

A new parametrization of Mass Varying Neutrinos applied in Supernovae

In this work we present a new parametrization, which also includes the situation described in Cirelli et. al. model, of mass varying neutrino (MaVaN) model. Our formulation presents three phenomenological advantages: the first one is that the mass square difference, which depends on the neutrino density, can increase or decrease during the neutrino propagation in some environment; secondly we can control the position in the same environment where we will have a substantial modification in the mass square difference; and finally the value of the amplitude of this mass square difference can be modified. We apply this model to a supernova case, discussing the survival probabilities for $\nu_e \rightarrow \nu_s$ and $\bar{\nu}_e \rightarrow \bar{\nu}_s$, comparing it to constraints of SN1987A, such as $P_{\bar{\nu}_e \bar{\nu}_e} < 0.5$ for electronic antineutrinos. Also we analyze it in the context of the r-process nucleosynthesis, expecting to see if the condition $Y_e < 0.5$ can put bounds on the neutrino oscillation parameters in the MaVaN context model.

Primary author: Mr ROSSI TORRES, Fernando (Unicamp)

Co-authors: Dr GUZZO, Marcelo M. (Unicamp); Dr PERES, Orlando L. G. (Unicamp); Dr DE HOLANDA, Pedro C. (Unicamp)

Presenter: Mr ROSSI TORRES, Fernando (Unicamp)