BBSAG Bulletin 26

1976 March 48

59th List of Minima of Eclipsing Binaries

The following table lists 346 minima obtained visually mainly during 1976 January and February by the observers

MB	Michel Behagle, Wattrelos, France
RB	Roland Bininsegna, Marcinelle, Belgium
JB	Jean Bourgeois, Montignies-le-Tilleul, Belgium
PC	Paolo Carnevali, Roma, Italy
JC	Jean-Pierre Clovin, Marcinelle, Belgium
RD	Roger Diethelm, Reinach, Switzerland
PD	Philippe Doby, Wattrelos, France
AFe	Andràs Fenyvesi, Debrecen, Hungary
AF	Alain Figer, Paris, France
MF	Michel Frangeul, Angers, France
RG	Robert Germann, Wald, Switzerland
JL	Jean-François Le Borgne, Brest, France
RL	Rolande Leydon, Embrun, France
KL	Kurt Locher, Grüt, Switzerland
AM	Alain Marot, Quimper, France
HP	Hermann Peter, Otelfingen, Switzerland
EP	Ennio Poretti, Milano, Italy
PR	Philippe Relincourt, Nantes, France
JR	Joseph Remis, St.Avold, France
AR	Alain Royer, Epinac, France
AS	Augustin Seretti, St.Avold, France
MW	Marcel Wilmet, Chapelle-lez-Herlaimont, Belgium
GZ	György Zajàcz, Debrecen, Hungary

The O-C values refer to the linear elements of the GCVS 1969, disregarding improved elements in the 1971 and 1974 supplements to the GCVS. Reductions were made mainly using the tracing paper method.

current no.	star	minimum order	JD hel 244...	O-C	n	observer
9255	RT And	I	2785.296	+0.002	7	RG
9256		I	2807.297	-0.009	10	KL
9257	TW And	I	2780.379	+0.028	6	KL
9258	UU And	I	2796.255	+0.096	6	KL
9259	XZ And	I	2782.279	-0.020	10	HP
9260		I	2782.284	-0.015	8	RG
9261		I	2786.344	-0.026	7	HP
9262		I	2809.424	-0.020	8	HP
9263	AB And	I	2780.289	+0.029	10	KL
9264		I	2782.274	+0.023	7	RG
9265		I	2786.257	+0.023	6	RG
9266		I	2796.235	+0.044	6	KL
9267		II	2802.344	+0.015	6	KL
9268	BL And	I	2787.301	-0.041	9	RD
9269	BX And	I	2787.331	-0.010	9	RD
9270		I	2827.294	-0.009	8	HP
9271		I	2838.300	+0.015	8	HP
9272	EP And	II	2782.357	*	10	RD
9273		I	2786.223	*	6	KL
9274		II	2807.426	*	7	KL
9275		I	2838.346	*	7	KL
9276	S Ant	I	2838.387	+0.010	11	KL
9277	CX Aqr	I	2796.255	+0.019	7	KL
9278	CZ Aqr	I	2782.212	+0.017	5	KL
9279	EE Aqr	I	2780.292	+0.028	6	KL
9280	OO Aql	I	2828.699	-0.027	6	KL

* GCVS period erroneous, O-C according to the elements of BBSAG Bull 25, p.5: -0.020 +0.006 -0.006 +0.007

current no.	star	minimum order	JD hel 244...	O - C	n	observer
9281	SZ Ari	I	2782.379:	-0.106:	6	RD
9282	RY Aur	I	2827.342	-0.003	10	KL
9283		I	2827.343	-0.002	10	HP
9284	WW Aur	II	2784.276	0.000	26	EP
9285		II	2789.328	+0.002	10	PC
9286		II	2837.300	-0.002	11	HP
9287	AR Aur	I	2739.427	-0.009	12	PR
9288		I	2797.327	+0.006	11	PR
9289		I	2826.282	+0.018	6	AFe
9290		I	2826.296	+0.032	8	GZ
9291	KO Aur	I	2787.292	-0.030	7	RD
9292	SV Cam	I	2780.257	+0.003	7	KL
9293		I	2787.368	-0.003	7	RG
9294		I	2828.272	-0.021	9	RG
9295		I	2832.437	-0.008	10	KL
9296		I	2836.591	-0.005	10	KL
9297	AT Cam	I	2787.296	-0.040	6	RD
9298	AZ Cam	I	2782.381	+0.292	9	RD
9299	TU Cnc	I	2829.332	-0.020	6	KL
9300	WY Cnc	I	2835.308	-0.005	7	RG
9301		I	2835.313	-0.001	11	HP
9302	YZ CVn		2838.497	*	10	KL
9303	R CMa	I	2785.367	0.000	7	HP
9304		I	2802.434	+0.028	6	KL
9305		I	2826.277	+0.016	6	GZ
9306		I	2826.286	+0.025	6	AFe
9307		I	2835.348	0.000	12	HP
9308		I	2835.368	+0.020	10	KL
9309	RX CMa	I	2785.497	-0.017	13	KL
9310	TU CMa	I	2782.476	-0.016	9	HP
9311	UX CMa	I	2785.532	-0.013	6	KL
9312	AK CMi	I	2785.340	+0.020	8	HP
9313		I	2807.410	+0.021	6	KL
9314		I	2812.501	+0.018	6	KL
9315		I	2828.344	+0.016	8	HP
9316		I	2832.302	+0.013	8	HP
9317	RZ Cas	I	2711.457	+0.007	19	AS
9318		I	2729.382	+0.003	29	JB
9319		I	2729.383	+0.004	32	RB
9320		I	2729.385	+0.006	33	JC
9321		I	2729.386	+0.007	25	MW
9322		I	2741.343	+0.012	16	RL
9323		I	2741.345	+0.014	8	PR
9324		I	2747.323	+0.016	7	AR
9325		I	2760.458	+0.003	19	JC
9326		I	2760.460	+0.005	17	JB
9327		I	2796.318	+0.005	9	RG
9328		I	2796.323	+0.010	14	AR
9329		I	2802.287	-0.002	9	MB
9330		I	2802.290	+0.001	11	KL
9331		I	2802.292	+0.004	9	PD
9332		I	2802.295	+0.007		RB
9334		I	2802.298	+0.010	13	AM
9335		I	2802.299	+0.010	9	MF
9336		I	2802.304	+0.015	16	AR
9337		I	2803.487	+0.003	10	PR
9338		I	2809.465	+0.004	11	HP
9339		I	2833.364	-0.001	9	KL
9340	AB Cas	I	2829.279	+0.003	8	HP
9341	V 364 Cas	I	2782.349	-0.018	9	RD
9342	V 374 Cas	I	2782.330	-0.007	8	RD
9343	V 523 Cas	II	2806.252	**	6	KL
9344		II	2809.284	**	10	KL
9345	U Cep	I	2786.490	+0.035	6	KL
9346		I	2796.451	+0.030	6	KL
9347		I	2806.429	+0.029	7	KL
9348		I	2826.371	+0.027	7	GZ
9349		I	2826.382:	+0.038:	5	AFe
9350	VW Cep	I	2719.359	-0.088	10	AR
9351		I	2741.319	-0.116	10	RL
9352		I	2780.301	-0.098	10	KL
9353		II	2780.732	-0.084	7	KL
9354		I	2802.281	-0.105	12	KL
9355		I	2832.350	-0.098	10	KL
9356		II	2833.334	-0.085	7	KL
9357	EG Cep	I	2802.432	+0.019	10	KL
9358		I	2832.390	+0.022	11	KL
9359	RW Cet	I	2780.382	-0.017	9	KL
9360		I	2782.319	-0.031	6	KL
9361		I	2782.323	-0.027	10	HP
9362	SS Cet	I	2787.387	-0.050	13	HP
9363		I	2796.300	-0.059	14	RG
9364		I	2796.307	-0.052	6	KL
9365	TW Cet	I	2782.266	-0.028	9	HP
9366		I	2782.274	-0.020	7	KL
9367		II	2785.294	-0.010	7	RG
9368		II	2786.230	-0.024	9	KL
9369		I	2787.339	-0.024	9	HP
9370	VY Cet	I	2782.324	***	6	KL
9371		II	2786.256	***	9	KL
9372		II	2786.262	***	8	HP
9373		II	2787.269	***	8	HP
9374	AA Cet	I	2782.304	****	6	KL
9375		II	2786.294	****	7	KL
9376	RW Com	II	2830.337	-0.041	6	RG
9377	CC Com	I	2806.581	+0.093	6	KL
9378		I	2829.540	+0.101	7	KL
9379	TW CrB	I	2780.711	*****	7	KL
9380		II	2791.616	*****	6	KL
9381		I	2836.663	*****	8	KL

* period unknown

** not contained in the GCVS, O - C according to the elements of Häussler IBVS 887: +0.025 +0.018

*** GCVS 1969 period erroneous, O - C according to the GCVS 1974: -0.194 -0.183 -0.176 -0.192

**** not contained in the GCVS 1969, O-C according to 1974: -0.001 -0.032

***** not contained in the GCVS, O - C according to the elements of Цесевич and Каретников, Переменные Звёзды Приложение 1, № 6, p.459: -0.010 0.000 -0.001 0.000

current no.	star	minimum order	JD hel 244...	O-C	n	observer
9382		II	2837.548	*****	10	KL
9383	W Crv	I	2787.732	0.000	7	KL
9384		I	2791.611	-0.001	6	KL
9385		I	2838.568	-0.003	6	KL
9386	V Crt	I	2791.577	+0.033	7	KL
9387	Z Dra	I	2837.302	-0.001	10	KL
9388	SX Dra	I	2782.401	+0.141	6	KL
9389	RU Eri	I	2780.380	+0.011	11	KL
9390		I	2782.295	+0.028	9	HP
9391		I	2787.331	+0.007	9	RD
9392		I	2787.347	+0.023	10	HP
9393		I	2806.314	+0.024	8	HP
9394	WX Eri	I	2780.304	+0.011	10	KL
9395	YY Eri	II	2780.323	0.000	10	KL
9396		I	2782.410	-0.002	11	HP
9397		I	2785.296	-0.010	9	HP
9398		I	2785.300	-0.006	7	RG
9399		I	2796.237	+0.001	8	HP
9400		I	2802.340	-0.005	14	KL
9401		II	2809.248	-0.009	8	RG
9402		I	2812.300	-0.011	8	RG
9403		I	2829.329	-0.022	6	RG
9404		I	2829.344	-0.007	10	HP
9405		I	2830.300	-0.016	9	RG
9406		II	2835.293	-0.005	8	RG
9407		II	2835.294	-0.004	11	KL
9408		I	2838.332	-0.021	8	RG
9409	RW Gem	I	2828.449	+0.006	11	KL
9410	AF Gem	I	2809.291	-0.010	9	RG
9411		I	2835.393	-0.022	13	RG
9412		I	2835.403	-0.012	9	HP
9413	AV Gem	I	2806.431	-0.001	6	KL
9414	BD Gem	I	2786.362:	+0.030:	6	HP
9415		I	2828.413	+0.046	10	KL
9416	EG Gem	I	2806.300	+0.139	5	KL
9417	FG Gem	I	2817.404:	-0.062:	6	KL
9418	GW Gem	I	2796.394	-0.031	6	KL
9419	UX Her	I	2833.575	-0.052	11	KL
9420	RX Hya	I	2829.366	+0.016	10	HP
9421	TY Hya	I	2812.468	+0.175	13	KL
9422	WY Hya	I	2806.362	+0.021	10	HP
9423		II	2812.432	+0.006	5	KL
9424		II	2827.472	+0.009	6	KL
9425		II	2835.340	+0.002	10	HP
9426	EU Hya	I	2838.385	-0.012	8	HP
9427	SW Lac	II	2780.314	-0.081	10	KL
9428		I	2786.245	-0.084	7	RG
9429		II	2796.351	-0.080	7	KL
9430		II	2802.272	-0.093	10	KL
9431	TW Lac	I	2782.318	-0.075	12	HP
9432	Y Leo	I	2782.528	+0.092	7	KL
9433		I	2809.505	+0.092	10	HP
9434		I	2809.506	+0.093	5	KL
9435	RW Leo	I	2828.370	+0.025	10	KL
9436		I	2838.464	+0.024	9	HP
9437		I	2838.476	+0.036	7	KL
9438	UU Leo	I	2785.462	-0.018	7	KL
9439		I	2837.527	-0.025	10	KL
9440	UV Leo	II	2802.444	-0.005	7	KL
9441		I	2812.343	-0.007	8	RG
9442		I	2830.340	-0.013	7	RG
9443		II	2832.445	-0.008	9	HP
9444		II	2832.460	+0.007	11	KL
9445		I	2833.351	-0.003	6	KL
9446		II	2836.650	-0.004	10	KL
9447	AM Leo	II	2833.392	-0.032	6	KL
9448		II	2836.706	-0.017	11	KL
9449	BL Leo	I	2786.601	-0.005	7	KL
9450		I	2791.686	+0.005	6	KL
9451		II	2837.495	+0.001	10	KL
9452	T LMi	I	2827.453	-0.093	7	KL
9453	V Lep	I	2787.339	-0.016	6	RD
9454	RS Lep	I	2832.304	-0.007	10	HP
9455	TY Lib	I	2806.618	-0.011	6	KL
9456	SX Lyn	I	2832.444	-0.290	10	HP
9457	UU Lyn	I	2782.407	-0.027	6	RD
9458	RW Mon	I	2835.420	-0.002	12	HP
9459		I	2837.317	-0.011	12	HP
9460		I	2837.324	-0.004	10	KL
9461	BO Mon	I	2786.623	+0.129	7	KL
9462	FW Mon	I	2785.425	+0.023	10	HP
9463		I	2785.436	+0.034	11	KL
9464	V566 Oph	I	2581.413	+0.017	5	PR
9465		I	2592.496	+0.040	7	PR
9466		II	2593.505	+0.025	8	PR
9467		II	2627.506	+0.026	12	PR
9468		II	2632.430	+0.036	13	PR
9469		II	2639.381	+0.021	5	PR
9470		II	2650.428	+0.008	13	PR
9471		I	2651.473	+0.029	5	PR
9472		II	2664.372	+0.024	6	PR
9473	EQ Ori	I	2786.362	-0.067	6	KL
9474		I	2786.363	-0.065	11	HP
9475		I	2807.317	-0.064	6	KL
9476		I	2828.267	-0.067	10	KL
9477	ER Ori	II	2780.396	-0.014	10	KL
9478		I	2782.287	-0.029	7	RG
9479		II	2786.322	-0.017	7	RG
9480		I	2787.373	-0.024	8	RG
9481		I	2796.261	-0.027	9	RG
9482		II	2802.406	-0.022	10	KL
9483		I	2806.426	-0.024	10	HP
9484		I	2812.342	-0.035	8	RG
9485		I	2812.358	-0.020	10	KL
9486		I	2815.331	-0.011	12	GZ
9487		I	2821.252	-0.017	6	KL
9488		I	2829.291	-0.023	8	RG
9489		II	2830.339	-0.033	8	RG
9490		II	2833.318	-0.018	10	KL
9491	FL Ori	I	2785.256	+0.085	7	KL
9492	FT Ori	I	2829.385	+0.023	11	HP
9493	OS Ori	I	2838.362	-0.026	11	HP
9494		I	2838.363	-0.024	10	KL
9495	V640 Ori	I	2828.316	-0.007	11	KL
9496		I	2830.336	-0.008	7	KL
9497		I	2832.346	-0.018	12	HP

current no.	star	minimum order	JD hel 244...	O - C	n	observer
9498	DI Peg	I	2786.271	-0.021	9	RG
9499		I	2786.275	-0.016	9	HP
9500		I	2796.240	-0.017	9	HP
9501	RT Per	I	2782.317	-0.059	9	HP
9502		I	2787.413	-0.059	11	HP
9503		I	2827.339	-0.055	8	HP
9504		I	2827.348	-0.046	7	KL
9505	RV Per	I	2832.365	+0.009	12	HP
9506	XZ Per	I	2785.404	+0.009	8	HP
9507		I	2830.317	+0.008	9	KL
9508		I	2838.375	+0.005	7	KL
9509		I	2838.377	+0.007	11	HP
9510	DM Per	I	2793.314	+0.029	17	AFe
9511	IQ Per	I	2787.390	*	10	HP
9512	KW Per	I	2782.408:	+0.020:	7	RD
9513		I	2782.429	+0.040	10	KL
9514		I	2796.393	+0.035	6	KL
9515		I	2838.297	+0.033	7	KL
9516	β Per	I	2751.278	-0.061	15	RL
9517		I	2771.324:	-0.087:	4	PC
9518		I	2771.341	-0.070	5	RL
9519		I	2791.413	-0.070	18	PR
9520		I	2794.269	-0.081	12	AFe
9521		I	2794.272	-0.078	11	GZ
9522		I	2814.343	-0.079	12	RG
9523		I	2837.278	-0.083	10	JR
9524		I	2837.291	-0.070	13	HP
9525	UV Psc	I	2782.262	+0.017	10	HP
9526		I	2806.268	+0.013	13	HP
9527	UZ Pup	I	2832.437	-0.032	11	KL
9528	XZ Pup	I	2802.439	-0.009	12	KL
9529		I	2835.317	-0.017	11	KL
9530	AY Pup	II	2782.482	+0.060	8	KL
9531		II	2837.348	+0.057	7	KL
9532	RZ Pyx	II	2802.574	+0.185	8	KL
9533		II	2806.523	+0.197	7	KL
9534		I	2807.508	+0.197	6	KL
9535		I	2809.467	+0.187	4	KL
9536		II	2812.419	+0.186	6	KL
9537		II	2827.524	+0.196	5	KL
9538		I	2828.506	+0.195	8	KL
9539		I	2832.442	+0.193	10	KL
9540		II	2835.401	+0.198	7	KL
9541		II	2837.360	+0.188	6	KL
9542	U Sge	I	2836.641	+0.008	11	KL
9543	AU Ser	I	2787.648	-0.005	7	KL
9544	RW Tau	I	2782.474	-0.076	7	KL
9546		I	2782.474	-0.075	18	HP
9547		I	2785.246	-0.073	5	KL
9548		I	2785.247	-0.072	16	RG
9549		I	2796.319	-0.075	14	RG
9550		I	2796.319	-0.075	13	AR
9551		I	2796.321	-0.073	8	KL
9552		I	2807.394	-0.075	6	KL
9553		I	2832.317	-0.072	9	HP
9554	AM Tau	I	2786.387	-0.135	12	HP
9555		I	2827.272	-0.129	11	KL
9556		I	2829.316	-0.129	10	HP
9557	AP Tau	I	2782.332	**	6	KL
9558	CT Tau	I	2760.385	+0.031	17	AF
9559		II	2761.365	+0.011	12	AF
9560		II	2771.381	+0.024	16	AF
9561		II	2781.385	+0.025	14	AF
9562		I	2782.373	+0.013	8	RD
9563		I	2806.394	+0.029	10	HP
9564		II	2835.393	+0.020	10	HP
9565	HU Tau	I	2739.410	+0.015	12	PR
9566		I	2809.337	+0.028	9	HP
9567	V Tri	I	2809.382	+0.013	10	HP
9568	X Tri	I	2787.377	-0.040	14	RG
9569		I	2787.380	-0.037	9	HP
9570	RW Tri	I	2782.460	-0.004	7	KL
9571	W UMa	II	2718.466	-0.099	12	AM
9572		I	2719.629	-0.104	5	PR
9573		II	2743.483	-0.106	10	PR
9574		II	2747.482	-0.111	8	PR
9575		II	2771.508	-0.107	7	AM
9576		II	2771.521	-0.096	8	PR
9577		I	2782.358	-0.101	18	AR
9578		I	2802.373	-0.104	17	AR
9579		I	2805.404	-0.076	10	JL
9580	TX UMa	I	2826.309	-0.007	7	GZ
9581		I	2826.311	-0.005	5	AFe
9582		I	2829.377	-0.002	9	HP
9583	UX UMa	I	2786.607	+0.001	5	KL
9584		I	2837.546	+0.002	4	KL
9585	VV UMa	I	2838.297	+0.072	10	RG
9586	XZ UMa	I	2830.281	-0.076	10	RG
9587	ZZ UMa	I	2796.370	-0.011	6	KL
9588		I	2835.459	-0.009	9	HP
9589	AC UMa	I	2809.498	+0.255	4	KL
9590	RU Umi	I	2833.588	-0.009	6	KL
9591	AH Vir	II	2791.572	+0.040	6	KL
9592		II	2802.562	+0.027	7	KL
9593		I	2835.386	+0.045	5	KL
9594		I	2836.607	+0.043	10	KL
9595		I	2837.416	+0.037	11	KL
9596		II	2838.431	+0.033	10	KL
9597	AK Vir	I	2787.669	+0.034	7	KL
9598	BF Vir	I	2791.602	-0.011	6	KL
9599	BH Vir	I	2829.530	+0.008	6	KL
9600		I	2833.605	-0.001	10	KL
9601		I	2838.508	+0.001	6	KL

* no period given by the GCVS 1969, O - C according to the GCVS 1974 : +0.005

** Failing an epoch in the GCVS, the first observed BBSAG minimum (no.9063 of Bulletin 24) has been taken as epoch and combined with the GCVS period to get the O - C : -0.005

Missed Minima of R S Crateris

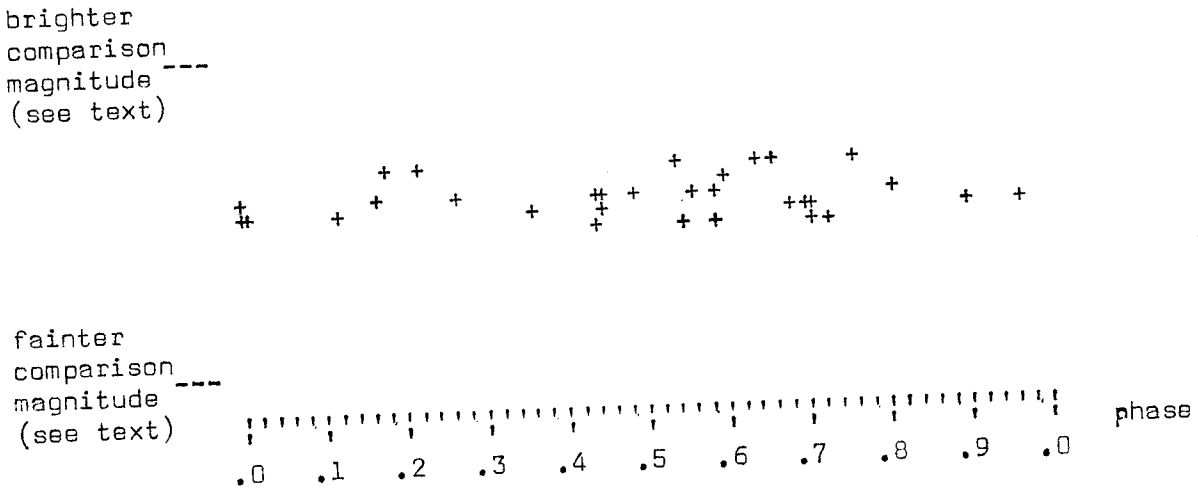
This star is unambiguously and independently indentifiable by its GCVS coordinates as well as in Tsesevitsh's and Kazanasmas' 'Atlas of Finding Charts of Variable Stars'(Moscow 1972, Izdatelstvo Nauka).

According to the GCVS 1969/1971/1974 it should show minima 0^m7 deep and D/P=.3 broad at a period of .8168 day. It is now evident that at least one of these 3 data must be totally wrong, as the results of my survey at all phases during the past 13 months show in figure 31.

As the brighter comparison magnitude I used the star shown 6.5 mm exactly northwest of RS Crt in Tsesevitsh's and Kazanasmas' chart, and as fainter one the star denoted 'B' in the same chart. B being some 0^m8 fainter, it results that my estimated brightnesses scatter (RMS) less than 0^m1.

K.Locher

figure 31



The True Amplitude of AA Ceti

The GCVS (1974) states $0^m.5$ and $0^m.4$ for the primary and secondary amplitude of this EW binary, which is in agreement with (and probably as usual quoted from) the GCVS reference no.5865. Now the study referred to by this no. is a photographic one using patrol plates and therefore does not account for the visual duplicity of the at least triple system

$$\text{ADS 1581 A}_{I,II} = \text{SAO 167451}_{I,II} = \text{AA Ceti // 10" // ADS 1581 B = SAO 167450}$$

as already mentioned in part in BBSAG Bulletin 1, p.4 and 7, p.4 .

Nor does Bloomer's (IBVS 745) more recent photoelectric study publish photometric parameters. Hence I try to give preliminary values for the true primary and secondary amplitude deduced from my visual survey in which I always estimated the magnitude difference of the visual pair:

Figure 32 plots all my observations later than 1972 November (which are of higher value than former ones because of a larger instrument used since). Reasonable deduction can be made without calibration of my steps as follows :

The secondary minimum being closely as bright as the visual companion, it immediately follows that the true secondary amplitude is $0^m.7$ assuming correctness of the GCVS combined secondary amplitude an negligibilty of colour differences among all three components. Taking the ratio of both true amplitudes directly from figure 32, the primary one results as $1^m.0$:

$$|\max - \min_I| = 1.0 \pm .1 \qquad |\max - \min_{II}| = .7 \pm .1$$

These values are typical for an EW-EB binary with an orbital inclination of nearly 90^o. Since the GCVS combined primary amplitude has not been used for the above deduction, it may serve as a check, and indeed there is agreement deeply within the estimated errors.

K. Locher

figure 32