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Performance of missing transverse energy reconstruction in pp collisions at 13 TeV in the diphoton channel with ATLAS

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A good measurement of missing transverse energy (MET) is pre-eminent for many searches for new physics carried out by the ATLAS experiment at the LHC. The measurement of MET in the ATLAS detector makes use of the full event reconstruction and a calibration based on reconstructed physics objects. The performance of MET reconstruction is evaluated using data collected in proton-proton collisions at a centre-of-mass energy of 13 TeV in Run 2 of data taking in the diphoton channel. Regrettably, these high luminosities achieved lead to undesirable backgrounds due to additional proton-proton collisions occurring at the same bunch crossing as the collision of interest (pile-up). As a result of this downside, several methods have been implemented in an effort to alleviate the effects of pile-up on the reconstruction and performance of MET. Some of these methods and the consequent performance of MET reconstruction at ATLAS in events with two photons are deliberated.

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