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Corrigendum

Corrigendum to: "Measurement of the $t\bar{t}$ production cross-section using $e\mu$ events with b-tagged jets in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector" [Phys. Lett. B 761 (2016) 136–157]

The ATLAS Collaboration

ARTICLE INFO

ABSTRACT

This paper describes a measurement of the inclusive top quark pair production cross-section ($\sigma_{t\bar{t}}$) with a data sample of 3.2 fb^{-1} of proton–proton collisions at a centre-of-mass energy of $\sqrt{s} = 13$ TeV, collected in 2015 by the ATLAS detector at the LHC. This measurement uses events with an opposite-charge electron–muon pair in the final state. Jets containing b-quarks are tagged using an algorithm based on track impact parameters and reconstructed secondary vertices. The numbers of events with exactly one and exactly two b-tagged jets are counted and used to determine simultaneously $\sigma_{t\bar{t}}$ and the efficiency to reconstruct and b-tag a jet from a top quark decay, thereby minimising the associated systematic uncertainties. The cross-section is measured to be:

$$\sigma_{t\bar{t}} = 818 \pm 8\ (\text{stat}) \pm 27\ (\text{syst}) \pm 19\ (\text{lumi}) \pm 12\ (\text{beam})\ \text{pb},$$

where the four uncertainties arise from data statistics, experimental and theoretical systematic effects, the integrated luminosity and the LHC beam energy, giving a total relative uncertainty of 4.4%. The result is consistent with theoretical QCD calculations at next-to-next-to-leading order. A fiducial measurement corresponding to the experimental acceptance of the leptons is also presented.

It has been found that the acceptance $A_{e\mu}$ values given in Section 4 of the paper correspond to the values before applying the detector acceptance cuts, $p_{\mathrm{T}} > 25$ GeV and $|\eta| < 2.5$. The correct acceptance $A_{e\mu}$ values within the detector acceptance are about 1.4% (instead of 2.7%) including τ decays, and 1.2% (instead of 2.3%) excluding τ decays.

This change does not have any impact on the fiducial cross-section result or in any other number presented in the paper. $A_{e\mu}$ is not used in the extraction of the fiducial cross-section, it is given for reference as the prediction from the baseline $t\bar{t}$ POWHEG+PYTHIA6 MC sample. The fiducial cross-section is calculated using Eq. (1) with $G_{e\mu}$ replacing $\epsilon_{e\mu}$. In the total cross-section $\epsilon_{e\mu}$ corresponds to $\epsilon_{e\mu} = A_{e\mu} G_{e\mu}$.

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