

## Linear jet tagging with the energy flow basis (15'+5')

*Tuesday, 12 December 2017 10:00 (20 minutes)*

In this talk, I will demonstrate the linear power of Energy Flow Polynomials (EFPs) by applying linear classification methods to quark/gluon discrimination, boosted  $W$  tagging, and boosted top tagging, achieving performance that compares favorably to other jet representations and modern machine learning approaches. I will briefly describe novel algorithms that make use of the graph-theoretic interpretation of EFPs to improve their computational complexity over that of an arbitrary  $N$ -particle correlator, making the computation of a large number of EFPs highly feasible. I will discuss how this linear energy flow basis provides an alternative to “black-box” machine learning techniques for fully combining the (IRC-safe) information in jet observables, replacing complex models by convex linear methods with few or no hyperparameters.

**Primary authors:** Mr METODIEV, Eric (MIT); Prof. THALER, Jesse (MIT); Mr KOMISKE, Patrick (MIT)

**Presenter:** Mr KOMISKE, Patrick (MIT)

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