

The Nuclear Compton Telescope (NCT) Project

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The Nuclear Compton Telescope (NCT) is a balloon-borne telescope designed to study astrophysical sources of hard X-ray and gamma-ray emission with high spectral resolution, moderate angular resolution, and novel sensitivity to gamma-ray polarization. The heart of NCT is an array of novel cross-strip germanium detectors, each of 15-mm thickness and 5400 mm² active area, with full 3D position resolution < 2 mm³. NCT will perform Compton imaging in the 0.2-10 MeV gamma-ray band, and simultaneously perform coded-mask imaging in the 20-100 keV hard X-ray band. We are currently planning a 6-detector long duration balloon flight of the NCT instrument from Australia in December 2007. We will present the scientific goals of this flight, as well as the design, simulated performance and current status of the project. NCT is a joint effort of several institutions in US and in Taiwan.