

Modelling of gamma ray bursts and predictions for CTA observations

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We use a time-dependent numerical model to calculate the prompt GRB emission (spectra and light curves) in GeV/TeV energy range. The emission is modelled by combining a time-dependent radiative code, solving for the electron and photon distributions, with a dynamical code calculating the evolution of the physical conditions in the shocked regions of the outflow. The microphysics parameters and the parameters defining the dynamical evolution are constrained by the observed spectral evolution in the standard sub-MeV energy range as well as by Fermi/LAT observations. The confrontation of our results with the simulated GRB population led to further constraints of the parameter space for GRB prompt emission. The analysis of simulated spectra and lightcurves was performed using the Gammapy package. The results of our study will be used in the estimate of the GRB detection rate and the optimisation of the observations with CTA.

Primary author: BOSNJAK, Zeljka (FER-University of Zagreb)

Co-authors: GHIRLANDA, Giancarlo (INAF-Osservatorio Astronomico di Brera); LEFAUCHEUR, Julien (CEA Saclay, DSM/IRFU/Sap)

Presenter: BOSNJAK, Zeljka (FER-University of Zagreb)

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