

Non-Hermitian Topological Phenomena in Condensed Matter Physics

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Whereas the full description of quantum physics requires a Hermitian Hamiltonian, the effective description of quantum physics is sometimes given by a non-Hermitian Hamiltonian. In this talk, I will explain how such non-Hermitian description can predict non-trivial phenomena in condensed matter physics [1-3]. In particular, I will explain hidden non-Hermiticity of topological boundary states, and resultant new phenomena in topological phases.

[1] J. Cayao and M. Sato, Phys. Rev. B110, L201403 (2024)

[2] D. Nakamura, K. Shiozaki, K. Shimomura, M. Sato, K. Kawabata, Phys. Rev. Lett.135, 096601 (2025)

[3] Y. Nakai, D. Nakamura, K. Shimomura, Hamanaka, M. Sato, arXiv:2502.16729.