Abstract Submitted
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The Non-Imaging CHErenkov Array (NICHE): A TA/TALE extension to measure the flux and composition of Very-High Energy Cosmic Rays DOUGLAS BERGMAN, University of Utah, JOHN KRIZMANIC, USRA, GSFC, PIERRE SOKOLSKY, University of Utah, TELESCOPE ARRAY COLLABORATION — Co-sited with TA/TALE, the Non-Imaging CHErenkov Array (NICHE) will measure the flux and nuclear composition of cosmic rays from below 10^{16} eV to over 10^{18} eV in its initial deployment. Furthermore, the low-energy reach can be lowered below the cosmic ray knee via counter redeployment or additional counters. 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. NICHE will have sufficient area and angular acceptance to have significant overlap with the TA/TALE detectors to allow for 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, 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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