

DIRAC ELECTRONS IN A PLANAR POTENTIAL
WELL IN A MAGNETIC FIELD

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S u m m a r y

We study the Dirac equation in two spatial dimensions for quasiparticles in a potential well in graphene in a homogeneous magnetic field. It is shown that, at some critical value of the potential strength, the lowest empty energy level crosses a filled negative energy level leading to the instability of the system. The critical potential strength decreases with decrease of a quasiparticle gap and becomes zero in the gapless case. It is argued that the magnetically driven instability of a charged center can be considered as a quantum mechanical counterpart of the magnetic catalysis phenomenon in graphene.