Contribution ID: **35** Type: **not specified**

Observations of the Sun with Fermi-LAT in the first 10 years on-orbit

We present the results of the observations of the Sun in its quiescent state with Fermi-LAT in almost 10 years on orbit. The high energy gamma-ray emission from the Sun is due to the interactions of cosmic ray (CR) protons and electrons with matter and photons in the solar environment. Such interactions lead to two component gamma-ray emission: a disk-like emission due to the nuclear interactions of CR protons and nuclei in the solar atmosphere and a space extended emission due to the inverse Compton (IC) scattering of CR electrons off solar photons in the whole heliosphere. The observation of these two solar emission components may give useful information about the evolution of the solar cycle by probing two different CR components (proton and electrons) in regions not directly accessible by direct observations. The long period of observations allows us to study the variations of the emission between the maximum and the minimum of the solar cycle.

Moreover we will present an overview of the observation of the active Sun with Fermi, that has provided the largest sample of detected solar flares with emission greater than 30 MeV to date. The LAT data provides a new observational channel that, when combined with observations from across the electromagnetic spectrum, provide a unique opportunity to diagnose the mechanisms of high-energy emission and particle acceleration in solar flares.

Primary author: RAINO', Silvia (BA)