

CU Physics Department Particle Seminar

Tuesday, December 22, 2009 1124 Pupin Hall 1:00 PM

Search for $H \rightarrow \gamma\gamma$ at D0

We present a search for a light Higgs boson in the diphoton final state using 4.2 fb⁻¹ of the D0 Run II data, collected at the Fermilab Tevatron collider from April 2002 to December 2008. Good agreement between the data and the Standard Model (SM) background prediction is observed. Since there is no evidence for new physics, we set 95% C.L. limits on the production cross section times the branching ratio relative to the SM-like Higgs prediction for different assumed Higgs masses. We also extend the results to the particular fermiophobic Higgs model, where we have reached the world's best sensitivity, and provide the access to the $M_{Hf} > 125$ GeV regions, which is inaccessible at LEP.

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