

Milagro Detections of Solar Energetic Particles in the Current Solar Maximum

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Milagro and its prototype predecessor Milagrino have been sensitive to interplanetary protons above 5 GV from October 1997 to the present, with one major interruption from March 1998 to March 2000 during which time Milagrino was decommissioned and Milagro was integrated. The smaller Milagrino detected the 6 November 1997 GLE while Milagro failed to register any signal from the far larger GLE of 14 July 2000. Both instruments operate(d) by detecting atmospheric muons generated by solar energetic protons interacting in the atmosphere. The two instruments possess(ed) a solar-proton energy threshold that is a convolution of the atmospheric cutoff (2650 m altitude) with the geomagnetic cutoff (3 GV). This combination of effects restricts their energy range to be above 5 GV approximately. Their effective areas grow rapidly with energy above 5 GV. At 10 GV, the effective areas of Milagrino and Milagro are a factor of 1000 greater than that of Climax. In a scaler counting mode, random non-statistical fluctuations have the greatest influence on our sensitivity limit for detecting events. We present a summary of observations of established GLEs and major flares.