

Filippo Frontera

Position: Adjunct Professor of ICRANET, Contract Professor of the University of Ferrara, Associated Senior Scientist INAF-IASF Bologna



Period covered: January- December 2017

I Scientific Work

Experimental and observational X-/gamma-ray astronomy, in particular:

- a. Advanced process development for assembling a focusing Laue lens of gamma-rays;
- b. Study of a mission, THESEUS, now under evaluation by ESA (M5 call), devoted to high z GRBs, multi-messenger astronomy and monitoring of the X-ray sky for the search of new transient phenomena.
- c. Study of a space mission concept ASTENA (Advanced Surveyor of Transient Events and Nuclear Astrophysics) based on Laue lens (30-600 keV) with unprecedented sensitivity and a very large wide field ($>1\text{sr}$) broad band (1 keV-20 MeV) monitor with imaging and spectroscopy capabilities.
- d. Historical review and prospects of hard X-ray astronomy.

II Conferences and educational activities

II a. Conferences and Other External Scientific Work

- a. Attendance to the workshop on the Chinese-European mission e-XTP (extended X-ray Timing and Polarimetry) now under development, Rome, 6-8 Feb. 2017
- b. Attendance to the AHEAD meeting on Gamma-ray Astronomy, Rome, 3 March 2017.
- c. Lecture at the Academy of Sciences of Ferrara, 11 May 2017
- d. Invitation to the launch of the Chinese satellite HXMT (Hard X-ray Modulation Telescope), Jiayuguan (Inner Mongolia, China), 12-17 June 2017, with associated a workshop on e-XTP Chinese-European mission under development.
- e. Invited talk at the THESEUS workshop 2017, Naples, 5-6 October 2017
- f. Invited talk at the Symposium on "A decade of AGILE: Results, Challenges and Prospects of Gamma-Ray Astrophysics", Rome, 11-13 Dec 2017.

II b. Work With Students

yes, with

a) 1 PhD student (TaisMaiolino), EMJD-IRAP-PhD program

II c Other Teaching Duties

Course at the Master's Degree in Physics, University of Ferrara, on "Measures and Observations of Celestial X- and gamma-rays".

II d. Work With Postdocs

Yes, with 1 PostDoc: E. Virgilli at the Physics and Earth Sciences Department, University of Ferrara

III. Service activities

III a. Member of the IRAP-PhD Faculty

IV. Other

none

2017 List of Publications

- Van Putten, Maurice H. P. M.; Levinson, Amir; **Frontera, Filippo**; Guidorzi, Cristiano; Amati, Lorenzo; Della Valle, Massimo, *GPU-searches for broadband extended emission in gravitational waves in nearby energetic core-collapse supernovae*, eprint arXiv:1709.04455, submitted to Space Science Reviews (2017).
- Amati, L.; O'Brien, P.; Goetz, D.; Bozzo, E.; Tenzer, C.; **Frontera, F.**; Ghirlanda, G.; Labanti, C.; Osborne, J. P.; Stratta, G.; and 202 coauthors, *The Transient High Energy Sky and Early Universe Surveyor (THESEUS)*, eprint arXiv:1710.04638, submitted to Advances in Space Research (2017).
- Cavallari, Erica; **Frontera, Filippo**, *Hard X-Ray/Soft Gamma-Ray Experiments and Missions: Overview and Prospects*, Space Science Reviews, Volume 212, Issue 1-2, pp. 429-518 (2017).
- Virgilli, E.; Valsan, V.; **Frontera, F.**; Caroli, E.; Liccardo, V.; Stephen, J. B., *Expected performances of a Laue lens made with bent crystals*, J. of Astronomical Telescopes, Instruments, and Systems, 3(4), 044001 (2017). doi:10.1117/1.JATIS.3.4.044001
- Stratta, G.; Ciolfi, R.; Amati, L.; Ghirlanda, G.; Tanvir, N.; Bozzo, E.; Gotz, D.; O'Brien, P.; Frontera, F.; Osborne, J. P.; and 48 coauthors, *THESEUS: a key space mission for Multi-Messenger Astrophysics*, eprint arXiv:1712.08153, Submitted to Advances in Space Research (2017).

