

# **Propagation of symmetric and anti-symmetric surface waves in a self-gravitating magnetized dusty space plasma layer**

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The dispersion properties of surface dust ion-acoustic waves in a self-gravitating magnetized dusty space plasma layer with the  $(r, q)$  distribution is investigated. The result shows that the wave frequency of the symmetric mode in the plasma layer decreases with an increase of the wave number. It is also shown that the wave frequency of the symmetric mode decreases with an increase of the spectral index  $r$ . However, the wave frequency of the anti-symmetric mode increases with an increase of the wave number. It is also found that the anti-symmetric mode wave frequency increases with an increase of the spectral index  $r$ . In addition, it is found that the influence of the self-gravitation on the symmetric mode wave frequency decreases with increasing scaled Jeans frequency. Moreover, it is found that the wave frequency of the symmetric mode increases with an increase of the dust charge, however, the anti-symmetric mode shows the opposite behavior.