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The forward backward asymmetry of the decay $q\bar{q} \rightarrow Z/\gamma^* \rightarrow \mu^+\mu^-$ at LHCb

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The forward backward asymmetry of the decay $q\bar{q} \rightarrow Z/\gamma^* \rightarrow \mu^+\mu^-$ arises from the interference of vector and axial vector couplings of the Z and γ to fermions. As such, the measurement of AFB is sensitive to the couplings of the boson to quarks and to muons. This measurement is also sensitive to the weak mixing angle $\sin 2\theta_W$, an input to the Standard Model. At the LHC the observed asymmetry is diluted by an unknown initial quark direction, however, at LHCb the unique kinematic acceptance results in less of a dilution and a reduction in theoretical error. I present progress towards the measurement of both AFB and $\sin 2\theta_W$ at LHCb.

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