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Two features in the numerical modeling of Raman backscattering : boundary condition for an infinite homogeneous system and test particle method for the kinetic effects[1] MIN SUP HUR, KERI, HYYONG SUK, KERI — We investigate two issues in the computational modeling of Raman backscattering in a plasma. The first one is on the effect of boundary condition in the infinite homogeneous Raman backscattering system. It was found that the periodic boundary condition for the electrostatic potential, which is commonly used in an infinite homogeneous plasma, induces a numerical frequency shift of the plasma wave. Though the frequency shift is small (typically one or two percent) for a non-relativistic plasma wave, the Raman backscattering is significantly changed due to its sensitivity to the frequency detuning. A corrected version of boundary condition based on the Ampere's law is presented. Second, we treat the kinetic effects in the Raman backward laser amplification. The envelope-kinetic model of the plasma wave is numerically closed by calculating the kinetic term from test particles. The benchmarking results of the test particle method against the full kinetic simulation are presented.

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