# Bilocal states in conducting carbon nanostructures

In this seminar I would like to present some of the interesting physical properties of honeycomb carbon nanostructures. In particular, I will show the nature and possible observable consequences of singular one-electron state that appears when strong defects are introduced in the metallic family of graphene systems. This state, called "bilocal state", is unique, normalizable, and features a wave function equally distributed around two separated defects. Furthermore, the magnetic properties of the bilocal state have been studied by means of first principles and it does not present antiferromagnetic order at any distance. Then, the intrinsic spins couple ferromagnetically and consequently he exchange coupling between the magnetic moments is anomalous. This peculiarity can be used for the robust transmission of magnetic information at large distances employing a carbon nanotube device.
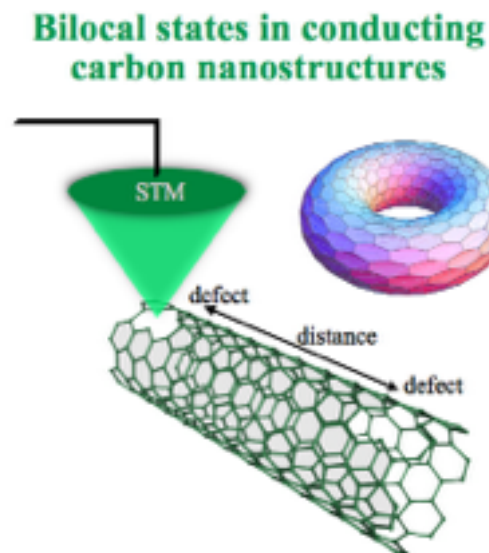
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