



PHYSIKALISCHES KOLLOQUIUM

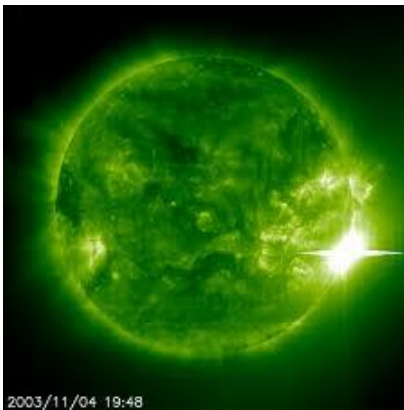
Wintersemester 2018/19

Montag, 22.10.2018, 12 Uhr c.t. **HZO 20**

Solar Energetic Particles and Space Weather

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The National Aeronautics and Space Administration (NASA) defines space weather as the term that generally refers to conditions on the sun, in the solar wind, and within Earth's magnetosphere, ionosphere and thermosphere that can influence the performance and reliability of space-borne and ground-based technological systems and can endanger human life or health. One aspect to this broad topic is covered by space radiation effects that are caused by energetic particles that can be harmful not only to space electronics but also to manned space mission to the Moon and other planets. In interplanetary space the two

major contributions are galactic cosmic rays (GCRs) and solar energetic particles (SEPs). While the temporal and spatial distribution of GCRs is well known and varying on time scales of month and spatial scales of several AU, SEP events can not only occur suddenly at most times during the solar cycle but also their spatial distribution is highly variable. One of the scientific goals of the Solar Terrestrial Relations Observatory (STEREO), launched in 2006, is to investigate the longitudinal distribution of such SEP events. The left panel of the figure below illustrates the expectation of the longitudinal distribution of SEP events stemming from a flare location before the launch of STEREO. With increasing solar activity in 2010 the first so called wide spread event was measured on January 17, 2010. Widespread event are defined to be events that show an energetic particle increase at a position that is more than 80° away from the solar source, questioning our expectation. Since than several of these events have been observed with extreme cases of being observed in the whole inner heliosphere as shown in the right panel. These findings have not only severe consequence for space travel but also on our understanding of SEP injection into the interplanetary medium as well as their transport.

Einführung: PD Dr. H. Fichtner

Die Fakultät lädt alle Interessierten herzlich ein.

Ab 11.45 Uhr Kaffee/Tee im Hörsaal