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Séminaire du Laboratoire de Physique Théorique de la Matière Condensée

Lundi 25 Novembre 2019, 10 :45
LPTMC, Jussieu, tower 13-12, room 5-23
Domaines : cond-mat.mes-hall

Titre : *Topological phases of quantum walks and how they can be detected*

Orateur : **Janos Asboth (Wigner Research Centre for Physics & Budapest University, Hungary)**

Résumé : *Quantum walks are versatile toy models for periodically driven systems in the nonperturbative regime of low-frequency and high-intensity drive. In this regime, systems can have "hidden" topological invariants : they can host topologically protected edge states even if their effective Hamiltonian is topologically trivial. I will discuss schemes we developed [1,2] to measure the bulk topological invariants, including the "hidden" ones, directly, which also work in the case with spatial disorder, and which have recently been measured in quantum walk experiments[3,4].*

[1] : T Rakovszky, JK Asbóth, A Alberti : Detecting topological invariants in chiral symmetric insulators via losses, Phys Rev B 95 (20), 201407 [2] : B Tarasinski, JK Asbóth, JP Dahlhaus : Scattering theory of topological phases in discrete-time quantum walks, Phys Rev A 89 (4), 042327 [3] : Zhan, X., Xiao, L., Bian, Z., Wang, K., Qiu, X., Sanders, B.C., Yi, W. and Xue, P. : Detecting topological invariants in nonunitary discrete-time quantum walks. Phys Rev Lett, 119(13), 130501 [4] : S Barkhofen, T Nitsche, F Elster, L Lorz, A Gábris, I Jex, C Silberhorn : Measuring topological invariants in disordered discrete-time quantum walks, Phys Rev A 96 (3), 033846