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He abundance in the ejecta of U Sco (Erratum)

http://researchonline.ljmu.ac.uk/id/eprint/2488/

Article

Erratum: He abundance in the ejecta of U Sco

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Key words: errata, addenda – circumstellar matter – infrared: stars.

The paper 'The helium abundance in the ejecta of U Scorpi' was published in MNRAS, 419, 1465 (2012).

An error has been identified in the abundance calculations, including the error analysis. In addition, the day numbers presented in Table 1 and used to identify observations in tables 2–5 and

Table 1. Corrected day numbers.

Published day	Correct day
1.93	1.94
4.93	4.95
5.41	6.16
5.93	5.93
6.81	7.07
7.81	8.04
7.93	7.91
8.81	9.04
8.93	8.91
9.43	9.43
9.93	9.90
10.93	10.92
11.81	12.04
11.93	11.90
12.81	13.08

figs 1–4 were listed incorrectly. These were discovered during the viva of the lead author, and were simple arithmetic errors; the data were correctly reduced and the measurements were conducted correctly.

Table 1 shows the correspondence between the published day numbers and the correct day numbers. Note that the order of the observations changes at two points: day 5.93 moves from fourth to third observation, and the penultimate observation moves to third from last, swapping with the one previously listed as third from last. This does not affect the discussion or any of the conclusions of the paper.

The revised component abundance estimates and associated errors for each line are shown in Table 2. The weighted mean

Table 2. Revised helium abundances, to replace table 6 in the original paper.

Helium line	Derived abundance
He I 6678 Å	0.061 ± 0.01
He II 4686 Å	0.047 ± 0.008
He II 5411 Å	0.076 ± 0.014
He II 1.163 μm	0.061 ± 0.010

abundance from the ionized helium lines is $N(\mathrm{He})/N(\mathrm{H}) = 0.056 \pm 0.019$ with the errors added in quadrature. Combined with the abundance from the neutral line, this gives a total abundance of $N(\mathrm{He})/N(\mathrm{H}) = 0.117 \pm 0.014$.

We note that this is closer to the results of Iijima (2002), who found $N(\mathrm{He})/N(\mathrm{H}) = 0.16 \pm 0.02$ purely from He I lines. The 3σ range of this value is within 3σ range of our value. However, Iijima (2002) employed indirect arguments to determine which of the ratios they discuss was the best representation of the true value. Our work is the first direct measurement incorporating both He I and He II lines and hence the most robust determination to date.

Using the Asplund, Grevesse & Sauval (2005) solar abundance value of $N(\mathrm{He})/N(\mathrm{H}) = 0.085$, we find an overabundance relative to solar to be a factor of 1.38 ± 0.15. This is well within the range for typical classical novae (table 6.1 of José & Shore 2008) showing that this recurrent nova with a main-sequence-type secondary shows no particular helium enhancement compared to these very similar binary systems.

We confirm the original conclusion that previously claimed overabundance of helium was due to incomplete sampling of the neutral and ionized lines, and was not due to a helium-rich secondary.

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