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Prospects for VHE monitoring of Gamma-ray Bursts with SWGO

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It has been established that Gamma-Ray Bursts (GRB) can produce Very High Energy radiation ($E > 100$ GeV), opening a new window through which to investigate particle acceleration and radiation properties in the most energetic domain. We expect that next-generation instruments, such as the Cherenkov Telescope Array (CTA), will mark a huge improvement in their observation. However, constraints on the target visibility and the limited duty cycle of Imaging Atmospheric Cherenkov Telescopes (IACT), affect their ability to react promptly to transient events and to characterize them as a population. Here we use a grid of instrument performance estimates, based on the Extensive Air Shower (EAS) array concept proposed by the Southern Wide Field-of-view Gamma-ray Observatory (SWGO) collaboration, to evaluate SWGO's potential to detect and track VHE emission from GRBs. Observations by the *Fermi* Large Area Telescope (*Fermi*-LAT) at high energy ($E > 10$ GeV), identified some events with a distinct spectral component, which can represent a substantial fraction of the emitted energy and even arise in early stages of the process. Using models based on these properties, we estimate the possibilities that a wide field of view and large effective area ground-based monitoring facility has to probe VHE emission from GRBs. We show that the ability to monitor VHE transients with a nearly continuous scanning of the sky grants us the opportunity to simultaneously observe electromagnetic counterparts to gravitational waves and relativistic particles sources up to cosmological scales, in a way that is not available to IACTs.

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