



SEMINAR

Latent symmetries: An introduction

Date: 20 October, 2026 (Tuesday)
Time: 11:00 a.m.
Venue: CPD-LG.35
Central Podium
HKU

Speaker: Dr. Malte Röntgen
Eastern Institute of Technology
China

Abstract:

A latent symmetry is a novel type of symmetry which, in general, is not apparent from a geometric inspection of the system. Instead, it becomes visible after a suitable dimensional reduction: The so-called isospectral reduction, which is akin to an effective Hamiltonian. Latent symmetries can appear in many discrete systems, including networks of acoustic waveguides, transmission line networks, electric circuits, or coupled oscillators. Besides providing a new viewpoint on seemingly asymmetric systems, latent symmetries can also be used to design certain properties of the system. For instance, it is possible to design of lattices with seemingly accidental degeneracies, which are in fact caused by non-abelian latent symmetries.

In this talk, I will give a short introduction to the emerging topic of latent symmetries and showcase some of our recent results.

Biography:

Biography: Malte Röntgen did his PhD in theoretical Physics in Hamburg University in 2022. After working in Hamburg and Le Mans (France), Malte joined the Eastern Institute of Technology (EIT) at Ningbo in 2024 as a senior researcher. His research focusses on using graph-theoretical tools to analyze and to better understand physical systems. Two of these tools are the isospectral reduction (akin to an effective Hamiltonian) and, tightly connected, so-called latent symmetries, that is, symmetries that only become apparent after performing an isospectral reduction of the original system. In the past few years, Malte has extensively worked on applying these tools to various (both hermitian and non-hermitian) physical systems, including tight-binding models, electric circuits, and (electric or acoustic) waveguide networks. His works, including 4 PRL, have more than 500 citations.

ALL INTERESTED ARE WELCOME

For further information, please contact Prof. Nicholas Xuanlai Fang at 3917 2639.