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Detection of very-high-energy gamma rays from the Crab Nebula with the prototype Schwarzschild-Couder Telescope LESLIE TAYLOR, University of Wisconsin - Madison, CHERENKOV TELESCOPE ARRAY COLLABORATION — The Schwarzschild-Couder Telescope (SCT) is a candidate for the medium-sized telescope in the Cherenkov Telescope Array (CTA), the next-generation ground-based observatory for very-high-energy gamma-ray astronomy. CTA will have unparalleled sensitivity and angular resolution and will detect gamma-ray sources nearly 100 times faster than current arrays, enabling valuable multiwavelength and multimessenger observations. A prototype SCT (pSCT) has been constructed at the Fred Lawrence Whipple Observatory. The pSCT uses a dual-mirror design with a 9.7 m primary mirror. It has a large field of view (2.68^{o}), a higher resolution, and double the sensitivity compared to current single-mirror telescope designs. The high-resolution camera uses densely packed silicon photomultipliers and state-of-the-art electronics, capable of imaging air showers with waveform readout at a rate of one billion samples per second. It is currently partially instrumented with 1600 pixels. The pSCT was inaugurated in January 2019, with commissioning continuing throughout that year. The first campaign of observations with the pSCT was conducted in January and February of 2020. Gamma-ray emission from the Crab Nebula was detected with a significance of 8.6 sigma. An upgrade to the pSCT camera is currently underway. The upgrade will fully populate the focal plane - increasing the field of view to 8.04^{o}. The upgrade will also include lower noise electronics allowing for better energy reconstruction and lower energy thresholds.

Leslie Taylor
University of Wisconsin - Madison

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