



Contribution ID: 29

Type: Oral

Crystal Eye hard X and gamma ray all sky monitor

Wednesday 14 May 2025 11:20 (25 minutes)

The Crystal Eye detector is an all-sky spaceborne gamma-ray monitor intended to cover the energy range between 10 keV - 30 MeV, a region currently lacking of extensive observations and monitoring. To optimize its design and estimate its scientific potential, it is essential to understand the environment where it will operate and how it could affect the observation process. With this aim, we assumed the orbital parameters of a potential future mission to be ~ 550 km in near equatorial orbit, where the main backgrounds include cosmic diffuse and albedo gamma radiation, primary and secondary protons and neutrons. The effective area and efficiency are calculated by simulating low energy gamma-ray sources, and used to estimate the detector sensitivity to transient and steady sources. A method to estimate the online transient localization performance of the detector is also developed and discussed.

The GEANT4 simulations were driving the engineering design optimization, which is now at the end and the production of an EQM is going to start.

In the talk the optimization process and the expected performances will be discussed.

Eligibility for "Best presentation for young researcher" or "Best poster for young researcher" prize

No

Authors: BARBATO, Felicia (Gran Sasso Science Institute (IT)); SARKAR, Ritabrata (Gran Sasso Science Institute); SAVINA, Pierpaolo (Gran Sasso Science Institute); Ms SIDDIQUE, Iqra; SMIRNOV, Aleksei (Gran Sasso Science Institute (IT))

Presenter: BARBATO, Felicia (Gran Sasso Science Institute (IT))

Session Classification: Instrumentation and missions for direct X-ray and gamma-ray measurements