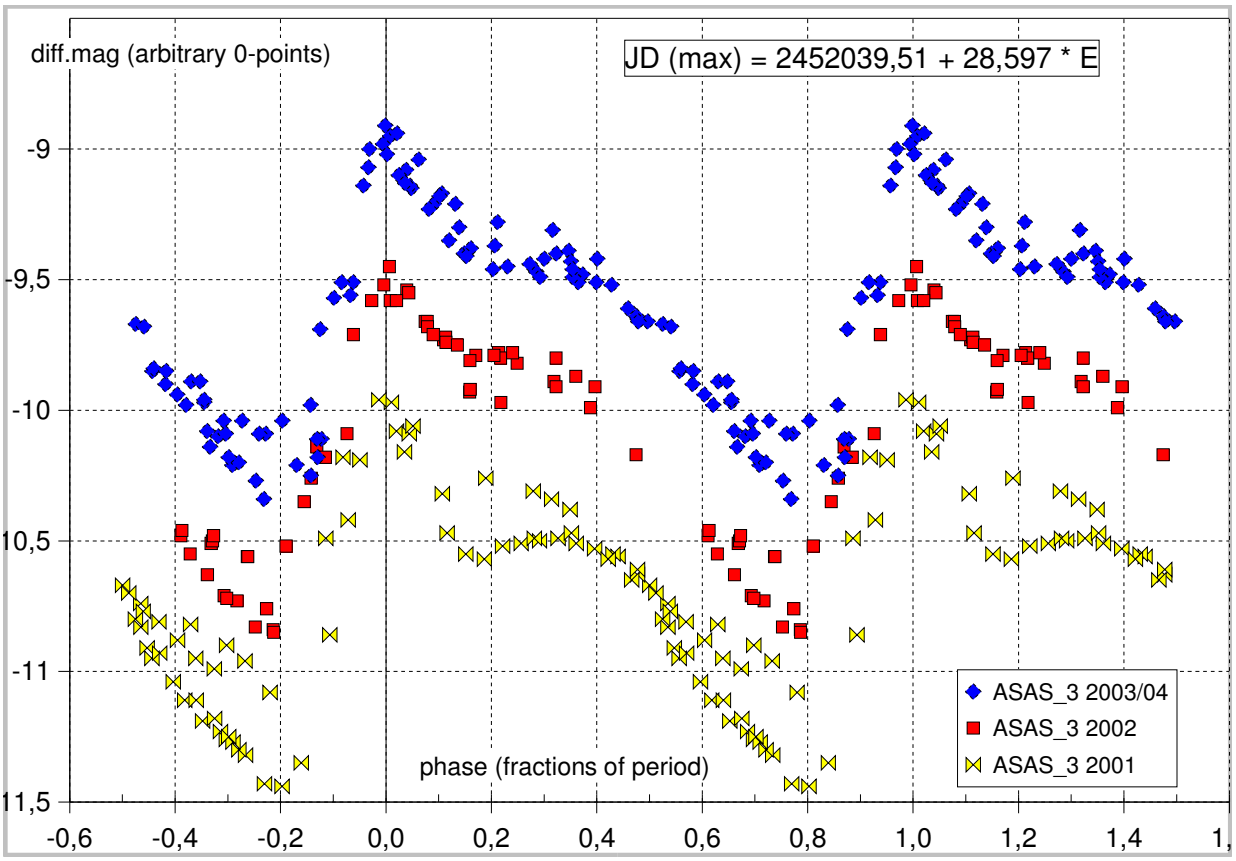
The peculiar Cepheid TW Capricorni

i. Discovery of variability: Hoffmeister (1933) on plates in Sonneberg (Germany)
ii. First reliable study: Solovyev (1952) together with Guryev and Tsessevitch (USSR)
iii. Classification (GCVS_2001): Cepheid of the halo subtype (W Virginis Star, CWA), period 28.5 days, light variation 9,95...11,28mag(V)
iv. Lightcurve: Very asymmetrical; variable humps found visually by Guryev (Solovyev, 1952) and confirmed by precise data (1. diagram)
v. Reported observations: 55 maximum times 1917...2004, 20 VIS, 25 PP, 10 LE. I distinguish reliable maximum times and others. All LE are regarded reliable, VIS and PP only on certain conditions (cf. appendix, key). W*ithin 90 years and only 1200 epochs occurred several drastic period changes*. (2. diagram)

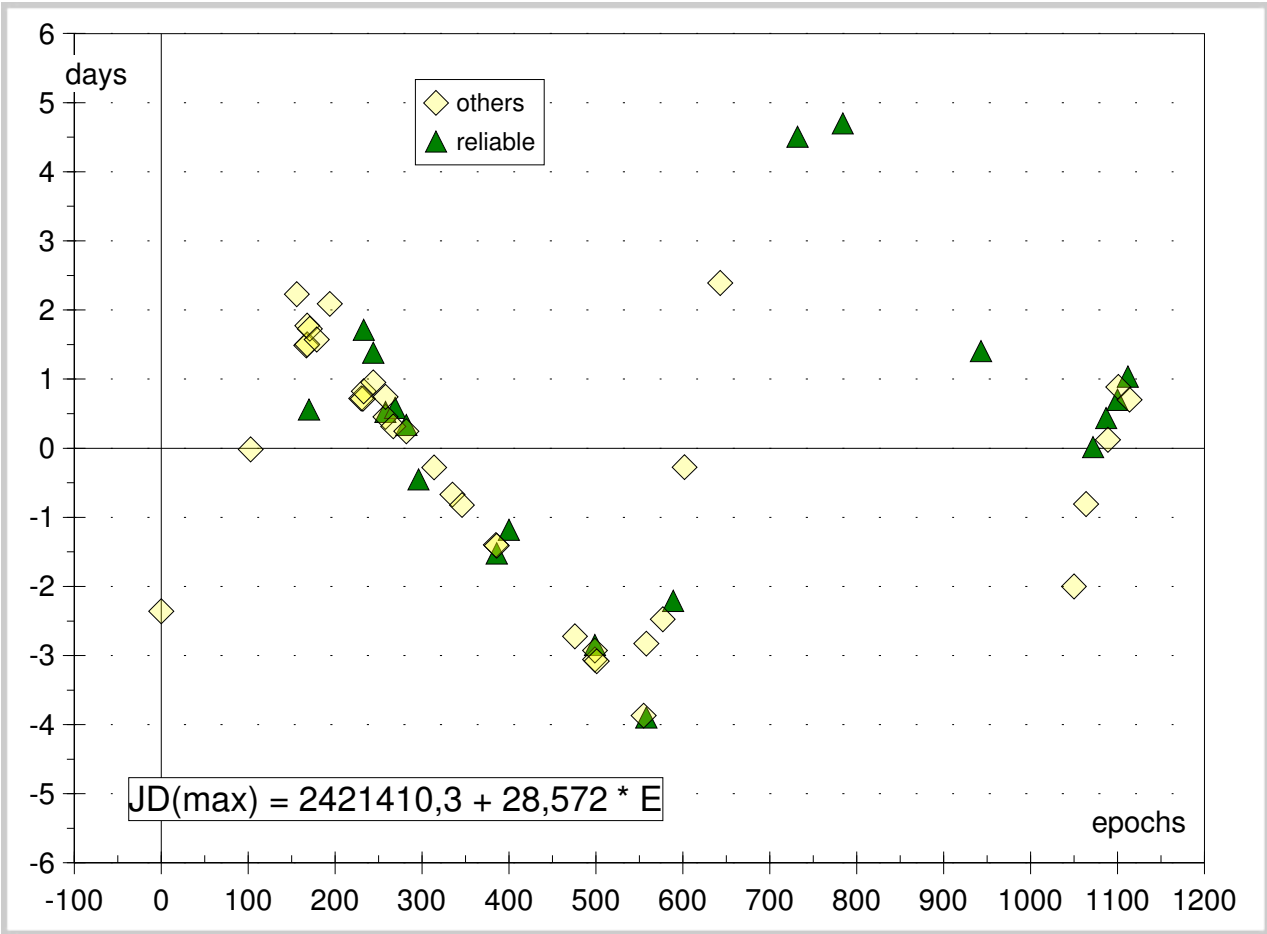
Lightcurves diagram of TW Capricorni:



The above diagram shows 3 lightcurves from ASAS_3 data, that have been phased with the new linear ephemeris:

JD(max) = 2452039.51 + 28.597 * E (this paper)
± 3 1

O-C-diagram of TW Capricorni (based on a global ad hoc ephemeris):



Remarks: Visual observations in central Europe are feasible or even easy because of good amplitude and very rewarding; the required minimum telescope is 15cm.

References:

GCVS_2001	<< http://www.sai.msu.su/groups/cluster/gcvs/gcvs/ >>
HOFFMEISTER C.:	Astron_Nachr. 247, 281 (1933)
SOLOVYEV A.W.:	Bulletin_Stalinabad_Astron_Inst. 3, 3 (1952)

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Appendix

Reported maximum times:

JD	Observer and referring author	Reference	Method	Weight
2421407,94	TSESSEVITCH_BEI_DE_YOUNG	AVSJ_10	PP	
2424353,20	TSESSEVITCH_BEI_DE_YOUNG	AVSJ_10	PP	
2425869,76	SOLOVYEV_BEI_DE_YOUNG	AVSJ_10	PP	
2426183,31	TSESSEVITCH_BEI_DE_YOUNG	AVSJ_10	PP	

2426211,90	TSESSEVITCH_BEI_DE_YOUNG	AVSJ_10	PP	
2426212,17	MORGENROTH_BEI_TSESSEVITCH	CTAD_8_1_	PP	
2426268,10	MORGENROTH	AN_248_325_	PP	X
2426297,84	SOLOVYEV_BEI_DEYOUNG	AVSJ_10	PP	
2426526,26	TSESSEVITCH_BEI_DE_YOUNG	AVSJ_10	PP	
2426955,356	MORGENROTH	AN_248_325_	PP	
2427982,58	TSESSEVITCH_BEI_DE_YOUNG	AVSJ_10	PP	
2428039,72	GURYEV	CTAD_28_2_	VIS	
2428068,40	GURYEV_BEI_SOLOVYEV	BATSD_3_3_	VIS	
2428069,29	GURYEV_BEI_SOLOVYEV	BATSD_3_3_	VIS	X
2428382,82	GURYEV_BEI_SOLOVYEV	BATSD_3_3_	VIS	
2428383,25	GURYEV_BEI_SOLOVYEV	BATSD_3_3_	VIS	X
2428782,33	TSESSEVITCH_BEI_DE_YOUNG	AVSJ_10	PP	
2428782,40	GURYEV_BEI_SOLOVYEV	BATSD_3_3_	VIS	X
2428782,62	GURYEV_BEI_SOLOVYEV	BATSD_3_3_	VIS	
2429039,34	TSESSEVITCH_BEI_DE_YOUNG	AVSJ_10	PP	
2429096,75	GURYEV_BEI_SOLOVYEV	BATSD_3_3_	VIS	X
2429467,85	GURYEV_BEI_SOLOVYEV	BATSD_3_3_	VIS	
2429467,94	GURYEV_BEI_SOLOVYEV	BATSD_3_3_	VIS	X
2429867,16	SOLOVYEV	BATSD_3_3_	PP	X
2430381,63	TSESSEVITCH_BEI_DE_YOUNG	AVSJ_10	PP	
2430981,25	TSESSEVITCH_BEI_SOLOVYEV	BATSD_3_3_	VIS	
2431295,39	TSESSEVITCH_BEI_SOLOVYEV	BATSD_3_3_	VIS	
2432409,12	TSESSEVITCH_BEI_DE_YOUNG	AVSJ_10	PP	
2432437,57	SOLOVYEV	BATSD_3_3_	VIS	X
2432437,68	SOLOVYEV	BATSD_3_3_	VIS	
2432837,92	SOLOVYEV	BATSD_3_3_	PP	X
2435007,85	VASILJANOWSKAJA_EA_BEI_DE_YOUNG	AVSJ_10	PP	
2435664,67	VASILJANOWSKAJA_EA_BEI_DE_YOUNG	AVSJ_10	PP	
2435664,8	KUKARKIN_BEI_DEYOUNG	AVSJ_10	PP	
2435664,88	MITCHELL_EA	BOTT_3_153_	LE	X
2435721,79	VASILJANOWSKAJA_EA_BEI_DE_YOUNG	AVSJ_10	PP	
2437263,89	VASILJANOWSKAJA_EA_BEI_DE_YOUNG	AVSJ_10	PP	
2437349,58	MITCHELL_EA	BOTT_3_153_	LE	X
2437350,648	KUKARKIN_BEI_DE_YOUNG	AVSJ_10	PP	
2437893,87	KUKARKIN_BEI_DE_YOUNG	AVSJ_10	PP	
2438237,00	KWEE_BEI_DE_YOUNG	AVSJ_10	LE	X
2438610,37	VASILJANOWSKAJA_EA_BEI_DE_YOUNG	AVSJ_10	PP	
2439784,487	CRAGG_BEI_DE_YOUNG	AVSJ_10	VIS	
2442329,512	DEAN_EA	MORAS_83_74_	LE	X
2443815,449	HARRIS	THES_1980_	LE	X
2448355,1	TYCHO_MYR	HIP_99765_	LE	X
2451408,9	CRAGG	AFODB	VIS	
2451810,1	CRAGG	AFODB	VIS	
2452039,5	ASAS-3_BEI_HASSFORTHER	PRIV_2004_	LE	100 & X
2452468,5	ASAS-3_BEI_HASSFORTHER	PRIV_2004_	LE	100 & X
2452525,33	MEYER_R	BAVM_157_	VIS	1
2452840,2	ASAS-3_BEI_HASSFORTHER	PRIV_2004_	LE	100 & X
2452869,0	MEYER_R	BAVM_171_*	VIS	1
2453183,4	ASAS-3_BEI_HASSFORTHER	PRIV_2004_	LE	100 & X
2453240,22	MEYER_R	BAVM_174_	VIS	1

Key:

VIS	visual
PP	photographic
LE	photoelectric
BEI	followed by an author's name designates a secondary reference
X	reliable data; in the case of VIS and PP I regard only maximum times calculated from reported sets of single observations as reliable
1 & 100	weights in calculation of the new ephemeris
AFODB	Database of the AFOEV (http://cdsweb.u-strasbg.fr/afoev/, F)
AVSJ	Journal of the American Association of Variable Star Observers (USA)
BAVM	BAV-Mitteilungen (* = misprint, replaced here by correct time)
BATSD	Bulletin_Stalinabadskoj_Astronom_Institute (Tadjik Soviet Republic)
BOTT	Bolletín del observatorio de Tonantzintla y Tacubaya (Mexico)
CTAD	Tadjikistan Observatory Circular
HIP	Hipparcos catalogue via Simbad (http://simbad.u-strasbg.fr/, F)
MORAS	Memoirs of the Royal Astronomical Society (GB)
PRIV	private communication
THES	Thesis of the University of Washington (USA)

Some references have been obtained online using the McMaster Cepheid Database (http://dogwood.physics.mcmaster.ca/Cepheid//HomePage.html) and the Article Service ADS at CDS Strasbourg (http://cdsads.u-strasbg.fr/article_service.html)