Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Pair Structure and the Pairing Interaction in a Bilayer Hubbard model THOMAS MAIER, Oak Ridge National Laboratory, DOUGLAS SCALAPINO, University of California, Santa Barbara — The bilayer Hubbard model with an intra-layer hopping t and an inter-layer hopping $t_\perp$ provides an interesting testing ground for several aspects of what has been called unconventional superconductivity. One can study the type of pair structures which arise when there are multiple Fermi surfaces. One can also examine the pairing for a system in which the structure of the spin-fluctuation spectral weight can be changed. Using a dynamic cluster quantum Monte Carlo approximation, we find that near half-filling, if the splitting between the bonding and anti-bonding bands $t_\perp/t$ is small, the gap has B_{1g} ($d_{x^2-y^2}$-wave) symmetry but when the splitting becomes larger, A_{1g} ($s^\pm$-wave) pairing is favored. We also find that in the $s^\pm$ pairing region, the pairing is driven by inter-layer spin fluctuations and that T_c is enhanced.

Thomas Maier
Oak Ridge National Laboratory

Date submitted: 10 Nov 2011 Electronic form version 1.4