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Corrigendum

FRACTIONAL YIELDS INFERRED FROM HALO AND THICK DISK STARS

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SUMMARY: Due to a wrong sign in a computer code, theoretical yield ratios have been recalculated. Related changes affect only Figs. 12-13, where theoretical yield ratios are represented as vertical bands. The correct figures are provided and differences with respect to the earlier version are mentioned. Minor corrections are also shown.

Key words. galaxy: evolution - galaxy: formation - stars: evolution - stars: formation.

1. THEORETICAL YIELD RATIOS

A computer code with a wrong sign was used in the earlier version of this paper (Caimmi 2013, hereafter quoted as C13), for determining the global element production by a star generation in connection with the stellar evolution theory (Woosley and Weaver 1995), as shown by vertical bands in Figs. 12 and 13 therein. Computations have been repeated with the right sign and the related text and figures has to be changed as follows.

A comparison between the fractional yield $\hat{p}_Q/\hat{p}_O$ inferred from data in the framework of simple MCBR models, and theoretical counterparts deduced from an earlier attempt (Woosley and Weaver 1995) is shown in Figs. 12 and 13 for Q = Na, Mg, Si, Ca, and Q = Ti, Cr, Fe, Ni, respectively, with regard to different subsamples (LH, HH, KD, HA) and different power-law stellar initial mass function exponents.

More specifically, horizontal bars represent fractional yields inferred from Eqs. (14) and (18), top and bottom, respectively, where the semiamplitude equals $2\sigma_{\hat{p}_Q/\hat{p}_O}$ in each case as listed in Table 5. Full and dashed vertical bands represent theoretical fractional yields deduced from SNII progenitor nucleosynthesis within the mass range $11 \le m/m_\odot \le 40$, $Z = 0.02$, and $12 \le m/m_\odot \le 40$, $Z = 0.002$, respectively (Woosley and Weaver 1995, model A) where the power-law stellar initial mass function exponent p lies within the range $-3 \le -p \le -2$. A narrow band implies little dependence of fracional yields on p and vice versa. A formal expression of the theoretical fractional yield is shown in Appendix A4.

An inspection of Figs. 12 and 13 discloses that empirical [inferred from Eqs. (14) and (18)] and theoretical fractional yields are consistent (in the sense that horizontal bars related to the former lie between vertical bands related to the latter) for Na, Ca, Ni, and Na, Mg, Ca, Ni, respectively, while the contrary holds for the remaining elements in connection with one population at least.

The next text remains unchanged with respect to the earlier version (C13), with the exception of point (3) mentioned in Section 5, which has to be changed as follows:

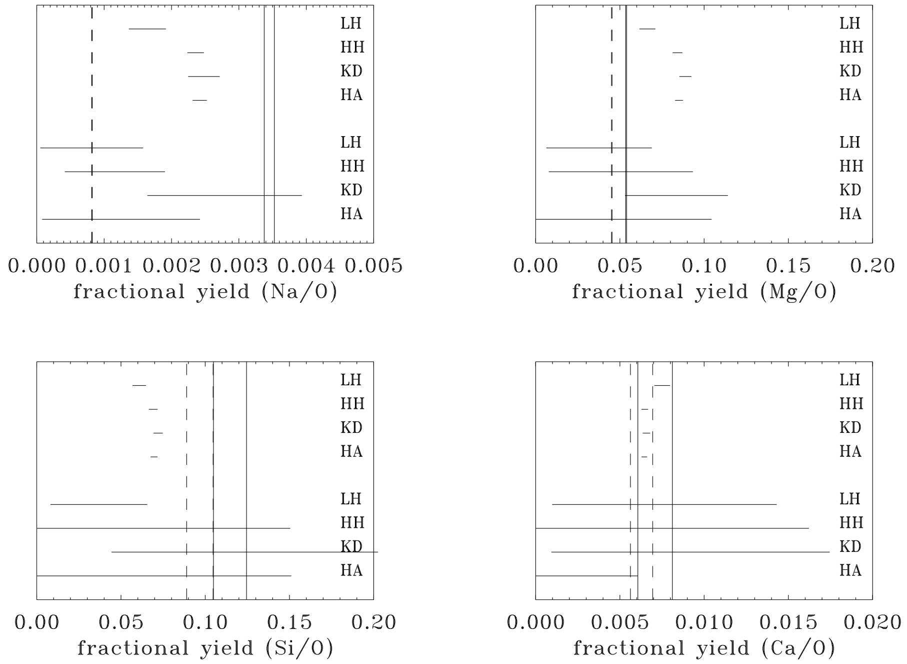

Fig. 12. *Comparison between the fractional yield $\hat{p}_Q/\hat{p}_O$, Q = Na, Mg, Si, Ca, inferred from Eqs. (14) and (18) for different subsamples as indicated (top and bottom bars, respectively) and theoretical counterparts deduced from stellar nucleosynthesis (vertical bands) for supersolar $Z = 0.02$ (full) and subsolar $Z = 0.002$ (dashed) metallicity, with respect to $Z_\odot = 0.134$ (Asplund et al. 2009) under the assumption of a power-law stellar initial mass function. The bar semiamplitude equals $2\sigma_{\hat{p}_Q/\hat{p}_O}$. The band width relates to a fiducial range of power-law exponent $-3 \le -p \le -2$. See text for further details.*

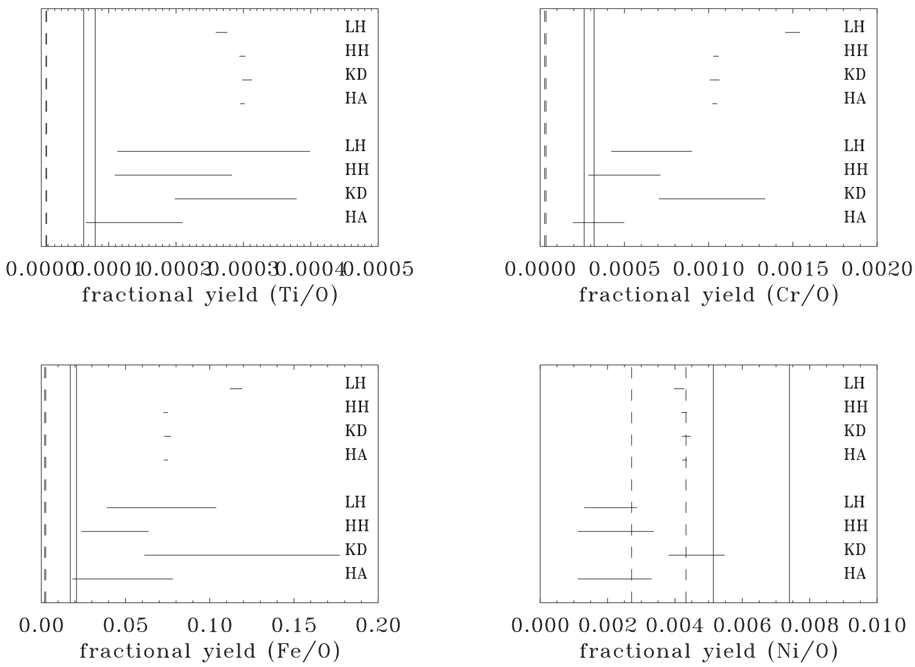

Fig. 13. *As in Fig. 12, but for Q = Ti, Cr, Fe, Ni.*

(3) Within the framework of simple MCBR chemical evolution models (Caimmi 2011a, 2012a), fractional yields are consistent with theoretical results from SNII progenitor nucleosynthesis (Woosley and Weaver 1995) for Na, Mg, Ca, Ni, while the contrary holds for the remaining elements in connection with one subsample at least. In particular, for Ti, Cr, Fe, where theoretical values appear to be underestimated, the contribution from SNIa progenitors could fill the gap.

2. MINOR CORRECTIONS

Due to a printing error (with no consequence on the results) the argument of a logarithm was written in absence of the logarithm in the earlier version (C13). The right expression reads:

$$\psi = \log \frac{dN}{N\, d\phi} = \alpha_Q \phi + \beta_Q \ , \qquad (3)$$

according to the definition of ψ.

Regression line slope estimators, listed in Table 2 and mentioned in related text (C13), must be captioned as $-\hat{\alpha}_Q$ instead of $\hat{\alpha}_Q$, in that the slope of corresponding regression lines is clearly negative, see Figs. 3-11 (C13). The results are left unchanged.

The argument of a logarithm was omitted in Eq. (23). Accordingly, log has to be replaced by $\log \phi_Q$. The right expression reads:

$$(\psi)_{cs} = \log \left\{ \frac{1}{\ln 10} \frac{1}{\sqrt{2\pi}\sigma_Q} \times \exp \left[- \frac{(\log \phi_Q - \overline{\log \phi_Q})^2}{2\sigma_Q^2} \right] \frac{1}{\phi_Q} \right\} . \qquad (23)$$

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