

2次元における大振幅ホイッスラー波の減衰

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Rapid decay of nonlinear whistler waves in two dimensions

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Decay of a nonlinear, short-wavelength, and monochromatic electromagnetic whistler wave in low-beta plasma is investigated by utilizing a two-dimensional (2D) fully relativistic electromagnetic particle-in-cell code. It has been shown that the nonlinear (large-amplitude) parent whistler wave decays through the parametric instability in a one-dimensional (1D) system. The present study shows that there is another channel for decay of the parent whistler wave in 2D which is much faster than in 1D. Detailed analysis of the decay process will be reported.