Erratum: Universal Relations for Gravitational-Wave Asteroseismology of Protoneutron Stars [Phys. Rev. Lett. **123**, 051102 (2019)]

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There is a factor 2 missing in the calculation of the ratio $r \equiv M_{\text{PNS}}/R_{\text{PNS}}^2$ in this Letter. Additionally, not all the data from the simulations with CoCoNuT were used for the fits and for the plots. As a result, there is a constant factor difference in Fig. 2 (a factor $\sqrt{2}$ on the left panel and 2 in the right panel affecting only the ordinate) and the coefficients in Table I have to be modified (approximately a factor 1/2 for b , 1/4 for c , and 1/8 for d). Table I and Fig. 2 presented here replace Table I and Fig. 2 in the Letter, respectively, correcting those factors and adding the missing data.

FIG. 2. Fits of the different modes. The left-hand panel shows the f mode and the first three p modes while the right-hand panel shows the first two g modes. The results from AENUS-ALCAR and CoCoNuT are represented with solid circles and crosses, respectively. Shaded areas indicate 2σ error intervals.

FIG. 3. Range of frequencies for the $2g_2$ (light shade) and the $2f$ mode (dark shade) as a function of the PNS and shock radius, respectively, for masses in the interval $1.2 M_{\odot}$ – $2.5 M_{\odot}$ considering 2σ errors from the universal relations. Vertical lines show the PNS and shock radius 0.5 s postbounce and horizontal dashed lines the frequency of the $2g_2$ mode (~ 1000 Hz) and the $2f$ mode (~ 300 Hz) at the same time.

TABLE I. Parameters of the universal relations found for each of the modes considered. Fits are of the form $f = a + bx + cx^2 + dx^3$, with f expressed in hertz, and using $M_\odot$ and kilometers as units for mass and length in the quantities expressed in the variable x . Note that some coefficients are not used in some fits. R^2 and σ are the correlation coefficient and the standard deviation of the data (in hertz) with respect to the fit, respectively.

Mode	x	a	$b/10^5$	$c/10^6$	$d/10^9$	R^2	σ
2f	$\sqrt{M_{\text{shock}}/R_{\text{shock}}^3}$	...	1.410 ± 0.004	-4.23 ± 0.06	...	0.966	45
2p_1	$\sqrt{M_{\text{shock}}/R_{\text{shock}}^3}$	...	2.205 ± 0.007	4.63 ± 0.09	...	0.991	61
2p_2	$\sqrt{M_{\text{shock}}/R_{\text{shock}}^3}$	...	4.02 ± 0.02	7.4 ± 0.3	...	0.983	123
2p_3	$\sqrt{M_{\text{shock}}/R_{\text{shock}}^3}$	...	6.21 ± 0.03	-1.9 ± 0.6	...	0.979	142
2g_1	$M_{\text{PNS}}/R_{\text{PNS}}^2$	...	8.67 ± 0.03	-51.9 ± 0.5	...	0.958	205
2g_2	$M_{\text{PNS}}/R_{\text{PNS}}^2$	...	5.88 ± 0.03	-86.2 ± 1.0	4.67 ± 0.08	0.956	85
2g_3	$\sqrt{M_{\text{shock}}/R_{\text{shock}}^3} \rho_C/\rho_C^{2.5}$	905 ± 3	-79.9 ± 1.7	-11000 ± 2000	...	0.925	41

There was an additional error in the coefficients b and c for the 2g_3 mode in Table I that has been corrected in the new Table I. Some of the labels in the header were misleading and have been improved. We note that the units for ρ_C and p_C used for the fit in this table are centimeters (using $G = c = 1$), information that was missing in the previous version of the Letter.

Figure 3 of the Letter has also been modified to use the updated values of the fits. The text has been modified accordingly. The updated measurement of the PNS radius at 0.5 s is 19–37 km (instead of 28–52 km), which fits much better the radius measured directly from the simulation (30 km). Similarly, the updated constraint for the shock radius is 50–100 km (instead of 64–127 km) to be compared with 70 km obtained from the simulation.

These changes leave all the conclusions of the Letter unaffected.