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 23

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

Assigned Problems for Friday, April 25

A106; **Supp CH 10:** 1a, 2, 3, 5, 6, 7, 8, 9, 10

Hand-In Set #10 Due Monday, April 28, 4:30 pm

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

Assigned Problems for Wednesday, April 30

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

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

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

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

Assigned Problems for Friday, May 2

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

Hand-In Set #11 Due Monday, May 5, 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 $125\,\mathrm{GeV}/c^2$. 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.