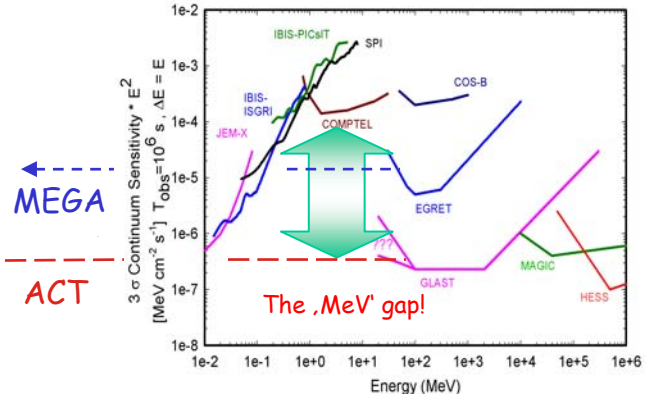
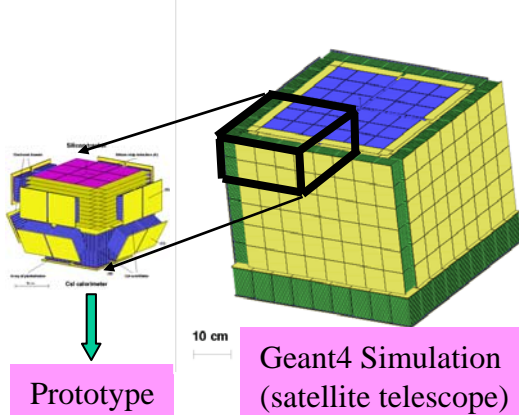
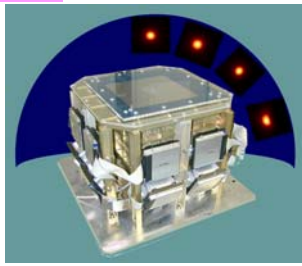


MEGA, short for **Medium Energy Gamma-ray Astronomy**, is the development of a new technology telescope in the energy band 0.4-50 MeV. As a successor to COMPTEL and EGRET, MEGA aims to improve the sensitivity for astronomical sources by at least an order of magnitude in a severely under-sensitive range between hard-X and high-energy γ -ray missions. MEGA would thus open the way for a future Advanced Compton Telescope (ACT). The wide energy range of MEGA, which spans nuclear γ -ray lines and energetic continuum spectra, the large field of view, and the capability for polarimetry will enable unique investigations into cosmic nucleosynthesis, particle accelerators around compact objects, and explosive high-energy events. We describe the design, prototyping, and calibration work achieved at MPE, and after the project has been discontinued at MPE, the outlook for a balloon test and a MidEx satellite mission proposal within a US led collaboration.

The ,retarded‘ status of MeV astronomy: Detection of highly penetrating photons and strong systematic backgrounds make the development of a sensitive γ -ray telescope very challenging. Advanced detector technologies now allow a new start in this field.



MEGABALL balloon payload



A possible MEGA satellite

After design and simulation work (since 1996) a scaled prototype was built and calibrated with radioactive sources and a beam test. In Nov. 2003 the MPE directorate decided to discontinue further hardware development on MEGA.

It was therefore decided to transfer the existing MPE hardware (detectors, anticoincidence shield, balloon gondola) to the Univ. of New Hampshire (J. Ryan, PI) to prepare a NASA approved balloon flight in 2005. The US led **MEGA collaboration** (UNH, NRL, GSFC, UoA, LANL, UCR & MPE, IASF Bologna, U. Valencia, CESR Toulouse) plans to compete in the upcoming NASA MidEx round for a mission based on the MEGA development.