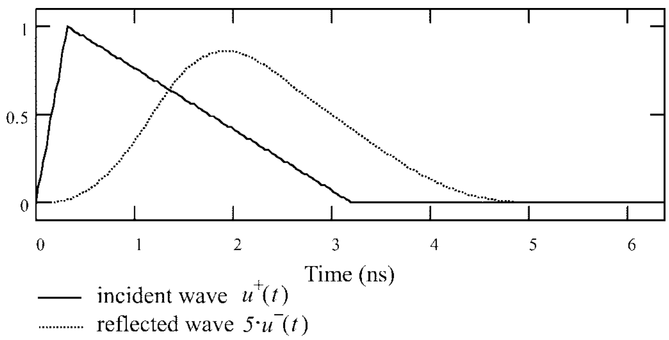

Fig. 2. Wave incident to triangular taper and reflected wave.

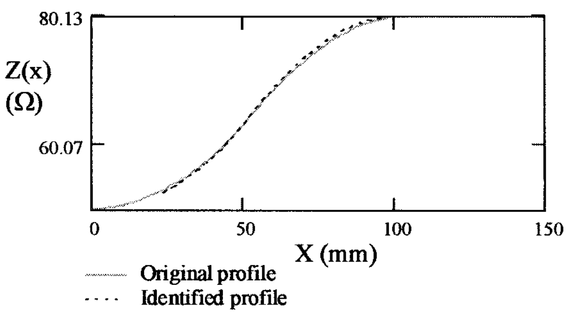

Fig. 3. Original and identified impedance profile of triangular taper.

me, only simulation results will be presented. Triangular taper from the above paper have been used for the simulation. Impedance profile of the taper is as follows:

$$Z(z) = \begin{cases} R_g \cdot \exp\left(2\left(\frac{x}{L}\right)^2 \cdot \ln\left(\frac{R_L}{R_g}\right)\right), & \text{if } 0 \le x < \frac{L}{2} \\ R_g \cdot \exp\left(\left(4\left(\frac{x}{L}\right) - 2\left(\frac{x}{L}\right)^2 - 1\right) \cdot \ln\left(\frac{R_L}{R_g}\right)\right), & \\ \quad \text{if } \frac{L}{2} \le x \le L. & \end{cases} \tag{17}$$

The source resistance $R_g = 50\ \Omega$, load resistance $R_g = 80\ \Omega$, length $L = 10$ cm, and velocity of electromagnetic waves $c = 10^8$ m/s. The incident wave has the form of a nonsymmetrical triangular wave with a rise time from 0 to 1 V equal to 0.325 ns and a fall time from 1 V to 0 equal to 2.875 ns. Duration of the incident wave is longer then the time needed to travel across the taper, reflect from the loading resistance, and return to source. The algorithm described in [3] has been used to simulate a reflection coefficient of the NLTL. In order to compute the reflected wave, fast Fourier transform (FFT)-based convolution [4] has been used (see Fig. 2). Simulated and identified impedance profiles are compared in Fig. 3. The reconstruction accuracy is similar to accuracy reported in the above paper.

References

[1] C.-W. Hsue and T.-W. Pan, "Reconstruction of nonuniform transmission lines from time-domain reflectometry," *IEEE Trans. Microwave Theory Tech.*, vol. 45, pp. 32–28, Jan. 1997.

[2] S. J. Orfanidis, *Optimum Signal Processing, An Introduction*. New York: McGraw-Hill, 1988.

[3] K. Lu, "An efficient method for analysis of arbitrary nonuniform transmission lines," *IEEE Trans. Microwave Theory Tech.*, vol. 45, pp. 9–14, Jan. 1997.

[4] A. V. Oppenheim and R. W. Shafer, *Discrete-Time Signal Processing*. New York: Prentice-Hall, 1999.

Authors' Reply

Te-Wen Pan, Ching-Wen Hsue, and Jhin-Fang Huang

We gratefully acknowledge Mr. Izydorczyk's comments on the above paper.[1] Mr. Izydorczyk derives the reflection coefficient $D(z)$ of the nonlinear transmission line (NLTL) by using the transmission matrix method, which is not found in the above paper. In addition, by omitting tedious enumeration of all possible transmission-reflection processes from junctions between uniform lossless transmission line (ULTL) sections, the text presents a simple algorithm to compute a wave impedance profile of the NLTL. We think the proposed algorithm is simple and accurate enough for some practical applications. In particular, Mr. Izydorczyk's comments further proves that an incident wave having the duration of pulsewidth longer than the time needed for the wave to travel across the NLTL can be employed to characterize the impedance profile of an NLTL.

Manuscript received January 8, 2003. This work was supported by the National Science Council, R.O.C. under Grant NSC 89-2213-EO11-137.

The authors are with the Department of Electronic Engineering, National Taiwan University of Science and Technology, Taipei, Taiwan 106, R.O.C. (e-mail: cwh@et.ntust.edu.tw).

Digital Object Identifier 10.1109/TMTT.2003.809637

[1] T.-W. Pan, C.-W. Hsue, and J.-F. Huang, *IEEE Trans. Microwave Theory Tech.*, vol. 50, no. 11, pp. 2558–2563, Nov. 2002.

Corrections to "Design of an Interdigital Hairpin Bandpass Filter Utilizing a Model of Coupled Slots"

Anatoli N. Deleniv, Marina S. Gashinova, Irina B. Vendik, and Anders Eriksson

The above paper[1] contains an error in (6). The correct form of (6) is as follows:

$$\left.\begin{array}{l} P^k = \frac{1}{2}\left(Vm_k^T\right)^* Im_k \\ 0 = Vm_l^T Im_m \ l \neq m \end{array}\right\}, \qquad k, l, m = 1, \ldots, n. \tag{6}$$

Manuscript received January 8, 2003.

A. N. Deleniv and A. Eriksson are with the Department of Microelectronics, Chalmers University of Technology, S-41296 Göteborg, Sweden.

M. S. Gashinova and I. B. Vendik are with the Department of Microelectronics and Radio Engineering, St. Petersburg Electrotechnical University, St. Petersburg 197376, Russia.

Digital Object Identifier 10.1109/TMTT.2003.809640

[1] A. N. Deleniv, M. S. Gashinova, I. B. Vendik, and A. Eriksson, *IEEE Trans. Microwave Theory Tech.*, vol. 50, no. 9, pp. 2153–2158, Sept. 2002.