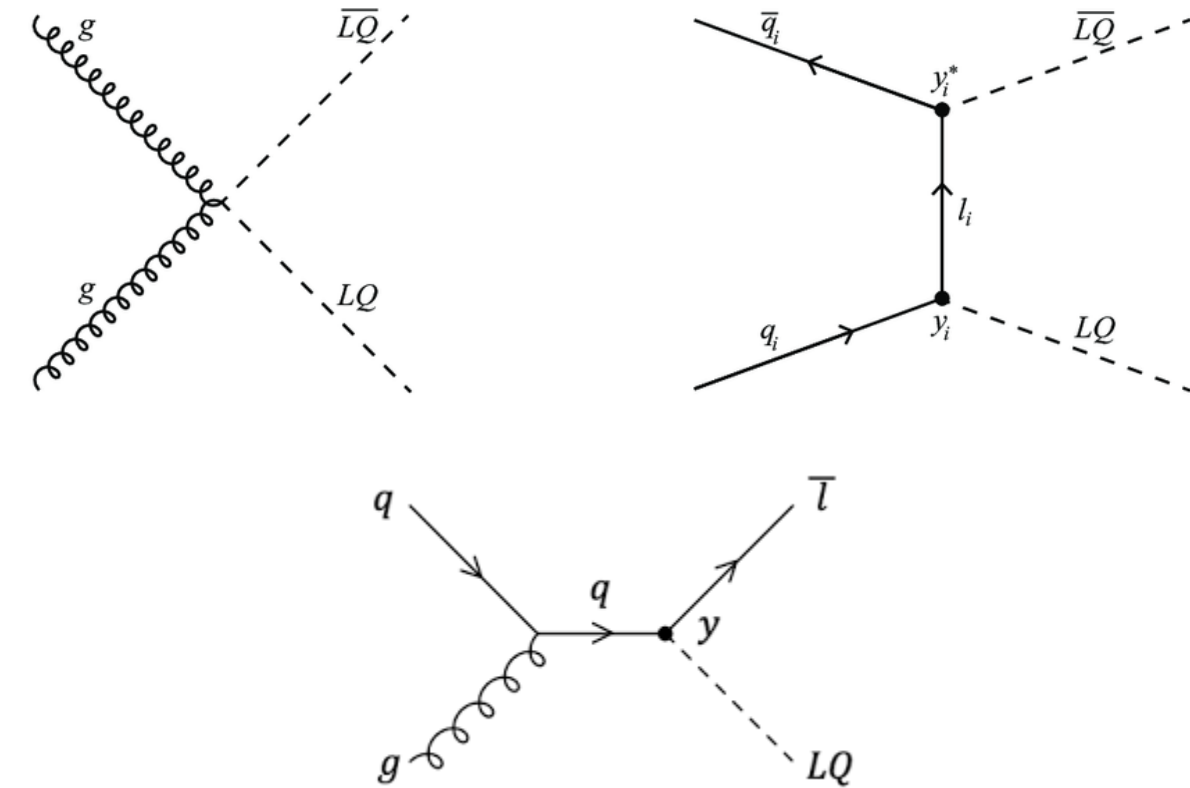


Investigation of Leptoquark Production Methods using $t\bar{t}H$ Analysis

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Work here at CERN

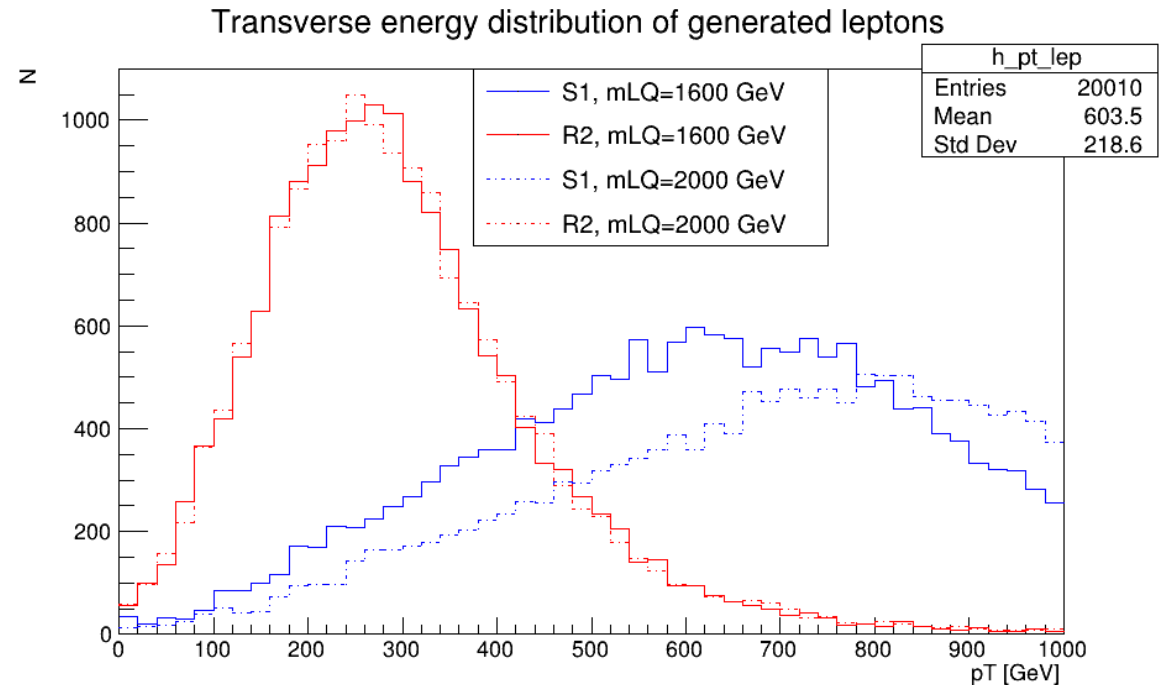


- Working in the ATLAS experiment in the exotics/computational department
 - Supervisor: Andre Sopczak
- We are interested in examining the production of the Leptoquark, a BSM particle proposed a long time ago
 - Couples to both leptons and quarks
- Can help explain experimental results inconsistent with SM predictions, such as B-meson decay
- Working with the Athena framework, used to facilitate event generation/derivation/analysis



Progress so Far

- Received models from a colleague to be used inside Athena
- Generate the events with MadGraph5, they are passed to Pythia8 to shower/hadronized: “Generation”
- Convert the raw data to readable format in terms of ntuples/root files: “Derivation”
- Can analyze the ntuples/root files to generate validation plots: “Validation” – ensures model is behaving correctly



Tentative Goal

- Show the validation plots to a subcommittee get access to ATLAS computing clusters to generate more events
- Use the results to perform more sophisticated analysis, such as ttH analysis, to see if these LQ's can be detected

