

Measurement of interplanetary magnetic field in short period using the cosmic-ray Sun shadow measured by LHAASO

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The interplanetary magnetic field (IMF) between the Sun and the Earth induces the displacement of the cosmic-ray Sun shadow from the optical position. Previously, the average IMF has been measured by the ARGO-YBJ and the Tibet-ASgamma experiments through several years of data. With the improvement of the sensitivity, the first pool of WCDA in LHAASO, which has obtained nearly one year's scientific data, has observed the Sun shadow with significance exceeds 70 standard deviation. Using the data collected by WCDA from July 26 to August 22, 2019, we measured the displacements of Sun shadow at the energy of 6.2 TeV every two or three days. Combining with the simulation of Sun shadow, the IMF is measured and is comparable with the satellite observations. This is the first time to measure the IMF using Sun shadow in a short period, and the expectation for space weather forecast is discussed.

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Collaboration

Lhaaso

other Collaboration

Subcategory

Experimental Results

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