

8.811 Particle Physics
Min Chen

Fall, 2004

Assignment 2
Due in class on Oct. 7

1. Q&L 5-3
2. Q&L 5-15
3. Express the helicity eigenstates of an electron with mass m and energy E , in terms of its chirality eigenstates by keeping the first order term in m/E , i.e. for the case when m/E is small but not entirely negligible.
4. Use the above results to obtain the ratio of the branching ratio of $\pi \rightarrow e + \text{neutrino}$ to that of $\pi \rightarrow \mu + \text{neutrino}$, and for the ratio of the branching ratio of $K \rightarrow e + \text{neutrino}$ to that of $K \rightarrow \mu + \text{neutrino}$.