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Measurement of the production cross-section of a W boson in association with $t\bar{t}$

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The top-quark pair production in association with a W boson is an important background to processes like $t\bar{t}H$ or 4-tops production. Due to higher order electroweak corrections, the process is difficult to model. In consequence, a mismodelling of $t\bar{t}W$ surpassing 2σ has been observed in previous analyses. Thus, it is of high importance to increase our understanding of it.

This talk will give an overview of the measurement of the $t\bar{t}W$ cross-section in the multi-lepton channel, i.e. $2\ell SS$ and 3ℓ , using the full Run 2 dataset. In addition to a measurement in the inclusive phase space, the extraction of the cross-section in a fiducial phase space, as well as the measurement of the ratio $\sigma(t\bar{t}W^+)/\sigma(t\bar{t}W^-)$ will be discussed. The fit to extract the cross-section is performed simultaneously to a template fit estimating the main background contributions.

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