1. Record Nr. UNINA9910790464403321

Autore	Joachain C. J (Charles Jean)
Titolo	Atoms in intense laser fields / / C.J. Joachain, N.J. Kylstra, and R.M. Potvliege [[electronic resource]]
Pubbl/distr/stampa	Cambridge : , : Cambridge University Press, , 2011
ISBN	1-107-21810-1 1-280-88670-6 9786613728012 1-139-12189-8 1-139-10962-6 1-139-11398-4 1-139-11179-5 1-139-12681-4 1-139-11615-0 0-511-99345-5
Descrizione fisica	1 online resource (xii, 568 pages) : digital, PDF file(s)
Classificazione	SCI074000
Disciplina	539.7/2
Soggetti	Electron-atom collisions Floquet theory Laser pulses, Ultrashort Multiphoton processes Multiphoton ionization
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Title from publisher's bibliographic system (viewed on 05 Oct 2015).
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Part I. Basic Concepts: 1. High-intensity laser-atom physics; 2. Theory of laser-atom interactions -- Part II. Theoretical Methods: 3. Perturbation theory; 4. Floquet theory; 5. Numerical integration of the wave equations; 6. The low-frequency regime; 7. The high-frequency regime -- Part III. Multiphoton Atomic Physics: 8. Multiphoton ionization; 9. Harmonic generation and attosecond pulses; 10. Laser-assisted electron-atom collisions.
Sommario/riassunto	The development of lasers capable of producing high-intensity pulses has opened a new area in the study of light-matter interactions. The

corresponding laser fields are strong enough to compete with the Coulomb forces in controlling the dynamics of atomic systems and give rise to multiphoton processes. This book presents a unified account of this rapidly developing field of physics. The first part describes the fundamental phenomena occurring in intense laser-atom interactions and gives the basic theoretical framework to analyze them. The second part contains a detailed discussion of Floquet theory, the numerical integration of the wave equations and approximation methods for the low- and high-frequency regimes. In the third part, the main multiphoton processes are discussed: multiphoton ionization, high harmonic and attosecond pulse generation, and laser-assisted electron-atom collisions. Aimed at graduate students in atomic, molecular and optical physics, the book will also interest researchers working on laser interactions with matter.

2. Record Nr. UNINA9911002552203321

Autore	Mondal Spandan
Titolo	Charming Decays of the Higgs, Z, and W Bosons : Development and Deployment of a New Calibration Method for Charm Jet Identification / / by Spandan Mondal
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2025
ISBN	9783031846779
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (XVI, 160 p. 50 illus., 44 illus. in color.)
Collana	Springer Theses, Recognizing Outstanding Ph.D. Research, , 2190-5061
Disciplina	539.72
Soggetti	Particles (Nuclear physics) Quantum field theory Particle accelerators Particle Physics Elementary Particles, Quantum Field Theory Accelerator Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia

Nota di contenuto	Introduction -- The Standard Model -- Experimental setup -- Data analysis technologies -- Physics object definitions -- Flavour tagging -- Charm tagger calibration -- Analysis strategy -- The VHcc, VZcc, and VWcq analyses -- Signal extraction -- Conclusion.
Sommario/riassunto	This book presents searches for the Higgs boson, Z boson, and W boson decaying into charm quark(s) performed with proton-proton collision data at s = 13TeV collected by the CMS experiment at the LHC, CERN, corresponding to an integrated luminosity of 138 fb1 and recorded between 2016 and 2018. The searches are carried out using events in which the Higgs/Z/W boson is produced in association with a leptonically-decaying Z or W boson. This thesis also discusses a novel calibration algorithm for charm jet identification that enables maximal use of the available information related to charm jets. The new method is used to correct the entire distribution expected as output when jet flavour identification algorithms are applied to jets of different flavours. The calibrated results improve over traditional efficiency measurements and help enhance the sensitivities of the Higgs, Z, and W searches. This book primarily reports on the so-called resolved-jet topology of the Higgs/Z/W boson searches, where the boson candidates are reconstructed using two separate small-radius (AK4) jets. Upon statistically combining the results of the resolved-jet search with a complementary merged-jet approach, the observed (expected) upper limit on the Higgs decay to charm quarks corresponds to 14 (7.6) times the Standard Model expectation at the 95% CL which is the most stringent direct limit to date. A significance of 5.7 (5.9) over the background-only prediction is observed (expected) in case of the search for charmed Z boson decays. Only the resolved-jet topology is used in the search for charmed W decays and the observed (expected) significance is 5.6 (5.7) over the background-only prediction. These mark the first observations of charmed decays of the Z and W bosons at a hadron collider experiment.