## Extreme Universe<br/>The 10th COLLOQUIUMNovember 18th (Fri.) ONLINE<br/>CALK 17:00 - 18:00 (JST)November 18th (Fri.) 16:00 - 17:00 (SST)<br/>November 18th (Fri.) 8:00 - 9:00 (SST)

Registration required (click HERE)

Extreme Universe, JAPAN

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Speaker Prof. Antonio Miguel Garcia-Garcia

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## Title Wormholes, Sachdev-Ye-Kitaev model and universal dynamics in dissipative quantum chaotic matter

## Abstract



I introduce the Sachdev-Ye-Kitaev (SYK) model and Jackiw-Teitelboim gravity, its gravity dual in the low temperature limit, and review recent results on the physics of two-site non-Hermitiian SYK models dual to wormhole configuration in these near AdS\_2 backgrounds. I then study universal features of the late-time dissipative quantum chaotic dynamics, first by providing a symmetry classification of the dynamics using random matrix theory and then by computing the decay rate of an excitation in the Sachdev-Ye-Kitaev model coupled to an environment. I find that interactions substantially enhance the decay rate and that the Keldysh path integral describing the real-time dynamics of the Lindblad evolution is identical to that of a two-site non-Hermitian SYK in Euclidean time. We



provide evidence that this enhancement is related to the existence of a dual wormhole in de-Sitter space. I explore consequences of this unexpected relation between quantum gravity and dissipative quantum matter.

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-