

GPPI Homework Set 3

Due on December 3, 2007

Problem 1. Landau contour for $k < 0$.

What are Landau contours for $k < 0$?

Problem 2. Plasma dielectric constant.

For high-frequency Langmuir waves, Poisson's equation can be written as

$$\nabla \cdot (\epsilon \mathbf{E}) = 0,$$

where ϵ is the plasma dielectric constant. Give an expression of ϵ . You can use either the kinetic theory or the fluid theory.