

Homework 1-2 Homework Assignment

Particle Detectors

Modern Particle Physics (2nd Edition) by Mark Thomson

Problems: 2.1, 2.2, 2.3, 2.4, 2.5, 2.7, 2.8, 2.9

In problem 2.8, the reaction should be $pp \rightarrow pp\bar{p}p$

- 1.xx** A K^+ meson decays at rest in the laboratory frame. $K^+ \rightarrow \mu^+ \nu_\mu$
- Draw the Feynman diagram for this decay. Make sure you get your arrows in the correct direction. **Hint:** This is a weak interaction.
 - Using momentum 4-vectors, calculate the momentum of the μ^+ lepton.
- 1.yy** A beam of π^- mesons are incident on a “proton target” and undergo the following reaction: $\pi^- p \rightarrow K^0 \Lambda^0$
- Draw the Feynman diagram for this reaction. **Hint:** This is a strong interaction.
 - Using momentum 4-vectors, calculate the threshold energy (i.e., minimum KE of the π^-) for producing a Λ^0 baryon.

Due Date: September 19, 2017

(Tuesday)