

Preface

This report covers the research program, which was carried out mainly in the year 2001 extending into 2002. A major activity of the community is, however, not covered by this report. In November of 2001 GSI submitted a proposal for “An International Accelerator Facility for Beams of Ions and Antiprotons”. The whole staff at GSI, research, technical and administrative and our collaborators were committed to write this proposal. As a result five major topics emerged, which will constitute the basis of future research at GSI. These topics are:

- Research with Rare-Isotope Beams- Nuclei far from stability
- Research with antiprotons – Hadron spectroscopy and hadronic matter
- Nucleus-Nucleus collisions at High Energy
- Ion beam and Laser beam induced plasmas – High energy density in matter
- From Fundamentals to applications – Quantum Electrodynamics, strong fields, and ion matter interactions

The report was reviewed by the Wissenschaftsrat and received very favourable judgement. One of the above listed topics is our field of research into High Energy Density Physics with intense ion and laser beams. This combination of laser and ion beams will for a long time only be available at GSI. Yet another major accelerator laboratory is ready to take up High Energy Density Plasma Physics as a major topic with the planned X- FEL (x-ray free electron laser) at DESY, Hamburg.

The PHELIX laser facility at GSI has made good progress and is nearing completion. While this report goes into press the final parts originating from the NOVA laser at LLNL are on their way to the final destination at GSI and will be integrated into the system soon.

A new collaboration with the Weizmann Institute has been taken up within the framework of a German Israeli Project cooperation on future oriented topics to investigate plasmas under pulsed energy deposition. In this cooperation GSI, TU-Darmstadt, the University of Jena and the Weizmann Institute perform common experiments and exchange scientists.

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