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Off-diagonal long-range order in the fractional quantum Hall effect G.S. JEON, M.R. PETERSON, J.K. JAIN, Pennsylvania State University — It is generally accepted that the fundamental physics of the fractional quantum Hall effect lies in the topological binding of quantized vortices and electrons. From a microscopic point of view, however, the non-Pauli vortices are not strictly bound to electrons in realistic ground state wave functions. We study the Girvin-MacDonald off-diagonal long-range order at Landau level fillings $\nu = 1/m$ (m odd) for bosonic wave functions obtained from fermionic fractional Hall wave functions by a singular gauge transformation. In order to test the robustness of the concept, we work with accurate representations of the Coulomb ground state, constructed using the framework of the composite-fermion theory, and find strong evidence that the exponent describing its long-distance algebraic decay has a universal value $m/2$ independent of the form of the wave function. We interpret this to mean that the topological notion of electron-vortex binding remains generally well defined as a long-distance property.

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