

## KIC 011410915

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011410915-01	OBS	No	2.743221	133.516224	11.0	15.637	8.0	6.3	1.72	6903	0.59	3083.55
011410915-02	OBS	No	121.491572	229.369437	128.8	24.113	12.0	7.8	1.72	6903	2.29	19.68
011410915-03	OBS	No	55.245253	140.692328	189.1	3.312	8.7	9.2	1.72	6903	2.73	56.28
011410915-04	OBS	No	120.170150	159.905711	235.8	3.124	8.5	8.7	1.72	6903	2.91	19.97
011410915-05	OBS	No	112.875535	221.399883	248.9	3.698	8.4	8.0	1.72	6903	4.41	21.71
011410915-06	OBS	No	97.310505	219.952147	299.1	1.968	8.1	9.3	1.72	6903	3.52	26.46
011410915-07	OBS	No	153.455328	240.155198	201.5	3.233	8.2	8.4	1.72	6903	2.80	14.41
011410915-08	OBS	No	89.998936	193.645171	212.2	2.773	7.9	8.4	1.72	6903	2.88	29.36
011410915-09	OBS	No	557.200061	337.590460	129.3	27.663	7.8	6.9	1.72	6903	2.25	2.58
011410915-10	OBS	No	200.409436	326.508363	211.5	2.971	8.0	8.1	1.72	6903	2.81	10.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011410915-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
011410915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011410915-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011410915-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011410915-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

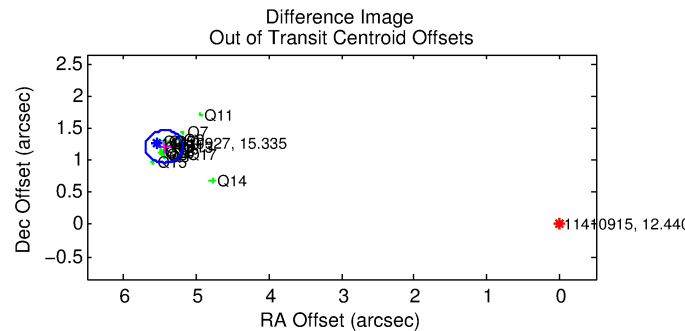
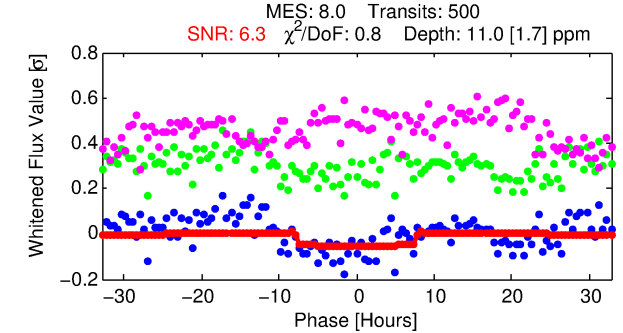
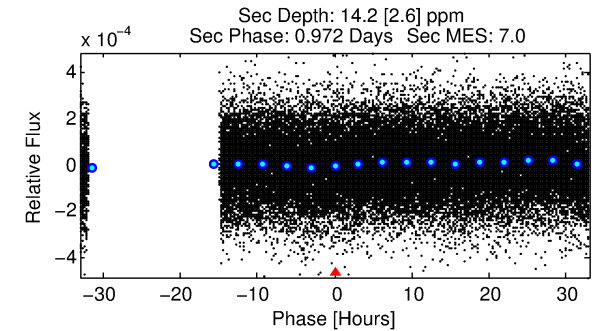
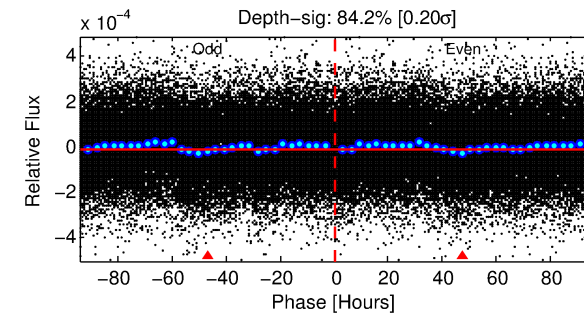
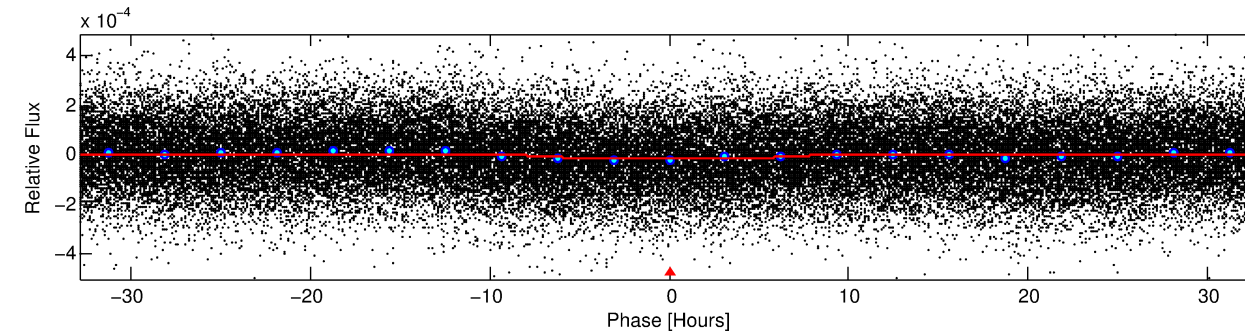
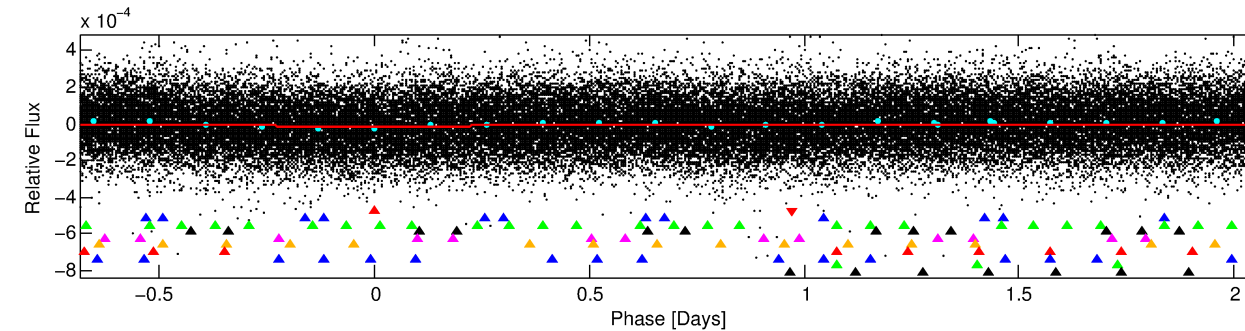
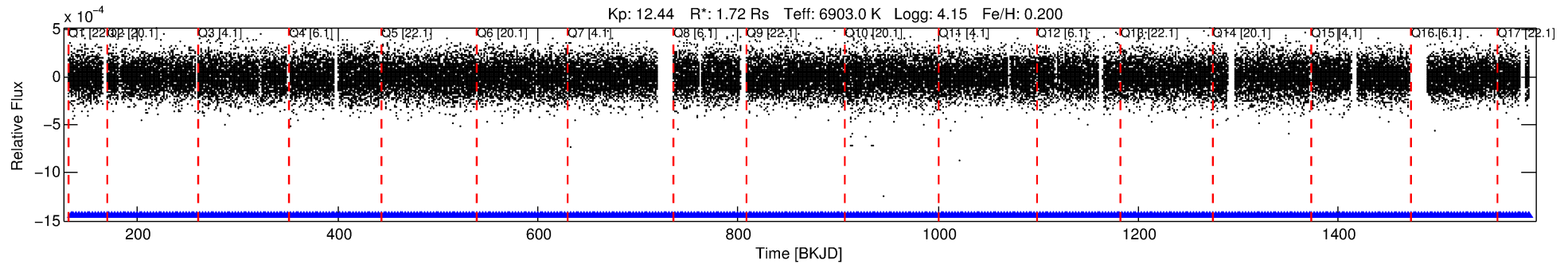
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011410915-01

No Significant Match Found

# DV One-Page Summary

KIC: 11410915 Candidate: 1 of 10 Period: 2.743 d



## DV Fit Results:

Period = 2.74322 [0.00007] d  
Epoch = 133.5162 [0.0136] BKJD  
Rp/R\* = 0.0032 [0.0014]  
a/R\* = 1.35 [1.50]  
b = 0.56 [3.06]  
Seff = 3083.55 [664.58]  
Teq = 1900 [102] K  
Rp = 0.59 [0.28] Re  
a = 0.0442 [0.0063] AU  
Ag = 42.96 [39.41] [1.06 $\sigma$ ]  
Teffp = 7521 [1682] K [3.33 $\sigma$ ]

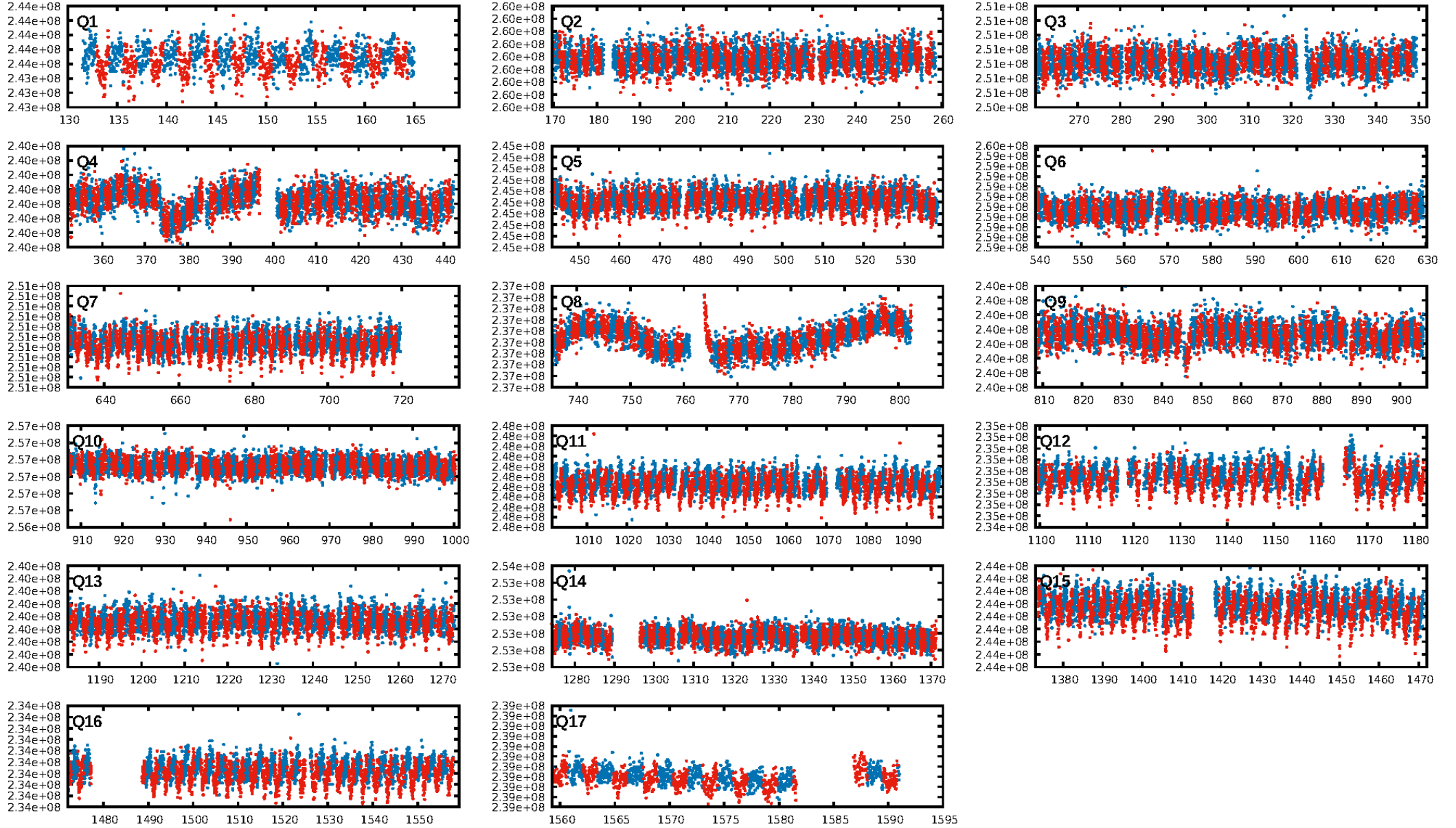
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [78.83 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [478/478]  
GhostDiagnostic-chr: -0.6468  
Centroid-sig: 0.0%  
Centroid-so: 5.889 arcsec [4.85 $\sigma$ ]  
OotOffset-rm: 5.570 arcsec [65.76 $\sigma$ ]  
KicOffset-rm: 5.651 arcsec [67.16 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.94 [16/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:48:23 Z

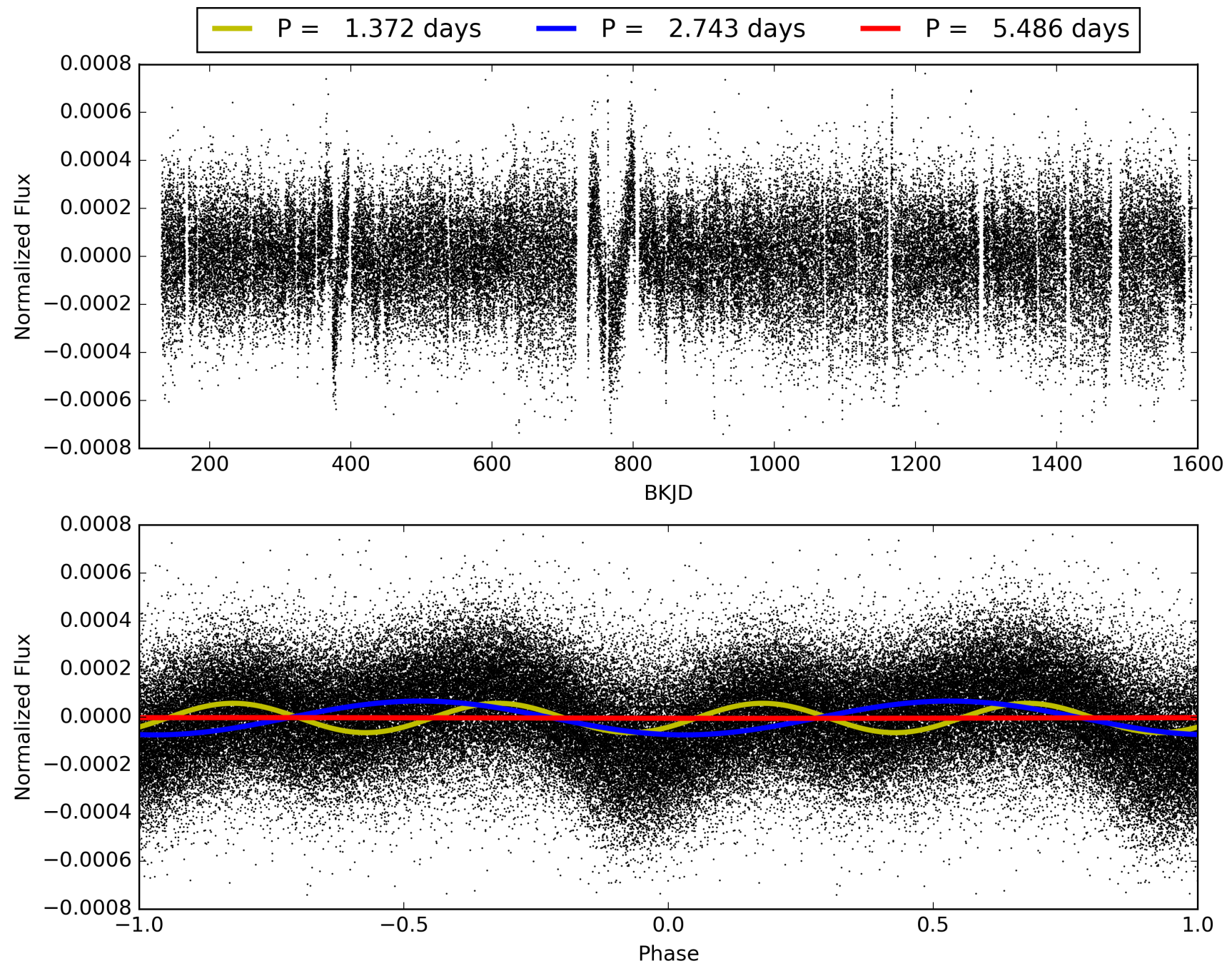
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011410915-01, PDC Light Curves





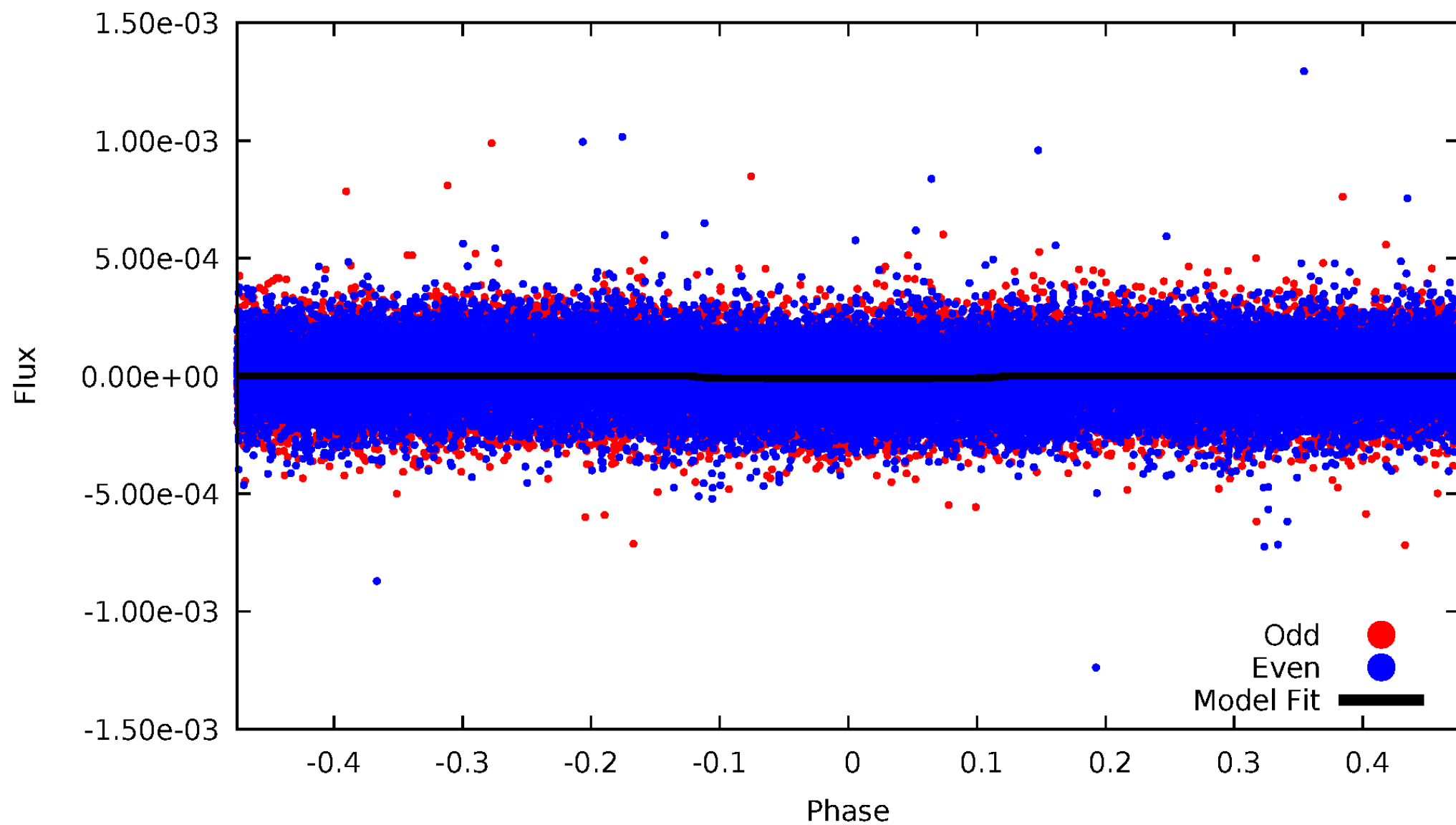
# TCE 011410915-01





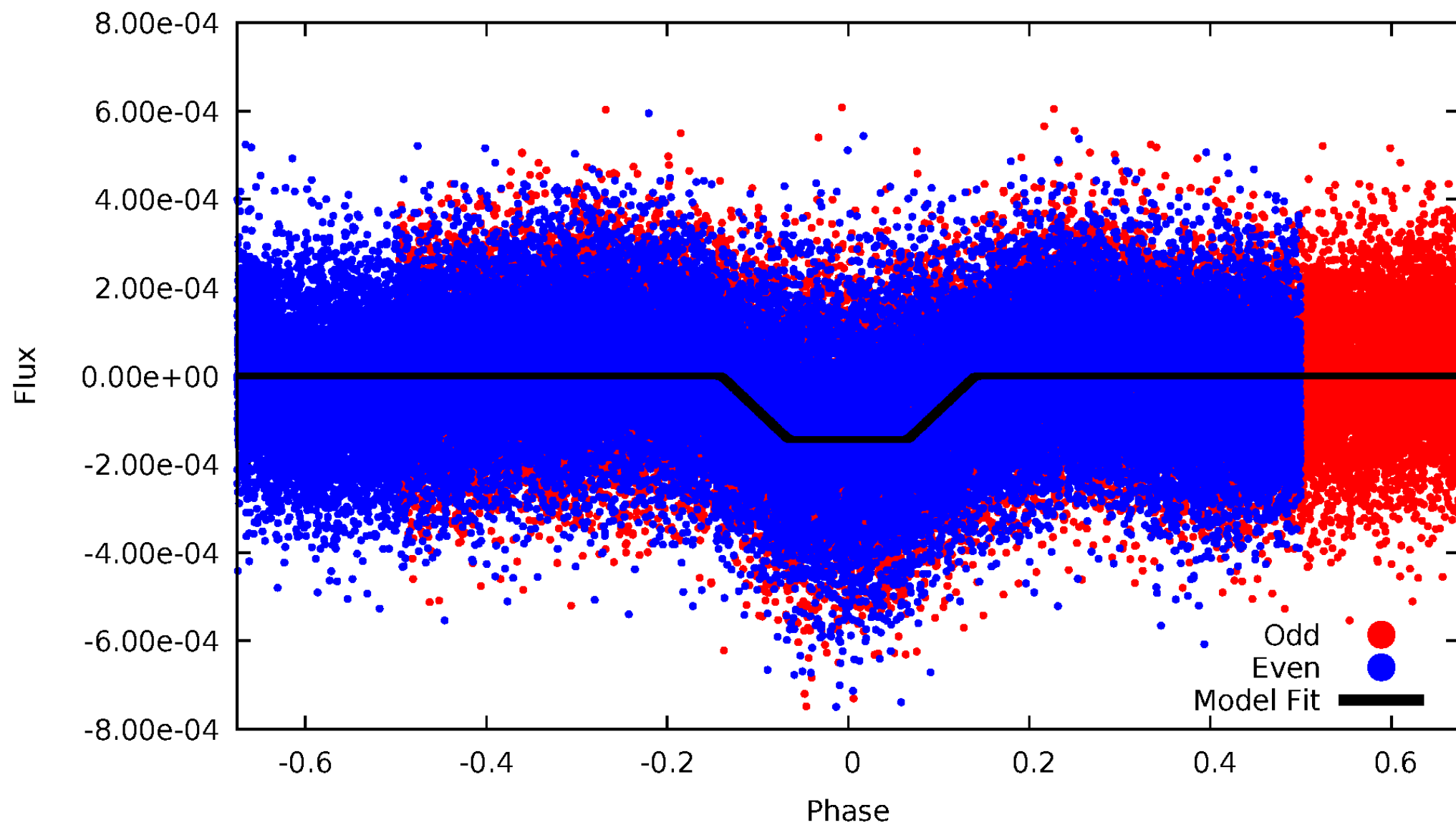
# DV Odd/Even

TCE 011410915-01

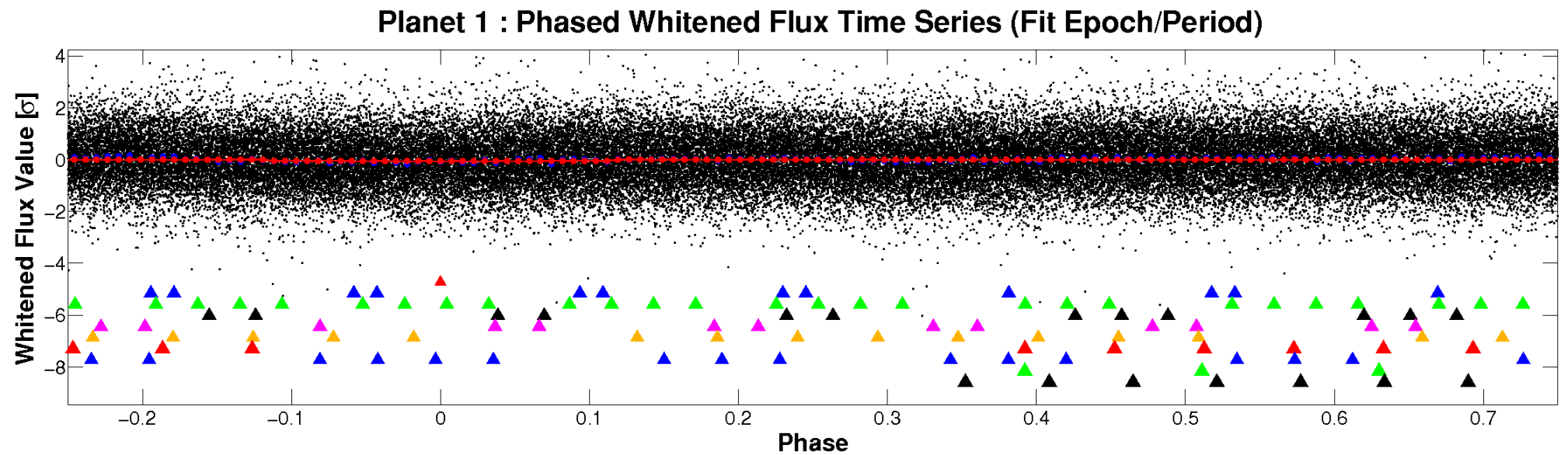
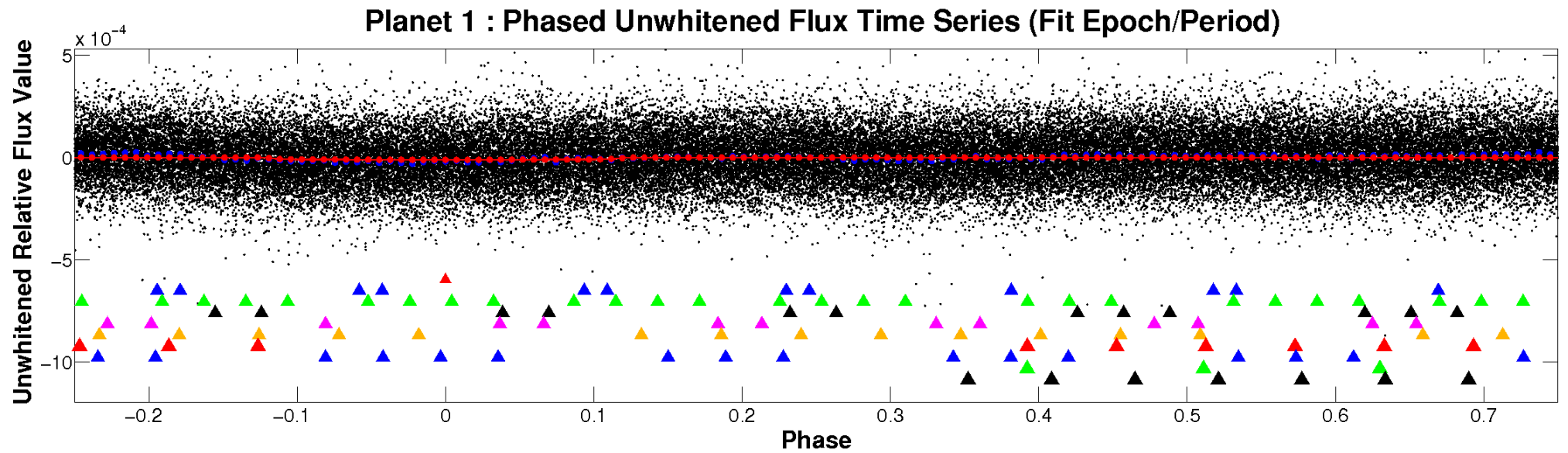


# ALT Odd/Even

TCE 011410915-01



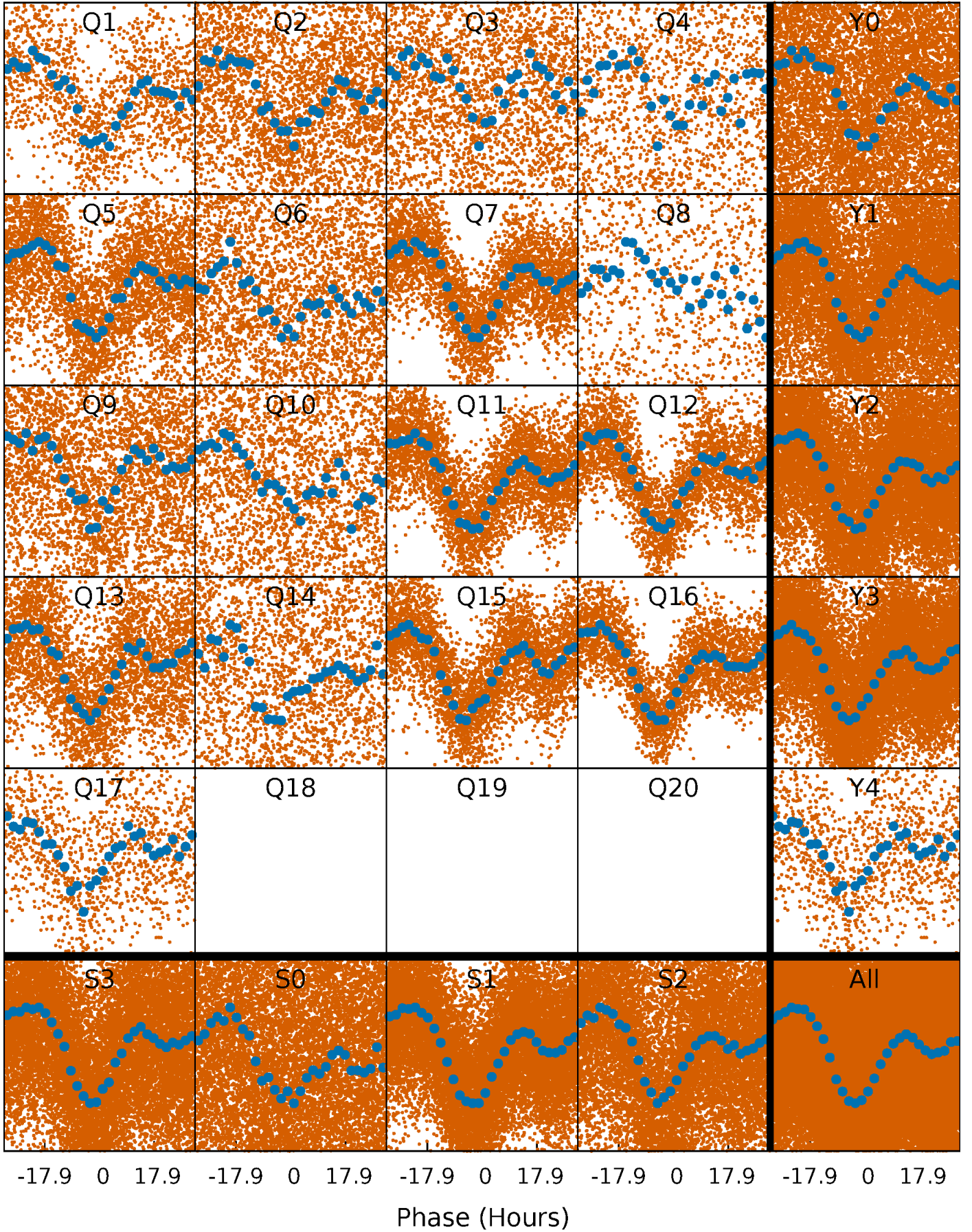
# Non-Whitened Vs. Whitened Light Curve





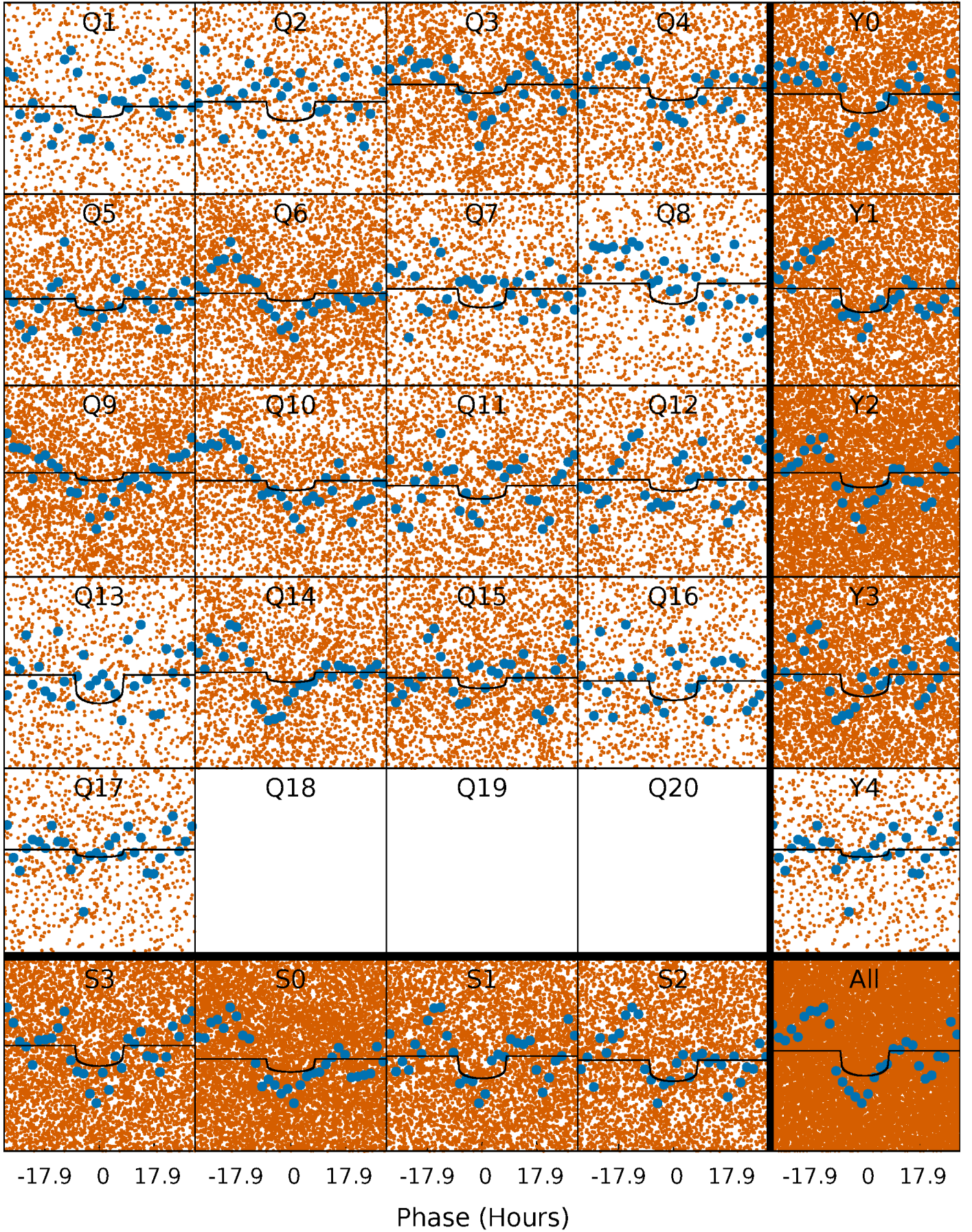
# PDC Quarter-Phased Transit Curves

TCE 011410915-01 P= 2.743221 Days  $T_0=133.516224$  (BKJD)



# DV Quarter-Phased Transit Curves

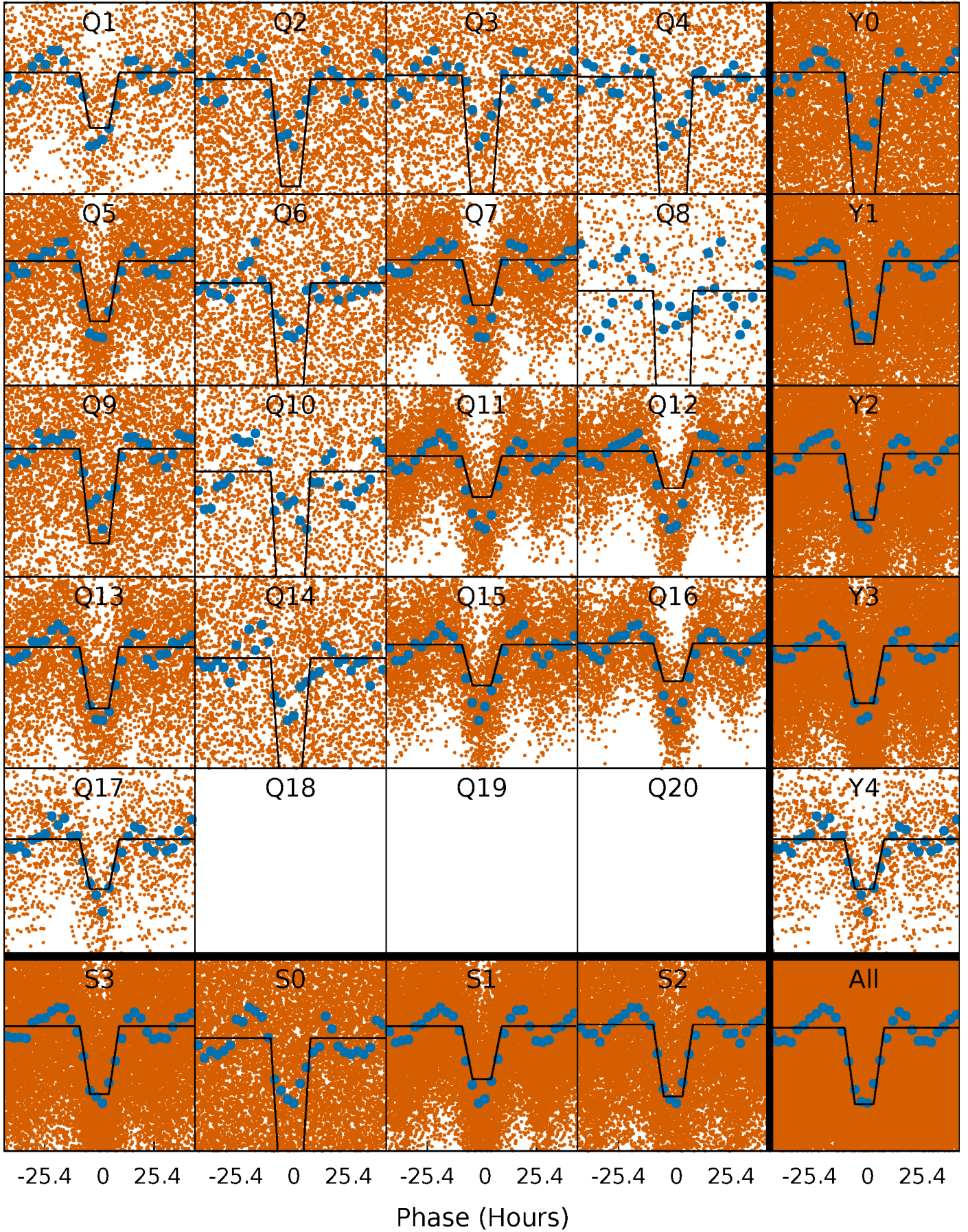
TCE 011410915-01   P= 2.743221 Days    $T_0=133.516224$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011410915-01 P= 2.742744 Days  $T_0=133.509285$  (BKJD)

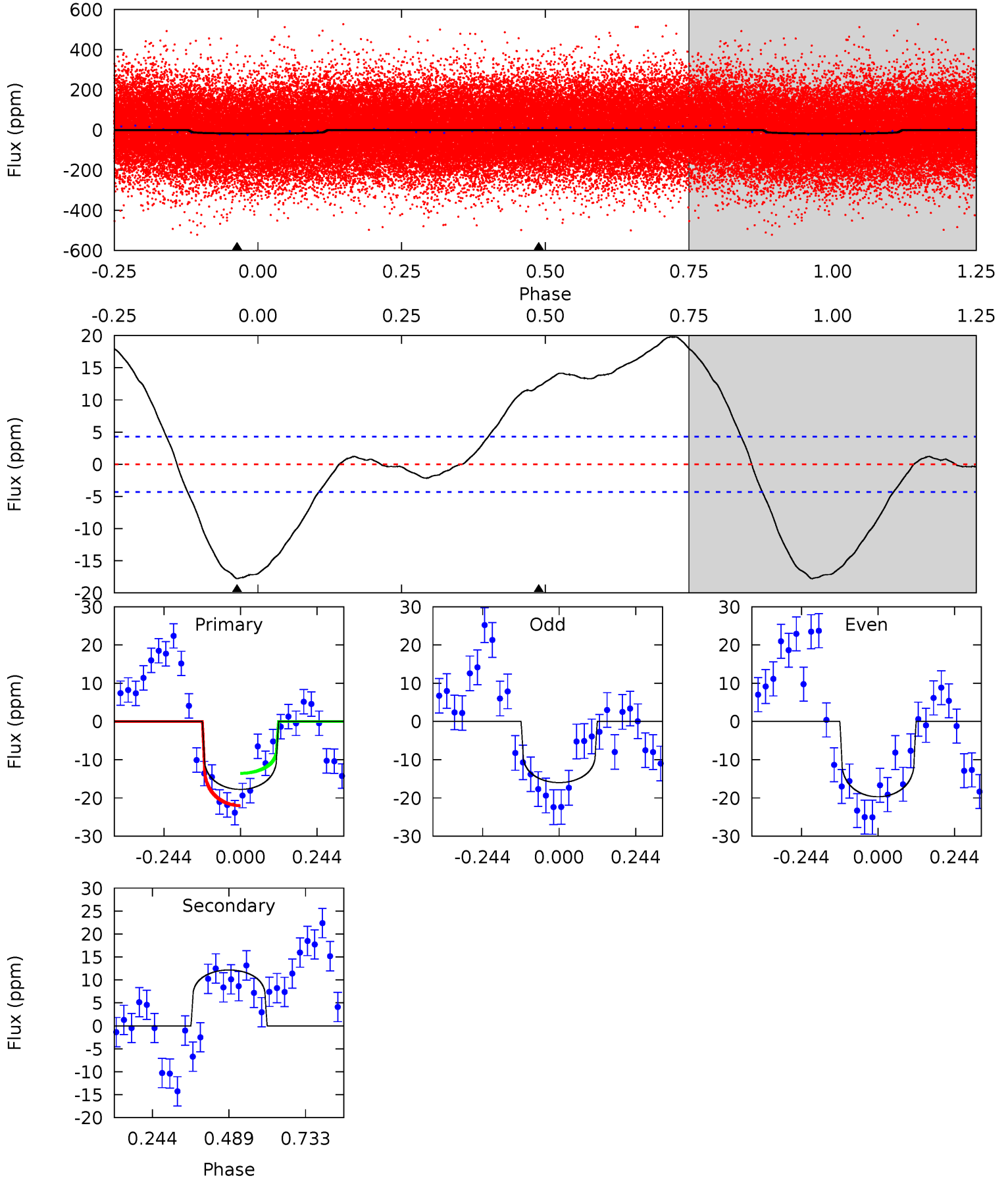




# DV Model-Shift Uniqueness Test

011410915-01, P = 2.743221 Days, E = 130.773003 Days

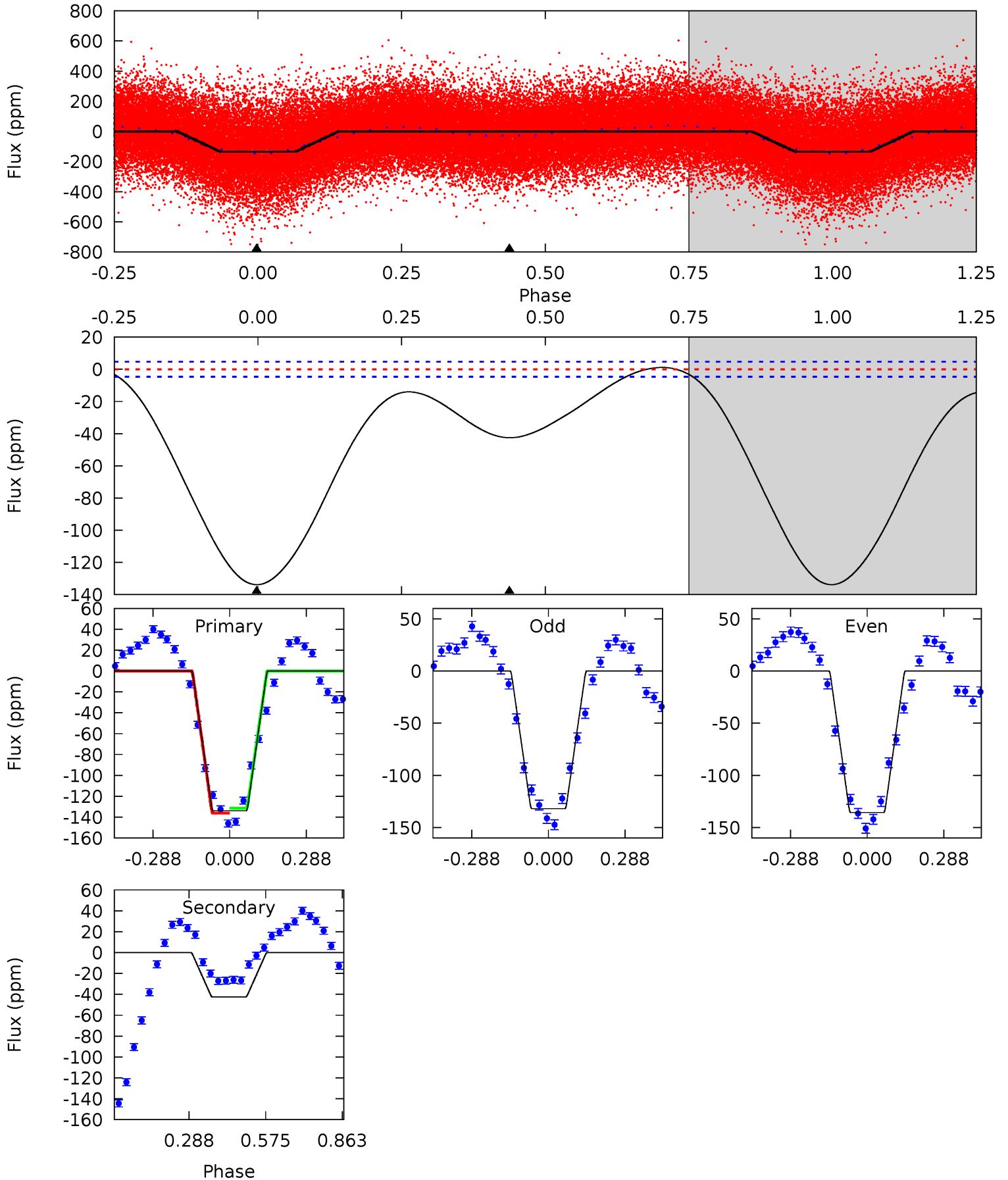
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.1	-12.4	0	0	4.37	1.16	8.70	18.1	18.1	-12.4	-12.4	1.89	1.07	0.53	4.30



# Alt Model-Shift Uniqueness Test

011410915-01, P = 2.742744 Days, E = 130.766541 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
124.3	39.5	0	0	4.34	1.06	2.26	124.3	124.3	39.5	39.5	1.72	1.02	0.01	2.12



### Stellar Parameters For KIC 011410915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6903^{+72}_{-92}$	$4.151^{+0.066}_{-0.114}$	$0.200^{+0.100}_{-0.150}$	$1.720^{+0.294}_{-0.171}$	$1.528^{+0.119}_{-0.097}$	$0.423^{+0.128}_{-0.148}$
	+1%/-1%	+2%/-3%	+50%/-75%	+17%/-10%	+8%/-6%	+30%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011410915-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$12\pm 1$	$0.62^{+0.25}_{-0.26}$	$2669^{+109}_{-81}$	$-7200^{+1198}_{-3182}$	$-33.339^{+16.467}_{-72.170}$
Alt.	$-43\pm 1$	$2.27^{+0.33}_{-0.31}$	$2660^{+106}_{-72}$	$5095^{+302}_{-271}$	$8.850^{+2.798}_{-2.113}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$



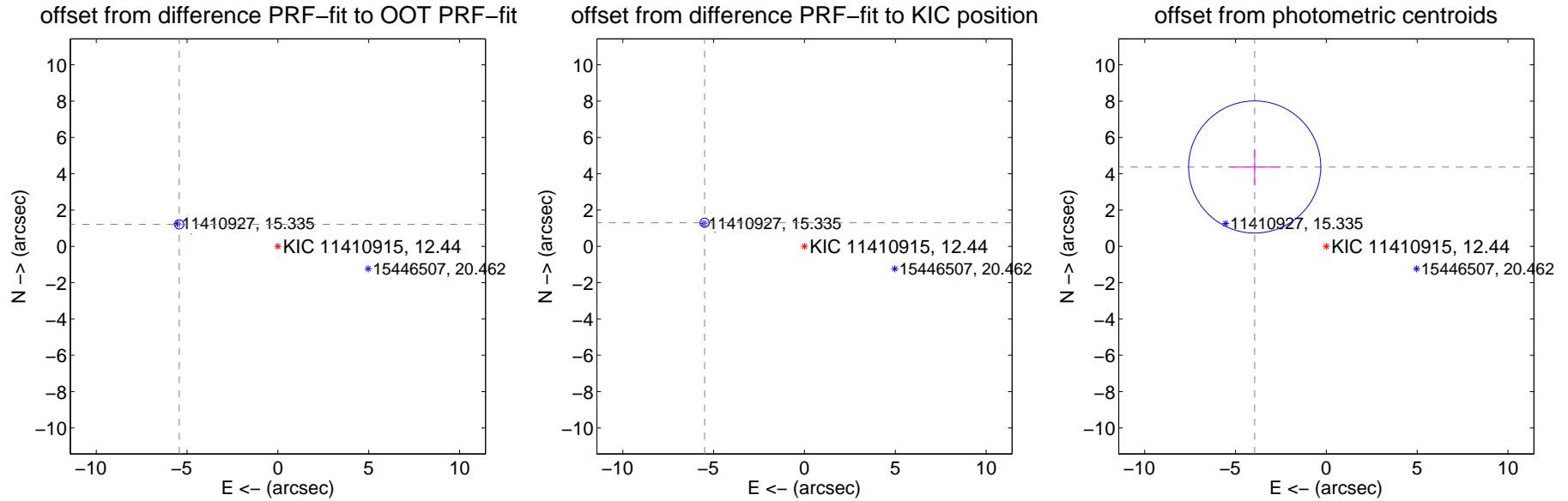
## DV Centroid Data

Supplemental centroid analysis for 011410915-01. Kepler magnitude: 12.44. Transit SNR 6.34

There are 16 quarters with good PRF difference image offsets

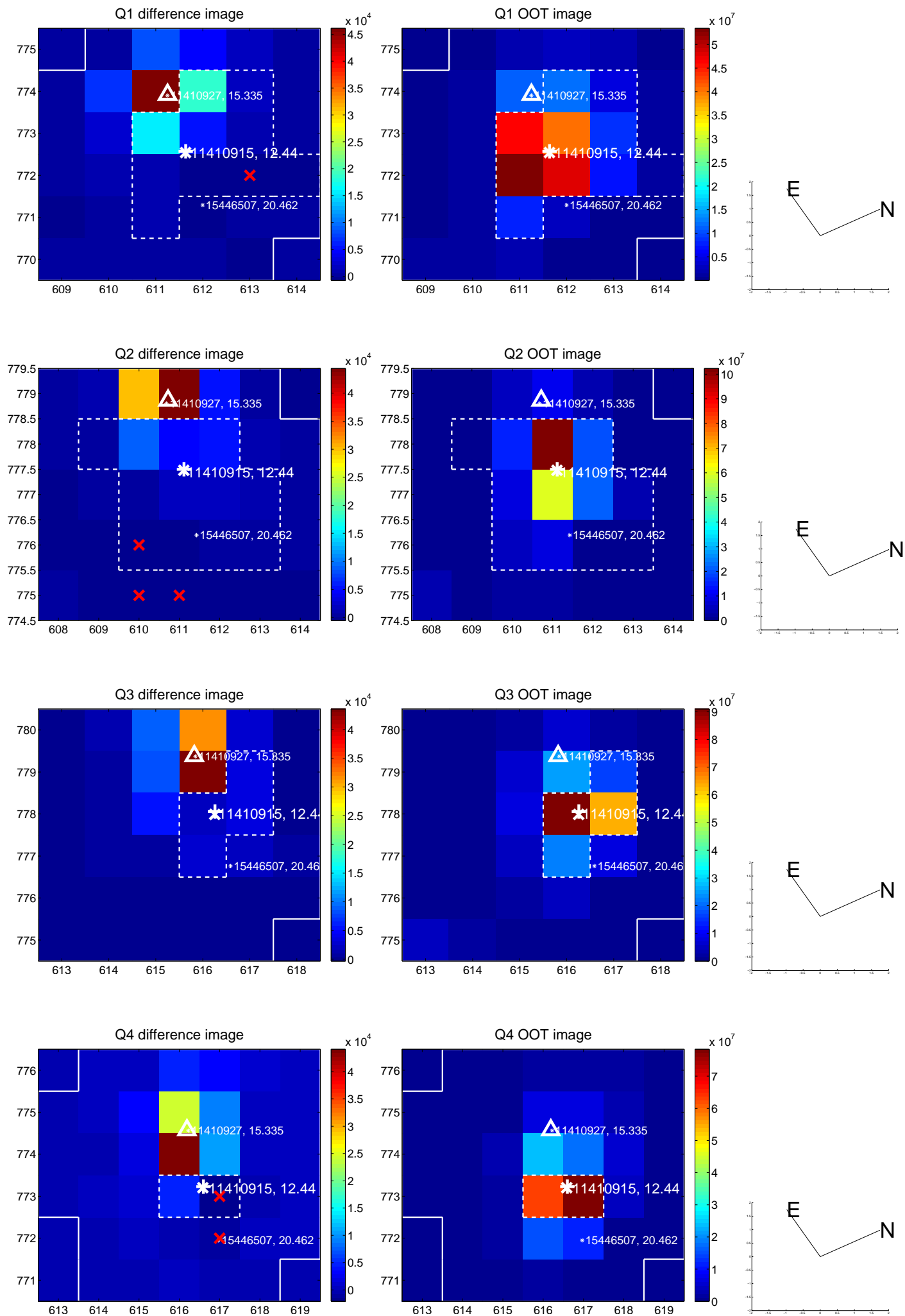
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.570 \pm 0.085$	$65.76$	$5.437 \pm 0.085$	$1.212 \pm 0.084$
PRF-fit source offset from KIC position	$5.651 \pm 0.084$	$67.16$	$5.499 \pm 0.083$	$1.300 \pm 0.083$
photometric centroid source offset	$5.89 \pm 1.21$	$4.85$	$3.95 \pm 1.44$	$4.37 \pm 1.00$

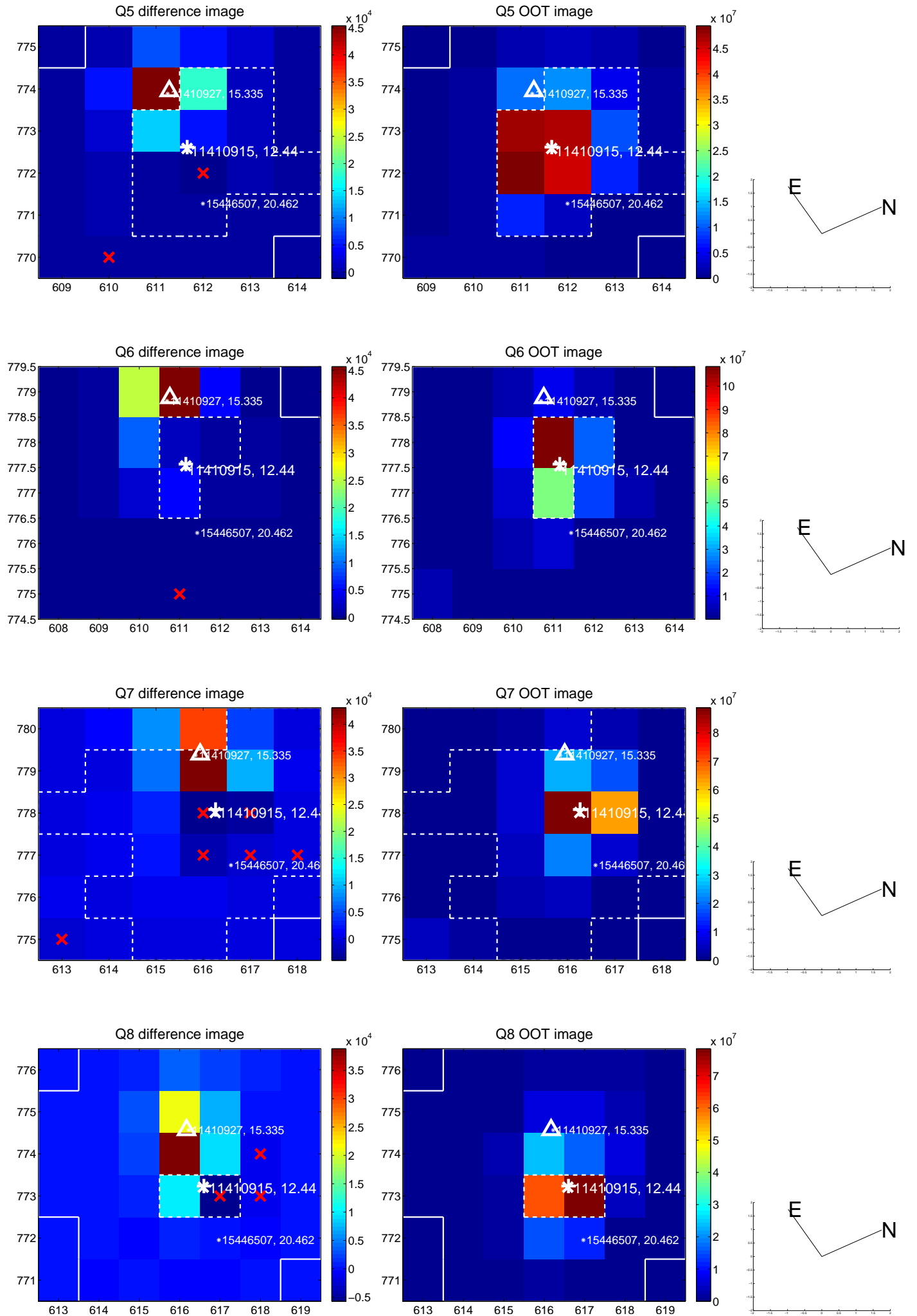


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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.

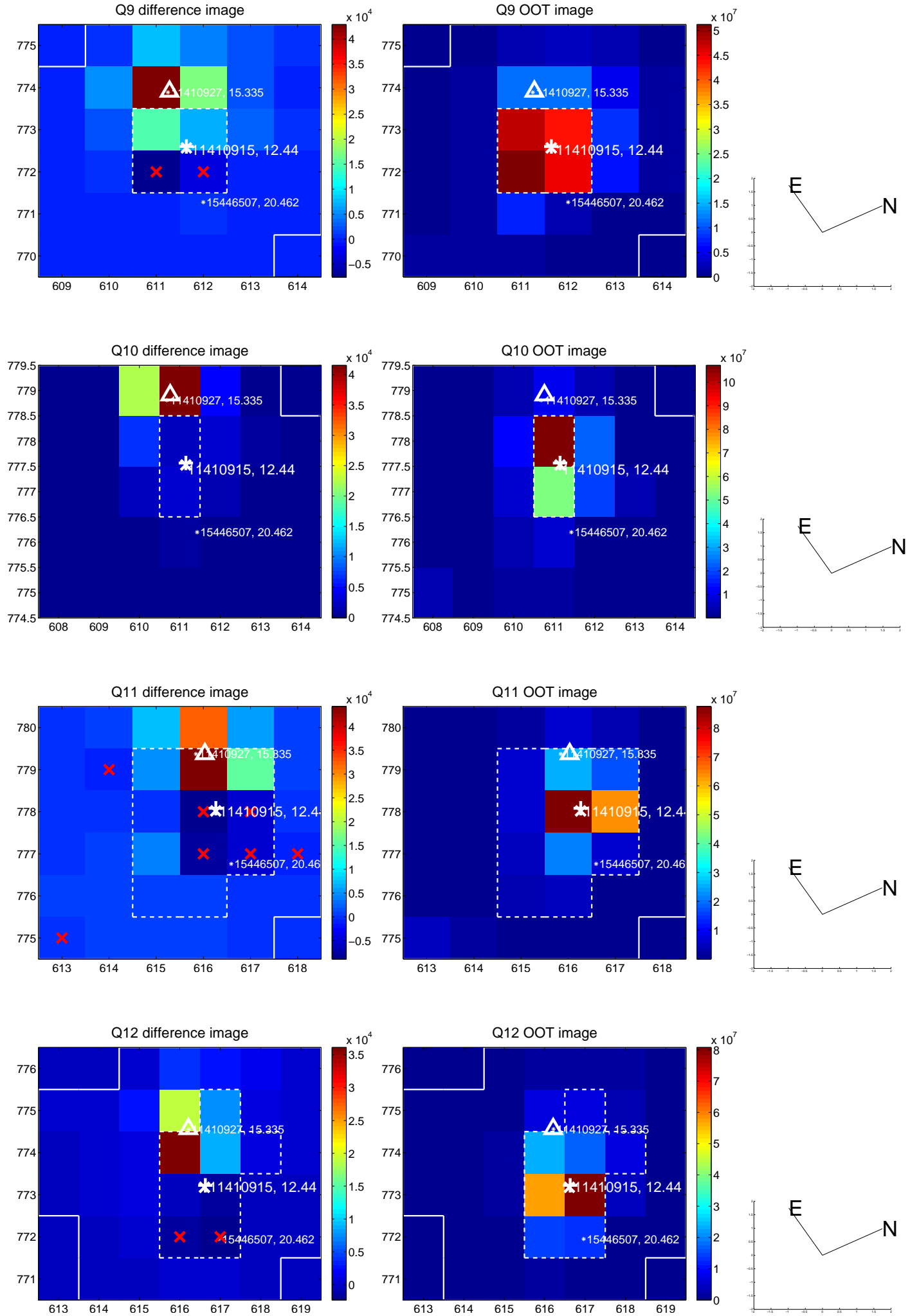
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



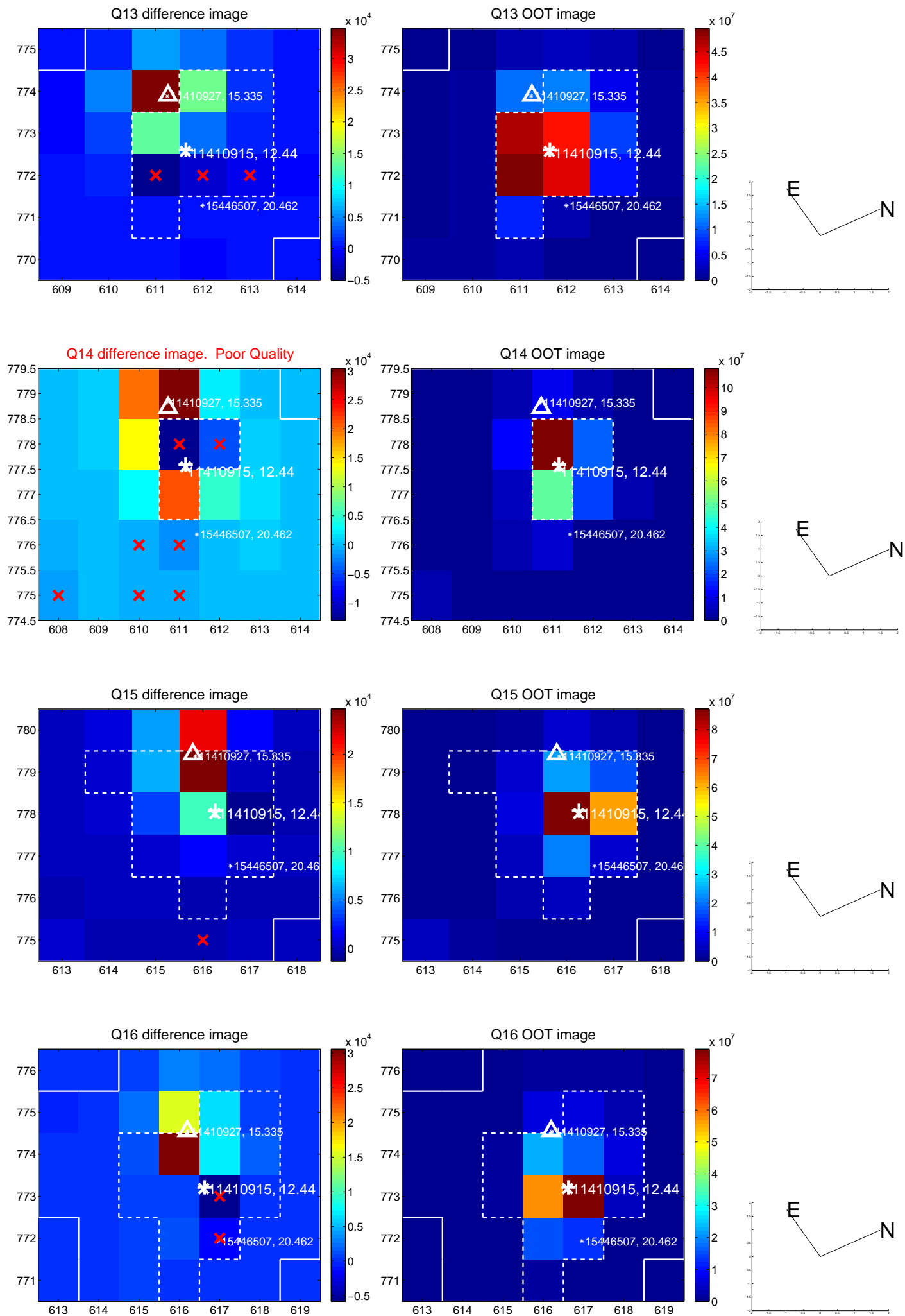
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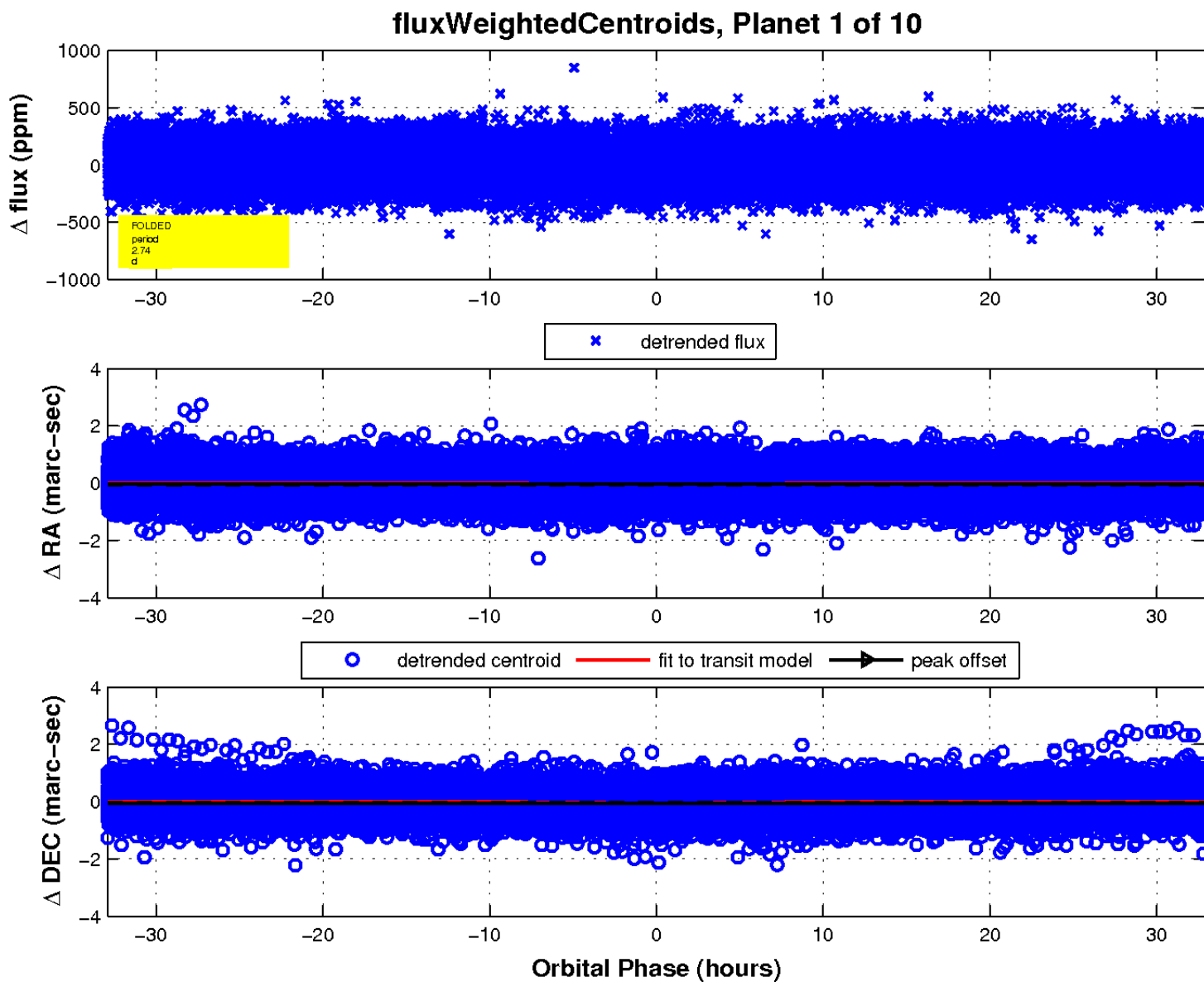
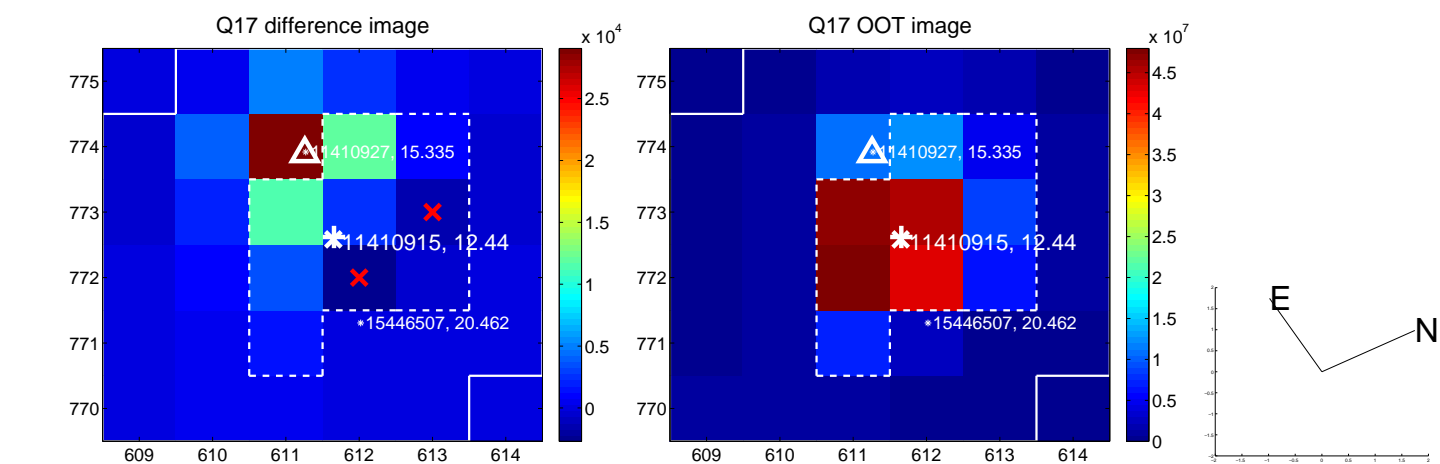


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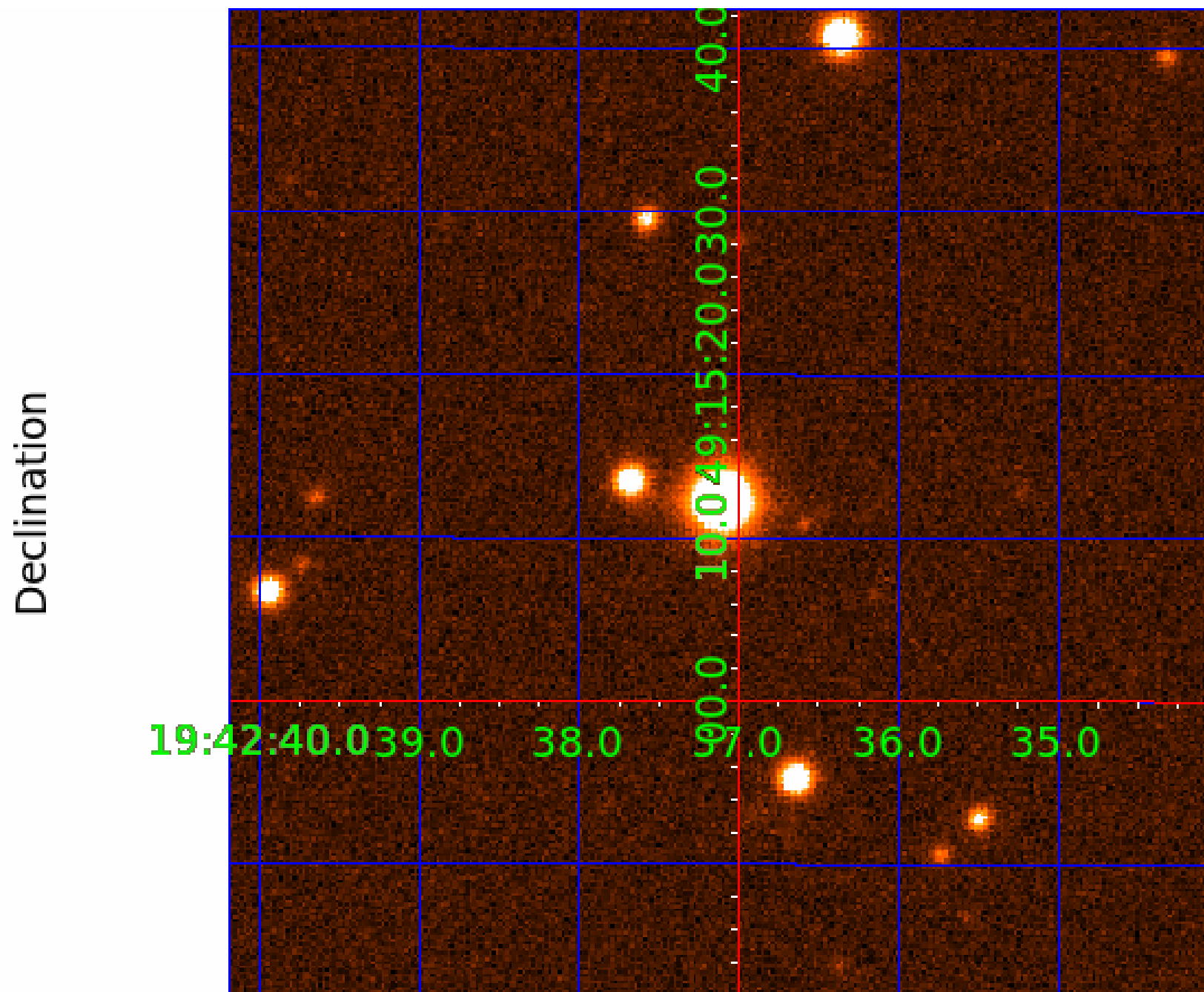




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UKIRT Image



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011410915-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011410915-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
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011410915-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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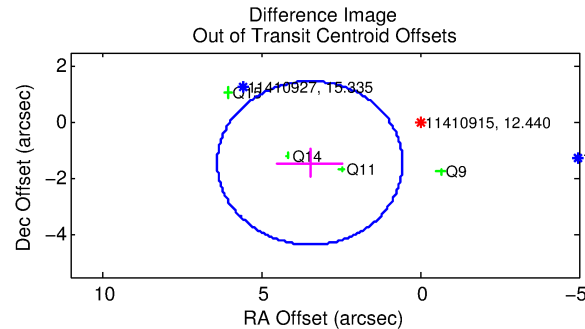
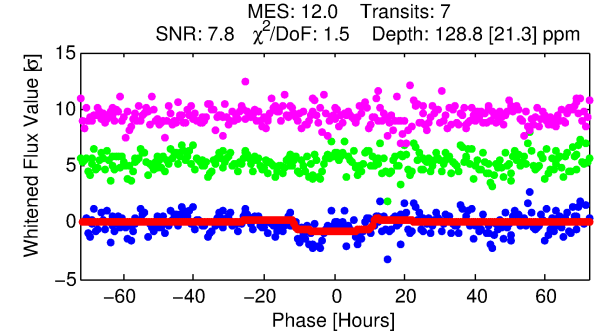
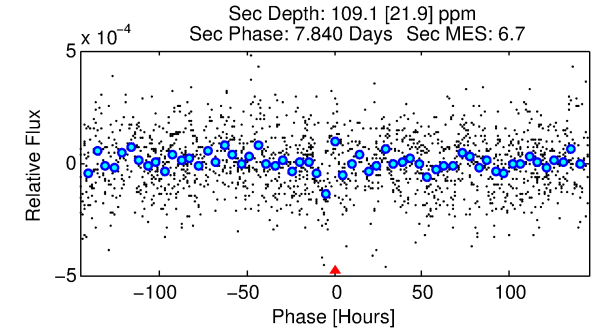
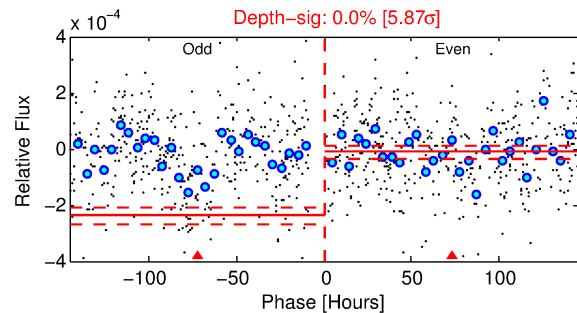
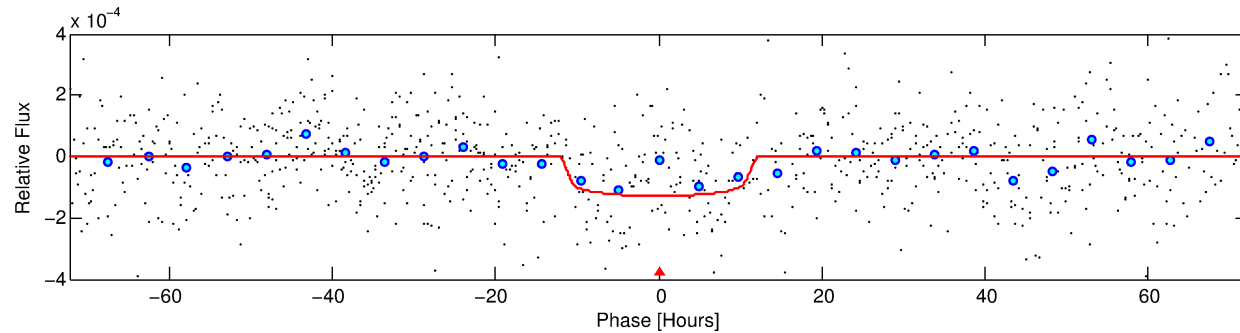
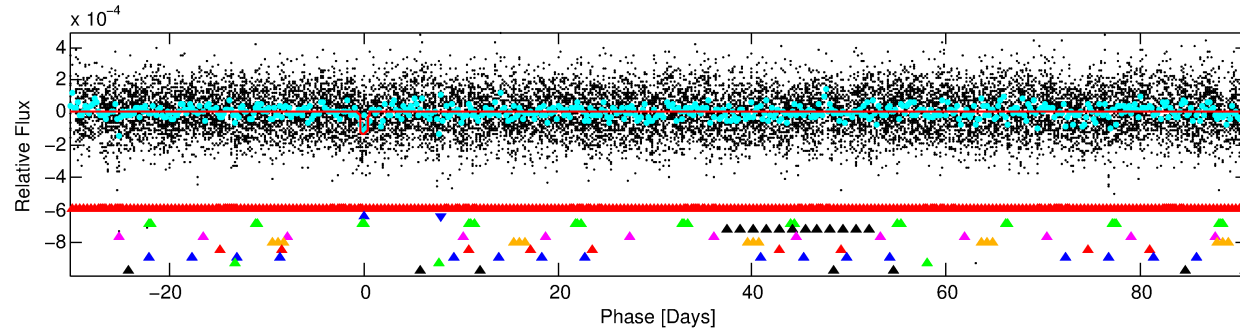
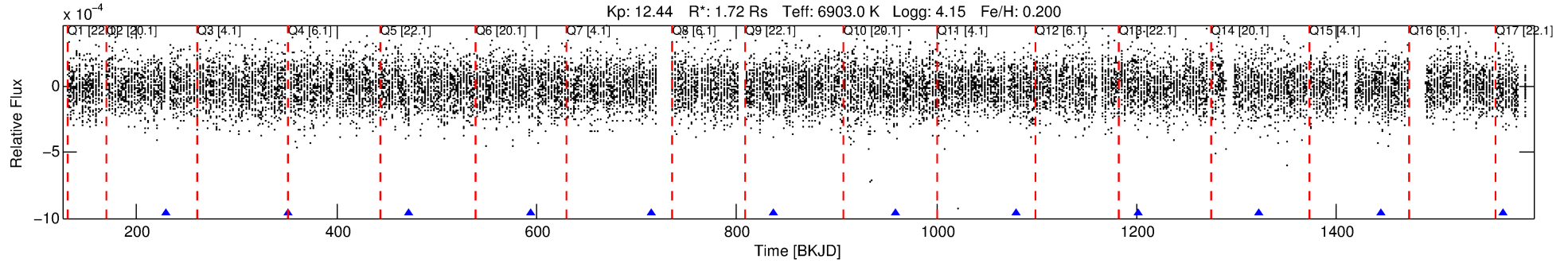
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011410915-02

No Significant Match Found

# DV One-Page Summary

KIC: 11410915 Candidate: 2 of 10 Period: 121.492 d



## DV Fit Results:

Period = 121.49157 [0.01315] d  
Epoch = 229.3694 [0.0866] BKJD  
Rp/R\* = 0.0122 [0.0018]  
a/R\* = 16.94 [12.36]  
b = 0.91 [0.14]  
Seff = 19.68 [4.24]  
Teq = 537 [29] K  
Rp = 2.29 [0.52] Re  
a = 0.5530 [0.0795] AU  
Ag = 3490.05 [1462.46] [2.39σ]  
Teffp = 6382 [586] K [9.97σ]

## DV Diagnostic Results:

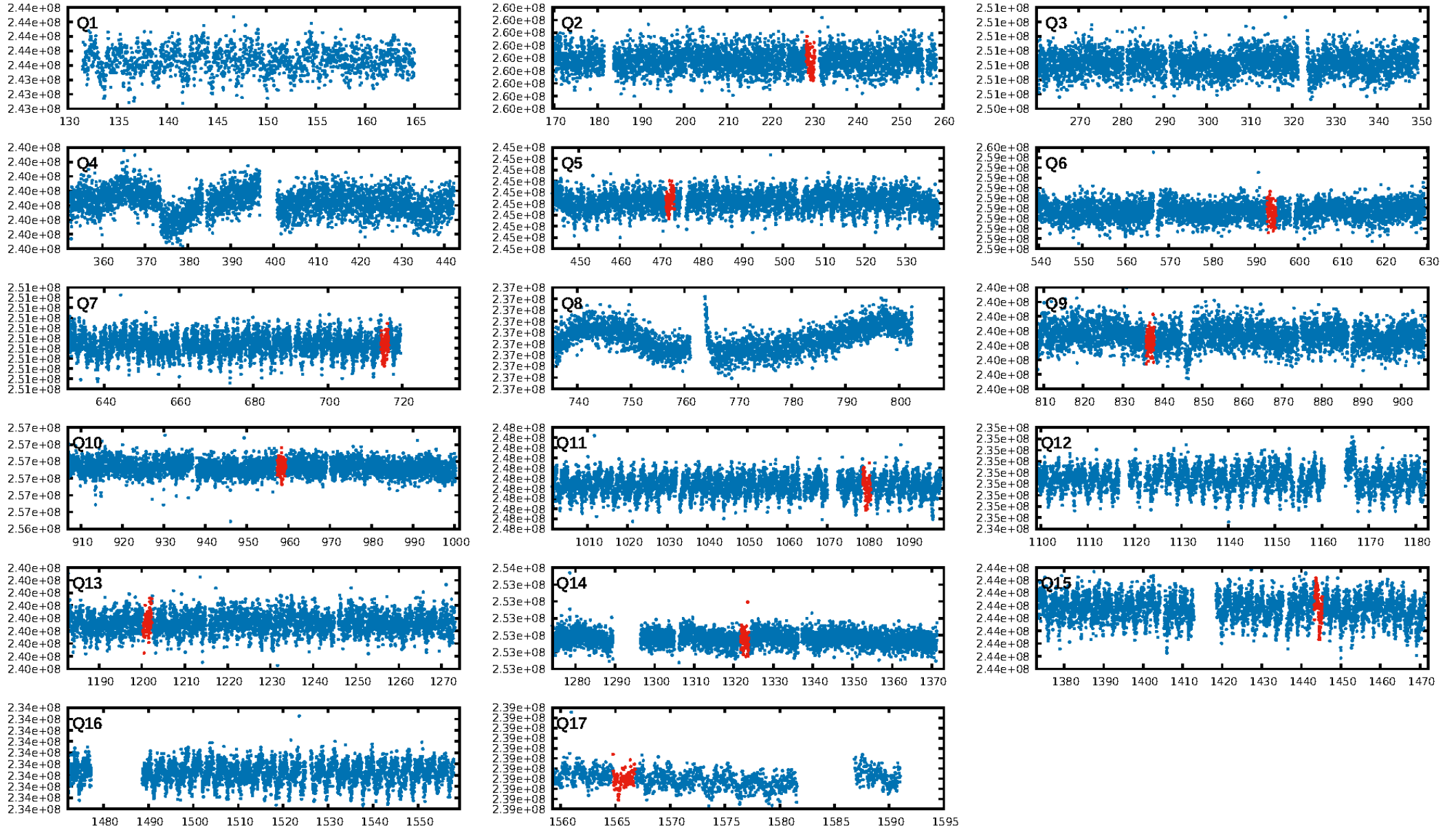
ShortPeriod-sig: 80.8% [1.30σ]  
LongPeriod-sig: 100.0% [31.53σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: 1.706  
Centroid-sig: 43.2%  
Centroid-so: 0.617 arcsec [0.67σ]  
OotOffset-rm: 3.751 arcsec [3.87σ]  
KicOffset-rm: 3.879 arcsec [3.34σ]  
OotOffset-st: 1/2/0/1 [4]  
KicOffset-st: 1/2/0/1 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 0.00 [0/8]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:48:35 Z

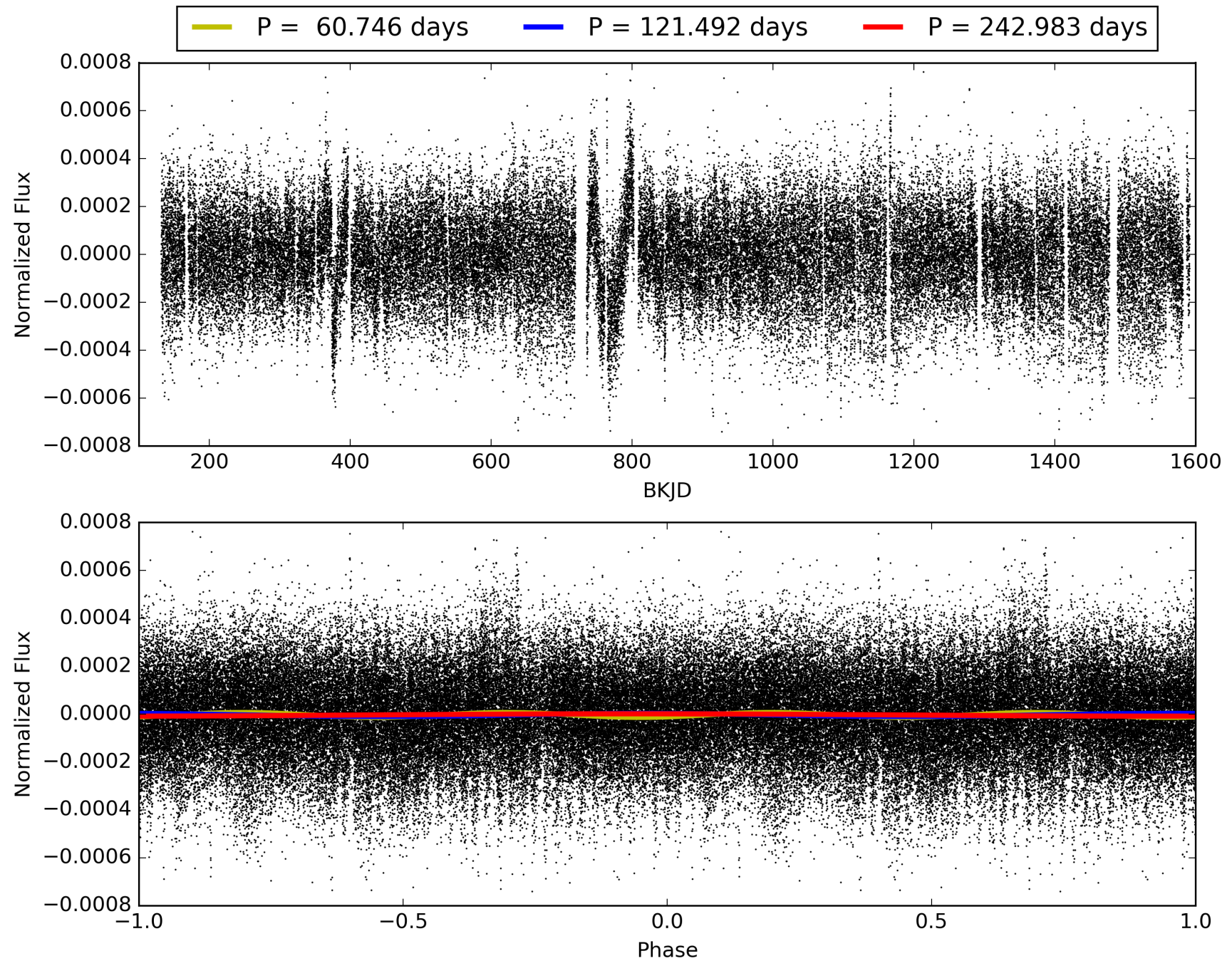
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 011410915-02, PDC Light Curves

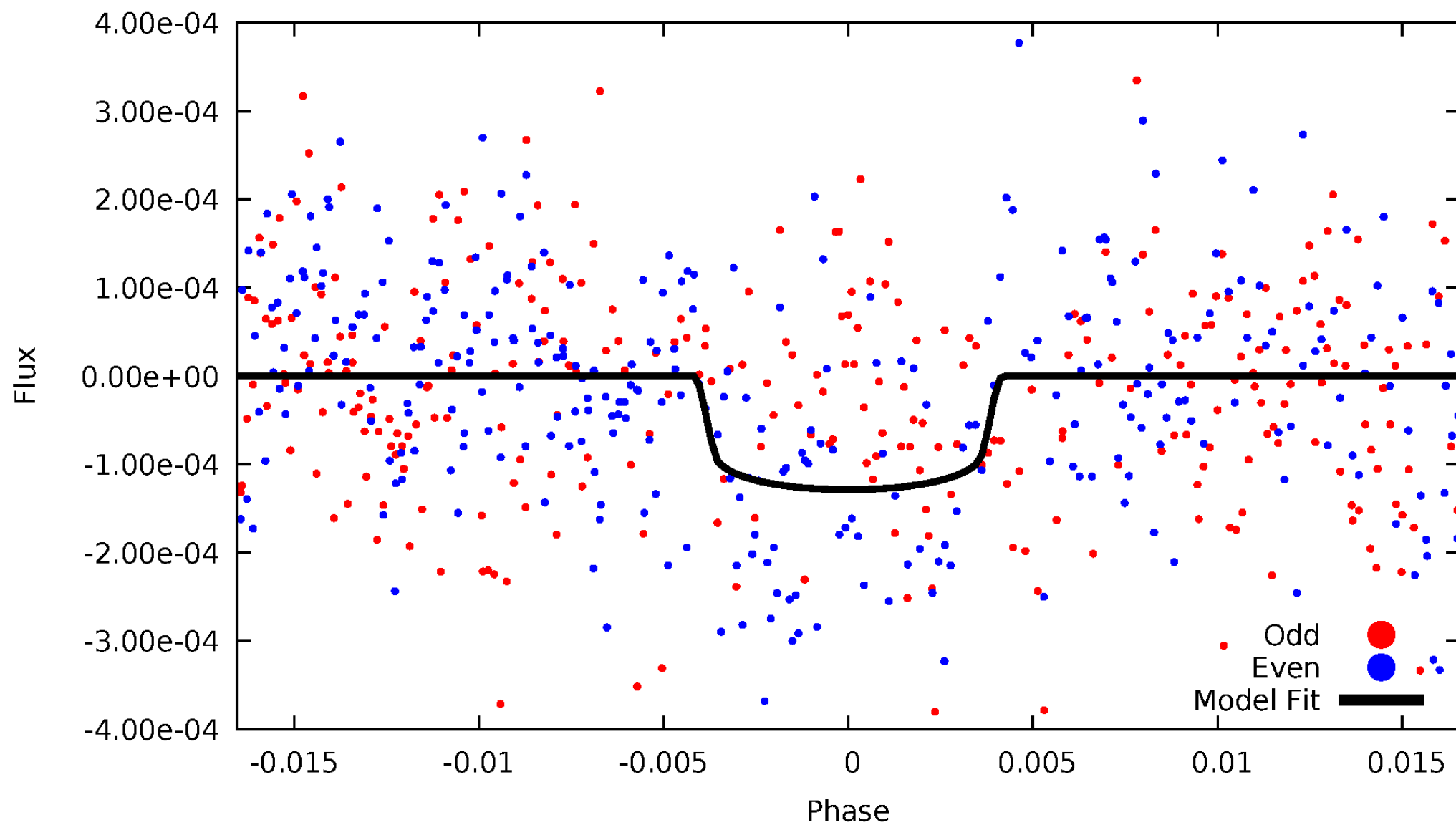


# TCE 011410915-02



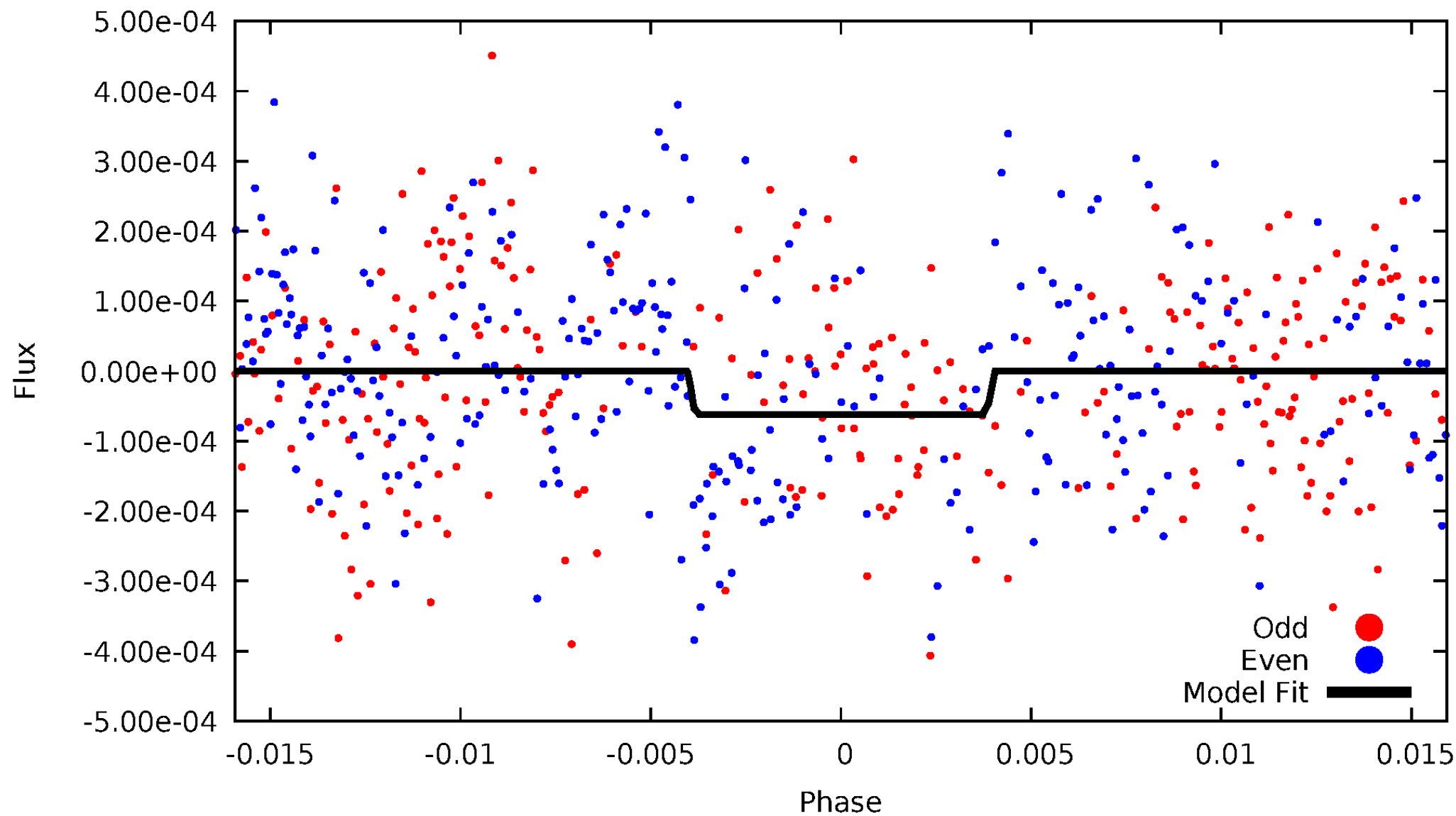
# DV Odd/Even

TCE 011410915-02



# ALT Odd/Even

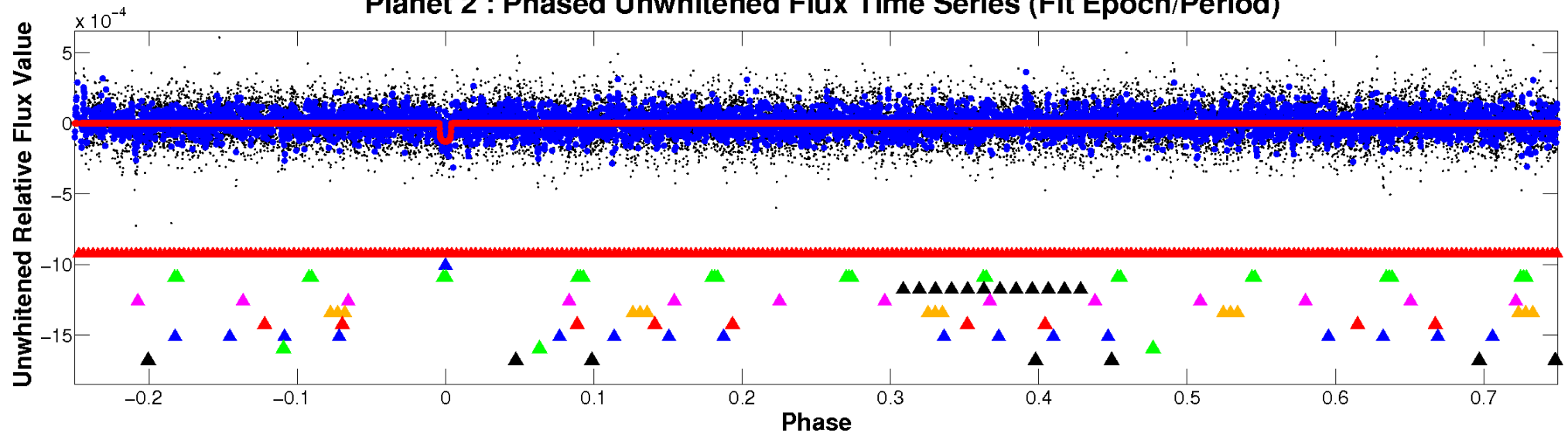
TCE 011410915-02



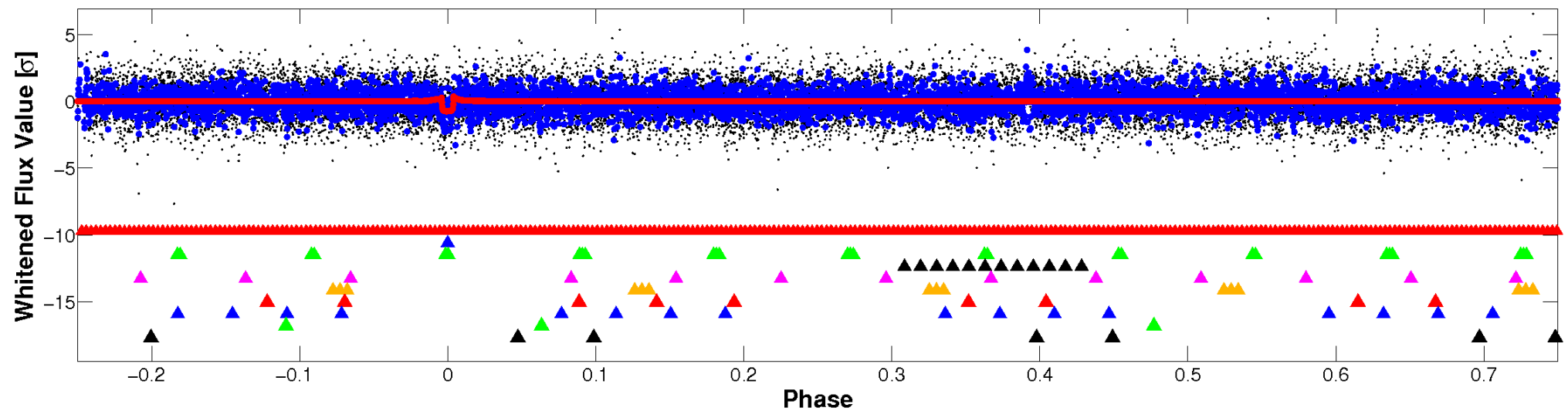


# Non-Whitened Vs. Whitened Light Curve

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

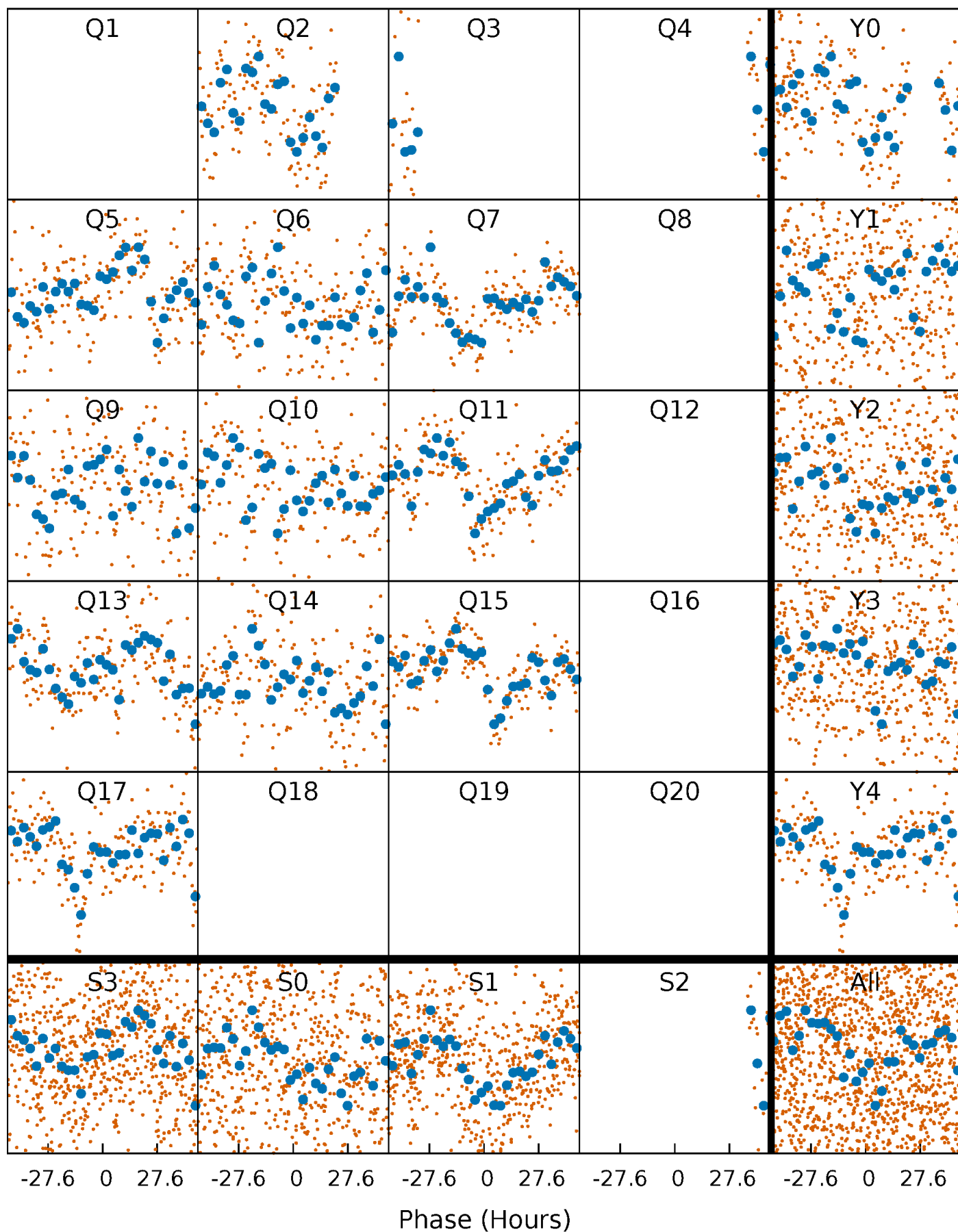


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



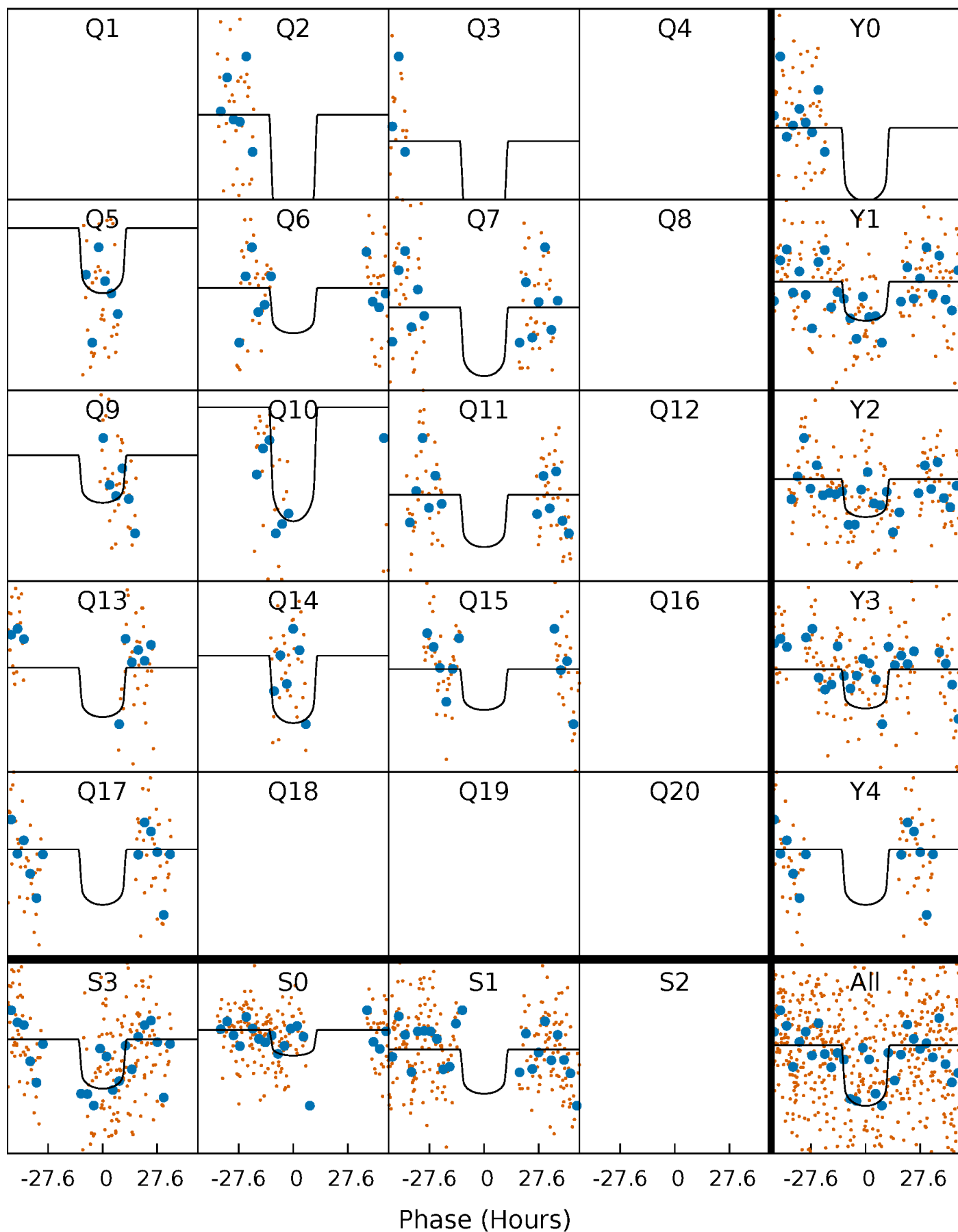
# PDC Quarter-Phased Transit Curves

TCE 011410915-02 P=121.491572 Days  $T_0=229.369437$  (BKJD)



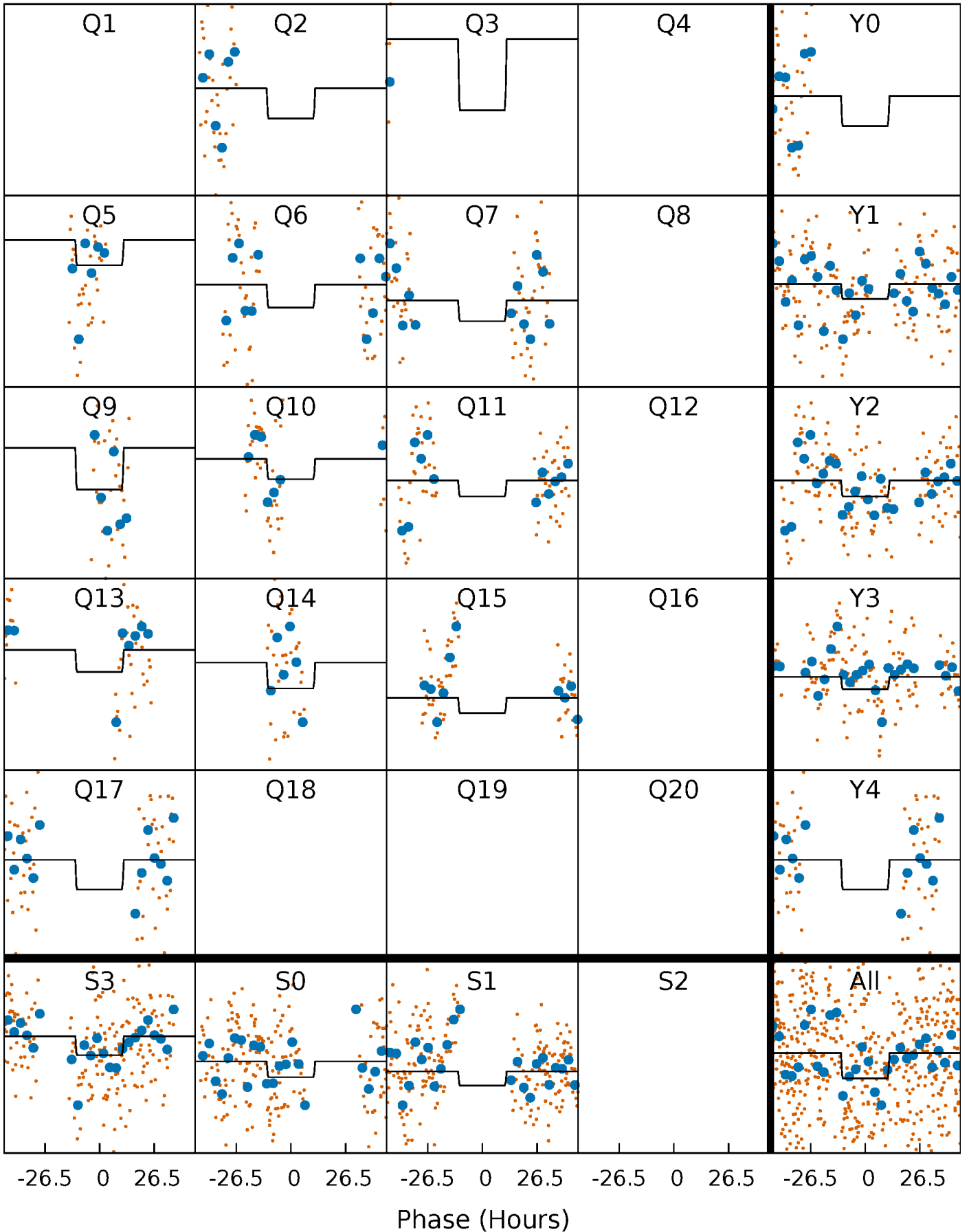
# DV Quarter-Phased Transit Curves

TCE 011410915-02 P=121.491572 Days  $T_0=229.369437$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011410915-02 P=121.463892 Days  $T_0=229.618274$  (BKJD)

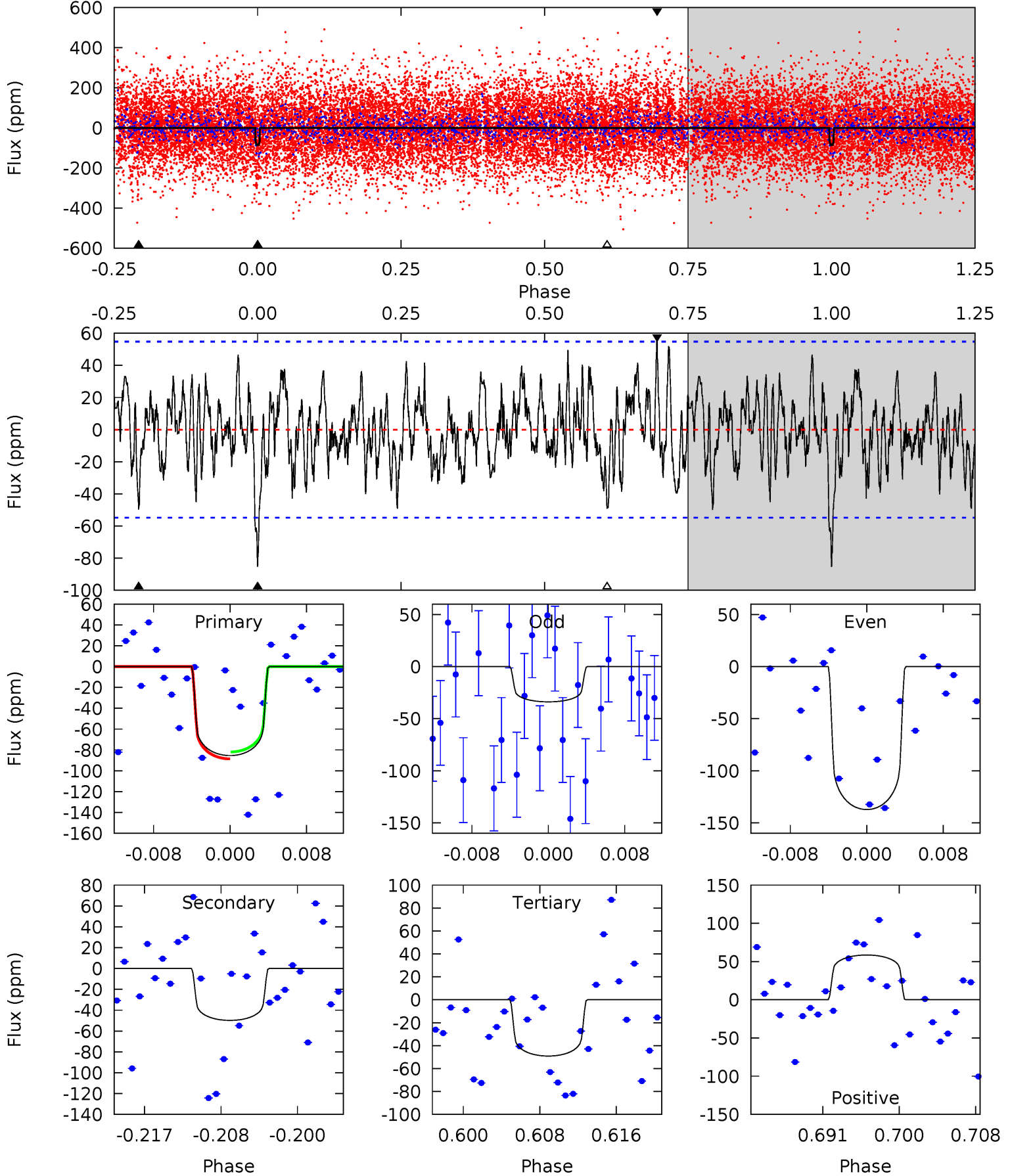




# DV Model-Shift Uniqueness Test

011410915-02, P = 121.491572 Days, E = 107.877865 Days

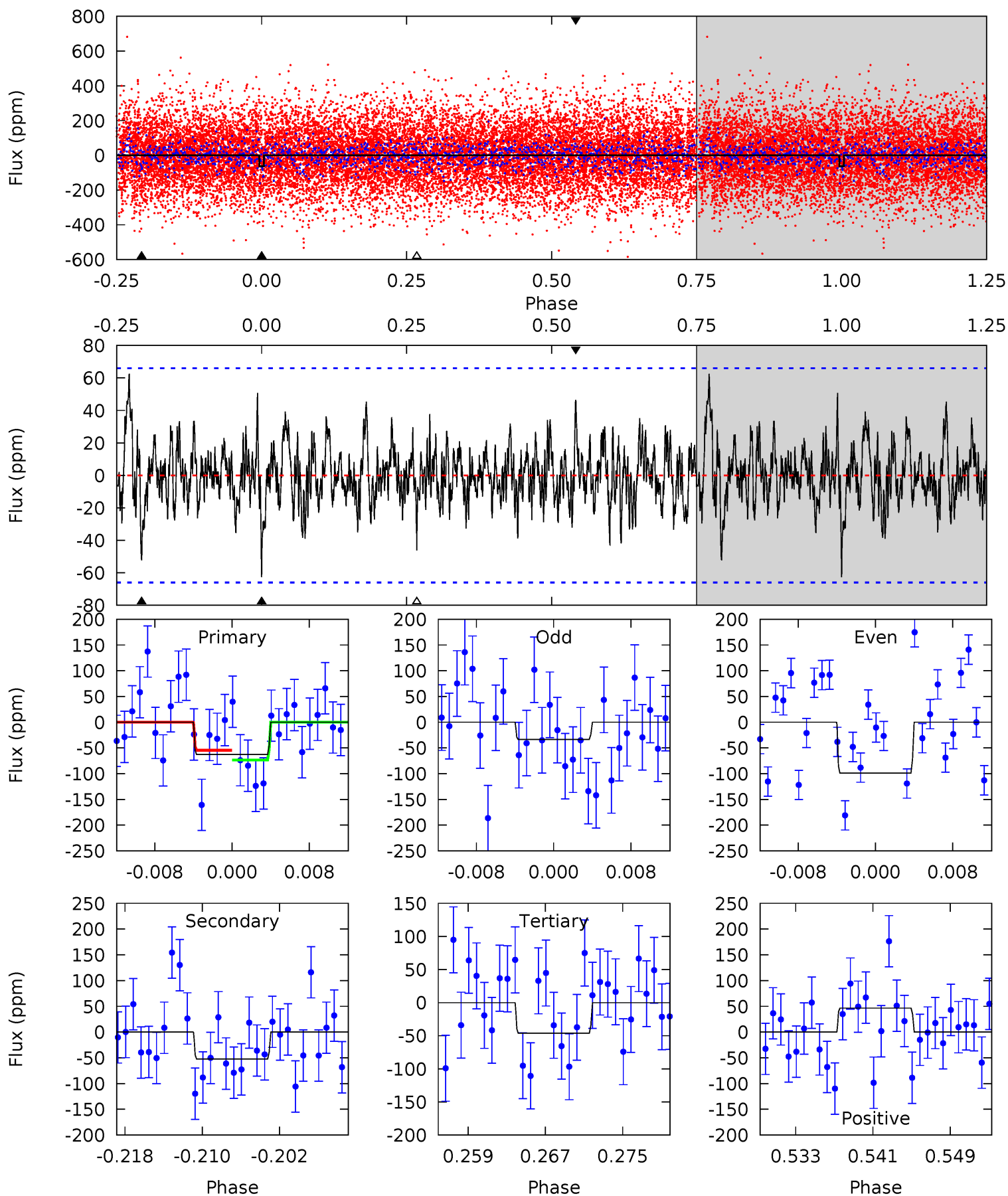
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.89	4.60	4.54	5.41	5.06	2.64	1.72	3.35	2.48	0.06	-0.81	4.77	0.67	0.41	0.30



# Alt Model-Shift Uniqueness Test

011410915-02, P = 121.463892 Days, E = 108.154382 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
4.81	4.02	3.55	3.58	5.07	2.65	1.12	1.26	1.24	0.46	0.44	2.50	1.06	0.50	0.72



### Stellar Parameters For KIC 011410915

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6903^{+72}_{-92}$	$4.151^{+0.066}_{-0.114}$	$0.200^{+0.100}_{-0.150}$	$1.720^{+0.294}_{-0.171}$	$1.528^{+0.119}_{-0.097}$	$0.423^{+0.128}_{-0.148}$
	+1%/-1%	+2%/-3%	+50%/-75%	+17%/-10%	+8%/-6%	+30%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011410915-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-50 \pm 11$	$2.32^{+0.41}_{-0.36}$	$754^{+31}_{-24}$	$5251^{+481}_{-385}$	$1521^{+751}_{-491}$
Alt.	$-52 \pm 13$	$1.51^{+0.39}_{-0.36}$	$755^{+30}_{-24}$	$6583^{+1100}_{-814}$	$3875^{+2897}_{-1575}$

$T_{\text{max}}$  = 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  $A_{\text{obs}} \gg 1.0$

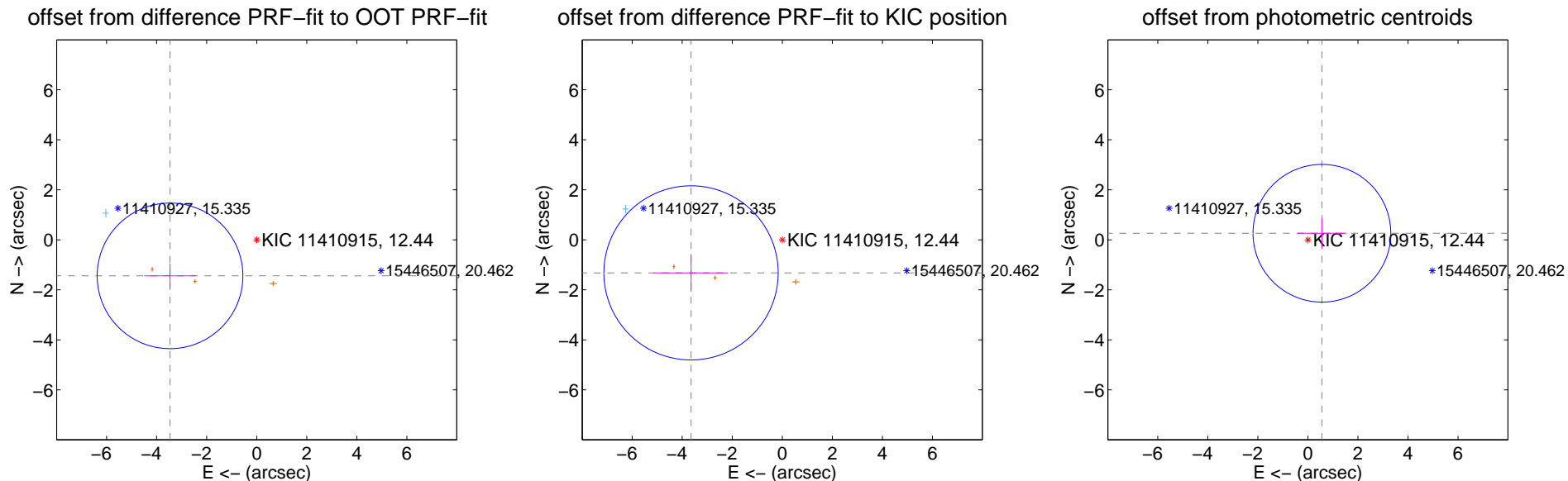
## DV Centroid Data

Supplemental centroid analysis for 011410915-02. Kepler magnitude: 12.44. Transit SNR 7.81

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.751 \pm 0.970$	3.87	$3.463 \pm 1.030$	$-1.441 \pm 0.499$
PRF-fit source offset from KIC position	$3.879 \pm 1.160$	3.34	$3.647 \pm 1.485$	$-1.322 \pm 0.751$
photometric centroid source offset	$0.62 \pm 0.92$	0.67	$-0.56 \pm 0.97$	$0.26 \pm 0.59$



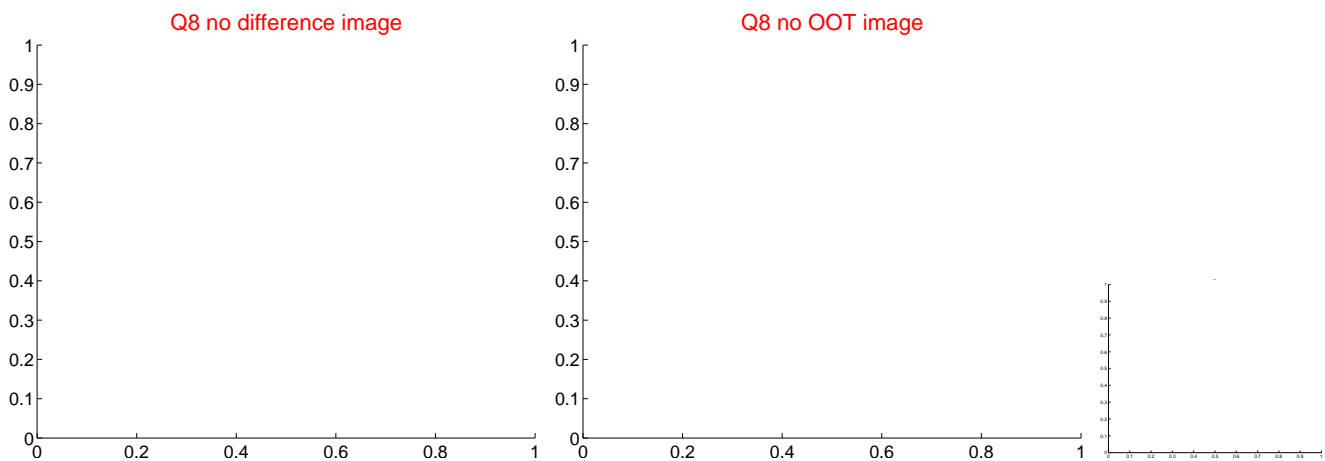
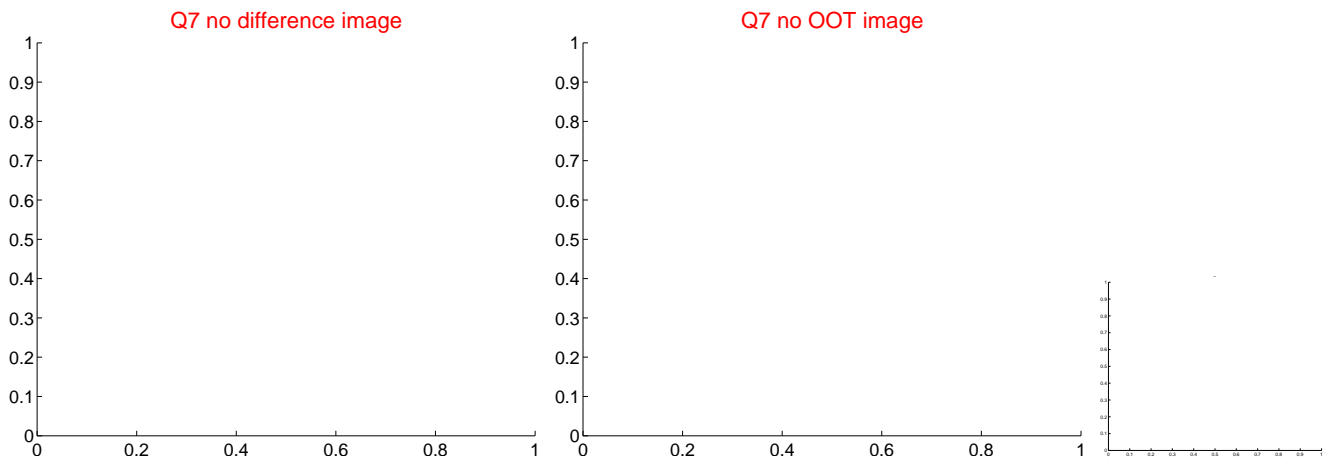
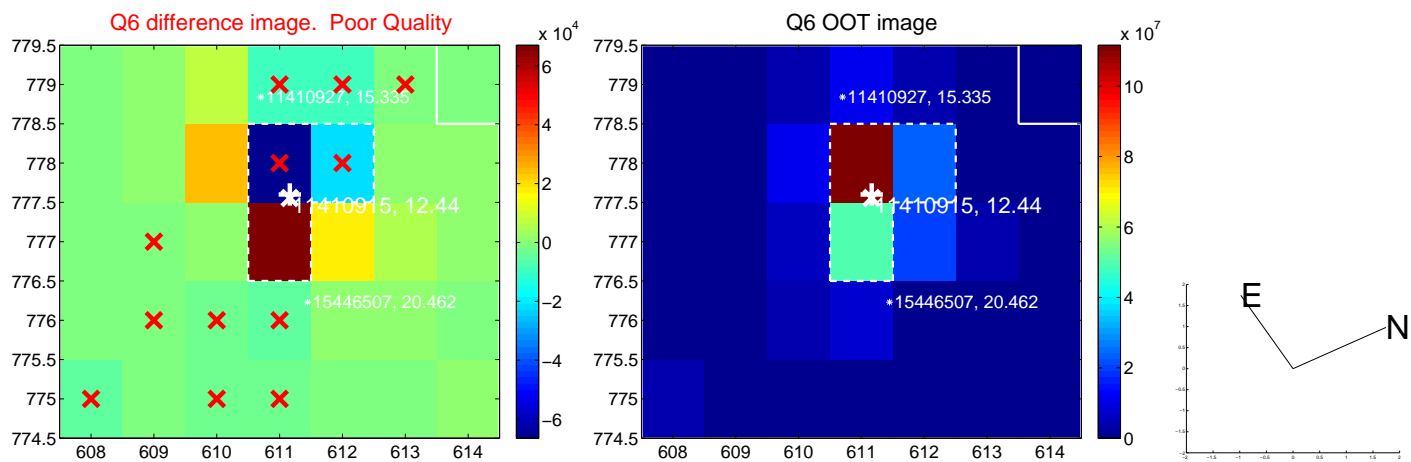
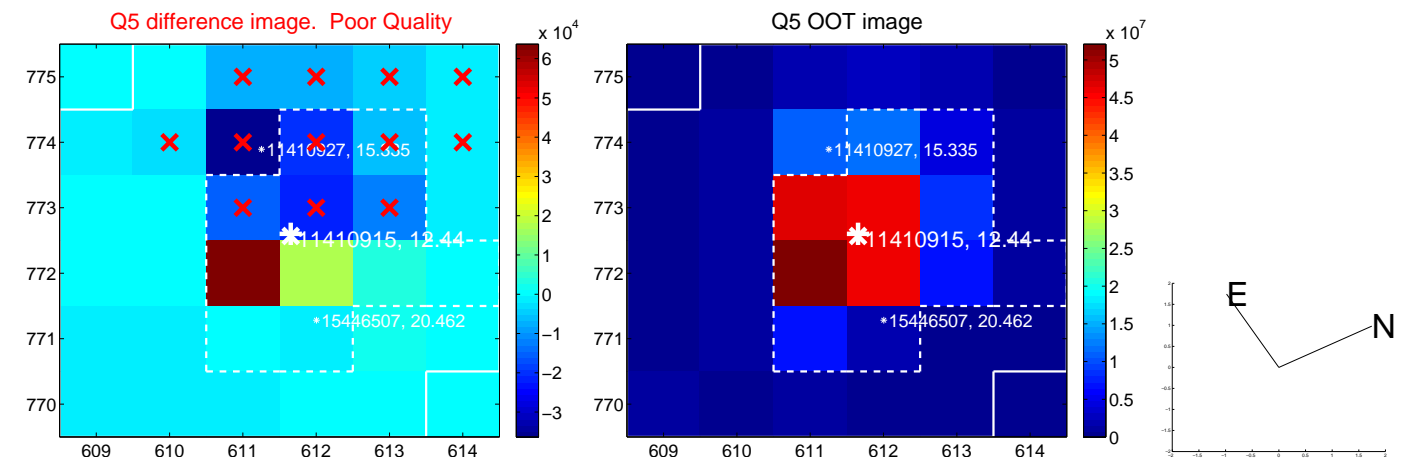
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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.

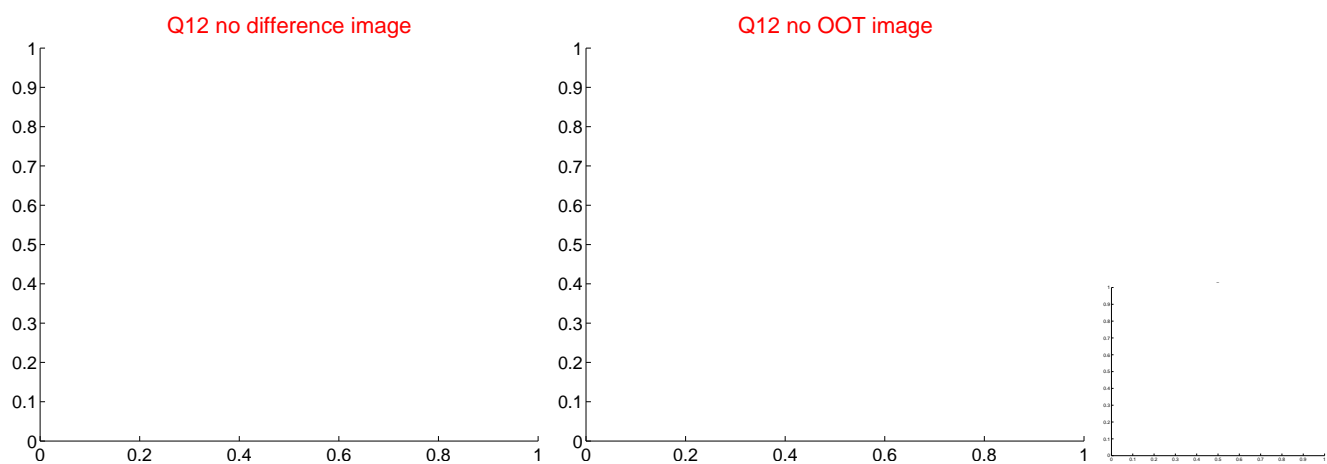
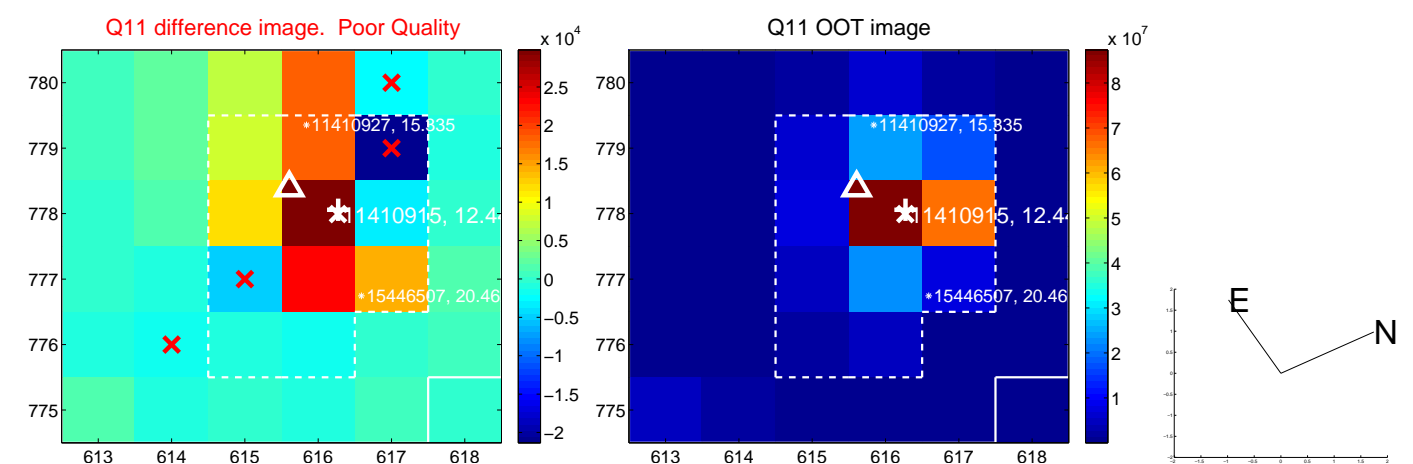
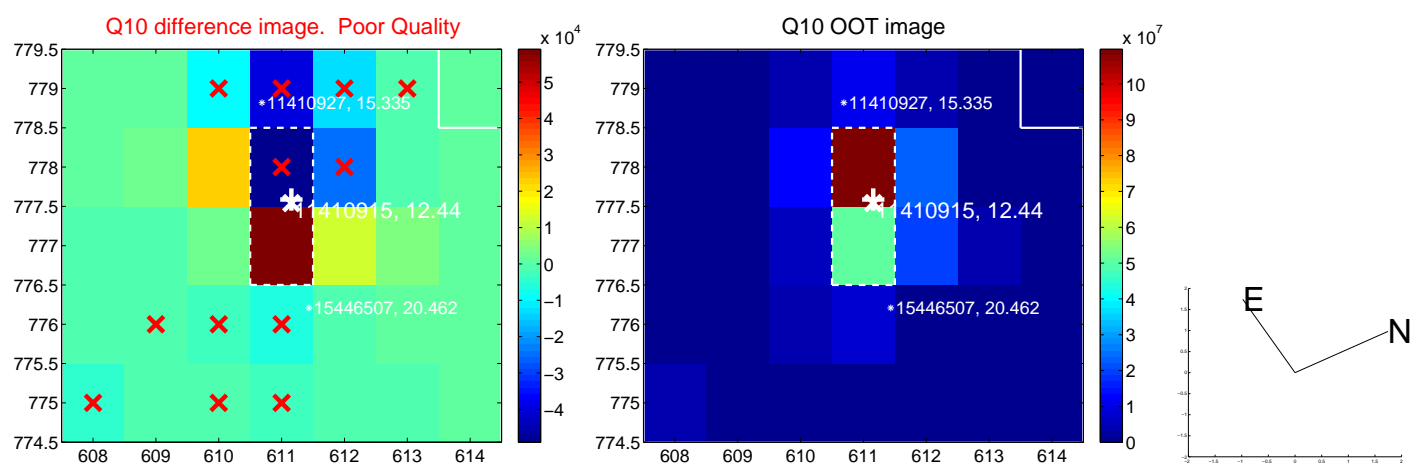
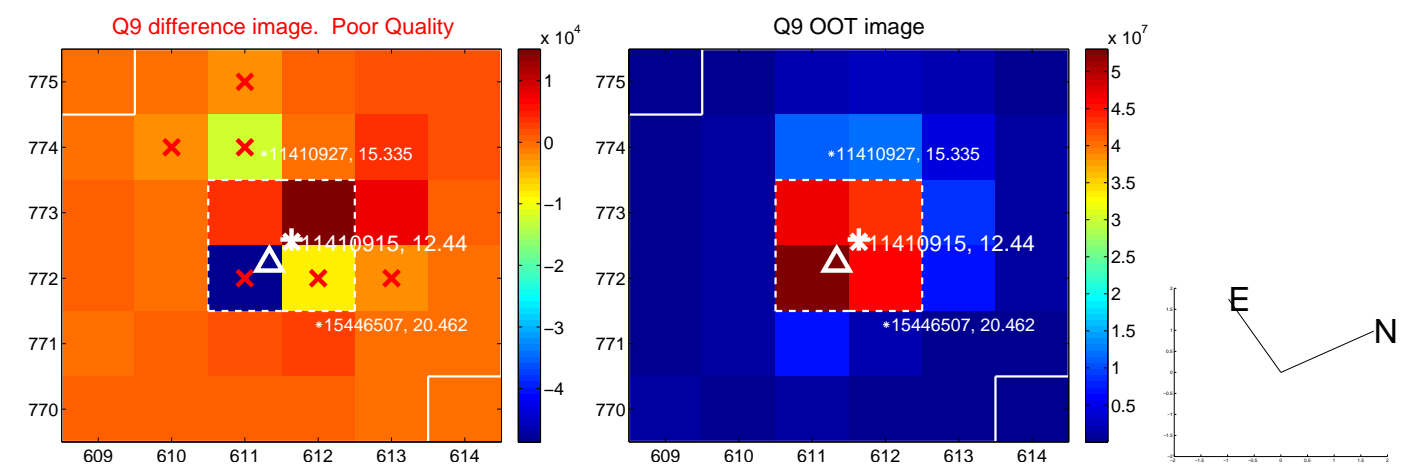




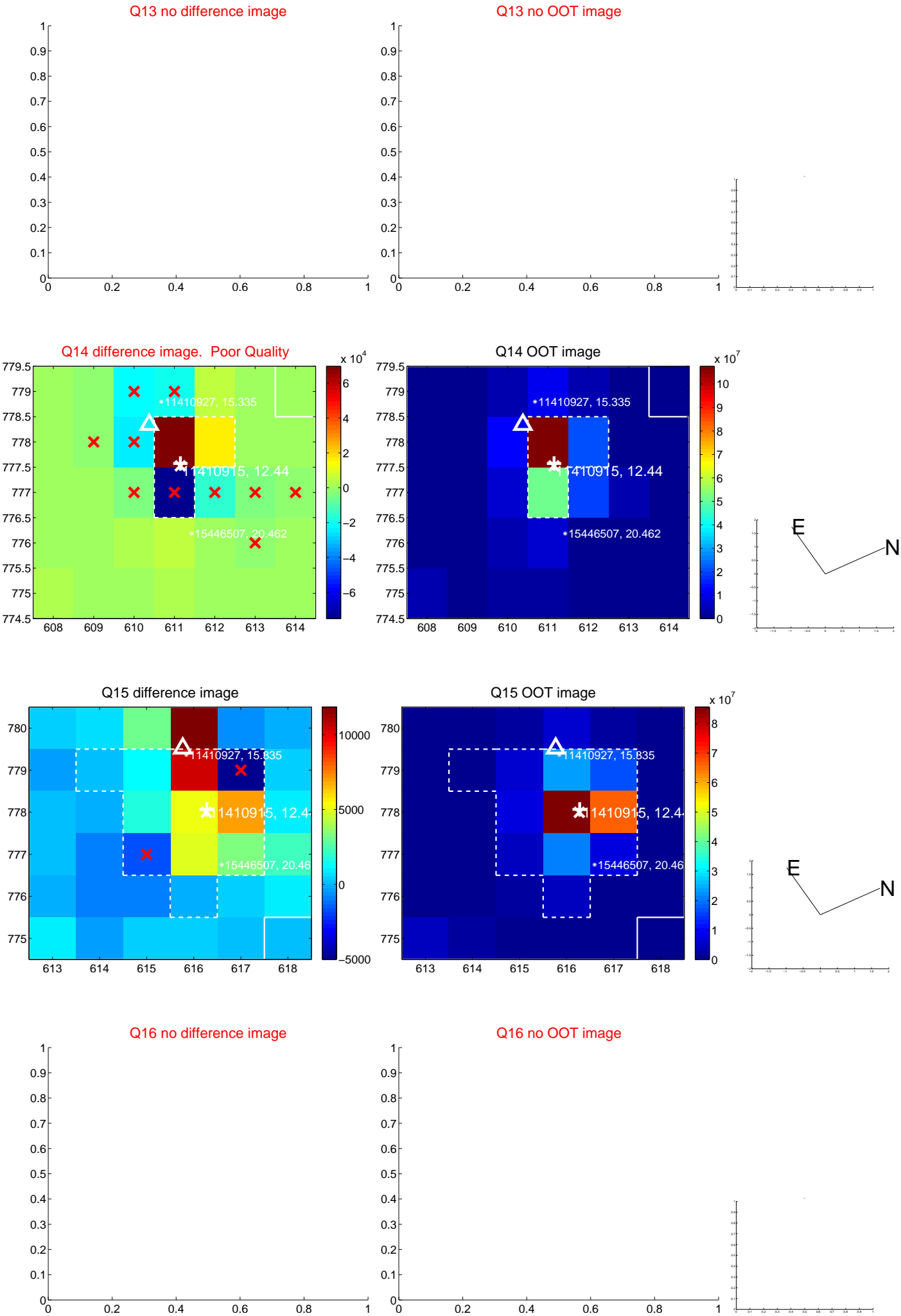
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



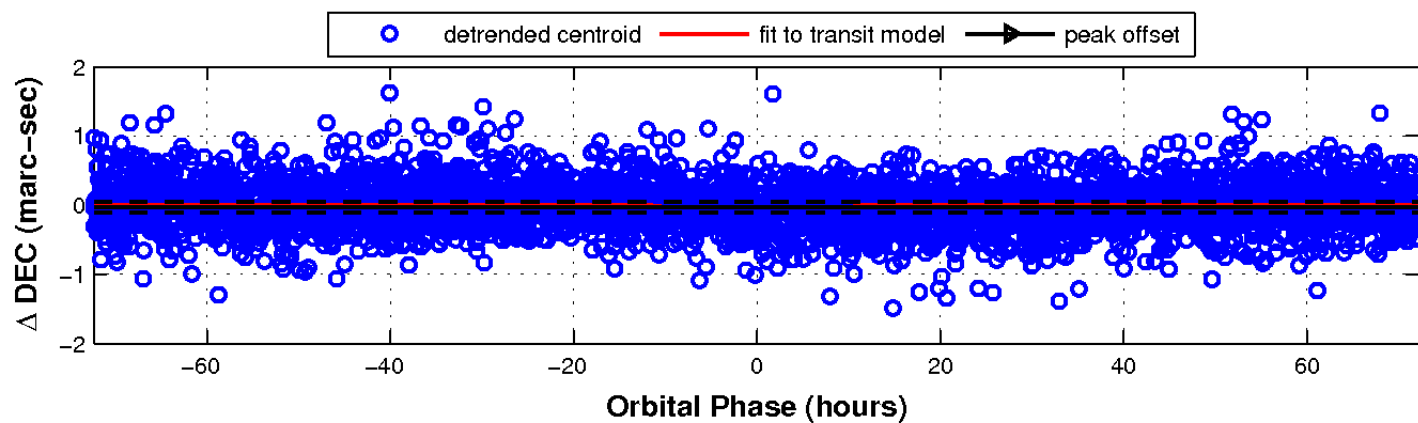
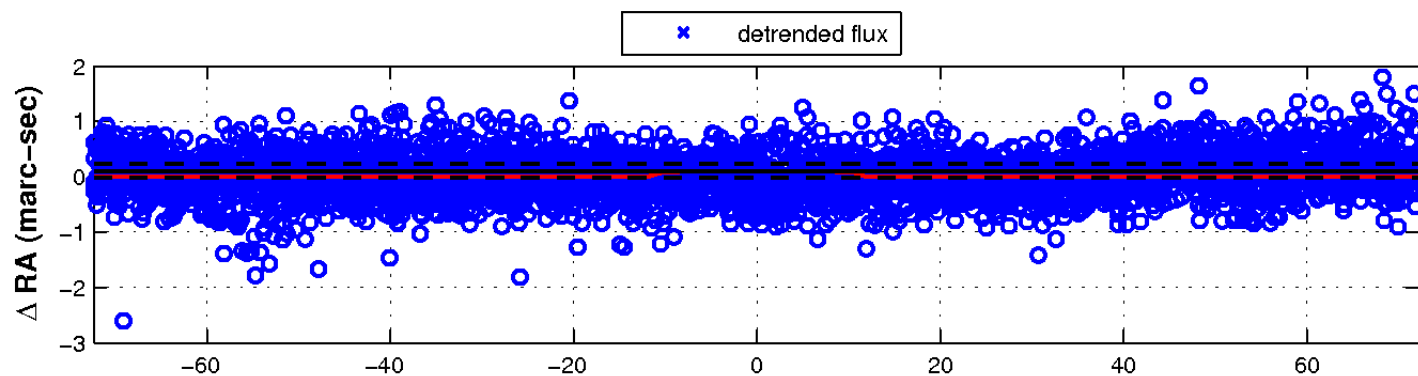
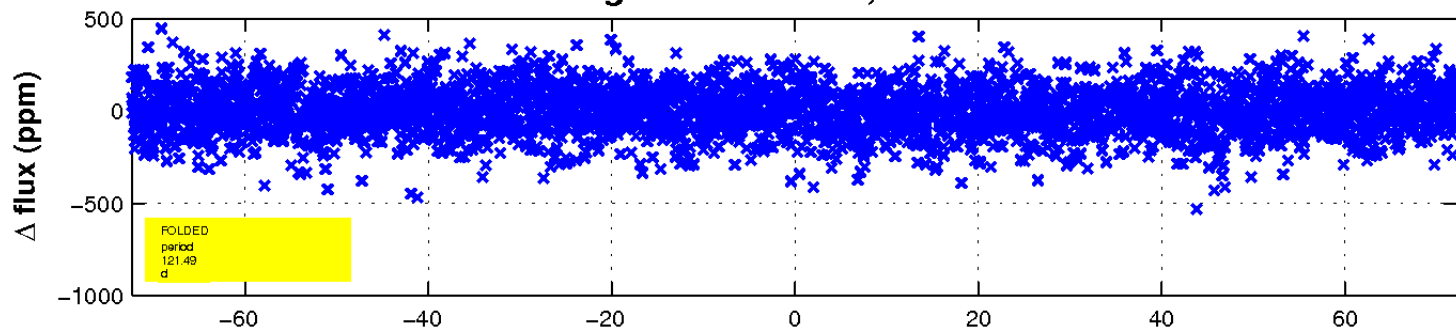
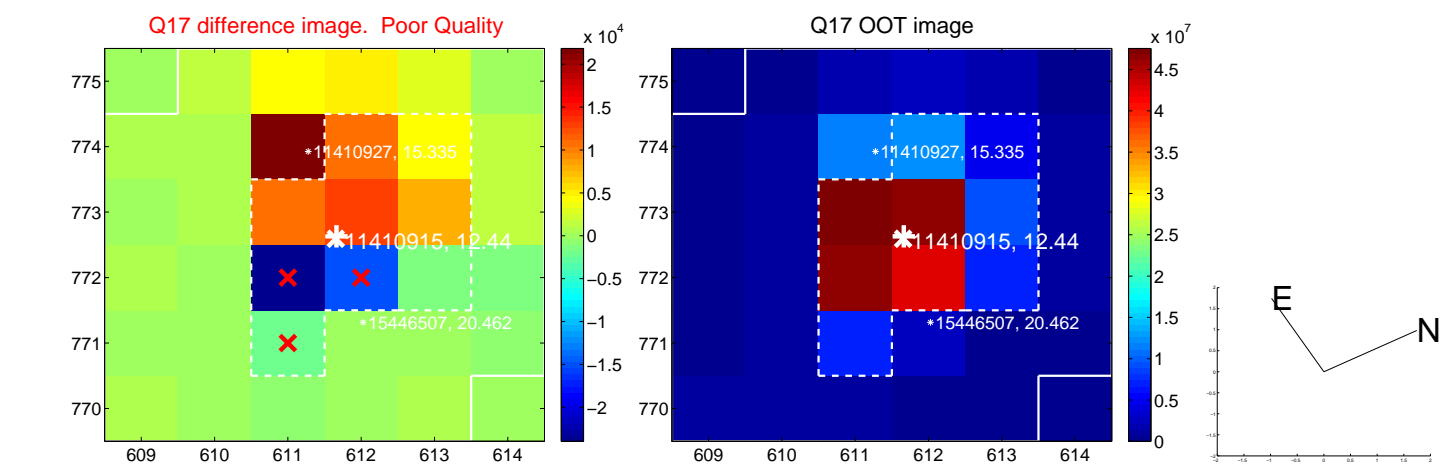
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



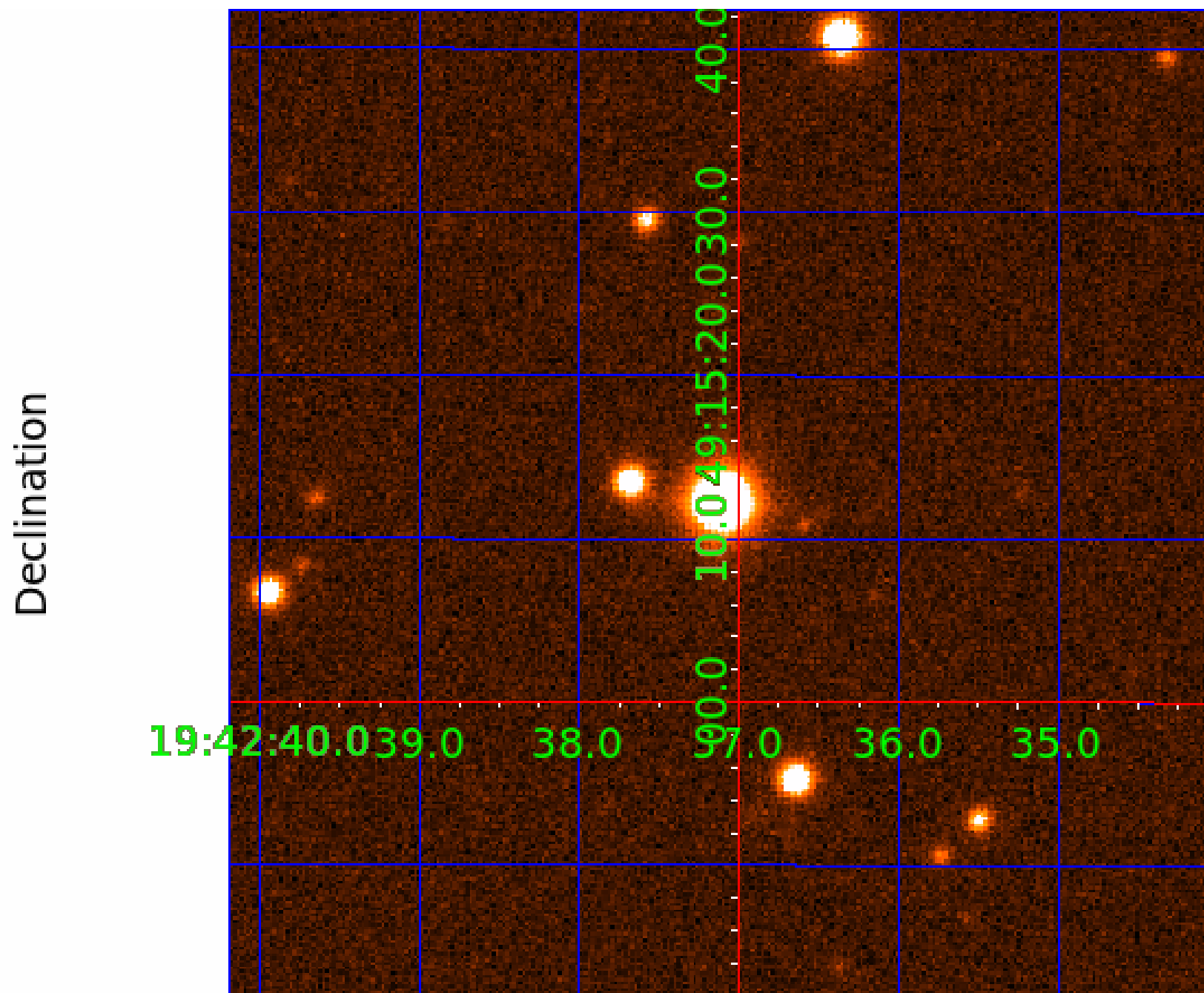
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





## KIC 011410915

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011410915-01	OBS	No	2.743221	133.516224	11.0	15.637	8.0	6.3	1.72	6903	0.59	3083.55
011410915-02	OBS	No	121.491572	229.369437	128.8	24.113	12.0	7.8	1.72	6903	2.29	19.68
011410915-03	OBS	No	55.245253	140.692328	189.1	3.312	8.7	9.2	1.72	6903	2.73	56.28
011410915-04	OBS	No	120.170150	159.905711	235.8	3.124	8.5	8.7	1.72	6903	2.91	19.97
011410915-05	OBS	No	112.875535	221.399883	248.9	3.698	8.4	8.0	1.72	6903	4.41	21.71
011410915-06	OBS	No	97.310505	219.952147	299.1	1.968	8.1	9.3	1.72	6903	3.52	26.46
011410915-07	OBS	No	153.455328	240.155198	201.5	3.233	8.2	8.4	1.72	6903	2.80	14.41
011410915-08	OBS	No	89.998936	193.645171	212.2	2.773	7.9	8.4	1.72	6903	2.88	29.36
011410915-09	OBS	No	557.200061	337.590460	129.3	27.663	7.8	6.9	1.72	6903	2.25	2.58
011410915-10	OBS	No	200.409436	326.508363	211.5	2.971	8.0	8.1	1.72	6903	2.81	10.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011410915-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
011410915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011410915-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011410915-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011410915-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

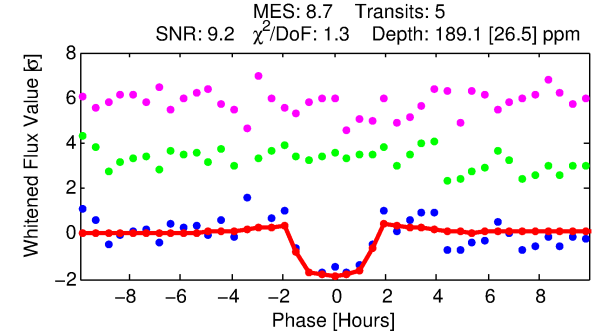
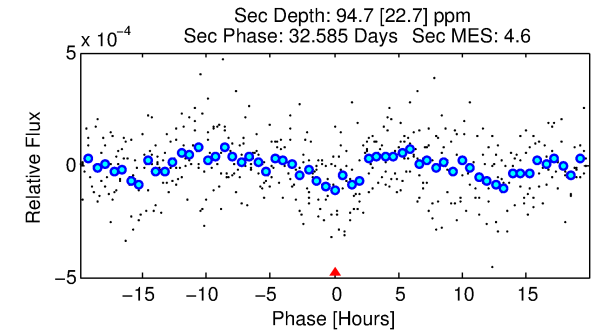
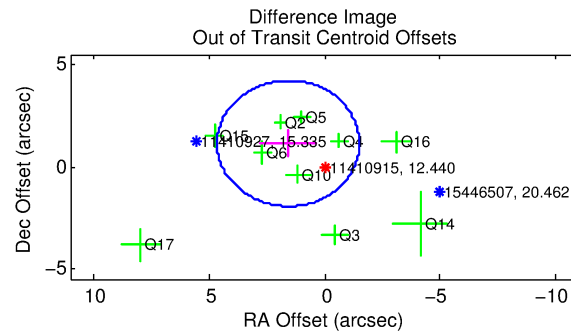
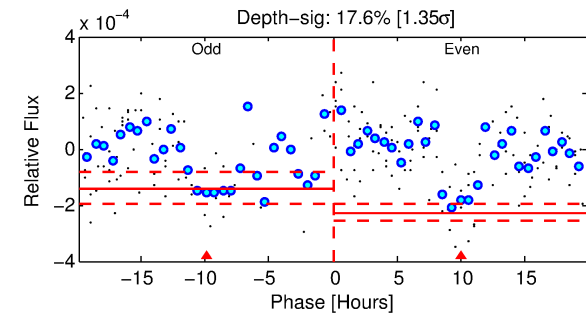
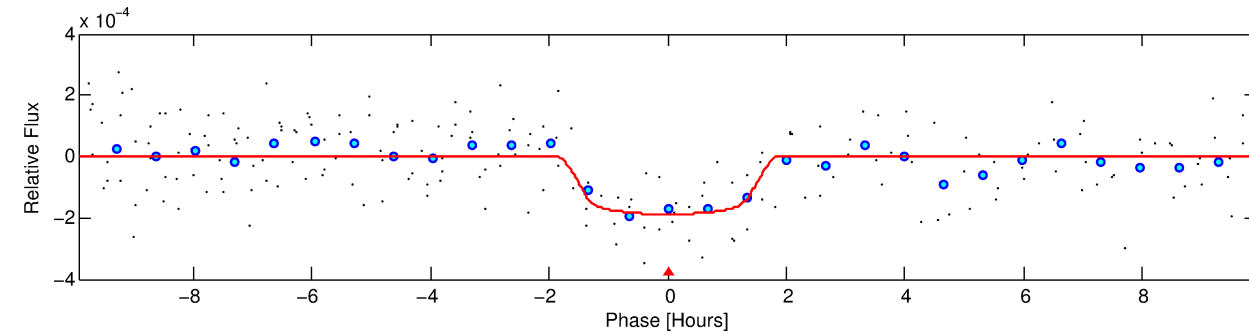
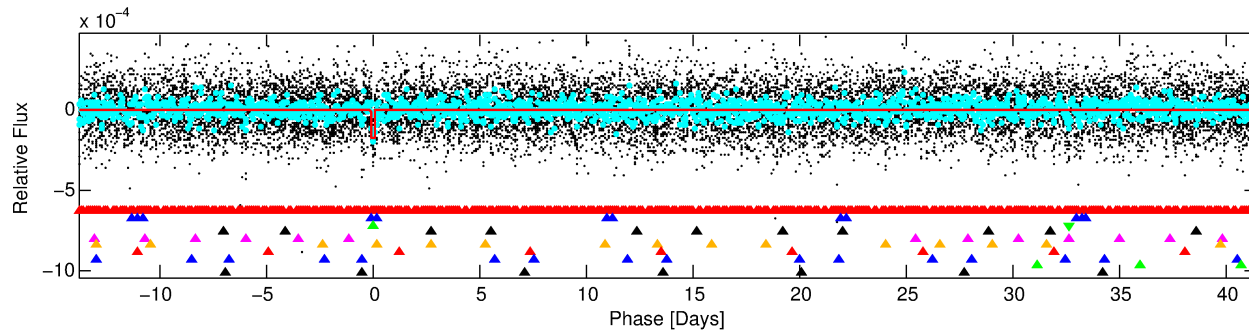
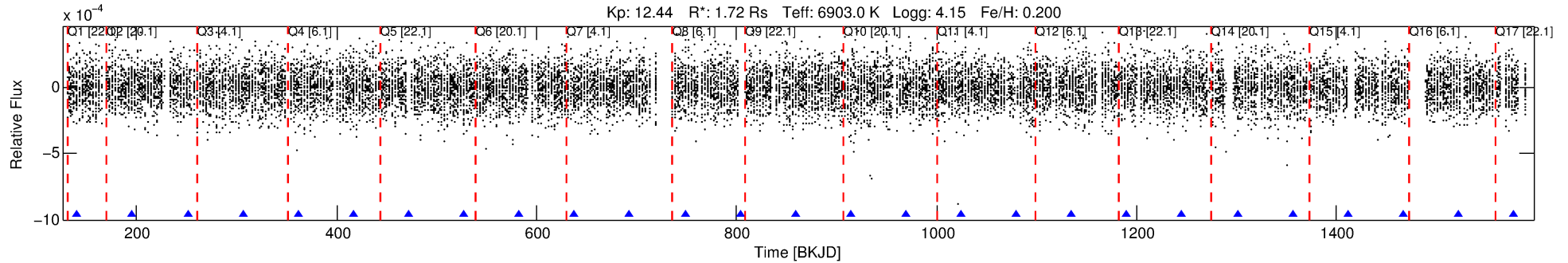
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011410915-03

No Significant Match Found

# DV One-Page Summary

KIC: 11410915 Candidate: 3 of 10 Period: 55.245 d



## DV Fit Results:

Period = 55.24525 [0.00069] d  
Epoch = 140.6923 [0.0094] BKJD  
Rp/R\* = 0.0146 [0.0078]  
a/R\* = 62.18 [196.79]  
b = 0.89 [0.75]  
Seff = 56.28 [12.13]  
Teff = 698 [38] K  
Rp = 2.73 [1.54] Re  
a = 0.3270 [0.0470] AU  
Ag = 746.57 [836.67] [0.89σ]  
Teffp = 5644 [1556] K [3.18σ]

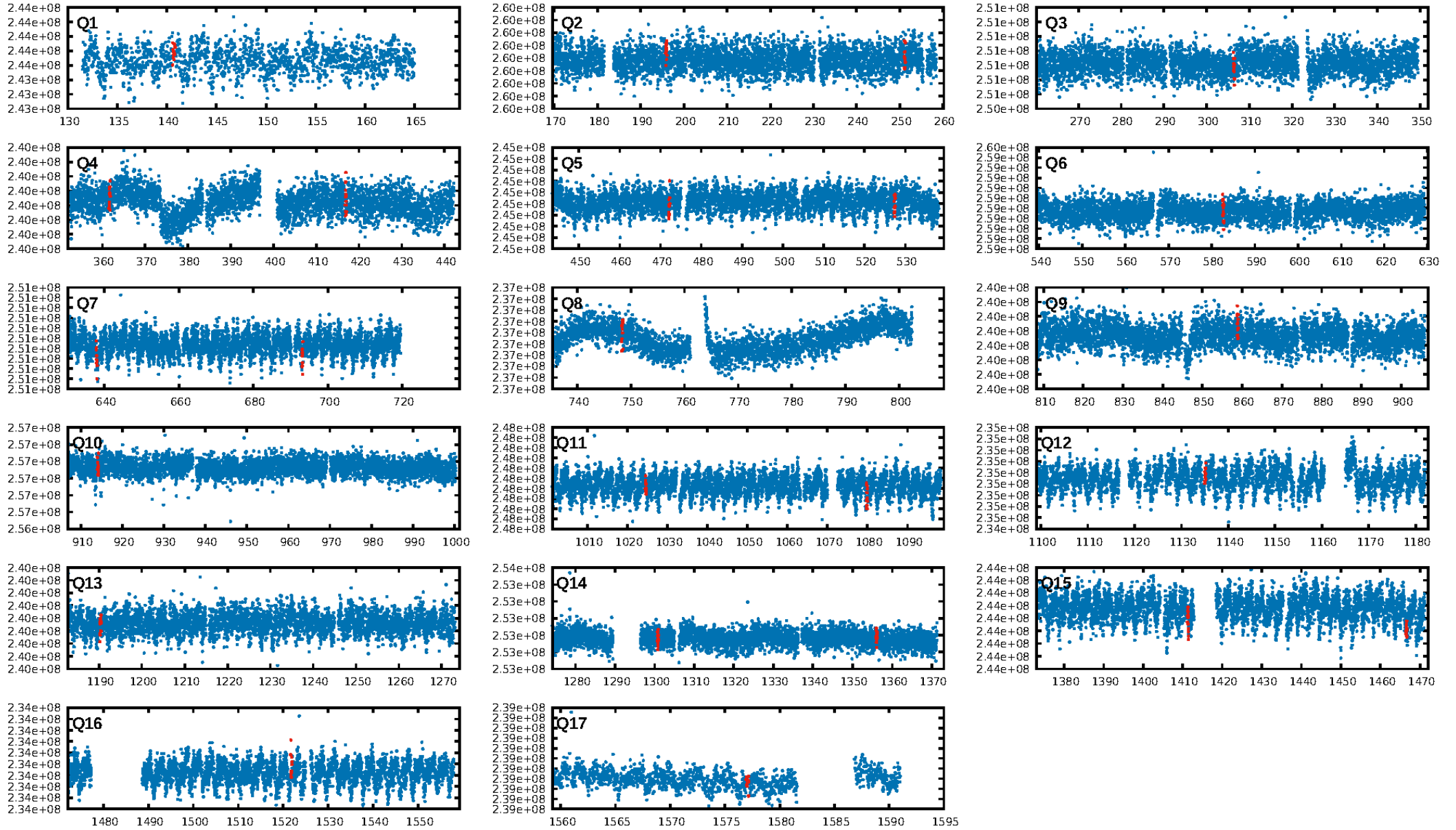
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [78.83σ]  
LongPeriod-sig: 100.0% [193.08σ]  
ModelChiSquare2-sig: 7.4%  
ModelChiSquareGof-sig: 73.9%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -7.825  
Centroid-sig: 23.8%  
Centroid-so: 0.409 arcsec [0.88σ]  
OotOffset-rm: 1.944 arcsec [1.89σ]  
KicOffset-rm: 2.068 arcsec [2.30σ]  
OotOffset-st: 4/2/2/2 [10]  
KicOffset-st: 4/2/2/2 [10]  
DiffImageQuality-fgm: 0.30 [3/10]  
DiffImageOverlap-fno: 0.53 [9/17]

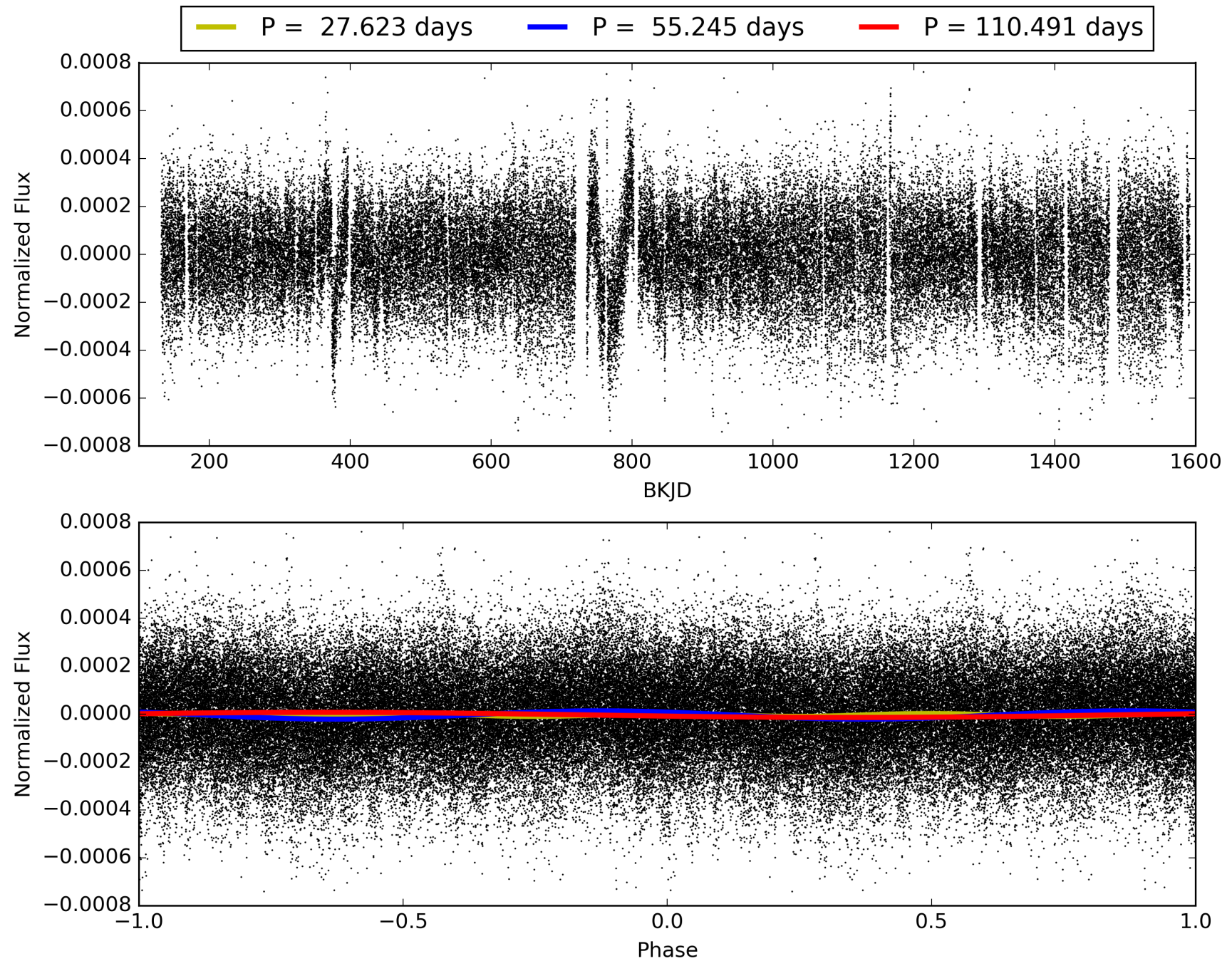
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:48:39 Z

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

# TCE 011410915-03, PDC Light Curves

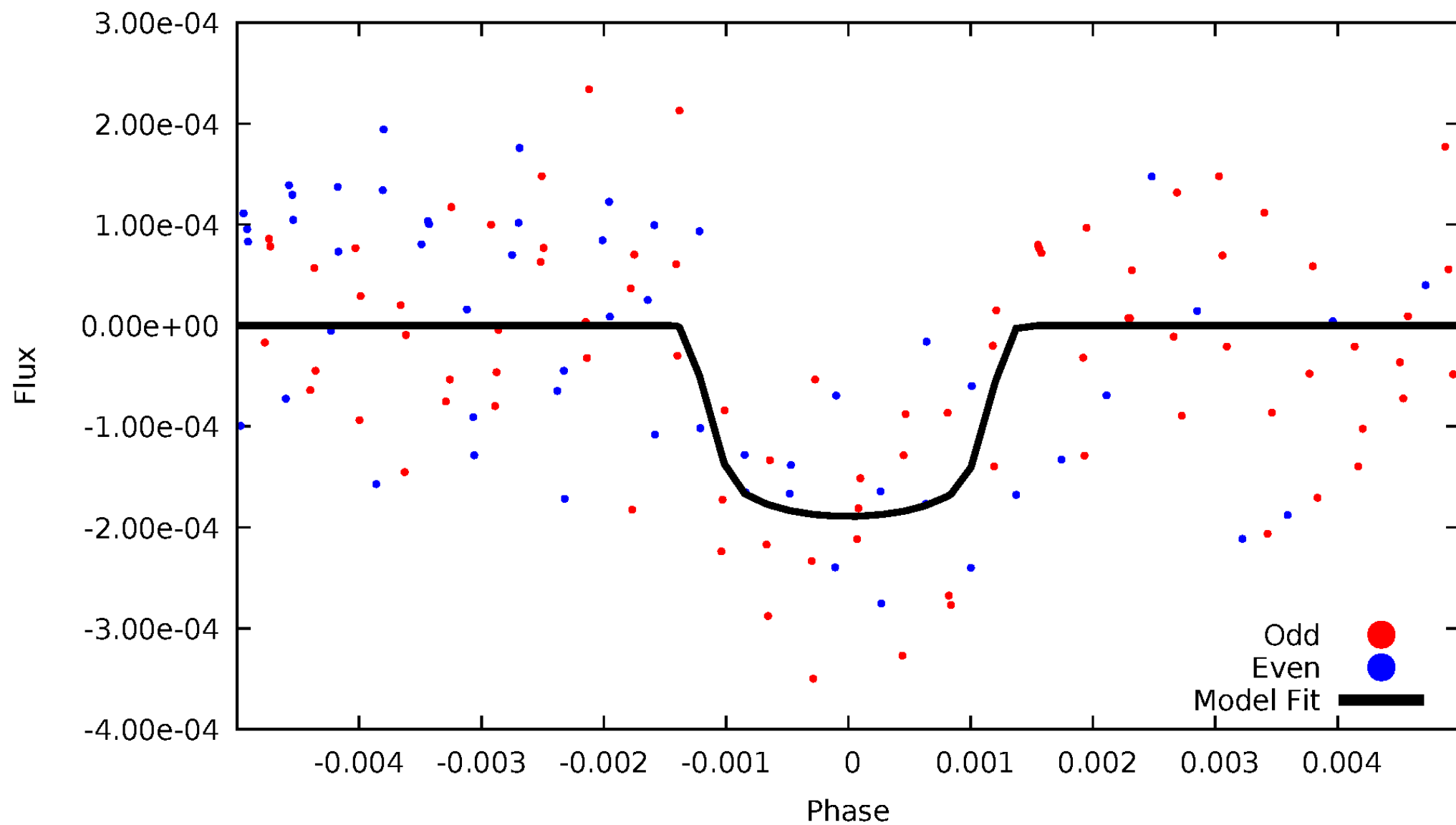


# TCE 011410915-03



# DV Odd/Even

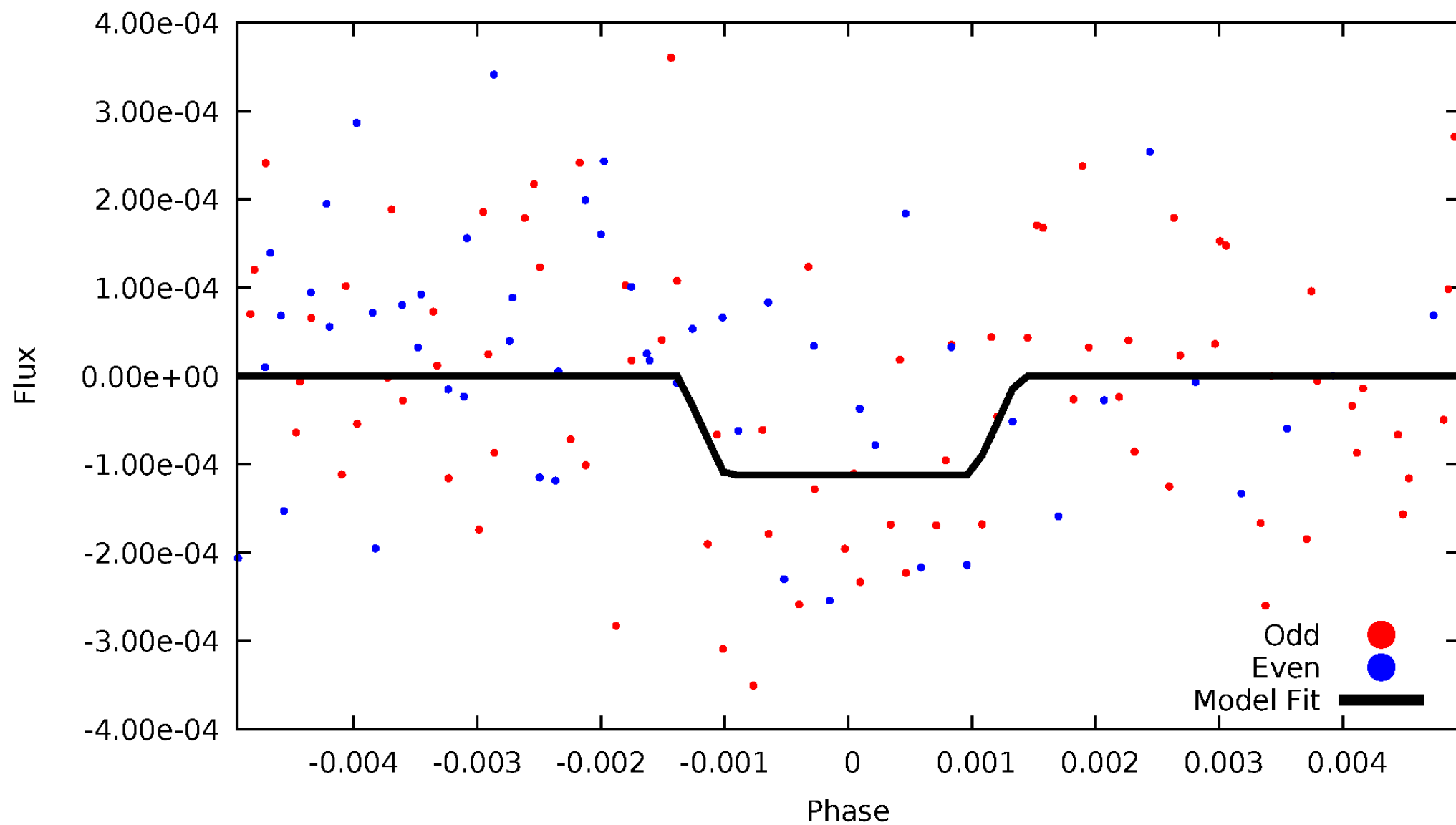
TCE 011410915-03





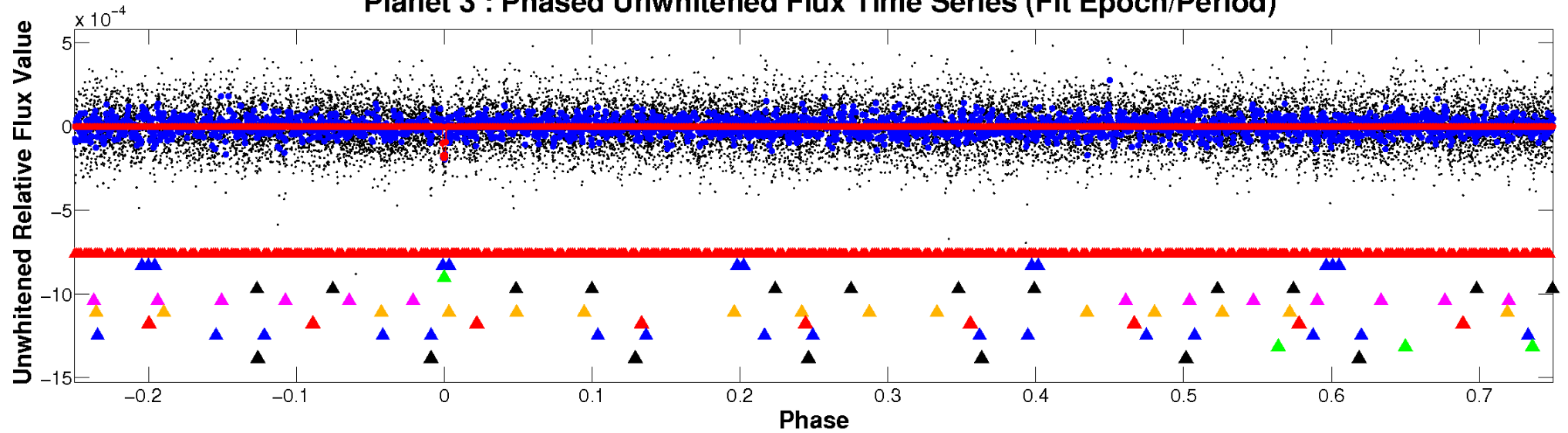
# ALT Odd/Even

TCE 011410915-03

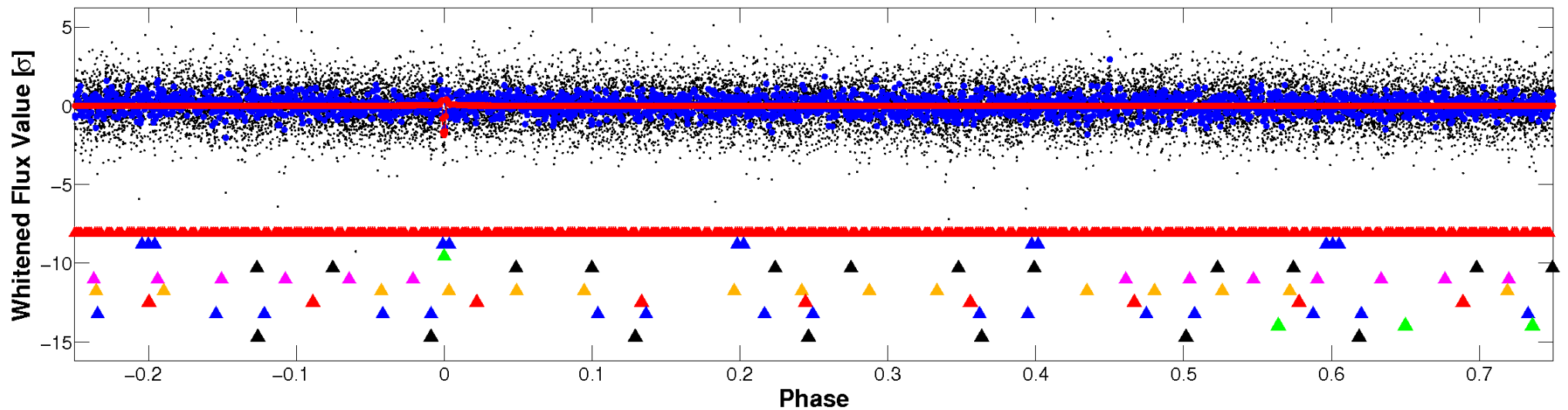


# Non-Whitened Vs. Whitened Light Curve

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

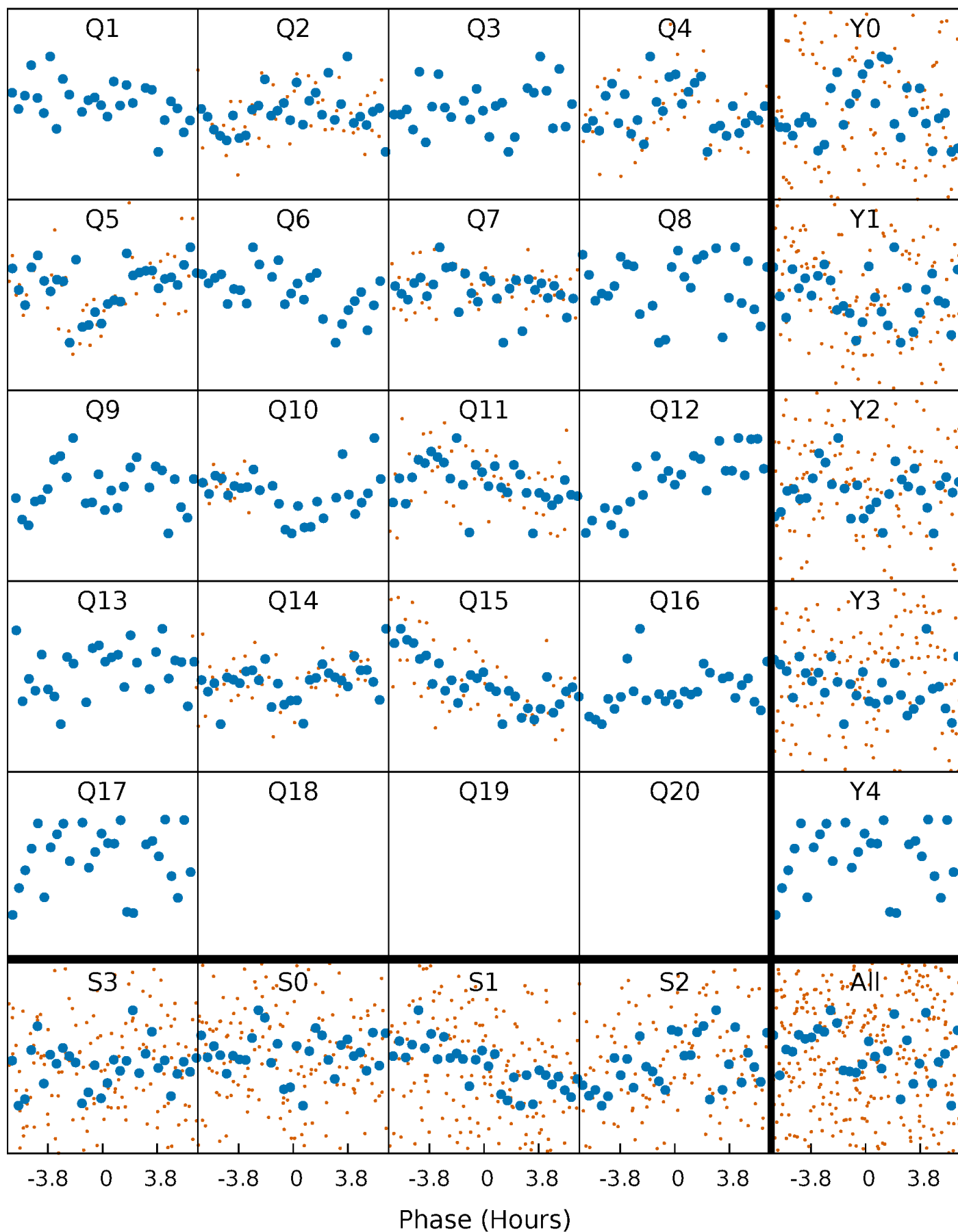


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



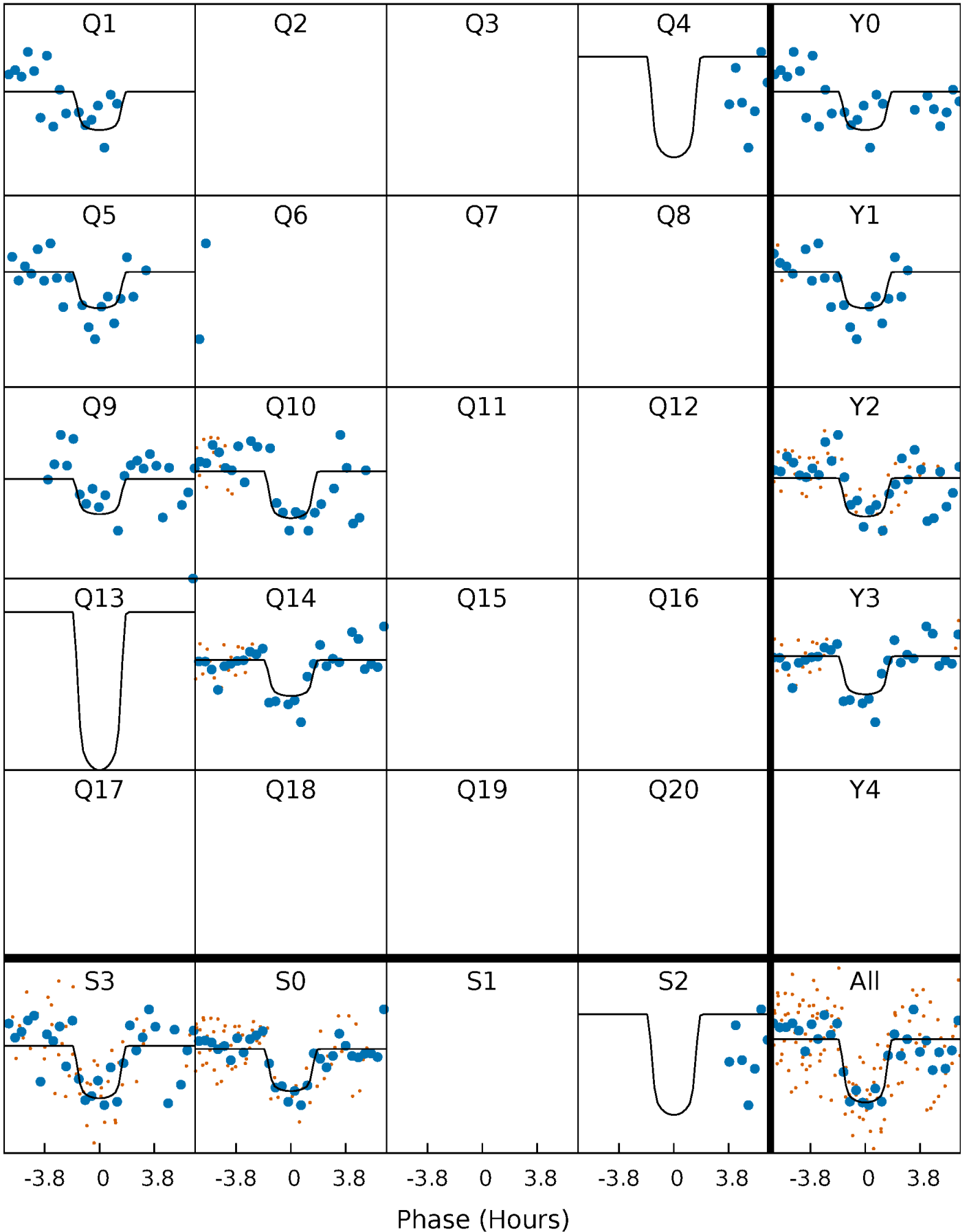
# PDC Quarter-Phased Transit Curves

TCE 011410915-03 P= 55.245253 Days  $T_0=140.692328$  (BKJD)



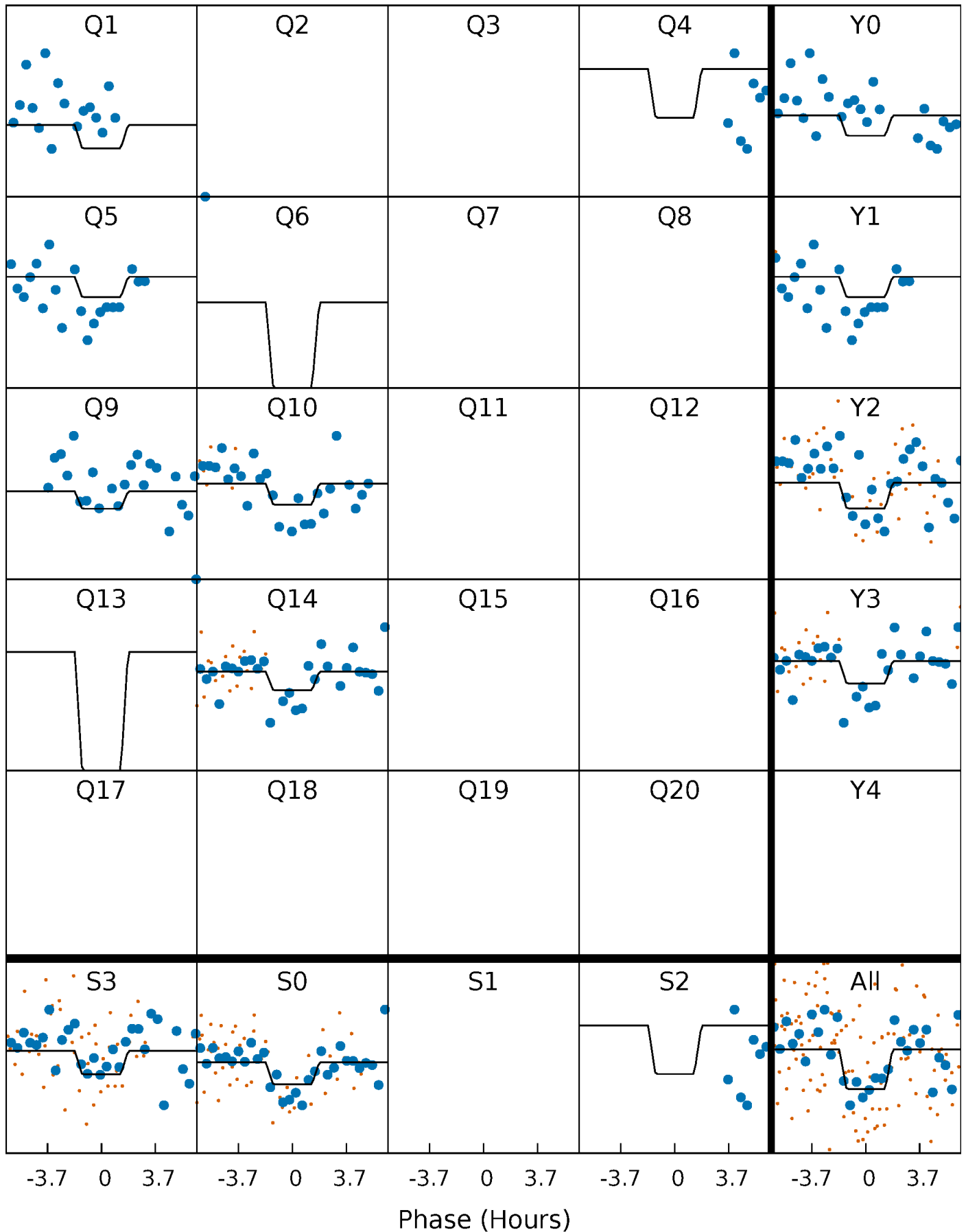
# DV Quarter-Phased Transit Curves

TCE 011410915-03 P= 55.245253 Days  $T_0=140.692328$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011410915-03 P= 55.244722 Days  $T_0=140.702138$  (BKJD)

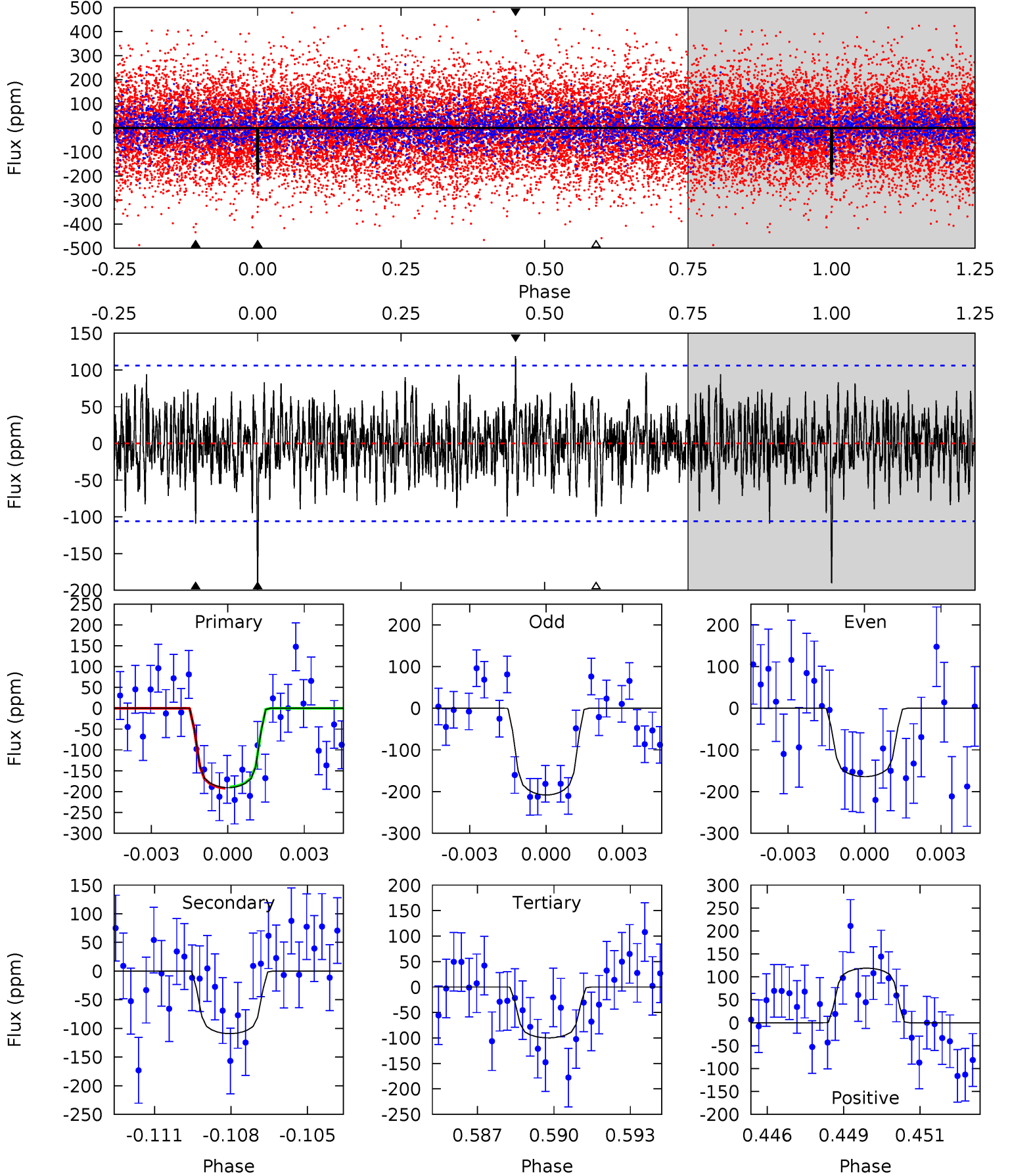




# DV Model-Shift Uniqueness Test

011410915-03, P = 55.245253 Days, E = 85.447075 Days

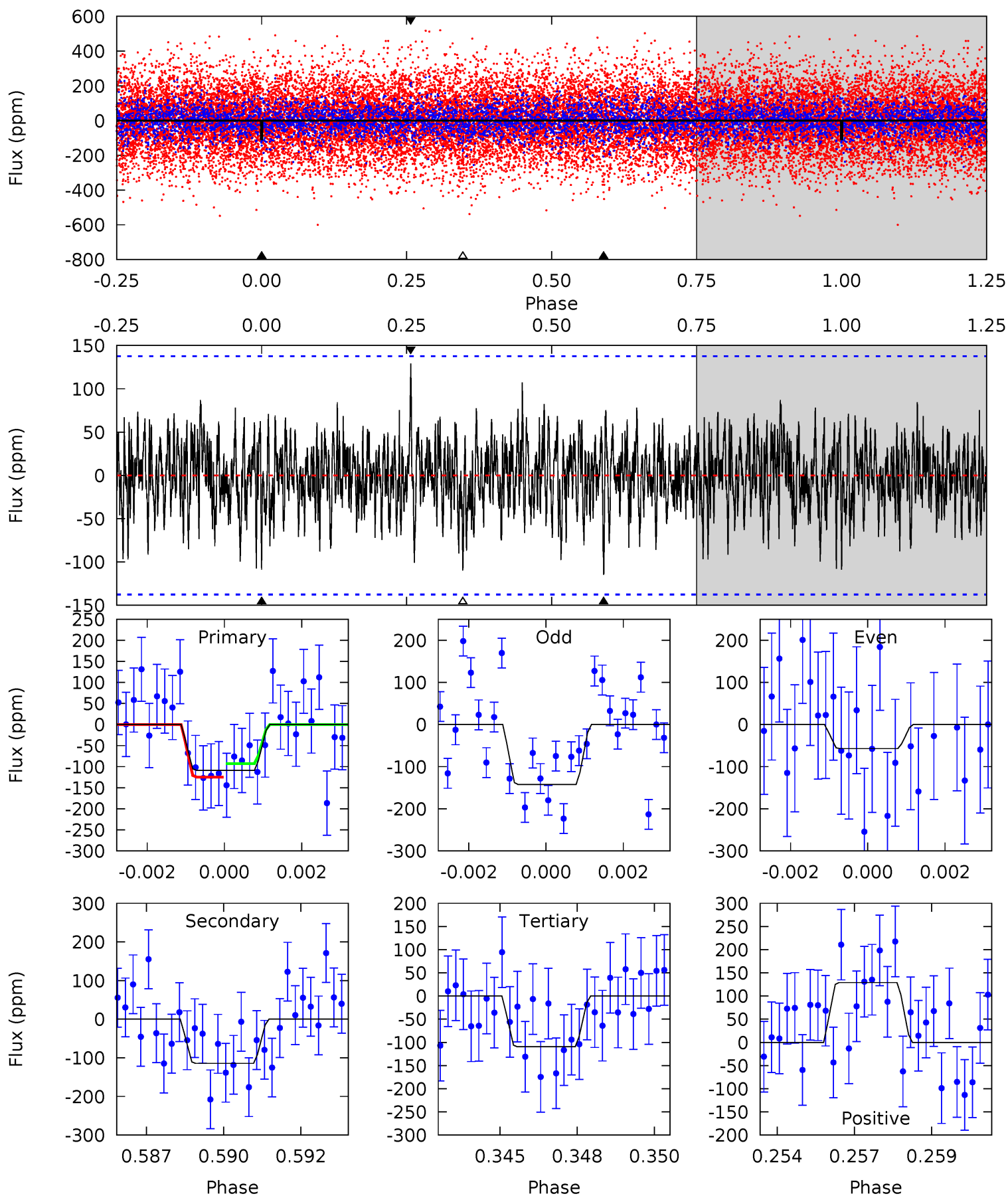
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.47	5.42	4.96	5.90	5.27	2.99	1.59	4.51	3.56	0.46	-0.48	1.07	0.99	0.38	0.07



# Alt Model-Shift Uniqueness Test

011410915-03, P = 55.244722 Days, E = 85.457416 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
4.18	4.40	4.21	4.96	5.29	3.03	1.28	-0.04	-0.78	0.19	-0.56	1.59	0.63	0.53	0.62



### Stellar Parameters For KIC 011410915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6903^{+72}_{-92}$	$4.151^{+0.066}_{-0.114}$	$0.200^{+0.100}_{-0.150}$	$1.720^{+0.294}_{-0.171}$	$1.528^{+0.119}_{-0.097}$	$0.423^{+0.128}_{-0.148}$
	+1%/-1%	+2%/-3%	+50%/-75%	+17%/-10%	+8%/-6%	+30%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011410915-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-109 \pm 20$	$2.82^{+1.51}_{-1.37}$	$981^{+40}_{-31}$	$5760^{+2540}_{-1015}$	$790^{+2199}_{-463}$
Alt.	$-115 \pm 26$	$2.30^{+1.37}_{-1.27}$	$982^{+42}_{-32}$	$6455^{+4410}_{-1329}$	$1244^{+5689}_{-753}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

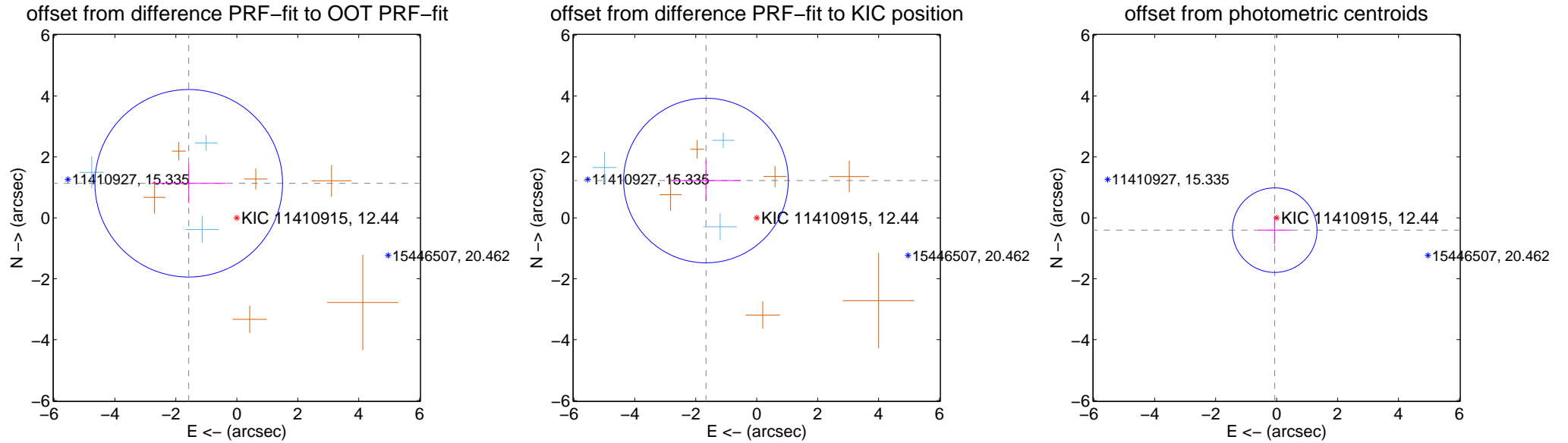
## DV Centroid Data

Supplemental centroid analysis for 011410915-03. Kepler magnitude: 12.44. Transit SNR 9.25

There are 3 quarters with good PRF difference image offsets

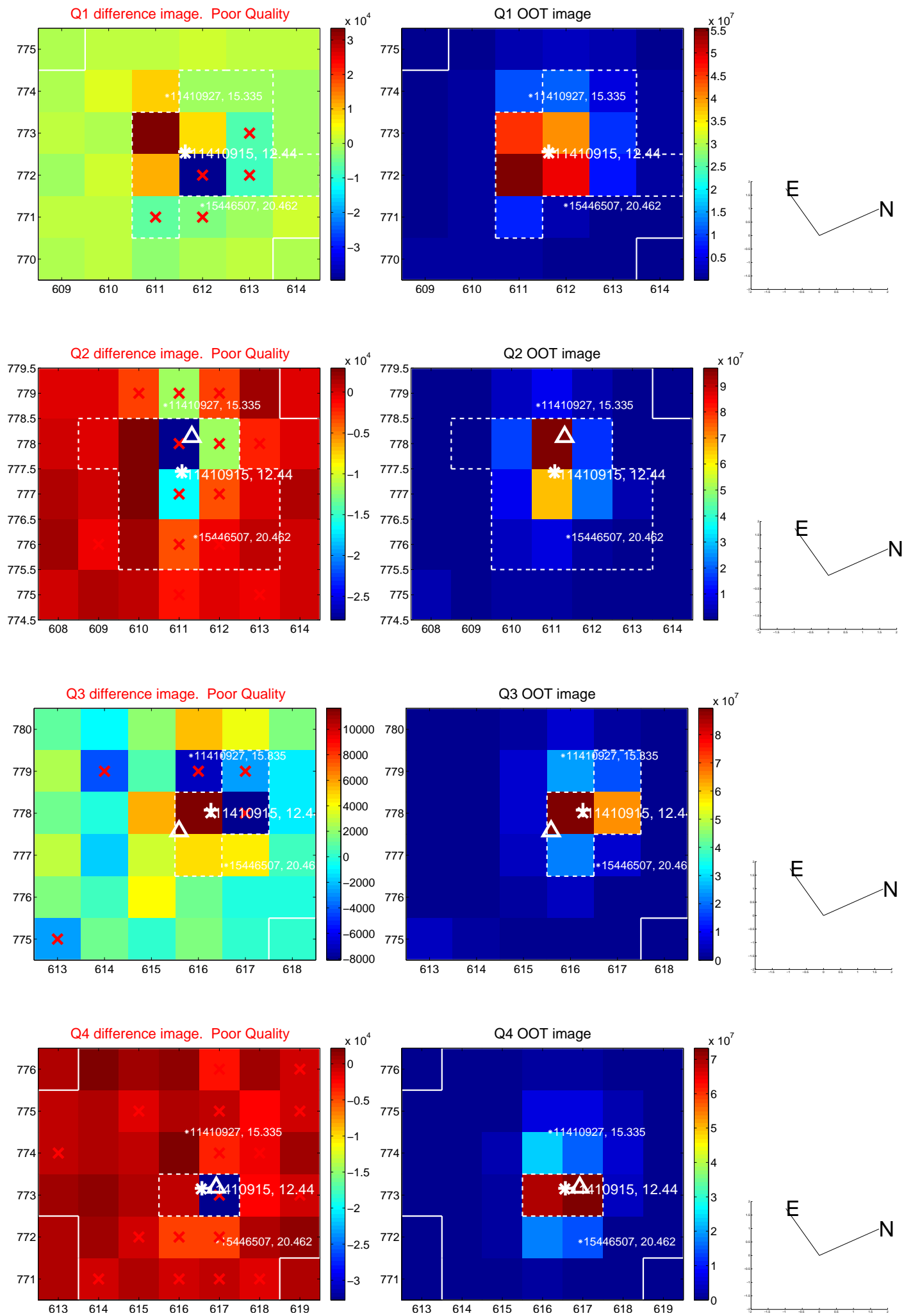
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.944 \pm 1.026$	1.89	$1.578 \pm 1.216$	$1.135 \pm 0.656$
PRF-fit source offset from KIC position	$2.068 \pm 0.901$	2.30	$1.666 \pm 1.149$	$1.225 \pm 0.668$
photometric centroid source offset	$0.41 \pm 0.46$	0.88	$0.06 \pm 0.55$	$-0.40 \pm 0.46$

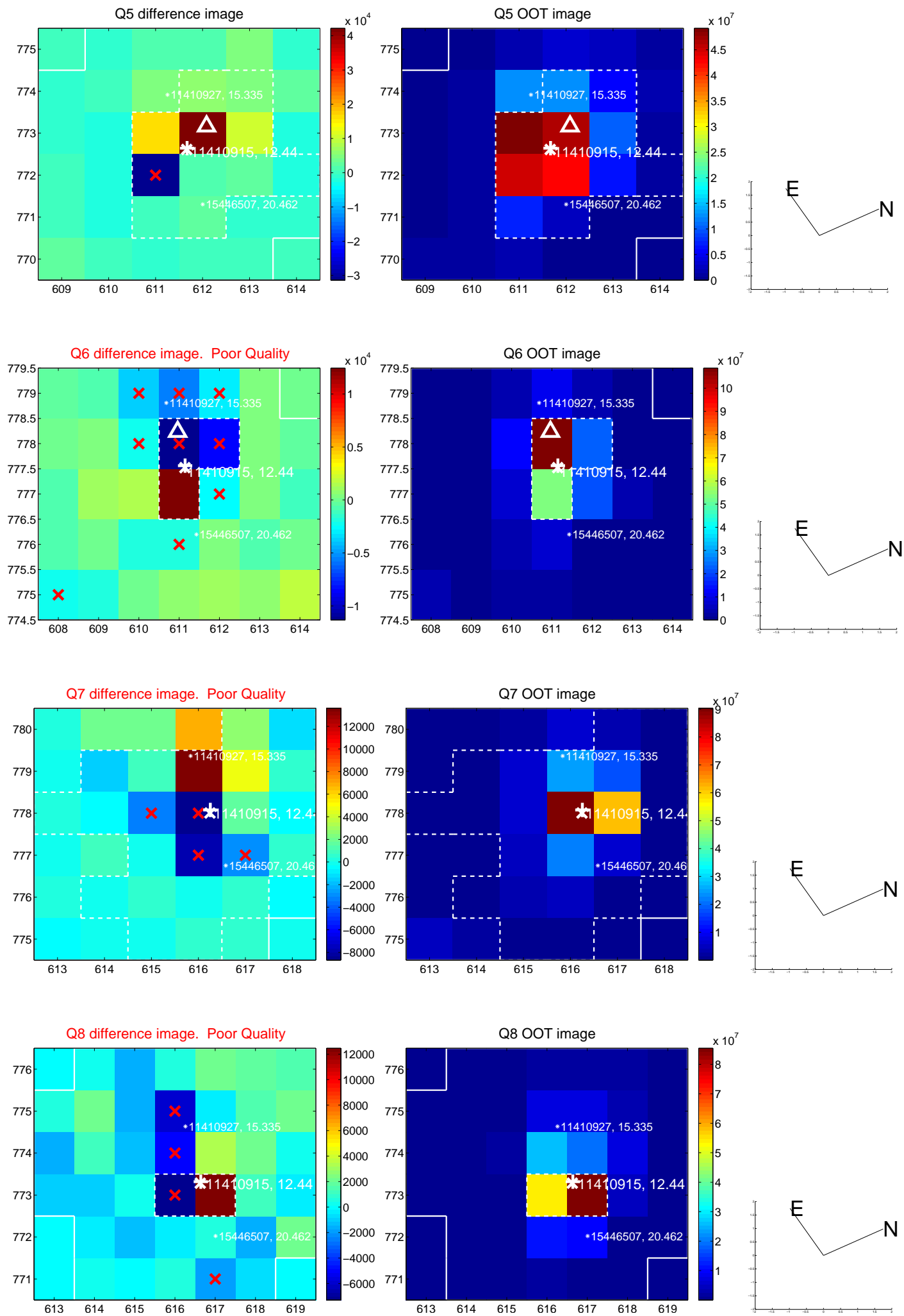


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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.

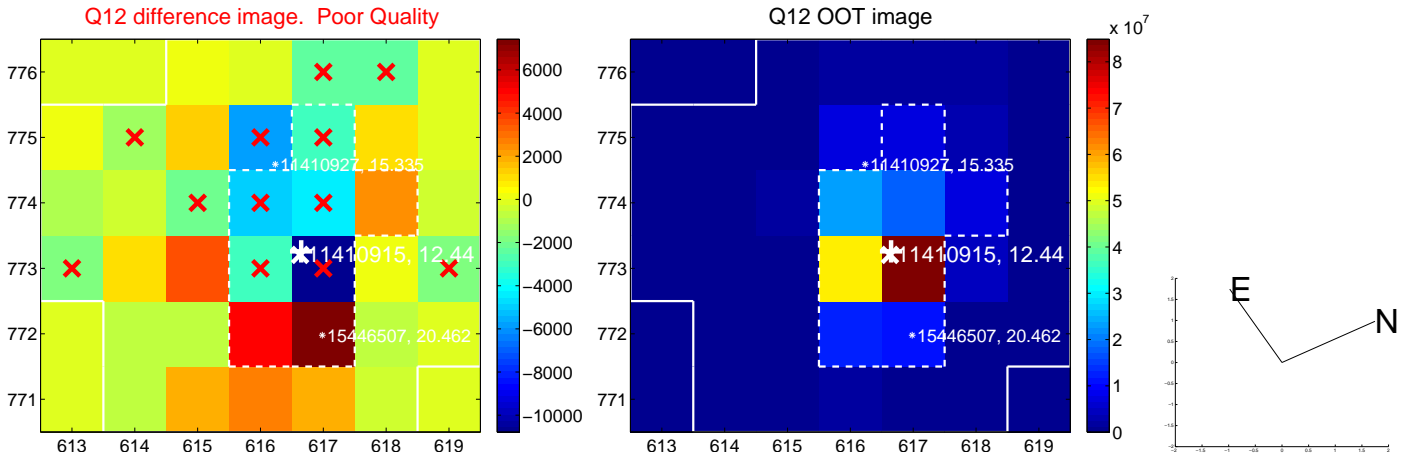
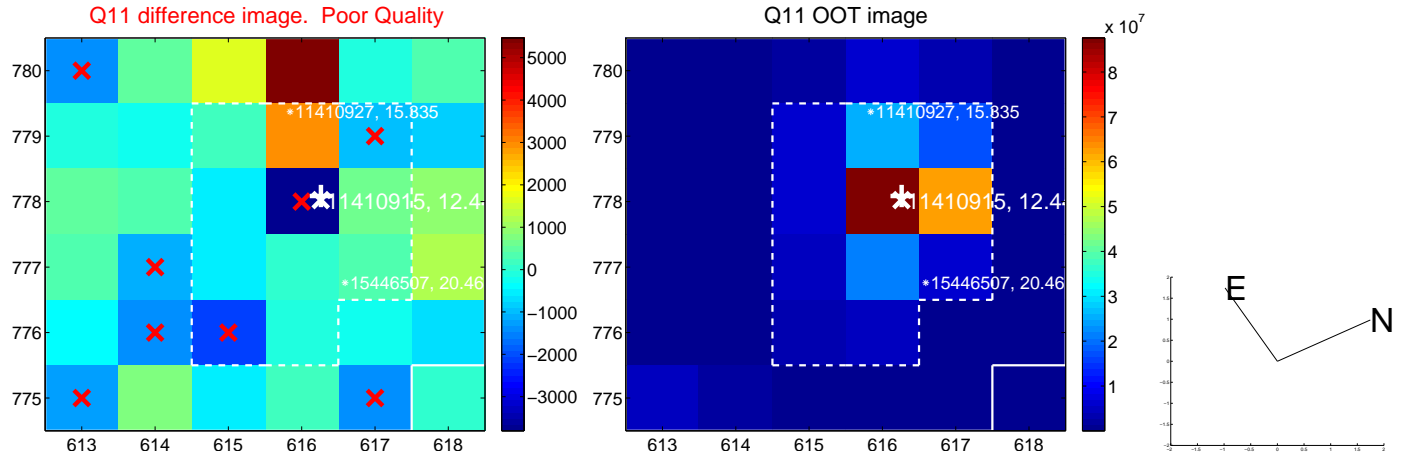
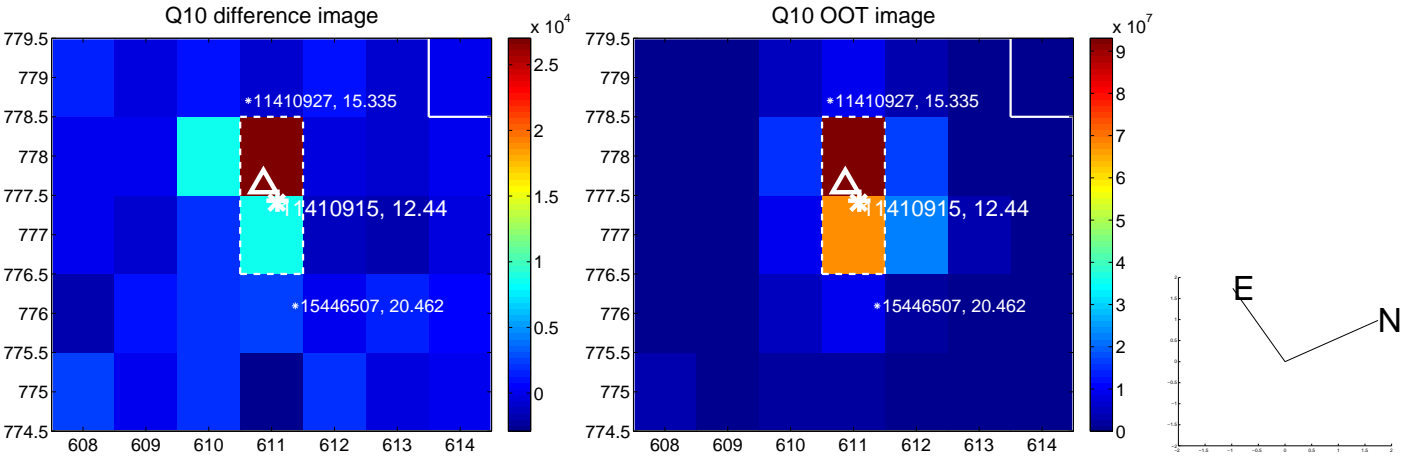
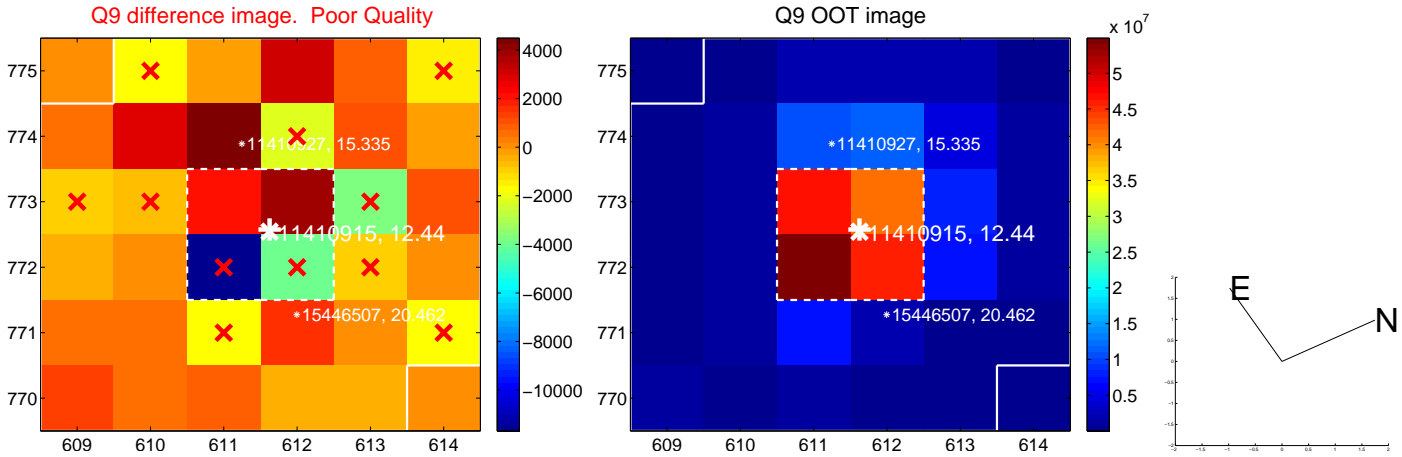


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

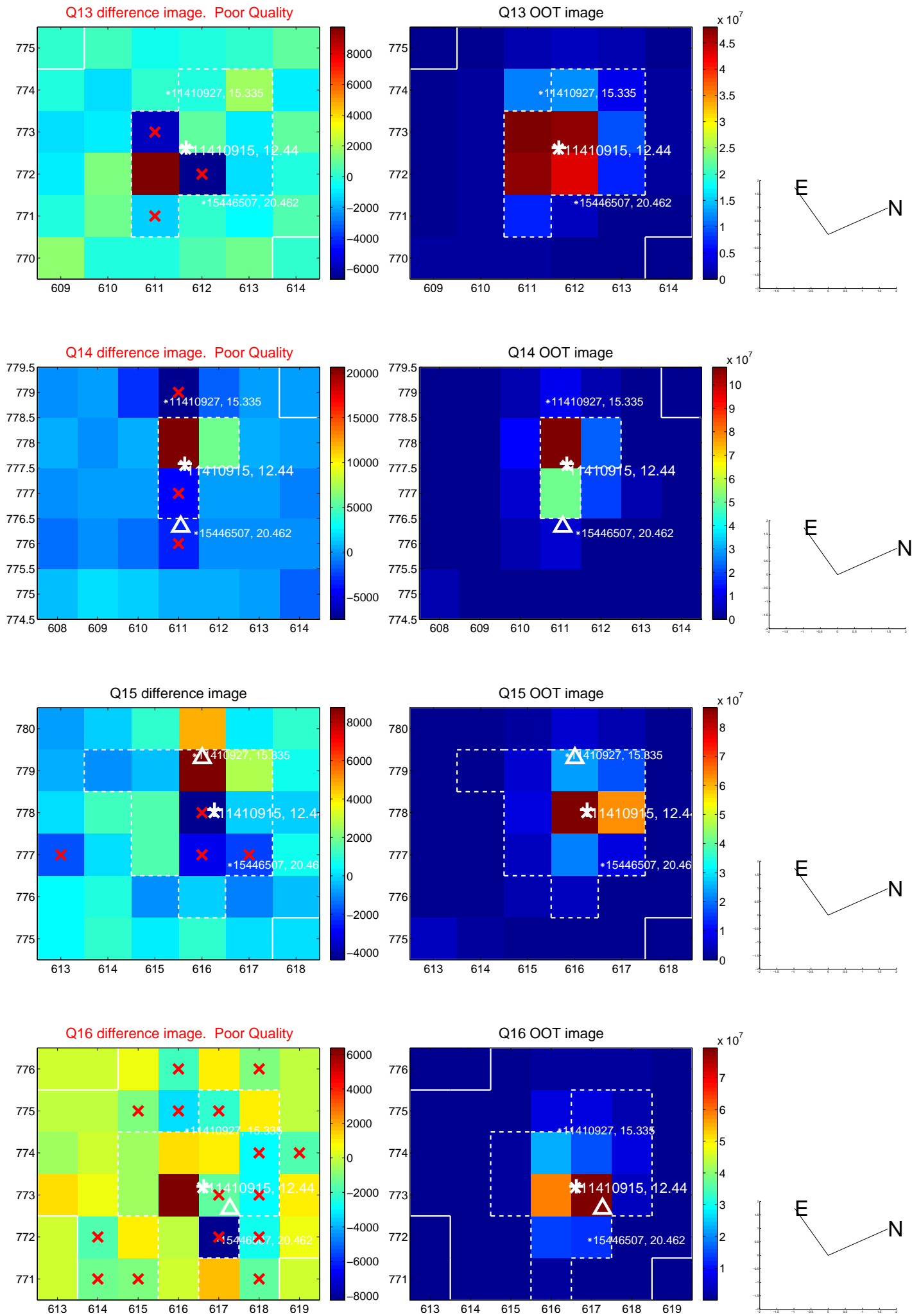




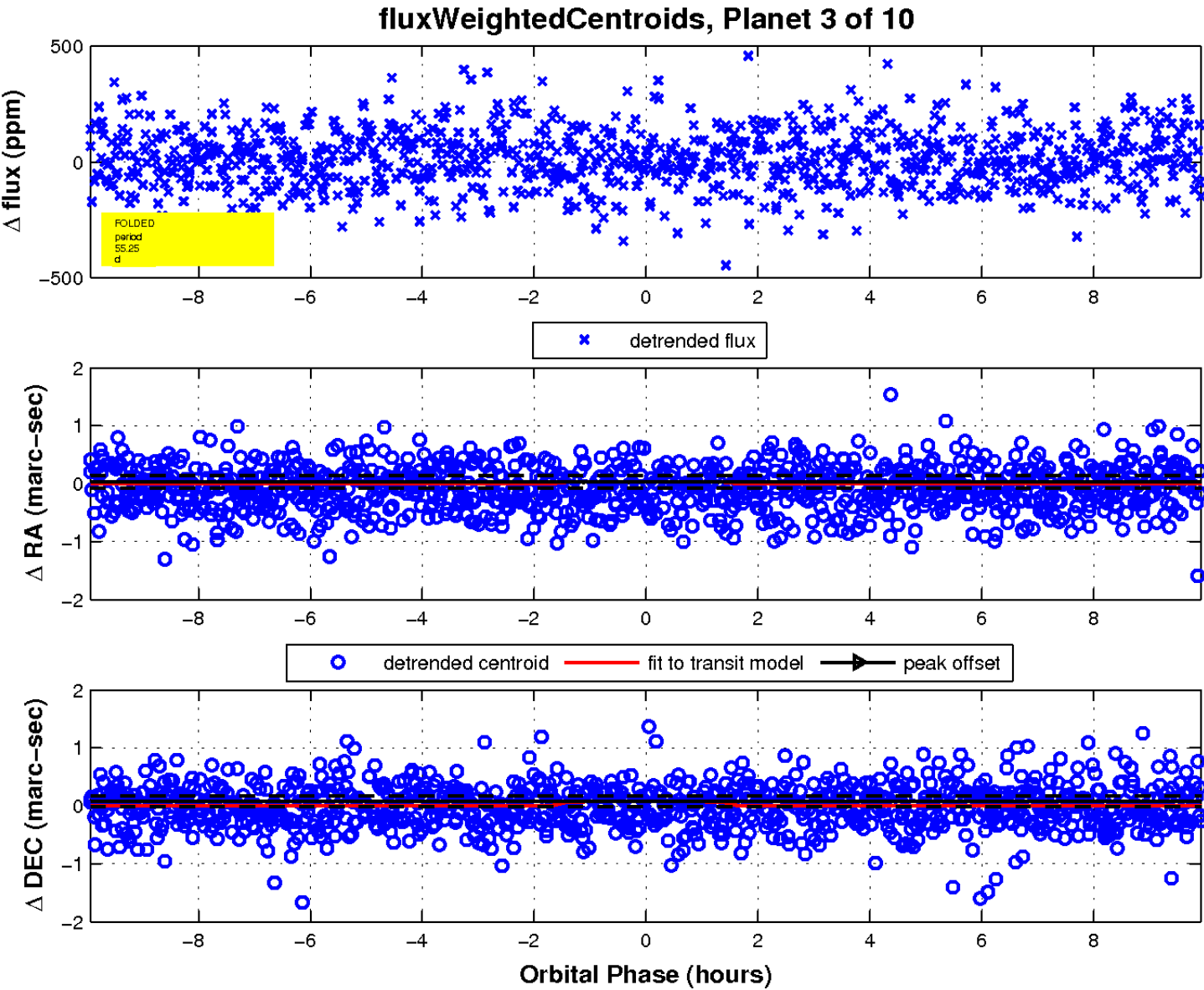
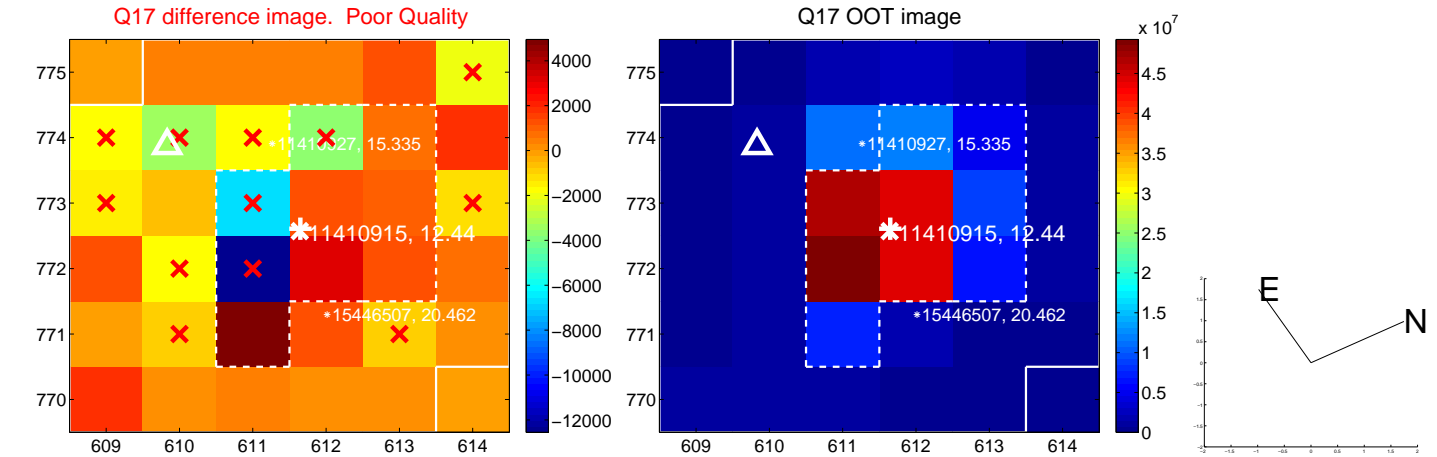
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



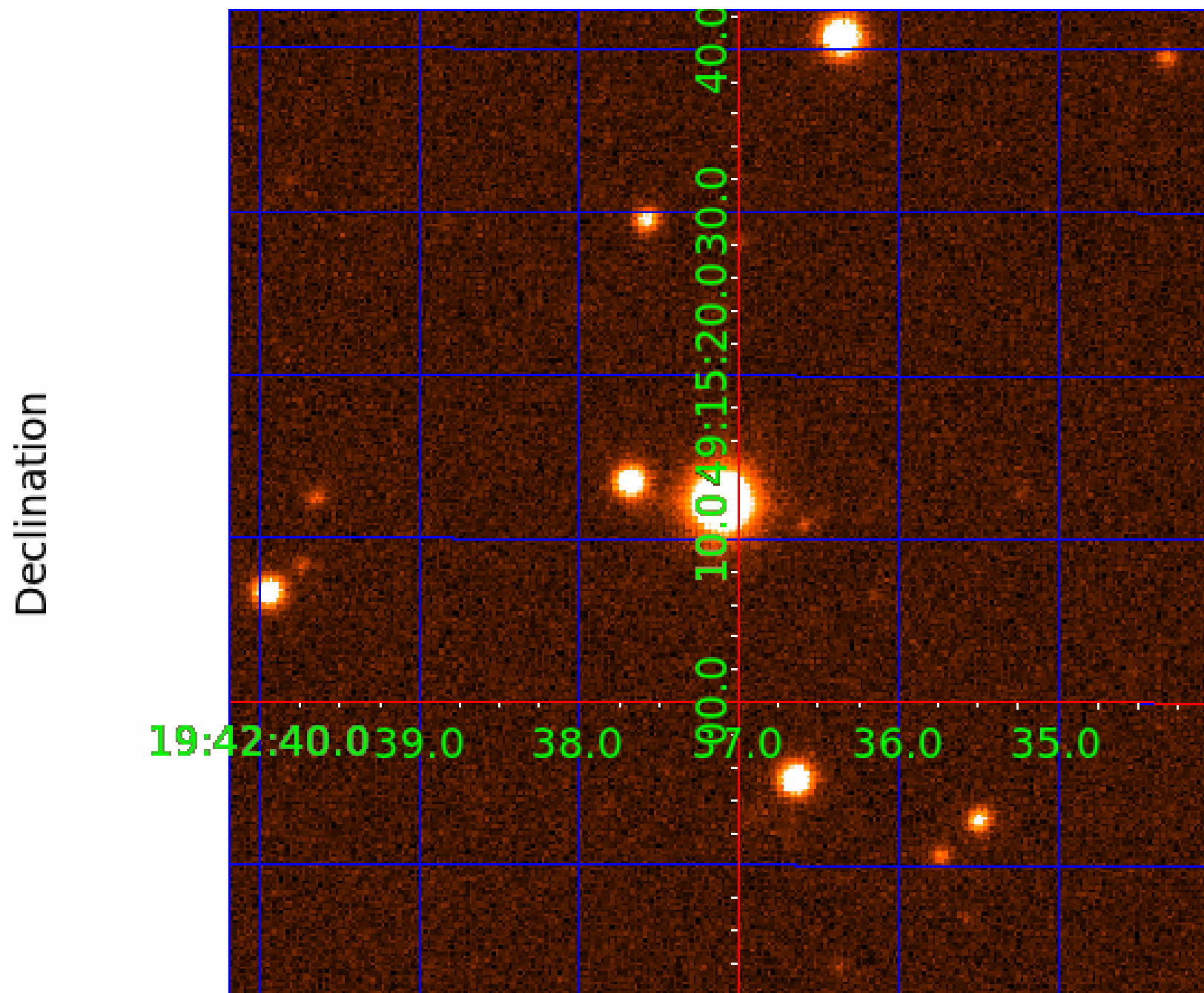
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011410915-01	OBS	No	2.743221	133.516224	11.0	15.637	8.0	6.3	1.72	6903	0.59	3083.55
011410915-02	OBS	No	121.491572	229.369437	128.8	24.113	12.0	7.8	1.72	6903	2.29	19.68
011410915-03	OBS	No	55.245253	140.692328	189.1	3.312	8.7	9.2	1.72	6903	2.73	56.28
011410915-04	OBS	No	120.170150	159.905711	235.8	3.124	8.5	8.7	1.72	6903	2.91	19.97
011410915-05	OBS	No	112.875535	221.399883	248.9	3.698	8.4	8.0	1.72	6903	4.41	21.71
011410915-06	OBS	No	97.310505	219.952147	299.1	1.968	8.1	9.3	1.72	6903	3.52	26.46
011410915-07	OBS	No	153.455328	240.155198	201.5	3.233	8.2	8.4	1.72	6903	2.80	14.41
011410915-08	OBS	No	89.998936	193.645171	212.2	2.773	7.9	8.4	1.72	6903	2.88	29.36
011410915-09	OBS	No	557.200061	337.590460	129.3	27.663	7.8	6.9	1.72	6903	2.25	2.58
011410915-10	OBS	No	200.409436	326.508363	211.5	2.971	8.0	8.1	1.72	6903	2.81	10.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011410915-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
011410915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011410915-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011410915-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011410915-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

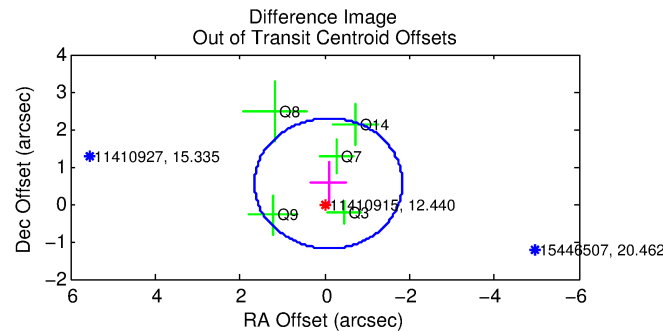
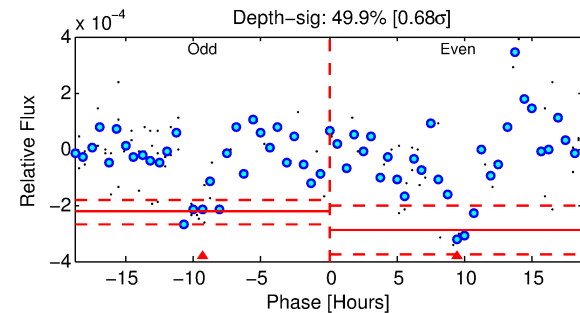
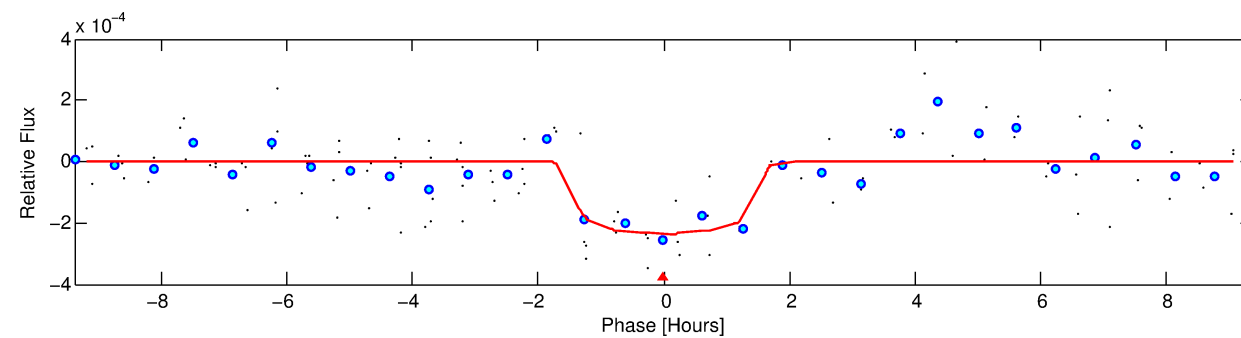
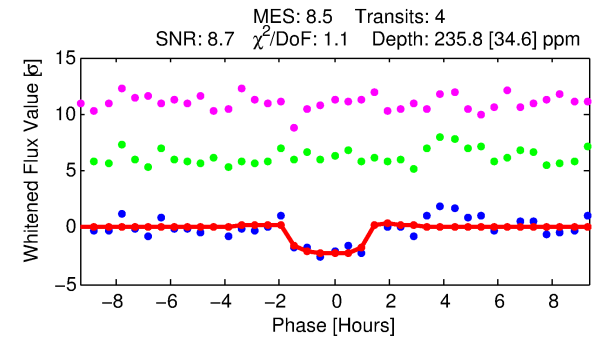
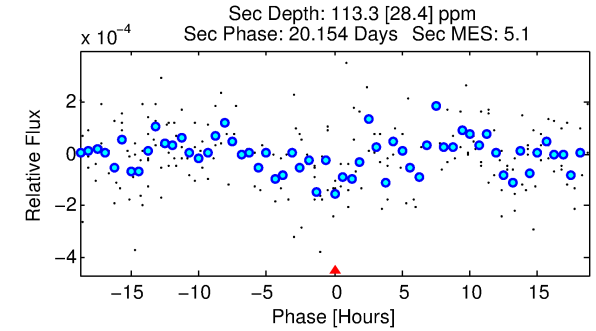
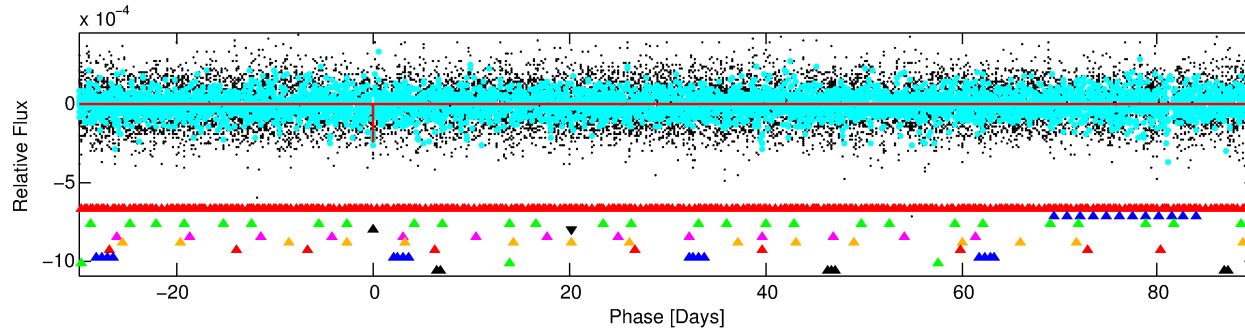
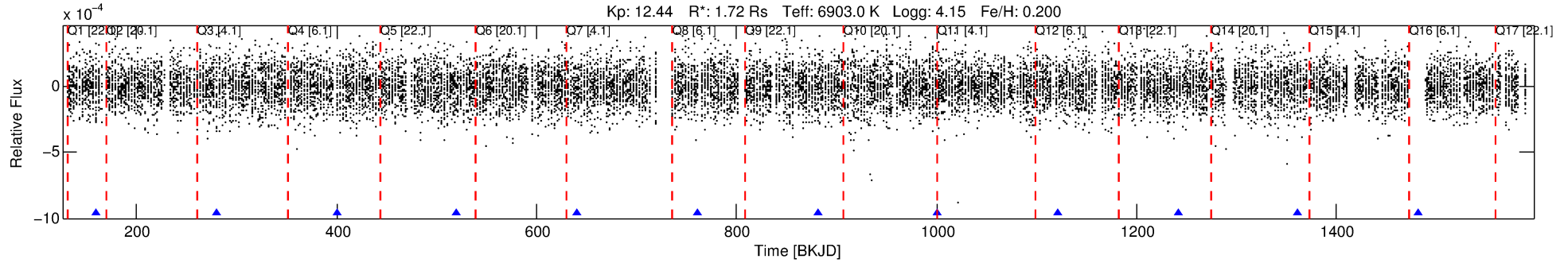
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011410915-04

No Significant Match Found

# DV One-Page Summary

KIC: 11410915 Candidate: 4 of 10 Period: 120.170 d



## DV Fit Results:

Period = 120.17015 [0.00201] d  
Epoch = 159.9057 [0.0086] BKJD  
Rp/R\* = 0.0155 [0.0098]  
a/R\* = 185.25 [663.17]  
b = 0.80 [1.66]  
Seff = 19.97 [4.30]  
Teq = 539 [29] K  
Rp = 2.91 [1.91] Re  
a = 0.5490 [0.0789] AU  
Ag = 2214.35 [2896.38] [0.76σ]  
Teffp = 5717 [1847] K [2.80σ]

## DV Diagnostic Results:

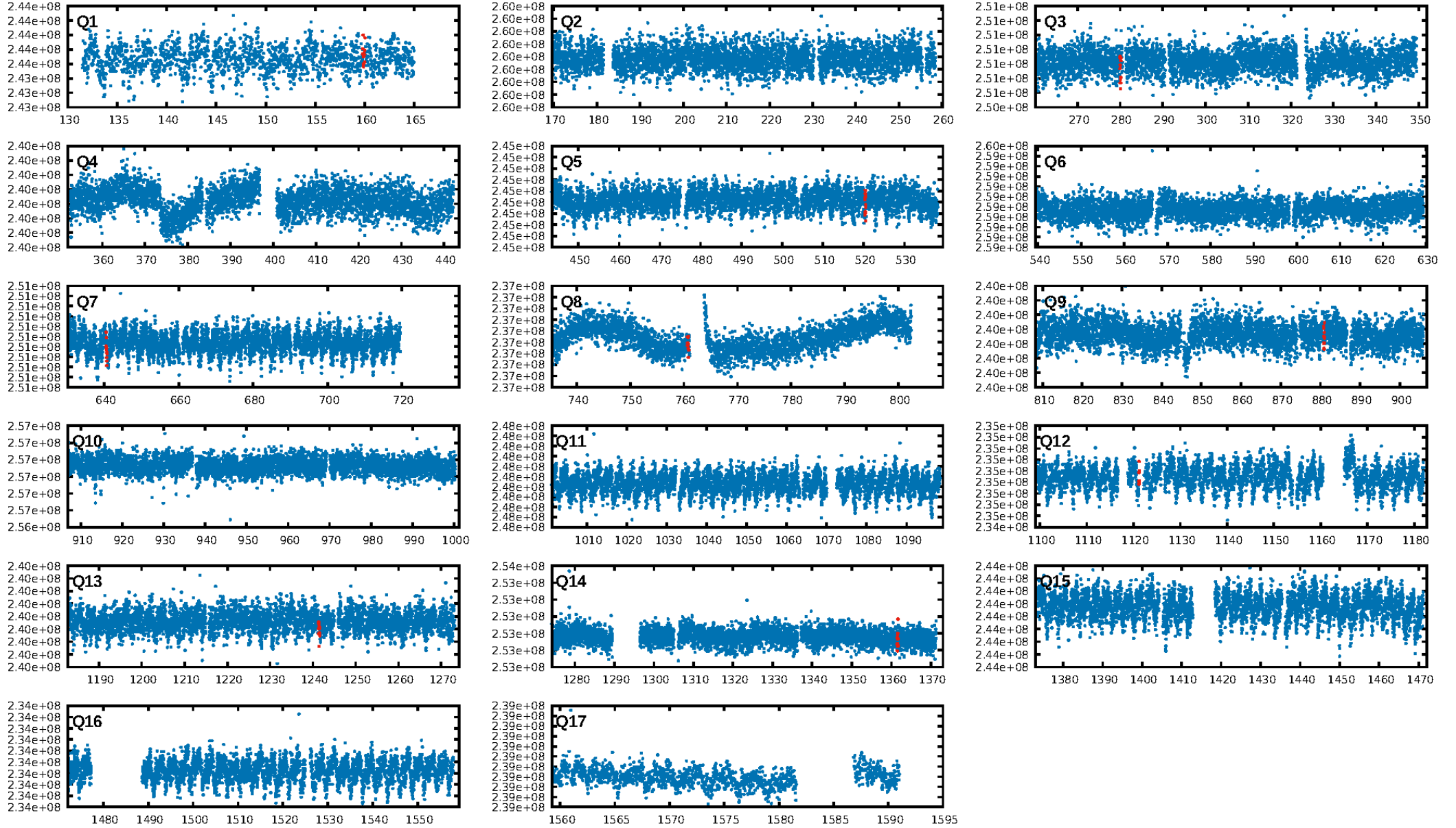
ShortPeriod-sig: 100.0% [36.16σ]  
LongPeriod-sig: 80.8% [1.30σ]  
ModelChiSquare2-sig: 23.7%  
ModelChiSquareGof-sig: 99.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 9.374  
Centroid-sig: 63.0%  
Centroid-so: 0.304 arcsec [0.41σ]  
OotOffset-rm: 0.561 arcsec [0.97σ]  
KicOffset-rm: 0.685 arcsec [1.17σ]  
OotOffset-st: 1/2/1/1 [5]  
KicOffset-st: 1/2/1/1 [5]  
DiffImageQuality-fgm: 0.80 [4/5]  
DiffImageOverlap-fno: 0.71 [5/7]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:48:44 Z

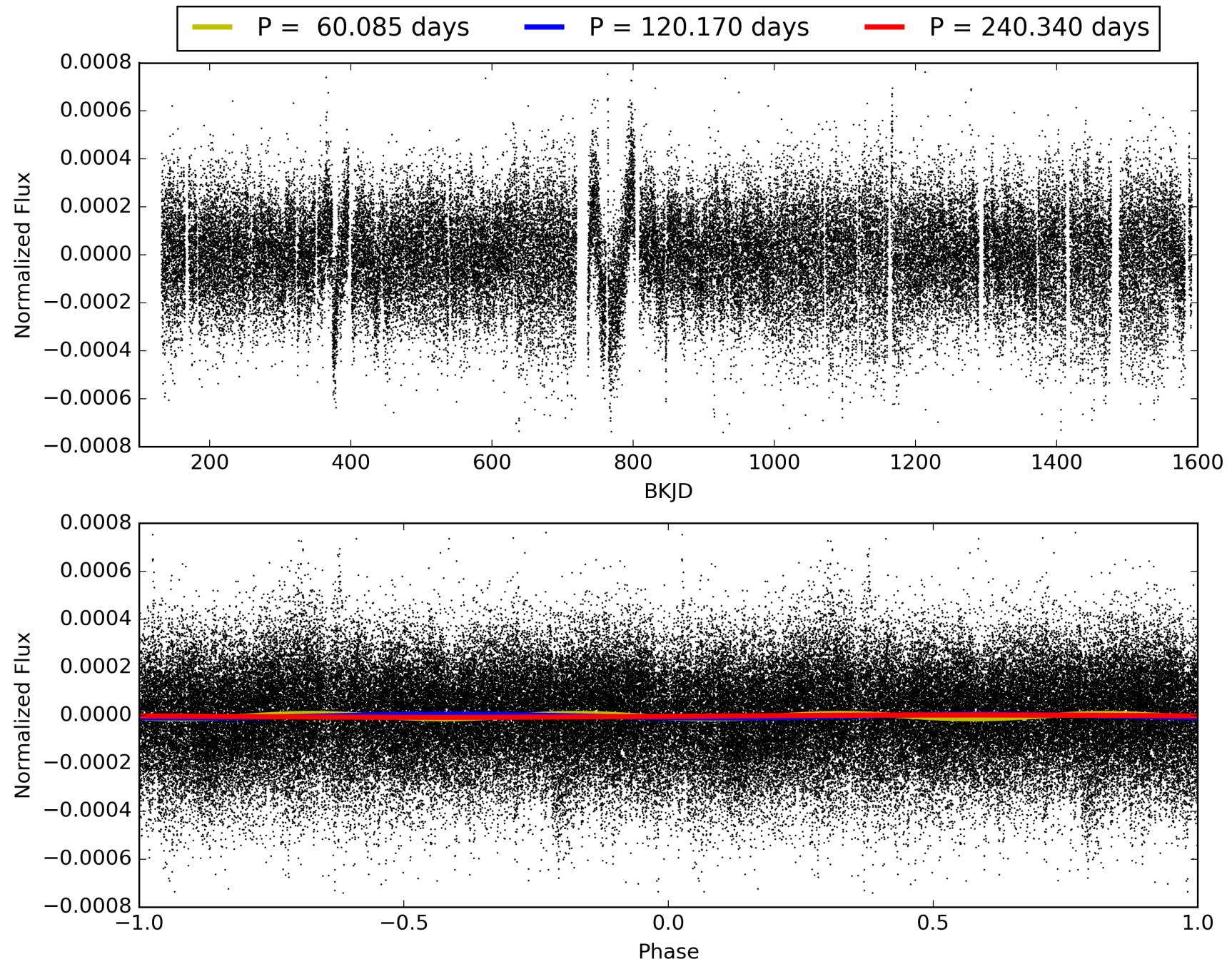
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 011410915-04, PDC Light Curves

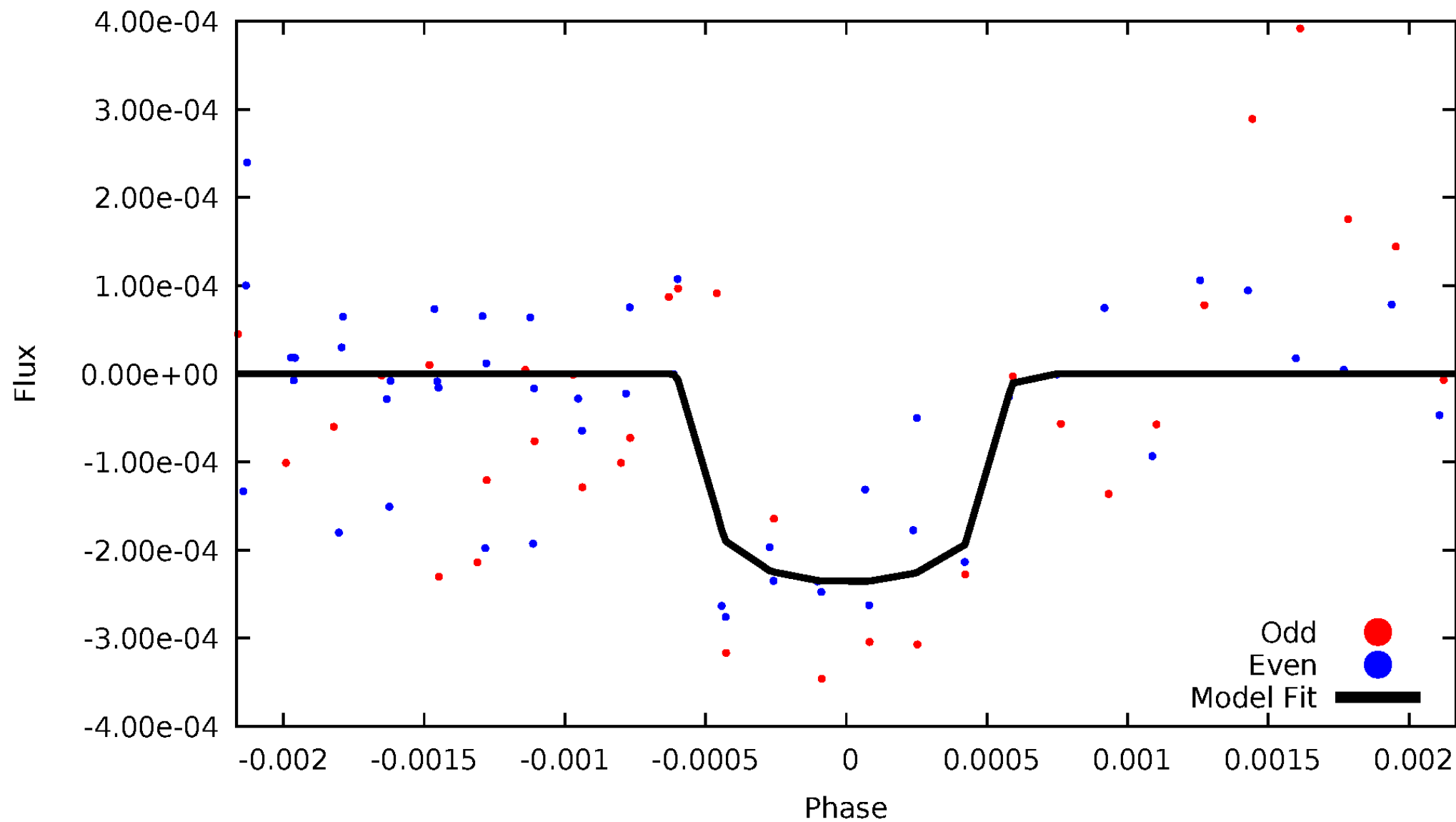


TCE 011410915-04



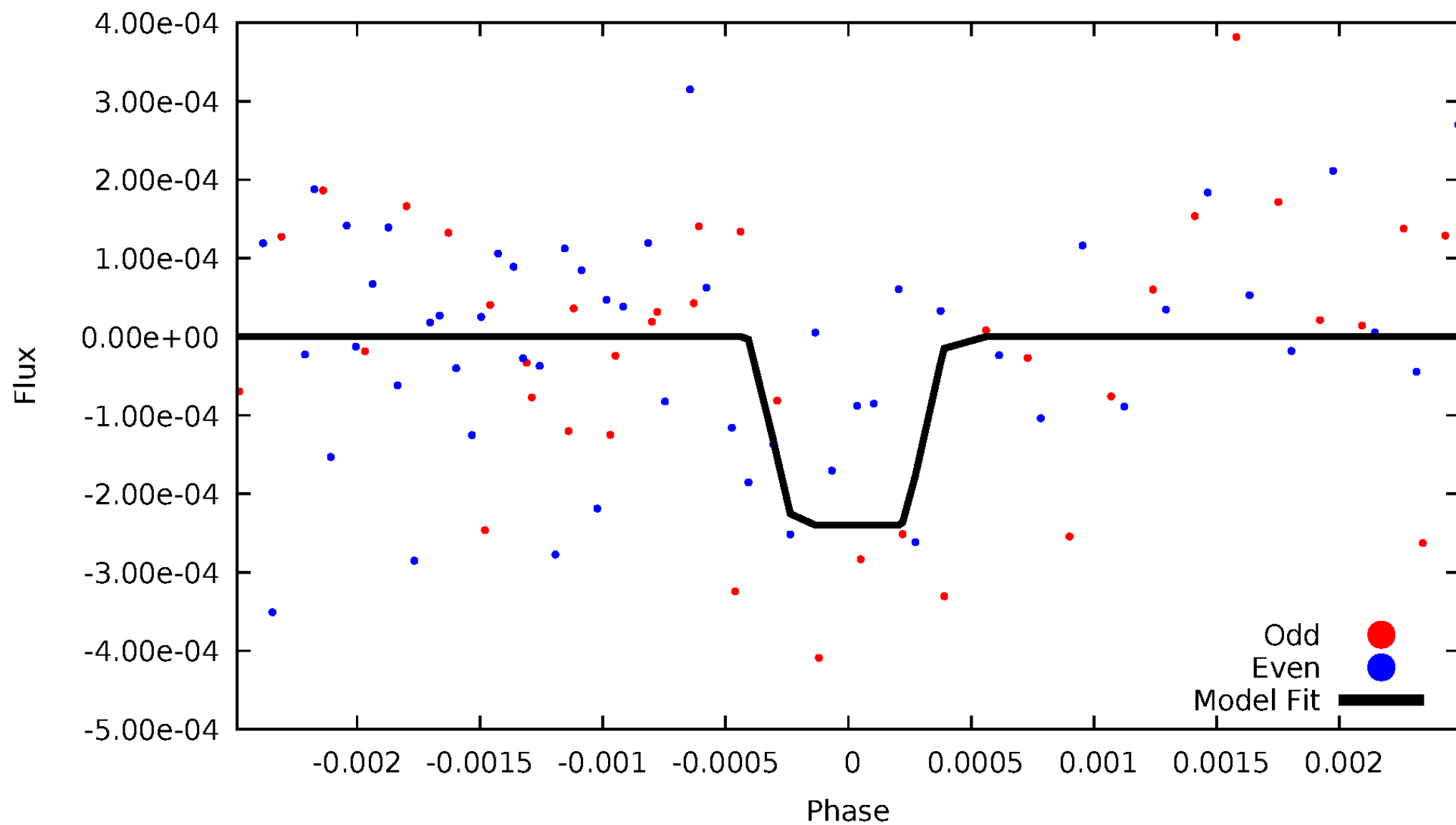
# DV Odd/Even

TCE 011410915-04



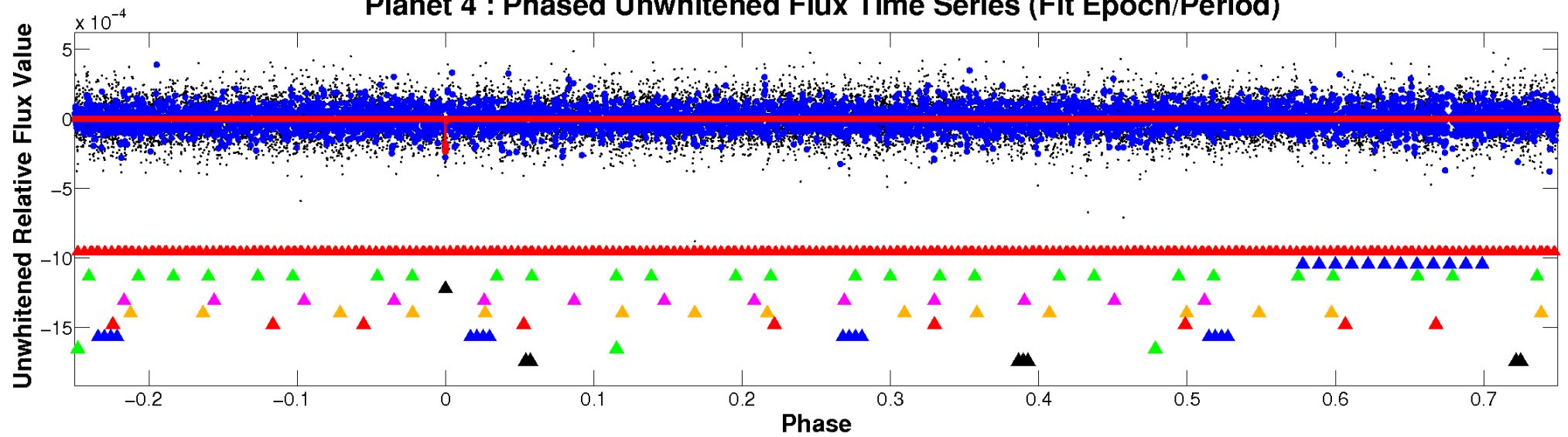
# ALT Odd/Even

TCE 011410915-04

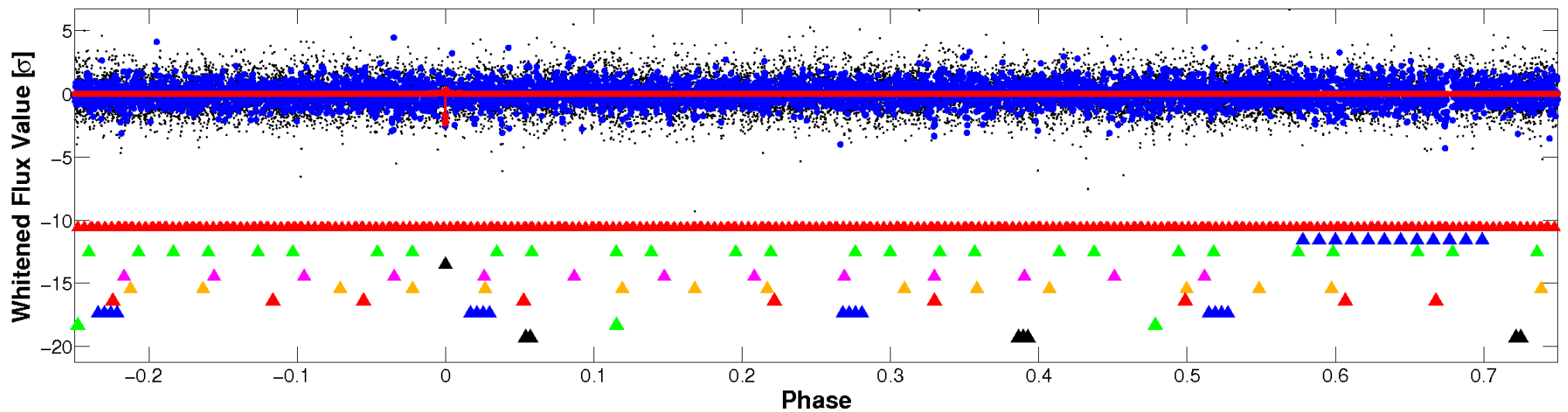


# Non-Whitened Vs. Whitened Light Curve

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

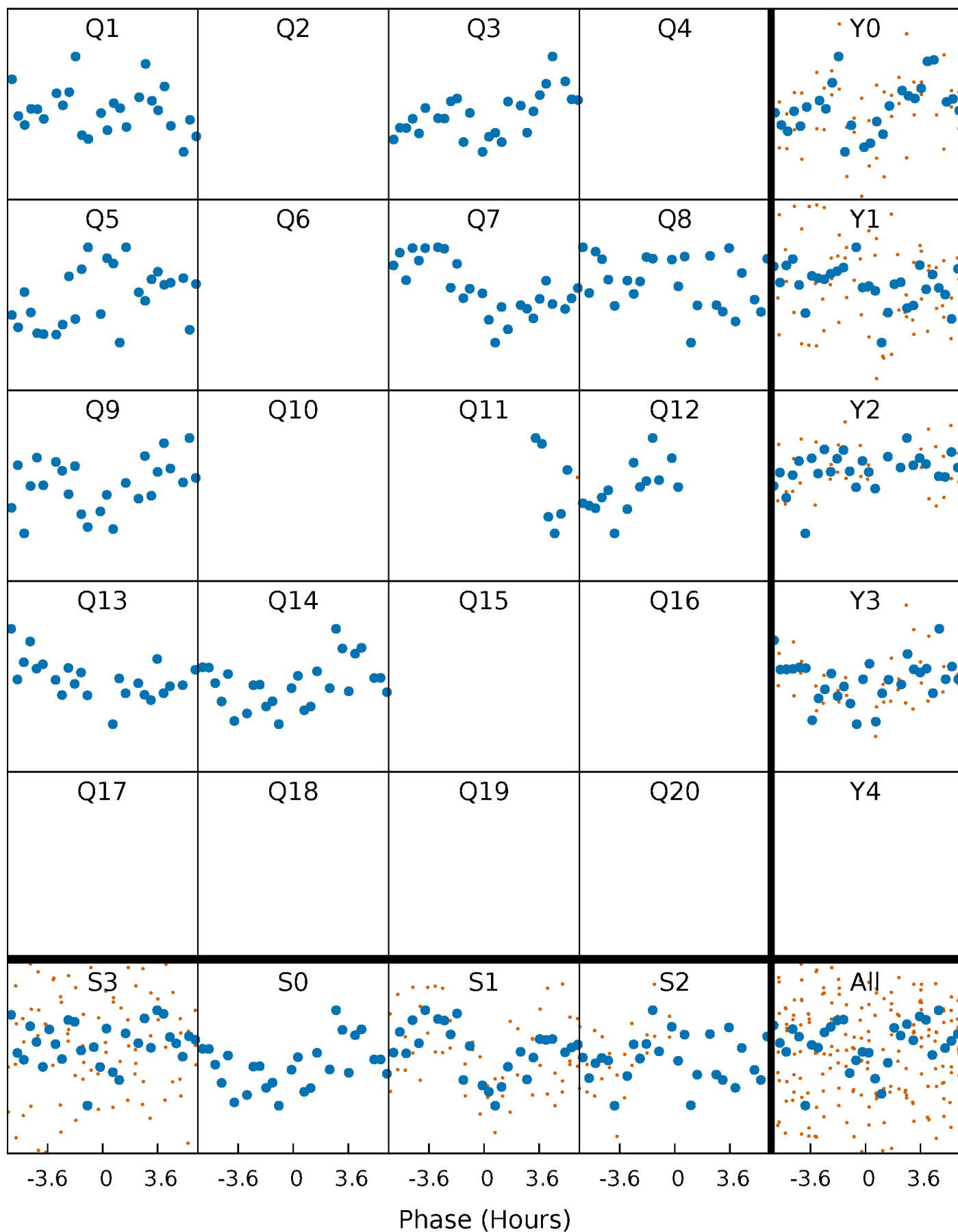


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

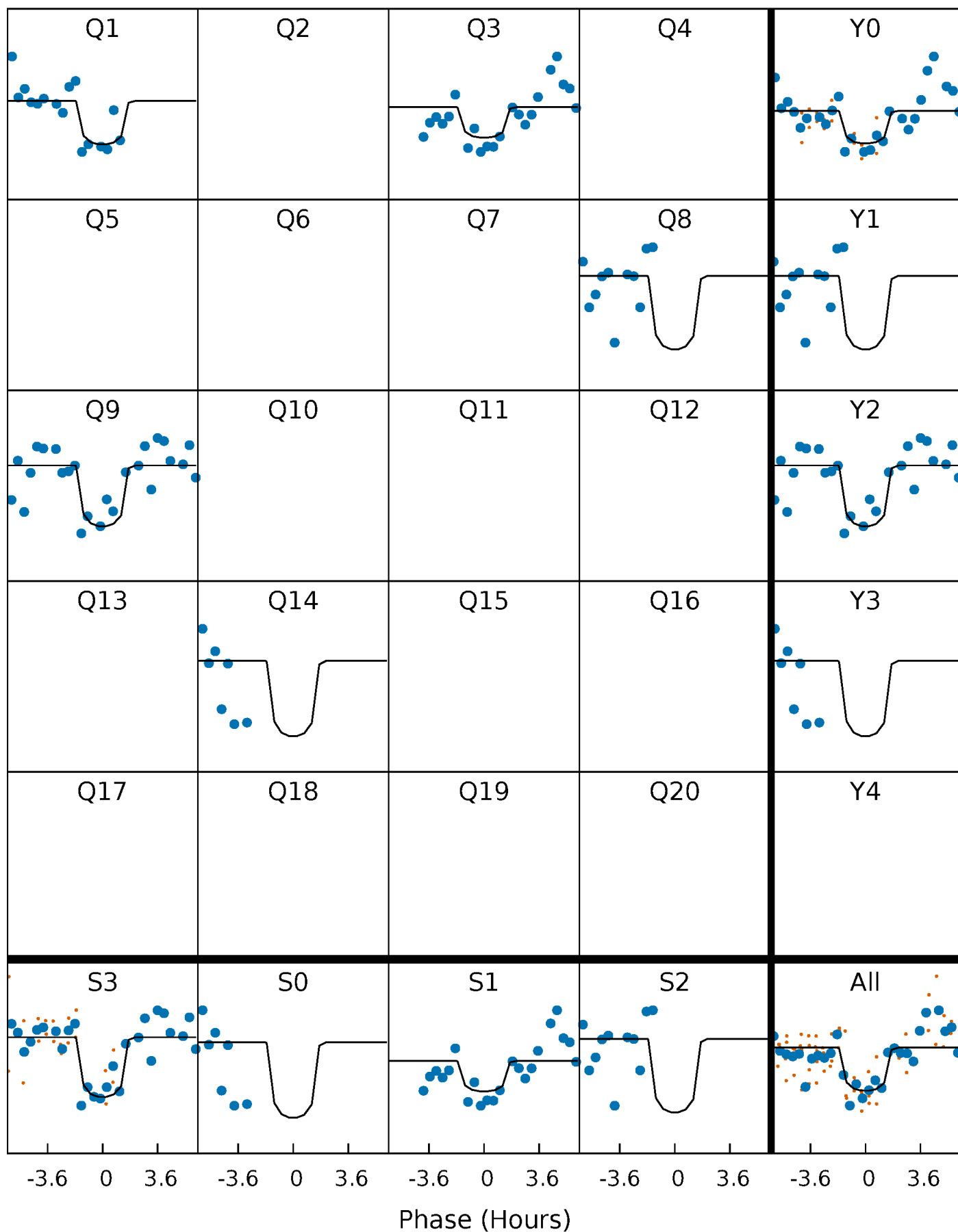
TCE 011410915-04 P=120.170151 Days  $T_0=159.905711$  (BKJD)





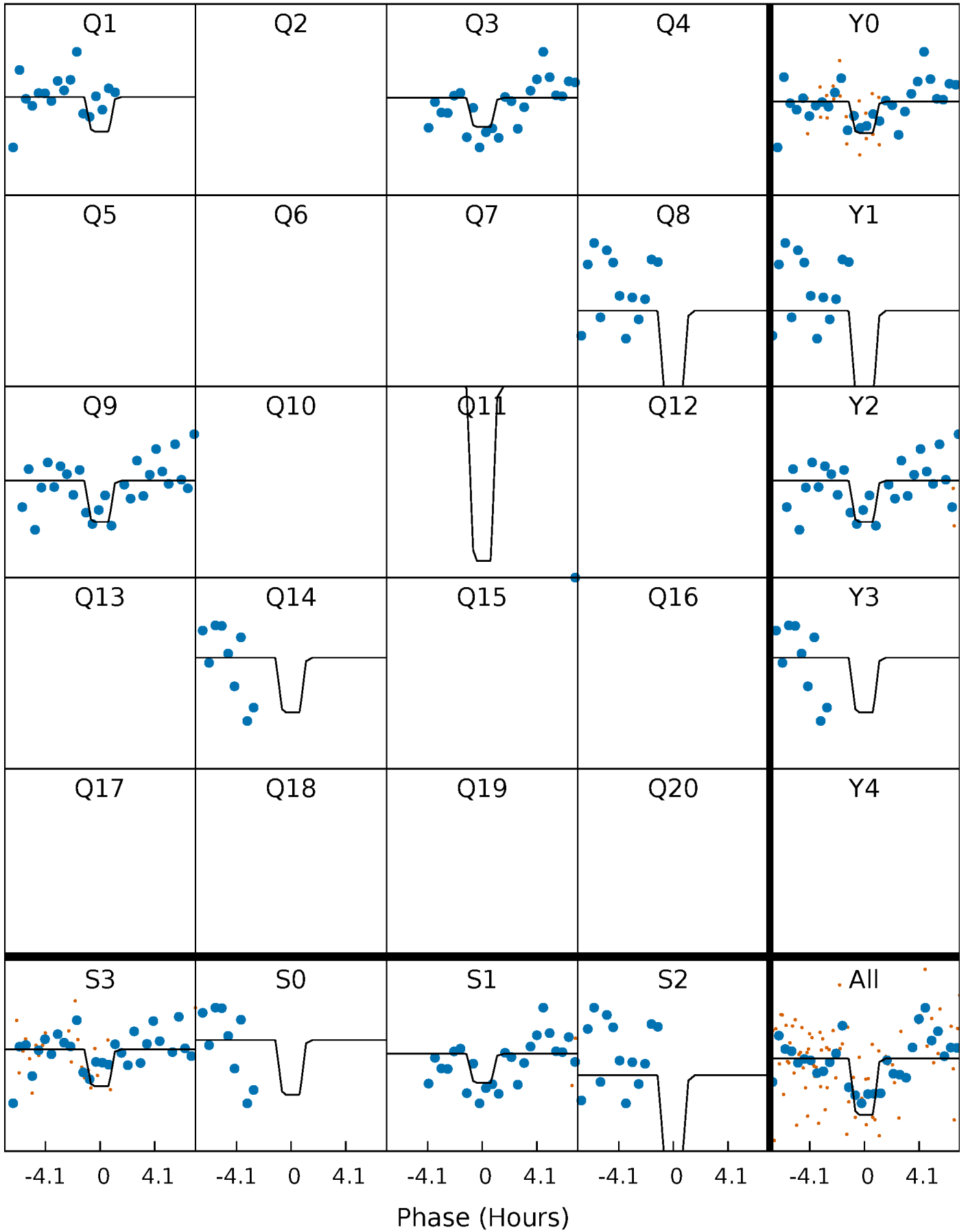
# DV Quarter-Phased Transit Curves

TCE 011410915-04 P=120.170151 Days  $T_0=159.905711$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

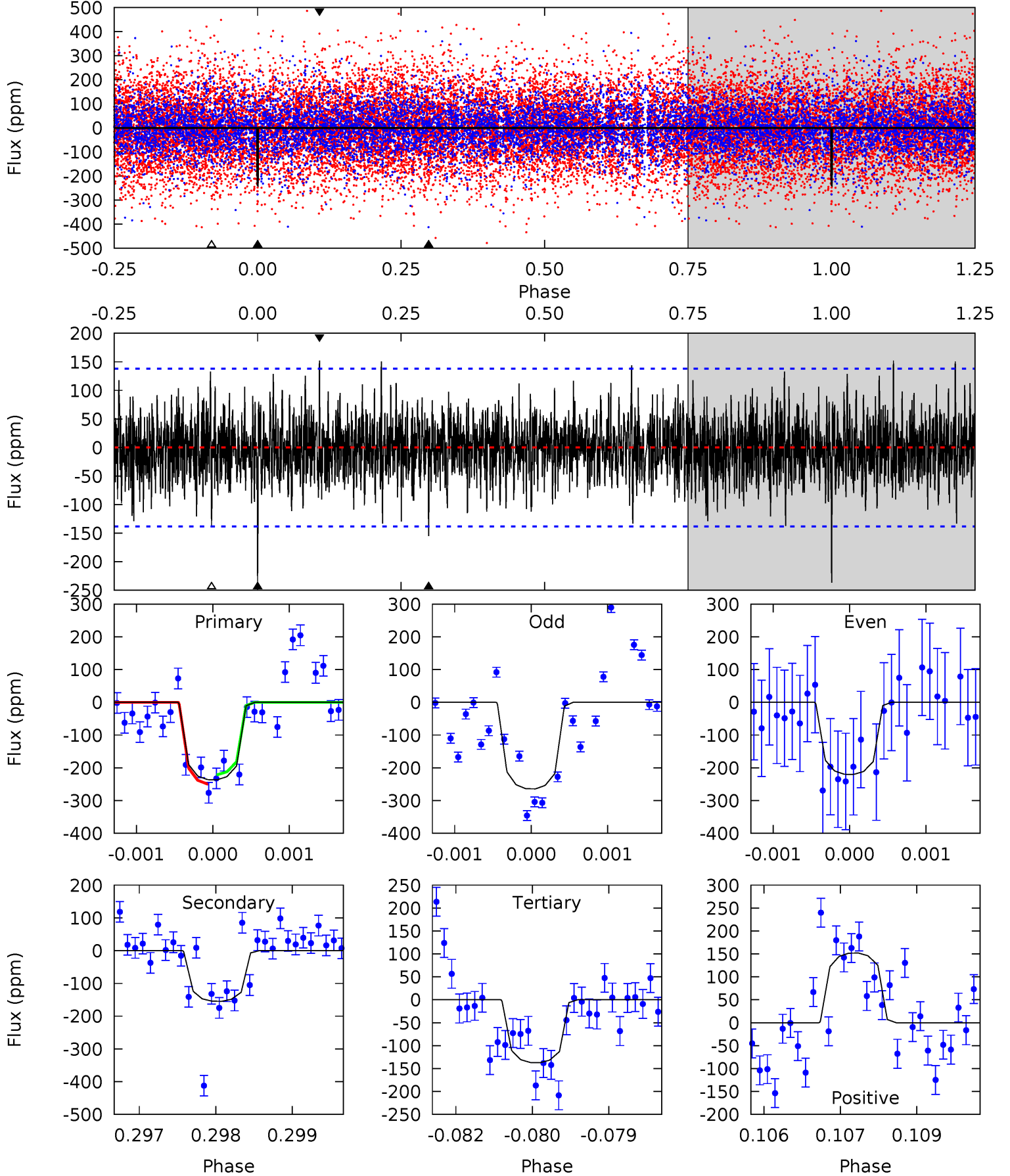
TCE 011410915-04 P=120.168514 Days  $T_0=159.911205$  (BKJD)



# DV Model-Shift Uniqueness Test

011410915-04,  $P = 120.170151$  Days,  $E = 39.735560$  Days

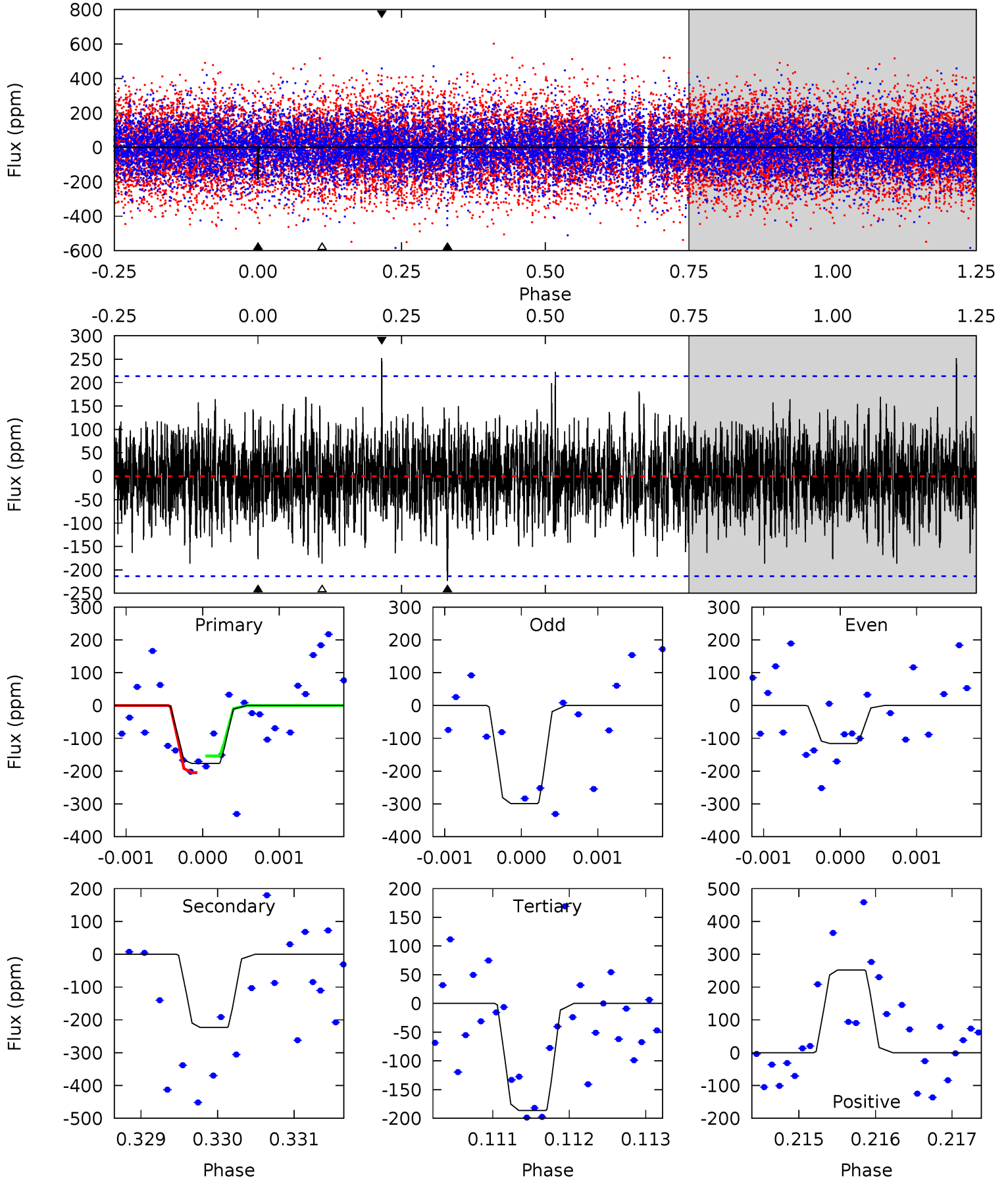
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.24	6.04	5.36	5.93	5.40	3.20	1.58	3.89	3.31	0.69	0.11	0.86	1.08	0.39	0.55



# Alt Model-Shift Uniqueness Test

011410915-04, P = 120.168514 Days, E = 39.742691 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
4.52	5.71	4.76	6.44	5.46	3.30	1.40	-0.24	-1.92	0.94	-0.73	2.24	0.88	0.53	0.64



### Stellar Parameters For KIC 011410915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6903^{+72}_{-92}$	$4.151^{+0.066}_{-0.114}$	$0.200^{+0.100}_{-0.150}$	$1.720^{+0.294}_{-0.171}$	$1.528^{+0.119}_{-0.097}$	$0.423^{+0.128}_{-0.148}$
	+1%/-1%	+2%/-3%	+50%/-75%	+17%/-10%	+8%/-6%	+30%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011410915-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-155 \pm 26$	$3.12^{+1.86}_{-1.73}$	$757^{+30}_{-25}$	$6006^{+3270}_{-1158}$	$2649^{+9181}_{-1610}$
Alt.	$-223 \pm 39$	$3.13^{+1.77}_{-1.73}$	$757^{+31}_{-22}$	$6525^{+4471}_{-1241}$	$3767^{+15842}_{-2249}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

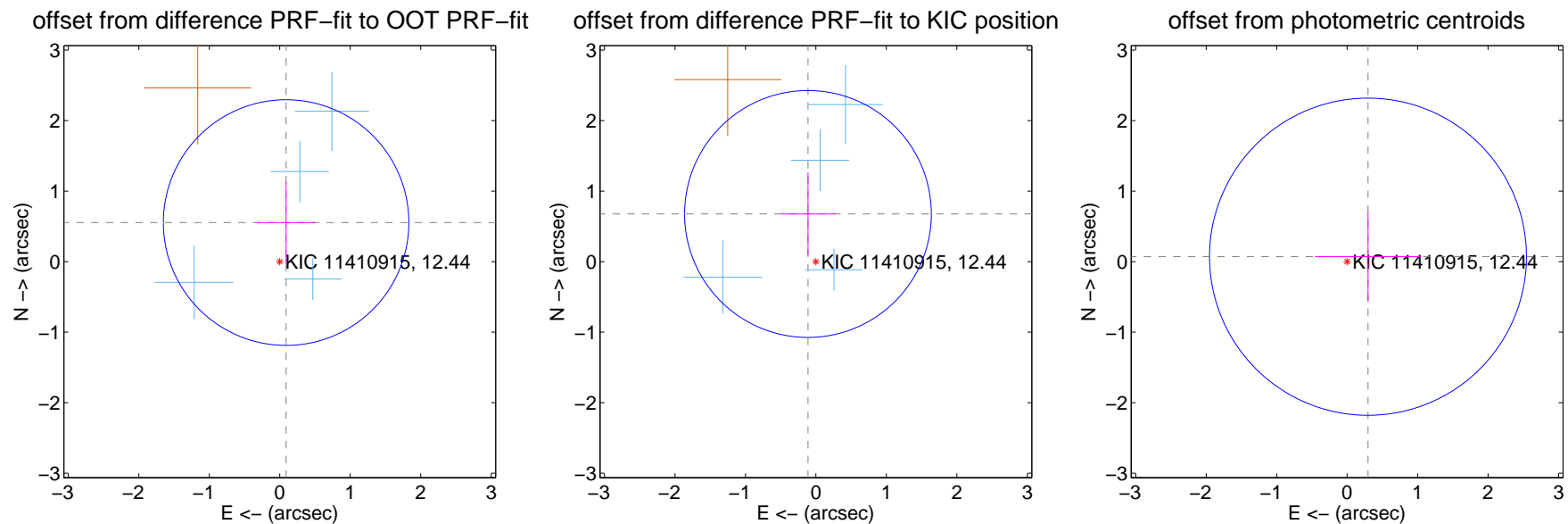
## DV Centroid Data

Supplemental centroid analysis for 011410915-04. Kepler magnitude: 12.44. Transit SNR 8.72

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

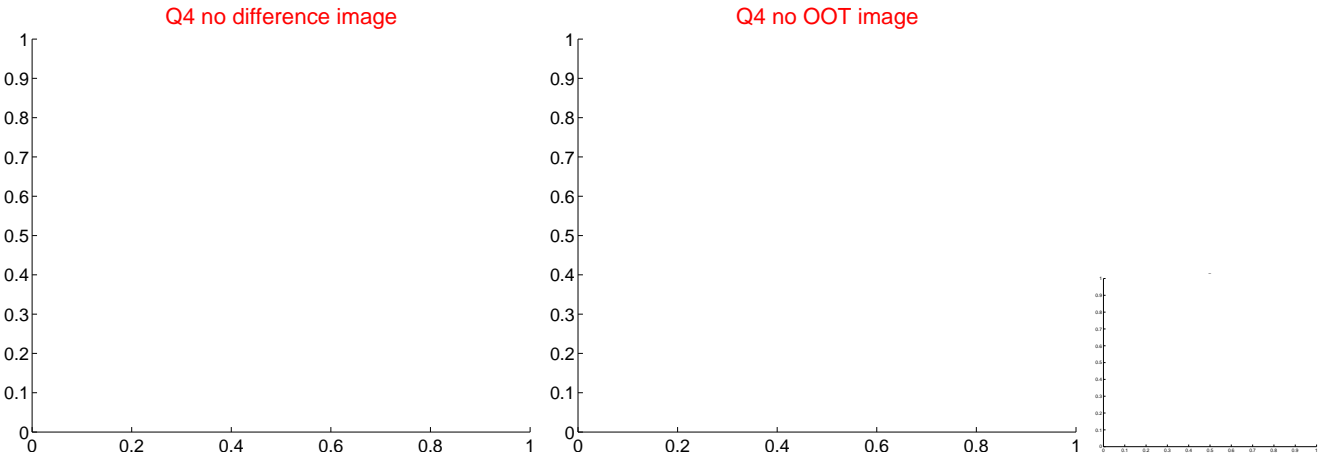
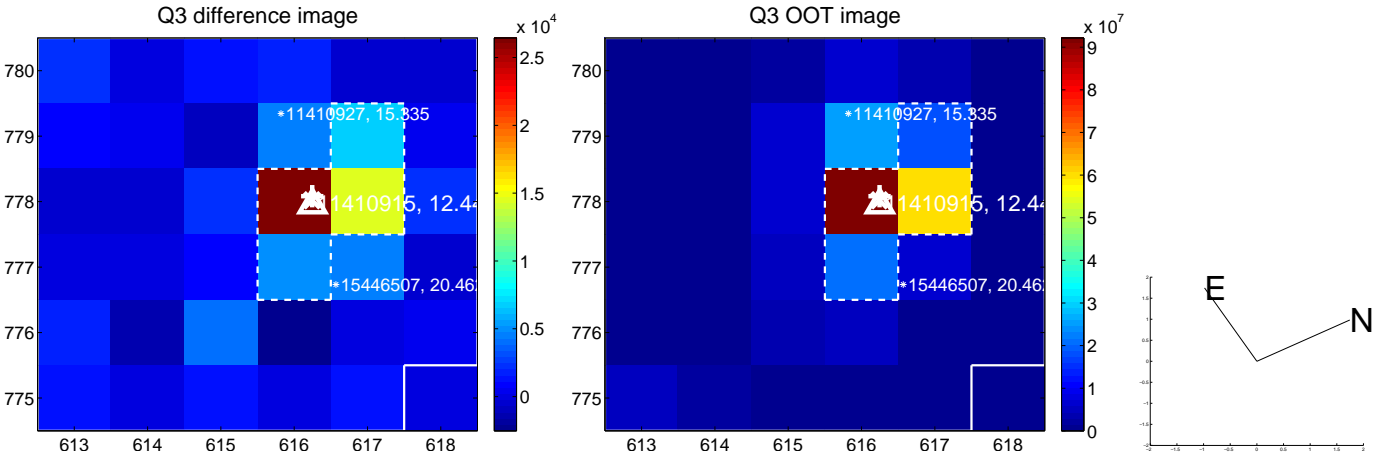
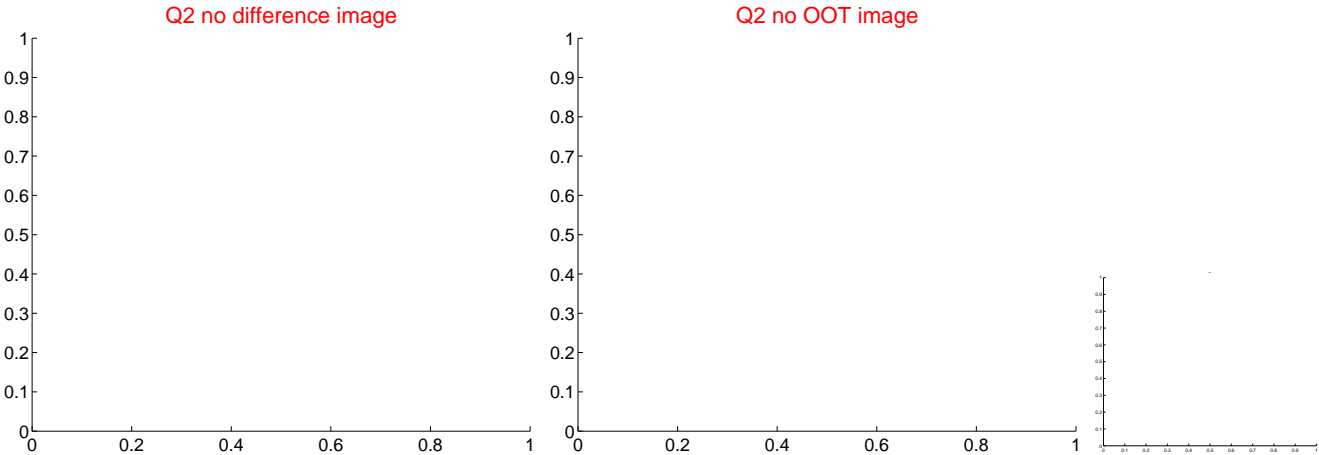
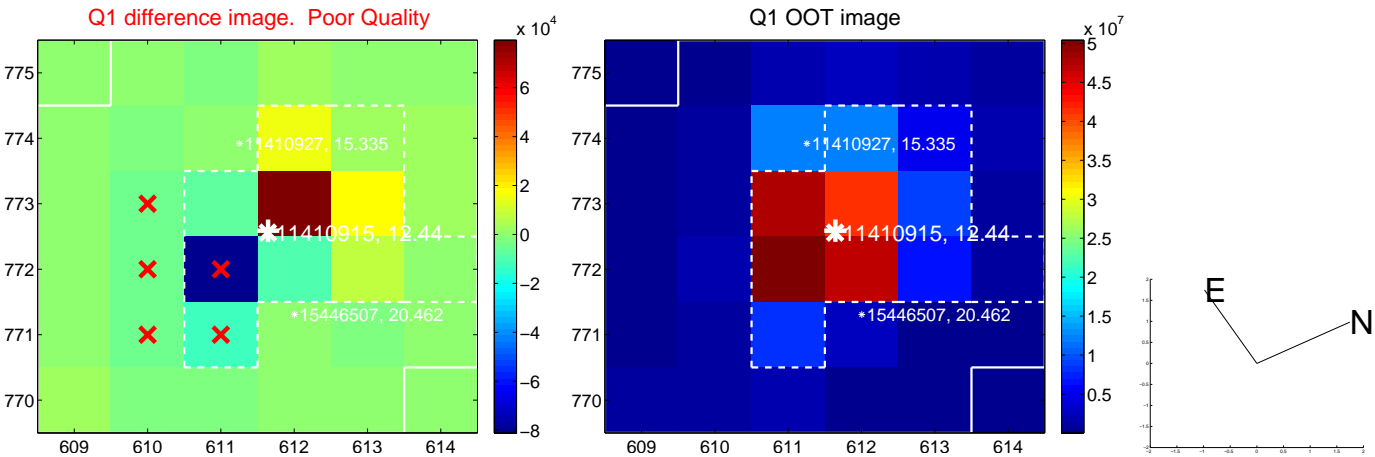
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.561 \pm 0.581$	0.97	$-0.089 \pm 0.415$	$0.554 \pm 0.584$
PRF-fit source offset from KIC position	$0.685 \pm 0.583$	1.17	$0.113 \pm 0.389$	$0.676 \pm 0.588$
photometric centroid source offset	$0.30 \pm 0.75$	0.41	$-0.30 \pm 0.76$	$0.07 \pm 0.64$



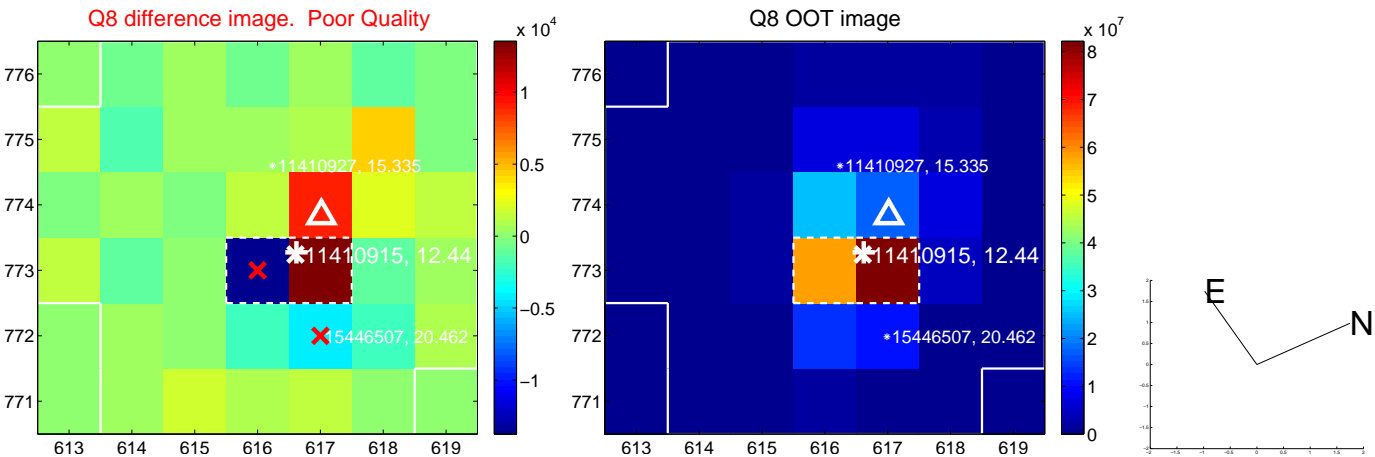
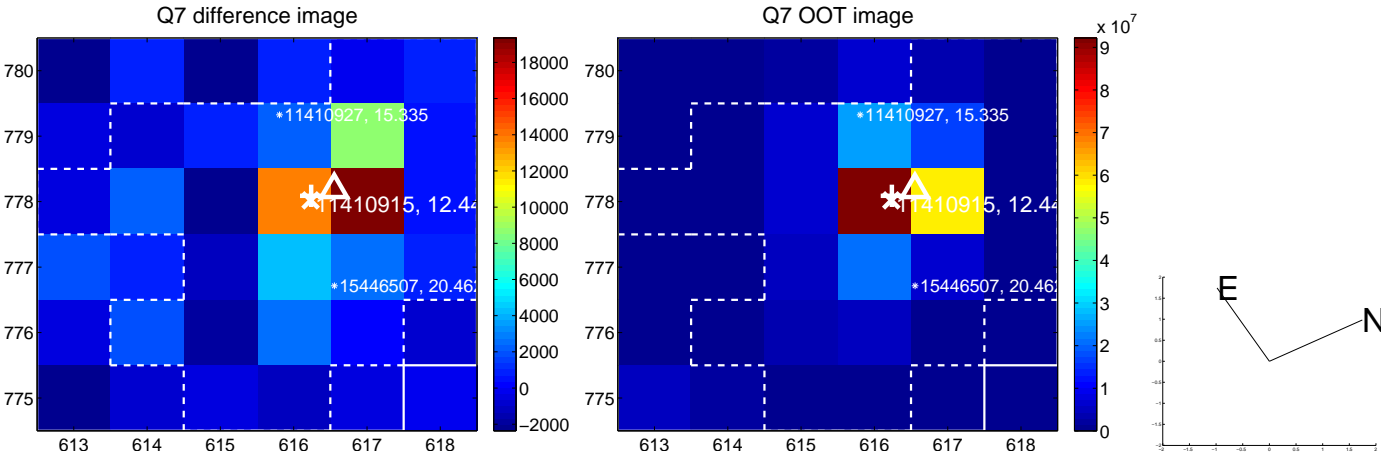
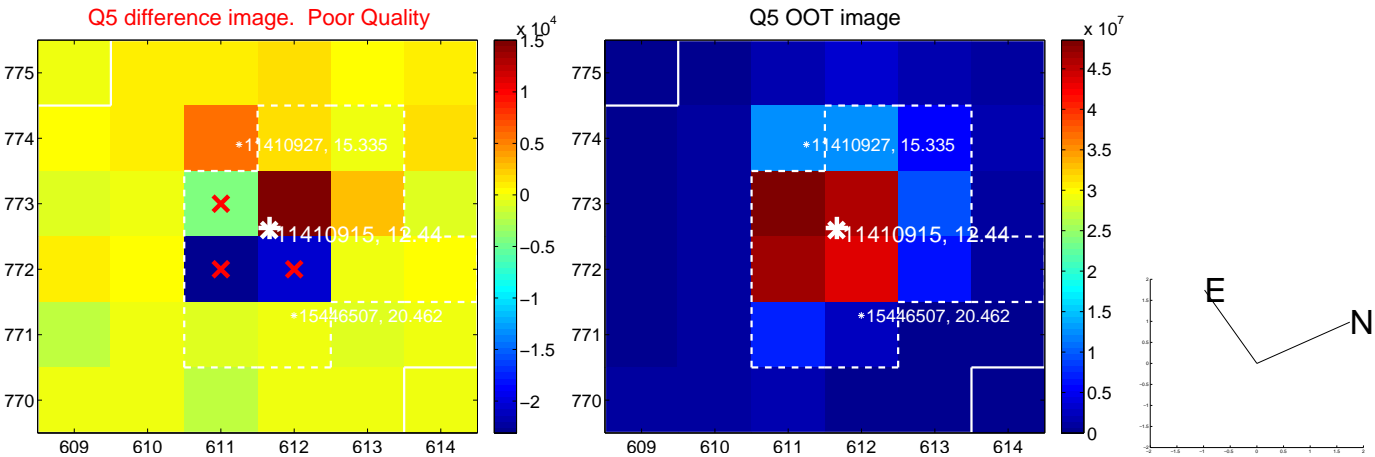
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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.



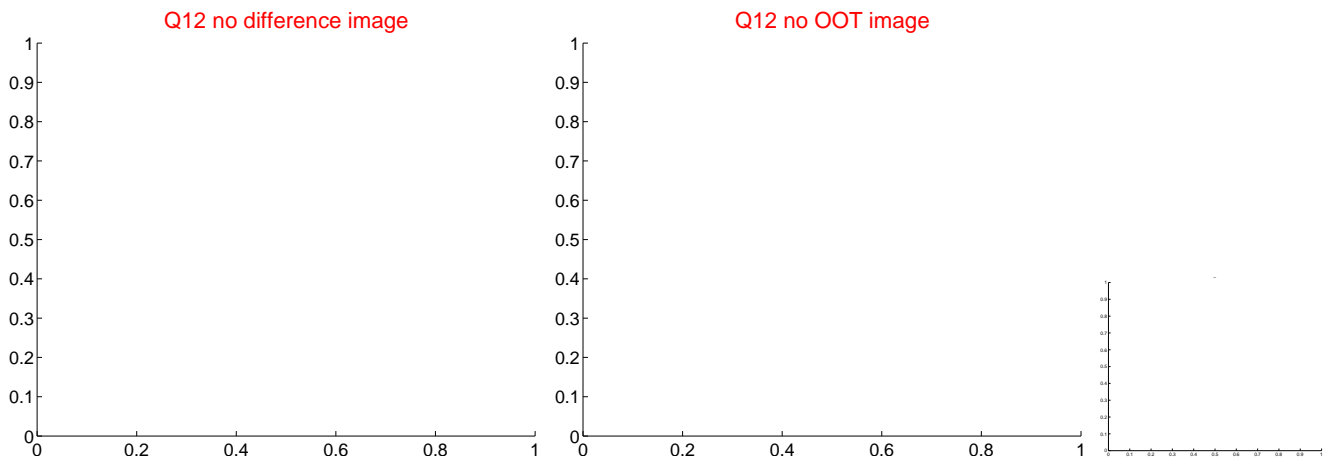
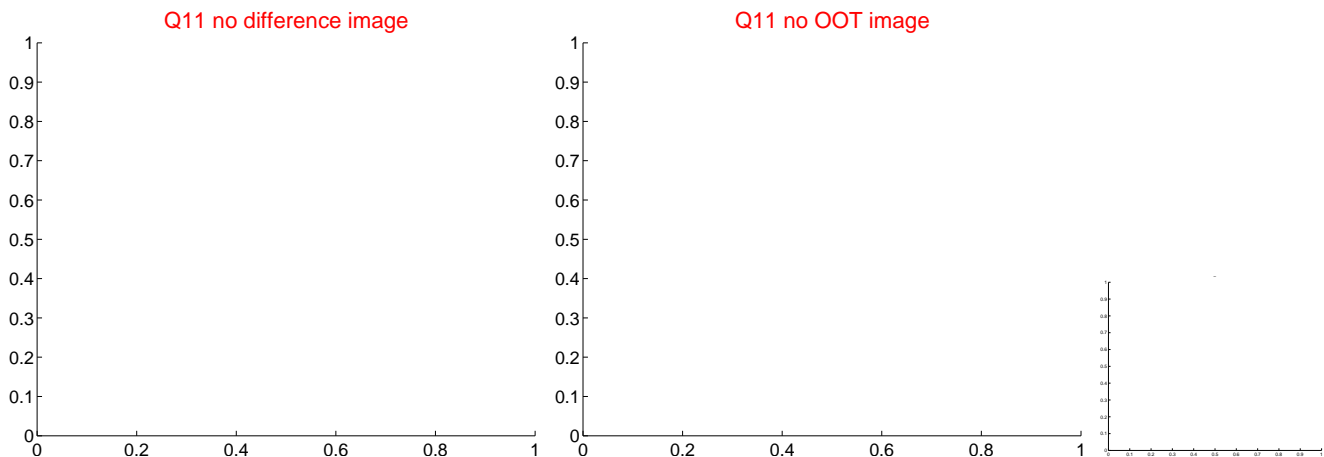
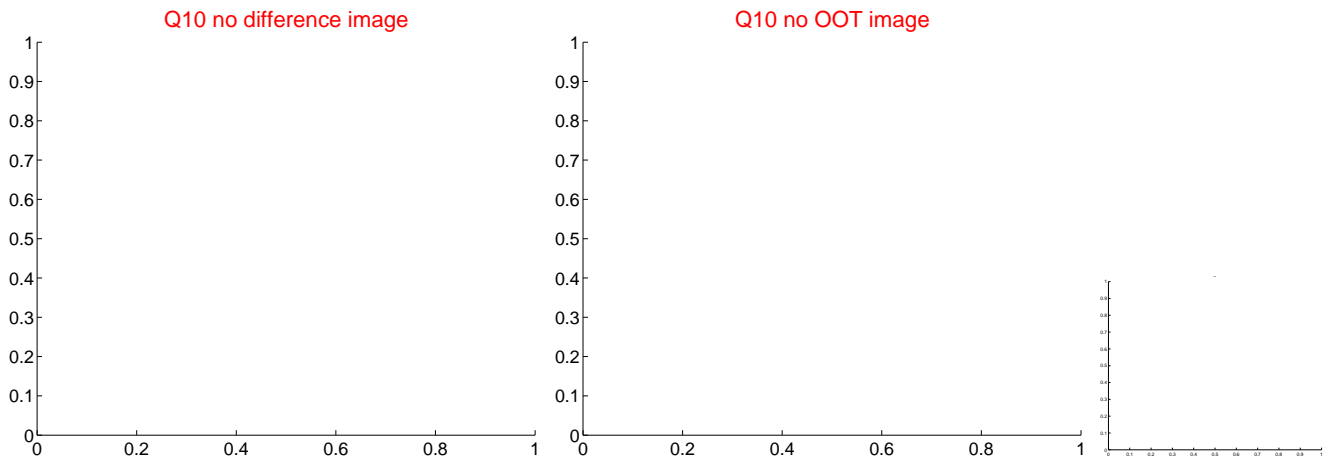
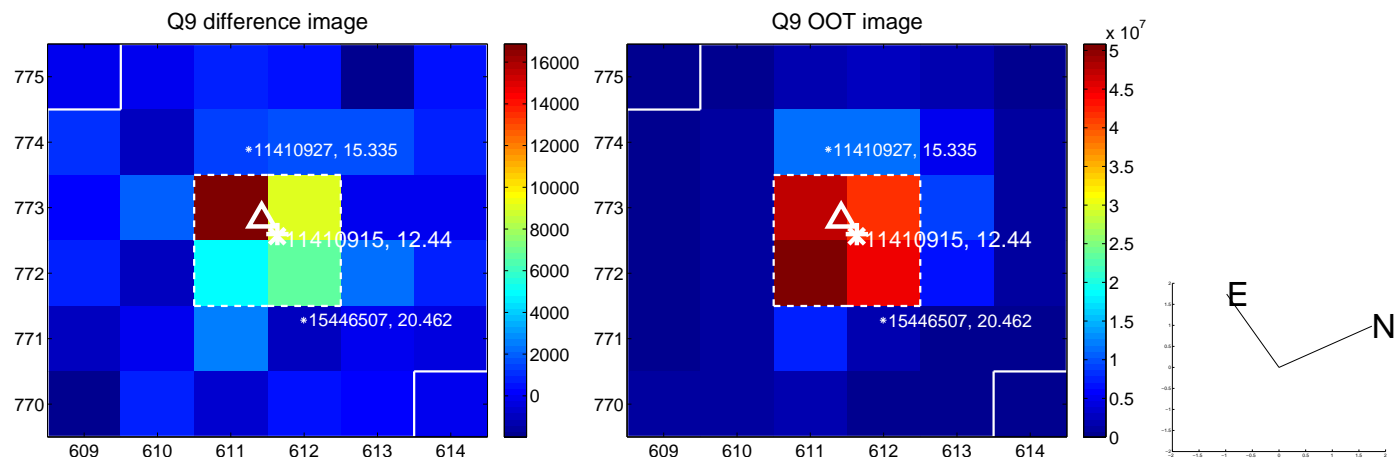
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.

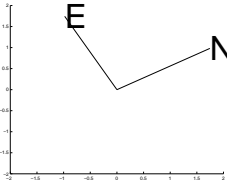
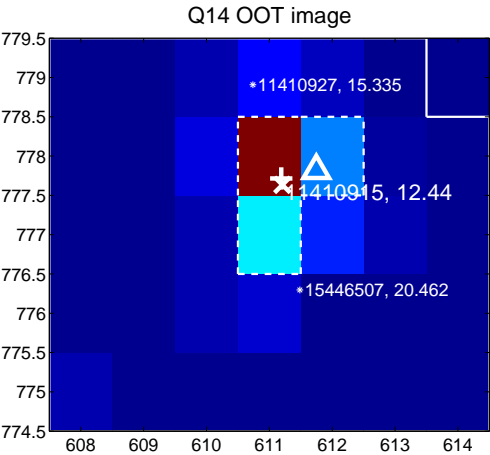
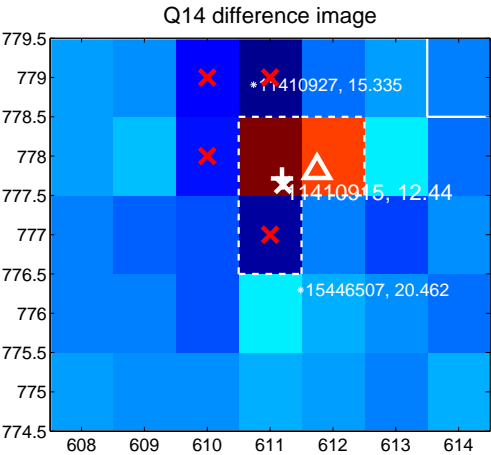


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

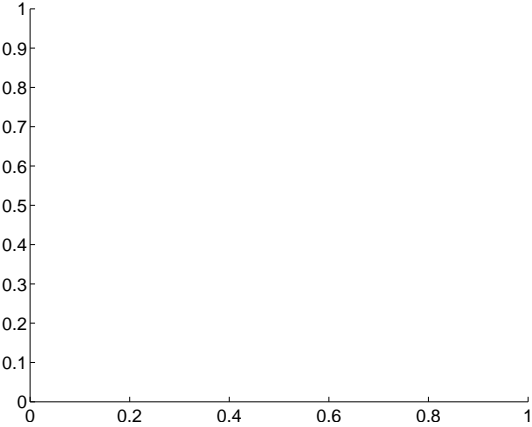
Q13 no difference image



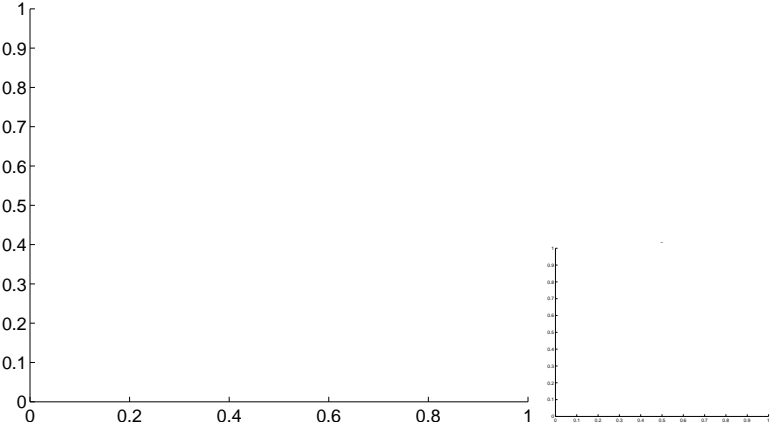
Q13 no OOT image



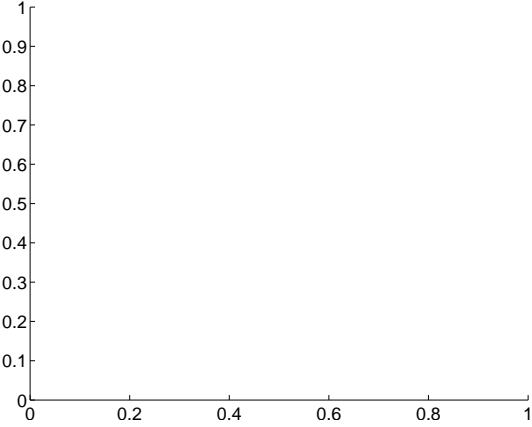
Q15 no difference image



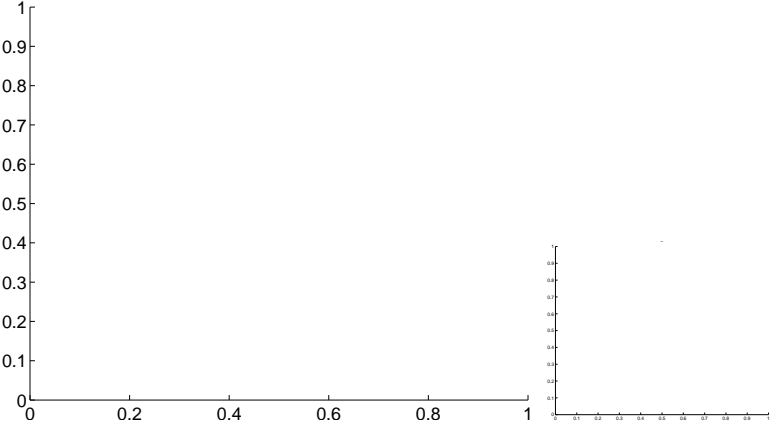
Q15 no OOT image



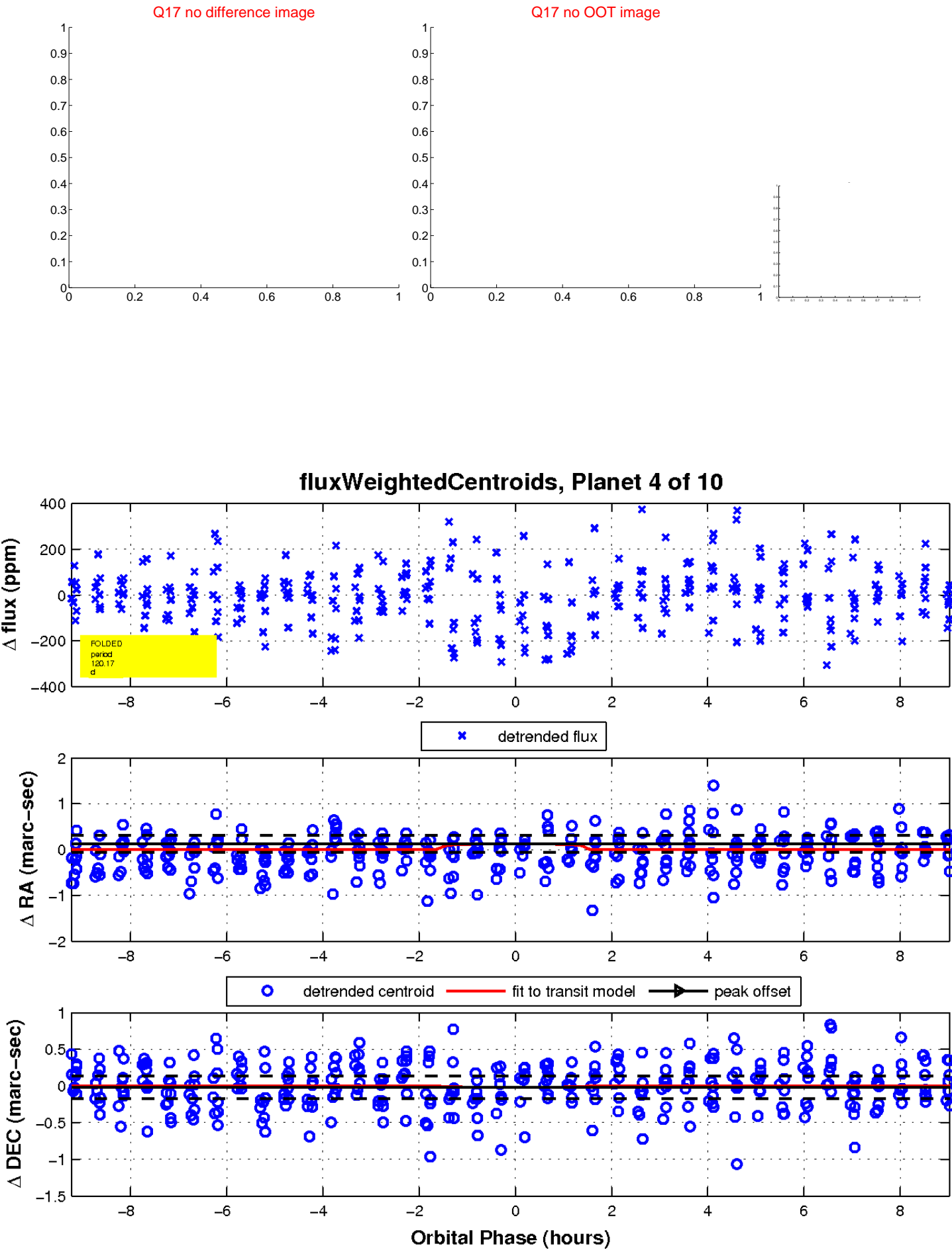
Q16 no difference image



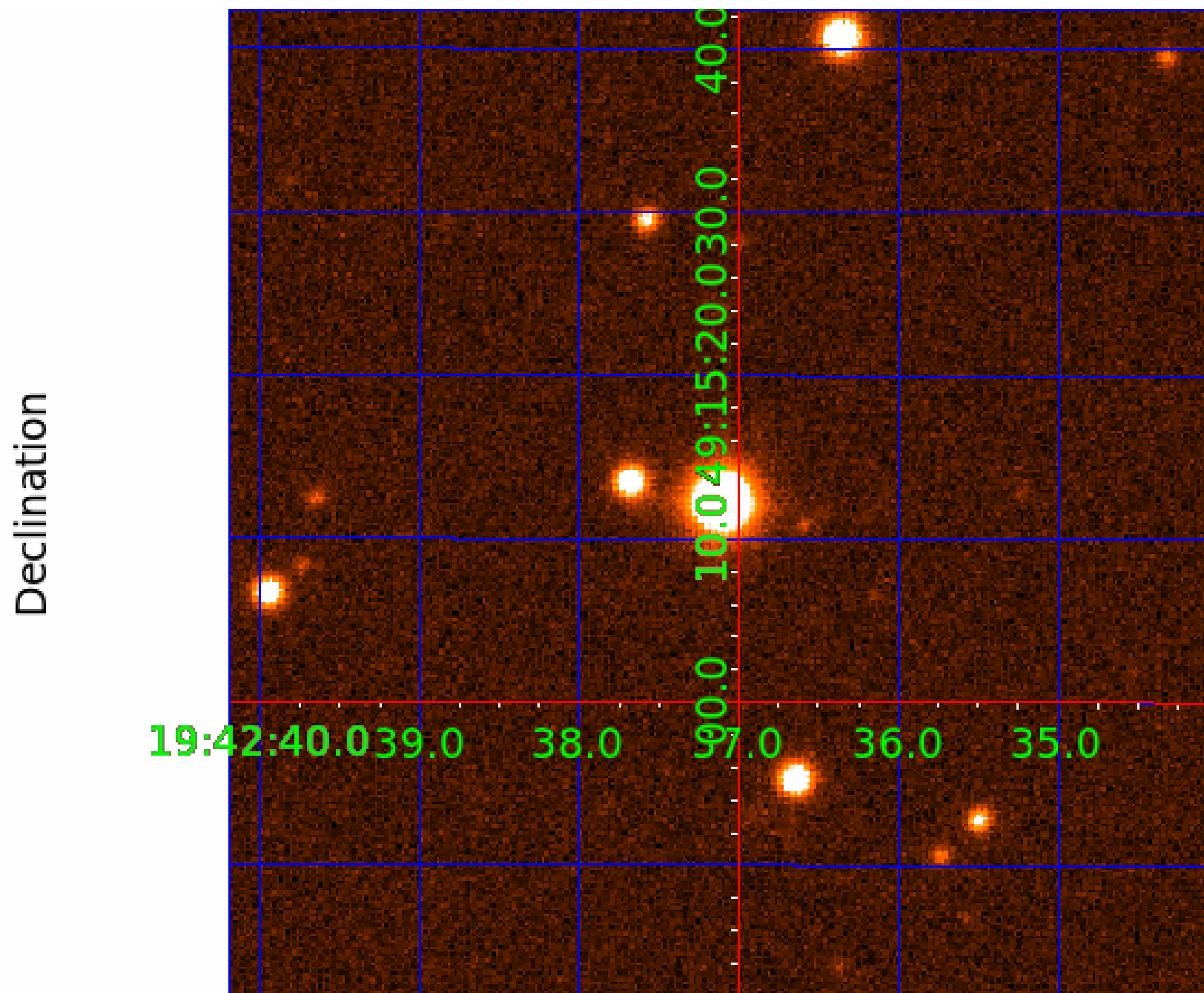
Q16 no OOT image



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



UKIRT Image



## KIC 011410915

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011410915-01	OBS	No	2.743221	133.516224	11.0	15.637	8.0	6.3	1.72	6903	0.59	3083.55
011410915-02	OBS	No	121.491572	229.369437	128.8	24.113	12.0	7.8	1.72	6903	2.29	19.68
011410915-03	OBS	No	55.245253	140.692328	189.1	3.312	8.7	9.2	1.72	6903	2.73	56.28
011410915-04	OBS	No	120.170150	159.905711	235.8	3.124	8.5	8.7	1.72	6903	2.91	19.97
011410915-05	OBS	No	112.875535	221.399883	248.9	3.698	8.4	8.0	1.72	6903	4.41	21.71
011410915-06	OBS	No	97.310505	219.952147	299.1	1.968	8.1	9.3	1.72	6903	3.52	26.46
011410915-07	OBS	No	153.455328	240.155198	201.5	3.233	8.2	8.4	1.72	6903	2.80	14.41
011410915-08	OBS	No	89.998936	193.645171	212.2	2.773	7.9	8.4	1.72	6903	2.88	29.36
011410915-09	OBS	No	557.200061	337.590460	129.3	27.663	7.8	6.9	1.72	6903	2.25	2.58
011410915-10	OBS	No	200.409436	326.508363	211.5	2.971	8.0	8.1	1.72	6903	2.81	10.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011410915-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
011410915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011410915-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011410915-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011410915-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

**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.

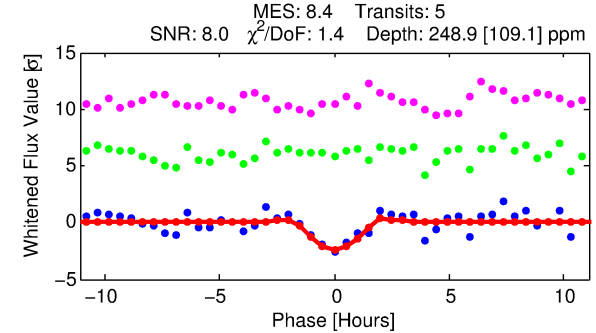
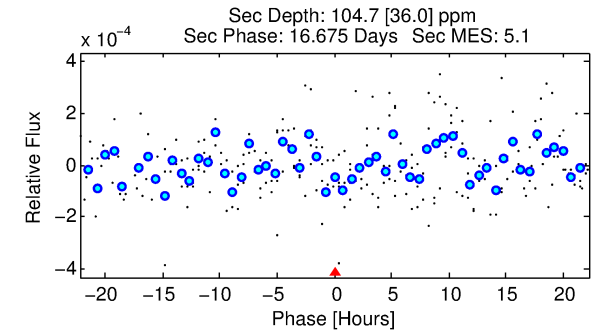
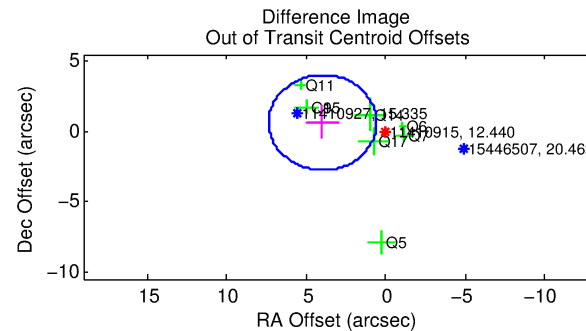
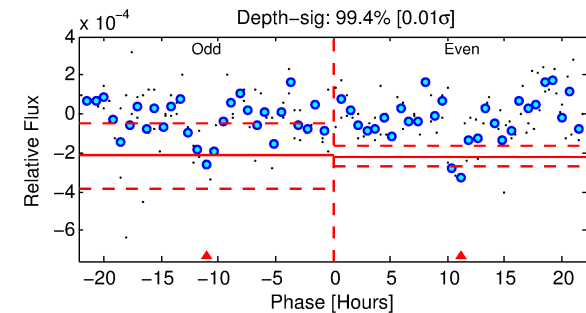
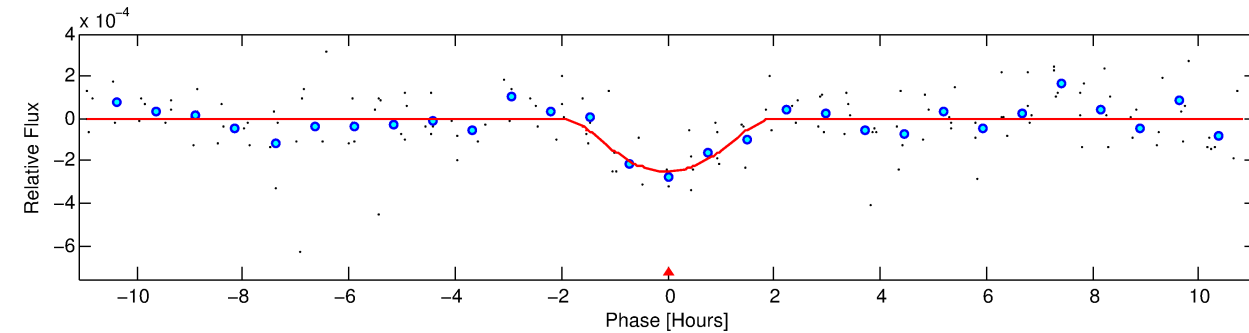
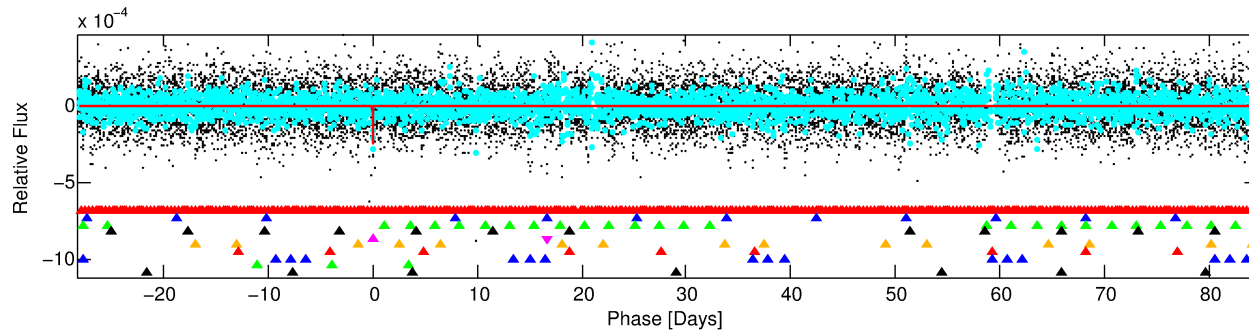
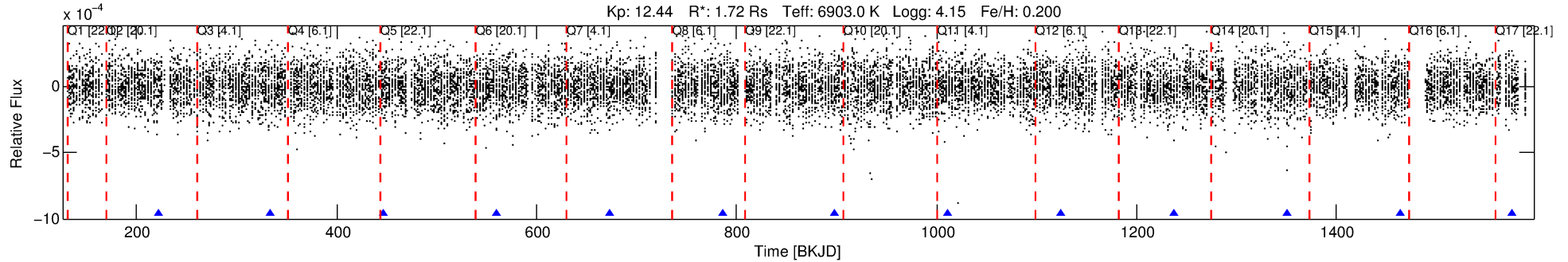
Ephemeris Match Information For 011410915-05

No Significant Match Found



# DV One-Page Summary

KIC: 11410915 Candidate: 5 of 10 Period: 112.876 d



## DV Fit Results:

Period = 112.87553 [0.00199] d  
Epoch = 221.3999 [0.0140] BKJD  
Rp/R\* = 0.0235 [0.0621]  
a/R\* = 58.66 [58.24]  
b = 0.99 [0.11]  
Seff = 21.71 [4.68]  
Teff = 550 [30] K  
Rp = 4.41 [11.68] Re  
a = 0.5266 [0.0757] AU  
Ag = 822.68 [4362.61] [0.19σ]  
Teffp = 4557 [6038] K [0.66σ]

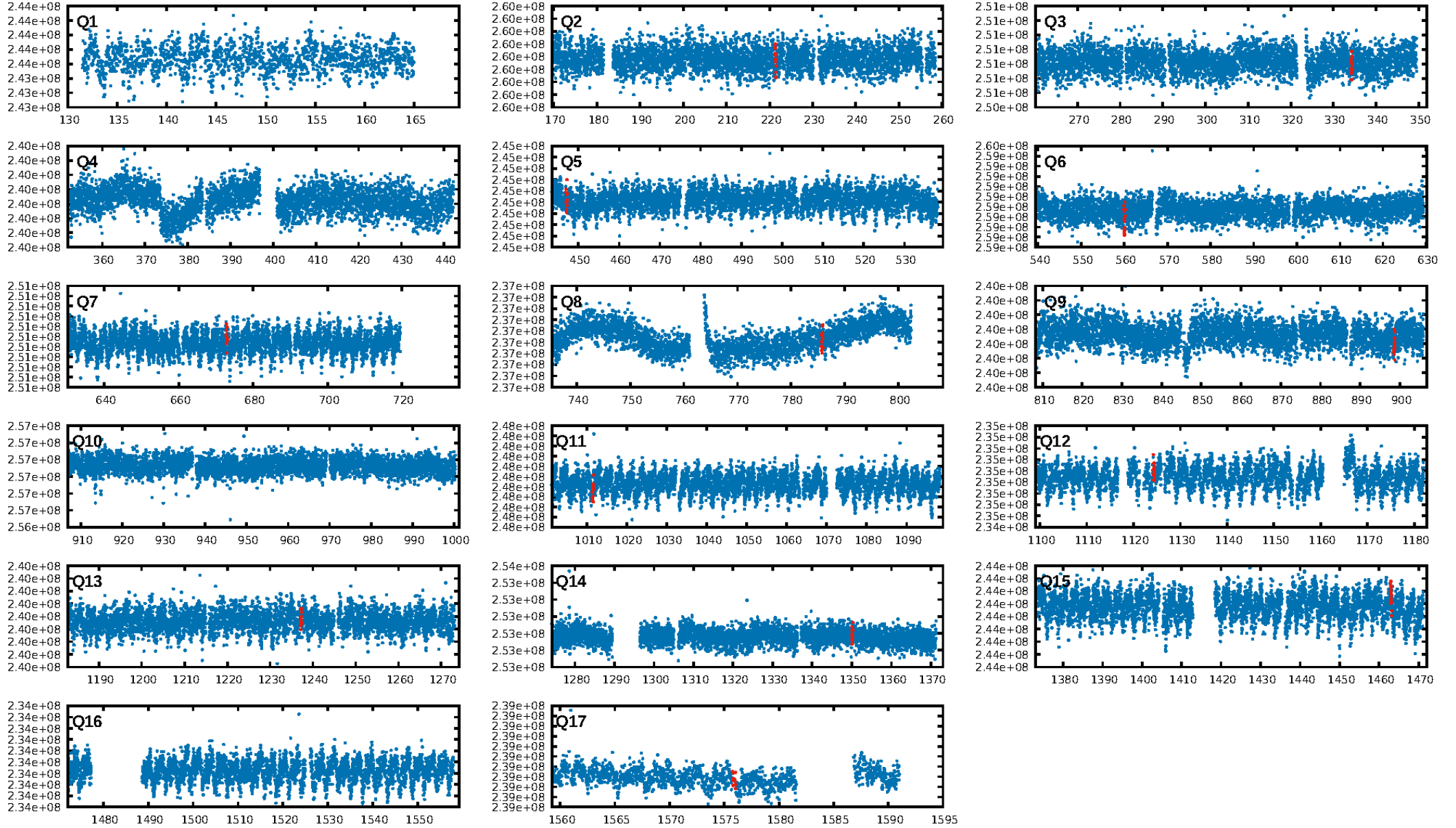
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [89.17σ]  
LongPeriod-sig: 100.0% [36.16σ]  
ModelChiSquare2-sig: 1.2%  
ModelChiSquareGof-sig: 97.6%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -0.2954  
Centroid-sig: 36.3%  
Centroid-so: 0.370 arcsec [0.62σ]  
OotOffset-rm: 4.003 arcsec [3.54σ]  
KicOffset-rm: 4.222 arcsec [4.63σ]  
OotOffset-st: 2/3/0/3 [8]  
KicOffset-st: 2/3/0/3 [8]  
DiffImageQuality-fgm: 0.62 [5/8]  
DiffImageOverlap-fno: 0.46 [6/13]

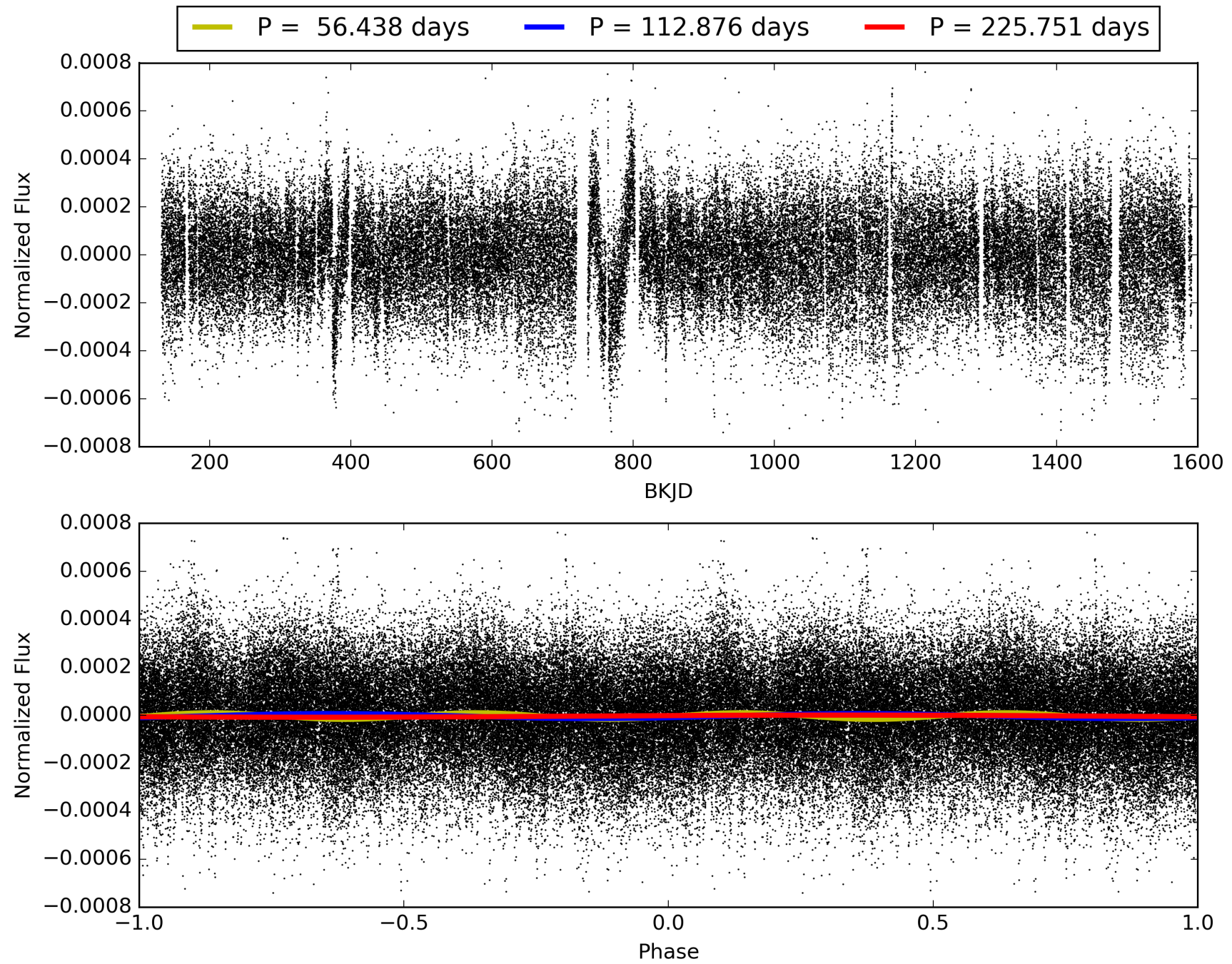
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:48:49 Z

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

# TCE 011410915-05, PDC Light Curves

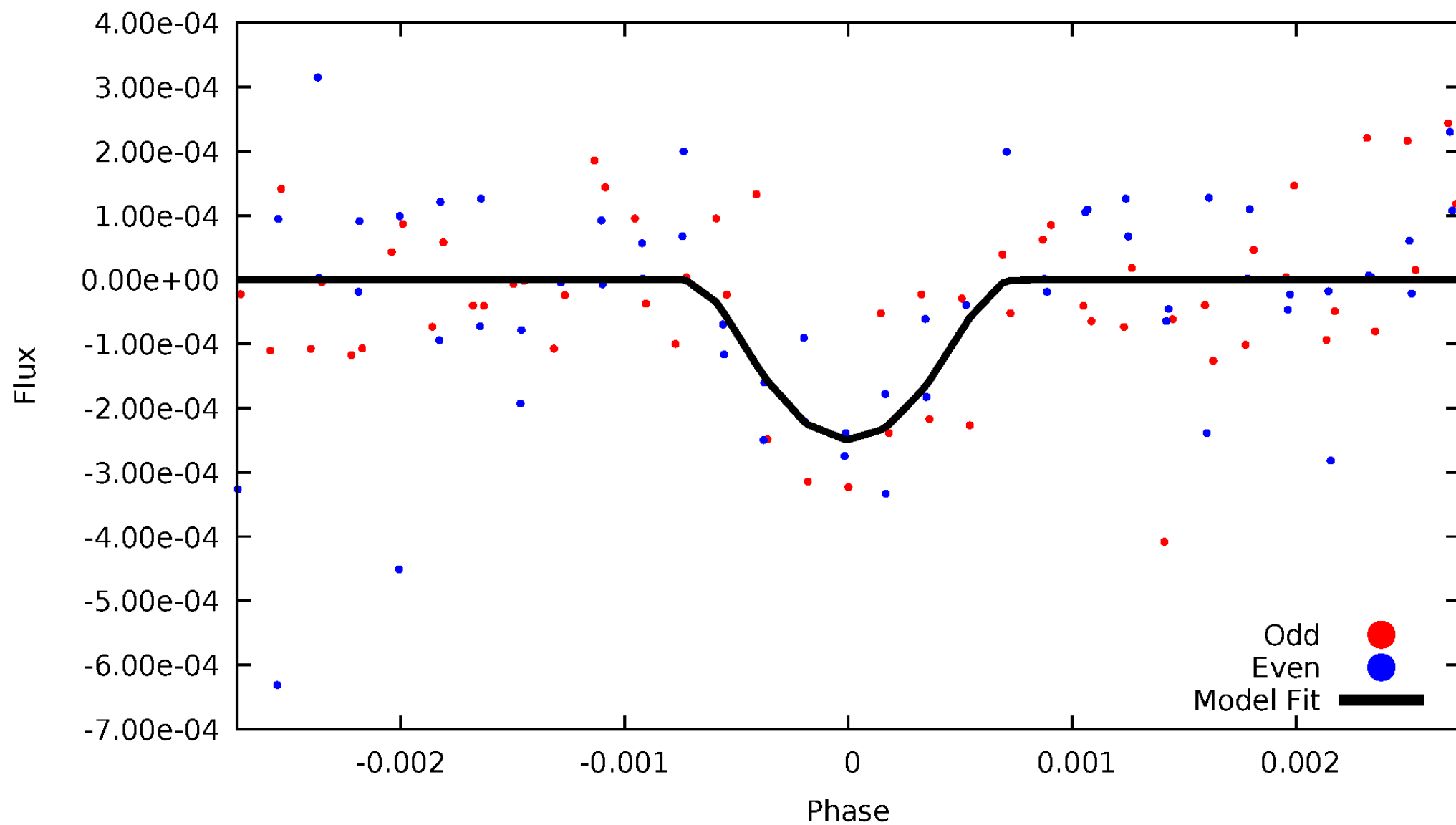


TCE 011410915-05



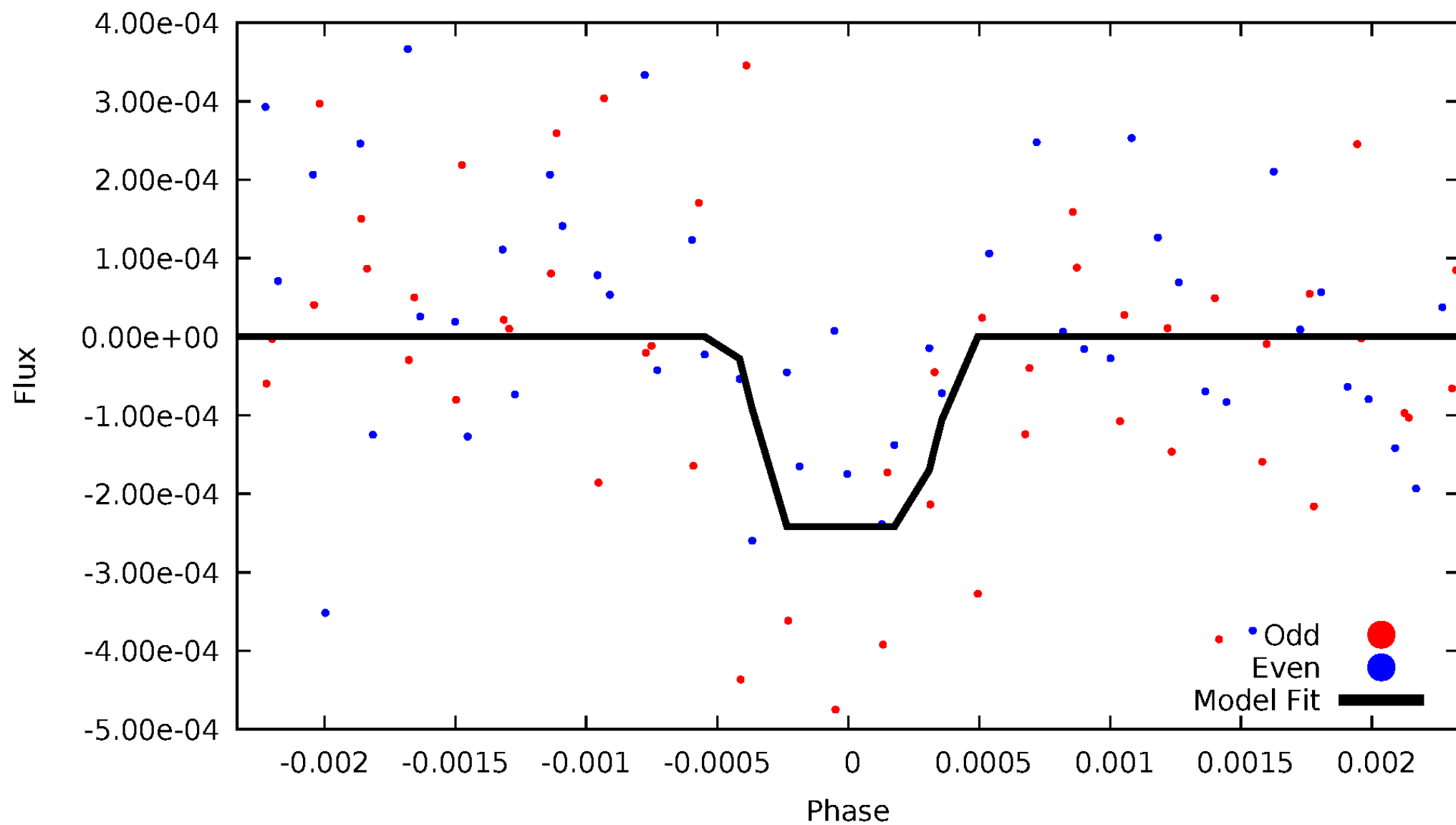
# DV Odd/Even

TCE 011410915-05

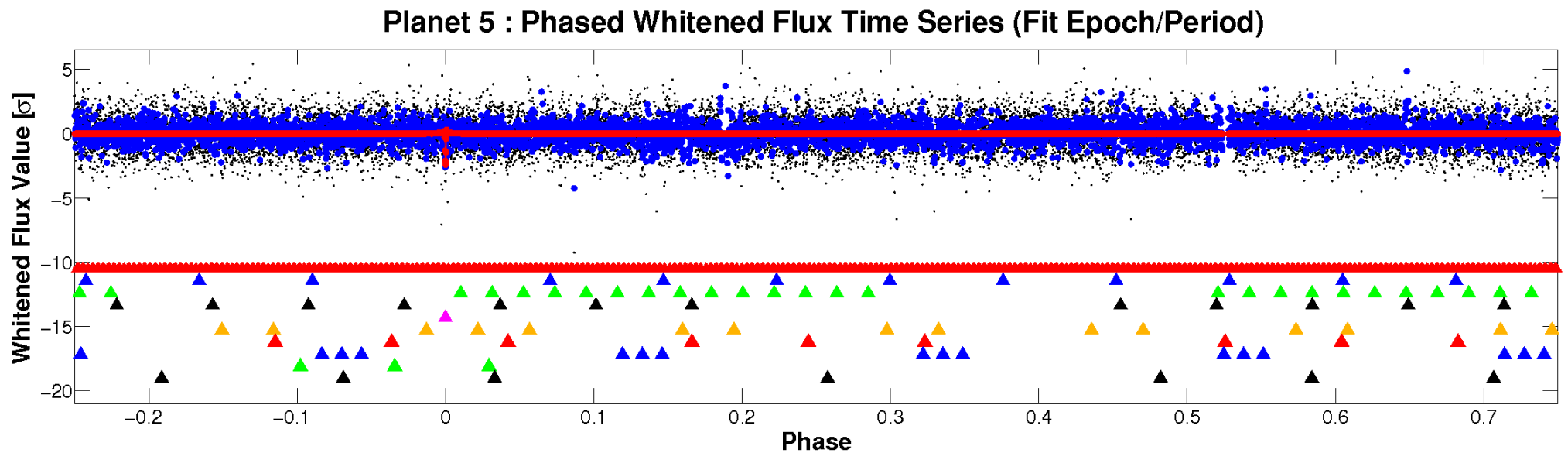
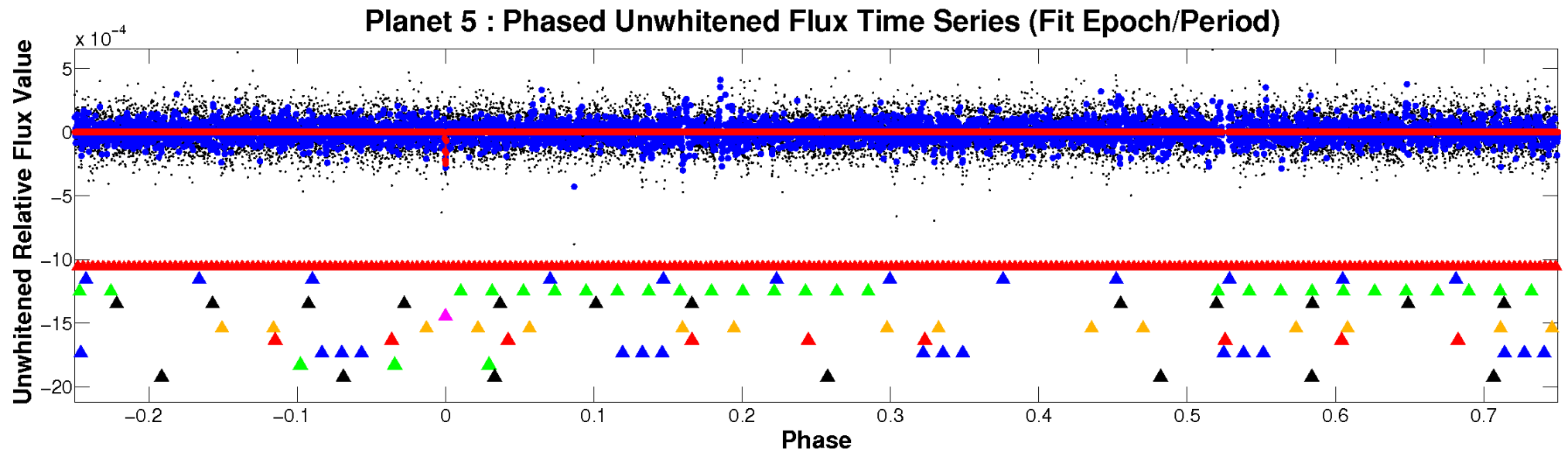


# ALT Odd/Even

TCE 011410915-05



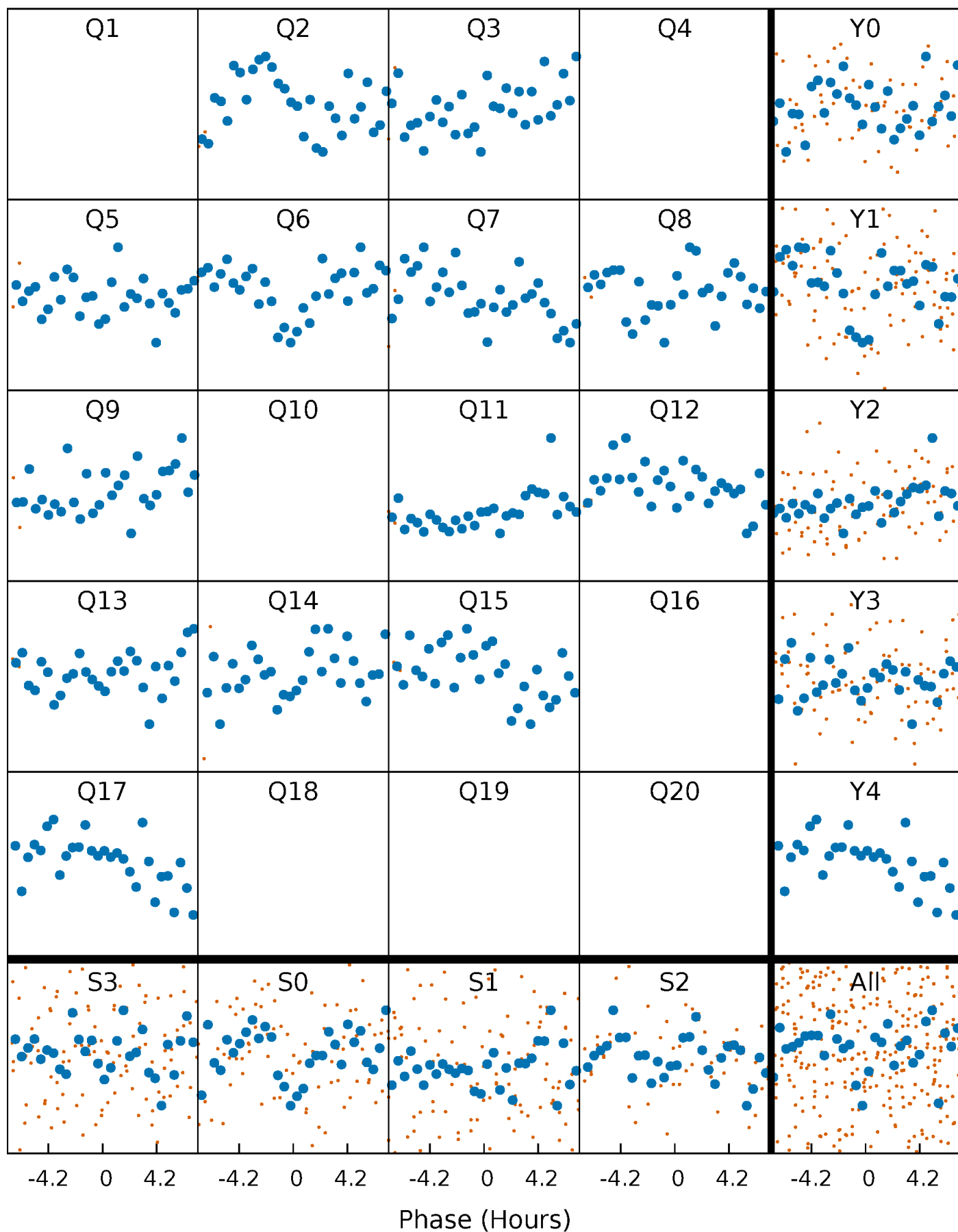
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

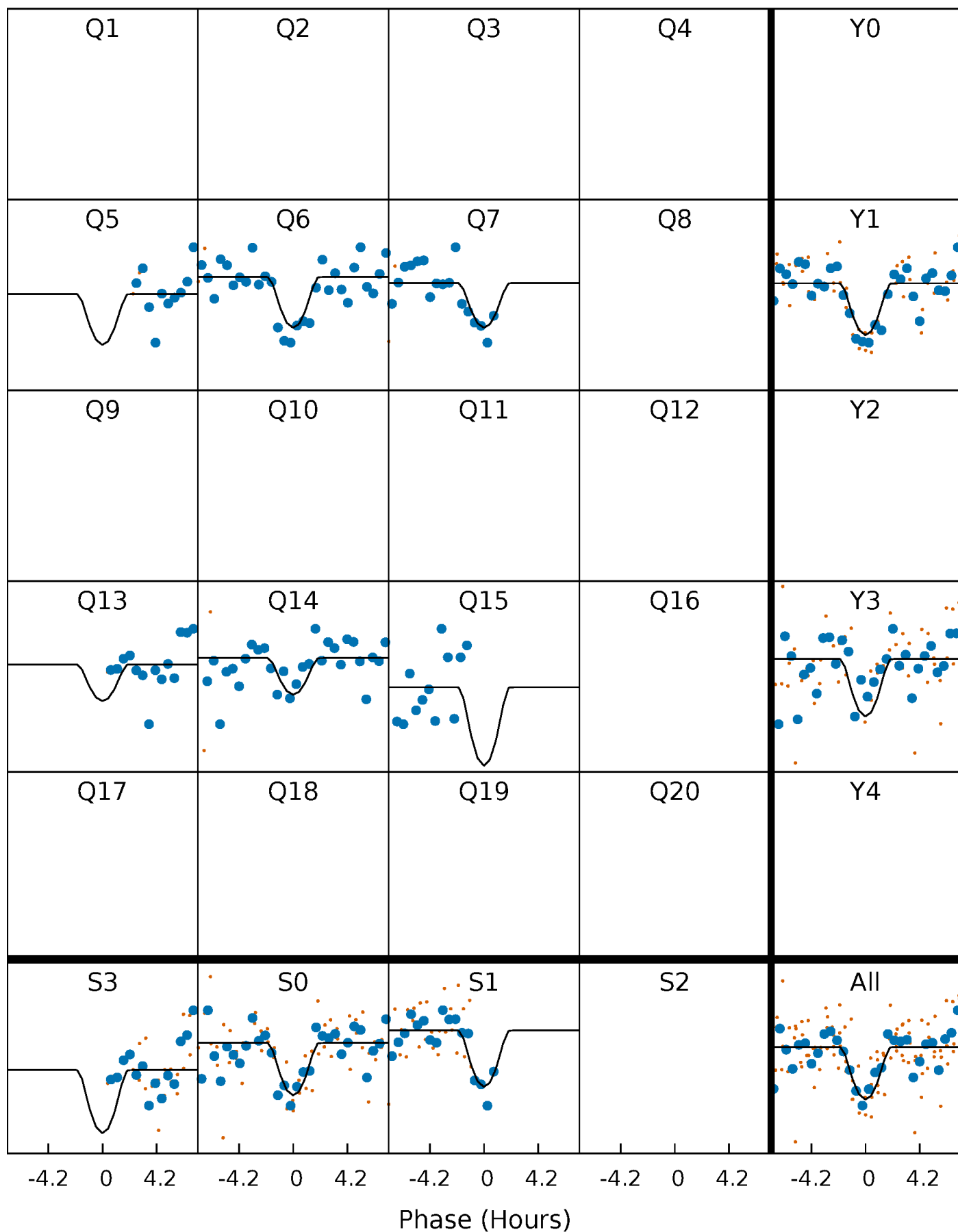
TCE 011410915-05 P=112.875535 Days  $T_0=221.399883$  (BKJD)





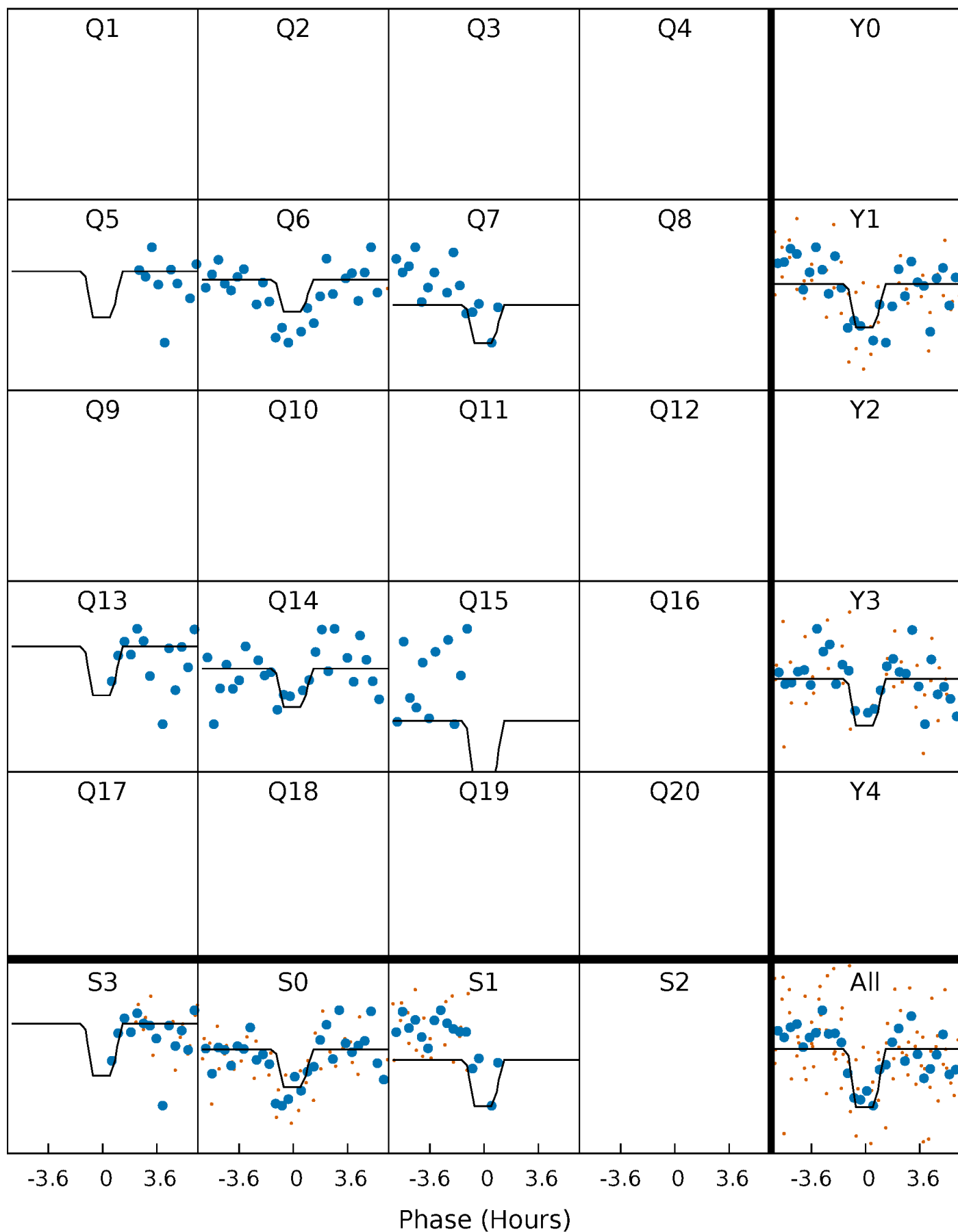
# DV Quarter-Phased Transit Curves

TCE 011410915-05     $P=112.875535$  Days     $T_0=221.399883$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

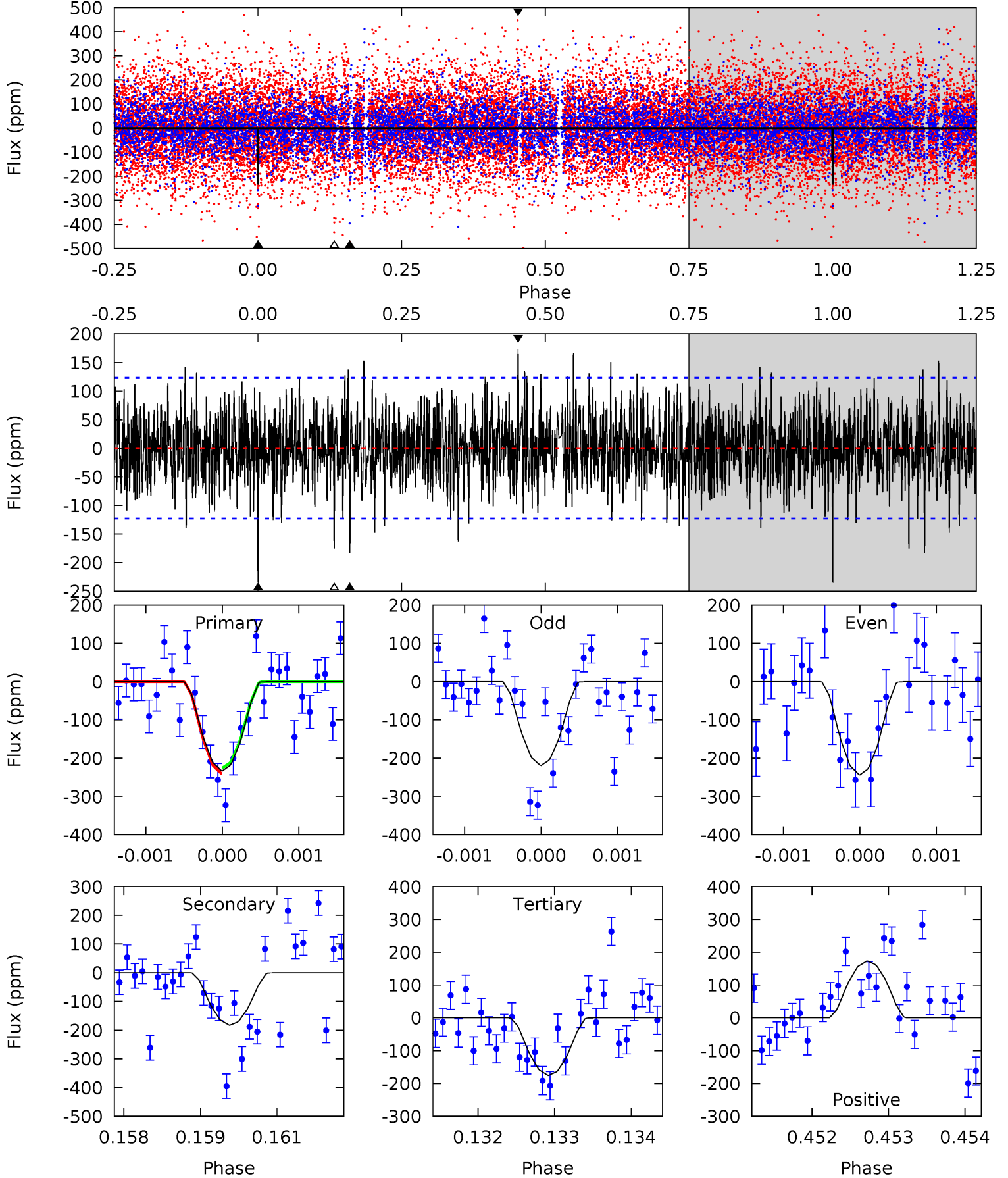
TCE 011410915-05     $P=112.874550$  Days     $T_0=221.408389$  (BKJD)



# DV Model-Shift Uniqueness Test

011410915-05, P = 112.875535 Days, E = 108.524348 Days

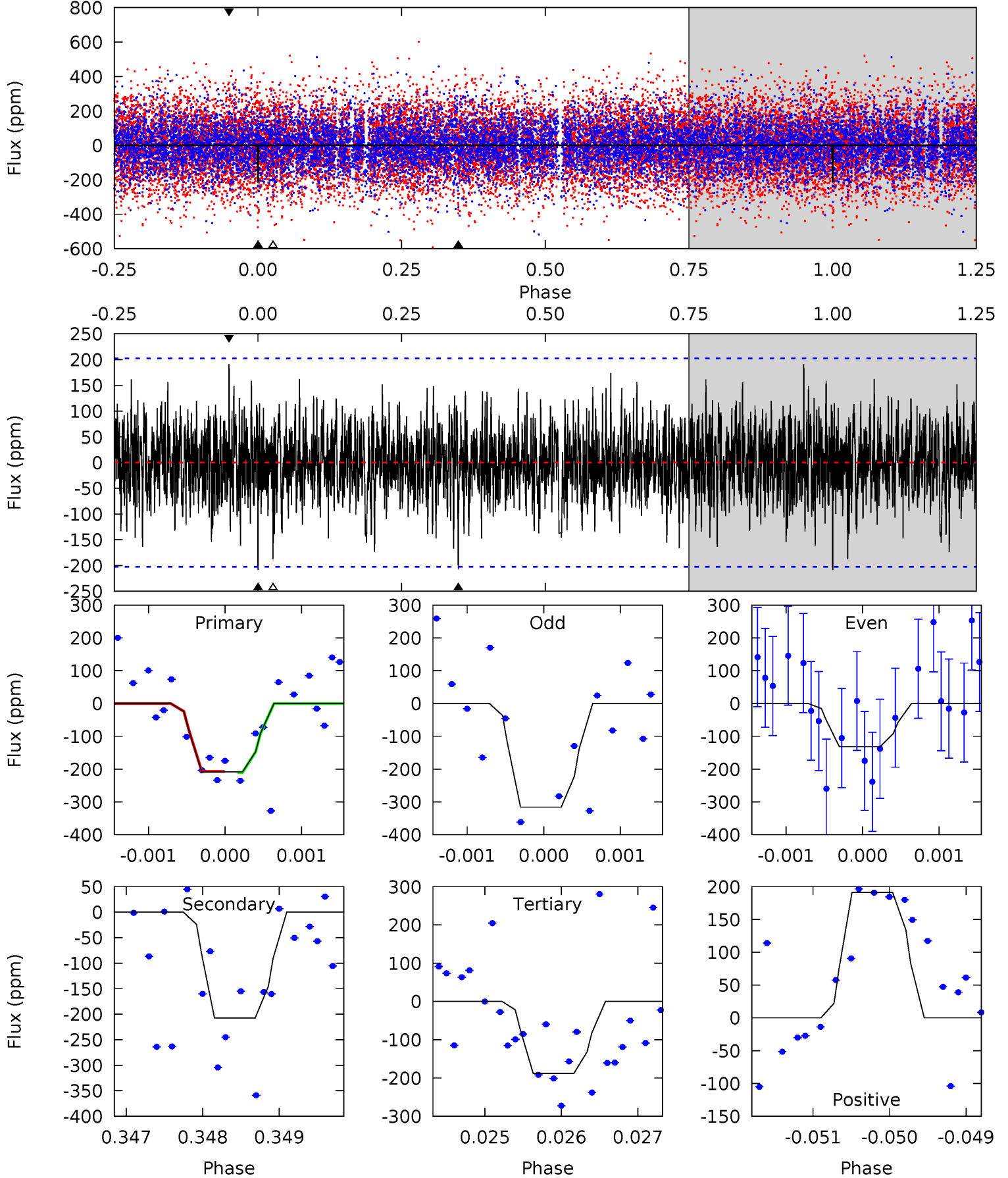
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	7.98	7.67	7.57	5.38	3.18	2.05	2.53	2.63	0.31	0.41	0.55	0.57	0.43	0.32



# Alt Model-Shift Uniqueness Test

011410915-05, P = 112.874550 Days, E = 108.533839 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
5.67	5.63	5.10	5.19	5.50	3.36	1.42	0.56	0.47	0.53	0.44	2.51	1.25	0.48	0.04



### Stellar Parameters For KIC 011410915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6903^{+72}_{-92}$	$4.151^{+0.066}_{-0.114}$	$0.200^{+0.100}_{-0.150}$	$1.720^{+0.294}_{-0.171}$	$1.528^{+0.119}_{-0.097}$	$0.423^{+0.128}_{-0.148}$
	+1%/-1%	+2%/-3%	+50%/-75%	+17%/-10%	+8%/-6%	+30%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011410915-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-182 \pm 23$	$9.80^{+9.30}_{-6.39}$	$770^{+33}_{-20}$	$3864^{+2088}_{-735}$	$283^{+2100}_{-209}$
Alt.	$-207 \pm 37$	$9.73^{+8.70}_{-6.91}$	$773^{+34}_{-24}$	$4009^{+2610}_{-791}$	$341^{+3396}_{-250}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

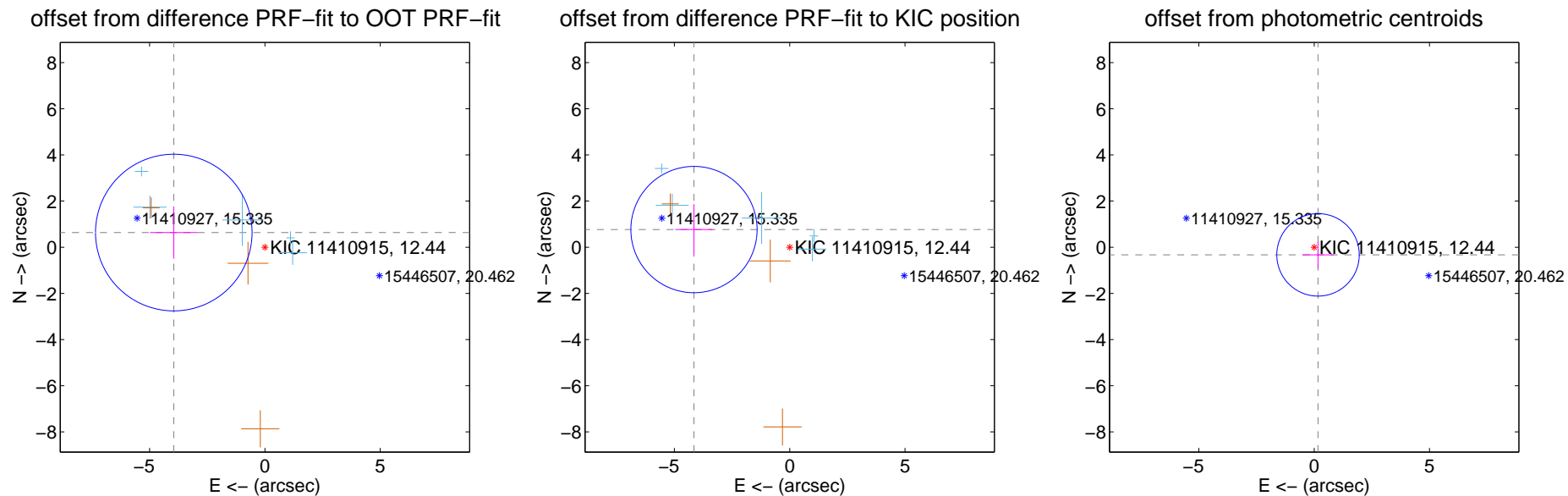
## DV Centroid Data

Supplemental centroid analysis for 011410915-05. Kepler magnitude: 12.44. Transit SNR 8.00

There are 5 quarters with good PRF difference image offsets

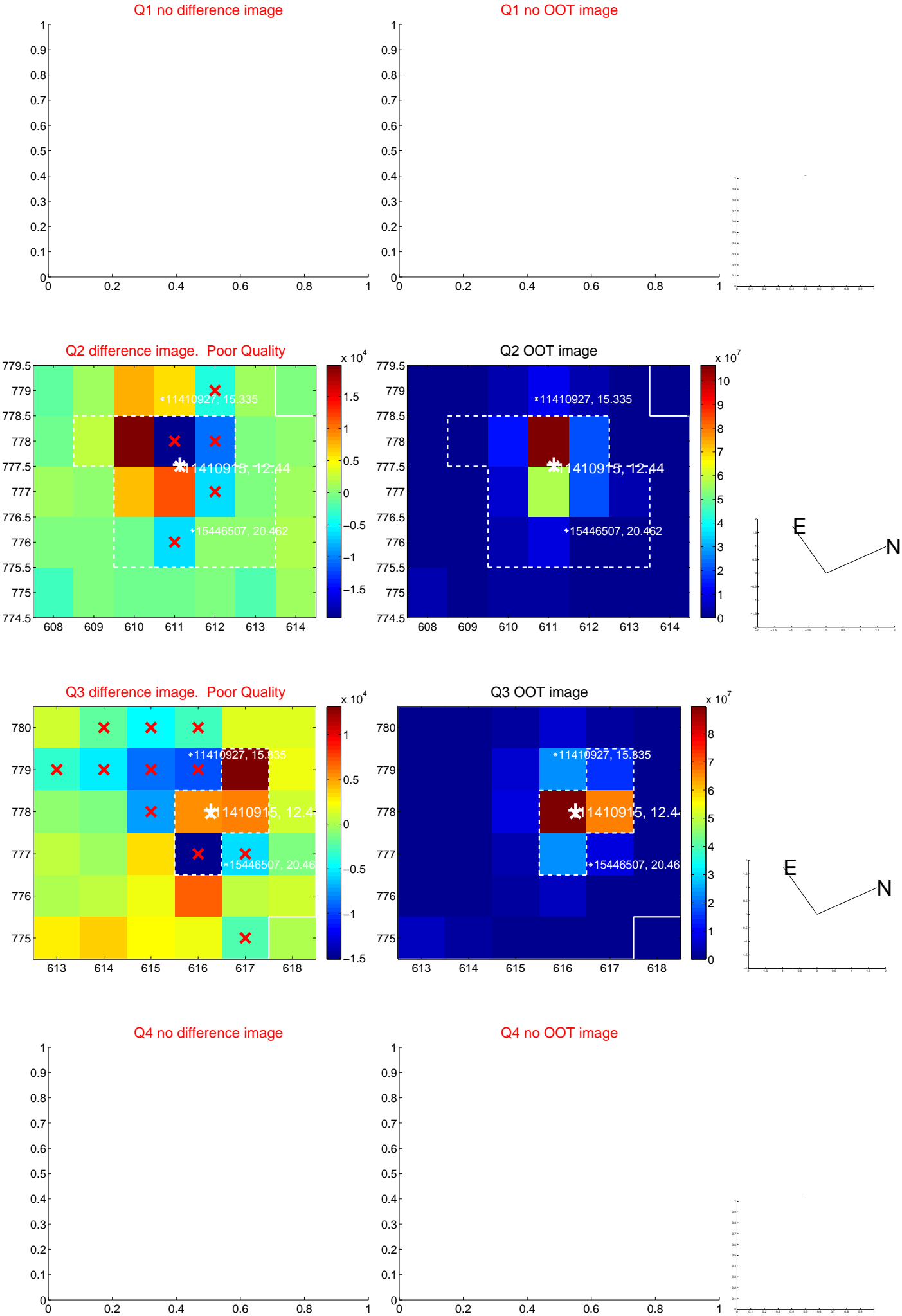
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.003 \pm 1.132$	3.54	$3.952 \pm 1.034$	$0.636 \pm 1.135$
PRF-fit source offset from KIC position	$4.222 \pm 0.912$	4.63	$4.152 \pm 0.813$	$0.766 \pm 1.100$
photometric centroid source offset	$0.37 \pm 0.60$	0.62	$-0.17 \pm 0.68$	$-0.33 \pm 0.57$



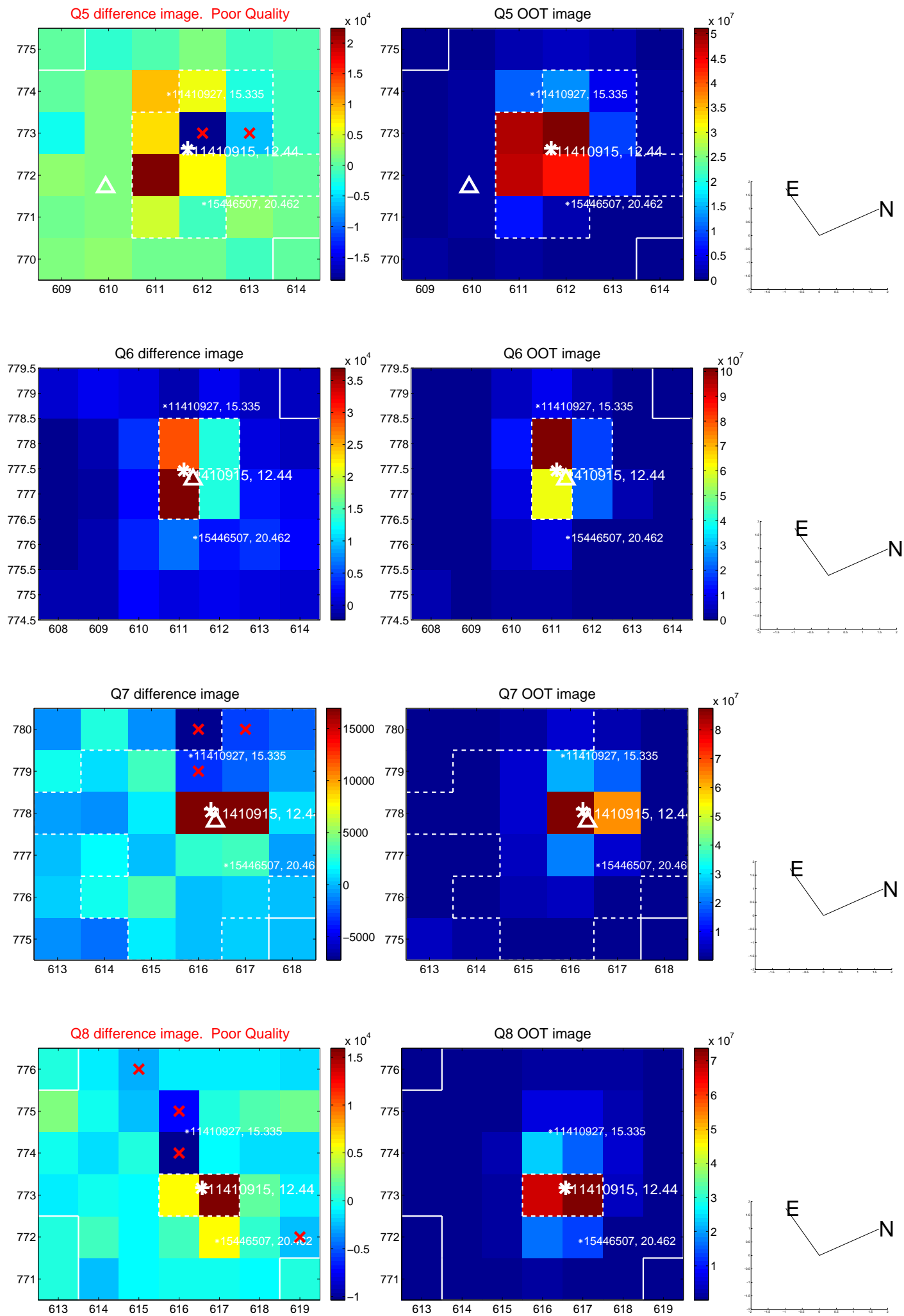
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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.

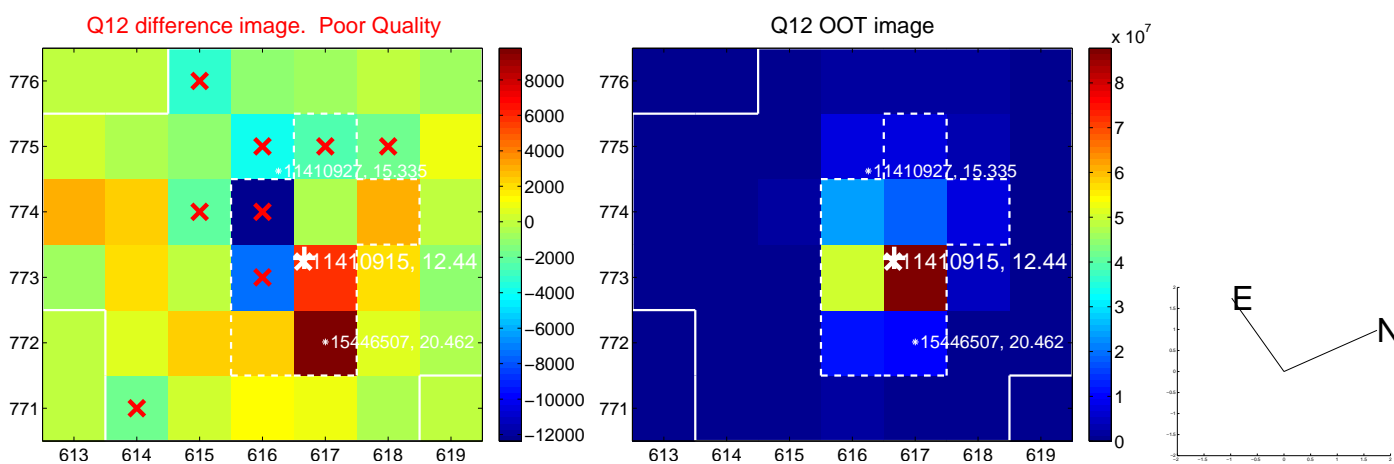
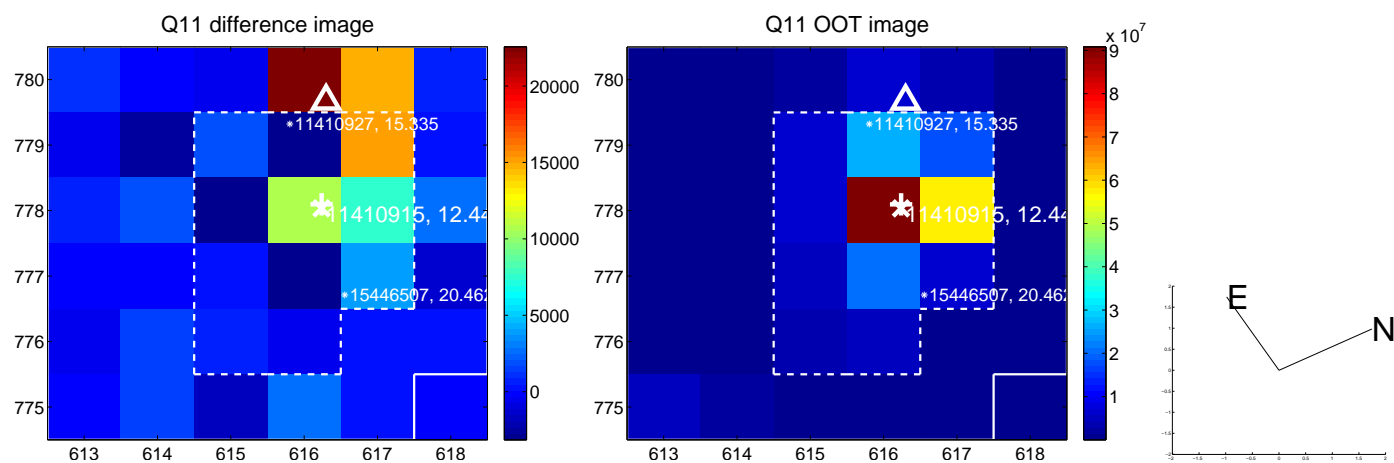
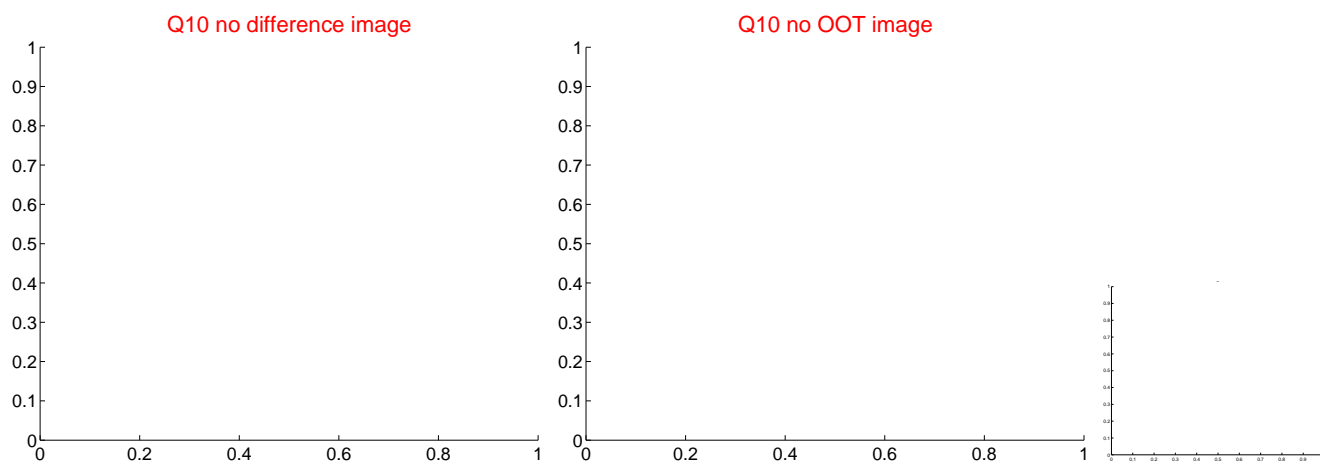
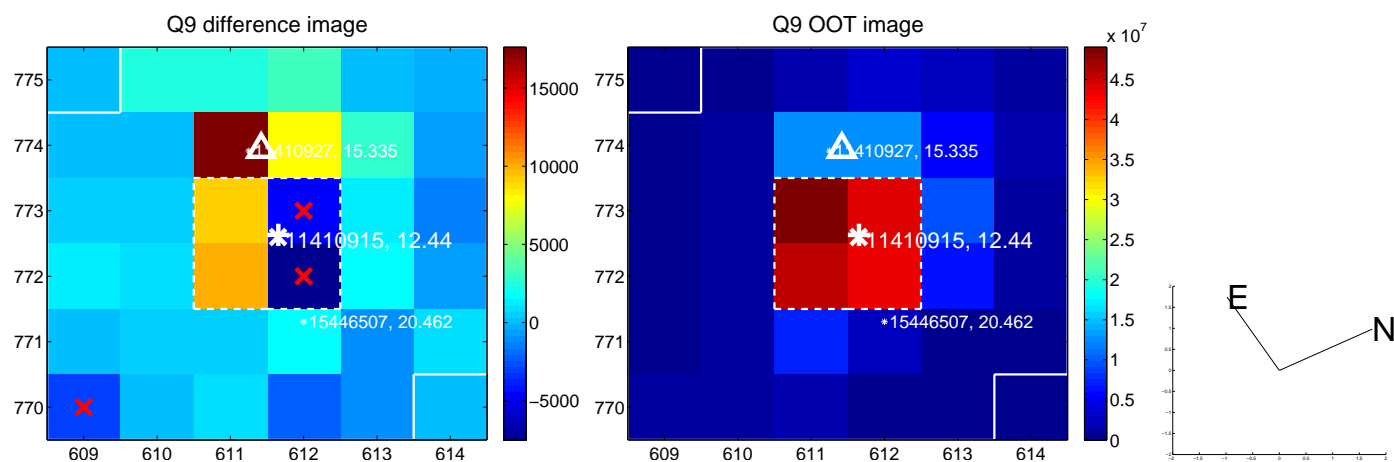




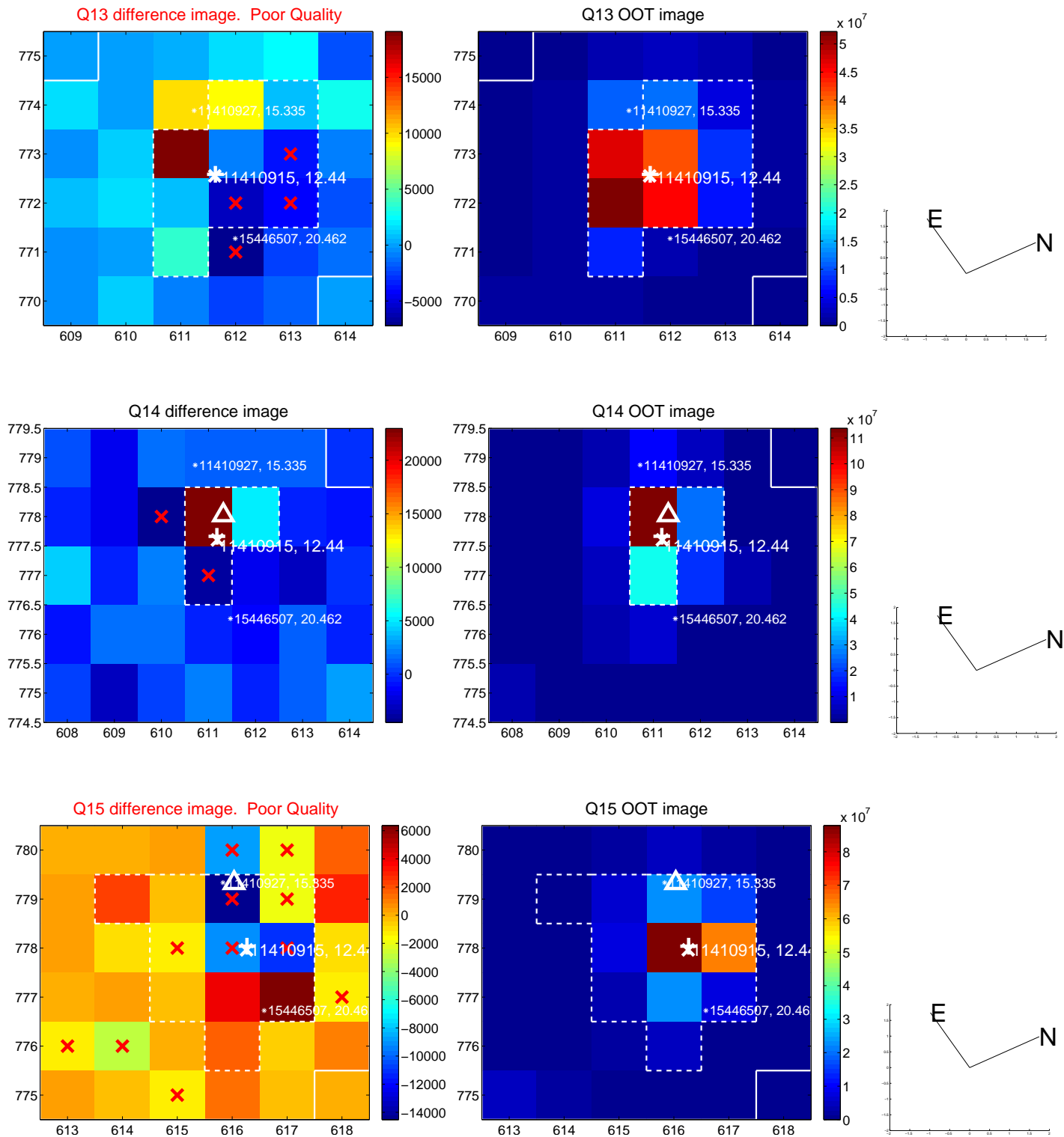
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



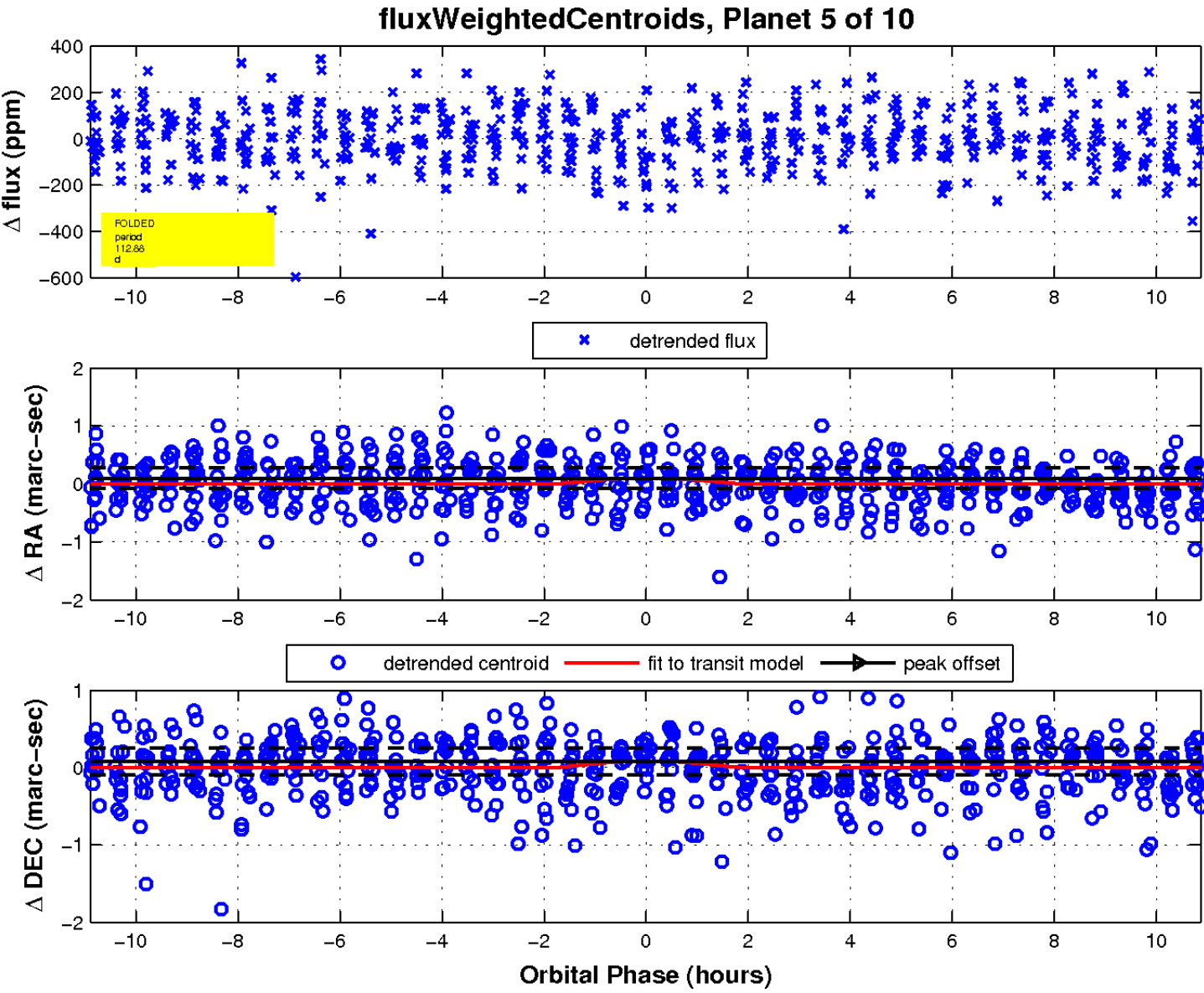
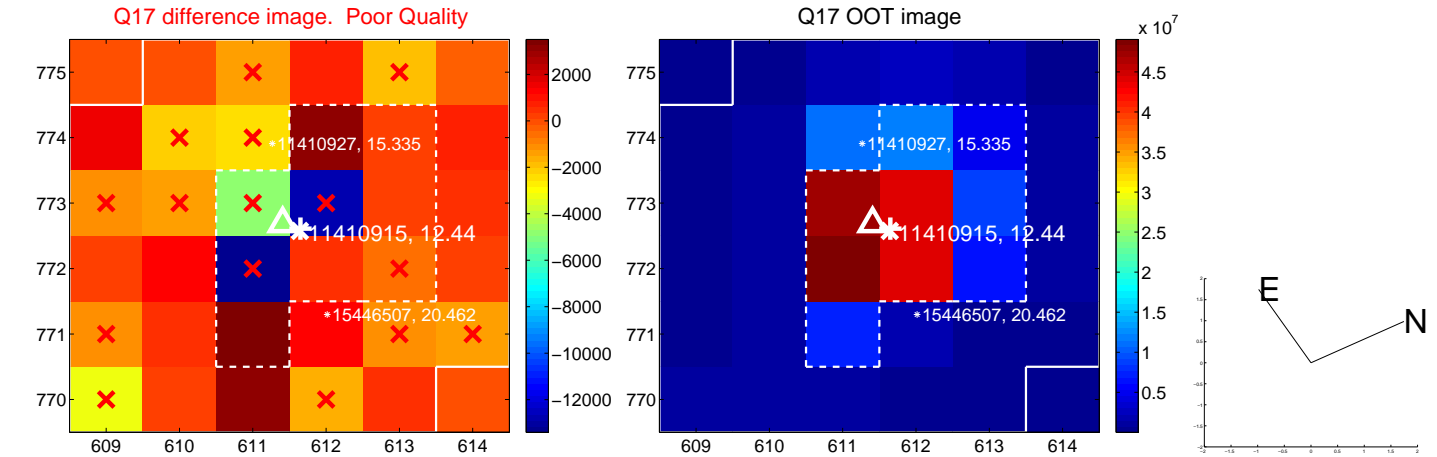
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



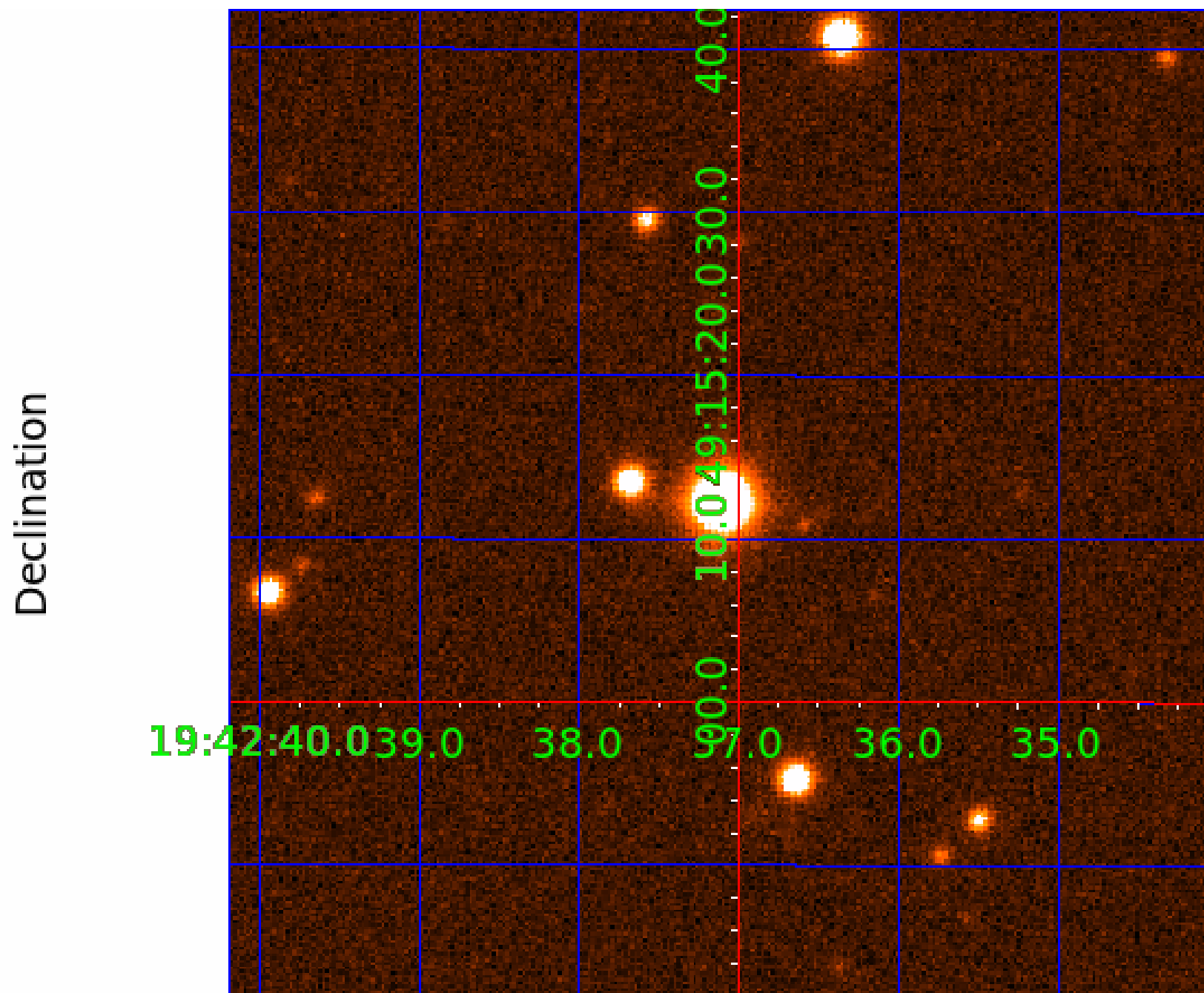
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



## KIC 011410915

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011410915-01	OBS	No	2.743221	133.516224	11.0	15.637	8.0	6.3	1.72	6903	0.59	3083.55
011410915-02	OBS	No	121.491572	229.369437	128.8	24.113	12.0	7.8	1.72	6903	2.29	19.68
011410915-03	OBS	No	55.245253	140.692328	189.1	3.312	8.7	9.2	1.72	6903	2.73	56.28
011410915-04	OBS	No	120.170150	159.905711	235.8	3.124	8.5	8.7	1.72	6903	2.91	19.97
011410915-05	OBS	No	112.875535	221.399883	248.9	3.698	8.4	8.0	1.72	6903	4.41	21.71
011410915-06	OBS	No	97.310505	219.952147	299.1	1.968	8.1	9.3	1.72	6903	3.52	26.46
011410915-07	OBS	No	153.455328	240.155198	201.5	3.233	8.2	8.4	1.72	6903	2.80	14.41
011410915-08	OBS	No	89.998936	193.645171	212.2	2.773	7.9	8.4	1.72	6903	2.88	29.36
011410915-09	OBS	No	557.200061	337.590460	129.3	27.663	7.8	6.9	1.72	6903	2.25	2.58
011410915-10	OBS	No	200.409436	326.508363	211.5	2.971	8.0	8.1	1.72	6903	2.81	10.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011410915-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
011410915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011410915-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011410915-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011410915-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

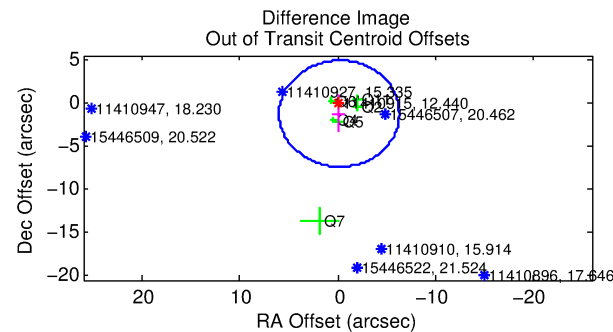
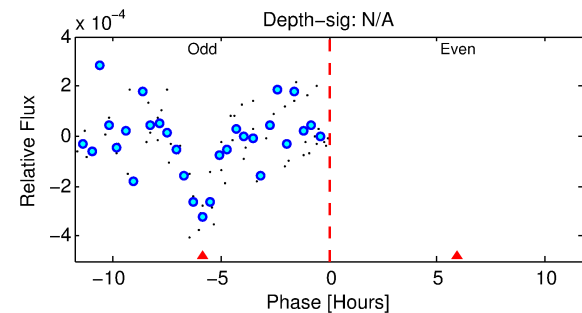
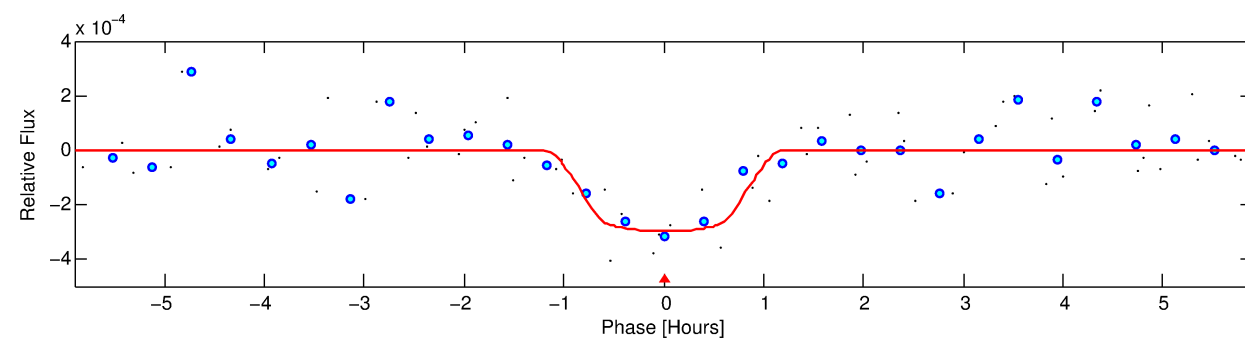
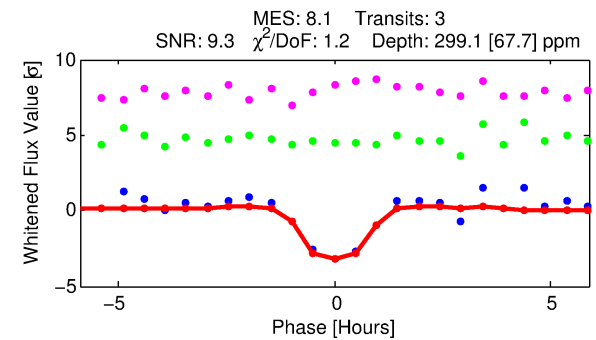
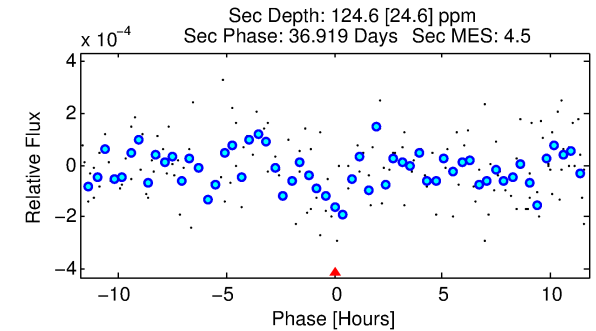
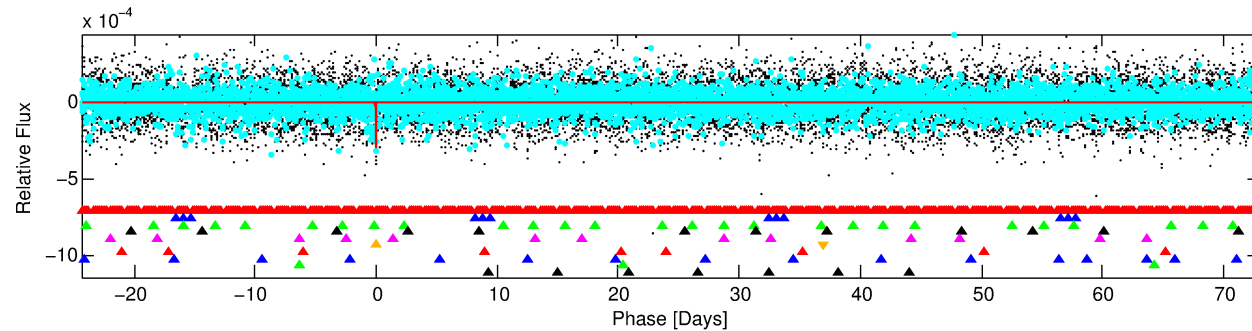
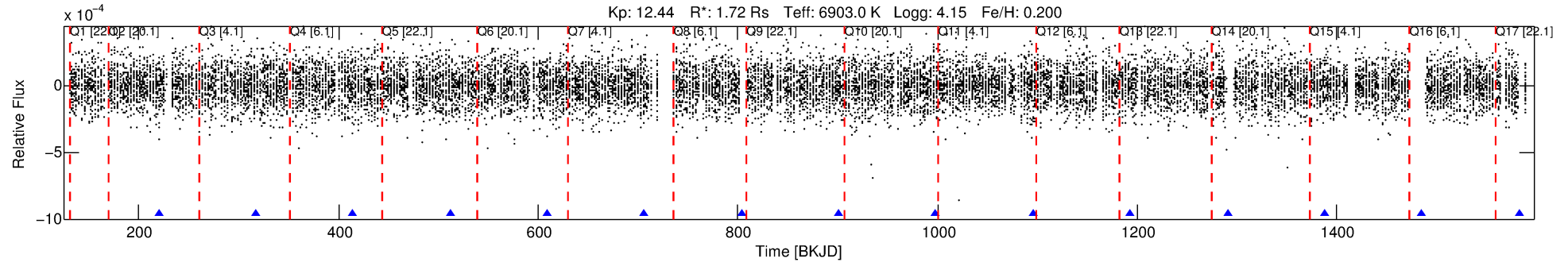
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011410915-06

No Significant Match Found

# DV One-Page Summary

KIC: 11410915 Candidate: 6 of 10 Period: 97.311 d



## DV Fit Results:

Period = 97.31051 [0.00246] d  
Epoch = 219.9521 [0.0073] BKJD  
Rp/R\* = 0.0187 [0.0228]  
a/R\* = 168.86 [1189.37]  
b = 0.92 [1.27]  
Seff = 26.46 [5.70]  
Teq = 578 [31] K  
Rp = 3.51 [4.32] Re  
a = 0.4770 [0.0685] AU  
Ag = 1262.83 [3094.92] [0.41σ]  
Teffp = 5330 [3255] K [1.46σ]

## DV Diagnostic Results:

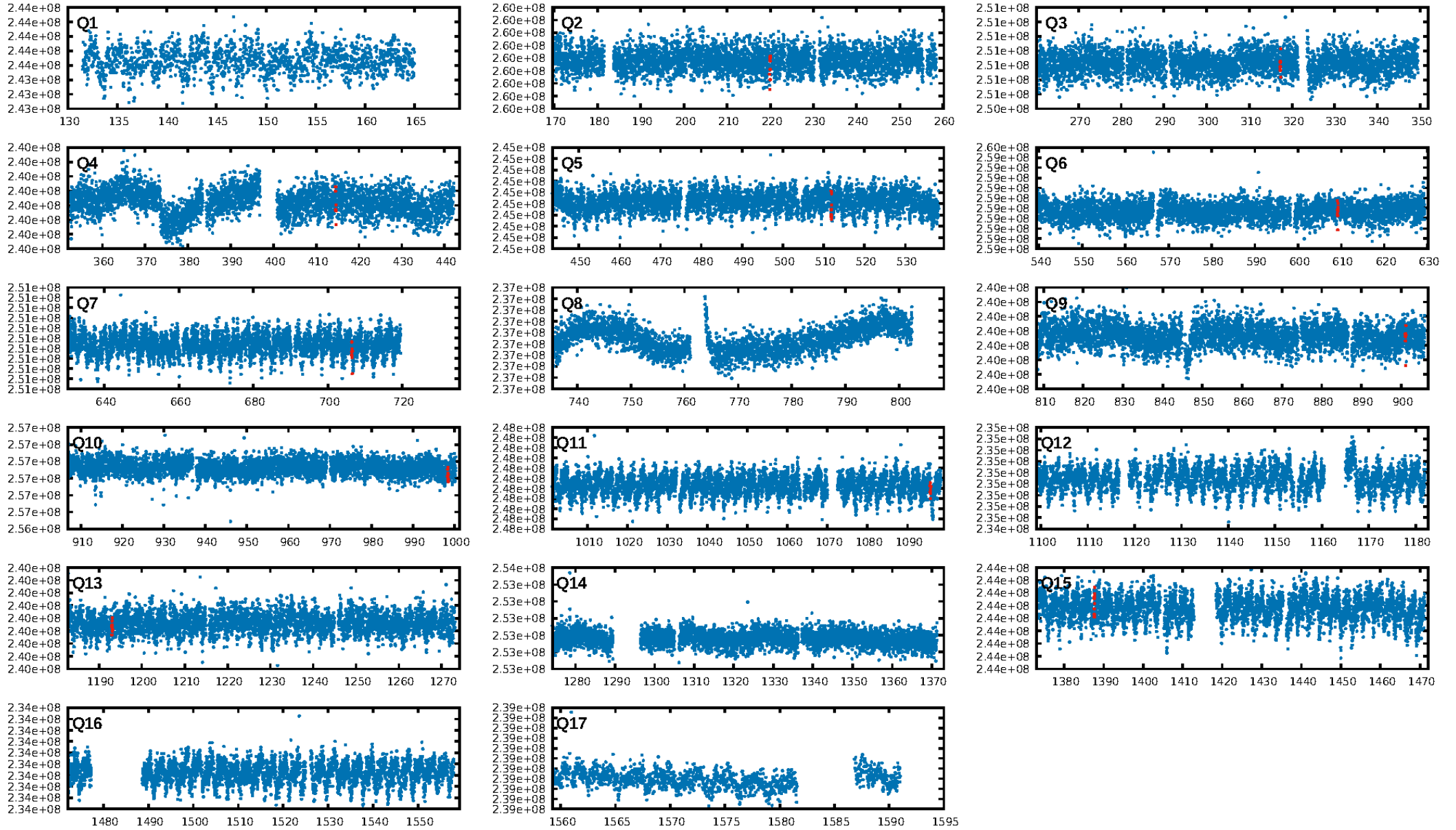
ShortPeriod-sig: 100.0% [51.60σ]  
LongPeriod-sig: 100.0% [89.17σ]  
ModelChiSquare2-sig: 51.2%  
ModelChiSquareGof-sig: 99.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -0.5487  
Centroid-sig: 22.7%  
Centroid-so: 0.891 arcsec [1.48σ]  
OotOffset-rm: 1.254 arcsec [0.61σ]  
OotOffset-st: 2/2/1/1 [6]  
KicOffset-rm: 1.159 arcsec [0.62σ]  
KicOffset-st: 2/2/1/1 [6]  
DiffImageQuality-fgm: 0.83 [5/6]  
DiffImageOverlap-fno: 0.55 [6/11]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:48:54 Z

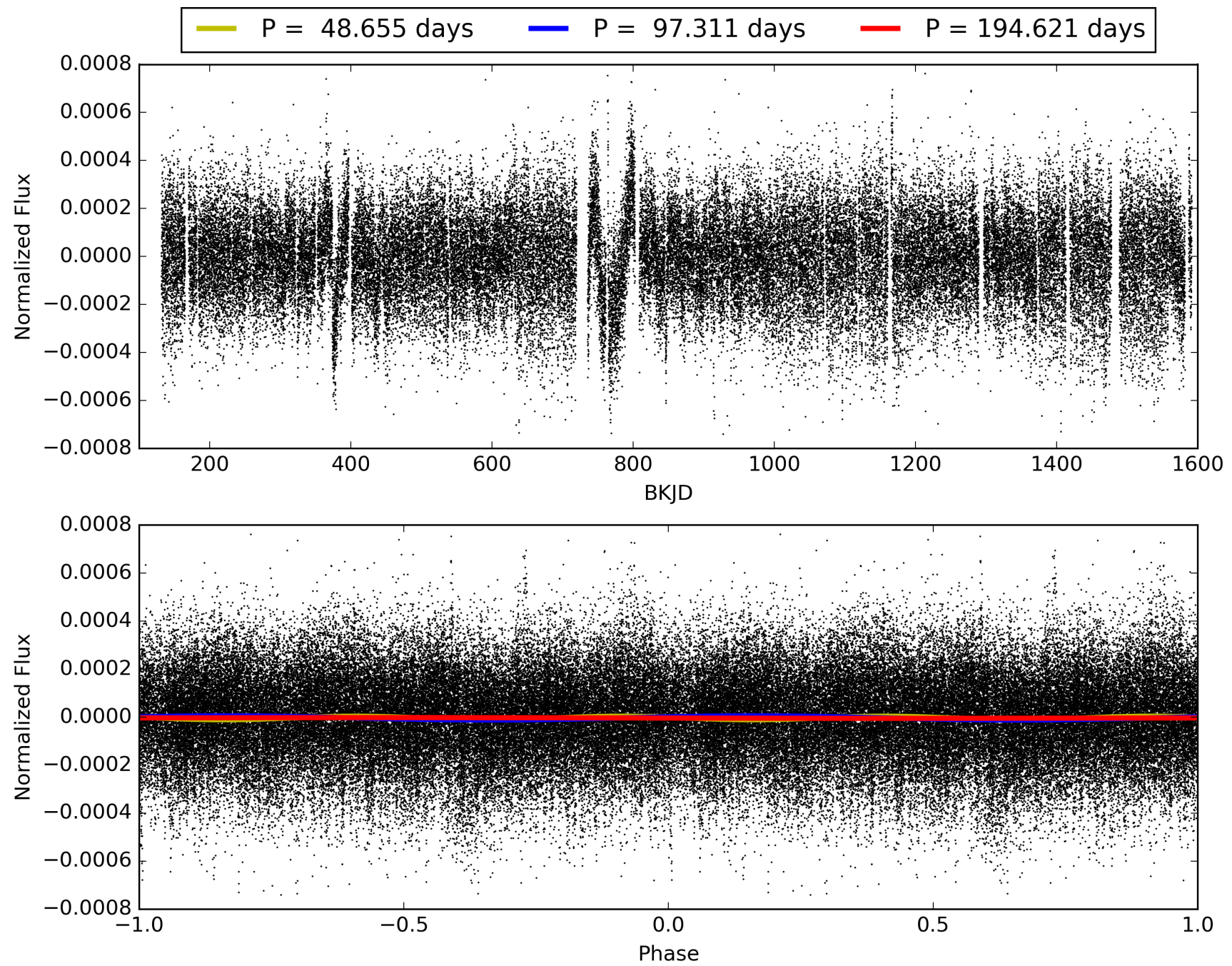
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 011410915-06, PDC Light Curves

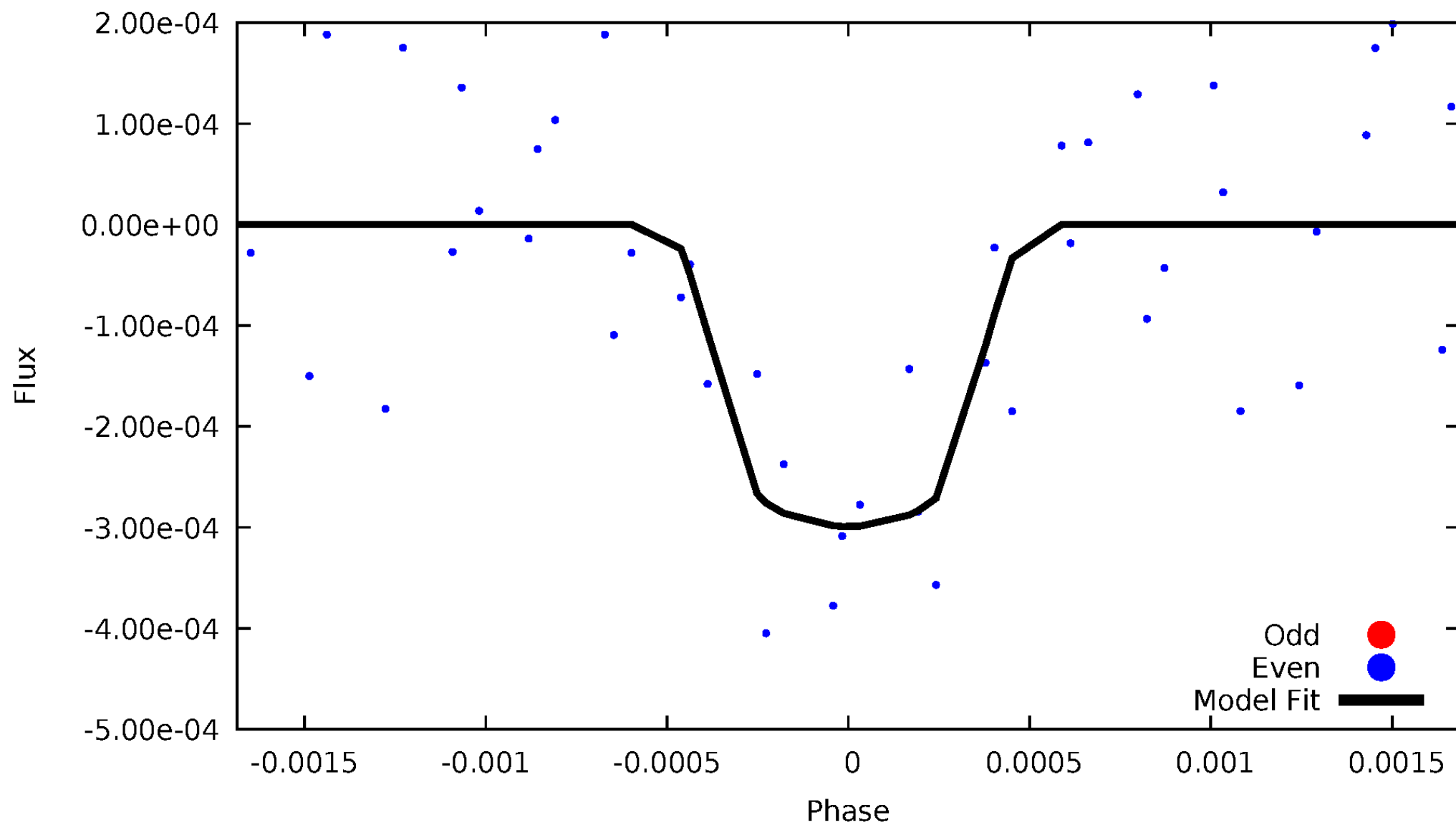


# TCE 011410915-06



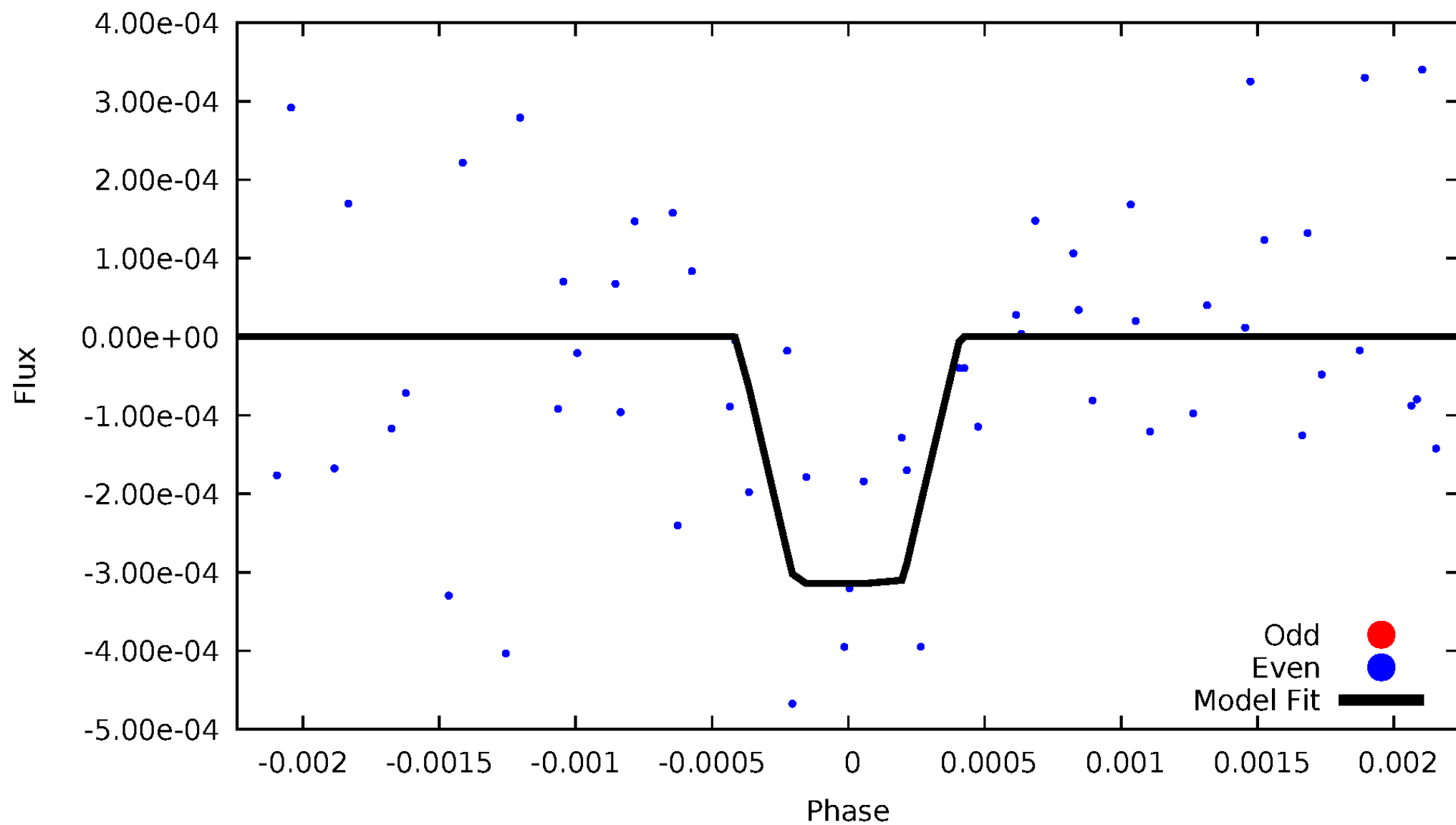
# DV Odd/Even

TCE 011410915-06



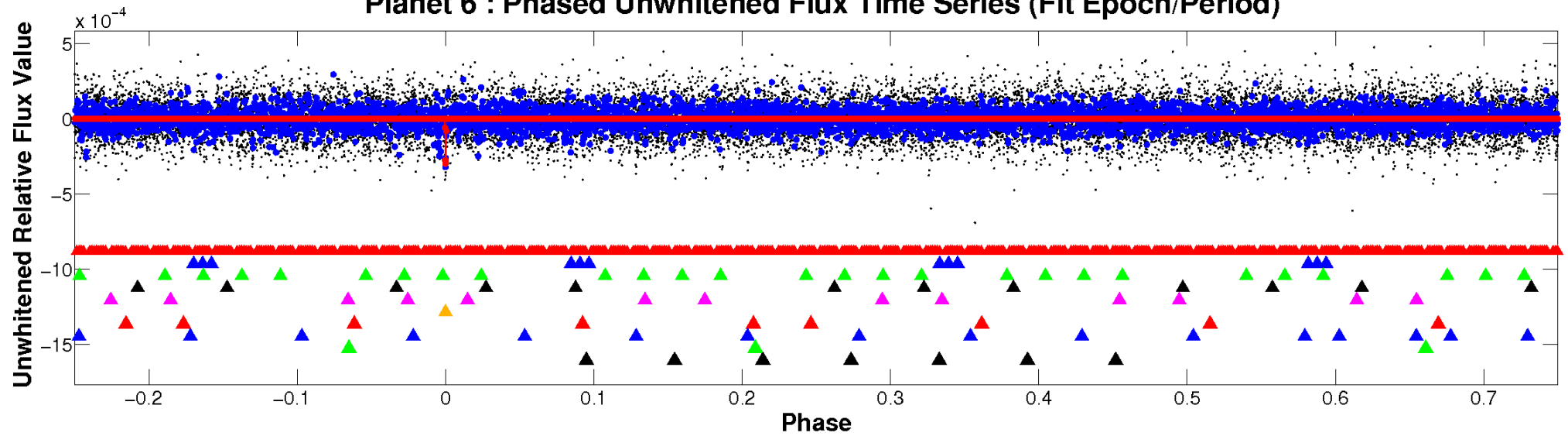
# ALT Odd/Even

TCE 011410915-06

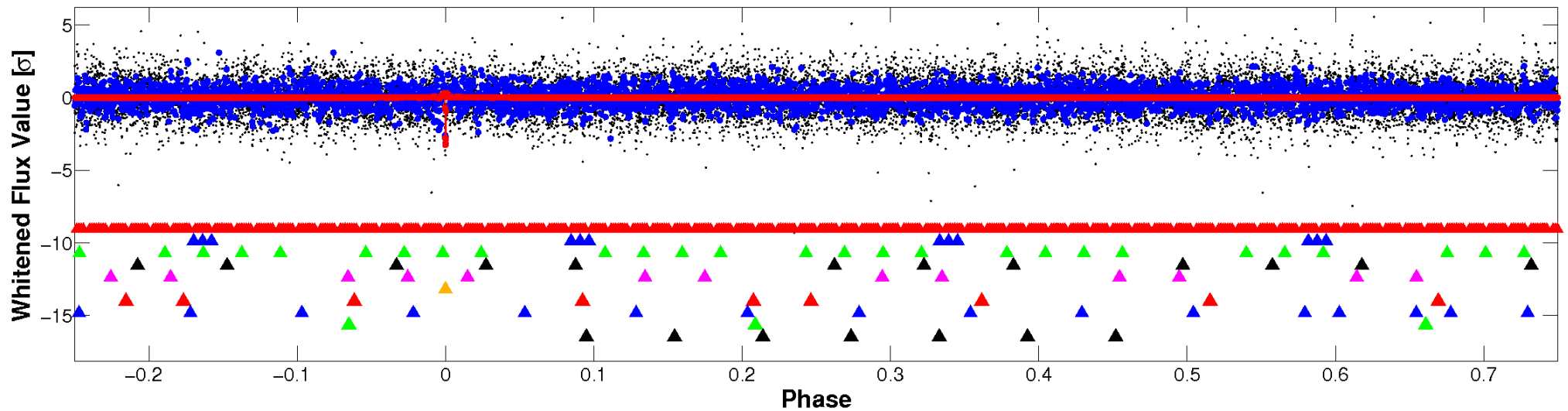


# Non-Whitened Vs. Whitened Light Curve

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

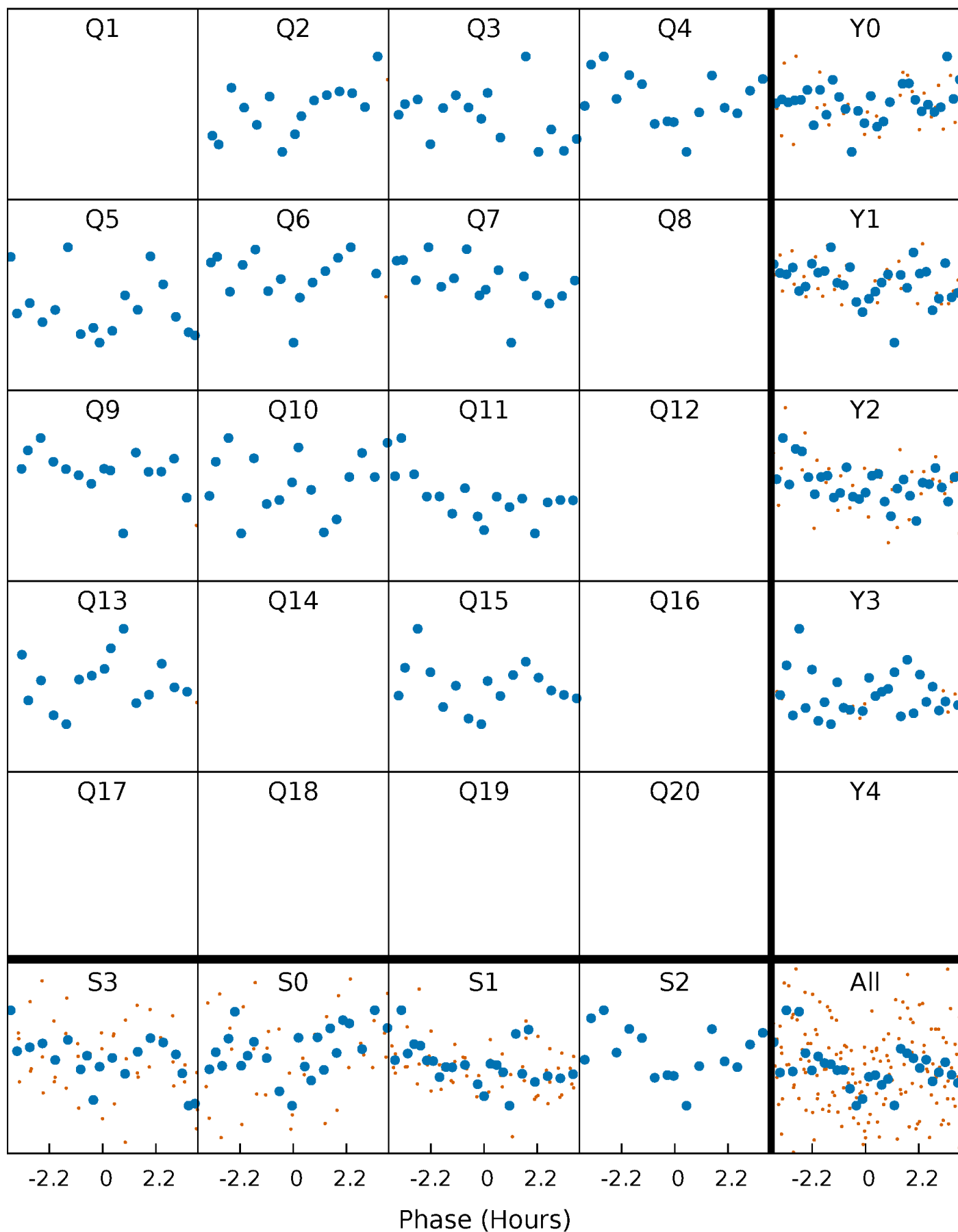


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



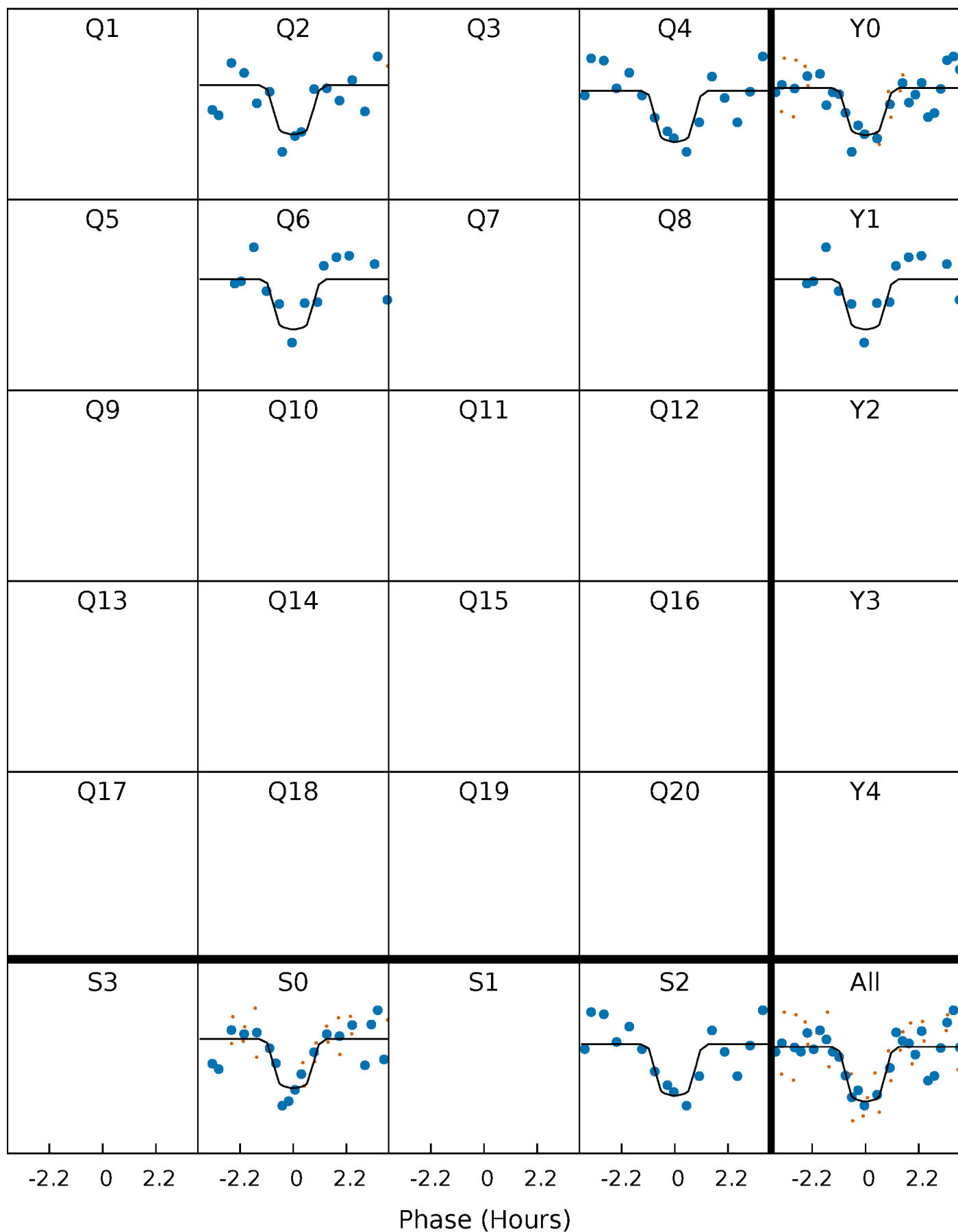
# PDC Quarter-Phased Transit Curves

TCE 011410915-06 P= 97.310505 Days  $T_0=219.952147$  (BKJD)



# DV Quarter-Phased Transit Curves

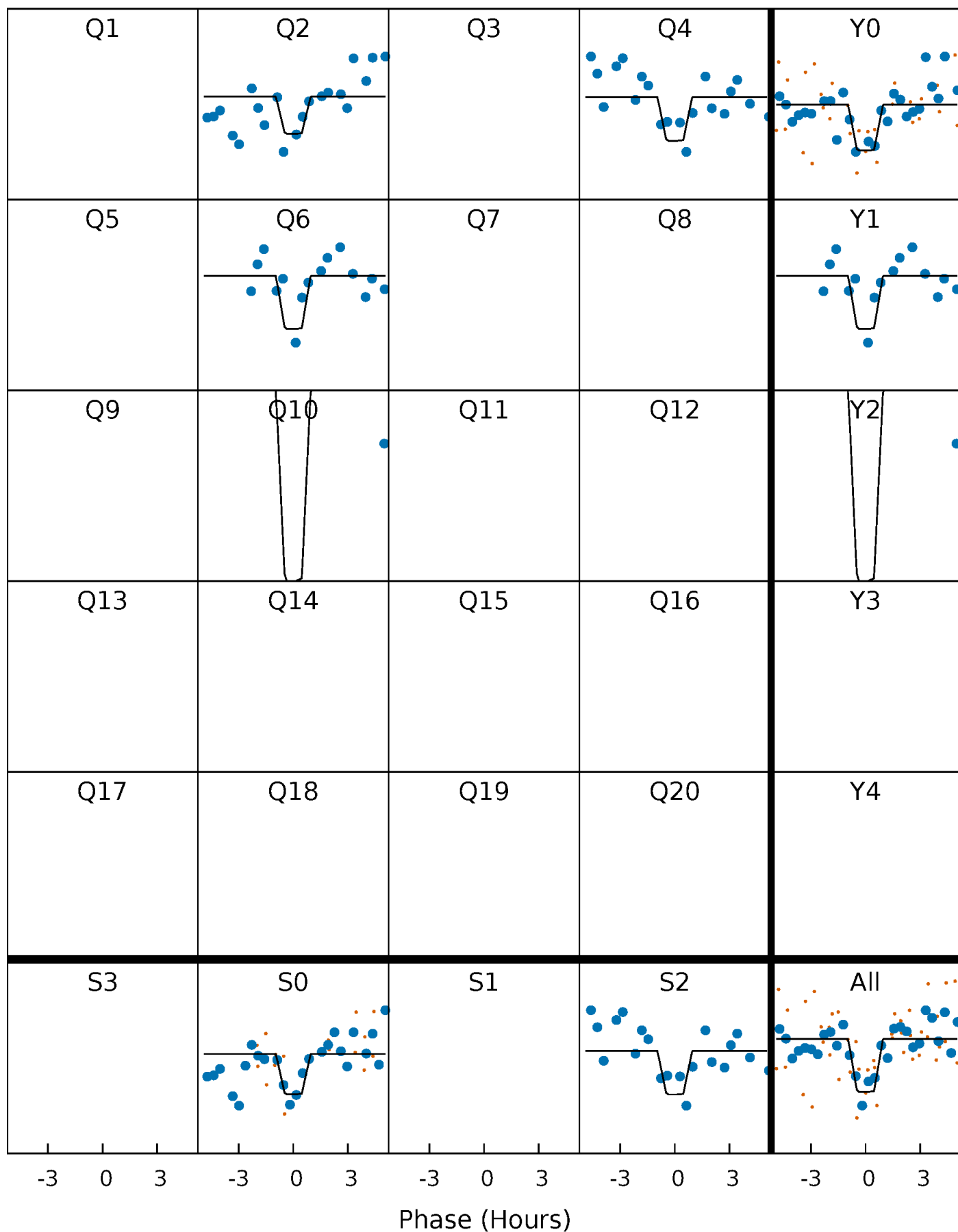
TCE 011410915-06 P= 97.310505 Days  $T_0=219.952147$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

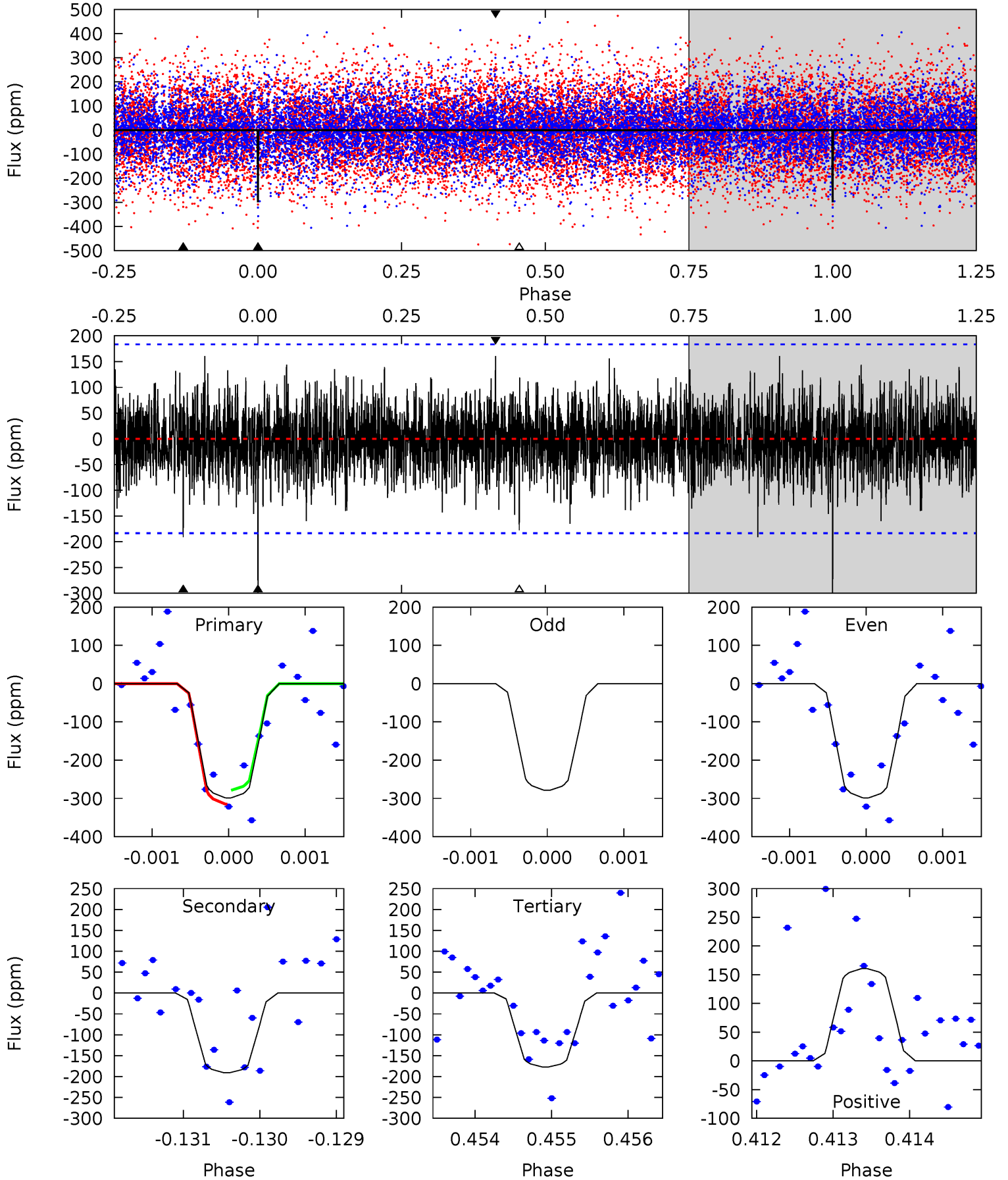
TCE 011410915-06 P= 97.310359 Days  $T_0=219.950076$  (BKJD)



# DV Model-Shift Uniqueness Test

011410915-06, P = 97.310505 Days, E = 122.641642 Days

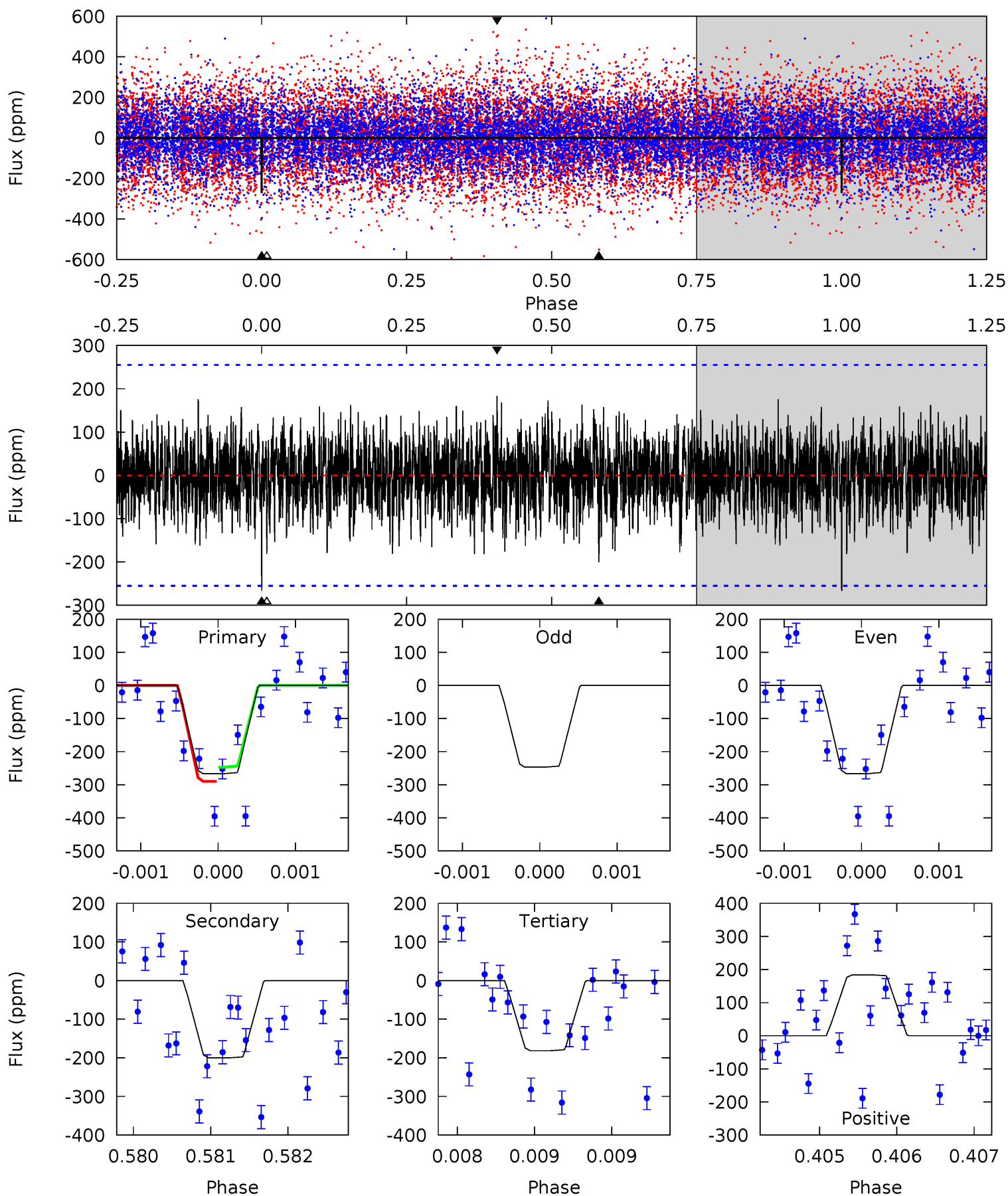
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.92	5.70	5.29	4.80	5.47	3.32	1.38	3.63	4.12	0.41	0.90	0.35	0.95	0.35	0.54



# Alt Model-Shift Uniqueness Test

011410915-06, P = 97.310359 Days, E = 122.639717 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
5.75	4.31	3.91	3.96	5.49	3.36	1.20	1.84	1.79	0.40	0.36	0.26	0.99	0.41	0.45



### Stellar Parameters For KIC 011410915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6903^{+72}_{-92}$	$4.151^{+0.066}_{-0.114}$	$0.200^{+0.100}_{-0.150}$	$1.720^{+0.294}_{-0.171}$	$1.528^{+0.119}_{-0.097}$	$0.423^{+0.128}_{-0.148}$
	+1%/-1%	+2%/-3%	+50%/-75%	+17%/-10%	+8%/-6%	+30%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011410915-06 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-191 \pm 34$	$4.77^{+3.94}_{-3.15}$	$811^{+37}_{-24}$	$5169^{+4089}_{-1126}$	$1048^{+7488}_{-743}$
Alt.	$-200 \pm 46$	$4.87^{+3.68}_{-3.21}$	$809^{+31}_{-23}$	$5180^{+4093}_{-1062}$	$1072^{+7913}_{-748}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

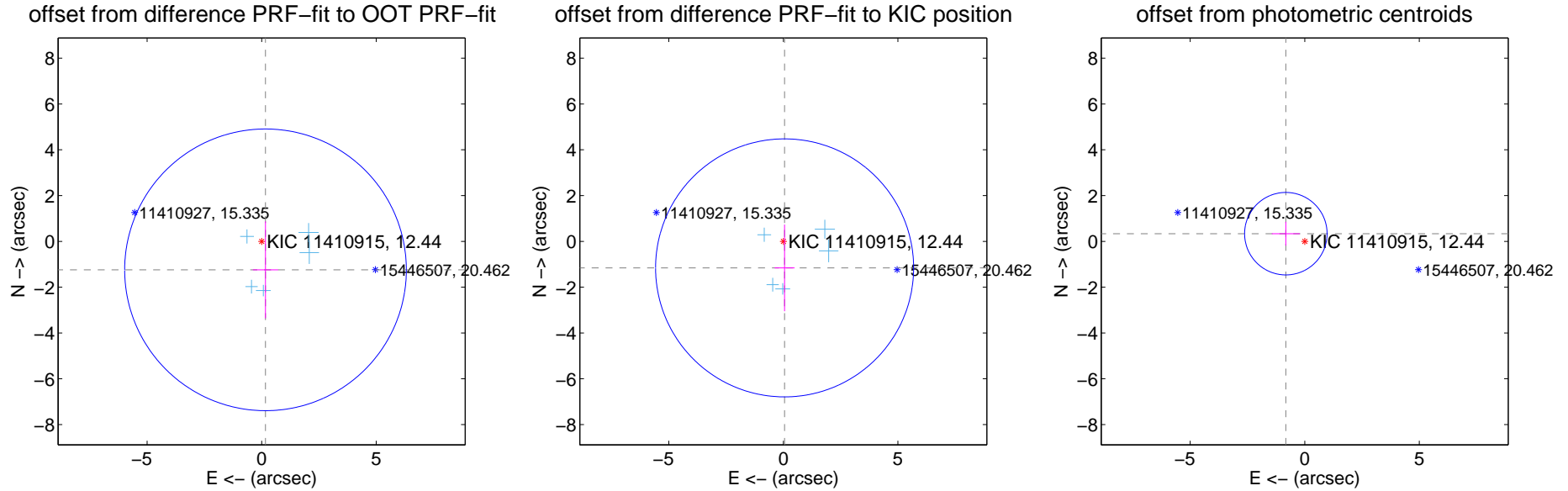
## DV Centroid Data

Supplemental centroid analysis for 011410915-06. Kepler magnitude: 12.44. Transit SNR 9.28

There are 5 quarters with good PRF difference image offsets

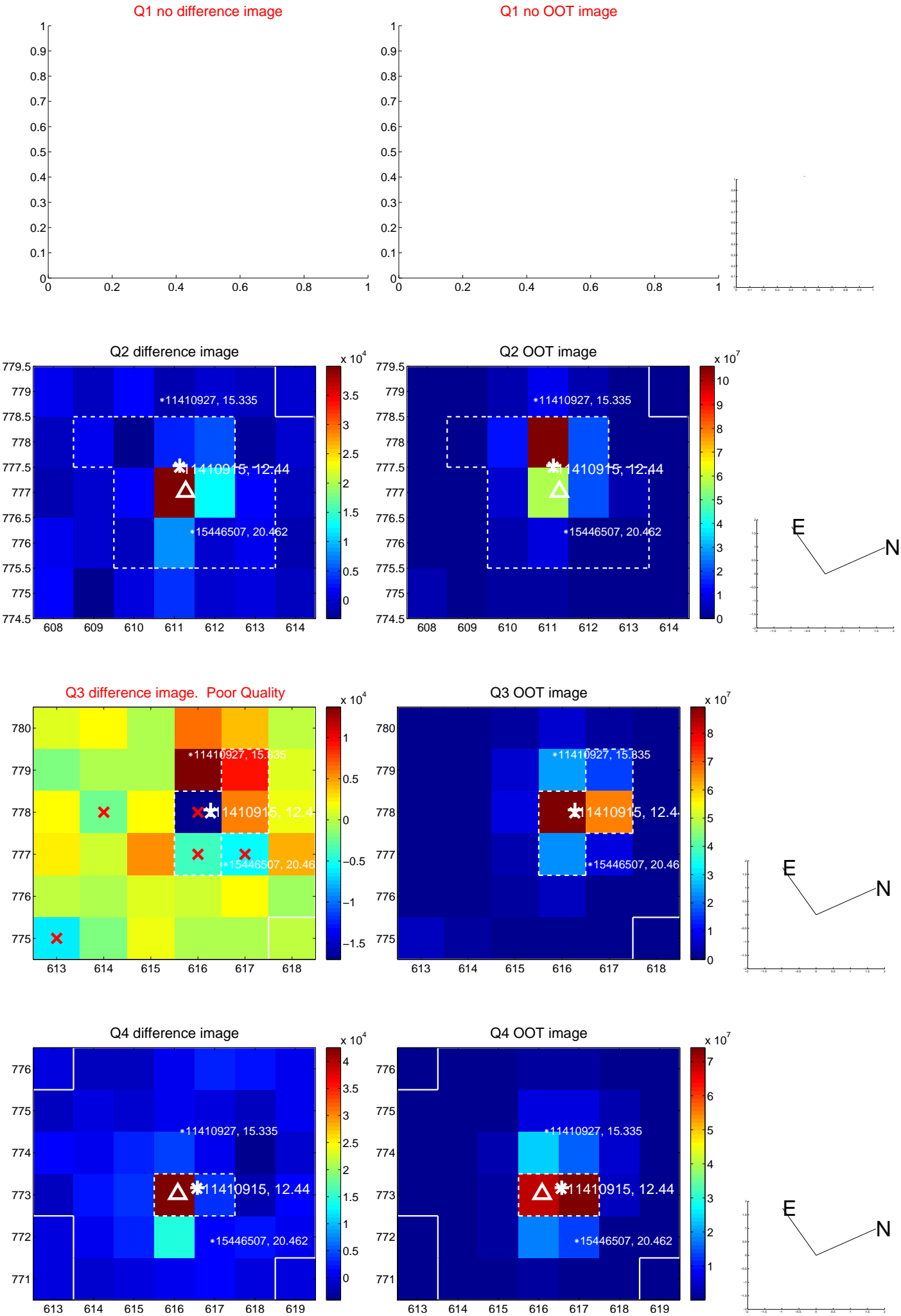
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.254 \pm 2.050$	0.61	$-0.168 \pm 0.554$	$-1.243 \pm 2.117$
PRF-fit source offset from KIC position	$1.159 \pm 1.878$	0.62	$-0.054 \pm 0.433$	$-1.157 \pm 1.892$
photometric centroid source offset	$0.89 \pm 0.60$	1.48	$0.83 \pm 0.61$	$0.34 \pm 0.52$

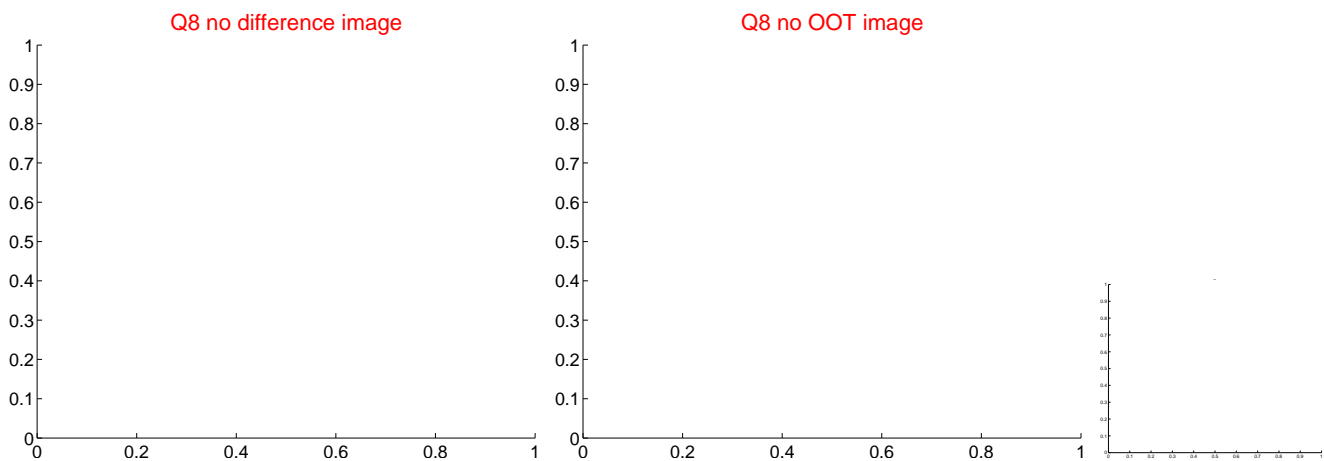
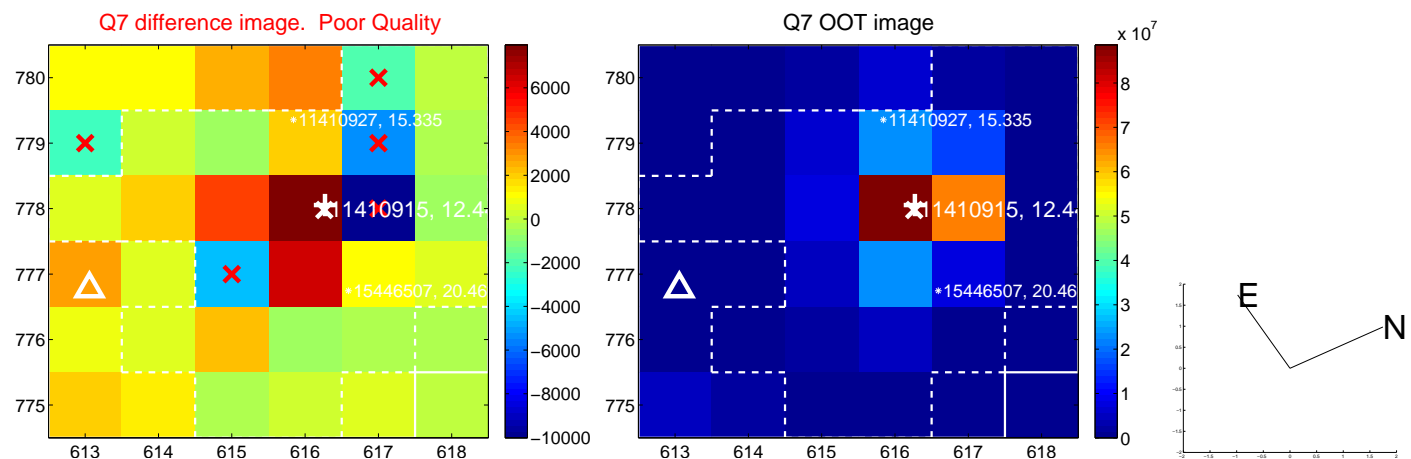
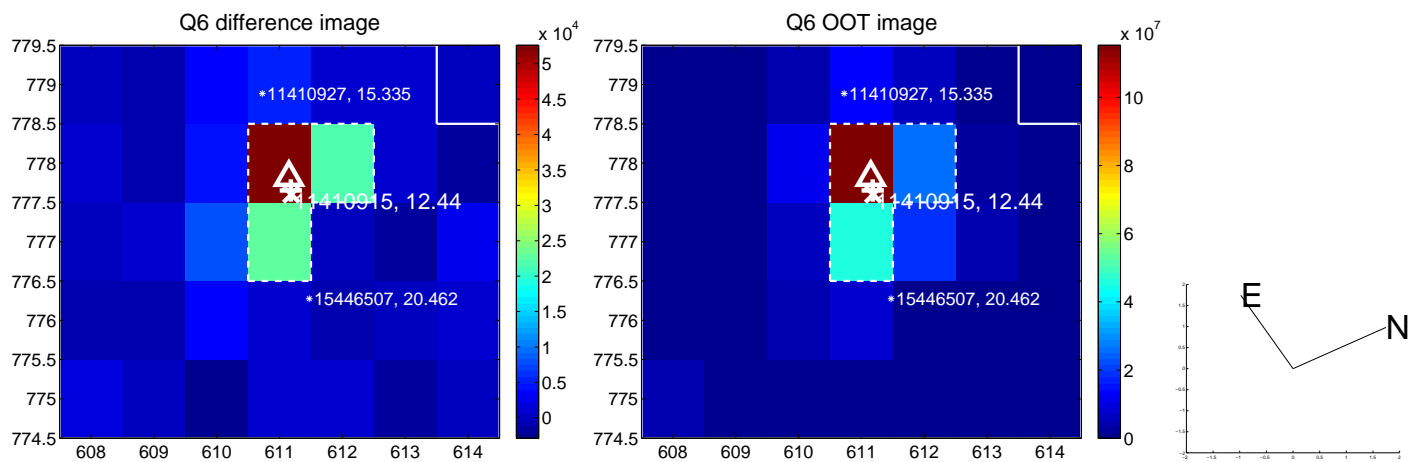
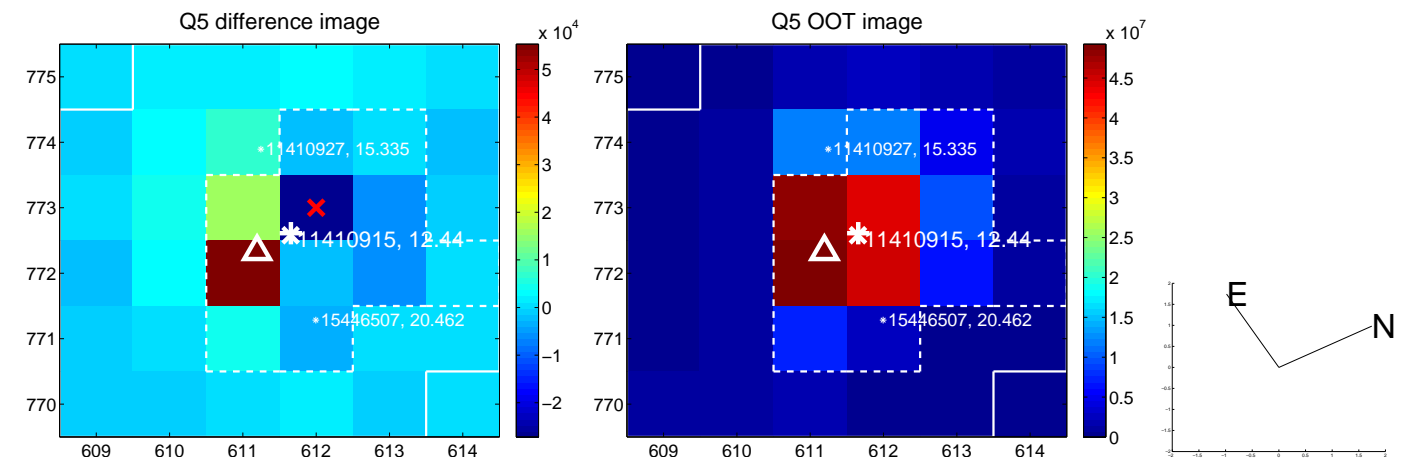


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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.

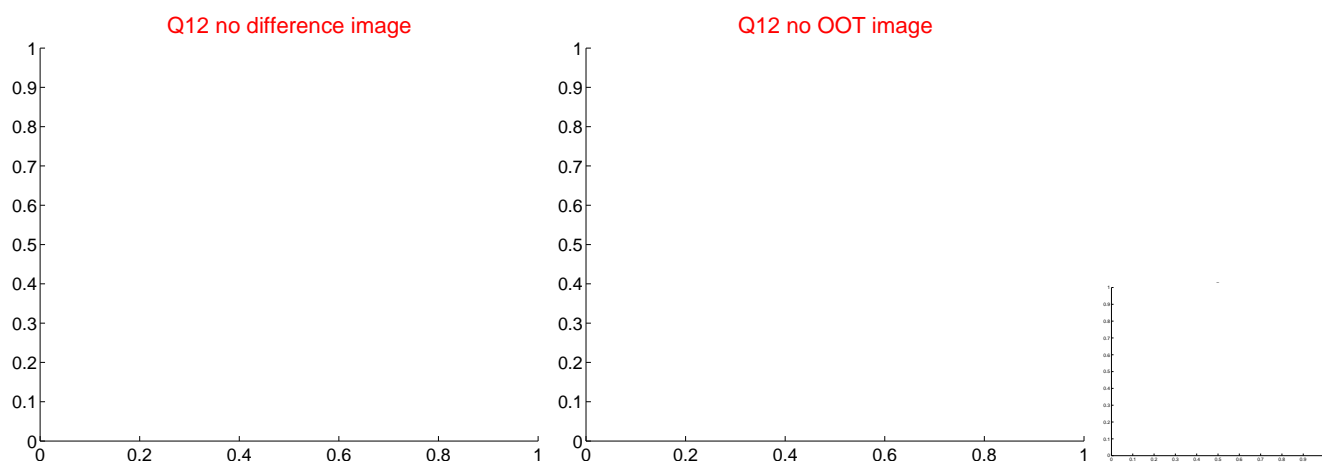
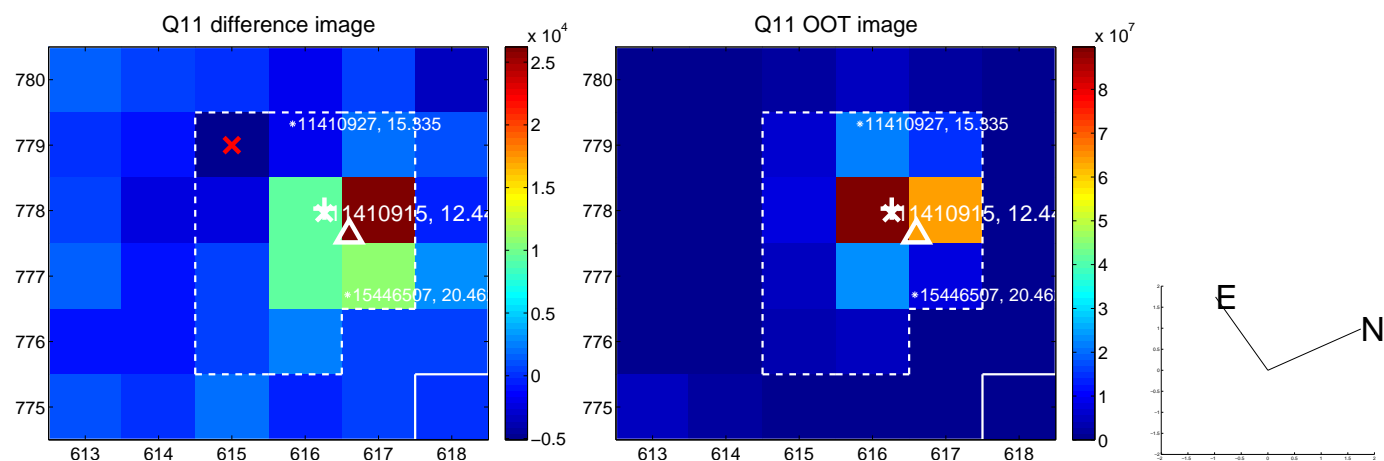
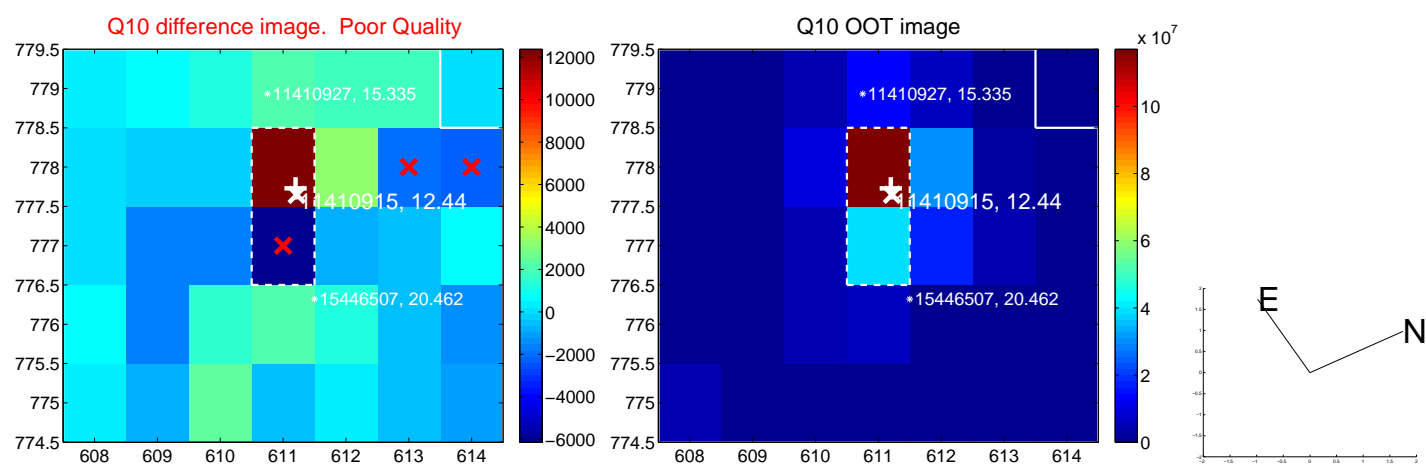
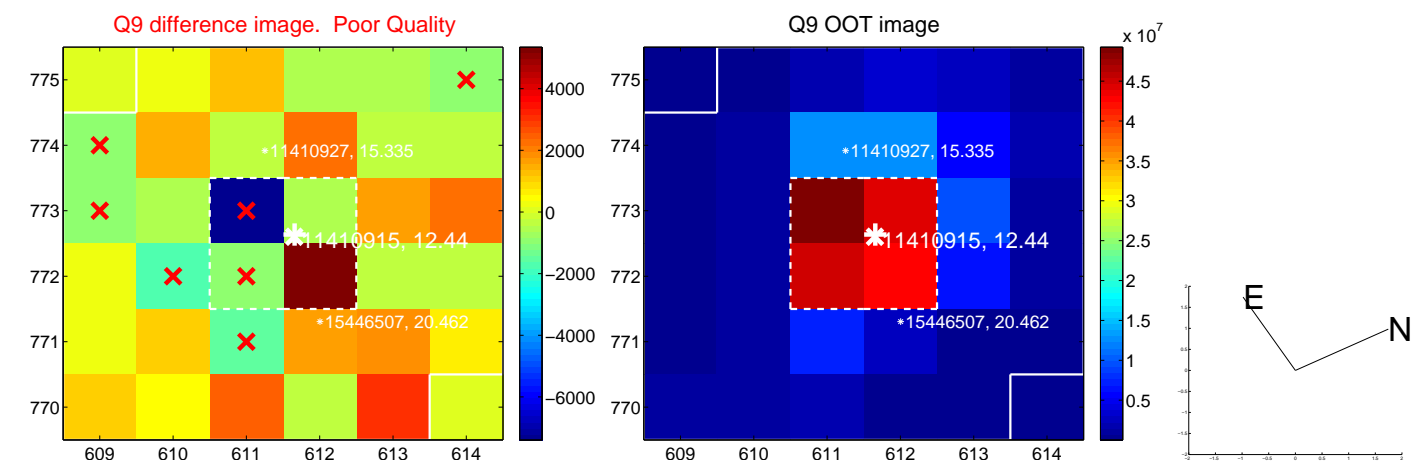


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

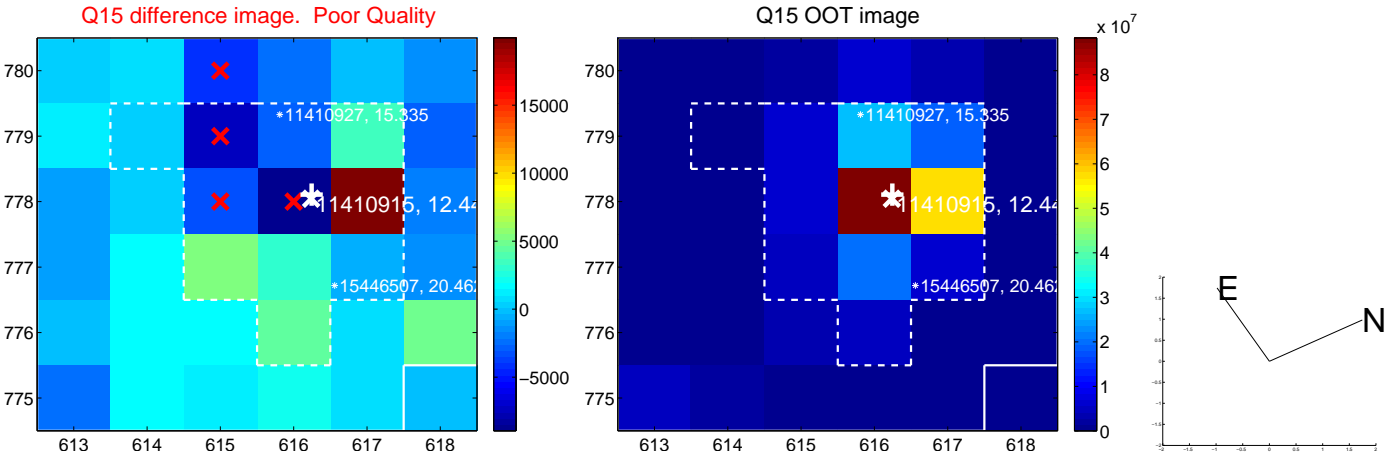
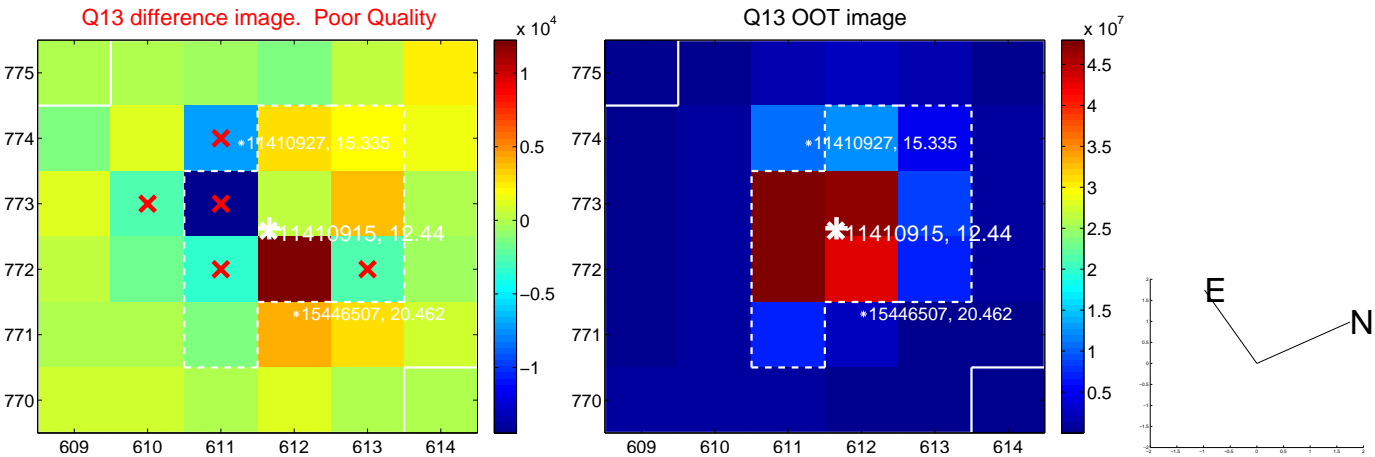




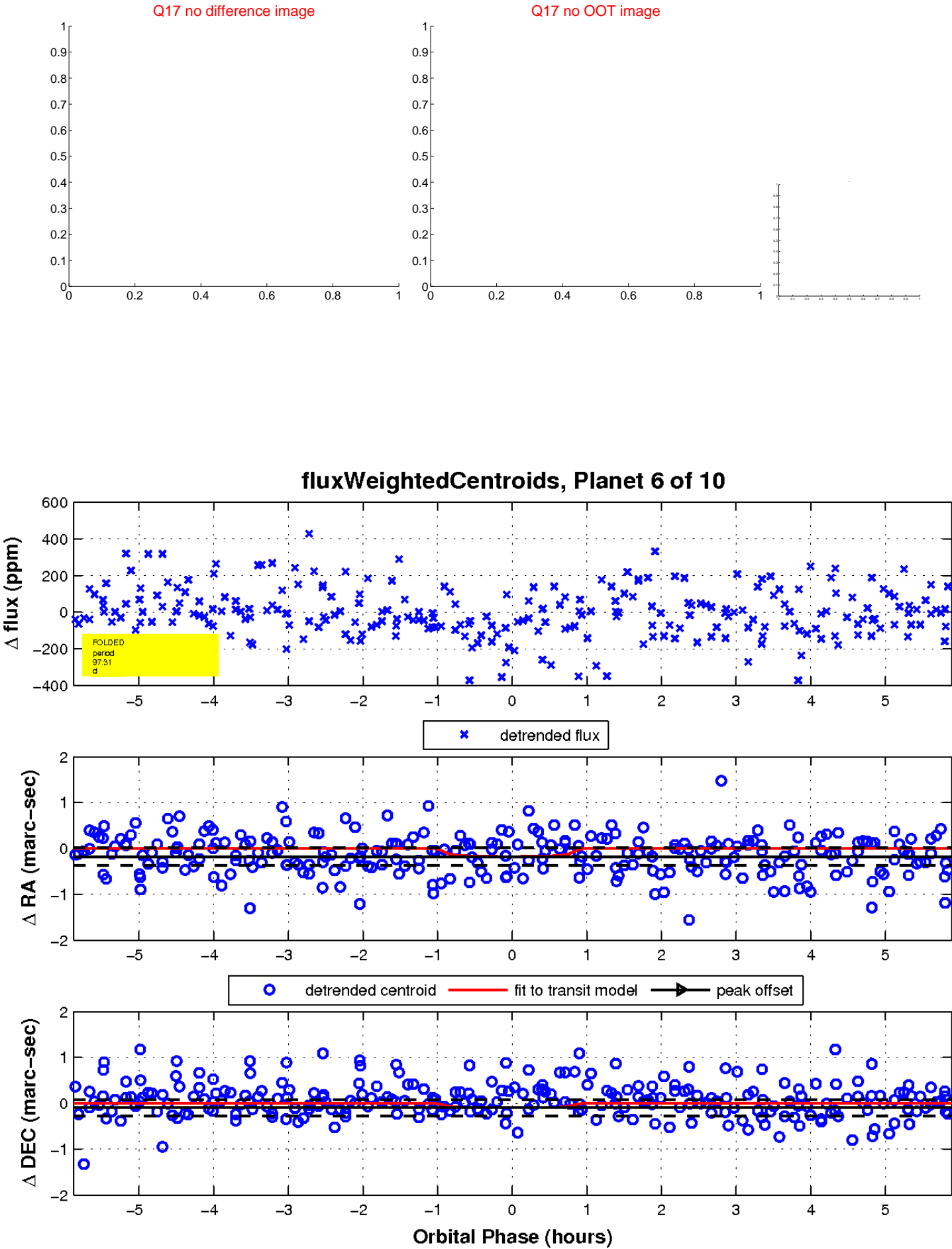
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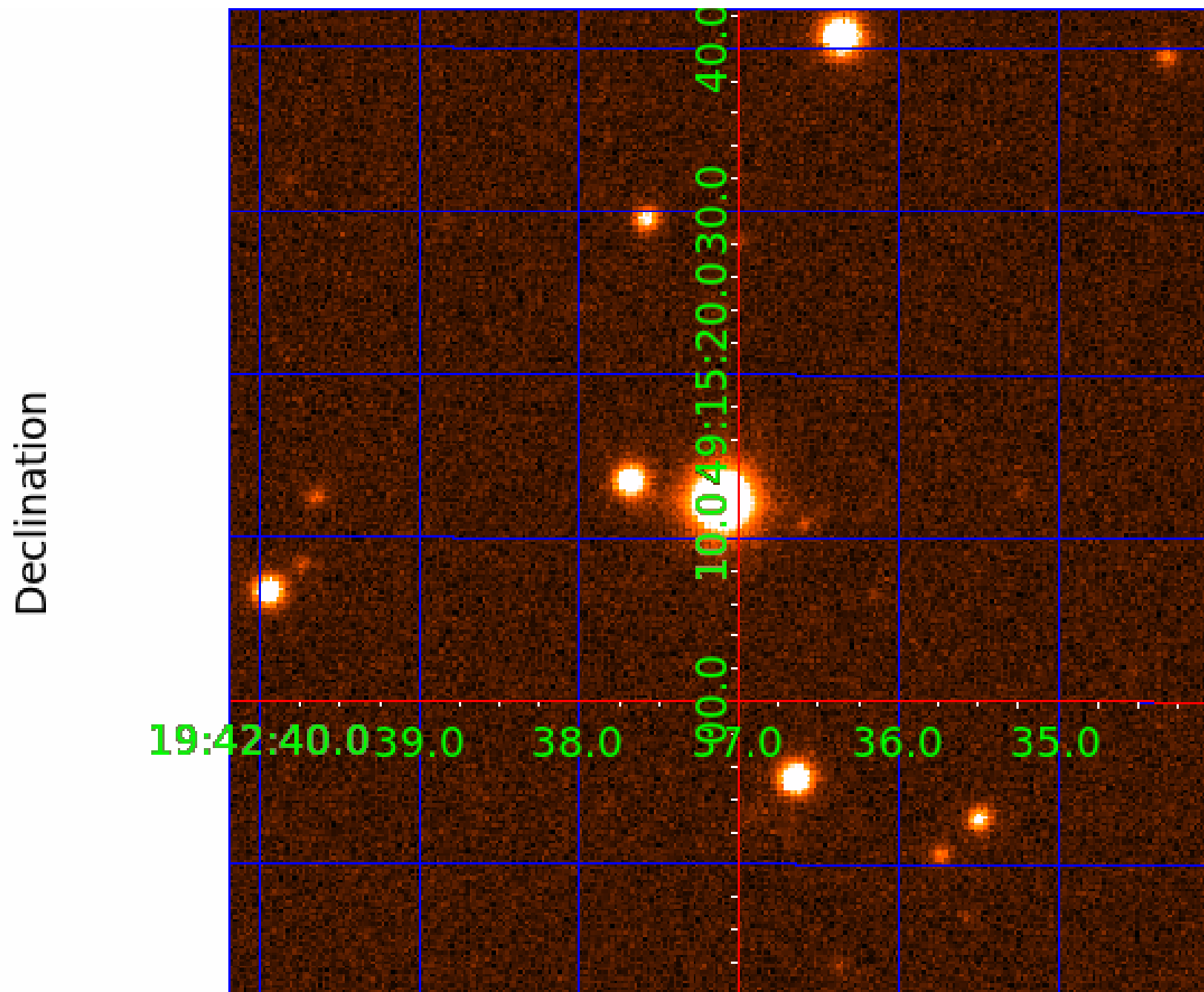
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011410915-01	OBS	No	2.743221	133.516224	11.0	15.637	8.0	6.3	1.72	6903	0.59	3083.55
011410915-02	OBS	No	121.491572	229.369437	128.8	24.113	12.0	7.8	1.72	6903	2.29	19.68
011410915-03	OBS	No	55.245253	140.692328	189.1	3.312	8.7	9.2	1.72	6903	2.73	56.28
011410915-04	OBS	No	120.170150	159.905711	235.8	3.124	8.5	8.7	1.72	6903	2.91	19.97
011410915-05	OBS	No	112.875535	221.399883	248.9	3.698	8.4	8.0	1.72	6903	4.41	21.71
011410915-06	OBS	No	97.310505	219.952147	299.1	1.968	8.1	9.3	1.72	6903	3.52	26.46
011410915-07	OBS	No	153.455328	240.155198	201.5	3.233	8.2	8.4	1.72	6903	2.80	14.41
011410915-08	OBS	No	89.998936	193.645171	212.2	2.773	7.9	8.4	1.72	6903	2.88	29.36
011410915-09	OBS	No	557.200061	337.590460	129.3	27.663	7.8	6.9	1.72	6903	2.25	2.58
011410915-10	OBS	No	200.409436	326.508363	211.5	2.971	8.0	8.1	1.72	6903	2.81	10.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011410915-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
011410915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011410915-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011410915-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011410915-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

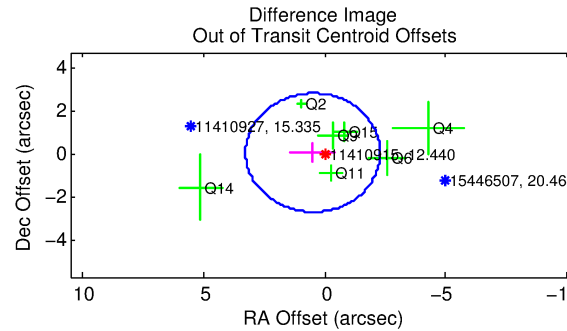
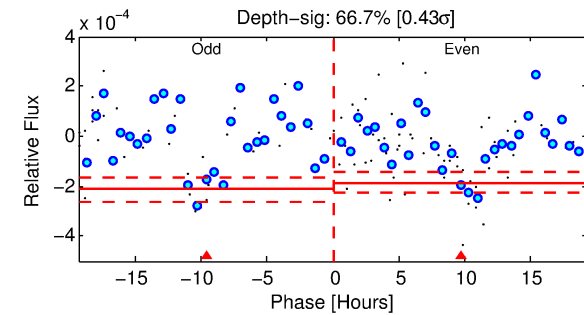
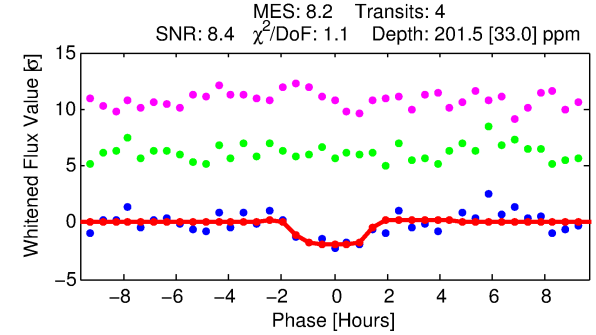
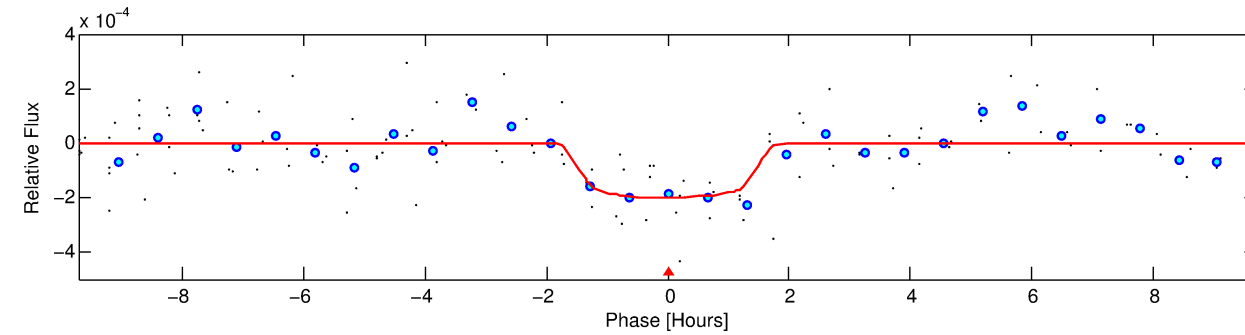
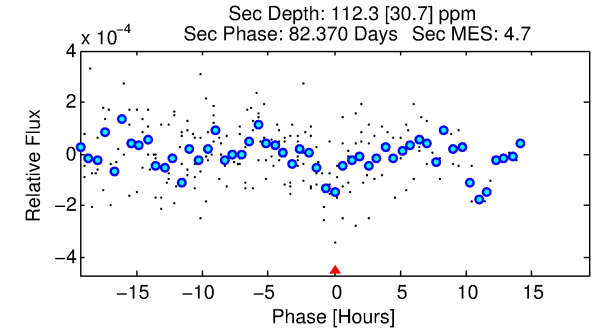
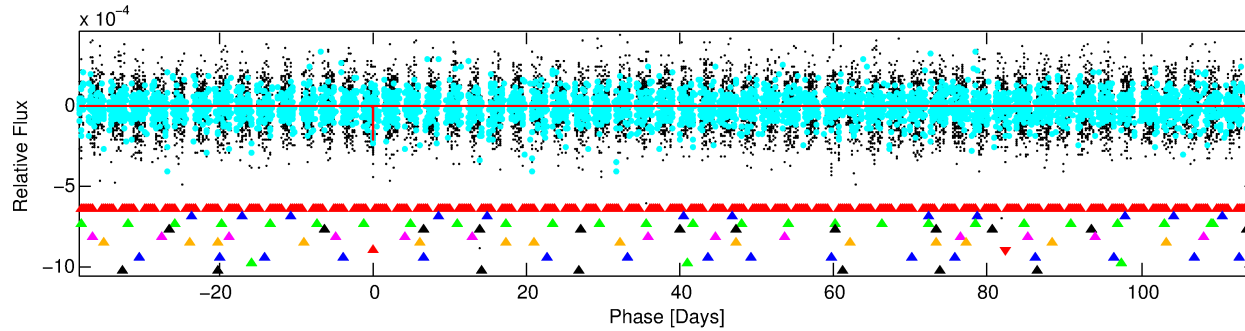
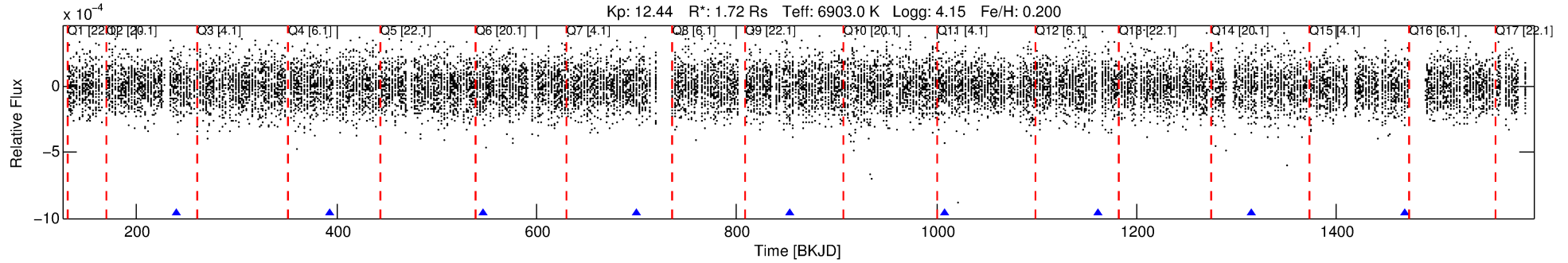
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011410915-07

No Significant Match Found

# DV One-Page Summary

KIC: 11410915 Candidate: 7 of 10 Period: 153.455 d



## DV Fit Results:

Period = 153.45533 [0.00398] d  
Epoch = 240.1552 [0.0266] BKJD  
Rp/R\* = 0.0149 [0.0117]  
a/R\* = 183.59 [830.64]  
b = 0.88 [1.18]  
Seff = 14.41 [3.11]  
Teq = 497 [27] K  
Rp = 2.80 [2.25] Re  
a = 0.6462 [0.0928] AU  
Ag = 3284.47 [5270.91] [0.62σ]  
Teffp = 5815 [2315] K [2.30σ]

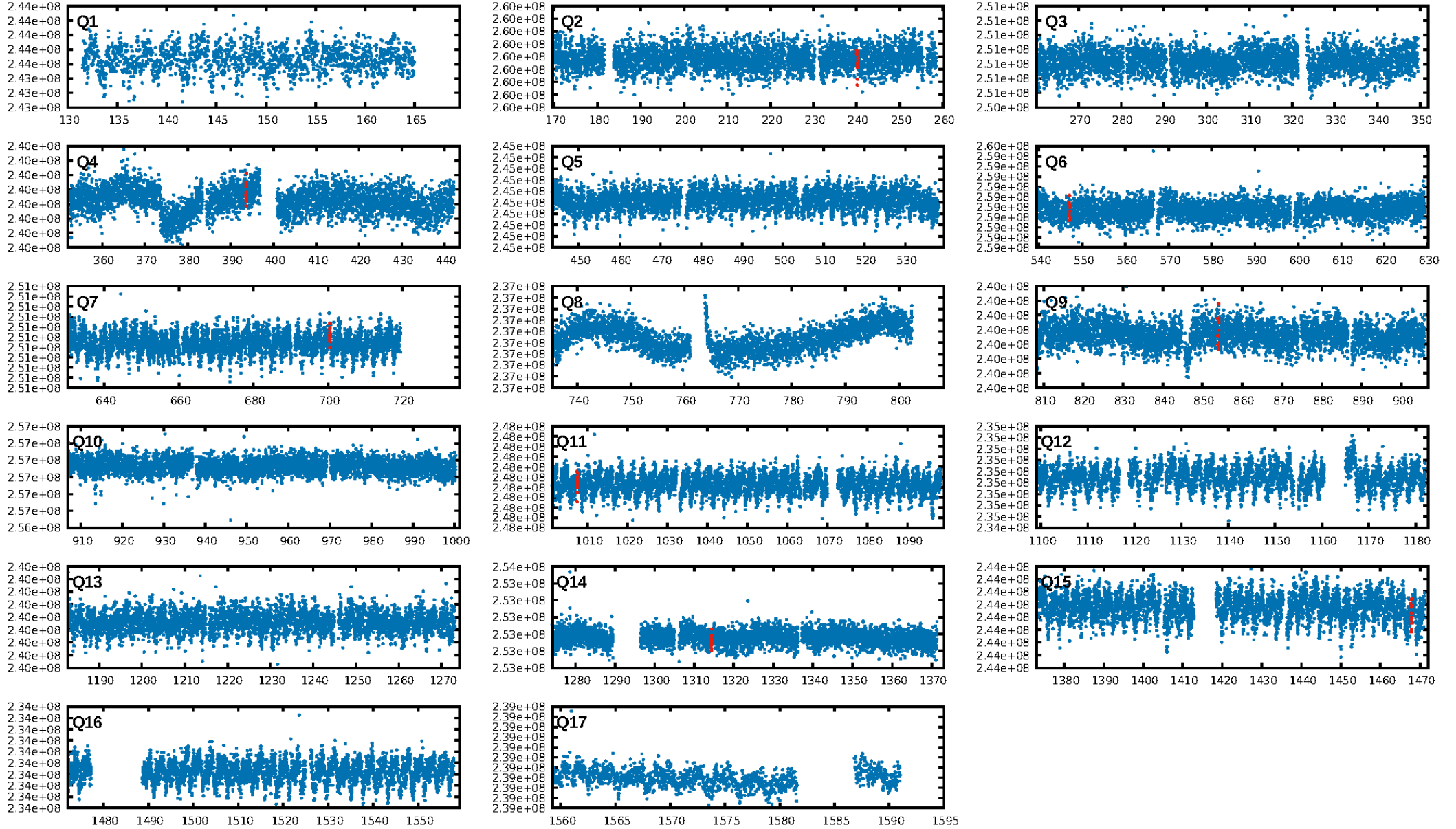
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [31.53σ]  
LongPeriod-sig: 100.0% [256.63σ]  
ModelChiSquare2-sig: 61.9%  
ModelChiSquareGof-sig: 99.5%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 3.782  
Centroid-sig: 34.3%  
Centroid-so: 0.742 arcsec [0.85σ]  
OotOffset-rm: 0.489 arcsec [0.53σ]  
KicOffset-rm: 0.669 arcsec [0.86σ]  
OotOffset-st: 3/2/1/1 [7]  
KicOffset-st: 3/2/1/1 [7]  
DiffImageQuality-fgm: 0.43 [3/7]  
DiffImageOverlap-fno: 0.75 [6/8]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:48:59 Z

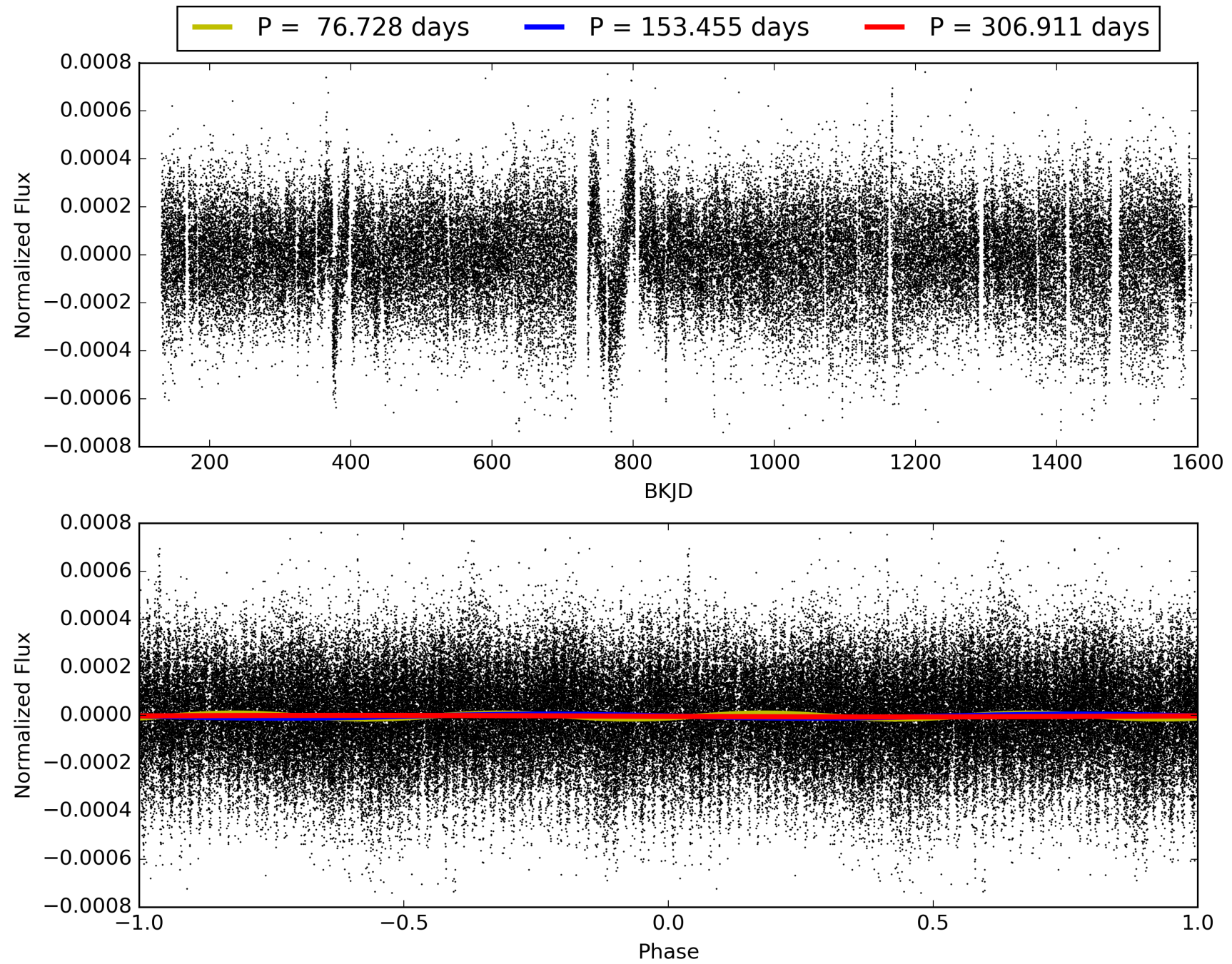
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011410915-07, PDC Light Curves



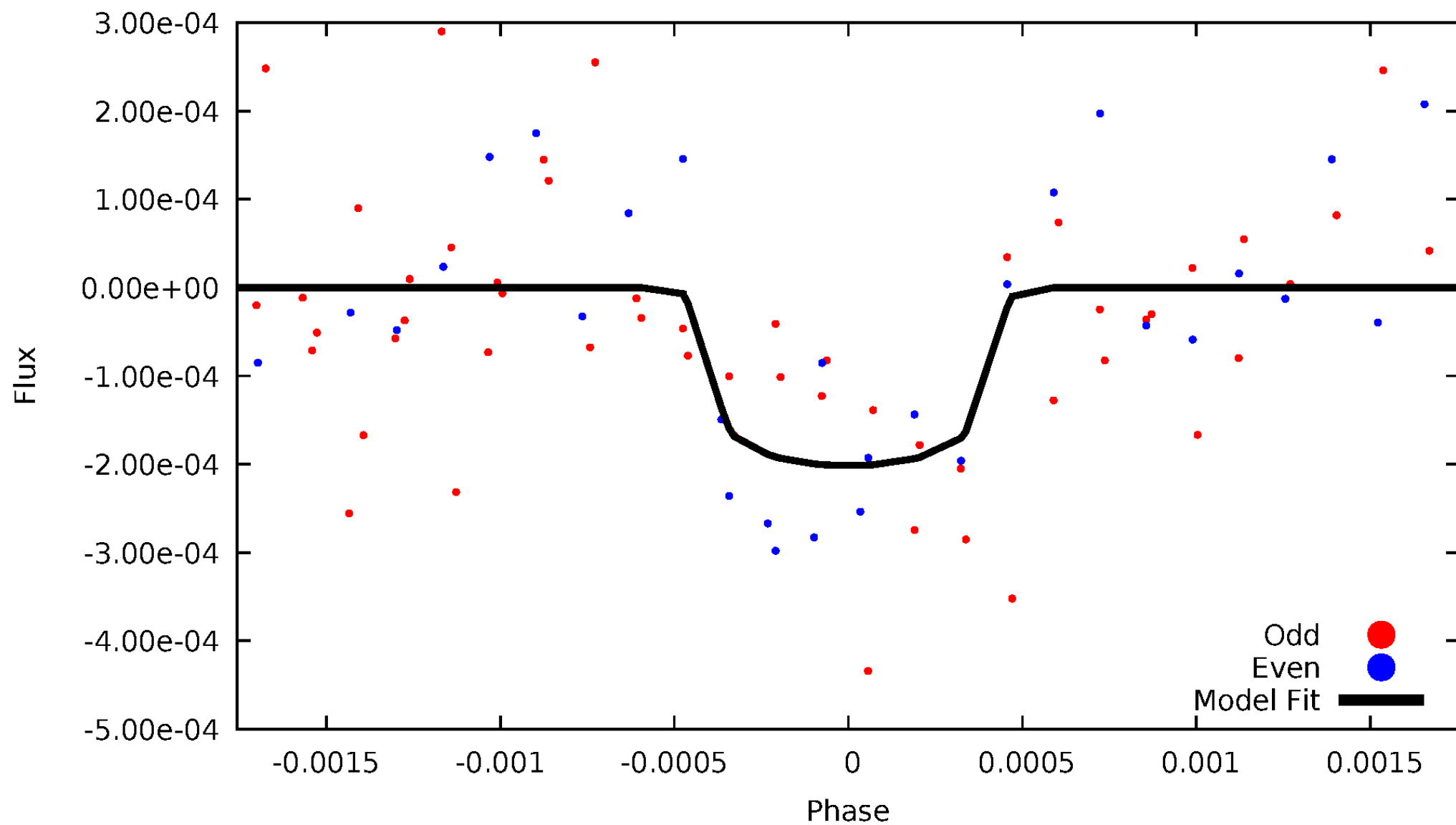


TCE 011410915-07



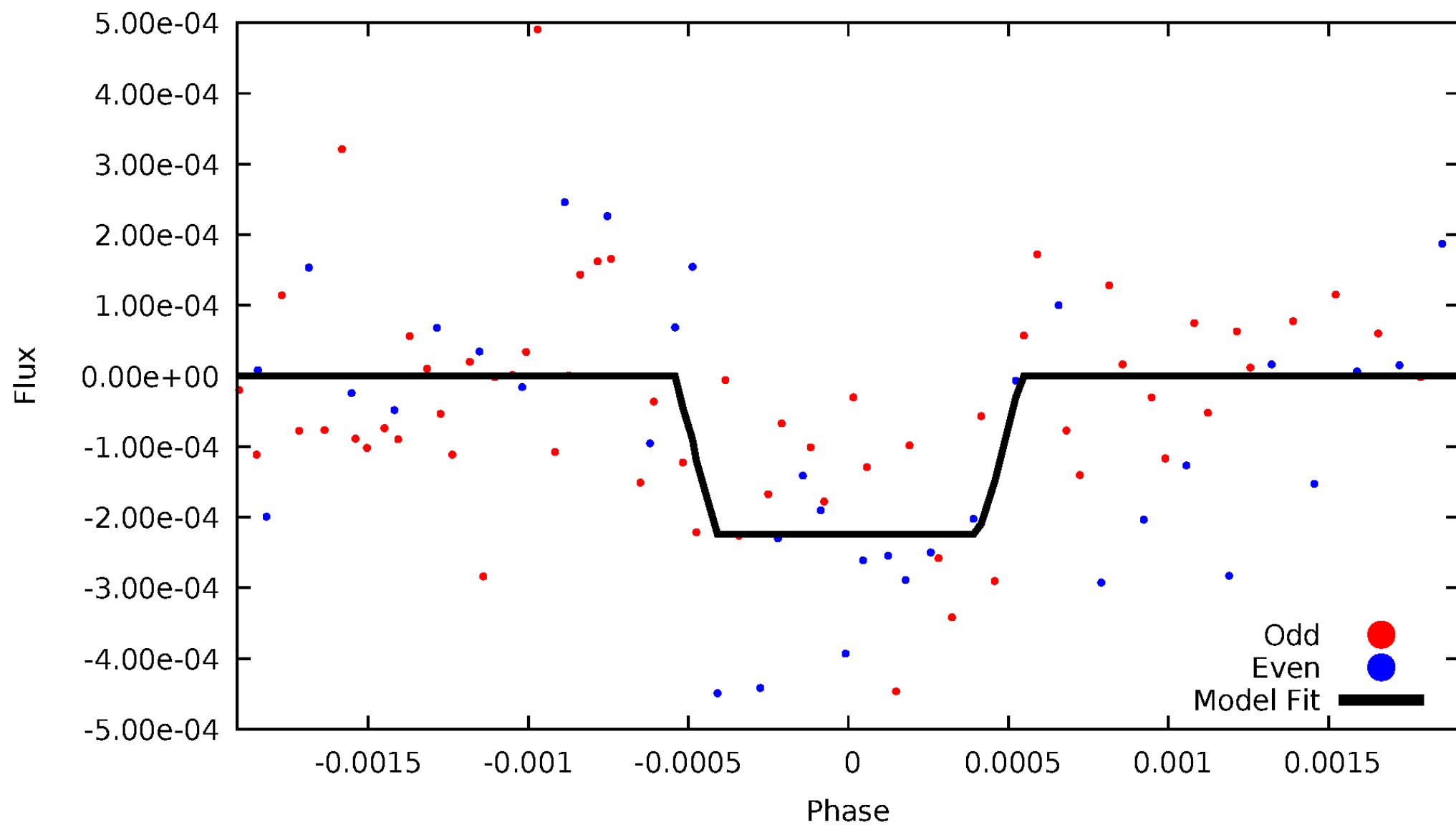
# DV Odd/Even

TCE 011410915-07



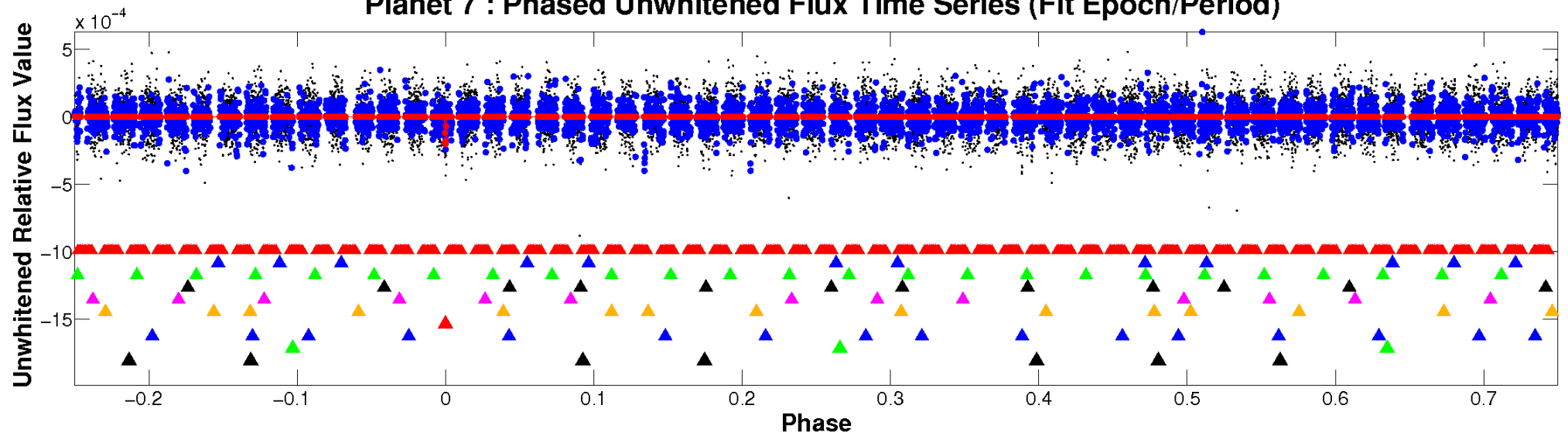
# ALT Odd/Even

TCE 011410915-07

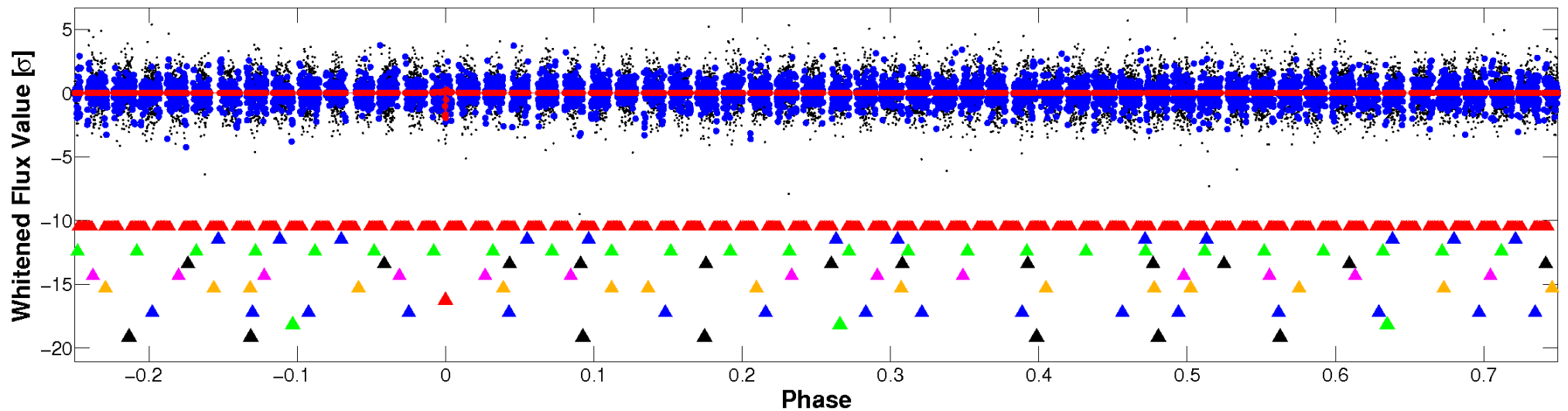


# Non-Whitened Vs. Whitened Light Curve

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

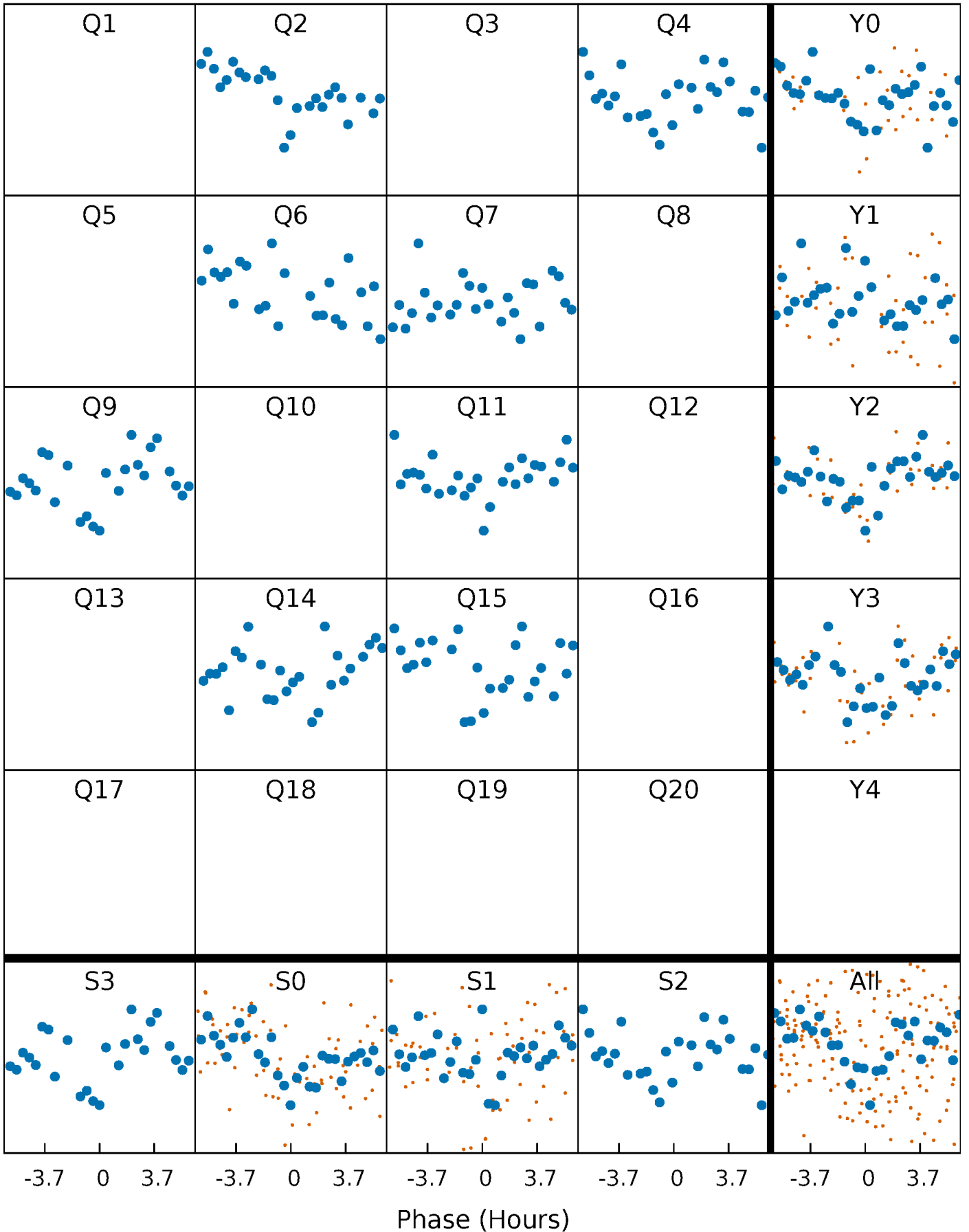


## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



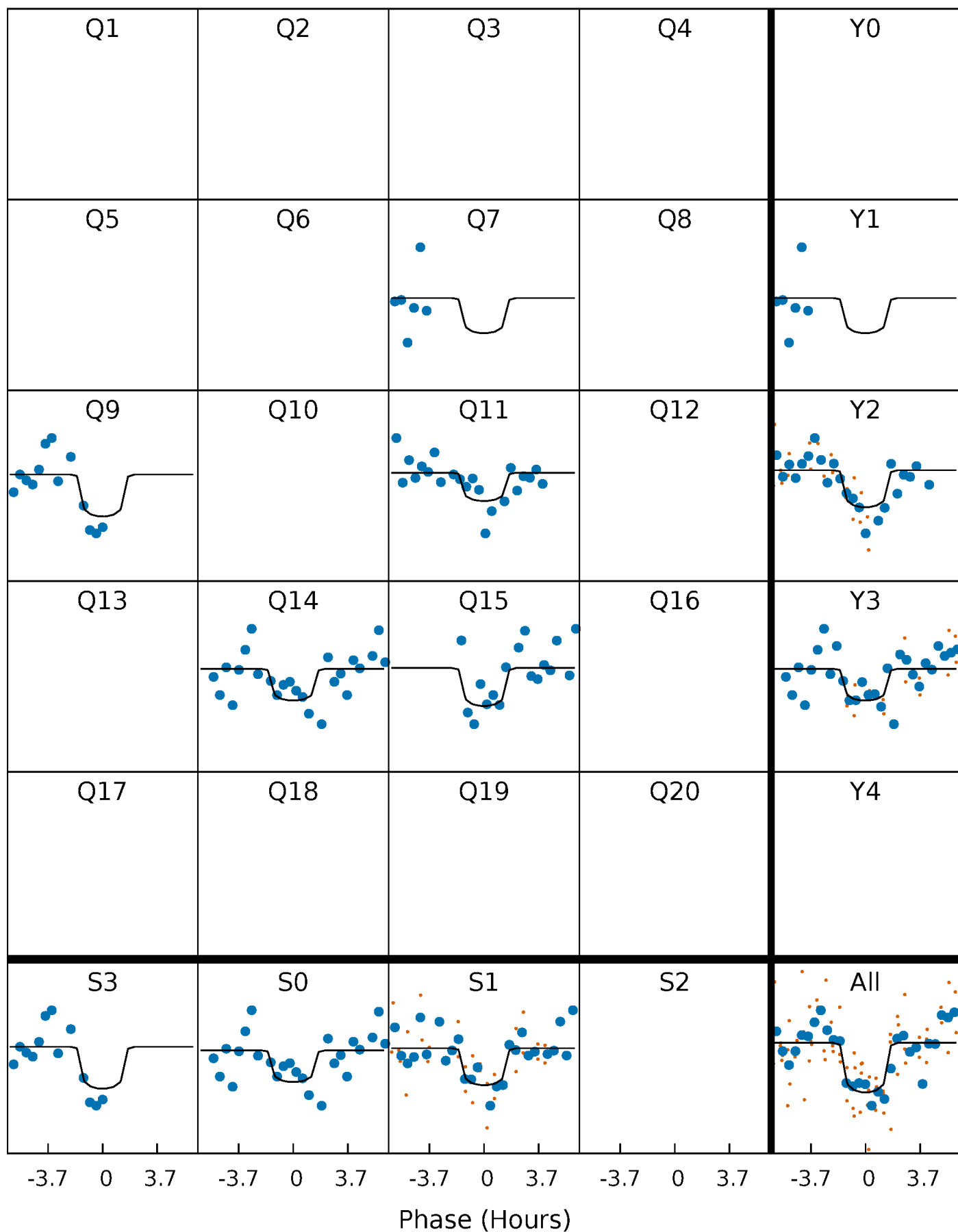
# PDC Quarter-Phased Transit Curves

TCE 011410915-07 P=153.455328 Days  $T_0=240.155198$  (BKJD)



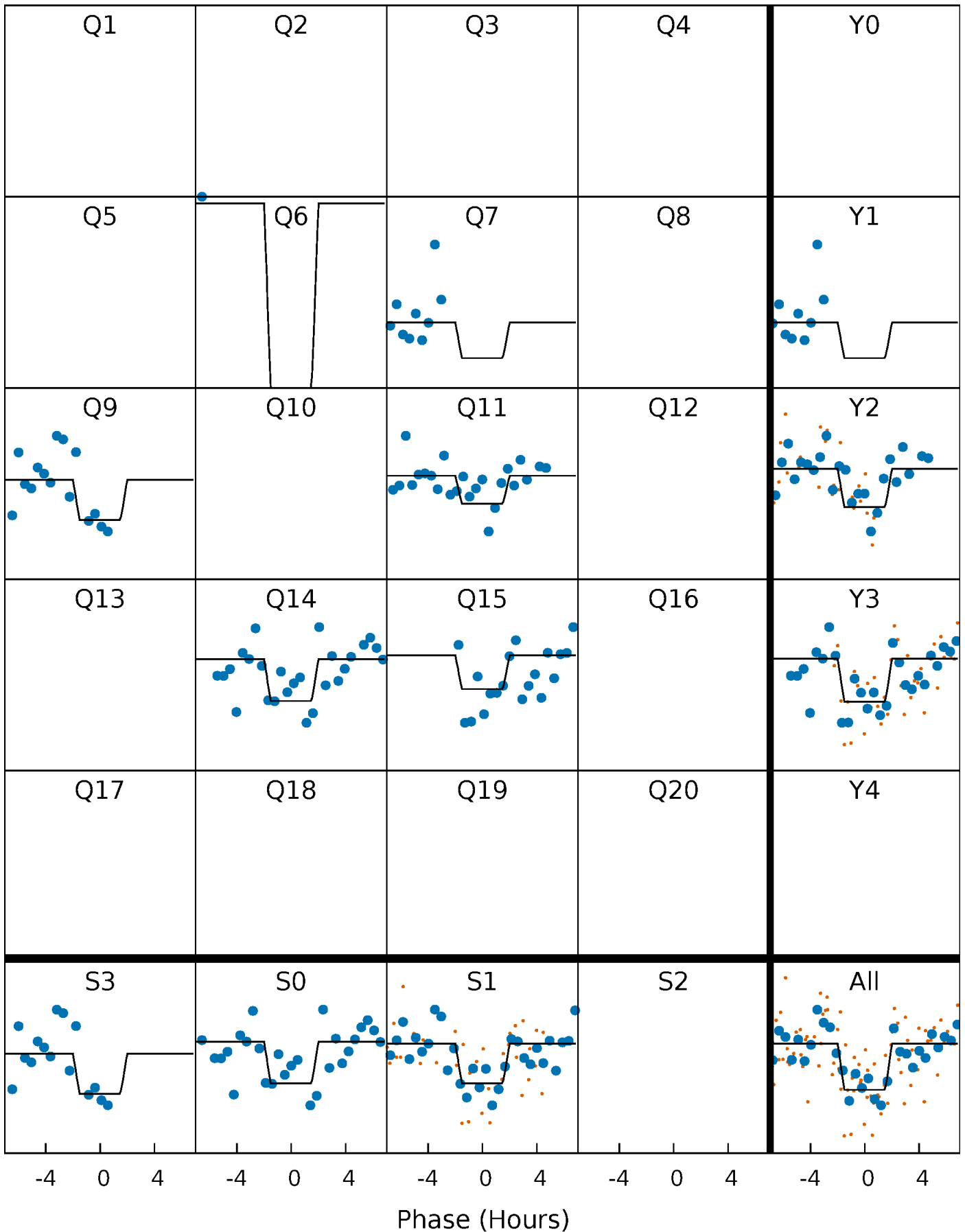
# DV Quarter-Phased Transit Curves

TCE 011410915-07     $P=153.455328$  Days     $T_0=240.155198$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

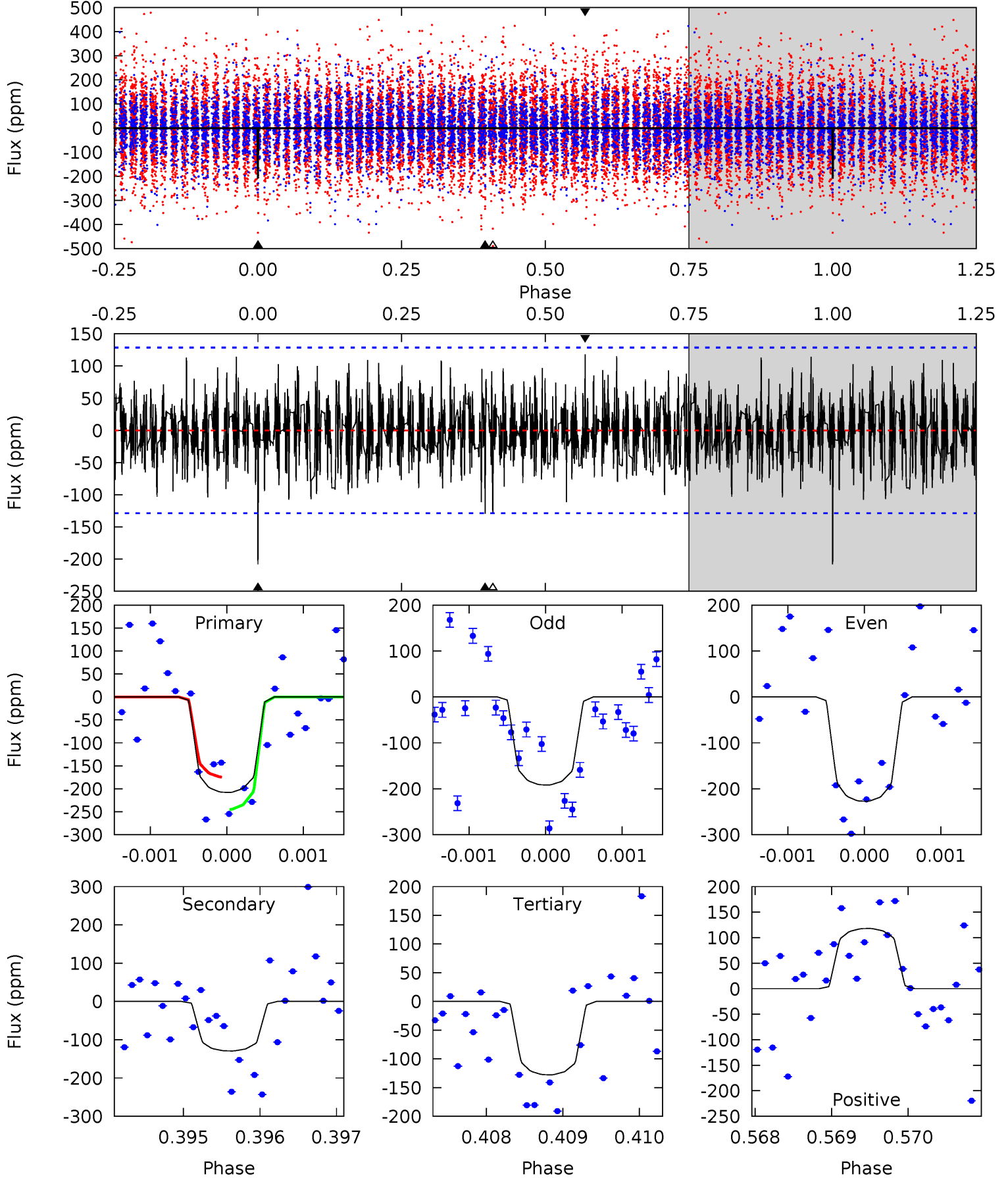
TCE 011410915-07 P=153.463414 Days  $T_0=240.100668$  (BKJD)



# DV Model-Shift Uniqueness Test

011410915-07, P = 153.455328 Days, E = 86.699870 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
8.83	5.49	5.43	5.01	5.46	3.31	1.54	3.41	3.82	0.06	0.48	0.75	1.02	0.36	1.49

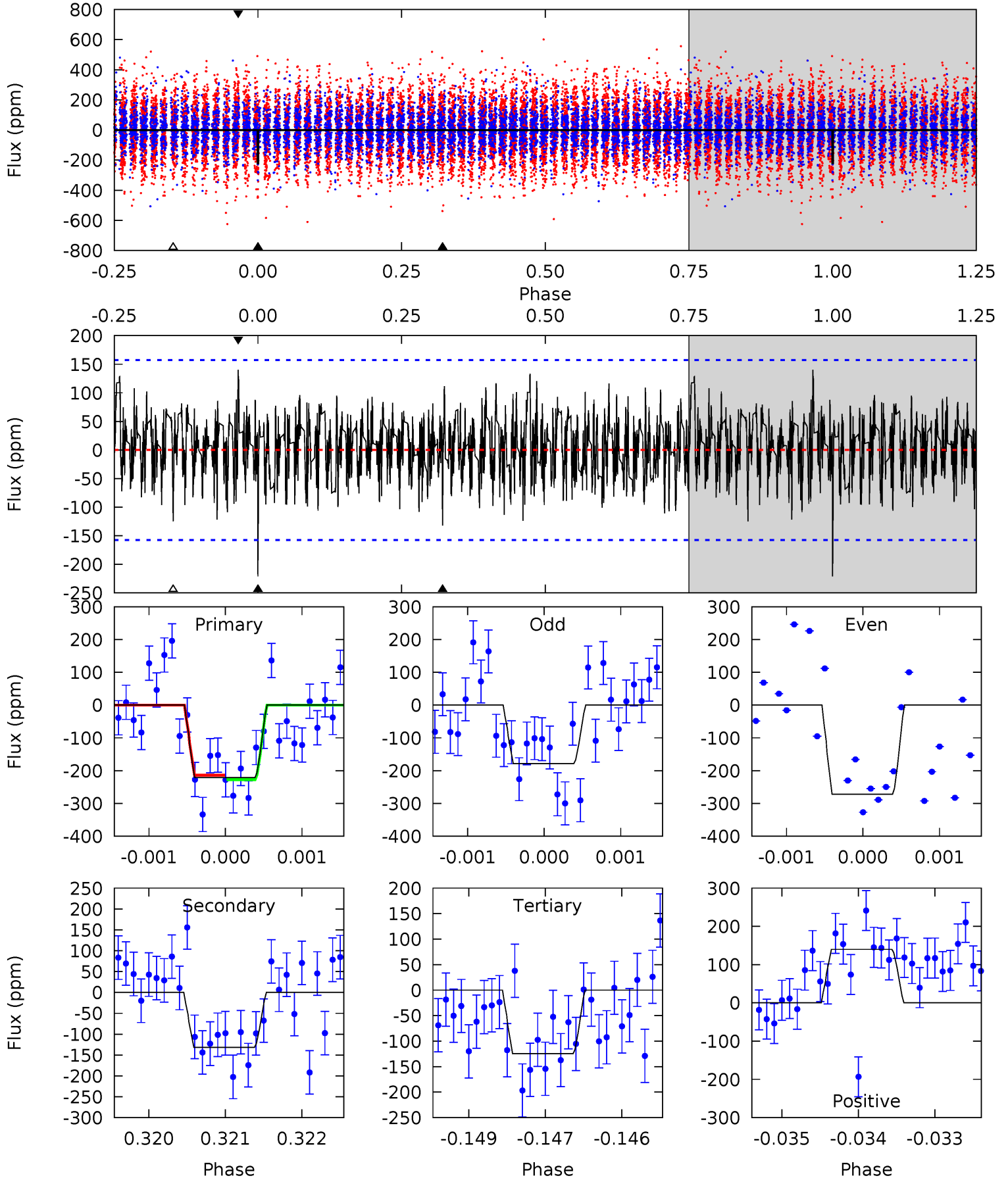




# Alt Model-Shift Uniqueness Test

011410915-07, P = 153.463414 Days, E = 86.637254 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
7.64	4.56	4.31	4.85	5.45	3.29	1.45	3.33	2.79	0.25	-0.29	1.60	1.05	0.39	0.24



### Stellar Parameters For KIC 011410915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6903^{+72}_{-92}$	$4.151^{+0.066}_{-0.114}$	$0.200^{+0.100}_{-0.150}$	$1.720^{+0.294}_{-0.171}$	$1.528^{+0.119}_{-0.097}$	$0.423^{+0.128}_{-0.148}$
	+1%/-1%	+2%/-3%	+50%/-75%	+17%/-10%	+8%/-6%	+30%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011410915-07 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-129 \pm 24$	$3.15^{+2.23}_{-1.73}$	$699^{+29}_{-22}$	$5735^{+3088}_{-1233}$	$3004^{+10823}_{-2013}$
Alt.	$-132 \pm 29$	$2.93^{+2.39}_{-1.64}$	$698^{+30}_{-22}$	$5898^{+3632}_{-1344}$	$3382^{+14528}_{-2364}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

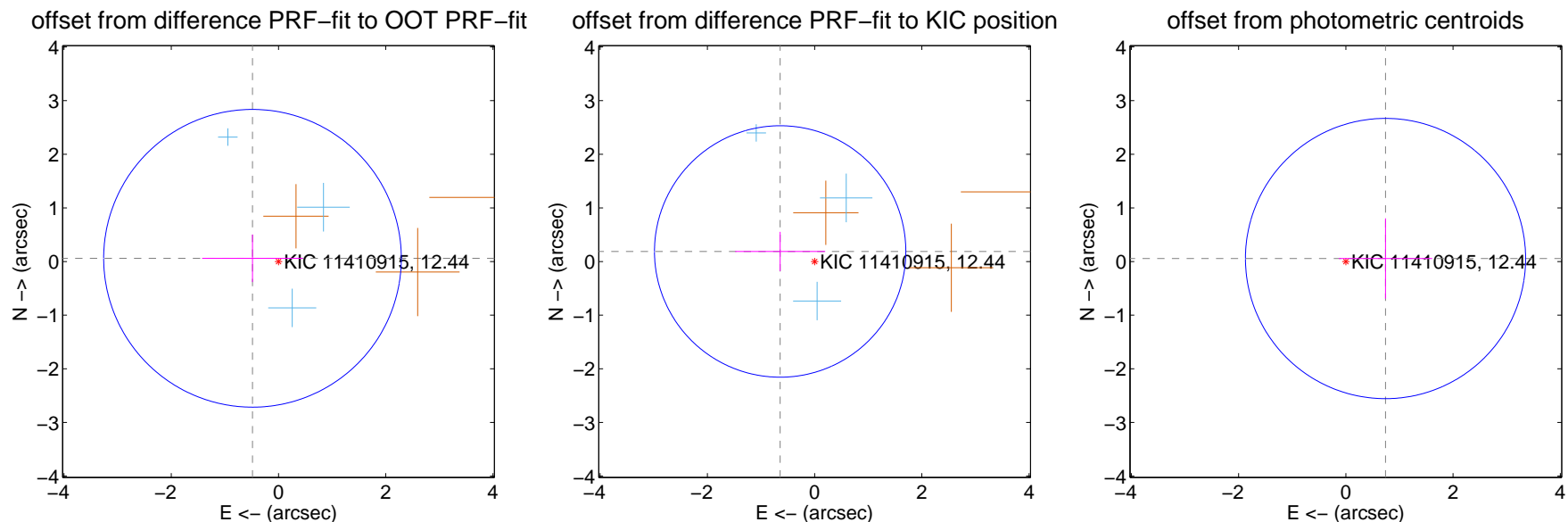
## DV Centroid Data

Supplemental centroid analysis for 011410915-07. Kepler magnitude: 12.44. Transit SNR 8.37

There are 3 quarters with good PRF difference image offsets

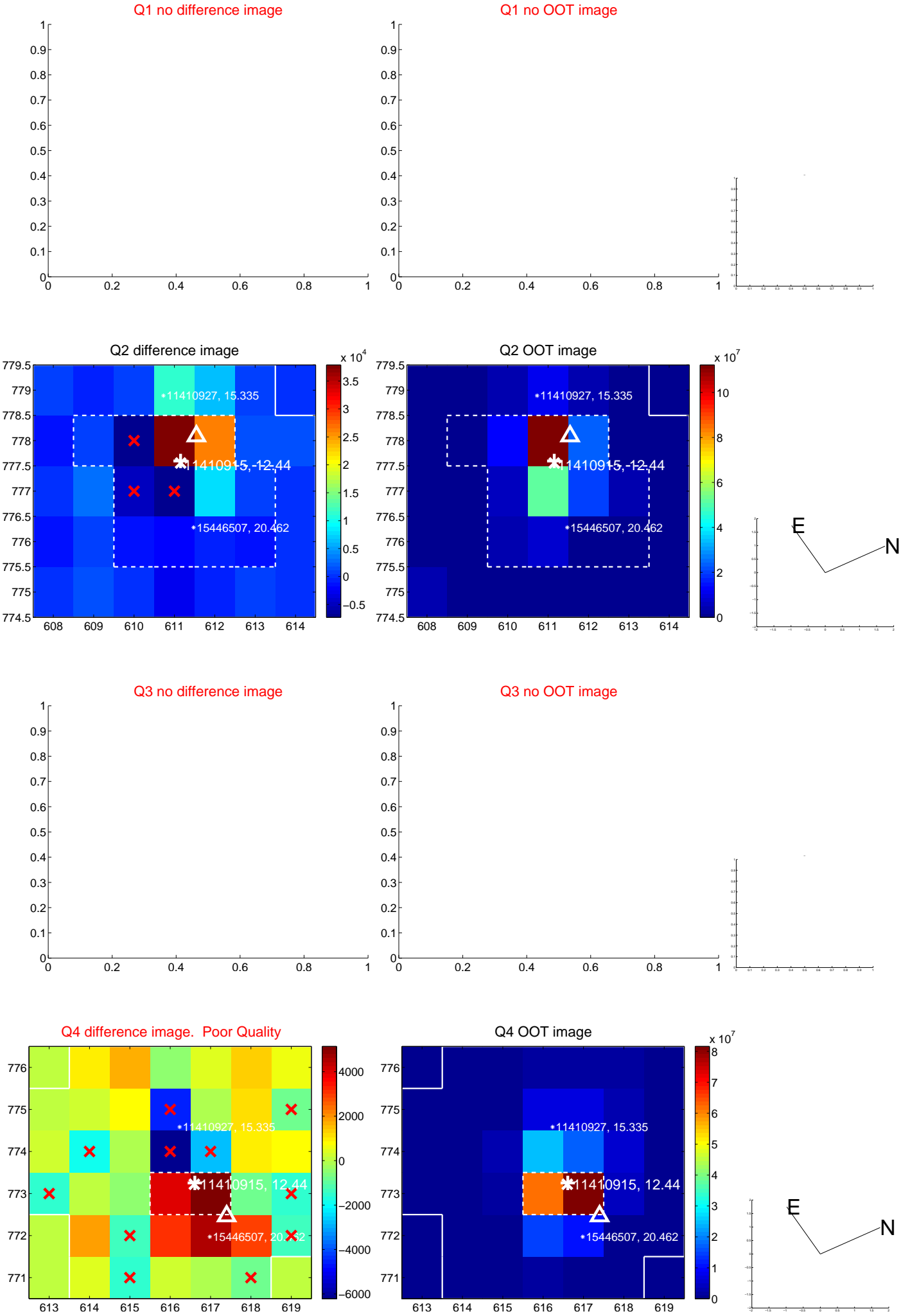
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.489 \pm 0.925$	0.53	$0.485 \pm 0.938$	$0.060 \pm 0.443$
PRF-fit source offset from KIC position	$0.669 \pm 0.781$	0.86	$0.642 \pm 0.839$	$0.188 \pm 0.366$
photometric centroid source offset	$0.74 \pm 0.87$	0.85	$-0.74 \pm 0.87$	$0.06 \pm 0.75$

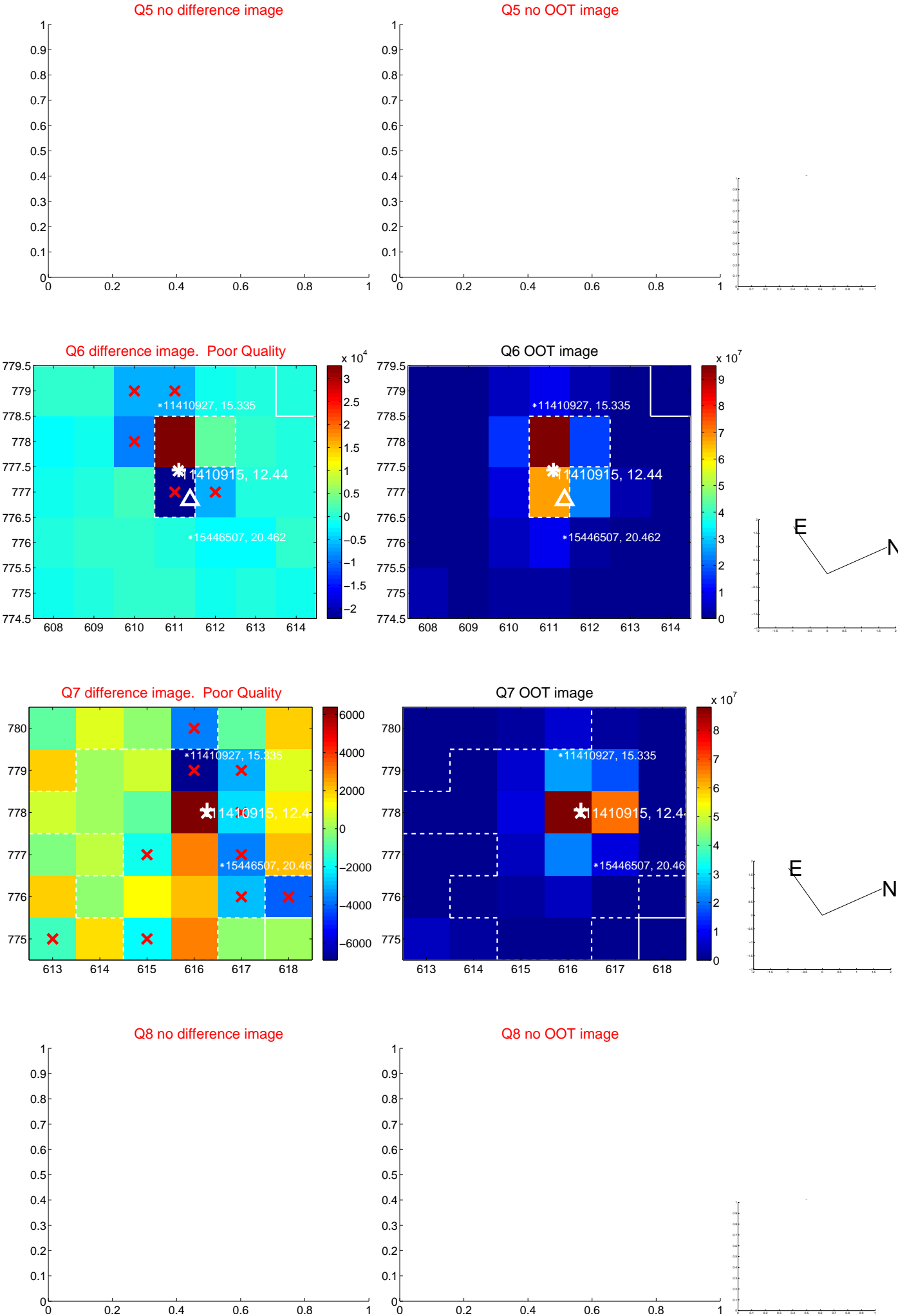


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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.

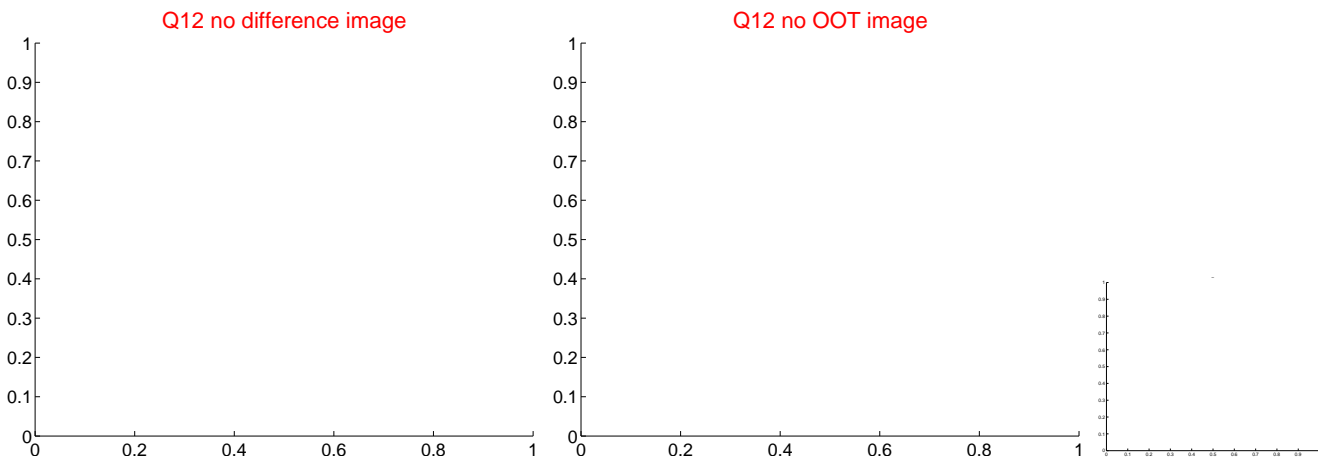
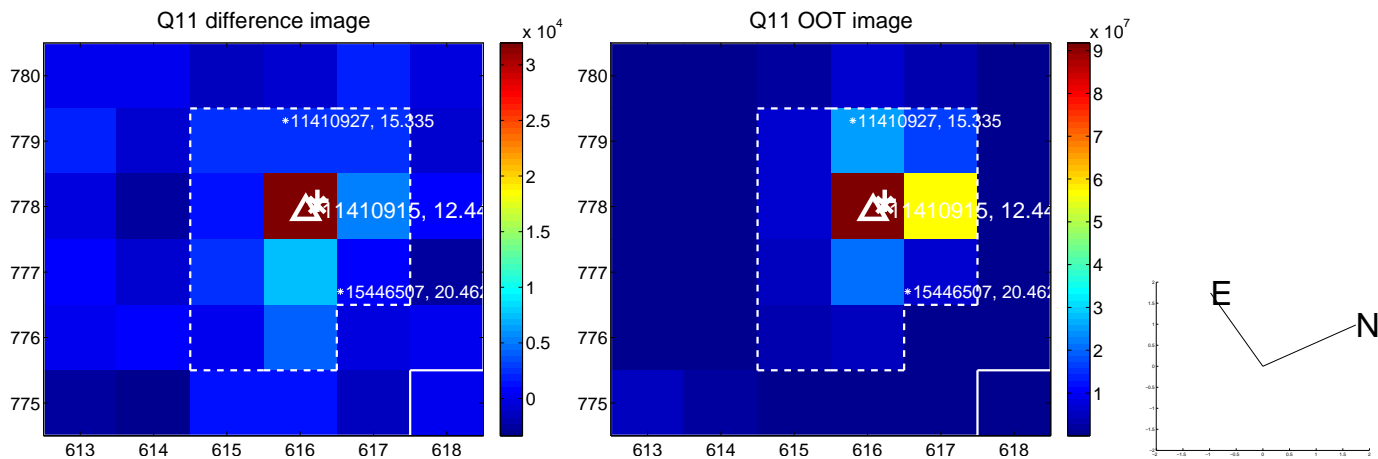
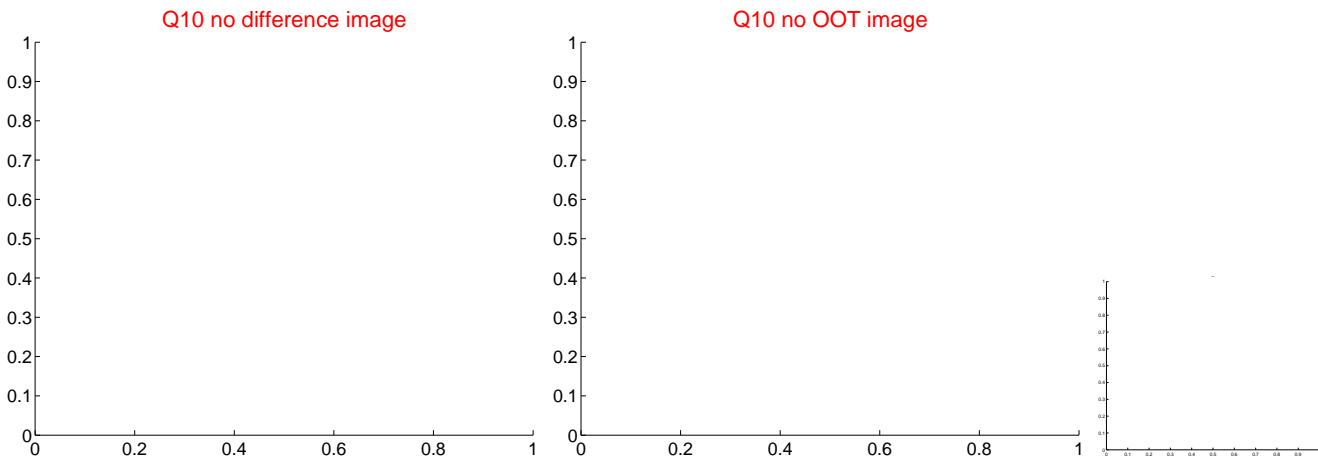
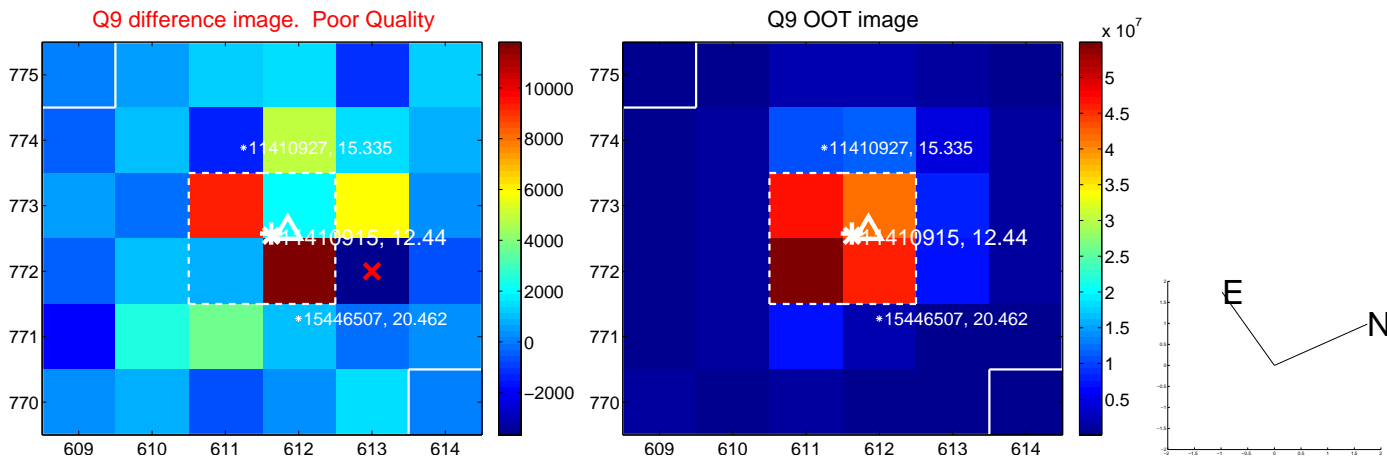
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

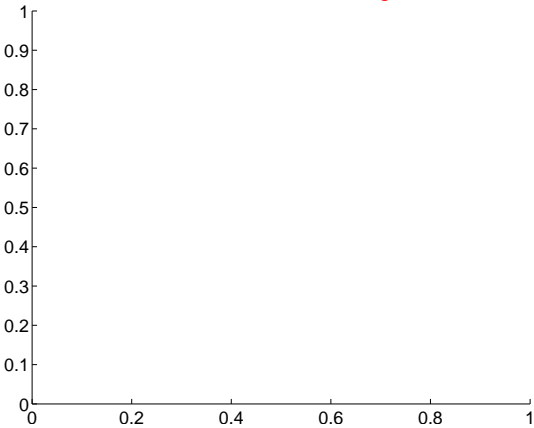


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

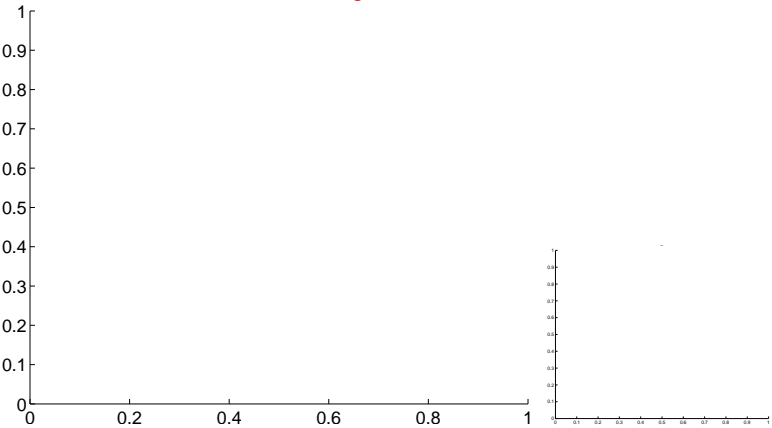


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

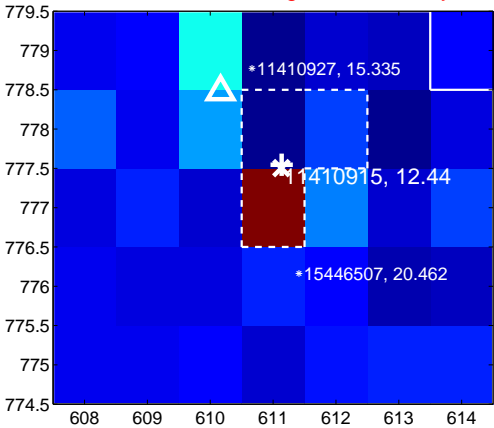
Q13 no difference image



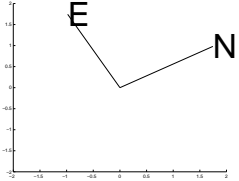
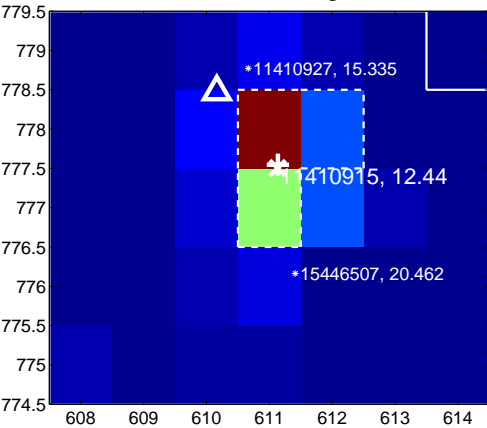
Q13 no OOT image



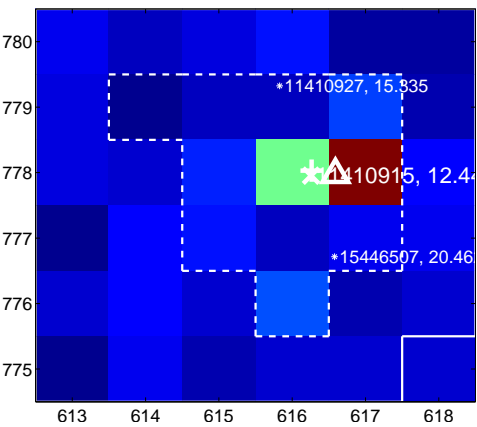
Q14 difference image. Poor Quality



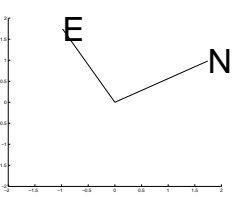
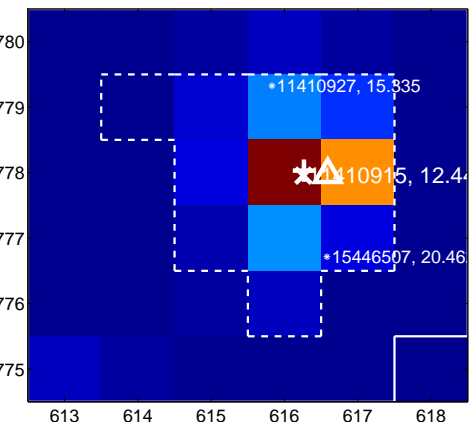
Q14 OOT image



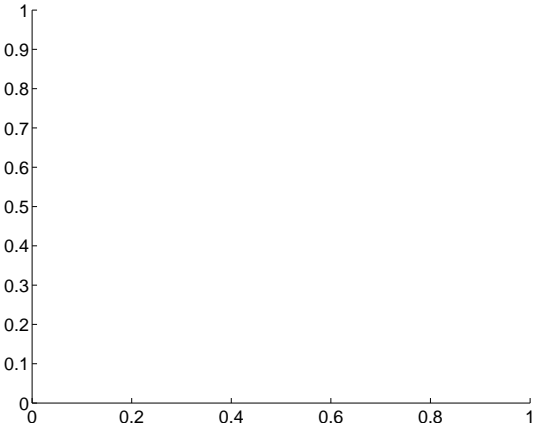
Q15 difference image



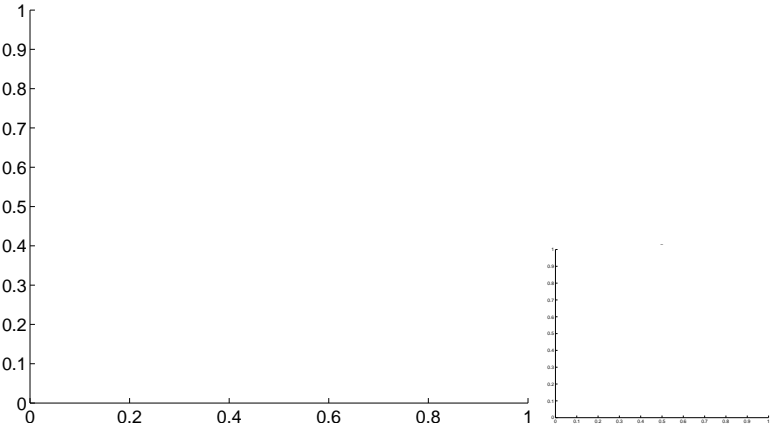
Q15 OOT image



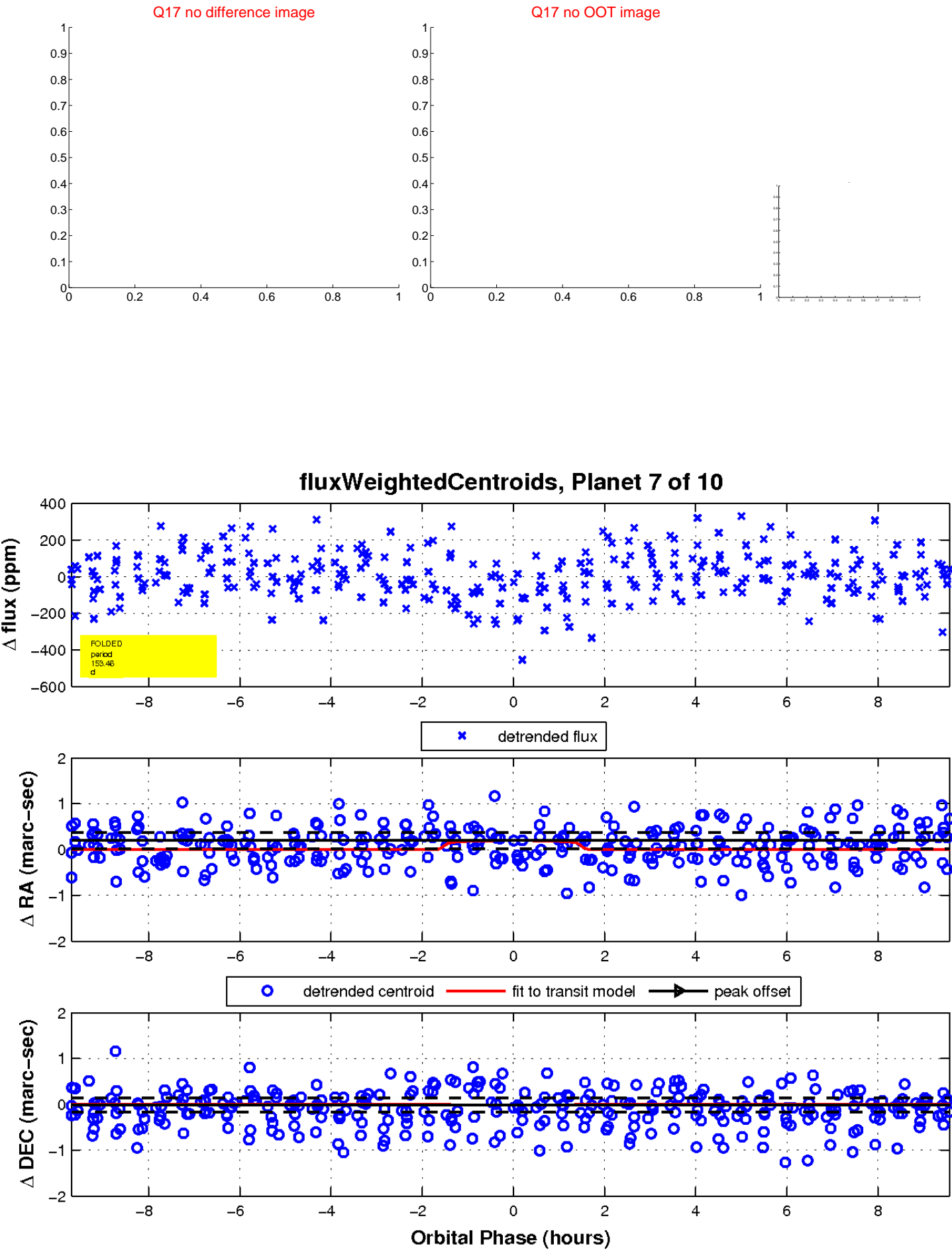
Q16 no difference image



Q16 no OOT image

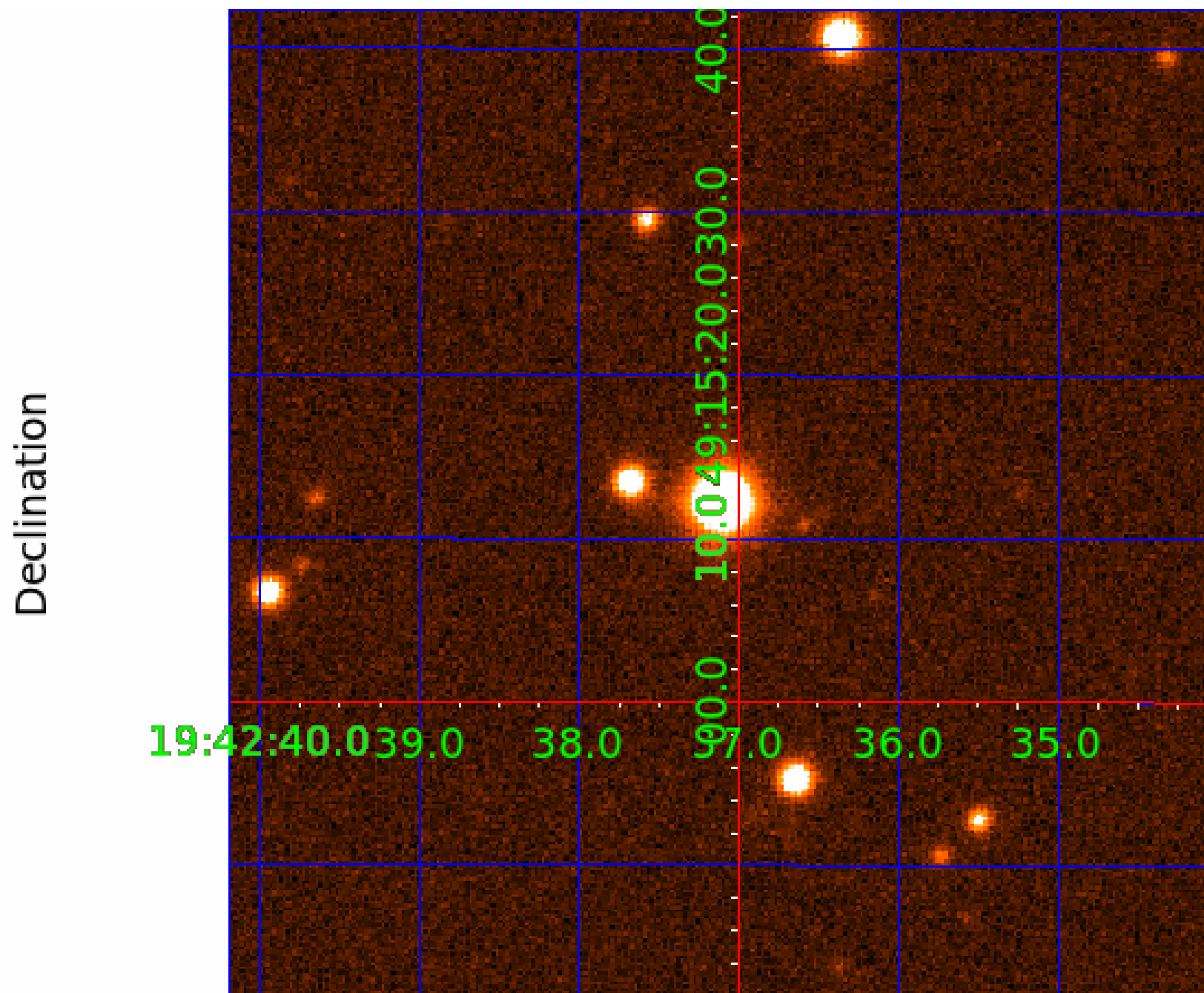


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image



## KIC 011410915

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011410915-01	OBS	No	2.743221	133.516224	11.0	15.637	8.0	6.3	1.72	6903	0.59	3083.55
011410915-02	OBS	No	121.491572	229.369437	128.8	24.113	12.0	7.8	1.72	6903	2.29	19.68
011410915-03	OBS	No	55.245253	140.692328	189.1	3.312	8.7	9.2	1.72	6903	2.73	56.28
011410915-04	OBS	No	120.170150	159.905711	235.8	3.124	8.5	8.7	1.72	6903	2.91	19.97
011410915-05	OBS	No	112.875535	221.399883	248.9	3.698	8.4	8.0	1.72	6903	4.41	21.71
011410915-06	OBS	No	97.310505	219.952147	299.1	1.968	8.1	9.3	1.72	6903	3.52	26.46
011410915-07	OBS	No	153.455328	240.155198	201.5	3.233	8.2	8.4	1.72	6903	2.80	14.41
011410915-08	OBS	No	89.998936	193.645171	212.2	2.773	7.9	8.4	1.72	6903	2.88	29.36
011410915-09	OBS	No	557.200061	337.590460	129.3	27.663	7.8	6.9	1.72	6903	2.25	2.58
011410915-10	OBS	No	200.409436	326.508363	211.5	2.971	8.0	8.1	1.72	6903	2.81	10.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011410915-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
011410915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011410915-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011410915-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011410915-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

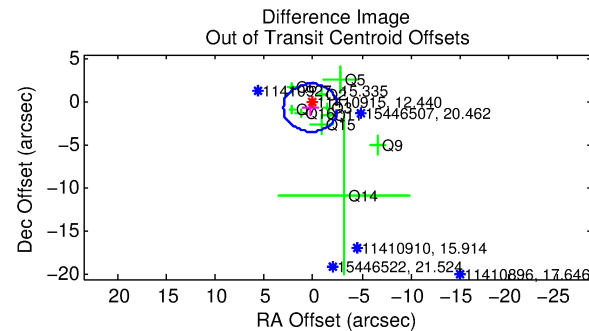
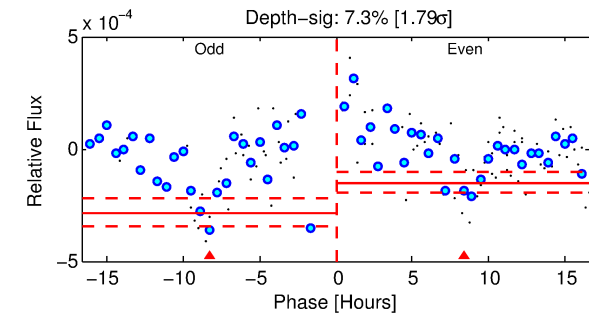
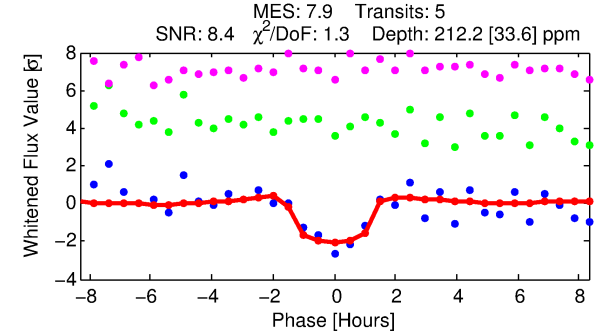
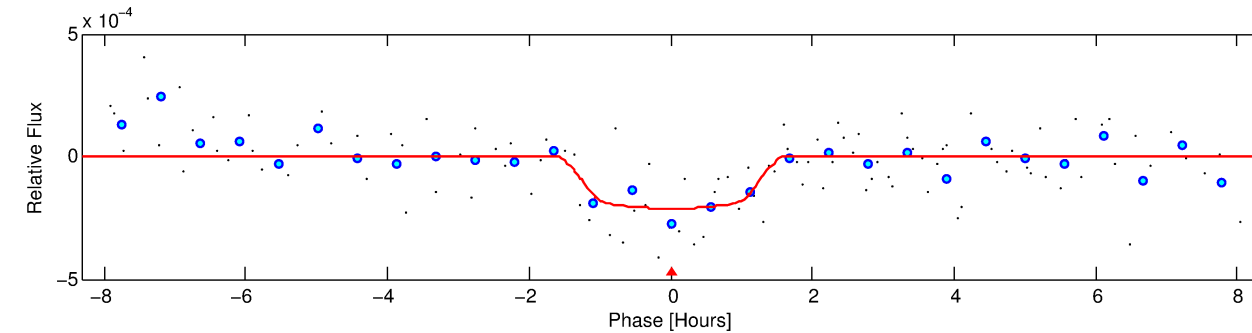
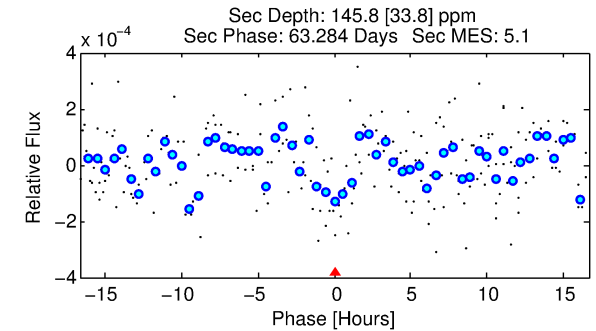
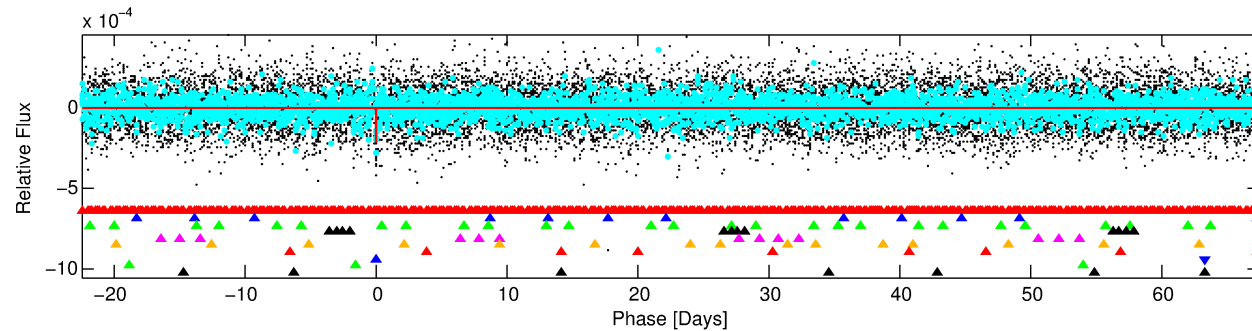
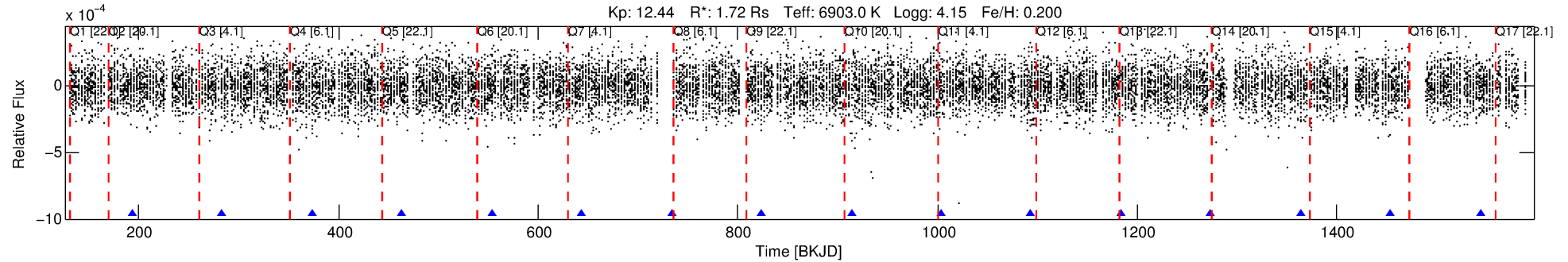
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011410915-08

No Significant Match Found

# DV One-Page Summary

KIC: 11410915 Candidate: 8 of 10 Period: 89.999 d



## DV Fit Results:

Period = 89.99894 [0.00118] d  
Epoch = 193.6452 [0.0093] BKJD  
Rp/R\* = 0.0153 [0.0132]  
a/R\* = 126.06 [645.86]  
b = 0.88 [1.34]  
Seff = 29.36 [6.33]  
Teq = 594 [32] K  
Rp = 2.88 [2.53] Re  
a = 0.4528 [0.0650] AU  
Ag = 1988.66 [3492.75] [0.57σ]  
Teffp = 6128 [2673] K [2.07σ]

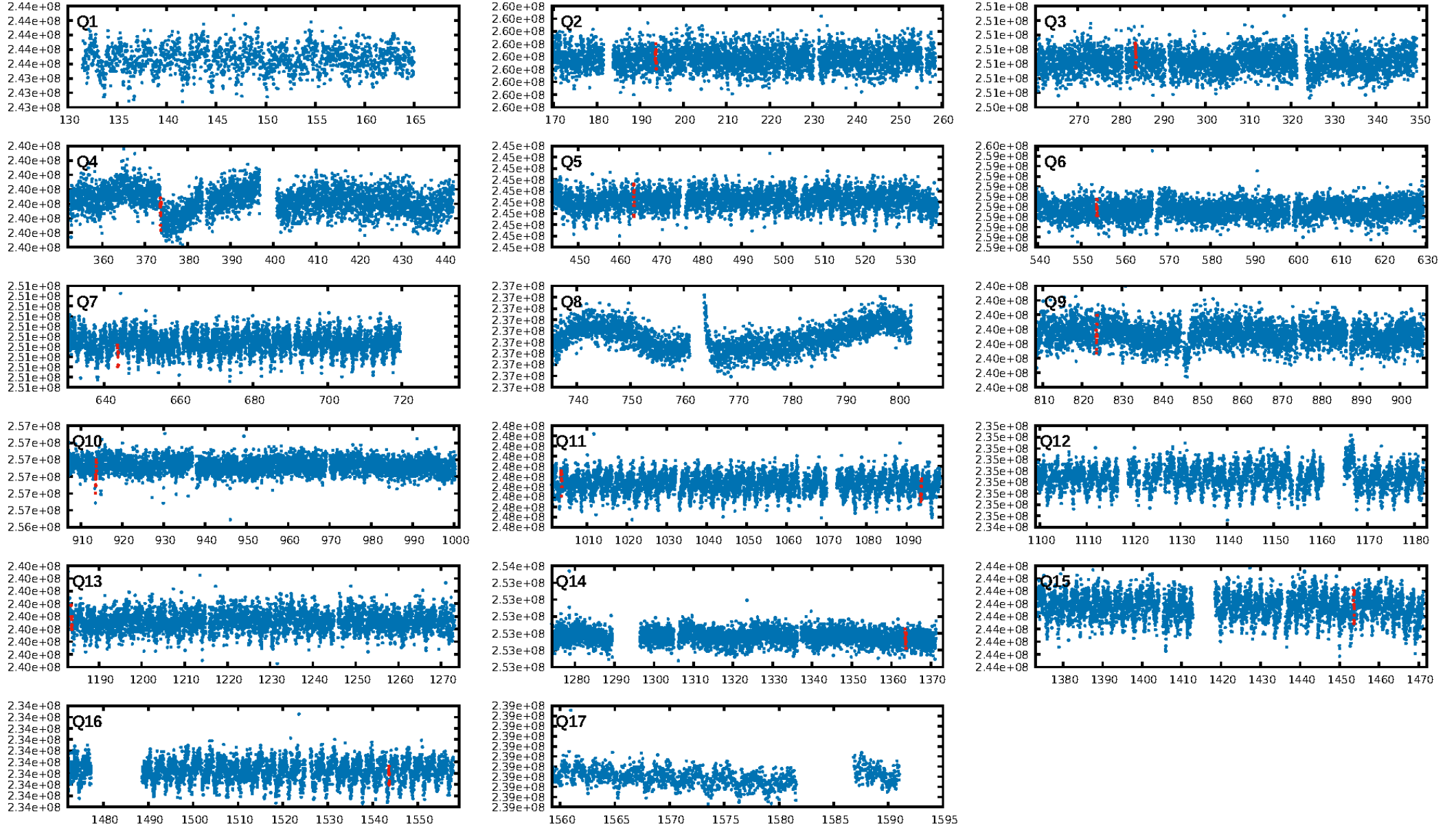
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [193.08σ]  
LongPeriod-sig: 100.0% [51.60σ]  
ModelChiSquare2-sig: 2.8%  
ModelChiSquareGof-sig: 71.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -0.4255  
Centroid-sig: 1.9%  
Centroid-so: 1.296 arcsec [2.02σ]  
OotOffset-rm: 0.725 arcsec [0.78σ]  
KicOffset-rm: 0.673 arcsec [0.76σ]  
OotOffset-st: 3/4/1/2 [10]  
KicOffset-st: 3/4/1/2 [10]  
DiffImageQuality-fgm: 0.20 [2/10]  
DiffImageOverlap-fno: 0.50 [6/12]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:49:04 Z

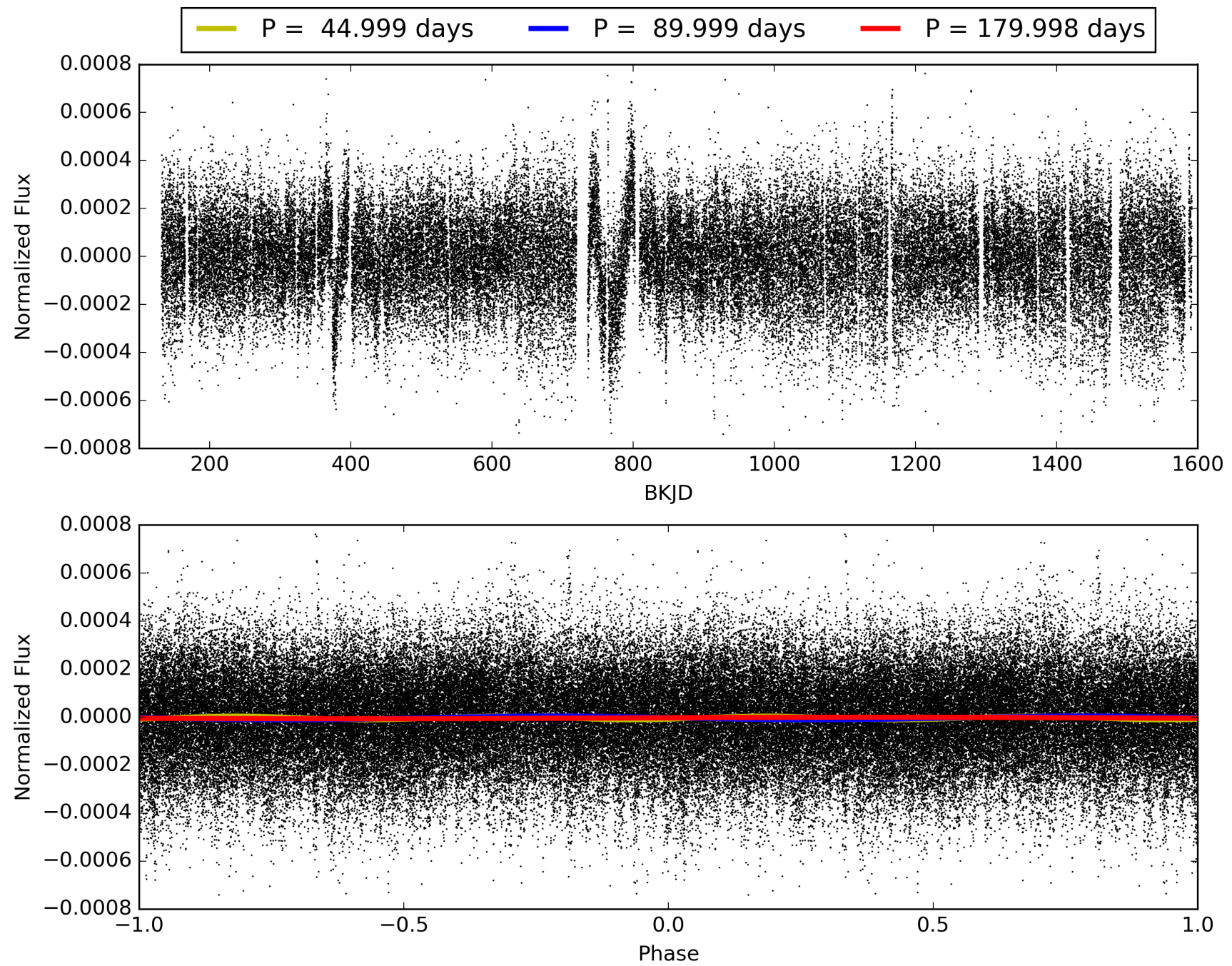
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011410915-08, PDC Light Curves



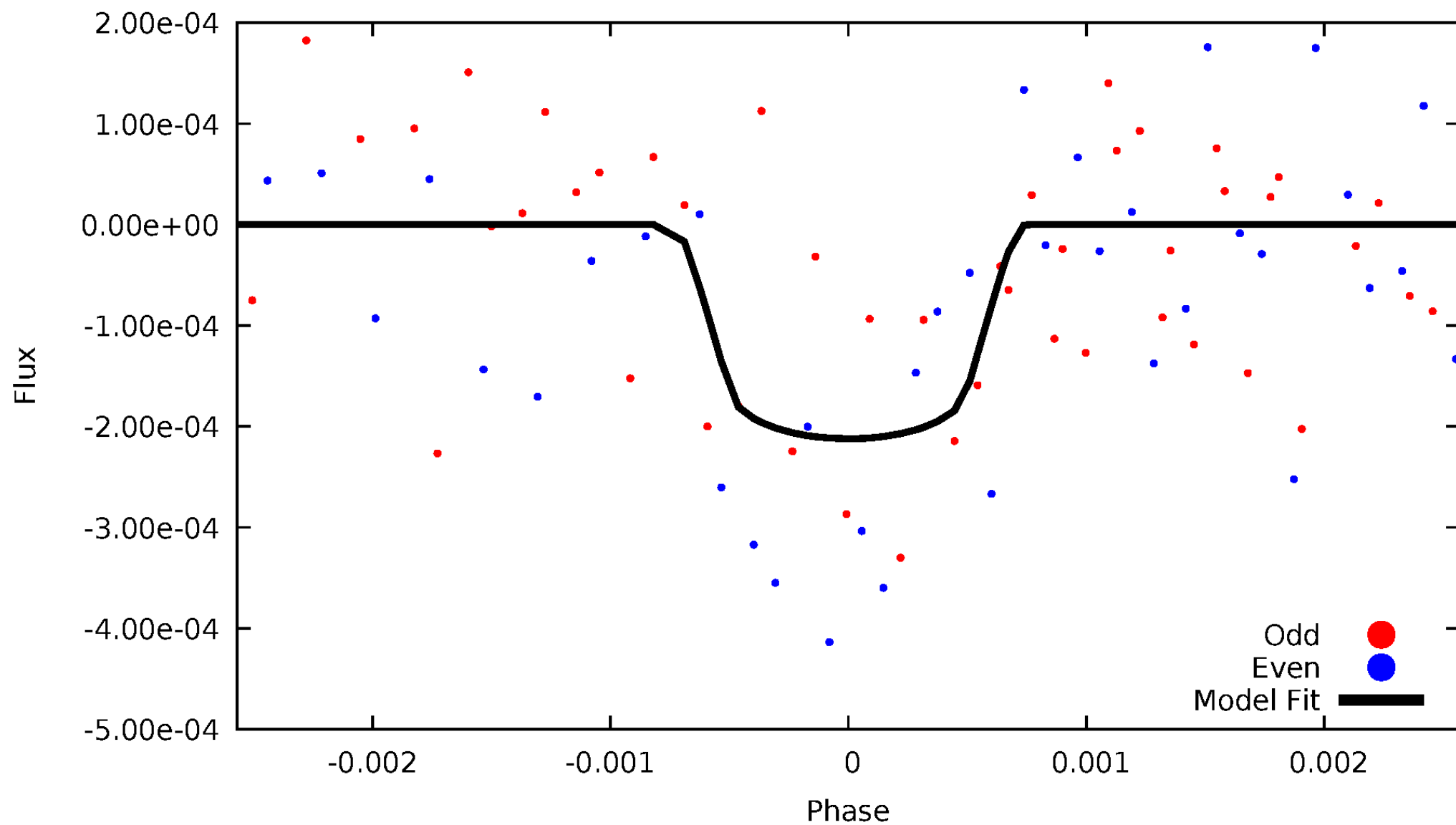


# TCE 011410915-08



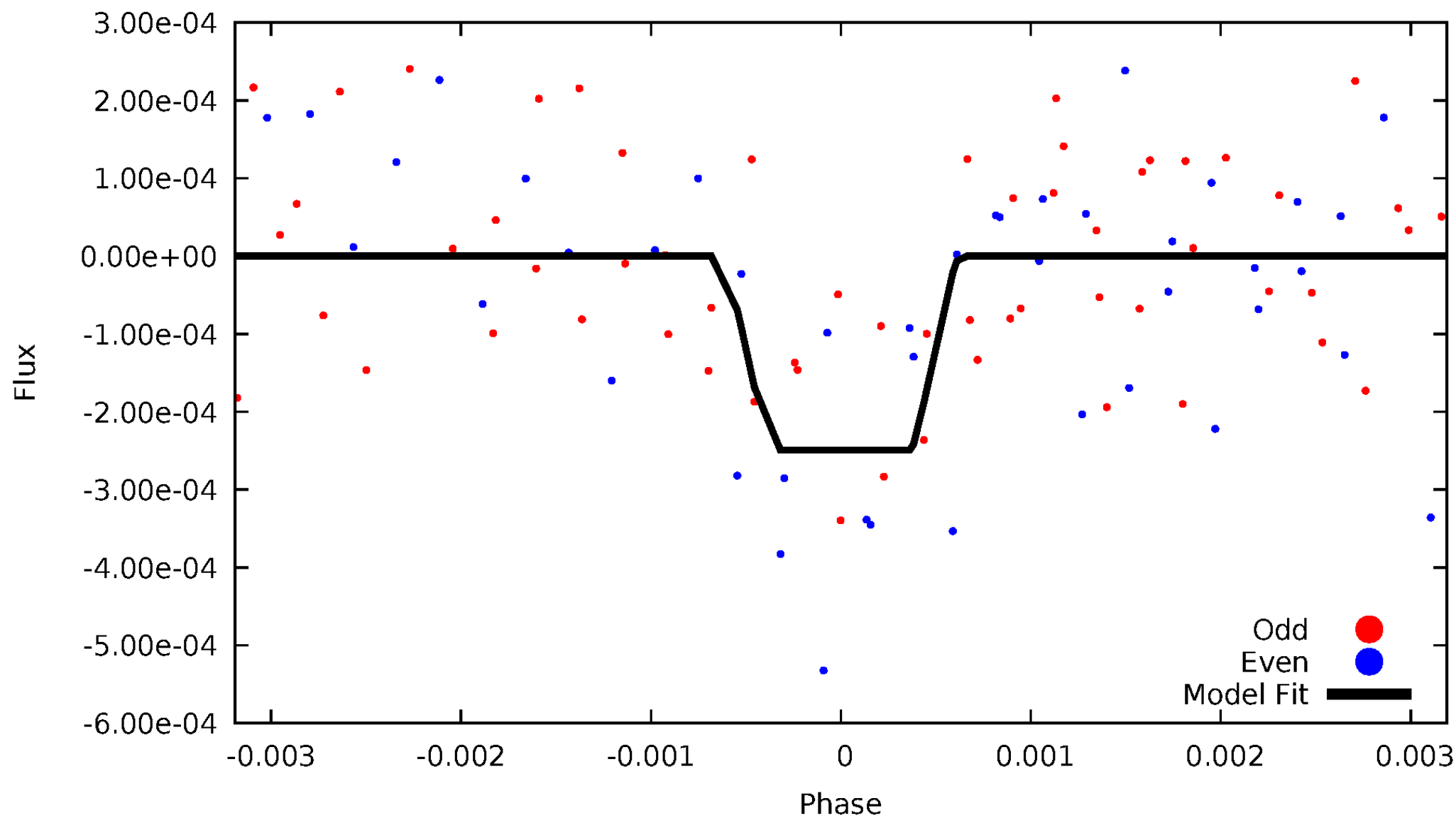
# DV Odd/Even

TCE 011410915-08



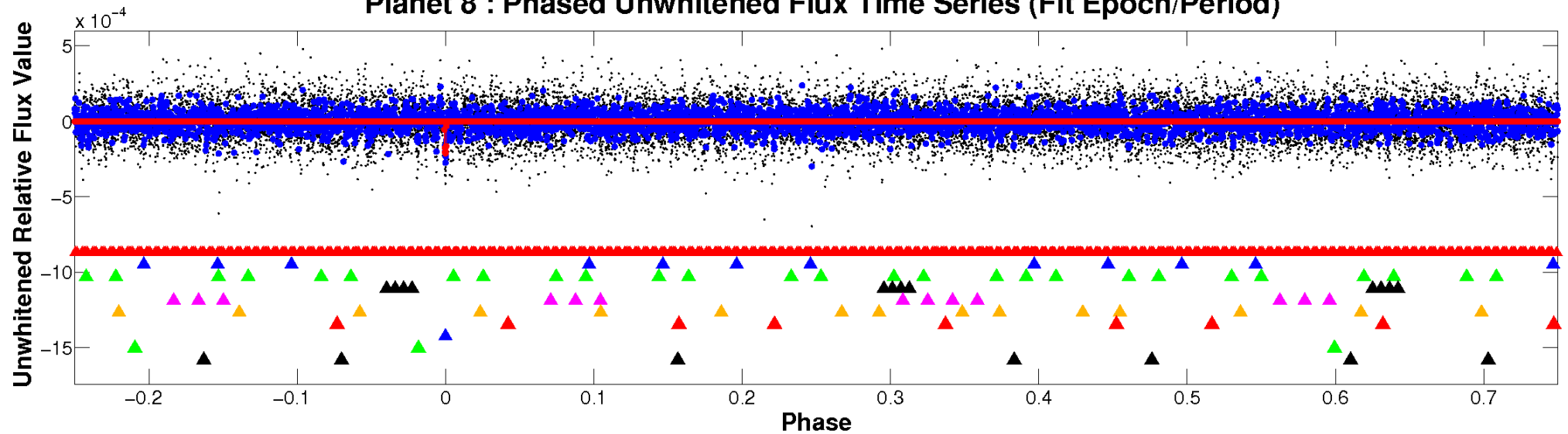
# ALT Odd/Even

TCE 011410915-08

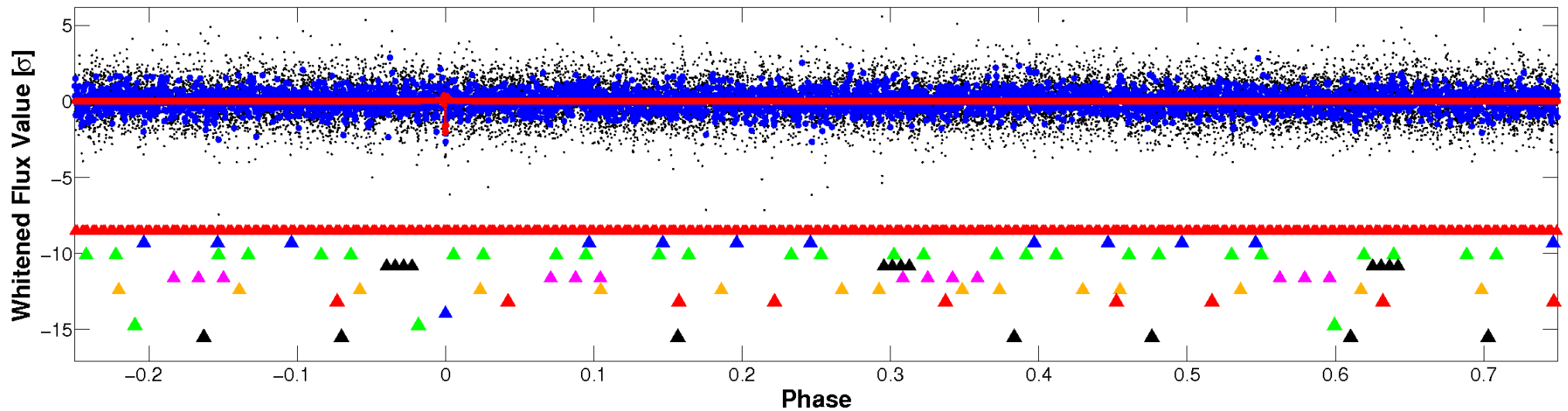


# Non-Whitened Vs. Whitened Light Curve

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



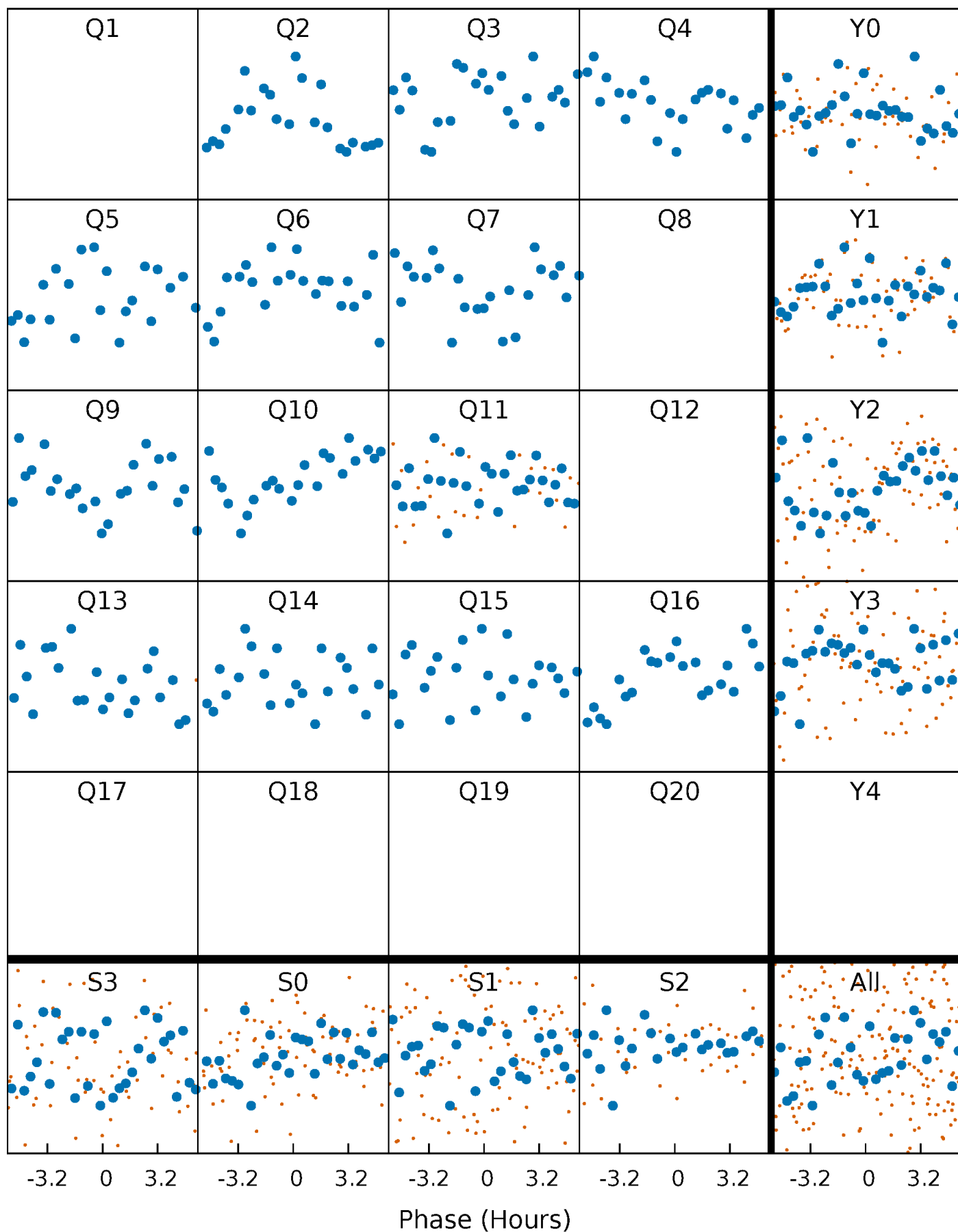
## Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)





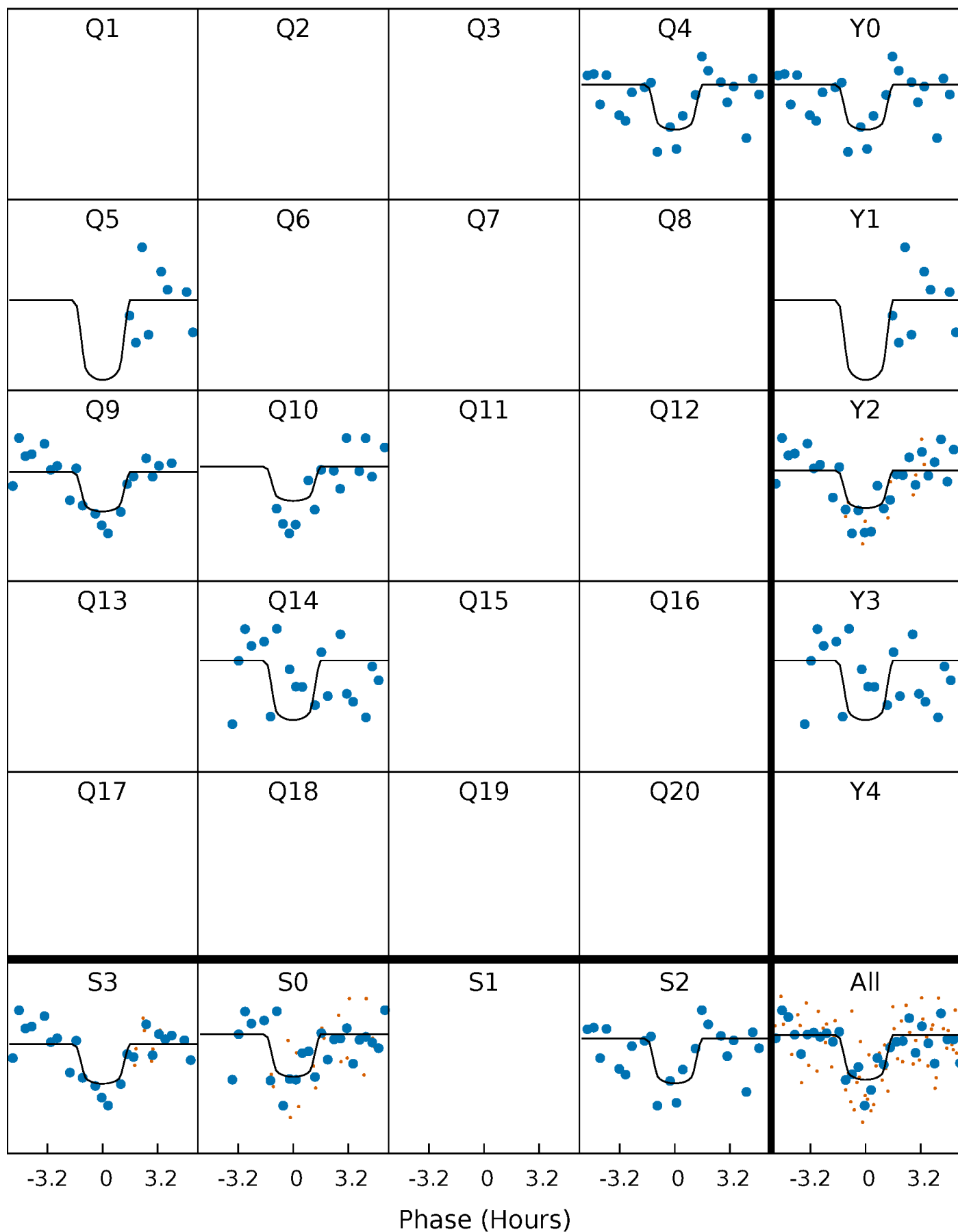
# PDC Quarter-Phased Transit Curves

TCE 011410915-08 P= 89.998936 Days  $T_0=193.645171$  (BKJD)



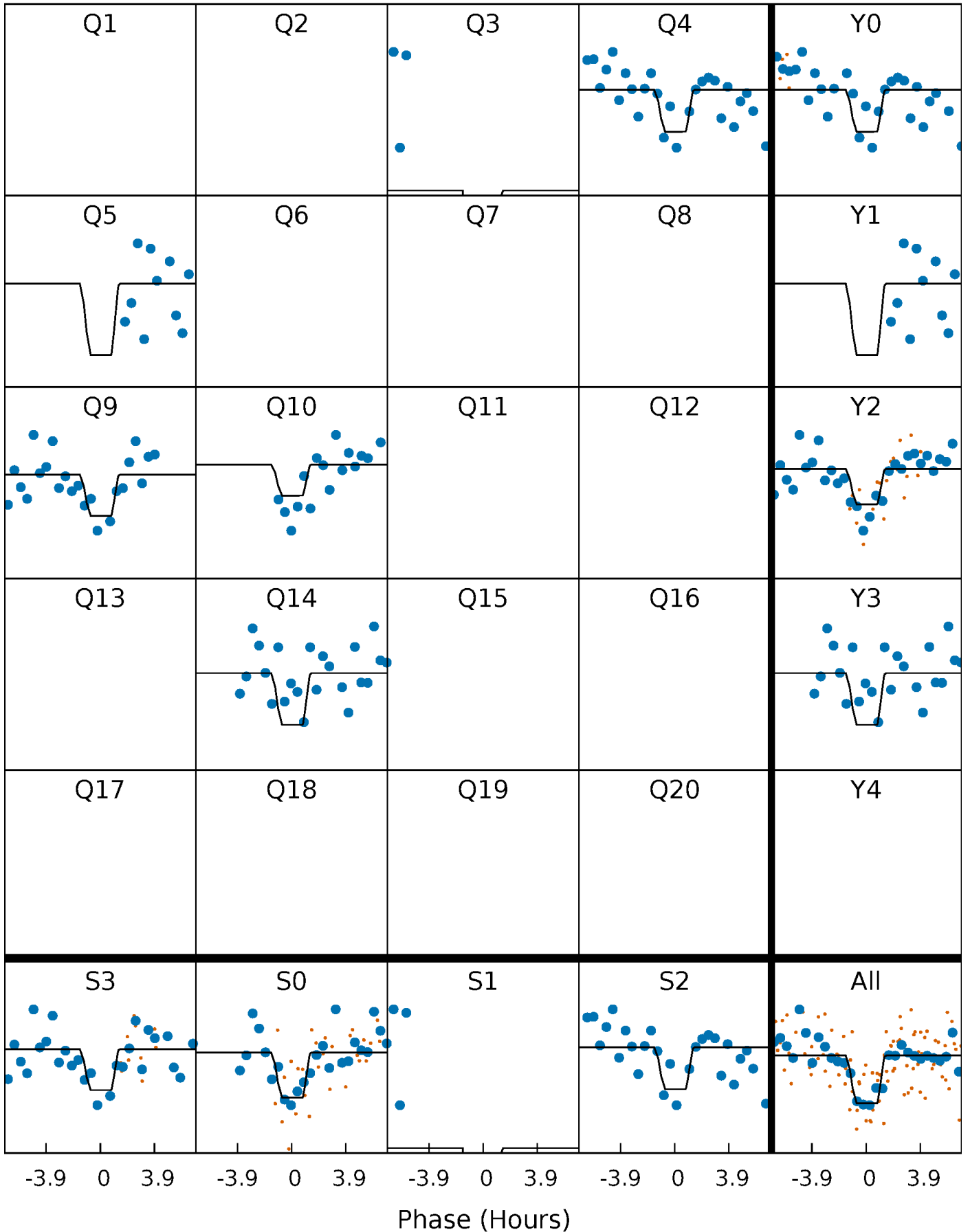
# DV Quarter-Phased Transit Curves

TCE 011410915-08   P= 89.998936 Days    $T_0=193.645171$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

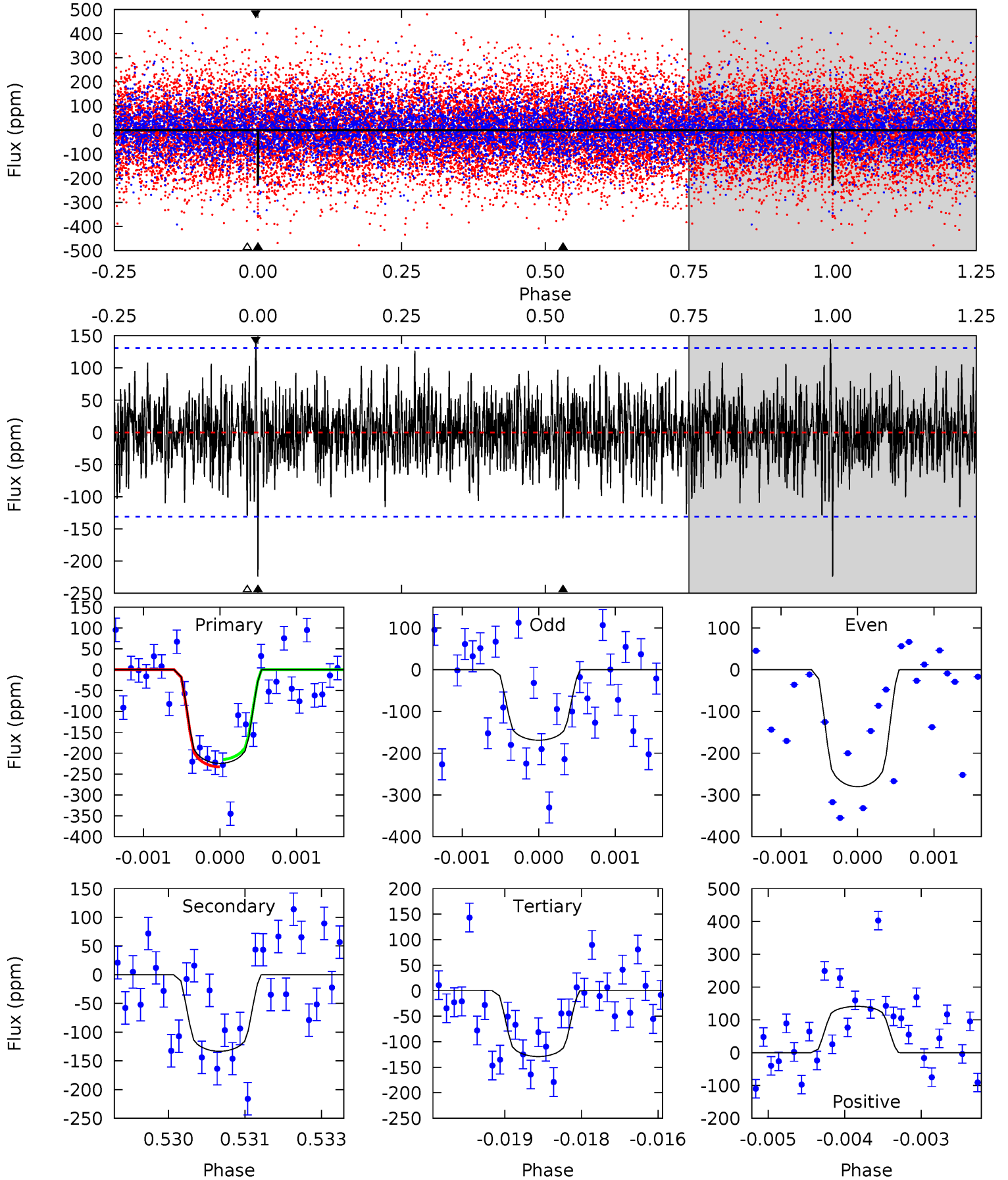
TCE 011410915-08 P= 90.000610 Days  $T_0=193.632862$  (BKJD)



# DV Model-Shift Uniqueness Test

011410915-08, P = 89.998936 Days, E = 103.646235 Days

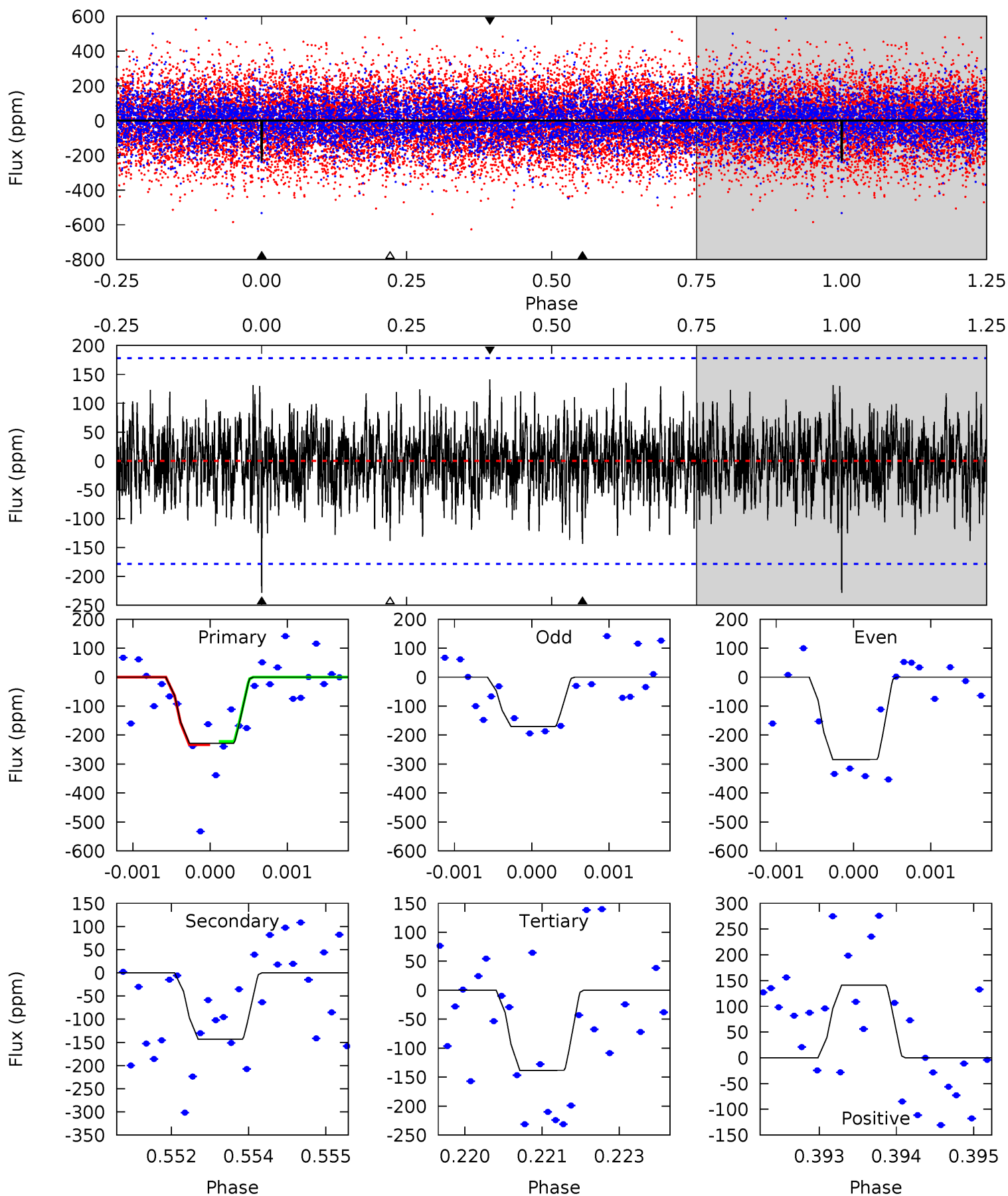
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.24	5.49	5.31	5.81	5.40	3.20	1.58	3.92	3.42	0.17	-0.32	2.39	0.92	0.39	0.36



# Alt Model-Shift Uniqueness Test

011410915-08,  $P = 90.000610$  Days,  $E = 103.632252$  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
6.95	4.36	4.21	4.29	5.42	3.24	1.33	2.74	2.66	0.15	0.07	1.73	0.99	0.38	0.17



### Stellar Parameters For KIC 011410915

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6903^{+72}_{-92}$	$4.151^{+0.066}_{-0.114}$	$0.200^{+0.100}_{-0.150}$	$1.720^{+0.294}_{-0.171}$	$1.528^{+0.119}_{-0.097}$	$0.423^{+0.128}_{-0.148}$
	+1%/-1%	+2%/-3%	+50%/-75%	+17%/-10%	+8%/-6%	+30%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011410915-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-133 \pm 24$	$3.44^{+2.45}_{-2.15}$	$832^{+34}_{-25}$	$5497^{+3923}_{-1075}$	$1285^{+7853}_{-852}$
Alt.	$-143 \pm 33$	$3.34^{+2.28}_{-2.02}$	$833^{+32}_{-26}$	$5639^{+3994}_{-1152}$	$1444^{+8000}_{-970}$

$T_{\text{max}}$  = 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  $A_{\text{obs}} \gg 1.0$

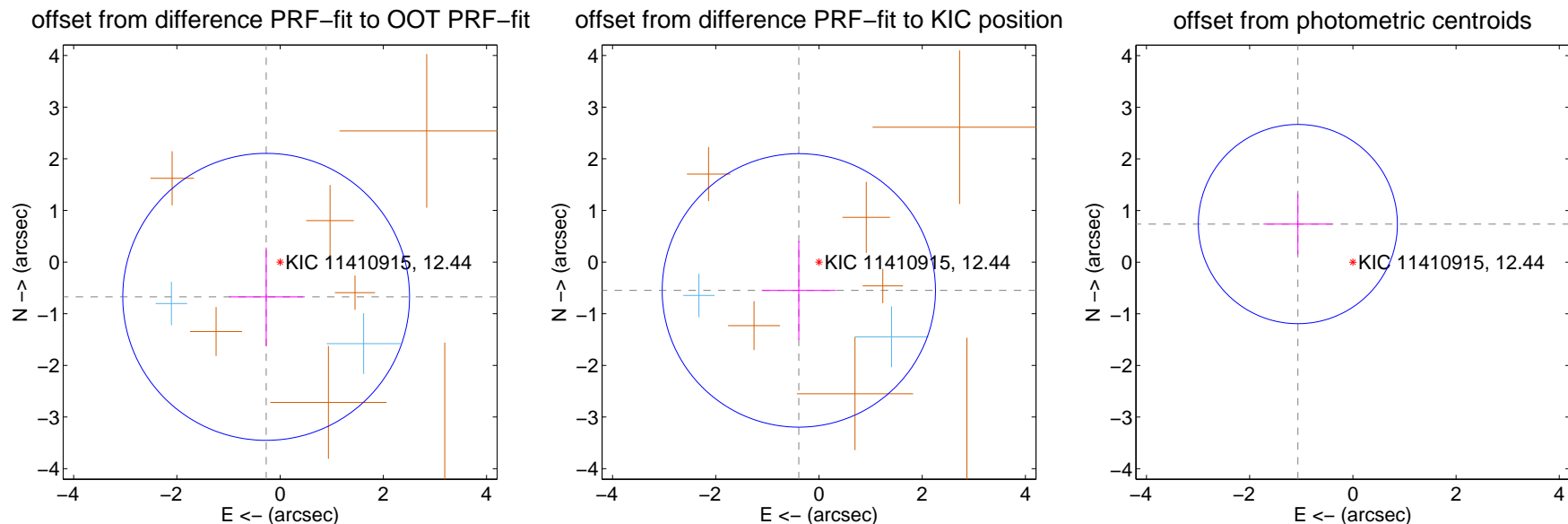
## DV Centroid Data

Supplemental centroid analysis for 011410915-08. Kepler magnitude: 12.44. Transit SNR 8.41

There are 2 quarters with good PRF difference image offsets

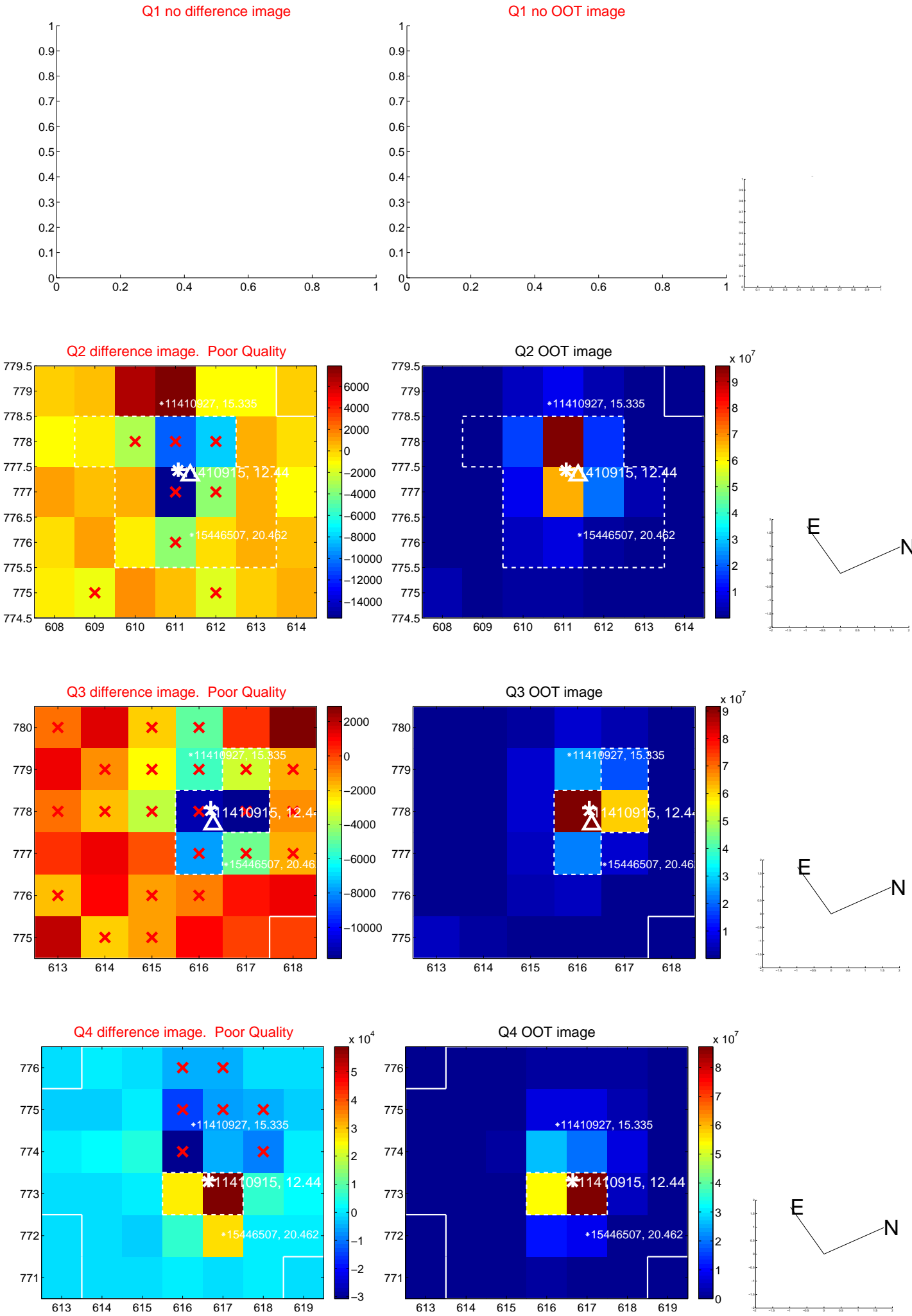
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.725 \pm 0.926$	0.78	$0.270 \pm 0.718$	$-0.673 \pm 0.956$
PRF-fit source offset from KIC position	$0.673 \pm 0.883$	0.76	$0.391 \pm 0.718$	$-0.548 \pm 0.956$
photometric centroid source offset	$1.30 \pm 0.64$	2.02	$1.07 \pm 0.67$	$0.74 \pm 0.59$



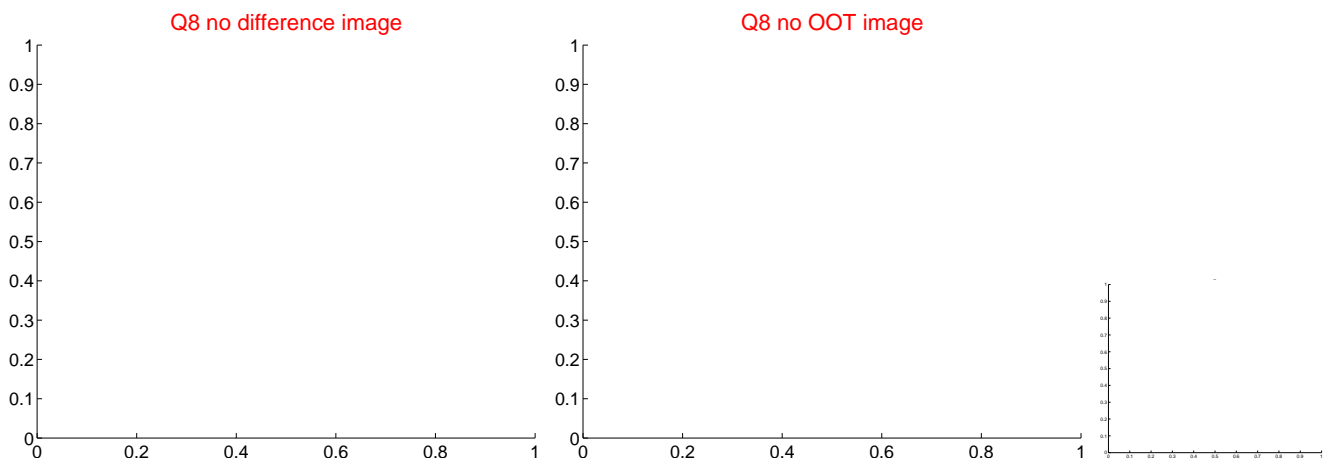
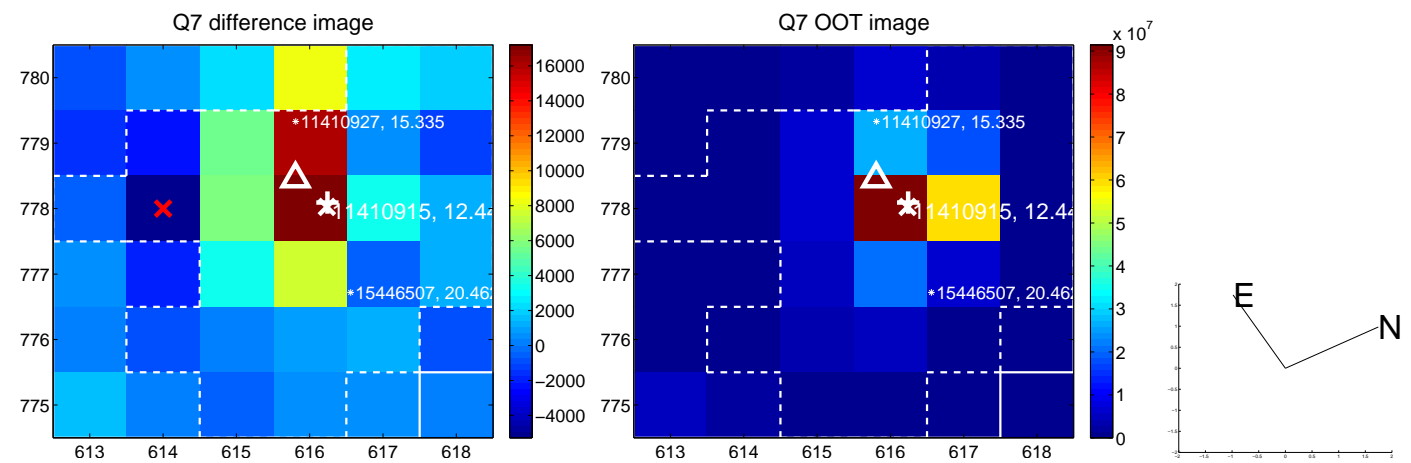
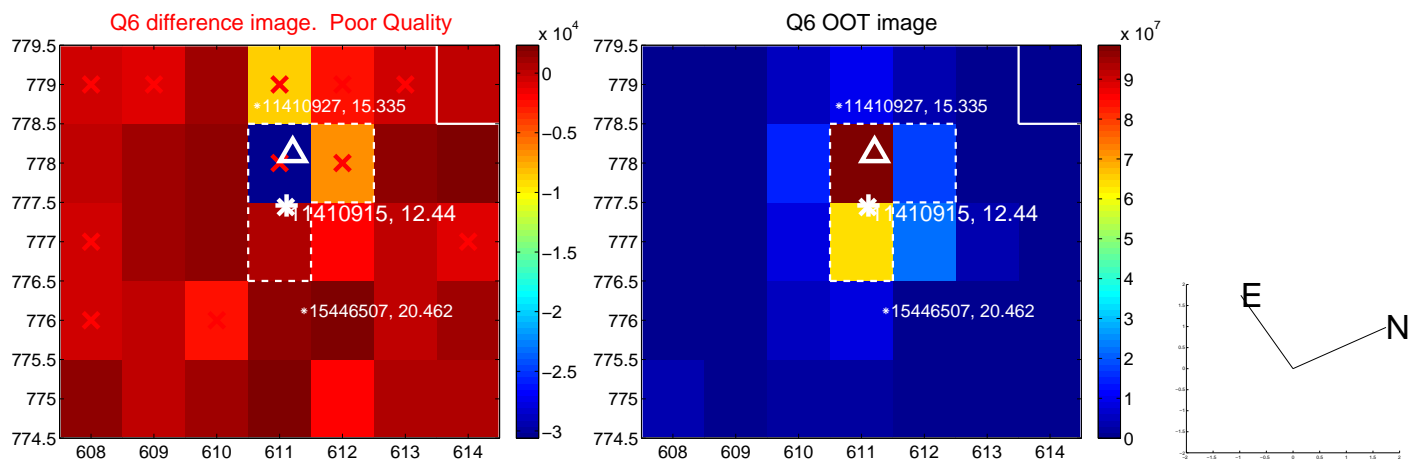
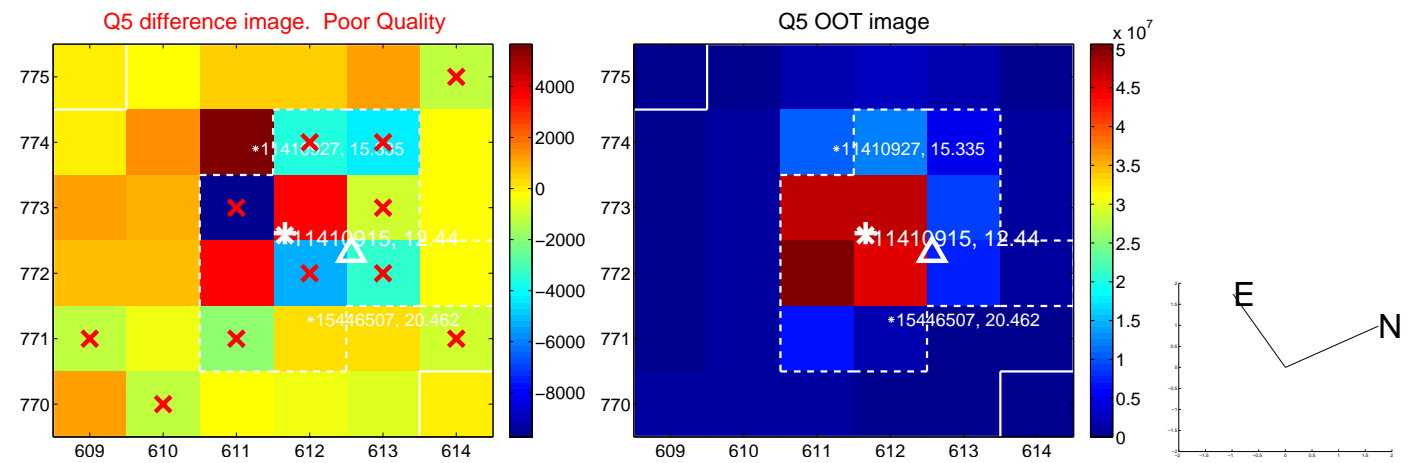
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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.

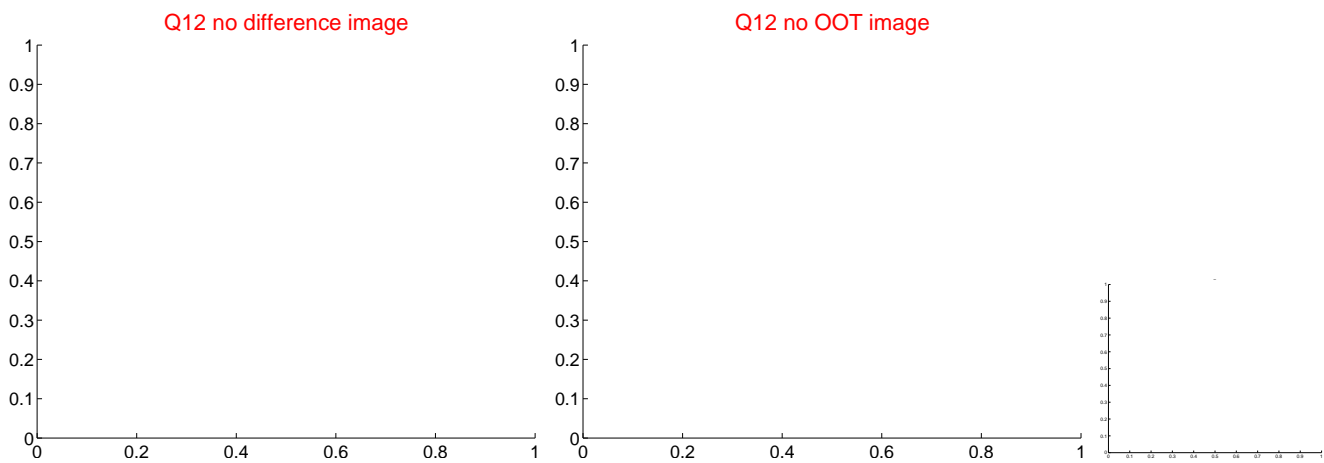
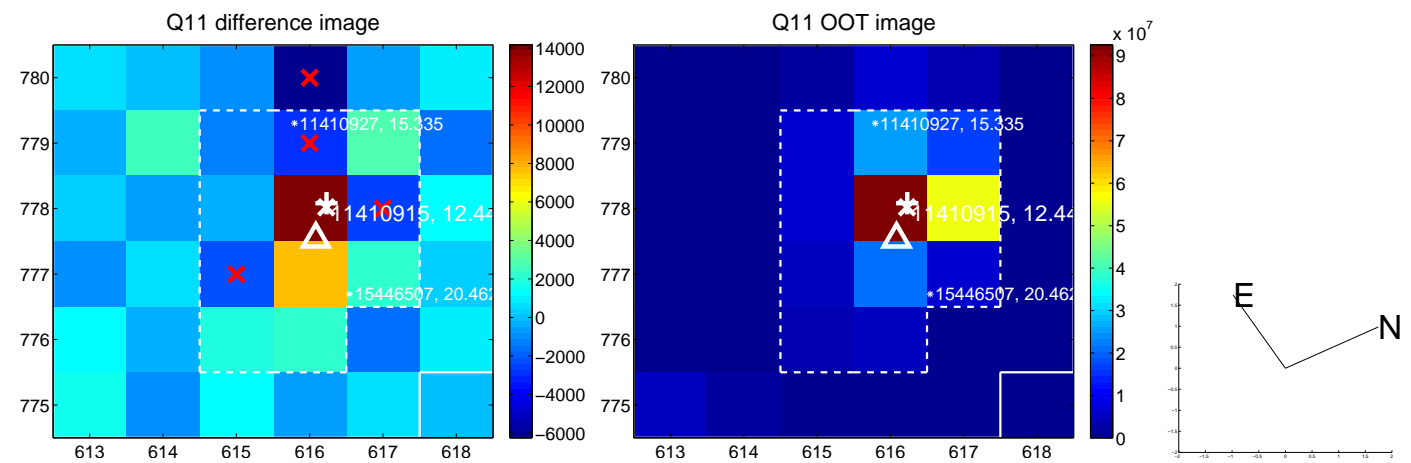
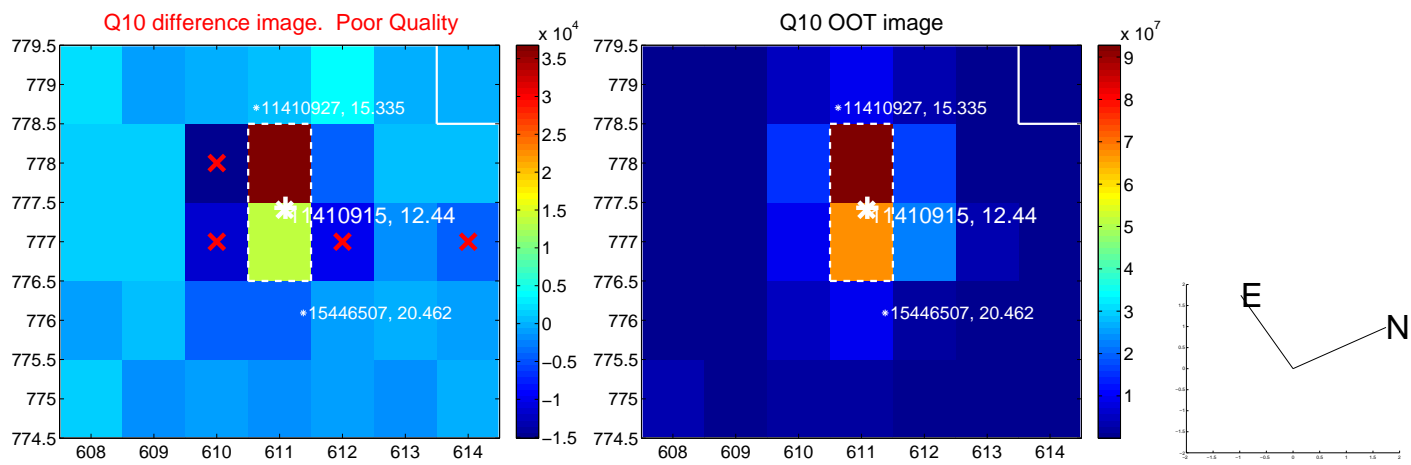
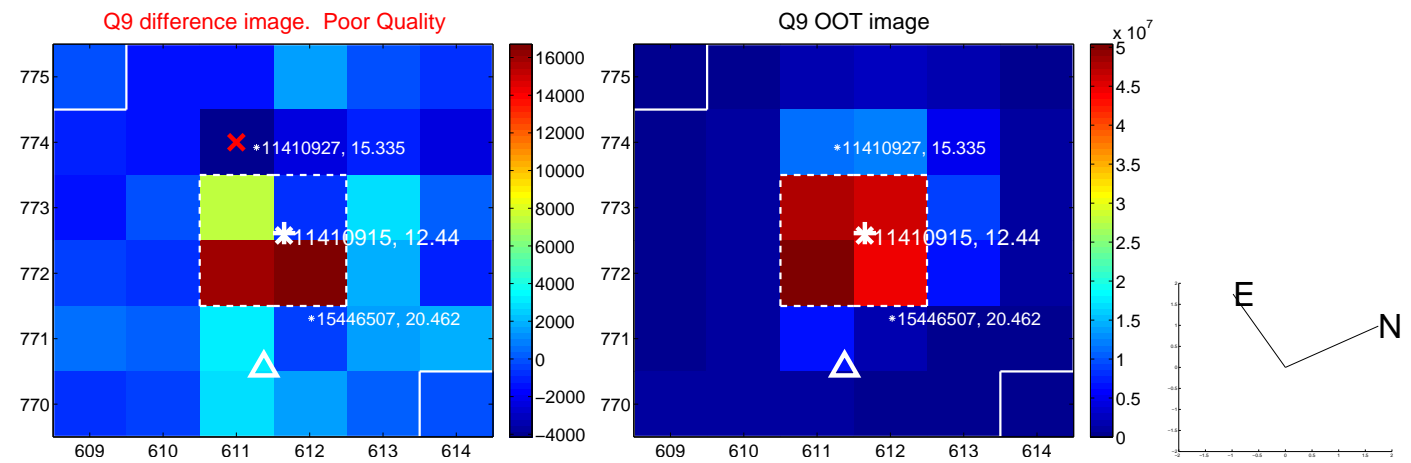




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.

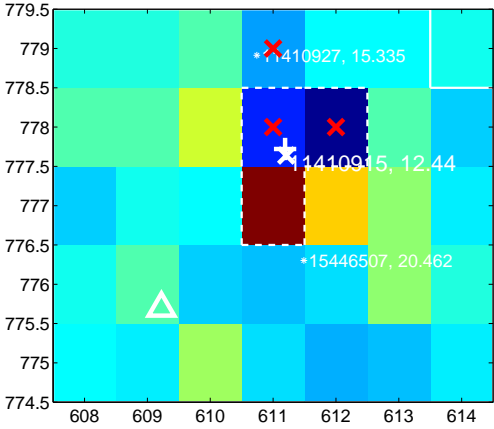
Q13 no difference image



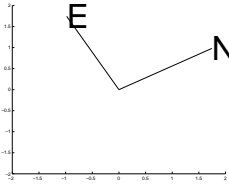
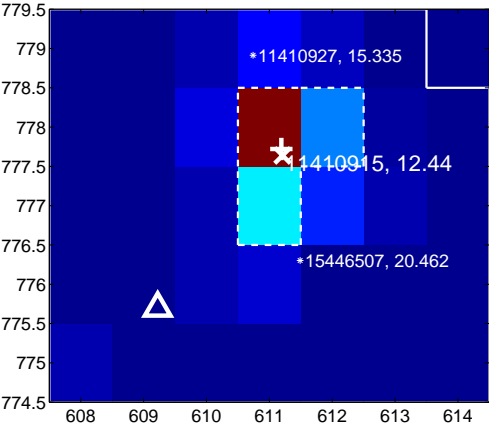
Q13 no OOT image



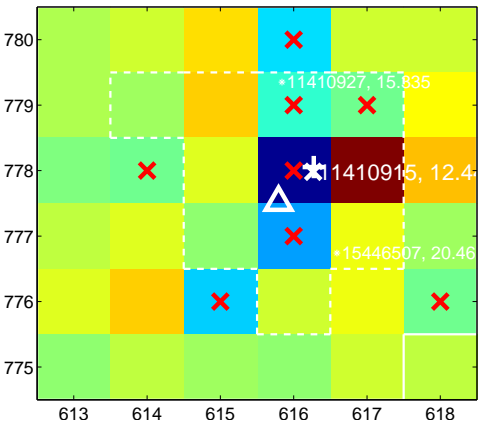
Q14 difference image. Poor Quality



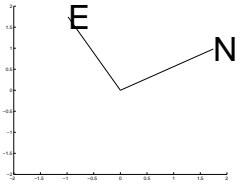
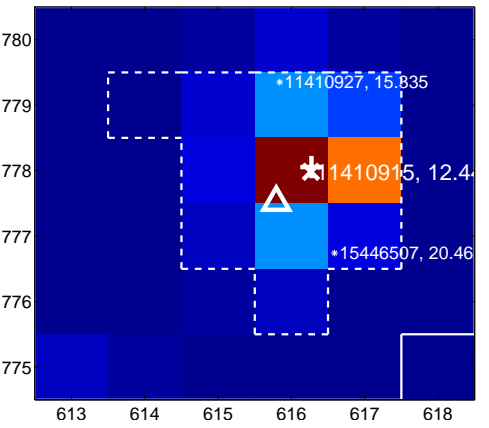
Q14 OOT image



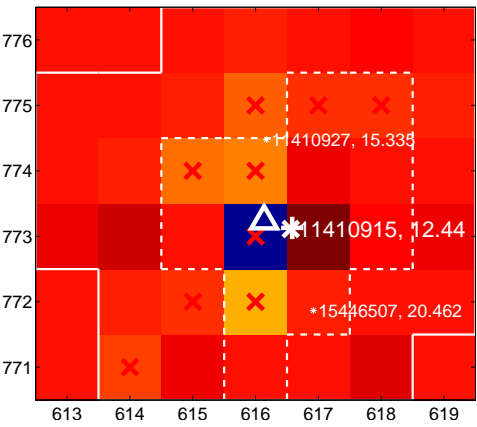
Q15 difference image. Poor Quality



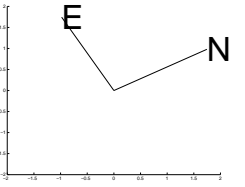
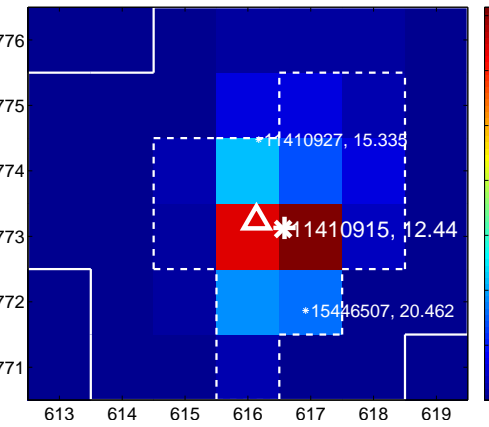
Q15 OOT image



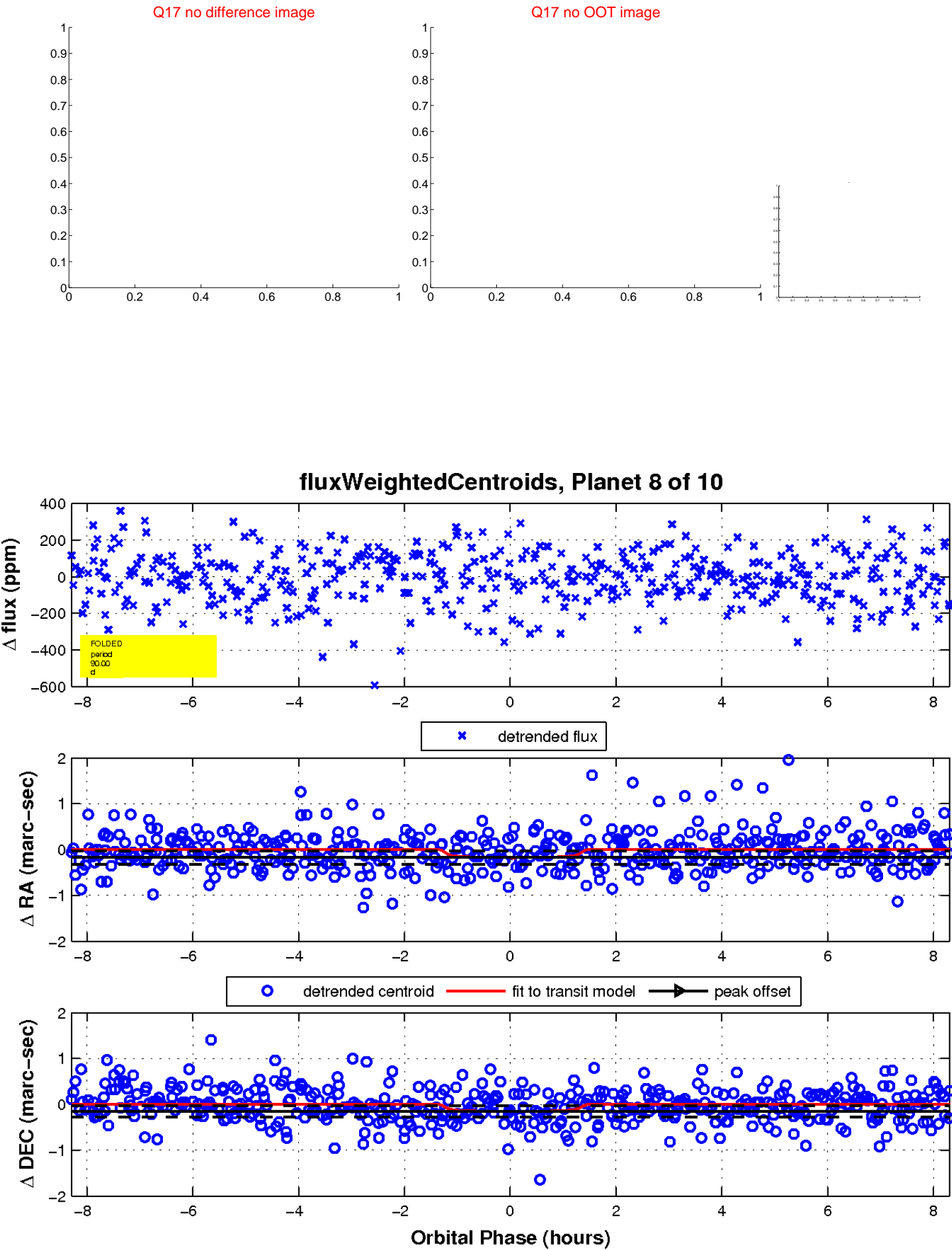
Q16 difference image. Poor Quality



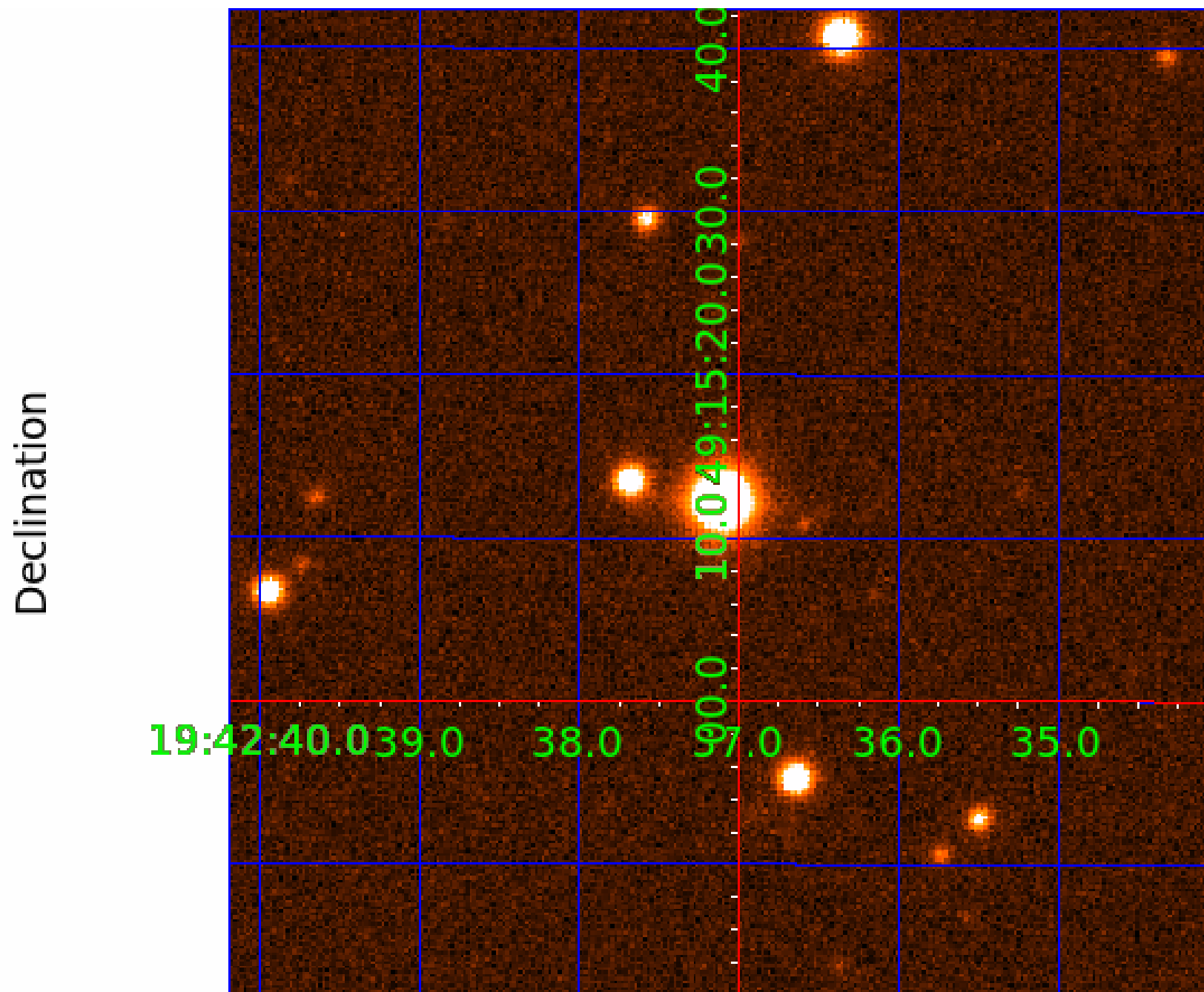
Q16 OOT image



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



UKIRT Image



## KIC 011410915

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011410915-01	OBS	No	2.743221	133.516224	11.0	15.637	8.0	6.3	1.72	6903	0.59	3083.55
011410915-02	OBS	No	121.491572	229.369437	128.8	24.113	12.0	7.8	1.72	6903	2.29	19.68
011410915-03	OBS	No	55.245253	140.692328	189.1	3.312	8.7	9.2	1.72	6903	2.73	56.28
011410915-04	OBS	No	120.170150	159.905711	235.8	3.124	8.5	8.7	1.72	6903	2.91	19.97
011410915-05	OBS	No	112.875535	221.399883	248.9	3.698	8.4	8.0	1.72	6903	4.41	21.71
011410915-06	OBS	No	97.310505	219.952147	299.1	1.968	8.1	9.3	1.72	6903	3.52	26.46
011410915-07	OBS	No	153.455328	240.155198	201.5	3.233	8.2	8.4	1.72	6903	2.80	14.41
011410915-08	OBS	No	89.998936	193.645171	212.2	2.773	7.9	8.4	1.72	6903	2.88	29.36
011410915-09	OBS	No	557.200061	337.590460	129.3	27.663	7.8	6.9	1.72	6903	2.25	2.58
011410915-10	OBS	No	200.409436	326.508363	211.5	2.971	8.0	8.1	1.72	6903	2.81	10.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011410915-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
011410915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011410915-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011410915-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011410915-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

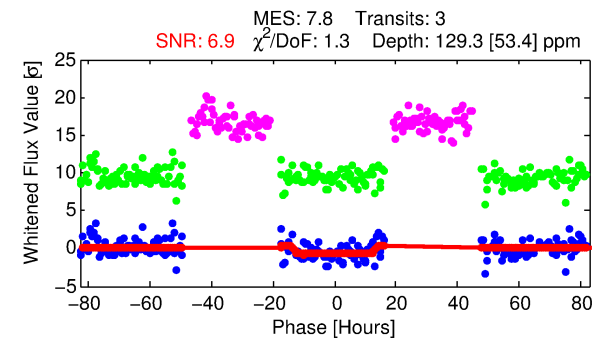
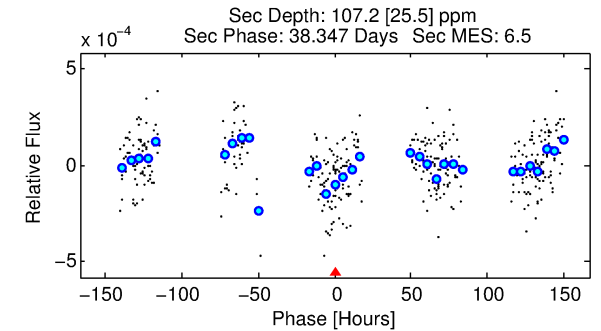
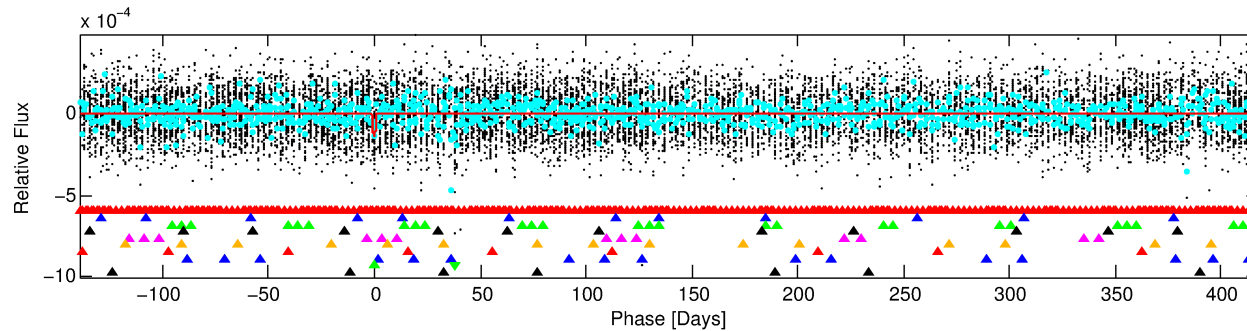
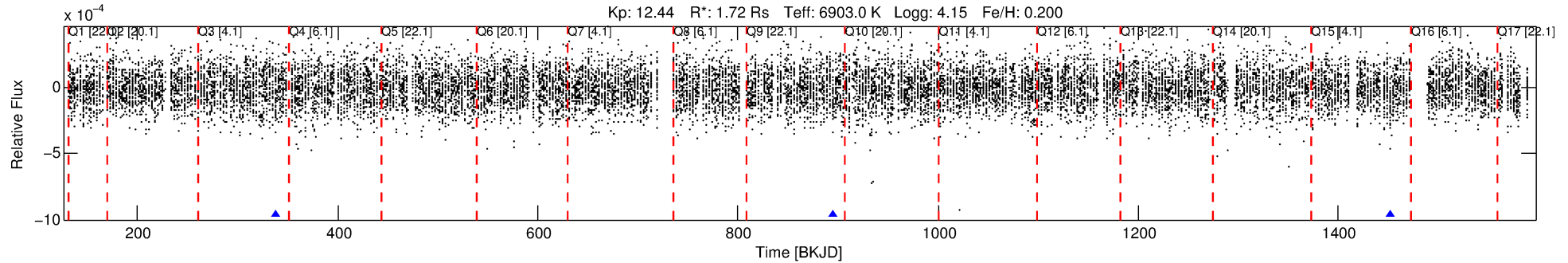
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011410915-09

No Significant Match Found

# DV One-Page Summary

KIC: 11410915 Candidate: 9 of 10 Period: 557.200 d

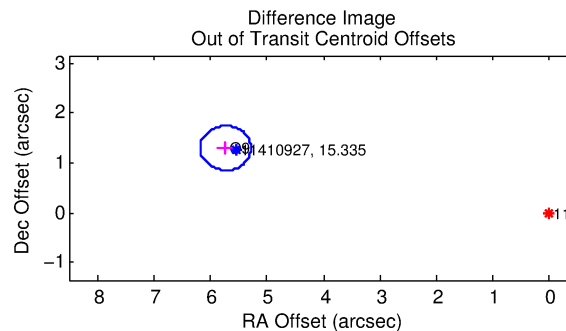
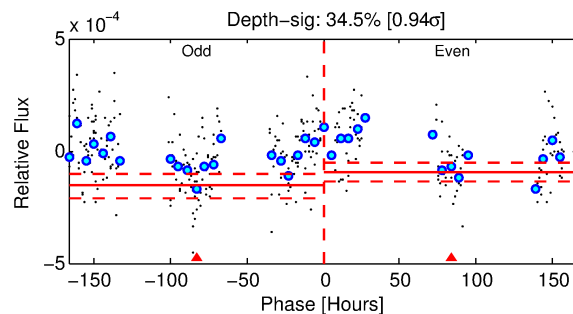
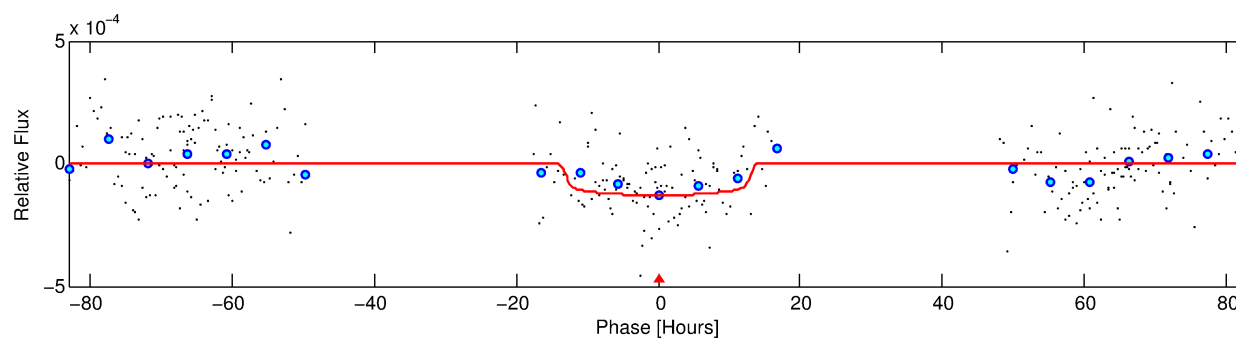


## DV Fit Results:

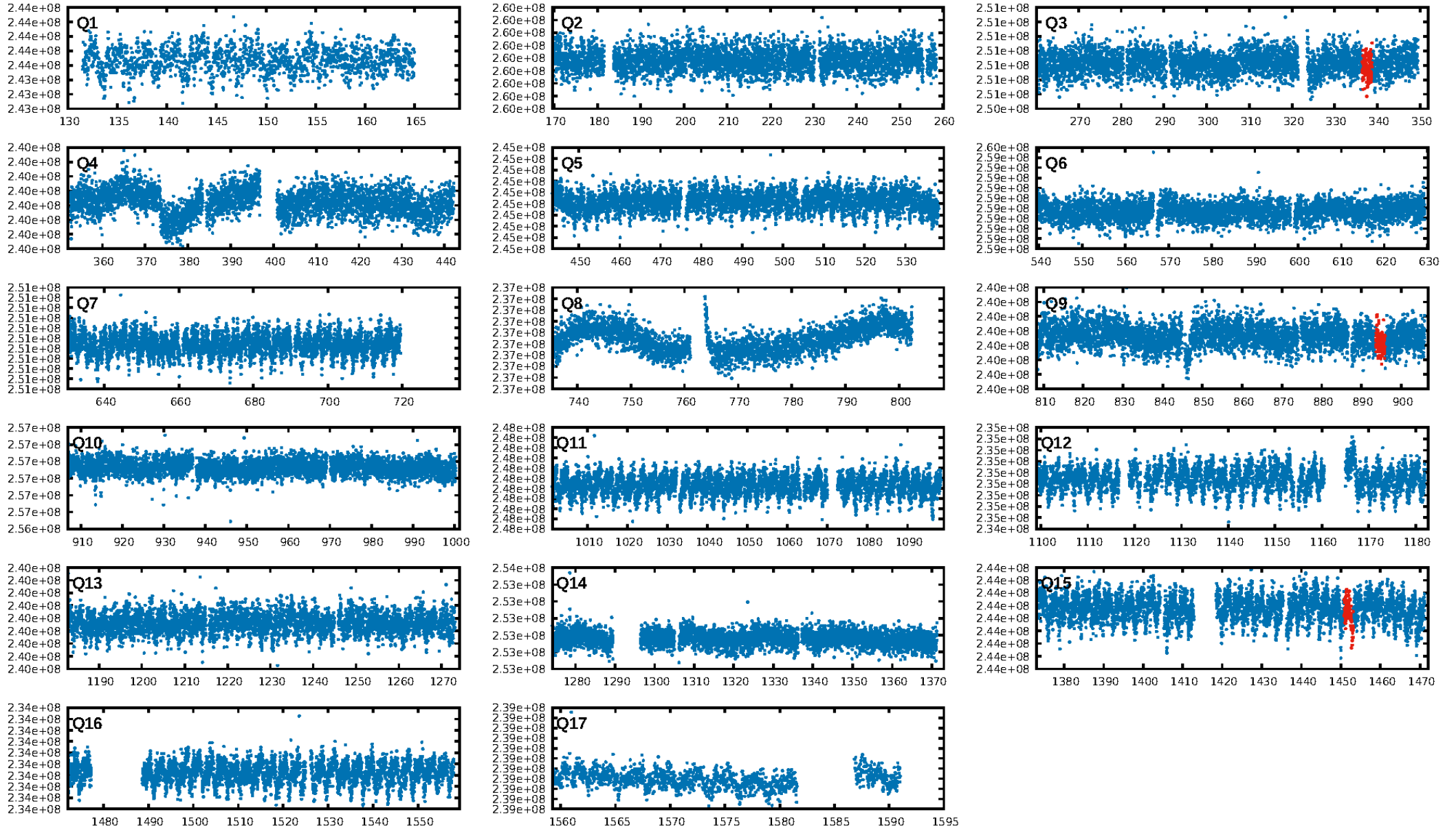
Period = 557.20006 [0.64528] d  
Epoch = 337.5905 [0.6515] BKJD  
Rp/R\* = 0.0120 [0.0047]  
a/R\* = 74.97 [177.32]  
b = 0.89 [0.34]  
Seff = 2.58 [0.56]  
Teq = 323 [17] K  
Rp = 2.25 [0.96] Re  
a = 1.5266 [0.2193] AU  
Ag = 27058.80 [22833.43] [1.19σ]  
Teffp = 6410 [1315] K [4.63σ]

## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [307.78σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 27.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.976  
Centroid-sig: 17.5%  
Centroid-so: 2.147 arcsec [1.17σ]  
OotOffset-rm: 5.873 arcsec [39.56σ]  
KicOffset-rm: 5.996 arcsec [40.42σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 0.00 [0/2]

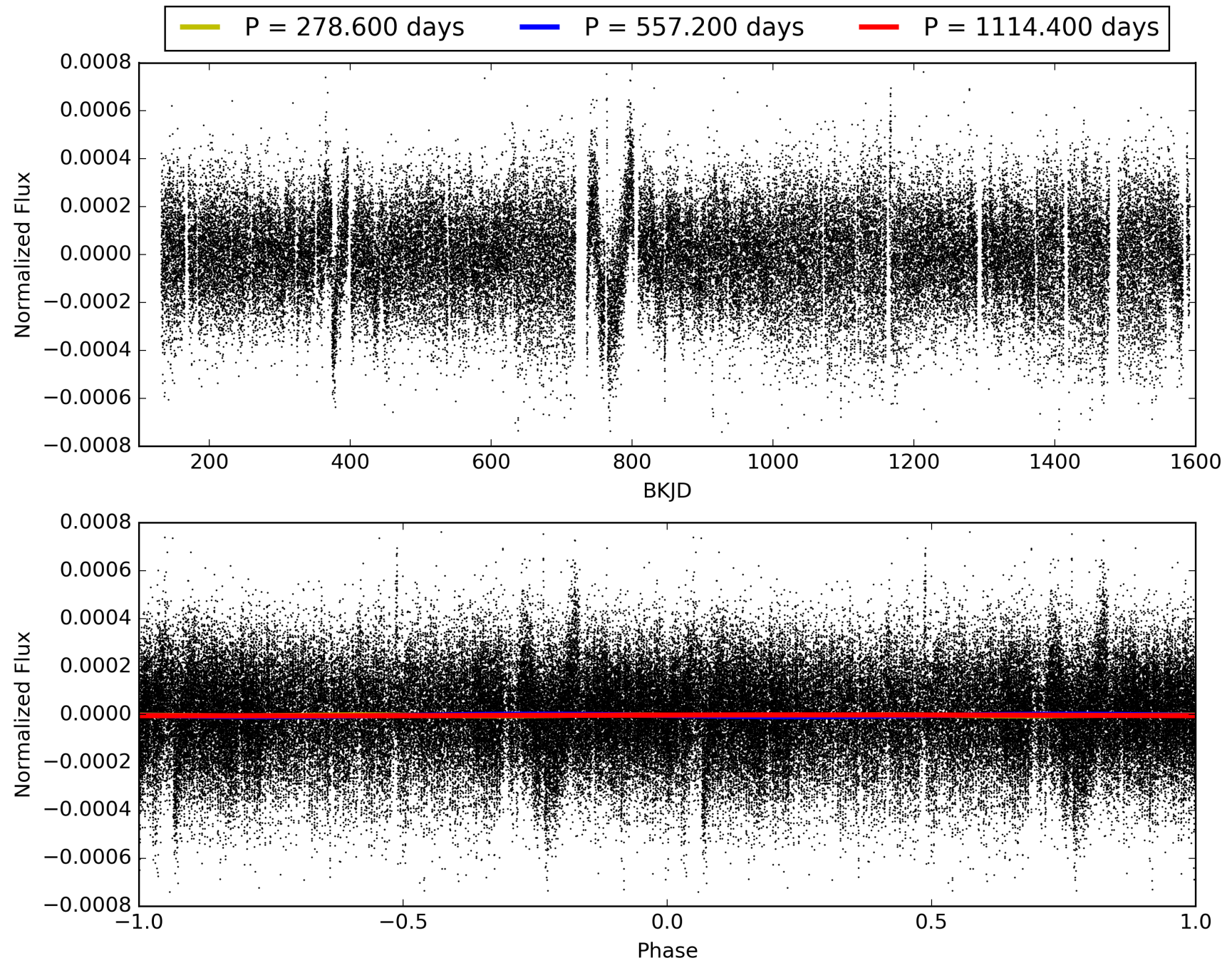


# TCE 011410915-09, PDC Light Curves



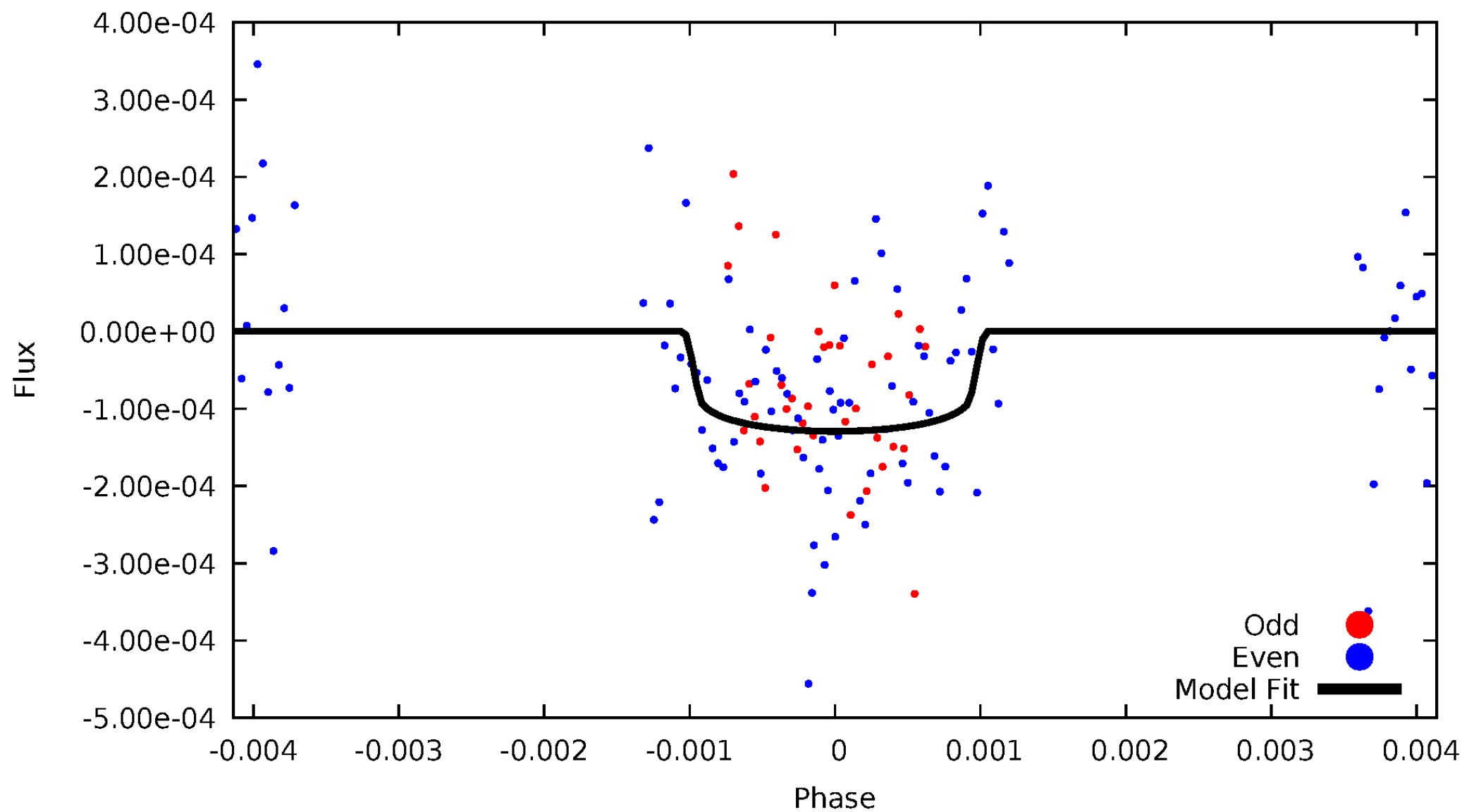


# TCE 011410915-09



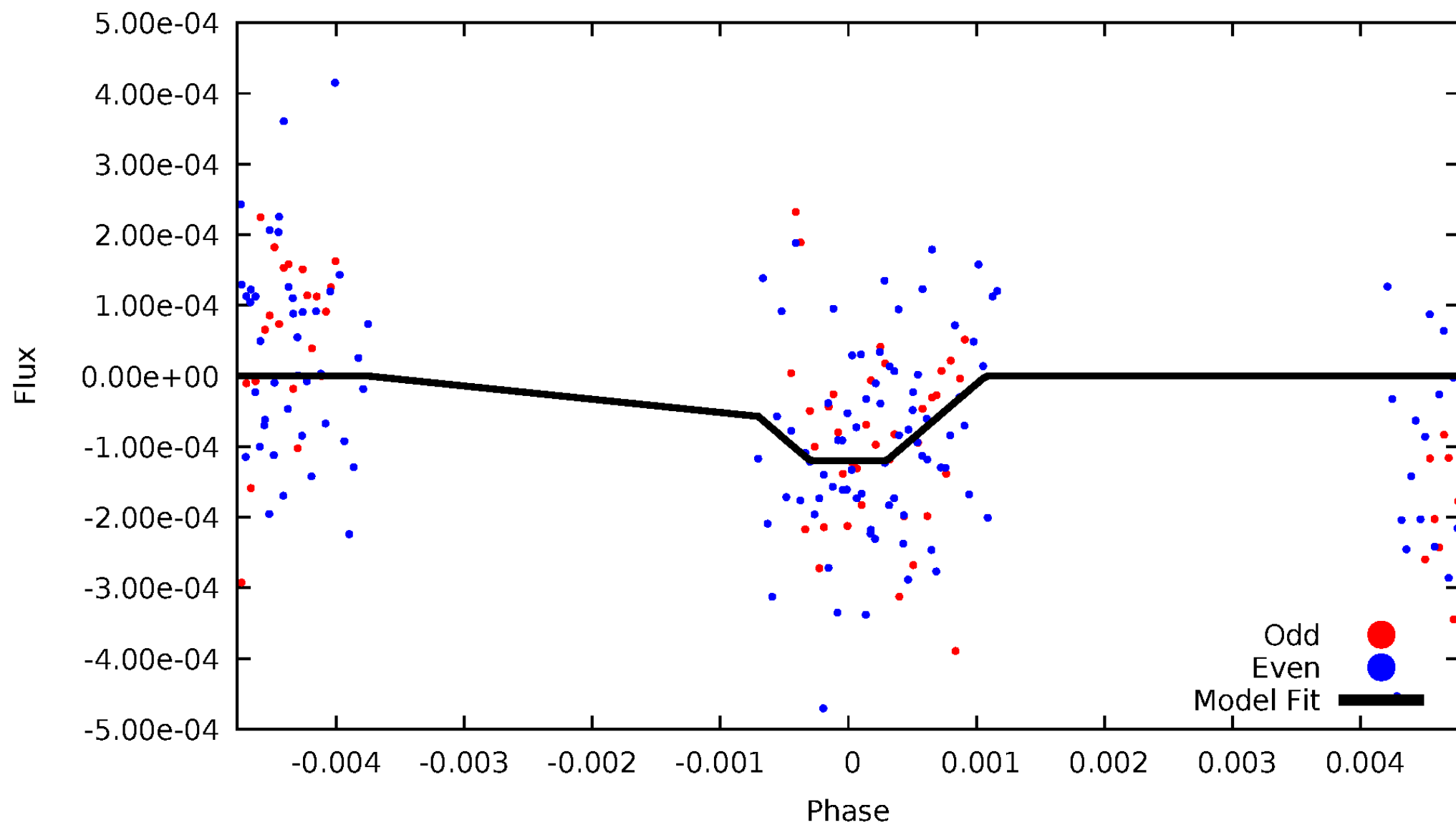
# DV Odd/Even

TCE 011410915-09



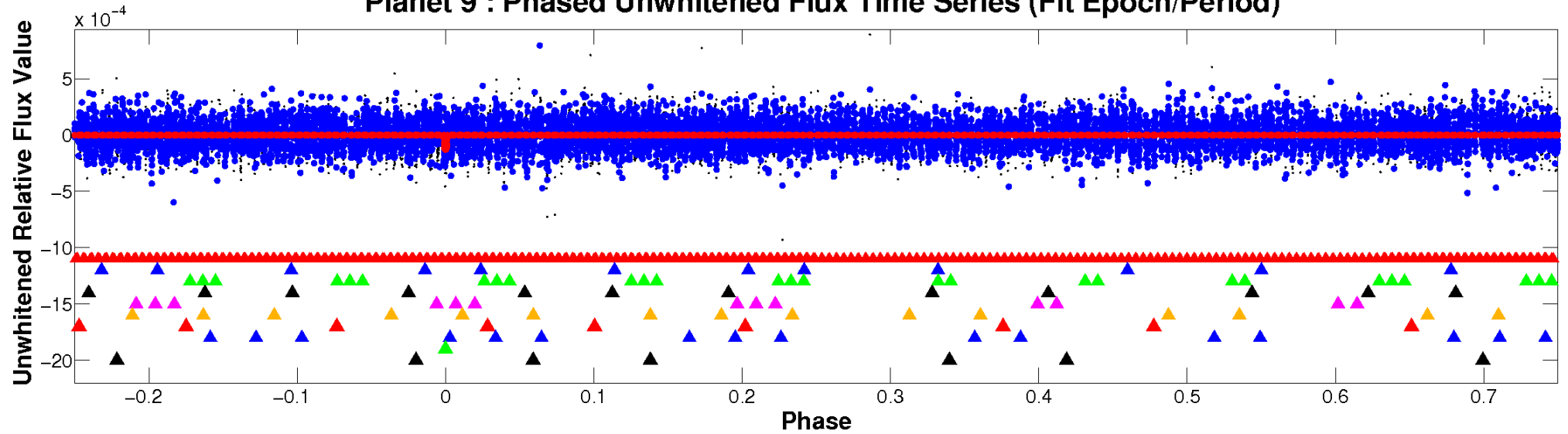
# ALT Odd/Even

TCE 011410915-09

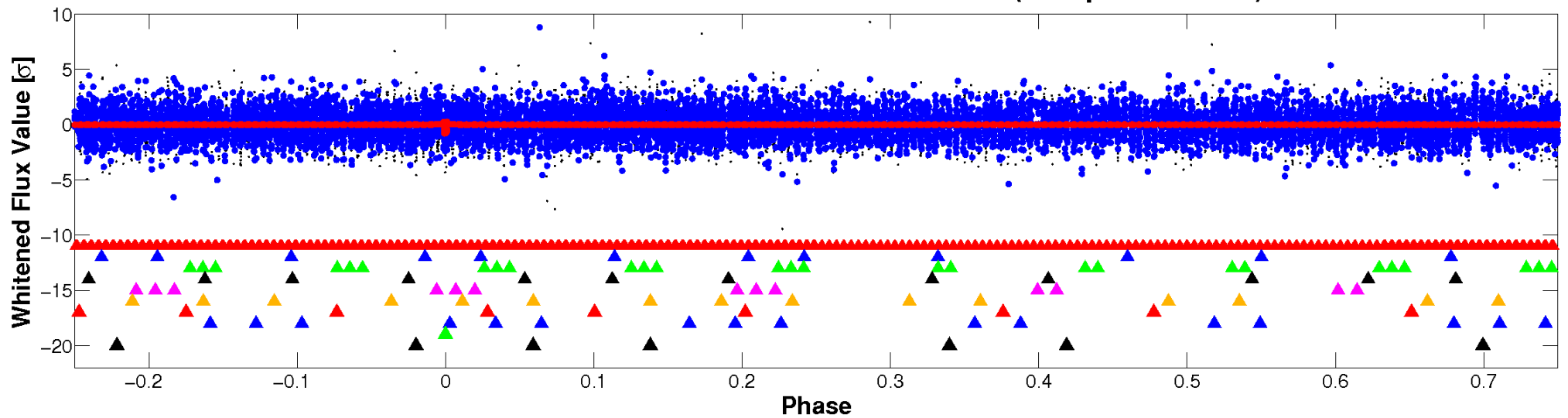


# Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



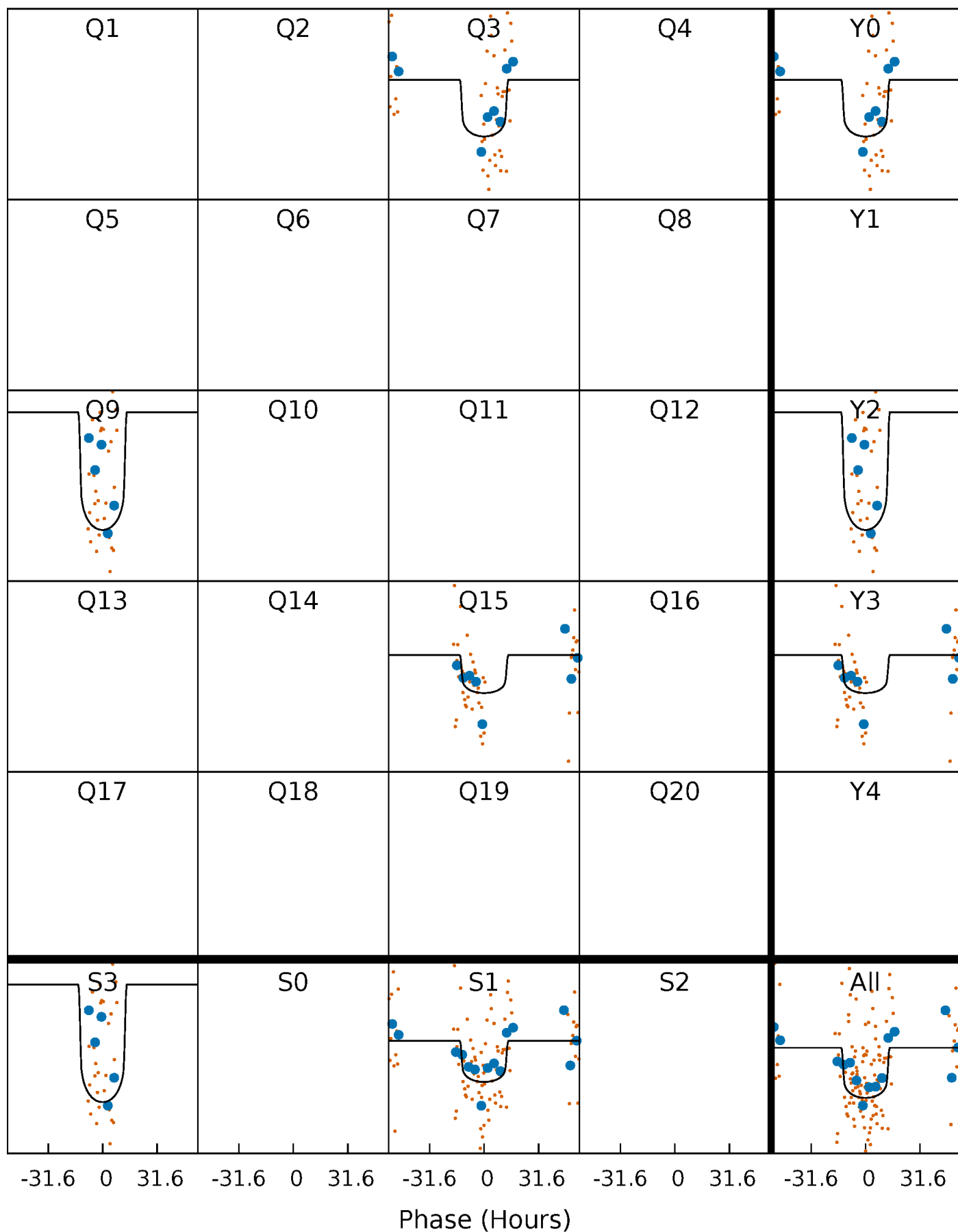
# PDC Quarter-Phased Transit Curves

TCE 011410915-09 P=557.200061 Days  $T_0=337.590460$  (BKJD)



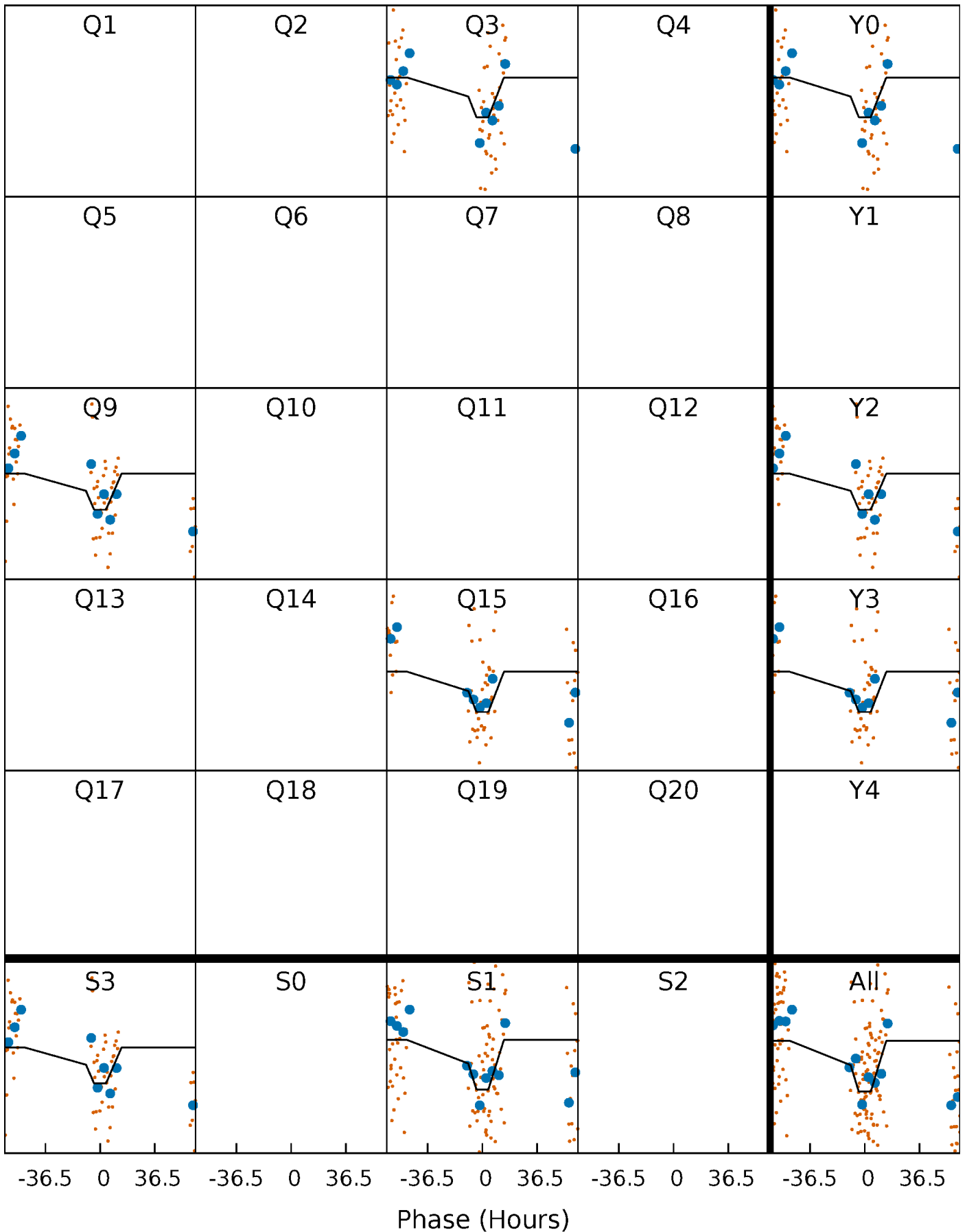
# DV Quarter-Phased Transit Curves

TCE 011410915-09 P=557.200061 Days  $T_0=337.590460$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

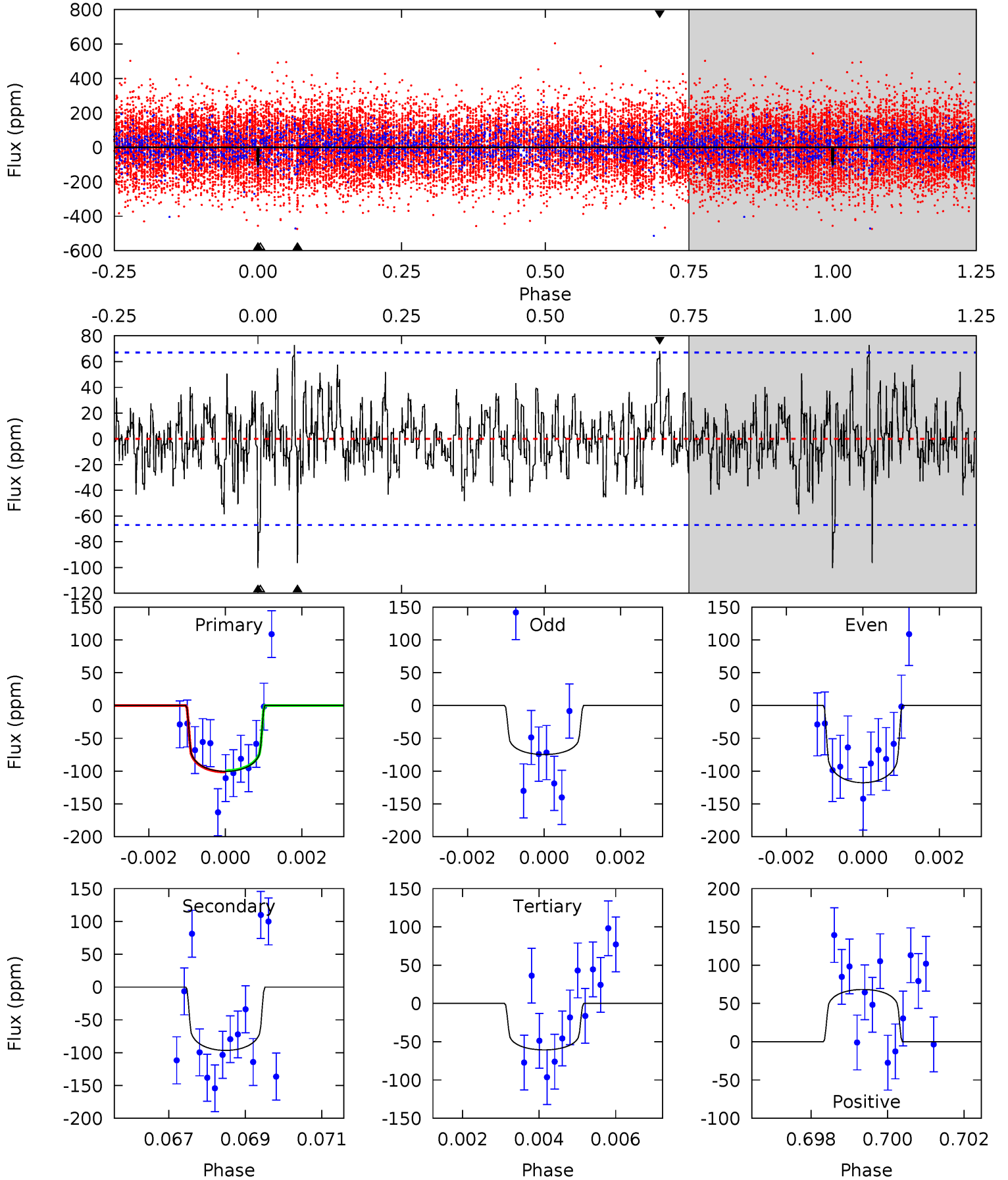
TCE 011410915-09 P=557.018846 Days  $T_0=337.610572$  (BKJD)



# DV Model-Shift Uniqueness Test

011410915-09, P = 557.200061 Days, E = 337.590460 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
7.98	7.68	4.82	5.43	5.32	3.08	1.53	3.16	2.56	2.85	2.25	1.64	1.08	0.42	0.07

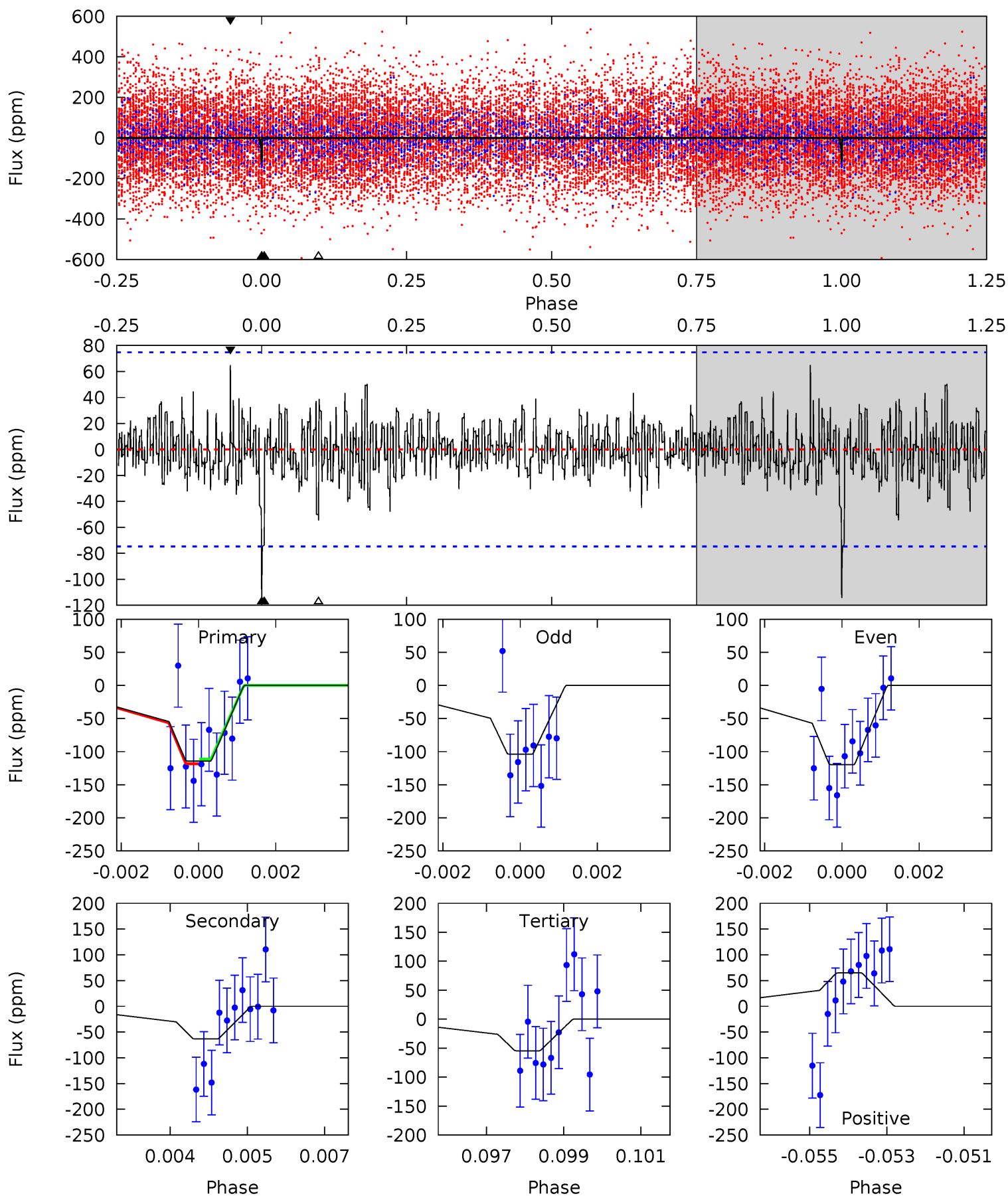




# Alt Model-Shift Uniqueness Test

011410915-09, P = 557.018846 Days, E = 337.610572 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
8.18	4.53	3.90	4.64	5.34	3.12	1.05	4.28	3.53	0.63	-0.12	0.53	1.14	0.36	0.24



### Stellar Parameters For KIC 011410915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6903^{+72}_{-92}$	$4.151^{+0.066}_{-0.114}$	$0.200^{+0.100}_{-0.150}$	$1.720^{+0.294}_{-0.171}$	$1.528^{+0.119}_{-0.097}$	$0.423^{+0.128}_{-0.148}$
	+1%/-1%	+2%/-3%	+50%/-75%	+17%/-10%	+8%/-6%	+30%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011410915-09 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-97 \pm 13$	$2.31^{+0.93}_{-0.88}$	$452^{+19}_{-12}$	$6158^{+1911}_{-907}$	$22747^{+38701}_{-11118}$
Alt.	$-63 \pm 14$	$2.07^{+0.91}_{-0.86}$	$454^{+17}_{-14}$	$5867^{+2018}_{-904}$	$18890^{+37339}_{-10198}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

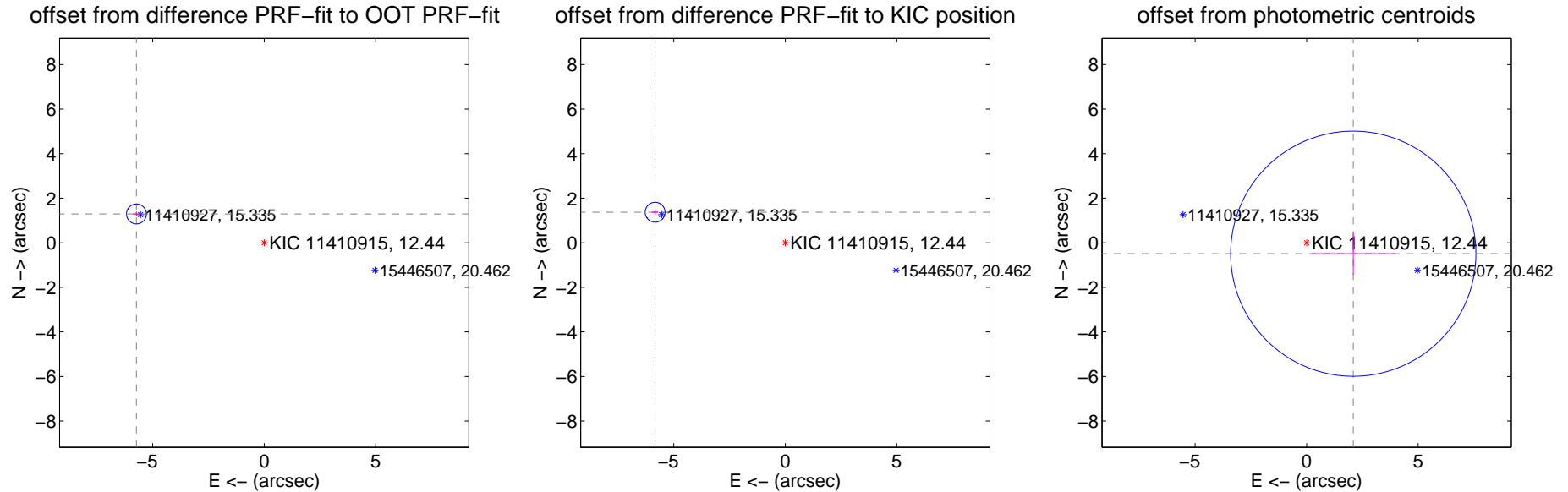
## DV Centroid Data

Supplemental centroid analysis for 011410915-09. Kepler magnitude: 12.44. Transit SNR 6.87

There are 0 quarters with good PRF difference image offsets

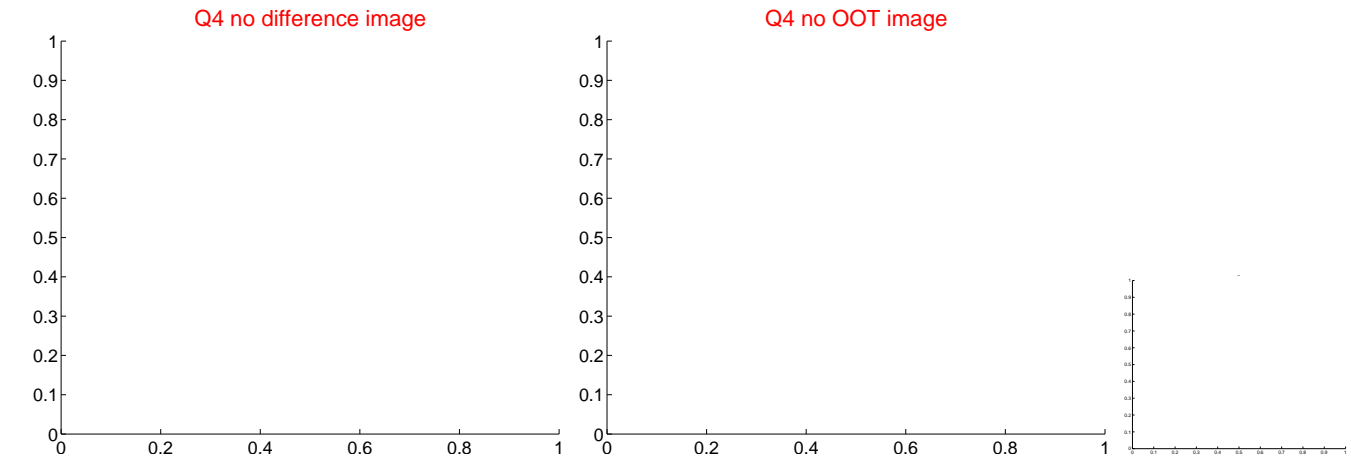
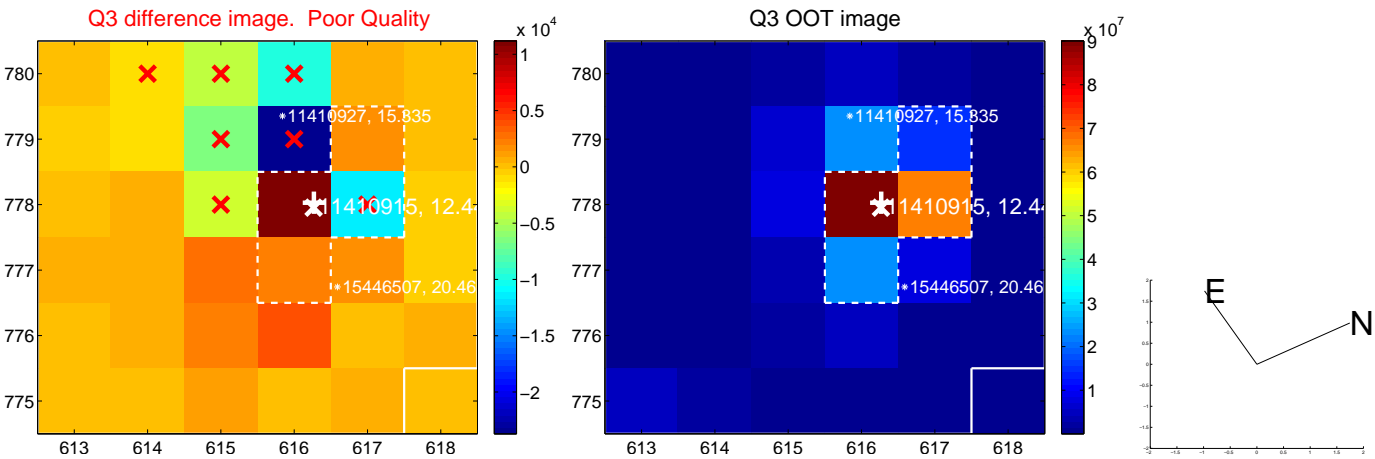
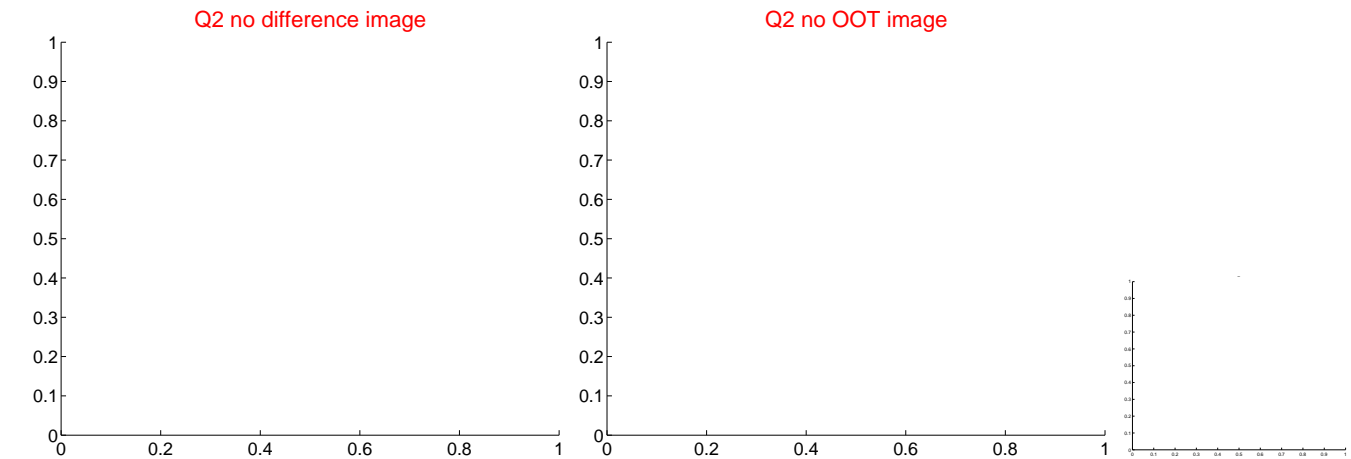
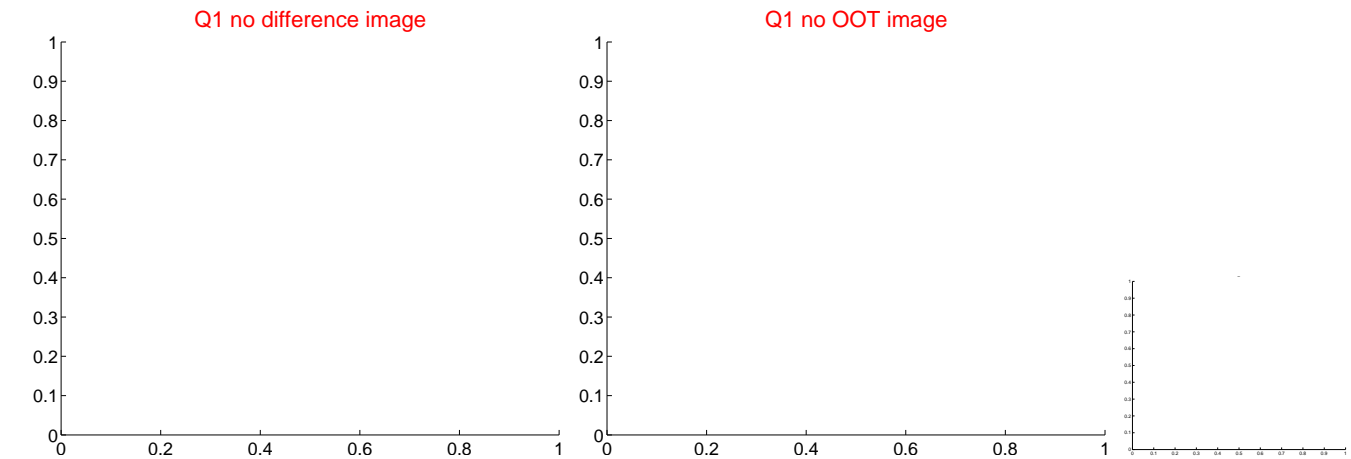
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.873 \pm 0.148$	39.56	$5.729 \pm 0.150$	$1.293 \pm 0.113$
PRF-fit source offset from KIC position	$5.996 \pm 0.148$	40.42	$5.837 \pm 0.150$	$1.370 \pm 0.113$
photometric centroid source offset	$2.15 \pm 1.83$	1.17	$-2.09 \pm 1.87$	$-0.49 \pm 0.93$



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.

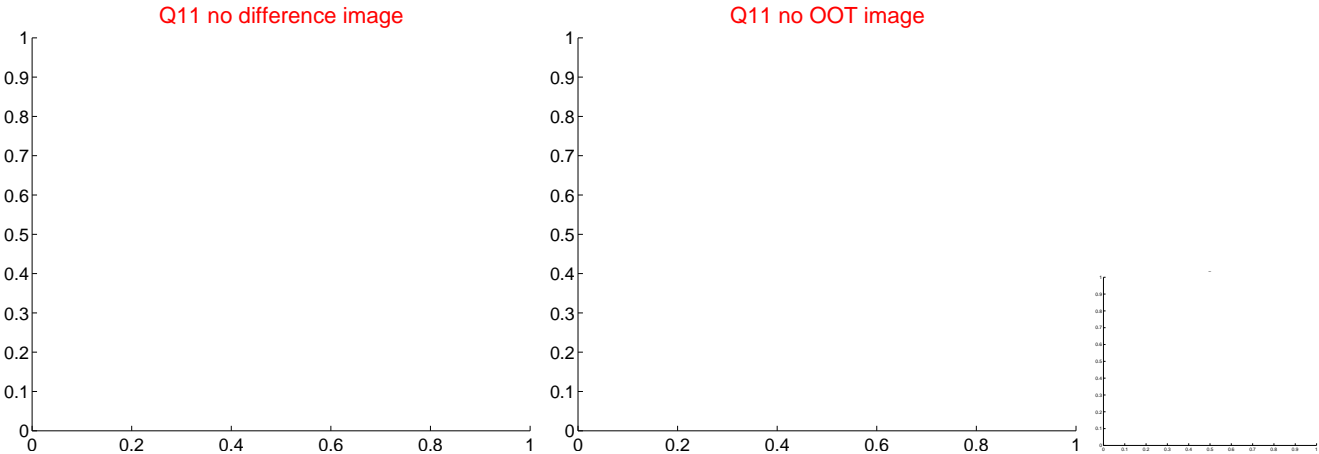
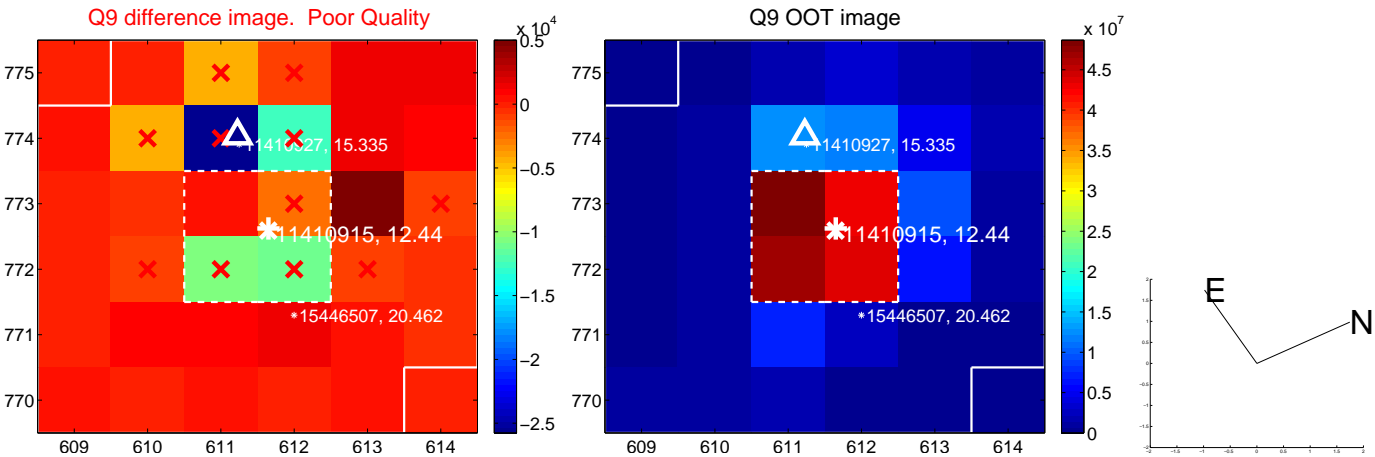
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



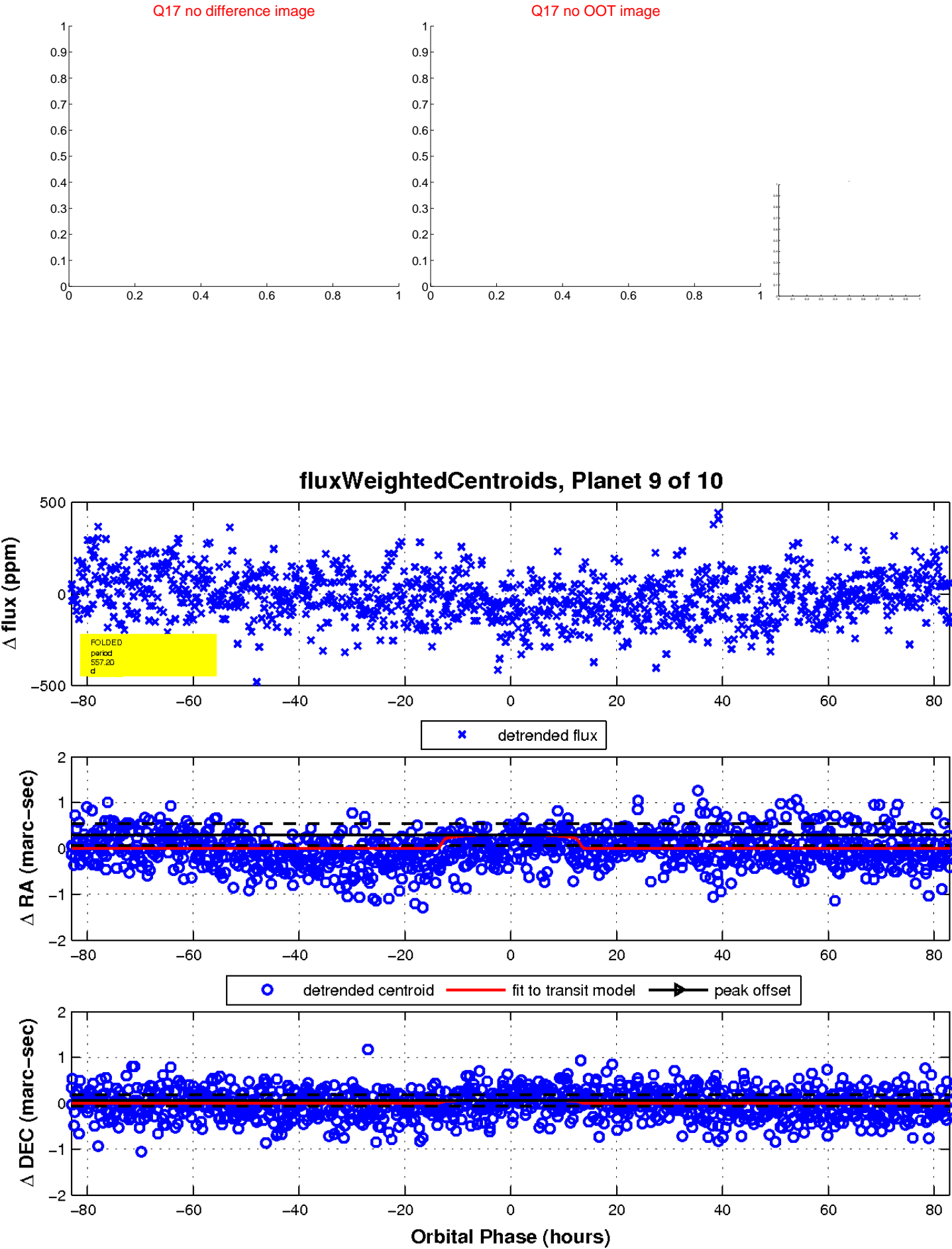
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

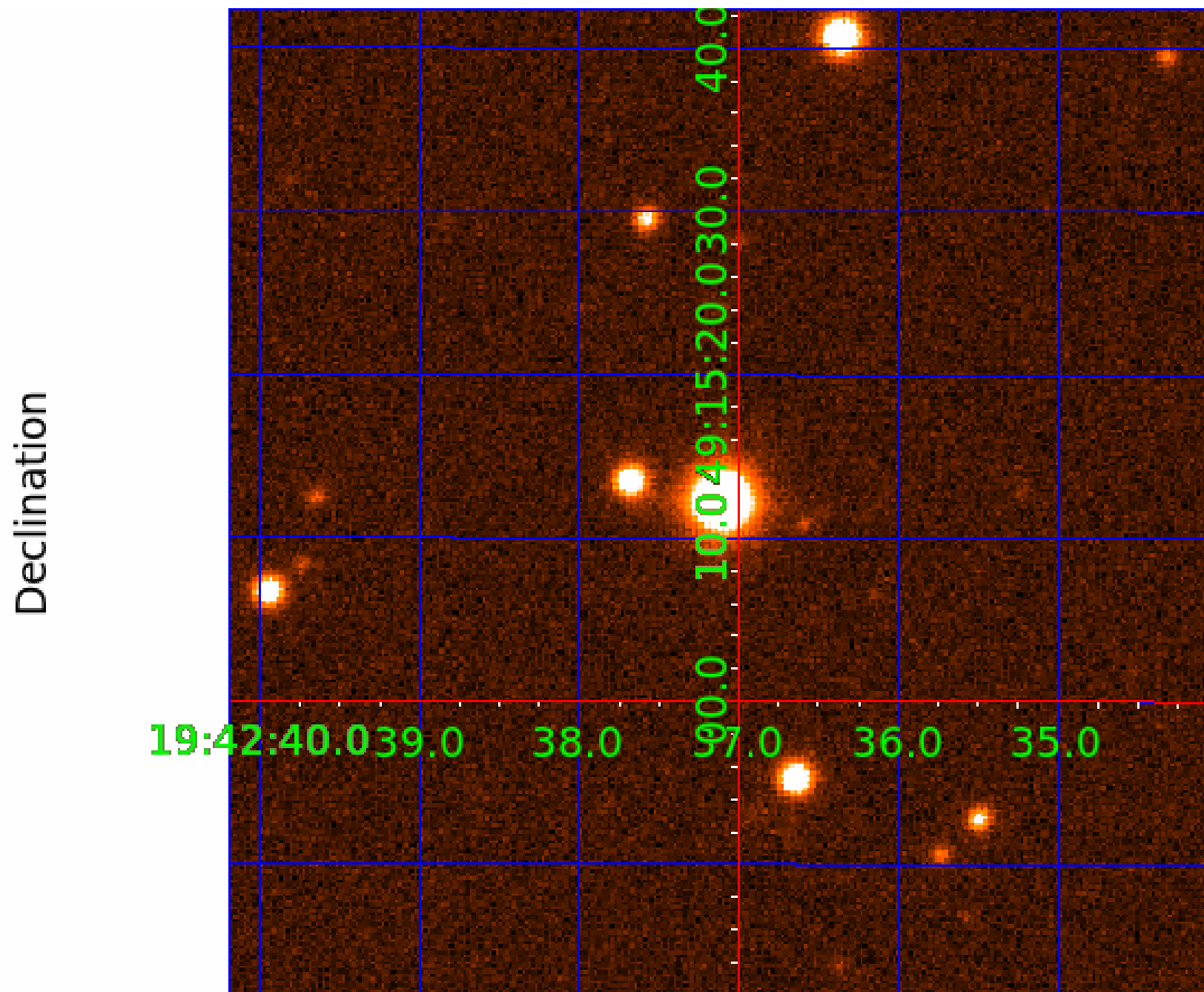


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image



## KIC 011410915

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011410915-01	OBS	No	2.743221	133.516224	11.0	15.637	8.0	6.3	1.72	6903	0.59	3083.55
011410915-02	OBS	No	121.491572	229.369437	128.8	24.113	12.0	7.8	1.72	6903	2.29	19.68
011410915-03	OBS	No	55.245253	140.692328	189.1	3.312	8.7	9.2	1.72	6903	2.73	56.28
011410915-04	OBS	No	120.170150	159.905711	235.8	3.124	8.5	8.7	1.72	6903	2.91	19.97
011410915-05	OBS	No	112.875535	221.399883	248.9	3.698	8.4	8.0	1.72	6903	4.41	21.71
011410915-06	OBS	No	97.310505	219.952147	299.1	1.968	8.1	9.3	1.72	6903	3.52	26.46
011410915-07	OBS	No	153.455328	240.155198	201.5	3.233	8.2	8.4	1.72	6903	2.80	14.41
011410915-08	OBS	No	89.998936	193.645171	212.2	2.773	7.9	8.4	1.72	6903	2.88	29.36
011410915-09	OBS	No	557.200061	337.590460	129.3	27.663	7.8	6.9	1.72	6903	2.25	2.58
011410915-10	OBS	No	200.409436	326.508363	211.5	2.971	8.0	8.1	1.72	6903	2.81	10.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011410915-01	OBS	FP	0.00	1	0	1	0	LPP_DV—MOD_NONUNIQ_DV—CENT_UNRESOLVED_OFFSET
011410915-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011410915-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011410915-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011410915-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011410915-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011410915-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

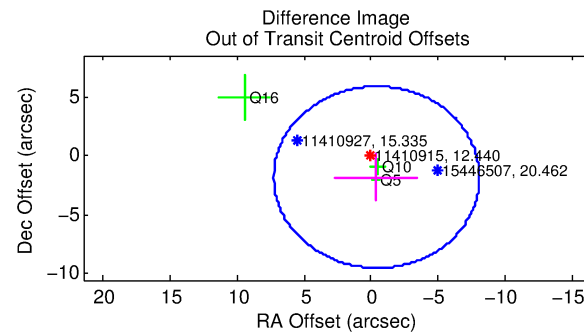
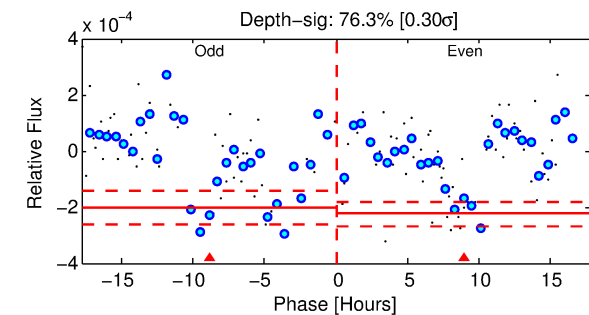
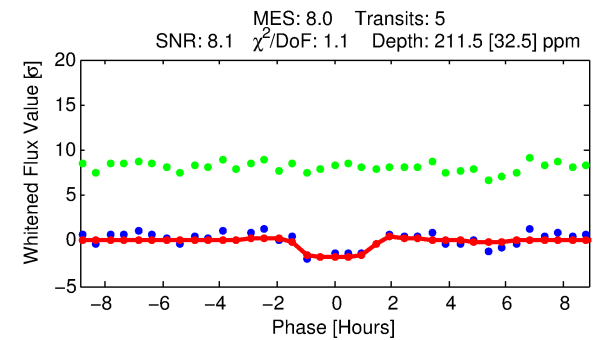
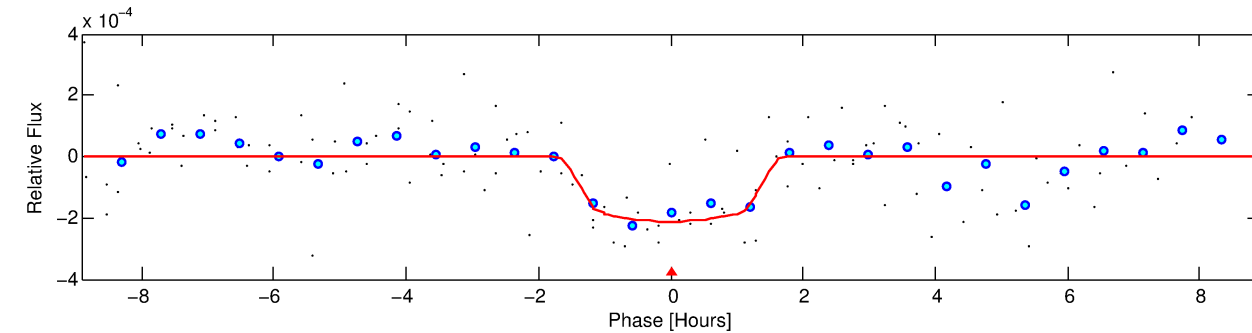
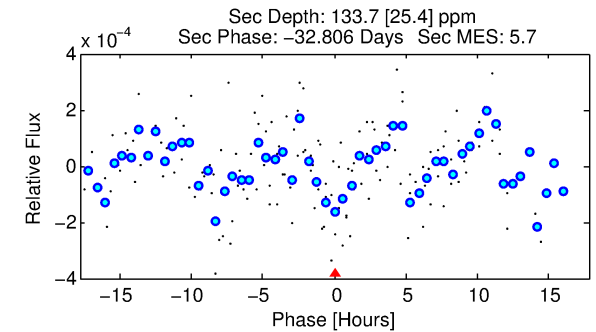
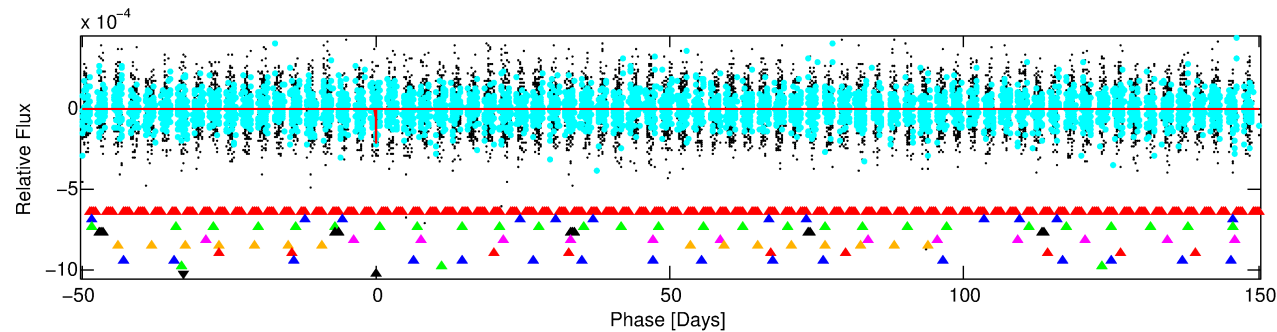
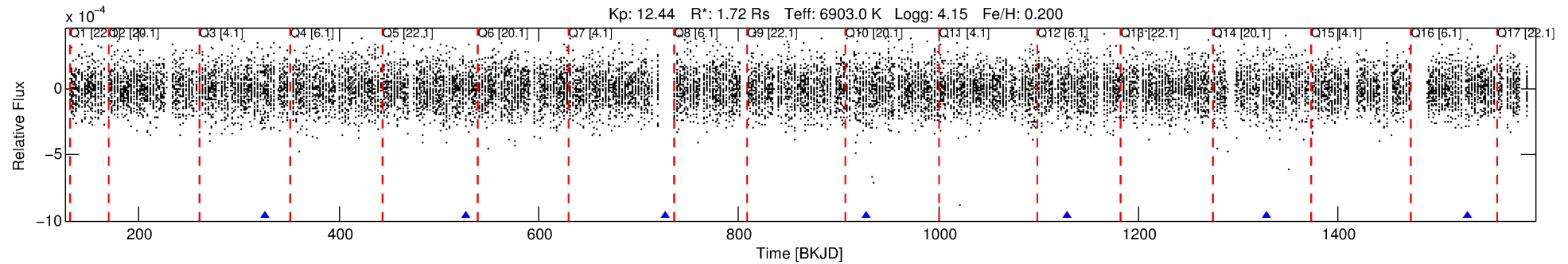
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011410915-10

No Significant Match Found

# DV One-Page Summary

KIC: 11410915 Candidate: 10 of 10 Period: 200.409 d



## DV Fit Results:

Period = 200.40944 [0.00280] d  
Epoch = 326.5084 [0.0086] BKJD  
Rp/R\* = 0.0150 [0.0075]  
a/R\* = 290.03 [832.97]  
b = 0.84 [0.98]  
Seff = 10.10 [2.18]  
Teff = 455 [24] K  
Rp = 2.82 [1.49] Re  
a = 0.7721 [0.1109] AU  
Ag = 5531.66 [5765.73] [0.96σ]  
Teffp = 6061 [1549] K [3.62σ]

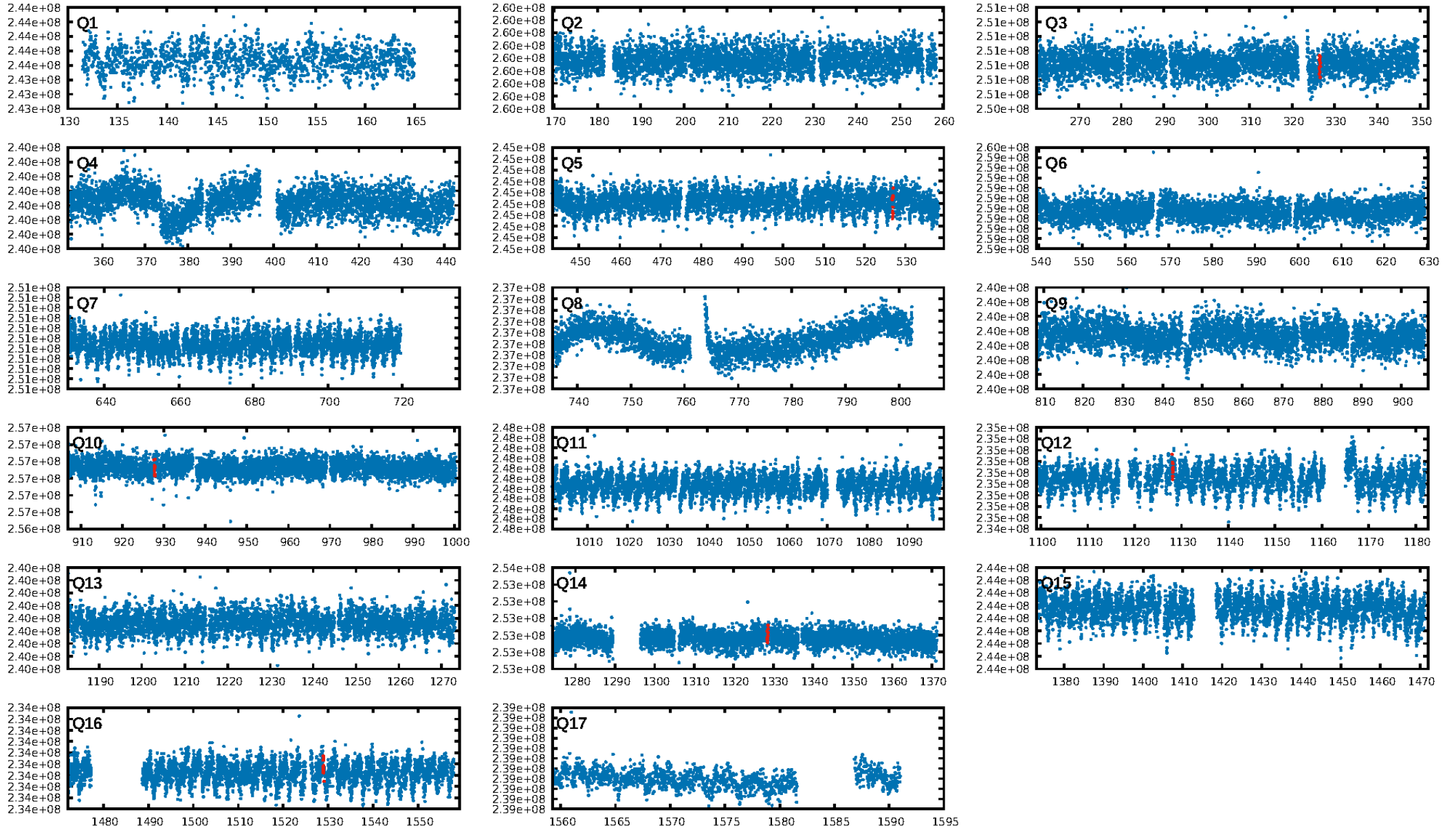
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [256.63σ]  
LongPeriod-sig: 100.0% [307.78σ]  
ModelChiSquare2-sig: 34.3%  
ModelChiSquareGof-sig: 99.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 2.563  
Centroid-sig: 5.0%  
Centroid-so: 1.073 arcsec [1.28σ]  
OotOffset-rm: 1.859 arcsec [0.73σ]  
KicOffset-rm: 1.757 arcsec [0.69σ]  
OotOffset-st: 1/0/1/1 [3]  
KicOffset-st: 1/0/1/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [6/6]

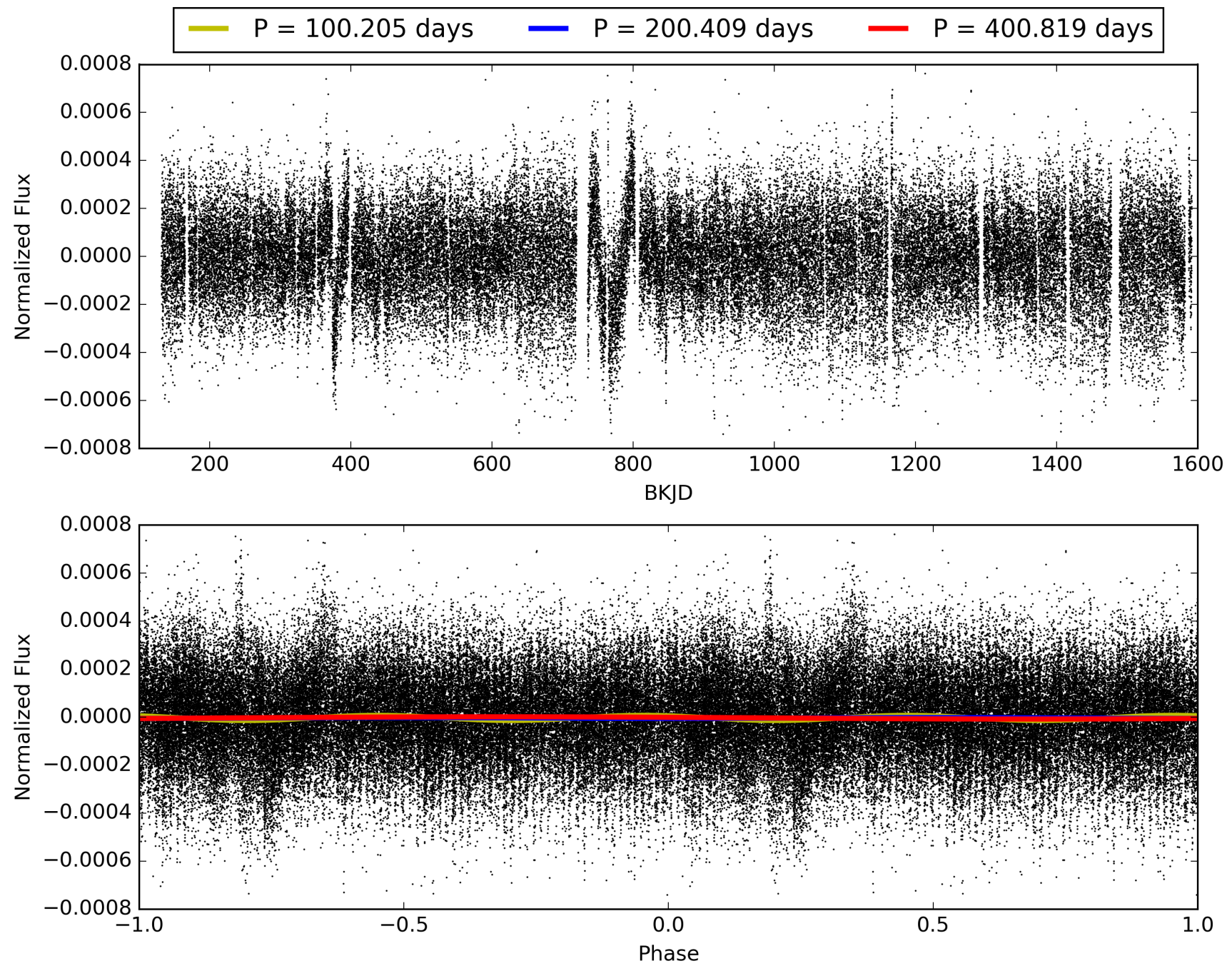
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:49:15 Z

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

# TCE 011410915-10, PDC Light Curves



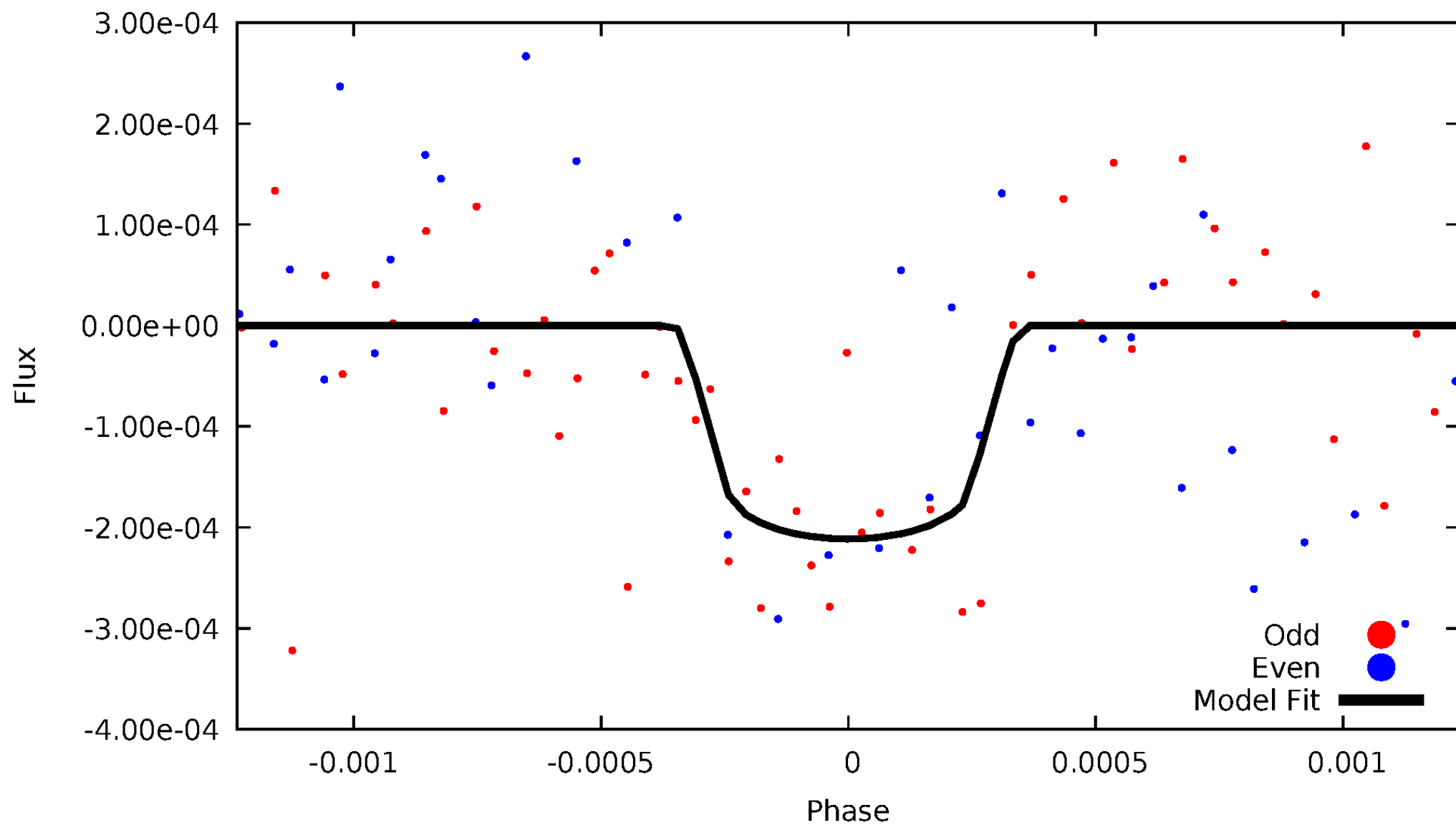
# TCE 011410915-10





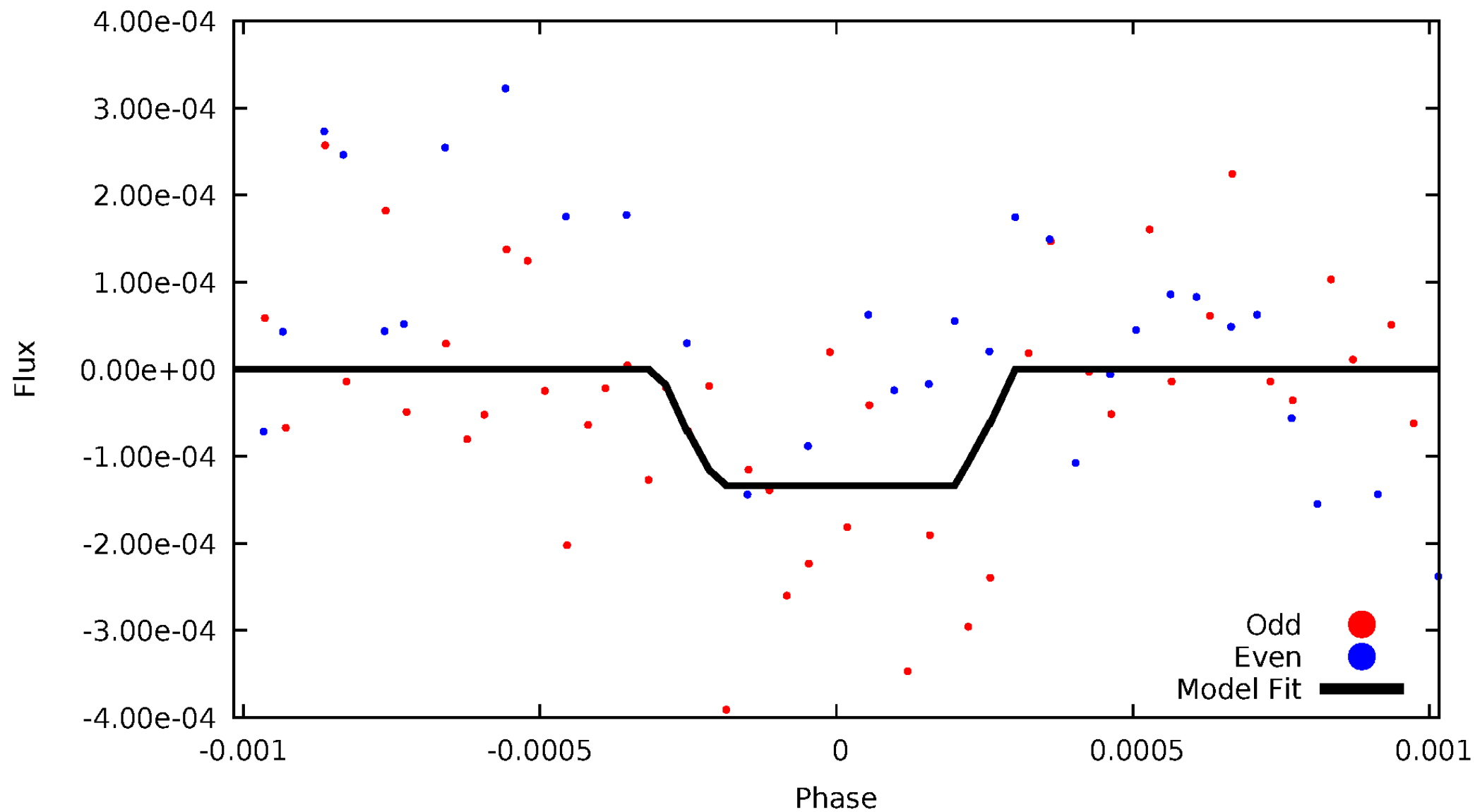
# DV Odd/Even

TCE 011410915-10



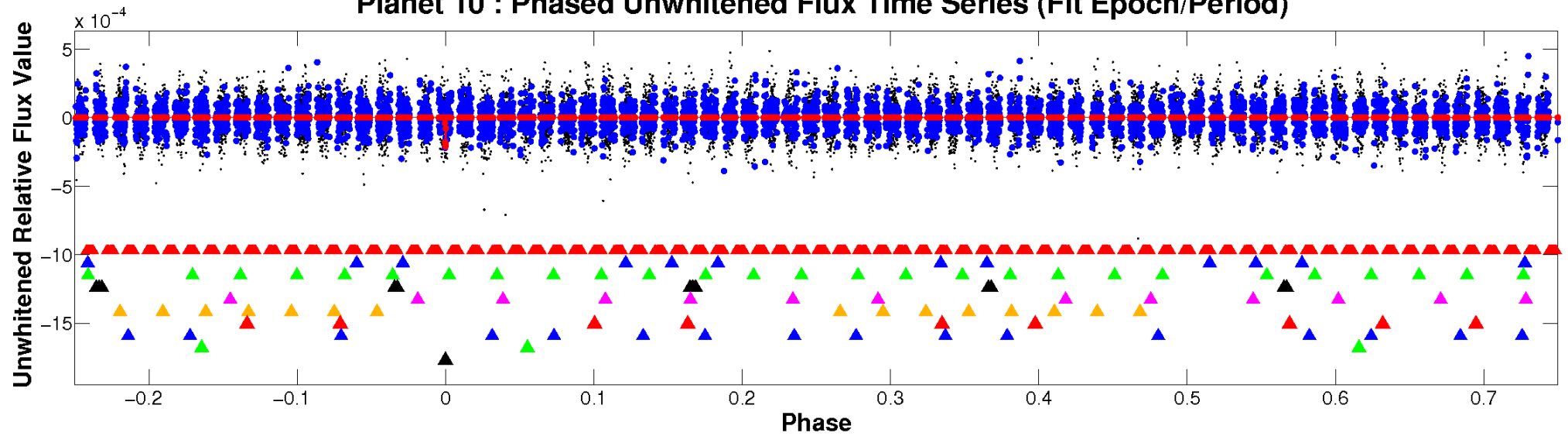
# ALT Odd/Even

TCE 011410915-10

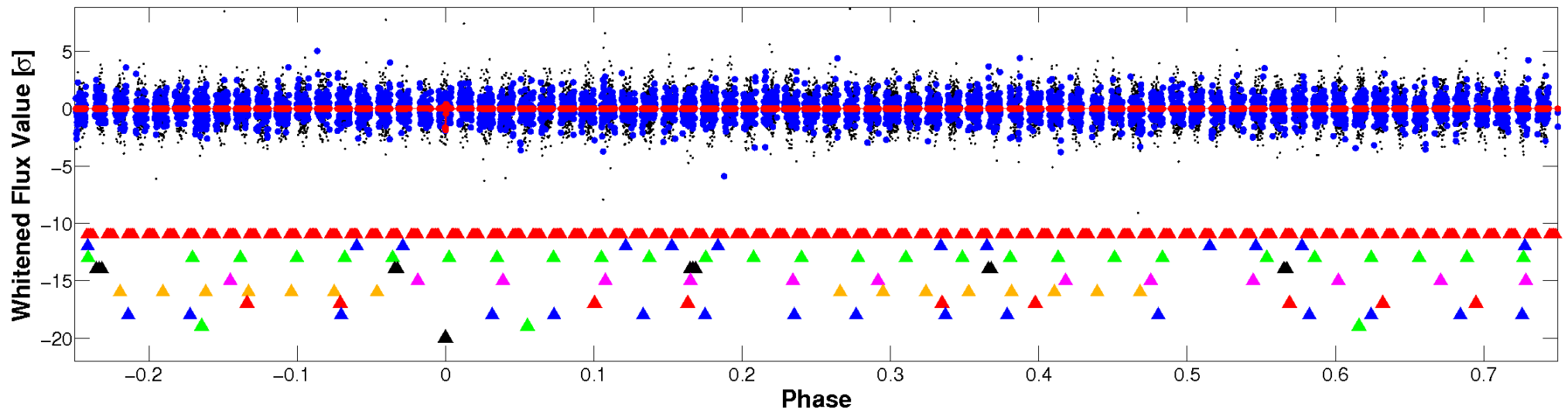


# Non-Whitened Vs. Whitened Light Curve

## Planet 10 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



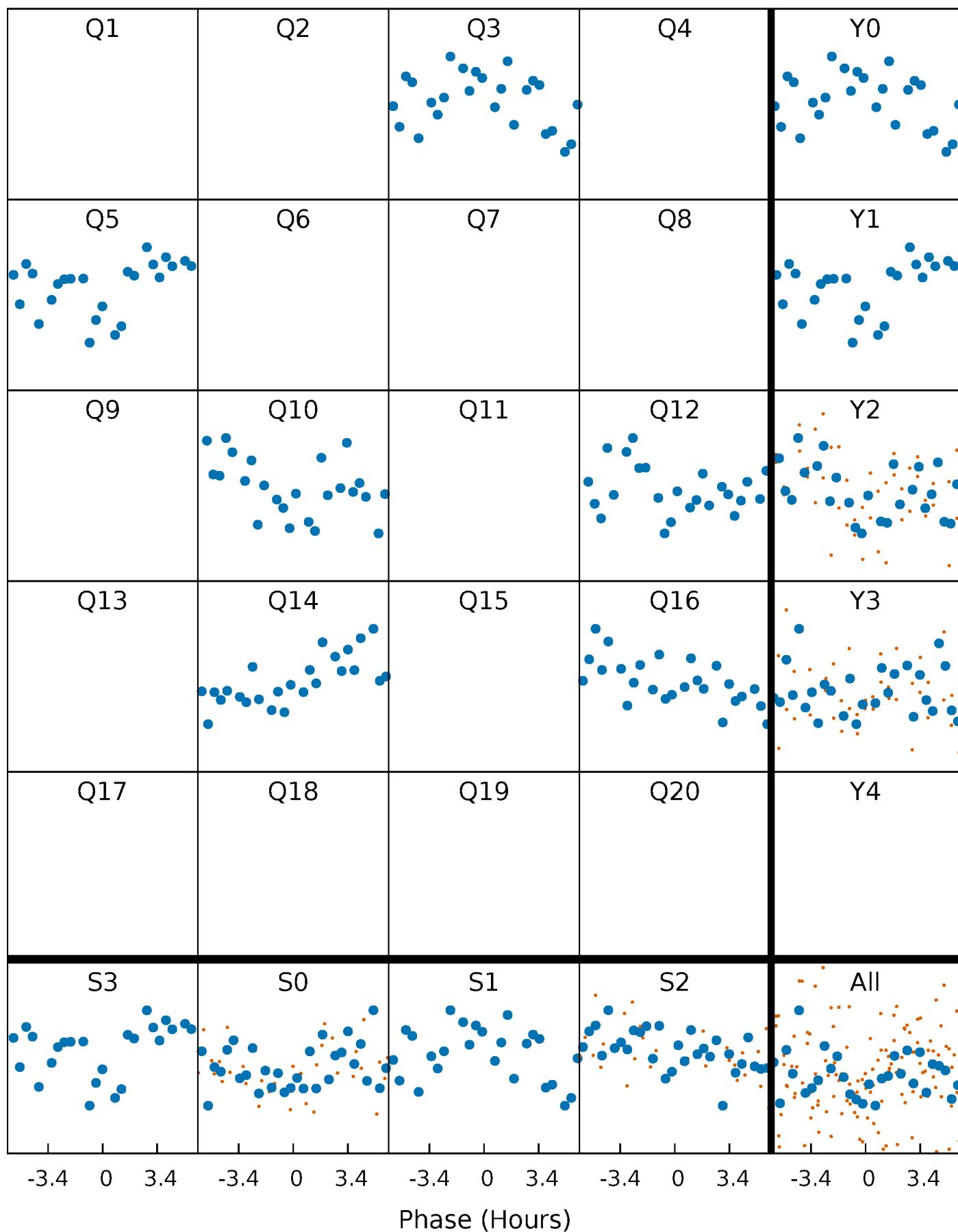
## Planet 10 : Phased Whitened Flux Time Series (Fit Epoch/Period)





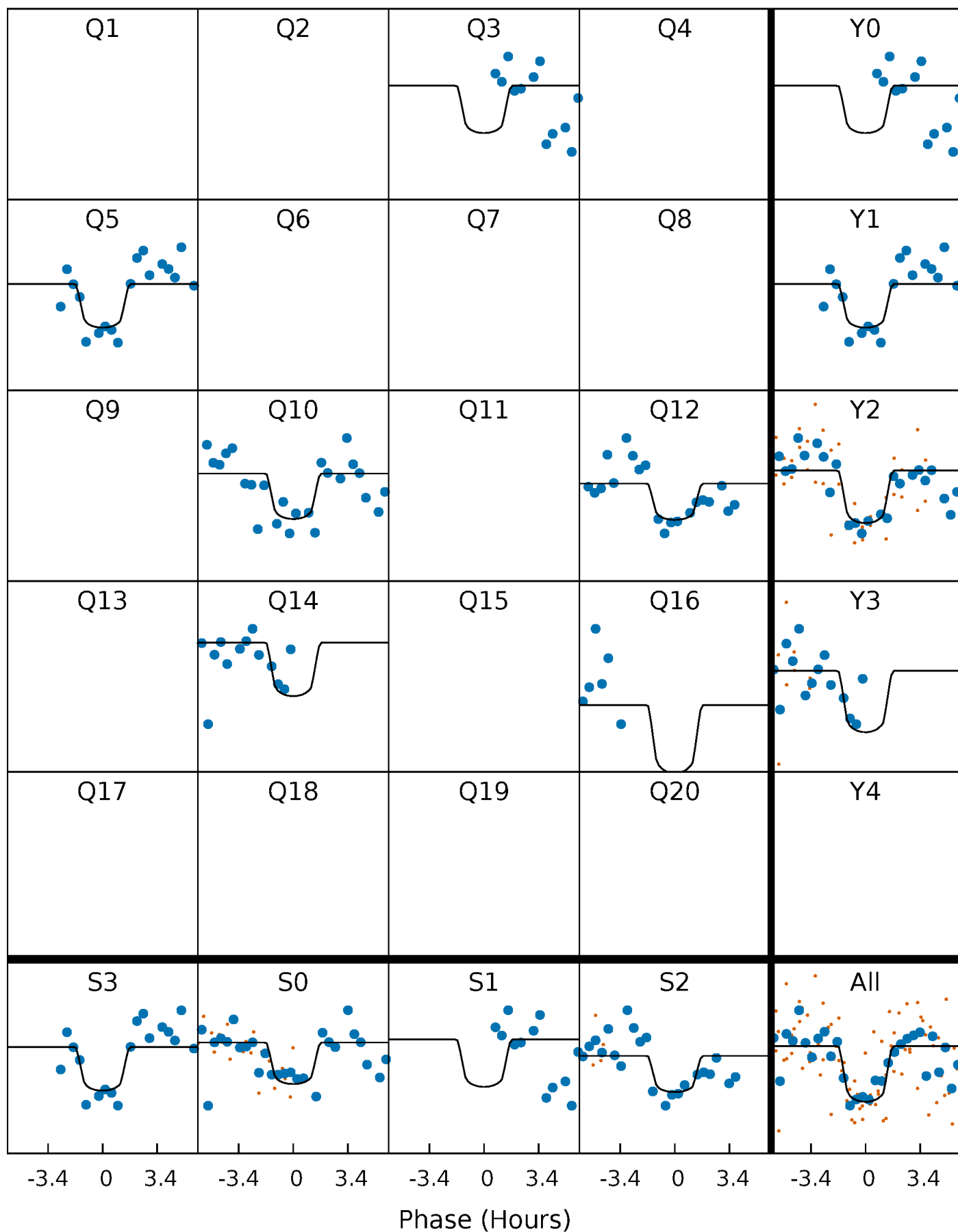
# PDC Quarter-Phased Transit Curves

TCE 011410915-10 P=200.409436 Days  $T_0=326.508363$  (BKJD)



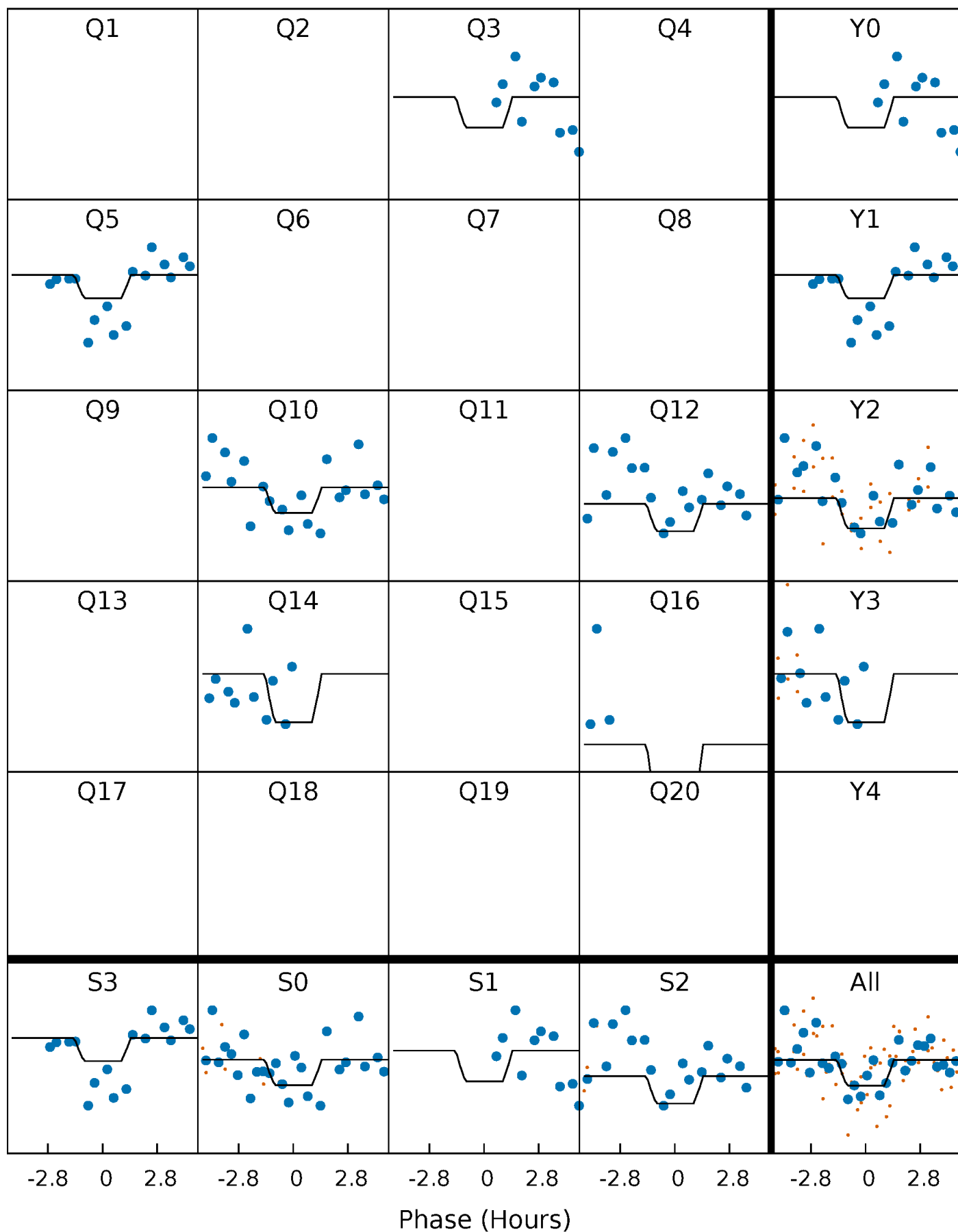
# DV Quarter-Phased Transit Curves

TCE 011410915-10 P=200.409436 Days  $T_0=326.508363$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

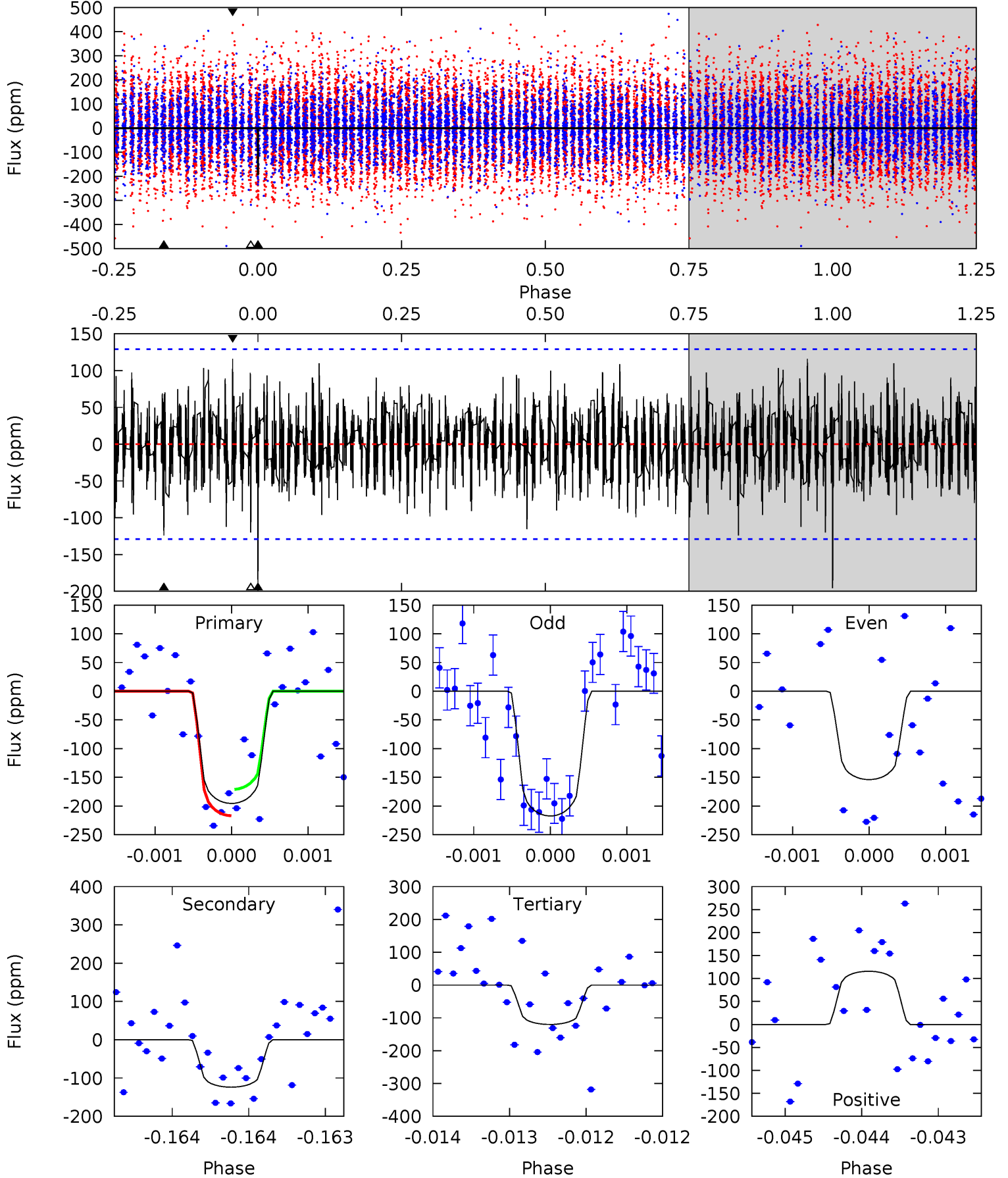
TCE 011410915-10 P=200.409398 Days  $T_0=326.510153$  (BKJD)



# DV Model-Shift Uniqueness Test

011410915-10, P = 200.409436 Days, E = 126.098927 Days

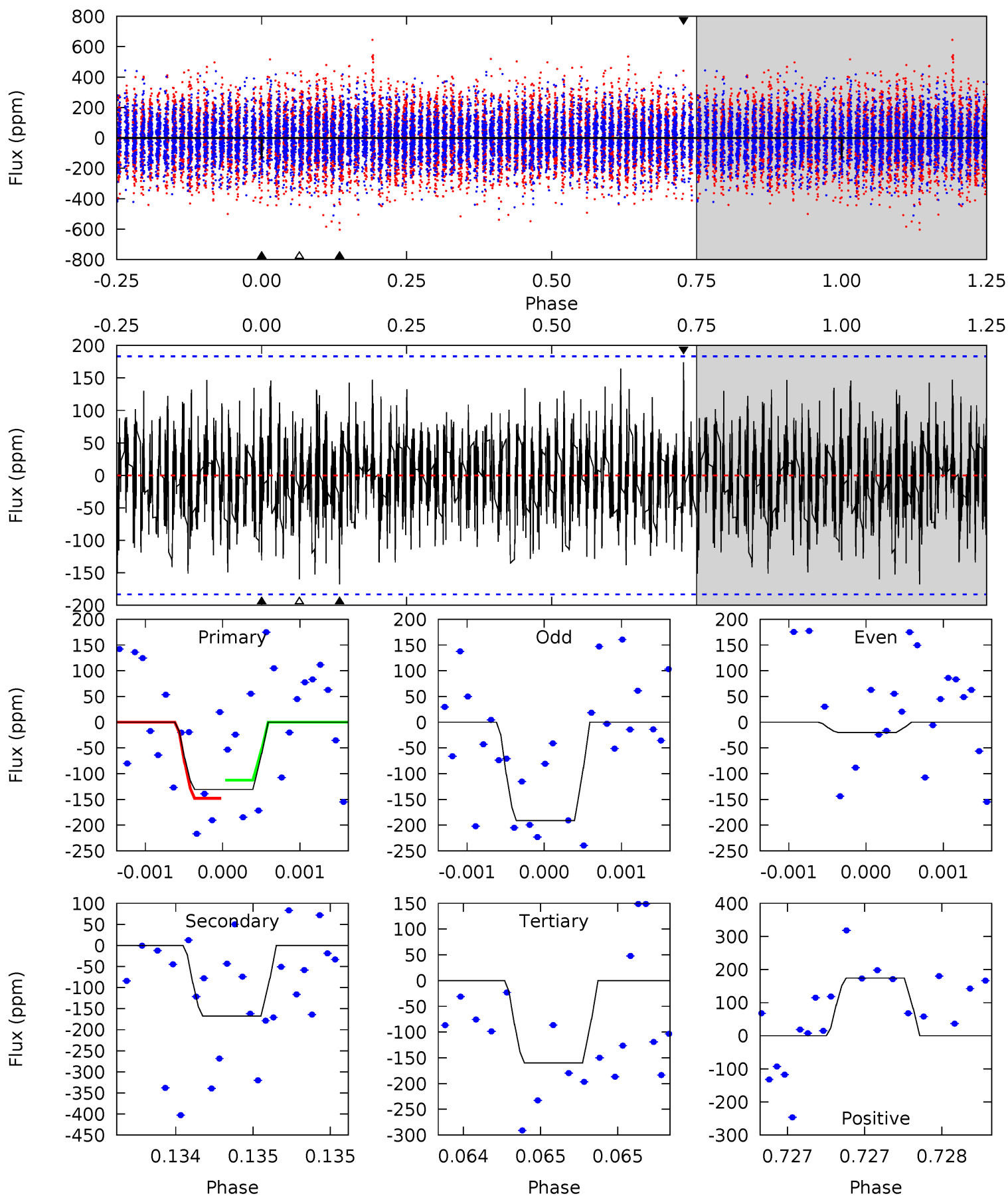
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.36	5.30	5.14	4.95	5.52	3.40	1.47	3.23	3.41	0.16	0.35	1.29	0.68	0.37	0.98



# Alt Model-Shift Uniqueness Test

011410915-10, P = 200.409398 Days, E = 126.100755 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
3.97	5.10	4.86	5.29	5.57	3.47	1.46	-0.89	-1.33	0.24	-0.19	2.48	2.16	0.51	0.54



### Stellar Parameters For KIC 011410915

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6903^{+72}_{-92}$	$4.151^{+0.066}_{-0.114}$	$0.200^{+0.100}_{-0.150}$	$1.720^{+0.294}_{-0.171}$	$1.528^{+0.119}_{-0.097}$	$0.423^{+0.128}_{-0.148}$
	+1%/-1%	+2%/-3%	+50%/-75%	+17%/-10%	+8%/-6%	+30%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 011410915-10 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-124 \pm 23$	$2.95^{+1.42}_{-1.38}$	$638^{+26}_{-19}$	$5867^{+2342}_{-1022}$	$4752^{+11489}_{-2754}$
Alt.	$-168 \pm 33$	$2.35^{+1.39}_{-1.23}$	$637^{+28}_{-19}$	$7111^{+4474}_{-1504}$	$9954^{+31924}_{-6013}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

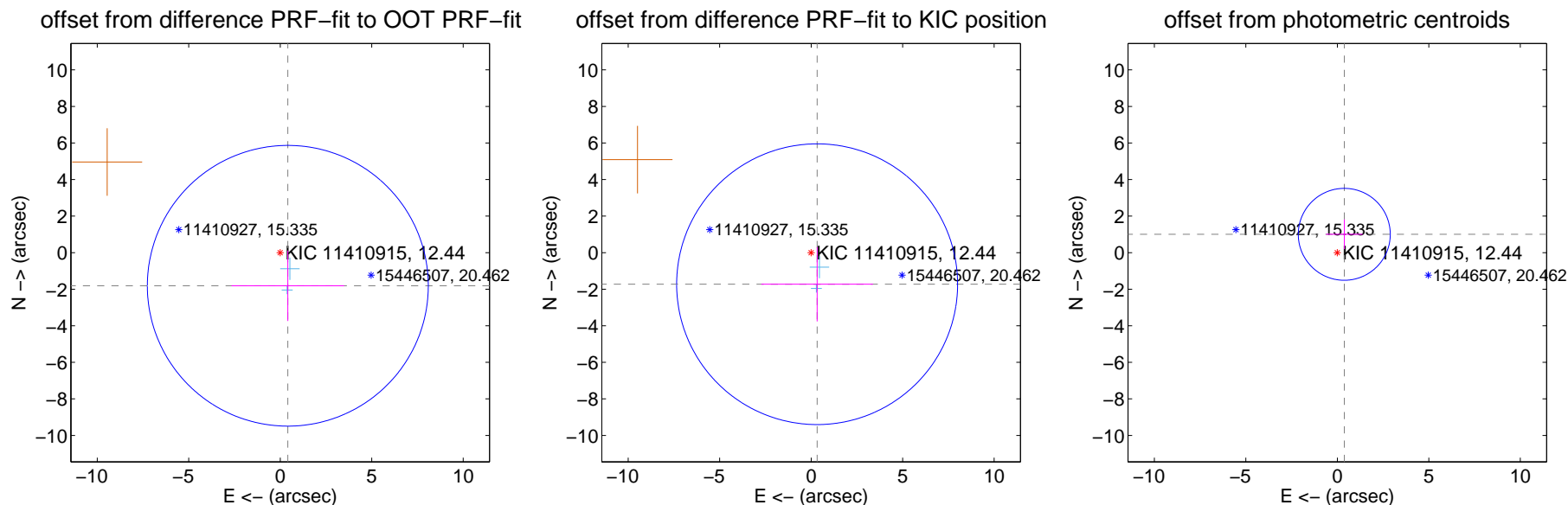
## DV Centroid Data

Supplemental centroid analysis for 011410915-10. Kepler magnitude: 12.44. Transit SNR 8.13

There are 2 quarters with good PRF difference image offsets

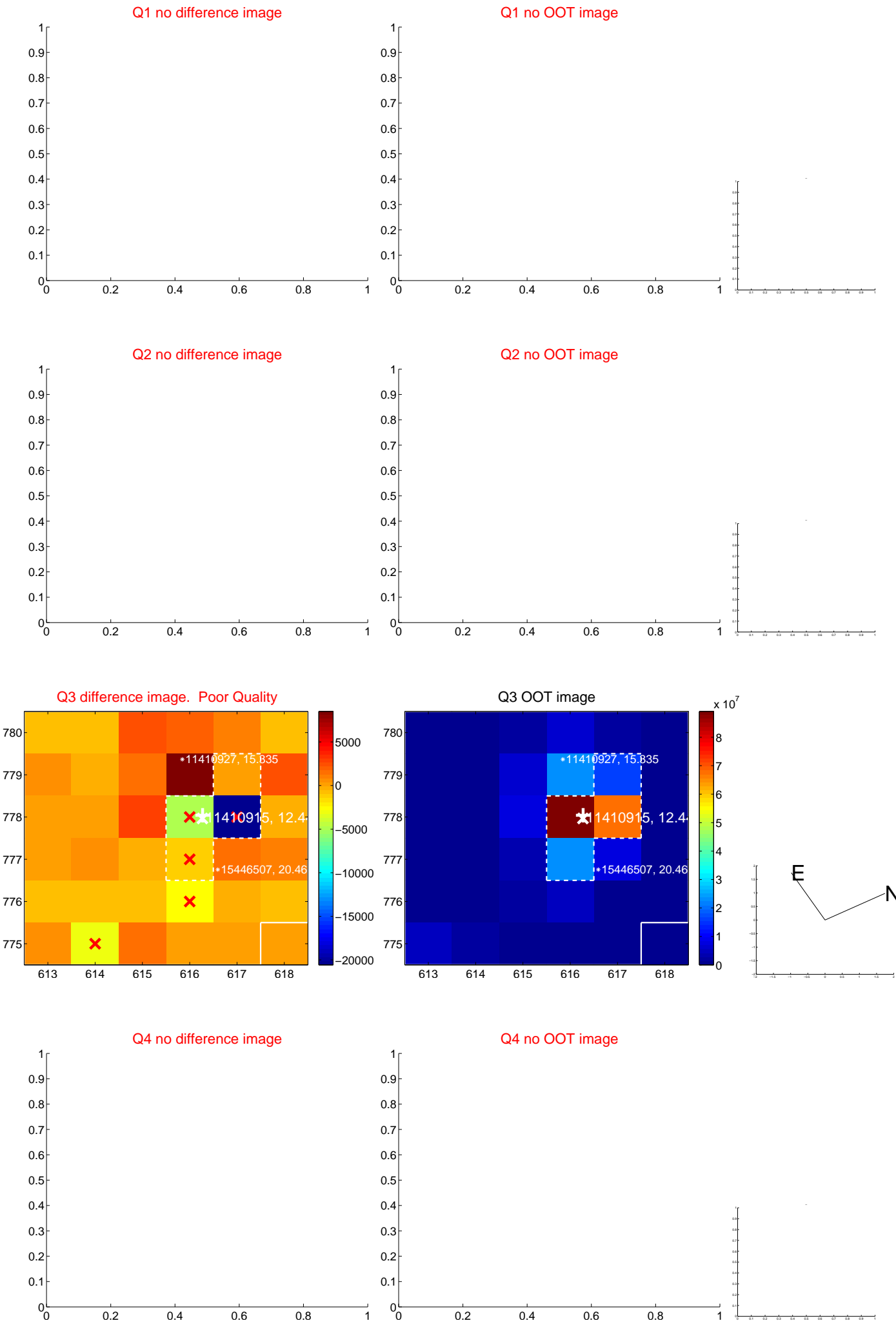
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.859 \pm 2.560$	0.73	$-0.415 \pm 3.078$	$-1.812 \pm 1.928$
PRF-fit source offset from KIC position	$1.757 \pm 2.560$	0.69	$-0.326 \pm 3.049$	$-1.727 \pm 2.034$
photometric centroid source offset	$1.07 \pm 0.84$	1.28	$-0.38 \pm 1.00$	$1.00 \pm 0.81$



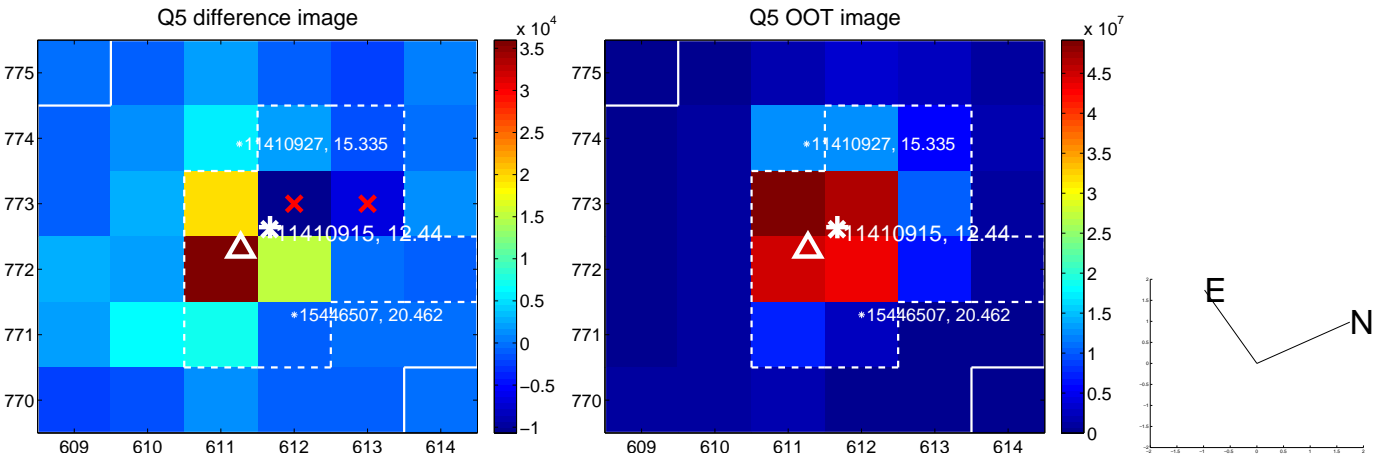
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.





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

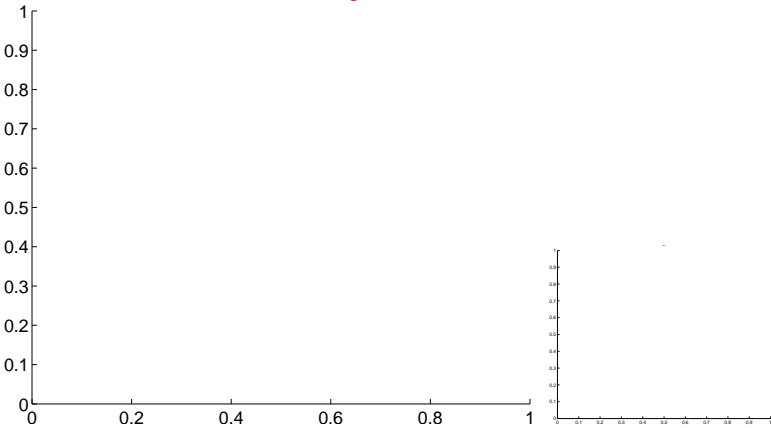


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

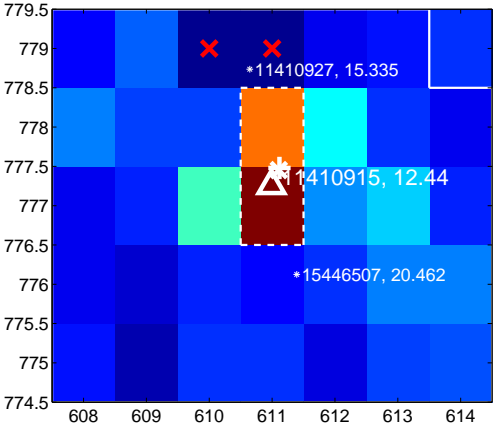
Q9 no difference image



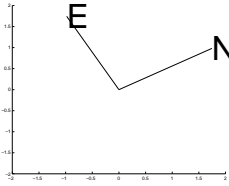
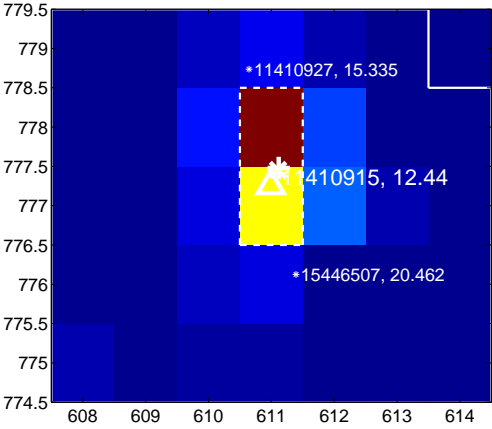
Q9 no OOT image



Q10 difference image



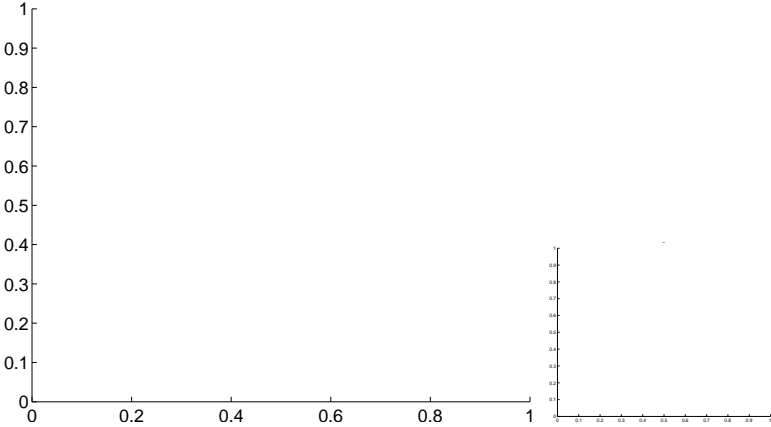
Q10 OOT image



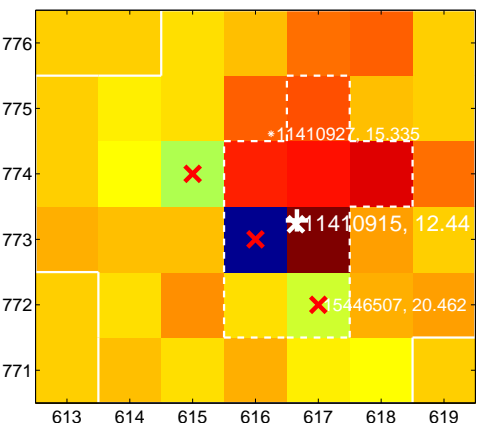
Q11 no difference image



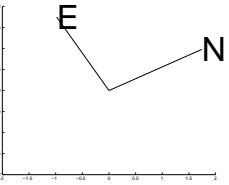
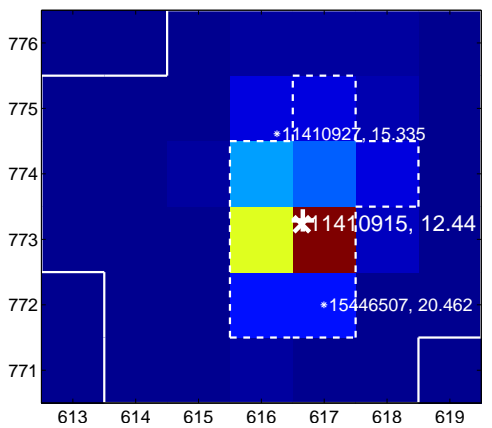
Q11 no OOT image



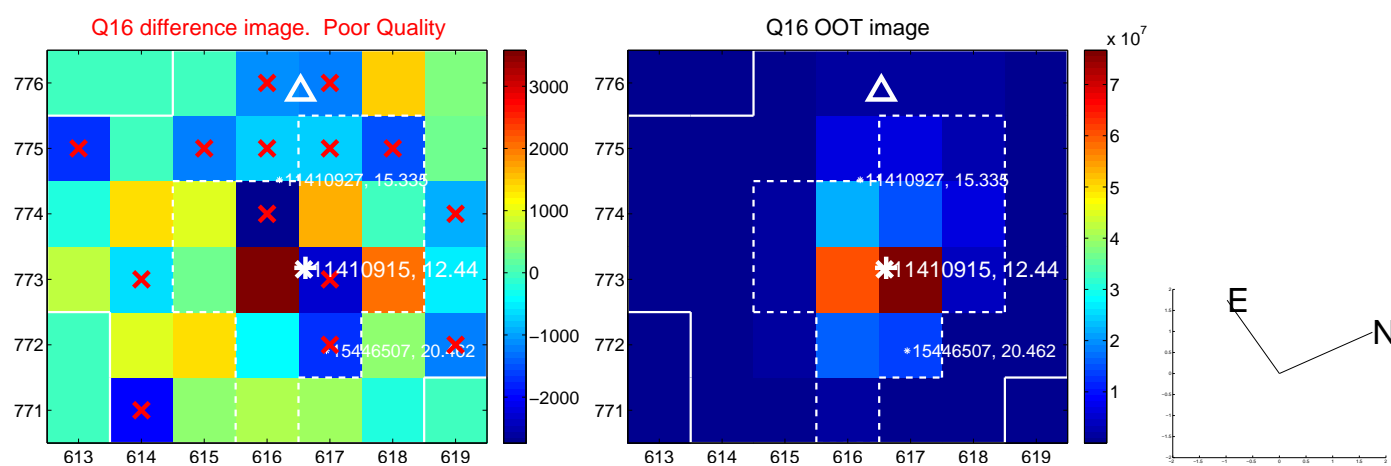
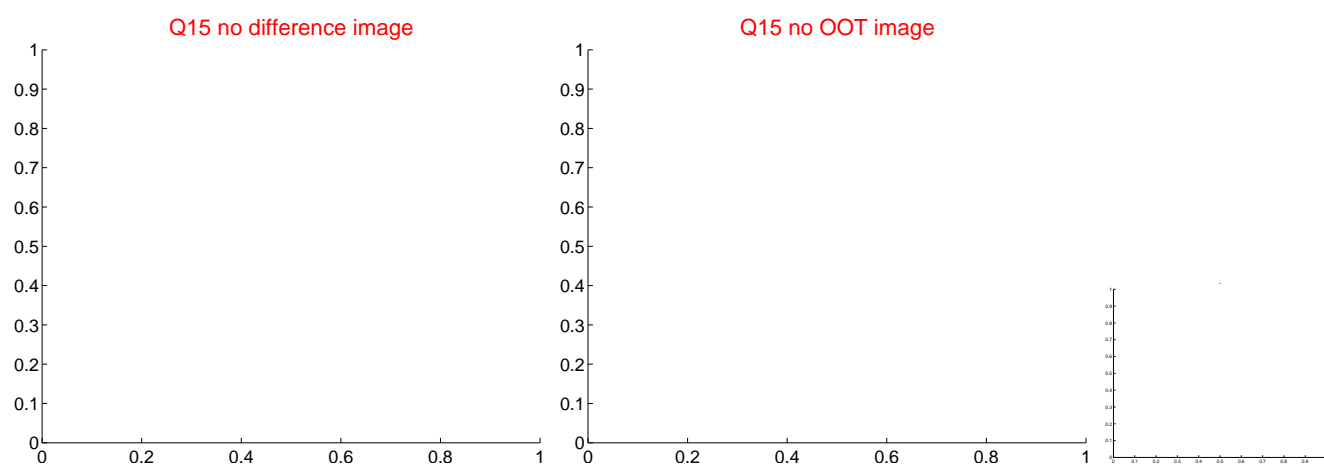
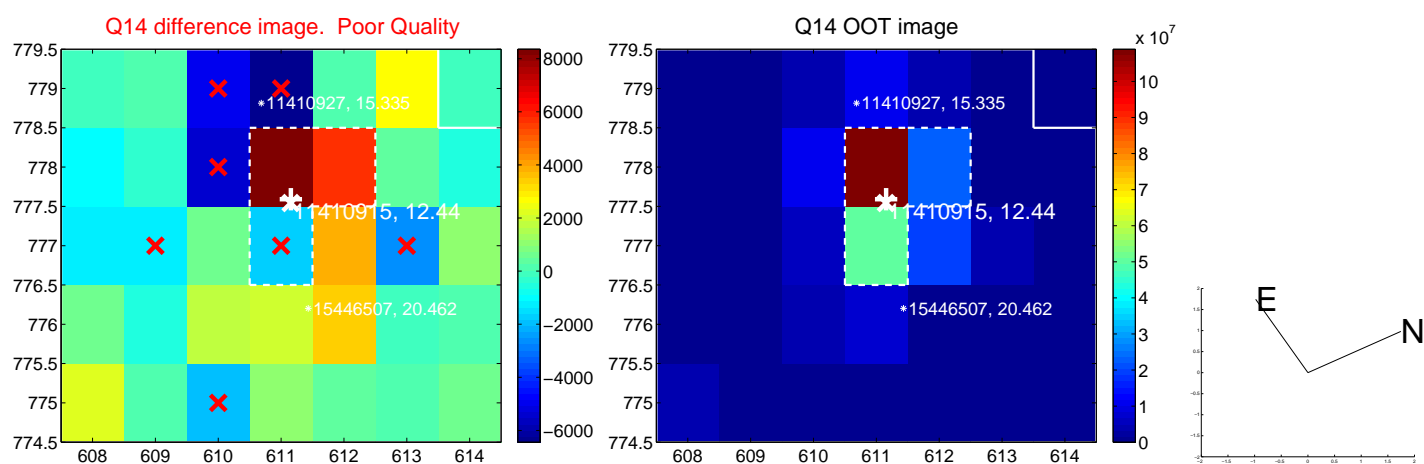
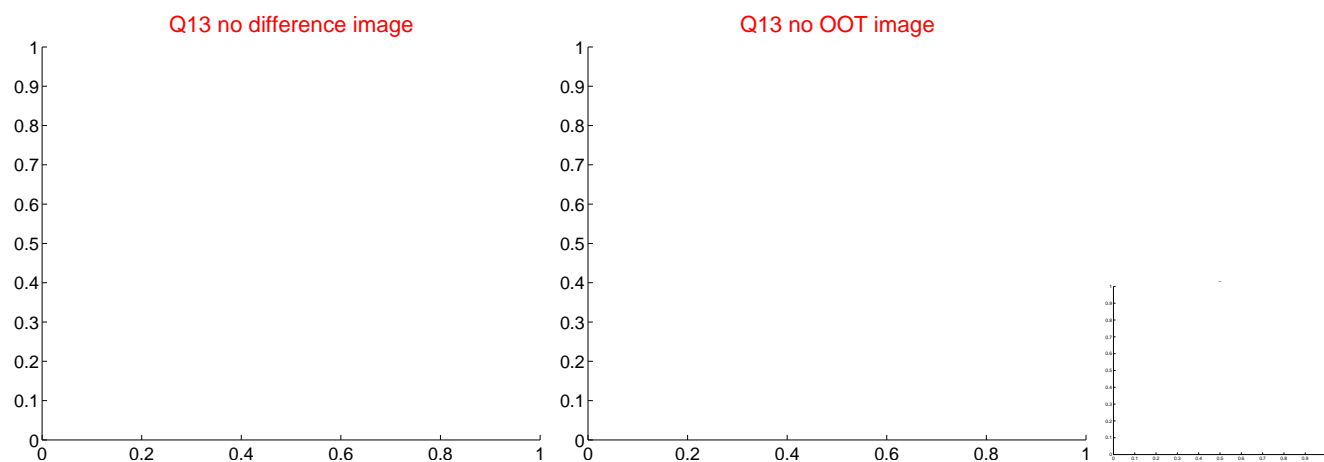
Q12 difference image. Poor Quality



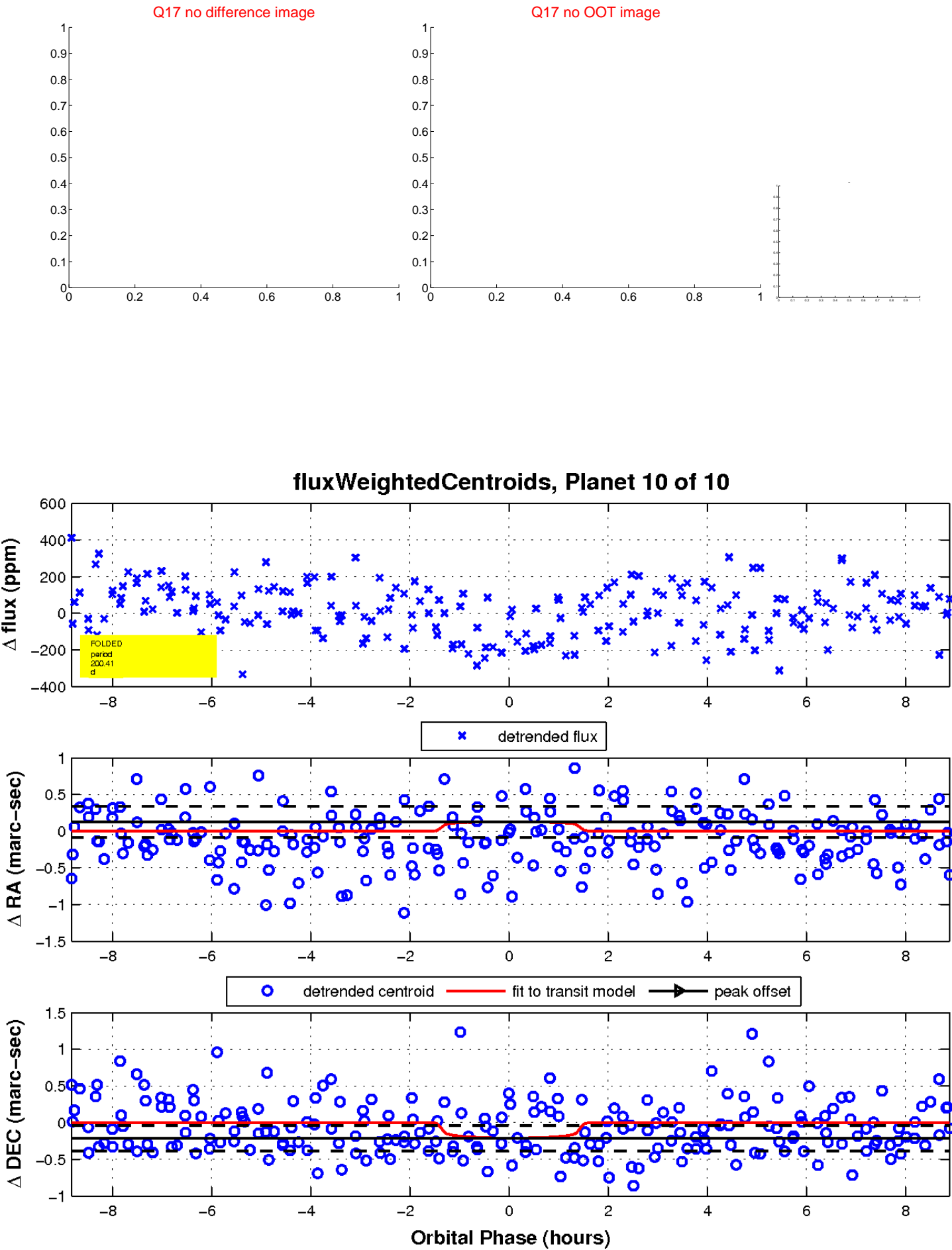
Q12 OOT image



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

