

S E M I N A R



Dr Raghav Jha
Jefferson Lab, USA

Date:

Tuesday, 7 May 2024

Time:

15h00-16h00 SAST

Venue:

- P213, Physics Building, East Campus, WITS
- Online

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SYK model on a noisy quantum computer - dynamics and state preparation

ABSTRACT:

I will discuss time dynamics and state preparation of a random quantum mechanical model of quantum gravity known as Sachdev-Ye-Kitaev (SYK) model on IBM's 127-qubit Eagle processor quantum computer. I will present results for return probability and four-point out-of-time-order correlator (OTOC) for small number of Majorana fermions using state-of-the-art error mitigation methods. I will also discuss the circuit complexity to simulate the real-time dynamics of dense and sparse SYK models.

This talk is based on the following work:

- Sachdev-Ye-Kitaev model on a noisy quantum computer (<https://arxiv.org/abs/2311.17991>)
- Hamiltonian simulation of minimal holographic sparsified SYK model (<https://arxiv.org/abs/2404.14784>) and ongoing work.

WHO SHOULD ATTEND?

This is a colloquium talk intended to be accessible to honours and other postgraduate students. Familiarity with quantum field theory and group theory is NOT assumed. All are welcome!

REGISTER: <https://bit.ly/3wmPkVt>

