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**Transport Signatures of Dirac Composite Fermions in the 1/2-filled Landau level** MAKSYM SERBYN, ANDREW C. POTTER, ASHVIN VISHWANATH, Univ of California - Berkeley — The half-filled state plays a special role among the variety of different fractional quantum Hall effect states. Halperin, Lee, and Read (HLR) predicted the existence of compressible state, where gapless excitations consists of electrons bound to a pair of vortices with emergent Fermi surface. There exists ample experimental evidence for this emergent Fermi surface, despite the presence of the strong magnetic field. However, the role of particle hole symmetry of the half-filled Landau level has remained a puzzle. Recently, an alternative, explicitly particle-hole symmetric state was proposed, where composite fermions fill a single Dirac-cone, analogous to the surface state of a topological insulator. These composite Dirac fermions have a quantized $\pi$ Berry phase due to their spin-1/2, their electric dipole moment, locked to their momentum. In this talk I will consider the experimental probes that can distinguish between HLR and composite Dirac fermions. In particular, I will address the signatures of particle-hole symmetry and Berry phase in the thermoelectric response. In addition, I will discuss other transport experiments which can probe the Fermi surface topology.

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