

A High-Dimensional and Unbinned SM Measurement with the ATLAS Detector

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Traditional approaches to precise Standard Model (SM) measurements of fundamental particles at the LHC generally restrict the format of these measurements to just one or two properties at a time in predetermined histogram bins. The ATLAS Experiment recently published such a measurement in a notable new format for LHC experiments: high-dimensional and unbinned datasets that can be used for a wide range of scientific applications. This precision measurement of high-momentum Z boson events uses neural networks to reduce detector distortions and therefore facilitate direct comparison with theoretical QCD predictions. Physicists can easily configure the datasets to produce traditional binned measurements of any of the measured properties, or arbitrary combinations of them, with full uncertainty covariances and customized binning.

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