The 5th international conference on particle physics and astrophysics



Contribution ID: 789

Type : Oral talk

Modification of beta-processes by magnetic field in core-collapse supernova

Friday, 9 October 2020 11:45 (15)

An influence of a magnetic field on beta-processes is investigated under conditions of a core-collapse supernova. For realistic magnetic fields reachable in astrophysical objects we obtain simple analytical expressions for reaction rates of beta-processes as well as the energy and momentum transferred from neutrinos and antineutrinos to the matter. Based on the results of one-dimensional simulations of a supernova explosion, we found that, in the magnetic field with the strength $B \sim 10^{15}$ G, the quantities considered are modified by a few percents only and, as a consequence, the magnetic-field effects can be safely neglected, considering neutrino interaction and propagation in a supernova matter. The work is supported by the Russian Science Foundation (Grant No. 18-72-10070).

Primary author(s): DOBRYNINA, AlexandraCo-author(s): OGNEV, Igor (P. G. Demidov Yaroslavl State University)

Presenter(s): DOBRYNINA, Alexandra

Session Classification : Astroparticle Physics

Track Classification : Astroparticle physics