

Ion-wake field effects on the dust-acoustic surface wave in a semi-bounded Lorentzian complex plasma

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The growth rate of the dust-acoustic surface wave in the semi-bounded complex plasma with an ion streaming passing through the plasma at rest is analytically derived. We have adopted the Lorentzian distribution for electrons to investigate the nonthermal property of plasma on the growth rate. We find that the growth rate of the surface wave increases as the wave number increases and it is always larger than that of bulk wave, especially in the realm of large wave numbers. The nonthermal effect of Lorentzian electrons in the high-energy tail is found to

enhance the growth rate. It is also found that the density and speed of streaming ion would increase the growth rate. The growth rate of surface wave is compared with that of bulk wave for various physical parameters

Biography

Young Dae Jung received his B.S. degree in physics in 1984 from Hanyang University, Seoul, South Korea, and the PhD degree in theoretical physics in 1990 from the University of California, San Diego. After his PhD, he held the National academy of sciences/National research council research fellowship at NASA/Marshall Space Flight Center. Since 1992, he has been at Hanyang University, Ansan, South Korea, where he is Professor of Applied Physics. His research deals with theoretical atomic physics, plasma physics, and astrophysics. At various times, he has been associated with NASA/Marshall Space Flight Center, U.S.A. and National Institute of Fusion Science, Japan. In addition, he held the visiting professorship at National Institute of Fusion Science in 2008. He is a member of the Korean Physical Society and the American Physical Society.

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