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Coherent Meson Production in the NOMAD Experiment

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We present recent NOMAD measurements on neutrino-induced coherent production of π^0 , ρ^+ and ρ^0 mesons. The NOMAD detector is based upon a low density design (0.1 g/cm^3) offering excellent momentum, energy and angular resolutions, which are well suited for the measurement of the coherent production processes.

The new NOMAD measurements are compared with different models for the coherent scattering off nuclei, in which all nucleons participate in the interaction and the nucleus recoils intact. These measurements can also provide a test of our understanding of the weak current at small momentum transfer, namely the PCAC and CVC hypotheses, which are used to model the processes. As a utilitarian application of the measurements, we will discuss the use of coherent π and ρ to provide constraints on neutrino fluxes and energy scales.

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