

物理学教室

物性コロキウム

日時：2016年2月12日（金）16:20-17:50

場所：理学研究科合同B棟721号室（721, Science complex B）

講師：Pilkyung Moon (New York University Shanghai)

題目：Moiré Interference of Atomic Arrangement

概要：

When repetitive structures are overlaid against each other, a new superimposed moiré pattern emerges and is observed in various macroscopic phenomena. Recent discovery of atomically thin planar crystalline lattices, such as graphene, hBN, and MoS₂, enabled the fabrication of artificial layered-structures. In case the lattice periods do not coincide between the layers, the moiré interference between the lattices makes a new class of superlattice where the influence of the exceptionally long-period interlayer interaction is crucial to determine its electronic structures.

In this talk, I will first discuss the impact of moiré superlattice formation for graphene systems and for hybrid layered-structures, and show that their electronic and optical properties are significantly altered if compared with those of the pristine graphene. I will show that this kind of superlattice is the first example of crystalline solids of which material properties are mainly governed by the moiré interference of atomic arrangement rather than the arrangement itself. Then, I will show that the moiré superlattice affords a unique opportunity to study the fractal phenomenon, aka Hofstadter's butterfly, by using crystalline solids. Finally, I will show that the theoretical model on general moiré superlattices provides a unique opportunity to rigorously investigate the electronic structures of one-dimensional moiré structures such as multi-walled carbon nanotubes.

連絡先：越野 幹人（795-6439）

☆ 16:05 よりコーヒー、紅茶、お菓子を用意します。カップを持ってお集まり下さい。

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