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# Neutral Current Neutrino Interactions at FASERν

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The Forward Physics Facility (FPF) at LHC has the potential to explore the far-forward region at LHC. FASERν is the dedicated program at FPF to study collider neutrinos. Charged current neutrino interactions have been extensively studied in the context of various experiments, including FASERν. The presence of a charged lepton in the final state allows for easy identification of candidate signal events and incoming beam energy reconstruction. Neutral current neutrino interaction on the other hand have a neutrino in the final state. This imposes two challenges: a) differentiating signal from background, which is primarily neutral hadron induced in FASERν and b) reconstructing incoming beam energy when the final state has missing energy. In this work, we propose to use machine learning tools to identify and reconstruct signal events. We show how a suitable choice of event observables and proper training of the neural network can allow us to constrain NC neutrino cross-section in the 100GeV- a few TeV range. We convert this cross-section sensitivity to limits on neutrino NSI.

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