

Large-scale simulations of antihelium production in cosmic-ray interactions

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The possibility of antihelium production in interaction of cosmic rays with the interstellar gas is studied using large-scale Monte Carlo simulations. For this purpose, an energy-dependent coalescence mechanism developed previously is extended to estimate the production of light antinuclei (antihelium-3 and antihelium-4). The uncertainty in the coalescence parameter and its effect on the expected antiparticle flux is also investigated. The simulated background antihelium fluxes are found to be lower than the fluxes predicted by simplified models using numerical scaling techniques. Ongoing measurements to improve these results, at NA61/SHINE at CERN-SPS, are also discussed.

Keywords

Cosmic-ray propagation, Cosmic-ray spectra, Coalescence model

Collaboration

other Collaboration

NA61/SHINE

Subcategory

Theoretical Results

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