Observation of same-sign WW production from double parton scattering in proton-proton collisions at $\sqrt{s} = 13\,\text{TeV}$

—Supplemental Material—
Distributions of the kinematic variables used to train the BDT discriminants along with the two BDT discriminants

The CMS Collaboration

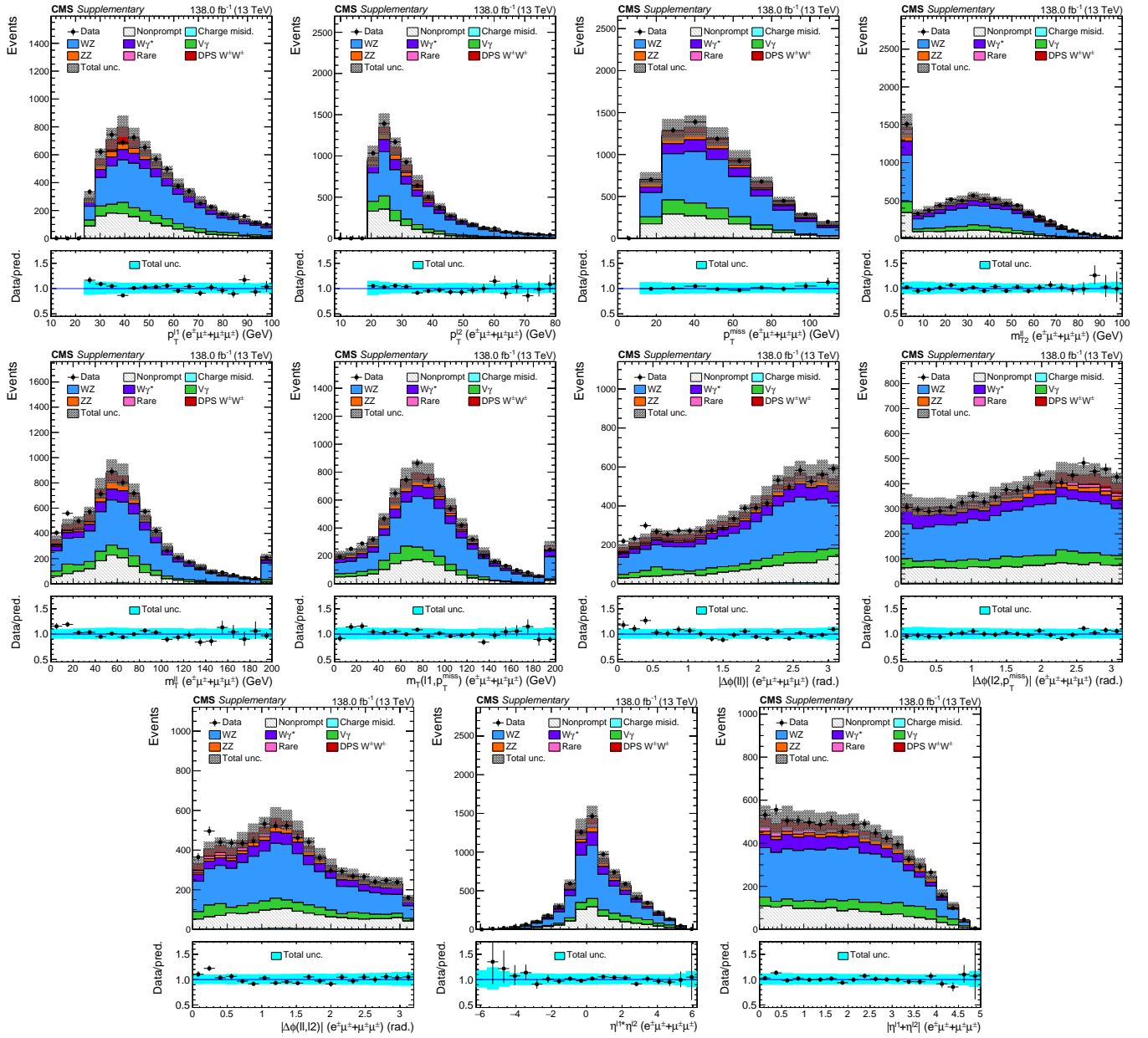*CERN*

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FIG. 1. Distributions of the kinematic variables used for the training of the BDT discriminants for the combined $e^{\pm}\mu^{\pm}$ and $\mu^{\pm}\mu^{\pm}$ final states: $p_{\mathrm{T}}^{\ell 1}$, $p_{\mathrm{T}}^{\ell 2}$, $p_{\mathrm{T}}^{\mathrm{miss}}$, $m_{\mathrm{T2}}(\ell\ell)$, $m_{\mathrm{T}}(\ell\ell)$, $m_{\mathrm{T}}(\ell 1, p_{\mathrm{T}}^{\mathrm{miss}})$, $|\Delta\phi(\ell\ell)|$, $|\Delta\phi(\ell 2, p_{\mathrm{T}}^{\mathrm{miss}})|$, $|\Delta\phi(\ell\ell, \ell 2)|$, $\eta^{\ell 1} * \eta^{\ell 2}$, and, $|\eta^{\ell 1} + \eta^{\ell 2}|$. The signal and background yields have been normalized to their respective postfit yields. The uncertainty bands represent the total expected uncertainty on the predicted yields, which includes both the statistical and systematic components.
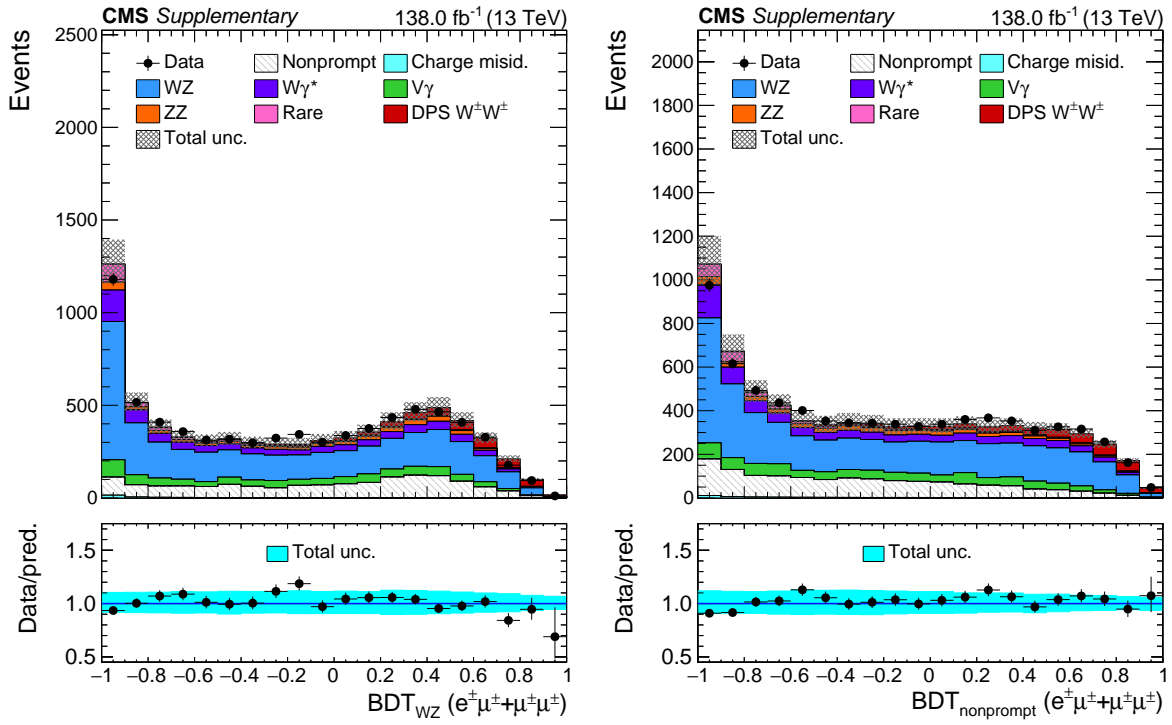
FIG. 2. Distributions of the two single BDT discriminants for the combined $e^{\pm}\mu^{\pm}$ and $\mu^{\pm}\mu^{\pm}$ final states. The BDT discriminant trained against the WZ (nonprompt leptons) background is labeled as BDT_{WZ} ($\mathrm{BDT}_{\mathrm{nonprompt}}$). The signal and background yields have been normalized to their respective postfit yields. The uncertainty bands represent the total expected uncertainty on the predicted yields, which includes both the statistical and systematic components.