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Measurement of the W Boson Helicity Fractions in $t\bar{t}$ Events at $\sqrt{s}$=8 TeV in the Lepton+Jets Channel with ATLAS BENJAMIN TANNENWALD, Ohio State Univ - Columbus, MOHAMMAD KAREEM, Georg-August-Universitaet Goettingen, HARRIS KAGAN, Ohio State Univ - Columbus, BORIS LEMMER, ELIZAVETA SHABALINA, MARIA MORENO LLACER, ARNULF QUADT, Georg-August-Universitaet Goettingen, ATLAS COLLABORATION — The relative fractions of longitudinally, left-handed, and right-handed polarized W bosons produced in lepton+jets $t\bar{t}$ decays are measured using proton-proton collisions at a center-of-mass energy of 8 TeV as recorded in 2012 with the ATLAS detector at the LHC. The data sample corresponds to an integrated luminosity of 20.3 fb^{-1}. A kinematic fitting technique is used to reconstruct the final state objects, and the helicity fractions are obtained via a template fit to data. The helicity angle is calculated and the relative fractions computed simultaneously for both the leptonically and hadronically decaying W bosons. This represents the first-ever direct measurement of helicity fractions using hadronic W decays. Results from orthogonal signal regions are combined to increase the overall sensitivity of the final measurement. The extracted helicity fractions are then compared to NLO predictions from the Standard Model.

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