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Landau Quantization of an Asymmetric Double-Quantum-Dot

N.J.M. HORING, S.L. HORTON, Stevens Institute of Technology, Hoboken, NJ 07030, V. FESSATIDIS, Fordham University, Bronx, NY 10458 — We examine the subband energy eigenstates of a two-dimensional asymmetric quantum double-dot system embedded in a two dimensional host sheet subject to Landau quantization. The dispersion relation for the asymmetric quantum double-dot subband energies is formulated and examined by analyzing the frequency poles of the appropriate Green's function with Landau-quantization-like splintering of the levels by a magnetic field. The effects of the asymmetry of the quantum dots in regard to their potential well depths are analyzed as functions of the well depth difference and dot separation.

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