Reply to "Gravitational waves and angular momentum"

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We would like to thank Professor Burko for his careful reading of our article and concede that we were in error. Using the same reference he cited, we find that for circular orbits that the fractional rate of angular momentum radiation exceeds the fractional energy radiation $\left( \frac{\dot{L}}{L} \right) = -2 \left( \frac{\dot{E}}{E} \right)$. Our incorrect statement was intended to motivate the increased orbital velocity as gravitational radiation is emitted. A better motivation would have noted that the energy of a gravitational bound system decreases as the inverse of the radius, while the angular momentum increases as $r^2 \omega$. Thus as the energy loss decreases the orbital radius, the angular frequency must increase. The lost angular momentum is insufficient to override that conclusion.

Regarding his point on quantum gravity, we were speaking simply of classical general relativity. Given the complete absence of empirical information on the topic, we remain agnostic on any statements describing very small amounts of gravitational radiation.

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