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Foreword

On March 18–20, 1996, the Mathematics Department of Princeton University held a conference entitled "Prospects in Mathematics" as part of the University's 250th anniversary celebration. These were the invited speakers and the titles of their lectures:

Gerd Faltings, Max-Planck Institüt für Mathematik, "What Do We Know About Diophantine Equations?"

Jürg Fröhlich, Eidgenössische Technische Hochschule Zürich (ETH), "The Electron Is Inexhaustible"

Michael Gromov, Institut des Hautes Études Scientifiques and the University of Maryland, "Qualitative Homotopy Theory"

Richard Hamilton, University of California, San Diego, "Nonlinear Parabolic Partial Differential Equations"

Ehud Hrushovski, Hebrew University of Jerusalem, "Model Theory and Geometry"

Henryk Iwaniec, Rutgers University, "Harmonic Analysis in Number Theory"

Robert Langlands, Institute for Advanced Study, Princeton, "Where Stands Functoriality Today?"

Dusa McDuff, State University of New York at Stony Brook, "Symplectic Topology and Capacities"

John Milnor, State University of New York at Stony Brook, "Growing Up in Old Fine Hall"

Jürgen Moser, ETH, Zürich, "Minimal Foliations in Geometry and Dynamics"

Yum-Tong Siu, Harvard University, "Recent Developments in Several Complex Variables"

Donald C. Spencer, Professor Emeritus, Princeton University, "Old Memories and an Old Problem"

Michael Struwe, ETH, Zürich, "Nonlinear Evolution Problems in Geometry and Physics"

Clifford Taubes, Harvard University, "Geometric Aspects of the Seiberg–Witten Invariants"

Ed Witten, Institute for Advanced Study, Princeton, "Small Instantons in String Theory"

Thomas Wolff, California Institute of Technology, "Combinatorial Questions in L^p Harmonic Analysis"

The invited speakers were asked to present their perspective and views on future developments on their chosen topics. In selecting the list the Organizing Committee did not intend to cover all of the basic parts of mathematics, but rather to choose subjects more or less related to the interests of people in the Department.

As a result of this strategy, we had several dominant themes: geometry (M. Gromov, D. McDuff, C. Taubes, J. Moser), nonlinear partial differential equations (R. Hamilton, M. Struwe), number theory (R. Langlands, H. Iwaniec, G. Faltings), and mathematical physics (J. Fröhlich, E. Witten)and three talks representative of specific significant developments during the past half century (E. Hrushovski, Y.-T. Siu, T. Wolff). The talks by D. Spencer and J. Milnor consisted in large part of reminiscences of their years in Princeton.

We were very fortunate that H. Rossi took on the great task of preparing texts based on videotapes and editing the texts which were sent by the speakers. The Organizing Committee expresses its deep gratitude to H. Rossi for his great help. We also thank the Committee Secretary K. Khanin, the graduate students, the staff and all members of the department who assisted us in preparing and organizing the conference.

The Organizing Committee:

William Browder
Steven Klainerman
Peter Sarnak
Yakov Sinai (Chair)
Elias Stein