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**Do composite fermions satisfy Luttinger's area rule?**[1]

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While an ordinary Fermi sea is perturbatively robust to interactions, the paradigmatic composite-fermion Fermi sea [1] arises as a non-perturbative consequence of emergent gauge fields in a system where there was no Fermi sea to begin with. A mean-field picture suggests two Fermi seas, of composite fermions made from electrons or holes in the lowest Landau level, which occupy different areas away from half filling and thus appear to represent distinct states. We show [2] that in the microscopic theory of composite fermions, which satisfies particle-hole symmetry in the lowest Landau level to an excellent degree, the Fermi wave vectors at filling factors $\nu$ and $1-\nu$ are the same, and are generally consistent with the experimental findings of Kamburov *et al.* [3]. Our calculations [2] suggest that the area of the CF Fermi sea may slightly violate the Luttinger area rule. We further determine the area of the spin unpolarized composite-fermion Fermi sea, for which the Fermi seas at $\nu$ and $1-\nu$ are not related by particle hole symmetry. [1] B.I. Halperin, P.A. Lee, N. Read, PRB 47, 7312 (1993). [2] A. C. Balram, C. Tőke, J. K. Jain, Phys. Rev. Lett. 115, 186805 (2015). [3] D. Kamburov *et al.* Phys. Rev. Lett. **113**, 196801 (2014).

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