Abstract Submitted
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Lifshitz transition with interactions in high magnetic fields: Application to $CeIn_3$[1] PEDRO SCHLOTTMANN, Florida State University — The Néel ordered state of $CeIn_3$ is suppressed by a magnetic field of 61 T at ambient pressure. There is a second transition at ∼45 T, which has been associated with a Lifshitz transition [1,2]. Skin depth measurements [2] indicate that the transition is discontinuous as $T \to 0$. Motivated by this transition we study the effects of Landau quantization and interaction among carriers on a Lifshitz transition. The Landau quantization leads to quasi-one-dimensional behavior for the direction parallel to the field. Repulsive Coulomb interactions give rise to a gas of strongly coupled carriers [3]. The density correlation function is calculated for a special long-ranged potential [4]. It is concluded that in $CeIn_3$ a pocket is being emptied as a function of field in a discontinuous fashion in the ground state. This discontinuity is gradually smeared by the temperature [4] in agreement with the skin depth experiments [2].

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