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## ParticleNet: Jet Tagging via Particle Clouds (15'+5')

*Tuesday, July 23, 2019 2:30 PM (20 minutes)*

How to represent a jet is at the core of machine learning on jet physics. Inspired by the notion of point cloud, we propose a new approach that considers a jet as an unordered set of its constituent particles, effectively a “particle cloud”. Such particle cloud representation of jets is efficient in incorporating raw information of jets and also explicitly respects the permutation symmetry. Based on the particle cloud representation, we propose ParticleNet, a customized neural network architecture using Dynamic Graph CNN for jet tagging problems. The ParticleNet architecture achieves state-of-the-art performance on two representative jet tagging benchmarks and improves significantly over existing methods.

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