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Session B31: Hybrid Quantum Photonic Systems
11:30 AM–2:30 PM, Monday, March 15, 2021

Sponsoring Unit: DQI
Chair: Danny Kim, HRL Laboratories, LLC

Abstract: B31.00010 : Multi-emitter cavity QED with color centers

1:42 PM–1:54 PM Live

← Abstract →

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Solid-state systems of quantum emitters integrated in photonic cavities have emerged as candidates for applications in quantum information processing. Many photonic simulator proposals have harnessed polaritonic physics of the Jaynes-Cummings-Hubbard model of the coupled cavity arrays. Experimentally, these systems have been challenging to realize due to the lack of scalability (typical of quantum dots) or insufficient light-matter interaction strength between individual emitters and cavities (typical of color centers). To circumvent both these obstacles, we explore systems of multiple color centers coupled to cavity arrays. Here, we expand the Tavis-Cummings-Hubbard model to include experimentally informed inhomogeneities in emitter ensembles and observe the cavity-protection effects in the system which recreate polaritonic phenomena seen in the Jaynes-Cummings-Hubbard model.