Erratum: Ubiquitous seeding of supermassive black holes by direct collapse

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Figure 1. Emission (corrected) in the LW band from a Pop II population as a function of its age computed using the data from fig. 8e in STARBURST99 for a continuous mode of Pop II star formation (compare to fig. 2 in original paper).

This is an erratum to the paper entitled ‘Ubiquitous seeding of supermassive black holes by direct collapse’ published in MNRAS, 425, 2854 (2012). An error was made in computing the net LW output from a Pop II stellar population for a burst mode of star formation (compare to fig. 2 in original paper).

This error resulted in an overestimation of the LW output by a factor of ∼80–100. However, by changing to a more accurate estimate of the LW contribution from a continuous mode of Pop II star formation, instead of a single burst, we find that our initial conclusions are qualitatively unchanged. Although, this resulted in lowering the peak emission of the LW output by a factor of 10 (with respect to the wrong estimate), we were able to account for the LW contribution from older stellar populations (see Fig. 1). Upon re-running the SAMs for all the cases with the continuous mode, we find the following minor quantitative changes. We show the corrected fig. 6 as Fig. 2 here.

(i) The DCBH site number density at $z = 6$ can be up to $\sim 2.5 \text{ Mpc}^{-3}$, instead of $\sim 2.09 \text{ Mpc}^{-3}$ (for the case esc1.0).

(ii) We find a slightly steadier rise in the formation rate of DCBHs going up to $10^{-3.5} \text{ Mpc}^{-3} \text{ z}^{-1}$.

(iii) The maximum LW output from a Pop II star cluster is reduced by a factor of $\sim 10$ but the number of sites increase by up to 10 per cent due to the contribution of the LW output from older stellar populations (see Fig. 1).

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