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Ion-acoustic surface waves propagating in a turbulent semi-bounded plasma with quantum recoil effect YOUNG-DAE JUNG, MYOUNG-JAE LEE, Hanyang University — The dispersion relation for the low-frequency ion-acoustic surface waves propagating in a semi-bounded turbulent plasma including the effect of quantum recoils is derived based on the kinetic dielectric permittivity of a quantum plasma. The specular reflection boundary condition for the interface of plasma-vacuum is employed and the transverse truncation method is used to derive the appropriate dispersive property of the surface mode of ion-acoustic waves for the degenerate and non-degenerate electrons. We find that the damping rate and the wave frequency are enhanced by the quantum recoil effect for both non-degenerate and degenerate cases. The quantum recoil effect on the wave propagation is significantly reduced as the wave number becomes small. We find that the diffusional dissipation in the turbulent plasma becomes more important than the quantum recoil for the wave propagation as the wave number is reduced.

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