

P2.3016 Lower hybrid waves excitation by a relativistic electron beam in a magnetized dusty plasma: kinetic theory

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See full abstract here:

<http://ocs.ciemat.es/EPS2019ABS/pdf/P2.3016.pdf>

In the present paper, we study the kinetic theory of instability of electrostatic lower hybrid waves¹ (LHWs) in a dusty plasma containing potassium positive ions (K⁺). A relativistic electron beam (REB) propagating through the plasma containing dust grains, positive potassium ions, and electrons, drives the LHWs to instability through Cerenkov interaction. Analytical expressions and numerical calculations using Vlasov equations² have been carried out for the frequency and the growth rate of LHWs for the existing experimental parameters. It is found that the growth rate of the instability increases with increase in the relative density of the dust grains. In addition to this, the growth rate of the LHW decreases with the increase in the frequency. Our theoretical results are in compliance with some of the experimental results.

1. Ved Prakash, Vijayshri, Suresh C. Sharma, and Ruby Gupta, *Physics of Plasmas* 20, 053701 (2013). 2. C. S. Liu and V. K. Tripathi, *Physics Reports*, 130, 143 (1986).

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