

CU Physics Department Particle Seminar

Wednesday, October 28, 2009 705 Pupin Hall 1:00 PM

Closing in on the Higgs Boson



The Standard Model describes the unification of electromagnetic and weak interactions. It was thoroughly tested over past thirty years, and represents one of the major successes of modern physics. This theory predicted the existence and the masses of the weak bosons. The last remaining piece of the puzzle is the Higgs boson whose existence is crucial for our understanding of the origin of particle masses.

Direct searches at LEP put a lower limit on the Higgs boson mass, and together with precision measurement constrained it to $\sim < 200$ GeV. The D0 and CDF experiments at the Tevatron recently excluded a new interval in the Higgs mass. In this time when we are entering LHC era, we are coming closer to the discovery or exclusion of the SM Higgs boson. I will discuss current searches for the SM Higgs boson with the D0 experiment at Tevatron, highlighting the most important techniques. I will also draw a parallel with future searches at LHC, showing what we can learn from Tevatron experience.

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