
New implications of self-generated turbulence on the cosmic ray propagation in the ISM

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Abstract

Cosmic rays with energies below TeV propagating in the Milky Way are likely to excite a streaming instability and to provide the conditions for their own diffusion. Here we present the results of a time dependent numerical solution of the transport equation for cosmic rays and waves in which we take into account both self-generation of waves and cascading in k space of turbulence, both self-generated and injected in the disc by other sources and advection of the turbulence away from the disc. The advection-diffusion of cosmic rays in such turbulence gives rise to interesting features that are discussed here in the context of the recent AMS-02 and FERMI-LAT results.

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