

4. By charge conservation, it is clear that reversing the sign of the pion means we must reverse the sign of the muon. In effect, we are replacing the charged particles by their antiparticles. Less obvious is the fact that we should now put a “bar” over the neutrino (something we should also have done for some of the reactions and decays discussed in the previous two chapters, except that we had not yet learned about antiparticles). To understand the “bar” we refer the reader to the discussion in §45-4. The decay of the negative pion is $\pi^- \rightarrow \mu^- + \bar{\nu}$. A subscript can be added to the antineutrino to clarify what “type” it is, as discussed in §45-4.