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Nonthermal and positron effects on the dust acoustic surface wave in a semi-bounded multi-component Lorentzian dusty plasma[1] MYOUNG-JAE LEE, YOUNG-DAE JUNG, Hanyang University — Nonthermal and positron effects on the dust acoustic surface waves propagating at the interface between a multi-component Lorentzian dusty plasma and a vacuum are investigated. The dispersion relation is kinetically derived by employing the specular reflection boundary condition and the dielectric permittivity for dusty plasma containing positrons. We found that there exist two modes of the dust acoustic surface wave; high- and low-frequency modes. We observe that both H- and L-modes are enhanced by the increase of the pair annihilation rate. However, the effects of positron density are duplex depending on the ratio of annihilated positrons. The effects of nonthermal plasmas are also investigated on the H- and L-modes of dust acoustic surface waves. We found that the nonthermal plasmas suppress the frequencies both H- and L-modes.

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