

## **Abstract:**

A cold electron gas fills the lowest Landau level for high enough magnetic fields and for low enough densities. Such a situation is expected to occur for the Malmberg-O'Neil experiment and also for pulsar crusts and atmospheres. Such plasmas behave as a quasi-one-dimensional system and exhibit some peculiarities in their wave structure. We study the dispersion and damping of the low frequencies, i.e., the whistler mode, and the extraordinary mode for zero temperature. The behavior of the whistler mode depends critically on the "filling number"  $F_c = F / \hbar \omega_c$ , where  $F$  is the Fermi energy and  $\omega_c$  is the cyclotron frequency. The one-dimensional character of the system affects the pair excitation spectrum and thus the decay of modes. We find that, in contrast to the three-dimensional situation, the plasma mode and the extraordinary mode remain undamped, while the whistler mode is undamped for all but very high values.