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	ISBN	3-031-98532-X
	Edizione	[1st ed. 2025.]
	Descrizione fisica	1 online resource (287 pages)
	Collana	Physics and Astronomy Series
	Disciplina	539.7
	Soggetti	Nuclear physics
		Nuclear engineering
		Quantum theory
		Mathematical physics
		Nuclear Physics
		Nuclear Energy
		Quantum Physics
		Theoretical, Mathematical and Computational Physics
	Lingua di pubblicazione	Inglese
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	Livello bibliografico	Monografia
	Nota di contenuto	1. Chain reaction principle and effective multiplication factor -- 2. Reminders -- 3. Principle of fast neutron reactors -- 4. Why does it make sense to slow down neutrons? -- 5. Fermi's 4-factors formula.
	Sommario/riassunto	This book provides engineers with a comprehensive understanding of nuclear reactor physics and neutronics, emphasizing the importance of simple models to validate complex computational results. It explains the rationale behind neutron slowing down and offers a straightforward method to evaluate the resonance escape probability in Fermi's 4-factors formula. The book includes exercises to assess the remaining three factors and demonstrates how to derive the diffusion approximation from the Boltzmann equation. It covers both one-group and two-group diffusion models, applying them to predict the reactivity of a nuclear reactor core. Special attention is given to the selection of the migration area. Additionally, the book addresses delayed neutrons, reactor kinetics, fission product poisoning, fuel evolution, fuel management, critical size, temperature effects, and

xenon oscillations. Originally written for students, it contains 28 exercises with solutions provided in the appendix, making it an invaluable resource for both learning and practical application in the field.