

# Cadmium Zinc Telluride X-Ray and Gamma-Ray Detectors for Astroparticle Experiments

Henric Krawczynski

Washington University, USA

Cadmium Zinc Telluride (CZT) is a large bandgap II-VI compound semiconductor that can be used for the detection of X-rays and gamma rays at room temperature. Although individual detector units are rather small ( $0.5\text{-}6\text{ cm}^3$ ), the material presents an attractive option for a wide range of applications owing to excellent spatial and energy resolutions. In this presentation, the electronic properties of CZT and the design of typical CZT detectors will be reviewed. Recent results from the fabrication and test of pixelated and cross-strip CZT detectors will be presented. We conclude with a discussion of particle physics and astrophysics experiments that use CZT detectors including the neutrino less double beta decay experiment COBRA and the X-ray polarimeter experiment X-Calibur.