Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Composite fermion basis for two-component Bose gases[1] MARIUS MEYER, OLA LIABOTRO, University of Oslo — The composite fermion (CF) construction is known to produce wave functions that are not necessarily orthogonal, or even linearly independent, after projection. While usually not a practical issue in the quantum Hall regime, we have previously shown that it presents a technical challenge for rotating Bose gases with low angular momentum. These are systems where the CF approach yield surprisingly good approximations to the exact eigenstates of weak short-range interactions, and so solving the problem of linearly dependent wave functions is of interest. It can also be useful for studying CF excitations for fermions. Here we present several ways of constructing a basis for the space of "simple CF states" for two-component rotating Bose gases in the lowest Landau level, and prove that they all give a basis. Using the basis, we study the structure of the lowest-lying state using so-called restricted wave functions. We also examine the scaling of the overlap between the exact and CF wave functions at the maximal possible angular momentum for simple states.

[1]This work was financially supported by the Research Council of Norway.

Marius Meyer
University of Oslo

Date submitted: 11 Nov 2016 Electronic form version 1.4