

# KIC 011304344

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011304344-01	OBS	No	0.863290	132.226037	0.0	6.125	10.2	0.0	1.67	7227	0.01	16379.51
011304344-02	OBS	No	21.393712	133.479125	212.4	1.842	10.3	12.8	1.67	7227	2.50	226.71
011304344-03	OBS	No	153.104629	225.899800	223.1	6.707	9.6	9.5	1.67	7227	2.92	16.44
011304344-04	OBS	No	41.015764	158.956317	322.2	0.929	11.0	11.0	1.67	7227	3.06	95.19
011304344-05	OBS	No	11.643967	133.955228	46.4	9.518	11.7	7.5	1.67	7227	1.17	510.16
011304344-06	OBS	No	21.884143	148.668846	220.8	2.402	9.3	10.3	1.67	7227	2.87	219.96
011304344-07	OBS	No	44.937165	157.100009	196.5	3.377	9.3	9.5	1.67	7227	2.71	84.28

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011304344-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011304344-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011304344-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—MOD_NONUNIQ_DV—HALO_GHOST
011304344-05	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
011304344-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-07	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

**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.

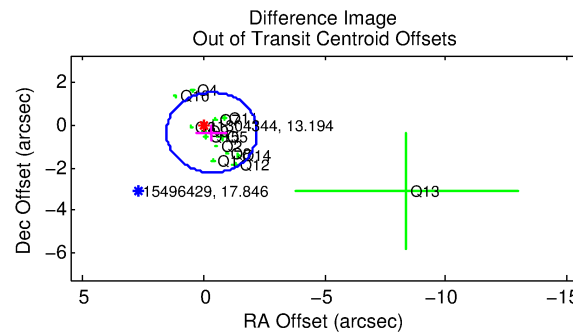
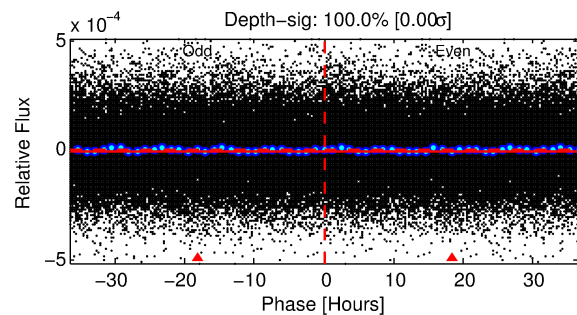
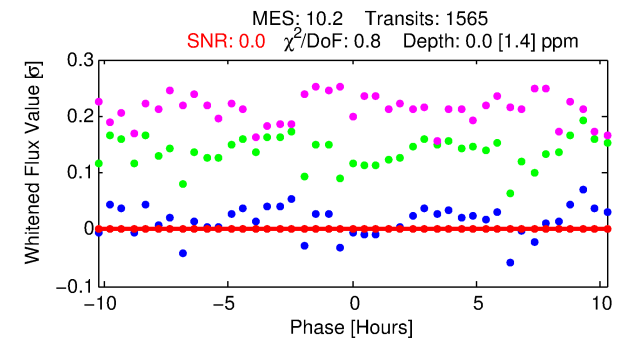
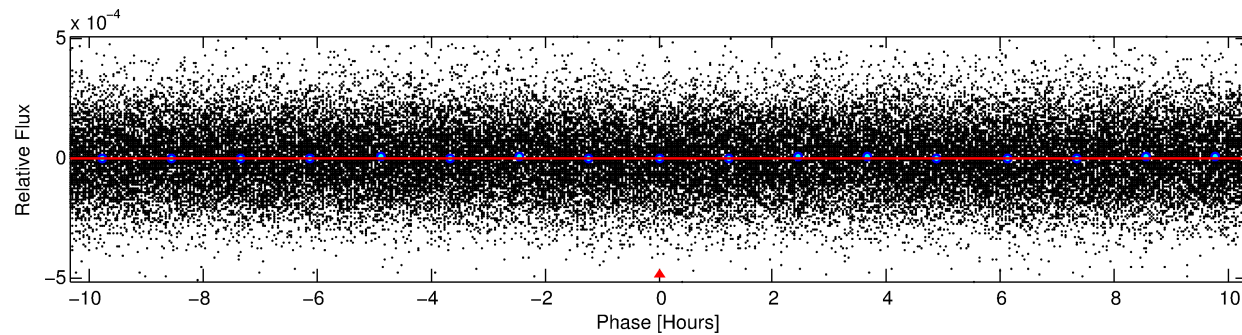
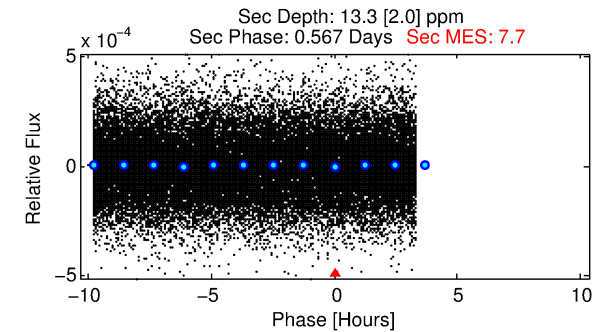
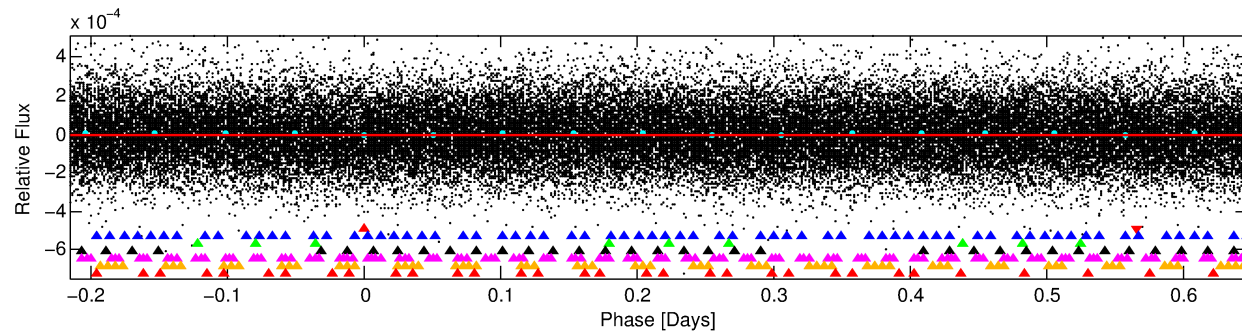
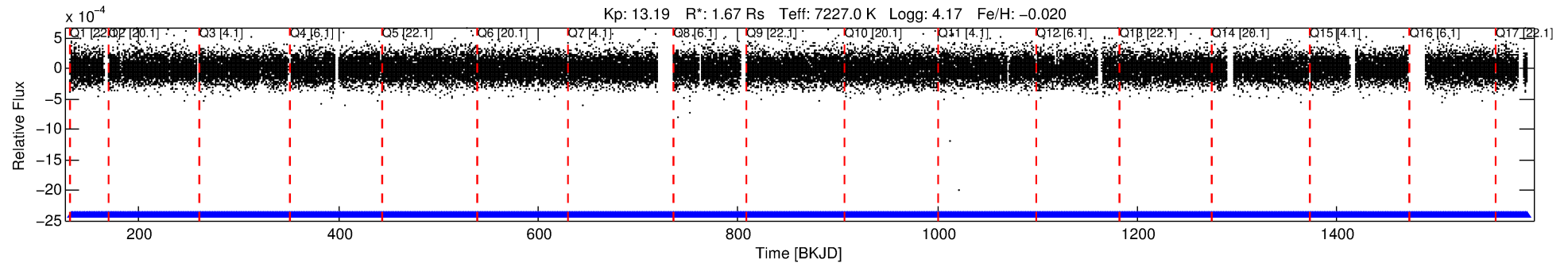
Ephemeris Match Information For 011304344-01

No Significant Match Found



# DV One-Page Summary

KIC: 11304344 Candidate: 1 of 7 Period: 0.863 d



## DV Fit Results:

Period = 0.86329 [0.04166] d  
Epoch = 132.2260 [16.5833] BKJD  
Rp/R\* = 0.0001 [0.0105]  
a/R\* = 1.23 [113.20]  
b = 0.30 [850.60]  
Seff = 16379.51 [6831.90]  
Teq = 2885 [301] K  
Rp = 0.01 [1.91] Re  
a = 0.0204 [0.0054] AU  
Ag = 23809.41 [8035346.36] [0.00σ]  
Teffp = 55402 [4674749] K [0.01σ]

## DV Diagnostic Results:

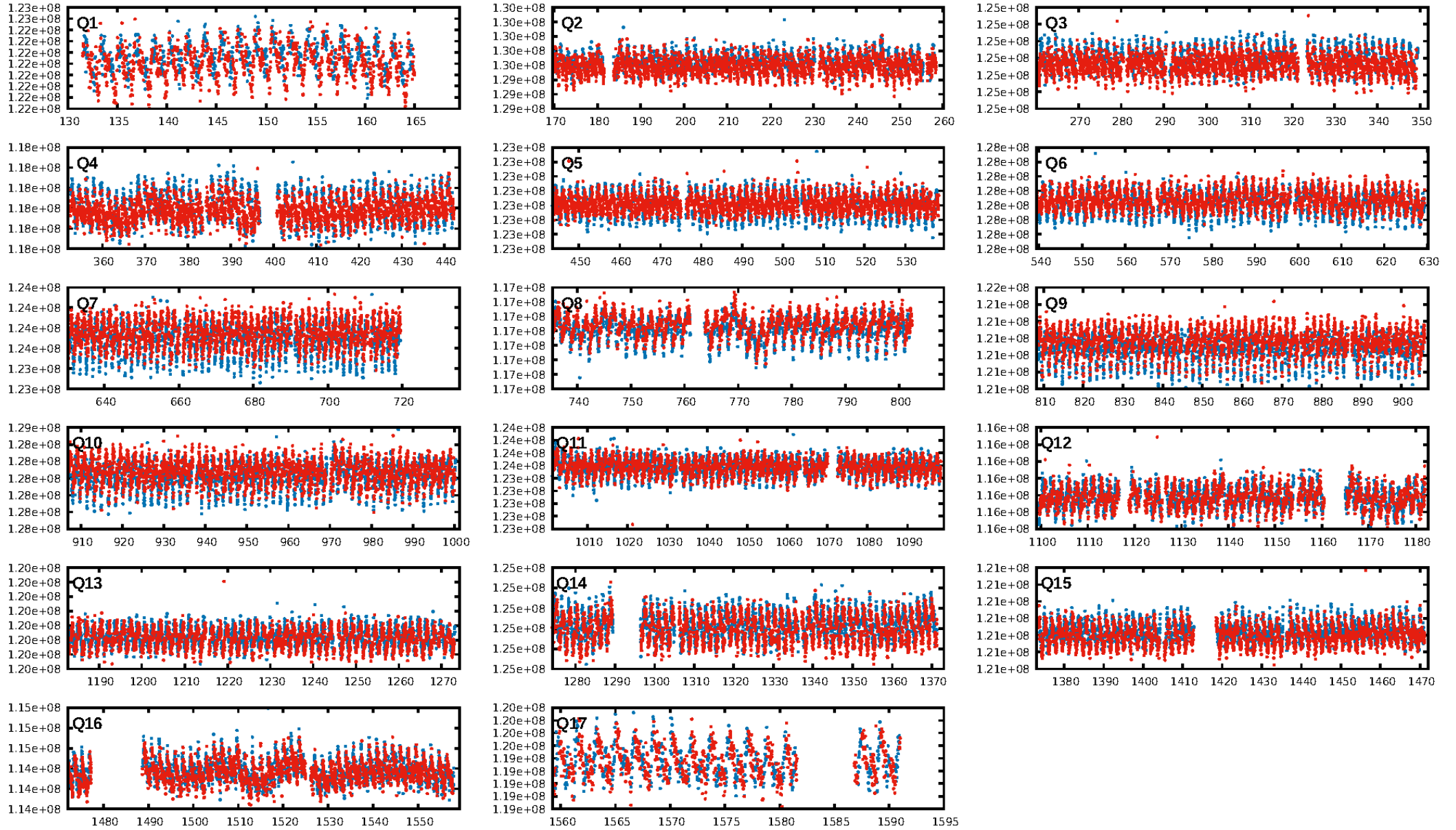
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [22.86σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 1.48e-12**  
RollingBand-fgt: 1.00 [1494/1494]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.498 arcsec [0.80σ]  
KicOffset-rm: 0.511 arcsec [0.92σ]  
OotOffset-st: 3/4/3/4 [14]  
KicOffset-st: 3/4/3/4 [14]  
DiffImageQuality-fgm: 0.50 [7/14]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:26:15 Z

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

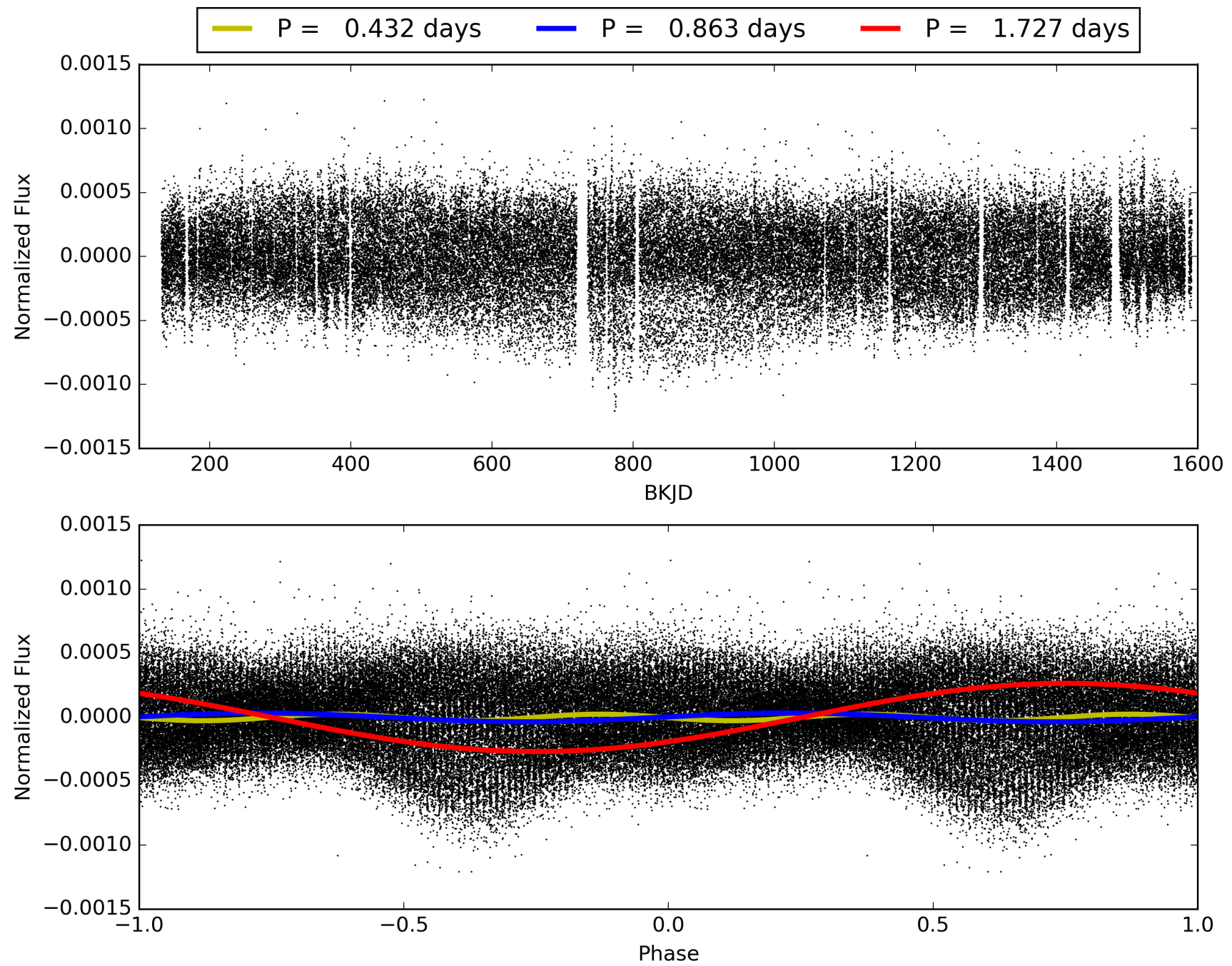


# TCE 011304344-01, PDC Light Curves





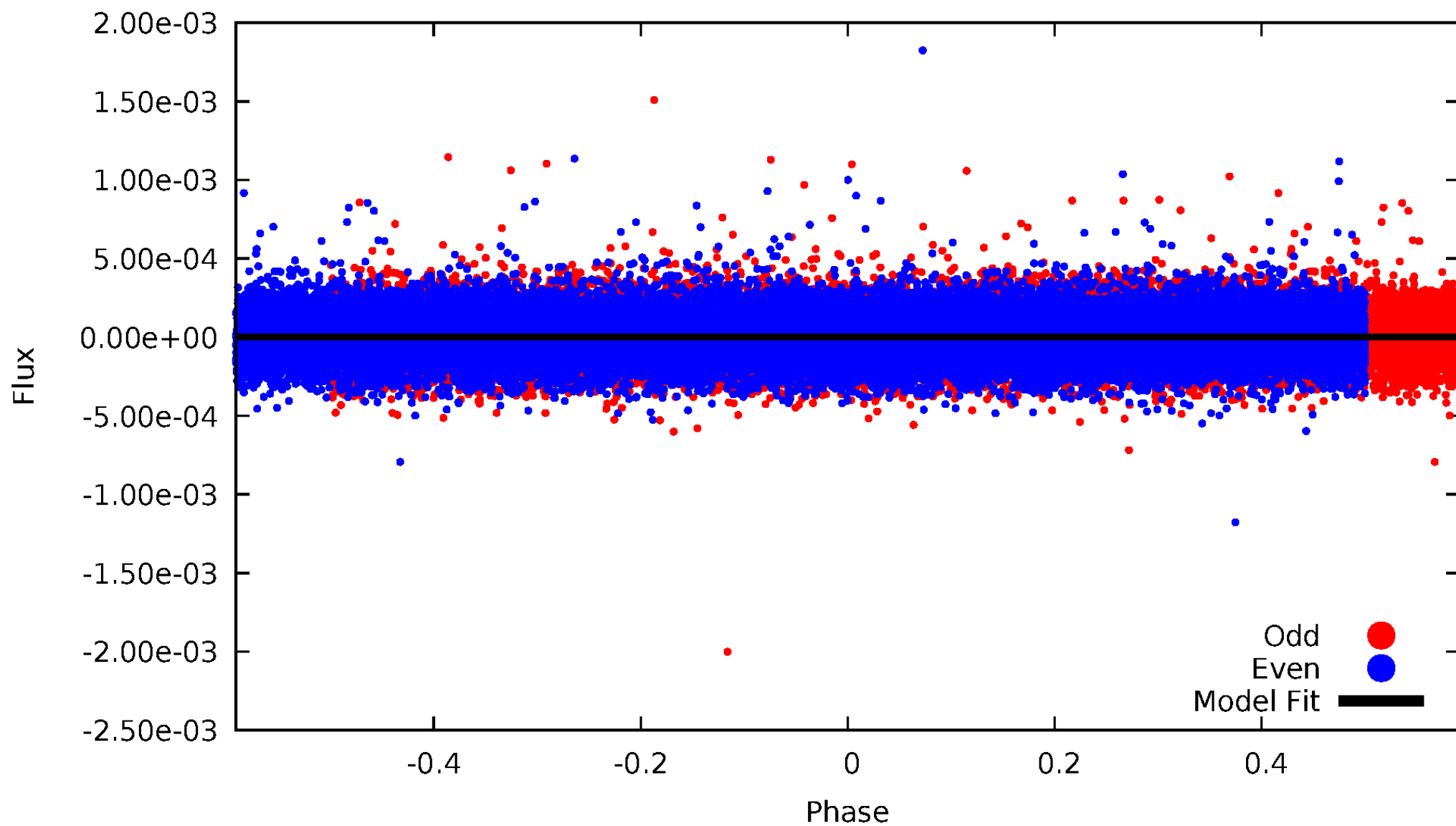
TCE 011304344-01





# DV Odd/Even

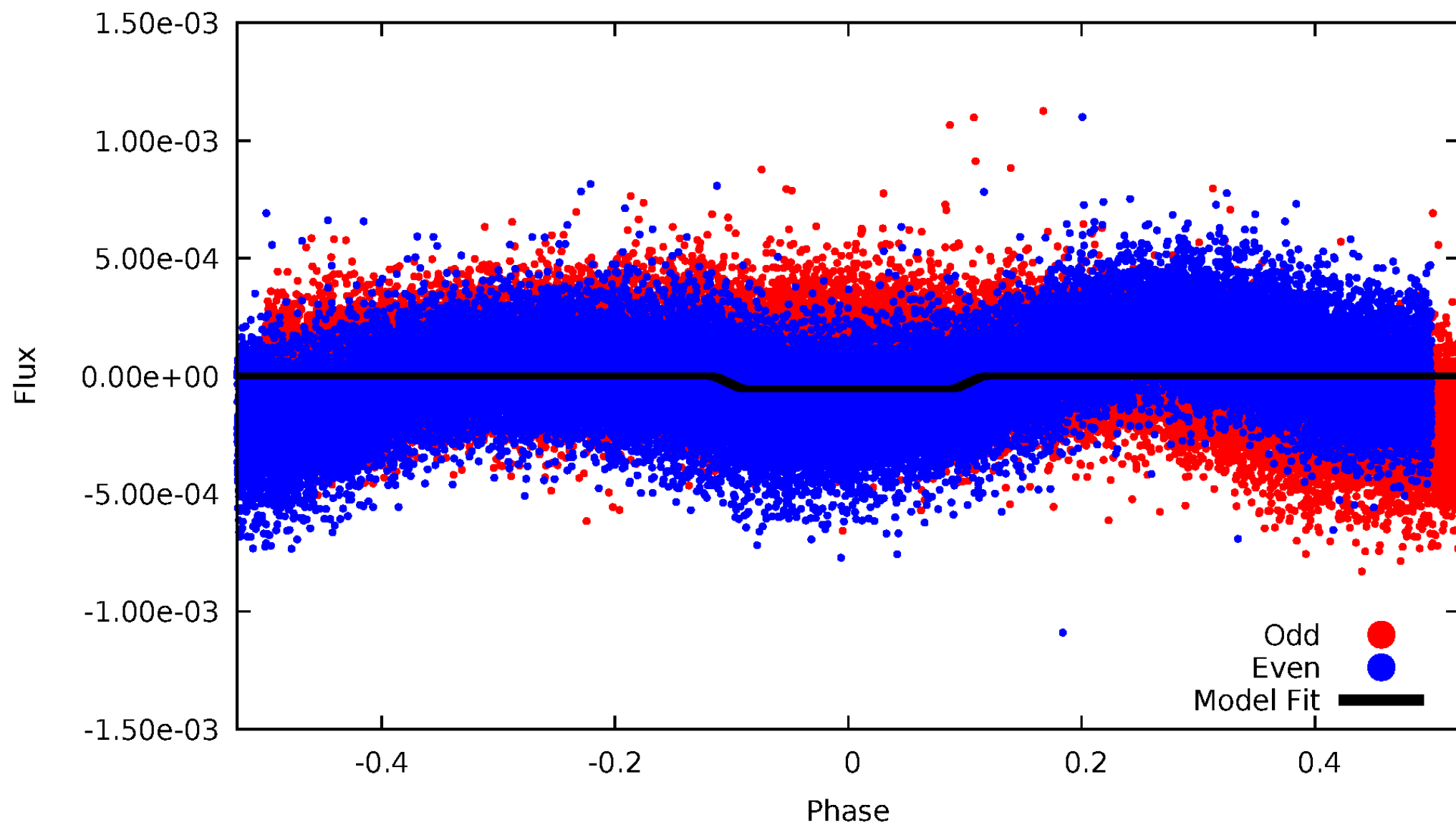
TCE 011304344-01





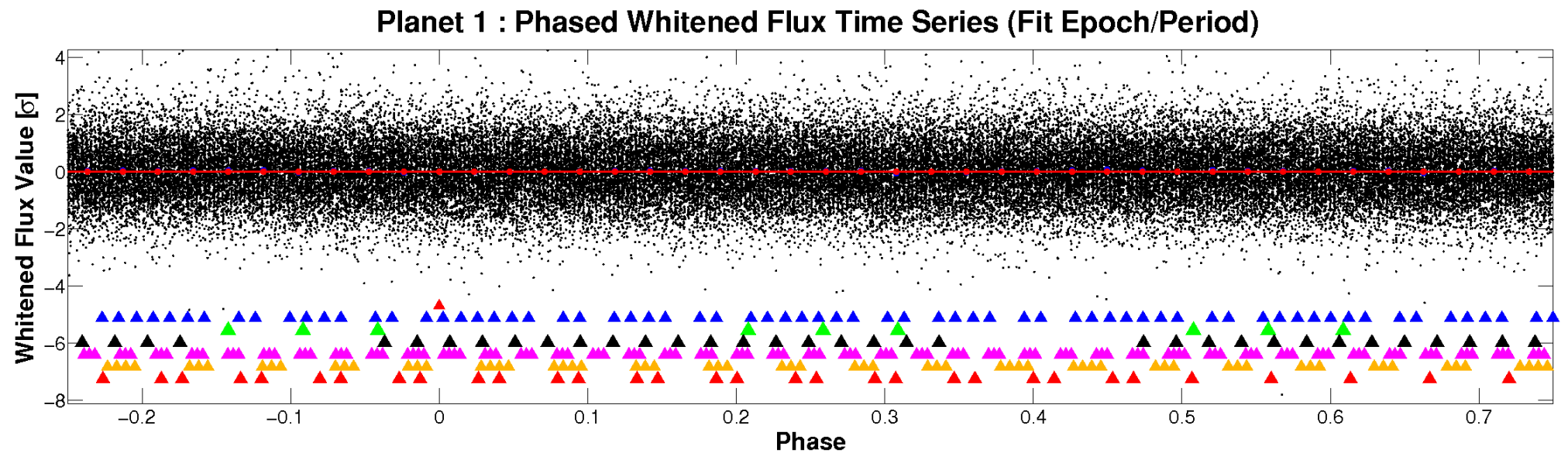
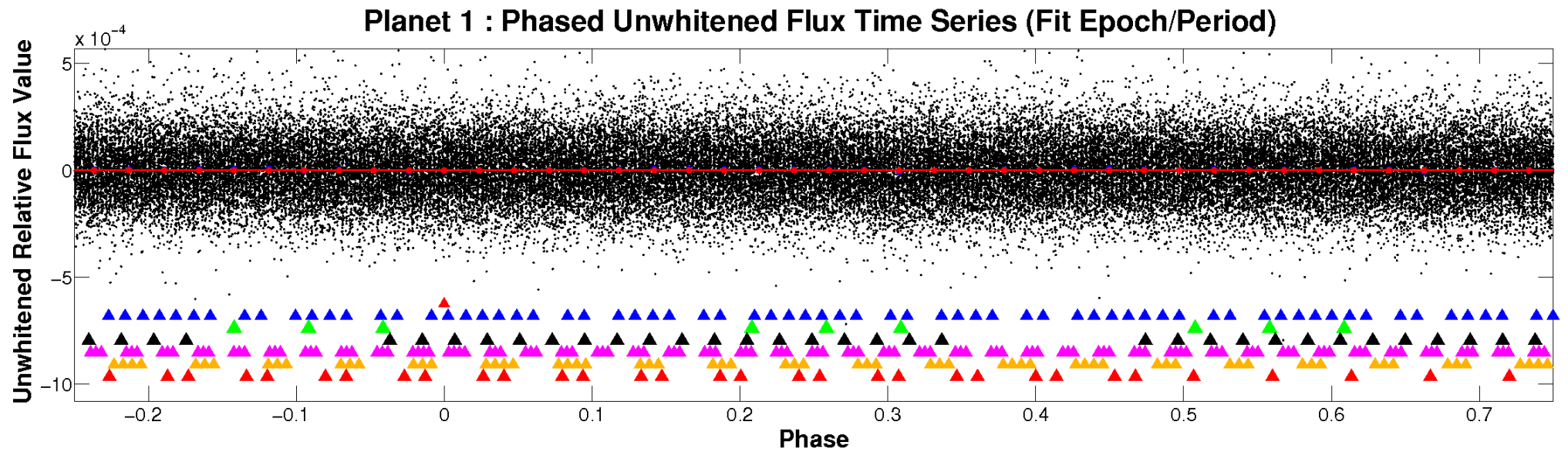
# ALT Odd/Even

TCE 011304344-01





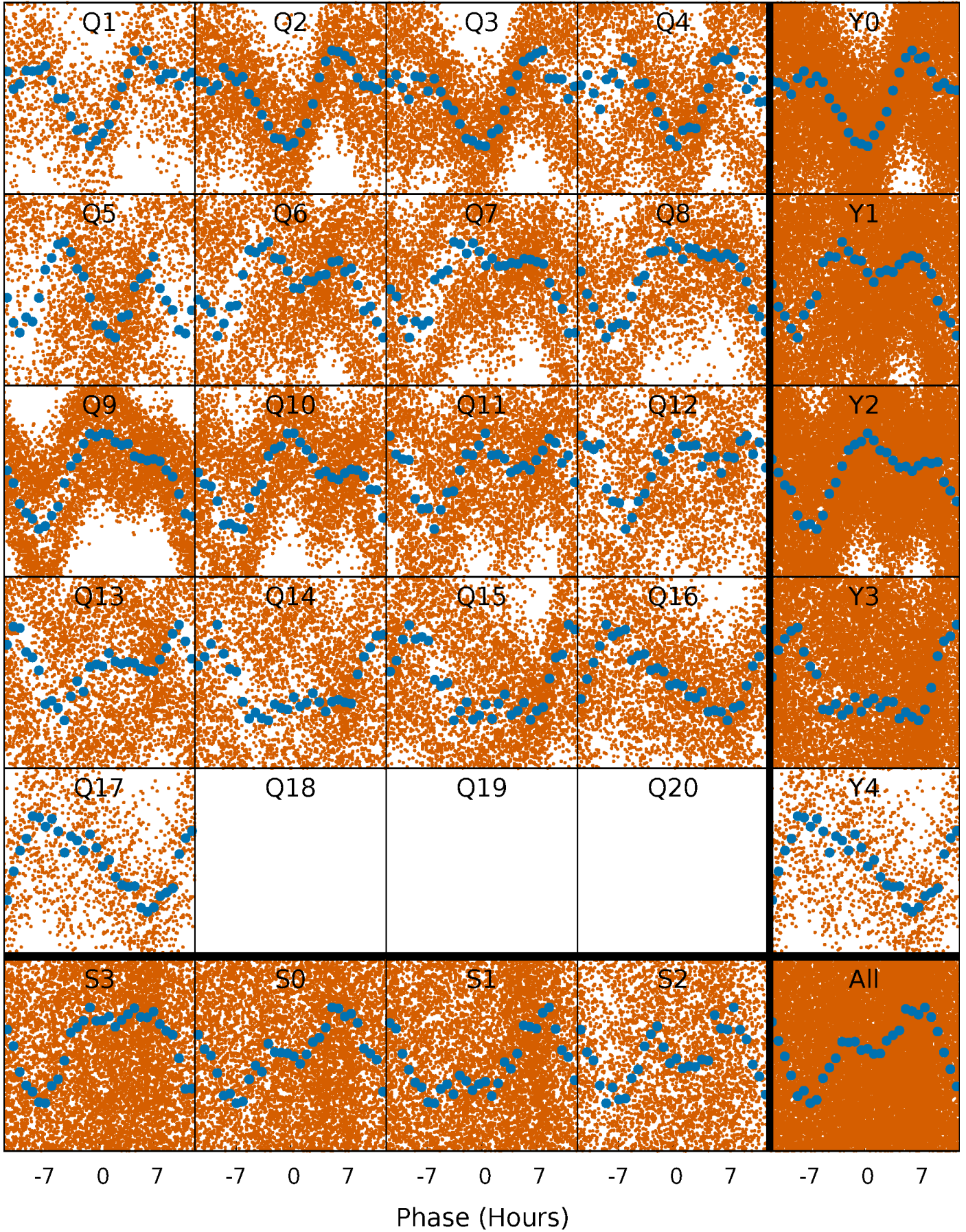
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

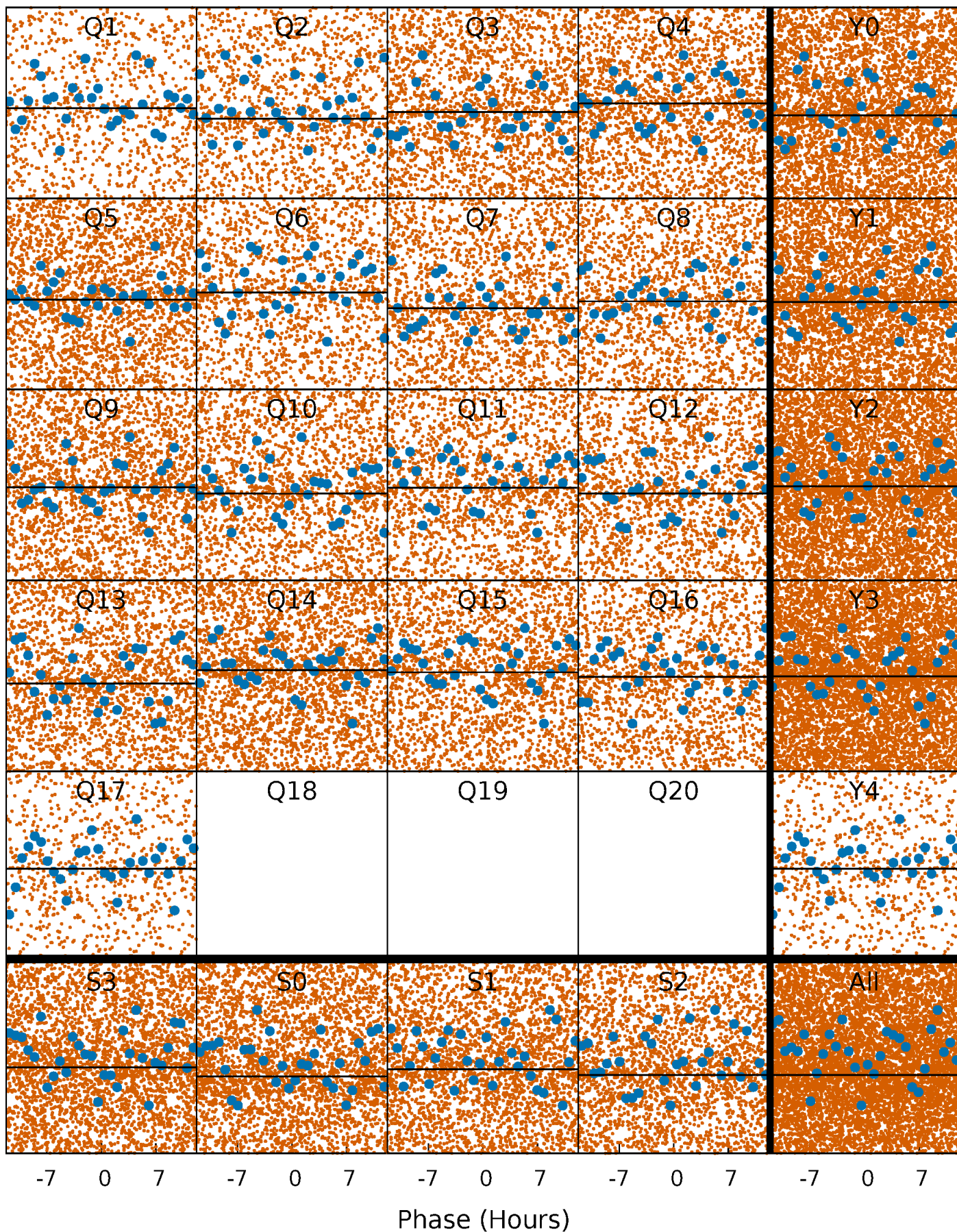
TCE 011304344-01 P= 0.863290 Days  $T_0=132.226037$  (BKJD)





# DV Quarter-Phased Transit Curves

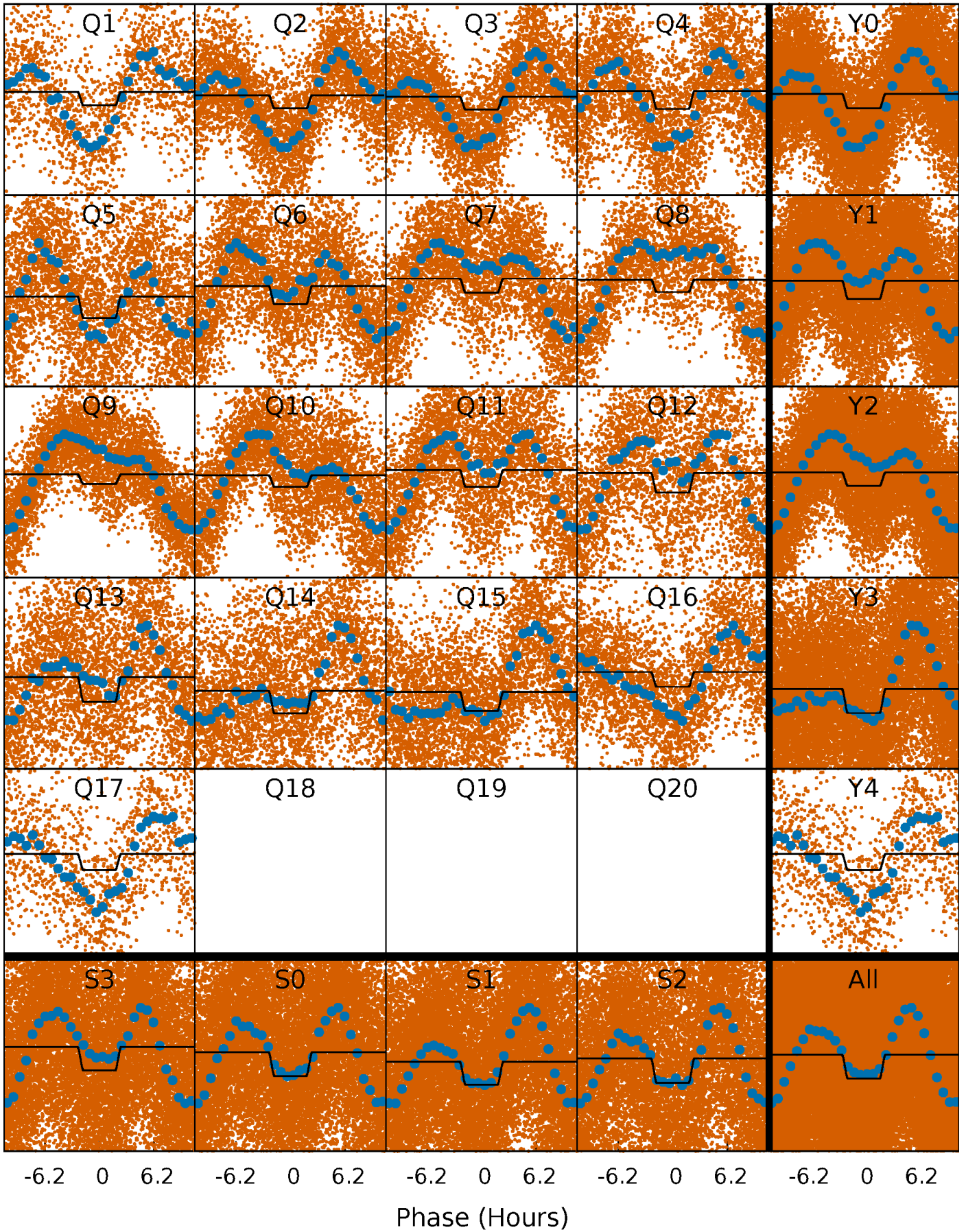
TCE 011304344-01 P= 0.863290 Days  $T_0=132.226037$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011304344-01   P= 0.863456 Days    $T_0=132.221822$  (BKJD)

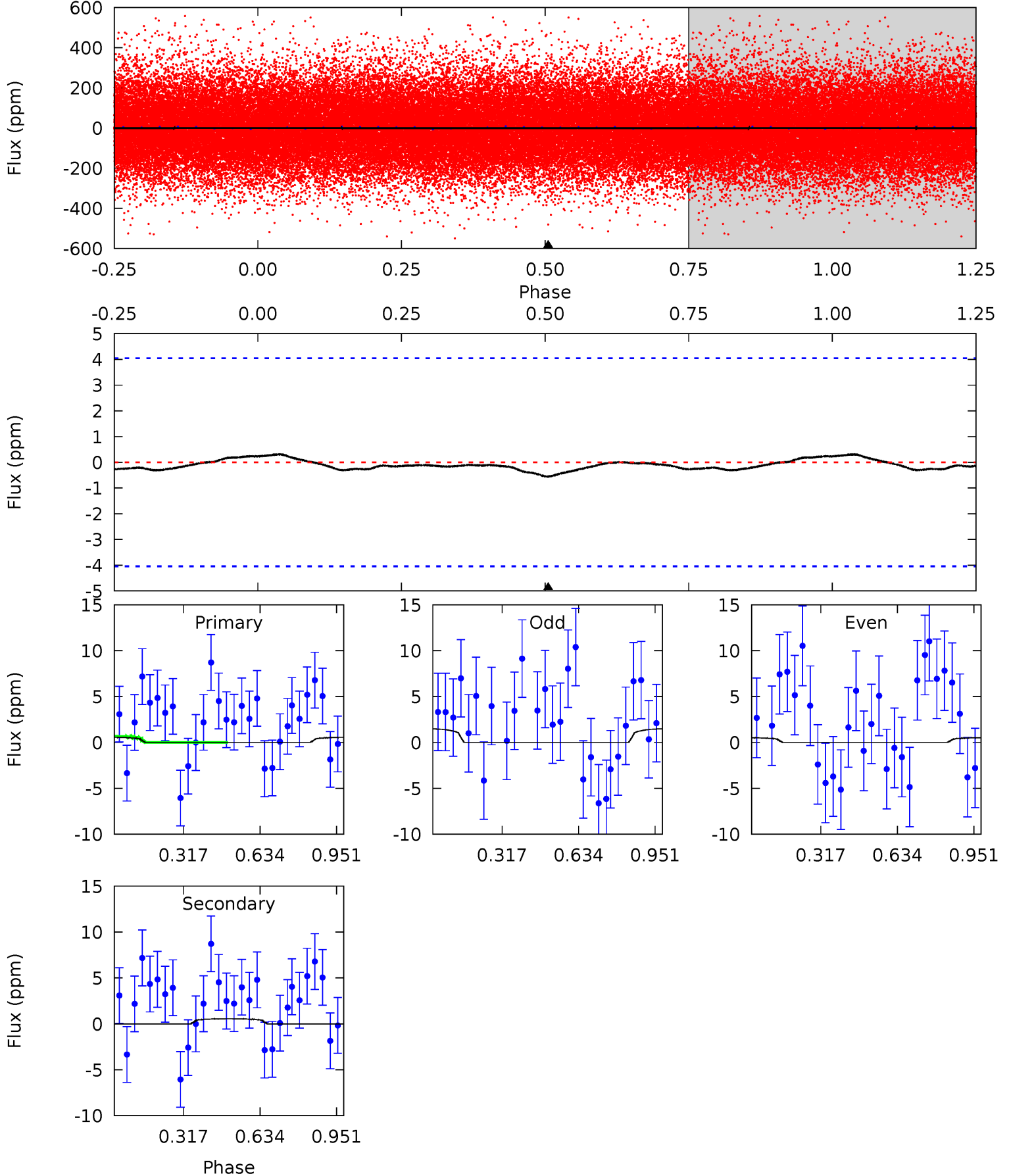




# DV Model-Shift Uniqueness Test

011304344-01, P = 0.863290 Days, E = 131.362747 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.59	0.59	0	0	4.32	1.00	0.22	0.59	0.59	0.59	0.59	0.53	1.39	0.36	0.23

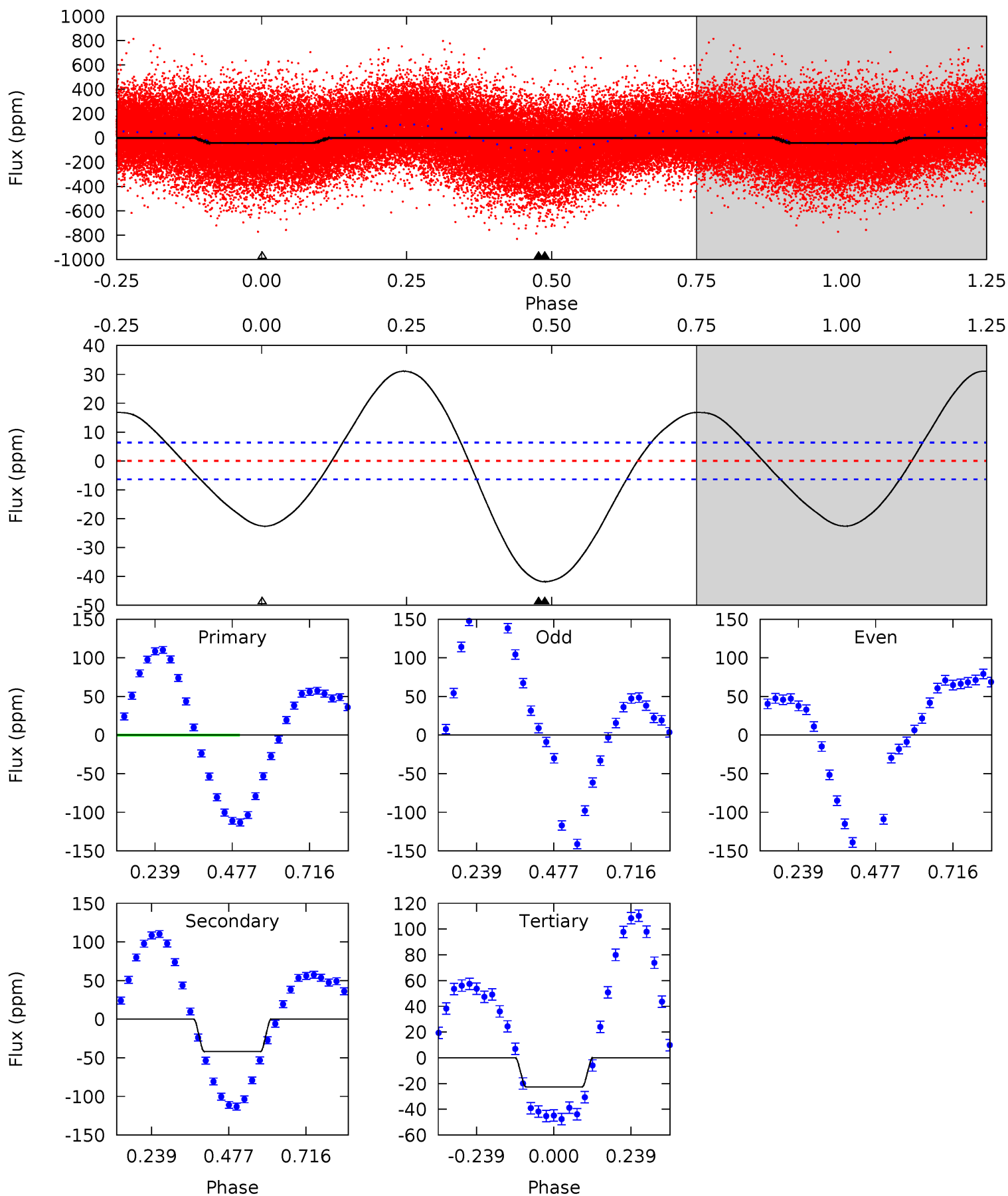




# Alt Model-Shift Uniqueness Test

011304344-01, P = 0.863456 Days, E = 131.358366 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
28.5	28.7	15.5	0	4.38	1.18	11.1	13.0	28.5	13.3	28.7	26.5	0.74	0.43	0.71





### Stellar Parameters For KIC 011304344

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7227^{+226}_{-302}$	$4.173^{+0.108}_{-0.201}$	$-0.020^{+0.200}_{-0.350}$	$1.666^{+0.540}_{-0.291}$	$1.505^{+0.221}_{-0.221}$	$0.459^{+0.239}_{-0.236}$
	+3%/-4%	+3%/-5%	+1000%/-1750%	+32%/-17%	+15%/-15%	+52%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011304344-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1 \pm 1$	$1.34^{+1.30}_{-0.96}$	$4083^{+311}_{-266}$	$-3559^{+7291}_{-372}$	$0.048^{+0.611}_{-0.074}$
Alt.	$-42 \pm 1$	$1.89^{+1.77}_{-1.28}$	$4075^{+312}_{-258}$	$5542^{+5970}_{-1646}$	$2.621^{+24.174}_{-1.920}$

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



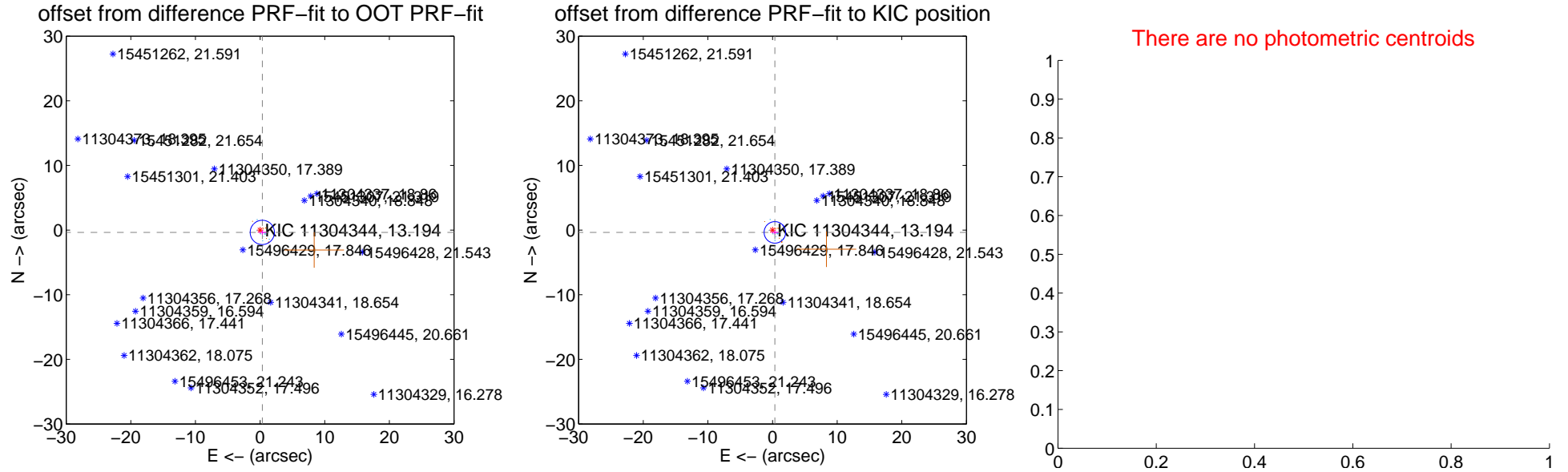
## DV Centroid Data

Supplemental centroid analysis for 011304344-01. Kepler magnitude: 13.19. Transit SNR 0.00

There are 7 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

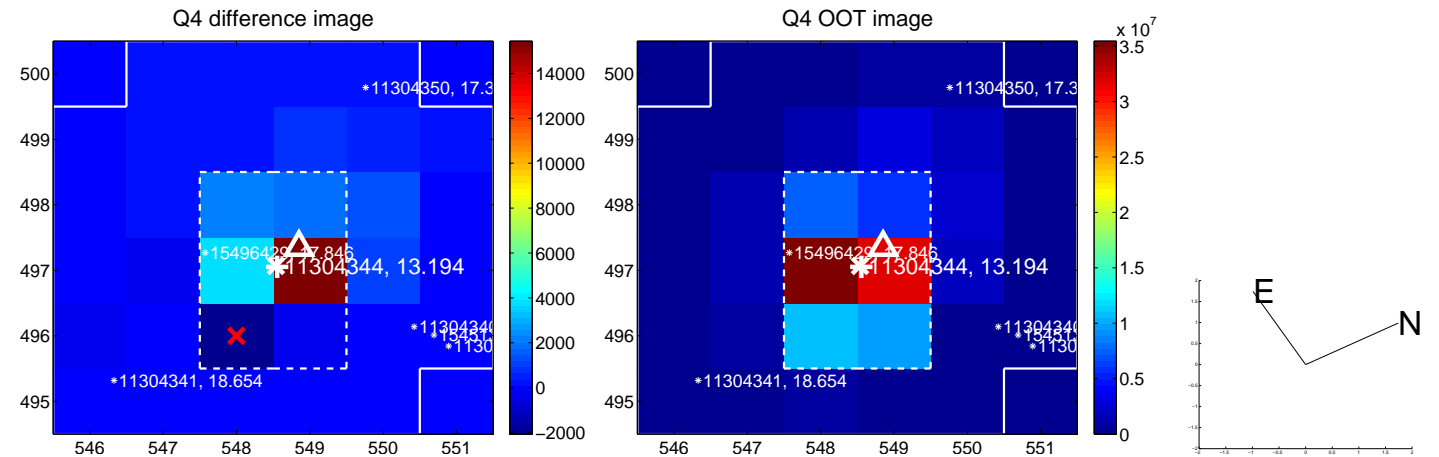
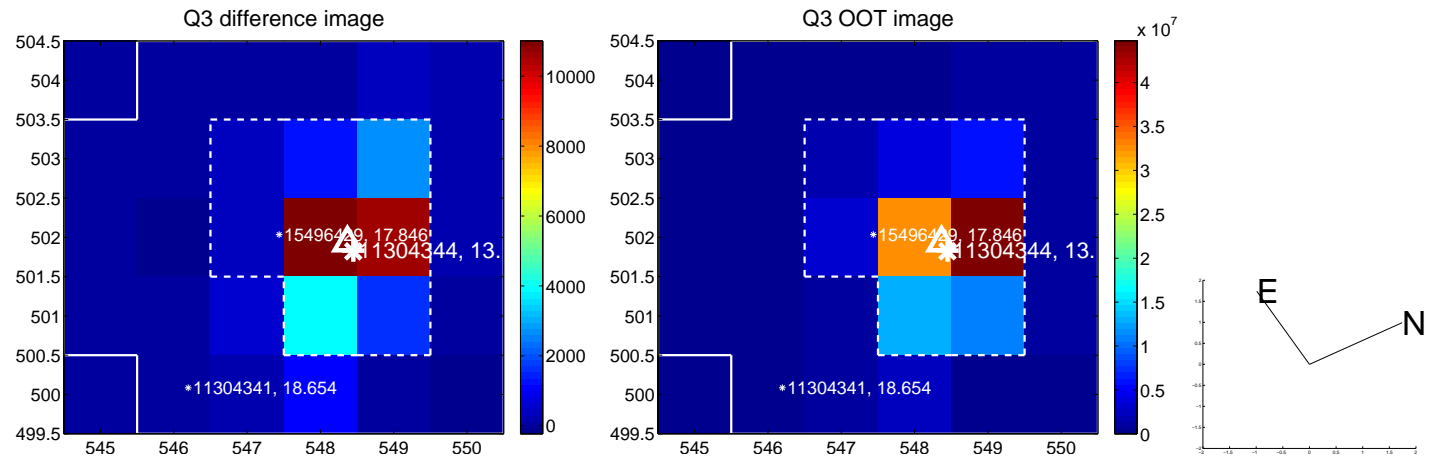
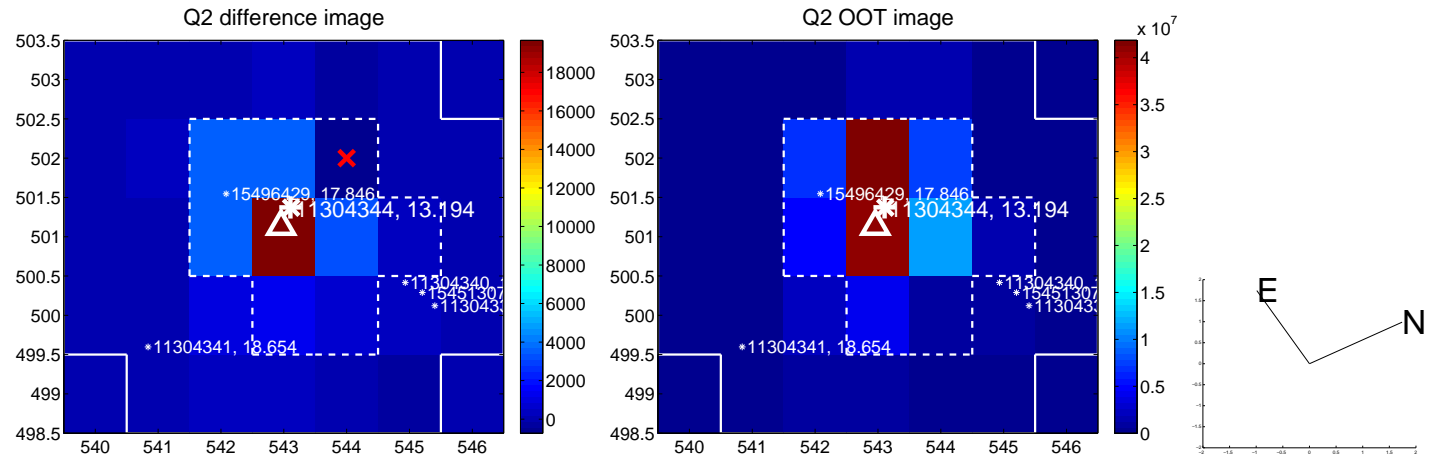
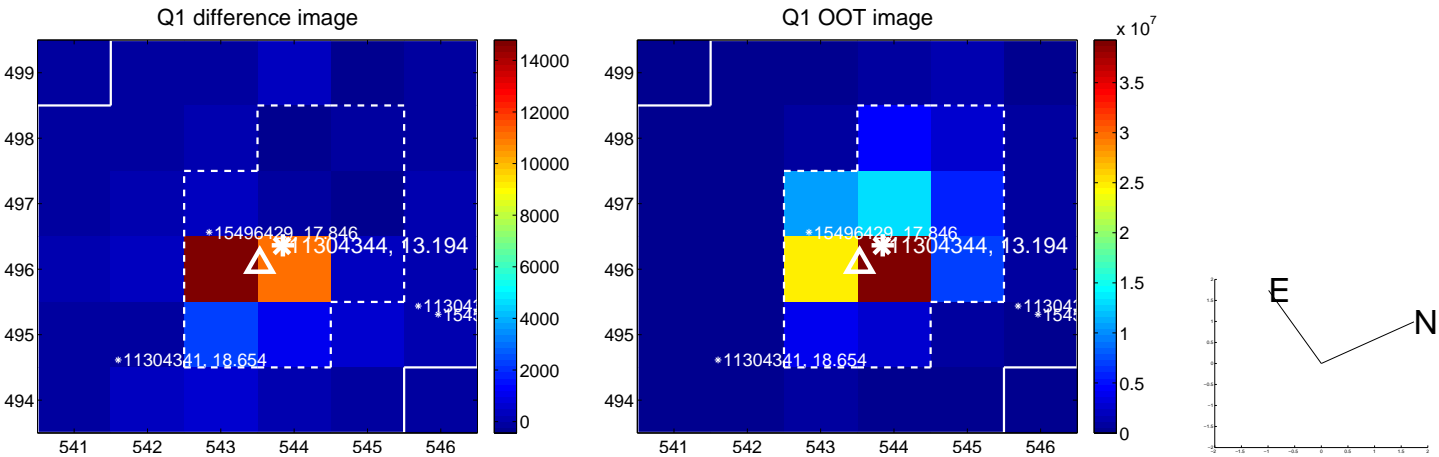
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.498 \pm 0.625$	0.80	$-0.344 \pm 0.601$	$-0.360 \pm 0.342$
PRF-fit source offset from KIC position	$0.511 \pm 0.555$	0.92	$-0.363 \pm 0.547$	$-0.359 \pm 0.301$
photometric centroid source offset	—	—	—	—



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.

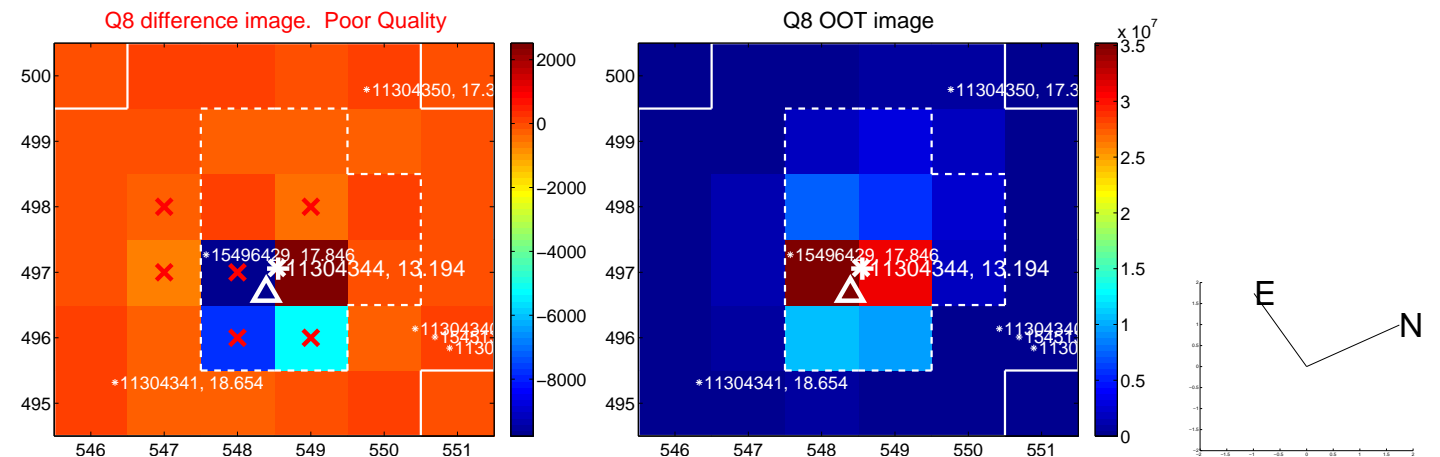
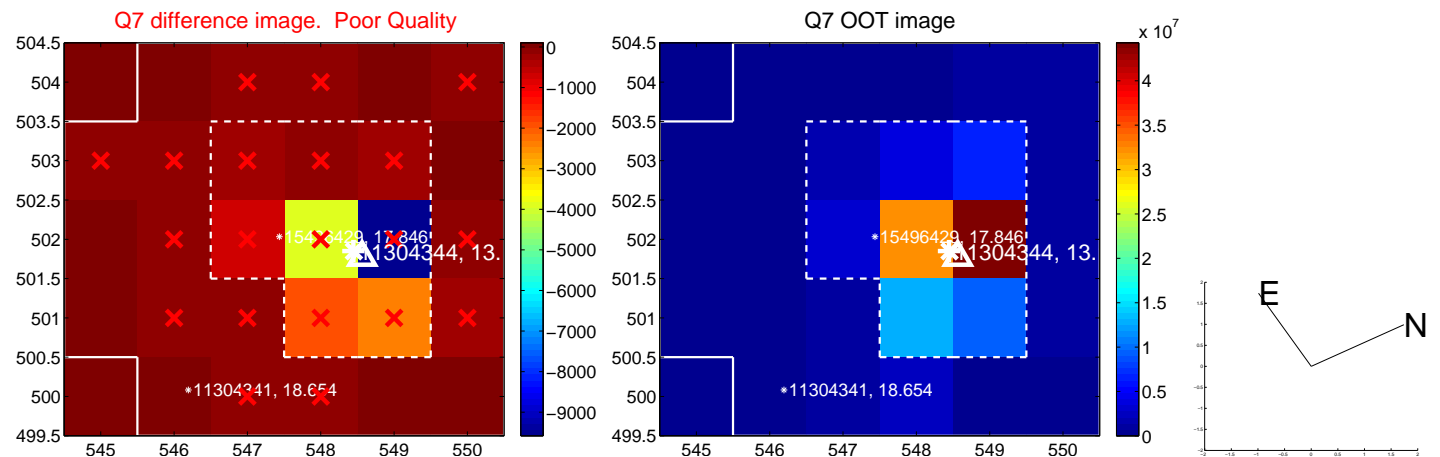
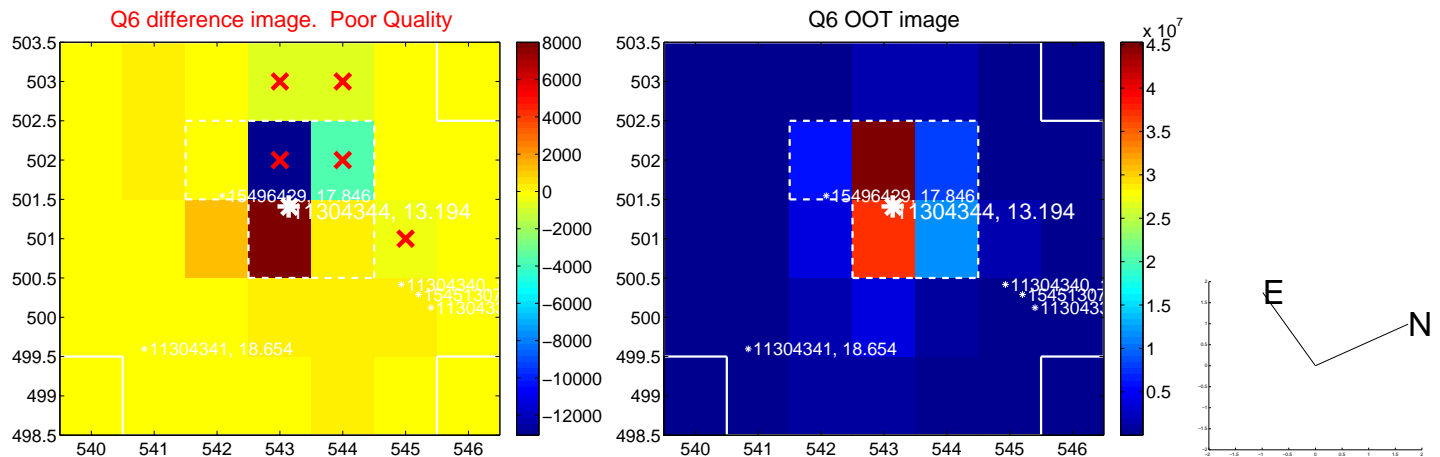
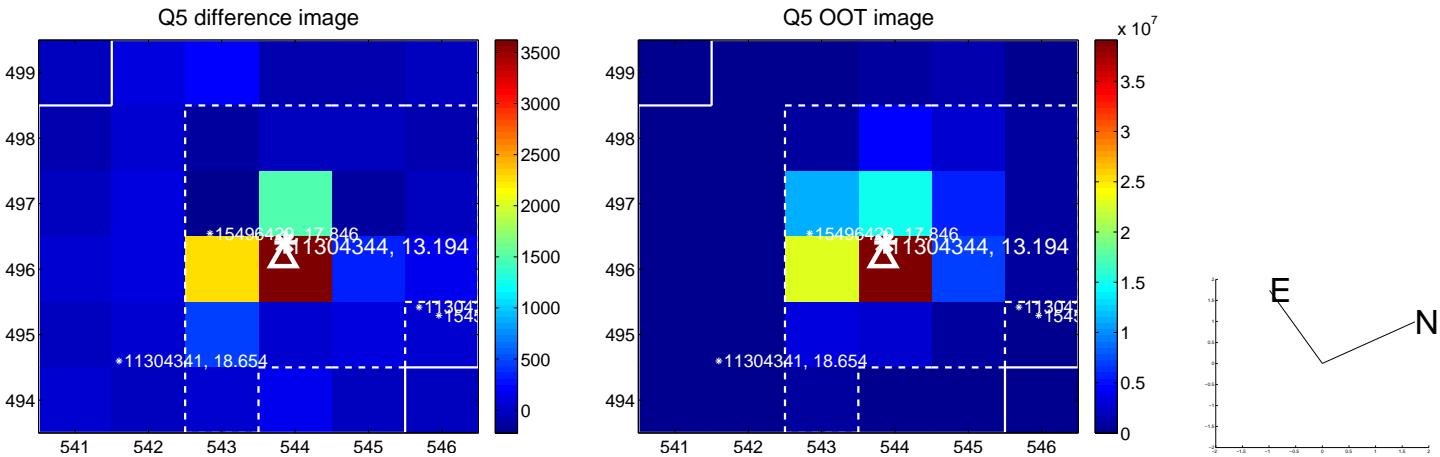


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



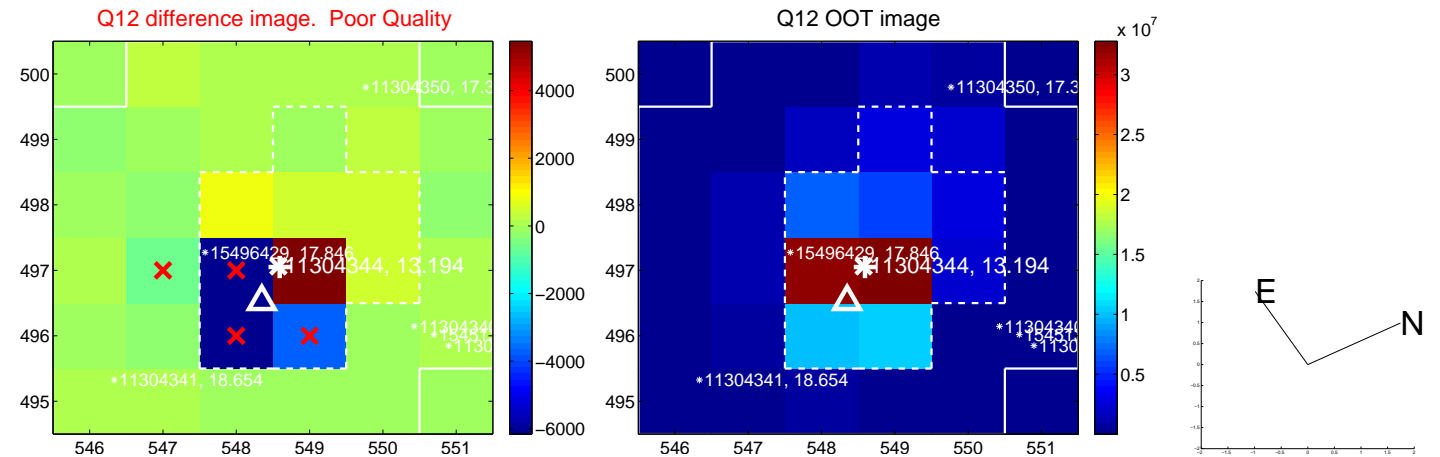
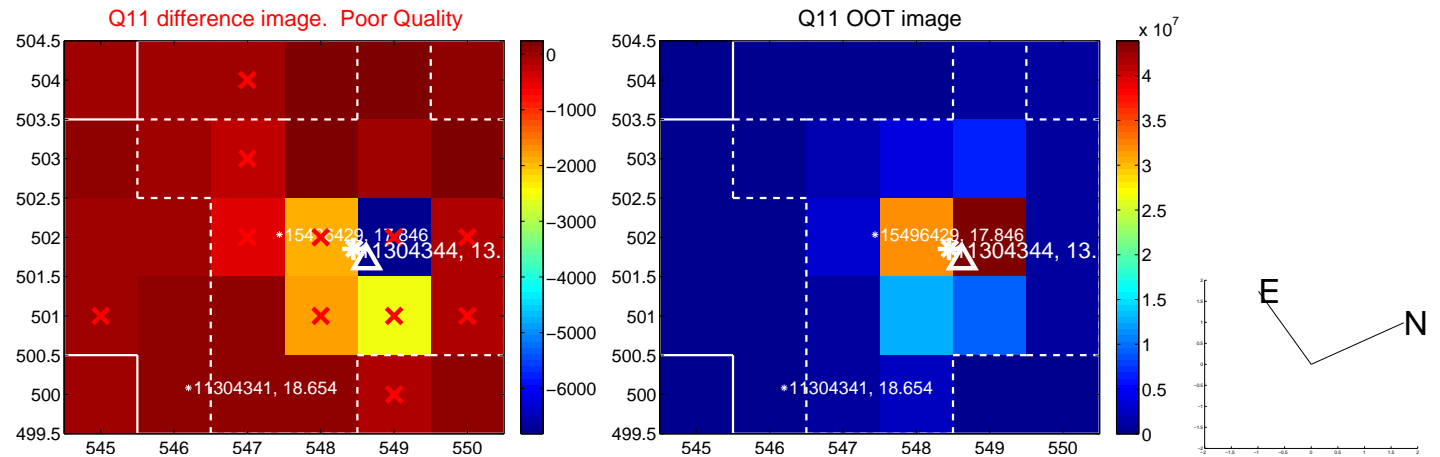
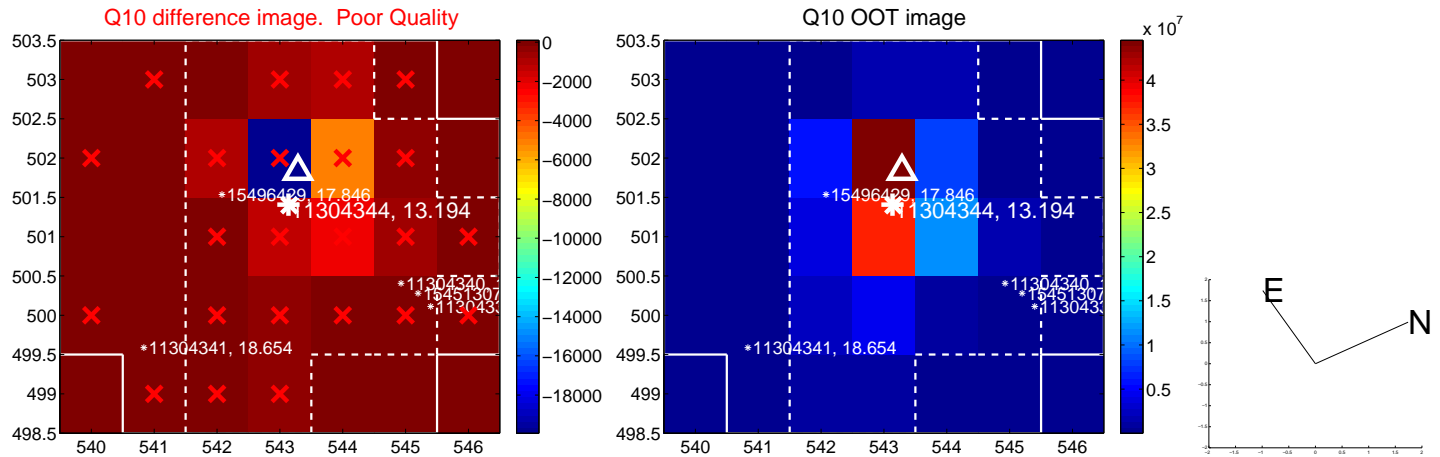
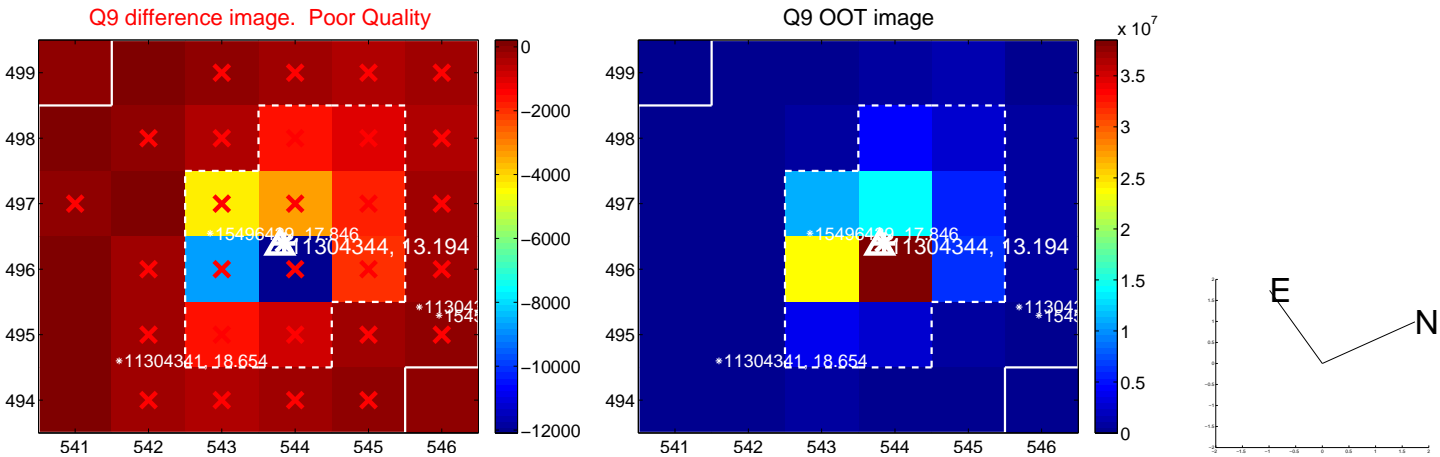


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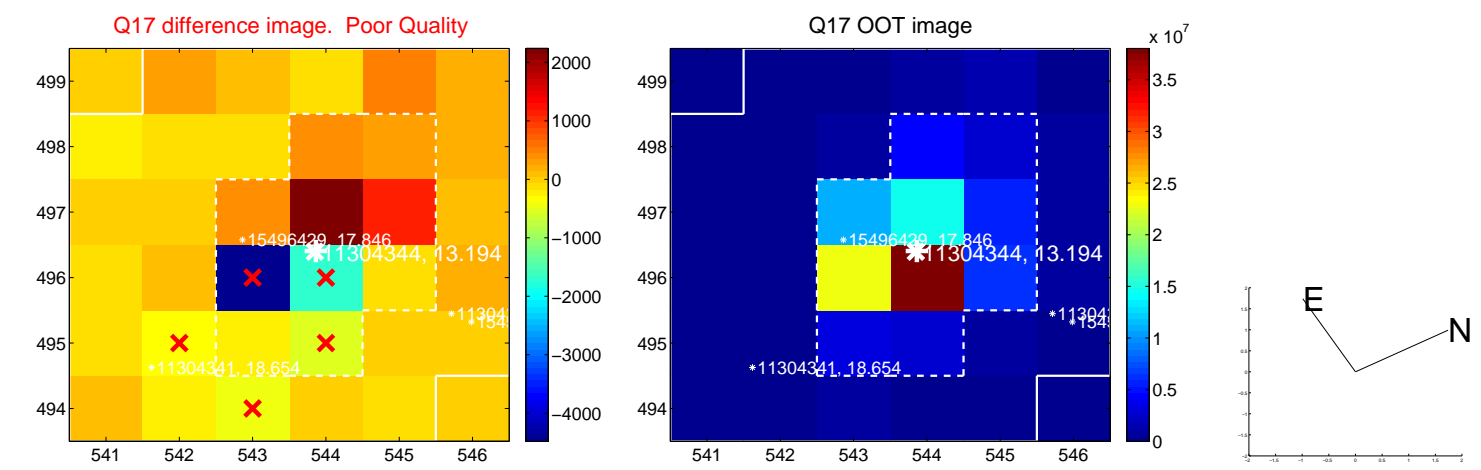








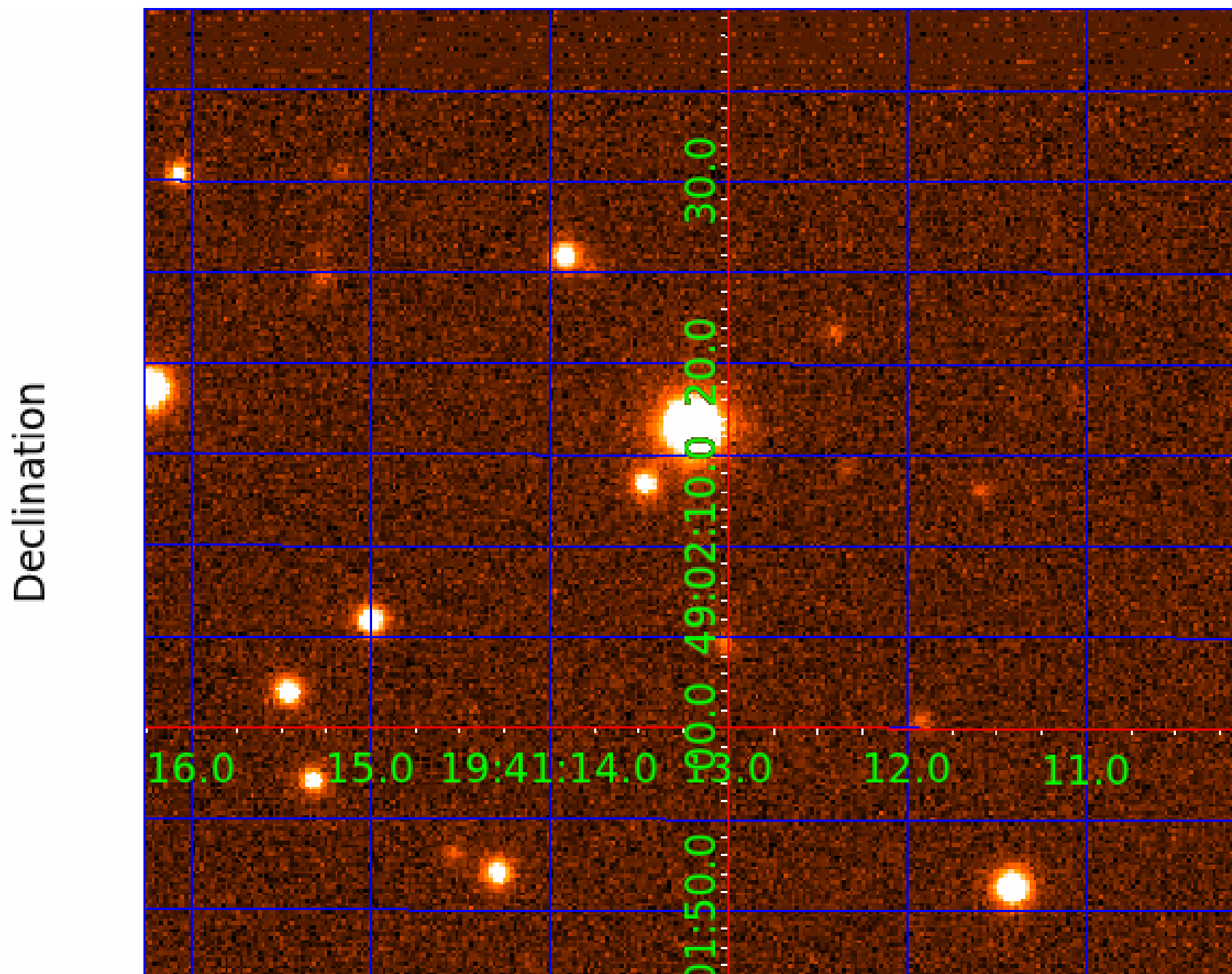
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.



UKIRT Image





# KIC 011304344

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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011304344-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011304344-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—MOD_NONUNIQ_DV—HALO_GHOST
011304344-05	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
011304344-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-07	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

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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.

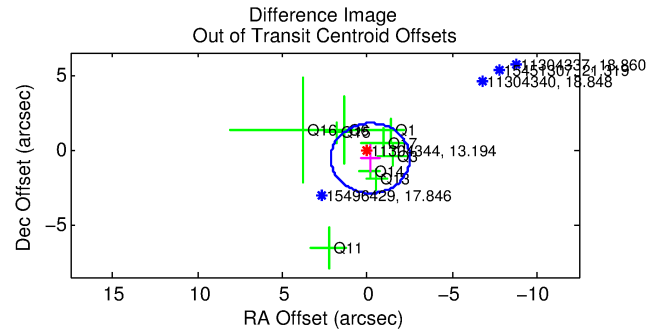
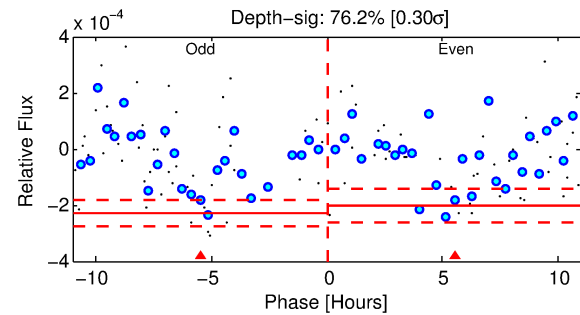
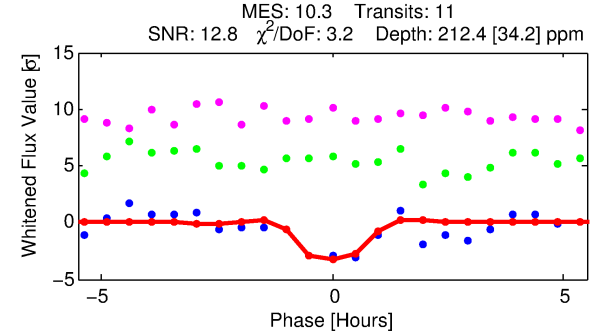
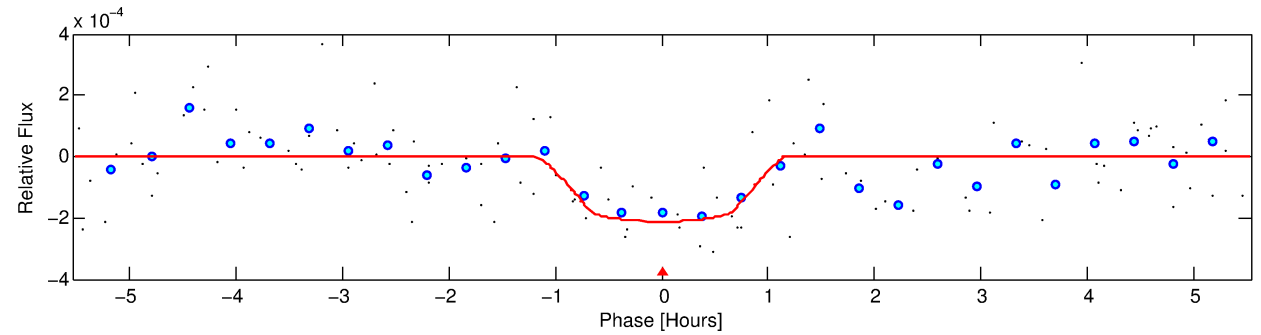
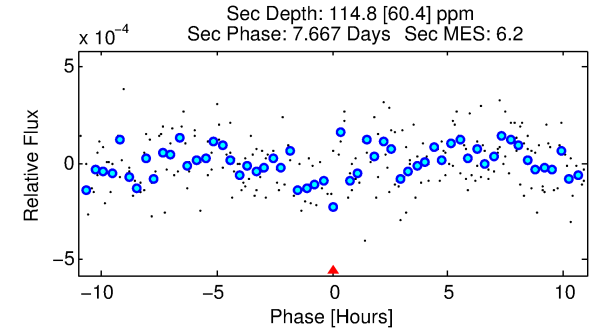
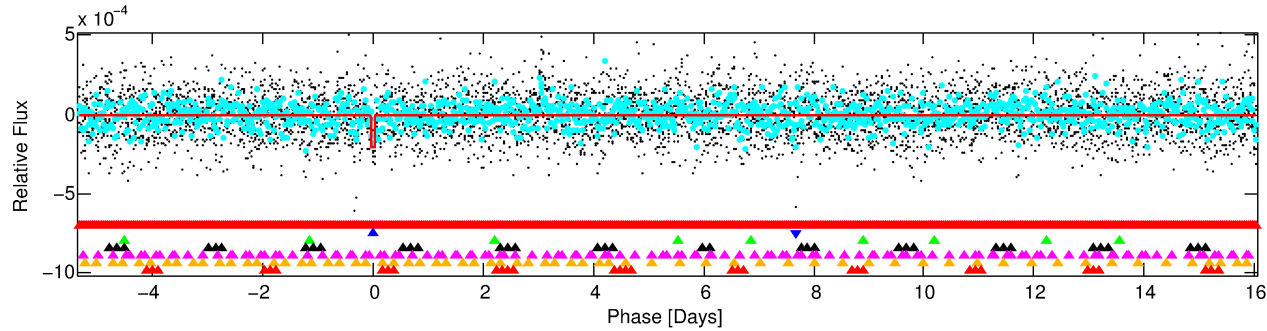
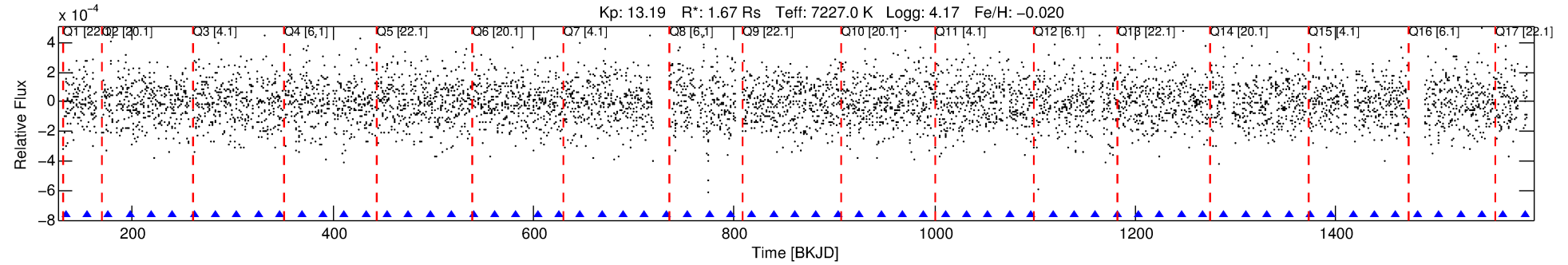
Ephemeris Match Information For 011304344-02

No Significant Match Found



# DV One-Page Summary

KIC: 11304344 Candidate: 2 of 7 Period: 21.394 d



## DV Fit Results:

Period = 21.39371 [0.00020] d  
Epoch = 133.4791 [0.0078] BKJD  
Rp/R\* = 0.0137 [0.0174]  
a/R\* = 82.94 [621.57]  
b = 0.39 [16.26]  
Seff = 226.71 [93.43]  
Teff = 989 [102] K  
Rp = 2.50 [3.27] Re  
a = 0.1730 [0.0459] AU  
Ag = 302.68 [791.26] [0.38σ]  
Teffp = 6381 [4135] K [1.30σ]

## DV Diagnostic Results:

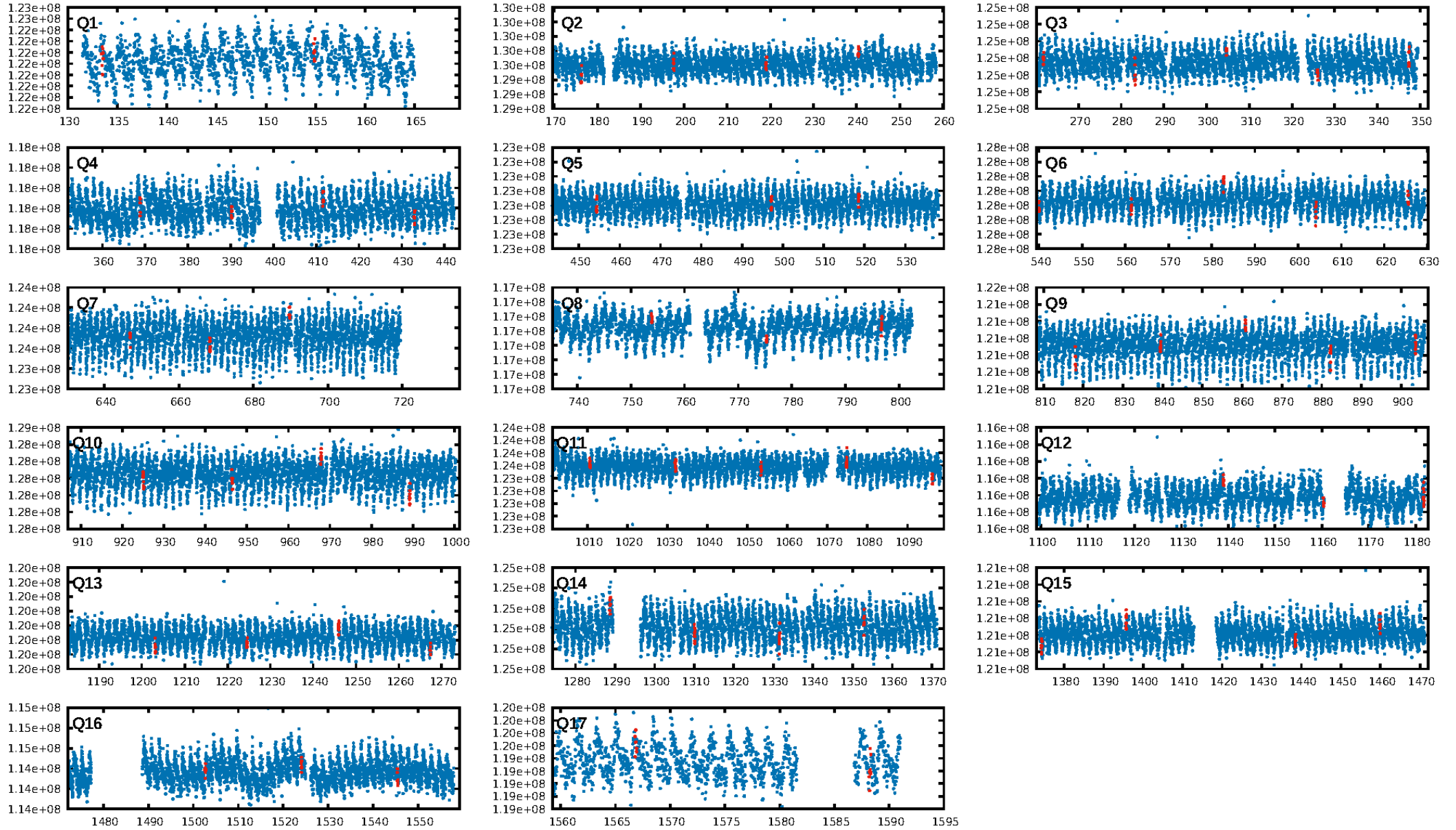
ShortPeriod-sig: 100.0% [24.14σ]  
LongPeriod-sig: 100.0% [3.89σ]  
ModelChiSquare2-sig: 1.7%  
ModelChiSquareGof-sig: 82.6%  
**Bootstrap-pfa: 5.15e-10**  
RollingBand-fgt: 1.00 [10/10]  
**GhostDiagnostic-chr: -4.648**  
Centroid-sig: 62.8%  
Centroid-so: 0.206 arcsec [0.38σ]  
OotOffset-rm: 0.600 arcsec [0.77σ]  
OotOffset-st: 2/3/1/3 [9]  
KicOffset-rm: 0.590 arcsec [0.75σ]  
KicOffset-st: 2/3/1/3 [9]  
DiffImageQuality-fgm: 0.33 [3/9]  
DiffImageOverlap-fno: 0.35 [6/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:26:25 Z

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

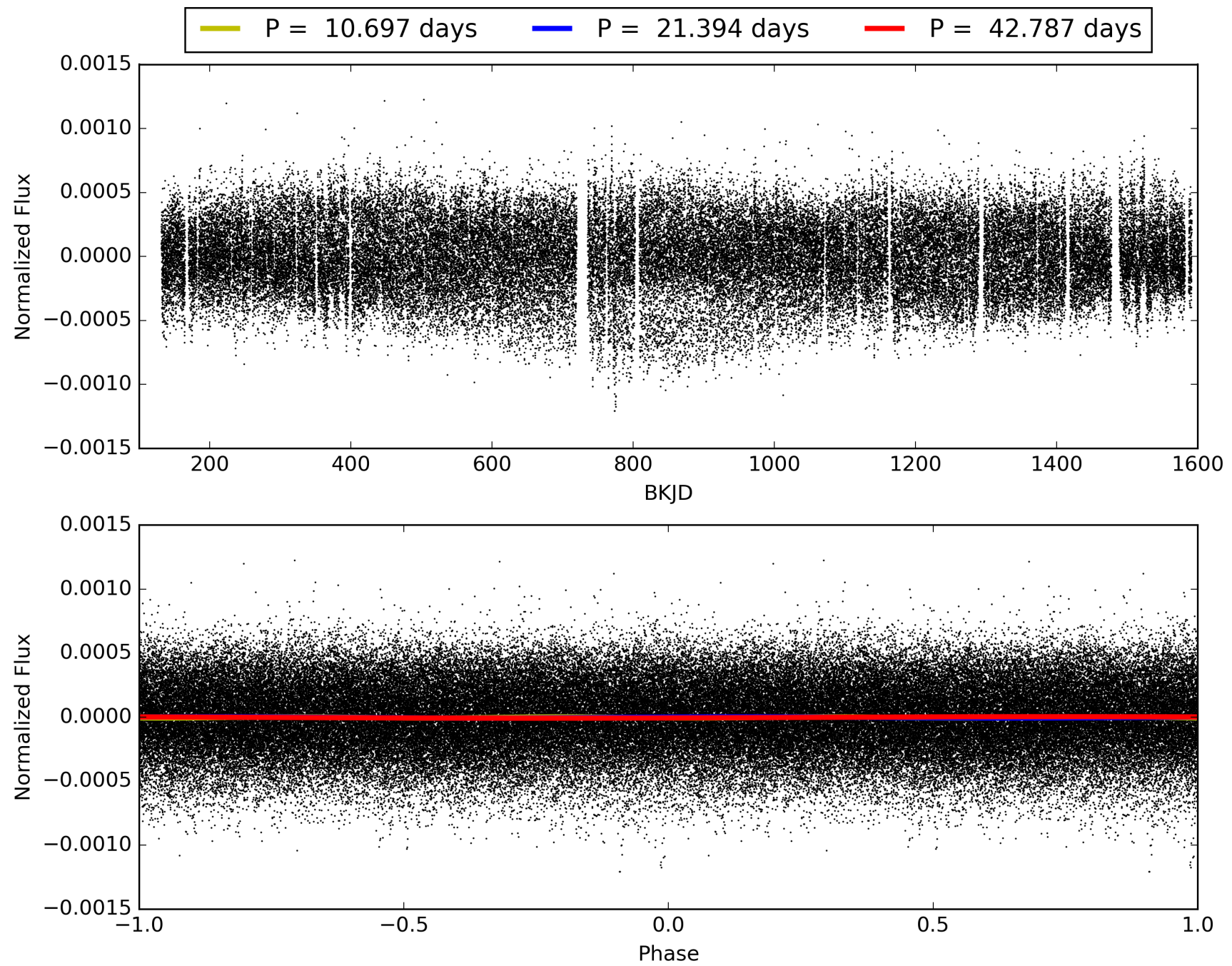


# TCE 011304344-02, PDC Light Curves





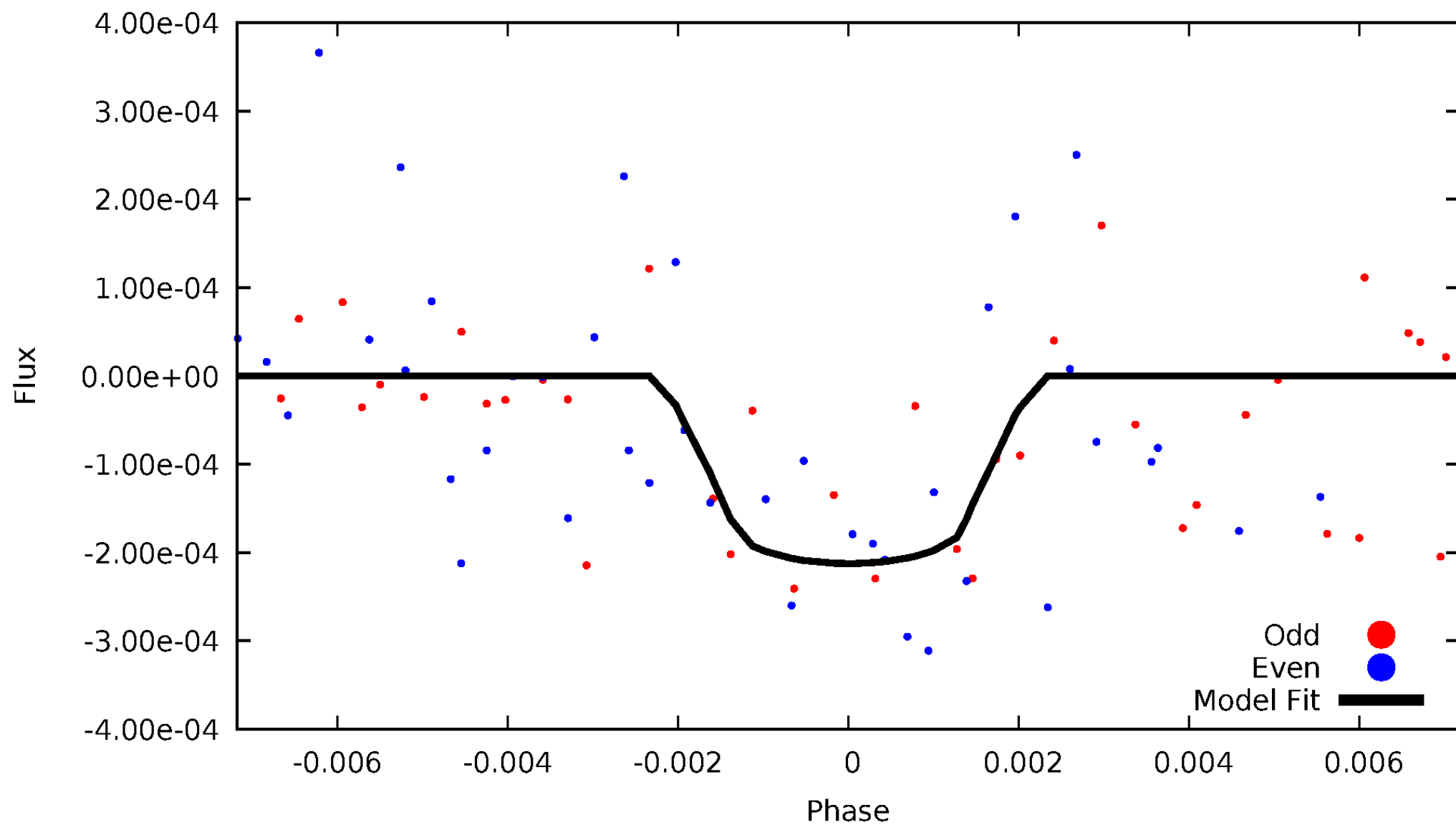
TCE 011304344-02





# DV Odd/Even

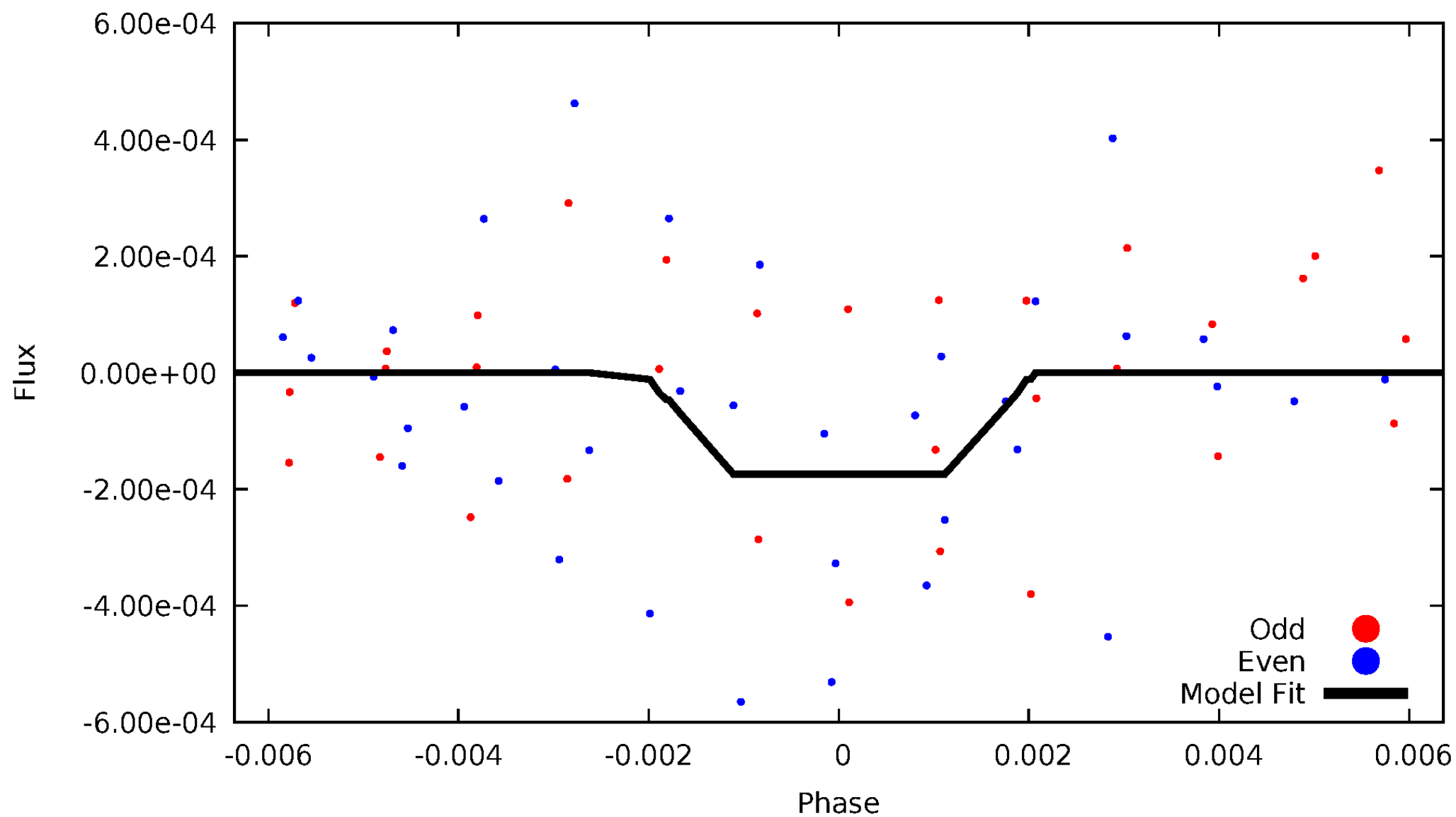
TCE 011304344-02





# ALT Odd/Even

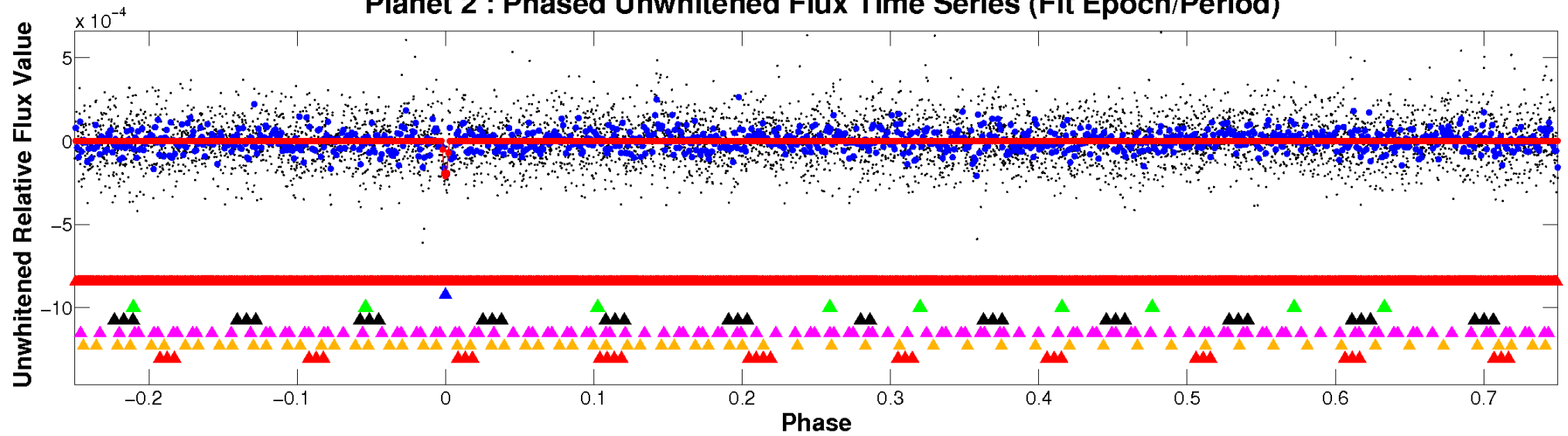
TCE 011304344-02



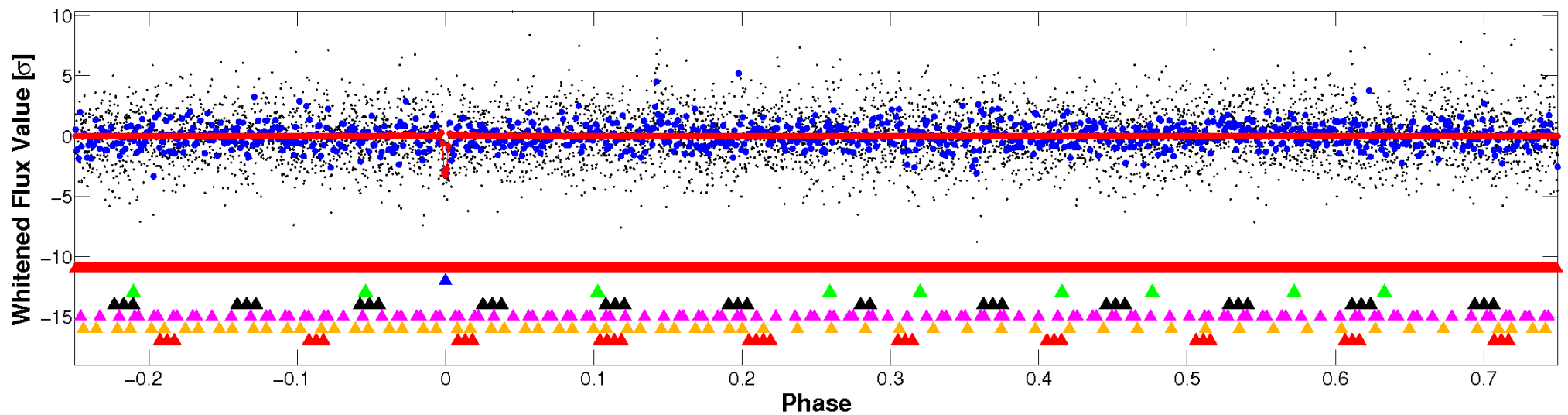


# Non-Whitened Vs. Whitened Light Curve

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



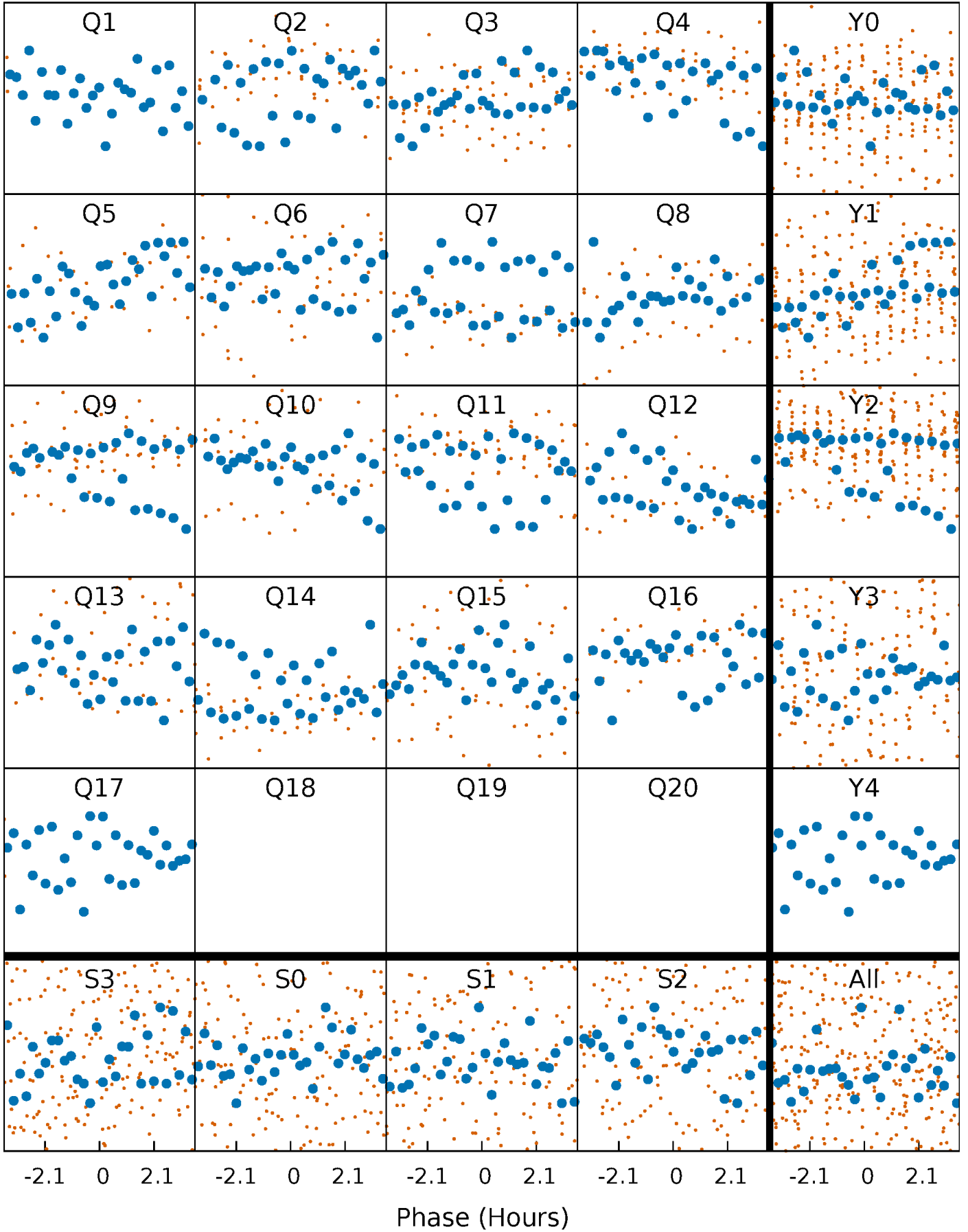
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

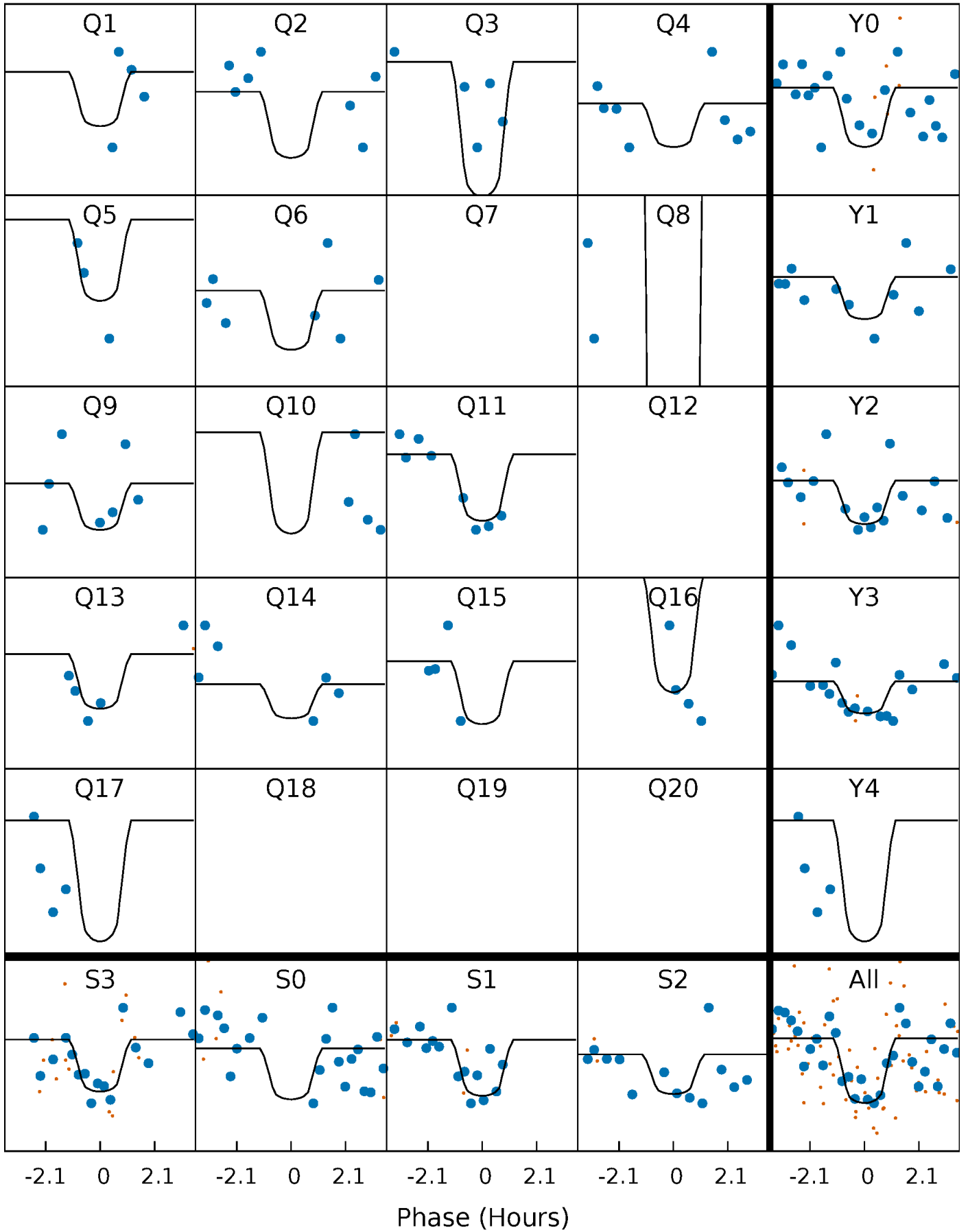
TCE 011304344-02   P= 21.393712 Days    $T_0=133.479125$  (BKJD)





# DV Quarter-Phased Transit Curves

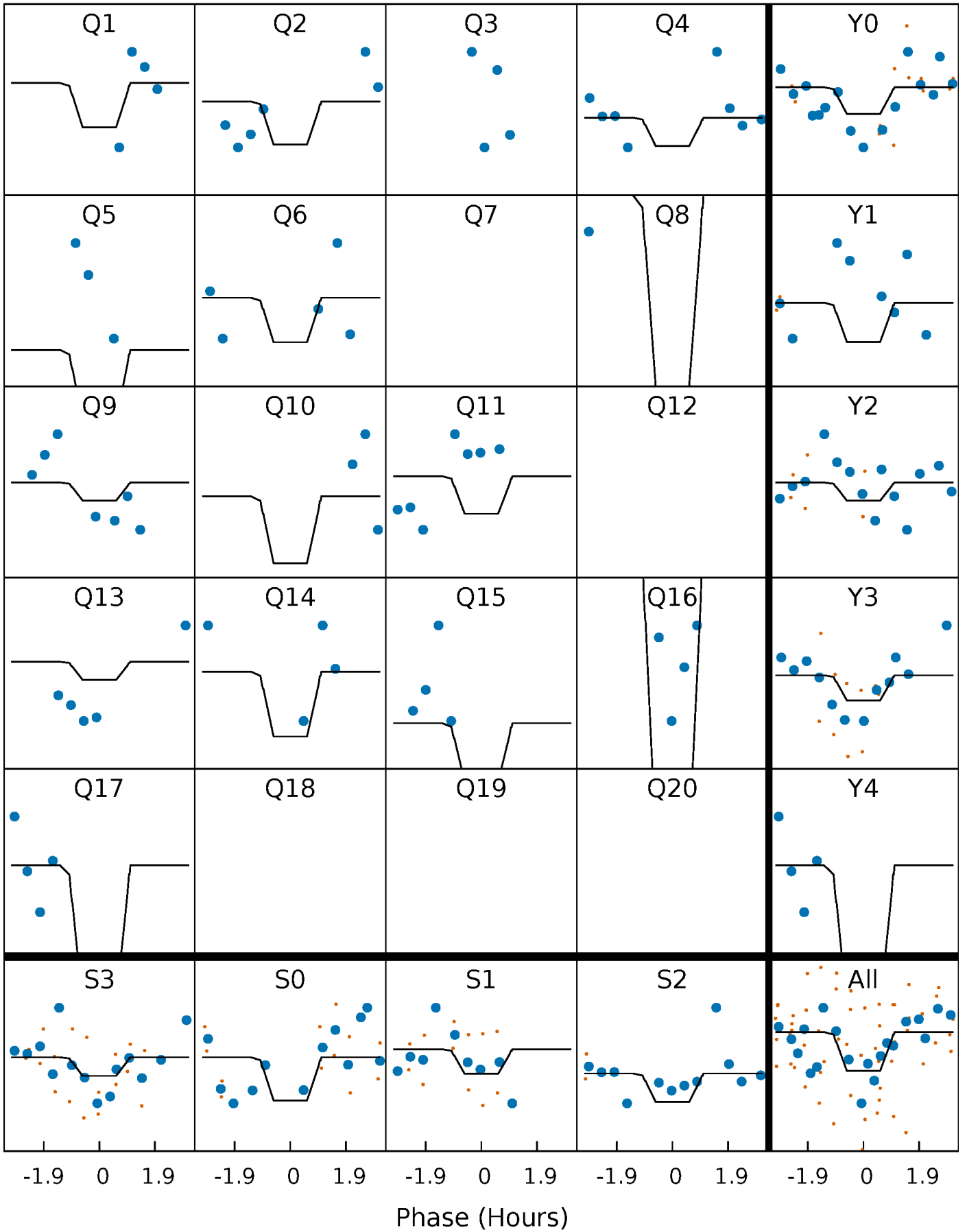
TCE 011304344-02 P= 21.393712 Days  $T_0=133.479125$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011304344-02 P= 21.394048 Days  $T_0=133.470100$  (BKJD)

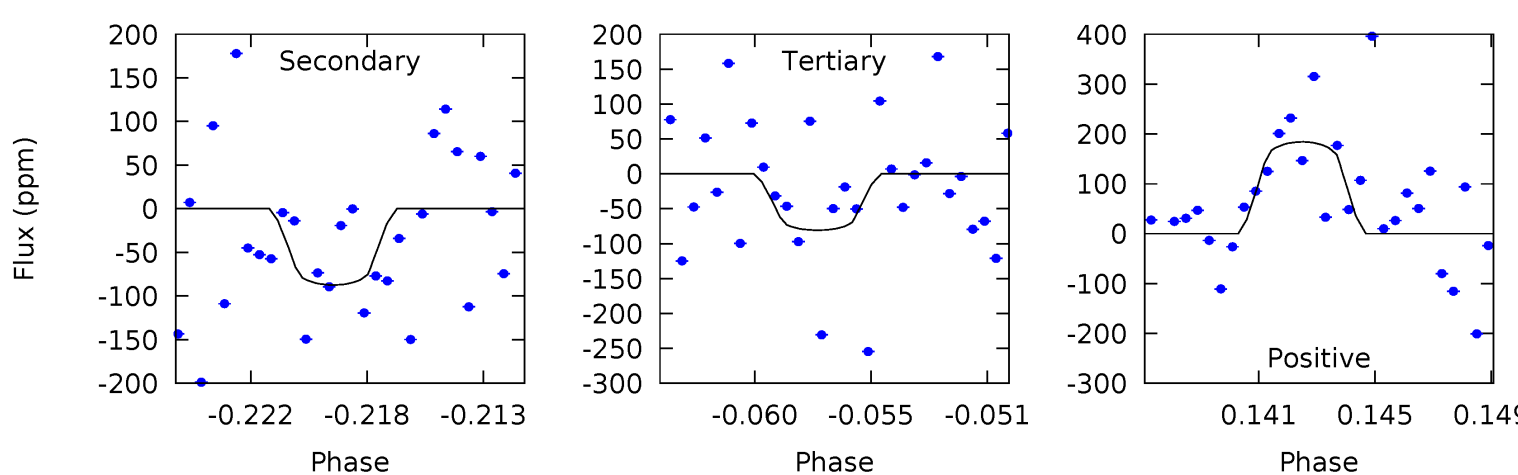
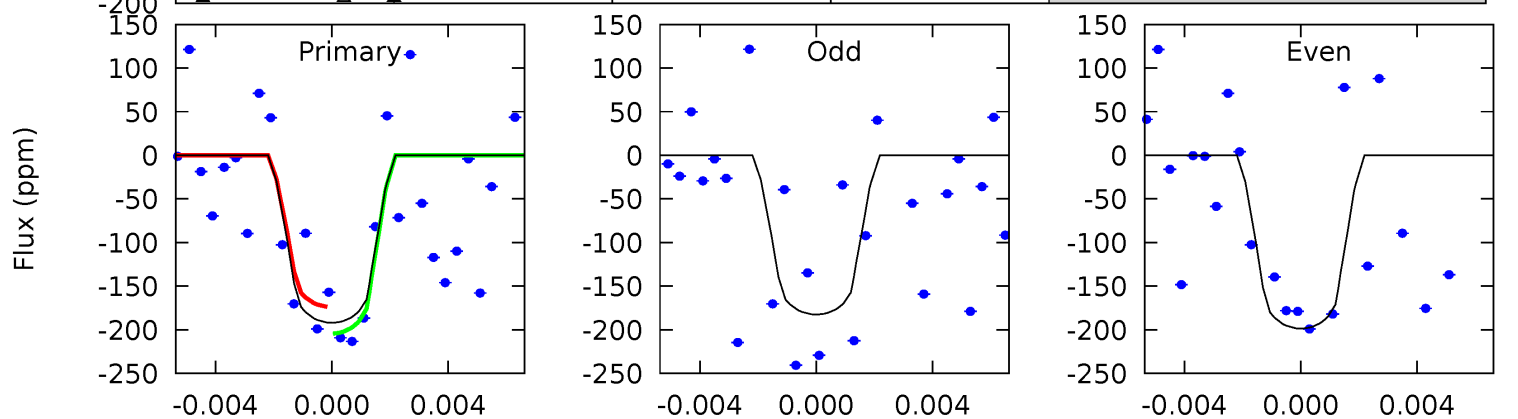
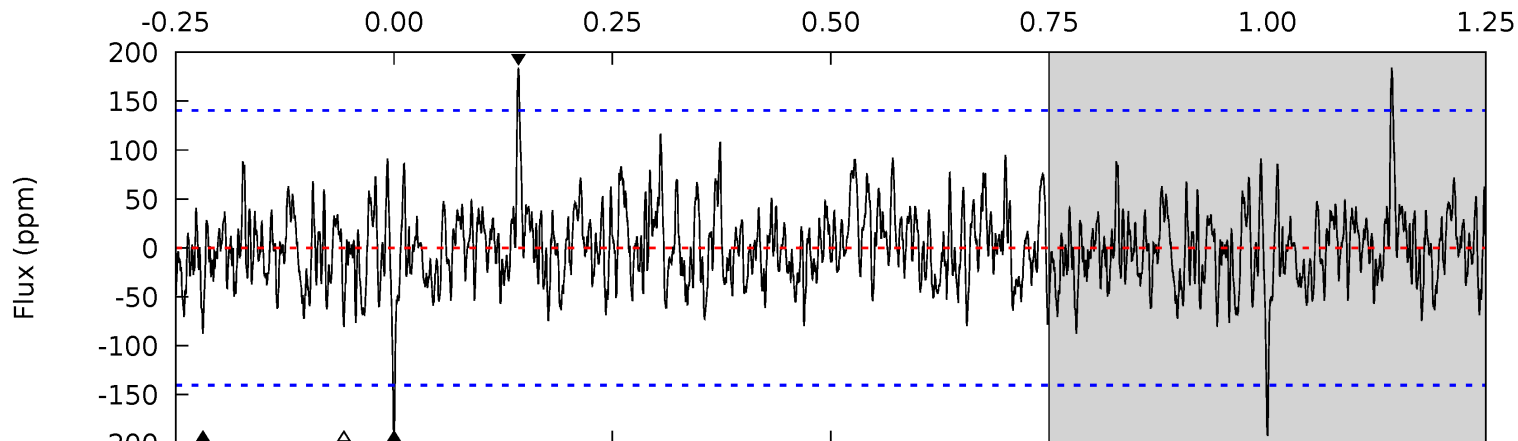
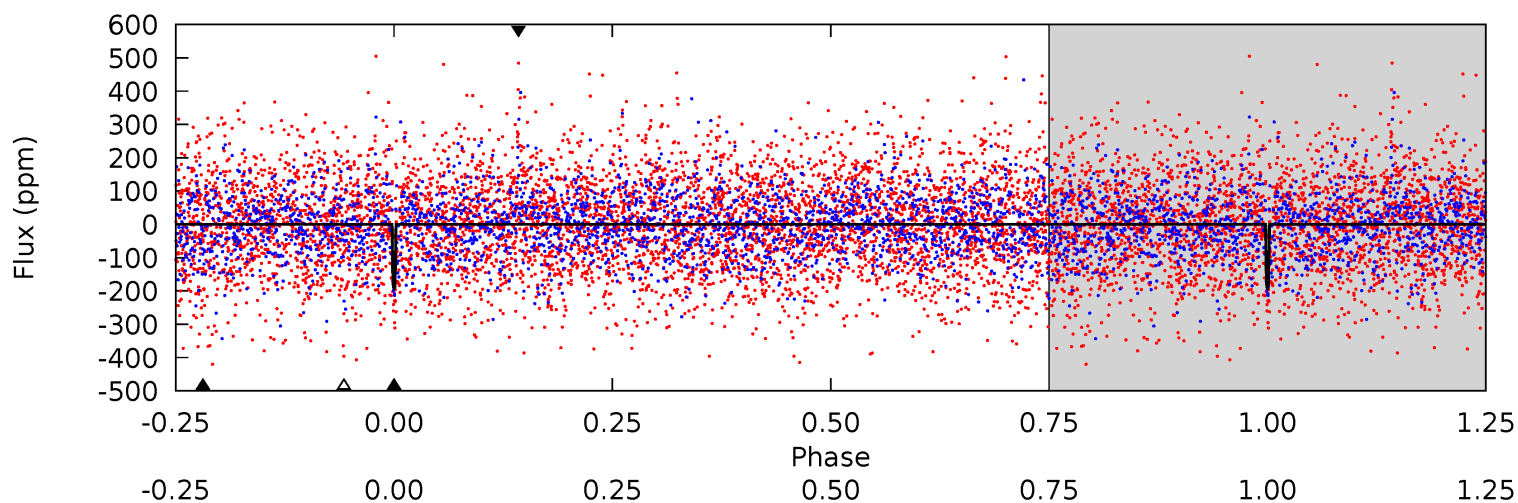




# DV Model-Shift Uniqueness Test

011304344-02, P = 21.393712 Days, E = 112.085413 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
7.09	3.23	2.98	6.80	5.19	2.86	1.32	4.11	0.29	0.25	-3.57	0.30	0.92	0.49	0.55

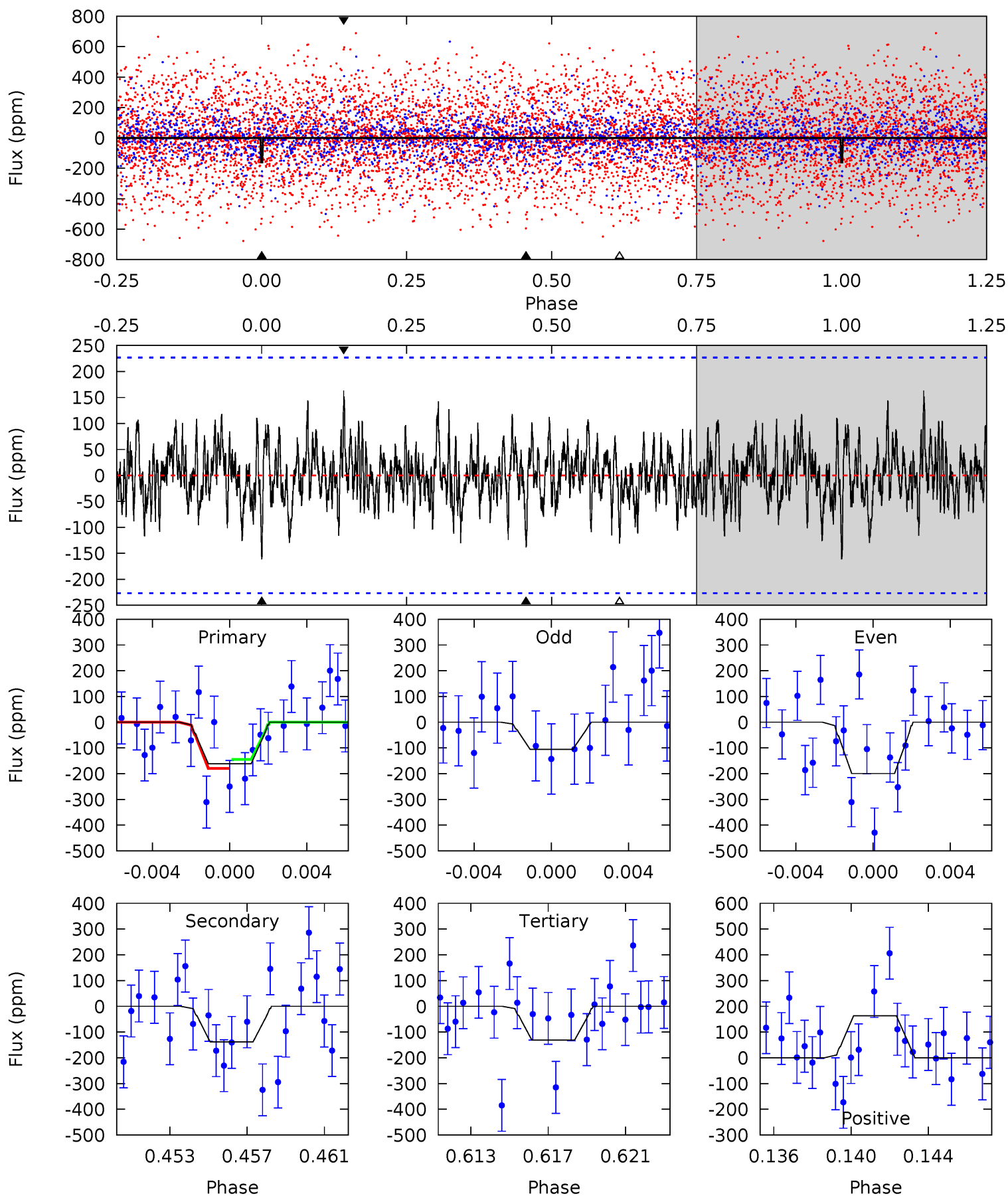




# Alt Model-Shift Uniqueness Test

011304344-02, P = 21.394048 Days, E = 112.076052 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
3.70	3.17	3.01	3.74	5.20	2.88	1.04	0.69	-0.05	0.17	-0.57	1.07	1.38	0.50	0.40





### Stellar Parameters For KIC 011304344

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7227^{+226}_{-302}$	$4.173^{+0.108}_{-0.201}$	$-0.020^{+0.200}_{-0.350}$	$1.666^{+0.540}_{-0.291}$	$1.505^{+0.221}_{-0.221}$	$0.459^{+0.239}_{-0.236}$
	+3%/-4%	+3%/-5%	+1000%/-1750%	+32%/-17%	+15%/-15%	+52%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011304344-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-87 \pm 27$	$3.44^{+3.00}_{-2.25}$	$1399^{+114}_{-93}$	$5046^{+3866}_{-1054}$	$116^{+825}_{-84}$
Alt.	$-138 \pm 44$	$3.47^{+2.89}_{-2.18}$	$1397^{+108}_{-90}$	$5654^{+4794}_{-1329}$	$179^{+1226}_{-127}$

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



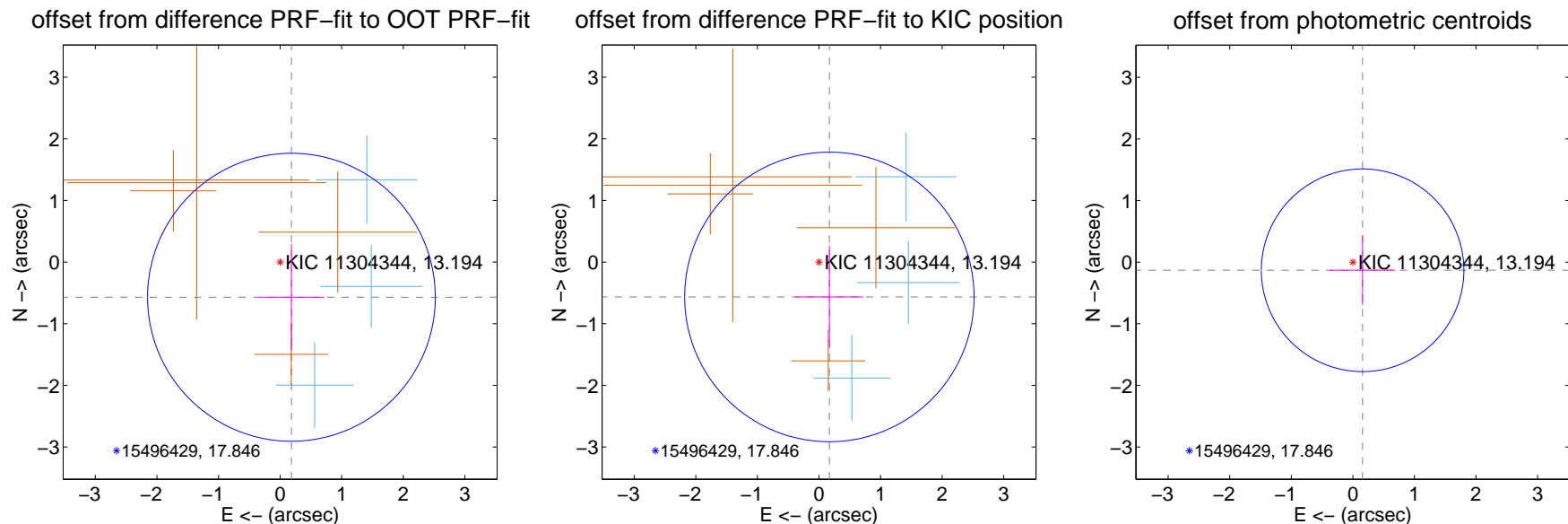
## DV Centroid Data

Supplemental centroid analysis for 011304344-02. Kepler magnitude: 13.19. Transit SNR 12.78

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

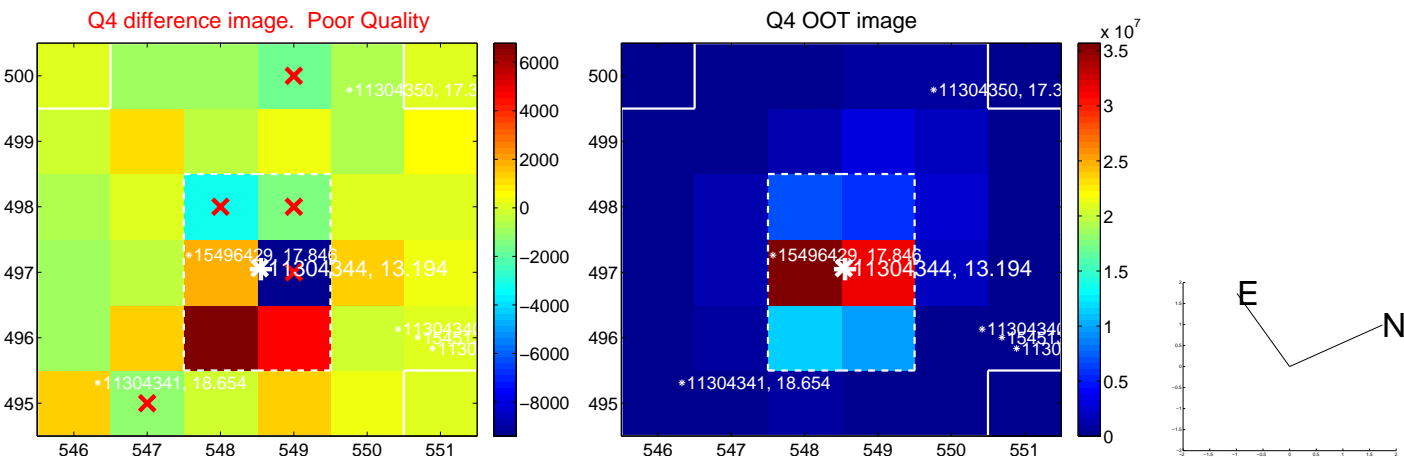
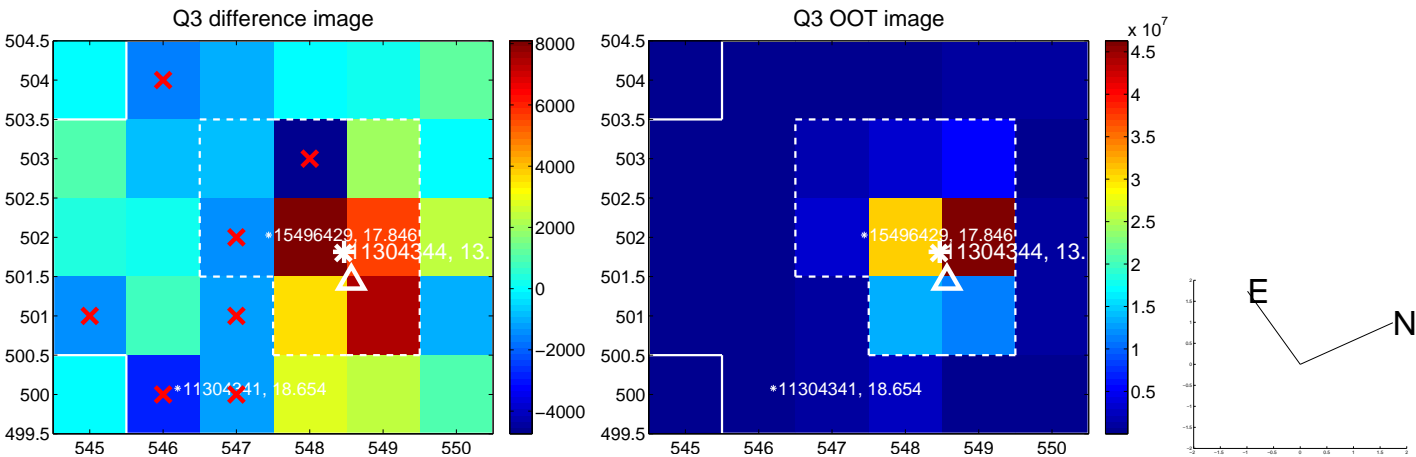
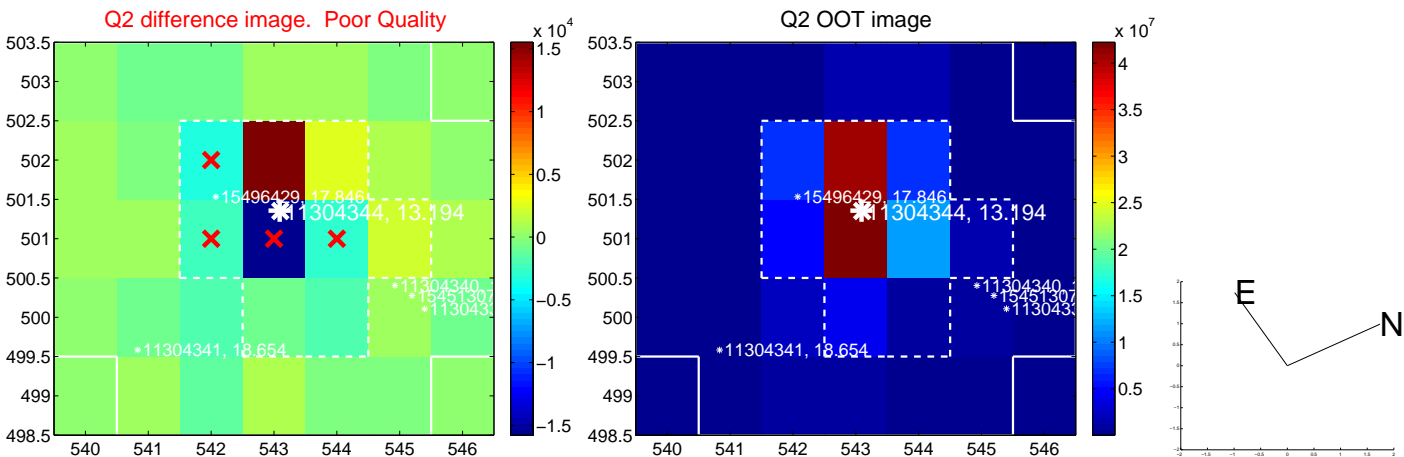
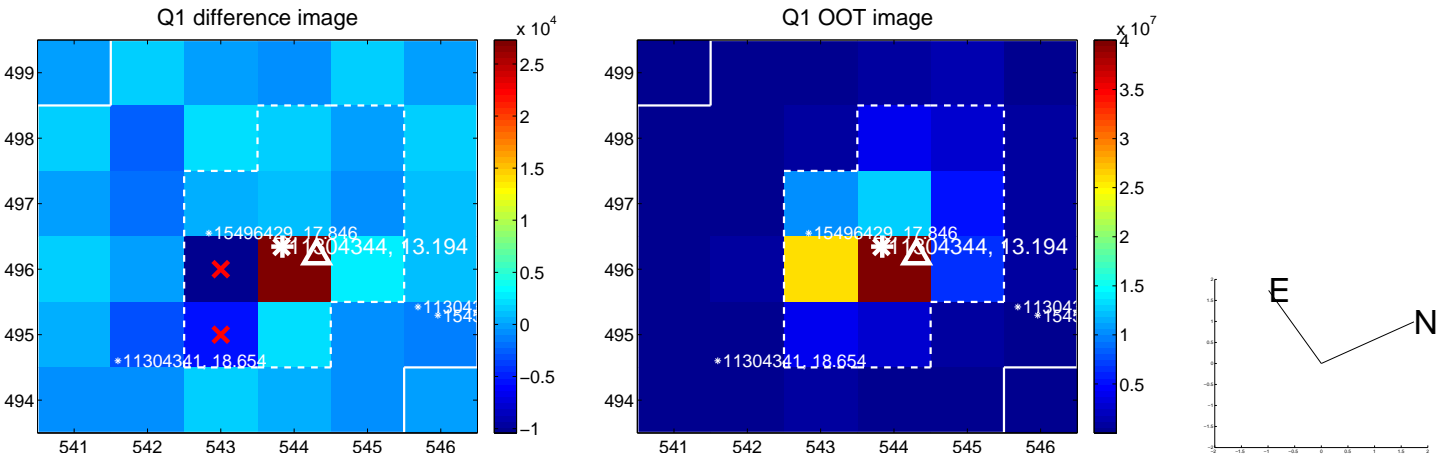
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.600 \pm 0.779$	0.77	$-0.184 \pm 0.533$	$-0.571 \pm 0.856$
PRF-fit source offset from KIC position	$0.590 \pm 0.783$	0.75	$-0.168 \pm 0.553$	$-0.565 \pm 0.833$
photometric centroid source offset	$0.21 \pm 0.55$	0.38	$-0.16 \pm 0.54$	$-0.13 \pm 0.57$



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.

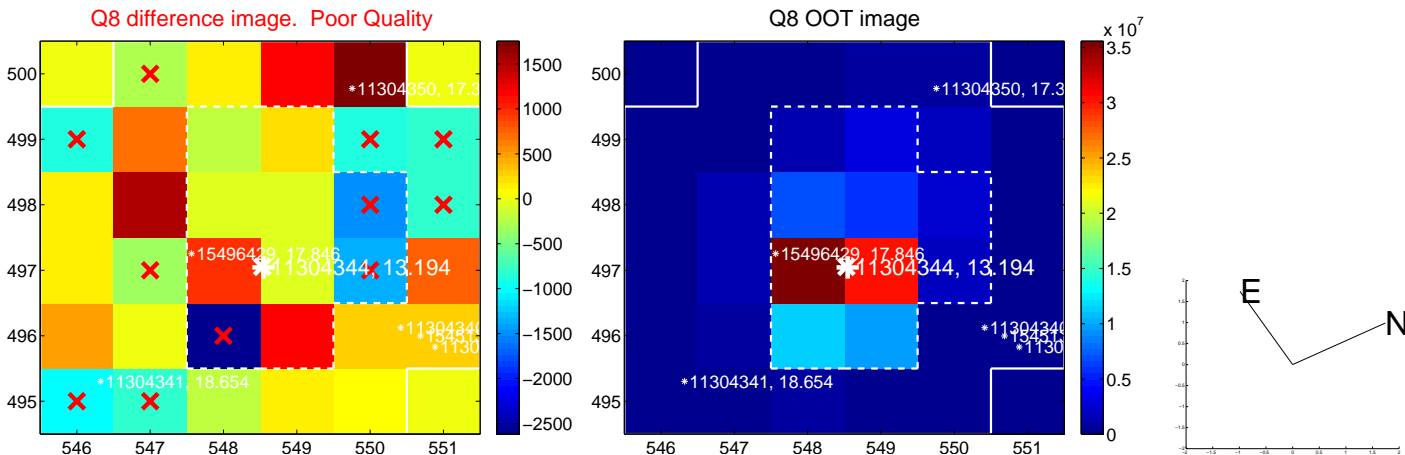
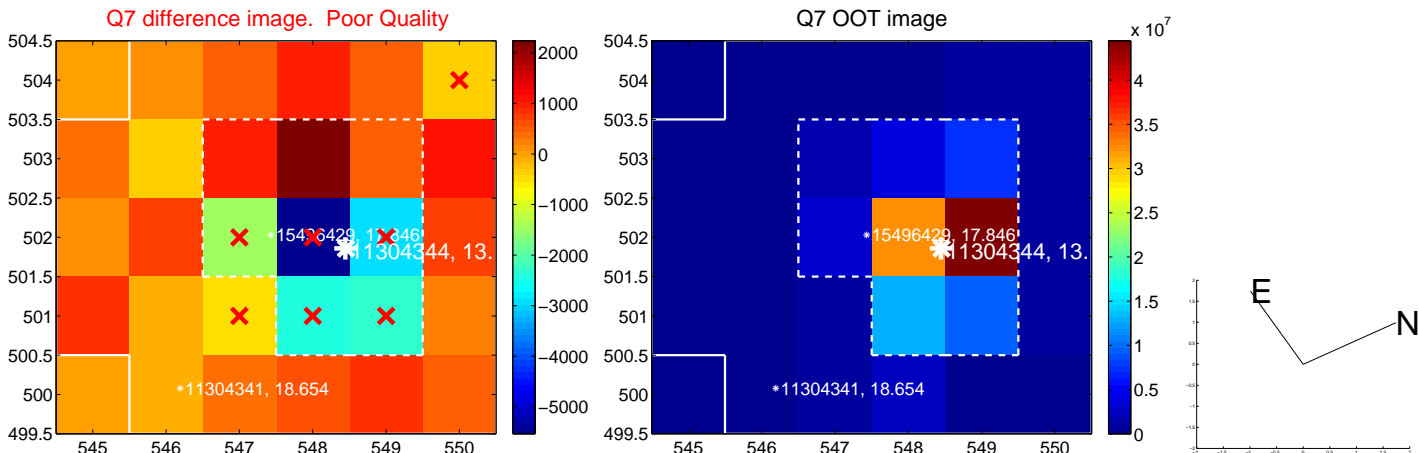
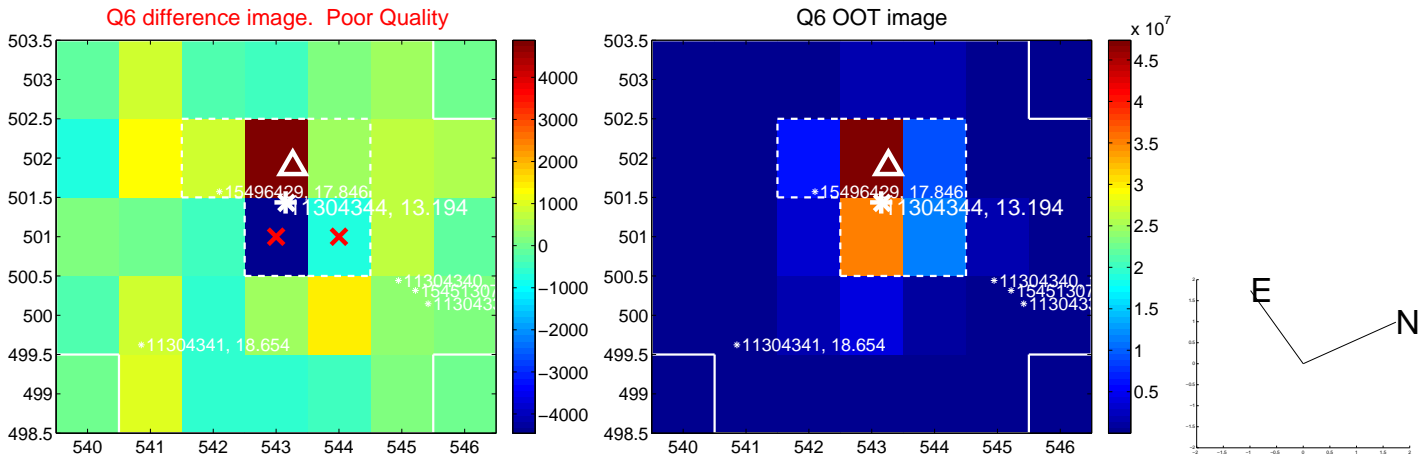
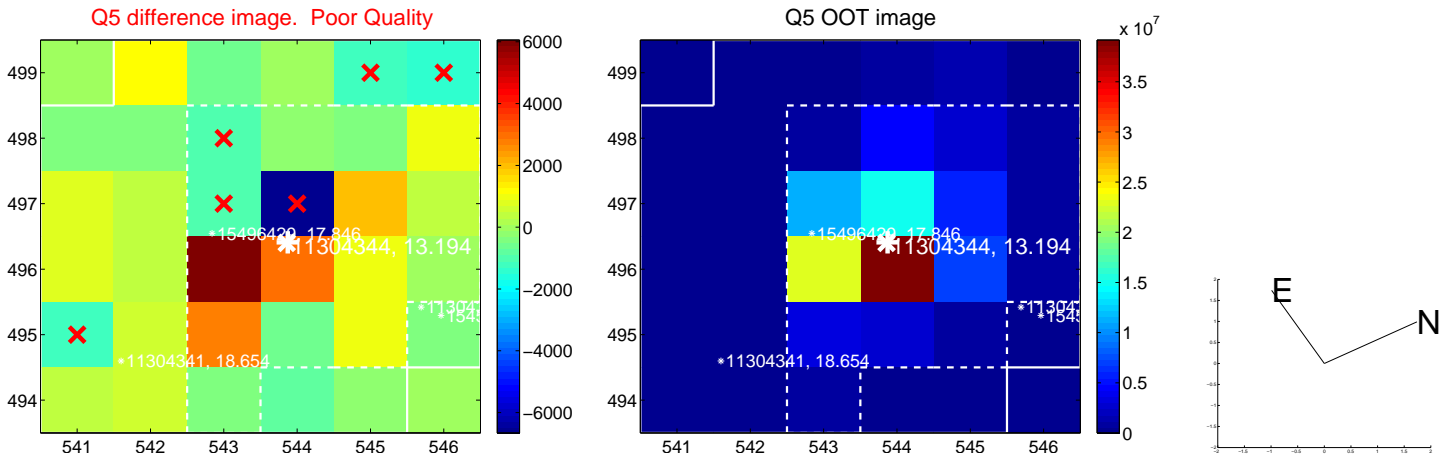


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



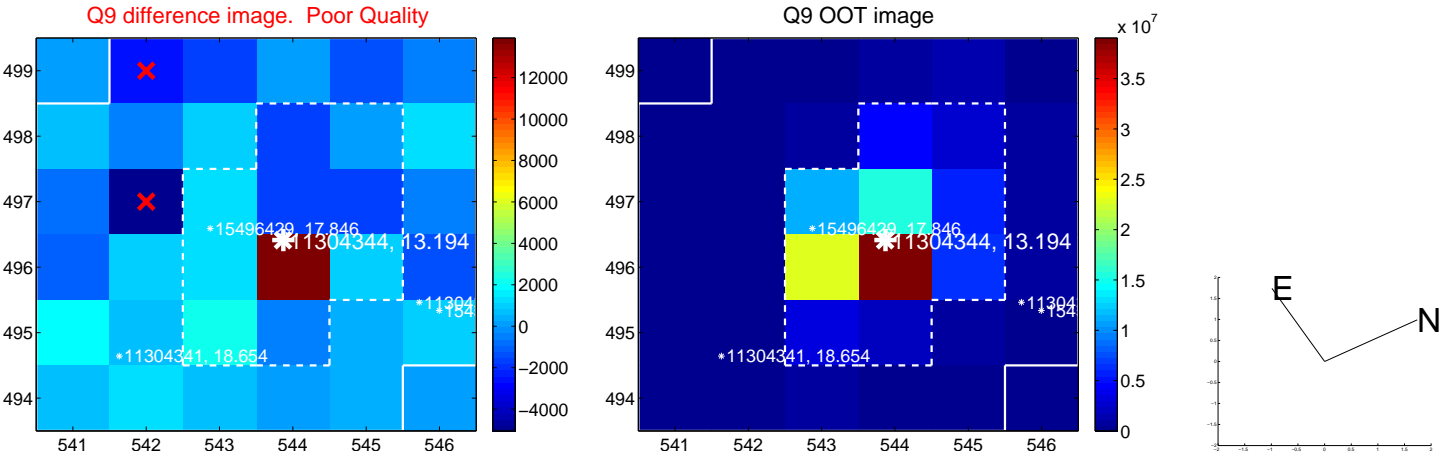


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



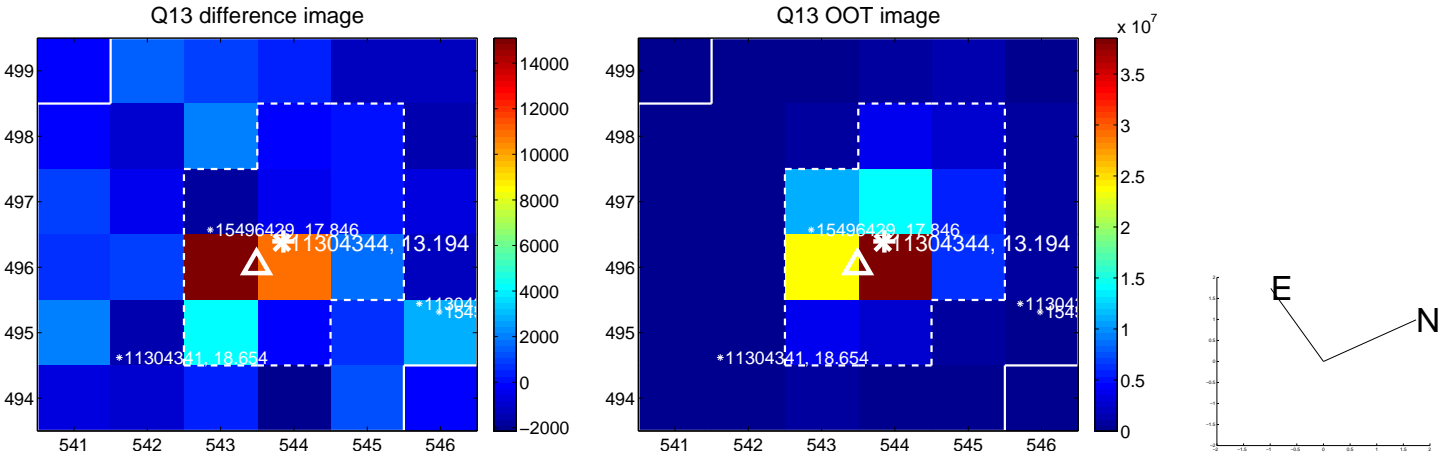


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



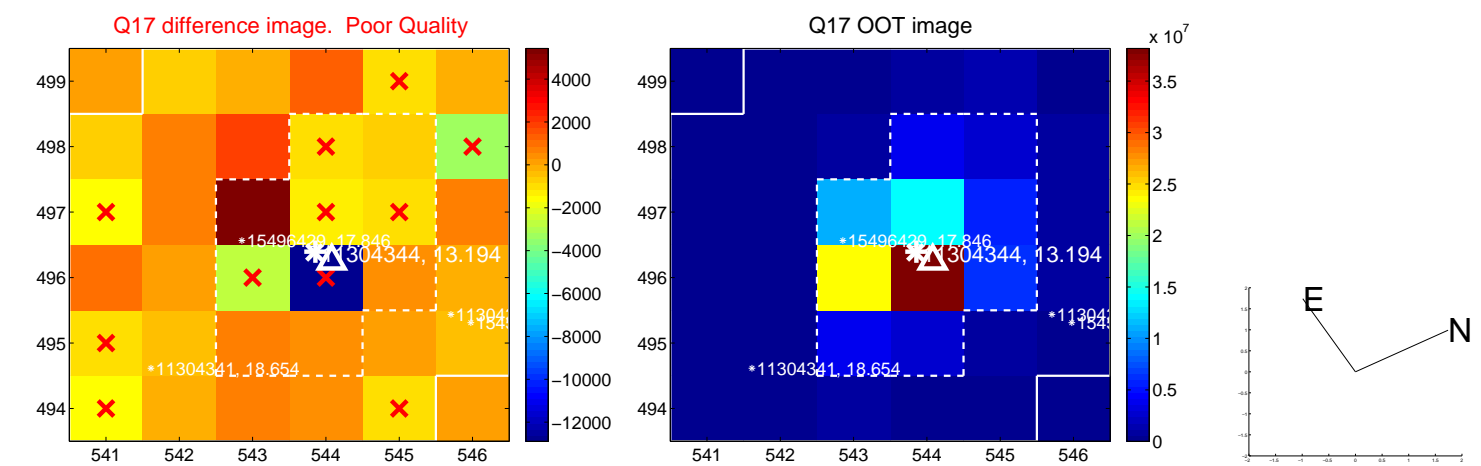


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

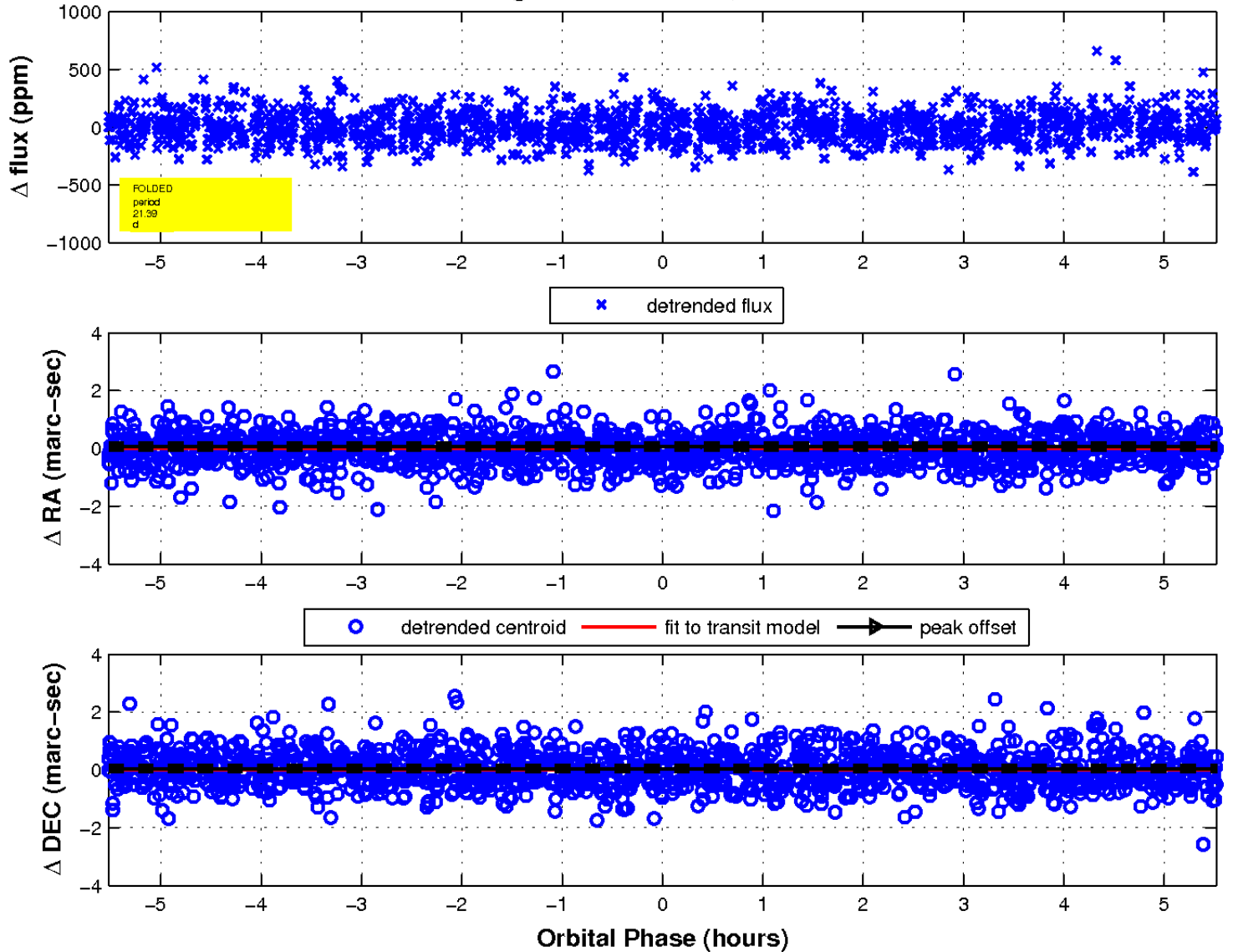




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

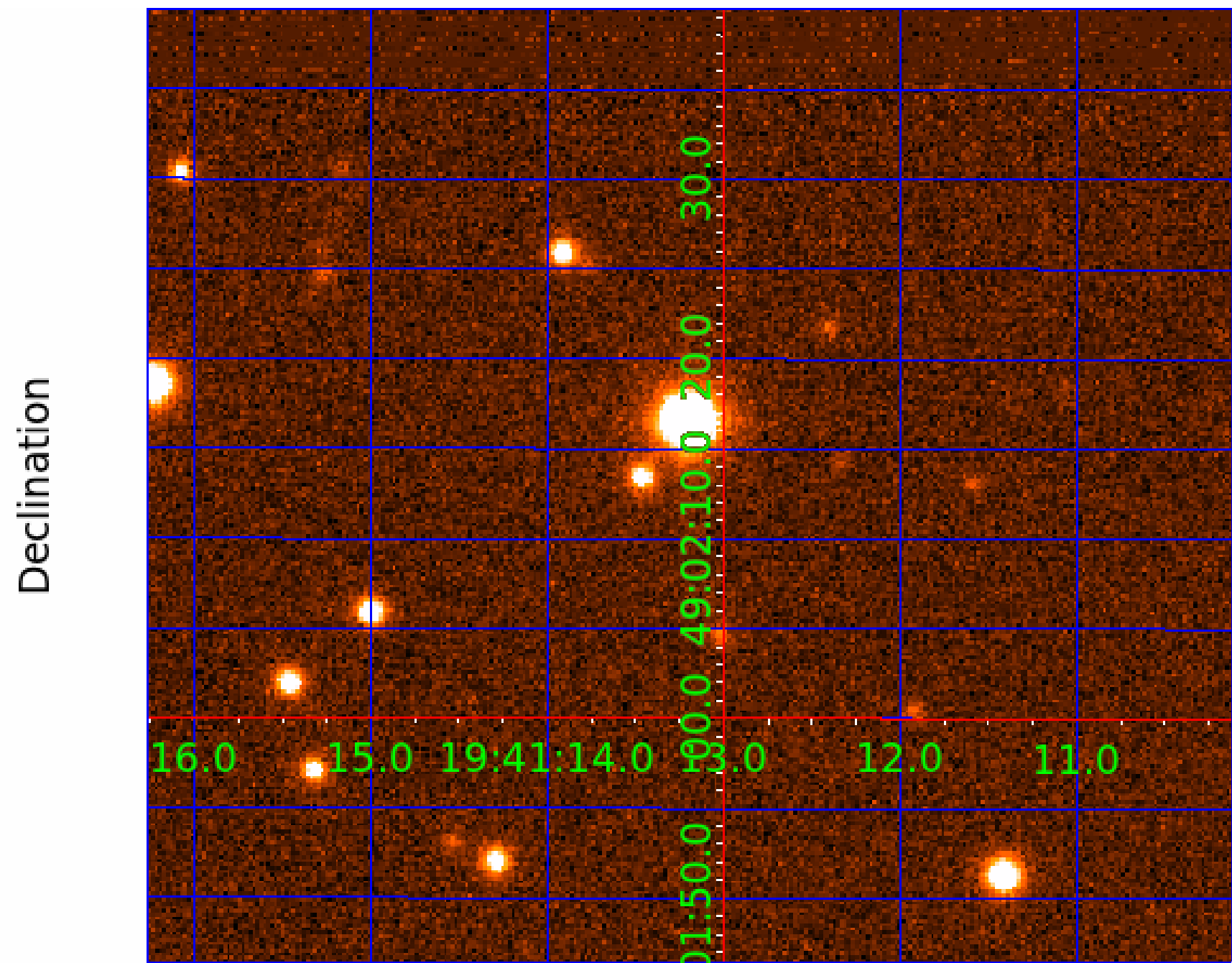


fluxWeightedCentroids, Planet 2 of 7





UKIRT Image





# KIC 011304344

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011304344-01	OBS	No	0.863290	132.226037	0.0	6.125	10.2	0.0	1.67	7227	0.01	16379.51
011304344-02	OBS	No	21.393712	133.479125	212.4	1.842	10.3	12.8	1.67	7227	2.50	226.71
011304344-03	OBS	No	153.104629	225.899800	223.1	6.707	9.6	9.5	1.67	7227	2.92	16.44
011304344-04	OBS	No	41.015764	158.956317	322.2	0.929	11.0	11.0	1.67	7227	3.06	95.19
011304344-05	OBS	No	11.643967	133.955228	46.4	9.518	11.7	7.5	1.67	7227	1.17	510.16
011304344-06	OBS	No	21.884143	148.668846	220.8	2.402	9.3	10.3	1.67	7227	2.87	219.96
011304344-07	OBS	No	44.937165	157.100009	196.5	3.377	9.3	9.5	1.67	7227	2.71	84.28

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011304344-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011304344-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011304344-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—MOD_NONUNIQ_DV—HALO_GHOST
011304344-05	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
011304344-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-07	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

**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.

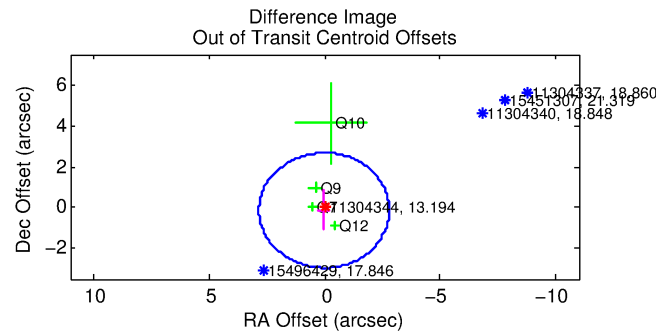
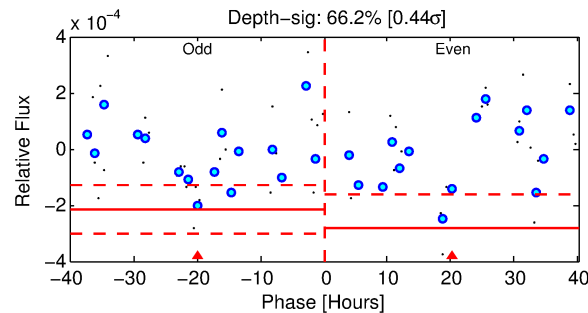
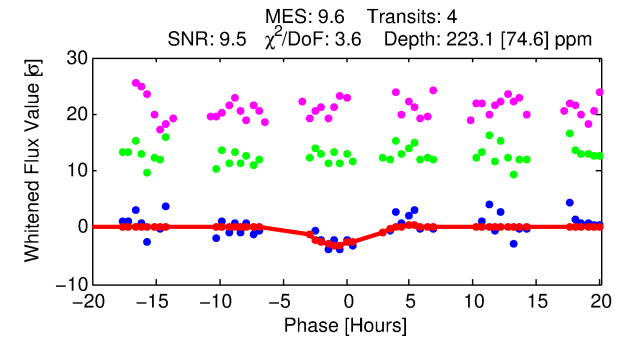
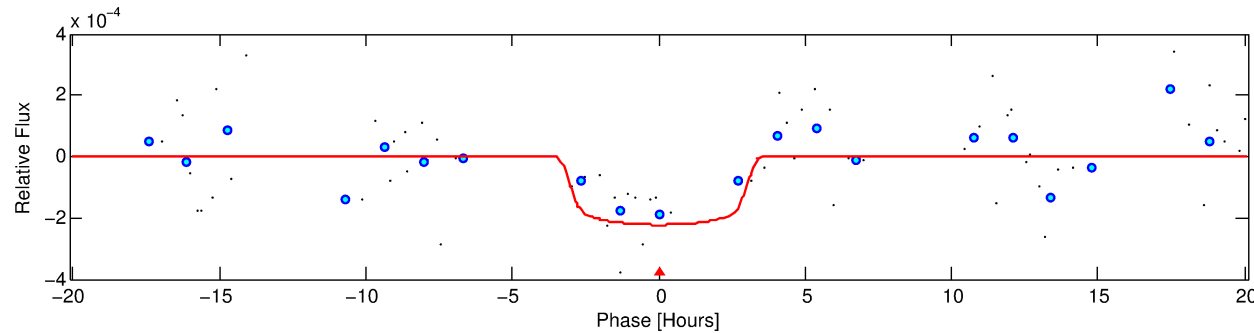
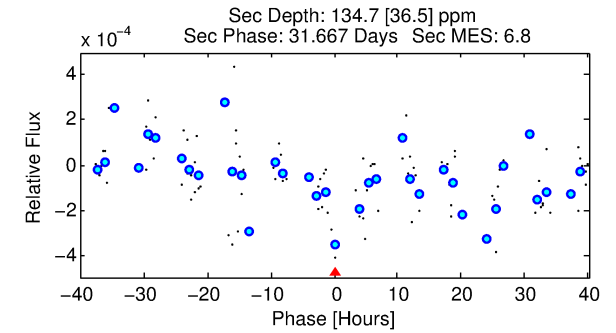
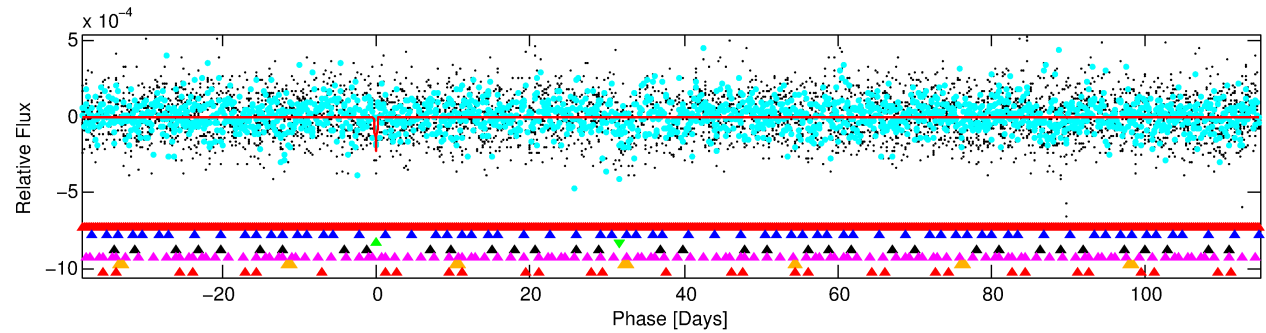
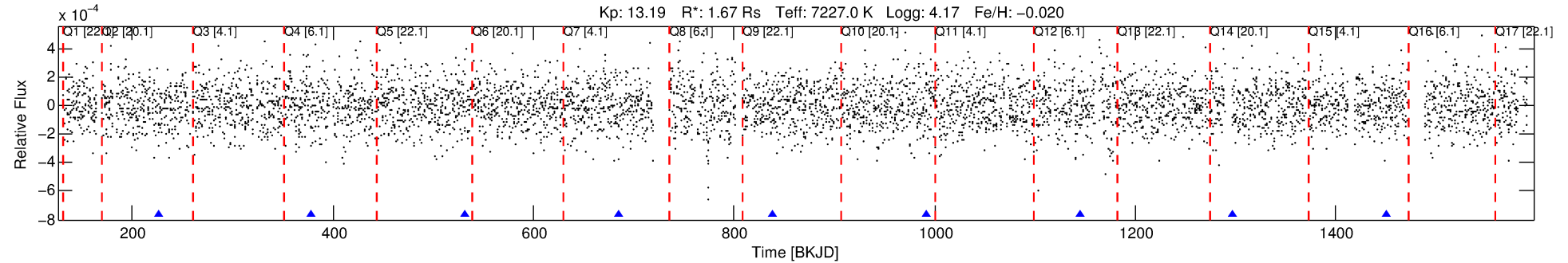
Ephemeris Match Information For 011304344-03

No Significant Match Found



# DV One-Page Summary

KIC: 11304344 Candidate: 3 of 7 Period: 153.105 d



## DV Fit Results:

Period = 153.10463 [0.03186] d  
Epoch = 225.8998 [0.1823] BKJD  
Rp/R\* = 0.0160 [0.0652]  
a/R\* = 77.17 [2043.81]  
b = 0.91 [4.78]  
Seff = 16.44 [6.77]  
Teq = 513 [53] K  
Rp = 2.92 [11.89] Re  
a = 0.6424 [0.1706] AU  
Ag = 3593.08 [29231.60] [0.12 $\sigma$ ]  
Teffp = 6146 [12489] K [0.45 $\sigma$ ]

## DV Diagnostic Results:

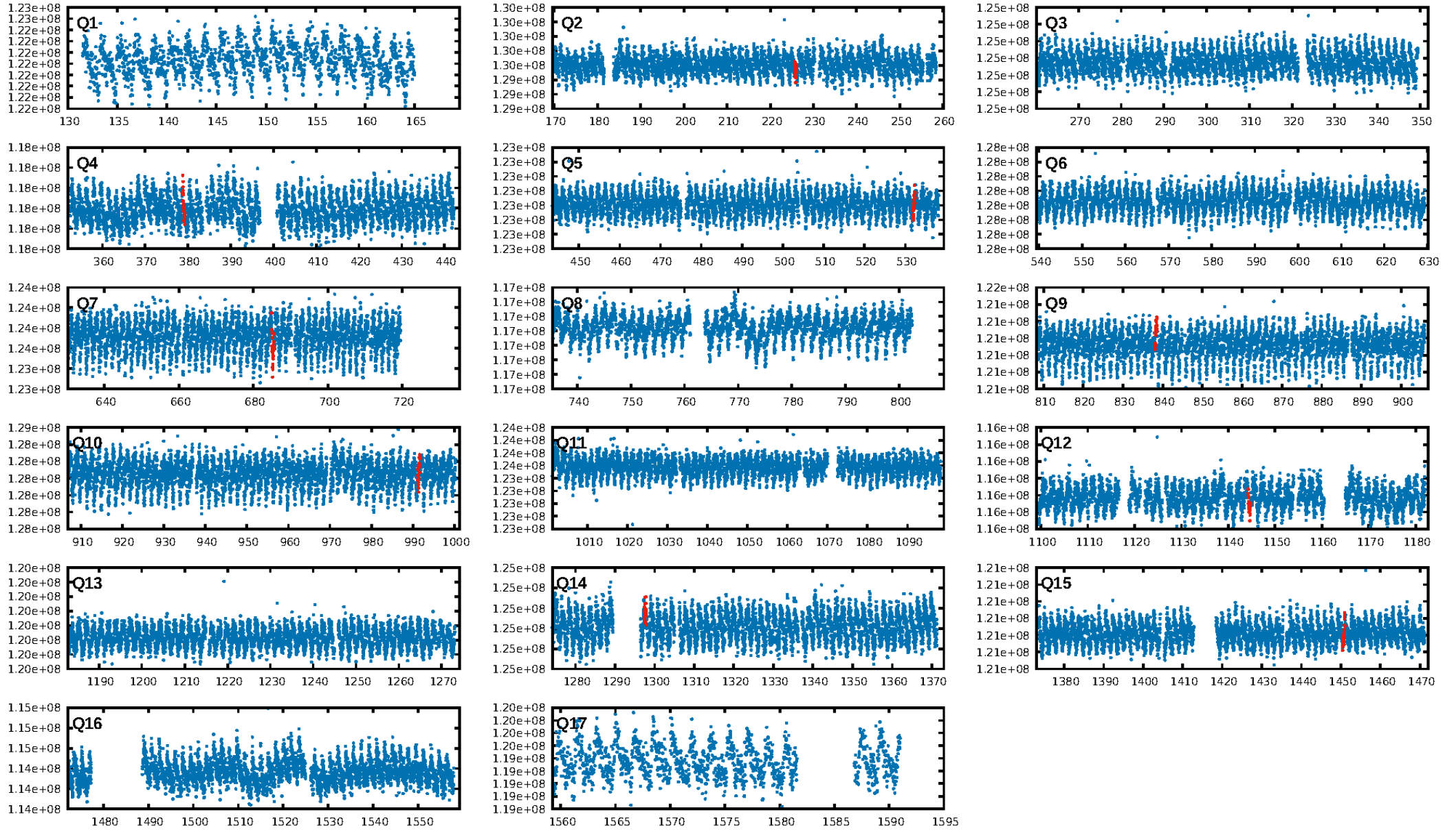
ShortPeriod-sig: 100.0% [345.74 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 17.7%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.19e-08**  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: 0.2757**  
Centroid-sig: 38.9%  
Centroid-so: 0.533 arcsec [0.65 $\sigma$ ]  
OotOffset-rm: 0.143 arcsec [0.15 $\sigma$ ]  
OotOffset-st: 1/1/1/1 [4]  
KicOffset-rm: 0.122 arcsec [0.12 $\sigma$ ]  
KicOffset-st: 1/1/1/1 [4]  
DiffImageQuality-fgm: 0.50 [2/4]  
DiffImageOverlap-fno: 0.00 [0/8]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:26:29 Z

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

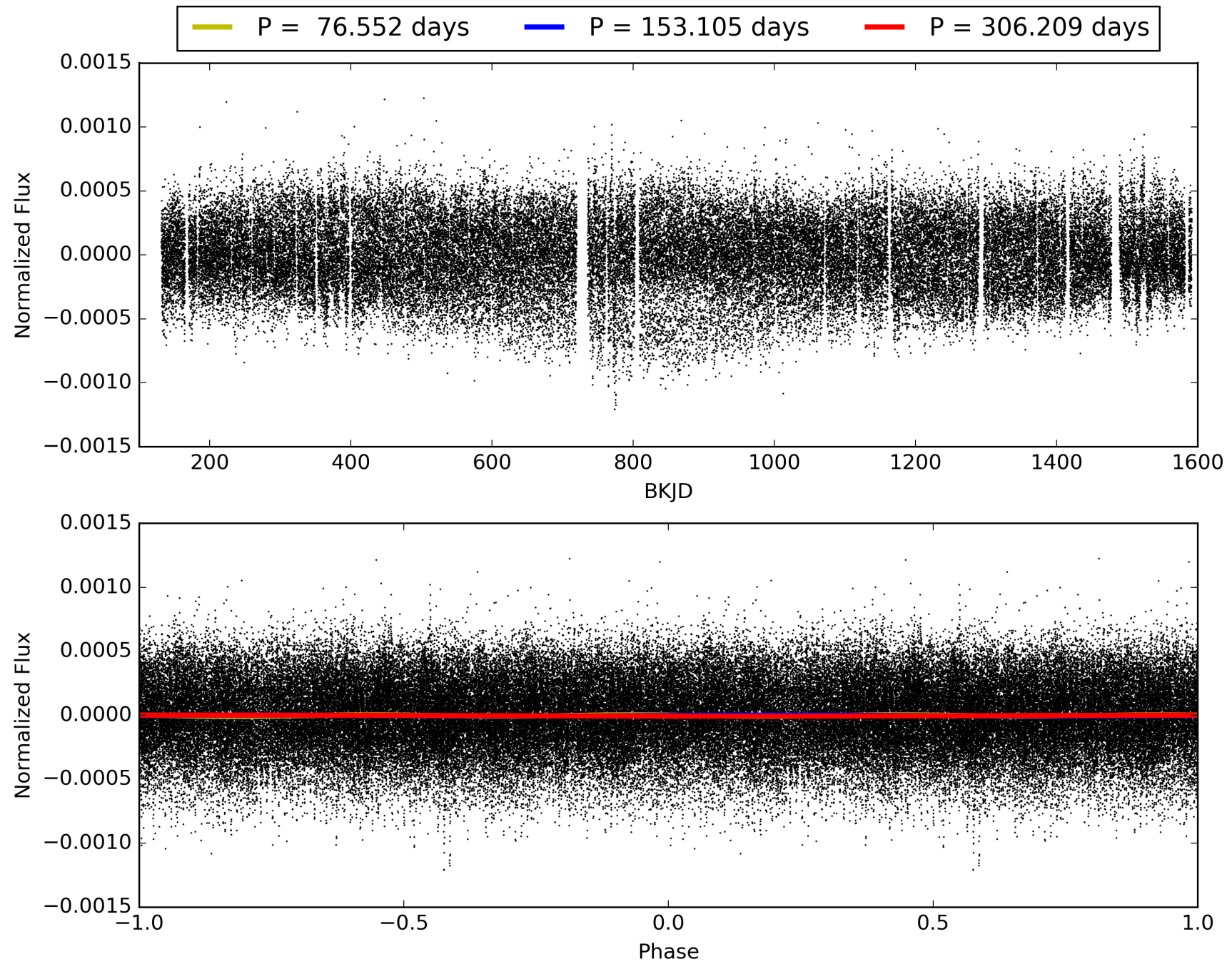


# TCE 011304344-03, PDC Light Curves





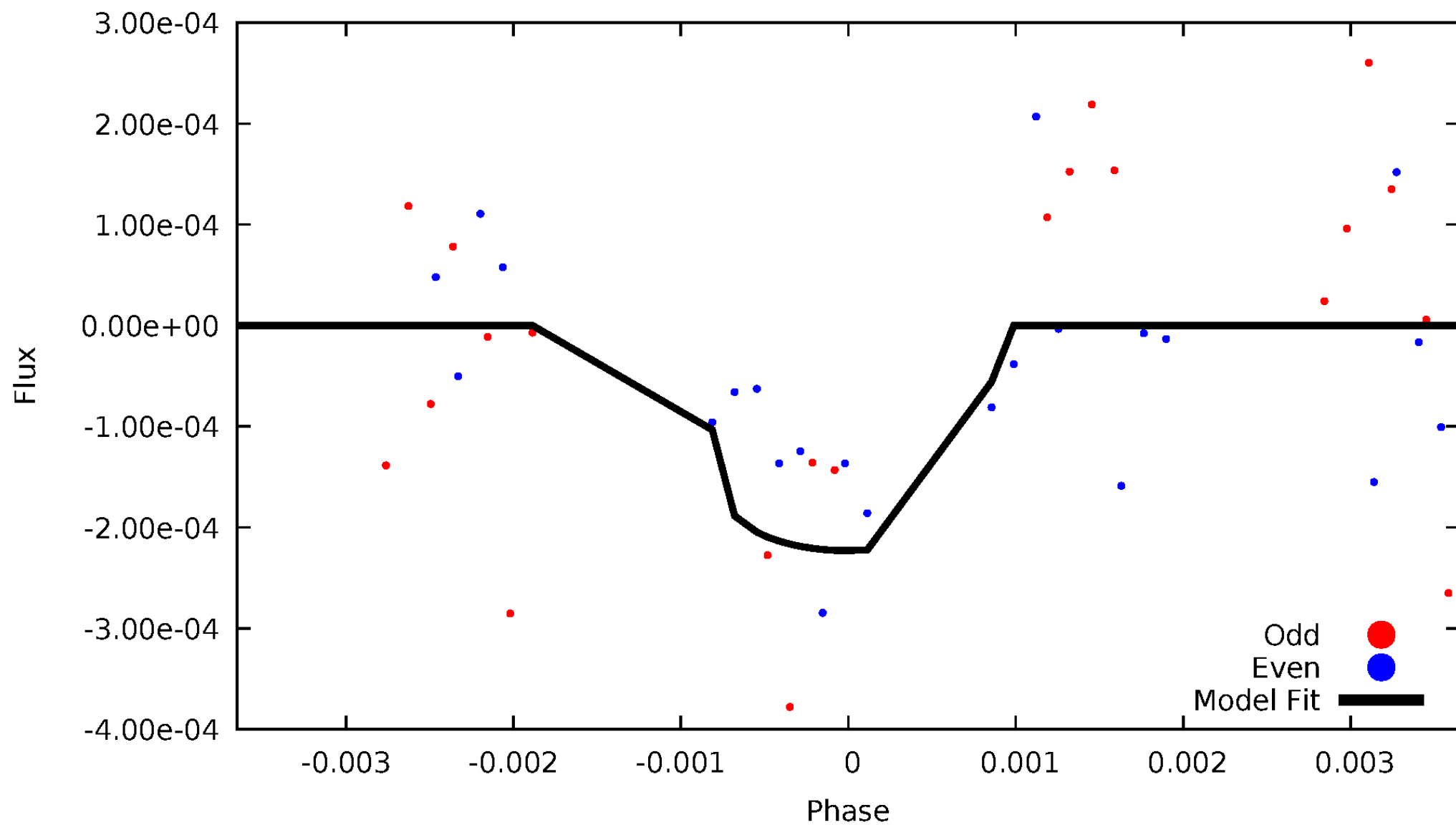
TCE 011304344-03





# DV Odd/Even

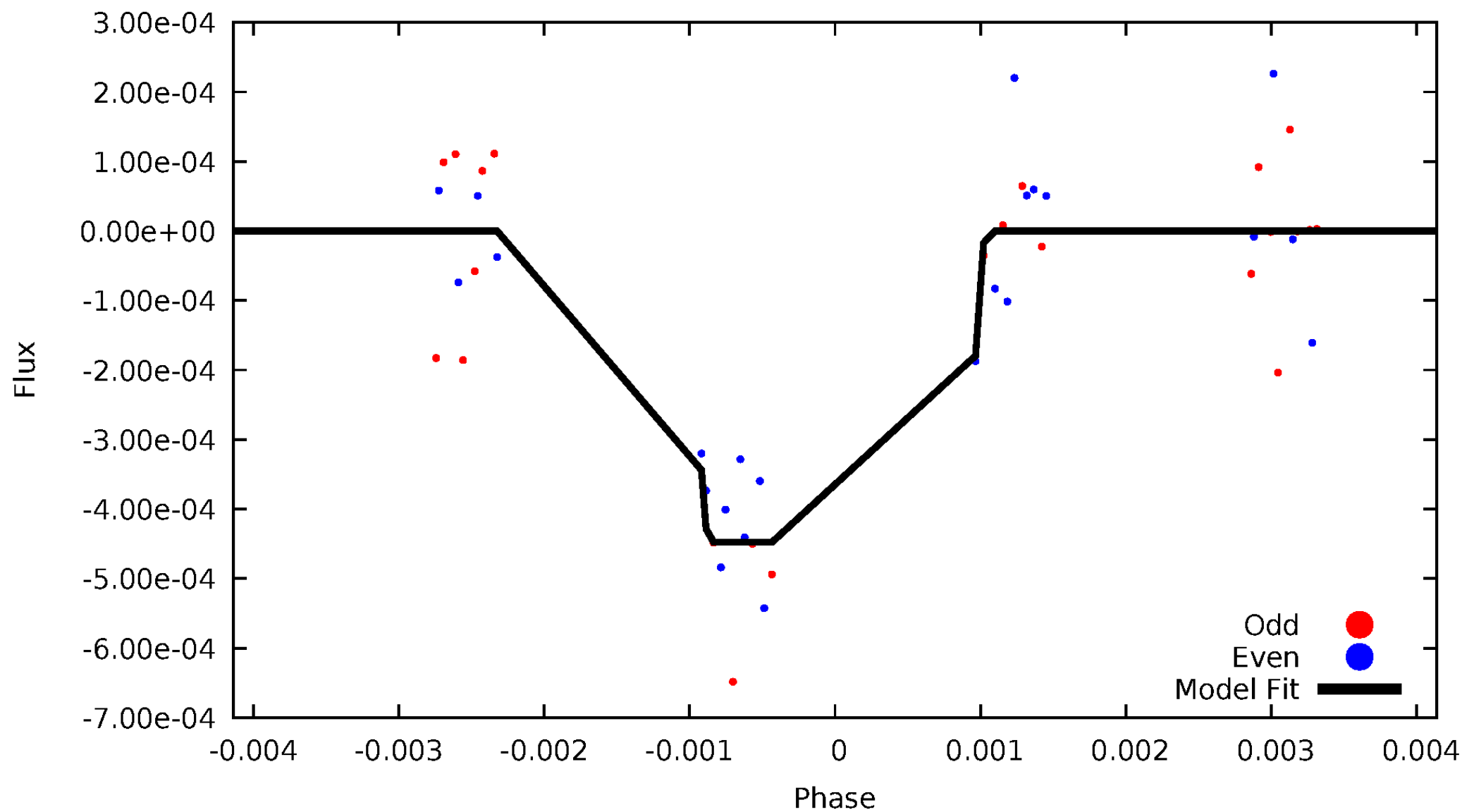
TCE 011304344-03





# ALT Odd/Even

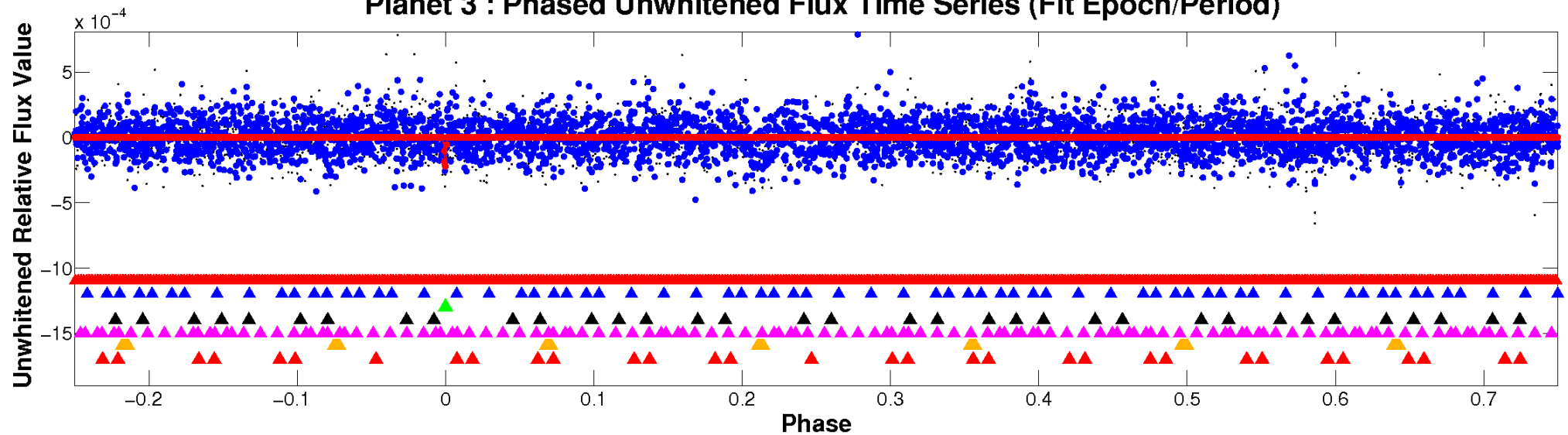
TCE 011304344-03



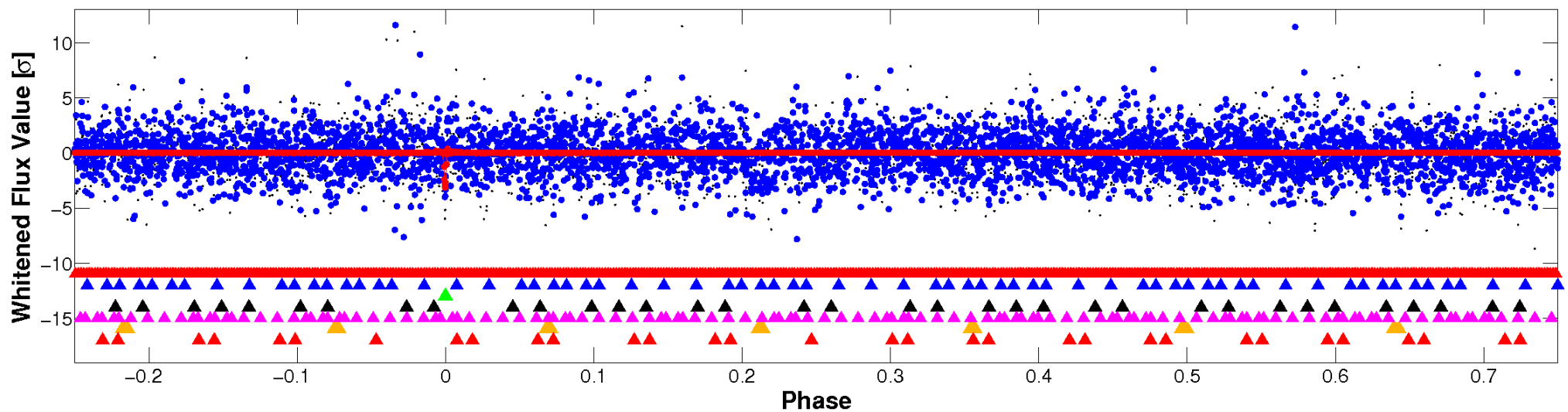


# Non-Whitened Vs. Whitened Light Curve

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



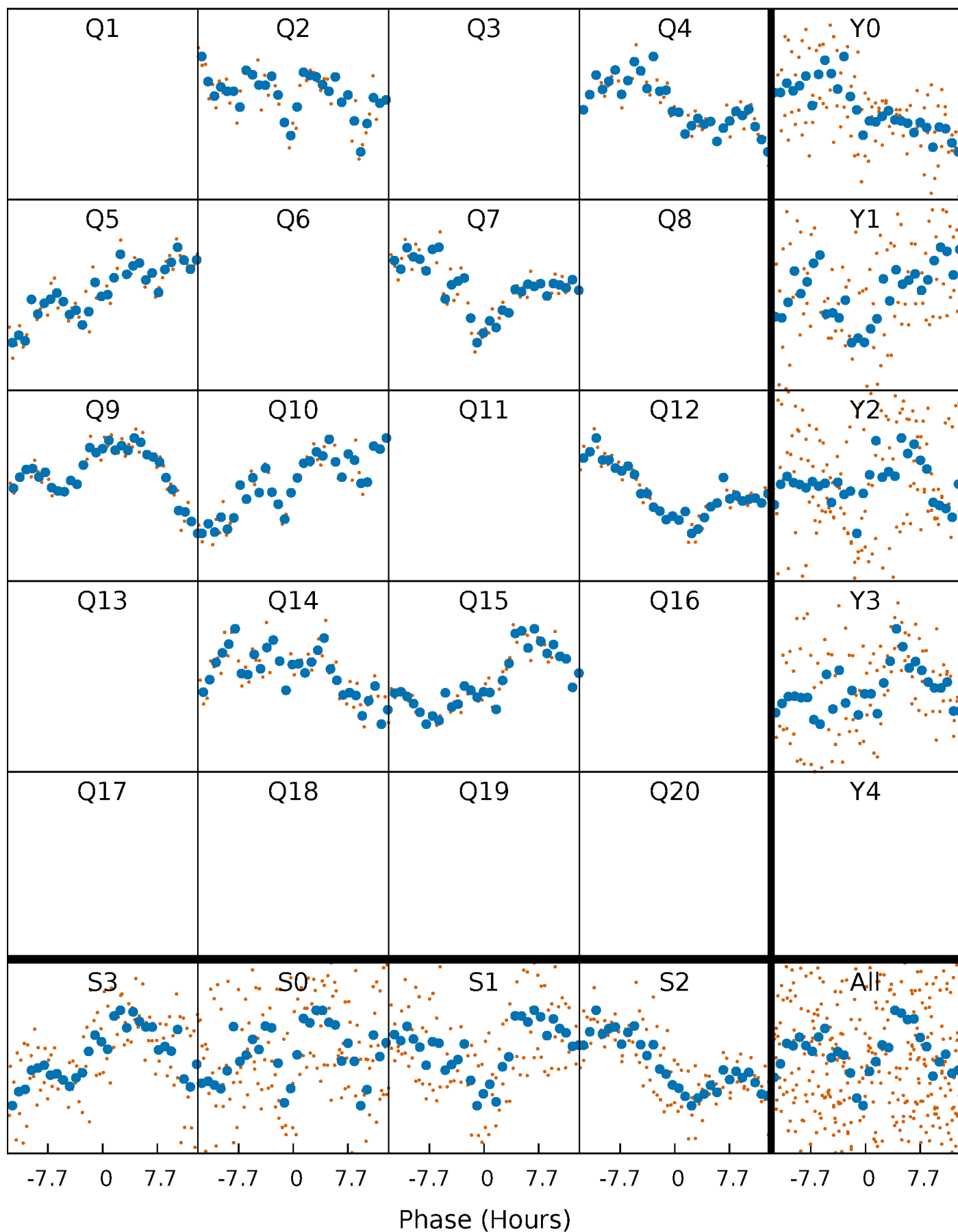
## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

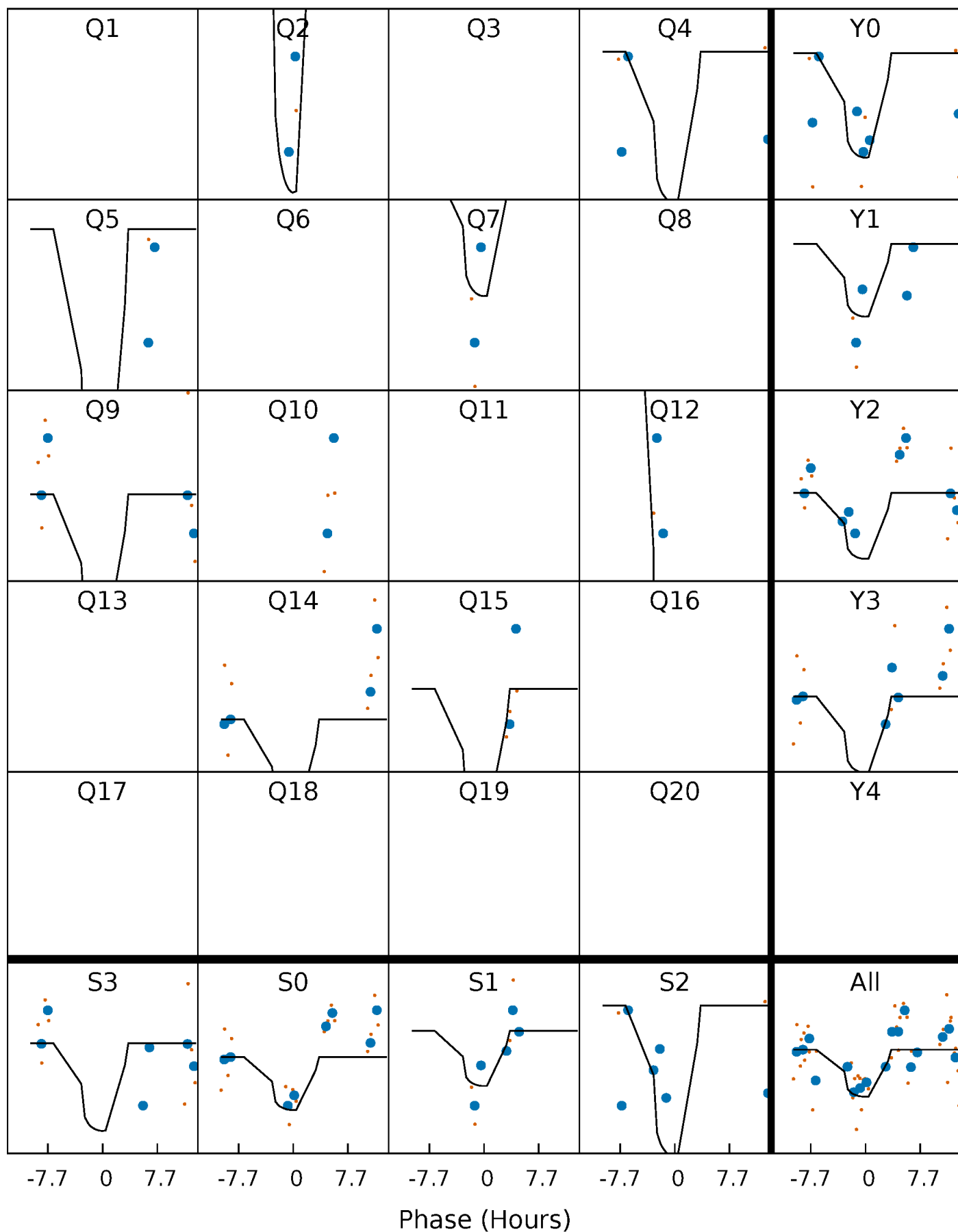
TCE 011304344-03 P=153.104629 Days  $T_0=225.899800$  (BKJD)





# DV Quarter-Phased Transit Curves

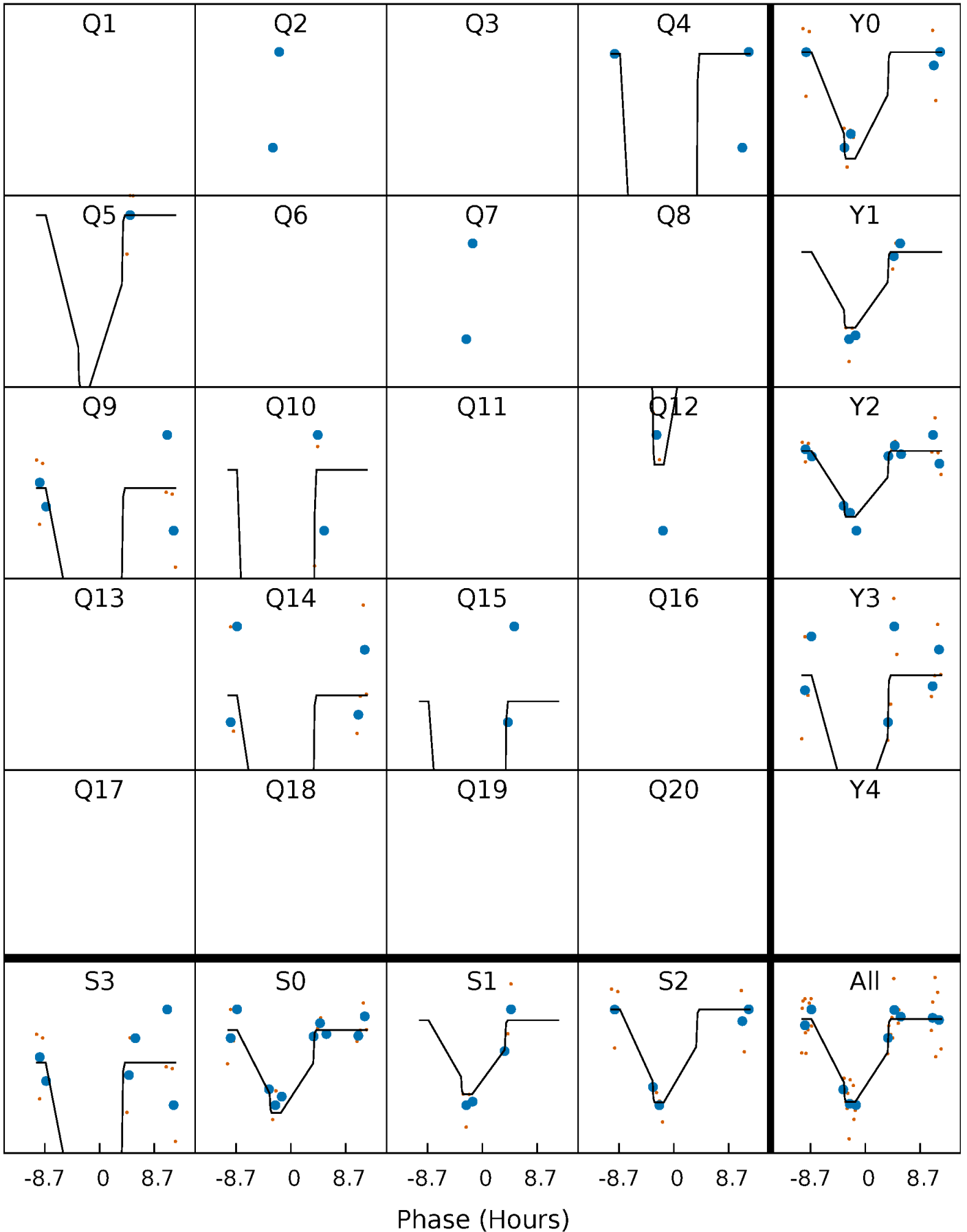
TCE 011304344-03 P=153.104629 Days  $T_0=225.899800$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011304344-03 P=153.090418 Days  $T_0=225.996363$  (BKJD)

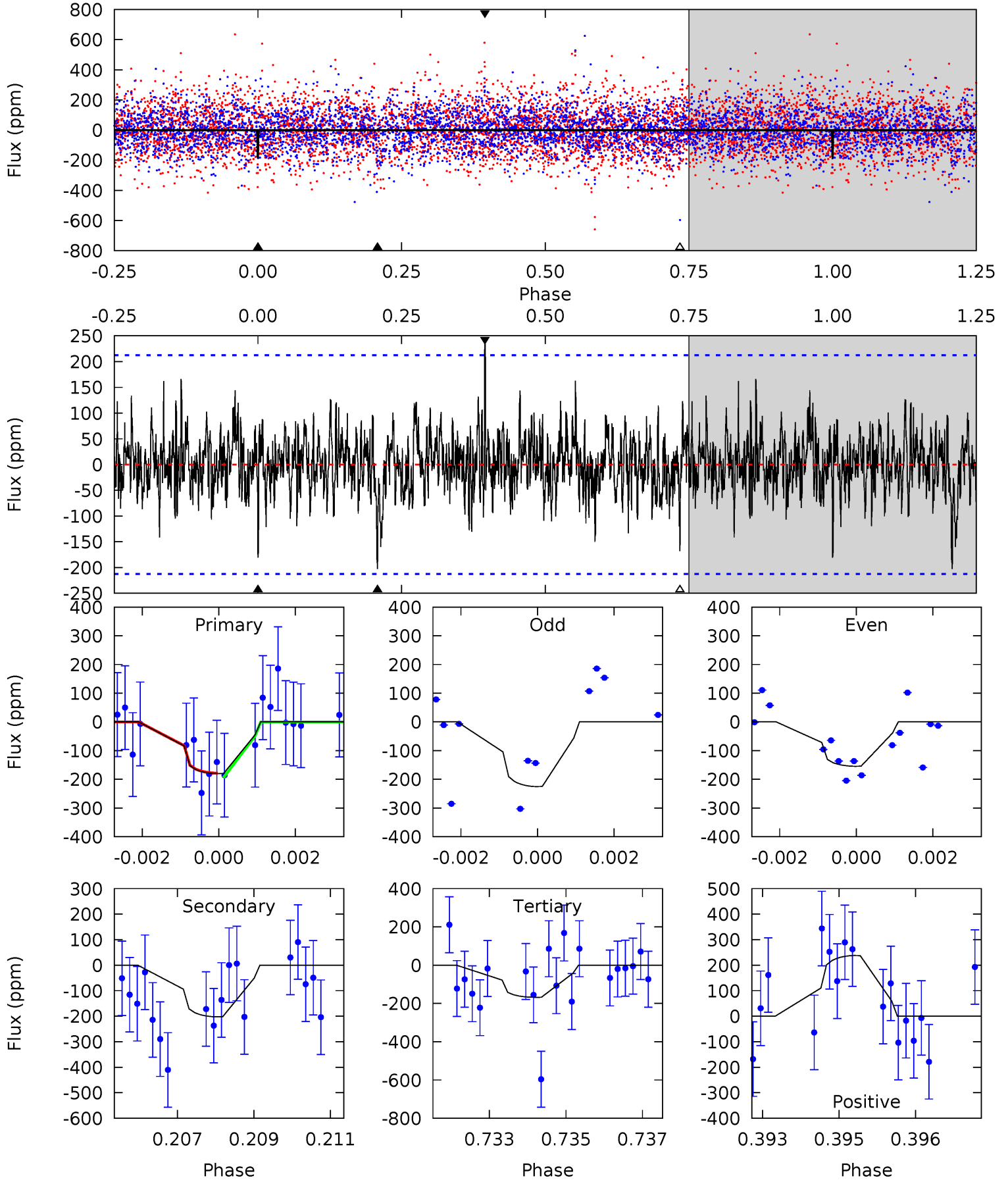




# DV Model-Shift Uniqueness Test

011304344-03, P = 153.104629 Days, E = 72.795171 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
4.54	5.10	4.23	5.99	5.35	3.12	1.22	0.31	-1.45	0.87	-0.89	0.83	0.94	0.54	0.14

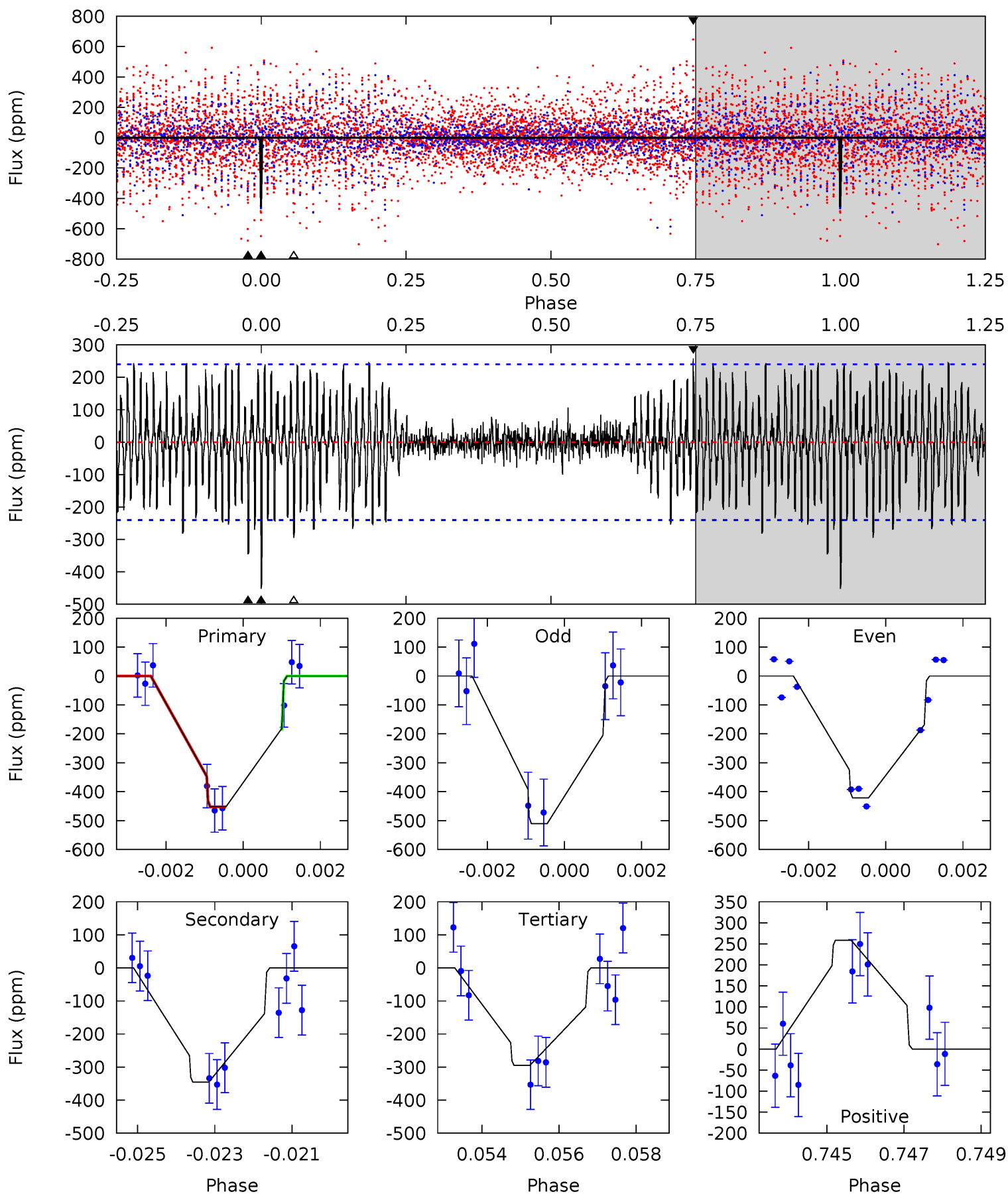




# Alt Model-Shift Uniqueness Test

011304344-03, P = 153.090418 Days, E = 72.905945 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
10.0	7.68	6.55	5.74	5.33	3.10	1.78	3.50	4.31	1.13	1.94	0.94	1.01	0.36	1.66





### Stellar Parameters For KIC 011304344

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7227^{+226}_{-302}$	$4.173^{+0.108}_{-0.201}$	$-0.020^{+0.200}_{-0.350}$	$1.666^{+0.540}_{-0.291}$	$1.505^{+0.221}_{-0.221}$	$0.459^{+0.239}_{-0.236}$
	+3%/-4%	+3%/-5%	+1000%/-1750%	+32%/-17%	+15%/-15%	+52%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011304344-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-202 \pm 40$	$9.48^{+10.31}_{-6.51}$	$733^{+56}_{-49}$	$4136^{+2523}_{-890}$	$506^{+4596}_{-388}$
Alt.	$-346 \pm 45$	$10.22^{+9.92}_{-7.06}$	$727^{+59}_{-47}$	$4390^{+3342}_{-907}$	$759^{+7025}_{-567}$

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



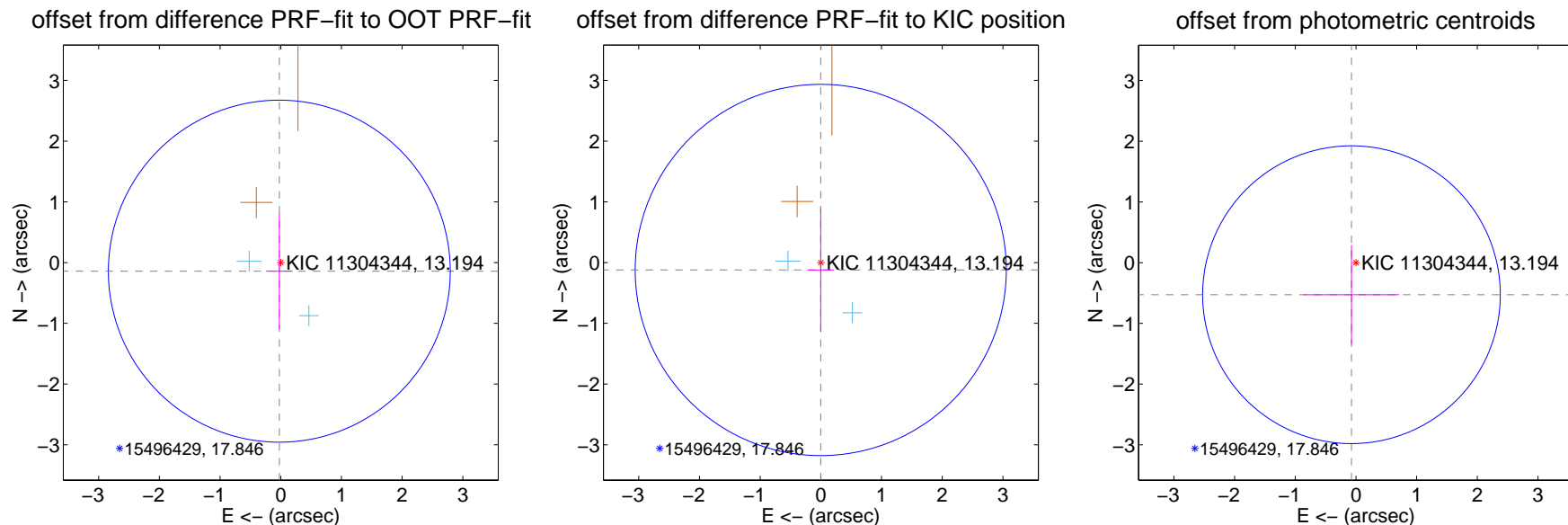
## DV Centroid Data

Supplemental centroid analysis for 011304344-03. Kepler magnitude: 13.19. Transit SNR 9.46

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

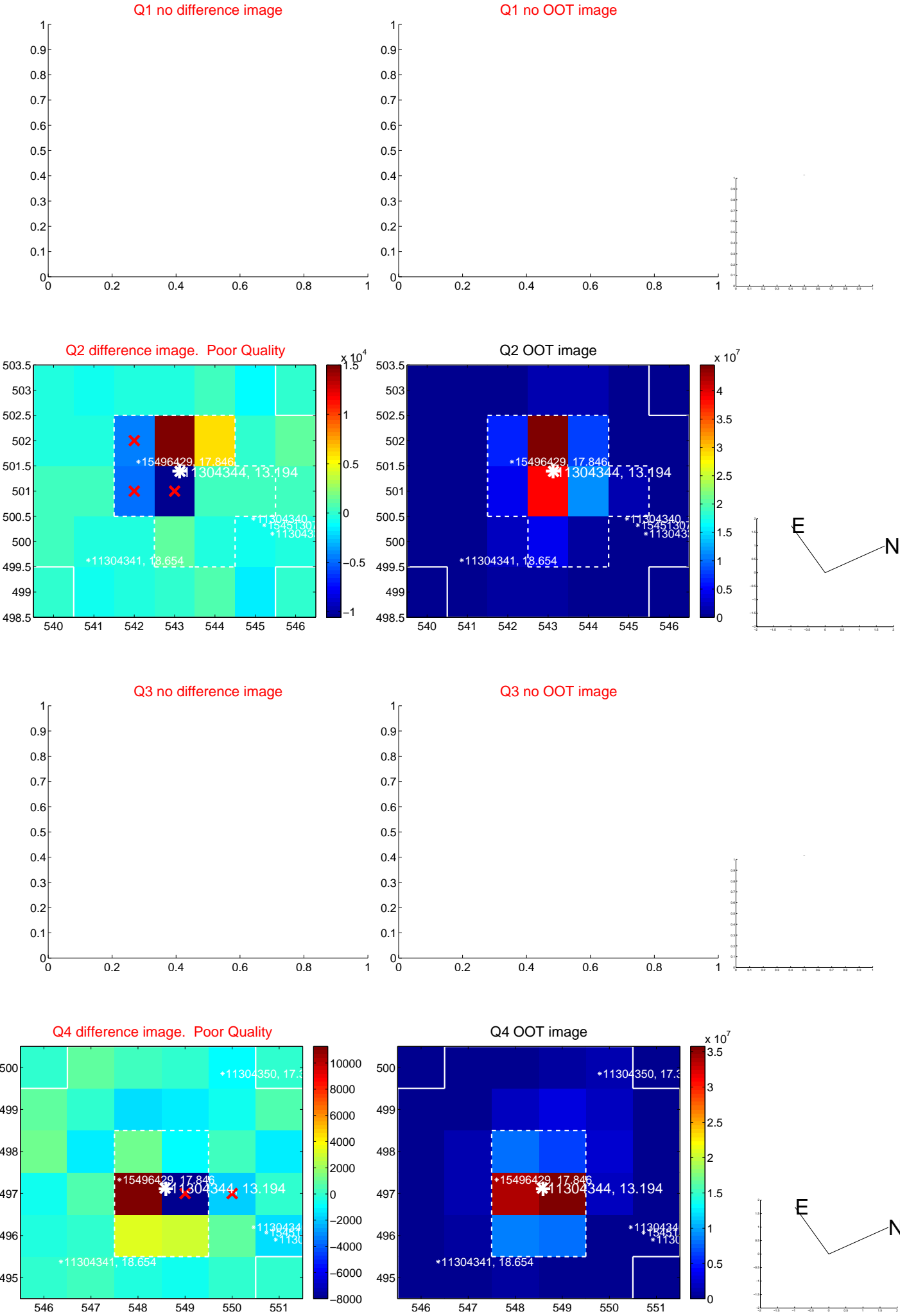
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.143 \pm 0.939$	0.15	$0.023 \pm 0.220$	$-0.141 \pm 0.956$
PRF-fit source offset from KIC position	$0.122 \pm 1.019$	0.12	$0.002 \pm 0.219$	$-0.122 \pm 1.017$
photometric centroid source offset	$0.53 \pm 0.82$	0.65	$0.07 \pm 0.79$	$-0.53 \pm 0.82$



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.

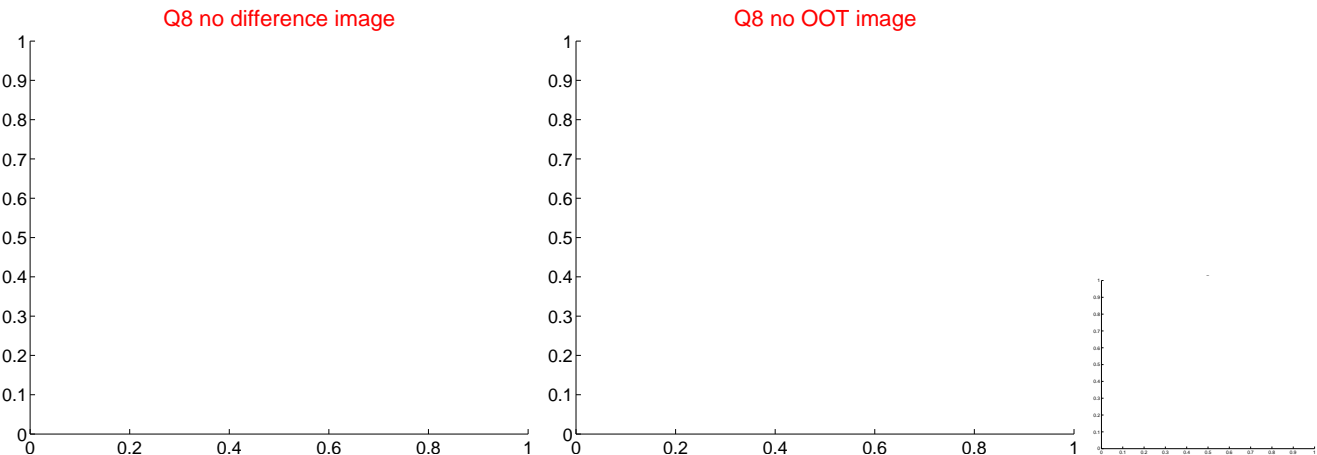
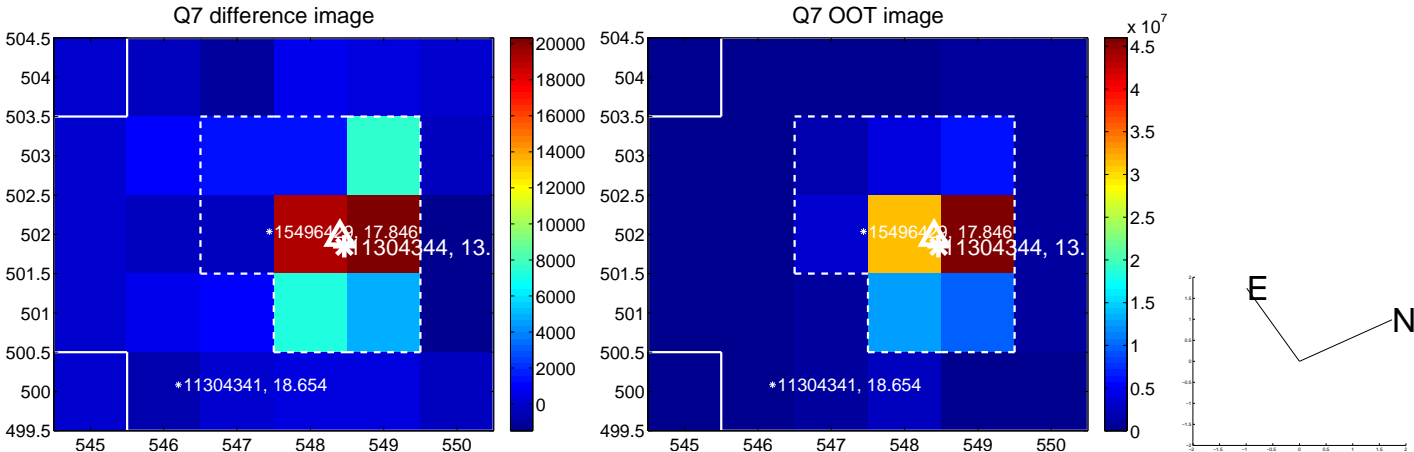
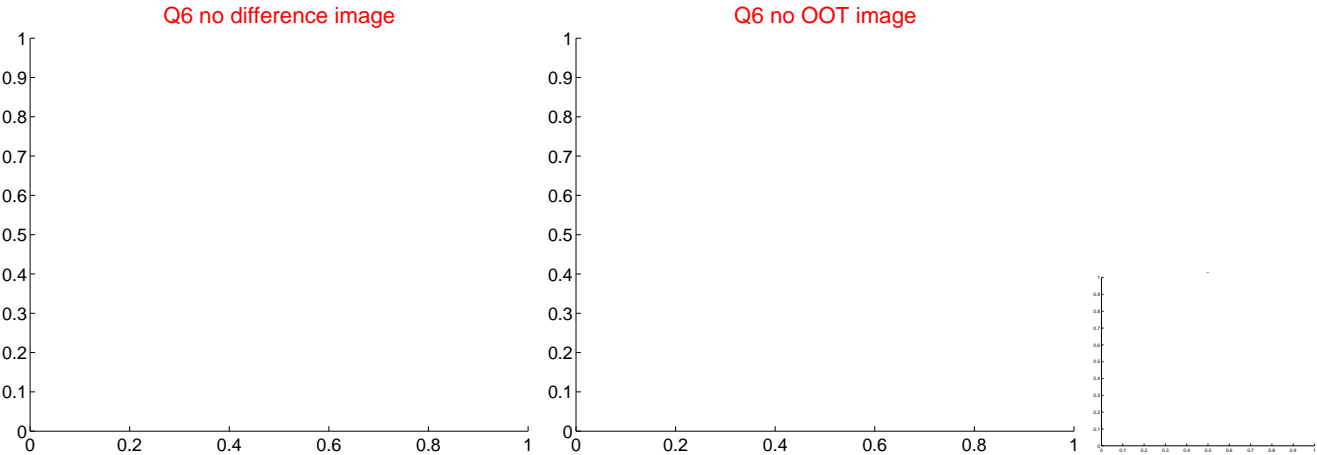
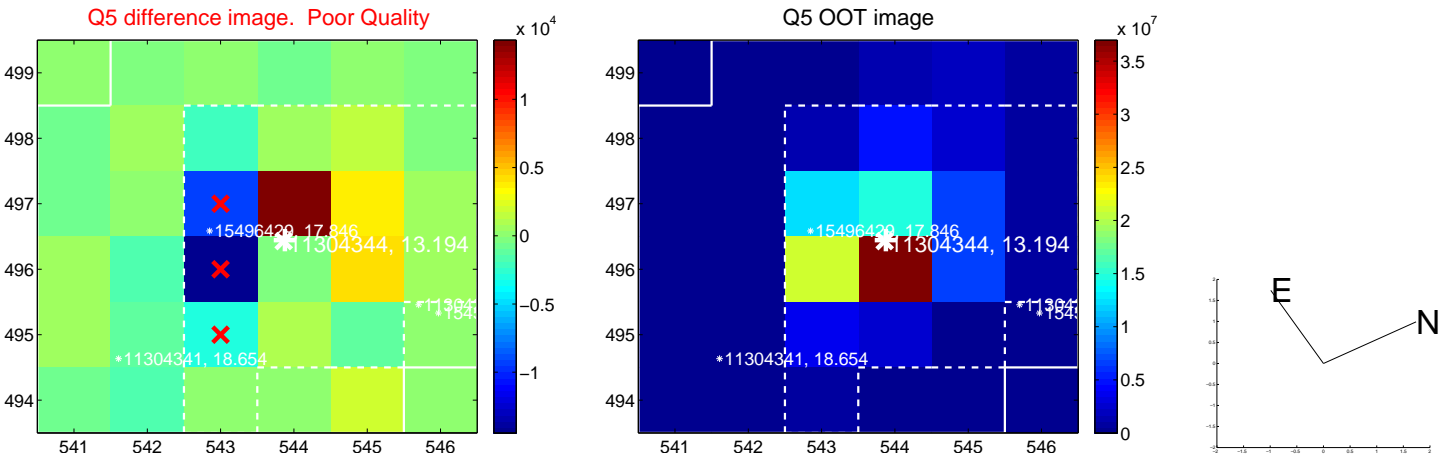


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



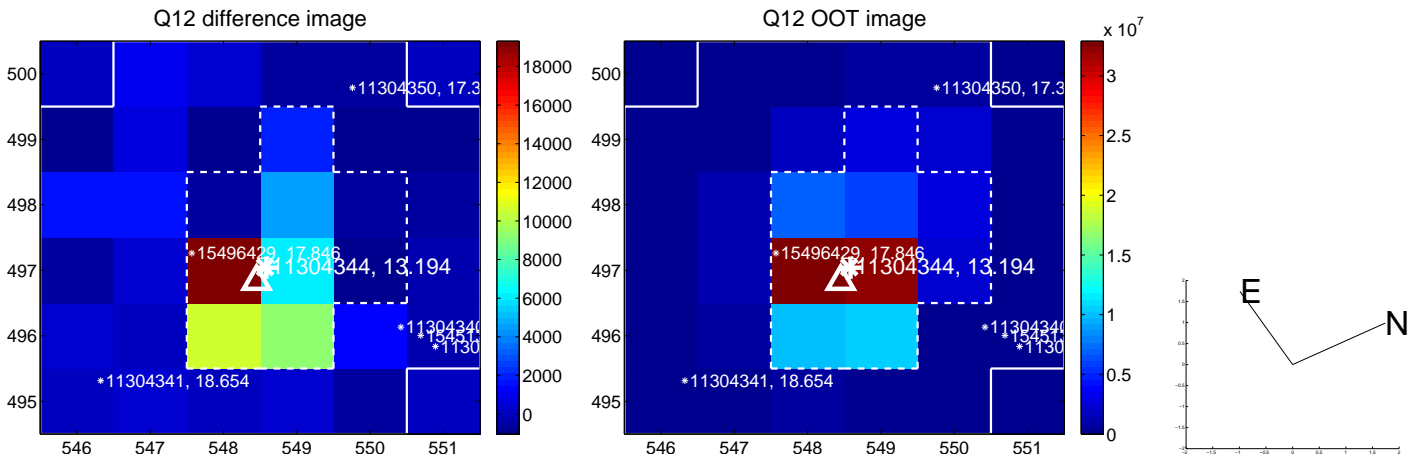
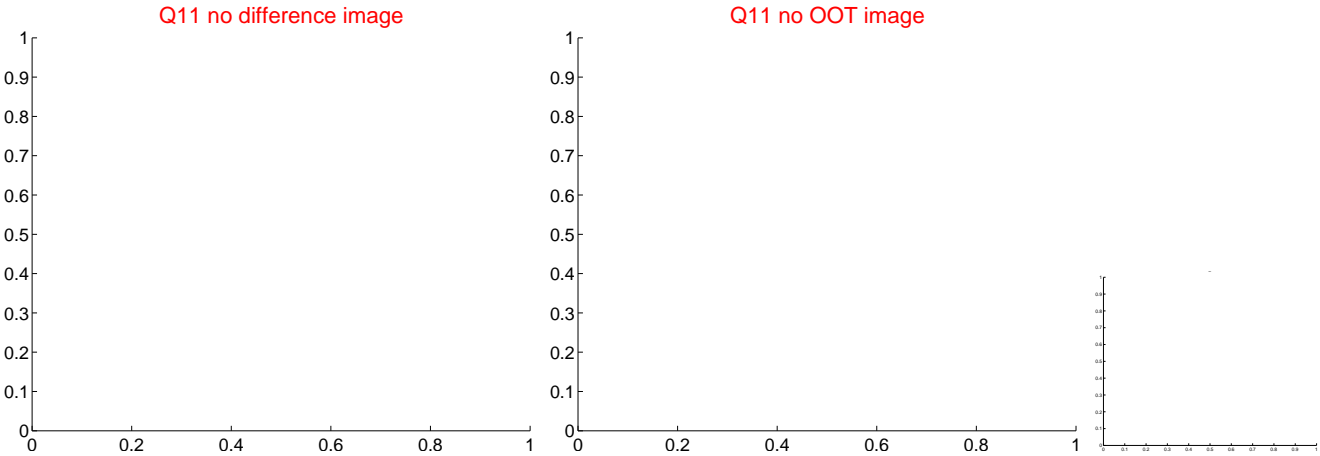
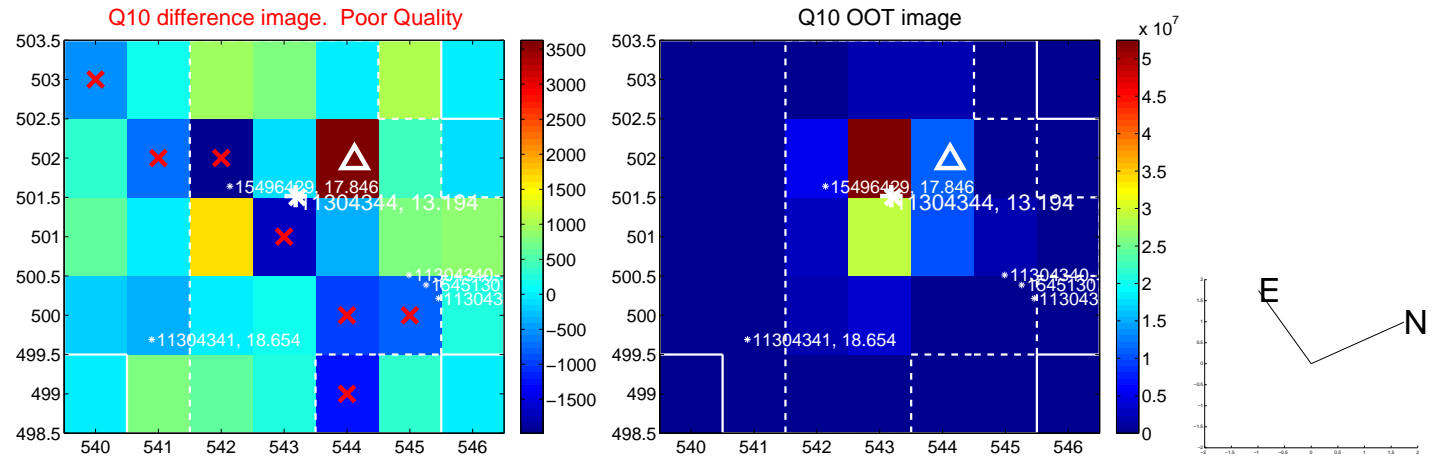
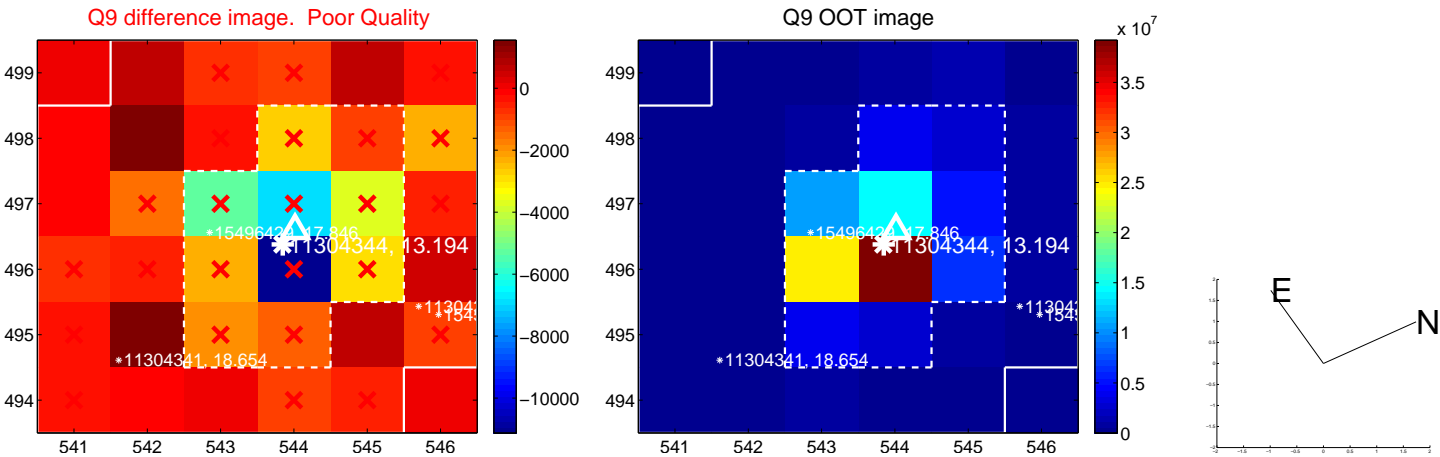


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





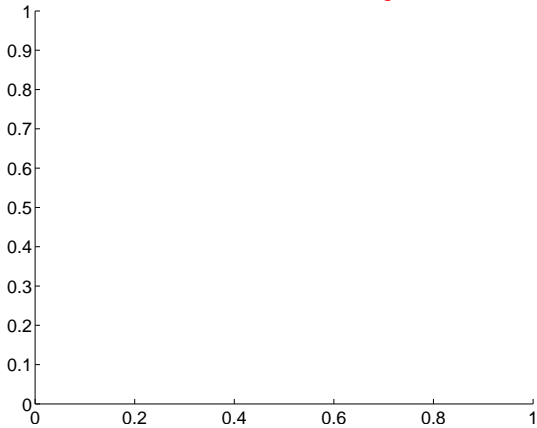
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



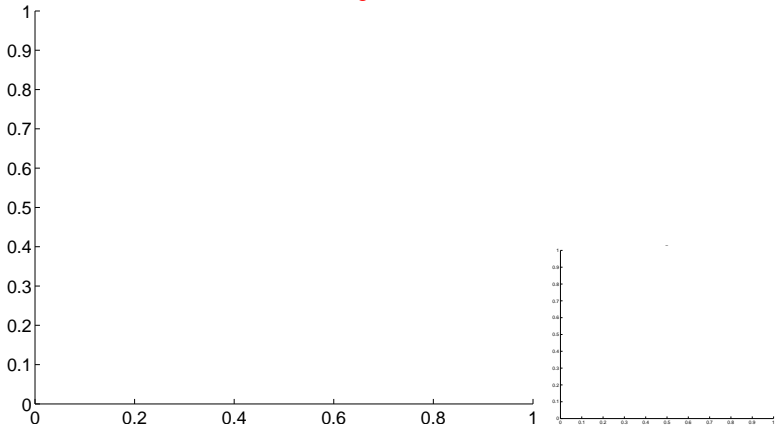


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

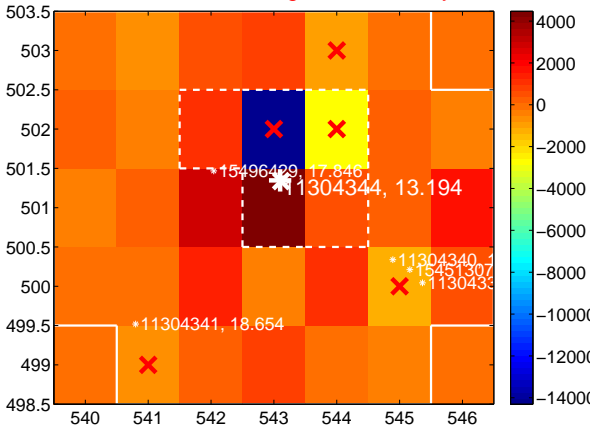
Q13 no difference image



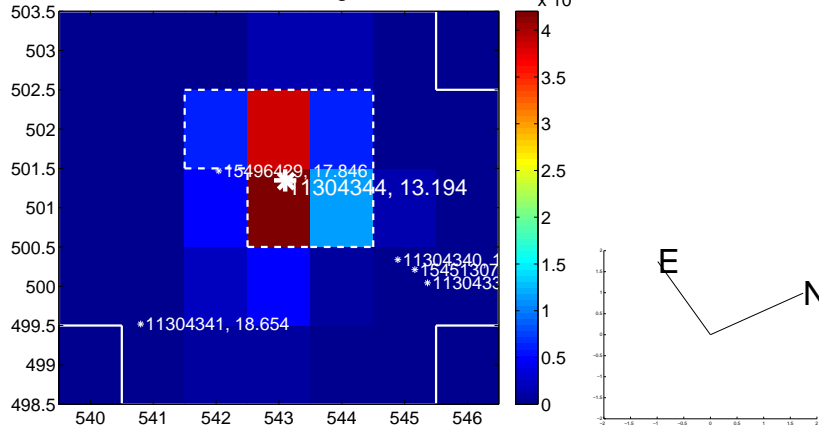
Q13 no OOT image



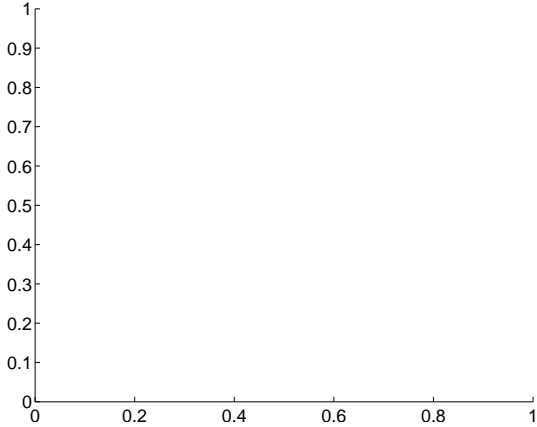
Q14 difference image. Poor Quality



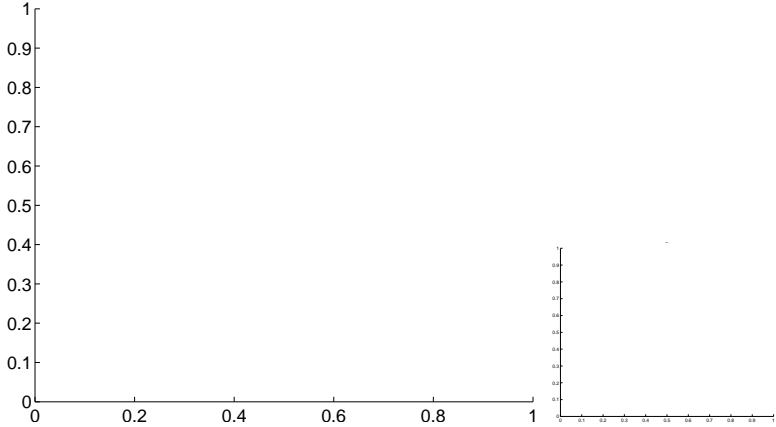
Q14 OOT image



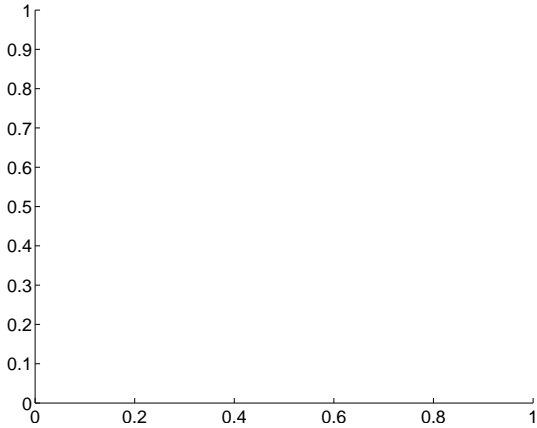
Q15 no difference image



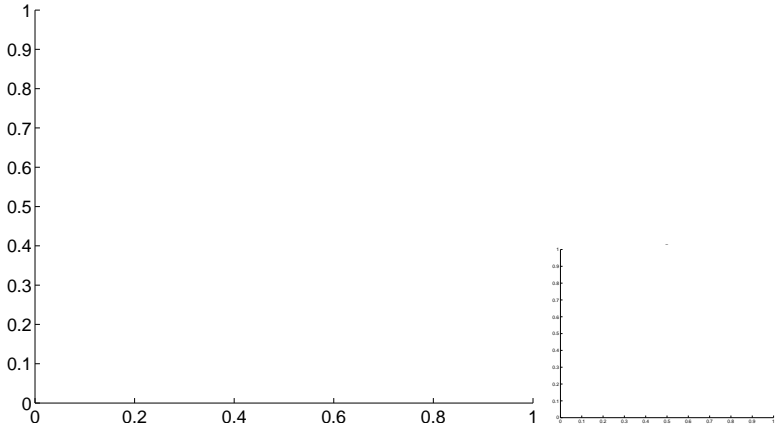
Q15 no OOT image



Q16 no difference image

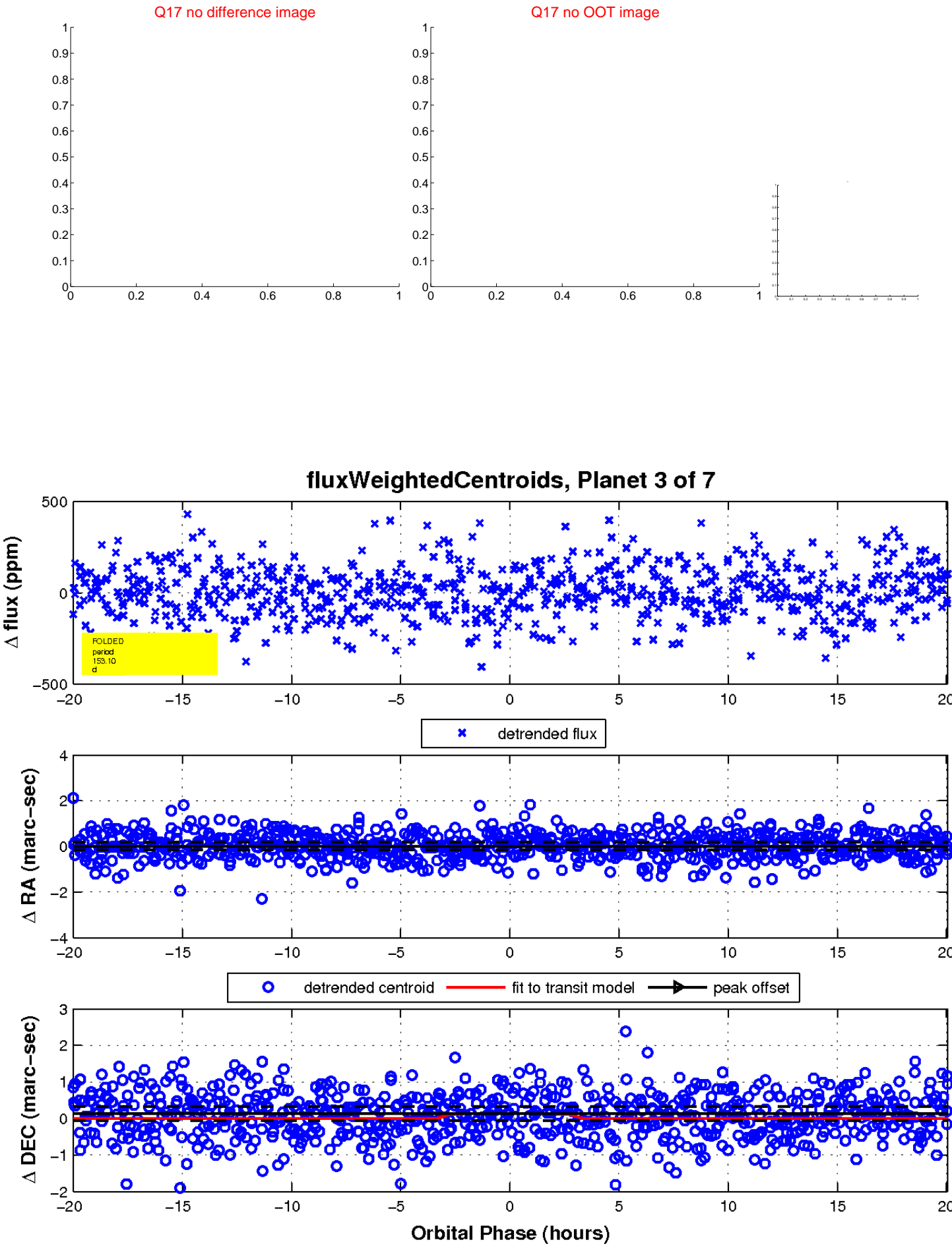


Q16 no OOT image



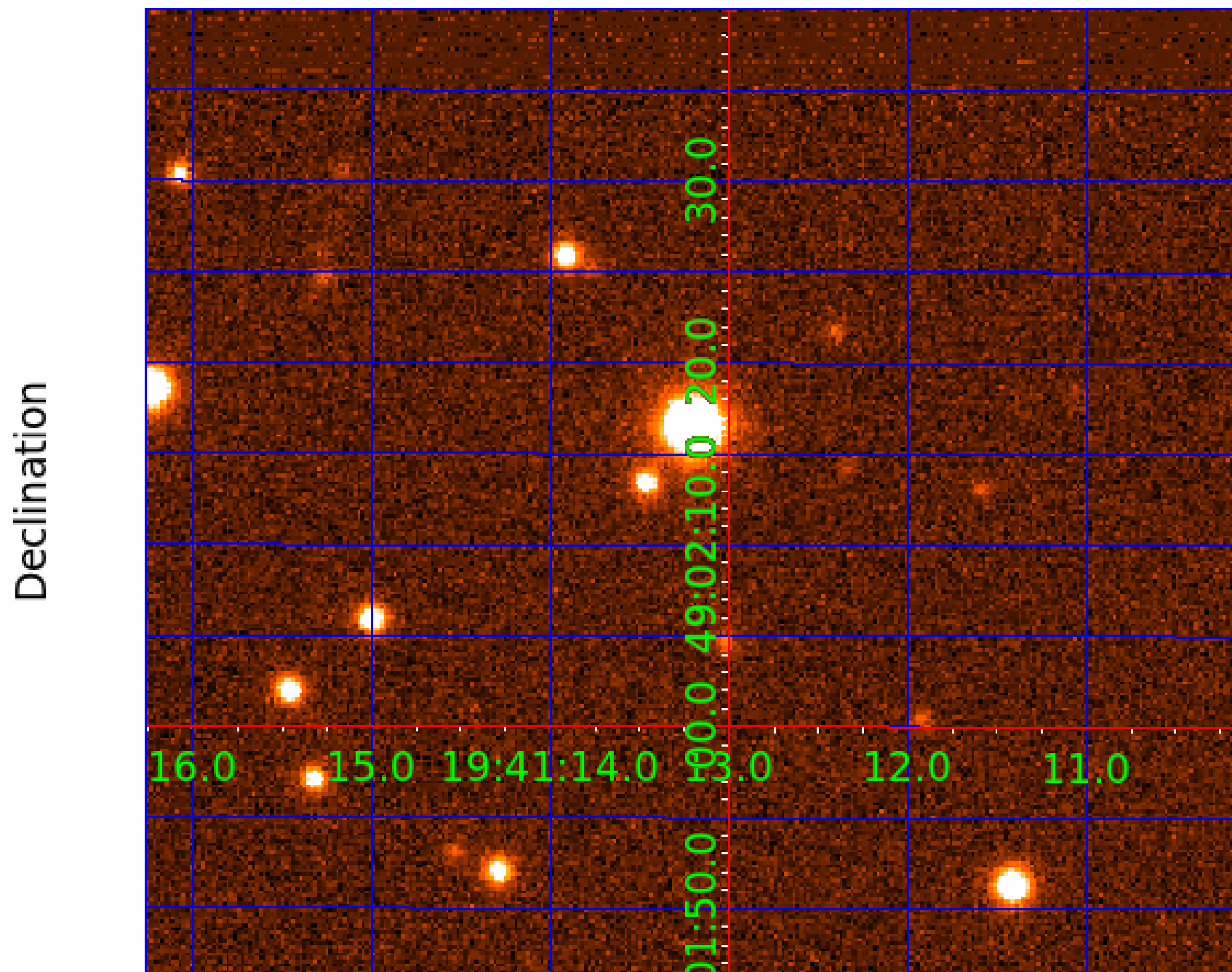


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image





# KIC 011304344

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011304344-01	OBS	No	0.863290	132.226037	0.0	6.125	10.2	0.0	1.67	7227	0.01	16379.51
011304344-02	OBS	No	21.393712	133.479125	212.4	1.842	10.3	12.8	1.67	7227	2.50	226.71
011304344-03	OBS	No	153.104629	225.899800	223.1	6.707	9.6	9.5	1.67	7227	2.92	16.44
011304344-04	OBS	No	41.015764	158.956317	322.2	0.929	11.0	11.0	1.67	7227	3.06	95.19
011304344-05	OBS	No	11.643967	133.955228	46.4	9.518	11.7	7.5	1.67	7227	1.17	510.16
011304344-06	OBS	No	21.884143	148.668846	220.8	2.402	9.3	10.3	1.67	7227	2.87	219.96
011304344-07	OBS	No	44.937165	157.100009	196.5	3.377	9.3	9.5	1.67	7227	2.71	84.28

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011304344-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011304344-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011304344-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—MOD_NONUNIQ_DV—HALO_GHOST
011304344-05	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
011304344-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-07	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

**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.

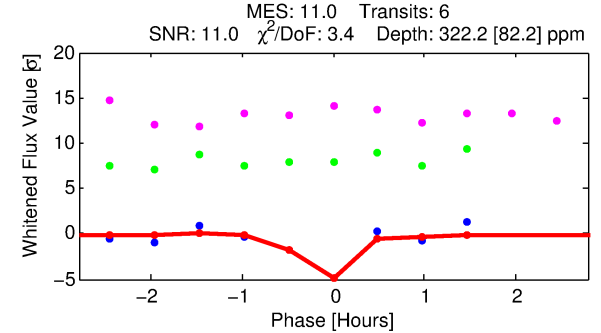
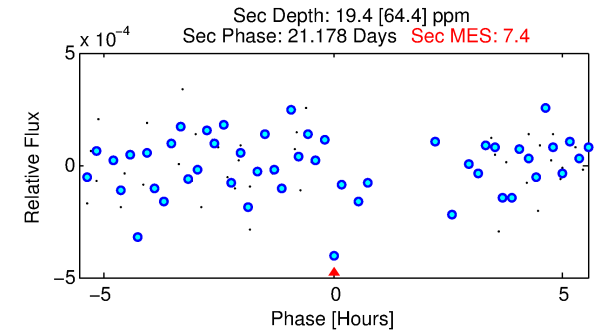
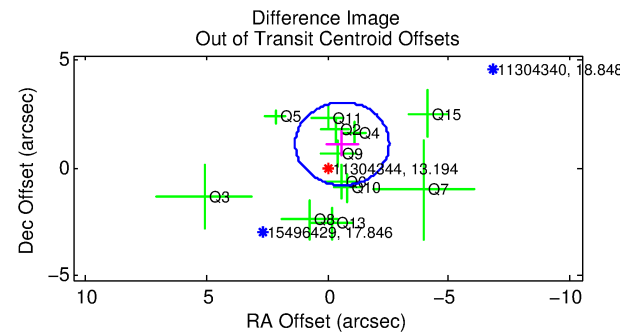
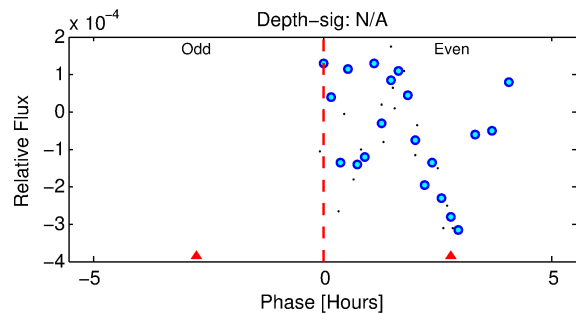
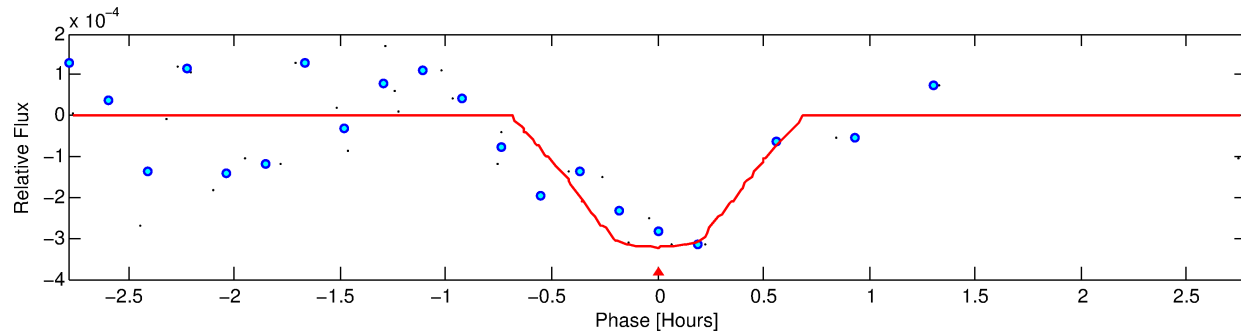
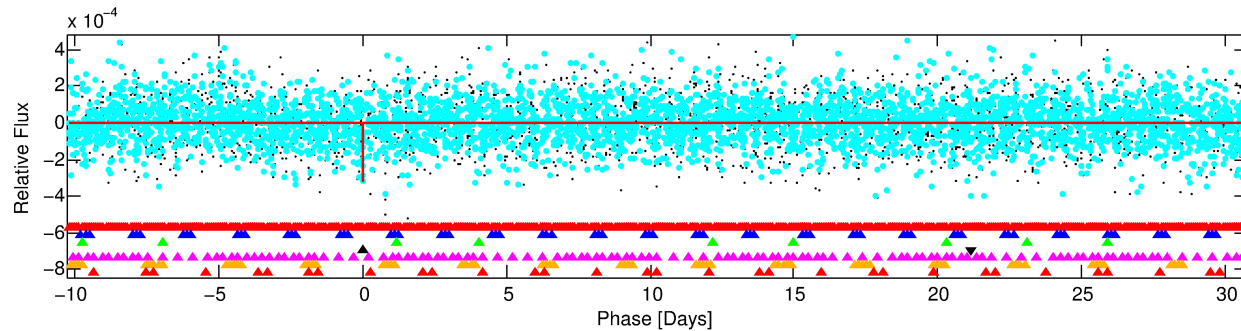
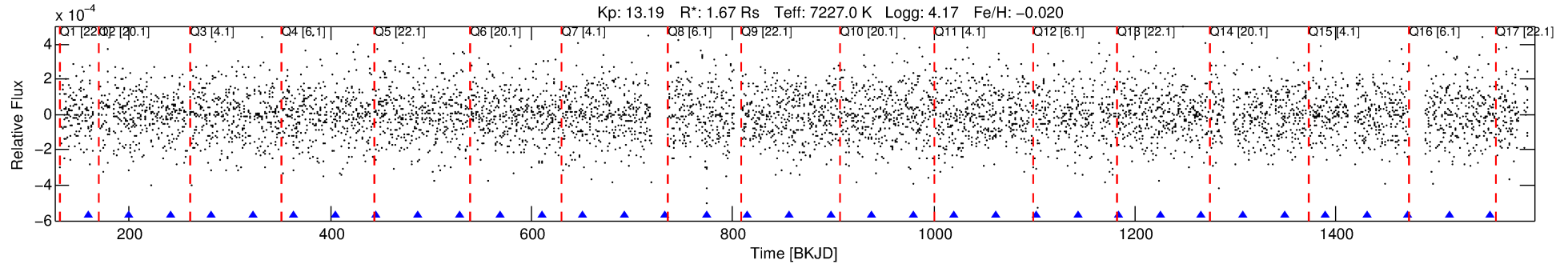
Ephemeris Match Information For 011304344-04

No Significant Match Found



# DV One-Page Summary

KIC: 11304344 Candidate: 4 of 7 Period: 41.016 d



## DV Fit Results:

Period = 41.01576 [0.00100] d  
Epoch = 158.9563 [0.0055] BKJD  
Rp/R\* = 0.0168 [0.1245]  
a/R\* = 340.51 [14369.51]  
b = 0.12 [343.41]  
Seff = 95.19 [39.23]  
Teq = 796 [82] K  
Rp = 3.06 [22.65] Re  
a = 0.2670 [0.0709] AU  
Ag = 81.23 [1232.28] [0.07σ]  
Teffp = 3697 [14017] K [0.21σ]

## DV Diagnostic Results:

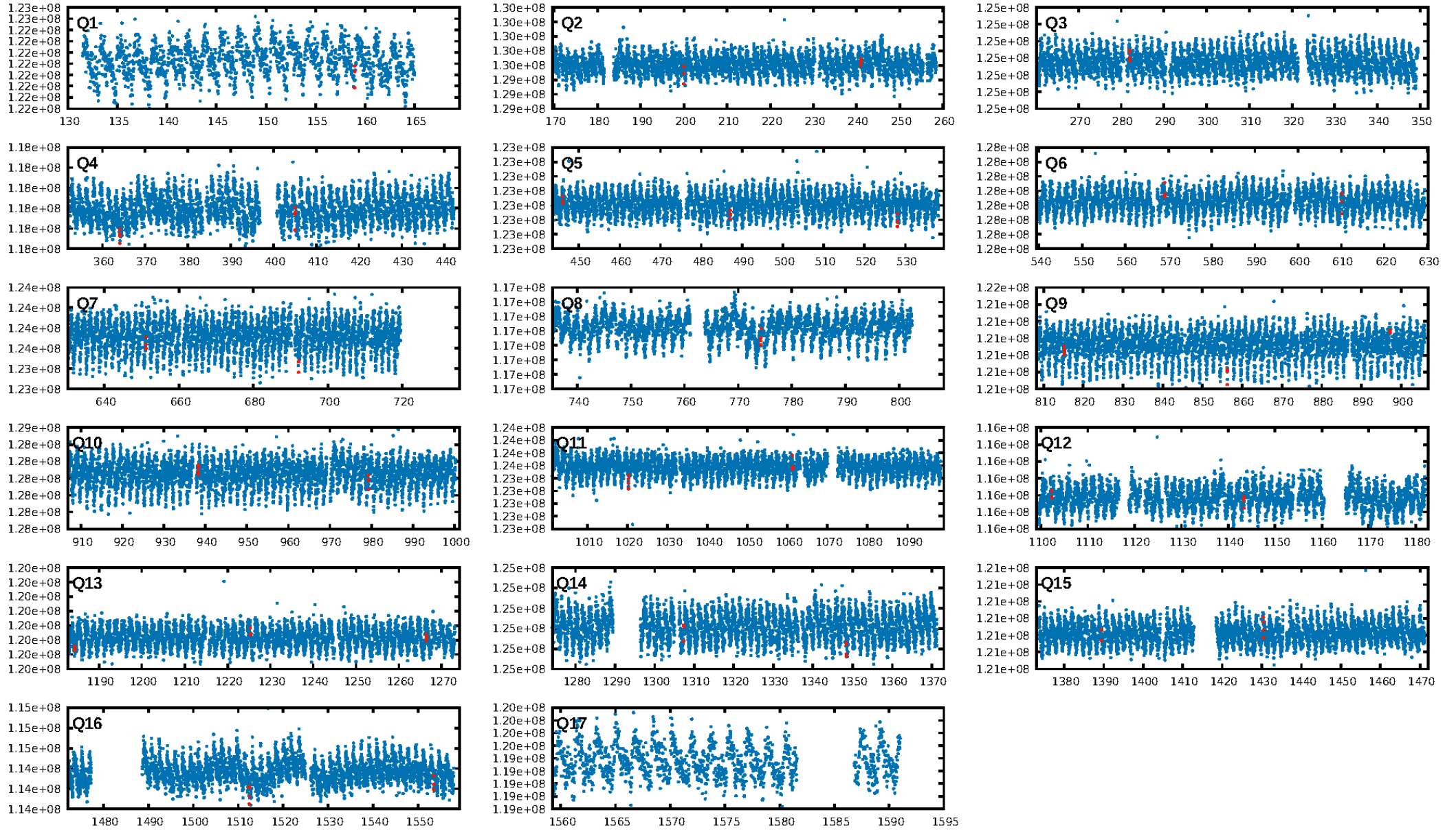
ShortPeriod-sig: 100.0% [178.28σ]  
LongPeriod-sig: 100.0% [26.87σ]  
ModelChiSquare2-sig: 91.9%  
ModelChiSquareGof-sig: 96.5%  
**Bootstrap-pfa: 2.09e-09**  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: -0.0955  
Centroid-sig: 0.4%  
Centroid-so: 1.592 arcsec [2.16σ]  
OotOffset-rm: 1.268 arcsec [1.96σ]  
OotOffset-st: 3/4/2/3 [12]  
KicOffset-rm: 1.274 arcsec [2.06σ]  
KicOffset-st: 3/4/2/3 [12]  
DiffImageQuality-fgm: 0.58 [7/12]  
DiffImageOverlap-fno: 0.25 [4/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:26:32 Z

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

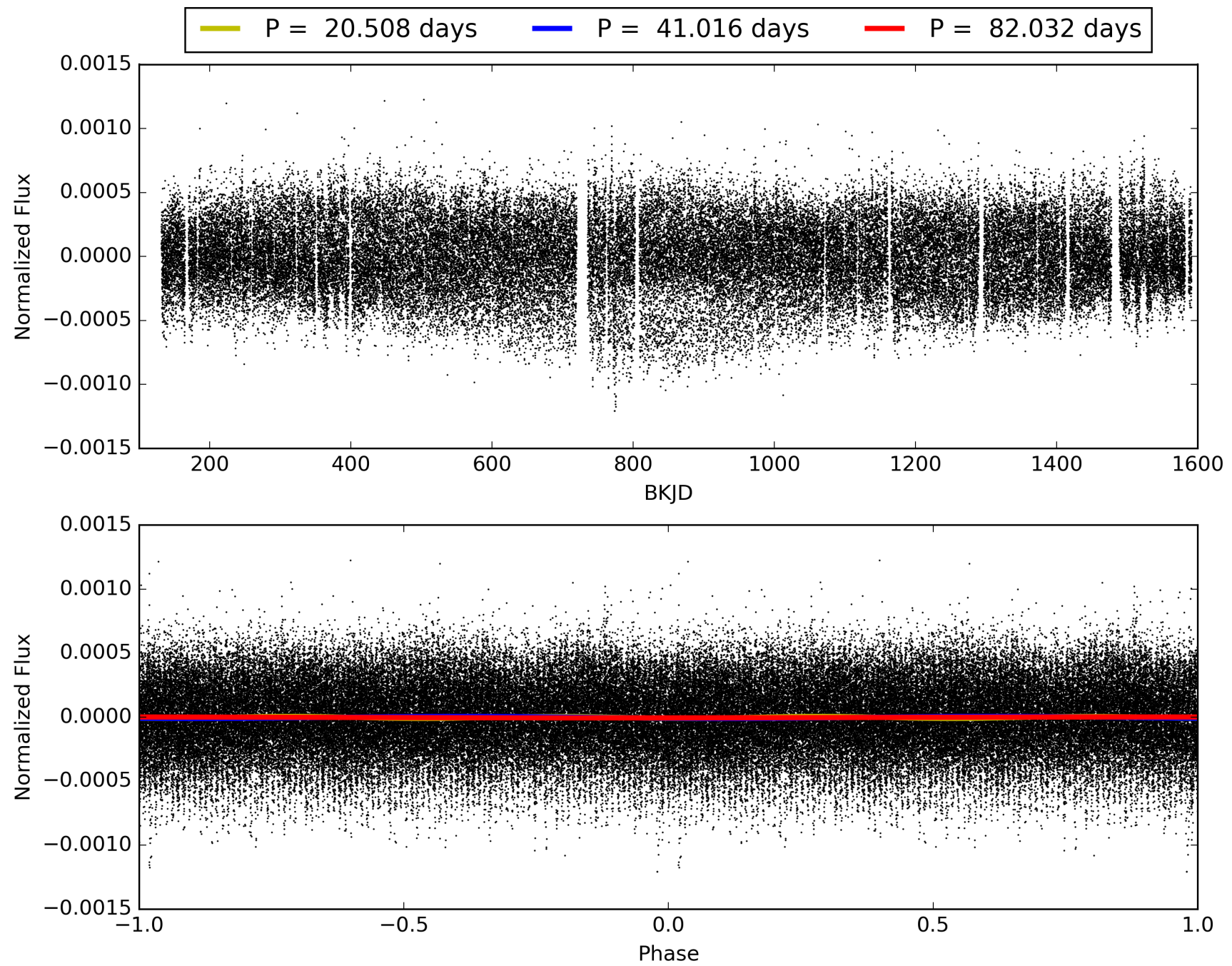


# TCE 011304344-04, PDC Light Curves





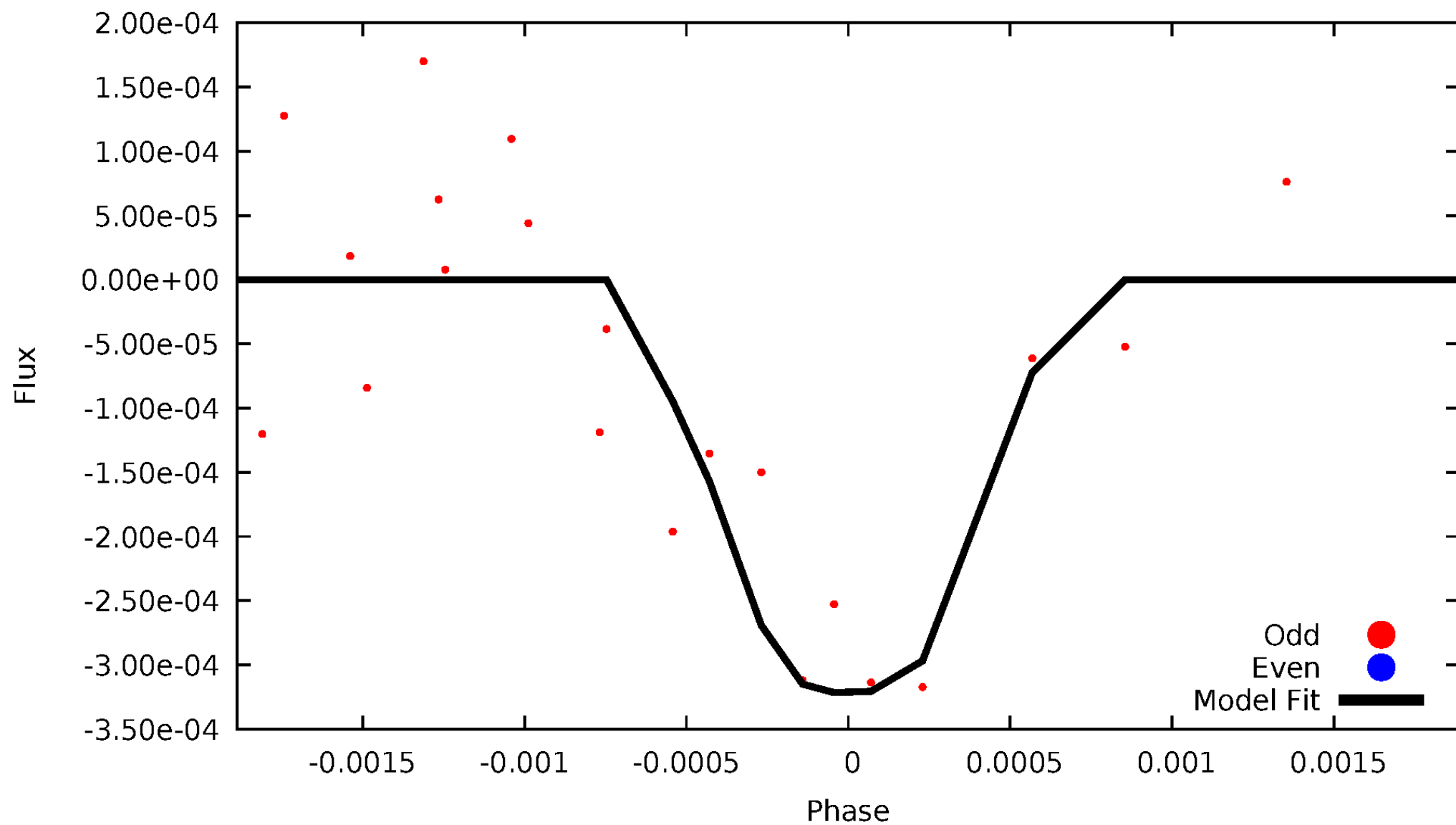
TCE 011304344-04





# DV Odd/Even

TCE 011304344-04









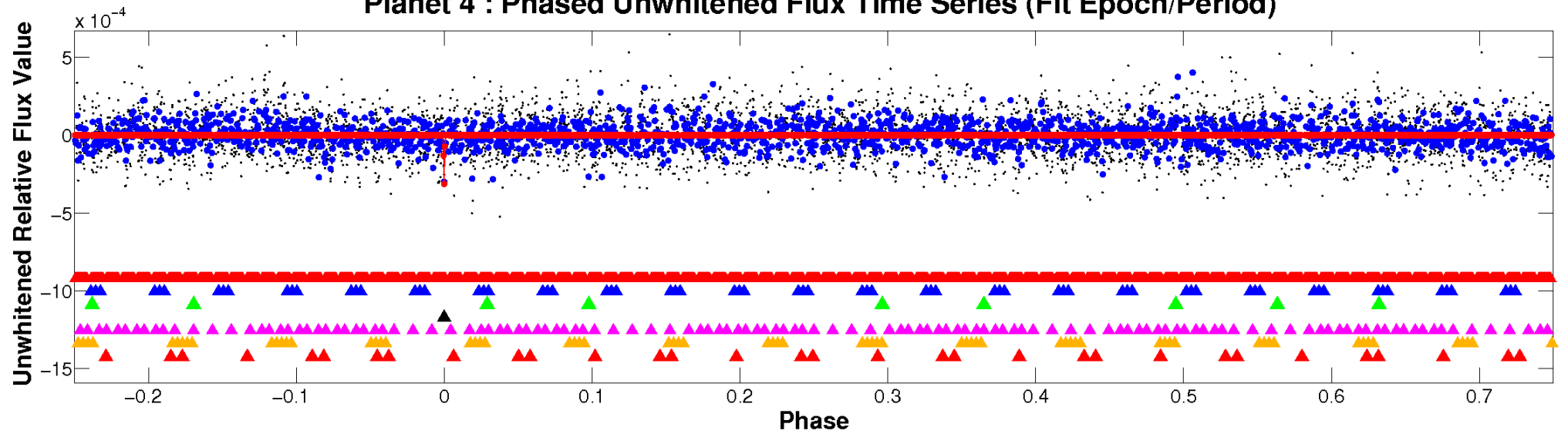
ALT Odd/Even

This plot does not exist for this TCE.

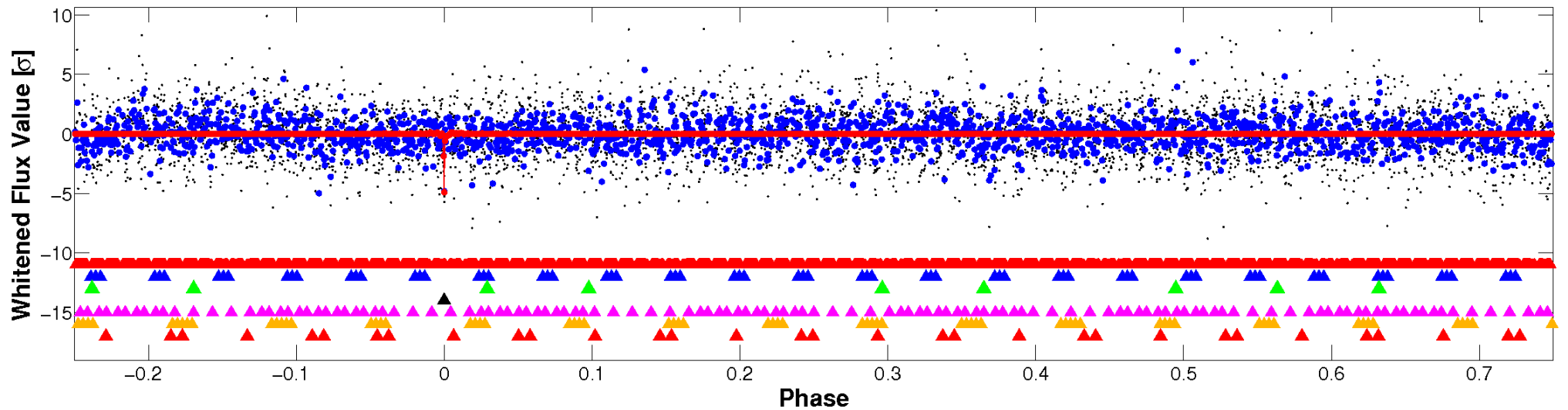


# Non-Whitened Vs. Whitened Light Curve

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



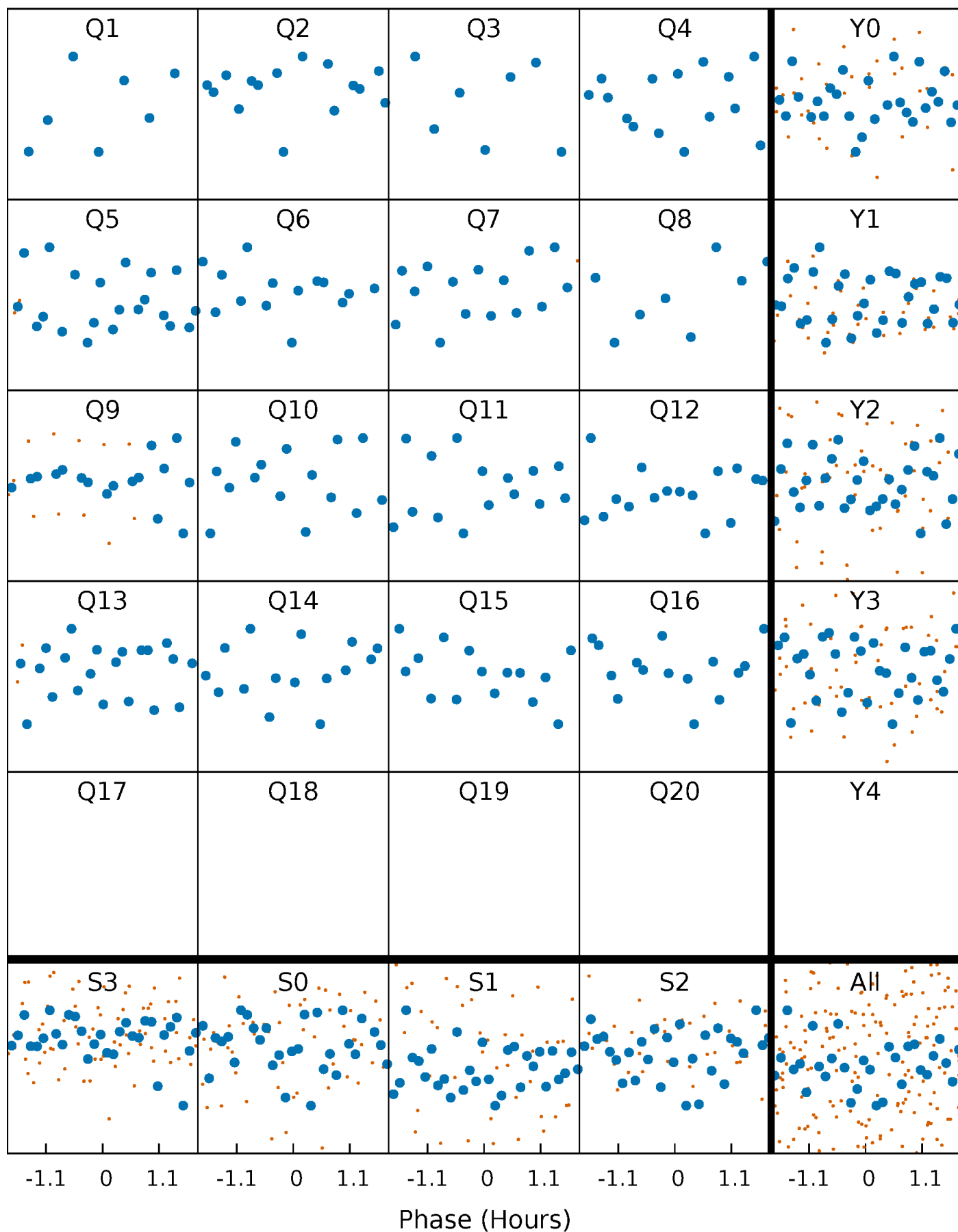
## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

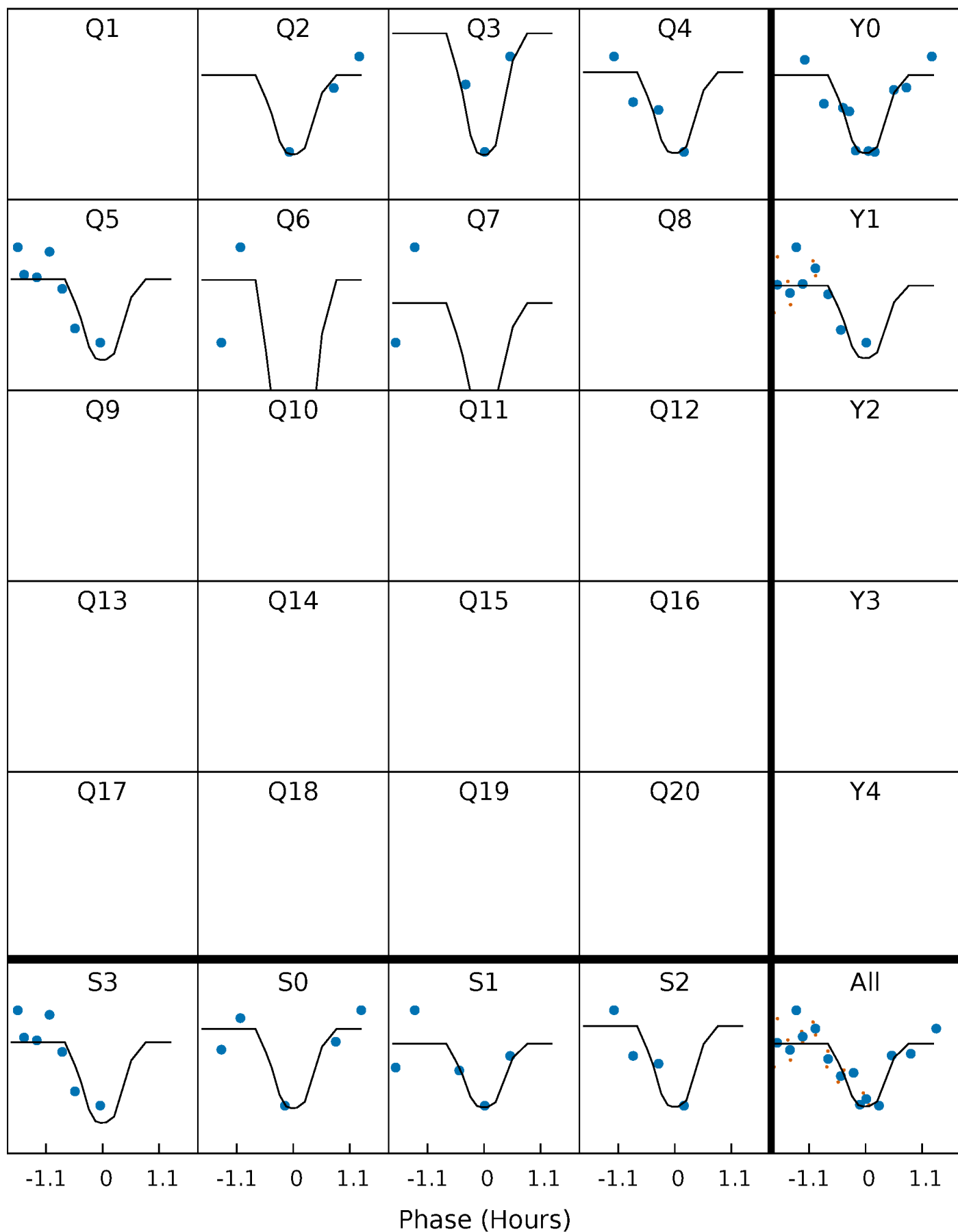
TCE 011304344-04   P= 41.015764 Days    $T_0=158.956317$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 011304344-04     $P = 41.015764$  Days     $T_0 = 158.956317$  (BKJD)





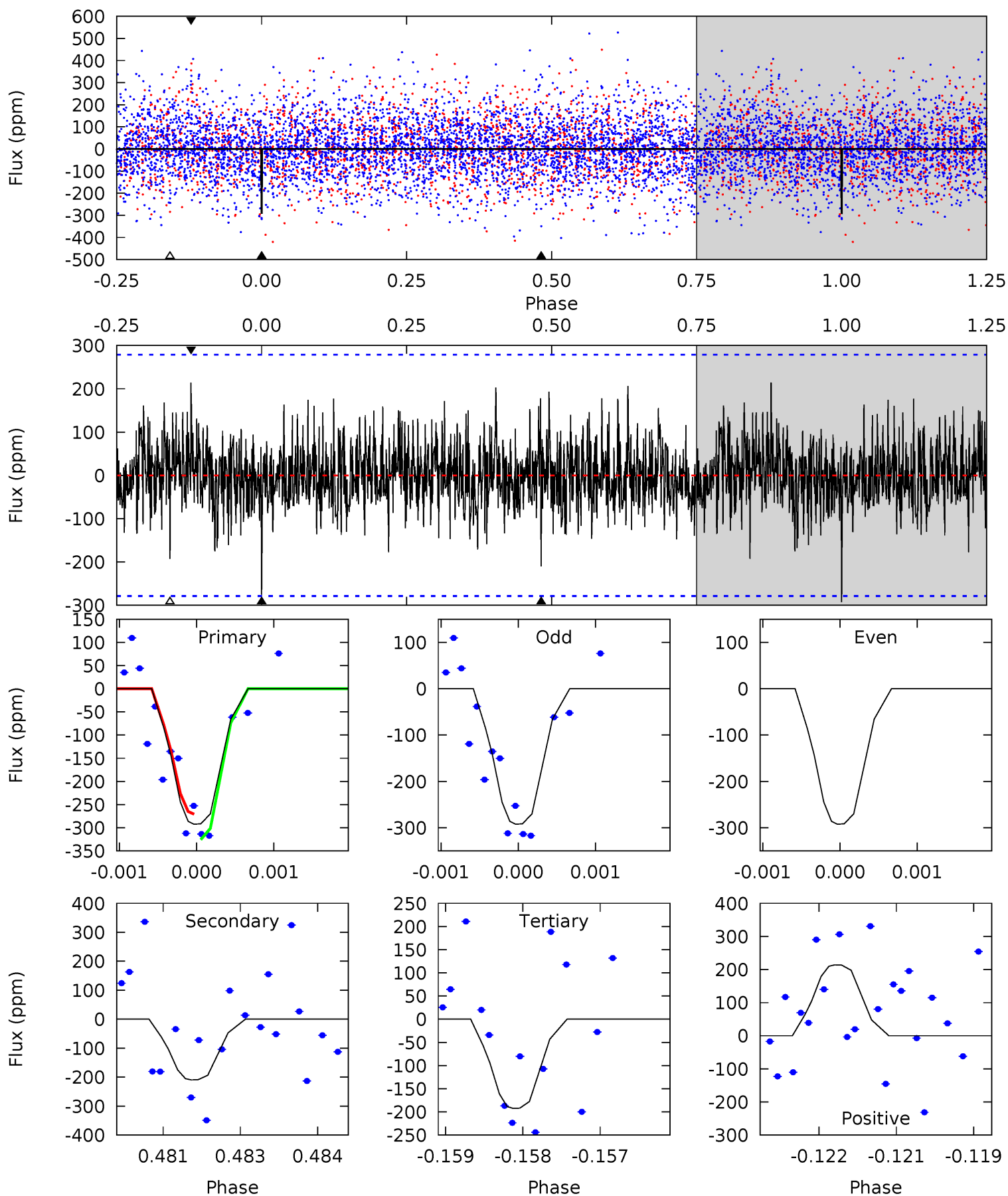
This plot does not exist for this TCE.



# DV Model-Shift Uniqueness Test

011304344-04, P = 41.015764 Days, E = 117.940553 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	4.06	3.73	4.15	5.41	3.22	1.12	1.94	1.52	0.33	-0.09	0	1.00	0.42	0.53





## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.



### Stellar Parameters For KIC 011304344

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7227^{+226}_{-302}$	$4.173^{+0.108}_{-0.201}$	$-0.020^{+0.200}_{-0.350}$	$1.666^{+0.540}_{-0.291}$	$1.505^{+0.221}_{-0.221}$	$0.459^{+0.239}_{-0.236}$
	+3%/-4%	+3%/-5%	+1000%/-1750%	+32%/-17%	+15%/-15%	+52%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011304344-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-210 \pm 52$	$17.02^{+19.20}_{-11.84}$	$1123^{+82}_{-69}$	$3330^{+1799}_{-625}$	$27^{+260}_{-21}$
Alt.	N/A	N/A	N/A	N/A	N/A

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



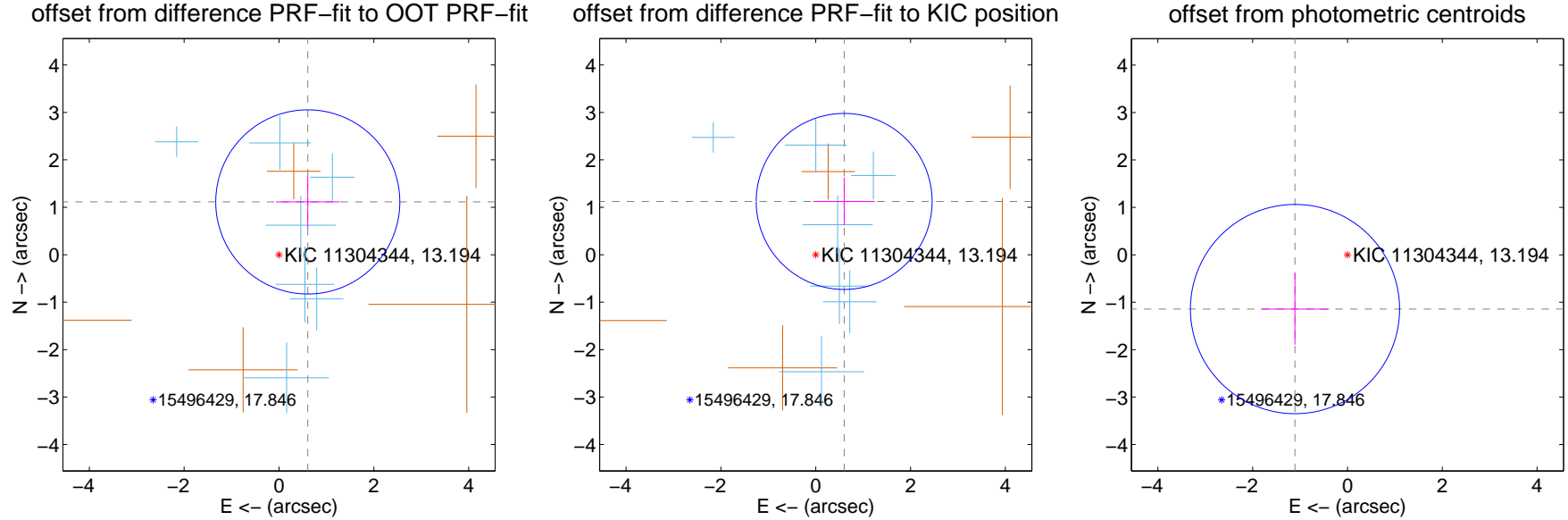
## DV Centroid Data

Supplemental centroid analysis for 011304344-04. Kepler magnitude: 13.19. Transit SNR 10.99

There are 7 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

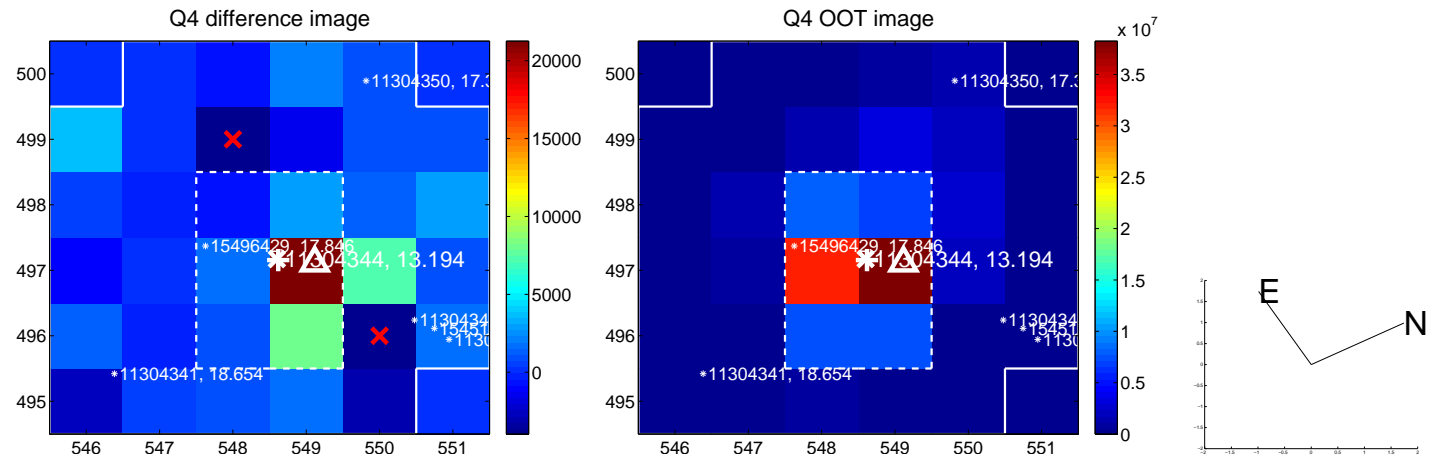
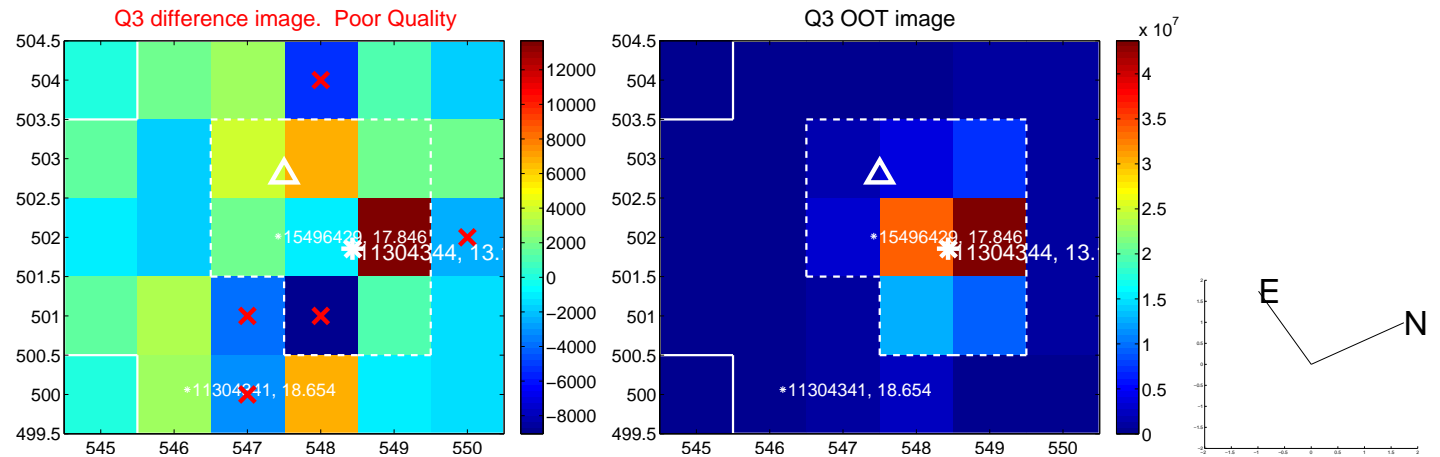
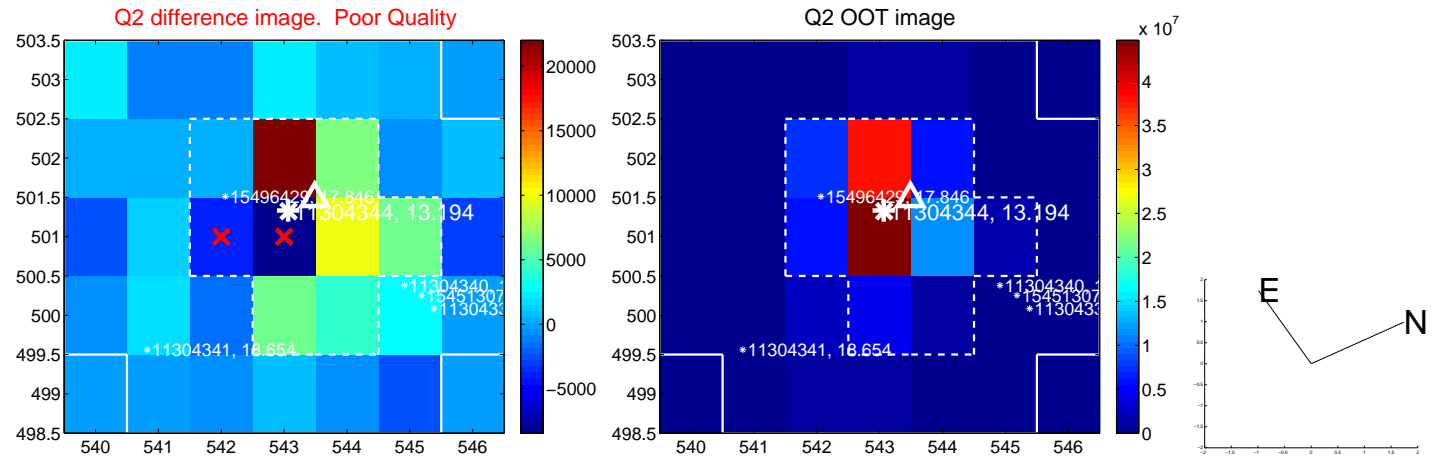
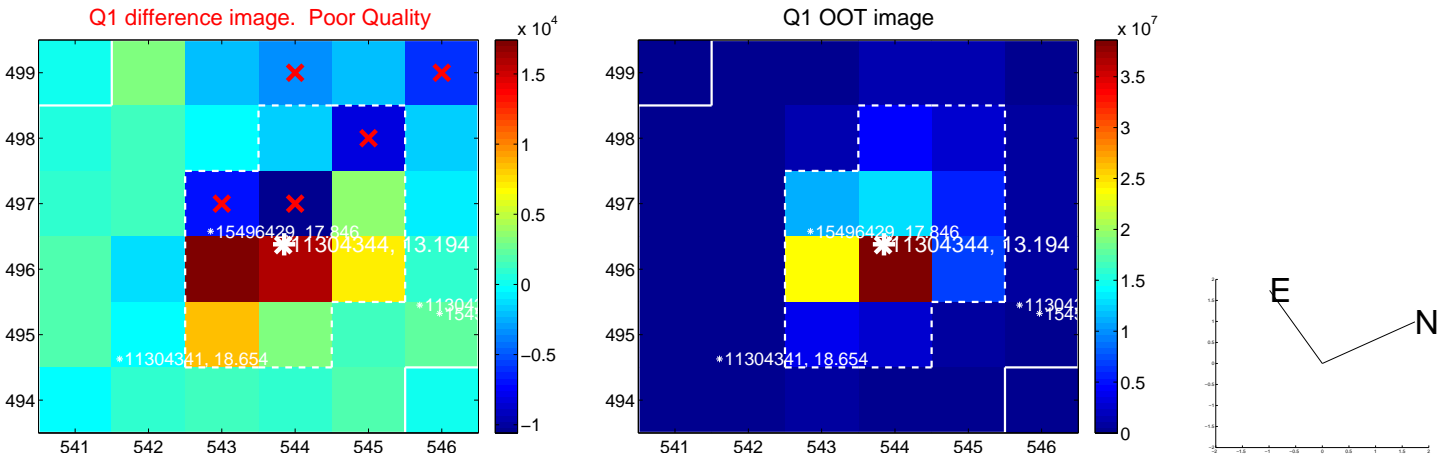
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.268 \pm 0.647$	1.96	$-0.607 \pm 0.673$	$1.113 \pm 0.551$
PRF-fit source offset from KIC position	$1.274 \pm 0.618$	2.06	$-0.600 \pm 0.651$	$1.124 \pm 0.502$
photometric centroid source offset	$1.59 \pm 0.74$	2.16	$1.11 \pm 0.72$	$-1.14 \pm 0.75$



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.

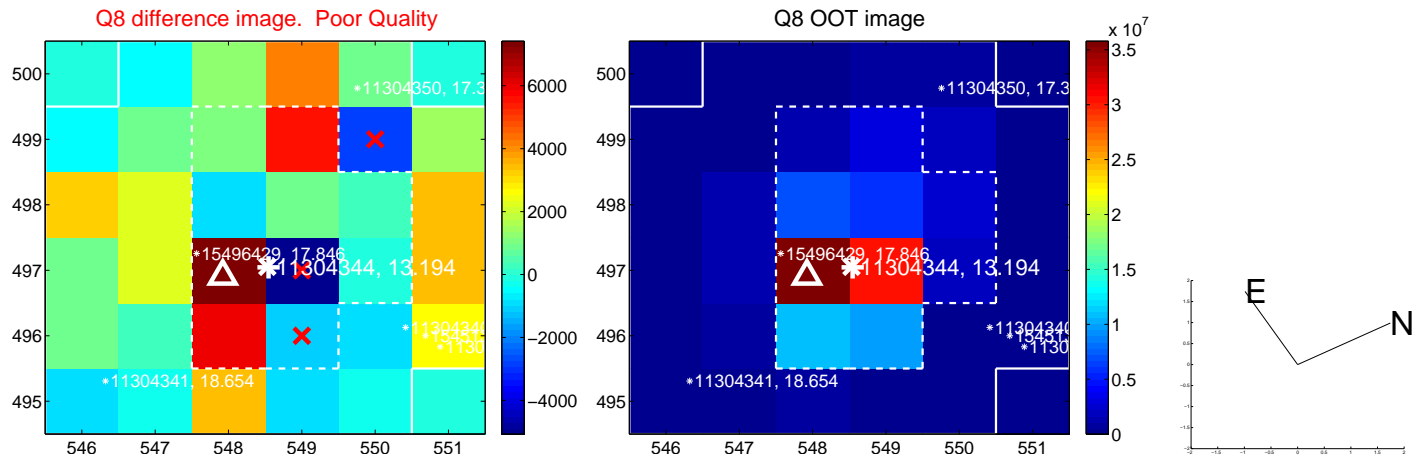
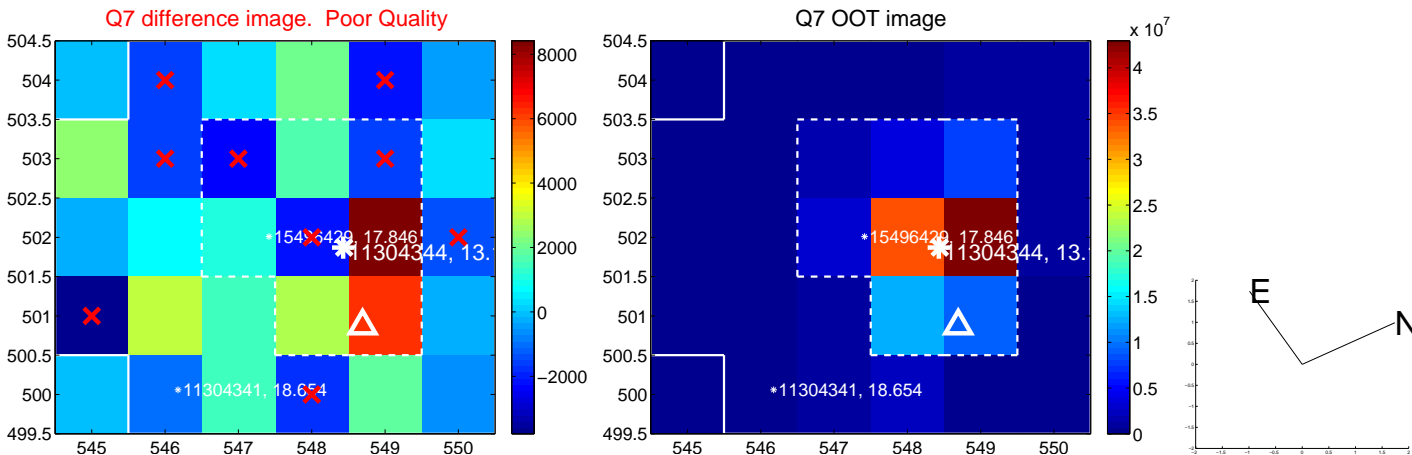
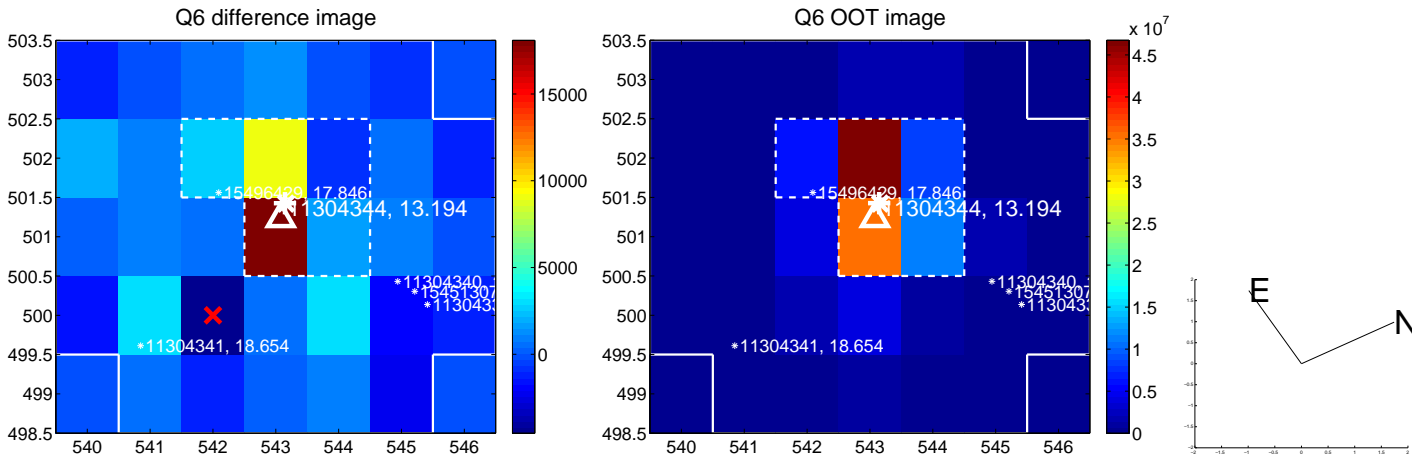
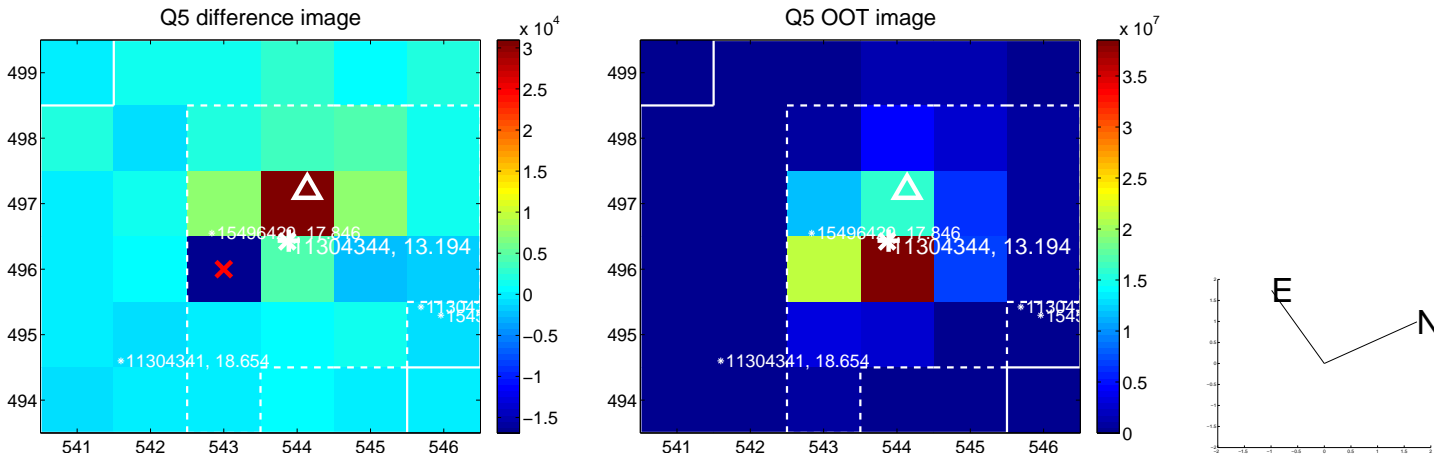


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



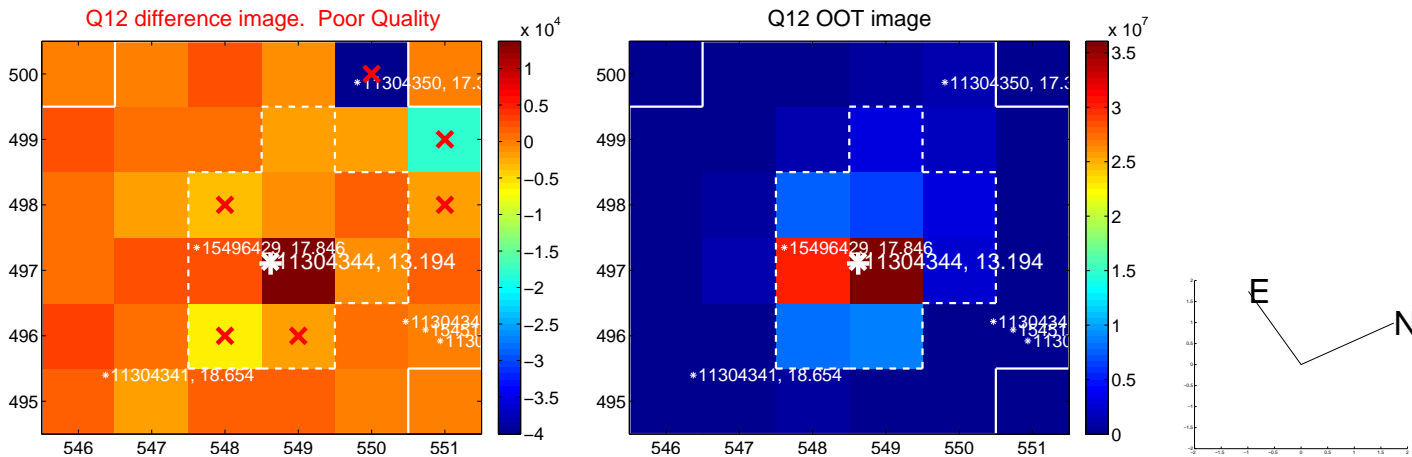
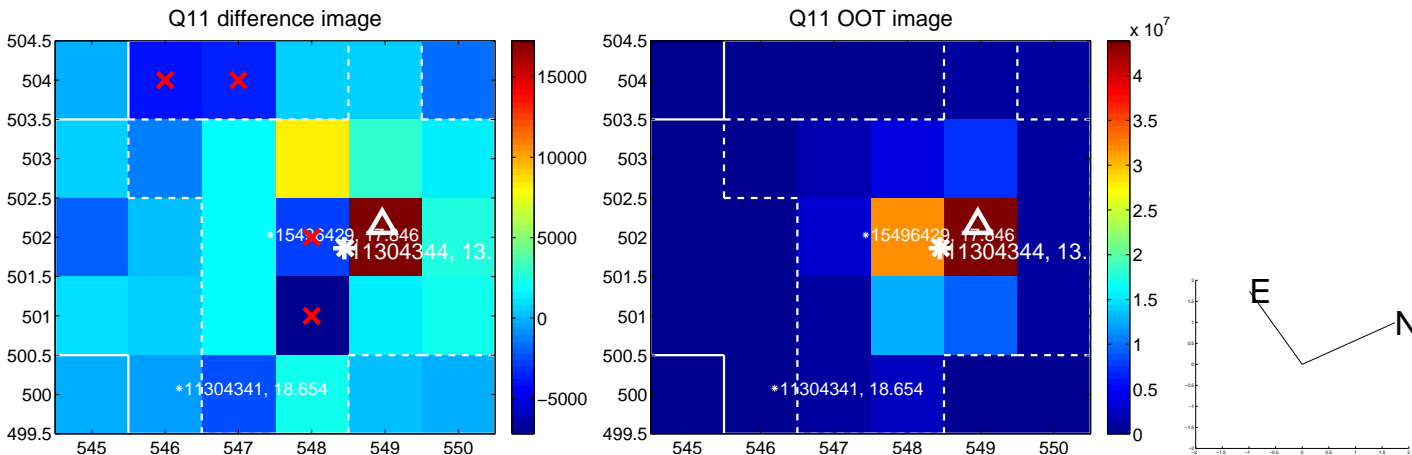
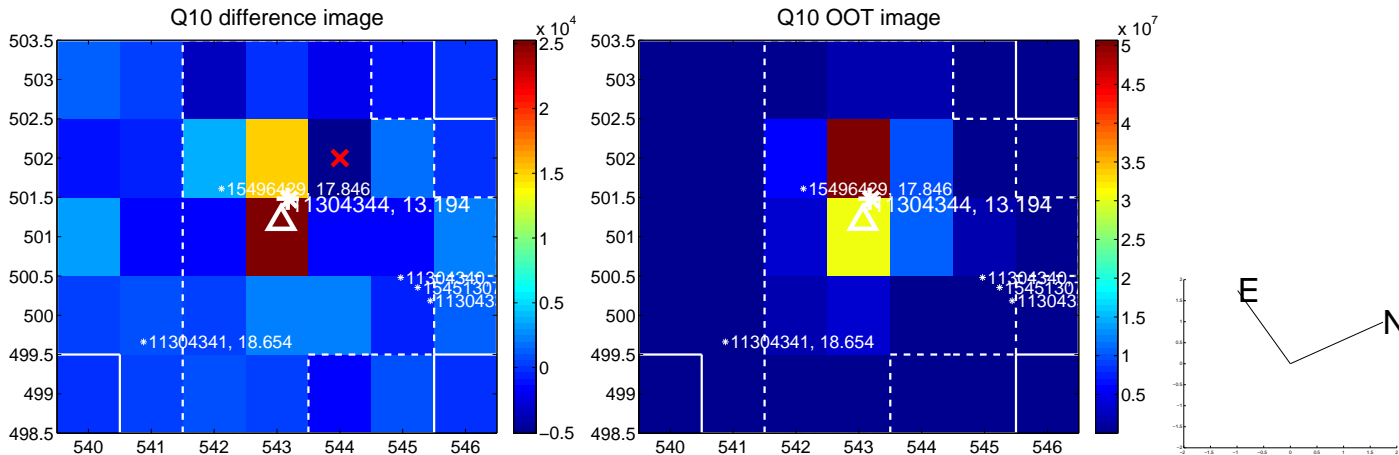
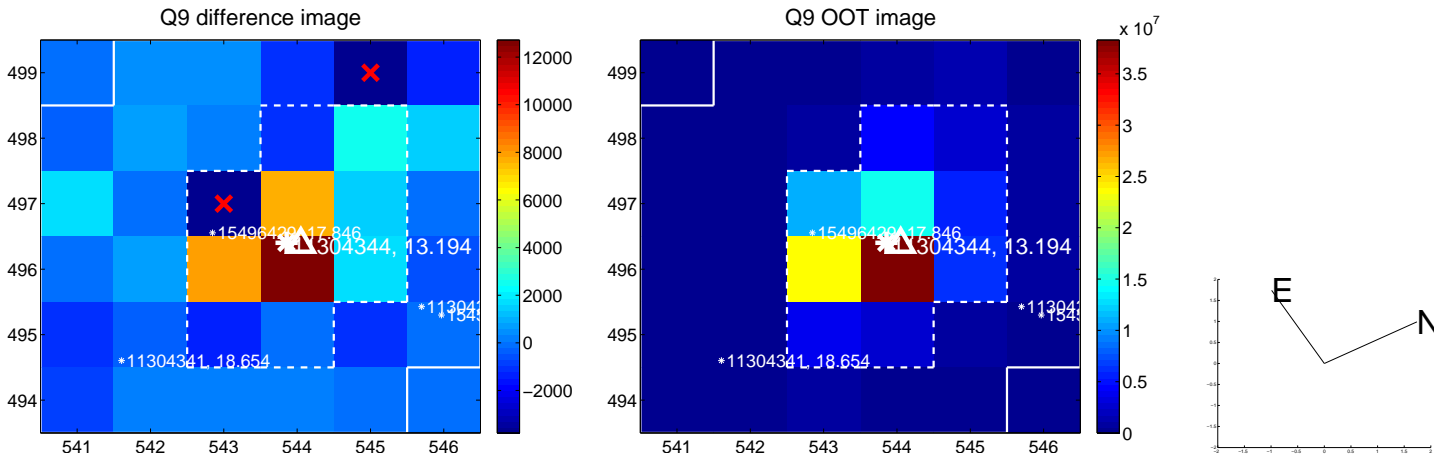


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



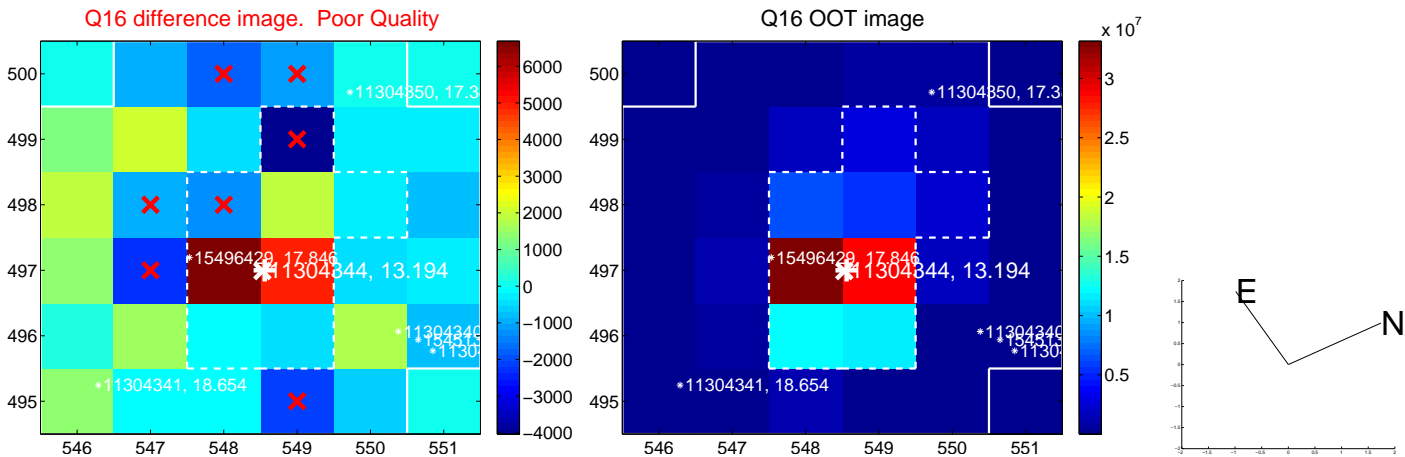
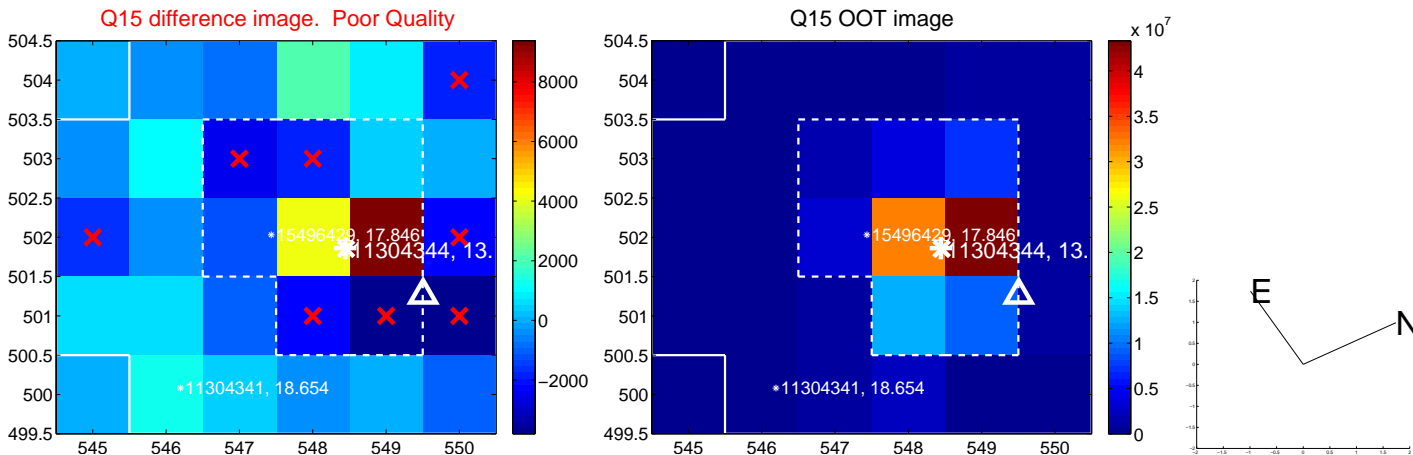
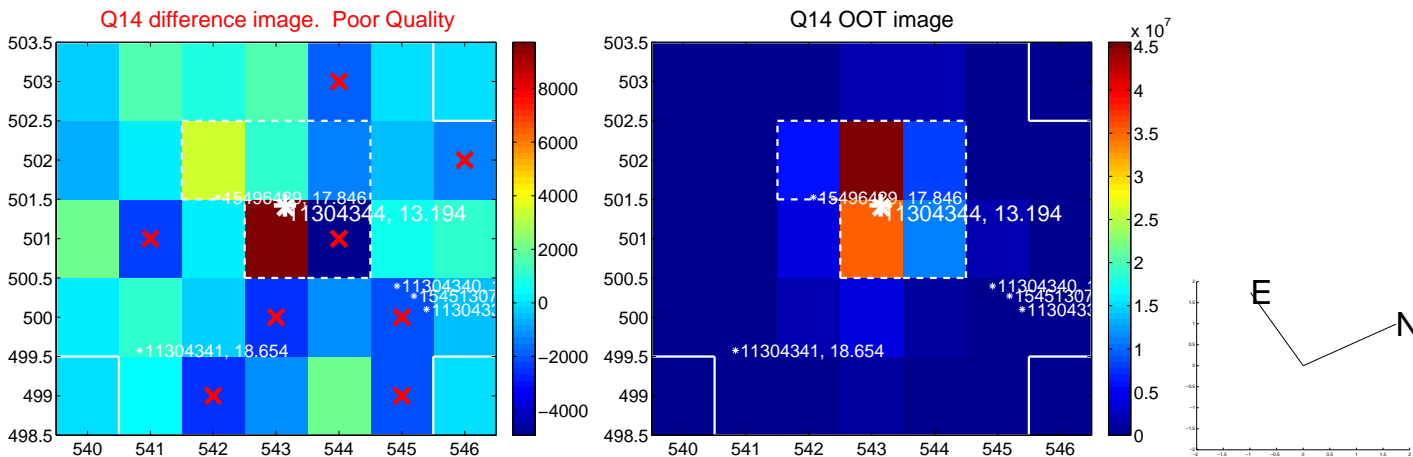
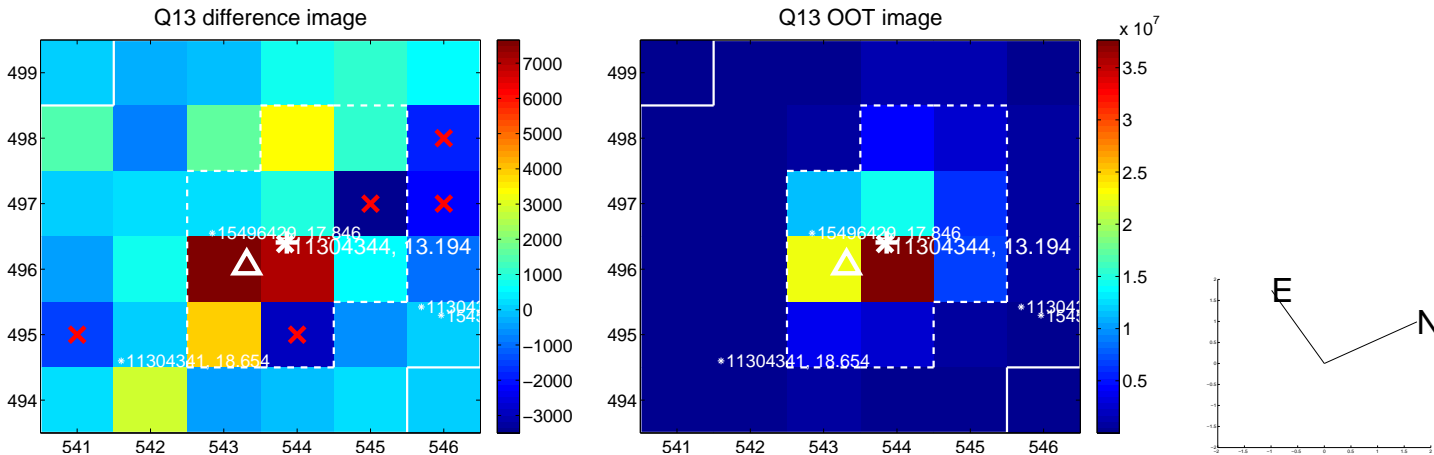


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



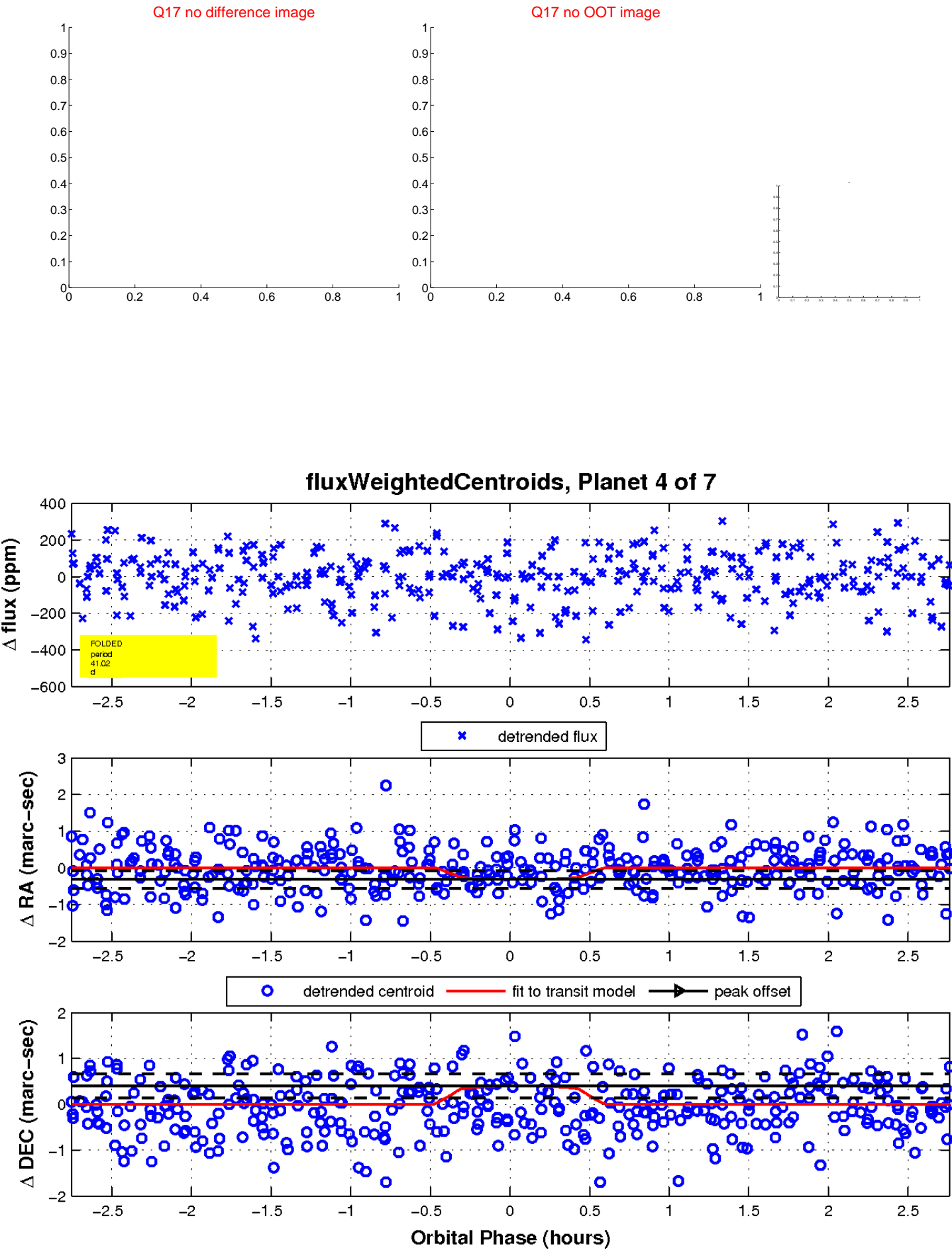


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



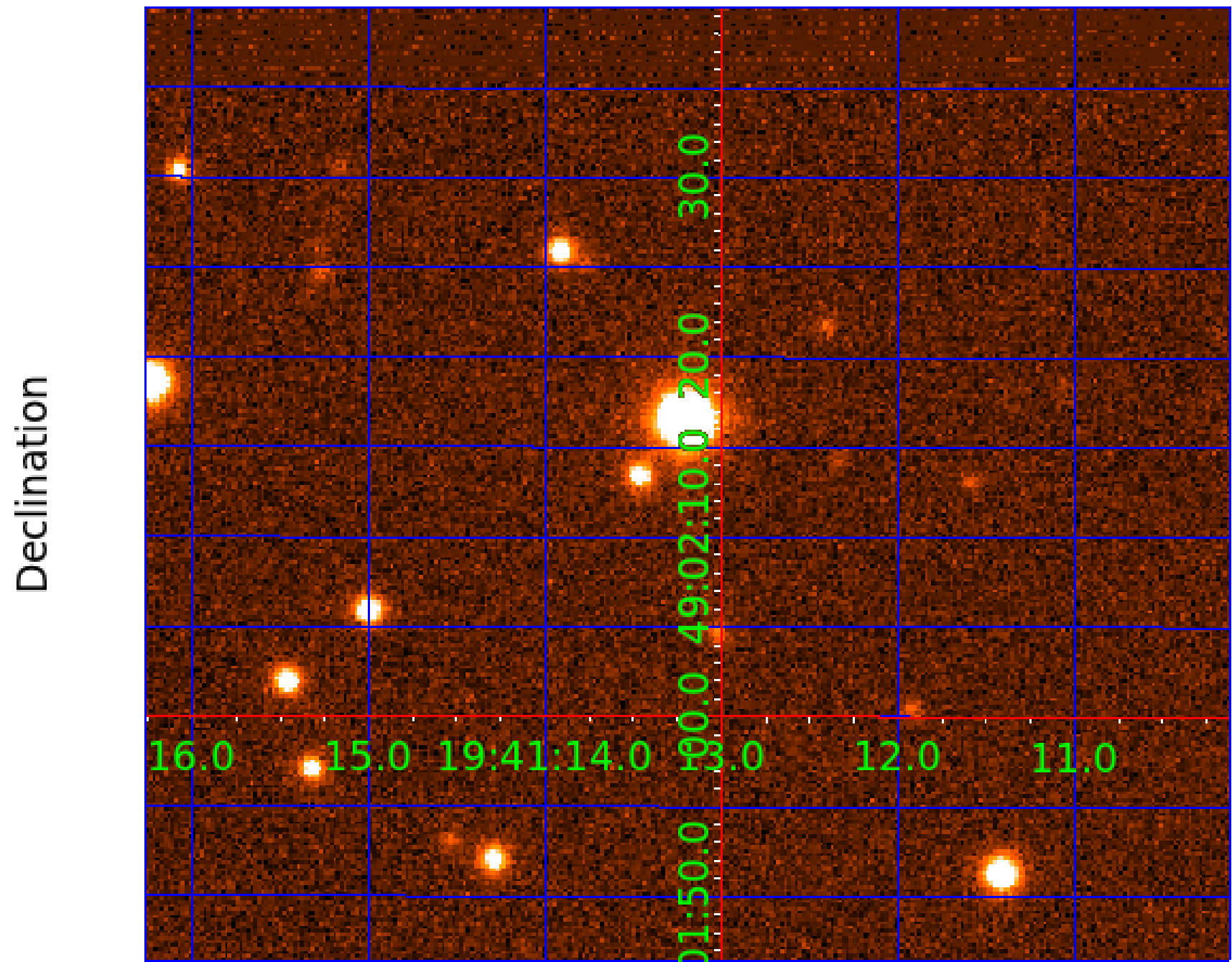


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image





# KIC 011304344

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011304344-01	OBS	No	0.863290	132.226037	0.0	6.125	10.2	0.0	1.67	7227	0.01	16379.51
011304344-02	OBS	No	21.393712	133.479125	212.4	1.842	10.3	12.8	1.67	7227	2.50	226.71
011304344-03	OBS	No	153.104629	225.899800	223.1	6.707	9.6	9.5	1.67	7227	2.92	16.44
011304344-04	OBS	No	41.015764	158.956317	322.2	0.929	11.0	11.0	1.67	7227	3.06	95.19
011304344-05	OBS	No	11.643967	133.955228	46.4	9.518	11.7	7.5	1.67	7227	1.17	510.16
011304344-06	OBS	No	21.884143	148.668846	220.8	2.402	9.3	10.3	1.67	7227	2.87	219.96
011304344-07	OBS	No	44.937165	157.100009	196.5	3.377	9.3	9.5	1.67	7227	2.71	84.28

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011304344-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011304344-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011304344-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—MOD_NONUNIQ_DV—HALO_GHOST
011304344-05	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
011304344-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-07	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

**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.

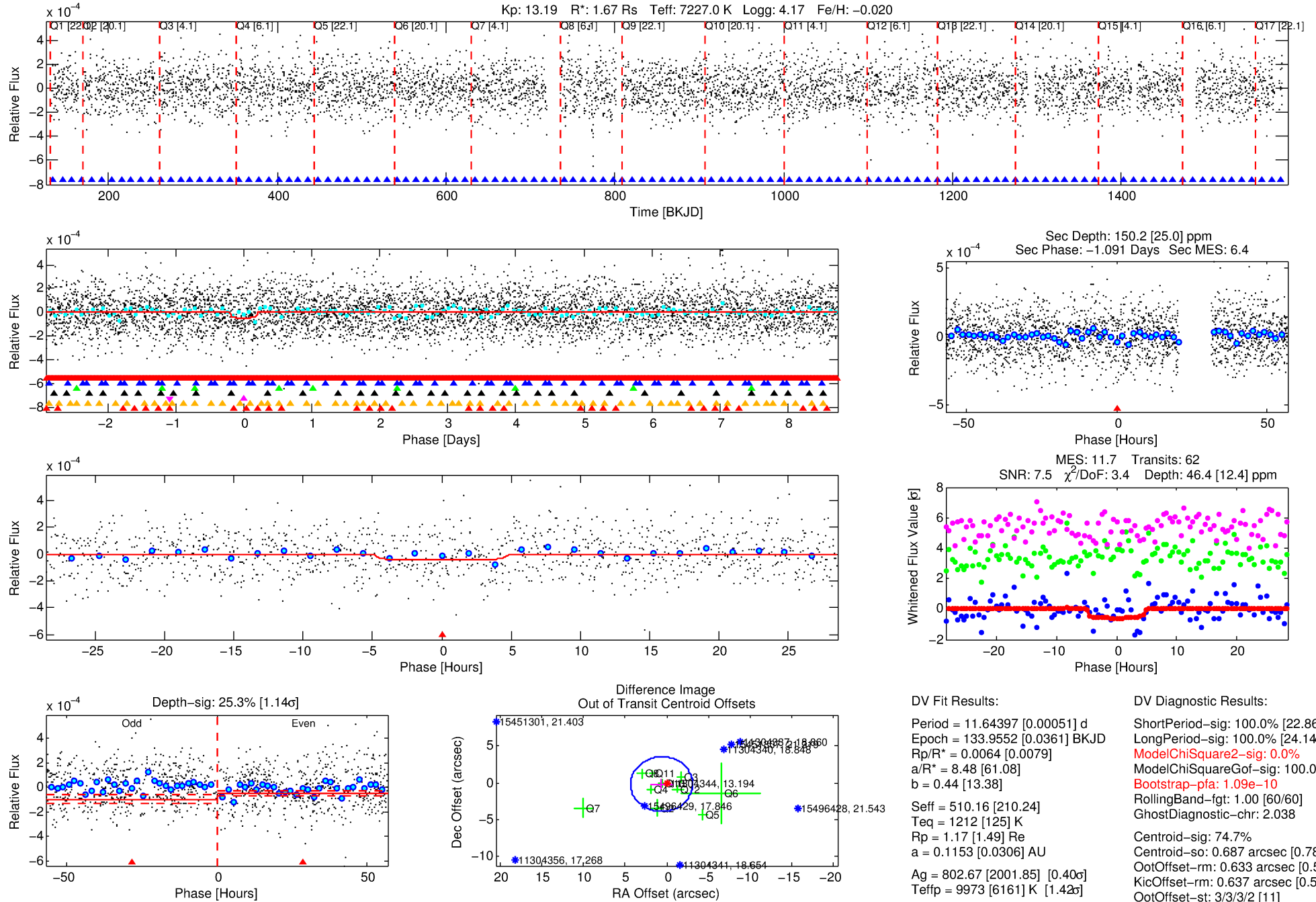
Ephemeris Match Information For 011304344-05

No Significant Match Found



# DV One-Page Summary

KIC: 11304344 Candidate: 5 of 7 Period: 11.644 d



## DV Fit Results:

Period = 11.64397 [0.00051] d  
Epoch = 133.9552 [0.0361] BKJD  
Rp/R\* = 0.0064 [0.0079]  
a/R\* = 8.48 [61.08]  
b = 0.44 [13.38]  
Seff = 510.16 [210.24]  
Teq = 1212 [125] K  
Rp = 1.17 [1.49] Re  
a = 0.1153 [0.0306] AU  
Ag = 802.67 [2001.85] [0.40 $\sigma$ ]  
Teffp = 9973 [6161] K [1.42 $\sigma$ ]

## DV Diagnostic Results:

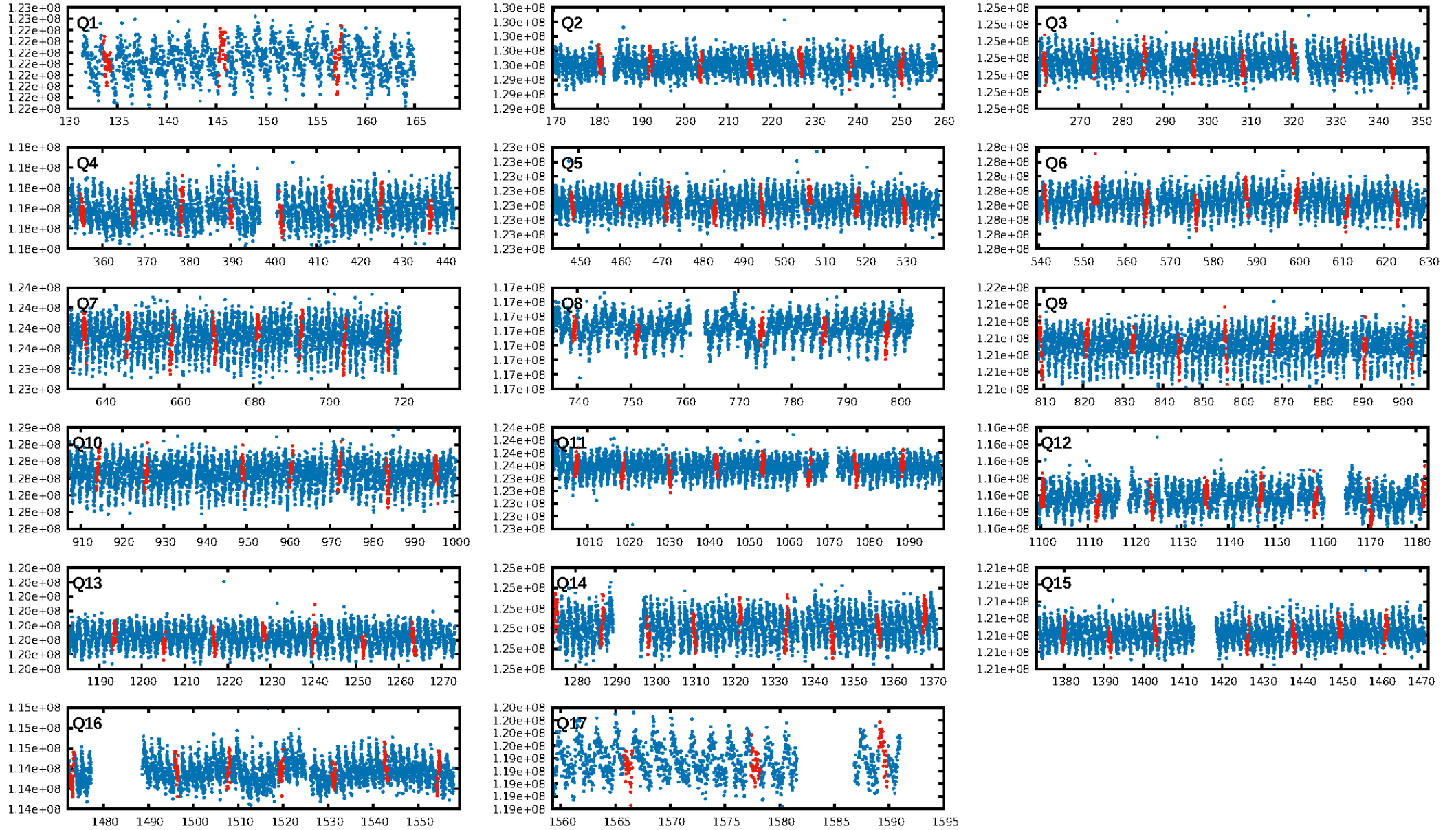
ShortPeriod-sig: 100.0% [22.86 $\sigma$ ]  
LongPeriod-sig: 100.0% [24.14 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.09e-10  
RollingBand-fgt: 1.00 [60/60]  
GhostDiagnostic-chr: 2.038  
Centroid-sig: 74.7%  
Centroid-so: 0.687 arcsec [0.78 $\sigma$ ]  
OotOffset-rm: 0.633 arcsec [0.51 $\sigma$ ]  
OotOffset-st: 3/3/3/2 [11]  
KicOffset-rm: 0.637 arcsec [0.55 $\sigma$ ]  
KicOffset-st: 3/3/3/2 [11]  
DiffImageQuality-fgm: 0.36 [4/11]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:26:36 Z

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

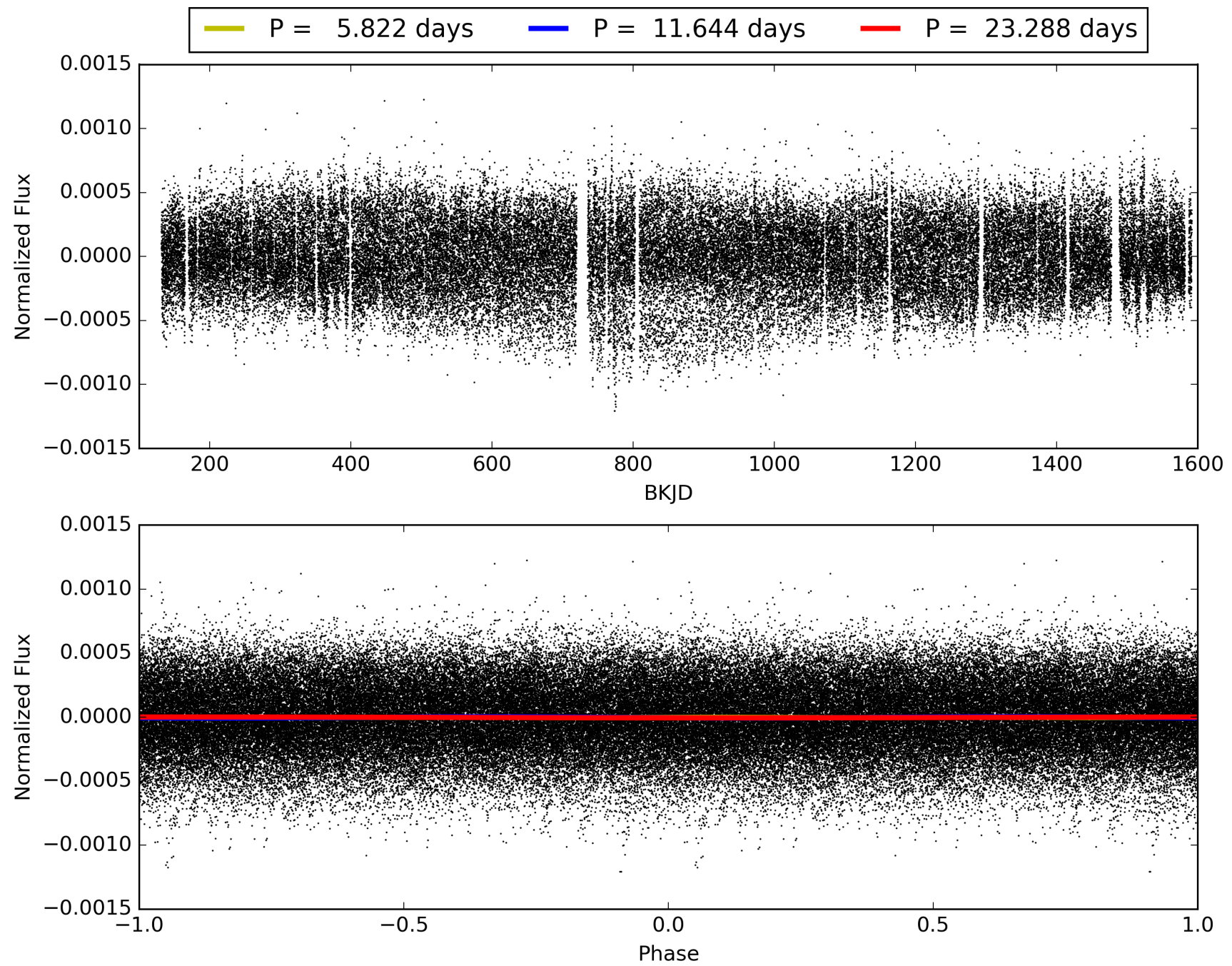


# TCE 011304344-05, PDC Light Curves





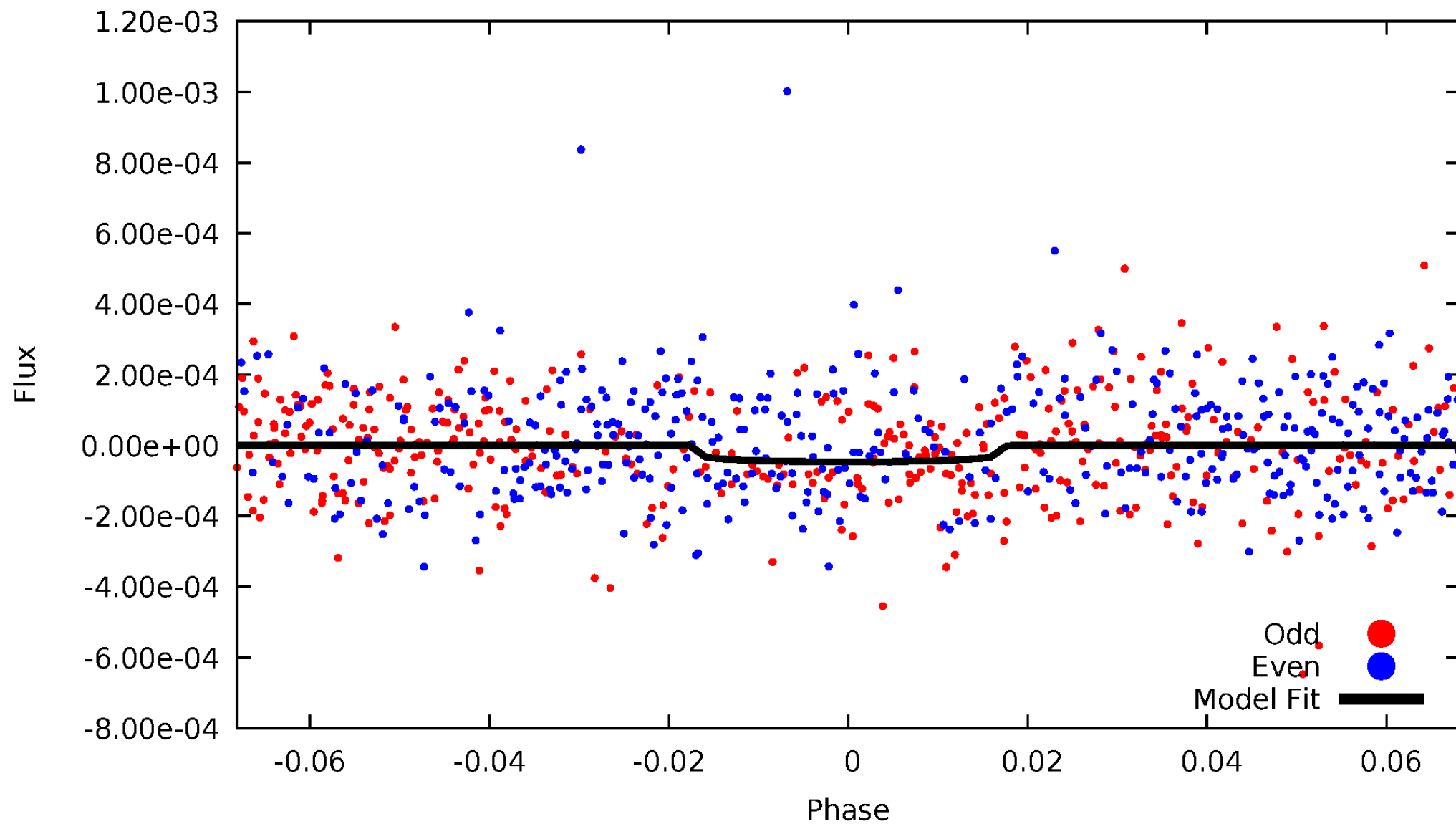
TCE 011304344-05





# DV Odd/Even

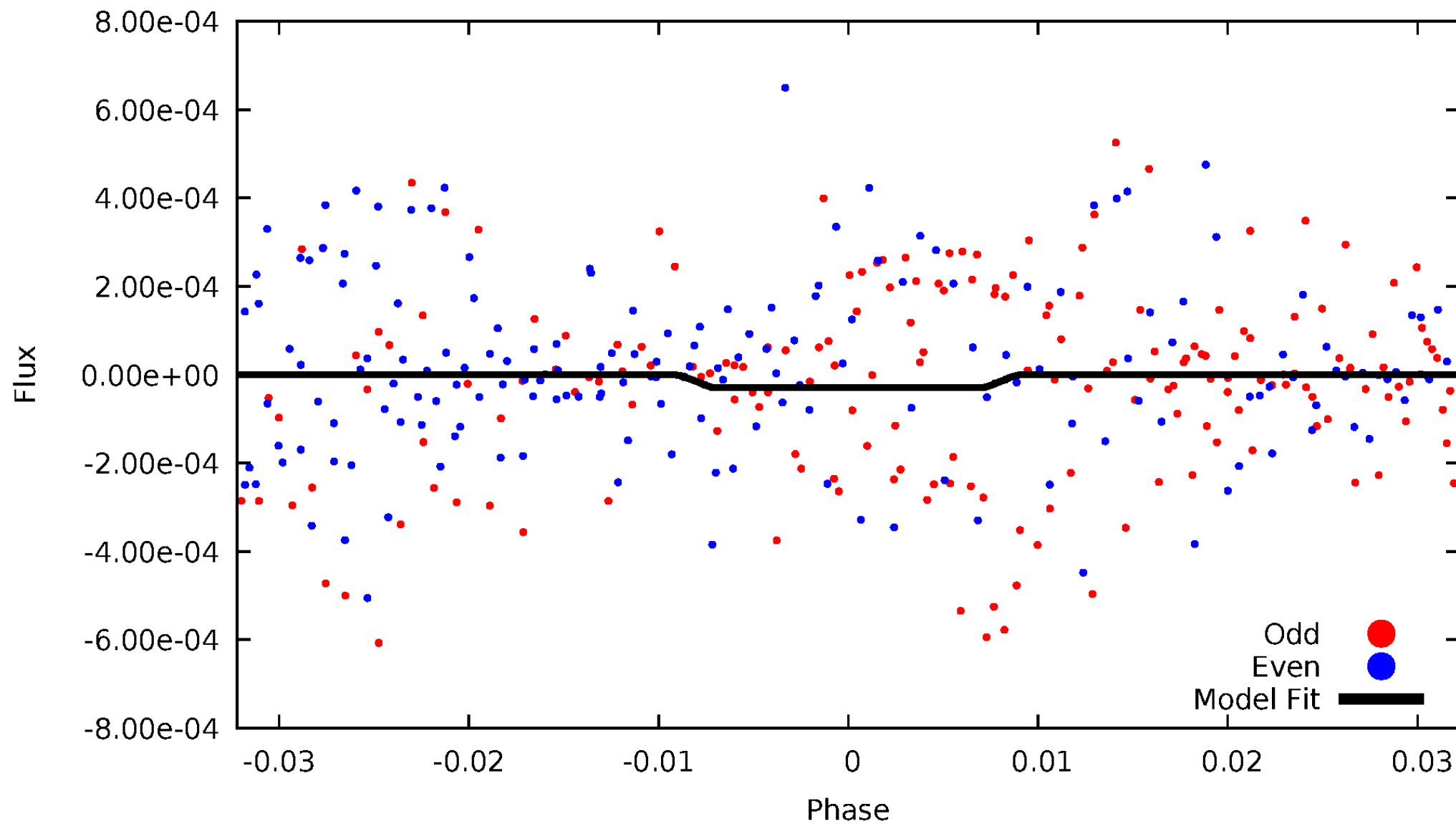
TCE 011304344-05





# ALT Odd/Even

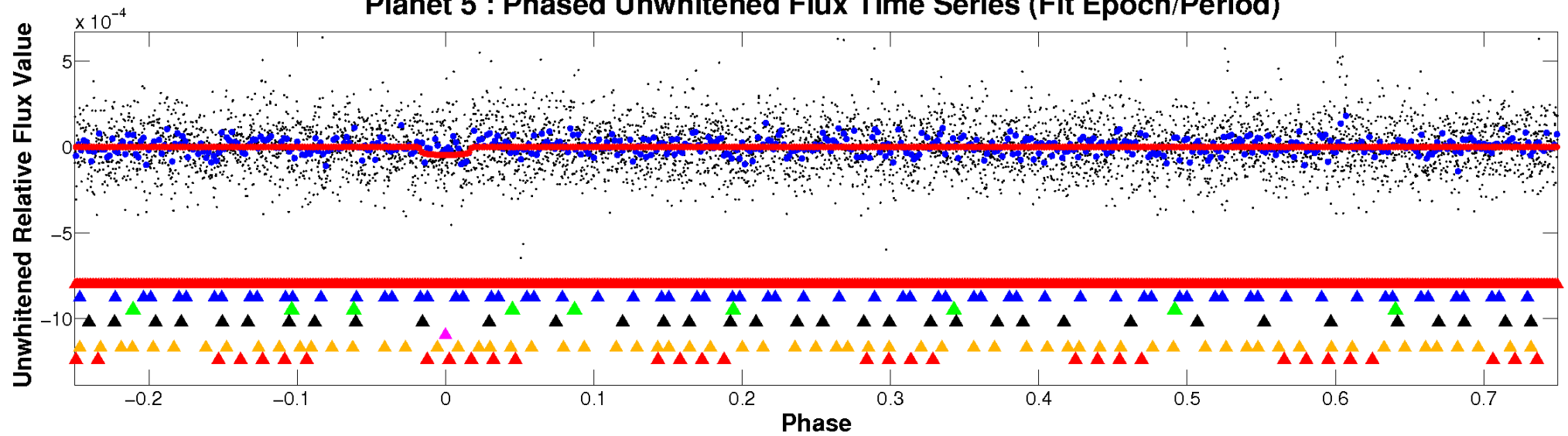
TCE 011304344-05



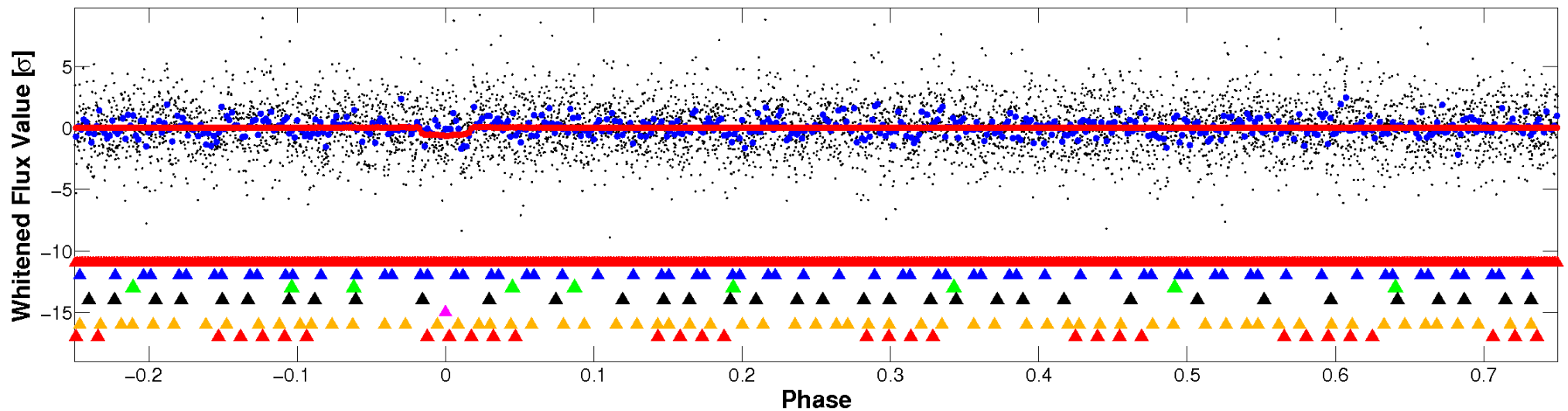


# Non-Whitened Vs. Whitened Light Curve

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



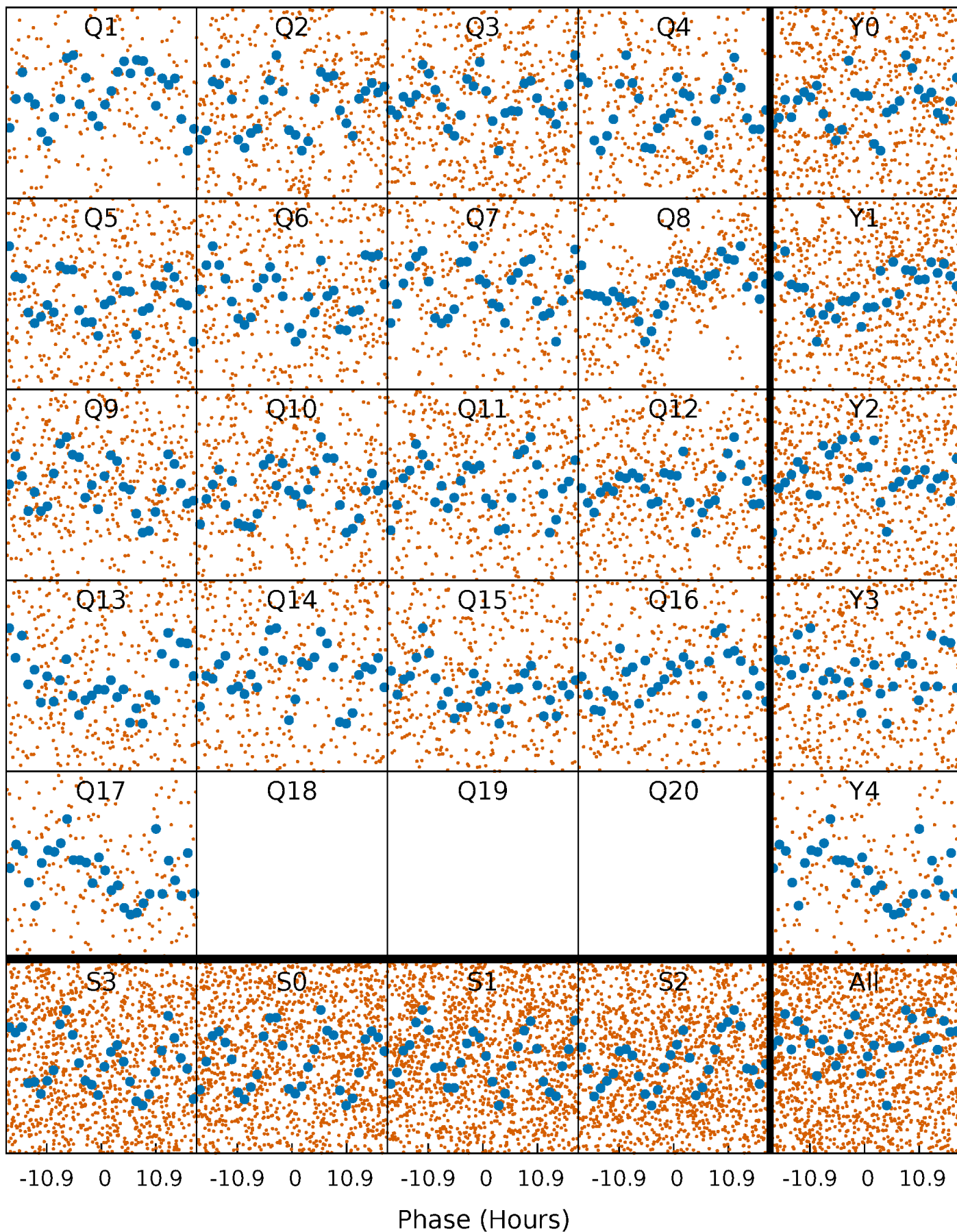
## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

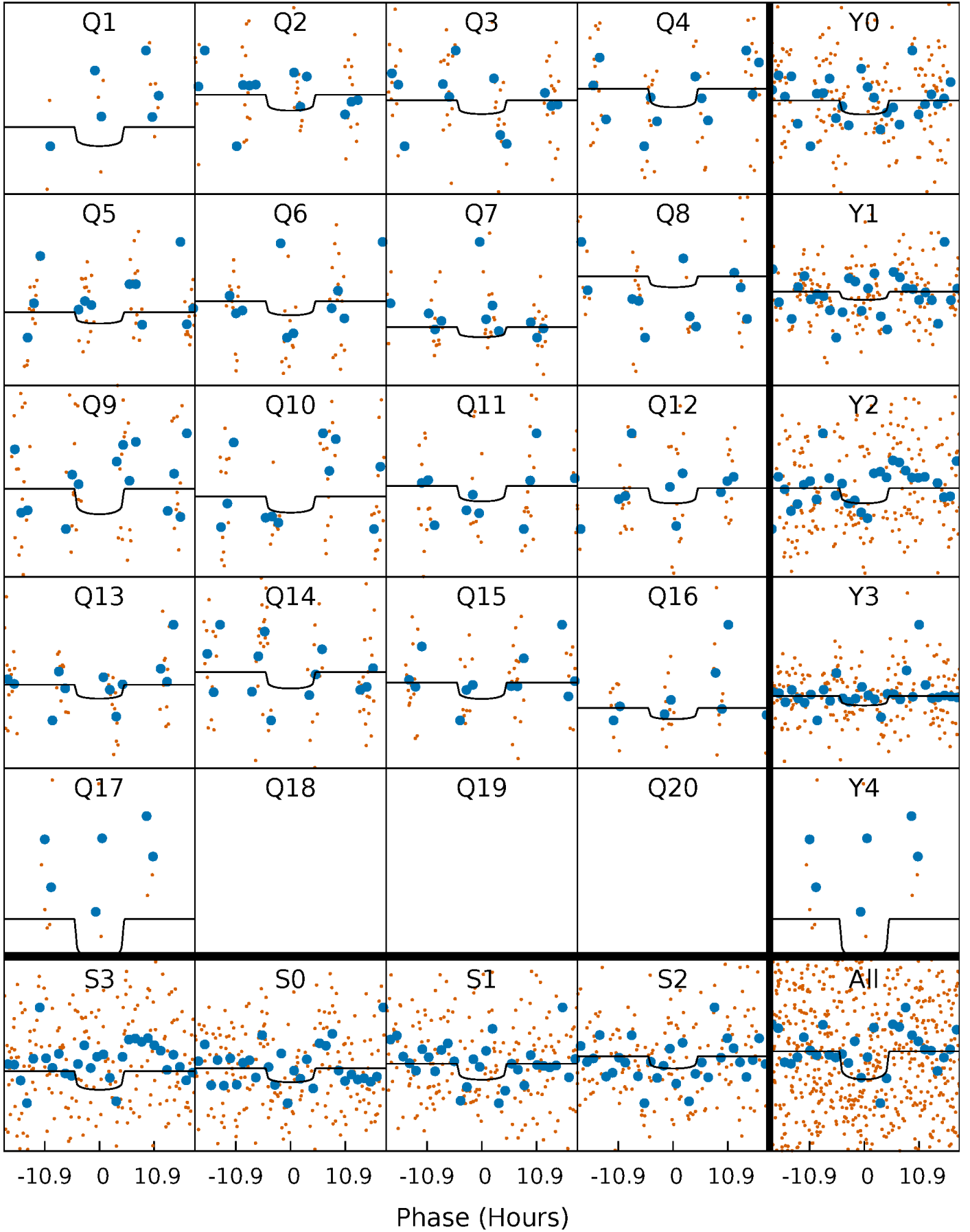
TCE 011304344-05     $P = 11.643967$  Days     $T_0 = 133.955229$  (BKJD)





# DV Quarter-Phased Transit Curves

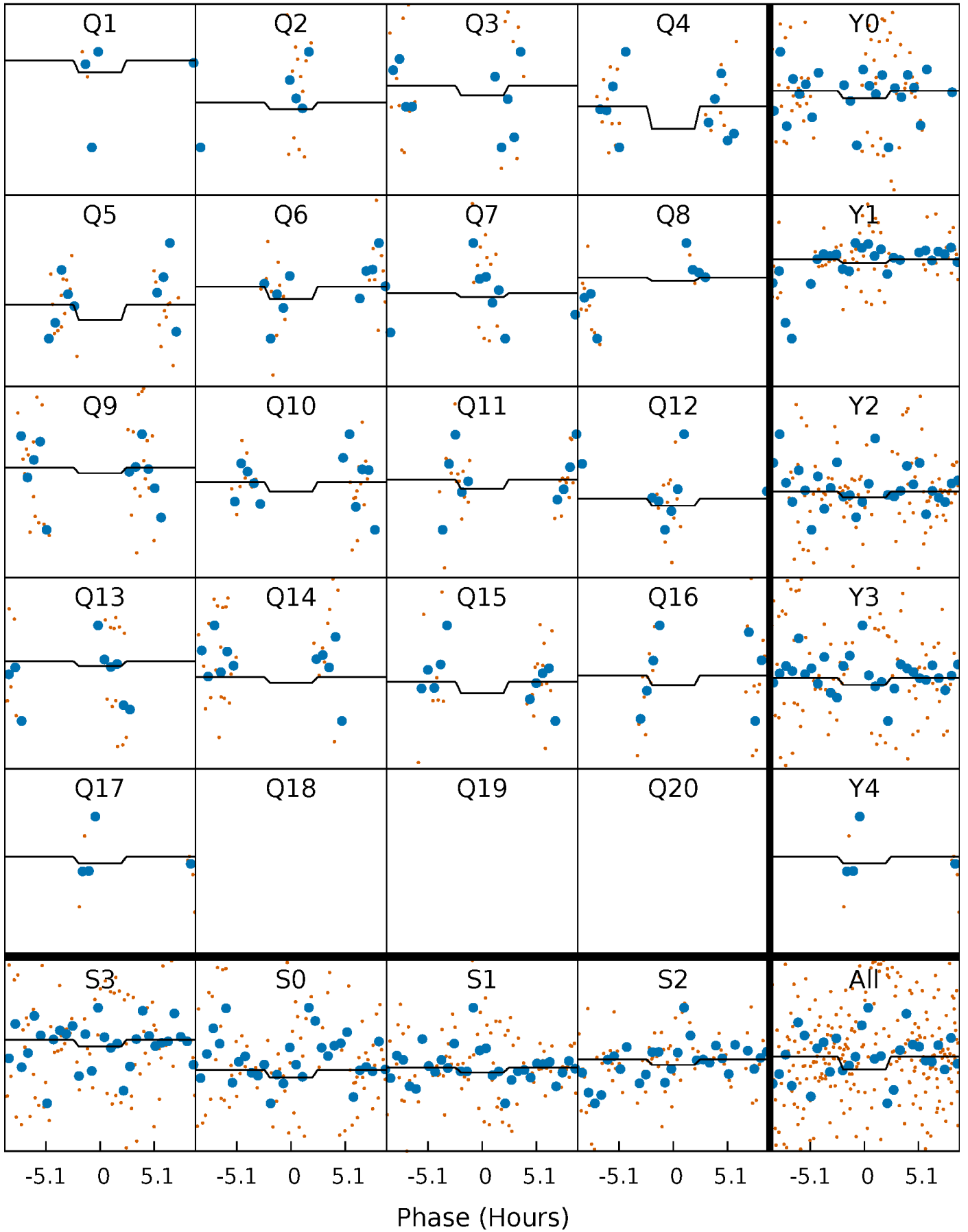
TCE 011304344-05   P= 11.643967 Days    $T_0=133.955229$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011304344-05     $P = 11.644073$  Days     $T_0 = 133.996317$  (BKJD)

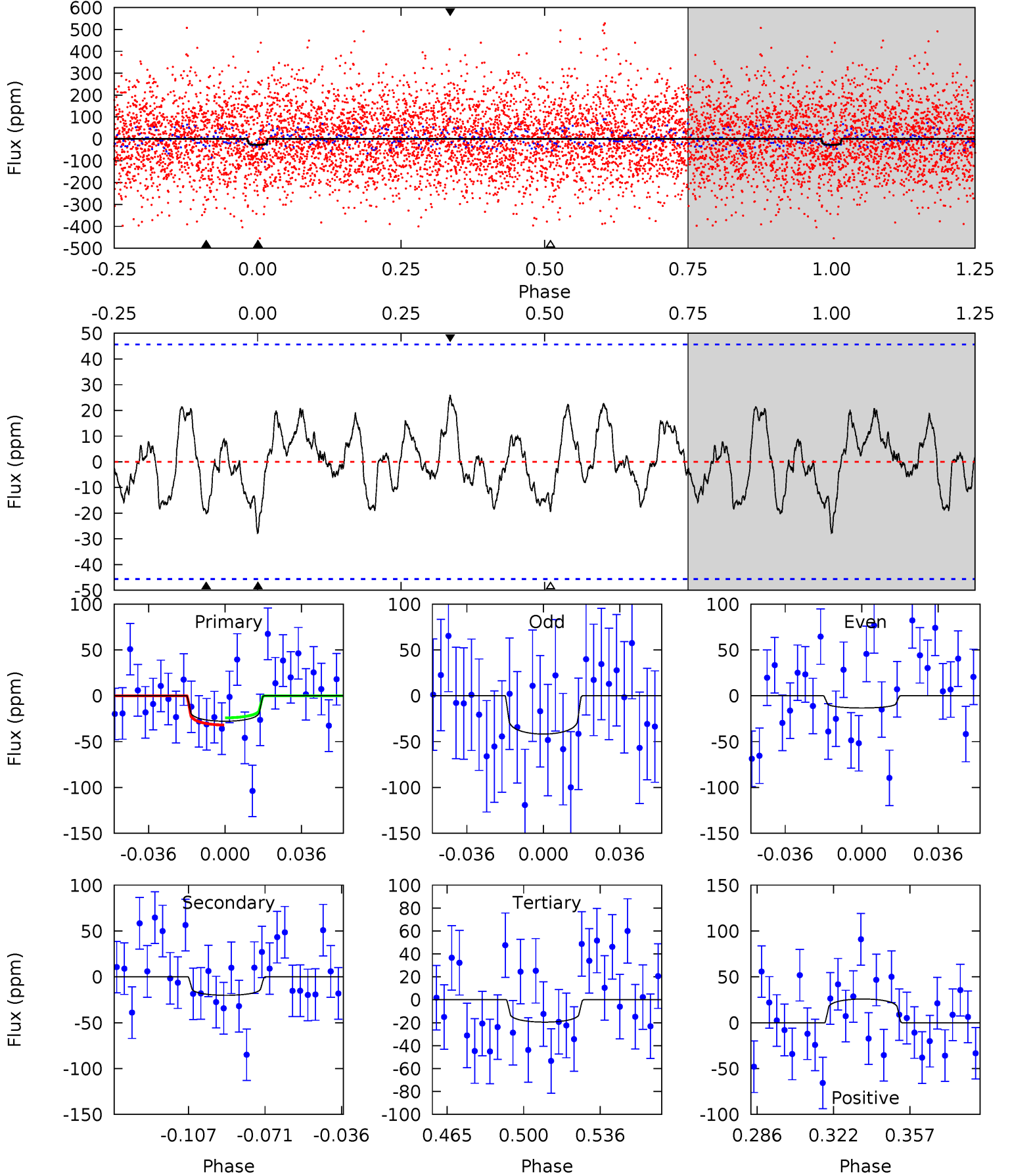




# DV Model-Shift Uniqueness Test

011304344-05, P = 11.643967 Days, E = 122.311262 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
2.91	2.11	2.04	2.70	4.78	2.10	1.06	0.87	0.21	0.06	-0.60	1.48	0.55	0.48	0.41

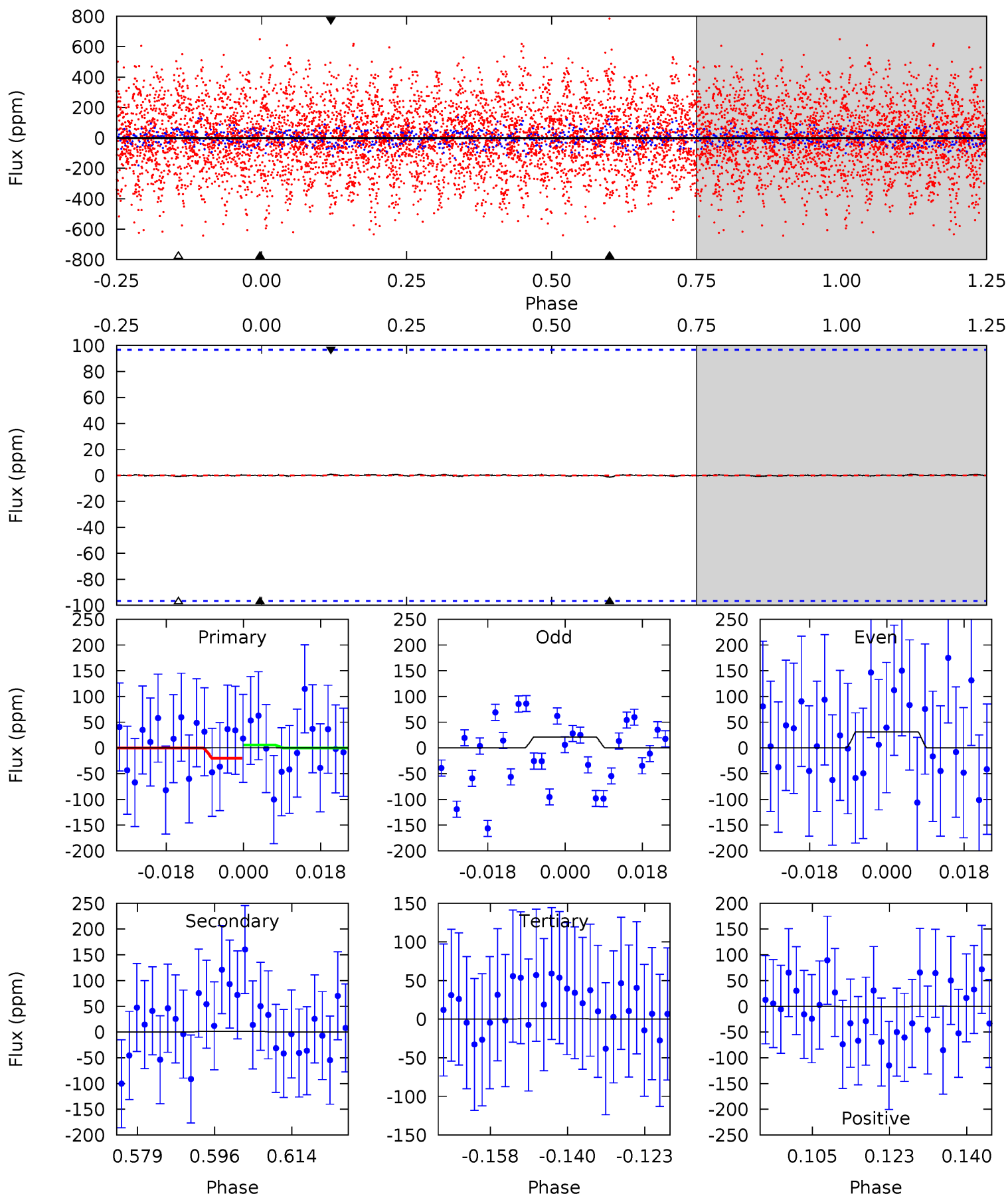




# Alt Model-Shift Uniqueness Test

011304344-05, P = 11.644073 Days, E = 122.352244 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.02	0.07	0.04	0.05	4.92	2.38	0.01	-0.02	-0.03	0.03	0.02	0.25	0.43	0.41	0.36





### Stellar Parameters For KIC 011304344

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7227^{+226}_{-302}$	$4.173^{+0.108}_{-0.201}$	$-0.020^{+0.200}_{-0.350}$	$1.666^{+0.540}_{-0.291}$	$1.505^{+0.221}_{-0.221}$	$0.459^{+0.239}_{-0.236}$
	+3%/-4%	+3%/-5%	+1000%/-1750%	+32%/-17%	+15%/-15%	+52%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011304344-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-20 \pm 10$	$1.54^{+1.36}_{-1.02}$	$1708^{+139}_{-108}$	$5161^{+4281}_{-1253}$	$55^{+460}_{-43}$
Alt.	$-1 \pm 20$	$1.49^{+1.25}_{-1.02}$	$1709^{+140}_{-103}$	$2972^{+3204}_{-8936}$	$2.398^{+116.571}_{-109.590}$

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



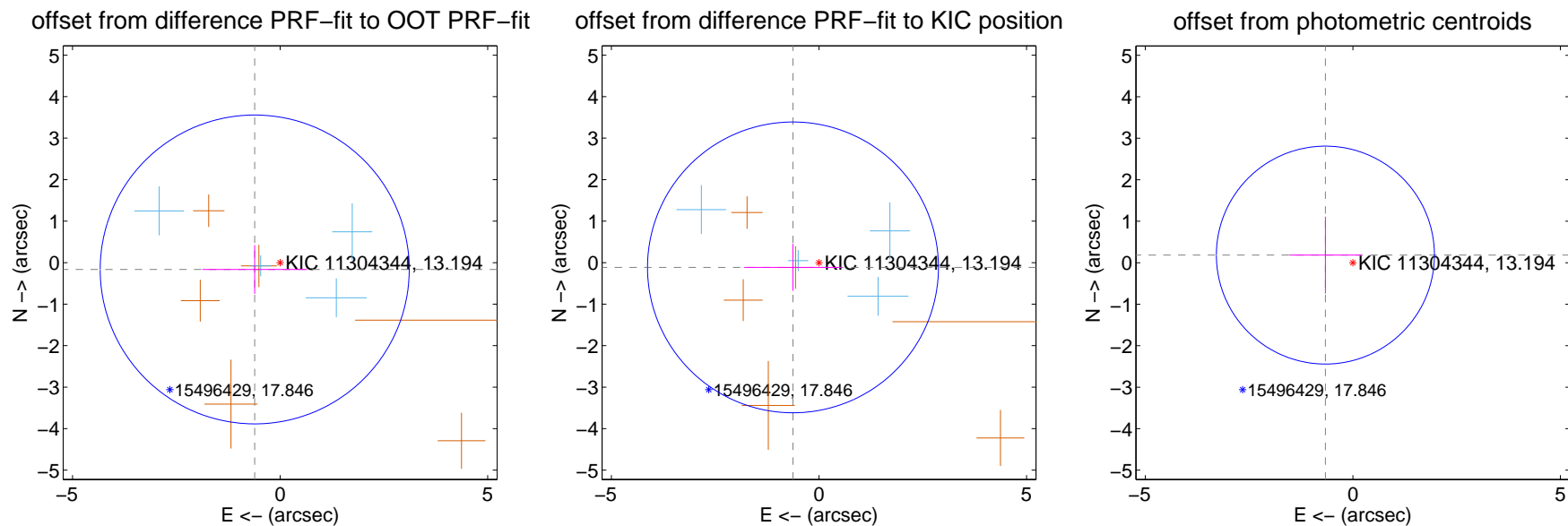
## DV Centroid Data

Supplemental centroid analysis for 011304344-05. Kepler magnitude: 13.19. Transit SNR 7.52

There are 4 quarters with good PRF difference image offsets

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

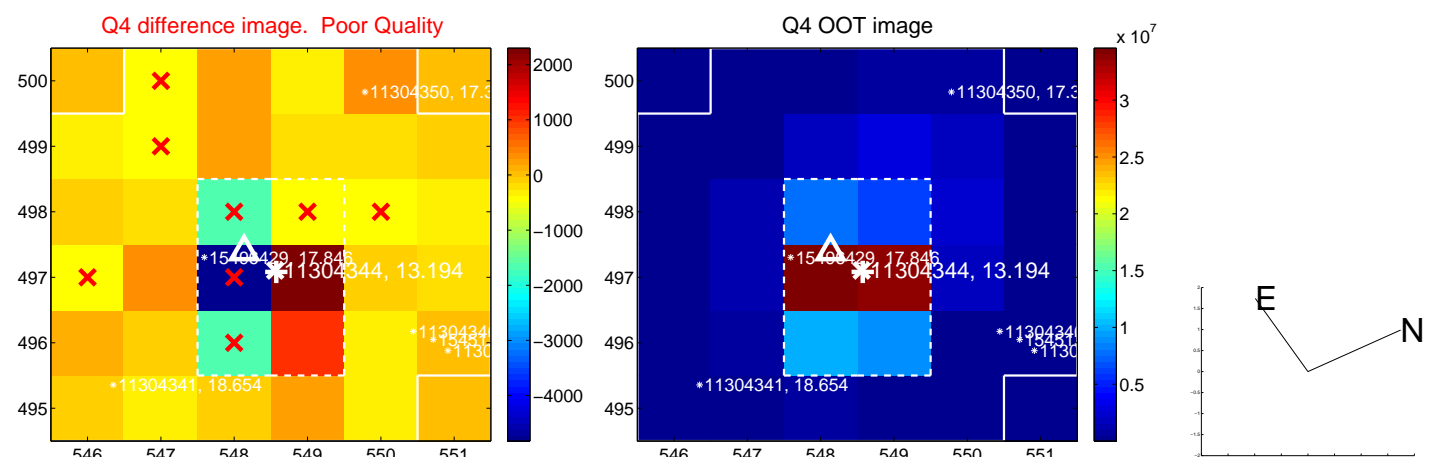
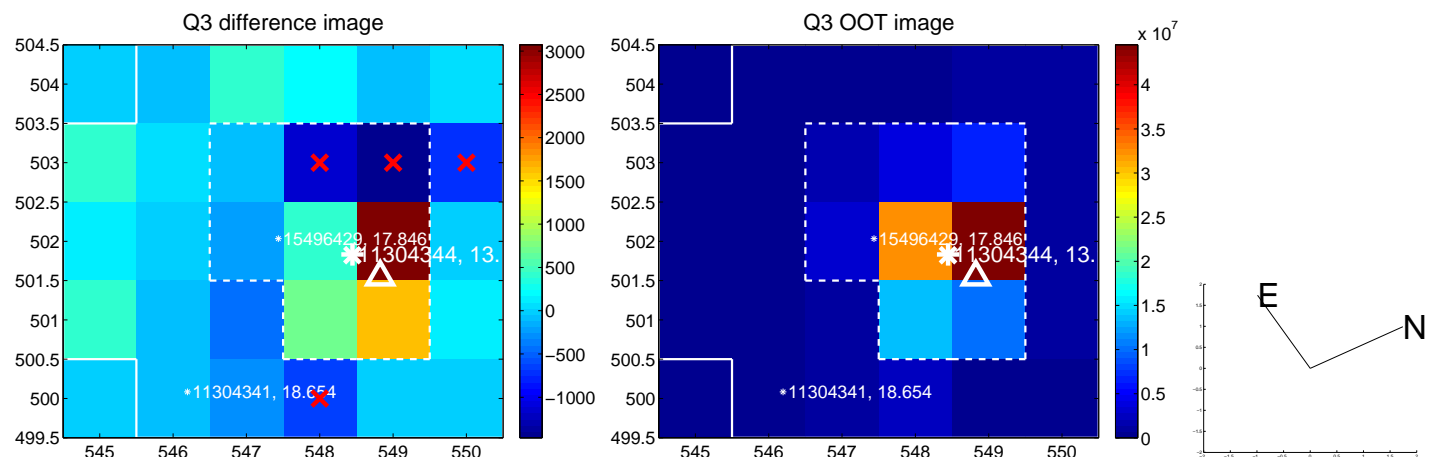
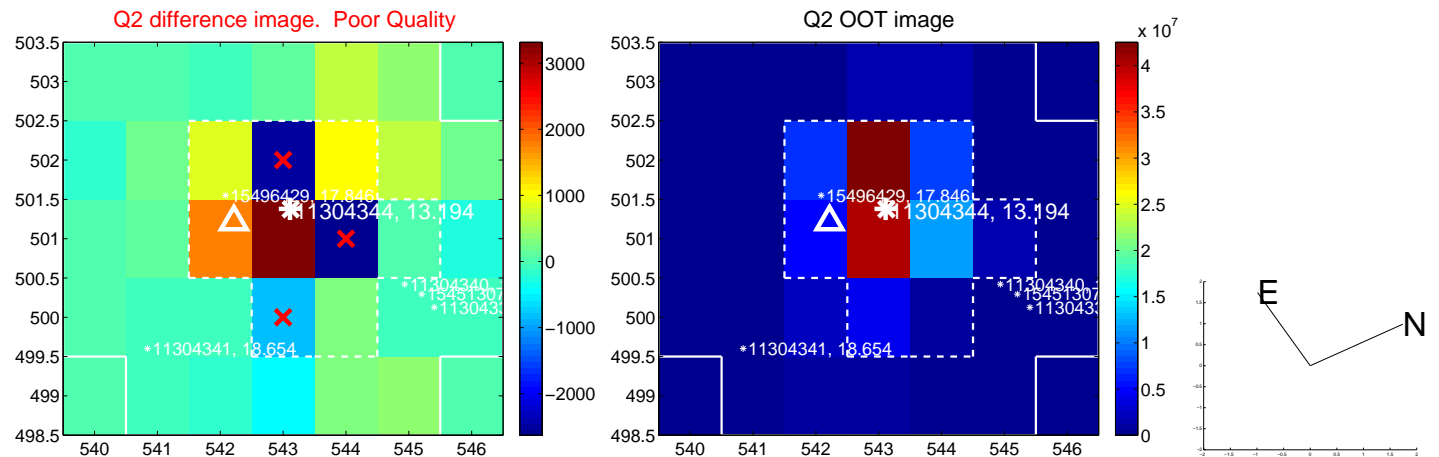
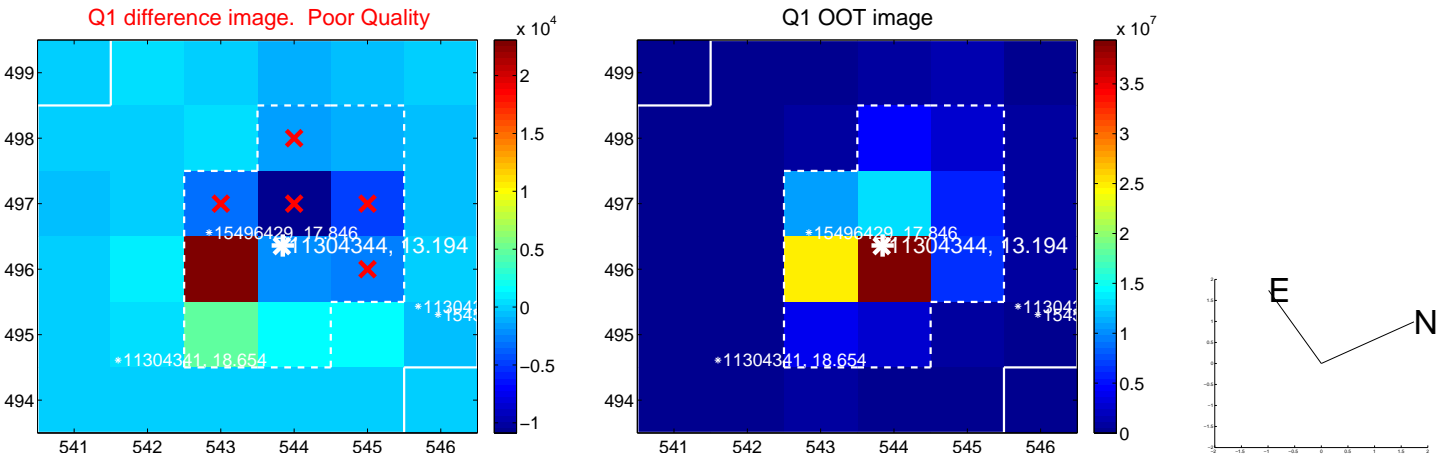
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.633 \pm 1.240$	0.51	$0.612 \pm 1.262$	$-0.164 \pm 0.589$
PRF-fit source offset from KIC position	$0.637 \pm 1.168$	0.55	$0.626 \pm 1.176$	$-0.114 \pm 0.564$
photometric centroid source offset	$0.69 \pm 0.88$	0.78	$0.66 \pm 0.87$	$0.18 \pm 0.93$



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.

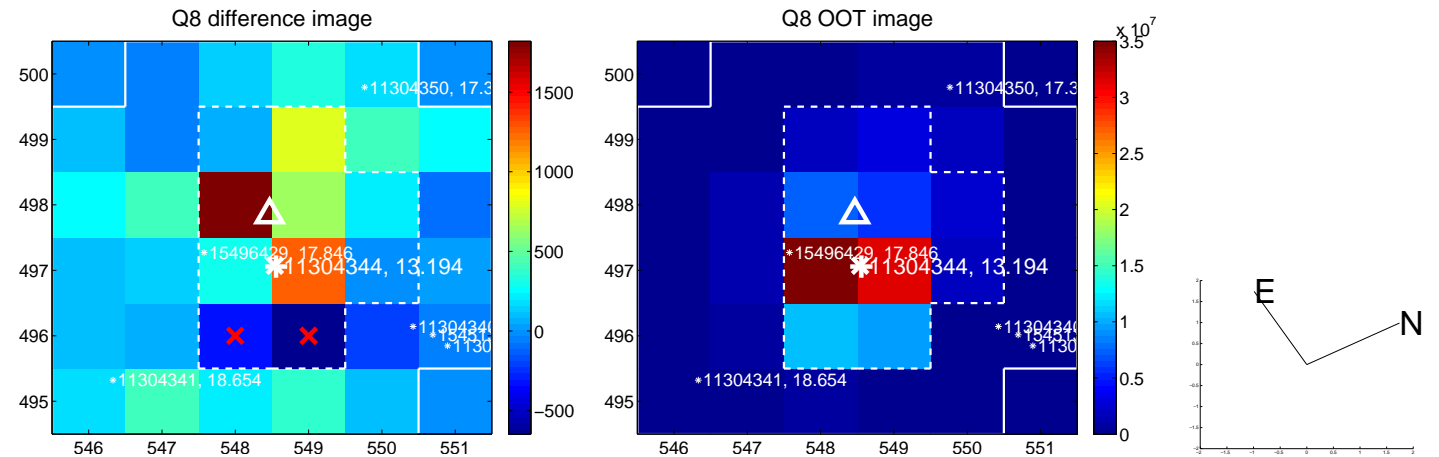
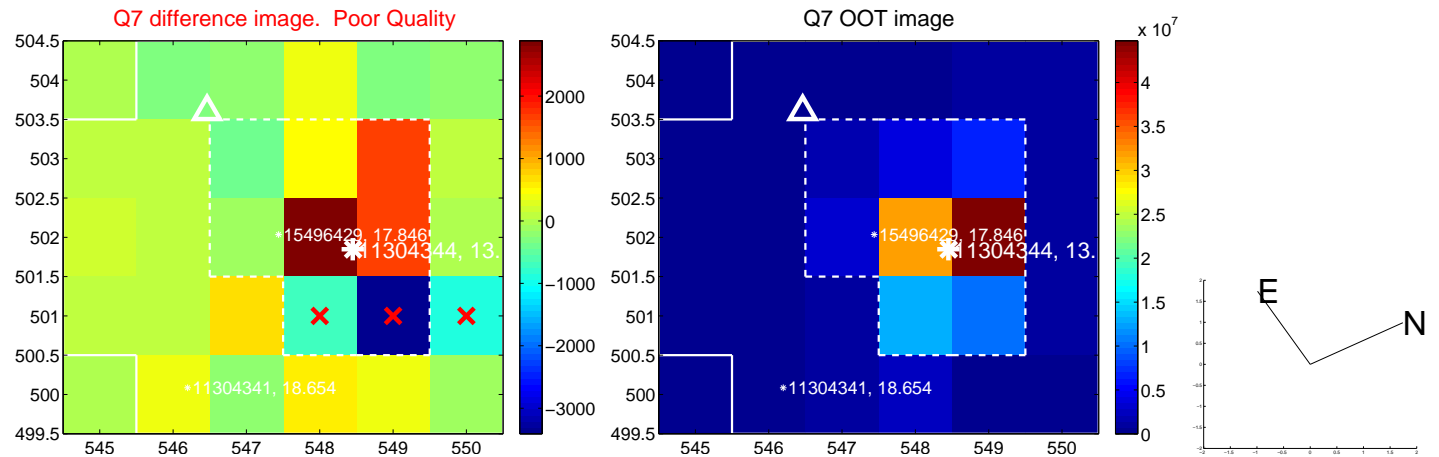
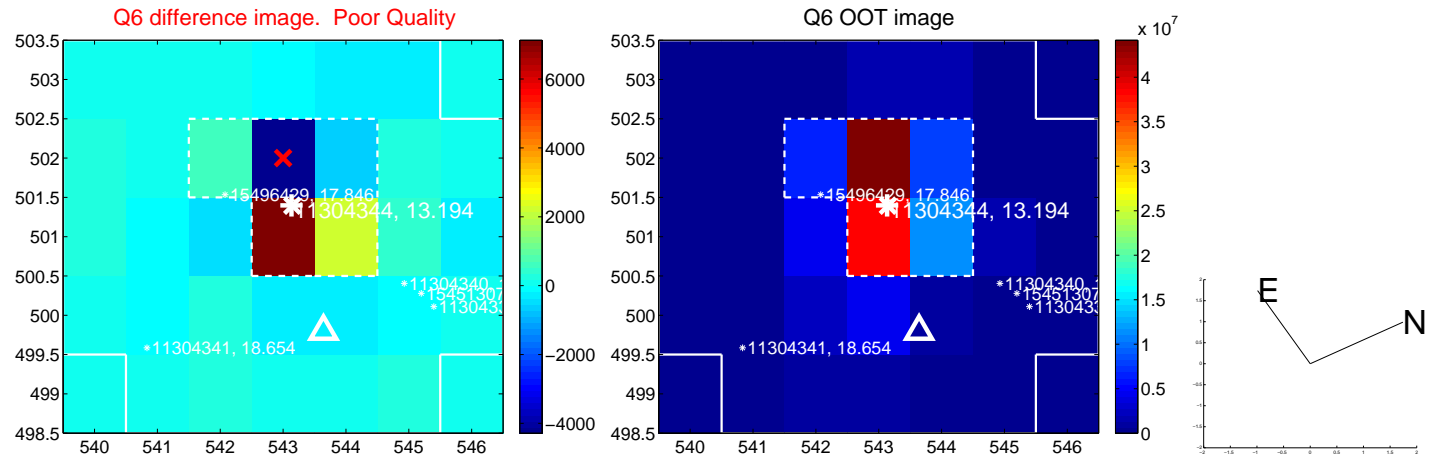
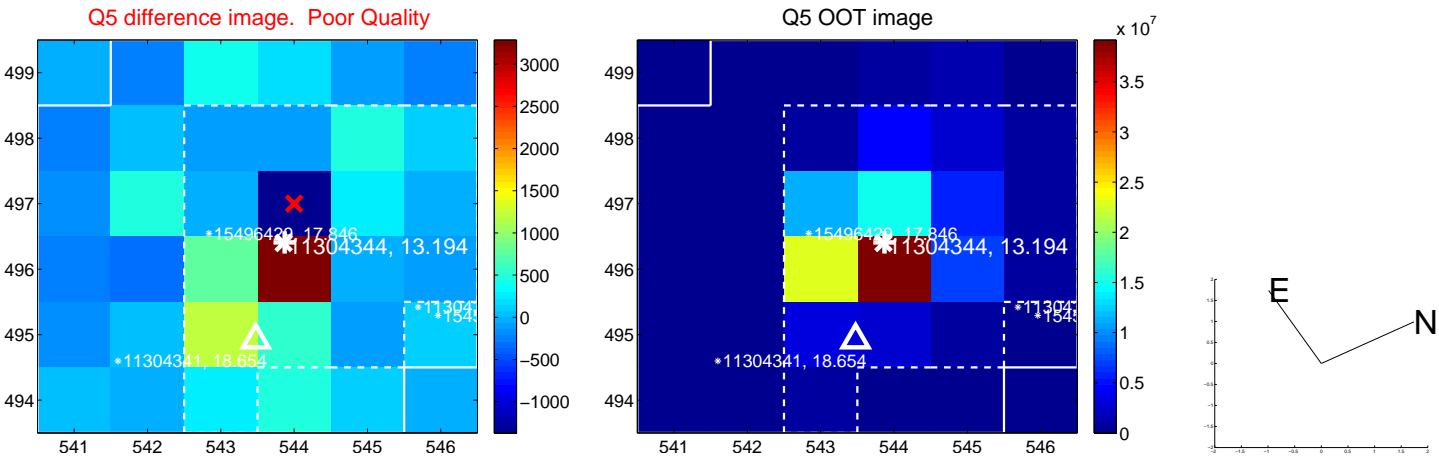


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



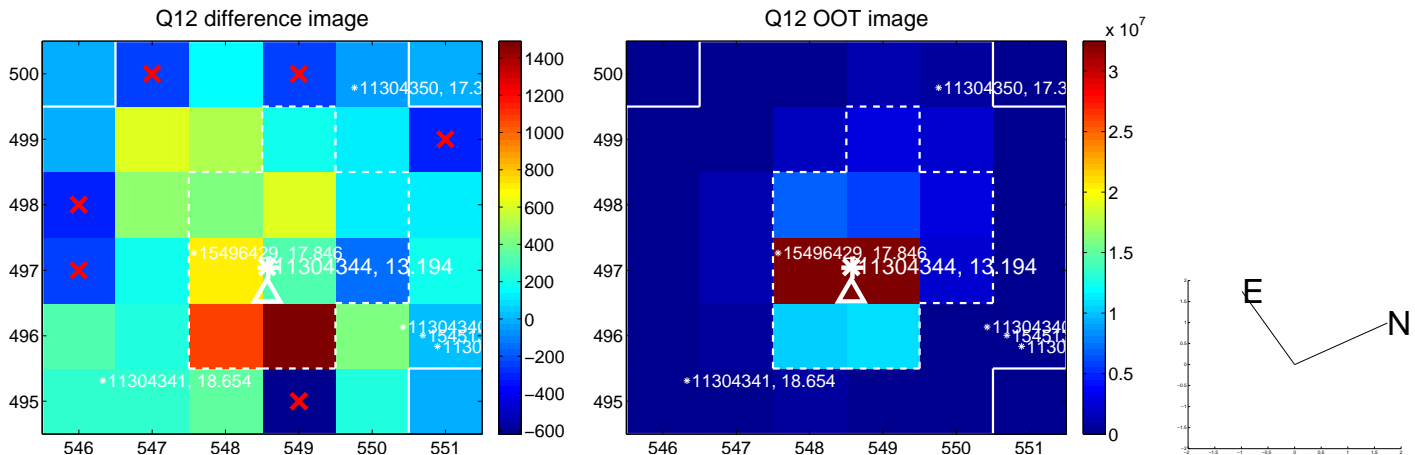
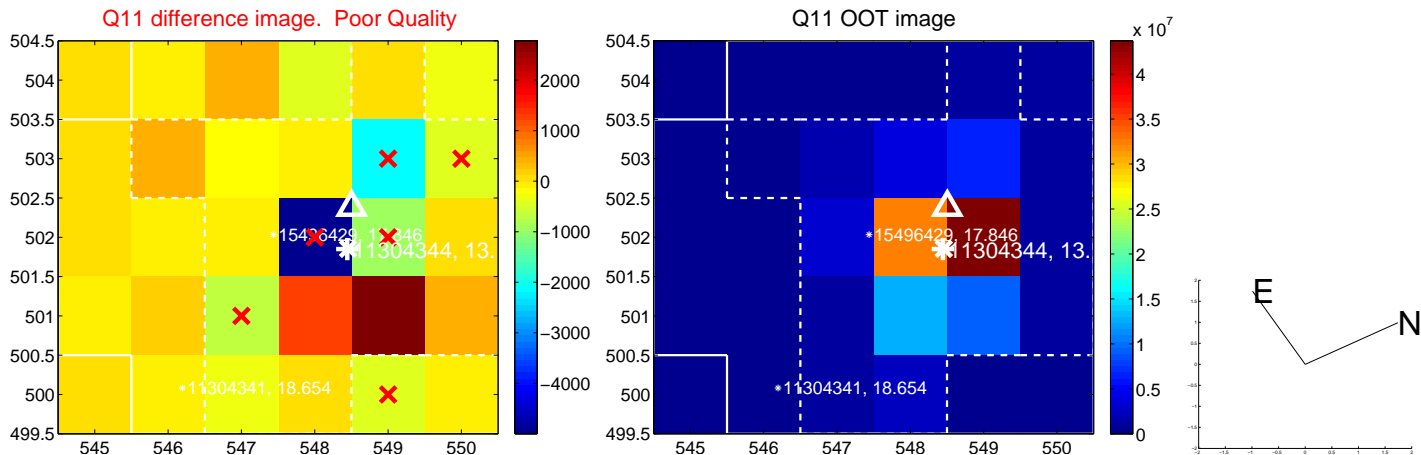
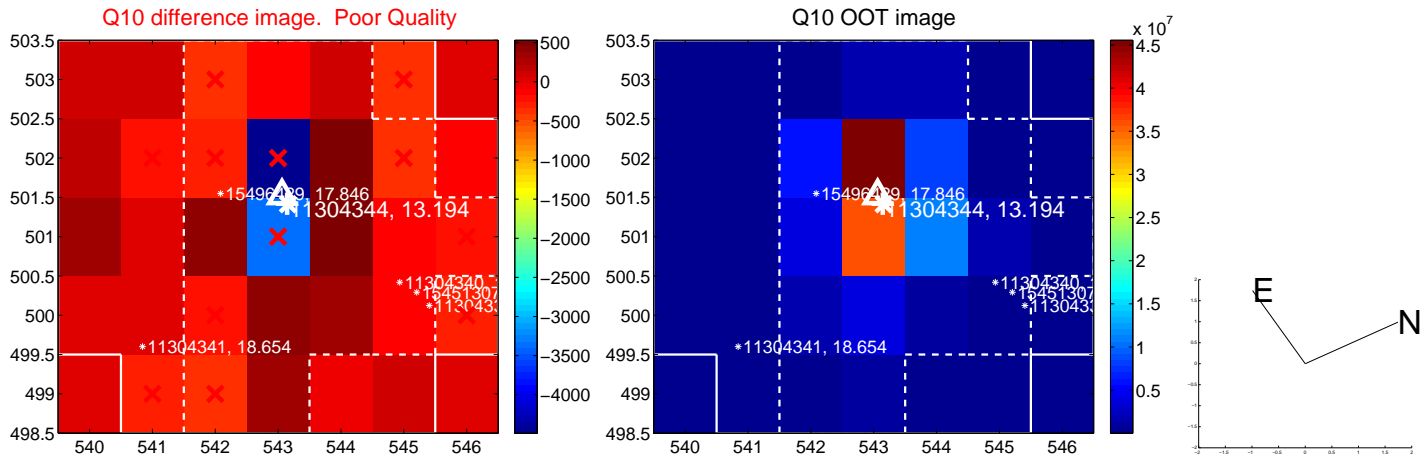
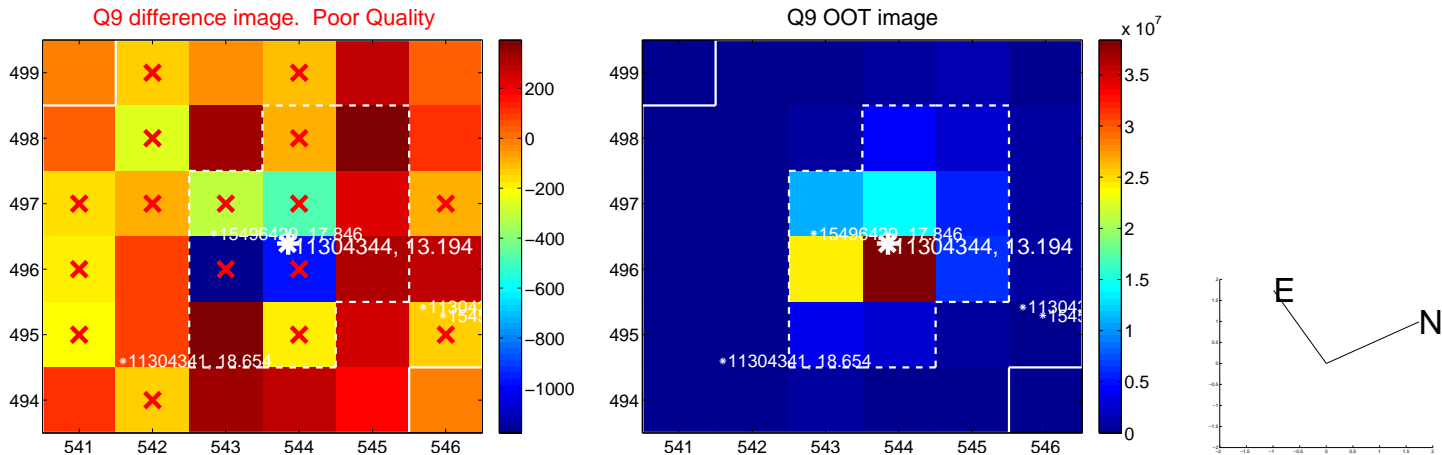


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



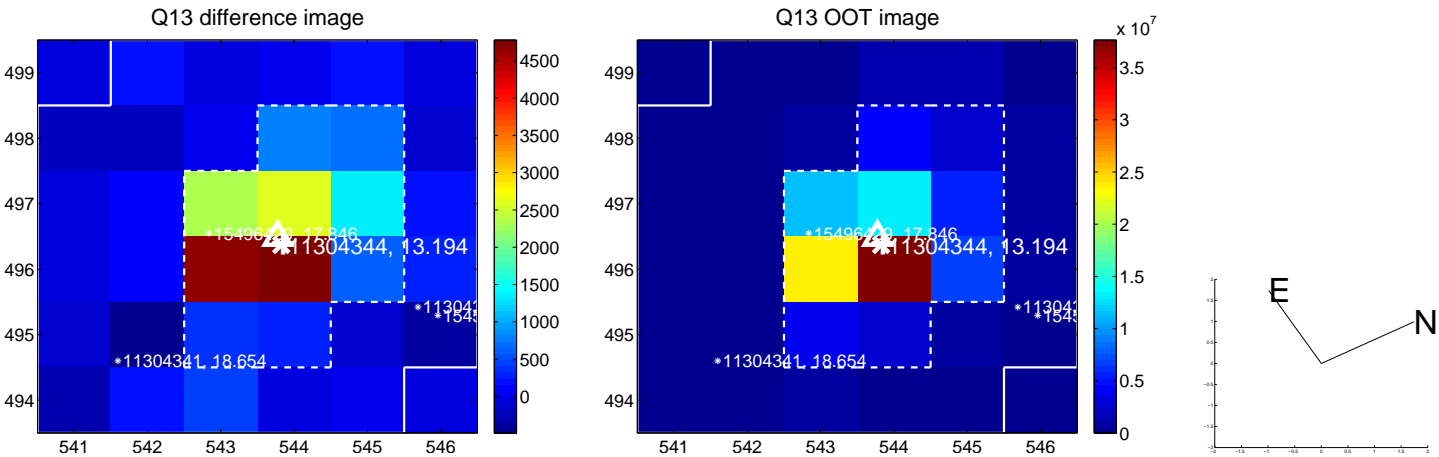


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



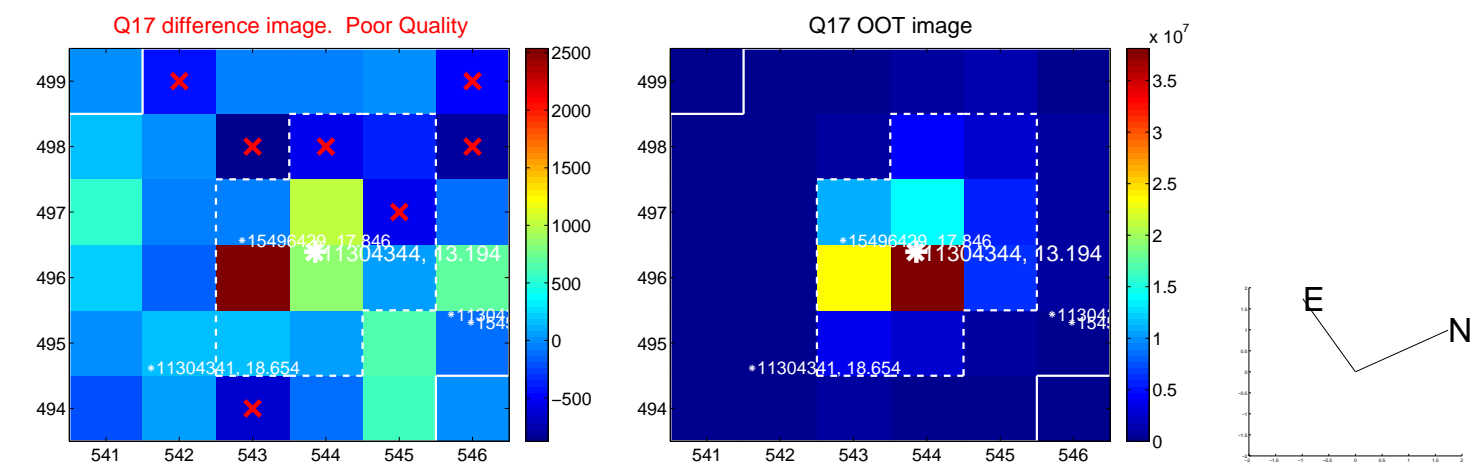


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

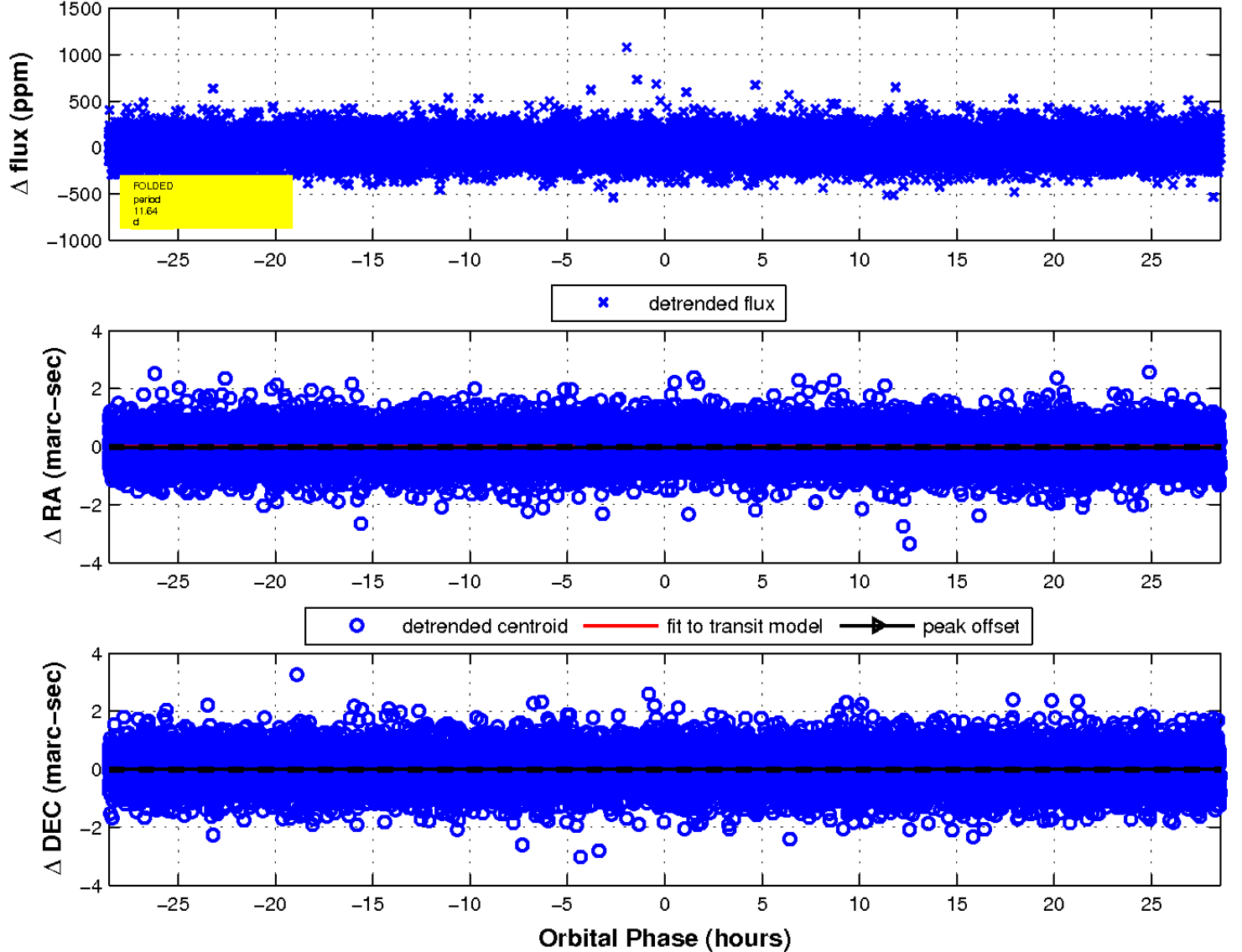




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

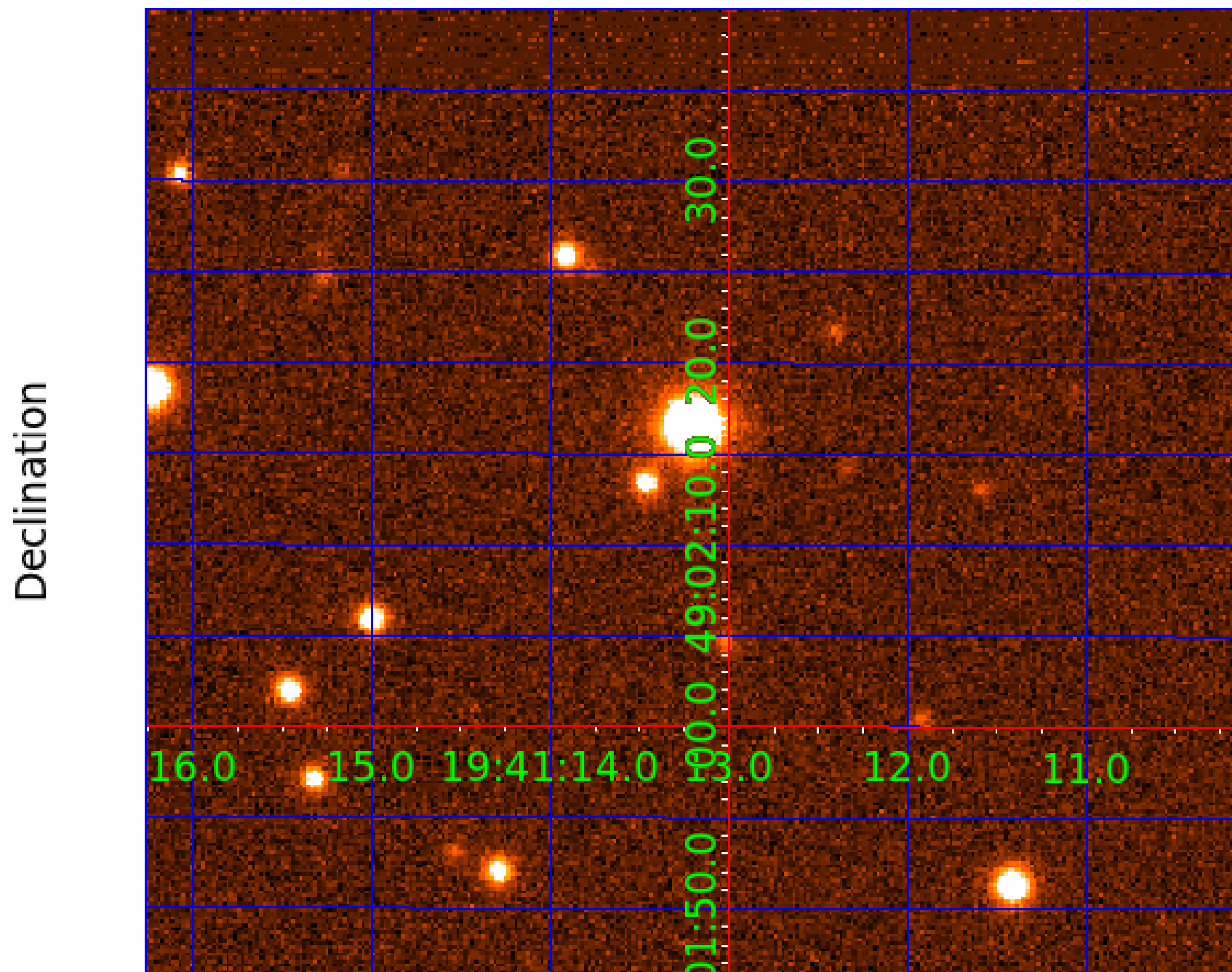


fluxWeightedCentroids, Planet 5 of 7





UKIRT Image





# KIC 011304344

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011304344-01	OBS	No	0.863290	132.226037	0.0	6.125	10.2	0.0	1.67	7227	0.01	16379.51
011304344-02	OBS	No	21.393712	133.479125	212.4	1.842	10.3	12.8	1.67	7227	2.50	226.71
011304344-03	OBS	No	153.104629	225.899800	223.1	6.707	9.6	9.5	1.67	7227	2.92	16.44
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011304344-07	OBS	No	44.937165	157.100009	196.5	3.377	9.3	9.5	1.67	7227	2.71	84.28

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011304344-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011304344-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011304344-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—MOD_NONUNIQ_DV—HALO_GHOST
011304344-05	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
011304344-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-07	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

**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.

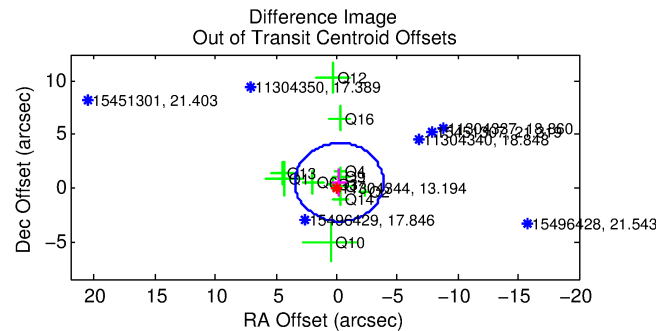
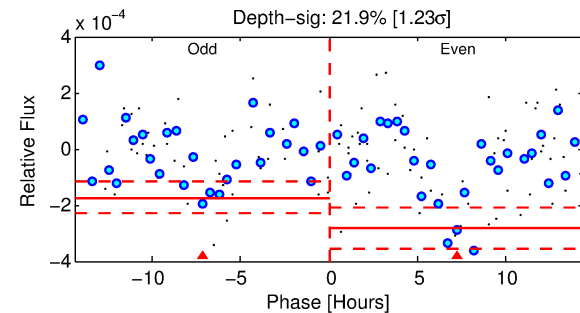
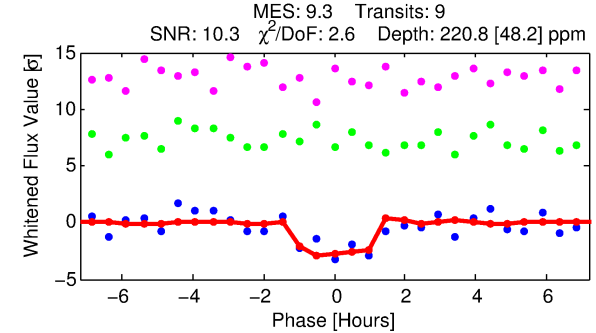
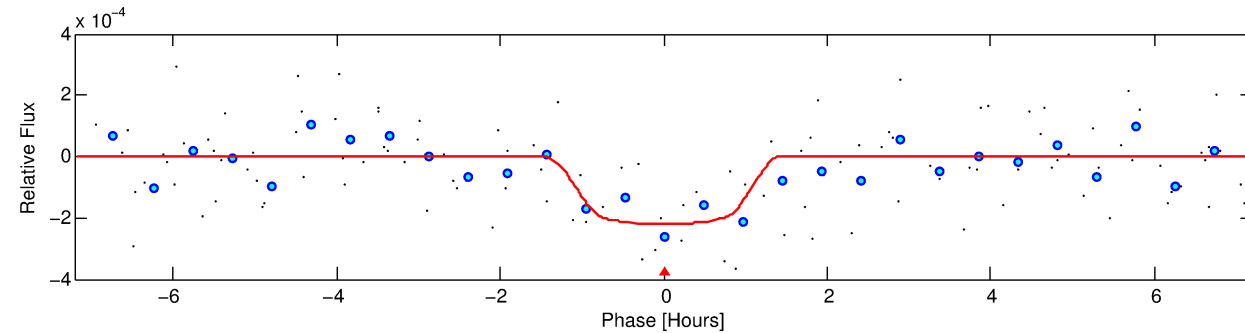
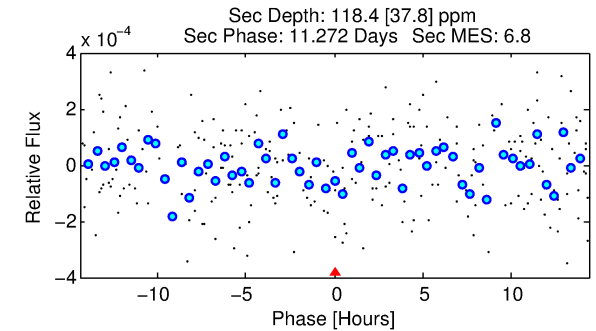
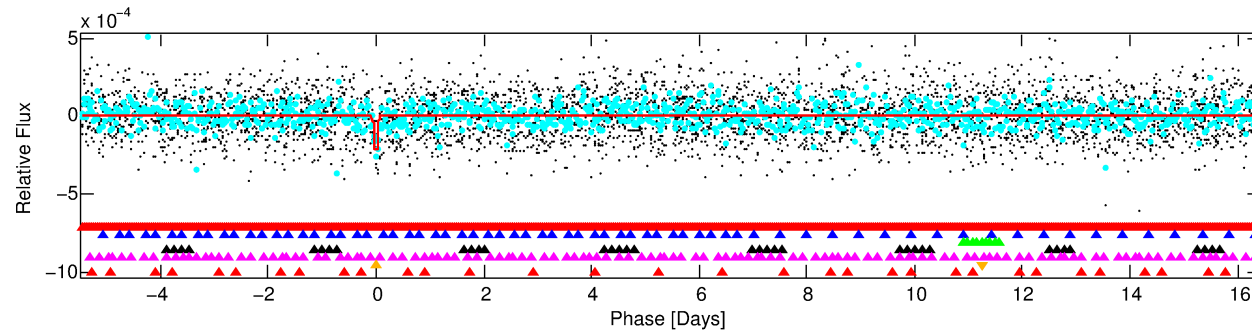
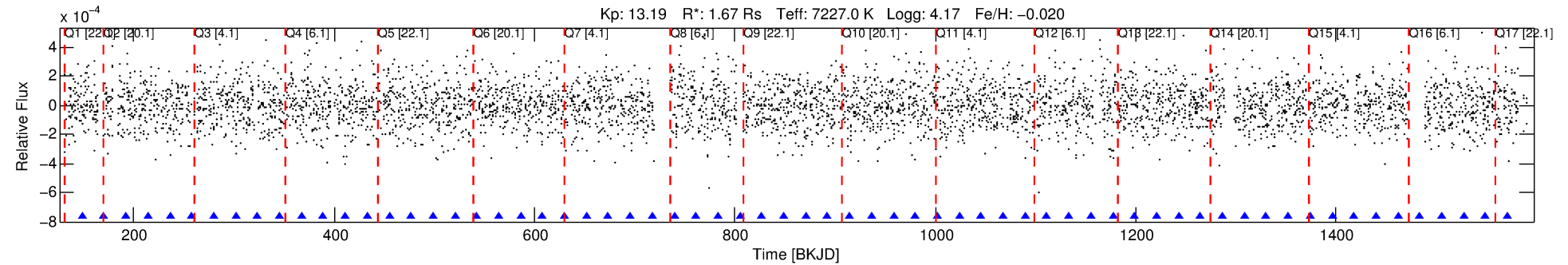
Ephemeris Match Information For 011304344-06

No Significant Match Found



# DV One-Page Summary

KIC: 11304344 Candidate: 6 of 7 Period: 21.884 d



## DV Fit Results:

Period = 21.88414 [0.00027] d  
Epoch = 148.6688 [0.0097] BKJD  
Rp/R\* = 0.0158 [0.0130]  
a/R\* = 32.92 [164.43]  
b = 0.90 [1.08]  
Seff = 219.96 [90.65]  
Teq = 982 [101] K  
Rp = 2.87 [2.55] Re  
a = 0.1756 [0.0466] AU  
Ag = 243.81 [420.37] [0.58 $\sigma$ ]  
Teffp = 6000 [2536] K [1.98 $\sigma$ ]

## DV Diagnostic Results:

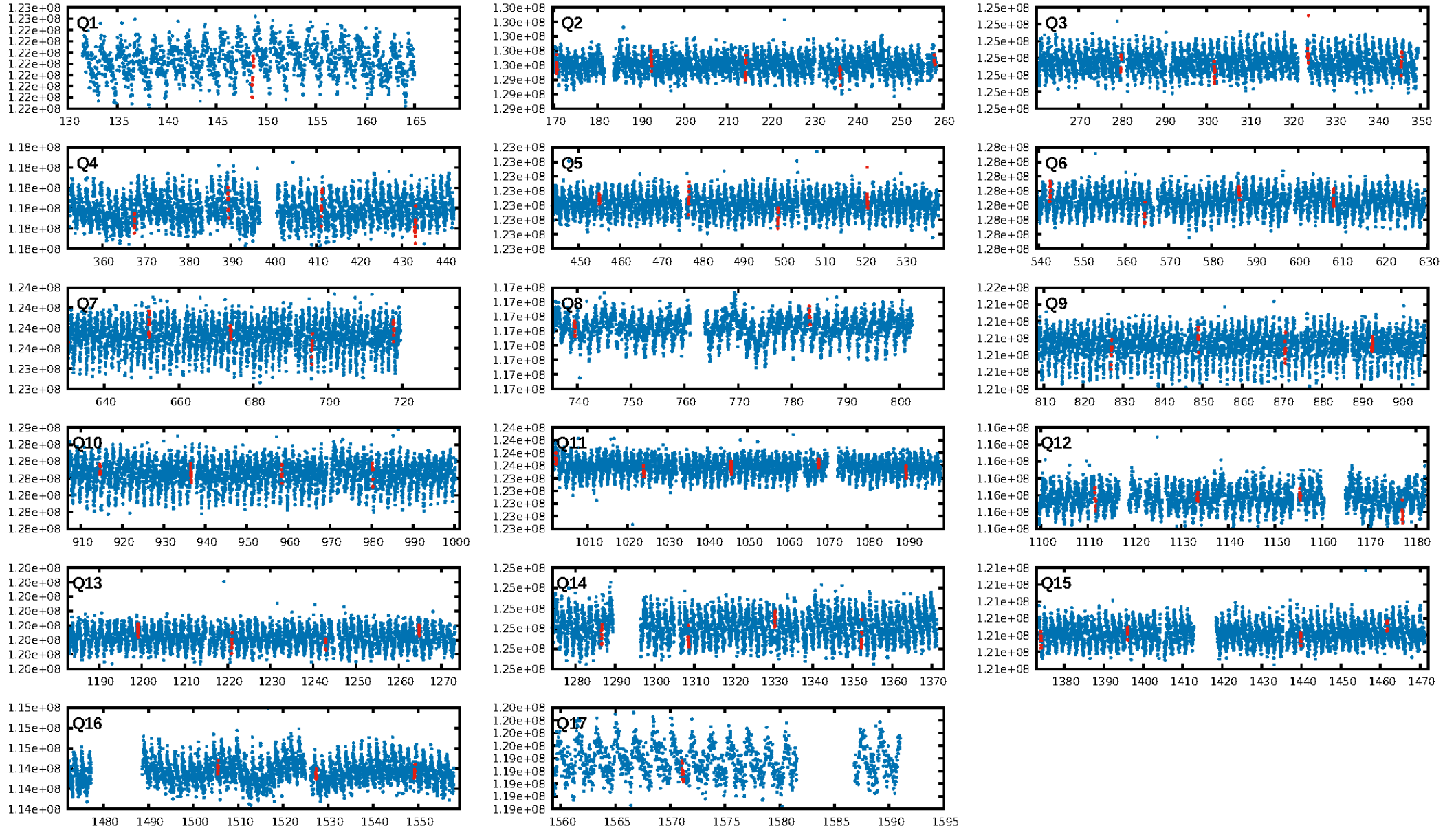
ShortPeriod-sig: 100.0% [3.89 $\sigma$ ]  
LongPeriod-sig: 100.0% [178.28 $\sigma$ ]  
ModelChiSquare2-sig: 12.8%  
ModelChiSquareGof-sig: 97.5%  
**Bootstrap-pfa: 3.43e-08**  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -12.01  
Centroid-sig: 48.0%  
Centroid-so: 0.635 arcsec [1.33 $\sigma$ ]  
OotOffset-rm: 0.581 arcsec [0.48 $\sigma$ ]  
KicOffset-rm: 0.619 arcsec [0.59 $\sigma$ ]  
OotOffset-st: 4/2/3/3 [12]  
KicOffset-st: 4/2/3/3 [12]  
DiffImageQuality-fgm: 0.33 [4/12]  
DiffImageOverlap-fno: 0.12 [2/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:26:39 Z

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

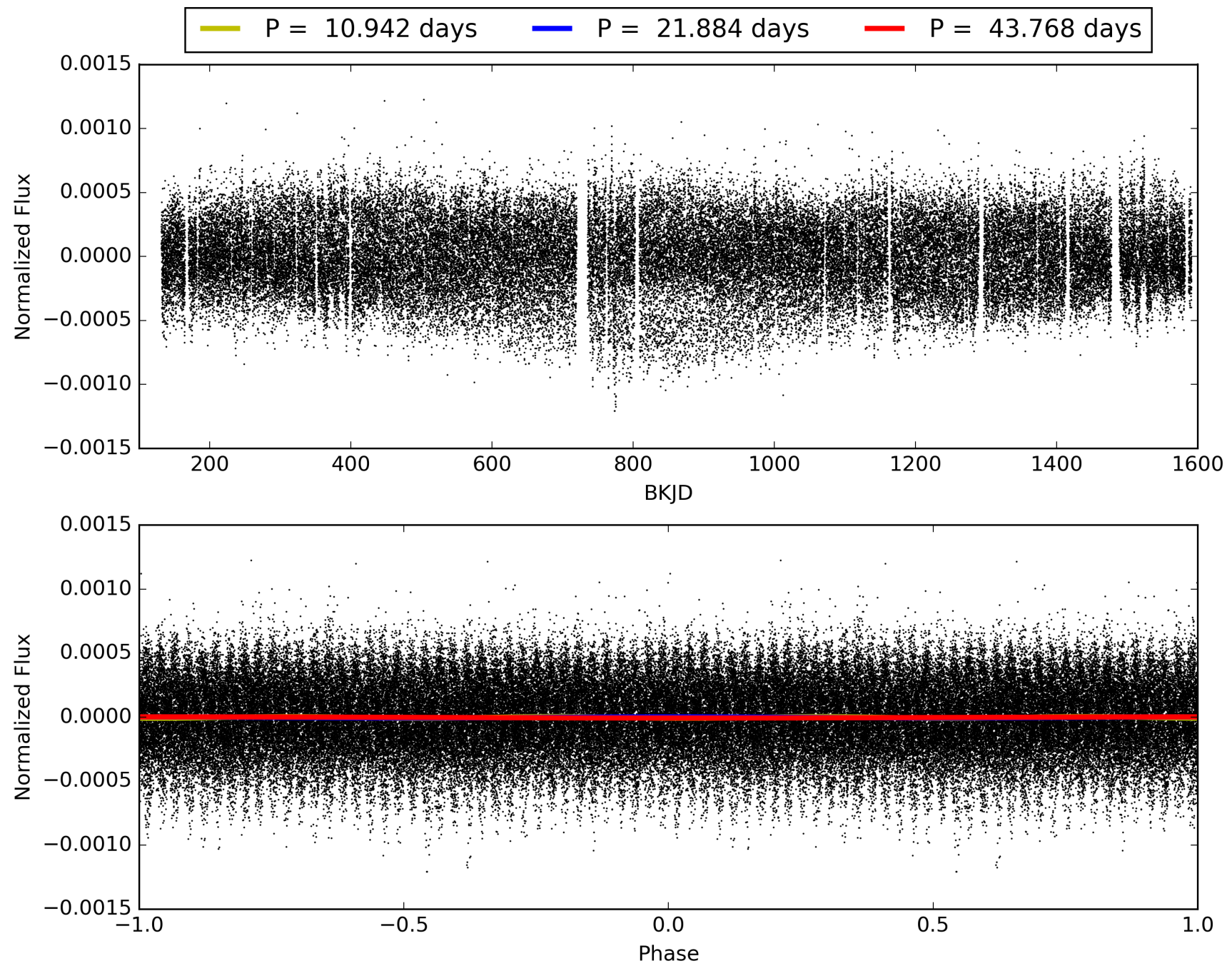


# TCE 011304344-06, PDC Light Curves





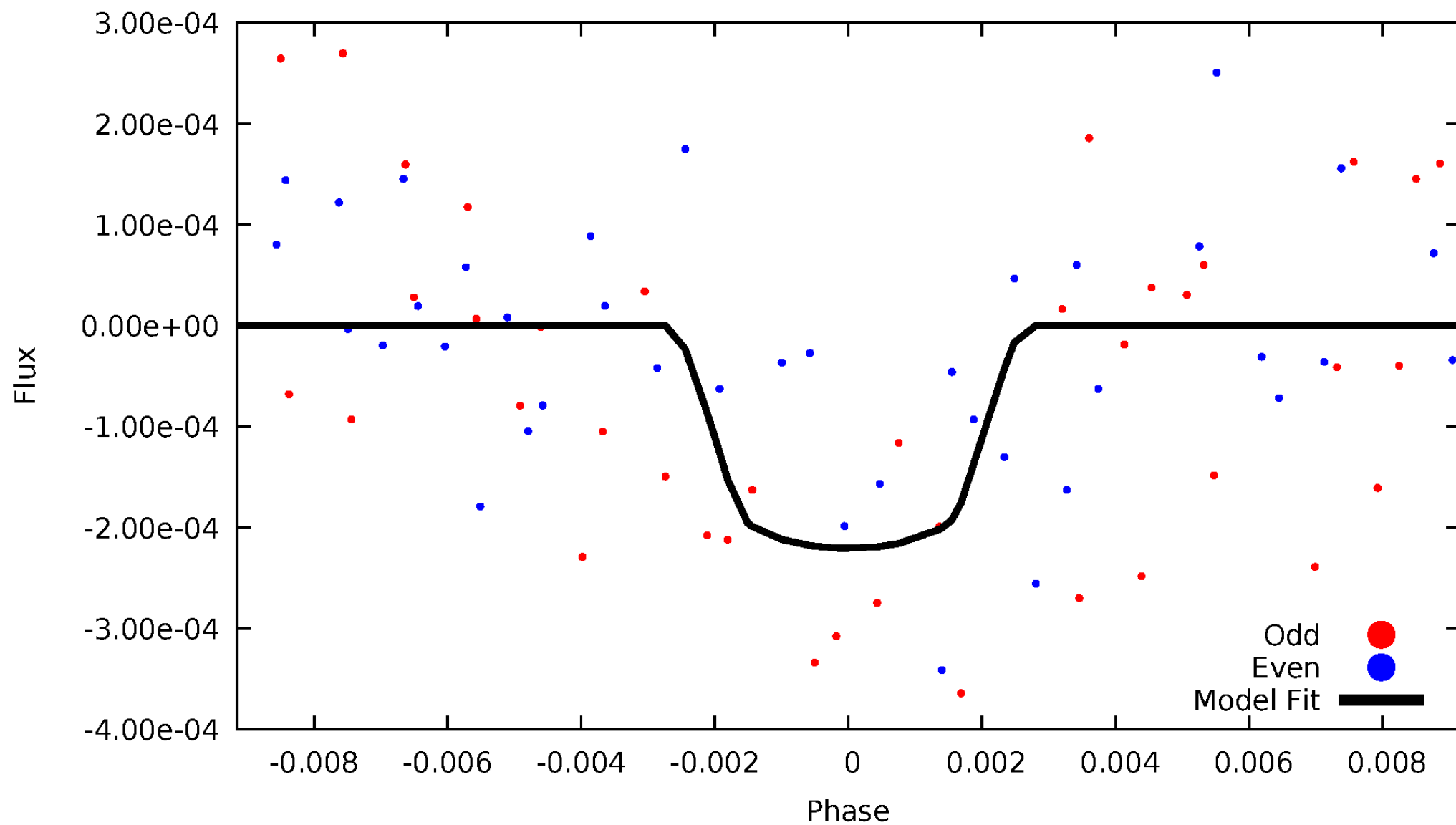
TCE 011304344-06





# DV Odd/Even

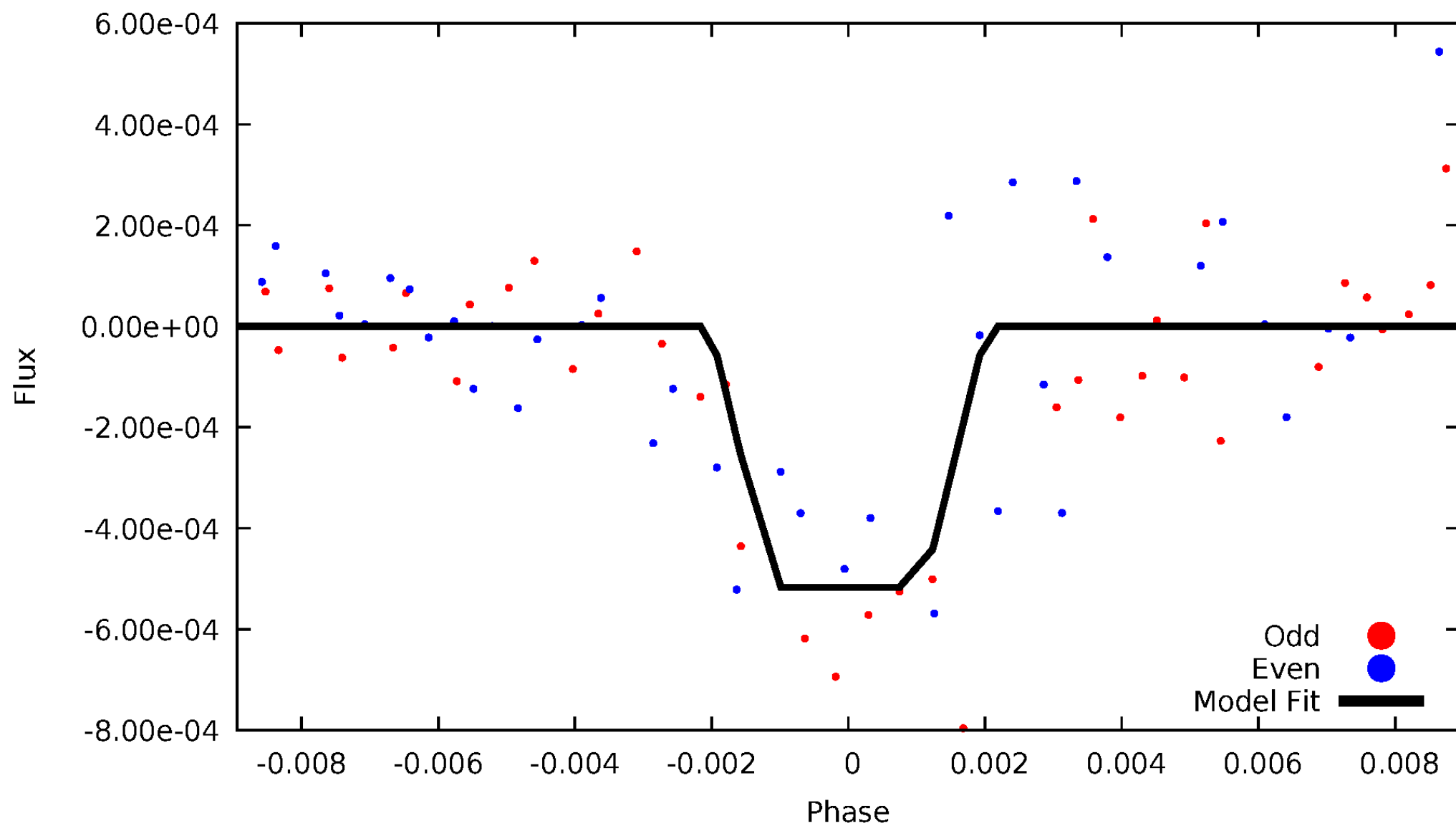
TCE 011304344-06





# ALT Odd/Even

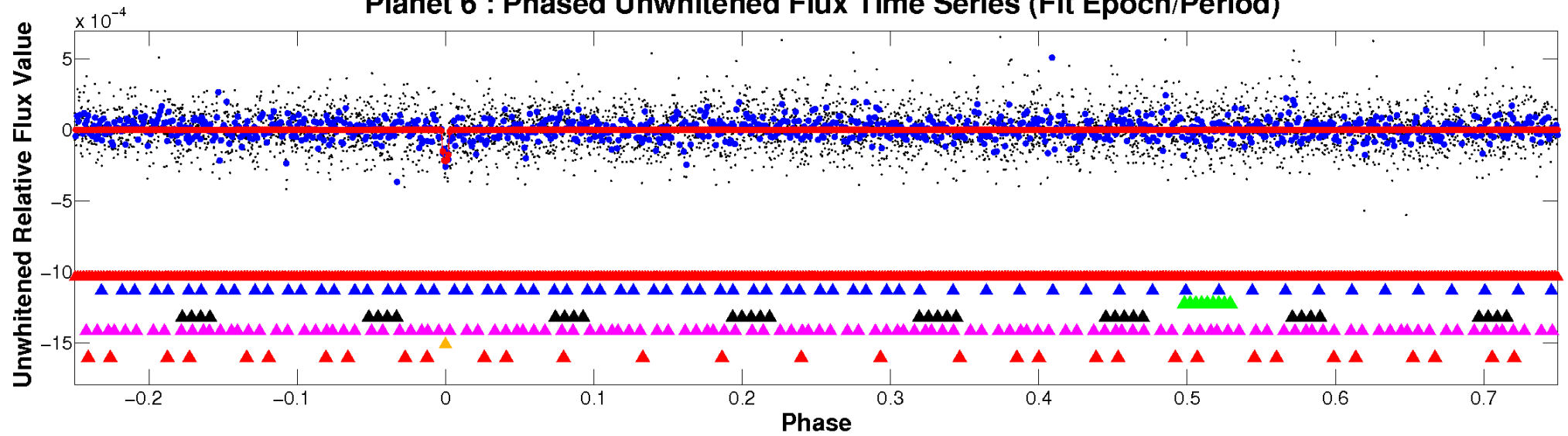
TCE 011304344-06



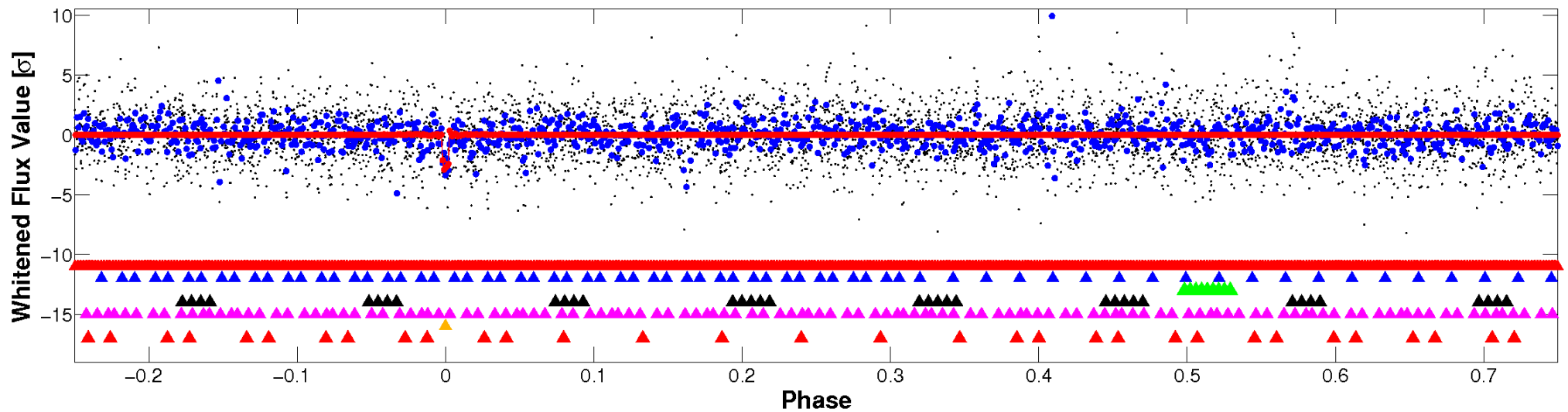


# Non-Whitened Vs. Whitened Light Curve

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



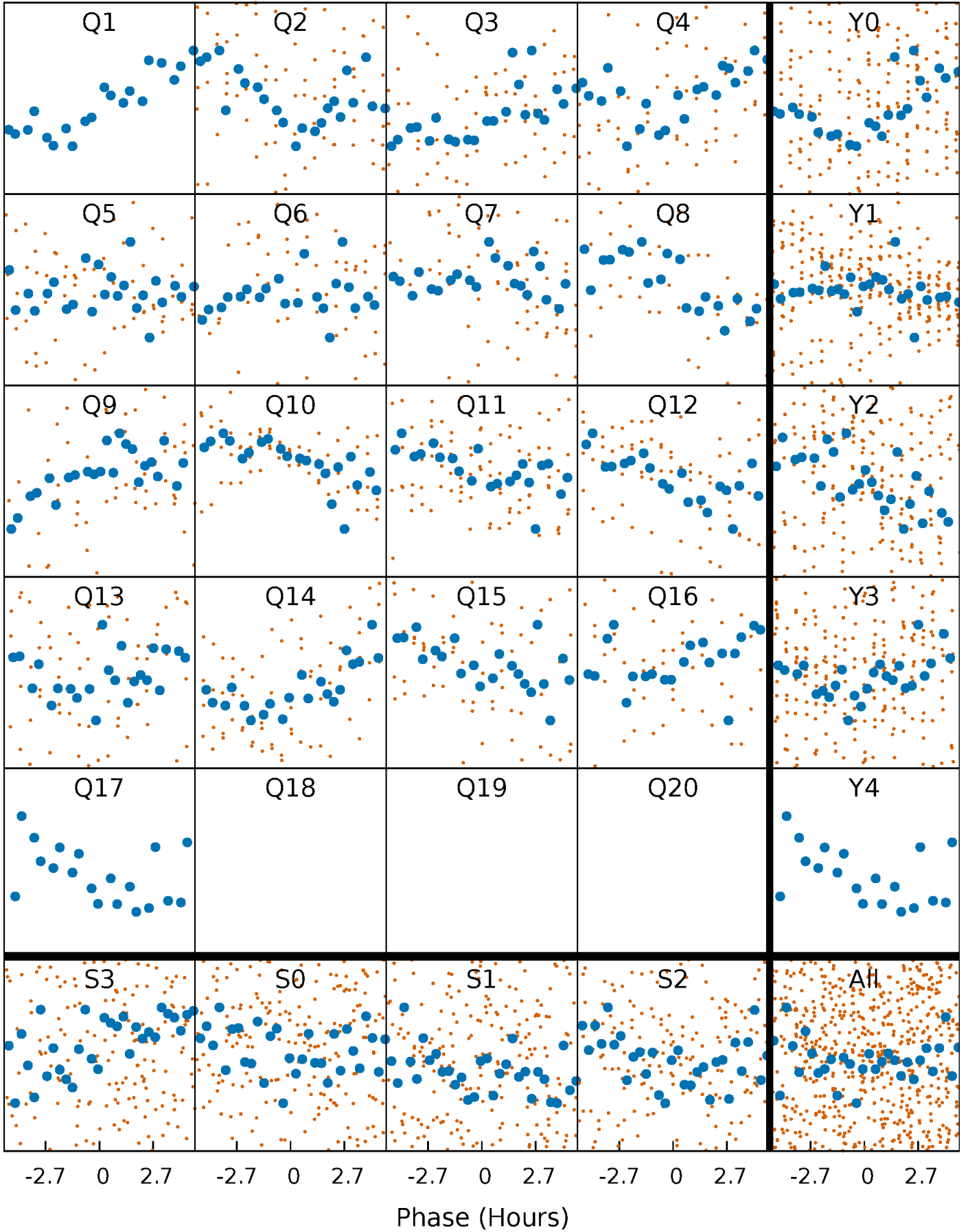
## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

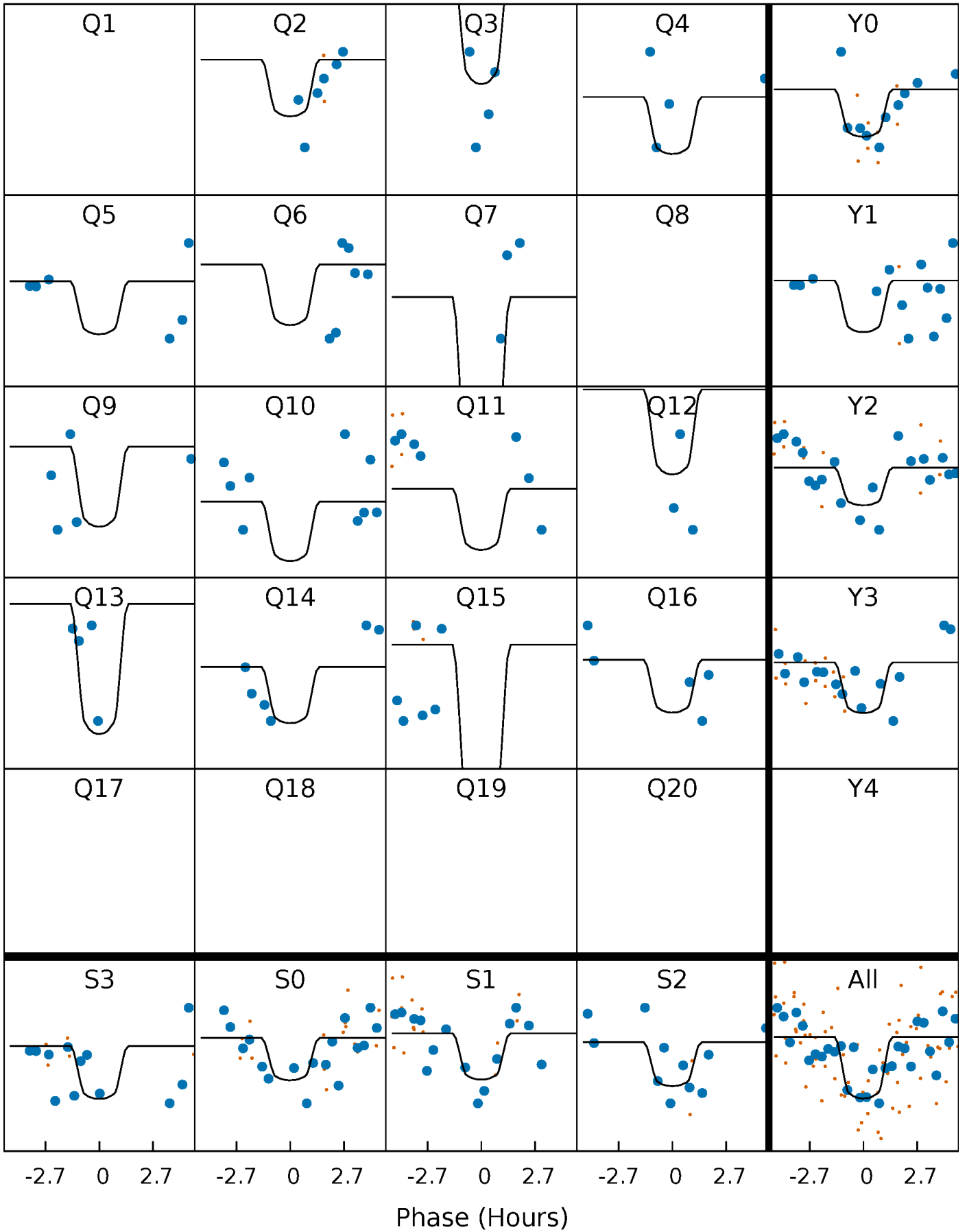
TCE 011304344-06 P= 21.884143 Days  $T_0=148.668846$  (BKJD)





# DV Quarter-Phased Transit Curves

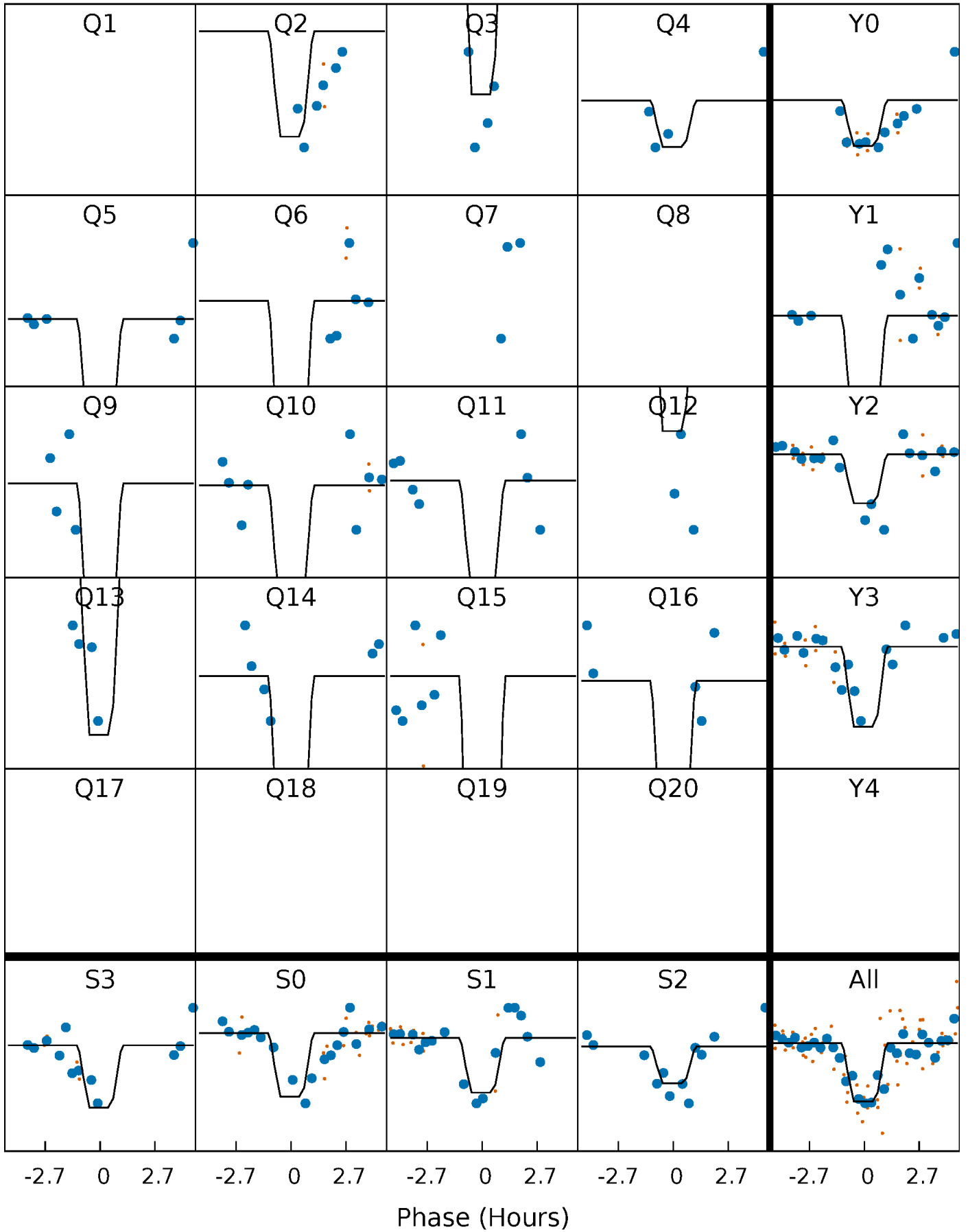
TCE 011304344-06 P= 21.884143 Days  $T_0=148.668846$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011304344-06   P= 21.884073 Days    $T_0=148.672285$  (BKJD)

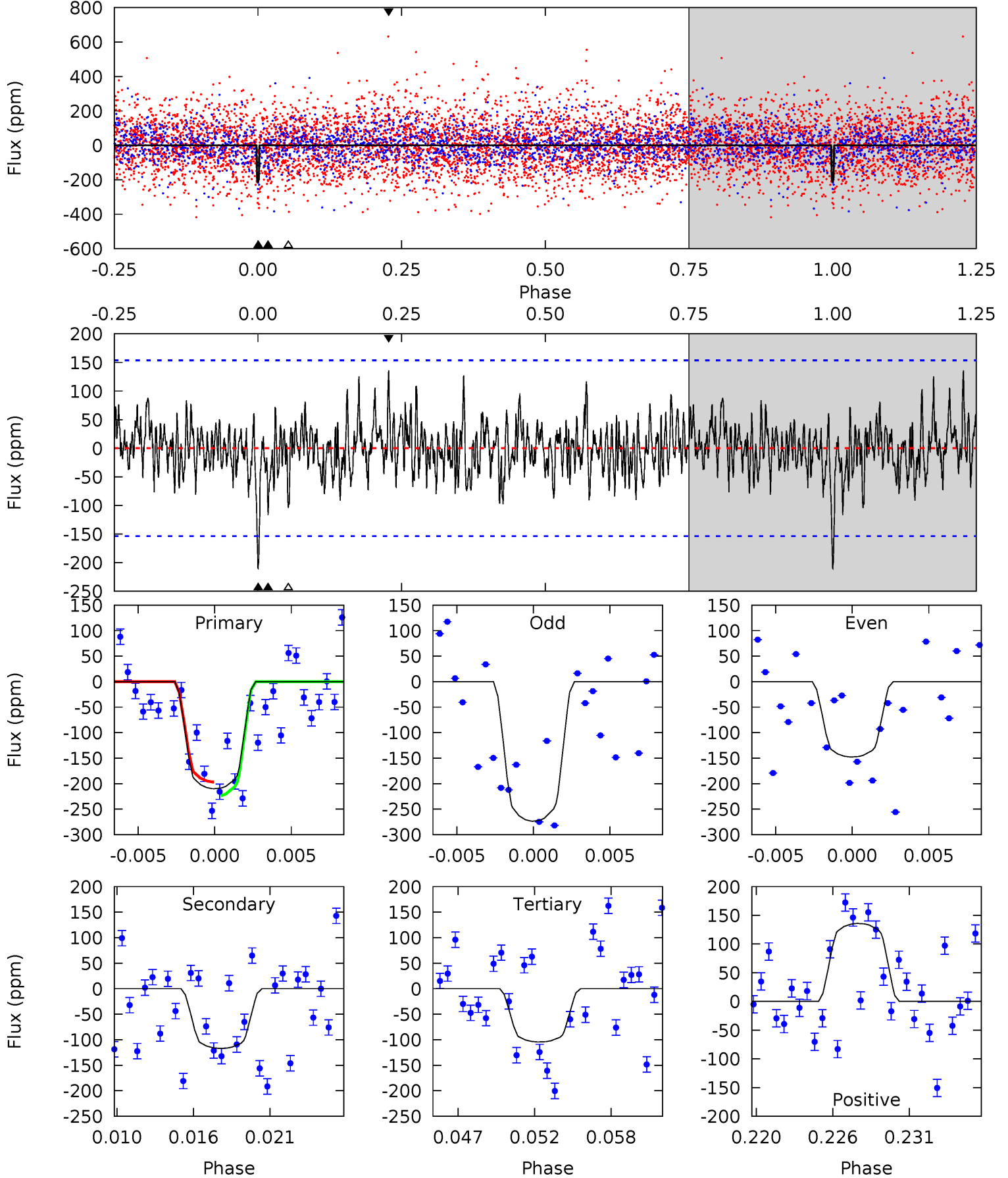




# DV Model-Shift Uniqueness Test

011304344-06, P = 21.884143 Days, E = 126.784703 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
7.04	3.92	3.50	4.56	5.15	2.79	1.25	3.54	2.48	0.42	-0.64	2.11	0.94	0.39	0.45

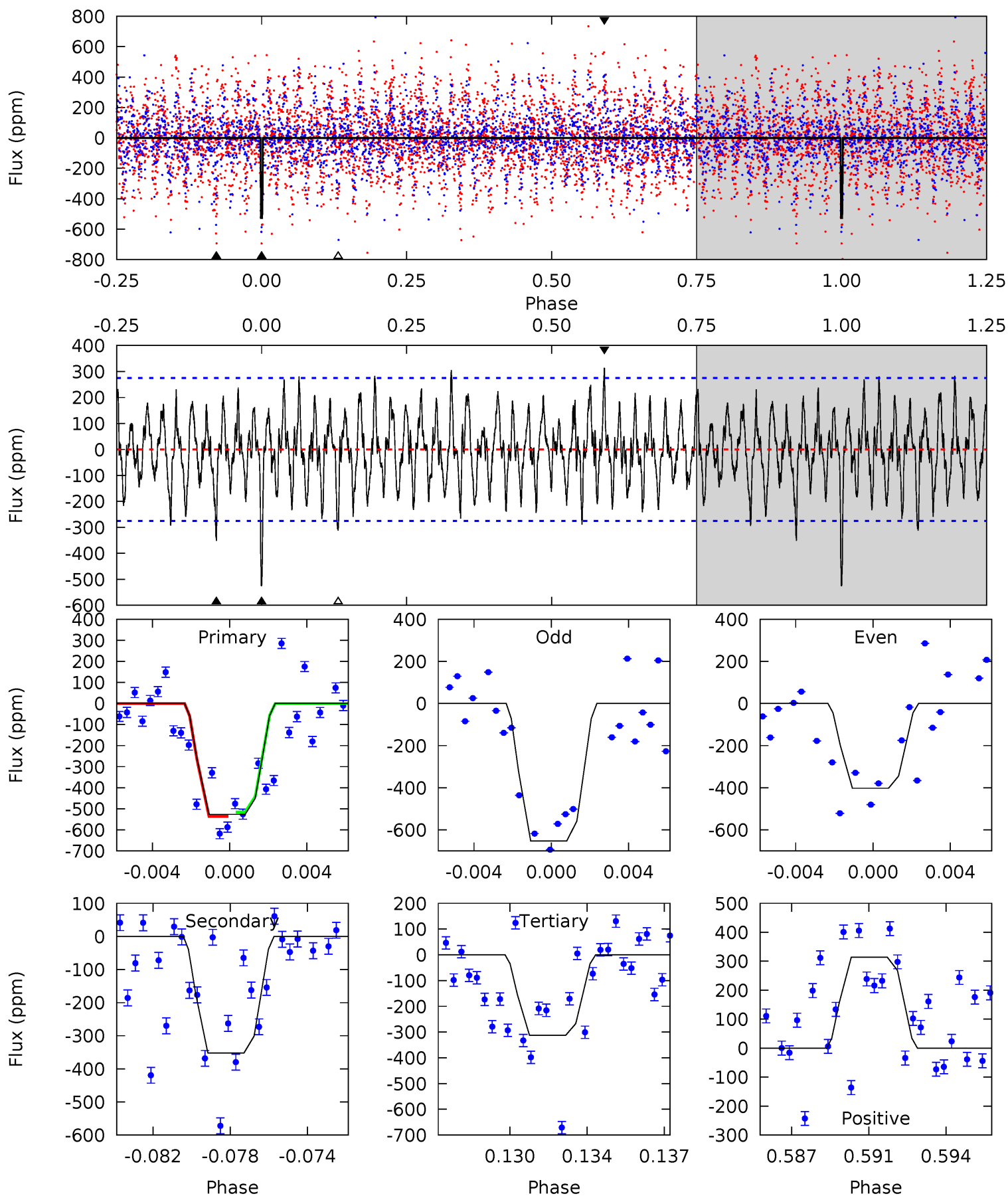




# Alt Model-Shift Uniqueness Test

011304344-06, P = 21.884073 Days, E = 126.788212 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
9.98	6.68	5.93	5.95	5.21	2.90	2.02	4.05	4.03	0.75	0.73	2.36	1.08	0.37	0.19





### Stellar Parameters For KIC 011304344

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7227^{+226}_{-302}$	$4.173^{+0.108}_{-0.201}$	$-0.020^{+0.200}_{-0.350}$	$1.666^{+0.540}_{-0.291}$	$1.505^{+0.221}_{-0.221}$	$0.459^{+0.239}_{-0.236}$
	+3%/-4%	+3%/-5%	+1000%/-1750%	+32%/-17%	+15%/-15%	+52%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011304344-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-117 \pm 30$	$3.30^{+2.36}_{-1.91}$	$1393^{+112}_{-91}$	$5575^{+3390}_{-1129}$	$175^{+798}_{-119}$
Alt.	$-352 \pm 53$	$4.43^{+2.46}_{-2.29}$	$1385^{+113}_{-83}$	$6303^{+3460}_{-1094}$	$298^{+983}_{-173}$

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



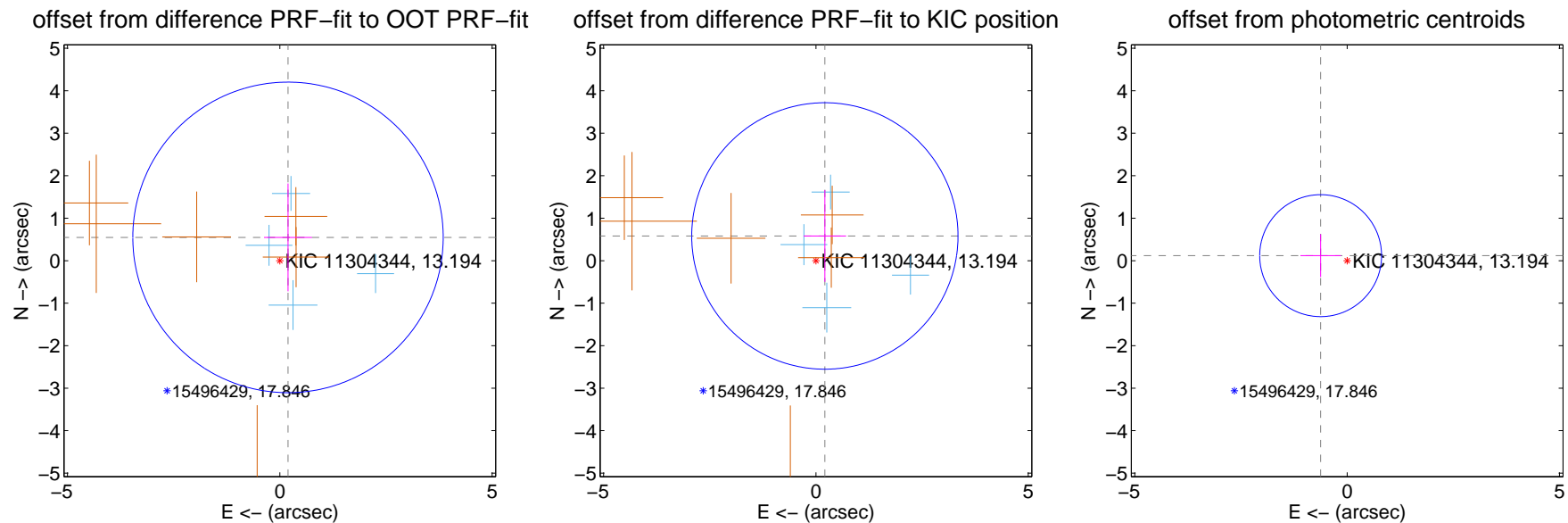
## DV Centroid Data

Supplemental centroid analysis for 011304344-06. Kepler magnitude: 13.19. Transit SNR 10.28

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

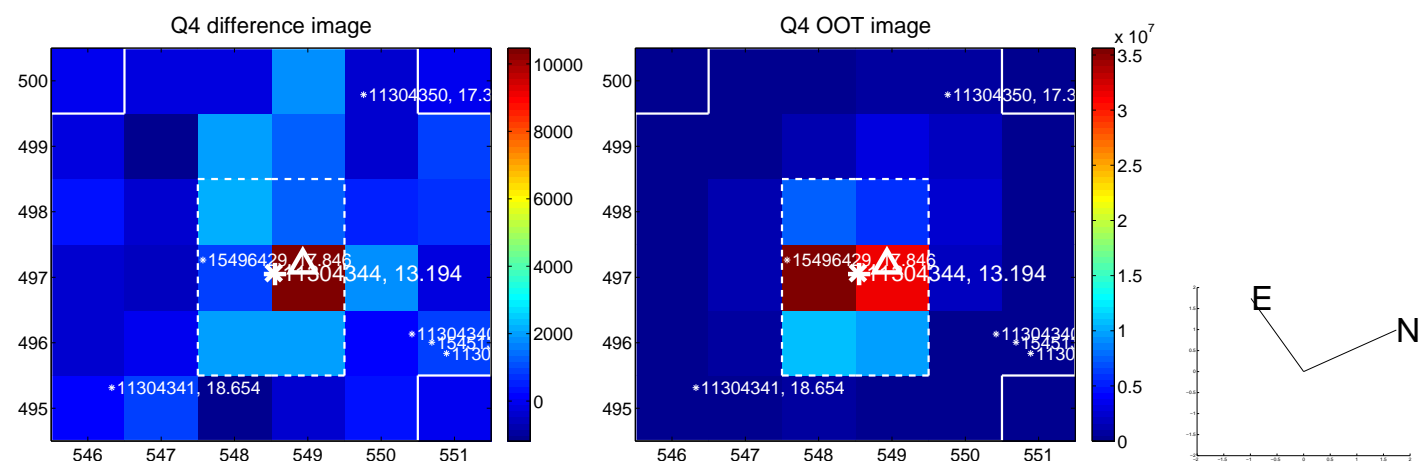
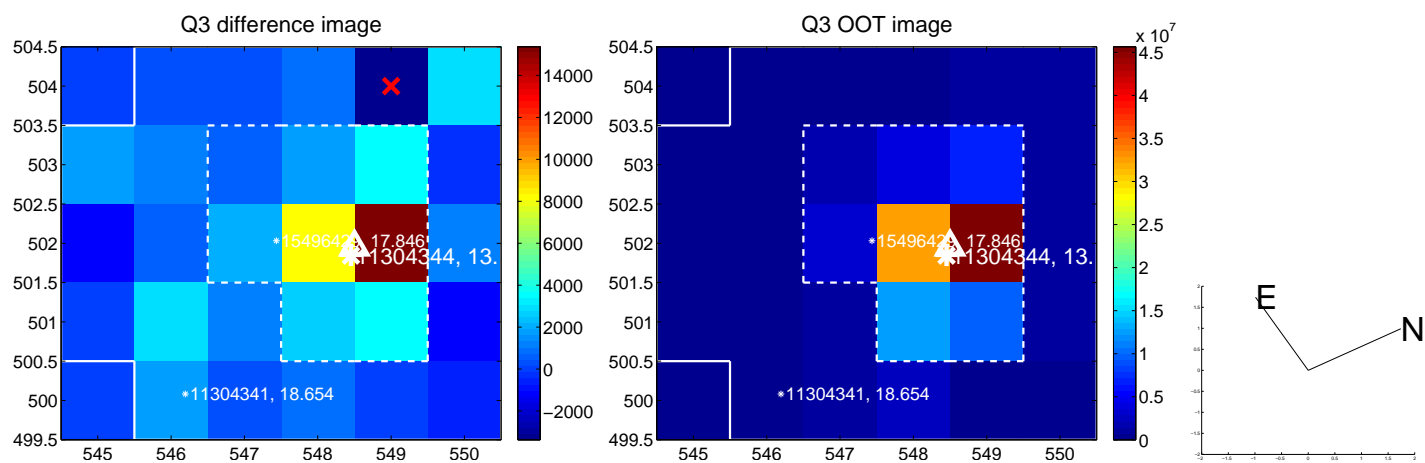
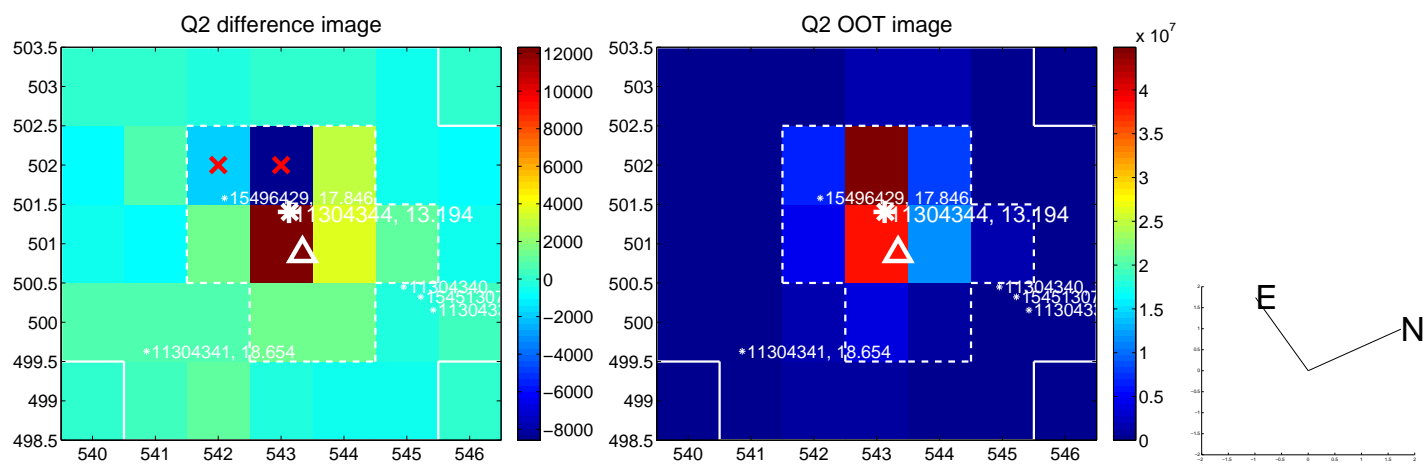
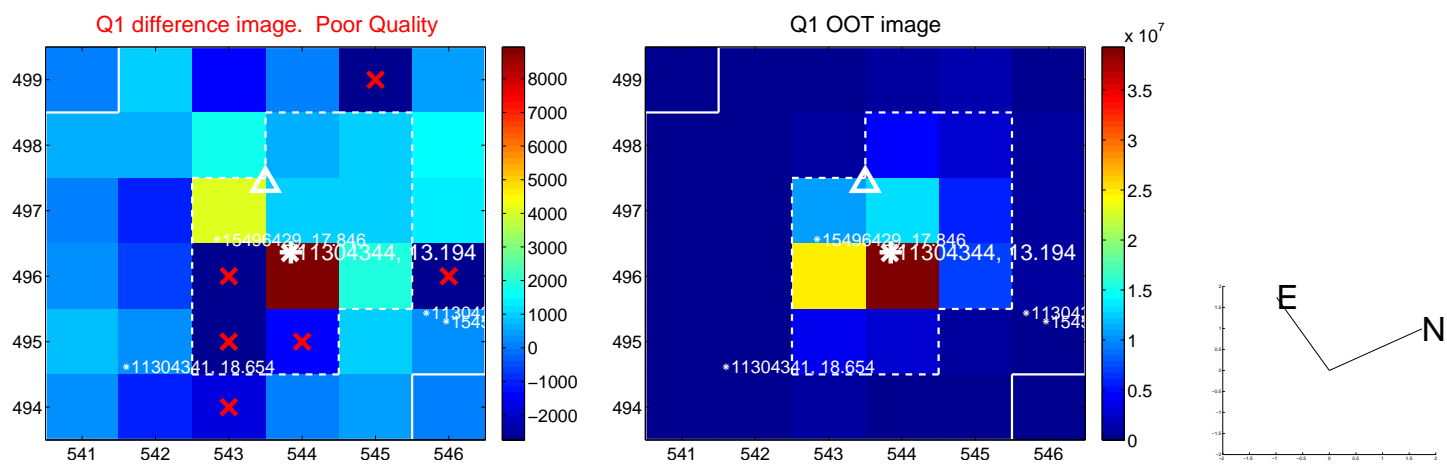
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.581 \pm 1.218$	0.48	$-0.193 \pm 0.564$	$0.548 \pm 1.269$
PRF-fit source offset from KIC position	$0.619 \pm 1.045$	0.59	$-0.211 \pm 0.500$	$0.582 \pm 1.078$
photometric centroid source offset	$0.64 \pm 0.48$	1.33	$0.62 \pm 0.48$	$0.12 \pm 0.50$



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

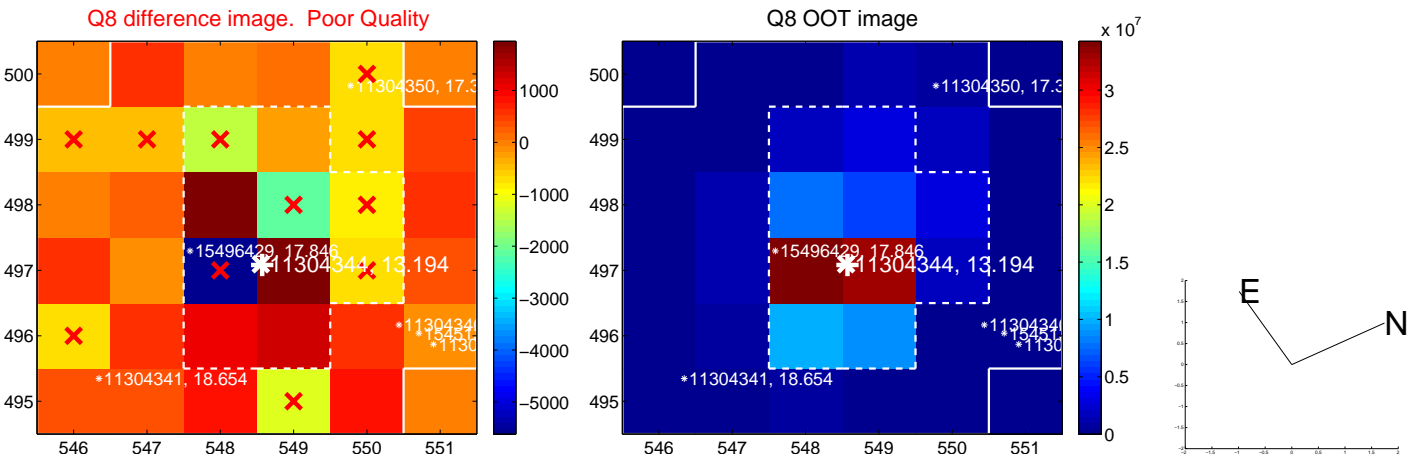
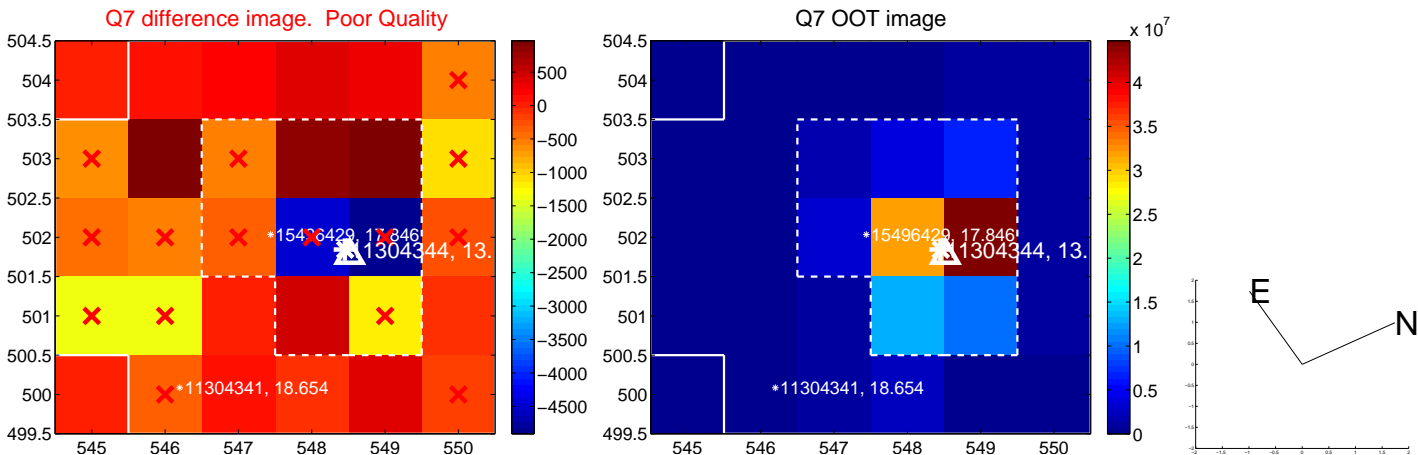
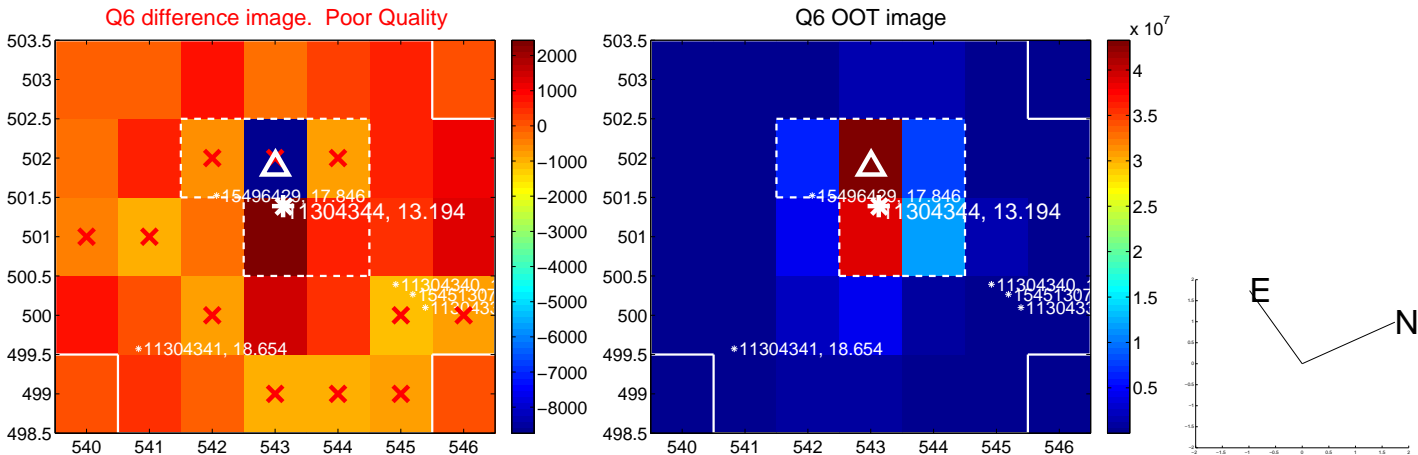
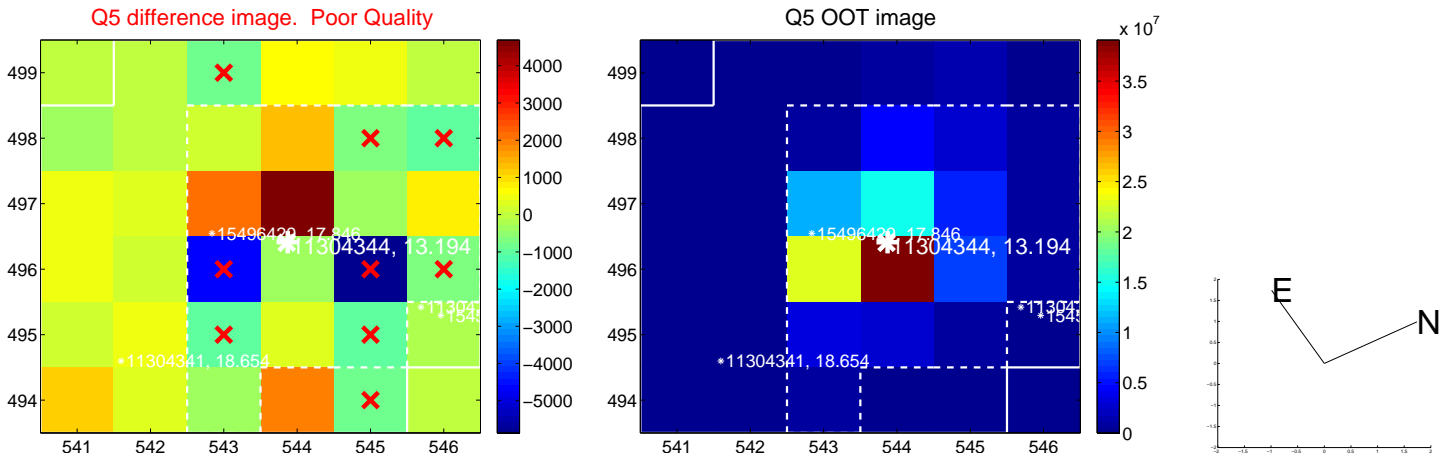


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



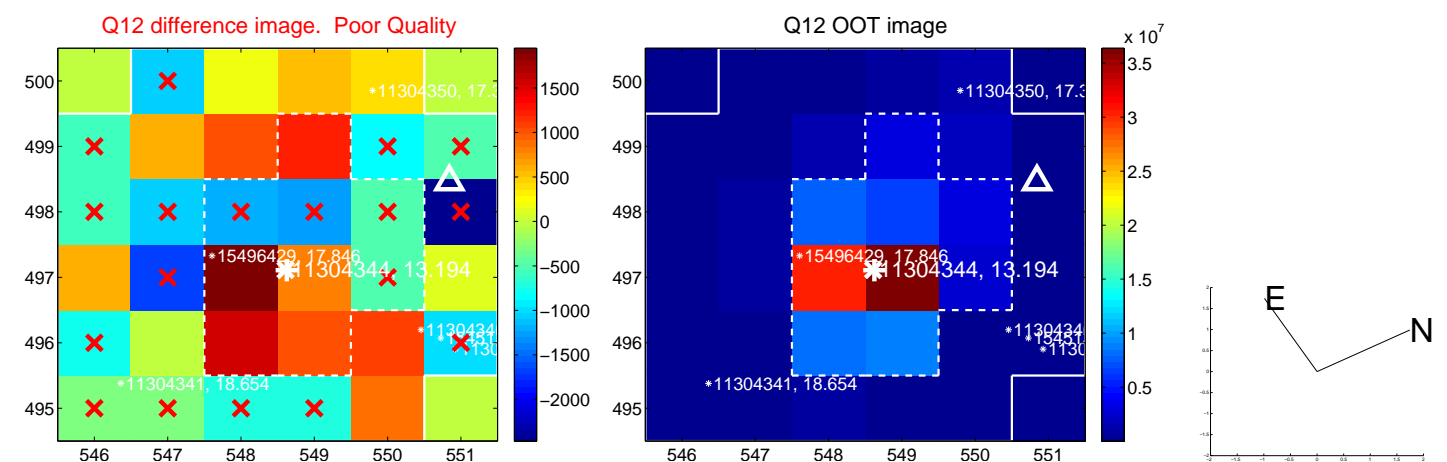
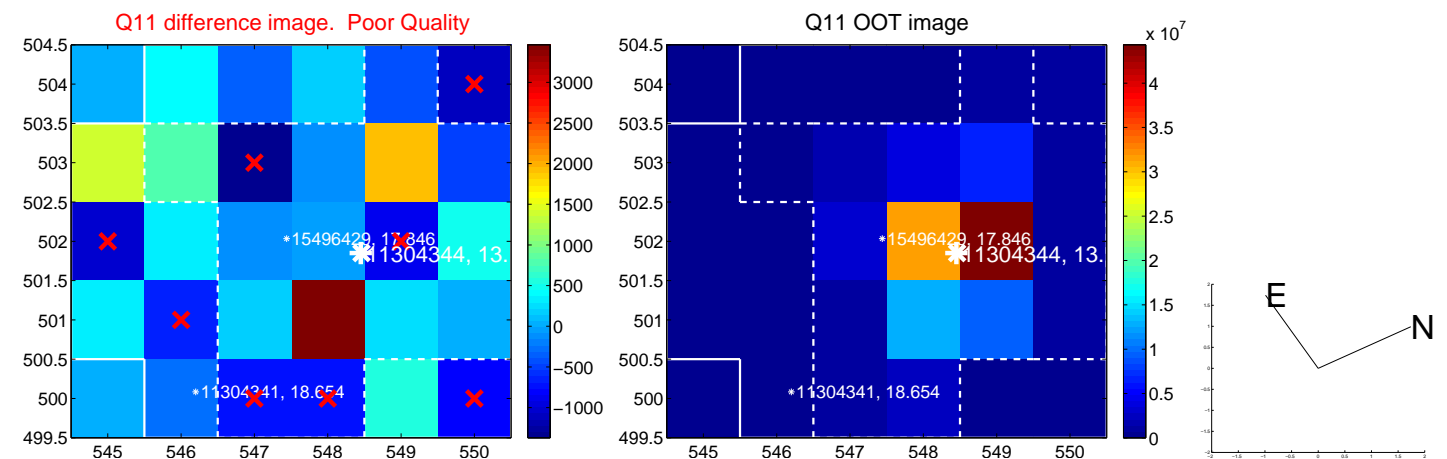
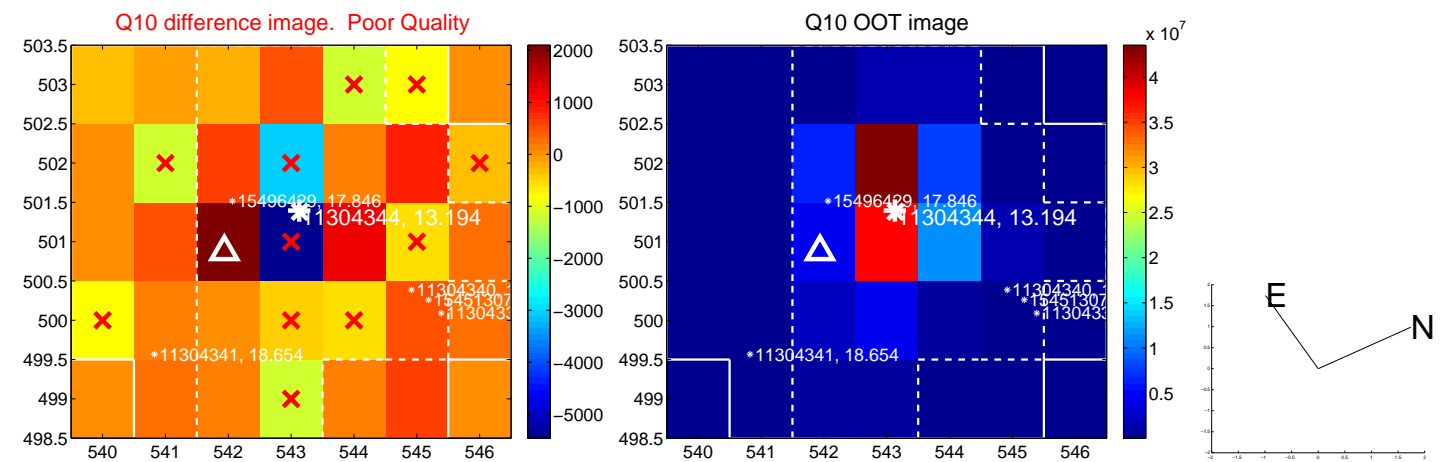
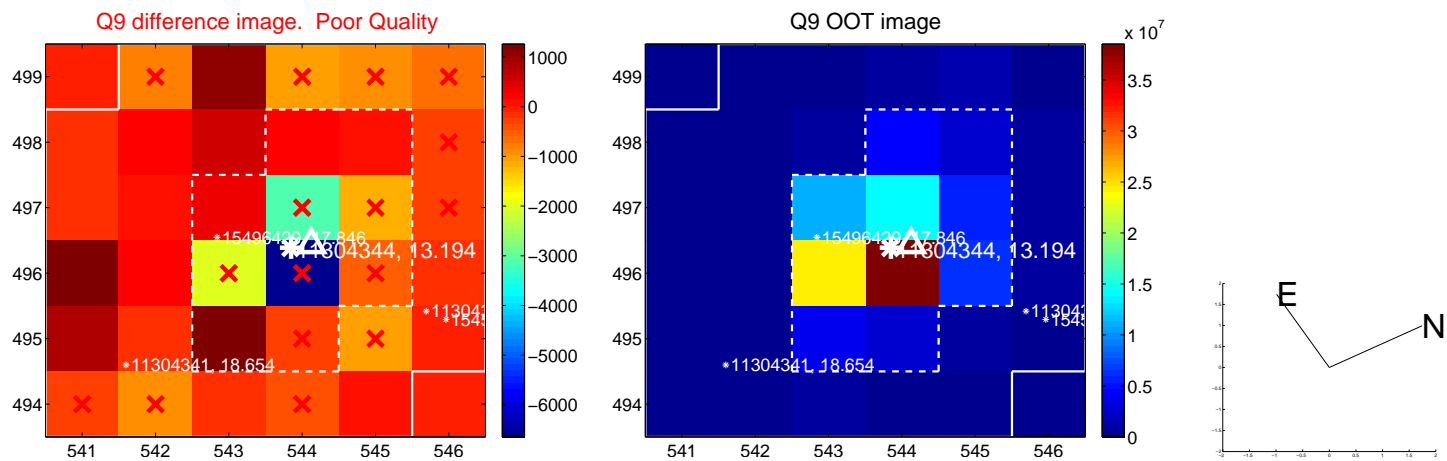


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



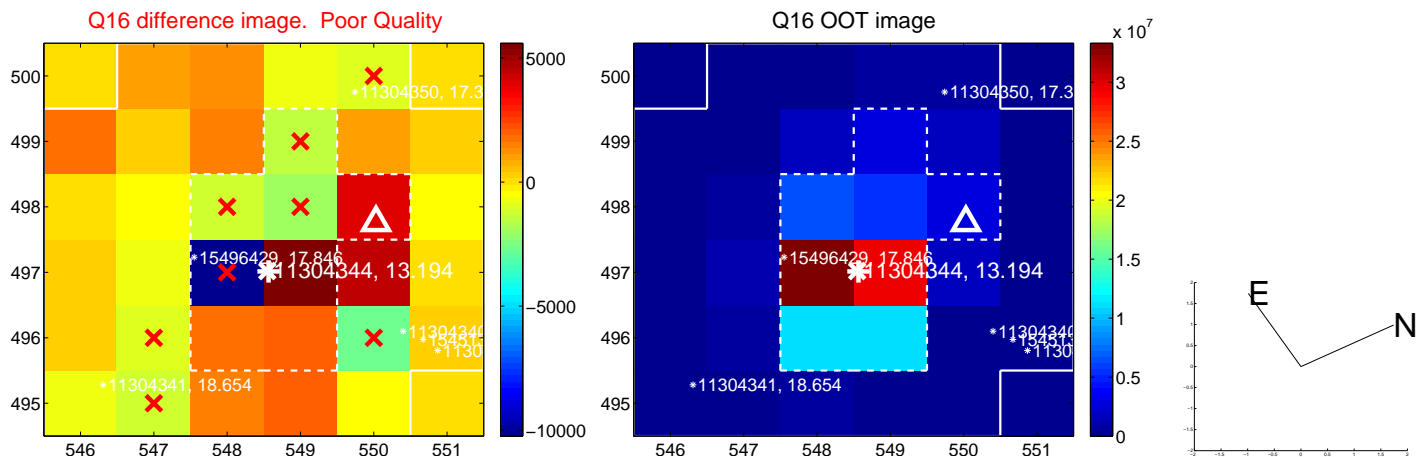
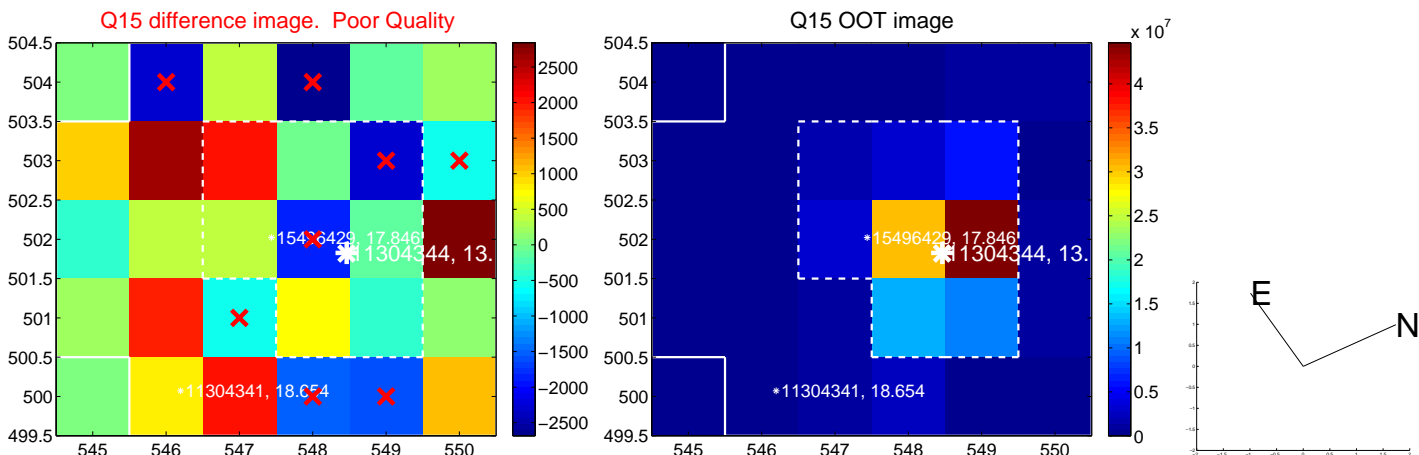
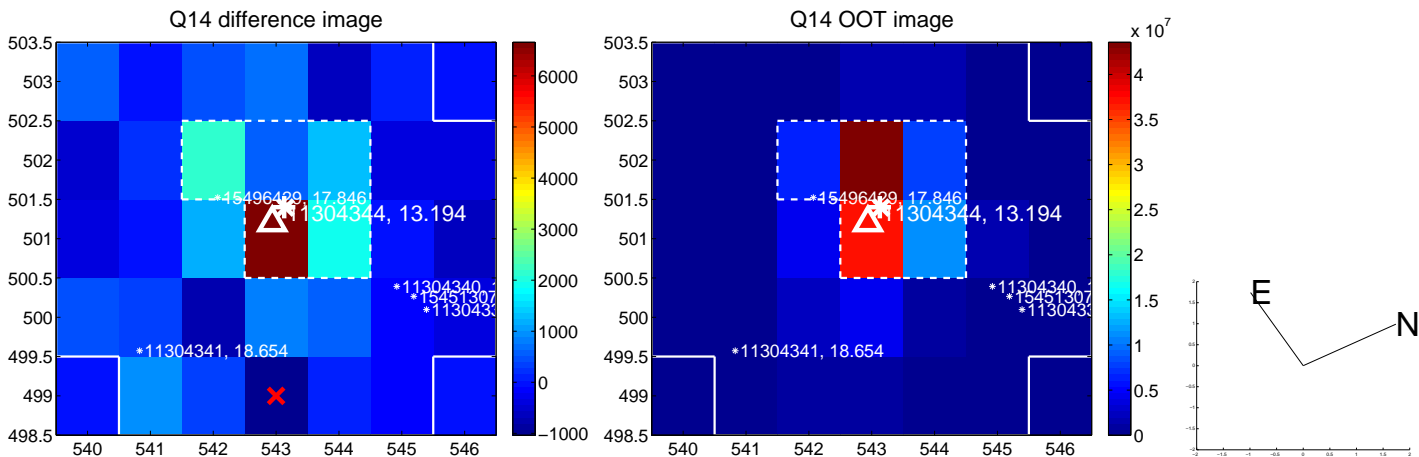
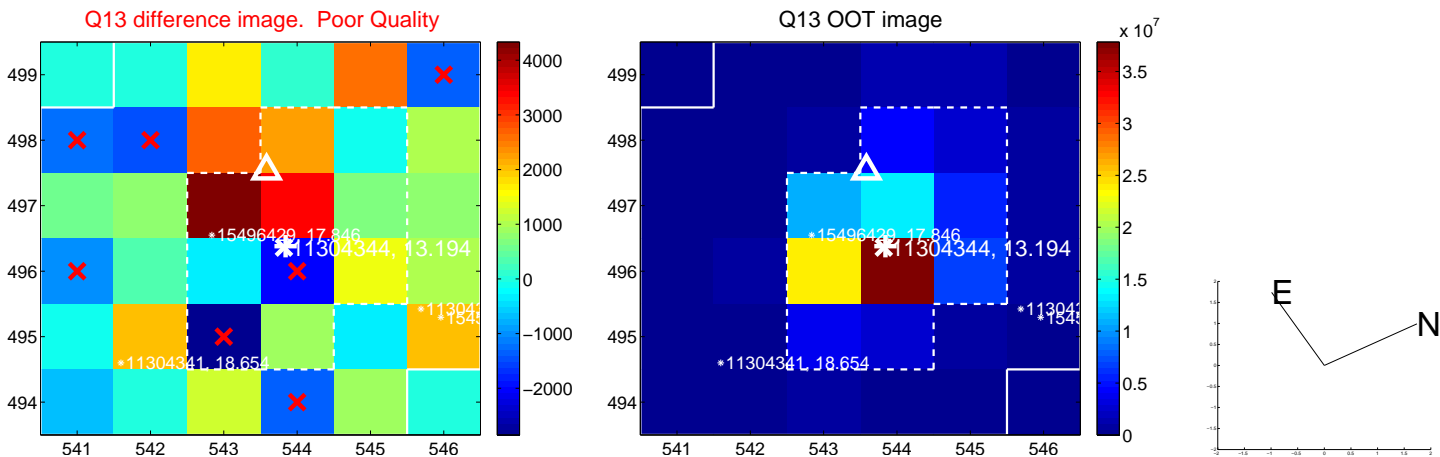


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



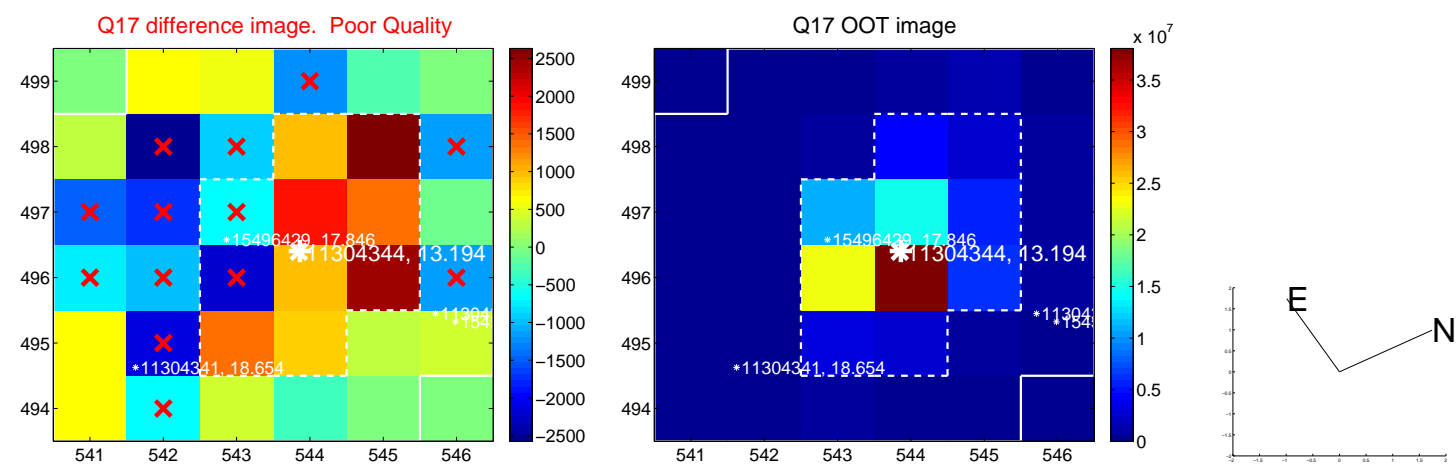


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

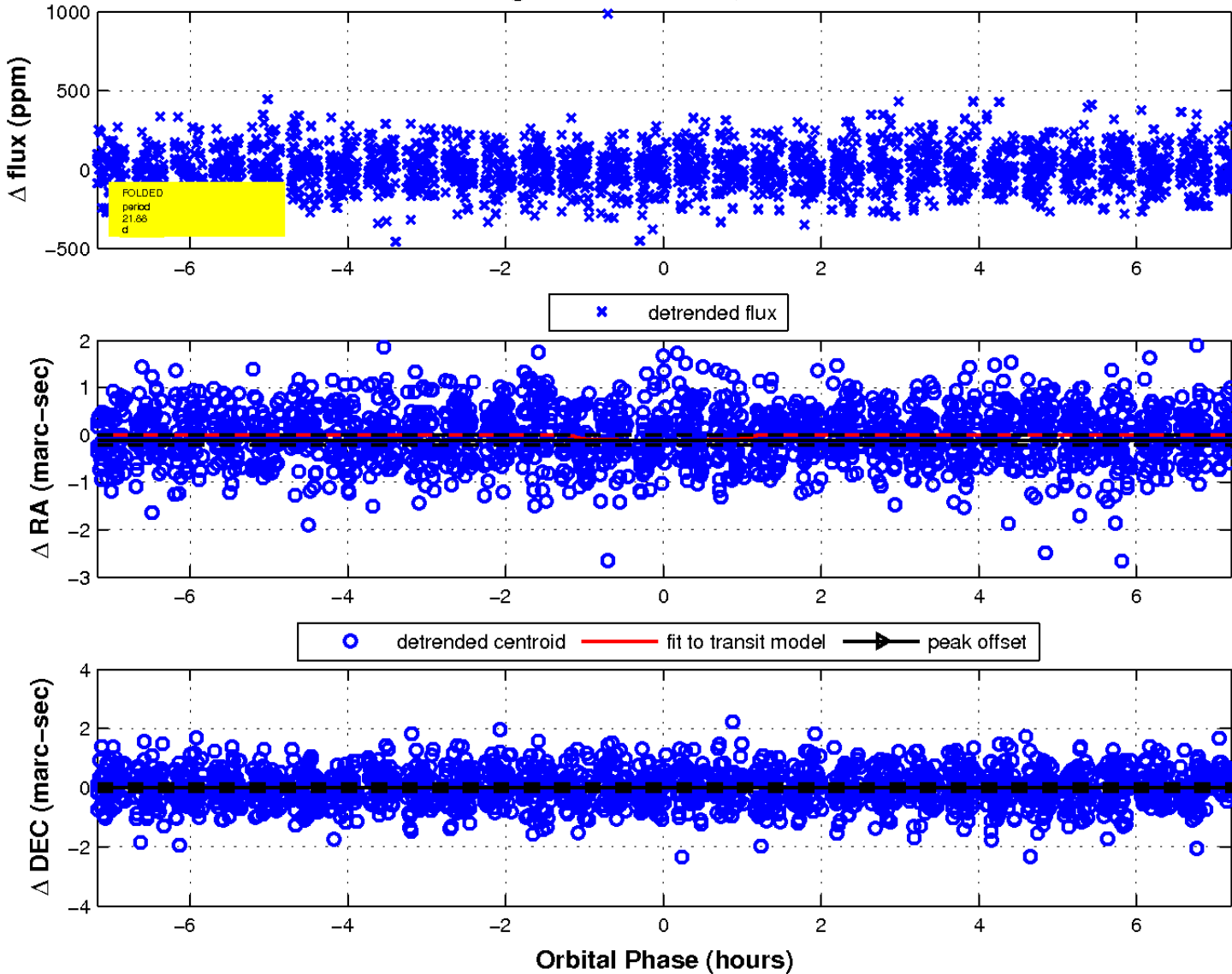




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

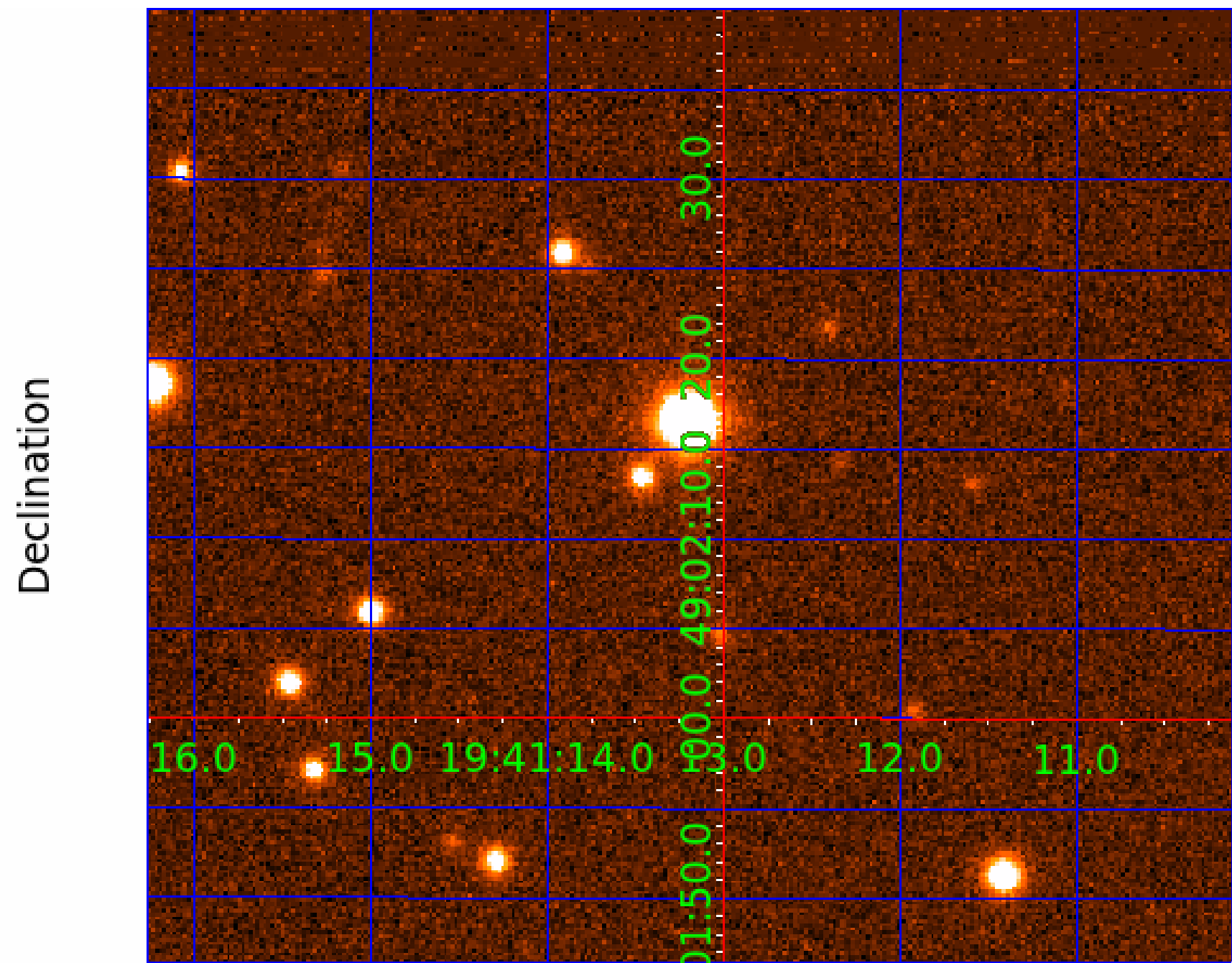


fluxWeightedCentroids, Planet 6 of 7





UKIRT Image





# KIC 011304344

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011304344-01	OBS	No	0.863290	132.226037	0.0	6.125	10.2	0.0	1.67	7227	0.01	16379.51
011304344-02	OBS	No	21.393712	133.479125	212.4	1.842	10.3	12.8	1.67	7227	2.50	226.71
011304344-03	OBS	No	153.104629	225.899800	223.1	6.707	9.6	9.5	1.67	7227	2.92	16.44
011304344-04	OBS	No	41.015764	158.956317	322.2	0.929	11.0	11.0	1.67	7227	3.06	95.19
011304344-05	OBS	No	11.643967	133.955228	46.4	9.518	11.7	7.5	1.67	7227	1.17	510.16
011304344-06	OBS	No	21.884143	148.668846	220.8	2.402	9.3	10.3	1.67	7227	2.87	219.96
011304344-07	OBS	No	44.937165	157.100009	196.5	3.377	9.3	9.5	1.67	7227	2.71	84.28

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011304344-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
011304344-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011304344-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—MOD_NONUNIQ_DV—HALO_GHOST
011304344-05	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
011304344-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011304344-07	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

**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.

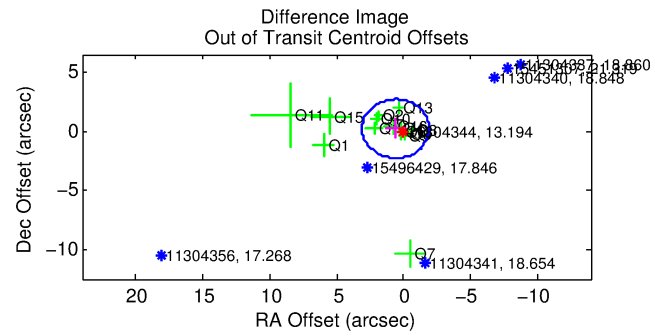
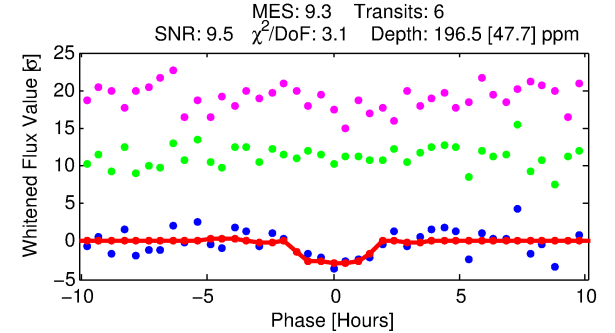
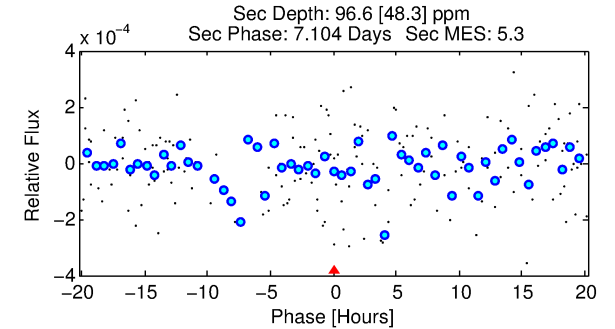
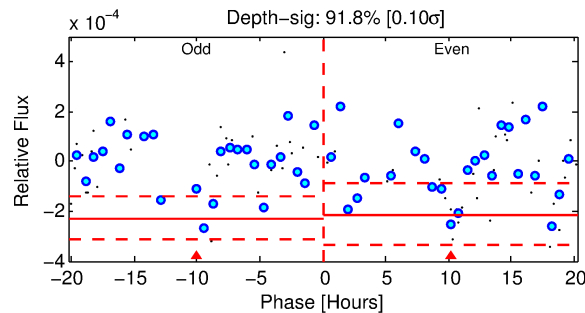
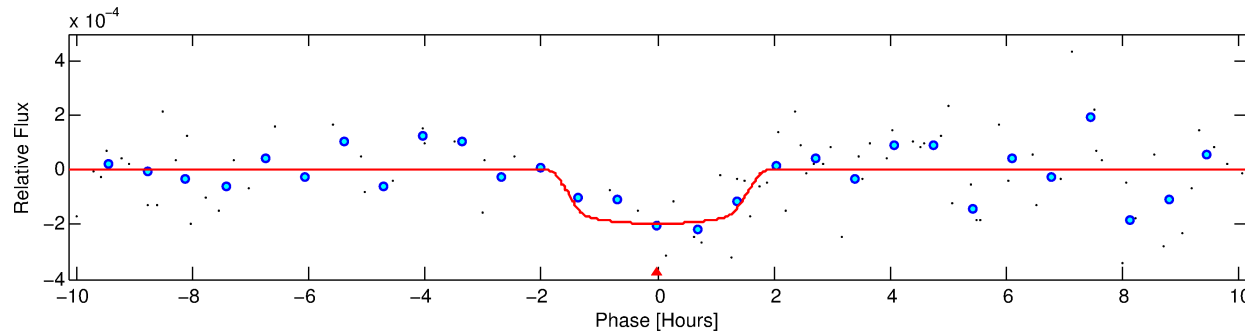
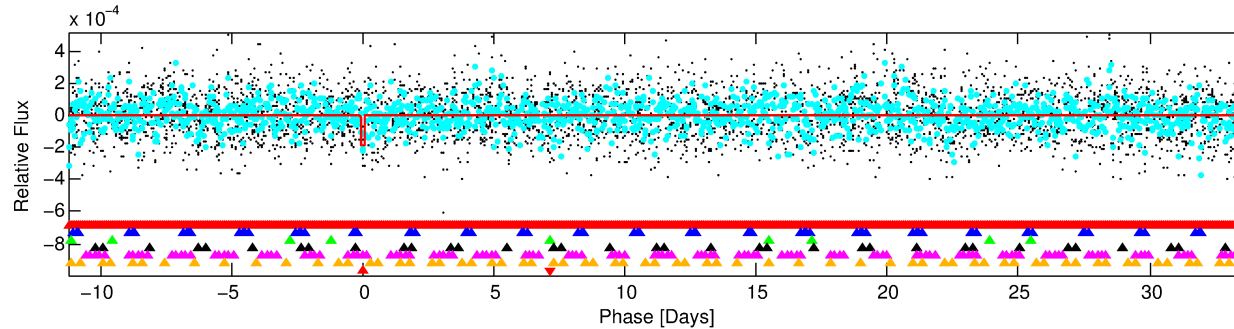
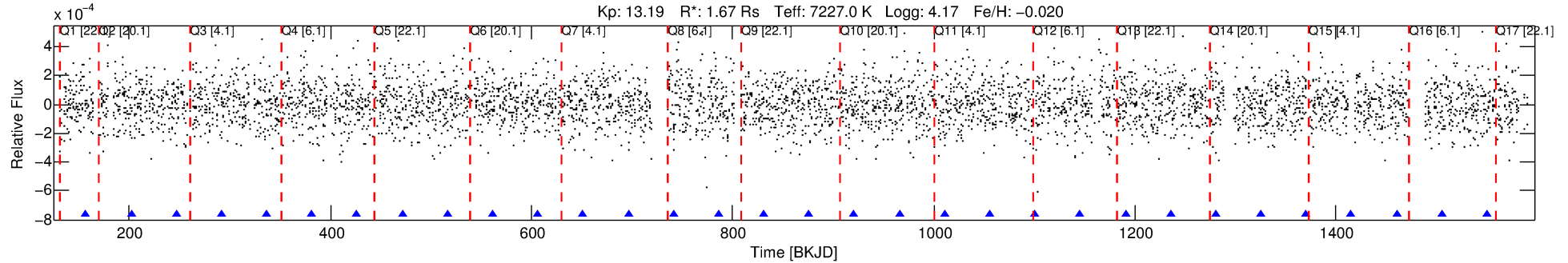
Ephemeris Match Information For 011304344-07

No Significant Match Found



# DV One-Page Summary

KIC: 11304344 Candidate: 7 of 7 Period: 44.937 d



## DV Fit Results:

Period = 44.93717 [0.00088] d  
Epoch = 157.1000 [0.0197] BKJD  
Rp/R\* = 0.0149 [0.0148]  
a/R\* = 47.90 [297.23]  
b = 0.90 [1.34]  
Seff = 84.28 [34.73]  
Teq = 773 [80] K  
Rp = 2.71 [2.83] Re  
a = 0.2837 [0.0753] AU  
Ag = 584.33 [1218.49] [0.48 $\sigma$ ]  
Teffp = 5873 [3021] K [1.69 $\sigma$ ]

## DV Diagnostic Results:

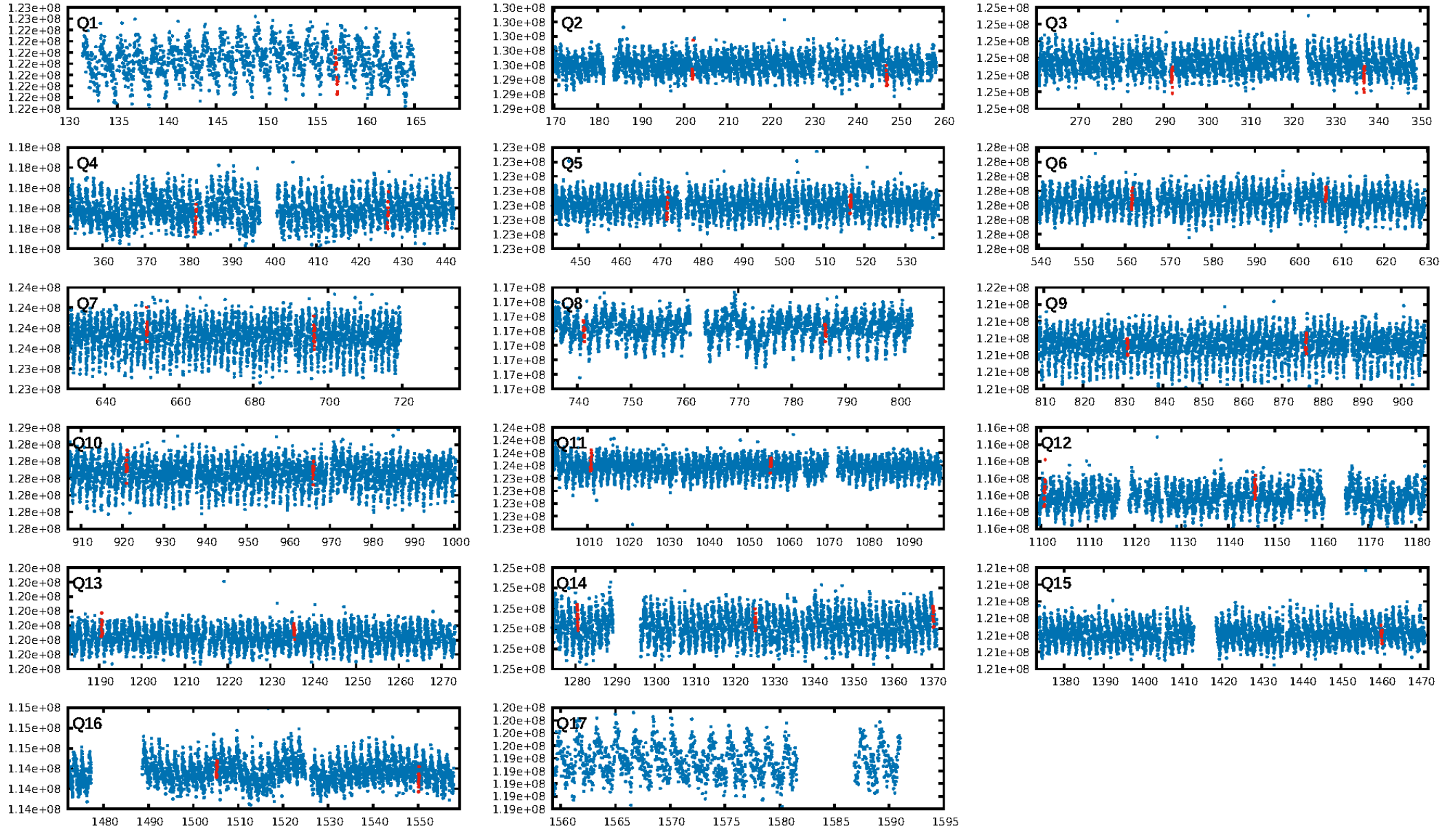
ShortPeriod-sig: 100.0% [26.87 $\sigma$ ]  
LongPeriod-sig: 100.0% [345.74 $\sigma$ ]  
ModelChiSquare2-sig: 36.4%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.82e-08**  
RollingBand-fgt: 1.00 [6/6]  
**GhostDiagnostic-chr: -0.9222**  
Centroid-sig: 6.6%  
Centroid-so: 1.142 arcsec [1.78 $\sigma$ ]  
OotOffset-rm: 0.634 arcsec [0.76 $\sigma$ ]  
KicOffset-rm: 0.634 arcsec [0.78 $\sigma$ ]  
OotOffset-st: 4/4/3/3 [14]  
KicOffset-st: 4/4/3/3 [14]  
DiffImageQuality-fgm: 0.50 [7/14]  
DiffImageOverlap-fno: 0.00 [0/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:26:42 Z

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

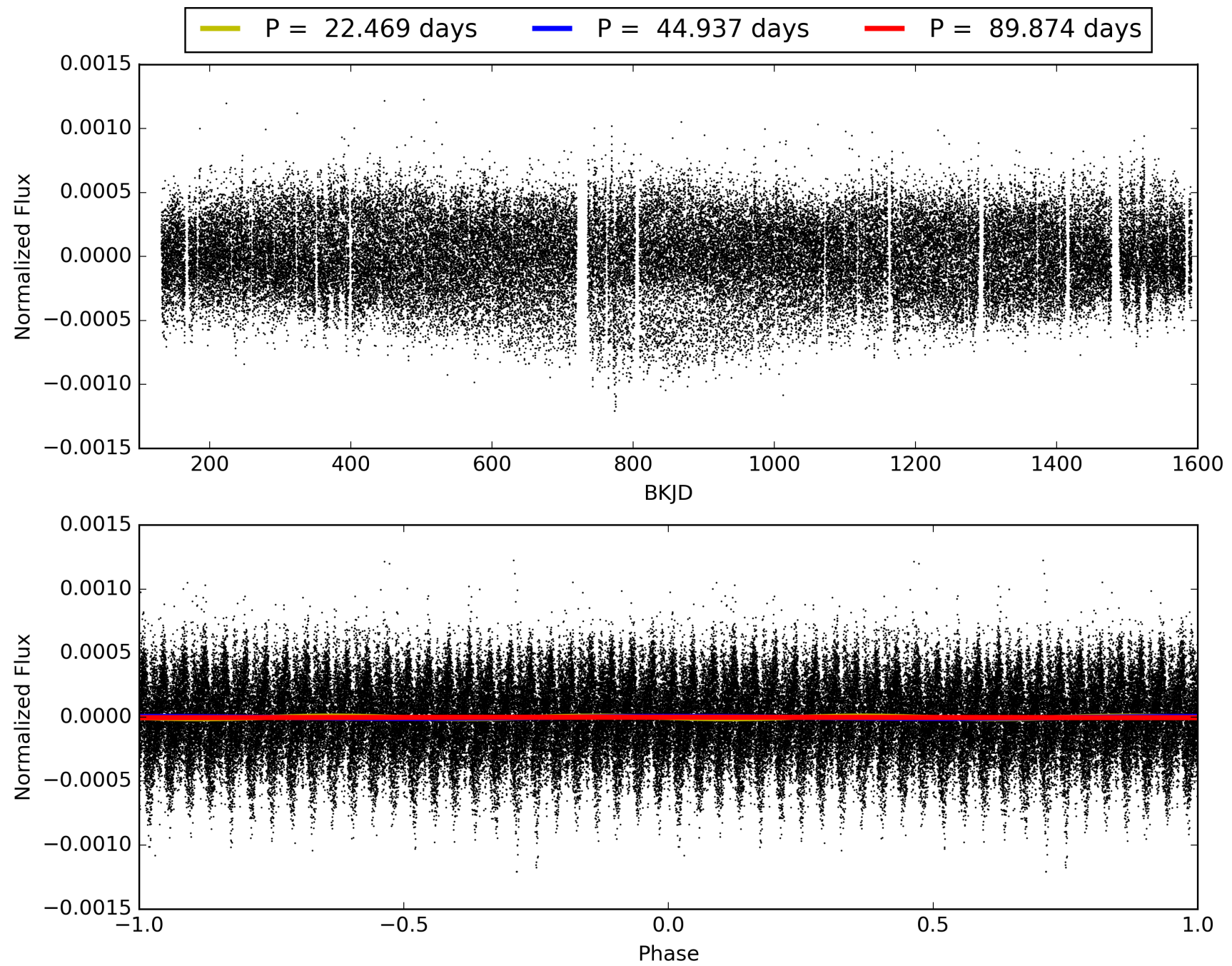


# TCE 011304344-07, PDC Light Curves





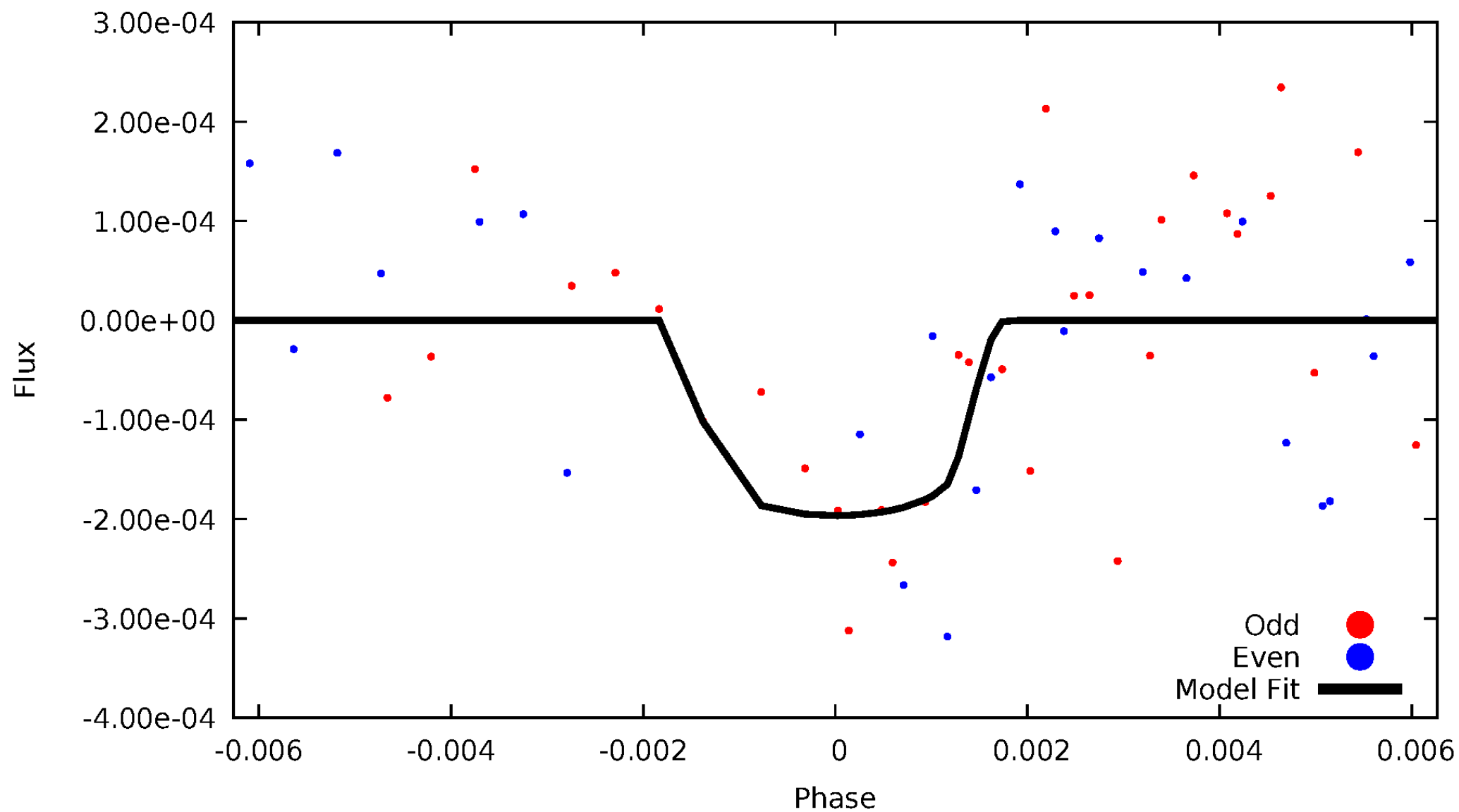
TCE 011304344-07





# DV Odd/Even

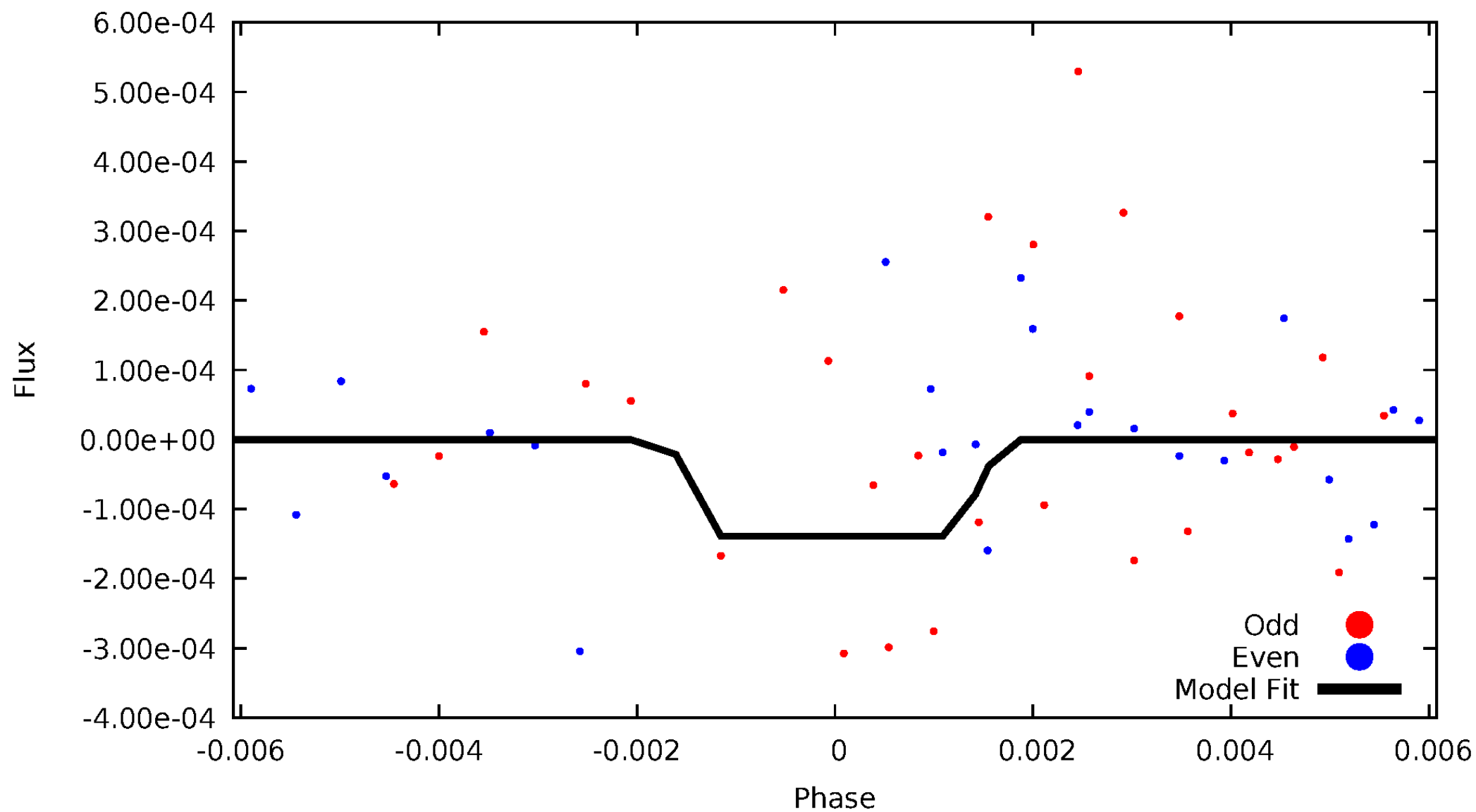
TCE 011304344-07





# ALT Odd/Even

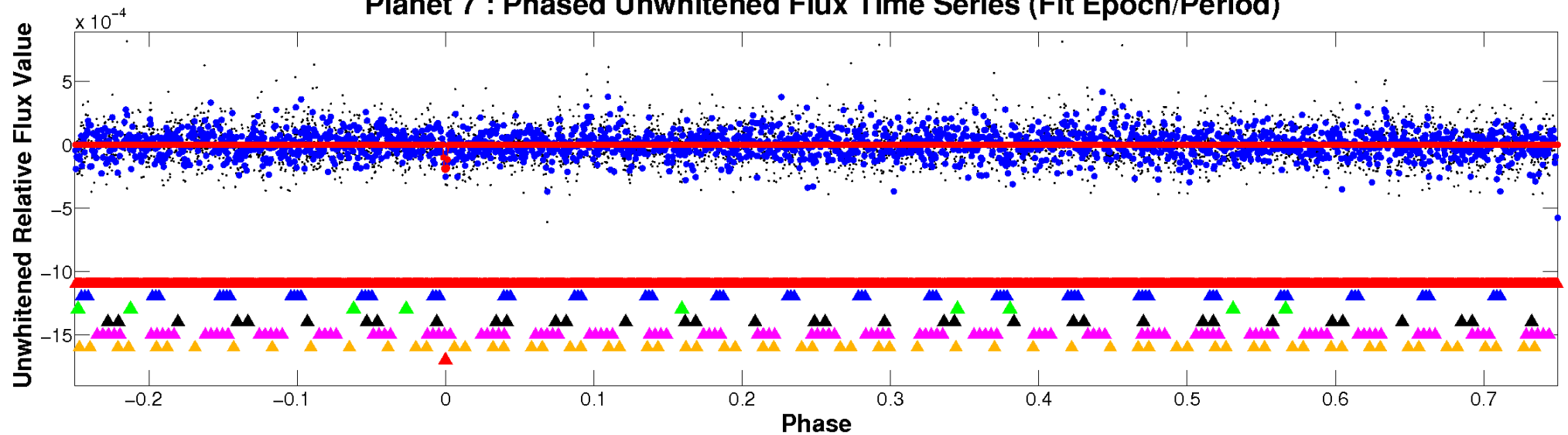
TCE 011304344-07



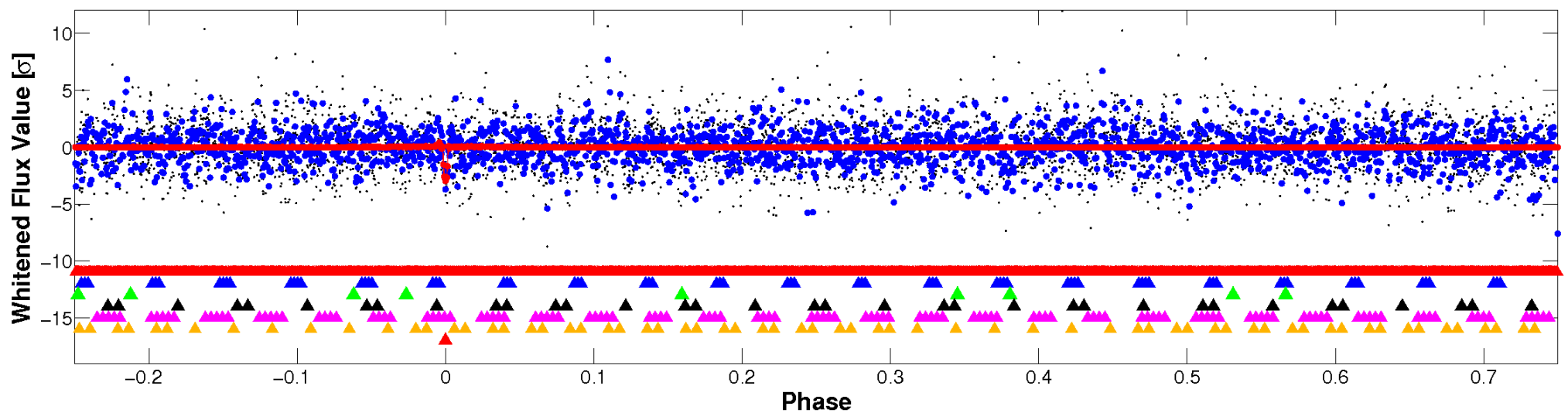


# Non-Whitened Vs. Whitened Light Curve

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



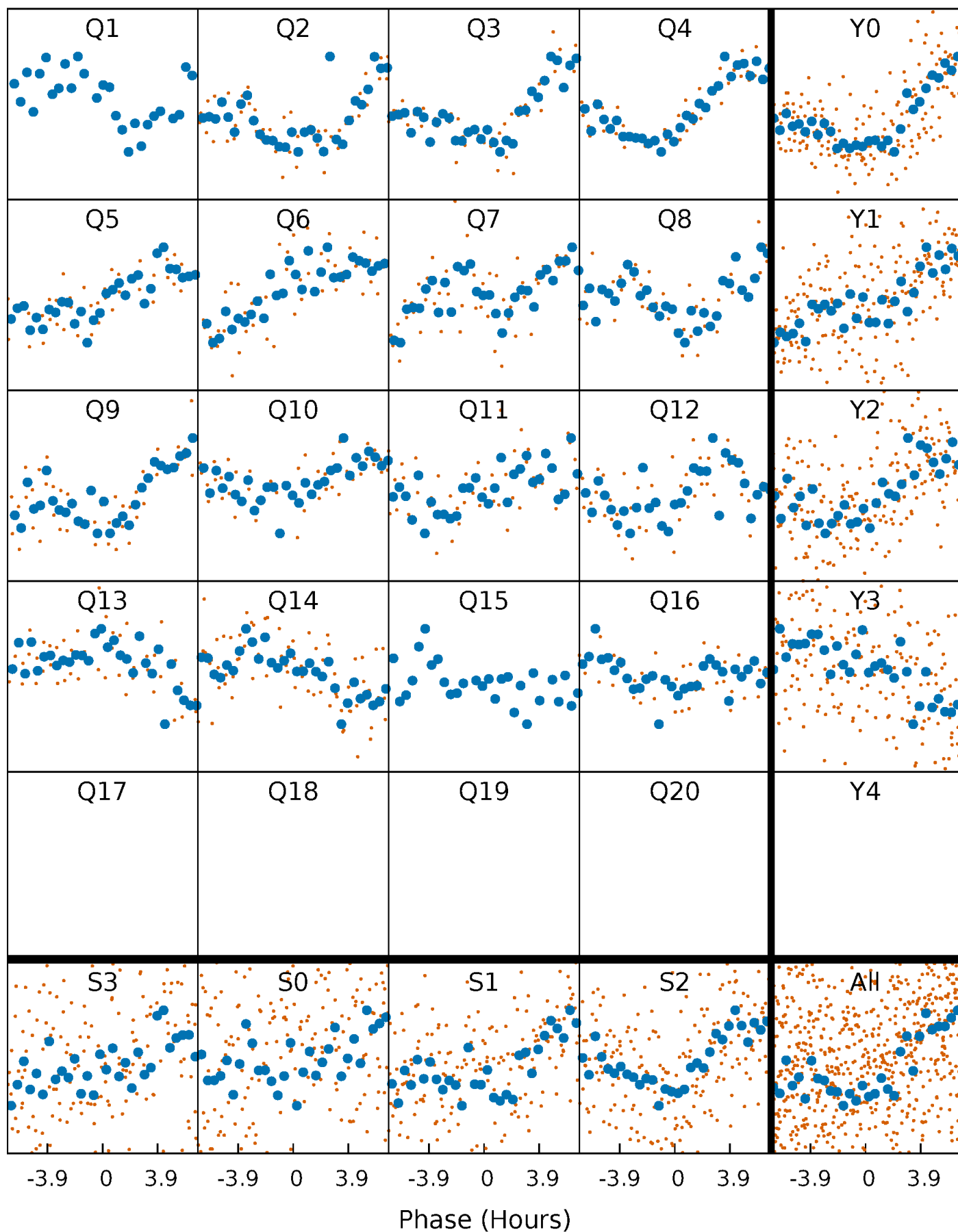
Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

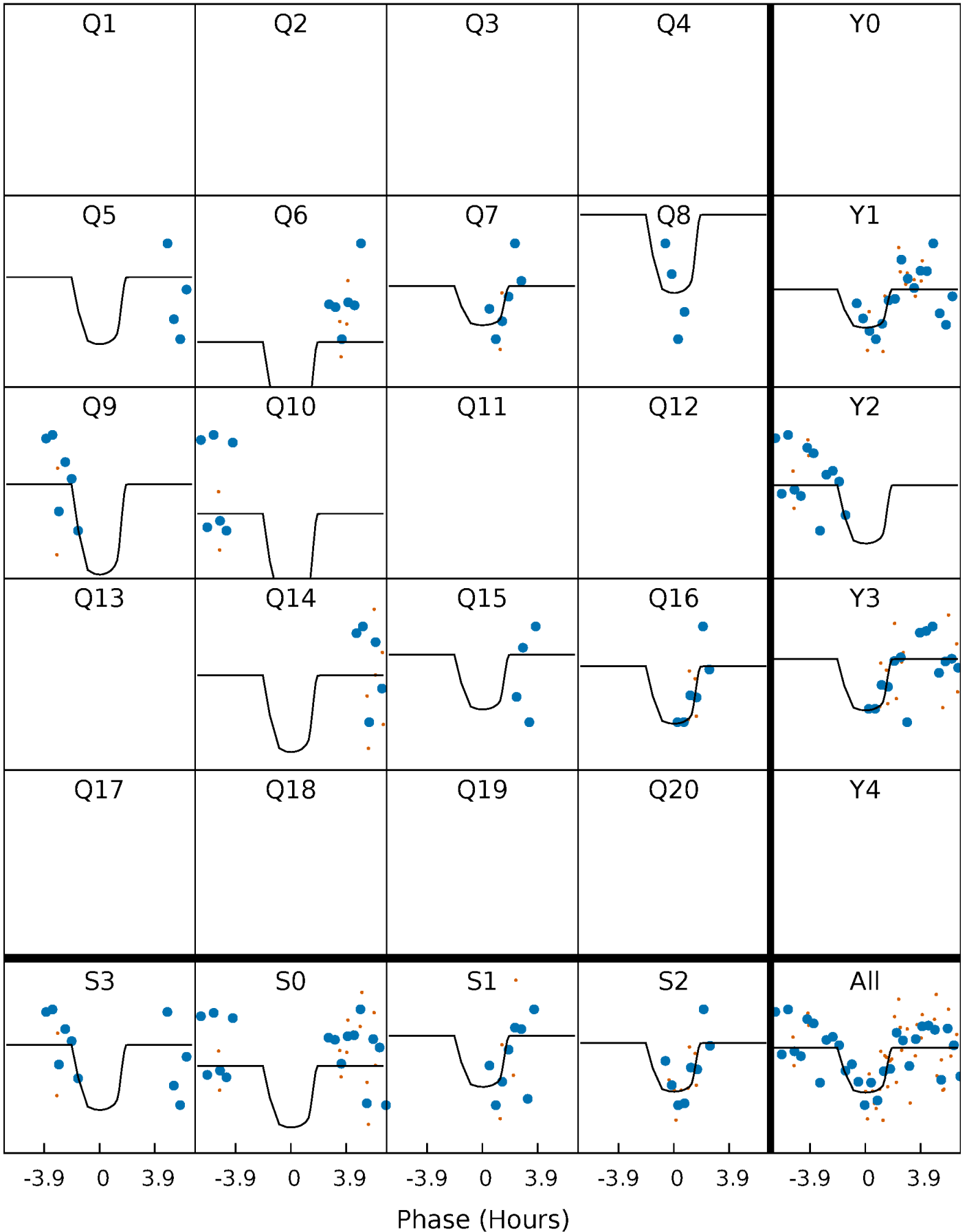
TCE 011304344-07 P= 44.937165 Days  $T_0=157.100009$  (BKJD)





# DV Quarter-Phased Transit Curves

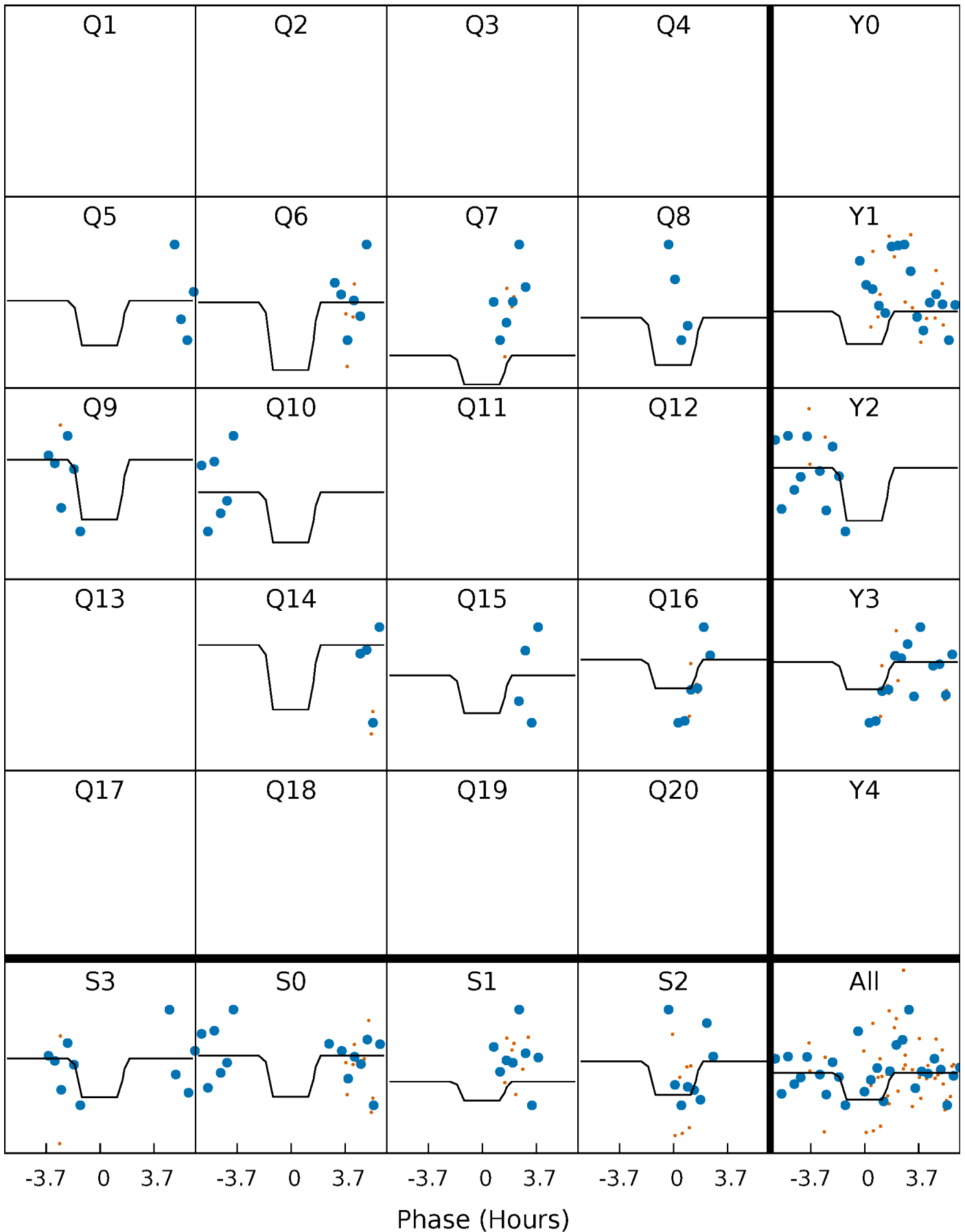
TCE 011304344-07 P= 44.937165 Days  $T_0=157.100009$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011304344-07   P= 44.937620 Days    $T_0=157.082994$  (BKJD)

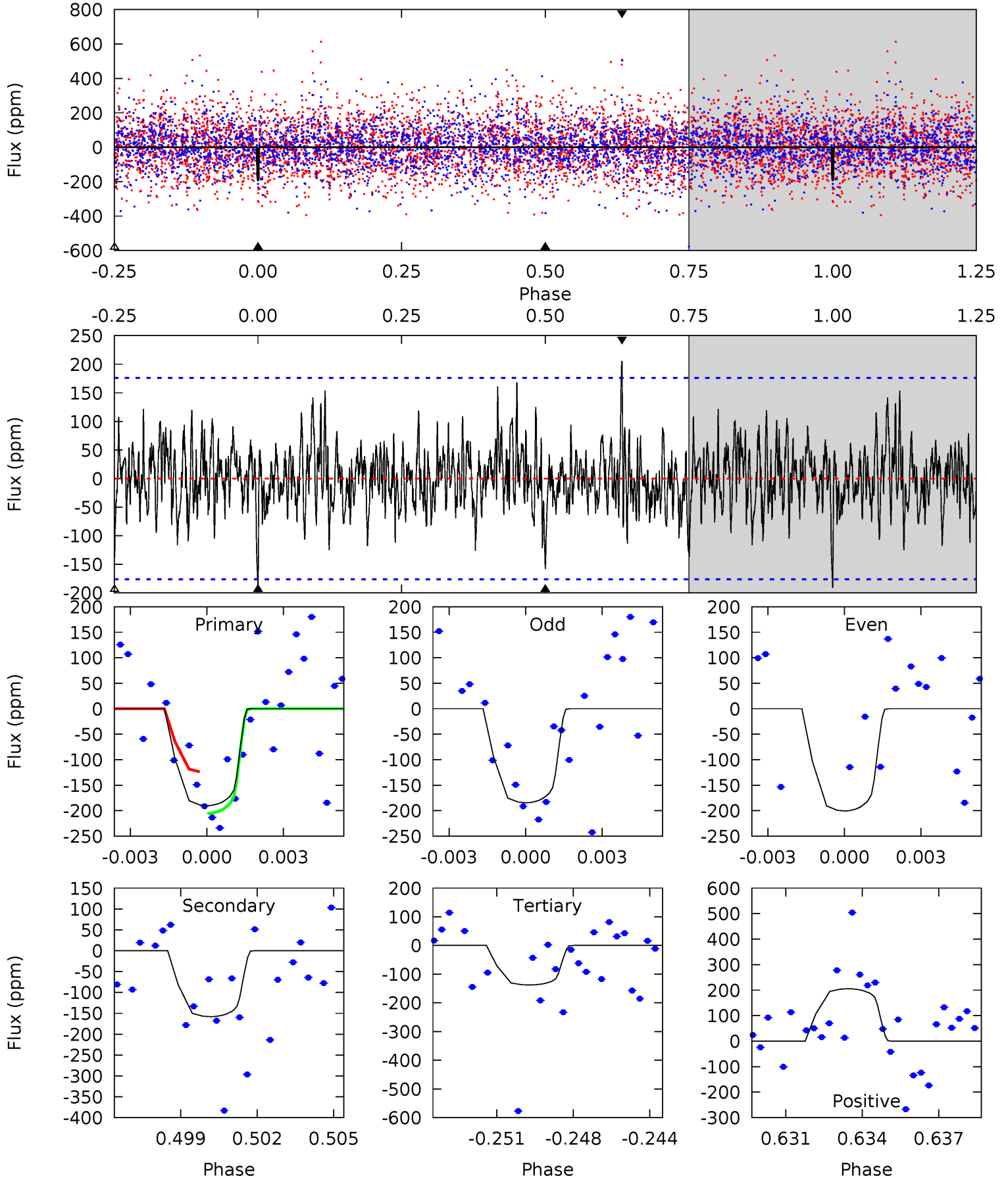




# DV Model-Shift Uniqueness Test

011304344-07, P = 44.937165 Days, E = 112.162844 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
5.64	4.70	4.09	6.10	5.23	2.94	1.34	1.55	-0.46	0.61	-1.41	0.23	0.82	0.52	0.81

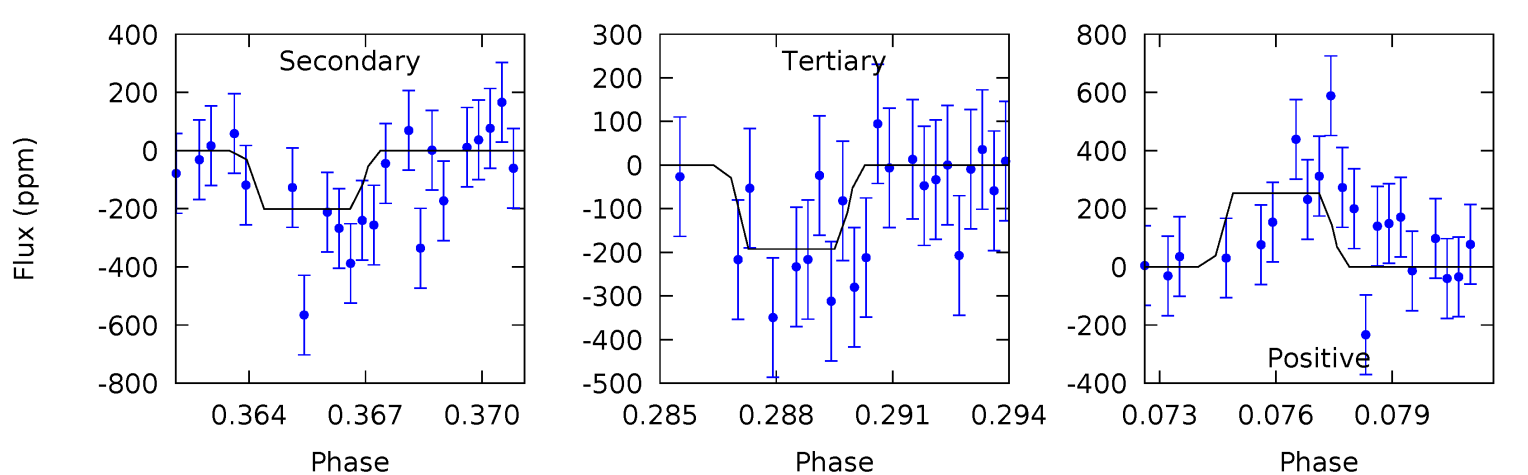
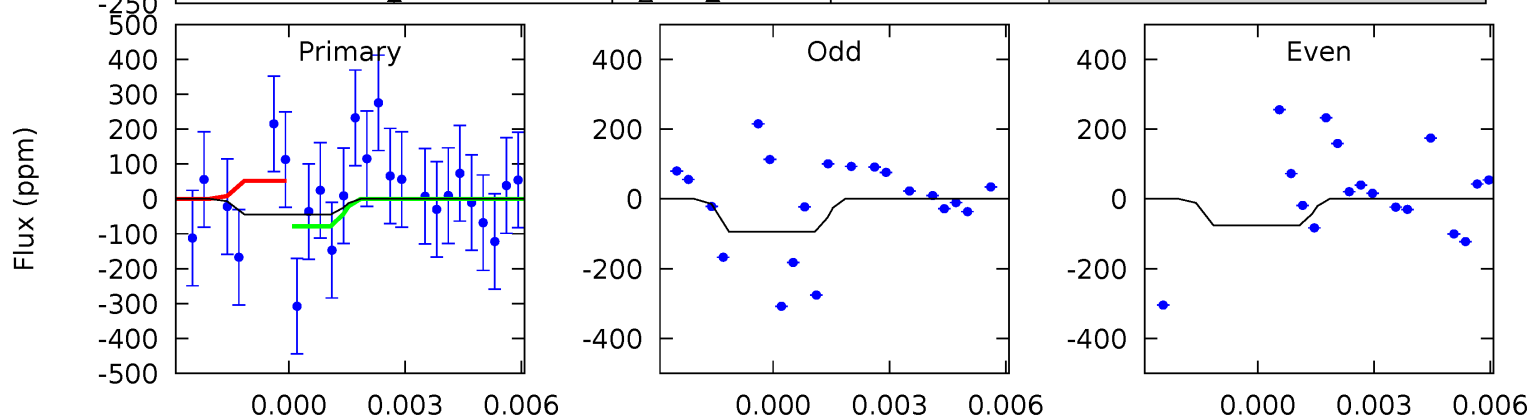
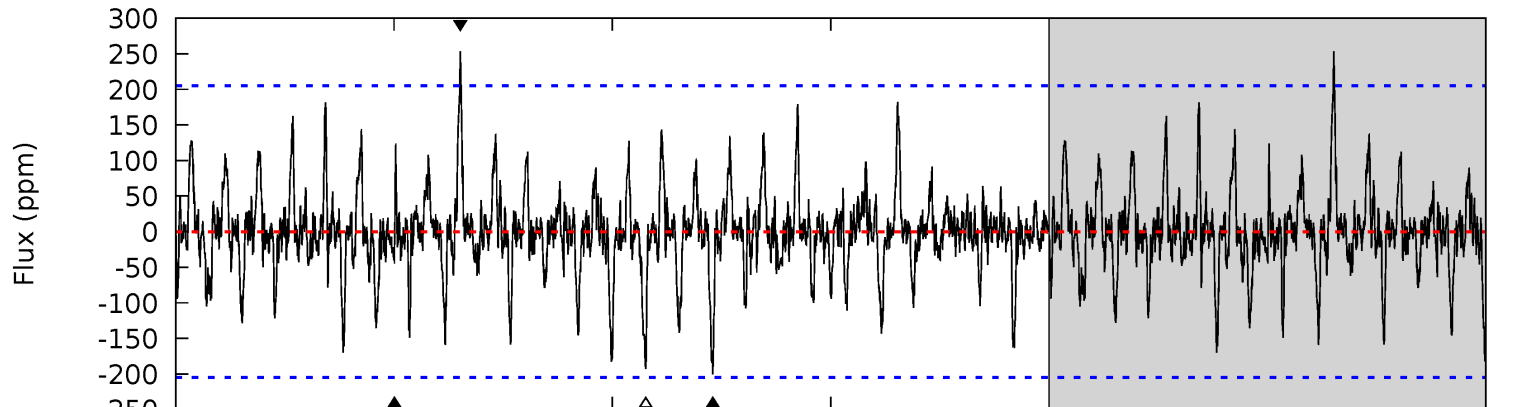
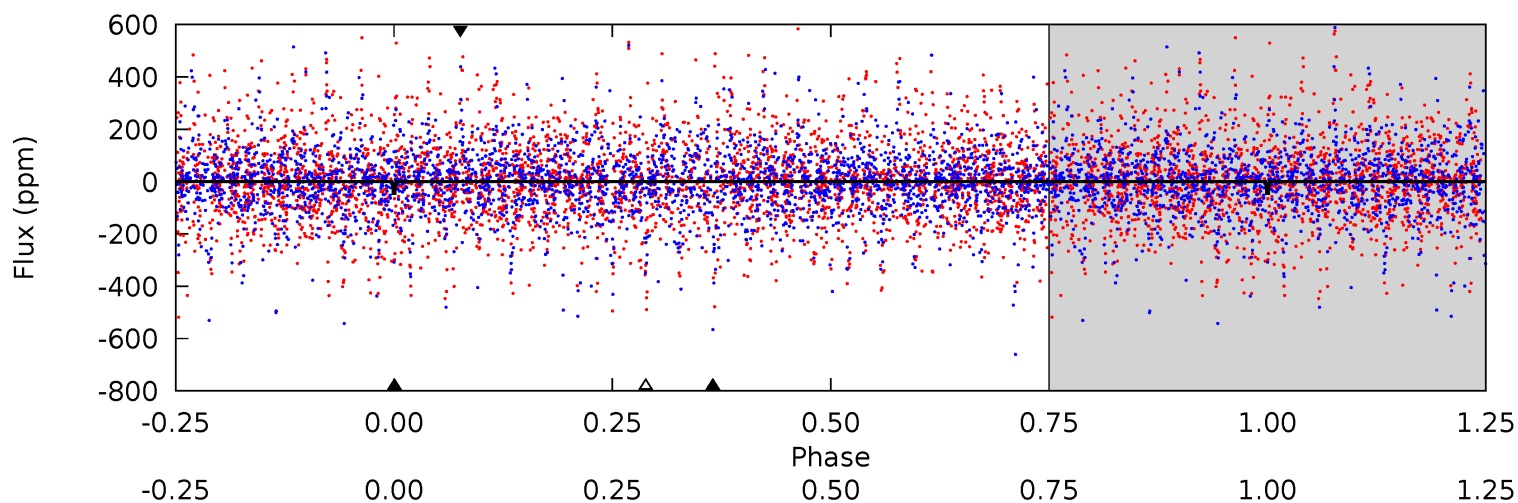




# Alt Model-Shift Uniqueness Test

011304344-07, P = 44.937620 Days, E = 112.145374 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
1.14	5.13	4.93	6.49	5.25	2.96	1.16	-3.79	-5.35	0.20	-1.36	0.23	1.05	0.56	0.24





### Stellar Parameters For KIC 011304344

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7227^{+226}_{-302}$	$4.173^{+0.108}_{-0.201}$	$-0.020^{+0.200}_{-0.350}$	$1.666^{+0.540}_{-0.291}$	$1.505^{+0.221}_{-0.221}$	$0.459^{+0.239}_{-0.236}$
	+3%/-4%	+3%/-5%	+1000%/-1750%	+32%/-17%	+15%/-15%	+52%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011304344-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-158 \pm 34$	$3.29^{+2.72}_{-2.01}$	$1093^{+79}_{-70}$	$6002^{+4755}_{-1361}$	$624^{+3763}_{-432}$
Alt.	$-201 \pm 39$	$2.80^{+2.56}_{-1.81}$	$1088^{+83}_{-66}$	$6903^{+7903}_{-1819}$	$1132^{+7798}_{-839}$

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



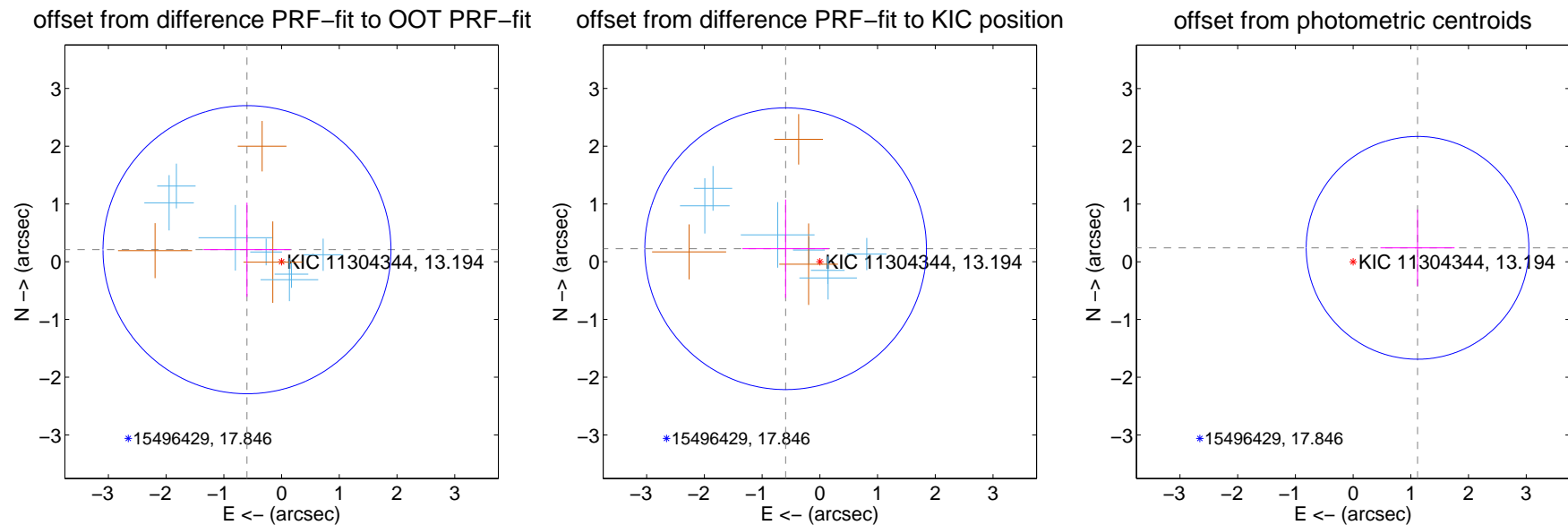
## DV Centroid Data

Supplemental centroid analysis for 011304344-07. Kepler magnitude: 13.19. Transit SNR 9.48

There are 7 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

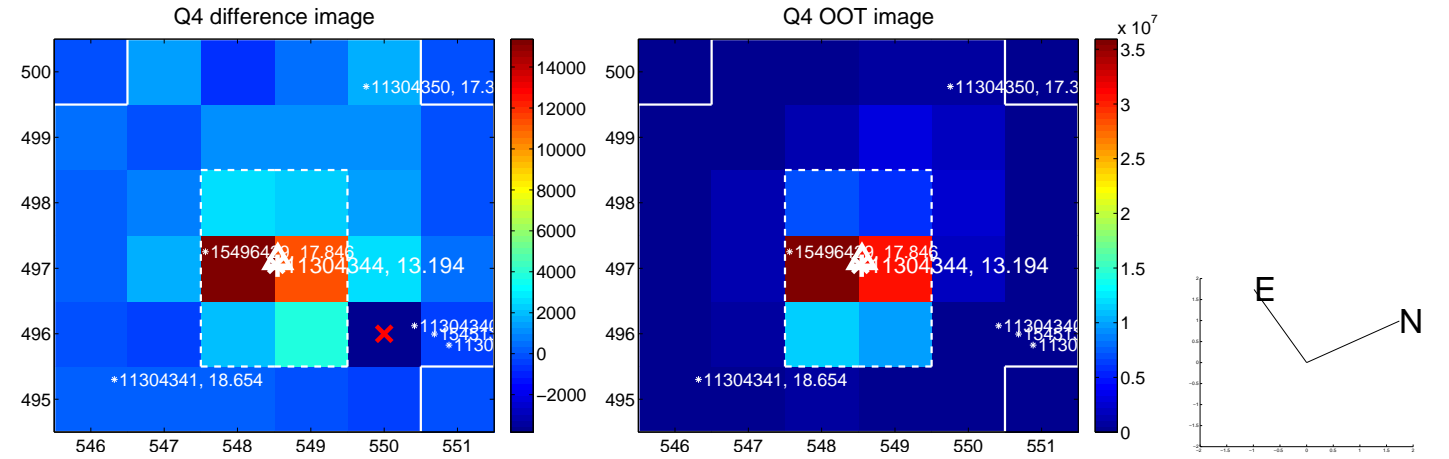
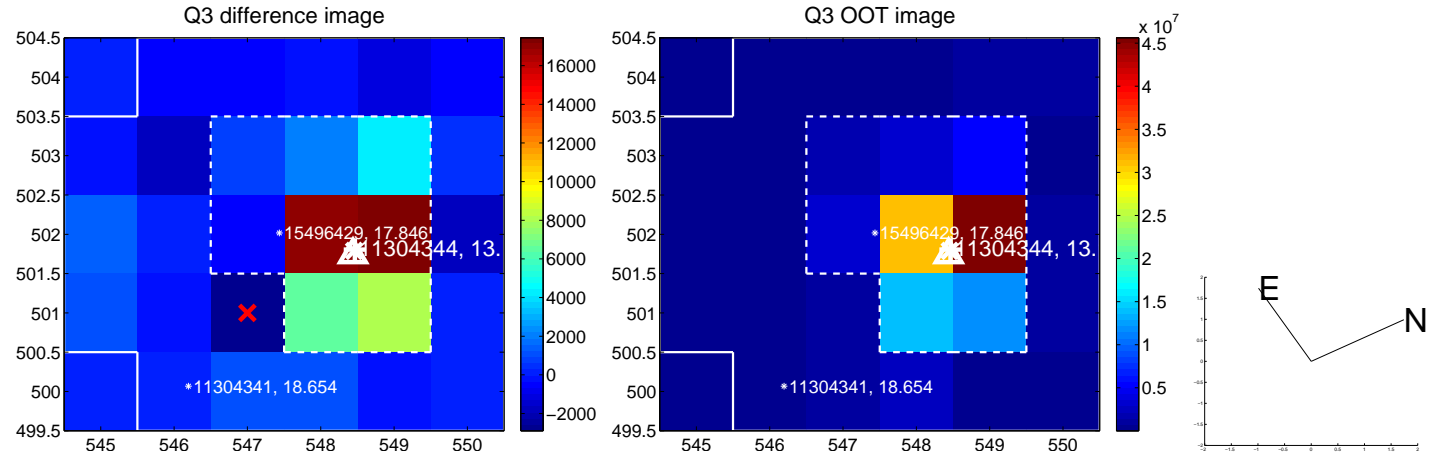
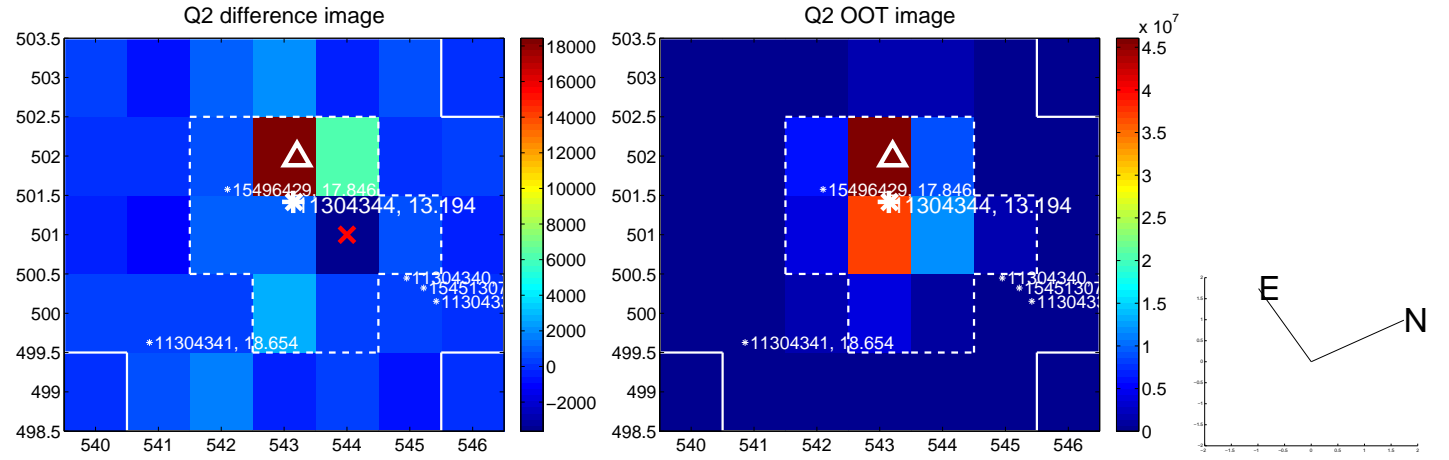
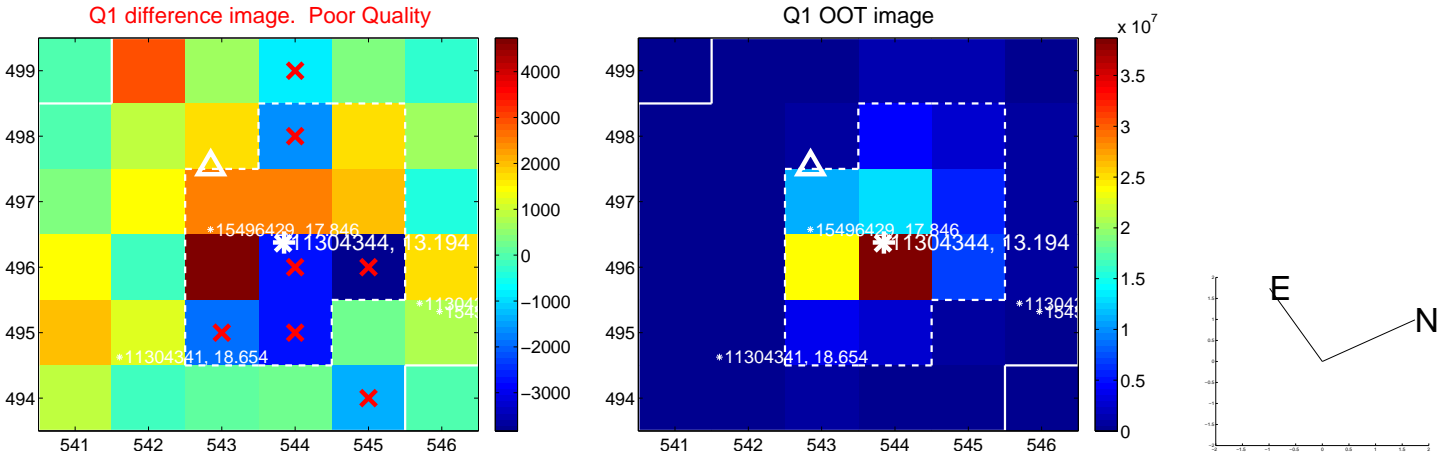
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.634 \pm 0.831$	0.76	$0.599 \pm 0.754$	$0.208 \pm 0.815$
PRF-fit source offset from KIC position	$0.634 \pm 0.813$	0.78	$0.593 \pm 0.749$	$0.225 \pm 0.851$
photometric centroid source offset	$1.14 \pm 0.64$	1.78	$-1.12 \pm 0.64$	$0.24 \pm 0.66$



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  $> 15,000$  are from the UKIRT catalog.

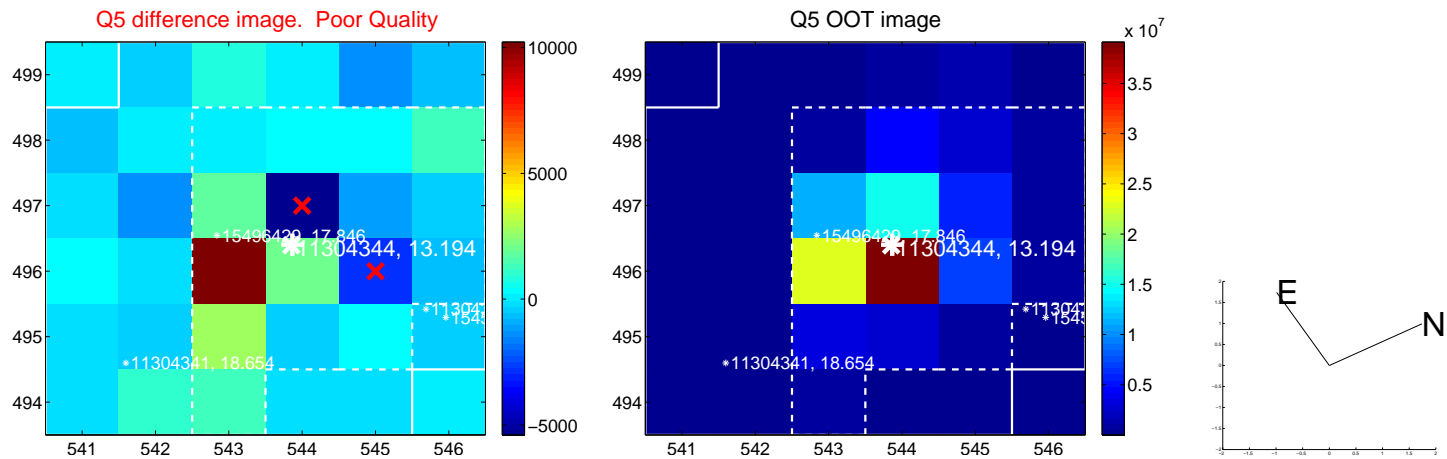


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



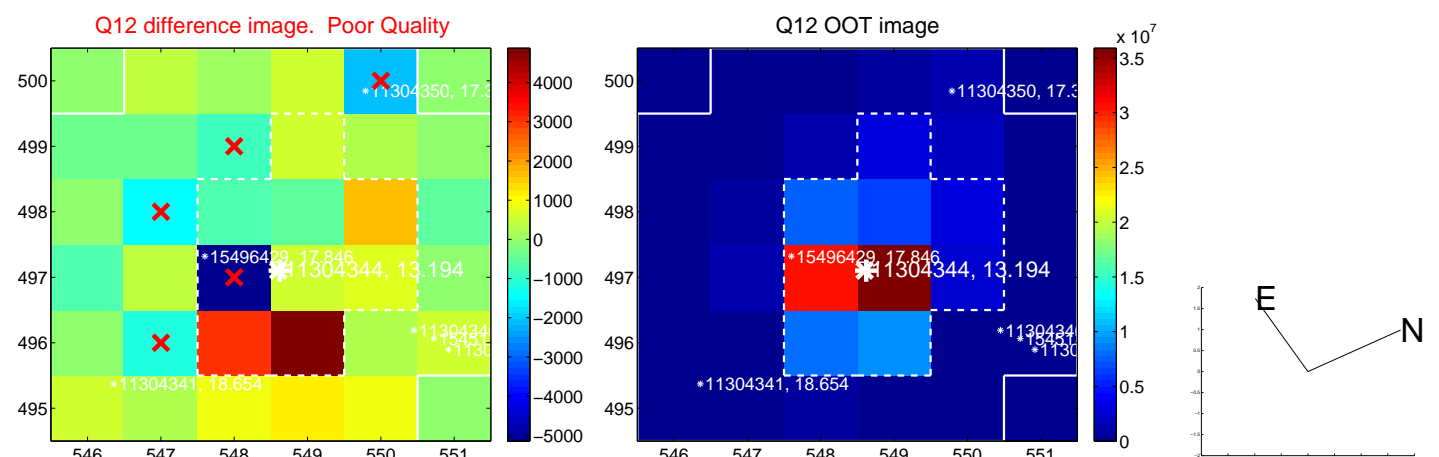
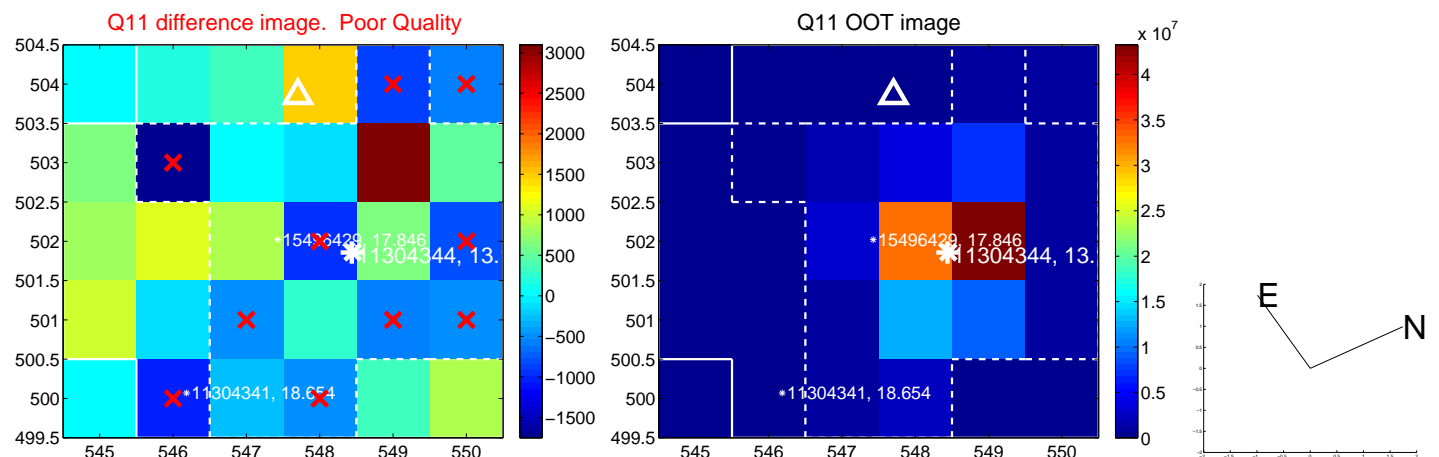
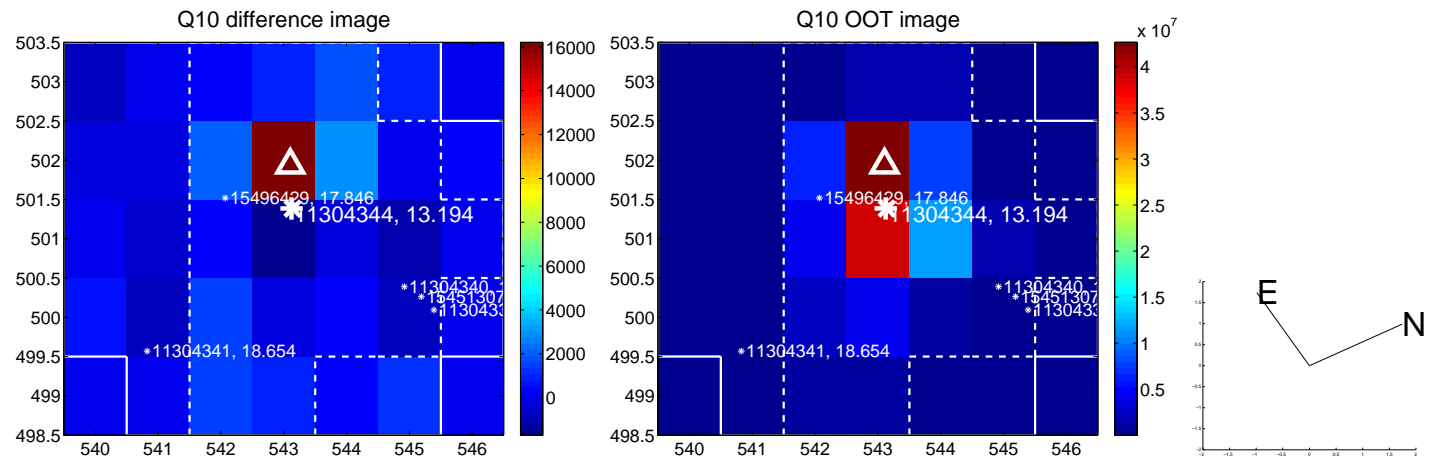
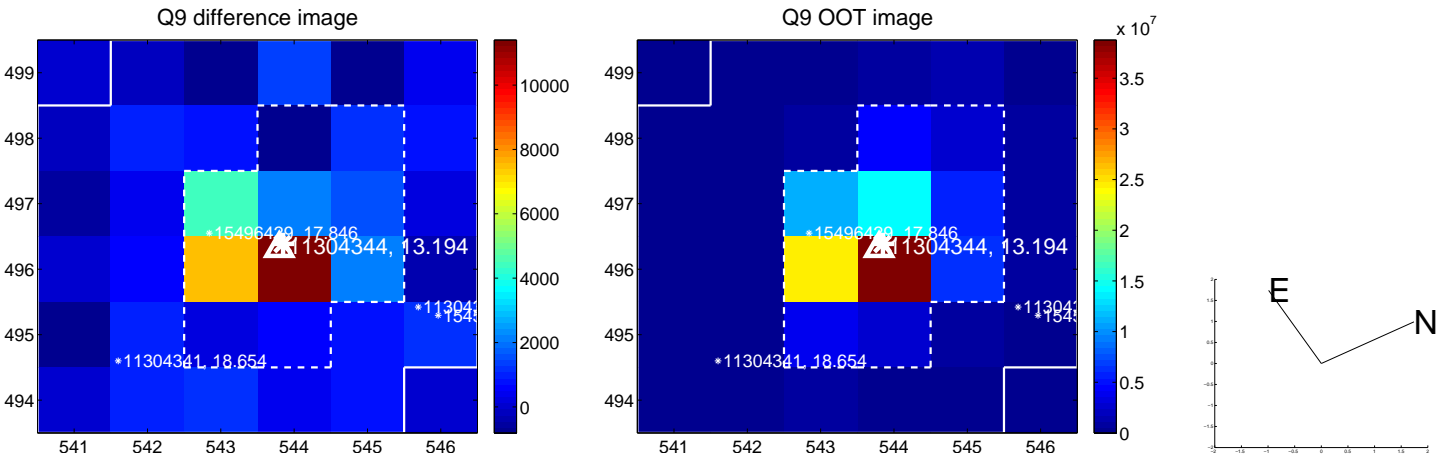


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



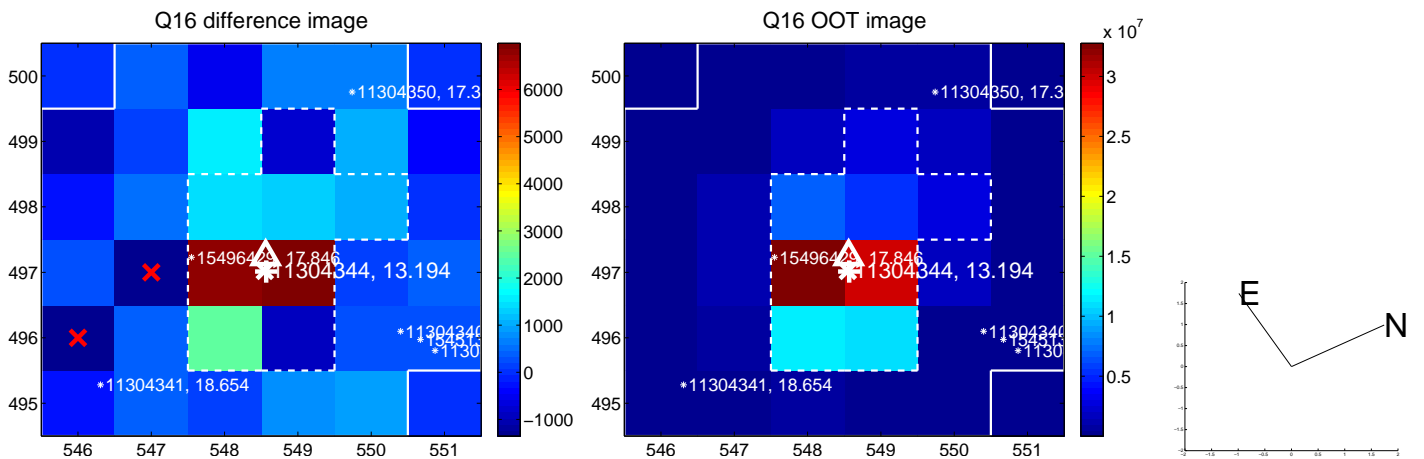
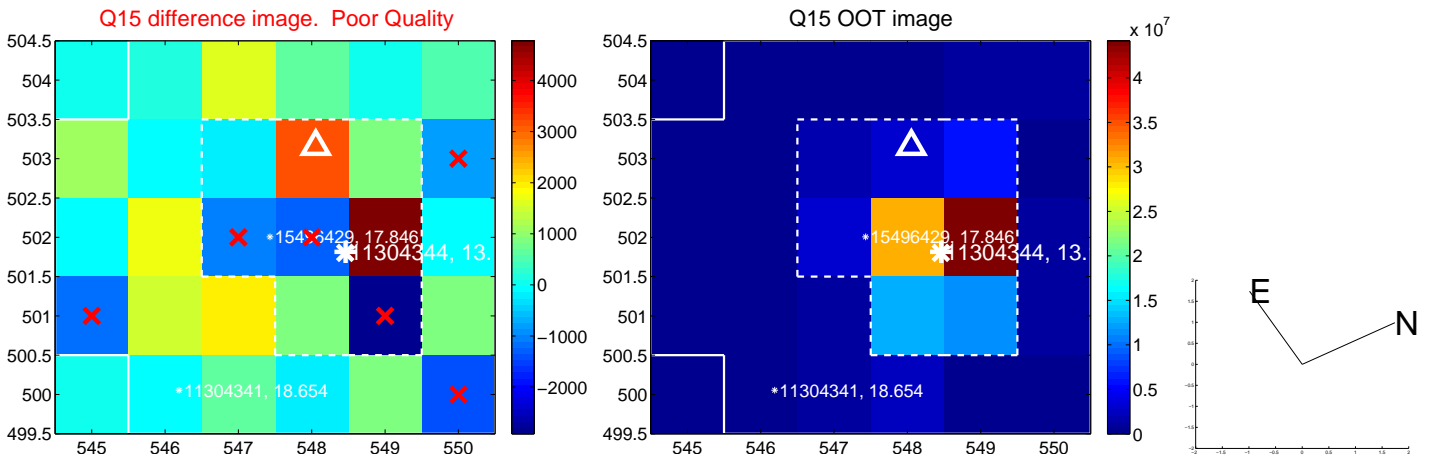
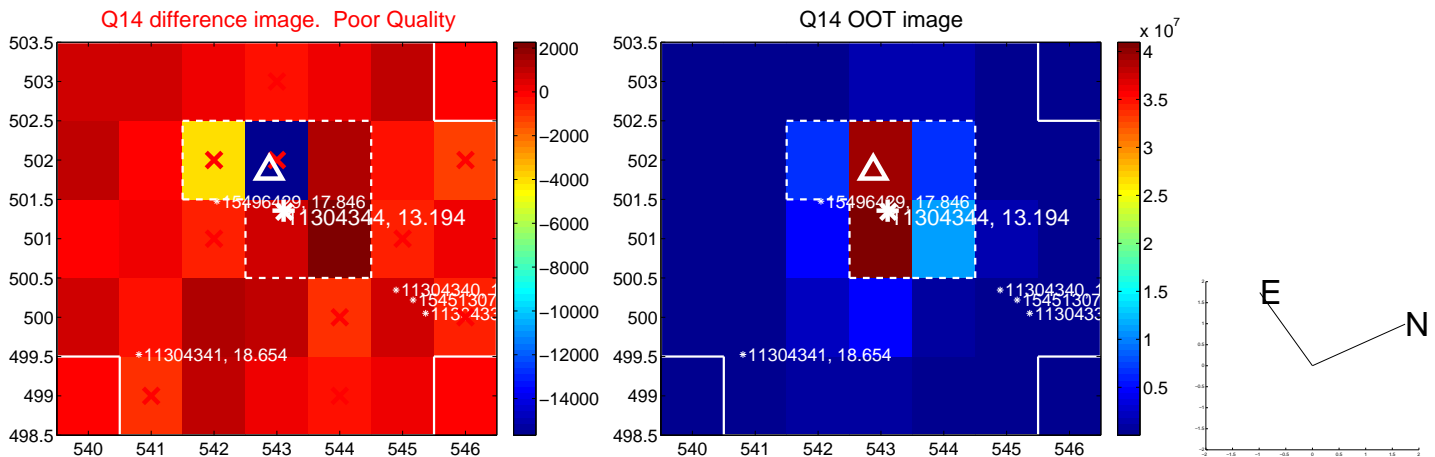
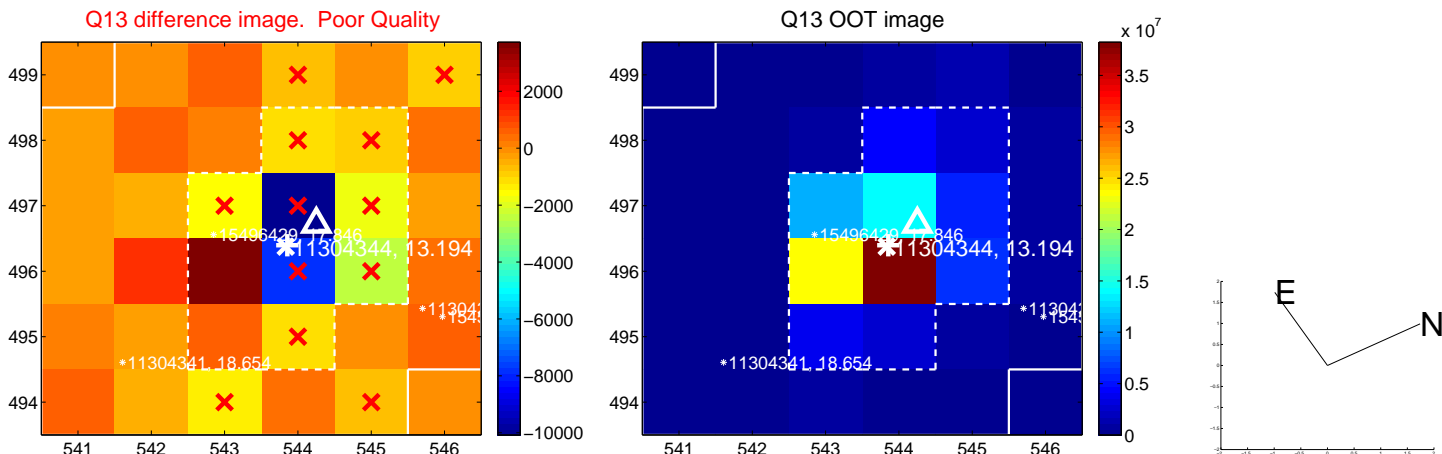


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



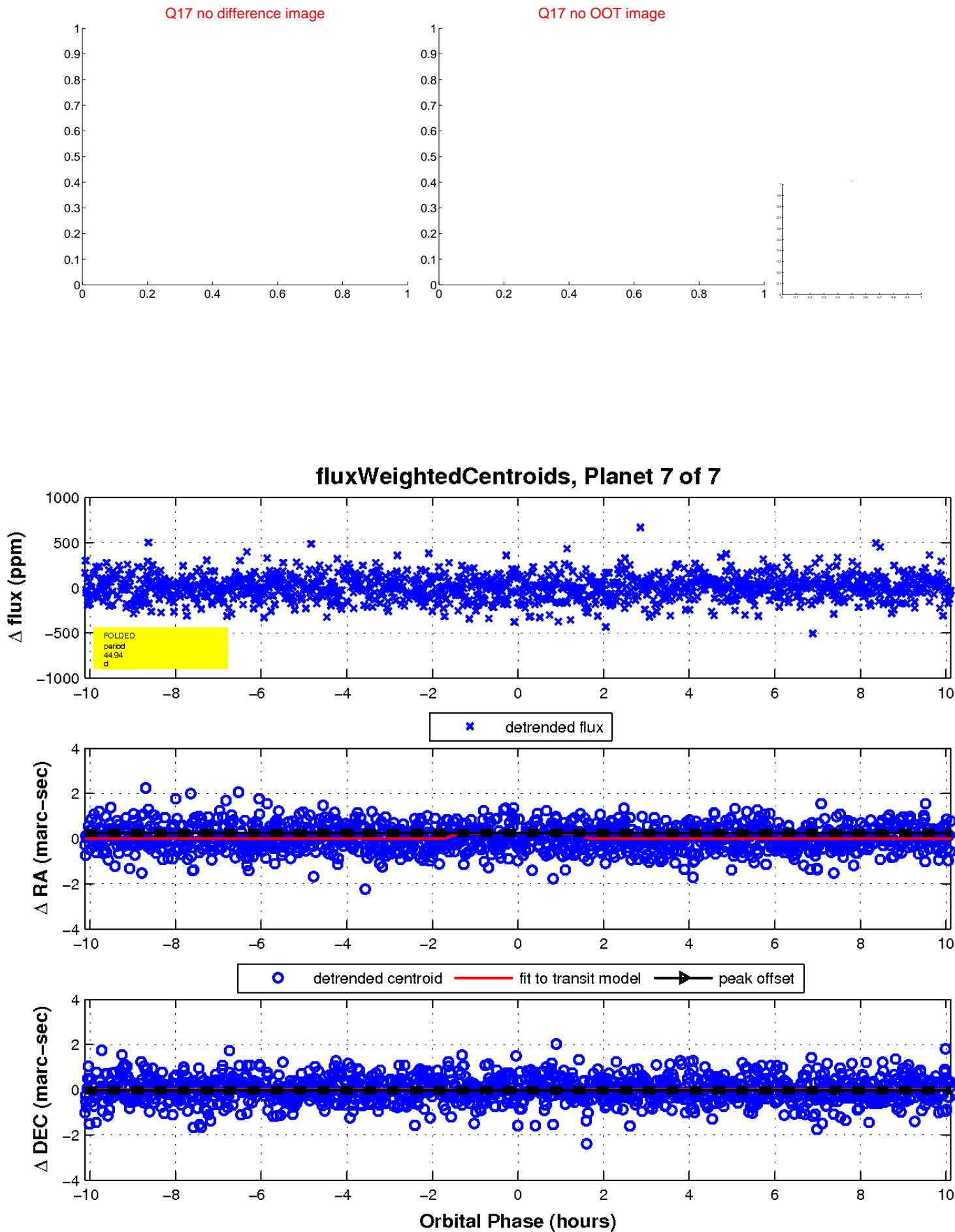


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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





UKIRT Image

