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# P1.53: The Trans-Iron Galactic Element Recorder for the International Space Station (TIGERISS)

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Selected as a NASA Astrophysics Pioneers mission, TIGERISS is designed to measure the nuclear composition of cosmic rays above 350 MeV/nucleon from 5B through 82Pb with individual element resolution. TIGERISS will obtain high-statistics measurements of the Ultra-Heavy Galactic Cosmic Rays (UHGCRs; Z > 27), including the first ever single-element resolution measurements of elements above 56Ba. TIGERISS's ability to precisely measure a wide, continuous span of elements produced in s-process and r-process neutron capture nucleosynthesis, provides unique data needed to determine the relative contributions of supernovae (SN) and Neutron Star Merger (NSM) events to r-process nucleosynthesis. The high exposure provided by TIGERISS space-based measurements provide the needed high statistics to test models for cosmic-ray origins and acceleration after processing by the Galaxy. TIGERISS uses the heritage of the TIGER and SuperTIGER long-duration balloon instruments, including Cherenkov detectors using aerogel and acrylic radiators but with SiPM read out, while incorporating silicon strip detectors (SSDs) for both the cosmic ray charge and trajectory measurements. The current concept study phase will provide guidance for the optimal ISS external attachment accommodation for TIGERISS, including the JAXA JEM-EF and the ESA Columbus Laboratory. In this presentation, the TIGERISS science goals, instrument design concepts, and mission profile will be discussed with a focus on the performance of the Cherenkov- and SSD-based instruments.

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