



Spintronics in Graphene

Gonzalo Usaj (usaj@cab.cnea.gov.ar)

Centro Atomico Bariloche e Instituto Balseiro, Bariloche, Argentina

An interesting property of zigzag graphene nanoribbons is the presence of edge states: states that are extended along its edges but localized in the transverse direction.

In this talk I will discuss transport through a potential well (induced by external gates) in a nanoribbon and show that due to the edge states, it displays two-paths-interference oscillations when subject either to a magnetic or a transverse electric field.

This effect does not require the existence of an actual 'hole' in the nanoribbon. Moreover, since in narrow ribbons the edge states are spin polarized, having opposite polarization on opposite sides, such interference effect can be used to rotate the spin of the incident carriers in a controlled way.