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ASTENA mission concept: an Advanced Surveyor for Transient Events and Nuclear Astrophysics

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Hard X- and gamma-ray astronomy is a crucial field for transient, nuclear, and multimessenger astrophysics. However, at energies above 80 keV imaging capabilities and sensitivity of current non-focusing instruments are very limited. To overcome these limitations, we have proposed the ASTENA mission concept, submitted to the ESA program “Voyage 2050”, that includes a wide field monitor with imaging and spectroscopic capabilities (WFM-IS) operating in 2 keV to 20 MeV, along with a narrow field telescope (NFT) based on a focusing Laue lens, with energy passband from 50 to 700 keV and 20 m focal length, which will represent a breakthrough in this energy band in terms of sensitivity and angular resolution.

Given the relatively low weight of NFT, we intend to propose it to ASI as a mission for a small Italian satellite. A 3D position sensitive detector with high spectroscopic and polarization capabilities will be positioned in the focal plane. In this poster we will present the main NFT capabilities and some of the most important science goals that can be pursued with unprecedented resolution and sensitivity.

Eligibility for “Best presentation for young researcher” prize

Yes

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