

From neutrino oscillations to new physics

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Massive neutrinos together with the existence of dark matter are two of the most compelling evidence for physics beyond the standard model. Several extensions of the standard model, for instance motivated by neutrino masses, can also generate new neutrino interactions. It is then interesting to establish whether this new neutrino interactions are 'observable' or not. Working in an specific beyond the standard model would not be practical, but instead an effective and model independent approach to the problem is much more convenient. This effective framework to deal with the new couplings is known as Non-standard Neutrino Interactions or NSI in short. Phenomenologically, the goal is to determine the strength of the NSI based on its effect on a weak process in general or in a neutrino-related process in particular. Neutrino oscillations (and also different neutrino scattering processes) have provided an interesting arena to probe the NSI couplings. In this talk I will describe the NSI framework, the current bounds on the NSI couplings, and the NSI effects on neutrino oscillations. Examples of how observed events on neutrino oscillation experiments constrain some of the NSI couplings will also be given.