

First Measurement of W Helicity Fractions at LHCb

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The measurement of the W helicity states provides a fundamental probe at understanding the production mechanisms of W bosons at the LHC. W boson helicity states have shown a strong dependency on $|y_W|$, with increasingly left-handed states expected with forward production. The LHCb detector provides a unique kinematic coverage, with lepton acceptance of $2 < \eta < 5$, in which an unparalleled measurement of W helicity states can be measured. Using the 2D distribution of lepton kinematics, p_T^ℓ and η^ℓ , a template fit can be made to extract the helicity fractions as a function of y_W without needing to reconstruct the W boson kinematics directly.

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