ATRAPP Meeting

Jeremy Couthures

Moving to Athena

1) Move the Hashing code to core:

1) Move the code to core (local) √
2) Make the code compile √
3) Ensure same results than before √
4) Pull requests: Hashing √, Event Timing **(−)**, Root seed writer √, Root comparison √

2) Link ACTS+Hashing version in Athena (TWiki) √

3) Reproduce official plots (slide 17) (with Florencia):

1) Athena + Default: μ = 0 √; μ = 200 √
2) Athena + ACTS μ = 0 √; μ = 200 √

4) Edit seeding tool (in Athena) with Hashing √

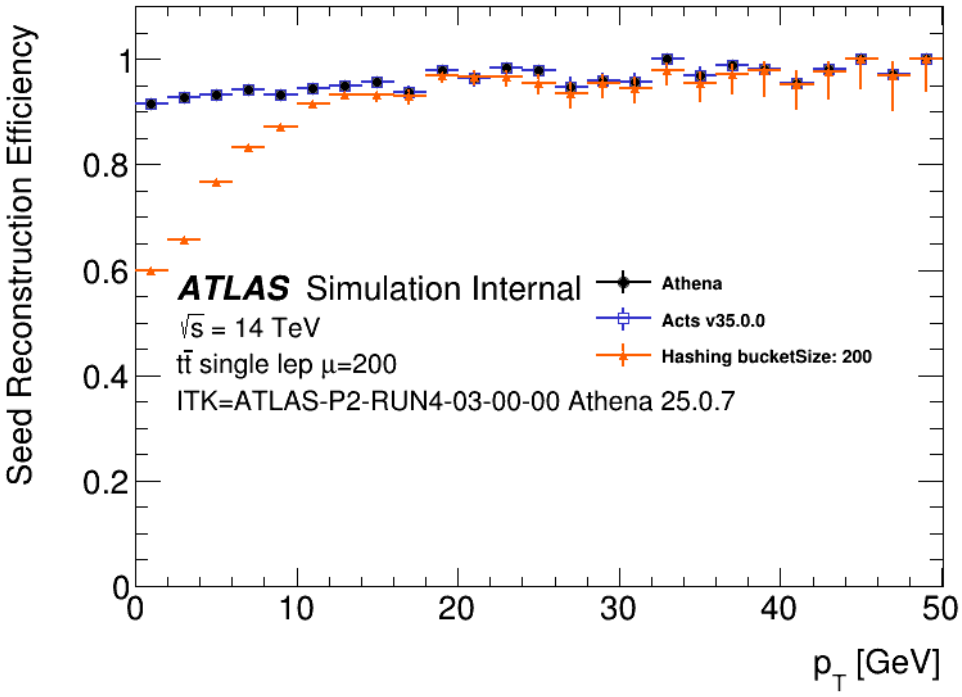
5) Reproduce the plots with Hashing (Eff √ + CPU)

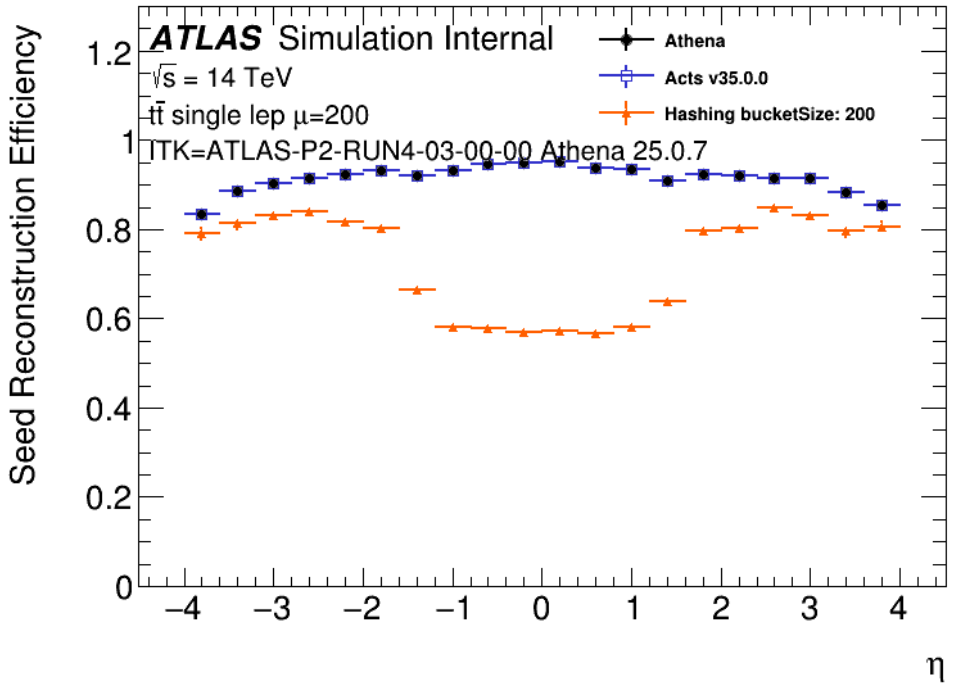
Manuscript

- **50 pages of content (not all finished written)**
  - Chapter 4: 25 pages (not finished)

No new plots

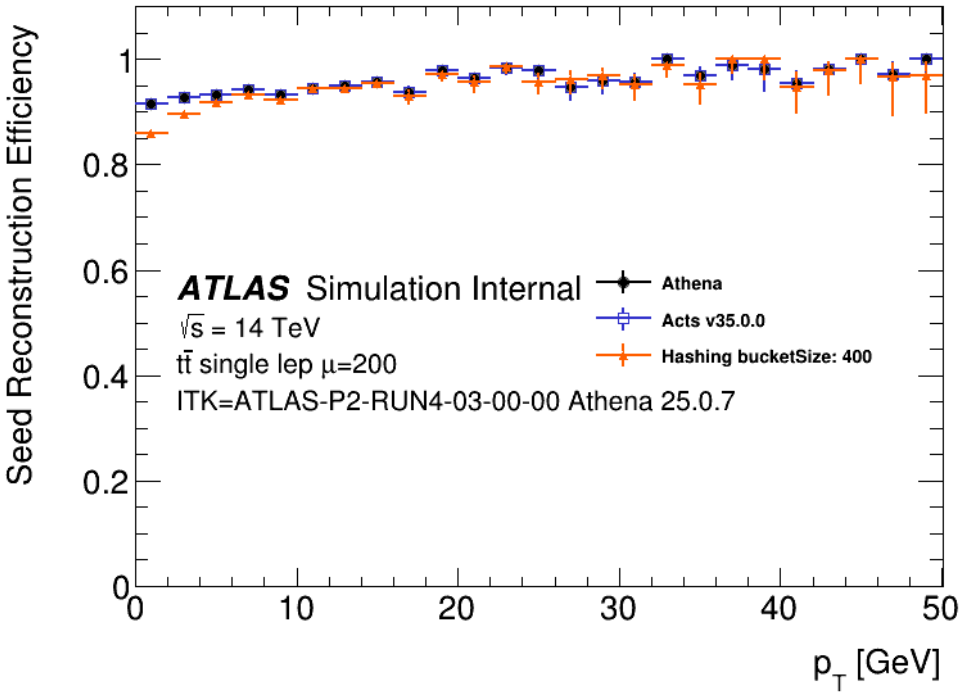
Hashing μ = 200

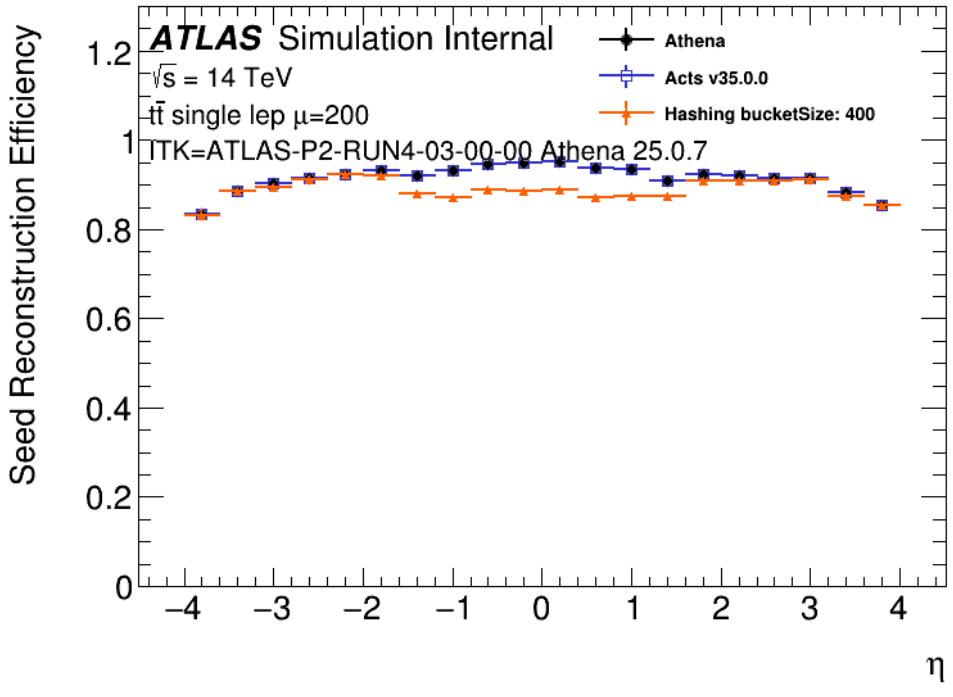




1000 events

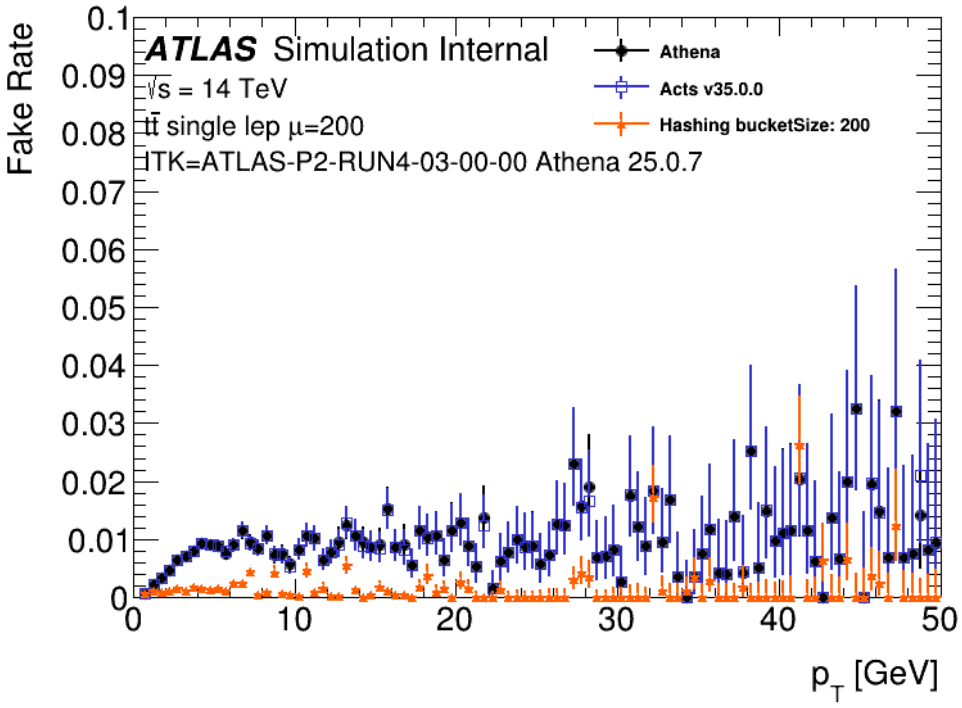
Hashing μ = 200

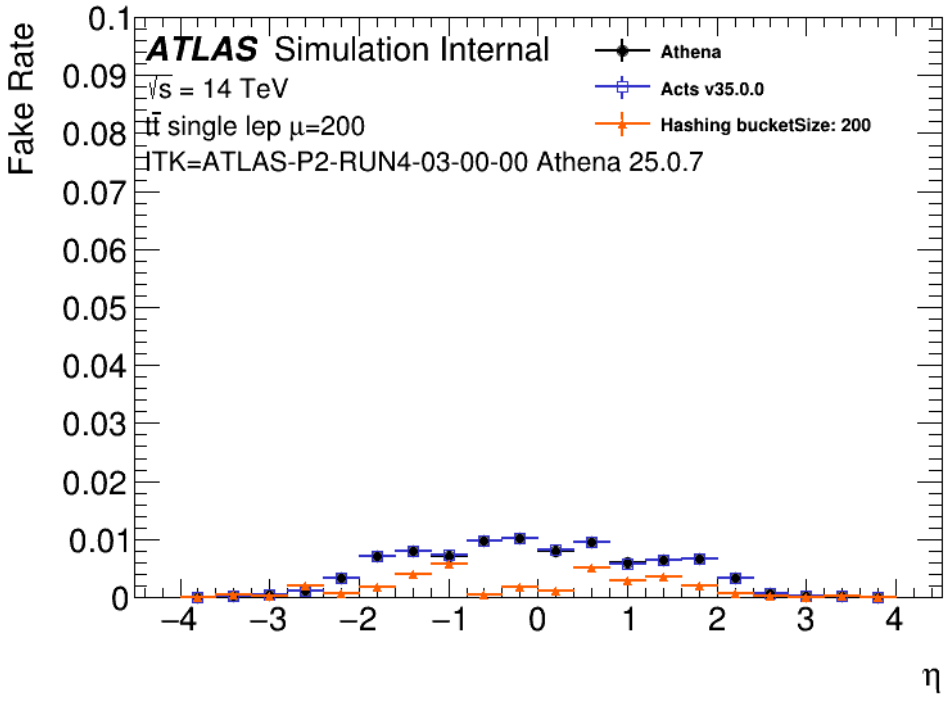




1000 events

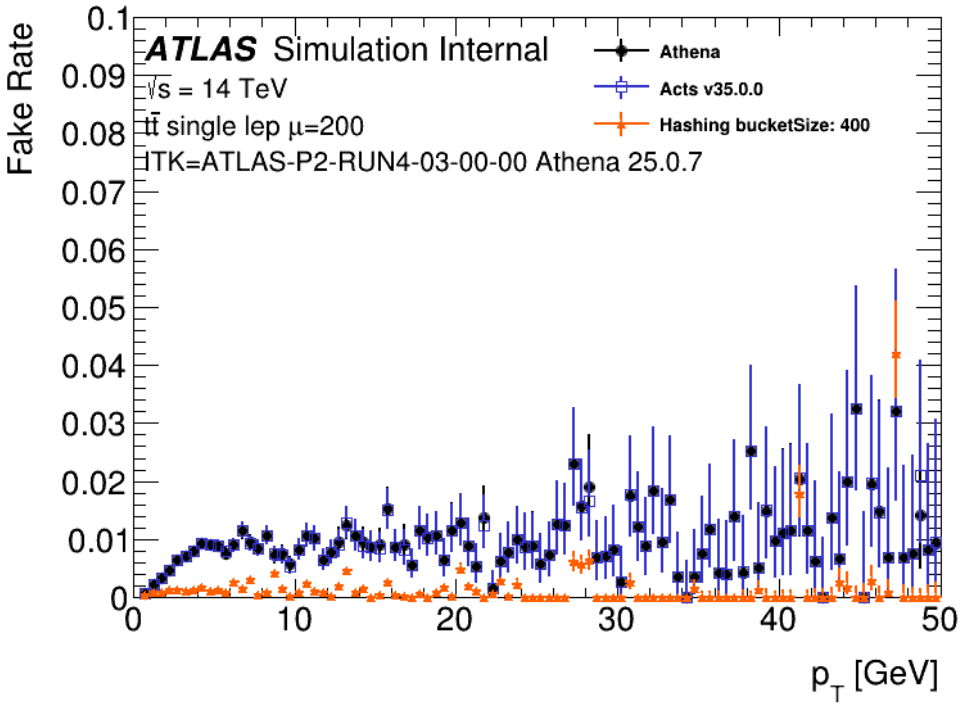
Hashing μ = 200

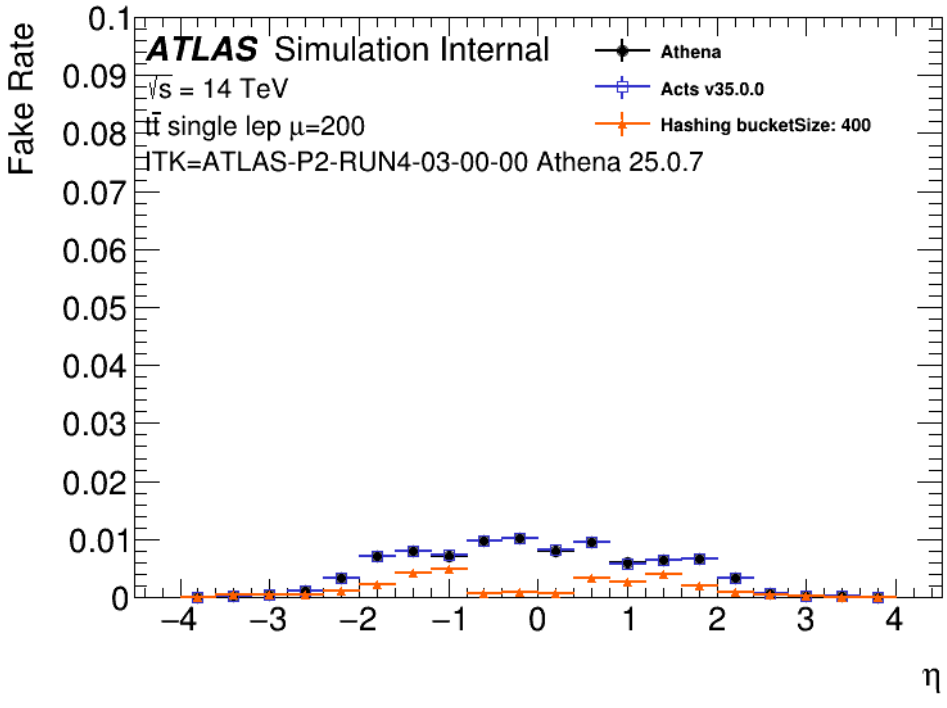




1000 events

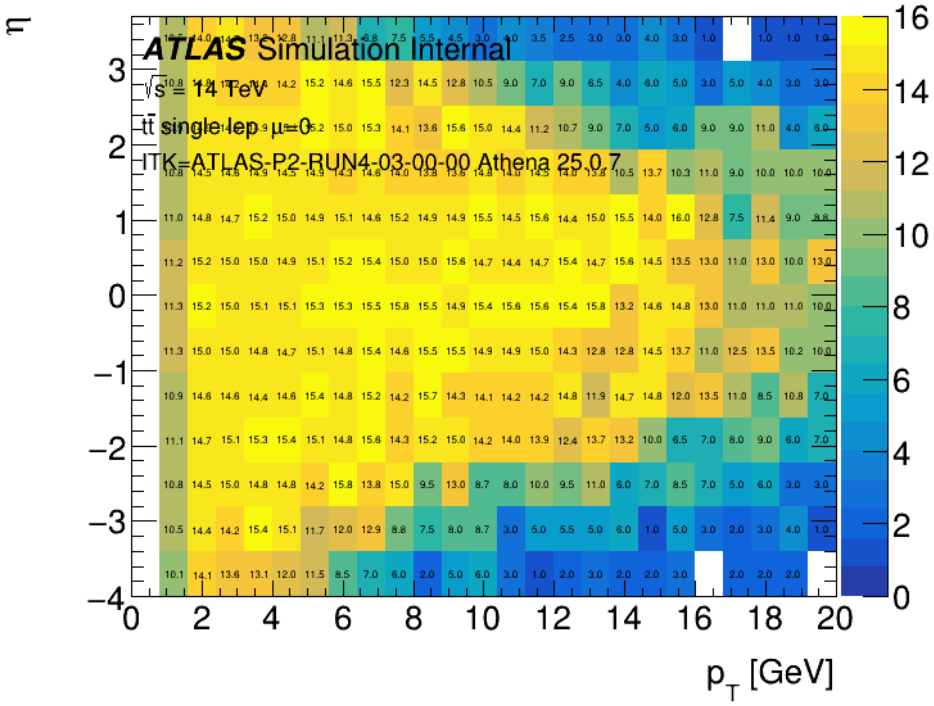
Hashing μ = 200



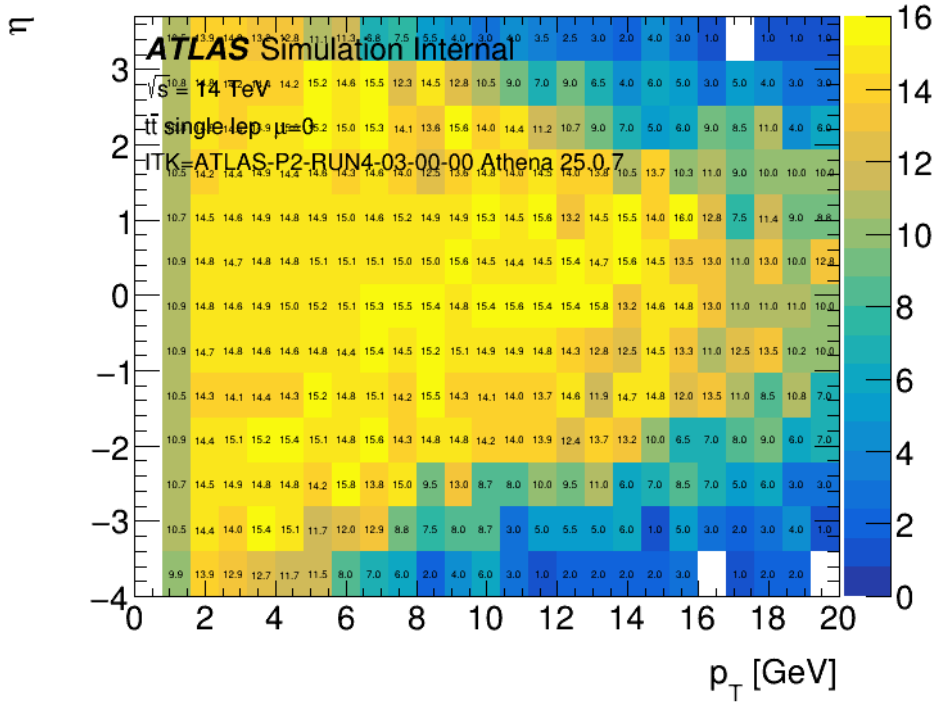


1000 events

Hashing μ = 0

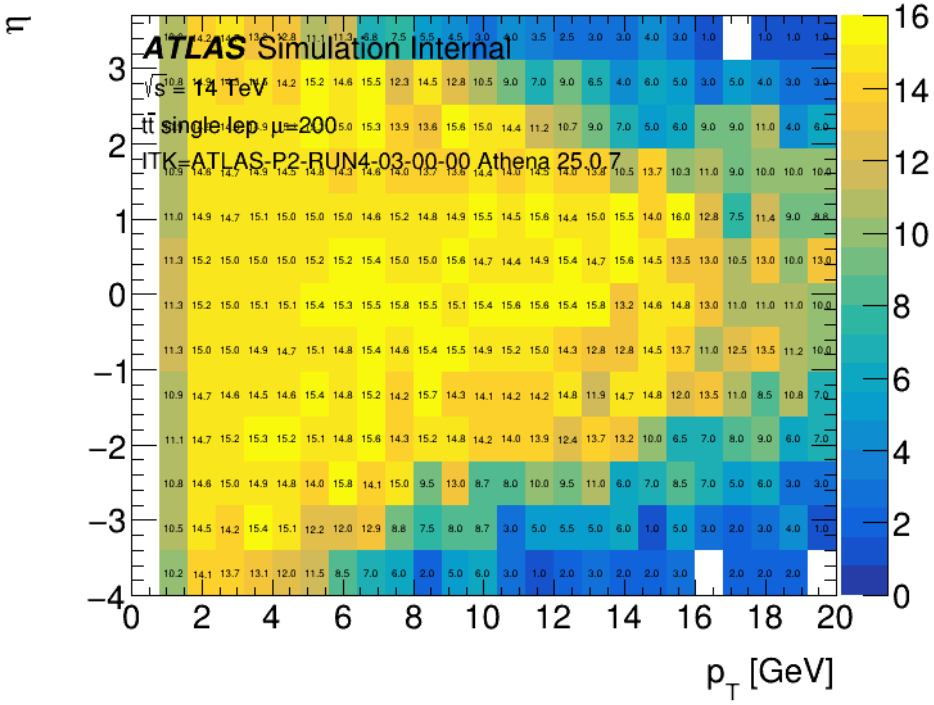


Acts

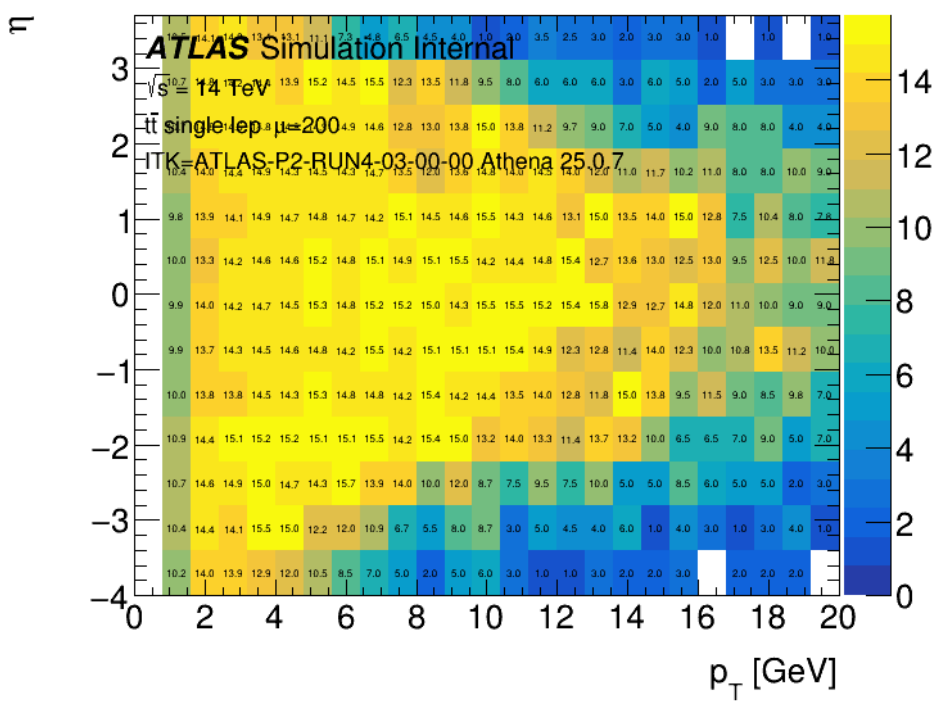


Hashing

Hashing μ = 200

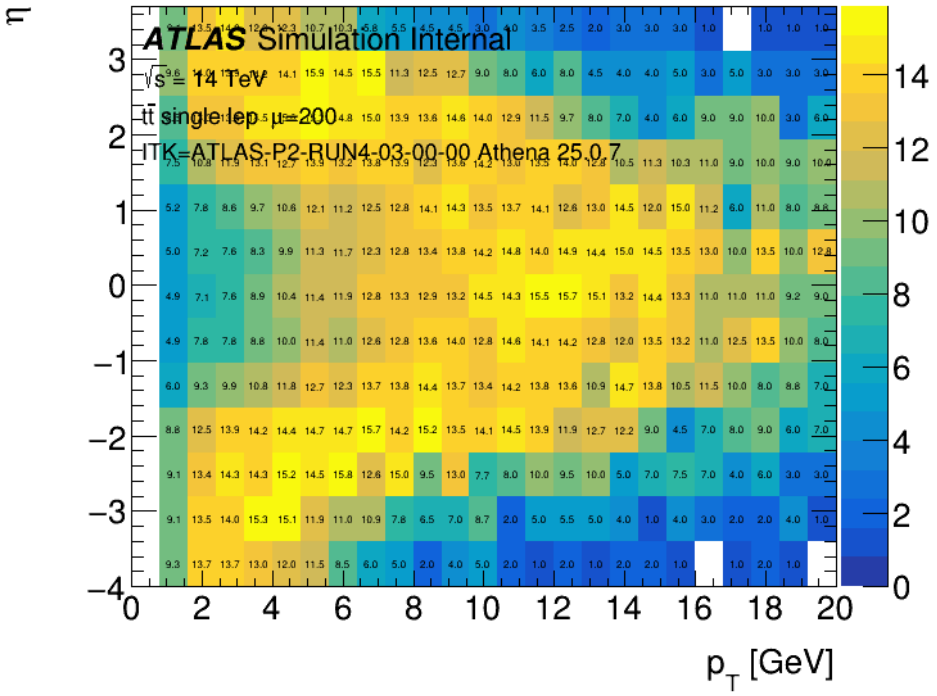


Acts

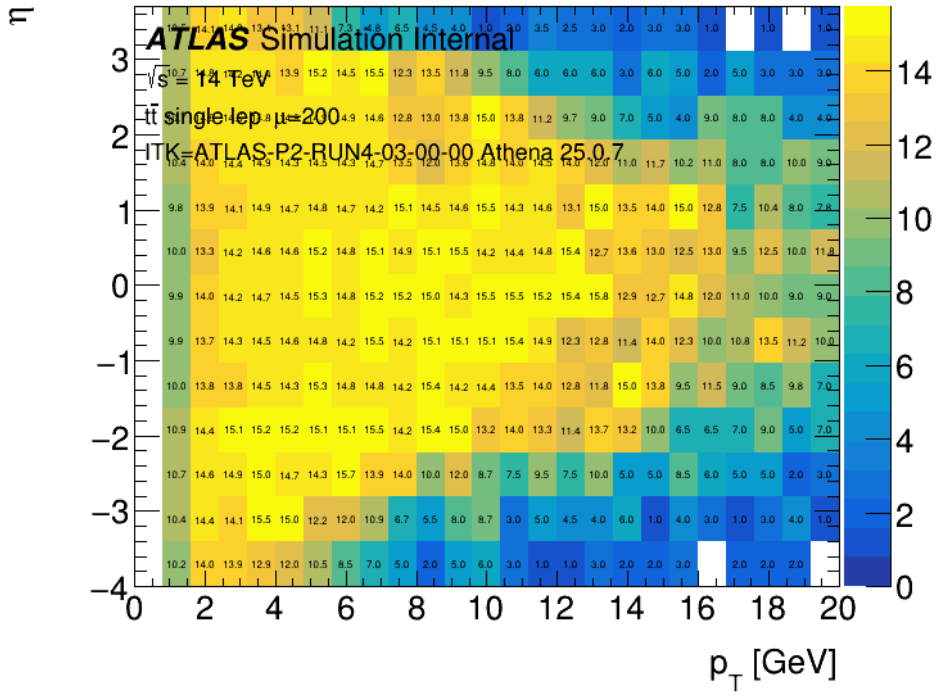


Hashing

Hashing μ = 200

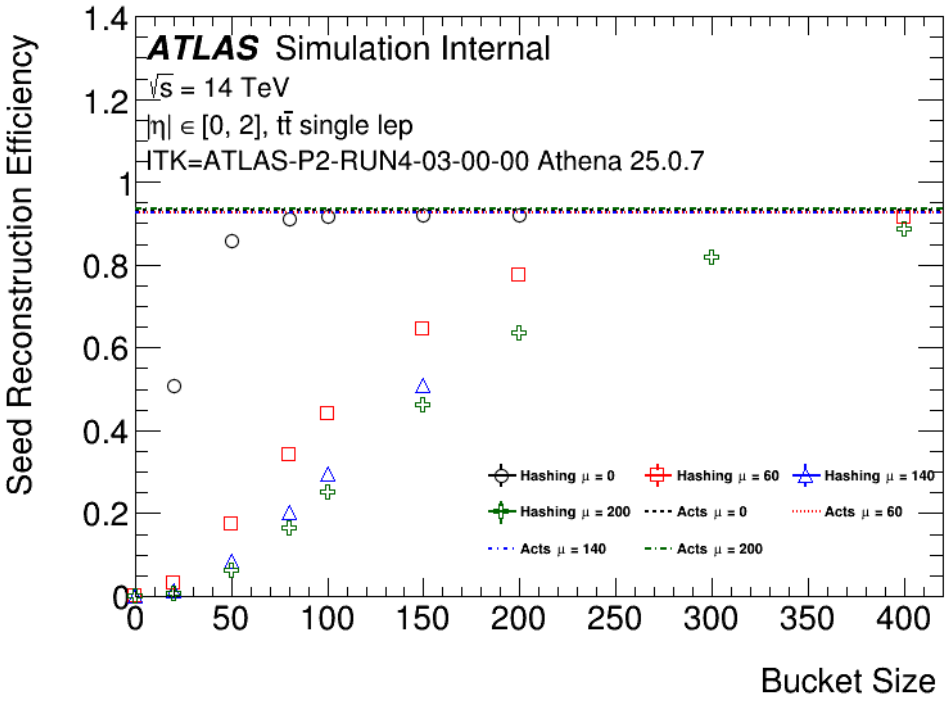


Bucket size 200



Bucket size 400

Bucket Size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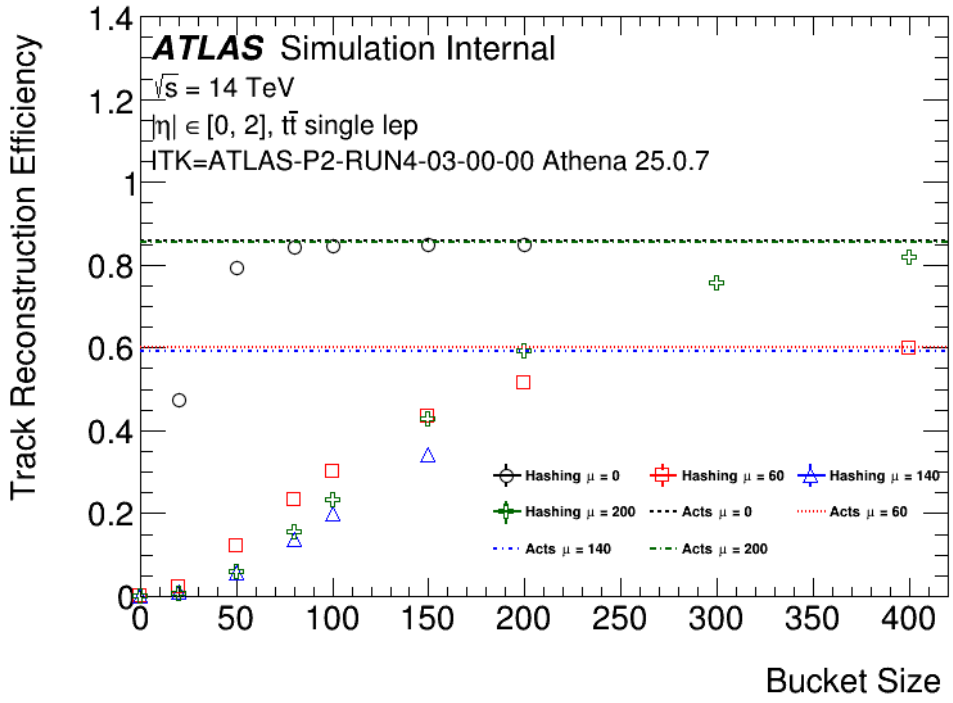
√s = 14 TeV
|η| ∈ [0, 2], tt̄ single lep
ITK=ATLAS-P2-RUN4-03-00-00 Athena 25.0.7
Seed Reconstruction Efficiency
Bucket Size
Hashing μ = 0
Hashing μ = 60
Hashing μ = 140
Hashing μ = 200
Acts μ = 0
Acts μ = 60
Acts μ = 140
Acts μ = 200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Track Reconstruction Efficiency
Bucket Size
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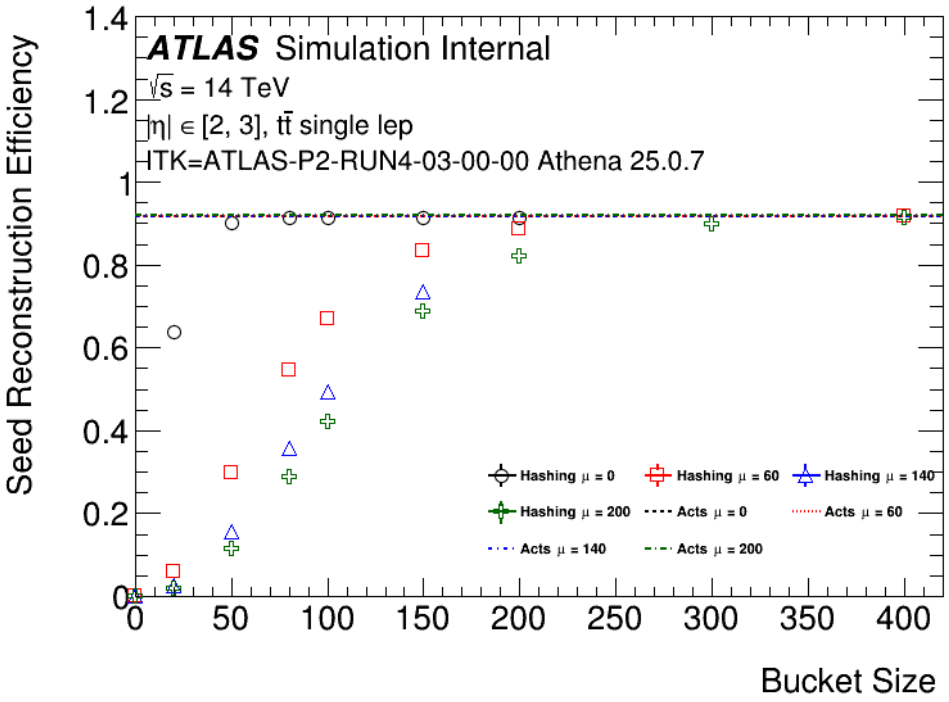
Hashing μ = 60
Hashing μ = 140
Hashing μ = 200
Acts μ = 0
Acts μ = 60
Acts μ = 140
Acts μ = 200

Bucket Size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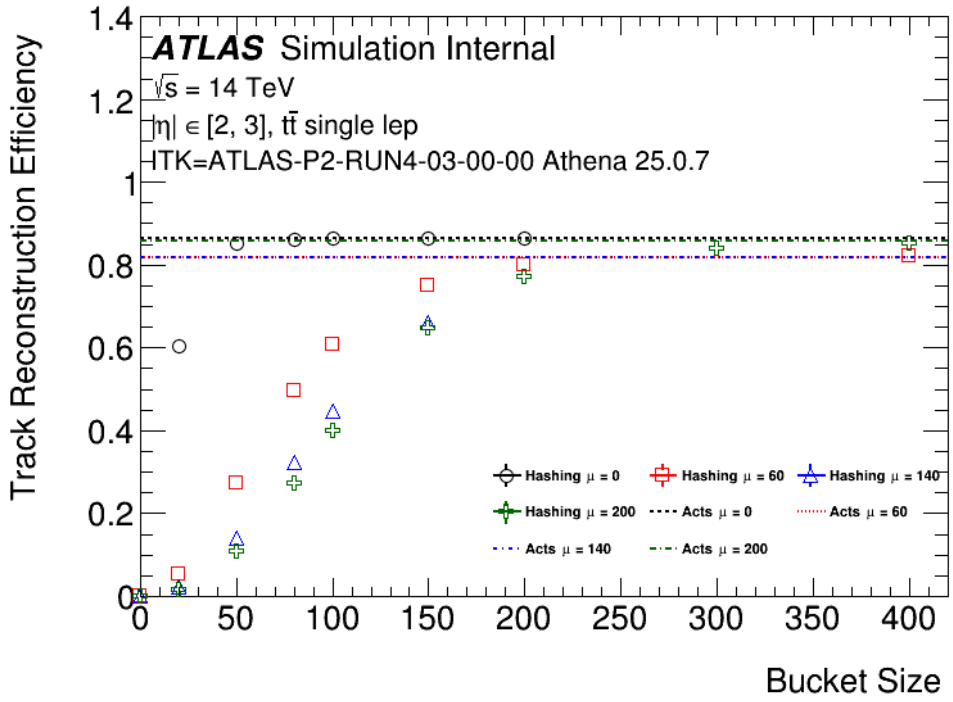
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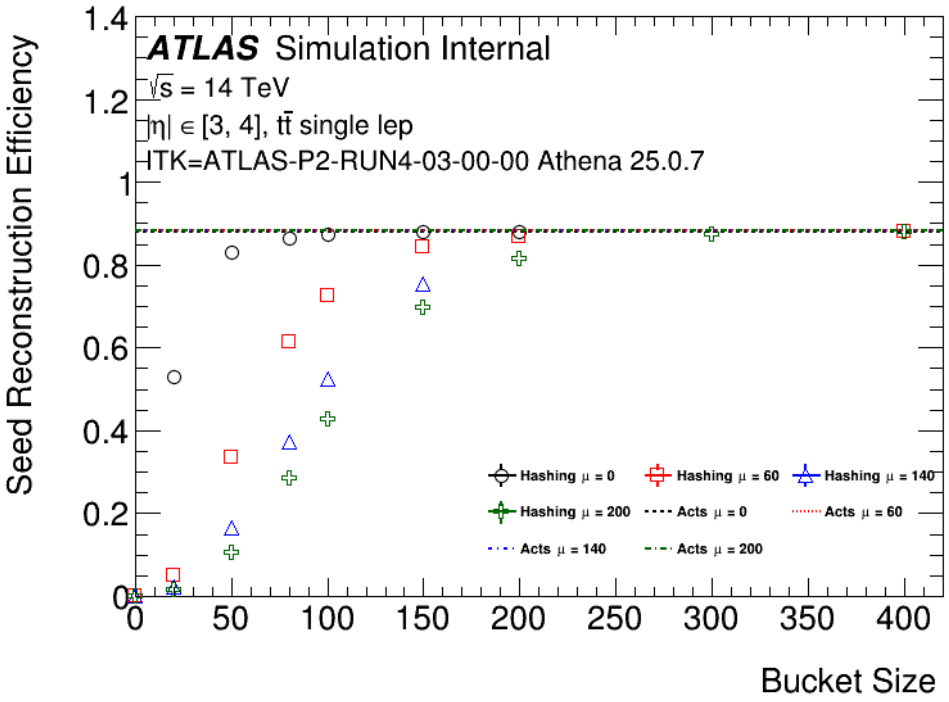
Bucket Size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Seed Reconstruction Efficiency
Bucket Size
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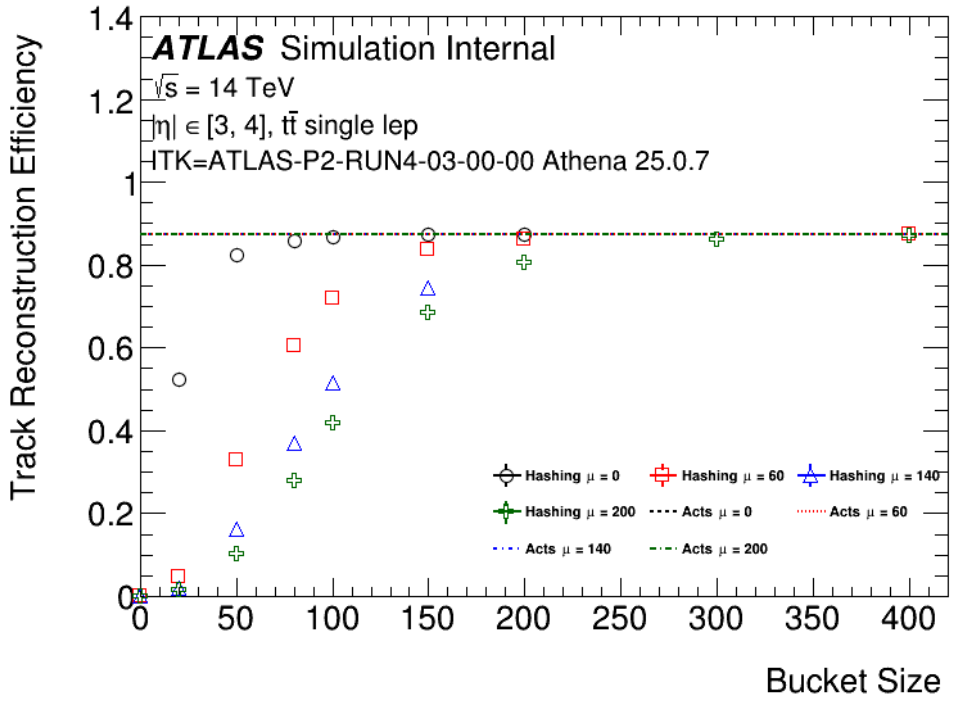
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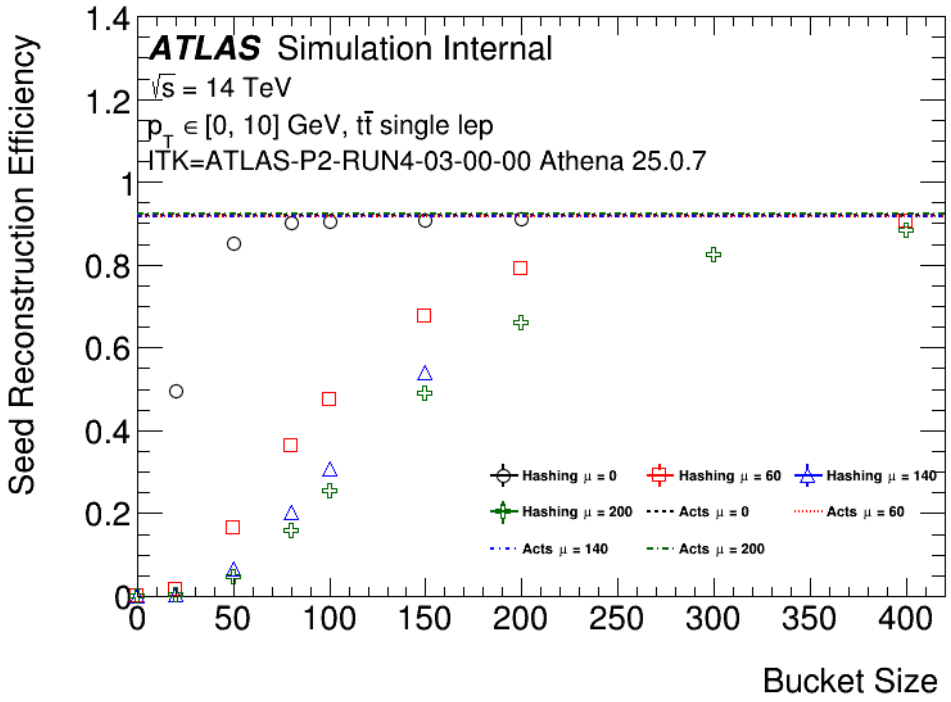
Bucket Size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Seed Reconstruction Efficiency
Bucket Size
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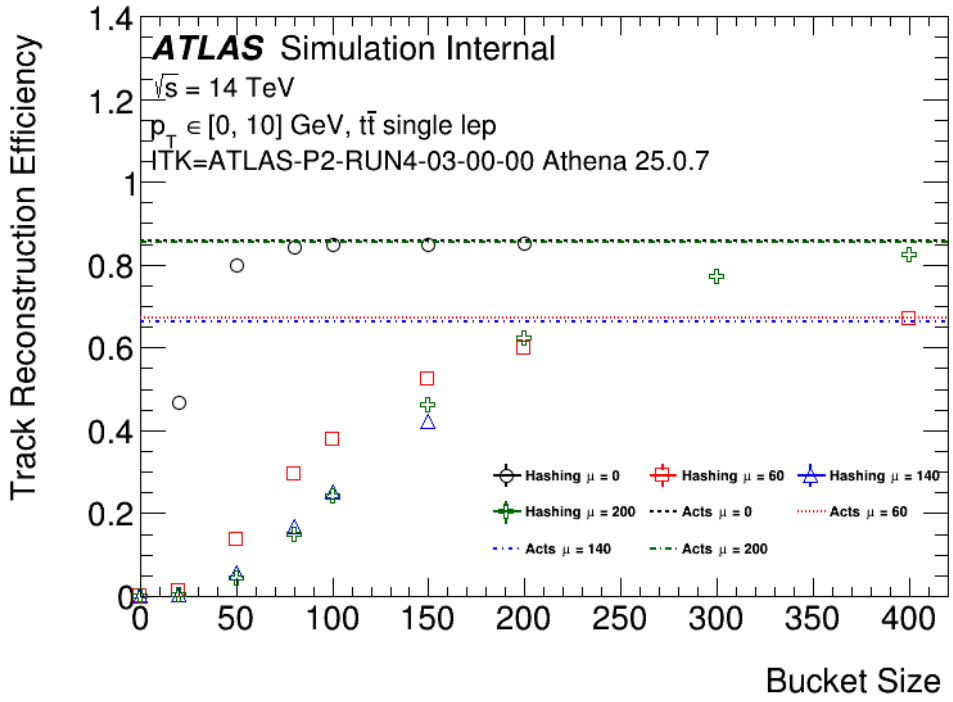
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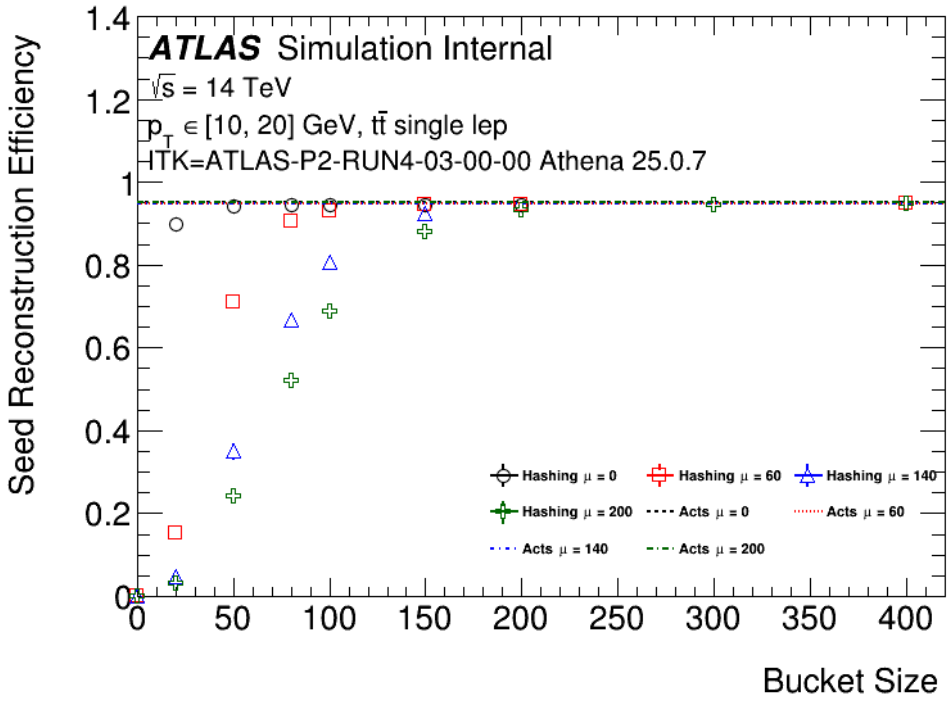
Bucket Size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Seed Reconstruction Efficiency
Bucket Size
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Hashing μ = 200
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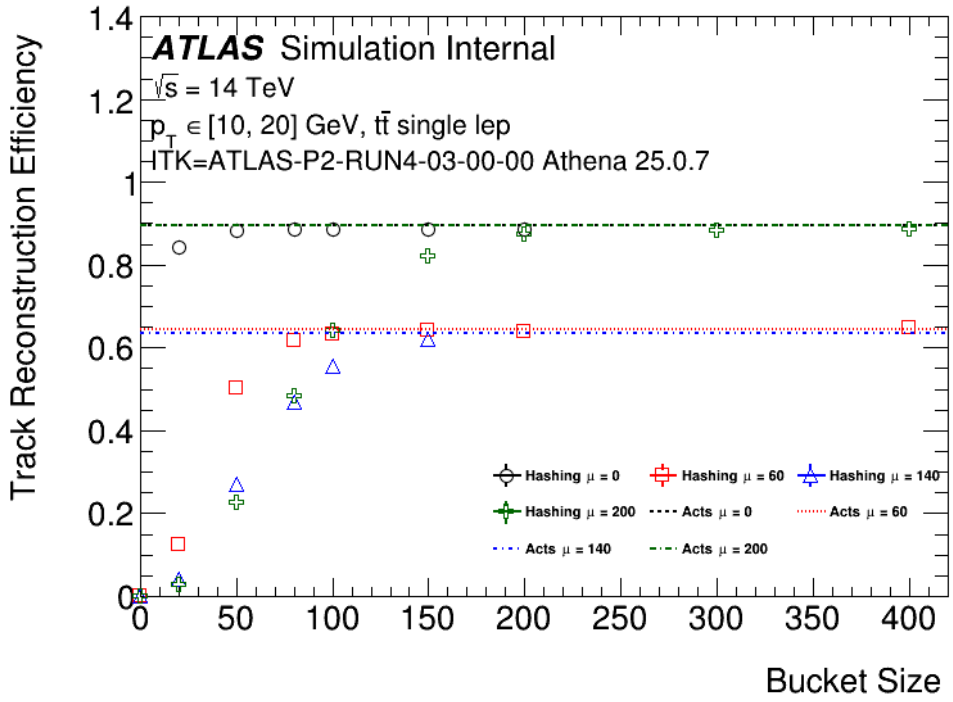
Acts μ = 200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p_T ∈ [10, 20] GeV, tt̄ single lep
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Track Reconstruction Efficiency
Bucket Size
Hashing μ = 0
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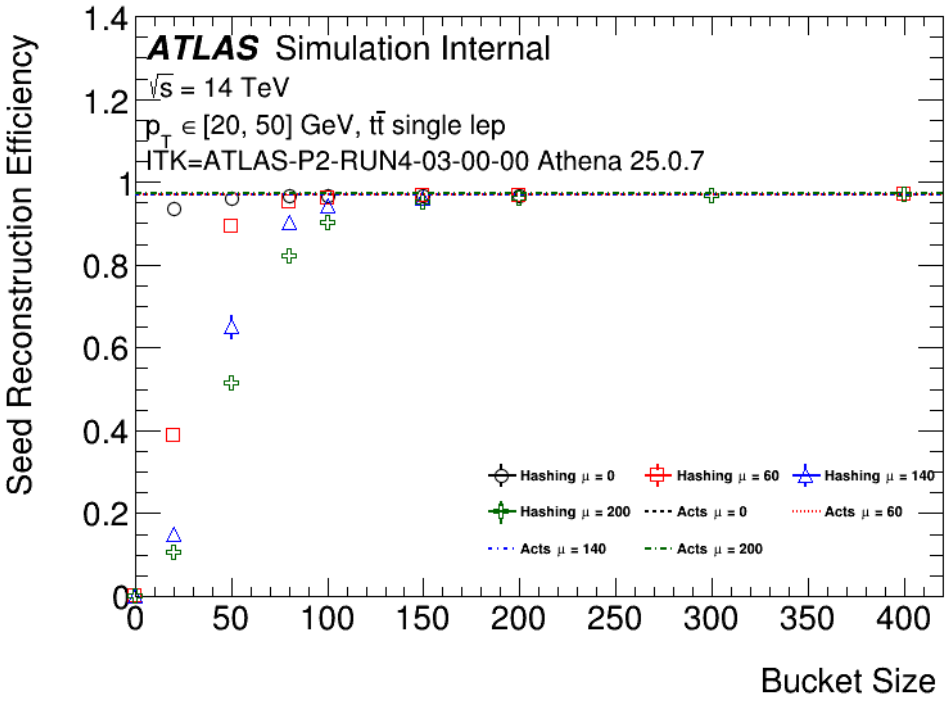
Hashing μ = 200
Acts μ = 0
Acts μ = 60
Acts μ = 140
Acts μ = 200

Bucket Size


ATLAS Simulation Internal
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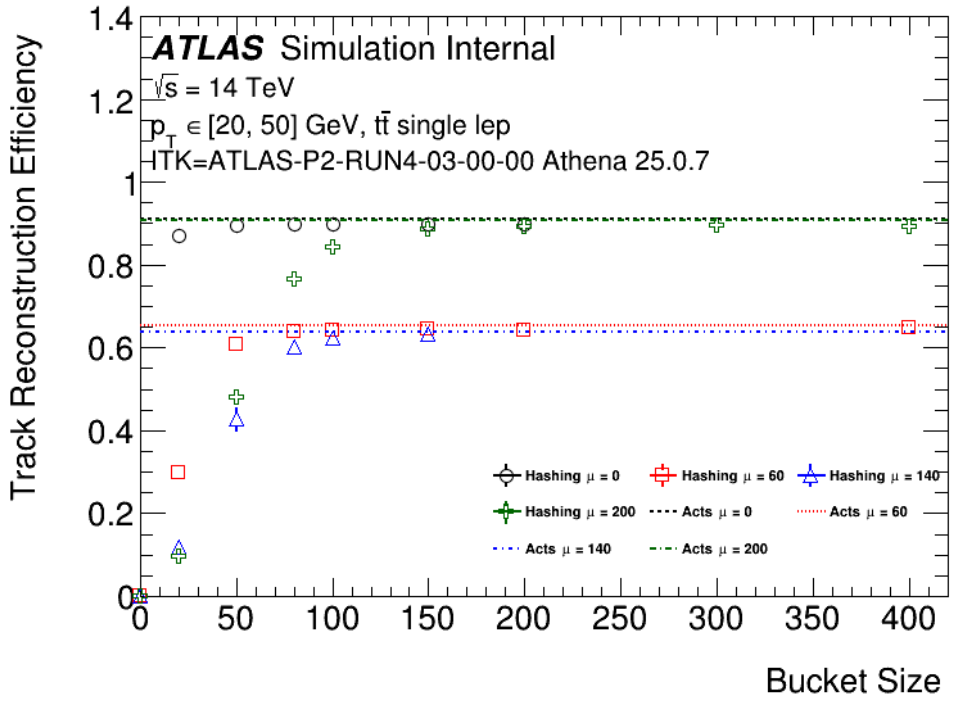
p_T ∈ [20, 50] GeV, tt̄ single lep
ITK=ATLAS-P2-RUN4-03-00-00 Athena 25.0.7
Seed Reconstruction Efficiency
Bucket Size
Hashing μ = 0
Hashing μ = 60
Hashing μ = 140
Hashing μ = 200
Acts μ = 0
Acts μ = 60
Acts μ = 140
Acts μ = 200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p_T ∈ [20, 50] GeV, tt̄ single lep
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Track Reconstruction Efficiency
Bucket Size
Hashing μ = 0
Hashing μ = 60
Hashing μ = 140
Hashing μ = 200
Acts μ = 0
Acts μ = 60
Acts μ = 140
Acts μ = 200

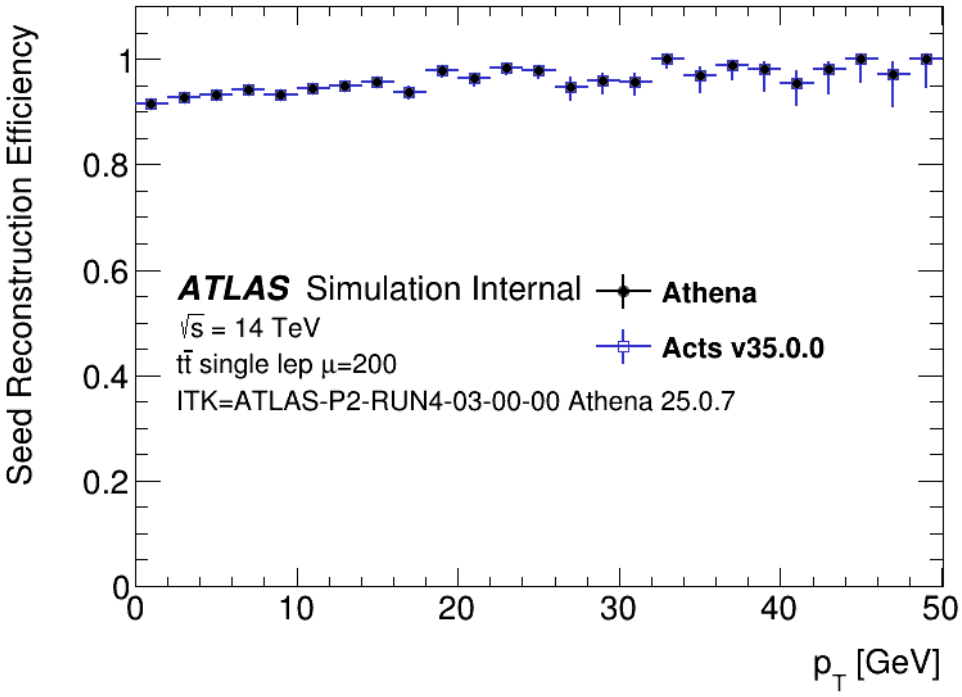
Next

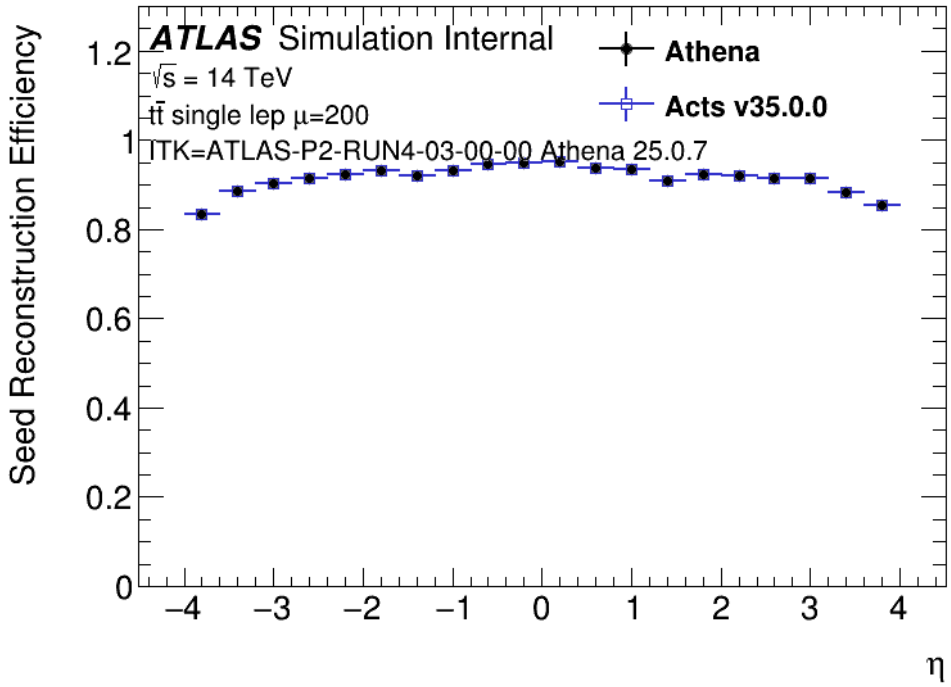
1) Get the data from GNN people (SP and truth) (Alexis) (Dumped files) (Dumping code)

2) Train NN (using acorn? It can already read the dumped files)

Backup

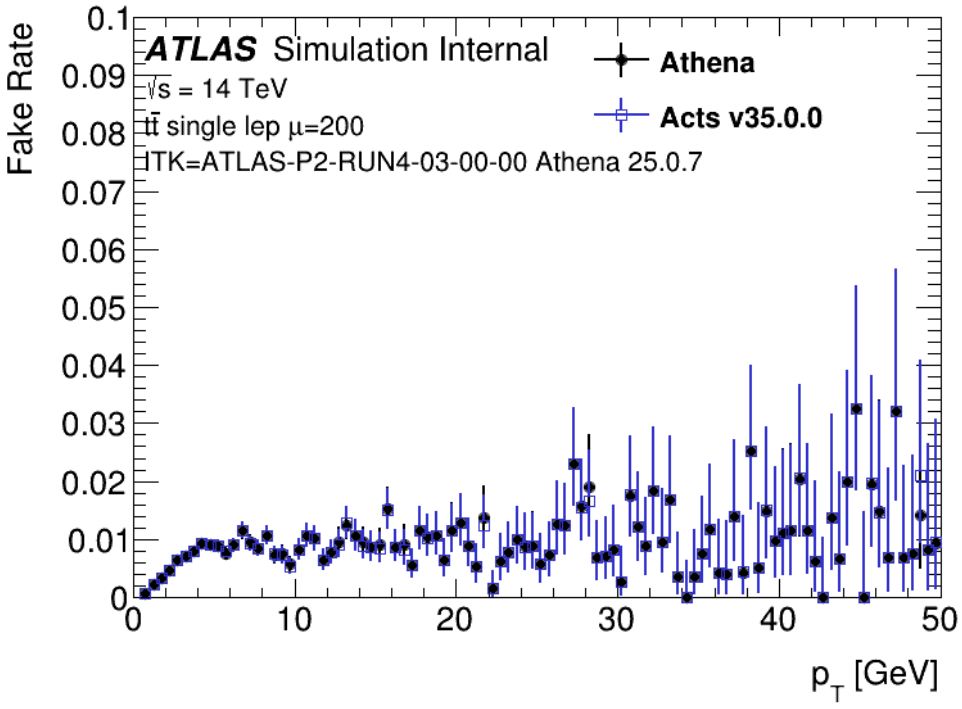
Setup validation: Efficiency μ=200

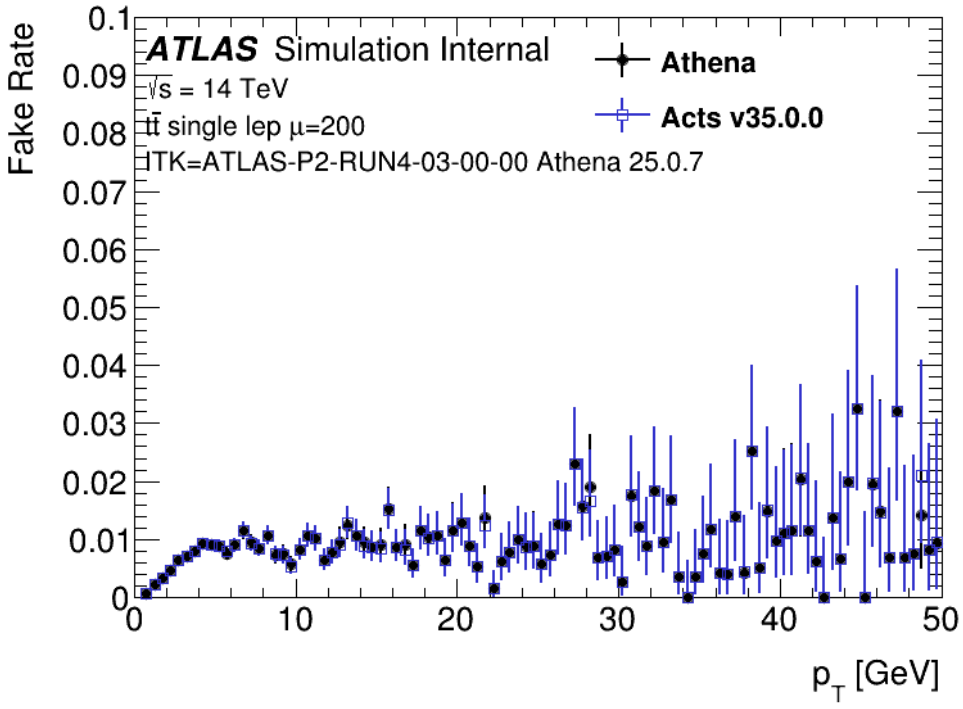




1000 events

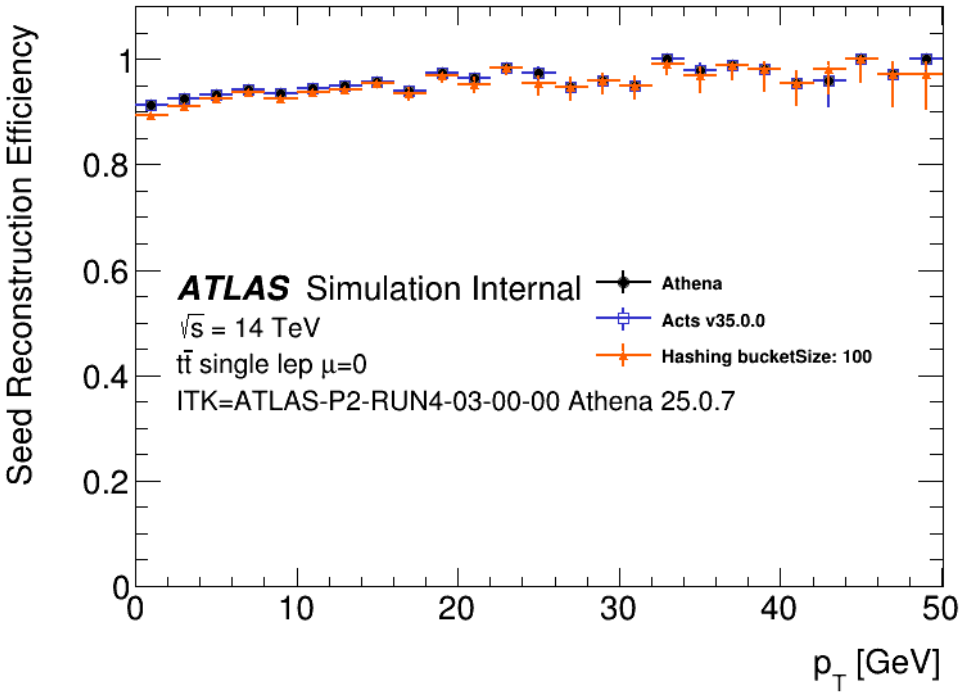
Setup validation: Fake Rate μ=200

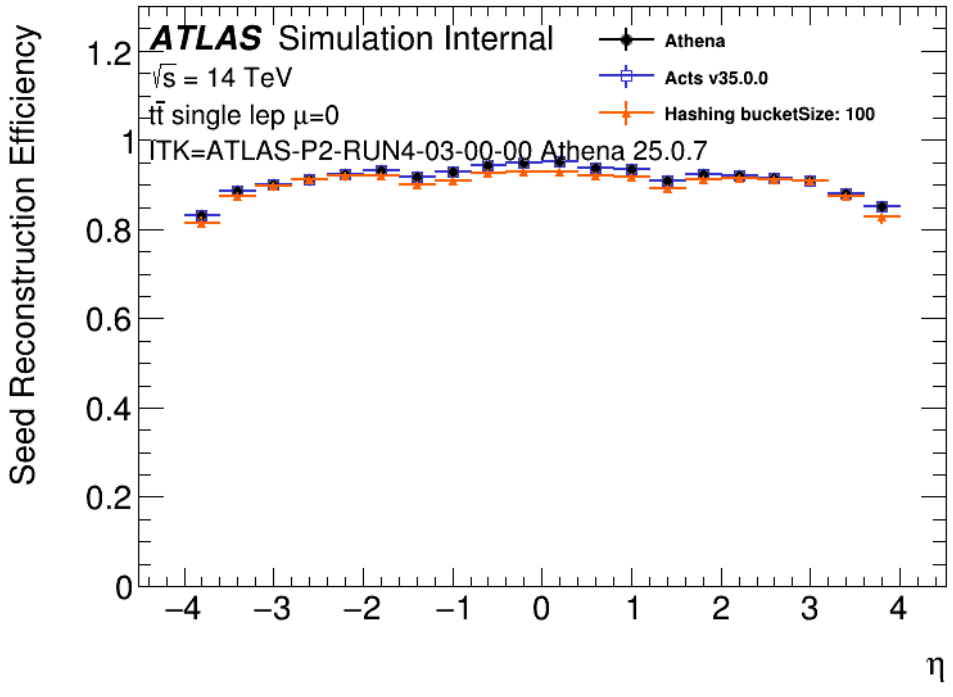




1000 events

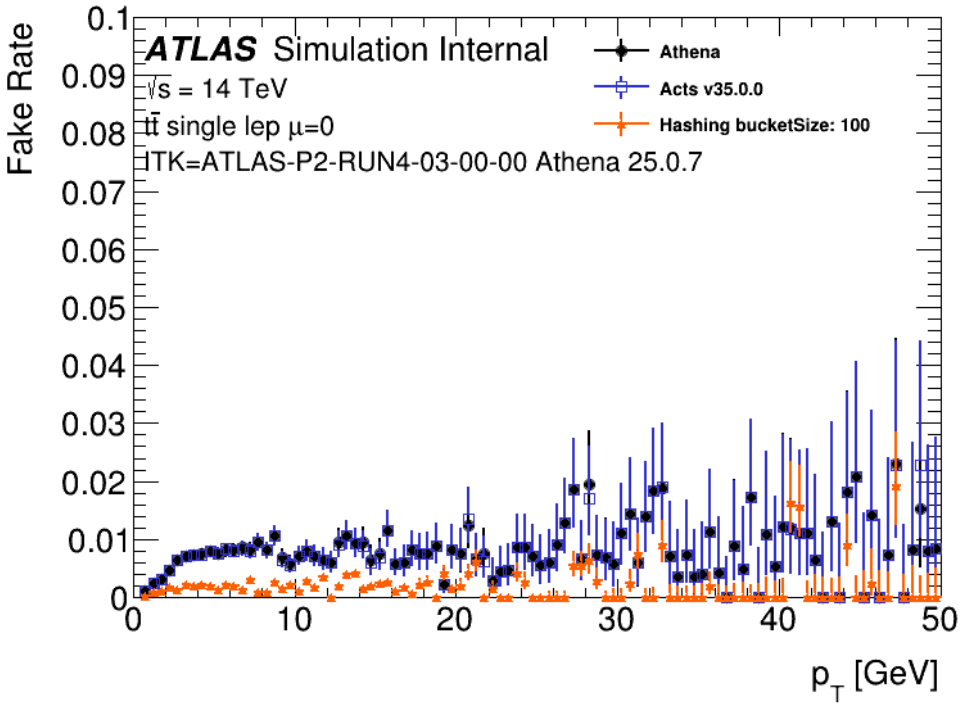
Hashing μ = 0

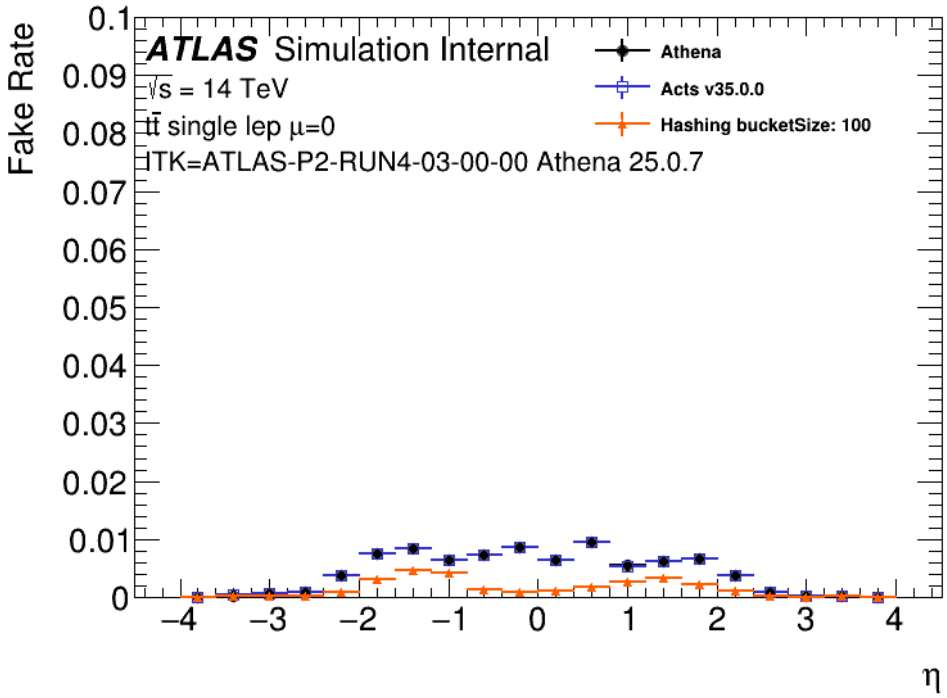




1000 events

Hashing μ = 0





1000 events

Acorn metric learning