



# Erratum: “Simple Physics and Integrators Accurately Reproduce Mercury Instability Statistics” (2023, ApJ, 944, 190)

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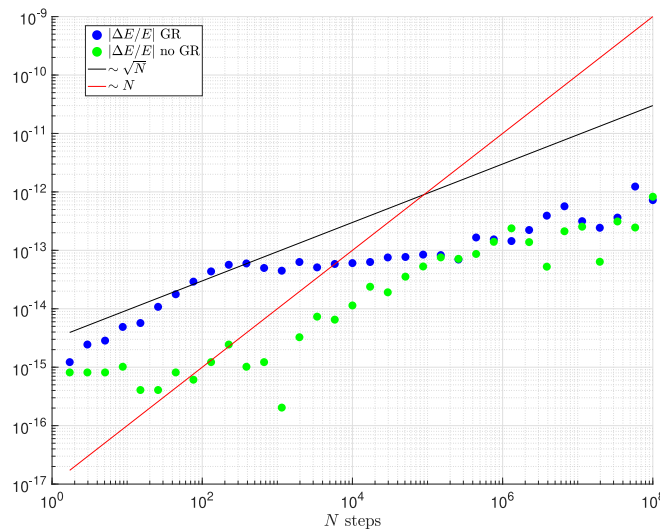
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Appendix B in the published article presented evidence that the roundoff error of the WHFast integrator was biased (Brouwer 1937) for a particular two-body gravitational system. The gravitational force was Newtonian with an added general relativistic correction from Nobili & Roxburgh (1986). The published article presented evidence in Figure 8 of biased roundoff error; i.e., energy error in a forward integration growing linearly in time. This figure was not produced correctly because our query of the value of the speed of light,  $c$ , in REBOUND (`gr.params["c"]=constants.C`) yielded a value in units different from our Gaussian simulation units. We have now redone the plot, using  $c$  in Gaussian units; the result is shown in Figure 8. In contrast to the previous figure, no data show linear, biased energy error growth. The rest of the paper is unaffected by this result. In particular, the bias of Figure 7 in the published article is real: in that plot we studied the full solar system.



**Figure 8.** Accumulation of fractional error in energy including general relativity (GR) and not including GR as a function of the number of time steps for a REBOUND simulation including only the Sun and Mercury that is run forward only. In contrast to Figure 8 in the published article, there is no bias in the GR simulation. This result has no effect on the other results of the published article and, in particular, the roundoff bias observed in Figure 7.



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