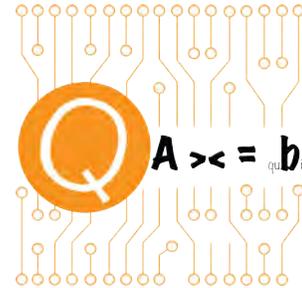


# Quantum Numerical Linear Algebra

January 24 - 27, 2022



## Scientific Overview

With the rapid development of quantum computers, a number of quantum algorithms have been developed and tested on both superconducting qubits based machines and trapped-ion hardware. The recent development of quantum algorithms has significantly pushed forward the frontier of using quantum computers for performing a wide range of numerical linear algebra tasks, such as solving linear systems, eigenvalue decomposition, singular value decomposition, matrix function evaluation etc. While many quantum algorithms aim at future fault-tolerant quantum architecture, some of such numerical linear algebra algorithms have already demonstrated promise for being implemented on near term quantum devices. This workshop brings together leading experts in quantum numerical linear algebra, to discuss the recent development of quantum algorithms to perform linear algebra tasks for solving challenging problems in science and engineering and for various industrial and technological applications.

This workshop will include a poster session; a request for posters will be sent to registered participants in advance of the workshop.

## Participation

Additional information about this workshop including links to register and to apply for funding, can be found on the webpage listed below. Encouraging the careers of women and minority mathematicians and scientists is an important component of IPAM's mission, and we welcome their applications.

## Organizers

Aram Harrow (MIT), Lin Lin (UC Berkeley), Thomas Vidick (Caltech), and Nathan Wiebe (University of Toronto).

## Speakers

Dong An (UC Berkeley), Dominic Berry (Macquarie University), Carlos Bravo-Prieto (Univ. of Barcelona), Garnet Chan (Caltech), Andrew Childs (Univ. of Maryland), Anirban Chowdhury (Univ. of Waterloo), Elizabeth Crosson (Univ. of New Mexico), Yulong Dong (UC Berkeley), Sophia Economou (Virginia Tech), Di Fang (UC Berkeley), Andras Gilyen (Renyi Institute of Mathematics), Iordanis Kerenidis (Université Paris Diderot), Maria Kieferova (Univ. of Technology Sydney), Alexandra Kolla (Univ. of Colorado Boulder), Jin-Peng Liu (Univ. of Maryland), Seth Lloyd (MIT), Jarrod McClean (Google), Rolando Somma (Los Alamos National Laboratory), Dan Stamper-Kurn (UC Berkeley), Ewin Tang (Univ. of Washington), Yu Tong (UC Berkeley), Konstantina Trivisa (Univ. of Maryland), Birgitta Whaley (UC Berkeley), Chao Yang (Lawrence Berkeley National Laboratory).

