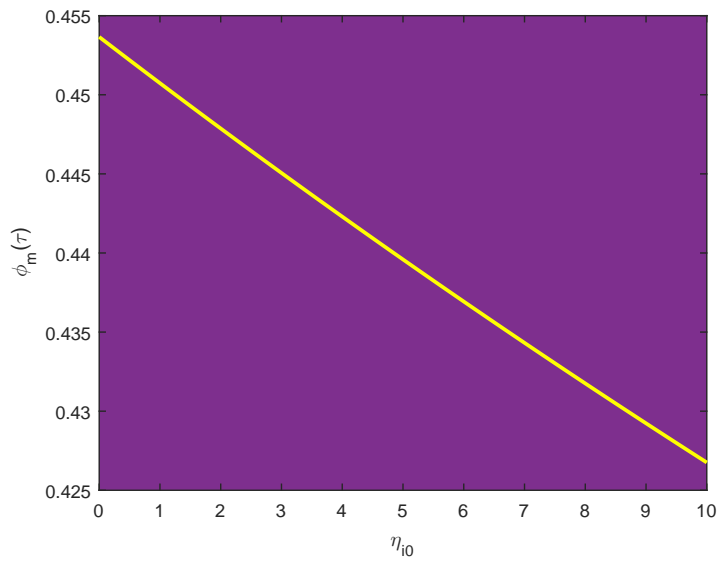
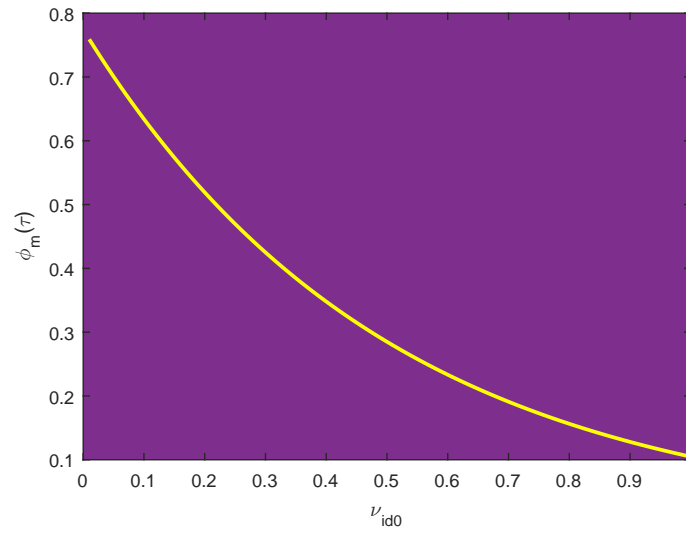


**FIGURE 5.** Variation of amplitude of the solitary wave from equation (25) with respect to  $\tau$  with other parameter same as in Fig. 1.

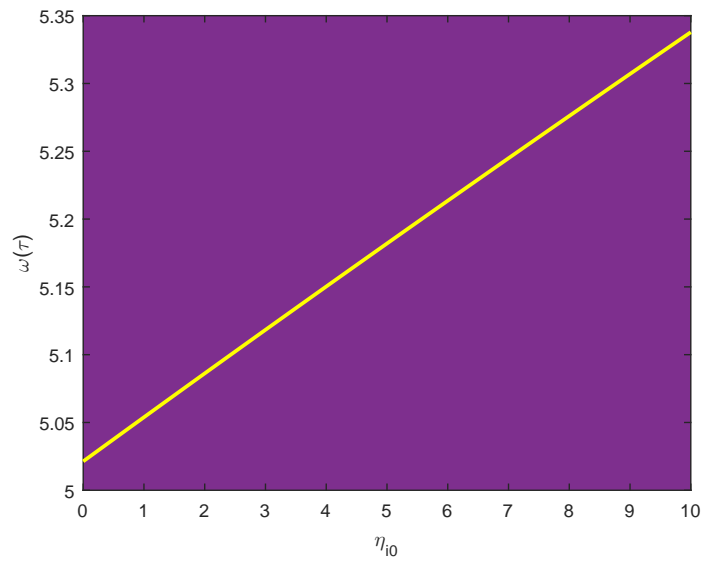


**FIGURE 6.** Variation of amplitude of the solitary wave from equation (25) with respect to  $\eta_{i0}$  with other parameter same as in Fig 1.

the DIASWs does not exist for  $v_{ido} = 0$ . As a consequence the figure does not show any

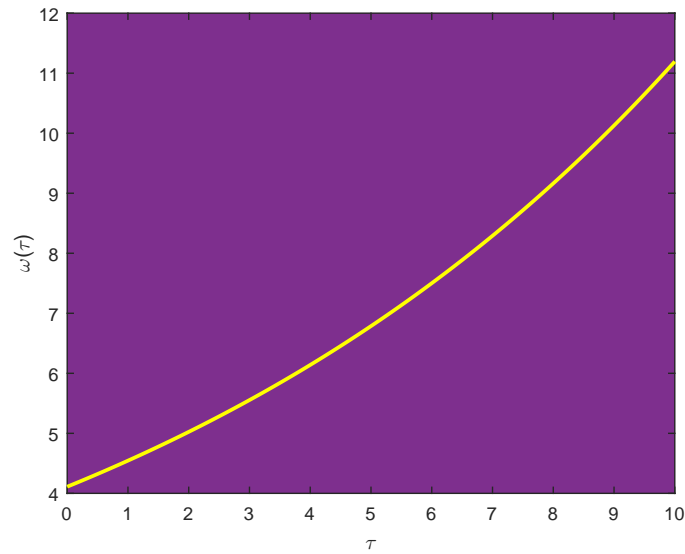


**FIGURE 7.** Variation of amplitude of the solitary wave from equation (25) with respect to  $v_{ido}$  with other parameter same as in Fig 1.



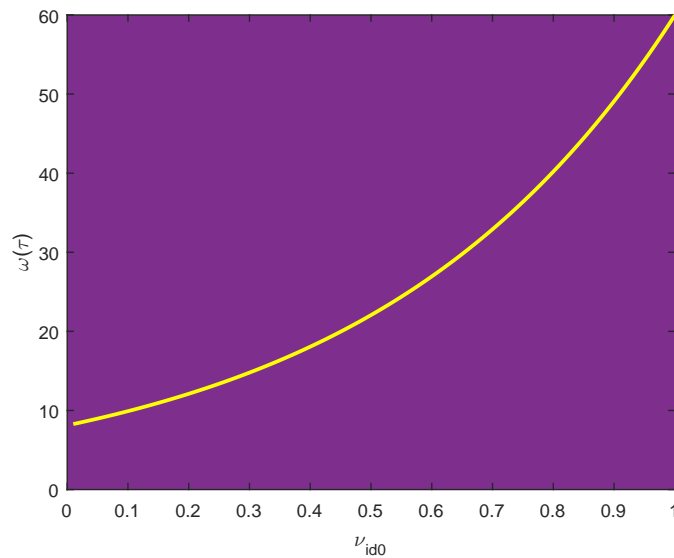
**FIGURE 8.** Variation of width of the solitary wave from equation (25) with respect to  $\eta_{i0}$  with other parameter same as in Fig 1.

amplitude and width of the DIASWs in case of  $v_{ido}=0$ . Thus we get important



**FIGURE 9.** Variation of width of the solitary wave from equation (25) with respect to  $\tau$  with other parameter same as in Fig 1.

information regarding the non linear properties of DIASWsr from quation (25).



**FIGURE 10.** Variation of width of the solitary wave from equation (25) with respect to  $v_{id0}$  with other parameter same as in Fig 1.

## V. Conclusion

In this work, we carried out the analytical solitary wave solution of dust ion acoustic waves using some critical composition of parameters for DMKdVB equation. For this purpose, we assumed a complex plasma model and carried out a numerical analysis of DIASWs. To check how the different plasma parameters affect the DIASWs, we have plotted number of graphs. We applied the RPT technique to obtain MKdVB equation. The DMKdVB equation gives a good estimate of the DIASWs in non linear studies in plasma.

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