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# StellarICS: Inverse Compton Emission from the Quiet Sun and Stars from keV to TeV

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Gamma rays from the quiet Sun are produced by Cosmic Rays (CRs) interacting with its surface (disk component) and with its photon field (spatially extended inverse-Compton component, IC). IC is maximum close to the Sun and it extends over the whole sky. Monitoring the IC component with Fermi-LAT allows to obtain information on CR electrons close to the Sun and in the heliosphere for different solar activity and polarity. The detection of IC emission from stars allows to learn about CR electrons in their photosphere. Fermi-LAT data analyses are usually model-driven. Hence advances in model calculations and constraints from precise CR measurements are timely and needed.
We present our StellarICS code to compute the gamma-ray IC emission from the Sun and also from single stars. The code is publicly available and it is extensively used by the scientific community to analyze Fermi-LAT data. It has been used by the Fermi-LAT collaboration to produce the solar models released with the FSSC Fermi Tools. Our modeling provides the basis for analyzing and interpreting high-energy data of the Sun and of stars. After presenting examples of updated solar IC models in the Fermi-LAT energy range that account for the various CR measurements, we extend the models to keV, MeV, and TeV energies for predictions for future possible telescopes such as AMEGO, GECCO, e-ASTROGAM, HAWC, LHAASO, SWGO, and present X-ray telescopes. We also present predictions for some of the closest and most luminous stars. Work based on arXiv:2012.13126, JCAP submitted.

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