

1. Record Nr.	UNINA9910279581103321
Autore	Marguet Serge
Titolo	The Physics of Nuclear Reactors / / by Serge Marguet
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
ISBN	3-319-59560-1
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (1,462 pages)
Disciplina	621.483
Soggetti	Nuclear physics Heavy ions Nuclear energy Energy systems Physical measurements Measurement Nuclear Physics, Heavy Ions, Hadrons Nuclear Energy Energy Systems Measurement Science and Instrumentation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	This comprehensive volume offers readers a progressive and highly detailed introduction to the complex behavior of neutrons in general, and in the context of nuclear power generation. A compendium and handbook for nuclear engineers, a source of teaching material for academic lecturers as well as a graduate text for advanced students and other non-experts wishing to enter this field, it is based on the author's teaching and research experience and his recognized expertise in nuclear safety. After recapping a number of points in nuclear physics, placing the theoretical notions in their historical context, the book successively reveals the latest quantitative theories concerning: • The slowing-down of neutrons in matter • The charged particles and electromagnetic rays • The calculation scheme,

especially the simplification hypothesis • The concept of criticality based on chain reactions • The theory of homogeneous and heterogeneous reactors • The problem of self-shielding • The theory of the nuclear reflector, a subject largely ignored in literature • The computational methods in transport and diffusion theories

Complemented by more than 400 bibliographical references, some of which are commented and annotated, and augmented by an appendix on the history of reactor physics at EDF (Électricité De France), this book is the most comprehensive and up-to-date introduction to and reference resource in neutronics and reactor theory.
