

Prospects of searches for excited neutrinos at the LHC

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The Baur, Spira, and Zerwas model of composite quarks and leptons predicts the excited neutrinos to be produced in proton-proton collisions via contact interactions. Subsequently, the excited neutrinos decay via gauge interaction or contact interaction. The final states always include missing transverse energy; there can also be zero to three charged leptons and/or jets. The present study scans the possible final state scenarios, depending on the model parameter values, to identify searches by the ATLAS and CMS Collaborations that can be reinterpreted as a search for the excited neutrinos. As an example, the publicly available results of the monojet ATLAS search are used to derive rough limits on the excited tau neutrino mass and the contact interaction scale. The reinterpretation of the search can considerably improve the current 1.6 TeV mass limit and reach the 4 TeV region.

Alternate track

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Yes

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