NEW YORK CITY COLLEGE OF TECHNOLOGY
Physics Department
Center for Theoretical Physics

2D materials in the ultraclean limit: basic science and applications

Presented by:

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Abstract

Two-dimensional materials offer a wide range of outstanding properties but are highly sensitive to disorder from the environment. We have developed a 'van der Waals transfer' technique to encapsulate graphene within crystalline h-BN with nearly perfect interfaces, and an 'edge contact' technique to achieve electrical contact to the encapsulated channel. Using these and related techniques, we can study 2D materials and applications in the ultraclean limit. This talk will summarize recent results in four areas: [1] Demonstration of negative refraction at graphene p-n junctions; [2] Tunable interactions and evidence for exciton condensation in double-layer heterostructures of bilayer graphene; [3] graphene light emitters; and [4] approaching the intrinsic photoluminescence linewidth in 2D semiconductors.

Light refreshments will be served.