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The Plasma Physics of Cosmic Rays¹

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Cosmic rays produce some of the most energetic emission in the Universe. They play a key role in the dynamics and energy balance of galactic gas, and allow us to probe galactic and intergalactic magnetic fields in the present epoch and over cosmic time. The acceleration and propagation of cosmic rays, and the mechanisms by which they interact collectively with their environments, are largely plasma physics problems. I will briefly review some salient aspects of cosmic ray astrophysics and describe recent progress toward understanding cosmic ray plasma physics.

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