

GRB prompt emission from the synchrotron radiation of relativistic electrons in a decaying magnetic field

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The parameters of observed prompt gamma-ray burst spectra provide the key constraint for the proposed emission models. The low energy slope of the photon spectrum depends on the involved emission process, and observations show that it is often not consistent with the simple assumptions of the synchrotron model. We studied the effect of the synchrotron cooling of relativistic electrons in a decaying magnetic field on the spectrum. The numerical simulations of the emitted spectrum in the comoving frame performed for a large parameter space will be presented, and the derived low energy spectral slopes will be discussed.

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