Contribution ID: **18** Type: **Poster**

Ultra-fast infrared detector for astronomy

Thursday, 26 May 2022 15:31 (1 minute)

The detection of the first gravitational wave in 2015 by the LIGO-VIRGO collaboration has opened a new era for the astronomy, that now can correlate even more types of signals from the space, and now the multi-messenger astronomy is a new approach to have a more complete and deeper vision of the universe. The goal of this philosophy is to evaluate how the synchronized arrival of quite different signals from the same astronomical source can give us a more detailed description of the events. Focusing on the photon detection, different approaches and technologies are necessary for observing remote sources in gamma or X rays, UV or visible, infrared, micro or radio waves.
Considering the infrared detection, some telescopes are for satellites, like JWST (James Webb Space Telescope) and WISE, while others are ground-based, like three infrared recent instruments: VIRCAM (the VISTA InfraRed Camera), MOONS (The Multi-Object Optical and Near-infrared Spectrograph) and ERIS-NIX, both by ESO's Very Large Telescope (VLT). These detectors are designed for working "transversally"to get images and spectrographs.
The FAIRTEL experiment has been funded for 2022 by CSNV of INFN to study a not very explored and, in our opinion, interesting case: the ultra-fast infrared transient's detection. Observations on astrophysical signals with fast transient present more promising and exciting cases every day, as demonstrated for gamma ray bursts/flares or for the fast radio bursts. In the latter case, transients <1 ms have been observed. In FAIRTEL (FAst InfraRed ground-based TELescope), the authors aim to design a low-cost detector based on HgCdTe semiconductors to be used for searching astronomical infrared fast transients, even of the order of nanoseconds. The philosophy of the proposed detector consists in observing the IR signal longitudinally (which means recording time tracks) rather than transversely (which means taking pictures) as it is usually done.

Collaboration

UNI-Fi, INFN/LNF

Primary author: DRAGO, Alessandro (Istituto Nazionale di Fisica Nucleare)

Co-authors: PACE, Emanuele (FI); BINI, Simone (LNF); CESTELLI GUIDI, Mariangela (Istituto Nazionale di Fisica Nucleare); MARCELLI, Augusto (LNF); BOCCI, Valerio (Istituto Nazionale di Fisica Nucleare)

Presenter: DRAGO, Alessandro (Istituto Nazionale di Fisica Nucleare)

Session Classification: Detectors Techniques for Cosmology and Astroparticle Physics - Poster session