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Forum de Physique Statistique @ ENS

Mercredi 10 Mars 2021, 14 :30
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Domaines : cond-mat.stat-mech

Titre : *Constrained Quantum Dynamics*

Orateur : **Michael Knap (TU Munich)**

Résumé : *The presence of global conserved quantities in interacting many-body systems generically leads to diffusive transport at late times. Here we show that this general principle is substantially modified in systems that conserve in addition the dipole moment of an associated global charge, in that transport becomes subdiffusive instead. Such dipole conserving systems are relevant for fracton phases of quantum matter, that are characterized by excitations with restricted mobility. Modeling the time evolution of dipole conserving systems, and higher moment generalizations thereof, such as cellular automata, we numerically find distinct anomalous exponents of the late time relaxation. We explain these findings by analytically constructing a general hydrodynamic model, yielding an accurate description of the scaling form of charge correlation functions. We will furthermore analyze the spatial profile of the correlations and discuss experimentally relevant signatures of such higher- moment conservation.*