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Recurrent GANs for particle-based simulation at the LHC

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Generative models, and in particular generative adversarial networks, are gaining momentum in hep as a possible way to speed up the event simulation process. Traditionally, gan models applied to hep are designed to return images. On the other hand, many applications (e.g., analyses based on particle flow) are designed to take as input lists of particles. We investigate the possibility of using recurrent GANs as a generator of particle lists. We discuss a prototype implementation, challenges and limitations in the context of specific applications.

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