Contribution ID: **722** Type: **Talk**

Modeling of the TeV cosmic-ray anisotropy based on intensity mapping in an MHD-simulated heliosphere

Friday 16 July 2021 19:18 (12 minutes)

Arrival directions of galactic cosmic rays observed at the Earth are not completely uniform; at TeV energies there are small yet significant anisotropic features with amplitudes of roughly 0.1% such as large-scale deficit and excess regions called "Loss-Cone"and "Tail-In", respectively. The origin of the anisotropy has not been known yet, although the anisotropy is considered to reflect how cosmic rays propagate through magnetic fields in the heliosphere and the surrounding interstellar medium. Recent studies make use of the 'intensity-mapping'method, in which heliospheric magnetic field structures are reconstructed by MHD simulations, trajectories of cosmic rays are calculated in the MHD-simulated heliosphere, and then the cosmic-ray intensity distribution observed at the Earth is mapped onto that at the outer boundary ideally outside the heliosphere based on Liouville's theorem.
In this presentation, we preform the modeling of the TeV cosmic-ray anisotropy outside the heliosphere using experimental data taken by the Tibet ASγ experiment. In the intensity-mapping process, we take into account for the first time the rigidity distribution of cosmic-ray particles observed by the experiment. We also discuss the influence of the heliospheric modulation on the cosmic-ray intensity distribution by varying the distance of the outer boundary from the Sun in the intensity-mapping process.

Keywords

Collaboration

other Collaboration

The Tibet ASgamma Collaboration

Subcategory

Experimental Results

Primary authors: SAKO, Takashi K. (Institute for Cosmic Ray Research, the University of Tokyo); FOR THE TIBET ASGAMMA COLLABORATION

Presenter: SAKO, Takashi K. (Institute for Cosmic Ray Research, the University of Tokyo)

Session Classification: Discussion

Track Classification: Scientific Field: SH | Solar & Heliospheric