

Erratum: “Relativistic collision operators for modeling noninductive current drive by waves” [Phys. Plasmas 18, 022504 (2011)]

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There are errors in equations (13), (14), and (A1) of Ref. [1], where a factor of c^2 is missing in the denominator. The correct form of Eq. (13) should read

$$\frac{\partial}{\partial \mathbf{u}'} \cdot \mathbf{U} = - \frac{\partial}{\partial \mathbf{v}} \left(\frac{1}{|\mathbf{v} - \mathbf{v}'|} \left(\frac{1}{\gamma'} + \frac{1}{\gamma'^3} \right) + \frac{(\mathbf{v} \cdot \mathbf{v}' - v'^2)^2}{c^2 |\mathbf{v} - \mathbf{v}'|^3 \gamma'} \right).$$

The correct form of Eq. (14) should read

$$g_b(\mathbf{v}) \equiv - \frac{1}{4\pi} \int \left[\frac{1}{|\mathbf{v} - \mathbf{v}'|} \left(\frac{1}{\gamma'} + \frac{1}{\gamma'^3} \right) + \frac{(\mathbf{v} \cdot \mathbf{v}' - v'^2)^2}{c^2 |\mathbf{v} - \mathbf{v}'|^3 \gamma'} \right] \gamma'^5 f_b(\gamma' \mathbf{v}') d^3 \mathbf{v}',$$

The correct form of Eq. (A1) should read

$$g_b^j(v) \equiv - \frac{1}{P_j(\cos\theta)} \frac{1}{4\pi} \times \int d^3 \mathbf{v}' \left[\frac{1}{|\mathbf{v} - \mathbf{v}'|} \left(\frac{1}{\gamma'} + \frac{1}{\gamma'^3} \right) + \frac{v'^2 (v \cos\alpha - v')^2}{c^2 |\mathbf{v} - \mathbf{v}'|^3 \gamma'} \right] \gamma'^5 f_b^j(\gamma' \mathbf{v}') P_j(\cos\theta').$$

I found these errors when I tried to recover the non-relativistic limit of the collision coefficients. I will consider submitting the erratum to PoP after I double check the correctness of these formula.

Bibliography

- [1] Y. J. Hu, Y. M. Hu, and Y. R. Lin-Liu. Relativistic collision operators for modeling noninductive current drive by waves. *Phys. Plasmas*, 18(2):022504, 2011.