MACHIDA LAB.

[Electrons in nano]

Center for Photonics Electronics Convergence

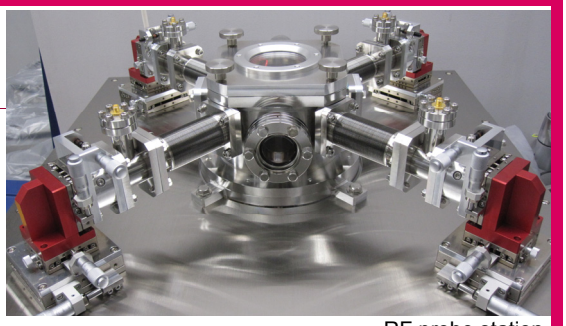
http://qhe.iis.u-tokyo.ac.jp

Department of applied physics
School of Engineering

Semiconductor quantum spintronics

Electrons in nano-structure

The electrons in the nano-device exhibit very different behavior. By combining material science (graphene, semiconductor, oxide), nano-fabrication, and low temperature (~10 mK) measurement, we explore the science and the engineering of quantum transport phenomena.

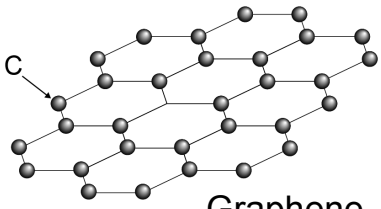


RF probe station

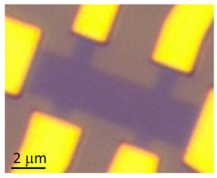
EB lithography system

Graphene

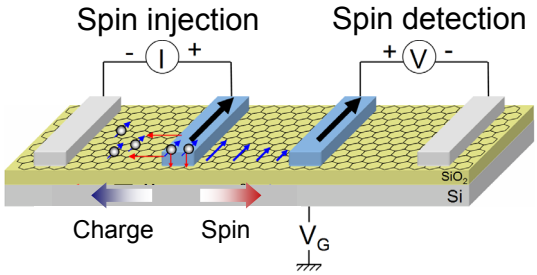
Quantum transport in Dirac fermion.



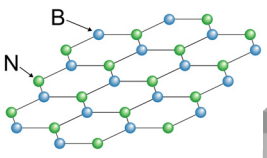
Graphene



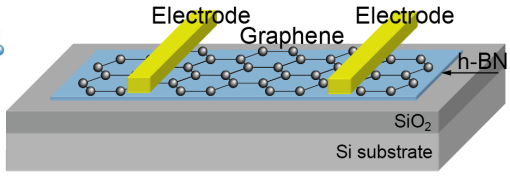
Graphene spintronics



High mobility graphene/h-BN toward room temperature ballistic transport



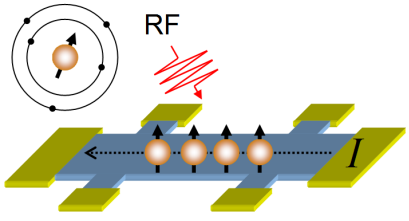
h-Boron Nitride



Nuclear spins in semiconductor

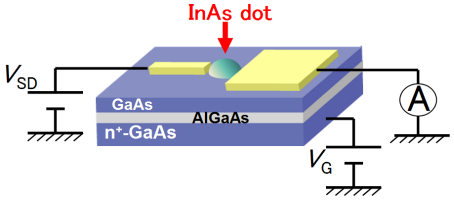
Quantum information processing with nuclear spins in semiconductor.

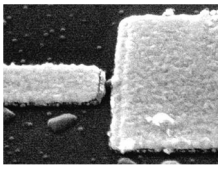
nuclear spin

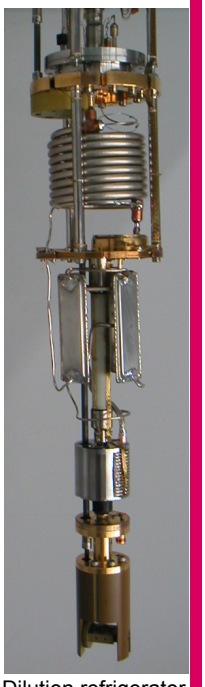


Quantum dot SET

Single electron transistor based on nanogap electrode and self-assembled InAs quantum dot (QD).







10 mK Dilution refrigerator