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Descrizione fisica	1 online resource (239 p.)
Disciplina	333.7924
Soggetti	Nuclear fusion Nuclear chemistry Physics Nuclear energy Nuclear Fusion Nuclear Chemistry History and Philosophical Foundations of Physics Nuclear Energy
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Preface -- Energy Release in Nuclear Reactions, Neutrons, Fission, and Characteristics of Fission -- Critical Mass and Efficiency -- Producing Fissile Material -- Complicating Factors -- Miscellaneous Calculations -- Appendices -- Appendix A: Selected D-Values and Fission Barriers -- Appendix B: Densities, Cross-Sections and Secondary Neutron Numbers -- Appendix C: Energy and Momentum Conservation in a Two-Body Collision -- Appendix D: Energy and Momentum Conservation in a Two-Body Collision That Produces a Gamma-Ray -- Appendix E: Formal Derivation of the Bohr-Wheeler Spontaneous Fission Limit -- Appendix F: Average Neutron Escape Probability From Within a Sphere -- Appendix G: The Neutron Diffusion Equation -- Appendix H: Exercises and Answers -- Appendix I: Glossary of Symbols -- Appendix J: Further Reading -- Appendix K: Useful Constants and Conversion Factors.
Sommario/riassunto	The development of nuclear weapons during the Manhattan Project is

one of the most significant scientific events of the twentieth century. This revised and updated 3rd edition explores the challenges that faced the scientists and engineers of the Manhattan Project. It gives a clear introduction to fission weapons at the level of an upper-year undergraduate physics student by examining the details of nuclear reactions, their energy release, analytic and numerical models of the fission process, how critical masses can be estimated, how fissile materials are produced, and what factors complicate bomb design. An extensive list of references and a number of exercises for self-study are included. Links are given to several freely-available spreadsheets which users can use to run many of the calculations for themselves.
