

Data-driven constraints on cosmic-ray diffusion: Probing self-generated turbulence in the Milky Way [10'+5']

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The AMS-02 experiment has provided high-precision measurements of several cosmic-ray (CR) species. We exploit the AMS-02 data to investigate CR propagation in the Galaxy, and provide updated constraints on reacceleration, convection, and the spatial and rigidity dependence of the diffusion coefficient. We explicitly consider the impact of the uncertainties in the nuclear production cross-sections of secondaries. Our findings favor models with a smooth behavior in the diffusion coefficient, indicating a good qualitative agreement with the predictions of self-generated magnetic turbulence models. Instead, the current cosmic-ray data do not exhibit a clear preference for or against inhomogeneous diffusion, which is also a prediction of these models.

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