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## The potential of the HAWC Observatory to observe violations of Lorentz Invariance

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The framework of relativistic quantum-field theories requires Lorentz Invariance, which among other things implies a constant velocity of light. Many theories of quantum gravity, on the other hand, include violations of Lorentz Invariance at small scales and high energies. This generates a lot of interest in establishing limits on such effects, and, if possible, observe them directly. Gamma ray observatories provide a tool to probe parts of the parameter space of models of Lorentz Invariance Violation that is not accessible in terrestrial laboratories and man-made accelerators. Transients, especially gamma-ray bursts, are a particularly promising class of events to search for such phenomena. By combining cosmological distances with high energy emission and short duration, emitting photons up to 30 GeV in less than a second, one can measure the energy dependence of the speed of photons to one part in  $10^{16}$ . We will discuss the potential of HAWC to detect effects of the violation of Lorentz Invariance and place its sensitivity in the context of existing limits.

### Collaboration

HAWC

### Registration number following "ICRC2015-I"

877

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