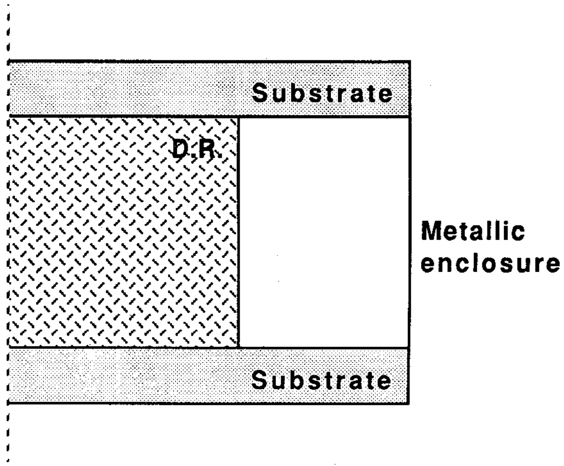

Fig. 1.

excitation (metallic perturbation) can't take into account in a two dimensional free oscillation (2-D) analysis. To our knowledge, no equivalent rigorous analysis have been published on the three dimensional (3-D) structures we have examined, and specially concerning the computed external quality factors and $[S]$ parameters. We think that in this case we can then evaluate the accuracy of these FEM results by a comparison to experimental ones. We can note that the precision on the resonant frequency is not perfect (Figs. 19 and 20), but the coupling between the DR and the coaxial probes (Figs. 19 and 20) are in good agreement. That was the purpose of these computations, as the repartition of the elements in the mesh have been chosen, to limit the computation time required, to favorise these coupling parameters determinations. Moreover, the second hybrid mode (Fig. 20) is the second mode which can be measured or computed for the probe positions shown on Fig. 18. The HEM_{12} mode (second frequency with only one azimuthal variation) can't be excited in this structure, which appears clearly applying the 3-D forced oscillations FEM, but not using 2-D analysis as the probes are not taken into account. We have considered the HEM_{21} mode.

The structure developed to study the radial coupling between two DRs (Fig. 8) is not symmetrical too, and the effects of the enclosure and substrate geometries are not considered in the 2-D analysis. Here, we can verify that the coupling coefficient between DRs agrees well with the experimental one. For time consuming requirement, the mesh was probably not enough fine to determine accurately the resonant frequencies, but it doesn't modify significantly the coupling coefficient as the computed frequencies for odd and even modes are shifted up with respect to their accurate values for about the same increment.

It is however important to establish the accuracy of the different methods, but it must be compared on the same structure. We analyze here the cylindrical structure presented on Fig. 1 and computed by A. Abramowicz. The cylindrical DR of heigth 6 mm radius 6 mm and permittivity $\varepsilon_r = 36$ is enclosed in a perfectly conducting cylindrical cavity of radius R_c and heigth 9 mm. This DR is placed between two dielectric supports ($\varepsilon_r = 2,2$). We have applied both the 2-D FEM, the Raileigh Rity Method (RRM) [2], but also the 3-D FEM, which is not required here, to compute the resonant frequency of the first TE_{01} mode of the DR structure. These results are compared with the Mode Matching Method (MMM) ones in Table I.

The 3-D FEM computations have been performed on a HP 750 workstation. The computing time required is less than 10 s.

TABLE I

	2-D FEM	MMM	RRM*	3-D FEM
$R_c = 9$ mm	4.950 GHz	4.950 GHz	4.950 GHz	4.951 GHz
$R_c = 16.97$ mm	4.838 GHz	4.839 GHz	4.835 GHz	4.836 GHz

A 2-D approach is desirable for a symmetrical structure, but we hope that these results may prove the accuracy of the 3-D FEM. This analysis, or equivalent finite difference one, is an efficient tool for real arbitrary structures engineers have to modellize. With the development of high power workstations, 3-D electromagnetic simulators seems to become desirable to analyze but also to optimize such devices.

Note: We think that there is a printing mistake in the comments of A. Abramovicz. $D_{\text{ext1}} = \sqrt{12^2 + 12^2}$ or = 9 mm represent the external radius, and not the external diameters, of the cylindrical structure.

References

[1] J. P. Cousty, S. Verdeyme, M. Aubourg, and P. Guillon, "Finite element for microwave device simulation: Application to microwave dielectric resonators filters," *IEEE Trans. Microwave Theory Tech.,* vol. 40, no. 5, pp. 925–932, May 1992.

[2] J. Krupka, "Resonant modes in shielded cylindrical ferrite and single crystal resonators," *IEEE Trans. Microwave Theory Tech.,* vol. 37, pp. 691–697, Apr. 1989.

Corrections to "Moment Method Formulation of Thick Diaphragms in a Rectangular Waveguide"

Amlan Datta, B. N. Das, and Ajoy Chakraborty

In the above paper[1] the following corrections should be made:

1) On page 592, the revised version of (1) should be

$$H_i(e_p) = \sum_{n=1}^{\alpha} V_n \Big[\text{sinc}\,\{R_{np}(w_1)\}\cos\{S_{np}(c_1)\} - \text{sinc}\,\{T_{np}(w_1)\}\cos\{U_{np}(c_1)\}\Big]\sin\left(\frac{n\pi y}{b}\right)$$

instead of

$$H_i(e_p) = V_n \Big[\text{sinc}\,\{R_{np}(w_1)\}\cos\{S_{np}(c_1)\} - \text{sinc}\,\{T_{np}(w_1)\}\cos\{U_{np}(c_1)\}\Big]\sin\left(\frac{\pi y}{b}\right)$$

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IEEE Log Number 9206322.

[1] A Datta, B. N. Das, and A. Chakraborty, *IEEE Trans. Microwave Theory Tech.,* vol. 40, no. 3, pp. 592–595, Mar. 1992.

2) In the same page, the revised version of (2) should be

$$H_t(e_q) = \sum_{n=1}^{\alpha} V_n \Big[\operatorname{sinc}\{R_{nq}(w_2)\}\cos\{S_{nq}(c_2)\} - \operatorname{sinc}\{T_{nq}(w_2)\}\cos\{U_{nq}(c_2)\}\Big] \sin\left(\frac{n\pi y}{b}\right)$$

instead of

$$H_t(e_q) = V_n \Big[\operatorname{sinc}\{R_{nq}(w_2)\}\cos\{S_{nq}(c_2)\} - \operatorname{sinc}\{T_{nq}(w_2)\}\cos\{U_{nq}(c_2)\}\Big] \sin\left(\frac{\pi y}{b}\right)$$

where the expression for V_n is given by the following expression:

$$V_n = \frac{\left[k^2 - \left(\frac{n\pi}{b}\right)^2\right]}{j\omega\mu_b\gamma_{0n}}$$

3) On page 593, the first line of the last paragraph should be $\cdots$ constants $(\gamma_{0p}, \gamma_{0q})$ as well $\cdots$

instead of $\cdots$ constants $(\gamma_{0p}, D\gamma_{0q})$ as well $\cdots$.