Targets of Opportunity with POEMMA[1] TONIA VENTERS, NASA
Goddard Space Flight Center, MARY RENO, University of Iowa, JOHN KRIZ-
MANIC, CRESST/NASA GSFC/UMBC, LUIS ANCHORDOQUI, CUNY/AMNH,
CLAIRE GUPIN, JSI/UMd, ANGELA OLINTO, University of Chicago, POEMMA
COLLABORATION — Cosmic-ray accelerators capable of reaching ultra-high en-
ergies are expected to also produce very-high energy neutrinos via hadronic inter-
actions within the source. Many of the candidate astrophysical source classes are
either transient in nature or exhibit flaring activity. Leveraging the Earth as a neu-
trino converter, the Probe of Extreme Multi-Messenger Astrophysics (POEMMA)
will be able to detect cosmic tau neutrinos at energies 10 PeV and above. As
a space-based mission, POEMMA will have orbital characteristics and slewing ca-
pability that will ensure full-sky coverage and enable rapid follow up, making it
uniquely suited for searching for neutrinos from astrophysical transient events. We
present the latest results of a study exploring the prospects of detecting tau neutrino
events with POEMMA from a variety of astrophysical transient source classes and
potential backgrounds during Target-of-Opportunity observations.

Tonia Venters
NASA Goddard Space Flight Center

Date submitted: 08 Jan 2021   Electronic form version 1.4