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Nota di contenuto	Review of Quantum Mechanics -- Atoms and Ions -- Atomic Spectra -- Simple Reactions -- Special Topics -- Appendix -- Solutions to the Problems -- Special Mathematical Functions.
Sommario/riassunto	This expanded and updated well-established textbook contains an advanced presentation of quantum mechanics adapted to the requirements of modern atomic physics. It includes topics of current interest such as semiclassical theory, chaos, atom optics and Bose-Einstein condensation in atomic gases. In order to facilitate the consolidation of the material covered, various problems are included, together with complete solutions. The emphasis on theory enables the reader to appreciate the fundamental assumptions underlying standard theoretical constructs and to embark on independent research projects. The fourth edition of Theoretical Atomic Physics contains an updated treatment of the sections involving scattering theory and near-threshold phenomena manifest in the behaviour of cold atoms (and molecules). Special attention is given to the quantization of weakly bound states just below the continuum threshold and to low-energy

scattering and quantum reflection just above. Particular emphasis is laid on the fundamental differences between long-ranged Coulombic potentials and shorter-ranged potentials falling off faster than 1/r2 at large distances r. The new sections on tunable near-threshold Feshbach resonances and on scattering in two spatial dimensions also address problems relevant for current and future research in the field of cold (and ultra-cold) atoms. Graduate students and researchers will find this book a valuable resource and comprehensive reference alike.