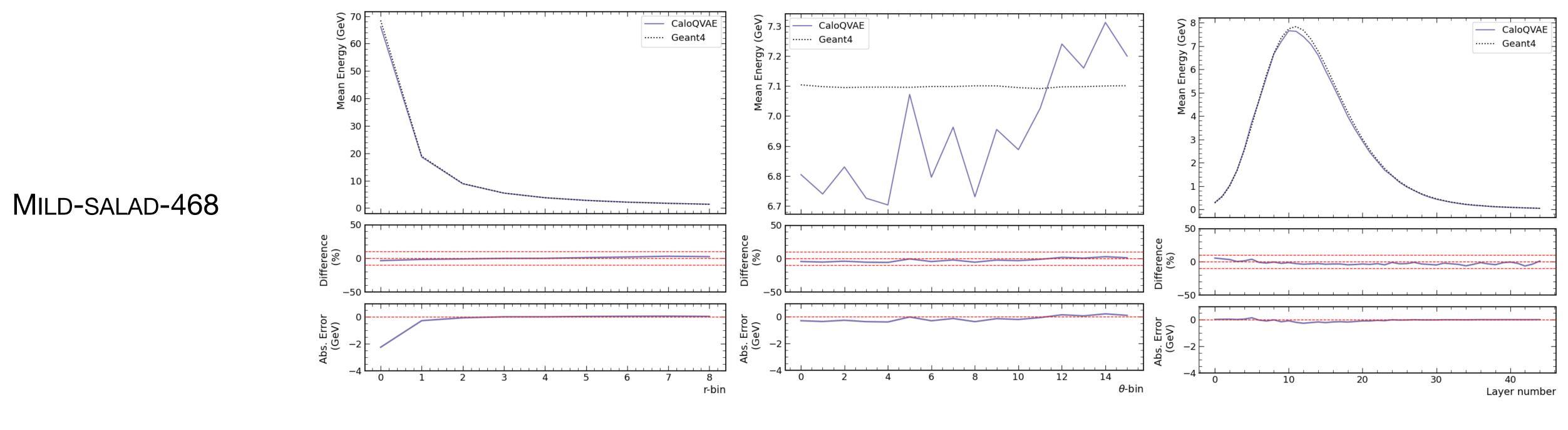
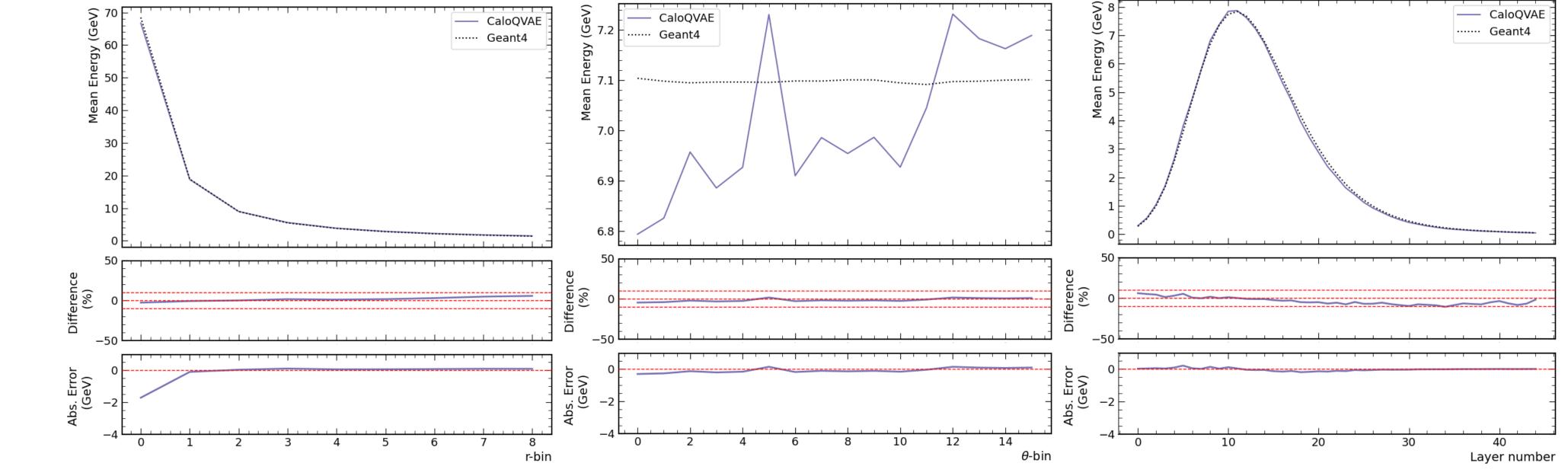
QVAE w/ Pegasus & Zephyr

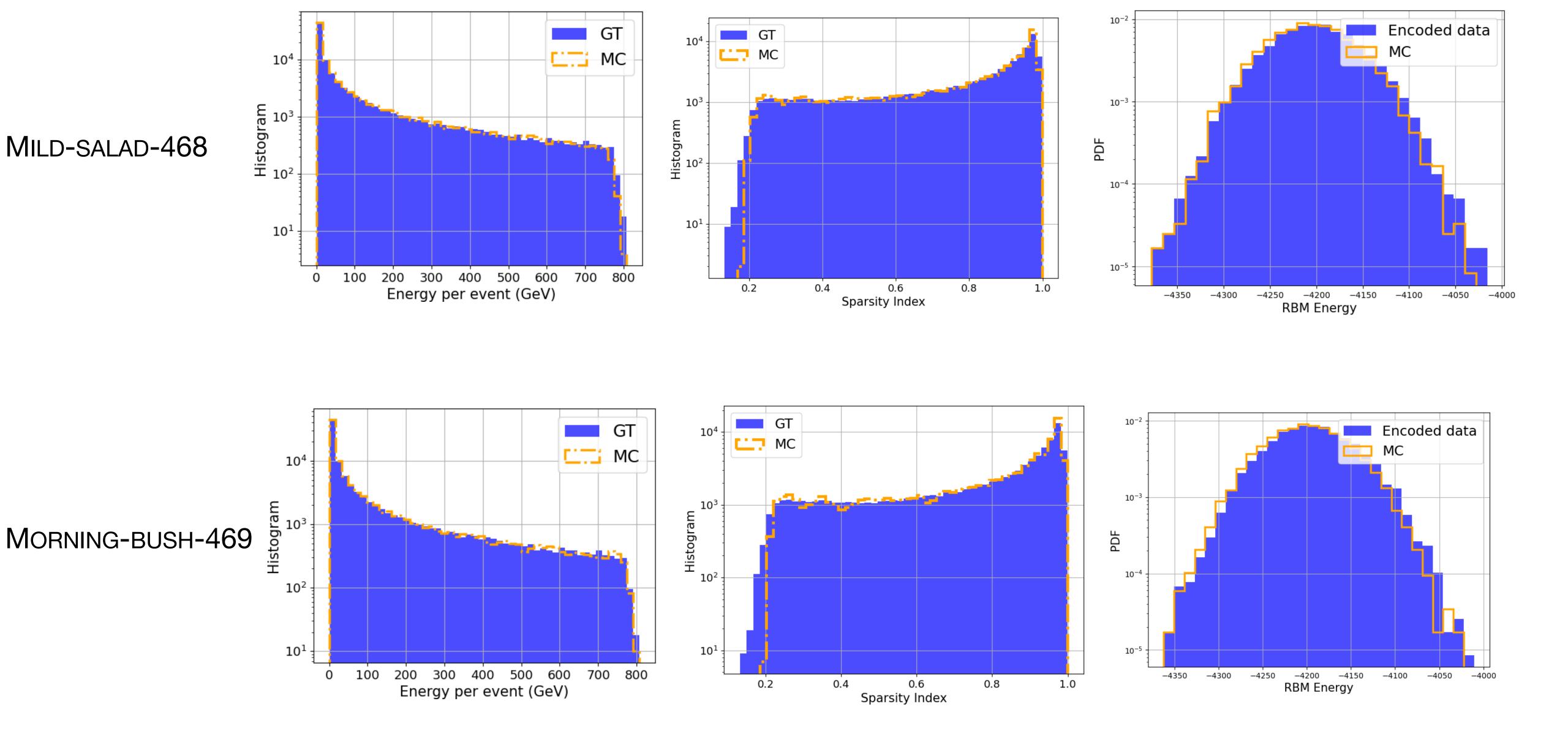
PRX

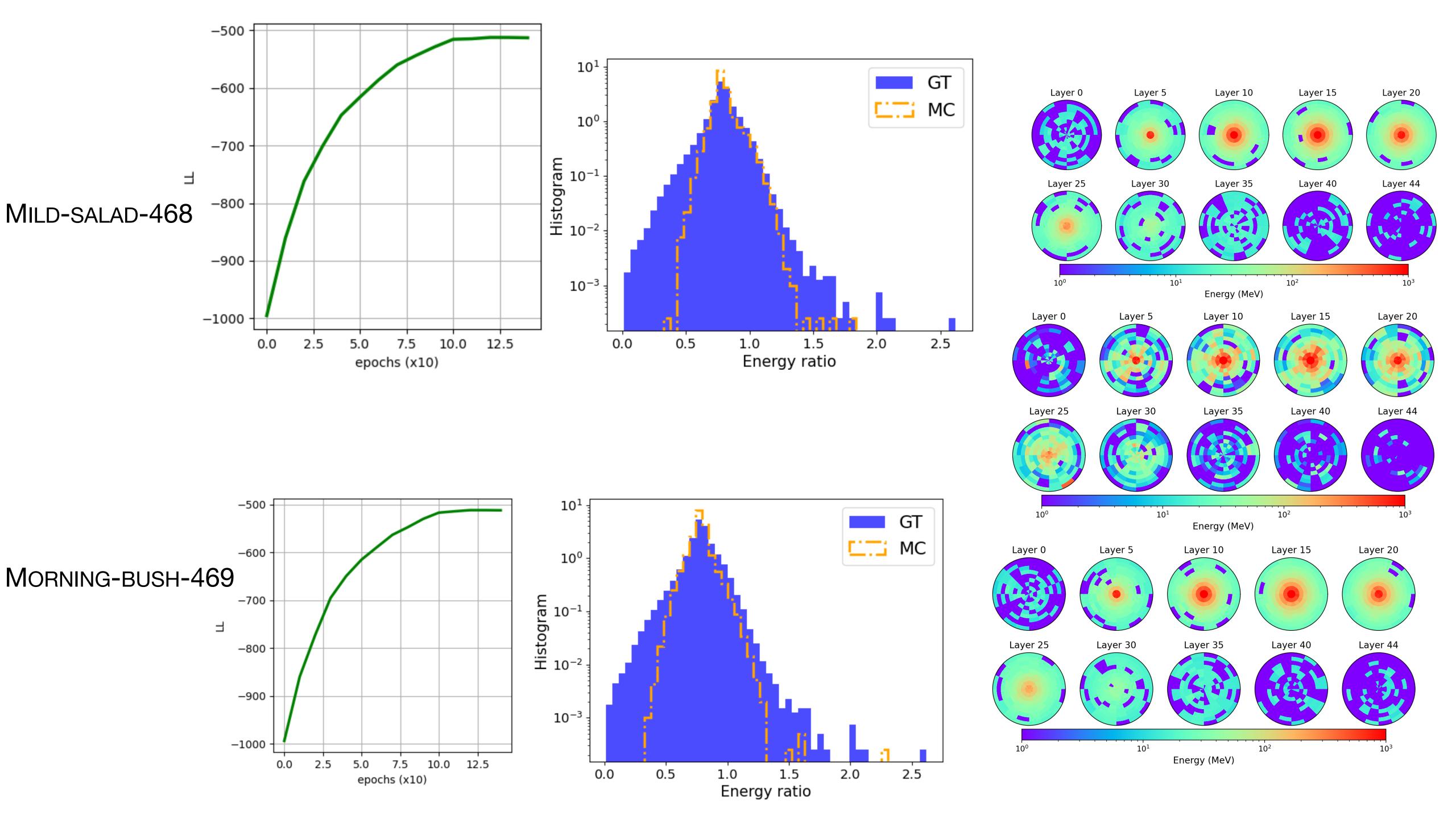
- Results for two models:
 - PBC + new pre-processing + Conditionalized RBM
- Comparison w/ test set (100k events)

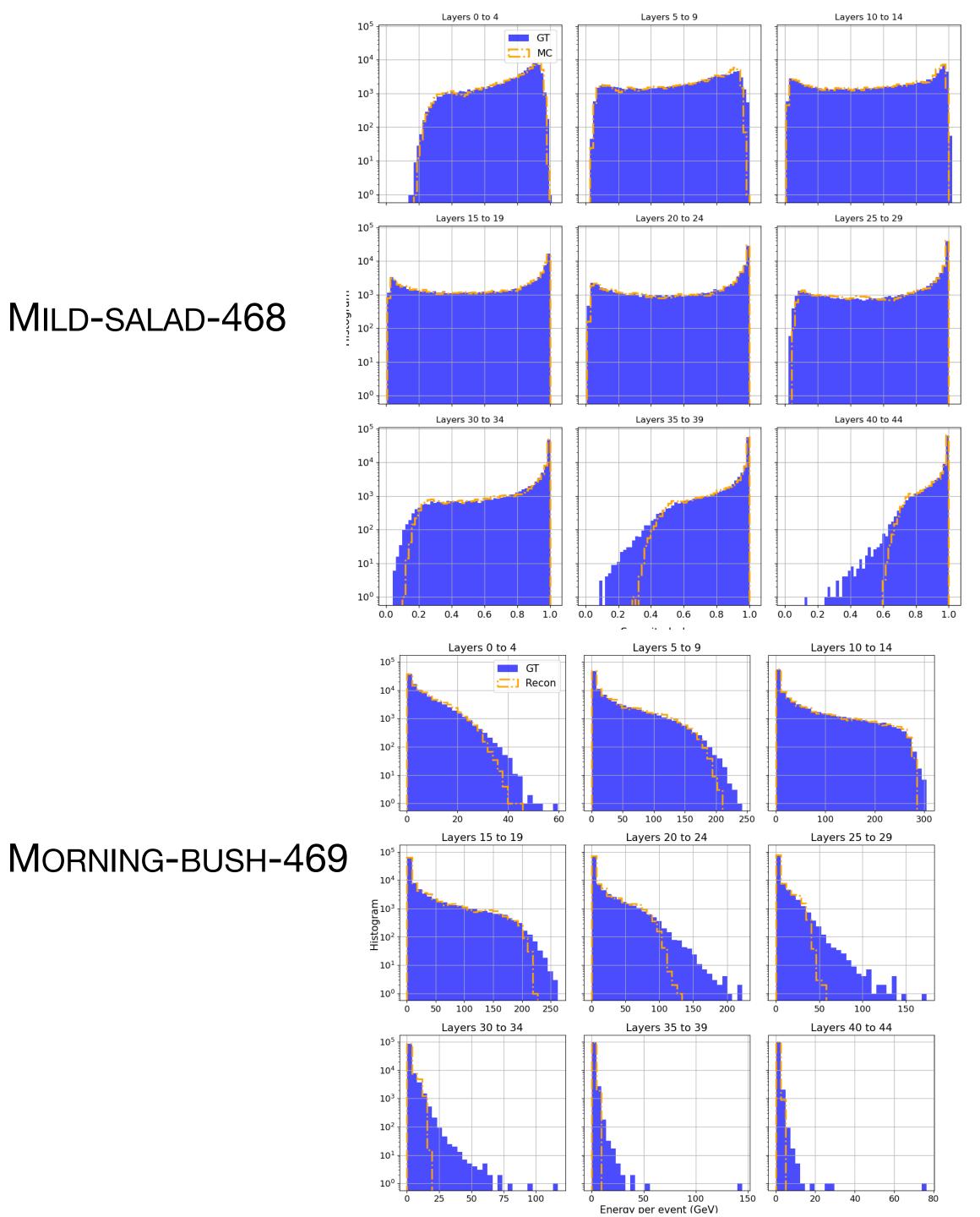












MILD-SALAD-468

Layers 0 to 4

Layers 15 to 19

0 50 100 150 200 250

Layers 30 to 34

25 50 75 100

Layers 0 to 4

Layers 15 to 19

Layers 30 to 34

10² =

10³

10²

10¹

10⁴

10³

10²

10¹

:::: Recon

60

Layers 5 to 9

50 100 150 200 250

Layers 20 to 24

0 50 100 150 200

Layers 35 to 39

100

Layers 20 to 24

Layers 35 to 39

0.0 0.2 0.4 0.6 0.8 1.0 0.0 0.2 0.4 0.6 0.8 1.0 0.0 0.2 0.4 0.6 0.8 1.0

50

Enerav per event (GeV)

Layers 10 to 14

100

Layers 25 to 29

Layers 40 to 44

40

Layers 10 to 14

Layers 25 to 29

Layers 40 to 44

20

60

150 0

Roadmap for papers

- IEEE Conf paper
 - Short paper 4pp max
 - 4-partitite non-conditionalized RBM
 - Non-conditionalized Quantum-assisted CaloQVAE time benchmarks
 - QML deadline is July 17th. Abstract deadline: July 10th, 2024
 - QC for Nat Sci: Tech and App deadline is July 31st
 - Quantum Artificial Intelligence: By invitation
- PRX will include:
 - PBC NN architecture
 - Non conditionalized CaloQVAE on Pegasus.
 - Temp estimation via new mapping
 - 4-partite RBM
 - Non-conditionalized Quantum-assisted CaloQVAE time benchmarks
 - Conditionalized RBM
 - QPU conditionalized using flux biases
 - Discussion: Hierarchical decoder, PB to account for voxel's neighbours in inner cylinder, gray code, noise related stuff, zephyr
- Next paper (maybe conf paper? Neurips?):
 - Hierarchical decoder, PB to account for voxel's neighbours in inner cylinder, gray code, noise related stuff, zephyr
 - Maybe also dataset 1 and/or 3
- ATLAS paper