

International Centre for Theoretical Physics

*P.A.M. Dirac Medals
Presentation Ceremony*



19 November 1993

P.A.M. Dirac Medals

The Dirac Medals of the International Centre for Theoretical Physics were instituted in 1985. These are awarded yearly to outstanding physicists, on Dirac's birthday - 8th August - for contributions to theoretical physics.

The Selection Committee includes Professors S. Lundqvist, Y. Nambu, J. Schwinger, E. Witten, S. Weinberg and Abdus Salam. The Dirac Medals are not awarded to Nobel Laureates or Wolf Foundation Prize winners.

P.A.M. Dirac (1902 - 1984)

Paul Adrien Maurice Dirac was born in Bristol in 1902. He studied engineering in his hometown, and obtained his degree in physics and mathematics at Cambridge University where he became professor in mathematics in 1932 in the Lucasian chair which was once of Sir Isaac Newton. After his retirement, Professor Dirac went to live in Tallahassee, Florida, where he taught at the University from 1971 until his death in 1984. A Member of the Royal Society since 1930, he won the Royal Medal in 1939 and the Copley Medal in 1952. He shared the Nobel Prize for Physics with E. Schrödinger in 1933.

Professor Dirac was an honoured guest and a staunch friend of the International Centre for Theoretical Physics in Trieste.

DIRAC MEDALISTS

- 1985 Professor Yakov Zeldovich
(Institute for Space Research, Moscow, Russia)
Professor Edward Witten
(Princeton University, USA)
- 1986 Professor Yoichiro Nambu
(Enrico Fermi Institute for Nuclear Studies, Chicago, USA)
Professor Alexander Polyakov
(Landau Institute for Theoretical Physics, Moscow, Russia)
- 1987 Professor Bryce DeWitt
(University of Texas at Austin, USA)
Professor Bruno Zumino
(University of California at Berkeley, USA)
- 1988 Professor David J. Gross
(Princeton University, New Jersey, USA)
Professor Efim Samoilovich Fradkin
(Lebedev Physical Institute, Moscow, Russia)
- 1989 Professor Michael B. Green
(Queen Mary College, University of London, UK)
Professor John H. Schwarz
(California Institute of Technology, USA)
- 1990 Professor Ludwig Dmitriyevich Faddeev
(Steklov Mathematical Institute, Leningrad, Russia)
Professor Sidney Richard Coleman
(Harvard University, Cambridge, Massachusetts, USA)
- 1991 Professor Stanley Mandelstam
(University of California, Berkeley, USA)
Professor Jeffrey Goldstone
(Massachusetts Institute of Technology, Cambridge, USA)
- 1992 Professor N.N. Bogolubov (posthumously)
(formerly of the Joint Institute for Nuclear Research, Moscow, Russia)
Professor Yakov G. Sinai
(Landau Institute of Theoretical Physics, Moscow, Russia)
- 1993 Professor Daniel Z. Freedman
(Department of Mathematics, MIT, Cambridge)
Professor Sergio Ferrara
(Theory Division, CERN, Geneva)
Professor Peter van Nieuwenhuizen
(Department of Physics, SUNY, Stony Brook)

Dirac Medal 1993

Daniel Z. Freedman

Professor Daniel Z. Freedman is honoured:

"for the discovery of supergravity theory and research in its subsequent development. Prior to his work in supergravity, he made significant contributions to the S matrix theory, discovering the so-called daughter trajectories. In the spring of 1976, in a seminal paper with Sergio Ferrara and Peter van Nieuwenhuizen, the first supergravity theory was proposed. This theory combines, in a non-trivial fashion, the spin 2 graviton with a spin 3/2 particle called the gravitino to elevate supersymmetry to a local gauge symmetry. This led to an explosion of interest in quantum gravity and it transformed the subject, playing a significant role in very important developments in string theory as well as Kaluza-Klein theory. Professor Freedman played a major role in the development of the subject, with his studies on the quantization of supergravity theories, coupling of supergravity to matter - in particular the introduction of Yang-Mills gauge coupling to supergravity. Currently any grand unified theory incorporating gravity is based on a supergravity theory coupled to matter in four dimensions. These theories emerge most naturally from the compactifications of the ten dimensional heterotic string. Professor Freedman also made essential contributions to the understanding of the ultraviolet properties of supersymmetric sigma models in two dimensions, especially those on Kahler manifolds. Such models, which include the Calabi-Yau sigma models, currently play a central role in the study of superstring compactifications."

Professor Daniel Z. Freedman was born in 1939 at Hartford, Connecticut. He obtained his Ph.D. from the University of Wisconsin in 1964. Professor Freedman held postdoctoral positions at Imperial College in London (1964-1965), the University of California at Berkeley (1965-1967) and the Institute for Advanced Study at Princeton (1967-

1968). He was Assistant Professor (1968-1970), Associate Professor (1970-1975) and Professor (1968-1980) at the State University of New York at Stony Brook. He was Visiting Member at the Institute for Advanced Study at Princeton in 1973 and 1987. In 1974 and in 1985 he was Professeur d'Exchange at the Ecole Normale Supérieure in Paris. He is presently Professor of Applied Mathematics at MIT. Professor Freedman is a Fellow of the American Physical Society and Fellow of the American Academy of Arts and Sciences. He is the author of many scientific works on the theory of elementary particles and their interactions, particularly as related to the theory of gravitation.

The other 1993 Dirac Medals will be awarded to Prof. S. Ferrara on 19 April 1994 and to Prof. P. van Nieuwenhuizen in July 1994.