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Spectral properties of center-of-mass conserving two-body Hamiltonians[1] AMILA WEERASINGHE, TAHEREH MAZAHERI, ALEXANDER SEIDEL, Washington University in St. Louis — We study the low energy spectral properties of positive center-of-mass conserving two-body Hamiltonians as they arise in models of fractional quantum Hall states. We explore what general constraints can be obtained for such interactions, both in the presence and absence of particle-hole symmetry. We find general bounds that constrain the evolution of the ground state energy with particle number, and in particular constrain the chemical potential at T = 0. Special attention is given to Hamiltonians with zero modes, in which case similar bounds on the first excited state are also obtained, using a duality property. In this case, in particular an upper bound on the charge gap is also obtained.

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