

Abstract Submitted  
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**Spin relaxation in a GaAs quantum dot embedded inside a suspended phonon cavity**<sup>1</sup> YING-YEN LIAO, Department of Electrophysics, National Chiao-Tung University, Hsinchu 300, Taiwan, YUEH-NAN CHEN, Department of Electrophysics, National Chiao-Tung University, Hsinchu 300, Taiwan, DER-SAN CHUU, Department of Electrophysics, National Chiao-Tung University, Hsinchu 300, Taiwan, TOBIAS BRANDES, School of Physics and Astronomy, The University of Manchester P.O. Box 88, Manchester, M60 1QD, U.K. — The phonon-induced spin relaxation in a two-dimensional quantum dot embedded inside a semiconductor slab is investigated theoretically. An enhanced relaxation rate is found due to the phonon van Hove singularities. Oppositely, a vanishing deformation potential may also result in a suppression of the spin relaxation rate. For larger quantum dots, the interplay between the spin orbit interaction and Zeeman levels causes the suppression of the relaxation at several points. Furthermore, a crossover from confined to bulk-like systems is obtained by varying the width of the slab.

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