

The fermion mass hierarchy problem

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The fact that the quark and charged-lepton mass spectrum is hierarchical remains a tantalising hint that beyond-SM physics might be at play. I will review work I completed with Baker and Cox on a systematic analysis of 1-loop generation of the bottom and tau masses, which are, of course, known to be suppressed compared to the fundamental electroweak scale. Note that both of those species have weak isospin $I = -1/2$. I will then expand on that to include 1-loop generation of $I = +1/2$ fermion masses, in particular the Dirac mass of neutrinos (from unpublished work by L. Stockdale in her MSc thesis). Experimental and theoretical constraints will be discussed. I will finish with a few brief words about how the construction of a complete theory of hierarchical radiative masses might be approached.

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