

Solar Energetic Particles (SEP), Solar Modulation and Space Radiation: New Opportunities in the AMS-02 Era

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The Space Radiation Environment on the Surface of Mars Measured with the RAD Instrument on the Mars Science Laboratory

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The Radiation Assessment Detector (RAD) is a compact, lightweight energetic particle analyzer currently operating on the surface of Mars as part of the Mars Science Laboratory (MSL) Mission. RAD is providing the first measurements of the energetic particle radiation environment on the surface of another planet due to solar flares, coronal mass ejections (CMEs), and galactic cosmic rays (GCRs).

RAD is providing synoptic measurements of the energetic particle environment at a 2nd location in heliosphere (other than near-Earth or L1), and will aid heliospheric modeling over solar cycle. These observations of SEP fluxes are contributing to a solar energetic particle (SEP) event database at Mars and the Martian surface to aid prediction of Solar Particle Events (SPEs), including onset, temporal & size predictions. This presentation will provide an overview of the RAD investigation and present measurements of the solar flare, GCR and radiation environment on the surface of Mars, and discuss the importance of providing broad heliospheric coverage for situational awareness of space weather as we plan to send humans out into deep space and to Mars.

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