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Generative Machine Learning at CMS

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The CMS Generative Machine Learning Group will showcase three distinct projects, each utilizing point cloud-based generative models to advance particle physics research. The first project, "Attention to Mean Fields for Particle Cloud Generation", features an attention-based generative model that adeptly processes complex collider data represented as point clouds, demonstrating effectiveness on the JetNet150 and CaloChallenge datasets. The second project, "DeepTreeGAN", explores novel techniques for iterative up- and downscaling of point clouds, inspired by the tree-based development of particle showers. Finally, "CaloPointFlow" presents a generative model using normalizing flows.

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