



김영석

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2020-2025 IBM Quantum, Research Staff Member
2018-2020 IBM Research, Research Staff Member
2012-2015 SK Hynix, TCAD Engineer

2018 University of Illinois at Urbana and Champaign, PhD in ECE
2012 University of Illinois at Urbana and Champaign, MS in ECE
2010 POSTECH, BS in EE

Quantum hardware algorithm co-optimization lab

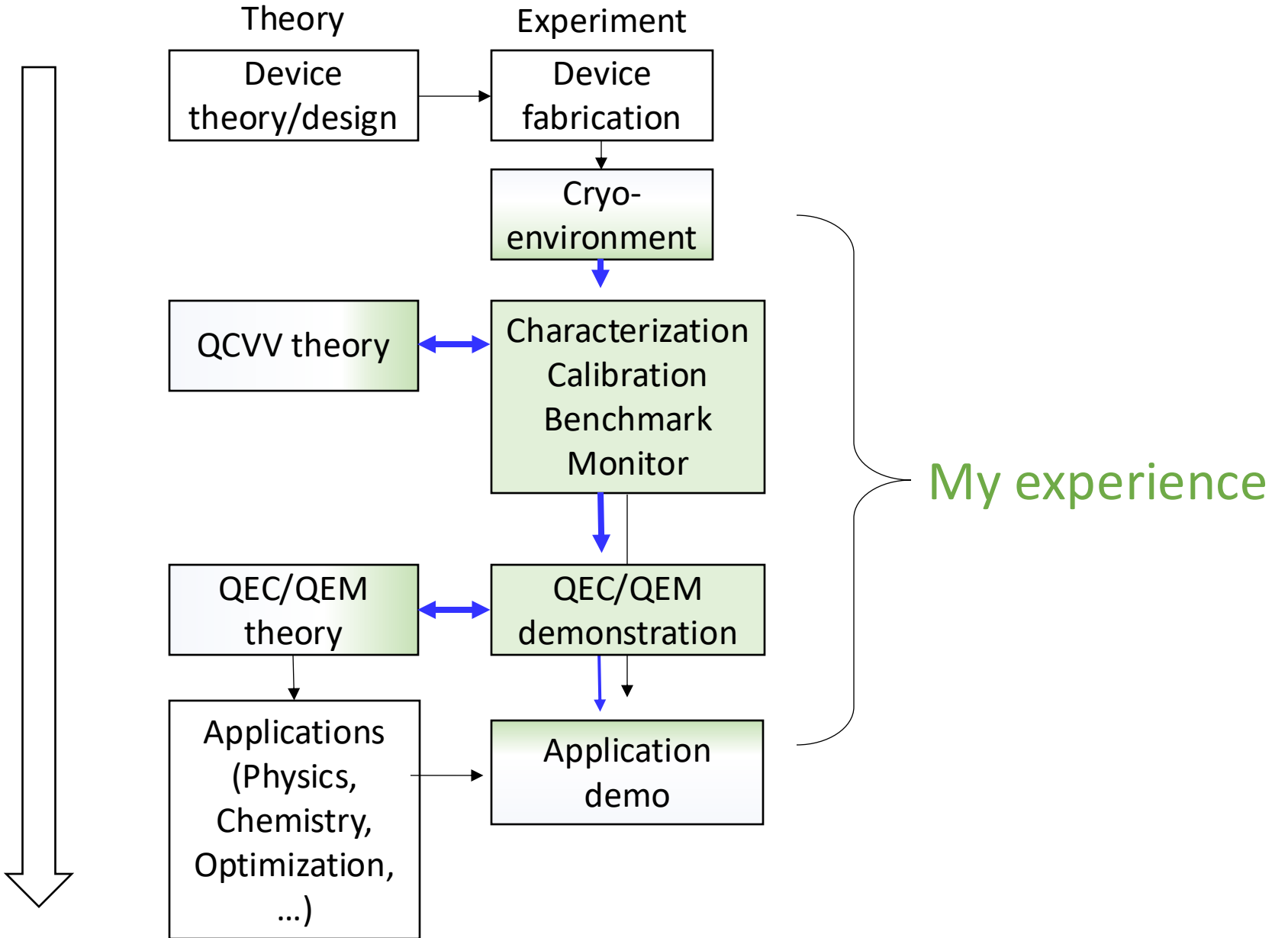
Goal: Accelerate the advent of practical quantum computing through hardware-algorithm co-optimization

- Target research fields
 - Device characterization and noise analysis
 - NISQ* algorithm
 - Quantum error mitigation
 - Early fault tolerance
 - Practical quantum error correction

* Noisy intermediate scale quantum era that utilizes pre fault tolerant quantum computer

Past research experience

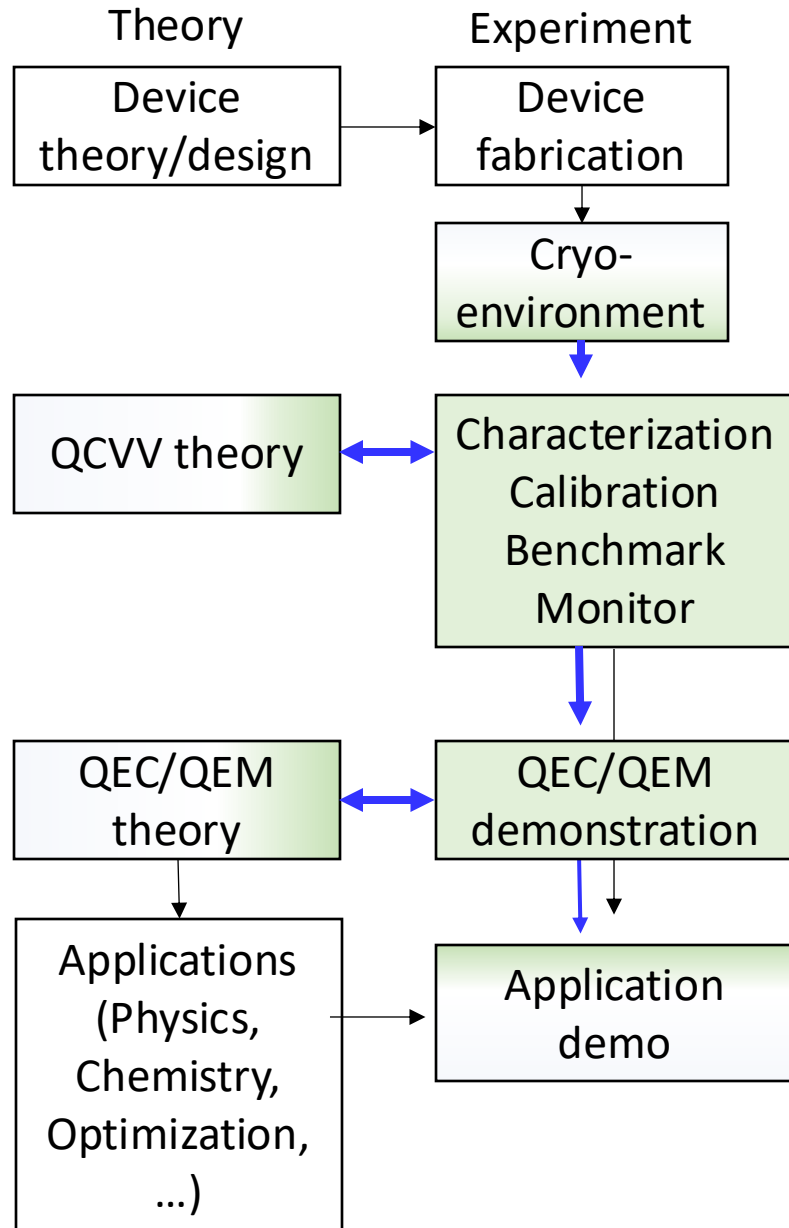
An example of experimental workflow for superconducting based quantum computer



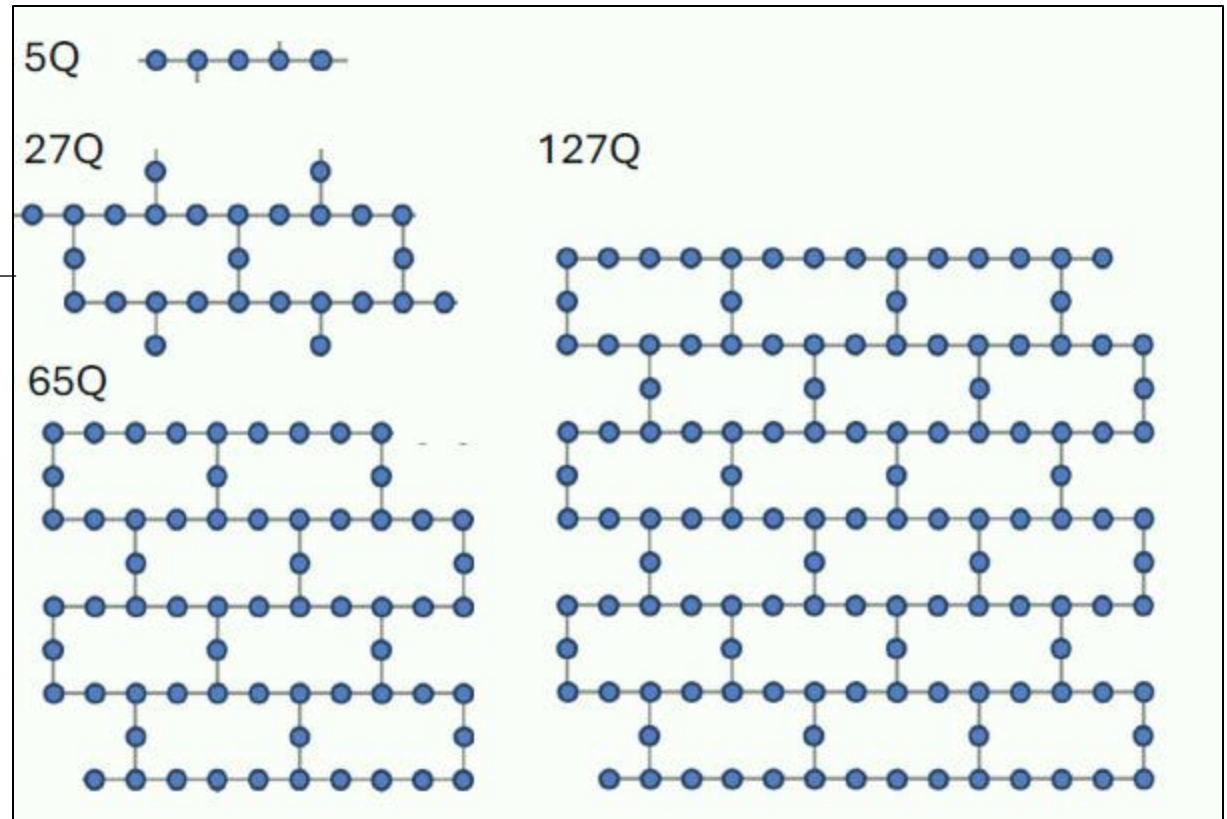
My experience

QCVV: Quantum characterization, verification, and validation
QEC: Quantum error correction
QEM: Quantum error mitigation

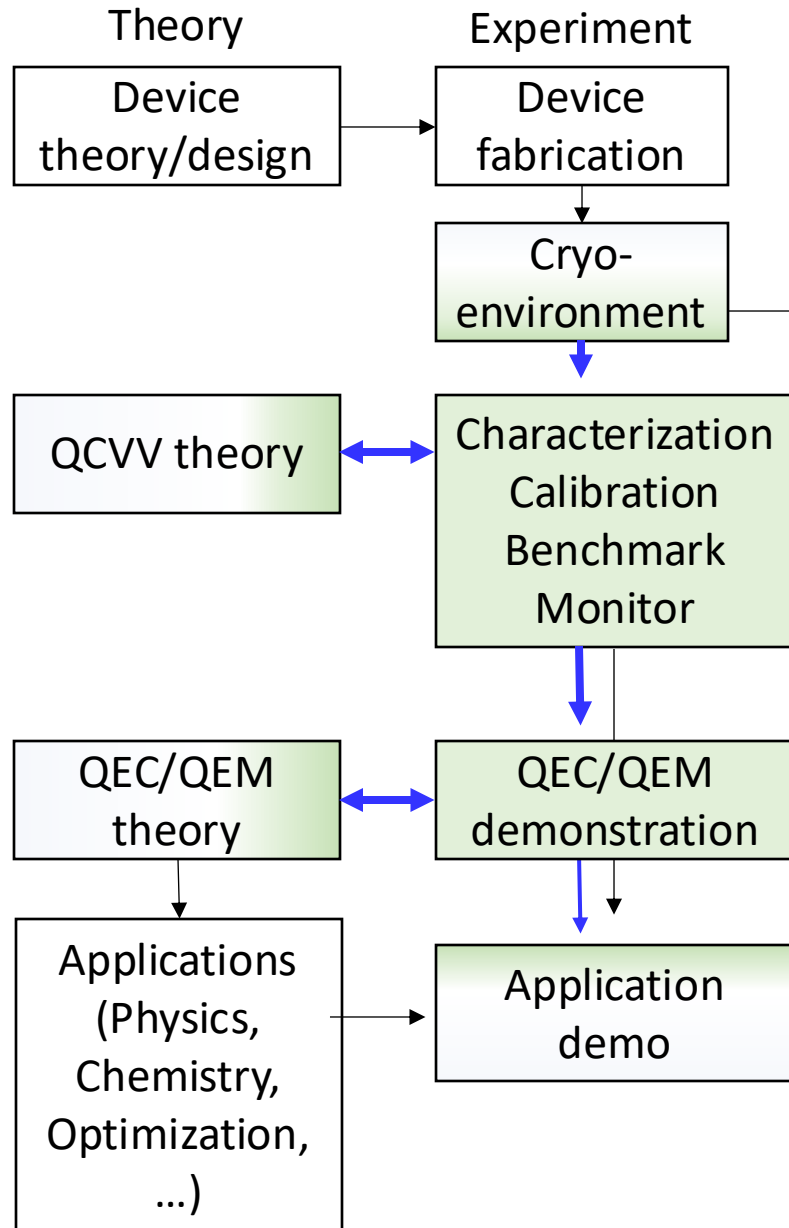
Past research experience



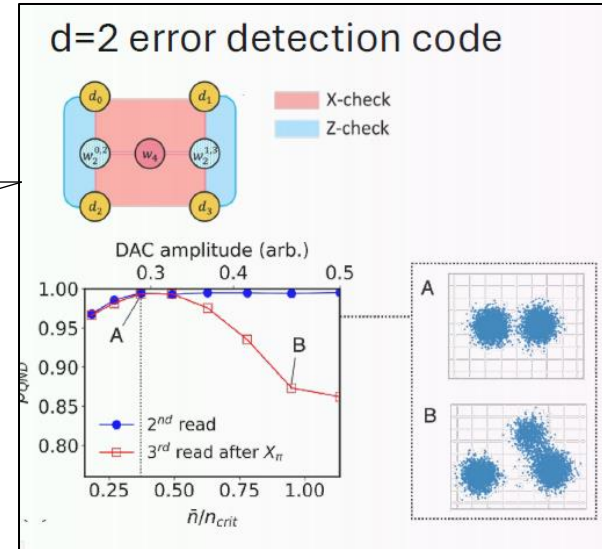
Hands on calibration/deployment experience on superconducting qubit processor (5Q – 127Q)



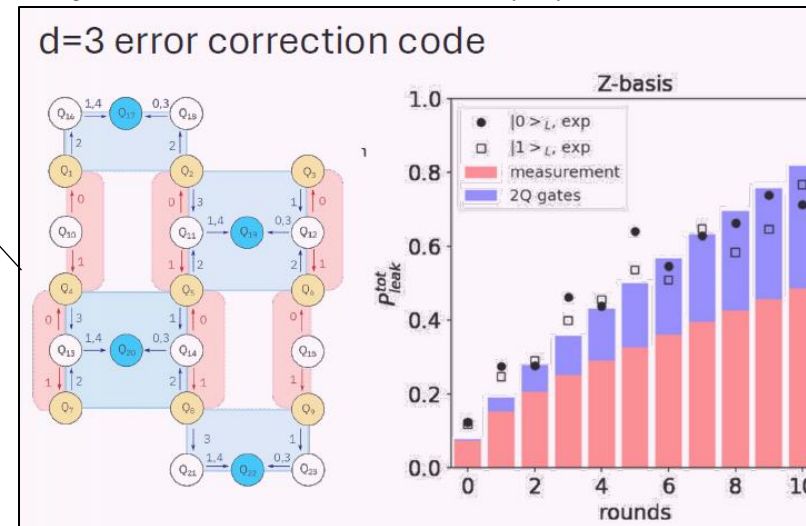
Past research experience



Experimental efforts on quantum error correction (QEC) using IBM hardware

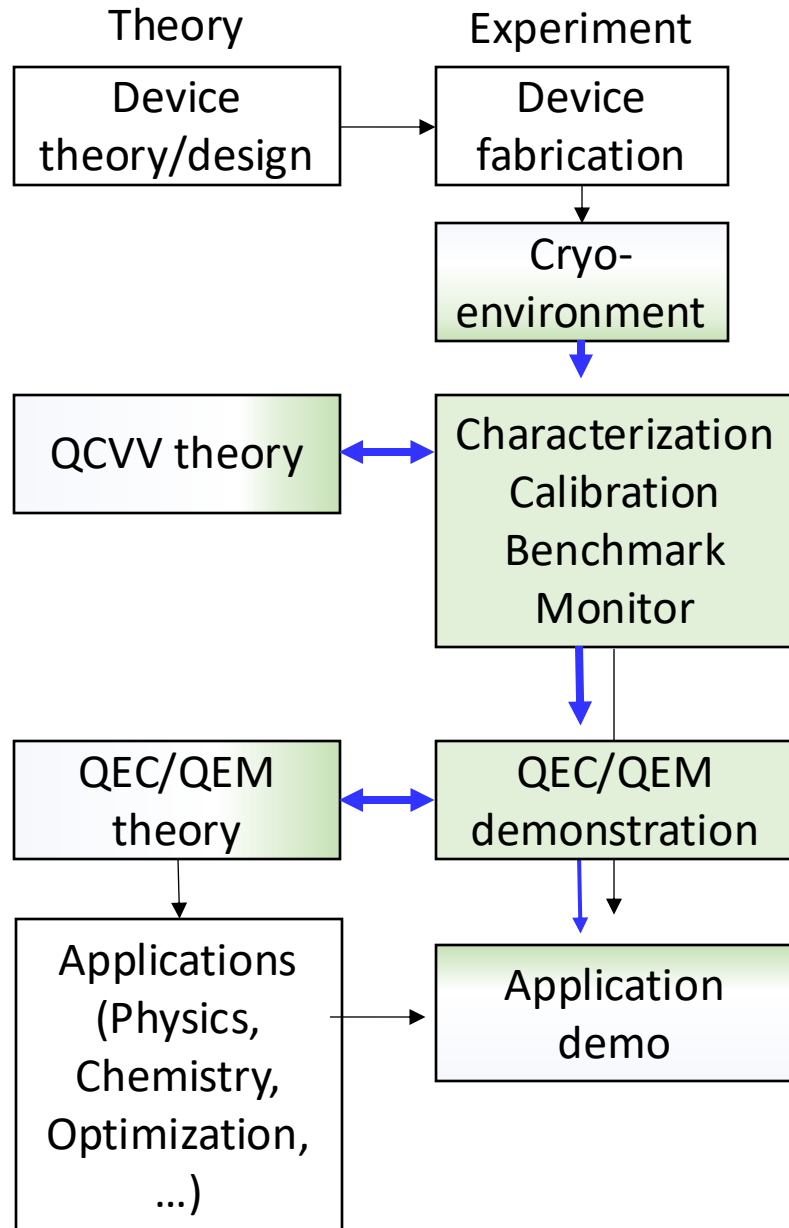


Physical Review Letters 128 (11), 110504



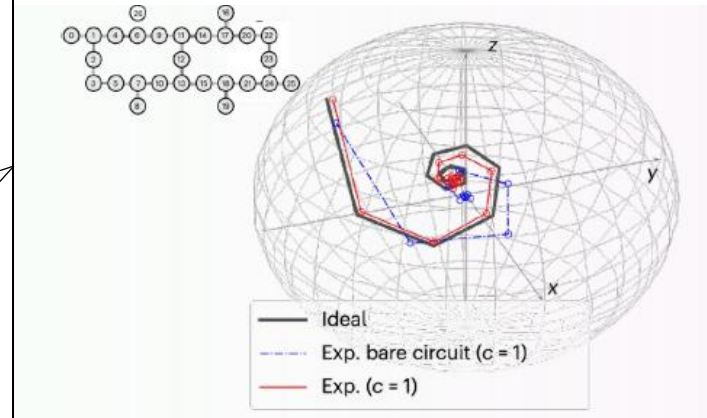
Nature Communications 14 (1), 2852

Past research experience



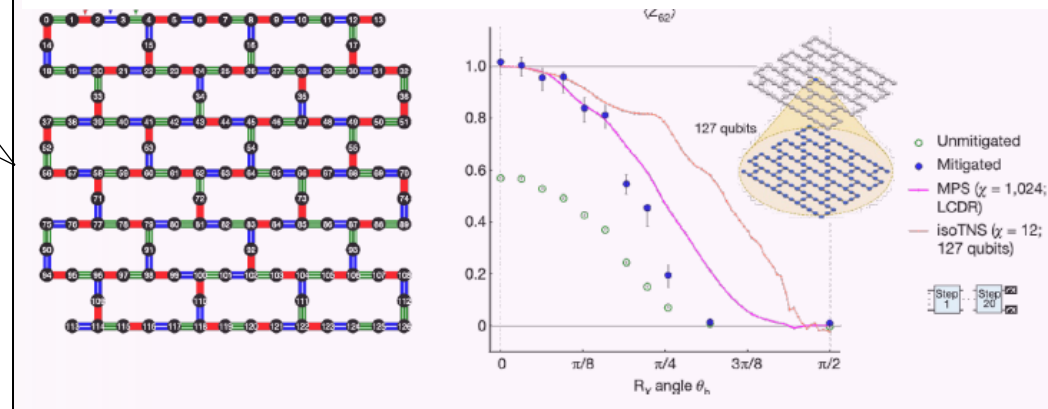
Experimental efforts on quantum error mitigation (QEM) using IBM hardware

Quantum error mitigation scalability on 26 qubit device



Nature Physics 19 (5), 752-759

Quantum error mitigation scalability on 127 qubit device



Nature 618 (7965), 500-505, [video](#)

We are hiring!

- MS/PhD or PhD
- Looking for candidates with
 - strong interest in quantum computer
 - self-motivated and open-minded
 - positive mindset
- What to expect after joining the group?
 - Develop a strong foundation in quantum information processing
 - Gain hands-on experimental experience to build practical intuition
 - Learn to bridge the gap between theory and real-world implementation