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Polarimetric prospects of the Narrow Field Telescope aboard the ASTENA mission concept

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The measurement of the polarization of the high-energy emission (>100 keV) from cosmic gamma-ray sources has now become a key observational parameter for understanding the production mechanisms and the geometry of the regions involved. Therefore, a mandatory requirement for new instrumentation in this energy range will be to get high sensitivity for polarimetric measurements. For several years our group has studied the performance of CdTe/CZT pixel spectrometers as scattering polarimeters. However, in order to achieve the sensitivities required by the next generation of instrumentation at energies higher than 100 keV, a promising solution is now offered by a broadband Laue lens telescope paired to a spectrometer with very good three-dimensional spatial resolution. This configuration is proposed for the narrow field telescope (NFT) of the ASTENA mission concept currently under study also in the framework of the AHEAD European project. In this poster we will report on the results of a Monte Carlo study devoted to evaluate the polarimetric performances of the NFT while presenting scientific cases in which a next generation hard X-/soft gamma ray mission can provide significant advances.

Eligibility for ”Best presentation for young researcher” prize

No

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