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Search for Beyond the Standard Model physics with Emerging Jets with the ATLAS detector during Run-3

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In the framework of the ATLAS Run-3 datataking period, an early-data analysis targeting emerging jets is in preparation. This analysis is the first effort to study this signature in the ATLAS collaboration. Emerging jets are part of a global Beyond the Standard Model (BSM) theory called Dark QCD. This BSM theory predicts the existence of a new dark sector : containing QCD-like particles and interactions, that is seperated from the Standard Model (SM), but accessible through a portal productible in proton-proton collisions at LHC. In addition, Emerging jets model predict that dark particles produced at LHC can decay back to the Standard Model with a long lifetime, leading to displaced objects (tracks, vertices) in the ATLAS detector. This leads to a highly exotic type of signature that until recently was poorly studied. This Run-3 analysis will benefit from a new trigger dedicated to this signature and software upgrades for large radius objects reconstruction. An overview of the current state of this analysis will be presented.

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