



## **Role of magnetic field in propagation of Dust-Ion Acoustic (DIA) solitary waves in a multi-species dusty plasma with Cairn's distributed electrons and quantum effect in inertia less electrons**

Samiran Das<sup>1</sup>, Dulal Chandra Das<sup>1,2</sup>

<sup>1</sup> Department of Mathematics, Central Institute of Technology Kokrajhar, BTR, Assam 783370, India

<sup>2</sup> Department of Mathematics, Barnagar College, Sorbhog, Barpeta, Assam 781317, India  
e-mail (speaker): s.das@cit.ac.in

Propagation of Dust-Ion Acoustic (DIA) solitary waves in a multi-species dusty plasma with Cairn's distributed electrons under the influence of quantum effect in inertia less electrons are rigorously discussed. Pseudopotential method is applied to derive the corresponding energy integral for the study of DIA solitary wave. Both compressive and rarefactive and only subsonic solitons of interesting characters are found to exist for this investigation. It is found that Mach number ( $M$ ), nonthermal parameter ( $\beta$ ) and the number of dust charges contained in a dust particle ( $Z_d$ ) drastically effect on the amplitude and width of the solitary waves. Remarkably, the magnetic field ( $B$ ) make significant changes in the amplitude and width of the DIA solitary wave.

### References

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