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| Autore | Belyaev Alexander |
| Titolo | The Basics of Nuclear and Particle Physics // by Alexander Belyaev, Douglas Ross |
| Pubbl/distr/stampa | Cham : , : Springer International Publishing : , : Imprint : Springer, , 2021 |
| ISBN | 3-030-80116-0 |
| Edizione | [1st ed. 2021.] |
| Descrizione fisica | 1 online resource (412 pages) |
| Collana | Undergraduate Texts in Physics, , 2510-4128 |
| Classificazione | KPH 60 |
| Disciplina | 539.7 |
| Soggetti | Nuclear physics Particles (Nuclear physics) Quantum field theory Quantum theory Nuclear and Particle Physics Elementary Particles, Quantum Field Theory Quantum Physics |
| Lingua di pubblicazione | Inglese |
| Formato | Materiale a stampa |
| Livello bibliografico | Monografia |
| Nota di bibliografia | Includes bibliographical references and index. |
| Nota di contenuto | Chapter 1. Rutherford Scattering -- Chapter 2. Nuclear Size and Shape -- Chapter 3. Nuclear Masses and the Semi-Empirical Mass Formula -- Chapter 4. The Nuclear Shell Model -- Chapter 5. Radioactivity -- Chapter 6. Alpha Decay -- Chapter 7. Beta Decay -- Chapter 8. Gamma Decay -- Chapter 9. Nuclear Fission -- Chapter 10. Nuclear Fusion -- Chapter 11. Charge Independence and Isospin -- Chapter 12. The forces of Nature and Particle Classification -- Chapter 13. Particle Accelerators -- Chapter 14. Particle Detectors -- Chapter 15. Constituent Quarks -- Chapter 16. Particle Interactions and Cross Sections -- Chapter 17. Weak Interactions -- Chapter 18. The Higgs Mechanism and the Higgs boson -- Chapter 19. Electromagnetic Interactions -- Chapter 20. Quantum Chromodynamics (QCD) -- Chapter 21. Parity, Charge Conjugation, and CP -- Chapter 22. Beyond the Standard Model (BSM). |
| Sommario/riassunto | This undergraduate textbook breaks down the basics of Nuclear Structure and modern Particle Physics. Based on a comprehensive set of |

course notes, it covers all the introductory material and latest research developments required by third- and fourth-year physics students. The textbook is divided into two parts. Part I deals with Nuclear Structure, while Part II delves into Particle Physics. Each section contains the most recent science in the field, including experimental data and research on the properties of the top quark and Higgs boson. Detailed mathematical derivations are provided where necessary to help students grasp the physics at a deeper level. Many of these have been conveniently placed in the Appendices and can be omitted if desired. Each chapter ends with a brief summary and includes a number of practice problems, the answers to which are also provided.
