

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Spin Diffusion in a Cold Fermi Gas Close to Unitarity HUA LI, KEVIN BEDELL, Boston College, JASON JACKIEWICZ, New Mexico State University — We study the transport properties of a normal two component Fermi gas with strong attractive interactions close to the unitary limit. In particular, we compute its spin diffusion coefficient in the extreme low temperature limit. To calculate the spin diffusion coefficient we need the scattering amplitudes. The scattering amplitudes are calculated from the Landau parameters. These parameters are obtained from the local version of the induced interaction model for computing Landau parameters. The leading order finite temperature corrections to the spin diffusion coefficient are also calculated. At temperatures close to the BCS transition temperature, pairing fluctuations are considered in calculating the scattering amplitudes. A minimum is found on the calculated temperature dependent spin diffusion coefficient curve. The position and magnitude of this minimum is sensitive to the Landau parameter F_0^a . Upon choosing a proper value of F_0^a , we are able to present a good match between the theoretical result and the experimental measurement which has a minimum with a value of order \hbar/m being observed at some finite temperature below the Fermi temperature.

Hua Li
Boston College

Date submitted: 31 Oct 2012

Electronic form version 1.4