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Asymmetric Double Quantum Dot Energy States in a Quantizing Magnetic Field NORMAN HORING, SPENCER HORTON, SINA BAHRAMI, Stevens Inst. Tech. — This work is concerned with electron states and propagation in a two-dimensional asymmetric quantum double-dot system embedded in a two dimensional host sheet subject to Landau quantization. The two dots are represented by two Dirac delta function potential terms of differing depths each of which would support just one subband state if the other were absent, if there were no magnetic field. The integral equation for the Schrodinger Green's function for this double-dot system is solved exactly in closed form in terms of the infinite sheet Green's function for two dimensional electrons subject to Landau quantization with no quantum dots. The dispersion relation for the double dot subband energies is formulated and examined by analyzing the frequency poles of the Green's function with Landau-quantization-like splintering of the levels by the magnetic field. The effects of the asymmetry in regard to the potential well depths are analyzed as functions of the well-depth difference and dot-separation.

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