

# NONLINEAR THEORY OF COSMIC RAYS ACCELERATION BY STEADY STELLAR WIND

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## ABSTRACT

We consider the model of particles acceleration to relativistic energies by spherical symmetric strong shock wave of stellar wind. It's supposed, that the particles are accelerated by the Fermi mechanism. It is taken into account the effect of the accelerated particles on the hydrodynamic parameters of stellar wind.

Our method allows to find the self-consistent steady solution for a strong shock, significantly modified by accelerated particles. On the hydrodynamic stage we give the pressure of accelerated particles and find the profile of hydrodynamical stream as a solution of hydrodynamic equation. On the kinetic stage we calculate the spectrum of accelerated particles and determine its pressure by self-consistent method. In this report we also discuss possibility of nonthermal X-ray radiation and give recommendations for observations.