

1 Introduction

The motivation for developing an optimized Java based jet clustering algorithm, is to provide a platform independent implementation for use in online validation scripts on HepSim[1] repository with Monte Carlo predictions for HEP experiments.

Currently, the most widely used implementation of jet clustering algorithms in high energy physics is FastJet[2]. It is written in C++ and provides a highly optimized implementation of (anti)kt and Cambridge-Aachen jet finding algorithms with selectable $O(N^2)$ and $O(N \log N)$ complexities, which significantly reduce runtime in comparison to naive $O(N^3)$ algorithms[3].

Unfortunately, platform dependence of C++ is prohibitive for use of FastJet in client-side web application scripts. Therefore, a Java implementation was necessary.

2 Implementation

2.1 Geometric Factorization

2.2 Tiling

2.3 Linked List

References

- [1] S. V. Chekanov, [arXiv:1403.1886 \[hep-ph\]](#).
- [2] M. Cacciari, G. P. Salam and G. Soyez, Eur. Phys. J. C **72** (2012) 1896 [[arXiv:1111.6097 \[hep-ph\]](#)].
- [3] M. Cacciari and G. P. Salam, Phys. Lett. B **641** (2006) 57 [[hep-ph/0512210](#)].