

Homework #9: More Conservation Laws

1. Ford, E4.12, p. 87
2. Ford, E4.13, p. 87
3. Below is a series of interactions and decays. Determine whether each is possible or impossible. Show your reasoning. For collisions, you can assume that the collisions provide as much kinetic energy as you want.
 - (a) $p + \bar{p} \rightarrow \pi^+ + \pi^-$
 - (b) $e^+ + e^- \rightarrow \mu^+ + \mu^-$
 - (c) $\Sigma^- \rightarrow n + e^- + \bar{\nu}_e$
 - (d) $\pi^0 \rightarrow \gamma + \gamma$
 - (e) $\mu^- \rightarrow e^- + \bar{\nu}_e$
 - (f) $p + p \rightarrow p + p + p + \bar{p}$
 - (g) $p + p \rightarrow \Sigma^+ + \Lambda^0 + K^0 + \pi^+ + \pi^0$
 - (h) $\Xi^- \rightarrow \Sigma^0 + \pi^-$
 - (i) $\Xi^0 \rightarrow p + \pi^-$
 - (j) $p \rightarrow e^- + \gamma$
4. Ford, Q4.6, p. 85

Due: Friday, November 6, 2:30 pm