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Astroparticle physics with the Southern Wide-field Gamma-ray Observatory (SWGO)

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Abstract

The scientific potential of a wide field of view, and very high duty cycle, ground-based gamma-ray detector has been demonstrated by the current generation instruments HAWC and ARGO and will be extended in the Northern hemisphere by LHAASO. No such instrument exists in the southern hemisphere, where great potential exists for the mapping of large scale emission as well as providing access to the full sky for transient and variable multi-wavelength and multi-messenger phenomena. Access to the Galactic Centre and complementary with the major facility CTA-South are key motivations for such a gamma-ray observatory in the south. There is also significant potential for cosmic ray studies, including anisotropy. In this seminar, the Southern Wide-field Gamma-ray Observatory (SWGO) and its main goals will be introduced.