NASA   Eleanor Rieffel   NASA   Quantum   Qunatum-inspired

<u>Real-time decoding and control of fault-tolerant systems</u>

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Assessing and Advancing the Potential of Quantum Computing: A NASA Case Study - <u>https://arxiv.org/abs/2406.15601</u>

Quantum Proofs for Classical Theorems - <u>https://arxiv.org/abs/0910.3376</u>

   Quantum-inspired classical algorithms and hardware

PySA: Fast Simulated Annealing in Native Python - <u>https://github.com/nasa/pysa</u>

Classical and Quantum Distributed Algorithms for the Survivable Network Design Problem - <u>https://arxiv.org/abs/2404.10748</u>

HybridQ: A Hybrid Simulator for Quantum Circuits - <u>https://github.com/nasa/hybridq</u>

A "thoughtful" Local Friendliness no-go theorem: a prospective experiment with new assumptions to suit - <u>https://arxiv.org/abs/2209.08491</u>

Can AI Save Schr   dinger's Cat? - <u>https://www.scientificamerican.com/article/can-ai-save-schroedingers-cat/</u>

FPGA-based Distributed Union-Find Decoder for Surface Codes - <u>https://arxiv.org/abs/2406.08491</u>

Spatially parallel decoding for multi-qubit lattice surgery - <u>https://arxiv.org/abs/2403.01353</u>

Quantum error correction below the surface code threshold - <u>https://arxiv.org/abs/2408.13687</u>

Suppressing quantum errors by scaling a surface code logical qubit - <u>https://www.nature.com/articles/s41586-022-05434-1</u>

Data for "Quantum error correction below the surface code threshold" - <u>https://zenodo.org/records/13273331</u> <u>https://doi.org/10.5281/zenodo.13273331</u>

Efficient near-optimal decoding of the surface code through ensembling - <u>https://arxiv.org/abs/2401.12434</u>

Improved accuracy for decoding surface codes with matching synthesis - <u>https://arxiv.org/abs/2408.12135</u>

Learning to Decode the Surface Code with a Recurrent, Transformer-Based Neural Network - <u>https://arxiv.org/abs/2310.05900</u>

   speed: currently ~25us@d=5, training cost: scales very quickly with distance

Optimization of decoder priors for accurate quantum error correction - <u>https://arxiv.org/abs/2406.02700</u>

Promatch: Extending the Reach of Real-Time Quantum Error Correction with Adaptive Predecoding - <u>https://dl.acm.org/doi/abs/10.1145/3620666.3651339</u> <u>https://arxiv.org/abs/2404.03136</u>