Spectral theory of Schrödinger Operators with periodic magnetic field

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Schrödinger operators with periodic electric fields are at the heart of solid state physics, their spectrum (band structure) is well known. The case of periodic magnetic fields (non-zero magnetic flux) poses new challenges since the operator is not periodic any more; indeed it allows for new spectral phenomena: infinitely degenerate point spectra and Cantor spectra are possible. In this talk we describe criteria on the operator that decide about the appearance of band structure, and we give more detailed information on the spectrum (spectral type, degeneracy).