Study of Longitudinal-Longitudinal WZ interactions using inclusive WZ→ $\ell\nu\ell\ell$ events[1] SYDNEY ERICKSON, PRACHI ATMASIDDHA, JUN-JIE ZHU, Univ of Michigan - Ann Arbor — In the Standard Model of particle physics, the Higgs field spontaneously breaks the underlying electroweak symmetries resulting in a massive Higgs boson and three massless Goldstone bosons. These Goldstone bosons are absorbed into the W and Z bosons and become their longitudinal components and thus make them massive. It is critical to study longitudinal-longitudinal (LL) vector boson interactions. Normally people use vector boson scattering (VBS) events to study LL vector boson interactions. We propose to use the inclusive WZ→ $\ell\nu\ell\ell$ (ℓ =e, μ) sample to study LL WZ interactions ($W_L Z_L$). We apply selection criteria on the Z boson transverse momentum and the angle of the W boson in the WZ rest frame with respect to the lab z-axis to improve the separation between the signal process ($W_L Z_L$) and background processes ($W_L Z_T$, $W_T Z_L$, $W_T Z_T$). Our truth-level study indicates that S:B can be increased from ˜1:150 to ˜1:1. We will also present sensitivity studies with detector effects included assuming 150 fb^{-1} of data at 13 TeV collected by the ATLAS or CMS detector.

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