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Crystal Eye: A Wide Field of View Instrument for Studying Astrophysical MeV Photons

Thursday, 11 July 2024 16:00 (30 minutes)

Crystal Eye represents an innovative space-based all-sky monitor designed to observe photons in the 30 keV to 50 MeV range. Utilizing a novel detection technique, this instrument features enhanced localization capabilities compared to current instruments, made possible by new materials and sensors. Its primary scientific objective is to detect electromagnetic signals from extreme phenomena in the universe. To support multi-messenger studies, the satellite will provide alerts to both space and ground-based experiments. Currently, a full-scale model of the Crystal Eye detector is under design and construction. Additionally, a smaller prototype is being prepared for a two-month mission aboard the Space Rider (ESA) in a low Earth orbit during 2025-2026. This work presents the instrument setup, along with sensitivity and performance calculations derived from Monte Carlo simulations of the complete detector configuration and prototype tests.

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