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Measurement of the Relative Abundances of the Ultra-Heavy Galactic Cosmic Rays $(30 \le Z \le 40)$ at the Top of the Atmosphere with TIGER

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Abstract content

Observations of Ultra-Heavy galactic cosmic rays (GCR) help to distinguish the possible origins of GCRs. The Trans-Iron Galactic Element Recorder (TIGER) is designed to measure the charge (Z) and energy of GCRs using a combination of scintillation counters, Cherenkov counters, and a scintillating fiber hodoscope. The two Cherenkov radiators, one acrylic and one aerogel, provide TIGER with an energy sensitivity between 0.3 and 10 GeV/nucleon in the instrument. The energy threshold at the top of the atmosphere is dependent on the atmospheric and instrument overburden, and is close to 0.8 GeV/nucleon for Fe. TIGER has accumulated data on two successful flights from McMurdo, Antarctica in December of 2001 and in December of 2003 with a total flight duration of ~50 days. The combined TIGER dataset has sufficient statistics and charge resolution to resolve ~140 nuclei with Z greater than 30, and provides the best measurements to date for Zn, Ga, Ge, and Se. We present abundances of the Ultra-Heavy GCRs with charges between 30 and 40 derived from the combined dataset propagated to the top of the atmosphere, and discuss the results in the context of previous measurements and different GCR source models.

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'Olivo, 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 7-10

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