Technology Needs for Gamma Ray Astronomy

Gamma ray astronomy is currently in an exciting period of multiple missions and a wealth of data. Results from INTEGRAL, Fermi, AGILE, Suzaku and Swift are making large contributions to our knowledge of high energy processes in the universe. The advances are due to new detector and imaging technologies. The steps to date have been from scintillators to solid state detectors for sensors and from light buckets to coded aperture masks and pair telescopes for imagers. A key direction for the future is toward focusing telescopes pushing into the hard X-ray regime and Compton telescopes and pair telescopes with fine spatial resolution for medium and high energy gamma rays. These technologies will provide finer imaging of gamma-ray sources. Importantly, they will also enable large steps forward in sensitivity by reducing background.