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Quark/Gluon Discrimination with Jet-Images and Deep Learning

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I will discuss recent work addressing light-quark/gluon jet discrimination using image recognition techniques from deep learning. The usual jet-image framework is supplemented by adding “color” to the images in the form of local energy deposit and count information. Overall, this approach outperforms multivariate analyses of traditional jet observables and provides a theoretical upper bound of the discrimination performance of IRC-safe information. Though different Monte Carlo programs are known to produce different quark and gluon jets, the deep learning techniques are found to be surprisingly insensitive to these differences.

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Session Classification: Algorithms