

PROCEEDINGS OF THE NINTH NATIONAL SYMPOSIUM ON FRONTIERS IN PHYSICS

28-30 JANUARY 2003

Editors:

G. MURTAZA

N.A.D. KHATAK

H. A. SHAH

Sponsors:

Pakistan Atomic Energy Commission

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Dr. A. Q. Khan Research Laboratories

Higher Education Commission

Government College University, Lahore.



PAKISTAN PHYSICAL SOCIETY
GOVERNMENT COLLEGE UNIVERSITY
LAHORE



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PREFACE

It is a pleasure to announce the publication of the proceedings of the **Ninth National Symposium on Frontiers in Physics** held from **28-30, 2003** on the premises of Government College University, Lahore. These Proceedings cover a wide spectrum of Physics such as Condensed Matter Physics, Nuclear and High Energy Physics, Laser, Atomic & Molecular Physics, Quantum Optics/Lasers, Plasma Physics and Cosmology. Unfortunately some of the speakers were not able to prepare their write-ups for the proceedings or have already published them elsewhere.

The aim of this symposium as of the others in the series was to bring the physics community of Pakistan together so as to share knowledge about the latest developments in different areas of physics as well as information on one's personal research achievements. The Symposium was attended by over 200 registered participants from all over Pakistan representing several universities and R&D organizations. Invited lectures were delivered by eminent physicists of the country. Seminars highlighting research contributions by individual physicists were also given.

We take this opportunity to thank the sponsors of the Symposium – Pakistan Atomic Energy Commission, National Engineering & Scientific Commission, Dr. A.Q. Khan Research Laboratories, Higher Education Commission and Government College University, Lahore, without whose generous support this academic activity would not have been possible. We also acknowledge contributions from various private enterprises.

This is the second time that the Symposium on Frontiers in Physics has been held outside Islamabad and we are thankful to the Vice Chancellor Dr. Khalid Atab for making it possible here at Government College University, Lahore.

G. Murtaza
Salam Professor of **Physics**
Govt. College University
Lahore.

N.A.D Khattak
Department of Physics
Gomal University
D.I. Khan

Hassan A. Shah
Professor & Chairman
Department of Physics
Govt. College University
Lahore.

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