

# NuFact15 : XVII International Workshop on Neutrino Factories and Future Neutrino Facilities



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## Neutrinos generating events for intranuclear cascade in CRISP code

Some years ago, the CRISP (Collaboration Rio-Ilhéus-São Paulo) code was developed to describe spallation and fission reactions [1] using the Monte Carlo method approach. In order to improve the physics and the capacity of prediction of the code, the neutrino channel is being implemented. This improvement could be applied in several experiments where the neutrino-nucleon/nucleus cross section is used to measure neutrino oscillations [2]. A study of the neutrino-nucleon interaction was made and critically analyzed taking into account the advantages and shortcomings of CRISP when the neutrino event generator is implemented. It is known that the neutrino-nucleus interaction is fundamental for event detection in neutrino oscillation experiments. The treatment of the interaction in the nuclear medium is more complicated due to the processes involve effects of nuclear structure and interactions between the various nucleons. The effect of the nuclear medium and the interactions of the final state will be included to make more accuracy comparisons with the different experiments fluctuations. An accurate event generation program leads to the elimination of “false events”. The primary amplitudes of neutrino-nucleon interaction developed by C. Barbero and A. Mariano [3] will be used. This formalism is essentially different from other ones in the way to treat the resonances and their interference with the non-resonant background. A comparison will be performed with others formalisms employed in neutrino generator events, such as in NUANCE [4] or GENIE [5] codes.

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