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Interaction Effects in a High-Mobility Two-Dimensional Electron Gas in a Nonquantizing Magnetic Field TIGRAN SEDRAKYAN, EUGENE MISHCHENKO, MIKHAIL RAIKH, University of Utah — Two dimensional electron gas in a perpendicular nonquantizing magnetic field, B, is considered. We demonstrate [1] that the anomaly in the polarization operator, $\Pi(q)$, near $q = 2k_F$, where k_F is the Fermi momentum, gets smeared with B in a peculiar fashion: slowly decaying modulation, periodic in $(2k_F - q)^{3/2}$, emerges. The period of modulation sets a spatial scale, $p_0^{-1} \propto B^{-2/3}$, which is much smaller than the Larmour radius, but much larger than the de Broglie wavelength. This scale manifests itself, *e.g.,* in lifting the periodicity of the Friedel oscillations, $\delta\rho(r)$ in magnetic field, namely we find that $\delta\rho(r) \propto \sin\left[2k_F r - (p_0 r)^3/12\right]/r^2$. The corrections to the interaction-induced characteristics of the $2D$ gas, such as relaxation rate and the tunnel density of states, coming from the distances $\sim p_0^{-1}$, are shown to be strongly singular (as $B^{1/3}$) in magnetic field.

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