

# NTML(BRL)-APCTP SEMINAR SERIES

## Topological Matter Out of Equilibrium

**Period** April 2022 ~ June 2022

**Venue** Online (ZOOM)

### Overview

Recently, a small but ambitious research group, funded by National Research Foundation (NRF) for three years, Nonlinear Topological Matter Laboratory (NTML) has been launched to investigate dynamical phase transitions in topological matter driven by electromagnetic fields including light. Our research group consists of three experimentalists (Prof. Heon-Jung Kim, Prof. Jong-Soo Rhyee, and Prof. Jungkil Kim) and one theorist (Prof. Ki-Seok Kim), which cover material preparation, electrical and thermal transport, light-matter interaction, device, and anomaly and transport theory. Additionally, the Junior Research Group “Non-equilibrium many-body physics” (Ryo Hanai) started in April 2021 with a broad interest in collective phenomena out of equilibrium. To promote this research direction in Korean Physical Society, we open NTML-APCTP seminar series on topological matter out of equilibrium, inviting several well-known experts in this direction mentioned above.

### Invited Speakers (Tentative)

- Mark S. Rudner (University of Washington) 15<sup>th</sup> April
- Alexey Gorshkov (University of Maryland and NIST) 6<sup>th</sup> May
- Liang Wu (University of Pennsylvania) 20<sup>th</sup> May
- Takahiro Morimoto (University of Tokyo) 3<sup>rd</sup> June
- Hai-Zhou Lu (Southern University of Science and Technology) 24<sup>th</sup> June

### Organizers

- Heonjung Kim (Daegu Univ.)
- Jongsoo Rhyee (KyungHee Univ.),
- Jungkil Kim (Jeju Nat. Univ.)
- Kiseok Kim (POSTECH)
- Ryo Hanai (APCTP)

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## Dynamics of Quantum Systems with Long-range Interactions

**Prof. Alexey V. Gorshkov**

*University of Maryland*

**May 6th (Fri.) 10:00**

**Online via ZOOM**

Atomic, molecular, and optical systems often exhibit long-range interactions, which decay with distance  $r$  as a power law  $1/r^\alpha$ . In this talk, we will discuss bounds on how quickly quantum information can propagate in such systems. We will then discuss applications of these bounds to numerous phenomena including quantum simulation, quantum supremacy, and the preparation of topologically ordered states.

### ■ ZOOM Webinar

- 1) Please register through this ZOOM link (password 0)  
[https://us06web.zoom.us/meeting/register/tZlodeCrqD0sH9PFBWgi49T3HZ\\_yjh5MPcP9](https://us06web.zoom.us/meeting/register/tZlodeCrqD0sH9PFBWgi49T3HZ_yjh5MPcP9)
- 2) Join the webinar with a link generated after the registration
- 3) Please rename your profile - E.g. **Full name (affiliation)**

### ■ Contact information

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- Office: Research Support Team ([ra@apctp.org](mailto:ra@apctp.org))