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Astrophysics > High Energy Astrophysical Phenomena

Three Regions of Excessive Flux of PeV Cosmic Rays

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Three regions of excessive flux of cosmic rays with energies of the order of PeV are found in the experimental data of the EAS MSU array at a confidence level greater than 4\sigma. For two of them, there are similar regions in the experimental data of the EAS-1000 Prototype array. One of the interesting features of the regions is the absence of supernova remnants in their vicinities, traditionally considered as the main sources of Galactic cosmic rays, but the presence of isolated pulsars, some of which are able to accelerate heavy nuclei up to energies close to PeV. In our opinion, this favors the assumption that isolated pulsars are able to contribute to the flux of Galactic cosmic rays more than is usually assumed.

Comments: 7 pages. The preprint fixes errors that appeared in the English version of the article published in Bull. Rus. Acad. Sci. Physics, 2011, Vol.75, p.342. Original Russian text: Izv. RAN., Ser. Fiz., 2011, Vol.75, p.371. V2: a few typos fixed, layout improved. arXiv admin note: repeats content from arXiv:0907.3192
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