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Poster
Understanding and mitigating the radiation exposure encountered on the surface of Mars remains one of the mahor challenge in preparation for future human exploration of the Red Planet.

Since Mars possesses only a thin atmosphere high-energy particles (e.g., galactic cosmic protons with energies greather than ~ 150 MeV) can penetrate deep into the atmosphere and the subsurface. Therfore, the Martian surface radiation environment is mainly consisting of Galactic Cosmic Radiation (GCR) and secondary particles created by their interactions with nuclei in the atmosphere or soil, with additional contributions from spontaneous Solar Energetic Particles (SEPs), emitted from the Sun during solar storms.

Here, we focus on two main subjects aimed at understanding the Martian surface radiation field. Firstly, we present updated analysis on how the natural terrain on Mars, e.g. provided by buttes or steep cliff and canyon walls influences the radiation dose as measured by Curiosity's Radiation Assessment Detector (RAD). The presence of any large natural terrain feature might aid in reducing the local exposure to the prevalent radiation encountered on the surface. We will provided analysis on all identified cases where decreases in RAD radiation dose measurements can be attributed to influence of the surrounding terrain; Secondly, we present initial analysis on how a radiation detector, such as RAD, might be employed to serve as an in-situ, real-time solar-storm warning monitor on Mars and how such an instrument could help to reduce the radiation exposure to future human explorers during such solar storms.

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