Harvard Quantum Initiative
IN SCIENCE AND ENGINEERING

Quantum Colloquium

Wednesday, April 17, 2024. 12pm
Jefferson 250

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"Quantum advantage in scientific computation?"

Abstract: The advent of error-corrected quantum computers is anticipated to usher in a new era in computing, with Shor's algorithm poised to demonstrate practical quantum advantages in prime number factorization. However, cryptography problems are typically not categorized as scientific computing problems. This raises the question: which scientific computing challenges are likely to benefit from quantum computers? I will first discuss some essential criteria and considerations towards realizing quantum advantages in these problems. I will then introduce some recent advancements in quantum algorithms, especially for simulating non-unitary quantum dynamics and open quantum system dynamics. The first half of the presentation is intended to be accessible to a broad audience, including both theoretical and experimental researchers.

Guest presentation will begin promptly at noon.