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## Force-Field Model of Galactic Cosmic Ray Propagation in the Inner Heliosphere

*Monday 8 August 2022 14:00 (20 minutes)*

We investigate the effect of inertial range magnetohydrodynamic turbulence to the 1-dimensional force-field model. Using well established quasilinear theory together with the recently available magnetic power spectrum from Parker Solar Probe, we perform calculations of parallel diffusion coefficient, modulation potential and galactic cosmic ray flux in the inner heliosphere. The model applies to solar ecliptic plane only and does not include particle drifts and full adiabatic energy loss. Our model shows a rigidity-dependent modulation at low particle rigidity from including the inertial range power spectrum and a rigidity-independent modulation at high rigidity from including  $1/f$  noise in which the latter agrees with neutron monitor measurements. We find a substantial cosmic ray flux reduction for particle kinetic energy less than 10 GeV compared to the previous analytical treatments, which only consider  $1/f$  noise for the magnetic power spectrum. Comparison of the model with the measurements of galactic cosmic ray radial gradients is presented.

### Collaboration name

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