

Abstract Submitted  
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**Observing Ultra-High-Energy Cosmic Rays with a prototype of the Fluorescence detector Array of Single-pixel Telescopes** JOHN FARMER, KICP, Univ. of Chicago, THE FLUORESCENCE DETECTOR ARRAY OF SINGLE-PIXEL TELESCOPES (FAST) COLLABORATION — Fluorescence detector Array of Single-pixel Telescopes (FAST) is an R&D project for the next generation of cosmic ray detectors; it addresses the need to instrument a huge area at a low cost to observe the most energetic Ultra-High-Energy Cosmic Rays (UHECRs). FAST features a compact design with four 200 mm PMTs at the focal plane of a 1.6 m segmented mirror with an automated DAQ system. As of 2018, we have assembled two iterative prototypes at the Black Rock Mesa site of the Telescope Array (TA) experiment in Utah, demonstrating stable remote operation under high background and stereo observations of UHECR events, artificial light sources, and ultraviolet laser shots. We discuss UHECR measurements and calibrations for these prototypes, compare with artificial traces generated by Monte Carlo and ray-tracing simulations, and discuss the possibility of using FAST to cross-calibrate the energy scales of the two largest UHECR observatories, the Telescope Array experiment and the Pierre Auger Observatory.

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