

New Constraints on the Global Structure of the Coherent Galactic Magnetic Field

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We present a major revision of the widely used model of the coherent magnetic field of the Galaxy from Jansson&Farrar (JF12). For this purpose, we use new full-sky data of extragalactic rotation measures, final polarized intensity maps from WMAP and Planck and the rotation measures of Galactic pulsars. Furthermore, we tune auxiliary models for the thermal electron density to the dispersion measures of Galactic pulsars and employ a suite of state-of-the-art cosmic-ray electrons models to predict the synchrotron emission from the Galaxy. Finally, we developed new divergence-free parametric models of the global structure of the magnetic field and tune them to the data.

We will discuss the deflection of ultrahigh-energy cosmic rays implied by this new model and estimate a lower limit on their uncertainties from a variation of model assumptions.

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