Erratum to "The Heretical Physicist: Revisiting Einstein's Objection to the Event Horizon"

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October 18, 2025

Article corrected: R. J. Beery III, *Reports in Advances of Physical Sciences* **9** (2025) 2550013, doi:10.1142/S2424942425500136.

Summary of correction

In Sec. 3 ("No Rope Long Enough"), Eq. (3) was written as

$$\ell = \int_{r_0}^{2M+\epsilon} \left(1 - \frac{2M}{r}\right)^{-1/2} dr,$$

and was described as the spatial distance along a constant–time hypersurface. This integrand corresponds to the *proper distance* along a static Schwarzschild slice, not to the *operational distance* measured by a stationary observer maintaining causal contact with a freely falling clock via radar or an inelastic rope.

The operational distance is given instead by the **tortoise (radar) coordinate**

$$r_* = r + 2M \ln\left|\frac{r}{2M} - 1\right|,$$

so that the correct rope length from r_0 to r is

$$\ell = r_* - r_*^{(0)} = r - r_0 + 2M \ln\left(\frac{r - 2M}{r_0 - 2M}\right). \tag{1}$$

Equation (1) diverges logarithmically as $r \to 2M$, demonstrating that the rope (and radar distance) required to reach the event horizon is infinite.

Scope of impact

The correction affects only the displayed integral in Eq. (3). All subsequent arguments and conclusions in the paper remain valid: the proper length required to maintain contact with an infalling clock diverges before horizon crossing occurs, reinforcing that the event horizon functions as a causal boundary rather than a traversable surface.

Conclusions unchanged in spirit

This correction aligns the mathematics with the operational definition used throughout the text and does not alter the physical conclusion that causal contact with the infalling body is never lost, nor that the rope would need infinite length to reach the horizon.

Acknowledgment

The author thanks independent reviewers and participants in online physics discussions for identifying technical errors and for constructive comments on their resolution.