

Poster: Enabling multiple intercavity polariton coherences by adding quantum confinement to cavity molecular polaritons

A new microcavity infrastructure was designed and constructed to study molecular vibrational polaritons, which are hybrid particles blending aspects of light and matter. This implementation of photonic confinement within the Fabry-Perot cavity introduced additional ‘quantized’ cavity modes and allowed for the creation of polaritonic multi-qubit systems, also referred to as qudits. These qudits exhibited notable coherence stability even in the presence of environmental fluctuations. This work has implications for the development of molecular vibrational polaritons in the context of quantum information technology and may have broader applications in topological polariton systems and quantum light spectroscopy for molecular systems.

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