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**Interlayer CF Pairing in a Symmetric $\nu_T = 1$ Quantum Hall Bilayer** GUNNAR MOLLER, LPTMS Orsay/France, STEVEN H. SIMON, Lucent Technologies, EDWARD REZAYI, California State University Los Angeles — In bilayer quantum Hall systems at filling fractions near $\nu = \frac{1}{2} + \frac{1}{2}$, as the spacing $d$ between the layers is continuously decreased, intra-layer correlations must be replaced by inter-layer correlations, and the composite fermion (CF) Fermi seas at large $d$ must eventually be replaced by a composite boson (CB) condensate at small $d$. In recent work [1], trial wave functions were constructed that can describe how composite fermion-like intra-layer correlations can be continuously replaced by 111-like inter-layer correlations using a picture of two classes of quasi particles: composite bosons and composite fermions. Here, we present how to extend this approach both qualitatively and quantitatively, introducing a new way of writing the previously introduced wave functions, which allows for the introduction of composite fermion inter-layer positive p-wave pairing. These wave functions depend on a small number of variational parameters related to the momentum distribution of $(\mathbf{k}, \uparrow; -\mathbf{k}, \downarrow)$ CF pairs. Comparison of energies and correlation functions to results from exact diagonalizations for small systems shows close to perfect agreement, thus giving evidence for inter layer CF pairing in QH bilayer systems [2]. This work was supported by the DOE.
[1] S. H. Simon, E. H. Rezayi, and M. V. Milovanovic, Phys.Rev.Lett. **91**, 046803 (2003). [2] G. Möller, S. H. Simon, to be published, G. Möller, S. H. Simon, E. H. Rezayi, to be published.

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