

FOREWORD

There has been a revival in nuclear physics studies using low/medium energy heavy ion beams. This interest has come about with the possibility of carrying out measurements involving channels with low probabilities. With the advent of new techniques in ion beam production and particle/photon detection it is now possible to carry out exclusive measurements of rare/exotic nuclear processes with relative ease though they were earlier considered to be rare and difficult to study. Such studies demand sophisticated instrumentation and devices which need continuous upgradation and more importantly new design concepts. Therefore, it is important to periodically review the current trends and future directions in this field. With this objective, an International Workshop on Rare Nuclear Processes in Low Energy Heavy Ion Physics (IWRNP-98) was held at Nuclear Science Centre (NSC)*, New Delhi, India from November 16–20, 1998.

At IWRNP-98, there were about one hundred participants from India and abroad who presented the results of their latest research work in the frontier areas of nuclear physics. This workshop provided an opportunity to the participants to exchange ideas related to the present achievements and future plans spanning experimental facilities, experimental plans and theoretical approaches.

In his welcome address, Prof. G K Mehta, Director, NSC made introductory remarks about the accelerator and the associated experimental facilities including the accelerator upgradation programme of the Centre. Prof. V S Ramamurthy of the Department of Science and Technology, New Delhi inaugurated the Workshop and Dr. S S Kapoor of Bhabha Atomic Research Centre, Mumbai delivered the keynote address on “Emerging Frontiers in Heavy Ion Nuclear Physics” thereby setting the tone of the Workshop. The programme consisted of 23 invited talks and several contributed papers in the form of short talks and posters. Dr. S Kailas and Prof. S C Pancholi summarised the talks and discussions.

This proceedings consists of invited talks and refereed contributed papers. We thank all the experts who agreed to be referees in spite of their tight schedule and also did a wonderful job of evaluation in a short time.

We are grateful to Prof. G K Mehta for his guidance, encouragement and continuous support in organising this International Workshop. We thank the distinguished members of the International Advisory Committee for their valuable suggestions and recommendations which helped immensely in the finalisation of the programme. Apart from the University Grants Commission (through Nuclear Science Centre), the financial support for organising the Workshop was provided by the Department of Science and Technology (Govt. of India, New Delhi), Board of Research in Nuclear Sciences (Dept. of Atomic Energy, Govt. of India, Mumbai), Council of Scientific and Industrial Research (New Delhi) and Indian National Science Academy (New Delhi). The talks were held at the auditorium of International Centre for Genetic Engineering and Biotechnology (ICGEB).

Keen interest of Prof. H R Krishnamurthy, Prof. Rohini M Godbole and Dr. S Kailas in our efforts to have the proceedings of the Workshop published in *Pramana* in the form of a special issue is very much appreciated. The editorial office of *Pramana* rendered immense help in organising electronic mail transmission/acceptance of the manuscripts and proofs, etc.

Dr. P B Tripathi needs special mention for his help in getting necessary approvals and completion of visa formalities for foreign participants. In addition to the local organising

committee members, help received from N J Jose, Ms Neelaveni, Maurya, Prakash and Rajpal Sharma (all from NSC) is acknowledged.

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* About NSC: (<http://www.nsc.ernet.in>)

Nuclear Science Centre, an Inter-University research centre of University Grants Commission (UGC), provides front-ranking experimental facilities for University users to carry out accelerator based research. The centre is equipped with a 15 MV Tandem accelerator and experimental facilities such as Recoil Mass Spectrometer and Gamma and Charged Particle Detector Arrays for nuclear physics studies. A low energy RIB facility has been made operational recently. There is an ongoing process to augment the energy and beam intensity by building a Superconducting LINAC and a high current injector using ECR source. Among future experimental facilities, a Hybrid Recoil Mass Spectrometer and a Large Gamma Detector Array are planned.