

Abstract Submitted
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Rabi Coupling Between IR-active Phonon and Cavity-resonant Electromagnetic Modes¹ GAVIN K. BRENNEN, Institute for Quantum Optics and Information of the Austrian Academy of Sciences, H.M. LAWLER, University of Washington, SANJIV SHRESTA, NIST, J.N. BYRD, University of Washington — We predict an approximately 200 micron Rabi coupling between a cavity-resonant electromagnetic mode and the infrared-active phonon of an enclosed GaAs sample. This prediction follows from our quantized description of the electromagnetic field, the phonon field, and their interaction. We believe the prediction to be supported by recent observations of geometry-enhanced terahertz emission, and boundary-condition dependent phonon-polariton spectra in pump-probe optical studies.

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H.M. Lawler
University of Washington

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