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Nota di contenuto	Preface -- Part I: Tools for a Microscopic Theory of the Nucleus -- Hartree-Fock-Bogoliubov Theory -- Matrix Elements of the Finite-Range Interaction -- The Generator Coordinate Method -- Part II: Application to Low-Energy Fission -- General Concepts -- Numerical Application to 240Pu Fission -- Summary and Outlook for Future Directions in Fission Theory -- Appendix A -- Appendix B -- Appendix C -- Appendix D -- Appendix E -- Appendix F -- Appendix G.
Sommario/riassunto	This book introduces a quantum-mechanical description of the nuclear fission process from an initial compound state to scission. Issues like the relevant degrees of freedom throughout the process, the way of coupling collective and intrinsic degrees during the fission process, and how a nucleus divides into two separate daughters in a quantum-mechanical description where its wave function can be non-local, are currently being investigated through a variety of theoretical,

computational, and experimental techniques. The term “microscopic” in this context refers to an approach that starts from protons, neutrons, and an effective (i.e., in-medium) interaction between them. The form of this interaction is inspired by more fundamental theories of nuclear matter, but still contains parameters that have to be adjusted to data. Thus, this microscopic approach is far from complete, but sufficient progress has been made to warrant taking stock of what has been accomplished so far. The aim is to provide, in a pedagogical and comprehensive manner, one specific approach to the fission problem, originally developed at the CEA Bruyères-le-Châtel Laboratory in France. Intended as a reference for advanced graduate students and researchers in fission theory as well as for practitioners in the field, it includes illustrative examples throughout the text to make it easier for the reader to understand, implement, and verify the formalism presented.