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Nota di contenuto	Multiple Messengers and Challenges in Astroparticle Physics -- Cosmic Rays -- Introduction -- Galactic Cosmic Rays -- Gamma Rays -- Introduction -- Galactic Sources of Gamma Rays -- Astrophysical Neutrinos -- Introduction -- Terrestrial phenomena -- Low energy cosmic neutrinos -- Cosmology -- Introduction -- Cosmic Microwave Background -- Open Issues In Gravitational Physics -- Introduction -- Gravity and the Quantum -- Testing gravity at Atomic Scales.
Sommario/riassunto	This book, designed as a tool for young researchers and graduate students, reviews the main open problems and research lines in various fields of astroparticle physics: cosmic rays, gamma rays, neutrinos, cosmology, and gravitational physics. The opening section discusses cosmic rays of both galactic and extragalactic origin, examining experimental results, theoretical models, and possible future developments. The basics of gamma-ray astronomy are then described, including the detection methods and techniques. Galactic and extragalactic aspects of the field are addressed in the light of recent

discoveries with space-borne and ground-based detectors. The review of neutrinos outlines the status of the investigations of neutrino radiation and brings together relevant formulae, estimations, and background information. Three complementary issues in cosmology are examined: observable predictions of inflation in the early universe, effects of dark energy/modified gravity in the large-scale structure of the universe, and neutrinos in cosmology and large-scale structures. The closing section on gravitational physics reviews issues relating to quantum gravity, atomic precision tests, space-based experiments, the strong field regime, gravitational waves, multi-messengers, and alternative theories of gravity.