

Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Ion-Acoustic Surface Waves in a Complex Plasma with Lorentzian Distribution¹ MYOUNG-JAE LEE, BK21 Program Division of Advanced Research and Education in Physics, Hanyang University, Seoul 133-791, Korea, GUEN-SIG CHOI, KYU-SUN CHUNG, Electric Probe Applications Laboratory (ePAL), Hanyang University, Seoul 133-791, Korea — The electrostatic modes of dusty ion-acoustic surface waves propagating on the interface between a vacuum and a complex (dusty) plasma are kinetically investigated by using the dispersion relation based on the Vlasov-Maxwell equations. The complex plasma consists of the electron and ion plasmas with Lorentzian distributions and dust particles in the form of $f_d = n_d \delta(r - r_d)$ where r_d indicates the location of dust particles. In the long wavelength limit, the ion-acoustic surface wave in a complex Lorentzian plasma is found to be slower as the non-thermality of electron and ion plasmas increases when the phase velocity is in the range of $v_i \ll \omega/k_x \ll v_e$. The wave is, however, found to be faster as the ratio of ions to electrons increase. Some new results on the ion-acoustic waves in a complex plasma will be given.

¹This work was supported in part by the research fund of Hanyang University (HY-2006-N) and in part by the NRL (National Research Laboratory) Program of KOSEF (Korea Science and Engineering Foundation) under the Korea Ministry of Science and Technology

Myoung-Jae Lee
Department of Physics, Hanyang University, Seoul 133-791, Korea

Date submitted: 21 Jul 2006

Electronic form version 1.4