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Development of Payload and Platform for Gamma-ray Energy Measurement and Terrestrial Gamma-ray Flash detection

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The observations of Terrestrial Gamma-ray Flashes (TGF) from ground today are still a challenge since there is not much ground detectors are built for detecting those energetic bursts. Inherit from the detector design of the IGOSat nanosatellite, we are proposing a new project to develop a payload and a platform for measuring gamma-rays from 100 keV up to 2 MeV. The payload contains a gamma-ray detector, which is a combination of the CeBr3 crystal scintillator and surrounded EJ-200 plastic scintillators, all of them are readout by Silicon Photomultipliers (SiPMs). The payload and platform can be used to measure background gamma-ray as an observatory, or can be carried in a balloon flight for detecting the radiative photons at high altitude, especially at 15 km. Its ability of TGF detection will open us a windows to have better understands of this phenomena by comparing to the TGF models that are already recently published by other authors. Beside that, the final product can be used as a portable gamma-ray detector for other applications. This project will create a new collaboration between Vietnamese's universities: University of Science and Technology of Hanoi - USTH; Vietnamese - German University - VGU; University of Science -VNUHCM; with the support of the APC laboratory (Paris Diderot University).

Minioral

Yes

IEEE Member

No

Are you a student?

No

Author: Dr PHAN, Hiền (University of Science and Technology of Hanoi (USTH))

Co-authors: Dr VO, Hien (Vietnamese-German University (VGU)); Dr VO, Hai (Vietnam National University - Ho Chi Minh City (VNUHCM)); Dr LAURENT, Philippe (AstroParticule et Cosmologie Laboratory (APC), Paris Diderot University, CNRS/IN2P3, CEA/IRFU, Observatoire de Paris, Paris, France); Dr GERAUD-HÉRAUD, Yannick (AstroParticule et Cosmologie Laboratory (APC), Paris Diderot University, CNRS/IN2P3, CEA/IRFU, Observatoire de Paris, Paris, France)

Presenter: Dr PHAN, Hiền (University of Science and Technology of Hanoi (USTH))

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