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Nota di contenuto	Particle dark matter / G. Bertone and J. Silk -- Simulations of cold dark matter haloes / B. Moore and J. Diemand -- Milky Way satellites / J. Bullock, M. Kaplinghat and L. Strigari -- Gravitational lensing and dark matter / Y. Mellier -- Dark matter at the centres of galaxies / D. Merritt -- Modified gravity as an alternative to dark matter / J.D. Bekenstein -- DM production mechanisms / G. Gelmini and P. Gondolo -- Supersymmetric dark matter candidates / J. Ellis and K.A. Olive -- Dark matter at the electroweak scale : non-supersymmetric candidates / G. Servant -- Non-WIMP candidates / J.L. Feng -- Axions / P. Sikivie -- Sterile neutrinos / M. Shaposhnikov -- SUSY searches at the LHC / T. Plehn and G. Polesello -- Supersymmetric dark matter at colliders / M. Battaglia and M.E. Peskin -- Extra dimensions at the LHC / K. Kong, K. Matchev and G. Servant -- SUSY tools / F. Boudjema, J. Edsjö and P. Gondolo -- Direct detection of WIMPs / D.G. Cerdeño and A.M. Green -- Annual modulation signature with large mass highly radiopure NaI (TI) / R. Bernabei and P. Belli -- Particle dark matter and the DAMA/NaI and DAMA/LIBRA annual modulation effect / N. Fornengo -- Cryogenic detectors / G. Gerbier and J. Gascon -- Liquid noble gases / E. Aprile and L. Baudis -- Directional detectors / N. Spooner -- Axion searches / S. Asztalos -- Gamma-rays / L. Bergström and G. Bertone -- High-energy neutrinos from WIMP annihilations in the sun / F. Halzen and D. Hooper -- Indirect dark matter detection with cosmic antimatter / P.

Salati, F. Donato and N. Fornengo -- Multi-wavelength studies / S. Profumo and P. Ullio -- Particle dark matter and Big Bang nucleosynthesis / K. Jedamzik and M. Pospelov -- Dark matter and stars / G. Bertone

Sommario/riassunto

"Dark matter is among the most important open problems in modern physics. Aimed at graduate students and researchers, this book describes the theoretical and experimental aspects of the dark matter problem in particle physics, astrophysics and cosmology. Featuring contributions from 48 leading theorists and experimentalists, it presents many aspects, from astrophysical observations to particle physics candidates, and from the prospects for detection at colliders to direct and indirect searches. The book introduces observational evidence for dark matter along with a detailed discussion of the state-of-the-art of numerical simulations and alternative explanations in terms of modified gravity. It then moves on to the candidates arising from theories beyond the Standard Model of particle physics, and to the prospects for detection at accelerators. It concludes by looking at direct and indirect dark matter searches, and the prospects for detecting the particle nature of dark matter with astrophysical experiments. -- Describes the theoretical and experimental aspects of the dark matter problem -- Presents observations, theory and experiments to give a complete and consistent understanding of dark matter -- Features contributions from leading experts in the field"--Provided by publisher

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