

Electronic Telegram No. 2555

Central Bureau for Astronomical Telegrams

INTERNATIONAL ASTRONOMICAL UNION

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AX PERSEI

U. Munari and A. Siviero, Istituto Nazionale di Astrofisica, Padova
Astronomical Observatory; R. L. M. Corradi, Instituto de Astrofisica de
Canarias; and P. Valisa, G. Cherini, F. Castellani, and S. Dallaporta, "Asiago
Novae and Symbiotic Stars" (ANS) collaboration, report that the symbiotic star
AX Per is undergoing a brightening phase, the first after the short outburst
it experienced in the (northern-hemisphere) spring of 2009 (cf. CBET 1757).
The 2009 event was the first bright phase after the major outburst AX Per
experienced between 1988 and 1992 (cf. IAUCs 4544, 4621, 4922, 4994). The
monitoring carried out with several ANS-collaboration telescopes recorded AX
Per to be still in quiescence at $B = 12.33$ ($B-V = +0.89$, $V-I_c = +2.79$) on
2010 Nov. 15.93 UT. On Nov. 19.97, it had brightened to $B = 11.73$ ($B-V =$
 $+0.80$, $V-I_c = +2.53$), and by Nov. 22.69 it has reached $B = 11.63$ ($B-V =$
 $+0.78$, $V-I_c = +2.47$). Interestingly, the start of this new active phase is
occurring about 615 days past that of 2009, which is not too dissimilar from
the orbital period of the star (682 days). Absolute optical
spectrophotometry of AX Per was obtained with the 0.60-m telescope of the
Schiaparelli Observatory in Varese. The spectrum from Nov. 22 is
characterized by a strong and high-ionization emission-line spectrum,
superimposed on the M-giant absorption spectrum, which is veiled shortward
of 500 nm by the blue continuum from circumstellar nebular material. On
this spectrum, the integrated flux of H_{beta} emission is $1.2 \times 10^{(-11)}$
 $\text{erg cm}^{(-2)} \text{ s}^{(-1)}$, and the flux ratios (H_{beta}):(H_{alpha}):(He II
468.6-nm):(He I 587.6-nm):([O III] 500.7-nm):([Fe VII] 608.7-nm):(O I
844.6-nm) are 1.00:5.18:0.47:0.22:0.19:0.0067:0.069; for comparison, on
August 7, during quiescence, they obtained exactly the same flux for H_{beta}
emission, but different line ratios 1.00:6.01:0.24:0.24:0.05:0.068:0.16. So
the onset of the current active phase has not changed the flux of Balmer and
He I lines, but increased He II by a factor of two and [O III] by three,
and reduced O I 844.6 by a factor of two and [Fe VII] by ten. It is worth
noting that AX Per underwent a short-duration flare about one year before
the onset of the major 1988-1992 outburst. It is tempting to speculate by
similarity that the 2009 short outburst could be a similar precursor, and
that the present rise in brightness by AX Per could be the onset of a major
outburst event similar to that in 1988-1992.

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