

In-situ axion-conversion of a gamma-ray burst

Gamma-ray bursts (GRB) are the most powerful cosmic events, observed up to the multi TeV range with modern instruments like LHAASO. The brightest one ever detected, GRB221009A, challenged the frontier of known physics. As an extragalactic source estimated at about $z \sim 0.15$, its transparency at multi-TeV energies poses a serious challenge to conventional models of the Extragalactic Background Light. Physics beyond the standard model has subsequently been invoked to explain the observation, notably axions acting as a weakly-interactive particle mediating the propagation across the intergalactic medium. In this talk, I propose a mechanism for in-situ axion conversion in the source's plasma, built upon the so-called "reverse-shock" model of B. Zhang et al.

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