

# KIC 005961350

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005961350-01	OBS	6017.01	5.262659	135.626500	22506.4	2.856	3524.4	3111.7	1.55	7049	35.34	1194.44
005961350-02	OBS	No	5.262648	132.994784	686.3	2.694	102.9	109.4	1.55	7049	6.88	1194.44
005961350-03	OBS	No	649.643757	250.259004	406.0	7.163	10.7	9.9	1.55	7049	3.45	1.94
005961350-04	OBS	No	5.262331	136.142601	90.5	15.000	9.2	-1.0	1.55	7049	1.49	1194.54

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005961350-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
005961350-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005961350-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005961350-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_NOFITS

**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.

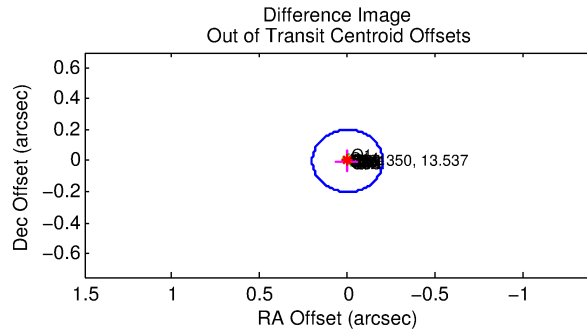
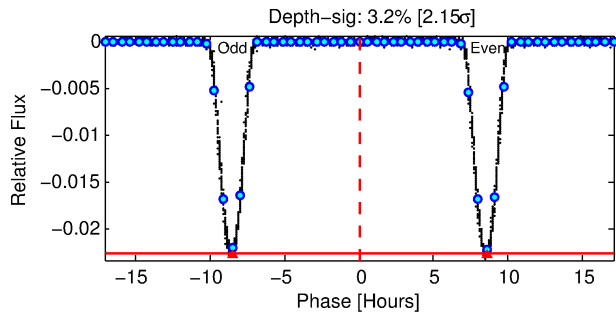
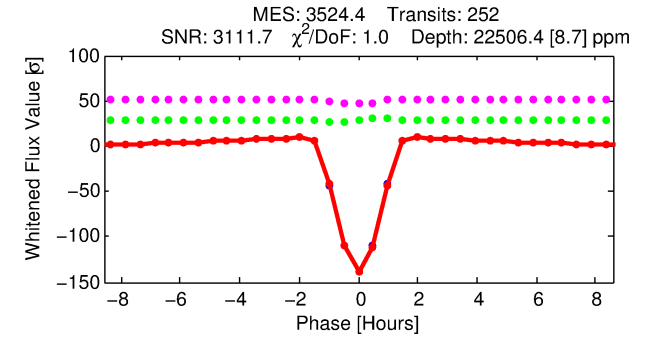
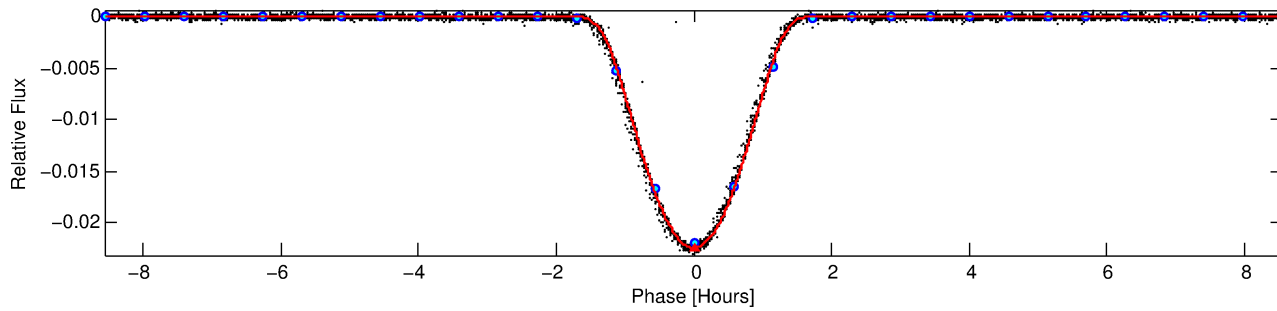
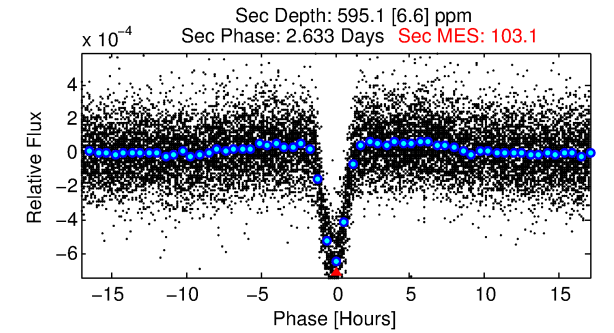
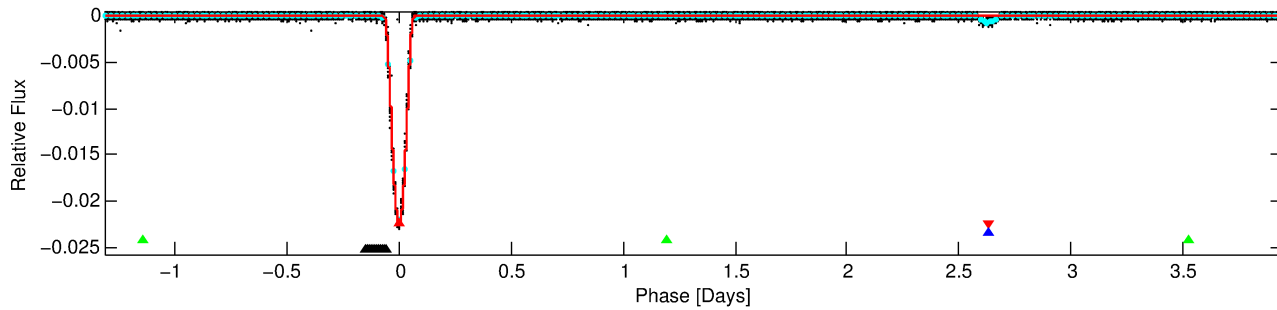
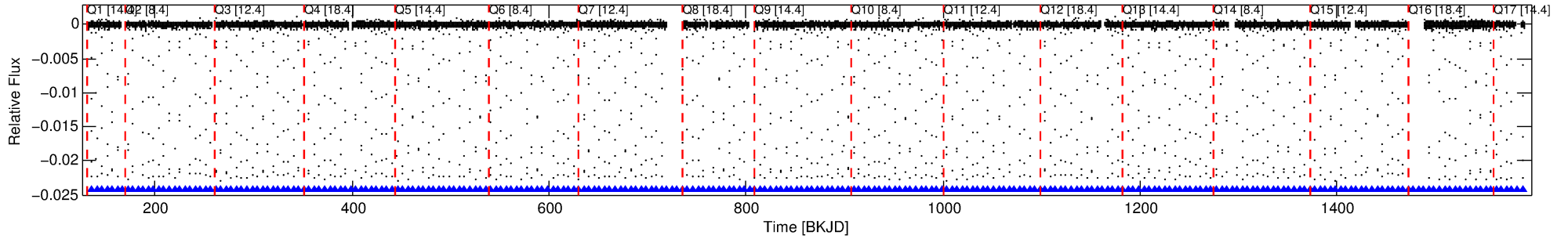
Ephemeris Match Information For 005961350-01

No Significant Match Found

# DV One-Page Summary

KIC: 5961350 Candidate: 1 of 4 Period: 5.263 d  
KOI: K06017.01 Corr: 0.993

Kp: 13.54 R\*: 1.55 Rs Teff: 7049.0 K Logg: 4.21 Fe/H: -0.040



## DV Fit Results:

Period = 5.26266 [0.00000] d  
Epoch = 135.6265 [0.0000] BKJD  
Rp/R\* = 0.2091 [0.0027]  
a/R\* = 10.45 [0.02]  
b = 0.96 [0.00]  
Seff = 1194.44 [279.45]  
Teq = 1499 [88] K  
Rp = 35.34 [6.38] Re  
a = 0.0667 [0.0103] AU  
Ag = 1.16 [0.27] [0.62σ]  
Teffp = 2408 [37] K [9.56σ]

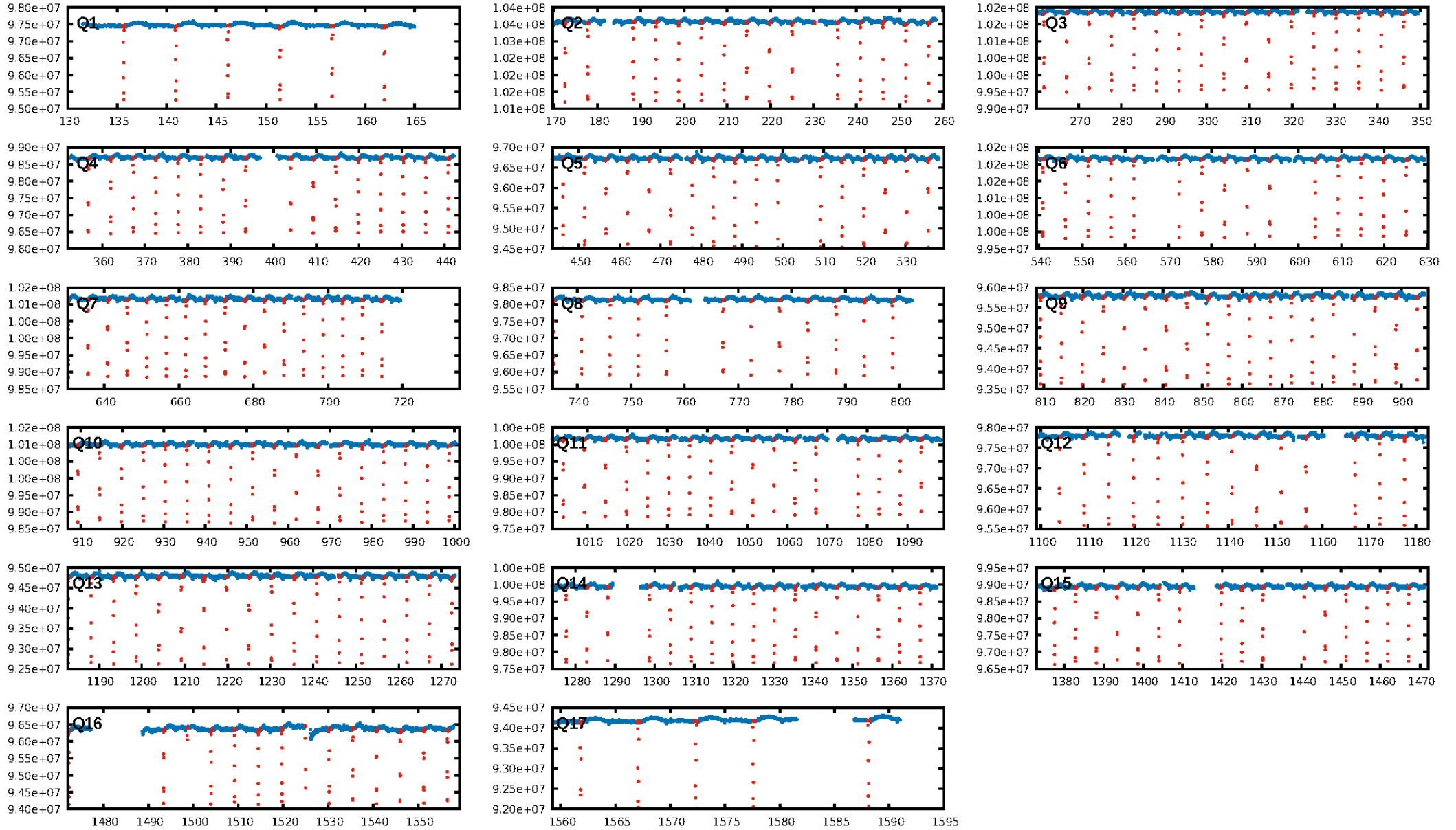
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [2005.49σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [241/241]  
GhostDiagnostic-chr: 6.66  
Centroid-sig: 0.0%  
Centroid-so: 0.077 arcsec [20.39σ]  
OotOffset-rm: 0.001 arcsec [0.02σ]  
KicOffset-rm: 0.100 arcsec [1.48σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

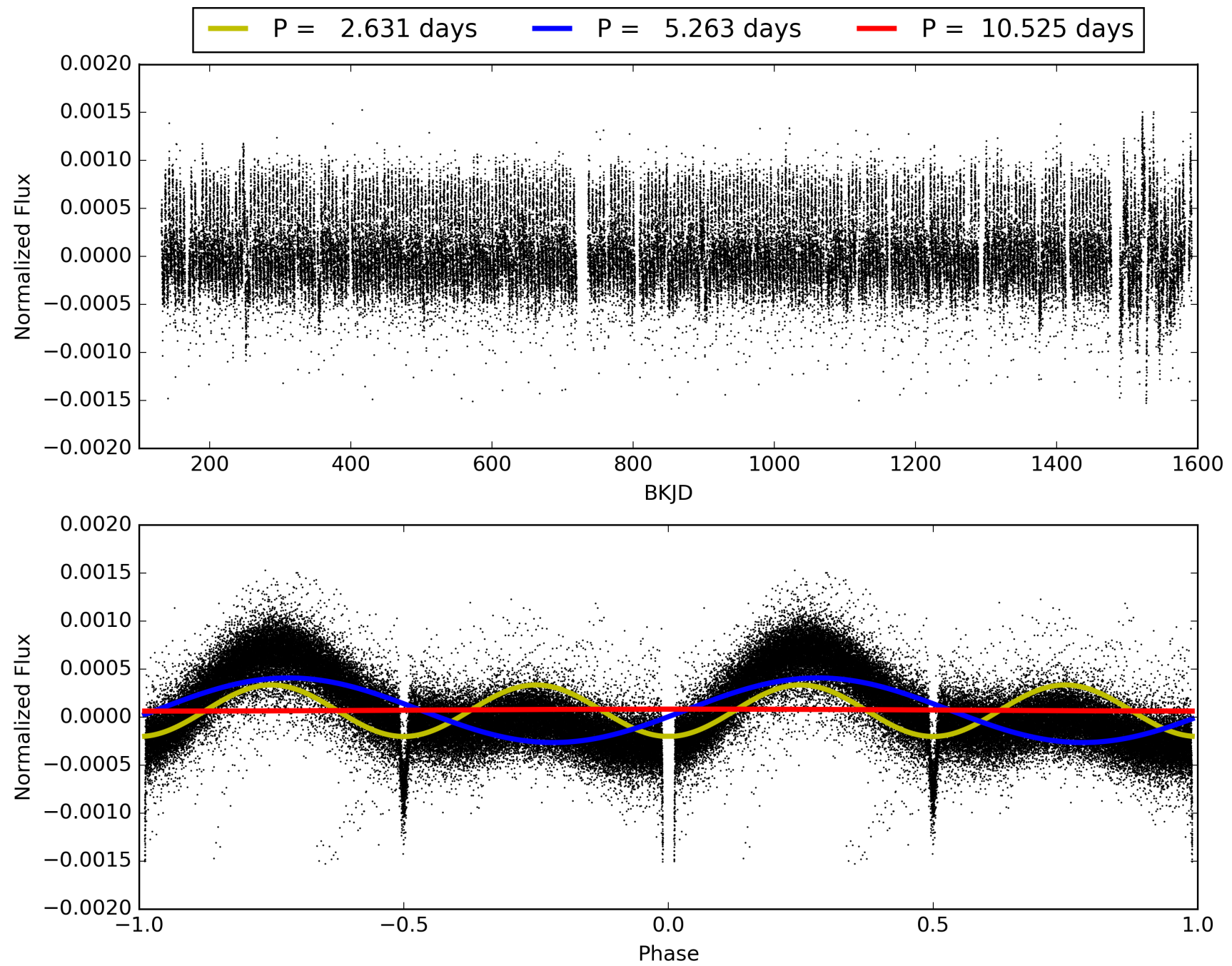
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:06:14 Z

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

# TCE 005961350-01, PDC Light Curves



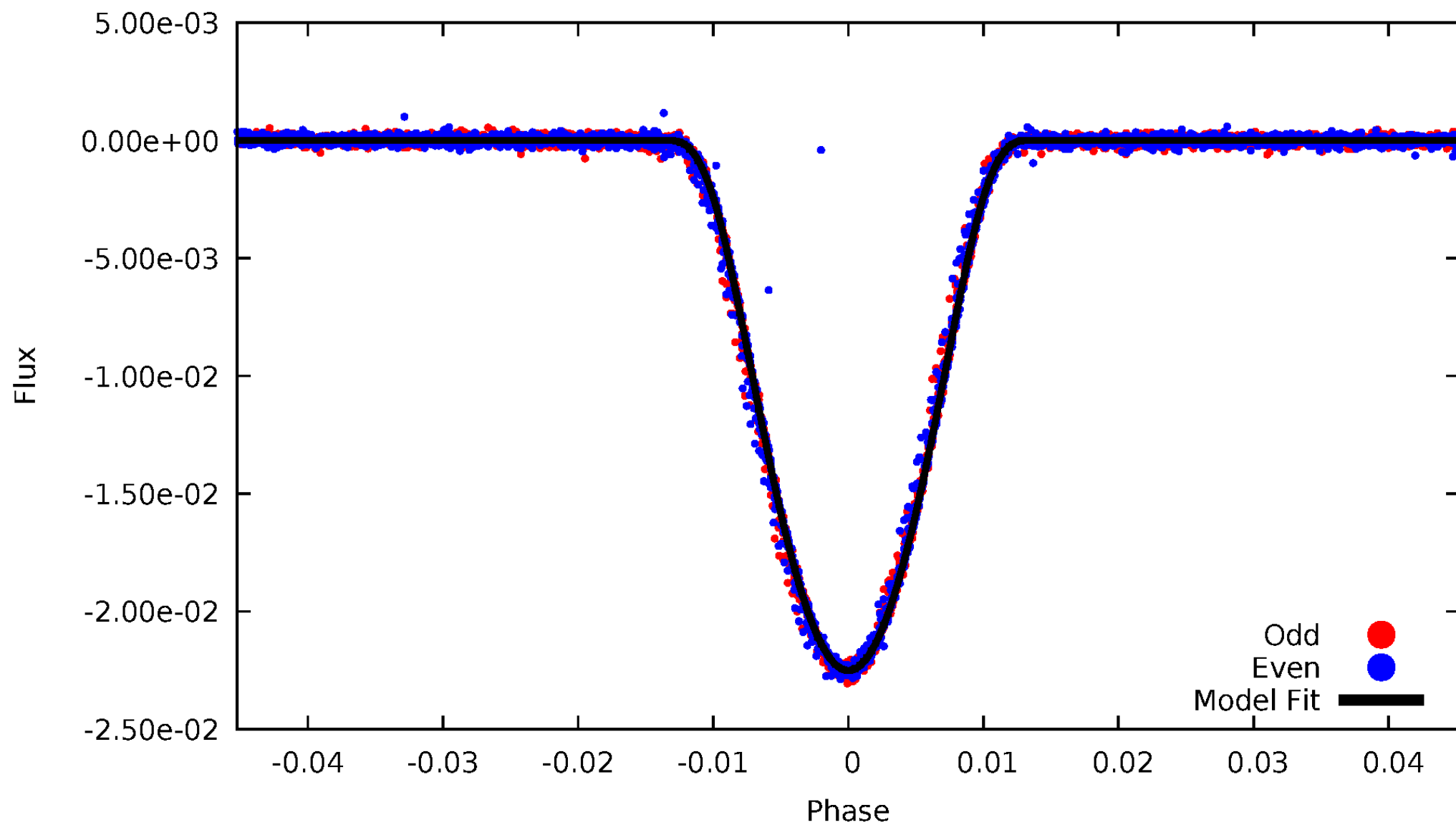
# TCE 005961350-01





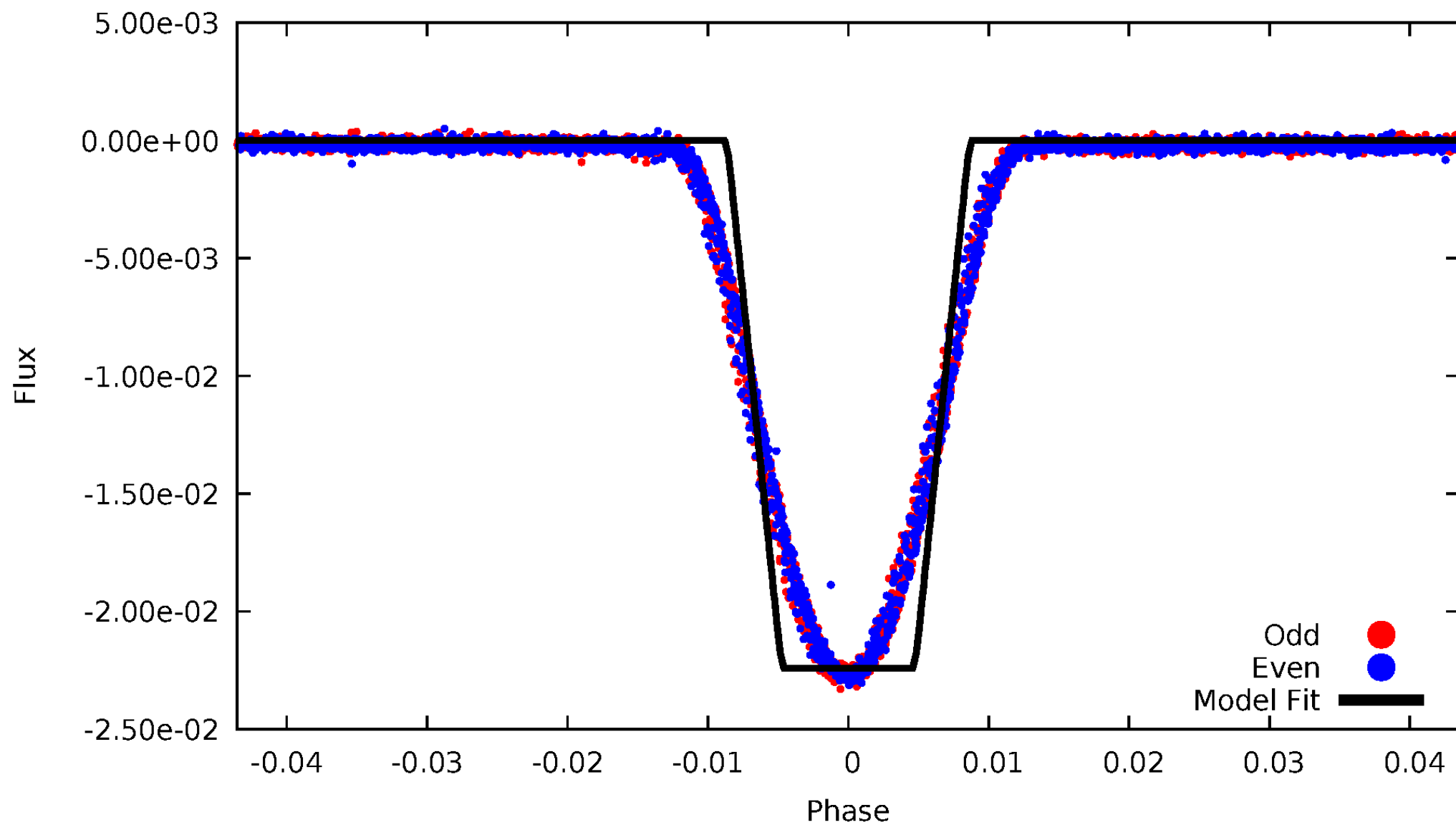
# DV Odd/Even

TCE 005961350-01



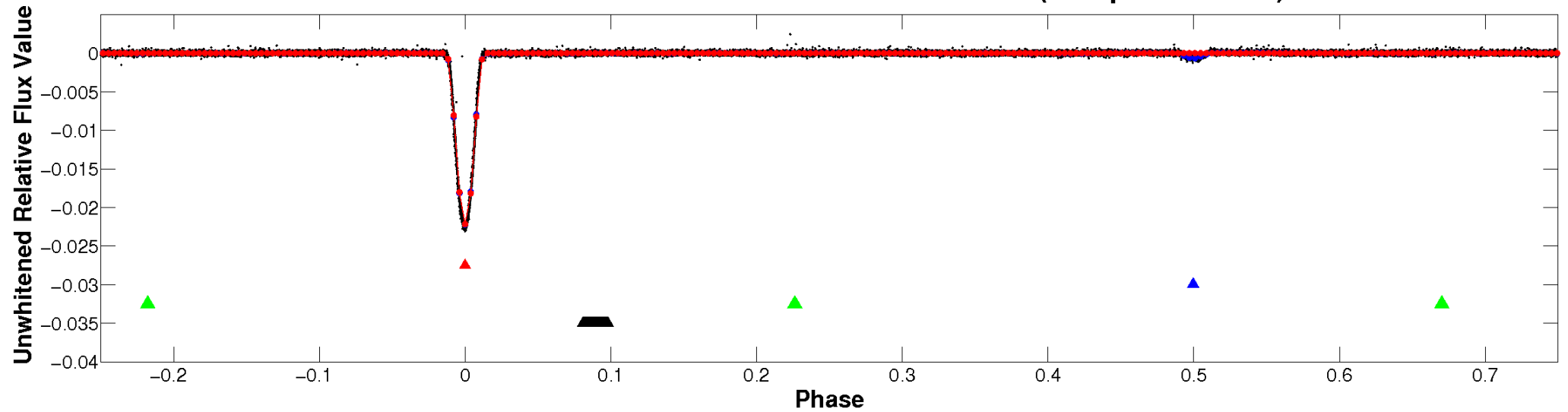
# ALT Odd/Even

TCE 005961350-01

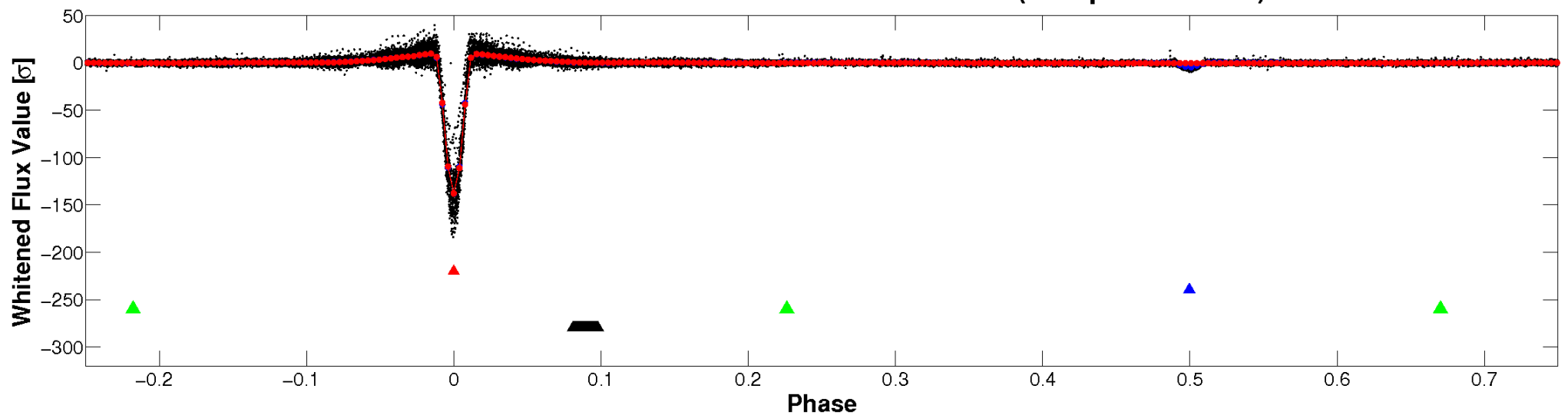


# Non-Whitened Vs. Whitened Light Curve

## Planet 1 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

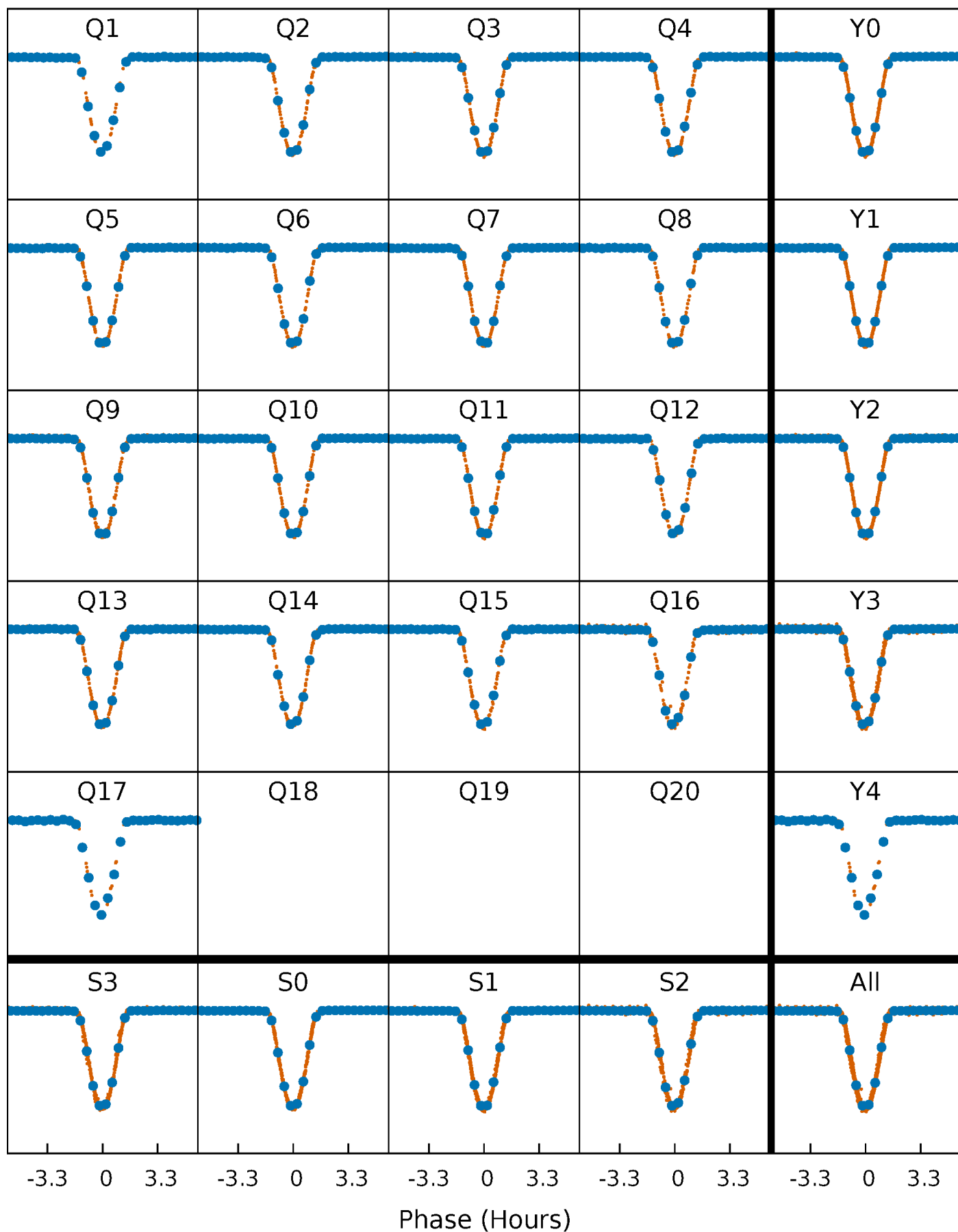


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



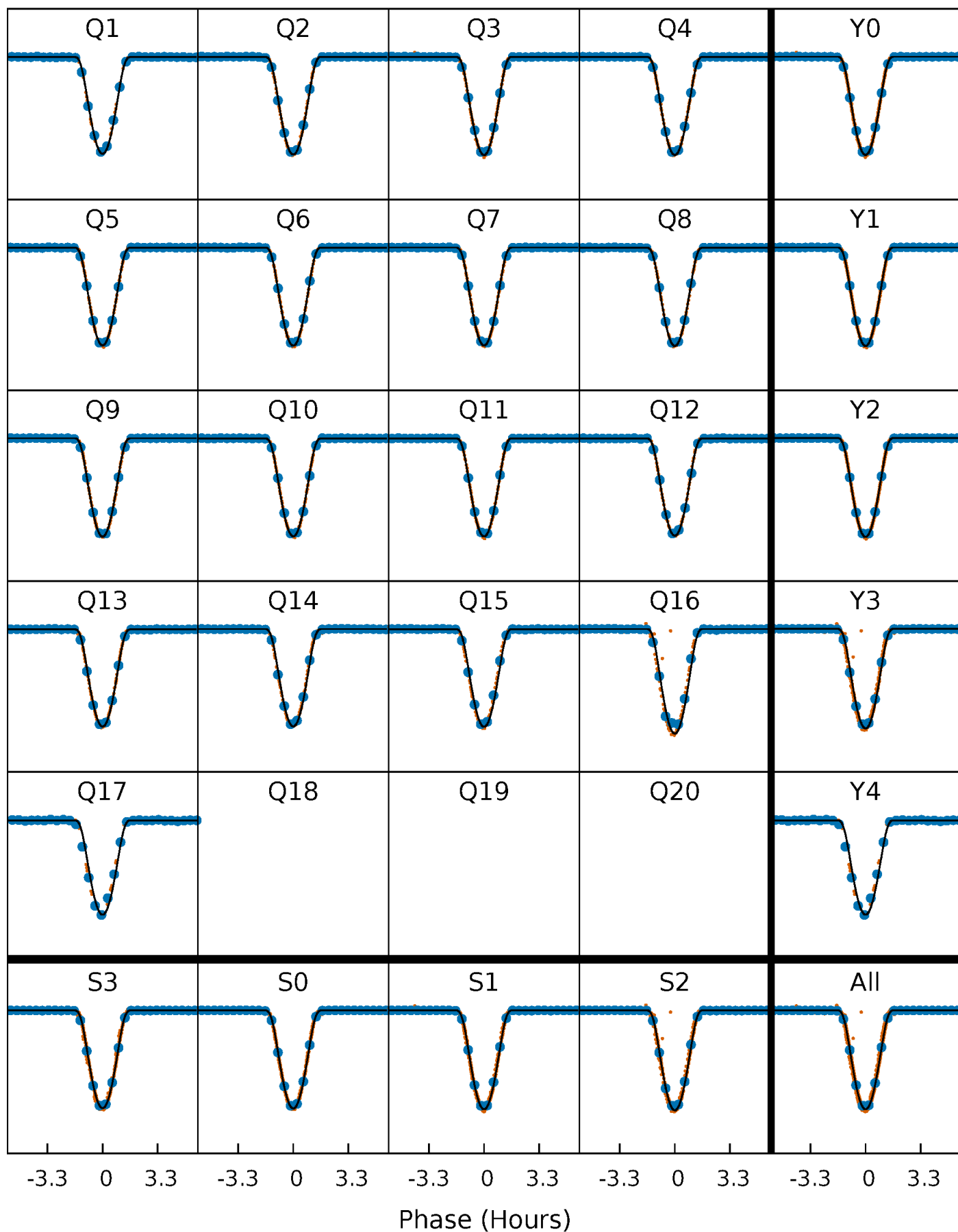
# PDC Quarter-Phased Transit Curves

TCE 005961350-01 P= 5.262659 Days  $T_0=135.626500$  (BKJD)



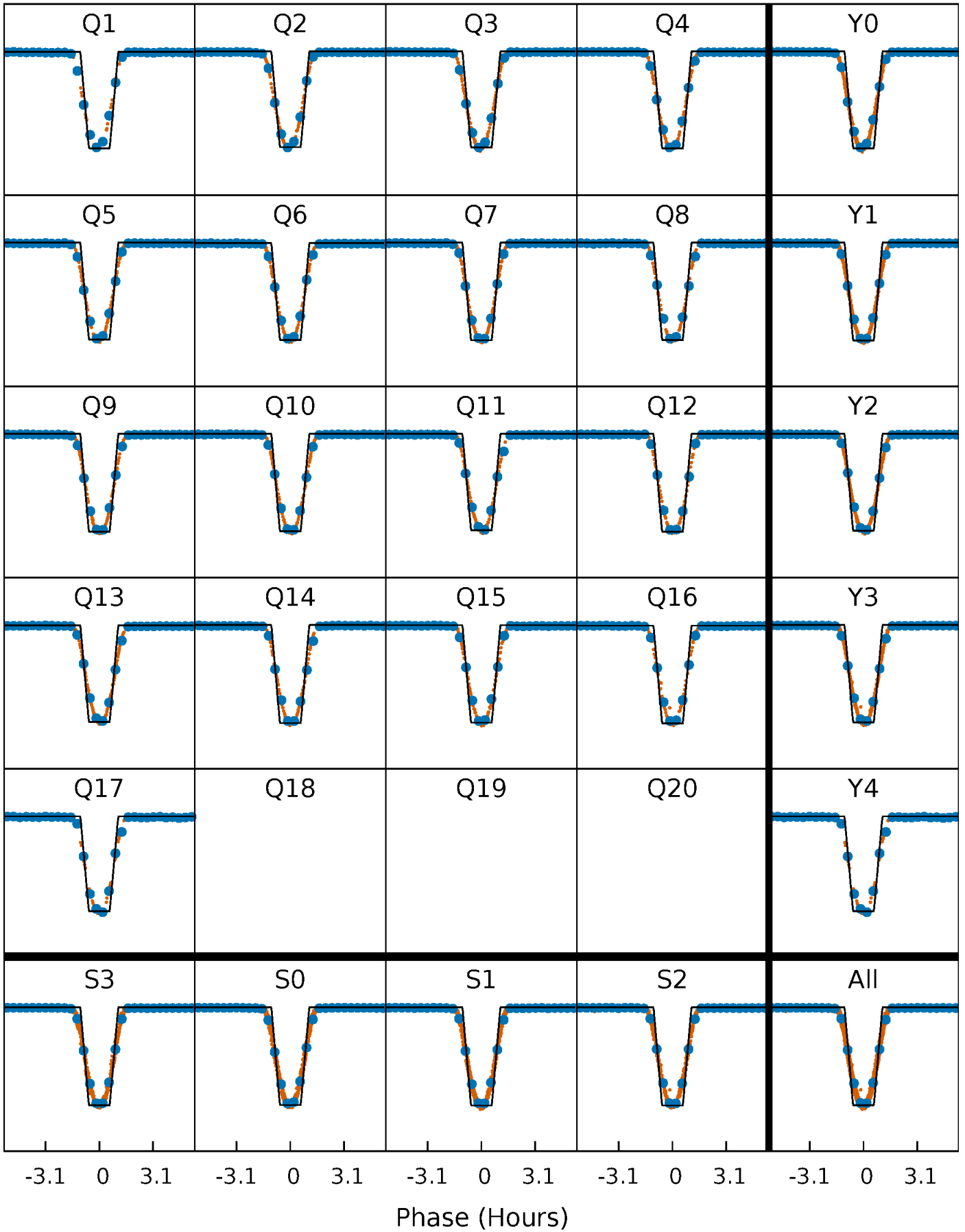
# DV Quarter-Phased Transit Curves

TCE 005961350-01 P= 5.262659 Days  $T_0=135.626500$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005961350-01   P= 5.262632 Days    $T_0=135.629676$  (BKJD)

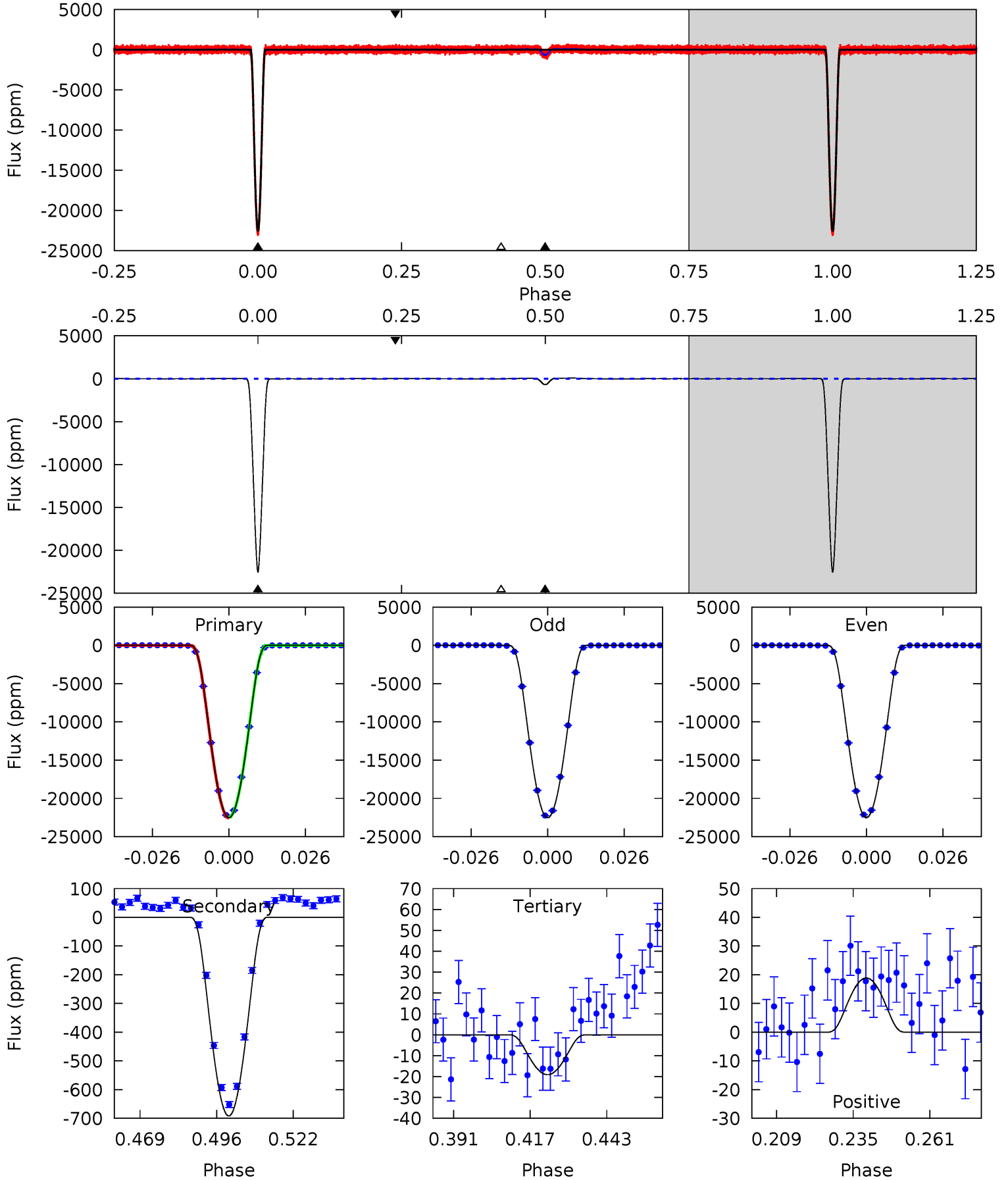




# DV Model-Shift Uniqueness Test

005961350-01, P = 5.262659 Days, E = 130.363841 Days

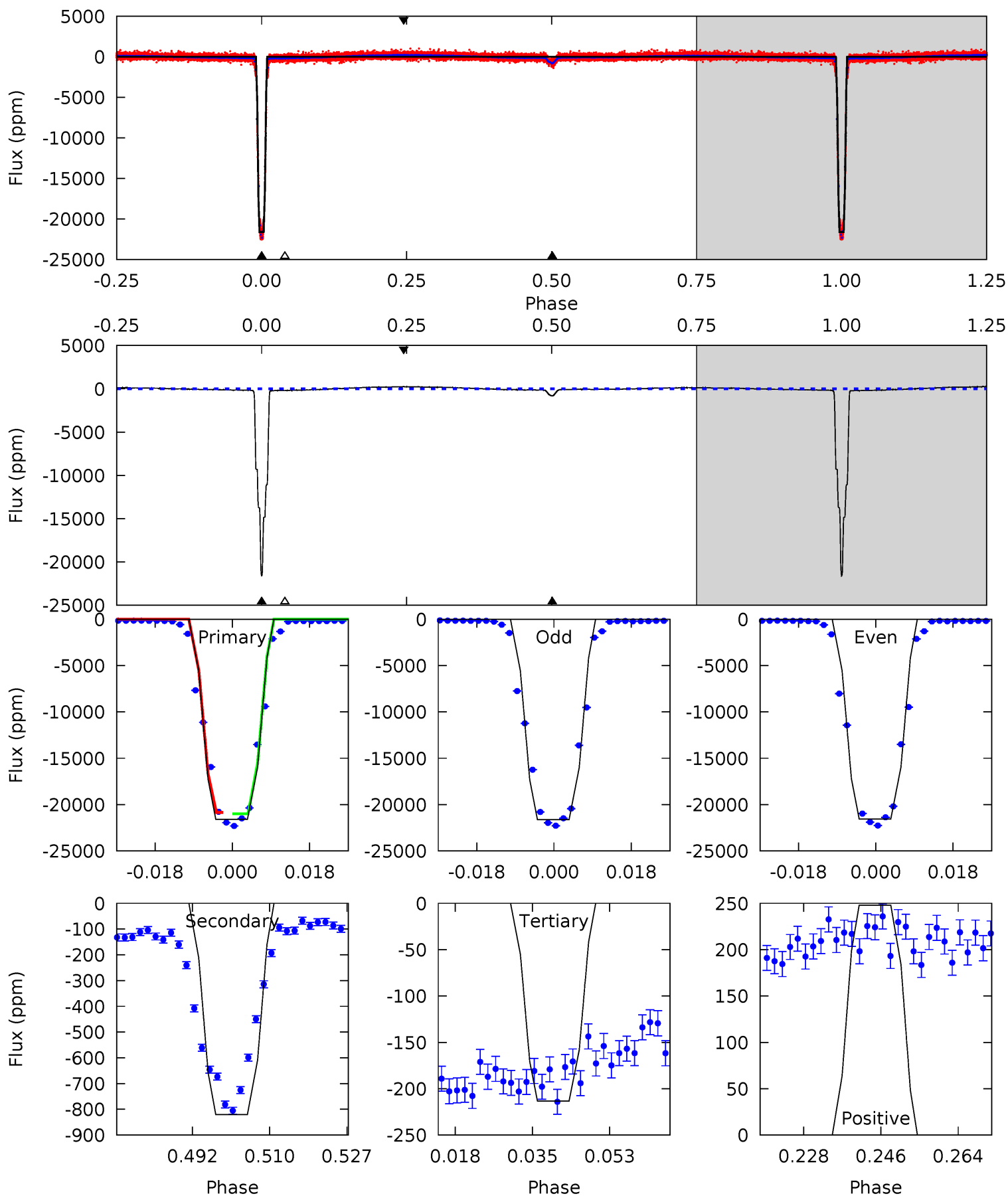
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5965	183.4	5.06	5.00	4.84	2.23	4.63	5960	5960	178.3	178.4	3.27	1.00	0.00	13.2



# Alt Model-Shift Uniqueness Test

005961350-01, P = 5.262632 Days, E = 130.367044 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
2296	87.3	22.7	26.4	4.92	2.37	12.9	2274	2270	64.6	60.9	4.33	1.00	0.01	0



### Stellar Parameters For KIC 005961350

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$7049^{+74}_{-95}$	$4.212^{+0.054}_{-0.126}$	$-0.040^{+0.150}_{-0.150}$	$1.549^{+0.279}_{-0.129}$	$1.432^{+0.103}_{-0.082}$	$0.542^{+0.142}_{-0.201}$
	+1%/-1%	+1%/-3%	+375%/-375%	+18%/-8%	+7%/-6%	+26%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005961350-01 / KOI 6017.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-692 \pm 4$	$35.92^{+3.38}_{-1.94}$	$2111^{+95}_{-60}$	$2995^{+27}_{-32}$	$1.309^{+0.148}_{-0.201}$
Alt.	$-821 \pm 9$	$25.73^{+2.25}_{-1.48}$	$2109^{+87}_{-59}$	$3476^{+33}_{-39}$	$3.054^{+0.350}_{-0.472}$

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

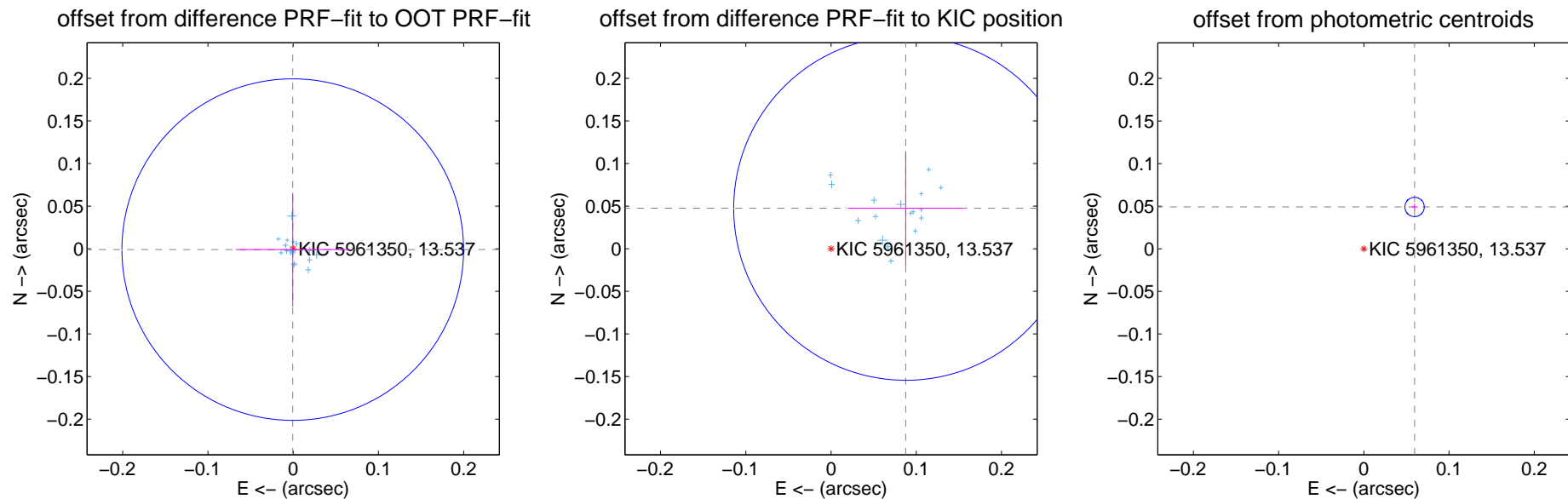
## DV Centroid Data

Supplemental centroid analysis for 005961350-01. Kepler magnitude: 13.54. Transit SNR 3111.67

There are 17 quarters with good PRF difference image offsets

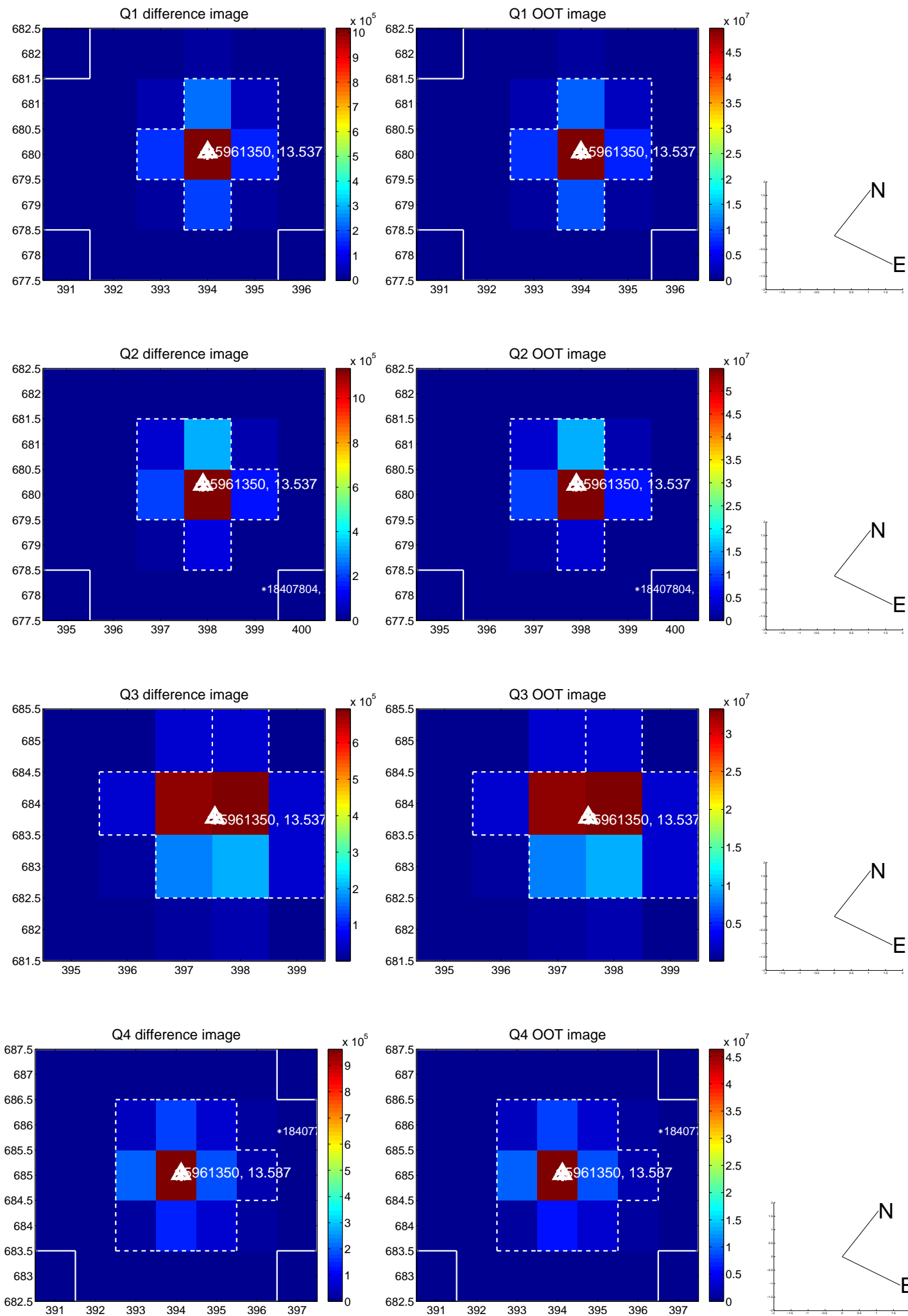
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.001 \pm 0.067$	0.02	$0.001 \pm 0.067$	$-0.001 \pm 0.067$
PRF-fit source offset from KIC position	$0.100 \pm 0.067$	1.48	$-0.088 \pm 0.067$	$0.048 \pm 0.067$
photometric centroid source offset	$0.08 \pm 0.00$	20.39	$-0.06 \pm 0.00$	$0.05 \pm 0.00$

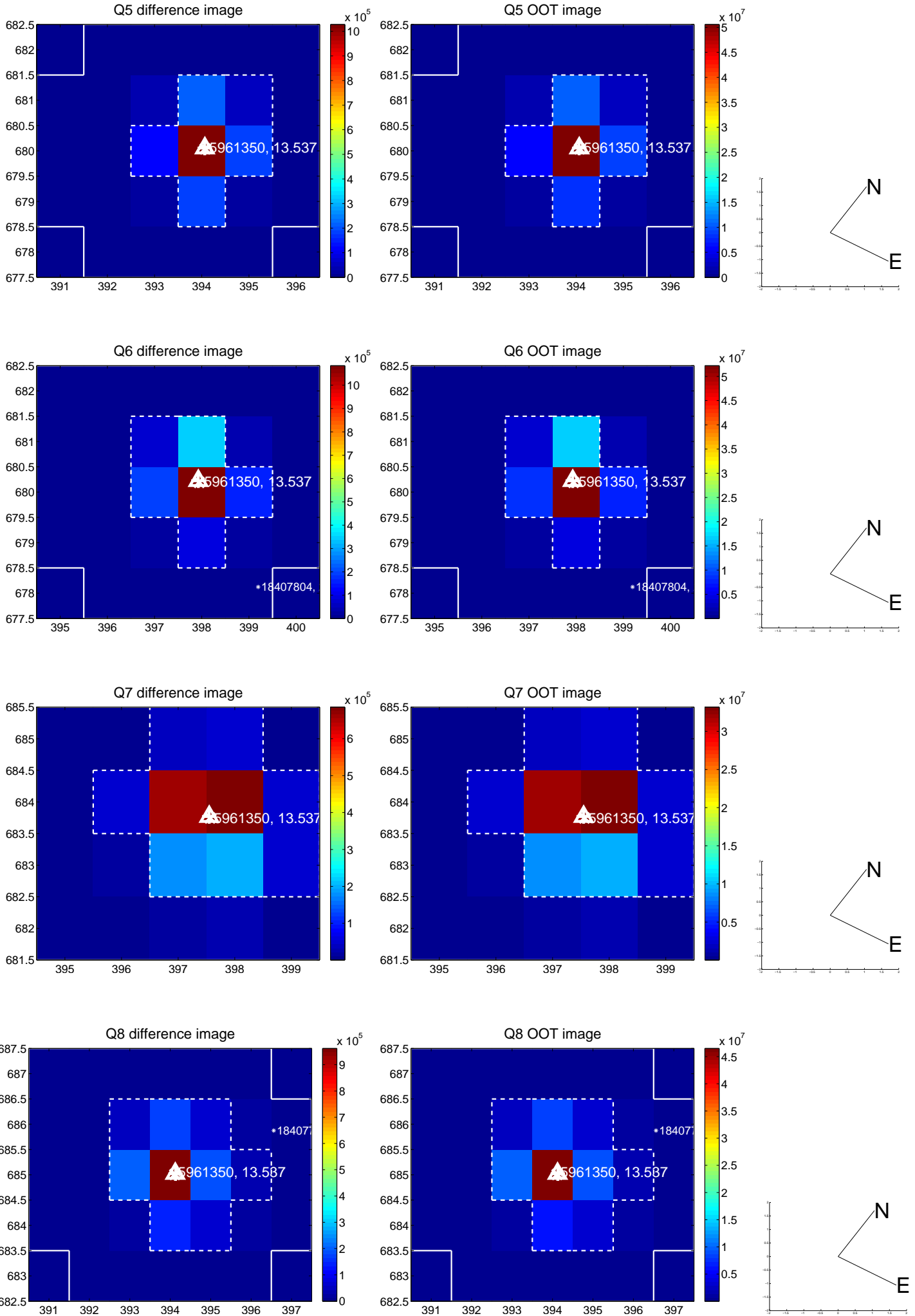


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

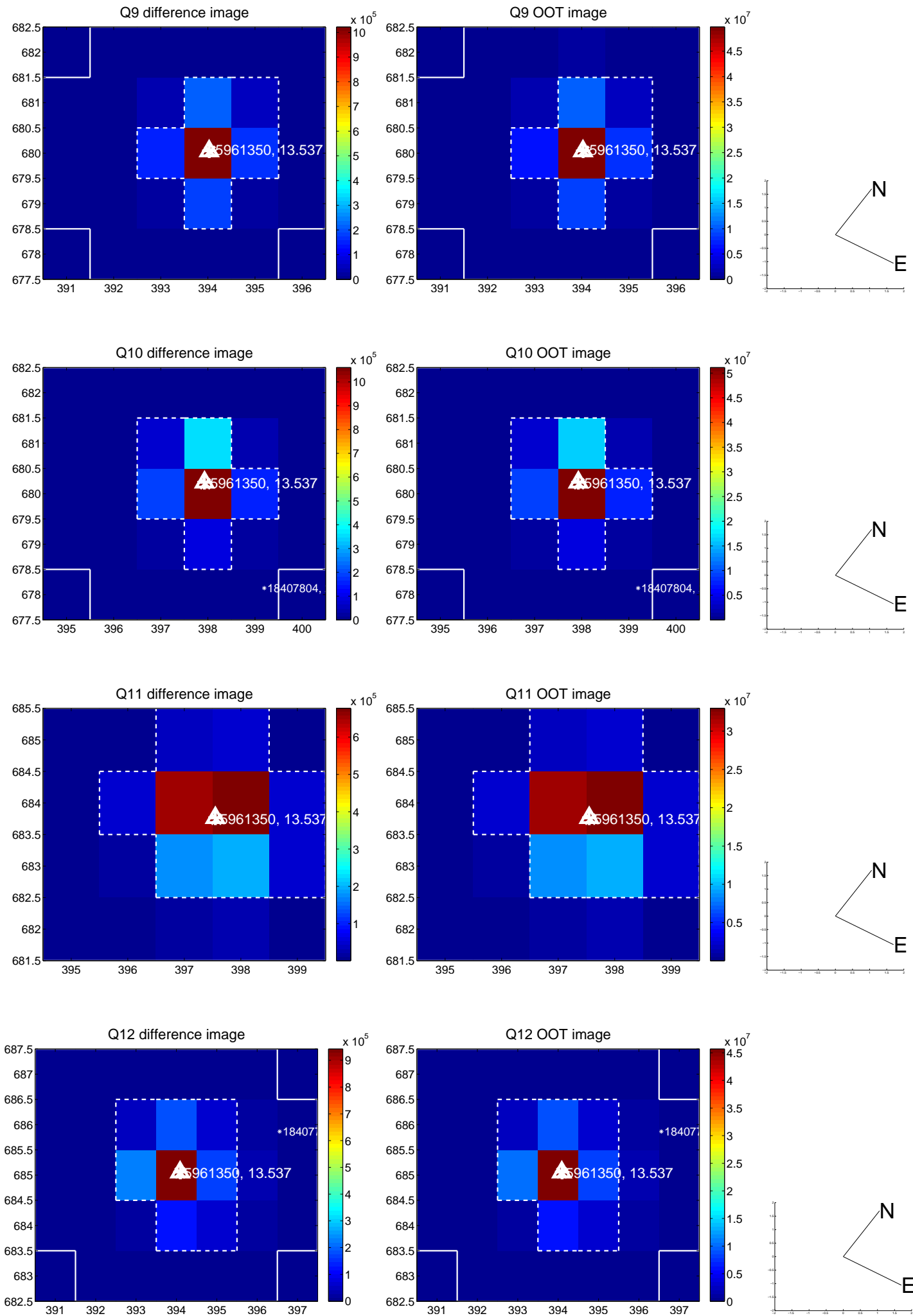


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

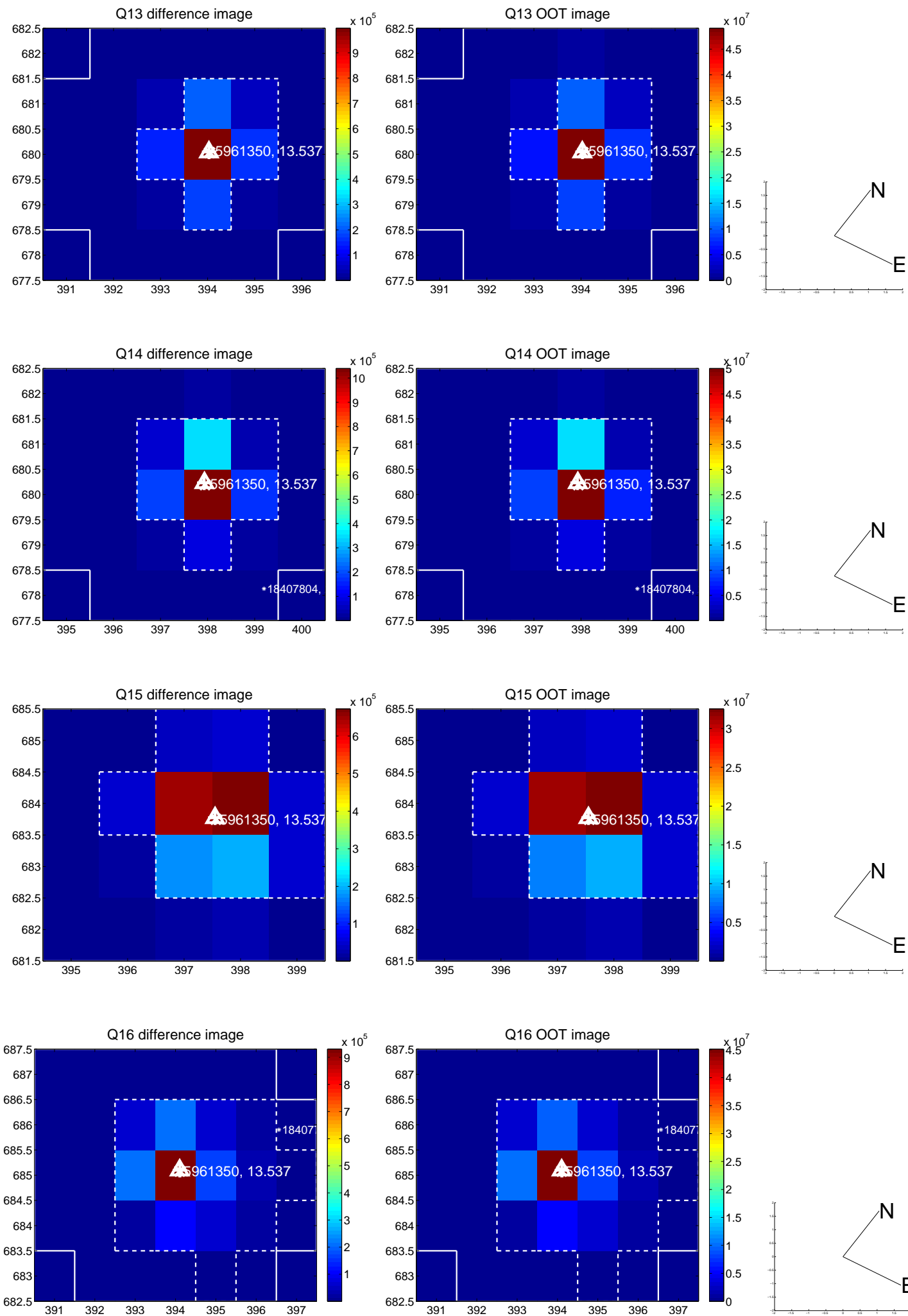




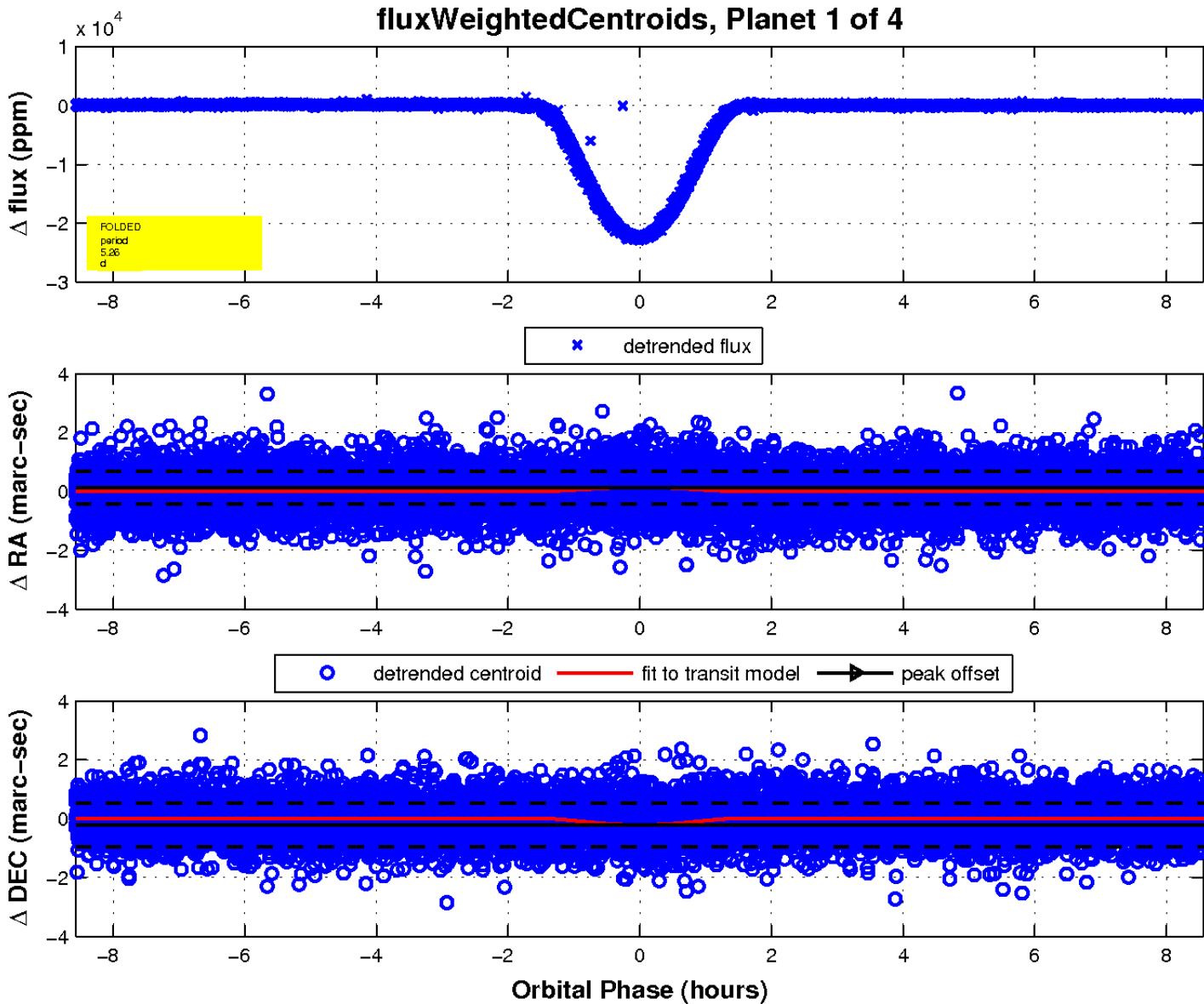
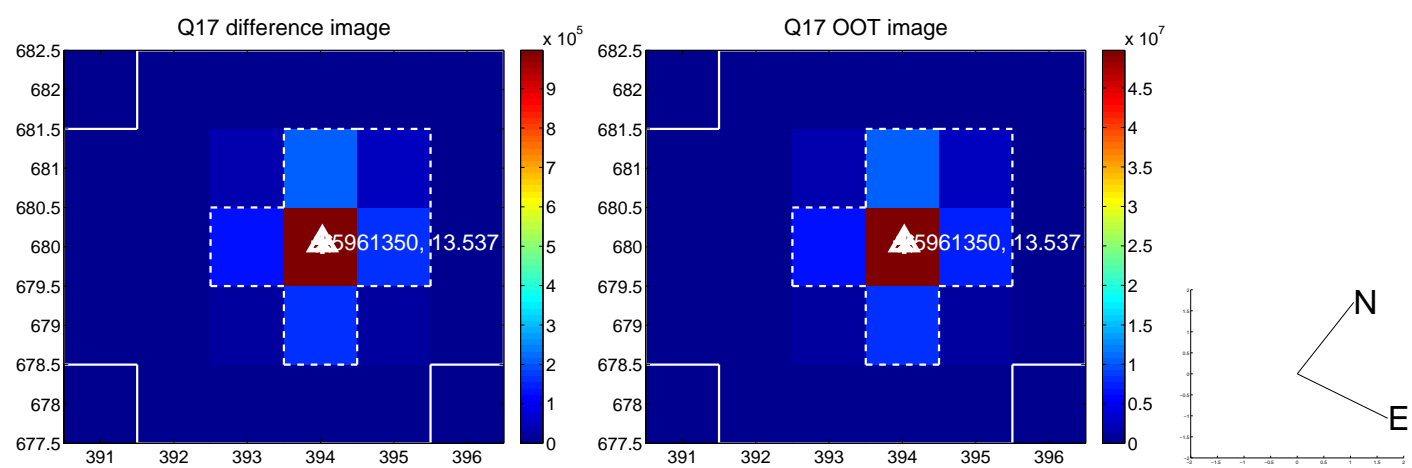
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

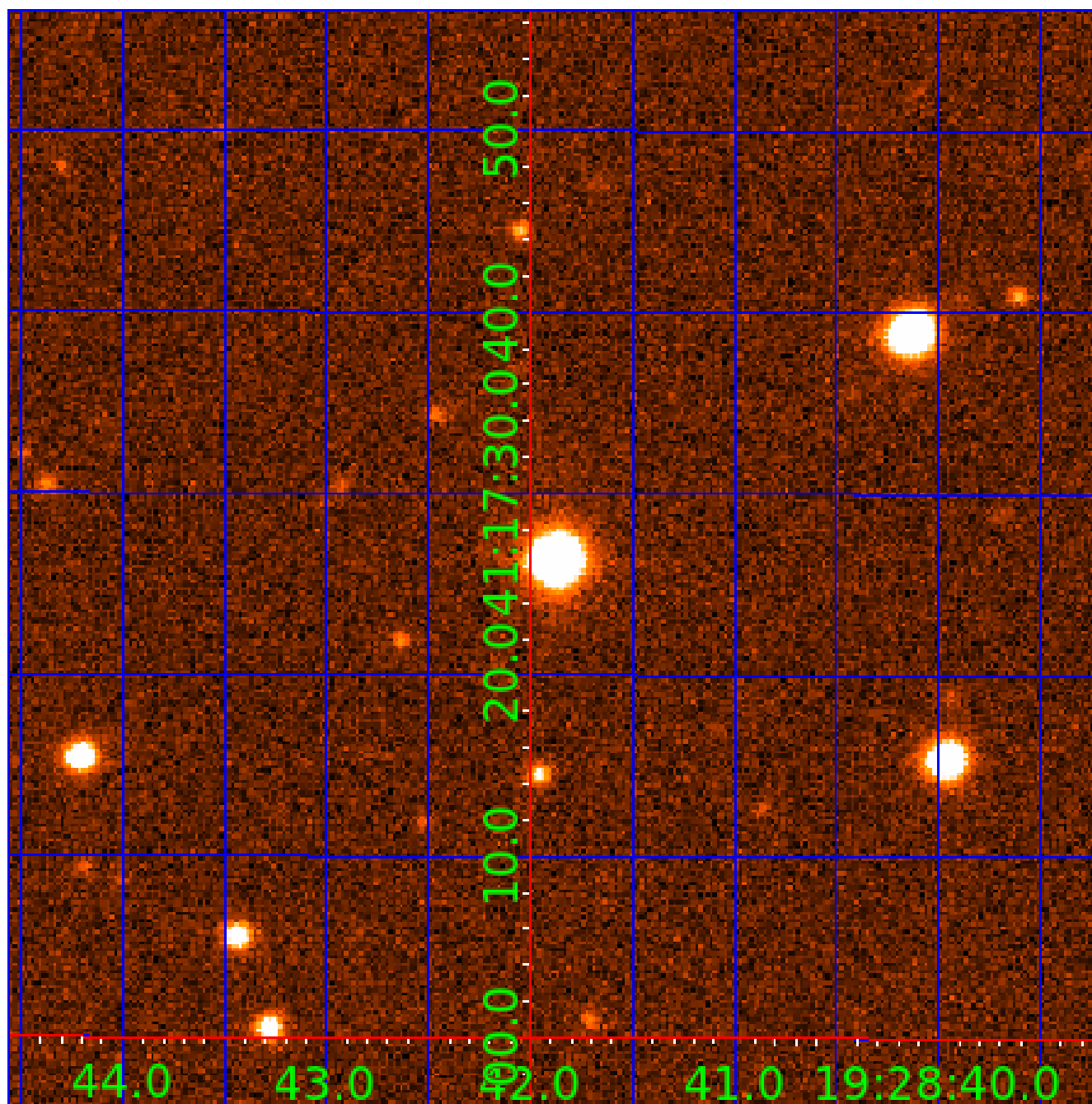


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005961350

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005961350-01	OBS	6017.01	5.262659	135.626500	22506.4	2.856	3524.4	3111.7	1.55	7049	35.34	1194.44
005961350-02	OBS	No	5.262648	132.994784	686.3	2.694	102.9	109.4	1.55	7049	6.88	1194.44
005961350-03	OBS	No	649.643757	250.259004	406.0	7.163	10.7	9.9	1.55	7049	3.45	1.94
005961350-04	OBS	No	5.262331	136.142601	90.5	15.000	9.2	-1.0	1.55	7049	1.49	1194.54

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005961350-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
005961350-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005961350-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005961350-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_NOFITS

**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.

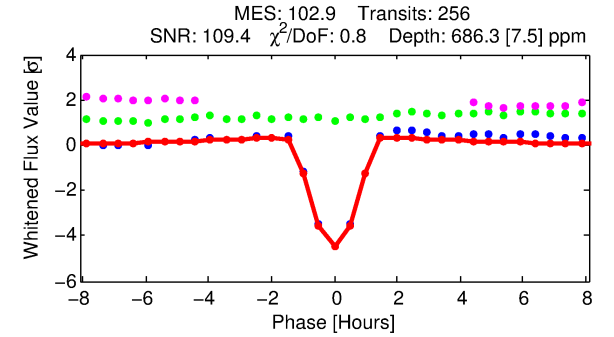
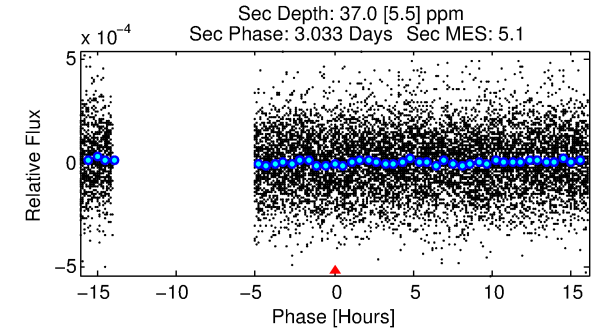
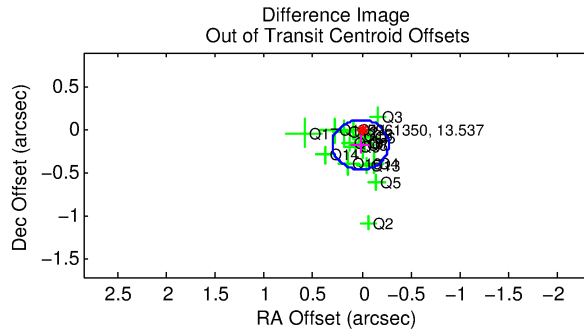
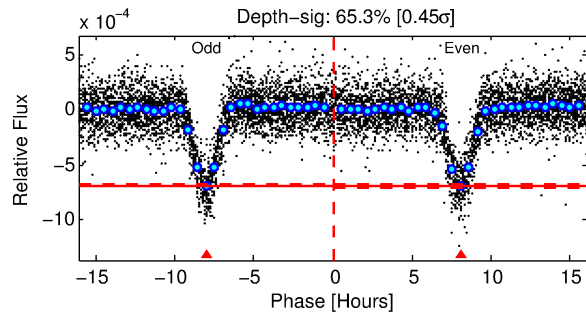
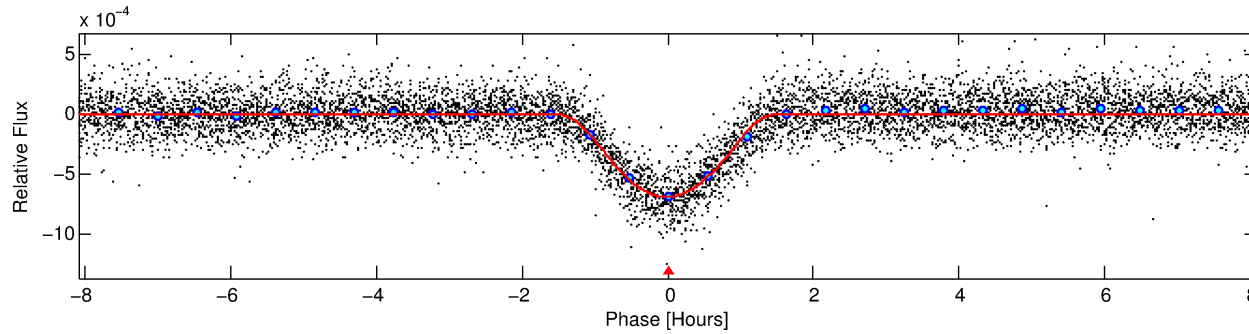
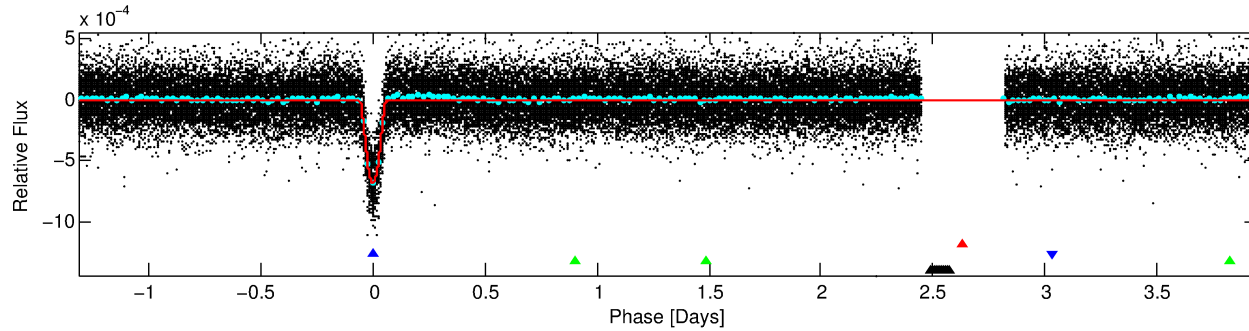
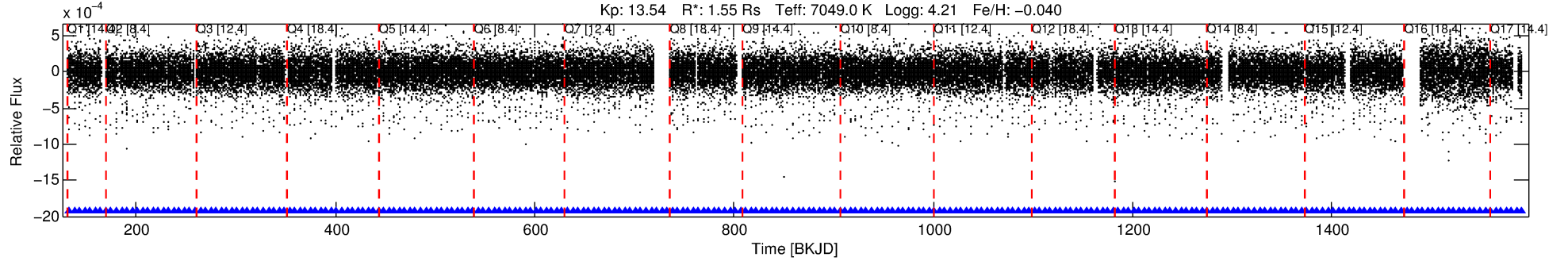
Ephemeris Match Information For 005961350-02

No Significant Match Found

# DV One-Page Summary

KIC: 5961350 Candidate: 2 of 4 Period: 5.263 d

KOI: K06017 Corr: No Ephemeris Match



## DV Fit Results:

Period = 5.26265 [0.00000] d  
Epoch = 132.9948 [0.0005] BKJD  
Rp/R\* = 0.0407 [0.0107]  
a/R\* = 4.78 [0.37]  
b = 0.99 [0.02]  
Seff = 1194.45 [279.45]  
Teq = 1499 [88] K  
Rp = 6.88 [2.19] Re  
a = 0.0667 [0.0103] AU  
Ag = 1.91 [1.13] [0.81 $\sigma$ ]  
Teffp = 2726 [374] K [3.20 $\sigma$ ]

## DV Diagnostic Results:

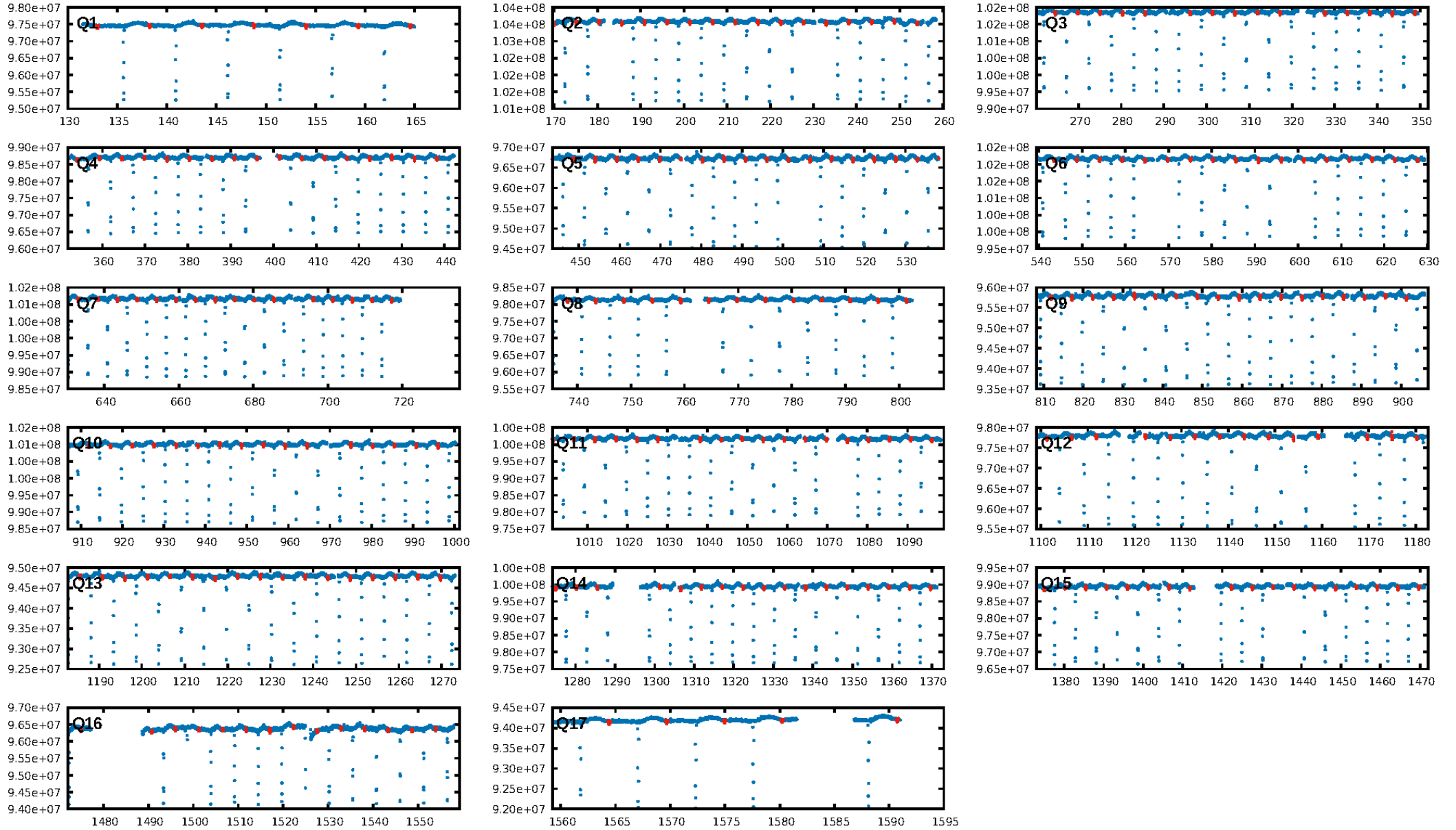
ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [244/244]  
GhostDiagnostic-chr: 4.846  
Centroid-sig: 0.0%  
Centroid-so: 0.296 arcsec [2.73 $\sigma$ ]  
OotOffset-rm: 0.170 arcsec [1.77 $\sigma$ ]  
KicOffset-rm: 0.119 arcsec [1.27 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:06:19 Z

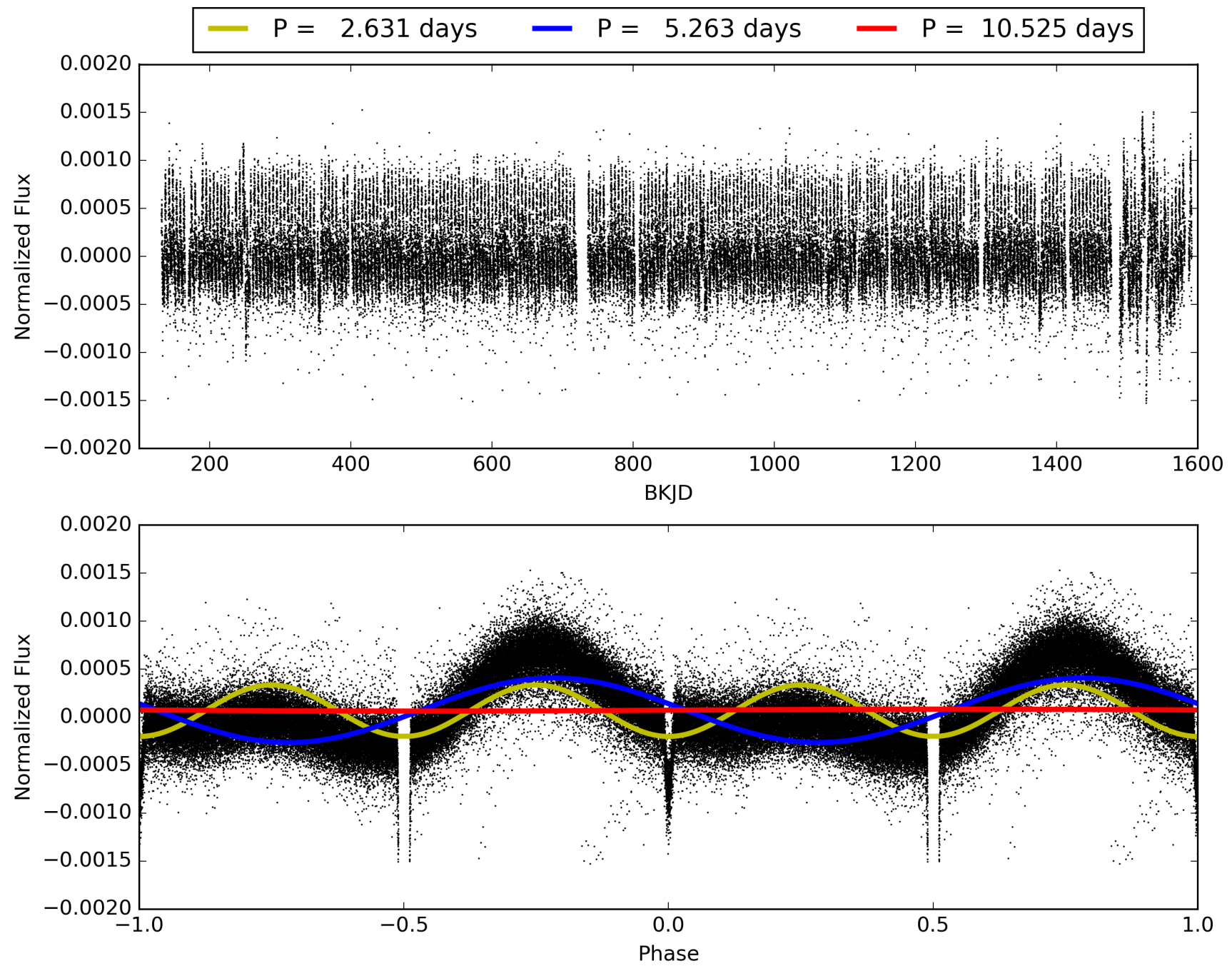
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005961350-02, PDC Light Curves

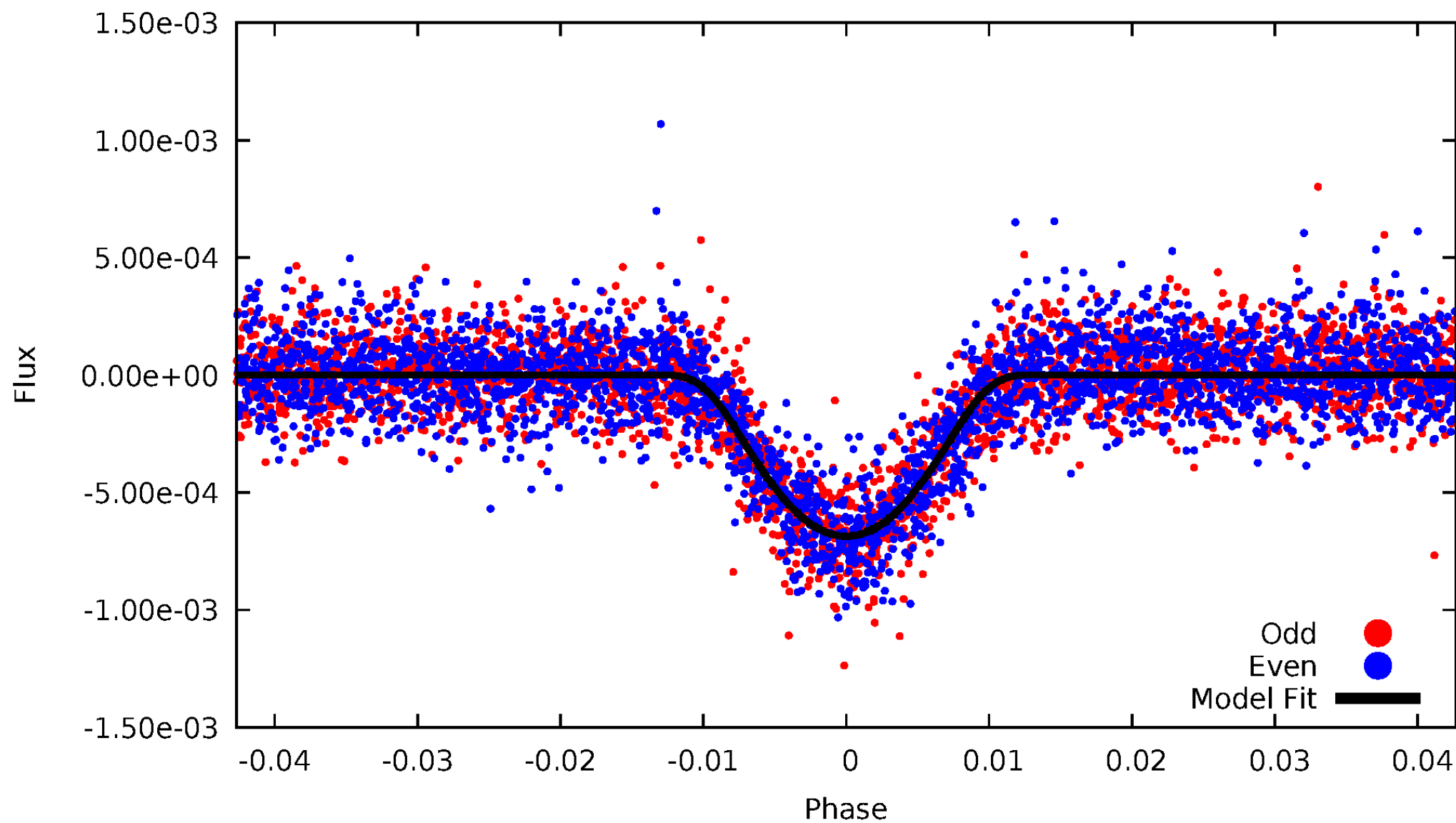


TCE 005961350-02



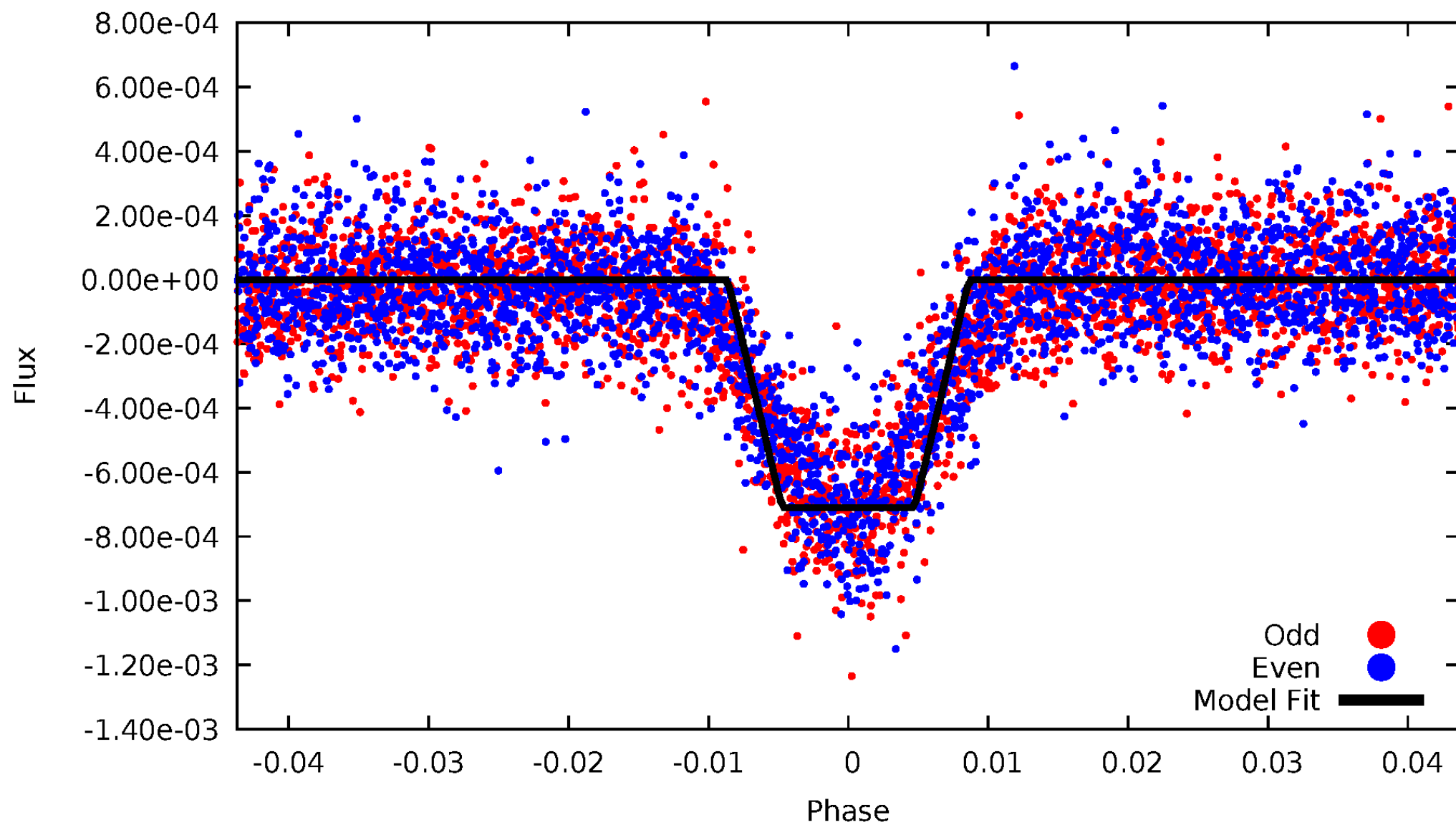
# DV Odd/Even

TCE 005961350-02



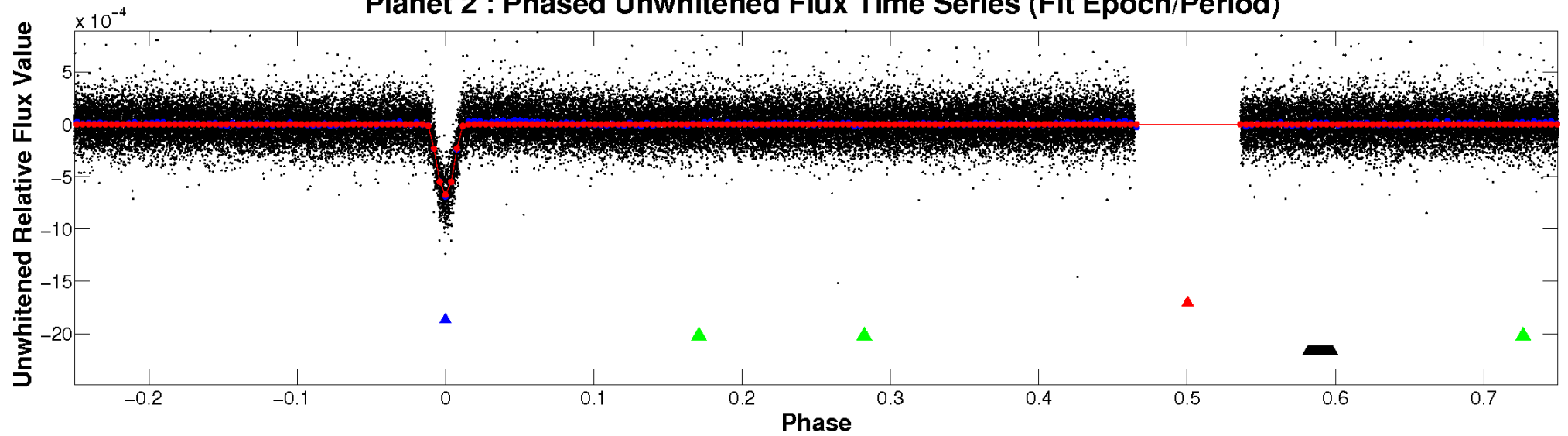
# ALT Odd/Even

TCE 005961350-02

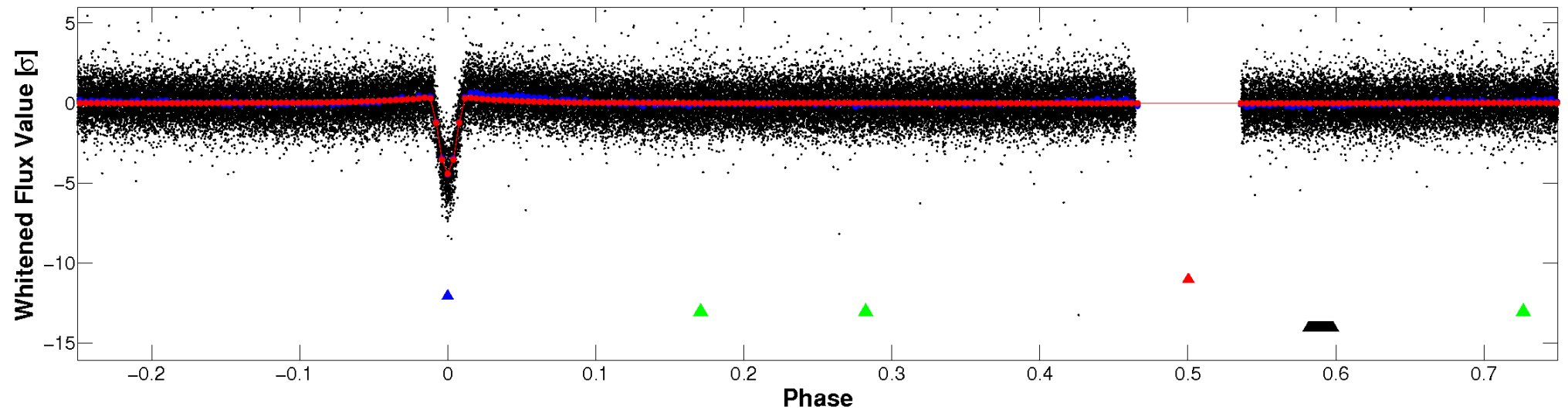


# Non-Whitened Vs. Whitened Light Curve

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

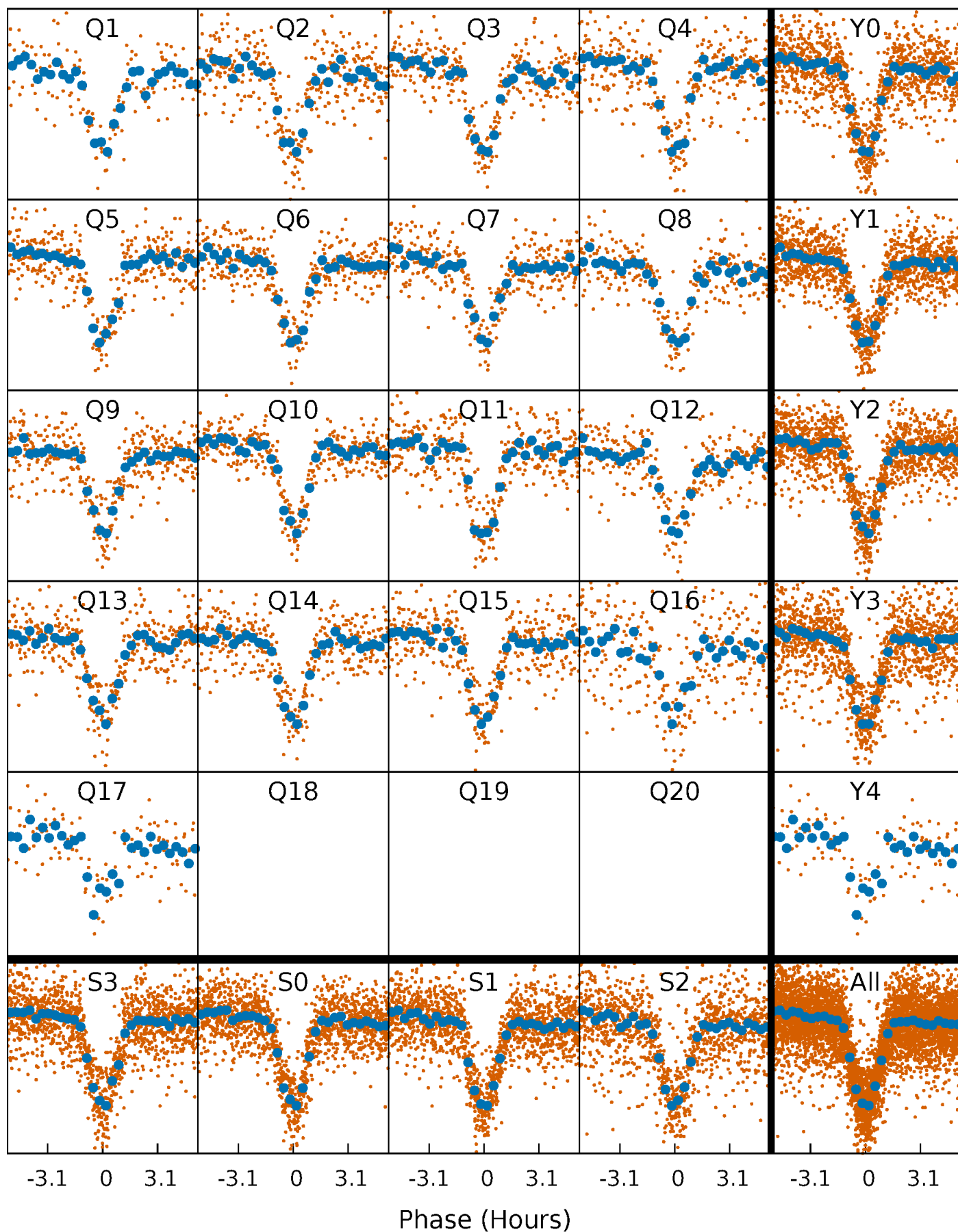


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

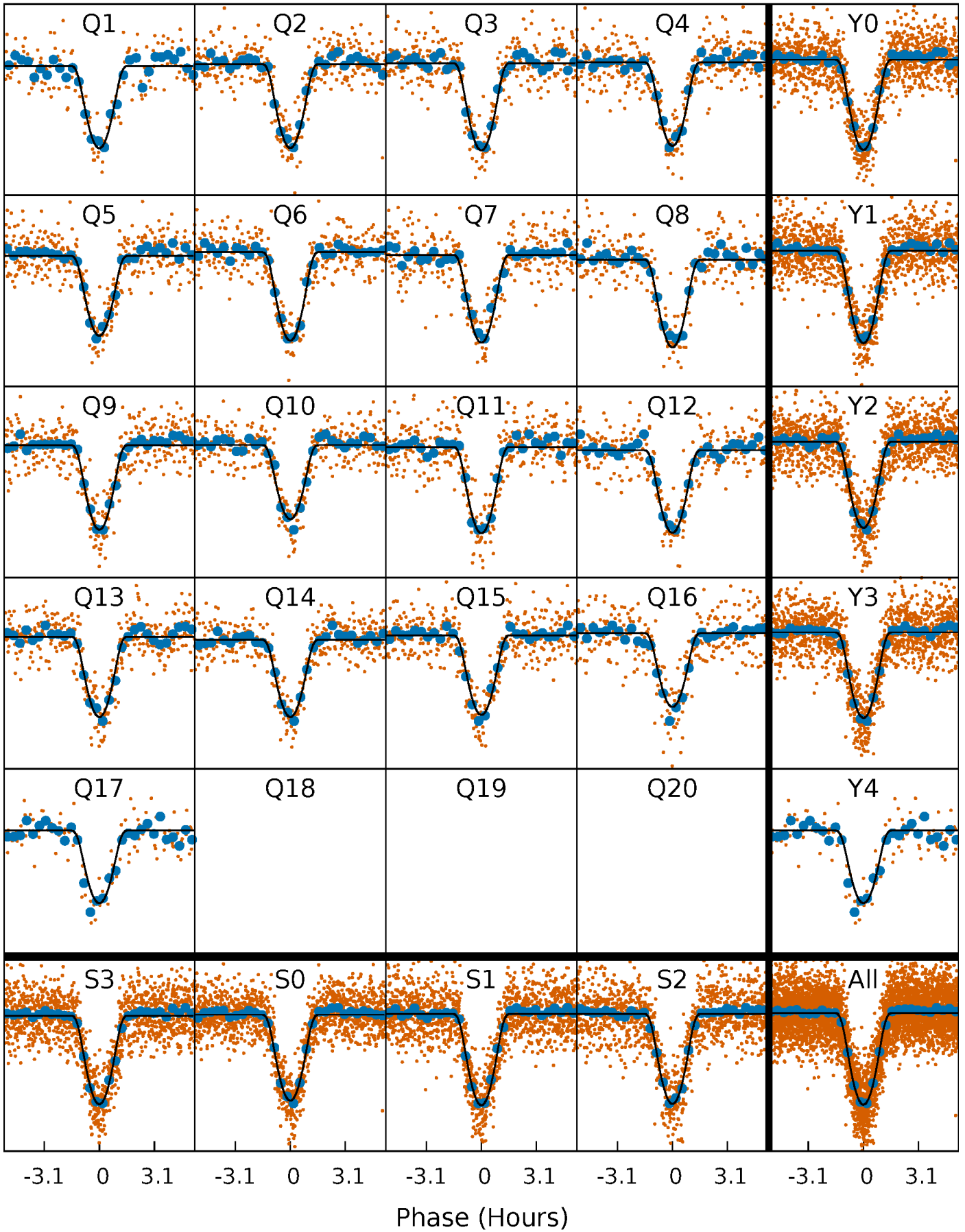
TCE 005961350-02 P= 5.262648 Days  $T_0=132.994784$  (BKJD)





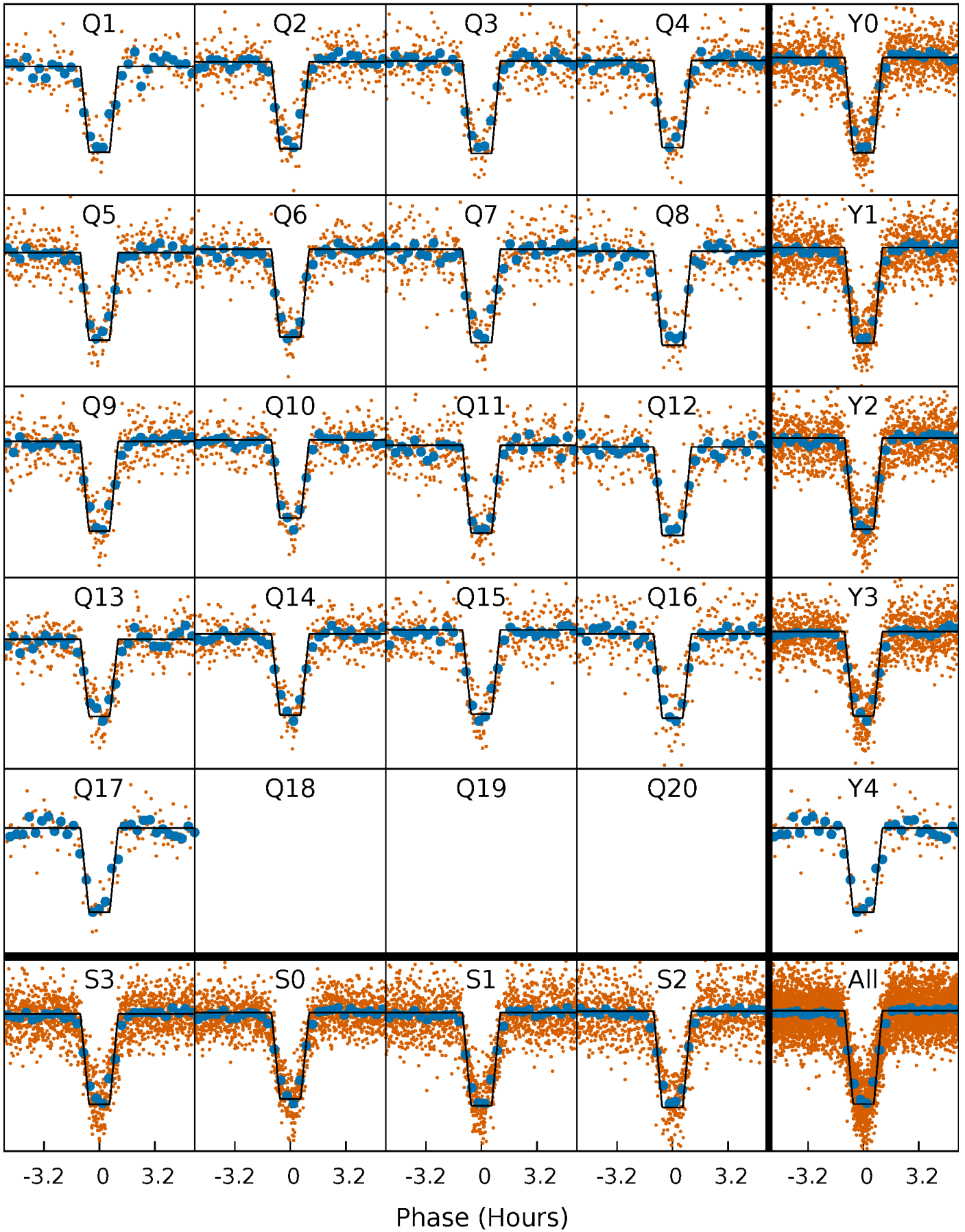
# DV Quarter-Phased Transit Curves

TCE 005961350-02   P= 5.262648 Days    $T_0=132.994784$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

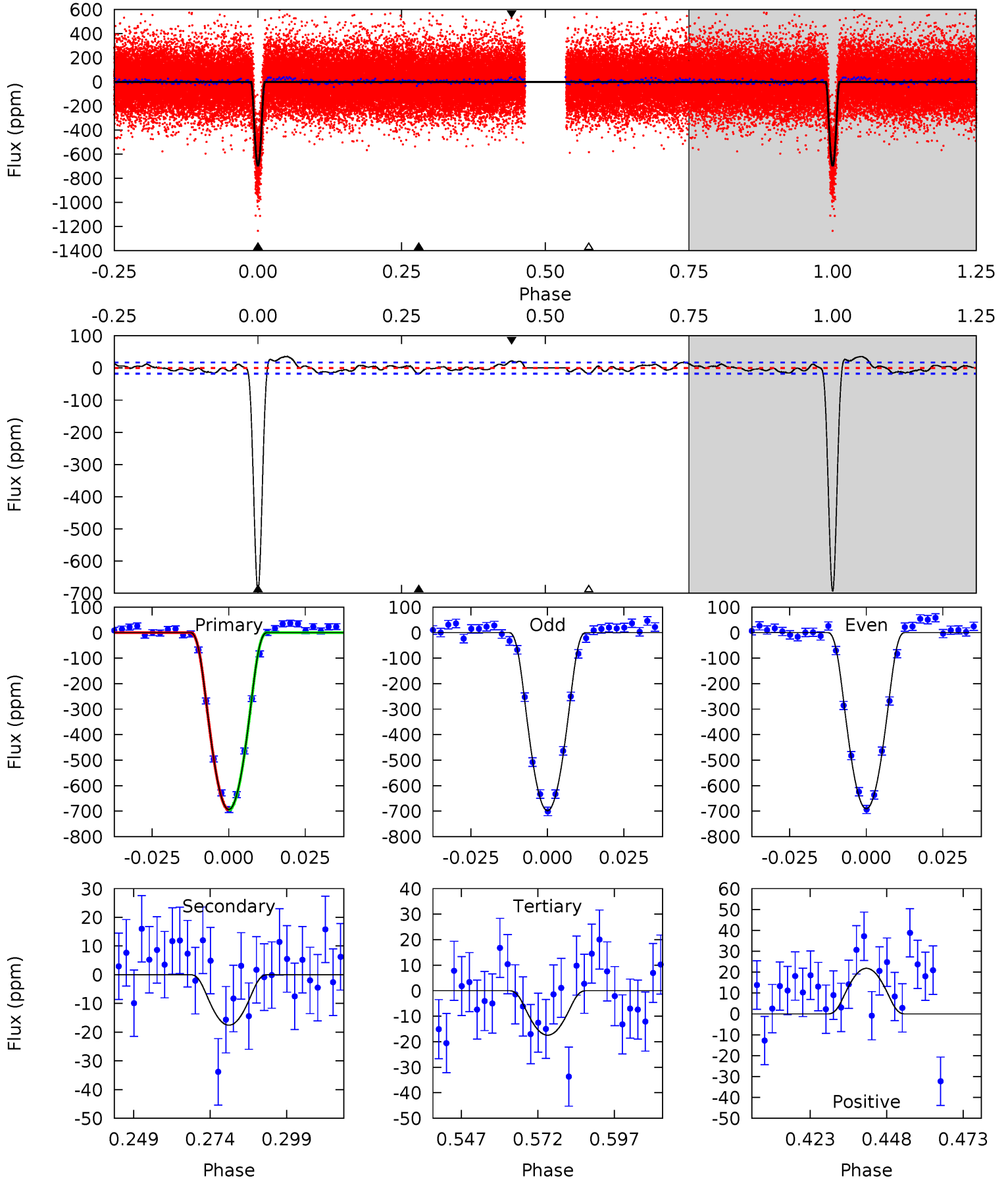
TCE 005961350-02   P= 5.262632 Days    $T_0=132.997097$  (BKJD)



# DV Model-Shift Uniqueness Test

005961350-02, P = 5.262648 Days, E = 127.732136 Days

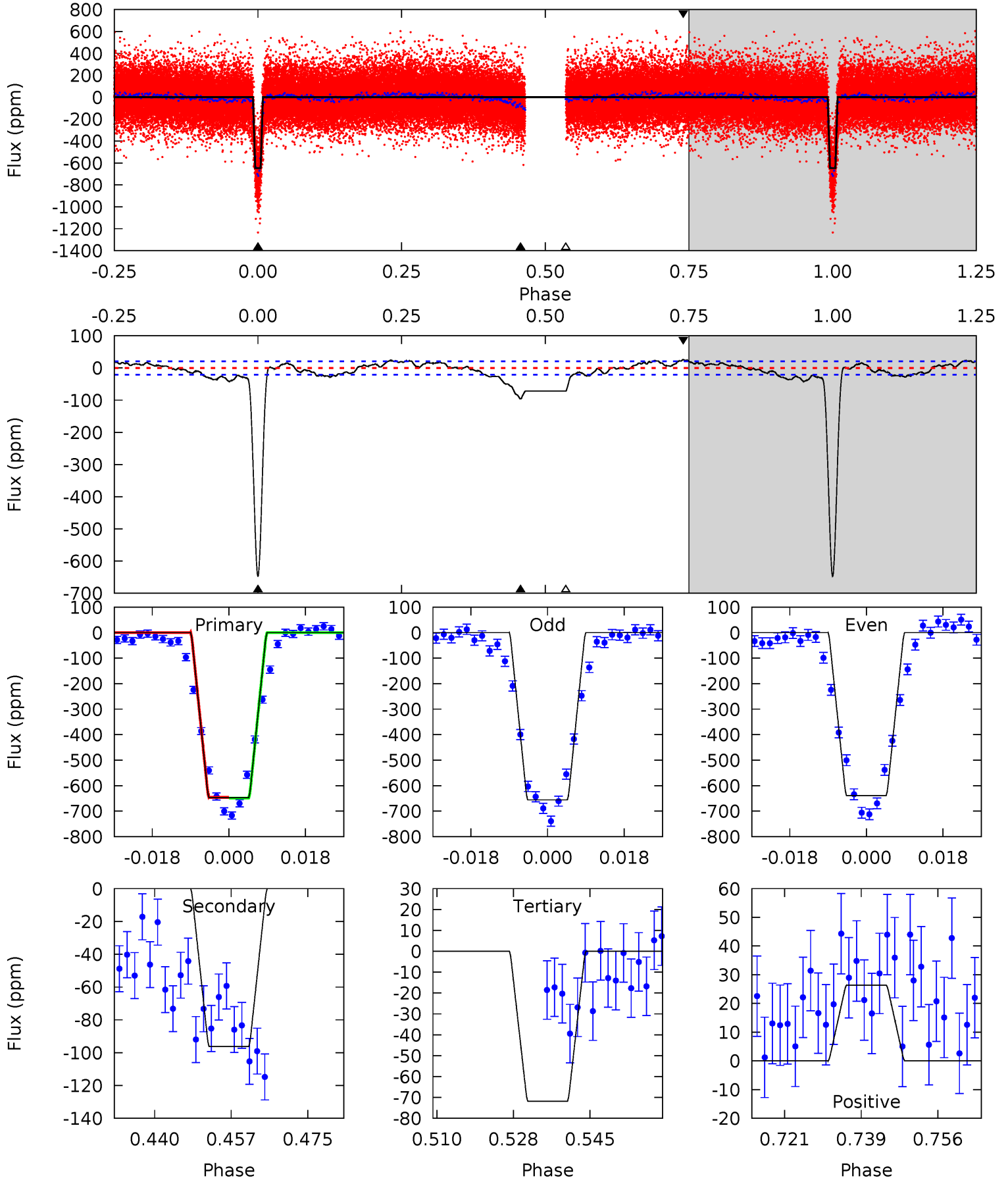
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
194.4	4.93	4.89	6.12	4.85	2.24	2.86	189.5	188.3	0.04	-1.19	1.06	1.00	0.05	0.12



# Alt Model-Shift Uniqueness Test

005961350-02, P = 5.262632 Days, E = 127.734465 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
152.9	22.8	17.0	6.24	4.92	2.37	4.29	136.0	146.7	5.77	16.5	2.02	1.01	0.04	0.39



### Stellar Parameters For KIC 005961350

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$7049^{+74}_{-95}$	$4.212^{+0.054}_{-0.126}$	$-0.040^{+0.150}_{-0.150}$	$1.549^{+0.279}_{-0.129}$	$1.432^{+0.103}_{-0.082}$	$0.542^{+0.142}_{-0.201}$
	+1%/-1%	+1%/-3%	+375%/-375%	+18%/-8%	+7%/-6%	+26%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005961350-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-18 \pm 4$	$6.92^{+2.00}_{-1.84}$	$2108^{+88}_{-61}$	$2783^{+354}_{-352}$	$0.871^{+0.844}_{-0.374}$
Alt.	$-96 \pm 4$	$4.62^{+1.86}_{-1.87}$	$2108^{+91}_{-59}$	$4431^{+1044}_{-536}$	$11^{+20}_{-5}$

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

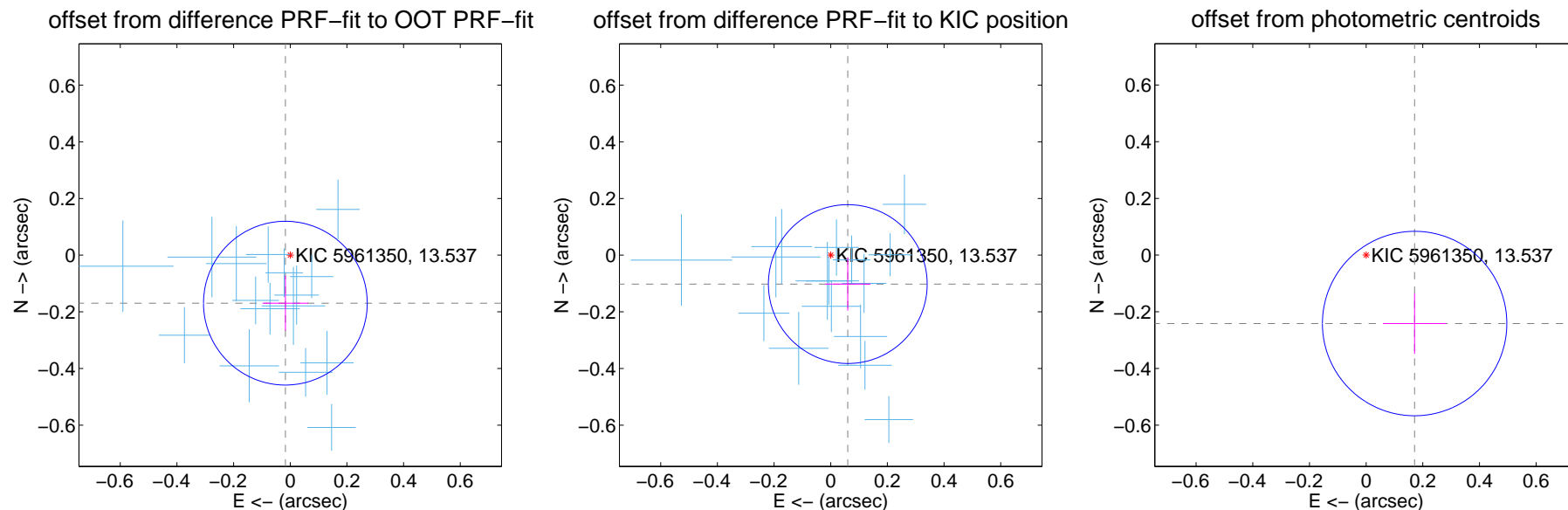
## DV Centroid Data

Supplemental centroid analysis for 005961350-02. Kepler magnitude: 13.54. Transit SNR 109.43

There are 17 quarters with good PRF difference image offsets

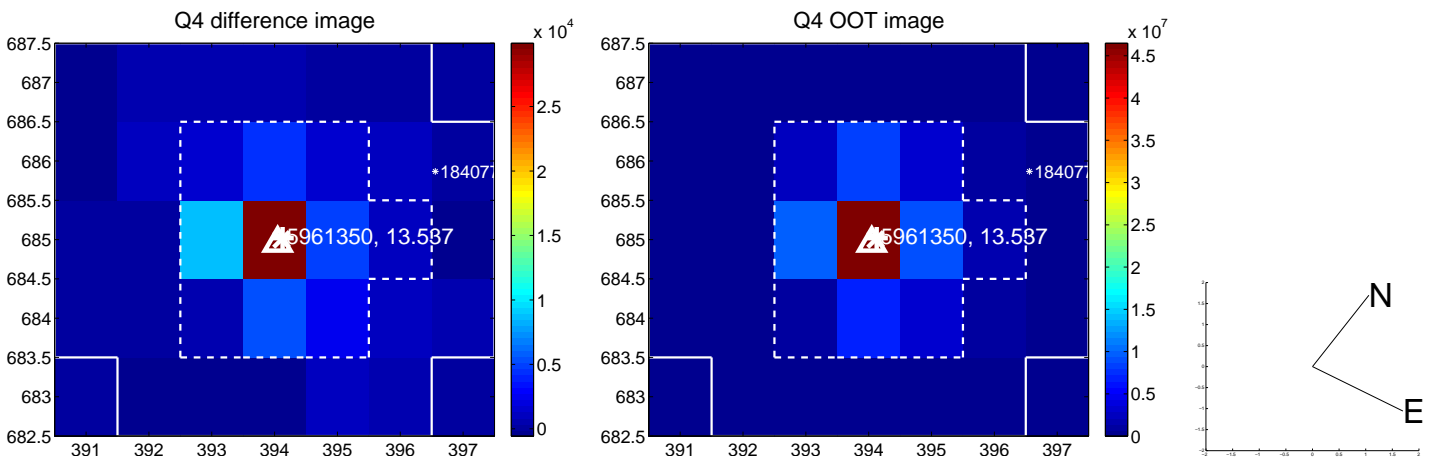
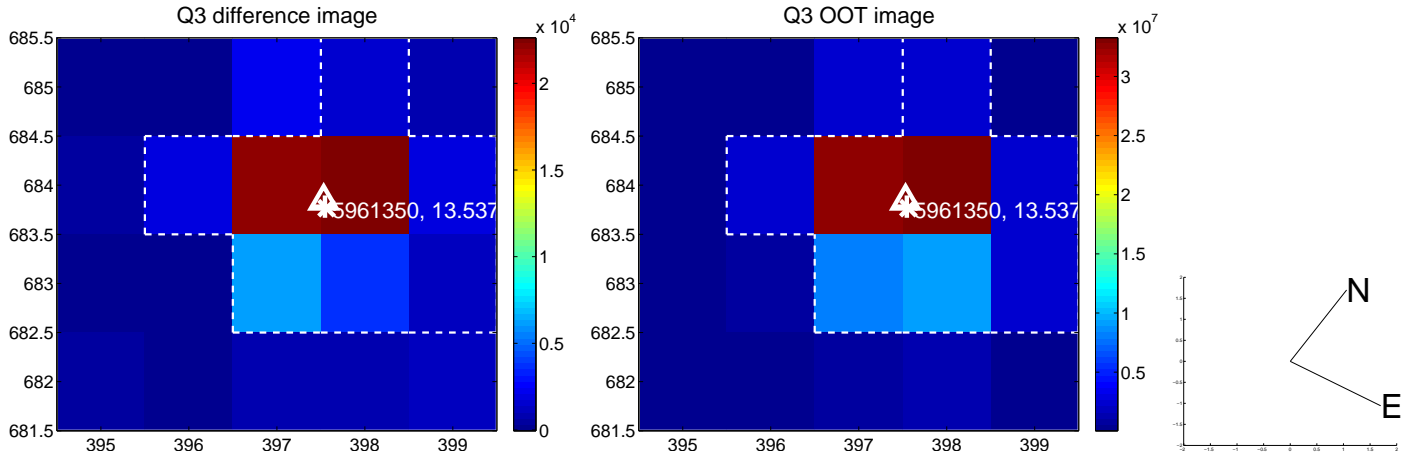
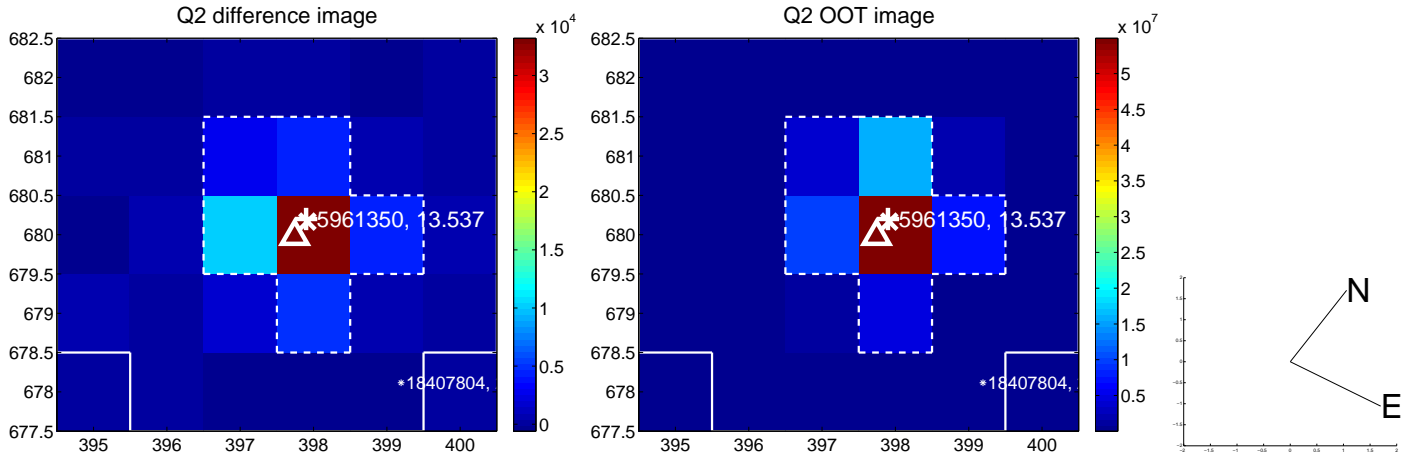
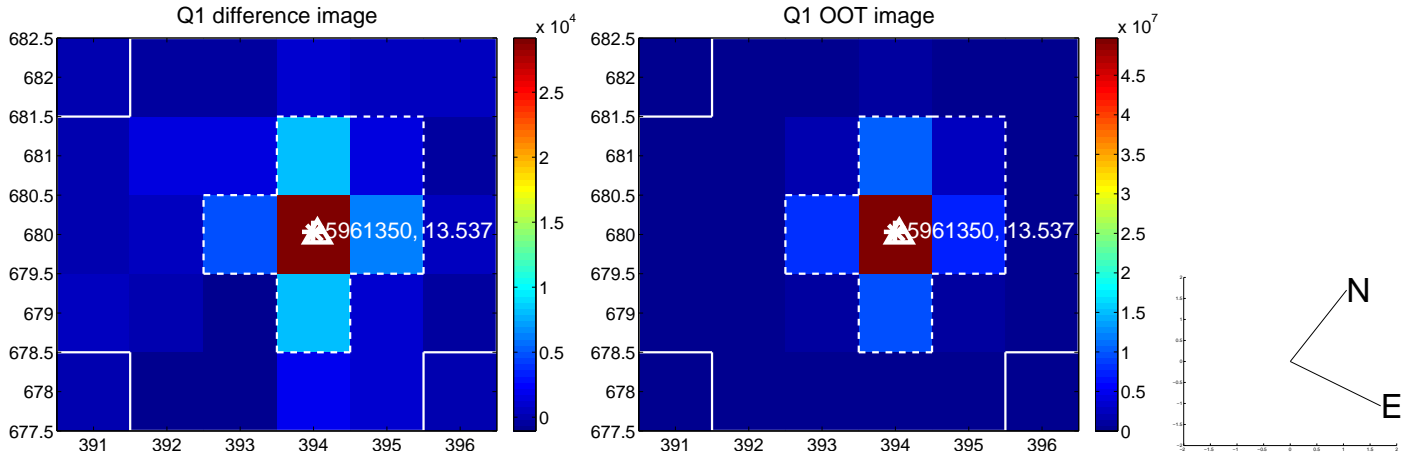
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.170 \pm 0.096$	1.77	$0.017 \pm 0.080$	$-0.169 \pm 0.097$
PRF-fit source offset from KIC position	$0.119 \pm 0.093$	1.27	$-0.060 \pm 0.080$	$-0.102 \pm 0.094$
photometric centroid source offset	$0.30 \pm 0.11$	2.73	$-0.17 \pm 0.11$	$-0.24 \pm 0.11$

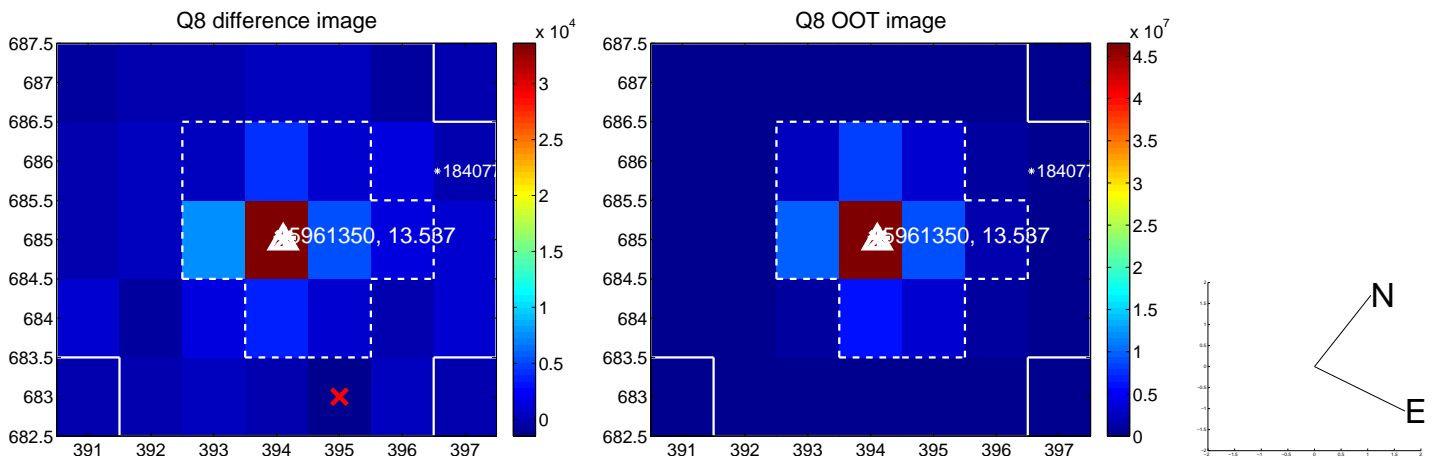
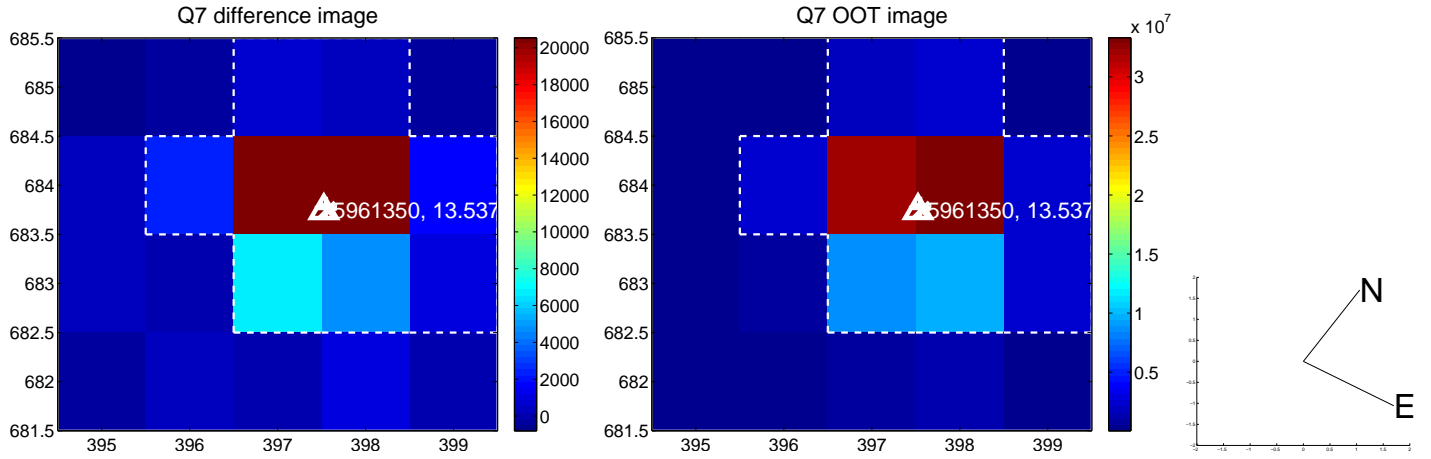
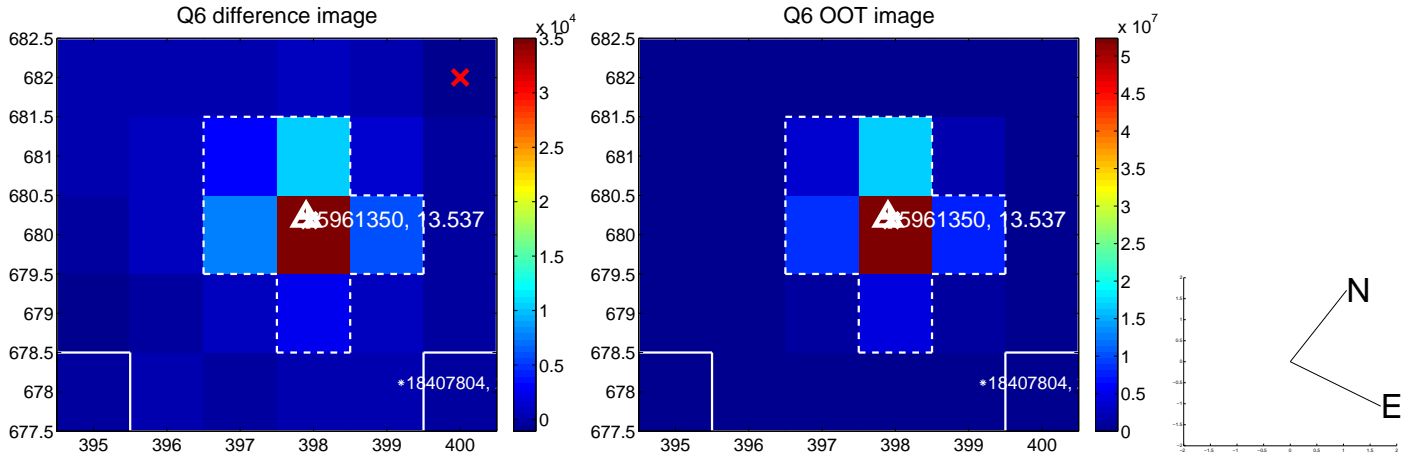
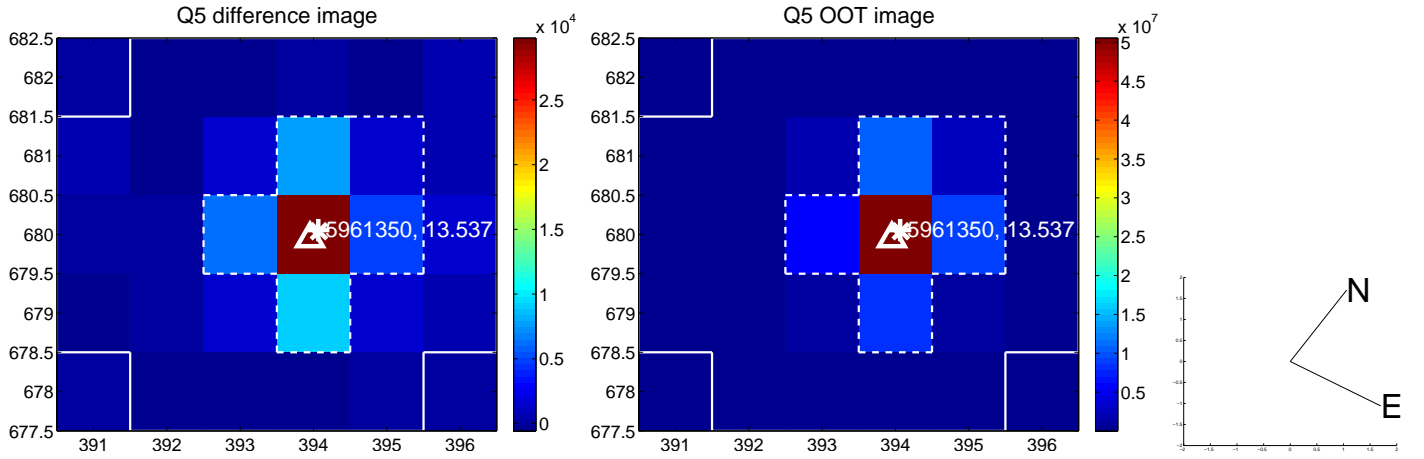


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

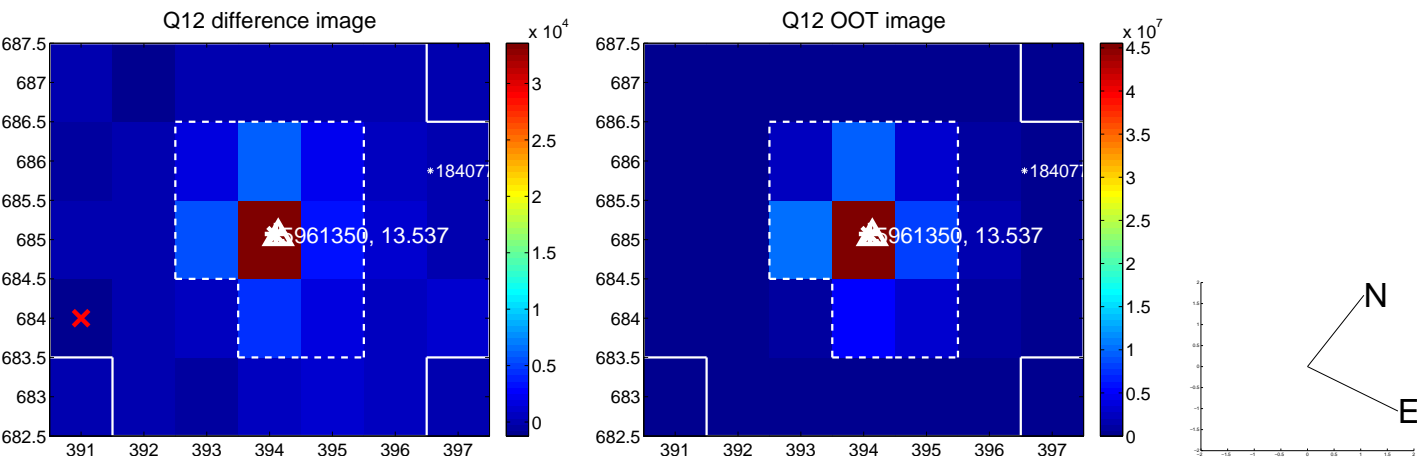
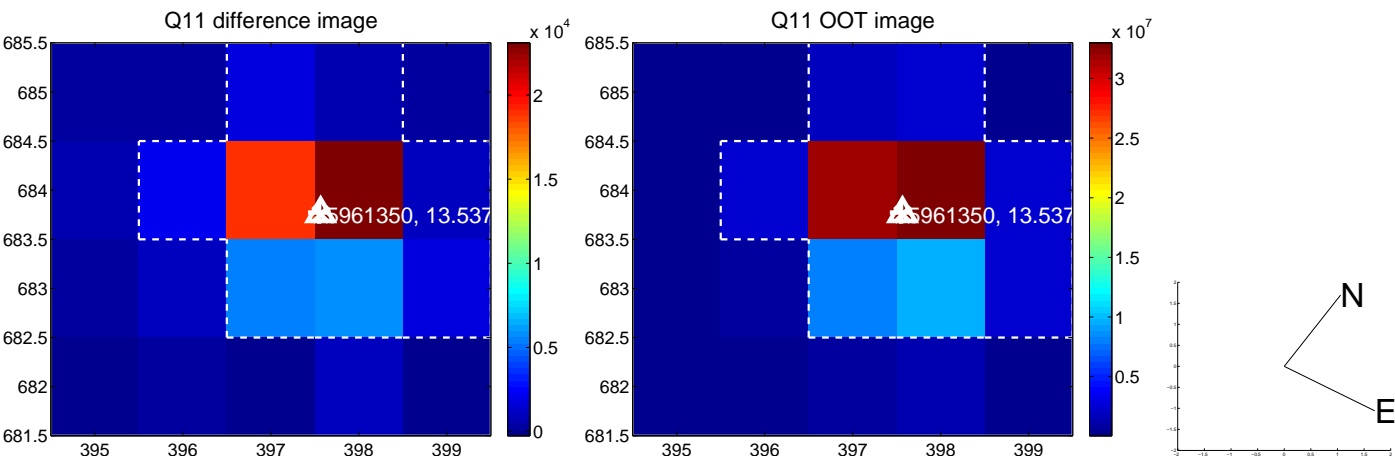
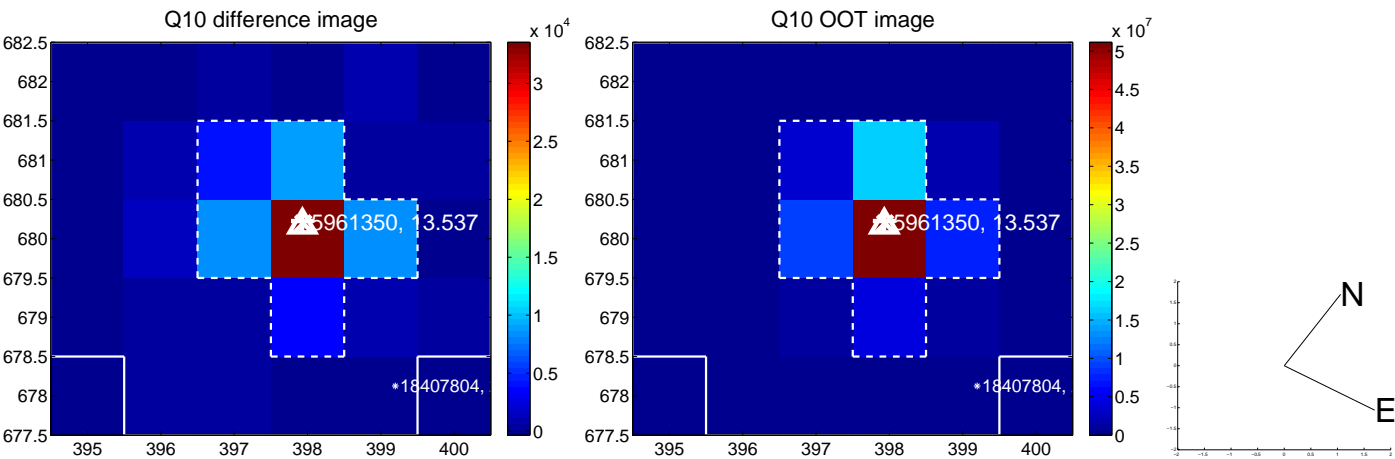
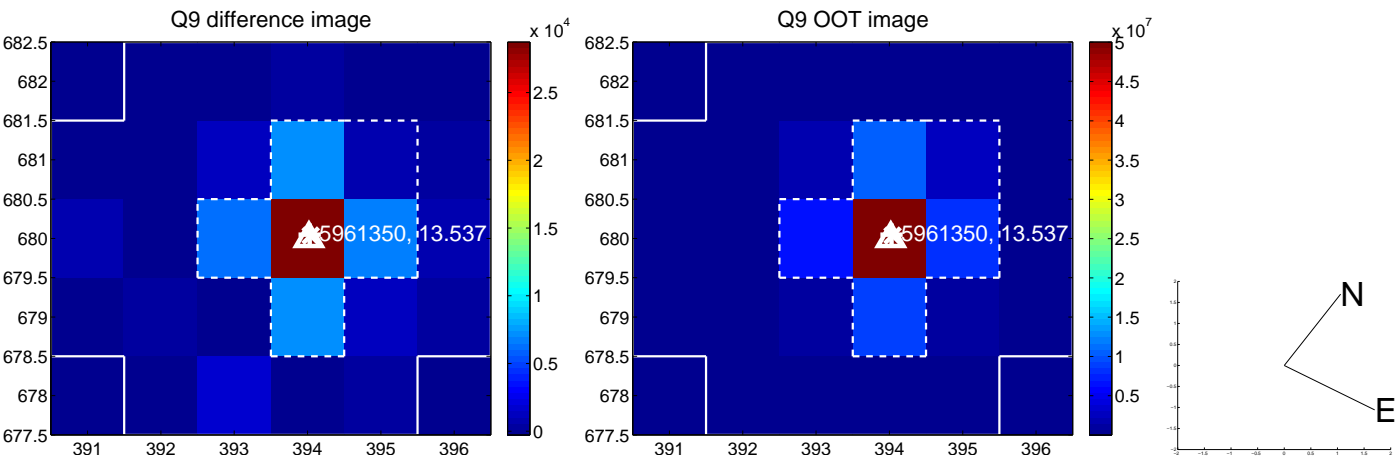


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

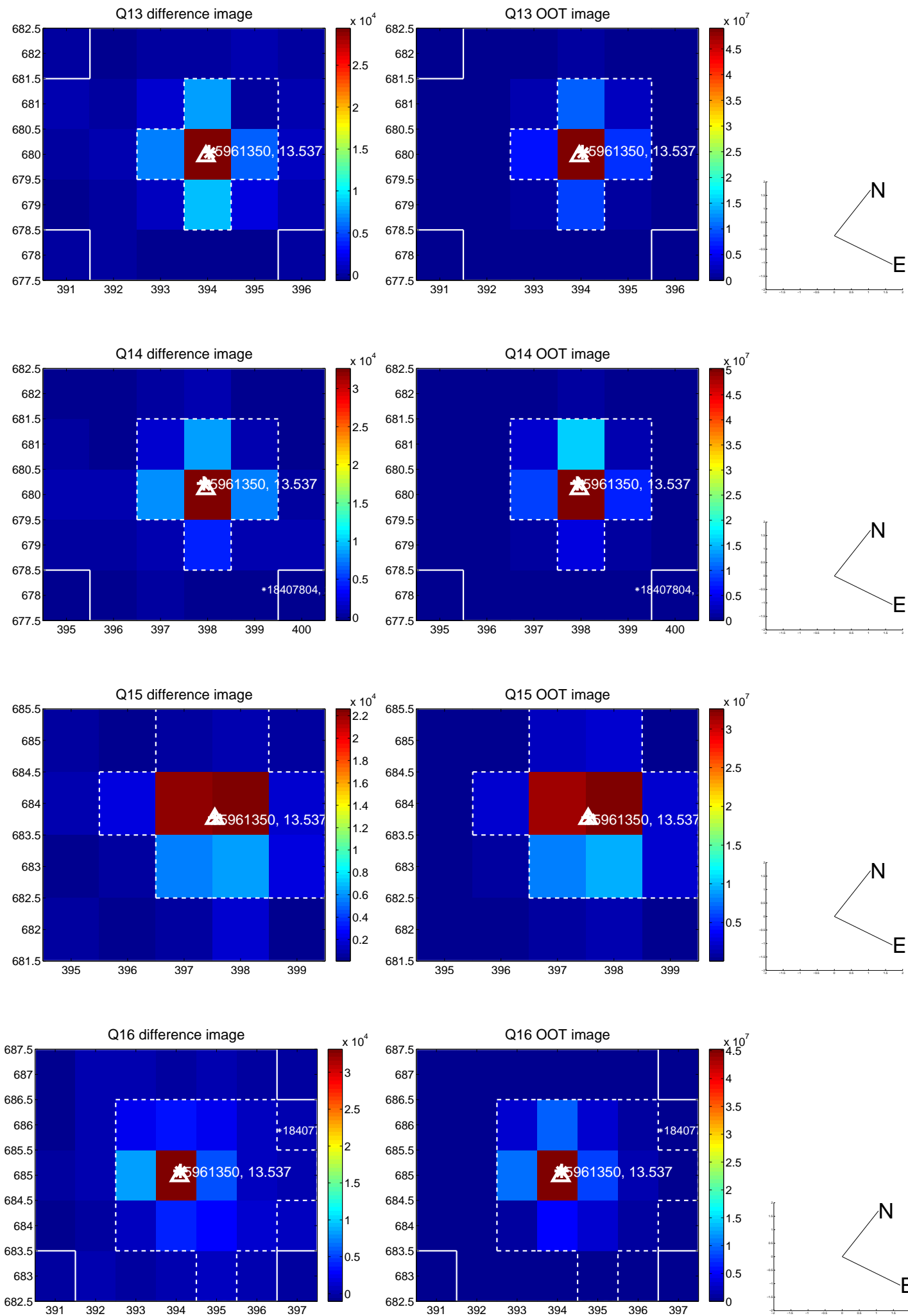




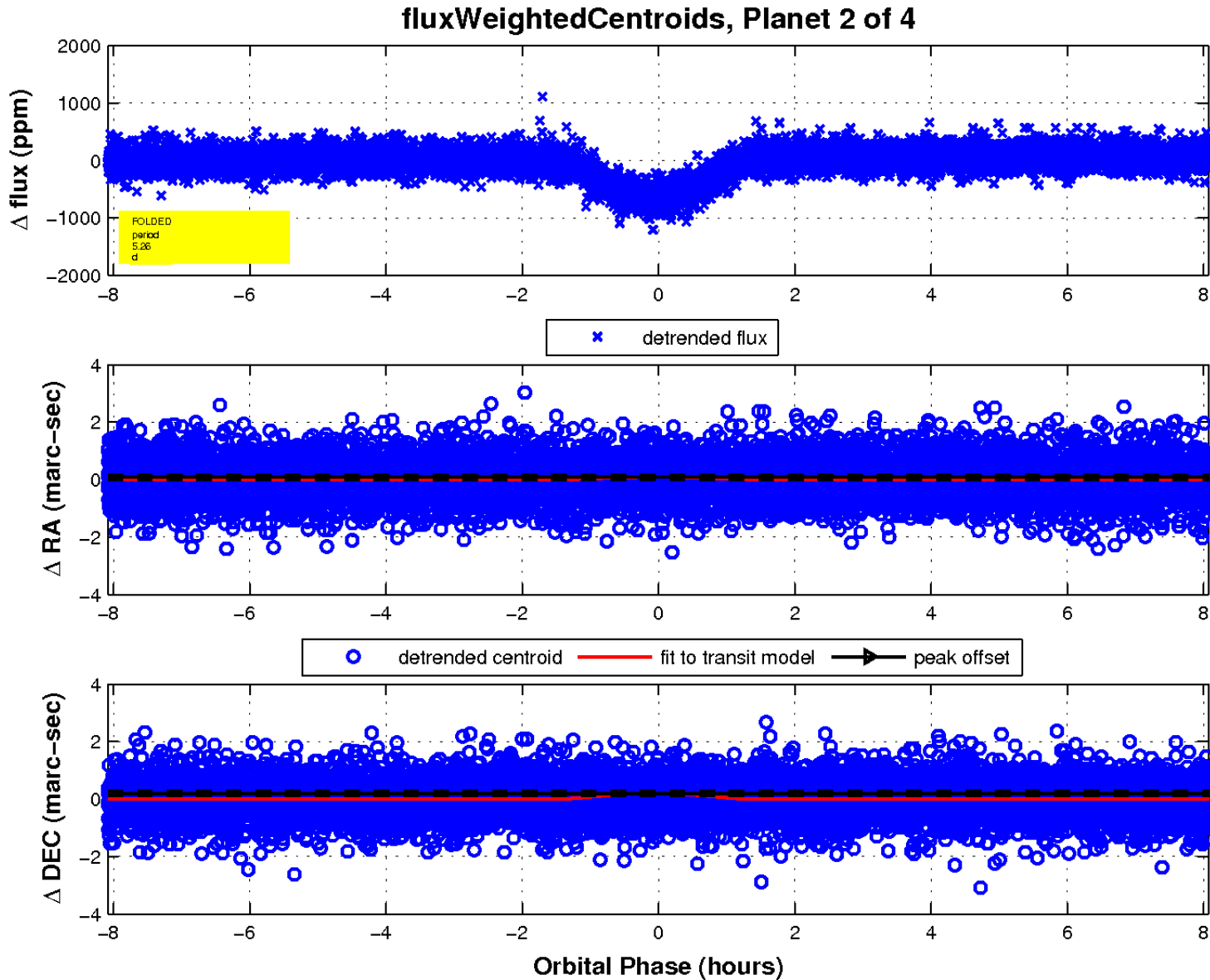
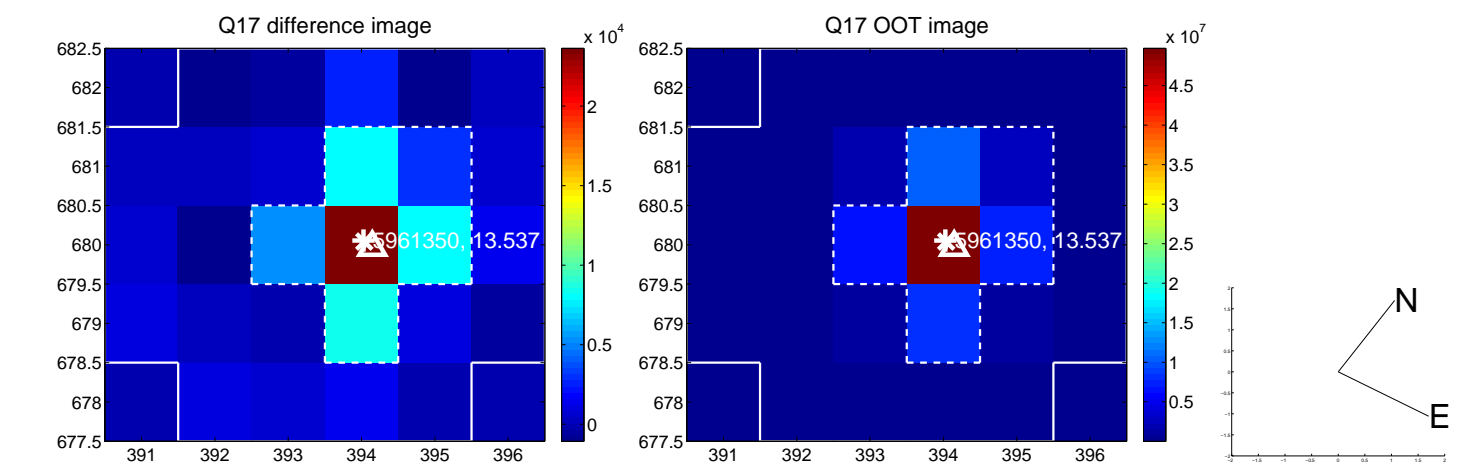
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

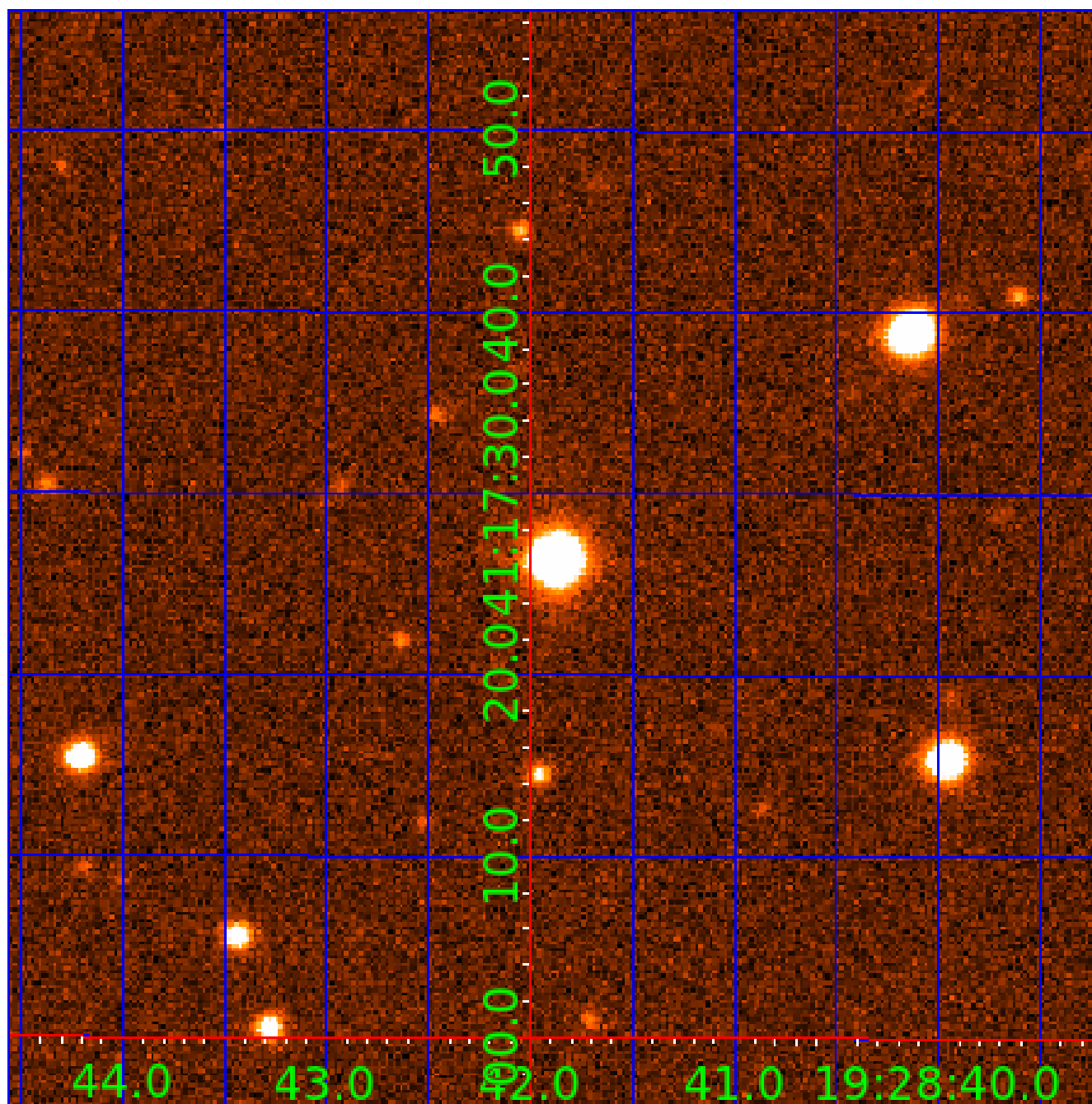


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005961350

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005961350-01	OBS	6017.01	5.262659	135.626500	22506.4	2.856	3524.4	3111.7	1.55	7049	35.34	1194.44
005961350-02	OBS	No	5.262648	132.994784	686.3	2.694	102.9	109.4	1.55	7049	6.88	1194.44
005961350-03	OBS	No	649.643757	250.259004	406.0	7.163	10.7	9.9	1.55	7049	3.45	1.94
005961350-04	OBS	No	5.262331	136.142601	90.5	15.000	9.2	-1.0	1.55	7049	1.49	1194.54

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005961350-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
005961350-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005961350-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005961350-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_NOFITS

**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 005961350-03

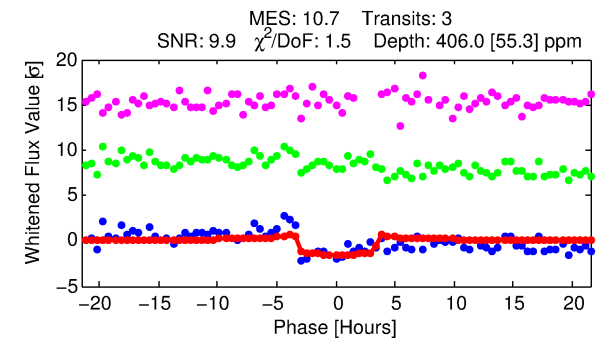
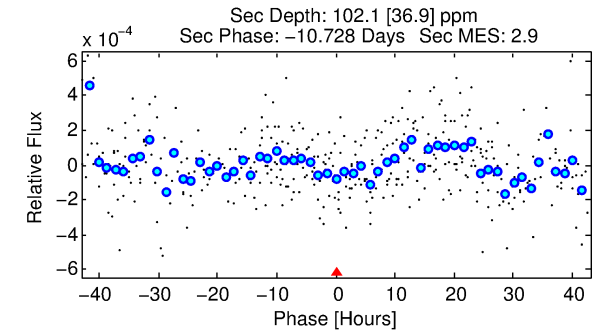
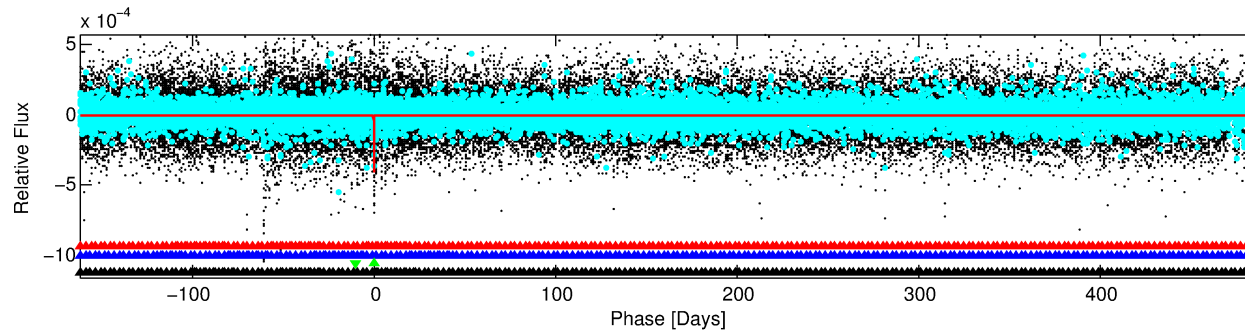
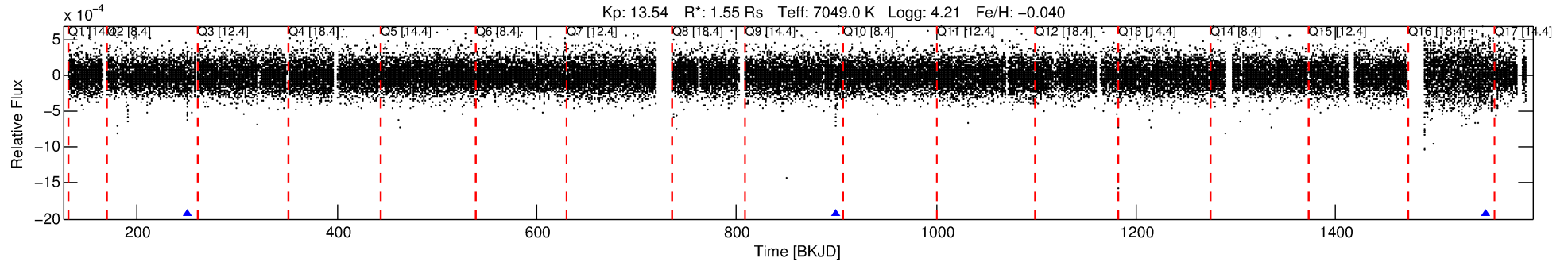
No Significant Match Found

# DV One-Page Summary

KIC: 5961350 Candidate: 3 of 4 Period: 649.644 d

KOI: K06017 Corr: No Ephemeris Match

Kp: 13.54 R\*: 1.55 Rs Teff: 7049.0 K Logg: 4.21 Fe/H: -0.040

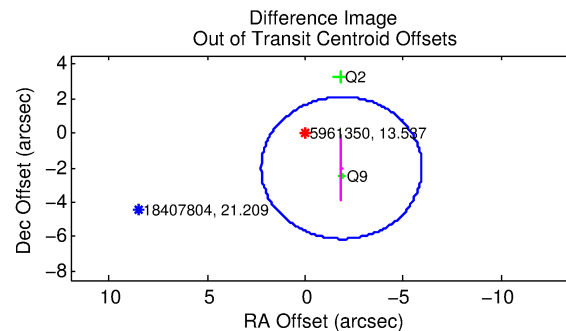
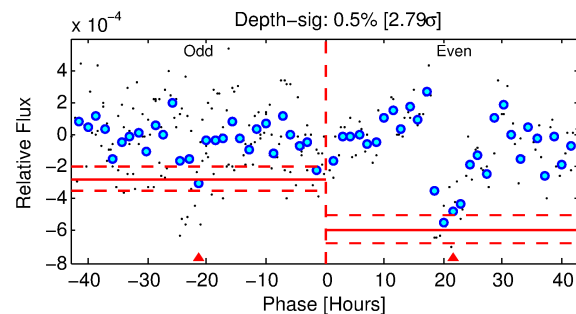
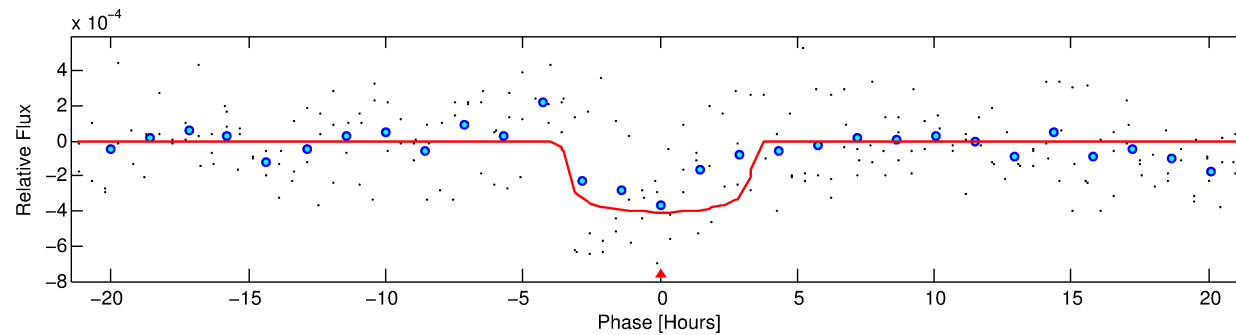


## DV Fit Results:

Period = 649.64376 [0.00865] d  
Epoch = 250.2590 [0.0099] BKJD  
Rp/R\* = 0.0204 [0.0059]  
a/R\* = 432.35 [712.61]  
b = 0.81 [0.72]  
Seff = 1.94 [0.45]  
Teq = 301 [18] K  
Rp = 3.45 [1.18] Re  
a = 1.6527 [0.2548] AU  
Ag = 12875.44 [9304.97] [1.38σ]  
Teffp = 4958 [853] K [5.46σ]

## DV Diagnostic Results:

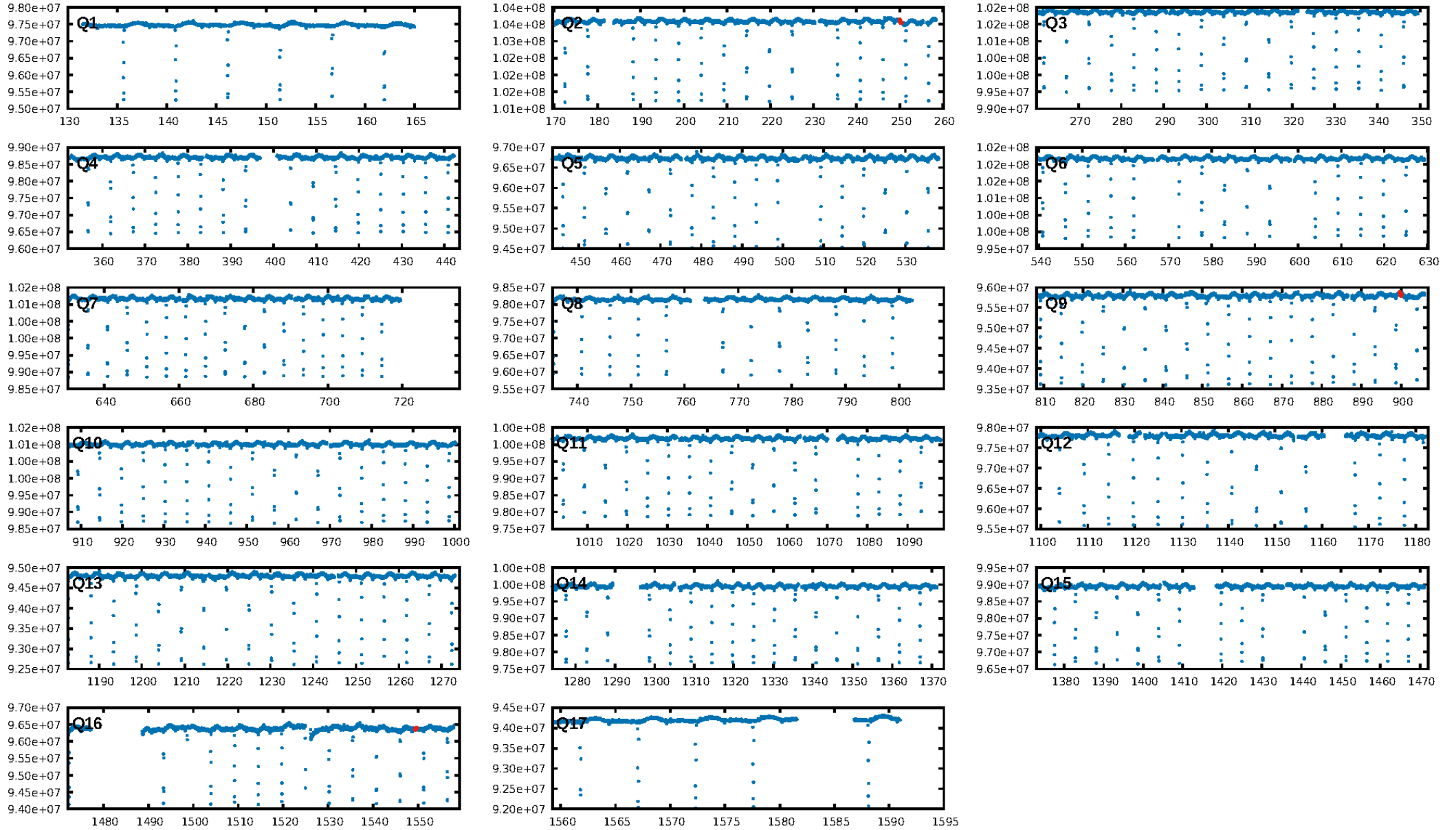
ShortPeriod-sig: 100.0% [2005.49σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 28.8%  
Bootstrap-pfa: 1.36e-10  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.5133  
Centroid-sig: 13.4%  
Centroid-so: 1.178 arcsec [1.26σ]  
OotOffset-rm: 2.736 arcsec [2.00σ]  
OotOffset-st: 1/0/0/1 [2]  
KicOffset-rm: 2.767 arcsec [2.05σ]  
KicOffset-st: 1/0/0/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:06:34 Z

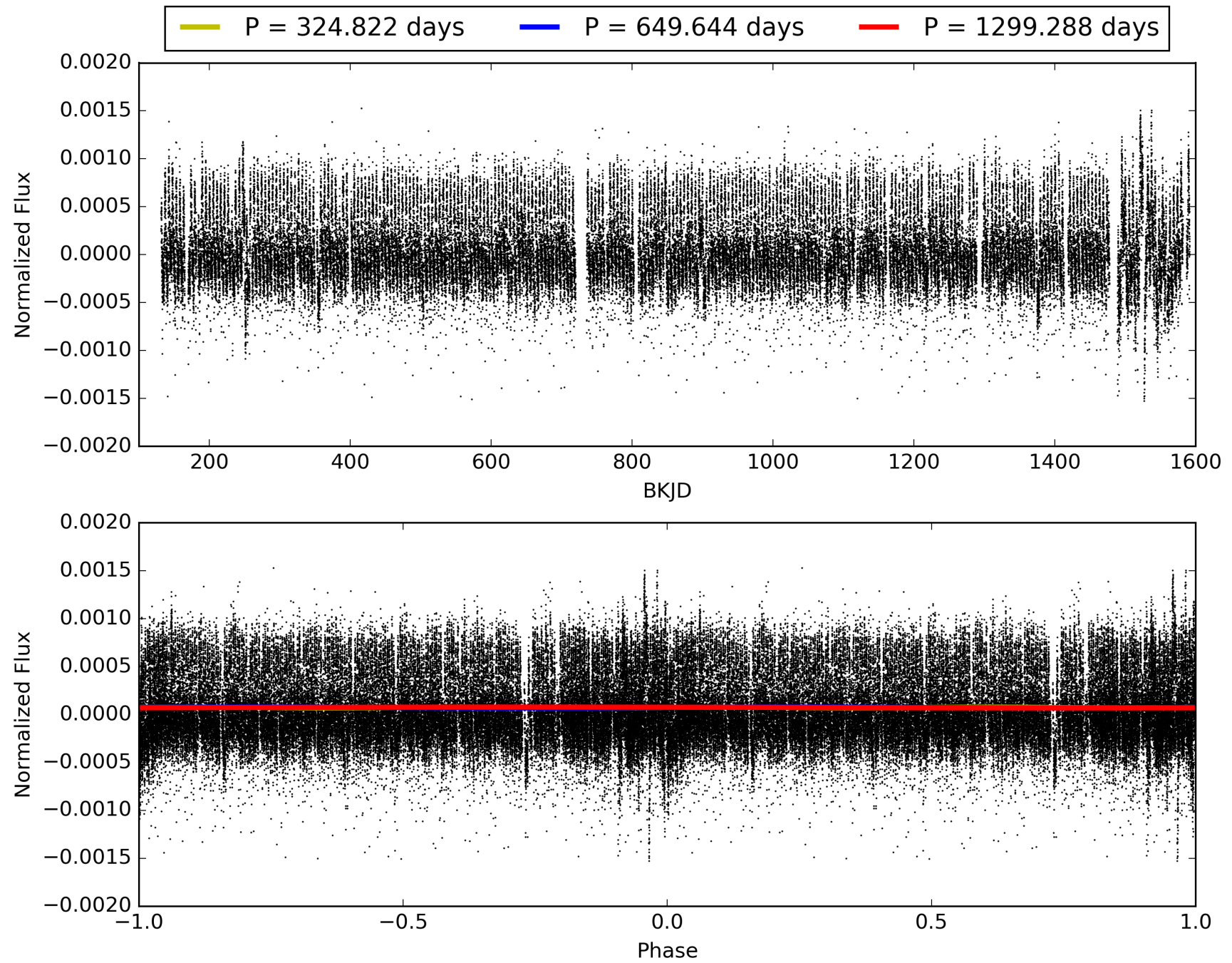
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005961350-03, PDC Light Curves





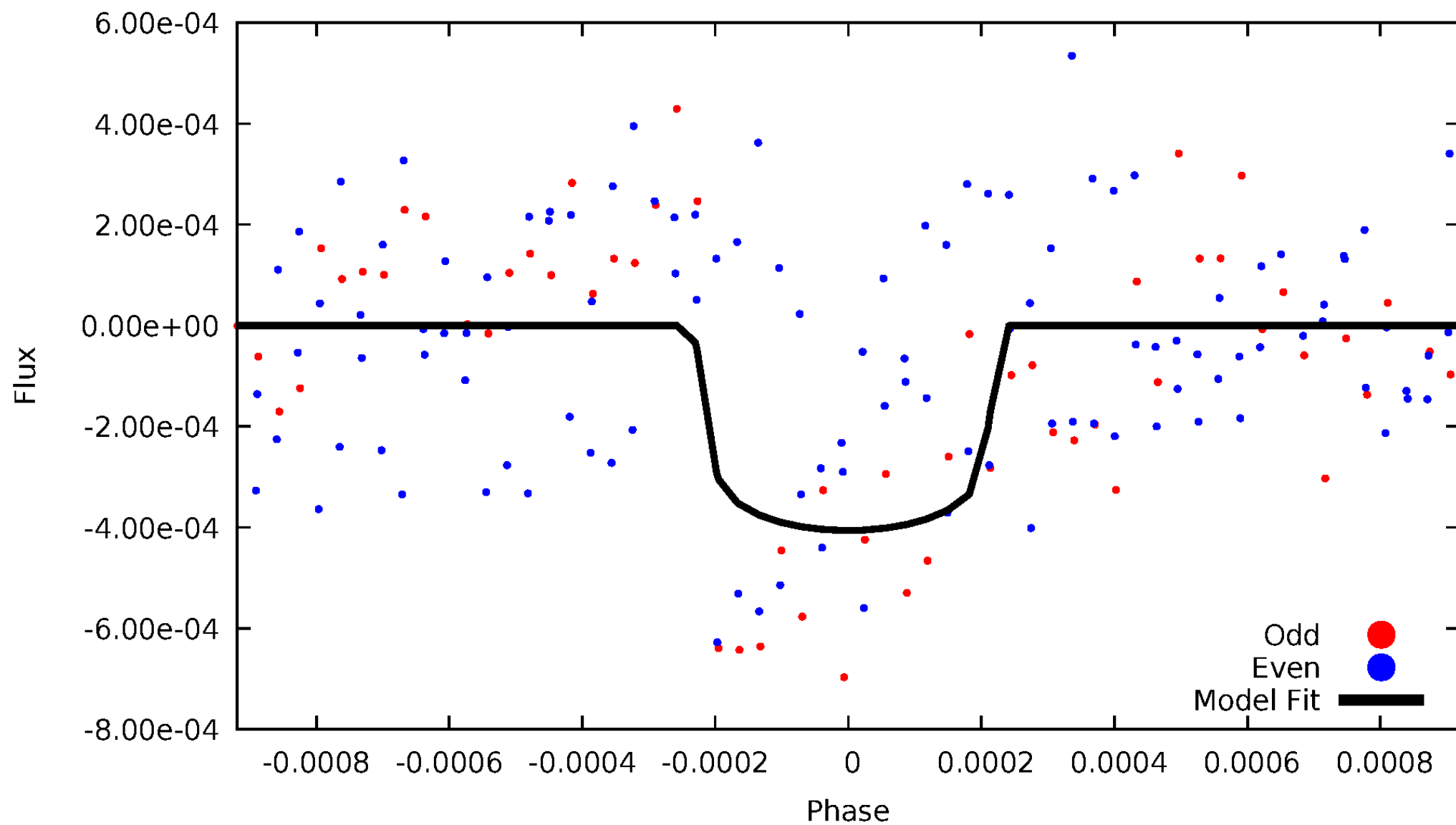
TCE 005961350-03





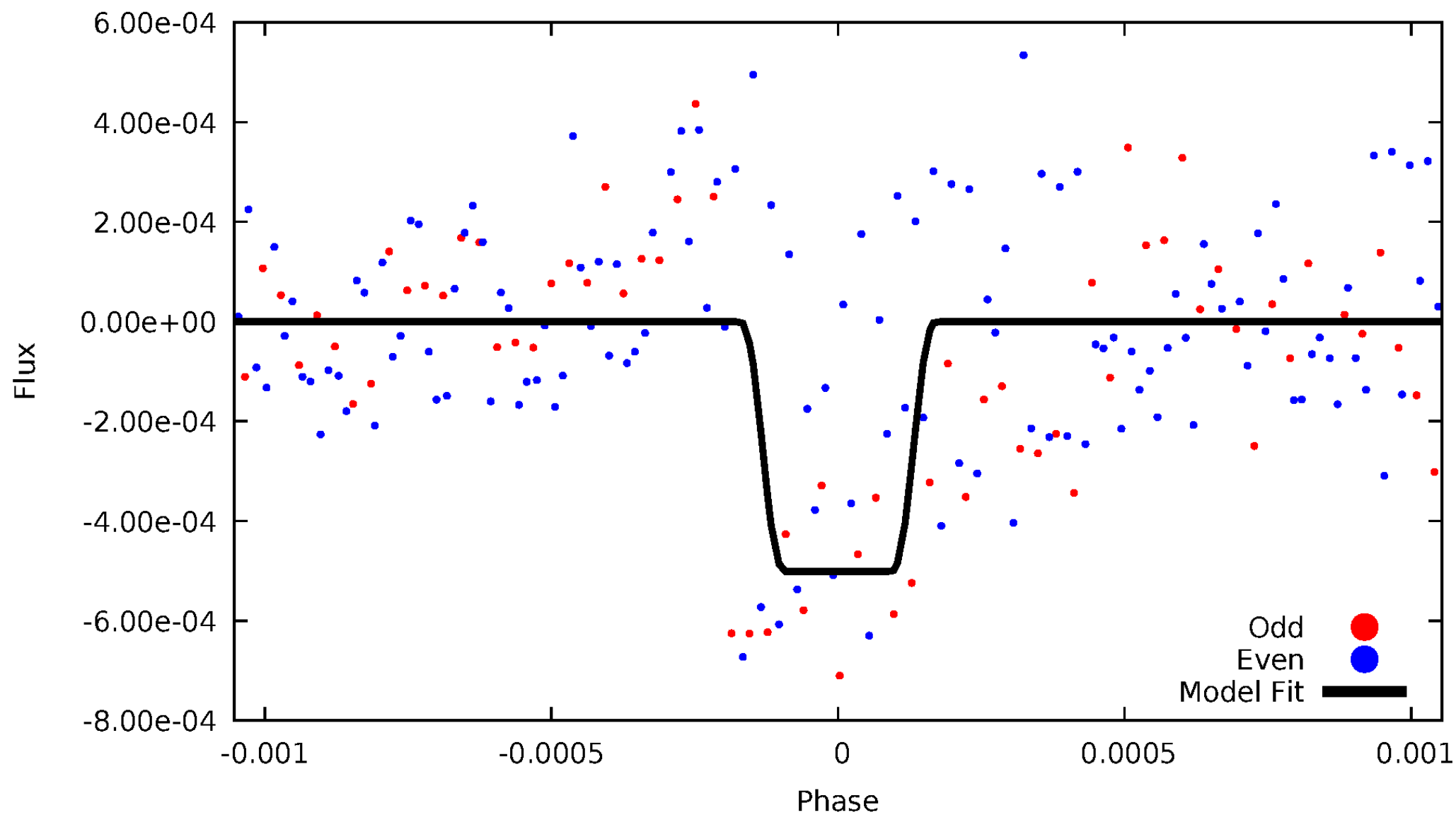
# DV Odd/Even

TCE 005961350-03

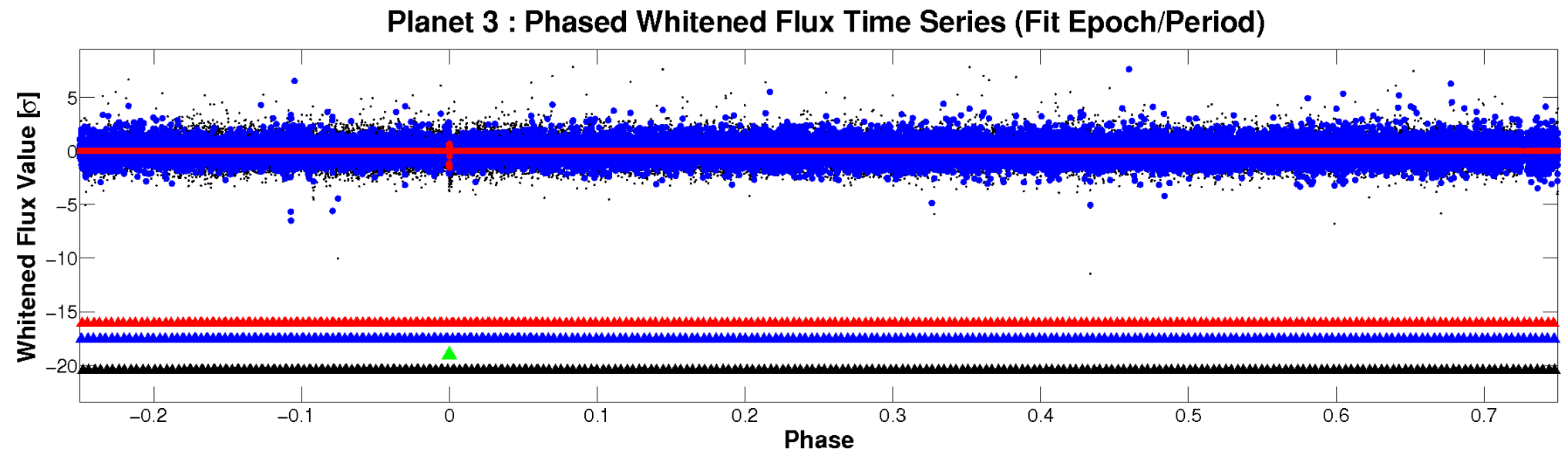
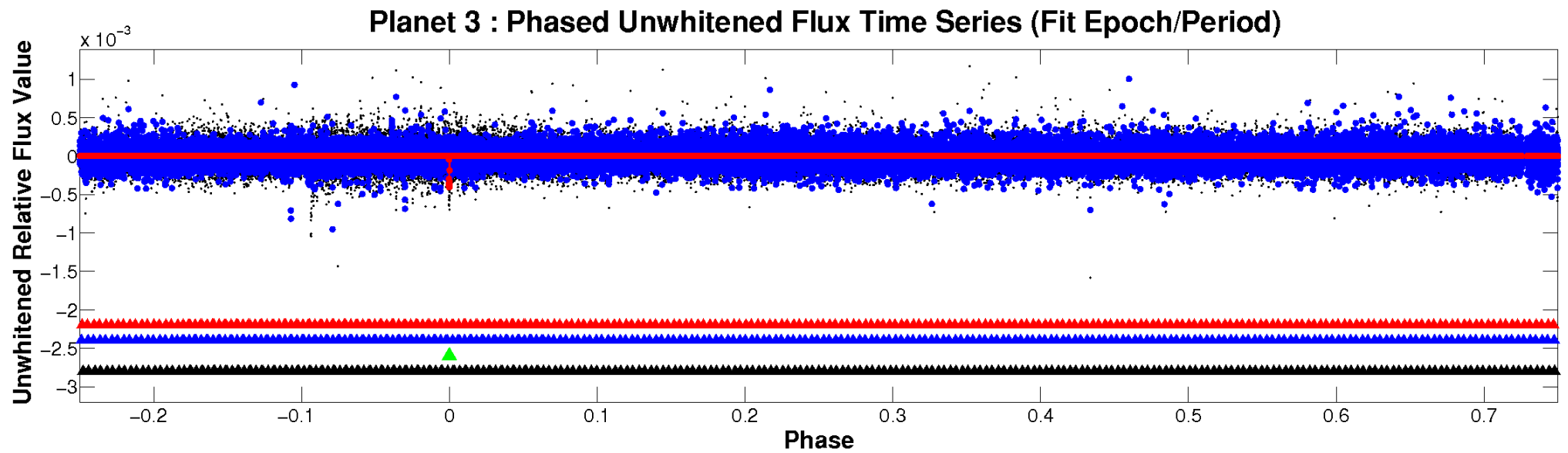


# ALT Odd/Even

TCE 005961350-03

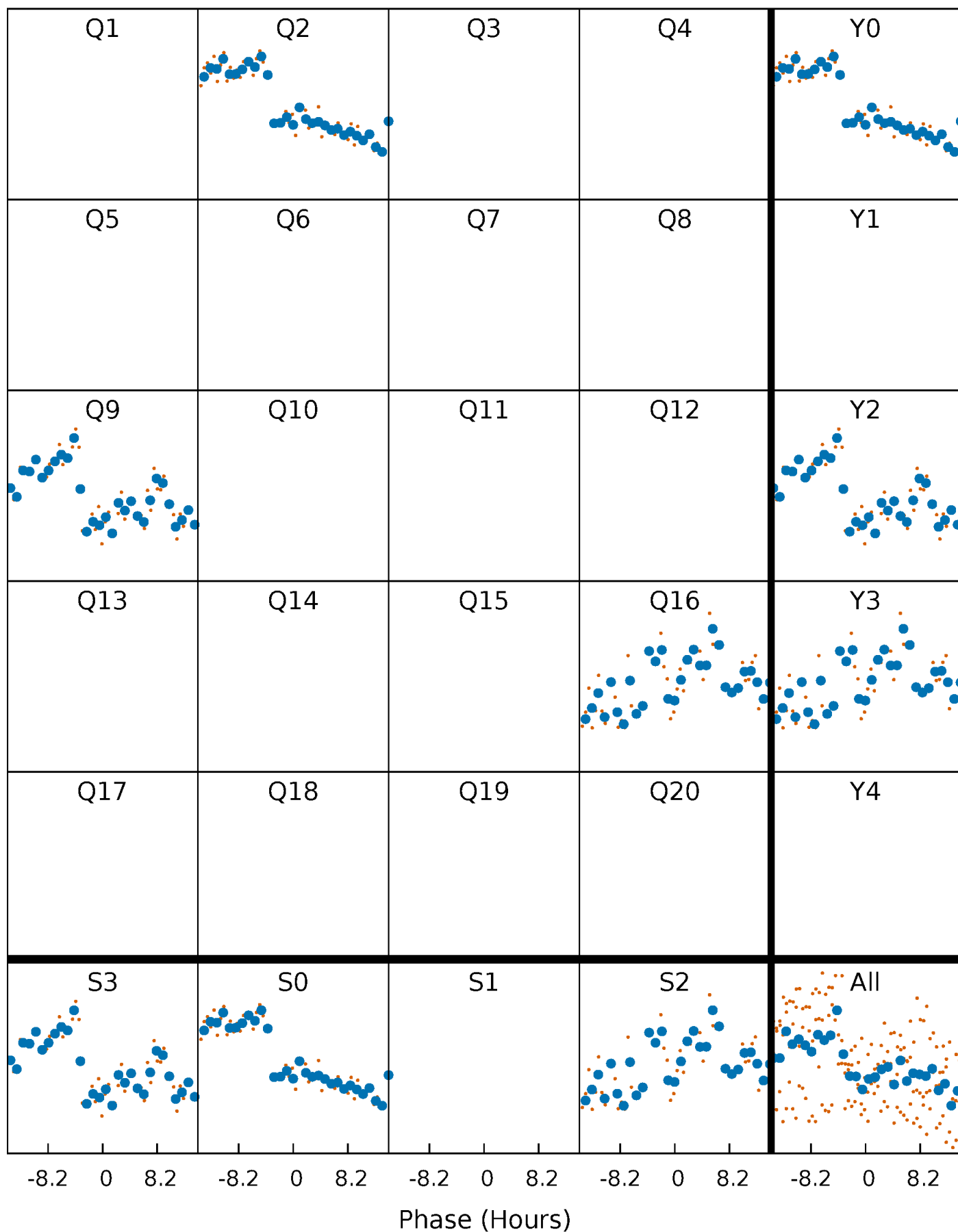


# Non-Whitened Vs. Whitened Light Curve



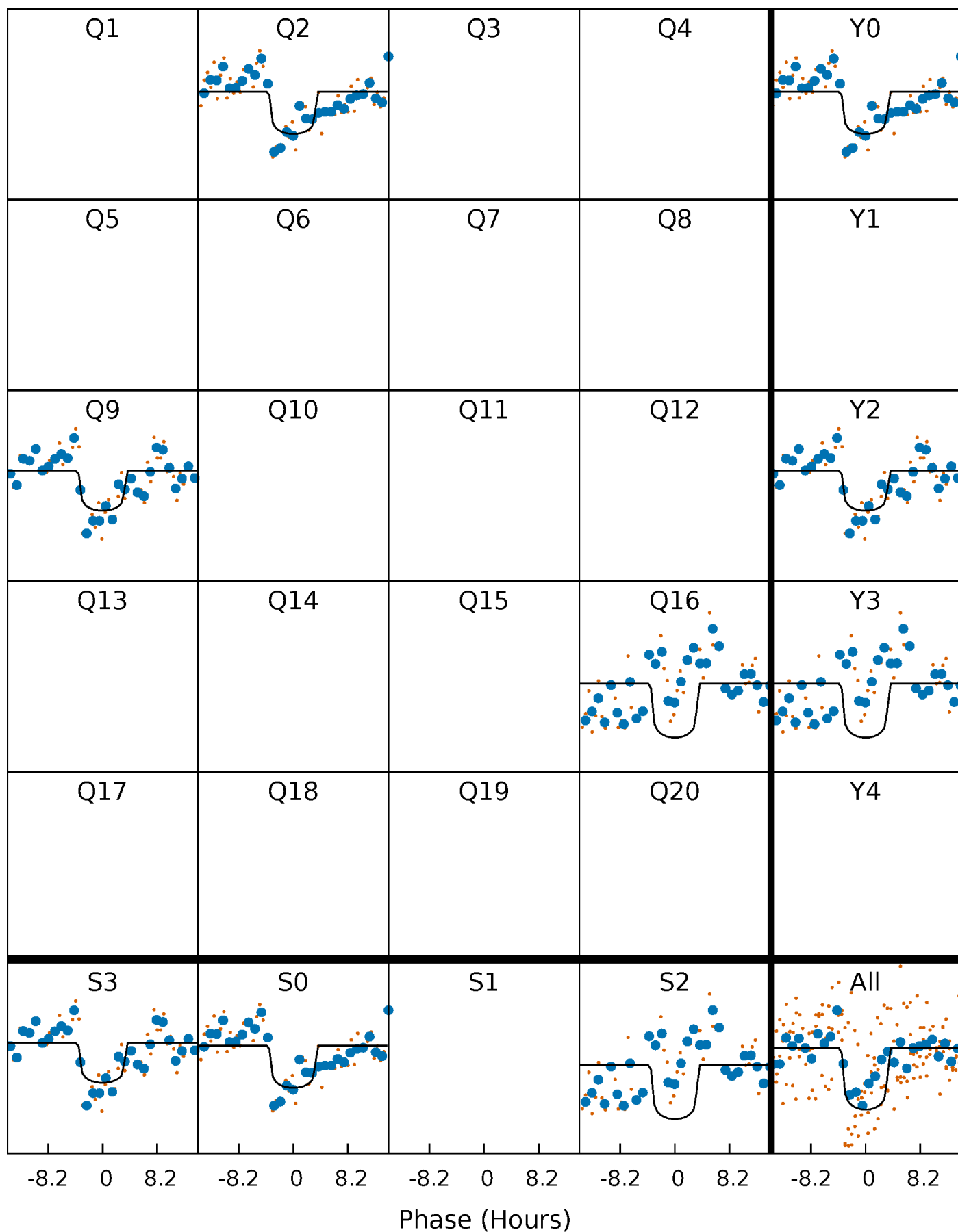
# PDC Quarter-Phased Transit Curves

TCE 005961350-03   P=649.643757 Days    $T_0=250.259004$  (BKJD)



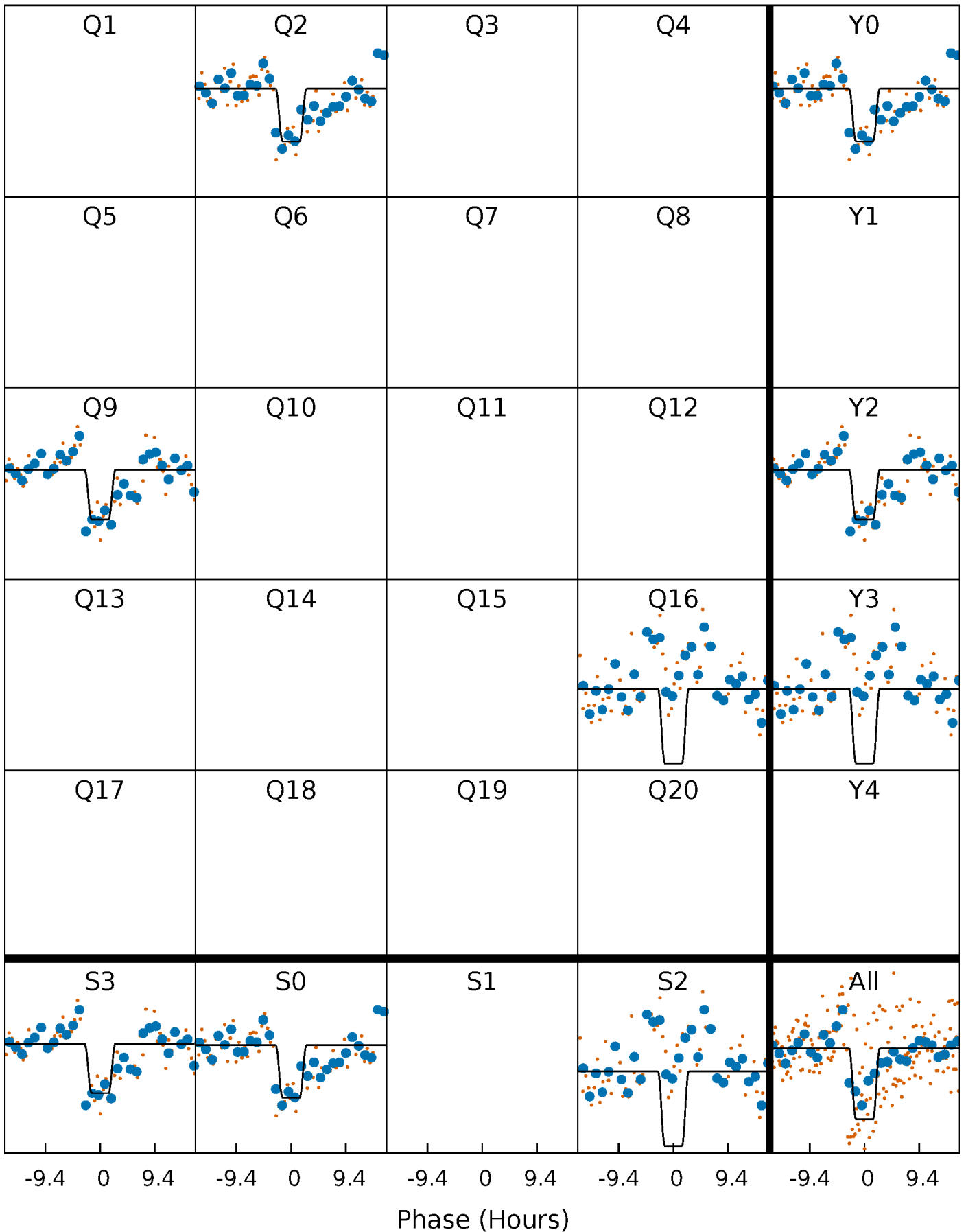
# DV Quarter-Phased Transit Curves

TCE 005961350-03     $P=649.643757$  Days     $T_0=250.259004$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

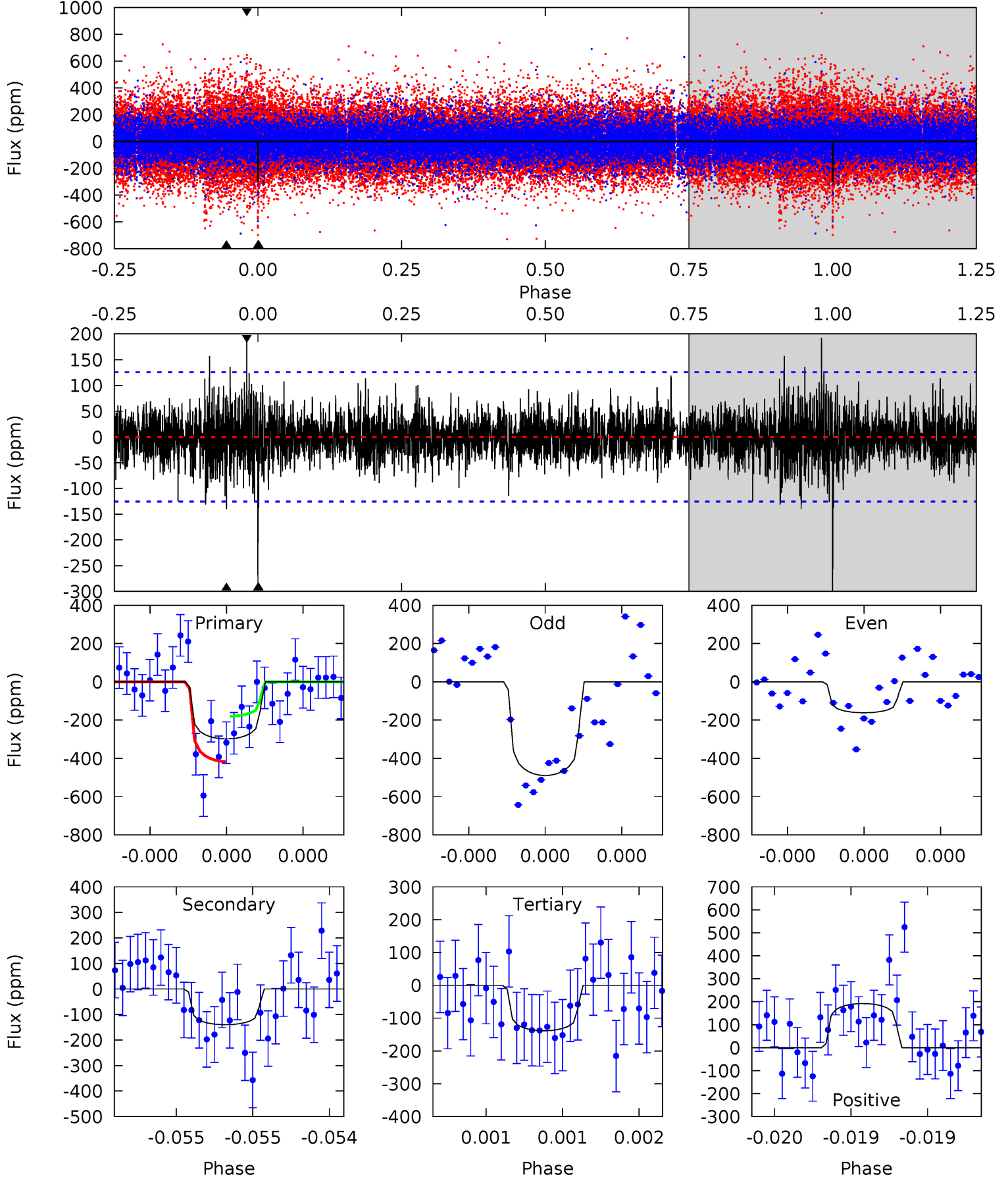
TCE 005961350-03 P=649.657795 Days  $T_0=250.238878$  (BKJD)



# DV Model-Shift Uniqueness Test

005961350-03, P = 649.643757 Days, E = 250.259004 Days

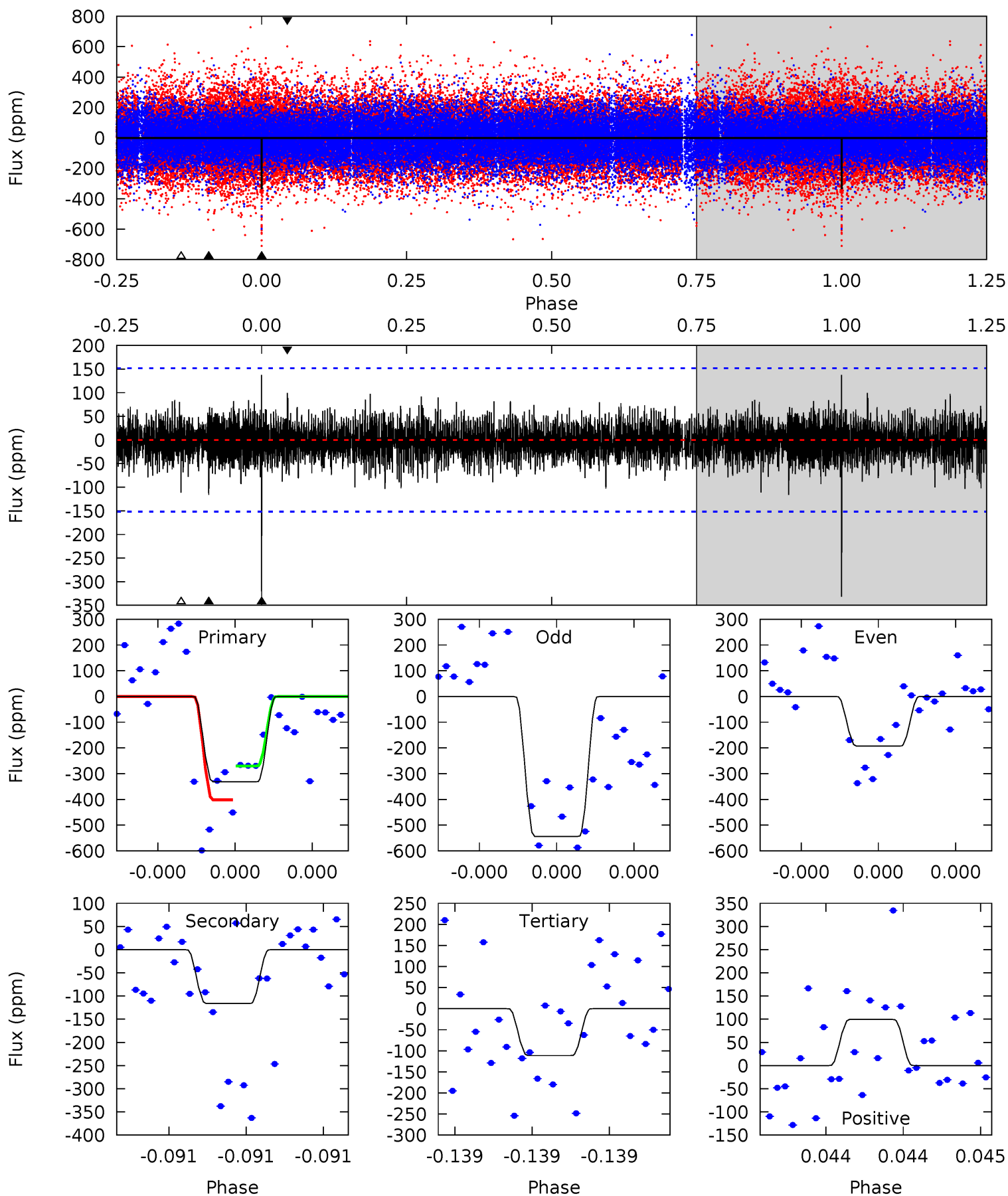
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	6.23	6.16	8.54	5.58	3.49	1.44	7.11	4.73	0.07	-2.32	7.07	0.68	0.39	5.26



# Alt Model-Shift Uniqueness Test

005961350-03, P = 649.657795 Days, E = 250.238878 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
12.3	4.32	4.14	3.70	5.65	3.60	0.98	8.20	8.65	0.18	0.62	6.43	0.66	0.29	2.42





### Stellar Parameters For KIC 005961350

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$7049^{+74}_{-95}$	$4.212^{+0.054}_{-0.126}$	$-0.040^{+0.150}_{-0.150}$	$1.549^{+0.279}_{-0.129}$	$1.432^{+0.103}_{-0.082}$	$0.542^{+0.142}_{-0.201}$
	+1%/-1%	+1%/-3%	+375%/-375%	+18%/-8%	+7%/-6%	+26%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005961350-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-140 \pm 22$	$3.51^{+1.19}_{-1.06}$	$423^{+20}_{-13}$	$5387^{+1025}_{-632}$	$17003^{+18757}_{-7877}$
Alt.	$-116 \pm 27$	$3.89^{+1.09}_{-1.05}$	$423^{+20}_{-12}$	$4914^{+747}_{-519}$	$11372^{+11119}_{-5110}$

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

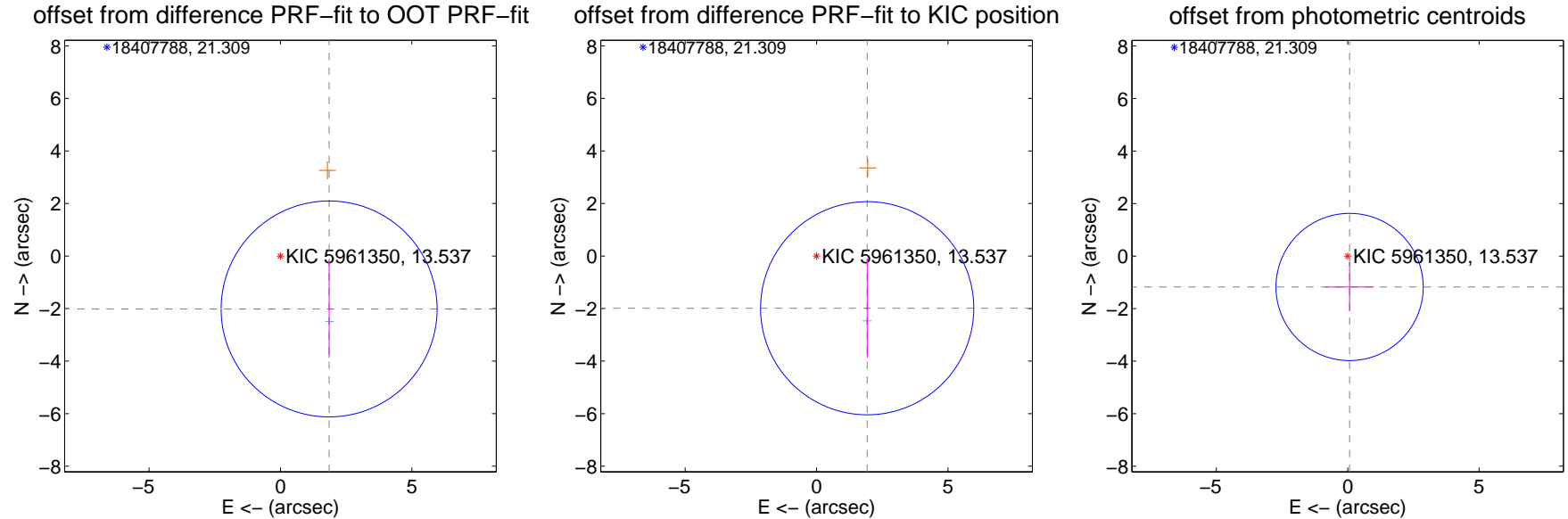
## DV Centroid Data

Supplemental centroid analysis for 005961350-03. Kepler magnitude: 13.54. Transit SNR 9.93

There are 1 quarters with good PRF difference image offsets

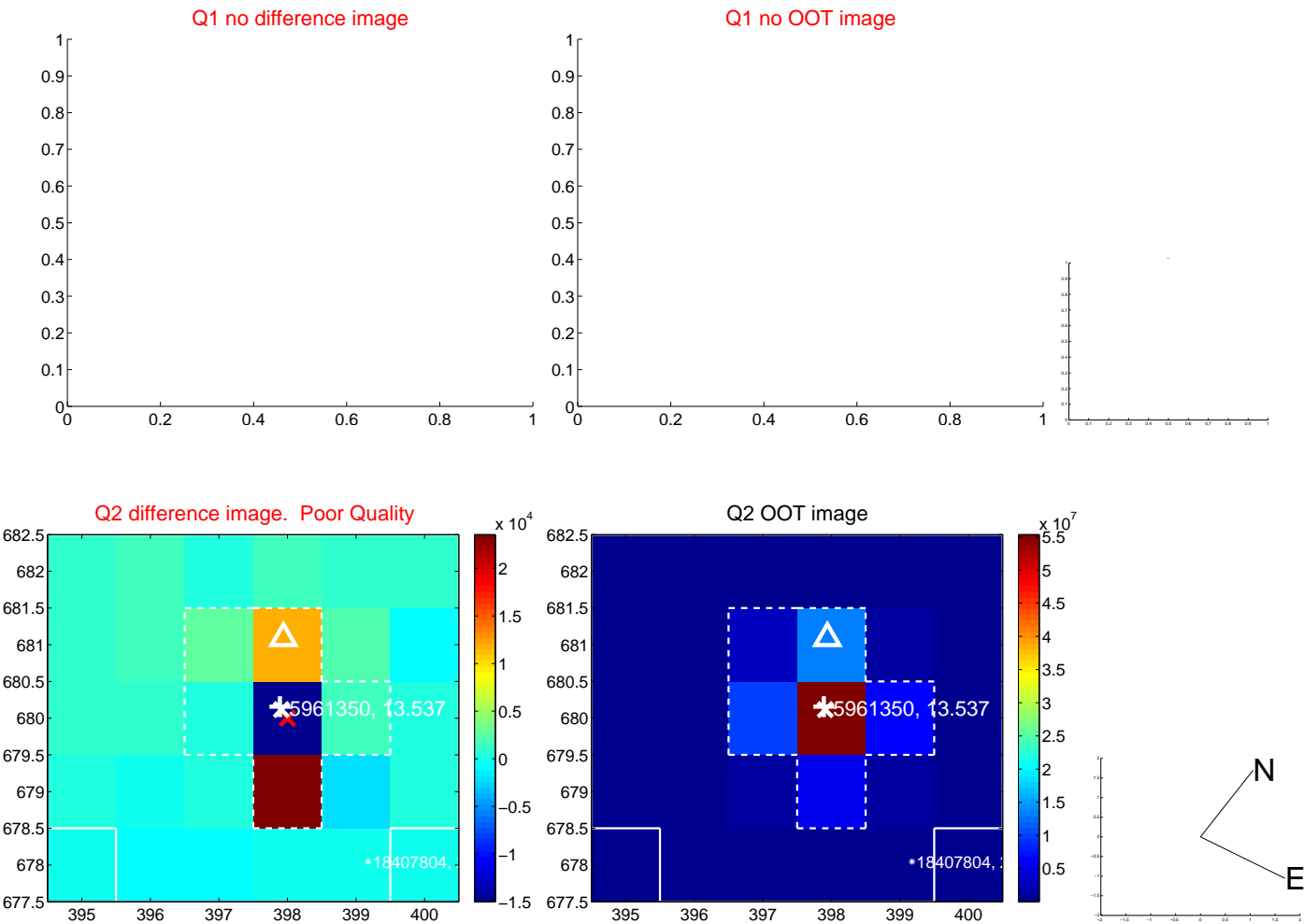
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.736 \pm 1.370$	2.00	$-1.851 \pm 0.078$	$-2.014 \pm 1.859$
PRF-fit source offset from KIC position	$2.767 \pm 1.352$	2.05	$-1.926 \pm 0.068$	$-1.987 \pm 1.882$
photometric centroid source offset	$1.18 \pm 0.93$	1.26	$-0.07 \pm 0.92$	$-1.18 \pm 0.93$



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.

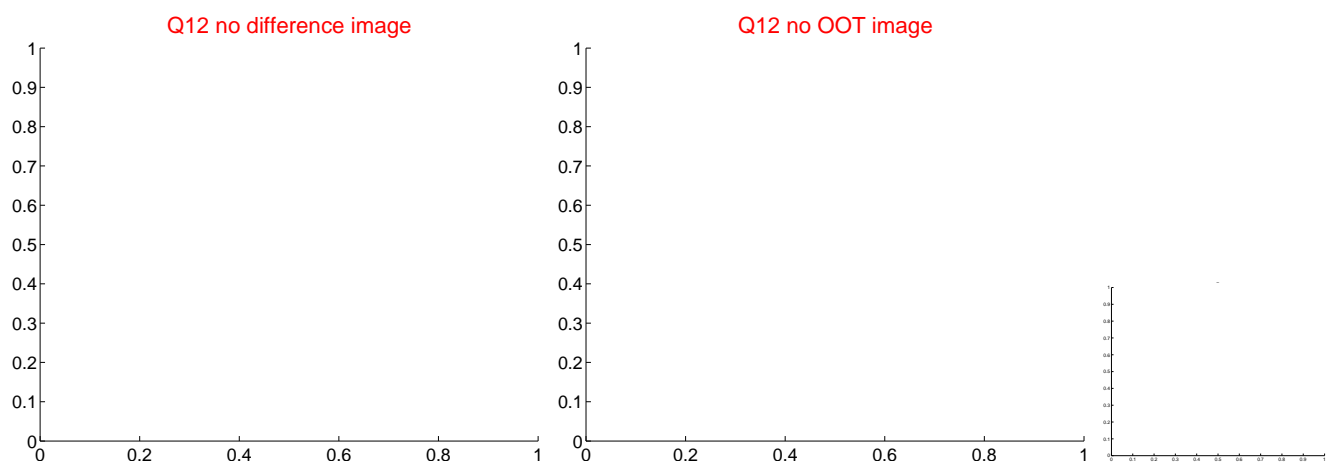
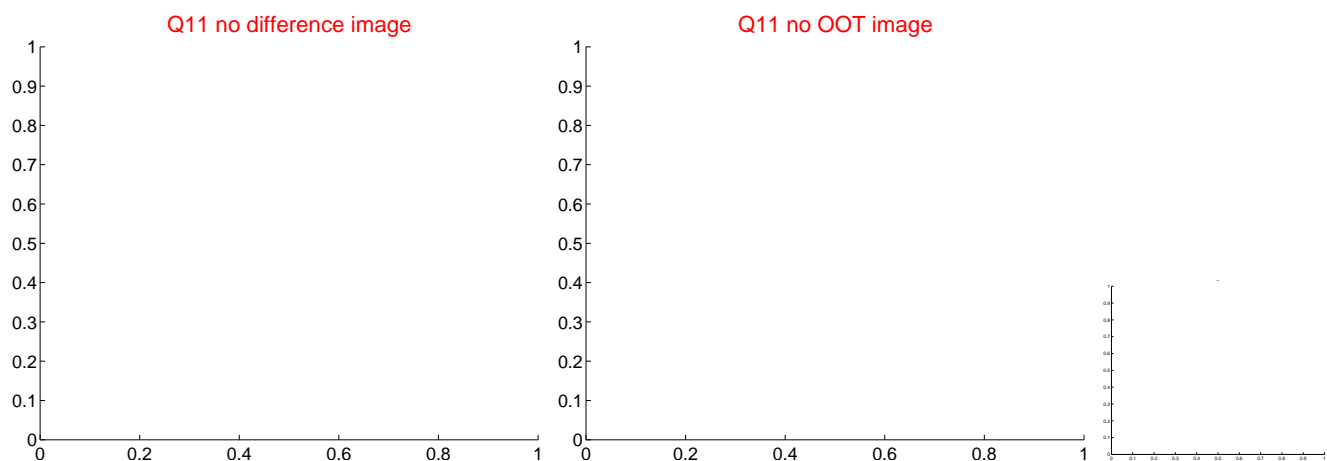
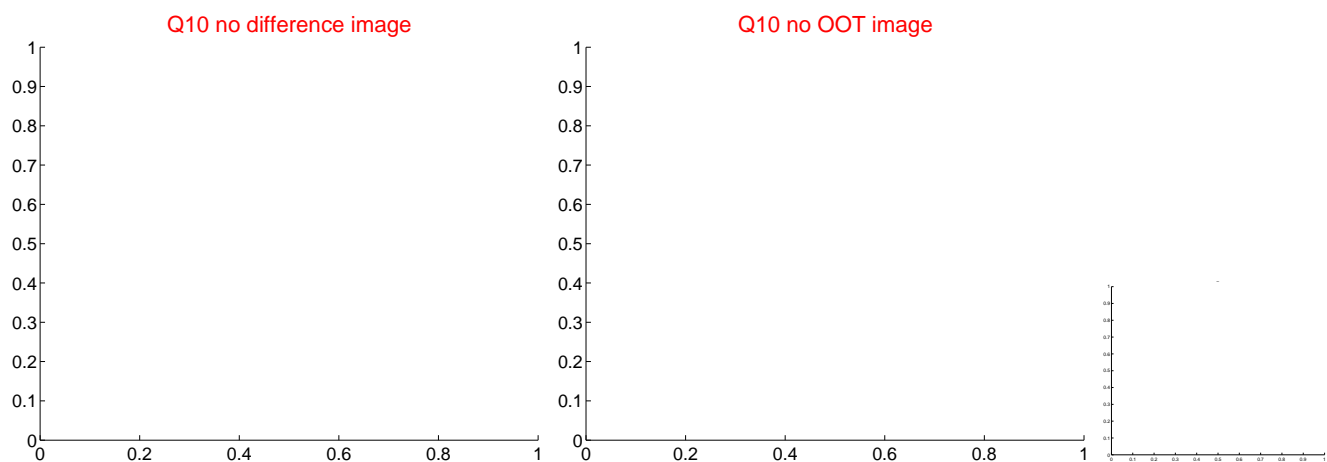
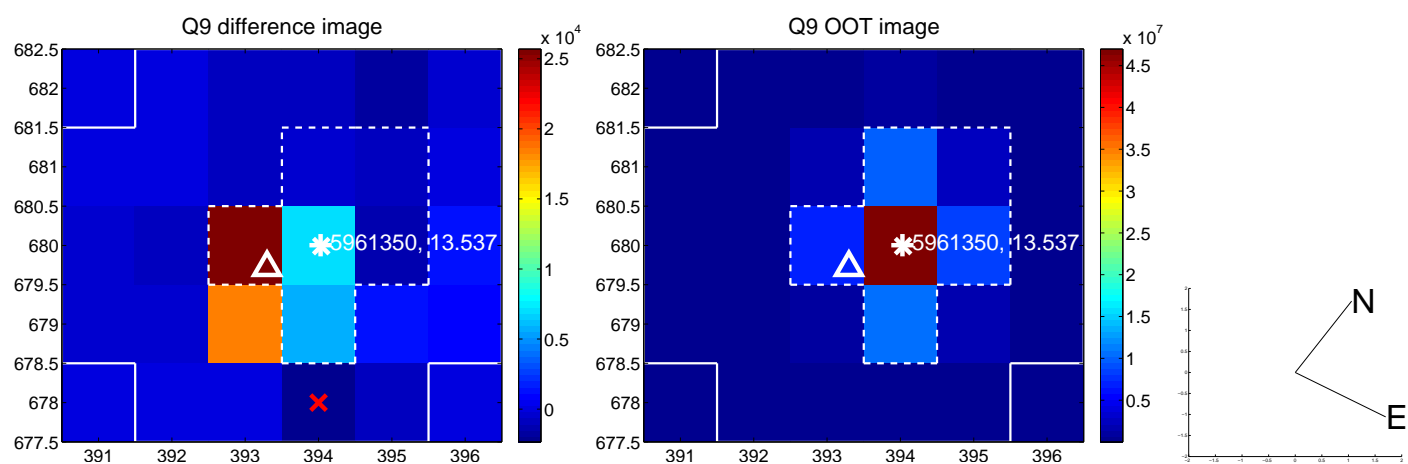
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



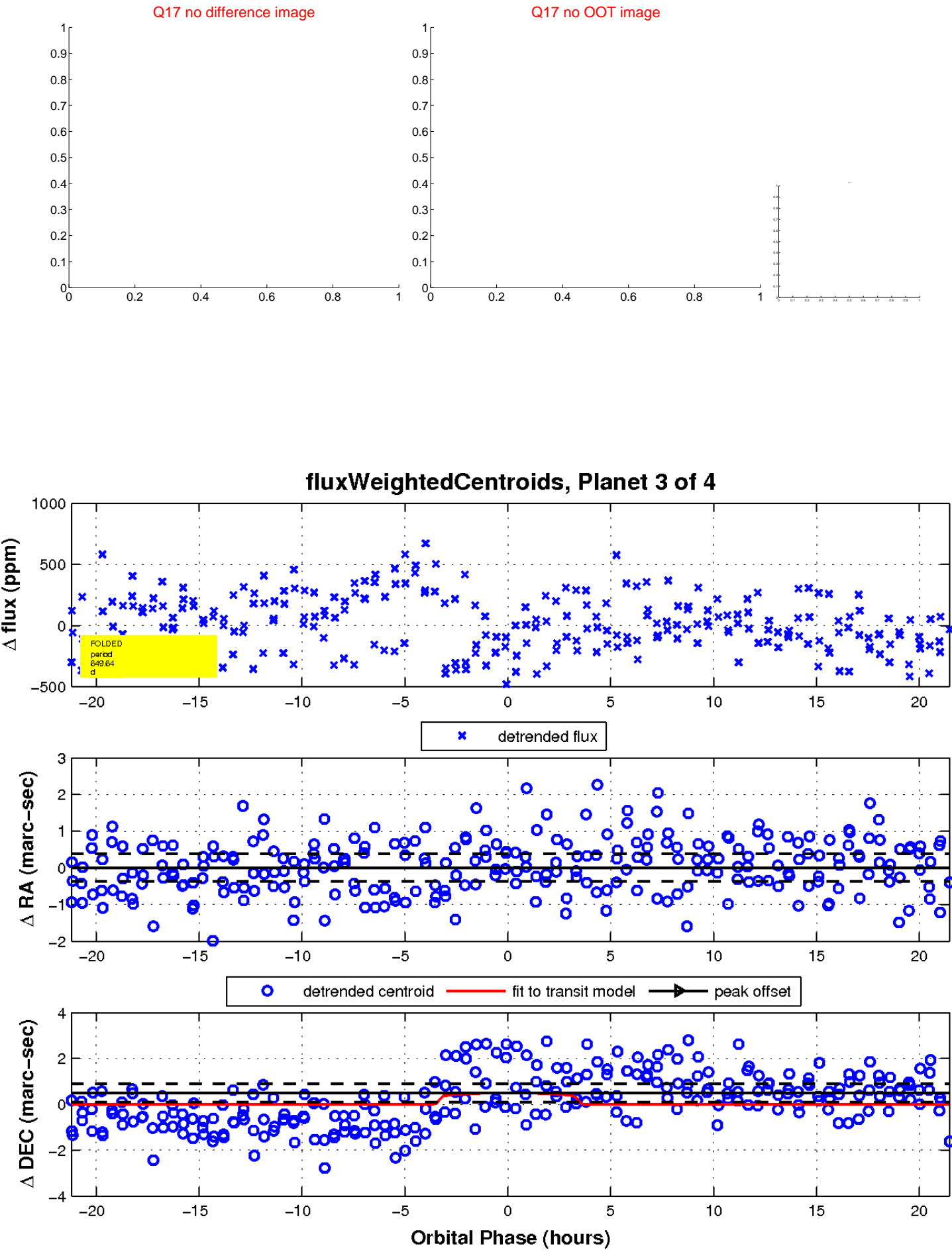
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

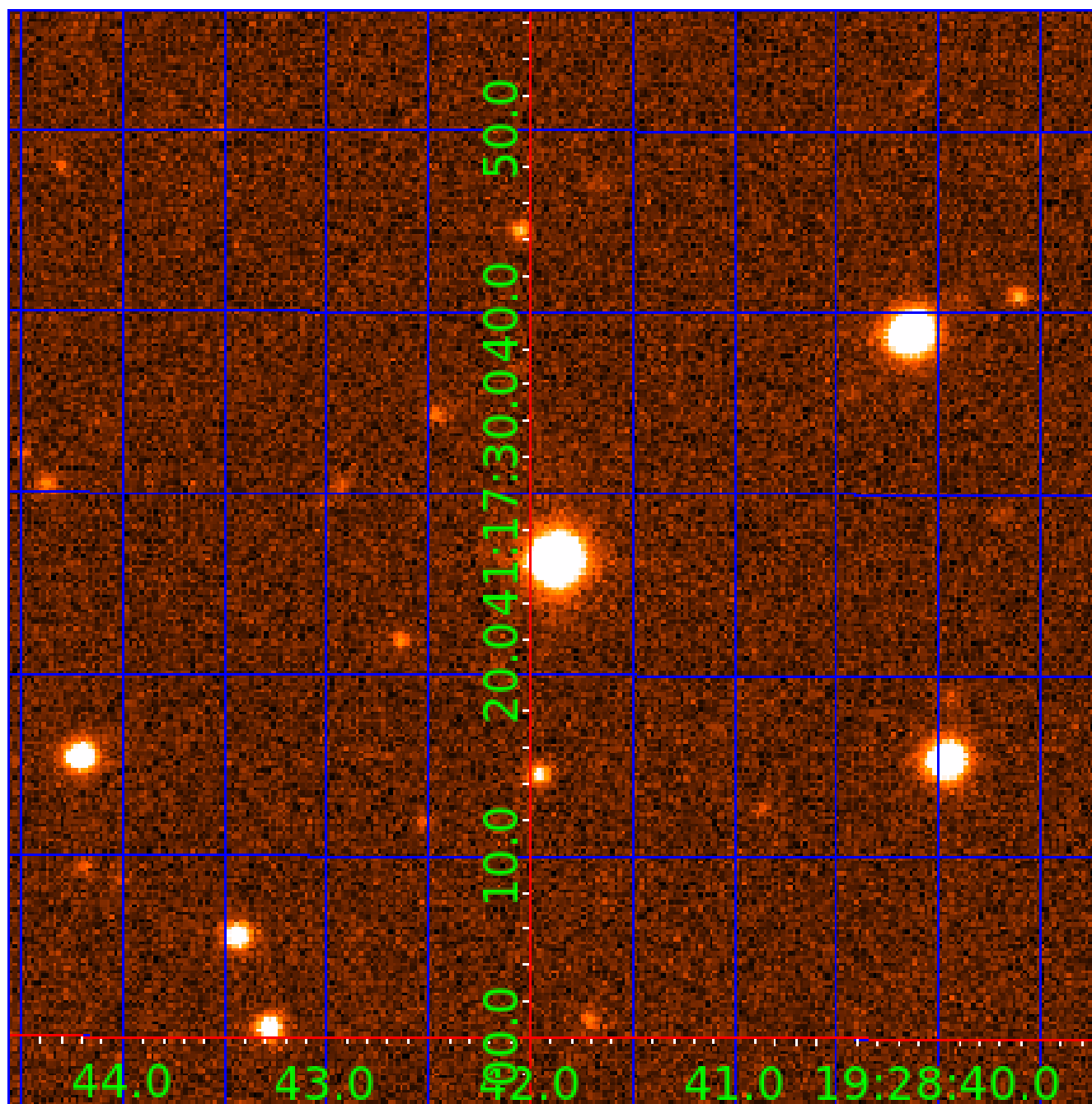


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005961350

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005961350-01	OBS	6017.01	5.262659	135.626500	22506.4	2.856	3524.4	3111.7	1.55	7049	35.34	1194.44
005961350-02	OBS	No	5.262648	132.994784	686.3	2.694	102.9	109.4	1.55	7049	6.88	1194.44
005961350-03	OBS	No	649.643757	250.259004	406.0	7.163	10.7	9.9	1.55	7049	3.45	1.94
005961350-04	OBS	No	5.262331	136.142601	90.5	15.000	9.2	-1.0	1.55	7049	1.49	1194.54

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005961350-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
005961350-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005961350-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005961350-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

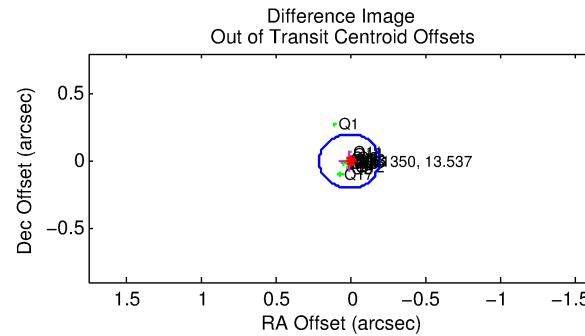
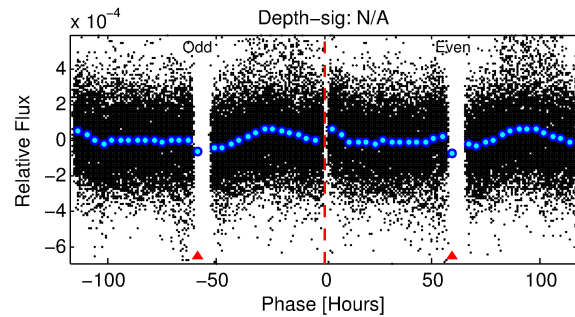
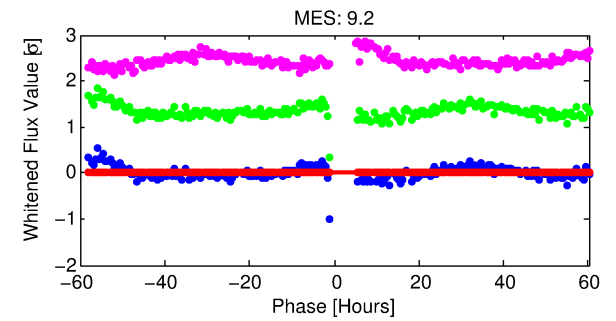
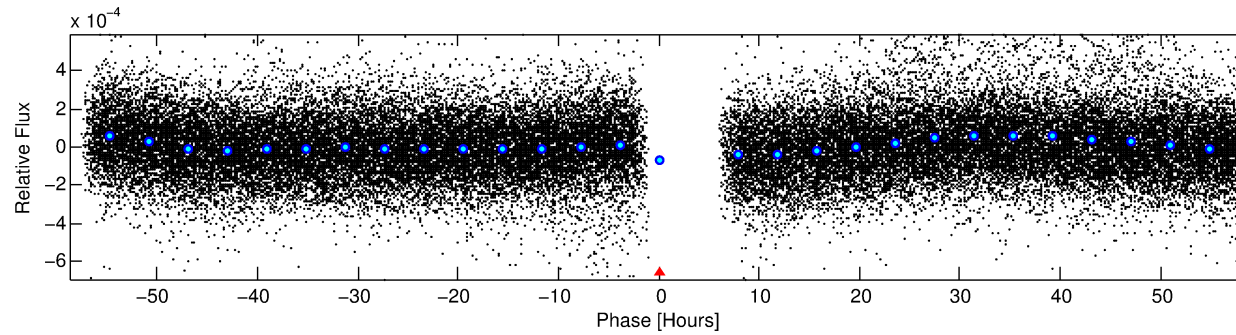
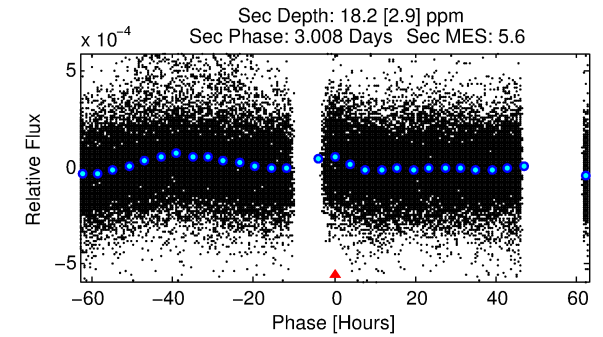
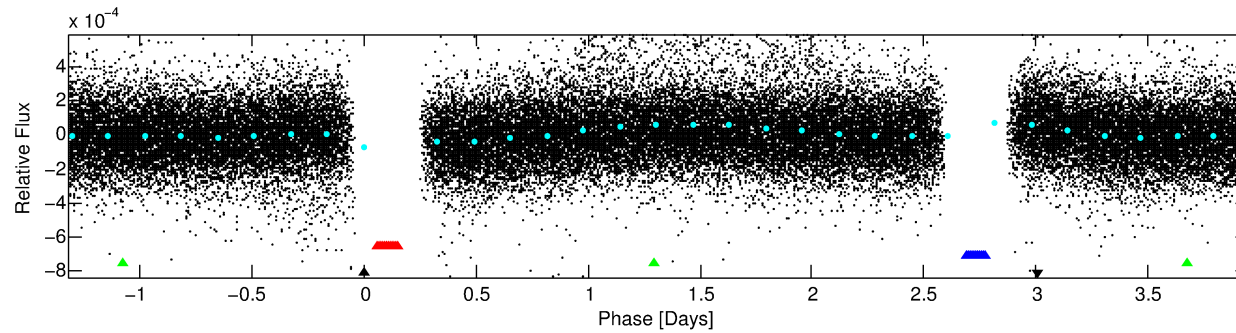
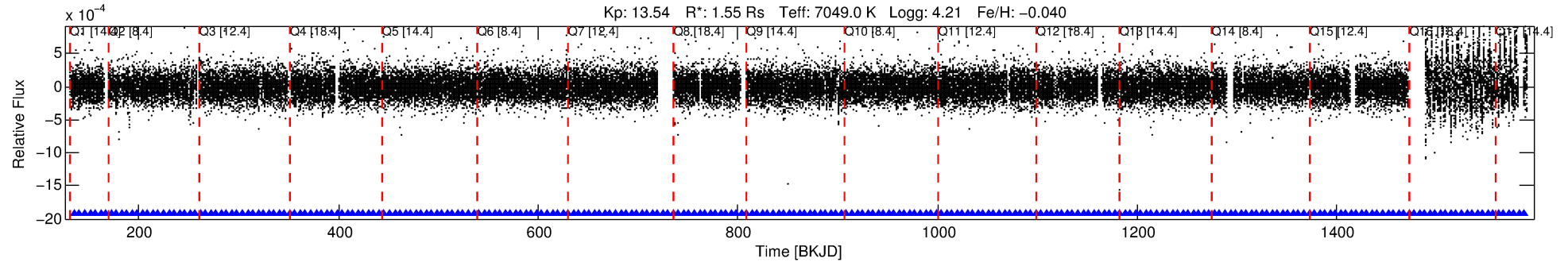
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005961350-04

No Significant Match Found

# DV One-Page Summary

KIC: 5961350 Candidate: 4 of 4 Period: 5.262 d  
KOI: K06017 Corr: No Ephemeris Match



## TPS TCE Results:

Period = 5.26233 d  
Epoch = 136.1426 BKJD

DV fit results are unavailable

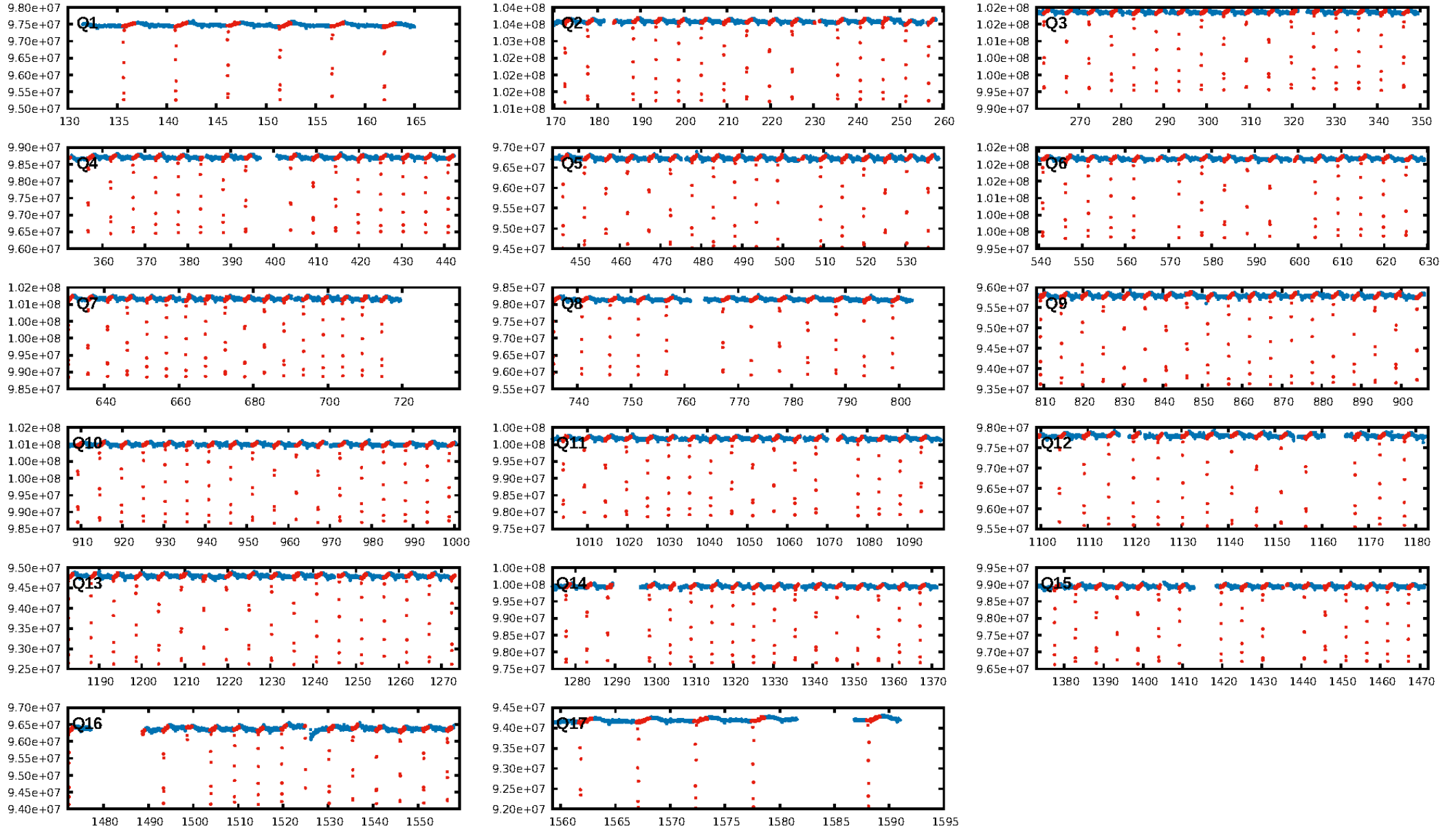
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.97e-12  
RollingBand-fgt: 1.00 [249/249]  
GhostDiagnostic-chr: -1.157  
Centroid-sig: 10.6%  
Centroid-so: 0.295 arcsec [0.86σ]  
OotOffset-rm: 0.006 arcsec [0.09σ]  
KicOffset-rm: 0.095 arcsec [1.40σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

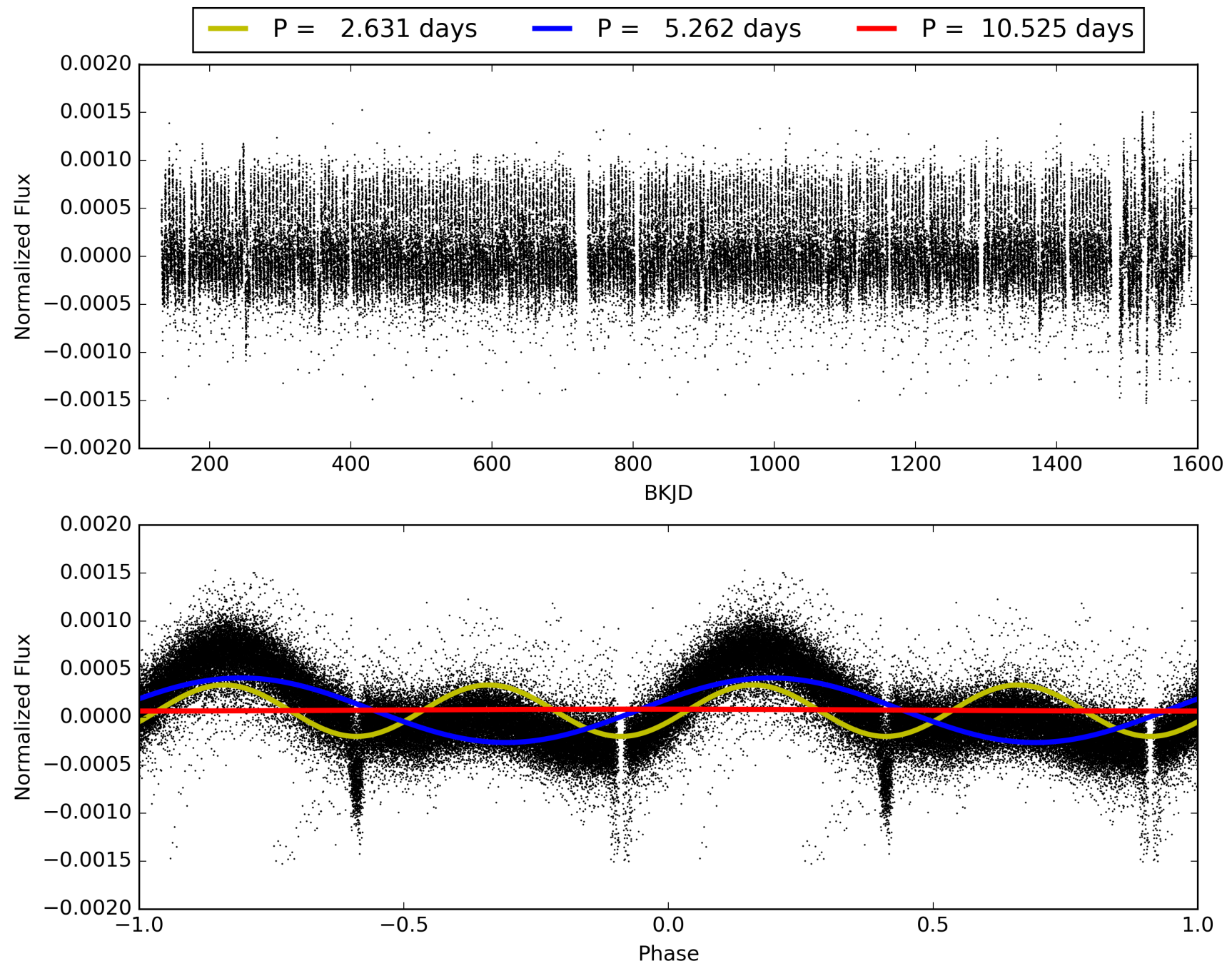
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:06:42 Z

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

# TCE 005961350-04, PDC Light Curves

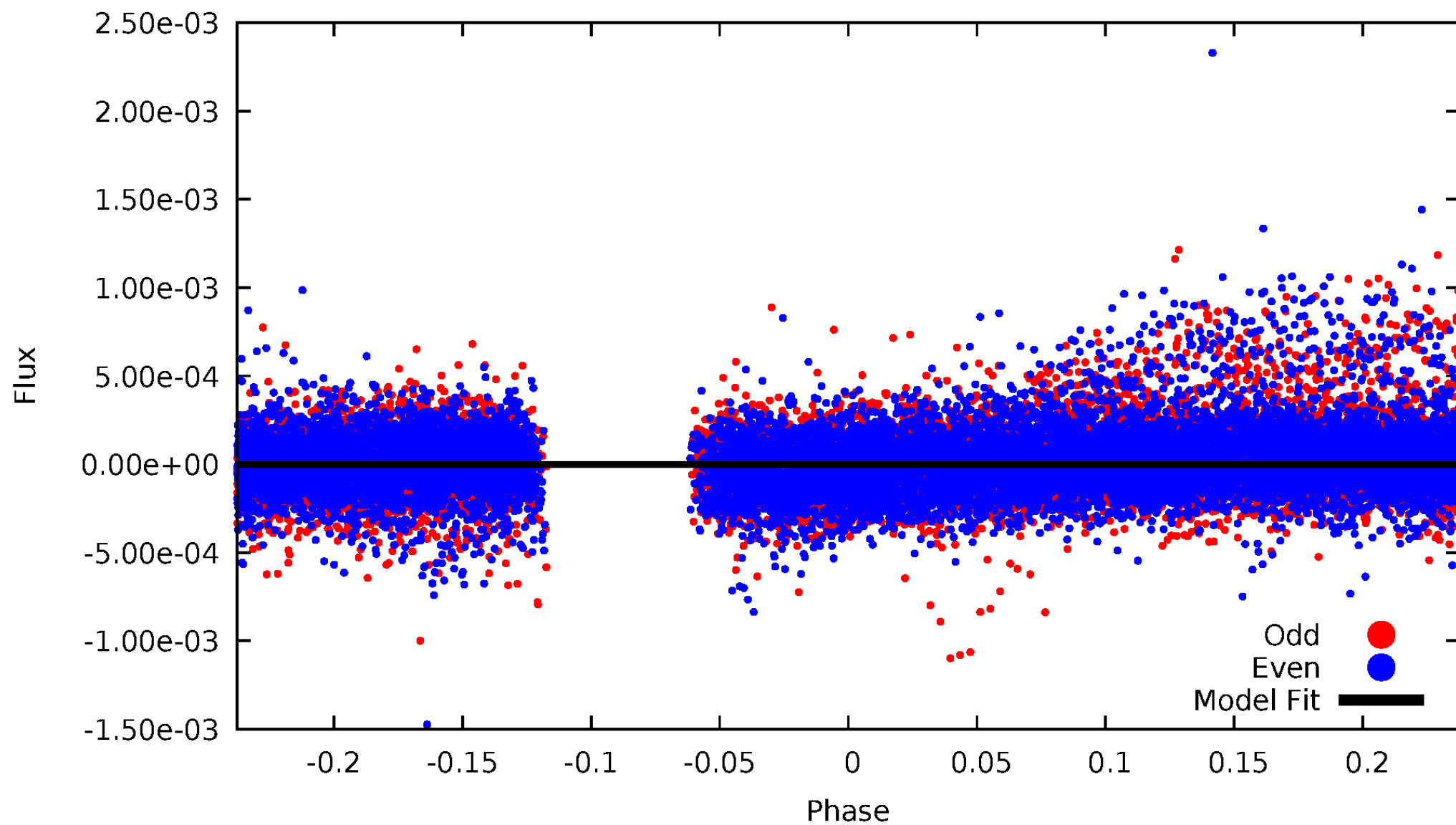


TCE 005961350-04



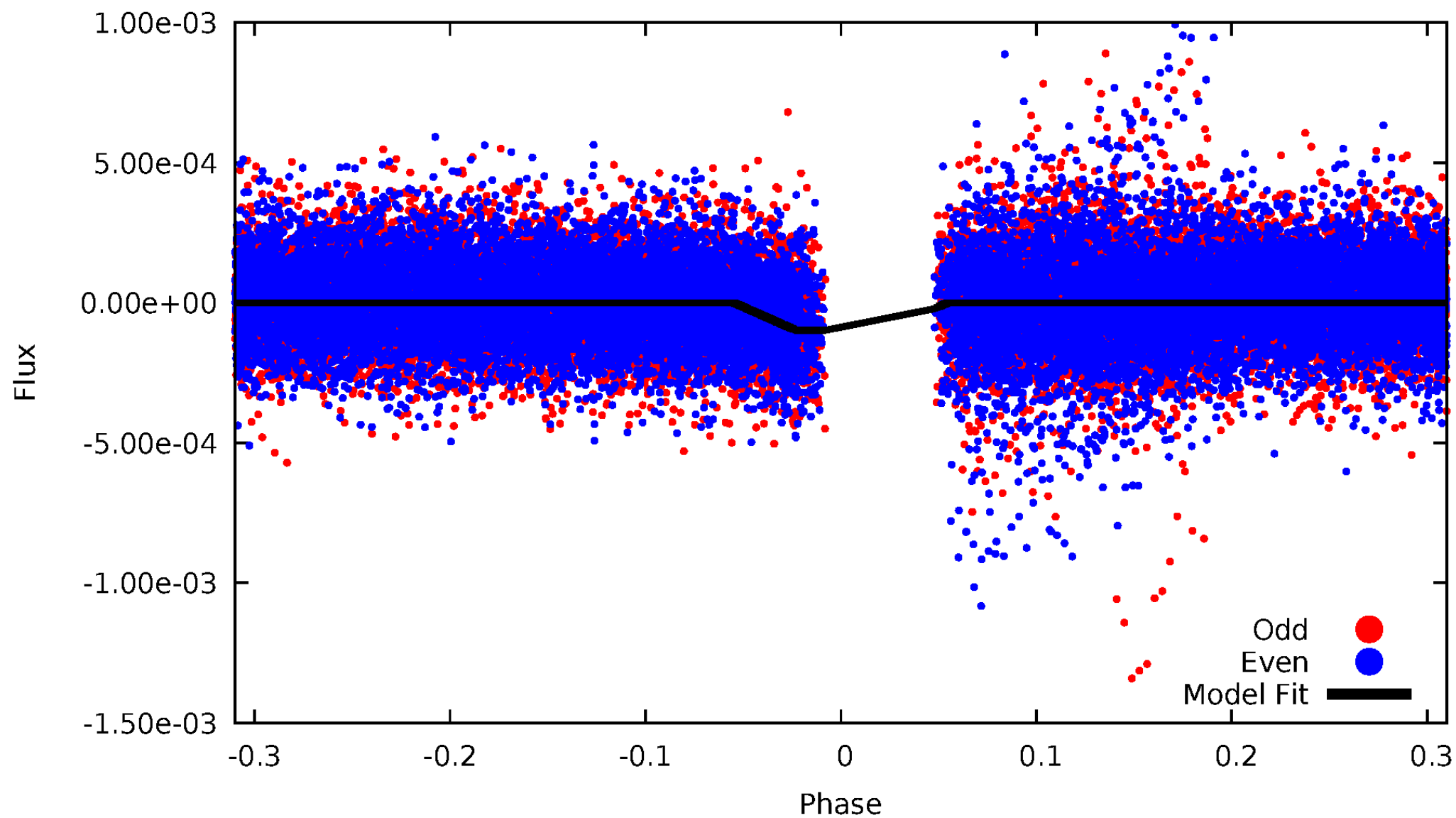
# DV Odd/Even

TCE 005961350-04



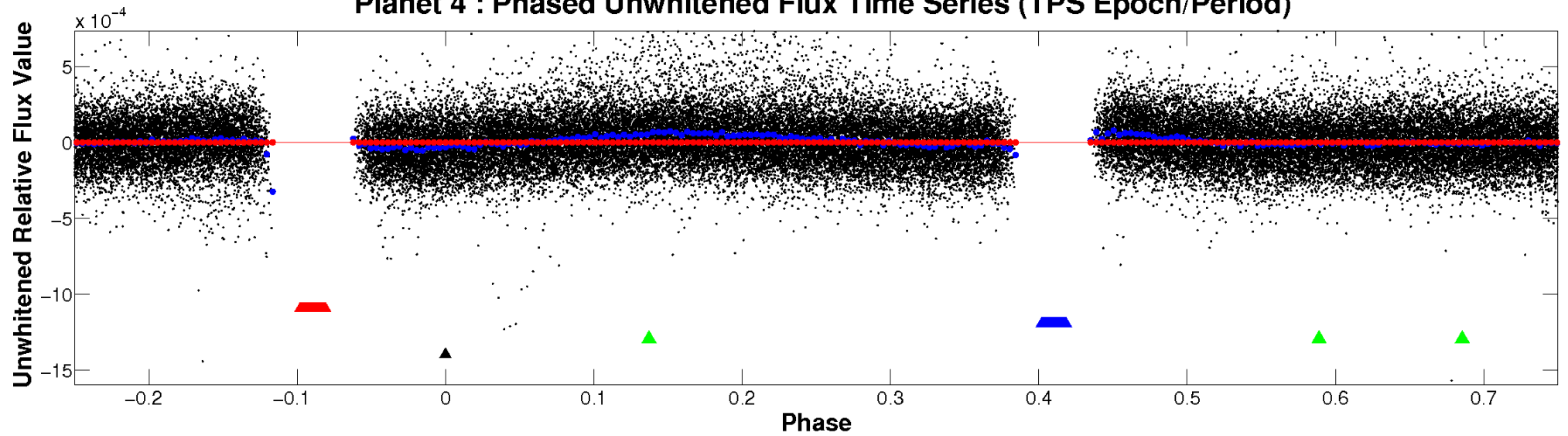
# ALT Odd/Even

TCE 005961350-04

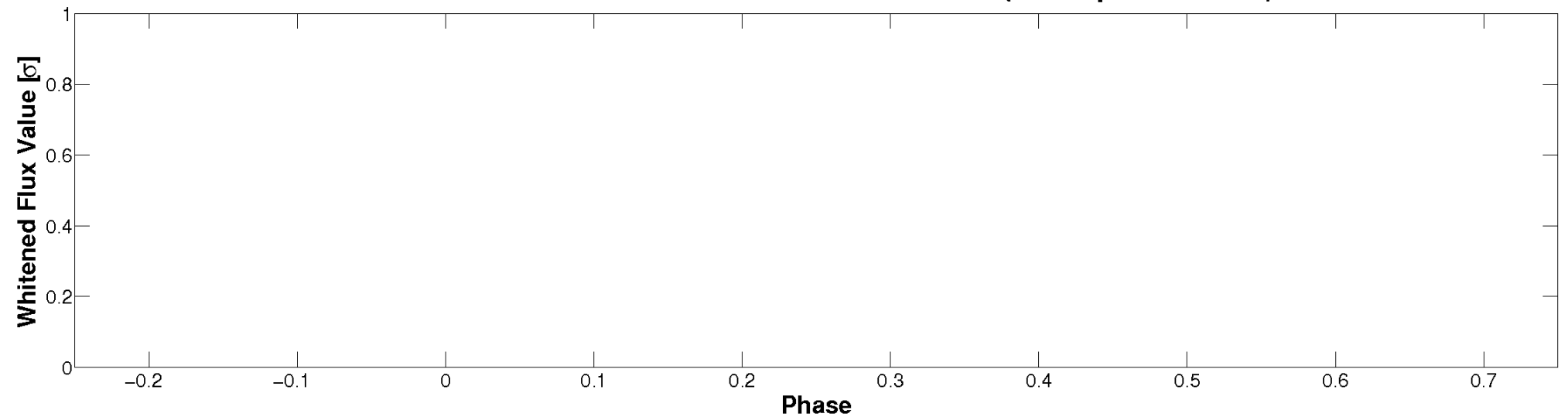


# Non-Whitened Vs. Whitened Light Curve

**Planet 4 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**



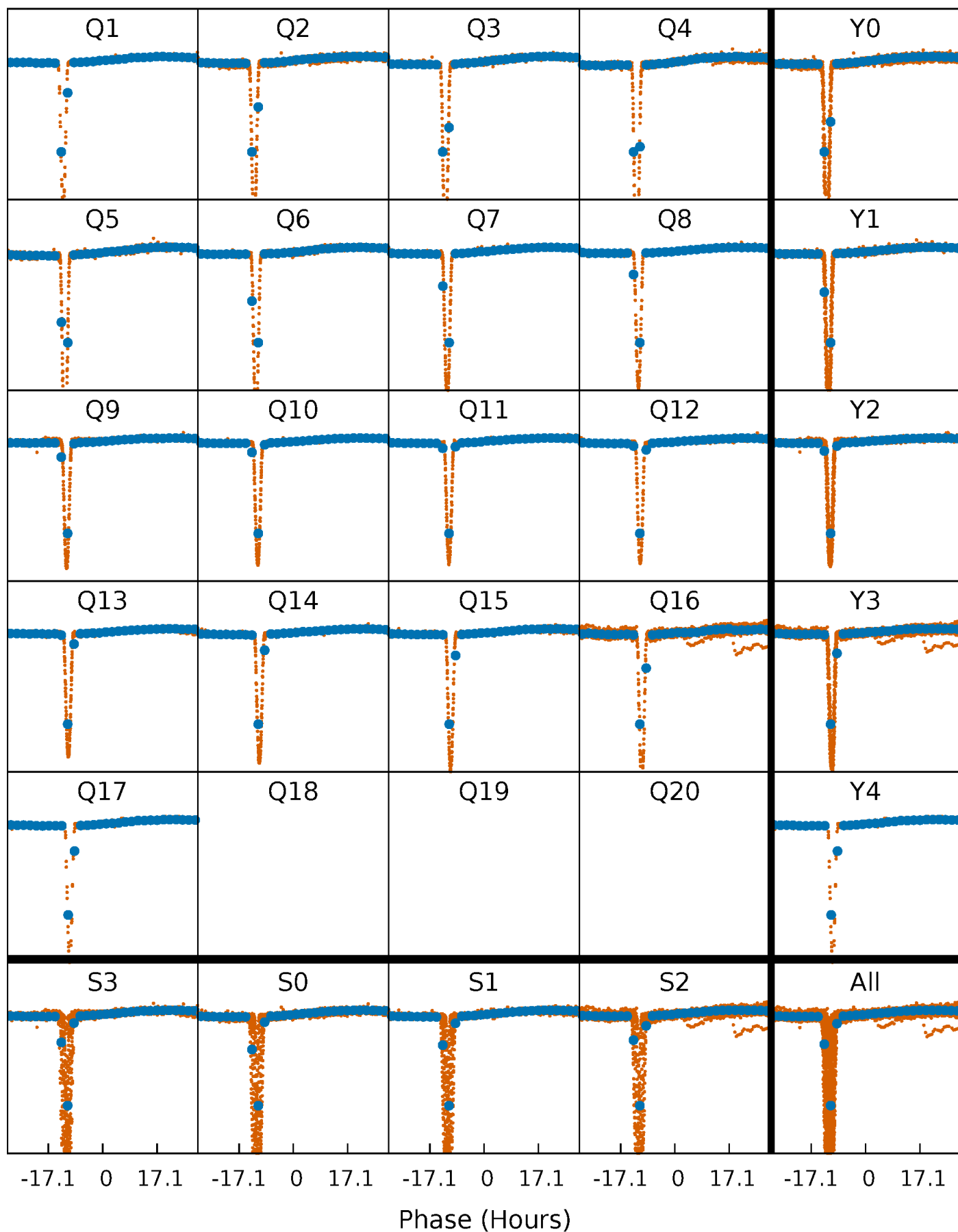
**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**





# PDC Quarter-Phased Transit Curves

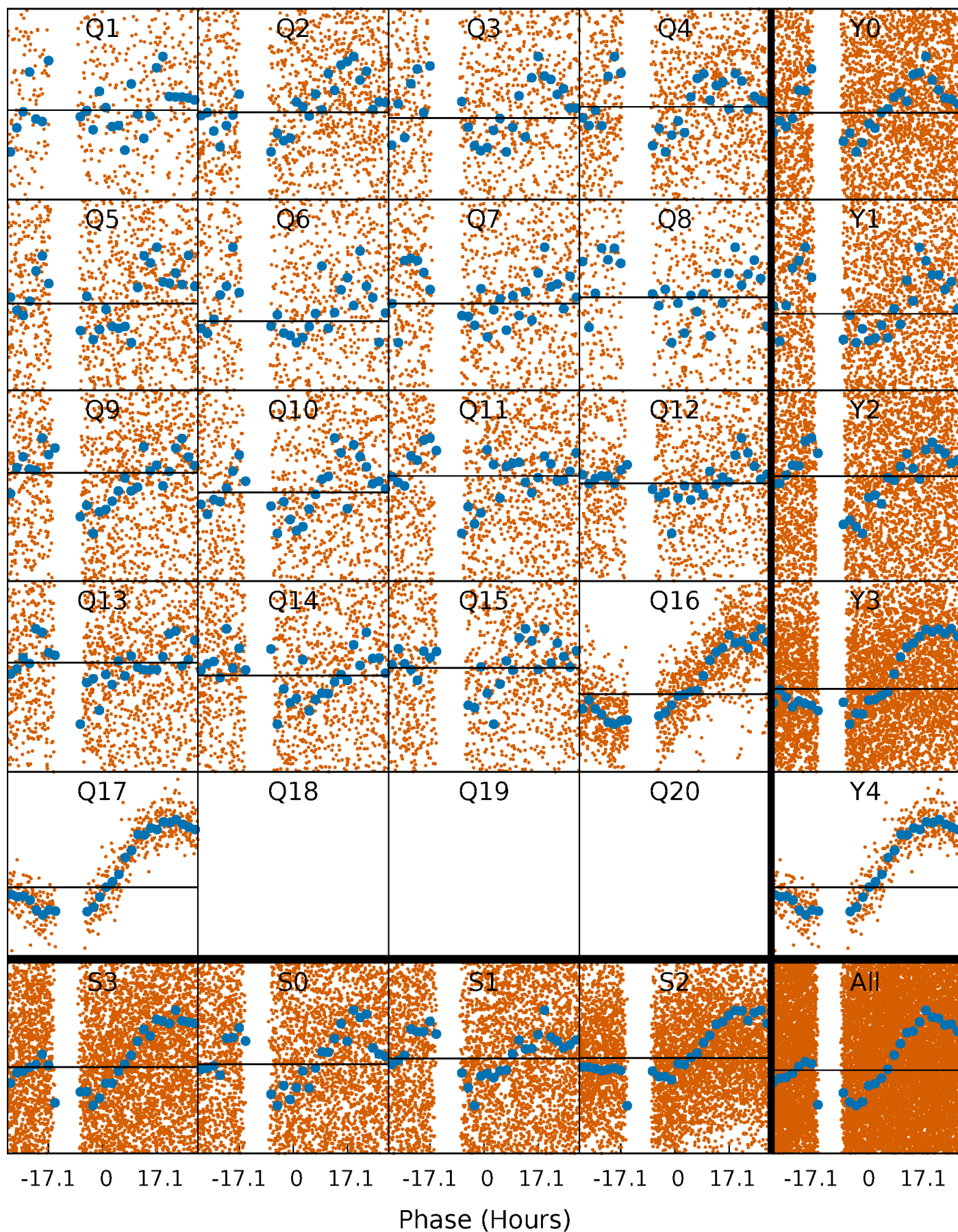
TCE 005961350-04   P= 5.262331 Days    $T_0=136.142601$  (BKJD)





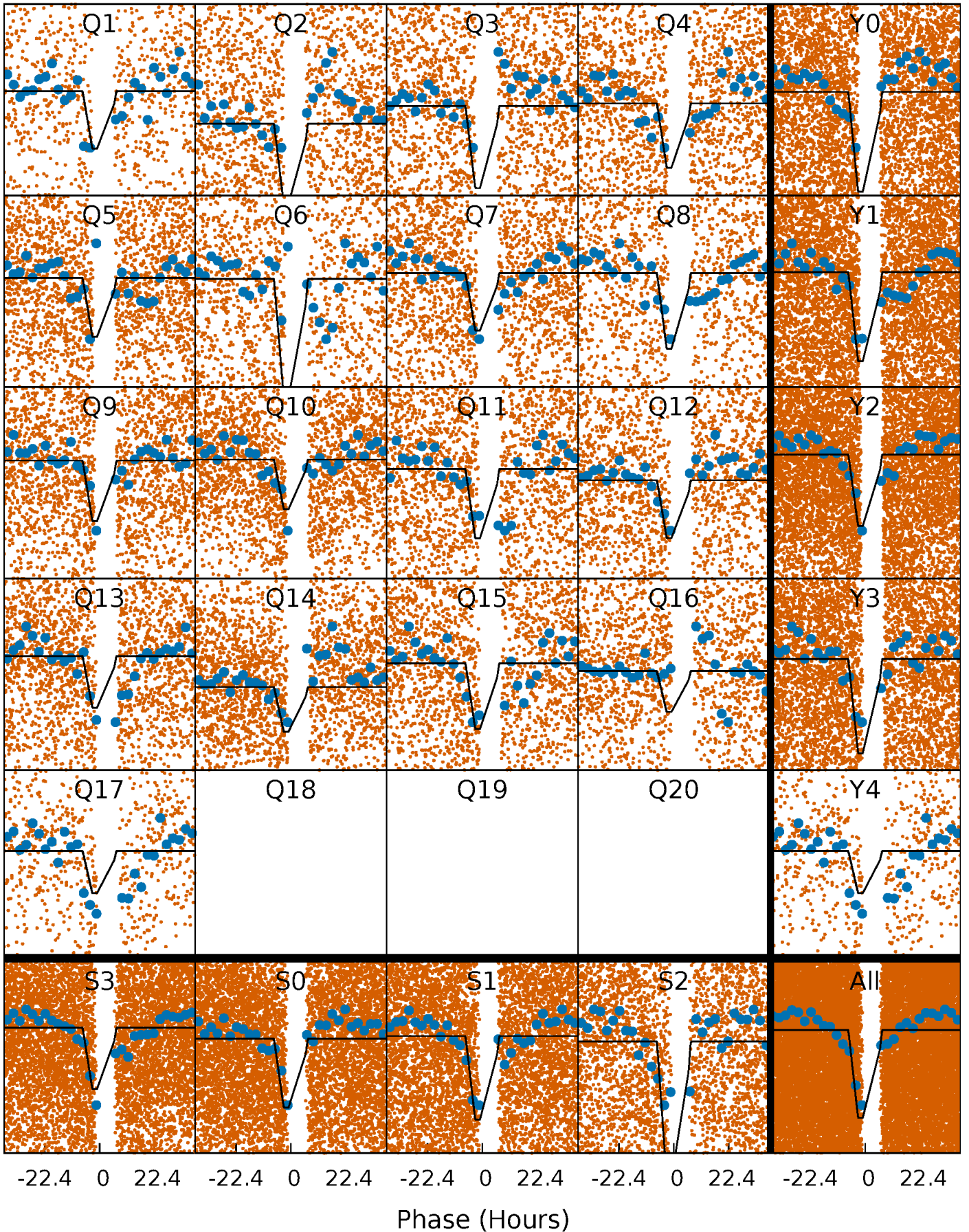
# DV Quarter-Phased Transit Curves

TCE 005961350-04 P= 5.262331 Days  $T_0=136.142601$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

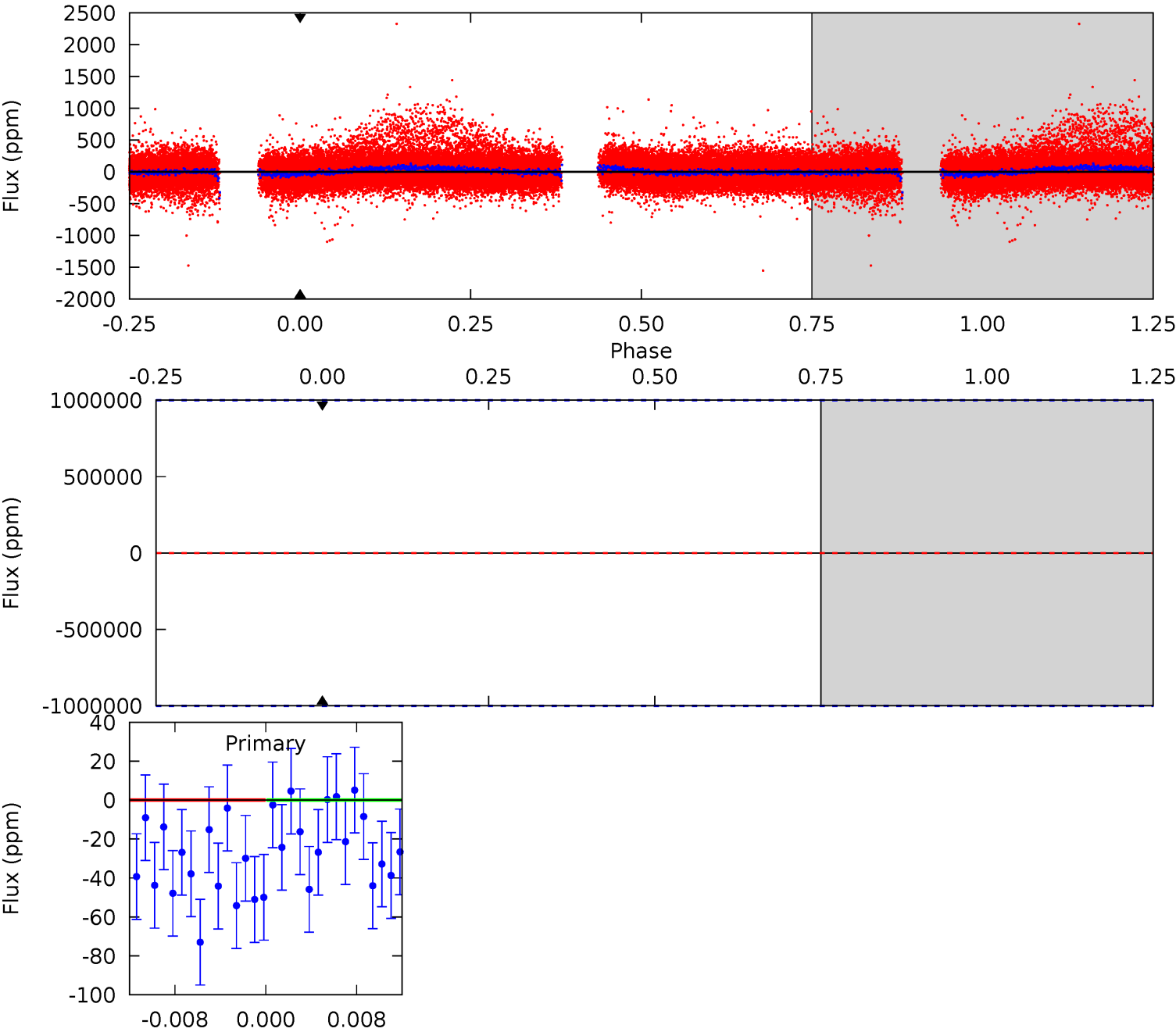
TCE 005961350-04     $P = 5.262331$  Days     $T_0 = 135.567706$  (BKJD)



DV Model-Shift Uniqueness Test

005961350-04, P = 5.262331 Days, E = 130.880270 Days

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

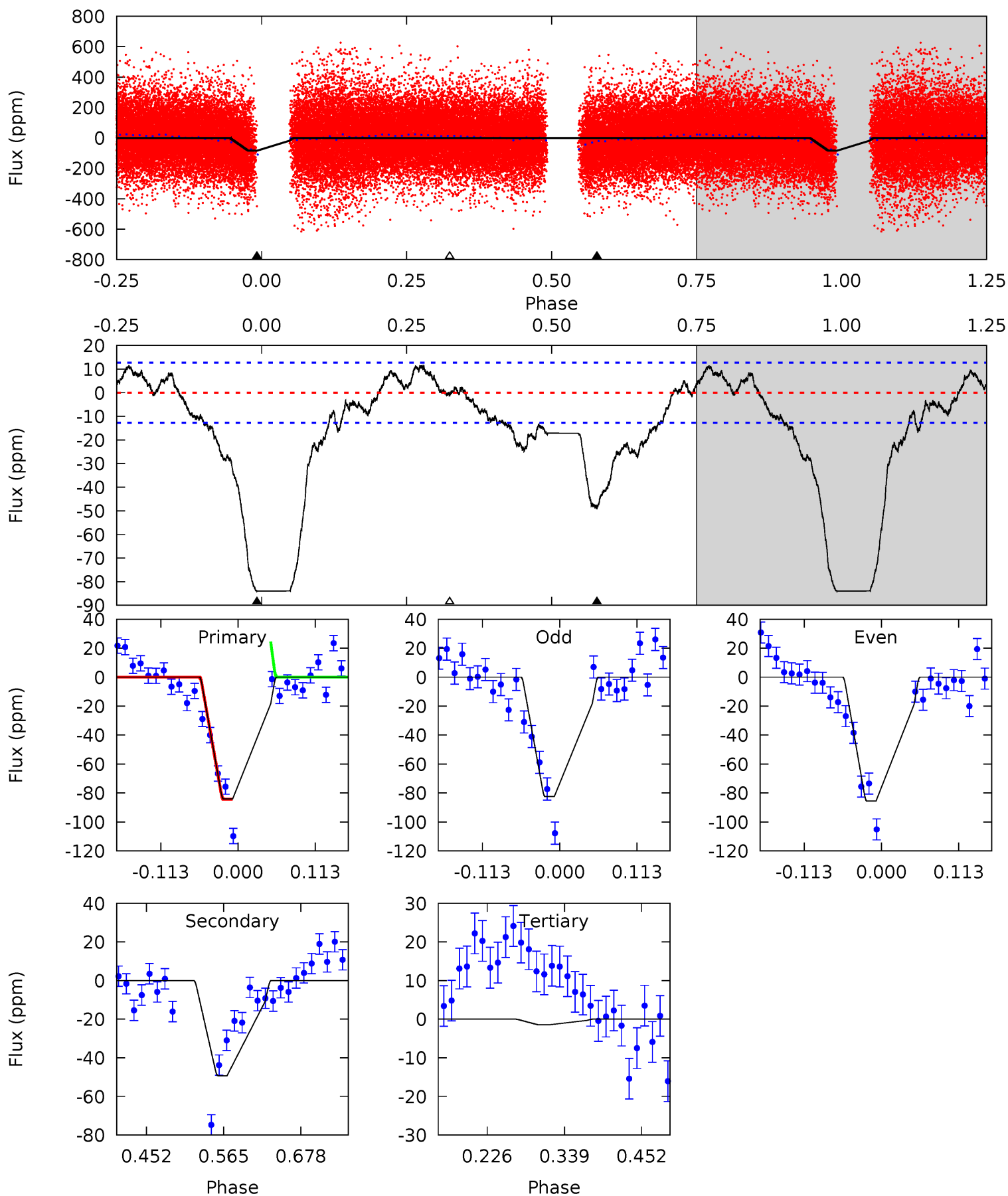




# Alt Model-Shift Uniqueness Test

005961350-04, P = 5.262331 Days, E = 130.305375 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
30.0	17.6	0.53	0	4.54	1.58	3.08	29.5	30.0	17.1	17.6	0.56	0.96	0.12	5.32



### Stellar Parameters For KIC 005961350

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$7049^{+74}_{-95}$	$4.212^{+0.054}_{-0.126}$	$-0.040^{+0.150}_{-0.150}$	$1.549^{+0.279}_{-0.129}$	$1.432^{+0.103}_{-0.082}$	$0.542^{+0.142}_{-0.201}$
	+1%/-1%	+1%/-3%	+375%/-375%	+18%/-8%	+7%/-6%	+26%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005961350-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$12.10^{+13.86}_{-8.13}$	$2109^{+93}_{-60}$	$-3262^{+41817}_{-28132}$	$-1.711^{+3217.562}_{-2433.889}$
Alt.	$-49 \pm 3$	$12.96^{+12.96}_{-8.90}$	$2111^{+97}_{-63}$	$2701^{+1346}_{-4987}$	$0.754^{+6.436}_{-0.573}$

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

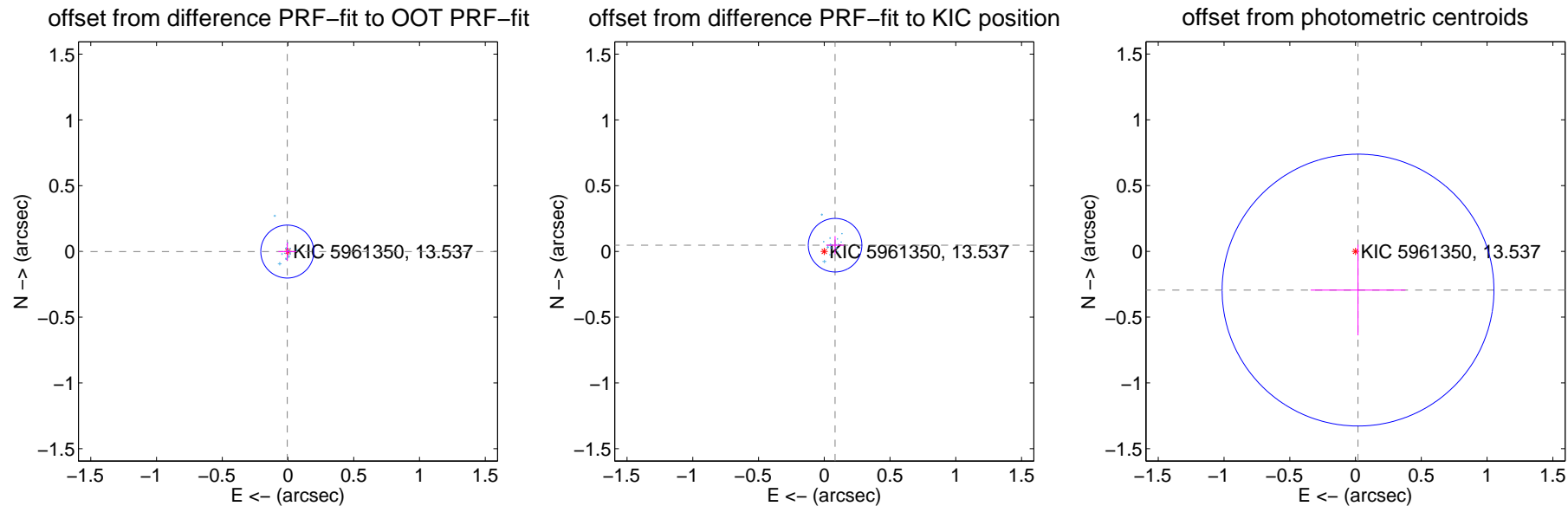
## DV Centroid Data

Supplemental centroid analysis for 005961350-04. Kepler magnitude: 13.54. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

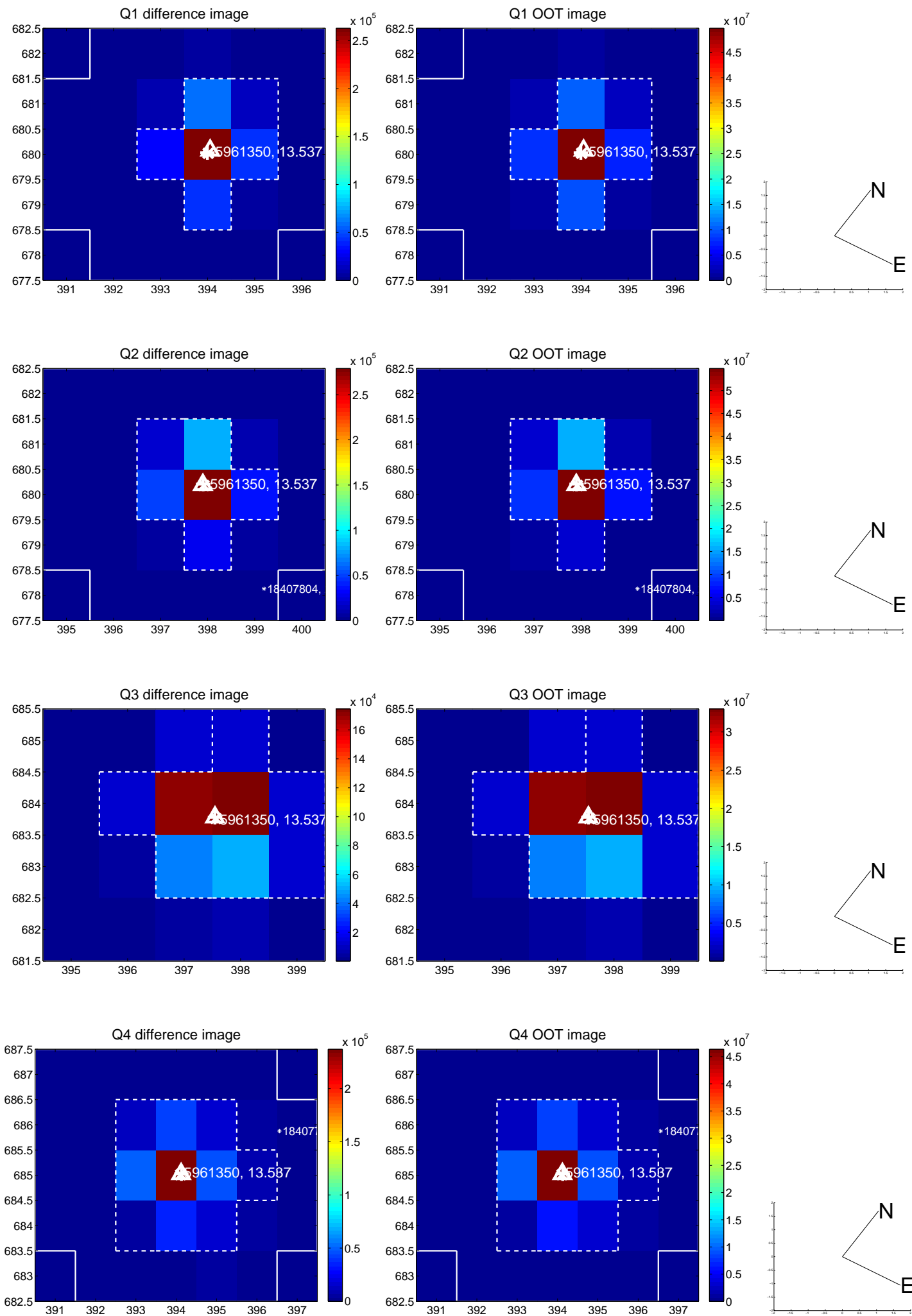
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.006 \pm 0.067$	0.09	$0.006 \pm 0.067$	$-0.001 \pm 0.069$
PRF-fit source offset from KIC position	$0.095 \pm 0.068$	1.40	$-0.082 \pm 0.068$	$0.047 \pm 0.069$
photometric centroid source offset	$0.30 \pm 0.34$	0.86	$-0.02 \pm 0.36$	$-0.29 \pm 0.34$

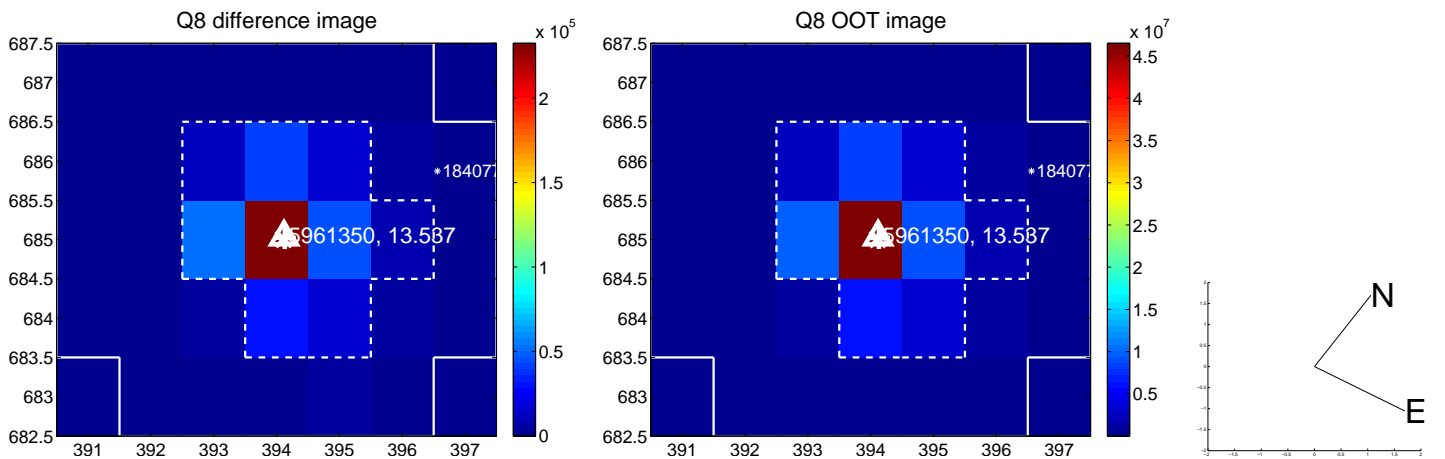
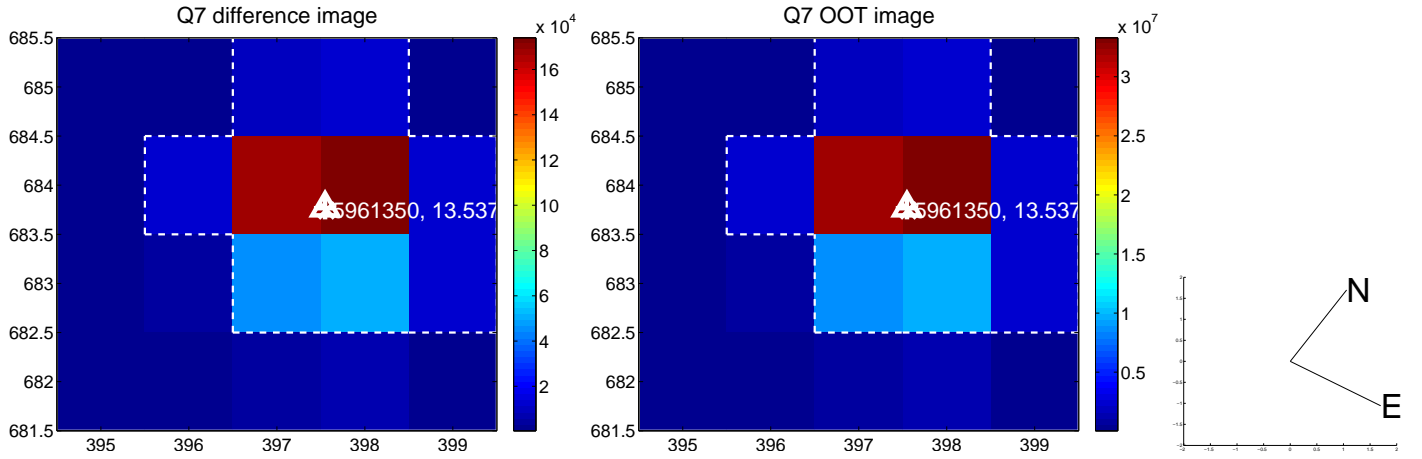
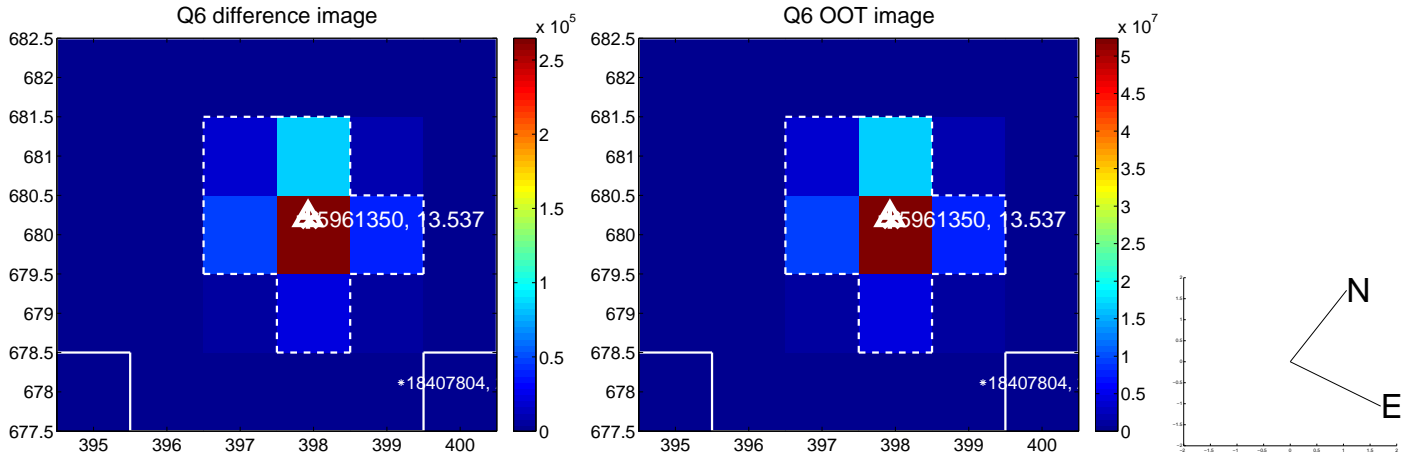
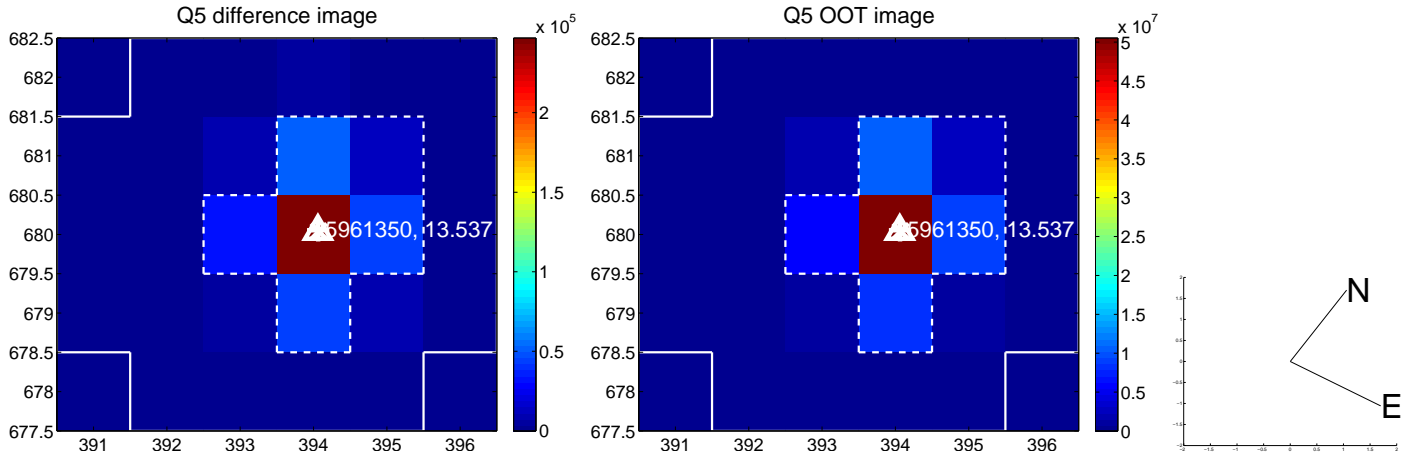


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

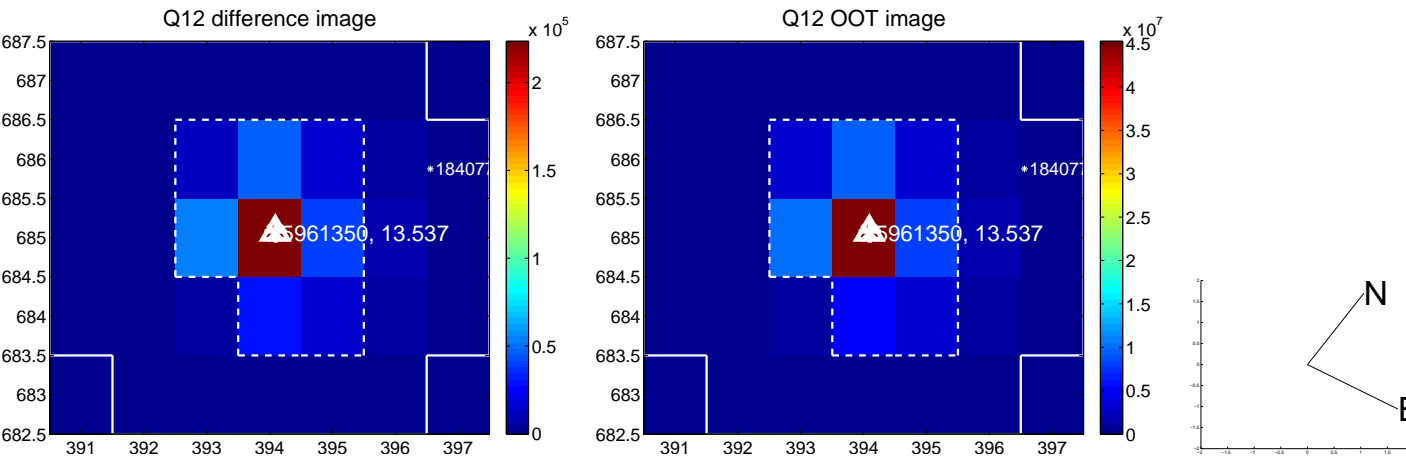
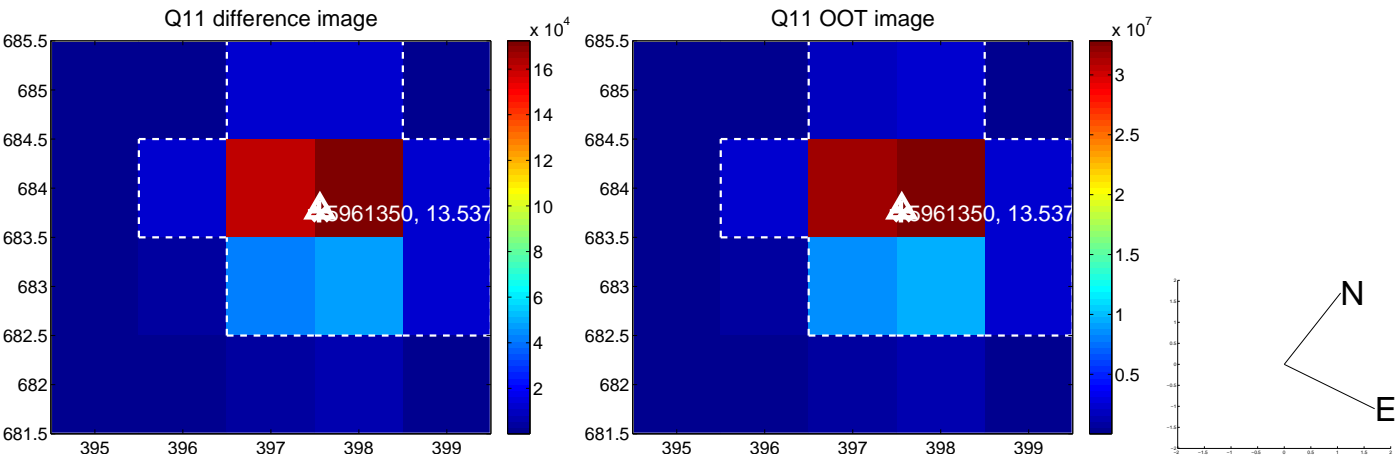
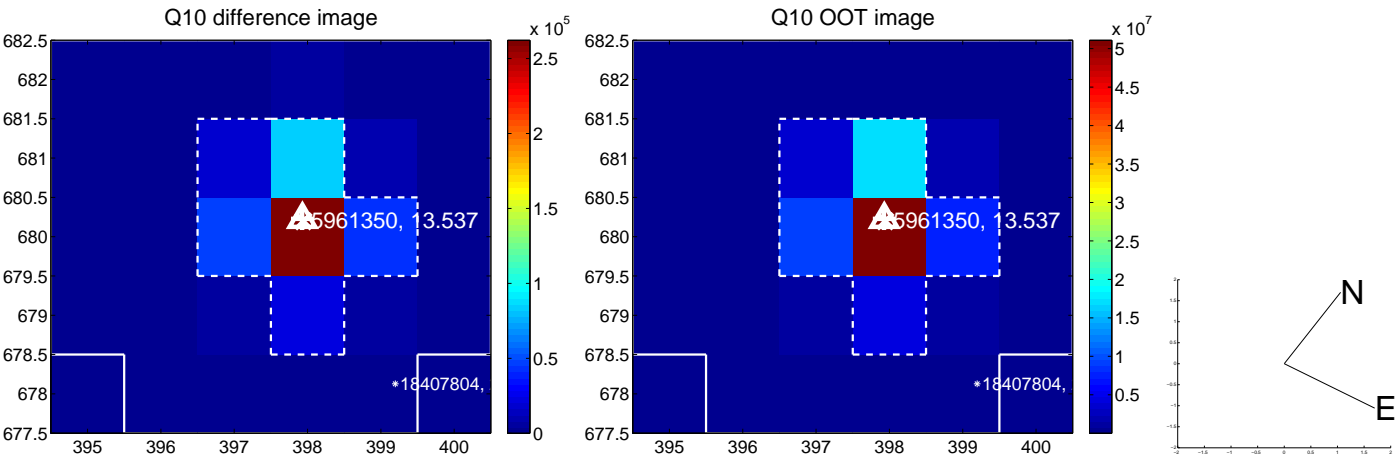
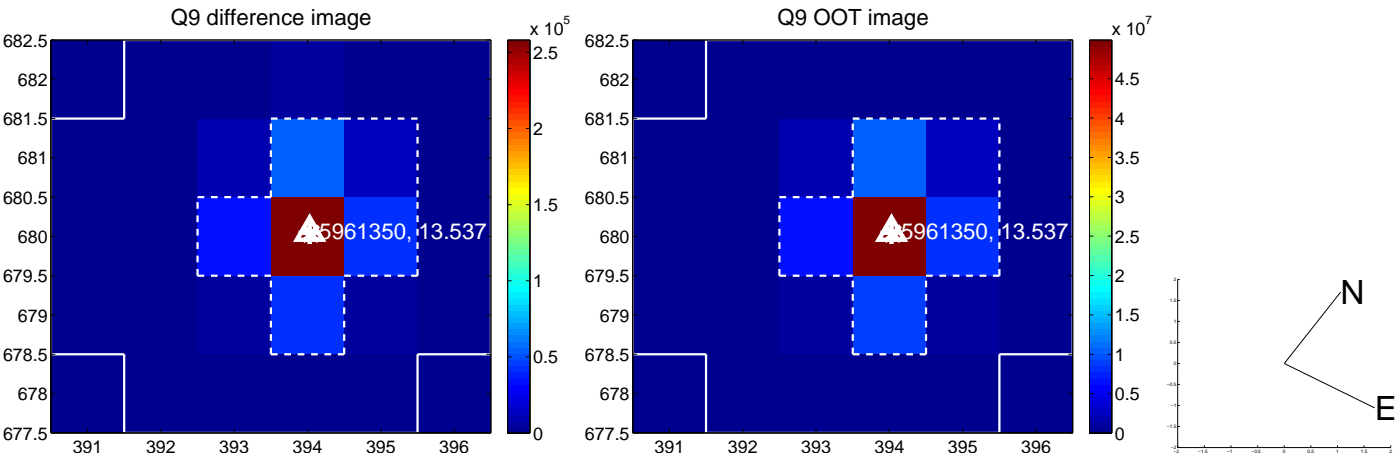


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

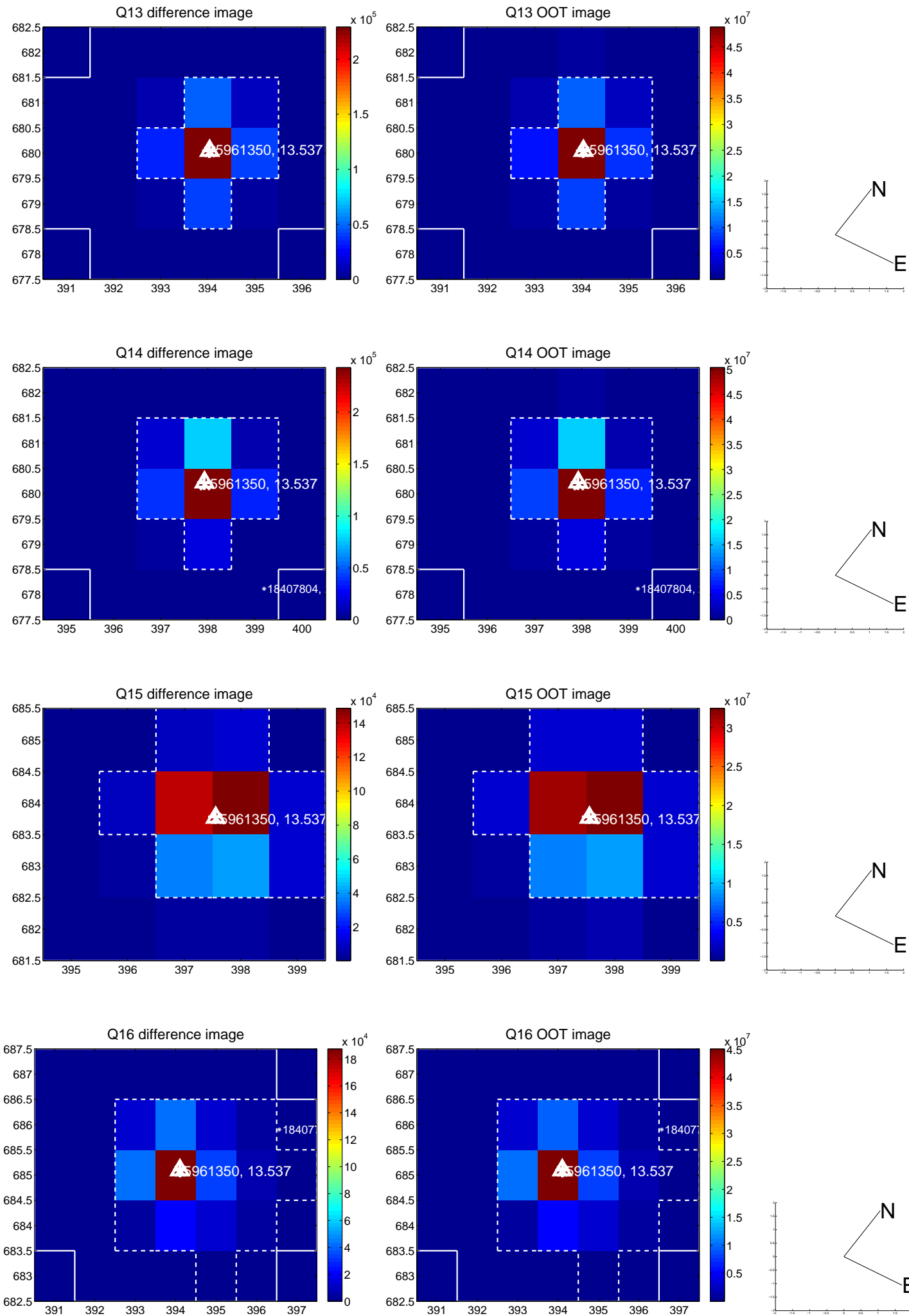




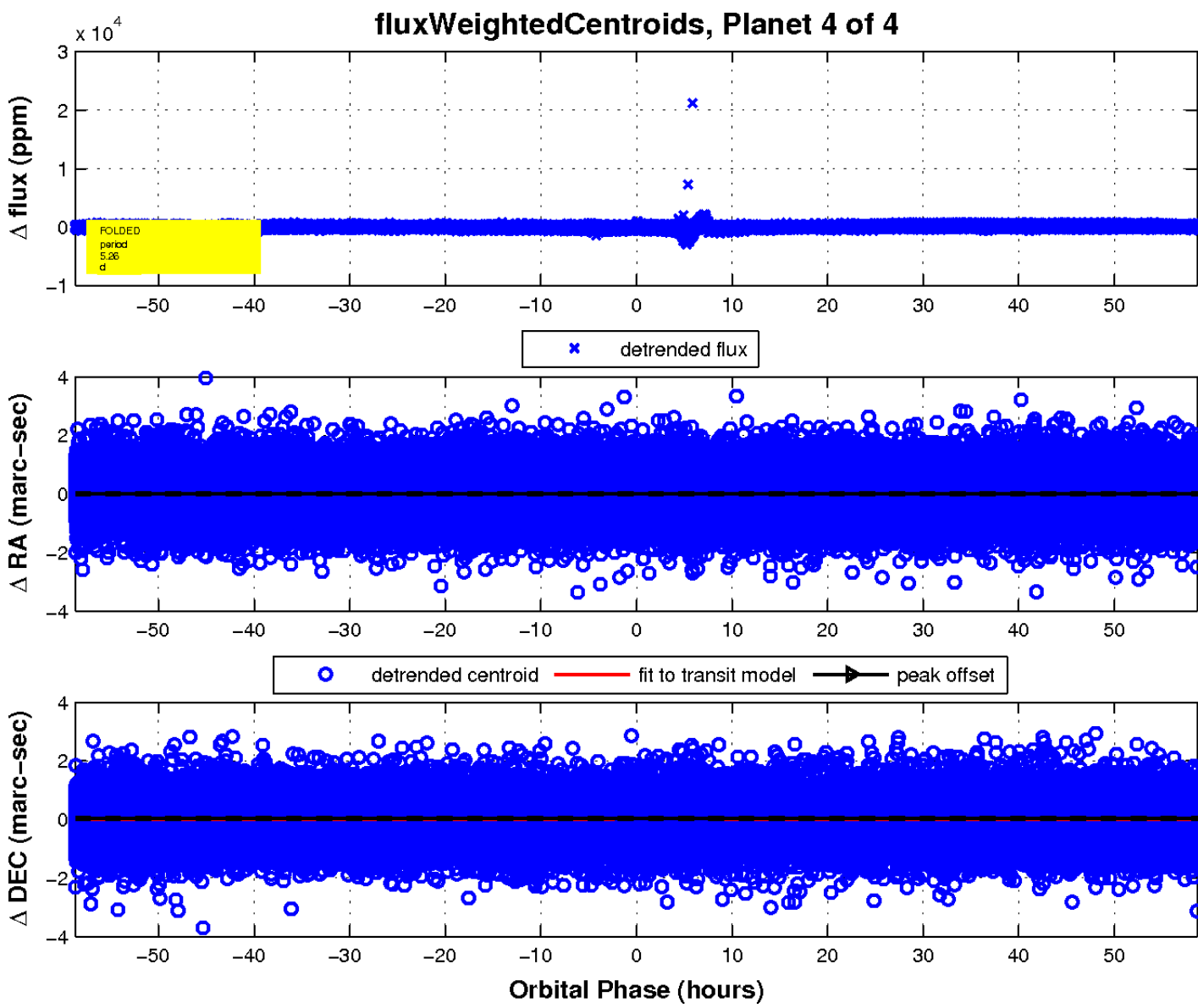
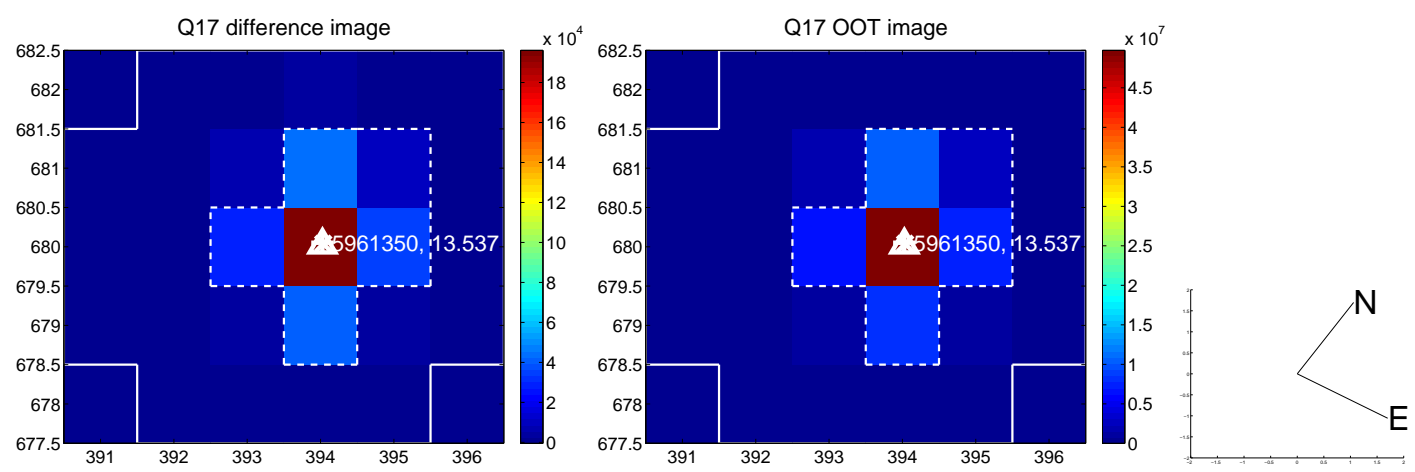
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

Declination

