Calo4pQVAE: Progress and updates

Dec 5 2024

Summary
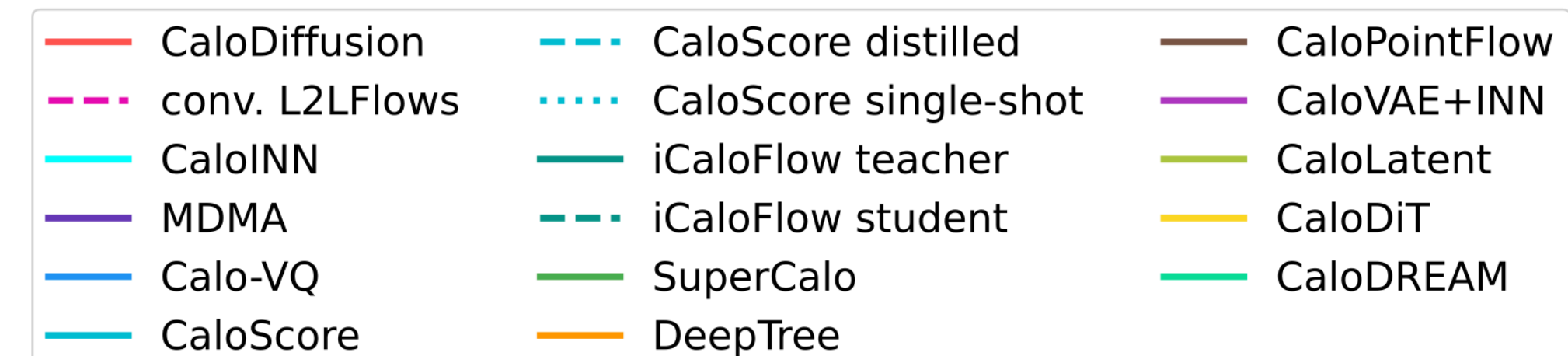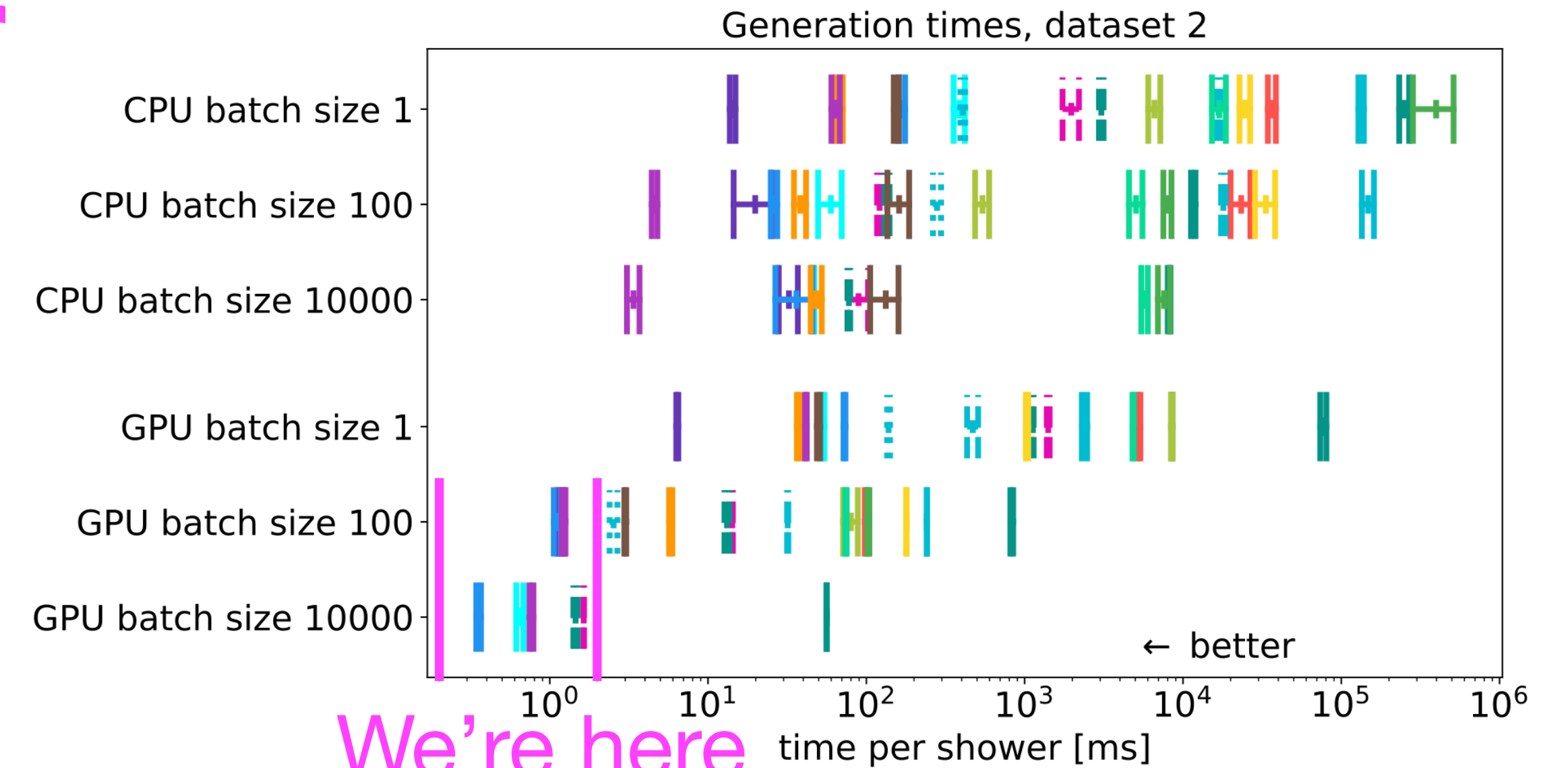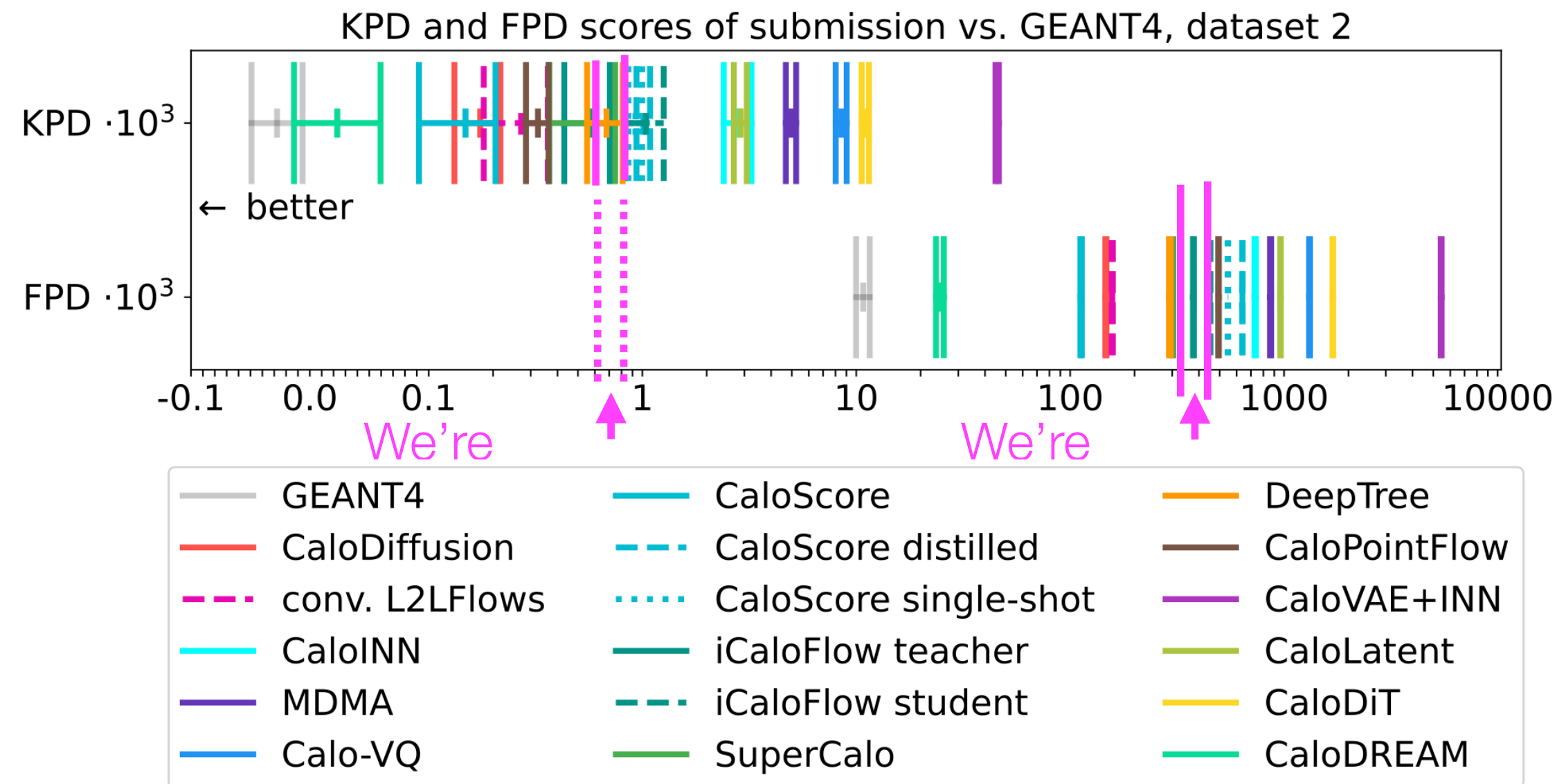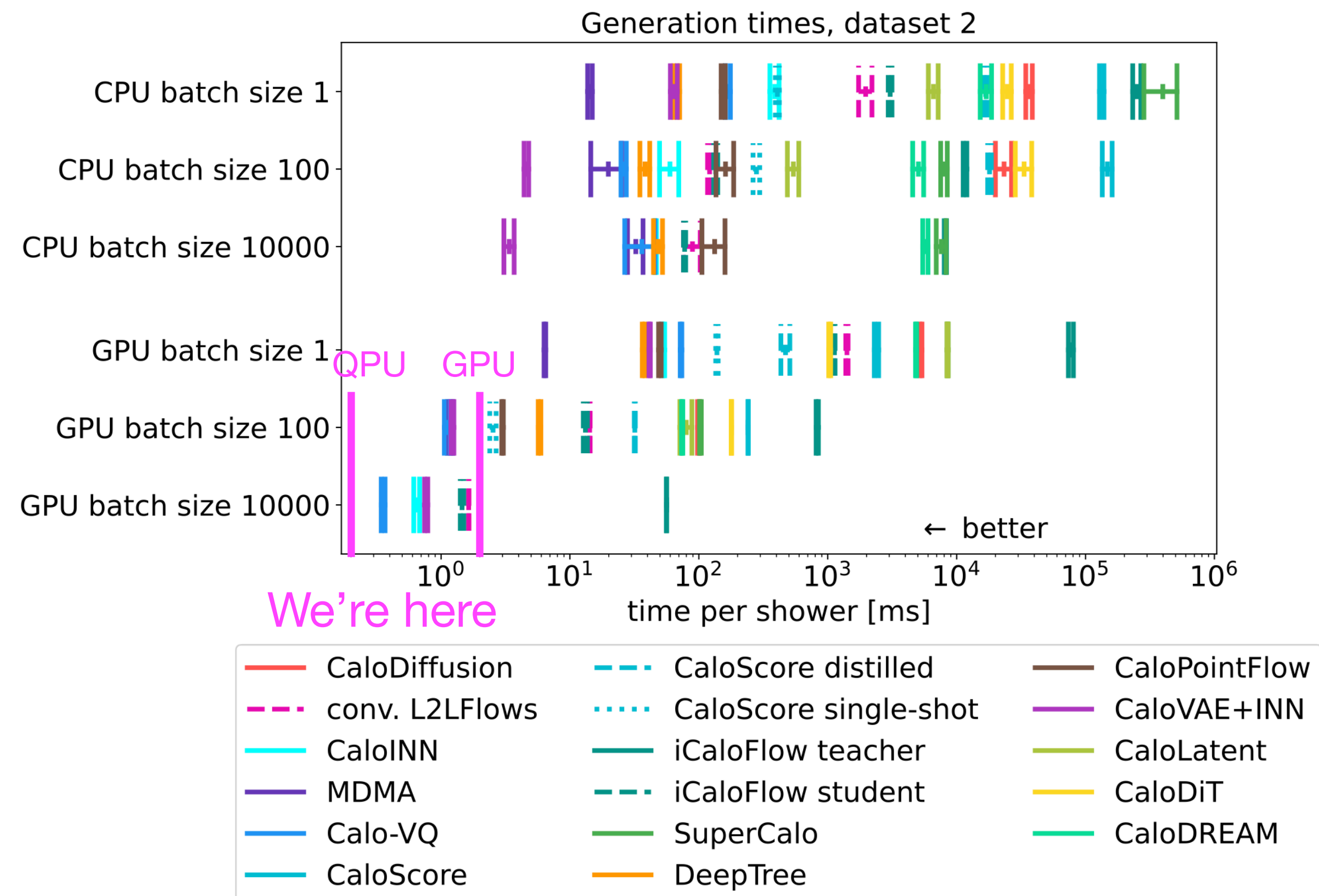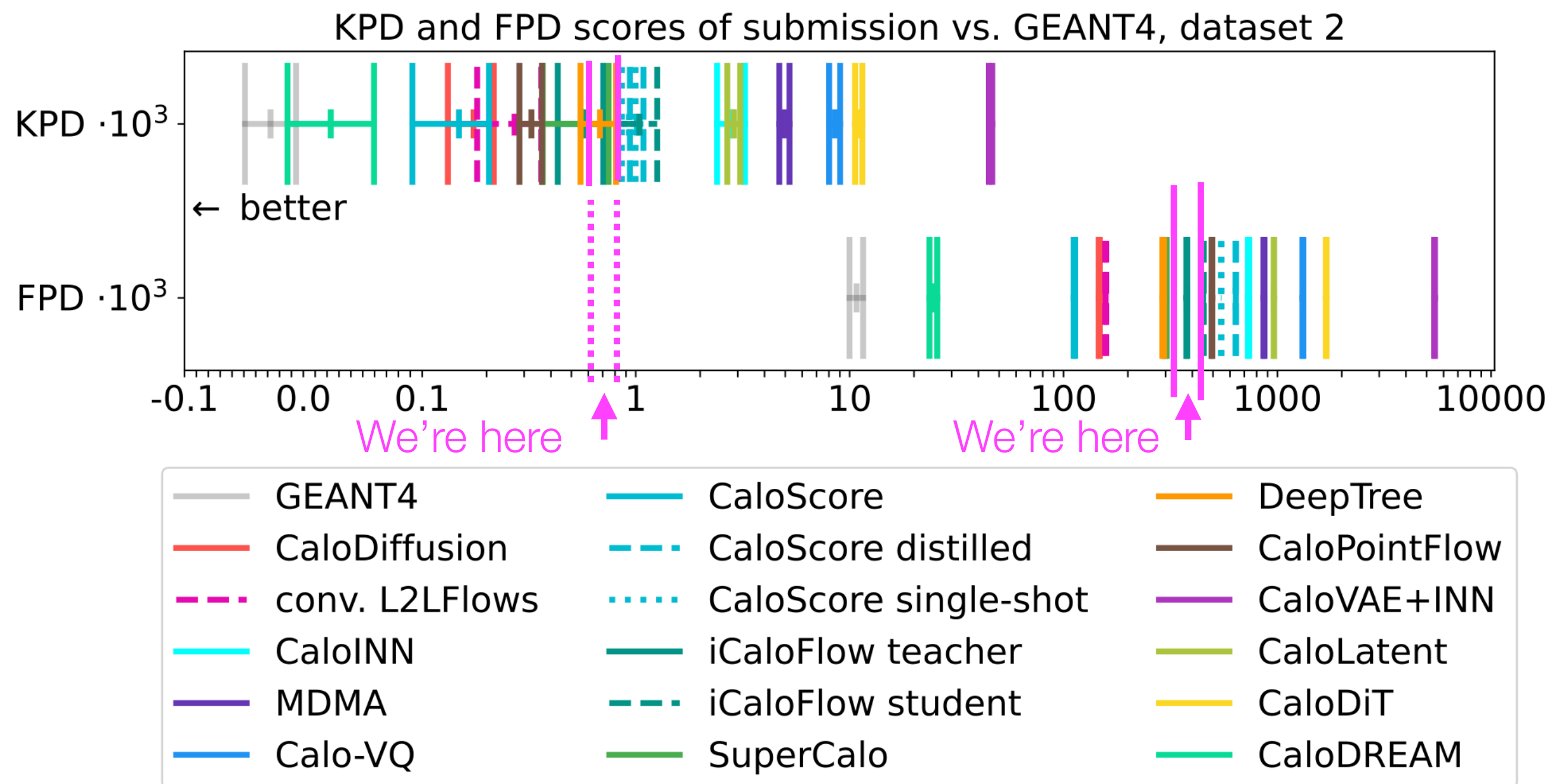
✓ Upload camera-ready paper and poster to Neurips

✓ Looked into estimating partition function using Tensor Cross Interpolation. https://arxiv.org/abs/2407.02454 but it did not work.

✓ How does dwave perform when estimating observables (e.g., energy) when the weights and biases are sampled from a Uniform distribution. **Pending**

✓ Once we get the subscription up and going => Generate samples from Dwave for paper. Will go over paper and submit once I'm done, unless otherwise…

✓ There might be a way to validate this RBM to Diffusion Model via the relaxation times. **Pending**

Where are we?

Krause C, Giannelli MF, Kasieczka G, Nachman B, Salamani D, Shih D, Zaborowska A, Amram O, Borras K, Buckley MR, Buhmann E. CaloChallenge 2022: A Community Challenge for Fast Calorimeter Simulation. arXiv preprint arXiv:2410.21611. 2024 Oct 28.

	FPD ($\times 10^3$)	KPD ($\times 10^3$)	Fixed bug	Exact RBM Grad
Pegasus	443.0 ± 2.4	0.84 ± 0.1		
Pegasus	390.4 ± 1.9	0.46 ± 0.05	☑	
Zephyr	380.7 ± 1.1	0.61 ± 0.06		
Zephyr	379.7 ± 1.7	0.57 ± 0.05	☑	
Zephyr	362.7 ± 1.7	0.57 ± 0.08	☑	☑

KPD and FPD scores of submission vs. GEANT4, dataset 2

Generation times, dataset 2

KPD and FPD scores of submission vs. GEANT4, dataset 2

We're here   We're here

Generation times, dataset 2

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