

## Extensive Air Showers High Energy Phenomena And Astrophysical Aspects A Tutorial Reference Manual And Data Book Astrophysics And Space Science Library

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### Extensive Air Showers High Energy

Extensive air showers are a very unique phenomenon. In the more than six decades since their discovery by Auger et al. we have learned a great deal about these extremely energetic events and gained deep insights into high-energy phenomena, particle physics and astrophysics.

### Extensive Air Showers: High Energy Phenomena and ...

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### Extensive Air Showers - High Energy Phenomena and ...

Key to understanding extensive air showers is the modeling of hadronic multiparticle production at energies from the particle-production threshold up to 10<sup>20</sup> eV—far beyond the reach of man-made accelerators. In this article, we introduce the relation between extensive air showers and hadronic interactions at high energy.

### Extensive Air Showers and Hadronic Interactions at High Energy

Abstract Extensive air showers are still the only source of information on primary cosmic-rays and their interactions at energies above PeV. However, this information is hidden inside the multiplicative character of the cascading process.

### Extensive air showers and the physics of high energy ...

The discovery of extensive air showers by Rossi, Schmeiser, Bothe, Kolhörster and Auger at the end of the 1930s, facilitated by the coincidence technique of Bothe and Rossi, led to fundamental contributions in the field of cosmic ray physics and laid the foundation for high-energy particle physics.

### Extensive Air Showers and Ultra High-Energy Cosmic Rays: A ...

MC studies indicate that the two deeps observed around 90° and 270° in the azimuth distribution of detected EAS disappear for high energy showers ( $E > 10^{16.8}$  eV), as it is demonstrated in the bottom plot of Fig. 6.

### Detection of high energy showers by the Astroneu extensive ...

The discovery of extensive air showers by Rossi, Schmeiser, Bothe, Kolhörster and Auger at the end of the 1930s, facilitated by the coincidence technique of Bothe and Rossi, led to fundamental contributions in the field of cosmic ray physics and laid the foundation for high-energy particle physics.

### Extensive Air Showers and Ultra High-Energy Cosmic Rays: A ...

EXTENSIVE AIR SHOWERS AND HIGH ENERGY INTERACTIONS. A.D. Erlykin (LPI, Moscow (main)) 1994. 12 pages. Contribution to: International Symposium on Cosmic Ray Physics in Tibet, 74-85; ... EXTENSIVE AIR SHOWERS ACCOMPANIED BY FAMILIES WITH SIGMA E ( $\gamma$ , H) => 10-TeV AND COMPARISON WITH THE GENERAL EAS. Y. Fukushima (Konan U.), C. Hamayasu

### EXTENSIVE AIR SHOWERS AND HIGH ENERGY INTERACTIONS - INSPIRE

CORSIKA(COSmic Ray Simulations for KAscade) is a program for detailed simulation of extensive air showers initiated by high energy cosmic ray particles. Protons, light nuclei up to iron, photons, and many other particles may be treated as primaries. The particles are tracked through the atmosphere until they undergo reactions with the air nuclei or - in the case of instable secondaries - decay.

### CORSIKA - an Air Shower Simulation Program - KIT

The discovery of extensive air showers by Rossi, Schmeiser, Bothe, Kolhörster and Auger at the end of the 1930s, facilitated by the coincidence technique of Bothe and Rossi, led to fundamental contributions in the field of cosmic ray physics and laid the foundation for high-energy particle physics. Soon after World War II a cosmic ray group at MIT in the USA pioneered detailed investigations of air shower phenomena and their experimental skill laid the foundation for many of the methods and ...

### [1207.4827] Extensive Air Showers and Ultra High-Energy ...

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### Extensive air showers : high energy phenomena and ...

An air shower is an extensive cascade of ionized particles and electromagnetic radiation produced in the atmosphere when a primary cosmic ray enters the atmosphere. When a particle, which could be a proton, a nucleus, an electron, a photon, or a positron, strikes an atom's nucleus in the air it produces many energetic hadrons. The unstable hadrons decay in the air speedily into other particles and electromagnetic radiation, which are part of the shower components. The secondary radiation rains d

#### **Air shower (physics) - Wikipedia**

Key to understanding extensive air showers is the modeling of hadronic multiparticle production at energies from the particle-production threshold up to 10<sup>20</sup> eV—far beyond the reach of man-made accelerators. In this article, we introduce the relation between extensive air showers and hadronic interactions at high energy.

#### **Extensive Air Showers and Hadronic Interactions at High Energy**

CORSIKA (COsmic Ray Simulations for KAscade) is a physics computer software for simulation of extensive air showers induced by high energy cosmic rays, i.e. protons and atomic nuclei, as well as Gamma rays (photons), electrons, and neutrinos. It may be used up to and beyond the highest energies of 10<sup>20</sup> eV.

#### **CORSIKA - Wikipedia**

CORSIKA is a detailed simulation program for extensive air showers initiated by high energy cosmic particles. The user's guide explains the installation of the code, all the necessary input data sets, the selection of simulation parameters, and the structure of the program outputs. 191 pages, 2 figures pdf file (1117 kB)

#### **KIT - CORSIKA - Documentation**

Extensive air showers are a very unique phenomenon. In the more than six decades since their discovery by Auger et al. we have learned a great deal about these extremely energetic events and gained deep insights into high-energy phenomena, particle physics and astrophysics.

#### **Extensive Air Showers | Springer for Research & Development**

Extensive air showers are a cascade of electromagnetic radiation and ionized particles produced in the atmosphere through the interaction of primary cosmic ray with the atom's nucleus in the air producing a huge amount of secondary particles such as X-ray, electrons, neutrons, muons, alpha particles, etc.

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