Abstract Submitted for the DPP09 Meeting of The American Physical Society

Effects of rotating dust grains on the instability of dust-acoustic waves in a complex Lorentzian plasma¹ MYOUNG-JAE LEE, KYU-SUN CHUNG, Hanyang University — Charged non-spherical dust grains can rotate due to the interaction with surrounding plasmas or oscillating electric field. The rotational effect will modify the conventional plasma wave dispersion relations. In this work, the growing of dust-acoustic wave is investigated in the presence of the rotating dust grains in a complex Lorentzian plasma. Full spectrums of the growth rate of the dust-acoustic wave is obtained and the effect of dust grain rotation is discussed. The Lorentzian plasma effect on the growth rate is also analyzed. The growth rate was found to be enhanced by the rotation of dust grains, but suppressed by the Lorentzian plasmas.

¹This research was supported by National R&D Program through the National Research Foundation of Korea (NRF) funded by the Ministry of Education, Science and Technology (Grant No. 20090082669 and No. R11-2008-072-02002-0).

> Myoung-Jae Lee Hanyang University

Date submitted: 20 Jul 2009

Electronic form version 1.4