

Physics of strongly-coupled dopant-atoms in nanodevices

Daniel Moraru, author

Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=9999920522022&lokasi=lokal>

Abstrak

In silicon nanoscale transistors, dopant atoms can significantly affect the transport characteristics, in particular at low temperatures. Investigation of coupling between neighboring dopants in such devices is essential in defining the properties for transport. In this work, we present an overview of different regimes of inter-dopant coupling, controlled by doping concentration and a selective doping process. Tunneling-transport spectroscopy can reveal the fundamental physics of isolated dopants in comparison with strongly-coupled dopants. In addition, observations of surface potential for Si nano-transistors can provide direct access to understanding the behavior of coupled dopants.