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Muonless Events in ICAL at INO

The primary physics signal events in the Iron Calorimeter at India-based Neutrino Observatory are the ν_μ charged current (CC) interactions with a
well defined muon track. Apart from these events, the Iron Calorimeter can also detect other types of neutrino interactions, i.e. the electron neutrino charged current interactions and the neutral current events. It is possible to have a dataset containing mostly ν_eCC events, by imposing appropriate selection cuts on the events. The ν_μCC and the neutral current events form the background to
these events. This study uses Monte Carlo generated neutrino events, to design the necessary selection cuts to obtain
a ν_eCC rich dataset. An optimized set of constraints are developed which balance the need for improving the purity
of the sample and having a large enough event sample. Depending on the constraints used, one can obtain a neutrino data sample with the purity of ν_e events varying between 55\% to 70\%.

additional information

For details, on may refer to our paper: JINST 10 (2015) 04, P04006.

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