

Erratum: Gravitational multipole renormalization [Phys. Rev. D **104**, 084095 (2021)]

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An algebraic mistake was given in Eq. (23), whose last line should be corrected to

$$\alpha_c^{(m)}(r) \equiv 4 \left[\frac{(r+1)(8r^3 + 64r^2 + 165r + 141)}{(r+2)(r+3)(2r+3)(2r+5)(2r+7)} + H_{r+1} \right]. \quad (1)$$

This propagates to Eq. (29), which now reads

$$\begin{aligned} \beta^{(m)}(r) &\equiv 2(\alpha_a^{(m)} + \alpha_b^{(m)} + \alpha_c^{(m)} - 4\pi_{r+2}) \\ &= -2 \frac{15r^4 + 150r^3 + 568r^2 + 965r + 642}{(r+2)(r+3)(2r+3)(2r+5)(2r+7)}, \end{aligned} \quad (2)$$

that is identical to Eq. (28).

As a result, our claim that the beta functions for $r > 0$ are different between the electric and in the magnetic cases was incorrect: the two beta functions are identical for all multipoles, as it was pointed out in [1] and recently confirmed in [2].

[1] F. Fucito, J. F. Morales, and R. Russo, *Phys. Rev. D* **111**, 044054 (2025).

[2] M. M. Ivanov, Y. Z. Li, J. Parra-Martinez, and Z. Zhou, [arXiv:2504.07862](https://arxiv.org/abs/2504.07862).