

## Computer experiment of Wave-Particle Interaction Measurement in Space Plasmas

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Spacecraft observation is essentially "one-point measurement", while numerical simulation can reproduce a whole system of physical processes on a computer. By performing particle simulations of plasma wave instabilities and calculating correlation of waves and particles observed at a single point, we examine how well we can infer the characteristics of the whole system by a one-point measurement. We perform various simulation runs with different plasma parameters using one-dimensional electromagnetic particle code (KEMPO1) and calculate inner product of electric field and plasma particles or other moments at a single point. We find good correlation between the measurement and the macroscopic fluctuations of the total simulation region. We make use of the results of the computer experiments in our system design of new instruments 'One-chip Wave Particle Interaction Analyzer (OWPIA)'.