



Physical Sciences Seminar

Creating new non-equilibrium phases of matter by "polyfractal" driving

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We propose a new protocol for engineering quantum many-body Hamiltonians with enhanced symmetries. The protocol is based on repeated pulsed application of a set of unitary operators X_i , with $X_i^2=1$, (which can be generalized to $X_n=1, n>2$) in a self-similar-in-time ("polyfractal") manner. For local initial Hamiltonians, the protocol can simultaneously implement multiple global and local symmetries, with the accuracy improving superpolynomially with the fastest drive period. The effective Hamiltonian remains local and avoids heating over time scales that are stretched-exponentially long in the drive frequency. Such Floquet engineering can be used to realize novel non-equilibrium quantum phases. We also discuss how our protocol can be implemented robustly using a setup based on Majorana fermions. Networks of such Majoranas can be used to implement novel symmetry-protected topological phases, lattice gauge theories, among others.

Monday, June 24, 2019 11:00am - 12:00pm

Big Seminar room Ground floor / Office Bldg West (I21.EG.101)



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.

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<https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.