

The 9th PUBLIC ExU COLLOQUIUM

December 18th (Thu.) ONLINE

TALK 16:00 - 17:00 (JST)

December 18th (Thu.) 7:00 - 8:00 (GMT)

ONLINE CHAT TIME
17:00 - 18:00 (JST)

Registration required (click [HERE](#))



Speaker

Prof. Keisuke Fujii

The University of Osaka

Extreme Universe, JAPAN



MEXT -KAKENHI- Grant-in-Aid for Transformative Research Areas (A)
The Natural Laws of Extreme Universe

OTOC spectroscopy: detecting quantum advantage of quantum chaos through the lens of quantum algorithms

Abstract

Benchmarking the computational advantage of quantum computers over classical ones has been relied on sampling tasks using random quantum circuits. However, such sampling problems are difficult to verify and highly sensitive to noise. Motivated by these limitations, recent efforts aim to validate quantum advantage through physically meaningful quantities. In particular, experiments based on OTOCs (out-of-time order correlators) and their higher order generalizations were recently demonstrated by the Google Quantum AI team. In this talk, I will present my recent work, which provides an operational understanding of these quantities through the lens of quantum signal processing (QSP), one of the most advanced quantum algorithmic frameworks available today.

Extreme Universe 2025