## Phenomenology 2018 Symposium



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## Bottom-quark Forward-Backward Asymmetry, Dark Matter and the LHC

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The LEP experiment at CERN provided accurate measurements of the Z neutral gauge boson properties. Although all measurements agree well with the SM predictions, the forward backward asymmetry of the bottomquark remains almost  $3\sigma$  away from the SM value. We proposed that this anomaly may be explained by the existence of a new U(1)D gauge boson, which couples with opposite charges to the right-handed components of the bottom and charm quarks. Cancellation of gauge anomalies demands the presence of a vector-like singlet charged lepton as well as a neutral Dirac (or Majorana) particle that provides a Dark Matter candidate. Constraints from precision measurements imply that the mass of the new gauge boson should be around 115 GeV. We discuss the experimental constraints on this scenario, including the existence of a di-jet resonance excess at an invariant mass similar to the mass of this new gauge boson, observed in boosted topologies at the CMS experiment.

## Summary

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