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Landau damping of the dust acoustic surface waves in a Lorentzian complex plasma containing elongated and rotating dust grains
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— We investigate the stability of dust acoustic surface waves propagating at the plasma-vacuum interface of semi-infinity Lorentzian plasma containing elongated and rotating dust particles. The dispersive properties of complex plasma are kinetically analyzed by employing Vlasov-Maxwell equations and the specular boundary condition. The result exhibits that the Landau damping rates of the dust acoustic surface wave can be evaluated for various parameters such as the Lorentzian spectral index, rotational frequency of dust particles, etc. It has been found that the high rotational frequency reduces the Landau damping rate in general. For the case of $k_x\lambda_e > 1$ where k_x is the wave number and λ_e the electron Debye length, the damping rate decreases as the wavelength of the wave decreases and vice versa for the case of $k_x\lambda_e << 1$.

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