Liesen

Physics with Multiply Charged Ions

Multiply charged ions have always been in the focus of atomic physics, astrophysics, plasma physics, and theoretical physics. Within the last few years, strong progress has been achieved in the development of ion sources, ion storage rings, ion traps, and methods to cool ions. As a consequence, nowadays, experiments with ensembles of multiply charged ions of brilliant quality are performed in many laboratories. The broad spectrum of the experiments demonstrates that these ions are an extremely versatile tool for investigations in pure and applied physics. It was the aim of this ASI to bring together scientists working in different fields of research with multiply charged ions in order to get an overview of the state of the art, to sound out possibilities for fruitful cooperations, and to discuss perspectives for the future. Accordingly, the programme of the ASI reached from established areas like QED calculations, weak interactions, x-ray astronomy, x-ray lasers, multi photon excitation, heavy-ion induced fusion, and ion-surface interactions up to the very recently opened areas like bound-beta decay, laser and x-ray spectroscopy, and spectrometry of ions in rings and traps, and the interaction of highly charged ions with biological cells. Impressive progress in nearly all of the fields could be reported during the meeting which is documented by the contributions to this volume. The theoretical understand ing of QED and correlation effects in few-electron heavy ions is rapidly developing.

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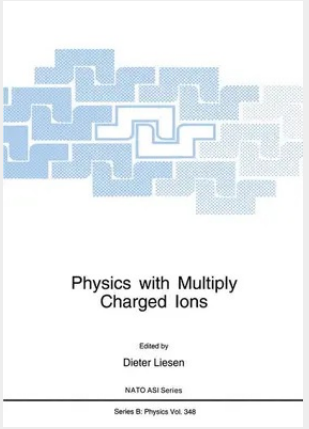

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