18 NEW VARIABLES IN THE PUPPIS FIELD

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The Puppis field was observed between 2011 and 2014 in the search for transiting extrasolar planets. To characterize the field, an automatic variable search was applied as described by Fruth et al. (2012). With the automatic procedure 1829 new variables were discovered and 26 previously known variables were confirmed (Dreyer et al. 2018).

Beyond this work, the data was also analysed for potential transit events by the Box-Fitting Least Square (BLS) method (Kovac et al. 2002, Fruth et al. 2013). This yielded a list of objects with tentative period, duration and depth, not included in the list of Dreyer et al (2018). The light curves of these potential candidates were visually inspected and further modelled by TLCM, a transit light curve model to get the basic parameters, developed by Csizmadia (2020). Thereby the period was confirmed or improved and the type of binary was determined. Identification and variability data for the stars are summarized in Tables 1–2; phase curves for each variable are presented in Figures 1–18. Photometry data files are also available online.

References:

Csizmadia Sz., 2020, *MNRAS*, under review
Dreyer, C. et al., 2018, *AJ*, **156**, 204 DOI
Fruth, T., et al., 2012, *AJ*, **143**, 140 DOI

Table 1: Cross-identification and coordinates.

Object Internal ID	2MASS ID	Coordinates		Data file
		RA$_{2000}$	Dec$_{2000}$	
F20a.005815	07333745-3259436	$07^h33^m37\overset{s}{.}4$	$-32°59'43\overset{''}{.}7$	6271-t3.txt
F20a.018824	07303116-3222418	$07^h30^m31\overset{s}{.}2$	$-32°22'41\overset{''}{.}8$	6271-t4.txt
F20a.026583	07310564–3159570	$07^h31^m05\overset{s}{.}7$	$-31°59\ 58\overset{''}{.}0$	6271-t5.txt
F20b.010782	07262660–3106585	$07^h26^m26\overset{s}{.}61$	$-31°06'58\overset{''}{.}57$	6271-t6.txt
F20b.017823	07291727-3049085	$07^h29^m17\overset{s}{.}3$	$-30°49'08\overset{''}{.}5$	6271-t7.txt
F20b.032711	07275882–3007572	$07^h27^m58\overset{s}{.}81$	$-30°07'57\overset{''}{.}62$	6271-t8.txt
F20c.005922	07300259–2940196	$07^h30^m02\overset{s}{.}59$	$-29°40'19\overset{''}{.}58$	6271-t9.txt
F20c.014909	07293525–2917331	$07^h29^m35\overset{s}{.}25$	$-29°17'33\overset{''}{.}05$	6271-t10.txt
F20c.015941	07331914–2914089	$07^h33^m19\overset{s}{.}16$	$-29°14'09\overset{''}{.}01$	6271-t11.txt
F20d.004702	07290369–2802282	$07^h29^m03\overset{s}{.}69$	$-28°02'28\overset{''}{.}25$	6271-t12.txt
F20d.006126	07310929–2758334	$07^h31^m09\overset{s}{.}29$	$-27°58'33\overset{''}{.}41$	6271-t13.txt
F20d.011593	07300456–2745258	$07^h30^m04\overset{s}{.}57$	$-27°45'25\overset{''}{.}80$	6271-t14.txt
F20d.013162	07274514–2741386	$07^h27^m45\overset{s}{.}1$	$-27°41'38\overset{''}{.}5$	6271-t15.txt
F20d.013467	07304375–2740426	$07^h30^m43\overset{s}{.}75$	$-27°40'42\overset{''}{.}49$	6271-t16.txt
F20d.013718	07292644–2740120	$07^h29^m26\overset{s}{.}44$	$-27°40'11\overset{''}{.}86$	6271-t17.txt
F20d.014956	07293465–2737019	$07^h29^m34\overset{s}{.}65$	$-27°37'01\overset{''}{.}79$	6271-t18.txt
F20d.020854	07284737–2720366	$07^h28^m47\overset{s}{.}39$	$-27°20'36\overset{''}{.}60$	6271-t19.txt
F20d.029101	07273592–2647430	$07^h27^m35\overset{s}{.}9$	$-26°47'43\overset{''}{.}0$	6271-t20.txt

Table 2: Variability parameters.

Object internal ID	Type	Period (d)	Epoch HJD-2455875	Brightness (mag)	Band
F20a.005815	EB	2.08	77.64	15.45	white
F20a.018824	EB	3.66	71.76	14.26	white
F20a.026583	EB	1.17	76.60	13.93	white
F20b.010782	EB	2.72	8.72	13.99	white
F20b.017823	EB	3.05	84.75	14.50	white
F20b.032711	EB	1.565	83.111	14.40	white
F20c.005922	EB	6.379	65.8	14.44	white
F20c.014909	EB	9.34	5.67	13.37	white
F20c.015941	EB	9.76	99.67	14.82	white
F20d.004702	EB	0.778	10.75	15.29	white
F20d.006126	EB	1.874	33.66	12.72	white
F20d.011593	EB	1.48	64.74	14.43	white
F20d.013162	EB	2.115	0.816	15.41	white
F20d.013467	EB	1.695	65.58	14.47	white
F20d.013718	EB	1.397	70.622	14.26	white
F20d.014956	EB	1.402	5.28864	15.58	white
F20d.020854	EB	8.794	75.75	15.45	white
F20d.029101	EB	5.927	0.738	13.78	white

Period = 2.0799999 days
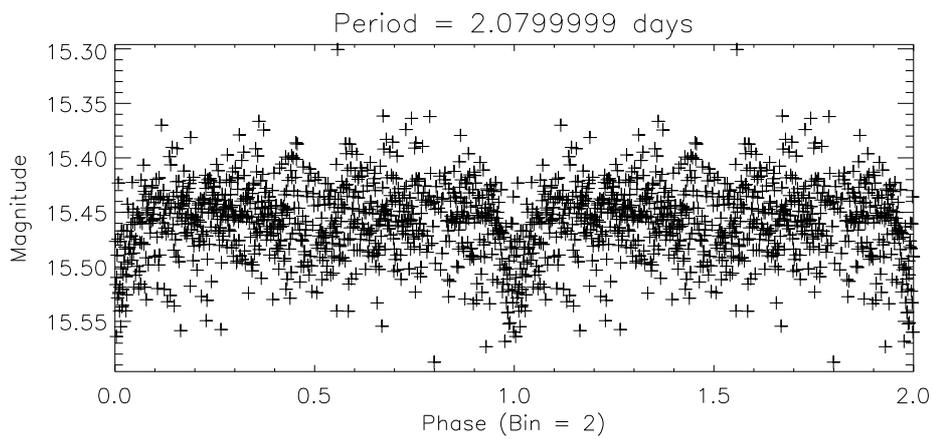
Figure 1. Phase curve of F20a.005815

Period = 3.6600001 days
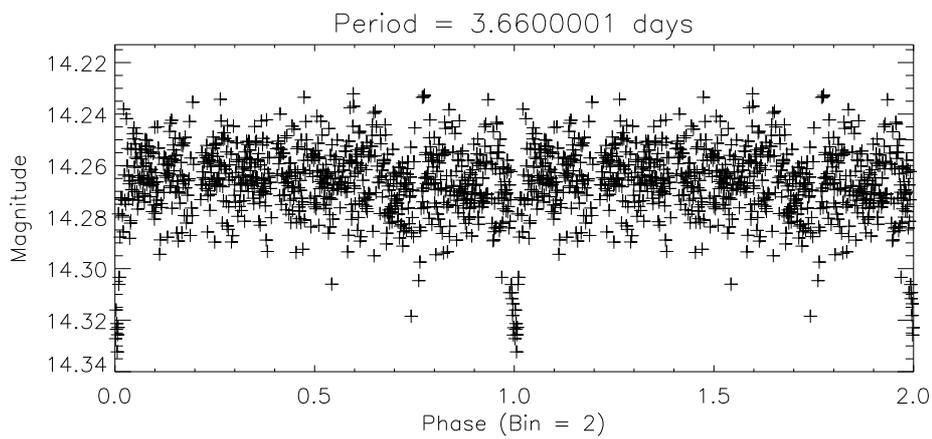
Figure 2. Phase curve of F20a.018824

Period = 1.1696800 days
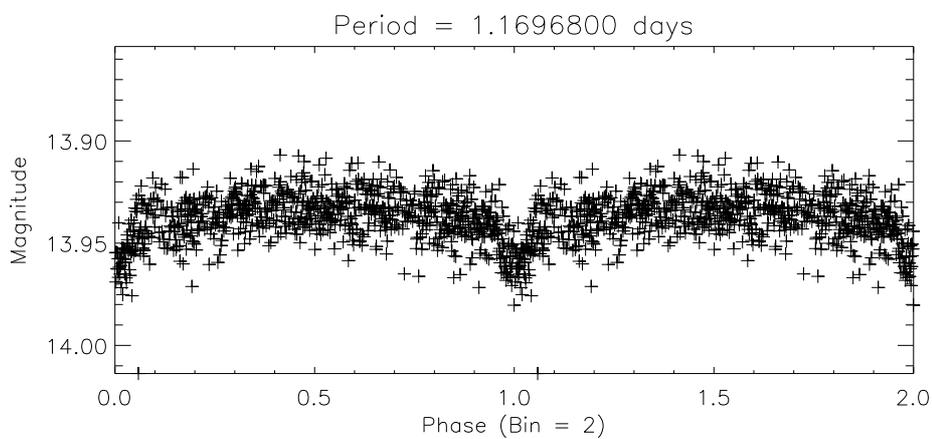
Figure 3. Phase curve of F20a.026583

Period = 2.7212918 days
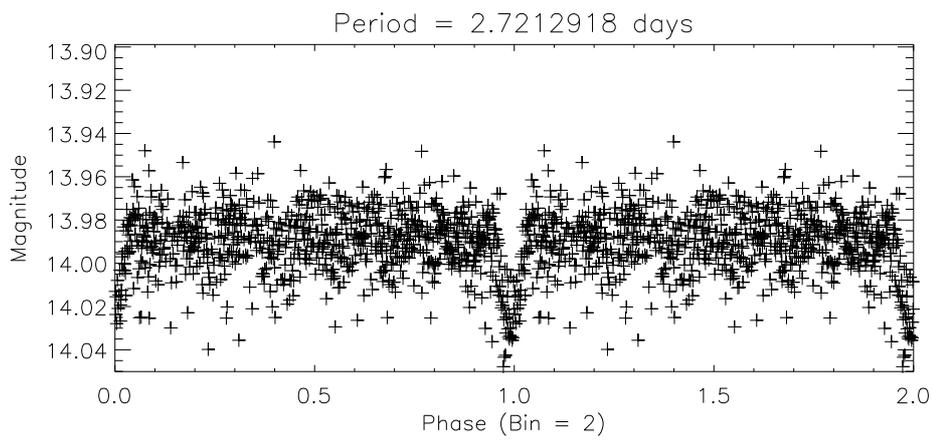
Figure 4. Phase curve of F20b.010782

Period = 3.0578201 days
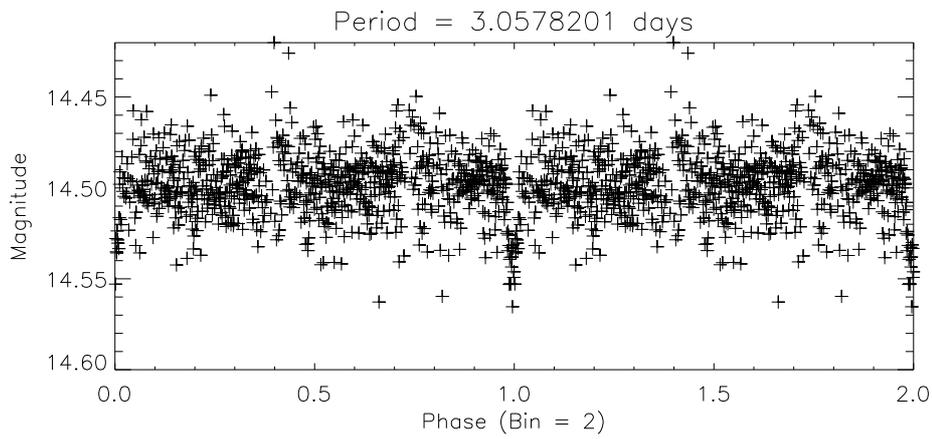
Figure 5. Phase curve of F20b.017823

Period = 1.5650001 days
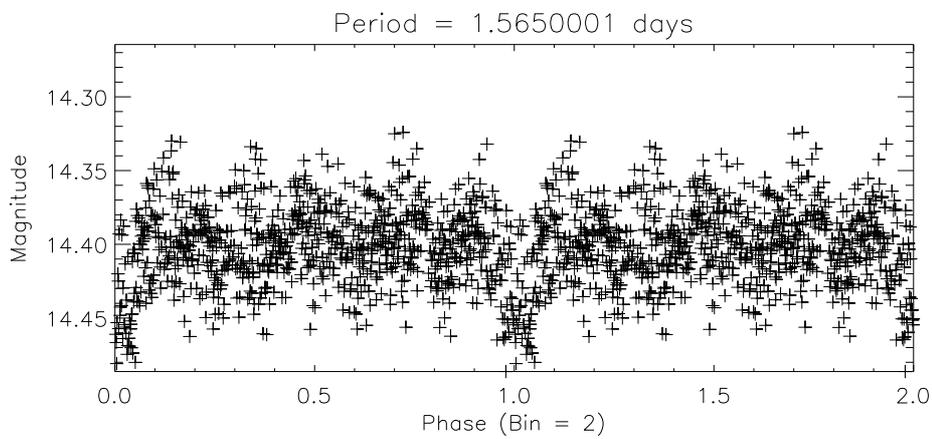
Figure 6. Phase curve of F20b.032711

Period = 6.3778300 days
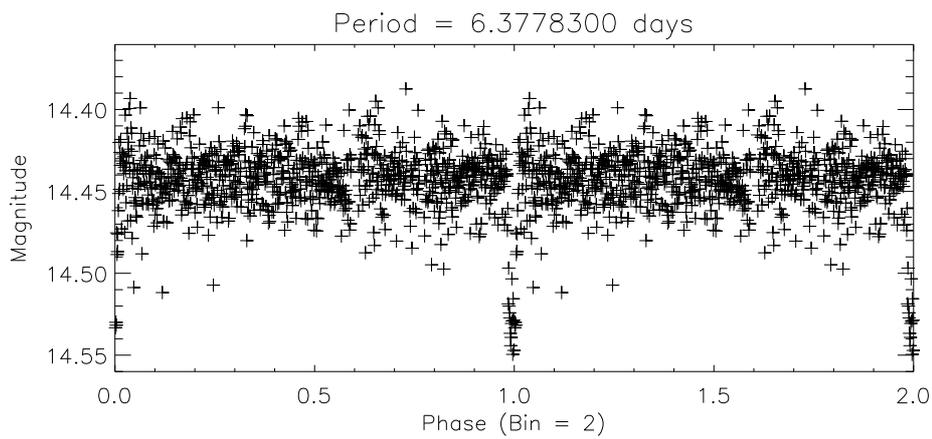
Figure 7. Phase curve of F20c.005922

Period = 9.3392496 days
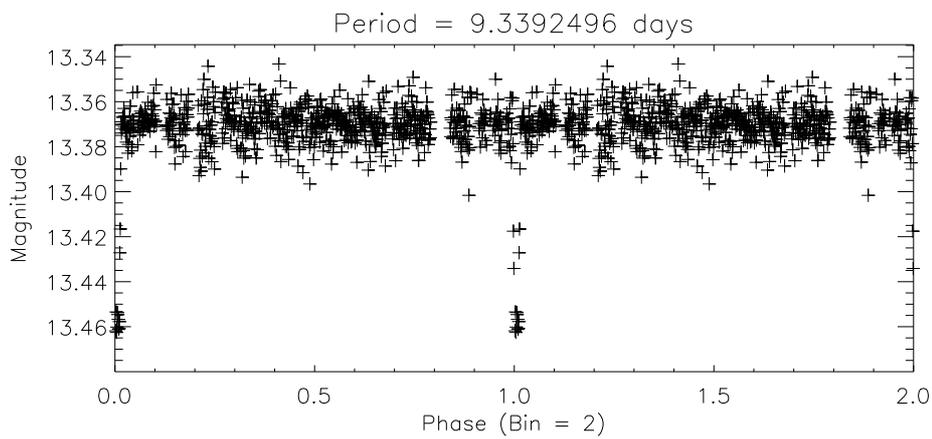
Figure 8. Phase curve of F20c.014909

Period = 9.7670002 days
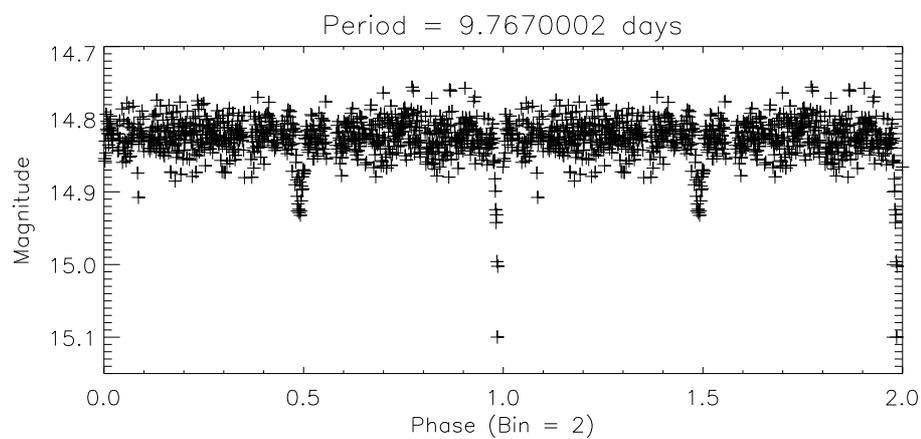
Figure 9. Phase curve of F20c.015941

Period = 0.77800000 days
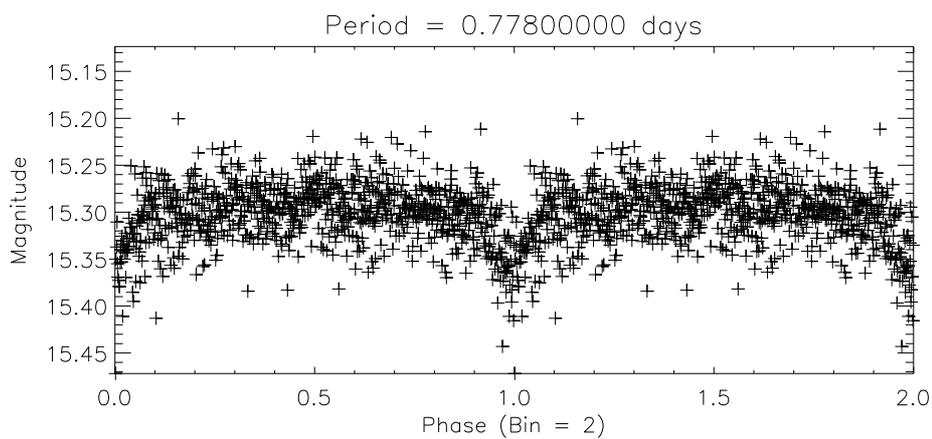
Figure 10. Phase curve of F20d.004702

Period = 3.7479999 days
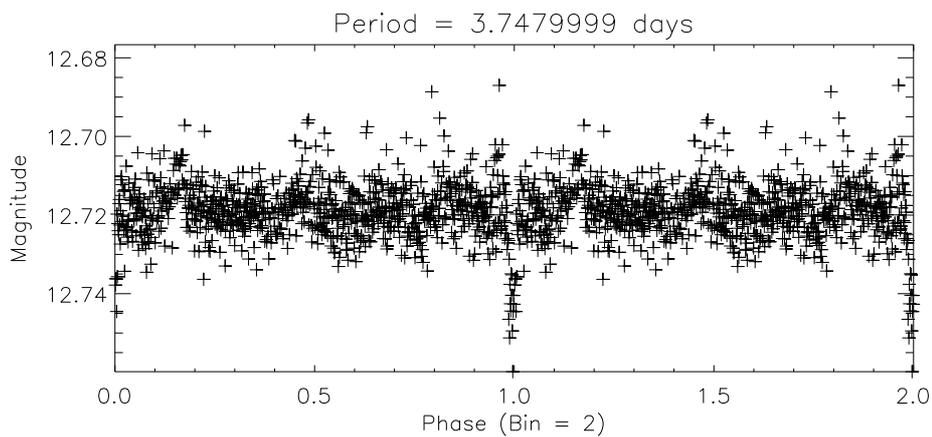
Figure 11. Phase curve of F20d.006126

Period = 1.4800000 days
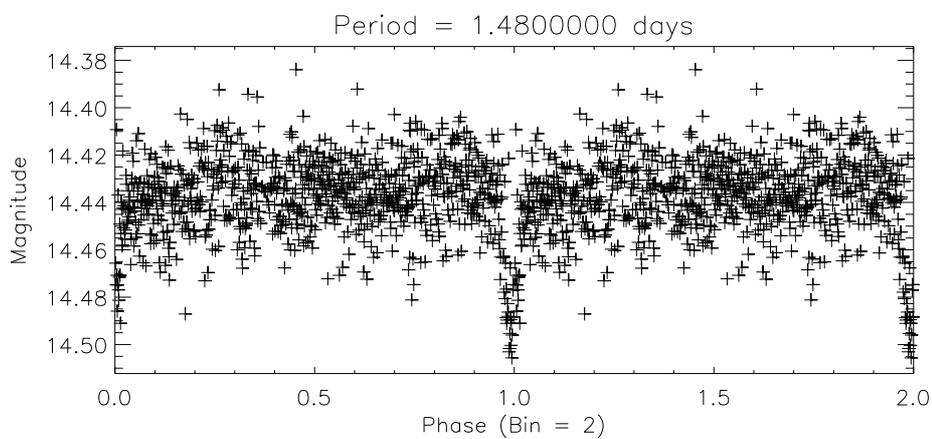
Figure 12. Phase curve of F20d.011593
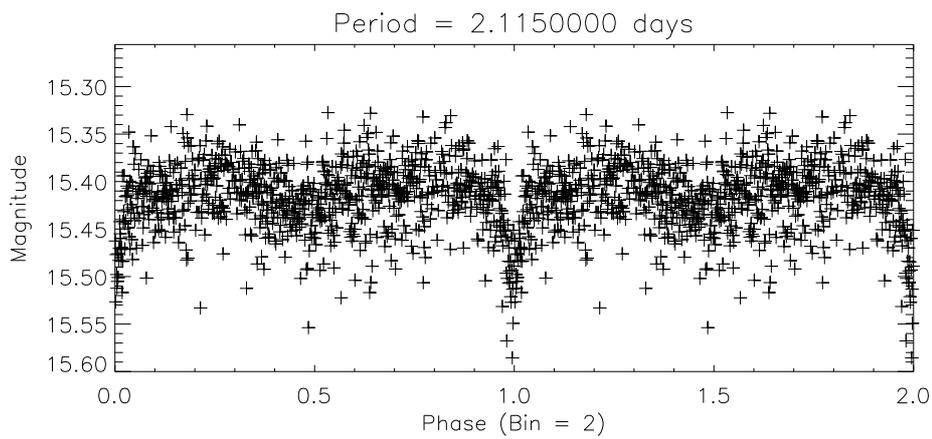
Figure 13. Phase curve of F20d.013162
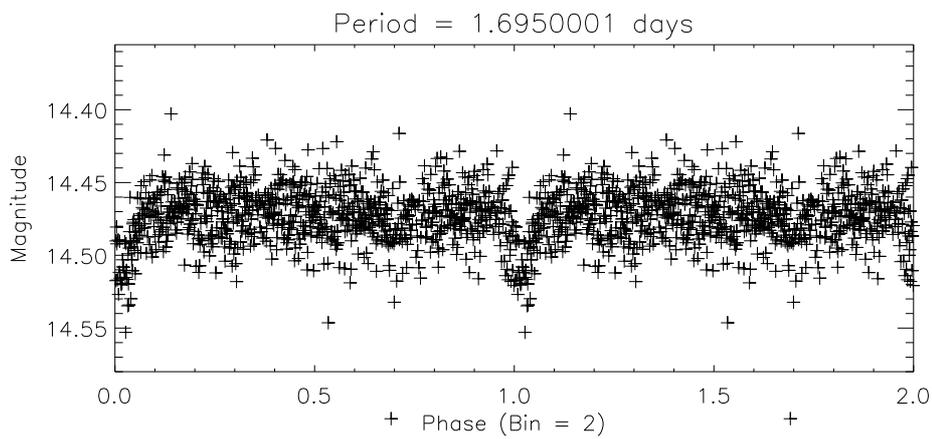
Figure 14. Phase curve of F20d.013467
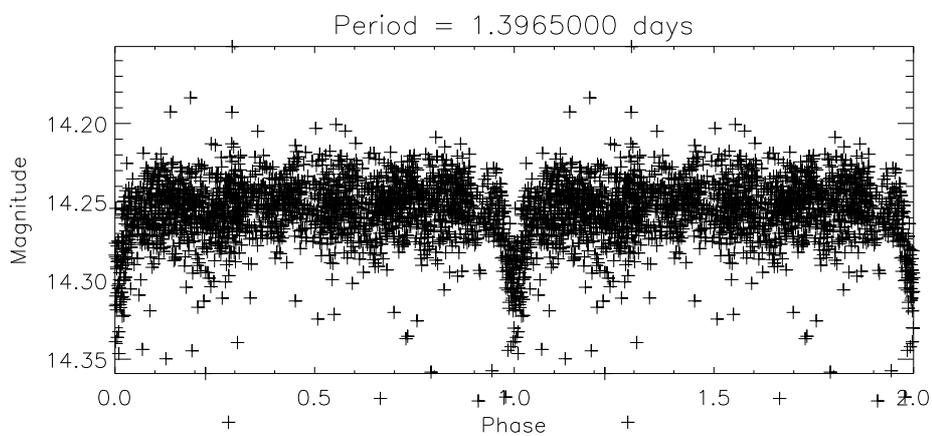
Figure 15. Phase curve of F20d.013718

Period = 1.4022144 days
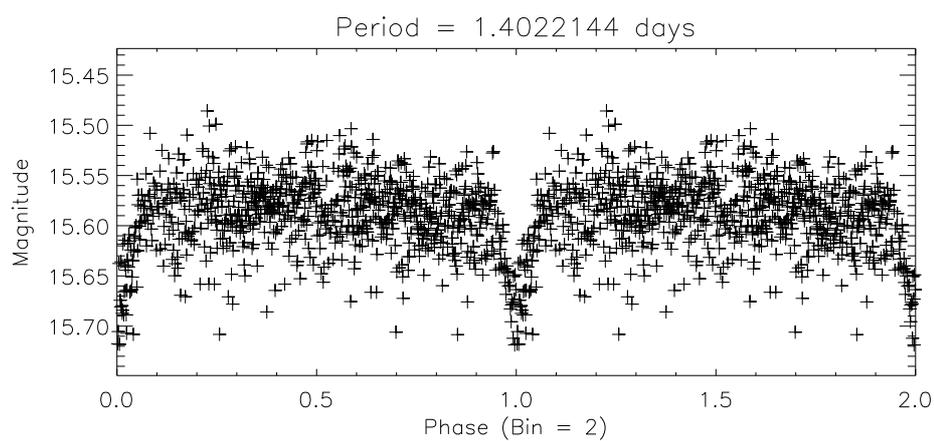
Figure 16. Phase curve of F20d.014956

Period = 8.7939997 days
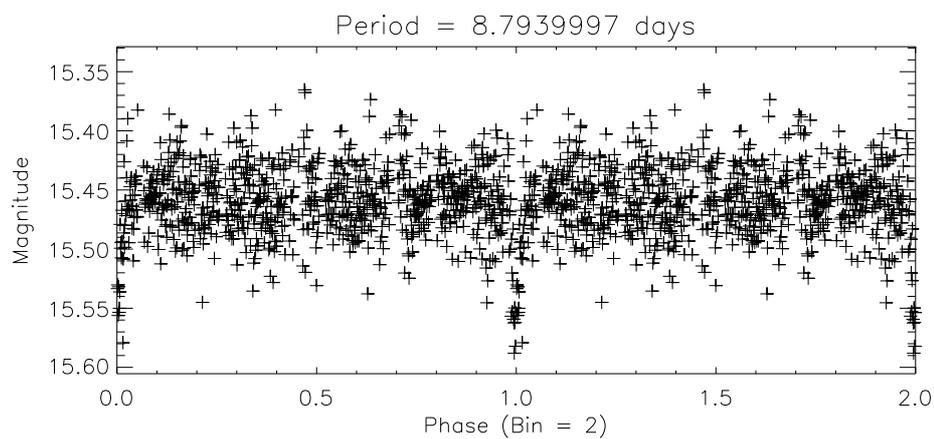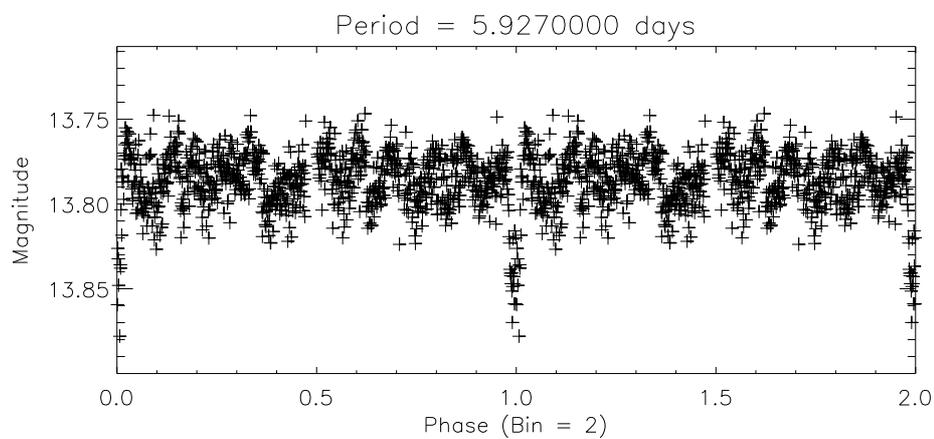
Figure 17. Phase curve of F20d.020854

Period = 5.9270000 days

Figure 18. Phase curve of F20d.029101