

Abstract Submitted
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The Heavy Nuclei eXplorer (HNX) Mission JOHN KRIZMANIC, CRESST-USRA-GSFC, JOHN MITCHELL, NASA-GSFC, W. ROBERT BINNS, WUSL, THOMAS HAMS, CRESST-UMBC-GSFC, MARTIN ISRAEL, WUSL, JASON LINK, CRESST-USRA-GSFC, BRIAN RAUCH, WUSL, KENICHI SAKAI, CRESST-UMBC-GSFC, MAKOTO SASAKI, CRESST-UMCP-GSFC, ANDREW WESTPHAL, UC Berkeley-SSL, MARK WIEDENBECK, JPL-Caltech, HEAVY NUCLEI EXPLORER COLLABORATION — The Heavy Nuclei eXplorer (HNX) will use two large high-precision instruments, the Extremely-heavy Cosmic-ray Composition Observer (ECCO) and the Cosmic-ray Trans-Iron Galactic Element Recorder (CosmicTIGER), designed to fly in a SpaceX DragonLab Capsule, to measure the cosmic-ray abundance of every individual element in the periodic table from carbon through curium, providing the first measurement of many of these elements. These measurements provide an investigation on the nature of the source material of cosmic rays, the processes that inject them into cosmic accelerators, and the acceleration mechanisms. HNX will measure several thousand ultra-heavy galactic cosmic ray (UHGCR) nuclei with $Z \geq 30$, including about 50 actinides ($Z \geq 79$). These data allow for a measurement of the mix of new and old material that is accelerated to GCRs, determine their age, measure the mix of nucleosynthesis processes responsible for the UHGCRs, determine how UHGCR elements are selected for acceleration, and measure the mean integrated pathlength traversed by UHGCRs before observation. The scientific motivation and instrumentation of HNX will be discussed as well as recent beam test results.

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