

Analysis: (Starting on September 2016)

Looking for $\chi_1^\pm \chi_2^0$ pair production with final state: $l^\pm + h(bb) + \text{MET}$

Qualification task on bjet-tagging: (until end of november 2016)

“The impact of pixel dead modules and ToT changes on b-tagging performance”

- I'm studying several configurations with random location of inactive pixel modules (inactive modules for the entire run).
- b-taggers performances of the different configurations are compared to the default RUN 2 configuration of the ATLAS detector performances
- Similarly I'm looking to the effect of changing ToT threshold on overall b-tagging performance.

“Reconstruct V0 neutral tracks on jets”

- Task: optimize the discrimination between b and light jet

N.B: Both studies will be documented in Atlas internal notes.

Phenomenology part:

“Add the Higgs boson mass of 125 GeV as input to Suspect3 ”

- Task: Look to the free parameters in the Higgs and top sectors that can be computed for a given Higgs boson mass of 125 GeV. (i.e.: μ , A_t , ...).
- To proceed with the Higgs inversion, I considered a simple approximation for the Higgs mass radiative corrections.
- I developed a code which compute each of $\tan(\beta)$, μ , A_t for the given Higgs boson mass
- Next, I'll replace this simple equation but the fully consistent on two loop relation