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Seminaires du LPTM , Universite de Cergy Pontoise

Jeudi 24 Mai 2018, 14 :00
LPTM, 4.13 St Martin II
Domaines : cond-mat

Titre : *Artificial spin models : examples from topological bosons and Rydberg atoms*

Orateur : **Guillaume Roux (LPTMS Université Paris Sud)**

Résumé : *The goal of this seminar is to present how spin models are relevant in the physics of quantum simulators through two examples. In the first one, we show that the strong interacting limit of a topological Bose-Hubbard model with two species maps onto a 2D XY spin model with frustrated couplings on the honeycomb lattice. This model displays an exotic phase thats breaks both parity and time reversal symmetry through the stabilization of a chiral order parameter. While the ground-state remains gapped and the original bosonic model is topological, we find a zero Chern number for the groundstate. In the second example, we discuss how spin models are realized in Rydberg based quantum simulators. We discuss a proposal envisionned by colleagues at College de France and perspectives on some relevant information that could be extracted from the Loschmidt echo.*