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Large scaled observation program of ultra heavy nuclei in galactic cosmic rays

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Abstract content

Our galaxy is filled with relativistic nuclei and electrons, or galactic cosmic rays (GCRs). The source of GCR nuclei, especially ultraheavy nuclei ($Z > 30$), is still unknown, though the measurement of ultraheavy cosmic rays has been identified as an important goal of cosmic-ray research. Observation program of ultra-heavy nuclei in GCRs is proposed with the use of solid-state track detector on board long-duration balloon and/or space station. The program focuses to measure the isotopic abundance above iron-peak elements and the composition of the rare ultraheavy nuclei up to uranium and transuranium at high energies. The observation of nuclear composition covers a wide range of scientific themes including studies of nucleosynthesis of cosmic ray sources, chemical evolution of galactic material, the characteristic time of cosmic rays, heating and acceleration mechanism of cosmic ray particles. In order to achieve the objectives, the International Space Station and/or Super Pressure Balloon capable of carrying very large scientific payloads for long extended period is best suited. The possible approach is based on a large telescope-array (4m^2 in sensitive area) of modularized SSTD stacks presently under study.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olive, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 2 (OG part 1), pages 51-54

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