804th ASRC Seminar

Date: July 12 (Mon) 16:30~17:30
Location: Online Seminar by Zoom
Speaker: Dr. Fabrizio Minganti
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Title: Dissipation-induced effects in open quantum systems

Abstract:

Dissipation is often regarded as an obstacle to the realization of quantum technology. However, if properly controlled and engineered, dissipative processes can be harnessed for technological advantages. The purpose of this talk is to discuss some uncanny phenomena emerging in open quantum systems. At first, I will introduce the formalism of the Lindblad master equation and of the Liouvillian superoperator, a unifying framework that makes it possible to relate apparently different phenomena within the same formalism. I will then discuss a simple example of a purely dissipative phenomenon: a dissipative state transfer [1]. That is, the very presence of dissipation can move energy between two non-interacting systems. I will then focus on criticality in open quantum systems [2-4] and briefly summarize our work on exceptional points [5].

[1] F. Minganti, V. Macri, A. Settineri, S. Savasta, F. Nori, Phys. Rev. A 103, 052201 (2021)
[2] F. Minganti, A. Biella, N. Bartolo, and C. Ciuti, Phys. Rev. A 98, 042118 (2018)
[3] F. Minganti, I. I. Arkhipov, A. Miranowicz, and F. Nori, arXiv:2103.05625 (2021)
[4] F. Minganti, I. I. Arkhipov, A. Miranowicz, and F. Nori, arXiv:2008.08075 (2020)
[5] F. Minganti, A. Miranowicz, R.W. Chhajlany, F. Nori, Phys. Rev. A 100, 062131 (2019)

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