

PHYSICS
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CONTEMPORARY
NEEDS

— VOLUME 4 —

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— VOLUME 4 —

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PREFACE

These proceedings cover the lectures delivered at the Fourth International Summer College on Physics and Contemporary Needs held from June 16 - July 4, 1979 at Nathiagali, one of the scenic hill resorts in the northern part of Pakistan. The college was organised by Pakistan Atomic Energy Commission (PAEC) and co-sponsored by the International Centre for Theoretical Physics, Trieste (ICTP), Italy. It also received a financial grant from the University Grants Commission for the participation of physicists from various universities of Pakistan. The college was attended by 16 lecturers and invited seminar speakers. It was attended by 186 participants from 28 countries and consisted of 15 concentrated days of lectures, seminars and informal discussions. These proceedings contain only regular lectures delivered at Nathiagali but the seminars held there are listed in the Appendix.

This year the college put special emphasis on various energy systems, including their long term implications, and computer software. However, the lectures delivered at the college also covered a wide spectrum of physics. The series of the colleges of which the present college is the fourth one are an attempt to remove the barrier of isolation for the physicists working in developing countries, far removed from active centres of research. Thus these colleges could help to fill the important gap in communication between the physicists of developing and advanced countries. It is hoped that the colleges would help the cause of science and would stimulate research in some areas relevant to the needs of society.

The success of the college is due in large part to the lecturers who gave an excellent presentation of the material covered in their respective lectures, to the participants who took enthusiastic interest in the lectures and discussions, to the local organizing committee who worked very hard and in spite of the remoteness of Nathiagali tried to make the stay of the participants both enjoyable and useful, and above all to Mr. Munir Ahmad Khan, Chairman, Pakistan Atomic Energy Commission who took very keen personal interest in making the college a success. We are deeply grateful to many other persons too numerous to mention who helped us in the

organising of this college.

The volume is divided into four parts. Part I covers Physics, Energy and Natural Resources, with lectures on Nuclear Energy in Developing Countries, Nuclear Safety, Nuclear Fusion, Solar Energy conversion, Energy Systems and Nuclear Waste Characteristics. Part II covers Physics and Technology with lectures on Photovoltaics, Amorphous Materials and Materials for Nuclear Power Reactors. Part III contains lectures on Computer Software, Information Retrieval Systems and Numerical Studies. Finally Part IV covers Physics and Frontiers of Knowledge with lectures on Atomic and Molecular Spectroscopy, Experimental Gravitation and Recent Trends in Particle Physics.

In bringing out the proceedings of the college our sincere thanks go to Professor Fayyazuddin, Dr. M. Aslam and Mr. Sajjad Mahmood, who helped in various ways. Thanks are also due to Mr. Azhar Hussain for excellent art work and to Mr. S. U. Khan who did a very good job in typing the manuscript.

Riazuddin

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G.Duchossois*
C.W.F.Everitt
Sinzi Kuwabara
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S.Leschiutta*
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F.H.Read
Riazuddin
J.F.Sadoc
K.Smith
C.Wettrich

*Their lectures could not be included in these proceedings.

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