

Quantum Semiconductor Electronics

Department of Electronic Engineering and Information Systems

Quantum nanophysics and its device applications

Various intriguing physics shows up in quantum nanostructures owing to size quantization and electron-electron interaction effects. We investigate novel physics in such quantum nanostructures and explore their device applications.

Carrier dynamics and device applications of quantum nanostructures in the THz range
Physics and applications of single quantum dot transistors
Nanoscience for single molecular transistors
Molecular beam epitaxy of semiconductor quantum structures and nanofabrication technologies



Bloch oscillation in semiconductor superlattices and its application







Crystal growth of quantum nanostructures by molecular beam epitaxy



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