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First results from the full-scale prototype for the Fluorescence detector Array of Single-pixel Telescopes

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The Fluorescence detector Array of Single-pixel Telescopes (FAST) is a design concept for the next generation of Ultra-High-Energy Cosmic Ray (UHECR) observatories, addressing the requirements for a large-area, low-cost detector suitable for measuring the properties of the highest energy cosmic rays. In the FAST design, a large field of view is covered by a few pixels at the focal plane of an optical apparatus. Motivated by the successful detection of UHECRs using
a prototype comprised of a single 200 mm PMT and a 1 square meter Fresnel lens system, we have developed a new full-scale prototype consisting offour 200 mm PMTs at the focus of a 1.6m segmented mirror. In October 2016 we installed the full-scale prototype at the Telescope Array site in central Utah, USA, and began steady data acquisition. We report on first results of the full-scale FAST prototype, including measurements of artificial light sources, distant ultraviolet lasers, and UHECRs.

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