



复旦大学物理系物质科学报告

Physics Department Colloquium

Graphene and Beyond: New Physics in Atomically Thin Crystals

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Abstract: The discovery of graphene nearly 10 years ago has changed the way we look at electronic materials. It is now common, for many different compounds, to be able to produce high-quality layers that are only one (or few) atom(s) (or unit cells) thick. These layers are truly new electronic crystalline systems, with well-defined properties that differ drastically from those of their bulk parent compounds, and that in general depend strongly on thickness. The investigation of these 2D crystalline materials is now thriving, with new compounds appearing on the scene, and with an increasing amount of work starting to focus on the realization of atomic heterostructures. Quite in general, both in individual materials and in heterostructures, these systems are a playground where new interesting physics can be studied. In this talk I will discuss two examples. The first is the case of now established bilayer graphene. There, thanks to a new technique that we have developed to realize high quality multi-terminal suspended devices, we have been able to observe new interesting phenomena, and specifically the occurrence of even-denominator fractional quantum Hall effect at a filling factor of $1/2$. The second is the case of transition metal dichalcogenides, and more specifically of WS₂, for which I will discuss our work on electronic and opto-electronic processes in ionic-liquid gated field-effect transistors.

Time: 2:00 pm, Tuesday, 2014.6.17

Location: Physics Building, Room 221B

(Cookies and coffee are served from 1:30 pm)