Contribution ID: **429** Type: **Talk**

【651】Gate Induced Superconductivity in Transition Metal Dichalcogenides

Thursday 24 August 2017 14:00 (30 minutes)

In this talk I will present an overview of our work on gate induced superconductivity in transition metal dichalcogenides. After a short introduction about the technique of ionic liquid gating, I will discuss our observation of a gate-induced superconducting state in MoS2 that persists even when the thickness of the material is reduced to an individual monolayer. I will summarize the key observation concerning the evolution of the superconducting properties with thickness, which are not fully understood at the moment. In the second part of the talk I will concentrate on very recent tunneling spectroscopy experiments that have allowed us to directly probe the superconducting gap as a function of carrier density. In agreement with expectations for an Ising superconducting state, we find that the density of states is not affected by applying in-plane magnetic fields as large as 15 T. We also discuss the indication given by tunneling spectroscopy as to the microscopic nature of the superconducting state and show that many of the observations point to a so-called s+/- state characteristic of two-band superconductivity due to repulsive interactions (analogous to what is considered to be the state in Fe-based pnictides superconductors).

Work done in collaborations with D. Costanzo, H. Zhang, A. Reddy, S. Jo, and H. Berger

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