

SEMPARIS – Séminaires en région parisienne

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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 be 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*
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