

Homework 2 Elementary Particle Physics (PHYSICS 552 UIC)

Be creative, and independent. Not think of this a homework, but fun.

Estimate how many events of deep inelastic scattering ($\nu_\mu N \rightarrow \mu X$) occurs when a beam of 10^{12} muon neutrinos at an energy 500 GeV hitting upon a thick wall of iron-stell, 1 meter long. Use the approximation that the nucleons in Fe are half protons and half neutrons. Roughly use the known fact that the momentum fraction carried by quarks in a nucleon is only about half, with rest carried by gluons.

(Hint: use the density of Fe 7.8 g/cc.)