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$Ro := 100 \quad \Omega$ $\qquad$ $T := 83 \cdot 10^{-9} \quad s$ $\qquad$ $Crad := 250 \cdot 10^{-12} \quad F$

$Rg := 4.7 \quad \Omega$ $\qquad$ $Rcable := 5 \quad \Omega$ $\qquad$ $RL := 10^{7} \quad \Omega$

$Vg := 1 \quad V$ $\qquad$ $N := 100$ $\qquad$ $dt := \frac{T}{N}$

$$send(near, INPUT, Vgen) := \left| \begin{array}{l} \begin{pmatrix} Ifi \\ Ini \end{pmatrix} \leftarrow INPUT \\ \begin{pmatrix} Ina \\ Int \\ Ins \\ Qns \end{pmatrix} \leftarrow near \\ Ina \leftarrow \frac{2 \cdot Ro \cdot Ini + Vgen}{Rg + Ro + Rcable} \\ Inr \leftarrow Ina - Ini \\ Ins \leftarrow Inr - \frac{Qns}{Ro \cdot Crad} \\ Int \leftarrow Inr - Ins \\ Qns \leftarrow Qns + Ins \cdot dt \\ \begin{pmatrix} Ina \\ Int \\ Ins \\ Qns \end{pmatrix} \end{array} \right.$$

$$recv(INPUT) := \left| \begin{array}{l} \begin{pmatrix} Ifi \\ Ini \end{pmatrix} \leftarrow INPUT \\ Ifa \leftarrow \frac{2 \cdot Ro \cdot Ifi}{RL + Ro} \\ Ifr \leftarrow Ifa - Ifi \\ \begin{pmatrix} Ifa \\ Ifr \end{pmatrix} \end{array} \right.$$

Figure 6.4.4 Subroutines for near-end and far-end calculations

$point(n) := \left| \begin{array}{l} m \leftarrow mod(n, N) \\ m \leftarrow N \quad if \quad m = 0 \end{array} \right.$ see table 6.2.1

$T1 := 100 \cdot 10^{-9}$ s start time

$T2 := 2 \cdot 10^{-6}$ s end time $N1 := \frac{T1}{dt}$ $N2 := \frac{T2}{dt}$

$Idiff := \left| \begin{array}{l} data_{2,N} \leftarrow 0 \\ near_4 \leftarrow 0 \\ \text{for} \quad i \in 1 .. N2 \\ \quad \left| \begin{array}{l} Vgen \leftarrow Vg \quad if \quad i > N1 \\ p \leftarrow point(i) \\ INPUT \leftarrow data^{\langle p \rangle} \\ near \leftarrow send(near, INPUT, Vgen) \\ \begin{pmatrix} Ina \\ Int \\ Ins \\ Qns \end{pmatrix} \leftarrow near \\ \begin{pmatrix} Ifa \\ Ifr \end{pmatrix} \leftarrow recv(INPUT) \\ OUTPUT \leftarrow \begin{pmatrix} Int \\ Ifr \end{pmatrix} \\ data^{\langle p \rangle} \leftarrow OUTPUT \\ Out_i \leftarrow Ina \end{array} \right. \\ Out \end{array} \right.$

$n := 1 .. N2$ $t_n := (n - 1) \cdot dt$

Figure 6.4.5 Calculating the waveform of the current at the near end of the line

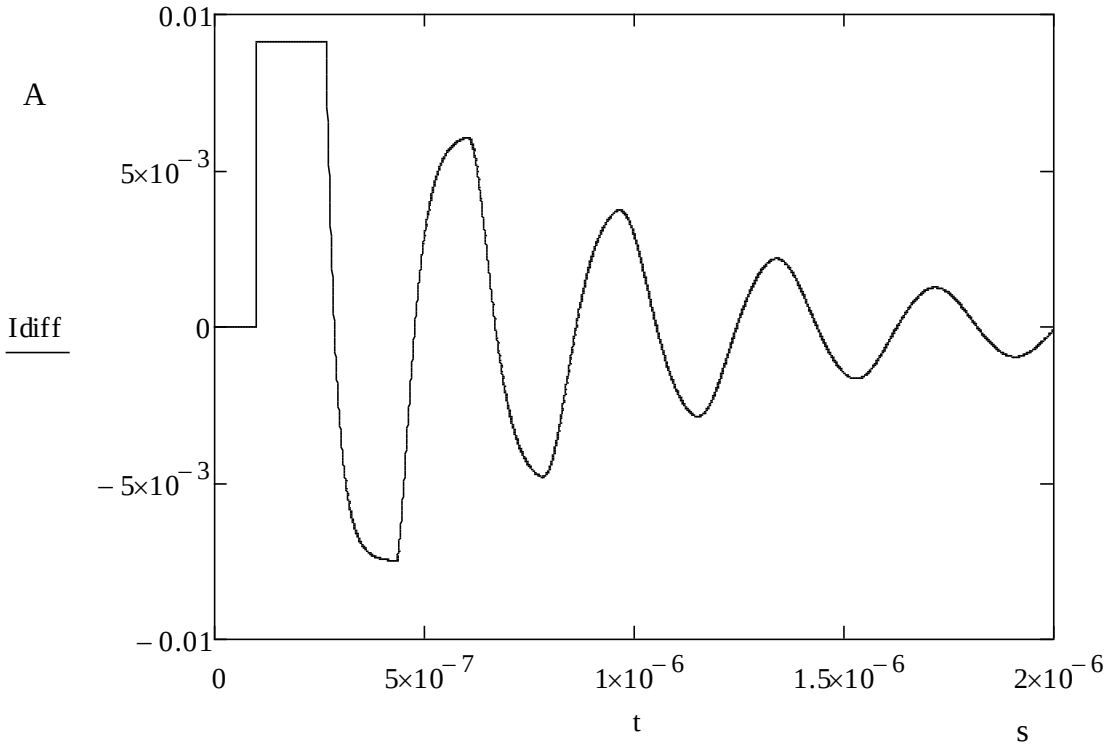

Figure 6.4.6 Waveform of current at near-end of transmission line