

# Search of Dark Matter in Cosmic Ray Anti-Matter

*giovedì 11 luglio 2024 10:00 (30 minuti)*

Antiparticles are a natural component of cosmic radiation since they are produced in the interaction between cosmic rays and interstellar matter. Cosmic-ray positrons and antiprotons were first observed in pioneering experiments in the sixties and seventies, respectively. Since their first observation, it has been apparent that cosmic-ray antimatter can shed light on the nature of dark matter.

Measurements of cosmic-ray antiparticle spectra have shown intriguing features that may indicate contributions from the annihilation or decay of dark matter particles. However, uncertainties about the secondary production of antiprotons, by the interaction of cosmic rays with interstellar matter, and their propagation in the Galaxy and the heliosphere are affecting a comprehensive understanding of their origin. Heavier cosmic-ray antinuclei, such as antideuterons and antihelium, are also predicted to be produced as secondaries. However, their spectra, especially at energies below a few GeV/n, are expected to be orders of magnitude lower than those of antideuterons and antihelium produced by plausible models of dark matter annihilation or decay.

Several experiments, equipped with state-of-the-art detectors, have recently presented, or are going to present, new results on the antimatter component of cosmic radiation with a significant improvement in statistics and systematics concerning older data.

We will review these experiments and discuss their most recent scientific results.

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**Classifica Sessioni:** Plenary