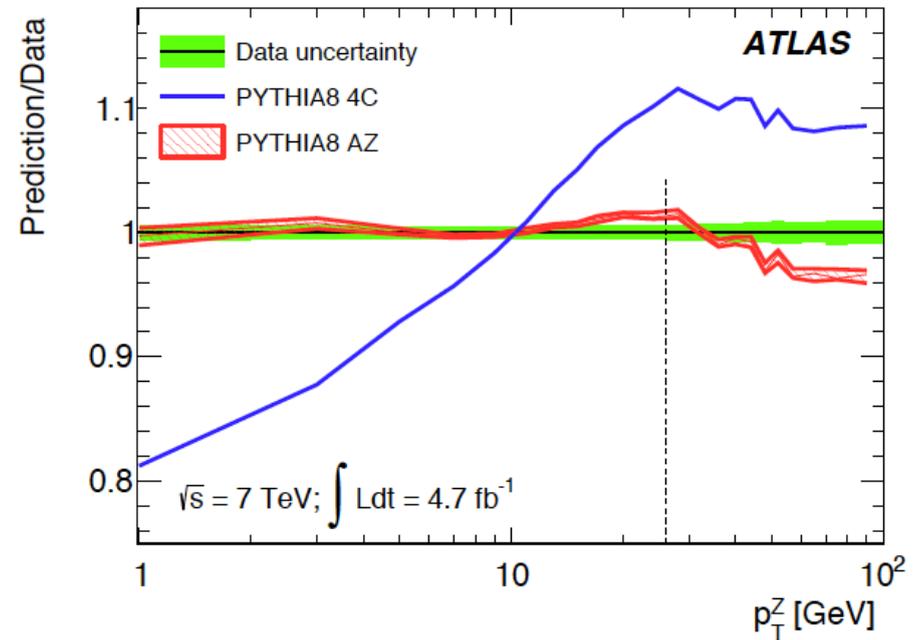
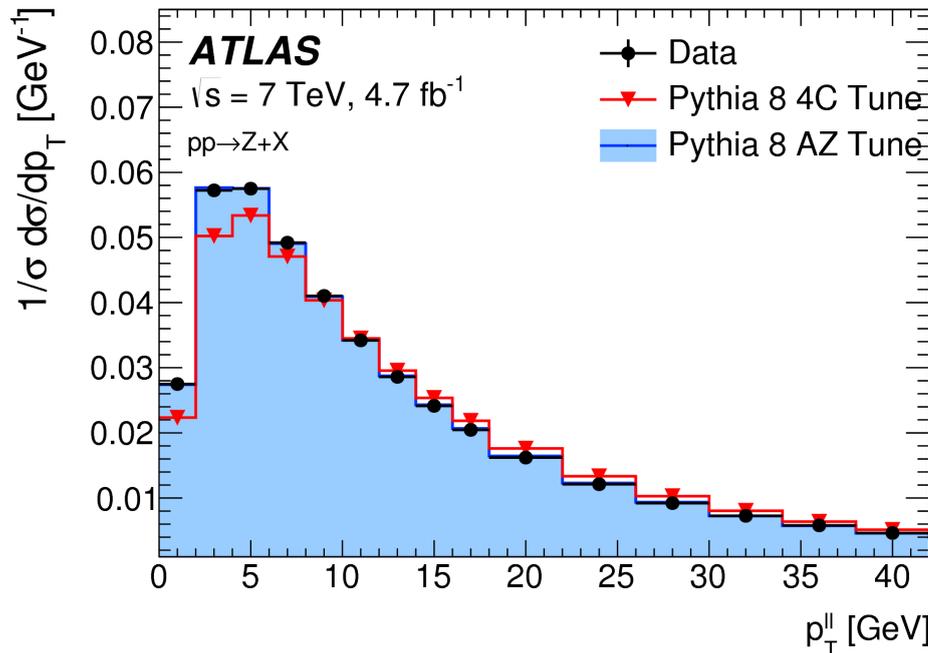


# Z transverse momentum

Parton shower MC Pythia 8 tuned to the 7 TeV data AZ tune (better description in rapidity bins than the AZNLO tune of Powheg+Pythia) [JHEP09\(2014\)145](#)

PYTHIA8	
Tune Name	AZ
Primordial $k_T$ [GeV]	$1.71 \pm 0.03$
ISR $\alpha_S^{\text{ISR}}(m_Z)$	$0.1237 \pm 0.0002$
ISR cut-off [GeV]	$0.59 \pm 0.08$
$\chi^2_{\text{min}}/\text{dof}$	45.4/32

The agreement between data and Pythia AZ is better than 1% for  $p_T < 40$  GeV



The accuracy of Z data is propagated and considered as an uncertainty

W-boson charge Kinematic distribution	$W^+$		$W^-$		Combined	
	$p_T^\ell$	$m_T$	$p_T^\ell$	$m_T$	$p_T^\ell$	$m_T$
AZ tune	3.0	3.4	3.0	3.4	3.0	3.4