

Nuclear Physics - Problem Set 3 – Due Tuesday, 9/25

Problem 1)

Solve Problem 1.a) for Chapter 4 on p. 52 in Povh. Let me know if you can't get access to a copy of the book.

Problem 2)

- 1) The CLAS12 detector in Hall B at Jefferson Lab can operate at a (“nuclear”) luminosity of at most $L=10^{34}$ nuclei/cm²/s for light nuclei. If you have a 1 cm long carbon-12 (¹²C) target in Hall B, what is the maximum useful electron beam current that you can shoot at that target?
- 2) After 1 day of running, let's say we collect 100 M electron scattering events (fully inclusive, integrated over all angles and energies. This corresponds to TB's of data). What integrated cross section $\Delta\sigma$ does this correspond to?

Problem 3)