

Abstract Submitted  
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**Mitigation of runaway electrons by electrostatic wave-particle interaction**<sup>1</sup> HYE LIN KANG, MIN UK LEE, Pohang University of Science and Technology, JEONG-YOUNG JI, Utah State University, GUNSU S. YUN, Pohang University of Science and Technology — Runaway electron (RE) is a kinetic phenomenon that undermines the safe operation of tokamaks. We conduct a numerical study on the mitigation of REs based on a wave-particle interaction scheme. Performing 1D particle-in-cell (PIC) simulations, we demonstrate energy reduction of REs via the inverse Landau damping. The velocity distribution of REs undergoes velocity space diffusion and damping due to the wave while the thermal electrons nearly sustain their initial distribution. Furthermore, the electron holes emerge accompanying a transition from a linear wave-particle interaction to a nonlinear phase. Finally, we discuss the nonlinear effect of the electron hole and phase mixing.

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