

# Colloquium Notice

## Benedetta Flebus

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### *A solid-state platform for cooperative quantum phenomena*

The dissipation resulting from the coupling of a system with its environment is commonly viewed as a foe for quantum technologies. Nonetheless, recent developments at light-matter interfaces have shown that correlated dissipation can be harnessed into novel dynamical states of matter and entanglement in many-body quantum systems. In this talk, I will discuss how we have recently capitalized on this knowledge from quantum optics to set the stage for the — yet uncharted — exploration of cooperative quantum phenomena in quantum hybrid solid-state platforms [1]. I will first introduce a comprehensive formalism for the quantum many-body dynamics of an ensemble of solid-state spin defects interacting via the magnetic field fluctuations of a common solid-state reservoir, and then show that dissipative correlations can play a relevant role in a realistic experimental setup. Finally, I will discuss how our findings offer a pathway to novel quantum sensing modalities and schemes for realizing long-range qubit-qubit coupling.

[1] X. Li, J. Marino, D. Chang and B. Flebus, arXiv:2309.08991 (2023)

Monday

**January 29, 2024**

Starts at 12:15 PM

Coffee at 12:00 PM

Physics Conference Room, SB B326

This talk is accessible via [Zoom](#) or use

**meeting ID 829 2687 2594** and **passcode 866995** to join