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Detecting Fourth Generation Heavy Quarks at the LHC

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In this talk, I will discuss the production of fourth generation quarks at the LHC. In particular, if such a quark has a mass in the phenomenologically interesting range of 400GeV-600 GeV and decays to a light quark and a W-boson, I will consider a number of possible signals through which it might be detected.

In general, the signals I consider include missing momentum together with jets and either a single high-Pt lepton, an opposite sign pair of high-Pt leptons or a same sign pair of high-Pt leptons. In each case I will discuss methods for separating the signal from the three generation Standard Model background. I will show that these methods should allow the detection of heavy fourth generation quarks for a wide range of quark mass and mixing rates.

Summary

I discuss the phenomenology and detection of fourth generation quarks at the LHC.

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