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D. Berényi G. Hock (Eds.)

High-Energy Ion-Atom Collisions

Proceedings of the 4th Workshop on
High-Energy Ion-Atom Collision Processes
Held in Debrecen, Hungary, 17–19 September 1990



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Preface

This is the fourth workshop on high-energy ion-atom collision processes organized by the Institute of Nuclear Research of the Hungarian Academy of Sciences (*ATOMKI*) in Debrecen. (The proceedings of the former (third) workshop were also published by Springer-Verlag: Lecture Notes in Physics, Vol. **294**, 1988.)

According to the philosophy of the workshop, invited surveys (two, in general) are given on the most topical subjects, and these are selected with the help of the international advisory committee of the workshop. The surveys are followed in the individual sessions by pertinent contributions (mostly in poster form) on recent results.

Here, the following topics were selected and treated as separate sessions:

- electron capture and loss (including ionization)
- double electron and resonance processes
- electron correlation and post collision interaction effects
- collisions of antiparticles with atoms, etc.

Additionally, a *keynote talk* launched the workshop and a '*hot topics*' session and *concluding remarks* ended it.

In these proceedings, the invited surveys are included together with the relevant invited contributions. In certain cases, other (so-called *poster*) contributions are also included, at the referees' suggestion. The grouping of articles follows the sessions of the workshop. On the first page of each session, the titles and authors of the other contributions not published in the proceedings are additionally listed. All the *abstracts* of the contributions to the workshop (surveys, invited and other contributions) are published as an issue of *ATOMKI Report 1990/1*. This report has been distributed as usual and is still available. Of course, both the keynote talk and the concluding remarks are included in these proceedings.

Debrecen,
31 October 1990

D. Berényi
G. Hock

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Opening

Chairman: J.M. HANSTEEN

W e l c o m e by D. BERÉNYI, Director of the Institute,
Vice-President of the Hung. Acad. Sci.

Keynote: I.A. SELLIN
Newly Appreciated Roles for Electrons in
Ion-Atom Collisions