

Abstract Submitted
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Interaction induced Landau level mixing in the fractional quantum Hall regime¹ INTI SODEMANN, ALLAN MACDONALD, Department of Physics, University of Texas at Austin — We study Landau Level mixing in parabolic bands perturbatively to second order in the ratio of interaction to cyclotron energy, for the lowest ($N = 0$) and first excited ($N = 1$) Landau levels. The mixing is accounted for by constructing an effective Hamiltonian which includes two body and three body interactions. Our study builds upon two previous treatments [1,2], using as a stepping stone the observation that the effective Hamiltonian is fully determined by the 2 and 3 body problems. For the $N = 0$ problem we provide a compact and transparent derivation of the effective Hamiltonian using first quantization which captures a class of virtual processes omitted in earlier calculations of Landau-level mixing corrected Haldane pseudo-potentials. We will comment on potential application of our results for numerical studies.

[1] G. Murthy and R. Shankar, *PRB* **65**, 245309 (2002)

[2] W. Bishara and C. Nayak, *PRB* **80**, 121302 (2009).

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