

Théorie conforme des champs et systèmes quantiques à plusieurs corps
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Conformal field theory and quantum many-body physics
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W-Infinity Symmetry in the Quantum Hall Effect

I review the description of quantum incompressible fluids by the W-infinity symmetry. I discuss how it encompasses the conformal symmetry of edge excitations and predicts specific theories corresponding to the observed Jain states. Next, I show how it extends to the non-conformal bulk. Edge and bulk excitations are characterized by different sizes, energies, and momenta within the disk geometry. In particular, bulk quantities have a finite limit for large droplets. I present analytic results for the radial shape of excitations, the edge reconstruction phenomenon, and the spectrum of density fluctuations.