

Compton polarization signatures in gamma-ray burst models

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Since the first detection of Gamma-ray Bursts (GRBs) in 1967, GRBs have been an active subject of study with many questions still left unanswered. In particular, the dominant radiation mechanism responsible for the prompt emission of GRBs remains an open question. As the host of possible GRB prompt emission models grows it has become clear that relying on spectral information alone to discern between these models may be insufficient. With IXPE successfully operating and several other high-energy polarimetry missions in the planning, high-energy polarimetry offers a new avenue to disentangle different models. To this extent we employ the use of Monte Carlo inverse Compton scattering simulations of various GRB prompt emission models in order to calculate the associated polarization signatures of these models. A particular focus is placed on calculating not only time-integrated polarization predictions, but also time-resolved polarization predictions in addition to energy-resolved polarization predictions.

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