MAR17-2016-020536

Abstract for an Invited Paper
for the MAR17 Meeting of
the American Physical Society

**Electronic properties of two-dimensional materials beyond graphene**

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Two-dimensional (2D) atomic crystals, best exemplified by graphene, have emerged as a new class of material that may impact future science and technology. The reduced dimensionality in these 2D crystals often leads to novel material properties that are vastly different from that in the bulk. In this talk I will illustrate this scheme with two 2D materials that we found particularly interesting – black phosphorus and 1T-$TaS_2$. These two layered materials have vastly different properties. Black phosphorus is a 2D semiconductor, and its superior material quality has recently enabled us to observe the quantum Hall effect. 1T-$TaS_2$, on the other hand, is a metal with a rich set of charge density wave phases. We explore their electronic properties while the doping and dimensionality of the 2D systems are modulated.