Erratum: Goos-Hänchen shift in negatively refractive media [Physical Review E 66, 067603 (2002)]

P. R. Berman

(Received 5 January 2005; published 16 March 2005)

DOI: 10.1103/PhysRevE.71.039903 PACS number(s): 42.25.Gy, 42.25.Bs, 99.10.Cd

There were some typographical errors in this paper. The lateral displacement d is given by $d=-\sin\theta\partial\phi_R/\partial k_x=(1/k_1)\partial\phi_R/\partial\theta$, where $\phi_R=\tan^{-1}[2\alpha\cos\theta/(\cos^2\theta-\alpha^2)]$. A factor $[1-(\mu_2\epsilon_2/\mu_1\epsilon_1)]$ was inadvertantly left out of the equation for d. The correct expression is

$$d=\frac{2}{k_1}\frac{\left(1-\frac{\mu_2\epsilon_2}{\mu_1\epsilon_1}\right)|\mu_2/\mu_1|\sin\theta}{\left[(\mu_2/\mu_1)^2\cos^2\theta+\sin^2\theta-\frac{\mu_2\epsilon_2}{\mu_1\epsilon_1}\right]\sqrt{\sin^2\theta-\frac{\mu_2\epsilon_2}{\mu_1\epsilon_1}}}.$$

Although the expression for d is finite at $\theta=\pi/2$, the derivative $d\phi_R/d\theta$ is not defined at that point, since ϕ_R varies linearly for $\theta<\pi/2$, but is zero for $\theta>\pi/2$. Thus this expression cannot be used for $\theta=\pi/2$, where d should equal zero. Renard's [1] expression for d is multiplied by $\cos^2\theta/[1-(\mu_2\epsilon_2/\mu_1\epsilon_1)]$ and vanishes at $\theta=\pi/2$, a point he used to justify his approach, but the approximations he made to arrive at his result were questioned by Lai *et al.* [2].

I would like to thank Dr. S. R. Seshadri for pointing out the missing factor in the expression for d. He also noted that Felson [3] obtained "backward" refraction for lateral waves in a calculation of emission at an anisotropic plasma interface.

[1] R. H. Renard, J. Opt. Soc. Am. **54**, 1190 (1964).
[2] H. M. Lai, F. C. Cheng, and W. K. Tang, J. Opt. Soc. Am. A **3**, 550 (1986). (The page number has been corrected.)
[3] L. B. Felson, IEEE Trans. Antennas Propag. **10**, 347 (1962).

