Abstract Submitted
for the APR06 Meeting of
The American Physical Society

MSSM Higgs boson reconstruction at CMS via $ggH \rightarrow \tau\tau \rightarrow ll\nu\nu\nu\nu$ FIRDEVS DURU, U. AKGUN, University of Iowa, S. KUNORI, U. Maryland, Y. ONEL, University of Iowa, CMS COLLABORATION — The associated Higgs production mechanism $gg \rightarrow b\bar{b}H/A$ can be strongly enhanced in the Minimal Supersymmetric Standard Model (MSSM). Regardless of the production mechanism, the decay of a Higgs Boson into a pair of τ- leptons has a very unique topology that allows reconstruction of the invariant mass of the Higgs, using collinear approximation, with well-measured $\not\!\!E_T$. Since the τ can decay to an electron or muon plus $\not\!\!E_T$ the presence of two soft b-jets with leptons (or jets, in the case of hadronic τ decays) and $\not\!\!E_T$ can be the signature of new physics. The hermetic calorimeter coverage of the CMS experiment provides the needed $\not\!\!E_T$ resolution for this potential discovery channel. In this report we discuss the invariant mass reconstruction efficiencies of CMS for leptonic $gg \rightarrow b\bar{b}H/A \rightarrow \tau^+\tau^-$ decay at large $tan\beta$, as well as the background from Drell-Yan production.

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Date submitted: 09 Jan 2006 Electronic form version 1.4