



# CSSI Collaborative Research: Frameworks: Machine Learning and FPGA computing for real-time applications in big-data physics experiments

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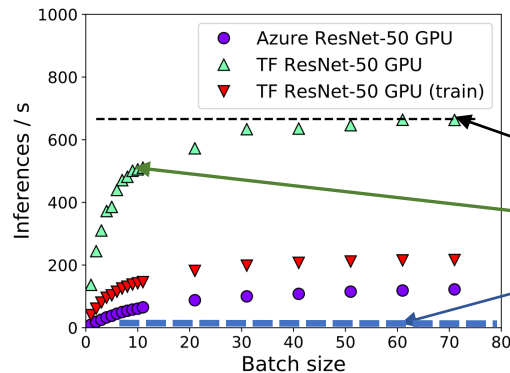
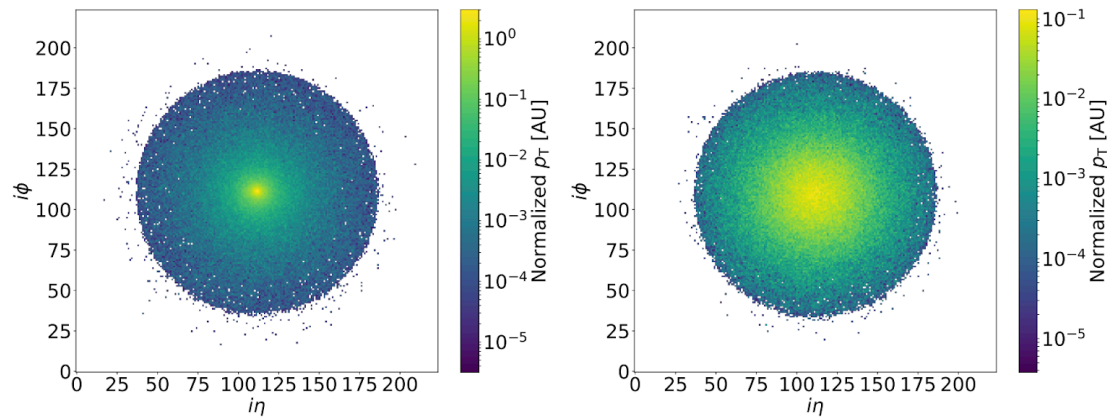
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Award #: 1931561  
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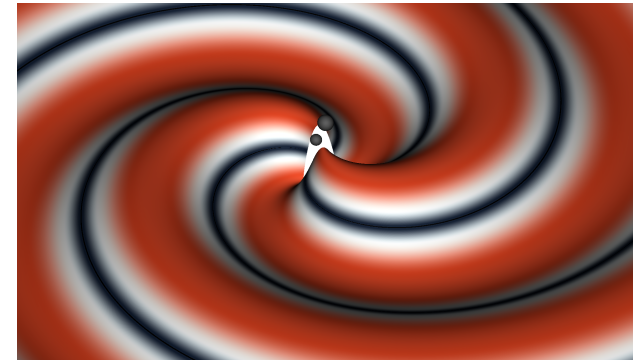
Accelerate convergence of AI and extreme-scale computing to design physics-inspired AI models and optimization schemes for big-data physics experiments



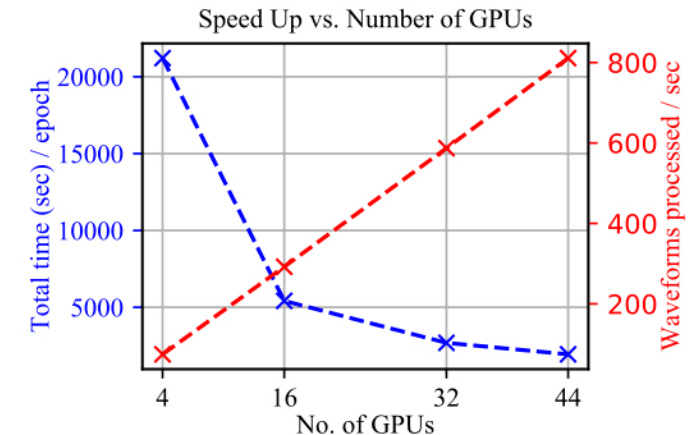
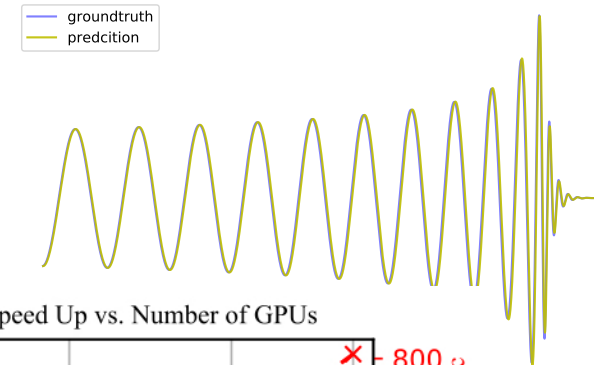
**FPGA**  
**GPU**  
**CPU**

MRI NSF-funded (OAC-1725729)  
IBM Power9 Hardware Accelerated  
Learning (HAL) cluster at NCSA

Advance GPU-accelerated, neuromorphic chips and Field Programmable Gate Arrays computing for real-time AI learning and inference analyses



q\_error: 0.04, s1\_err:-0.02, s2\_err: 0.02  
q: 4.04, s1:-0.77, s2: 0.40  
q\_p: 4.08, s1\_p:-0.79, s2\_p: 0.41  
waveform match: 0.995



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