

BIB mitigation with AI

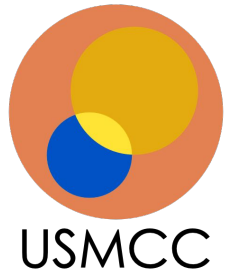
Simons progress report
May 8, 2026

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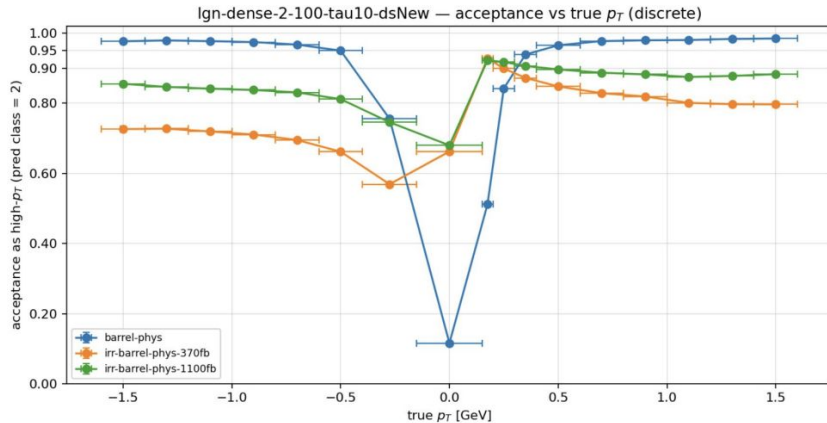


Major Updates

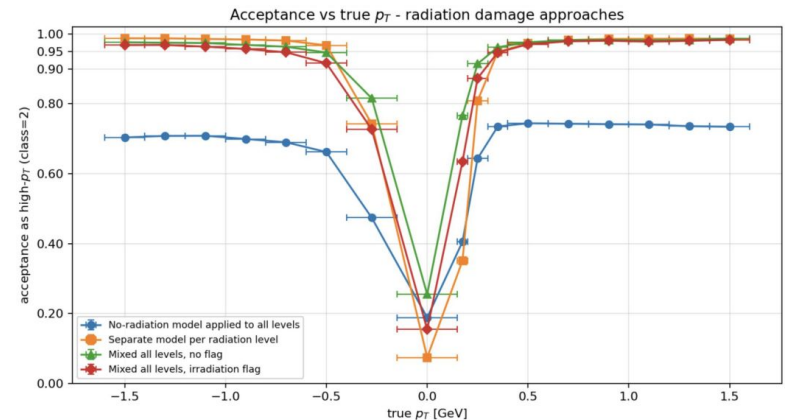
Report on SmartPixels / LGN – Princeton

- Studying the impact of sensor irradiation using SmartPixels irradiated datasets (0, 370, 1100 fb)
- Observe significantly diminished performance when only training over non-irradiated data
- Improved performance when training includes irradiated data
- Open questions/ongoing work:
 - Why asymmetry in left plot? Why 370 fb and 1100 fb behavior “flipped”?
 - Extend training scheme studies to LGNs
 - Synthesis in FPGAs vs ASICs

LGN Discrete: Train non-irradiated, test irradiated



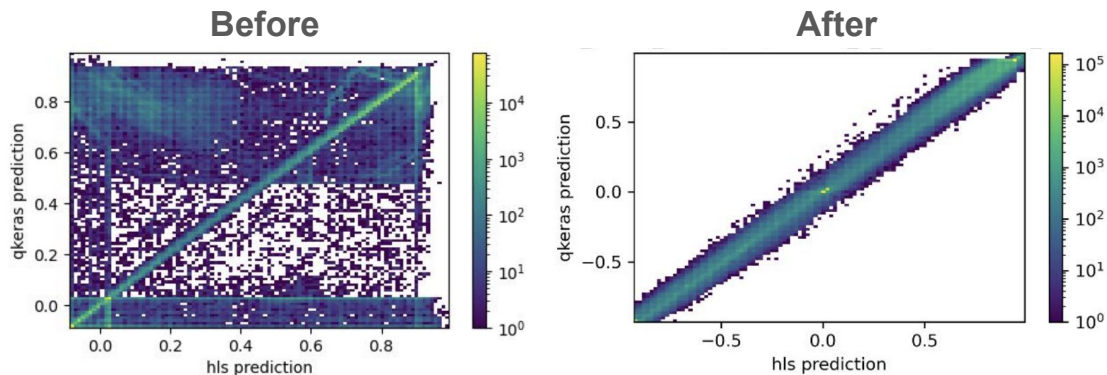
Unquantized Torch: Different training schemes



Major Updates

DNN Model Update – Chicago (Daniel)

- Input scaling significantly improved QKeras / HLS agreement
- Open questions/ongoing work: understanding and improving agreement



SmartPixel ASIC – Chicago (Daniel)

- Plans:
 - Run cold tests without the chip this week
 - Run cold test with the chip next week

General Project Direction

- Brief discussion about various project distinction / cohesion – plan to revisit in a few more weeks

Current Roadblocks

Neuromorphic networks (UTK) – some delays in communication with collaborators