

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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