Abstract Submitted
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Microscopic Disorder-Based model for non-Abelian Quasi-Particles in $\nu = 5/2$ FQH states[1] GILAD BEN-SHACH, CHRIS R. LAUMANN, AMIR YACOBY, BERTRAND I. HALPERIN, Harvard University — The detection of non-Abelian quasiparticles remains an outstanding experimental problem in the $\nu = \frac{5}{2}$ fractional quantum Hall (FQH) state. The presence of non-Abelian statistics would lead to additonal low energy states in the system, and hence an additional low-temperature entropy. One approach to test for non-Abelian quasiparticle statistics uses thermodynamic measurements to detect this entropy contribution [1,2]. We present a microscopic model for quasiparticles in the $\nu = \frac{5}{2}$ FQH state with a disorder potential that fluctuates on the order of several magnetic lengths, and attempt to determine the feasibility of the experiments proposed in [1], based on local probe measurements of incompressibility [3].

[1] Cooper, N.R., Stern, A. PRL. **102**, 176807 (2009).
[2] Yang, K., Halperin, B.I. PRB **79**, 115317 (2009).
[3] Venkatachalam, V., Yacoby, A., Pfeiffer, L., West, K. Nature **469**, 185 (2011).

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