Winding Numbers in Rotating Bose Gases ALEXIS G. MORRIS, University of Calgary, DAVID L. FEDER, University of Calgary — The exact ground states of zero-temperature rotating Bose gases confined in quasi-two-dimensional harmonic traps are investigated numerically, for small numbers of alkali atoms. As the rotation frequency increases, the interacting Bose gas undergoes a series of transitions from one quantum Hall state to another. By tracking the change in ground state energy with an applied phase twist, we are able to calculate the winding (Chern) number characterizing the topological nature of the various bosonic quantum Hall states.

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