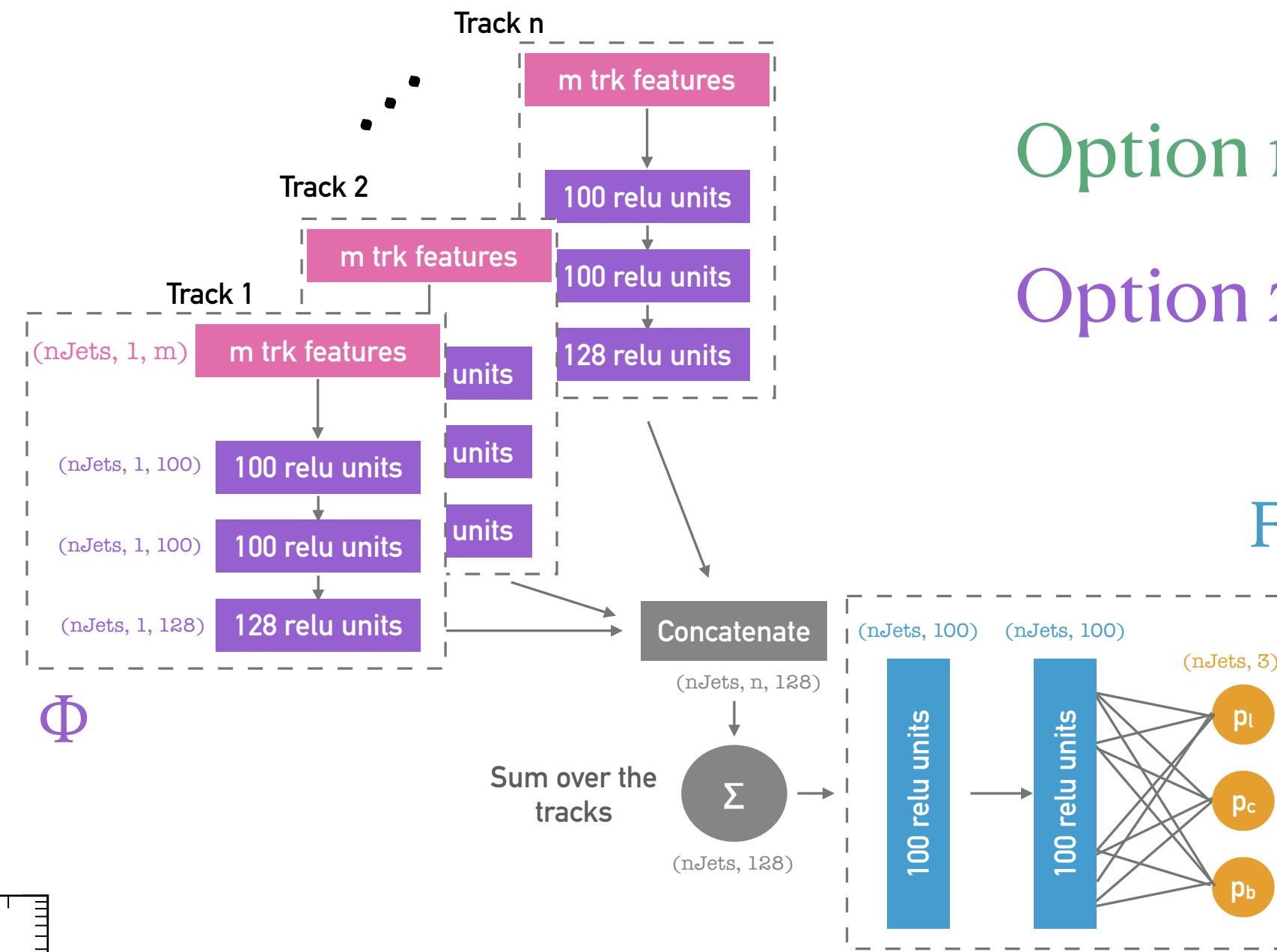
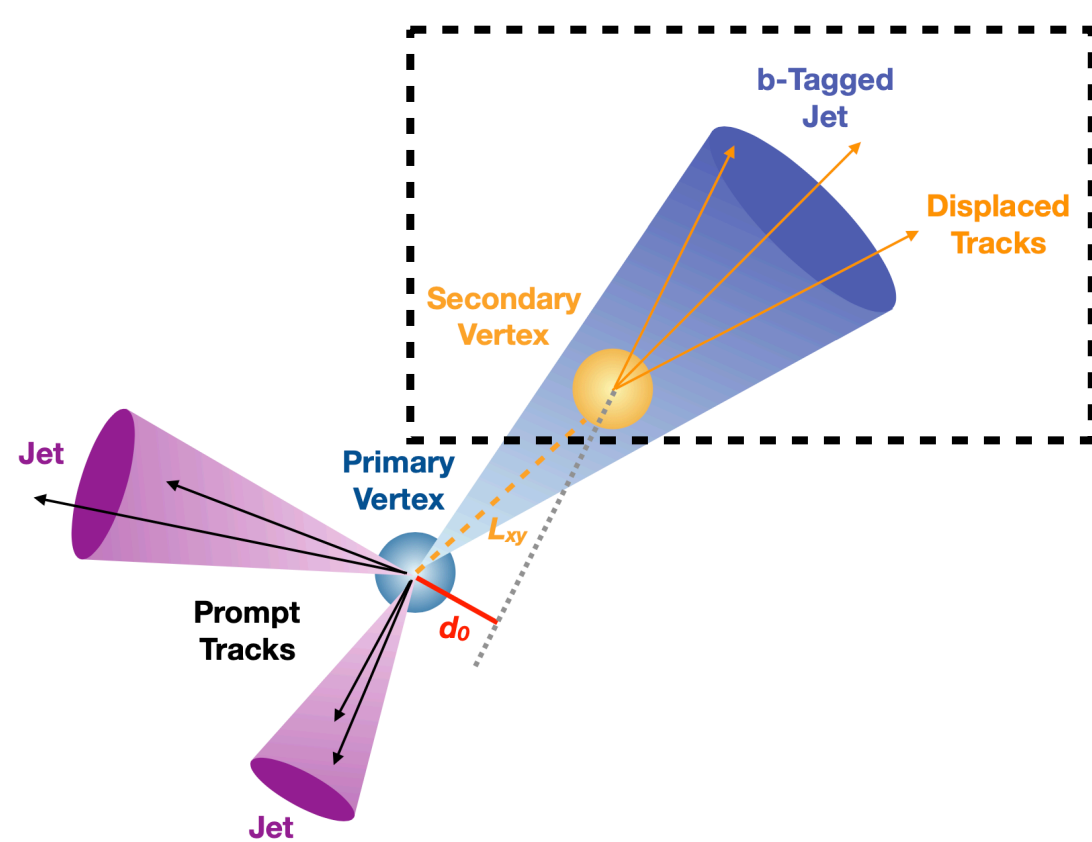


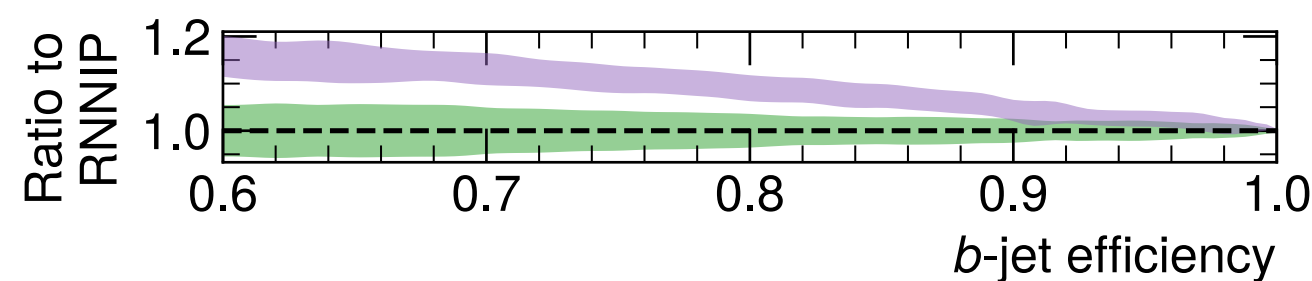
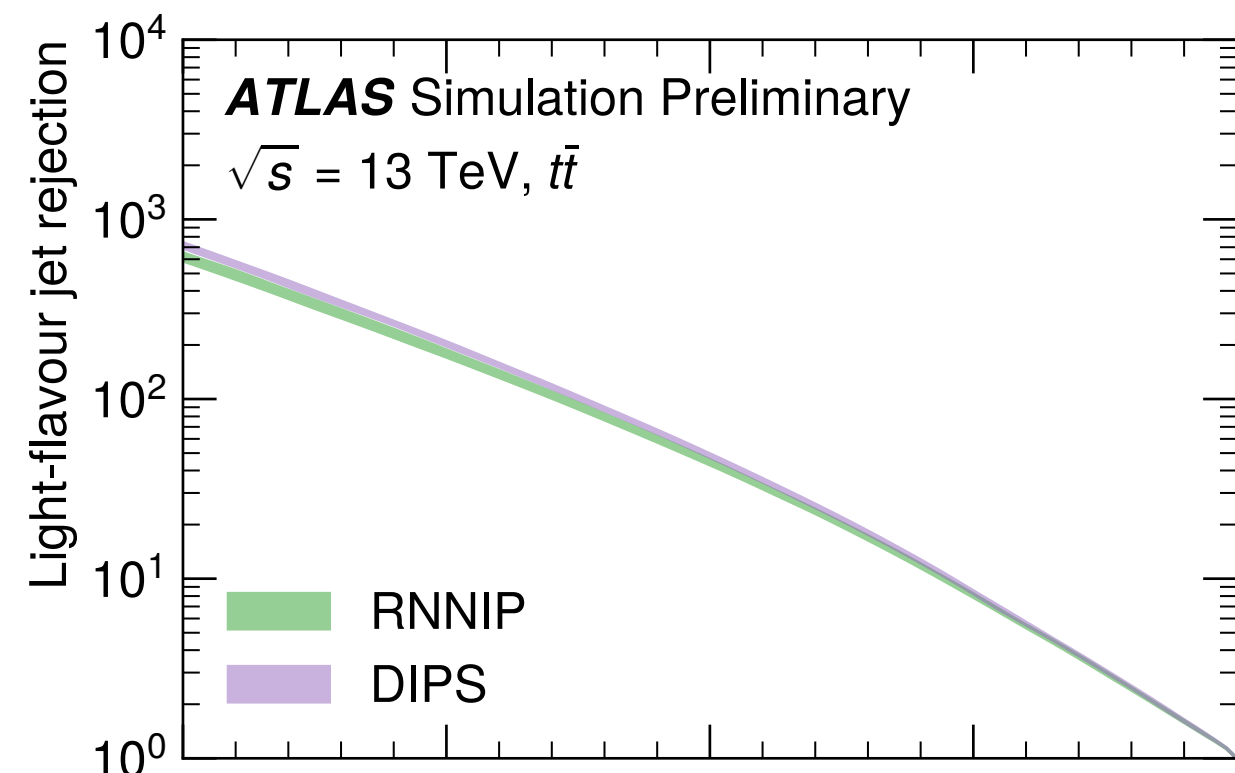
Deep Sets for b-tagging

Nicole Hartman, Michael Kagan, Rafael Teixeira de Lima on behalf of the ATLAS collaboration



Option 1: Model the jet as a sequence (RNN)

Option 2: Model the jet as a set (DIPS)

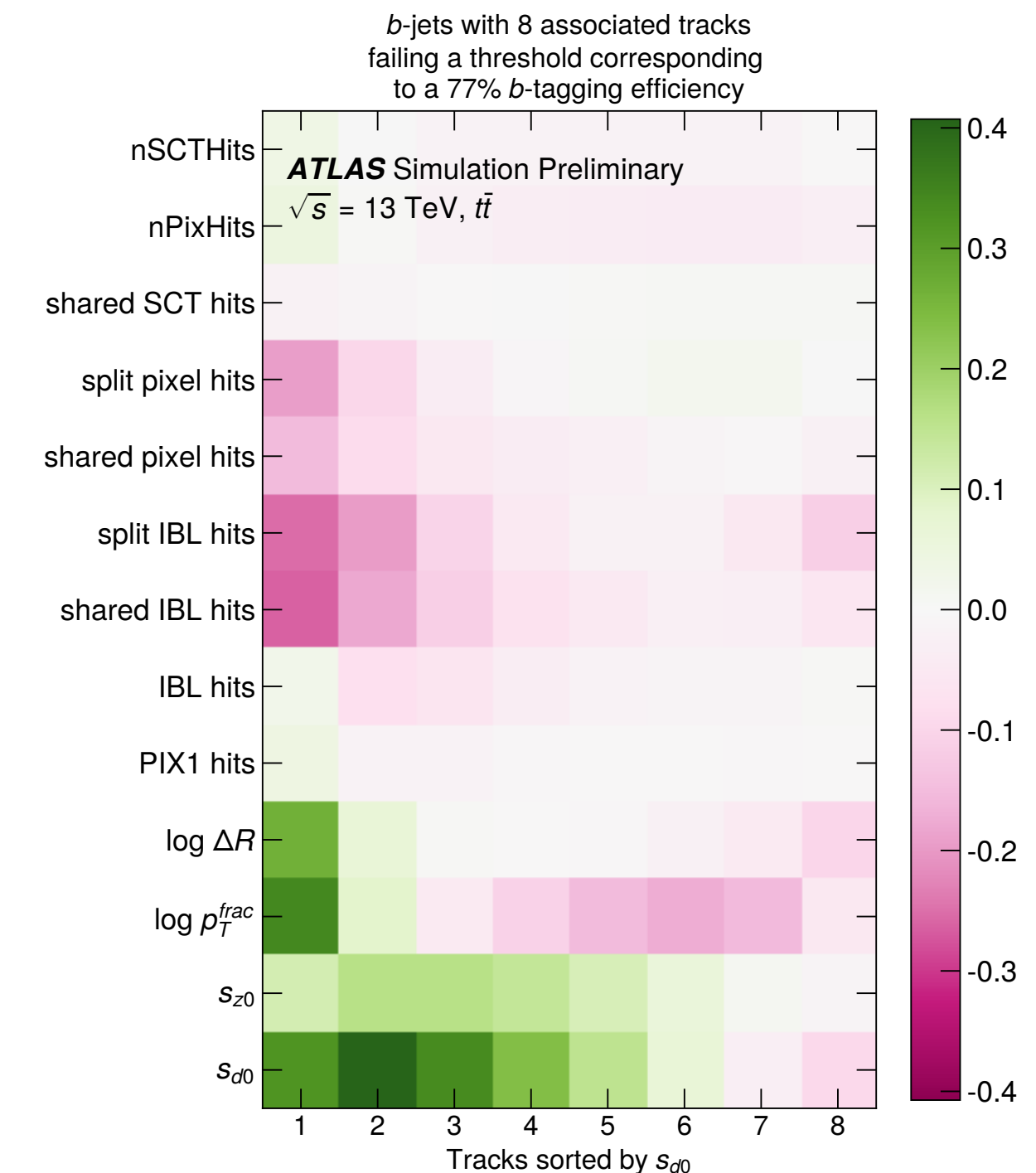


Factor of 3-4 increase in training + inference time

	# of parameters	GPU training time /epoch [s]	GPU eval time [s]	CPU eval time [s]
RNNIP	47 k	241 ± 14	170 ± 2	685 ± 84
DIPS	49 k	78 ± 4	46 ± 2	206 ± 98

Additional DIPS optimizations increase l-rej to > 1000 at $\epsilon_b = 60\%$

Linearized view of network response



$\nabla_{inputs} D_b$