



Contribution ID: 10

Type: **not specified**

Jet formation with Chebyshev Polynomials

Friday 10 November 2023 09:45 (15 minutes)

Jet formation algorithms that utilise eigenvalues of the similarity matrix offer a innovative take on the definition of a jet. This is referred to as spectral clustering. It solves the clustering problem in a non-greedy manner, and so may find more optimal solutions than straightforward agglomerative algorithms. However, the eigenvalue problem is computationally expensive, so in this study the Chebyshev Polynomial approximation to the eigenvalue spectrum is applied.

This talk will motivate our interest in spectral clustering for jet formation, and describe the advantages we expect. Some toy datasets that demonstrate this edge are presented.

The time complexity of the algorithm is then discussed, and the Chebyshev Polynomial approximation is introduced. Finally, a prototype of the altered algorithm is presented. We share our preliminary results that maintain good performance with a significant reduction in time complexity.

Authors: DAY-HALL, Henry (Czech Technical University in Prague (CZ)); MAGUIRE, Kieran (University of Southampton); DASMAHAPATRA, Srinandan; MORETTI, Stefano (Science and Technology Facilities Council STFC (GB))

Presenter: DAY-HALL, Henry (Czech Technical University in Prague (CZ))

Session Classification: Results, Observables & Techniques