

DY 61: Invited Talk

Time: Friday 9:30–10:00

Location: HÜL 186

Invited Talk

DY 61.1 Fri 9:30 HÜL 186

Characterizing quantum chaos through adiabatic transformations — •ANATOLI POLKOVNIKOV¹, ANUSHYA CHANDRAN¹, PIETER CLAEYS³, ANATOLY DYMARSKY⁴, MOHIT PANDEY¹, TAMIRO RENZO¹, DRIES SELS², SHO SUGIURA², and JONATHAN WURTZ¹ — ¹Department of Physics, Boston University — ²Department of Physics, Harvard University — ³Cavendish Laboratory at the University of Cambridge — ⁴Department of Physics, University of Kentucky

I will discuss our recent progress in understanding and characterizing quantum chaos through the adiabatic gauge potential (AGP). The

latter is defined as an operator generating adiabatic transformations. In particular, I will show that these generators are highly anisotropic in the coupling space defining the families of adiabatically connected Hamiltonians implying that chaos is highly directional. I will discuss the structure of the adiabatic flows along the directions with the minimal norm of the AGP and show that these flows have natural attractors corresponding to massively degenerate points. I will also discuss emerging singularities of the AGP and the corresponding many-body dark states, which can live very far from the ground state. Finally I will show that the AGP can serve as a very sensitive probe of quantum chaos.