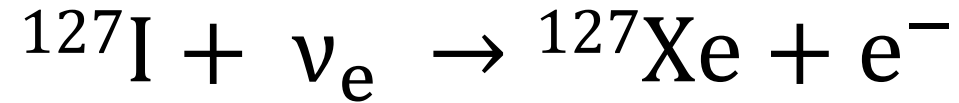
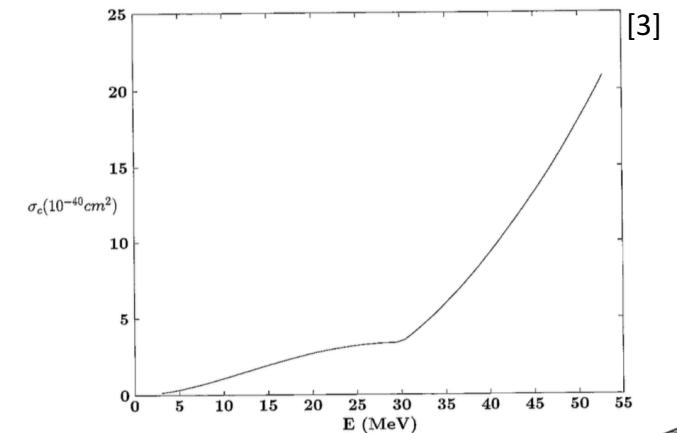
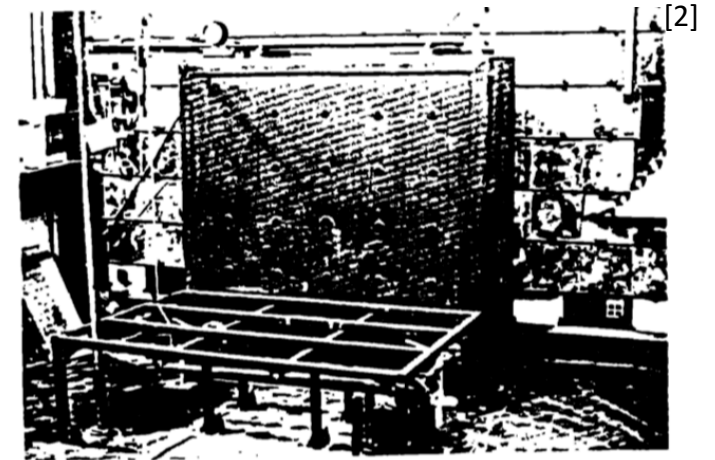


A 185 kg NaI[Tl] Detector for Observing the Charged-Current Neutrino Interaction on ^{127}I



- ^{127}I charged-current reaction proposed by W. Haxton^[1] for solar, supernova neutrino detection
- Additionally, measurement used to test nuclear models, measure g_A quenching with neutrinos
 - Very few neutrino-nuclear cross sections measured at these energies!
- Radiochemical measurement^[2] made at LAMPF in 1990s, but:
 - No energy dependence of cross section
 - Exclusive measurement (no ^{127}Xe particle emission)
- Inclusive cross section calculated by Mintz & Pourkaviani^[3]



[1] W.C. Haxton, Phys. Rev. Lett. 60 (1988)
[2] J.R. Distel, et. al, Phys. Rev. C 68 (2003)
[3] S.L. Mintz and M. Pourkaviani, Nuc. Phys. A 584 (1995)

The NaIvE Detector

- Twenty-four 7.7kg NaI(Tl) scintillators deployed to the SNS in 2016
- Goal: make a preliminary measurement of the charged-current reaction on ^{127}I , test backgrounds for a CEvNS search with ^{23}Na
 - Using dual-gain base with range 3 keV-60 MeV
- Main background for CC is cosmic muons
 - Vetos deployed in 2017, big improvement
 - Also investigating tracking algorithms
- Beam resumed in May (at higher power)
 - Work on tonne-scale detector continues

