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Advancing Particle Astrophysics with the Southern Wide-field Gamma-ray Observatory (SWGO) KRISTI ENGEL, CHAD BRISBOIS, University of Maryland, College Park, PETRA HUENTEMEYER, Michigan Technological University, SWGO COLLABORATION — We present the Southern Wide-field Gamma-ray Observatory (SWGO): a next-generation, wide-field-of-view, ground-based survey instrument that will provide a unique view on gamma-ray emission from 100 GeV to hundreds of TeV. This facility will improve upon the success of other wide-field instruments that survey the Northern gamma-ray sky with a nearly 100% duty cycle, like the HAWC Observatory in Mexico, and complement observations of the LHAASO observatory in China. The SWGO five-year differential point-source sensitivity is anticipated to be the best in the Southern sky above tens of TeV, with particular strengths towards observing extended sources and monitoring transient behavior across the sky. Its science topics include unveiling Galactic and extragalactic particle accelerators and monitoring the transient sky at very high energies.

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