



HARVARD UNIVERSITY  
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# Mathematical Picture Language Seminar



**Tuesday, February 10**

**4:00 p.m. Boston time**

**Fully Remote on Zoom**

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Quantinuum

## Superconducting pairing correlations on a 98-qubit trapped-ion quantum computer

**Abstract:** The Fermi-Hubbard model is the starting point for the simulation of many strongly correlated materials, including high-temperature superconductors, whose modelling is a key motivation for the development of quantum simulators and computers. However, the detection of superconducting pairing correlations has been challenging, both because of their off-diagonal character and because of the difficulty of preparing superconducting states. In this talk I will discuss recent work using Quantinuum's "Helios" trapped-ion quantum computer, in which significant superconducting pairing correlations were measured in three regimes of the Fermi-Hubbard model, both in and away from equilibrium. I plan to finish with some open problems that need to be solved before quantum computers can solve generic condensed matter problems of this kind.



Zoom QR Code & Link:

<https://harvard.zoom.us/j/779283357?pwd=MitXVm1pYUIJVzZqT3lwV2pCT1ZUQT09>

Passcode: 657361

<https://mathpicture.fas.harvard.edu/seminar>