Christina
Lee
University of California, Berkeley
Patrick Dunn, University of California, Berkeley
Bent Ehresmann, Southwest Research Institute
Poster
Mars is weakly shielded from space weather due to its tenuous atmosphere and a lack of a global magnetic field. Thus, the space weather impacts and effects on human explorers and supporting infrastructure at Mars (in orbit and at the surface) can be more severe than those experienced at Earth. Continuing to improve our understanding of the high-energy particle radiation environment at Mars will be important for both scientific and exploration purposes. For example, charged particle radiation can cause ionization in the lower and middle Martian atmosphere and subsequently alter the atmospheric chemistry and ionospheric structure, thereby affecting communications. At higher energies, the charged particle radiation can pose a clear health hazard for humans in orbit and at the surface.

We will present the energy spectra for > 13 MeV solar protons that are derived from particle count rate data measured in orbit around Mars by the MAVEN SEP instrument and discuss the peak fluxes and fluences for some of the largest SEP events observed. Some of this discussion includes the peak fluxes in the context of the NOAA Solar Radiation Storm Scale (S-scale). We will also present the event-integrated fluence spectra and compare the spectral hardness for several of our largest events, some of which are considered to be ‘Mars-GLE’ events since they were detected at the surface by MSL/RAD.
Thursday, April 30, 2026
Poster location
46
Meeting homepage
2026 Space Weather Workshop
Download to PDF