Contribution ID: **73** Type: **not specified**

Detection of excited state quantum phase transition with a Kerr-nonlinear resonator

Friday 15 July 2022 12:30 (50 minutes)

Kerr nonlinear resonators have been used to study dynamical bifurcation, to squeeze quantum fluctuations, and to prepare Schroedinger cat states. They can be realized by coupling a superconducting two-level system to a microwave cavity. This is also the setup for the transmon qubit adopted by companies such as IBM, Google, and Rigetti. We show that the experimentally detected spectrum of a Kerr-nonlinear resonator signals the presence of an excited state quantum phase transition. The analysis of the classical limit of the Hamiltonian explains the origin of the quantum critical point and its consequence for the quantum dynamics, which includes the exponential growth of out-of-time ordered correlators.

Presenters: PEREZ-BERNAL, Curro (Universidad de Huelva); SANTOS, Lea

Session Classification: Excited-state quantum phase transitions

Track Classification: Excited-state quantum phase transitions