

[A Balloon-Borne 3D CZT Scattering Polarimeter for Hard X-Ray Astrophysics](#)

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It is widely recognised that a measurement of the polarization of the high energy emission from cosmic sources is a key observational parameter which will aid in the understanding of the nature of high energy cosmic ray astrophysics. Therefore new instrumentation operating in this energy range should exhibit a good sensitivity also for this type of measurements. Herein we present the concept of a small high performance detector optimized for polarimetry between 100 and 500 keV suitable for use with a stratospheric balloon-borne payload dedicated to obtaining accurate measurements of the polarization of the Crab pulsar. The detector with 3D spatial resolution is based on CZT spectrometer sensitive units in a highly segmented configuration suitable for operation as a high quality scattering polarimeter. We describe recent development results and possible improvement currently under study. The proposed payload can be also considered as a pathfinder for a high performance focal plane detector for the next generation of hard X and soft gamma ray telescopes based on Laue lenses.