

## Graphene in the magnetic field with constant gradient

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The possibility of the carriers' confinement in graphene by the magnetic field with constant gradient is considered. The obtained results are compared with the classical description of the plasma motion within magnetically neutral sheet in the earth geomagnetic tail. The consideration is carried out within the original strictly gauge invariant approach making use of the additional integral of motion, so called pseudo-momentum. The essential role of the tunneling effect distinguishing quantum case from classical behavior is revealed.

**Keywords:** graphene, magnetic field, tunneling effect, classical and non-relativistic quantum cases.

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