de Haas van Alphen Effect in Strongly Interacting Systems LARA
THOMPSON, University of British Columbia, P.C.E. STAMP, UBC, PITP — We
present calculations of de Haas van Alphen (dHvA) oscillations for strongly inter-
acting systems, for (1) systems near a quantum phase transition (QPT); and/or (2)
2D and quasi-2D systems. The standard Lifshitz-Kosevich (LK) results are then in-
applicable. Near a QPT, the electronic interaction scale goes to zero, giving strong
corrections to LK. In 2D, LK breaks down entirely in the presence of interactions.
Recently, dHvA oscillations in high Tc systems have been measured, but their form
does not yet rule out non-Fermi liquid behaviour. We calculate the expected mag-
netization response assuming various Fermi reconstruction scenarios. The response
depends crucially on the inter-plane couplings, and we find deviations from LK if
the reconstruction is interaction-driven.

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