Towards Transfer Electron RF Oscillations in van der Waals Heterostructure

Deji Akinwande

This presentation explores the prospect of transferred electron oscillations (TEOs) in novel two-dimensional (2D) heterostructures. Unlike the conventional Gunn effect in bulk III-V semiconductors, which relies on intravalley scattering to create a negative differential mobility, we focus on a distinct TEO mechanism driven by intervalley scattering across the heterostructure interface. We investigate how the unique electronic band structure in 2D layered materials can enable these oscillations potentially in the sub-THz spectrum.