

Fermi Large Area Telescope observations of high-energy gamma-ray emission from behind-the-limb solar flares

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Fermi LAT >30 MeV observations of the active Sun have increased the number of detected solar flares by almost a factor of 10 with respect to previous space observations. Of particular interest are the recent detections of three solar flares whose position behind the limb was confirmed by the STEREO-B satellite. These observations sample flares from active regions originating from behind both the eastern and western limbs and include an event associated with the second ground level enhancement event (GLE) of the 24th Solar Cycle. While gamma-ray emission up to tens of MeV resulting from proton interactions has been detected before from occulted solar flares, the significance of these particular events lies in the fact that these are the first detections of >100 MeV gamma-ray emission from footpoint-occulted flares. These detections present a unique opportunity to diagnose the mechanisms of high-energy emission and particle acceleration in solar flares. We will present the Fermi-LAT, RHESSI and STEREO observations of these flares and discuss the various emission scenarios for these sources.

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