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Quark and Gluon Tagging at the LHC

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Distinguishing light-quark jets from gluon jets on an event-by-event basis could significantly enhance the reach for many new physics searches at the Large Hadron Collider. Through an exhaustive search of existing and novel jet substructure observables, we find that a multivariate approach can filter out over 95% of the gluon jets while keeping more than half of the light-quark jets. Moreover, a combination of two simple variables, the charge track multiplicity and the p_T-weighted linear radial moment (girth), can achieve similar results. I will discuss applications and address theoretical issues in the definitions of quark and gluon jets.

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