

Dear Prof. Dr.

We revere your opinion in our manuscript.

Dear Prof. Dr., we hope that, you have some free time to read the rewritten copy.

There, some important modifications have been mode.

The paper has been revised in different stages.

**In our new version manuscript (please see the second paragraph in page 13 )**

Now, using the results (44) and (46) in the condition (41), then the dispersion relation for our problem (unmagnetized quantum plasma layer has been supported by uniform magnetized vacuum one)given by

$$\omega^2 - \frac{k^2}{q_1} \left\{ g - \frac{B_0^2 k_x^2}{k \mu \rho_0(0)} - \frac{\omega_q^2}{k^2} (L_D(q_1^2 - k^2) + q_1) \right\} = 0, \quad (47)$$

Here  $\omega_q^2 = \frac{\hbar^2 k^2}{4L_D^2 m_e m_i}$  and  $q_1 = -\frac{1}{2} \left\{ \frac{1}{L_D} - \sqrt{\frac{1}{L_D^2} + 4k^2 \left( 1 + \frac{g}{L_D(\omega^2 + \omega_q^2)} \right)} \right\}.$

**Now, we will try to simplify this equation at  $\omega_q^2 = 0$**

$$\begin{aligned}
& -\frac{\omega^2}{2} \left\{ \frac{1}{L_D} - \sqrt{\frac{1}{L_D^2} + 4k^2 \left(1 + \frac{g}{L_D(\omega^2)}\right)} \right\} - k^2 \left\{ g - \frac{B_0^2 k_x^2}{k\mu\rho_0(0)} \right\} = 0 \\
& \frac{\omega^2}{2} \left\{ \sqrt{\frac{1}{L_D^2} + 4k^2 \left(1 + \frac{g}{L_D(\omega^2)}\right)} \right\} = \frac{\omega^2}{2L_D} + k^2 \left\{ g - \frac{B_0^2 k_x^2}{k\mu\rho_0(0)} \right\} \\
& \frac{\omega^4}{4} \left\{ \underbrace{\frac{1}{L_D^2}}_1 + 4k^2 \left(1 + \underbrace{\frac{g}{L_D(\omega^2)}}_2\right) \right\} = \underbrace{\frac{\omega^4}{4L_D}}_3 + k^4 \left\{ g - \frac{B_0^2 k_x^2}{k\mu\rho_0(0)} \right\}^2 + \frac{\omega^2 k^2}{L_D} \left\{ \underbrace{g}_4 - \frac{B_0^2 k_x^2}{k\mu\rho_0(0)} \right\}
\end{aligned}$$

Now  $1 = 3$ ,  $2 = 4$ , then

$$k^2 \omega^4 = k^4 \left\{ g - \frac{B_0^2 k_x^2}{k\mu\rho_0(0)} \right\}^2 - \frac{\omega^2 k^2}{L_D} \left\{ \frac{B_0^2 k_x^2}{k\mu\rho_0(0)} \right\}$$

So, if we ignore the quantum effect, then the dispersion relation (47) becomes

$$\omega^4 + \frac{1}{L_D} \left\{ \frac{B_0^2 k_x^2}{k\mu\rho_0(0)} \right\} \omega^2 - k^2 \left\{ g - \frac{B_0^2 k_x^2}{k\mu\rho_0(0)} \right\}^2 = 0, \quad (48)$$

while, if we ignore both quantum and magnetic field effects, we have the Rayleigh-Taylor instability

mode that is given by the classical expression  $\omega = (kg)^{\frac{1}{2}}$  see Eq. (1) ref. (12)

Again, we hope that, you have the chance to read the new version.

Finally, we hope that, the manuscript becomes suitable to publish.

Thanks for your time.