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## COMCUBE: A compact Compton telescope in a 6U CubeSat

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The radiation produced by gamma-ray bursts (GRBs) is generated in highly relativistic jets. The nature of the central engines producing these jets, their physical composition, and the processes of energy dissipation and radiation in them, are still poorly understood, more than 50 years after the discovery of GRBs. Gamma-ray polarimetry is a powerful diagnostic of the high-energy physics processes at work in cosmic sources emitting collimated outflows and jets, and/or with large-scale ordered magnetic fields. The combination of polarisation information with temporal and spectroscopic data can break model degeneracies and provide new insights into these long-standing questions in astrophysics. Polarimetry is a challenging technique in gamma-ray astrophysics with no consensus yet as to the fraction of GRBs with high polarisation. A prototype compact Compton Telescope (COMCUBE) is being developed to realise a design that offers GRB polarimetric capability in the few hundred keV energy range using a combination of double-sided silicon strip detectors and scintillator plus silicon photomultiplier calorimeter modules. Performance assessment has been carried out by simulations, and construction of the prototype is underway with a planned high altitude balloon flight in Q3 2023.

### Eligibility for "Best presentation for young researcher" prize

No

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**Session Classification:** Direct hard-X-ray and  $\gamma$ -ray measurements

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