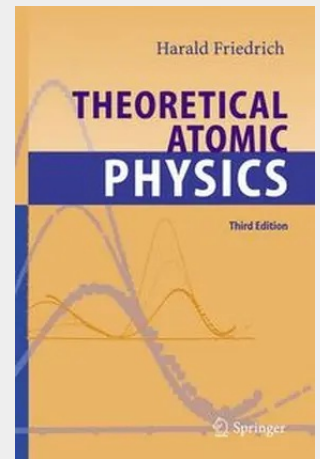


Theoretical Atomic Physics

level, and a good understanding of the links to classical mechanics is almost always helpful. The aim of Theoretical Atomic Physics remains to provide the reader with a solid foundation of this sort of advanced quantum mechanics. In preparing the third edition I have again tried to do justice to the rapid development of the field. I have included references to important new work whenever this seemed appropriate and easy to do. Chapter 1 now includes a section on processes involving (wave packets of) continuum states and also an expanded treatment of the semiclassical approximation. Chapter 3 begins with a section illuminating the characteristic differences in the near-threshold properties of long-ranged and shorter-ranged potentials, and the first section of Chap. 4 contains a more elaborate discussion of scattering lengths. As a further "special topic" in Chap. 5 there is a section describing some aspects of atom optics, including discussions of the interactions of atoms with material surfaces and with light fields.

The appendix on special mathematical functions has been slightly expanded to accommodate a few results that I repeatedly found to be useful. I am grateful to many colleagues who continue to inspire me with numerous discussions involving atomic physics, quantum mechanics and semiclassical connections, in particular Robin Coté at the University of Connecticut, Manfred Kleber at the Technical University Munich and Jan-Michael Rost at the Max-Planck-Institute for Complex Systems in Dresden.



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