



Contribution ID: 2

Type: Long talk (25min. + 10min. Q/A)

Conditional Generation of LArTPC Images Using Latent Diffusion

Thursday 30 October 2025 09:35 (25 minutes)

Given the challenges in LArTPC event reconstruction, we have taken the first steps towards creating an end-to-end inference pipeline to go from 2D images to event properties. Inspired by the success of denoising diffusion probabilistic models (DDPMs), we have developed a method of conditionally generating 2D LArTPC images. By utilizing a modified latent diffusion model, we have demonstrated the ability to generate single-particle events of a specified momentum with quality comparable to traditional Geant4 simulations.

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Session Classification: Foundation Models