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LAGO studies to detect Gamma-Ray Burst and High Energy Astrophysics sources using water Cherenkov detector arrays

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The Latin American Giant Observatory (LAGO) operates a network of water Cherenkov detectors (WCD) at different sites in Latin America. Spanning over different latitudes, altitudes and geomagnetic rigidity cutoffs. LAGO detectors at high altitudes have good sensitivity to electromagnetic secondary radiation that is the expected signature of this kind of high energy events. The spanning of LAGO sites results in a very wide Field of View that alongside the WCDs characteristics makes a large aperture and high duty cycle Observatory.

GRBs are of the brightest transients detected, with typical energies in their prompt phase ranging from keV to several tens of GeV. Recently GRB190114C was the first GRB detected at TeV energies by the MAGIC experiment.

We present results for the LAGO sensitivity as using small arrays of WCDs for the detection of events like GRB190114C. We also pretend to extend this study to other galactic sources that are known to be gamma steady emitters in the TeV range. Also we show the simulatation of the expected response of a small array of three equispaced LAGO WCD to this kind of transients or steady gamma sources that are being deployed at four FOV-overelaped, high-altiutude LAGO sites in the Andes range (h>4000 m.asl.). The simulation was done using ARTI, a toolkit developed by LAGO for calculating the expected background and the secondaries expected due to different astrophysical phenomena and OneDataSim, the new high-performance computing and cloud-based implementation of our simulation framework.

Poster fallback option for rejected abstracts for parallel oral presentations

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