

Optimization of the Southern Wide Field-of-view Gamma-ray Observatory (SWGGO)

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Ground-based, wide field of view instrumentation in gamma-ray astronomy such as HAWC and LHAASO is currently limited to the northern hemisphere and hence, lack sensitivity to our Galactic Center and the rest of the southern sky. A Gamma-ray Observatory comprising an array with a high fill factor ($> 70\%$) of primarily modular and scalable Water Cherenkov Detector (WCD) units in the Southern Hemisphere between latitudes of -10 to -30 degrees and above an altitude of 4.4 km would provide 100% duty cycle, steradian field of view, and cover an energy range from 100 s of GeV to 100 s of TeV. In this contribution, we present the current status of the research and development phase of the project, developments towards a common framework for simulation and analysis and initial optimization studies with a candidate double-chambered WCD array.

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