

Investigation of thermal effects appearing due to gamma-ray heating of circumstellar environment

Badjin D.A.¹, Blinnikov S.I.², Postnov K.A.¹

¹Sternberg Astronomical Institute, Moscow, Russia

²Alikhanov Institute for Theoretical and Experimental Physics, Moscow, Russia

The investigation of gamma-ray emission influence on relatively dense ($n \sim 10^{13}$ cm⁻³) structures in the environment of GRBs (< 0.1 pc) is presented. Processes of the matter heating under condition of time-dependent ionization and processes of following plasma cooling are studied. This mechanism can be responsible for the observed optical afterglow lightcurve irregularities and the X-ray spectral lines.