

Electronic Telegram No. 2861

Central Bureau for Astronomical Telegrams

INTERNATIONAL ASTRONOMICAL UNION

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YY HERCULIS

U. Munari, Istituto Nazionale di Astrofisica, Padova Astronomical Observatory; A. Siviero Department of Astronomy, University of Padova; G. L. Righetti, F. Castellani, S. Dallaporta, M. Graziani, G. Cherini, S. Moretti, S. Tomaselli, and A. Frigo, ANS Collaboration, write that the symbiotic star YY Her is entering a new active phase. The last such phase ended six years ago, and was characterized by three brightness maxima occurring in early 2003, mid-2004 and late 2005 when, according to ANS Collaboration data, it peaked at $B = 12.69$, $B-V = +0.78$, $V-I_c = +1.75$ on 2005 Nov. 20. In the following years, the star has remained in quiescence, with its light curve being modulated by reflection effect and ellipsoidal distortion for a total of 0.4-mag amplitude around a mean value $B = 14.17$. Around 2011 Sept. 12, YY Her began to brighten above the normal quiescence level, peaking at $B = 13.01$, $B-V = +0.76$, $U-B = -0.19$, $V-R_c = +0.83$, $V-I_c = +1.89$ on Oct. 4. Its rise has since then halted, the last measurement for Oct. 9 giving $B = 13.12$, $B-V = +0.82$, $U-B = -0.19$, $V-R_c = +0.88$, $V-I_c = +1.99$. The authors obtained a low-resolution, absolutely calibrated spectrum of YY Her on Oct. 7 with the Asiago 1.22-m telescope (range 328-790 nm; 0.23 nm/pixel dispersion). The last spectrum that the authors obtained of YY Her with the same instrumentation and with the star in quiescence was on Aug. 24. The spectrum obtained on Oct. 4 shows a general increase in the absolute intensities of emission lines [H_β , He I 587.6-nm and He II 468.6-nm changed from an integrated flux of 13.2, 2.2, and 4.4, to 19.7, 5.1, and 11.9 in units of $10^{(-13)}$ erg $cm^{(-2)}$ $s^{(-1)}$, respectively] and increase in excitation conditions (the He II 468.6-nm/ H_β ratio increased from 0.32 to 0.60; He I 587.6-nm/ H_β from 0.17 to 0.26; and [Ne III] 386.9-nm/H I 389.0-nm from 0.34 to 0.80). The largest changes in the emission lines were those of [O III] 500.7-nm, which rose from 0.003 to 0.170 compared to H_β , and the N III-C III 464- to 465-nm complex that was not visible in the Aug. 24 and Oct. 7 spectra is instead prominent. Only [Ne V] 334.5-, 342.6-nm behaved the opposite way. The [Ne V] 342.6-nm/O III 344.5-nm ratio declined from 3.62 to 0.41. A high-resolution echelle spectrum (range 365-735 nm; resolving power 22000) of YY Her was obtained on Oct. 4 with the Asiago 1.82-m telescope. All emission lines are sharp, with a FWHM of 100 km/s for hydrogen Balmer and He I lines, 135 km/s for He II, and 150 km/s for [O III]. No line shows an obvious P-Cyg profile.

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