

Problem Assignments for Unit 4

Unless otherwise indicated, problems are from Wolfson. “**Supp**” refers to chapters in the supplementary reading and “**A**” refers to the additional problems that are available at the beginning of the Supplementary Reading booklet.

Assigned Problems for Wednesday, April 22

Supp CH 9: 2, 6, 7, 8, 10, 11, 12, 13, 14abc, 15

Assigned Problems for Friday, April 24

A106; **Supp CH 10:** 1a, 2, 3, 5, 6, 7, 8, 10

Hand-In Set #10 Due Monday, April 27, 4:30 pm

A83; **Supp CH 9:** 3, 4, 14def, 16; **Supp CH 10:** 1b, 4, 11, 12

Assigned Problems for Wednesday, April 29

X14 (below); **Supp CH 11:** 1, 3, 4, 5, 7, 8, 9, 11

Problem X14 Draw a complete reaction diagram for the following interaction:

$$e^+ + \Lambda \rightarrow \Sigma^+ + \bar{\nu}_e$$

In the diagram, be sure to label all messengers, and label all particles with color/anti-color, where relevant.

Assigned Problems for Friday, May 1

A85; **Supp CH 12:** 1, 2, 5, 6, 9

Hand-In Set #11 Due Monday, May 4, 4:30 pm

X15 (below); **Supp CH 11:** 2, 6, 10, 12; **Supp CH 12:** 4, 7, 8

Problem X15 The Higgs boson is the messenger particle for the Higgs interaction. Recently, the mass of the Higgs boson was measured to be $125 \text{ GeV}/c^2$. In the early universe, real Higgs bosons could be produced in random collisions. Determine the latest time after the Big Bang that Higgs bosons could be easily made from collisions.