

Abstract Submitted
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Quasiparticles Charge in Hole-States of the FQHE MOTY HEIBLUM, MITALI BANERJEE, VLADIMIR UMANSKY, Braun Center for Sub-Micron Research, Dept. of Condensed Matter Physics, Weizmann Institute of Science, Rehovot, Israel 76100 — Current and energy flow in fractional hole-states of the first Landau level; namely, with filling ν in the range $1/2 < \nu < 1$, is much more complicated than in the particle-states (Laughlin's, $1/2 > \nu > 0$). In the hole-states topological counter-propagating charge and/or neutral edge-modes coexist, moving charge and energy downstream as well as upstream. While their thermal conductance [1] and the proliferation of upstream neutral modes were recently reported [2,3], their partitioned quasiparticle charge was studied only in $\nu = 2/3$ [3]. Studying the main hole-states $\nu = 2/3, 3/5$, and $4/7$, we found a universal behavior. The 'apparent partitioned charge' (by a QPC) was always $e^* = \nu e$, as deduced from shot-noise measurements. The surprising part was that the Fano factor was not due to charge partitioning; but was directly related to the fragmentation of upstream neutral modes to particle-hole pairs. The fragmentation led to current fluctuations with the observed, quantized, Fano factor [3]. [1] M. Banerjee et al., To be published. [2] H. Inoue et al., Nat. Comm. 5, 4067 (2014). [3] R. Sabo et al., arXiv:1603.06908.

Braun Center for Sub-Micron Research, Dept. of Condensed Matter Physics, Weizmann Institute of Science, Rehovot, Israel

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