

1. Record Nr.	UNINA9910149489303321
Autore	Zohuri Bahman
Titolo	Neutronic Analysis For Nuclear Reactor Systems // by Bahman Zohuri
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
ISBN	9783319429649
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (XXII, 551 p. 148 illus., 58 illus. in color.)
Disciplina	333.7924
Soggetti	Nuclear energy Nuclear physics Heavy ions Nuclear Energy Nuclear Physics, Heavy Ions, Hadrons
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Neutron Physics Background -- Modeling Neutron Transport and Interactions -- Spatial Effects in Modeling Neutron Diffusion – One Group Models -- Energy Effects in Modeling Neutron Diffusion – Two Group Models -- Numerical Methods in Modeling Neutron Diffusion -- Slowing Down Theory -- Resonance Processing -- Heterogeneous Reactors and Wigner Seitz Cells -- Thermal Spectra and Thermal Cross Sections -- Perturbation Theory for Reactor Neutronics -- Reactor Kinetics and Point Kinetics -- Reactor Dynamics -- Reactor Stability -- Numerical Modeling for Time Dependent Problems -- Fission Product Buildup and Decay -- Fuel Burnup and Fuel Management -- Appendix A: Laplace Transforms -- Appendix B: Transfer Functions and Bode Plots -- Index.
Sommario/riassunto	This book covers the entire spectrum of the science and technology of nuclear reactor systems, from underlying physics, to next generation system applications and beyond. Beginning with neutron physics background and modeling of transport and diffusion, this self-contained learning tool progresses step-by-step to discussions of reactor kinetics, dynamics, and stability that will be invaluable to

anyone with a college-level mathematics background wishing to develop an understanding of nuclear power. From fuels and reactions to full systems and plants, the author provides a clear picture of how nuclear energy works, how it can be optimized for safety and efficiency, and why it is important to the future.
