Neutrino processes $\nu\bar{\nu} \to e^- e^+$ and $\nu \to \nu e^- e^+$ in a strong magnetic field

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The processes of neutrino production of electron positron pairs, $\nu\bar{\nu} \to e^- e^+$ and $\nu \to \nu e^- e^+$, in a magnetic field of arbitrary strength, where electrons and positrons can be created in the states corresponding to excited Landau levels, are analysed. The mean values of the neutrino energy losses due to these processes are calculated. The results can be applied for calculating the efficiency of the electron-positron plasma production by neutrinos in the conditions of the Kerr black hole accretion disc considered by experts as the most possible source of a short cosmological gamma burst. The presented research can be also useful for further development of the calculation technic for an analysis of quantum processes in external active medium, and in part in the conditions of moderately strong magnetic field, when taking account of the ground Landau level appears to be insufficient.

Presentation type

Section talk (10+5 min)

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