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Soggetti	Nuclear physics Heavy ions Nuclear fusion Physics Atoms Nuclear Physics, Heavy Ions, Hadrons Nuclear Fusion Mathematical Methods in Physics Numerical and Computational Physics, Simulation Atomic, Molecular, Optical and Plasma Physics
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Nota di contenuto	Nucleon-nucleon interactions -- Microscopic theories of effective interaction with an application to halo nuclei -- Large no-core basis-space shell model calculations for light nuclei -- Order and disorder in the nuclear shell model -- Large scale shell model calculations: The physics in and the physics out -- Realistic shell-model calculations for Sn isotopes -- Shell model monte carlo methods -- Shell model for large systems and quantum monte carlo diagonalization method -- Shell-model applications in nuclear astrophysics -- Large scale continuum shell model calculations for photonuclear reactions with ? isobars and exchange currents -- Kerman-Klein method for nuclear structure: Accomplishments and opportunities -- Solving the nuclear

shell model with an algebraic method -- Challenges to microscopic theories of nuclear structure -- Projected shell model -- Relativistic mean field theory and applications in finite nuclei -- Some thoughts on the nuclear shell model -- Conventional shell model: Some issues.

Sommario/riassunto

This volume reports recent development in nuclear structure physics and closely related topics. Particularly, it centers on new methodologies and recent applications of the nuclear shell model such as quantum Monte Carlo methods, large-scale shell model calculations and microscopic theories of effective interactions. Each review focuses on one fundamental topic closely related to the nuclear shell model. Each topic is covered in sufficient depth and detail to be accessible to a wide audience including nuclear engineers and astrophysicists and those working in various fields of scientific computing and modelling.
