

Abstract Submitted  
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**The Non-Imaging Cherenkov (NICHE) Array: A TA/TALE extension to measure the flux and composition evolution of Very-High Energy Cosmic Rays** JOHN KRIZMANIC, Universities Space Research Association, DOUGLAS BERGMAN, University of Utah, YOSHIKI TSUNESADA, Tokyo Institute of Technology — Co-sited with TA/TALE, the Non-Imaging Cherenkov (NICHE) Array will measure the flux and nuclear composition of cosmic rays from below  $10^{15}$  eV to over  $10^{18}$  eV in its eventual full deployment. NICHE uses easily deployable detectors to measure the amplitude and time-spread of the air-shower Cherenkov signal to achieve an event-by-event measurement of Xmax and energy, each with excellent resolution. Prototype detectors are under construction and will form an initial prototype array (jNICHE) that will be deployed in 2015, co-measuring air showers with TA/TALE. This development forms the foundation for the full NICHE array that is designed to have sufficient area and angular acceptance to have significant overlap with the TA/TALE measurements, which provides energy cross-calibration. Simulated NICHE performance has shown that the array has the ability to distinguish between several different composition models as well as measure the end of Galactic cosmic ray spectrum. In this talk, the NICHE design, array performance, prototype development, and status will be discussed as well as NICHE's ability to measure the cosmic ray nuclear composition as a function of energy.

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