

Monte Carlo simulation in solar neutrino experiments

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Monte Carlo simulations have continuously increased their importance in solar neutrino physics. Nowadays they play a crucial role in the interpretation of acquired data. Consequently the understanding and a proper modelling of the detector response is a key point for a successful experiment. Recent Borexino updates show in a clear way how precision measurements can benefit from a reliable detector simulation.

After a brief introduction to the similarities and the peculiarities of the Monte Carlo codes of several recent solar neutrino experiments, this talk will highlight the important aspects to take into account using the Borexino experiment as a test case. Particular emphasis will be given to a novel efficient method for simulating external background events surviving passive shielding. This technique allows to reliably predict the effect in the final spectrum of the contaminants present in the construction materials and can be very useful for the next generation of liquid scintillator experiments.

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