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Neutrino Landau Damping in Dense Stellar Plasmas ROBERT BINGHAM, Rutherford Appleton Laboratory, LUIS SILVA, IST Lisbon, J.T. MENDONÇA, IST Lisbon, P.K. SHUKLA, University of Bochum, A. SERBETO, Instituto de Física, Rio de Janeiro, Brazil) — In high energy density stellar interiors neutrinos play a significant role in cooling the dense fusion plasma. A number of processes involving neutrinos are invoked to explain energy transport by neutrino emission stellar interiors. Processes that are considered important are the plasma process in which transverse or longitudinal photons decay in to neutrino pairs, the photo neutrino process a variation of Chevenkov emission and the URCA process. We consider another collective process based on the Landau damping or growth of plasma waves by neutrinos. In this case neutrinos Landau damp on plasma waves carrying away the energy. This mechanism can reduce the cooling time of neutron stars by orders of magnitude. The effect of magnetic fields will also be considered.

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