

Comment to Comment to Black Hole in Dehnen (1, 4, $\frac{1}{2}$) Dark Matter Halo: Exact Solution, Lensing, Light Ring, and Thermodynamics

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1 Erratum

I would like to respond to Comment Letter [1], submitted by a competing author to David Senjaya. Equation (2) in Ref. [2] contains a minor typographical error arising solely from the transcription of the Mathematica code. Importantly, this mistake **does not affect any subsequent equations, numerical results, or physical interpretations** presented in the manuscript.

Specifically, the density profile was incorrectly written as,

$$\rho(r) = \rho_0 \left(\frac{r}{r_0} \right)^{-\frac{3}{2}} \left(1 + \frac{r}{r_0} \right)^{-\frac{7}{2}}, \quad (1)$$

whereas the correct expression reads,

$$\rho(r) = \rho_0 \left(\frac{r}{r_0} \right)^{-\frac{1}{2}} \left(1 + \frac{r}{r_0} \right)^{-\frac{7}{2}}. \quad (2)$$

Consequently, the claim in [1] that *”the errors in the foundational components (3) and (5) of Ref. [1] invalidate all subsequent analyses, numerical results, and physical interpretations that depend on them”* is **entirely unfounded**. This statement reflects a fundamental misunderstanding of the typographical nature of the error and appears to be a misplaced critique originating from a competing author, rather than a substantive assessment of the results, which remain fully valid.

References

- [1] Al-Badawi, A., Ahmed, F., Sakalli, İ.: Comment on "Black hole in Dehnen $(1, 4, \frac{1}{2})$ dark matter halo: exact solution, lensing, light ring, and thermodynamics (EPJC 85 (2025) 1256)" (2025) [arXiv:2511.11763](#) [gr-qc]
- [2] Senjaya, D.: Black hole in Dehnen $(1, 4, \frac{1}{2})$ dark matter halo: exact solution, lensing, light ring, and thermodynamics. Eur. Phys. J. C **85**(11), 1256 (2025) <https://doi.org/10.1140/epjc/s10052-025-15005-z>