Erratum: Dust yields in clumpy supernova shells: SN 1987A revisited

by B. Ercolano,★M. J. Barlow and B. E. K. Sugerman

The paper 'Dust yields in clumpy supernova shells: SN 1987A revisited', was published in Mon. Not. R. Astron. Soc. **375**, 753–763, (2007). We have identified an error in the version of the MOCASSIN code used for the radiative transfer modelling of the dusty supernova envelope. The error affected the probability density functions for the calculation of dust emissivities. The result is that the infrared spectral shapes shown in figs 2–11, 13 and 14 are not correct. The error affected versions 2.02.14 to 2.02.41 of the code (version 2.02.21 was used for this work) – no other published work is affected.

The error, introduced during an optimization exercise, effectively removed the frequency dependence from the emission coefficient, reducing the infrared spectral energy distribution (SED) to a combination of blackbodies of multiple temperatures, modified by self-absorption by the grains.

Only the probability density functions (PDFs) used for the Monte Carlo determination of the infrared dust emission were affected by the error, with the optical part of the SED not being affected, as the latter is controlled by the PDFs for dust absorption, which were correct. All the main conclusions presented in our article are unaffected; in particular the dust mass estimates remain unchanged (because the PDFs controlling dust absorption were correct), as well as our conclusion that only a very small amount of silicate dust grains could be present in the envelope of SN 1987A. In fact the conclusion that there is a near absence of silicate dust is reinforced, given that the correct emission PDFs for a given amount of silicate dust show even more prominent features at 10 and 18 μm than before, which are not present in the observations.

It should be noted, however, that small downward adjustments to the R_{in} values quoted in table 1 are necessary to provide better fits to the overall SEDs with the new code. All other quantities in the published article are confirmed.

We thank Mr Nick Wright (University College London) and Professor Peter Meikle (Imperial College London) for bringing to our attention inconsistencies in the infrared SEDs being produced by the relevant version of MOCASSIN.

REFERENCES

Ercolano B., Barlow M. J., Sugerman B. E. K., 2007, MNRAS, 375, 753

★E-mail: bercolano@head.cfa.harvard.edu

This paper has been typeset from a TEX/LATEX file prepared by the author.