
Preface

Precision studies of simple atomic and molecular systems are a multidisciplinary field in modern physics. They massively involve methods and objects from very different areas of physics.

Experimental methods vary from laser spectroscopy to accelerator physics, from laboratory desktop-scale experiments to space missions. On the theoretical side they deal with methods of molecular, atomic, nuclear, and particle physics.

The specific feature of this area is that the simple atoms and molecules are not the object of the studies, but a powerful instrument to look into the deepest and most basic problems of physics. The most advanced precision measurements allow us to see various tiny effects, while the atomic simplicity provides us with the possibility of keeping the atomic details under control and looking into a substantially more fundamental level.

Simple atoms and molecules provide us with a good opportunity to measure fundamental constants, to look for possible violation of basic symmetries, to study properties of elementary particles and nuclei.

This book is based on extended review lectures from two recent international meetings on simple atoms and presents the most recent progress in the field. I am grateful to Claudio Lenz Cesar, Jochen Walz, and Theodor W. Hänsch, who were co-organizers of these meetings (Mangaratiba, 2004, and Venice, 2006) and made great efforts to make these meetings happen, and to many other colleagues, whose help in organizing the meetings was important.

Precision Physics of Simple Atoms and Molecules

Karshenboim, S.G. (Ed.)

2008, XIV, 286 p., Hardcover

ISBN: 978-3-540-75478-7