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Forum de Physique Statistique @ ENS

Mercredi 30 Novembre 2022, 12 :30
LPENS, L369
Domaines : cond-mat.stat-mech

Titre : *What can we learn by measuring nonlinear response functions ?*

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Résumé : *Most conventional experimental probes used in condensed matter systems can be interpreted through the framework of linear response. There are however cases where linear response functions alone are insufficient to discriminate between different physical scenarios. In these situations, nonlinear response functions could provide a valuable resource to sharpen our understanding.*
However, currently, a major limitation is the ability to provide a qualitative interpretation to the measured signals. In this talk I will discuss two setups where the long-time divergence of nonlinear response functions can be understood and potentially provide insights into condensed matter systems.In the first part of the seminar, I will show that long-time divergences in systems with non-topological excitations are produced by scattering processes [1,2]. In the second part, I will focus on 2D quantum systems with topological order and featuring anyonic excitations. I will argue that in this case a stronger long-time divergence appears, which could used as a unique fingerprint of anyons in experimental systems [3].

[1] MF, S. Gopalakrishnan, R. Vasseur, F. Essler, S. A. Parameswaran, arXiv :2208.09490
[2] MF, S. Gopalakrishnan, R. Vasseur, S. A. Parameswaran, F. Essler, in preparation
[3] M. McGinley, MF, S. A. Parameswaran, arXiv :2210.16249