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The Quintuplet cluster

III. Hertzsprung-Russell diagram and cluster age

(Corrigendum)

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Key words. open clusters and associations: individual: Quintuplet – infrared: stars – stars: early-type – stars: late-type – Hertzsprung-Russell and C-M diagrams – errata, addenda

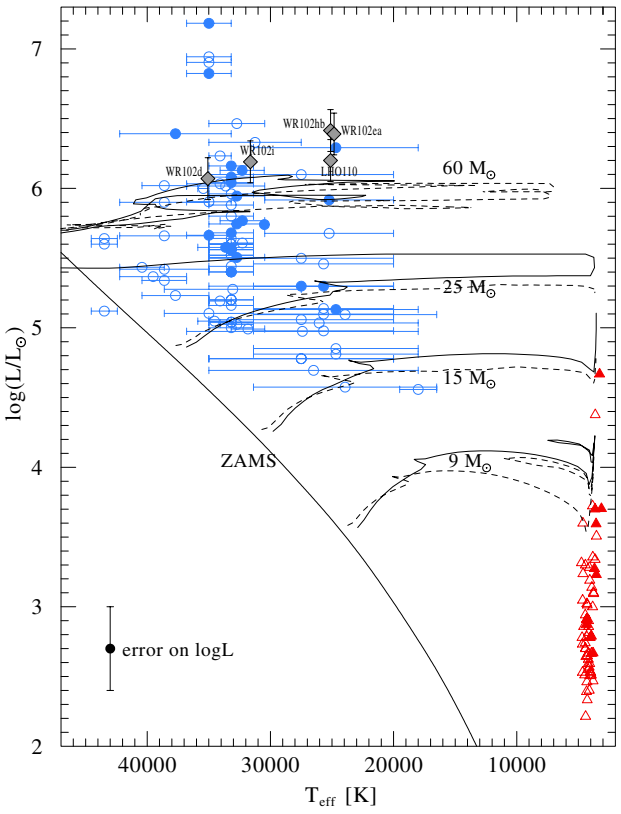

Fig. 4. Hertzsprung-Russell diagram of the Quintuplet. Circles (blue) represent the early-type OB stars, triangles (red) the late-type KM stars, filled symbols refer to stars of the corrected sample (see text). The ZAMS and stellar evolution tracks with rotation (solid lines) and without rotation (dashed lines) for different initial masses are from Meynet & Maeder (2003).

In our paper Liermann et al. (2012) we discovered a sign error. The equation describing the conversion of bolometric corrections from the V-magnitude to the K-magnitude, which is embedded in the text paragraph following Eq. (2), should correctly read as $BC_K = BC_V + (M_V - M_K)$. Consequently, the luminosities of all early-type OB stars in Figs. 4–6 must be increased by about 0.8 dex. Here we present the corrected figures.

When comparing the now higher luminosities with isochrones, the OB stars in the Quintuplet cluster appear to be about 3.0 ± 0.5 million years old, i.e., slightly younger than the 4 Myr concluded in the erroneous version. The captions of Figs. 5 and 6 have been updated accordingly.

The corrected luminosities also affect the derived initial-mass function (Fig. 9), which now is slightly flatter with a power-law exponent $\gamma = -0.94 \pm 0.34$.

A sign error is also contained in Eq. (3), where the term BC_K should appear with a plus sign. Since we used the correct formula for our calculations, this typo has no further consequences.

The main conclusions of the original paper remain unaffected.

References

Girardi, L., Bertelli, G., Bressan, A., et al. 2002, A&A, 391, 195
Lejeune, T., & Schaerer, D. 2001, A&A, 366, 538
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Maíz Apellániz, J., & Úbeda, L. 2005, ApJ, 629, 873
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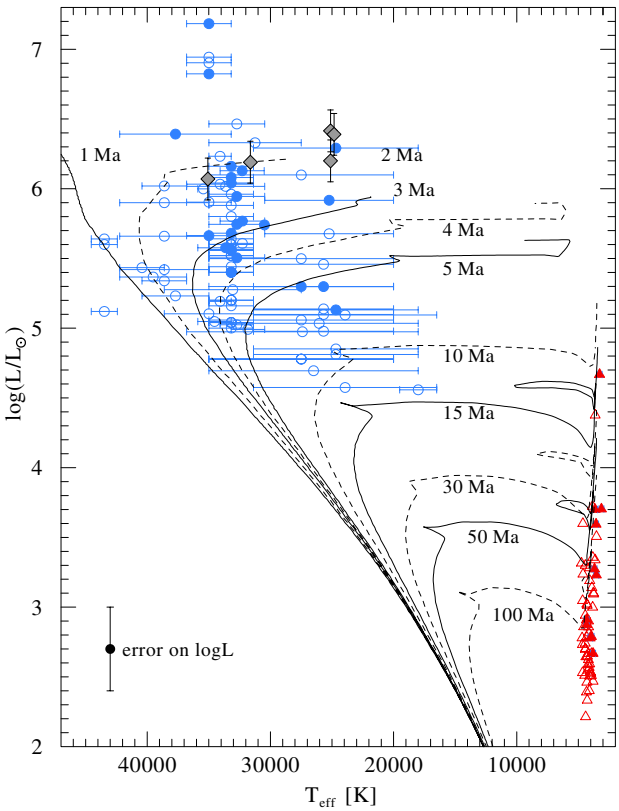

Fig. 5. Same as Fig. 4 but with theoretical isochrones for different cluster ages. The isochrones, shown with alternating line styles, were constructed by Lejeune & Schaerer (2001). The majority of the population of OB stars in the Quintuplet falls between the 2 and 4 Myr isochrones, while most KM stars would need more than 30 Myr to evolve

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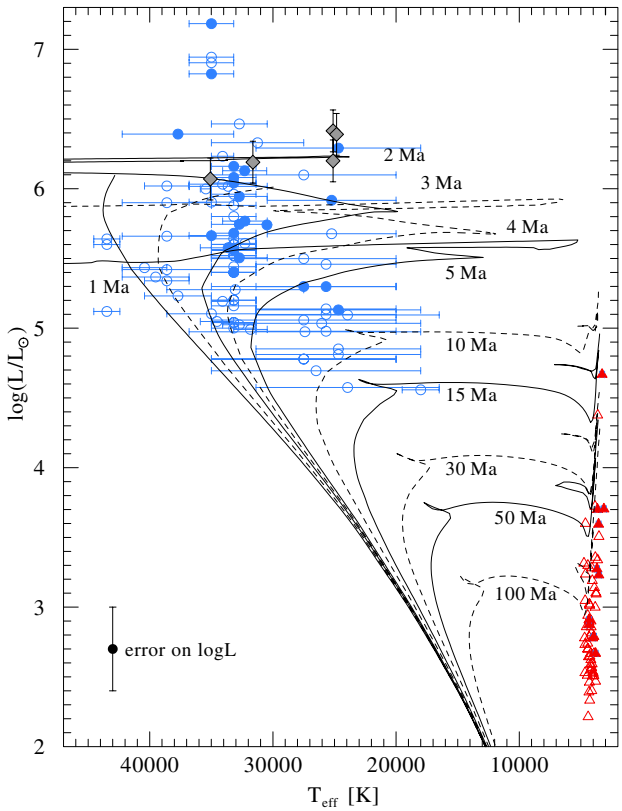

Fig. 6. Same as Fig. 5 but with theoretical isochrones based on Girardi et al. (2002). Again, the majority of OB stars falls between the 2 and 4 Myr isochrones, while most KM stars evolve on timescales with more than 30 Myr.

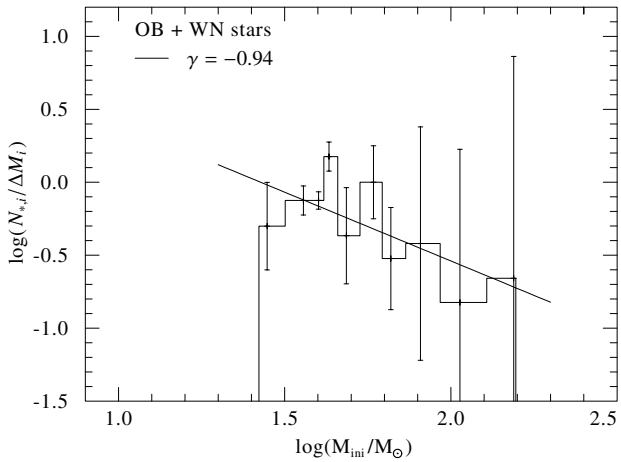

Fig. 9. IMF for the early-type OB stars in the corrected sample of the LHO catalog plus the WN stars. The distribution shown has variable mass range bins with a constant number of stars per bin to avoid numerical biases according to Maíz Apellániz & Úbeda (2005); the linear fit gives a slope coefficient as indicated in the plot.