









INSTITUTE  
*for* ADVANCED STUDY

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REPORT

FOR THE ACADEMIC YEARS  
1987·88 AND 1988·89

PRINCETON · NEW JERSEY

HISTORICAL STUDIES — SOCIAL SCIENCES LIBRARY  
THE INSTITUTE FOR ADVANCED STUDY  
PRINCETON, NEW JERSEY 08540











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FOUNDERS, TRUSTEES AND OFFICERS OF THE BOARD  
AND OF THE CORPORATION

*Founders*

CAROLINE BAMBERGER FULD  
LOUIS BAMBERGER

*The Board of Trustees [1987-1989]*

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Yale University, New Haven, Connecticut*

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*Director*

*The Center for Hellenic Studies, Washington, D.C. [ -1989]*

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*President*

*Research Institute of the American Arbitration Association [ -1989]*

FRANK E. TAPLIN

*Princeton, New Jersey [ -1988]*

MICHEL VAILLAUD

*New York, New York*

LADISLAUS VON HOFFMANN

*President*

*Omicron Investments, Inc., New York, New York [1988- ]*

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*President*

*James D. Wolfensohn, Inc., New York, New York*

*Honorary Trustee*

GLADYS K. DELMAS

*New York, New York [1988- ]*

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NORTON SIMON  
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FRANK E. TAPLIN [1988- ]

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*Honorary Vice-Chairman [1988- ]*

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*Treasurer*

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*Assistant Treasurer*

PATRICIA H. LABALME  
*Secretary of the Corporation*

ALLEN I. ROWE  
*Assistant Secretary of the Corporation [1988- ]*

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*Director*

PATRICIA H. LABALME

*Associate Director [ -1988]*

JAMES A. QUITSLUND

*Associate Director [1988- ]*

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*Associate Director for Administration and Finance*

JAMES H. BARBOUR, JR.

*Manager of Administration*

ROBERTA GERNHARDT

*Personnel Officer*

SABINE S. MODZELEWSKI

*Comptroller [ -1987]*

MARY J. MAZZA

*Comptroller [1988- ]*

PROFESSOR AT LARGE

HARRY WOOLF

## REPORT OF THE CHAIRMAN

It is my pleasure to report on the second and third years of my term as Chairman of the Board of Trustees.

In 1987, at the end of my first year as Chairman, I announced the appointment of Dr. Marvin L. Goldberger as Director of the Institute. These first two years of his Directorship have seen the Institute strengthened in several ways, principally in the new energies of his administration, the appointment of three new permanent faculty members and the continued vitalizing flow of visiting scholars through our four Schools.

It is to the credit of the faculty that the Institute continues to attract so many of the world's finest scholars in all the fields of mathematical, scientific and humanistic research it sponsors. My colleagues and I on the Board of Trustees commend the faculties of all four Schools for everything they have done to assure that the Institute maintains its preeminence as a center of independent scholarly inquiry. We also congratulate Dr. Goldberger on the many initiatives that he has taken in his first two years as Director to strengthen the Institute's bonds to the worldwide community of which it is a part.

In 1988, in the middle of the period covered by this report, two Trustees reached the end of their active terms as members of the Board. Gladys K. Delmas, who had joined the Board in 1978, was elected Honorary Trustee and Honorary Vice Chairman. Frank E. Taplin, whose membership on the Board dates back to 1971, was elected Trustee Emeritus. In 1989, Zeph Stewart, Trustee since 1979, retired, and Donald B. Straus, who first joined the Board in 1968, became Trustee Emeritus. We thank these four colleagues most warmly for their continuing support and friendship.

During the same two years, the Board lost two of its valued members, Thornton F. Bradshaw and Michael V. Forrestal. At the Board's meeting on May 6, 1989 the following resolutions were adopted:

"Thornton F. Bradshaw joined the Board of Trustees of the Institute for Advanced Study in the spring of 1982. He served on the Nominating and Development Committees, chairing the Nominating Committee from 1985 until his death in 1988. In 1986-87, he led the Search Committee to its successful choice of Marvin Goldberger as sixth Director of the Institute. Through Brad's RCA connections, funds were secured for a number of visiting members in the Schools of Mathematics and Natural Sciences from 1985 to 1987. A man of many parts and wide interests, Brad brought to the Institute both sensitivity to academic issues and a finely honed business expertise. He was benign, generous and right-hearted, and his gentle and wise voice will be deeply missed in our counsels. The Board of Trustees hereby expresses its gratitude for the years he gave us and extends to Pat Bradshaw its heartfelt sympathies for the loss which we all feel."



“Michael V. Forrestal joined the Board of Trustees of the Institute for Advanced Study in 1969 and served continuously since that time as a Trustee, except for a leave of absence, from 1978-80, during his tenure as President of the United States-U.S.S.R. Trade and Economic Council. As an Institute Trustee, he served on the Nominating, Land Development, Development and Finance Committees; he was a member of the Executive Committee since 1974. In 1975-76, he chaired the Search Committee which selected Harry Woolf as the fifth Director of the Institute. The Board relied often on his legal advice, whether the matter concerned film royalties, the intricacies of the Bylaws or the weighing of possible financial transactions. Mike was always balanced in his opinions, urbane and to the point. He brought with him an international outlook and a long view, a sense of the Institute’s place in space and time. He enjoyed his work with what he once described to a former director as his “happy band of unruly academics,” and his untimely loss is keenly felt by his colleagues here, even as we are grateful for the commitment and fine contribution he made over the many years of his service to the Institute.”

In 1988 we were delighted to welcome four new members to the Board: Marel-la Caracciolo Agnelli, Leon Levy, Max Palevsky and Ladislaus von Hoffmann.

Marella Caracciolo Agnelli was born in Florence, Italy and educated at the Académie Julian and the Ecole des Beaux Arts in Paris. She has worked as a photographer and editor for Condé Nast and is known as a designer of fabrics and furniture. In 1987 she co-authored a book, *Gardens of the Italian Villas*. She is chairman of *Associazione Amici Torinesi di Arte Contemporanea*, a member of the Council of *Amici di Palazzo Grassi* in Venice, vice-chairman of the Italian National Council of the United World Colleges, member of the International Council of the Salk Institute for Biological Studies in San Diego, chairman of *Scuola per Terapisti della Riabilitazione* and chairman of *Associazione Amici degli Handicappati*.

Leon Levy was born in New York and educated at the City College of New York. From 1948 to 1951 he was a security analyst with Hirsch & Company and then became a General Partner of Oppenheimer & Company [now Odyssey Partners] in New York City. He serves on the boards of numerous corporations, and is chairman of the boards of Oppenheimer Mutual Funds and Avatar Holdings, Inc. A trustee of Bard College, of the Jerome Levy Foundation for Economic Research and of New York University’s Institute of Fine Arts, he is also a Director of the International Foundation for Art Research.

Max Palevsky was born in Chicago and received his B.S. and Ph.B. degrees at the University of Chicago; a year of postgraduate study at the University of California at Los Angeles followed shortly. Mr. Palevsky is an industrialist who has been affiliated with the Bendix Corporation, Packard Bell Electronics, Scientific

Data Systems, Xerox Corporation, Intel Corporation, Komag, Inc. and Daisy Systems, Inc. For the last two decades he has been a member of the Democratic Advisory Committee, and he is a member of the board of directors of the American Civil Liberties Union.

Ladislav von Hoffmann was born in Berlin, Germany. After completing his education at the University of Freiburg he worked with an affiliate of the Federation of German Industry and then was associated, from 1953 to 1960, with *Wasag Chemie* in Germany and the Middle East. In 1960 he joined the International Finance Corporation and rose to the position of Executive Vice President before moving in 1977 to the Hochschild Group's Consolidated Mining and Industries. In 1984 he created a company, Omicron Holdings, Inc., and in 1987 he established Omicron Investments, Inc., a personally held company. He is now also president of Arcana Foundation, a private charitable foundation set up in 1986.

The other Trustees and I look forward to a long association with the four distinguished new members of the Board and to many years of effective and imaginative collaboration in the service of the Institute.

JAMES D. WOLFENSOHN, *Chairman of the Board*

## REPORT OF THE DIRECTOR

- I My association with the Institute for Advanced Study and its mission, programs and personalities dates back to 1953, when I spent a year at Princeton University on leave from the University of Chicago. During that year I spent a good deal of time at the Institute, where I had several collaborators and was friendly both with many faculty members and with the Director, J. Robert Oppenheimer. The spring of 1954 was a traumatic period because of the Atomic Energy Commission's hearings in Washington "In the Matter of J. Robert Oppenheimer," in my judgment one of the saddest, most shameful episodes in American history.

I joined the Physics Department at Princeton University in 1957 and again spent much time with Oppenheimer and others at the Institute. I was a Member of the School of Natural Sciences on three separate occasions while on leave from the University [1966-67, 1969-70 and 1976-77]. I was and still am a close friend of Carl Kaysen, who succeeded Oppenheimer as Director in 1966 and held that office until 1976. Harry Woolf, my predecessor, and I overlapped briefly before I left for California in 1978 to assume the Presidency of the California Institute of Technology. This is all by way of saying that I was no stranger to the Institute or it to me when I was asked to become the Director in 1987.

- II One of the first things that struck me about the Institute after nine years away from Princeton was the evidence of its continuing importance in research and scholarship. Like everyone else in academic life, I had always been aware of the unmatched excellence of the Institute faculty and of the impressive numbers of the world's leading scholars and scientists who had begun and enhanced their careers as visiting scholars at the Institute. But I was also aware that in the past twenty or so years the number of first-rate research universities in the United States and abroad had grown steadily and, with them, the range of opportunities for both post-doctoral researchers and senior visiting scholars. With all these new and competing alternatives, the Institute might have expected to find that attracting and retaining its faculty was no longer so easy, and that demand for its 150 memberships was in decline.

On the contrary, the Institute is stronger than ever. Three faculty appointments during my first years as Director confirm that the prestige and drawing power of the Institute are undiminished. In 1987 the School of Natural Sciences appointed Edward Witten. He was trained at Brandeis University and Princeton University and had been named Professor of Physics at Princeton University in 1980, following three years as a member of the Harvard Society of Fellows. During his years on the faculty at Princeton University he had emerged as one of the world leaders in the theory of elementary particles.

Then, in January 1989, I had the pleasure of announcing the appointment of Frank Wilczek, who was educated at the University of Chicago and at Princeton University and had taught at Princeton, the University of California at Santa Barbara and Harvard University. He was simultaneously being wooed by Harvard, but the Institute prevailed. He works in condensed matter theory and elementary particle physics. In collaboration with his wife, Elizabeth Devine, he has written a popular book on modern science called *Longing for the Harmonies*.

The Institute's prominence among centers of humanistic research has also been demonstrated recently. In May of 1989 it was announced in London that John H. Elliott, Professor in the School of Historical Studies, had been named Regius Professor of Modern History at the University of Oxford, effective in the summer of 1990. After a careful search the School filled the vacancy by appointing Oleg Grabar, a world-renowned Harvard University scholar in the field of Islamic art and culture. He will join our faculty in the summer of 1990, bringing with him a field of scholarship that has never been represented on the permanent faculty.

While reporting news of the faculty, I also must note that Morton White, Professor in the School of Historical Studies since 1970, retired in 1988. As you will see from the School's own report, he remains very active as Professor Emeritus. It is my sad duty to report the deaths of two Professors Emeriti. Hassler Whitney, who was appointed Professor in the School of Mathematics in 1952 [Professor Emeritus in 1977], died in Princeton on May 10, 1989. Benjamin D. Meritt, Professor in the School of Historical Studies since 1935 [Professor Emeritus since 1969], died in Austin, Texas on July 7, 1989.

The Institute's community of visiting scholars is approximately eight times the size of our permanent faculty. The scholars picked from a world-wide pool of well over 1,000 applicants are as remarkable for their credentials as they are for the diversity of their fields and methods of research. It remains true that the best and brightest of the post-doctoral crop of mathematicians, physicists and astrophysicists almost invariably accept the positions that the Institute offers, and we have more applications from senior scholars on sabbatical than our offices and apartments can accommodate.

In the Schools of Historical Studies and of Social Science the visiting scholars are certainly comparable in their excellence and diversity to their colleagues in Mathematics and the Natural Sciences. Members of these two Schools tend on the whole to be established and mature scholars. Both Schools also have some relatively young Members each year. In 1988-89, in fact, the School of Historical Studies inaugurated a program of Two-Year Memberships for Assistant Professors who can use their time at the Institute to consolidate their scholarly credentials before facing tenure decisions at their home institutions.

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Neither our permanent faculty nor our community of visiting scholars would be fully productive without the inspiration of the other. Life at the Institute is dominated by the interaction of these two lively groups. As indicated by this report's lists of Members, Visitors and Research Staff, our Trustees and I have the privilege of presiding over a community of scholars whose cosmopolitan character has been dramatically reinforced by the participation of scholars from once isolated countries such as the People's Republic of China, Romania and the Soviet Union.

- III The Institute's continuing appeal to scholars from all over the world and the gradual accumulation of the research materials that our work requires have of course created a serious shortage of various kinds of space.

Early in my tenure as Director it became obvious that the Library of the Schools of Mathematics and Natural Sciences in Fuld Hall was bursting at the seams. We considered moving the Library to the Annex of the Historical Studies and Social Science library building. The Annex had originally been intended for this use, but it has been indispensable for more than two decades as the Institute's one large lecture hall. After much discussion we decided that the best solution would be to install compact shelving for older mathematics and physics journals and books on the lower level of the Historical Studies–Social Science Library. Additional space was made available in the Historical Studies–Social Science Library by moving the offices of the American School of Classical Studies to another Institute building.

This project gives both Libraries adequate space for the next fifteen or twenty years. We gratefully acknowledge the gifts of members of the Institute Board of Trustees, and in particular the challenge gift of Gladys K. Delmas, that made this project possible.

- IV Soon after my arrival in 1987 another space problem was brought to my attention, and it was apparent that this would require a more ambitious response. This space problem has its most direct impact on the Schools of Mathematics and of Natural Sciences but in fact affects the Institute as a whole.

For many years roughly one-third of the Institute's mathematicians have had offices in the old Electronic Computer Project building at the foot of Olden Lane [it once housed John von Neumann's pioneering digital computer]. The isolation of these members from the mathematics faculty and from the rest of the community has become an increasingly serious problem.

After careful deliberation we have concluded, with the full support of the Board of Trustees, that the only reasonable solution is to construct a new building. We have retained the renowned architect Cesar Pelli, who is now designing a 23,000 square-foot building which will contain office space and a seminar room for Faculty and Members of the School of Mathematics. The Electronic Computer

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Project building will then be available for other uses. By significantly increasing the total number of offices on the main campus the new building will relieve the shortage of office space that has been felt by all four Schools. The auditorium that is being planned as a part of the new building will also bring immediate benefits to the entire Institute community and to all the others who flock to our lectures, films and concerts. We are already actively developing plans for a campaign that will generate funds for this building, which we hope to see completed in 1991 or early 1992.

- V I want to close with a word of thanks to all of the many friends who have given support to the Institute during my first two years as Director. Acknowledgement of gifts and grants from foundations, corporations, government agencies, associations and individuals is made in the section that follows. Without such support the Institute would have long since lost its position of leadership among the world's centers of scholarship and culture.

In addition to thanking the Chairman and the entire Board of Trustees, I should like to note with deep gratitude the service rendered over the years by Thornton F. Bradshaw and Michael V. Forrestal. They both died suddenly while still active and at the peak of their powers. Their friendship and commitment to our work will always be remembered by everyone who cares about the Institute.

MARVIN L. GOLDBERGER, *Director*

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## ACKNOWLEDGMENTS

The following individuals, associations, foundations, corporations and government agencies provided support for Visiting Members in the academic years 1987-88 and 1988-89:

ASSOCIATION OF MEMBERS OF THE INSTITUTE FOR ADVANCED STUDY  
BELL SYSTEM  
BOTWINICK-WOLFENSOHN FOUNDATION  
CORNING GLASS WORKS FOUNDATION  
ELIZABETH AND J. RICHARDSON DILWORTH  
EXXON RESEARCH AND ENGINEERING COMPANY  
THE FORD FOUNDATION  
FRIENDS OF THE INSTITUTE FOR ADVANCED STUDY  
GERDA HENKEL FOUNDATION  
W. M. KECK FOUNDATION  
SAMUEL H. KRESS FOUNDATION  
THE HENRY LUCE FOUNDATION  
THE AMBROSE MONELL FOUNDATION  
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
NATIONAL ENDOWMENT FOR THE HUMANITIES  
NATIONAL SCIENCE FOUNDATION  
STATE OF NEW JERSEY  
NEW JERSEY COMMISSION ON SCIENCE AND TECHNOLOGY  
JOHN M. OLIN FOUNDATION  
THE ROCKEFELLER FOUNDATION  
HELENA RUBINSTEIN FOUNDATION  
SIEMENS CORPORATE RESEARCH AND SUPPORT  
ALFRED P. SLOAN FOUNDATION  
SQUIBB CORPORATION  
FRITZ THYSSEN FOUNDATION  
UNITED PARCEL SERVICE FOUNDATION  
UNITED STATES DEPARTMENT OF ENERGY  
VOLKSWAGENWERK FOUNDATION  
ELIZABETH A. AND EDWIN C. WHITEHEAD

Their contributions are acknowledged with deep appreciation.



## INDEPENDENT AUDITORS' REPORT

The Board of Trustees  
Institute for Advanced Study -  
Louis Bamberger and Mrs. Felix Fuld Foundation  
Olden Lane  
Princeton, New Jersey

We have audited the accompanying balance sheet of the Institute for Advanced Study as of June 30, 1989 and the related statements of support and revenue, expenses, capital additions and changes in fund balances and of changes in financial position for the year then ended. These financial statements are the responsibility of the Institute's management. Our responsibility is to express an opinion on these financial statements based on our audit.

We conducted our audit in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, such financial statements present fairly, in all material respects, the financial position of the Institute at June 30, 1989 and the results of its operations and the changes in its financial position for the year then ended in conformity with generally accepted accounting principles.

DELOITTE HASKINS & SELLS  
*Princeton, New Jersey*  
September 30, 1989

BALANCE SHEET  
 JUNE 30, 1989 [WITH COMPARATIVE AMOUNTS FOR 1988]

ASSETS	1989	1988
OPERATING FUNDS:		
Cash	\$ 3,395	\$ 3,870
Temporary investments	491,204	784,656
Accounts and notes receivable	72,415	57,429
Government contracts receivable	169,225	135,326
Private gifts and grants receivable	86,953	52,093
Accrued income on investments	1,696,810	1,346,170
Prepaid and other assets	235,816	171,770
TOTAL OPERATING FUNDS	<u>\$ 2,755,818</u>	<u>\$ 2,551,314</u>
PLANT FUNDS:		
Debt service fund deposits	\$ 447,641	\$ 441,793
Unamortized debt issuance expense	68,357	71,464
Land, buildings and improvements, equipment and rare book collection - net [ Note C ]	<u>15,512,524</u>	<u>15,378,467</u>
TOTAL PLANT FUNDS:	<u>\$ 16,028,522</u>	<u>\$ 15,891,724</u>
ENDOWMENT AND SIMILAR FUNDS: [ Note B ]		
Investments, at cost [ Note D ]	\$ 174,261,975	\$ 167,520,158
TOTAL ENDOWMENT AND SIMILAR FUNDS	<u>\$ 174,261,975</u>	<u>\$ 167,520,158</u>

See Notes to Financial Statements

## EXHIBIT A

LIABILITIES AND FUND BALANCES	1989	1988
OPERATING FUNDS:		
Accounts payable and accrued expenses	\$ 645,702	\$ 461,714
Deferred restricted revenue [ Note G ]	1,149,104	866,557
Fund balance [Exhibit B]—unrestricted	961,012	1,223,043
<b>TOTAL OPERATING FUNDS</b>	<b><u>\$ 2,755,818</u></b>	<b><u>\$ 2,551,314</u></b>
PLANT FUNDS:		
Interest payable [ Note D ]	\$ 302,641	\$ 306,793
Long-term debt [ Note D ]	7,781,879	7,913,100
Plant fund balance [Exhibit B]	7,944,002	7,671,831
<b>TOTAL PLANT FUNDS</b>	<b><u>\$ 16,028,522</u></b>	<b><u>\$ 15,891,724</u></b>
ENDOWMENT AND SIMILAR FUNDS:		
Fund balances [Exhibit B]:		
True endowment	\$ 35,057,842	\$ 33,662,026
Quasi-endowment:		
Restricted	14,780,198	13,988,777
Unrestricted:		
Designated	8,067,288	7,653,289
Undesignated	116,356,647	112,216,066
<b>TOTAL ENDOWMENT AND SIMILAR FUNDS</b>	<b><u>\$ 174,261,975</u></b>	<b><u>\$ 167,520,158</u></b>

STATEMENT OF SUPPORT AND REVENUE, CAPITAL ADDITIONS AND  
CHANGES IN FUND BALANCES FOR THE YEAR ENDED JUNE 30, 1989  
[WITH COMPARATIVE TOTALS FOR 1988]

	OPERATING FUNDS	
	UNRESTRICTED	RESTRICTED
<b>SUPPORT AND REVENUE:</b>		
Endowment income [net of management fees]	\$ 7,007,413	\$ 2,607,153
Private gifts and grants	1,486	2,485,889
Government contracts		743,919
Total support and revenue	<u>7,008,899</u>	<u>5,836,961</u>
<b>EXPENSES:</b>		
School of Mathematics	856,256	2,041,253
School of Natural Sciences	1,456,908	1,349,904
School of Historical Studies	1,628,693	698,780
School of Social Science		1,223,081
Libraries	995,466	166,121
Director's Special Purpose Fund	230,683	41,221
Administration and general	2,339,307	5,691
Auxiliary activity - tenants' housing expenses, net of unrestricted revenue of \$165,281 in 1989	46,757	100,588
Total expenses	<u>7,554,070</u>	<u>5,626,639</u>
<b>EXCESS [DEFICIENCY] OF SUPPORT AND REVENUE OVER EXPENSES BEFORE CAPITAL ADDITIONS</b>	<u>[545,171]</u>	<u>210,322</u>
<b>CAPITAL ADDITIONS:</b>		
Gifts and grants		
Realized gain on investments -net		
Investment income		
Total capital additions		
<b>EXCESS [DEFICIENCY] OF SUPPORT AND REVENUE OVER EXPENSES AFTER CAPITAL ADDITIONS</b>	[545,171]	210,322
<b>FUND BALANCES AT BEGINNING OF YEAR</b>	1,223,043	
<b>TRANSFERS:</b>		
Plant acquisitions and principal debt service payments	[1,417,592]	
Quasi-endowment funds utilized	1,779,962	
Transfers to endowment and similar funds	[79,230]	[210,322]
<b>FUND BALANCES AT END OF YEAR</b>	<u>\$ 961,012</u>	<u>\$ -0-</u>

*See Notes to Financial Statements*

EXHIBIT B

TOTAL	PLANT FUNDS	ENDOWMENT AND SIMILAR FUNDS	TOTAL 1989 ALL FUNDS	TOTAL 1988 ALL FUNDS
\$ 9,614,566			\$ 9,614,566	\$ 9,118,811
2,487,375			2,487,375	2,258,277
743,919			743,919	728,288
<u>12,845,860</u>			<u>12,845,860</u>	<u>12,105,376</u>
2,897,509	\$ 188,759		3,086,268	3,117,548
2,806,812	339,907		3,146,719	2,800,320
2,327,473	154,559		2,482,032	2,152,381
1,223,081	73,947		1,297,028	1,276,059
1,161,587	133,165		1,294,752	1,288,254
271,904	6,122		278,026	227,117
2,344,998	190,594		2,535,592	2,141,803
147,345	94,614		241,959	309,289
<u>13,180,709</u>	<u>1,181,667</u>		<u>14,362,376</u>	<u>13,312,771</u>
<u>[334,849]</u>	<u>[1,181,667]</u>		<u>[1,516,516]</u>	<u>[1,207,395]</u>
	30,665	\$ 808,634	839,299	411,644
		7,423,593	7,423,593	9,108,203
	<u>5,581</u>		<u>5,581</u>	<u>2,218</u>
	<u>36,246</u>	<u>8,232,227</u>	<u>8,268,473</u>	<u>9,522,065</u>
[334,849]	[1,145,421]	8,232,227	6,751,957	8,314,670
1,223,043	7,671,831	167,520,158	176,415,032	168,100,362
[1,417,592]	1,417,592			
1,779,962		[1,779,962]		
<u>[289,552]</u>		<u>289,552</u>		
<u>\$ 961,012</u>	<u>\$ 7,944,002</u>	<u>\$ 174,261,975</u>	<u>\$ 183,166,989</u>	<u>\$ 176,415,032</u>

STATEMENT OF CHANGES IN FINANCIAL POSITION  
 FOR THE YEAR ENDED JUNE 30, 1989 [WITH COMPARATIVE  
 TOTALS FOR 1988]

	OPERATING FUNDS	PLANT FUNDS
<b>RESOURCES PROVIDED:</b>		
Deficiency of support and revenue over expenses before capital additions	\$ [334, 849]	\$ [1, 181, 667]
Capital additions:		
Gifts and grants		30, 665
Realized gain on investments- net		
Investment income		5, 581
Deficiency of support and revenue over expenses after capital additions	[334, 849]	[1, 145, 421]
Items not using [providing] resources:		
Depreciation		1, 181, 667
Amortization of debt issuance expense		3, 107
Gain on disposition of investments		
Proceeds from sale of investments		
Proceeds from disposals of plant facilities		
Decrease in receivables		
Decrease in accrued income		
Increase in payables	183, 988	
Increase in deferred restricted revenue	282, 547	
Total resources provided	<u>131, 686</u>	<u>39, 353</u>
<b>RESOURCES USED:</b>		
Purchases of investments		
Purchases of plant facilities and equipment		1, 315, 724
Increase in receivables	83, 745	
Increase in prepaid and other assets	64, 046	
Increase in debt service fund deposits		5, 848
Increase in accrued income	350, 640	
Decrease in payables		4, 152
Decrease in deferred restricted revenue		
Reduction of long-term debt		131, 221
Total resources used	<u>498, 431</u>	<u>1, 456, 945</u>
<b>TRANSFERS:</b>		
Plant acquisitions and principal debt service payments	[1, 417, 592]	1, 417, 592
Quasi-endowment funds utilized	1, 779, 962	
Transfers to endowment and similar funds	[289, 552]	
Total transfers	<u>72, 818</u>	<u>1, 417, 592</u>
<b>INCREASE [DECREASE] IN CASH AND TEMPORARY INVESTMENTS</b>	<u>\$ [293, 927]</u>	<u>\$ -0-</u>

*See Notes to Financial Statements*

EXHIBIT C

ENDOWMENT AND SIMILAR FUNDS	TOTAL 1989 ALL FUNDS	TOTAL 1988 ALL FUNDS
	\$ [1, 516, 516]	\$ [1, 207, 395]
\$ 808, 634	839, 299	411, 644
7, 423, 593	7, 423, 593	9, 108, 203
	5, 581	2, 218
8, 232, 227	6, 751, 957	8, 314, 670
	1, 181, 667	1, 129, 941
	3, 107	3, 107
[7, 423, 593]	[7, 423, 593]	[9, 108, 203]
512, 306, 937	512, 306, 937	193, 638, 977
		555, 070
		103, 306
		26, 137
	183, 988	
	282, 547	
513, 115, 571	513, 286, 610	194, 663, 005
511, 185, 644	511, 185, 644	188, 389, 912
	1, 315, 724	1, 253, 824
439, 784	523, 529	248, 713
	64, 046	3, 025
	5, 848	1, 100
	350, 640	
	4, 152	4, 515, 973
		101, 080
	131, 221	126, 222
511, 625, 428	513, 580, 804	194, 639, 849
[1, 779, 962]		
289, 552		
[1, 490, 410]		
\$ [267]	\$ [294, 194]	\$ 23, 156



## NOTES TO FINANCIAL STATEMENTS · JUNE 30, 1989

## A · SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

*Basis of Presentation*

The accompanying financial statements are prepared on the accrual basis and are presented in accordance with recommendations contained in *Audits of Certain Nonprofit Organizations* issued by the American Institute of Certified Public Accountants. Certain prior year amounts presented for comparative purposes have been reclassified to conform to the current year presentation.

*Fund Accounting*

The accounts of the Institute for Advanced Study [the "Institute"] are maintained in accordance with the principles of "fund accounting." This is the procedure by which resources for various purposes are classified for accounting and reporting purposes into funds that are in accordance with activities or objectives specified. Separate accounts are maintained for each fund; however, in the accompanying financial statements, funds that have similar characteristics have been combined into fund groups.

Fund balances restricted by outside sources are so indicated and are distinguished from unrestricted funds allocated or designated to specific purposes by action of the governing board. Externally restricted funds may only be utilized in accordance with the purpose established by the grantor of such funds. In contrast, the governing board retains full control over unrestricted funds to use in achieving any of the Institute's objectives.

True endowment funds are subject to the restrictions of the gift instruments which require that the principal be invested in perpetuity; income on such funds may be utilized without restriction. Quasi-endowment funds have been established by the governing board to function as endowment funds, and any portion of these funds may be expended. Unrestricted funds functioning as endowments have no external restrictions. However, certain of these funds have been internally designated to support specific needs of the Institute.

All gains and losses arising from the sale, collection, or other disposition of investments and other non-cash assets are accounted for in the fund which owned such assets. Ordinary income earned on investments and receivables is generally accounted for in the fund owning such assets. However, unrestricted income earned on investments of endowment and similar funds is accounted for as revenue in unrestricted operating funds, and restricted income is accounted for as deferred restricted revenue until used in accordance with the terms of the restriction or transferred to endowment and similar funds.

*Plant Assets and Depreciation*

Uses of operating funds for plant acquisitions and principal debt service payments are accounted for as transfers to plant funds. Proceeds from the sale of plant assets, if unrestricted, are transferred to operating funds or, if restricted, to deferred amounts restricted for plant acquisitions. Depreciation is provided over the estimated useful lives of the respective assets on a straight-line basis [buildings and capital improvements 20-40 years, equipment 3-6 years].

**B · INVESTMENTS**

Investments purchased by the Institute are recorded at cost; investments received by gift are recorded at the fair market value at the date of donation.

Endowment and similar funds investments at June 30, 1989 are comprised of the following:

	CARRYING VALUE	MARKET VALUE
Pooled investments:		
Cash equivalents	\$ 39,481,405	\$ 39,481,405
Equity securities	65,861,850	76,583,738
Debt securities	65,386,369	66,745,284
Mortgages and notes receivable from faculty and staff	2,825,929	2,825,929
Investment accounts receivable	8,342,490	8,342,490
Investment accounts payable	<u>[7,653,993]</u>	<u>[7,653,993]</u>
Total pooled investments	174,244,050	186,324,853
Funds separately invested	<u>17,925</u>	<u>28,088</u>
Total	<u>\$ 174,261,975</u>	<u>\$ 186,352,941</u>

Marketable debt and equity securities are carried in the aggregate at lower of cost [amortized, in the case of debt securities] or market. Realized gains and losses are computed based on the average cost of the investment.

Equity securities include the Institute's interest in partnerships with a carrying value of \$27,331,913 at June 30, 1989. The Institute accounts for these investments on the equity basis and, accordingly, recognizes its proportionate share of ordinary income and realized gains and losses attributable to the investments of the partnerships. The Institute's proportionate share of ordinary income and realized gains and losses was \$114,678 and \$1,469,367, respectively, for the year ended June 30, 1989.

Substantially all the assets of endowment and similar funds are pooled with each individual fund subscribing to or disposing of units on the basis of the market

value per unit, determined on a quarterly basis. Earnings per unit of the pooled investments for the year ended June 30, 1989, exclusive of realized gains and losses, amounted to \$380 after deducting management fees. The following table summarizes changes in carrying and market values of the pooled investments:

	POOLED ASSETS		NET CHANGE	MARKET VALUE PER UNIT
	MARKET VALUE	CARRYING VALUE		
June 30, 1988	\$ 175,132,460	\$ 167,502,233	\$ 7,630,227	\$ 6,885
June 30, 1989	186,324,853	174,244,050	<u>12,080,803</u>	7,358
Increase in unrealized appreciation for the year ended June 30, 1989			4,450,576	
Realized net gain for the year ended June 30, 1989			<u>7,423,593</u>	
Net change for the year ended June 30, 1989			<u>\$ 11,874,169</u>	

C · PHYSICAL PLANT

Physical plant and equipment are stated at the cost at date of acquisition, less accumulated depreciation. Library books, other than rare books, are not capitalized.

A summary of plant assets at June 30, 1989 follows:

Land and improvements	\$ 2,354,732
Buildings and improvements	21,247,823
Equipment	6,200,405
Rare book collection	<u>199,508</u>
Total	30,002,468
Less accumulated depreciation	[14,489,944]
Net book value	<u>\$ 15,512,524</u>

## D · LONG-TERM DEBT

A summary of long-term debt at June 30, 1989 follows:

7.804%, 1980 - NJEFA	\$ 7,865,000
Less unamortized bond discount	[83,121]
Total long-term debt	<u>\$ 7,781,879</u>

In July 1980, the Institute received proceeds of the New Jersey Educational Facilities Authority [NJEFA] offering of \$8,775,000 Revenue Bonds, 1980 Series A, the Institute for Advanced Study Issue. The proceeds were used for the construction of the West Building and the Dining Hall, as well as other construction and major remodeling projects of Institute facilities.

The bonds are dated July 1, 1980, bear interest, payable semi-annually, at the net average annual rate of 7.804%, are subject to redemption at various prices and require principal payments and sinking fund instalments through July 1, 2011. Bond principal in the amount of \$145,000 matured on July 1, 1989, and bond principal in the amount of \$155,000 [1990], \$165,000 [1991], \$175,000 [1992] and \$185,000 [1993] will mature on July 1 of the designated years. The obligation to pay the Authority on a periodic basis, in the amounts sufficient to cover principal and interest due on the bonds, is a general obligation of the Institute and is collateralized by United States Treasury Notes, 8.875%, due February 15, 1996, with an aggregate face amount of \$8,625,000.

Interest expense on long-term debt for the year that ended June 30, 1989 was \$624,443, of which \$302,641 is payable at June 30, 1989.

## E · RETIREMENT PLANS

Separate voluntary defined contribution retirement plans are in effect for faculty members and eligible staff personnel, both of which provide for annuities which are funded with the Teachers Insurance and Annuity Association and/or the College Retirement Equities Fund. Contributions for the year ended June 30, 1989 amounted to \$616,000.

In addition to the formal plans, the Board of Trustees or the Director has, at various times, authorized the payment of pensions to certain members, employees and the widow of a deceased member. Total pension payments which aggregated \$86,000 for the year ended June 30, 1989 have been charged to expense, and no reserves have been provided for pensions payable in subsequent years.

In addition to providing pension benefits, the Institute provides certain health care and life insurance benefits for retired employees and faculty. Substantially all of the Institute's employees may become eligible for those benefits if they reach normal retirement age while working for the Institute. The cost of retiree health care and life insurance benefits is recognized as expense as premiums are paid. For fiscal year 1989, those costs totalled approximately \$100,000.

F · FUNDS HELD IN TRUST BY OTHERS

The Institute is the residuary beneficiary of a trust under the Will of George Placzek, Deceased, and upon the death of the life tenant will be entitled to receive the corpus thereof. The approximate market value of the assets under the Will, as reported by the administrator of the Estate, aggregated \$1,683, 000 as of June 30, 1989 and is not included in the accompanying financial statements.

G · CHANGES IN DEFERRED RESTRICTED REVENUE

Restricted receipts, which are recorded initially as deferred restricted revenue, are reported as revenues when expended in accordance with the terms of the restriction or transferred to quasi-endowment funds. Changes in deferred restricted revenue amounts are as follows:

	<u>TOTAL DEFERRED RESTRICTED REVENUE</u>
Balance at June 30, 1988	\$ <u>866, 557</u>
Additions:	
Contributions, grants, etc.	3, 512, 355
Net restricted endowment income	<u>2, 607, 153</u>
Total additions	<u>6, 119, 508</u>
Deductions:	
Funds expended from contributions, grants, etc.	3, 229, 808
Funds expended from restricted endowment	2, 396, 831
Transfer to quasi-endowment funds	<u>210, 322</u>
Total deductions	<u>5, 836,961</u>
Balance at June 30, 1989	<u><u>\$ 1, 149, 104</u></u>

**H · FUNCTIONAL ALLOCATION OF EXPENSES**

The costs of providing the various programs and other activities have been summarized on a functional basis in the statement of support and revenue, expenses, capital additions and changes in fund balances. Accordingly, certain costs have been allocated among the programs and supporting services benefited. The costs incurred by the Institute in operating both the Dining Hall [\$323, 000, net of \$333, 000 in revenues] and members' housing [\$310, 000, net of \$862, 000 in revenues] have been allocated among the programs and supporting services benefited.

THE SCHOOL OF HISTORICAL STUDIES

*Academic Years 1987-88 and 1988-89*

*Faculty*

GLEN W. BOWERSOCK

GILES CONSTABLE

JOHN H. ELLIOTT

CHRISTIAN HABICHT

PETER PARET [*Andrew W. Mellon Professor*]

IRVING LAVIN

MORTON WHITE [ -1988]

*Professors Emeriti*

MARSHALL CLAGETT

FELIX GILBERT

JAMES F. GILLIAM

GEORGE F. KENNAN

BENJAMIN D. MERITT\*

KENNETH M. SETTON

HOMER A. THOMPSON

MORTON WHITE [1988- ]

*\*Deceased July 7, 1989*

*Member with Long-Term Appointment*

OTTO E. NEUGEBAUER



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*Academic Activities of the Permanent Faculty*  
*Academic Years 1987-88 and 1988-89*

GLEN BOWERSOCK is the general editor of a new series of books on the ancient world. Two volumes of this series, published by Harvard University Press under the overall title *Revealing Antiquity*, appeared during the period covered by this report. During these two years Professor Bowersock published twenty-one articles on the Roman and early Byzantine empires, the pre-Islamic Arabs and ancient and modern historiography. He participated in several scholarly symposia and lectured at the University of Toronto, Boston University, Columbia and Yale as well as delivering the Thomas Spencer Jerome Lectures at the University of Michigan and the American Academy in Rome. This series of six lectures, entitled "Hellenism in Late Antiquity," will be published in 1990 by the University of Michigan Press. He was elected a member of the American Philosophical Society in 1989.

GILES CONSTABLE completed and submitted for publication *The Cartulary of Homblières* and the *Letters between Bernard Berenson and Charles H. Coster*. Scholarly articles by Professor Constable were published in the *Journal des Savants* and in the book, *Horizons marins, Itinéraires spirituels*. During the academic years 1987-88 and 1988-89 he participated in numerous symposia and conferences. Sponsoring institutions included Barnard College, the Medieval Academy of America, the Center for Medieval and Renaissance Studies [University of California at Los Angeles], Princeton University's Shelby Cullom Davis Center for Historical Studies, New York University and Dumbarton Oaks. He lectured at Harvard University, the University of Toledo, Mt. Holyoke College, the University of Utrecht in The Netherlands, the University of North Carolina and elsewhere.

JOHN H. ELLIOTT'S publications during the period covered by this report included *Spain and Its World, 1500-1700: Selected Essays*. In 1987-88 he received the Medal of Honor of the Universidad Internacional Menéndez y Pelayo in Madrid, and the Spanish Ambassador to the United States conferred on him the Grand Cross of the Order of Alfonso X El Sabio in a ceremony at the Institute. At the end of the academic year 1988-89 Professor Elliott was appointed Regius Professor of Modern History at the University of Oxford, effective in the autumn of 1990.

CHRISTIAN HABICHT completed two books, *Cicero the Politician* and *Cicero der Politiker*. The former will appear in the series, "Ancient Society and History," of The Johns Hopkins University Press; the latter will be published by C.H. Beck in Munich. During the academic years 1987-88 and 1988-89 Professor Habicht published eleven articles in American and European journals and contributed an essay to *Bathron*, a *Festschrift* for H. Drerup. He gave the annual C.A. Robinson Lecture at Brown University on "Cicero and Caesar." Some of the results of his

continuing research on late Hellenistic Athens were included in the first annual David Magie Lecture at Princeton University, which was subsequently published by Princeton University Press.

During the academic years 1987-88 and 1988-89 IRVING LAVIN continued his research on various periods of the history of European art and culture. He contributed an article, "Le Bernin et son image du Roi-Soleil," to the *Festschrift* in honor of André Chastel, which appeared in Rome in 1987. He also lectured and taught widely. As a participant in the Phi Beta Kappa Visiting Scholar Program he taught at eight colleges and universities throughout the United States. He presented two series of lectures at the Istituto Italiano Per Gli Studi Filosofici in Naples. He was among the scholars featured in the television series, "Art of the Western World," a production of WNET in New York that was broadcast by public television throughout the country.

At the beginning of the academic year 1988-89 PETER PARET's book, *Art as History*, was published by Princeton University Press. A German edition of this book has subsequently appeared. During the period covered by this report two of Professor Paret's earlier book-length works were reissued in paperback editions: *The Berlin Secession* [Harvard University Press] and Carl von Clausewitz's classic, *On War*, edited and translated with Michael Howard. Professor Paret published numerous scholarly articles on various aspects of European history and historical interpretation. He lectured at Princeton, Harvard, Yale, Columbia, Stanford and elsewhere. In 1987 he was appointed Senior Fellow by Courtesy of the Hoover Institution, Stanford University, and in 1988 he was inducted into the American Philosophical Society.

*Academic Activities of the Professors Emeriti  
Academic Years 1987-88 and 1988-89*

MARSHALL CLAGETT completed and published the first volume of *Ancient Egyptian Science: A Source Book* and worked on the volumes that will follow. His *Greek Science in Antiquity* was reprinted with some corrections.

FELIX GILBERT published *A European Past: Memoirs 1905-1945* and a German edition entitled *Lehrjahre im alten Europa: Erinnerungen 1905-1945*. He completed a book of essays on Ranke and Burckhardt and published articles and reviews in American, German and English journals and papers.

GEORGE KENNAN'S book, *Sketches from a Life*, was published by Pantheon Press in 1989. Professor Kennan testified before the Senate Foreign Relations Committee, appeared in televised and print interviews, lectured widely and published numerous articles on Gorbachev, Gromyko, contemporary European affairs and "the German question."

KENNETH M. SETTON completed the text of a book on *Venice, Austria, and the Turks in the Seventeenth Century* as well as the sixth and final volume of *A History of the Crusades*, of which he is editor-in-chief. His 1956 work, *The Byzantine Background to the Italian Renaissance*, appeared in Greek translation.

HOMER A. THOMPSON continues to be involved in the publication program of the excavation of the Athenian Agora under the auspices of the American School of Classical Studies. Three new volumes—one dealing with inscriptions and two with the Athenian courts of law—are now in manuscript, and several other volumes are nearing completion.

MORTON WHITE'S book, *Philosophy, "The Federalist," and the Constitution*, was published in 1987 and reprinted as a paperback in 1989. Articles have appeared in *Rutgers Law Review*, *Ethics* and the German journal *Dialectica*. During both years Professor White served as Distinguished Visiting Professor at Rutgers University. In September 1989 he participated in a conference on advanced study sponsored by the newly established International Institute for Advanced Studies in Kyoto.

MEMBERS, VISITORS AND RESEARCH STAFF

*Academic Year 1987-88*

ELIZABETH BEATSON

*Princeton, New Jersey*

Medieval art history · A

PAUL BINSKI

*Gonville and Caius College, University of  
Cambridge, United Kingdom*

Figurative arts at the English court, 1250-1350

KLAUS BRINGMANN

*Johann Wolfgang Goethe University, Frankfurt,  
Federal Republic of Germany*

Ancient history

CARLRICHARD BRÜHL

*University of Giessen, Federal Republic of Germany*

Medieval history

KISOR K. CHAKRABARTI

*Calcutta University, Calcutta, India*

Ancient logic

INGA V. CLENDINNEN

*La Trobe University, Bundoora, Victoria, Australia*

Pre-conquest Mexico · F

KEVIN CLINTON

*Cornell University, Ithaca, New York*

Greek epigraphy

PENELOPE J. CORFIELD

*Royal Holloway and Bedford New College,  
University of London, United Kingdom*

Modern British history · F

JOHN M. DILLON

*Trinity College, University of Dublin,  
Republic of Ireland*

Later Greek philosophy · s

LAWRENCE G.J. DUGGAN

*University of Delaware, Newark*

Medieval history

JAMES D. FARQUHAR

*University of Maryland, College Park*

Late Medieval manuscript painting · s

JOSEP M. FRADERA

*Universitat Autònoma de Barcelona*

Spanish-American history · A

EDMOND FRÉZOULS

*Université des Sciences Humaines,  
Strasbourg, France*

History of the eastern Roman empire · F

CHIARA FRUGONI

*University of Pisa, Italy*

Medieval iconography and history · F

DANIELA C. GALLAVOTTI

*Università degli Studi di Roma, Rome, Italy*

Roman 16th century painting · VF

STEPHEN GARDNER

*Harvard University, Cambridge, Massachusetts*

Gothic architecture

LÉOPOLD GENICOT

*Catholic University of Louvain, Belgium*

Medieval social history · F

PETER J. GODMAN

*Pembroke College, University of Oxford,  
United Kingdom*

History of classical tradition · F

GYÖRGY GYÖRFFY

*Institute of History, Hungarian Academy of Sciences,  
Budapest*

Medieval history · F

MARCIA B. HALL

*Temple University, Philadelphia, Pennsylvania*

Italian Renaissance painting · VS

ÜLRICH HAUSMANN

*University of Tübingen, Federal Republic of  
Germany*

Classical archaeology · VF

MICHAEL F. HENDY

*University of Birmingham, United Kingdom*

Late Roman and Byzantine history

- HENNING H. KÖHLER  
*Free University of Berlin, Federal Republic of Germany*  
German political history
- LUBOMÍR KONEČNÝ  
*Czechoslovak Academy of Sciences, Prague*  
17th-century Spanish painting · F
- STEPHAN KUTTNER  
*University of California, Berkeley*  
Medieval canon law · VF
- BARRY J. LEVY  
*Case Western Reserve University, Cleveland, Ohio*  
American colonial history
- JOSEPH H. LYNCH  
*Ohio State University, Columbus, Ohio*  
Medieval European social history · S
- HENRY I. MACADAM  
*Princeton, New Jersey*  
History of the Roman Near East · A
- DOMENICO MAFFEI  
*University of Rome, Italy*  
Medieval legal history · F
- CHARLES E. MCCLELLAND, III  
*University of New Mexico, Albuquerque*  
Modern German history
- JAMES V. H. MELTON  
*Emory University, Atlanta, Georgia*  
History of historiography · F
- JOHN MONFASANI  
*State University of New York, Albany*  
Renaissance intellectual history
- E. WILLIAM MONTER  
*Northwestern University, Evanston, Illinois*  
Early modern European history
- DANIEL MORAN  
*Princeton, New Jersey*  
Late 18th-century and early 19th-century German history · A
- JOHN E. MURDOCH  
*Harvard University, Cambridge, Massachusetts*  
Medieval philosophy and science
- LAWRENCE NEES  
*University of Delaware, Newark*  
Early medieval manuscript painting · S
- OTTO E. NEUGEBAUER  
*Princeton, New Jersey*  
History of exact sciences in antiquity · M
- ROBERT R. PALMER  
*Princeton, New Jersey*  
18th-century European history · V
- LORENZ B. PUNTEL  
*University of Munich, Federal Republic of Germany*  
History of philosophy
- MICHAEL C. J. PUTNAM  
*Brown University, Providence, Rhode Island*  
Latin literature
- BRYAN P. REARDON  
*University of California, Irvine*  
Greek literature of the Roman empire
- LEIGHTON D. REYNOLDS  
*Brasenose College, University of Oxford, United Kingdom*  
Latin literature and textual criticism
- WOLFGANG H.R.A. SCHIERING  
*University of Mannheim, Federal Republic of Germany*  
Greek art
- BERNHARD SCHIMMELPFENNIG  
*University of Augsburg, Federal Republic of Germany*  
History of Rome in the middle ages · S
- MORRIS SLAVIN  
*Youngstown State University, Youngstown, Ohio*  
Modern European history
- ROBERT SOMERVILLE  
*Columbia University, New York City*  
Medieval church history
- ALDO STELLA  
*University of Padua, Italy*  
American intellectual history · S
- LAWRENCE STONE  
*Princeton University*  
British history · V



WILLIAM B. TAYLOR  
*University of Virginia, Charlottesville*  
Spanish-American colonial history · F

HANS J. TORKE  
*Free University of Berlin, Federal Republic of Germany*  
Early modern Russian history · S

STEPHEN V. TRACY  
*Ohio State University, Columbus*  
Greek epigraphy

THEODORE WEISS  
*Princeton University*  
English and creative writing · V

MARIT WERENSKIOLD  
*University of Oslo, Norway*  
Modern painting · S

ROBERT WILLIAMS  
*Princeton, New Jersey*  
Italian Renaissance art history · A

HENRI T. ZERNER  
*Harvard University, Cambridge, Massachusetts*  
French Renaissance art · F

MOSHE I. ZIMMERMANN  
*Hebrew University, Jerusalem, Israel*  
Modern German history

## MEMBERS, VISITORS AND RESEARCH STAFF

*Academic Year 1988-89*

SUSAN D. AMUSSEN  
*Connecticut College, New London, Connecticut*  
Social history of early modern England · V

ELIZABETH BEATSON  
*Princeton, New Jersey*  
Medieval art history · A

SUZANNE P. BLIER  
*Columbia University, New York City*  
African art · S

KENNETH BOURNE  
*London School of Economics, University of London, United Kingdom*  
19th-century British history · S

VITTORE BRANCA  
*University of Padua, Italy*  
Philology and history of art · F

JANE CHANCE  
*Rice University, Houston, Texas*  
Medieval thought

WILLIAM A. CHILDS  
*Princeton University*  
Classical archaeology · VF

STUART CLARK  
*University College of Swansea, United Kingdom*  
Early modern intellectual history

WILLIAM J. COURTENAY  
*University of Wisconsin, Madison*  
Medieval intellectual history · S

JANE W. CRAWFORD  
*Loyola Marymount University, Los Angeles, California*  
Latin literature

PETER J. DUIGNAN  
*Stanford University, Stanford, California*  
Modern European history · F

JEAN H. DUNBABIN  
*St. Anne's College, University of Oxford, United Kingdom*  
Medieval history · S

WALTER EDER  
*Free University of Berlin, Federal Republic of Germany*  
Ancient history

LISA FARBER  
*Princeton University*  
Northern Renaissance art · A

DENIS F. FEISSEL

*Collège de France, Paris, France*

Greek epigraphy of the later Roman Empire

ANTONIO FEROS

*Universidad Autónoma de Madrid, Spain*

Spanish history · A

JOHN V. FLEMING

*Princeton University*

Medieval history · v

ROY FOSTER

*Birkbeck College, University of London,*

*United Kingdom*

Biography of W. B. Yeats

MARC FUMAROLI

*Collège de France, Paris, France*

History of French language: sixteenth and

seventeenth centuries · v

MERCEDES GARCÍA-ARENAL

*Universidad Complutense, Madrid, Spain*

History of western Islam

JASPER GRIFFIN

*Balliol College, University of Oxford,*

*United Kingdom*

Classical literature · vs

MIRIAM T. GRIFFIN

*Somerville College, University of Oxford,*

*United Kingdom*

Roman history · s

ALBERT N. HAMSCHER

*Kansas State University, Manhattan*

Early modern French history

PETER B. HUMFREY

*University of St. Andrews, United Kingdom*

Venetian Renaissance art · F

ANNA KARTSONIS

*University of Washington, Seattle*

Byzantine art · v

CAROLYN KAY

*Yale University, New Haven, Connecticut*

Modern history · A

LAWRENCE J. F. KEPPIE

*University of Glasgow, United Kingdom*

Roman military epigraphy · s

MACGREGOR KNOX

*University of Rochester, Rochester, New York*

Modern European history

RICHARD KRAUTHEIMER

*Bibliotheca Hertziana [Max Planck Institute],*

*Rome, Italy*

History of architecture · F

MARCIA KUPFER

*Boston University, Boston, Massachusetts*

Romanesque wall painting in central France

ROBERT E. LERNER

*Northwestern University, Evanston, Illinois*

Medieval history

MEREDITH P. LILlich

*Syracuse University, Syracuse, New York*

Stained glass of eastern France, 1250-1325 · F

PETER A. LINEHAN

*St. John's College, University of Cambridge,*

*United Kingdom*

Medieval Spanish history · F

HENRY I. MACADAM

*Princeton, New Jersey*

History of the Roman Near East · A

MURDO J. MACLEOD

*University of Florida, Gainesville*

Mexican history

GLORIA S. MERKER

*Rutgers University, New Brunswick, New Jersey*

Classical archaeology · s

WILLIAM E. METCALF

*American Numismatic Society, New York City*

Roman numismatics

LUDO J. R. MILIS

*University of Ghent, Belgium*

Medieval religious and social history · s

A. LLOYD MOOTE

*University of Southern California, Los Angeles*

Early modern French history

OTTO E. NEUGEBAUER  
*Princeton, New Jersey*  
 History of exact sciences in antiquity · M

KNUT W. NÖRR  
*University of Tübingen, Federal Republic  
 of Germany*  
 Medieval legal history · S

ROBERT R. PALMER  
*Princeton, New Jersey*  
 18th-century European history · V

RICHARD PATTERSON  
*Emory University, Atlanta, Georgia*  
 Modal logic and metaphysics in Aristotle's  
*Organon* · S

DEBRA PINCUS  
*University of British Columbia,  
 Vancouver, Canada*  
 Venetian Renaissance art

PETER J. RHODES  
*University of Durham, United Kingdom*  
 Ancient history

MICHAEL RICHTER  
*University of Constance, Federal Republic  
 of Germany*  
 Medieval history · F

JOHN M. RIDDLE  
*North Carolina State University, Raleigh*  
 Greek scientific texts · F

STEVEN W. ROWAN  
*University of Missouri, St. Louis*  
 16th-century legal history

MIRI RUBIN  
*University of Cambridge, United Kingdom*  
 Medieval social and religious history

GEORGE SALIBA  
*Columbia University, New York City*  
 Planetary theories in the Middle Ages

MAURICE SARTRE  
*University of Tours, France*  
 History of the Roman Near East

PETER L. SCHMIDT  
*University of Constance, Federal Republic  
 of Germany*  
 Latin historians of the early empire · F

UDO W. SCHOLZ  
*University of Würzburg, Federal Republic  
 of Germany*  
 Roman religion · F

CHRISTINE SMITH  
*Georgetown University, Florence, Italy*  
 Renaissance architectural history

FRITZ STERN  
*Columbia University, New York City*  
 Modern European history · VF

GABRIEL TORTELLA  
*University of Alcalá de Henares, Spain*  
 Modern economic history · S

DAVID E. UNDERDOWN  
*Yale University, New Haven, Connecticut*  
 17th-century English history

ISSER WOLOCH  
*Columbia University, New York City*  
 18th-century French history · F



THE SCHOOL OF MATHEMATICS

*Academic Years 1987–88 and 1988–89*

*Faculty*

ENRICO BOMBIERI [*IBM von Neumann Professor*]

ARMAND BOREL [*Herman Weyl Professor*]

LUIS A. CAFFARELLI

PIERRE DELIGNE

ROBERT P. LANGLANDS

JOHN W. MILNOR [*Oswald Veblen Professor*]

THOMAS SPENCER

*Professor Emeriti*

DEANE MONTGOMERY

ATLE SELBERG

ANDRÉ WEIL

HASSLER WHITNEY\*

*\*Deceased May 10, 1989*

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*Academic Activities of the School: Academic Year 1987–88*

In informal collaboration with the School of Natural Sciences and with the help of a grant from the Alfred P. Sloan Foundation, the School of Mathematics held a program in string theory during the academic year 1987–88. It invited a number of senior mathematicians and mathematical physicists, and they led seminars on string theory and related topics.

There were three seminars on conformal field theory: D. Friedan and S. Shenker, term I; G. Segal, term I; and P. Goddard, term II. In addition, D. Olive held one on algebraic aspects of string theory; it was continued by J. Lepowsky and I. Frenkel, who discussed orbifold conformal field theory, aiming at the construction of a remarkable finite group called the Monster. Parallel lectures on the last topic were given by P. Deligne. M. Atiyah led a seminar on applications to 3-dimensional and 4-dimensional manifolds of ideas coming from physics.

In term II, E. Witten continued with a series of lectures that presented a more powerful heuristic approach to some of the same questions. The supergeometry seminar in term I was also related to physics, the theory it expounded being an outgrowth of the treatment by physicists of Fermi fields.

In all these seminars an effort was made to have the first lectures understandable to the non-specialist. The presence of both mathematicians and mathematical physicists in the audience and the corresponding need for communication were helpful.

The School also had a much smaller group on Drinfel'd modules. The parallels between the field  $\mathbb{Q}$  of rational numbers and the fields  $\mathbb{F}_p(X)$  of rational functions over a finite field are well known, and Drinfel'd modules are a new version of this old idea. Several visitors presented their work on the subject.

In their seminar on the Oppenheim conjecture, A. Borel and G. Prasad expounded Margulis's results on the approximation of numbers by the values of irrational quadratic forms and presented a generalization to number fields. Although the results have an arithmetic ring, the methods are group theoretic.

In the academic year 1987–88 the School also sponsored a seminar on partial differential equations, held jointly with Princeton University; a seminar on differential geometry; and the customary seminars on dynamical systems, number theory and topology. In addition, the members' seminar provided an opportunity for all visitors to describe their own research, regardless of the field.

In November 1987, the 11th Marston Morse Memorial Lecture, entitled "The Einstein-Hilbert Variational Problem on the Space of Riemannian Metrics," was delivered by R. Schoen.

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The Herman Weyl Lectures were given by L. Kadanoff on “Chaos and Universality” [three lectures, January 26–February 4, 1988]. Lectures in commemoration of Arne Beurling were given on January 4, 1988 by L. Carleson, P. Malliavin and L. Ahlfors.

*Academic Activities of the School: Academic Year 1988–89*

In the academic year 1988–89 the School had a special program on dynamical systems and invited L. Carleson as distinguished visiting professor. The dynamical systems seminar was very active, often meeting two or three times a week. Among many other topics and speakers in this seminar, Professor Carleson gave several lectures explaining the proof, due to him and M. Benedicks, that the Hénon map has a so-called strange attractor. The Hénon map is a simple area-contracting map from two-dimensional space to itself that exhibits a complicated chaotic behavior when iterated in computer simulation. Despite many attempts, until Carleson’s work with Benedicks, this behavior, which is also observed in many physical systems with dissipation, could not be explained analytically.

A. Douady gave the 12th Marston Morse Memorial Lectures. The lectures, entitled “Holomorphic Surgery,” took place on December 5, 7 and 8 and dealt with holomorphic dynamical systems.

There were two other smaller areas of concentration, with only a few visitors: partial differential equations and representations of  $p$ -adic groups. In particular, there was a seminar devoted primarily to a presentation of the work of C. Bushnell, P. Kutzko and L. Morris on  $GL_N$ , as their research developed during the course of their visit.

In term I, a seminar on “Lie groups and quadratic forms” continued the previous year’s seminar on approximations by irrational quadratic forms and then continued in term II as a seminar on “locally symmetric varieties.”

In the number-theory seminar, G. Faltings gave a series of talks on his recent work on  $p$ -adic cohomology of algebraic varieties in term I. Then, during term II, E. Bombieri gave a course on diophantine approximation.

In July, good use was made of the facilities of the Institute by the Clavius group, a group of Catholic mathematicians, mainly geometers, who assembled here for a month of seminars and discussions.

*As usual, the organized activities of the academic years 1987–88 and 1988–89 are to be viewed only as a part of the mathematical life at the Institute. Of equal, or greater, importance are individual research and the many informal discussions between members and faculty, for which the Institute provides a most favorable environment.*

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MEMBERS, VISITORS AND RESEARCH STAFF

Academic year 1987-88

GREG W. ANDERSON

*University of Minnesota, Minneapolis*  
Arithmetic algebraic geometry · F

MICHAEL ATIYAH

*Mathematical Institute, University of Oxford,  
United Kingdom*  
Algebraic geometry and global analysis · F

ILYA J. BAKELMAN

*Texas A & M University, College Station*  
Nonlinear partial differential equations

MLADEN BESTVINA

*University of California, Los Angeles*  
Low-dimensional topology

FREDERIC V. BIEN

*Princeton University*  
Representation theory · F

JOAN S. BIRMAN

*Barnard College, Columbia University,  
New York City*  
Low-dimensional topology · S

JEAN-BENOÎT BOST

*Ecole Normale Supérieure, Paris, France*  
String theory · S

JOHN L. BRYANT

*Florida State University, Tallahassee*  
Geometric topology · F

DAVID C. BRYDGES

*University of Virginia, Charlottesville*  
Mathematical physics · F

NICHOLAS P. BUCHDAHL

*Tulane University, New Orleans, Louisiana*  
Several complex variables, gauge theory,  
twistor theory

DAVID H. COLLINGWOOD

*University of Oregon, Eugene*  
Representations of Lie groups · F

BRIAN CONREY

*Oklahoma State University, Stillwater*  
Analytic number theory

LOUIS CRANE

*Princeton, New Jersey*  
Mathematical physics · V

PERCY A. DEIFT

*Courant Institute of Mathematical Sciences,  
New York University, New York City*  
Inverse problems and completely  
integrable systems · F

VINCENT DELLAPIETRA

*Harvard University, Cambridge, Massachusetts*  
Mathematical physics, geometry

RONALD J. DIPERNA

*University of California, Berkeley*  
Nonlinear partial differential equations · S

LAWRENCE C. EVANS

*University of Maryland, College Park*  
Nonlinear partial differential equations · S

ALEX J. FEINGOLD

*State University of New York, Binghamton*  
Kac-Moody Lie algebras

IGOR B. FRENKEL

*Yale University, New Haven, Connecticut*  
Infinite-dimensional Lie algebras and  
string theory

DANIEL FRIEDAN

*University of Chicago, Illinois*  
Mathematical physics

ERNEST-ULRICH GEKELER

*Max Planck Institute for Mathematics,  
Bonn, Federal Republic of Germany*  
Drinfeld modules

HENRI A. GILLET

*University of Illinois at Chicago*  
String theory · F

PETER GODDARD

*University of Cambridge, United Kingdom*  
String theory · S

LISA R. GOLDBERG

*Brooklyn College, City University of New York,  
New York City*

Conformal dynamical systems

DAVID GOSS

*Ohio State University, Columbus*

Arithmetic algebraic geometry

MICHAEL HANDEL

*Lehman College, City University of New York,  
New York City*

Dynamical systems and topology

HELMUT HOFER

*Rutgers University, New Brunswick,  
New Jersey*

Differential equations and dynamical  
systems · F

LYMAN HURD

*Princeton University*

Dynamical systems · A

STEVEN E. HURDER

*University of Illinois at Chicago*

Analysis and differential invariants of open  
manifolds and foliations · F

JACQUES C. HURTUBISE

*University of Quebec, Montreal, Canada*

Geometry and mathematical physics

SERGIO R. IDELSOHN

*Universidad Nacional del Litoral,  
Santa Fe, Argentina*

Numerical solutions of fluid mechanics  
problems

RONALD S. IRVING

*University of Washington, Seattle*

Representation theory of Lie algebras

HIROSHI ITO

*Nagoya University, Japan*

Number theory

HERVÉ M. JACQUET

*Columbia University, New York City*

Automorphic representations · F

MOSHE JARDEN

*Tel Aviv University, Tel Aviv, Israel*

Galois theory

JÜRGEN JOST

*University of the Ruhr, Bochum, Federal  
Republic of Germany*

Partial differential equations

NIKY KAMRAN

*University of Waterloo, Ontario, Canada*

Geometric methods for differential equations

CHRISTIAN KASSEL

*National Center of Scientific Research,  
Strasbourg, France*

Algebraic K-theory

GERHARD F. KNIEPER

*California Institute of Technology, Pasadena*

Differential geometry, dynamical systems

FRIEDRICH KNOP

*University of Basel, Basel, Switzerland*

Algebraic groups

MARVIN I. KNOPP

*Temple University, Philadelphia, Pennsylvania*

Modular forms and modular integrals · S

PETER B. KRONHEIMER

*Balliol College, University of Oxford,  
United Kingdom*

Differential geometry

JEAN-FRANÇOIS LEON

*University of Paris-Dauphine, Paris, France*

Mathematical physics · VS

JAMES LEPOWSKY

*Rutgers University, New Brunswick, New Jersey*

Infinite-dimensional Lie theory

JOSHUA A. LESLIE

*Northwestern University, Evanston, Illinois*

Infinite-dimensional Lie groups

FANG HUA LIN

*Courant Institute of Mathematical Sciences,  
New York University, New York City*

Partial differential equations and geometric  
measure theory · S

XIAO-SONG LIN

*University of California, San Diego*

Knots and links, topology of 3- and  
4-manifolds · S



- ANDREW J. MAJDA  
*Princeton University*  
 Applied mathematics · s
- ALBERT MARDEN  
*University of Minnesota, Minneapolis*  
 Kleinian groups · F
- GORDANNA MATIC  
*Massachusetts Institute of Technology,  
 Cambridge, Massachusetts*  
 Geometry and topology of 4-manifolds
- HIROO MIKI  
*Tokyo Metropolitan University, Tokyo, Japan*  
 Algebra and algebraic number theory · vs
- CLAUDE MITSCHI  
*Louis Pasteur University, Strasbourg, France*  
 Differential Galois groups · v
- WERNER MÜLLER  
*Academy of Sciences of the German  
 Democratic Republic, Berlin*  
 Global analysis, spectral theory · F
- RALPH W. OBERSTE-VORTH  
*Cornell University, Ithaca, New York*  
 Complex analytic dynamics
- DAVID I. OLIVE  
*Imperial College of Science and Technology,  
 University of London, United Kingdom*  
 String theory
- ROBERT A. OLIVER  
*University of Aarhus, Denmark*  
 Topology · F
- KYEWON K. PARK  
*Bryn Mawr College, Bryn Mawr, Pennsylvania*  
 Dynamical systems
- MARK POLLICOTT  
*University of Edinburgh, United Kingdom*  
 Ergodic theory and dynamical systems
- GOPAL PRASAD  
*Tata Institute of Fundamental Research,  
 Bombay, India*  
 Arithmetical questions on semi-simple  
 algebraic groups
- TRIVANDRUM R. RAMADAS  
*Tata Institute of Fundamental Research,  
 Bombay, India*  
 String theory
- PAUL F. RINGSETH  
*University of Michigan, Ann Arbor*  
 Automorphic forms
- VINCENT RIVASSEAU  
*Center for Theoretical Physics, Palaiseau, France*  
 String theory · s
- ALVANY ROCHA-CARIDI  
*Barnet College, City University of New York,  
 New York City*  
 Representation theory of infinite-dimensional  
 Lie algebras
- MIHAIL-RADU ROSU  
*Princeton, New Jersey*  
 Integral geometry
- MAREK R. RYCHLIK  
*University of Washington, Seattle*  
 Dynamical systems
- KLAUS SCHMIDT  
*University of Warwick, United Kingdom*  
 Ergodic theory · s
- MARIA E. SCHONBEK  
*University of California, Santa Cruz*  
 Nonlinear partial differential equations · s
- JALAH SHATAH  
*Courant Institute of Mathematical Sciences,  
 New York  
 University, New York City*  
 Partial differential equations · s
- TAKAHIRO SHIOTA  
*Brandeis University, Waltham, Massachusetts*  
 Algebraic geometry
- PANAGIOTIS E. SOUGANIDIS  
*Brown University, Providence, Rhode Island*  
 Nonlinear partial differential equations · vs
- STEVEN I. SPERBER  
*University of Minnesota, Minneapolis*  
 Arithmetic algebraic geometry · F

JOEL SPRUCK

*University of Massachusetts, Amherst*  
Nonlinear partial differential equations · s

JAMES D. STASHEFF

*University of North Carolina, Chapel Hill*  
Applications of algebraic topology to  
theoretical physics · F

ULRICH STUHLER

*Bergische Universität, Wuppertal,  
Federal Republic of Germany*  
Arithmetic algebraic geometry · s

HIROTAKA TAMANOI

*The Johns Hopkins University, Baltimore,  
Maryland*  
[Hyper]elliptic genera and string theory

DINESH S. THAKUR

*Harvard University, Cambridge, Massachusetts*  
Number theory and Drinfeld modules

ARMANDO TREIBICH

*University of Rennes I, Rennes, France*  
Korteweg-DeVries equations and  
Riemann surfaces

JUAN L. VASQUEZ

*Universidad Autónoma de Madrid, Spain*  
Nonlinear partial differential equations · VF

T. N. VENKATARAMANA

*Tata Institute of Fundamental Research,  
Bombay, India*  
Discrete subgroups of Lie groups and  
arithmetic

ROBERT L. WILSON

*Rutgers University, New Brunswick, New Jersey*  
Lie algebras

MARIUSZ WODZICKI

*Princeton, New Jersey*  
Noncommutative differential geometry,  
global analysis, algebraic geometry

SCOTT A. WOLPERT

*University of Maryland, College Park*  
Deformation and spectral theory of  
Riemann surfaces · s

HORNG-TZER YAU

*Princeton University*  
Mathematical physics

JING YU

*Chinese Academy of Sciences, Beijing,  
People's Republic of China*  
Number theory and algebraic geometry

MILJENKO ŽABČIĆ

*University of Utah, Salt Lake City*  
Representations of semi-simple Lie groups

RADU ZAHAROPOL

*Ohio State University, Columbus*  
Ergodic theory of positive operators in  
Banach lattices

## MEMBERS, VISITORS AND RESEARCH STAFF

*Academic Year 1988-89*

WILLIAM ABIKOFF

*University of Connecticut, Storrs*  
Teichmüller theory - physics and  
Kleinian groups · s

MICHAEL BENEDICKS

*Royal Institute of Technology,  
Stockholm, Sweden*  
Dynamical systems · s

DENIS BERNARD

*Princeton University*  
Kac-Moody algebras

PAUL BLANCHARD

*Boston University, Boston, Massachusetts*  
Complex analytic dynamical systems · F

- CIPRIAN SORIN BORCEA  
*National Institute for Scientific and Technical  
 Creation, Bucharest, Romania*  
 Torelli problems for complete intersections;  
 algebraic geometry · AS
- HENDRIK J. M. BOS  
*Mathematical Institute, University of Utrecht,  
 The Netherlands*  
 Mathematics of the period 1550–1750: concept  
 of construction and representation of curves · F
- COLIN J. BUSHNELL  
*King's College, University of London,  
 United Kingdom*  
 Representation theory of p-adic groups and  
 related arithmetic
- LENNART A. E. CARLESON  
*Royal Institute of Technology,  
 Stockholm, Sweden*  
 Analysis · D
- FRANCESCO CASERTA  
*University of Naples, Italy*  
 Algebraic topology and homological algebra · V
- ANTONIO CORDOBA  
*Universidad Autónoma de Madrid, Madrid, Spain*  
 Nonlinear partial differential equations
- STEPHEN A. DELLAPIETRA  
*University of Texas, Austin*  
 Mathematical physics
- RONALD J. DIPERNA  
*University of California, Berkeley*  
 Partial differential equations · F
- ALBERT EDREI  
*San Diego State University, San Diego, California*  
 Entire and meromorphic functions with  
 applications · V
- LAWRENCE C. EVANS  
*University of Maryland, College Park*  
 Partial differential equations · F
- GERD FALTINGS  
*Princeton University*  
 Arithmetic algebraic geometry · F
- PAUL S. FAN  
*University of Arizona, Tucson*  
 Group theory · S
- GIOVANNI FELDER  
*Federal Institute of Technology, Zurich, Switzerland*  
 Quantum field theory
- MANOUSSOS GRILLAKIS  
*Courant Institute of Mathematical Sciences,  
 New York University, New York City*  
 Non-linear partial differential equations,  
 nonlinear functional analysis
- JOHN GUCKENHEIMER  
*Cornell University, Ithaca, New York*  
 Dynamical systems
- THOMAS WILLIAM HAWKINS  
*Boston University, Boston, Massachusetts*  
 History of mathematics [Lie algebras]
- GUY HENNIART  
*University of Paris [South], Orsay, France*  
 Representation of reductive groups over  
 local fields · S
- MICHAEL HERMAN  
*Ecole Polytechnique, Palaiseau, France*  
 Dynamical systems
- LYMAN HURD  
*Princeton University*  
 Dynamical systems · VF
- STEWART DORIN JOHNSON  
*Mathematical Sciences Institute, Cornell University,  
 Ithaca, New York*  
 Ergodic theory, dynamic systems
- PETER JONES  
*Yale University, New Haven, Connecticut*  
 Harmonic analysis · S
- SWAN KIM  
*Cornell University, Ithaca, New York*  
 Nonlinear dynamics, chaos · V
- JOSEPH J. KOHN  
*Princeton University*  
 Complex manifolds



PETER B. KRONHEIMER

*Baliol College, University of Oxford,  
United Kingdom*

Differential geometry, hyperkahler manifolds,  
Yang-Mills theory

SHRAWAN KUMAR

*Tata Institute of Fundamental Research,  
Bombay, India*

Geometry and topology of Kac-Moody groups  
and their flag varieties

PHILIP KUTZKO

*University of Iowa, Iowa City*

Representation theory of p-adic groups

MICHAEL LARSEN

*Princeton University*

Arithmetic algebraic geometry

DIMITRY A. LEITES

*Stockholm University, Sweden*

Supermanifold theory and its applications to  
mathematical physics · S

ELLIOTT LIEB

*Princeton University*

Mathematical physics · S

JORAM LINDENSTRAUSS

*Hebrew University, Jerusalem, Israel*

Convexity, Banach spaces, nonlinear  
functional analysis · F

GEORGE LUSZTIG

*Massachusetts Institute of Technology,  
Cambridge, Massachusetts*

Representations of finite and p-adic groups · F

DAVID C. MANDERSCHIED

*University of Iowa, Iowa City*

Representation theory of p-adic groups

HISAYOSI MATUMOTO

*Massachusetts Institute of Technology,  
Cambridge, Massachusetts*

Representation theory of semisimple  
Lie groups, algebraic analysis

DIANE MEUSER

*Boston University, Boston, Massachusetts*

Number theory, algebraic geometry

VITALI MILMAN

*Tel Aviv University, Tel Aviv, Israel*

Functional analysis, convexity, isoperimetric  
inequalities · F

JAMES S. MILNE

*University of Michigan, Ann Arbor*

Arithmetic geometry · F

MICHAŁ MISIUREWICZ

*Institute of Mathematics, University of  
Warsaw, Poland*

Dynamical systems · S

LAWRENCE E. MORRIS

*Clark University, Worcester, Massachusetts*

Representation theory of p-adic groups

MOTOHICO MULASE

*University of California, Los Angeles*

Global analysis, algebraic analysis, infinite  
dimensional geometry

ALAN M. NADEL

*Harvard University, Cambridge, Massachusetts*

Complex algebraic geometry

TSU-ANN PENG

*National University of Singapore, Singapore*

Group theory · VS

JONATHAN PILA

*Stanford University, Stanford, California*

Number theory, algorithmic problems

IGOR REIDER

*University of Oklahoma, Norman*

Algebraic geometry

ROGER W. RICHARDSON

*Australian National University, Canberra*

Algebraic groups, mathematics · F

PAUL F. RINGSETH

*University of Michigan, Ann Arbor*

Automorphic forms, Selberg trace formula

THOMAS B. RUSHING

*University of Utah, Salt Lake City*

Geometric topology

MAREK R. RYCHLIK

*University of Washington, Seattle*

Dynamical systems

MORIIHIKO SAITO

*Research Institute for Mathematical Sciences,  
Kyoto University, Japan*

D-modules and Hodge theory

MARIA ELENA SCHONBEK

*University of California, Santa Cruz*

Non-linear partial differential equations · F

JIAN-YI SHI

*East China Normal University, Shanghai,  
People's Republic of China*

Representation theory of algebraic groups

MITSUHIRO SHISHIKURA

*Kyoto University, Kyoto, Japan*

Dynamical systems, especially complex  
analytic dynamical systems

EUGENE SORETS

*Courant Institute of Mathematical Sciences,  
New York University, New York City*

Dynamical systems · A

BIRGIT E. M. SPEH

*Cornell University, Ithaca, New York*

Representation theory of semisimple

Lie groups · S

JOEL SPRUCK

*University of Massachusetts, Amherst*

Partial differential equations · F

SUSAN G. STAPLES

*University of Michigan, Ann Arbor*

Quasiconformal mappings and harmonic  
analysis

MARK A. STERN

*Duke University, Durham, North Carolina*

Differential geometry

PETER F. STILLER

*Texas A & M University, College Station*

Algebraic geometry, automorphic forms

GRZEGORZ SWIATEK

*Institute of Mathematics, Polish Academy of  
Sciences, Warsaw*

The theory of one-dimensional dynamical  
systems

HIROTAKA TAMANOI

*Princeton, New Jersey*

[Hyper]elliptic genera and string theory

DONNA M. TESTERMAN

*Ohio State University, Columbus*

Algebraic and finite groups

FRANCISCO P. THAINE

*University of Campinas, Brazil*

Cyclotomic fields, ideal class groups,  
unit groups and related topics

DINESH S. THAKUR

*Harvard University, Cambridge, Massachusetts*

Number theory, especially theory of Drinfeld  
modules

GANG TIAN

*Harvard University, Cambridge, Massachusetts*

Differential geometry

GERARD A. VENEMA

*Calvin College, Grand Rapids, Michigan*

Geometric topology · F

YOSEF YOMDIN

*Ben Gurion University, Beersheva, Israel*

Dynamical systems, analysis

LAI-SANG YOUNG

*University of Arizona, Tucson*

Dynamical systems · F

THOMAS F. ZINK

*University of Bonn, Federal Republic of Germany*

Arithmetical algebraic geometry

THE SCHOOL OF NATURAL SCIENCES

*Academic Years 1987-88 and 1988-89*

*Faculty*

STEPHEN L. ADLER [*New Jersey Albert Einstein Professor*]

JOHN N. BAHCALL

FREEMAN J. DYSON

PIET HUT

FRANK WILCZEK \*

EDWARD WITTEN

*\*Appointed in the academic year 1988-89*

*Members with Long-Term Appointments*

JULIAN H. BIGELOW

OTTO E. NEUGEBAUER

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*Academic Activities of the Faculty Academic Years 1987-88 and 1988-89*

During these two academic years STEPHEN L. ADLER'S research fell into three principal areas. His work on overrelaxation algorithms for Monte Carlo analysis had its genesis in a paper he wrote in 1981; he returned to this set of problems, publishing a paper and speaking at conferences in Tallahassee and at Fermilab. His work in the area of quaternionic quantum mechanics will produce a book in which he details the quaternionic analogs of many of the results of standard non-relativistic quantum mechanics. He also dealt with the problems involved in a new approach to grand unification theory. During the academic year 1988-89 he taught the Intermediate Quantum Mechanics course at Princeton University. Professor Adler received the 1988 J. J. Sakurai Prize of the American Physical Society "for his work in elucidating the consequences of chiral symmetry through sum rules and low energy theorems."

JOHN N. BAHCALL'S main activity during the academic years 1987-88 and 1988-89 was the writing of a book entitled *Neutrino Astrophysics*. It was published by Cambridge University Press in April 1989. The book summarizes the main achievements and the future challenges of the subject, as preparations for understanding the new data that will be provided by experiments in progress.

FREEMAN J. DYSON devoted most of his time during the period covered by this report to work in pure mathematics and to reflections on broader aspects of science and society. The work in mathematics was stimulated by the 100th anniversary in 1987 of the birth of the great Indian scholar, Ramanujan, who died in 1920 leaving interesting problems unsolved. Professor Dyson's work on more general and public issues expressed itself in several lectures. These included the Danz Lectures, given at the University of Washington in 1988 under the title, "On Being the Right Size: Reflections on the Ecology of Scientific Projects," and a lecture at Yale University's Gibbs 150th Anniversary Symposium in May 1989 on "Willard Gibbs and the Teaching of Science." His book, *Infinite in All Directions*, won the Phi Beta Kappa Award in Science, and he was elected to the status of *Associé Etranger* of the French Academy of Sciences in Paris.

PIET HUT'S research has continued to focus on the interface between computer science and astrophysics. Following contacts with an innovative company that produces a parallel computer with more than 65,000 processors, he collaborated with the company's scientists and colleagues from Massachusetts Institute of Technology and Tokyo University to develop astrophysical software for parallel computers. The immediate results have been published; in time this project may lead to a new generation of computer codes capable of simulating the evolution of dense stellar systems. A projected study of collisions between galaxies

was jeopardized with the withdrawal of National Science Foundation support for the John von Neumann Supercomputer Center in Princeton. The project is now being continued in Japan. Professor Hut also continues to study the evolution of globular clusters in collaboration with colleagues at Princeton University, the Harvard-Smithsonian Center for Astrophysics, Munich, Utrecht, Tokyo, Kyoto and elsewhere.

FRANK WILCZEK, who joined the faculty in January 1989, pursued research in three principal areas. Working with Professor Edward Witten, Yi-Hong Chen and Bert Halperin, he demonstrated that ideal gases of certain kinds of anyons are superconducting at zero temperature. This work has since been extended in several directions, notably to give new insight into the quantized Hall effect. Professor Wilczek worked on several topics and published several papers relating to the quantum mechanics of cosmic strings and quantum hairs on black holes. Finally, with Curt Callan of Princeton University, he has begun a program to investigate several problems of physics that are difficult or obscure in flat space on spaces of constant negative curvature, where they seem to simplify.

EDWARD WITTEN, who joined the faculty in 1987, has spent most of the last three years working on geometrical applications of quantum field theory. The main successes have been a physical reinterpretation of "Donaldson theory" of four-dimensional geometry; a new description of the "Jones polynomial" of three-dimensional knot theory that for the first time explains its symmetries; and new interpretations and insights concerning general relativity in two and three dimensions. In the course of this work, many physical ideas have been applied to problems in geometry for the first time, and vice versa. These developments, some of which were forecast and advocated by former Institute Professor Sir Michael Atiyah at the string theory workshop at the Institute in 1987-88, have shown that many structures usually studied by string theorists in two dimensions have important analogs in the "physical dimensions," three and four. Professor Witten's explanation of the Jones polynomial involved ingredients similar to ideas of Professor Frank Wilczek about fractional statistics particles in  $2 + 1$  dimensions. The realization of this led to a collaboration of Wilczek and Witten [with Yi-Hong Chen and Bert Halperin] on theories of high-temperature superconductivity.

MEMBERS, VISITORS AND RESEARCH STAFF

Academic Year 1987–88

- GREGORY ATHANASIU  
*Stanford Linear Accelerator Center,  
Stanford, California*  
Particle physics
- JOSEPH ATICK  
*Stanford Linear Accelerator Center,  
Stanford, California*  
Particle physics
- JOSHUA BARNES  
*Princeton, New Jersey*  
Astrophysics
- JULIAN BIGELOW  
*Princeton, New Jersey*  
Applied mathematics, experimental physics  
and electronic computers · M
- JAMES BINNEY  
*University of Oxford, United Kingdom*  
Astrophysics · VS
- LEO BLITZ  
*University of Maryland, College Park*  
Astrophysics
- STEVEN CARLIP  
*University of Texas, Austin*  
Particle physics
- GERALD CECIL  
*Princeton, New Jersey*  
Astrophysics
- TA-PEI CHENG  
*University of Missouri, St. Louis*  
Particle physics
- ARNON DAR  
*Technion—Israel Institute of Technology,  
Haifa, Israel*  
Astrophysics · VF
- ASHOK DAS  
*University of Rochester, Rochester,  
New York*  
Particle physics
- HERWIG DEJONGHE  
*Princeton, New Jersey*  
Astrophysics
- STAN DESER  
*Brandeis University, Waltham,  
Massachusetts*  
Particle physics · VS
- MICHAEL DINE  
*City College of New York, New York City*  
Particle physics
- EWINE VAN DISHOECK  
*Princeton University*  
Astrophysics · V
- REBECCA ELSON  
*Princeton, New Jersey*  
Astrophysics
- YOSHIHARU ERIGUCHI  
*University of Tokyo, Tokyo, Japan*  
Astrophysics · VF
- KEN FREEMAN  
*Mt. Stromlo Observatory, Canberra,  
Australia*  
Astrophysics · VS
- MASATAKA FUKUGITA  
*Kyoto University, Kyoto, Japan*  
Fundamental physics · VS
- PETER GOLDREICH  
*California Institute of Technology, Pasadena*  
Astrophysics · VF
- JEREMY GOODMAN  
*Princeton, New Jersey*  
Astrophysics · M
- DOUGLAS HEGGIE  
*University of Edinburgh, Edinburgh,  
United Kingdom*  
Mathematics · VS
- LARS HERNQUIST  
*University of California, Berkeley*  
Astrophysics



- DAVID KAZHDAN  
*Harvard University, Cambridge,  
Massachusetts*  
Mathematics · VS
- ADRIAN KENT  
*Fermi National Accelerator Laboratory,  
Batavia, Illinois*  
Particle physics
- JOSE LABASTIDA  
*Princeton, New Jersey*  
Particle physics
- LING-FONG LI  
*Carnegie Institute of Technology,  
Carnegie-Mellon University,  
Pittsburgh, Pennsylvania*  
Particle physics · F
- GREGORY MOORE  
*Harvard University, Cambridge,  
Massachusetts*  
Particle physics · M
- KEVIN MORIARTY  
*Dalhousie University, Halifax, Nova Scotia,  
Canada*  
Computational physics
- RAMESH NARAYAN  
*University of Arizona, Tucson*  
Astrophysics · VS
- OTTO E. NEUGEBAUER  
*Princeton, New Jersey*  
History of exact sciences in antiquity · M
- BOHDAN PACZYNSKI  
*Princeton, New Jersey*  
Astrophysics · V
- MARIO PERNICI  
*Princeton, New Jersey*  
Particle physics
- DANIEL PFENNINGER  
*Geneva Observatory, Saunerny, Switzerland*  
Astrophysics
- WILLIAM PRESS  
*Harvard University, Cambridge,  
Massachusetts*  
Astrophysics · V
- ZONGAN QIU  
*Princeton, New Jersey*  
Particle physics
- NORMAN REDLICH  
*Princeton, New Jersey*  
Particle physics
- HERBERT ROOD  
*Wesleyan University, Middletown,  
Connecticut*  
Astrophysics
- DONALD SCHNEIDER  
*Princeton, New Jersey*  
Astrophysics · M
- ROBERT SCHRADER  
*Free University of Berlin, Federal Republic  
of Germany*  
Particle physics
- GRAEME SEGAL  
*Mathematical Institute, University of Oxford,  
United Kingdom*  
Mathematical physics · VF
- NATHAN SEIBERG  
*Weizmann Institute of Science, Rehovot, Israel*  
Particle physics · M
- GORDON SEMENOFF  
*University of British Columbia, Vancouver,  
Canada*  
Particle physics · VS
- JAMES SEXTON  
*Princeton, New Jersey*  
Particle physics
- JOEL SHAPIRO  
*Rutgers University, New Brunswick,  
New Jersey*  
Particle physics · V
- STEVE SHENKER  
*Enrico Fermi Institute, University of  
Chicago, Chicago, Illinois*  
Particle physics · VF
- DAVID SPERGEL  
*Princeton, New Jersey*  
Astrophysics · M

GERALD T'HOOFT  
*University of Utrecht, The Netherlands*  
 Particle physics · VF

SCOTT TREMAINE  
*University of Toronto, Ontario, Canada*  
 Astrophysics · V

MARTIN WEINBERG  
*Cornell University, Ithaca, New York*  
 Astrophysics

JONATHAN YAMRON  
*University of California, Berkeley*  
 Particle physics

TIM DE ZEEUW  
*Princeton, New Jersey*  
 Astrophysics · M

MEMBERS, VISITORS AND RESEARCH STAFF

*Academic Year 1988-89*

NATAN ANDREI  
*Rutgers University, New Brunswick, New Jersey*  
 Particle physics · S

GREGORY ATHANASIU  
*Princeton, New Jersey*  
 Particle physics

JOSEPH ATICK  
*Princeton, New Jersey*  
 Particle physics · M

JOSHUA BARNES  
*Princeton, New Jersey*  
 Astrophysics

JAMES BINNEY  
*University of Oxford, United Kingdom*  
 Astrophysics · VS

MICHAEL BERSHADSKY  
*Landau Institute of Theoretical Physics, Moscow,  
 U.S.S.R.*  
 Particle physics

STEVEN CARLIP  
*Princeton, New Jersey*  
 Particle physics

GERALD CECIL  
*Princeton, New Jersey*  
 Astrophysics

JOANNE COHN  
*University of Chicago, Illinois*  
 Particle physics

REBECCA ELSON  
*Princeton, New Jersey*  
 Astrophysics

YOSHIHARU ERIGUCHI  
*University of Tokyo, Japan*  
 Astrophysics · VF

ANDREW GOULD  
*Stanford University, Stanford, California*  
 Astrophysics

MARTIN HALPERN  
*Lawrence Berkeley Laboratory, University of  
 California, Berkeley*  
 Particle physics · S

LARS HERNQUIST  
*Princeton, New Jersey*  
 Astrophysics

YUTAKA HOSOTANI  
*University of Minnesota, Minneapolis*  
 Particle Physics

SHOGO INAGAKI  
*Kyoto University, Japan*  
 Astrophysics · VF

ADRIAN KENT  
*Princeton, New Jersey*  
 Particle physics

OFER LAHAV  
*University of Cambridge, United Kingdom*  
 Astrophysics



- AVI LOEB  
*Soreq Nuclear Research Center, Yavne, Israel*  
Astrophysics · M
- CHRISTOPHER MCKEE  
*University of California, Berkeley*  
Astrophysics · S
- GREGORY MOORE  
*Princeton, New Jersey*  
Particle physics · M
- KEVIN MORIARTY  
*Dalhousie University, Halifax, Canada*  
Computational physics
- CHIARA NAPPI  
*Princeton University*  
Particle physics · M
- OTTO E. NEUGEBAUER  
*Princeton, New Jersey*  
History of exact sciences in antiquity · M
- HIROSI OOGURI  
*University of Tokyo, Japan*  
Particle physics
- ASHER PERES  
*Technion—Israel Institute of Technology, Haifa*  
Particle physics · VF
- WILLIAM PRESS  
*Harvard University, Cambridge, Massachusetts*  
Astrophysics · VS
- GEORG RAFFELT  
*University of California, Berkeley*  
Astrophysics · F
- NORMAN REDLICH  
*Princeton, New Jersey*  
Particle physics
- HERBERT ROOD  
*Princeton, New Jersey*  
Astrophysics · V
- JONATHAN ROSNER  
*University of Chicago, Illinois*  
Particle physics
- DONALD SCHNEIDER  
*Princeton, New Jersey*  
Astrophysics · M
- NATHAN SEIBERG  
*Princeton, New Jersey*  
Particle physics · M
- ALFRED SHAPERÉ  
*University of California, Santa Barbara*  
Particle physics
- GLENN STARKMAN  
*Stanford University, Stanford, California*  
Astrophysics
- LEO STODOLSKY  
*Max Planck Institute, Munich, Federal Republic of Germany*  
Astrophysics
- DAIICHIRO SUGIMOTO  
*University of Tokyo, Japan*  
Astrophysics · VF
- SCOTT TREMAINE  
*University of Toronto, Canada*  
Astrophysics · VS
- ERIK VERLINDE  
*Institute for Physics, Utrecht, The Netherlands*  
Particle physics
- MARTIN WEINBERG  
*Princeton, New Jersey*  
Astrophysics
- TED WILLIAMS  
*Rutgers University, New Brunswick, New Jersey*  
Astrophysics
- LOUIS WITTEN  
*University of Cincinnati, Ohio*  
Particle physics · F
- JONATHAN YAMRON  
*Princeton, New Jersey*  
Particle physics
- TIM DE ZEEUW  
*Princeton, New Jersey*  
Astrophysics · M

THE SCHOOL OF SOCIAL SCIENCE

*Academic Years 1987–88 and 1988–89*

*Faculty*

CLIFFORD GEERTZ [*Harold F. Linder Professor*]

JOAN WALLACH SCOTT

MICHAEL WALZER [*UPS Foundation Professor*]

*Professor Emeritus*

ALBERT O. HIRSCHMAN

*Academic Activities of the School and its Faculty*  
*Academic Years 1987-88 and 1988-89*

At the beginning of the period covered by this report the School of Social Science embarked on a three-year program that was devised to emphasize various aspects of group identity.

The focus for the academic year 1987-88 was "Gender and the Different Meanings and Uses of Ideas of Male and Female." A group composed of permanent faculty, visiting members and guests met every other week to discuss theoretical and practical approaches to the study of gender-related issues.

In addition, a roundtable on "Life and Death in Sexuality," funded by the Ford Foundation and sponsored jointly by the Institute and Brown University's Pembroke Center, took place in Princeton in May. A conference on "Women's Studies Research: Critical Issues Past, Present and Future" was held in June with the support of a grant from the Rockefeller Foundation.

In 1987-88 the School had a total of 22 members, visitors and research assistants.

The thematic focus of the School's regular seminar in the academic year 1988-89 was "Political Revival of Ethnicity and Religion." In this year the School's members, visitors and research assistants totalled 20.

During the two years covered by this report CLIFFORD GEERTZ published a number of articles, including a National Academy of Science memorial to Margaret Mead. His book, *Works and Lives: The Anthropologist as Author*, won the National Book Critics Circle Award for criticism in 1988. He began work on a book that reflects on his four decades of work in Indonesia and Morocco and started preparing the Harvard-Jerusalem Lectures that will be given in Jerusalem in May 1990.

JOAN SCOTT'S book, *Gender and the Politics of History*, appeared in 1988. It was awarded the Joan Kelly prize for women's history/feminist theory of the American Historical Association in 1989. In 1988 and 1989 she published several articles on a variety of topics having to do with changes in women's roles in society. In 1988-89 she delivered papers at the annual meetings of the American Historical Association and of the Society for French Historical Studies. She lectured at Princeton, Brown, Cornell, Wesleyan, Rutgers and Harvard and at the Universities of Amsterdam, Utrecht, Stockholm and Copenhagen. She was on the faculty of a session of the Salzburg Seminar for American Studies. She received an honorary degree from the State University of New York at Stony Brook.

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MICHAEL WALZER'S book, *The Company of Critics: Social Criticism and Political Commitment in the Twentieth Century*, was published in 1988. In the period covered by this report two of his earlier books, *The Revolution of the Saints* and *Regicide and Revolution*, appeared in French translation, and an Italian edition of *Spheres of Justice* was published. He worked on a number of papers dealing with the possibilities of objectivity in ethics. In 1987–88 he contributed to a British television program on the meaning of “evil” in contemporary life. He lectured at Rutgers, Johns Hopkins, Brandeis, Brooklyn College, Brooklyn Polytechnic, Queens College, the New School for Social Research and the University of New Orleans and presented a paper at a conference in Helsinki on “the quality of life.” In 1988–89 he spoke about “Two Kinds of Moral Universalism” at a Mellon Colloquium at Princeton University and presented the Tanner Lectures at the University of Oxford.

In the academic years 1987–88 and 1988–89 Professor Emeritus ALBERT O. HIRSCHMAN published articles on economic issues in Latin America, on general economic history and theory and on conservative ideologies and rhetoric in the 19th and 20th centuries. An article that was published in *The Atlantic* in May 1989 picked up themes explored in earlier lectures in Ann Arbor, Paris and Munich. One of his books, *Getting Ahead Collectively*, appeared in Portuguese translation. Volumes containing selections from his writings were published in Italy and Germany. He served as a member of the Executive Panel on Social Welfare organized by the Ford Foundation and on the Twentieth Century Fund's Task Force on International Debt. He received honorary degrees from universities in Paris, Berlin, Turin and New York.

MEMBERS, VISITORS AND RESEARCH STAFF

*Academic Year 1987-88*

LILA ABU-LUGHOD

*Williams College, Williamstown, Massachusetts*  
 Anthropology: Feminist theory and Middle  
 East ethnology

YITZHAK BRUDNY

*Princeton University*  
 Contemporary Russian political thought · A

JUDITH BUTLER

*George Washington University, Washington, DC*  
 Gender, identity and desire: foundations of  
 philosophical feminism

JEAN-PAUL DUMONT

*University of Washington, Seattle*  
 Toward an anthropological understanding  
 of insularity

CHRISTINE EISENBERG

*University of Bielefeld, Federal Republic  
 of Germany*  
 Sports and the middle classes: a comparative  
 study of England and Germany, 1890-1936

ABDURRAMANE EL-MOUDDEN

*Princeton University*  
 Near Eastern studies · A

YASMINE ERGAS

*Social Science Research Council,  
 New York City*  
 Equality and differences in contemporary  
 politics as viewed through the feminisms  
 of the U.S. and Italy

STEFANO FENOALTEA

*Swarthmore College, Swarthmore, Pennsylvania*  
 Transaction cost analysis of socio-economic  
 institutions

JOSEPH FRANK

*Stanford University, Stanford, California*  
 Biography of Dostoyevsky · VF

DAVID GORDON

*New School for Social Research, New York City*  
 Importance of institutional linkages between  
 power relations and macro-economic outcomes

DONNA HARAWAY

*University of California, Santa Cruz*  
 Cultural and historical studies of science;  
 feminist theory

ISTVAN HONT

*Columbia University, New York City*  
 International political economy and distributive  
 justice theory and their histories

G. JOHN IKENBERRY

*Princeton University*  
 International affairs · v

EVELYN FOX KELLER

*Massachusetts Institute of Technology, Cambridge,  
 and Northeastern University, Boston*  
 Gender and science

DORINNE KONDO

*Harvard University, Cambridge, Massachusetts*  
 Crafting selves: work and personhood in a  
 Japanese family enterprise

DAVID PLOTKE

*Yale University, New Haven, Connecticut*  
 Contemporary collective action: social  
 movements and political interest groups in  
 the West

RAYNA RAPP

*New School for Social Research, New York City*  
 Social impact and cultural meaning of prenatal  
 diagnosis in American culture

JERROLD SEIGEL

*Princeton University*  
 History · v

GEORGE SHER

*University of Vermont, Burlington*  
 Values in public life

CARROLL SMITH-ROSENBERG

*University of Pennsylvania, Philadelphia*  
 History of gender

LOUISE TILLY

*New School for Social Research, New York City*  
History and sociology

PIERRE-ETIENNE WILL

*Ecole des Hautes Etudes en Sciences Sociales,  
Paris, France*  
Economic history of late imperial China

MEMBERS, VISITORS AND RESEARCH STAFF

*Academic Year 1988-89*

GREGORY DENING

*University of Melbourne, Australia*  
Prophets and priests: a book of voyages

DONALD EMMERSON

*University of Wisconsin, Madison*  
Competing interpretations of a regime:  
culture, leadership, economy and  
organization in Indonesia, 1965-88

WILLIAM EWALD

*The Queen's College, University of Oxford,  
United Kingdom*  
The laws of nations; completion of book on  
philosophy of law, concentration on aspects of  
cultural relativism

JAMES FERNANDEZ

*University of Chicago, Illinois*  
An ethnography of the transformation of  
cattlekeepers into miners in Northern  
Spain [Asturias]

SUSAN HARDING

*University of Michigan, Ann Arbor*  
The revival and the rhetoric of Jerry Falwell's  
fundamental Baptist community

DAN HOROWITZ

*Hebrew University of Jerusalem, Israel*  
The road to communal conflict: a comparative  
examination of cases of decline of state authority  
in deeply divided bi-communal and  
multi-communal polities

LYNN HUNT

*University of Pennsylvania, Philadelphia*  
Patriarchalism, pornography and political  
discourse in revolutionary France

FRED INGLIS

*University of Bristol, United Kingdom*  
Political narratives: the Cold War as history  
and fiction

ISRAEL KNOHL

*Shalom Hartman Institute, Jerusalem, Israel*  
"Separation from impurity" as an organization  
model in the constitution of religious  
communities and their relations to other  
religious communities · A

JEAN LECA

*Institut d'Etudes Politiques de Paris, France*  
The politicization of communal identities and  
the future of citizenship in western democracies

EWA MORAWSKA

*University of Pennsylvania, Philadelphia*  
Insecure prosperity: Jews in smalltown  
industrial America, 1880-1940

CHANTAL MOUFFE

*Collège International de Philosophie, Paris, France*  
Citizenship in a pluralistic society

MARY LOU ROBERTS

*Brown University, Providence, Rhode Island*  
Les Années Folles: bourgeois identity and the  
debate on women, 1919-24 · A

RICARDO SALVATORE

*National University of Cordoba, Argentina*  
Trade and Proletarianization: Yankee  
merchants and the articulation of cattle-ranging  
labor in South and Central America, 1820-70

ISABELLE SCHULTE-TENCKHOFF

*University of Lausanne, Switzerland*  
From Potlatch to carnival: ideology of progress  
and transformations of the feast · v



WILFRIED SPOHN

*Free University of Berlin, Federal Republic  
of Germany*

Religion and working-class formation in imperial  
Germany 1871-1914 in comparative perspective

MARY MARGARET STEEDLY

*University of Michigan, Ann Arbor*

An historical study of Karo Batak [North  
Sumatra, Indonesia] spirit veneration · A

MARGARET WEIR

*Harvard University, Cambridge, Massachusetts*

Economic restructuring and the remaking of  
class and race in Britain and the United States

GAVIN WRIGHT

*Stanford University, Stanford, California*

The rise of American economic pre-eminence,  
1870-1940

R. STEPHEN WARNER

*University of Illinois, Chicago*

Communities of faith: an essay on religion in  
the United States today



## THE LIBRARIES

The *Historical Studies – Social Science Library* [Dr. Elliott Shore, Librarian] contains about 100,000 volumes and has subscriptions to about 1,000 journals. The library is strongest in classical studies, ancient history and archaeology, but it contains basic document collections, reference works and important secondary works of scholarship in most fields of history and the social sciences. The journal collection is extensive, and fairly complete back runs exist to the founding of the Institute. The library has occupied its present building since 1964.

The Institute's rare book collection, the gift of Lessing J. Rosenwald, consists of about 2,000 volumes on the history of science and was compiled by Herbert M. Evans in the 1930s. The collection, which is housed in a special room, includes numerous first editions of important scientific works in mathematics, astronomy, physics and the life sciences.

The Library has an extensive offprint collection that includes offprints received by Professors Kurt Gödel, Ernst H. Kantorowicz, Elias Avery Lowe, Millard Meiss and Erwin Panofsky and former visiting member Walther Kirchner.

The microfilm collections of the Library include a large selection from *Manuscripta*, a collection of several thousand fifteenth- to nineteenth-century printed books from the Vatican Library. The Bavarian Academy has given the Institute a microfilm copy of slips prepared for the *Thesaurus Linguae Latinae*. The Library has microfilm copies of the papers of Albert Einstein, Kurt Gödel and Simone Weil.

The Historical Studies – Social Science Library houses the Institute Archives. The papers in the collection date from the 1930s and include official correspondence of the Director's Office, minutes of meetings of the Faculty and the Board of Trustees, miscellaneous correspondence concerning past Faculty members, records of the Electronic Computer Project and other documents. The Archives also include the Institute's extensive photograph collection.

The *Mathematics - Natural Sciences Library* [Momota Ganguli, Librarian] is located on the second floor of Fuld Hall. Its collection of older journals and books is housed in compact shelving on the lower level of the Historical Studies – Social Science Library. Reprints of former members of the School of Natural Sciences are kept in Buildings D and E.

The Mathematics – Natural Sciences Library contains about 30,000 volumes [including bound periodicals and monographs] and has subscriptions to approximately 190 journals. The areas covered by this collection are pure and applied mathematics, astrophysics and theoretical, particle and mathematical physics.

Both of the Institute's libraries participate in the shared cataloguing system of the Research Libraries Group, which gives Institute scholars computerized access to a database that contains more than fourteen million records. Searches of this database retrieve bibliographic information and identify the location of materials in all participating libraries. Scholars who use the Historical Studies - Social Science Library can also conduct computerized searches in the Avery Art Index, the Eighteenth Century Short Title Catalogue and such indexes as Art Index, Humanities Index and the Social Science Index.

All scholars affiliated with the Institute enjoy the same privileges as Princeton University faculty in the Harvey S. Firestone Memorial Library and the nineteen special-subject libraries in the Princeton University Library System and also in the Robert E. Speer Library of the Princeton Theological Seminary.

Both Librarians and the Faculties and visiting scholars of all four Schools at the Institute warmly appreciate gifts, too numerous to mention here, of books and articles from former permanent and visiting members of the Institute community.

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## RECORD OF EVENTS

*Academic Year 1987-88*

What follows is a calendar of events sponsored by the Schools of Historical Studies, Mathematics, Natural Sciences and Social Science and by the Director's Office

September 15

Astrophysics Seminar Luncheon · N  
J. GOODMAN, *School of Natural Sciences, IAS*;  
R. GOTT, T. LAUER, M. PARK, E. TURNER,  
*Princeton University*

September 21

Dynamical Systems Seminar:  
Organizational meeting · M

September 22

Astrophysics Seminar Luncheon · N  
S. BAITZYK, *Princeton University*; R. DUNCAN,  
*Princeton University*; P. GOLDREICH, *California  
Institute of Technology*; R. JUSZKEWICZ, *University  
of California at Berkeley*; R. MAY, *Princeton  
University*; M. POSTMAN, *Princeton University*;  
L. SPITZER, *Princeton University*; J. WHEELER,  
*University of Texas at Austin*

September 23

Special Seminar: "Conformal field theory and  
non-linear equations of the Ising model" · M  
BARRY MCCOY, *State University of New York  
at Stony Brook*

September 24

Supergeometry Seminar: "Multilinear algebra" · M  
PIERRE DELIGNE, *Professor, School of Mathematics, IAS*

Special Seminar: "Higher-genus model  
solutions to star-triangle equations" · M  
JACQUES PERK, *State University of New York  
at Stony Brook*

September 25

Lunchtime Seminar: "Lagrangians for chiral  
bosons" · N  
MARIO PERNICI, *School of Natural Sciences, IAS*

September 28

Dynamical Systems Seminar: "Entropy and  
exponential growth of  $\pi_1$  in dimension two" · M  
MICHAEL HANDEL, *School of Mathematics, IAS*

September 29

Drinfeld Modules Seminar: "Introduction" · M  
DAVID GOSS, *School of Mathematics, IAS*

October 1

Art History Colloquium: "The Gothic in  
Renaissance France" · H  
HENRI T. ZERNER, *School of Historical Studies, IAS*

Topology Seminar: "Cyclic homology and  
analytic isomorphisms" · M

CHARLES A. WEIBEL, *Rutgers University*

Supergeometry Seminar:

"Super varieties, I" · M

PIERRE DELIGNE, *Professor, School of  
Mathematics, IAS*

October 2

Seminar on Conformal Field Theory:  
"Introduction" · M

DANIEL FRIEDAN, *School of Mathematics, IAS*

October 5

Members Seminar: "Geometric complex  
coordinates for Teichmüller space" · M  
ALBERT MARDEN, *School of Mathematics, IAS*

Theoretical Physics Seminar: "Holomorphic  
coordinates on supermoduli space" · N  
PHILLIP NELSON, *Boston University*

October 6

Seminar on Orbits in Spaces of Lattices:  
"Survey of Margulis' proof of Oppenheim's  
conjecture" · M

ARMAND BOREL, *Professor, School of  
Mathematics, IAS*

Drinfeld Modules Seminar:

"Cyclotomic theory" · M

DAVID GOSS, *School of Mathematics, IAS*

## Astrophysics Seminar Luncheon · N

J. AMSKANSK, *Max Planck Institute, Munich*;  
 A. DAR, *Techmion*; D. LAMBAS, *Argentina*;  
 T. PIRAN, *Hebrew University*; A. STARK, *Bell Labs*;  
 D. STINEBRING, *Princeton University*; C. THOMPSON,  
*Princeton University*; T. WILLIAMS, *Rutgers*  
*University*; T. WOODS, *Princeton University*

October 8

## Supergeometry Seminar:

“Super varieties, II” · M

PIERRE DELIGNE, *Professor, School of*  
*Mathematics, IAS*

Lecture on Algebraic Aspects of String  
Theory, I · M

DAVID I. OLIVE, *School of Mathematics, IAS*

October 9

## Seminar on Conformal Field Theory:

“Introduction [continued]” · M

DANIEL FRIEDAN, *School of Mathematics, IAS*

Lunchtime Seminar: “Perturbative  
supersymmetry breaking” · N

NATHAN SEIBERG, *School of Natural Sciences, IAS*

October 12

Dynamical Systems Seminar: “The measure of  
periodic points of a billiard ball map” · M

MAREK R. RYCHLIK, *School of Mathematics, IAS*

October 13

## Seminar on Orbits in Spaces of Lattices:

“Margulis’ proof of Oppenheim’s conjecture” · M

GOPAL PRASAD, *School of Mathematics, IAS*

## Drinfeld Modules Seminar: “Comparison

between Carlitz and classical fields” · M

DAVID GOSS, *School of Mathematics, IAS*

## Drinfeld Modules Seminar: “Drinfeld

modular forms” · M

ERNST-ULRICH GEKELER, *School of Mathematics, IAS*

## Astrophysics Seminar Luncheon · N

R. BRANDENBERGER, *Brown University*; J. GUNN,  
*Princeton University*; J. KNAPP, *Princeton University*;  
 B. PACZYNSKI, *Princeton University*; D. WEINBERG,  
*Princeton University*

October 14

## Seminar on Three- and Four-Manifolds:

“Introduction” · M

MICHAEL ATIYAH, *School of Mathematics, IAS*

October 15

## Topology Seminar: “Bivariant cyclic theory” · M

CHRISTIAN KASSEL, *School of Mathematics, IAS*

## Supergeometry Seminar: “Super varieties, III” · M

PIERRE DELIGNE, *Professor, School of Mathematics, IAS*

Lecture on Algebraic Aspects of String  
Theory, II · M

DAVID I. OLIVE, *School of Mathematics, IAS*

## Seminar on Conformal Field Theory · M

STEPHEN SHENKER, *School of Natural Sciences, IAS*

Luncheon Seminar: “The Tasaday, which  
and whose?” · S

JEAN-PAUL DUMONT, *School of Social Science, IAS*

October 19

Dynamical Systems Seminar: “Rigorous results  
for the Henon map” · M

MICHAEL BENEDICKS, *Yale University*

Members Seminar: “The ‘zero-two’ law for  
positive contractions in Banach lattices [with  
emphasis on  $L^p$  spaces]” · M

RADU ZAHAROPOL, *School of Mathematics, IAS*

Theoretical Physics Seminar: “Three new tricks  
for the simulation of the scalar sector of the  
Weinberg-Salam model” · N

HERBERT NEUBERGER, *Rutgers University*

Astrophysics Seminar: “Computers and starwars:  
Is the software feasible?” · N

ERIC ROBERTS, *Digital Equipment Research Center,*  
*Palo Alto, California*

October 20

## Joint IAS/Princeton University Lecture:

“The Athenian Agora from Peisistratos to Kinon:  
Some Observations” · H

HANS VON STEUBEN, *Archaeological Institute of*  
*Johann Wolfgang Goethe University, Frankfurt*

Seminar on Orbits in Spaces of Lattices:  
 "Margulis' proof of Oppenheim's conjecture  
 [continued]" · M

GOPAL PRASAD, *School of Mathematics, IAS*

Drinfeld Modules Seminar: "Cyclotomic theory,  
 zeta and gamma functions" · M

DAVID GOSS, *School of Mathematics, IAS*

Drinfeld Modules Seminar: "Drinfeld modular  
 forms [continued]" · M

ERNST-ULRICH GEKELER, *School of Mathematics, IAS*

Astrophysics Seminar Luncheon · N

J. BAHCALL, *Professor, School of Natural Sciences, IAS;*

L. BLITZ, *University of Maryland at College Park;*

L. HERNQUIST, *School of Natural Sciences, IAS;*

H. ROOD, *School of Natural Sciences, IAS;*

R. KULSRUD, *Princeton University*

October 21

Seminar on Three- and Four-Manifolds:

"Donaldson invariants of four-manifolds, I" · M

MICHAEL ATIYAH, *School of Mathematics, IAS*

October 22

Topology Seminar: "Analytic torsion and the  
 arithmetic Todd genus" · M

CHRISTOPHE SOULÉ, *Short-term Visitor, School of  
 Mathematics, IAS*

Supergeometry Seminar:

"Super Riemann surfaces" · M

PIERRE DELIGNE, *Professor, School of Mathematics, IAS*

Lecture on Algebraic Aspects of  
 String Theory, III · M

DAVID I. OLIVE, *School of Mathematics, IAS*

Luncheon Seminar: "Domesticating virtue:  
 coquettes and rebels in the early American  
 republic" · S

CARROLL SMITH-ROSENBERG, *School of  
 Social Science, IAS*

October 23

Seminar on Conformal Field Theory · M

STEPHEN SHENKER, *School of Natural Sciences, IAS*

October 26

Dynamical Systems Seminar: "Henon-like and  
 horseshoe mappings in the complex" · M

RALPH W. OBERSTE-VORTH, *School of  
 Mathematics, IAS*

Members Seminar: "Ruled surfaces and the  
 equations of all K-P elliptic solitons"

ARMANDO TREIBICH, *School of Mathematics, IAS*

October 27

Seminar on Orbits in Spaces of Lattices:  
 "Margulis' proof of Oppenheim's conjecture  
 [continued]" · M

GOPAL PRASAD, *School of Mathematics, IAS*

Drinfeld Modules Seminar: "Drinfeld  
 motives" · M

GREG W. ANDERSON, *School of Mathematics, IAS*

Richard Llewelyn-Davies Lecture: "Richard  
 Llewelyn-Davies and the dilemma of the  
 architect" · D

NOEL ANNAN, *University of London*

Astrophysics Seminar Luncheon · N

J. BAHCALL, *Professor, School of Natural Sciences,  
 IAS;* M. FALL, *Space Telescope Science Institute,*

*University of Maryland;* E. JENKINS, *Princeton*

*University;* J. PEEBLES, *Princeton University;*

F. PERKINS, *Plasma Physics Lab;* A. STARK,

*Bell Labs;* E. TURNER, *Princeton University*

October 28

Number Theory Seminar:

"Small eigenvalues on  $\Gamma_0(p)$ "

HENRYK IWANIEC, *Rutgers University*

Seminar on Three- and Four-Manifolds:

"Donaldson invariants of four-manifolds, II" · M

MICHAEL ATIYAH, *School of Mathematics, IAS*

October 29

Topology Seminar: "Towards a bivariant  
 Chern character" · M

STEVEN E. HURDER, *School of Mathematics, IAS*

Supergeometry Seminar:

"Lie superalgebras: classification" · M

FREDERIC V. BIEN, *School of Mathematics, IAS*



Lecture on Aspects of String Theory, IV · M  
DAVID I. OLIVE, *School of Mathematics*, IAS

Luncheon Seminar: “Durkheim and the social constitution of the subject” · s  
JERROLD SEIGEL, *School of Social Science*, IAS

October 30  
Seminar on Conformal Field Theory · M  
STEPHEN SHENKER, *School of Natural Sciences*, IAS

November 2  
Dynamical Systems Seminar: “Zeta-functions for hyperbolic flows” · M  
MARK POLLICOTT, *School of Mathematics*, IAS

Members Seminar: “Rational functions and curves of genus 0” · M  
JOHN THOMPSON, *University of Florida at Gainesville*

Theoretical Physics Seminar: “Graviton dominance in ultra-high energy scattering” · N  
GERALD T’HOOFT, *School of Natural Sciences*, IAS

November 3  
Seminar on Orbits in Spaces of Lattices: “Margulis’ proof of Oppenheim’s conjecture [continued]” · M  
GOPAL PRASAD, *School of Mathematics*, IAS

Drinfeld Modules Seminar: “Drinfeld motives” · M  
GREG W. ANDERSON, *School of Mathematics*, IAS

Astrophysics Seminar: “Evolution and clustering of heavy element absorption redshifts in quasars” · N  
WALLACE SARGENT, *California Institute of Technology*

Astrophysics Seminar Luncheon · N  
A. BABUL, *Princeton University*; C. BAILYN, *Harvard University*; J. GAUSTAD, *Swarthmore College*; W. HAXTON, *University of Washington*; J. QUASHNACK, *Princeton University*; W. SARGENT, *California Institute of Technology*; J. TAYLOR, *Princeton University*

November 4  
Number Theory Seminar: “Explicit construction of expanding graphs” · M  
FREDERIC V. BIEN, *School of Mathematics*, IAS

Seminar on Three- and Four-Manifolds: “Donaldson invariants of four-manifolds, III” · M  
PETER B. KRONHEIMER, *School of Mathematics*, IAS

Gender Seminar: Discussion of Caroline Steedman’s book, *Landscape for a Good Woman* · s

November 5  
Art History Colloquium: “Paris and the origins of Gothic architecture” · H  
W. STEPHEN GARDNER, *School of Historical Studies*, IAS

Topology Seminar: “What is BRS cohomology and why?” · M  
JAMES D. STASHEFF, *School of Mathematics*, IAS

Supergeometry Seminar: “Lie superalgebras: representations” · M  
FREDERIC V. BIEN, *School of Mathematics*, IAS

Lecture on Algebraic Aspects of String Theory, V · M  
DAVID I. OLIVE, *School of Mathematics*, IAS

Luncheon Seminar: “The language of practice and the practice of language: lost wor(l)ds of late nineteenth-century Stockholm” · s  
ALAN PRED, *University of California at Berkeley*

November 9  
Marston Morse Memorial Lecture, I: “The Einstein-Hilbert variational problem on the space of Riemannian metrics” · M  
RICHARD M. SCHOEN, *Stanford University*

Special Seminar: “Inverse problems and potential theory” · M  
AVNER FRIEDMAN, *University of Minnesota*

November 10  
Seminar on Orbits in Spaces of Lattices: “Margulis’ proof of Oppenheim’s conjecture [continued]” · M  
ARMAND BOREL, *Professor, School of Mathematics*, IAS

Marston Morse Memorial Lecture, II: “The Einstein-Hilbert variational problem on the space of Riemannian metrics” · M  
RICHARD M. SCHOEN, *Stanford University*

Astrophysics Seminar Luncheon · N

P. BENDER, *University of Colorado*; P. GOLDREICH, *California Institute of Technology*; J. PETERSEN, *Princeton University*; S. TREMAINE, *California Institute of Technology*; N. TUROK, *Fermi National Accelerator Laboratory*; R. WILSON, *Bell Labs*

Gender Seminar: Discussion of articles by Nancy Fraser and Linda Nicholson: "Social Criticism without Philosophy: An Encounter between Feminism and Postmodernism," and by Christine DeStefano, "Postmodernism/Postfeminism? The Case of the Incredible Shrinking Woman" · S

November 11

Number Theory Seminar: "Eigenvalues on  $PL_2(\mathbb{Q}_p)/\Gamma$  and Ramanujan graphs" · M  
FREDERIC V. BIEN, *School of Mathematics, IAS*

Seminar on Three- and Four-Manifolds: "Instanton invariants for three-manifolds, I" · M  
ANDREAS FLOER, *Courant Institute*

November 12

Topology Seminar: "A survey of elliptic genera" · M  
PETER S. LANDWEBER, *Rutgers University*

Supergeometry Seminar: "Super Lie groups" · M  
FREDERIC V. BIEN, *School of Mathematics, IAS*

Lecture on Algebraic Aspects of String Theory, VI · M  
DAVID I. OLIVE, *School of Mathematics, IAS*

Marston Morse Memorial Lecture, III: "The Einstein-Hilbert variational problem on the space of Riemannian metrics" · M  
RICHARD M. SCHOEN, *Stanford University*

Luncheon Seminar: "Transaction costs, Whig history and the common fields" · S  
STEFANO FENOALTEA, *School of Social Science, IAS*

November 13

Lecture: "Medieval Confraternities: A Re-Assessment" · H  
ANDRÉ VAUCHEZ, *University of Paris*

Seminar on Conformal Field Theory · M  
STEPHEN SHENKER, *School of Mathematics, IAS*

Seminar on Conformal Field Theory · M  
GRAEME SEGAL, *University of Oxford*

November 16

Dynamical Systems Seminar: "A discrete group which arises when iterating Henon mappings" · M  
JOHN HUBBARD, *Cornell University*

Members Seminar: "Hamiltonian mechanics and the eigenvalue problem" · M  
PERCY A. DEIFT, *School of Mathematics, IAS*

November 17

Seminar on Orbits in Spaces of Lattices: "Margulis' proof of Oppenheim's conjecture [continued]" · M  
ARMAND BOREL, *Professor, School of Mathematics, IAS*

Drinfeld Modules Seminar: "Drinfeld motives [continued]" · M  
GREG W. ANDERSON, *School of Mathematics, IAS*

November 18

Number Theory Seminar: "Maass forms of H- integral weight" · M  
WILLIAM D. DUKE, *Rutgers University*  
Seminar on Three- and Four-Manifolds: "Instanton invariants for three-manifolds, II" · M  
ANDREAS FLOER, *Courant Institute*

Lecture on Algebraic Aspects of String Theory, VII · M  
DAVID I. OLIVE, *School of Mathematics, IAS*

November 19

Topology Seminar: "Cyclic homology and equivariant cohomology" · M  
JEAN-LUC BRYLINSKI, *Brown University*

Supergeometry Seminar: "The super-Virasoro algebras: representation theory" · M  
ALVANY ROCHA-CARIDI, *School of Mathematics, IAS*



Luncheon Seminar: “Interests and identities in contemporary collective action” · s  
DAVID PLOTKE, *School of Social Science*, IAS

November 20

Seminar on Conformal Field Theory · M  
GRAEME SEGAL, *University of Oxford*

Seminar on Differential Geometry:  
“Fundamental group and the growth of the number of closed geodesics in rank 1 manifolds” · M  
GERHARD F. KNIEPER, *School of Mathematics*, IAS

Special Lecture: “Knot polynomials, abstract tensors and the Yang–Baxter equation” · M  
LOUIS H. KAUFFMAN, *University of Illinois at Chicago*

November 23

Dynamical Systems Seminar: “Regularity of entropy under smooth perturbation of the Riemannian metric on surfaces of negative curvature” · M  
GERHARD F. KNIEPER, *School of Mathematics*, IAS

Members Seminar: “The local equivalence problem of Elie Cartan and the Painlevé transcendents” · M  
NIKY KAMRAN, *School of Mathematics*, IAS

Theoretical Physics Seminar:  
“Curiosities at  $c=1$  and beyond” · N  
PAUL GINSPIRG, *Harvard University*

November 24

Seminar on Orbits in Spaces of Lattices:  
“Margulis’ proof of Oppenheim’s conjecture [continued]” · M  
ARMAND BOREL, *Professor, School of Mathematics*, IAS

November 25

Number Theory Seminar: “Bounds for discriminants of number fields” · M  
ANDREW ODLYZKO, *Bell Laboratories*

Seminar on Three- and Four-Manifolds:  
“Instanton invariants for three-manifolds, III” · M  
ANDREAS FLOER, *Courant Institute*

November 30

Dynamical Systems Seminar: “Symplectic topology and Hamiltonian systems” · M  
HELMUT HOFER, *School of Mathematics*, IAS

Members Seminar: “A survey of Whitehead groups of finite groups” · M  
ROBERT A. OLIVER, *School of Mathematics*, IAS

Theoretical Physics Seminar: “Real, p-adic and adelic strings” · N  
PETER FREUND, *Enrico Fermi Institute*

December 1

Seminar on Orbits in Spaces of Lattices:  
“Margulis’ proof of Oppenheim’s conjecture [concluded]” · M  
ARMAND BOREL, *Professor, School of Mathematics*, IAS

Drinfeld Modules Seminar: “Drinfeld motives [continued]” · M  
GREG W. ANDERSON, *School of Mathematics*, IAS

Astrophysics Seminar Luncheon · N  
J. BAHCALL, *Professor, School of Natural Sciences*, IAS; J. OSTRIKER, *Princeton University*;  
R. ROMANI, *University of California at Berkeley*;  
J. TAYLOR, *Princeton University*

December 2

Number Theory Seminar: “Elementary bounds for the degree of Artin L-functions in characteristic p” · M  
ENRICO BOMBIERI, *Professor, School of Mathematics*, IAS

Seminar on Three- and Four-Manifolds:  
“Homology decompositions of four-manifolds” · M  
PETER B. KRONHEIMER, *School of Mathematics*, IAS

Gender Seminar: “Situated Knowledge: The Science Question in Feminism” · s  
DONNA HARAWAY, *School of Social Science*, IAS; and “Feminism, Science and Post-Modernism”  
EVELYN FOX KELLER, *School of Social Science*, IAS

December 3

Art History Colloquium: “The problem of the stigmata in St. Francis iconography” · H  
CHIARA FRUGONI, *School of Historical Studies*, IAS

Topology Seminar · M

GRAEME B. SEGAL, *University of Oxford*

Supergeometry Seminar: “The super-Virasoro

algebras: representation theory [continued]” · M  
ALVANY ROCHA-CARIDI, *School of Mathematics, IAS*

Luncheon Seminar: “Apes, aliens, cyborgs,  
and women” · S

DONNA HARAWAY, *School of Social Science, IAS*

December 4

Seminar on Conformal Field Theory · M

DANIEL FRIEDAN, *School of Mathematics, IAS*

Seminar on Conformal Field Theory · M

GRAEME SEGAL, *University of Oxford*

IAS-Princeton University Lunchtime Seminar:

“Ghostly Polyakov integrals; dual Peierls  
brackets” · N

MARK RUBIN, *Rockefeller University*

Astrophysics Seminar: “Intrinsic shapes of  
elliptical galaxies”

MARIJN FRANX, *University of Leiden*

December 7

Special Lecture: “S<sup>1</sup>-actions and elliptic

genera revisited” · M

CLIFFORD TAUBES, *Harvard University*

Dynamical Systems Seminar: “Algorithms

for a global perspective” · M

STEPHEN SMALE, *University of California  
at Berkeley and IBM*

Members Seminar: “The trace class problem in  
the theory of automorphic forms” · M

WERNER MÜLLER, *School of Mathematics, IAS*

Theoretical Physics Seminar: “Conformal

theories and punctured surfaces” · N

CUMRUN WAFA, *Harvard University*

December 8

Art History Colloquium: “Vittore Carpaccio’s  
*Young Knight* reconsidered” · H

LUBOMÍR KONEČNÝ, *School of Historical Studies, IAS*

Seminar on Orbits in Spaces of Lattices:

“Unipotent flows” · M

GOPAL PRASAD, *School of Mathematics, IAS*

Drinfeld Modules Seminar: “Drinfeld motives  
[concluded]” · M

GREG W. ANDERSON, *School of Mathematics, IAS*

Drinfeld Modules Seminar:

“Periods of second kind” · M

ERNST-ULRICH GEKELER, *School of  
Mathematics, IAS*

Astrophysics Seminar Luncheon · N

J. BAHCALL, *Professor, School of Natural Sciences,*

*IAS*; P. HUT, *Professor, School of Natural Sciences,*

*IAS*; J. E. GUNN, *Princeton University*; B. PACZYNSKI,

*Princeton University*; J. PEEBLES, *Princeton*

*University*; T. TYSON, *Bell Labs*

December 9

Number Theory Seminar: “Elementary

bounds for the degree of Artin L-functions in  
characteristic p [concluded]” · M

ENRICO BOMBIERI, *Professor, School of  
Mathematics, IAS*

Seminar on Three- and Four-Manifolds:

“Floer homology groups for the Brieskorn  
spheres  $\Sigma(p, q, r)$ ” · M

GORDANA MATIĆ, *School of Mathematics, IAS*

Simulation Seminar: “Live Halos in Merger

Calculations” · N

JOSHUA BARNES, *School of Natural Sciences, IAS*

“Constructing spherical models”

HERWIG DEJONGHE, *School of Natural Sciences, IAS*

“Smooth particle hydrodynamics  
in a tree code”

LARS HERNQUIST, *School of Natural Sciences, IAS*

December 10

Topology Seminar: “Renormalized cyclic  
cocycles and eta invariants” · M

STEVEN E. HURDER, *School of Mathematics, IAS*

Supergeometry Seminar: “KP and SKP  
hierarchies, I” · M

TAKAHIRO SHIOTA, *School of Mathematics, IAS*

Lecture on Algebraic Aspects of String Theory:  
“Conformal field theories with extra  
symmetries” · M

ZONGAN QIU, *School of Natural Sciences, IAS*

Luncheon Seminar: “Personhood and the  
politics of meaning in a Japanese factory” · S  
DORINNE KONDO, *School of Social Science, IAS*

December 11

Seminar on Conformal Field Theory · M  
DANIEL FRIEDAN, *School of Mathematics, IAS*

December 11-12

Colloquium: Art History Colloquium in  
honor of Irving Lavin, Professor, School of  
Historical Studies, IAS · H

December 14

Dynamical Systems Seminar: “Ergodic  
geodesic flow on a sphere” · M

VICTOR J. DONNAY, *Princeton University*

Members Seminar: “Construction and moduli  
of monopoles for the classical groups” · M  
JACQUES C. HURTUBISE, *School of Mathematics, IAS*

Concert: An Evening of Cello and  
Piano Sonatas · D

SARA WOLFENSOHN [piano] and ALEX VELTMAN  
[cello]

December 15

Seminar on Orbits in Spaces of Lattices:  
“Unipotent flows” · M

GOPAL PRASAD, *School of Mathematics, IAS*

Drinfeld Modules Seminar: “Transcendence  
and Drinfeld modules” · M

JING YU, *School of Mathematics, IAS*

Friends of the Early Universe Seminar:  
“Topological dark matter”

J. FRIEMAN, *Stanford Linear Accelerator Center*

Astrophysics Seminar Luncheon · N

J. FRIEMAN, *Stanford Linear Accelerator Center*;

B. PACZYNSKI, *Princeton University*;

E. SALPETER, *Cornell University*

December 16

Simulations Seminar: “Fokker-Planck methods  
in globular cluster evolution” · N

MARTIN WEINBERG, *School of Natural Sciences, IAS*  
“N-body calculations on the connection  
machine”

JUN MAKINO, *University of Tokyo*

“‘Chemistry’ of multiple-star reactions in  
globular clusters”

PIET HUT, *Professor, School of Natural Sciences, IAS*

Gender Seminar: Comments on M. Foucault,  
*Herculine Barbin* · S

JUDITH BUTLER, *School of Social Science, IAS*

December 17

Topology Seminar: “Poisson homological  
algebra and constrained Hamiltonians” · M

JAMES D. STASHEFF, *School of Mathematics, IAS*

Supergeometry Seminar: “KP and SKP  
hierarchies, II” · M

TAKAHIRO SHIOTA, *School of Mathematics, IAS*

Lecture on Algebraic Aspects of String Theory:  
“Algebraic conformal field theory and the  
monster” · M

JAMES LEPOWSKY, *School of Mathematics, IAS*

Luncheon Seminar: “Chromosomes and  
communication: the discourse of genetic  
counselling” · S

RAYNA RAPP, *School of Social Science, IAS*

December 18

Seminar on Conformal Field Theory · M  
DANIEL FRIEDAN, *School of Mathematics, IAS*

IAS-Princeton University Lunchtime Seminar:  
“New issues in Fermionic string perturbation” · N

JOSEPH ATICK, *School of Natural Sciences, IAS*

December 22

Astrophysics Seminar Luncheon · N

P. HUT, *Professor, School of Natural Sciences, IAS*;

G. CECIL, *School of Natural Sciences, IAS*;

J. GOODMAN, *School of Natural Sciences, IAS*;

M. POSTMAN, *Princeton University*

- January 4  
 Commemoration: Program honoring Arne Beurling · M  
 LENNART A. E. CARLSON, *Royal Institute of Technology, Stockholm*; PAUL MALLIAVIN, *University of Paris VI*; L. V. AHLFORS, *Harvard University*
- January 5  
 Astrophysics Seminar Luncheon · N  
 L. BLITZ, *University of Maryland at College Park*; B. PACZYNSKI, *Princeton University*; E. TURNER, *Princeton University*
- January 7  
 Art History Colloquium: “Problems in early Carolingian art” · H  
 LAWRENCE NEES, *School of Historical Studies, IAS*
- January 8  
 IAS-Princeton University Lunchtime Seminar: “Fermion string-loop amplitudes and spacetime supersymmetry” · N  
 HERMAN VERLINDE, *University of Utrecht*
- January 11  
 Members Seminar: “Inverse problems of potential theory” · M  
 VICTOR ISAKOV, *Courant Institute*
- January 12  
 Joint IAS-Princeton University Partial Differential Equations Seminar: “Quasiconvexity and regularity” · M  
 LAWRENCE C. EVANS, *School of Mathematics, IAS*
- Astrophysics Seminar Luncheon · N  
 D. SPERGEL, *School of Natural Sciences, IAS*; D. SCHNEIDER, *School of Natural Sciences, IAS*; W. LEWIN, *Massachusetts Institute of Technology*; J. OSTRIKER, *Princeton University*
- January 13  
 Gender Seminar: “Constructing Amniocentesis: Maternal and Medical Discourses” · S  
 RAYNA RAPP, *School of Social Science, IAS*
- January 14  
 Luncheon Seminar: “The romance of resistance: Bedouin women and the problems of powerlessness” · S  
 LILA ABU-LUGHOD, *School of Social Science, IAS*
- January 15  
 Seminar on Differential Geometry: “Harmonic maps and Teichmüller theory” · M  
 JÜRGEN JOST, *School of Mathematics, IAS*
- Joint IAS-Princeton University Partial Differential Equations Seminar: “Quasiconvexity and regularity [continued]” · M  
 LAWRENCE C. EVANS, *School of Mathematics, IAS*
- IAS-Princeton University Lunchtime Seminar: “Supersymmetry and quark mass matrix” · N  
 TOM BANKS, *University of California at Santa Cruz*
- January 19  
 Drinfeld Modules Seminar: “Gauss sums” · M  
 DINESH THAKUR, *School of Mathematics, IAS*
- Joint IAS-Princeton University Partial Differential Equations Seminar: “Long-time existence for finite amplitude and elastic waves” · M  
 FRITZ JOHN, *Courant Institute*
- Friends of the Early Universe Seminar: “Particle physics and stellar evolution: new bounds on the properties of axions” · N  
 GEORG RAFFELT, *University of California, Berkeley*
- Astrophysics Seminar Luncheon · N  
 J. BAHCALL, *Professor, School of Natural Sciences, IAS*; B. DRAINE, *Princeton University*; G. STARKMAN, *Stanford University*; D. WILKINSON, *Princeton University*
- January 21  
 Topology Seminar: “Excision in cyclic homology” · M  
 MARIUSZ WODZICKI, *School of Mathematics, IAS*
- Lecture on Algebraic Aspects of String Theory: “Algebras of vertex operators and conformal field theory, I” · M  
 IGOR B. FRENKEL, *School of Mathematics, IAS*
- Luncheon Seminar: “Two hundred years of reactionary rhetoric: the case of the perverse effect” · S  
 ALBERT HIRSCHMAN, *Professor Emeritus, School of Social Science, IAS*



Jazz Concert: Kenny Barron Quartet · D

January 22

Seminar on Conformal Field Theory:  
"Quantum field theory and Donaldson's  
polynomials" · M

EDWARD WITTEN, *Professor, School of  
Natural Sciences, IAS*

Seminar on Differential Geometry:  
"Hyperbolic metric and the geometry of the  
universal curve" · M

SCOTT WOLPERT, *School of Mathematics, IAS*

Joint IAS-Princeton University Partial  
Differential Equations Seminar: "Systems of  
hyperbolic conservation laws" · M

CONSTANTINE DAFERMOS, *Brown University*

January 24

Gender Seminar: "Gender Identities for Men  
and Women: The Politics of Work and Family  
for Parisian Garment Workers in 1848" · S

JOAN SCOTT, *Professor, School of Social Science, IAS*

January 25

Dynamical Systems Seminar: "Rational  
rotation numbers for circle maps" · M

GRZEGORZ SWIATEK, *University of Warsaw and  
City University of New York Graduate Center*

Members Seminar: "Systems of hyperbolic  
"conservation laws"[continued] · M

CONSTANTINE DAFERMOS, *Brown University*

January 26

Hermann Weyl Lecture: "Chaos and  
universality, I" · M

LEO P. KADANOFF, *University of Chicago*

Seminar on Semisimple Groups: "The  
Oppenheim conjecture over totally real  
number fields" · M

ARMAND BOREL, *Professor, School of  
Mathematics, IAS*

Drinfeld Modules Seminar:

"Gamma functions" · M

DINESH S. THAKUR, *School of Mathematics, IAS*

Astrophysics Seminar Luncheon · N

F. DYSON, *Professor, School of Natural Sciences, IAS;*

J. GOODMAN, *School of Natural Sciences, IAS;*

L. AGUILAR, *Harvard University;* A. GOULD, *Stanford*

*University;* E. JENKINS, *Princeton University;*

J. PEEBLES, *Princeton University;* E. TURNER, *Princeton*

*University*

January 27

Simulations Seminar: "'Chemistry' of  
multiple-star reactions in globular clusters" · N

PIET HUT, *Professor, School of Natural Sciences, IAS*

"Resoluton and relaxation in different N-body  
methods"

LARS HERNQUIST, *School of Natural Sciences, IAS*

January 28

Topology Seminar: "Cyclic homology of  
pseudo-differential operators and  
noncommutative Euler characteristics" · M

MARIUSZ WODZICKI, *School of Mathematics, IAS*

Geometry and Analysis on Riemann Surfaces:

"Determinant line bundles, Quillen metrics and  
degenerating curves" · M

JEAN-BENOÎT BOST, *School of Mathematics, IAS*

Lecture on Algebraic Aspects of String Theory:

"Algebras of vertex operators and conformal field  
theory, II" · M

IGOR B. FRENKEL, *School of Mathematics, IAS*

Luncheon Seminar: "Power and accumulation:

can their relationship be (gasp!) quantified? And  
why (choke!) try? [With numbers and reifications  
for the United States, 1951-86]" · S

DAVID GORDON, *School of Social Science, IAS*

January 29

Seminar on Conformal Field Theory: "Quantum  
field theory and Donaldson's polynomials  
[continued]" · M

EDWARD WITTEN, *Professor, School of Natural  
Sciences, IAS*

Seminar of Differential Geometry: "Hyperbolic

metric and the geometry of the universal curve  
[continued]" · M

SCOTT WOLPERT, *School of Mathematics, IAS*

Joint IAS-Princeton University Partial  
Differential Equations Seminar: "Systems of  
hyperbolic conservation laws" · M  
CONSTANTINE DAFERMOS, *Brown University*

IAS-Princeton University Lunchtime Seminar:  
"Smale horseshoes and Higgs potentials" · N  
ROLAND WARNER, *University of Melbourne*

February 1

Dynamical Systems Seminar:  
"Automorphisms of compact groups" · M  
KLAUS SCHMIDT, *School of Mathematics, IAS*

Theoretical Physics Seminar: "Unitary  
representations of extended conformal  
symmetry" · N  
PETER GODDARD, *School of Mathematics, IAS*

February 2

Hermann Weyl Lecture:  
"Chaos and universality, II" · M  
LEO P. KADANOFF, *University of Chicago*

Seminar on Semisimple Groups: "The  
Oppenheim conjecture over totally real number  
fields [continued]" · M  
ARMAND BOREL, *Professor, School of  
Mathematics, IAS*

Drinfeld Modules Seminar: "Cohomology of  
 $p$ -adic homogeneous spaces" · M  
UIRICH STUHLER, *School of Mathematics, IAS*

Astrophysics Seminar Luncheon · N  
J. BAHCALL, *Professor, School of Natural Sciences,  
IAS*; W. DIEMBOWSKI, *University of Warsaw*;  
B. DRAINE, *Princeton University*; J. GUNN, *Princeton  
University*; K. HURLEY, *University of California at  
Berkeley*

February 3

Simulations Seminar:  
"New triaxial galaxy models" · N  
DANIEL PFENNINGER, *School of Natural Sciences,  
IAS*; and TIM DE ZEEUW, *School of  
Natural Sciences, IAS*

February 4

Art History Colloquium: "The Plantagenets  
and Valois as artistic patrons" · H  
PAUL BINSKI, *School of Historical Studies, IAS*

Hermann Weyl Lecture:  
"Chaos and universality, III" · M  
LEO P. KADANOFF, *University of Chicago*

Topology Seminar: "Hyperelliptic genera" · M  
HIROTAKA TAMANOI, *School of Mathematics, IAS*

Geometry and Analysis on Riemann Surfaces:  
"Various points of view on Diff  $S^1$ "  
PIERRE DELIGNE, *Professor, School of Mathematics, IAS*

Astrophysics Seminar:  
"Chocolates: the road to perdition"  
DAVID SPERGER, *School of Natural Sciences, IAS*

Luncheon Seminar: "Critical silences in scientific  
discourse: problems of form and re-form" · S  
EVELYN FOX-KELLER, *School of Social Science, IAS*

February 5

Lecture: "The Sapphoris Dionysus mosaic and  
its context" · H  
ERIC MEYERS, *Duke University*

Seminar on Conformal Field Theory:  
"Quantum field theory and Donaldson's  
polynomials [continued]" · M  
EDWARD WITTEN, *Professor, School of Natural  
Sciences, IAS*

Seminar on Differential Geometry: "Hermitian  
Einstein connections and stable vector bundles on  
compact complex surfaces" · M  
NICHOLAS BUCHDAHL, *School of Mathematics, IAS*

February 8

Dynamical Systems Seminar: "Automorphisms  
of nilmanifolds and solutions to diophantine  
equations in sets of positive density" · M  
HARRY FURSTENBERG, *Hebrew University and  
University of Maryland*

Theoretical Physics Seminar: "A particle physics  
solution to the solar neutrino and dark matter  
problems" · N  
GEOFF WEST, *Los Alamos Scientific Laboratory*



February 9

Partial Differential Equations Seminar:  
 "Vorticity, oscillations and concentrations in  
 incompressible flow". M

ANDREW J. MAJDA, *School of Mathematics*, IAS

Astrophysics Seminar Luncheon · N

D. SCHNEIDER, *School of Natural Sciences*, IAS;

G. WEST, *Los Alamos National Laboratory*

February 10

Special Partial Differential Equations Seminar:  
 "Regularity of flows in porous media". M

DONALD G. ARONSON, *University of Minnesota*

Gender Seminar: "The Aesthetics and Politics  
 of Artisanal Identities in Japan". S

DORINNE KONDO, *School of Social Science*, IAS

February 11

Topology Seminar: "Poisson manifolds,  
 enveloping algebras and cyclic homology". M

CHRISTIAN KASSEL, *School of Mathematics*, IAS

Geometry and Analysis on Riemann Surfaces:

"Various points of view on Diff S<sup>1</sup>

[continued]". M

PIERRE DELIGNE, *Professor, School of*

*Mathematics*, IAS

Lecture on Algebraic Aspects of String Theory:

"Conformal-field-theoretic construction of the  
 Monster, I". M

JAMES LEPOWSKY, *School of Mathematics*, IAS

Luncheon Seminar: "Working women:

subjects, objects, actors of social movements in  
 Milan, 1880-1905". S

LOUISE TILLY, *School of Social Science*, IAS

February 12

Seminar on Conformal Field Theory:

"Quantum field theory and Donaldson's  
 polynomials [continued]". M

EDWARD WITTEN, *Professor, School of Natural*

*Sciences*, IAS

Partial Differential Equations Seminar:

"Vorticity, oscillations and concentrations in  
 incompressible flow [continued]". M

ANDREW J. MAJDA, *School of Mathematics*, IAS

IAS-Princeton University Lunchtime Seminar:

"B physics". N

FRED GILMAN, *Stanford Linear Accelerator Center*

February 15

Dynamical Systems Seminar: "Lorenz/Rychlik  
 bifurcation to an attractor". M

CLARK ROBINSON, *Northwestern University*

Members Seminar: "Analytic torsion and finite  
 group actions". M

VINCENT DELLAPIETRA, *School of Mathematics*, IAS

February 16

Seminar on Semisimple Groups: "The  
 Oppenheim conjecture over totally real number  
 fields [continued]". M

ARMAND BOREL, *Professor, School of Mathematics*, IAS

Drinfeld Modules Seminar: "Cohomology of  
 p-adic homogeneous spaces". M

ULRICH STUHLER, *School of Mathematics*, IAS

Partial Differential Equations Seminar:

"Nonlinear classical field theories". M

JOHN NEU, *University of California at Berkeley*

February 18

Geometry and Analysis on Riemann Surfaces:

"Determinant line bundles, Quillen metrics and  
 degenerating curves [continued]". M

JEAN-BENOÎT BOST, *School of Mathematics*, IAS

Lecture on Algebraic Aspects of String Theory:

"Conformal-field-theoretic construction of the  
 Monster, II". M

JAMES LEPOWSKY, *School of Mathematics*, IAS

Seminar on Differential Geometry: "The

asymptotic behavior of minimal surfaces in  
 hyperbolic space". M

FANG HUA LIN, *School of Mathematics*, IAS

Luncheon Seminar: "The middle class and

competition: some considerations of  
 the beginnings of modern sport in England  
 and Germany". S

CHRISTIANE EISENBERG, *School of Social Science*, IAS

February 19

Partial Differential Equations Seminar:  
 “Nonlinear classical field theories  
 [continued]”. M  
 JOHN NEU, *University of California at Berkeley*

February 22

Members Seminar: “Zeta functions of Shimura  
 varieties attached to unitary groups”. M  
 ROBERT KOTTWITZ, *Harvard University*

Astrophysics Seminar: “Star formation, optical  
 jets and bipolar flows”. N  
 FRANK SHU, *University of California, Berkeley*

February 23

Seminar on Semisimple Groups: “The  
 Oppenheim conjecture over totally real number  
 fields [continued]”. M  
 ARMAND BOREL, *Professor, School of Mathematics,  
 IAS*

Drinfeld Modules Seminar: “Automorphic  
 sheaves related to Eisenstein series over function  
 fields”. M  
 GÉRARD LAUMON, *Centre National de la  
 Recherche Scientifique*

Partial Differential Equations Seminar:  
 “Mathematical questions of liquid crystal”. M  
 FANG HUA LIN, *School of Mathematics, IAS*

Astrophysics Seminar Luncheon · N  
 J. BARNES, *School of Natural Sciences, IAS*;  
 J. APPLGATE, *Columbia University*; E. GROTH,  
*Princeton University*; B. PACZYNSKI, *Princeton  
 University*; J. PEEBLES, *Princeton University*

February 24

Simulations Seminar: Informal discussion on  
 topics related to the Space Telescope:  
 Scheduling, data acquisition, data reduction and  
 new directions in software development · N  
 RUDI ALBRECHT, *European Southern Observatory,  
 Munich*

February 25

Topology Seminar: “Cyclic homology and  
 representations of reductive groups”. M  
 PHILIPPE BLANC, *Centre National de la Recherche  
 Scientifique*

Geometry and Analysis on Riemann Surfaces:  
 “Some remarks on Faltings’  $\delta$ -invariant of a  
 Riemann surface”. M  
 JEAN-BENOÎT BOST, *School of Mathematics, IAS*

Lecture on Algebraic Aspects of String Theory:  
 “Conformal-field-theoretic construction of the  
 Monster [continued]”. M  
 JAMES LEPOWSKY, *School of Mathematics, IAS*

Luncheon Seminar: “The communitarian  
 critique of liberalism”. S  
 MICHAEL WALZER, *Professor, School of  
 Social Science, IAS*

February 26

Seminar on Conformal Field Theory:  
 “Conformal field theory and coset  
 constructions”. M  
 PETER GODDARD, *School of Mathematics, IAS*

Seminar on Differential Geometry:  
 “The construction of constant mean  
 curvature tori”. M  
 JOEL SPRUCK, *School of Mathematics, IAS*

Partial Differential Equations Seminar:  
 “Mathematical questions of liquid crystal”. M  
 FANG HUA LIN, *School of Mathematics, IAS*

IAS-Princeton University Lunchtime Seminar:  
 “Normal ordering, invariants and CFT”. N  
 ADRIAN KENT, *School of Natural Sciences, IAS*

February 29

Dynamical Systems Seminar: “Catalan  
 numbers and branched coverings by  $P^1$ ”. M  
 LISA GOLDBERG, *School of Mathematics, IAS*

Members Seminar: “Unitarizability of some  
 local cohomology modules via residues”. M  
 MILJENKO ŽABČIĆ, *School of Mathematics, IAS*

Theoretical Physics Seminar: “Auxiliary fields  
 in 4-D N=1 supergravity from heterotic  
 strings”. N  
 WARREN SIEGEL, *University of Maryland*

March 1

Seminar on Semisimple Groups: “Volumes of  
 arithmetic quotients of semisimple groups”. M  
 GOPAL PRASAD, *School of Mathematics, IAS*

Drinfeld Modules Seminar: "Krichever's theory" · M

TAKAHIRO SHIOTA, *School of Mathematics, IAS*

Partial Differential Equations Seminar:

"A PDE-viscosity solution approach to large deviations and wavefront propagation for reaction diffusion systems, I" · M

PANAGIOTIS E. SOUGANIDIS, *School of Mathematics, IAS*

Astrophysics Seminar Luncheon · N

M. FUKUGITA, *Kyoto University*; R. MCRAY, *University of Colorado*; B. PACZYNSKI, *Princeton University*; M. POSTMAN, *Princeton University*; A. STEBBINS, *Fermi National Accelerator Laboratory*

March 2

Gender Seminar: "Gender Difference and the Production of Subjectivity" · S

WENDY HOLOWAY, *University of Sussex*

March 3

Art History Colloquium: "Shifting associations in fifteenth-century Netherlandish manuscripts" · H

JAMES D. FARQUHAR, *School of Historical Studies, IAS*

Topology Seminar: "Closed braid representations of the unlink" · M

JOAN BIRMAN, *School of Mathematics, IAS*

Geometry and Analysis on Riemann Surfaces: "Orbifold holomorphic conformal field theories of a Riemann surface"

PIERRE DELIGNE, *Professor, School of Mathematics, IAS*

Lecture on Algebraic Aspects of String Theory: "Conformal-field-theoretic construction of the Monster [continued]" · M

JAMES LEPOWSKY, *School of Mathematics, IAS*

Luncheon Seminar: "Dilemmas of Glasnost: cultural policies and Russian nationalism under Gorbachev" · S

YITZHAK BRUDNY, *School of Social Science, IAS*

March 4

Seminar on Conformal Field Theory:

"Conformal field theory and coset constructions [continued]" · M

PETER GODDARD, *School of Mathematics, IAS*

Partial Differential Equations Seminar:

"A PDE-viscosity solution approach to large deviations and wavefront propagation for reaction diffusion systems, II" · M

PANAGIOTIS E. SOUGANIDIS, *School of Mathematics, IAS*

Seminar on Differential Geometry:

"Periodic minimal surfaces with an infinite number of ends" · M

DAVID A. HOFFMAN, *University of Massachusetts at Amherst*

March 7

Dynamical Systems Seminar:

"Automorphisms of the one-sided shift" · M

MIKE BOYLE, *University of Maryland*

Members Seminar: "K3 surfaces as moduli spaces" · M

PETER KRONHEIMER, *School of Mathematics, IAS*

March 8

Seminar on Semisimple Groups: "Volumes of arithmetic quotients of semisimple groups [continued]" · M

GOPAL PRASAD, *School of Mathematics, IAS*

Partial Differential Equations Seminar:

"Nonlinear transport theory: Boltzmann equation and Maxwell-Vlasov system" · M

RONALD J. DIPERNA, *School of Mathematics, IAS*

Astrophysics Seminar Luncheon · N

R. GOTT, *Princeton University*; E. JENKINS, *Princeton University*; C. PRYOR, *Rutgers University*; L. THOMPSON, *University of Illinois*

A Concert of Twentieth-Century Music · D  
THE NEW YORK NEW MUSIC ENSEMBLE

March 9

Special Partial Differential Equations Seminar: "The square root of the Dirichlet Laplacian on Lipschitz domains" · M

CARLOS KENIG, *University of Chicago*

Simulations Seminar: "Resolution and relaxation in results of N-body calculations" · N  
LARS HERNQUIST, *School of Natural Sciences, IAS*

March 10

Analytic Number Theory Seminar:  
"Waring's problem for biquadrates" · M  
JEAN-MARC DESHOUILLERS, *University of Bordeaux*

Topology Seminar: "Strongly commuting diffeomorphisms of the two spheres have common fixed points" · M  
MICHAEL HANDEL, *School of Mathematics, IAS*

Geometry and Analysis on Riemann Surfaces:  
"Orbifold holomorphic conformal field theories [continued]" · M  
PIERRE DELIGNE, *Professor, School of Mathematics, IAS*

Lecture on Algebraic Aspects of String Theory:  
"Conformal-field-theoretic construction of the Monster [continued]" · M  
JAMES LEPOWSKY, *School of Mathematics, IAS*

Luncheon Seminar: "Achieving the most with the least: bureaucratic efforts at managing the economy in late imperial China" · S  
PIERRE-ETIENNE WILL, *School of Social Science, IAS*

March 11

Seminar on Conformal Field Theory:  
"Conformal field theory and coset constructions [continued]" · M  
PETER GODDARD, *School of Mathematics, IAS*

Seminar on Differential Geometry: "Morse theory for minimal surfaces" · M  
JÜRGEN JOST, *School of Mathematics, IAS*

Partial Differential Equations Seminar:  
"Nonlinear transport theory: Boltzmann equation and Maxwell-Vlasov system [continued]" · M  
RONALD J. DIPERNA, *School of Mathematics, IAS*

IAS-Princeton University Lunchtime Seminar:  
"Sewing Polyakov amplitudes" · N  
STEVEN CARLIP, *School of Natural Sciences, IAS*

March 14

Dynamical Systems Seminar:  
"Fractal basin boundaries" · M  
KATHLEEN ALLIGOOD, *George Mason University*

Members Seminar [Special PDE Seminar]:  
"General variational principles" · M  
JAMES SERRIN, *University of Minnesota*

Theoretical Physics Seminar: "Effective actions and space time SUSY" · N  
JAMES GATES, *University of Maryland*

March 15

Seminar on Semisimple Groups: "Volumes of arithmetic quotients of semisimple groups [continued]" · M  
GOPAL PRASAD, *School of Mathematics, IAS*

Drinfeld Modules Seminar: "Cohomology of p-adic homogeneous spaces [continued]" · M  
ULRICH STUHLER, *School of Mathematics, IAS*

Partial Differential Equations Seminar:  
"Viscosity solutions of Hamilton-Jacobi equations in infinite dimensions" · M  
MICHAEL CRANDALL, *University of Wisconsin*

Astrophysics Seminar Luncheon · N  
S. BALBUS, *University of Virginia*; J. OSTRIKER, *Princeton University*; C. SARAZIN, *University of Virginia*; A. YAHIL, *State University of New York*

March 16

Simulations Seminar: "Lattice QCD and numerical methods" · N  
MASATAKA FUKUGITA, *School of Natural Sciences, IAS*

Gender Seminar: "Identities and Interests in Contemporary Collective Action" · S  
DAVID PLOTKE, *School of Social Science, IAS*

March 17

Geometry and Analysis on Riemann Surfaces:  
"Orbifold holomorphic conformal field theories [continued]" · M  
PIERRE DELIGNE, *Professor, School of Mathematics, IAS*



Lecture on Algebraic Aspects of String Theory:  
“Conformal-field-theoretic construction of the  
Monster [continued]” · M

JAMES LEPOWSKY, *School of Mathematics, IAS*

Luncheon Seminar:

“What is liberal neutrality?” · S

GEORGE SHER, *School of Social Science, IAS*

March 18

Seminar on Conformal Field Theory:

“Conformal field theory and coset  
constructions [continued]” · M

PETER GODDARD, *School of Mathematics, IAS*

Seminar on Differential Geometry: “Survey of  
existence and regularity for the variational  
maximal surface equation” · M

ROBERT BARTNIK, *Courant Institute and Australian  
National University*

Partial Differential Equations Seminar:

“Viscosity solutions of Hamilton-Jacobi  
equations in infinite dimensions” · M

MICHAEL CRANDALL, *University of Wisconsin*

Seminar: “Understanding thermal instability” · N

STEVE BALBUS, *University of Virginia*

March 21

Dynamical Systems Seminar: “Liapunov  
exponents, entropy and Hausdorff dimension  
in Banach spaces” · M

PHILIPPE THIEULLEN, *University of Maryland*

March 22

Seminar on Semisimple Groups: “Volumes of  
arithmetic quotients of semisimple groups  
[continued]” · M

GOPAL PRASAD, *School of Mathematics, IAS*

Drinfeld Modules Seminar: “Zeta values at  
positive integers” · M

DINESH THAKUR, *School of Mathematics, IAS*

Astrophysics Seminar Luncheon · N

A. FURCHTER, *Princeton University*; I. KOVNER,  
*Weizmann Institute of Science*; F. SCHWEIZER,  
*Princeton University*

March 23

Seminar on Three- and Four-Manifolds:  
“Instanton homology and surgery on  
3-manifolds” · M

ANDREAS FLOER, *Courant Institute*

Simulations Seminar: “Lyapunov instability  
in N-body systems” · N

DOUGLAS HEGGIE, *University of Edinburgh*

March 24

Number Theory Seminar: “Mordell’s  
conjecture over function fields and related  
topics [Expository lecture, in the geometric  
case only]” · M

ENRICO BOMBIERI, *Professor, School of  
Mathematics, IAS*

Topology Seminar: “Algorithmic classification  
of links up to homotopy” · M

XIAO-SONG LIN, *School of Mathematics, IAS*

Geometry and Analysis on Riemann Surfaces:  
“Orbifold holomorphic conformal field theories  
[continued]” · M

PIERRE DELIGNE, *Professor, School of  
Mathematics, IAS*

Lecture on Algebraic Aspects of String Theory:  
“Conformal-field-theoretic construction of the  
Monster [continued]” · M

JAMES LEPOWSKY, *School of Mathematics, IAS*

Seminar on Conformal Field Theory:

“Conformal field theory and coset constructions  
[continued]” · M

PETER GODDARD, *School of Mathematics, IAS*

Seminar on Differential Geometry: “Foliations  
by constant mean curvature spheres” · M

RUGANG YE, *Stanford University*

Luncheon Seminar: “High wages, empires and  
virtue: historical perspectives on international  
political economy” · S

ISTVAN HONT, *School of Social Science, IAS*

March 25

Partial Differential Equations Seminar: “Nodal  
sets of solutions of elliptic equations” · M

ROBERT HARDT, *University of Minnesota*

IAS-Princeton University Lunchtime Seminar:  
 "Universal string field theory". N  
 MICHAEL PESKIN, *Stanford Linear Accelerator Center*

Gender Seminar: "Women and Modernity:  
 The [Life] Styles of Lou Andreas-Salomé" and  
 "Lesbian Identity and Autobiographical  
 Differences". S  
 BIDDIE MARTIN, *Cornell University*

March 28  
 Dynamical Systems Seminar: "The application  
 of formal language theory to the dynamics of  
 cellular automata". M  
 LYMAN HURD, *Princeton University; Assistant,  
 School of Mathematics*

Theoretical Physics Seminar:  
 "Orbifolds which 'are' smooth manifolds". M  
 LANCE DIXON, *Princeton University*

March 29  
 Drinfeld Modules Seminar: "Special zeta values  
 in characteristic p". M  
 JING YU, *School of Mathematics, IAS*

March 30  
 Simulations Seminar: "A method of successive  
 approximations to spherical isotropic cluster  
 models". N  
 PIET HUT, *Professor, School of Natural Sciences, IAS;*  
 and HERWIG DEJONGHE, *School of Natural Sciences,  
 IAS*

March 31  
 Topology Seminar: "Algorithmic classification  
 of links up to homotopy". M  
 XIAO-SONG LIN, *School of Mathematics, IAS*

Luncheon Seminar: "Gender identity and the  
 discourse of inner truth". S  
 JUDITH BUTLER, *School of Social Science, IAS*

April 4  
 Dynamical Systems Seminar: "Realizing  
 automorphisms of the 3-shift". M  
 LINDA KEEN, *City University of New York*

April 5  
 Partial Differential Equations Seminar: "Large  
 time behavior of solutions to compressible  
 fluid equations, I". M  
 MARIA SCHONBEK, *School of Mathematics, IAS*

Astrophysics Seminar Luncheon · N  
 D. SPERGEL, *School of Natural Sciences, IAS;*  
 J. BLAND, *University of Hawaii;* L. BLITZ, *University  
 of Maryland;* A. LOEB, *Weizmann Institute of  
 Science;* R. NARAYAN, *University of Arizona;*  
 E. TURNER, *Princeton University*

April 6  
 Gender Seminar:  
 "Objectivity and Social Meaning". S  
 MICHAEL WALZER, *Professor, School of  
 Social Science, IAS*

April 7  
 Art History Colloquium: "What was  
 Expressionism? The transformation of the  
 German concept of Expressionism  
 1911-1920". H  
 MARIT WERENSKIOLD, *School of Historical  
 Studies, IAS*

Luncheon Seminar: "The politics of moral  
 reconstruction: Italy 1945-50". S  
 YASMINE ERGAS, *School of Social Science, IAS*

April 8  
 Partial Differential Equations Seminar: "Large  
 time behavior of solutions to compressible  
 fluid equations, II". M  
 MARIA SCHONBEK, *School of Mathematics, IAS*

IAS-Princeton University Lunchtime Seminar:  
 "On the 'current' algebra of the KdV  
 equation". N  
 ASHOK DAS, *School of Natural Sciences, IAS*

April 11  
 Dynamical Systems Seminar: "Minimal action  
 orbits for positive definite lagrangian  
 systems". M  
 JOHN MATHER, *Princeton University*

Theoretical Physics Seminar:  
 "Duality in QCD". N  
 STEPHEN J. PARKE, *Fermilab National  
 Accelerator Laboratory*

April 12  
 Drinfeld Modules Seminar: "The deRham  
 isomorphism for Drinfeld modules". M  
 ERNST-ULRICH GEKELER, *School of  
 Mathematics, IAS*



Partial Differential Equations Seminar:  
 "Periodic solutions of Hamiltonian systems" · M  
 PAUL RABINOWITZ, *University of Wisconsin*

Astrophysics Seminar Luncheon · N  
 P. AMSTERDAMSKI, *University of Texas*;  
 K. LIBBRECHT, *California Institute of Technology*;  
 P. DE LINTEL, *University of Leiden*; W. PRESS, *Harvard University*; G. RYBICKI, *Harvard University*; F. WILCZEK, *University of California at Santa Barbara*

April 14  
 Luncheon Seminar:  
 "What's the good of equality?" · s  
 JOHN BROOME, *Princeton University*

April 15  
 Partial Differential Equations Seminar:  
 "Periodic solutions of Hamiltonian systems" · M  
 PAUL RABINOWITZ, *University of Wisconsin*

April 19  
 Drinfeld Modules Seminar: "The deRham  
 isomorphism for Drinfeld modules  
 [continued]" · M  
 ERNST-ULRICH GEKELER, *School of  
 Mathematics, IAS*

Partial Differential Equations Seminar:  
 "Elliptic equations with critical exponent  
 on manifolds" · M  
 ABBAS BAHRI, *Rutgers University*

Astrophysics Seminar Luncheon · N  
 D. SCHNEIDER, *School of Natural Sciences, IAS*;  
 K. FREEMAN, *Australian National University*;  
 B. PACZYNSKI, *Princeton University*; D. STINEBRING,  
*Princeton University*; J. TAYLOR, *Princeton  
 University*

April 20  
 Gender Seminar: "U.S. Family Policy  
 Legislation in the 1980s" · s  
 YASMINE ERGAS, *School of Social Science, IAS*

April 21  
 Luncheon Seminar: "A sheaf of souls:  
 Phillipine reinterpretations" · s  
 JEAN-PAUL DUMONT, *School of Social Science, IAS*

April 22  
 IAS-Princeton University Lunchtime Seminar:  
 "Verlindemagic and modular geometry" · N  
 GREGORY MOORE, *School of Natural Sciences, IAS*

April 25  
 Theoretical Physics Seminar: "Coset  
 construction of chiral algebras" · N  
 JONATHAN BAGGER, *Harvard University*

April 26  
 Astrophysics Seminar Luncheon · N  
 H. DEJONGHE, *School of Natural Sciences, IAS*;  
 J. GUNN, *Princeton University*; C. LAWRENCE,  
*California Institute of Technology*; E. TURNER,  
*Princeton University*; A. YAHIL, *Columbia University*

April 27  
 Seminar: "The IBM parallel computer GF11" · N  
 JAMES SEXTON, *School of Natural Sciences, IAS*

May 3  
 Partial Differential Equations Seminar: "Regularity  
 theory for non-linear wave equations, I" · M  
 JALAL SHATAH, *School of Mathematics, IAS*

May 4  
 Gender Seminar: "Reflections on the  
 Gender Year" · s  
 DAVID GORDON, *School of Social Science, IAS*

May 5  
 Luncheon Seminar: "French feminists  
 and the rights of 'Man'" · s  
 JOAN SCOTT, *Professor, School of Social Science, IAS*

May 5 and 6  
 Gender Seminar: Roundtable meeting on  
 reproductive technologies with editors of the new  
 journal *Differences* [Brown University  
 Pembroke Center for Teaching and Research on  
 Women] and authors of papers for  
 its first issue · s

May 6  
 Partial Differential Equations Seminar:  
 "Regularity theory for non-linear wave  
 equations, II" · M  
 JALAL SHATAH, *School of Mathematics, IAS*

IAS-Princeton University Lunchtime Seminar:  
 "3-D quantum gravity: scattering on a cone" · N  
 STANLEY DESER, *Brandeis University*

May 9  
 Theoretical Physics Seminar: "Soliton  
 condensation and superconductivity" · N  
 T.D. LEE, *Columbia University*

May 10

Special Seminar: "A renormalization group approach to turbulence" · M

VICTOR YAKHOT, *Princeton University*

Astrophysics Seminar

ROALD SUNYAEV, *Space Research Institute, Moscow, USSR*

Astrophysics Seminar Luncheon · N

D. SPERGEL, *School of Natural Sciences, IAS*;

M. WEINBERG, *School of Natural Sciences, IAS*;

M. MILGROM, *Weizmann Institute of Science*;

R. SUNYAEV, *Space Research Institute, Moscow*;

J. TAYLOR, *Princeton University*; S. TREMAINE,

*California Institute of Technology*

May 13

Partial Differential Equations Seminar:

"Iterative methods for multi-constrained variational problems in plasma physics" · M

JOEL SPRUCK, *School of Mathematics, IAS*

May 17

Astrophysics Seminar Luncheon · N

S. BECKWITH, *Cornell University*; L. BLITZ,

*University of Maryland*; C. PILTCHER, *Princeton*

*University*; T. PIRAN, *Hebrew University*; W. PRESS,

*Harvard University*; D. WEINBERG, *Princeton*

*University*

May 18

Gender Seminar: "Can There Be a Feminist Ethnography?" · S

LILA ABU-LUGHOD, *School of Social Science, IAS*

May 19

IAS-Princeton University Special Seminar:

"Continuum strings from discrete field theories" · N

I. KLEBANOV and L. SUSSKIND, *Stanford University*

May 19 and 20

Conference: Seventh Biennial Meeting of AMIAS [Association of Members of the Institute for Advanced Study]

"Harold Cherniss and the history of ancient philosophy"

LEONARDO TARN, *Columbia University*

"Tesselation and symmetry in mathematics and design"

PAUL SALLY, *University of Chicago*

"Some new connections between physics and geometry"

EDWARD WITTEN, *Professor, School of Natural Sciences, IAS*

May 20

Partial Differential Equations Seminar:

"Geometric maximum principle in nonlinear elliptic PDE [new estimates and applications]" · M

ILYA J. BAKELMAN, *School of Mathematics, IAS*

IxvAS-Princeton University Lunchtime

Seminar: "Neural networks and the super Yang Mills equations over

Riemann surfaces" · N

GEORGE CHAPLINE, *Lawrence Livermore National Laboratory*

May 23

Theoretical Physics Seminar: "Knot theory and statistical mechanics" · N

V. JONES, *University of California, Berkeley*

May 25

Gender Seminar: "The Body Politic" · S

CARROLL SMITH-ROSENBERG, *School of Social Science, IAS*

May 26

Members Seminar: "Hopf's ergodic decomposition in Banach lattices" · M

RADU ZAHAROPOL, *School of Mathematics, IAS*

May 31

Astrophysics Seminar Luncheon · N

P. HUT, *Professor, School of Natural Sciences,*

*IAS*; T. LAUER, *Princeton University*; E. TURNER,

*Princeton University*; T. WILLIAMS, *Rutgers*

*University*

June 3

IAS-Princeton University Lunchtime Seminar:

"The Hagedorn transition and the number of fundamental degrees of freedom in string theory" · N

EDWARD WITTEN, *Professor, School of Natural Sciences, IAS*

June 7  
 Astrophysics Seminar Luncheon · N  
 B. DRAINE, *Princeton University*; R. KULSRUD,  
*Plasma Physics Lab*; B. PACZYNSKI, *Princeton*  
*University*

June 28-30  
 Conference · S  
 "Women's Studies research: Critical  
 issues—past, present and future"  
 Convener: JOAN SCOTT, *Professor, School of*  
*Social Science, IAS*

In addition, the following lectures at the  
 Institute were arranged by the Princeton  
 Society of the Archaeological Institute  
 of America.

October 21  
 Lecture: "Rome's spice trade with the East"  
 STEVEN E. SIDEBOTHAM, *University of Delaware*

November 11  
 Lecture: "The mysterious Muses"  
 BRUNILDE RIDGWAY, *Bryn Maur College*

December 9  
 Lecture: "Harpies: good or bad?"  
 LILLY KAHIL, *University of Fribourg*

February 10  
 Lecture: "The archaeology of the Taurus  
 mountains, Turkey: silver and tin in antiquity"  
 K. ASLIHAN YENER, *Metropolitan Museum of Art*

March 9  
 Lecture: "Mothers and children in the art of  
 ancient Italy"  
 LARISSA BONFANTE, *New York University*

April 13  
 Homer and Dorothy Thompson Lecture:  
 "Homeric and Dorotheic Athens"  
 EMILY TOWNSEND VERMEULE, *Harvard University*

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## RECORD OF EVENTS

*Academic Year 1988–89*

What follows is a calendar of events sponsored by the Schools of Historical Studies, Mathematics, Natural Sciences and Social Science and by the Director's Office

July 5

Special Mathematics Seminar [Clavius Group]:  
"A p-adic analogue of the Gauss-Bonnet  
formula" · M

RICHARD FREIJE, *Boston University*

July 6

Special Mathematics Seminar [Clavius Group]:  
"Dupin submanifolds in Lie sphere  
geometry" · M

THOMAS CECIL, *Holy Cross College*

July 10

Special Mathematics Seminar [Clavius Group]:  
"Curvature of submanifolds" · M

LESLIE COGHLAN, *University of Alabama*

July 11

Special Mathematics Seminar [Clavius Group]:  
"Curvature of submanifolds" [Conclusion] · M

LESLIE COGHLAN, *University of Alabama*

Special Mathematics Seminar [Clavius Group]:  
"Gauge theory constructions of mapping  
class groups" · M

EDWARD WITTEN, *Professor, School of Natural  
Sciences, IAS*

July 13

Special Mathematics Seminar [Clavius Group]:  
"Hyperbolic leaves of foliations" · M

LAWRENCE CONLON, *Washington University,  
St. Louis*

Special Mathematics Seminar [Clavius Group]:  
"Piecewise-circular curves" · M

THOMAS F. BANCHOFF, *Brown University*

July 14

Special Mathematics Seminar [Clavius Group]:  
"Triple points of stable surfaces in  
3-manifolds" · M

LESLIE COGHLAN, *University of Alabama*

Special Mathematics Seminar [Clavius Group]:  
"Geometric entropy of foliations" · M

PAWEL WALCZAK, *University of Lodz, Poland*

July 20

Special Mathematics Seminar [Clavius Group]:  
"Some formalities regarding the path integral  
approach to knot invariants" · M

SCOTT AXELROD, *Princeton University*

July 25

Special Mathematics Seminar [Clavius Group]:  
"Exact solutions of the Dirac equation in N  
dimensions with a Coulomb potential" · M

MAURICE WONG, *Fairfield University*

Special Mathematics Seminar [Clavius Group]:  
"Some formalities regarding the path integral  
approach to knot invariants" [conclusion] · M

SCOTT AXELROD, *Princeton University*

July 27

Special Mathematics Seminar [Clavius Group]:  
"The contribution to mathematics of Girolamo  
Saccheri" · M

JOSEPH MACDONNELL, *Fairfield University*

July 28

Special Mathematics Seminar [Clavius Group]:  
"Non-theorems: a new approach to the old  
problem of effective decidability in the first  
order predicate calculus" · M

GERD DÖBEN, *University of Munich*

Special Mathematics Seminar [Clavius Group]:  
"Structure constants in Lie algebras = computer  
methods" · M

JOHN KURTZKE, *University of Portland*

September 13

Theoretical Physics Seminar:  
"Moving away from the critical point" · N

V. DOTSENKO, *Landau Institute of Theoretical  
Physics, Moscow*; and

"Bethe-Ansatz calculation of finite size effects"  
V. BAZHANOV, *IHEP*

September 14

Theoretical Physics Seminar: "New non-renormalization theorem for  $N=1$  supersymmetric theories" · N

V. NOVIKOV, ITEP; and  
"Superconformal Geometry"  
A. ROSLY, ITEP

September 16

Partial Differential Equations Seminar:  
"On a conjecture of Dahlberg and harmonic measure" · M

ROBERT FEFFERMAN, *University of Chicago*

October 3

Theoretical Physics Seminar: "Quantum field theory and the Jones polynomial" · N

EDWARD WITTEN, *Professor, School of Natural Sciences, IAS*

Dynamical Systems Seminar: "On the dynamics of the Hénon map [survey]" · M

LENNART CARLESON, *School of Mathematics, IAS*

Members Seminar: "A polynomial identity arising in the study of the Virasoro algebra and conformal fields" · M

ROBERT LANGLANDS, *Professor, School of Mathematics, IAS*

October 4

Representation Theory of p-adic Groups:  
"Structure of admissible representations of p-adic groups" · M

PHILIP KUTZKO, *School of Mathematics, IAS*

Partial Differential Equations Seminar:  
"Existence of solutions to semilinear equations" · M

YANYAN LI, *Princeton University*

October 5

Lecture: "Rome and the Seleucids from the Khabur to the Tigris: an archaeological perspective" · H

DAVID OATES, *British Archaeological Expedition to Tell Brak*

Number Theory: "Frobenius maps of Abelian varieties and finding roots of unity in finite fields" · M

JONATHAN PILA, *School of Mathematics, IAS*

October 6

Art History Colloquium: "Temi figurativi e novellistici del Boccaccio fra autunno del Medioevo e Rinascimento" · H

VITTORE BRANCA, *School of Historical Studies, IAS*

October 7

Partial Differential Equations Seminar:  
Existence of solutions to semilinear equations" · M

YANYAN LI, *Princeton University*

Lunchtime Seminar: "What happens when the weak interactions become strong?" · N

JONATHAN ROSNER, *School of Natural Sciences, IAS*

October 10

Dynamical Systems Seminar: "Branched coverings of  $S^2$  and piecewise linear maps on trees" · M

MITSUHIRO SHISHIKURA, *School of Mathematics, IAS*

Members Seminar: "T-equivariant K-theory of flag varieties" · M

SHRAWAN KUMAR, *School of Mathematics, IAS*

October 11

Seminar on Lie Groups and Quadratic Forms:  
"Values of indefinite quadratic forms at integral points" · M

ARMAND BOREL, *Professor, School of Mathematics, IAS*

Seminar on Representation Theory of p-adic Groups:  
"Structure of admissible representations of  $GL_N$ : open compact subgroups and hereditary orders" · M

COLIN BUSHNELL, *School of Mathematics, IAS*

October 12

Special Partial Differential Equations Seminar:  
"Renormalization group for turbulence" [continued] · M

VICTOR YAKHOT, *Princeton University*

Ethnicity Seminar: Planning meeting · S  
MICHAEL WALZER, *Professor, School of Social Science, IAS*



October 13

Special Partial Differential Equations Seminar:  
 “Renormalization group for turbulence”  
 [continued] · M  
 VICTOR YAKHOT, *Princeton University*

Luncheon Seminar: “The new pluralism in  
 American religion and its sociology” · s  
 R. STEPHEN WARNER, *School of Social Science, IAS*

October 14

Partial Differential Equations Seminar: “The  
 least action principle for generalized flows in  
 incompressible fluids” · M  
 YANN BRENIER, *Institut National de Recherche en  
 Informatique et en Automatique, Le Chesnay,  
 France*

October 17

Dynamical Systems Seminar: “Distortion of  
 S-unimodal maps: an overview” · M  
 STEWART JOHNSON, *School of Mathematics, IAS*

Members Seminar: “Kähler–Einstein metrics  
 with positive scalar curvature” · M  
 GANG TIAN, *School of Mathematics, IAS*

Theoretical Physics Seminar:  
 “Global cosmic strings” · N  
 PIERRE SIKIVIE, *University of Florida*

October 18

Seminar on Lie Groups and Quadratic Forms:  
 “Values of indefinite quadratic forms at integral  
 points” [continued] · M  
 ARMAND BOREL, *Professor, School of Mathematics,  
 IAS*

Seminar on Representation Theory of p-adic  
 Groups: “Structure of admissible representations  
 of  $GL_N$ : open compact subgroups  
 and hereditary orders” [continued] · M  
 PHILIP KUTZKO, *School of Mathematics, IAS*

Partial Differential Equations Seminar · M  
 RICHARD M. SCHOEN, *Stanford University*

October 19

Number Theory Seminar: “p-adic Galois  
 representations” · M  
 GERD FALTINGS, *School of Mathematics, IAS*

October 20

Dynamical Systems Seminar: “Feigenbaum  
 Cantor sets: a priori bounds” · M  
 DENNIS SULLIVAN, *City University of New York*

Dynamical Systems Seminar:  
 “Strange attractors for Hénon maps” · M  
 LENNART CARLESON, *School of Mathematics, IAS*

Luncheon Seminar: “The world of the  
 born-again teledandals” · s  
 SUSAN F. HARDING, *School of Social Science, IAS*

October 21

Partial Differential Equations Seminar · M  
 RICHARD SCHOEN, *Stanford University*

Lunchtime Seminar: “Extended superconformal  
 algebras of string compactification on manifolds  
 of  $SU(N)$  holonomy” · N  
 HIROSHI OOGURI, *School of Natural Sciences, IAS*

October 24

Dynamical Systems Seminar: “Recent results on  
 the boundaries of Siegel singular discs” · M  
 MICHAEL HERMAN, *School of Mathematics, IAS*

Members Seminar: “The Langlands–Rapaport  
 conjecture for the points on Siegel modular  
 varieties” · M  
 JAMES MILNE, *School of Mathematics, IAS*

October 25

Seminar on Lie Groups and Quadratic Forms:  
 “Values of indefinite quadratic forms at integral  
 points” [continued] · M  
 ARMAND BOREL, *Professor, School of Mathematics,  
 IAS*

Seminar on Representation Theory of p-adic  
 Groups: “Structure of admissible representations  
 of  $GL_N$ : open compact subgroups and  
 hereditary orders” [continued] · M  
 PHILIP KUTZKO, *School of Mathematics, IAS*

October 26

Medievalist Seminar: “The Virgilization of  
 ‘Ovid’ and Boethius: mythographic exegesis in  
 the early Middle Ages” · H  
 JANE CHANCE, *School of Historical Studies, IAS*



Number Theory Seminar: "Sums over primes of Fourier coefficients of half-integral weight forms" · M

WILLIAM DUKE, *Rutgers University*

Partial Differential Equations Seminar: "Nonlinear waves for compressible Navier-Stokes and Euler equations" · M

TAI-PING LIU, *Courant Institute*

Ethnicity Seminar: Discussion of papers by Timothy Smith and Martha Minow · S

MICHAEL WALZER, *Professor, School of Social Science, IAS*

October 27

Concert: A concert of classical music by the Chamber Music Society of Lincoln Center · D

Luncheon Seminar: "Fact and fiction in the anthropology of America's northwest coast" · S

ISABELLE SCHULTE-TENCKHOFF, *School of Social Science, IAS*

Dynamical Systems Seminar: "Strange attractors for Hénon maps" [continued] · M

LENNART CARLESON, *School of Mathematics, IAS*

Dynamical Systems Seminar: "Feigenbaum Cantor sets: q.c.--conjugacy and geometric stability" · M

DENNIS SULLIVAN, *City University of New York*

October 28

Partial Differential Equations Seminar: "Nonlinear waves for compressible Navier-Stokes and Euler equations" · M

TAI-PING LIU, *Courant Institute*

Trustees' Lecture: "Cautionary tales for scientists" · D

FREEMAN DYSON, *Professor, School of Natural Sciences, IAS*

October 31

Dynamical Systems Seminar: "Conjugacies between circle homeomorphisms" · M

GRZEGORZ SWIATEK, *School of Mathematics, IAS*

Theoretical Physics Seminar: "Closed string couplings that give the modular region" · N

BARTON ZWIEBACH, *Massachusetts Institute of Technology*

1988 Oppenheimer Lecture: "Newton and Einstein - a study in contrasts" · D

S. CHANDRASEKHAR, *Enrico Fermi Institute, University of Chicago*

November 1

Seminar on Lie Groups and Quadratic Forms: "Decomposition of the tensor product of two finite dimensional representations of a complex semi-simple Lie algebra" · M

SHRAWAN KUMAR, *School of Mathematics, IAS*

Seminar on Representation Theory of p-adic Groups: "Representations of Hecke algebras" · M

GEORGE LUSZTIG, *School of Mathematics, IAS*

November 2

Number Theory Seminar: "p-adic Galois representations" [continued] · M

GERD FALTINGS, *School of Mathematics, IAS*

Technical Lecture · N

S. CHANDRASEKHAR, *Enrico Fermi Institute, University of Chicago*

November 3

Dynamical Systems Seminar: "Strange attractors for Hénon maps" [continued] · M

LENNART CARLESON, *School of Mathematics, IAS*

Dynamical Systems Seminar: "Ergodic properties of particle motion in potential fields" · M

VICTOR DONNAY, *Princeton University*

Luncheon Seminar: "After the Mutiny on the Bounty was over: reflections on ethnographic history, or how could Clark Gable, Marlon Brando and Mel Gibson have been so wrong?" · S

GREGORY M. DENING, *School of Social Science, IAS*

November 4

Partial Differential Equations Seminar: "Stability properties of a critical point for an infinite dimensional Hamiltonian system" · M

MANOUSSOS GRILLAKIS, *School of Mathematics, IAS*

Lunchtime Seminar: "2+1 dimensional gravity as a gauge theory" · N

EDWARD WITTEN, *Professor, School of Natural Sciences, IAS*

November 7

Dynamical Systems Seminar: "Local complexity growth for iterations of real analytic mappings and semicontinuity moduli of the entropy" · M

YOSEF YOMDIN, *School of Mathematics, IAS*

Members Seminar: "Symmetry breaking for bifurcation problems with symmetry" · M

ROGER RICHARDSON, *School of Mathematics, IAS*

Theoretical Physics Seminar: "Some observations on compactification of superstrings" · N

JOHN SCHWARZ, *California Institute of Technology*

November 8

Seminar on Lie Groups and Quadratic Forms: "Decomposition of the tensor product of two finite dimensional representations of a complex semi-simple Lie algebra" [continued] · M

SHRAWAN KUMAR, *School of Mathematics, IAS*

Seminar on Representation Theory of p-adic Groups: "Representations of Hecke algebras" [continued] · M

GEORGE LUSZTIG, *School of Mathematics, IAS*

November 9

Medievalist Seminar: "The invention of royal ceremonial: Two examples from Castile" · H

PETER A. LINEHAN, *School of Historical Studies, IAS*

Ethnicity Seminar: Discussion of papers by Debray, Connor, and Lijphart · s

DAN HOROWITZ, *School of Social Science, IAS*

November 9 and 10

Number Theory Seminar: "Diophantine geometry" · M

PAUL VOJTA, *University of California, Berkeley*

November 10

Art History Colloquium: "La république des lettres: mythe, idée, ou réalité?" · H

MARC FUMAROLI, *School of Historical Studies, IAS*

Dynamical Systems Seminar: "Strange attractors for Hénon maps" [continued] · M

LENNART CARLESON, *School of Mathematics, IAS*

Luncheon Seminar: "Between philosophy and politics: democracy and the decentering of the subject" · s

CHANTAL MOUFFE, *School of Social Science, IAS*

November 14

Dynamical Systems Seminar: "Automorphisms of the one-sided three shift and the dynamics of cubic polynomials" · M

PAUL BLANCHARD, *School of Mathematics, IAS*

Members Seminar: "Quantitative symmetrization of convex bodies" · M

JORAM LINDENSTRAUSS, *School of Mathematics, IAS*

November 15

Seminar on Lie Groups and Quadratic Forms: "Representations of quantum groups" · M

GEORGE LUSZTIG, *School of Mathematics, IAS*

Seminar on Representation Theory of p-adic Groups: "Representations of Hecke algebras" [continued] · M

Special Seminar in Complex Analysis: "Multidimensional power-series, an informal talk" · M

LARS V. AHLFORS, *Harvard University*

November 16

Informal Seminar: "Rhetoric revisited and revalued" · H

MARC FUMAROLI, *School of Historical Studies, IAS*

Number Theory Seminar: "p-adic Galois representations" [continued] · M

GERD FALTINGS, *School of Mathematics, IAS*

Ethnicity Seminar: Discussion of papers by Bell, Hall, Omni and Winant, and Pizzorno · s

CHANTAL MOUFFE, *School of Social Science, IAS*; and  
MICHAEL WALZER, *Professor, School of Social Science, IAS*

November 17

Luncheon Seminar: "The historical origins of U.S. industrial success" · s

GAVIN WRIGHT, *School of Social Science, IAS*

Dynamical Systems Seminar: "Strange attractors for Hénon maps, informal discussion" · M  
LENNART CARLESON, *School of Mathematics, IAS*

Dynamical Systems Seminar: "Homoclinic tangencies: concurrent creation and annihilation of periodic orbits" · M  
ITTAI KAN, *University of Maryland, Institute for Physical Science and Technology*

November 18  
Lunchtime Seminar: "[Super]-field theories from [super]-twistors" · N  
SORIN SOLOMON, *The Weizmann Institute*

November 21  
Dynamical Systems Seminar: "Classification of  $SU(2)$ -cocycles over an irrational rotation and renormalization" · M  
MAREK RYCHLIK, *School of Mathematics, IAS*

Special Seminar on Construction of L Functions: "L functions for  $G_2$ " [continued] · M  
STEPHEN RALLIS, *Ohio State University*

November 22  
Medievalist Seminar: "Oral contraceptives and early abortifacients in the Middle Ages" · H  
JOHN M. RIDDLE, *School of Historical Studies, IAS*

Special Seminar on Construction of L Functions: "L functions for  $G_2$ " · M  
I. PIATETSKI-SHAPIO, *Yale University*

Seminar on Representation Theory of p-adic Groups: "Unitary criterion for p-adic groups" · M  
ALLEN MOY, *Rutgers University*

November 23  
Number Theory Seminar: "The number of integral points on ovals" · M  
ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

November 28  
Dynamical Systems Seminar: "Families of diffeomorphisms of the two-torus" · M  
JOHN GUCKENHEIMER, *School of Mathematics, IAS*

Members Seminar: "Jacobi, Virasoro and Kac-Moody actions on an infinite Grassmannian" · M  
MOTOHICO MULASE, *School of Mathematics, IAS*

November 29  
Seminar on Lie Groups and Quadratic Forms: "Decomposition of the tensor product of two finite dimensional representations of a complex semi-simple Lie algebra" [continued] · M  
SHRAWAN KUMAR, *School of Mathematics, IAS*

Seminar on Representation Theory of p-adic Groups: " $GL_N$  in the composite case, an introduction" · M  
PHILIP KUTZKO, *School of Mathematics, IAS*

Partial Differential Equations Seminar: "Viscosity solution methods for regularity of variational inequalities" · M  
ROBERT JENSEN, *Loyola University of Chicago*

November 30  
Number Theory Seminar: "p-adic Galois representations" [continued] · M  
GERD FALTINGS, *School of Mathematics, IAS*

December 1  
Art History Colloquium: "The Bellini, the Vivarini and the beginnings of the Renaissance altarpiece in Venice" · H  
PETER B. HUMFREY, *School of Historical Studies, IAS*

Luncheon Seminar: "Generality and relativism in legal theory" · S  
WILLIAM EWALD, *School of Social Science, IAS*

Dynamical Systems Seminar: "Periodic and quasi-periodic solutions for non-linear wave equations via KAM theory" · M  
EUGENE WAYNE, *Pennsylvania State University*

Dynamical Systems Seminar: "Boundaries of Siegel singular domains" · M  
MICHAEL HERMAN, *School of Mathematics, IAS*

December 2  
Lunchtime Seminar: "Orbifolds and rational conformal field theory" · N  
ROBERT DIJKGRAAF, *University of Utrecht*

Partial Differential Equations Seminar:  
 "Viscosity solution methods for regularity of  
 variational inequalities" [continued] · M  
 ROBERT JENSEN, *Loyola University*

Seminar: "p-adic cohomology"  
 [technical lecture] · M  
 GERD FALTINGS, *School of Mathematics, IAS*

Informal Seminar: "Inertial manifolds for  
 partial differential equations"  
 GEORGE SELL, *University of Minnesota*

December 5

Informal Seminar: "Report from Rome: San  
 Lorenzo in Damaso – A fourth-century church  
 rediscovered" · H  
 RICHARD KRAUTHEIMER, *School of Historical  
 Studies, IAS*

Dynamical Systems Seminar: "Species of  
 conformal dynamical systems" · M  
 CURT MCMULLEN, *Princeton University*

December 5, 7, 8

The Twelfth Marston Morse Lectures:  
 "Holomorphic surgery" · M  
 ADRIEN DOUADY, *Ecole Normale Supérieure, Paris*

December 6

Medievalist Seminar: "Merchant writers  
 in the late Middle Ages" · H  
 VITTORE BRANCA, *School of Historical Studies, IAS*

Partial Differential Equations Seminar:  
 "Global regularity of Navier-Stokes in thin  
 three-dimensional domains" · M  
 GEORGE SELL, *University of Minnesota*

Seminar on Lie Groups and Quadratic Forms:  
 "Representations of quantum groups"  
 [continued] · M  
 GEORGE LUSZTIG, *School of Mathematics, IAS*

Seminar on Representation Theory of p-adic  
 Groups: "GL<sub>N</sub> in the composite case"  
 [continued] · M  
 PHILIP KUTZKO, *School of Mathematics, IAS*

December 7

Public Lecture: "Angry saints and kind  
 demons" · H  
 ARON J. GUREVICH, *Institute for General History,  
 Soviet Academy of Sciences*

Special Lecture: "Smooth representations of  
 Lie algebras and conformal fields" · M  
 A.A. BEILINSON, *Moscow*

Ethnicity Seminar: Discussion of Benedict  
 Anderson, *Imagined Communities: Reflections on  
 the Origin and Spread of Nationalism* · S  
 JEAN LECA, *School of Social Science, IAS*

December 8

Dynamical Systems Seminar: "Boundaries of  
 Siegel singular domains" [continued] · M  
 MICHAEL HERMAN, *School of Mathematics, IAS*

Special Seminar: "On Polylogarithms" · M  
 DON ZAGIER, *University of Maryland*

Dynamical Systems Seminar: "Tableaux and  
 Julia sets of cubic polynomials" · M  
 JOHN H. HUBBARD, *Cornell University*

Luncheon Seminar: "On disciplinary strategies  
 and the labor market: Argentine rural society  
 between 1820 and 1860" · S  
 RICARDO SALVATORE, *School of Social Science, IAS*

December 9

Informal Seminar: "Recent developments in  
 Soviet medieval historiography" · H  
 ARON J. GUREVICH, *Institute for General History,  
 Soviet Academy of Sciences*

Theoretical Particle Physics Seminar:  
 "Global string dynamics" · N  
 T. VACHASPATI, *DAMTP, Cambridge*

Special Seminar: "On Polylogarithms".  
 DON ZAGIER, *University of Maryland* · M

Partial Differential Equations Seminar:  
 "Global regularity of Navier-Stokes in thin  
 three-dimensional domains" · M  
 GEORGE SELL, *University of Minnesota*



December 12

Dynamical Systems Seminar: "Rotation vectors and entropy for diffeomorphisms of the torus" · M

ROBERT MACKAY, *University of Warwick*; and  
"Boundaries of Siegel singular domains"  
[continued] · M

MICHAEL HERMAN, *School of Mathematics, IAS*

Members Seminar: "Volume and entropy in spaces of large dimension; some unexpected phenomena" · M

VITALI MILMAN, *School of Mathematics, IAS*

December 13

Seminar on Representation Theory of p-adic Groups: "Representations of division algebras" · M

LARRY CORWIN, *Rutgers University*

Theoretical Physics Seminar: "Algebraic geometry and effective Lagrangians" · N

EMIL MARTINEC, *University of Chicago*

Seminar on Lie Groups and Quadratic Forms: "Irreducible components of the variety of unstable vectors" · M

ROGER RICHARDSON, *School of Mathematics, IAS*

December 14

Ethnicity Seminar: Discussion of Carl Schmitt, The Concept of the Political · S

WILLIAM EWALD, *School of Social Science, IAS*

December 15

Art History Colloquium: "Saints and Jews: patronage, hagiography and anti-Semitism in the stained glass of Saint Dié [Vosges]" · H

MEREDITH P. LILICH, *School of Historical Studies, IAS*

Luncheon Seminar: "Isn't there anything out there we can all agree upon? The quest for cultural consensus in anthropology and history" · S

JAMES W. FERNANDEZ, *School of Social Science, IAS*

December 16

Lunchtime Seminar: "Overrelaxed algorithms for lattice gauge theory" · N

FRANK BROWN, *Columbia University*

December 19

Theoretical Physics Seminar: "Two dimensional theory space and Stochastic quantization of strings" · N

G. MANDAL, *Tata Institute*

Special Seminar: "A geometrical approach to the theory of representations of finitely generated groups" · M

VLADIMIR PLATONOV, *Institute of Mathematics of the Soviet Academy of Sciences*

December 20

Seminar on Representation Theory of p-adic Groups: "Representations of division algebras" [continued] · M

LARRY CORWIN, *Rutgers University*

January 9

Dynamical Systems Seminar: "Localization for quasi-periodic Schrödinger in one dimension" · M

YA SINAI, *Soviet Academy of Sciences*

Dynamical Systems Seminar: · M

MIKHAIL YAKOBSON, *University of Maryland*

January 11

Medievalist Seminar: "Classes and guilds in late medieval Germany" · H

STEVEN W. ROWAN, *School of Historical Studies, IAS*

Ethnicity Seminar: "Demographic nationalism in Western Europe, 1870-1960" · S

SUSAN COTT WATKINS, *University of Pennsylvania*

January 12

Luncheon Seminar: "Piety, secularism, socialism—on religion and working-class formation in imperial Germany, 1871-1914" · S

WILFRIED SPOHN, *School of Social Science, IAS*

Dynamical Systems Seminar: "Quantum chaos and double Weyl's trigonometric sums" · M

YA SINAI, *Soviet Academy of Sciences*

January 13

Dynamical Systems Seminar: "Straddle orbits: finding trajectories on chaotic saddles" · M

JAMES YORKE, *University of Maryland*

January 16

Members Seminar: "Free Field representation of minimal conformal field theories" · M  
GIOVANNI FELDER, *School of Mathematics*, IAS

January 17

Art History Colloquium: "The patronage of Doge Andrea Dandolo: How art made history in fourteenth-century Venice" · H  
DEBRA PINCUS, *School of Historical Studies*, IAS

Seminar on Representation Theory of p-adic Groups: "Representations of division algebras" [continued] · M  
LARRY CORWIN, *Rutgers University*

January 19

Luncheon Seminar: "History beyond social theory" · s  
LYNN HUNT, *School of Social Science*, IAS

January 23

Dynamical Systems Seminar: "One-dimension Euler equations and Hamiltonian dynamics" · M  
YA SINAI, *U.S.S.R. Academy of Sciences*

January 24

Seminar on Locally Symmetric Varieties: " $\eta$ -invariants of arithmetic" · M  
MARK STERN, *School of Mathematics*, IAS

January 25

Ethnicity Seminar: "Nation and universe" · s  
MICHAEL WALZER, *Professor, School of Social Science*, IAS

Number Theory: "An introduction to diophantine approximation" · M  
ENRICO BOMBIERI, *Professor, School of Mathematics*, IAS

January 26

Luncheon Seminar: "A critique of philosophical conversation" · s  
MICHAEL WALZER, *Professor, School of Social Science*, IAS

January 27

Lunchtime Seminar: "Duality of fields and sources in conformal field theory" · N  
MICHAEL BERSHADSKY, *School of Natural Sciences*, IAS

January 30

Dynamical Systems Seminar: "Rotation sets for torus maps" · M  
MICHAEL MISIUREWICZ, *School of Mathematics*, IAS

Members Seminar: "The Lifschetz trace formula for an open algebraic surface" · M  
THOMAS F. ZINK, *School of Mathematics*, IAS

January 31

Medievalist Seminar: "Papal policy and jurisdiction in cases of academic orthodoxy: 1100-1400" · H  
WILLIAM J. COURTENAY, *School of Historical Studies*, IAS

Seminar on Locally Symmetric Varieties: " $\eta$ -invariants of arithmetic varieties" [continued] · M  
MARK STERN, *School of Mathematics*, IAS

February 1

Number Theory Seminar: "Geometry of numbers over the adeles" · M  
ENRICO BOMBIERI, *Professor, School of Mathematics*, IAS

Seminar on Representation Theory of p-adic Groups: "Supercuspidal representations induced from normalizers of parahoric subgroups" · M  
LAWRENCE MORRIS, *School of Mathematics*, IAS

February 2

Luncheon Seminar: "Work in progress: the cold war in history, fiction and everyday life" · s  
FRED INGLIS, *School of Social Science*, IAS

February 3

Number Theory Seminar: "An introduction to diophantine approximation" [continued] · M  
ENRICO BOMBIERI, *Professor, School of Mathematics*, IAS

February 6

Theoretical Physics Seminar: "Corners in Calabi-Yau moduli space" · N  
RYAN ROHM, *Boston University*  
Dynamical Systems Seminar: "Destruction of invariant curves" · M  
JOHN MATHER, *Princeton University*



Members Seminar: "Instantons, Platonic solids and the geometry of the nilpotent variety" · M  
PETER KRONHEIMER, *School of Mathematics, IAS*

February 7

Seminar on Locally Symmetric Varieties: "Invariants and Sato-Shintani zeta-functions" · M  
MARK STERN, *School of Mathematics, IAS*

February 8

Seminar on Representation Theory of p-adic Groups: "Tamely ramified supercuspidal representations for the classical groups" · M  
LAWRENCE MORRIS, *School of Mathematics, IAS*

Number Theory Seminar: "Dyson's theorem in diophantine approximations" · M  
ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

Ethnicity Seminar: "The national question in Poland and the Soviet Union" · S  
EWA MORAWSKA, *School of Social Science, IAS*

February 9

Luncheon Seminar: "History in crisis? The others' side of the story" · S  
JOAN W. SCOTT, *Professor, School of Social Science, IAS*

Art History Colloquium: "Paradox and enigma in Danhomè art" · H  
SUZANNE BLIER, *School of Historical Studies, IAS*

February 10

Lunchtime Seminar: "Gauge theories and integrable lattice models" · N  
EDWARD WITTEN, *Professor, School of Natural Sciences, IAS*

Number Theory Seminar: "An introduction to deophantine approximation" [continued] · M  
ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

February 13

Dynamical Systems Seminar: "Topological pressure, principal eigenvalues and growth rates of solution for parabolic equations with small parameters" · M  
YURI KIFER, *School of Mathematics, IAS*

February 14

Medievalist Seminar: "What did monasticism mean to medieval man?" · H  
LUDO J.R. MILIS, *School of Historical Studies, IAS*

Seminar on Locally Symmetric Varieties [continued]: "A Lefschetz theorem for Hecke operators" · M  
MARK STERN, *School of Mathematics, IAS*

Members Seminar: "The traveling salesman problem and related problems in harmonic analysis" · M  
PETER JONES, *School of Mathematics, IAS*

Special Seminar: "Geometry and potential theory on Lie groups" · M  
N. VAROPOULOS, *University of Paris VI*

February 15

Number Theory Seminar: "Heights and intersections on arithmetic surfaces" · M  
D. THAKUR, *School of Mathematics, IAS*

February 16

Luncheon Seminar: "Sacred monarchy, regicide, and the boundaries of legitimacy" · S  
LOYD MOOTE, *School of Historical Studies, IAS*

Dynamical Systems Seminar: "Minimal action orbits" · M  
JOHN MATHER, *School of Mathematics, IAS*

February 17

Number Theory Seminar: "An introduction to diophantine approximation" [continued] · M  
ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

February 20

Theoretical Physics Seminar: "Catastrophes, spectral flow and coset models" · N  
CUMRUN VAFA, *Harvard University*

Dynamical Systems Seminar: "New invariant manifolds and foliations and applications to rigidity" · M  
R. DE LA LLAVE, *School of Mathematics, IAS*

February 21

Members Seminar: "Symmetric decreasing rearrangement is discontinuous in  $W_1P(\mathbb{R}^1)$ " · M  
ELLIOTT LIEB, *School of Mathematics, IAS*

February 22

Seminar on Representation Theory of p-adic Groups: "Iteration of the arithmetic-geometric mean and complex multiplication" · M  
GUY HENNIART, *School of Mathematics, IAS*

Number Theory Seminar: "Calculus on arithmetic surfaces" · M  
MICHAEL LARSEN, *School of Mathematics, IAS*

Number Theory Seminar: "The elementary theory of heights" · M  
ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

Ethnicity Seminar: "State, community and communal conflicts in deeply divided societies" · S  
DAN HOROWITZ, *School of Social Science, IAS*

February 23

Dynamical Systems Seminar: "Use of Peierls Barrier" · M  
JOHN MATHER, *Princeton University*

Luncheon Seminar: "Democratic citizenship in France—two hundred years later: expanding or crumbling?" · S  
JEAN LECA, *School of Social Science, IAS*

February 24

Number Theory Seminar: "An introduction to diophantine approximation" [continued] · M  
ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

February 27

Dynamical Systems Seminar: "Chaotic flows and magnetic dynamoes" · M  
E. OTT, *School of Mathematics, IAS*

Members Seminar: "On Whittaker vectors for complex semisimple Lie groups" · M  
H. MATUMOTO, *School of Mathematics, IAS*

February 28

Medievalist Seminar: "Joachim of Fiore" · H  
ROBERT LERNER, *School of Historical Studies, IAS*

Seminar on Locally Symmetric Varieties: " $\eta$ -invariants and Selberg zeta functions" · M  
H. MOSCOVICI, *School of Mathematics, IAS*

March 1

Seminar on Representation Theory of p-adic Groups: "Recent results on the admissible dual of  $GL_N$ " · M  
P.C. KUTZKO, *School of Mathematics, IAS*

Number Theory Seminar: "The local theory of heights" · M  
ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

Number Theory Seminar: "Calculus on arithmetic surfaces" · M  
M. LARSEN, *School of Mathematics, IAS*

March 2

Luncheon Seminar: "Comparative economic history: the cases of Spain, Italy, and Portugal in the nineteenth- and early twentieth-centuries" · S  
GABRIEL TORTELLA, *School of Historical Studies, IAS*

Art History Colloquium: "Wall painting and the politics of narrative in twelfth-century France" · H  
MARCIA KUPFER, *School of Historical Studies, IAS*

March 3

Number Theory Seminar: "An introduction to diophantine approximation" [continued] · M  
ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

Mathematical Physics Seminar: "Rounding of first order transitions for systems with quenched disorder" · M  
J. WEHR, *Rutgers University*

March 6

Theoretical Physics Seminar: "Commensurate-incommensurate phase transitions in the chiral Potts model" · N  
BARRY MCCOY, *Institute for Theoretical Physics, Stony Brook*

Dynamical Systems Seminar: “Generically surface diffeomorphisms have hyperbolic attractors”. M

R. MANE, *School of Mathematics, IAS*

March 8

Seminar on Representation Theory of p-adic Groups: “Recent results on the admissible dual of  $GL_N$ ”. M

COLIN BUSHNELL, *School of Mathematics, IAS*

Number Theory Seminar: “Calculus on arithmetic surfaces” [continued]. M

MICHAEL LARSEN, *School of Mathematics, IAS*

Ethnicity Seminar: Discussion of Bernard Williams, *Morality: An Introduction to Ethics*. S

WILLIAM EWALD, *School of Social Science, IAS*

March 9

Luncheon Seminar: “Possession and exorcism in early modern Europe: a cultural history of demons”. S

STUART CLARK, *School of Historical Studies, IAS*

Special Seminar [Partial Differential Equations]: “Qualitative properties of solutions to non-linear P.D.E.’s and applications”. M

HENRI BERESTYCKI, *University of Paris VI*

March 10

Lunchtime Seminar: “Higher spin particles in background fields”. N

CHIARA NAPPI, *School of Natural Sciences, IAS*

Special Lecture: “Homer, *Iliad*: a war poem”. H

BERNARD M. W. KNOX, *Center for Hellenic Studies*

Number Theory Seminar: “An introduction to diophantine approximation” [continued]. M

ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

Special Dynamical Systems Seminar: “Ergodic properties of a one dimensional system of balls with gravity”. M

M. WOJTKOWSKI, *University of Arizona*

March 13

Dynamical Systems Seminar: “Symbolic dynamics for expanding maps”. M

DAVID RUELE, *Institut des Hautes Etudes, Bures-sur-Yvette*

Members Seminar: “Automorphic representations and Lefschetz numbers”. M

BIRGIT SPEH, *School of Mathematics, IAS*

March 14

Medievalist Seminar: “Periodization of Arabic science: problems of methodology”. H

GEORGE SALIBA, *School of Historical Studies, IAS*

Seminar on Locally Symmetric Varieties:

“Quasiprojectivity of complete Kähler manifolds of negative Ricci curvature and finite volume”. M

ALAN NADEL, *School of Mathematics, IAS*

Special Dynamical Systems Seminar:

“Rotation sets for the Torus and Annulus”. M

JOHN FRANKS, *Northwestern University*

March 15

Seminar on Representation Theory of p-adic Groups: “Recent results on the admissible dual of  $GL_N$ ”. M

PHILIP KUTZKO, *School of Mathematics, IAS*

Number Theory Seminar:

“The arithmetic of elliptic curves”. M

KARL RUBIN, *Ohio State University*

March 16

Luncheon Seminar: “Apocalypse postponed: reconsidering Indonesia”. S

DON EMMERSON, *School of Social Sciences, IAS*

Special Number Theory Seminar: “The arithmetic of elliptic curves” [continued]. M

KARL RUBIN, *Ohio State University*

March 17

Number Theory Seminar: “An introduction to diophantine approximation” [continued]. M

ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

March 20

Special Lecture: "Fluctuations and coevolution in the dynamics of viral diseases" · D

SIMON A. LEVIN, *Director's Visitor, Cornell University*

Theoretical Physics Seminar: "An effective theory of P and T violating superconductors" · N

ANTHONY ZEE, *Institute for Theoretical Physics, Santa Barbara*

Dynamical Systems Seminar:

"The rotation set for a homeomorphism of the annulus is closed" · M

M. HANDEL, *Lehman College, City University of New York*

Members Seminar: "Semisimplicity of the biholomorphism group of the universal cover of an algebraic variety with  $C_1 < 0$ " · M

ALAN NADEL, *School of Mathematics, IAS*

March 21

Theoretical Physics Seminar:

"A definition of math" · N

LEV OKUN, *Institute of Experimental & Theoretical Physics, Moscow*

Seminar on Locally Symmetric Varieties:

"Quasiprojectivity of complete Kähler manifolds of negative Ricci curvature and finite volume" [continued] · M

ALAN NADEL, *School of Mathematics, IAS*

Supermanifold Theory Seminar:

"A course on supermanifold theory" · M

DIMITRY LEITES, *School of Mathematics, IAS*

March 22

Special Lecture: "Scale as an ecological problem" · D

SIMON A. LEVIN, *Director's Visitor, Cornell University*

Seminar on Representation Theory of p-adic Groups: "Recent results on the admissible dual of  $GL_N$ " · M

PHILIP KUTZKO, *School of Mathematics, IAS*

Number Theory Seminar:

"An overview of Vojta's proof" · M

ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

Ethnicity Seminar: "Blasphemy, offensive speech and cultural pluralism" · S

MICHAEL WALZER, *Professor, School of Social Science, IAS*

March 23

Lunchtime Seminar: "Exact quantum scattering in  $2 + 1$  dimensional gravity" · N

STEVEN CARLIP, *School of Natural Sciences, IAS*

Luncheon Seminar:

"Capitalism vs. democracy yet again" · S

ALAN RYAN, *Princeton University*

Concert: "Concert of twentieth-century music" Continuum · D

March 27

Dynamical Systems Seminar: "Analytic conjugation of circle diffeomorphisms" · M

JEAN-CHRISTOPHE YOCCOZ, *University of Paris XI*

Special Seminar: "p-adic quantum mechanics and representation theory" · M

IGOR VOLOVICH, *University of North Carolina*

Members Seminar: "Analysis on CR manifolds" · M

JOSEPH KOHN, *School of Mathematics, IAS*

March 28

Medievalist Seminar: "Grundfragen des mittelalterlichen kirchlichen Prozessrechts" · H

KNUT NÖRR, *School of Historical Studies, IAS*

Seminar on Locally Symmetric Varieties:

" $L^2$ -index and representation theory" · M

J.P. LABESSE, *University of Dijon, France*

March 29

Special Seminar: "p-adic strings" · M

IGOR VOLOVICH, *School of Mathematics, IAS*

Seminar on Representation Theory of p-adic Groups: "Recent results on the admissible dual of  $GL_N$ " [continued] · M

PHILIP KUTZKO and COLIN BUSHNELL, *School of Mathematics, IAS*



Number Theory Seminar: “An overview of  
Vojta’s proof” [conclusion] · M

ENRICO BOMBIERI, *Professor, School of  
Mathematics, IAS*

March 30

Luncheon Seminar: Insecure prosperity:  
Jews in small-town industrial America,  
1880-1940” · S

EWA MORAWSKA, *School of Social Science, IAS*

March 31

Special Seminar: “Analytic torsion of  
Koszul complexes” · N

EZRA GETZLER, *Harvard University*

April 3

Theoretical Physics Seminar: “Implications of  
experiment for the theory of high temperature  
superconductivity” · N

VICTOR EMERY, *Brookhaven National Laboratory*

Dynamical Systems Seminar:

“Rational maps of degree two” · M

MARY REES, *School of Mathematics, IAS*

Members Seminar: “Line geometry,  
differential equations and the birth of Lie’s  
Theory of Groups” · M

THOMAS HAWKINS, *School of Mathematics, IAS*

April 4

Supermanifold Theory Seminar:

“A Course on supermanifold theory” · M

DIMITRY LEITES, *School of Mathematics, IAS*

Ethnicity Seminar: “Sociology and  
historiography of immigration” · S

EWA MORAWSKA, *School of Social Science, IAS*

April 6

Luncheon Seminar: “From riot to rebellion:  
ethnic and political crisis in Chiapas,  
1685-1720” · S

MURDO J. MACLEOD, *School of  
Historical Studies, IAS*

April 7

Lunchtime Seminar: “Renormalization group  
flows in G/H conformal theories from flows in  
WZW models” · N

NORMAN REDLICH, *School of Natural Sciences, IAS*

April 10

Dynamical Systems Seminar: “Random  
perturbations and invariant measures for  
one-dimensional maps” · M

MICHAEL BENEDICKS, *School of Mathematics, IAS*

April 11

Supermanifold Theory Seminar:

“A Course on supermanifold theory” · M

DIMITRY LEITES, *School of Mathematics, IAS*

April 12

Number Theory Seminar:

“First steps in Vojta’s proof” · M

ENRICO BOMBIERI, *Professor, School of  
Mathematics, IAS*

April 13

Luncheon Seminar: “Remaking politics:  
citizenship and race in Britain and the  
United States” · S

MARGARET WEIR, *School of Social Science, IAS*

April 14

Number Theory Seminar: “An introduction to  
diophantine approximation” [continued] · M

ENRICO BOMBIERI, *Professor, School of Mathematics,  
IAS*

April 17

Theoretical Physics Seminar:

“Quantum gravity in two dimensions” · N

J. POLCHINSKI, *University of Texas*

Dynamical Systems Seminar: “Towards  
universality in one-dimensional dynamics” · M

GRZEGORZ SWIATEK, *School of Mathematics, IAS*

April 19

Number Theory Seminar:

“Vojta’s proof” [continued] · M

ENRICO BOMBIERI, *Professor, School of  
Mathematics, IAS*

April 21

Lunchtime Seminar: “The cluster expansion for  
wormholes, the large wormhole problem and  
Newton’s constant” · N

S.P. DE ALWIS, *School of Natural Sciences, IAS*

Number Theory Seminar: "An introduction to diophantine approximation" [continued] · M  
 ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

April 26  
 Special Seminar: "Coefficient problems for univalent functions" · M  
 PETER JONES, *School of Mathematics, IAS*

Number Theory Seminar: "Vojta's proof" [conclusion] · M  
 ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

Ethnicity Seminar: "From equal opportunity to 'The New Social Contract': Race and politics of the American 'underclass'" · S  
 MARGARET WEIR, *School of Social Science, IAS*

April 27  
 Luncheon Seminar: "Niccolo Machiavelli and Paternosters" · S  
 SEBASTIAN DE GRAZIA, *Rutgers University*

April 28  
 Special Seminar: "Dupin submanifolds" · M  
 SHIING S. CHERN, *University of California, Berkeley*

Number Theory Seminar: "An introduction to diophantine approximation" [conclusion] · M  
 ENRICO BOMBIERI, *Professor, School of Mathematics, IAS*

May 5  
 Lunchtime Seminar: "Nonunitarity in rational conformal field theory" · N  
 JOANNE COHN, *School of Natural Sciences, IAS*

Trustees' Lecture: "The magic of four dimensions" · D  
 EDWARD WITTEN, *Professor, School of Natural*

May 9  
 Ethnicity Seminar: Discussion of readings displaying a range of "abortion rhetorics" · S  
 SUSAN HARDING, *School of Social Science, IAS*

May 10  
 Special Mathematics Seminar: "Arithmetic ampleness" · M  
 C. SOULÉ, *Harvard University*

May 15  
 Theoretical Physics Seminar: "Quantum mechanics of the googolplexus" · N  
 W. FISCHLER, *University of Texas*

Concert: Performance by The Princeton Baroque Ensemble · D

May 17  
 Theoretical Physics Seminar: "The dual of the Aharonov-Bohm effect" · N  
 JEEVA ANANDAN, *University of South Carolina*

May 18  
 Ethnicity Seminar: "Young Arabs, young Moslems, Young 'Beurs' or What? The unfinished quest of Rachid and Farida" · S  
 JEAN LECA, *School of Social Science, IAS*

May 19  
 Lunchtime Seminar: "The visual cortex and neural networks: an overview" · N  
 JOSEPH J. ATICK, *School of Natural Sciences, IAS*



In addition, the following lectures at the Institute were arranged by the Princeton Society of the Archaeological Institute of America.

October 12

Lecture: "Greek and Roman artistry in ivory"

ANDREW OLIVER [*Thompson Lecturer*], *Director, Museum Programs, National Endowment for the Arts, Washington, D.C.*

November 9

Lecture: "A lidded Dinos in Princeton by Syriskos and the Syriskos Painter".

ROBERT GUY, *Princeton University Museum*

December 14

Lecture: "Thera and the beginnings of Mycenaean civilization"

SPYROS IAKOVIDIS, *University of Pennsylvania*

February 8

Lecture: "Herakles and the gigantomachy: Athens and Pergamon"

GLORIA FERRARI PINNEY, *Bryn Maur College*

March 8

Lecture: "The reception of Greek art in the Black Sea area"

JAN BOUZEK, [*Norton Lecturer*], *Charles University, Prague*

April 12

Lecture: "The Philistines"

ROBERT R. STEIGLITZ, *Rutgers University, New Brunswick, New Jersey*

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