The nova type outburst of the symbiotic star AS 296

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Abstract. The photometric and spectroscopic evolutions, displayed by AS 296 since the June 1988 outburst ([1]), are presented and discussed. The main features of the model outlined by [2], [3] and [4], are confirmed and further developped. An orbital period of about 3 years is inferred from H_α modulation (see [5]).
The outburst originated from a TNR event in the accreted envelope of a WD. The IUE and optical spectroscopic evolution agrees with the expected scenario for degenerate conditions in the accreted material, while the high quiescence luminosity of the WD would indicate non-degenerate conditions.
The late type giant passed unchanged the outburst. Also the region of H_α formation was not touched by the eruption.
After one year the system has not yet reached the quiescence again. The photometric evolution displayed by AS 296 up to June 15, 1989 is presented in Fig.1.
In Tab.1, the main features exhibited by symbiotic stars that have experienced a TNR event are summarized. The first 8 objects in the table are usually collectively called "symbiotic novae". They distinguish themselves for the very long outburst duration. At present, AS 296 appears to be a borderline case of such class, and a firm understanding needs to wait for the end of current active phase.

References

[1] Munari,U.:1988 IAU Circ. 4622
[2] Munari,U.,Buson,L.M.,Massone,G.:1989 Astron.Astrophy. 214, L5
[3] Munari,U.,Whitelock,P.A.:1989 MNRAS in press vol. 239
[4] Munari,U.,Cassatella,A.,Gonlazez-Riestra,R.:1990 in prepar.
[5] Munari,U.:1988 Astron.Astrophys. 207, L8

Tab.1 **Selected properties of symbiotic stars with TNR outbursts**

		start	duration (yr)	spectrum at max.	amplit. (mag.)	orbital per.(yr)	LTG type
a)	AG Peg	1850:	>130	A or later	3	2.26	M3.0 III
	RT Ser	1909	40	F supergiant	>7		M5.5
	AS 239	1940::	10:	:			Mira
	RR Tel	1944	>45	F supergiant	7		Mira ($P=387^d$)
	V1329 Cyg	1956	>33	planet. nebula	4	2.61	>M4
	V1016 Cyg	1964	>25	planet. nebula	4.5	6	Mira ($P=478^d$)
	HM Sge	1975	>14	planet. nebula	5	>12	Mira ($P=527^d$)
	PU Vul	1978	>10	F supergiant	7		M4-5
b)	V407 Cyg:	1936	4	:	>4	43:	Mira ($P=745^d$)
	AS 338:	1983:	>6	A supergiant	>4	1.19	>M3
	AS 296:	1988	>1	F	3	3	M5.3 III

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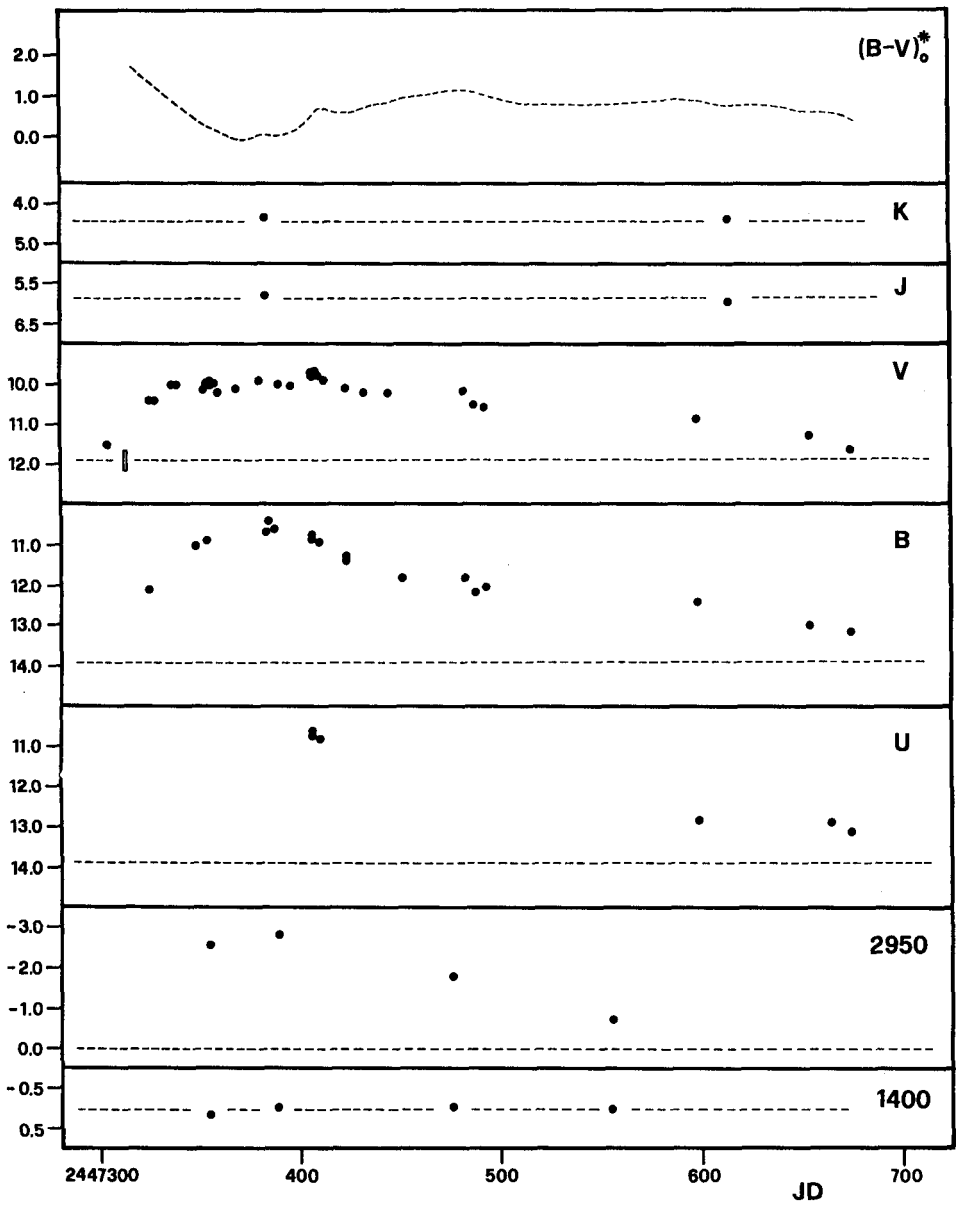

Fig.1 Photometric evolution of the AS 296 outburst up to June 15,1989. In each panel, the dashed line indicates the pre-outburst mean value. From the bottom: fluxes at 1400 and 2950 Ang measured on IUE spectra (ordinates are magnitudes relative to quiescence); U,B,V magnitudes (from [2] and unpublished data); J,K magnitudes (from [3] and unpublished data); $(B-V)^*_o$ = evolution of the B-V color after subtraction of interstellar extinction and the M5III contribution (see [2]), representing the evolution of the component responsable of the outburst (emission lines included).

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