

Preface

With the rapidly increasing interest in complex plasmas many books and reviews on different aspects of this growing field have been published. However, no review or book dedicated to the kinetics of complex plasmas and associated processes is available; this book is a modest attempt to present the basic aspects of electron emission from and electron/ion accretion on the surface of dust particles and the kinetics of complex plasmas, illustrated by a few typical applications.

Over the years, the approach to the kinetics has changed from mere charge balance on the dust particles to include the number and energy balance of the constituents, size distribution of dust, quantum effects in emission from and accretion of electrons on the dust particles, statistical mechanics considerations, nonlinear interaction with electric, electromagnetic field, etc. Effort has been made in the book to introduce the readers to the contemporary concepts.

In a book like this some omissions of significant work are inevitable, for which sincere apologies are in order. As far as possible the presentation is based on charge balance on the particles and number/energy balance of the constituents.

The book should be of use to researchers, engineers, and graduate students.

Comments are welcome.

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<http://www.springer.com/978-81-322-1819-7>

Kinetics of Complex Plasmas

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2014, XIX, 298 p. 101 illus., Hardcover

ISBN: 978-81-322-1819-7