

Confinement of Dirac fermions in graphene corral surrounded by steps

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We report a new way of confining Dirac fermions in a local region surrounded by steps like fast horses in a corral. Dirac fermions were found to undergo backscattering from a series of steps and thus they can be confined within a small terrace. The band gap of graphene increases with decreasing confined terrace size due to the quantum confinement effect. These results demonstrate that surrounding steps can be used to confine Dirac fermions in graphene corral and engineer the energy gap, which will be a key technology in future nano-optoelectronics.