Erratum: Energy Budget and Core-Envelope Motion in Common Envelope Evolution

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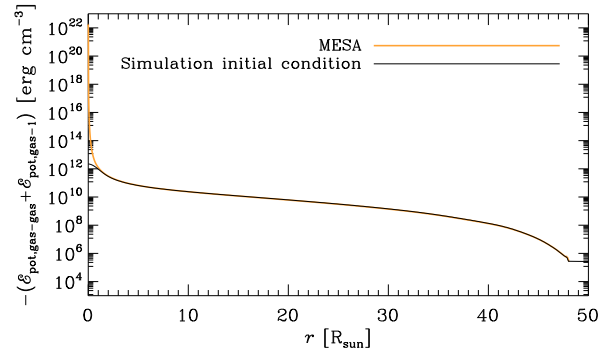
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This is an erratum to the paper 'Energy Budget and Core-Envelope Motion in Common Envelope Evolution' (2019, MNRAS, 486, 1070-1085). The actual condition that we used in our calculations for gas to be designated as unbound was $\mathcal{E}_{\rm bulk,gas} + \mathcal{E}_{\rm int,gas} + \mathcal{E}_{\rm pot,gas-gas} + 2\mathcal{E}_{\rm pot,gas-1} + 2\mathcal{E}_{\rm pot,gas-2} \geqslant 0$, not $\mathcal{E}_{\rm gas} = \mathcal{E}_{\rm bulk,gas} + \mathcal{E}_{\rm int,gas} + \mathcal{E}_{\rm pot,gas-gas} + \mathcal{E}_{\rm pot,gas-1} + \mathcal{E}_{\rm pot,gas-2} \geqslant 0$, as was erroneously implied in Section 4.1. The alternative criteria for assessing unbinding that we explored in Section 4 also included the above factors of two in the same terms in the actual calculations.

This does not affect the general conclusions of the paper. It only means that the various criteria used for unbinding were slightly more conservative than implied. There is currently a lack of consensus with respect to the condition used to designate gas as bound or unbound. (See Chamandy et al. 2020 for further details.)

In addition, the initial profiles of the potential energy density of the primary star, for the MESA model and the simulation, presented in the bottom panel of Figure B1, need to be corrected and the corrected version of the figure is presented in Figure 1.

Figure 1. Comparison of (negative of) potential energy density profiles in the MESA model and the simulation initial envelope.

References

Chamandy L., Blackman E. G., Frank A., Carroll-Nellenback J., Tu Y., 2020, MNRAS,

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