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POEMMA: Probe Of Multi-Messenger Astrophysics JOHN KRIZMANIC, CRESST/NASA/GSFC/UMBC, POEMMA COLLABORATION — Selected as a NASA Astrophysics Probe mission concept study in 2017, the Probe Of Multi-Messenger Astrophysics (POEMMA) mission science goals are to identify the sources of ultra-high energy cosmic rays (UHECRs) and to discover cosmic neutrinos above 10 PeV. POEMMA will consist of two satellites, flying in loose formation, each with a wide field-of-view UV telescope, using an innovative Schmidt camera, optimized to observe air fluorescence and air Cherenkov signals from UHECRs and neutrinos. POEMMA's goal is to obtain orders of magnitude higher sensitivity to the highest energy cosmic messengers compared to what been achieved so far by ground-based experiments. POEMMA will measure the spectrum, composition, and sky distribution of the UHECRs above 10 EeV to identify the most energetic cosmic accelerators in the universe and study the acceleration mechanism(s). POEMMA will also measure the Cherenkov signals from upward-moving air showers induced from tau neutrino interactions in the Earth. In this talk, the science goals, instrument design, launch and mission profile, and simulated UHECR and neutrino measurement capabilities for POEMMA will be presented.

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