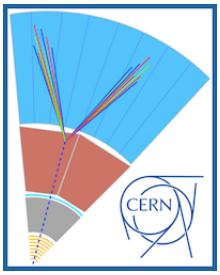

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Improved Mass Bounds on HECOs via Dyson-Schwinger Resummation Technique

Wednesday, 4 June 2025 10:50 (17 minutes)

High-Electric-Charge compact Objects (HECOs) arise in various extensions of the Standard Model and are actively investigated at the LHC. Existing experimental searches constrain their masses by relying on tree-level predictions from Drell-Yan and photon-fusion production mechanisms. However, these conventional approaches lose validity due to the breakdown of perturbative QED at the high electric charges characteristic of HECOs. To address this limitation, we introduce a Dyson-Schwinger resummation framework that accommodates strong gauge couplings, enabling more robust calculations of HECO production cross sections. This method leads to significantly improved mass bounds derived from current ATLAS and MoEDAL data.

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