Electromagnetic Anisotropy and Bianisotropy: A Field Guide

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Corrections and updates — 13 December 2011

1. Page 13. Equation $(1.46)_2$ should be:

$$\begin{aligned} \underline{\underline{\mathbf{K}}}_{\mathrm{EH}}(\underline{r},\omega) &\equiv \underline{\underline{\boldsymbol{\tau}}}^{-1}\left\{\underline{\underline{\mathbf{K}}}_{\mathrm{EB}}(\underline{r},\omega)\right\} \\ &= \left[\begin{array}{cc} \underline{\underline{\epsilon}}_{\mathrm{EB}} - \underline{\underline{\xi}}_{\mathrm{EB}} \cdot \underline{\underline{\nu}}_{\mathrm{EB}}^{-1} \cdot \underline{\underline{\zeta}}_{\mathrm{EB}} & \underline{\underline{\xi}}_{\mathrm{EB}} \cdot \underline{\underline{\nu}}_{\mathrm{EB}}^{-1} \\ -\underline{\underline{\nu}}_{\mathrm{EB}}^{-1} \cdot \underline{\underline{\zeta}}_{\mathrm{EB}} & \underline{\underline{\nu}}_{\mathrm{EB}}^{-1} \end{array}\right] \end{aligned}$$

2. Page 36. The footnote should refer to Section 4.5.2.

3. Page 105. Equations (4.87) should be:

$$\left.\begin{aligned} k_1 = k_3 = \frac{\omega}{c_0\,\hat{\underline{k}} \cdot \underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}} \cdot \hat{\underline{k}}} \left\{ \hat{\underline{k}} \cdot \underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}} \cdot \underline{\bar{\Gamma}}_{\mathrm{GAV}} + \left[\left(\hat{\underline{k}} \cdot \underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}} \cdot \underline{\bar{\Gamma}}_{\mathrm{GAV}} \right)^2 \right.\right. \\ \left.\left. -\hat{\underline{k}} \cdot \underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}} \cdot \hat{\underline{k}} \left(\underline{\bar{\Gamma}}_{\mathrm{GAV}} \cdot \underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}} \cdot \underline{\bar{\Gamma}}_{\mathrm{GAV}} - \det \underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}} \right) \right]^{1/2} \right\} \\ k_2 = k_4 = \frac{\omega}{c_0\,\hat{\underline{k}} \cdot \underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}} \cdot \hat{\underline{k}}} \left\{ \hat{\underline{k}} \cdot \underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}} \cdot \underline{\bar{\Gamma}}_{\mathrm{GAV}} - \left[\left(\hat{\underline{k}} \cdot \underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}} \cdot \underline{\bar{\Gamma}}_{\mathrm{GAV}} \right)^2 \right.\right. \\ \left.\left. -\hat{\underline{k}} \cdot \underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}} \cdot \hat{\underline{k}} \left(\underline{\bar{\Gamma}}_{\mathrm{GAV}} \cdot \underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}} \cdot \underline{\bar{\Gamma}}_{\mathrm{GAV}} - \det \underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}} \right) \right]^{1/2} \right\} \end{aligned}\right\},$$

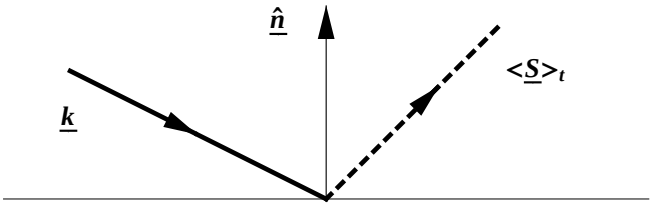
4. Page 106. Equation $(4.89)_1$ should be:

$$\hat{\underline{e}}_{\mathrm{p}}(\omega) = \frac{\underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}}^{-1} \cdot \underline{\hat{w}}_{\mathrm{GAV}}(\omega)}{|\,\underline{\underline{\bar{\gamma}}}_{\mathrm{GAV}}^{-1} \cdot \underline{\hat{w}}_{\mathrm{GAV}}(\omega)\,|}$$

5. Page 114. Equation (4.107) should be:

$$\left[\begin{array}{c} \check{\check{E}}_{0z}(\omega) \\ \check{\check{H}}_{0z}(\omega) \end{array}\right] = \underline{\underline{F}}(\omega) \cdot \left[\begin{array}{c} \check{\check{E}}_{0x}(\omega) \\ \check{\check{E}}_{0y}(\omega) \\ \check{\check{H}}_{0x}(\omega) \\ \check{\check{H}}_{0y}(\omega) \end{array}\right],$$

6. Page 117. Figure 4.3(b) should be:



(b)

7. Page 120. Reference [45] may be updated to:

   [45] T.G. Mackay and A. Lakhtakia, Negative refraction and positive refraction are not Lorentz covariant, *Phys Lett A* **374** (2009), 101–105.

8. Page 133. Equation $(5.35)_1$ should be:

$$\underline{\underline{G}}^{\rm ee}_{\rm GAV}(\underline{r}-\underline{r}',\omega) = i\omega\mu_0 \, \exp\left[i\omega\,(\epsilon_0\mu_0)^{1/2}\,\underline{\underline{\bar{\Gamma}}}_{\rm GAV} \bullet \underline{R}\right] \left(\text{adj}\, \underline{\underline{\bar{\gamma}}}_{\rm GAV} + \frac{1}{\omega^2\epsilon_0\mu_0}\,\nabla\nabla \right) g_{\rm GAV}(\underline{r}-\underline{r}',\omega)$$

   and equation (5.36) should be:

$$g_{\rm GAV}(\underline{R},\omega) = \frac{1}{4\pi \left| \underline{\underline{\bar{\gamma}}}^{-1/2}_{\rm GAV} \bullet \underline{R} \right|} \, \exp\left[i\omega\,(\epsilon_0\mu_0)^{1/2} \left(\det \underline{\underline{\bar{\gamma}}}_{\rm GAV} \right)^{1/2} \left| \underline{\underline{\bar{\gamma}}}^{-1/2}_{\rm GAV} \bullet \underline{R} \right| \right] .$$

9. Page 142. Equation (5.70) should be:

$$\underline{\underline{\mathbf{D}}}^0_{U/{\rm amb}}(\omega) = \frac{1}{4\pi} \int_{\phi=0}^{2\pi} \int_{\theta=0}^{\pi} \underline{\underline{\check{\mathbf{G}}}}^{\infty}(\underline{\underline{U}}^{-1} \bullet \hat{\underline{q}},\omega)\, \sin\theta \, d\theta \, d\phi.$$

   In the line preceding this equation, "surface integral" should be replaced by "double integral".

10. Page 159. Equation (6.7) should be:

$$\frac{\partial}{\partial s}\, \underline{\underline{\mathbf{K}}}\,(s) = \frac{1}{1-s}\, \underline{\underline{\boldsymbol{\alpha}}}_{{\rm a}/s},$$

11. Page 161. Equation (6.12) should be:

$$\underline{\underline{\mathbf{K}}}_{\rm a}(\omega) = \underline{\underline{\mathbf{K}}}_{\rm Br}(\omega) - \left[\frac{f_{\rm a}}{1-f_{\rm a}}\, \underline{\underline{\mathbf{I}}} + i\omega\, \underline{\underline{\boldsymbol{\alpha}}}_{{\rm b}/{\rm Br}}(\omega) \bullet \underline{\underline{\mathbf{D}}}^0_{U^{\rm a}/{\rm Br}}(\omega) \right]^{-1} \bullet \underline{\underline{\boldsymbol{\alpha}}}_{{\rm b}/{\rm Br}}(\omega).$$

12. Page 164. Equation (6.21) should be:

$$\underline{\underline{\mathbf{P}}}_{\Lambda_{\rm step}}(L_{\rm cor},\omega) = f_{\rm a} f_{\rm b}\, \underline{\underline{\mathbf{D}}}^+_{U/{\rm comp}}(L_{\rm cor},\omega),$$

13. Page 165. Equation (6.22) should be:

$$\langle\, \Phi_{\rm a}(\underline{r})\, \Phi_{\rm a}(\underline{r}')\, \Phi_{\rm a}(\underline{r}'')\, \rangle_{\rm e} = \begin{cases} f_{\rm a}^3, & \min\{L_{12},L_{13},L_{23}\} > L_{\rm cor} \\ f_{\rm a}, & \max\{L_{12},L_{13},L_{23}\} \le L_{\rm cor} \\ \frac{1}{3}\,(f_{\rm a} + 2f_{\rm a}^3), & \text{one of } L_{12},L_{13},L_{23} \le L_{\rm cor} \\ \frac{1}{3}\,(2f_{\rm a} + f_{\rm a}^3), & \text{two of } L_{12},L_{13},L_{23} \le L_{\rm cor} \end{cases},$$

14. Page 174. Reference [35] should be:

    I.O. Sosa, C.I. Mendoza and R.G. Barrera, Calculation of electron–energy–loss spectra of composites and self–similar structures, *Phys Rev B* **63** (2001), 144201.

15. Page 174. Reference [41] should be:

    T.G. Mackay and A. Lakhtakia, Percolation thresholds in the homogenization of spheroidal particles oriented in two directions, *Opt Commun* **259** (2006), 727–737.