



UNIVERSITÀ DI PAVIA
Dipartimento di Fisica
"Alessandro Volta"

Avviso di Seminario

Lunedì 29 Giugno 2026

Ore 14:00 - Aula Dottorato

Floquet Dissipative Phase Transitions

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Dissipative phase transitions (DPTs) have emerged as a central paradigm for understanding critical phenomena in driven open quantum systems. Their characterisation is traditionally based on the spectral properties of a time-independent Liouvillian, an approach that becomes inadequate for genuinely time-periodic (Floquet) systems. In this talk, a general framework will be presented for the study of DPTs in periodically driven open quantum systems based on the spectrum of the Floquet propagator. Using driven-dissipative Kerr resonators as a first example, this framework will show how counter-rotating terms modify the location of the critical point and strongly affect the dynamical time scales associated with the transition. Dissipative criticality in the driven quantum Rabi model will then be discussed, alongside a comparison with the driven Jaynes–Cummings approximation. This analysis reveals qualitative changes in the critical properties as the ultrastrong light–matter coupling regime is approached and demonstrates the eventual disappearance of the DPT in the deep-strong-coupling regime as a consequence of light–matter decoupling. These results establish a rigorous framework for exploring dissipative critical phenomena beyond the time-independent setting and open new avenues for the study of nonequilibrium phase transitions in periodically driven quantum systems