Crystal Eye

A wide view of the Universe in high energy

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on behalf of Crystal Eye collaboration
Gran Sasso Science Institute

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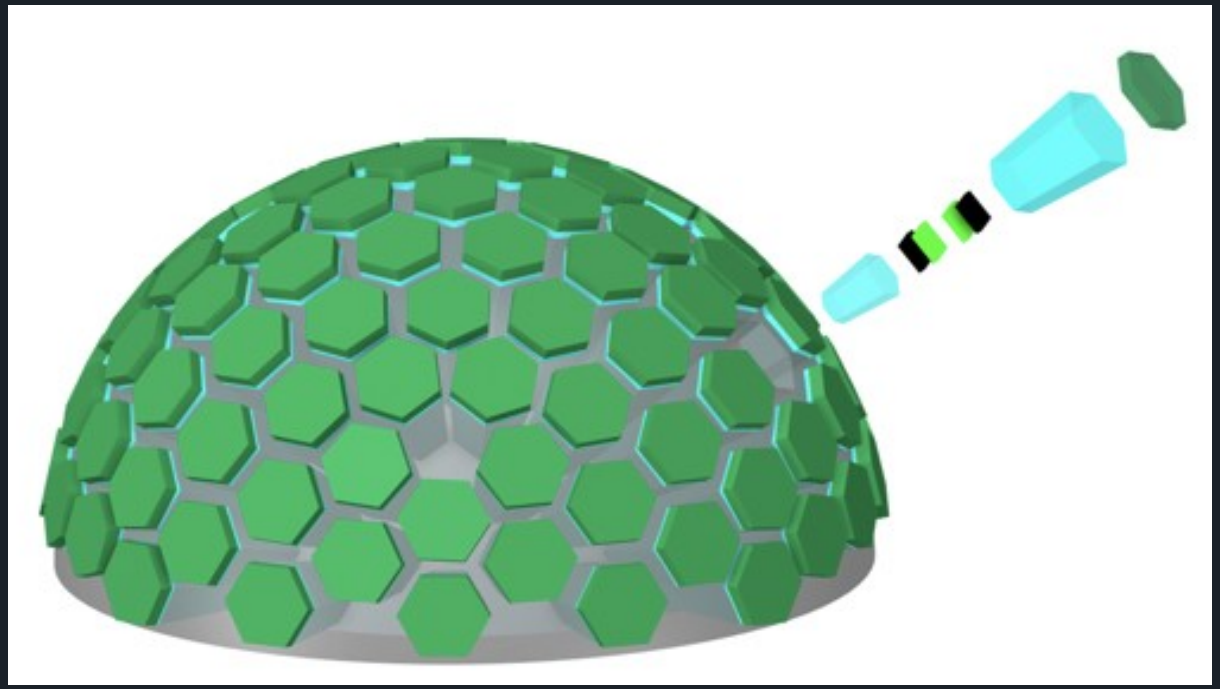
Overview

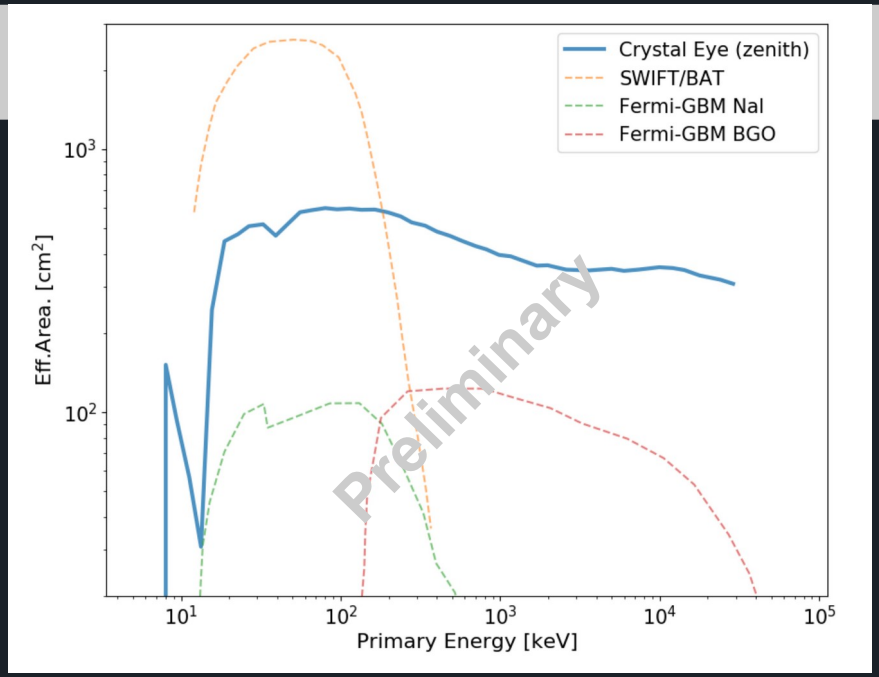
Crystal Eye is a novel concept of space-based all sky monitor for the observation of about 30 keV - 50 MeV photons.

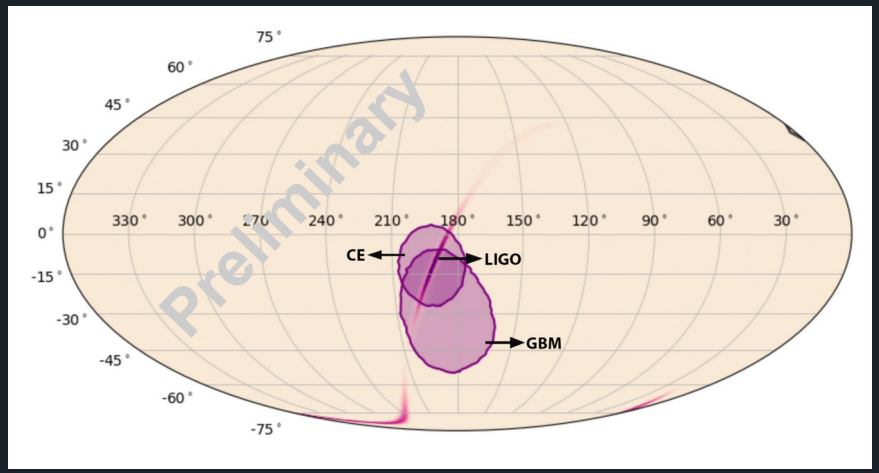


Main features:

- Wide FOV: ~ 6 sr.
- Full sky coverage.
- Very large effective area: ~ 5 times Fermi-GBM at 1 MeV.
- High localization capability: few degrees.
- Use LYSO/GAGG scintillator with SiPM for the signal readout.

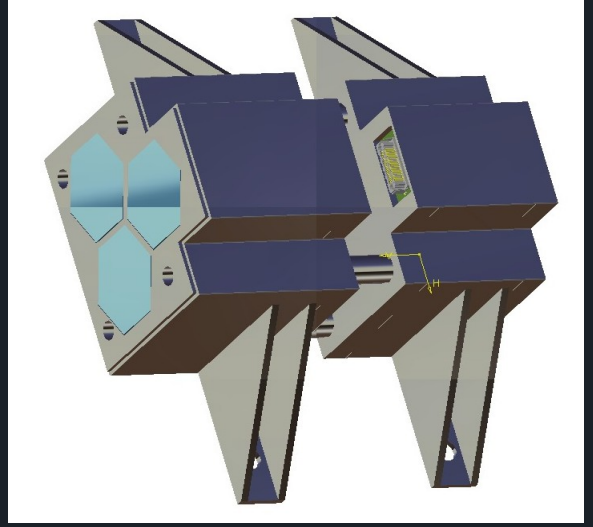
Science Goals



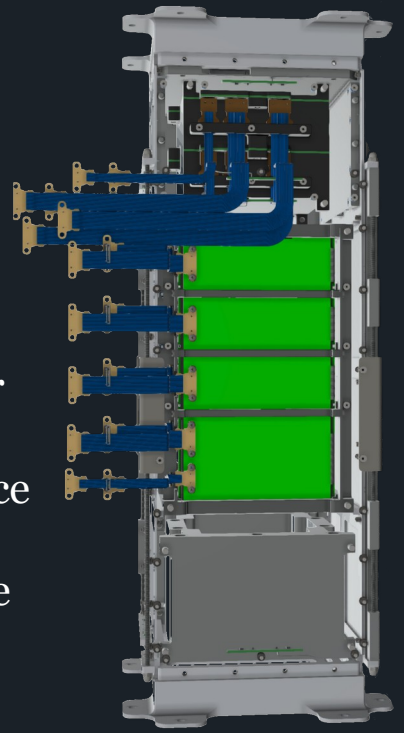


- Wide field and precise monitoring and localization of astrophysical transient phenomena to help the multimessenger scientific studies.
- Study the interesting and diverse astrophysical phenomena in the keV and low MeV region exhibiting spectral features which are, to date, not extensively measured.
- Primary scientific targets of the instrument are GRBs, GW electromagnetic counterparts and other transients, accreting systems, supernovae and particular γ emission lines.

The Crystal Eye Pathfinders: WINK & ZIRÈ



A smaller prototype with 3 pixels has been set up to fly aboard of the Space Rider (ESA) on a LEO orbit (400 km, 5.3° of inclination) for two months in 2025.



ZIRÈ detector in the NUSES mission uses the similar material (LYSO/GAGG) for its calorimeter as Crystal Eye (along with other sub-detectors) with similar science goals. While the technological advancements can be used for the mutual benefits of both the detectors.

[For more details see the presentation on Thursday by P. Savina]

Please visit the poster for more details about the Crystal Eye detector and its performance estimation.

Thank You...