



# TERI: cadmium zinc Telluride Radiation Imager

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## One-liner

- TERI is a technology demonstrator using large-volume cadmium zinc telluride (CZT) detectors to qualify the technology for operation in a space environment.

## Mission description

- TERI is a gamma-ray spectrometer and imager using large-volume cadmium zinc telluride (CZT) . Its primary science objective is to qualify it for space operations. As a wide-bandgap semiconductor, it can offer high-resolution gamma-ray spectroscopy of better than 1% FWHM at 662 keV, compared to <0.2% for HPGe. Unlike HPGe, it works at room temperature and does not require cryogenic cooling. However, up until recently, relatively large volumes were rare with the space community utilizing relatively small CZT detectors. TERI will employ four large-volume state-of-the-art CZT detectors with dimensions of 4×4×1.5 cm<sup>3</sup>, obtained from H3D, Inc. Using a pixelated anode and a planar cathode, the detector can reconstruct the 3D position of interaction for each event. This allows for Compton imaging. TERI is also outfitted with a coded aperture and allows for imaging of photons below 250 keV. Science objectives include characterizing CZT in a space environment and studying the internal background due to activation when in a space environment.

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