复旦大学物理系物质科学报告

Physics Department Colloquium

Finding New Quantum Materials

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Abstract: The goal of our research program in solid state chemistry is to find new materials that will be of interest to experimental and theoretical condensed matter physicists. Our method for finding new materials is to think about how the chemistry and structures of materials at the level of atomic orbitals, bonding, and crystal structure geometry might determine the electronic and magnetic properties of matter and then try to see if we can make materials that work from both perspectives – the chemical real space view and the physical k space view. This process would be easier if there was a way to proceed in a straightforward fashion from predicting the stability of an unknown non-molecular solid, predicting what its properties would be, and then making and testing it, but unfortunately that is not (yet) reliably the case. Talking with experimental and theoretical physicists teaches us about current issues in the electronic and magnetic properties of matter that might be addressed through the introduction of new quantum materials, and our chemistry background teaches us how to think about crystal structure and bonding; our work is about putting it together to get new materials of interest. In this talk I will describe some of our recent results in several new materials areas, from new superconductors and geometrically frustrated magnets to Topological Insulators and Dirac and Weyl Semimetals.

Time：2:00pm, Tuesday, June 13, 2017

Location：Physics Building, Room 221B

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