

Avishai, Y.; Redheffer, R. M.; Band, Y. B.

Electron states in a magnetic field and random impurity potential: Use of the theory of entire functions. (English) [Zbl 0784.30024](#)

J. Phys. A, Math. Gen. 25, No. 13, 3883-3889 (1992).

The paper studies plane electron states subject to a strong magnetic field and a disordered potential given by a sum of delta function terms (impurities). The authors adopt to formulate some general statements about the nature of the eigenstates. As it turns out, the wavefunction contains as a factor an entire function which vanishes on the sites of the impurities. The conclusion is that the existence of solutions at the Landau level energies is related to the growth rate of an entire function (i.e. to its order and type) whose distribution of zeros is given. Thus, "fortunate" (homogeneous) geometrical properties assures the existence. For instance, if the impurities are located on the sites of a square lattice, all facts are found in closed form in term of the Weierstrass σ function.

Reviewer: [E.Lanckau \(Chemnitz\)](#)

MSC:

[30D20](#) Entire functions of one complex variable, general theory

Cited in **9** Documents

Keywords:

[elektromagnetic interaction](#)

Full Text: [DOI](#)