OIST OKINAWA INSTITUTE OF SCIENCE AND TECHNOLOGY
沖縄科学技術大学院大学

VISITING PROGRAM

TSVP TALK

Entropic Order

2025 THU. **Oct. 16**

11:00–12:00

HYBRID L5D23, ZOOM

For zoom and other details scan QR code or visit oist.jp/visiting-program

Ordered phases of matter, such as solids, ferromagnets, superfluids, or quantum top ological order, typically only exist at low temperatures. Despite this conventional wis dom, I will present explicit local models in which all such phases persist to arbitrarily high temperature. This is possible since order in one degree of freedom can enable o ther degrees of freedom to strongly fluctuate, leading to "entropic order", whereby t ypical high energy states are ordered. Our construction, which utilizes interacting bo sons, avoids existing no-go theorems on long-range order or entanglement at high te mperature. I will also review known results on ordered states and introduce a simple model that realizes high-temperature superconductivity within this framework.

Simons Center for Geometry and Physics, Stony Brook University

Fedor Popov

Fedor Popov is a theoretical physicist and Research Assistant Professor at the Simons Center for Geometry and Physics (Stony Brook University). His research explores qua ntum field theory, conformal defects, and large N dynamics, bridging mathematical s tructures and physical phenomena. He has contributed to understanding entropic or der, symmetry breaking, and emergent geometry in strongly correlated systems. He r eceived his PhD from Princeton University in 2021 and was a Simons Junior Fellow at NYU from 2021 to 2024.

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