

Relativistic effects of radiative transfer at supernova shock breakout

A.G. Tolstov

Alikhanov Institute for Theoretical and Experimental Physics, ITEP (Moscow, Russia)

Radiative transfer is a key point of light curves and spectra modeling at supernova shock breakout. Due to high energy of the phenomenon, relativistic effects should be taken into account. Using our 1D radiative hydrodynamics code, we succeeded in numerical simulations of the breakout of shock propagation through a stellar envelope. To determine the intensity at the radiation surface we solve numerically the full time-, angle-, and frequency-dependent special relativistic transfer equation in the comoving frame using the method of characteristics. We discuss some relativistic effects of the radiation transport, present a numerical model which has been used and, finally, discuss our results of light curves modeling comparing with calculations in non-relativistic models.