Figure 1: *Time Evolution of $\phi(1,1)$ and $\phi(1,-1)$, denoted by ϕ_+, for the drift instability using the nonlinear gyrokinetic code with $\theta = 0.002$, $\tau = 100$, $v_{ei} = 0.001$, $\Delta t = 1.09$, and $(k_x, k_y) = 0.842(m,n)$.*
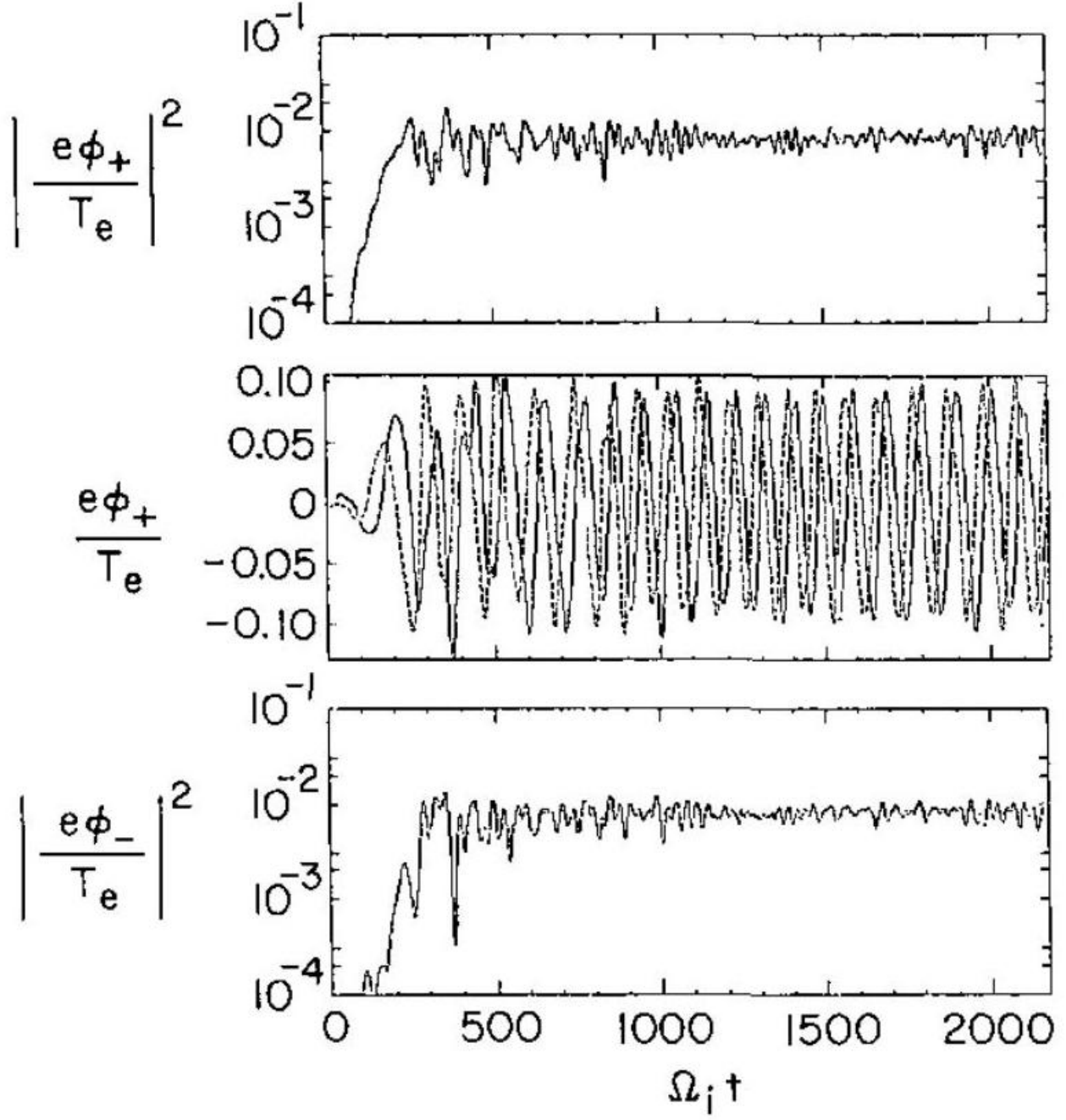
1

Figure 2: *Time evolution of $\phi_{\pm}$ using the linearized- $E_{\parallel}$ algorithm of Section 4.1 for $\theta = 0.002$, $\tau = 100$, $v_{ri} = 0.001$, and $\Delta t = 1.09$.*
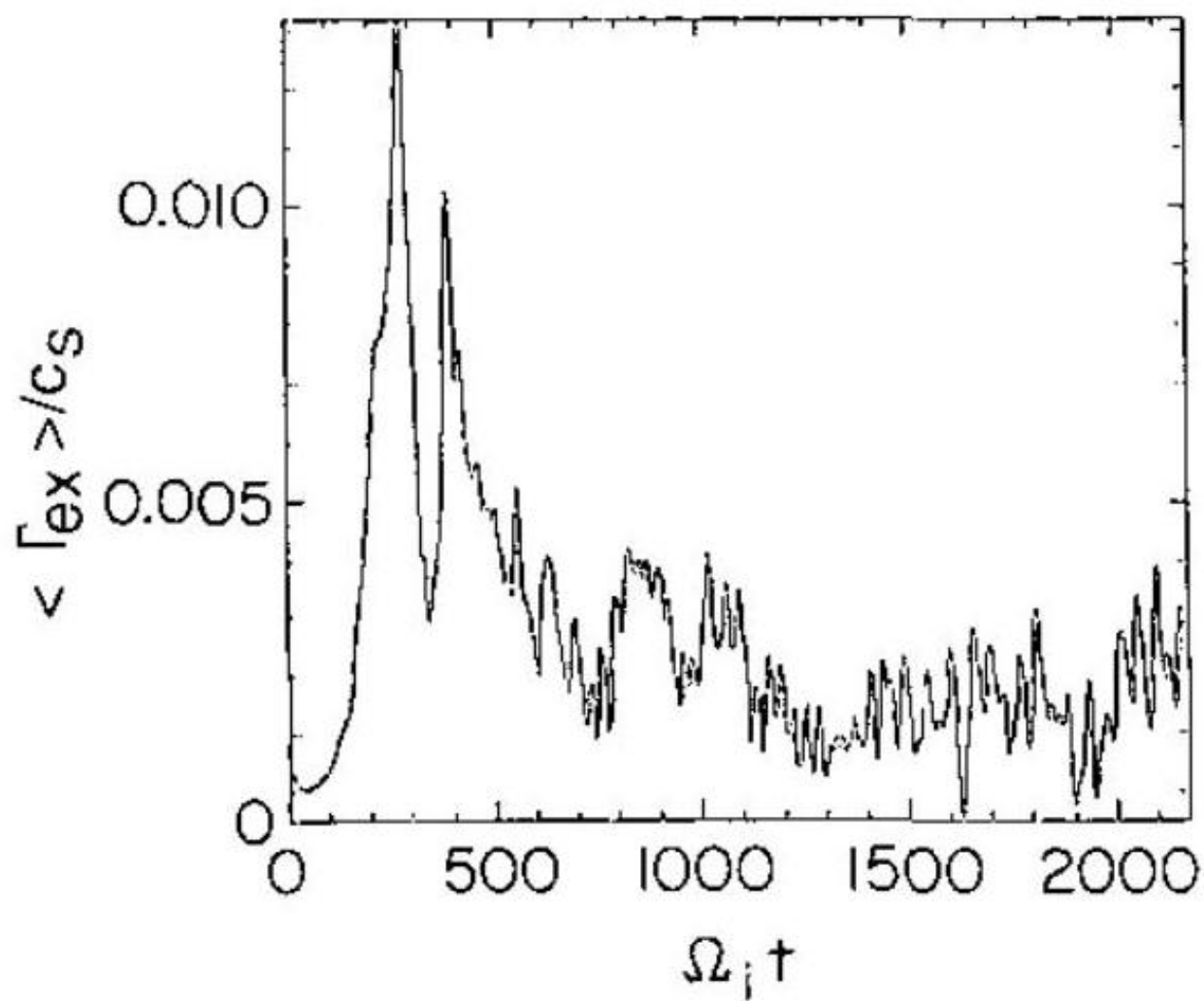
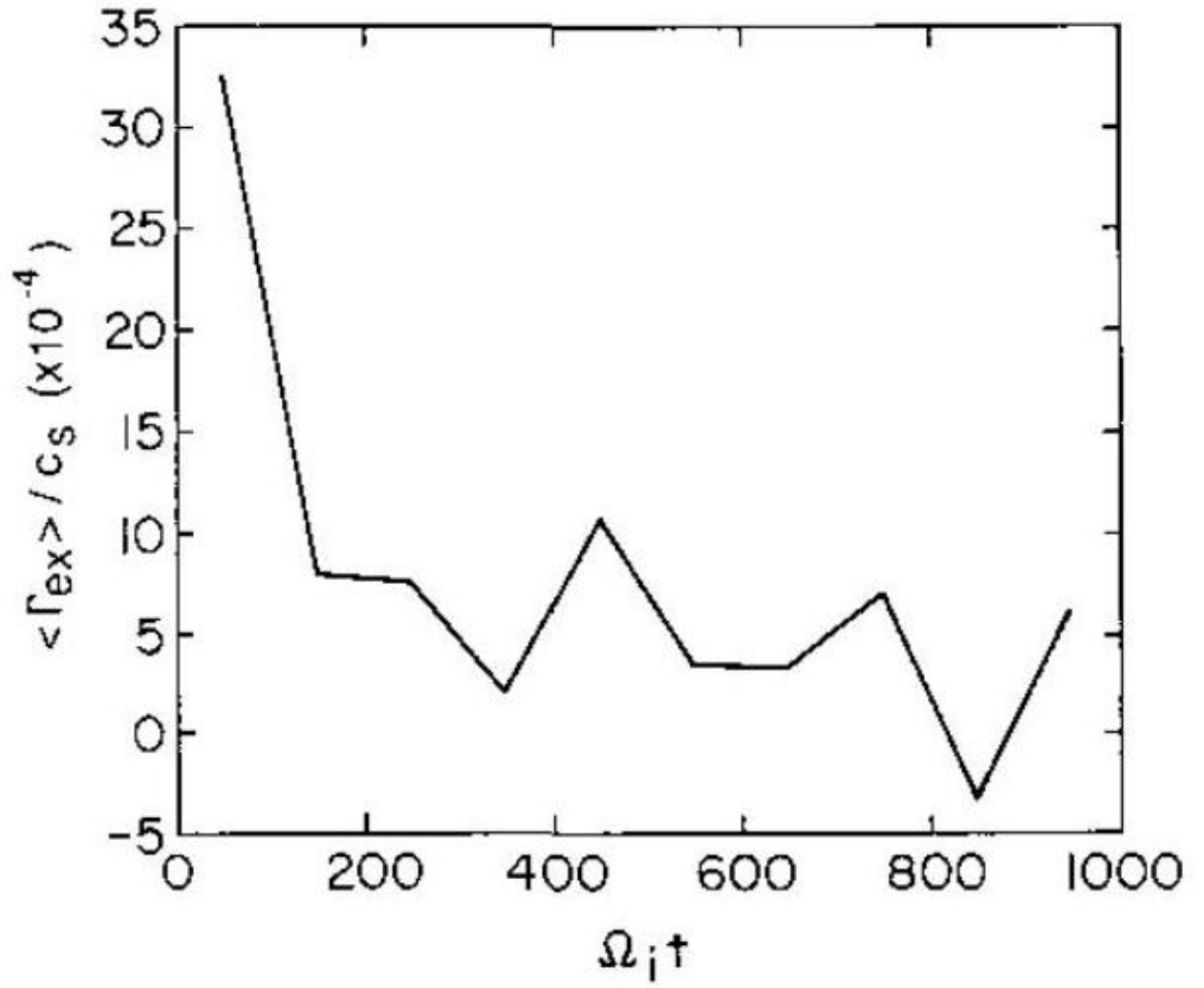**Figure 3:** *Time history for the electron particle flux induced by the instability shown in Fig. 2.*

Figure 4: *Electron particle flux calculated from a linearized- $E_\parallel$ code with non-self-consistent electric potentials similar to those of Fig. 1.*
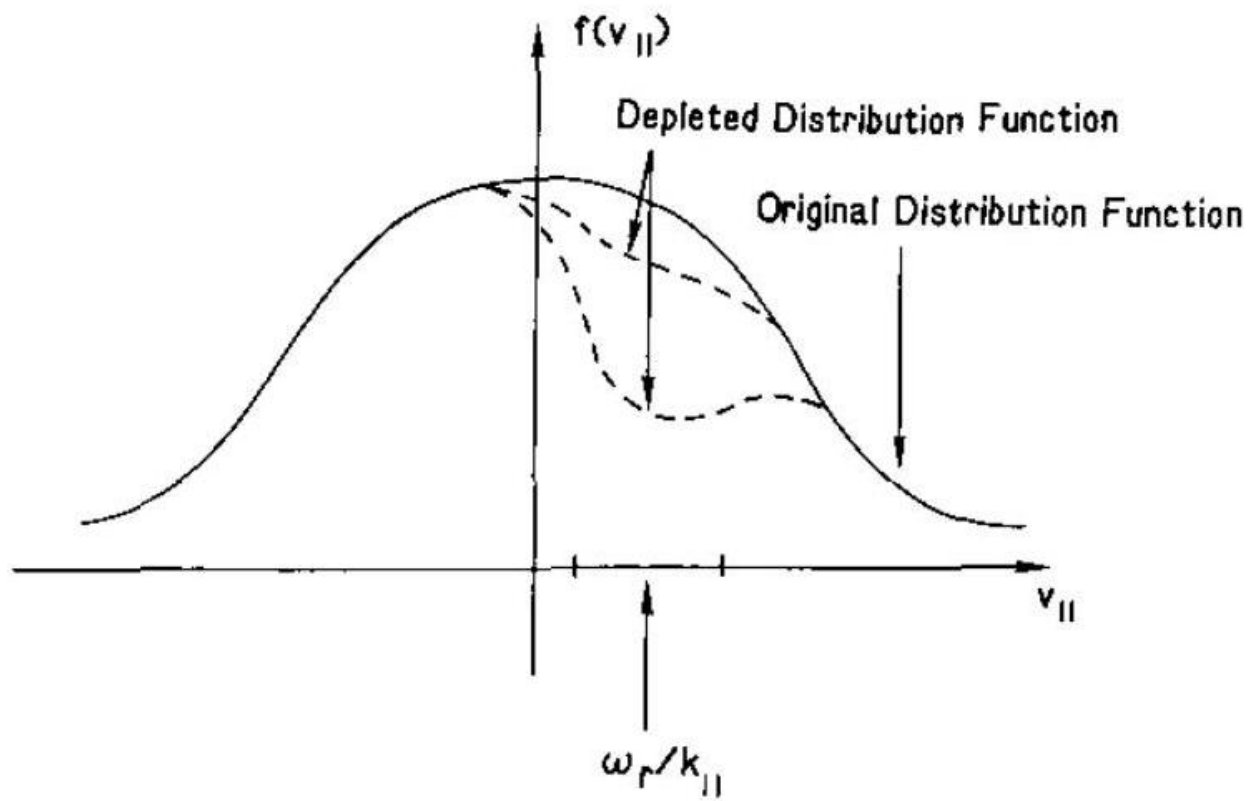
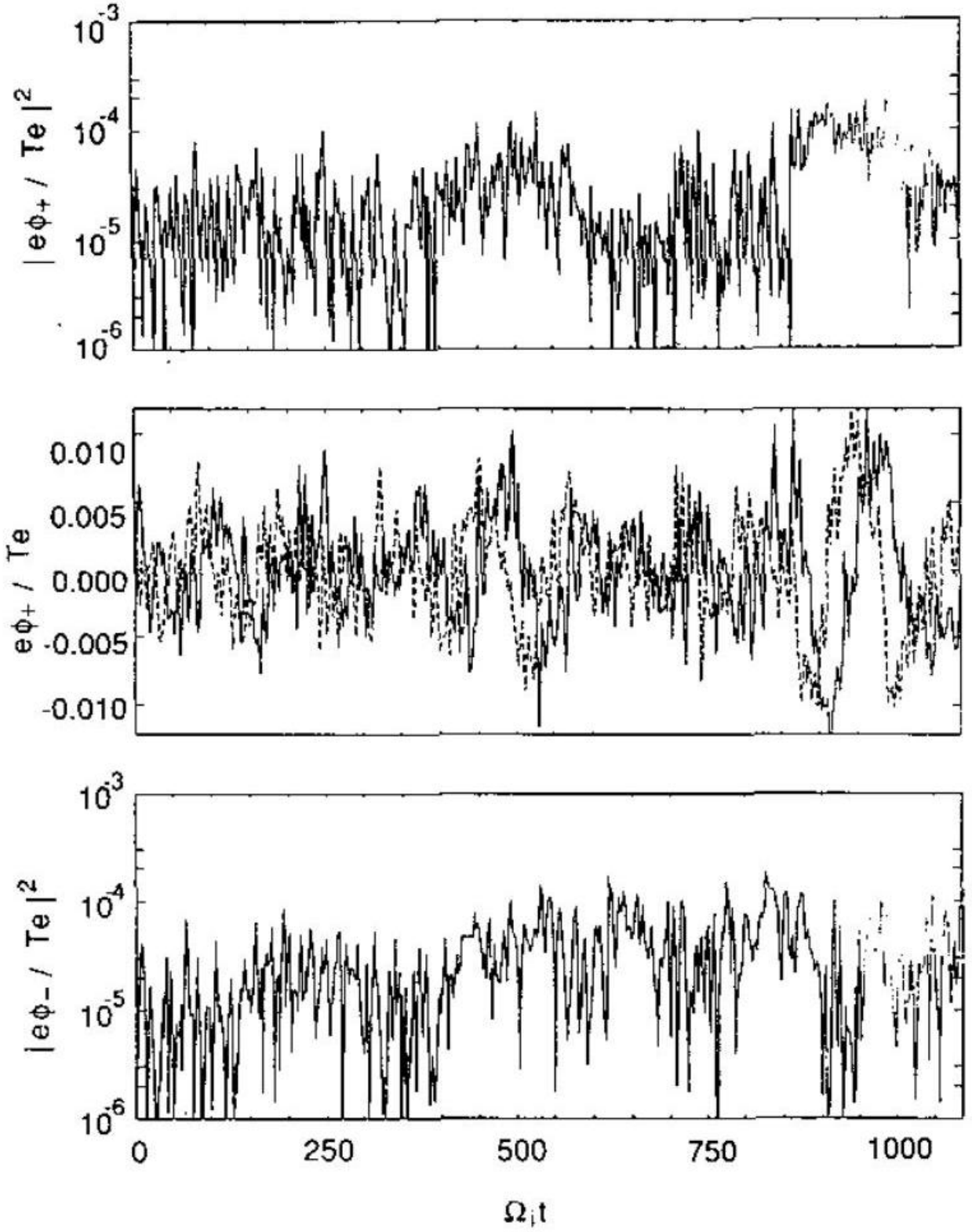**Figure 5:** *Diagram showing the decrease of the total (weighted) number of the electrons in the resonance region.*

Figure 6: *Time evolution of $\phi_{\pm}$ using the fully nonlinear gyrokinetic code with $\theta = 0.01, \tau = 4, \nu_{ei} = 0$, and $\Delta t = 2.18$.*
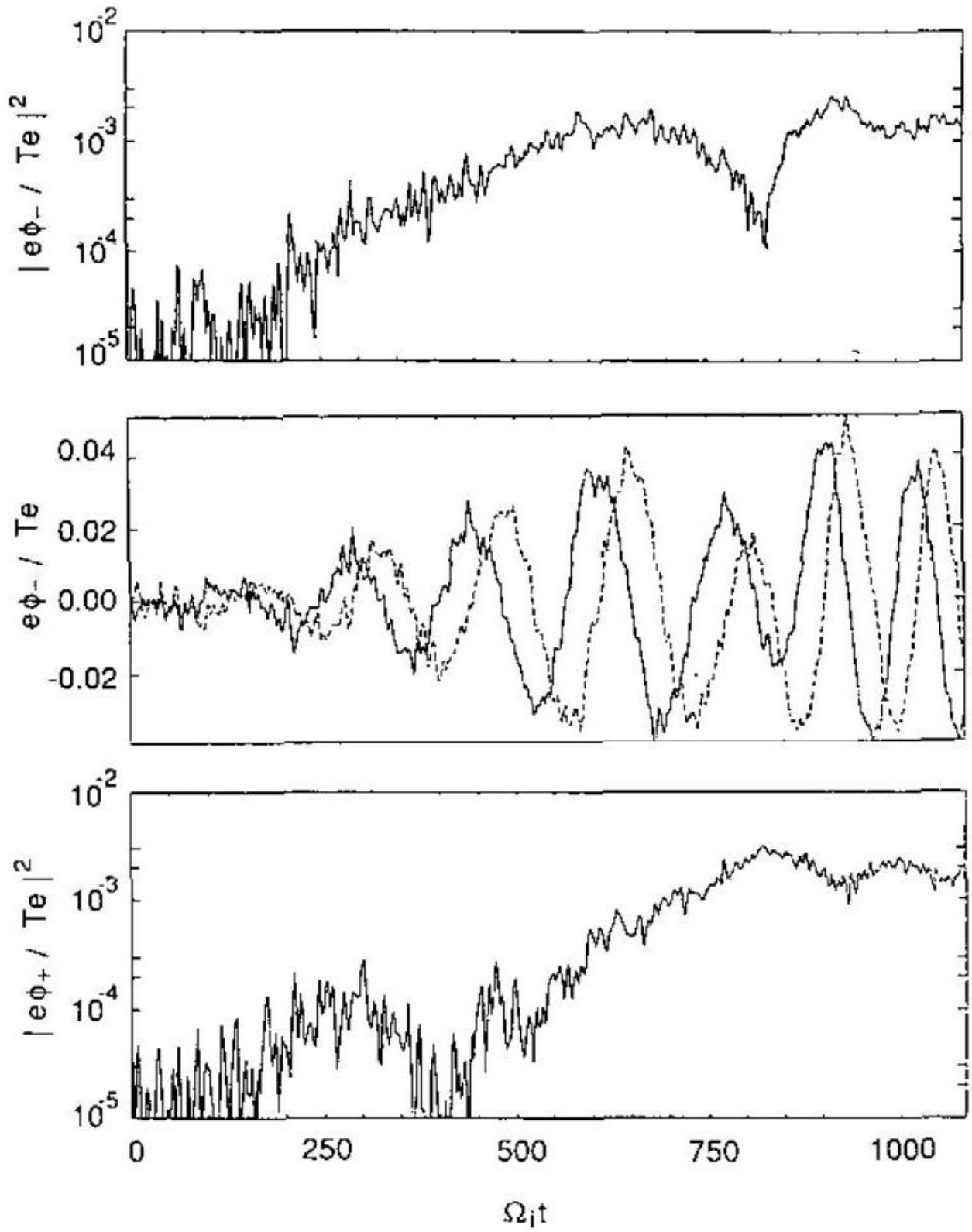
Figure 7: *Time evolution of $\phi_\pm$ using the linearized- $E_\parallel$ algorithm of Section 4.1 with $\theta = 0.01, \tau = 4, v_{ei} = 0$, and $At = 2.18$*
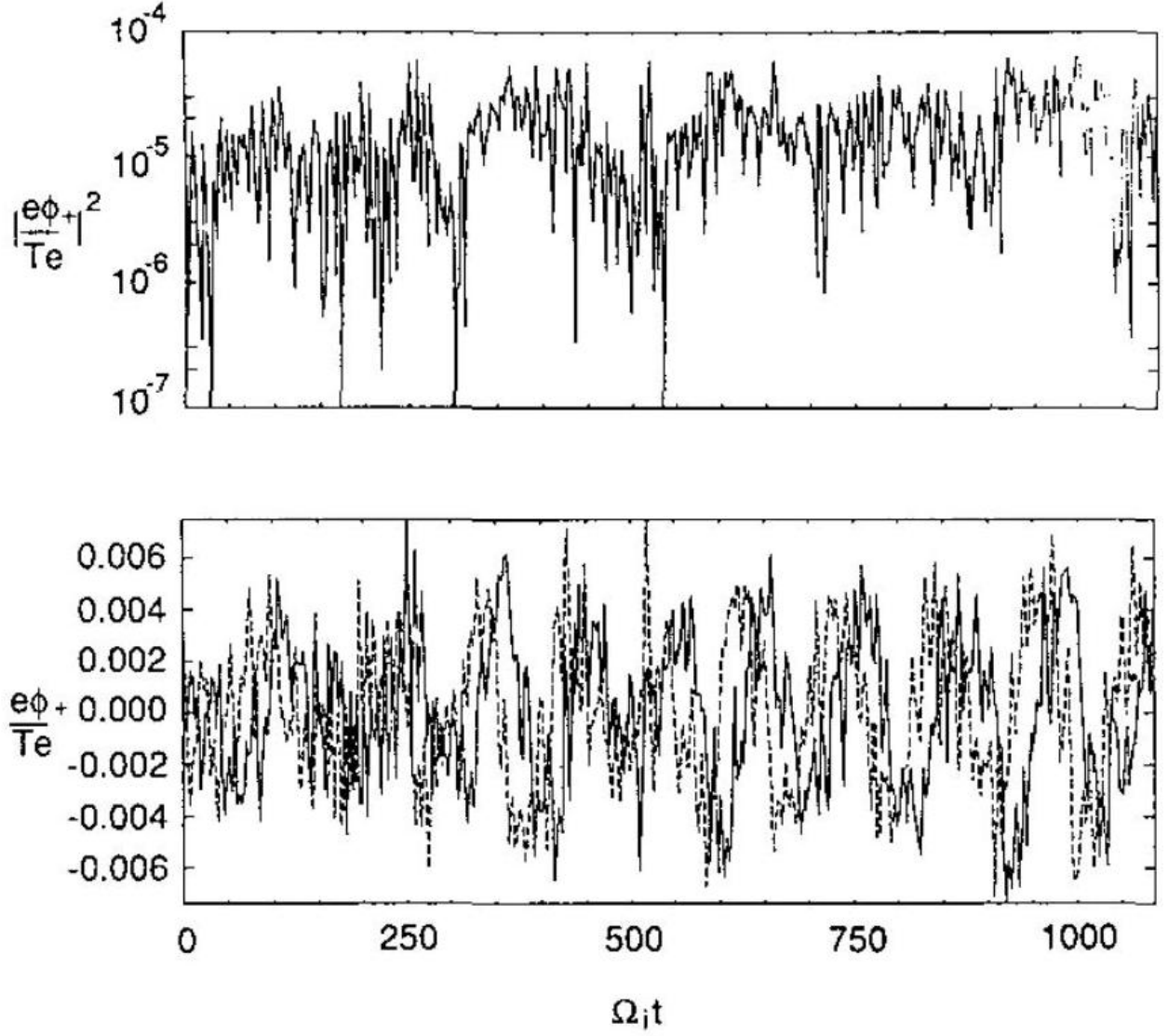
7

Figure 8: *Time history of ϕ_+ using the nonlinear gyrokinetic code with $\phi_+ = \phi_-^*$, $\theta = 0.01$, $\tau = 4$, $v_{ei} = 0$, and $\Delta t = 2.18$.*
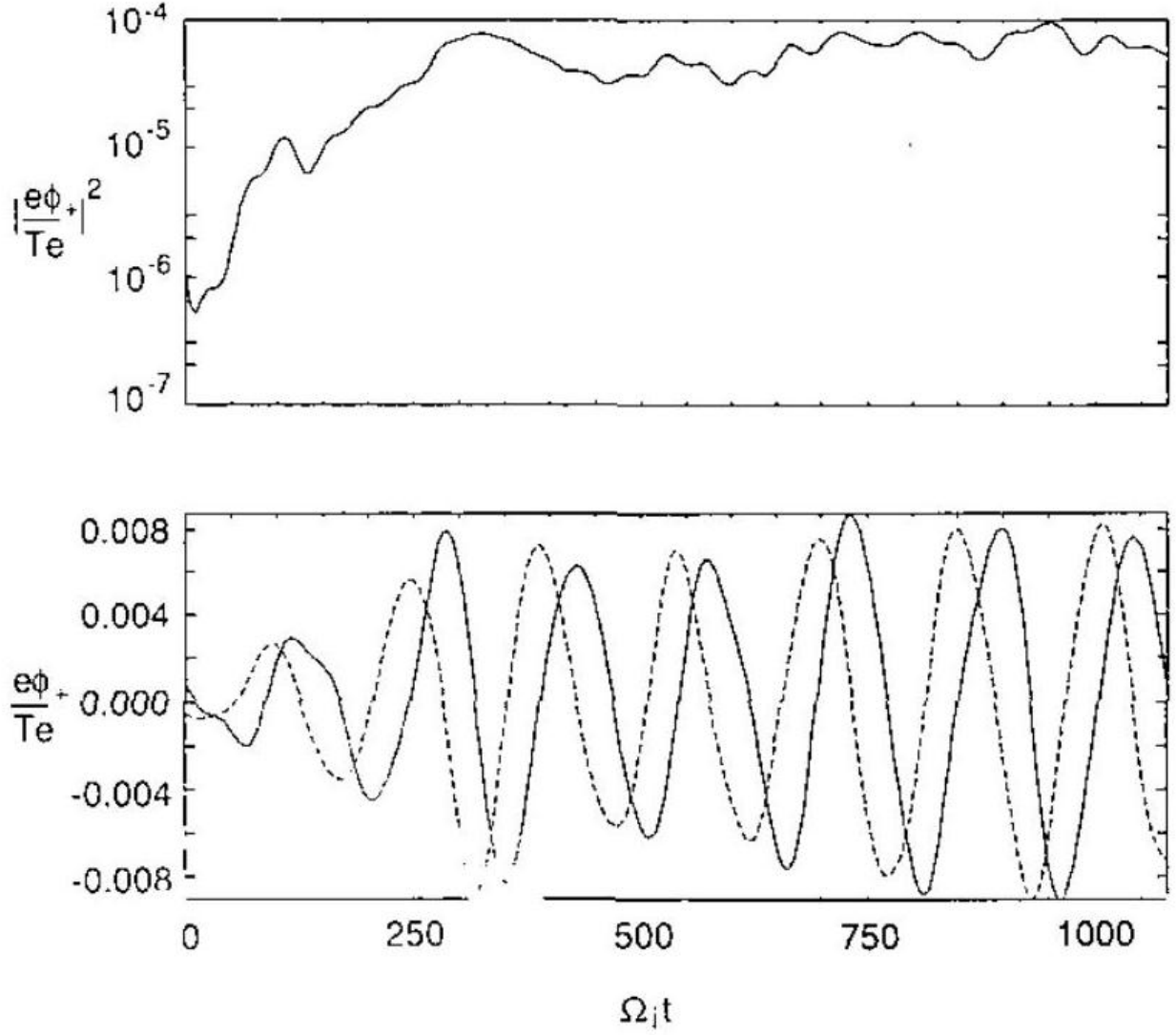
Figure 9: *Time history of ϕ_+ using the low-noise/long-time-step linearized-$E_\parallel$ algorithm with the same parameters as those used in Fig. 8 except for $\Delta t = 5.45$.*
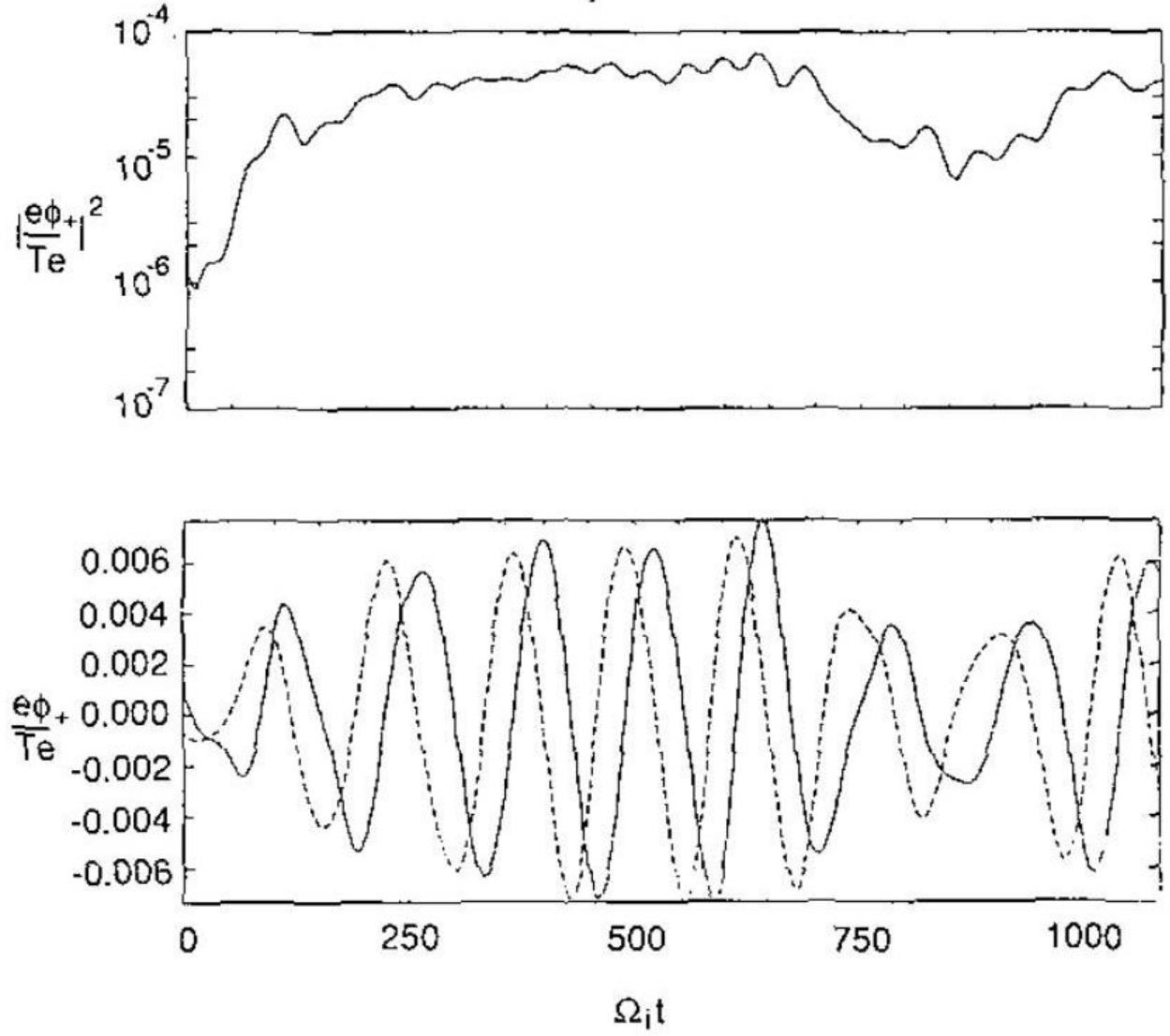
Figure 10: *Time history of ϕ_+ using the low-noise linearized- $E_\parallel$ algorithm including the adiabatic approximation for the fast electrons with the same parameters as those used in Fig. 8.*
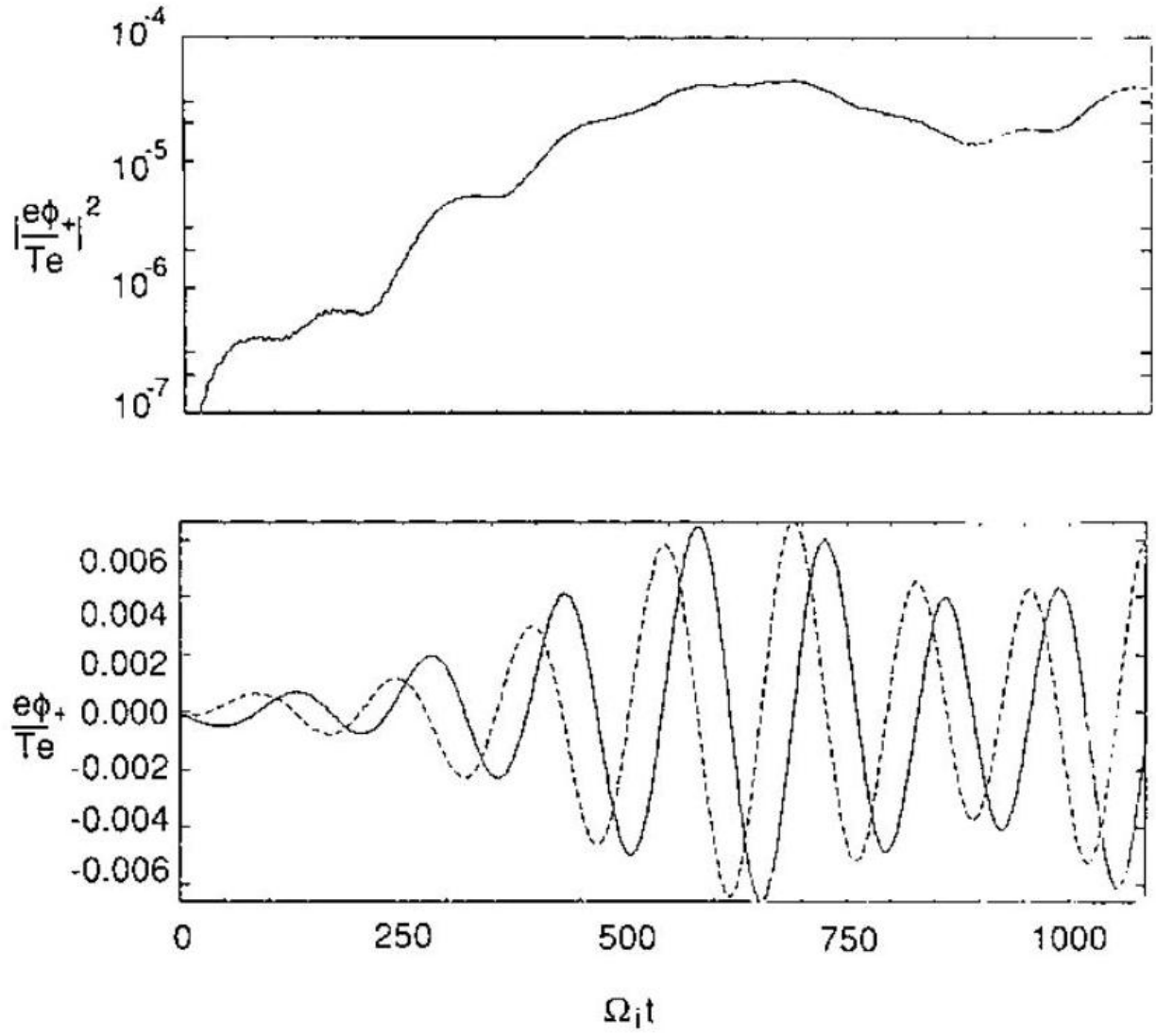
Figure 11: *Time history of ϕ_+ using the low-noise linearized- $E_\parallel \& \kappa$ algorithm with the same parameters as those used in Fig. 8.*

Figure 12: *Time history of ϕ_+ using the low-noise/long-time-step linearized- $E_\parallel$ & κ algorithm with the same parameters as those used in Fig. 8 except for $\Delta t = 5.45$*
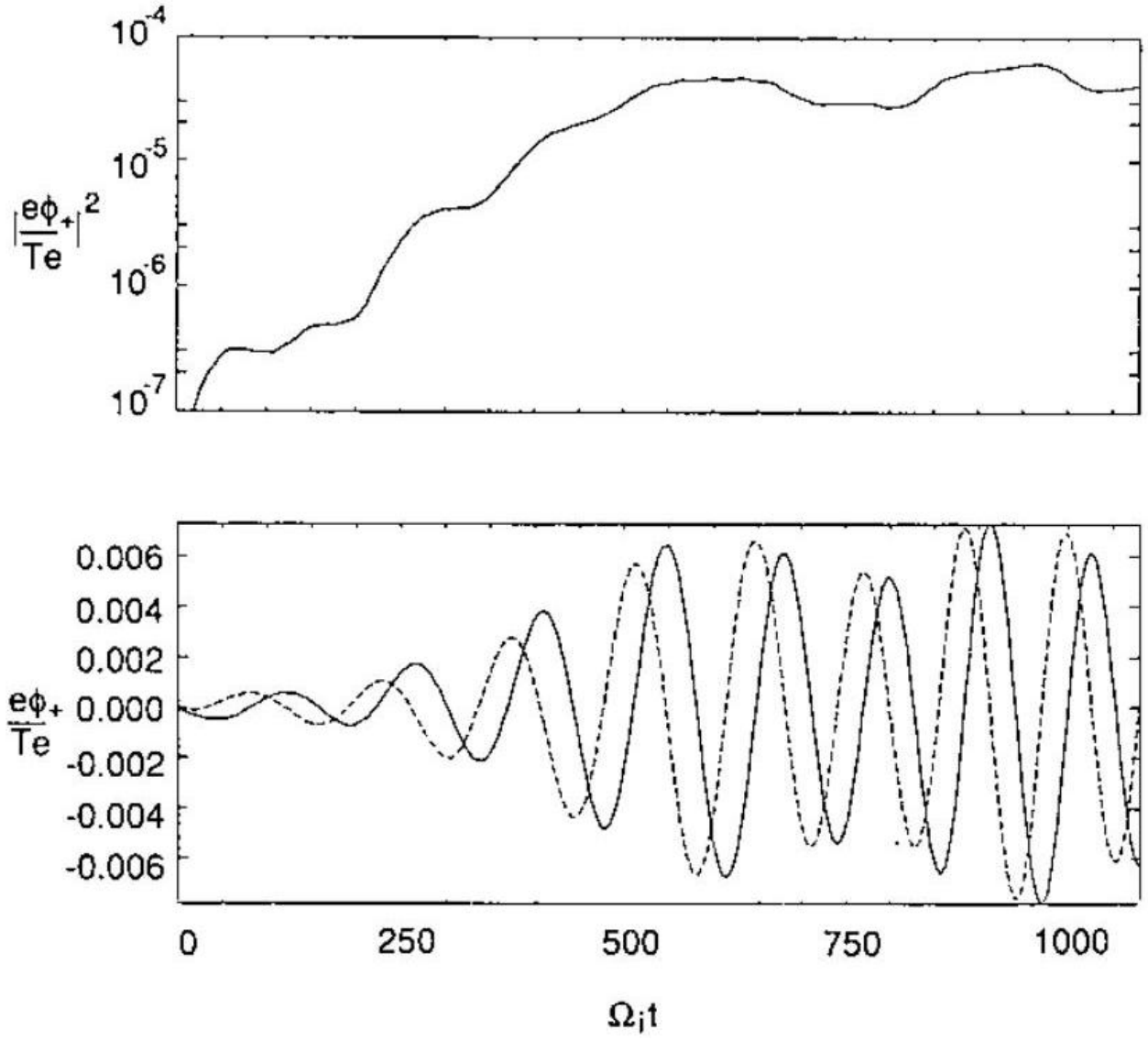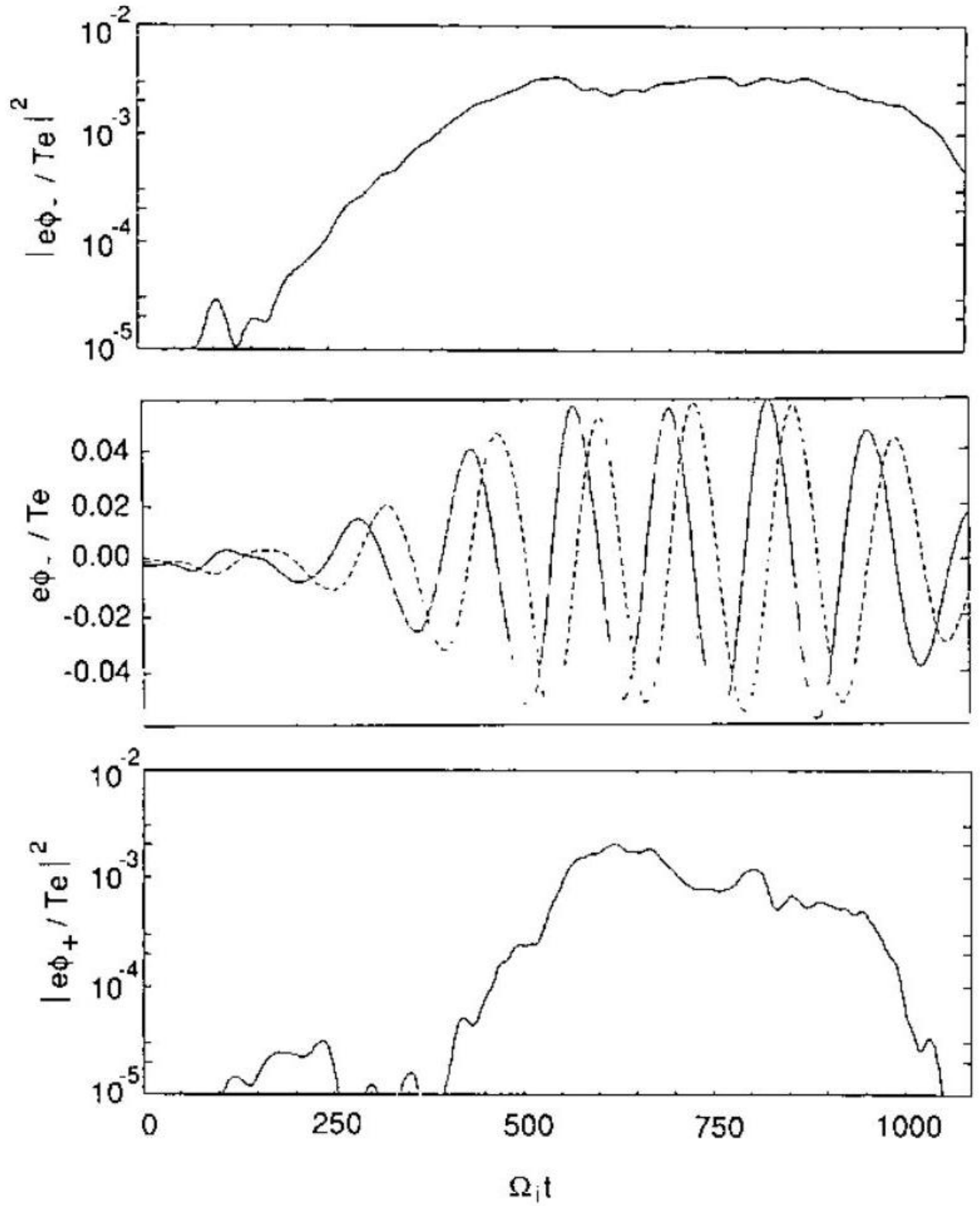
Figure 13: *Time history of ϕ$_\pm$ using the low-noise/long-time-step linearized- $E_\parallel$ algorithm with the same parameters as those used in Fig. 7 . The smaller time step used here is necessary due to the large saturation amplitude.*