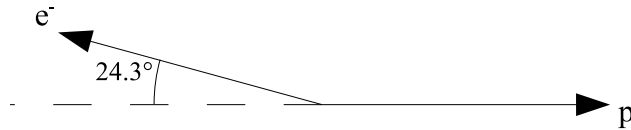


A260 Homework #1
Due Monday, 2005-Feb-14 ♡
(at the beginning of class)

1. A neutron at rest in the lab decays into a proton, an electron, and an antineutrino. Suppose that the electron is observed moving off at a velocity of $0.75c$, moving at an angle of 24.3° with respect to the opposite direction of the proton.



Calculate each of the following:

- The total energy of the proton
- The total energy of the antineutrino
- The momentum of the antineutrino
- The direction that the antineutrino is going
- How long it will be before the proton decays

You will want the rest mass of the neutron, proton, and electron in order to do this problem. A great source for all of these things is the particle data book.

2. (*Solo Problem*) Hartle Problem 5.17
3. (*Solo Problem*) Hartle Problem 5.22