

Select events in lepton+jets channel with: Process Single top-quark _ _ _ _ _ _ _ _ . $t\bar{t}V(t\bar{t}W+t\bar{t}Z+t\bar{t}H)$ Multijet W+jets Leptonic top reconstructed using pseudo-top algorithm Z+jets Diboson Re-clustered jets – for top reconstruction Data Hadronic Top



- Correct for detector effects using iterative Bayesian unfolding (IBU) and propagate uncertainties Validate unfolding by injecting moderate EFT contributions and recovering modified particle-level Differential cross-section measurements compared to NLO simulation and NLO re-weighted to NNLO
- Re-weighting observed to improve the agreement between data and theory
- \blacktriangleright Systematics dominated, leading uncertainties: $t\bar{t}$ modelling, flavour tagging, small-R jets

Unfolded differential cross-section measurements

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 \triangleright Probe sensitivity to new physics at high energy scale using EFTs ($\Lambda = 1$ TeV) \triangleright Use differential distribution to disentangle and constrain two sensitive Wilson coefficients; C_{tG} and $C_{ta}^{(8)}$ Build function of cross-section in terms of Wilson coefficients¹ and fit to data using EFTfitter \triangleright Observe no evidence for new physics and excellent sensitivity to $C_{tq}^{(8)}$, stronger limits than global fit [2] \triangleright Successfully disentangle effects of O_{tG} and $O_{tq}^{(8)}$ operators showing power of differential measurement

Differential EFT limit extraction



oserved	Expected	Observed	Global fit [2]
68, 0.21]	[-0.41, 0.42]	[-0.63, 0.20]	[0.007, 0.111]
30, 0.36]	[-0.35, 0.36]	[-0.34, 0.27]	[-0.40, 0.61]

¹ Only linear EFT terms included