Extreme Universe

The 6th COLLOQUIUM

May 23rd (Mon.) ONLINE

TALK 16:00 - 17:00 (JST)

May 23rd (Mon.) 7:00 am - 8:00 am (UTC)

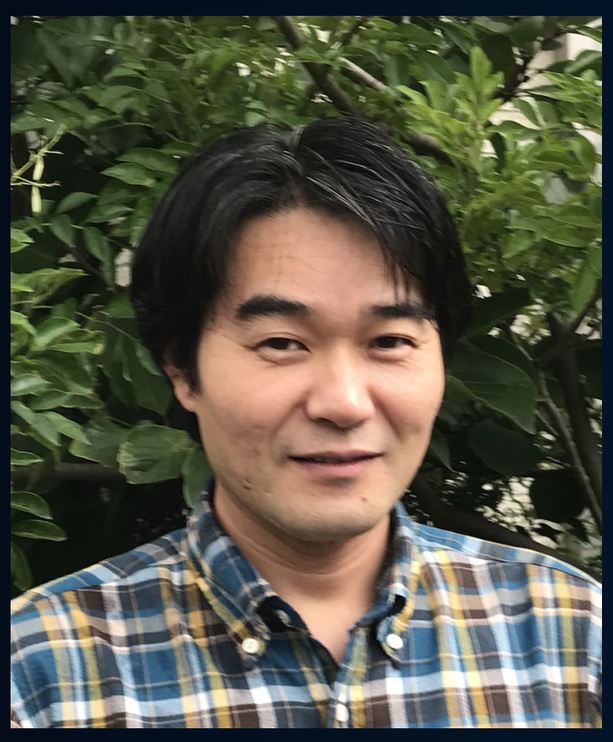
May 23rd (Mon.) 3:00 am - 4:00 am (EDT)

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

Registration required (click HERE)

Extreme Universe, JAPAN

collaboration



Speaker

Prof. Keiji Saito

Keio University

Title

Information dynamics in the long-range interacting systems

Abstract

Long-range interacting systems* are ubiquitous in nature. The examples include gravitational potential, Lenard-Jones potential, and magnetic dipole potential, to name only a few. Recent experiments even can tune the potential form in an artificial setup with controlled Rydberg atoms and trapped-ion systems. This technique enables us to observe quantum dynamics of the long-range interacting systems and even has the potential to study the fundamentals of the black hole. Of interest is the information propagation, which may show fast-scrambling. Motivated by this background, we develop several dynamical aspects of information dynamics. After talking about our findings on several generic aspects of information propagation (i.e., the criterion on the Lieb-Robinson velocity), I focus on a recent study on measurement-induced phase transition in long-range interacting systems.

*[I mean by this terminology the power-law interacting systems.]

References:
T. Minato, K. Sugimoto, T. Kuwahara, and KS, Phys. Rev. Lett. (2022).
T. Kuwahara and KS, Phys. Rev. Lett. (2021).
T. Kuwahara and KS, Phys. Rev. Lett. (2021).

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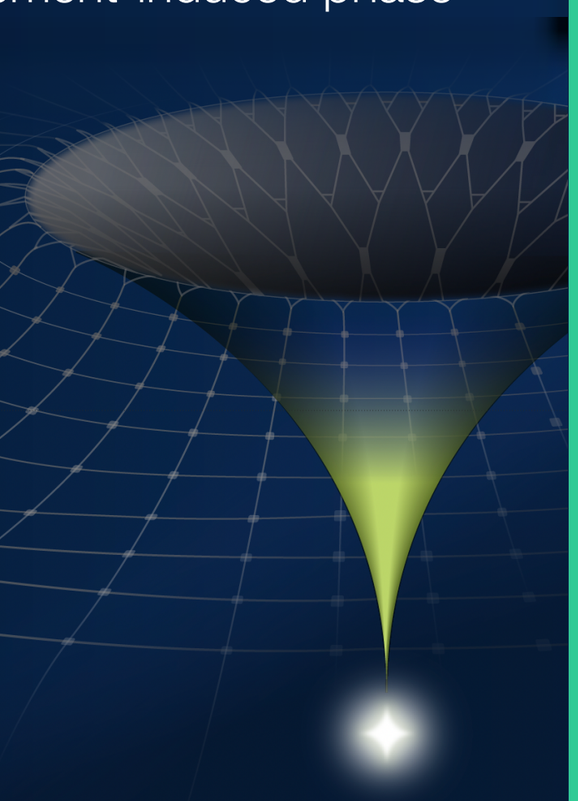

MEXT -KAKENHI- Grant-in-Aid for Transformative Research Areas (A)
The Natural Laws of Extreme Universe -A New Paradigm for Spacetime and Matter from Quantum Information-