

Abstract number: S2-511 2. CRs at Earth and planets (GEO)
--

The neutron monitor network: A tool to detect solar neutrons

Artamonov, Anton¹, Kovaltsov, Gennady², Mishev, Alexander^{1,3} and Usoskin, Ilya¹

¹University of Oulu, Finland

²Ioffe Physical-Technical Institute, St. Petersburg, Russia

³Institute for Nuclear Research and Nuclear Energy, Bulgarian Academy of Sciences, Sofia, Bulgaria

When energetic protons are accelerated during solar flares in the solar atmosphere, they may produce, in nuclear collisions with the ambient matter, secondary neutrons. Since these neutrons are not affected by the magnetic field and can escape the Sun and reach the Earth. Features of these neutrons carry direct information on the in-situ conditions at the flare site. The main tool to measure solar neutrons on ground was the world neutron monitor (NM) network, later complemented by a network of dedicated solar neutron telescopes. Although measurements of solar neutrons have long history, detailed computation of the specific yield function of the NM to solar neutrons was somewhat uncertain. Here we revise the computation of the NM yield function for solar neutrons, based on new Monte-Carlo simulation of the neutron-induced atmospheric cascade, and reassess the sensitivity of the world NM network to solar neutron events.