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Nota di contenuto	and Outline -- Fourier Analysis -- The Basics of Quantum Mechanics -- The Electronic Schrödinger Equation -- Spectrum and Exponential Decay -- Existence and Decay of Mixed Derivatives -- Eigenfunction Expansions -- Convergence Rates and Complexity Bounds -- The Radial-Angular Decomposition.
Sommario/riassunto	The electronic Schrödinger equation describes the motion of N-electrons under Coulomb interaction forces in a field of clamped nuclei. The solutions of this equation, the electronic wave functions, depend on 3N variables, with three spatial dimensions for each electron. Approximating these solutions is thus inordinately challenging, and it is generally believed that a reduction to simplified models, such as those of the Hartree-Fock method or density functional theory, is the only tenable approach. This book seeks to show readers that this conventional wisdom need not be ironclad: the regularity of the solutions, which increases with the number of electrons, the decay behavior of their mixed derivatives, and the antisymmetry enforced by the Pauli principle contribute properties that allow these functions to be approximated with an order of complexity which comes arbitrarily close to that for a system of one or two electrons. The text is accessible to a mathematical audience at the beginning graduate level as well as to

physicists and theoretical chemists with a comparable mathematical background and requires no deeper knowledge of the theory of partial differential equations, functional analysis, or quantum theory.