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## Examining new neutral gauge bosons using decays to third generation fermions (t, b, tau)

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New neutral gauge bosons ( $Z'$ ) are common in many new models of BSM physics. The LHC may be able to push the direct discovery limits for a neutral resonance ( $Z'$ , R-parity violating sneutrino, RS graviton) above 3 TeV, for a 14 TeV run, and may even be able to distinguish the spin and model of the resonance up to a mass of several TeV. This talk discusses a number of observables for understanding new neutral gauge bosons, focusing on the capability of measuring a  $Z'$  decaying to third generation fermion pairs and the ability to distinguish non-universal couplings as in technicolor and topcolour type models.

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