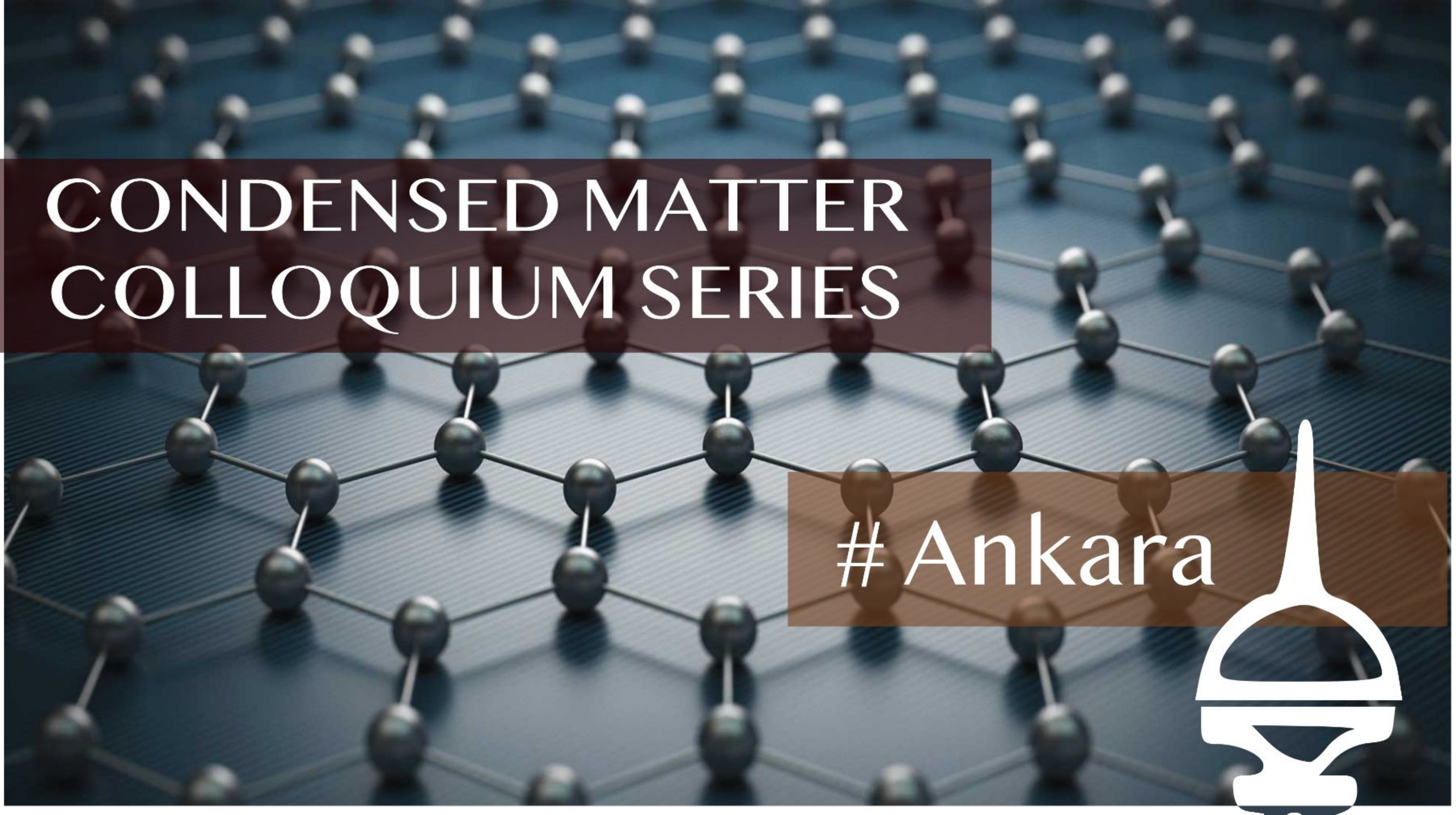

Ömer Mert Aksoy

Massachusetts Institute of Technology

Non-invertible Symmetries in Lattice Models

Symmetries play a central role in physics. In simple terms a symmetry can be thought of as an operation one can perform that does not change the outcome of the experiment, such as rotating or translating the experimental setup. In condensed matter physics, symmetry plays the role of an organizing principle that allows us to categorize the matter into phases. Recently, there has been significant effort put into characterizing what actually constitutes as a symmetry in a quantum system. This led to a generalization of the usual notion of symmetry to encompass operations that once done cannot be reversed, the so-called non-invertible symmetries. Apart from this peculiar property, non-invertible symmetries behave just like their ordinary counterparts. In this talk, I will review how the ordinary symmetry can be used to characterize phases of quantum matter. I will then show how non-invertible symmetries can be realized in simple quantum lattice models describing the dynamics of local finite degrees of freedom (e.g. spin-1/2). I will provide examples from my ongoing research efforts to showcase different flavors the non-invertible symmetries can take in quantum lattice models.

Nov, 18, 2025
Tuesday

19:00, (Ankara Time)

Click here for zoom link
Meeting ID: 432 931 6595
Password: 326852

1. A. Chatterjee, ÖMA, X.-G. Wen, SciPost Phys. 17, 115 (2024).
2. S. D. Pace, G. Delfino, H. T. Lam, ÖMA, SciPost Phys. 18, 021 (2025).
3. ÖMA, X.-G. Wen, arXiv:2503.21764.

Ömer M. Aksoy obtained his B.Sc. degree from Bilkent University in electrical and electronics engineering in 2017. He then move to ETH Zurich to complete his MSc and Phd degrees in physics in 2019 and 2023, respectively. He is currently a postdoctoral fellow at Massachusetts Institute of Technology since 2023. His research interests include generalized symmetries, topological phases of matter, and their applications in quantum condensed matter systems.

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