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Searching for new physics with emu asymmetry at the ATLAS detector

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The ATLAS experiment has never before measured the ratio of $e^+\mu^-$ to $e^-\mu^+$ events in its data. Such a ratio is not expected to exceed one in the Standard Model in the LHC's proton-proton collisions. However, it could exceed one for some Beyond the Standard Model (BSM) scenarios like R-Parity violating supersymmetry or scalar leptoquarks. This talk presents a general search for new physics through the measurement of this ratio, that will also provide world-leading limits on these two BSM models which have not been probed with ATLAS before. This ratio measurement is highly unusual for an ATLAS BSM search, requiring little use of Monte Carlo simulation as well as allowing many systematic uncertainties to cancel out. The result will use the full 140.3fb^{-1} of luminosity from the full run-2 dataset, taken in 2015-2018, and is aiming for publication in summer 2019.

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