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Search for quark contact interactions and extra spatial dimensions with dijet angular distributions in proton proton collisions at 13 TeV

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A search for quark contact interactions and extra spatial dimensions in dijet angular distributions in proton proton collisions at 13 TeV is presented. The data was collected by CMS detector at the CERN LHC and corresponds to an integrated luminosity of 2.6 fb⁻¹. The measured distributions are found to be in good agreement with predictions from perturbative QCD that include electroweak corrections. Limits for different contact interaction models are obtained. In a benchmark scenario, where only left-handed quark participate and which is evaluated to leading-order in QCD, quark contact interactions are excluded up to 12.1 (16.3) TeV for destructive (constructive) interference at 95% confidential level. Lower limits between 7.7 and 10.8 TeV on the scale of virtual graviton exchange are extracted for the Arkani-Hamed–Dimopoulos–Dvali model of extra spatial dimensions.

Summary

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