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Sommario/riassunto	Based on the method of canonical transformation of variables and the classical perturbation theory, this innovative book treats the systematic theory of symplectic mappings for Hamiltonian systems and its application to the study of the dynamics and chaos of various physical problems described by Hamiltonian systems. It develops a new, mathematically-rigorous method to construct symplectic mappings which replaces the dynamics of continuous Hamiltonian systems by the discrete ones. Applications of the mapping methods encompass the chaos theory in non-twist and non-smooth dynamical systems, the structure and chaotic transport in the stochastic layer, the magnetic

field lines in magnetically confinement devices of plasmas, ray dynamics in waveguides, etc. The book is intended for postgraduate students and researches, physicists and astronomers working in the areas of plasma physics, hydrodynamics, celestial mechanics, dynamical astronomy, and accelerator physics. It should also be useful for applied mathematicians involved in analytical and numerical studies of dynamical systems.