

Wide-field Gamma-ray Observations in a Natural Lake

Ground-level particle detection is a powerful approach to TeV gamma-ray astronomy. Ground-particle array observatories such as HAWC detect gamma-rays via water-Cherenkov detector units in tanks or buildings. This contribution is about the possibility of deploying water-Cherenkov detector units directly into a natural lake, specifically as one option for the future Southern Wide-field Gamma-ray Observatory (SWGGO). In the lake concept, bladders filled with clean water are deployed near the surface of a natural lake, where each bladder is a light-tight stand-alone unit containing one or more photosensors. Possible advantages of this design, including reduced cost and improved muon-tagging performance thanks to better shielding, will be discussed, along with challenges. We will describe the tests performed at a custom-built facility and other developments towards a realistic prototype.

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