

## CONDENSED MATTER THEORY SEMINAR

Subject: **Random Flux Driven Metal to Higher-Order Topological Insulator Transition**

Speaker: **Prof. Dr. Björn Trauzettel (Universität Würzburg)**

Date & time: **Friday, July 15<sup>th</sup>, 2022 at 3:15 p.m.**

Venue: **Room 01.114 and online:**

Zoom Link:

<https://uni-frankfurt.zoom.us/j/96520912647?pwd=NWZneE5XQmlwZFJlUXJpcUhdNEtKQT09>

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Abstract:

Random flux is commonly believed to be incapable of driving metal-insulator transitions. Surprisingly, we show that random flux can after all induce a metal-insulator transition in the twodimensional Su-Schrieffer-Heeger model, thus reporting the first example of such a transition. Remarkably, we find that the resulting insulating phase can even be a higher-order topological insulator with zero-energy corner modes and fractional corner charges, rather than a conventional Anderson insulator. Employing both level statistics and finite-size scaling analysis, we characterize the metal-insulator transition and numerically extract its critical exponent as  $\nu \sim 2.48$ . To reveal the physical mechanism underlying the transition, we present an effective band structure picture based on the random flux averaged Green function.