



Contribution ID: 890

Type: Talk in the parallel session

Laue lenses: focusing optics for hard-X/soft-Gamma rays

Wednesday, 7 July 2021 11:30 (20 minutes)

Hard X-/soft Gamma-ray astronomy is a key field for the study of important astrophysical phenomena such as the electromagnetic counterparts of gravitational waves, gamma-ray bursts, black holes physics and many more. However, the spatial localization, imaging capabilities and sensitivity of the measurements are strongly limited for the energy range >70 keV due to the lack of focusing instruments operating in this energy band. A new generation of instruments suitable to focus hard X-/ soft gamma-rays is necessary to shed light on the nature of astrophysical phenomena which are still unclear due to the limitations of current direct-viewing telescopes.

Laue lenses can be the answer to those needs. A Laue lens is an optical device consisting of a large number of properly oriented crystals which are capable, through Laue diffraction, to focus the radiation into the common Laue lens focus. In contrast with the grazing incidence telescopes commonly used for softer X-rays, the transmission configuration of the Laue lenses allows us to obtain a significant sensitive area even at energies of hundreds of keV.

At the University of Ferrara we are actively working on the modelization and construction of a broad-band Laue lens. In this talk we will present the main concepts behind Laue lenses, our Montecarlo modelization with our Laue Lens Library, and the latest technological developments of the TRILL (Technological Readiness Increase for Laue Lenses) project, devoted to the advancement of the technological readiness of Laue lenses by developing the first prototype of a sector of a lens made of cylindrically bent crystals of Germanium.

Primary author: FERRO, Lisa (University of Ferrara)

Co-authors: VIRGILLI, Enrico (INAF OAS Bologna); MOITA, Miguel; Prof. FRONTERA, Filippo (University of Ferrara and INAF-OAS Bologna); Dr SQUERZANTI, Stefano (INFN Ferrara); Prof. ROSATI, Piero; Dr FERRARI, Claudio (IMEM-CNR); Dr LOLLI, Riccardo (University of Ferrara); Dr CAROLI, Ezio (INAF OAS Bologna); Dr AURICCHIO, Natalia (INAF OAS-Bologna); Dr BUCHAN STEPHEN, John (INAF OAS-Bologna); Dr LABANTI, Claudio (INAF OAS Bologna); Dr FUSCHINO, Fabio (INAF OAS Bologna); Dr CAMPANA, Riccardo (INAF OAS Bologna); Dr DEL SORDO, Stefano (IASF - Palermo); Dr GARGANO, Carmelo (IASF - Palermo)

Presenter: FERRO, Lisa (University of Ferrara)

Session Classification: Future Missions for High Energy Astrophysics

Track Classification: High Energy: Future Missions for High-Energy Astrophysics