



Seminar/Talk

Tunneling through a sliding ferroelectric

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Host: Hryhoriy Polshyn

Recently discovered sliding ferroelectrics offer a new route for fabricating ultra-thin ferroelectric devices utilizing van der Waals materials. By controlling the angular alignment between adjacent layers, dielectric monolayers can be assembled into ferroelectric bilayers, unencumbered by epitaxial constraints and free from dangling bonds that can contribute to electric depolarization. These exceptional structural properties allow sliding ferroelectric layers to be incorporated with other electrically tunable van der Waals materials to construct heterostructures with unique device functionalities. In this talk, I will present a novel method of electrically detecting ferroelectric polarization by electrostatically doping a tunnel junction where the electrodes are monolayer graphene and the barrier is sliding ferroelectric parallel bilayer boron nitride. By considering contributions from elastic and phonon-assisted, inelastic electron tunneling, I will also discuss a theoretical model that captures the dependence of the tunneling conductance with bias, charge density, and polarization direction.

Monday, November 24, 2025 01:30pm - 02:30pm

Office Bldg West / Ground floor / Heinzel Seminar Room (I21.EG.101)



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