

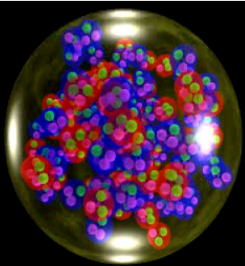
Theory Seminar



Monday, March 24, 2008 2:10 PM 831 Pupin Hall

"Quark and lepton masses from top loops"

Assuming that the leptons and quarks other than top are massless at tree level, we show that their masses may be induced by loops involving the top quark. As a result, the generic features of the fermion mass spectrum arise from certain combinations of loop factors. Explicitly, we construct a renormalizable model involving some colored scalar fields, which leads to 1-loop bottom and tau masses, a 2-loop charm mass, 3-loop muon and strange masses, 4-loop masses for up and down quarks, and a 5-loop electron mass. This realistic pattern of masses does not require any symmetry to differentiate the three generations of fermions. The scalar fields may lead to observable effects in future experiments searching for $\mu \rightarrow e$ conversion in nuclei, lepton-flavor violating kaon decays, and other flavor-changing processes.



Patrick Fox, FNAL

