Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

FFLO vs Bose-Fermi mixture in a two channel model of a 1D Fermi gas: a 3-body study[1] STEFAN BAUR, Laboratory for Atomic and Solid State Physics, Cornell University, JOHN SHUMWAY, Department of Physics, Arizona State University and Laboratory for Atomic and Solid State Physics, Cornell University, ERICH MUELLER, Laboratory for Atomic and Solid State Physics, Cornell University — We study three fermions with a 1D two-channel model of a Feshbach resonance in order to gain insight into how the FFLO-like state at small negative scattering lengths evolves into a Bose-Fermi mixutre at small positive scattering lengths. The FFLO state possesses an oscillating superfluid correlation function, while in a Bose-Fermi mixture the correlations are monotonic. This behavior is is already present at the 3-body level. We present an exact study of the 3-body problem, and compare the results to scalable quantum Monte-Carlo calculations.

[1]Supported under ARO Award W911NF-07-1-0464 with funds from the DARPA OLE program.

Stefan Baur
Laboratory for Atomic and Solid State Physics, Cornell University

Date submitted: 21 Jan 2009 Electronic form version 1.4