

Cosmic-Ray Transport in Interstellar Medium

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Cosmic rays are a key probe of high-energy astrophysical phenomena across a broad wavelength range, from radio to gamma rays, and may also play an important role in regulating galaxy evolution. However, how cosmic rays are transported in and around galaxies, and how they feed back on gas and magnetic fields, remain poorly understood. To investigate these two aspects of cosmic rays in a unified framework, we are developing a numerical code that treats cosmic-ray transport and dynamical feedback self-consistently. Recent improvements to the code have enabled us to stably follow the long-term evolution of star-formation-driven winds interacting with cold gas clouds under more realistic physical conditions. In this talk, I will present an overview of the code and discuss numerical results on how cosmic-ray transport affects the dynamical evolution of cold gas clouds in the galactic halo.

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