



School of Nano Science



IPM Condensed Matter &
Statistical Physics Group

Weekly Seminar

Low-loss two-dimensional plasmon modes in antimonene

Invited speaker: *Dr. Zahra Torbatian*

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Abstract:

The effects of spin-orbit (SOC) and electron-phonon coupling on the collective excitation of doped monolayer Sb₂ are investigated using density functional and many-body perturbation theories. The spin-orbit coupling is exclusively important for the monolayer Sb₂ and it leads to the modification of the electronic band structure. In particular, plasmon modes of monolayer Sb₂ are quite sensitive to the SOC and are characterized by very low damping rates, owing to small electron-phonon scatterings. Our results show how plasmons in antimonene are significantly less damped compared to monolayer graphene when plasmon energies are larger than 0.2 eV due to smaller plasmon-phonon coupling in the former material.

Wednesday, 31 Ordibehesht 1399 (May 20, 2020), 14:00-15:00

Virtual Seminar Room of IPM