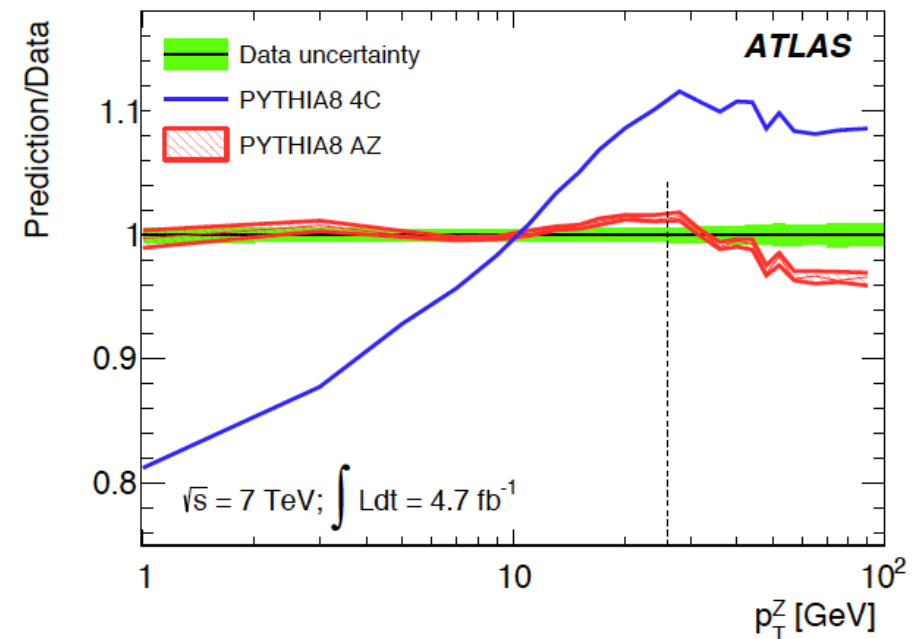
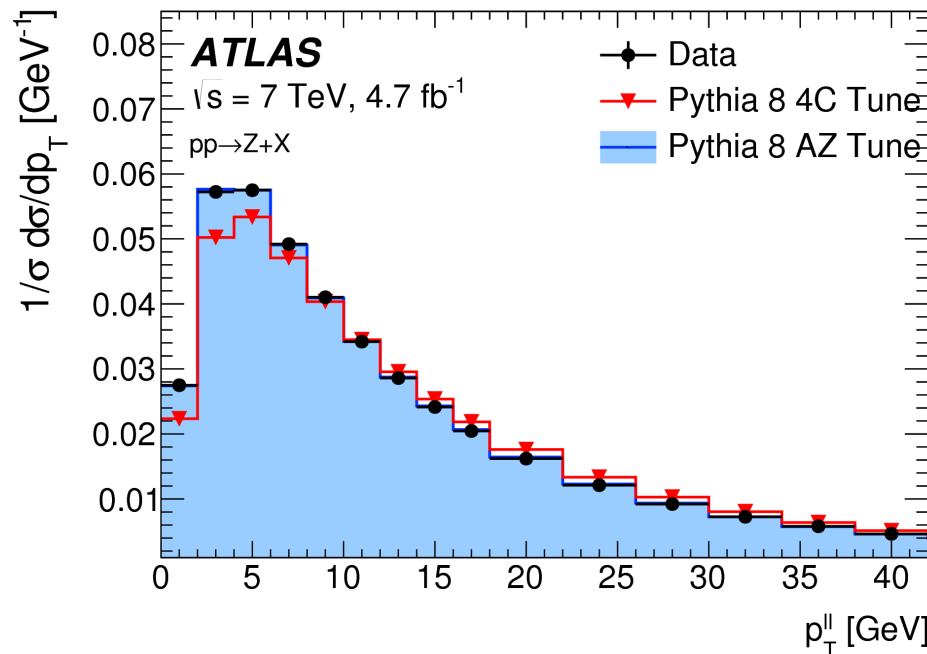


Z transverse momentum

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](#)

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

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



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

W-boson charge Kinematic distribution	W^+		W^-		Combined	
	p_T^ℓ	m_T	p_T^ℓ	m_T	p_T^ℓ	m_T
AZ tune	3.0	3.4	3.0	3.4	3.0	3.4