Circular No. 8675

Central Bureau for Astronomical Telegrams
INTERNATIONAL ASTRONOMICAL UNION
Mailstop 18, Smithsonian Astrophysical Observatory, Cambridge, MA 02138, U.S.A.
IAUSUBS@CFA.HARVARD.EDU or FAX 617-495-7231 (subscriptions)
CBAT@CFA.HARVARD.EDU (science)
URL http://cfa-www.harvard.edu/iau/cbat.html ISSN 0081-0304
Phone 617-495-7440/7244/7444 (for emergency use only)

RS OPHIUCHI

T. Iijima, Osservatorio Astrofisico, Asiago, writes that high-dispersion spectra (resolution 16000; range 420–680 nm) of RS Oph were taken with an échelle spectrograph mounted on the 1.82-m reflector at the Mt. Ekar station of the Astronomical Observatory of Padova on Feb. 18.2 and 19.2 UT. The spectra show broad emission lines of H I, He I, Fe II multiplets 27, 37, 38, 42, 43, 48, 49, and 74, and some Ti II lines. The emission lines of He II were not yet detected. The FWHM of H I and He I lines are $\sim$ 1800 km/s, and those of the Fe II lines are roughly 800 km/s. Very narrow emission components, whose widths are comparable to the resolution limit of the spectrograph, are seen on the top of the broad emission components. The narrow components are very weak for H I and He I lines, while their heights are larger than those of the broad components for several Fe II lines. The line of [N II] 575.5-nm shows only the narrow component.

M. F. Bode, Liverpool John Moores University; T. J. O'Brien and R. J. Davis, University of Manchester; J. Osborne and K. L. Page, University of Leicester; G. Schwarz, West Chester University; S. Starrfield and J.-U. Ness, Arizona State University; J. Krautter, University of Heidelberg; J. Drake, Smithsonian Astrophysical Observatory; A. Evans, Keele University; and S. P. S. Eyres, University of Central Lancashire, report that Swift XRT observations of the latest outburst of RS Oph (*IAUC* 8671) show this to be a very bright and rapidly evolving x-ray source: "The first observations, obtained on Feb. 16.21 UT (3.38 days after reported outburst), gave a total XRT countrate of 11.8 $\pm$ 0.2 counts/s. The x-ray spectrum could be well fitted with a strongly absorbed high-temperature thermal bremsstrahlung model plus an Fe K line and absorption edge: $kT > 70$ keV (90-percent confidence), $E_{\rm line} = 6.66 \pm 0.02$ keV, $E_{\rm edge} = 7.18 \pm 0.09$ keV, and $N_H = (2.3 \pm 0.1) \times 10^{22}$ cm^{-2}. Observations on Feb. 17.89 show the source to be around three times brighter in the XRT band, and the spectrum shows clear evidence of line emission from other elements as well as Fe. A preliminary solar abundance spectral fit requires four temperature components plus an Fe K line and absorption edge. In this fit, $N_H = (1.7^{+0.11}_{-0.22}) \times 10^{22}$ cm^{-2}. We note that these fits may not be unique and should be considered simply empirical at this stage. Detailed hydrodynamic modelling is now in progress. Observations and modelling of the previous outburst in 1985 (see, e.g., O'Brien *et al.* 1992, *MNRAS* **255**, 683) suggest that RS Oph will continue to evolve rapidly in the x-ray range over the coming weeks. We also urge continued monitoring at other wavelengths, in particular optical spectroscopy, for the next several months. Swift observations are ongoing."

2006 February 21 *Daniel W. E. Green*