Emergent Dissipation in the $\nu = 1$ Quantum Hall Bilayer

GANPATHY MURTHY, University of Kentucky, HERBERT FERTIG, Indiana University

Disorder is known to be central to the $\nu = 1$ bilayer [1]. Building on our previous study of the bilayer $\nu = 1$ system in a periodic potential [2] to capture the nonperturbative effects of disorder, we construct a $T = 0$ effective theory, in which the $XY$ angle is coupled to an emergent Ising spin. We uncover a $z = 2$ quantum phase transition with emergent dissipation. Calculations of the interlayer tunnelling conductance and counterflow conductivity will be presented.


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