Abstract Submitted
for the APR18 Meeting of
The American Physical Society

The Non-Imaging CHErenkov (NICHE) Array: A TA/TALE extension using Cherenkov radiation to measure Cosmic Ray Composition to sub-PeV energies DOUGLAS BERGMAN, Univ of Utah, JOHN KRIZMANIC, University of Maryland, Baltimore County, TAREQ ABU-ZAYYAD, University of Utah, YOSHIKI TSUNESADA, Osaka City University, TELESCOPE ARRAY COLLABORATION — Co-sited with the Telescope Array (TA) Low Energy (TALE) extension, the Non-Imaging CHErenkov (NICHE) Array will measure the flux and nuclear composition evolution of cosmic rays (CRs) from below 1 PeV to 1 EeV in its eventual full deployment. NICHE will co-measure CR air showers with TA/TALE and will initially be deployed to observe events simultaneously with the TALE telescopes acting in imaging-Cherenkov mode, providing the first hybrid-Cherenkov (simultaneous imaging and non-imaging Cherenkov) measurements of CRs in the Knee region of the CR energy spectrum. 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 $X_{\max}$ and energy, each with excellent resolution. A prototype array of 15 first-generation detectors called j-NICHE has been deployed at the TA/TALE site. In this talk, the NICHE design, array performance, j-NICHE status and initial data analysis will be discussed.

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Date submitted: 12 Jan 2018 Electronic form version 1.4