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Solar and stellar inverse Compton emission: a software package

The importance of inverse-Compton emission from interactions of cosmic-ray electrons and positrons on the photon field of the Sun (and also individual stars) was first realized around 2006.
Following the discovery of solar emission from the quiet sun in EGRET data, now Fermi-LAT is so sensitive that even such weak emission can be detected with high significance and studied in detail. This potentially allows the propagation of leptons in the inner heliosphere to be investigated, which is otherwise impossible.
Solar inverse Compton is also important as a background over the entire sky to be accounted for in studies of Galactic and extragalactic gamma-ray emission.

Hence, a general software package that provides a flexible model of the solar emission is useful to assist in interpreting such data. We present here our C++ software to compute inverse-Compton scattering from the heliosphere, as well as the photospheres of stars. It includes a formulation of modulation in the heliosphere, but can be used for any user-defined modulation model. It outputs profiles, spectra and differential flux to FITS files in a variety of forms for convenient use.
The software is publicly available and is
under continuing development, taking into account updated observations in gamma rays and cosmic rays. It uses general-purpose inverse-Compton routines with other features like energy loss rates and emissivity for any user-defined target photon and lepton spectra.

We will present the software and show examples of predictions for the solar inverse Compton, pointing out interesting features which should be the object of future data analyses.

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