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Development of tau selection techniques for the search of the Higgs boson produced with two top quarks decaying to two tau leptons in the CMS experiment

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My thesis work focuses on taking advantage of the newer analysis and selection techniques to search for tau leptons coming from Higgs which was produced associated to two tops (ttH) in the CMS detector. The ttH production mode is important to characterize the properties of the Higgs boson and in particular its coupling to top quarks, to which the ttH process has direct access. Given the mass of the Higgs, the tau decay mode is certainly favored but still represents challenging aspects in both selection and reconstruction techniques, due to the complexity of the final state. The thesis focuses both on development of tau selection techniques at trigger level, as well as analysis of the ttH process where the Higgs decays into a pair of tau leptons.

Presenter: MARTIN PEREZ, Cristina Session Classification: Particle physics II