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Point perturbation-invariant solutions of the Schrödinger equation with a magnetic field.
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Let Ω_Λ be a unit cell of the lattice Λ, which is a parallelogram of the form $\{x \in \mathbb{R}^2 : x = t_1\vec{a}_1 + t_2\vec{a}_2, 0 \le t_1, t_2 < 1\}$ spanning a pair of basis vectors of the lattice $(\vec{a}_1, \vec{a}_2)$. We denote the area of Ω_Λ by S_Λ, the number of elements in $\Omega_\Lambda \cap \Gamma$ by k, and the number of quanta of the magnetic flux across a unit cell of Λ by η, $\eta = S_\Lambda \xi$.

The aim of this note is to prove that for any k and for any level ε_l, the validity of the inequality $|\eta| > k$ is a sufficient condition for the existence of Landau-Ando states.

MSC:

35Q40 PDEs in connection with quantum mechanics
81Q10 Selfadjoint operator theory in quantum theory, including spectral analysis
35Q60 PDEs in connection with optics and electromagnetic theory

Keywords:

two-dimensional Schrödinger operator with a magnetic field perturbed by point potential localized at the points of a plane lattice; Schrödinger equation; thermodynamic and transport properties of diordered quasi-two dimensional systems of charge carriers in quantizing magnetic field; Landau-Ando level; Landau-Ando states

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