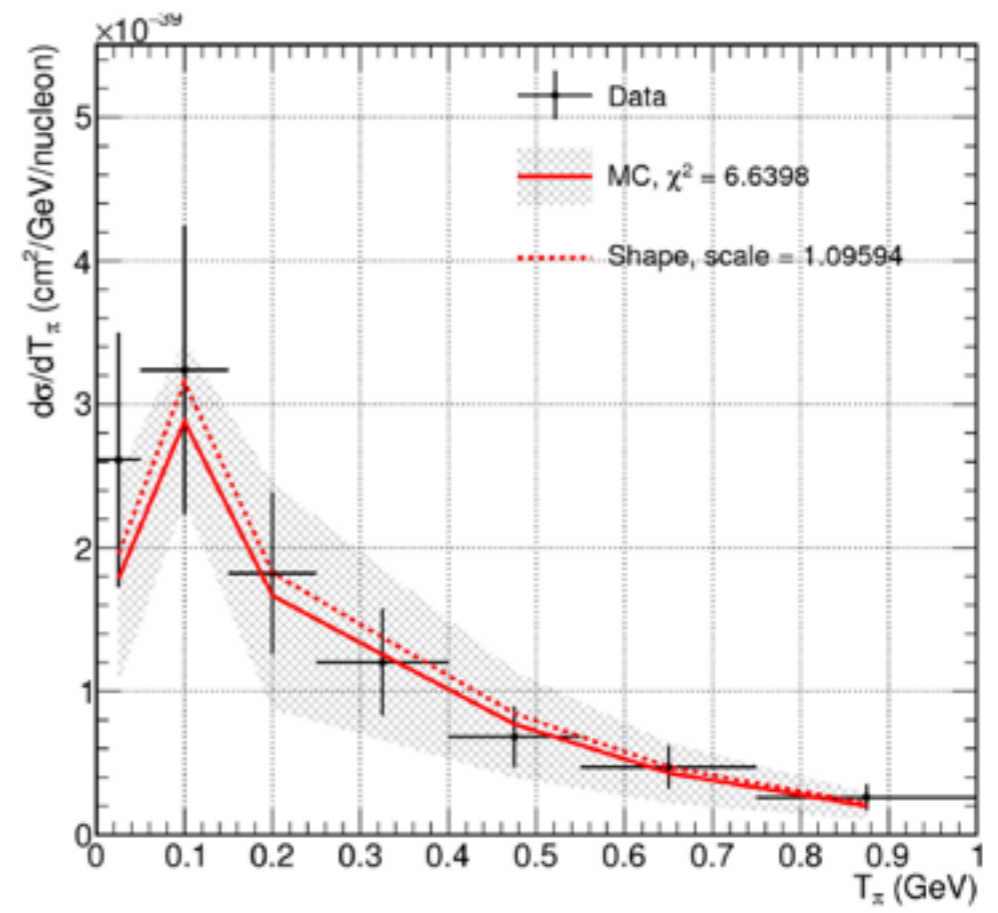


DUNE ND studies goals

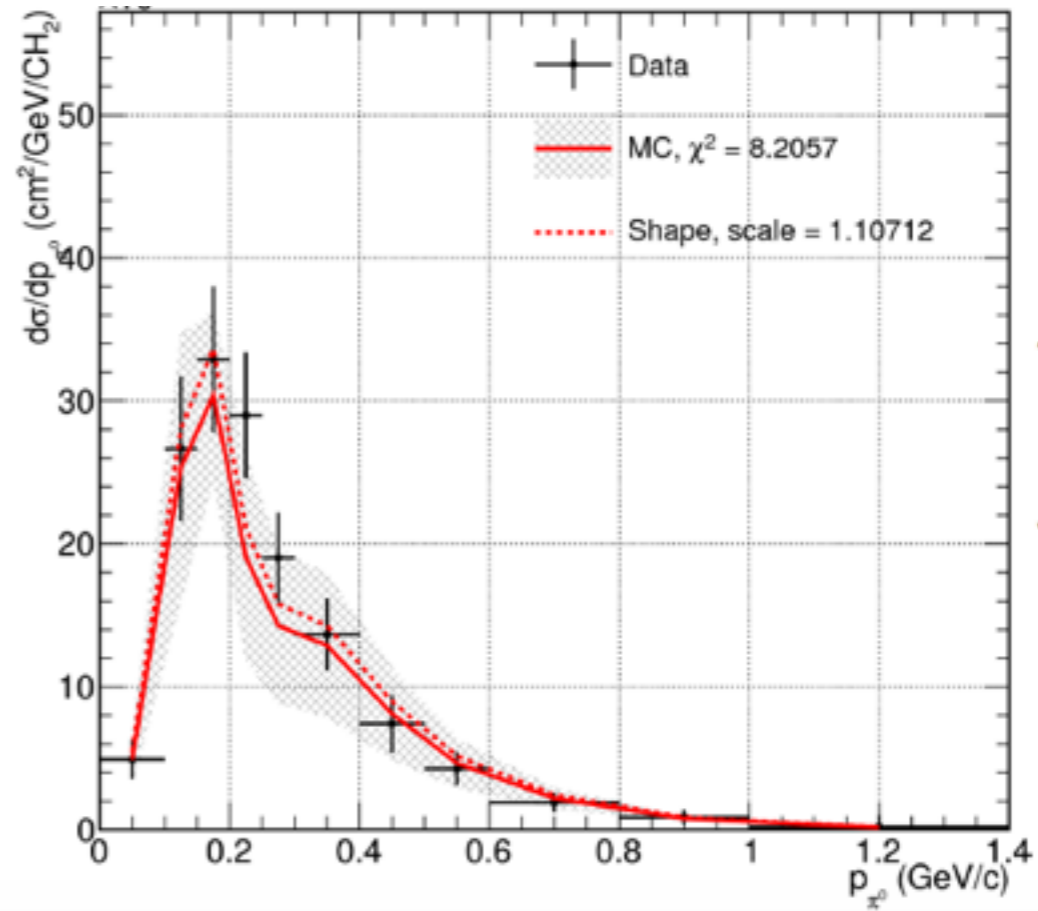
- Osc physics: Clarify the role of the cross section model in extrapolation
- ND design: How well do we need to know muon, proton, pion information for samples of particular interest to cross sections?
 - $1\mu+1p$
 - $1\mu + 1p + 1\pi$
 - $1\mu + 1\pi +$ lack of tracks at vertex (CC coherent sample)
- Consider perfect ND case, each ND configuration
- Propagate impact to an osc fit (parameter based interface)

- Model comparison with associated errors from fit from NUISANCE framework
- Fit “fake data” to estimate sensitivity of each ND sample

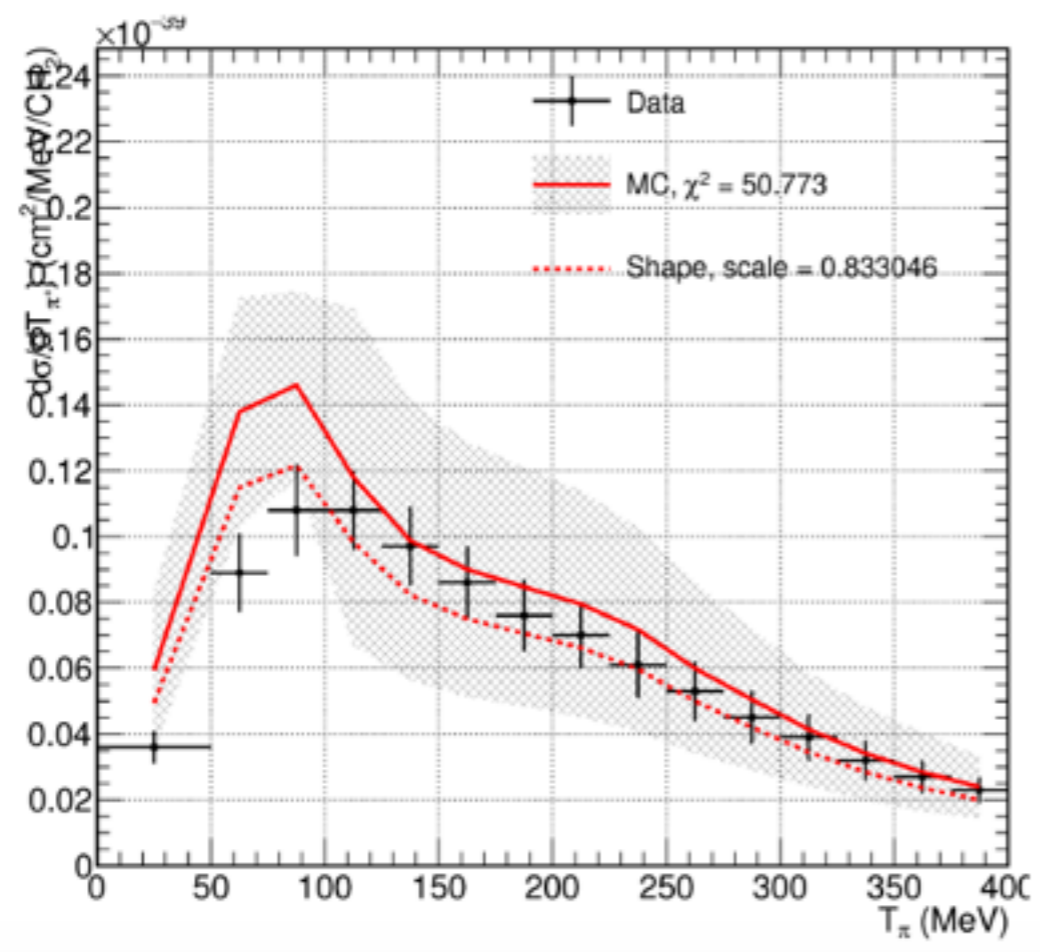
MIN $\bar{\nu}_\mu$ -CH CC1 π^0
 PRD 94 (2016) 052005



MB ν_μ -CH₂ CC1 π^0
 PRD 83 (2011) 052009



MB ν_μ -CH₂ CC1 π^+
 PRD 83 (2011) 052007



DUNE ND studies needs

- Need:
 - LAr, GaAr, FGT efficiencies (ND TF deliverables)
 - Interface to osc analyses