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Abstract for an Invited Paper
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Particle-hole symmetry and the Dirac composite fermion¹

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Composite fermion is a central notion in quantum Hall physics. For a long time, field theories of the composite fermion suffers from the lack of particle-hole symmetry, an exact symmetry of the lowest Landau level. I will describe how recent theoretical ideas have lead to a new understanding of the physics of the half-filled Landau level. According to the new picture, the composite fermion at half filling is a Dirac particle with a nontrivial π Berry phase around the Fermi surface. Consequences of the new proposal are outlined.

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