



## Poster session 2 – Tuesday 5 July

### P2.048 Muon neutrino on electron elastic scattering in the NOvA near detector and its applications beyond the Standard Model

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Using the NuMI beam at Fermilab and the NOvA near detector, we study the process by which a muon neutrino elastically scatters off an electron to produce a very forward going electromagnetic shower. By comparing  $dE/dx$  for various particle hypotheses for both longitudinal and transverse directions in a multilayer perceptron neural network, we trained a Particle ID algorithm to identify the scattered electron in an inclusive dataset. Muonneutrino-on-e elastic scattering provides a clean, pure leptonic process free from nuclear effects for understanding neutral current weak scattering and constraining the NuMI beam flux. Also, this technique can be applied in two broad areas of beyond the standard model physics: large neutrino transition magnetic moment and light dark matter particles produced in the NuMI target, both of which would create an energy-depend enhancement in the elastic scattering cross section, respectively. This poster presents an overview of the technique and sensitivities.