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(G*) The Search for Evidence of Vector Boson Scattering Between a Photon and a W Boson with the ATLAS Detector

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In the Standard Model, the interactions between gauge bosons are completely specified and any deviations from this expectation would indicate the presence of new physics phenomena at unprobed energy scales. The study of the self-couplings of electroweak gauge bosons is therefore a powerful approach to searching for new physics phenomena. The large data samples collected by the ATLAS experiment at the LHC make it possible to now explore extremely rare processes involving the interaction between four gauge bosons.

In this talk I will discuss the search for evidence of one of these rare processes, namely, the vector boson scattering between a W boson and a photon, whose production cross-section has never before been measured by the ATLAS collaboration. Making a measurement of this electroweak process is challenging due to the presence of a large and irreducible background from processes involving the strong interaction, which are mismodelled at high di-jet mass where we expect the greatest sensitivity to VBS. I will discuss analysis techniques being used to make a measurement in the presence of this large and mismodelled background.

Author: MC GOWAN, John Patrick (McGill University, (CA))

Presenter: MC GOWAN, John Patrick (McGill University, (CA))

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