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Denoising Graph Super-Resolution for Improved Collider Event Reconstruction

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Accurately reconstructing particles from detector data is a critical challenge in experimental particle physics, where the spatial resolution of calorimeters plays a key role. This study explores the integration of super-resolution techniques into the Large Hadron Collider (LHC)-like reconstruction pipeline to enhance the granularity of calorimeter data. By applying super-resolution, we demonstrate how significant improvements in reconstruction accuracy can be achieved without physical changes to the detectors. This approach could significantly impact the reconstruction pipeline of LHC-like experiments and could be a major consideration in future detector design.

Track

Reconstruction

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