Contribution ID: **230** Type: **Oral report**

Fiducial and differential cross-section measurements of electroweak Wγjj production in pp collisions at √s = 13 TeV with the ATLAS detector

Ref. https://arxiv.org/abs/2403.02809

The observation of the electroweak production of a W boson and a photon in association with two jets, using pp collision data at the Large Hadron Collider at a centre of mass energy of √s = 13 TeV, is reported. The data were recorded by the ATLAS experiment from 2015 to 2018 and correspond to an integrated luminosity of 140 fb^{-1}. This process is sensitive to the quartic gauge boson couplings via the vector boson scattering mechanism and provides a stringent test of the electroweak gauge symmetry breaking of the Standard Model. Events are selected if they contain one electron or muon, missing transverse momentum, at least one photon, and two jets. Multivariate techniques are used to distinguish the electroweak Wγjj process from irreducible background processes. The observed significance of the electroweak Wγjj process is well above six standard deviations, compared to an expected significance of 6.3 standard deviations. Fiducial and differential cross sections are measured in a fiducial phase space close to the detector acceptance, which are in reasonable agreement with leading order Standard Model predictions from MadGraph5+Pythia8 and Sherpa. The results are used to constrain new physics effects in the context of an effective field theory.

Primary author: CHEN, Jing (Shanghai Jiao Tong University)

Presenter: CHEN, Jing (Shanghai Jiao Tong University)

Session Classification: 分会场一

Track Classification: TeV 物理和超出标准模型新物理