

Abstract Submitted
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Drag and Drift of Excitons Induced by the Current in a Two-Dimensional Electron Gas S. K. LYO, Sandia National Laboratories — We show theoretically that an electric current in a high-mobility quasi- two-dimensional electron layer induces a significant drift of excitons in an adjacent layer through interlayer Coulomb interaction. The exciton gas is shown to drift with a velocity which can be a significant fraction of the electron drift velocity at low temperatures. The estimated drift length is of the order of micrometers or larger during the typical exciton lifetime for GaAs/Al_xGa_{1-x}As double quantum wells. A possible enhancement of the exciton radiative life time due to the drift is discussed. Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the U.S. DOE under contract DE-AC04-94AL85000.

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