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Jet Image Generation using Score Based and Consistency Diffusion Models

Monday 19 May 2025 15:15 (15 minutes)

Score based and consistency diffusion models are presented for generating jet images, focusing on high-fidelity synthesis for high energy Physics applications. Using the JetNet dataset, the diffusion models are trained to learn the visual representation of jet kinematics. The results demonstrate that consistency models achieve significantly lower Fréchet inception distance measures compared to score-based models, indicating improved image quality and generation stability. Unlike methods based on latent distributions, this approach operates directly in image space. Furthermore, the efficacy of jet image generation is demonstrated using jet tagging and other metrics to highlight the strengths of image-based jet generative modeling.

Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

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