

# Homework 7

Due 9/19/11

First are two questions where you will have to look up and plug in a few numbers. For these two questions, you will benefit from your reading assignment – section 2.12. The other two problems involve derivations.

1. 2.67 of text. As you will read about in section 2.12, the “total” energy, or  $E_t$ , is the kinetic energy plus the rest energy ( $mc^2$ ). i. e.

$$E_t = KE + mc^2 = m\gamma(U)c^2$$

2. 2. 81 of text. Here “protons of  $10^{12}$  eV (TeV) energy” means that their kinetic energy is  $10^{12}$  eV.
3. 2.55 of text. This will probably be useful in a future lab.
4. 2.73 of text. Here, the  $E$  stands for total energy (which I define in 1.). This is a handy relationship to know.