Abstract Submitted
for the APR20 Meeting of
The American Physical Society

POEMMA: Probe Of Extreme Multi-Messenger Astrophysics[1]
JOHN KRIZMANIC, UMBC/CRESST/NASA/GSFC, POEMMA COLLABORATION — The Probe Of Extreme Multi-Messenger Astrophysics (POEMMA) is designed to identify the sources of ultra-high energy cosmic rays (UHECRs) and to observe cosmic neutrinos. Developed as NASA Astrophysics Probe-class mission, POEMMA consists of two spacecraft flying in a loose formation at 525 km altitudes. Each spacecraft hosts a large Schmidt telescope with a novel focal plane optimized to observe both the UV fluorescence signal from extensive air showers (EASs) and the optical Cherenkov signals from EASs. In UHECR stereo fluorescence mode, POEMMA will measure the spectrum, composition, and full-sky distribution of the UHECRs above 20 EeV along with remarkable sensitivity to UHE neutrinos. POEMMA is designed to quickly re-orient to a Target-of-Opportunity (ToO) neutrino mode to observe transient astrophysical sources with unique sensitivity. In this mode, POEMMA will be measure cosmic tau neutrino events above 20 PeV by measuring the upward-moving EASs induced from tau neutrino interactions in the Earth. POEMMA's science goals, instrument mission designs, and simulated UHECR and neutrino measurement performance will be presented.

[1]This research was supported by NASA Award NNX17AJ82.

John Krizmanic
NASA Goddard Space Flight Center

Date submitted: 09 Jan 2020 Electronic form version 1.4