

The Compton Pair prototypes: A next-generation MeV gamma-ray observatory

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The Compton Pair (ComPair) telescope 1 is a prototype that aims to develop the necessary technologies for future medium energy gamma-ray missions, and was designed, built, and tested in a gamma-ray beam and balloon flight. ComPair 1 consists of 4 detector subsystems: a double-sided silicon strip detector (DSSD) Tracker, a novel high-resolution Frisch-grid cadmium zinc telluride (CZT) Calorimeter, and a high-energy hodoscopic cesium iodide (CsI) Calorimeter, all of which are surrounded by a plastic scintillator anti-coincidence detector (ACD). These subsystems together detect and characterize photons via Compton scattering and pair production, enable a veto of cosmic rays. The ComPair team is now developing an upgraded prototype, ComPair 2, with increased sensitivity and low-energy transient capabilities. These advancements will be enabled by replacing the DSSDs with silicon complementary metal-oxide-semiconductor monolithic Active Pixel Sensors, AstroPix. ComPair 2 consists of a tracker with AstroPix sensors and a CsI calorimeter. The ComPair 1 and 2 subsystems are a proof-of-concept for a space telescope with the same architecture that will address many questions on multi-wavelength and multi-messenger science themes. In this presentation we will give an overview and updates the ComPair 1 and 2 prototypes, and steps forward.

Collaboration

Role of Submitter

I am the presenter

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