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(G*) POS-J94 – Study of Wyy tri-boson production in proton-proton collisions with the ATLAS detector

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From 2015 to 2018, the Large Hadron Collider (LHC) collided protons at an unprecedented center of mass energy of $s=\sqrt{13}$ TeV. The ATLAS detector recorded an integrated luminosity of $139 fb^{-1}$ of these collisions. This offers an unprecedented opportunity for physicists to test the Standard Model by measuring predicted but yet unobserved rare processes. The triboson $W\gamma\gamma$ production is one of these unobserved processes. Its sensitivity to the electroweak trilinear and quartic gauge couplings make it a great probe of new physics phenomena as Beyond Standard Model processes could affect the effective strength of these couplings. The dominant source of background to the search for $W\gamma\gamma$ production are jets being misidentified as photons. The advanced data-driven technique used to estimate this background will be presented. Furthermore, preliminary studies of the dominant systematic uncertainties impacting the expected significance of the measurement will be presented.

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