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Using custom potentials to access quantum Hall states in rotating Bose gases ALEXIS G. MORRIS, DAVID L. FEDER, University of Calgary — The exact ground states of zero-temperature rotating Bose gases confined in quasi-two-dimensional harmonic traps are studied 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. We have investigated the possibility of facilitating access to specific quantum Hall states through the addition of customized potentials to the existing trapping potential. For the right choice of potential, we show that creation of predetermined quantum Hall states in rotating Bose gases should be possible using current experimental setups. (Research supported by NSERC, iCORE and CFI)

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