

Proton Decay at DUNE FD

$$p \rightarrow K + \bar{\nu}$$

Aaron Higuera
University of Houston

Generation

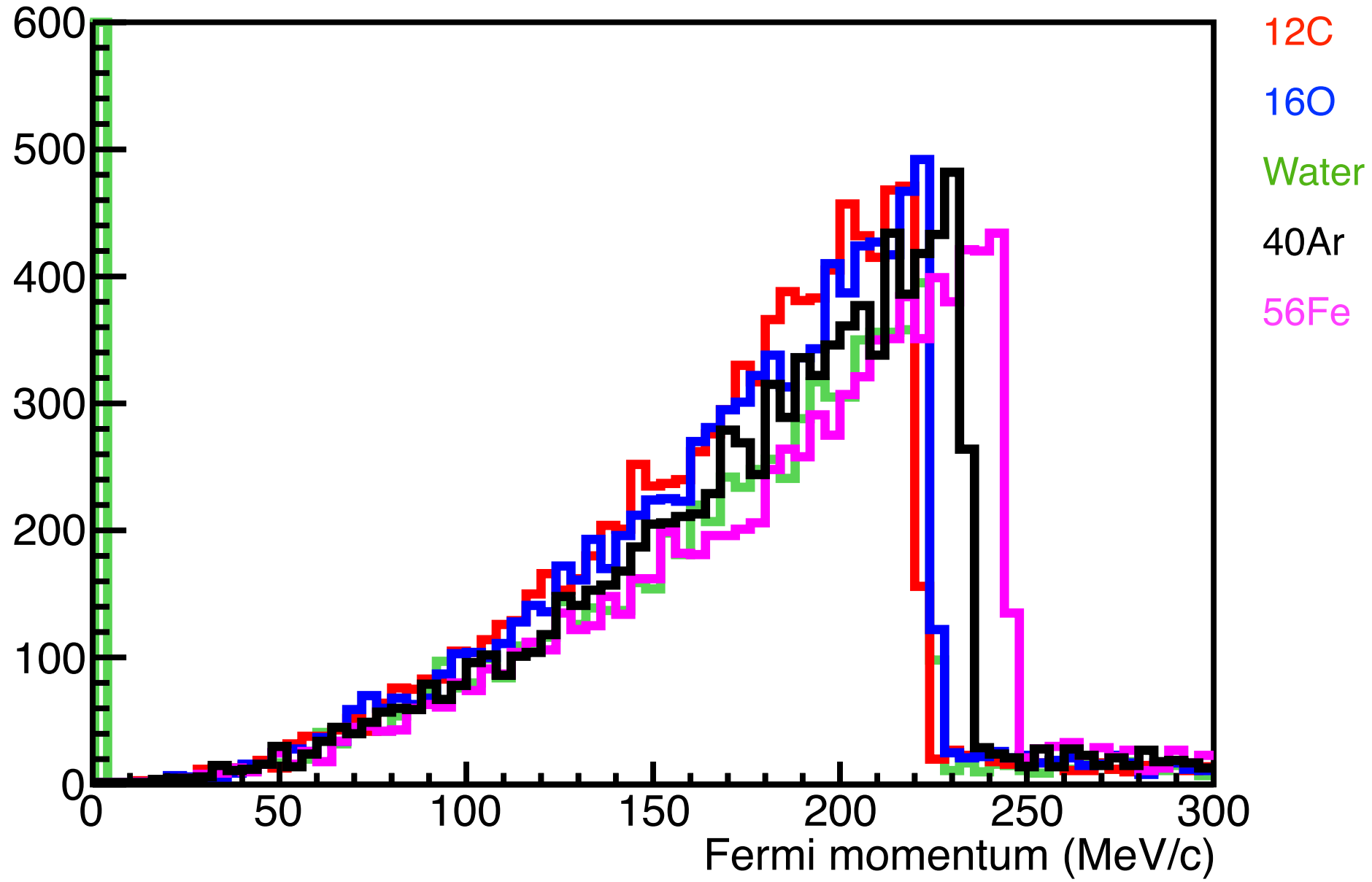
10K events $p \rightarrow K + \bar{\nu}$

GENIE v.2.12.10

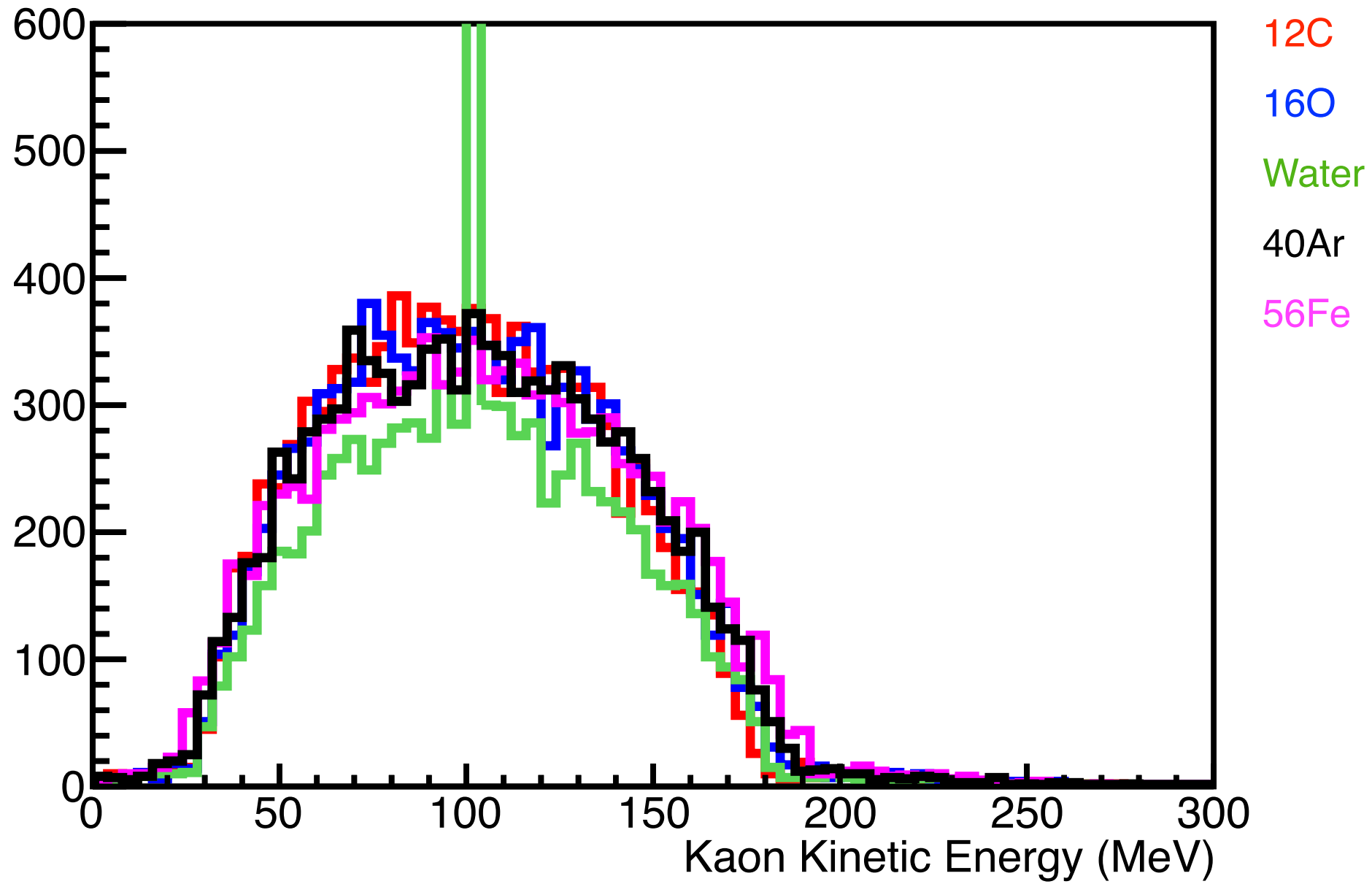
FSI hA 2015

Various Nuclei: ^{12}C , ^{16}O , Water, ^{40}Ar and ^{56}Fe

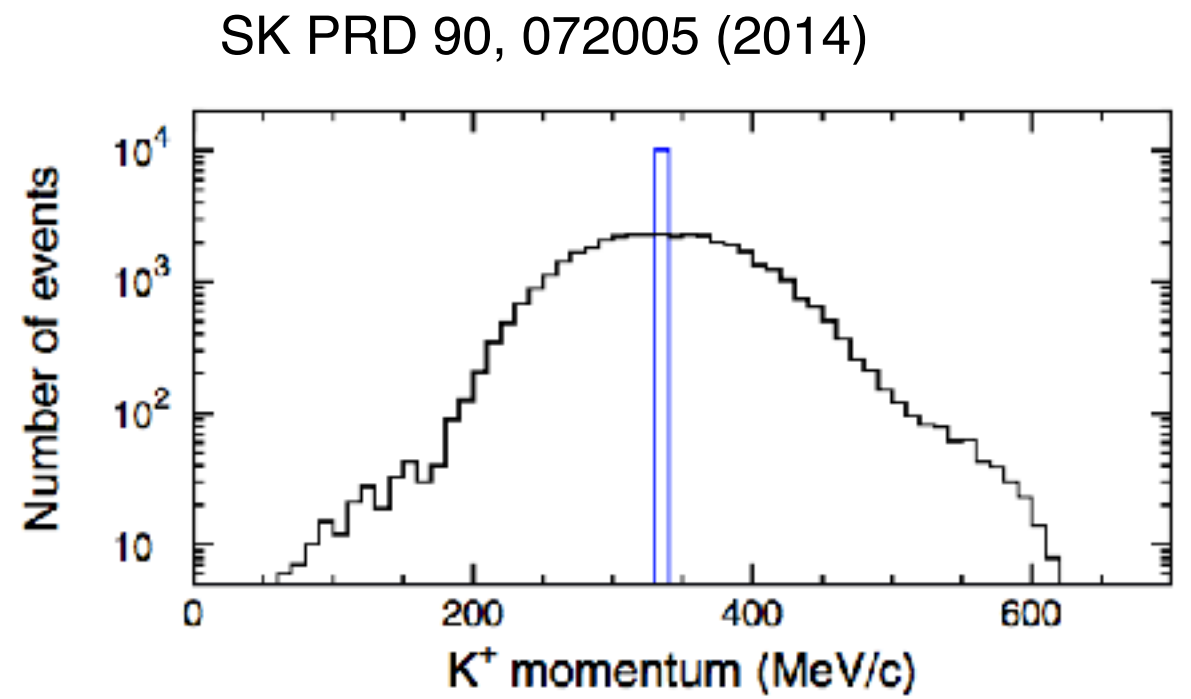
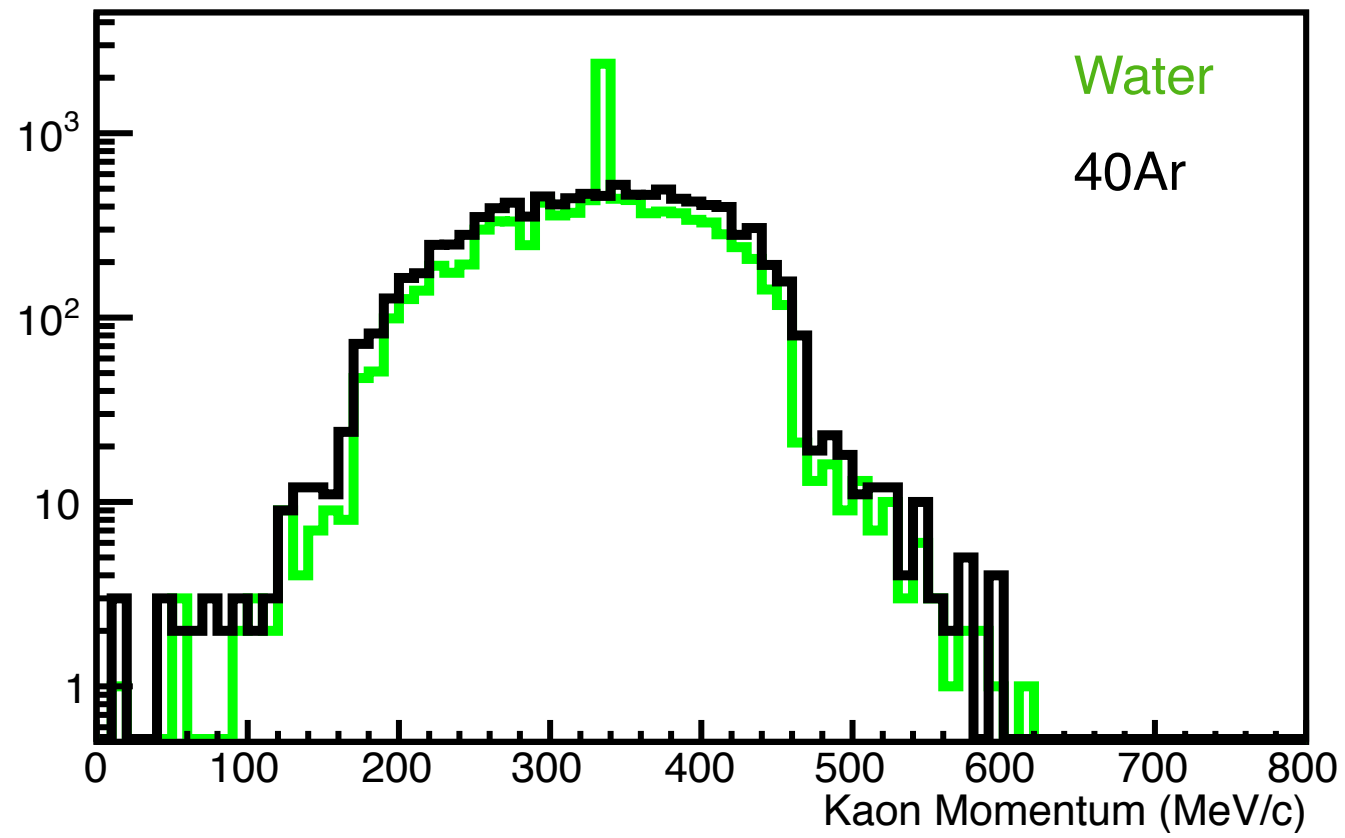
Fermi Momentum



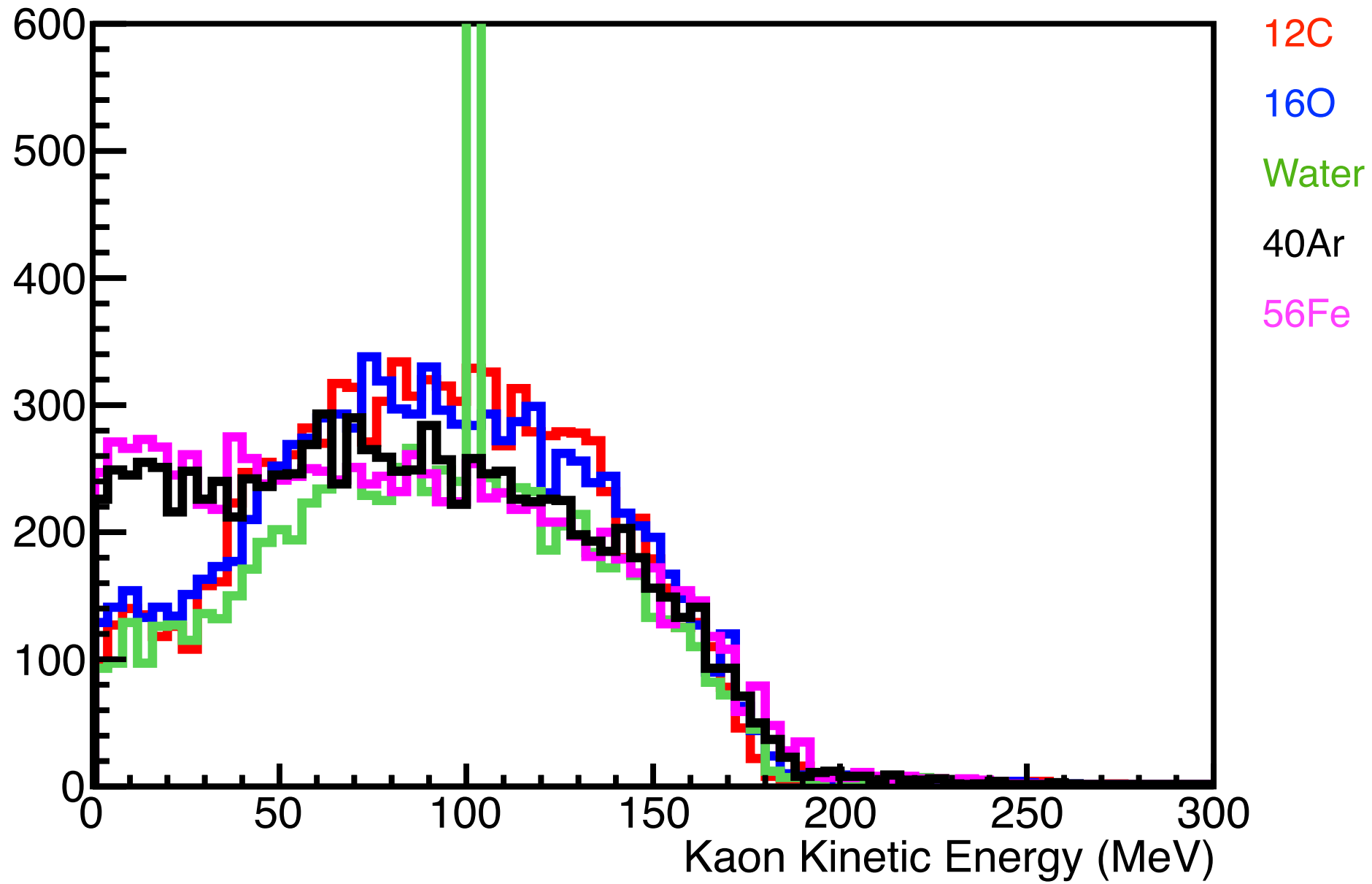
Kaon KE at the Vertex (before FSI)



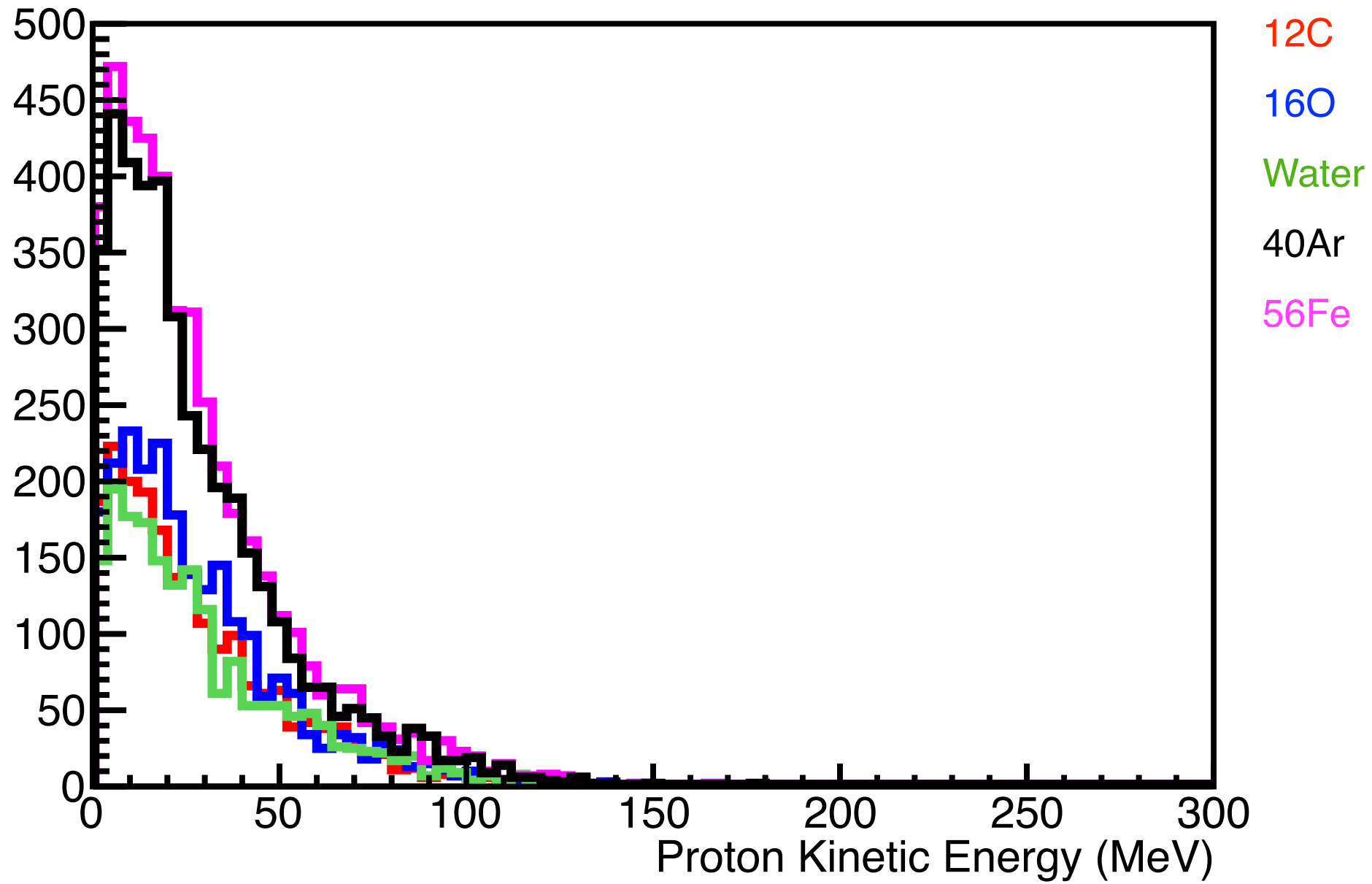
Kaon P at the Vertex (before FSI)



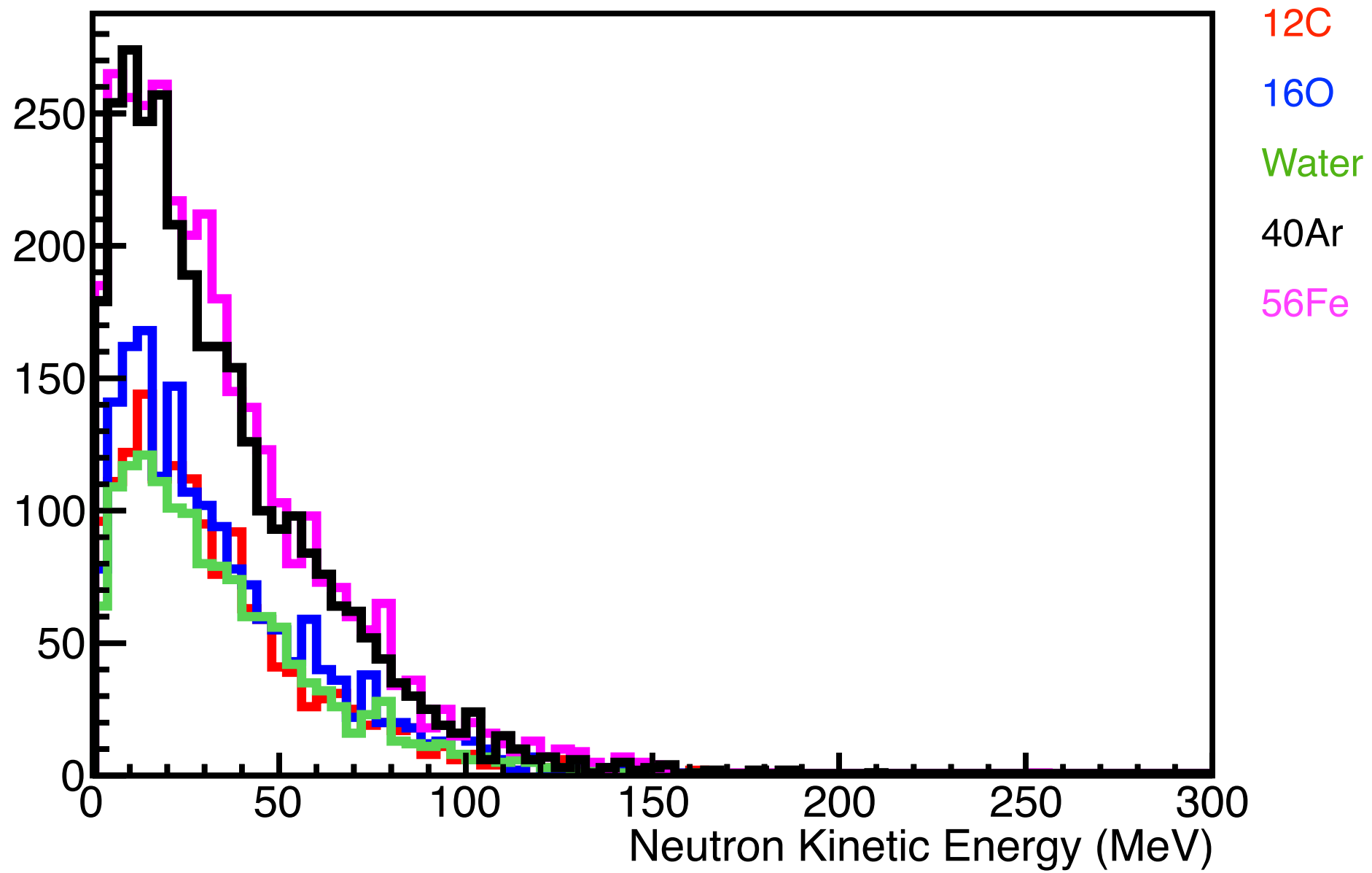
Kaon KE after FSI



Proton KE spectrum from FSI

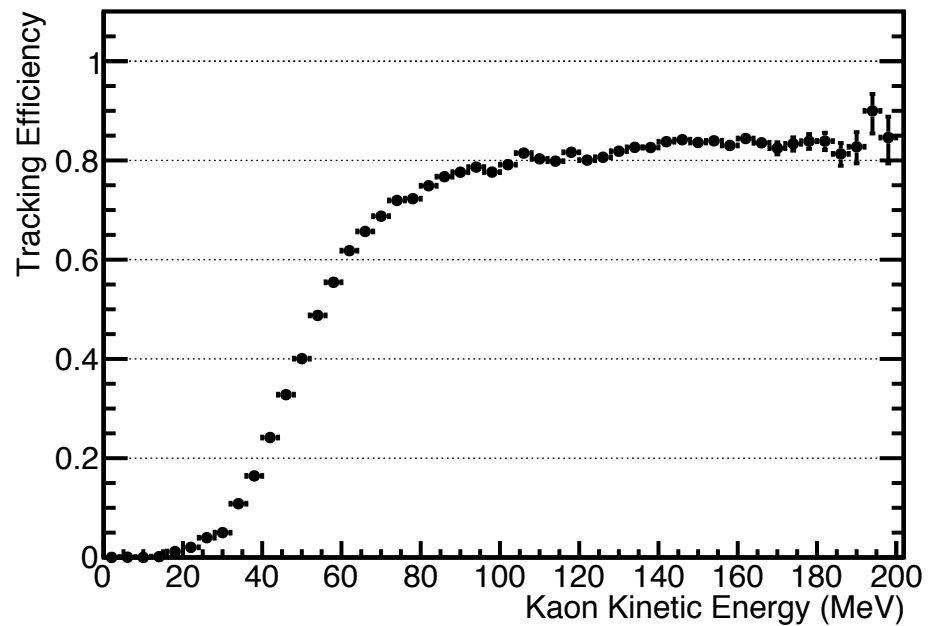


Neutron KE spectrum from FSI



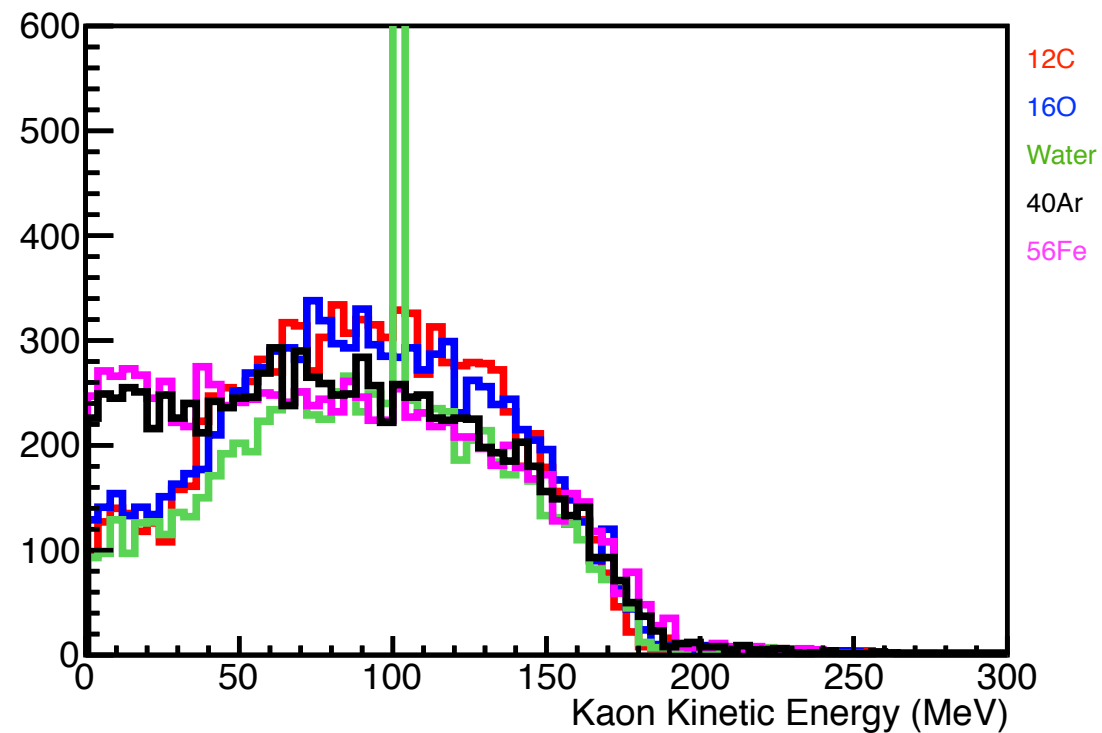
Summary

As we expect, FSI increase as Z



In argon, 32% of the kaons undergo FSI as result 26.2% of the kaons are below 50 MeV

In water, 10% of the kaons are below 50 MeV



The End