

## Erratum: Retrieval of the effective constitutive parameters of bianisotropic metamaterials [Phys. Rev. E 71, 046610 (2005)]

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The formula of the redefined impedance for the TM3 incidence listed in Table I has been reported erroneously. The correct formula should be  $z = \sqrt{\epsilon_z \mu_x - \mu_x / \mu_y \xi_0^2 / \mu_x}$ . Consequently,  $\mu_x$ , instead of  $\epsilon_z$ , is solved in the incidence TM3, so that  $\epsilon_x, \epsilon_y, \mu_x$ , and  $\mu_z$  are each solved twice. The fifth parameter,  $\xi_0$ , is retrieved using two different approaches. From the incidences TM1 and TM3, we formulate  $\epsilon_z$  and  $\mu_y$  in terms of  $\xi_0$ :

$$\epsilon_z = z_{TM1}^2 z_{TM3}^2 \mu_x \mu_y / \epsilon_x, \quad (1)$$

$$\mu_y = \frac{1 \pm \sqrt{1 + 4z_{TM1}^2 \xi_0^2 / (z_{TM3}^2 \epsilon_x \mu_x)}}{2z_{TM1}^2 / \epsilon_x}. \quad (2)$$

Thus, the  $S$  parameters for the case TE2 can be calculated using Eq. (7) for a given  $\xi_0$ . In the first (second) retrieval method, the value of  $\xi_0$  is obtained by optimizing its real and imaginary parts so that the calculated  $S_{11}$  ( $S_{21}$ ) parameter matches the measured one.

For the lossless case, whereas the first retrieval method still uses Eq. (16), the second one obtains  $\xi_0$  directly from  $z_{TE2}$  and  $n_{TE2}$ ,

$$\xi_0 = (-i)(\mu_y / z_{TE2} - n_{TE2}), \quad (3)$$

where  $\epsilon_z = \epsilon_x n_{TE2}^2 / n_{TM1}^2$  and  $\mu_y = \mu_x n_{TE2}^2 / n_{TM3}^2$ .

Upon introducing these corrections, the parameters obtained for the cases of Figs. 5–7 are replaced by those shown here in Figs. 1–3. Note that none of the conclusions of our paper are affected by this correction.

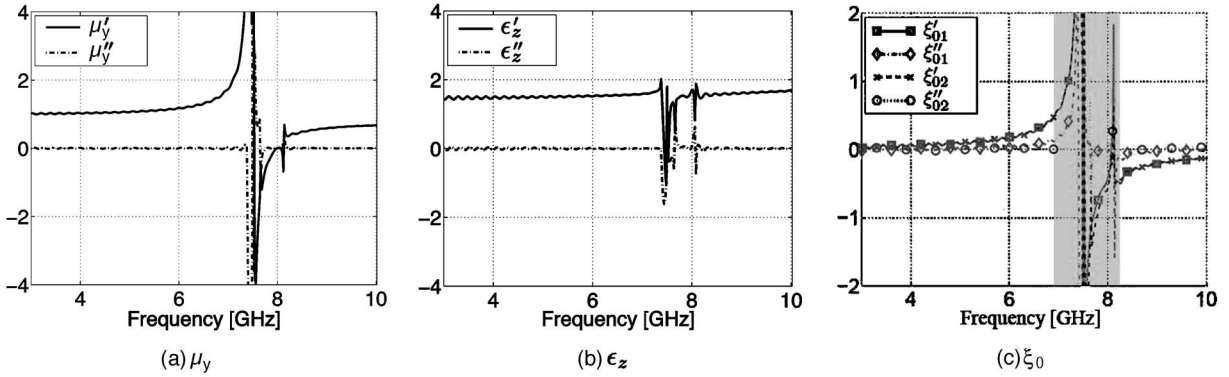


FIG. 1. Retrieval results for a lossless edge-coupled SRR metamaterial.

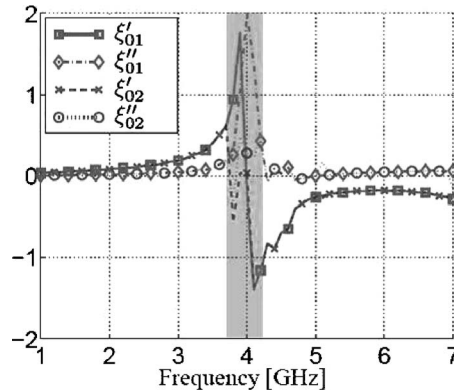


FIG. 2. Retrieval results for a lossy edge-coupled SRR metamaterial.

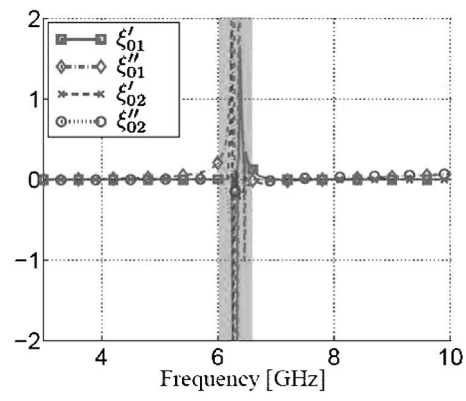


FIG. 3. Retrieved results for a broadside-coupled SRR metamaterial.