

Moment Unfolding using Deep Learning

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Deconvolving ('unfolding') detector distortions is a critical step in the comparison of cross section measurements with theoretical predictions. However, most of these approaches require binning while many predictions are at the level of moments. We develop a new approach to directly unfold distribution moments as a function of any other observables without having to first discretize. Our Moment Unfolding technique uses machine learning and is inspired by Generative Adversarial Networks (GANs). We demonstrate the performance of this approach using jet substructure measurements in collider physics. We also discuss challenges with unfolding all moments simultaneously, drawing connections to the renormalization of the partition function.

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