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Probing signatures of particle acceleration in blazar flares in a time-dependent SSC model.

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Rapid flux variability over a large range of wavelengths is a well-known signature of blazar emission, with variability time scales of the order of a few days and below frequently observed at high energies.
Radiative models with varying degrees of complexity are generally successful in reproducing individual flare events or overall statistical behaviour, but the physical origin of blazar flares is still unclear.
Our study focuses on the shape of light curves of rapid flares considered as individual events from compact emission regions. We have explored the parameter space of a one-zone synchrotron self-Compton model for several physical scenarios leading to flares due to the injection fo additional relativistic electrons, initial acceleration and re-acceleration of electrons due to Fermi-I and Fermi-II mechanisms.
The time-dependent EMBLEM code has been used to solve the kinetic equation describing the evolution of the electron distribution, simulate broad-band spectral distributions and multi-wavelength light curves, taking into account adiabatic expansion and the internal light-crossing effect. We have identified observable signatures in the shapes of the resulting light curves and in the relative amplitudes between different bands that are specific to these generic scenarios.

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