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ttW: Correlations and Asymmetries

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The ttW^{+/-} process in the multi-lepton plus b-jet final state has shown discrepancies between experiment and theory as reported by the ATLAS collaboration. To this end, we employ NLO QCD off-shell results for this process to investigate the cross section ratio between ttW^+ and ttW^- which is a precision observable. Using these results we obtain theoretical errors of order 1%-2%, depending of the transverse momentum cut on the b-jet. Furthermore, motivated by this discrepancy we analyse the charge asymmetry of the top quark and it's decay products for this process. These are quite sensitive to the chiral nature of possible new physics in this channel. The theoretical uncertainty, modelling and reconstruction issues are addressed and discussed and finally we reach theoretical uncertainties of below 15% for this observable.

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