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Search for new physics in ttbar + MET -> b bbar qqbar qqbar final state in ppbar collisions at sqrt(s) = 1.96 TeV

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We present a search for a new particle T' decaying to a top quark via T'-> t + X, where X goes undetected. We use a data sample corresponding to 5.7 inverse fb of integrated luminosity of ppbar collisions with sqrt(s) = 1.96 TeV, collected at Fermilab Tevatron by the CDF II detector. Our search for pair production of T' is focused on the hadronic decay channel, ppbar -> T'Tbar' -> ttbar + XX -> bqqbar bbarqqbar +XX. We interpret our results in terms of a model where T' is an exotic fourth generation quark and X is a dark matter particle. The data are consistent with standard model expectations. We set a limit on the generic production of T'Tbar' -> ttbar + XX, excluding the fourth generation exotic quarks T'at 95% confidence level up to mT' = 400 GeV/c2 for mX < 70 GeV/c2.

Author: BENTIVEGNA, Marco

Presenter: BENTIVEGNA, Marco

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