QUANTUM SCIENTIFIC COMPUTING

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MINISYMPOSIUM

The potential of quantum computing to solve scientific and engineering problems has been recognized over the past decade. The power of quantum computers stems from the efficiency in computational time and space for difficult problems by taking advantages of quantum superposition and entanglement. Quantum algorithms have been developed to solve engineering problems such as linear systems, eigenvalue, optimization, machine learning, and simulation. This minisymposium is to provide a platform for researchers to exchange the latest ideas of quantum scientific computing to solve engineering and materials problems. The topics of interest include but are not limited to:

- Quantum algorithms for computational solid and fluid mechanics
- Quantum computing for multiscale and/or multiphysics problems
- Quantum optimization algorithms
- Quantum algorithms and methods for materials discovery and materials design
- Uncertainty quantification for quantum computing
- Quantum machine learning and its combination with computational mechanics
- New computing architecture for noisy intermediate-scale quantum computers (e.g., tensor networks)
- Control mechanisms and error corrections for quantum computing
- Simulators of quantum computer on classical computing platforms
- Design and optimization of quantum computer systems
- Benchmark studies of quantum algorithms and quantum computers