

## **2005 Dirac Lecture by Patrick A. Lee**

"Dirac spectrum in condensed matter physics"

### **Abstract**

One of P. A. M. Dirac's crowning achievements is the discovery of the Dirac equation with its unique spectrum.

I will discuss two recent examples where the Dirac spectrum plays a prominent role in condensed matter physics. The first is the nodal quasi-particles in d wave superconductors, which give rise to a universal thermal conductivity as measured experimentally. The second has to do with the new phenomenon of "fractionalization". I will show how the Dirac fermion coupled to a gauge field emerge as low energy excitations of a simple rotor model.