



LJMU Research Online

Maxwell, MP, Rushton, MT, Darnley, MJ, Worters, HL, Bode, MF, Evans, A, Eyres, SPS, Kouwenhoven, MBN, Walter, FM and Hassall, BJM

He abundance in the ejecta of U Sco (Erratum)

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

Article

Citation (please note it is advisable to refer to the publisher's version if you intend to cite from this work)

Maxwell, MP, Rushton, MT, Darnley, MJ, Worters, HL, Bode, MF, Evans, A, Eyres, SPS, Kouwenhoven, MBN, Walter, FM and Hassall, BJM (2015) He abundance in the ejecta of U Sco (Erratum). MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY. 448 (4). pp. 3414-3415. ISSN 0035-8711

LJMU has developed [LJMU Research Online](#) for users to access the research output of the University more effectively. Copyright © and Moral Rights for the papers on this site are retained by the individual authors and/or other copyright owners. Users may download and/or print one copy of any article(s) in LJMU Research Online to facilitate their private study or for non-commercial research. You may not engage in further distribution of the material or use it for any profit-making activities or any commercial gain.

The version presented here may differ from the published version or from the version of the record. Please see the repository URL above for details on accessing the published version and note that access may require a subscription.

For more information please contact researchonline@ljmu.ac.uk

<http://researchonline.ljmu.ac.uk/>

Erratum: He abundance in the ejecta of U Sco

by M. P. Maxwell,¹ M. T. Rushton,¹ M. J. Darnley,² H. L. Worters,³ M. F. Bode,²
A. Evans,⁴ S. P. S. Eyres,^{1*} M. B. N. Kouwenhoven,⁵ F. M. Walter⁶
and B. J. M. Hassall¹

¹Jeremiah Horrocks Institute, University of Central Lancashire, Preston PR1 2HE, UK

²Astrophysics Research Institute, Liverpool John Moores University, Birkenhead CH41 1LD, UK

³South African Astronomical Observatory, PO Box 9, 7935 Observatory, South Africa

⁴Astrophysics Group, Keele University, Keele, Staffordshire ST5 5BG, UK

⁵Kavli Institute for Astronomy and Astrophysics, Peking University, Yi He Yuan Lu 5, Haidian Qu, Beijing 100871, China

⁶Department of Physics and Astronomy, Stony Brook University, Stony Brook, NY 11794-3800, USA

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.

* E-mail: spseyres@uclan.ac.uk

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

We note that this is closer to the results of Iijima (2002), who found $N(\text{He})/N(\text{H})=0.16 \pm 0.02$ 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 $N(\text{He})/N(\text{H}) = 0.085$, 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.

ACKNOWLEDGEMENTS

We thank Professor G. E. Bromage and Dr B. Smalley for identifying these errors.

REFERENCES

- Asplund M., Grevesse N., Sauval A. J., 2005, in Thomas G. B., III Frank N. B., eds, ASP Conf. Ser., Vol. 336, Cosmic Abundances as Records of Stellar Evolution and Nucleosynthesis in honor of David L. Lambert. Astron. Soc. Pac., San Francisco, p. 25
- Iijima T., 2002, A&A, 387, 1013

- José J., Shore S. N., 2008, in Bode M. F., Evans A., eds, Classical Novae. Cambridge Univ. Press, Cambridge, p. 121

This paper has been typeset from a \TeX/L\AA\TeX file prepared by the author.