

1. Record Nr.	UNINA9910139821903321
Titolo	Physics and Astrophysics of Ultra High Energy Cosmic Rays // edited by M. Lemoine, G. Sigl
Pubbl/distr/stampa	Berlin, Heidelberg : , : Springer Berlin Heidelberg : , : Imprint : Springer, , 2001
ISBN	3-540-45615-5
Edizione	[1st ed. 2001.]
Descrizione fisica	1 online resource (X, 328 p.)
Collana	Lecture Notes in Physics, , 0075-8450 ; ; 576
Disciplina	539.7/223
Soggetti	Astrophysics Nuclear physics Quantum field theory String models Astrophysics and Astroparticles Particle and Nuclear Physics Quantum Field Theories, String Theory
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Bibliographic Level Mode of Issuance: Monograph
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	to Cosmic Rays -- Phenomenology of Ultra-High-Energy Atmospheric Showers -- The Air Fluorescence Method for Measuring Extremely-High-Energy Cosmic Rays -- Fermi Acceleration of Astroparticles -- Rotation Powered Pulsars as Sources of High-Energy Particles -- High-Energy Particles from γ -Ray Bursts -- Cosmic Magnetic Fields from the Perspective of Ultra-High-Energy Cosmic Rays Propagation -- A Possible Nearby Origin for the Highest-Energy Events Observed -- Propagation of Ultra-High-Energy Radiation -- Neutrino Cascades: The Byproducts of Propagation of Ultra-High-Energy Neutrinos -- Extreme-Energy Cosmic Rays: Hints to New Physics Beyond the Standard Model? -- Summary of the School: A Critical View on the Origin of the Ultra-High-Energy Cosmic Rays.
Sommario/riassunto	The origin of the most energetic particles observed in nature is one of the major unresolved questions in modern astrophysics. Theoretical speculations range from electromagnetic acceleration in some unknown astrophysical source to as yet undiscovered particle physics beyond the

Standard Model. These speculations have also lead to the development of new detection concepts and experimental projects, some of which are currently under construction. The present volume consists of a self-contained set of lectures which cover most of these aspects: from the speculative origins and the acceleration and propagation mechanisms to a discussion of the detection techniques. It emphasizes the strong interdisciplinarity of this topic and highlights the many open questions. This volume is intended for students entering this field and for professional astronomers and particle and theoretical physicists.
