Erratum: Recovering galaxy stellar population properties from broad-band spectral energy distribution fitting

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Figure 1. Median deviation of fitted age from true ages of mock passive galaxies as a function of wavelength coverage at redshift 0.5–3 using the wide setup. The black dots and 68 per cent confidence levels refer to the unreddened case, the red to the case that includes reddening in the fit. Values for an ‘ugriz’ filter setup are corrected.

This is an erratum to the paper entitled ‘Recovering galaxy stellar population properties from broad-band spectral energy distribution fitting’, published in MNRAS, 422, 3285 (2012). In section 4.2 of Pforr, Maraston & Tonini (2012) we describe the recovery of stellar population parameters of mock passive galaxies and their dependency on a variety of assumptions of the SED-fitting. We list offsets in stellar age, stellar mass and other parameters in tables B3 and B4 and show the median offset in age (fig. 25) and stellar mass (fig. 31) as a function of the filter setup used in the fitting. For the SDSS filter setup ‘ugriz’ we erroneously used an outdated catalogue that did not consider the effect of the Lyman forest absorption on the observed magnitudes. Here we present the results obtained using the proper catalogue. The corrected figures for median age difference and median mass difference are shown in Figs 1 and 2, respectively. Furthermore, we list the corrected values at $z = 0.5$ and 2 in Table 1. Due to the nature of the error and the wavelength range spanned by the filter set, the largest correction occurs at the highest redshift.

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Figure 2. Median differences between true and recovered stellar mass as a function of photometric filters used in the model fitting, at redshifts 0.5, 1, 2 and 3. The filter setup is varied from left to right in each panel, redshift increases from top-left to bottom-right. Given are the 68 per cent confidence levels for each setup. The symbols are the same as in Fig. 1. The blue and green symbols refer to the mass recovery obtained with the wide setup for mock star-forming galaxies without and with reddening, respectively. Values for an ‘ugriz’ filter setup are corrected.

Table 1. Same as table B3 and B4 in Pforr et al. (2012) with corrected values for mock passive galaxies at \( z = 0.5 \) and 2 and a SDSS filter setup.

| Setup                  | \( \Delta \log \text{age} \) | \( \Delta (B-V) \) | \( \Delta \log M^* \) | \( \Delta \log \text{SFR} \) |
|------------------------|-------------------------------|-------------------|---------------------|---------------------|
| \( z = 0.5 \), no reddening | Median            | Range            | Median              | Range              | Median          | Range          |
| ugriz                  | 0.04                        | −0.27 to 0.26    | 0.00                | 0.00 to 0.00       | −0.17 to 0.15   | 0.00 to 0.00   |
| \( z = 0.5 \), with reddening | −0.07                      | −1.50 to 0.10    | 0.00                | 0.00 to 0.88       | −0.20 to 0.12   | 0.00 to 0.00   |
| \( z = 0.5 \), no reddening | Median            | Range            | Median              | Range              | Median          | Range          |
| ugriz                  | 0.04                        | −0.02 to 0.19    | 0.00                | 0.00 to 0.02       | −0.05 to 0.08   | 0.00 to 0.00   |
| \( z = 2 \), with reddening | −0.02                      | −0.24 to 0.11    | 0.05                | 0.00 to 0.10       | 0.00 to 0.19    | 0.00 to 0.00   |

The median offset in age increases on average by 0.025 dex. At \( z = 0.5 \), the 68 per cent range for age offsets in the unreddened case becomes more symmetric around the median and increases slightly by 0.04 dex. In the unreddened case at \( z = 2 \) the 68 per cent range shifts by \( \sim 0.05 \) dex towards overestimation. The 68 per cent ranges in reddening increase by 0.04 mag and reddening is slightly overestimated at higher redshift [\( \Delta (B-V) = 0.05 \) in comparison to \( \Delta (B-V) = 0 \) before]. The median offset between true and recovered stellar masses at low redshift indicates a negligible amount of overestimation at low redshift but the lower end of the 68 per cent range extends towards underestimation. In the reddened case at \( z = 2 \) the median offset and 68 per cent ranges in stellar mass are shifted by \( \sim 0.08 \) dex towards overestimation. The corrections are small overall and do not change any of the conclusions drawn in the original paper.

REFERENCE

Pforr J., Maraston C., Tonini C., 2012, MNRAS, 422, 3285

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