



Contribution ID: 90

Type: **Oral presentation**

Surveying the MeV gamma-ray sky with AMEGO-X

Monday, 12 September 2022 17:10 (20 minutes)

Recent detections of gravitational wave signals and neutrinos from gamma-ray sources have ushered in the era of multi-messenger astronomy, while highlighting the importance of gamma-ray observations for this emerging field. AMEGO-X, the All-sky Medium Energy Gamma-Ray Observatory eXplorer, is an MeV gamma-ray instrument proposed to the 2021 call for medium-sized explorer missions. AMEGO-X will survey the sky in the energy range from 100 keV to 1 GeV with unprecedented sensitivity, as well as detecting and localizing transient events such as gamma-ray bursts and magnetar activity down to 25 keV. AMEGO-X will detect gamma-ray photons both via Compton interactions and pair production processes, bridging the “sensitivity gap” between hard X-rays and high-energy gamma rays. AMEGO-X will provide important contributions to multi-messenger science and time-domain gamma-ray astronomy, studying e.g. high-redshift blazars, which are probable sources of astrophysical neutrinos, and gamma-ray bursts. I will present an overview of the instrument and anticipated science program.

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Session Classification: Gamma Rays