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27-day Variation of the Three Dimensional Solar Anisotropy of Galactic Cosmic Ray: 1965-2014.

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The temporal evaluation of the 27-day variation of the three dimensional (3D) galactic cosmic ray (GCR) anisotropy has been studied for 1965-2014. 3D anisotropy vector was obtained based on the neutron monitors and Nagoya muon telescopes data. We analyze the 27-day variation of the (1) two dimensional (2D) GCR anisotropy in the ecliptic plane, and (2) North-South anisotropy (ANS) normal to the ecliptic plane. Studying the time line of the 27-day variation of the 2D GCR anisotropy, we confirm that the average amplitude in the minimum epoch of solar activity is polarity dependent, as it is expected from the drift theory. The amplitude in the negative polarity epochs is less as we had shown before. The feeble 11-year variation connected with solar cycle and strong 22-year pattern connected with solar magnetic cycle is visible in the 27-day variation of the 2D anisotropy for 1965-2014. We show that the 27-day variation of the GG index (being a measure of the north-south asymmetry) varies in accordance to solar cycle with a period of 11-years, being in good agreement with the 27-day variation of the component of the GCR anisotropy calculated by the IZMIRAN group.

Collaboration

– not specified –

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