Electronic spectrum of a two-dimensional quantum dot array in the presence of electric and magnetic fields in the Hall configuration EN-RIQUE MUNOZ, Rice University, ZDENKA BARTICEVIC, MONICA PACHECO, Federico Santa Maria University — We report calculations of the electronic spectrum of a two-dimensional lattice of coupled quantum dots, subject to external electric and magnetic fields in the Hall configuration. The quantum dot array was modeled by a periodic superposition of truncated, parabolic potential wells. By adopting the Landau gauge, a single particle Hamiltonian was formulated, and its eigenfunctions were obtained as appropriately symmetrized, magnetic field-dependent Bloch functions. The magnetic field was consistently included in the corresponding Wannier functions, which were approximated by the eigenvectors of an isolated quantum dot in the presence of the external magnetic field, and multiplied by the Peierl's phase.

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