Letters

Corrections to "The Inverse Problem for Biaxial Materials"

Piergiorgio L. E. Uslenghi

In the expression for H_x of (15) in the above paper,[1] the ratio μ_1/μ_3 must be replaced with μ_3/μ_1. Consequently, all derivations in the paper remain valid with the corrections indicated below.

Equation (24) is replaced by

$$u = \frac{\beta_m}{\mu_1 \beta_{om}}, \tag{24'}$$

and (37) by

$$\beta_m = \mu_1 \beta_{om} u, \quad \beta_m^{(1)} = \mu_1 \beta_{om}^{(1)} u^{(1)}. \tag{37'}$$

In the second sentence of the first paragraph on p. 403, replace "and the ratio μ_3^2/μ_1" with "μ_1." Replace (42) with

$$\beta_1 = \mu_1 \beta_{01} u_1, \quad \beta_2 = \mu_1 \beta_{02} u_2; \tag{42'}$$

replace the left-hand side of (45) with $1/(\mu_1 \mu_3)$, and the left-hand side of (47) with $(\beta_m L)/(\mu_1 \tan \beta_m L)$.

Finally, a typographical error: in (44), μ_1 and μ_2 should read u_1 and u_2, respectively.

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[1] N. J. Damaskos, R. B. Mack, A. L. Maffett, W. Parmon, and P. L. E. Uslenghi, *IEEE Trans. Microwave Theory Tech.*, vol. MTT-32, pp. 400–405, 1984.

Correction to "*E*-Plane Steps in Rectangular Waveguide"

Tullio Rozzi and Mauro Mongiardo

The above paper[1] contains one error. Equation (1) should read as follows:

$$Y_0 = \frac{\beta}{\omega \mu}. \tag{1}$$

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[1] T. Rozzi and M. Mongiardo, *IEEE Trans. Microwave Theory Tech.*, vol. 39, no. 8, pp. 1279–1288, Aug. 1991.

Comments on "Modes of Elliptical Waveguides: A Correction"

J. Brian Davies

The object of this note is not to make any correction to the above paper[1], but rather to point out the existence of earlier, related work. Different errors in the Chu paper [1] were reported 20 years ago in these same TRANSACTIONS [2] and this was soon followed by a paper [3] which gave a routine and accurate scheme for the modal analysis of elliptical waveguide.

Kretzschmar [2] presents a fairly detailed account of the modes in elliptical waveguide, with graphical results for cut-off of 19 of the lowest modes over the full range of eccentricities; he also presented approximate formulas, some accurate tabular values and references to preceding work. Errors in the Chu paper were pointed out of mode classification.

This work was soon followed by Davies and Kretzschmar [3] when a fairly general program for the modal analysis of hollow waveguide [4], using Rayleigh–Ritz with entire polynomial basis functions, gave results easily and accurately. Without trying to belittle the elegance of (or the need to demystify![1]), Mathieu functions, the essence of [3] was that the Rayleigh–Ritz approach is a straightforward, robust and accurate route to the analysis of elliptical waveguide. Besides giving variational (and so rather accurate) results for eigenvalues, field plots are especially easy to obtain from the polynomial forms that emerge as eigenfunctions.

REFERENCES

[1] L. J. Chu, "Electromagnetic waves in elliptical hollow pipes of metal," *J. Appl. Phys.*, vol. 9, pp. 583–591, 1938.

[2] J. G. Kretzschmar, "Wave propagation in hollow conducting elliptical waveguides," *IEEE Trans. Microwave Theory Tech.*, vol. MTT-18, pp. 547–554, Sept. 1970.

[3] J. B. Davies and J. G. Kretzschmar, "Analysis of hollow elliptical waveguides by polygon approximation," *Proc. Inst. Elec. Eng.*, London, vol. 119, pp. 519–522, May 1972.

[4] R. M. Bulley, "Analysis of the arbitrarily shaped waveguide by polynomial approximation," *IEEE Trans. Microwave Theory Tech.*, vol. MTT-18, pp. 1022–1028, Dec. 1970.

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[1] D. A. Goldberg, L. J. Laslett, and R. A. Rimmer, *IEEE Trans. Microwave Theory Tech.*, vol. 38, pp. 1603–1608, Nov. 1990.