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Time-Dependent Models for Cosmic Rays and Diffuse Emissions from the Galaxy

Friday, 6 December 2019 11:00 (30 minutes)

Cosmic ray data collected by experiments like Pamela, AMS-02, CALET, and DAMPE show many spectral features that are not described by simple power laws. These features may be giving information on the time-dependent activity of individual cosmic ray sources, but the interpretation is unclear. Because the same cosmic rays are interacting also in the interstellar medium, these data are also intrinsically linked to the diffuse emissions from the Galaxy. Recent work has shown that the past activity of cosmic ray sources is indeed apparent in the high-energy diffuse emissions, with features appearing over a wide range of angular scales. I will talk about these time-dependent cosmic ray source models and propagation calculations, which may be providing novel explanations for features seen in high-energy gamma rays, such as the so-called 'Fermi Bubbles'.

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