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Pushing Normalizing Flows for higher-dimensional Detector Simulations

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Normalizing-flow architectures have shown outstanding performance in various generative tasks at the LHC. However, they don't scale well to higher dimensional datasets. We investigate several directions to improve normalizing flows for calorimeter shower simulations: 1) using a coupling-layer based flow to improve training and generation times without dimensionality reduction, and 2), using a VAE to compress the very high-dimensional datasets 2 and 3 of the CaloChallenge.

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