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Title: Fractional quantum Hall effect in systems with band mass anisotropy

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We investigate the prospects for fractional quantum Hall effect (FQHE) in systems with band mass anisotropy. Traditionally, in experiment and theory, FQHE has been studied in systems characterized by an isotropic mass tensor and under the assumption of rotational invariance. Using exact diagonalization calculations with periodic boundary conditions, we explicitly demonstrate that FQHE survives the breakdown of rotational invariance by mass anisotropy terms. Model FQH wavefunctions, such as the Laughlin and Moore-Read states, are shown to accommodate the changes of the metric defining the mass tensor. In these cases the anisotropy parameter becomes a hidden degree of freedom that can fluctuate and optimize their overlap with the ground state of Coulomb interaction. While incompressible states in the lowest Landau level are robust to variation in anisotropy, in $n=1$ Landau level sufficiently large values of mass anisotropy drive the transitions between incompressible liquids and compressible states with charge density wave (CDW) ordering. In $n\geq 2$ Landau levels, mass anisotropy selects and enhances the stripe with compatible wave vectors at $\nu=1/3$ and $\nu=1/2$ fillings.