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Pileup Mitigation with Machine Learning

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We develop a new pileup mitigation technique based on multi-channel jet images using convolutional neural nets. The input to the network is a three-channel jet image: the calorimeter “pixel” information of charged leading vertex particles, charged pileup particles, and neutral particles. We compare our algorithm to existing methods on a wide range of simple and complex jet observables up to 140 collisions per bunch crossing. In addition, we investigate what aspects of the event our algorithms are utilizing and also test the method robustness.

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