

# KIC 011082830

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011082830-01	OBS	No	0.679918	132.181500	25.5	2.887	9.3	10.4	2.22	7291	1.29	40557.84
011082830-02	OBS	No	3.626434	133.105257	66.3	6.601	8.1	5.5	2.22	7291	2.13	4352.22
011082830-03	OBS	No	110.968411	188.752274	1067.4	6.919	9.0	9.8	2.22	7291	13.47	45.47
011082830-04	OBS	No	263.166816	176.730002	495.5	3.527	8.7	5.5	2.22	7291	5.55	14.38
011082830-05	OBS	No	3.626397	133.720256	153.8	6.037	8.8	10.4	2.22	7291	5.34	4352.28
011082830-06	OBS	No	322.616820	139.890190	630.3	1.794	9.4	7.1	2.22	7291	5.92	10.96
011082830-07	OBS	No	45.688762	156.143238	882.7	8.488	8.6	8.8	2.22	7291	12.30	148.46
011082830-08	OBS	No	414.726345	153.623511	57.7	6.000	7.8	-1.0	2.22	7291	1.71	7.84

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011082830-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED—HALO_GHOST
011082830-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
011082830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
011082830-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

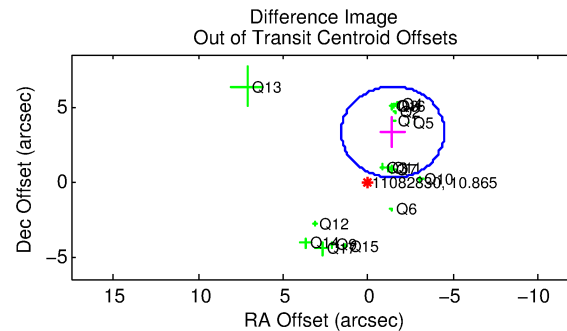
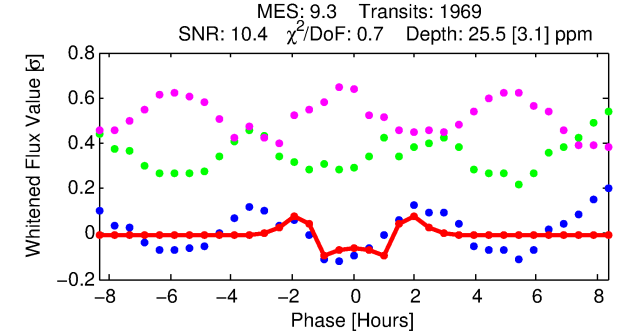
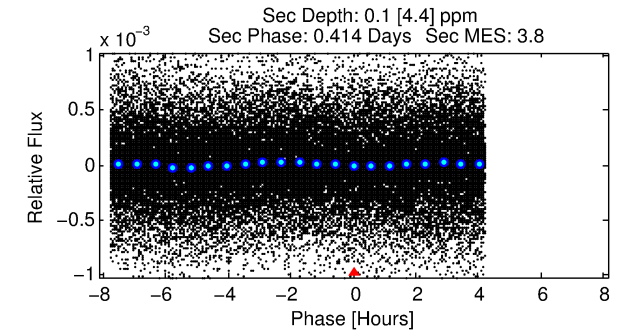
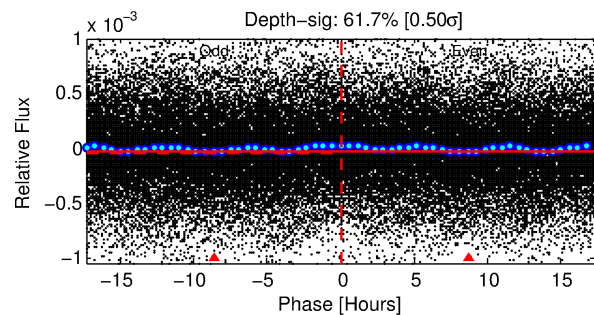
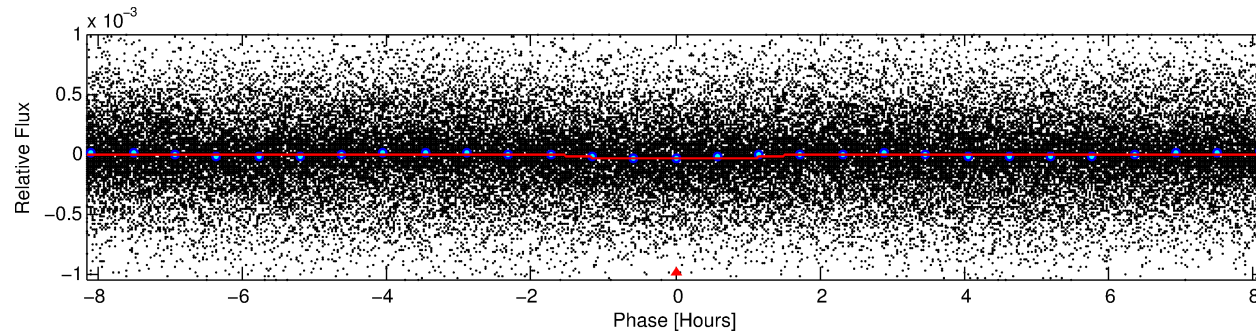
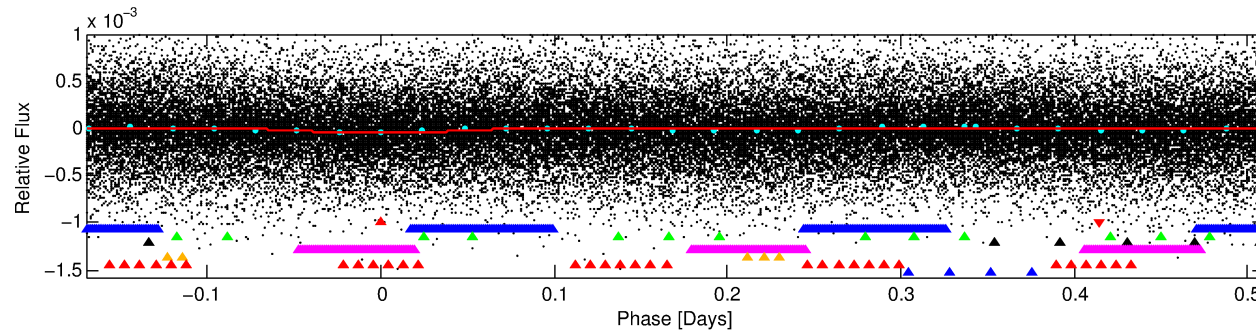
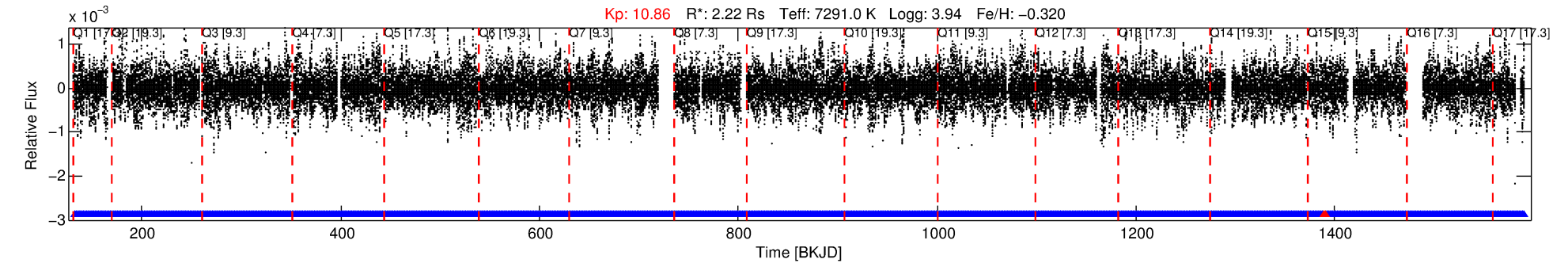
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011082830-01

No Significant Match Found

# DV One-Page Summary

KIC: 11082830 Candidate: 1 of 8 Period: 0.680 d



## DV Fit Results:

Period = 0.67992 [0.00001] d  
Epoch = 132.1815 [0.0013] BKJD  
Rp/R\* = 0.0054 [0.0008]  
a/R\* = 1.25 [0.38]  
b = 0.89 [0.20]  
Seff = 40557.84 [22786.21]  
Teff = 3619 [508] K  
Rp = 1.29 [0.51] Re  
a = 0.0175 [0.0060] AU  
Ag = 0.01 [0.44] [-2.22 $\sigma$ ]  
Teffp = 1891 [16098] K [-0.11 $\sigma$ ]

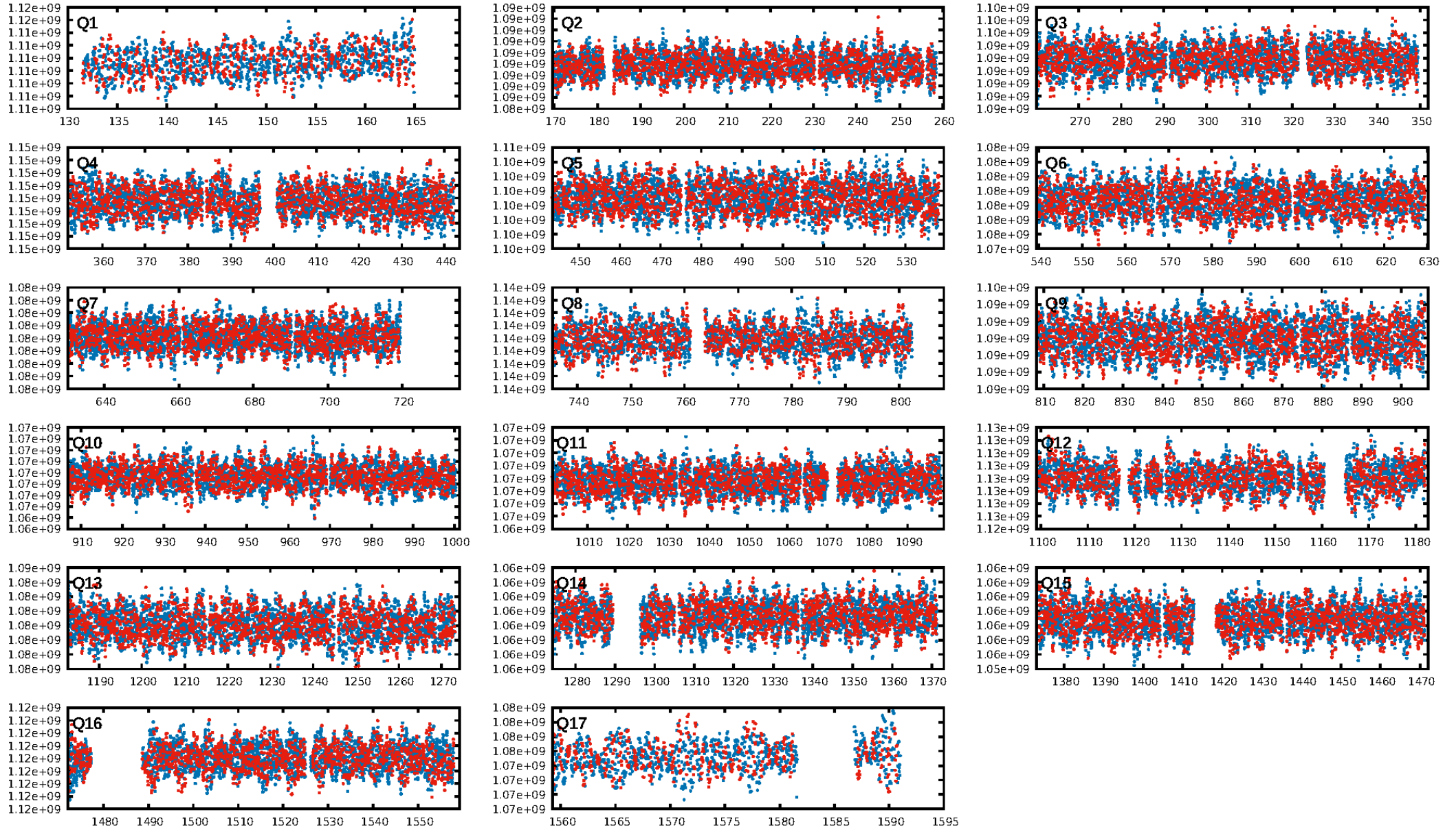
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [10.57 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1878/1880]  
GhostDiagnostic-chr: 1.214  
Centroid-sig: 0.0%  
Centroid-so: 1.544 arcsec [4.24 $\sigma$ ]  
OotOffset-rm: 3.615 arcsec [3.56 $\sigma$ ]  
KicOffset-rm: 4.805 arcsec [5.08 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.18 [3/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:41:00 Z

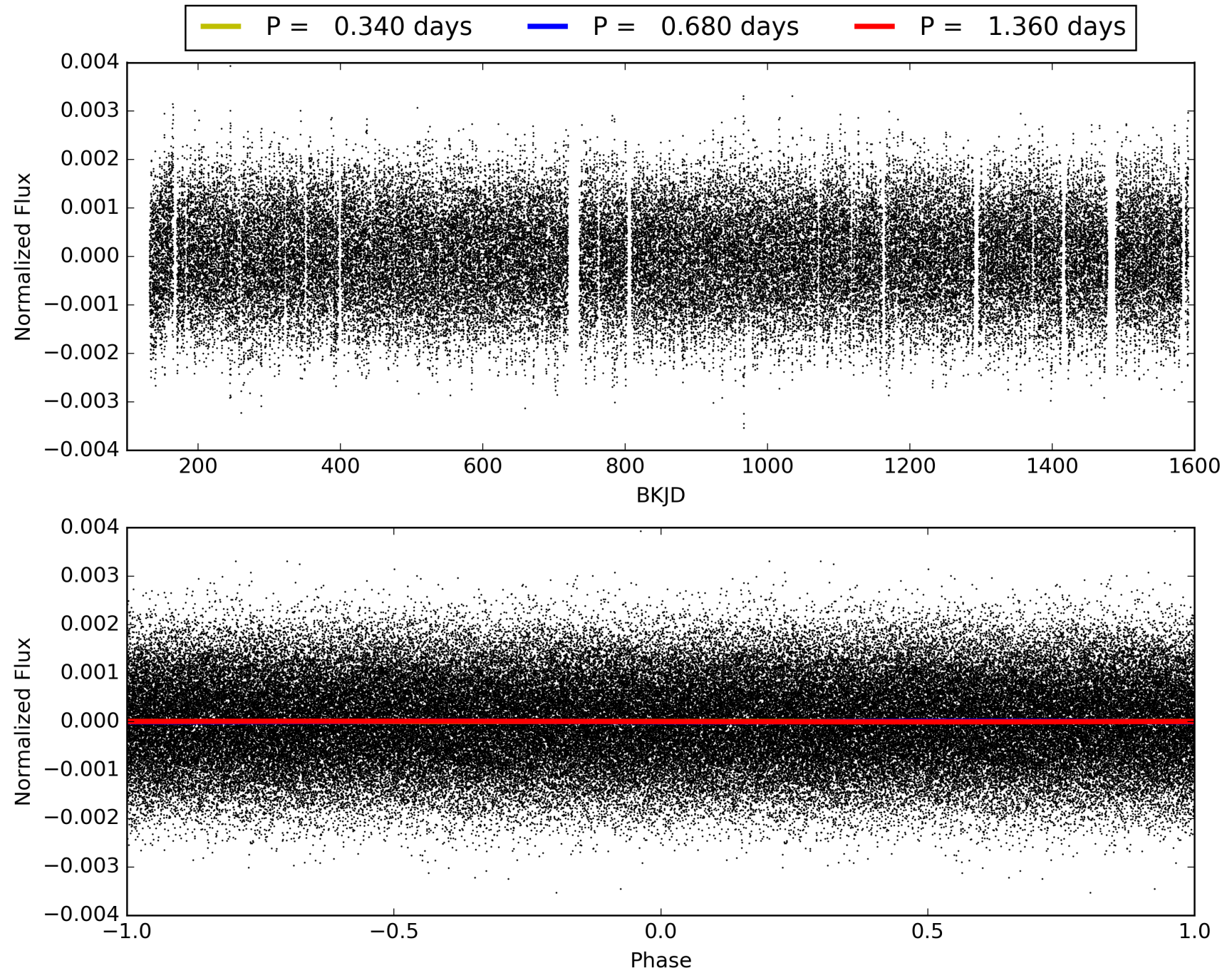
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011082830-01, PDC Light Curves





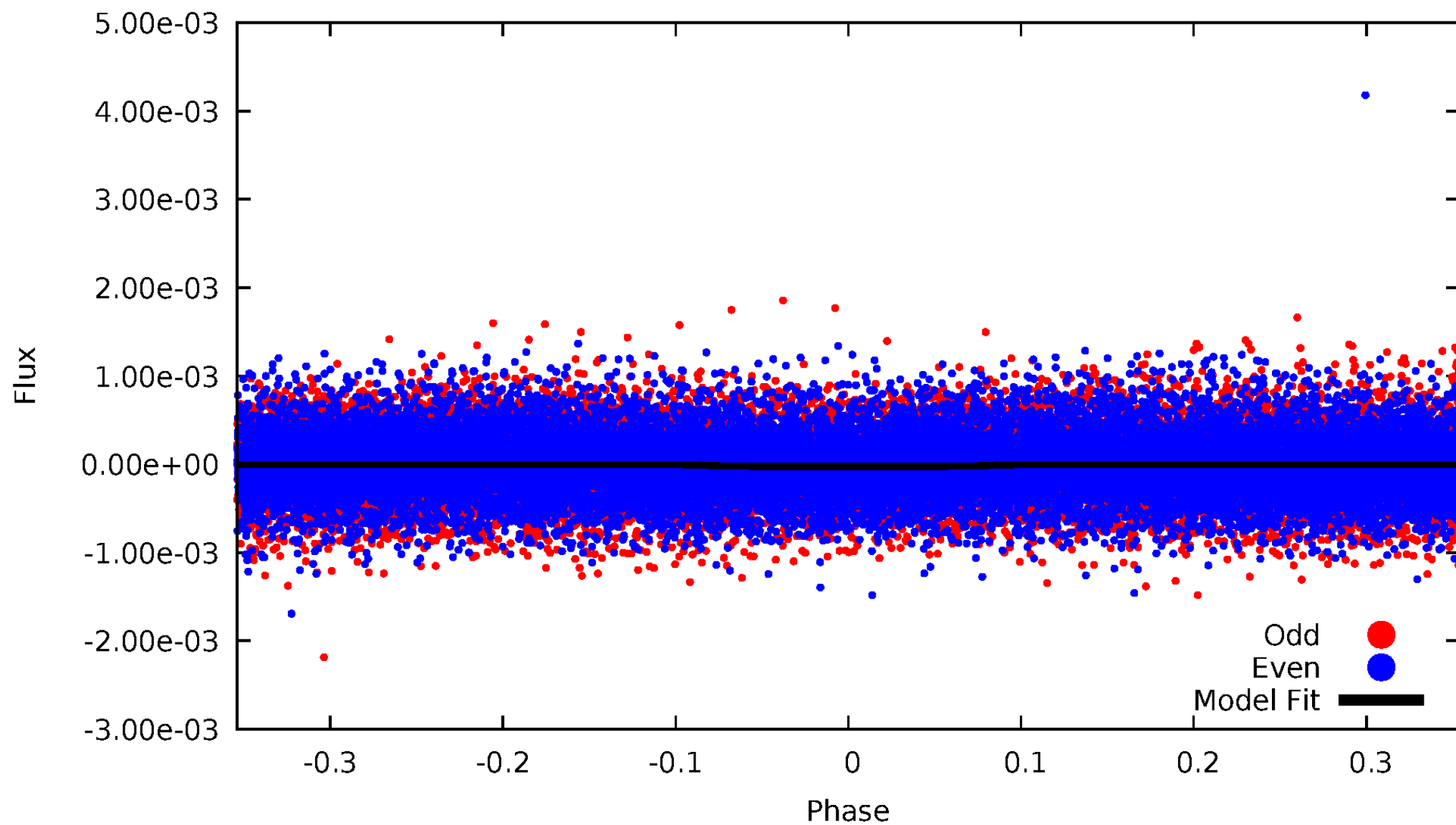
# TCE 011082830-01





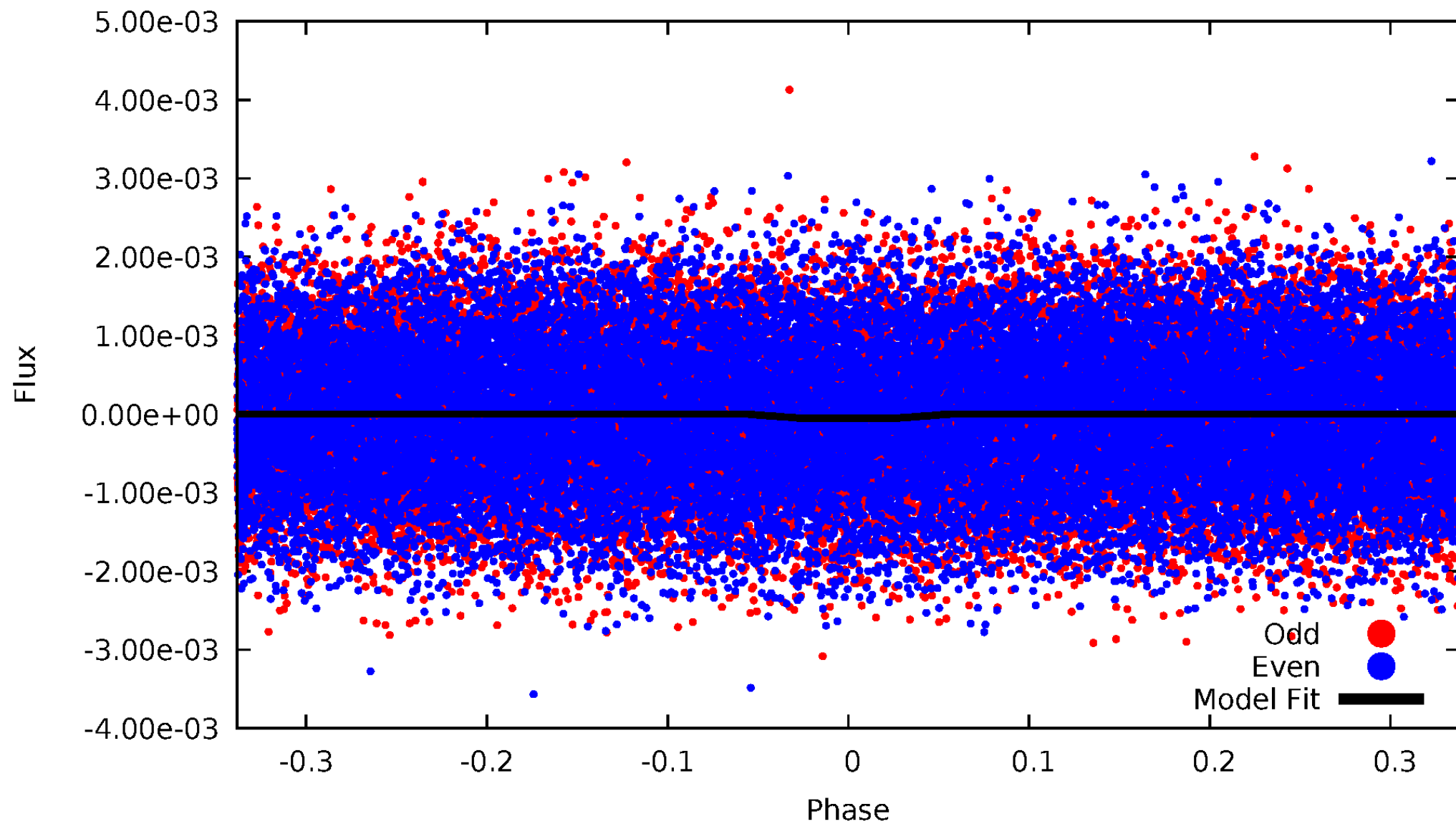
# DV Odd/Even

TCE 011082830-01

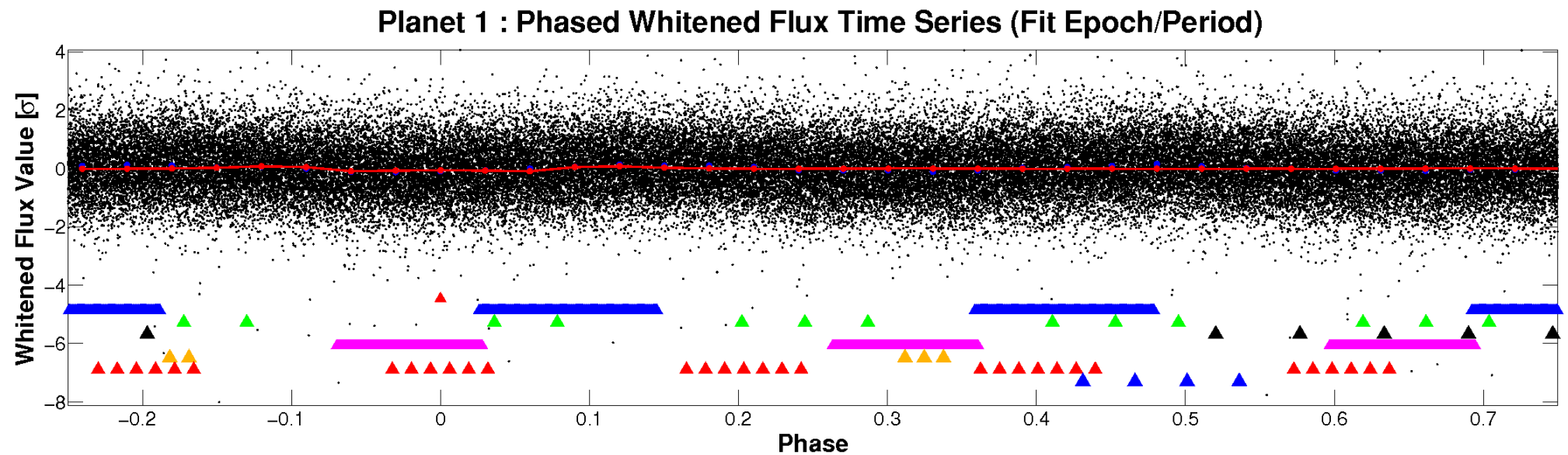
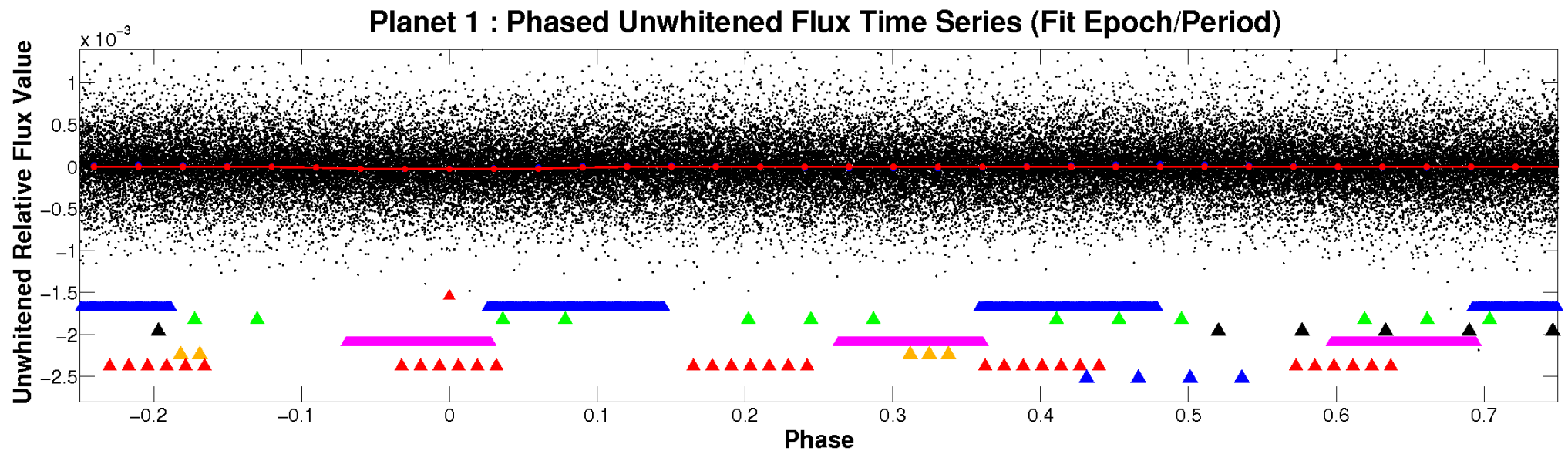


# ALT Odd/Even

TCE 011082830-01



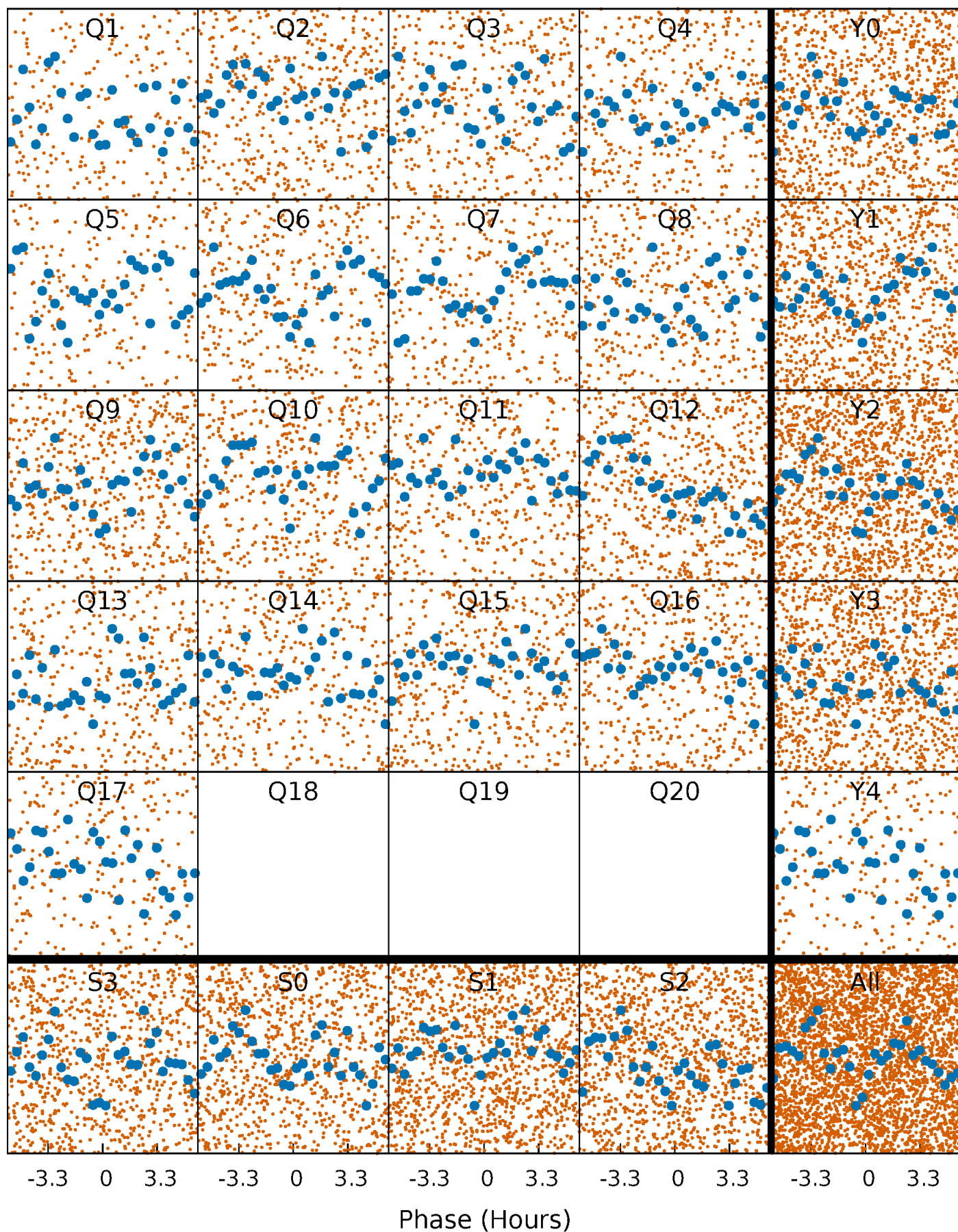
# Non-Whitened Vs. Whitened Light Curve





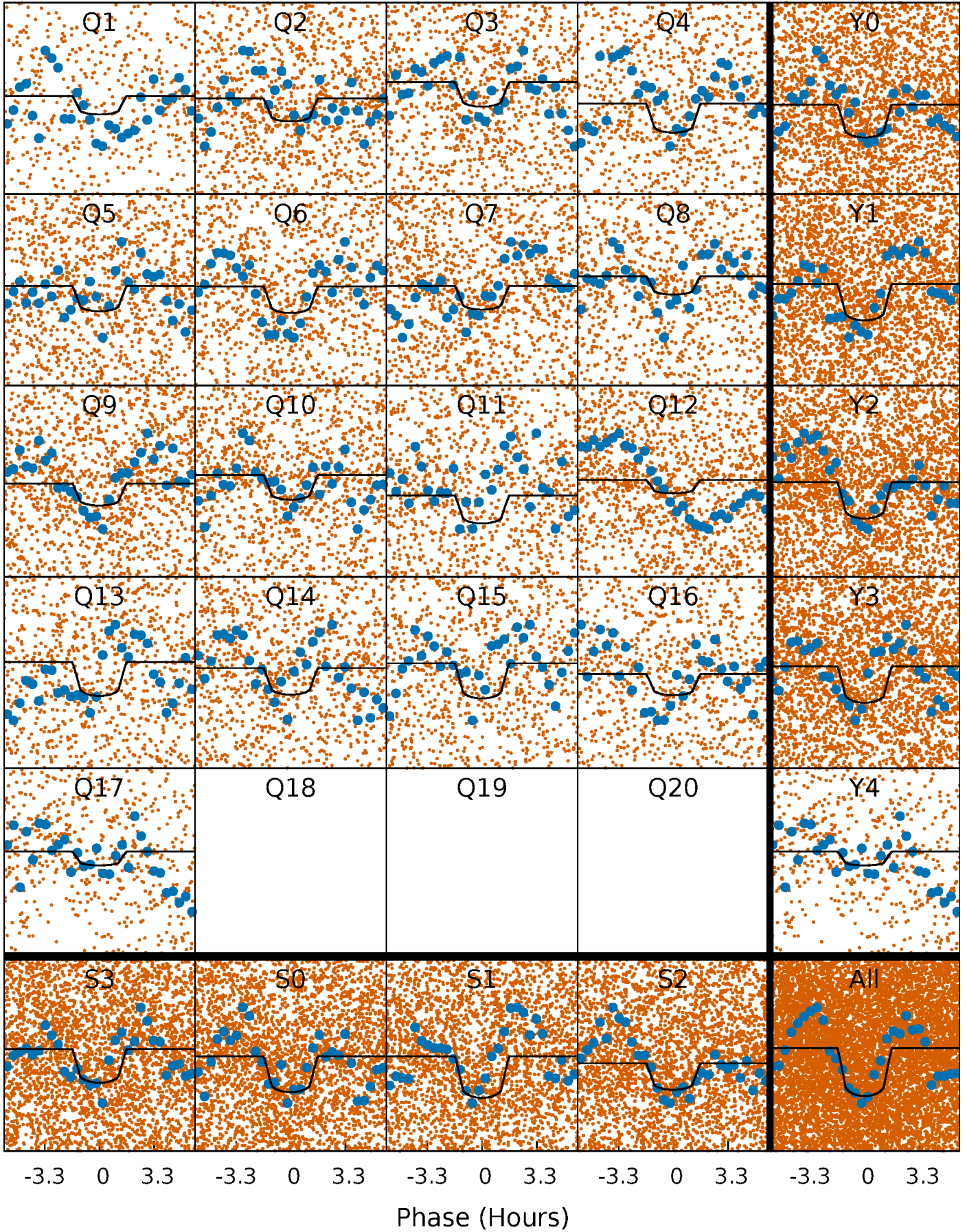
# PDC Quarter-Phased Transit Curves

TCE 011082830-01 P= 0.679918 Days  $T_0=132.181500$  (BKJD)



# DV Quarter-Phased Transit Curves

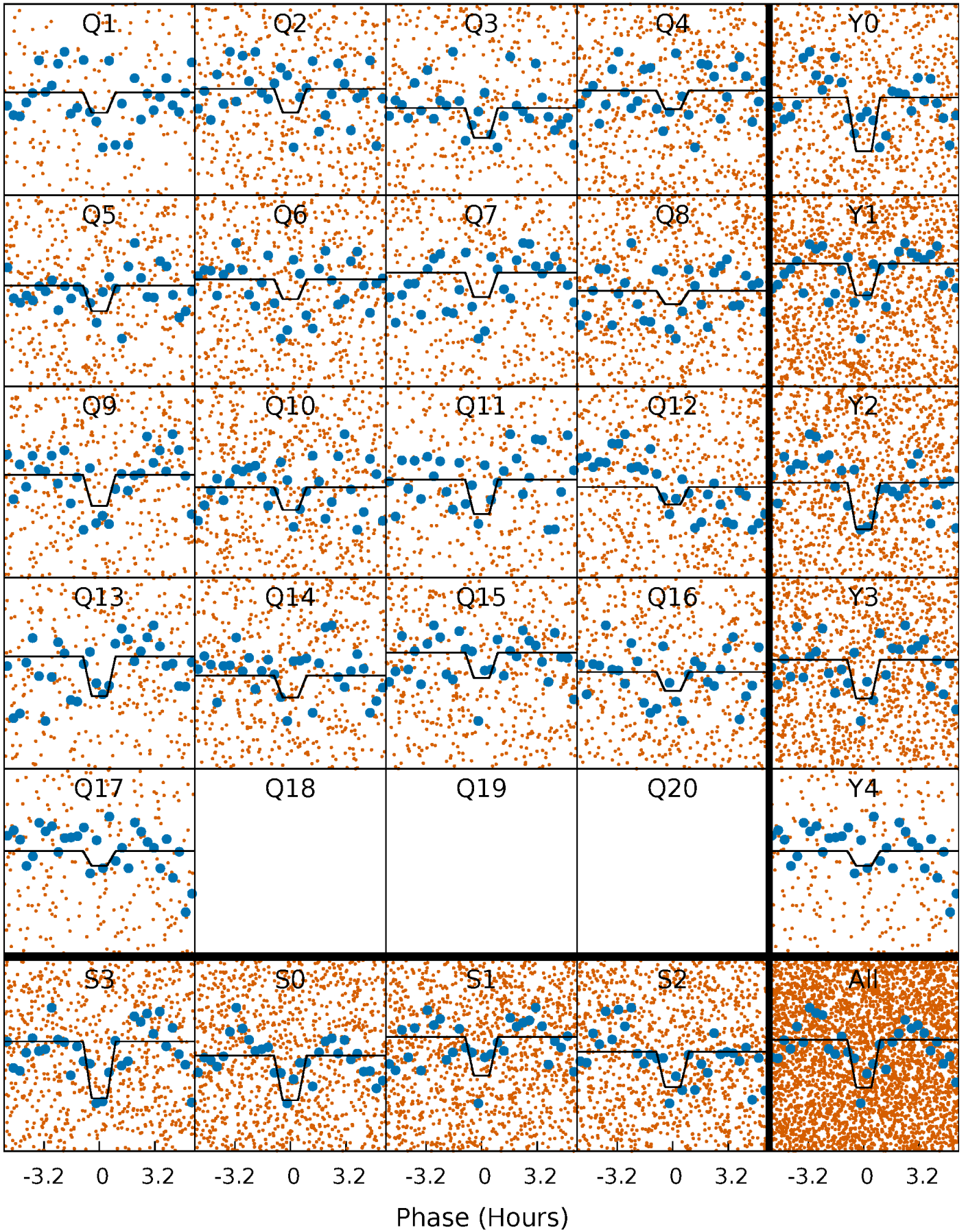
TCE 011082830-01 P= 0.679918 Days  $T_0=132.181500$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011082830-01 P= 0.679908 Days  $T_0=132.179739$  (BKJD)

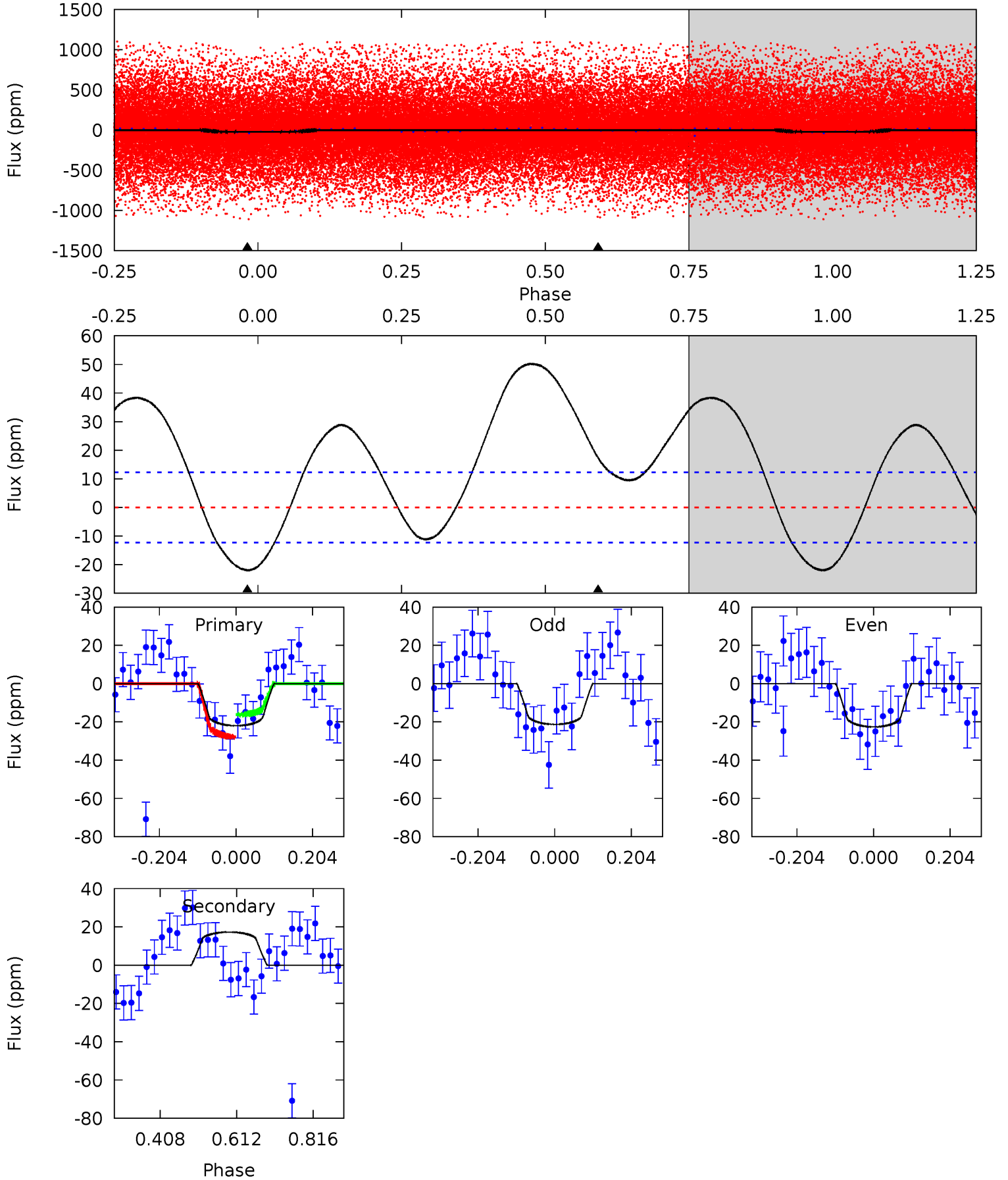




# DV Model-Shift Uniqueness Test

011082830-01, P = 0.679918 Days, E = 131.501582 Days

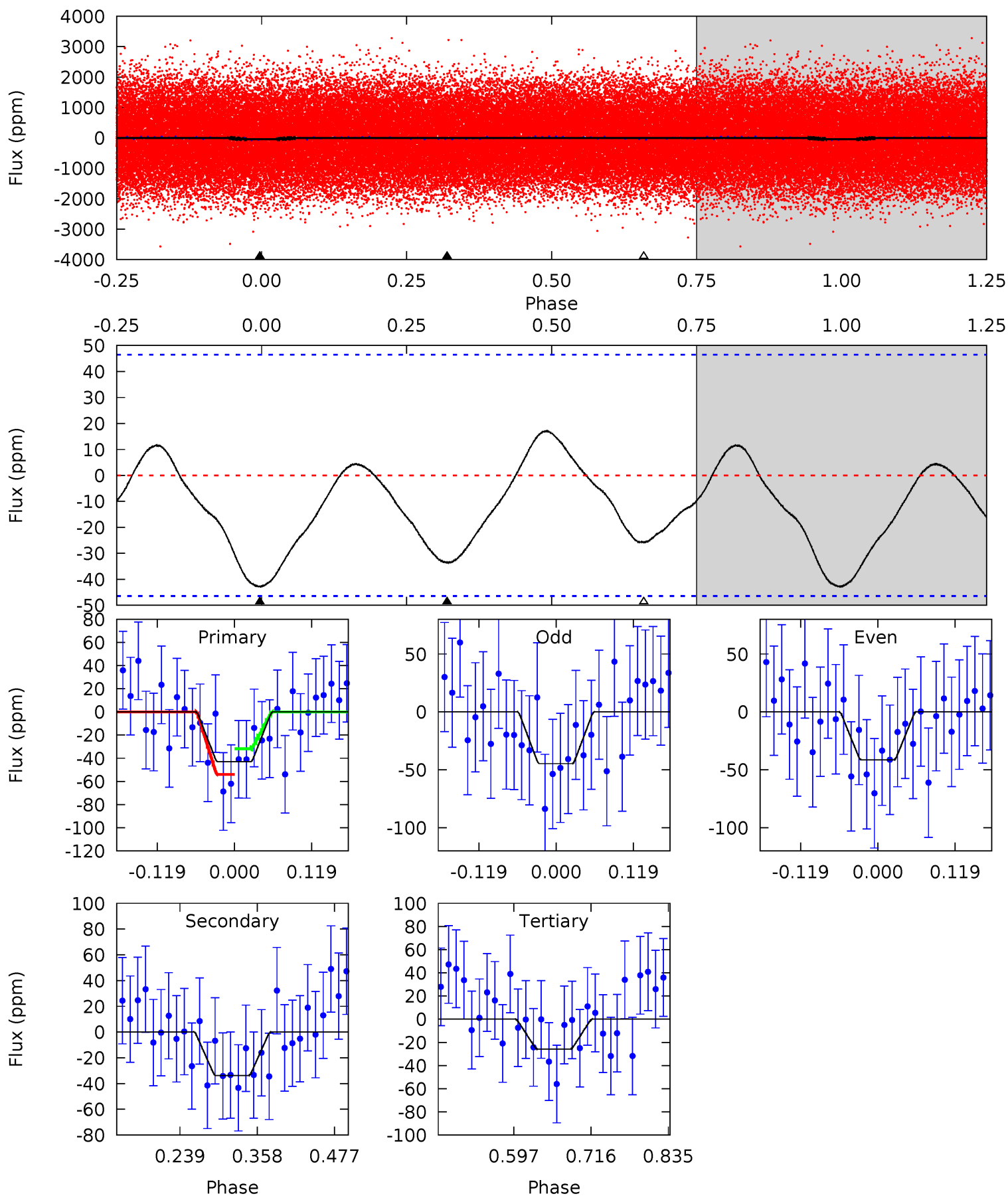
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.90	-6.21	0	0	4.41	1.27	3.65	7.90	7.90	-6.21	-6.21	0.24	0.79	0.70	2.13



# Alt Model-Shift Uniqueness Test

011082830-01, P = 0.679908 Days, E = 131.499831 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.19	3.30	2.53	0	4.53	1.56	1.19	1.66	4.19	0.77	3.30	0.16	0.90	0.29	1.08



### Stellar Parameters For KIC 011082830

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7291^{+203}_{-279}$	$3.937^{+0.315}_{-0.135}$	$-0.320^{+0.250}_{-0.350}$	$2.218^{+0.536}_{-0.804}$	$1.549^{+0.215}_{-0.323}$	$0.200^{+0.483}_{-0.083}$
	+3%/-4%	+8%/-3%	+78%/-109%	+24%/-36%	+14%/-21%	+242%/-42%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011082830-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$17 \pm 3$	$1.24^{+0.28}_{-0.27}$	$4964^{+357}_{-458}$	$-6583^{+494}_{-594}$	$-1.893^{+0.683}_{-1.212}$
Alt.	$-34 \pm 10$	$1.67^{+0.33}_{-0.37}$	$4950^{+385}_{-476}$	$6154^{+814}_{-708}$	$2.043^{+1.468}_{-0.807}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming A=0.3)

$A_{\text{obs}}$  = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$



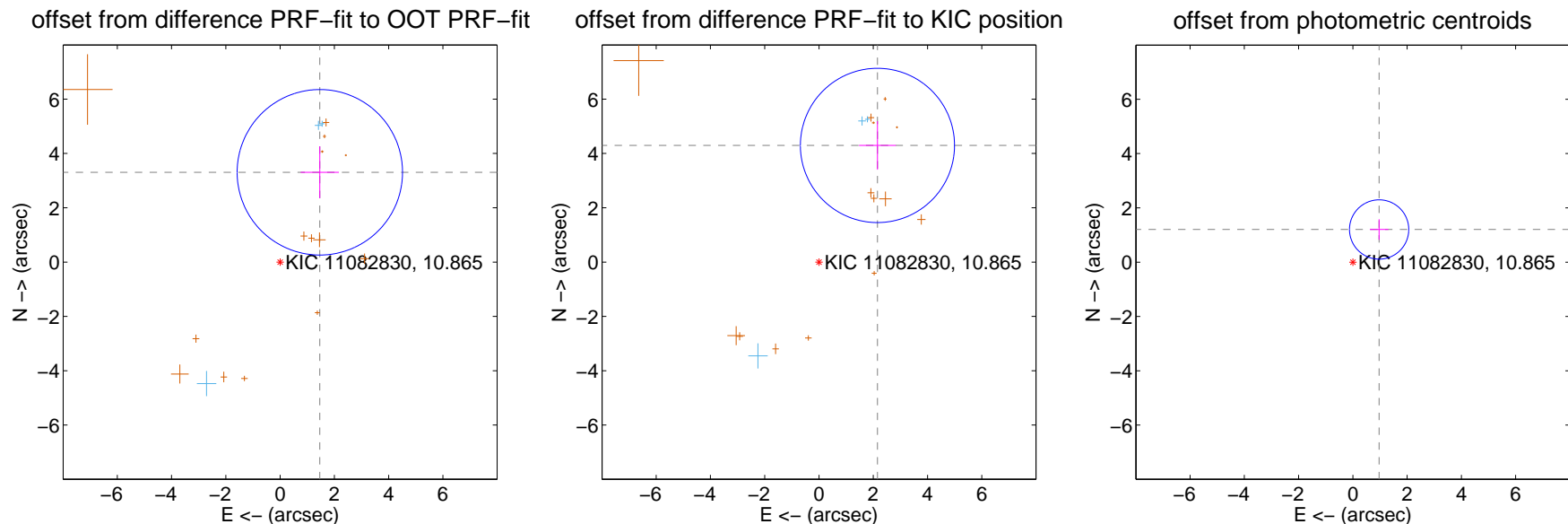
## DV Centroid Data

Supplemental centroid analysis for 011082830-01. **Kepler magnitude: 10.87.** Transit SNR 10.39

**There are 3 quarters with good PRF difference image offsets**

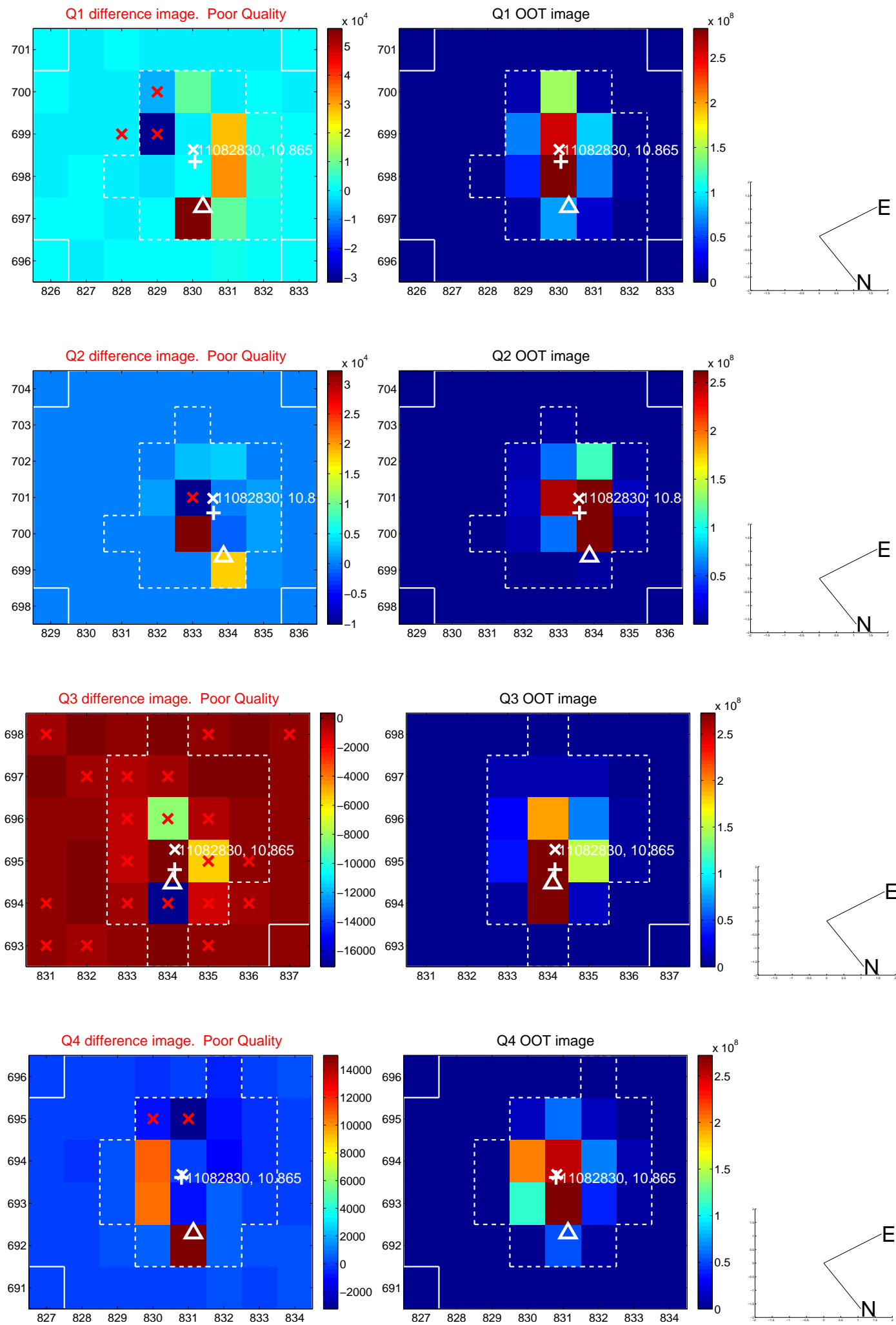
The direct PRF centroid is offset from the target star catalog position by about 1.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>3.615 \pm 1.015</math></b>	<b>3.56</b>	$-1.464 \pm 0.703$	$3.306 \pm 0.956$
PRF-fit source offset from KIC position	<b><math>4.805 \pm 0.946</math></b>	<b>5.08</b>	$-2.154 \pm 0.679$	$4.295 \pm 0.893$
photometric centroid source offset	<b><math>1.54 \pm 0.36</math></b>	<b>4.24</b>	$-0.97 \pm 0.34$	$1.20 \pm 0.38$

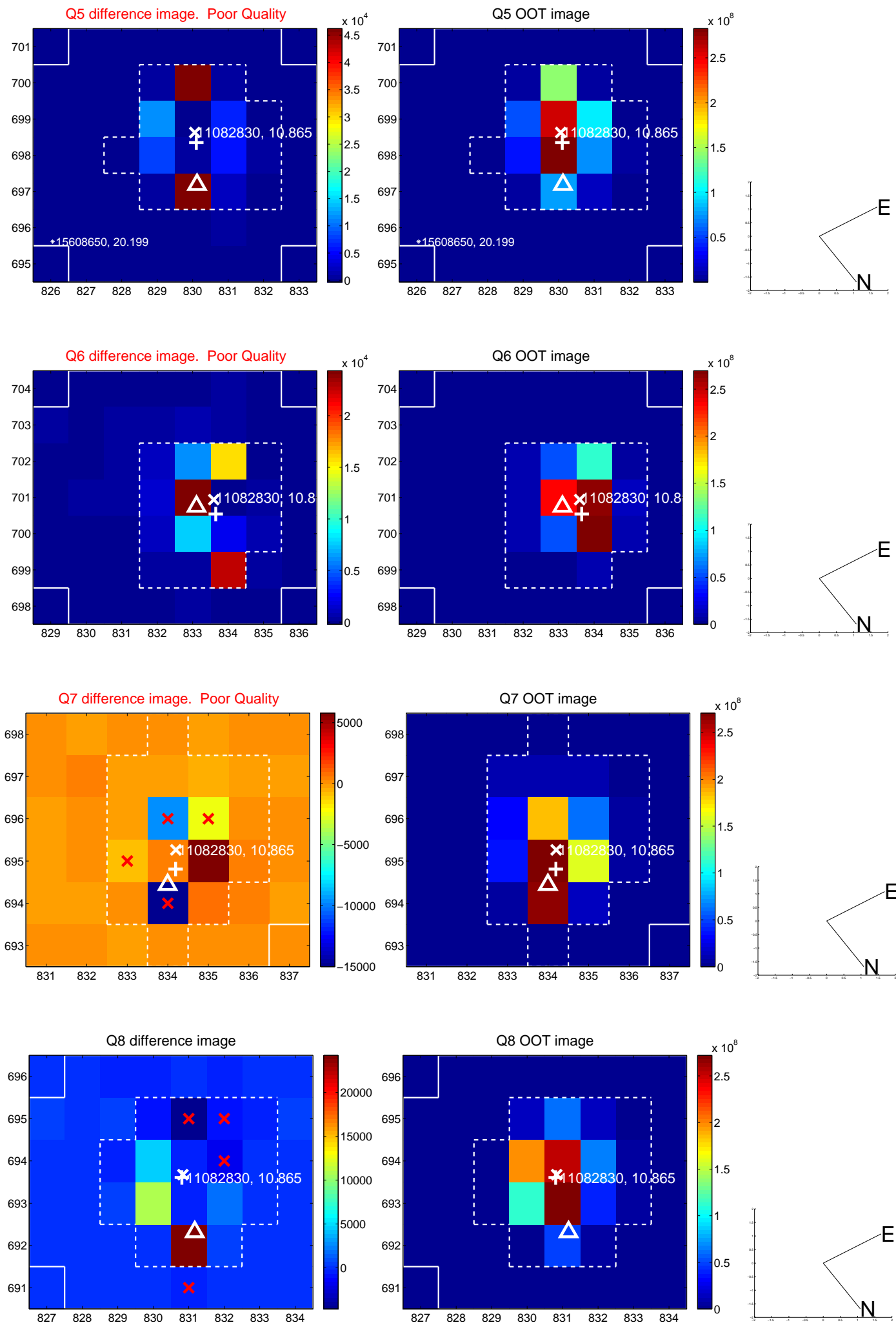


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

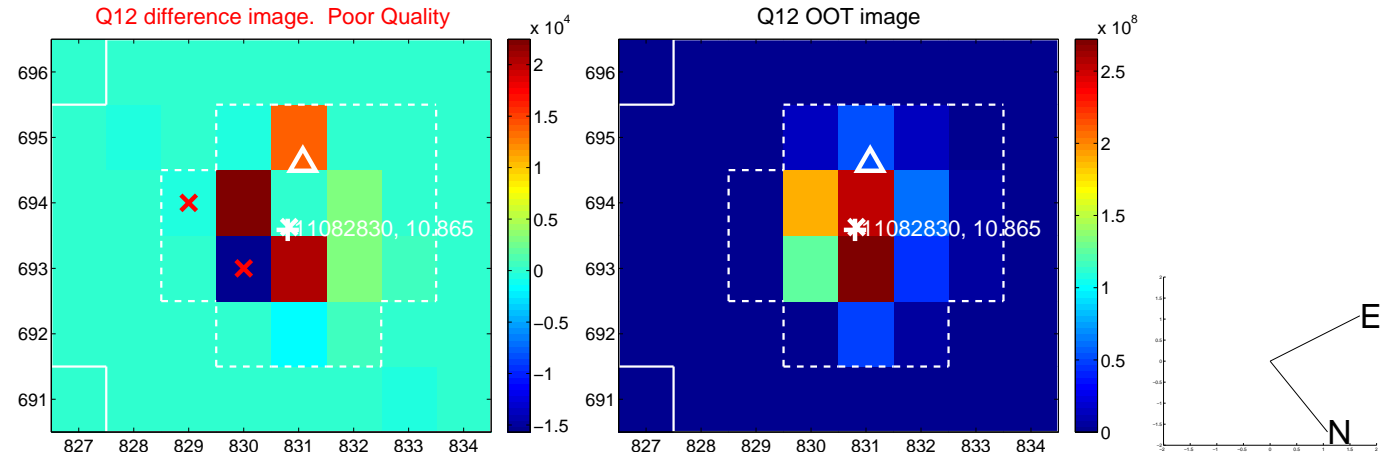
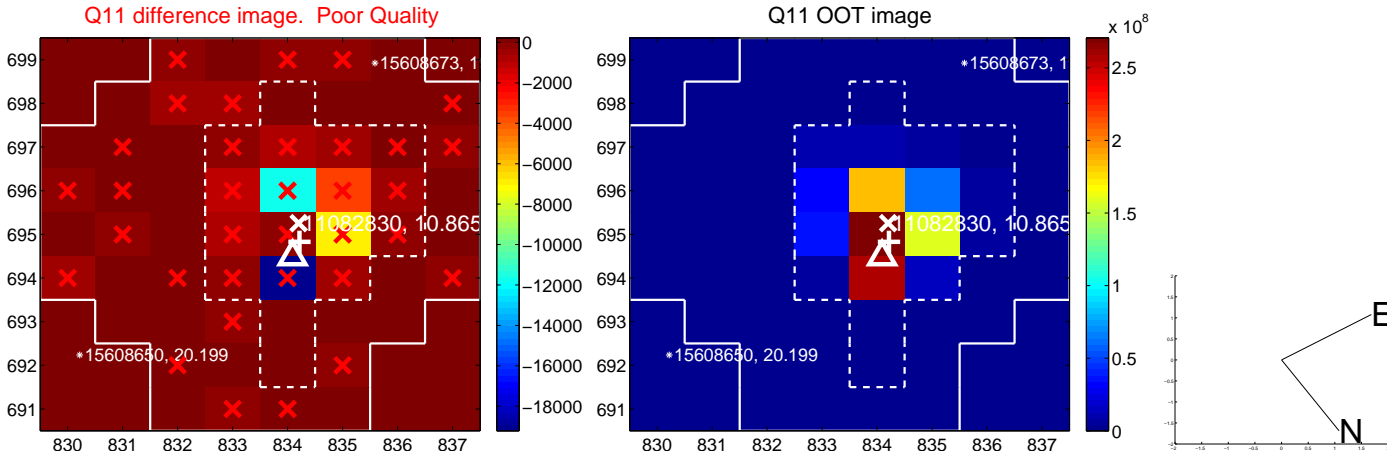
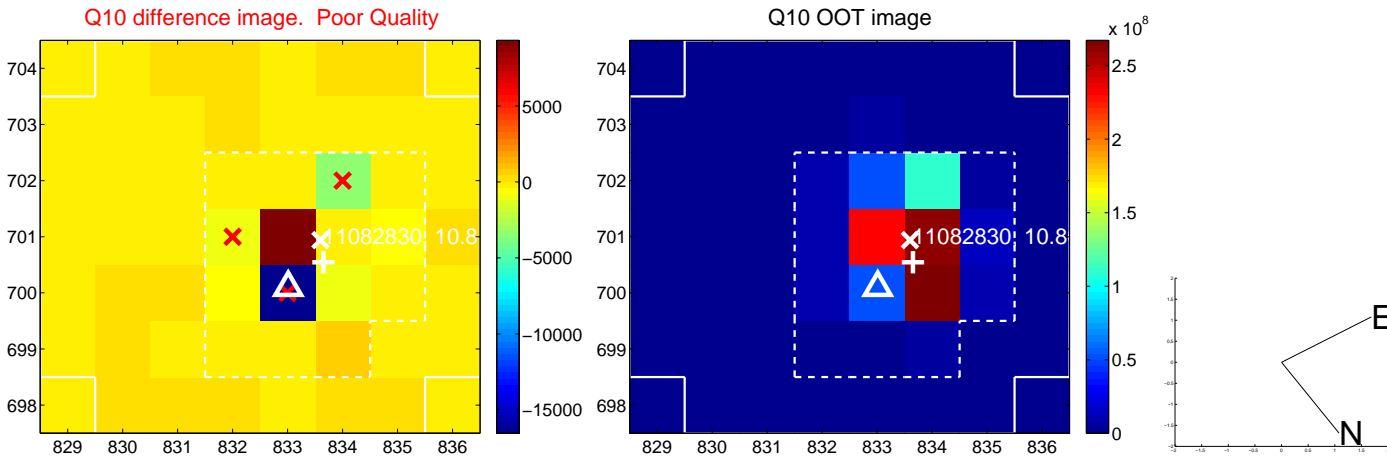
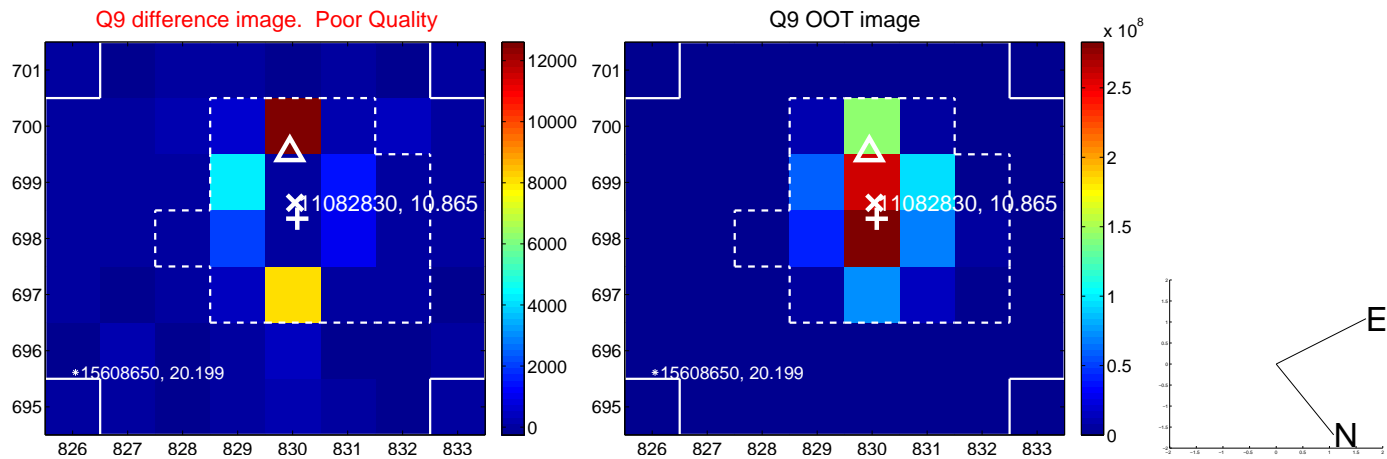


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

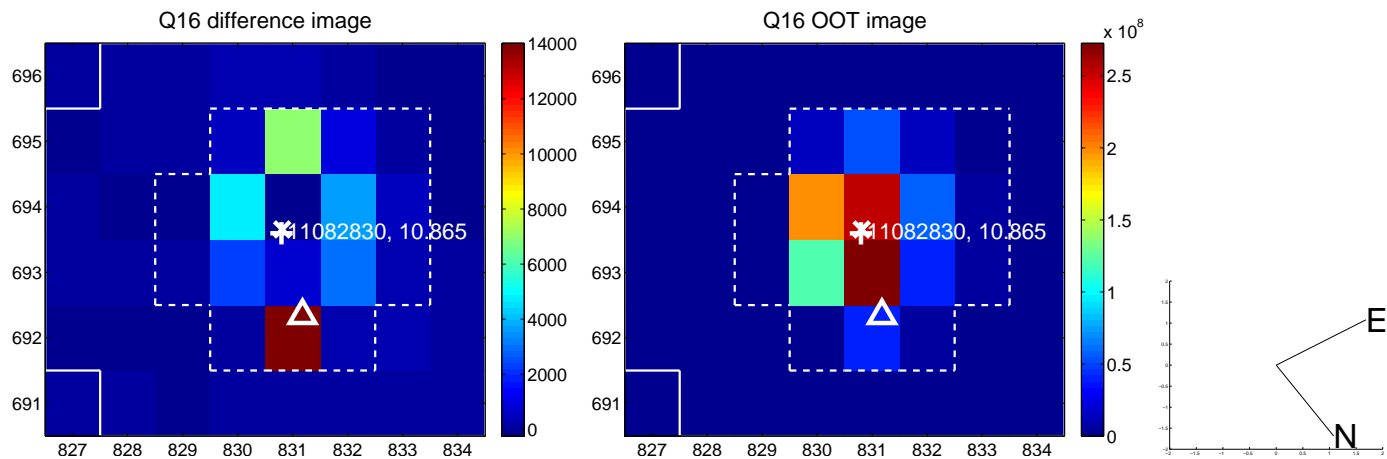
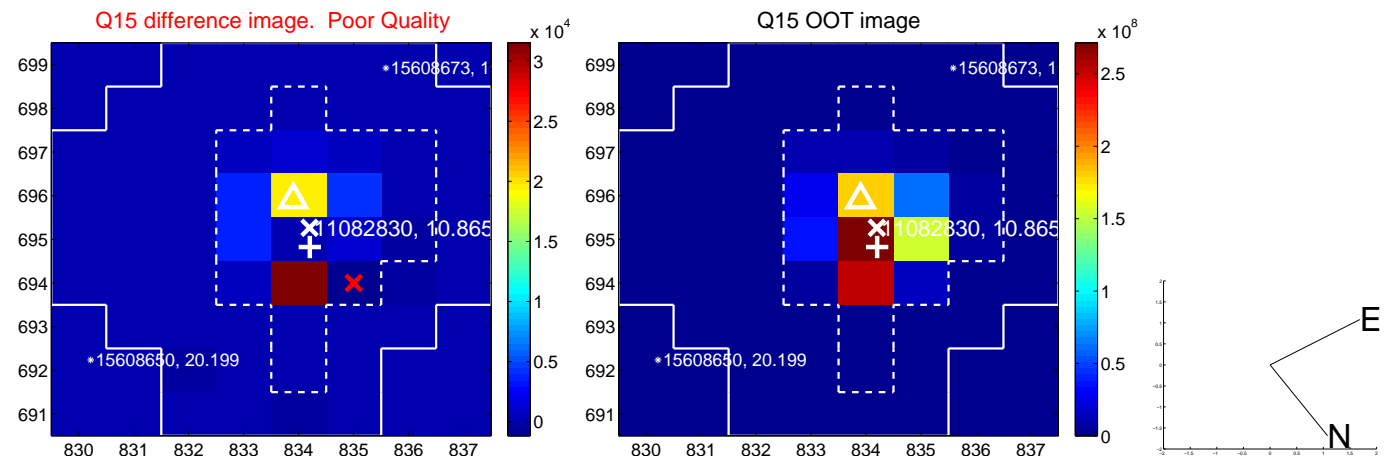
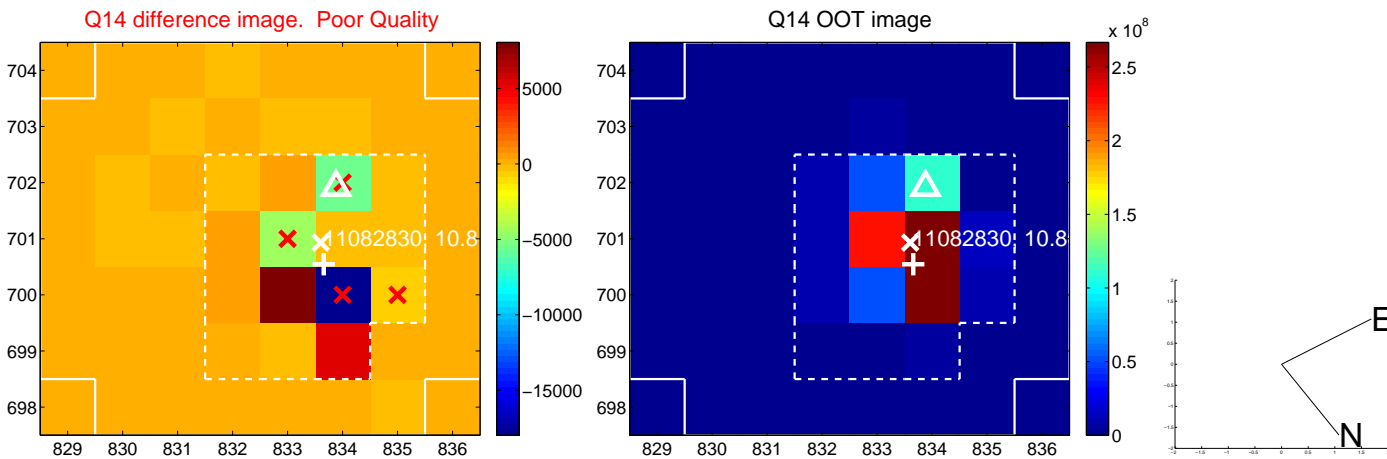
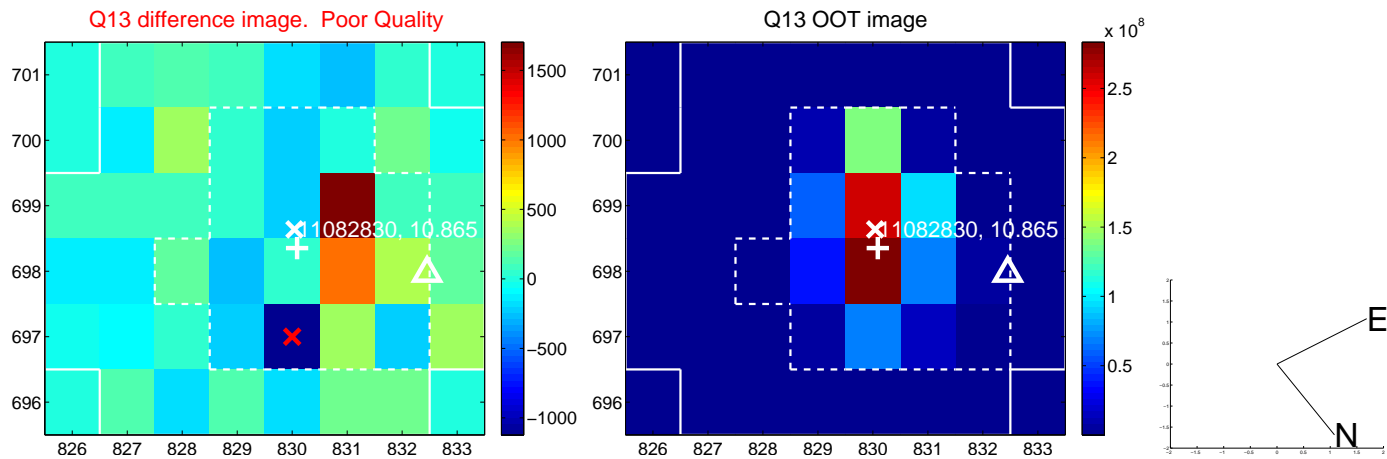




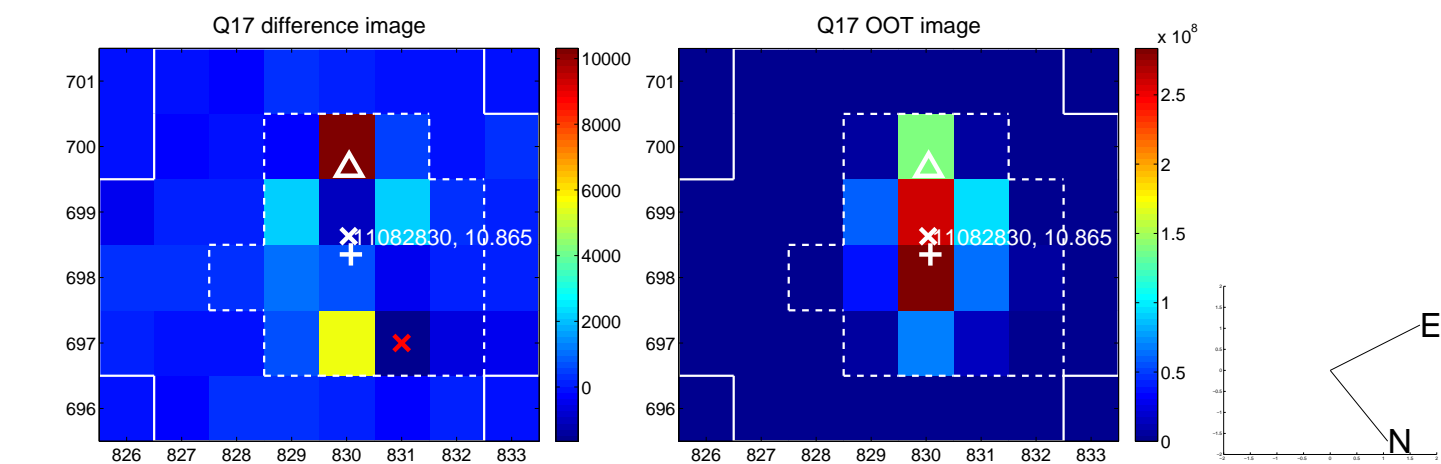
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



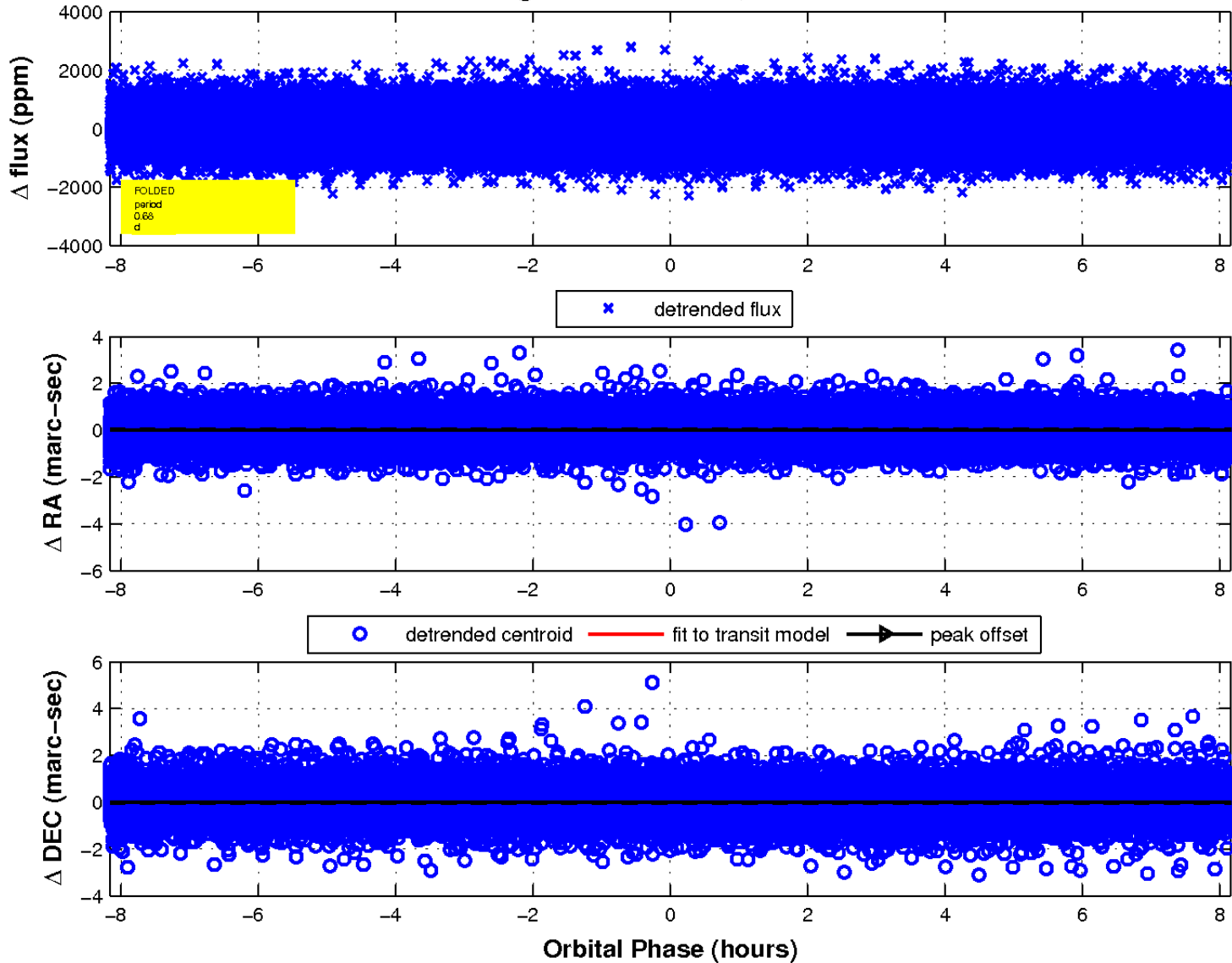
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



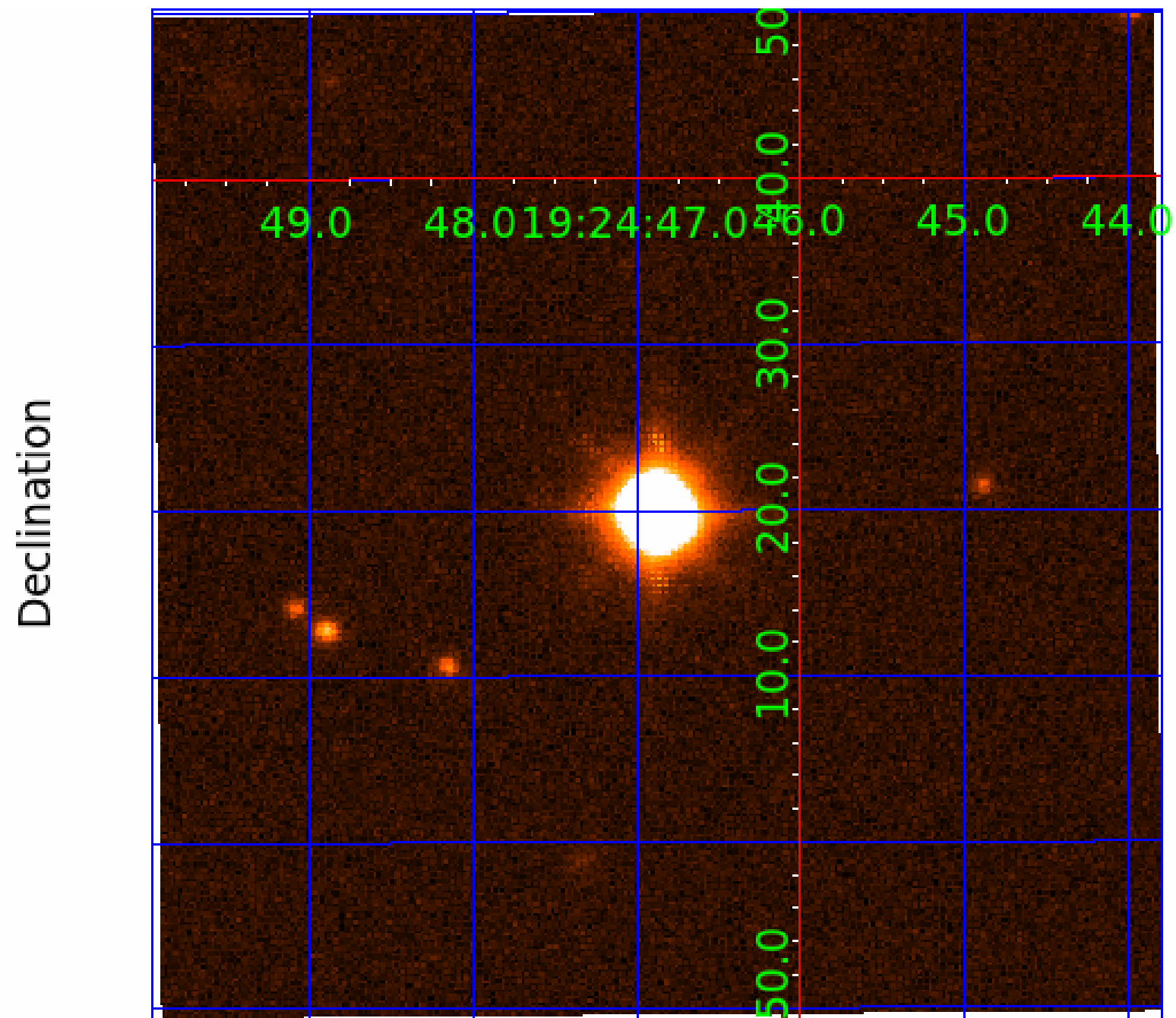
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 8



UKIRT Image





# KIC 011082830

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011082830-01	OBS	No	0.679918	132.181500	25.5	2.887	9.3	10.4	2.22	7291	1.29	40557.84
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011082830-07	OBS	No	45.688762	156.143238	882.7	8.488	8.6	8.8	2.22	7291	12.30	148.46
011082830-08	OBS	No	414.726345	153.623511	57.7	6.000	7.8	-1.0	2.22	7291	1.71	7.84

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011082830-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED—HALO_GHOST
011082830-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
011082830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
011082830-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

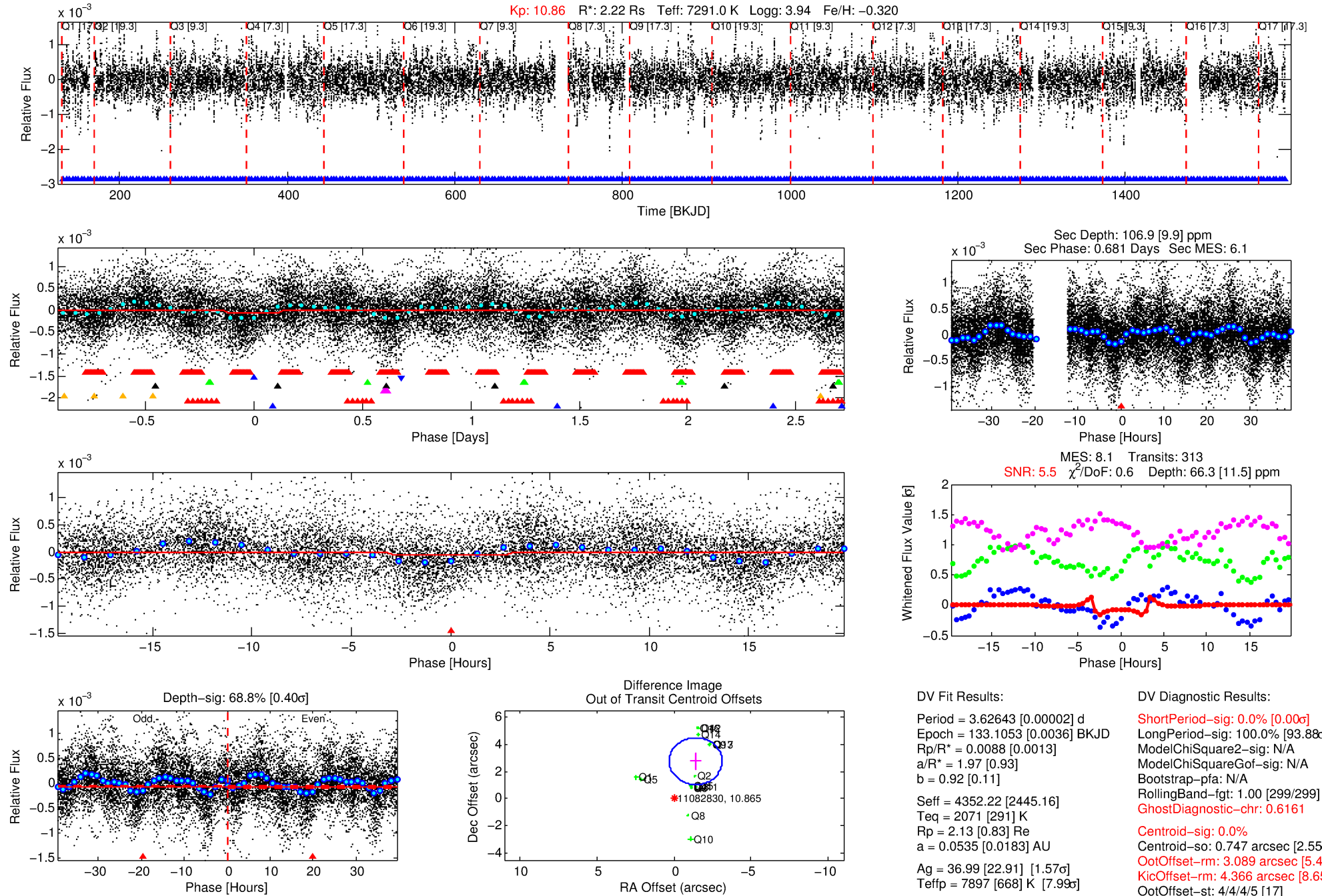
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011082830-02

No Significant Match Found

# DV One-Page Summary

KIC: 11082830 Candidate: 2 of 8 Period: 3.626 d



## DV Fit Results:

Period = 3.62643 [0.00002] d  
Epoch = 133.1053 [0.0036] BKJD  
Rp/R\* = 0.0088 [0.0013]  
a/R\* = 1.97 [0.93]  
b = 0.92 [0.11]  
Seff = 4352.22 [2445.16]  
Teq = 2071 [291] K  
Rp = 2.13 [0.83] Re  
a = 0.0535 [0.0183] AU  
Ag = 36.99 [22.91] [1.57σ]  
Teffp = 7897 [668] K [7.99σ]

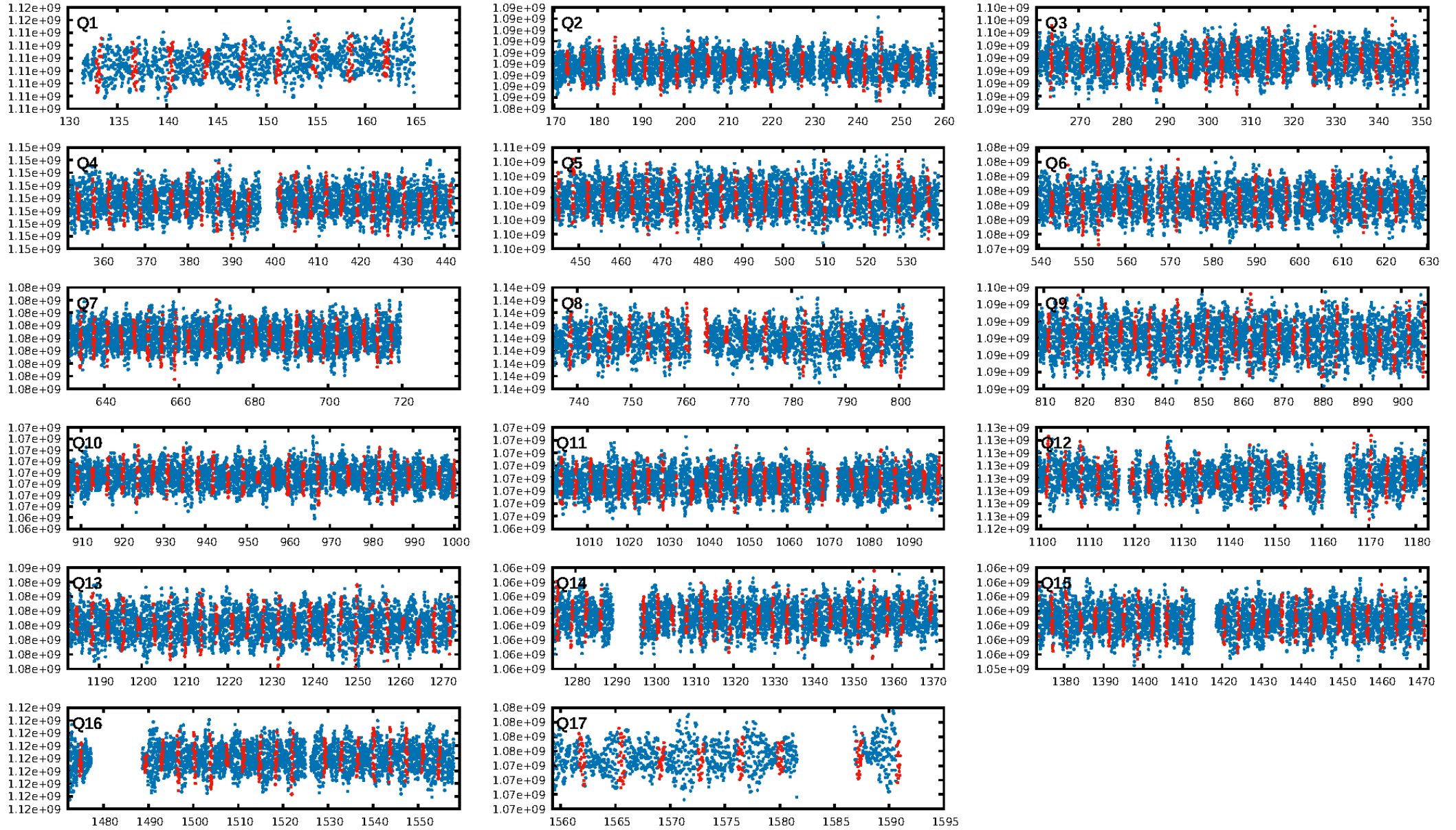
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [93.88σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [299/299]  
GhostDiagnostic-chr: 0.6161  
Centroid-sig: 0.0%  
Centroid-so: 0.747 arcsec [2.55σ]  
OotOffset-rm: 3.089 arcsec [5.40σ]  
KicOffset-rm: 4.366 arcsec [8.65σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.29 [5/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:41:11 Z

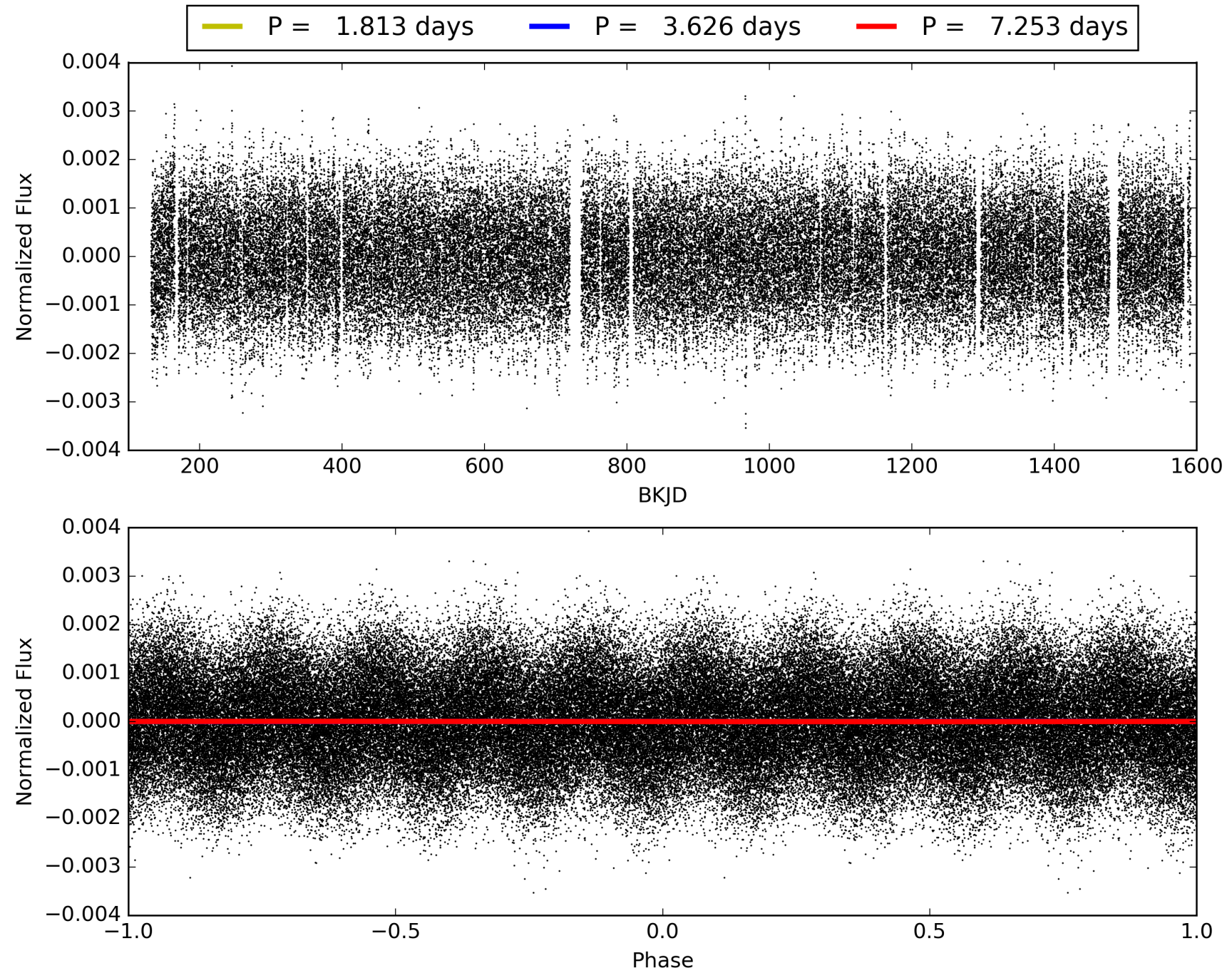
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011082830-02, PDC Light Curves





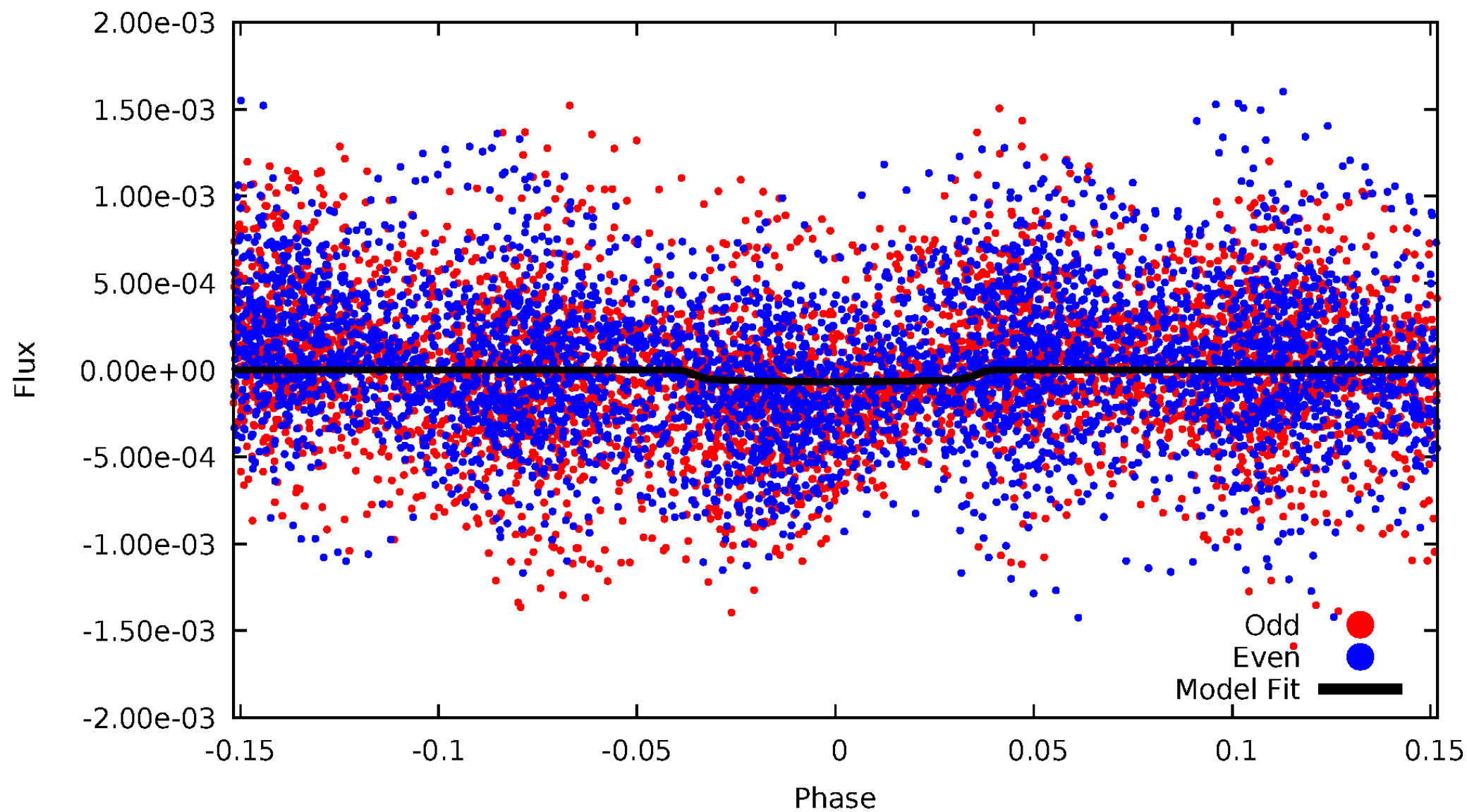
# TCE 011082830-02





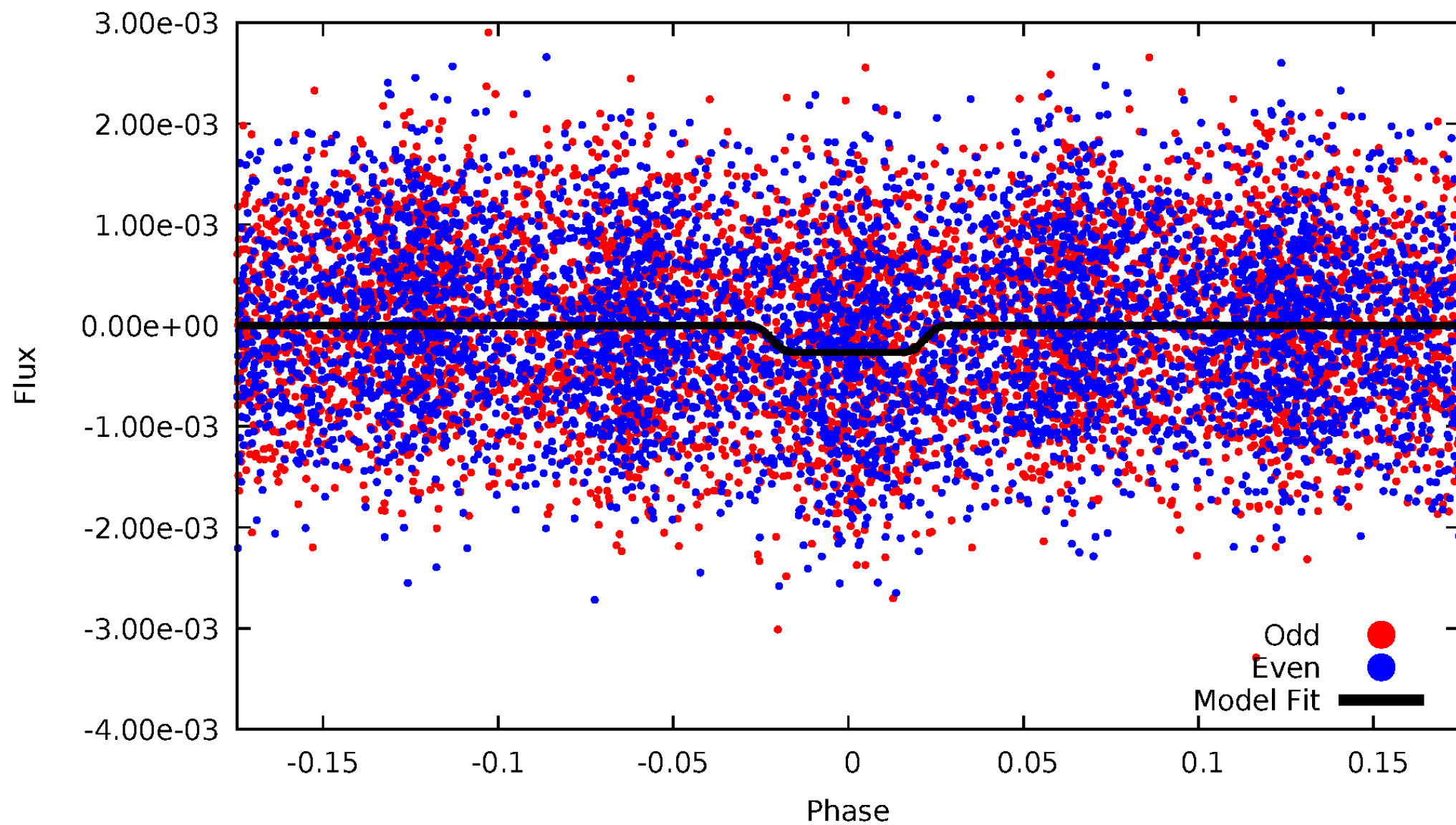
DV Odd/Even

TCE 011082830-02



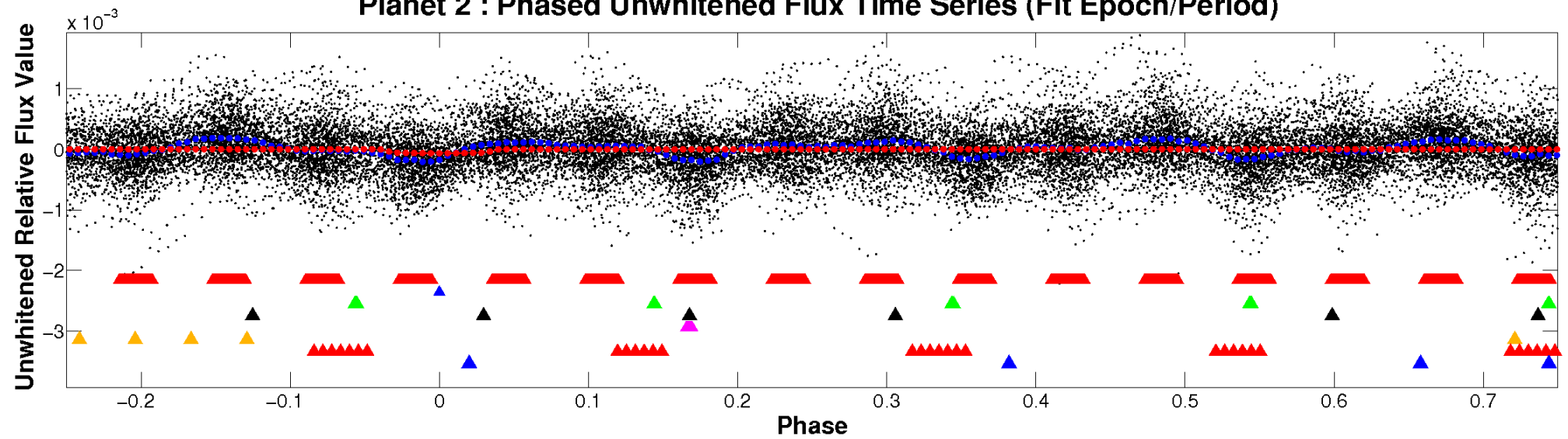
# ALT Odd/Even

TCE 011082830-02

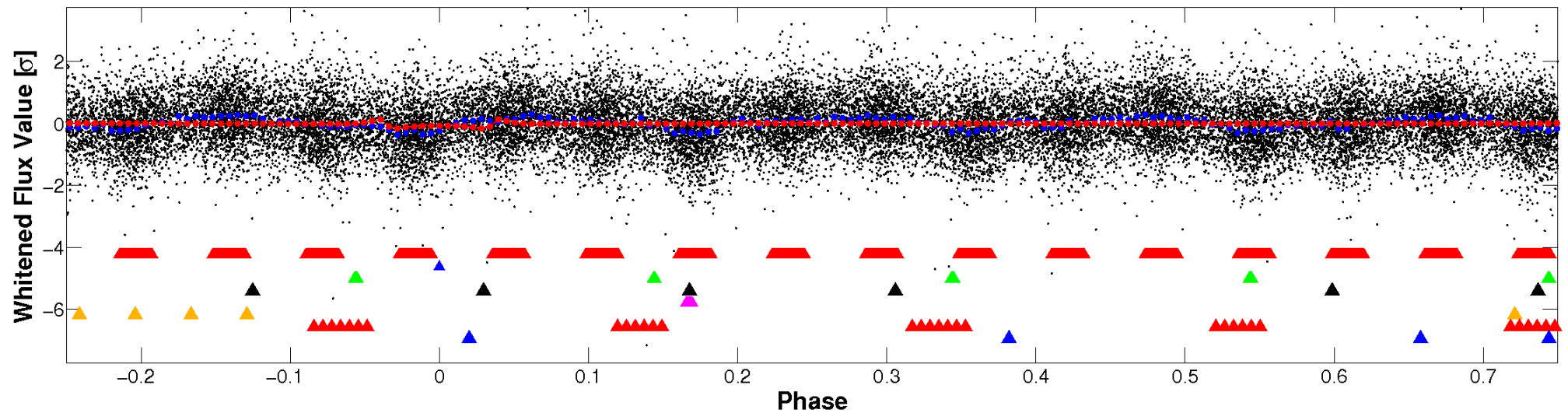


# Non-Whitened Vs. Whitened Light Curve

## Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

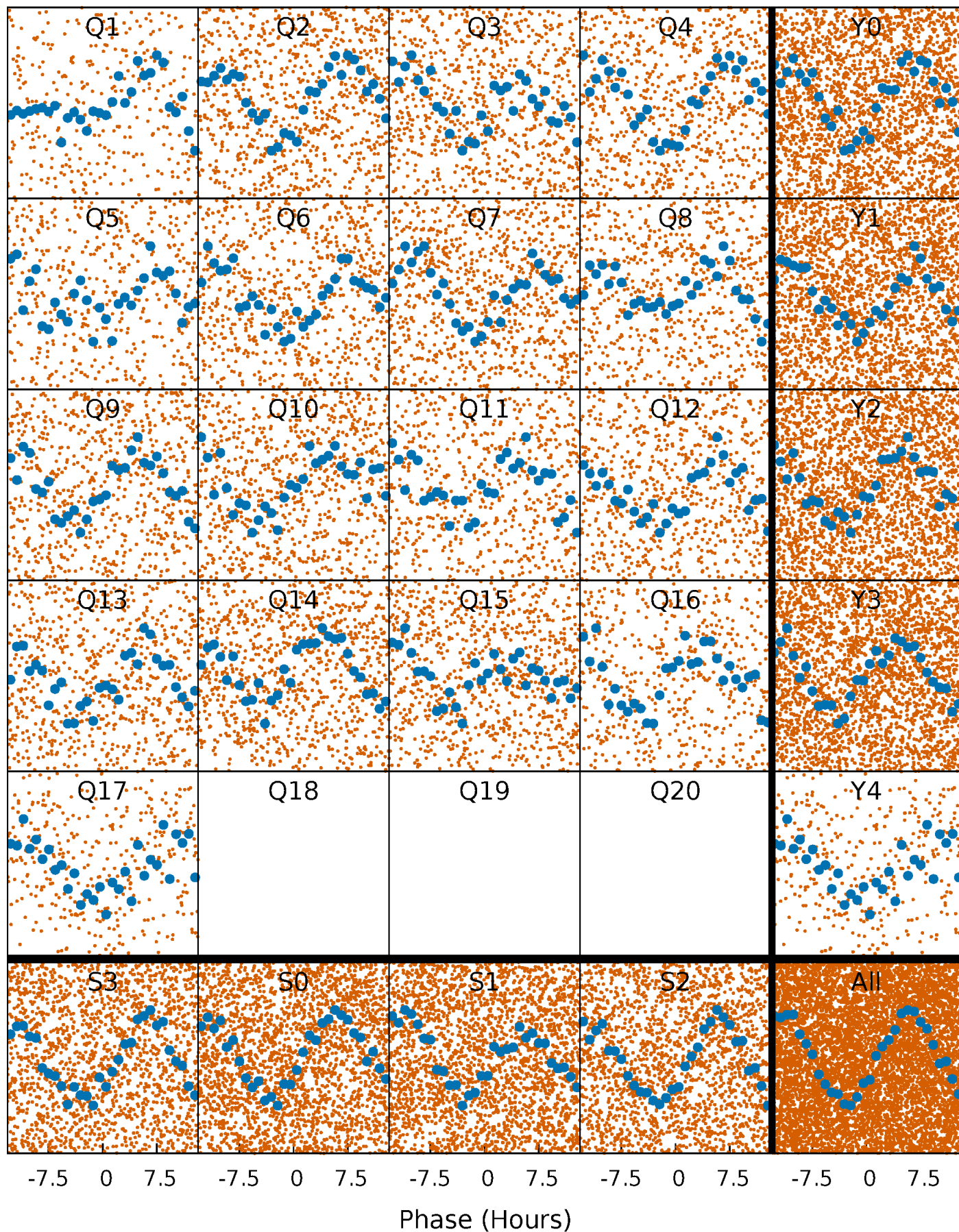


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

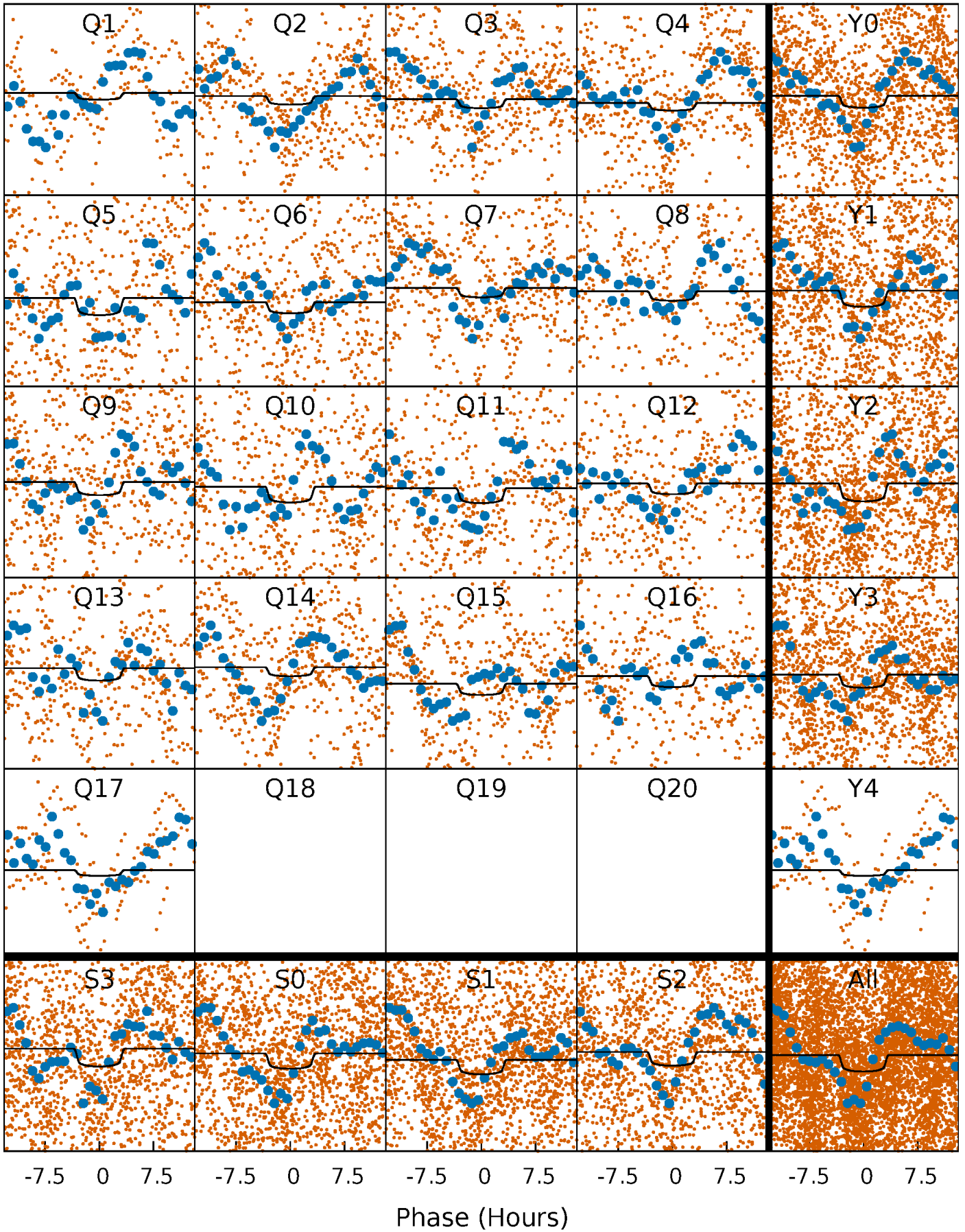
TCE 011082830-02   P= 3.626434 Days    $T_0=133.105257$  (BKJD)





# DV Quarter-Phased Transit Curves

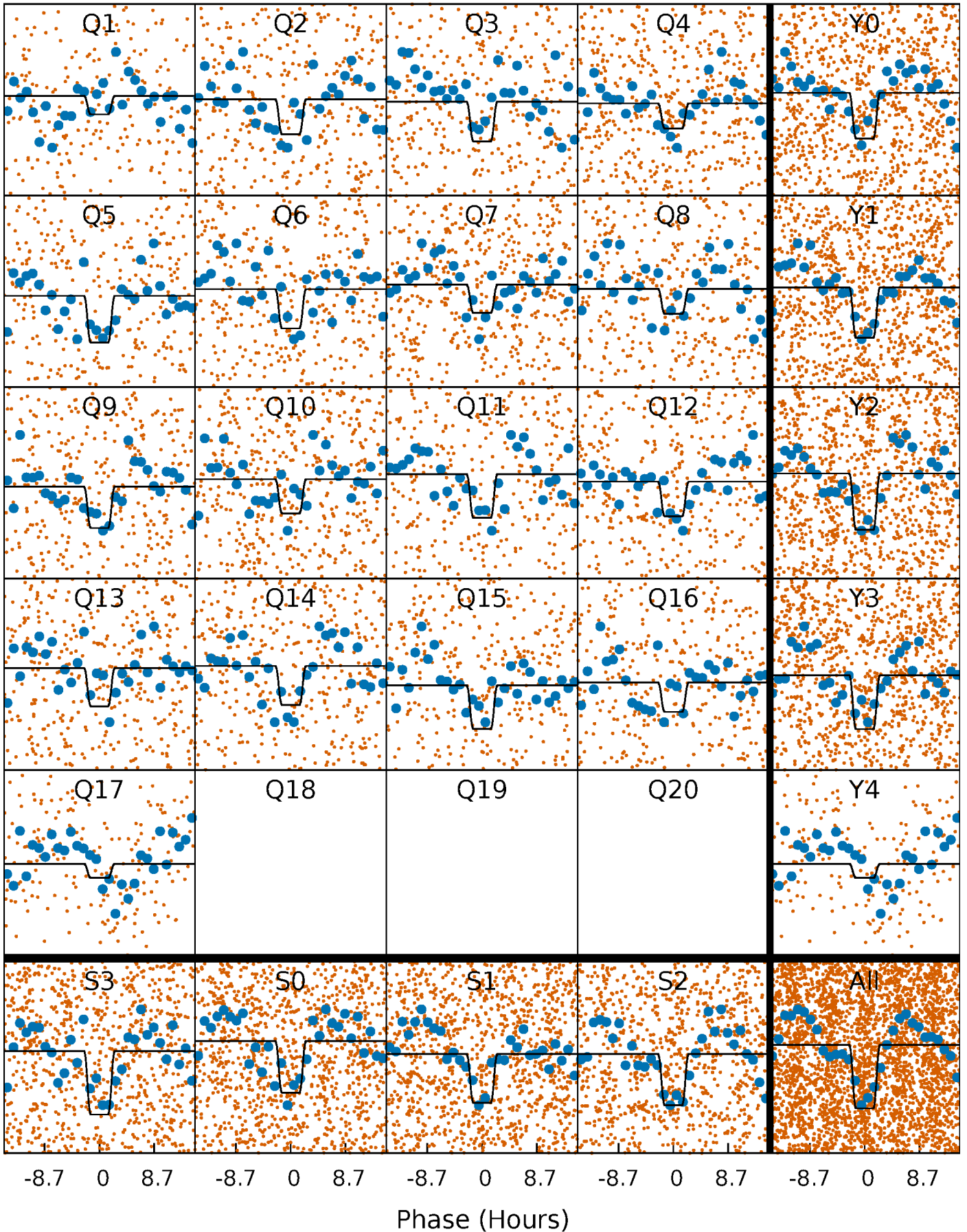
TCE 011082830-02 P= 3.626434 Days  $T_0=133.105257$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

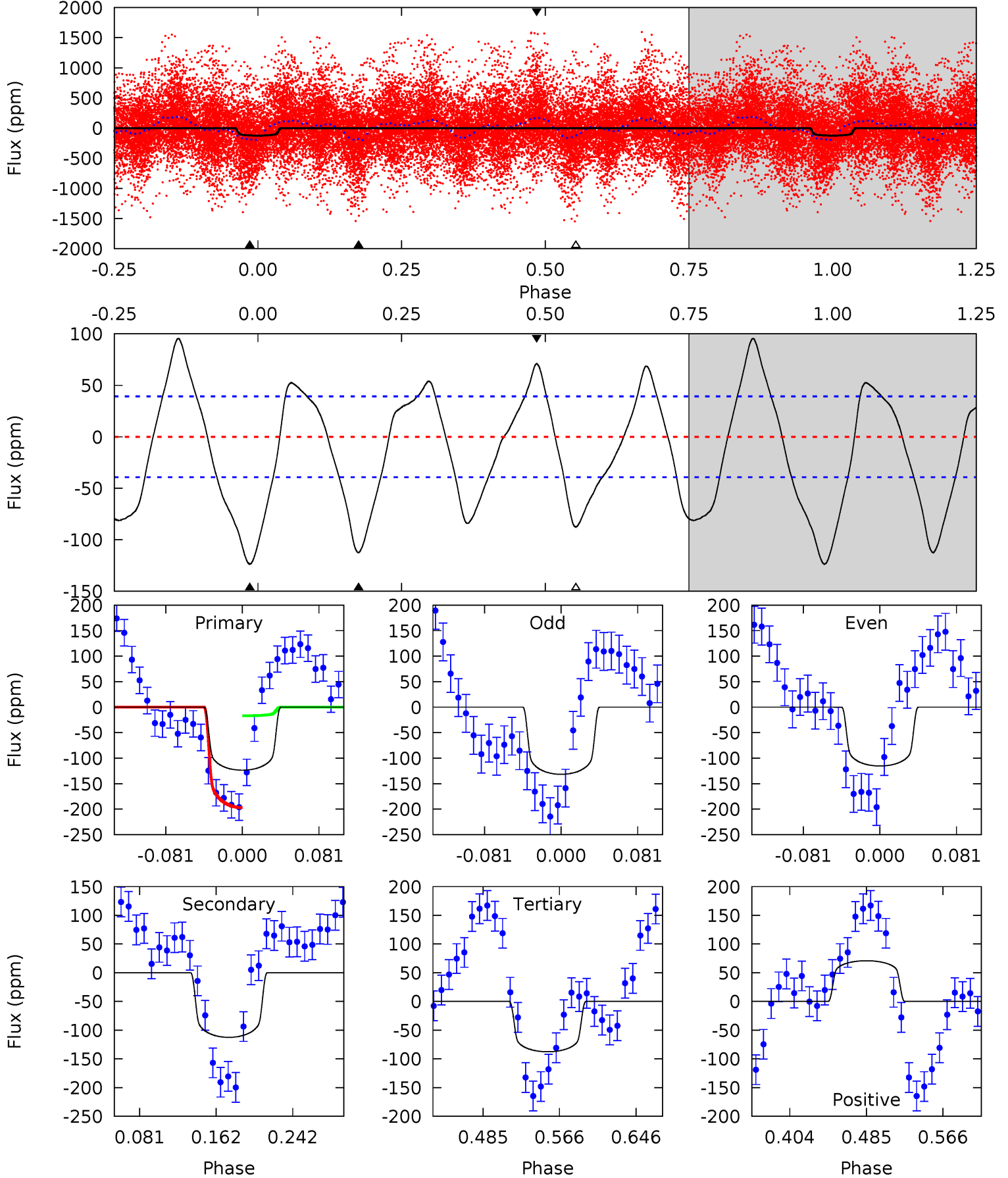
TCE 011082830-02 P= 3.626072 Days  $T_0=133.114598$  (BKJD)



# DV Model-Shift Uniqueness Test

011082830-02, P = 3.626434 Days, E = 129.478823 Days

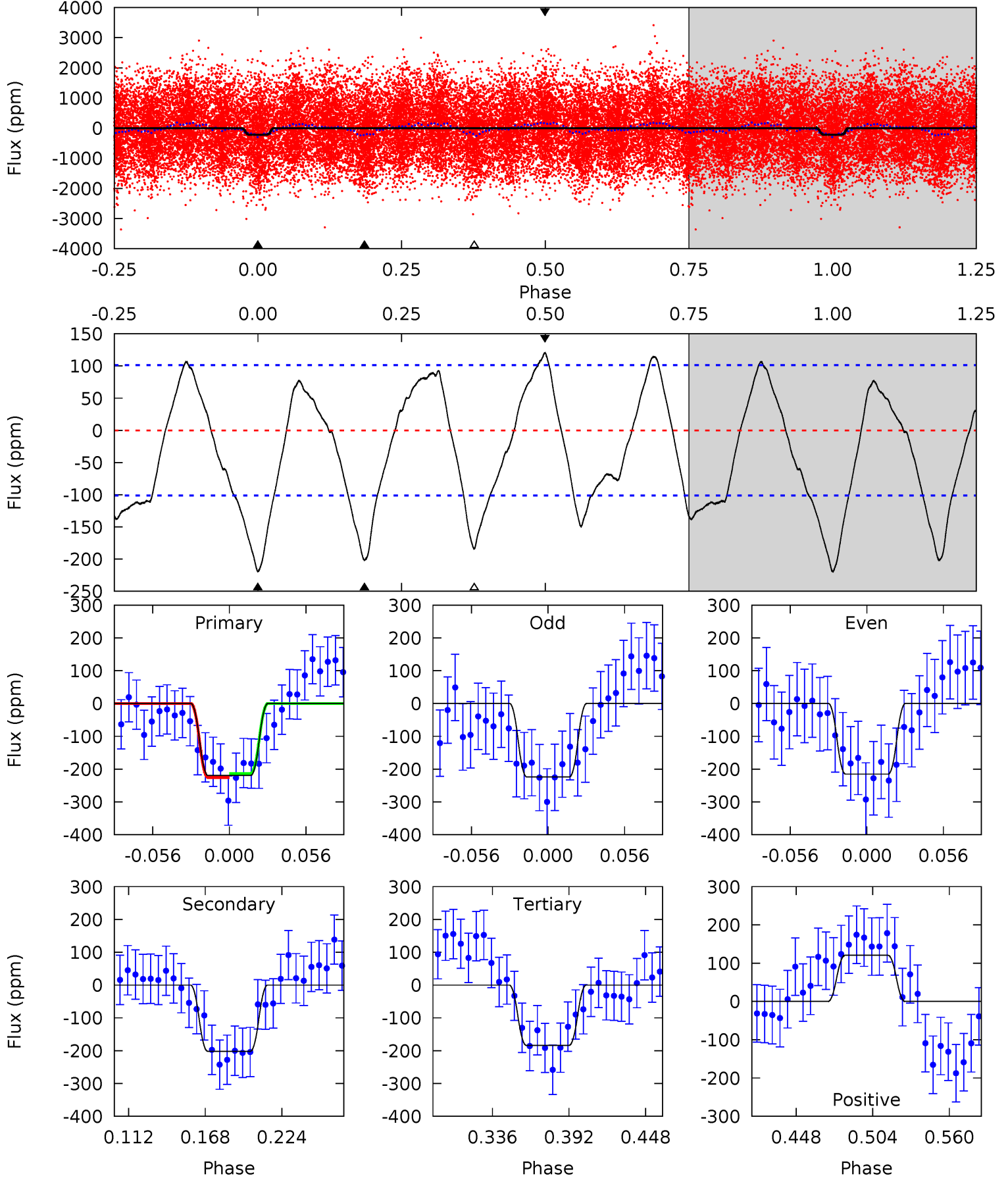
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	13.2	10.3	8.33	4.61	1.75	6.23	4.23	6.19	2.93	4.89	0.96	0.69	0.44	10.6



# Alt Model-Shift Uniqueness Test

011082830-02, P = 3.626072 Days, E = 129.488526 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	9.33	8.51	5.58	4.68	1.91	3.92	1.64	4.57	0.82	3.75	0.20	0.90	0.35	0.27



### Stellar Parameters For KIC 011082830

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$7291^{+203}_{-279}$	$3.937^{+0.315}_{-0.135}$	$-0.320^{+0.250}_{-0.350}$	$2.218^{+0.536}_{-0.804}$	$1.549^{+0.215}_{-0.323}$	$0.200^{+0.483}_{-0.083}$
	+3%/-4%	+8%/-3%	+78%/-109%	+24%/-36%	+14%/-21%	+242%/-42%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011082830-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	-112±9	$2.01^{+0.47}_{-0.45}$	$2843^{+217}_{-273}$	$8114^{+907}_{-689}$	$43^{+27}_{-14}$
Alt.	-202±22	$3.79^{+0.67}_{-0.73}$	$2836^{+226}_{-260}$	$6708^{+406}_{-403}$	$22^{+10}_{-6}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming A=0.3)

$A_{obs}$  = Observed Albedo (Assuming T=0)

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

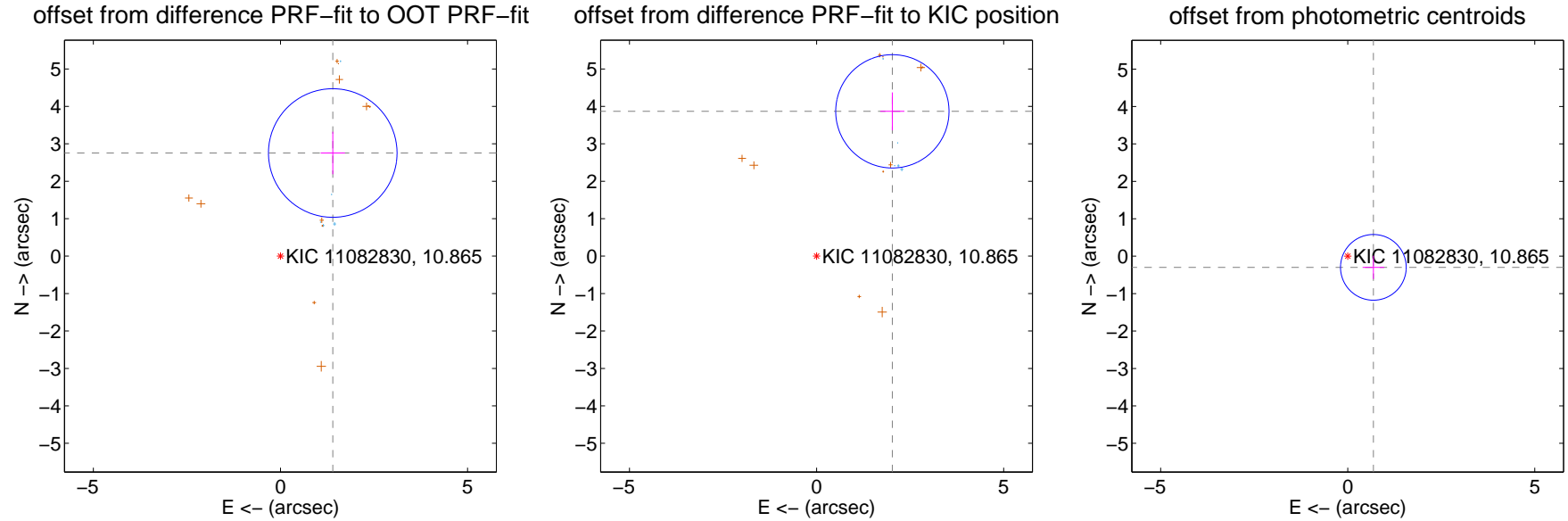
## DV Centroid Data

Supplemental centroid analysis for 011082830-02. **Kepler magnitude: 10.87.** Transit SNR 5.52

There are 5 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.11 arcsec

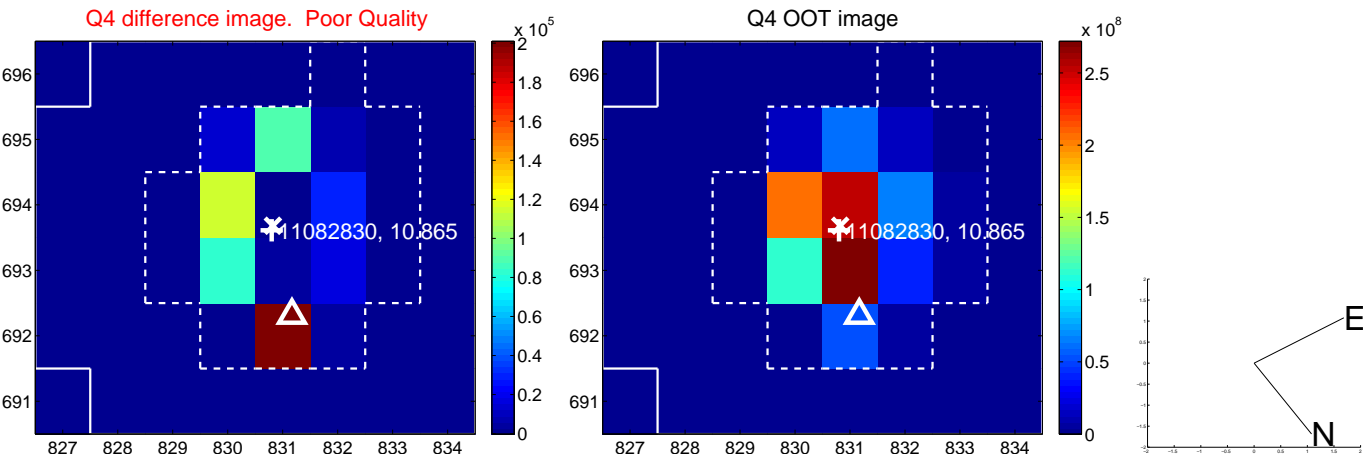
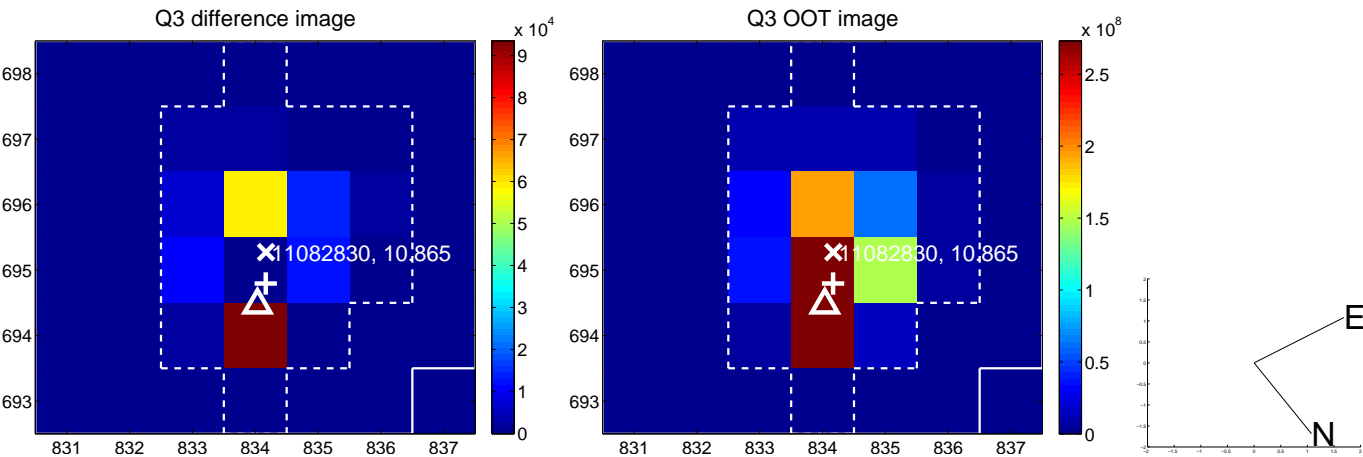
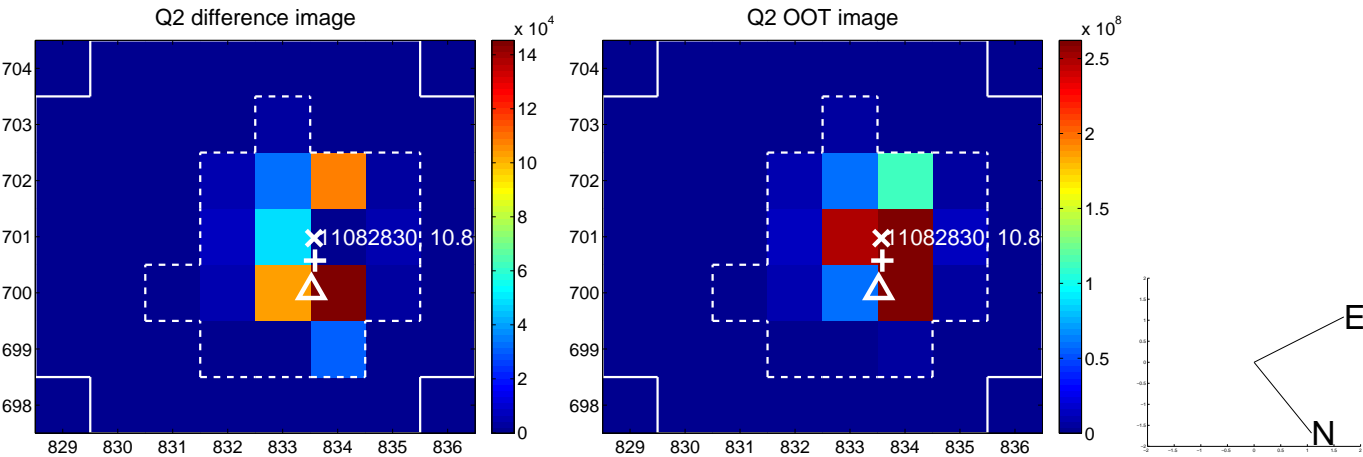
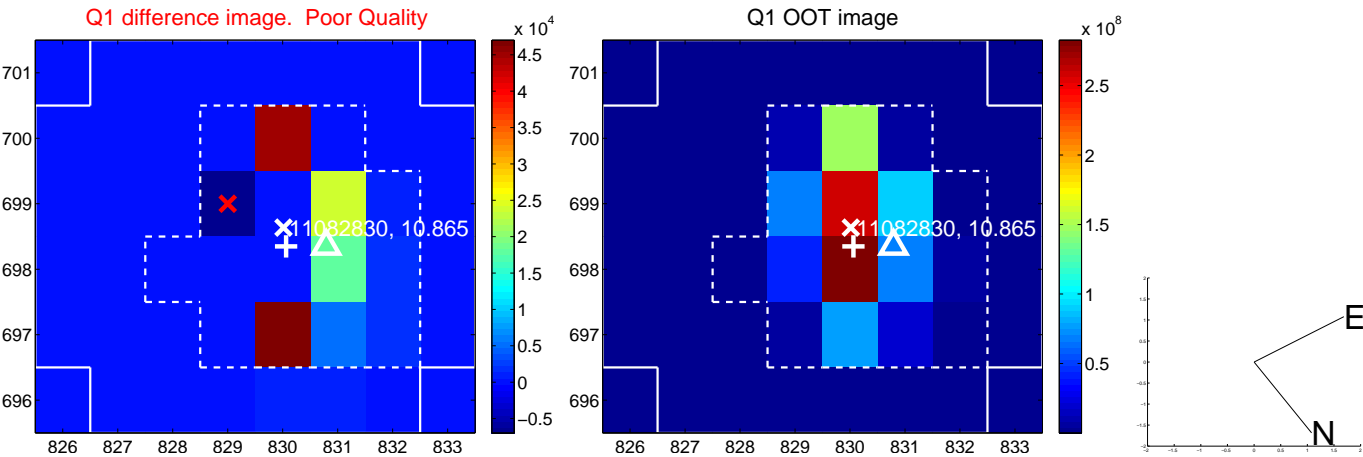
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>3.089 \pm 0.573</math></b>	<b>5.40</b>	$-1.398 \pm 0.325$	$2.755 \pm 0.568$
PRF-fit source offset from KIC position	<b><math>4.366 \pm 0.505</math></b>	<b>8.65</b>	$-2.025 \pm 0.321$	$3.868 \pm 0.506$
photometric centroid source offset	$0.75 \pm 0.29$	2.55	$-0.69 \pm 0.29$	$-0.30 \pm 0.31$



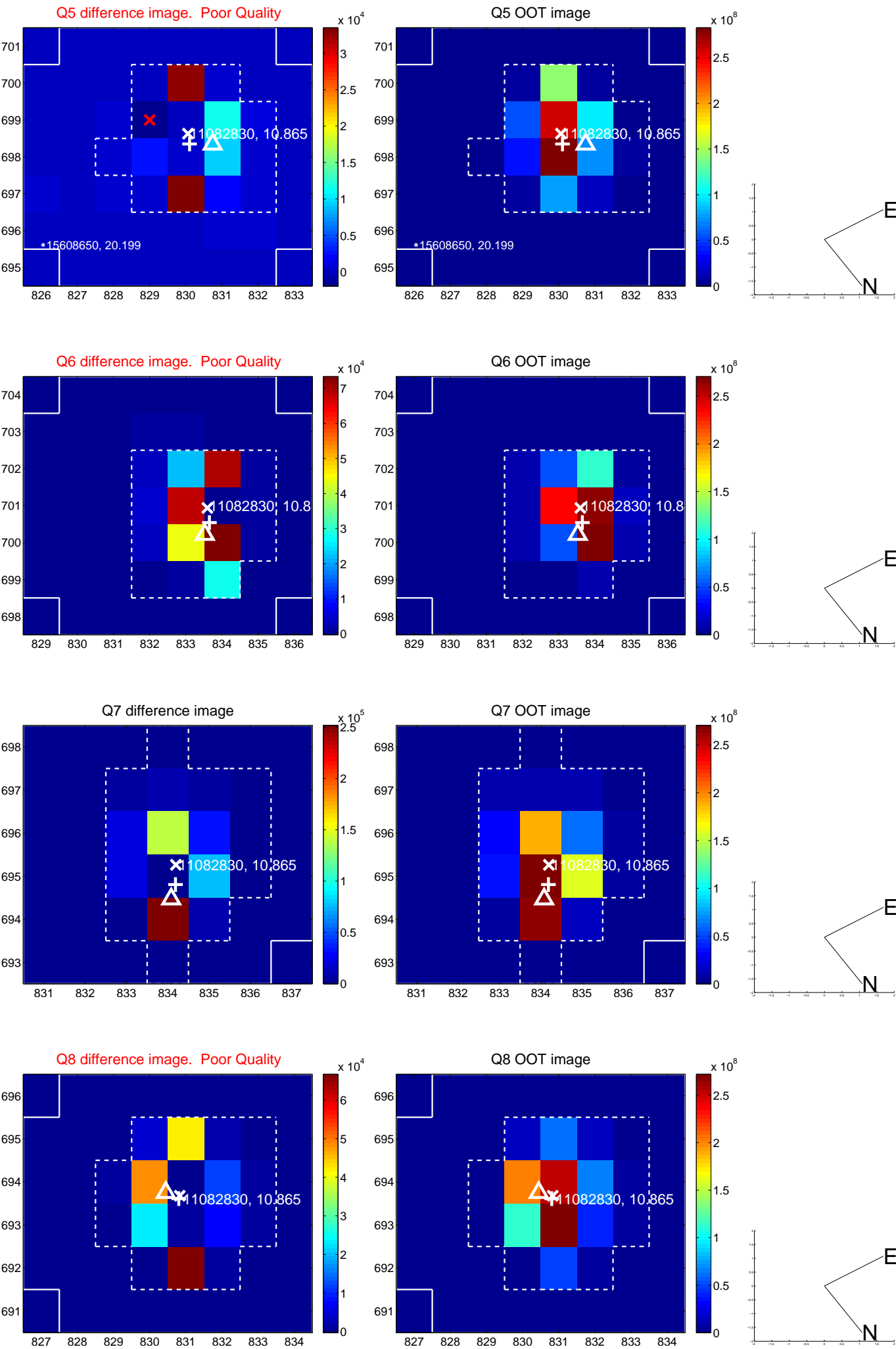
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.



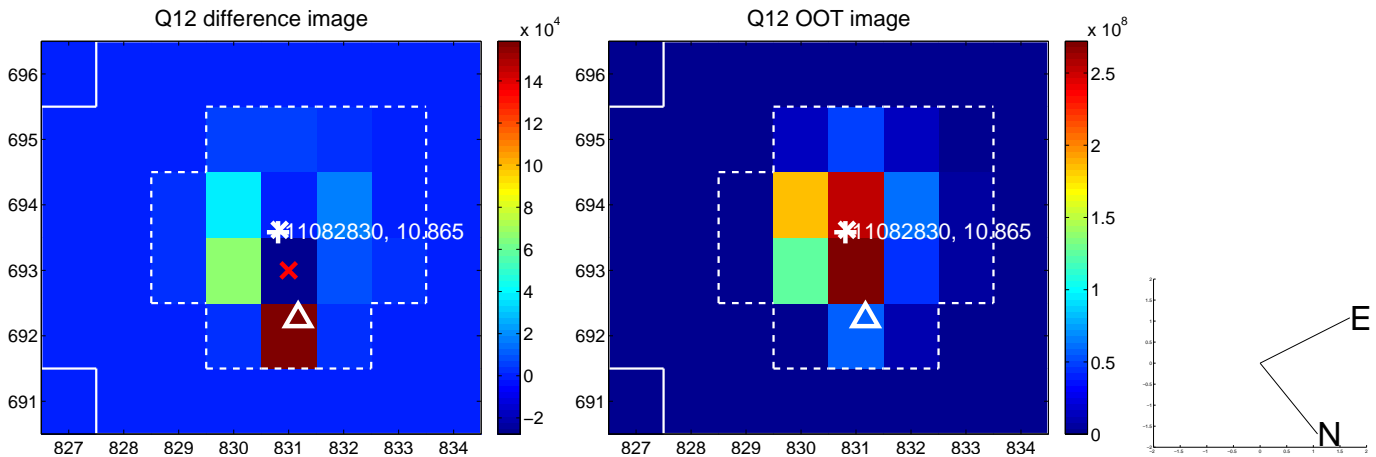
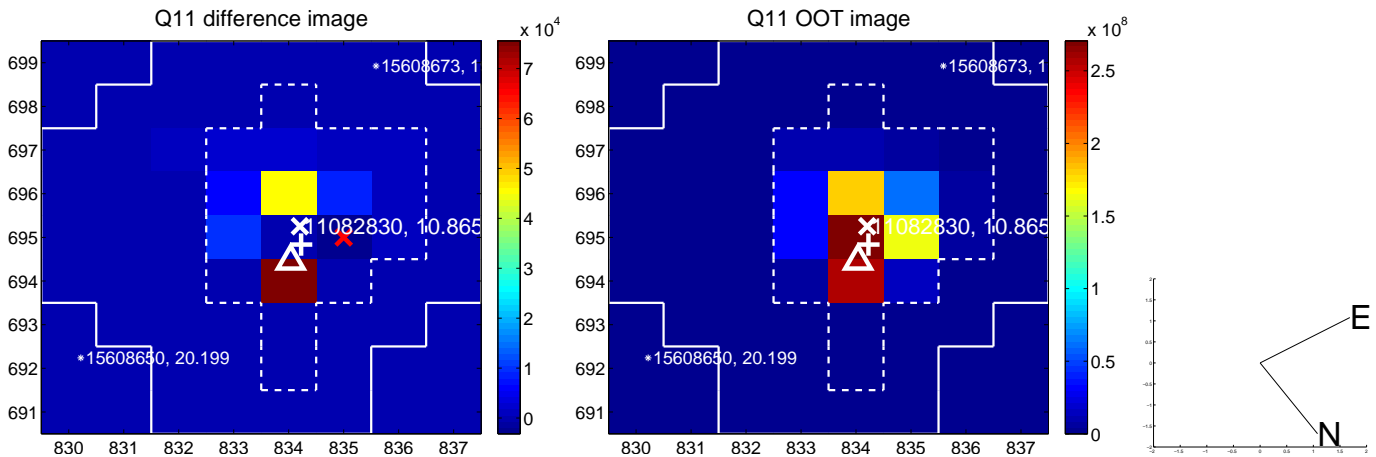
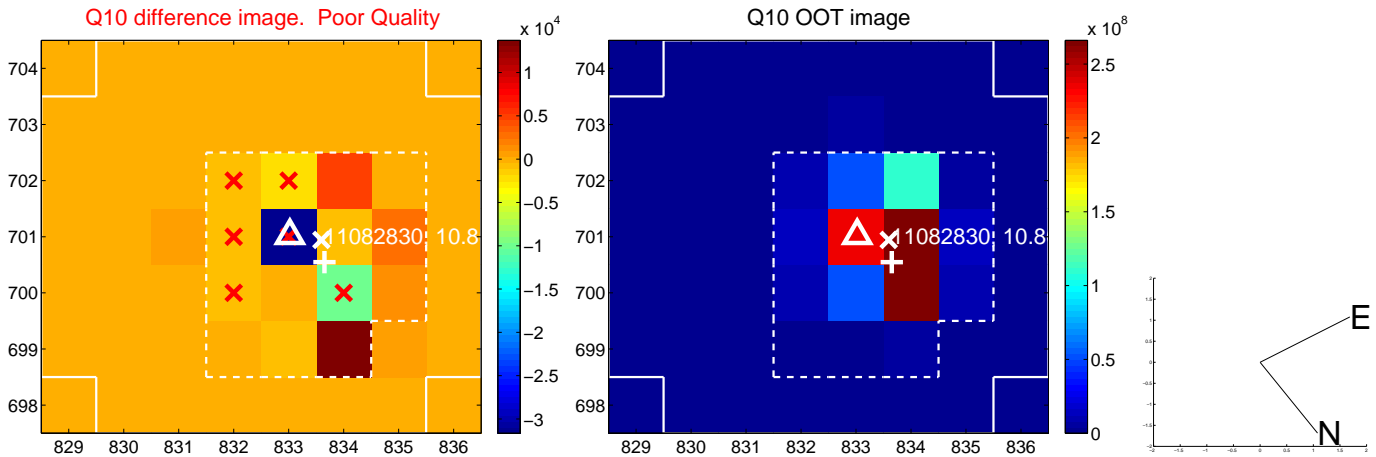
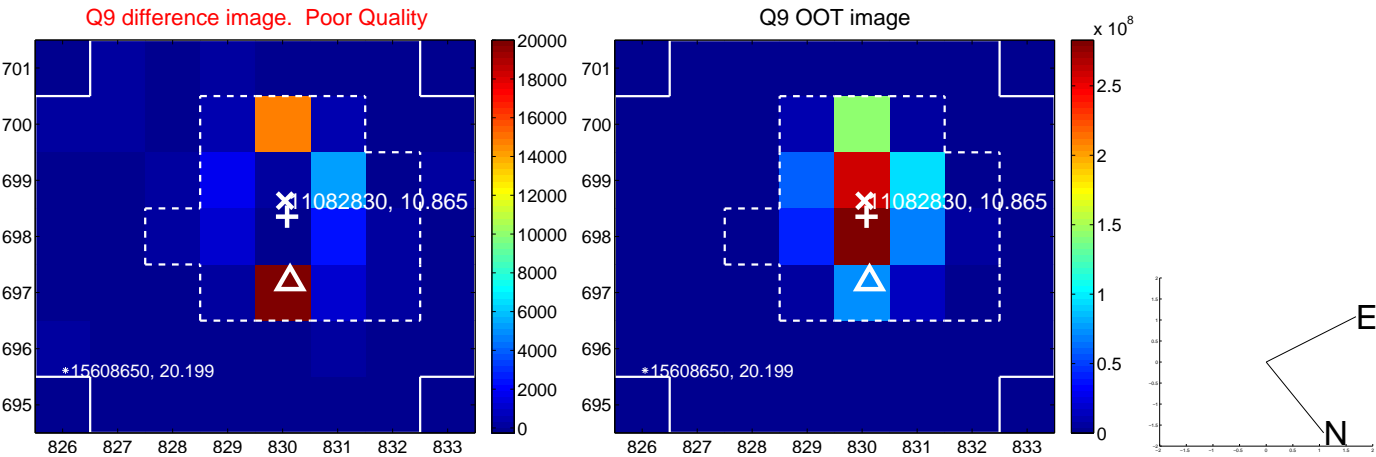
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



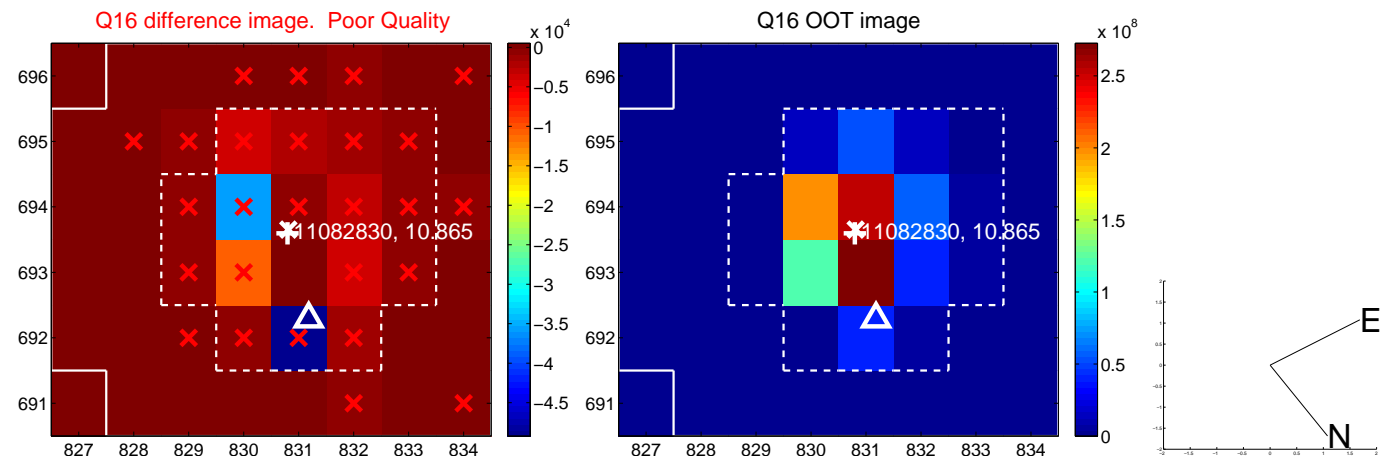
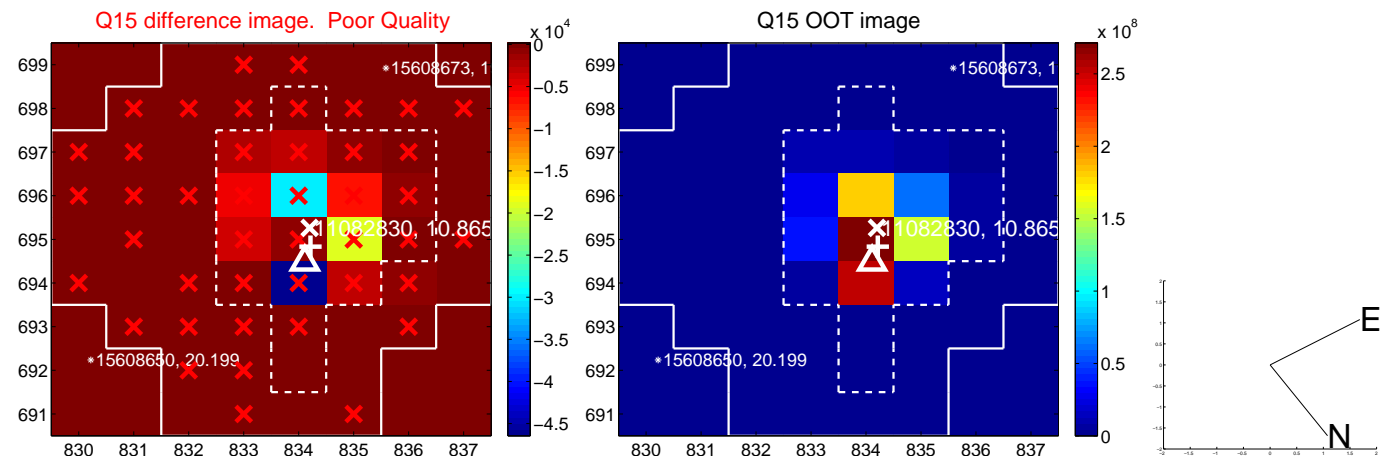
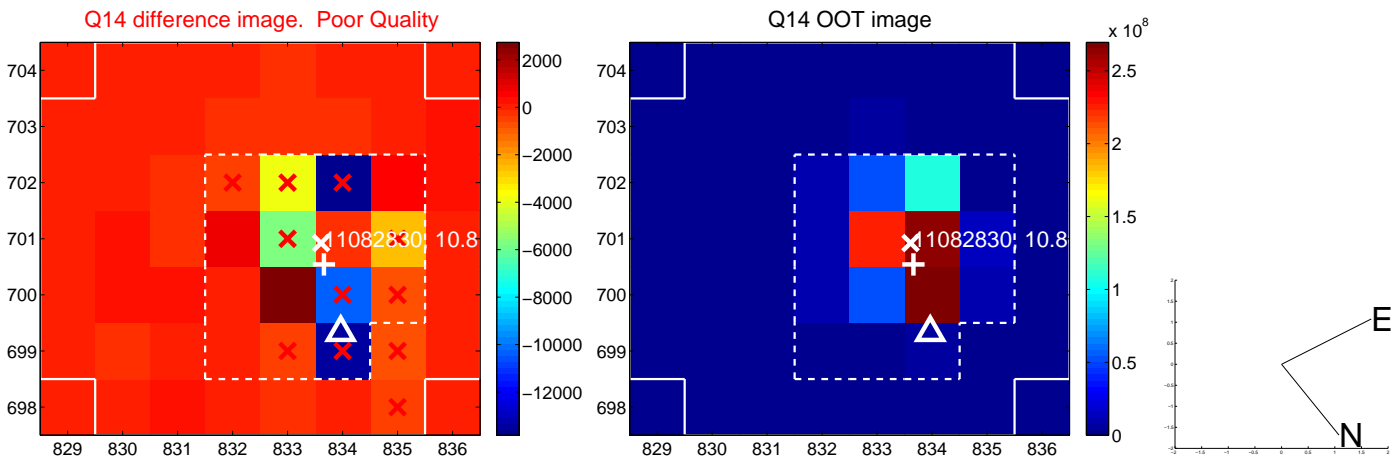
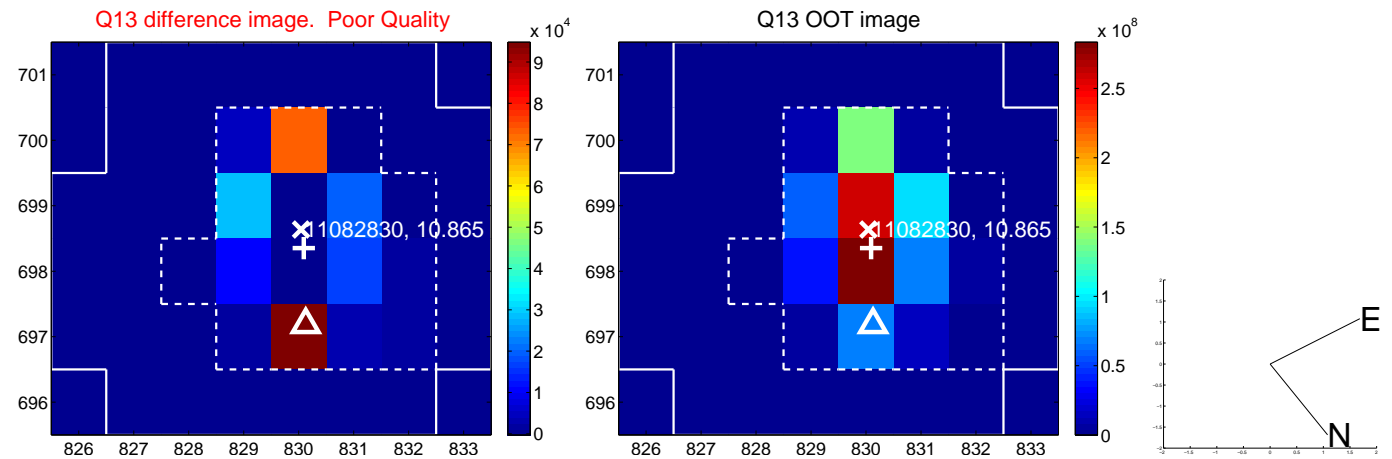
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



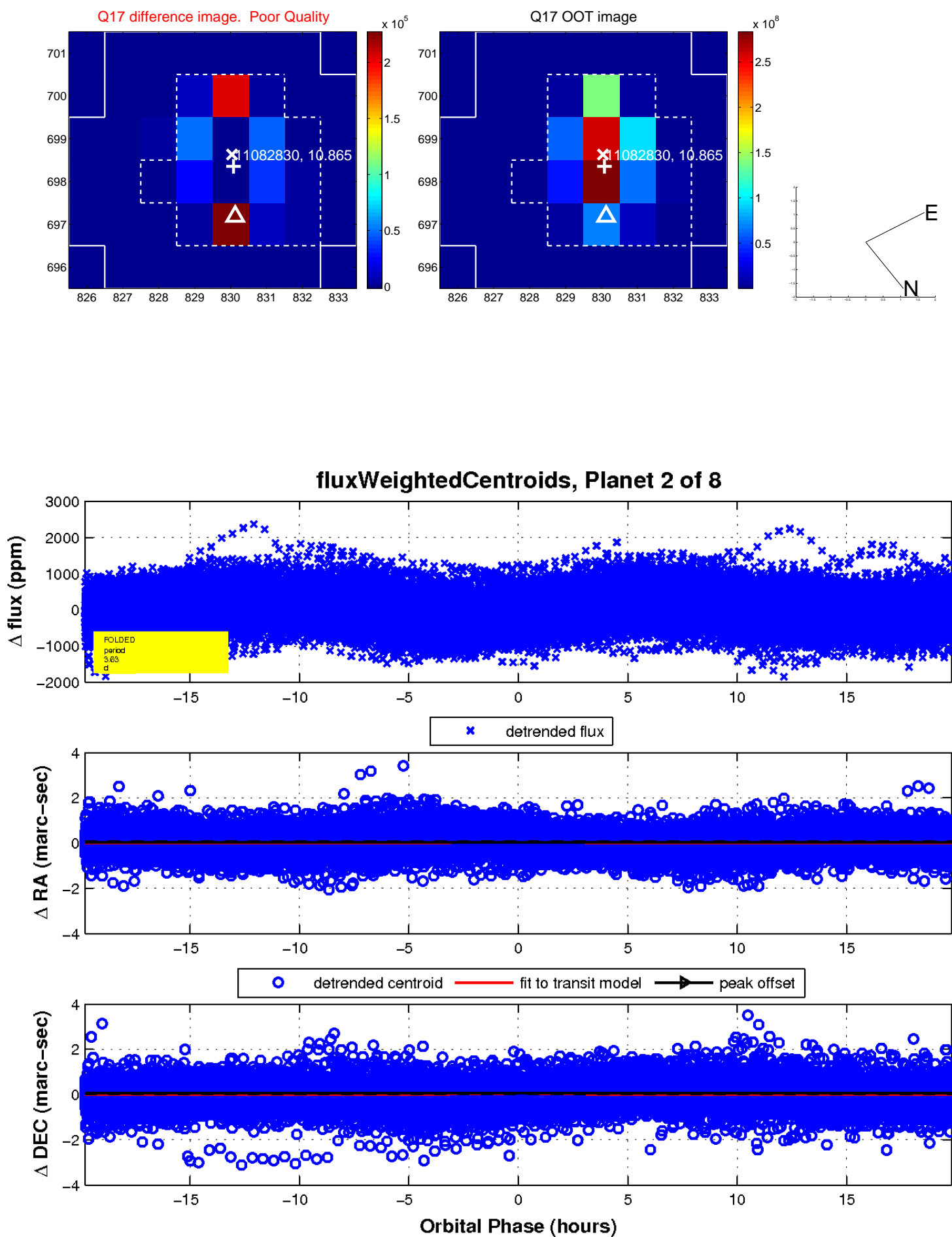
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

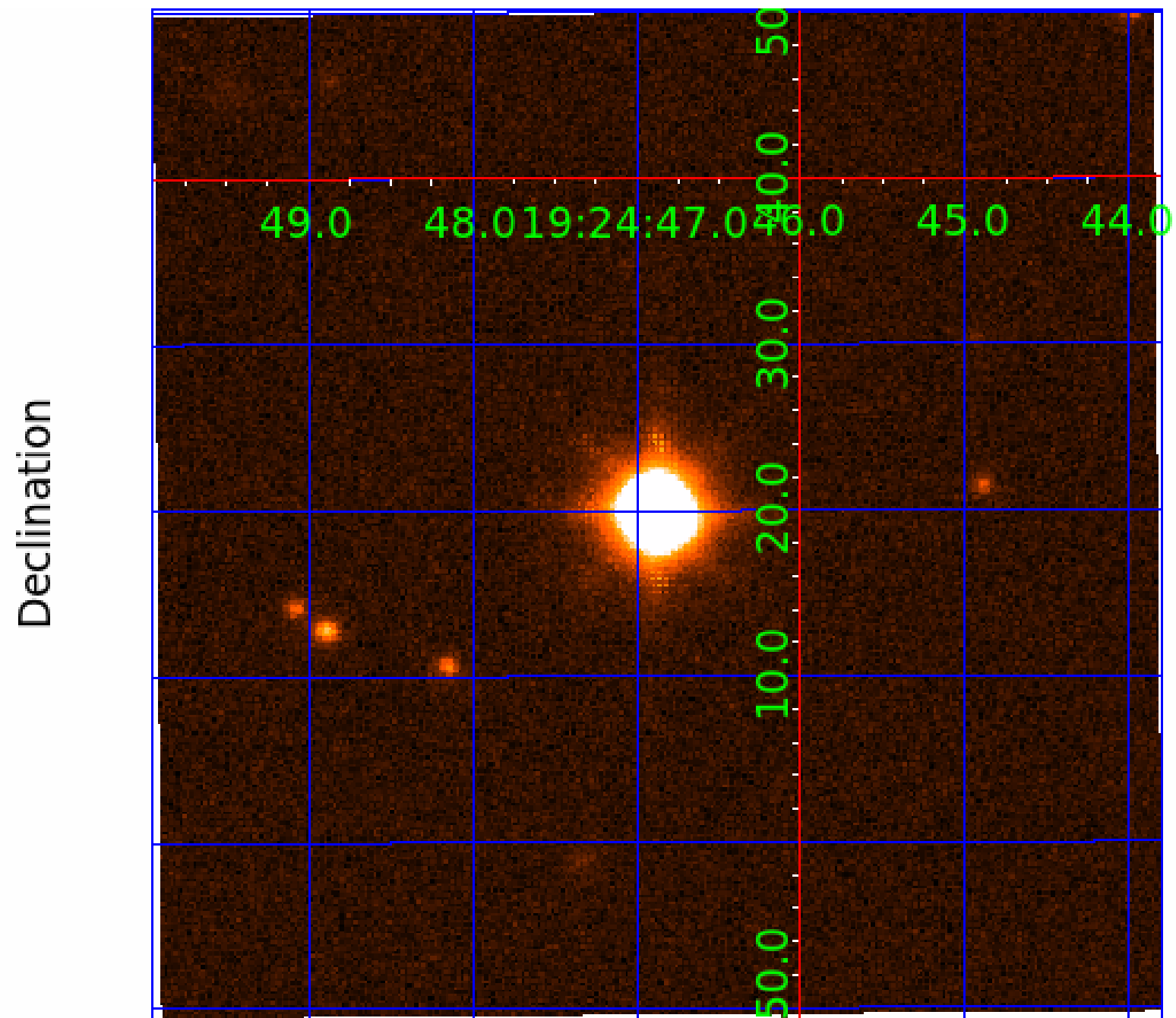


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image



# KIC 011082830

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011082830-01	OBS	No	0.679918	132.181500	25.5	2.887	9.3	10.4	2.22	7291	1.29	40557.84
011082830-02	OBS	No	3.626434	133.105257	66.3	6.601	8.1	5.5	2.22	7291	2.13	4352.22
011082830-03	OBS	No	110.968411	188.752274	1067.4	6.919	9.0	9.8	2.22	7291	13.47	45.47
011082830-04	OBS	No	263.166816	176.730002	495.5	3.527	8.7	5.5	2.22	7291	5.55	14.38
011082830-05	OBS	No	3.626397	133.720256	153.8	6.037	8.8	10.4	2.22	7291	5.34	4352.28
011082830-06	OBS	No	322.616820	139.890190	630.3	1.794	9.4	7.1	2.22	7291	5.92	10.96
011082830-07	OBS	No	45.688762	156.143238	882.7	8.488	8.6	8.8	2.22	7291	12.30	148.46
011082830-08	OBS	No	414.726345	153.623511	57.7	6.000	7.8	-1.0	2.22	7291	1.71	7.84

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011082830-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED—HALO_GHOST
011082830-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
011082830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
011082830-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

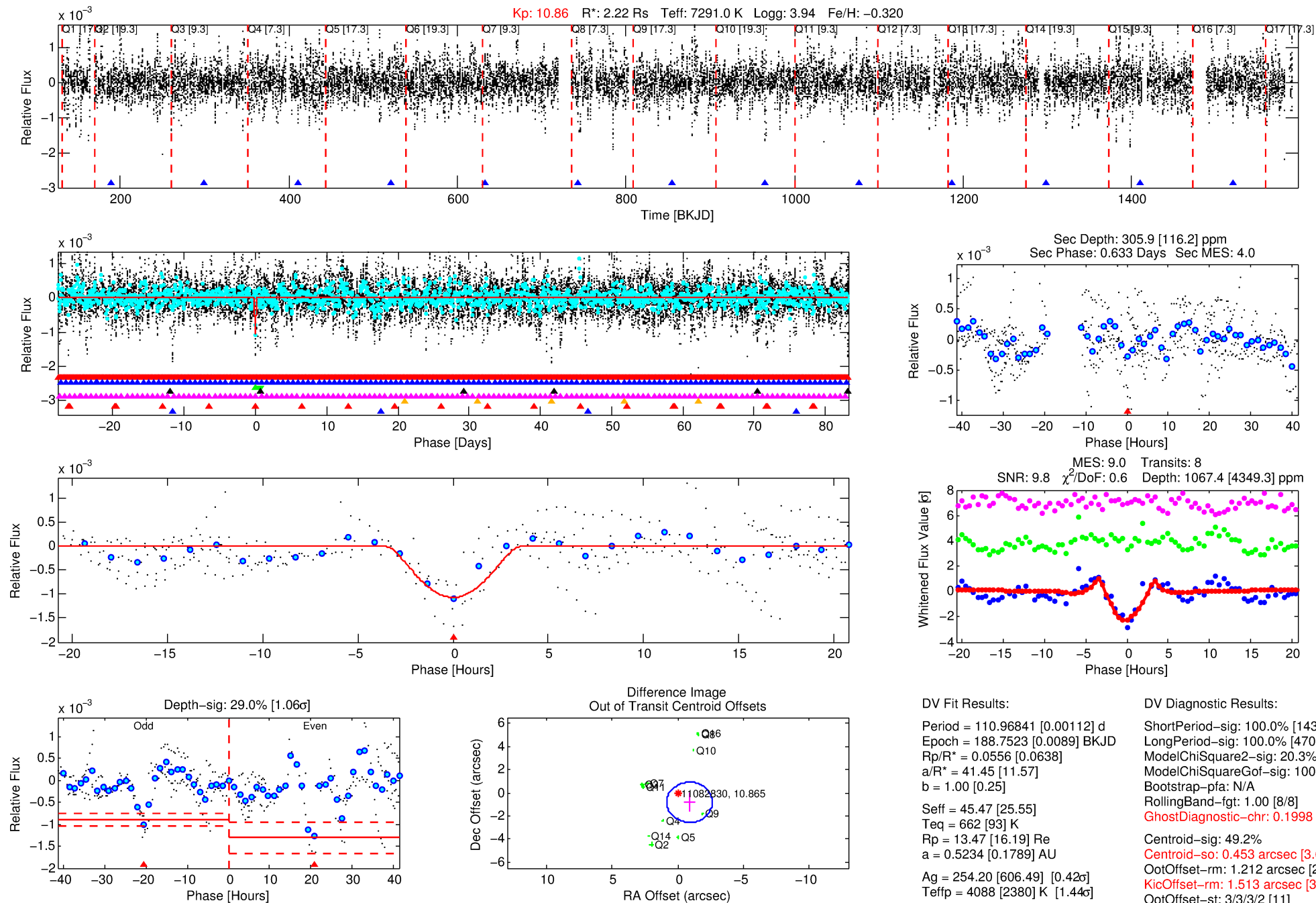
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011082830-03

No Significant Match Found

# DV One-Page Summary

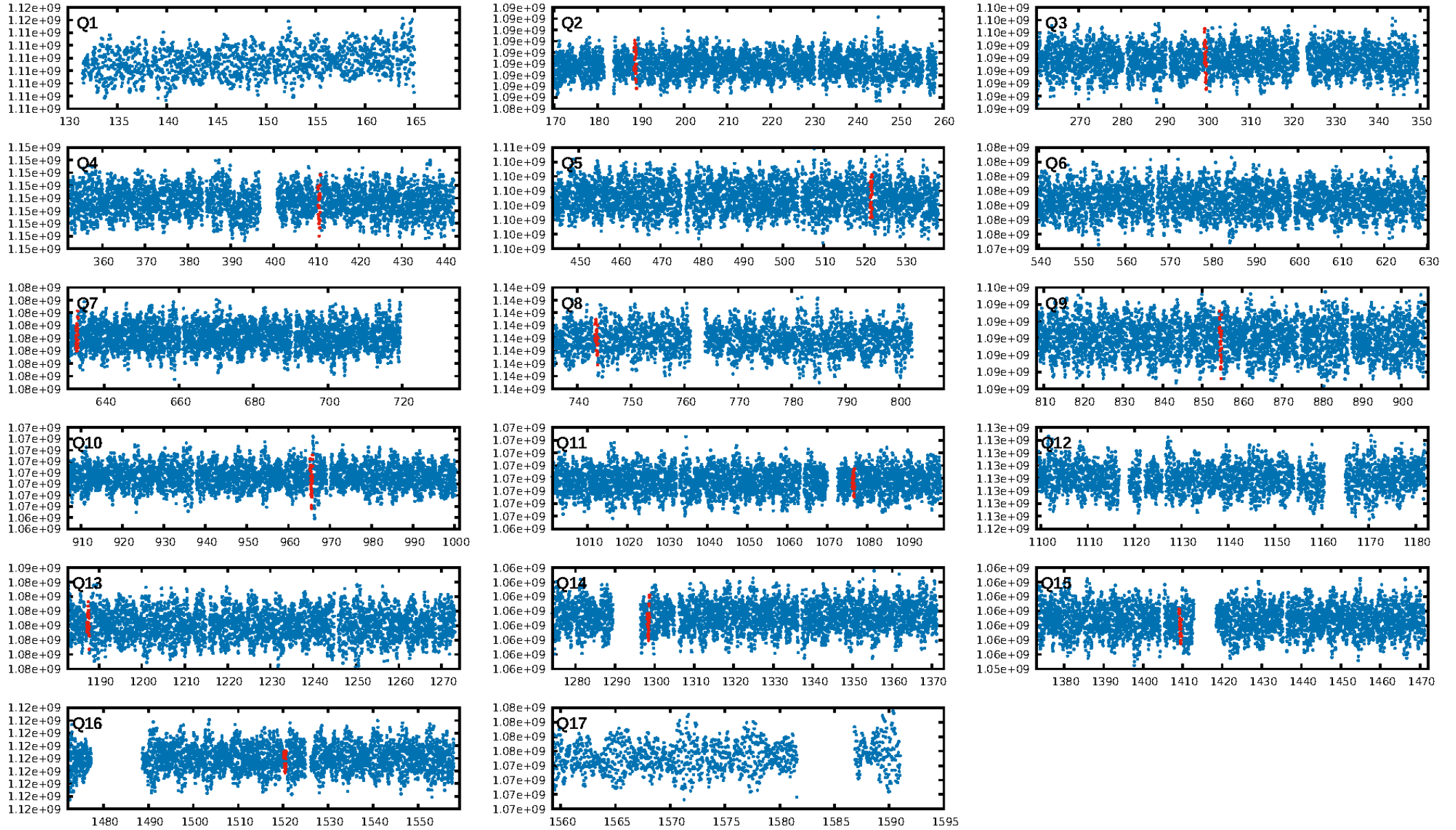
KIC: 11082830 Candidate: 3 of 8 Period: 110.968 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:41:17 Z

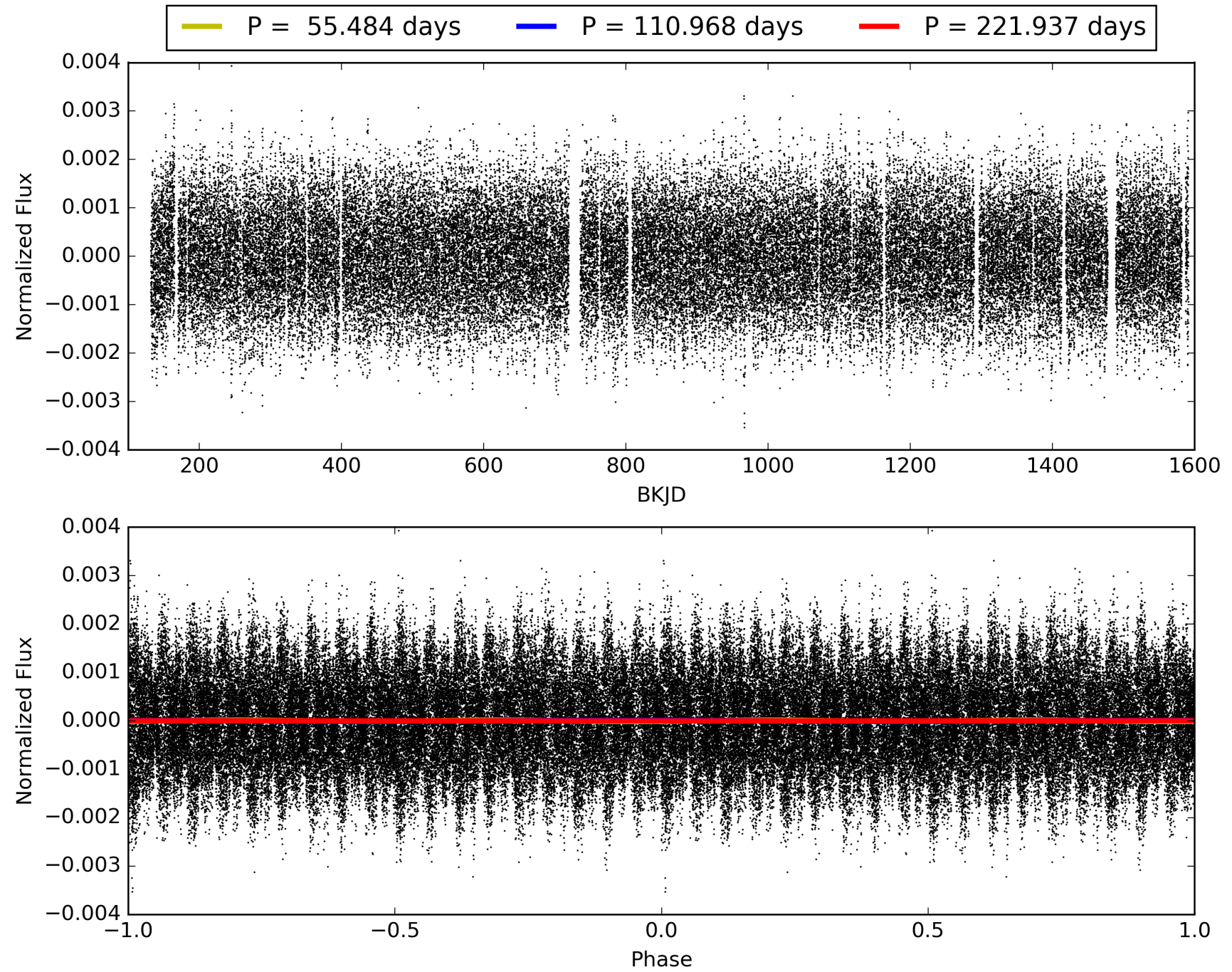
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011082830-03, PDC Light Curves





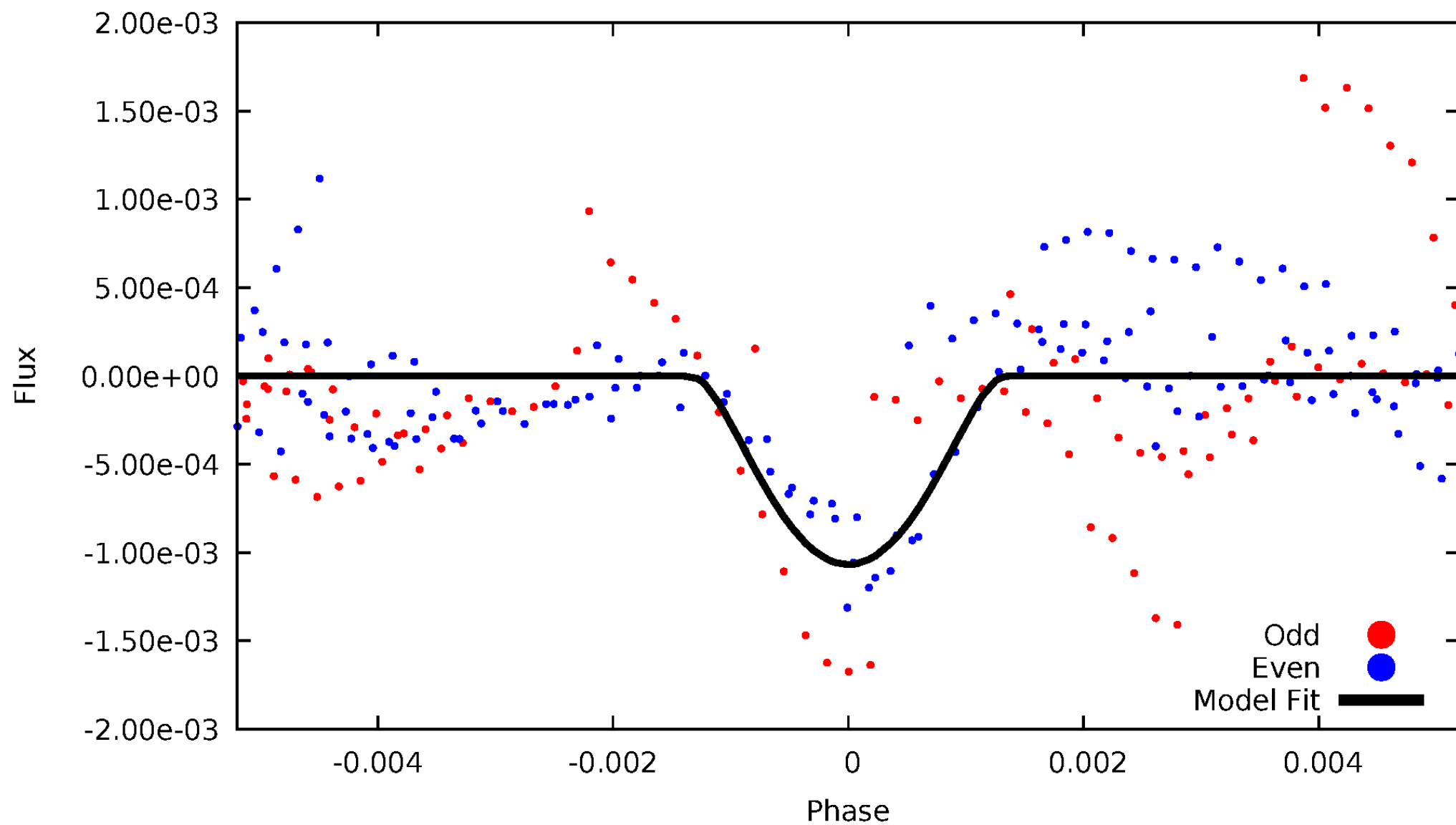
# TCE 011082830-03





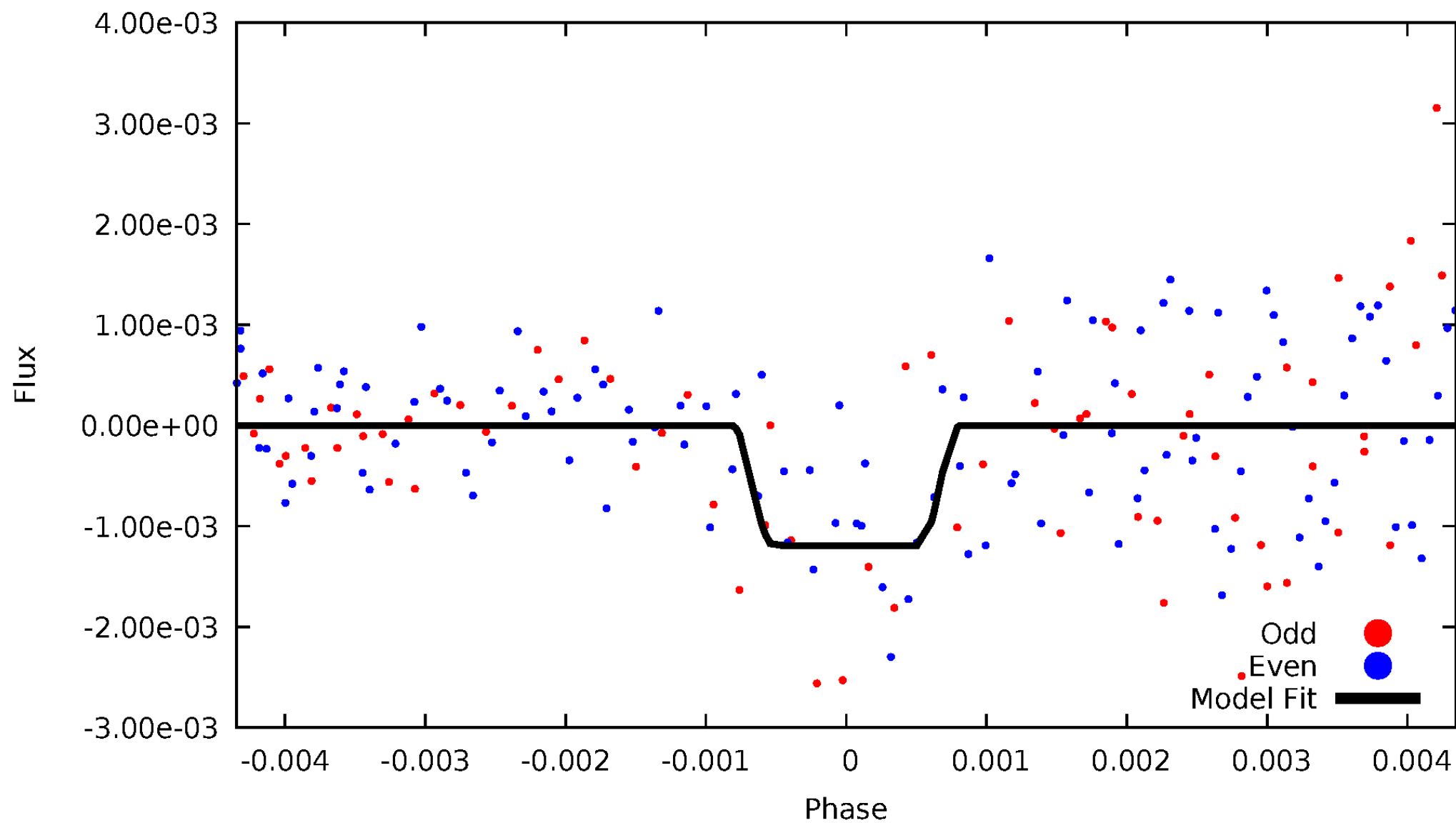
# DV Odd/Even

TCE 011082830-03



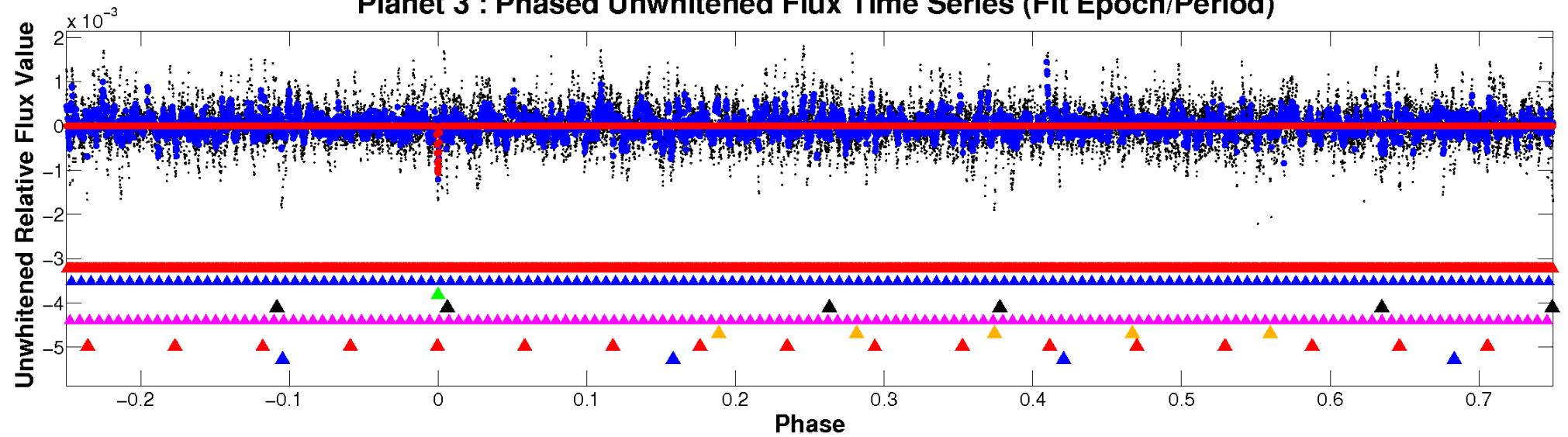
# ALT Odd/Even

TCE 011082830-03

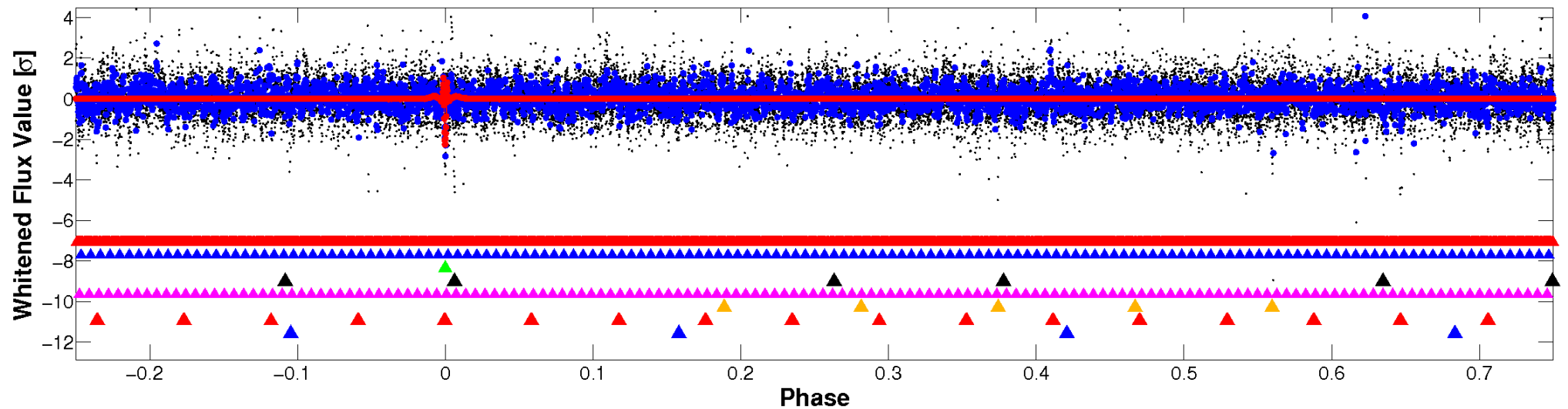


# Non-Whitened Vs. Whitened Light Curve

## Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

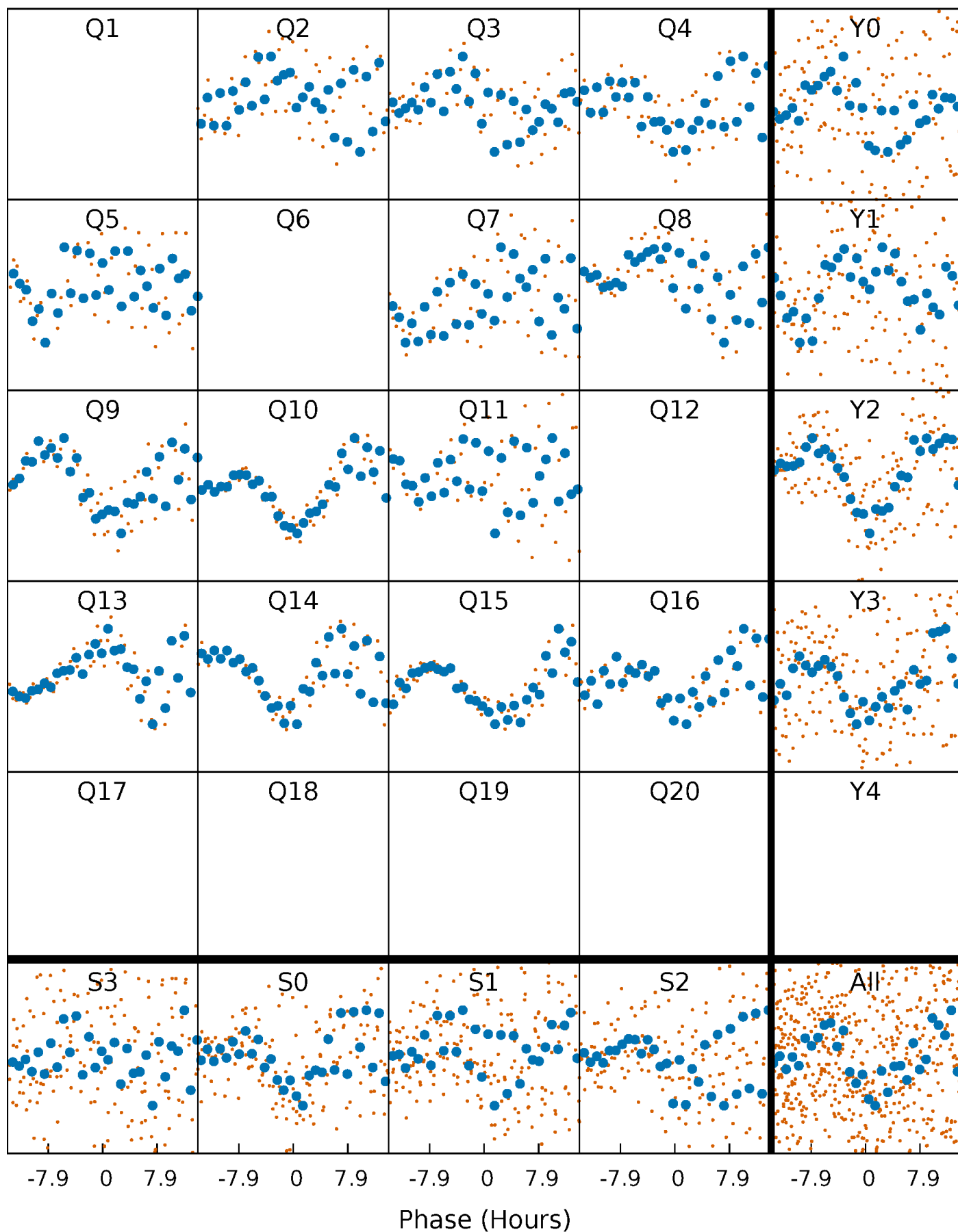


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



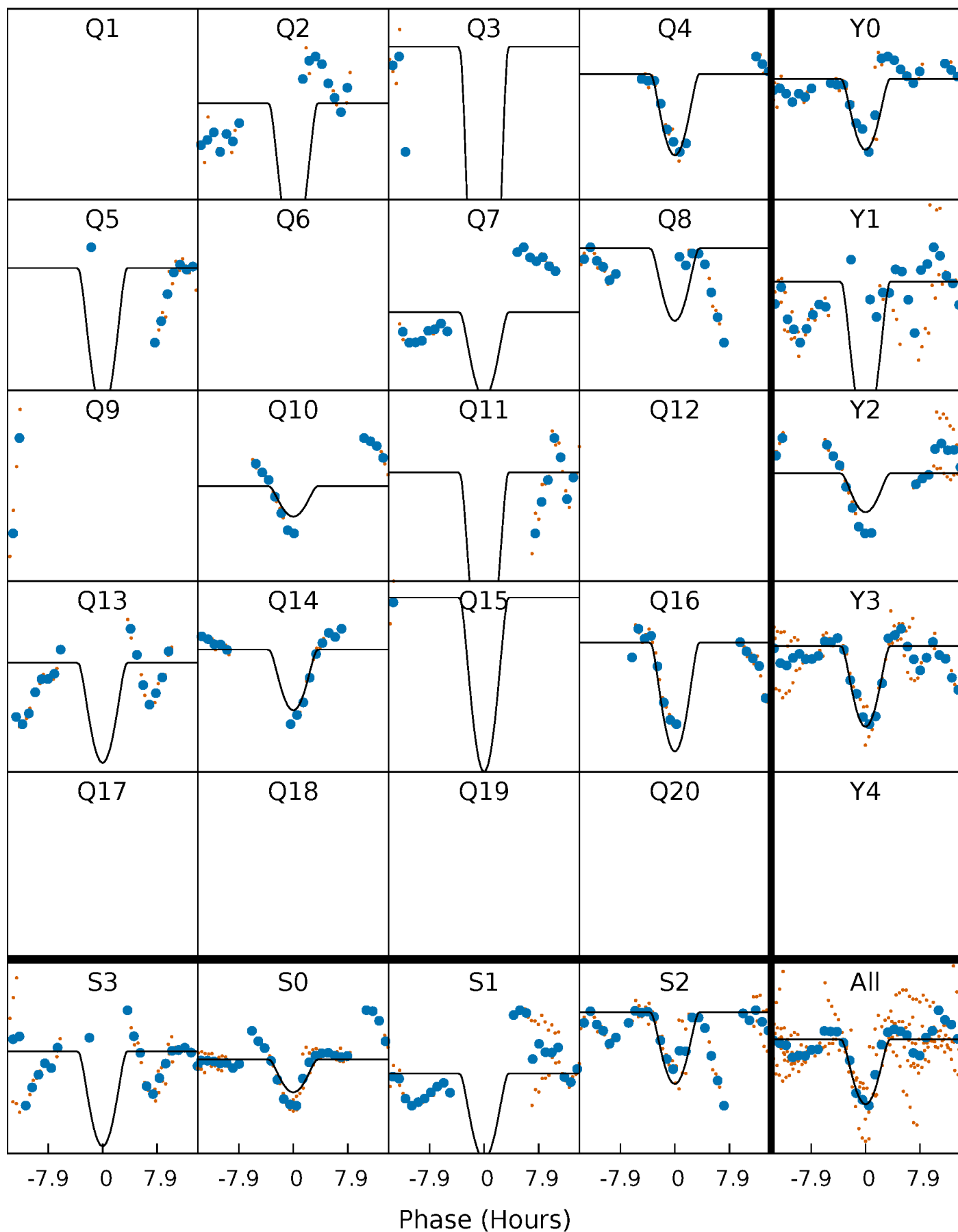
# PDC Quarter-Phased Transit Curves

TCE 011082830-03 P=110.968411 Days  $T_0=188.752274$  (BKJD)



# DV Quarter-Phased Transit Curves

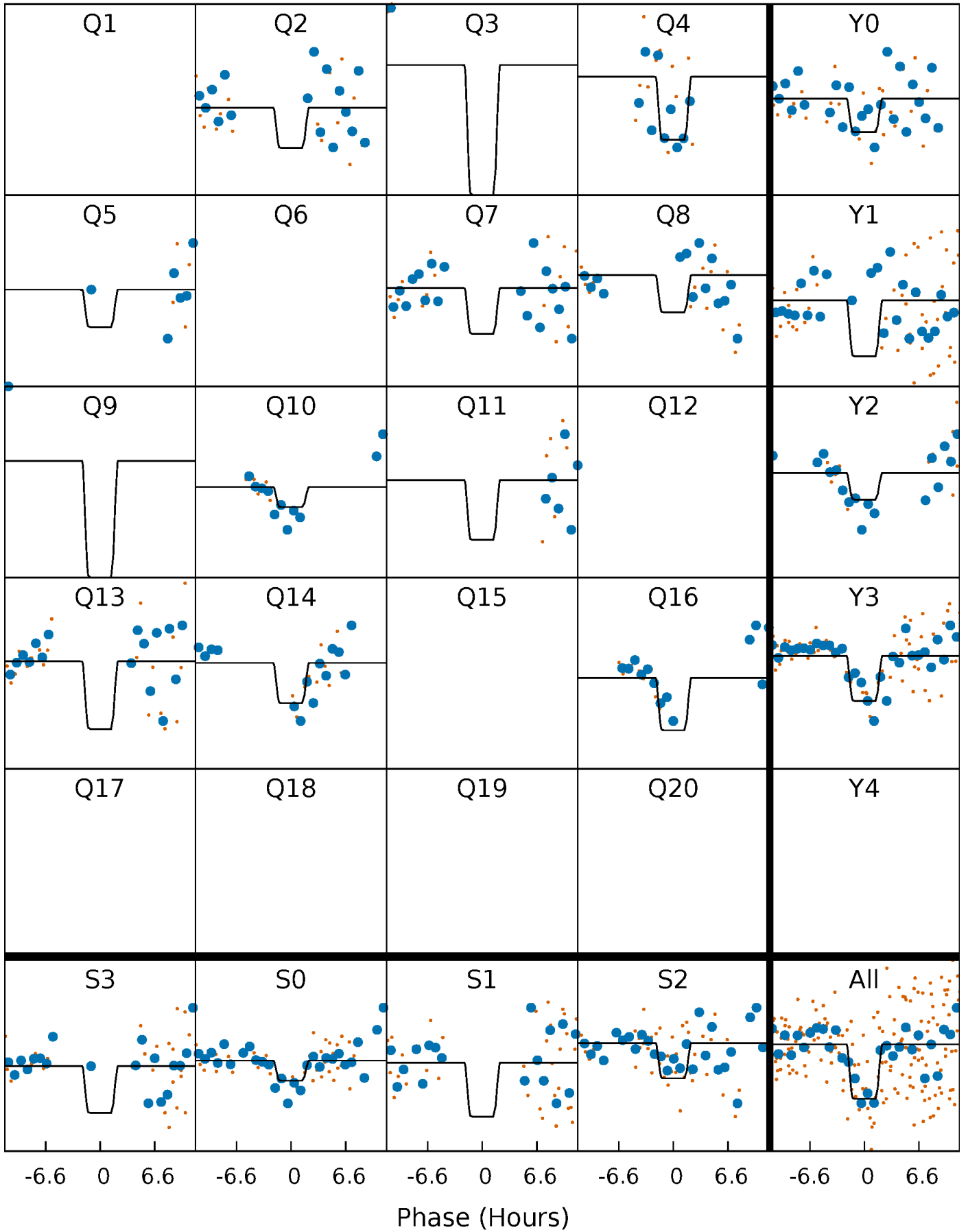
TCE 011082830-03 P=110.968411 Days  $T_0=188.752274$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

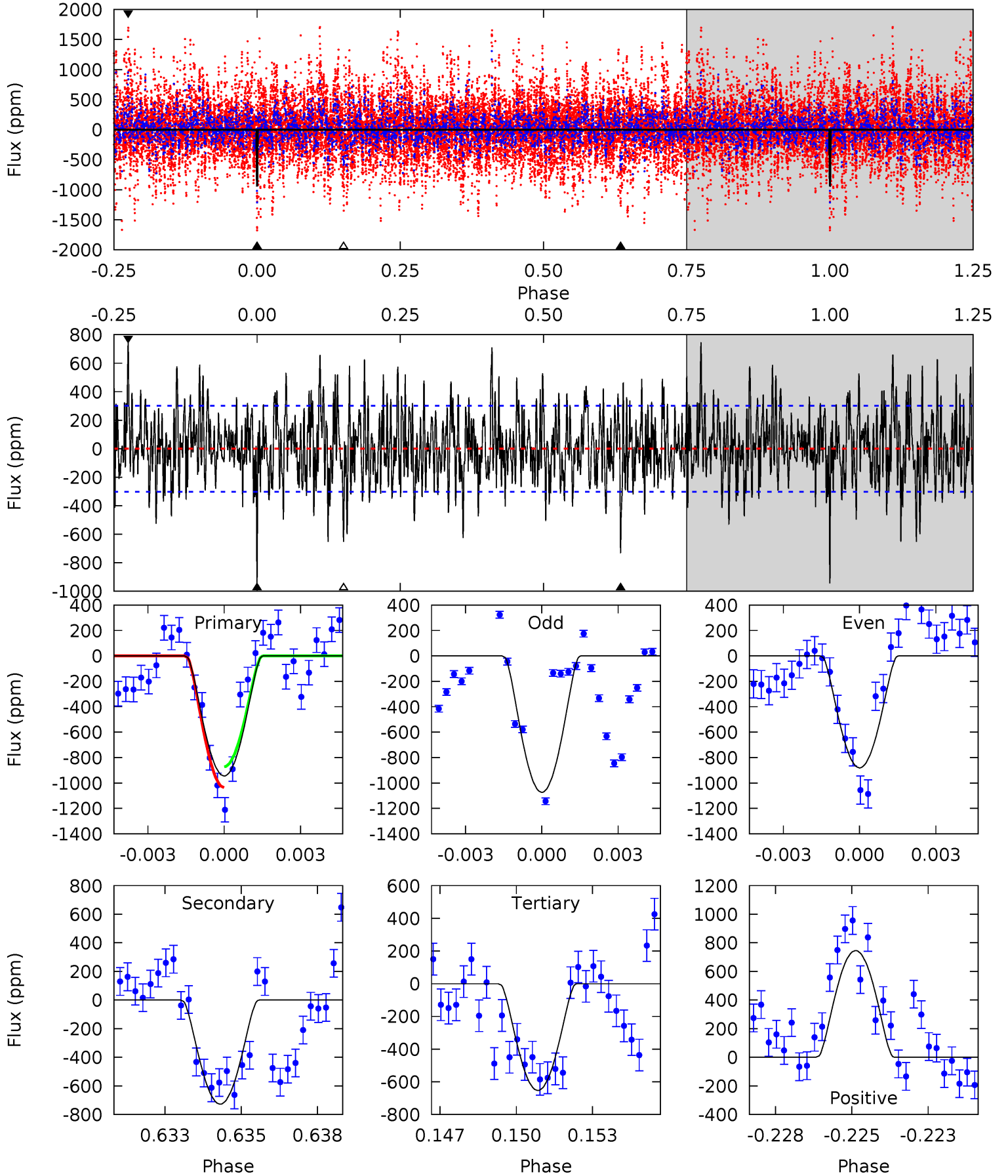
TCE 011082830-03 P=110.971075 Days  $T_0=188.716486$  (BKJD)



# DV Model-Shift Uniqueness Test

011082830-03,  $P = 110.968411$  Days,  $E = 77.783863$  Days

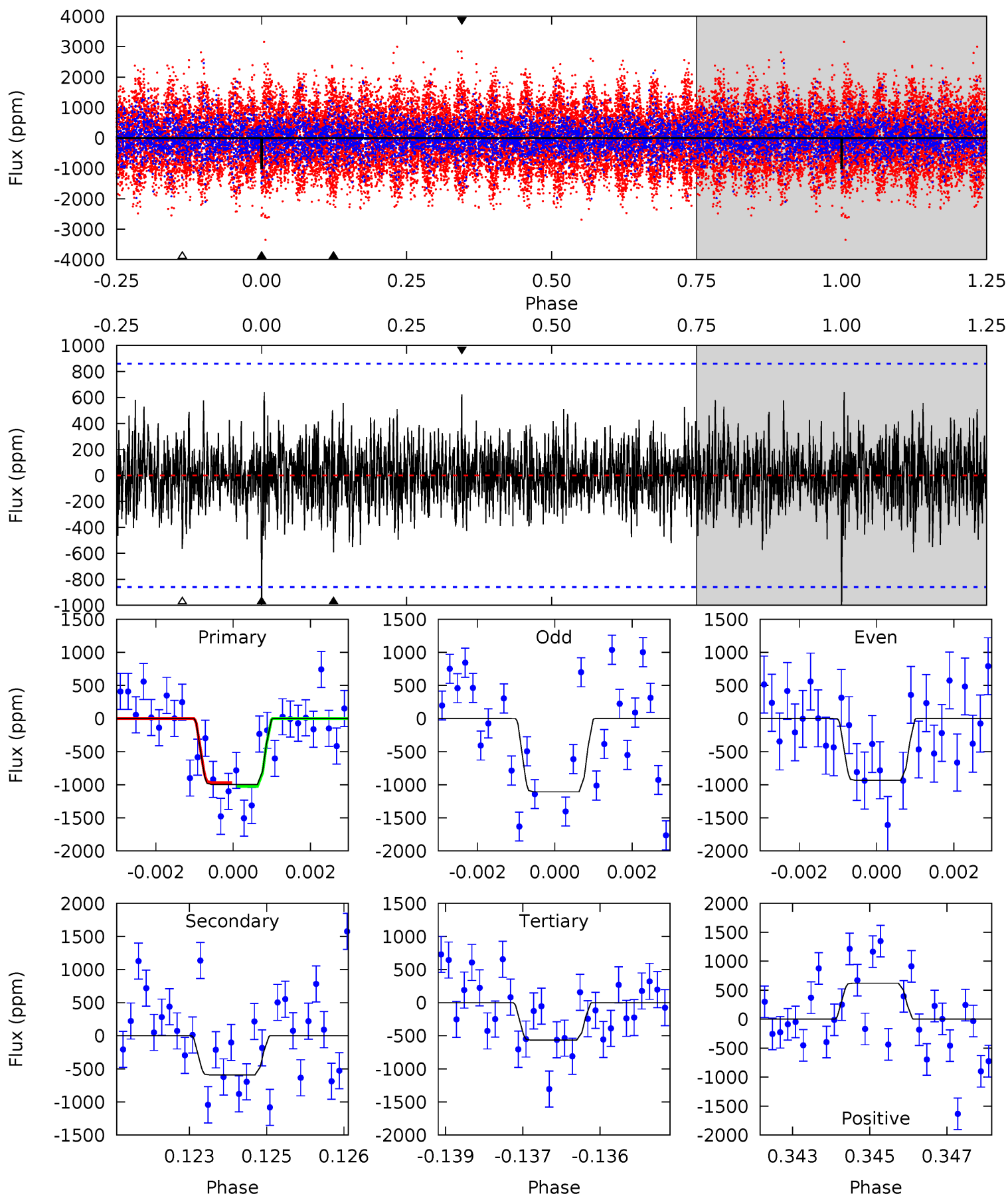
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.5	12.7	11.4	13.0	5.27	3.00	3.60	5.10	3.47	1.30	-0.32	1.61	0.82	0.44	1.43



# Alt Model-Shift Uniqueness Test

011082830-03, P = 110.971075 Days, E = 77.745411 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.23	3.69	3.54	3.89	5.37	3.16	1.05	2.69	2.34	0.15	-0.20	0.53	0.98	0.39	0.18



### Stellar Parameters For KIC 011082830

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7291^{+203}_{-279}$	$3.937^{+0.315}_{-0.135}$	$-0.320^{+0.250}_{-0.350}$	$2.218^{+0.536}_{-0.804}$	$1.549^{+0.215}_{-0.323}$	$0.200^{+0.483}_{-0.083}$
	+3%/-4%	+8%/-3%	+78%/-109%	+24%/-36%	+14%/-21%	+242%/-42%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011082830-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-728 \pm 57$	$15.83^{+13.99}_{-10.12}$	$909^{+67}_{-83}$	$4593^{+2937}_{-869}$	$439^{+2864}_{-320}$
Alt.	$-590 \pm 160$	$12.64^{+13.41}_{-8.56}$	$906^{+70}_{-92}$	$4831^{+3425}_{-1060}$	$514^{+4393}_{-387}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

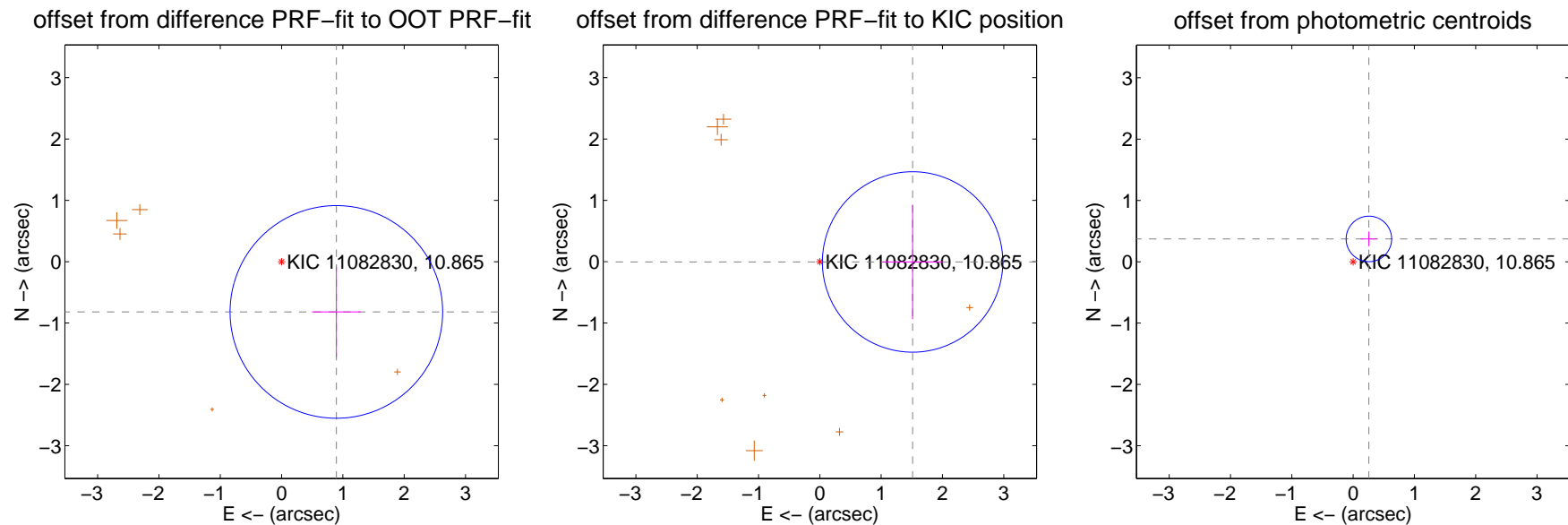
## DV Centroid Data

Supplemental centroid analysis for 011082830-03. **Kepler magnitude: 10.87.** Transit SNR 9.83

**There are 0 quarters with good PRF difference image offsets**

The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

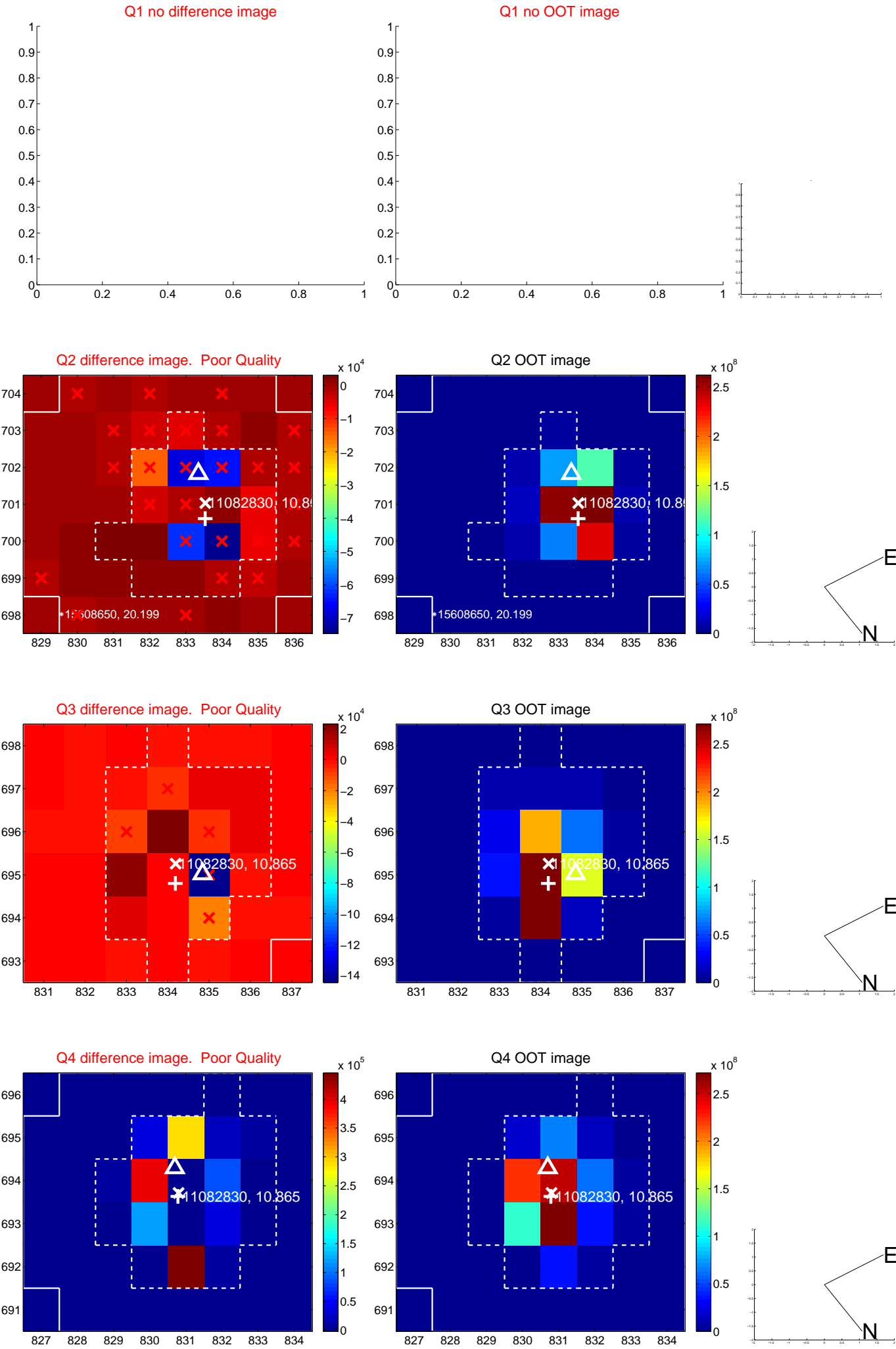
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.212 \pm 0.578$	2.10	$-0.894 \pm 0.397$	$-0.819 \pm 0.737$
PRF-fit source offset from KIC position	<b><math>1.513 \pm 0.490</math></b>	<b>3.08</b>	$-1.513 \pm 0.491$	$-0.004 \pm 0.934$
photometric centroid source offset	<b><math>0.45 \pm 0.12</math></b>	<b>3.66</b>	$-0.26 \pm 0.13$	$0.37 \pm 0.12$



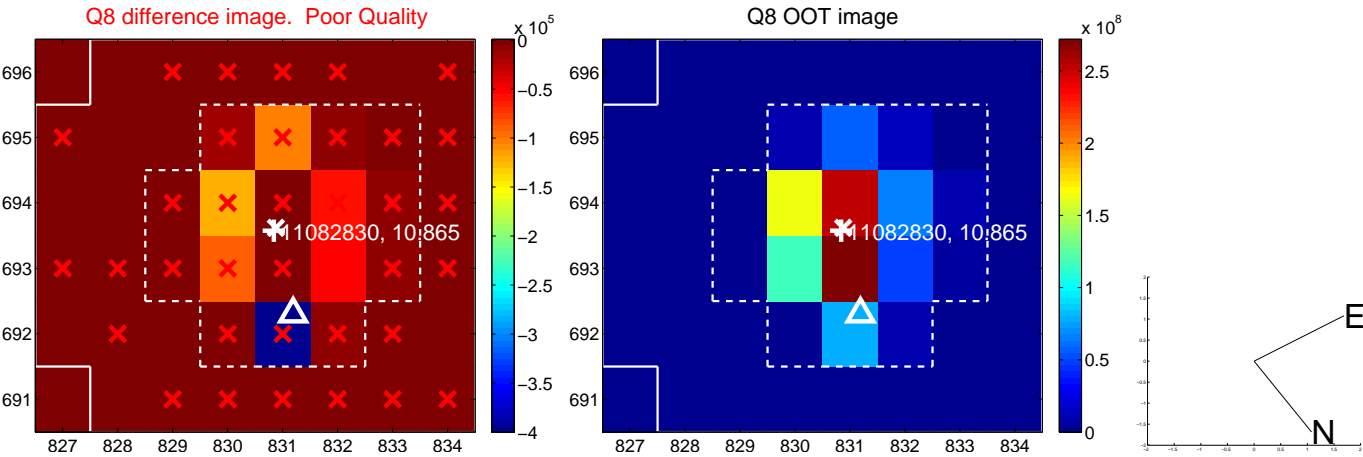
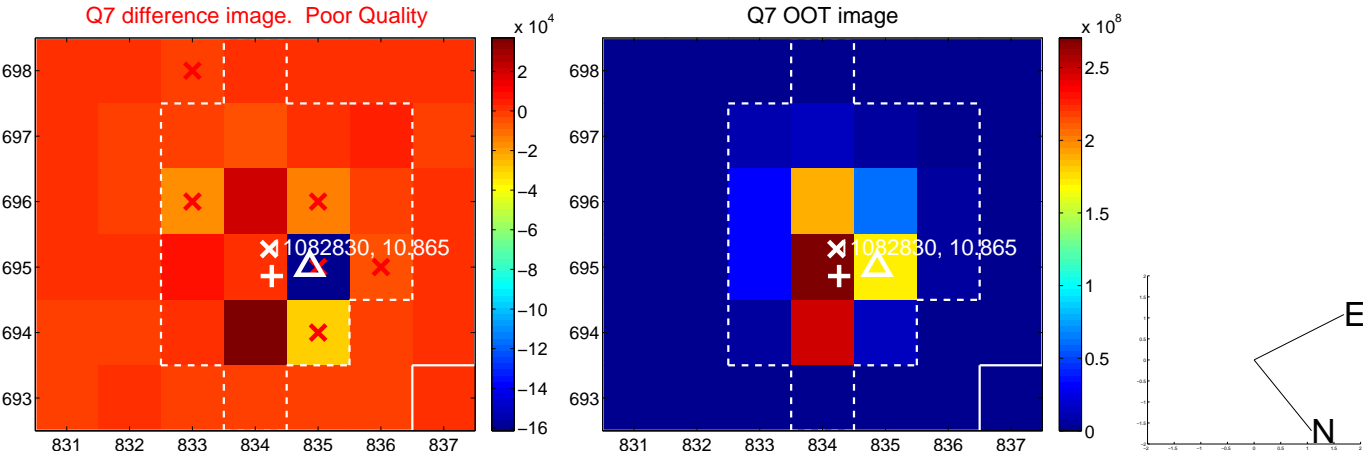
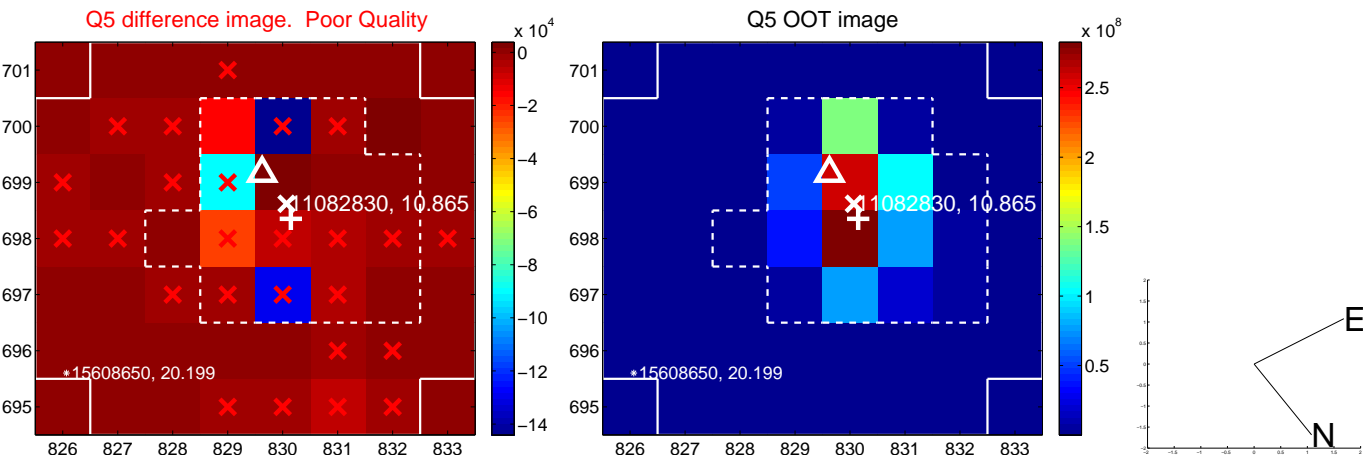
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.



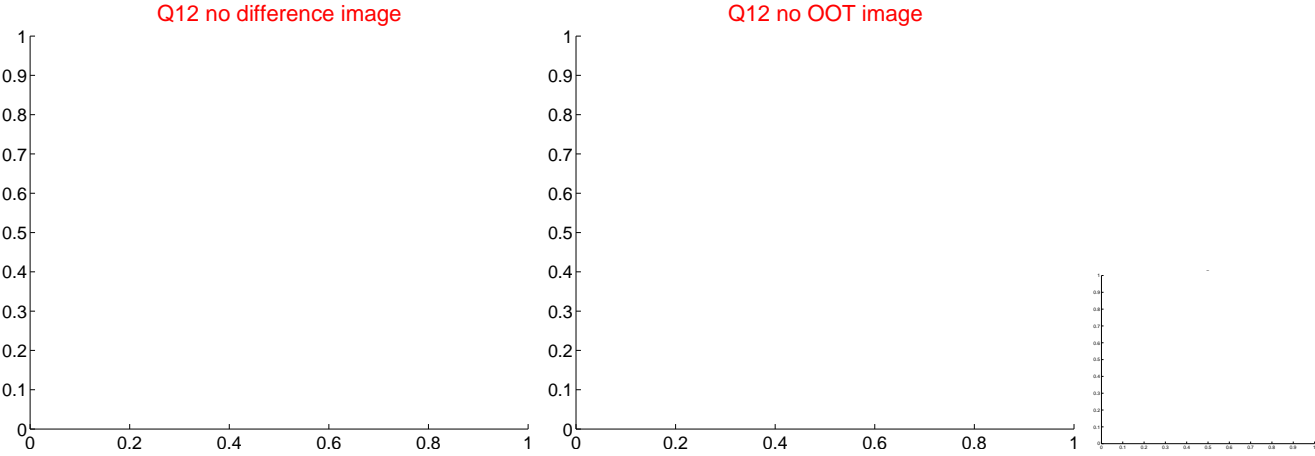
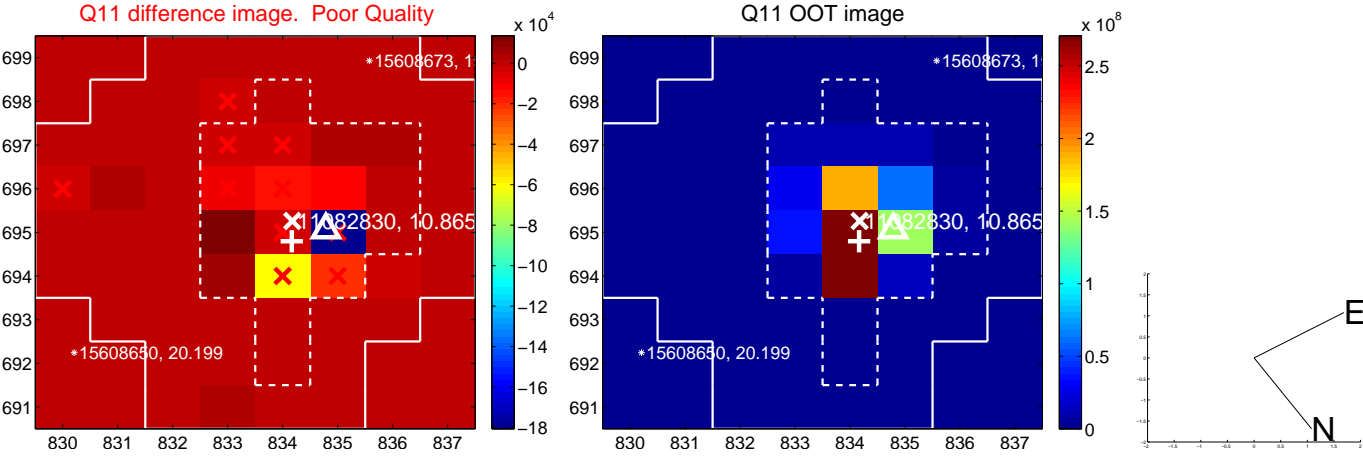
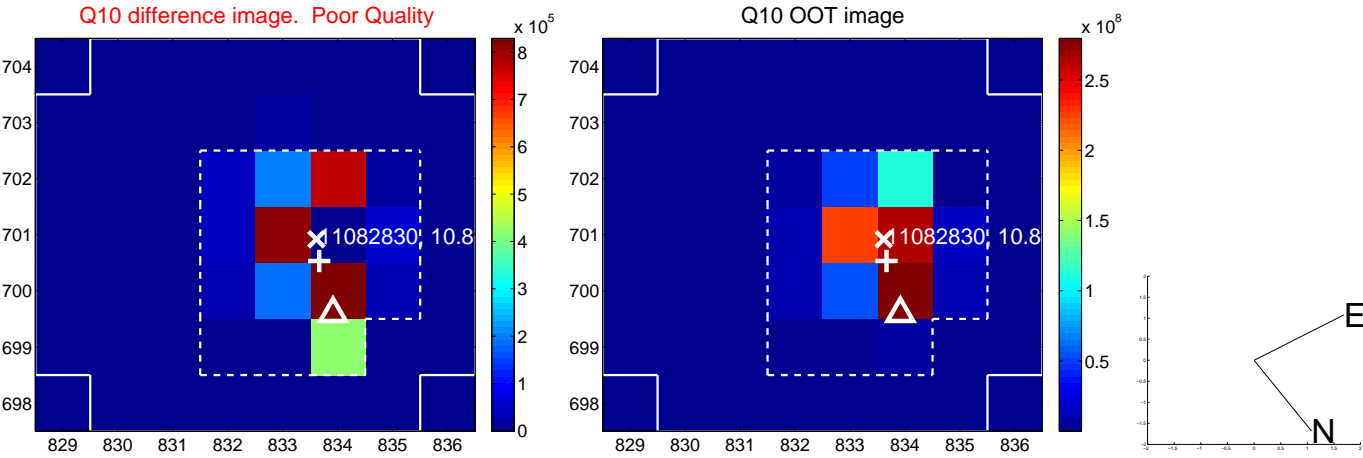
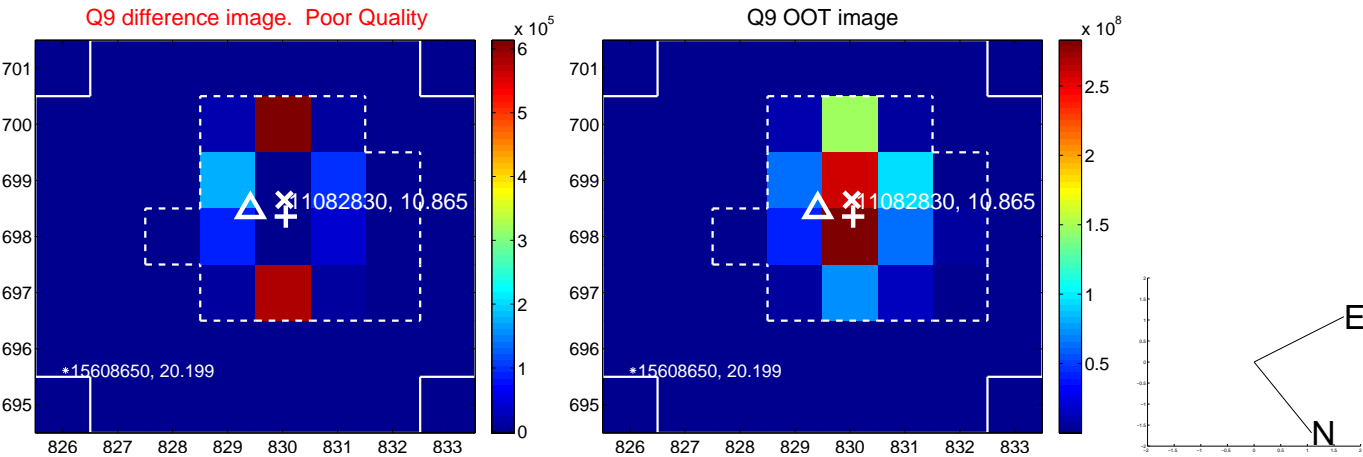
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



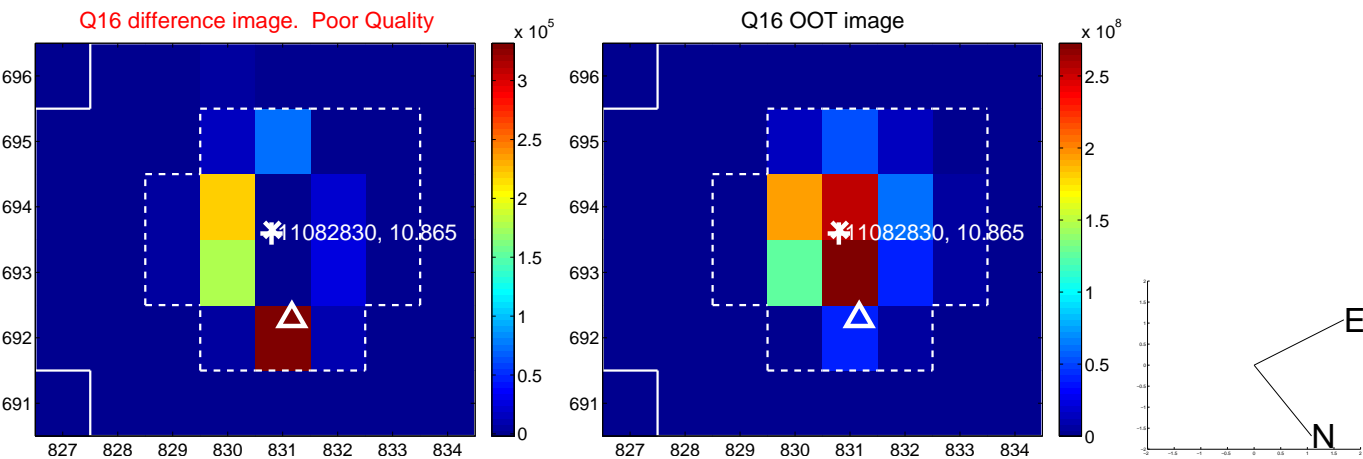
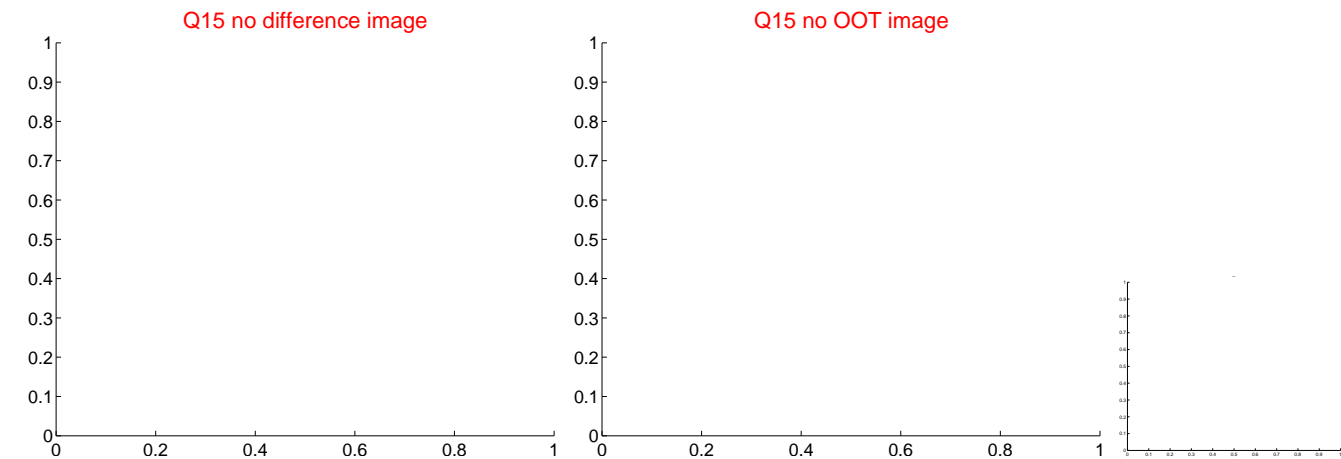
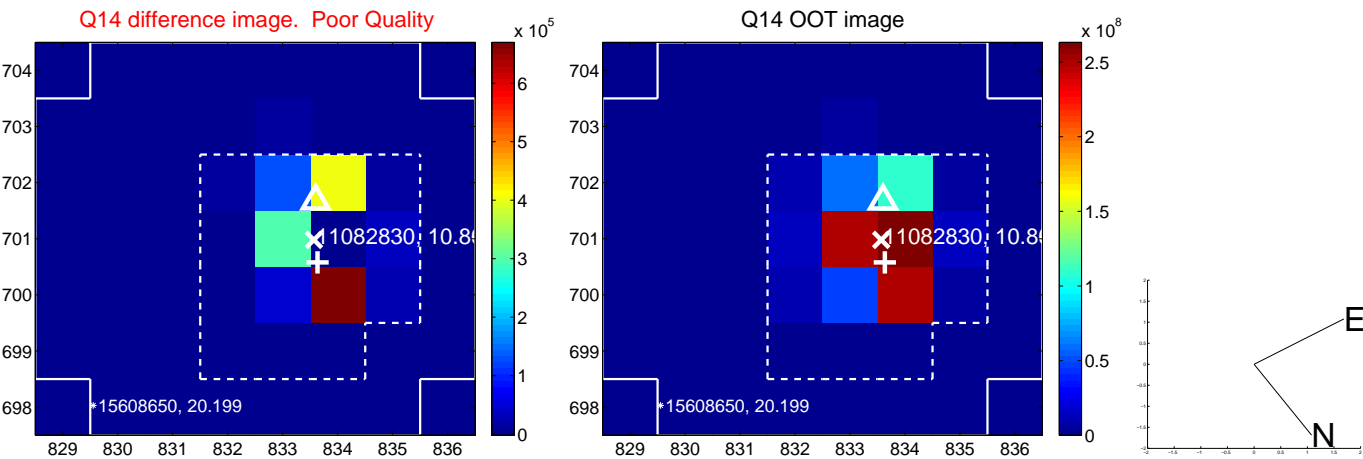
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



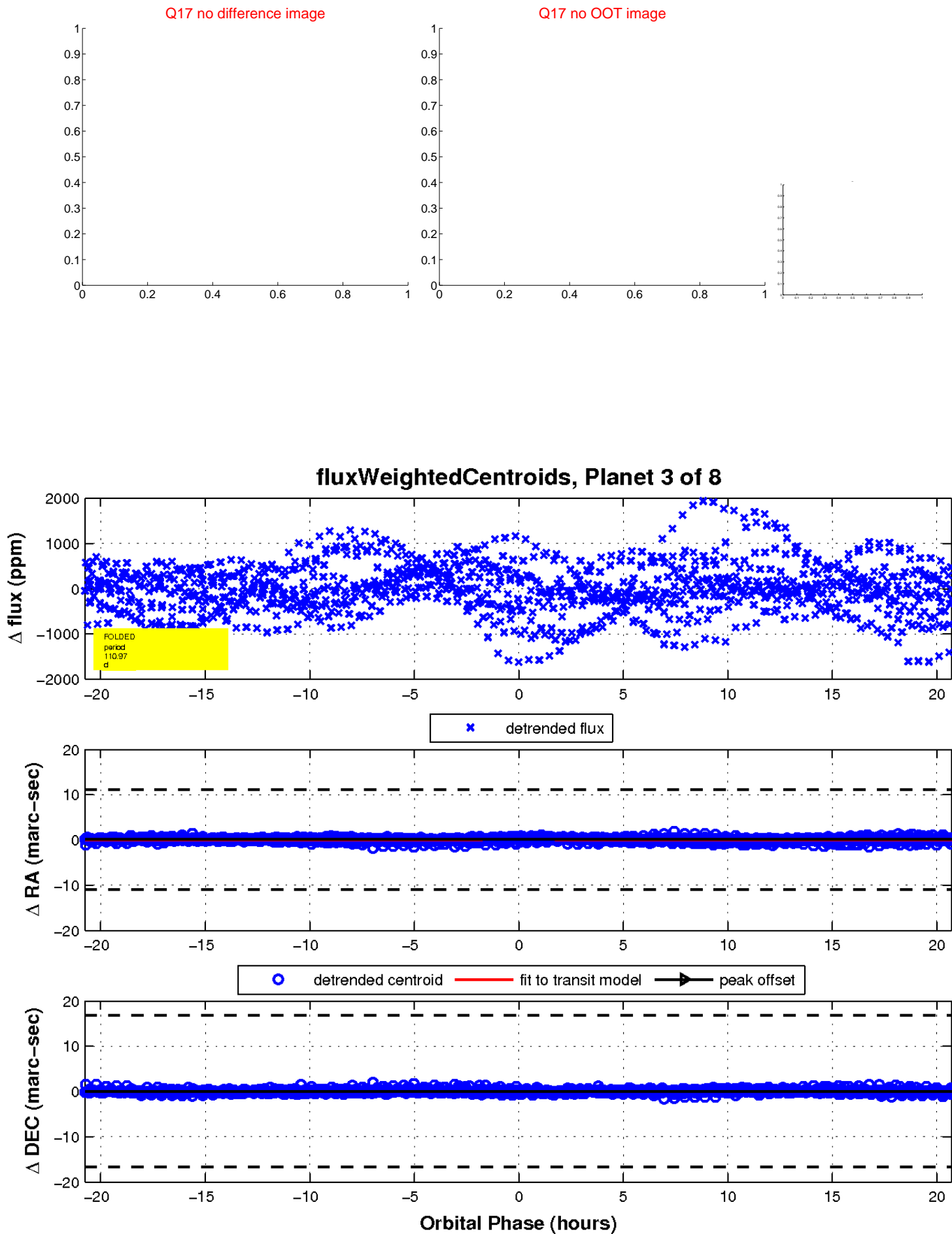
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

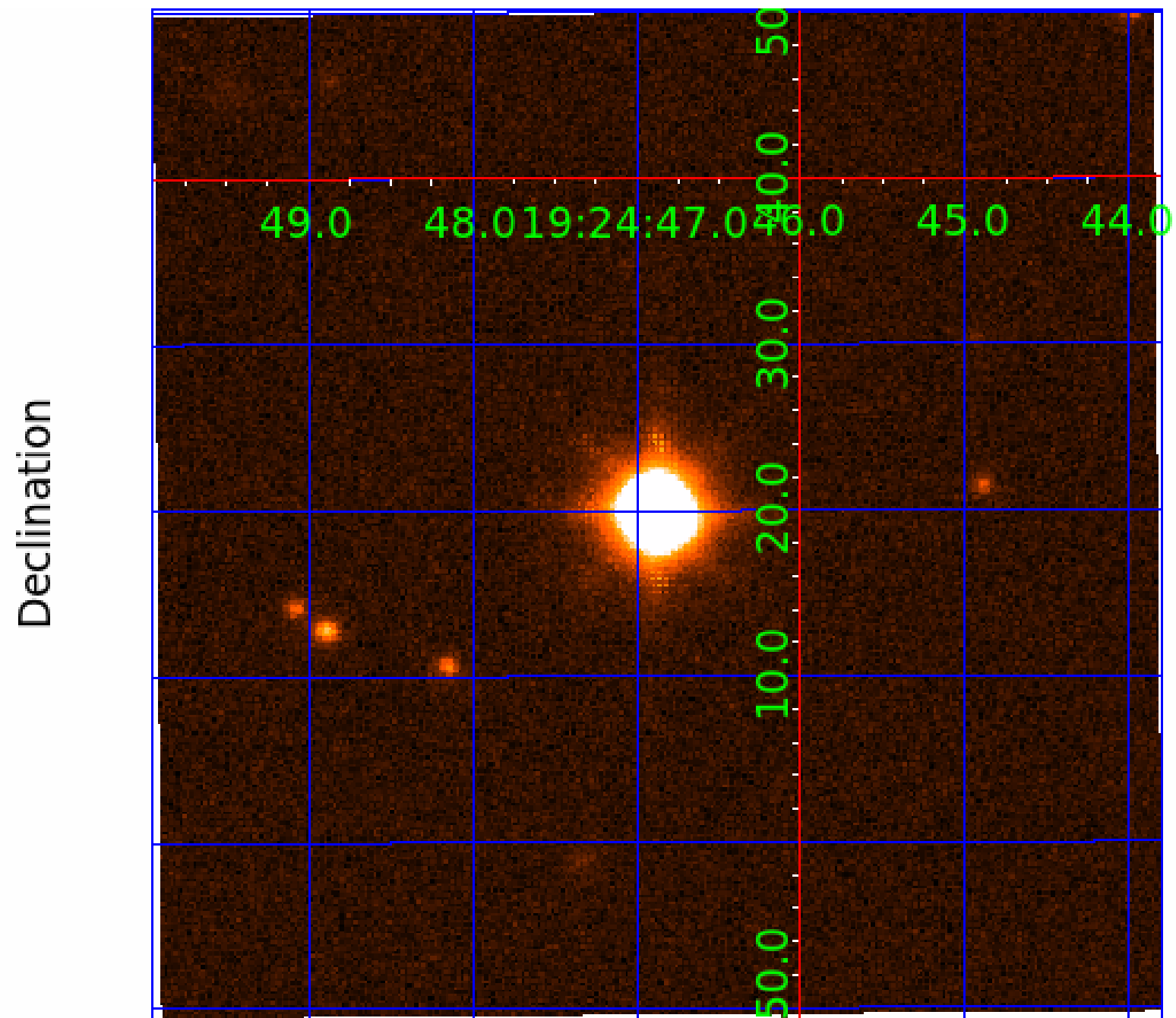


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image



# KIC 011082830

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011082830-01	OBS	No	0.679918	132.181500	25.5	2.887	9.3	10.4	2.22	7291	1.29	40557.84
011082830-02	OBS	No	3.626434	133.105257	66.3	6.601	8.1	5.5	2.22	7291	2.13	4352.22
011082830-03	OBS	No	110.968411	188.752274	1067.4	6.919	9.0	9.8	2.22	7291	13.47	45.47
011082830-04	OBS	No	263.166816	176.730002	495.5	3.527	8.7	5.5	2.22	7291	5.55	14.38
011082830-05	OBS	No	3.626397	133.720256	153.8	6.037	8.8	10.4	2.22	7291	5.34	4352.28
011082830-06	OBS	No	322.616820	139.890190	630.3	1.794	9.4	7.1	2.22	7291	5.92	10.96
011082830-07	OBS	No	45.688762	156.143238	882.7	8.488	8.6	8.8	2.22	7291	12.30	148.46
011082830-08	OBS	No	414.726345	153.623511	57.7	6.000	7.8	-1.0	2.22	7291	1.71	7.84

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011082830-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED—HALO_GHOST
011082830-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
011082830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
011082830-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

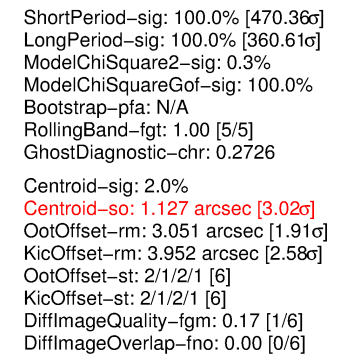
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011082830-04

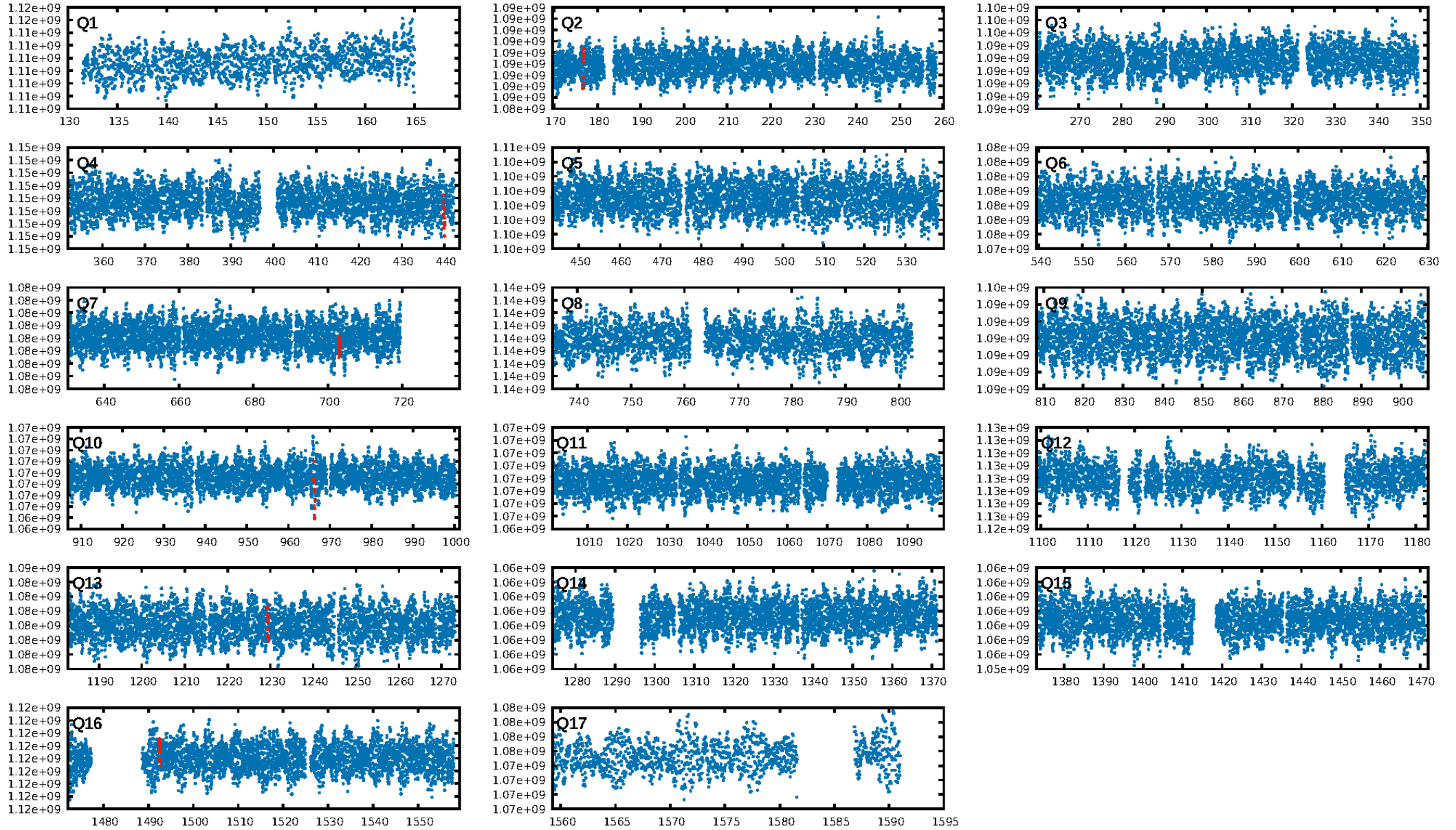
No Significant Match Found

## KIC: 11082830    Candidate: 4 of 8    Period: 263.167 d



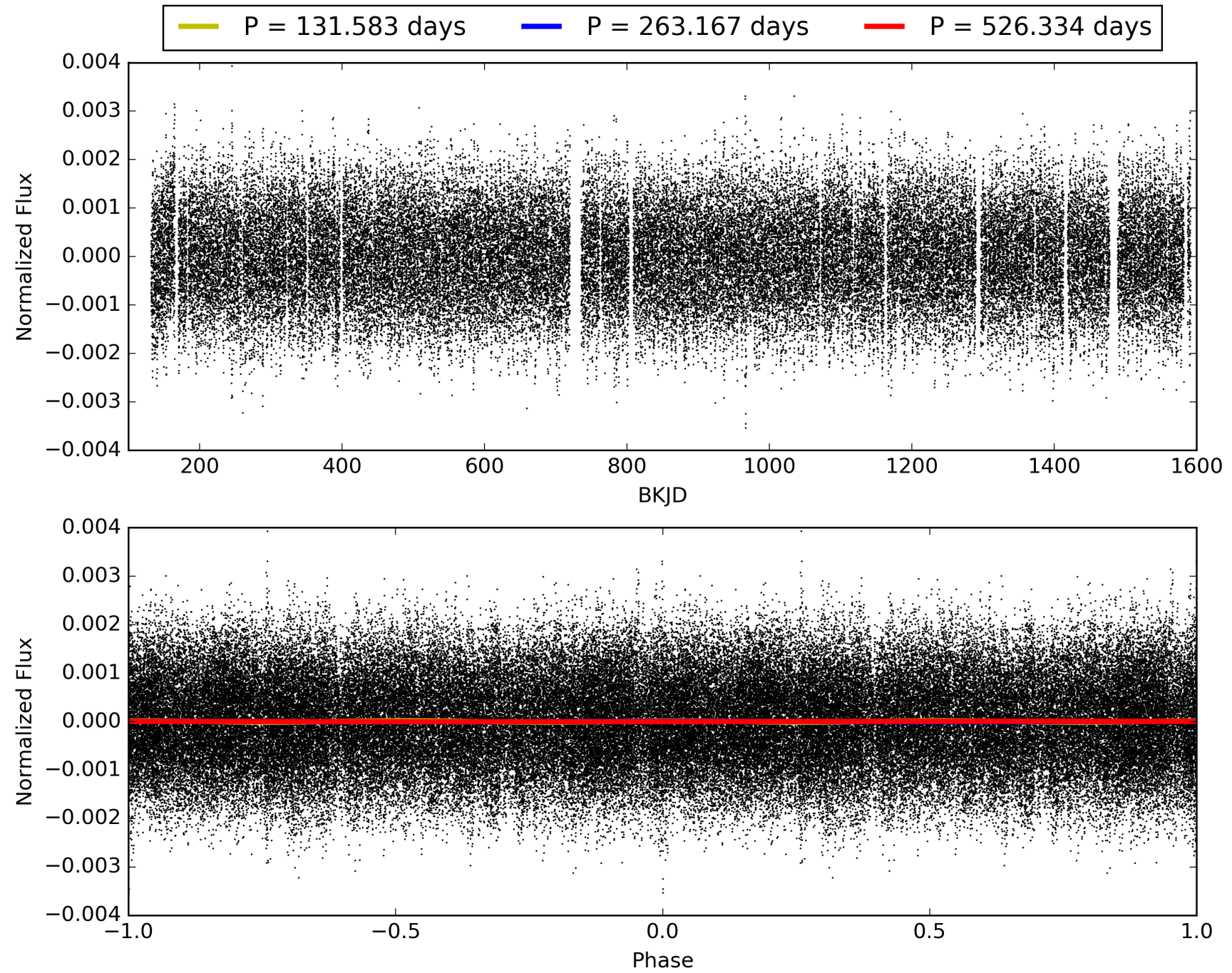
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011082830-04, PDC Light Curves



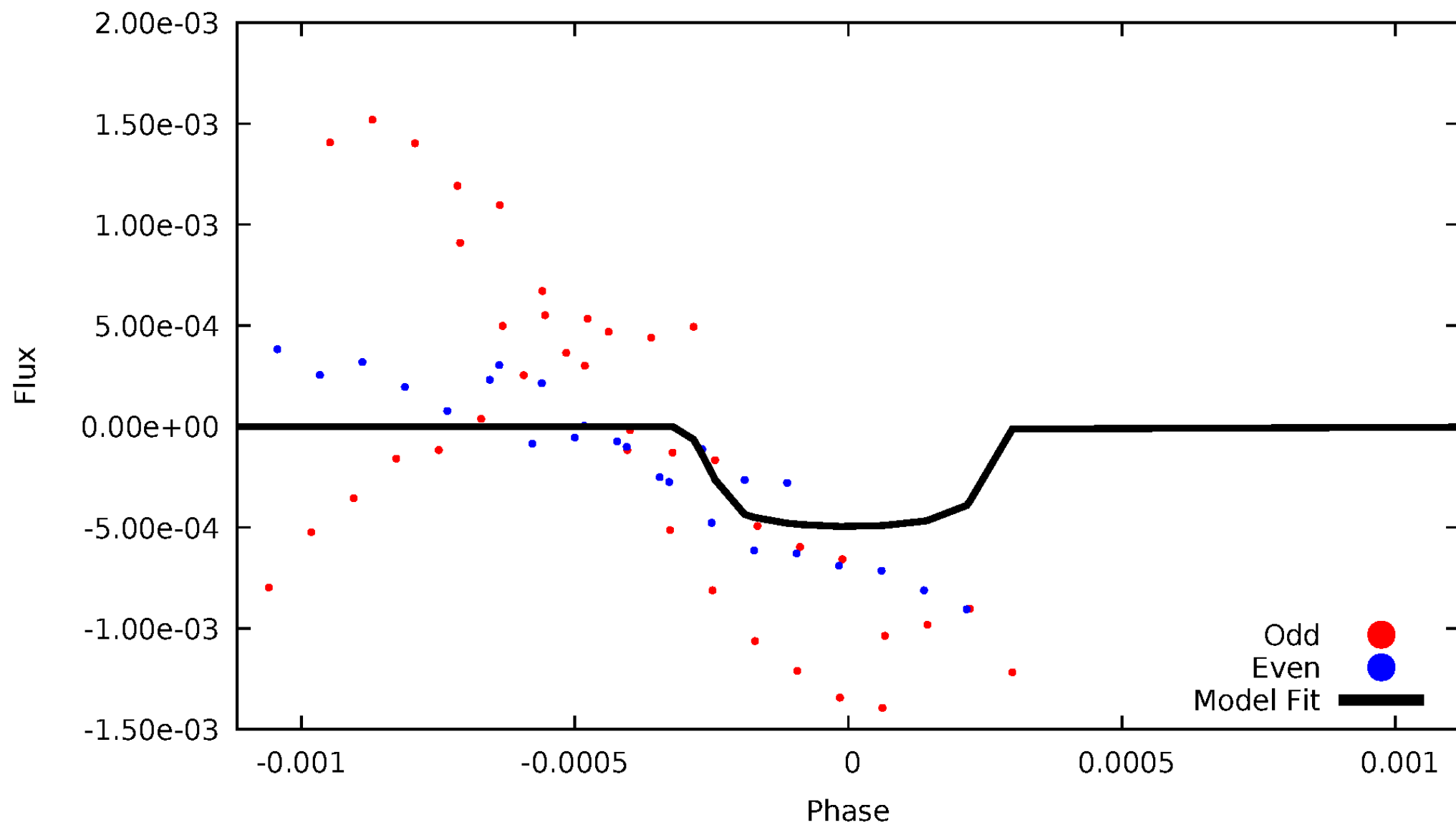


# TCE 011082830-04



# DV Odd/Even

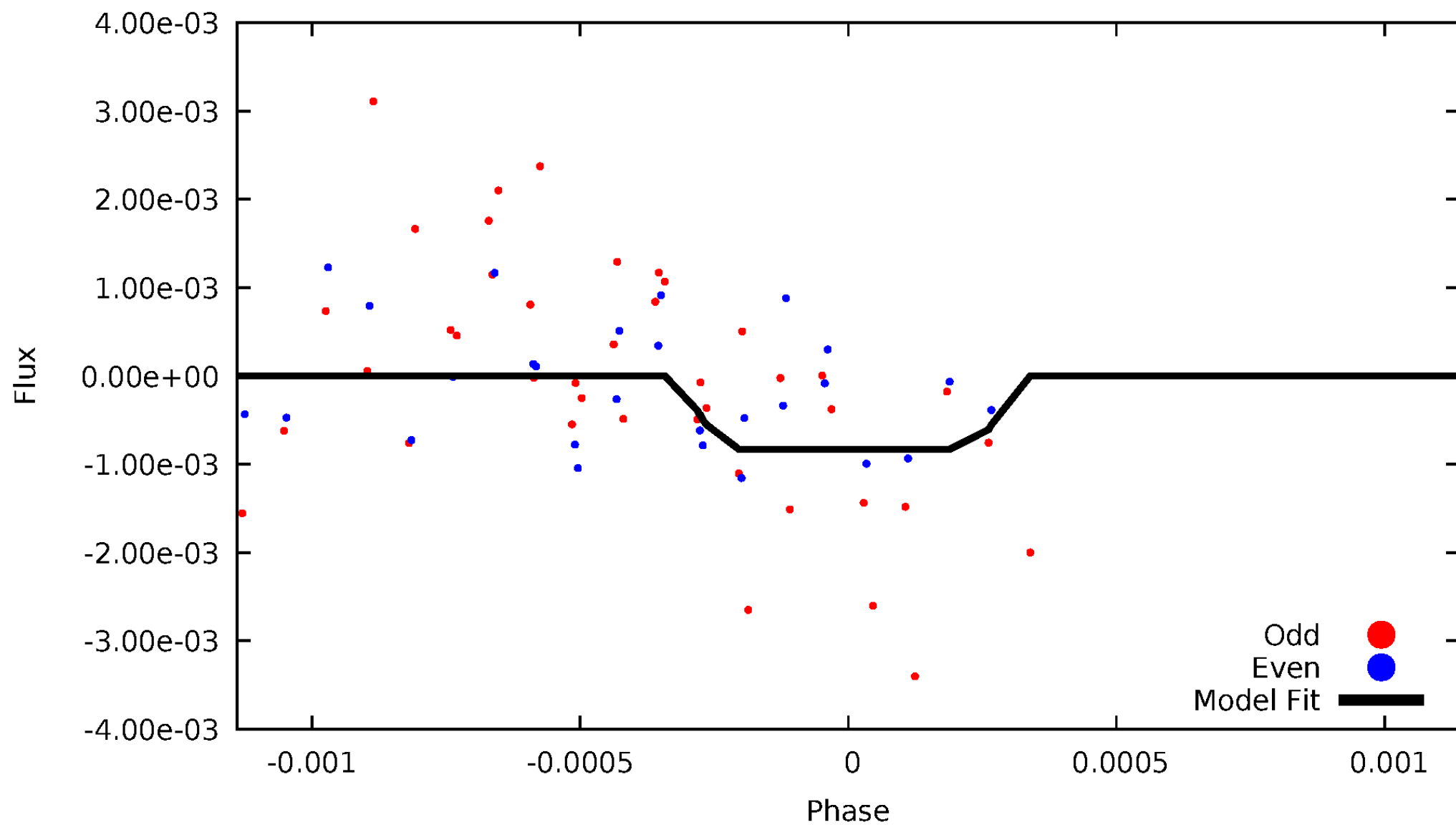
TCE 011082830-04





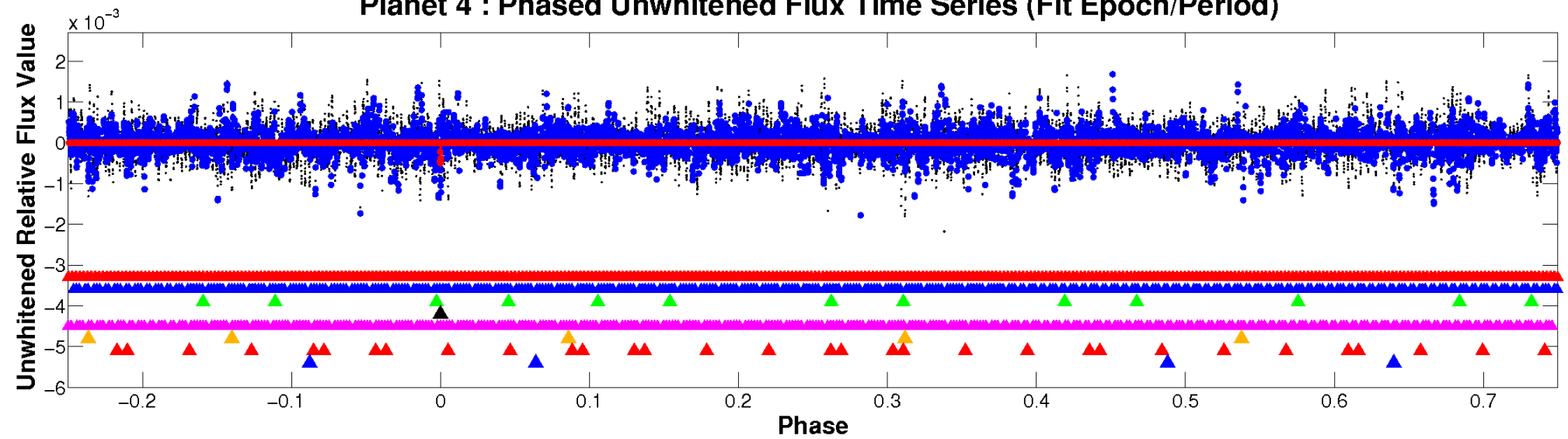
# ALT Odd/Even

TCE 011082830-04

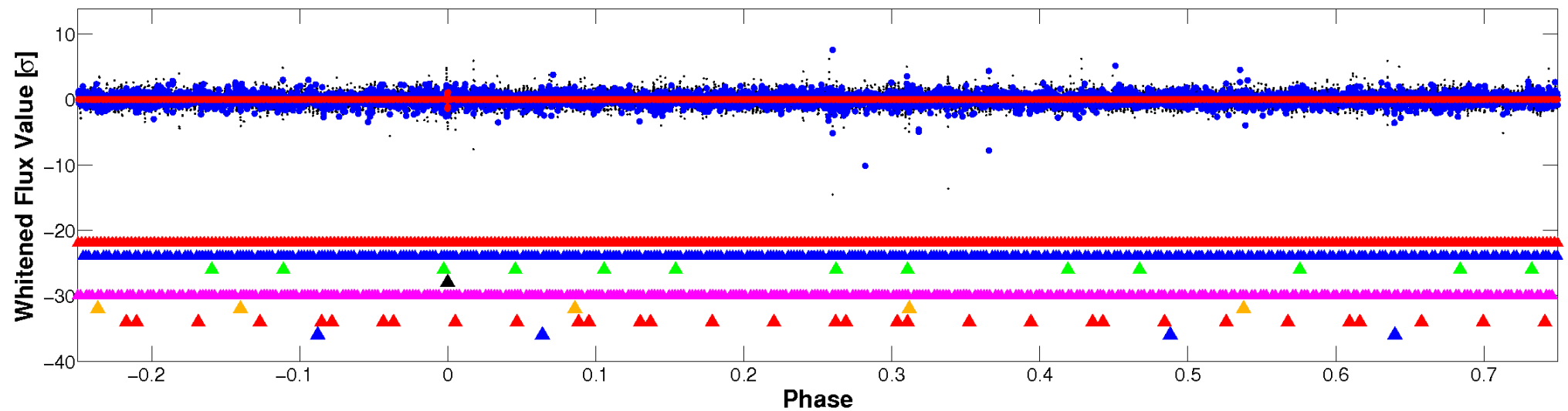


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

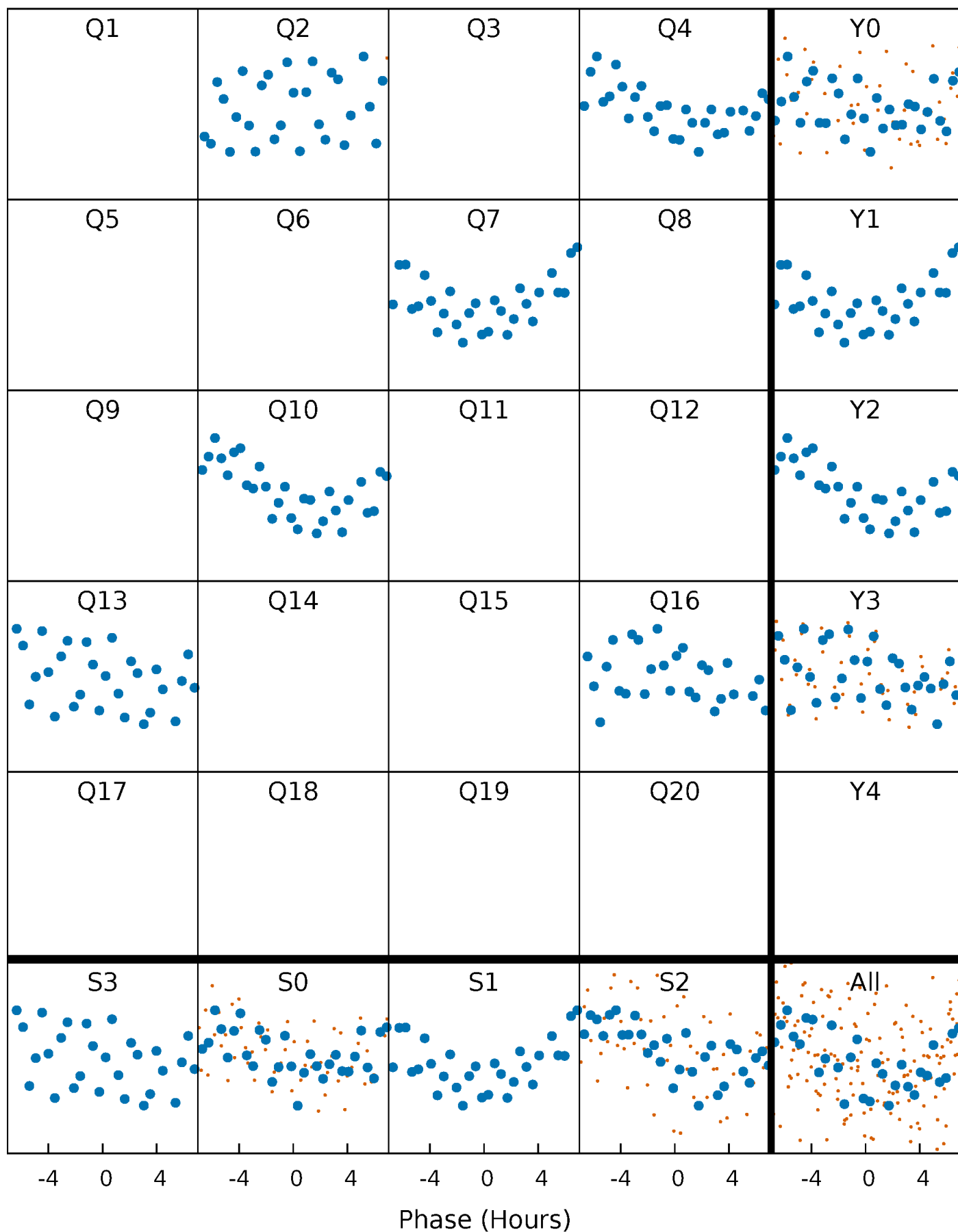


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



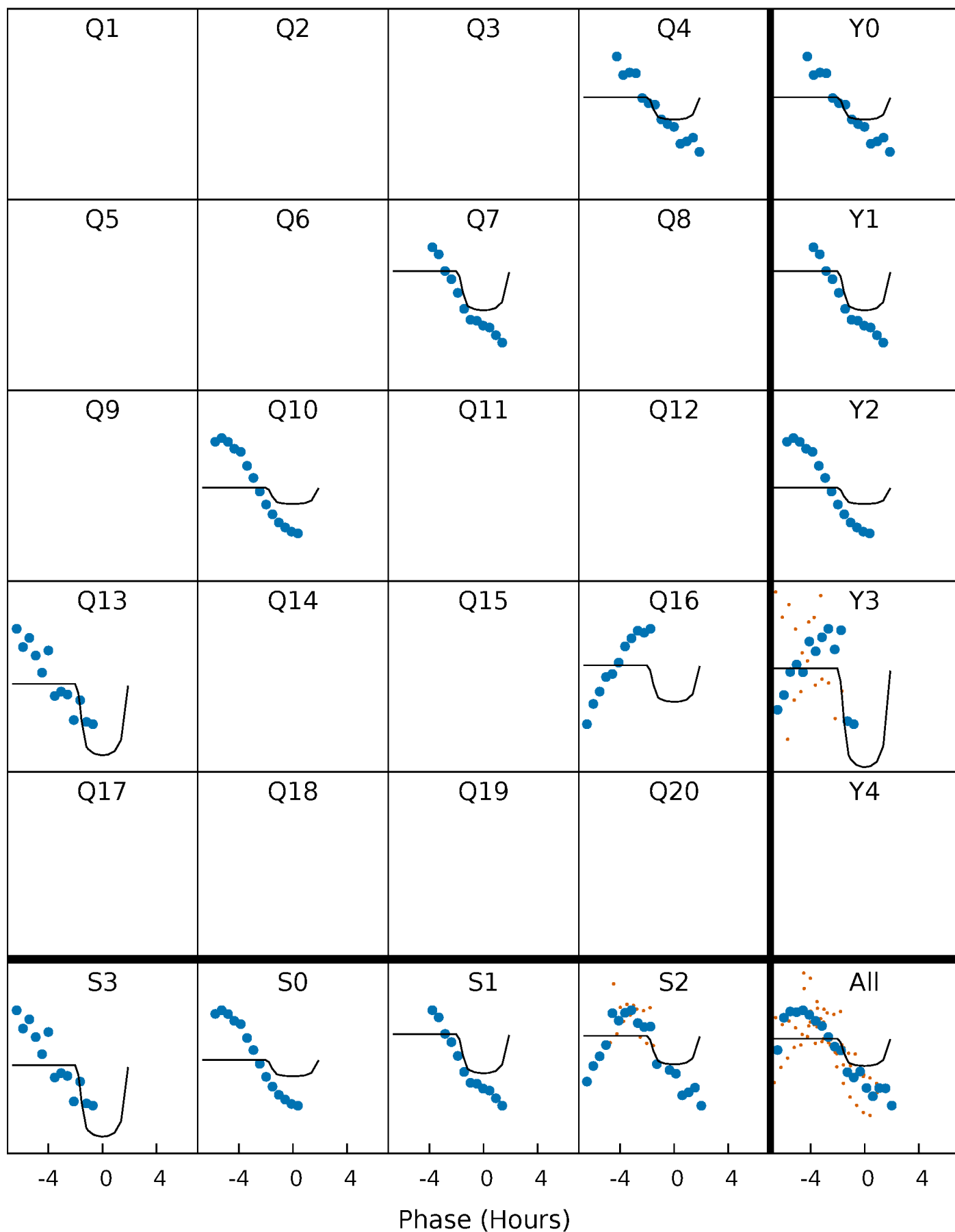
# PDC Quarter-Phased Transit Curves

TCE 011082830-04 P=263.166816 Days  $T_0=176.730002$  (BKJD)



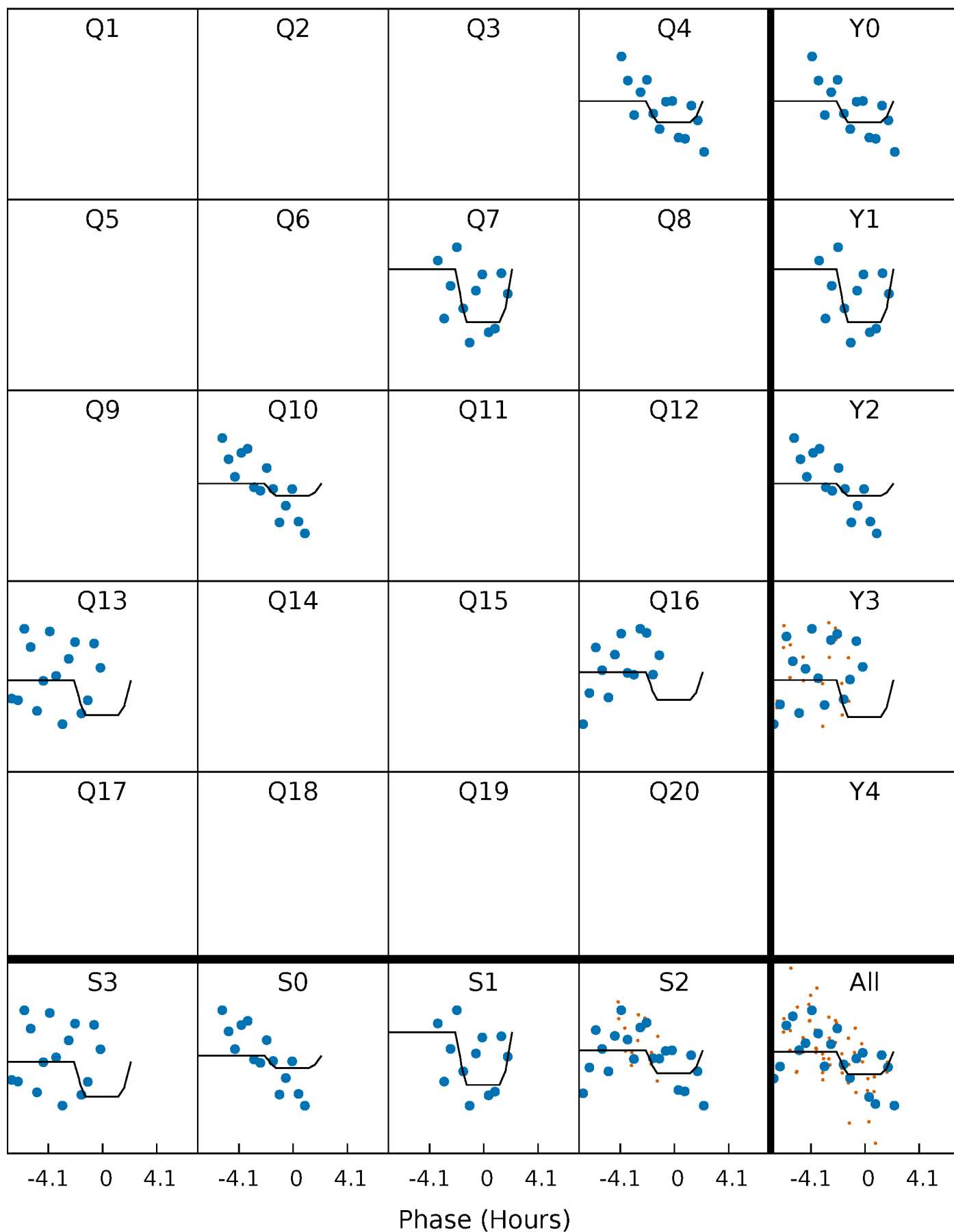
# DV Quarter-Phased Transit Curves

TCE 011082830-04 P=263.166816 Days  $T_0=176.730002$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

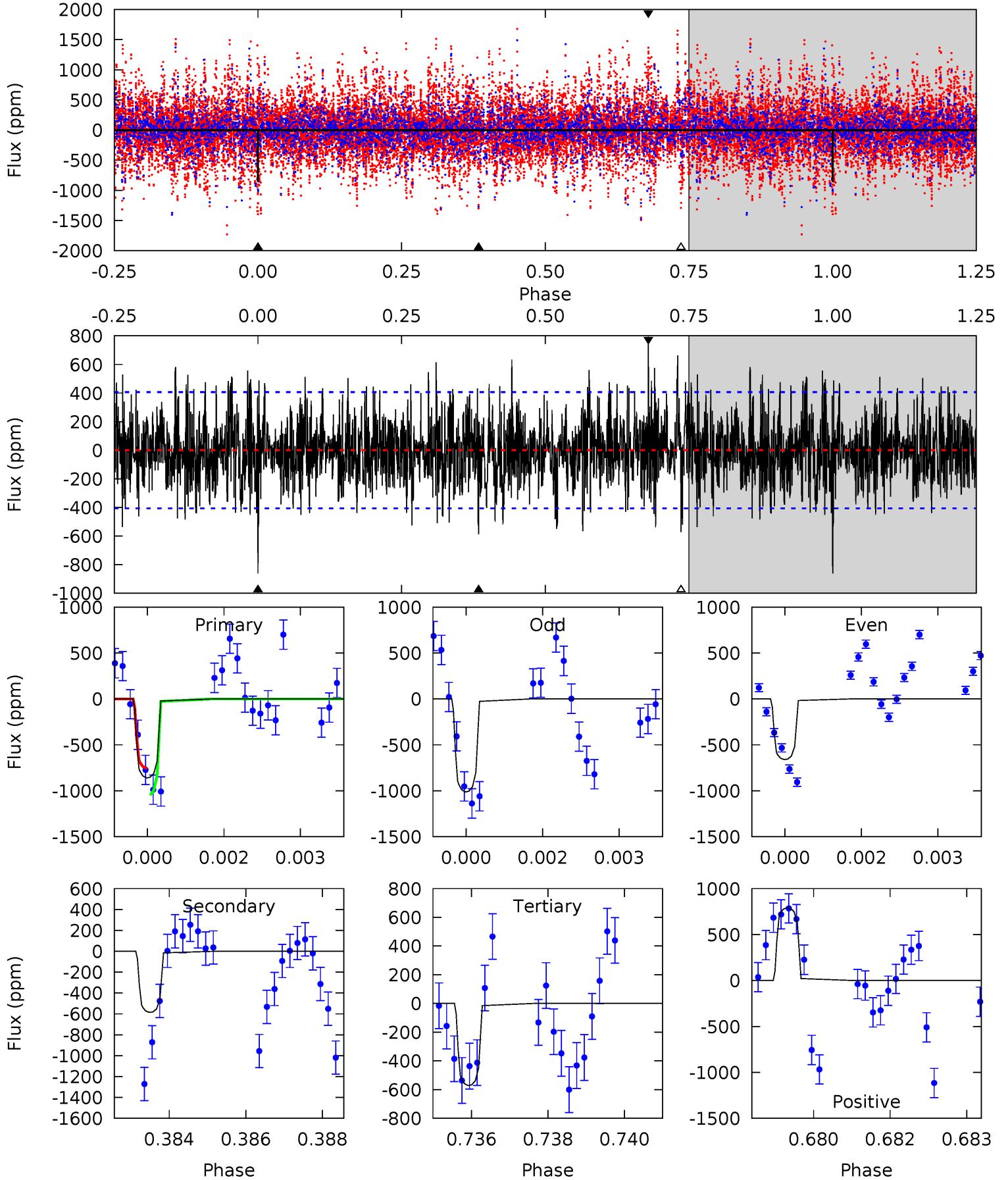
TCE 011082830-04 P=263.163819 Days  $T_0=176.722693$  (BKJD)



# DV Model-Shift Uniqueness Test

011082830-04, P = 263.166816 Days, E = 176.730002 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.3	7.72	7.54	10.5	5.36	3.14	2.40	3.80	0.88	0.18	-2.74	2.36	1.01	0.48	1.87

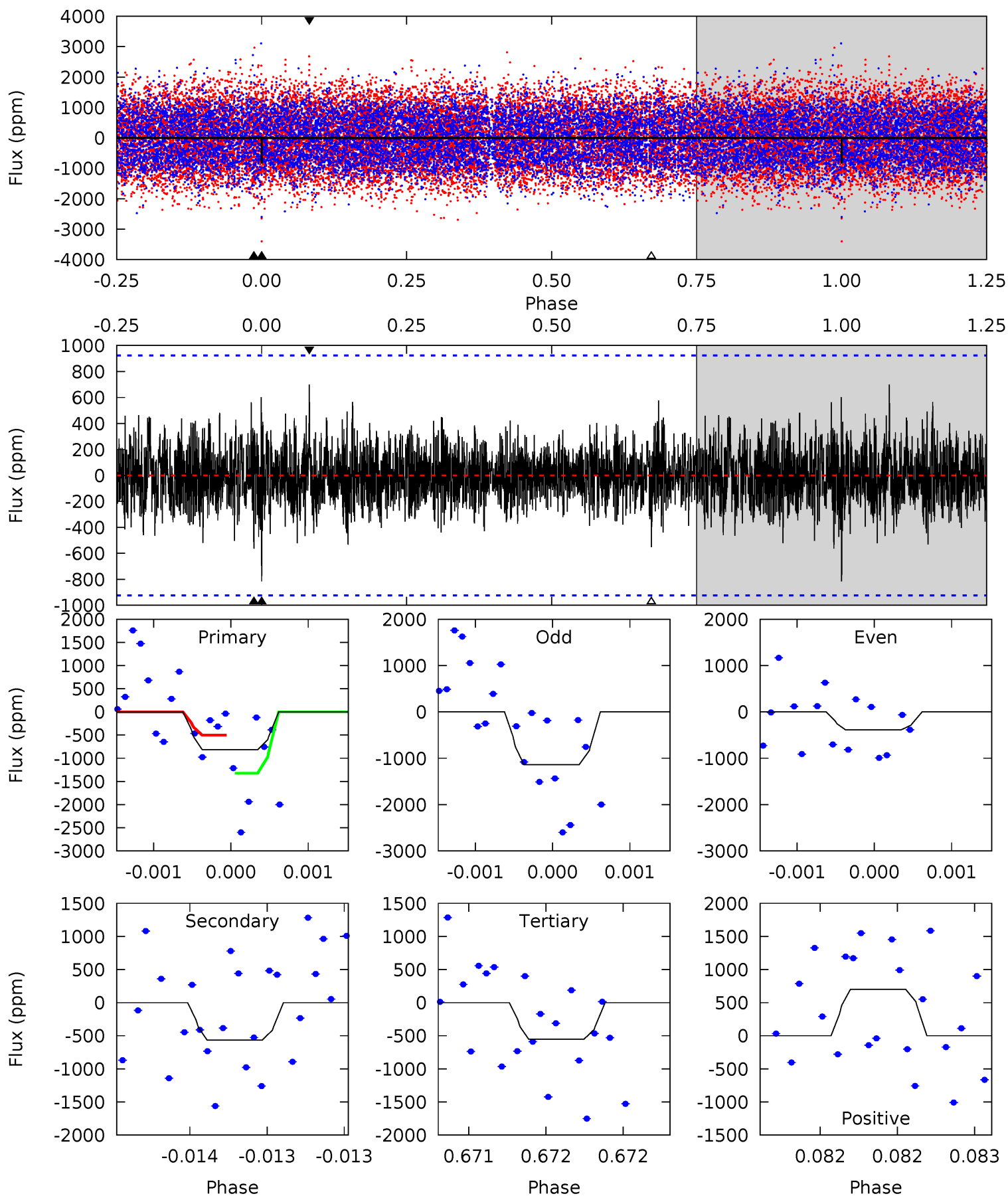




# Alt Model-Shift Uniqueness Test

011082830-04, P = 263.163819 Days, E = 176.722693 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.91	3.40	3.32	4.21	5.56	3.46	0.95	1.59	0.70	0.07	-0.82	2.22	0.94	0.46	2.36



### Stellar Parameters For KIC 011082830

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7291^{+203}_{-279}$	$3.937^{+0.315}_{-0.135}$	$-0.320^{+0.250}_{-0.350}$	$2.218^{+0.536}_{-0.804}$	$1.549^{+0.215}_{-0.323}$	$0.200^{+0.483}_{-0.083}$
	+3%/-4%	+8%/-3%	+78%/-109%	+24%/-36%	+14%/-21%	+242%/-42%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011082830-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-586 \pm 76$	$5.19^{+2.77}_{-2.34}$	$682^{+48}_{-70}$	$7497^{+3566}_{-1400}$	$10523^{+23402}_{-6122}$
Alt.	$-565 \pm 166$	$6.47^{+3.07}_{-2.42}$	$681^{+54}_{-61}$	$6436^{+2095}_{-992}$	$5951^{+10910}_{-3375}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

## DV Centroid Data

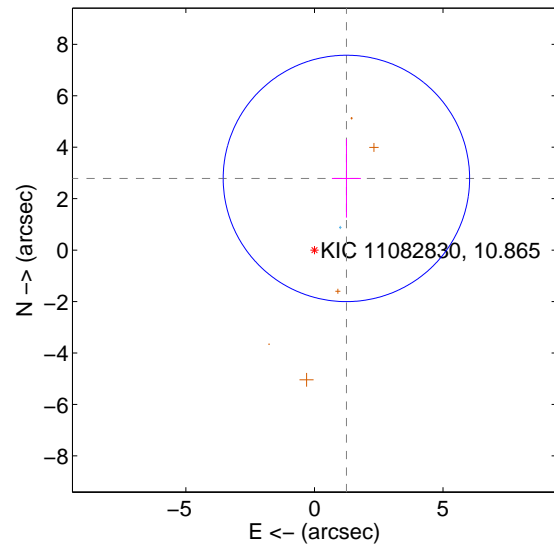
Supplemental centroid analysis for 011082830-04. **Kepler magnitude: 10.87.** Transit SNR 5.55

**There are 1 quarters with good PRF difference image offsets**

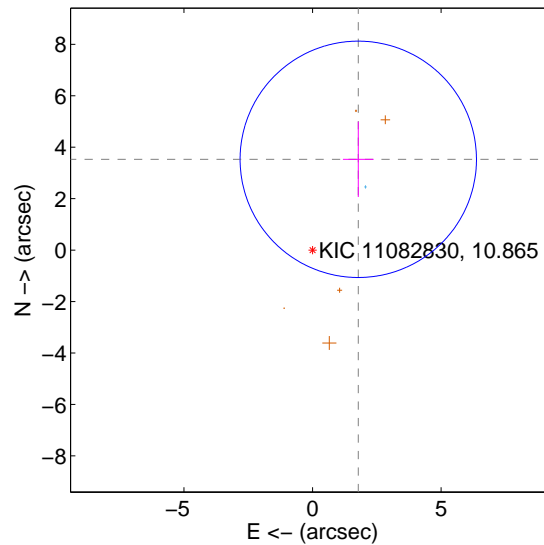
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.051 \pm 1.596$	1.91	$-1.242 \pm 0.565$	$2.786 \pm 1.526$
PRF-fit source offset from KIC position	$3.952 \pm 1.531$	2.58	$-1.778 \pm 0.594$	$3.529 \pm 1.464$
photometric centroid source offset	$1.13 \pm 0.37$	<b>3.02</b>	$-1.02 \pm 0.38$	$0.48 \pm 0.36$

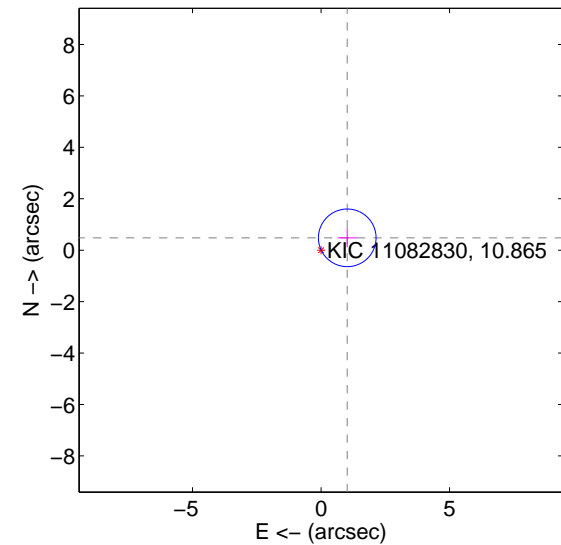
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

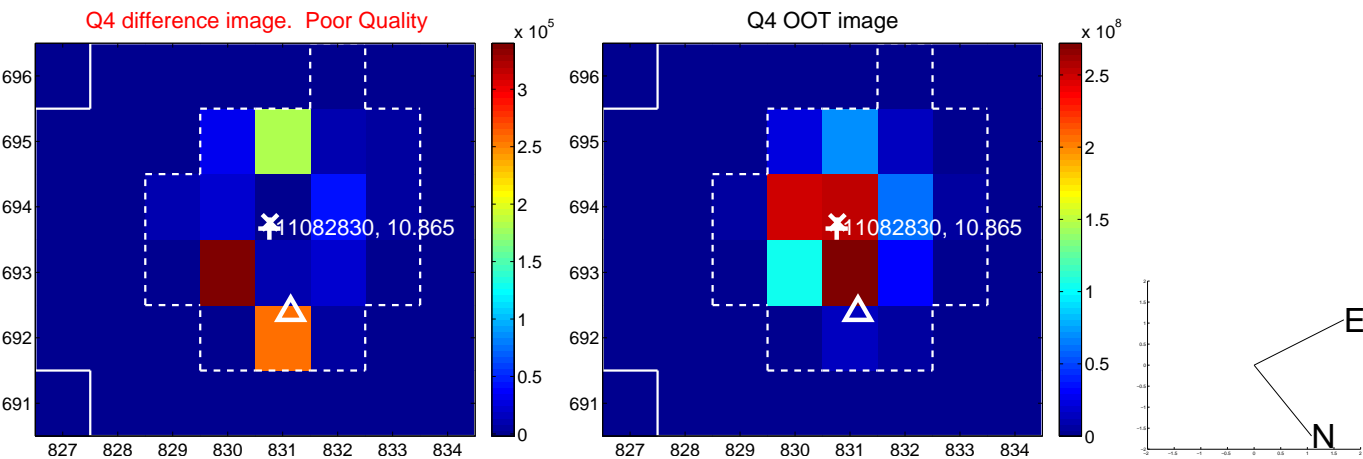
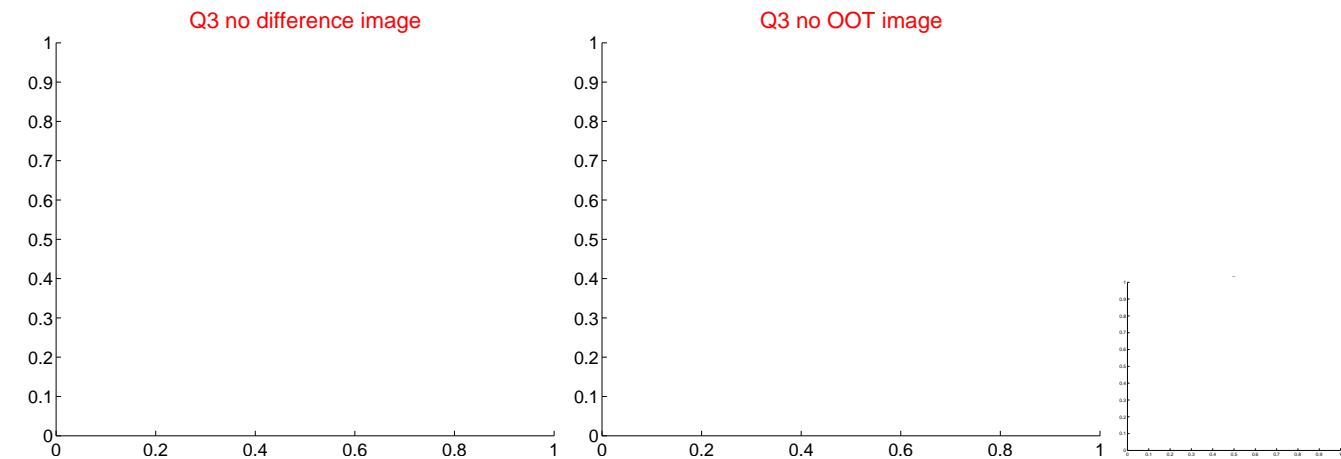
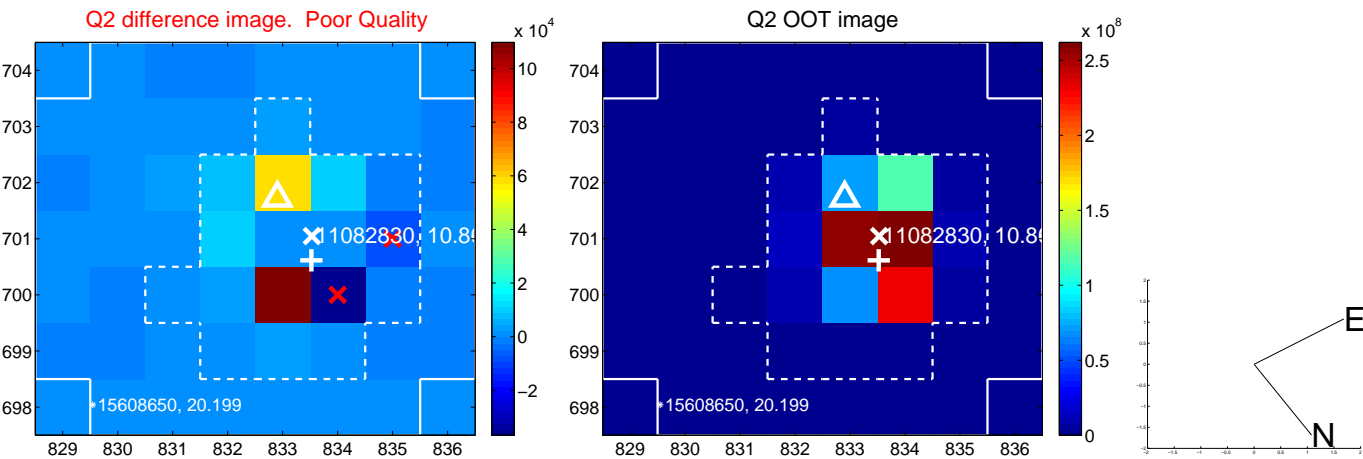


offset from photometric centroids

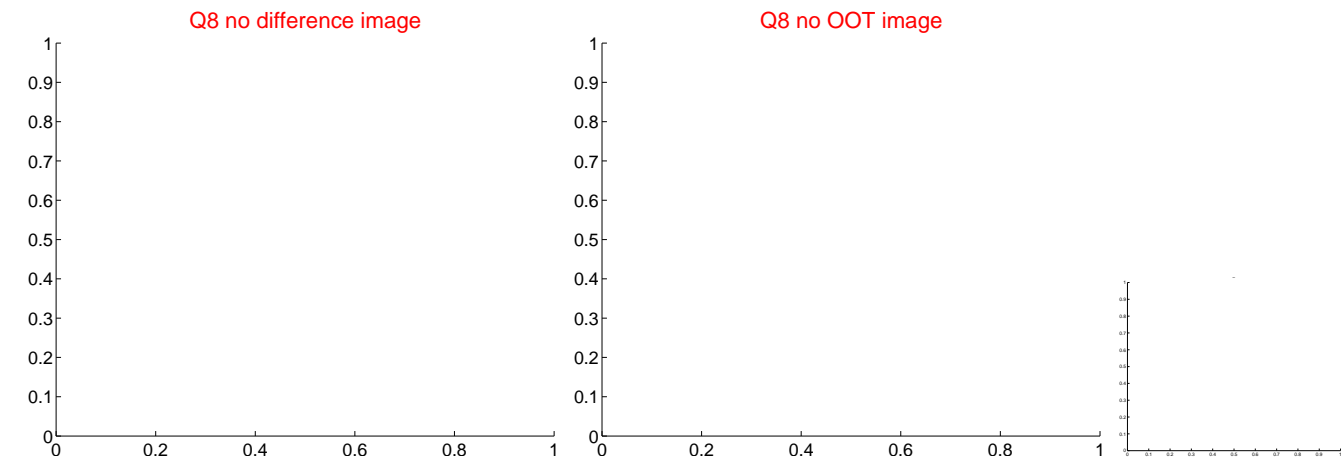
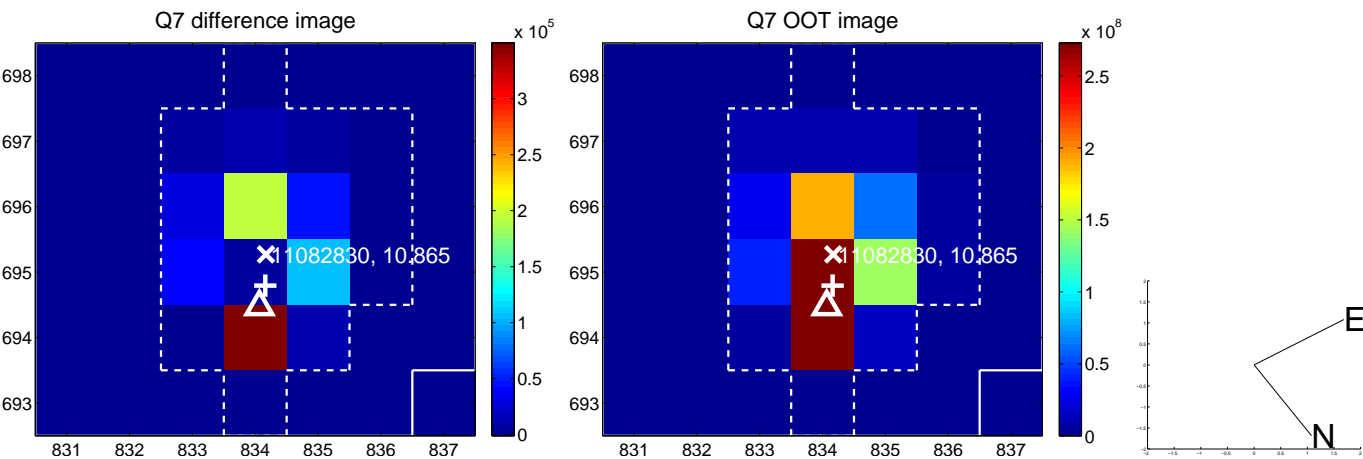
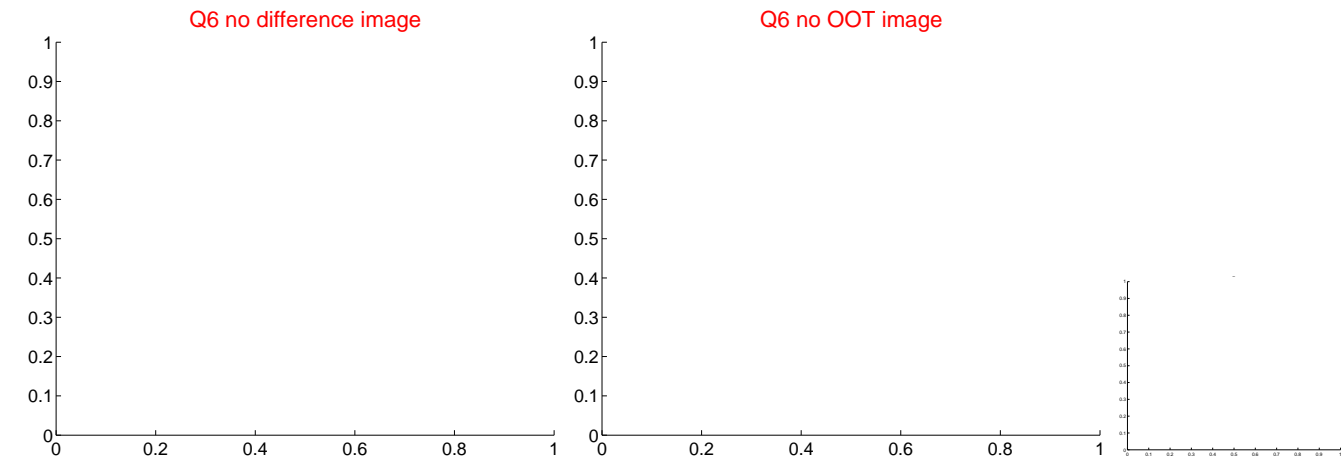


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

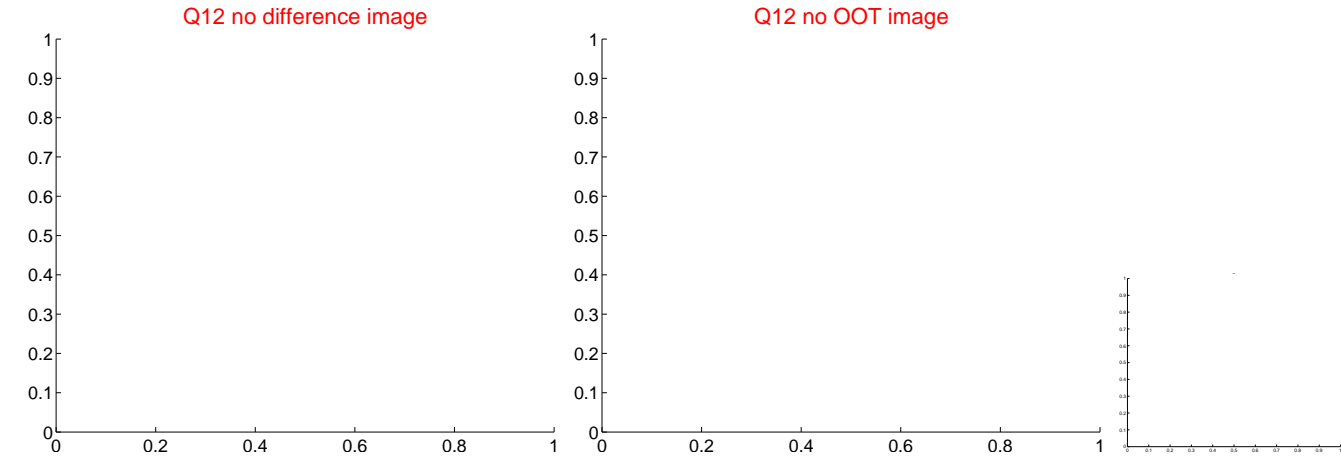
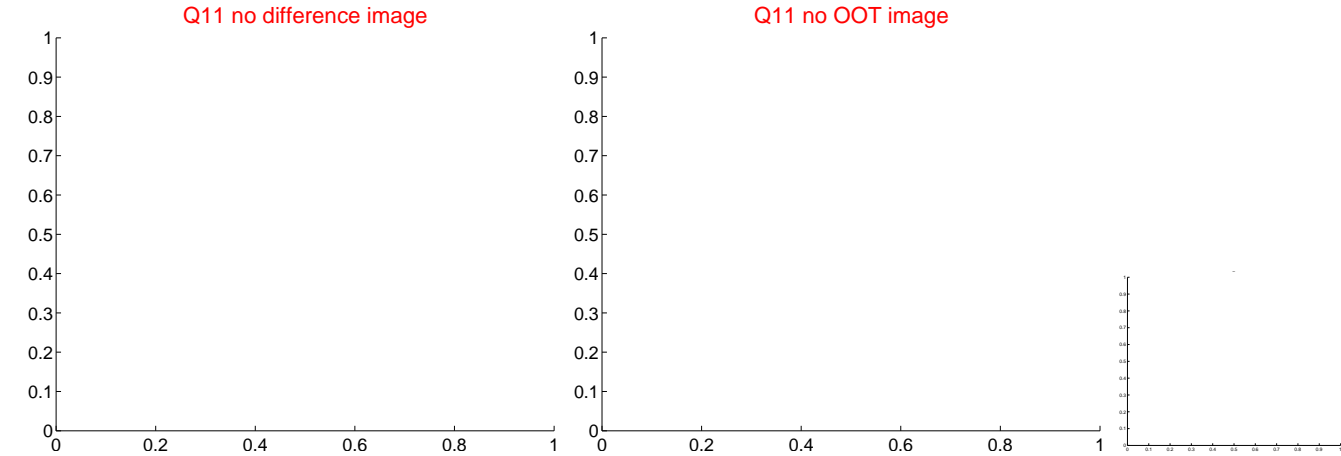
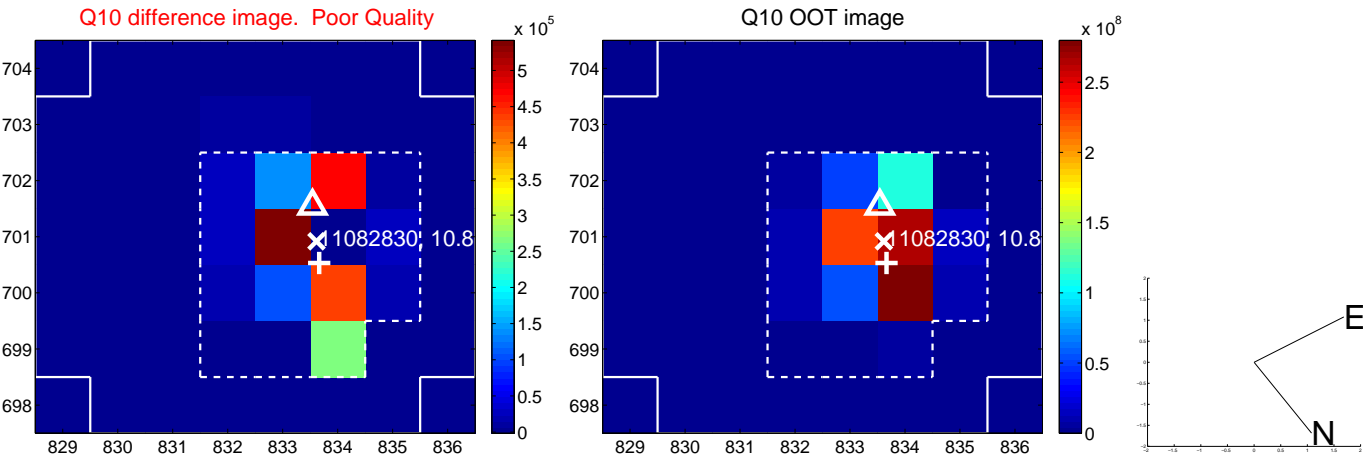
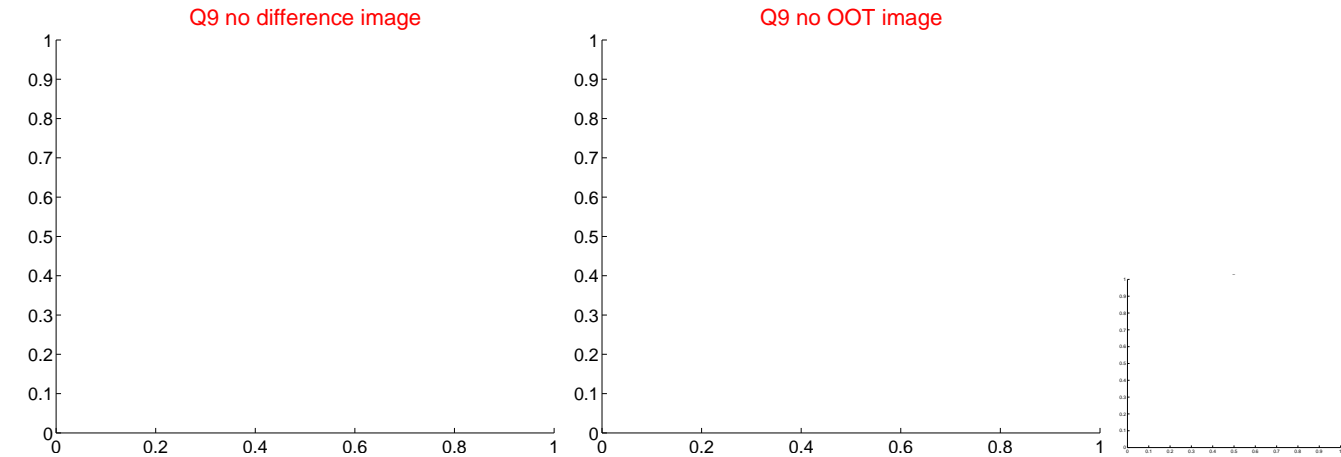
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

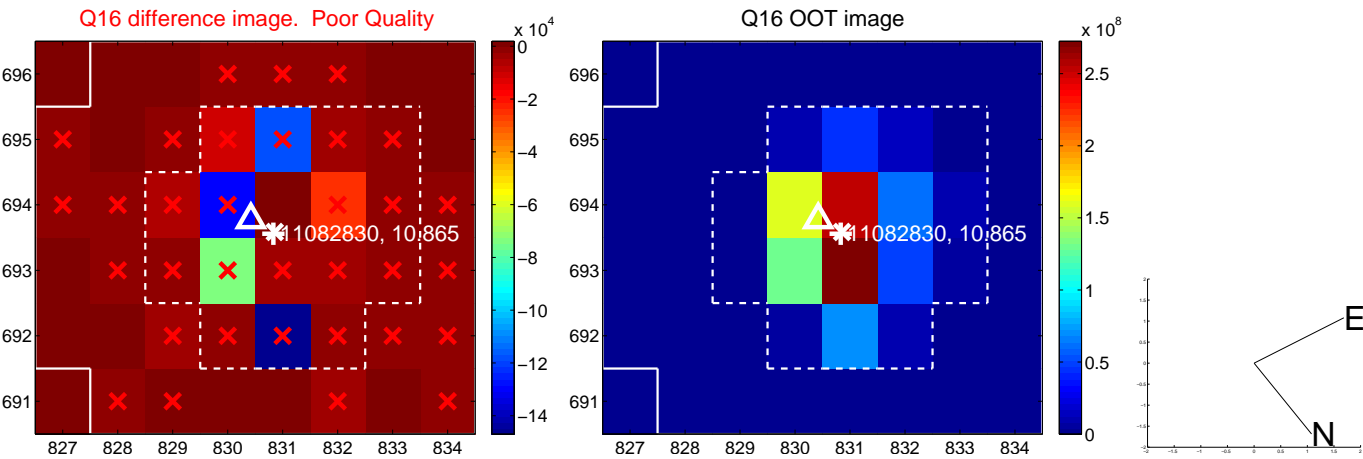
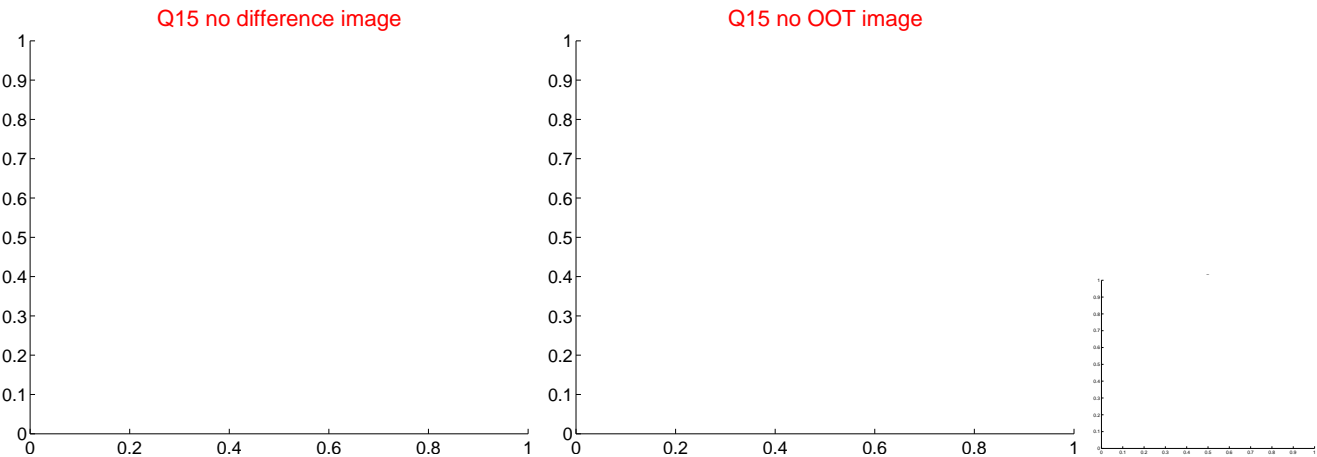
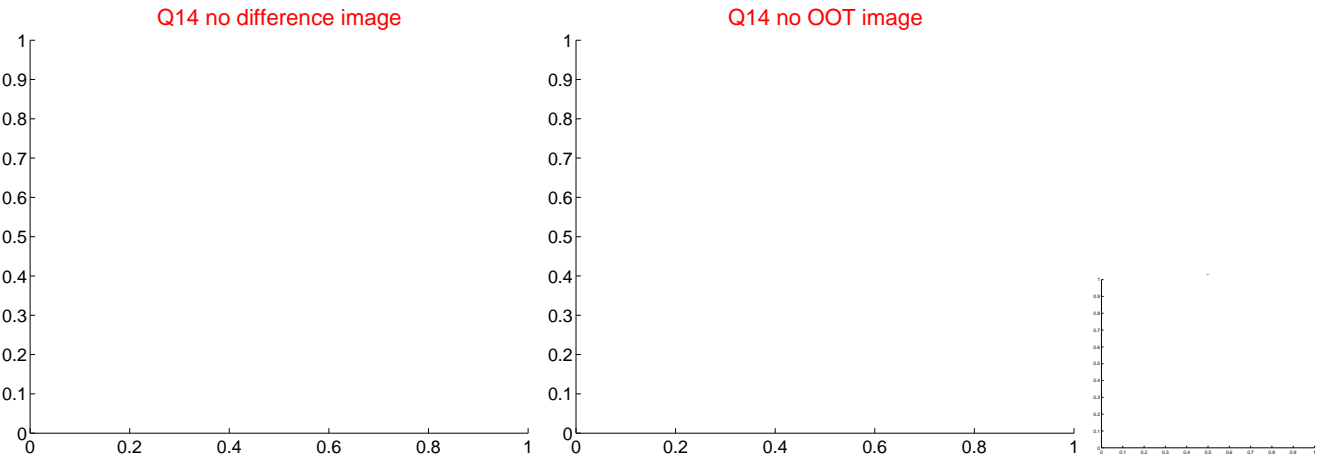
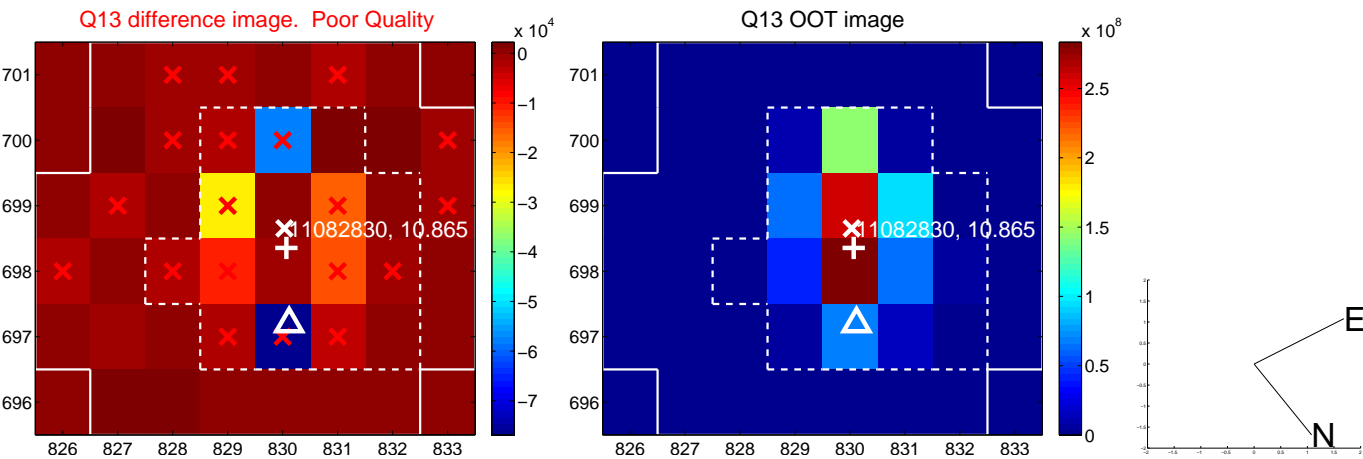


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

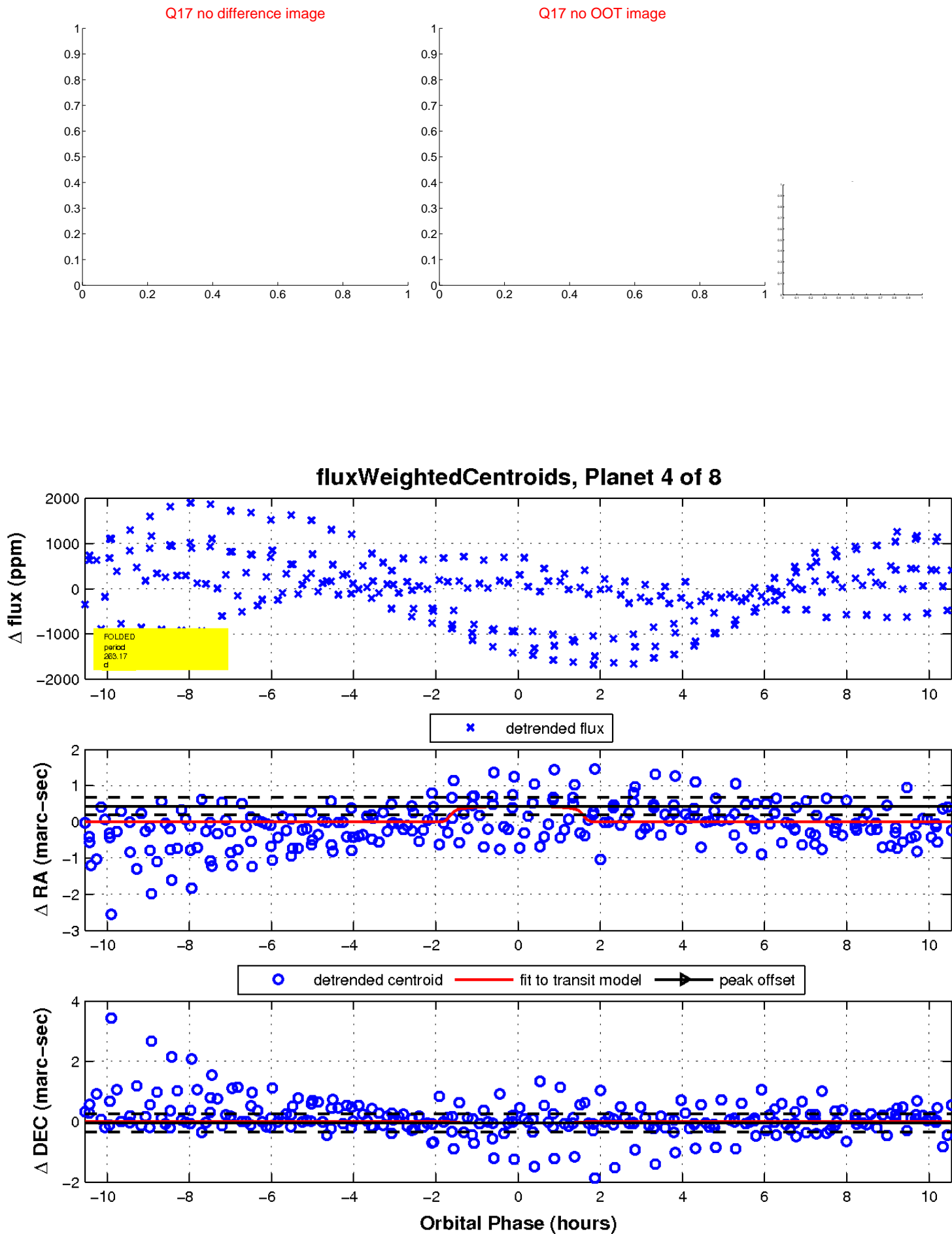




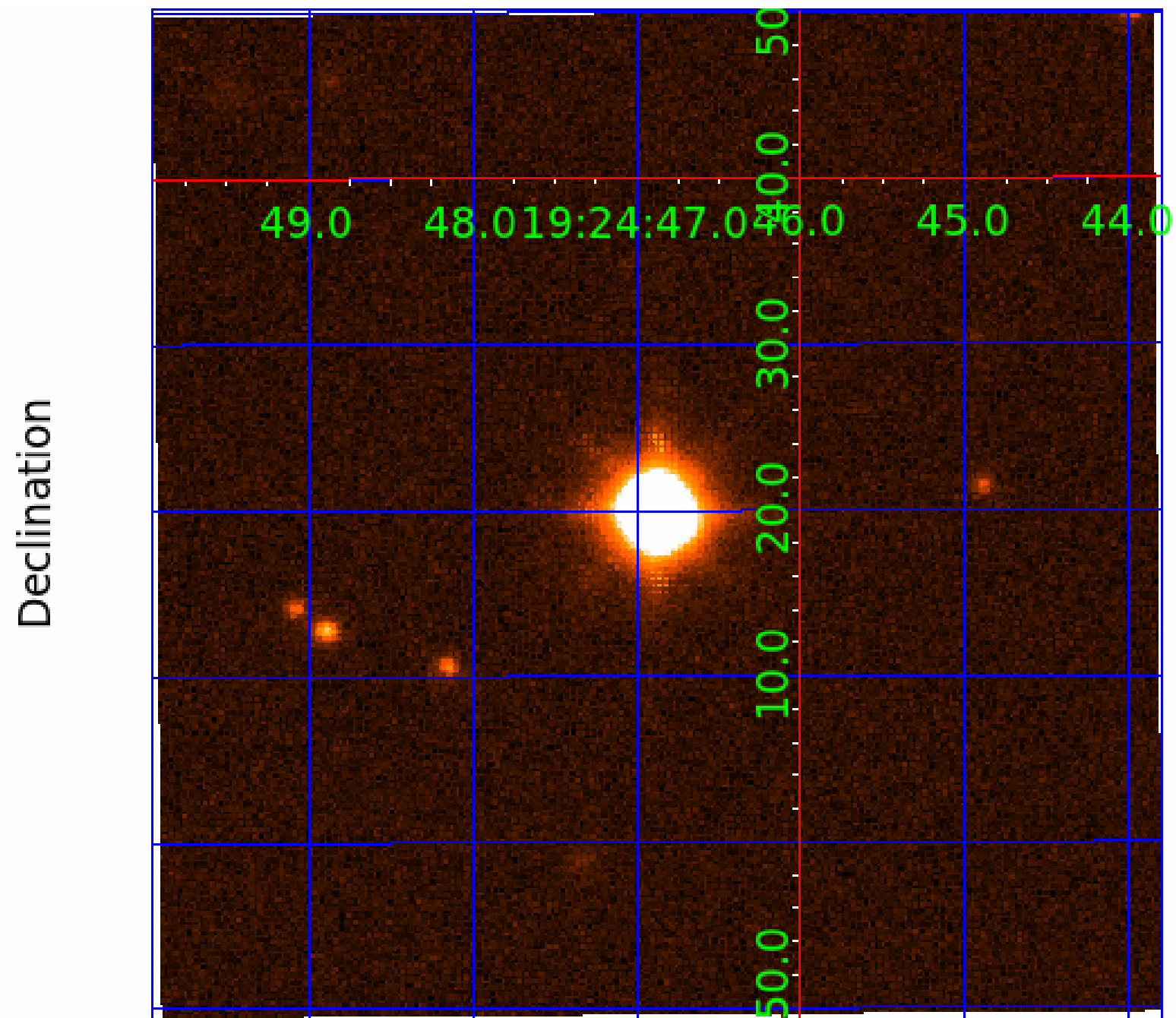
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



# KIC 011082830

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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011082830-02	OBS	No	3.626434	133.105257	66.3	6.601	8.1	5.5	2.22	7291	2.13	4352.22
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011082830-07	OBS	No	45.688762	156.143238	882.7	8.488	8.6	8.8	2.22	7291	12.30	148.46
011082830-08	OBS	No	414.726345	153.623511	57.7	6.000	7.8	-1.0	2.22	7291	1.71	7.84

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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011082830-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED—HALO_GHOST
011082830-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
011082830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
011082830-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

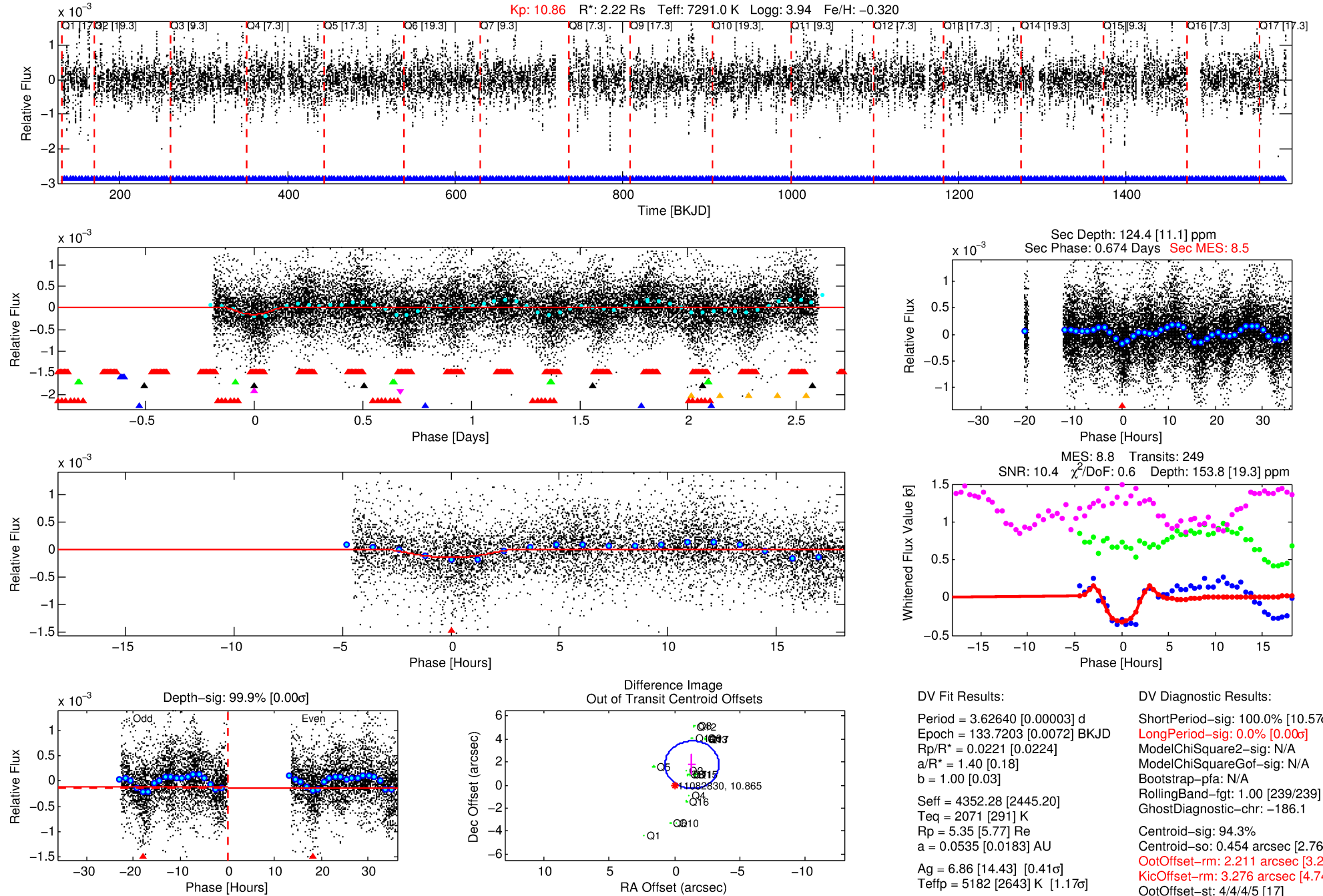
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011082830-05

No Significant Match Found

# DV One-Page Summary

KIC: 11082830 Candidate: 5 of 8 Period: 3.626 d



## DV Fit Results:

Period = 3.62640 [0.00003] d  
Epoch = 133.7203 [0.0072] BKJD  
Rp/R\* = 0.0221 [0.0224]  
a/R\* = 1.40 [0.18]  
b = 1.00 [0.03]  
Seff = 4352.28 [2445.20]  
Teff = 2071 [291] K  
Rp = 5.35 [5.77] Re  
a = 0.0535 [0.0183] AU  
Ag = 6.86 [14.43] [0.41σ]  
Teffp = 5182 [2643] K [1.17σ]

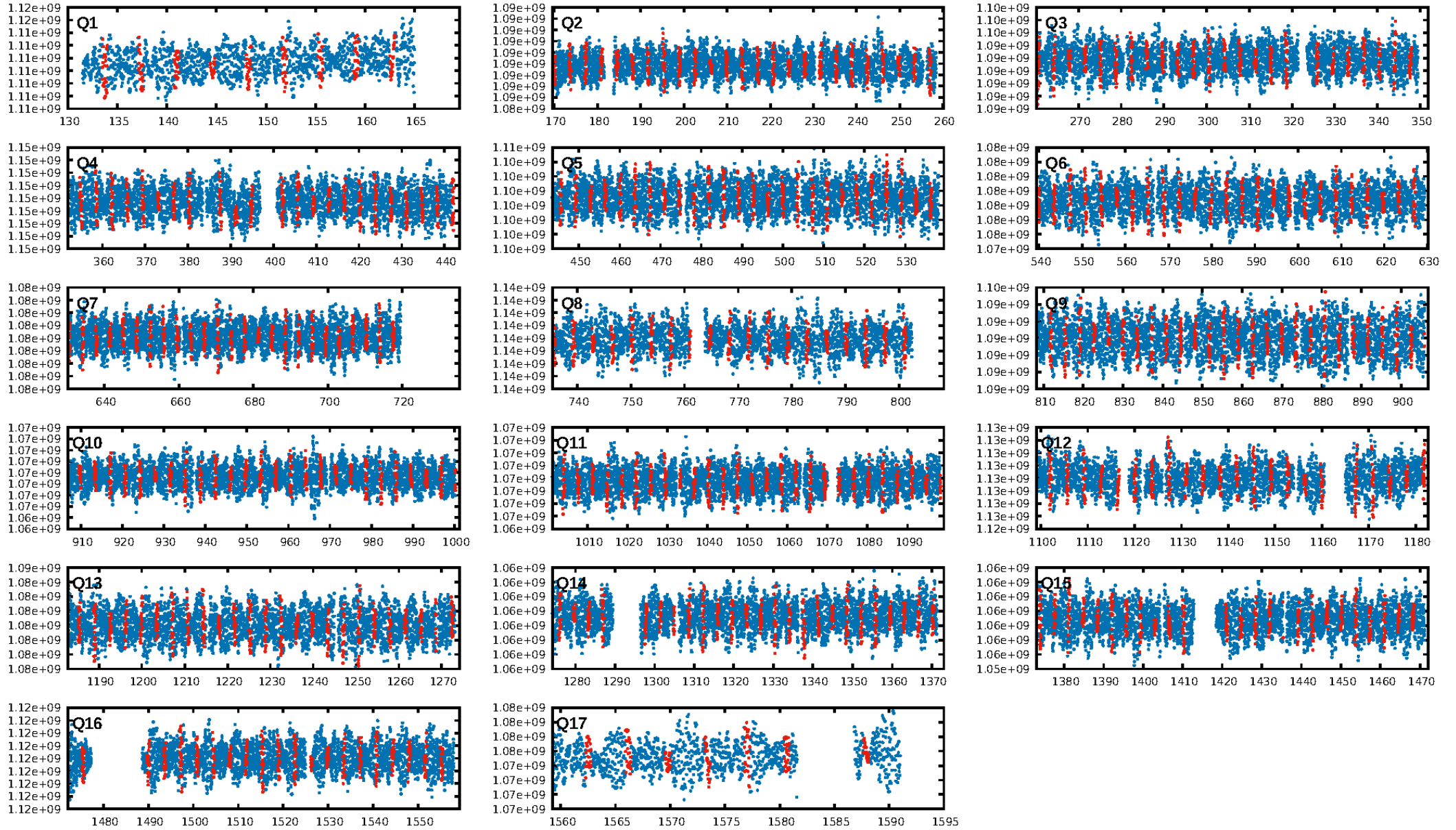
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.57σ]  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [239/239]  
GhostDiagnostic-chr: -186.1  
Centroid-sig: 94.3%  
Centroid-so: 0.454 arcsec [2.76σ]  
OotOffset-rm: 2.211 arcsec [3.21σ]  
KicOffset-rm: 3.276 arcsec [4.74σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.41 [7/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:41:29 Z

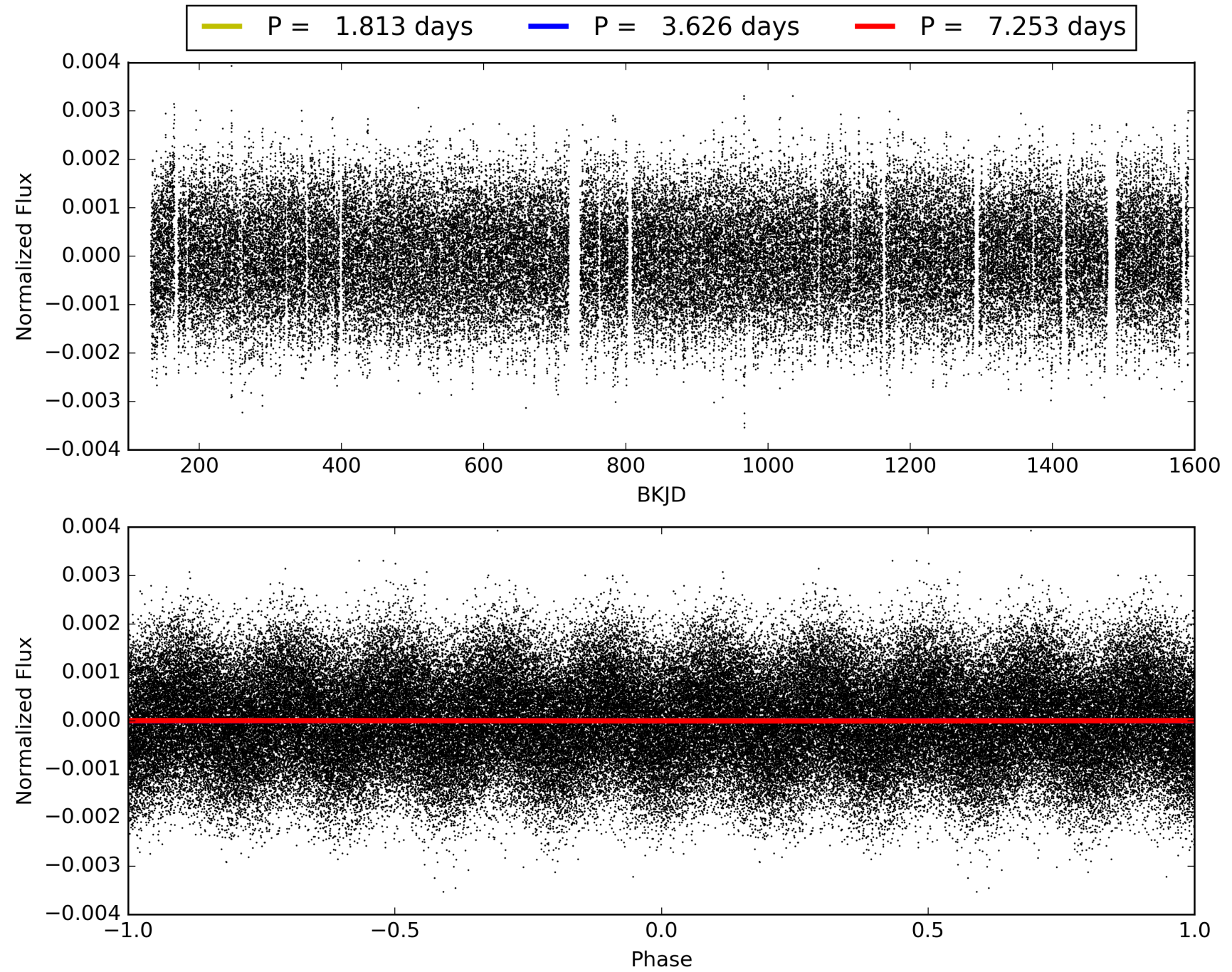
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011082830-05, PDC Light Curves



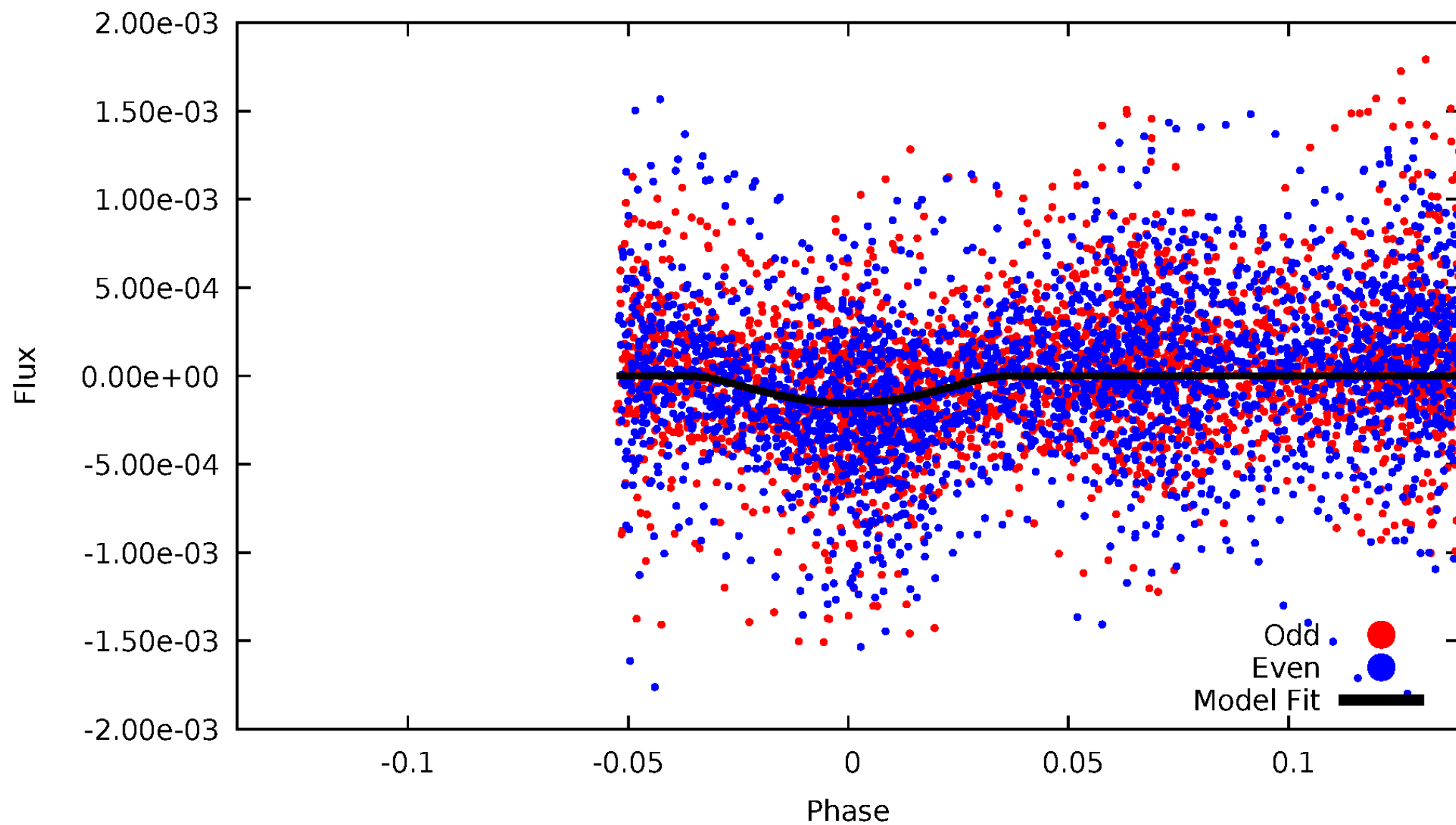


# TCE 011082830-05



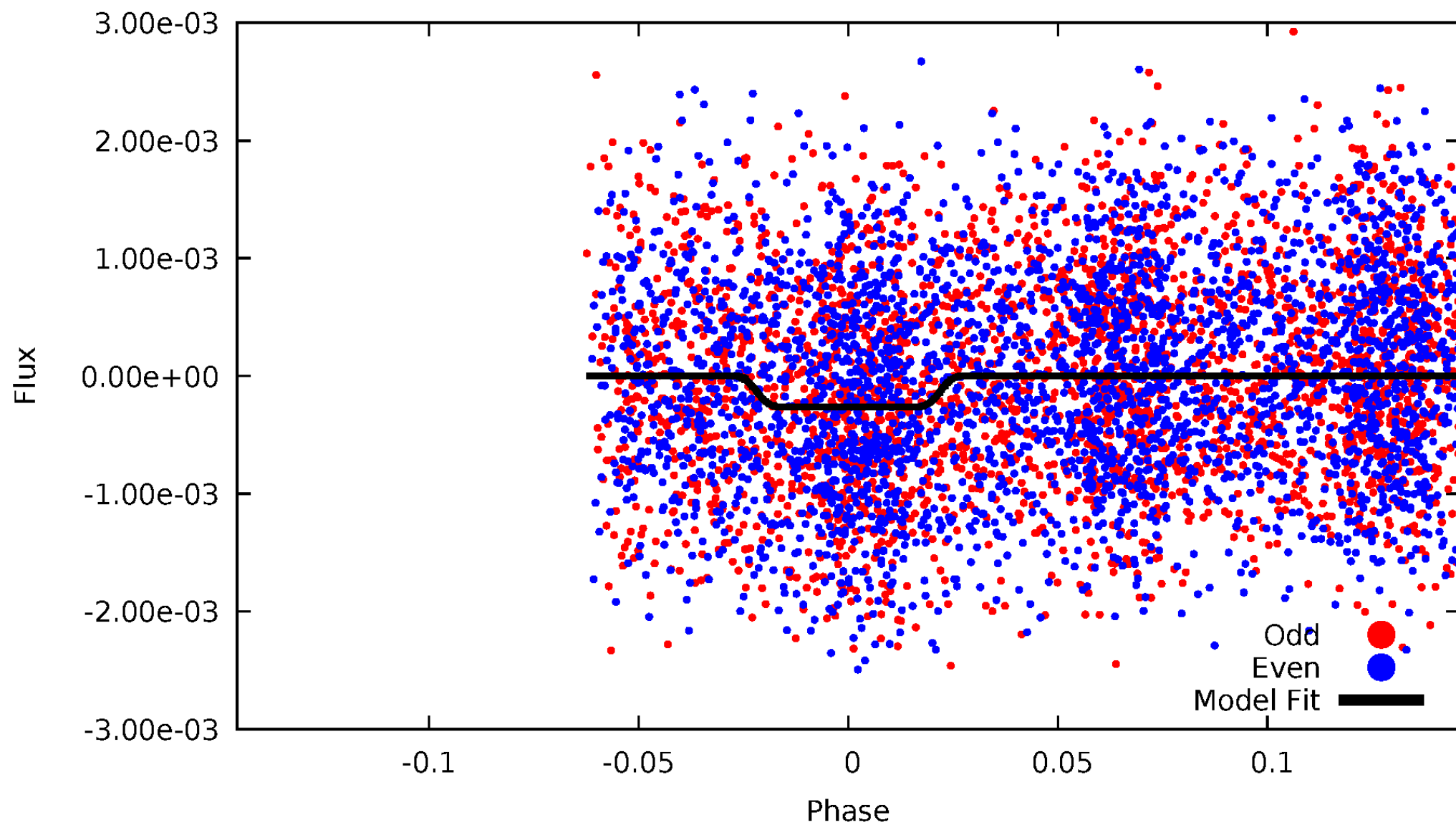
# DV Odd/Even

TCE 011082830-05



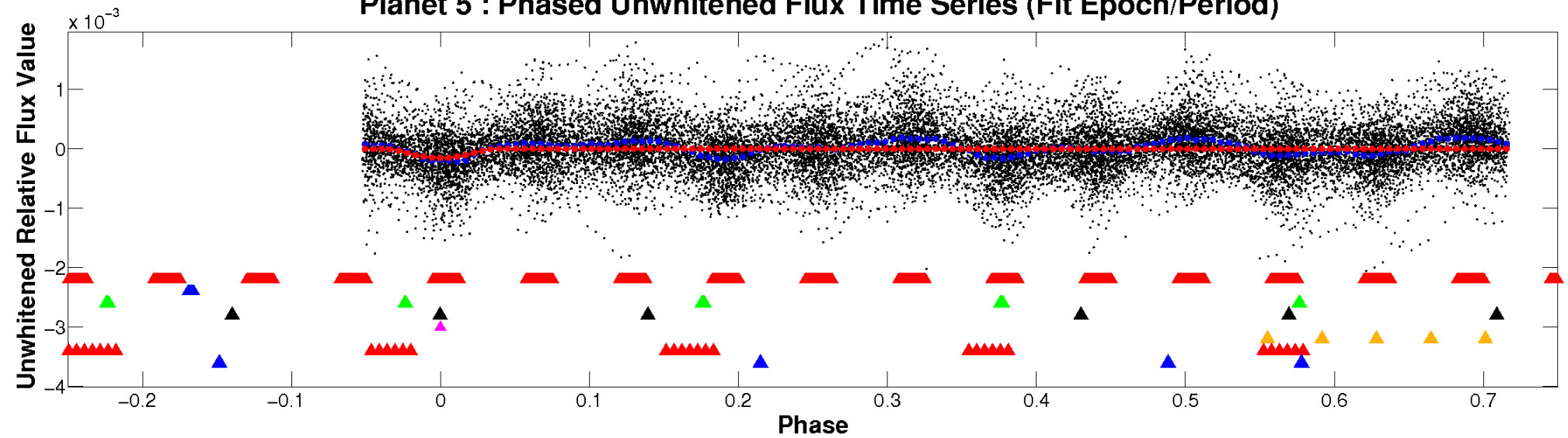
# ALT Odd/Even

TCE 011082830-05

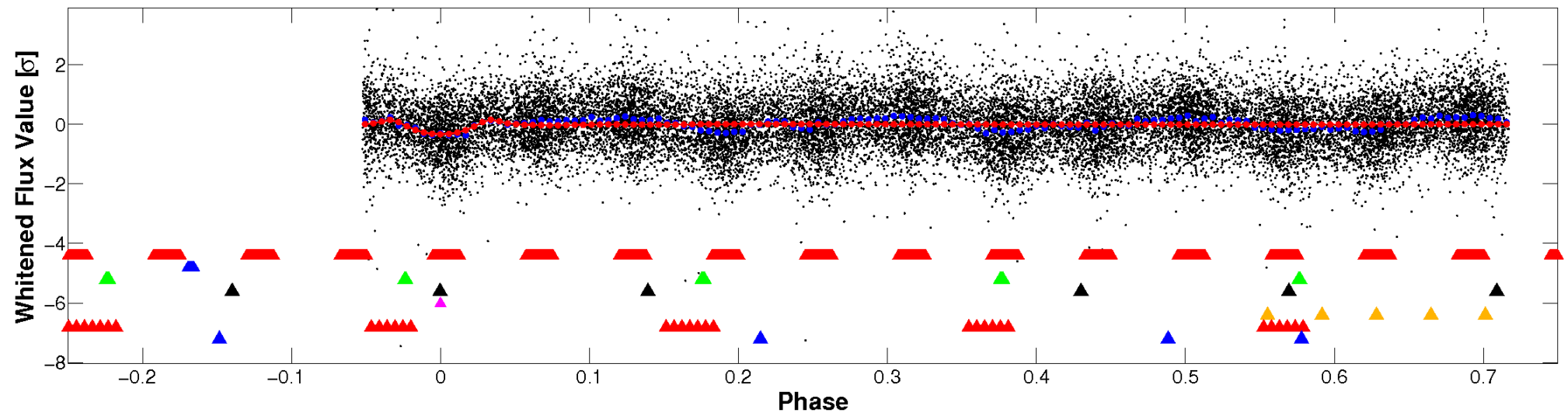


# Non-Whitened Vs. Whitened Light Curve

## Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



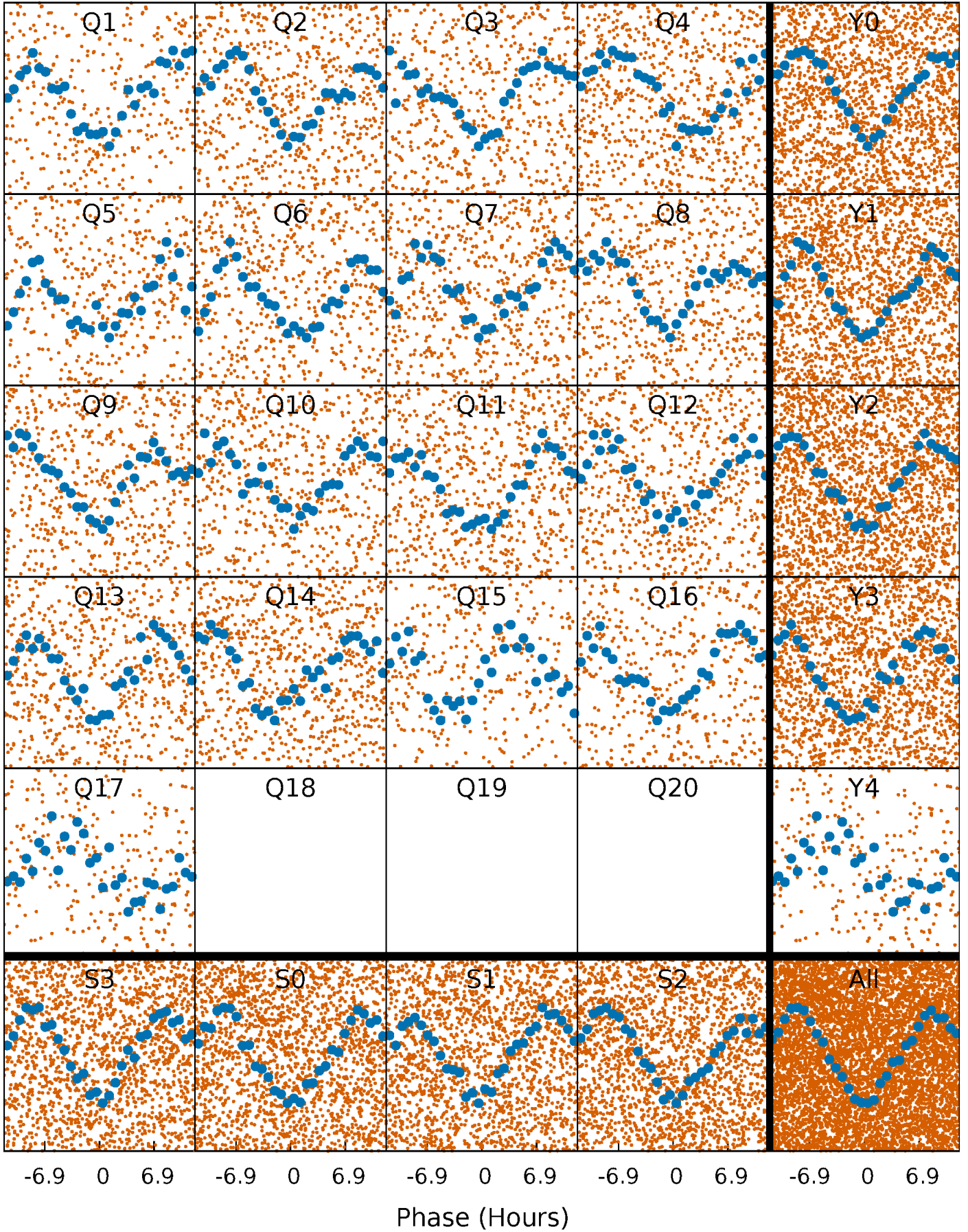
## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)





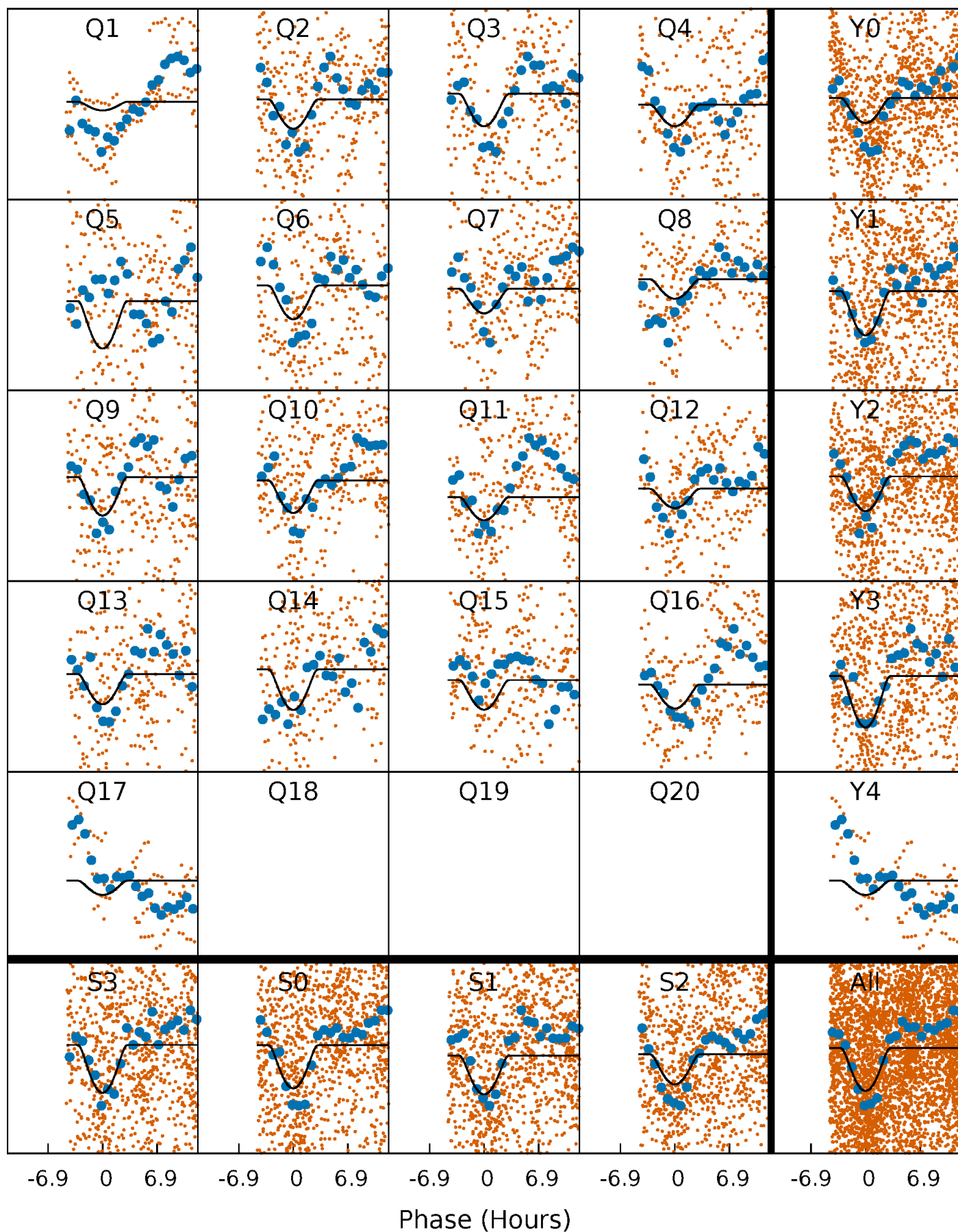
# PDC Quarter-Phased Transit Curves

TCE 011082830-05   P= 3.626397 Days    $T_0=133.720256$  (BKJD)



# DV Quarter-Phased Transit Curves

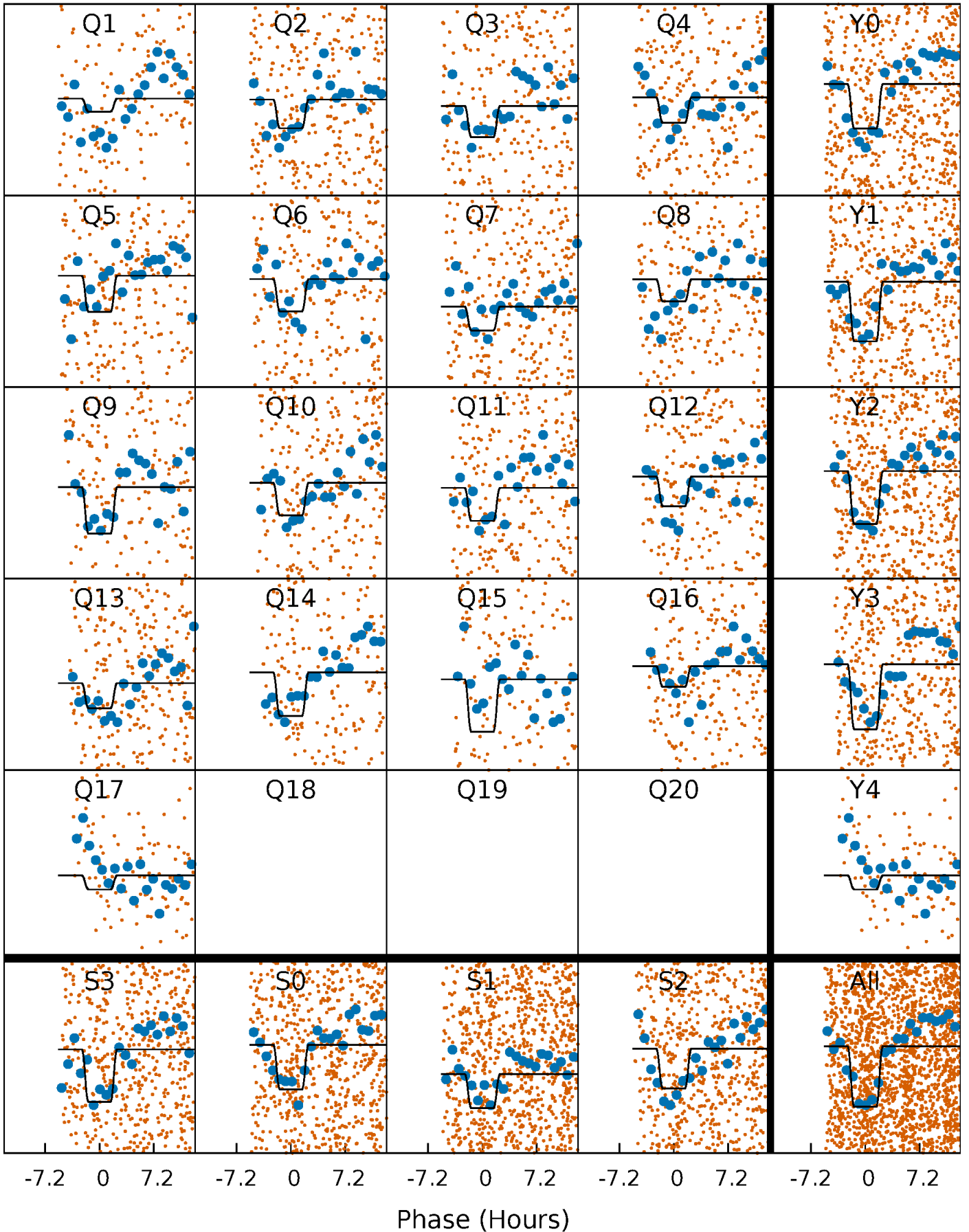
TCE 011082830-05     $P = 3.626397$  Days     $T_0 = 133.720256$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

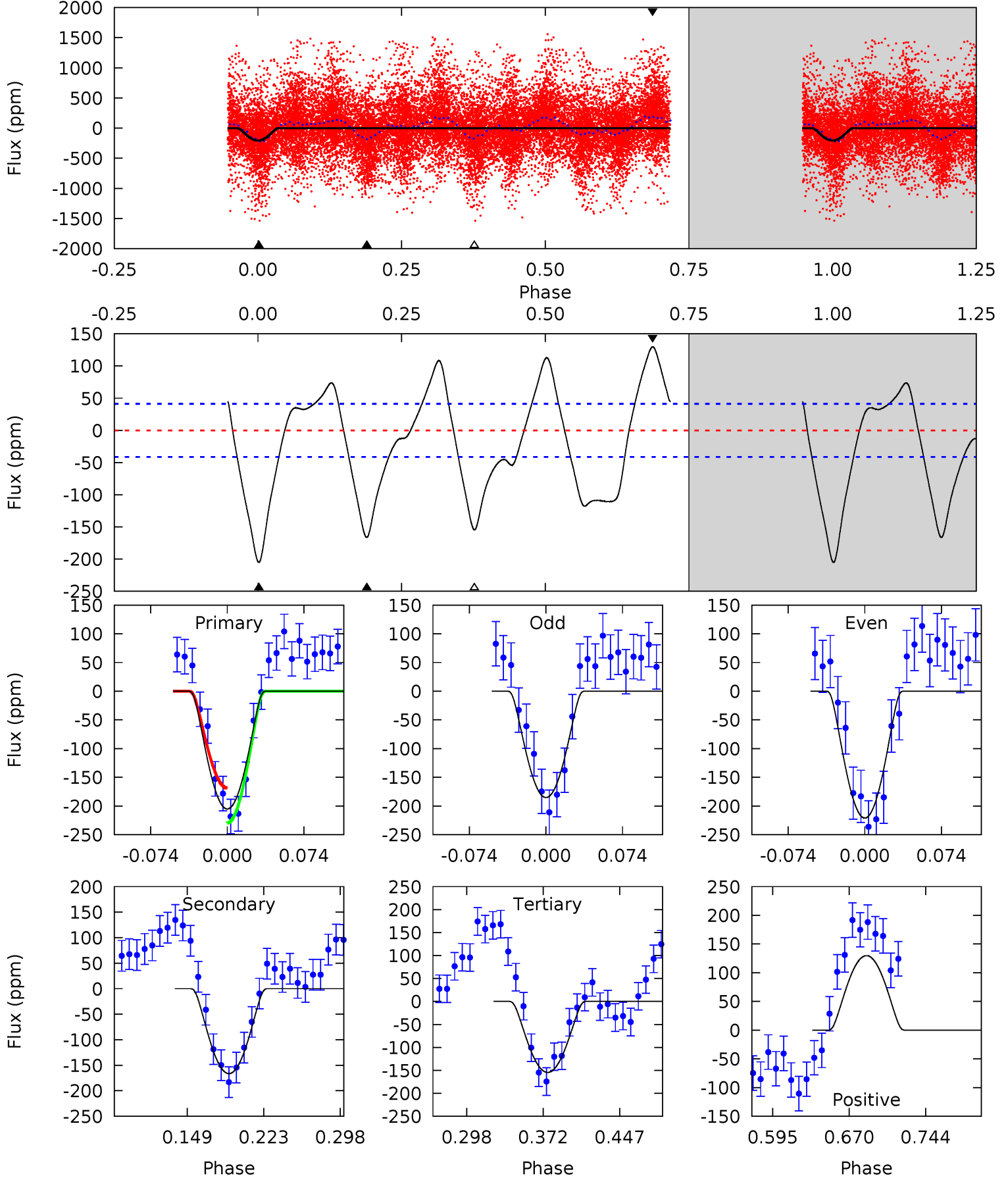
TCE 011082830-05     $P = 3.626222$  Days     $T_0 = 133.757138$  (BKJD)



# DV Model-Shift Uniqueness Test

011082830-05, P = 3.626397 Days, E = 130.093859 Days

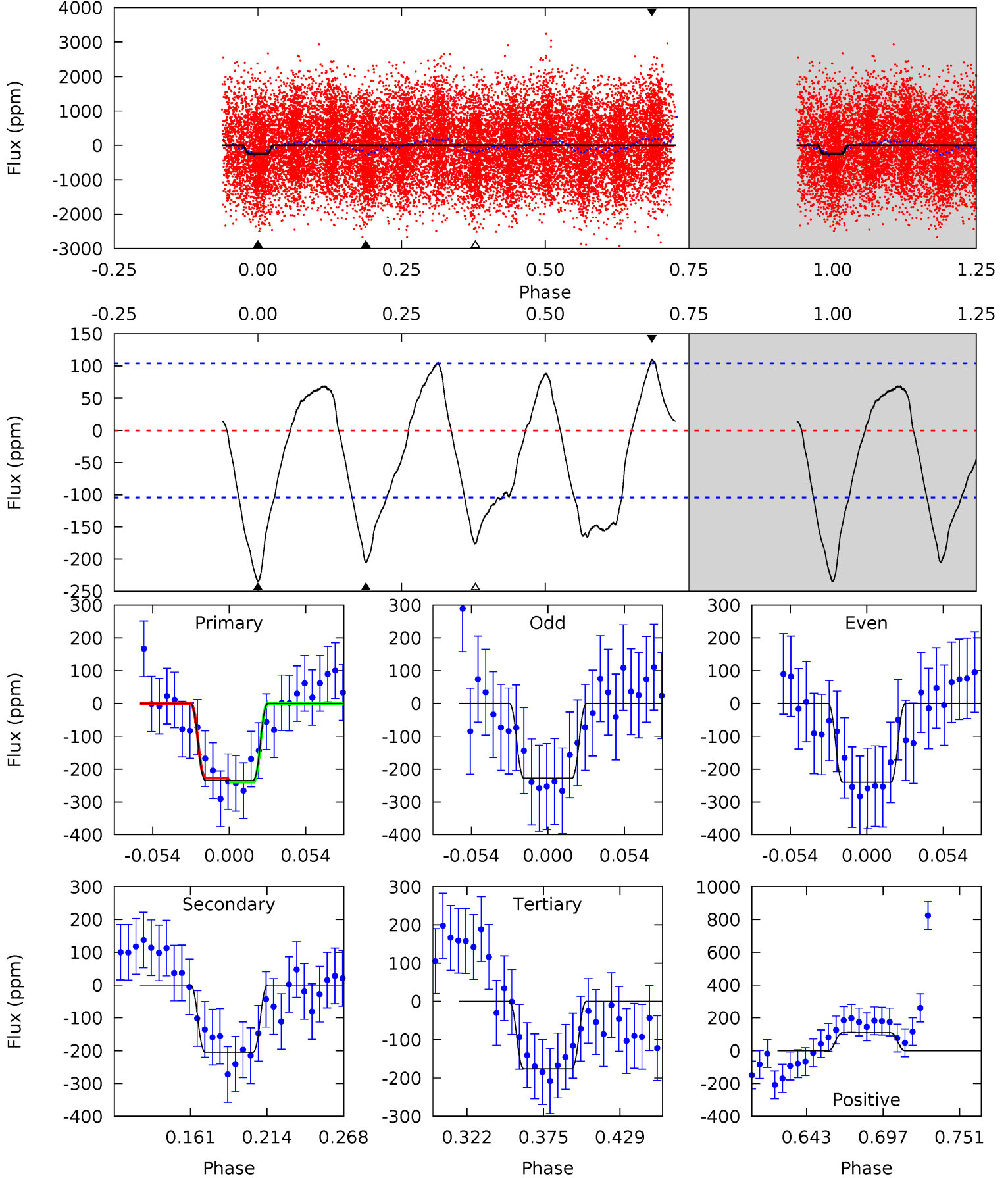
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.0	18.6	17.3	14.5	4.63	1.78	9.49	5.67	8.43	1.33	4.09	2.02	0.93	0.39	3.43



# Alt Model-Shift Uniqueness Test

011082830-05, P = 3.626222 Days, E = 130.130916 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	9.23	7.92	4.94	4.69	1.93	4.10	2.62	5.60	1.30	4.28	0.28	1.10	0.32	0.27



### Stellar Parameters For KIC 011082830

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7291^{+203}_{-279}$	$3.937^{+0.315}_{-0.135}$	$-0.320^{+0.250}_{-0.350}$	$2.218^{+0.536}_{-0.804}$	$1.549^{+0.215}_{-0.323}$	$0.200^{+0.483}_{-0.083}$
	+3%/-4%	+8%/-3%	+78%/-109%	+24%/-36%	+14%/-21%	+242%/-42%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011082830-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-166 \pm 9$	$6.19^{+4.99}_{-3.94}$	$2831^{+207}_{-267}$	$4984^{+3332}_{-1039}$	$6.782^{+42.191}_{-4.697}$
Alt.	$-205 \pm 22$	$5.06^{+4.73}_{-3.49}$	$2837^{+224}_{-292}$	$5728^{+5598}_{-1366}$	$13^{+110}_{-9}$

$T_{max}$  = Theoretical Maximum Planetary Temperature  
 $T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

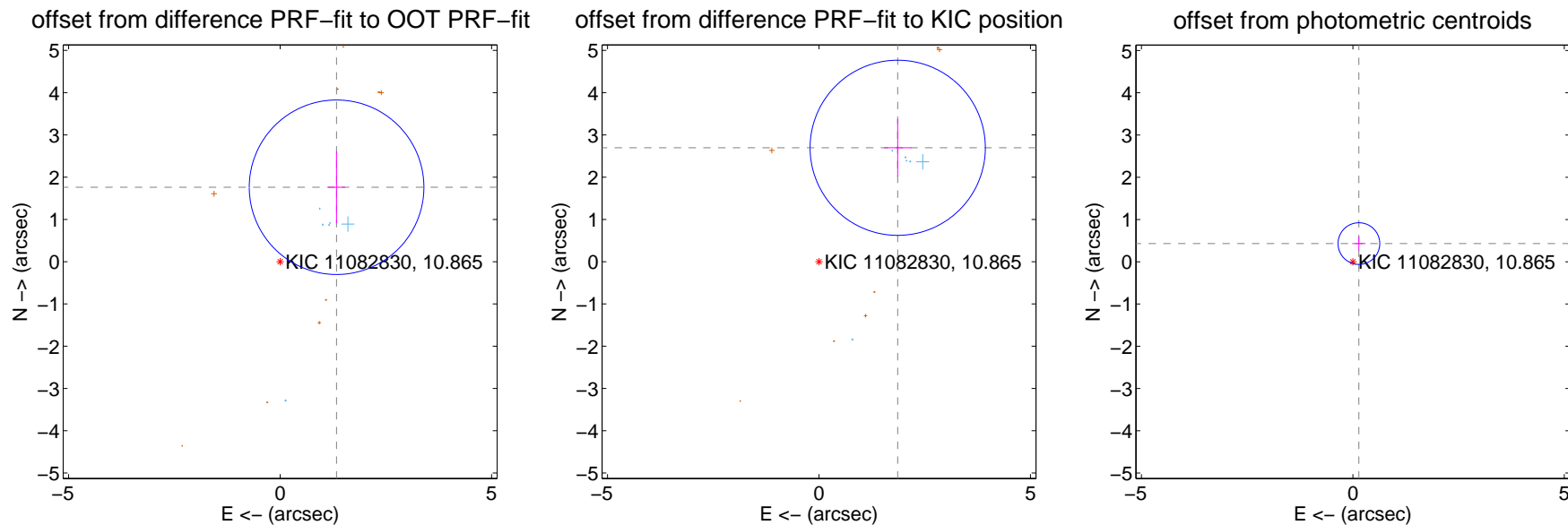
## DV Centroid Data

Supplemental centroid analysis for 011082830-05. **Kepler magnitude: 10.87.** Transit SNR 10.42

There are 7 quarters with good PRF difference image offsets

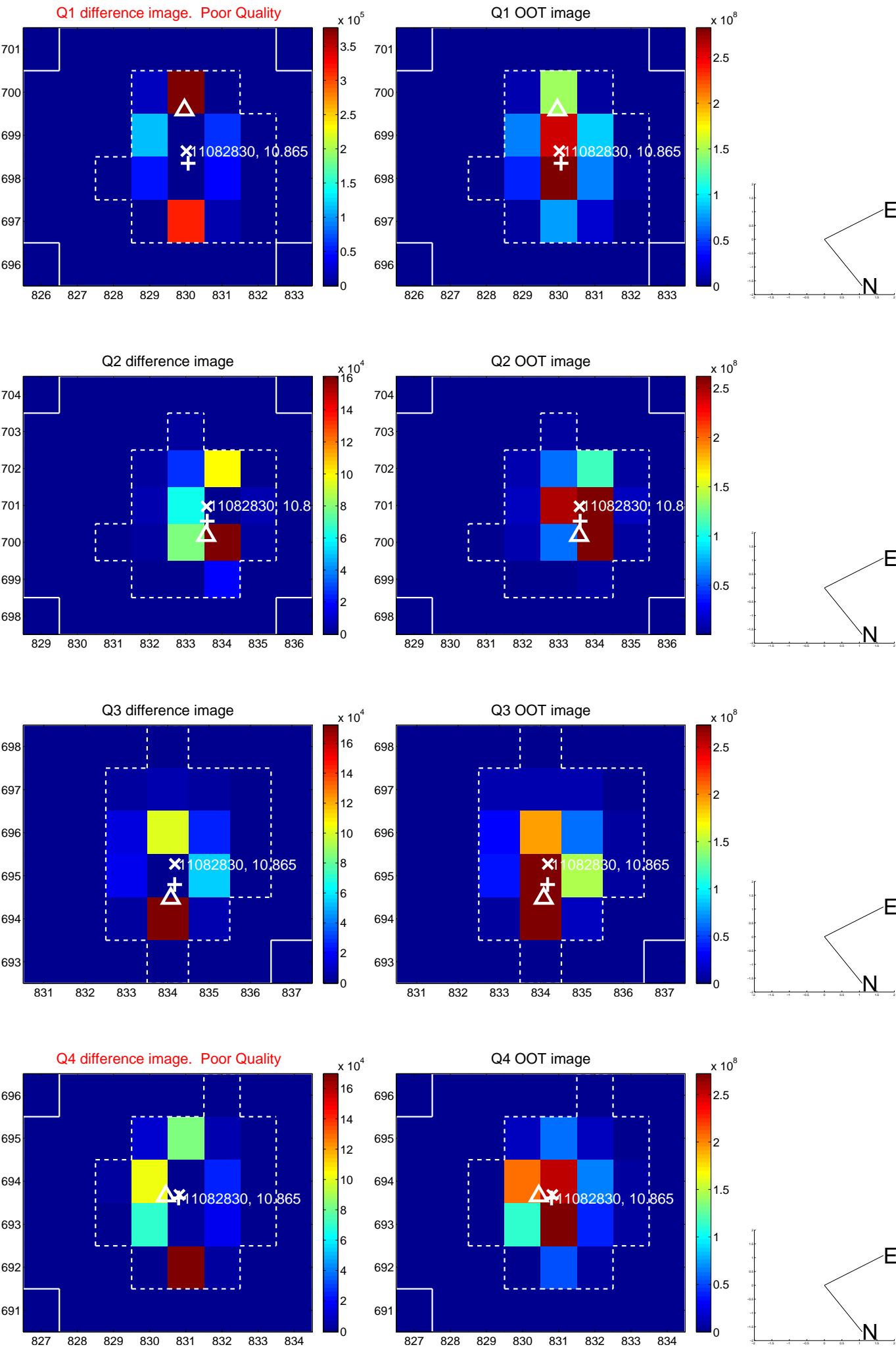
The direct PRF centroid is offset from the target star catalog position by about 1.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>2.211 \pm 0.688</math></b>	<b>3.21</b>	$-1.335 \pm 0.200$	$1.762 \pm 0.850$
PRF-fit source offset from KIC position	<b><math>3.276 \pm 0.691</math></b>	<b>4.74</b>	$-1.862 \pm 0.323$	$2.695 \pm 0.680$
photometric centroid source offset	$0.45 \pm 0.16$	2.76	$-0.14 \pm 0.16$	$0.43 \pm 0.17$



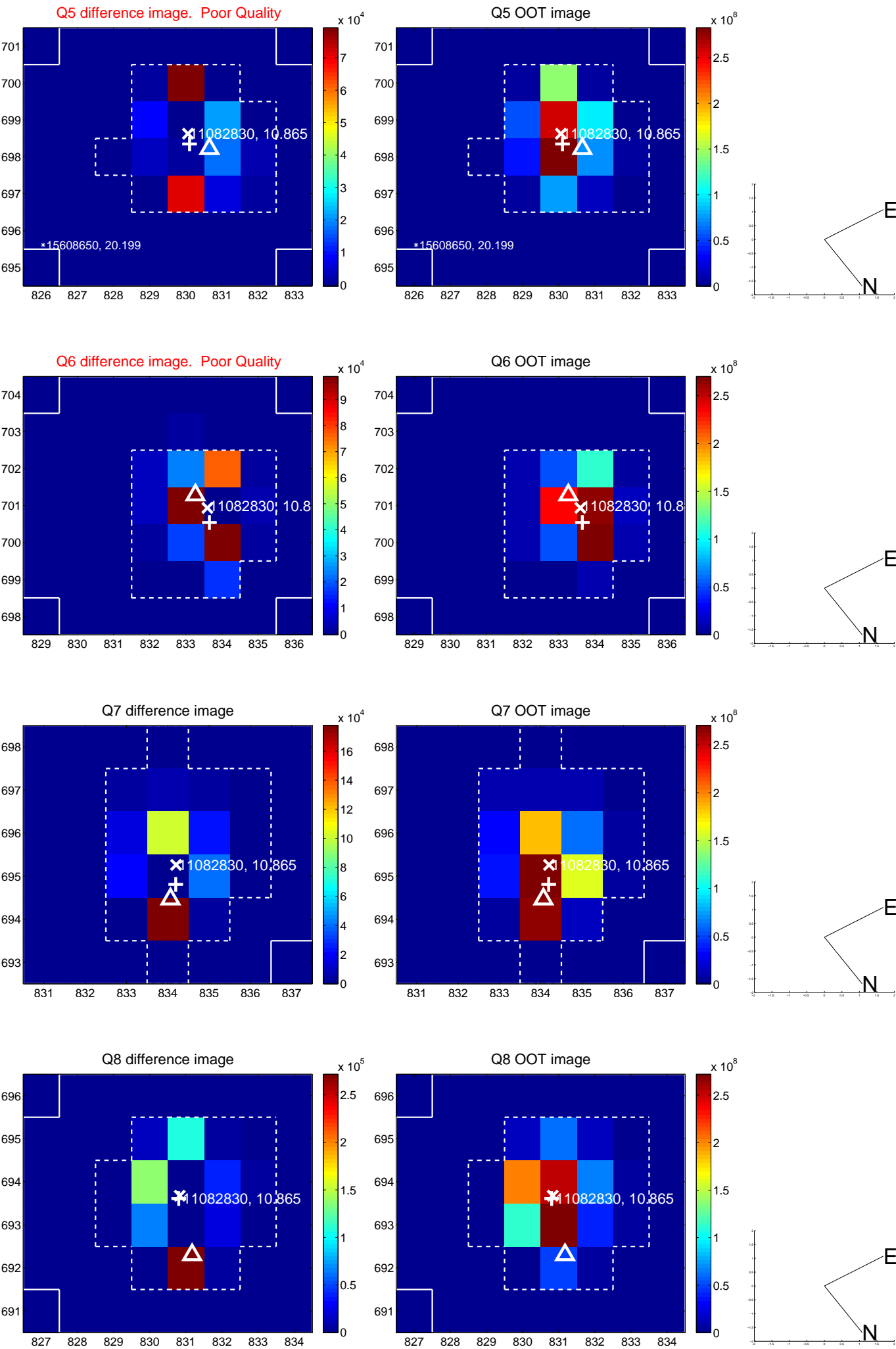
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

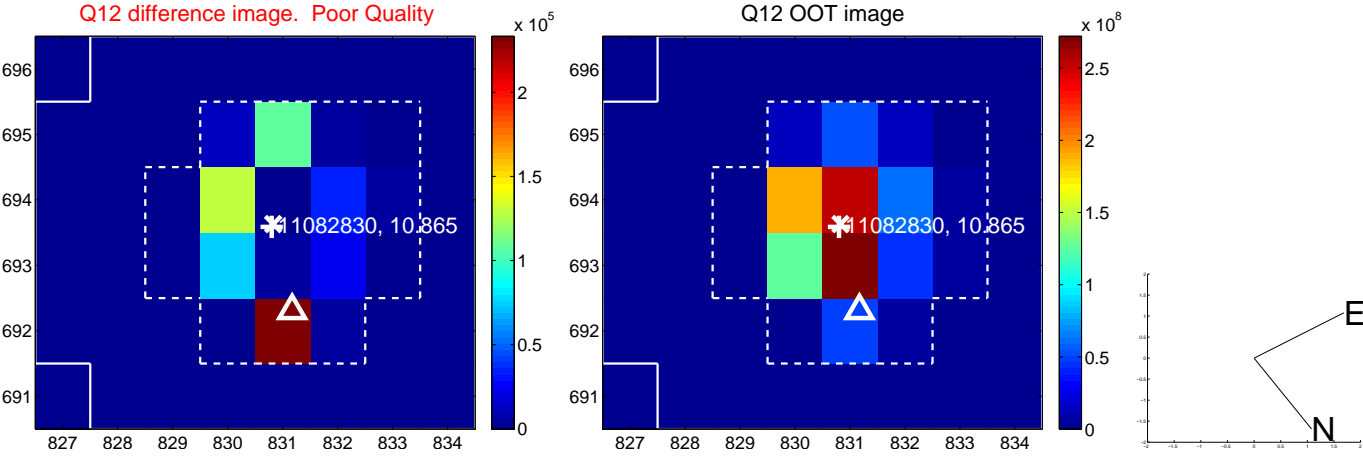
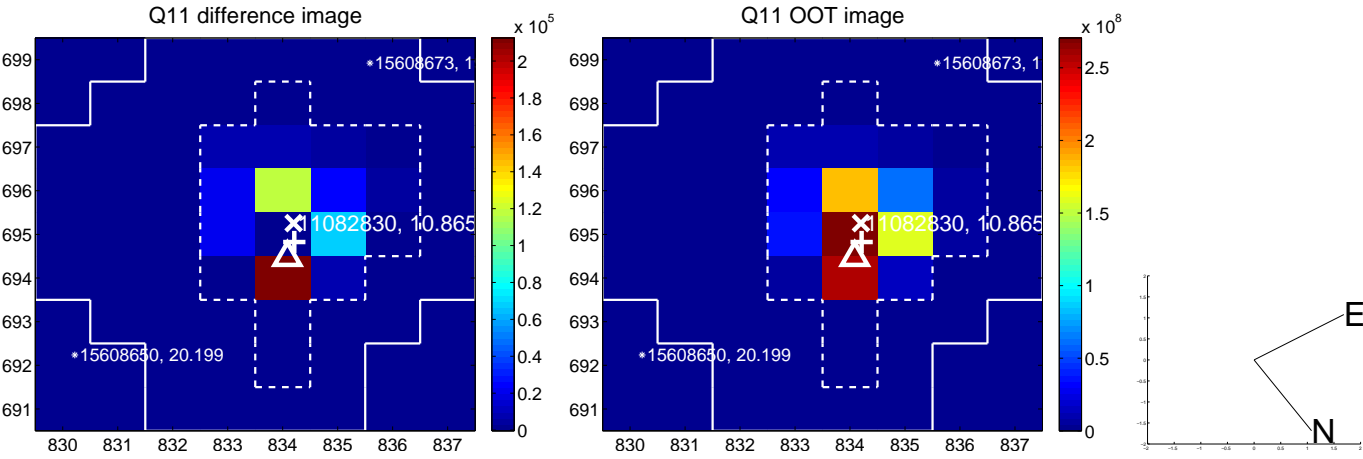
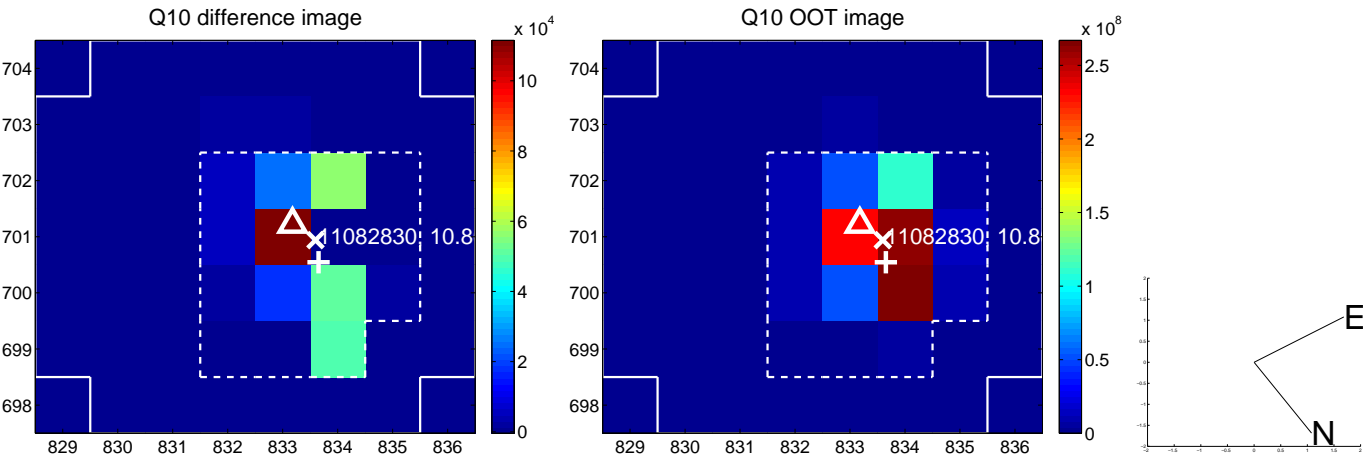
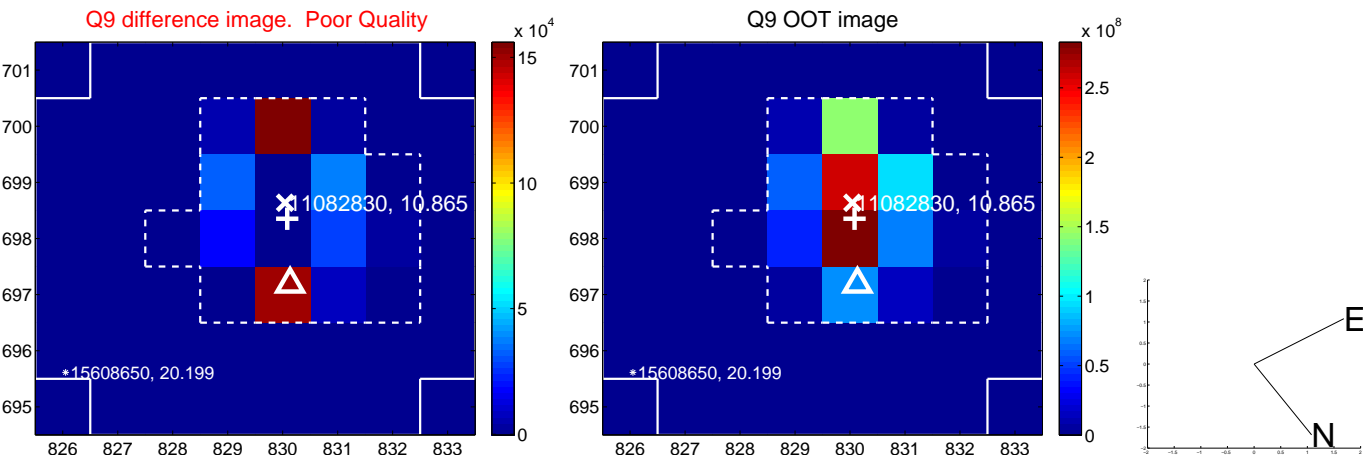




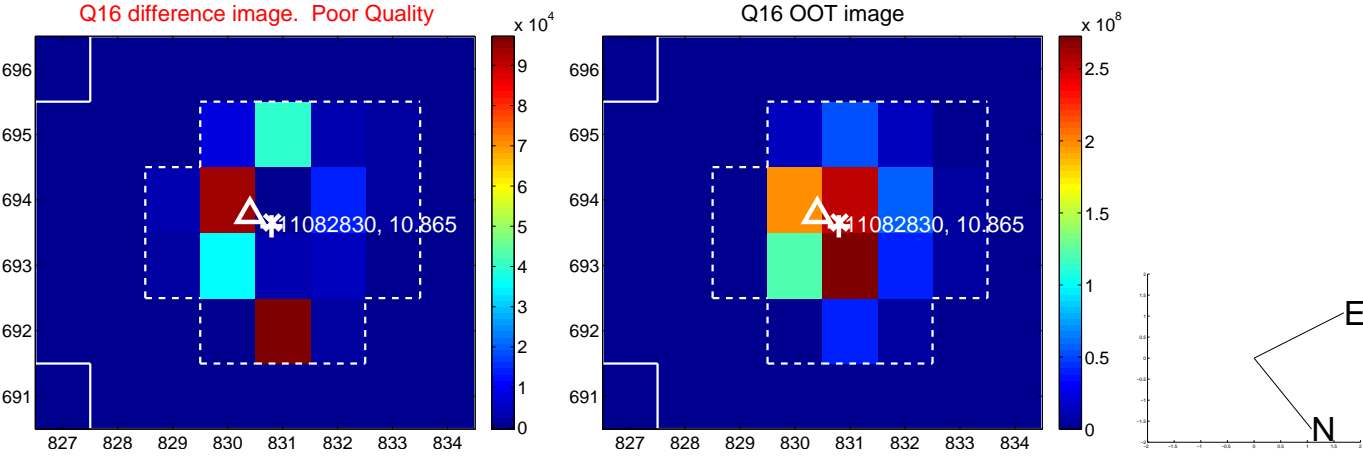
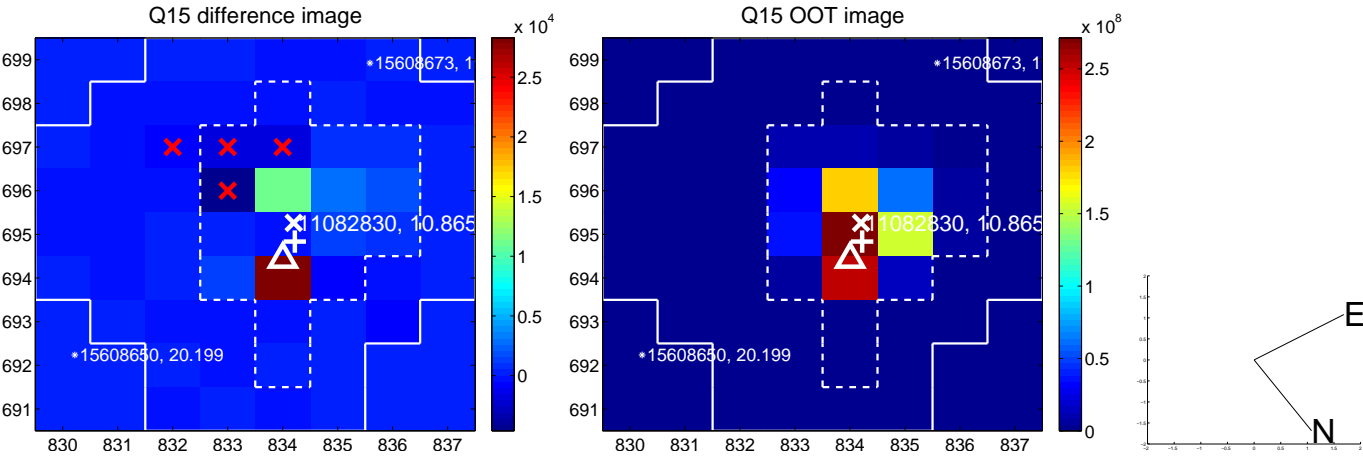
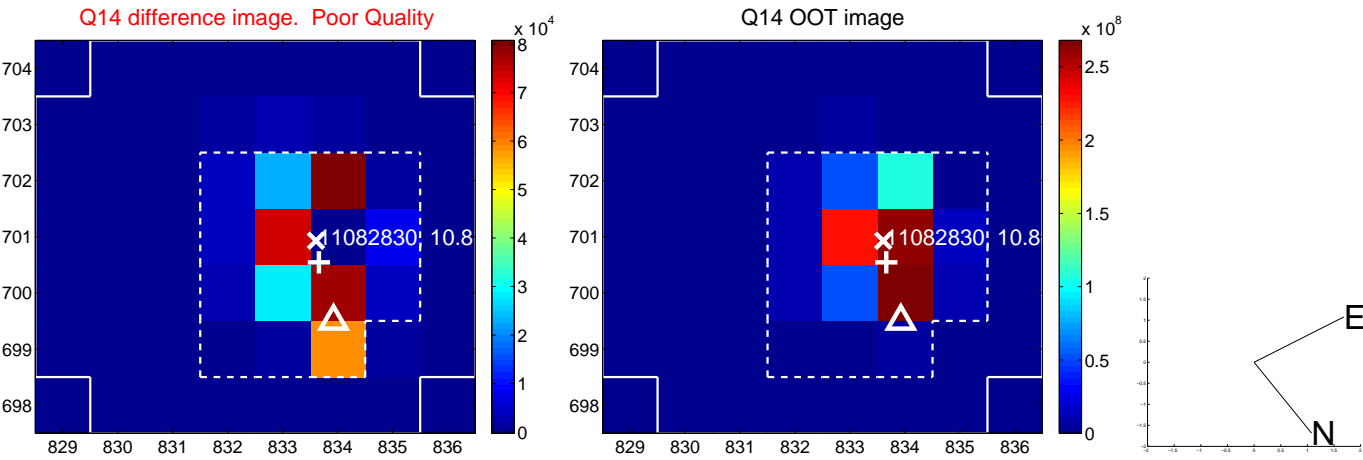
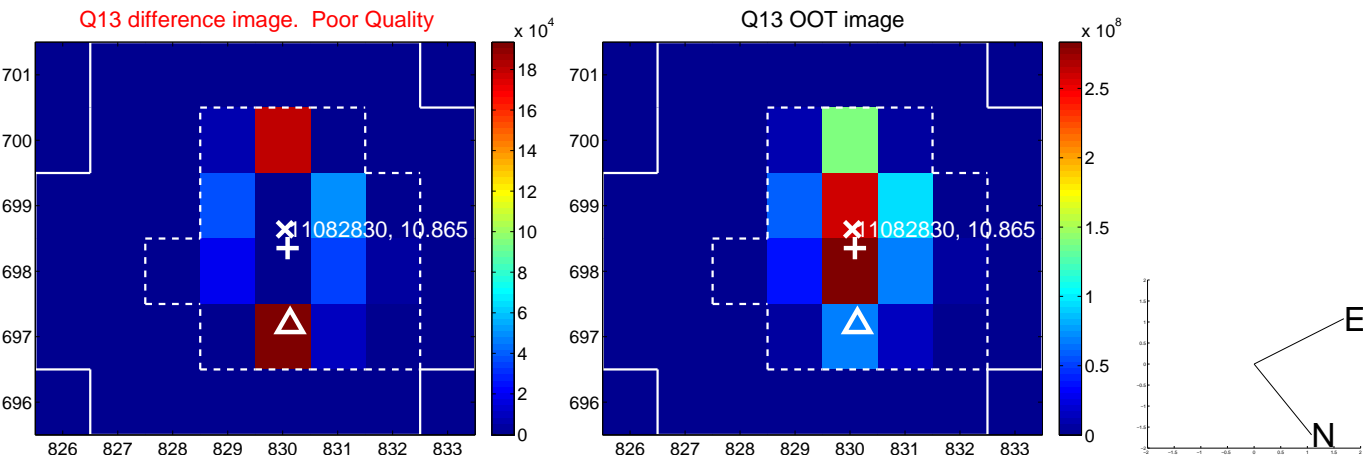
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



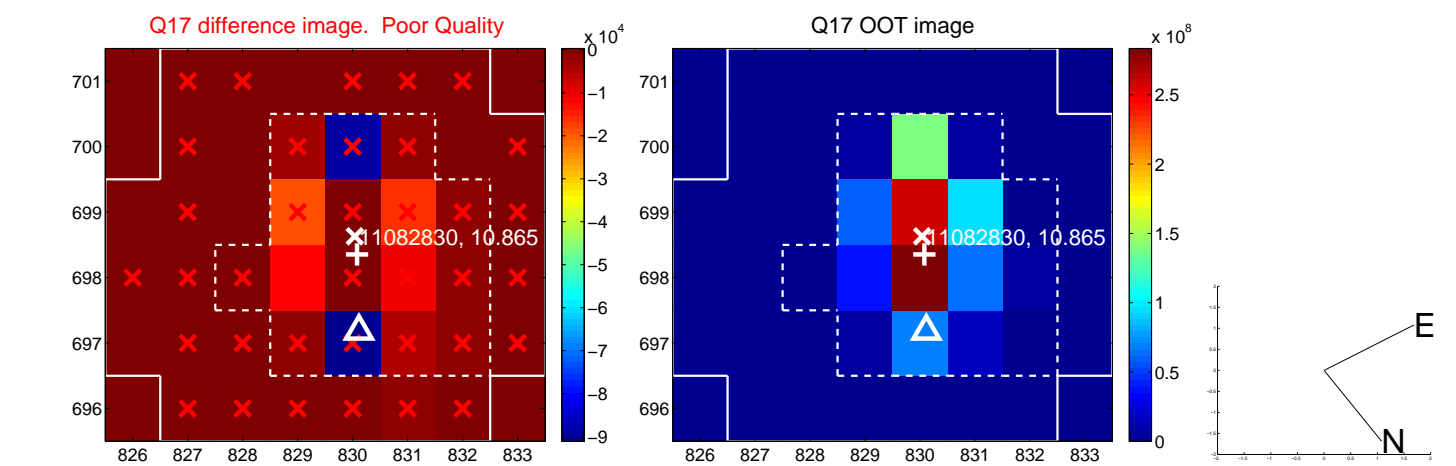
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



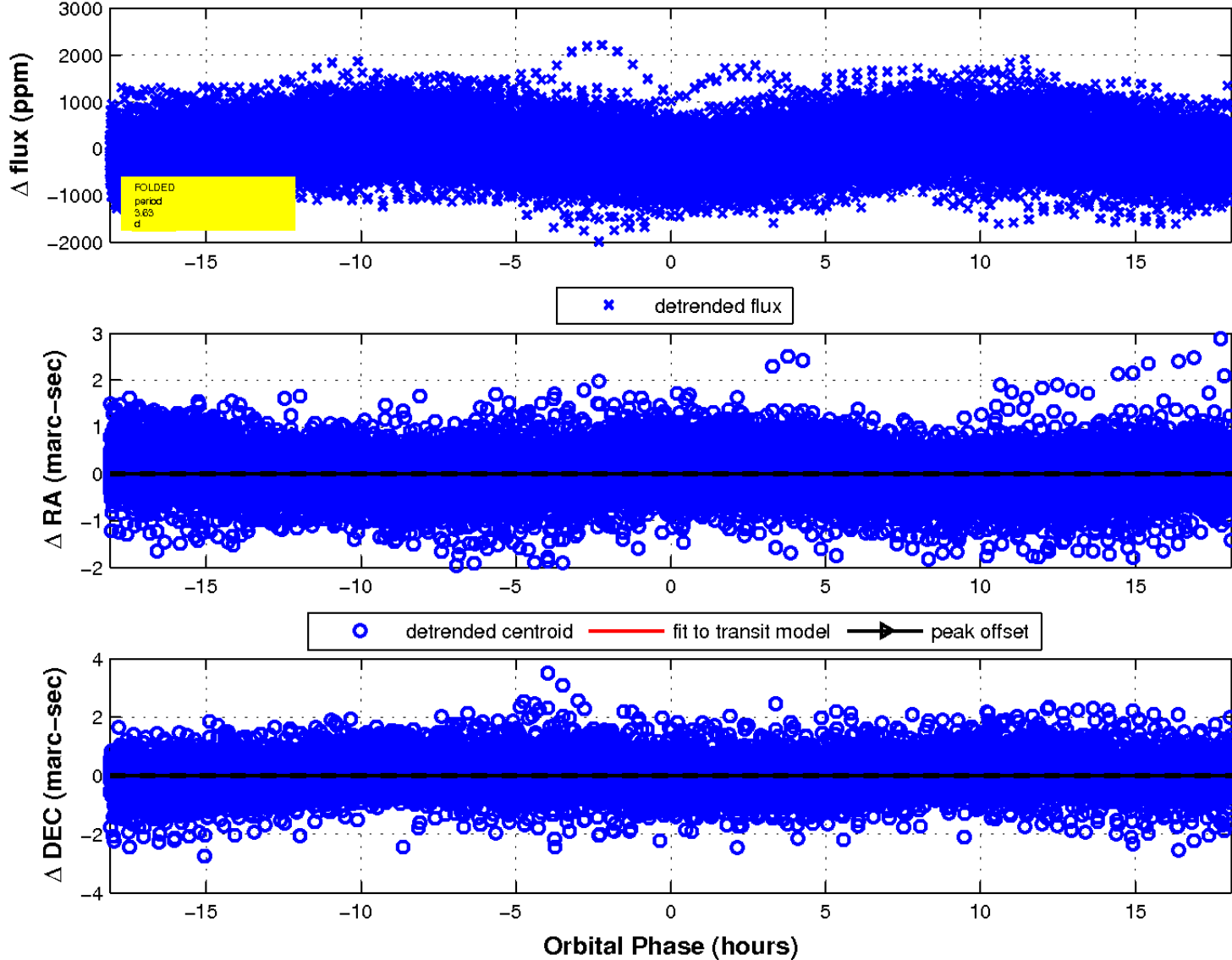
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



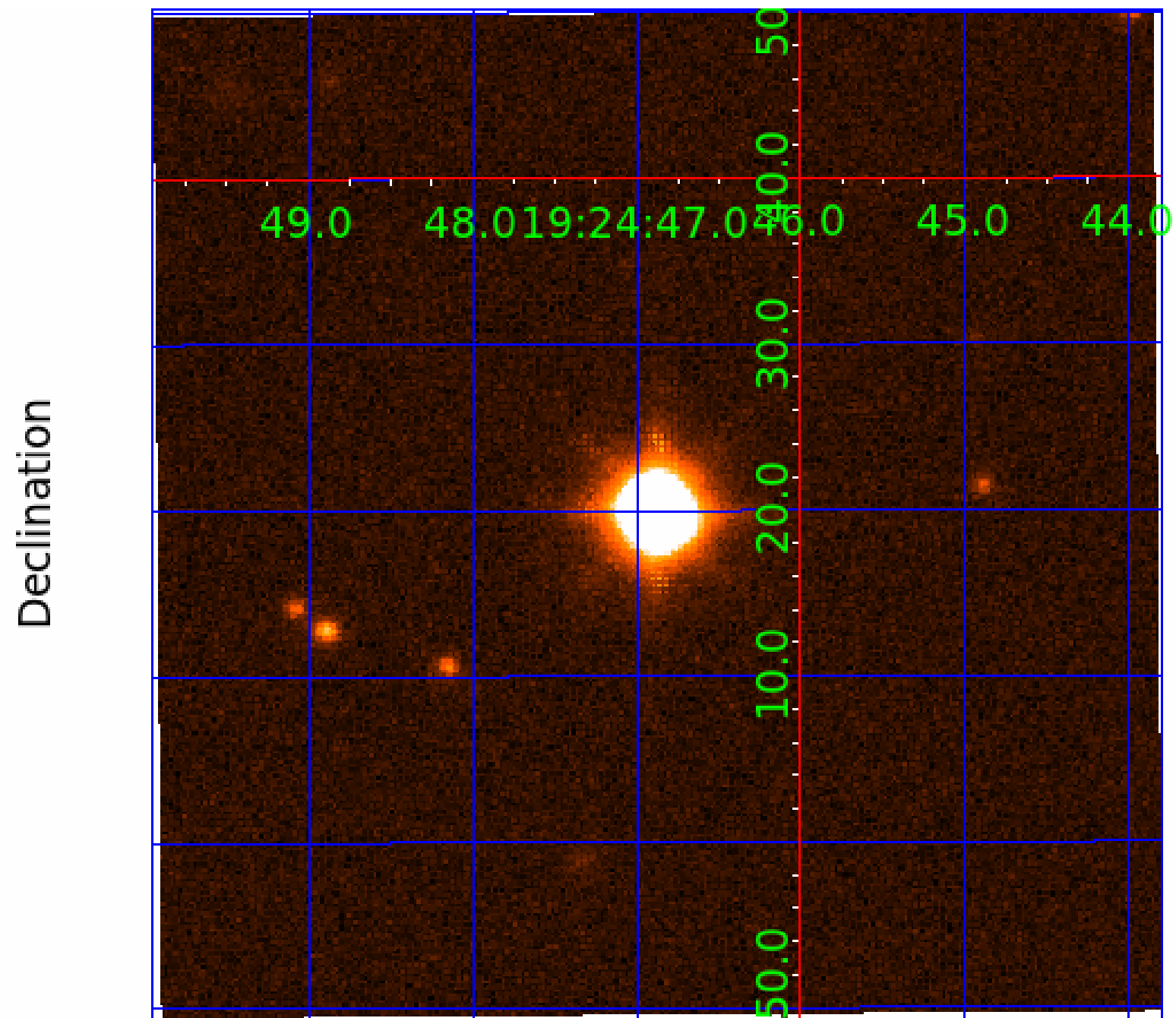
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 5 of 8



UKIRT Image



# KIC 011082830

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011082830-01	OBS	No	0.679918	132.181500	25.5	2.887	9.3	10.4	2.22	7291	1.29	40557.84
011082830-02	OBS	No	3.626434	133.105257	66.3	6.601	8.1	5.5	2.22	7291	2.13	4352.22
011082830-03	OBS	No	110.968411	188.752274	1067.4	6.919	9.0	9.8	2.22	7291	13.47	45.47
011082830-04	OBS	No	263.166816	176.730002	495.5	3.527	8.7	5.5	2.22	7291	5.55	14.38
011082830-05	OBS	No	3.626397	133.720256	153.8	6.037	8.8	10.4	2.22	7291	5.34	4352.28
011082830-06	OBS	No	322.616820	139.890190	630.3	1.794	9.4	7.1	2.22	7291	5.92	10.96
011082830-07	OBS	No	45.688762	156.143238	882.7	8.488	8.6	8.8	2.22	7291	12.30	148.46
011082830-08	OBS	No	414.726345	153.623511	57.7	6.000	7.8	-1.0	2.22	7291	1.71	7.84

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011082830-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED—HALO_GHOST
011082830-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
011082830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
011082830-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

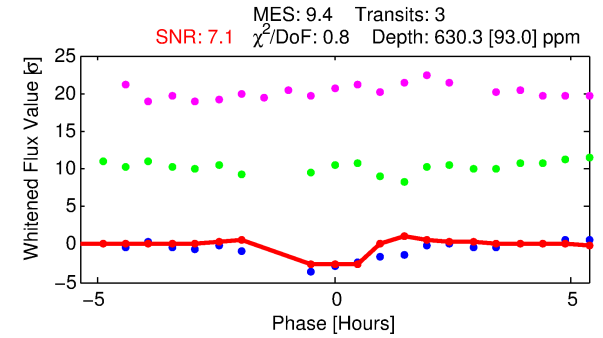
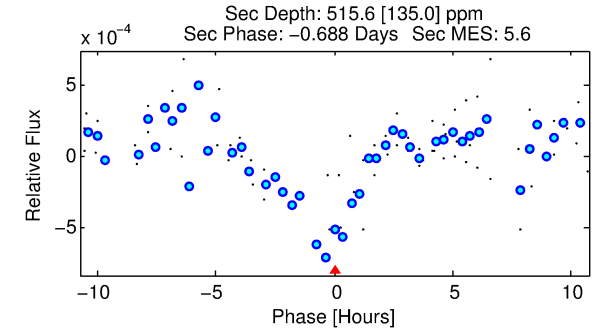
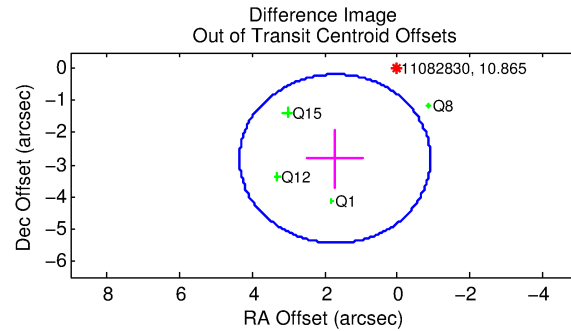
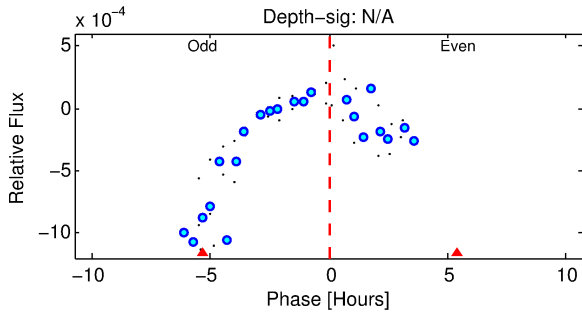
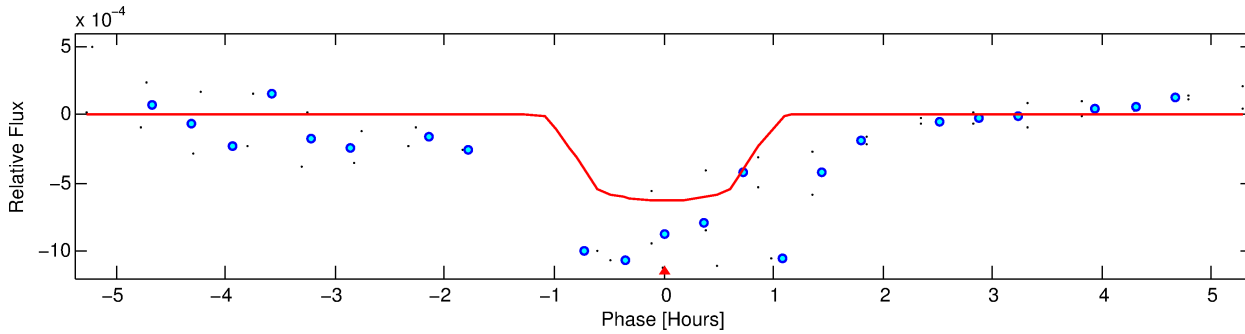
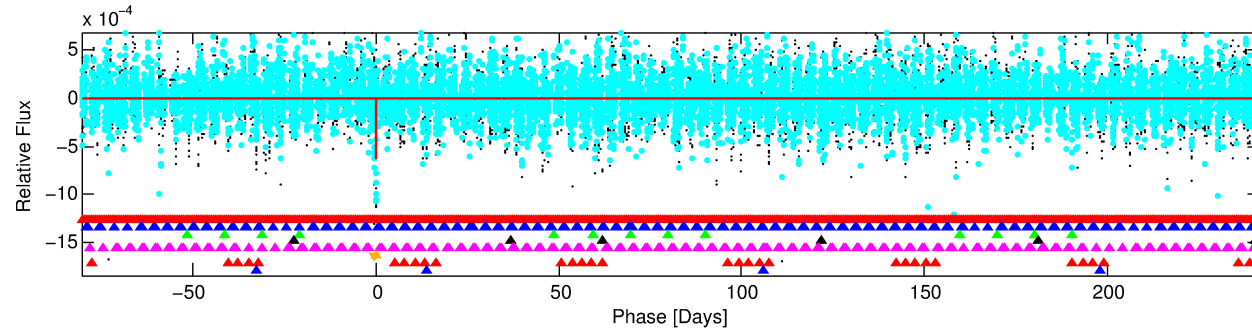
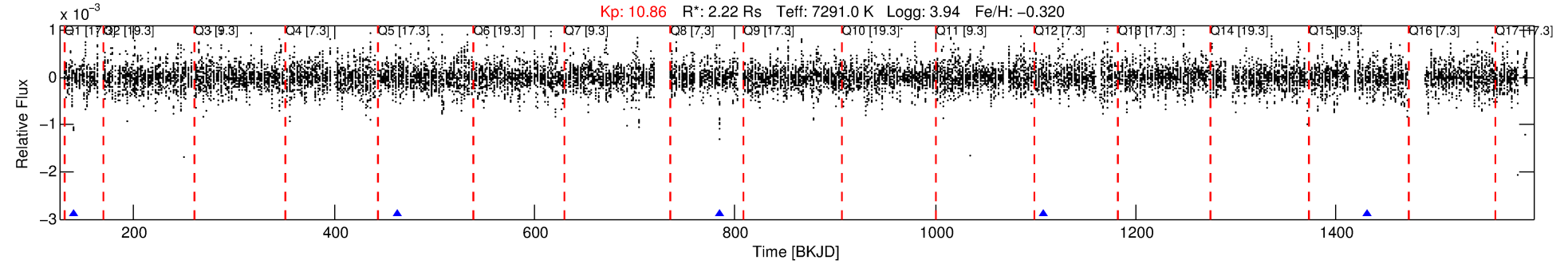
Ephemeris Match Information For 011082830-06

No Significant Match Found



# DV One-Page Summary

KIC: 11082830 Candidate: 6 of 8 Period: 322.617 d



## DV Fit Results:

Period = 322.61682 [0.00339] d  
Epoch = 139.8902 [0.0062] BKJD  
Rp/R\* = 0.0244 [0.0684]  
a/R\* = 1087.48 [18100.08]  
b = 0.65 [14.80]  
Seff = 10.96 [6.16]  
Teq = 464 [65] K  
Rp = 5.92 [16.69] Re  
a = 1.0661 [0.3644] AU  
Ag = 9208.87 [51822.71] [0.18σ]  
Teffp = 7027 [9844] K [0.67σ]

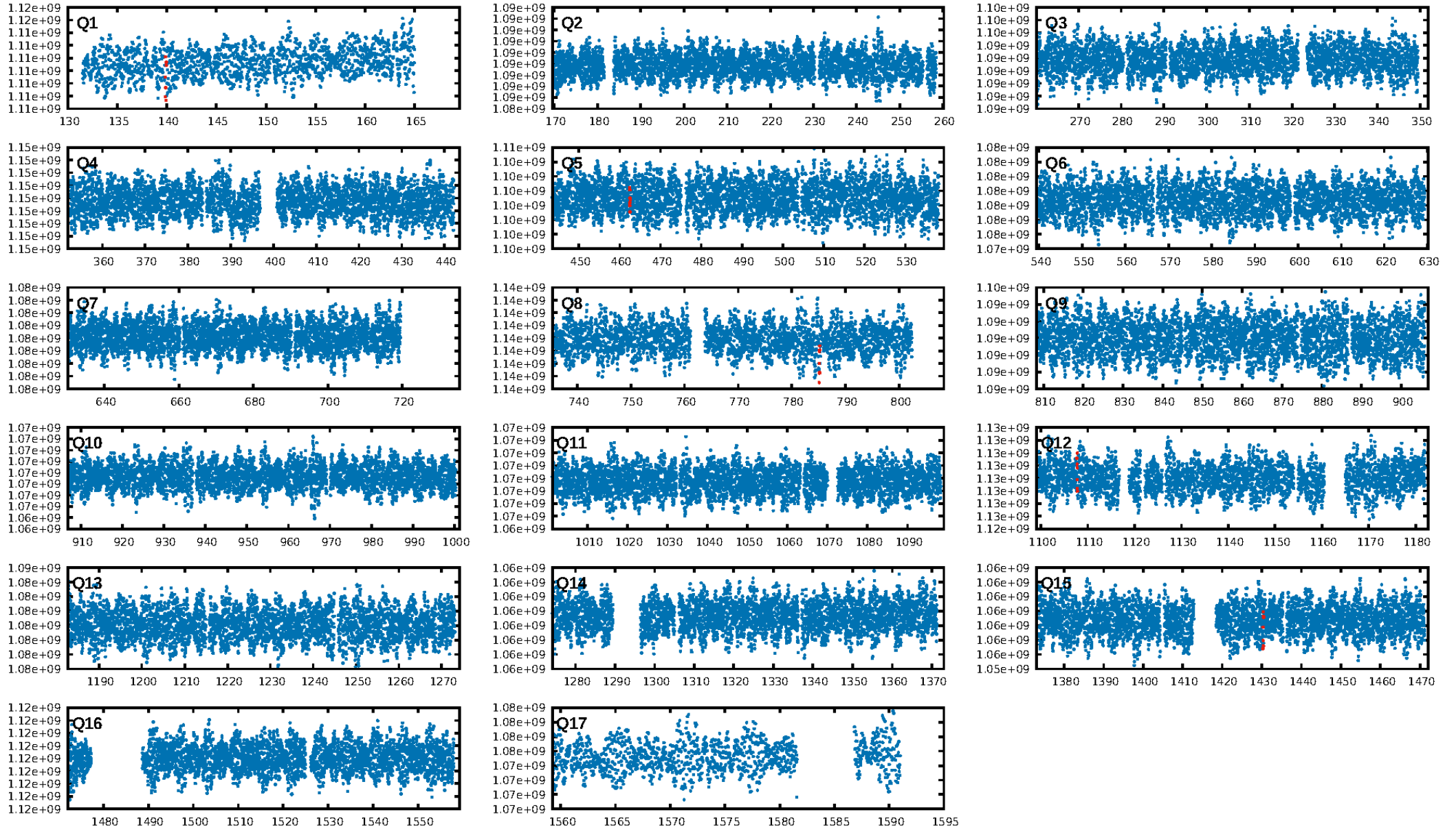
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [360.61σ]  
LongPeriod-sig: 100.0% [353.00σ]  
ModelChiSquare2-sig: 23.8%  
ModelChiSquareGof-sig: 99.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 0.5716  
Centroid-sig: 88.0%  
Centroid-so: 0.345 arcsec [1.11σ]  
OotOffset-rm: 3.297 arcsec [3.76σ]  
OotOffset-st: 0/1/2/1 [4]  
KicOffset-rm: 2.472 arcsec [2.70σ]  
KicOffset-st: 0/1/2/1 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 0.00 [0/5]

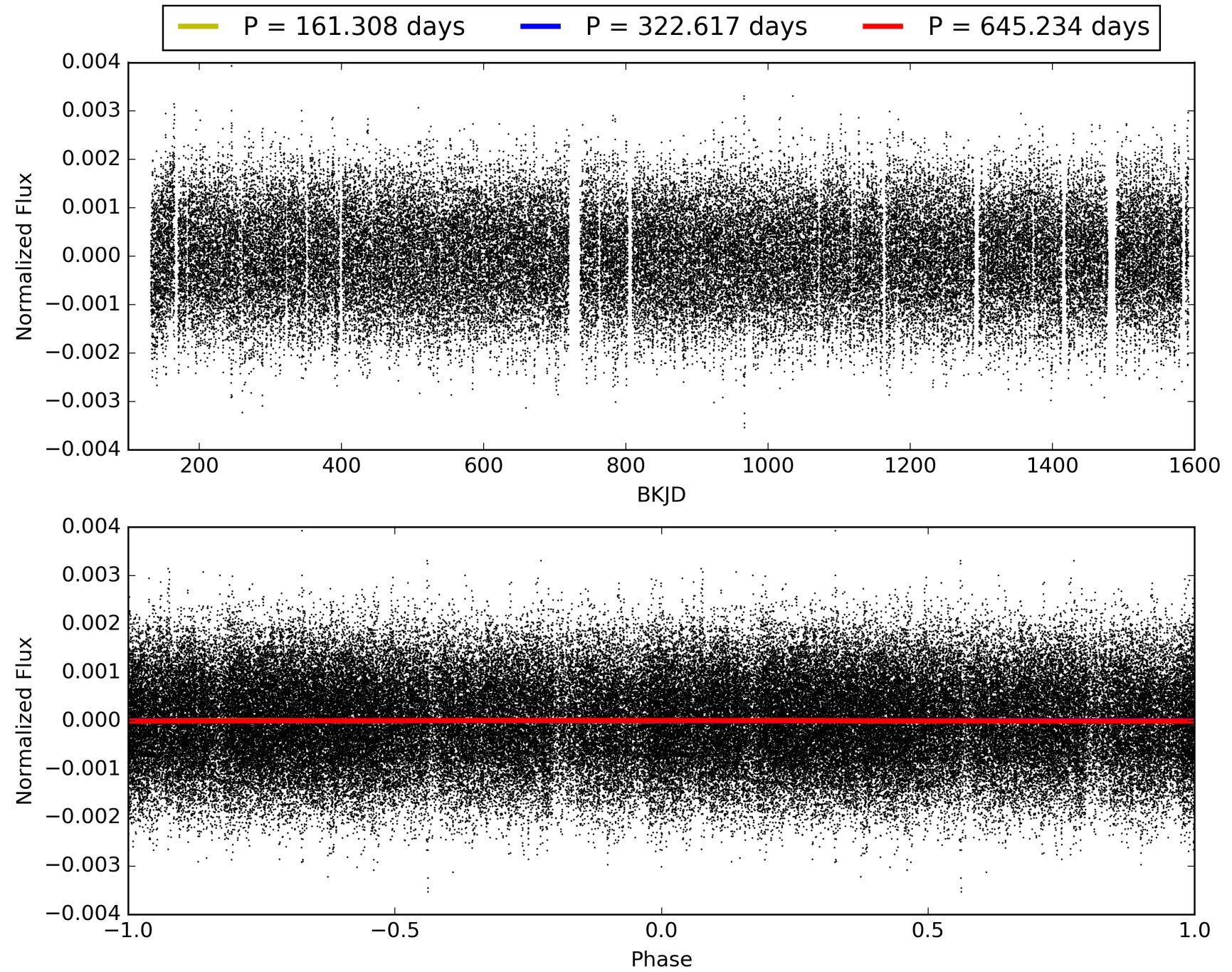
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:41:39 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011082830-06, PDC Light Curves

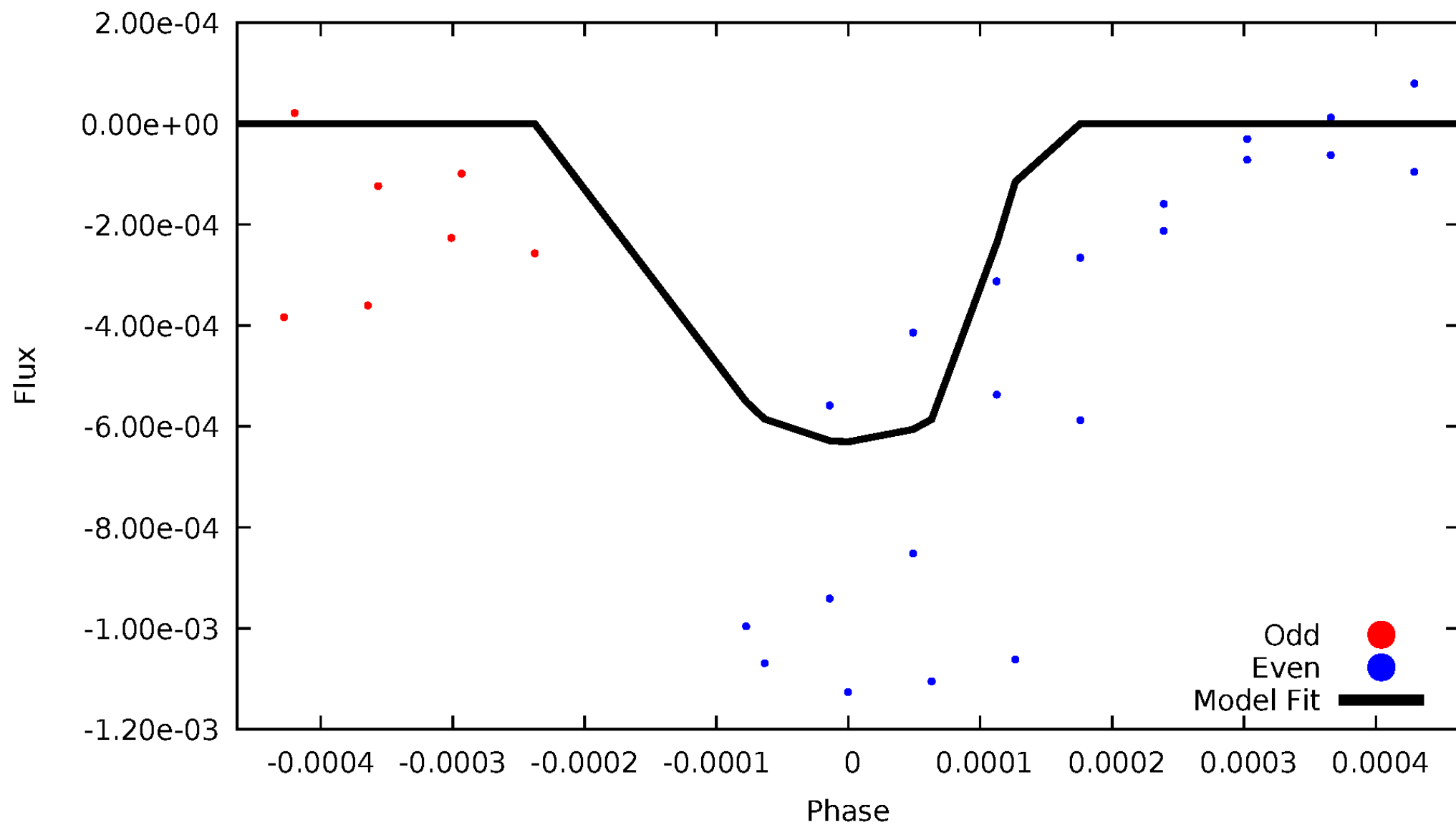


# TCE 011082830-06



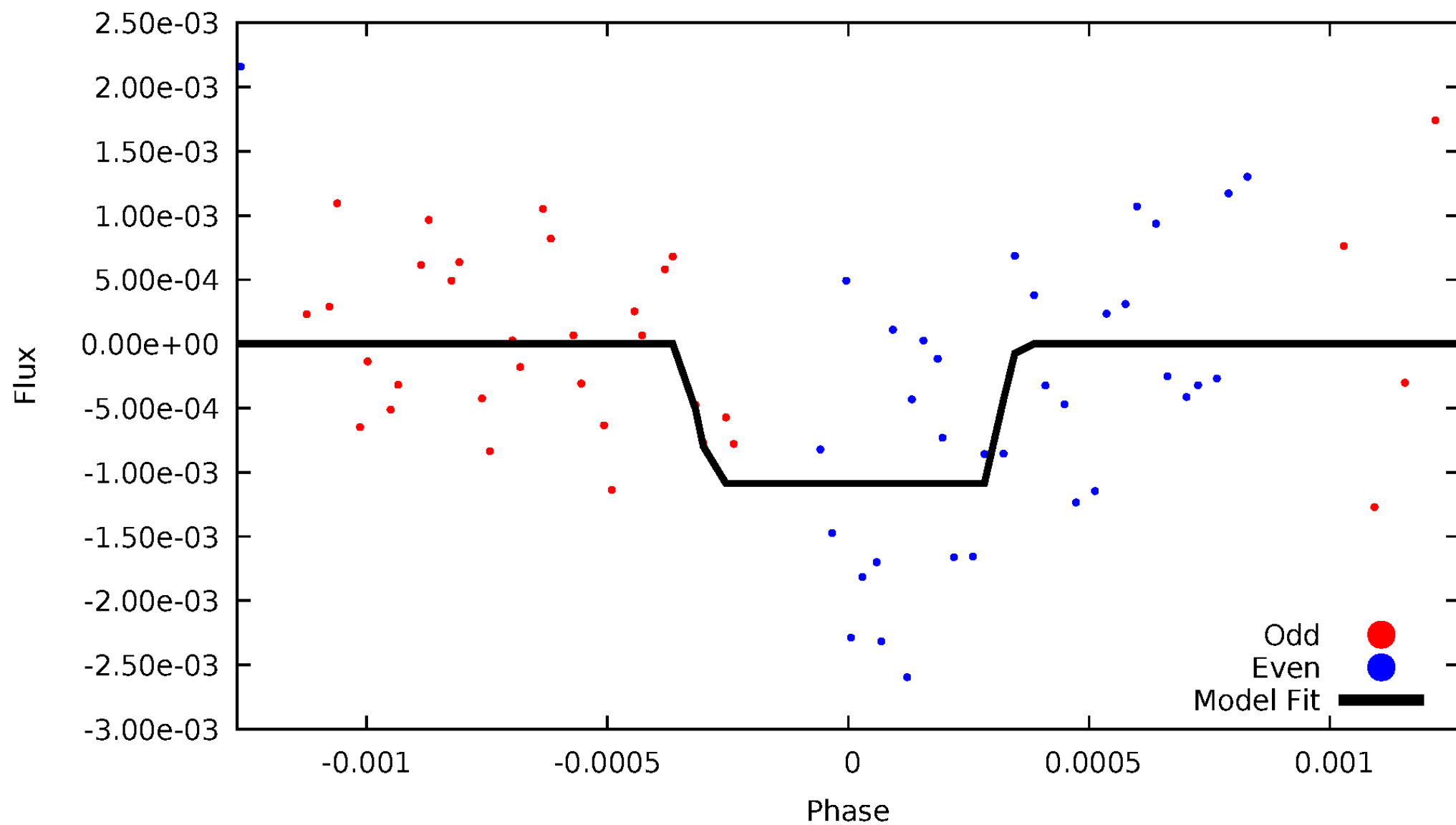
# DV Odd/Even

TCE 011082830-06



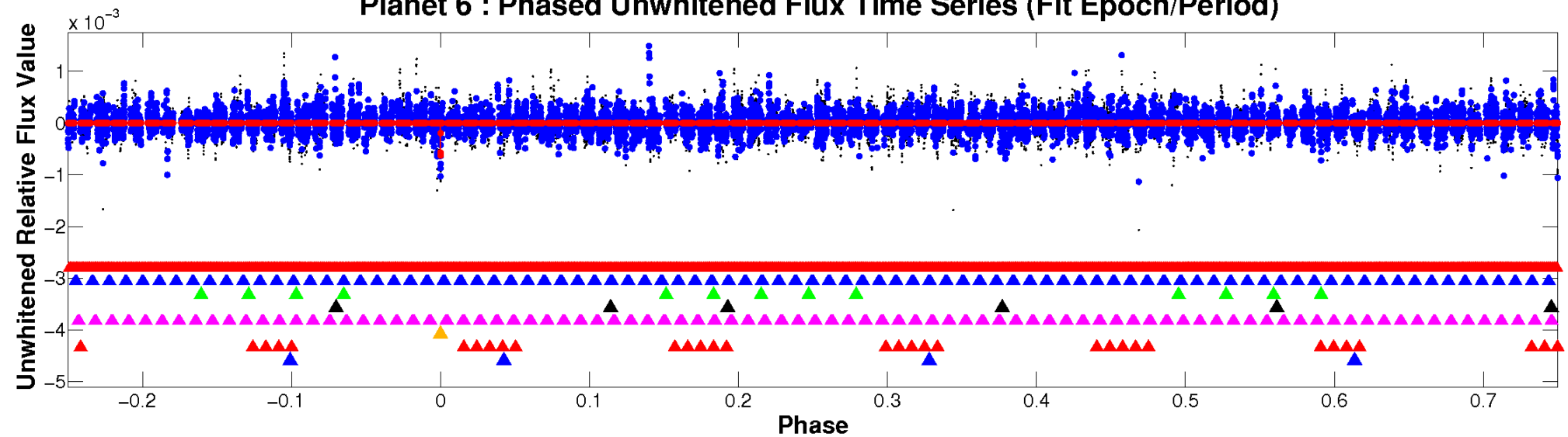
# ALT Odd/Even

TCE 011082830-06

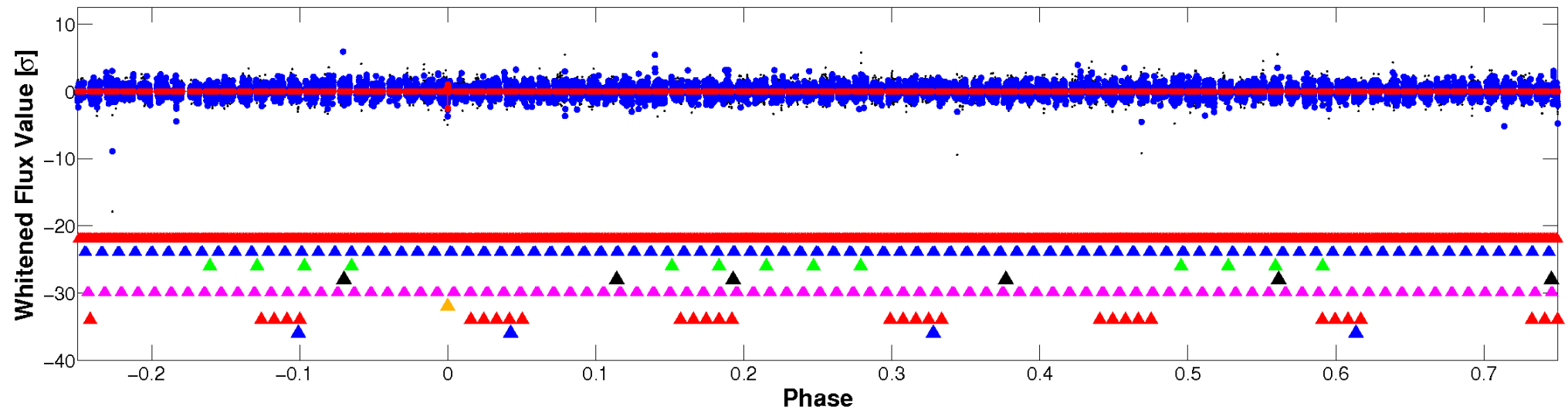


# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



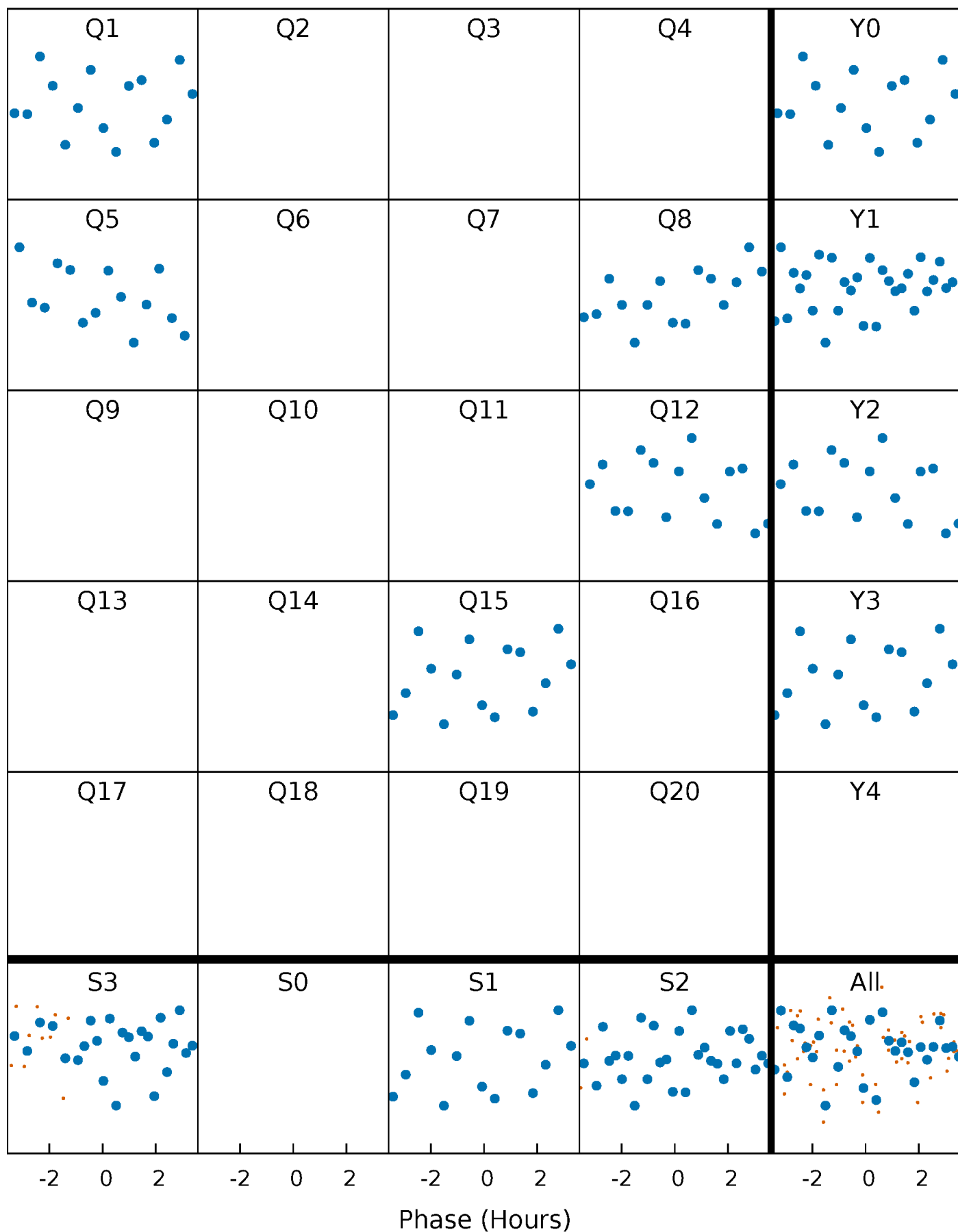
## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)





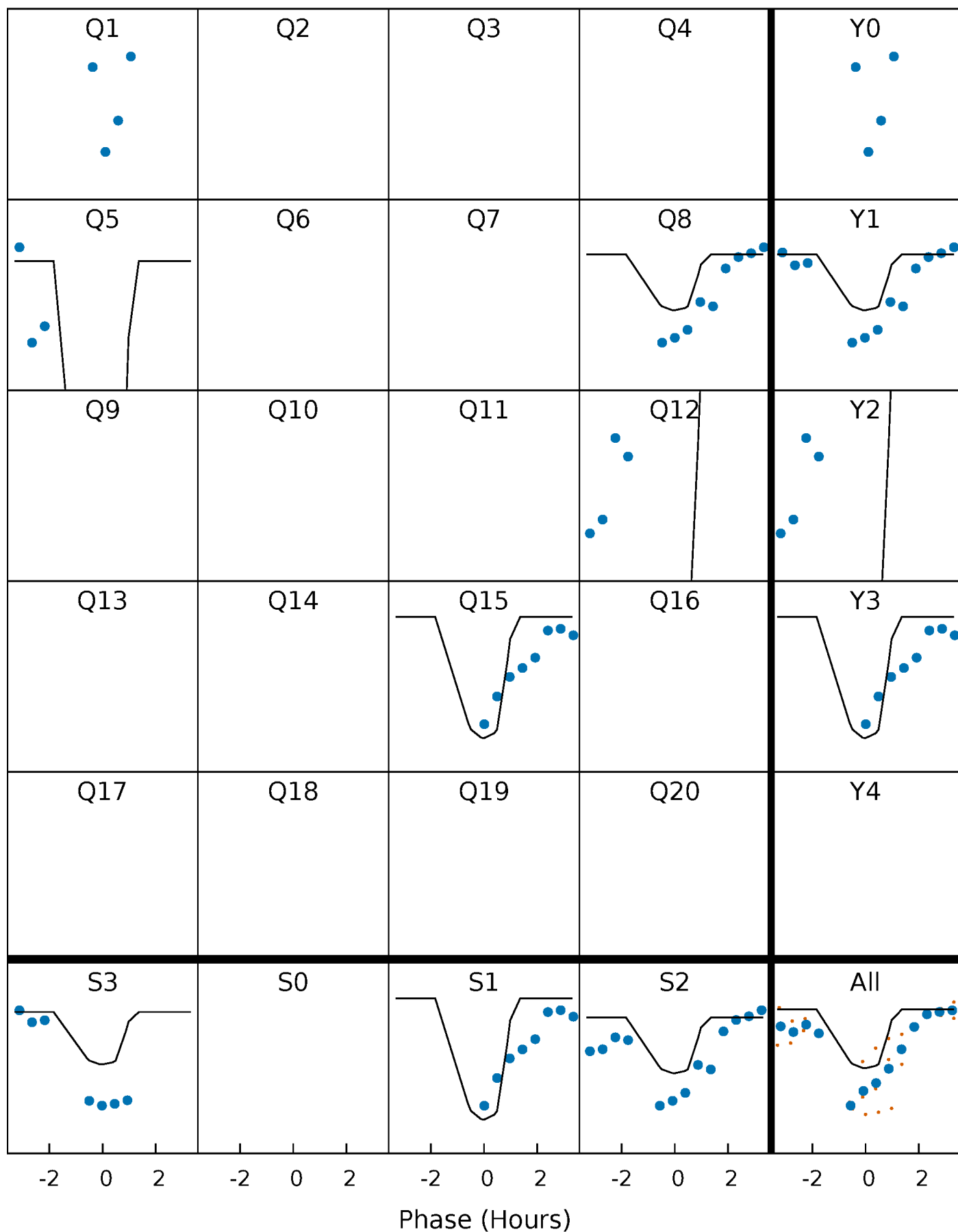
# PDC Quarter-Phased Transit Curves

TCE 011082830-06 P=322.616820 Days  $T_0=139.890189$  (BKJD)



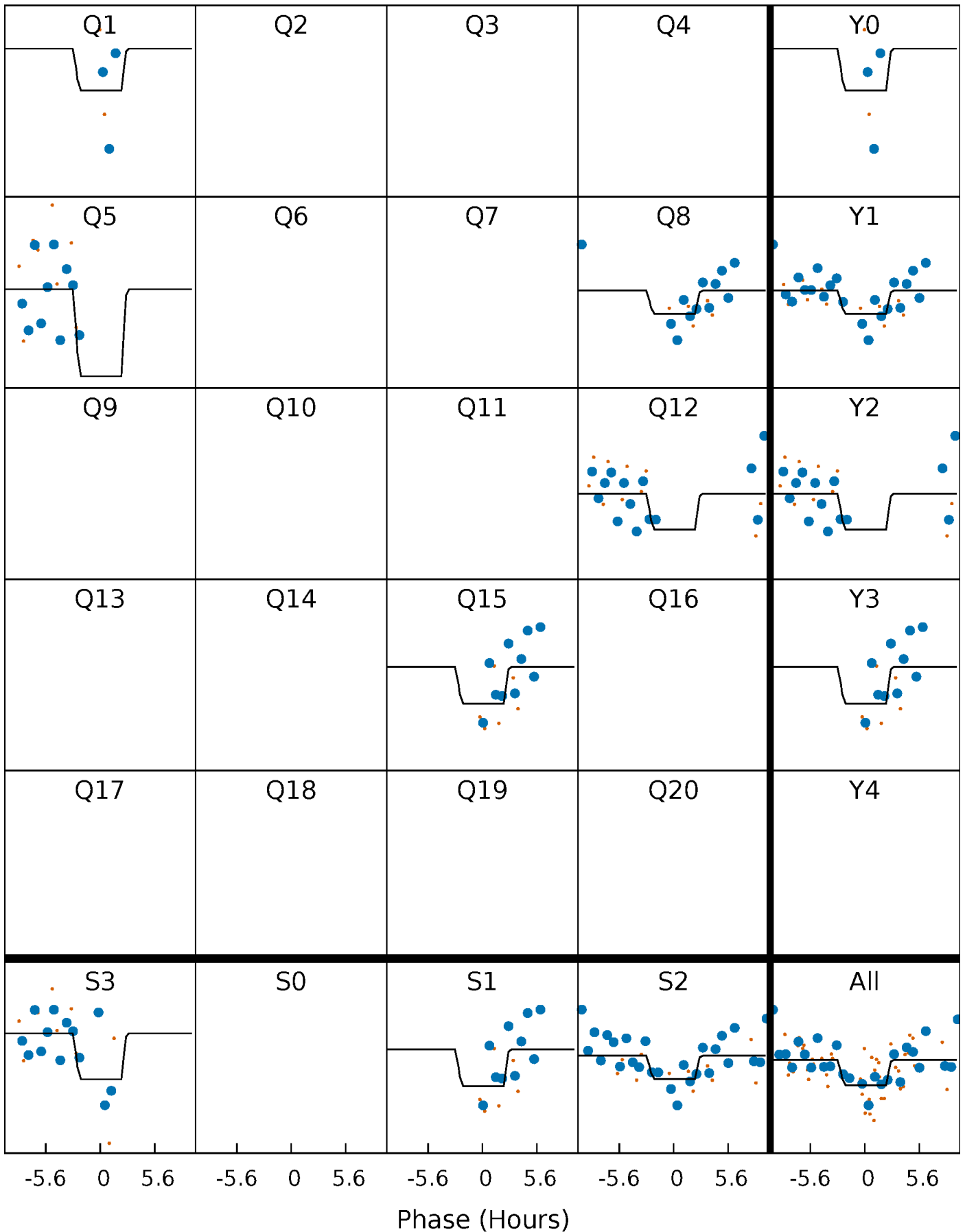
# DV Quarter-Phased Transit Curves

TCE 011082830-06 P=322.616820 Days  $T_0=139.890189$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

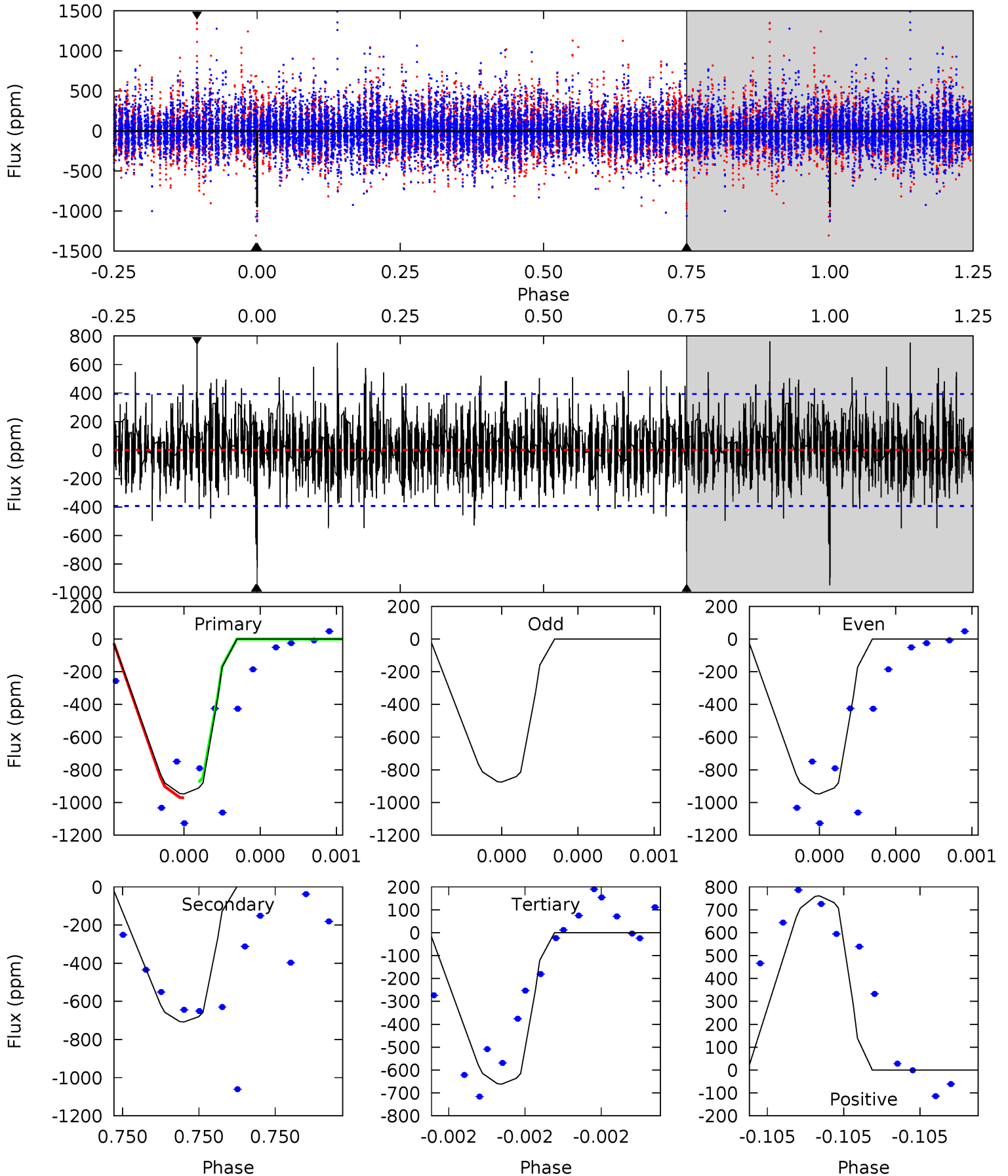
TCE 011082830-06 P=322.623177 Days  $T_0=139.871164$  (BKJD)



# DV Model-Shift Uniqueness Test

011082830-06, P = 322.616820 Days, E = 139.890189 Days

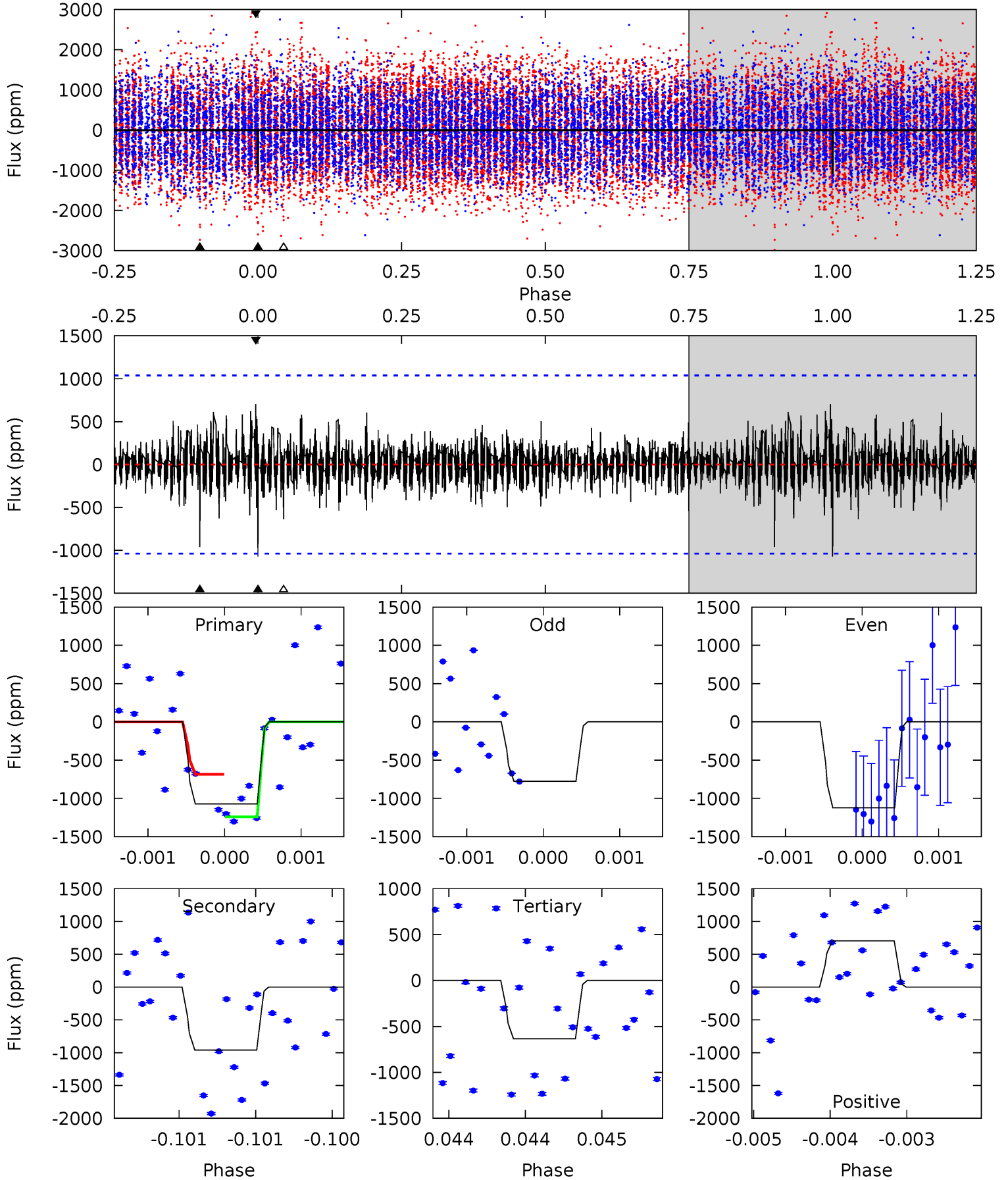
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	10.3	9.58	11.0	5.69	3.66	2.11	4.15	2.71	0.67	-0.77	0.66	0.91	0.45	0.69



# Alt Model-Shift Uniqueness Test

011082830-06, P = 322.623177 Days, E = 139.871164 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.70	5.11	3.38	3.74	5.52	3.40	0.84	2.32	1.96	1.72	1.37	0.66	1.03	0.40	1.35



### Stellar Parameters For KIC 011082830

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7291^{+203}_{-279}$	$3.937^{+0.315}_{-0.135}$	$-0.320^{+0.250}_{-0.350}$	$2.218^{+0.536}_{-0.804}$	$1.549^{+0.215}_{-0.323}$	$0.200^{+0.483}_{-0.083}$
	+3%/-4%	+8%/-3%	+78%/-109%	+24%/-36%	+14%/-21%	+242%/-42%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011082830-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-708 \pm 69$	$13.34^{+13.27}_{-8.73}$	$639^{+46}_{-67}$	$4940^{+3688}_{-1108}$	$2463^{+17756}_{-1842}$
Alt.	$-959 \pm 188$	$13.74^{+14.52}_{-9.20}$	$636^{+49}_{-60}$	$5176^{+4434}_{-1253}$	$3150^{+25223}_{-2406}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$



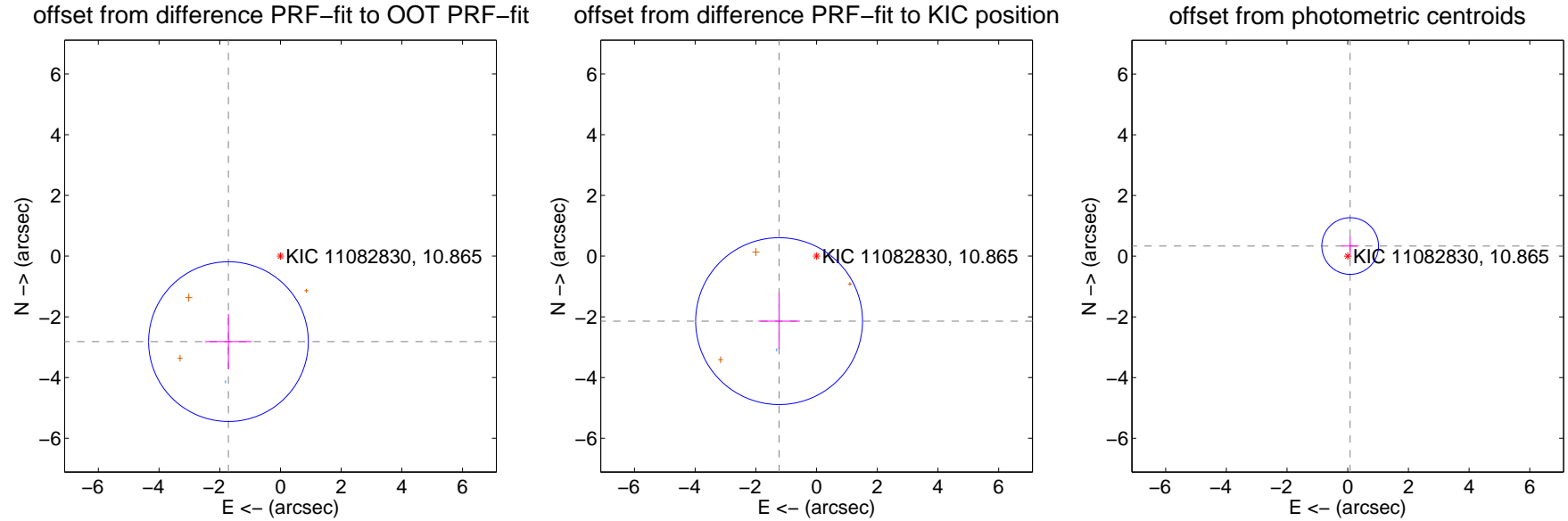
## DV Centroid Data

Supplemental centroid analysis for 011082830-06. **Kepler magnitude: 10.87.** Transit SNR 7.08

**There are 1 quarters with good PRF difference image offsets**

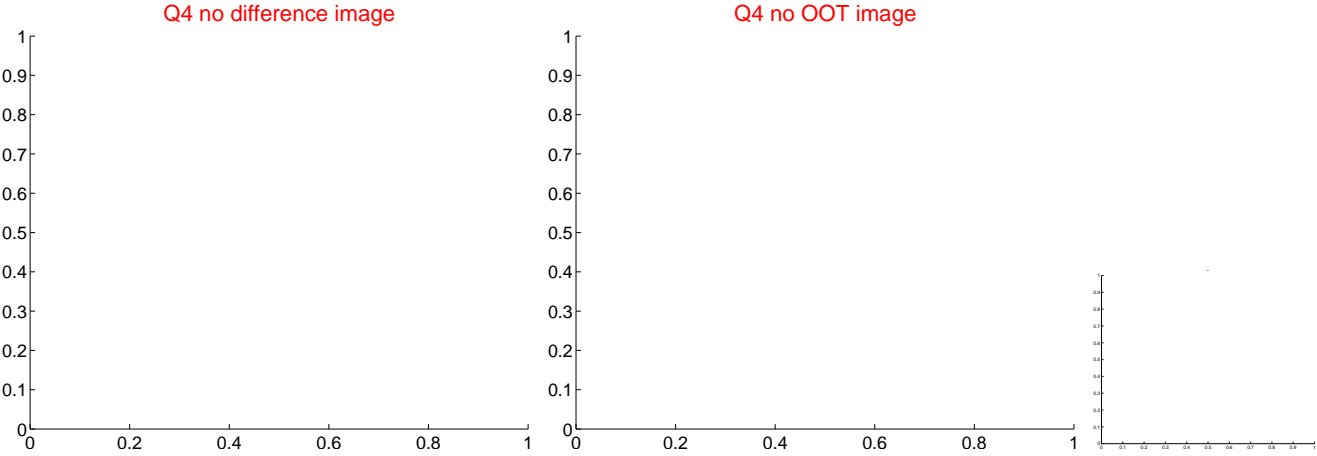
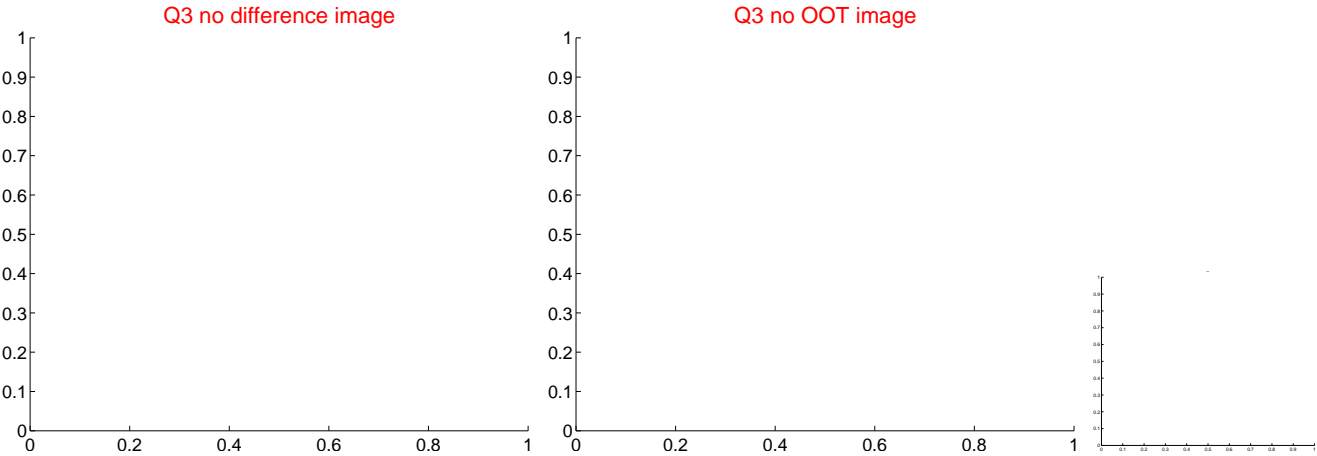
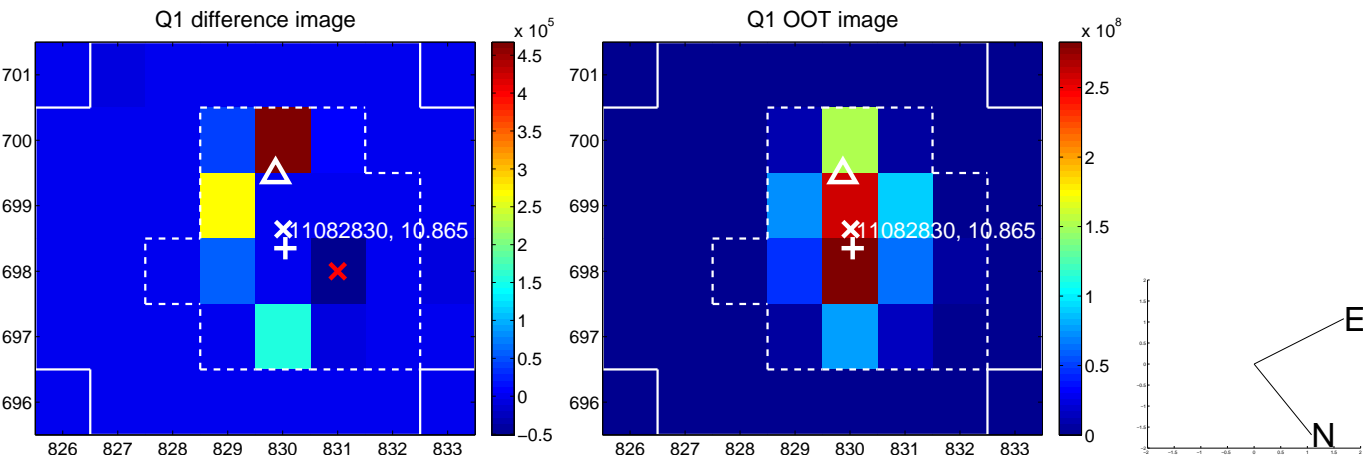
The direct PRF centroid is offset from the target star catalog position by about 1.81 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>3.297 \pm 0.877</math></b>	<b>3.76</b>	$1.714 \pm 0.767$	$-2.816 \pm 0.914$
PRF-fit source offset from KIC position	$2.472 \pm 0.916$	2.70	$1.236 \pm 0.684$	$-2.142 \pm 0.942$
photometric centroid source offset	$0.34 \pm 0.31$	1.11	$-0.08 \pm 0.27$	$0.34 \pm 0.31$

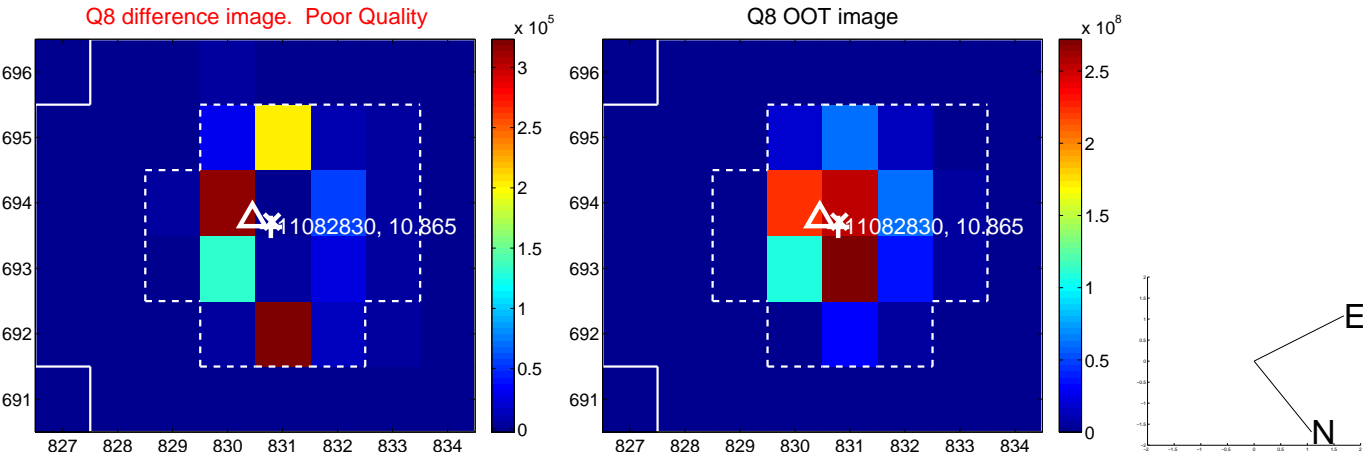
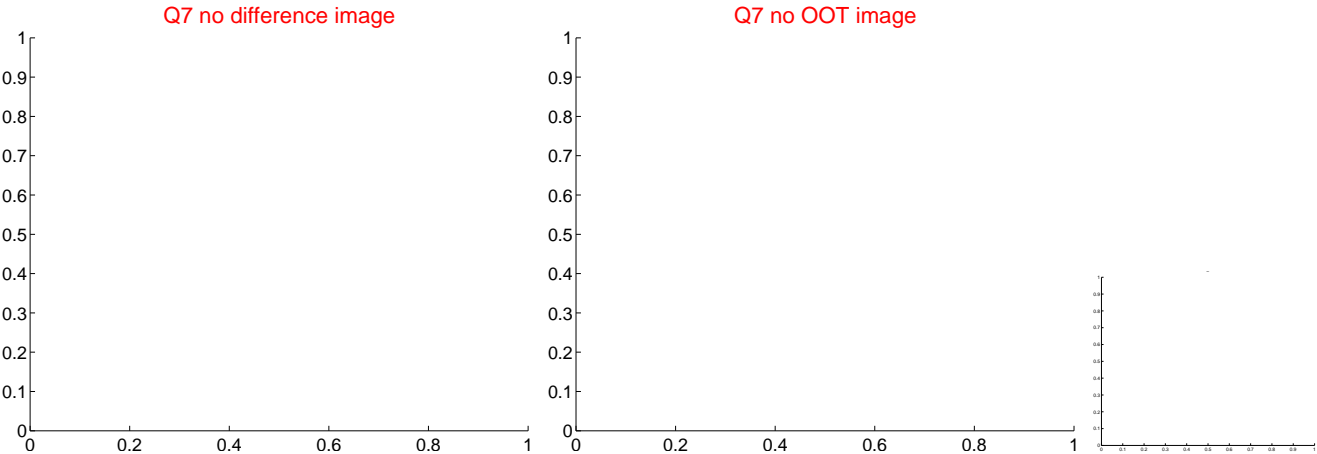
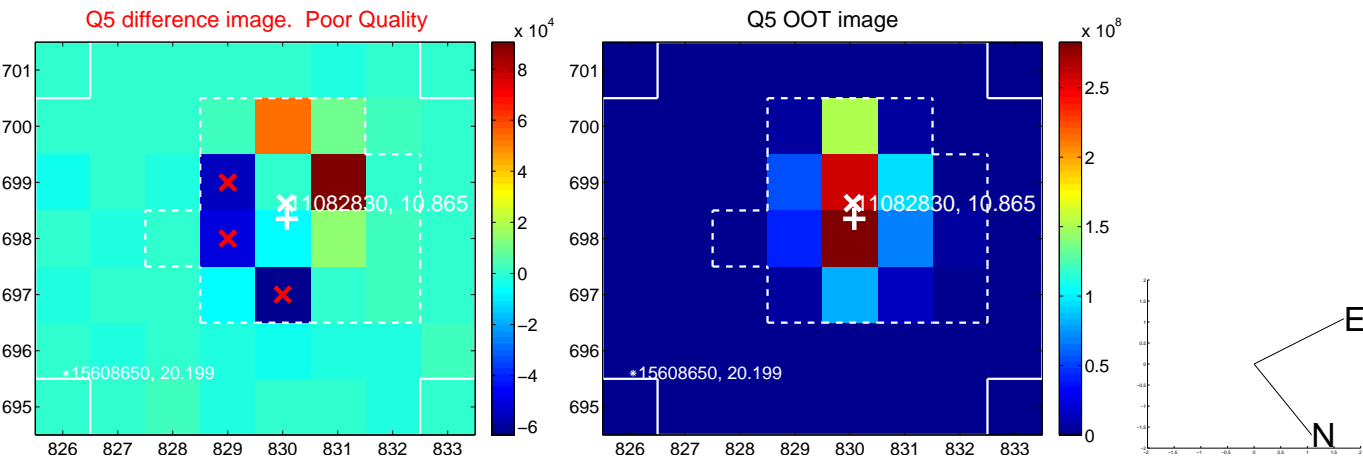


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

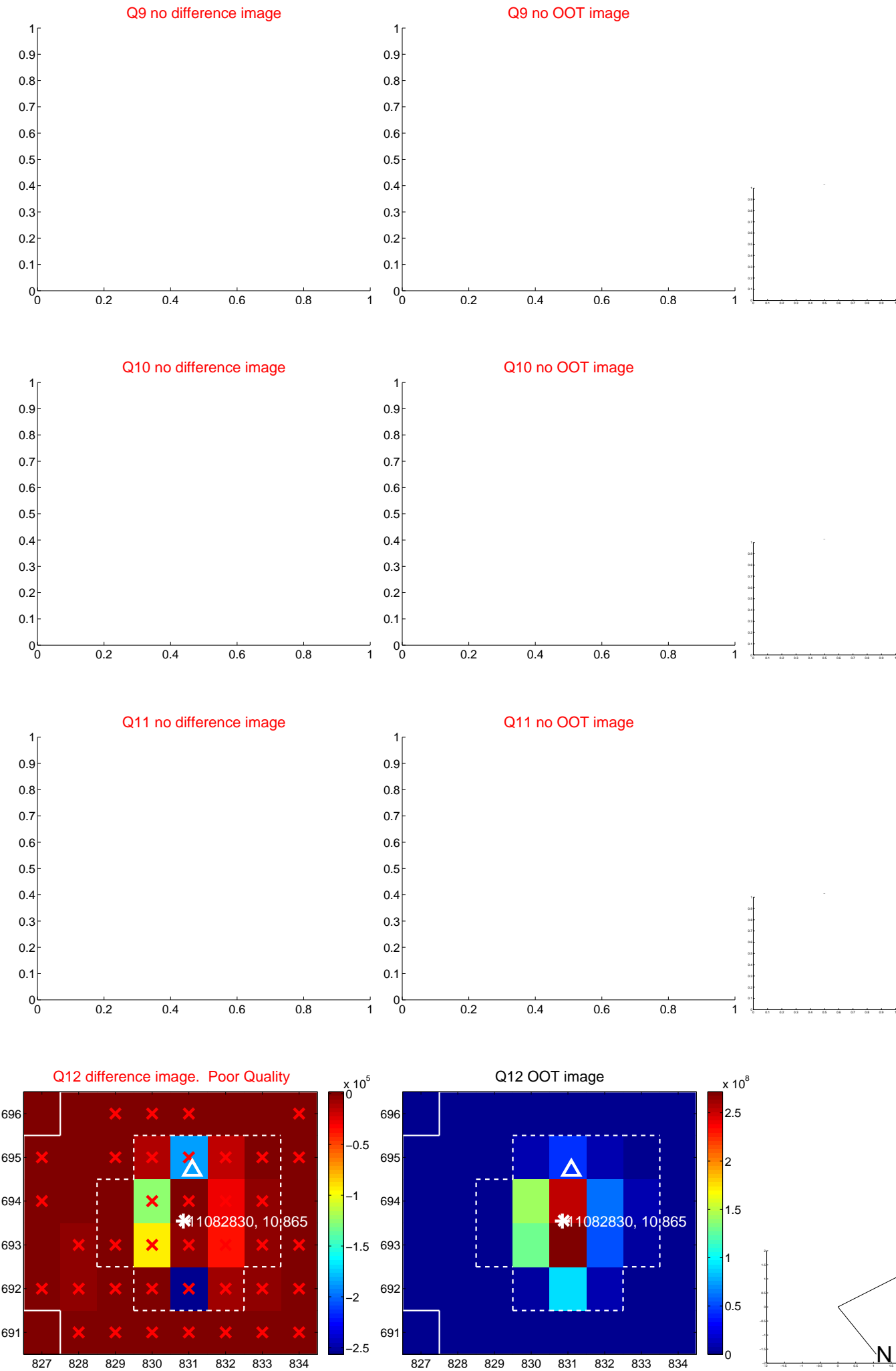
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



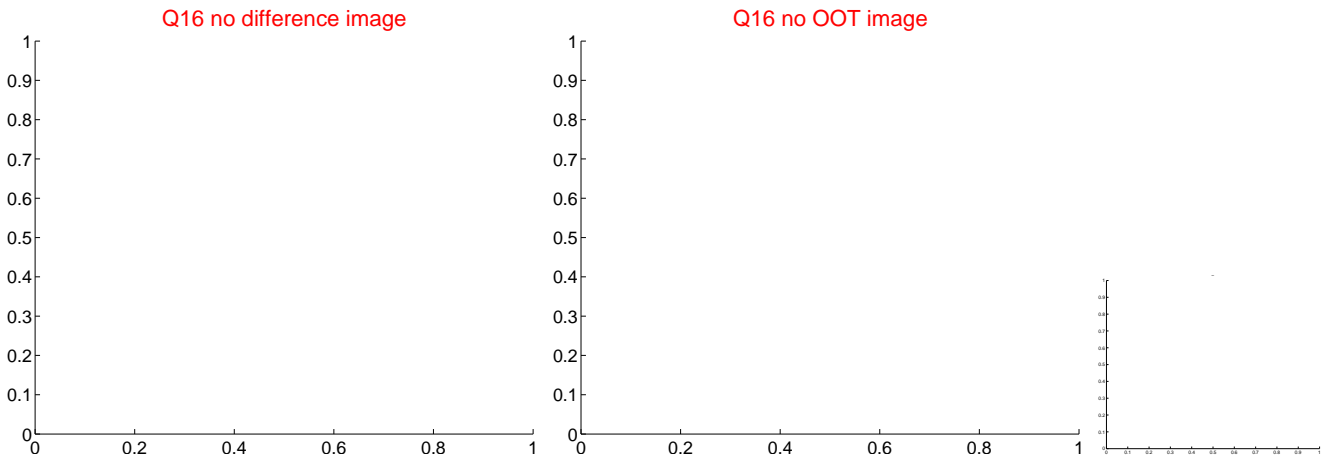
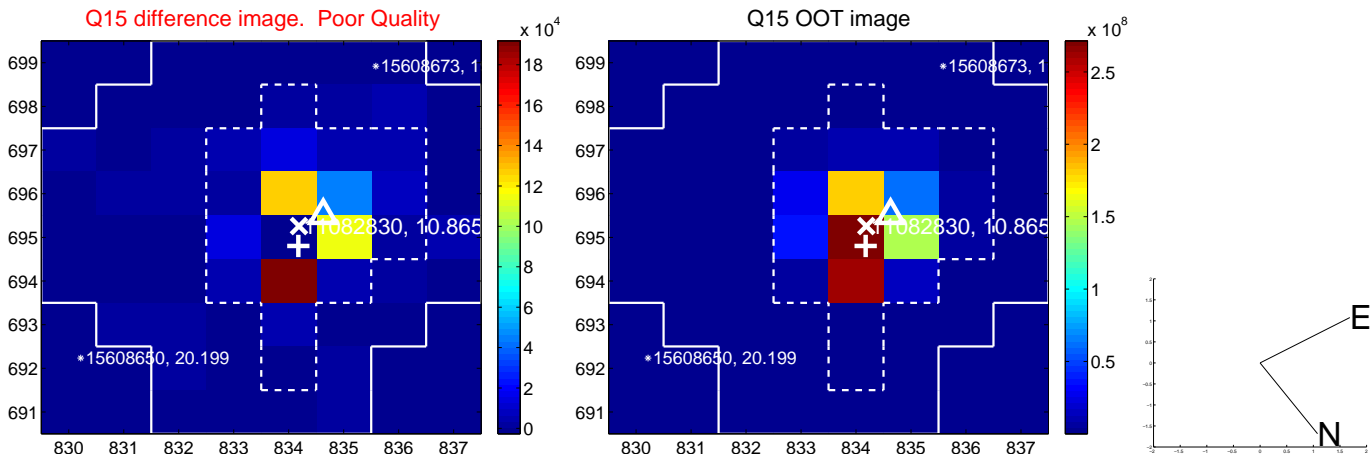
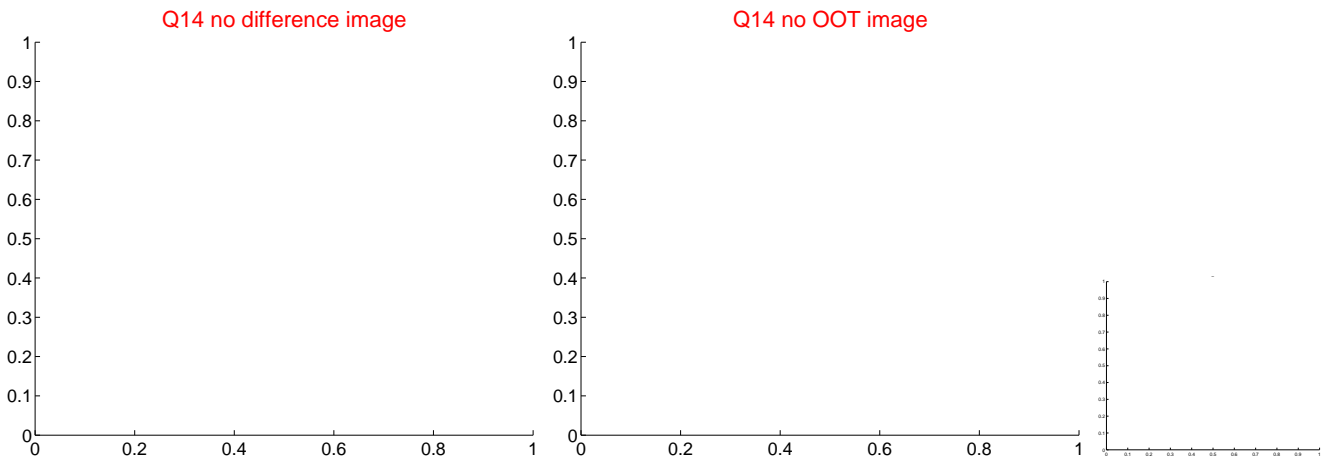
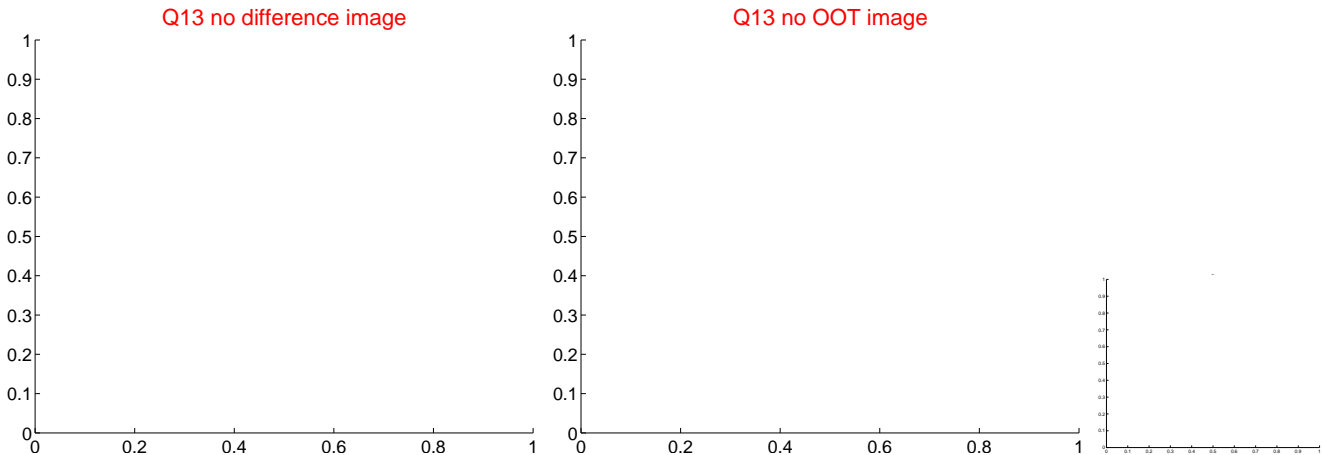
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



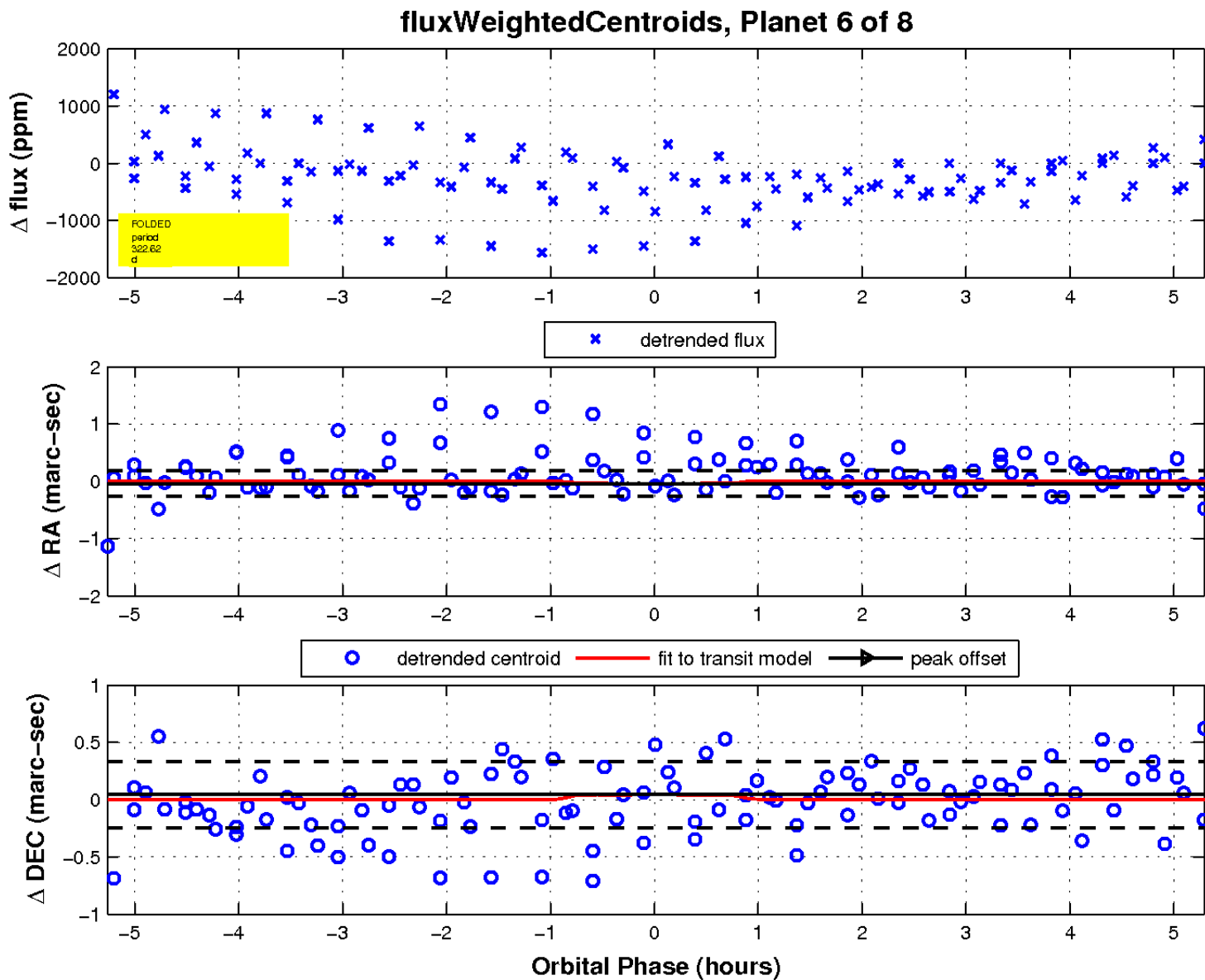
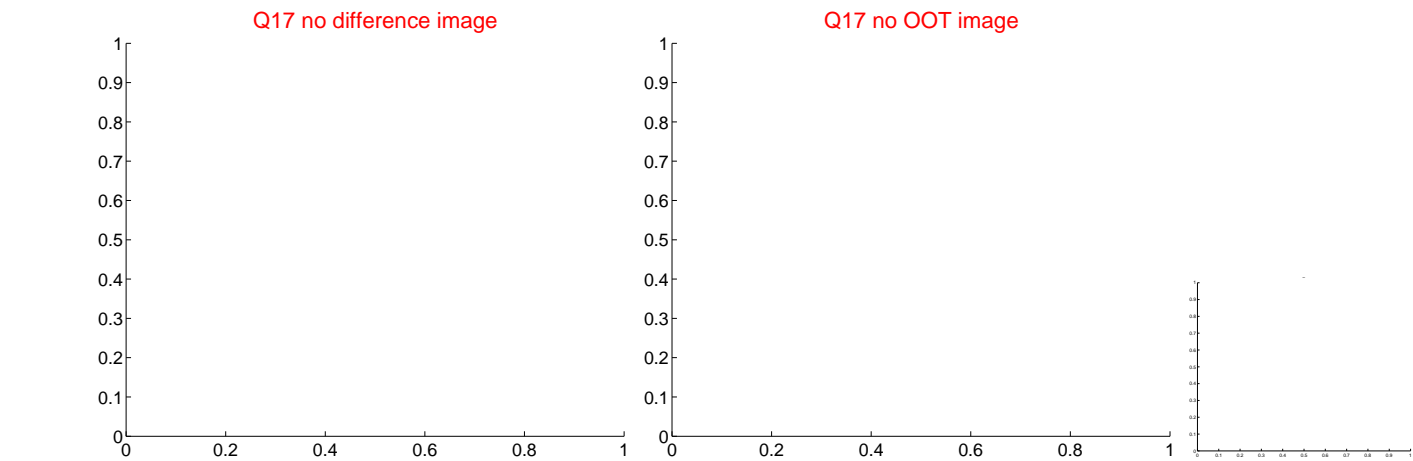
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value

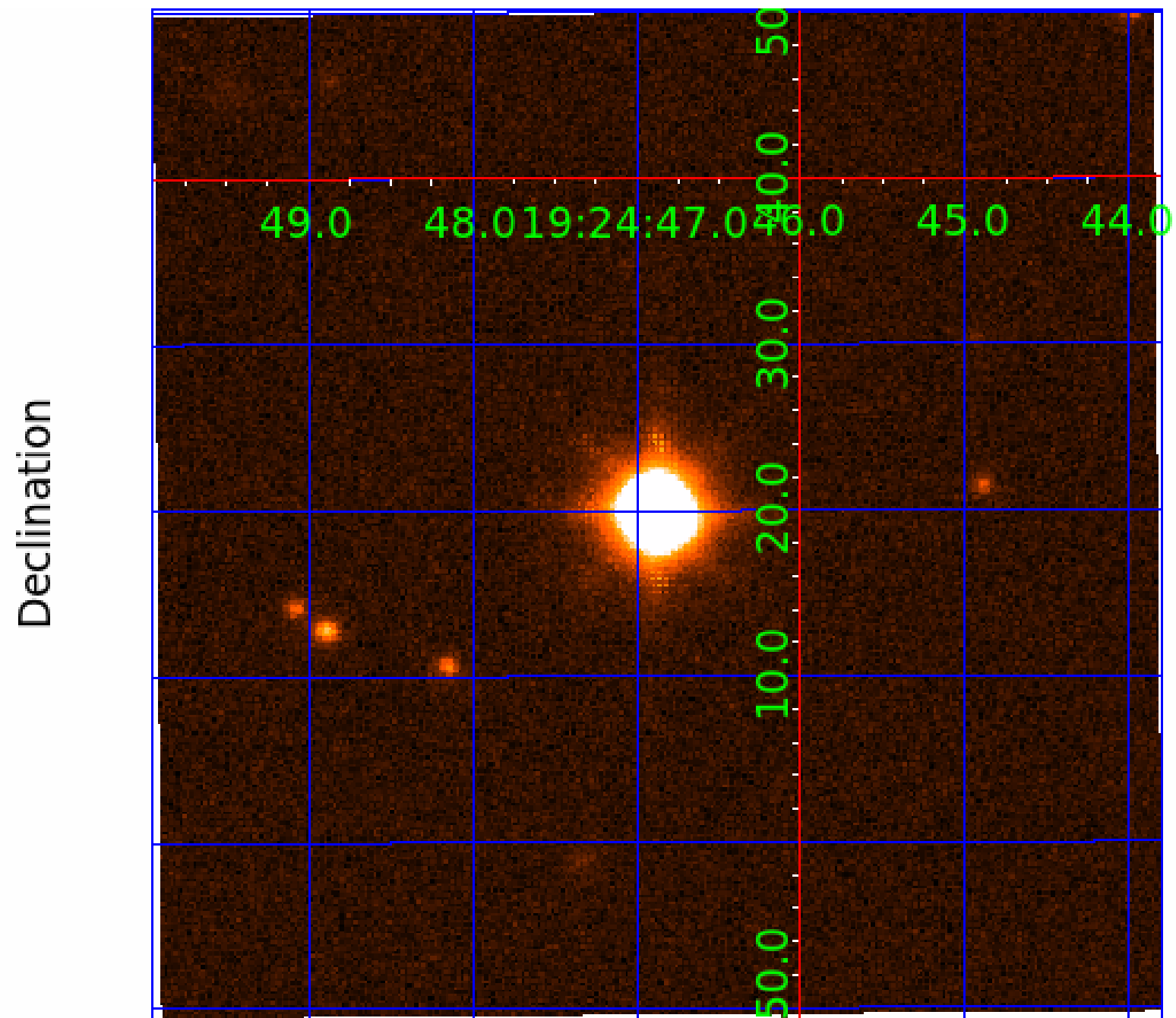


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image



# KIC 011082830

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011082830-01	OBS	No	0.679918	132.181500	25.5	2.887	9.3	10.4	2.22	7291	1.29	40557.84
011082830-02	OBS	No	3.626434	133.105257	66.3	6.601	8.1	5.5	2.22	7291	2.13	4352.22
011082830-03	OBS	No	110.968411	188.752274	1067.4	6.919	9.0	9.8	2.22	7291	13.47	45.47
011082830-04	OBS	No	263.166816	176.730002	495.5	3.527	8.7	5.5	2.22	7291	5.55	14.38
011082830-05	OBS	No	3.626397	133.720256	153.8	6.037	8.8	10.4	2.22	7291	5.34	4352.28
011082830-06	OBS	No	322.616820	139.890190	630.3	1.794	9.4	7.1	2.22	7291	5.92	10.96
011082830-07	OBS	No	45.688762	156.143238	882.7	8.488	8.6	8.8	2.22	7291	12.30	148.46
011082830-08	OBS	No	414.726345	153.623511	57.7	6.000	7.8	-1.0	2.22	7291	1.71	7.84

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011082830-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED—HALO_GHOST
011082830-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
011082830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
011082830-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

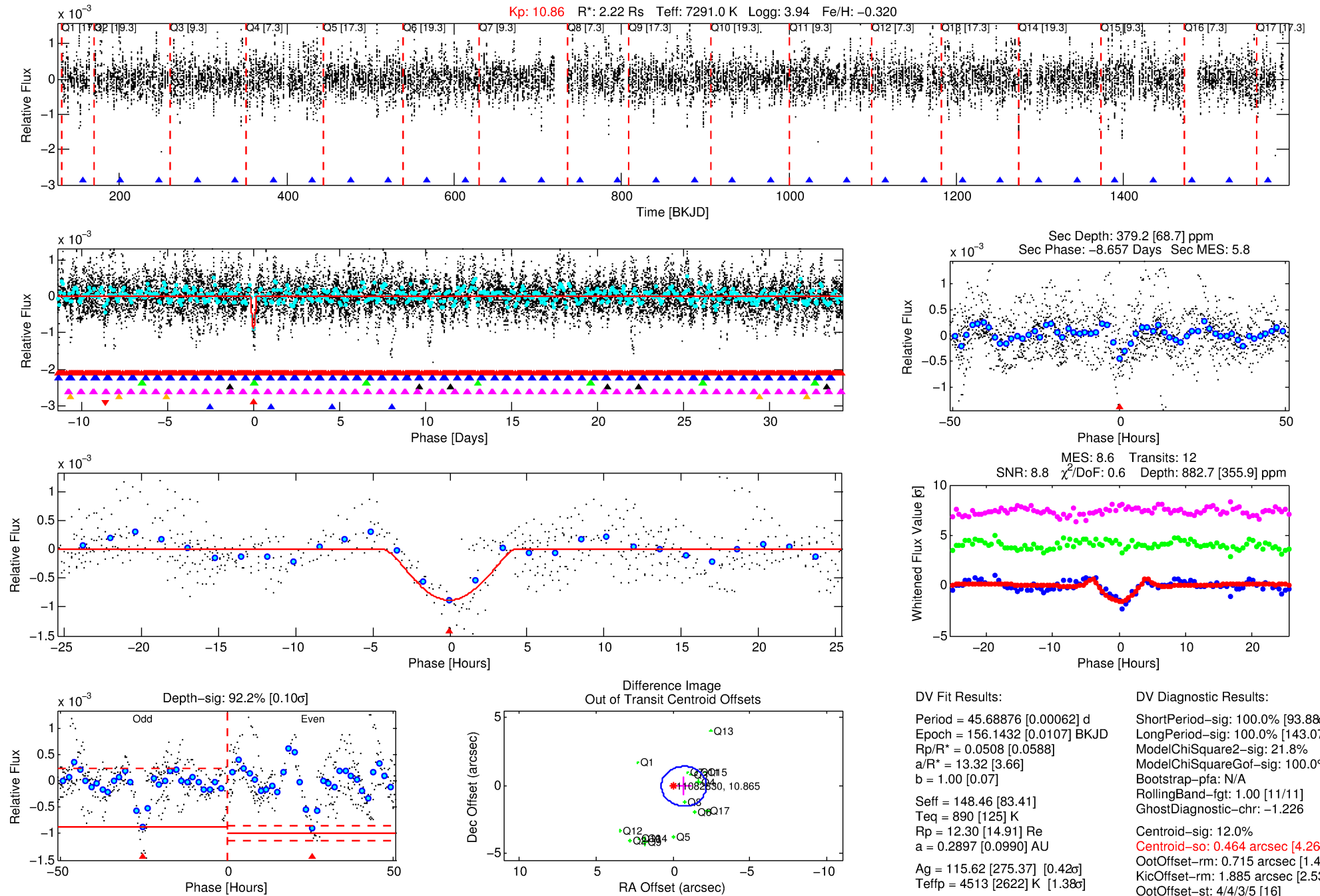
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011082830-07

No Significant Match Found

# DV One-Page Summary

KIC: 11082830 Candidate: 7 of 8 Period: 45.689 d



## DV Fit Results:

Period = 45.68876 [0.00062] d  
Epoch = 156.1432 [0.0107] BKJD  
 $R_p/R^* = 0.0508$  [0.0588]  
 $a/R^* = 13.32$  [3.66]  
 $b = 1.00$  [0.07]  
 $\text{Seff} = 148.46$  [83.41]  
 $T_{\text{eq}} = 890$  [125] K  
 $R_p = 12.30$  [14.91]  $R_{\text{e}}$   
 $a = 0.2897$  [0.0990] AU  
 $\text{Ag} = 115.62$  [275.37] [0.42 $\sigma$ ]  
 $T_{\text{eff}} = 4513$  [2622] K [1.38 $\sigma$ ]

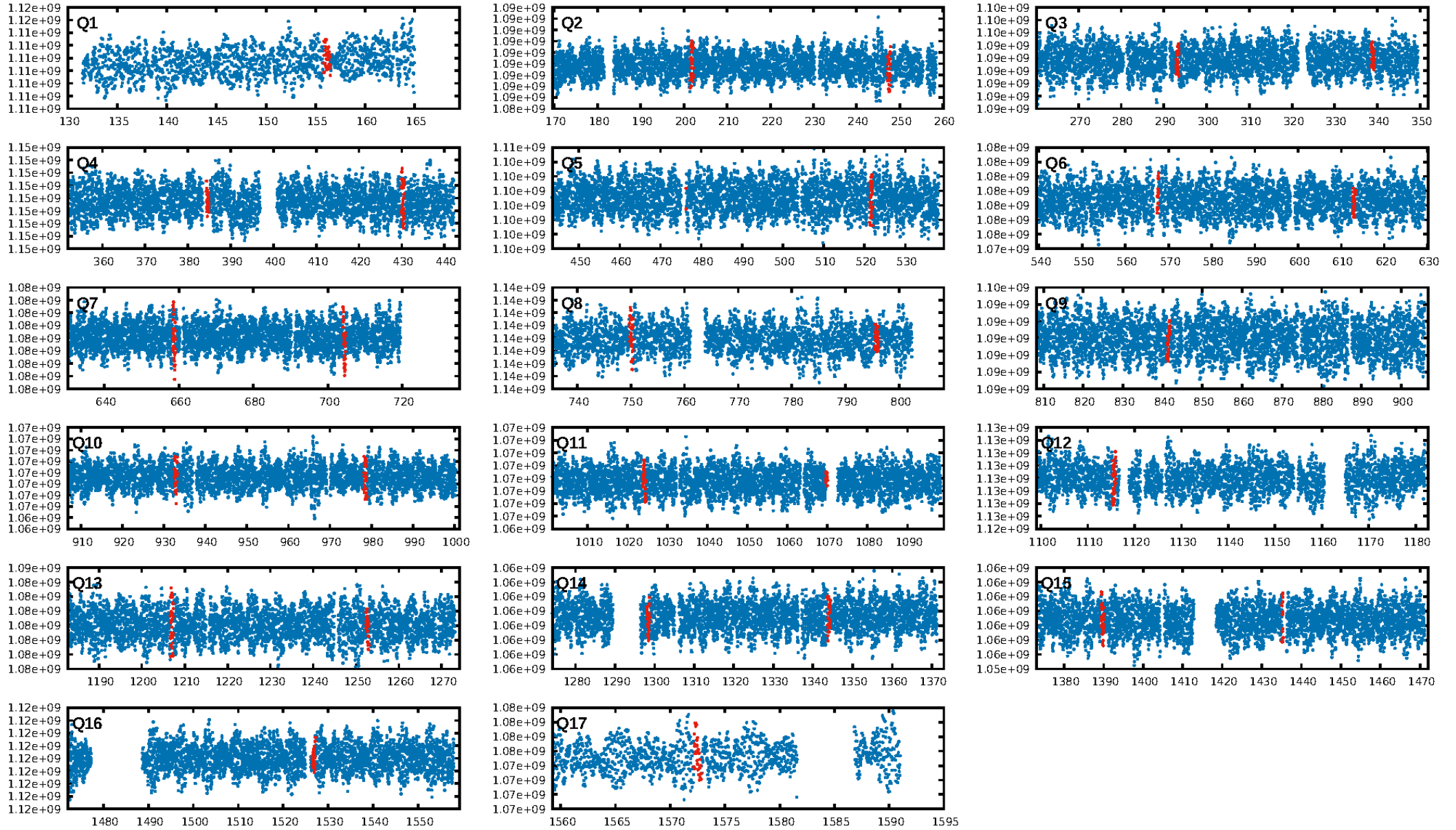
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [93.88 $\sigma$ ]  
LongPeriod-sig: 100.0% [143.07 $\sigma$ ]  
ModelChiSquare2-sig: 21.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [11/11]  
GhostDiagnostic-chr: -1.226  
Centroid-sig: 12.0%  
**Centroid-so: 0.464 arcsec [4.26 $\sigma$ ]**  
OotOffset-rm: 0.715 arcsec [1.46 $\sigma$ ]  
KicOffset-rm: 1.885 arcsec [2.53 $\sigma$ ]  
OotOffset-st: 4/4/3/5 [16]  
KicOffset-st: 4/4/3/5 [16]  
DiffImageQuality-fgm: 0.12 [2/16]  
DiffImageOverlap-fno: 0.00 [0/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:41:44 Z

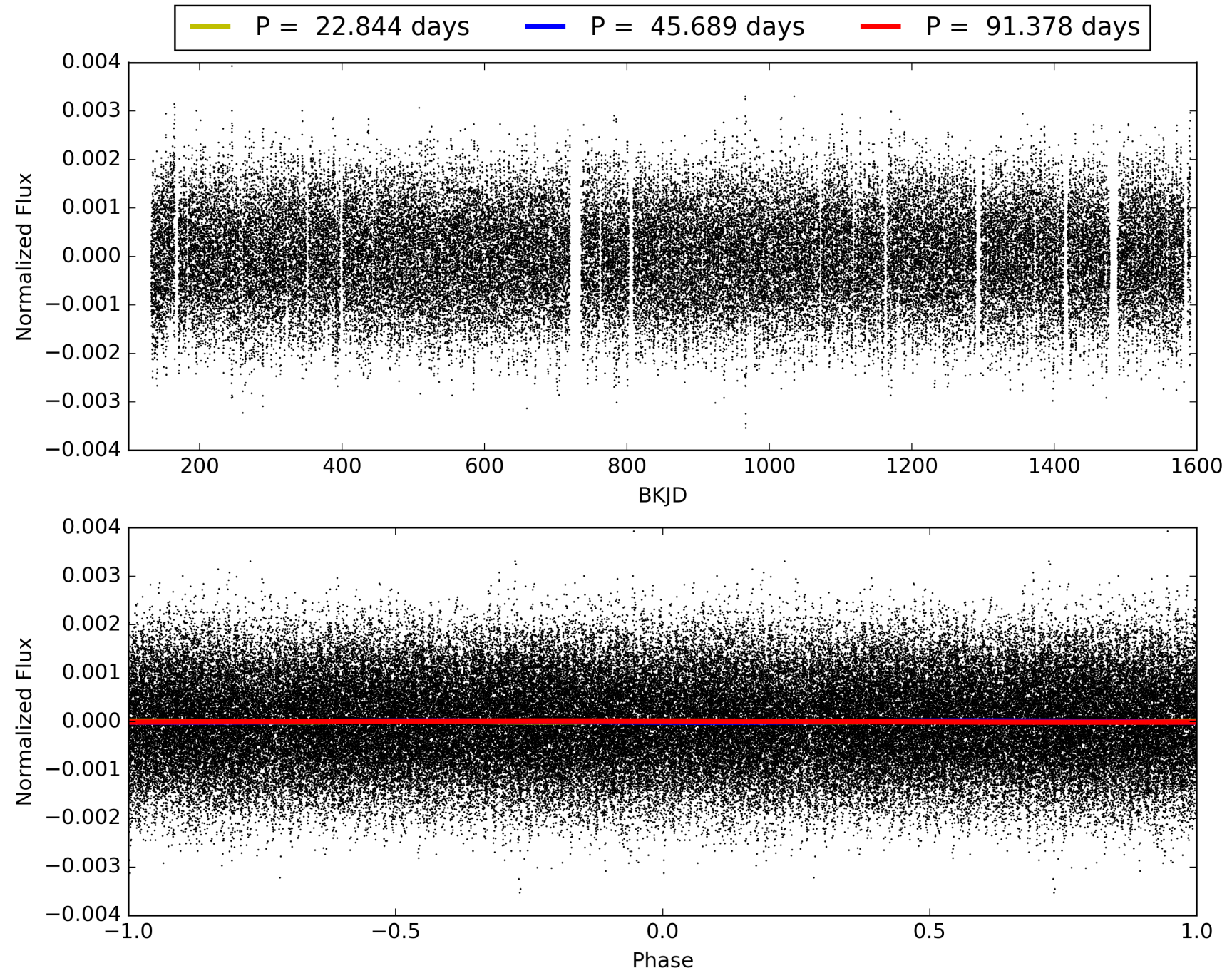
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011082830-07, PDC Light Curves



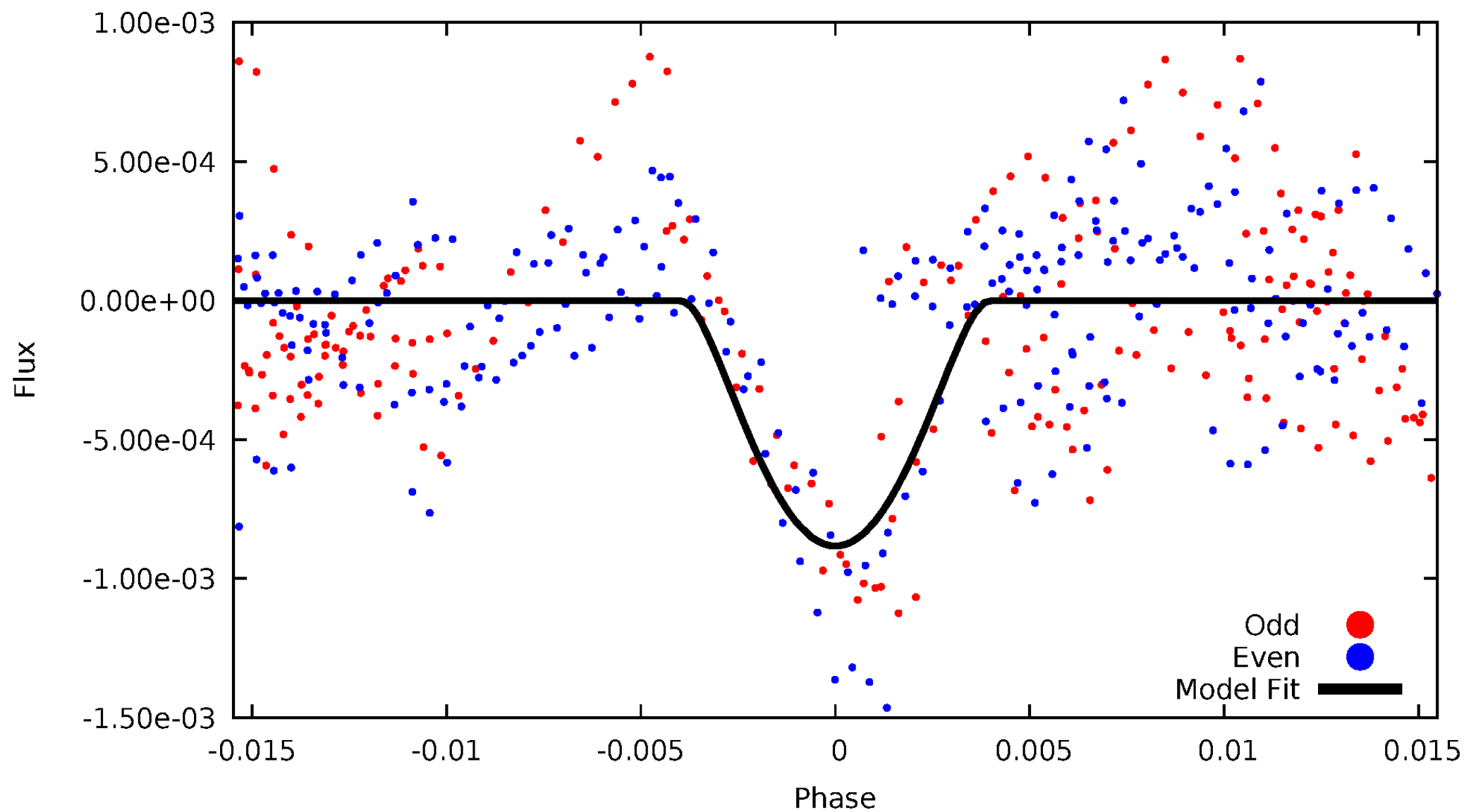


# TCE 011082830-07



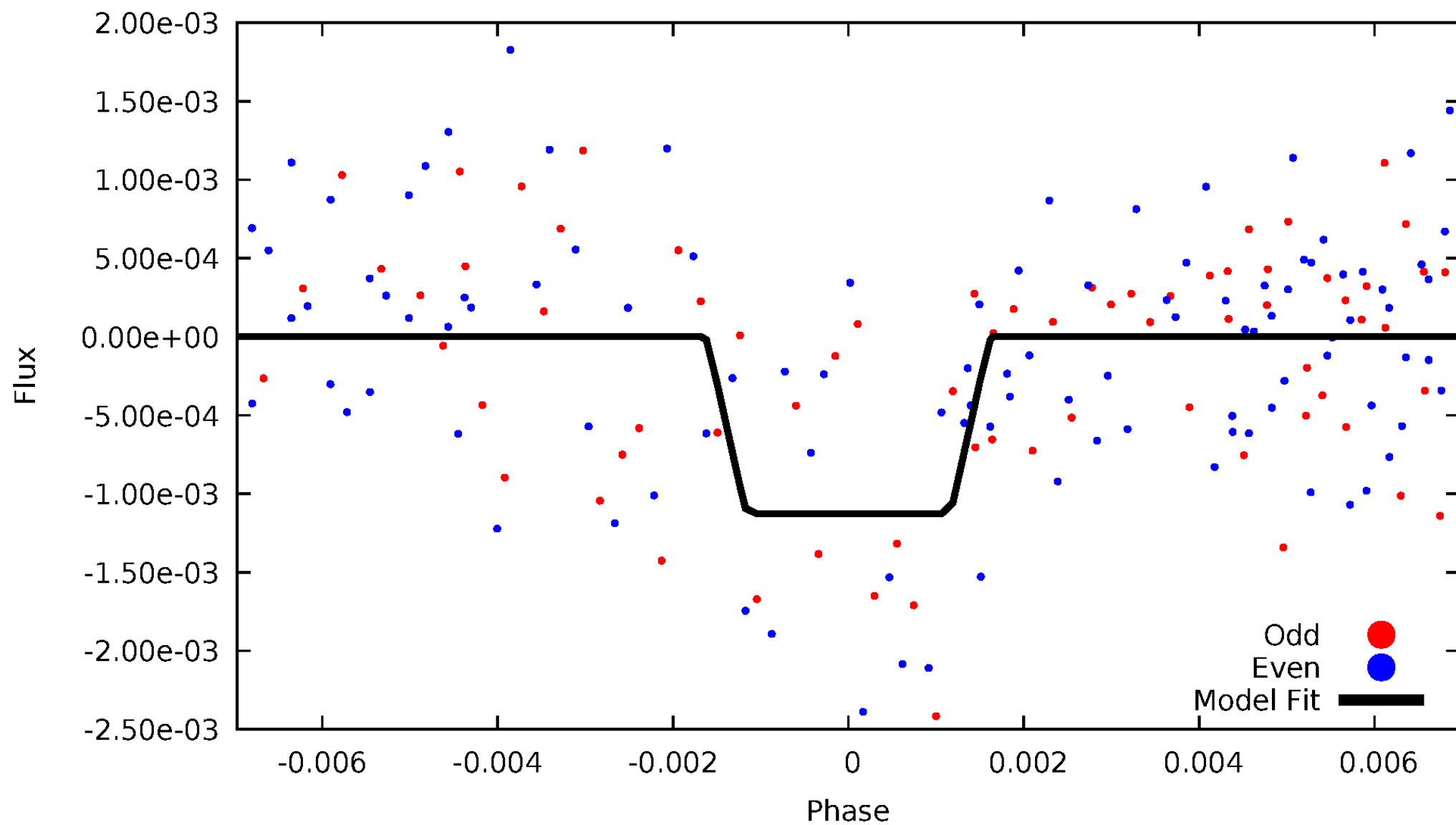
# DV Odd/Even

TCE 011082830-07



# ALT Odd/Even

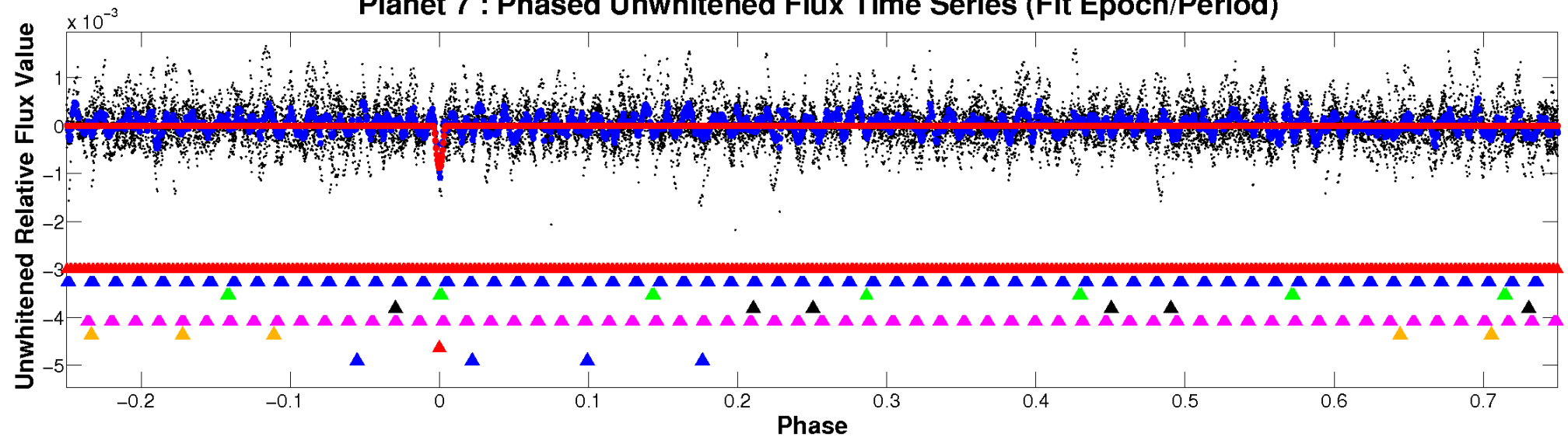
TCE 011082830-07



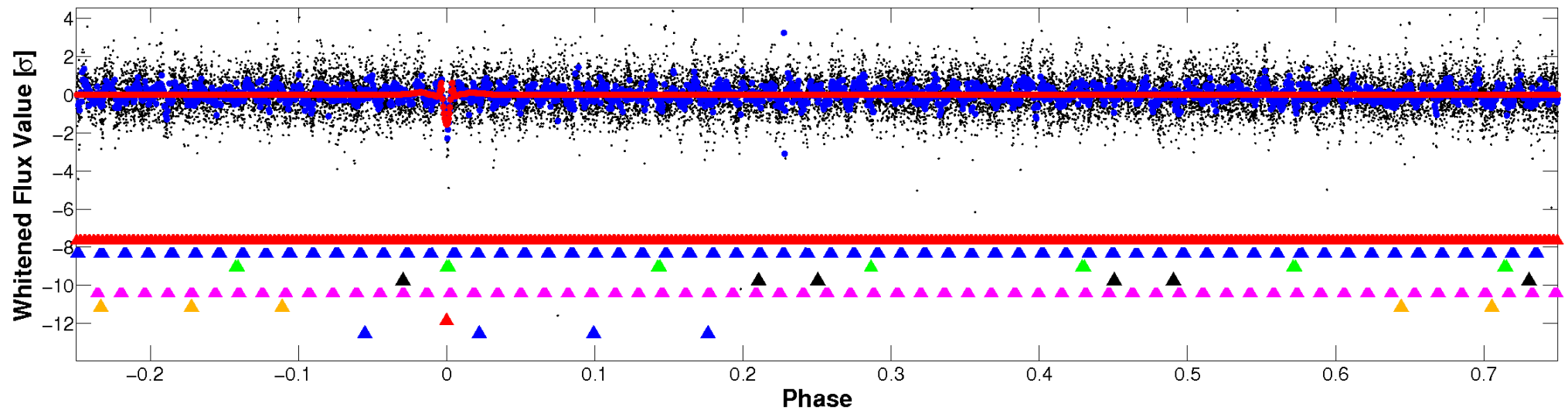


# Non-Whitened Vs. Whitened Light Curve

## Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

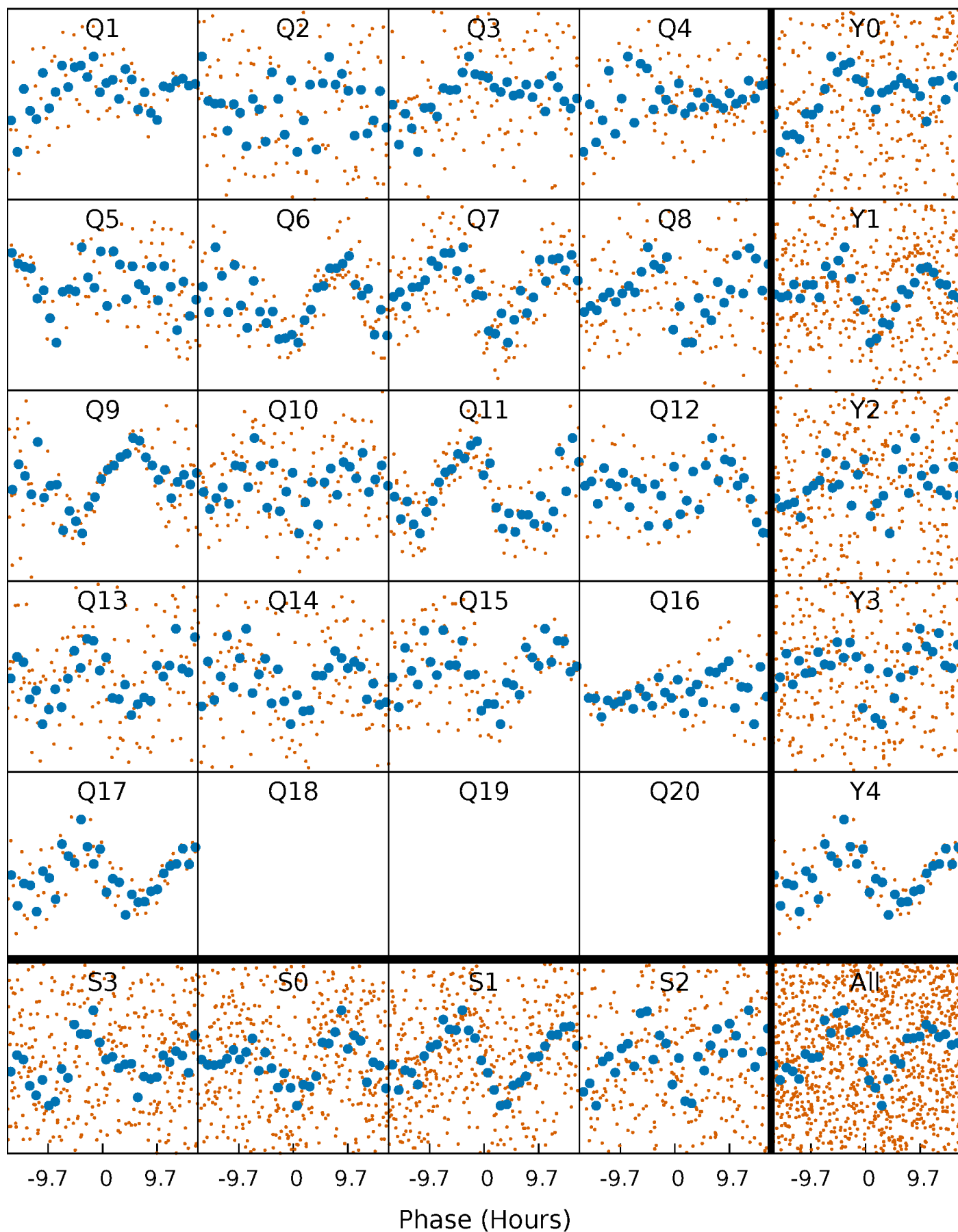


## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



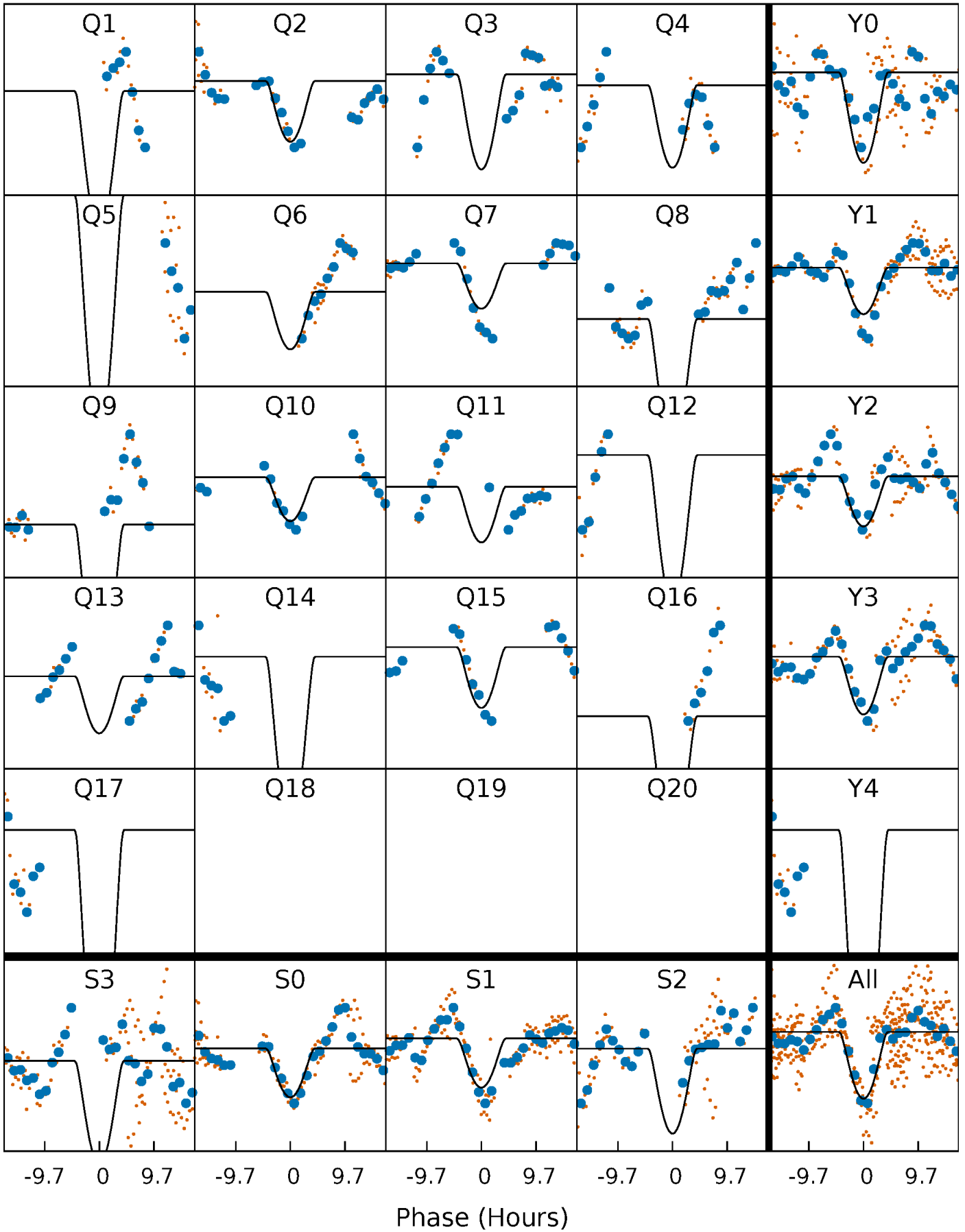
# PDC Quarter-Phased Transit Curves

TCE 011082830-07     $P = 45.688762$  Days     $T_0 = 156.143238$  (BKJD)



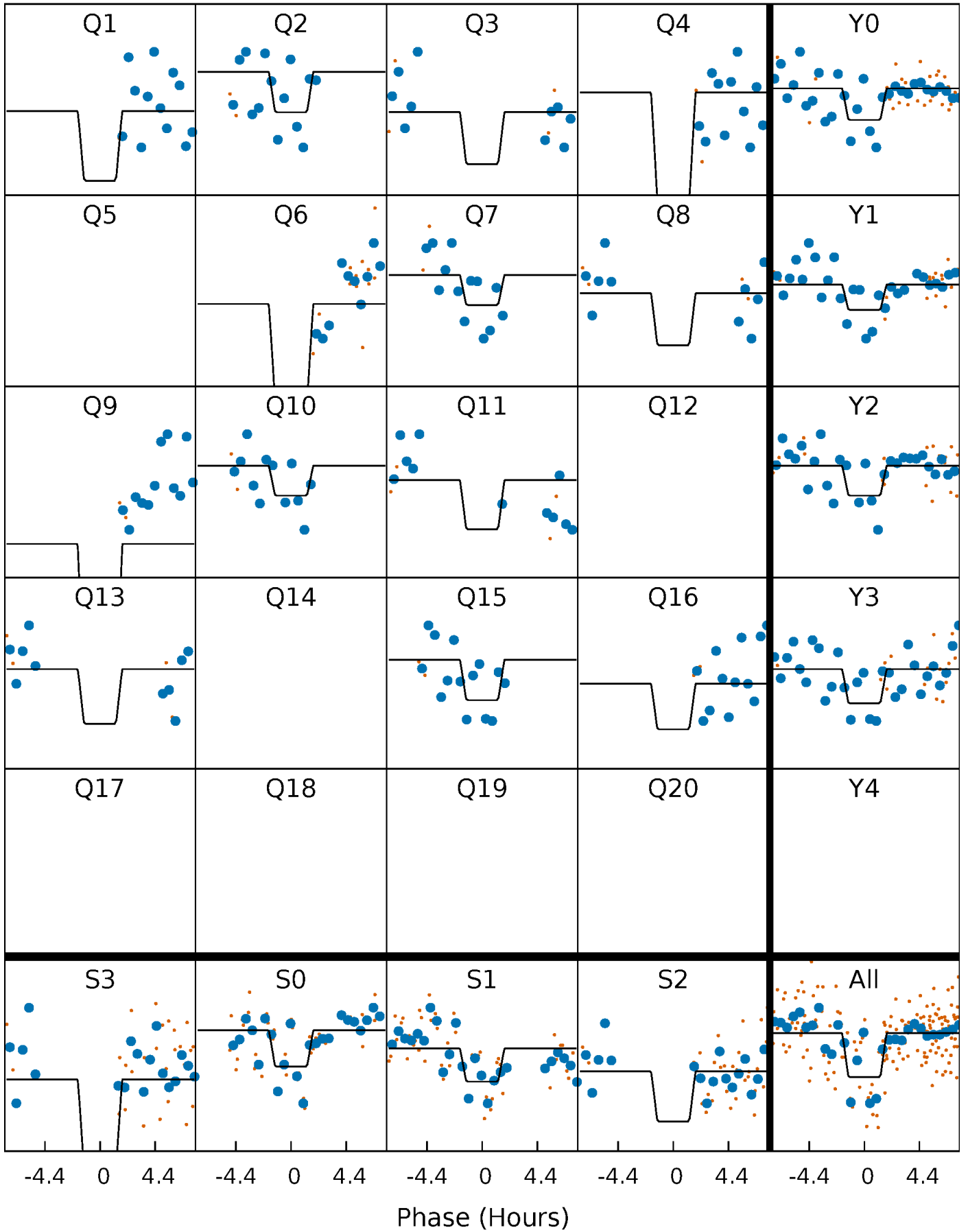
# DV Quarter-Phased Transit Curves

TCE 011082830-07     $P = 45.688762$  Days     $T_0 = 156.143238$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

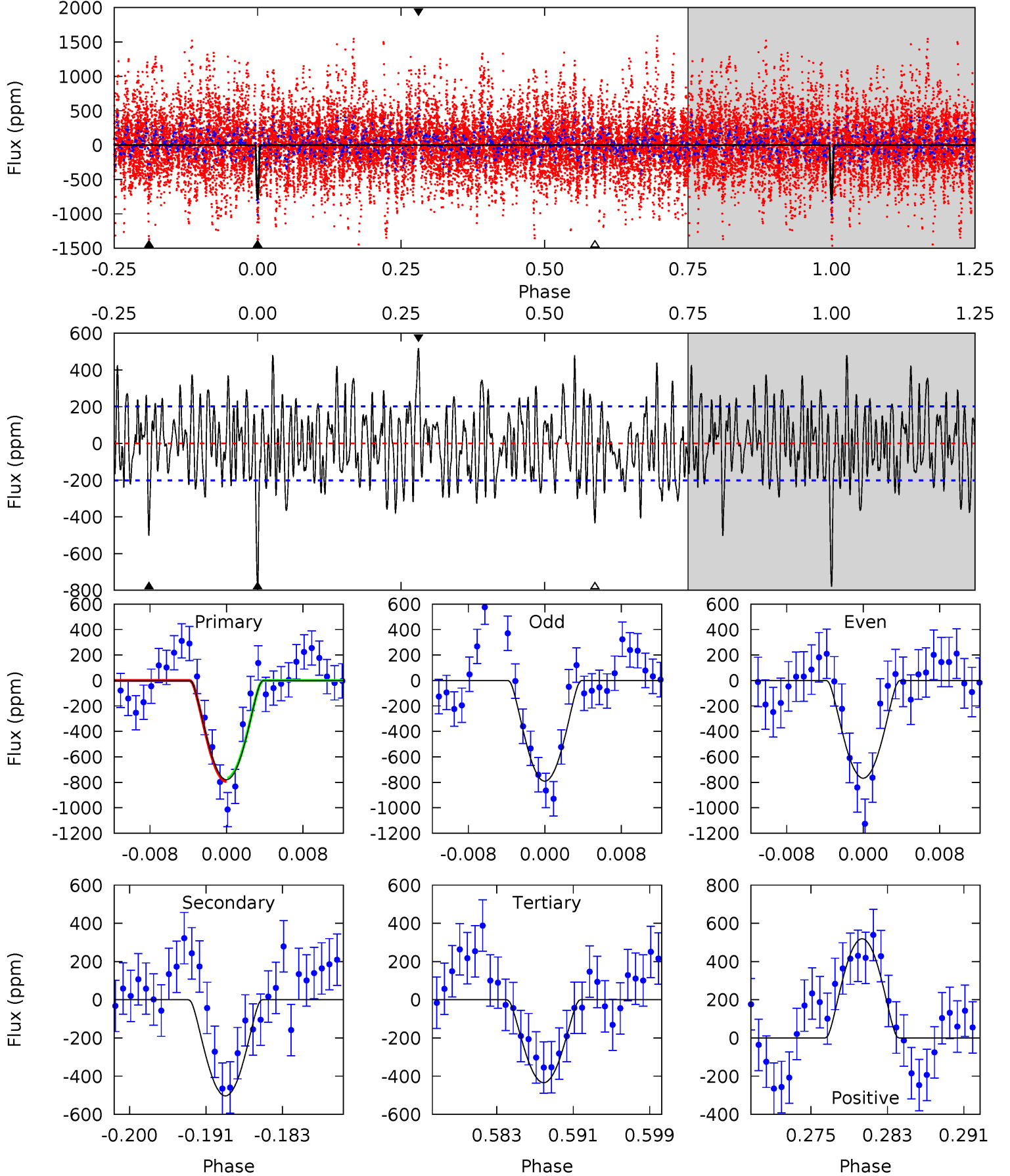
TCE 011082830-07 P= 45.690631 Days  $T_0=156.112494$  (BKJD)



# DV Model-Shift Uniqueness Test

011082830-07,  $P = 45.688762$  Days,  $E = 110.454476$  Days

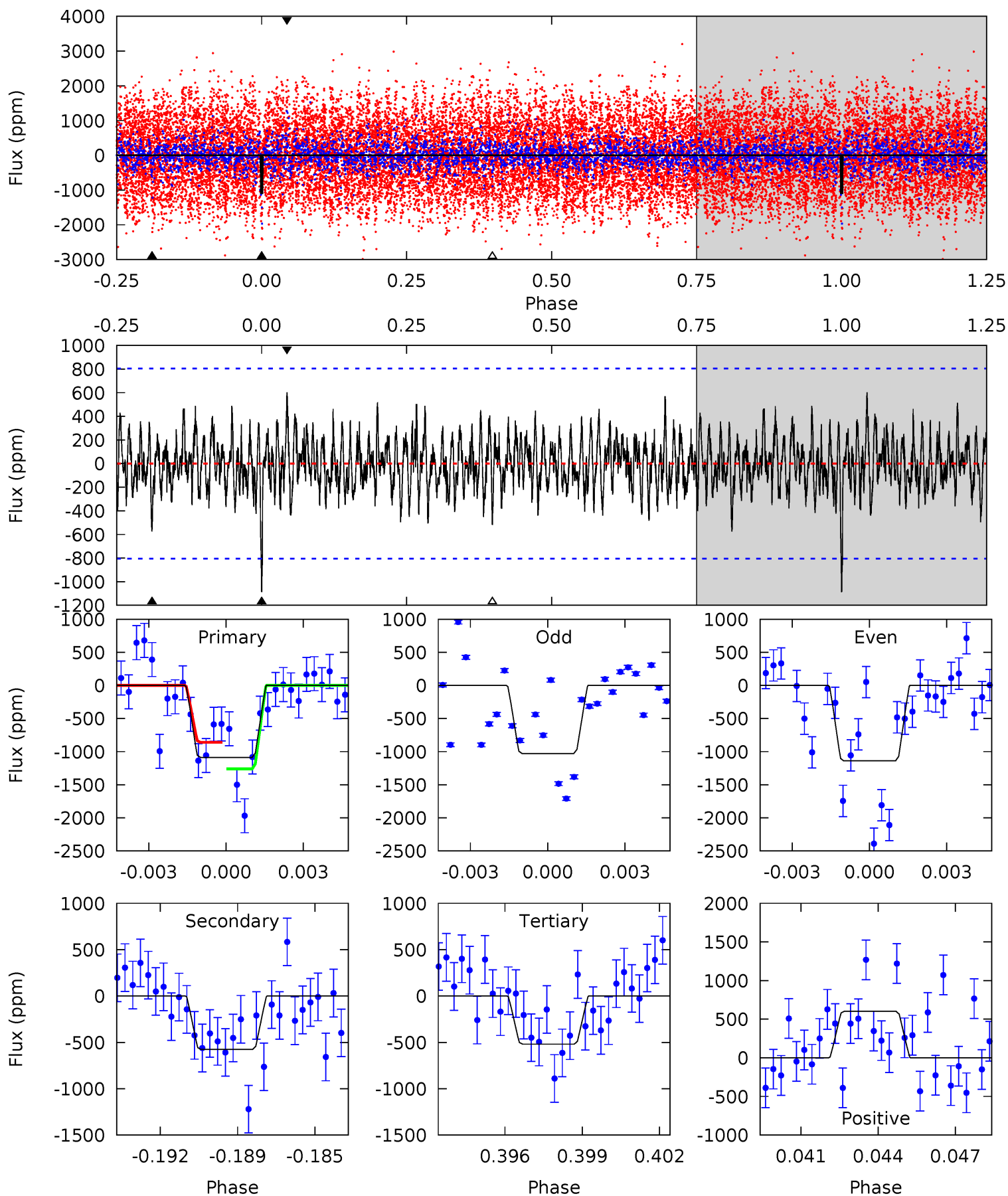
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.6	12.6	10.9	13.1	5.06	2.64	4.17	8.68	6.53	1.74	-0.40	0.29	0.72	0.40	0.32



# Alt Model-Shift Uniqueness Test

011082830-07, P = 45.690631 Days, E = 110.421863 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.08	3.75	3.38	3.92	5.24	2.95	1.18	3.71	3.17	0.37	-0.17	0.36	1.02	0.36	1.24



### Stellar Parameters For KIC 011082830

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7291^{+203}_{-279}$	$3.937^{+0.315}_{-0.135}$	$-0.320^{+0.250}_{-0.350}$	$2.218^{+0.536}_{-0.804}$	$1.549^{+0.215}_{-0.323}$	$0.200^{+0.483}_{-0.083}$
	+3%/-4%	+8%/-3%	+78%/-109%	+24%/-36%	+14%/-21%	+242%/-42%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011082830-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-503 \pm 40$	$14.20^{+13.69}_{-9.29}$	$1216^{+96}_{-123}$	$4401^{+2826}_{-829}$	$110^{+836}_{-80}$
Alt.	$-575 \pm 154$	$12.42^{+12.20}_{-8.59}$	$1220^{+96}_{-129}$	$4858^{+3887}_{-1096}$	$159^{+1549}_{-118}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$



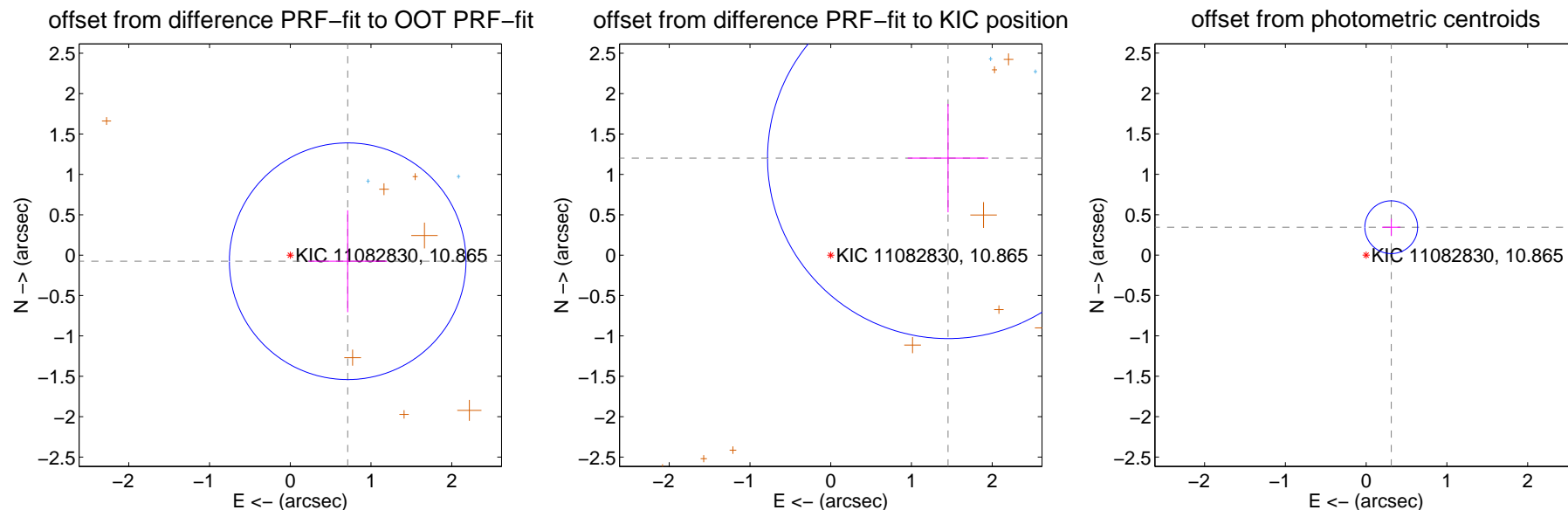
## DV Centroid Data

Supplemental centroid analysis for 011082830-07. **Kepler magnitude: 10.87.** Transit SNR 8.80

**There are 2 quarters with good PRF difference image offsets**

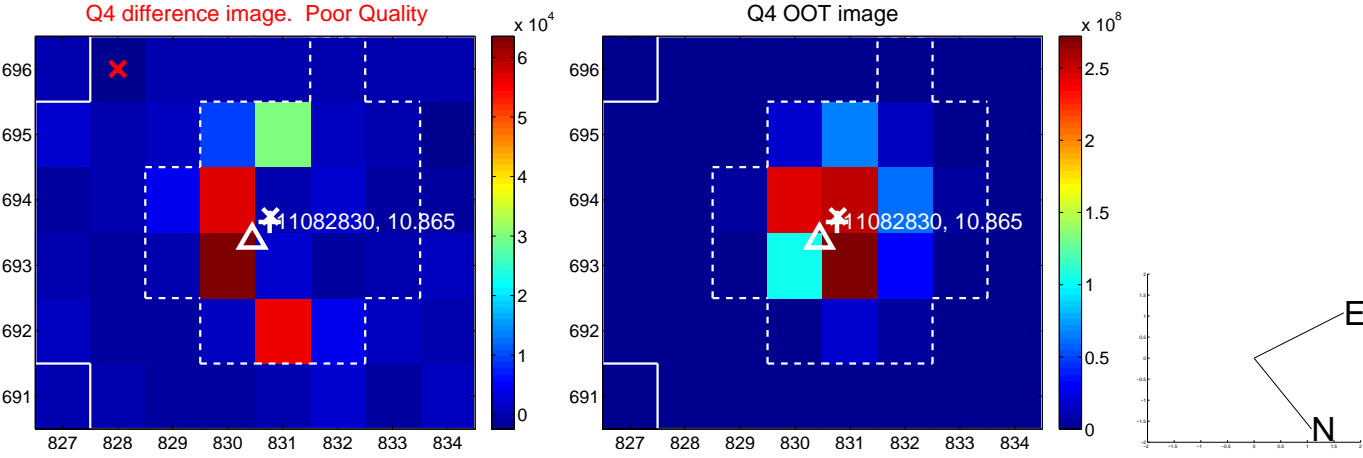
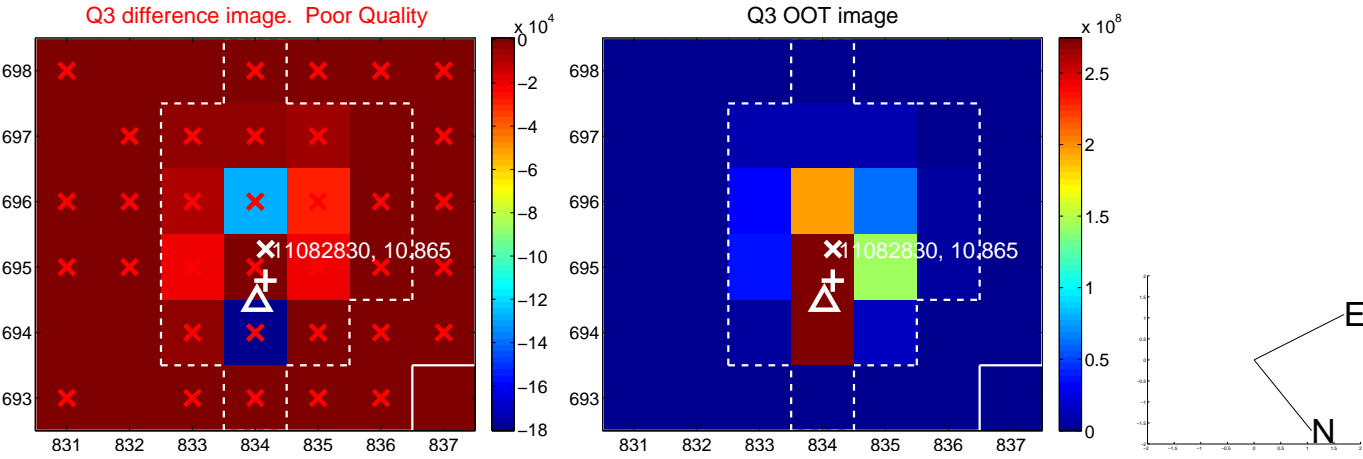
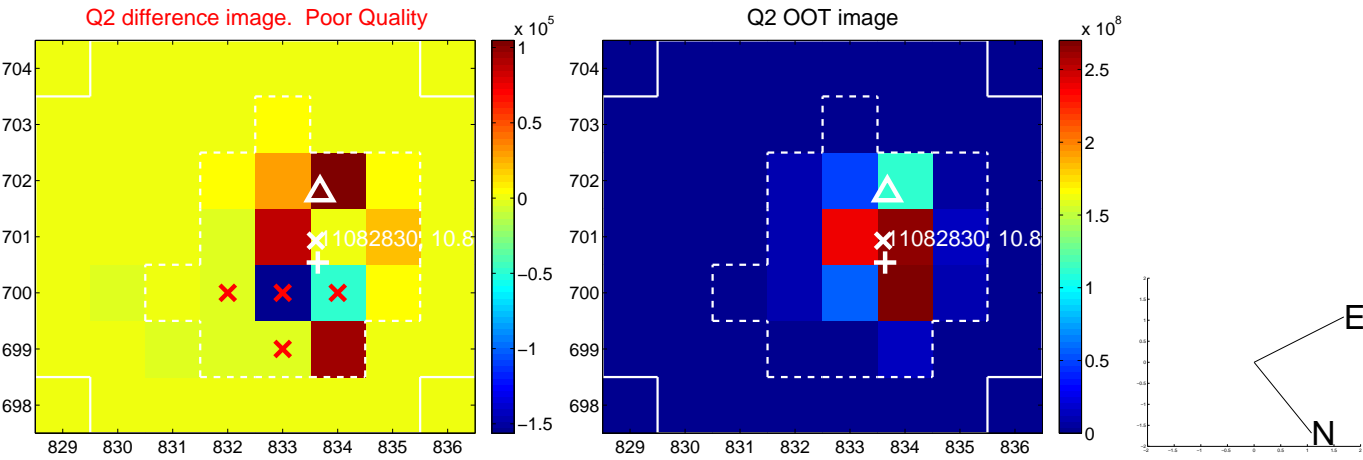
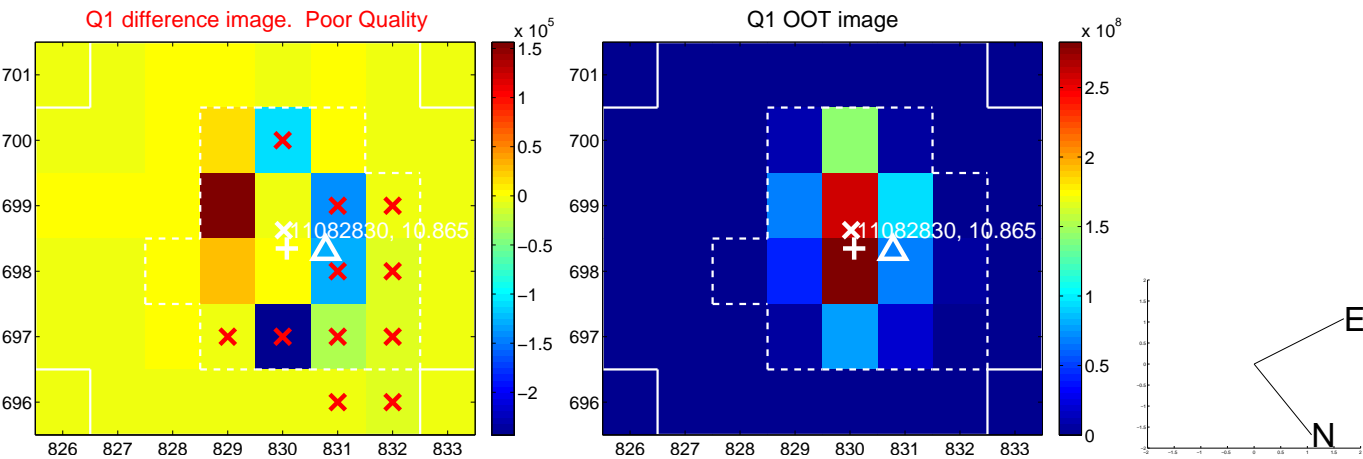
The direct PRF centroid is offset from the target star catalog position by about 1.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.715 \pm 0.488$	1.46	$-0.711 \pm 0.486$	$-0.075 \pm 0.631$
PRF-fit source offset from KIC position	$1.885 \pm 0.745$	2.53	$-1.452 \pm 0.498$	$1.201 \pm 0.671$
photometric centroid source offset	$0.46 \pm 0.11$	4.26	$-0.31 \pm 0.11$	$0.34 \pm 0.11$

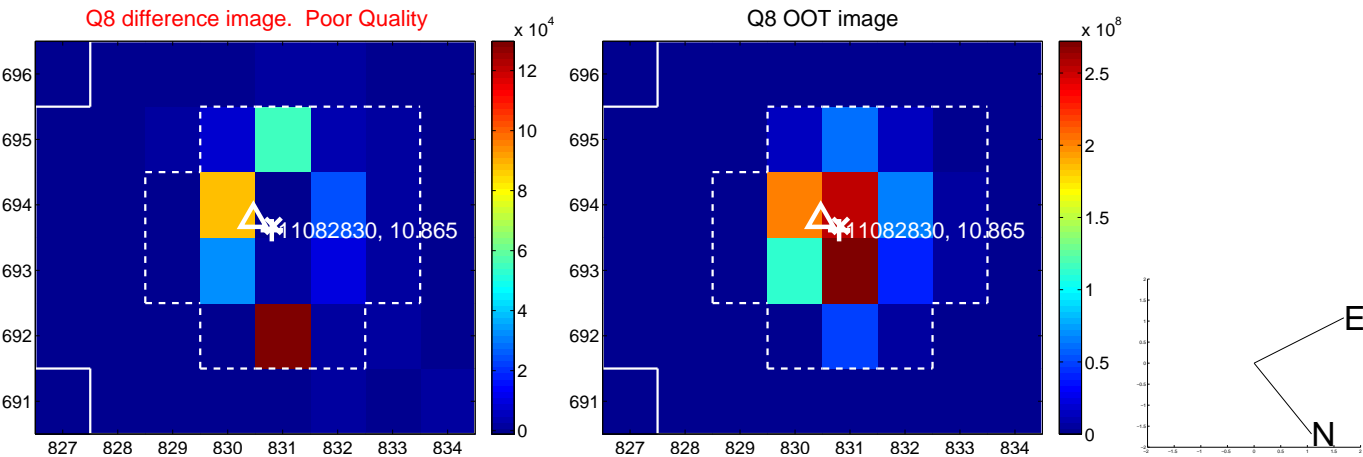
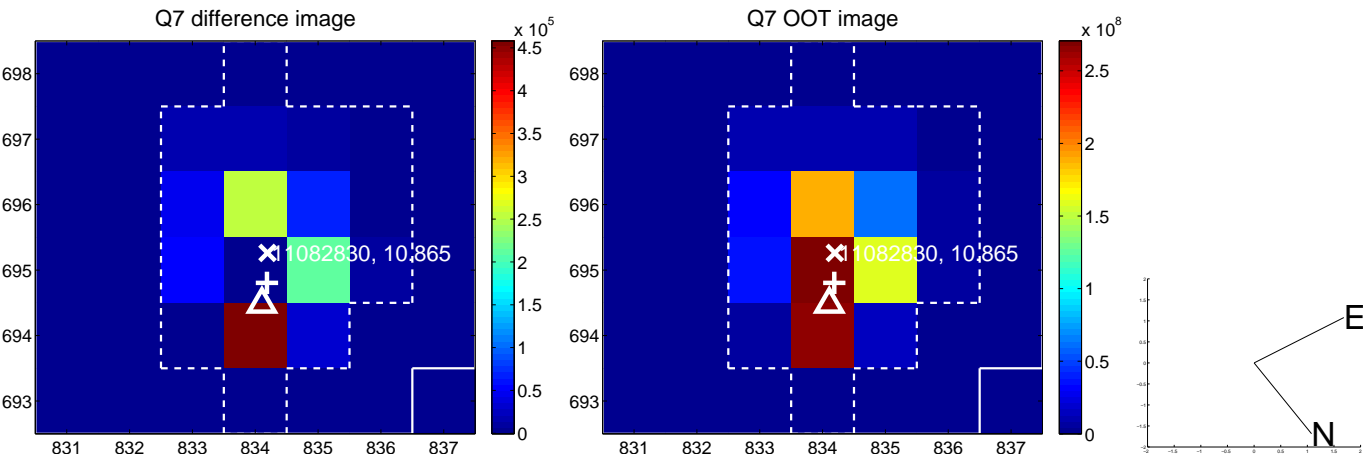
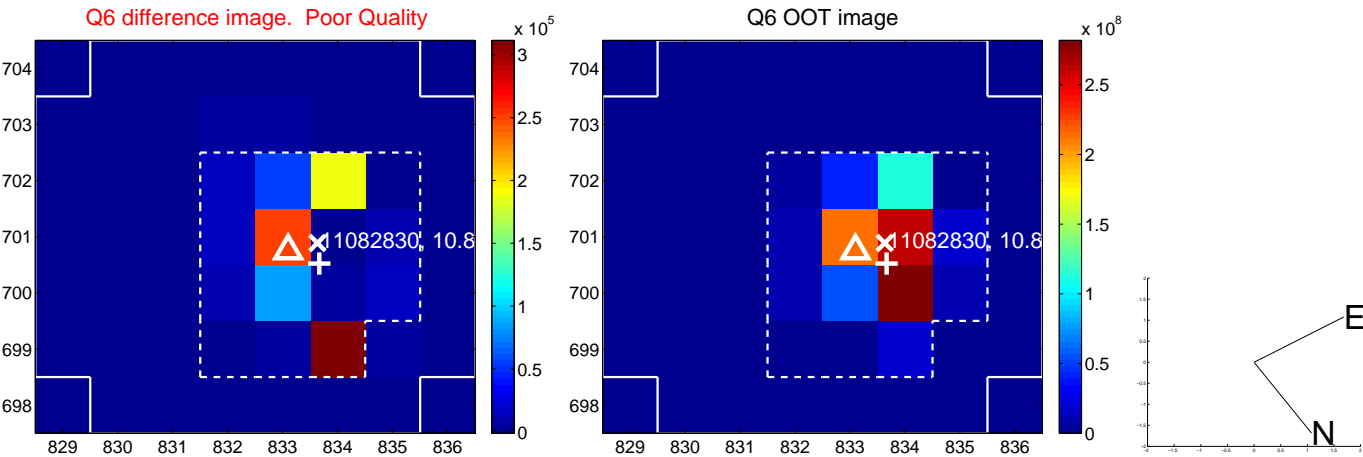
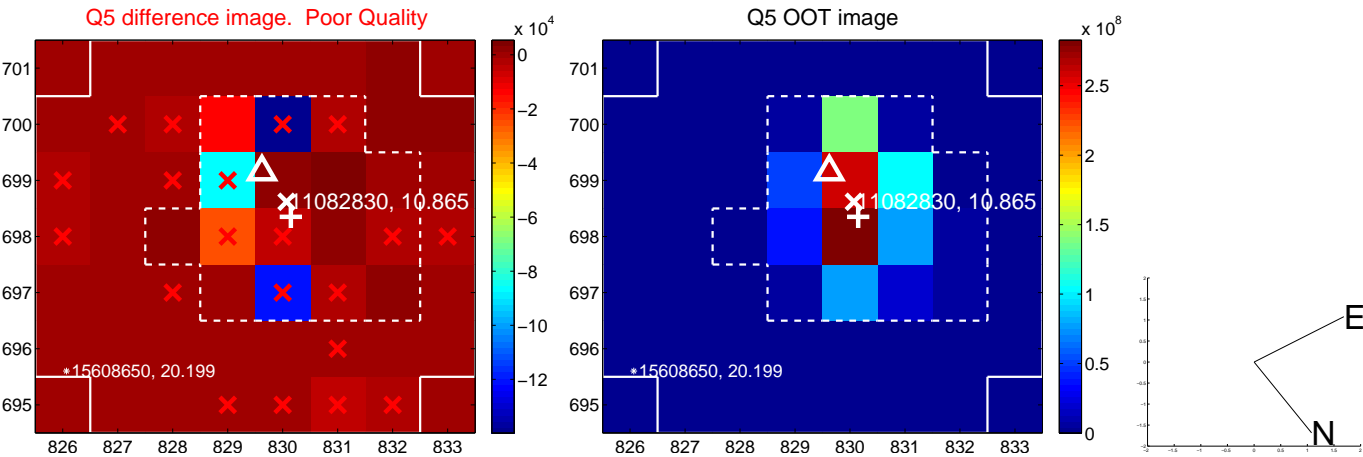


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

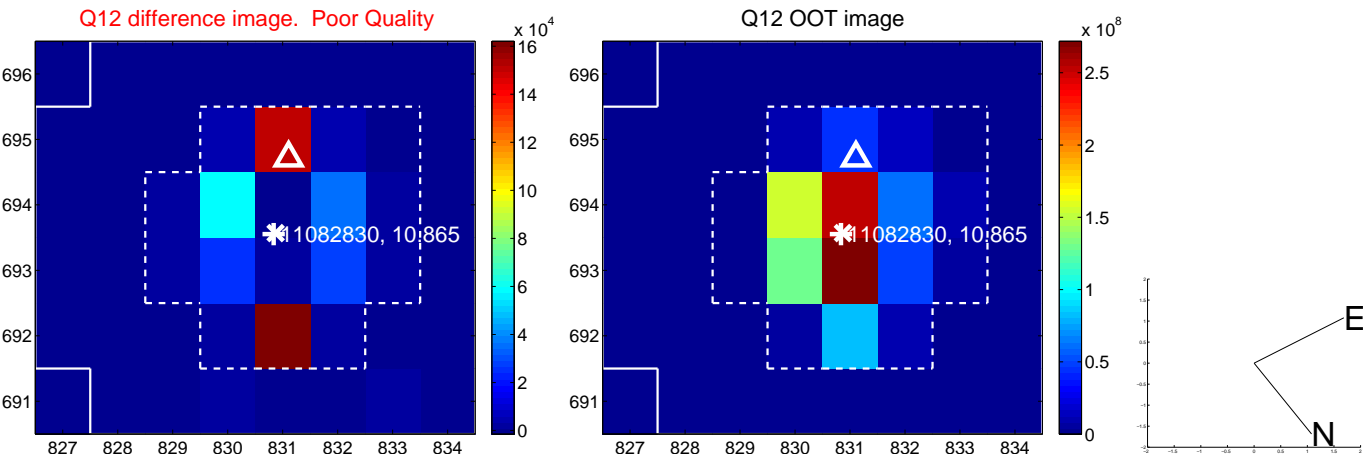
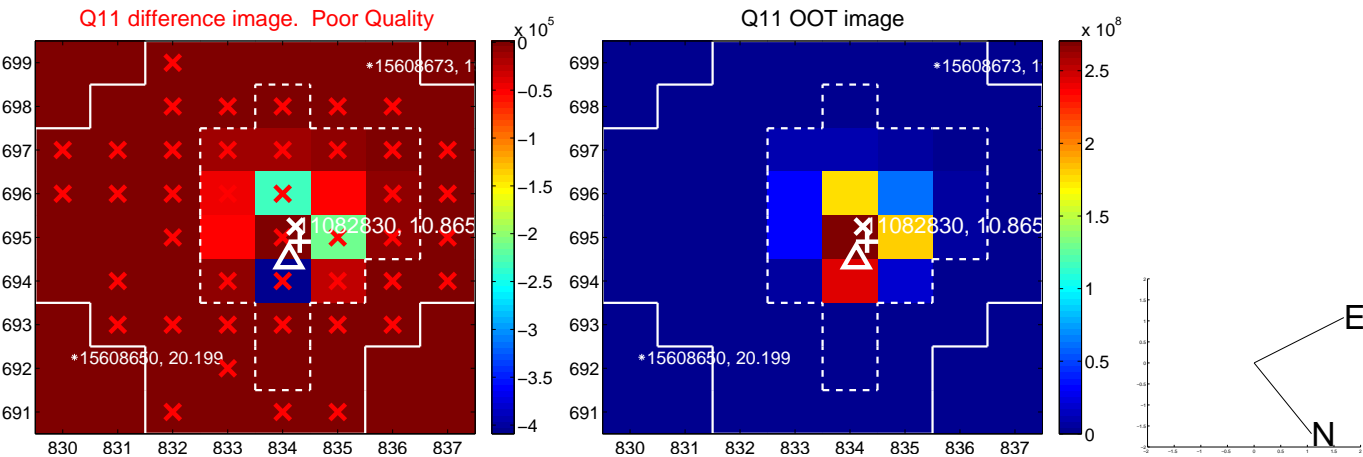
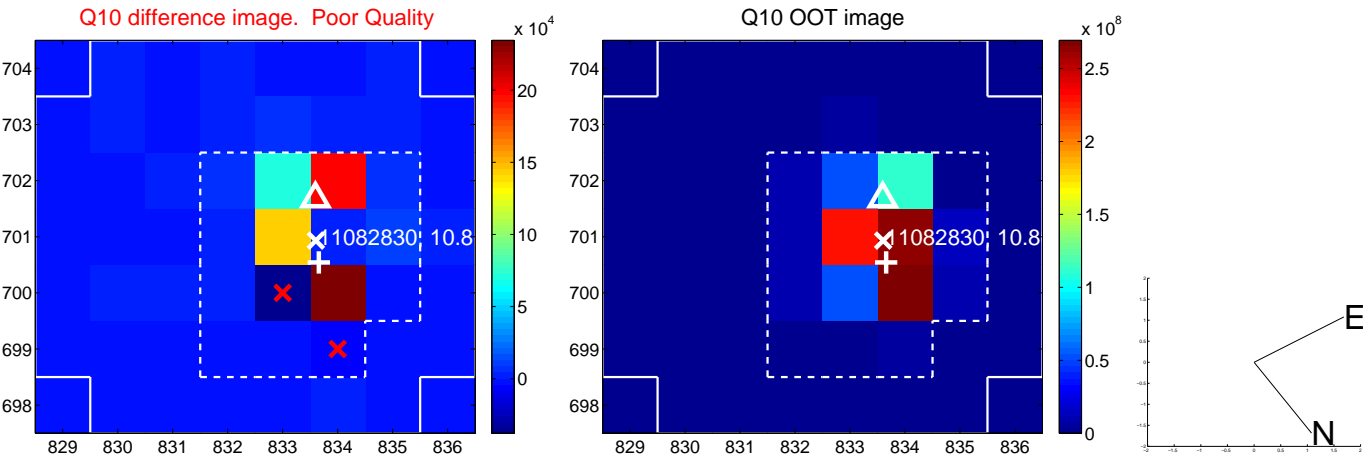
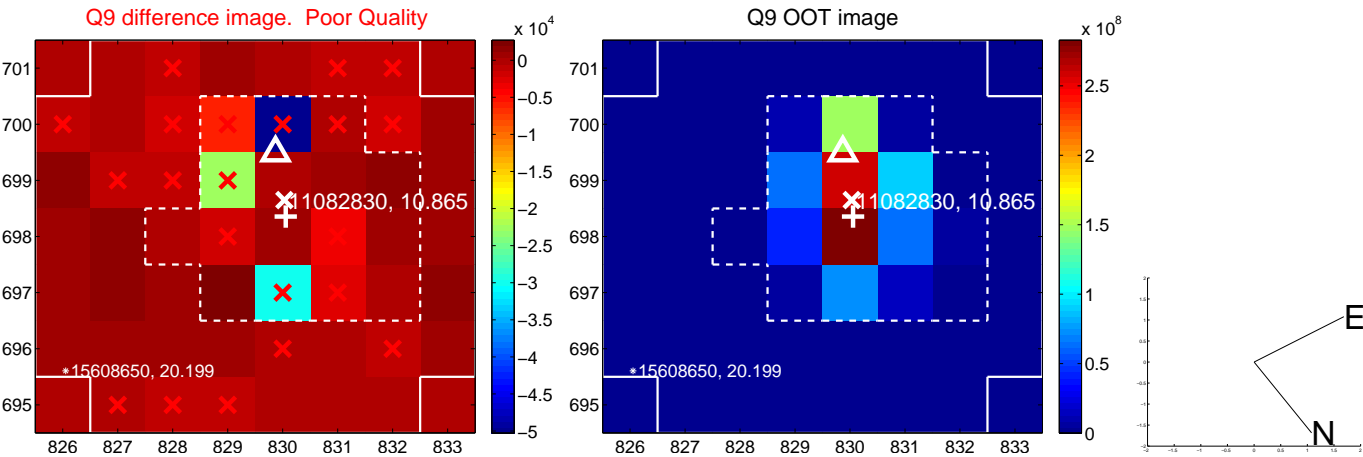
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



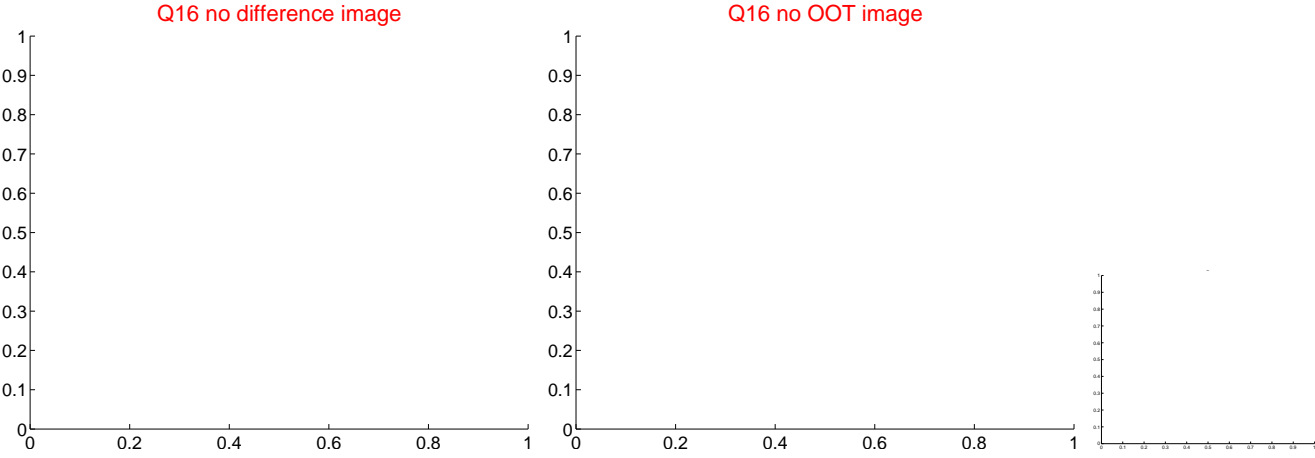
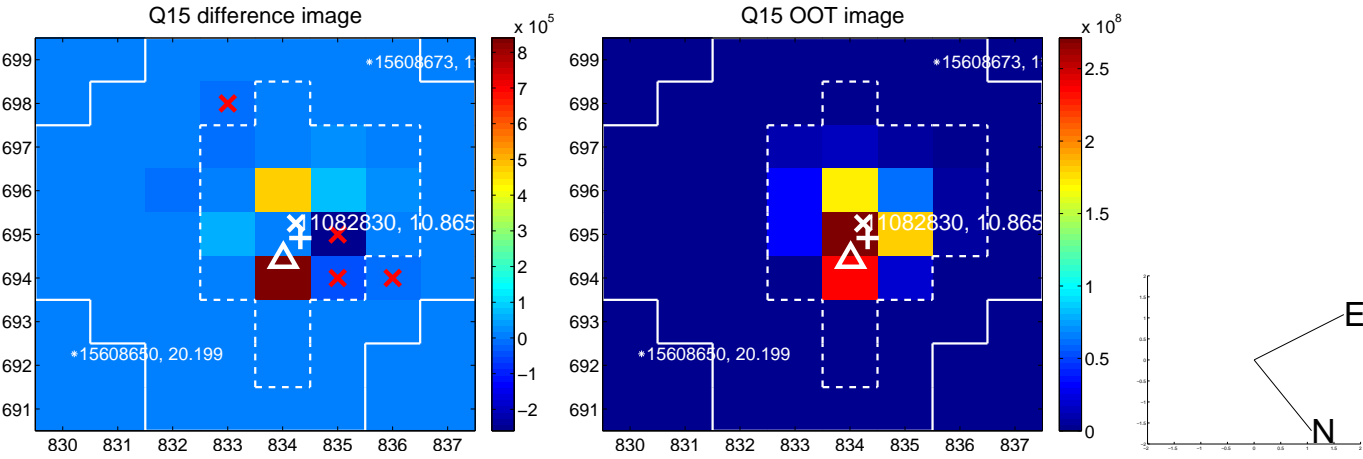
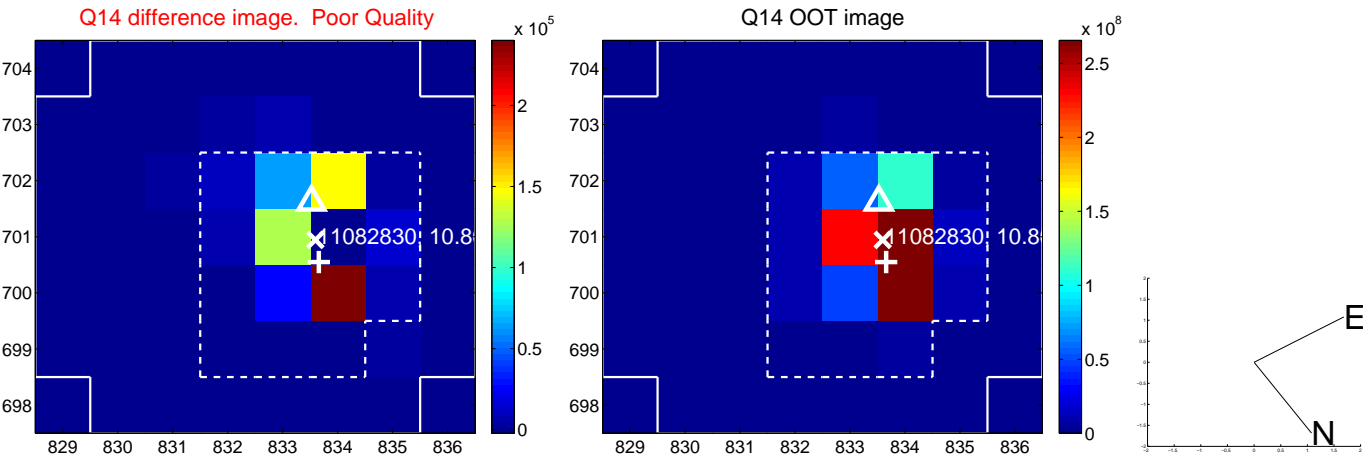
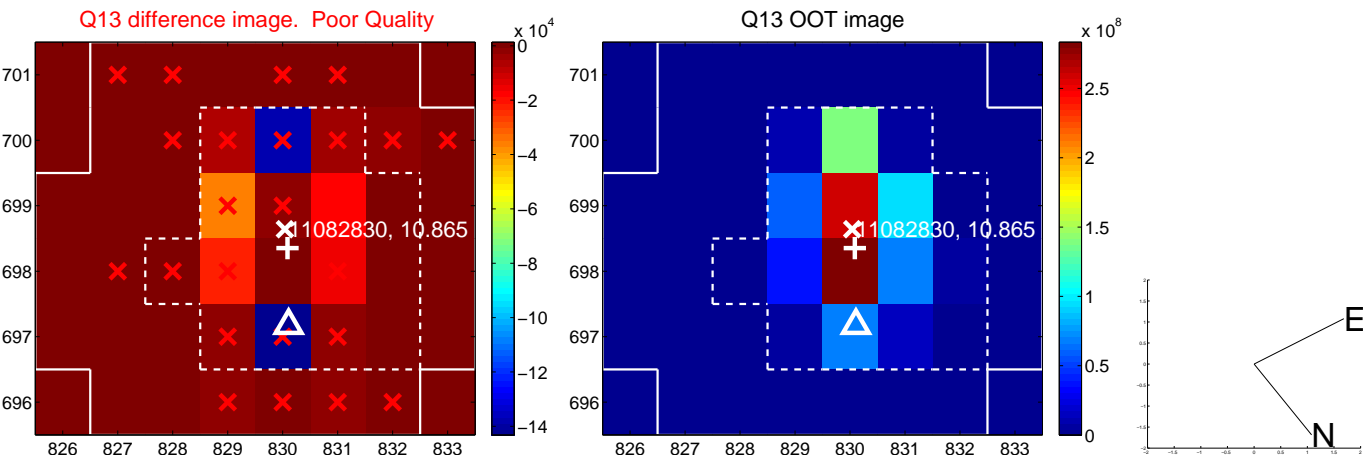
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



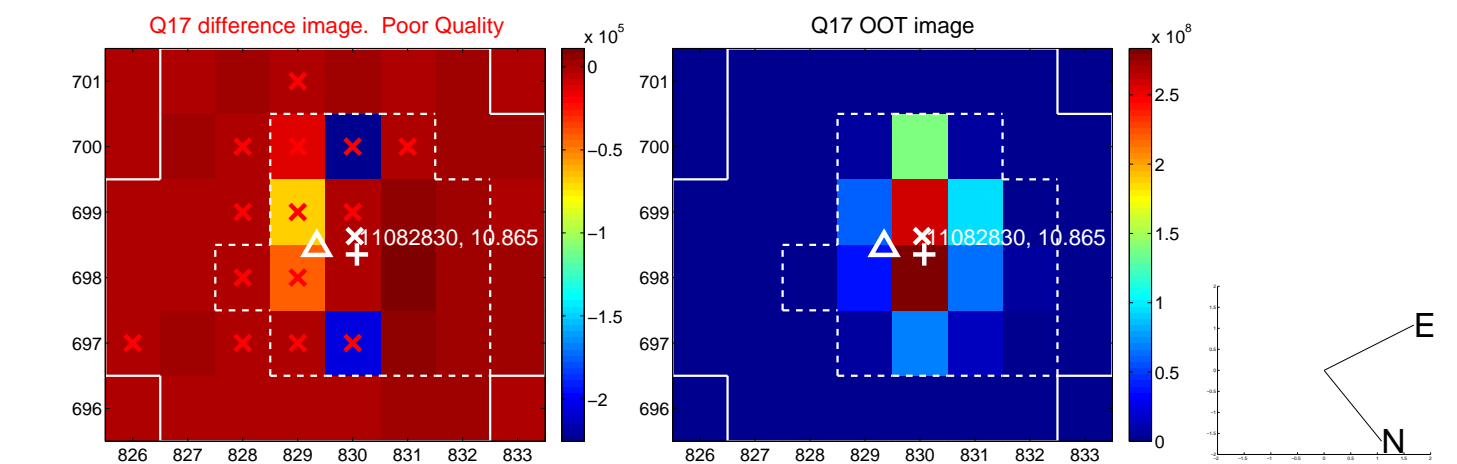
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



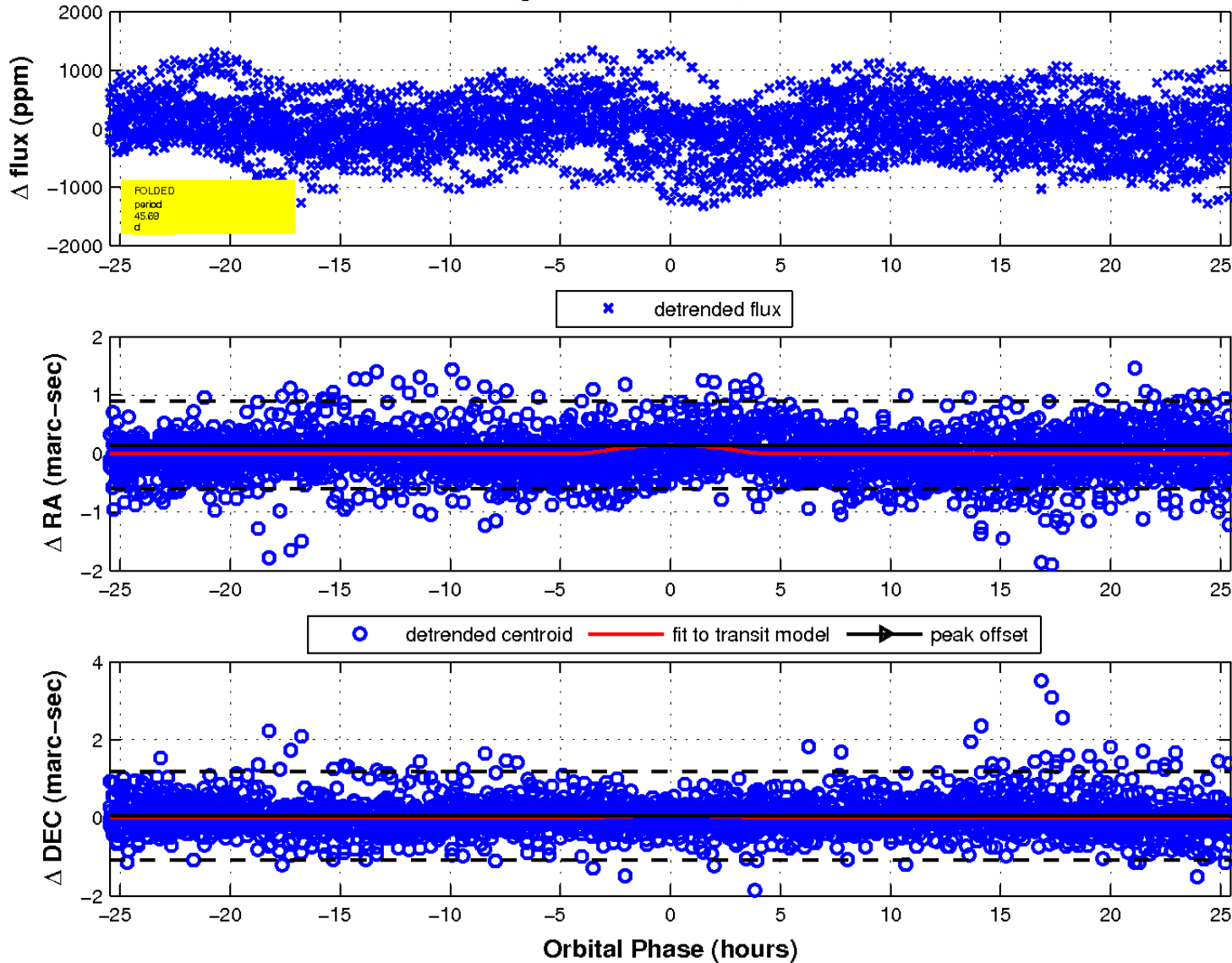
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



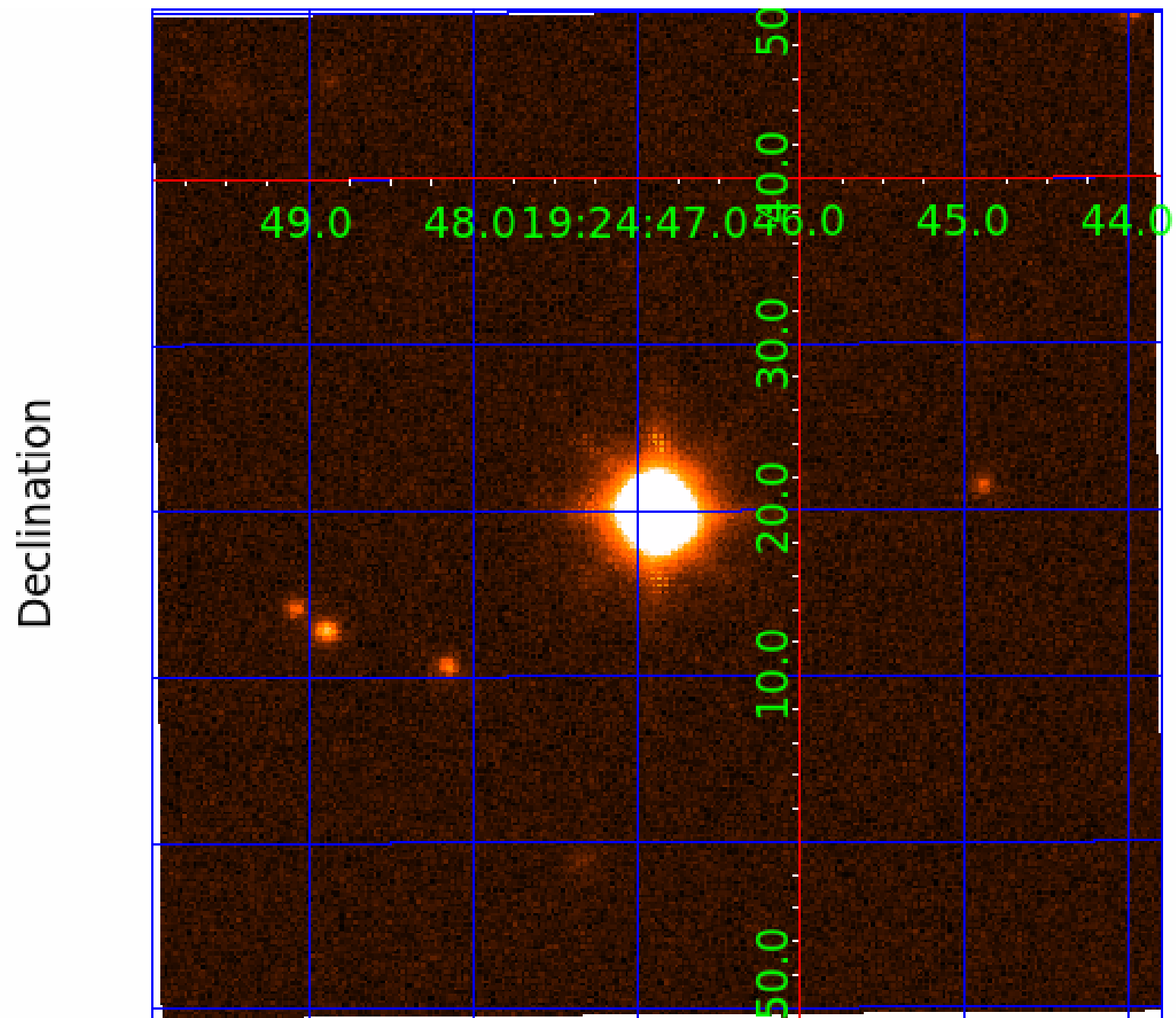
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 7 of 8



UKIRT Image





# KIC 011082830

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011082830-01	OBS	No	0.679918	132.181500	25.5	2.887	9.3	10.4	2.22	7291	1.29	40557.84
011082830-02	OBS	No	3.626434	133.105257	66.3	6.601	8.1	5.5	2.22	7291	2.13	4352.22
011082830-03	OBS	No	110.968411	188.752274	1067.4	6.919	9.0	9.8	2.22	7291	13.47	45.47
011082830-04	OBS	No	263.166816	176.730002	495.5	3.527	8.7	5.5	2.22	7291	5.55	14.38
011082830-05	OBS	No	3.626397	133.720256	153.8	6.037	8.8	10.4	2.22	7291	5.34	4352.28
011082830-06	OBS	No	322.616820	139.890190	630.3	1.794	9.4	7.1	2.22	7291	5.92	10.96
011082830-07	OBS	No	45.688762	156.143238	882.7	8.488	8.6	8.8	2.22	7291	12.30	148.46
011082830-08	OBS	No	414.726345	153.623511	57.7	6.000	7.8	-1.0	2.22	7291	1.71	7.84

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011082830-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011082830-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED—HALO_GHOST
011082830-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
011082830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011082830-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED
011082830-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—CENT_SATURATED

**Notes:** OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

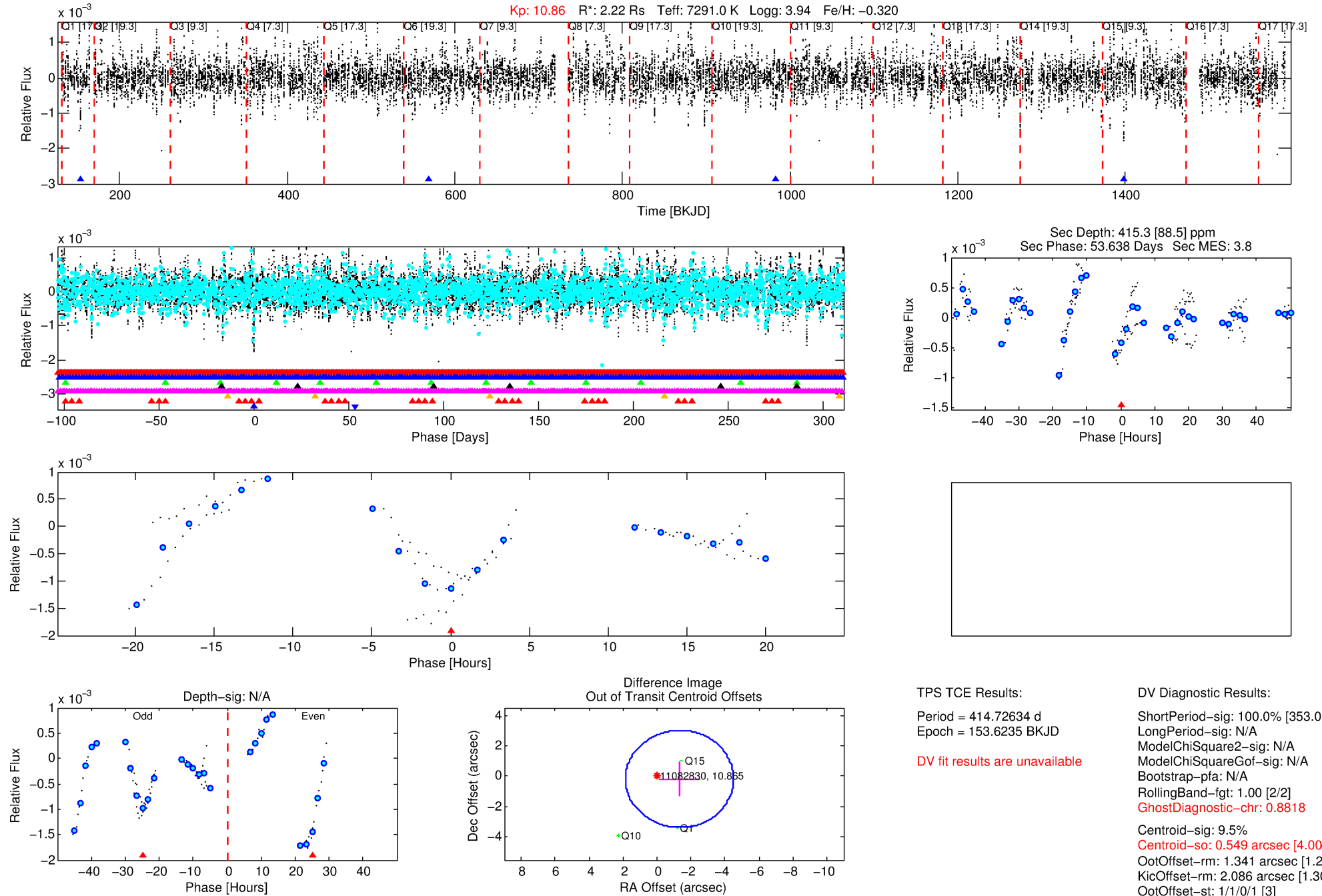
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011082830-08

No Significant Match Found

# DV One-Page Summary

KIC: 11082830 Candidate: 8 of 8 Period: 414.726 d



## TPS TCE Results:

Period = 414.72634 d  
Epoch = 153.6235 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

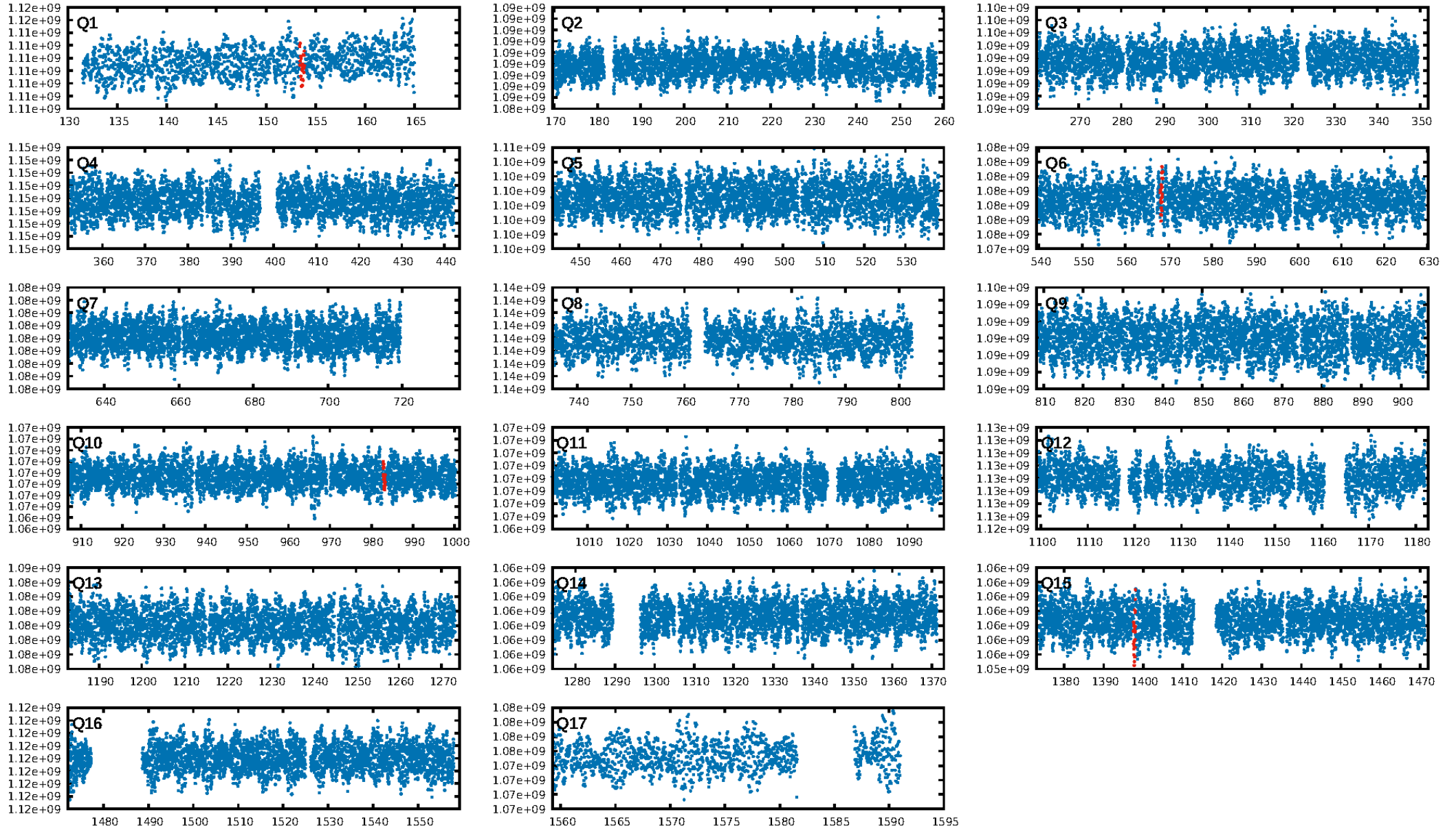
ShortPeriod-sig: 100.0% [353.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 0.8818

Centroid-sig: 9.5%  
Centroid-so: 0.549 arcsec [4.00σ]  
OotOffset-rm: 1.341 arcsec [1.26σ]  
KicOffset-rm: 2.086 arcsec [1.30σ]  
OotOffset-st: 1/1/0/1 [3]  
KicOffset-st: 1/1/0/1 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 0.00 [0/3]

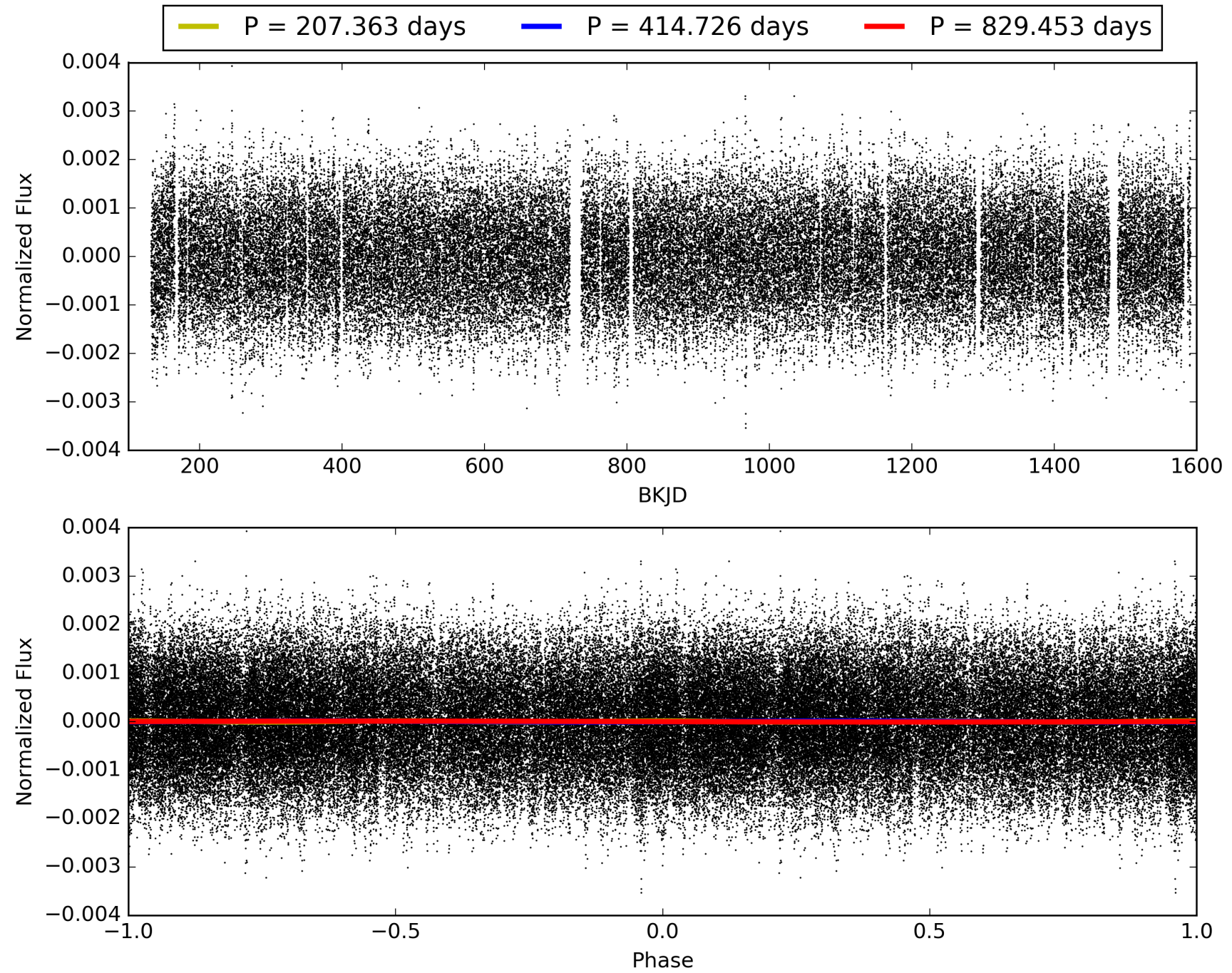
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:41:49 Z

This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011082830-08, PDC Light Curves

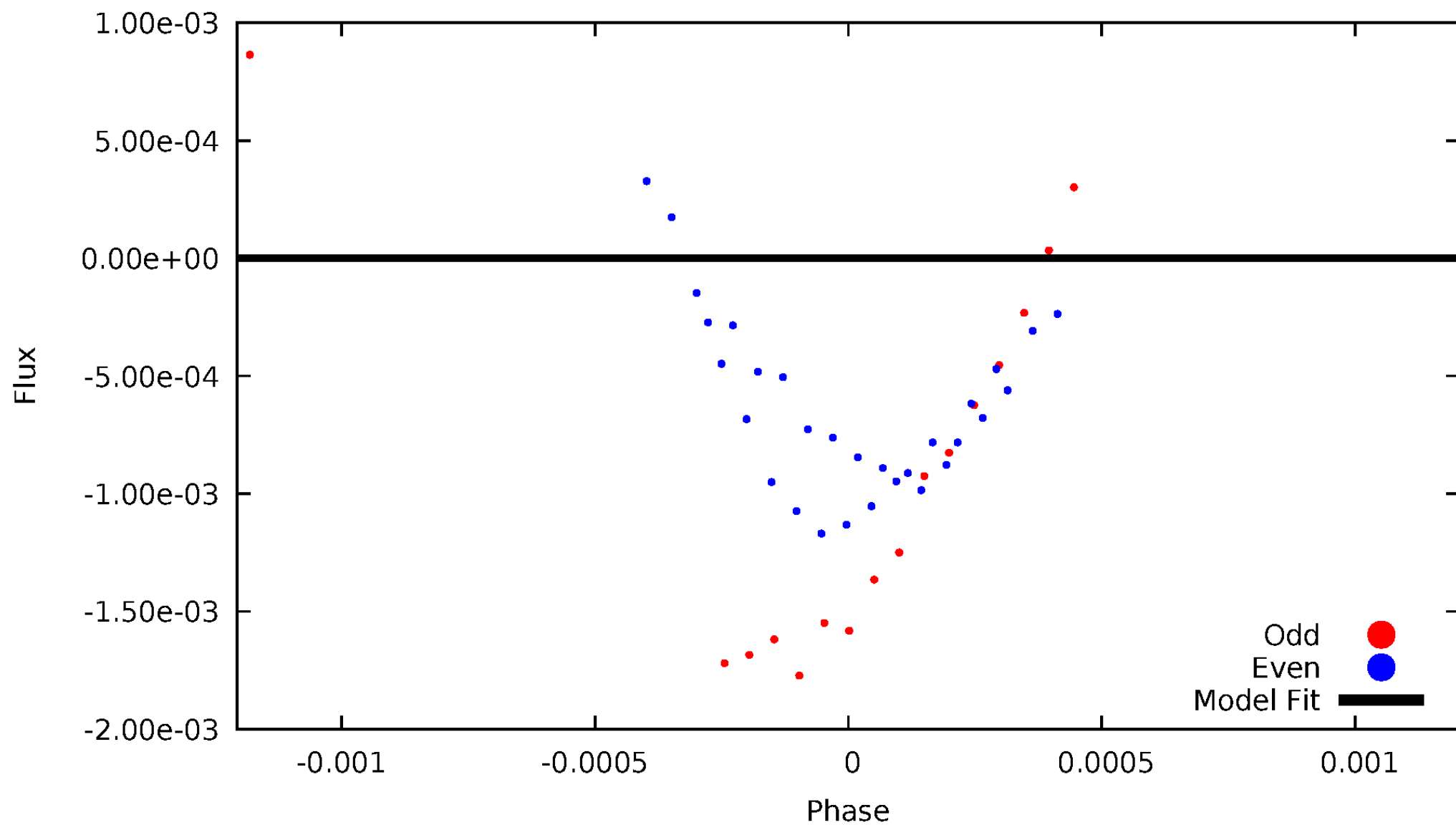


# TCE 011082830-08



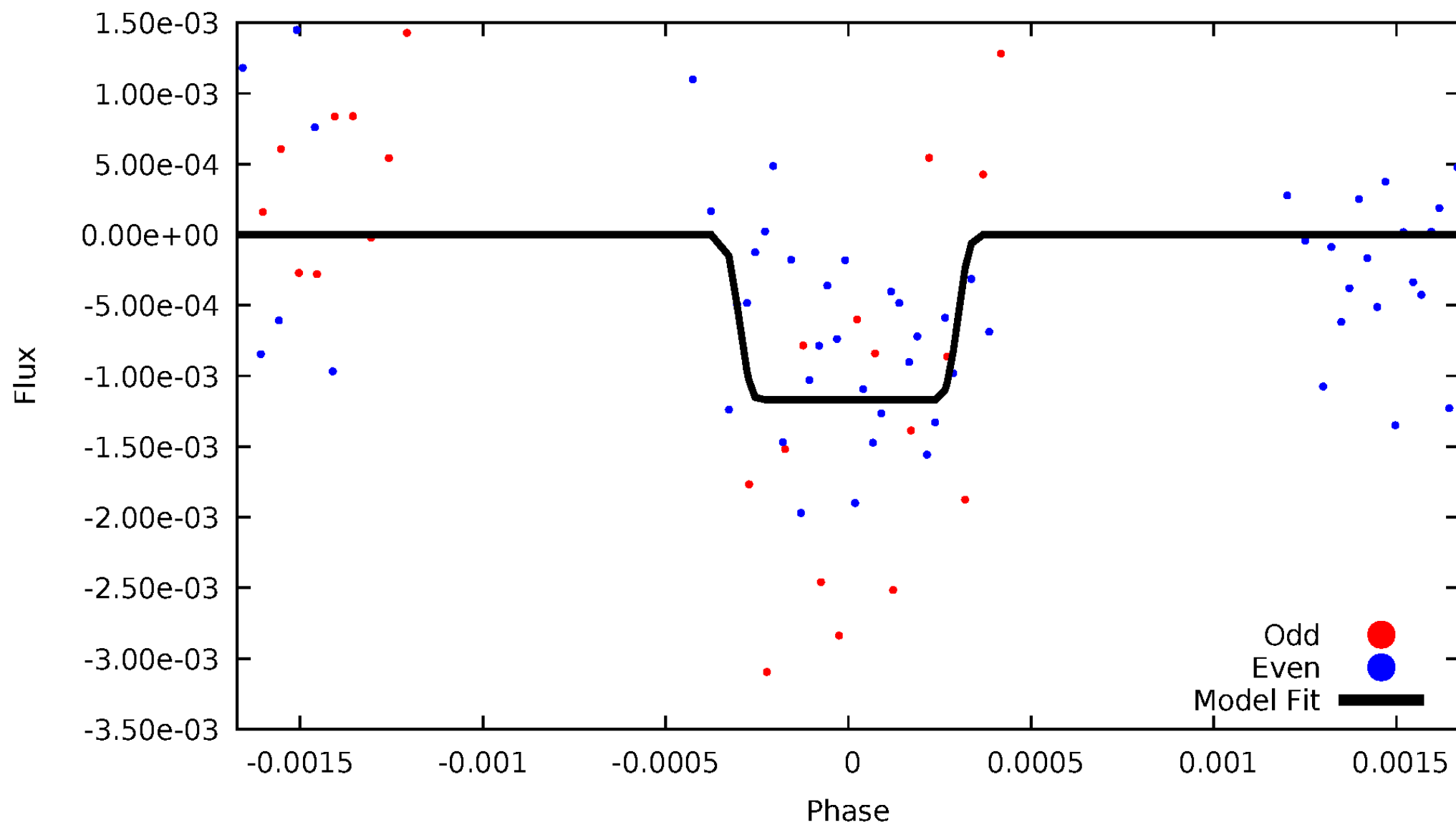
# DV Odd/Even

TCE 011082830-08



# ALT Odd/Even

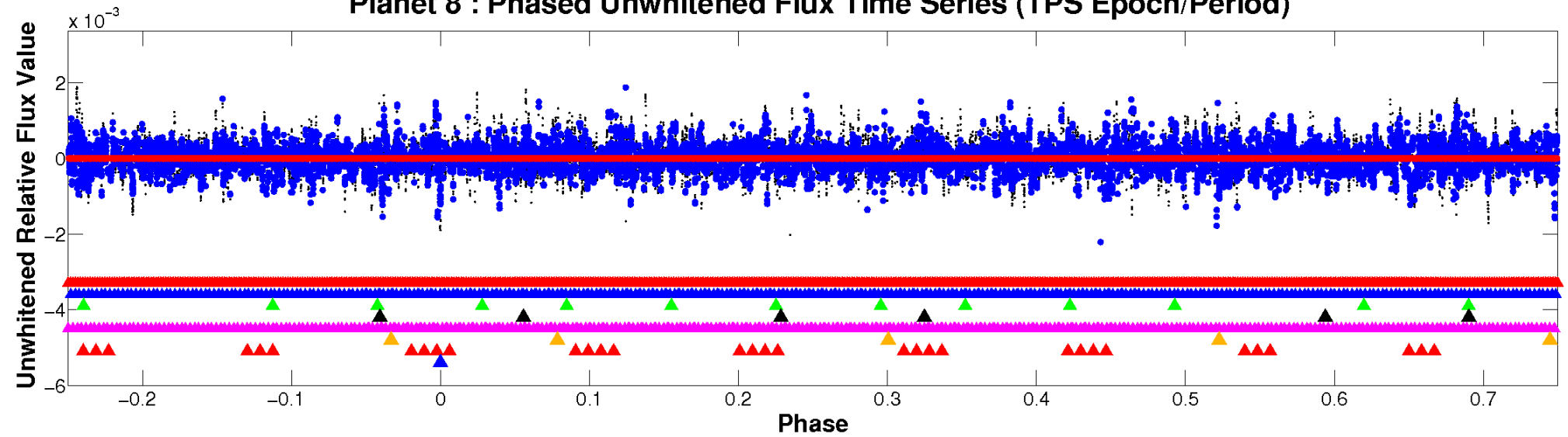
TCE 011082830-08



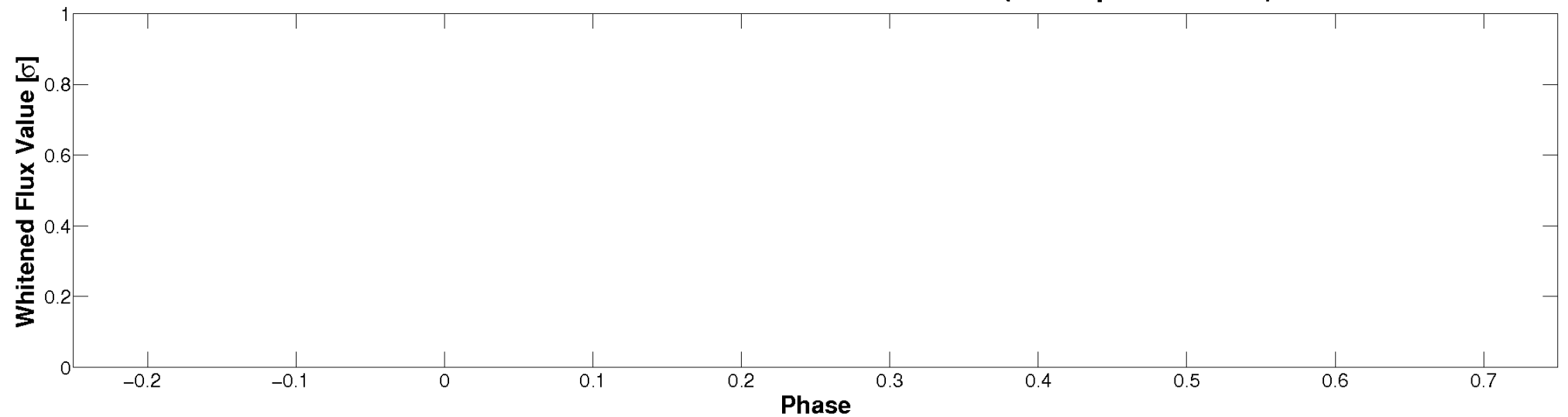


# Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)



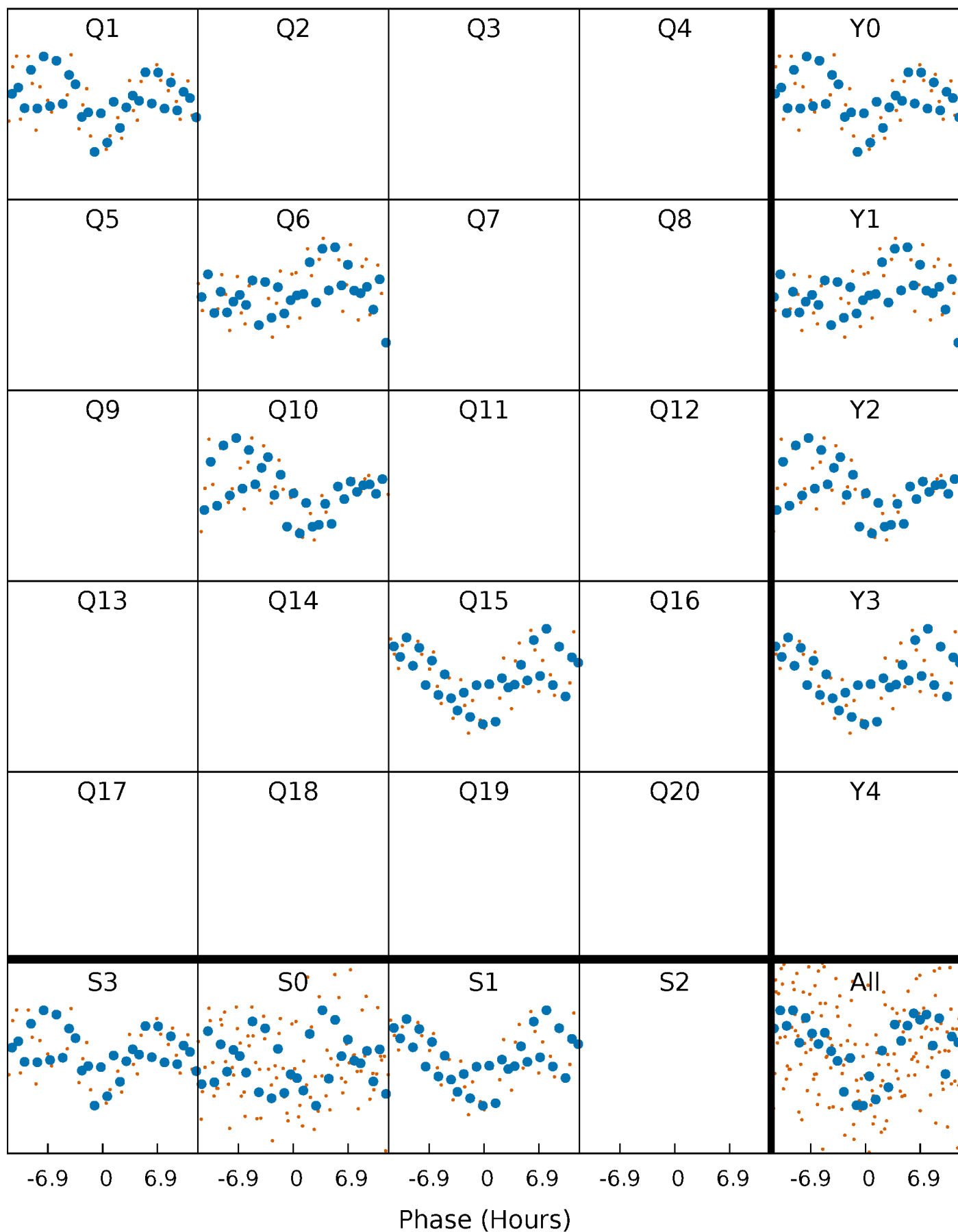
Planet 8 : Phased Whitened Flux Time Series (TPS Epoch/Period)





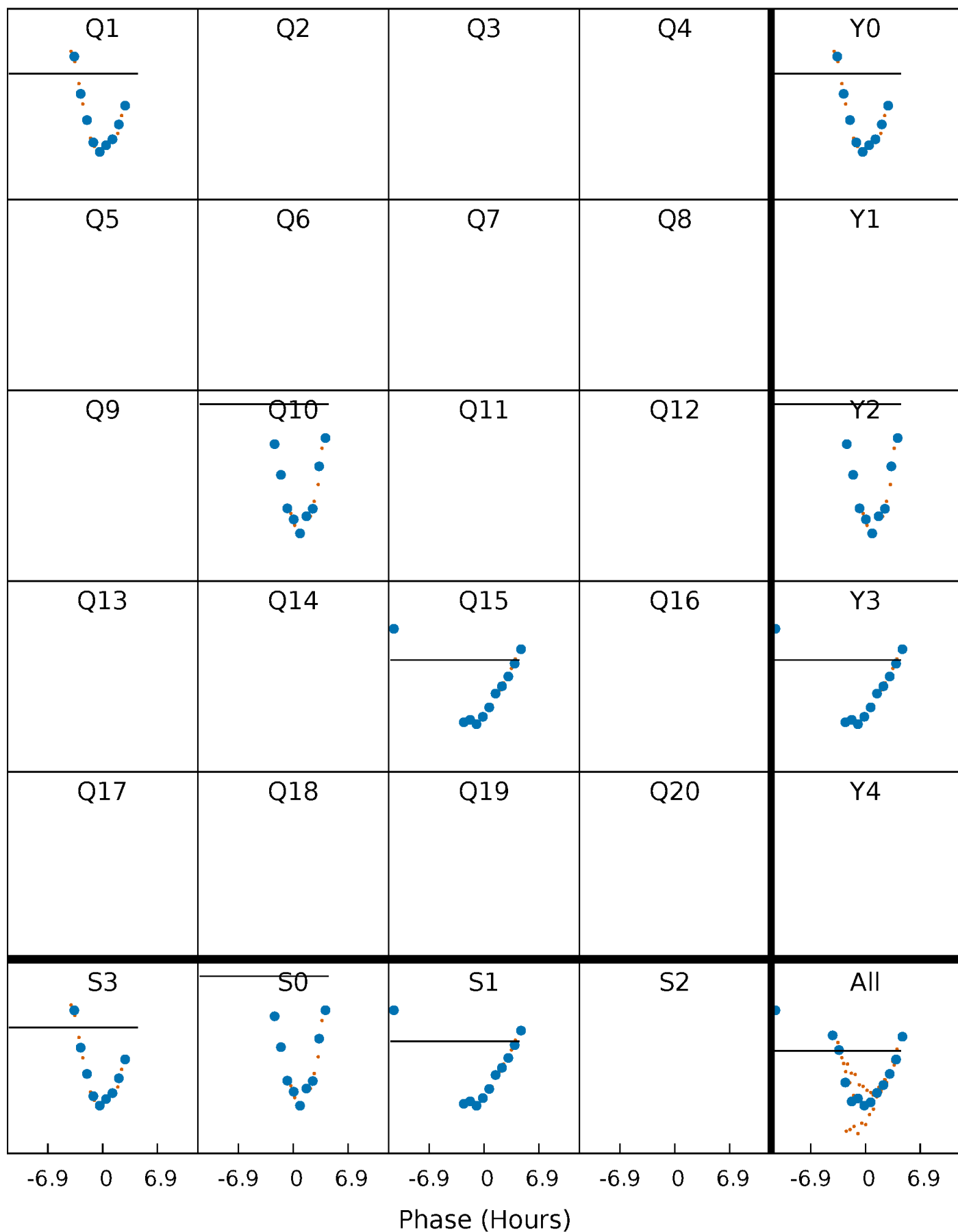
# PDC Quarter-Phased Transit Curves

TCE 011082830-08 P=414.726345 Days  $T_0=153.623511$  (BKJD)



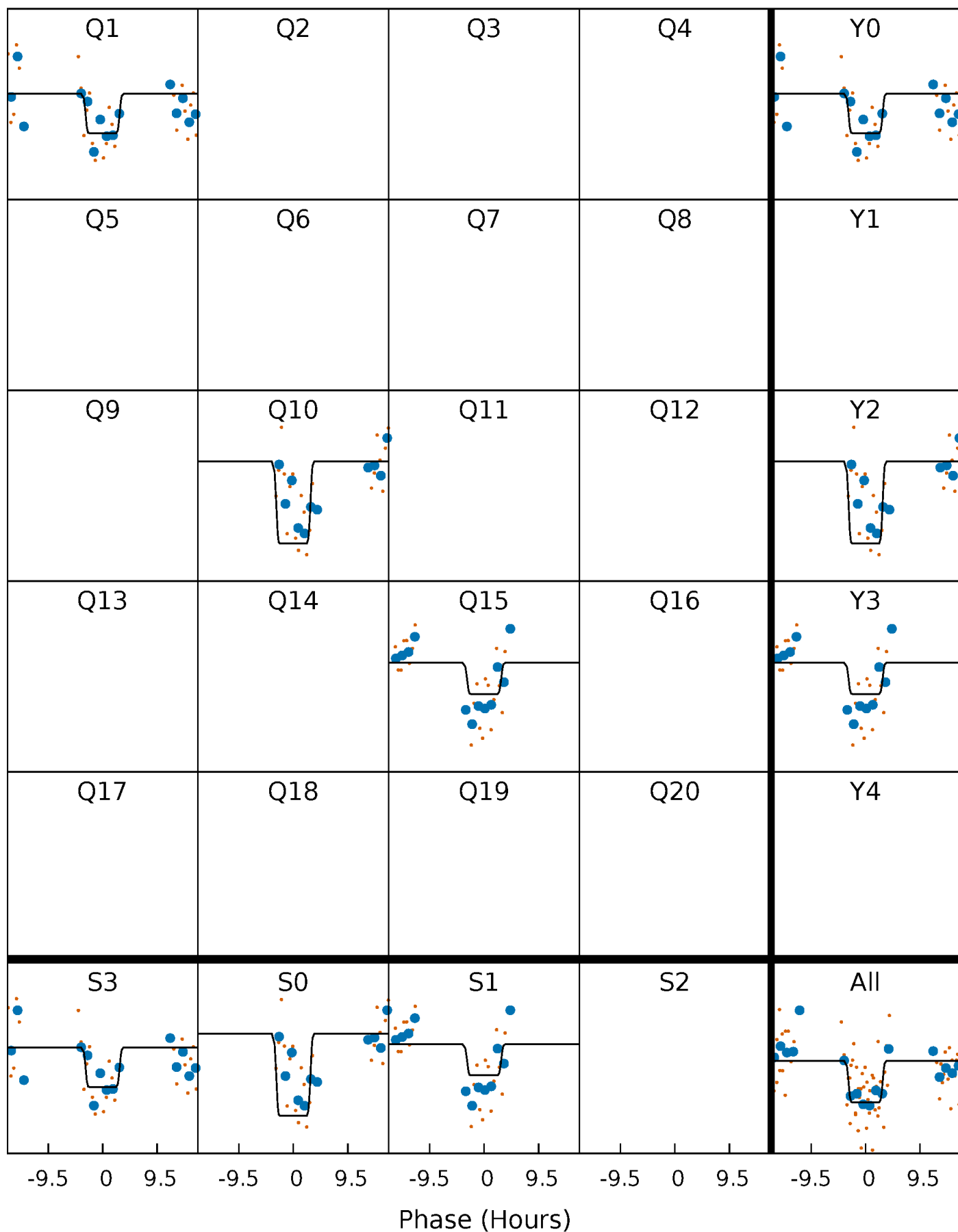
# DV Quarter-Phased Transit Curves

TCE 011082830-08 P=414.726345 Days  $T_0=153.623511$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

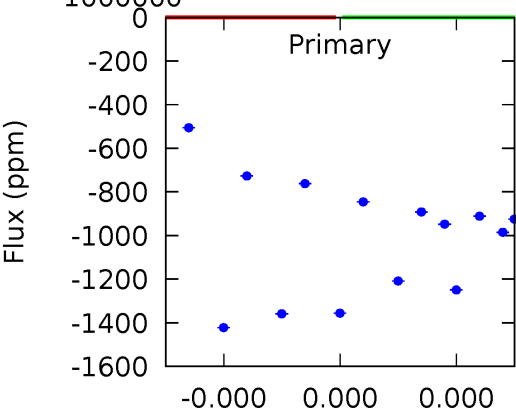
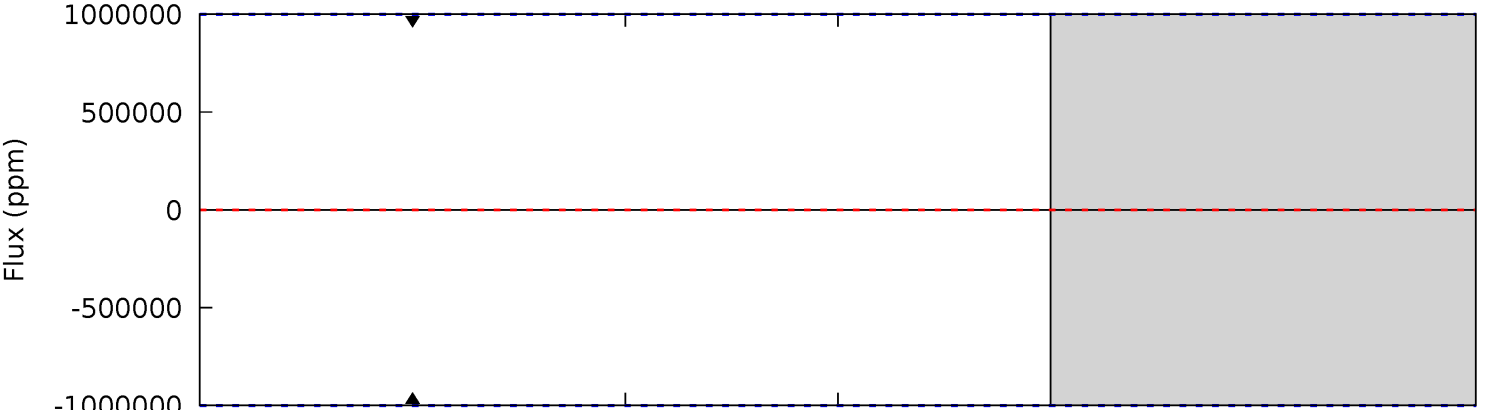
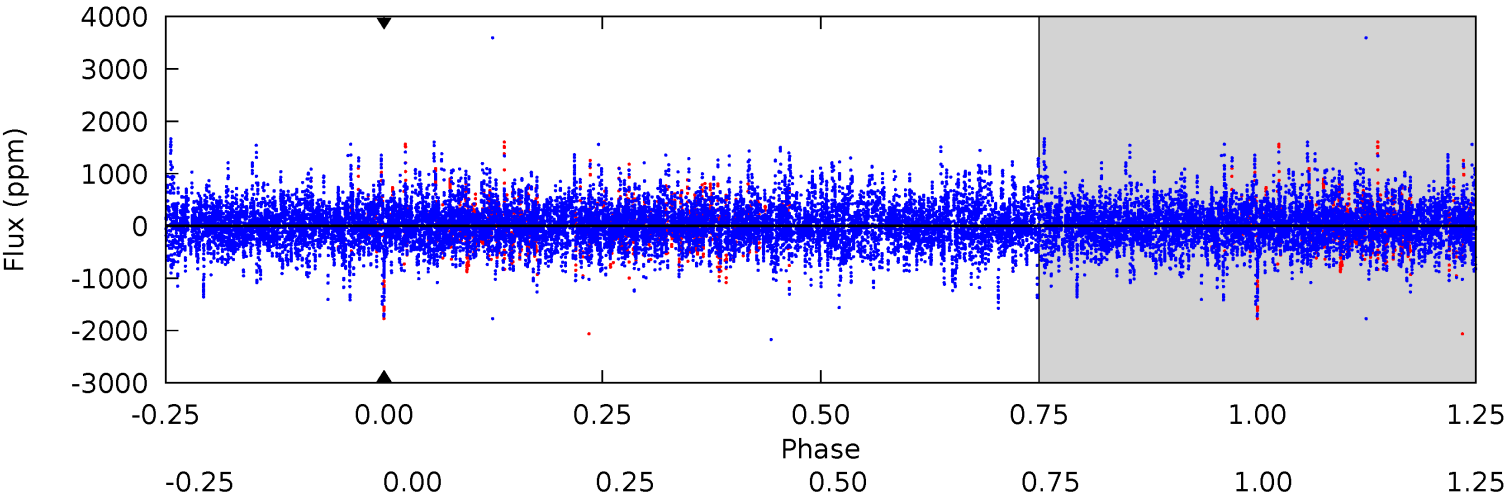
TCE 011082830-08 P=414.726345 Days  $T_0=153.634807$  (BKJD)



# DV Model-Shift Uniqueness Test

011082830-08, P = 414.726345 Days, E = 153.623511 Days

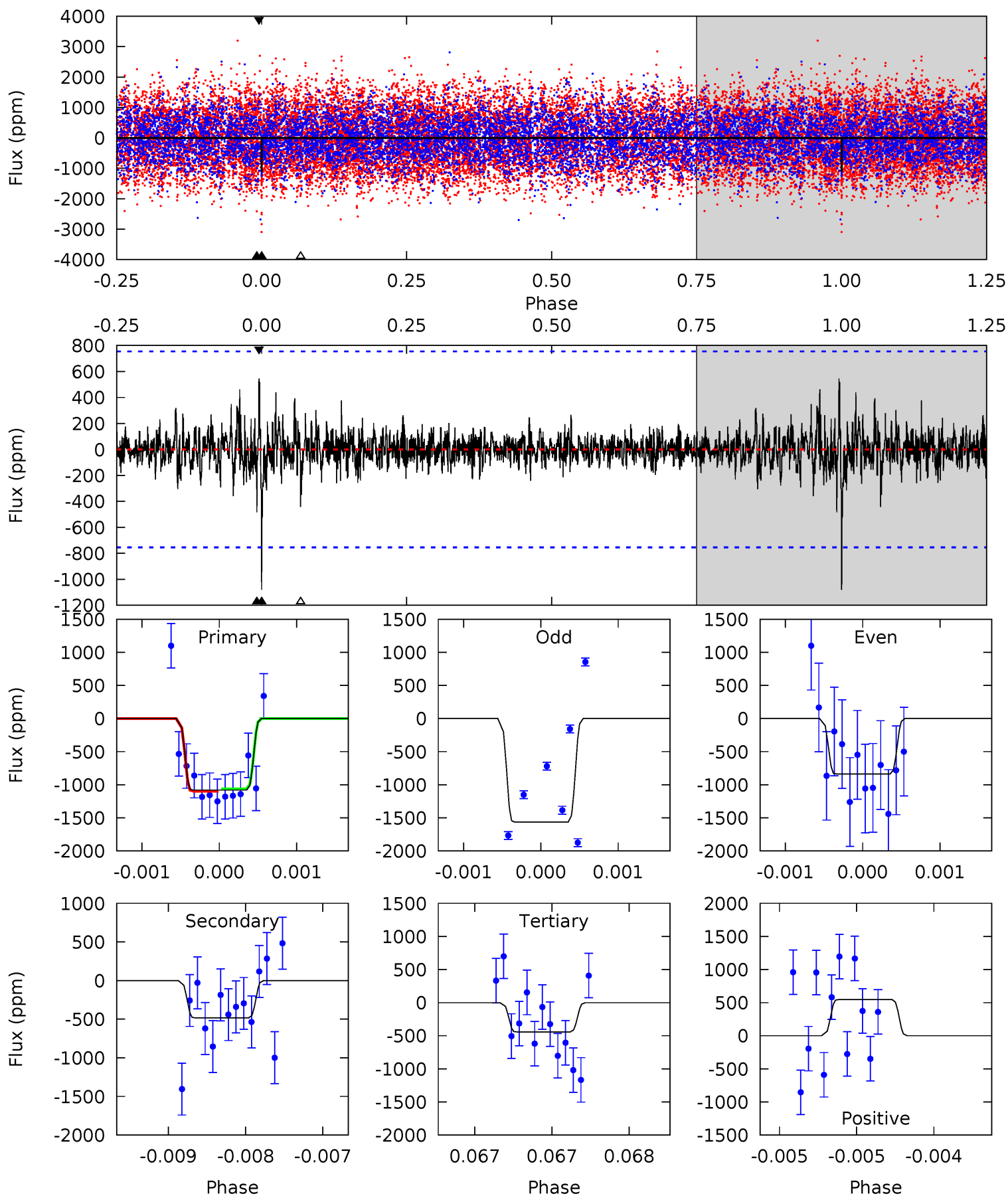
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

011082830-08, P = 414.726345 Days, E = 153.634807 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.91	3.54	3.23	3.99	5.52	3.40	0.69	4.67	3.91	0.30	-0.46	2.54	1.02	0.34	0.12



### Stellar Parameters For KIC 011082830

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7291^{+203}_{-279}$	$3.937^{+0.315}_{-0.135}$	$-0.320^{+0.250}_{-0.350}$	$2.218^{+0.536}_{-0.804}$	$1.549^{+0.215}_{-0.323}$	$0.200^{+0.483}_{-0.083}$
	+3%/-4%	+8%/-3%	+78%/-109%	+24%/-36%	+14%/-21%	+242%/-42%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011082830-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$15.55^{+19.13}_{-11.12}$	$585^{+42}_{-55}$	$3905^{+46145}_{-42968}$	$1153^{+830489}_{-625872}$
Alt.	$-483 \pm 137$	$18.31^{+18.56}_{-12.59}$	$583^{+44}_{-60}$	$4052^{+2384}_{-839}$	$1250^{+11013}_{-964}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{obs} \gg T_{max}$  AND  $A_{obs} \gg 1.0$

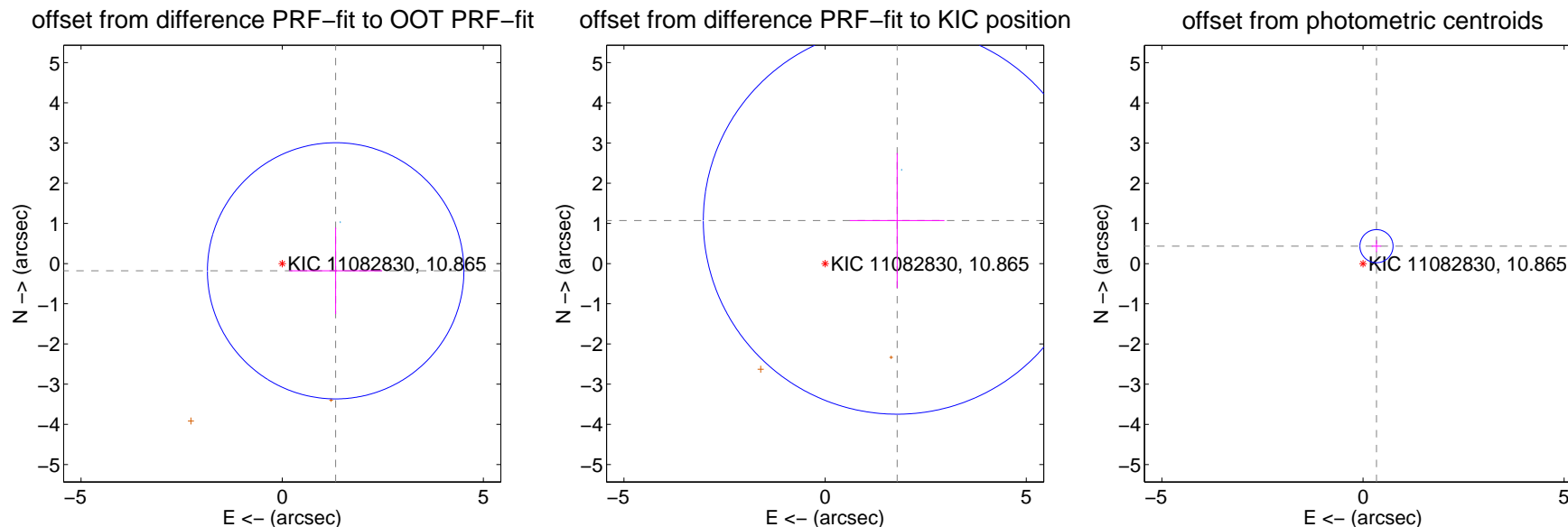
## DV Centroid Data

Supplemental centroid analysis for 011082830-08. **Kepler magnitude: 10.87.** Transit SNR -1.00

**There are 1 quarters with good PRF difference image offsets**

The direct PRF centroid is offset from the target star catalog position by about 1.38 arcsec

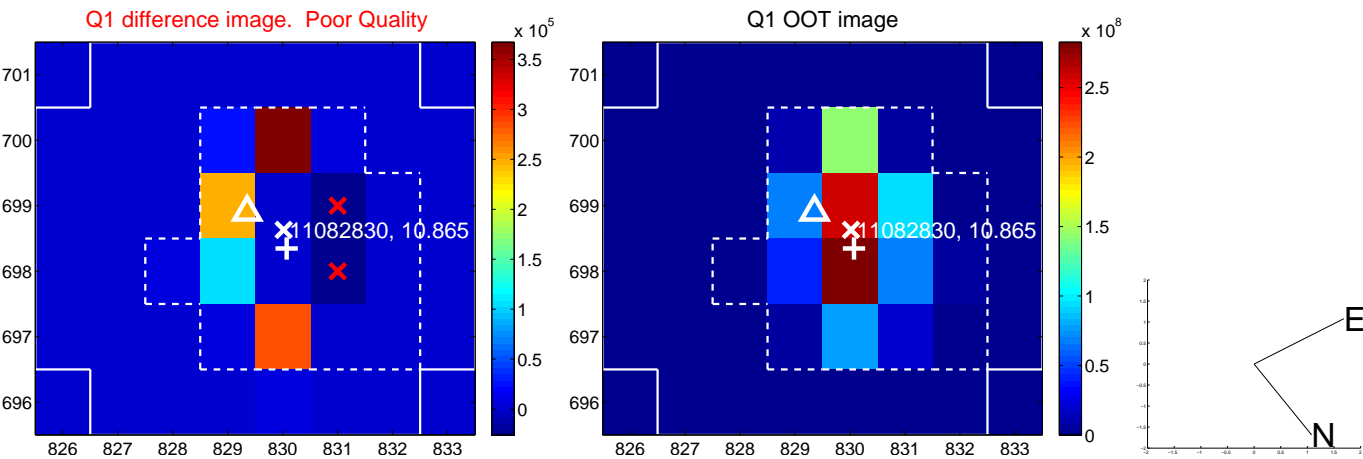
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.341 \pm 1.062$	1.26	$-1.329 \pm 1.156$	$-0.180 \pm 1.076$
PRF-fit source offset from KIC position	$2.086 \pm 1.606$	1.30	$-1.790 \pm 1.177$	$1.070 \pm 1.679$
photometric centroid source offset	$0.55 \pm 0.14$	4.00	$-0.34 \pm 0.12$	$0.44 \pm 0.15$



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.



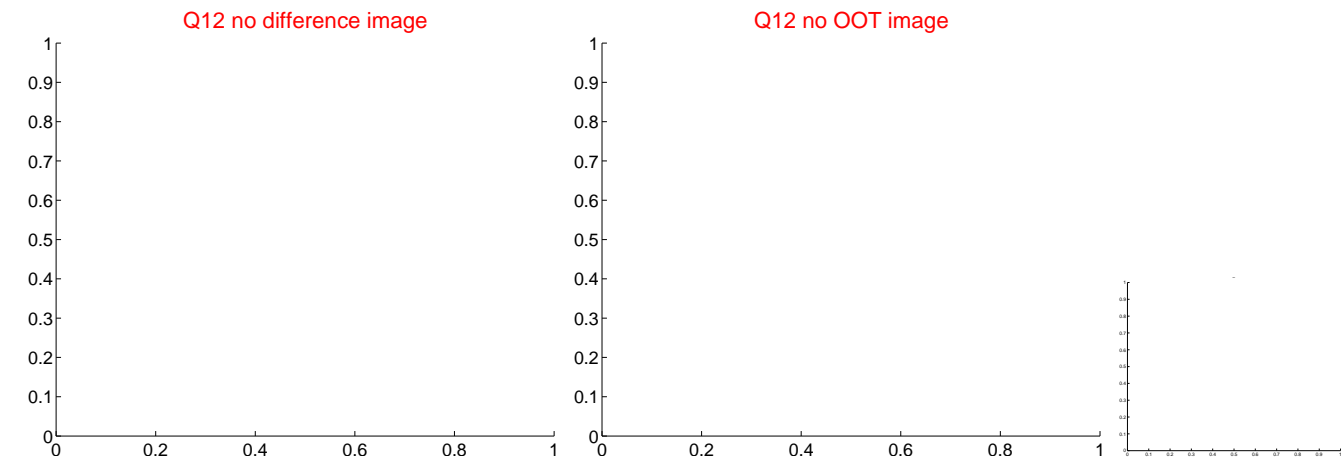
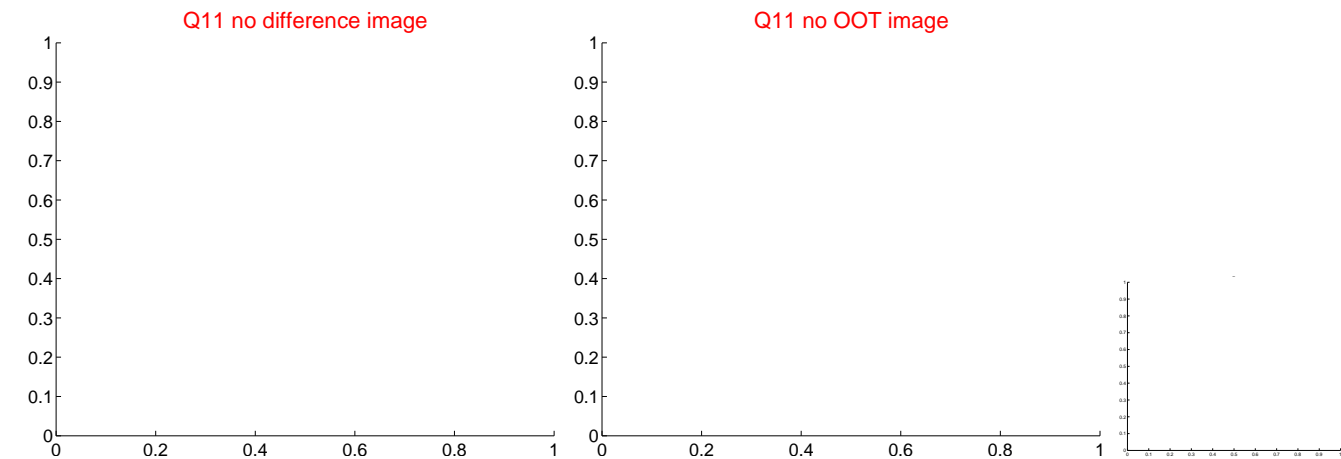
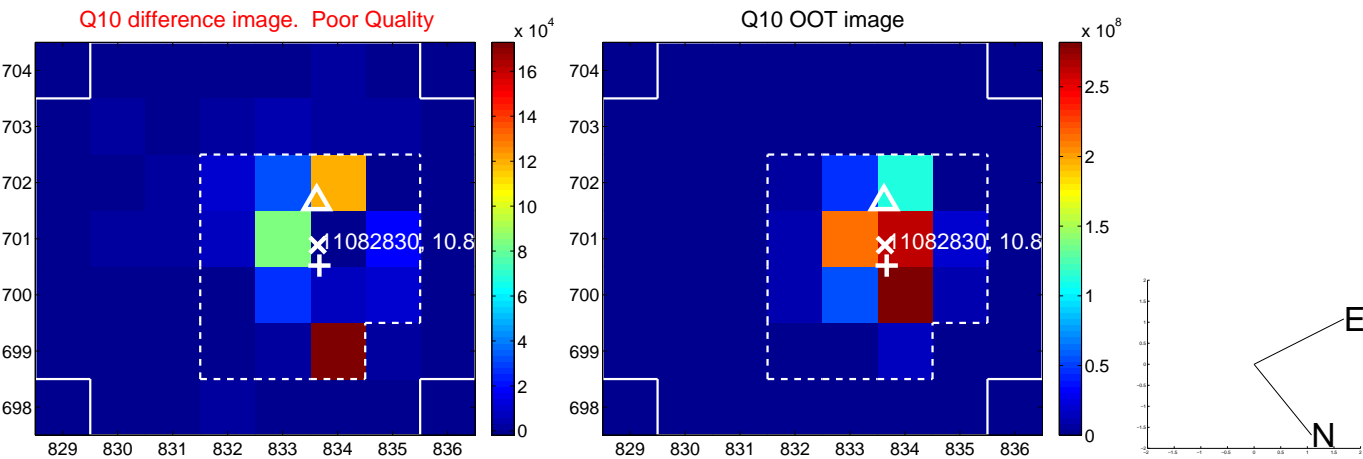
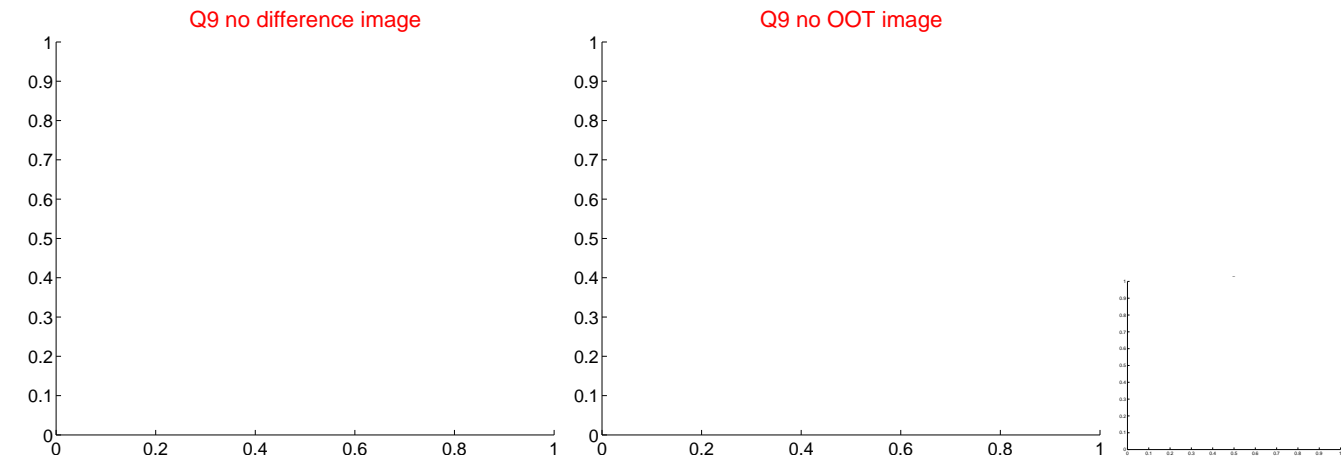
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



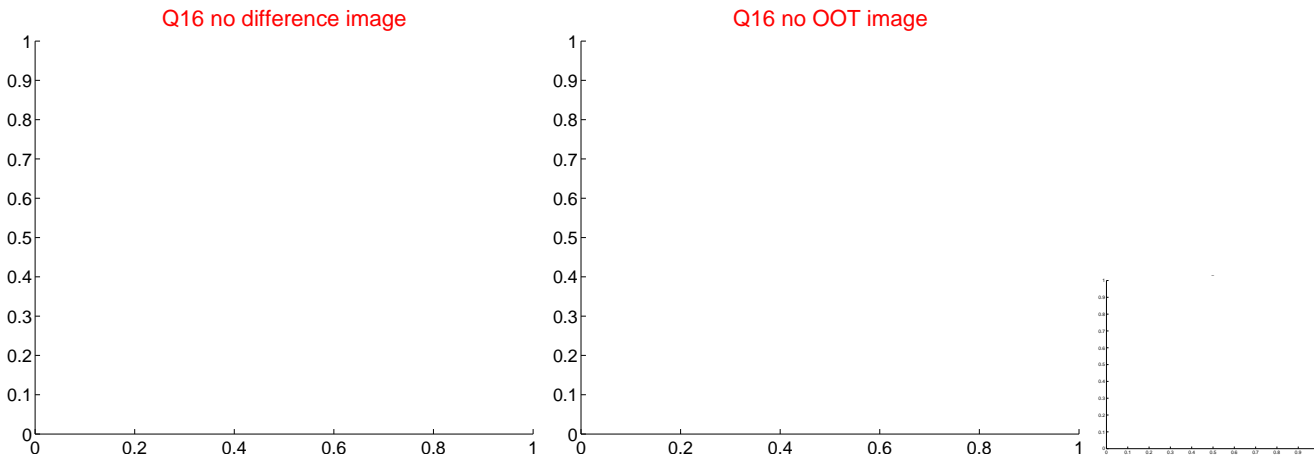
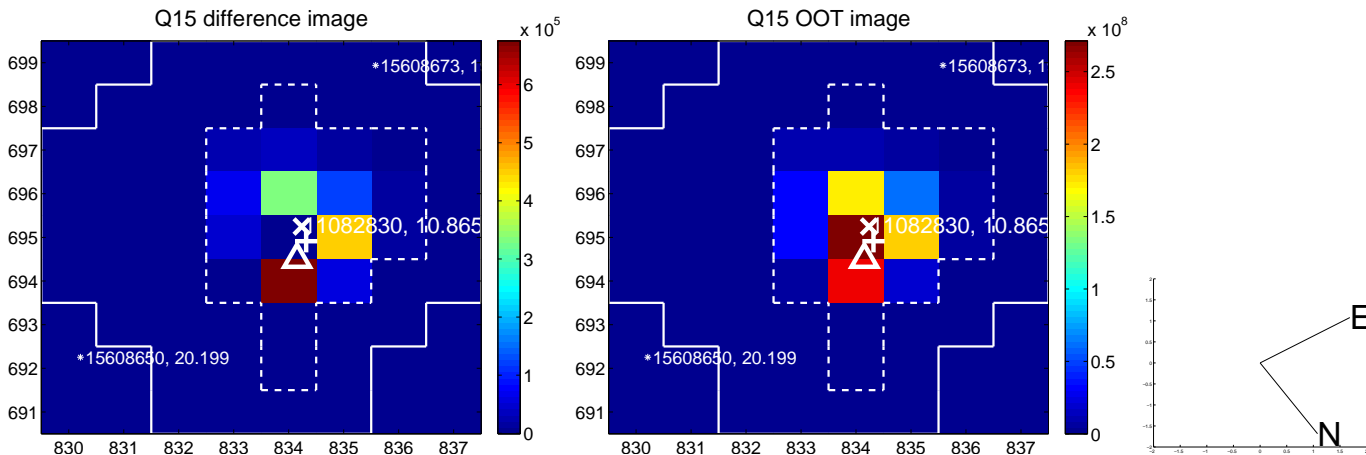
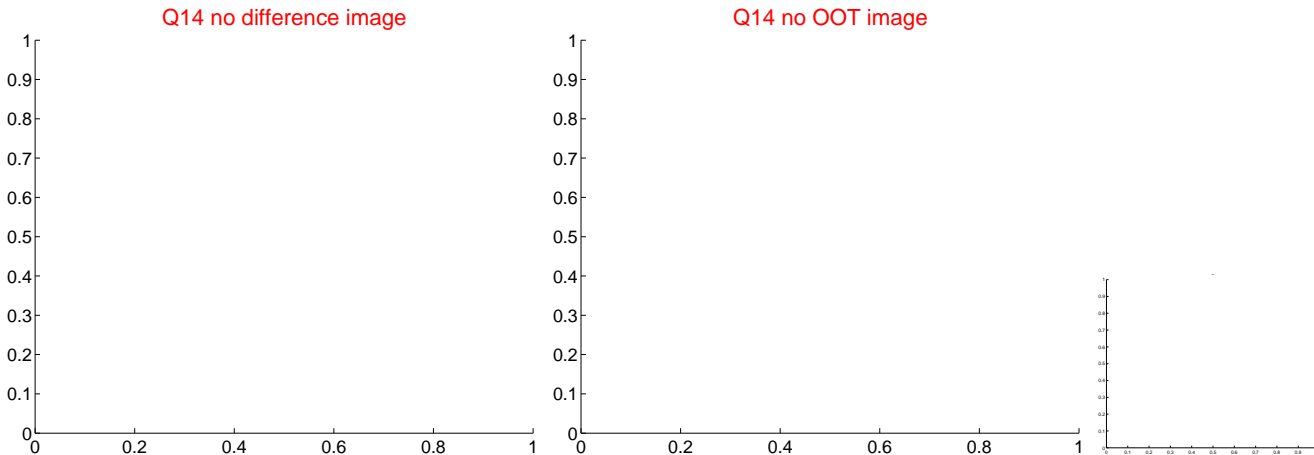
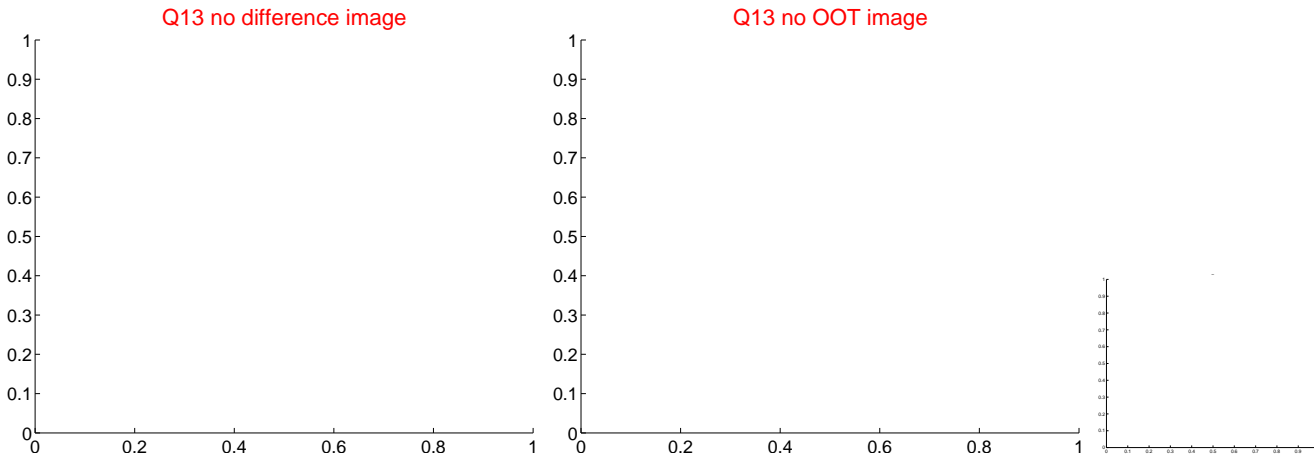
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



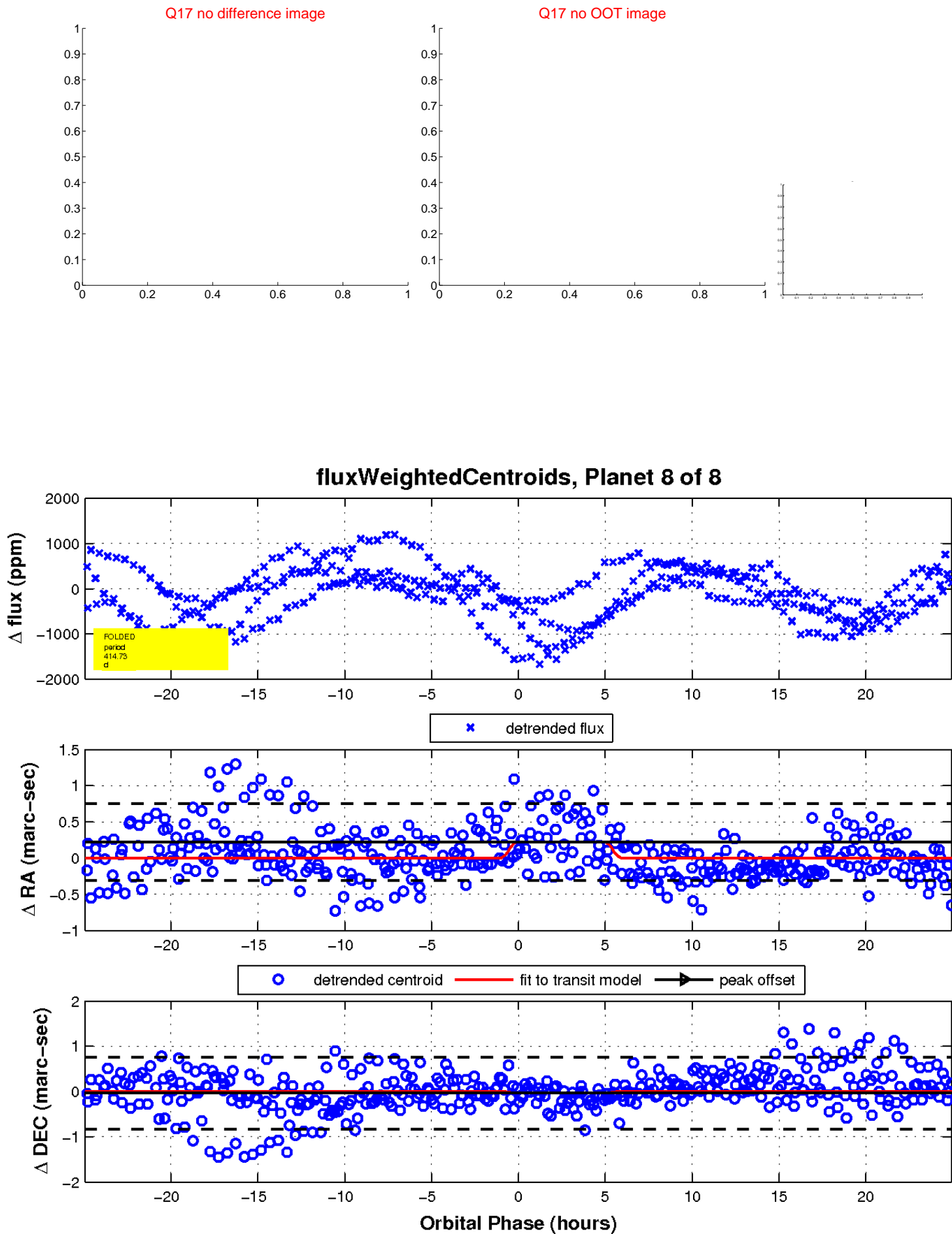
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

