



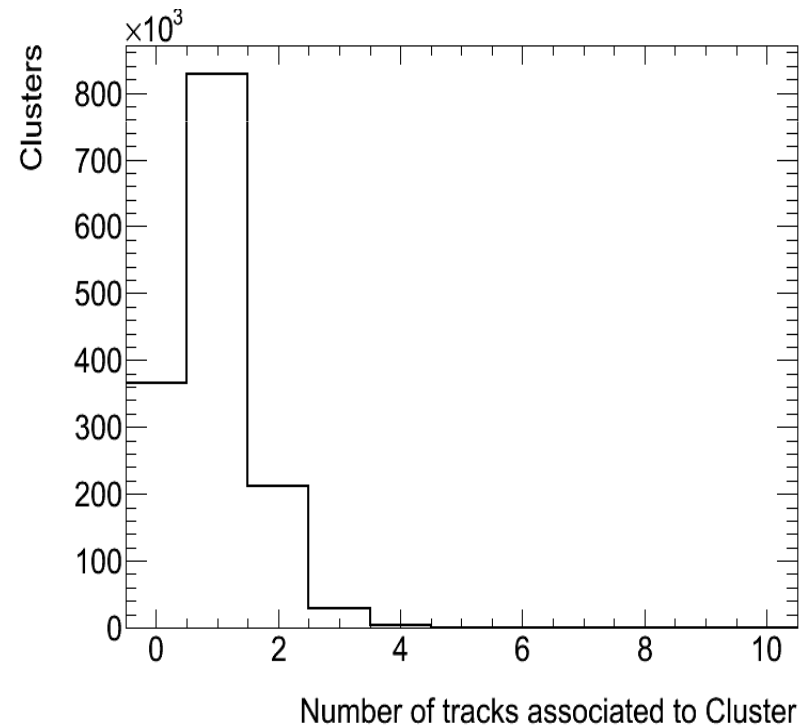
PFA studies

Remi Zaidan

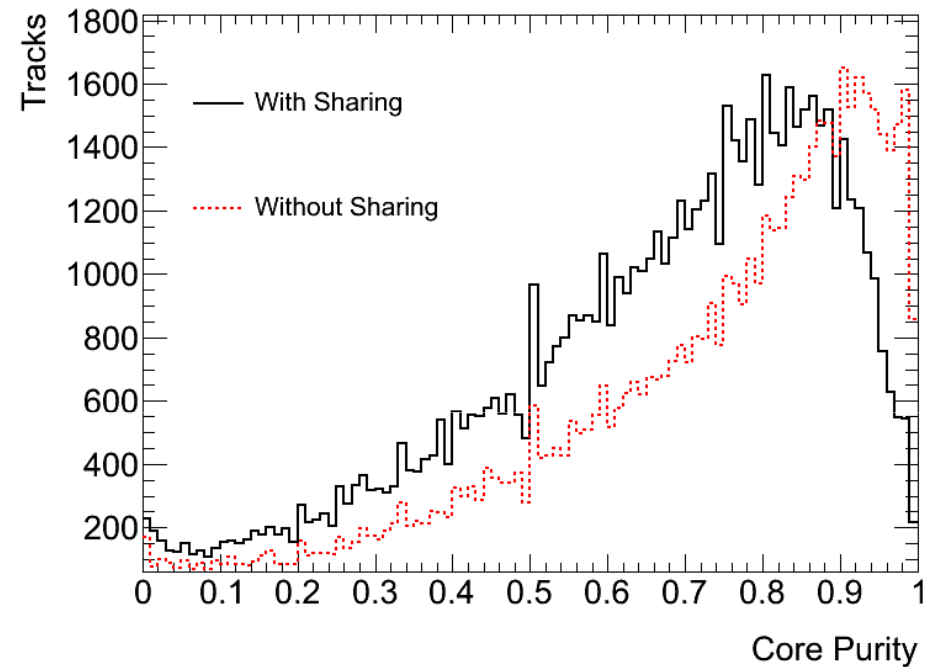
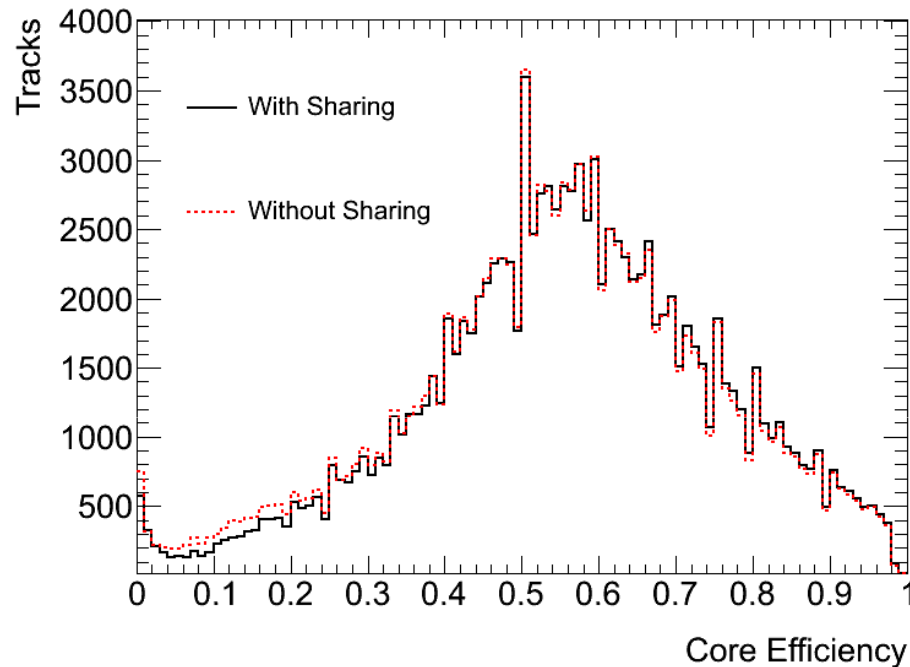
The University of Iowa

Introduction

- Idea to reduce mistakes:
 - Allow clusters to be shared between showers.
 - Come up with a criteria to resolve ambiguities.
- A preliminary test was done:
 - Sample: 10 K qqbar events at 500 GeV CM energy.
 - One iteration:
 - Loop on tracks and build showers.
 - No attempt to merge tracks into jets.
 - Allow sharing of clusters:
 - Call the shower building method for each track assuming there are no other tracks in the event.

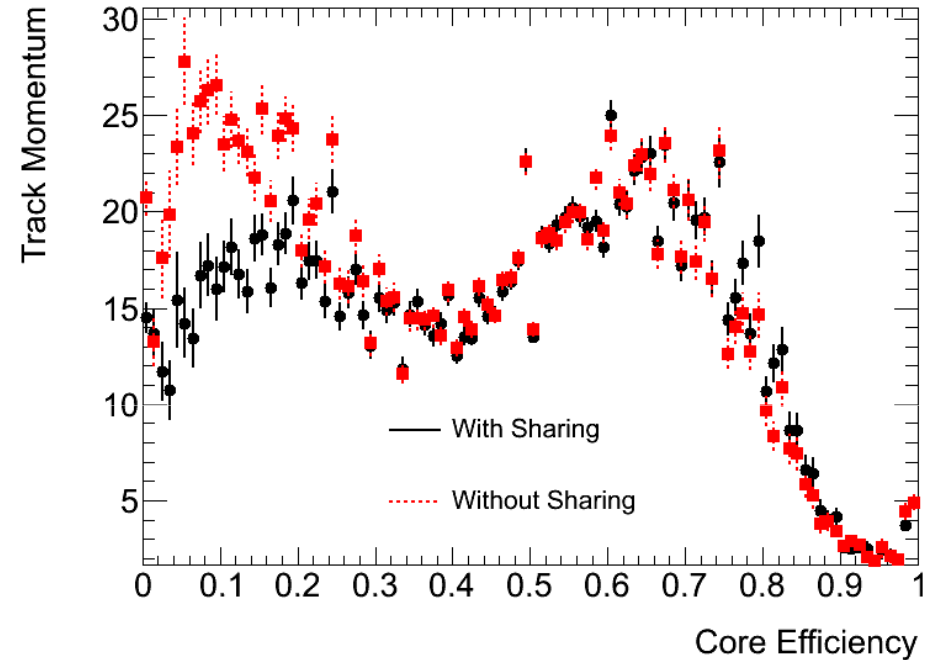
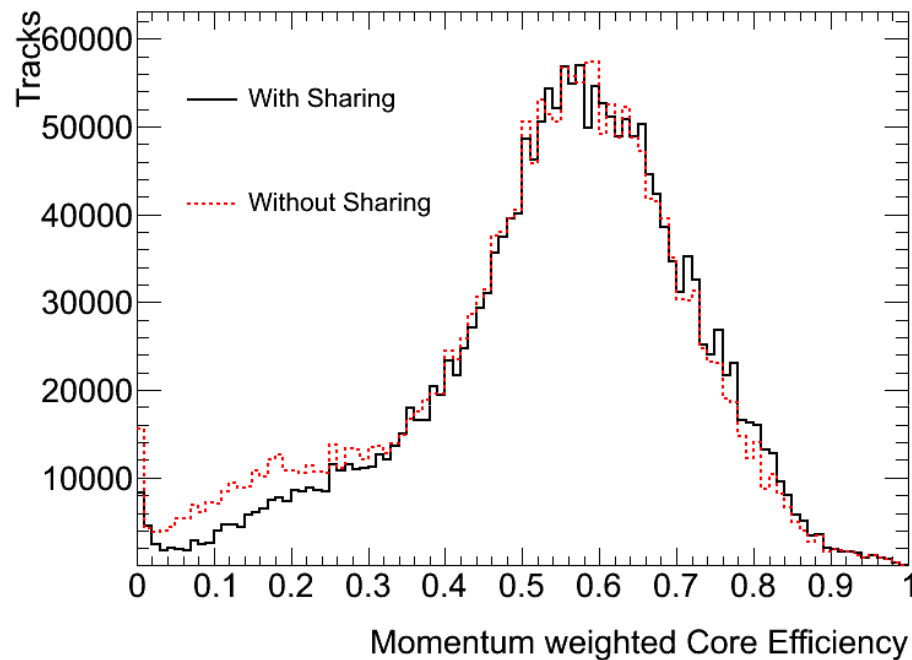


Efficiency and Purity



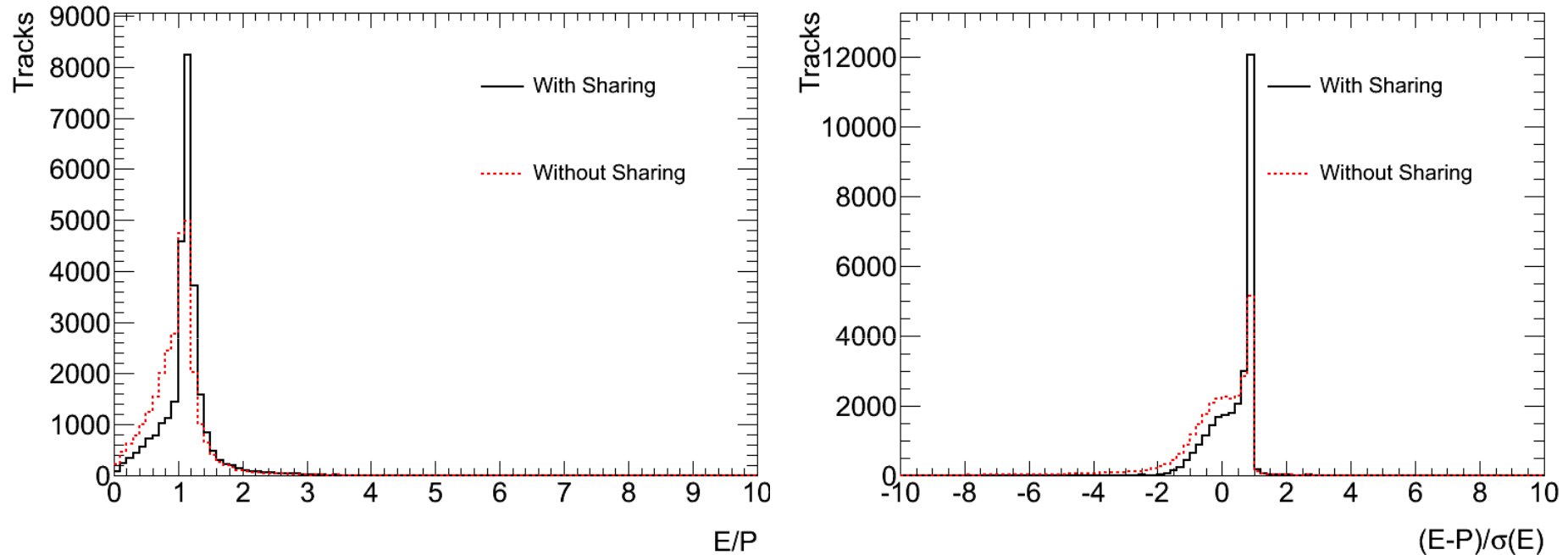
- Efficiency: Truth hit fraction included in a shower.
- Purity: Reconstructed hit fraction belonging to the truth particle.
- Core efficiency/purity: defined without accounting the shared hits.
- Efficiency slightly increase while purity degrades: as expected.

Efficiency vs. Momentum



- A component of high momentum tracks with low efficiency appear when no sharing of clusters is allowed.

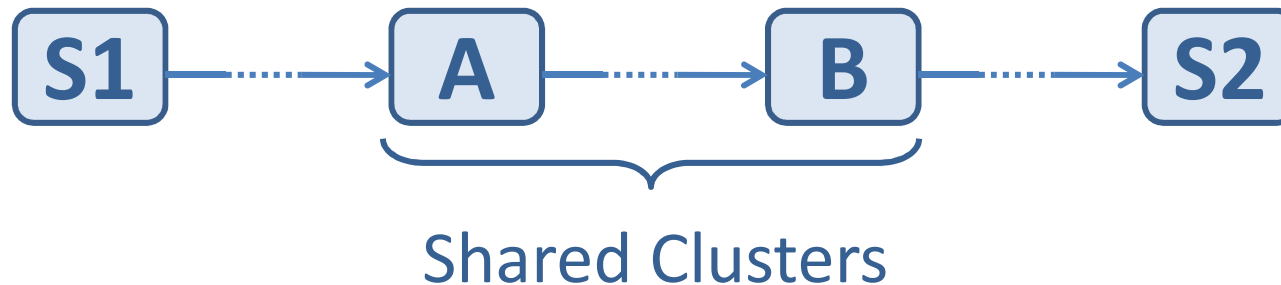
Energy resolution



- Shower building tends to continue as long as the E/P balance is not reached.
- Probably will need to relax the tolerance as well.

Next steps

- Ideas:
 - Define and implement and ambiguity solving criteria.
 - Break the chain at the weakest link:



- Needs additional book-keeping and code implementation.
- Once done: study and optimize performance.