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| Descrizione fisica | 1 online resource (743 pages) |
| Disciplina | 539.75 |
| Soggetti | Nuclear physics Mathematical physics Nuclear engineering Engineering mathematics Engineering - Data processing Energy policy Energy and state Nuclear Physics Theoretical, Mathematical and Computational Physics Nuclear Energy Mathematical and Computational Engineering Applications Energy Policy, Economics and Management |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Chapter 1. Basic Knowledge of Polarization Theory of Nuclear Reactions -- Chapter 2. Polarization Theory of Nuclear Reactions for Spin 1/2 Particles -- Chapter 3. Polarization Theory of Nuclear Reactions for Spin 1/2 Particles -- Chapter 4. Polarization Theory of Nuclear Reactions for Spin 3/2 Particles and Polarization Theory for Photon Beams -- Chapter 5. Polarization Theory of Relativistic Nuclear Reactions -- Chapter 6. Basis of the Polarized Particle Transport Theory. |
| Sommario/riassunto | This book provides the reader with a modern and comprehensive overview of nuclear polarization theory. The understanding of |

polarization phenomena greatly enriches data obtained from scattering and nuclear reactions by providing information on the interaction that can change spin orientation as well as important verification data for the study of nuclear structures and reaction mechanisms. The author methodically derives the polarization theory of nuclear reactions for various types of elastic scattering and two-body direct reactions between particles of different spin and unpolarized target nuclei with arbitrary spin, as well as the reactions between two polarized light particles and the polarization theory for photon beams. In addition, the polarization theories of relativistic nuclear reactions are rigorously covered in great scope and detail. A chapter on polarized particle transport theory presents the Monte-Carlo method for describing the transport of polarized particles and formalizes the polarized particle transport equation. Here, the author also illustrates a novel and concrete scheme for establishing a polarization nuclear database. Nuclear polarization is important not only for microscopic nuclear structure and reaction studies but also for nuclear engineering, applied nuclear physics, and medical physics. With the development of radioactive beam facilities and, on the theoretical side, the development of consistent microscopic nuclear reaction and structure theories, this book on the polarization theory of nuclear reactions serves as a timely source of reference for students and researchers alike.
