Universidad Nacional Mayor de San Marcos
Faculty of Physical Sciences
Professional School of Physics

Refinement of the search for BSM particles in the process Z' -> tt at sqrt (s) = 13 TeV with single-lepton boosted final state in the ATLAS experiment

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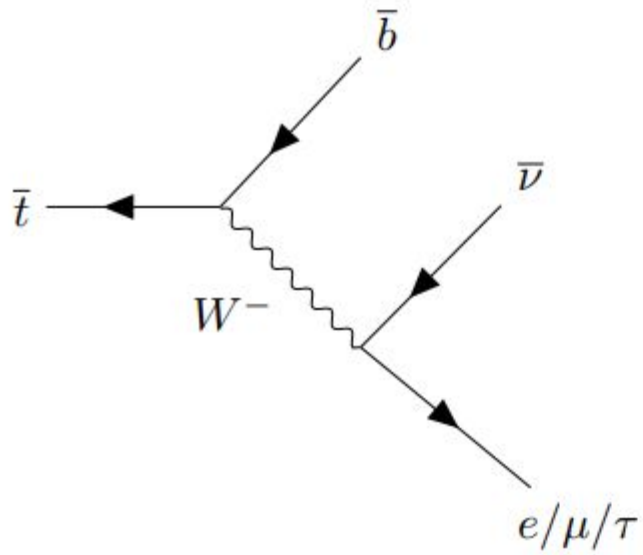
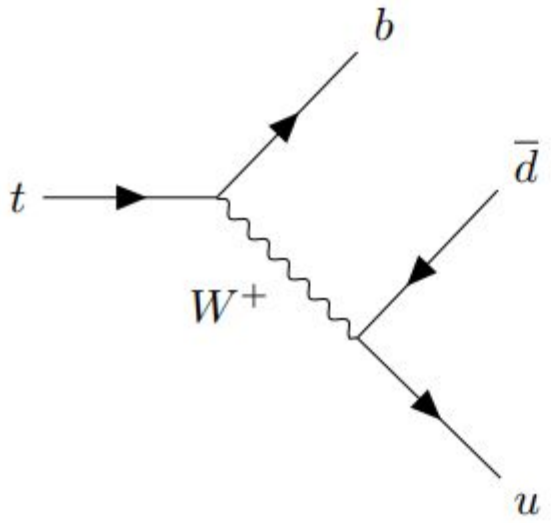
About me

Education	B.S. in Physics March 2015–December 2019 UNMSM, Lima, Peru Ranked in the upper one-fifth of the class
Presentations	• Significance increase of the signal of the decay of the Higgs-boson through the dileptonic channel (January 2020) UNSAC, Cusco, Peru • Analysis of the decay of the Higgs-boson through the dileptonic channel (December 2020) UNMSM, Lima, Peru
Languages	- Advanced English - Native Spanish - Basic French
Awards	• Scholarship for Excellence • For having achieved the C1 level in the international English test FCE • Awarded a one-month stay in London to study English at International House

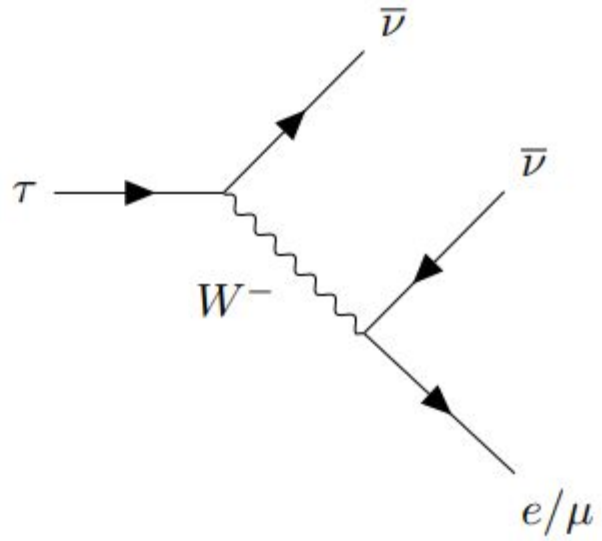
Z’ -> tt ANALYSIS

This analysis is focused on implementing the selection criteria of a search for BSM Z’ particles that decay into top-quark pairs in events containing a single charged lepton, large-R jets and missing transverse momentum.

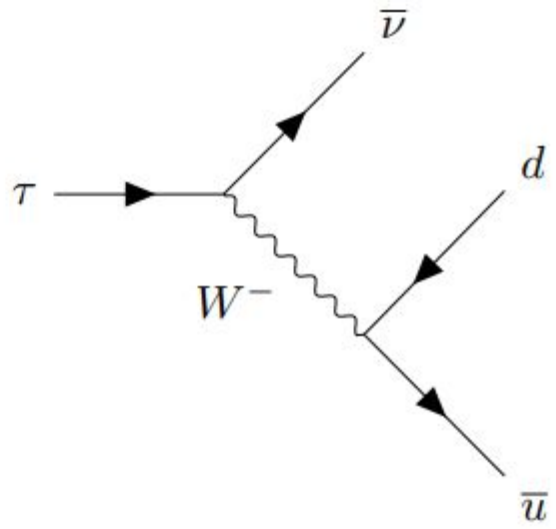




if $\ell = \tau$ then:



Yes



No

Thesis Idea

- An observable that approximates the mass of the “tt” system must be constructed by summing the four-momentum of the top-tagged large-R jet, the charged lepton and the b-tagged small-R jet associated with the lepton. In the previous analysis, the neutrino momentum is not added.
- The task of this thesis is to reconstruct the complete "tt" system and either confirm or deny whether this makes a significant difference in the results of the analysis.
- The addition of the neutrino momentum introduces a challenge due to the reconstruction of its z component.

THANKS