

Third MODE Workshop on Differentiable Programming for Experiment Design



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Geometry Optimization of the SWGO Cherenkov Array

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The SWGO experiment aims at measuring ultra-high-energy gamma ray showers through an array of water Cherenkov tanks deployed at high altitude in the southern hemisphere. A measurement of photon flux entails the separation of hadronic backgrounds and a precise energy and position reconstruction. In this presentation we propose a method for the optimization of the placement on the ground of the detector tanks, using differentiable programming techniques. A parallel study of tank design integrated in the pipeline will produce an end-to-end model suitable for working out the global configuration guaranteeing the maximum scientific output of the experiment.

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