

Graphene quantum circuits

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Graphene quantum dots and constrictions have been fabricated by mechanical exfoliation of graphene followed by electron beam lithography and dry etching. The single layer quality of graphene has been checked by Raman spectroscopy. The electron hole-crossover can be investigated by linear transport experiments as well as using non-linear effects in three-terminal junctions. A variety of nanostructures such as graphene constrictions, graphene quantum dots and graphene rings have been realized. Of particular interest is the electron hole crossover in graphene quantum dots, spin states as well as the electronic transport through graphene double dots. The goal is to establish the peculiar consequences of the graphene bandstructure with its linear dispersion for the electronic properties of nanostructures.