

# KIC 004862625

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004862625-01	OBS	6464.01	20.000245	134.820264	13093.7	4.977	859.7	824.9	1.05	6373	19.43	73.26
004862625-02	OBS	No	20.000232	142.675005	1288.6	5.354	91.7	90.5	1.05	6373	4.71	73.26
004862625-03	OBS	6464.03	541.743332	374.454915	1089.0	10.423	17.8	19.2	1.05	6373	3.52	0.90
004862625-04	OBS	No	409.130099	237.836116	621.1	16.754	16.4	13.5	1.05	6373	3.24	1.31
004862625-05	OBS	No	270.882617	240.260490	616.5	10.407	11.9	14.4	1.05	6373	2.76	2.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004862625-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
004862625-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
004862625-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004862625-04	OBS	FP	0.00	1	0	0	0	ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004862625-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

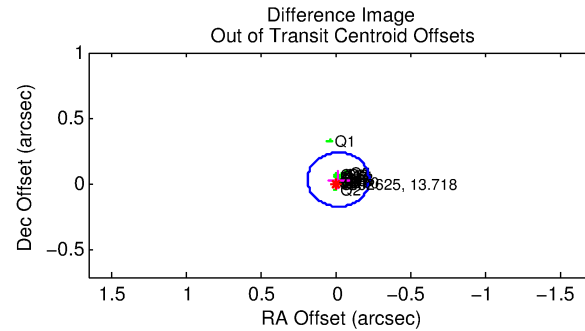
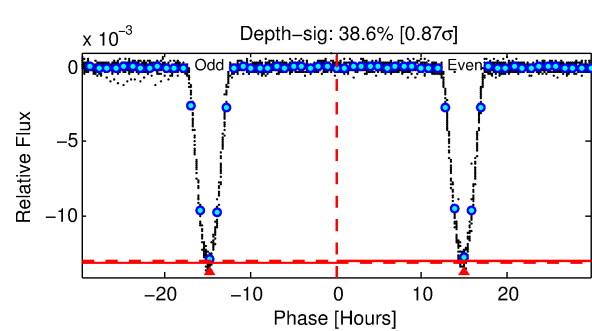
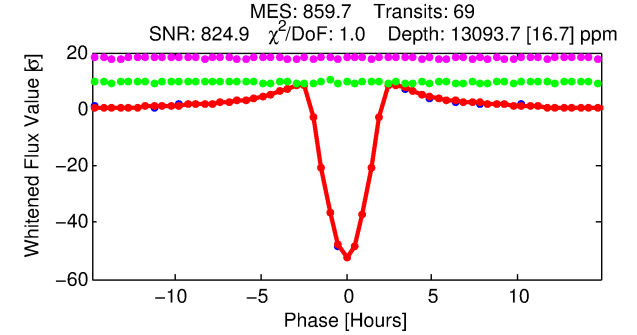
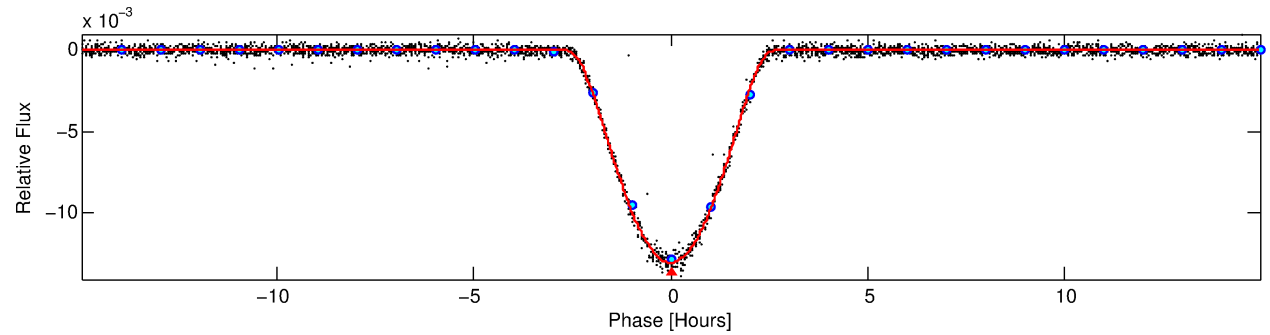
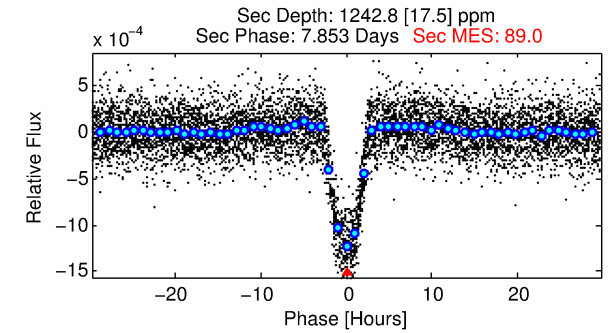
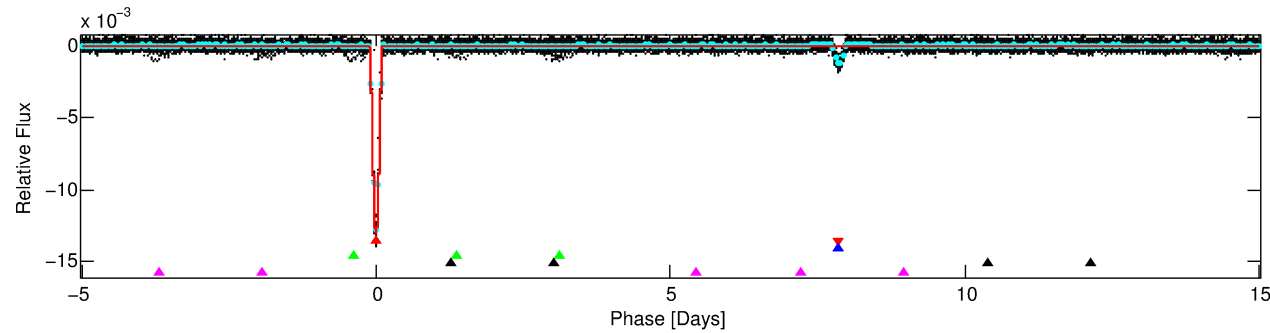
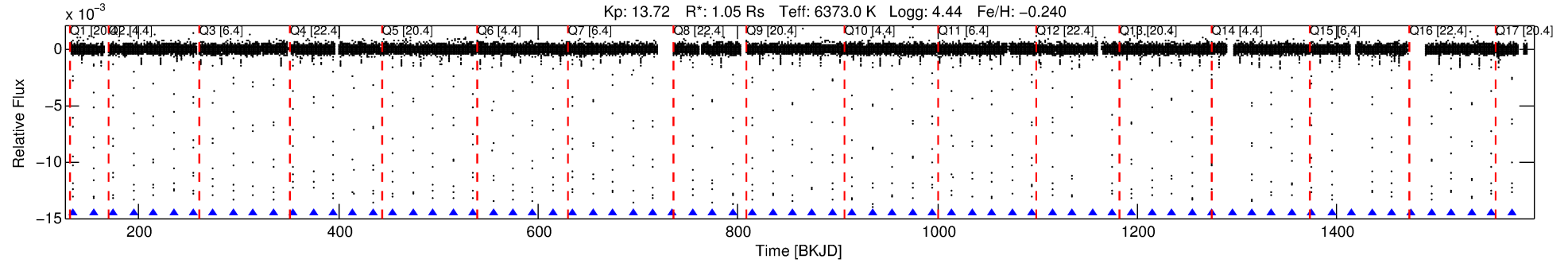
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 004862625-01

No Significant Match Found

# DV One-Page Summary

KIC: 4862625 Candidate: 1 of 5 Period: 20.000 d  
KOI: K06464.01 Corr: 0.996



## DV Fit Results:

Period = 20.00025 [0.00000] d  
Epoch = 134.8203 [0.0001] BKJD  
Rp/R\* = 0.1701 [0.0070]  
a/R\* = 19.71 [0.14]  
b = 0.98 [0.01]  
Seff = 73.26 [26.75]  
Teq = 746 [68] K  
Rp = 19.43 [5.59] Re  
a = 0.1487 [0.0355] AU  
Ag = 40.04 [14.23] [2.74 $\sigma$ ]  
Teffp = 2901 [105] K [17.20 $\sigma$ ]

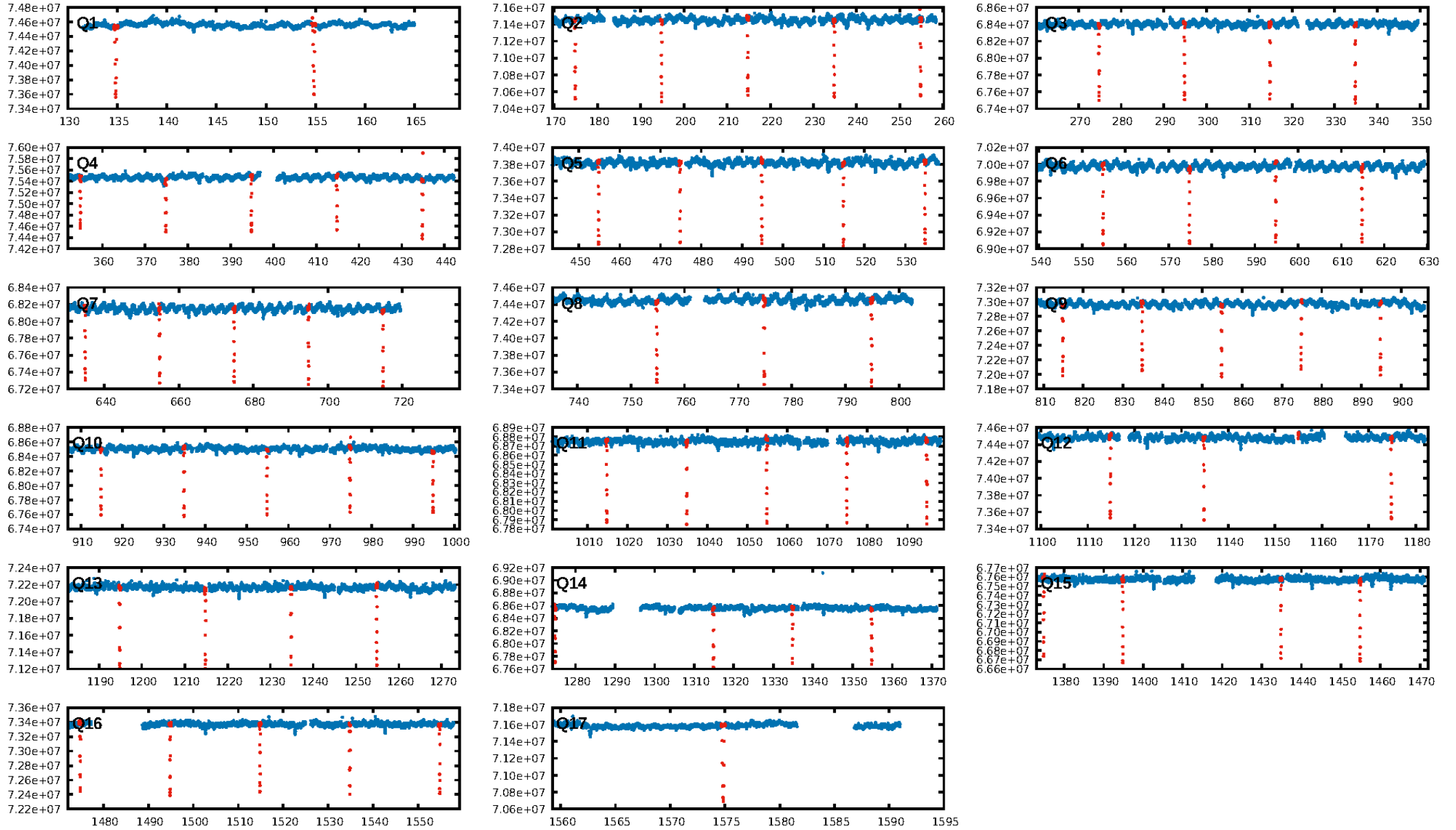
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: 100.0% [521.95 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [66/66]  
GhostDiagnostic-chr: 4.653  
Centroid-sig: 0.0%  
Centroid-so: 0.315 arcsec [26.62 $\sigma$ ]  
OotOffset-rm: 0.042 arcsec [0.62 $\sigma$ ]  
KicOffset-rm: 0.039 arcsec [0.58 $\sigma$ ]  
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]

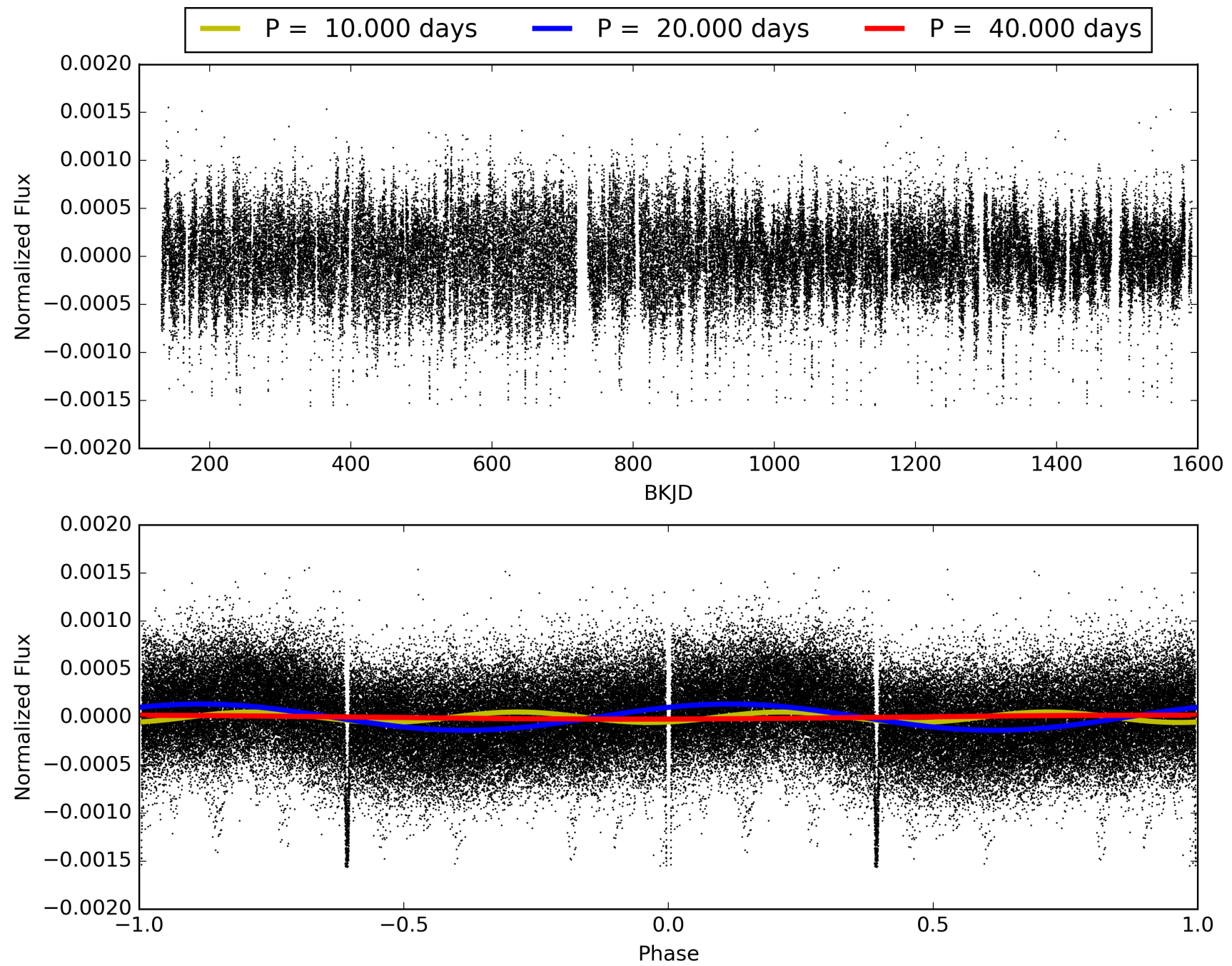
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:20:36 Z

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

# TCE 004862625-01, PDC Light Curves



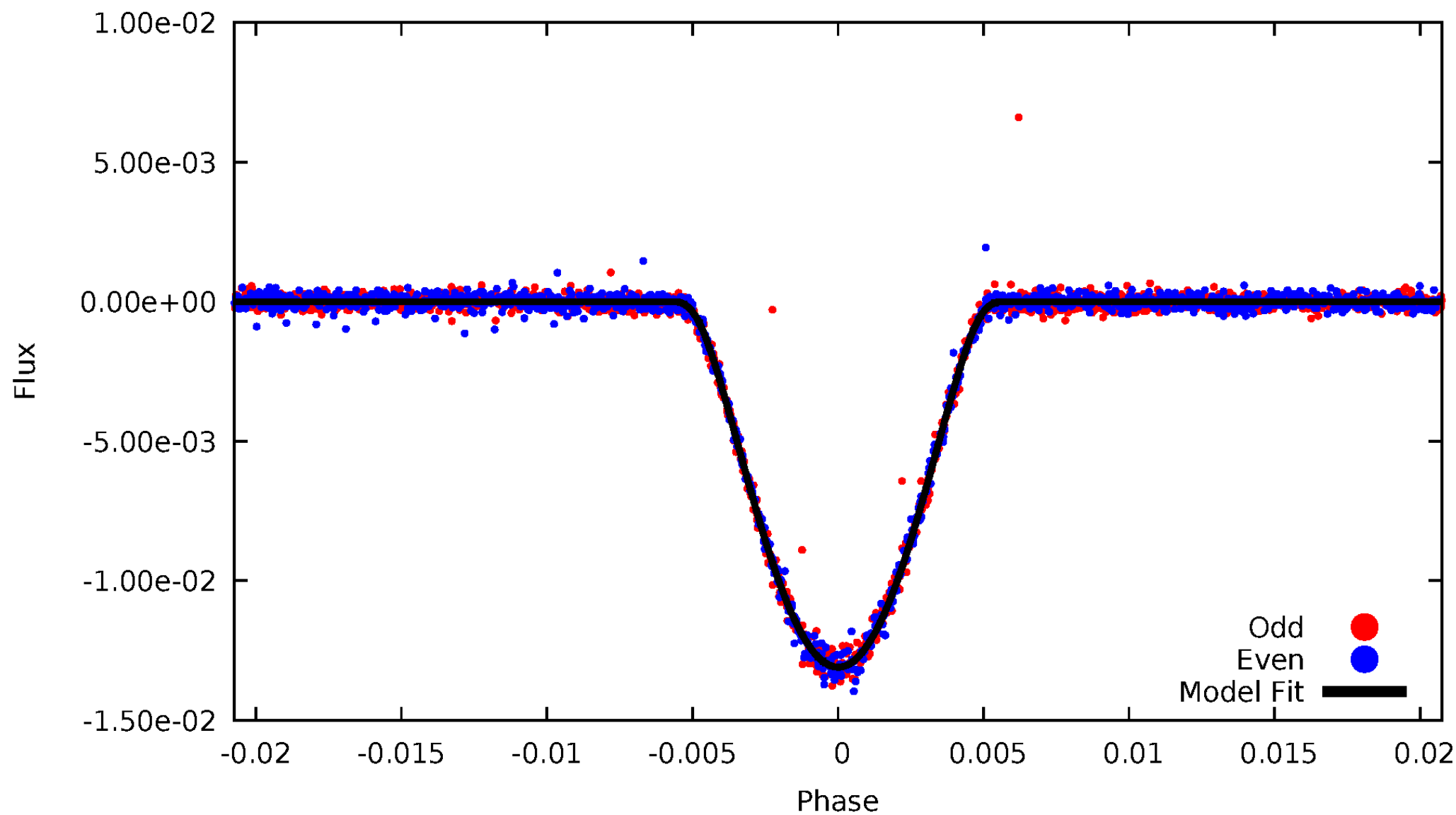
TCE 004862625-01





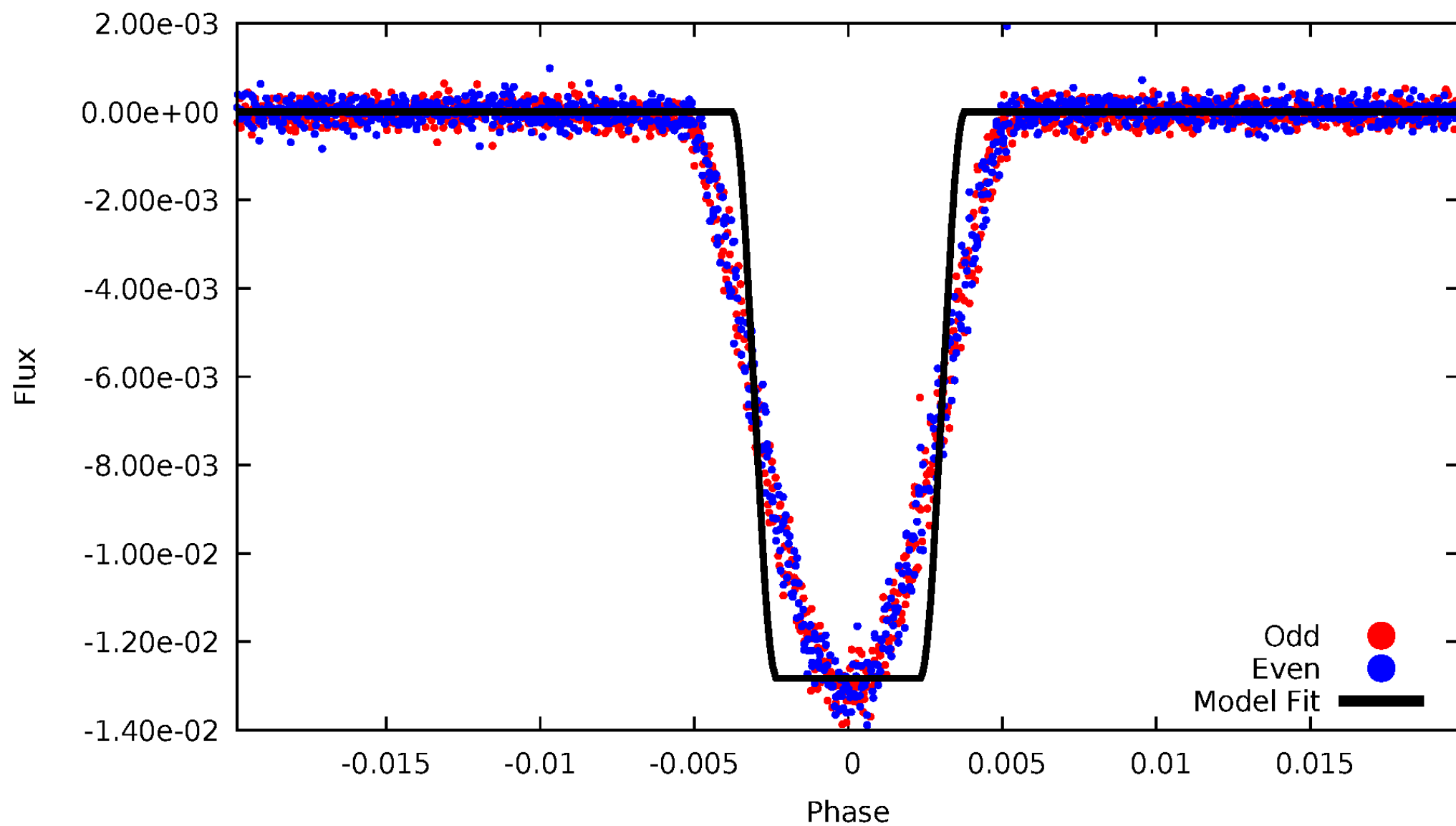
# DV Odd/Even

TCE 004862625-01



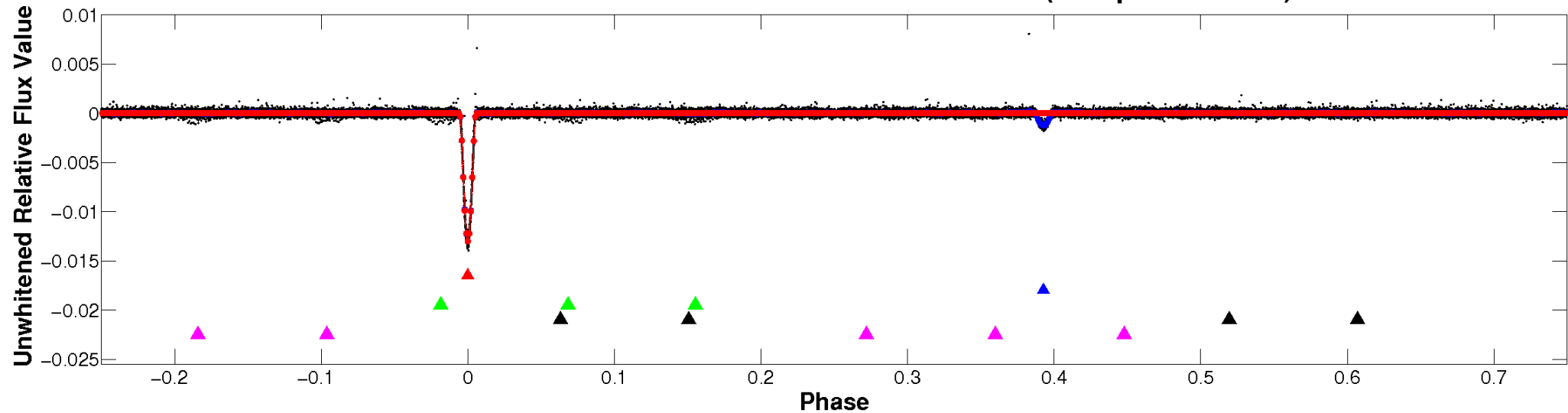
# ALT Odd/Even

TCE 004862625-01

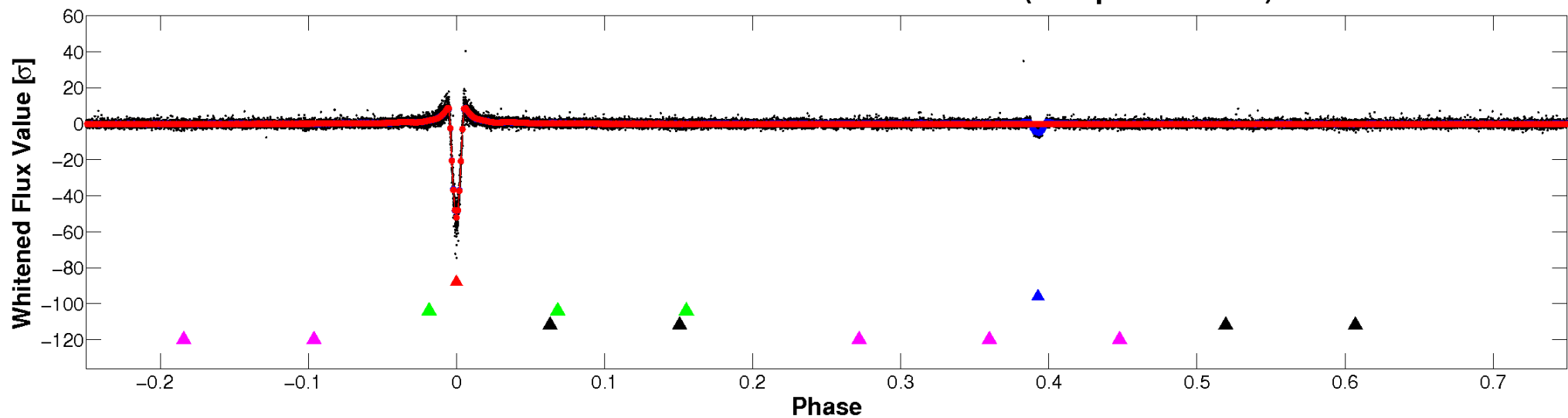


# Non-Whitened Vs. Whitened Light Curve

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

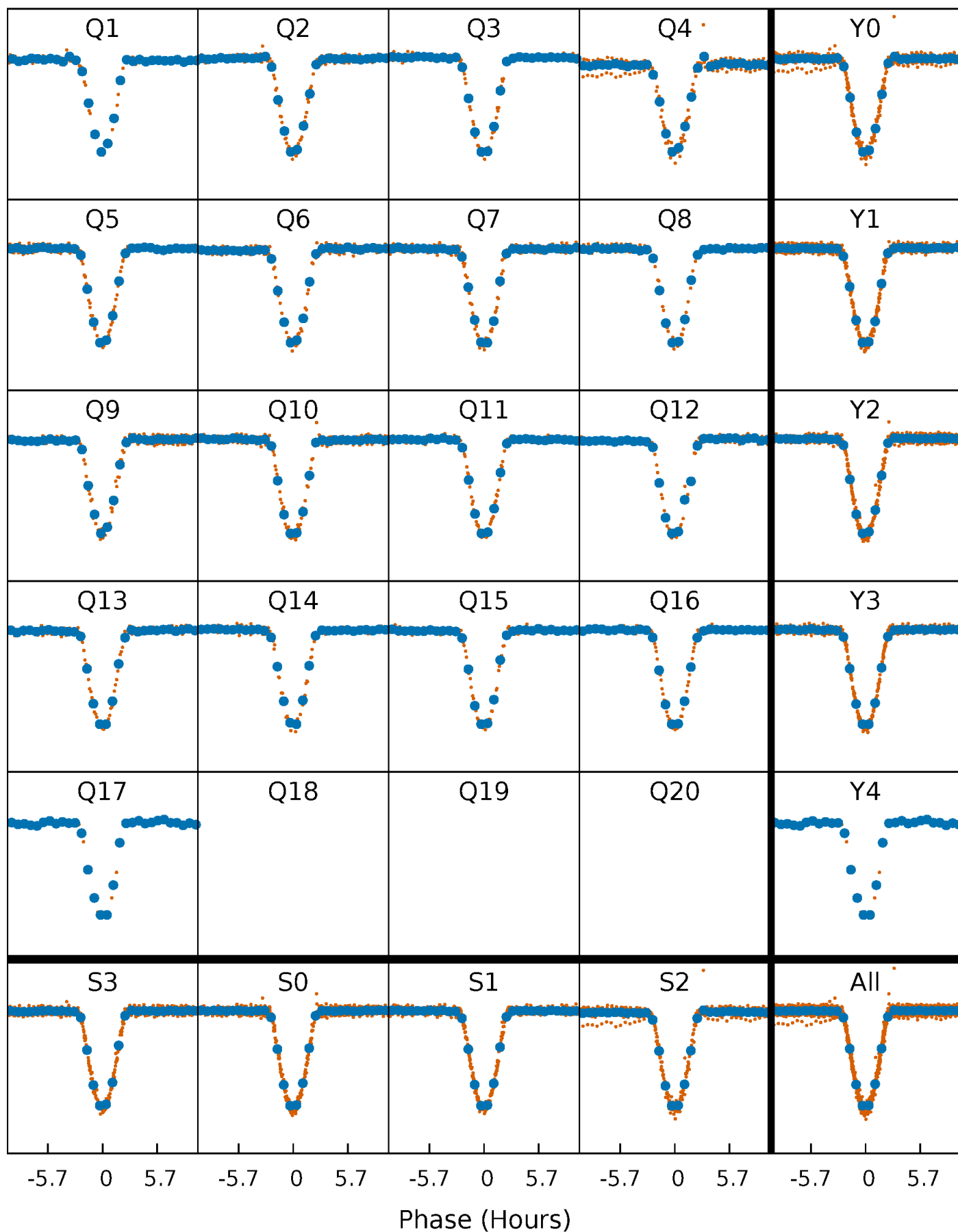


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



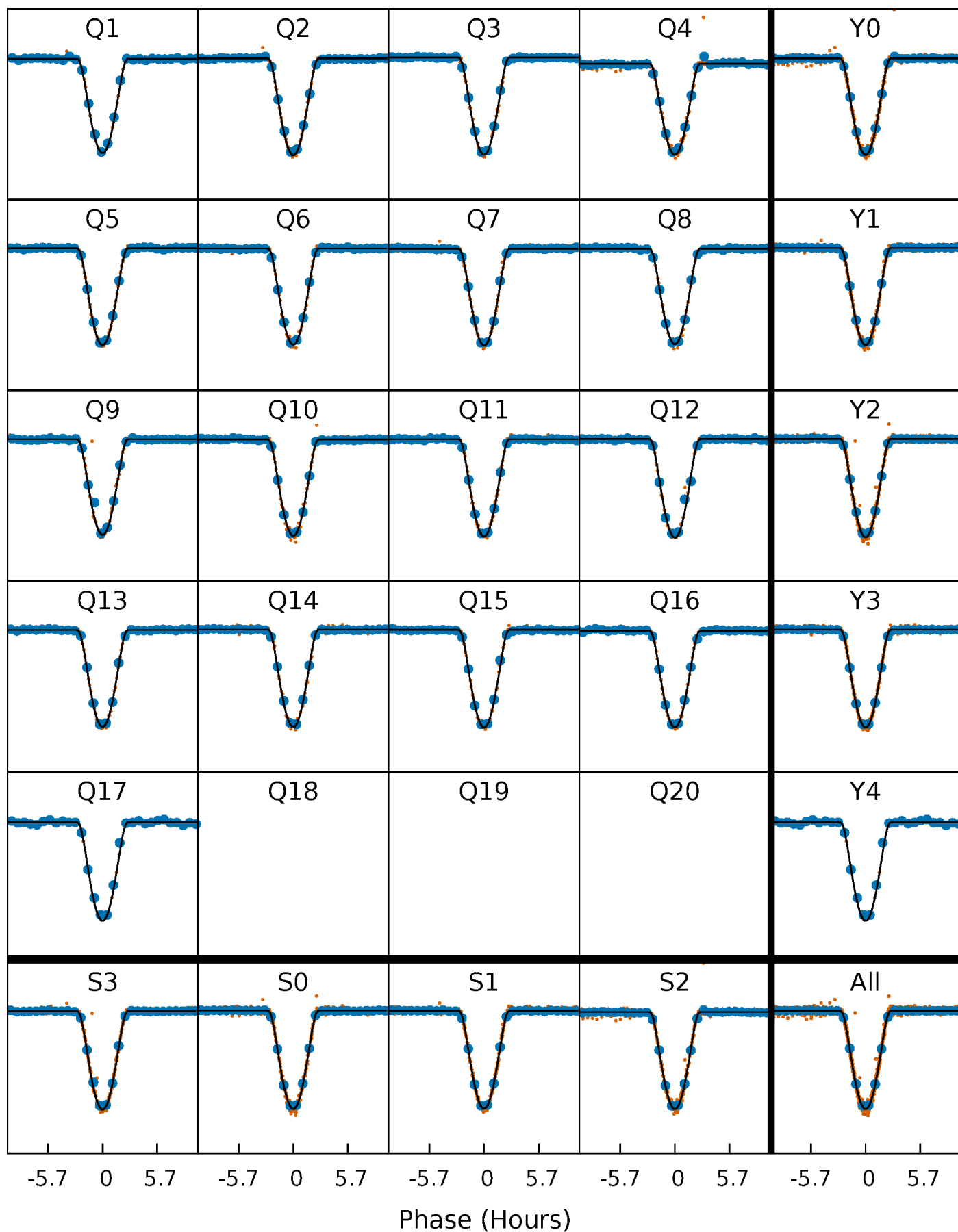
# PDC Quarter-Phased Transit Curves

TCE 004862625-01 P= 20.000245 Days  $T_0=134.820264$  (BKJD)



# DV Quarter-Phased Transit Curves

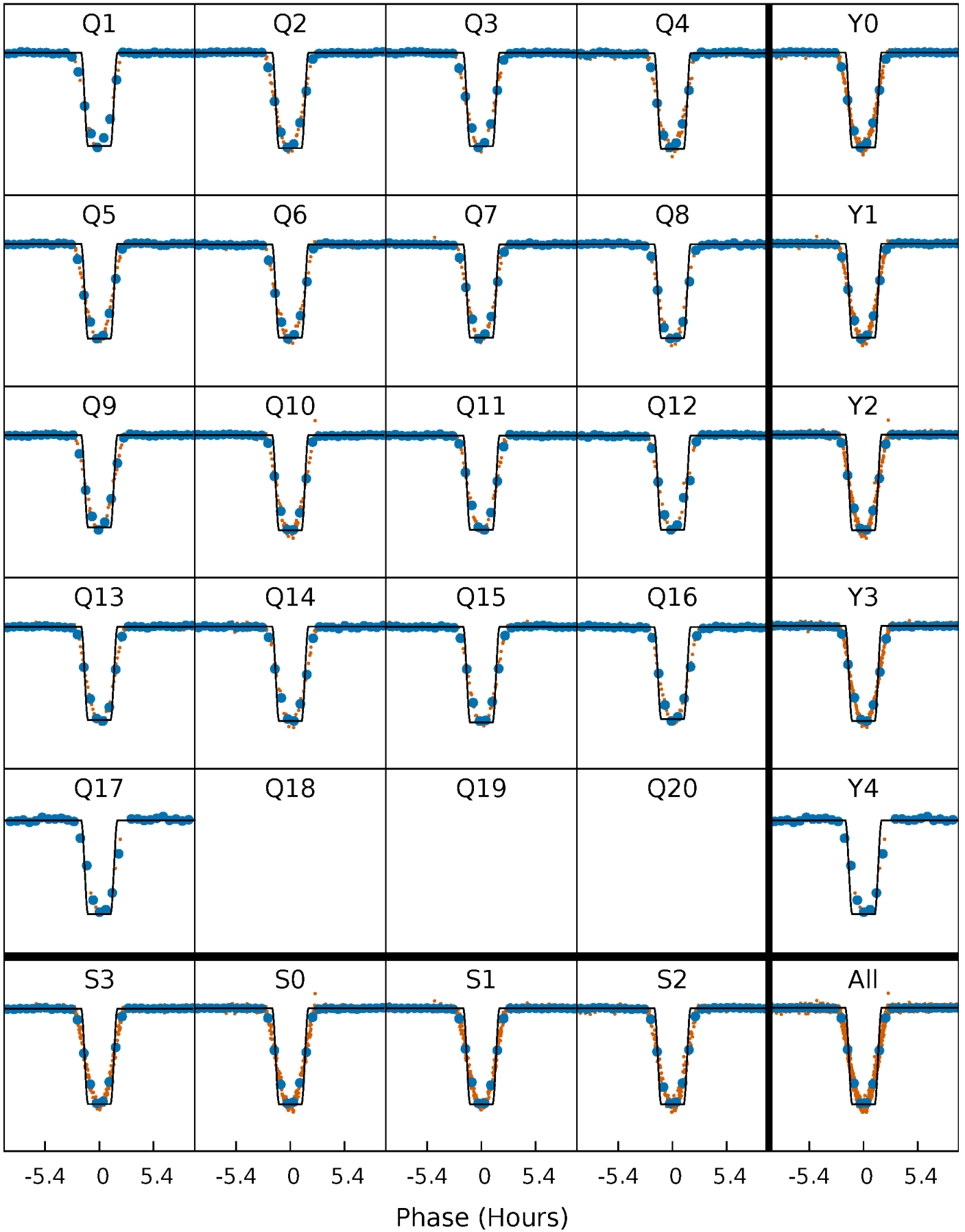
TCE 004862625-01 P= 20.000245 Days  $T_0=134.820264$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

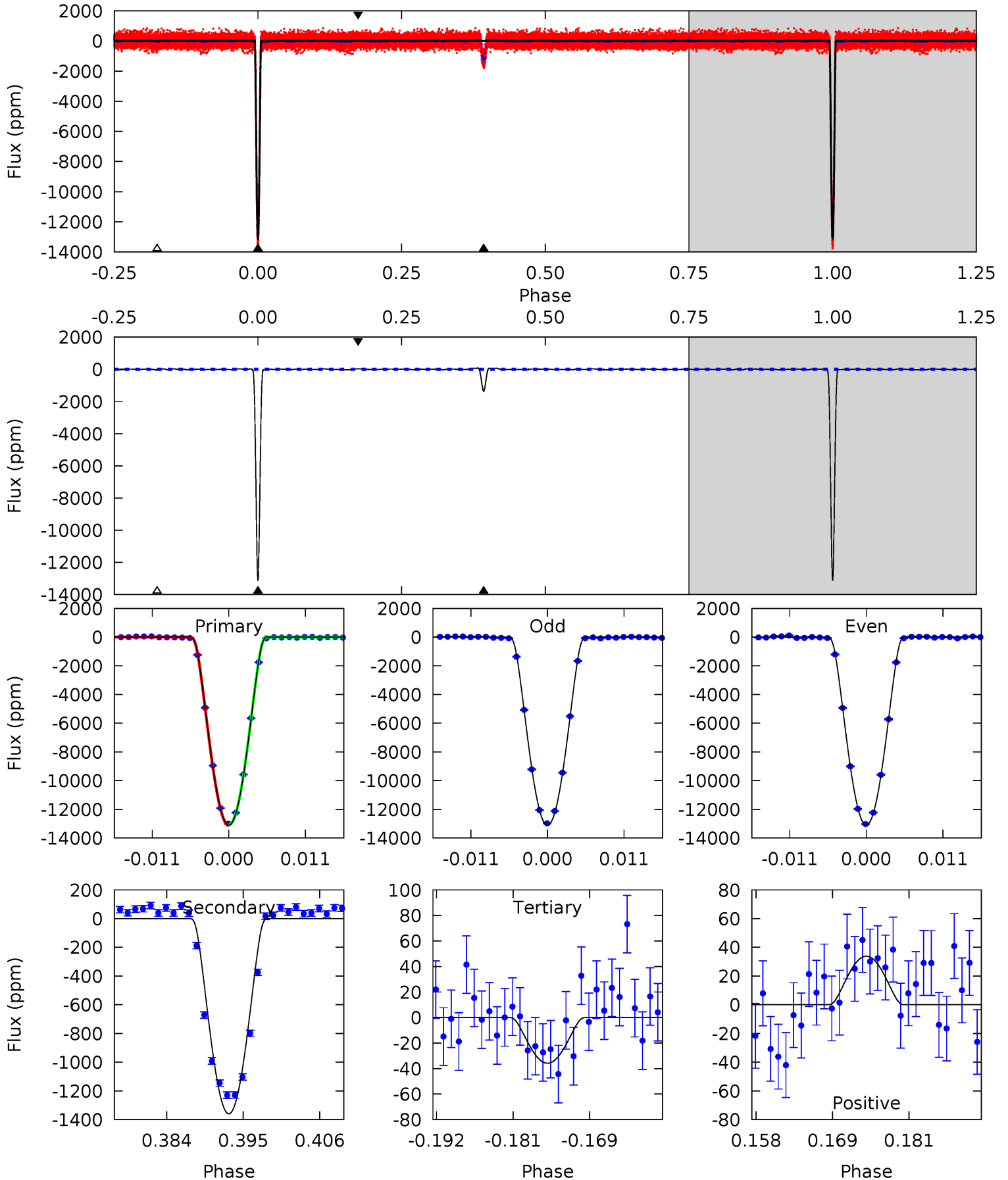
TCE 004862625-01   P= 20.000082 Days    $T_0=134.825543$  (BKJD)



# DV Model-Shift Uniqueness Test

004862625-01, P = 20.000245 Days, E = 114.820019 Days

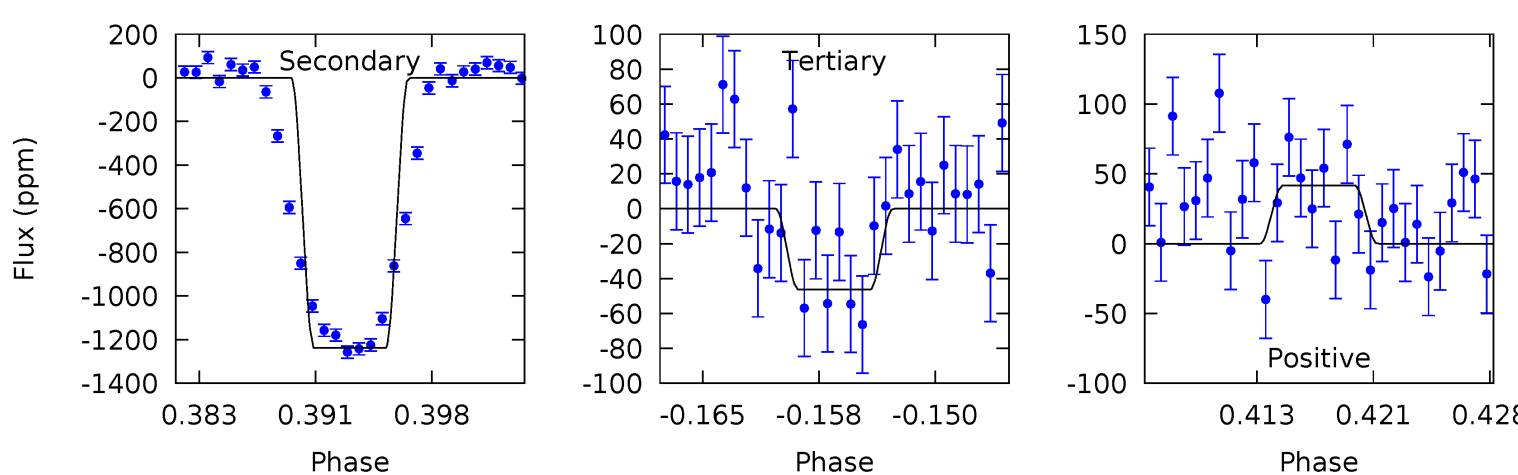
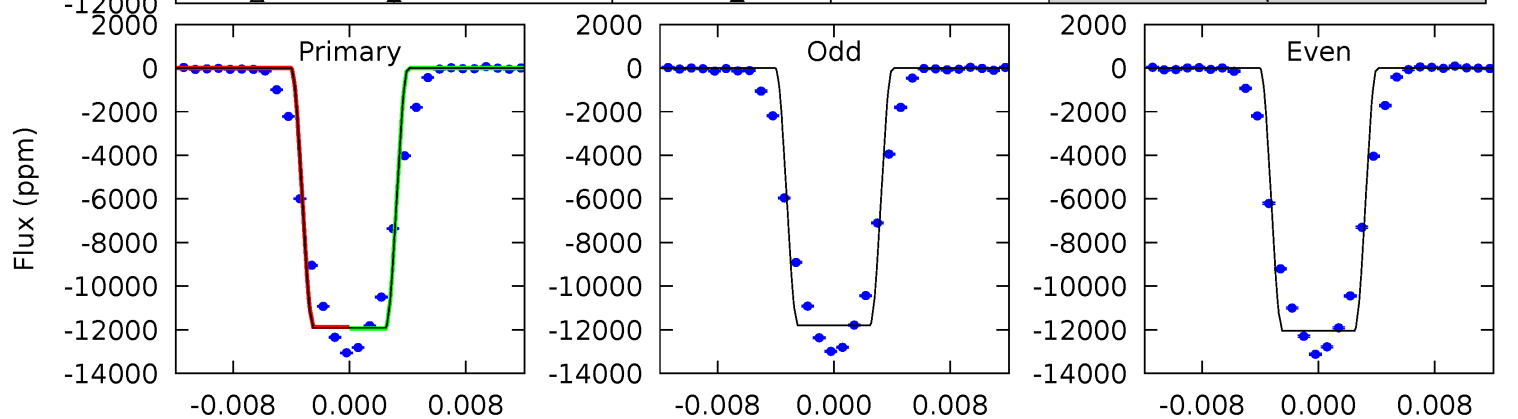
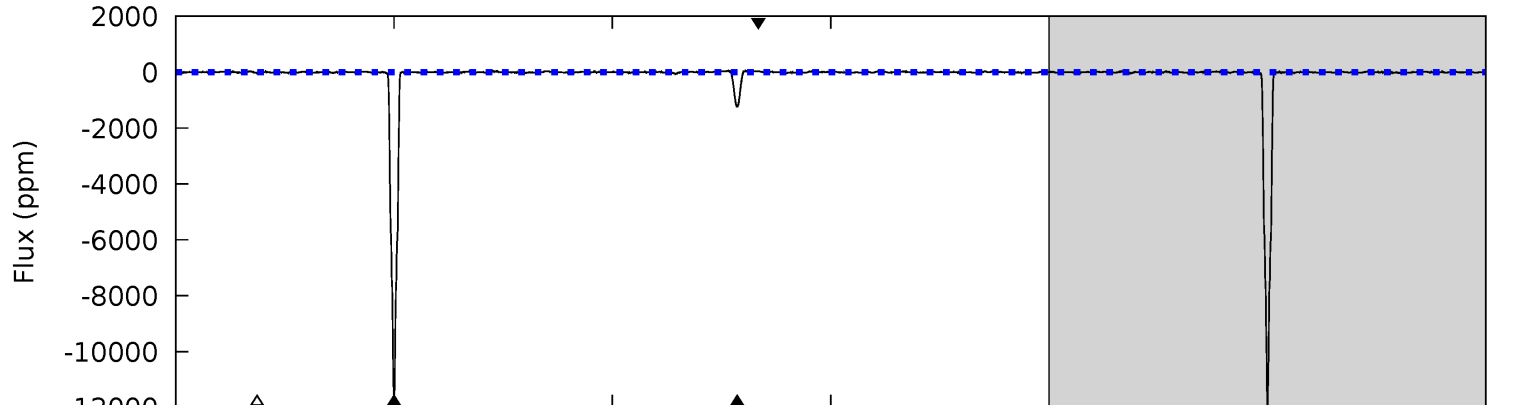
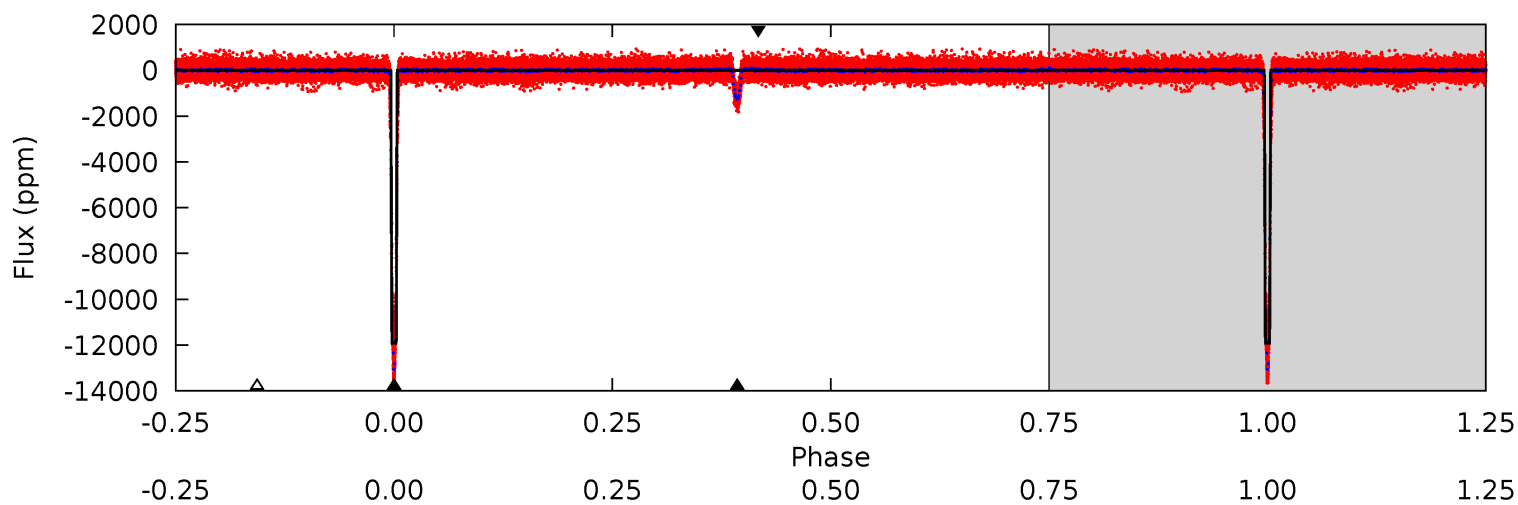
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1739	180.4	4.75	4.49	5.00	2.53	2.28	1735	1735	175.7	175.9	1.35	1.00	0.01	2.21



# Alt Model-Shift Uniqueness Test

004862625-01, P = 20.000082 Days, E = 114.825461 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
1025	106.6	3.99	3.59	5.08	2.67	1.24	1021	1022	102.6	103.0	10.4	1.00	0.00	2.79



### Stellar Parameters For KIC 004862625

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6373^{+151}_{-189}$	$4.438^{+0.062}_{-0.188}$	$-0.240^{+0.250}_{-0.300}$	$1.047^{+0.298}_{-0.106}$	$1.094^{+0.143}_{-0.143}$	$1.343^{+0.431}_{-0.636}$
	+2%/-3%	+1%/-4%	+104%/-125%	+28%/-10%	+13%/-13%	+32%/-47%
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 004862625-01 / KOI 6464.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1360 \pm 8$	$19.93^{+3.33}_{-1.86}$	$1060^{+75}_{-52}$	$3456^{+73}_{-76}$	$41^{+8}_{-10}$
Alt.	$-1238 \pm 12$	$13.16^{+2.28}_{-1.29}$	$1055^{+67}_{-48}$	$3898^{+103}_{-115}$	$85^{+18}_{-21}$

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

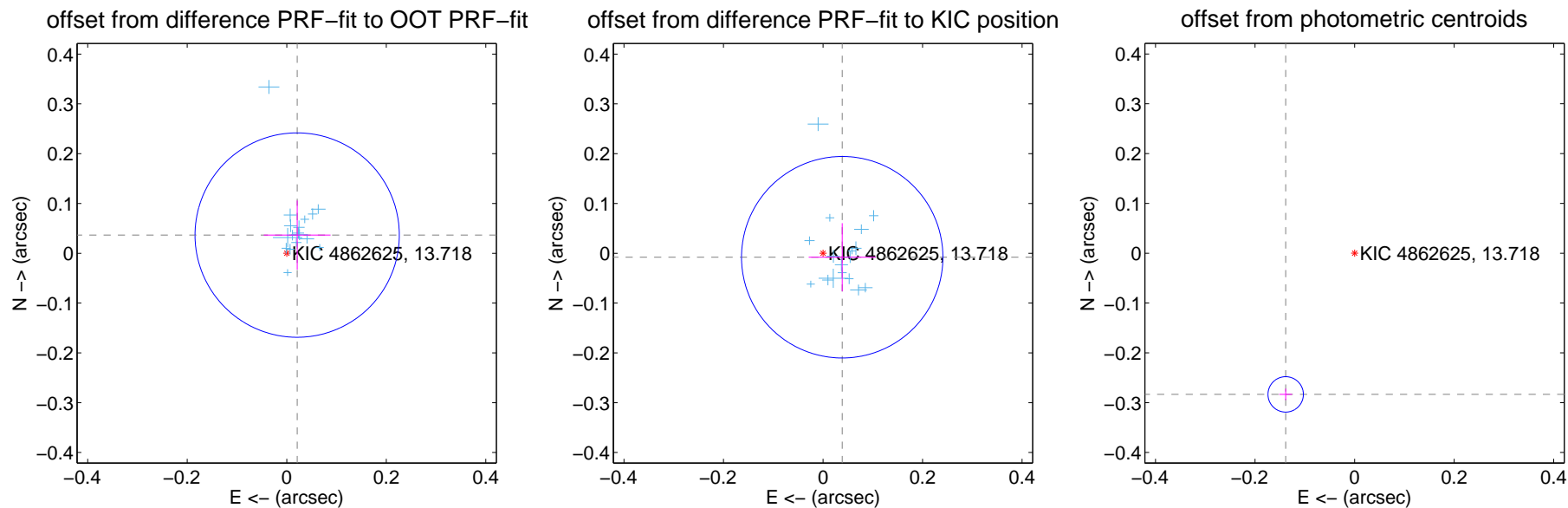
## DV Centroid Data

Supplemental centroid analysis for 004862625-01. Kepler magnitude: 13.72. Transit SNR 824.92

There are 17 quarters with good PRF difference image offsets

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

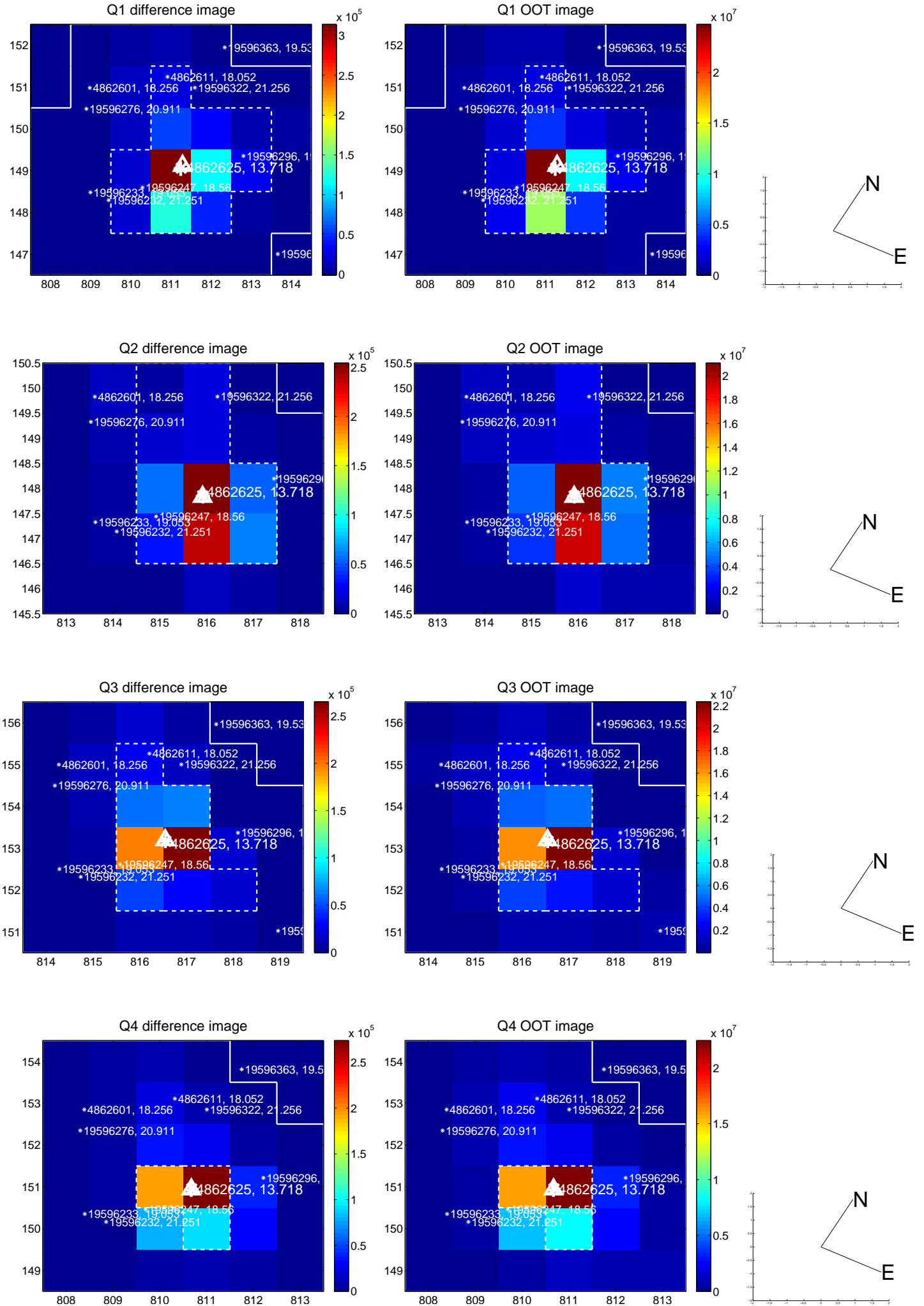
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.042 \pm 0.068$	0.62	$-0.021 \pm 0.067$	$0.037 \pm 0.069$
PRF-fit source offset from KIC position	$0.039 \pm 0.067$	0.58	$-0.039 \pm 0.067$	$-0.008 \pm 0.069$
photometric centroid source offset	$0.32 \pm 0.01$	26.62	$0.14 \pm 0.01$	$-0.28 \pm 0.01$



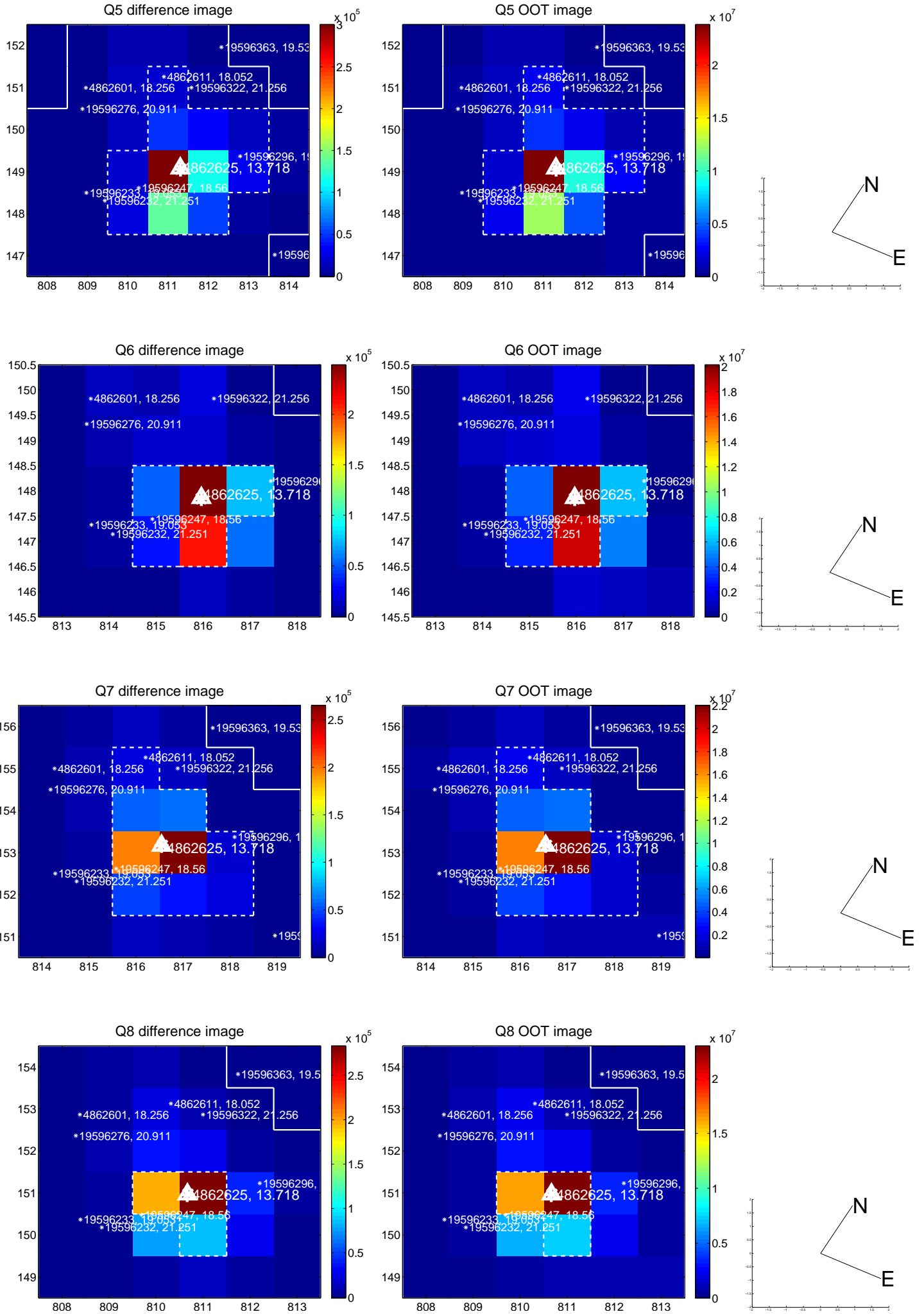
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



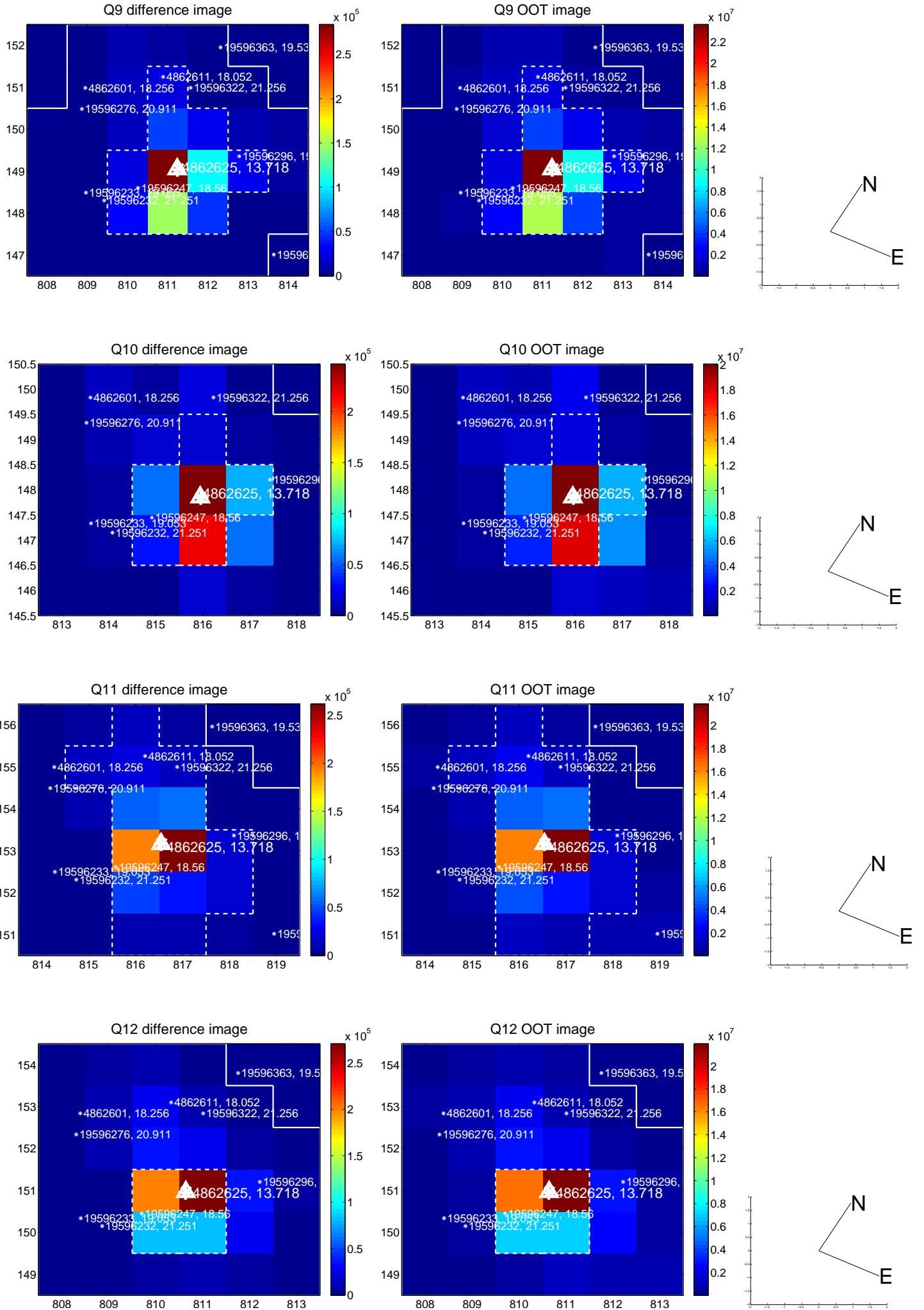
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



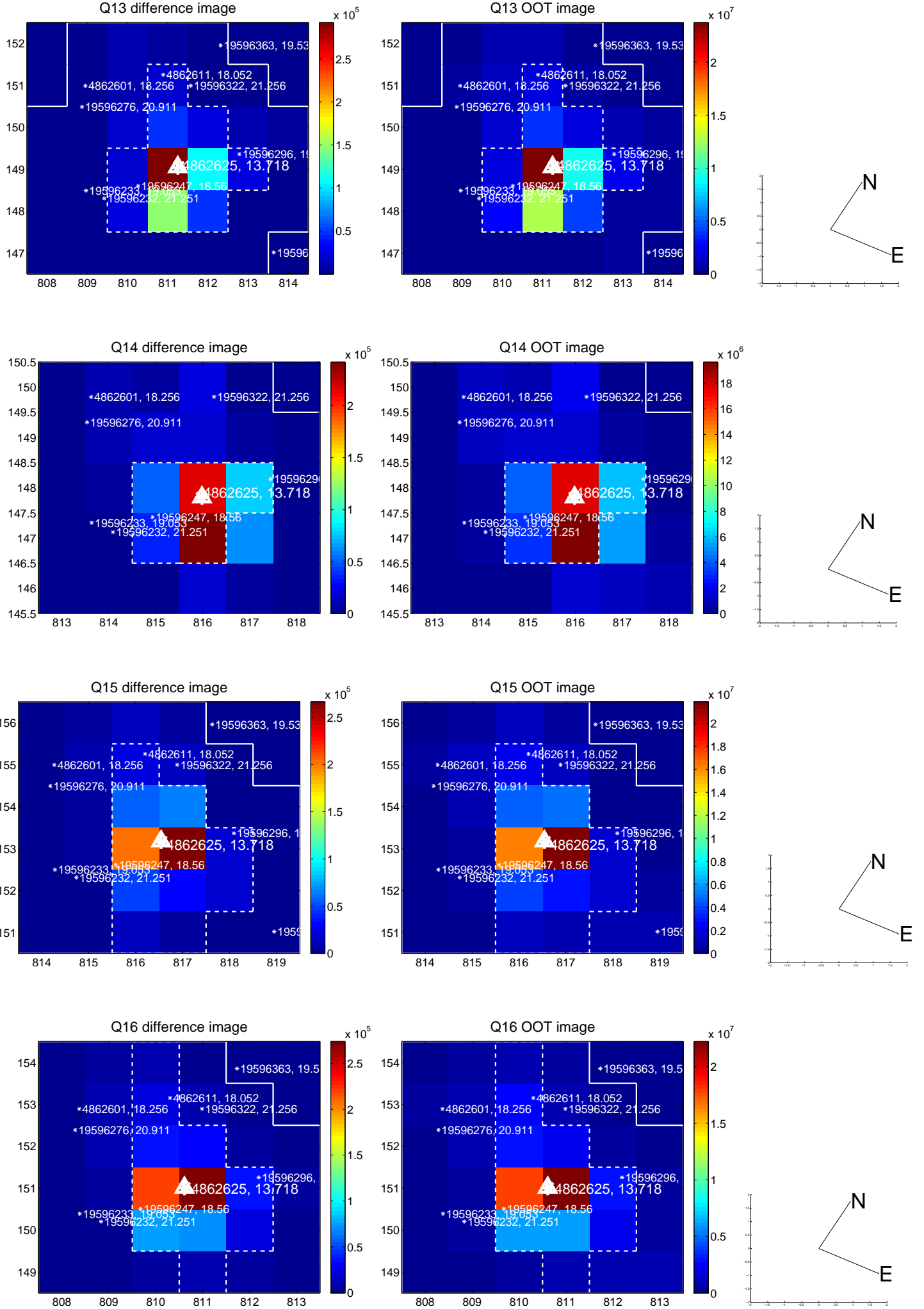
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



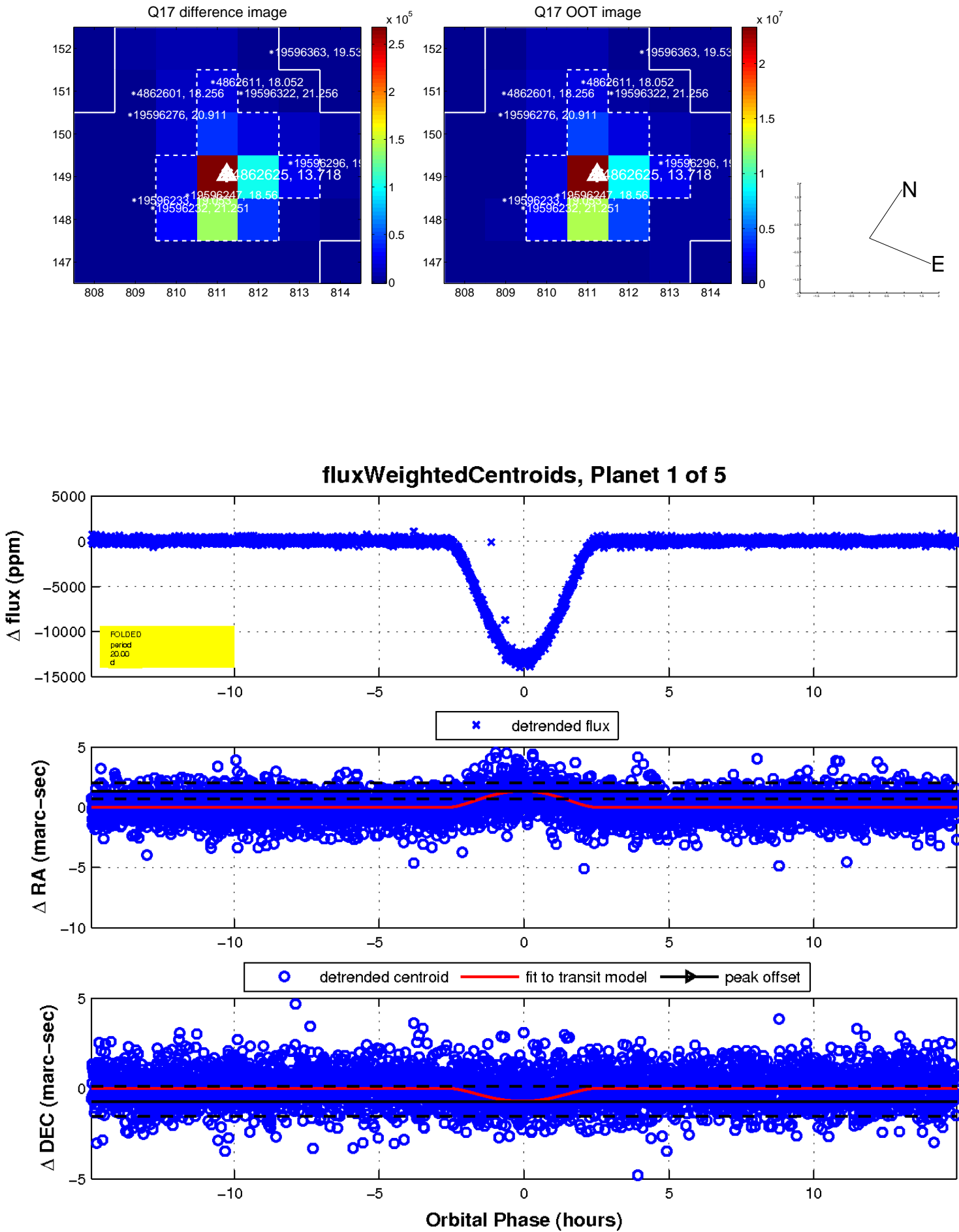
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



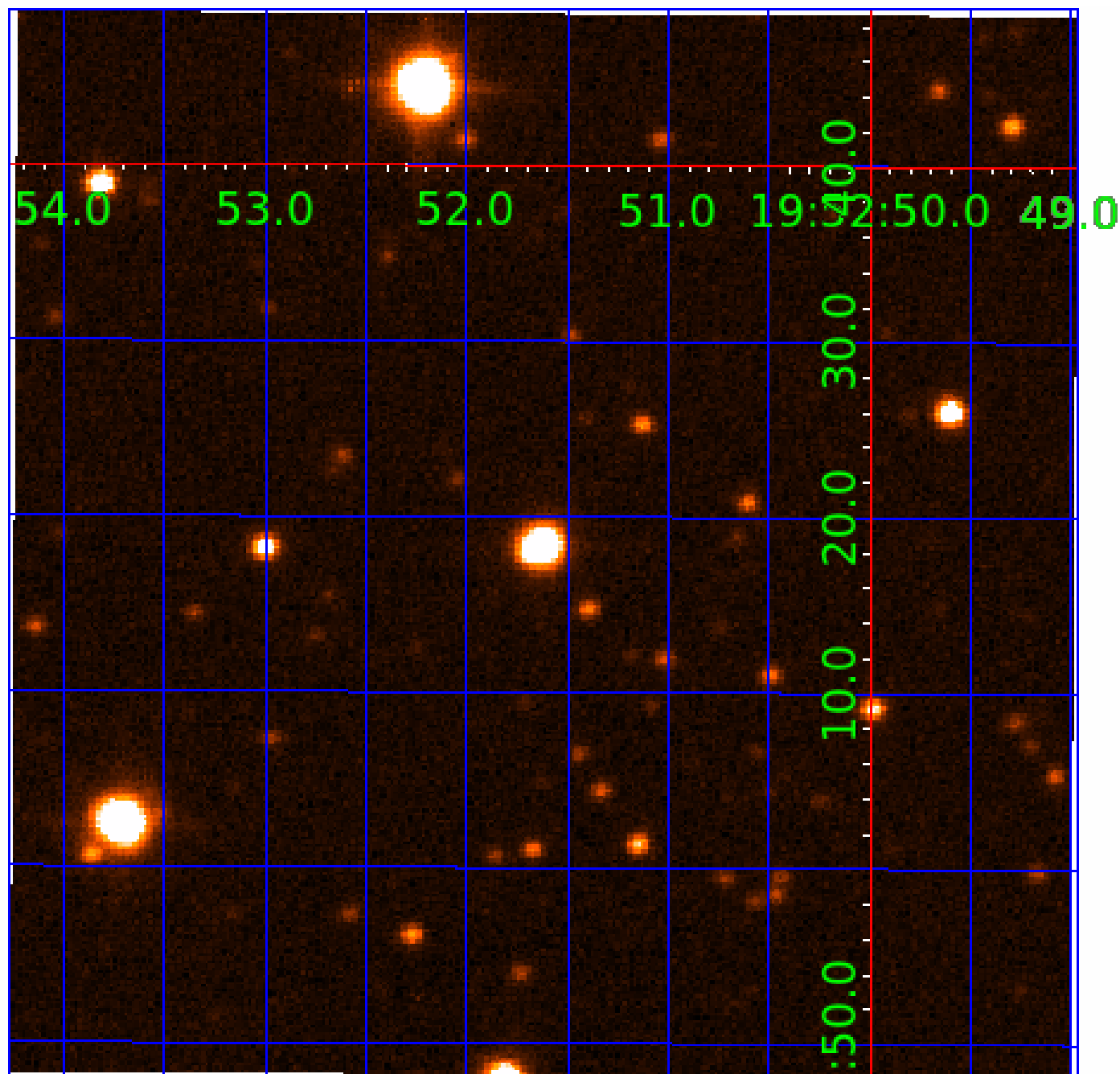
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 004862625

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004862625-01	OBS	6464.01	20.000245	134.820264	13093.7	4.977	859.7	824.9	1.05	6373	19.43	73.26
004862625-02	OBS	No	20.000232	142.675005	1288.6	5.354	91.7	90.5	1.05	6373	4.71	73.26
004862625-03	OBS	6464.03	541.743332	374.454915	1089.0	10.423	17.8	19.2	1.05	6373	3.52	0.90
004862625-04	OBS	No	409.130099	237.836116	621.1	16.754	16.4	13.5	1.05	6373	3.24	1.31
004862625-05	OBS	No	270.882617	240.260490	616.5	10.407	11.9	14.4	1.05	6373	2.76	2.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004862625-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
004862625-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
004862625-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004862625-04	OBS	FP	0.00	1	0	0	0	ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004862625-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

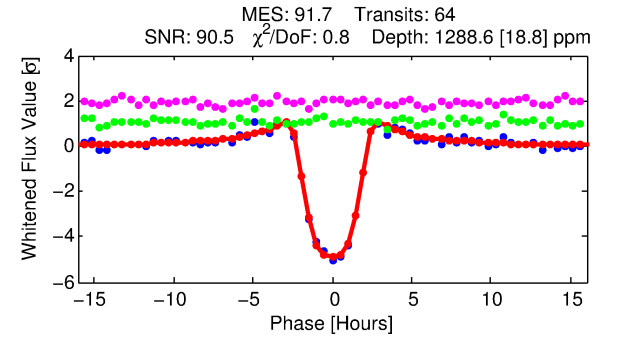
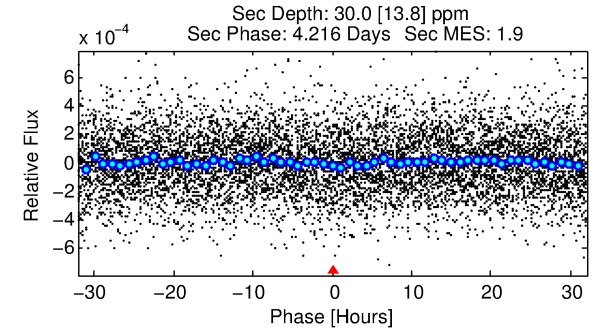
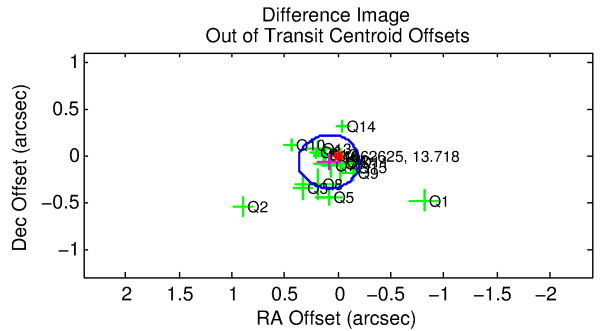
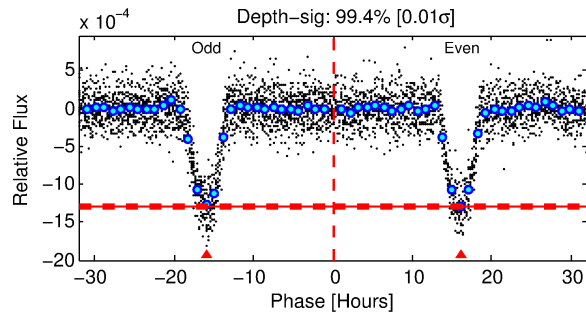
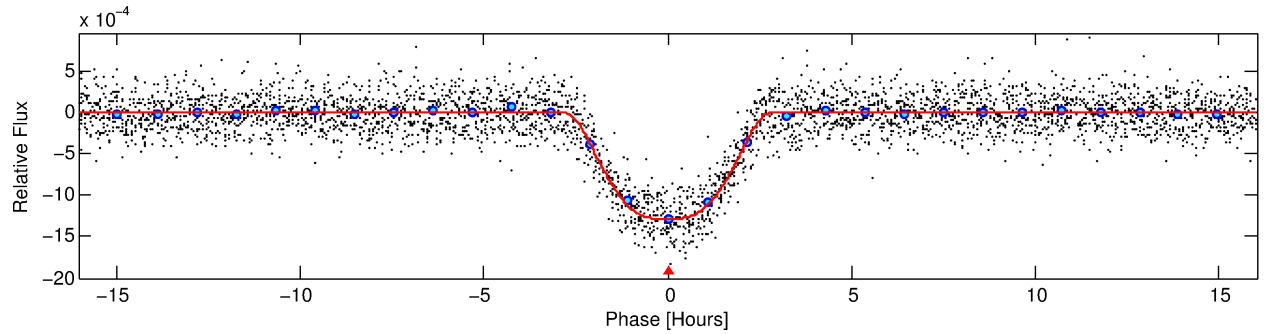
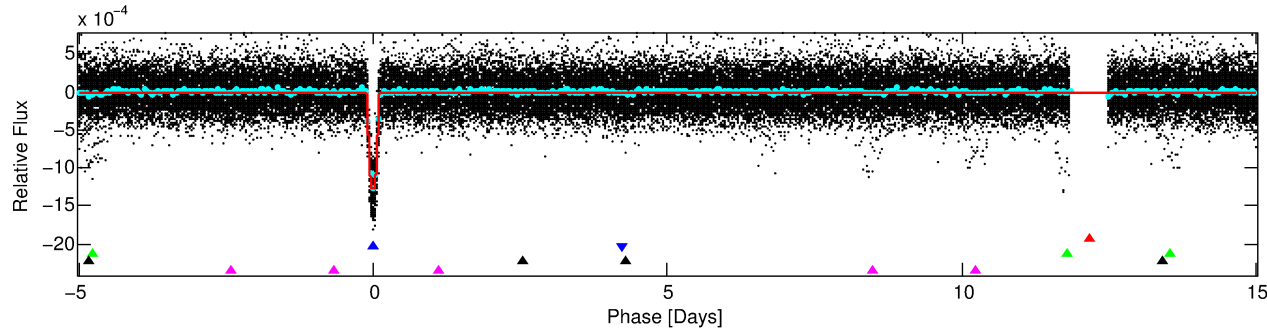
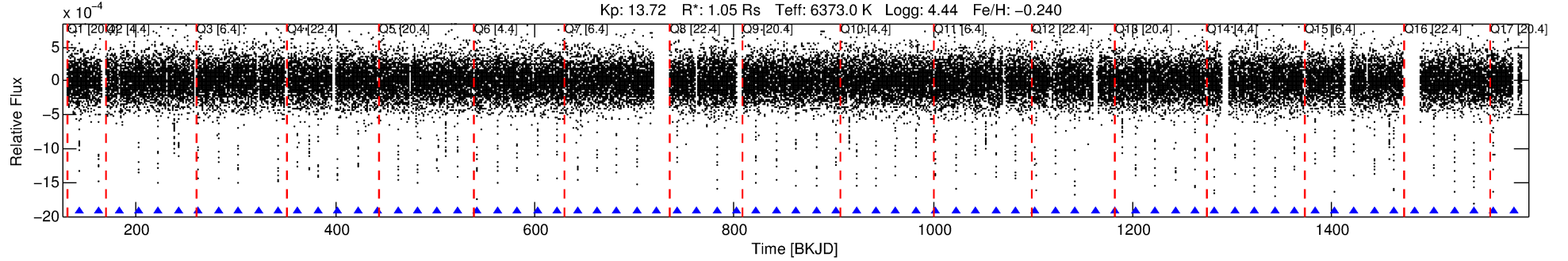
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 004862625-02

No Significant Match Found

# DV One-Page Summary

KIC: 4862625 Candidate: 2 of 5 Period: 20.000 d  
KOI: K06464 Corr: No Ephemeris Match



## DV Fit Results:

Period = 20.00023 [0.00003] d  
Epoch = 142.6750 [0.0012] BKJD  
Rp/R\* = 0.0413 [0.0004]  
a/R\* = 11.96 [0.23]  
b = 0.95 [0.00]  
Seff = 73.26 [26.75]  
Teq = 746 [68] K  
Rp = 4.72 [1.34] Re  
a = 0.1487 [0.0355] AU  
Ag = 16.43 [9.46] [1.63 $\sigma$ ]  
Teffp = 2322 [276] K [5.54 $\sigma$ ]

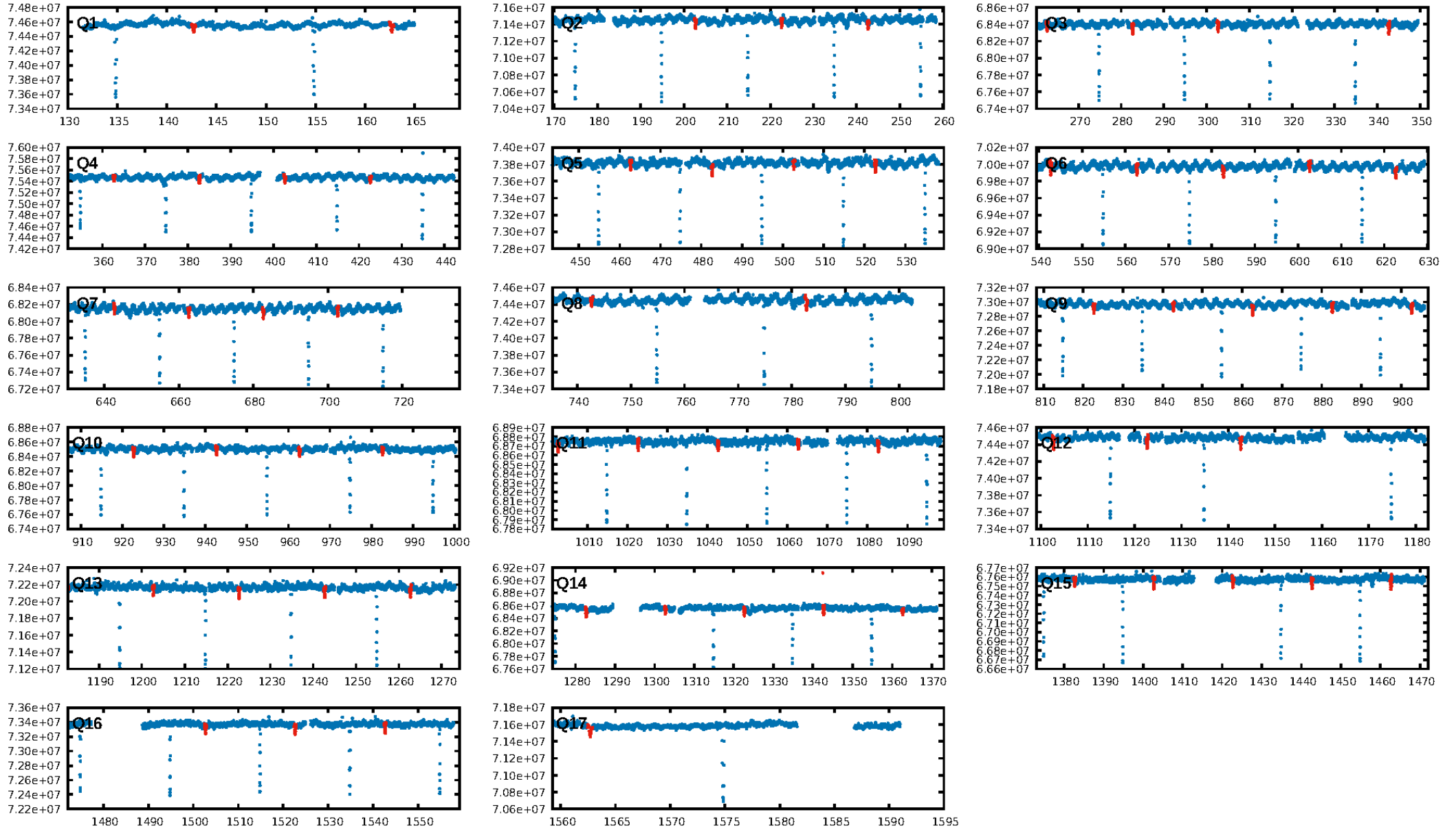
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: 54.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [61/61]  
GhostDiagnostic-chr: 3.208  
Centroid-sig: 8.9%  
Centroid-so: 0.538 arcsec [4.84 $\sigma$ ]  
OotOffset-rm: 0.108 arcsec [1.13 $\sigma$ ]  
KicOffset-rm: 0.131 arcsec [1.41 $\sigma$ ]  
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]

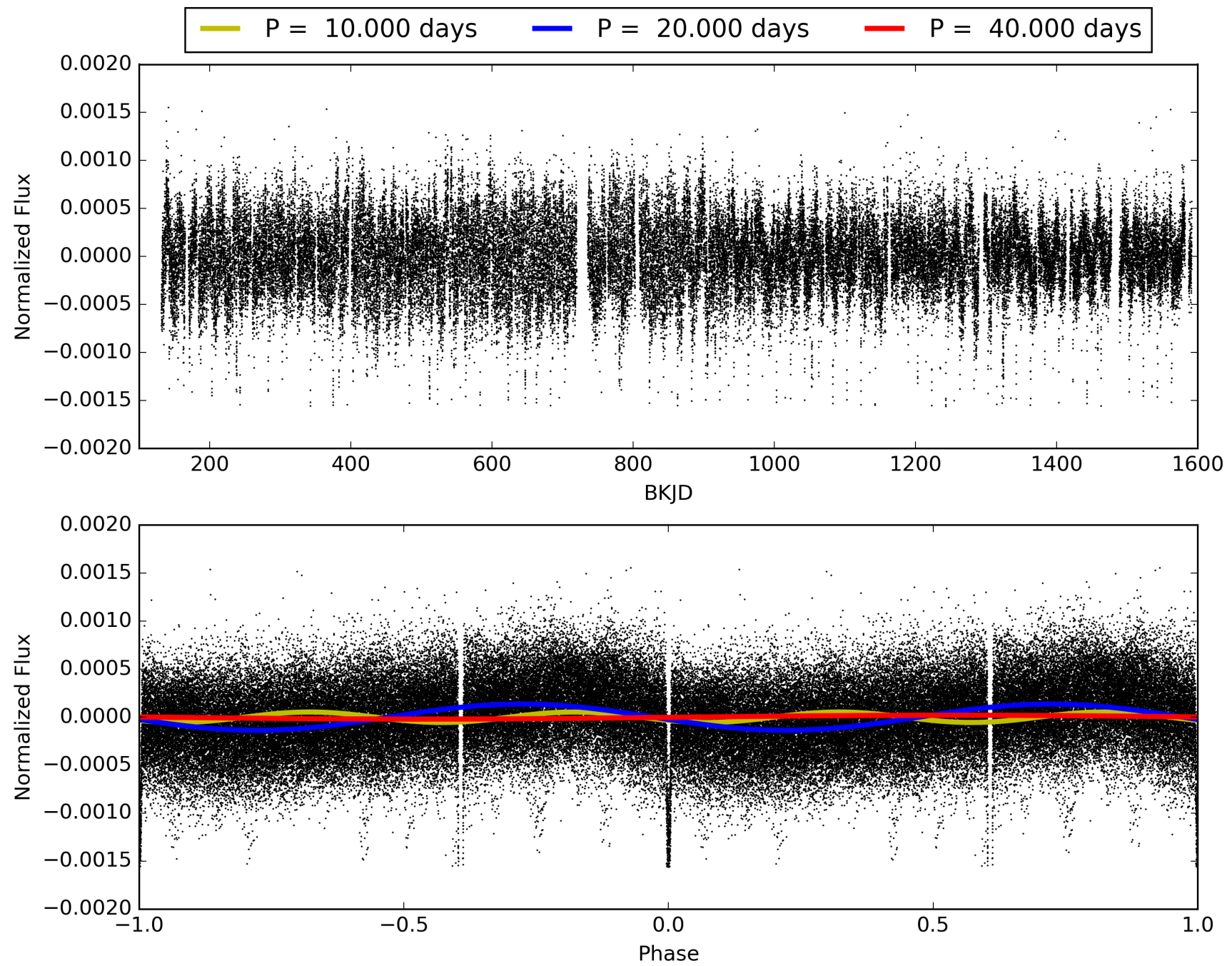
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:20:42 Z

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

# TCE 004862625-02, PDC Light Curves



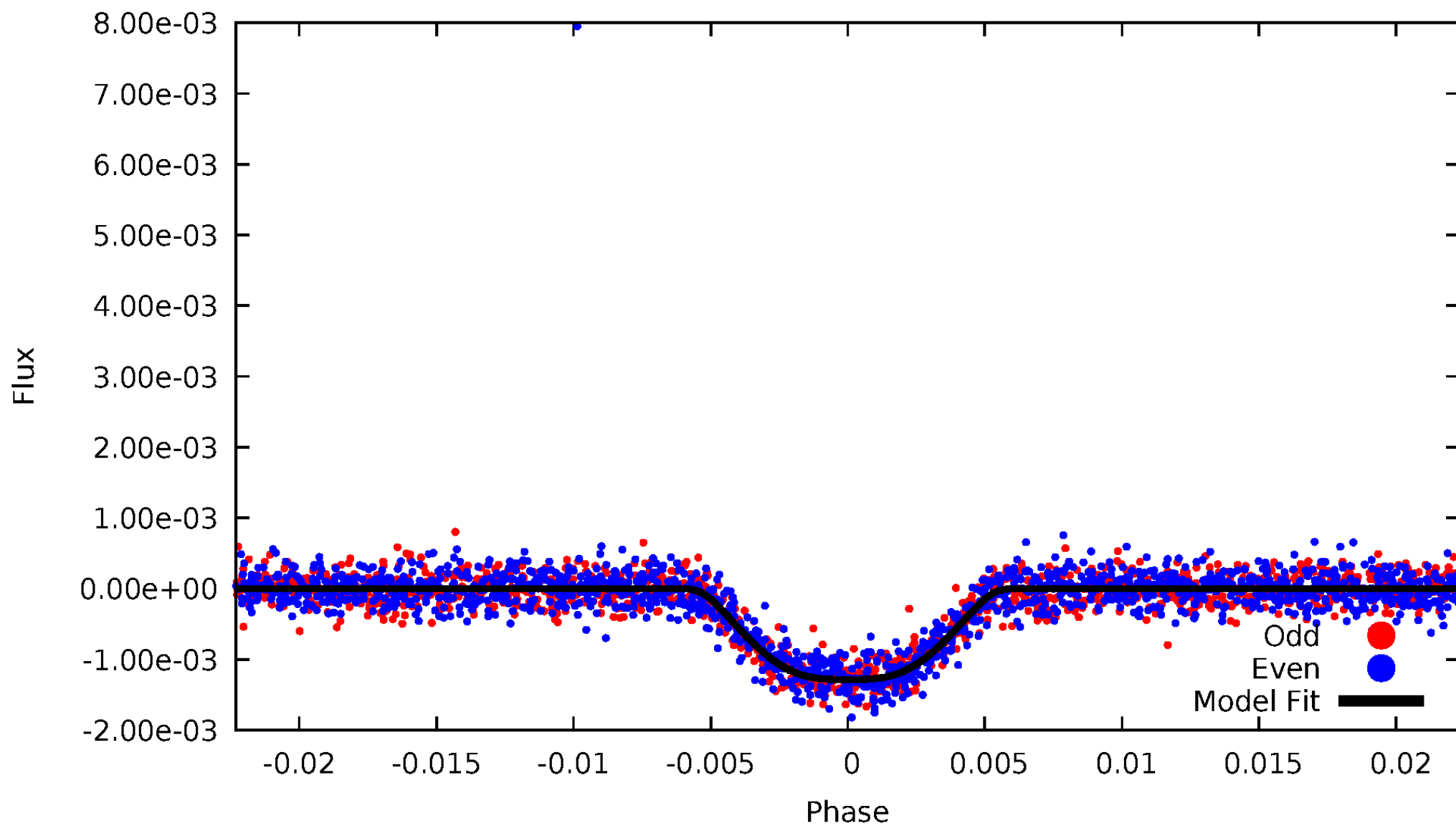
TCE 004862625-02





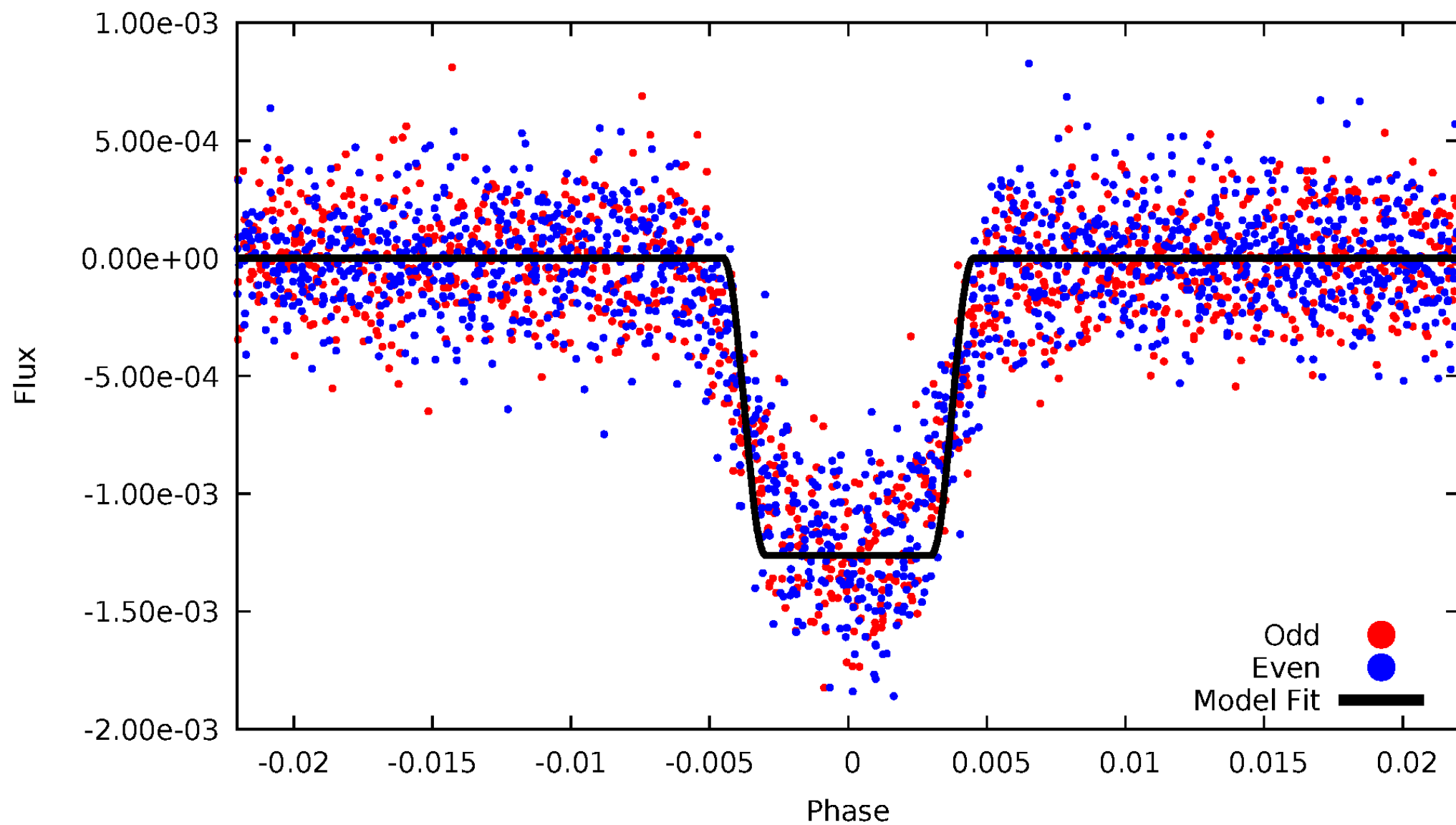
# DV Odd/Even

TCE 004862625-02



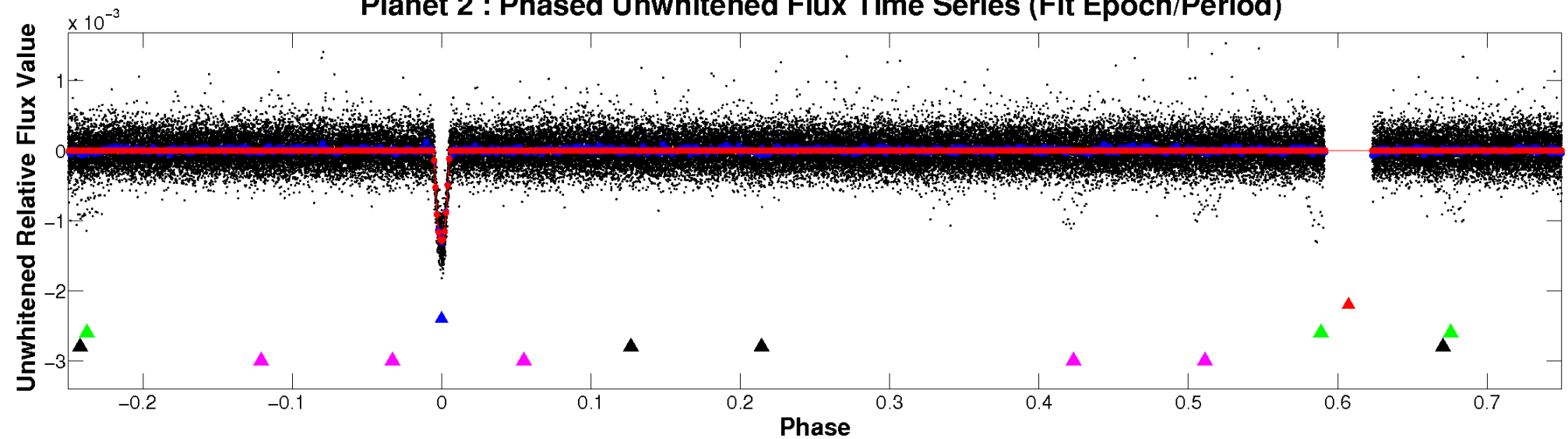
# ALT Odd/Even

TCE 004862625-02

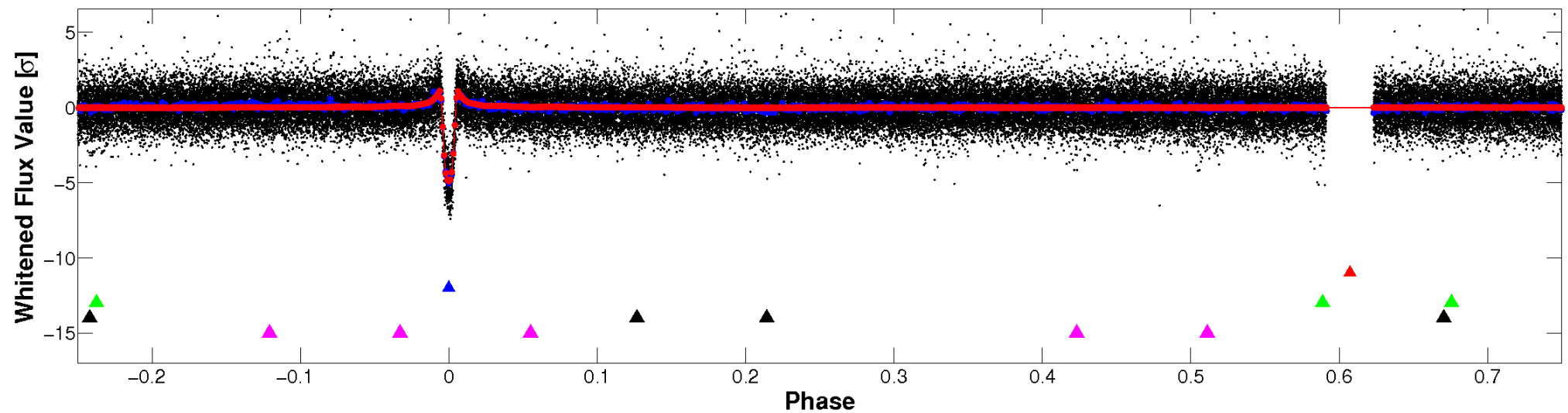


# Non-Whitened Vs. Whitened Light Curve

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

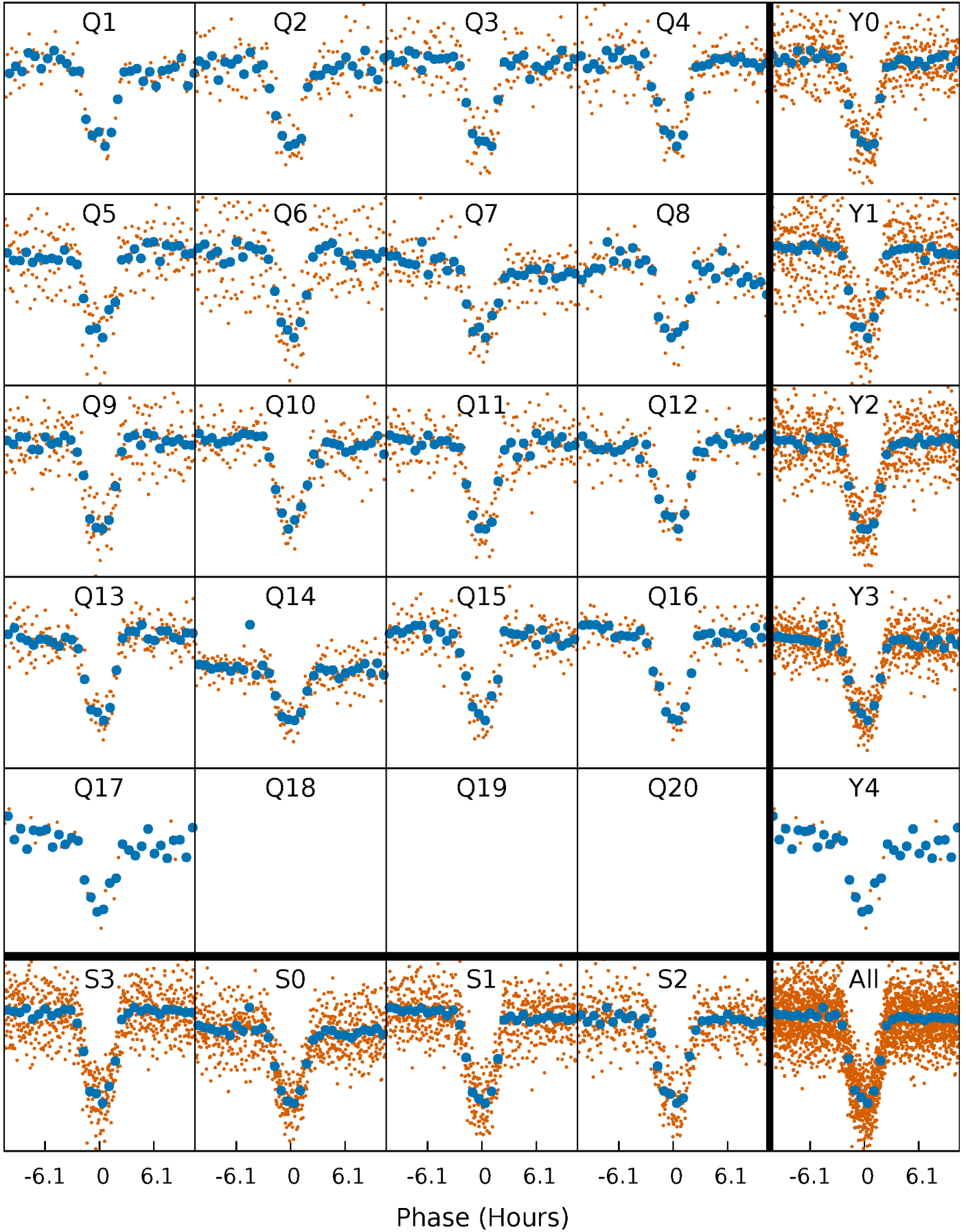


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



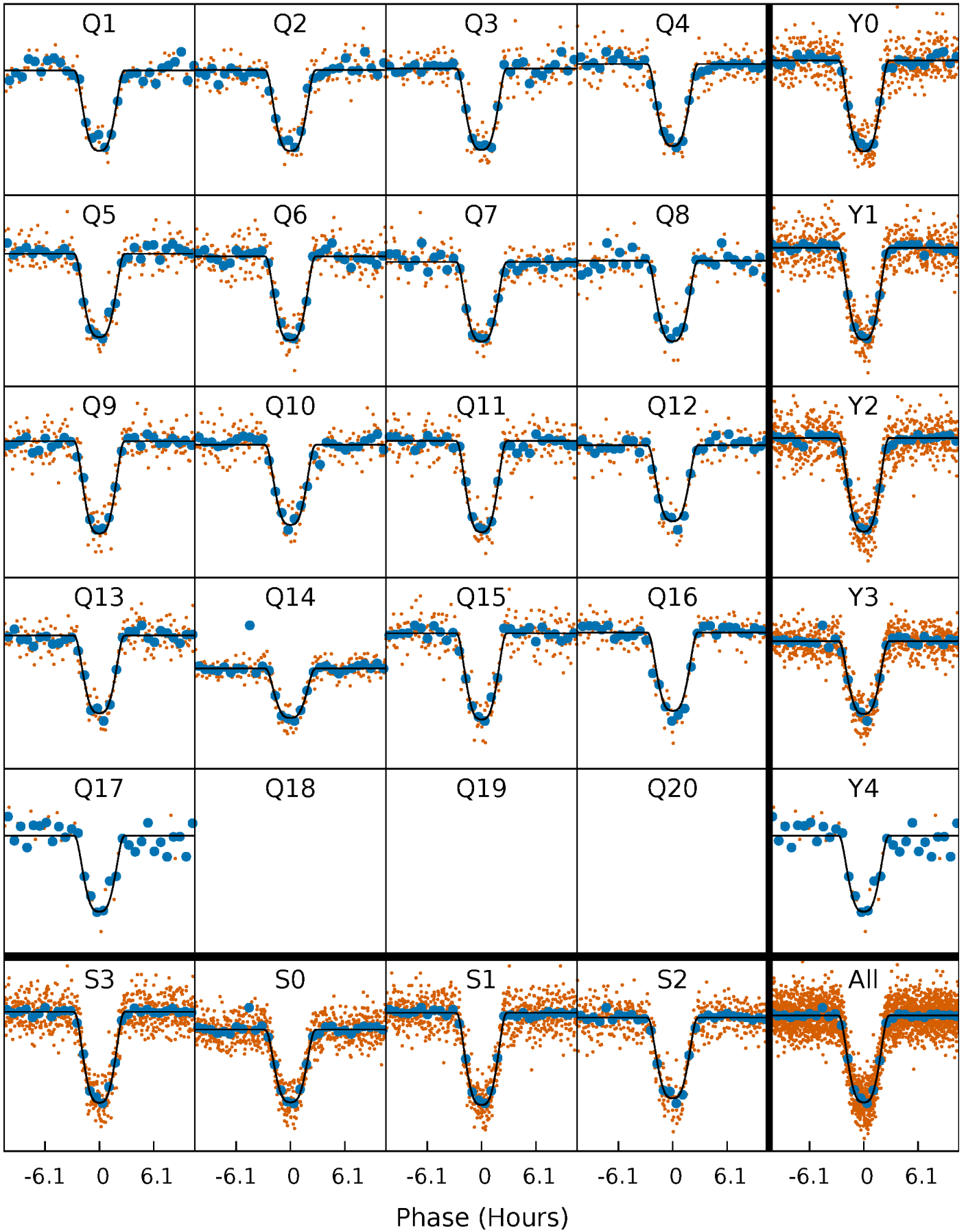
# PDC Quarter-Phased Transit Curves

TCE 004862625-02 P= 20.000232 Days  $T_0=142.675005$  (BKJD)



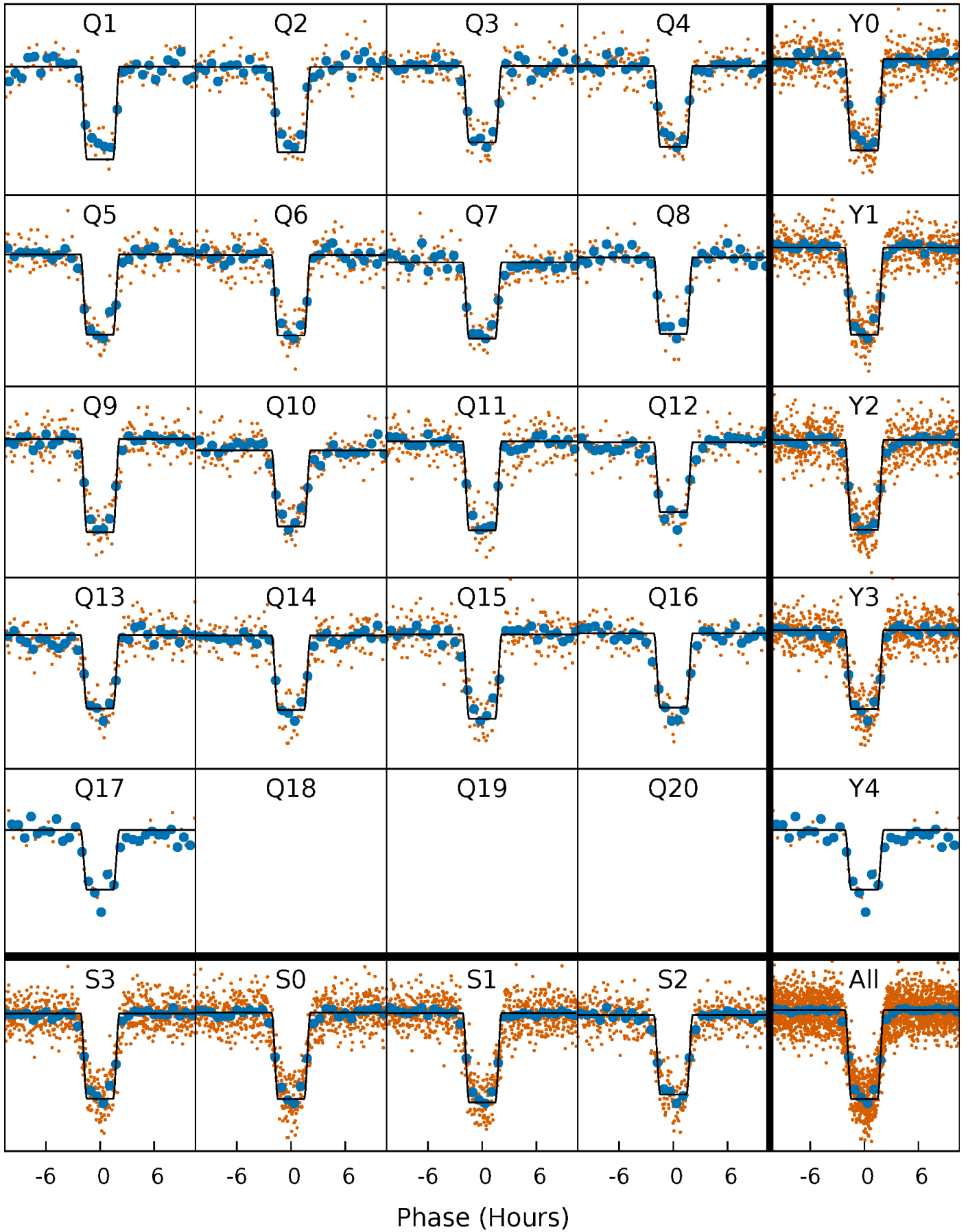
# DV Quarter-Phased Transit Curves

TCE 004862625-02   P= 20.000232 Days    $T_0=142.675005$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

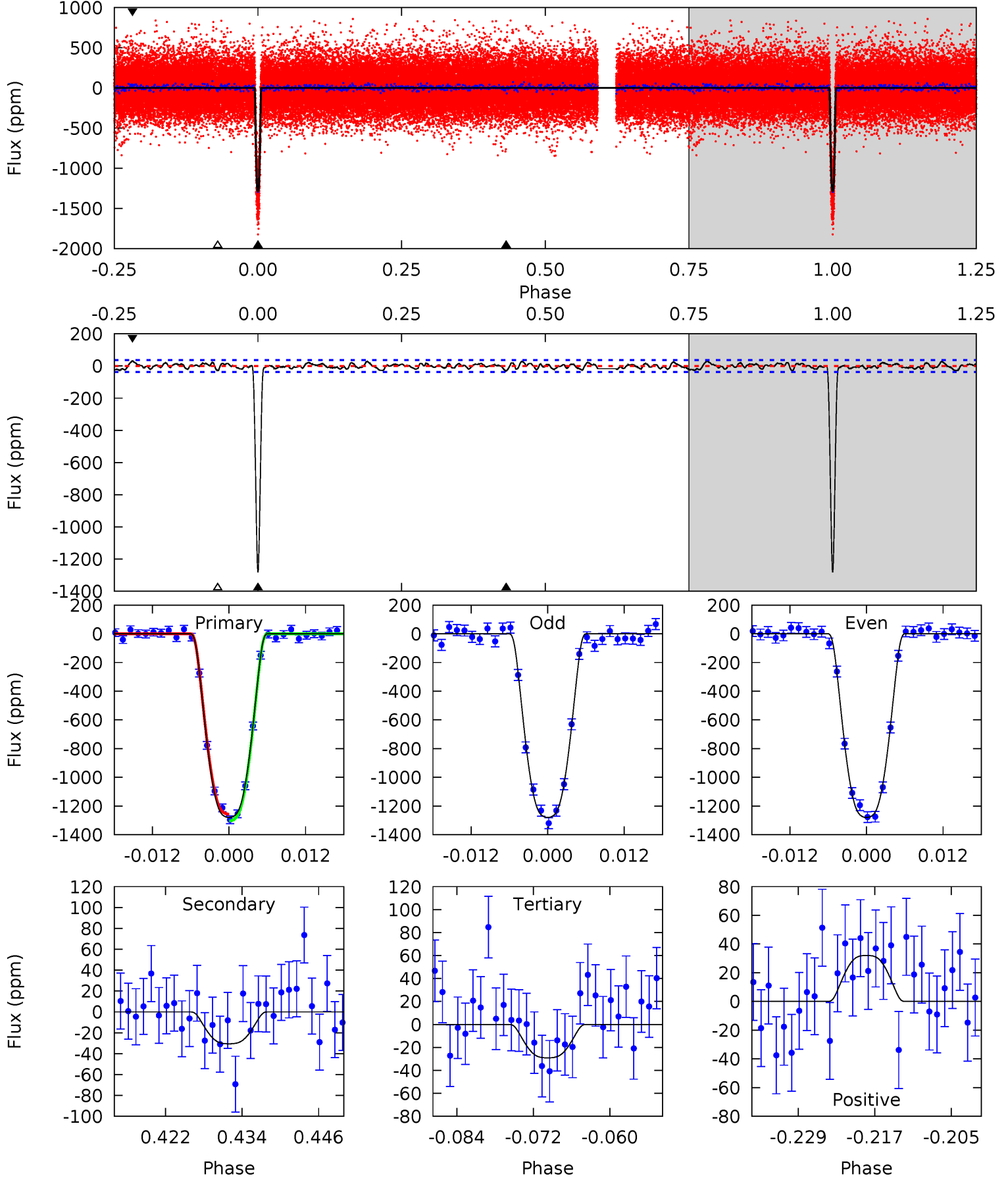
TCE 004862625-02 P= 20.000230 Days  $T_0=142.674824$  (BKJD)



# DV Model-Shift Uniqueness Test

004862625-02, P = 20.000232 Days, E = 122.674773 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
171.9	4.10	3.91	4.31	4.99	2.51	1.61	167.9	167.5	0.19	-0.21	0.03	0.99	0.02	3.15

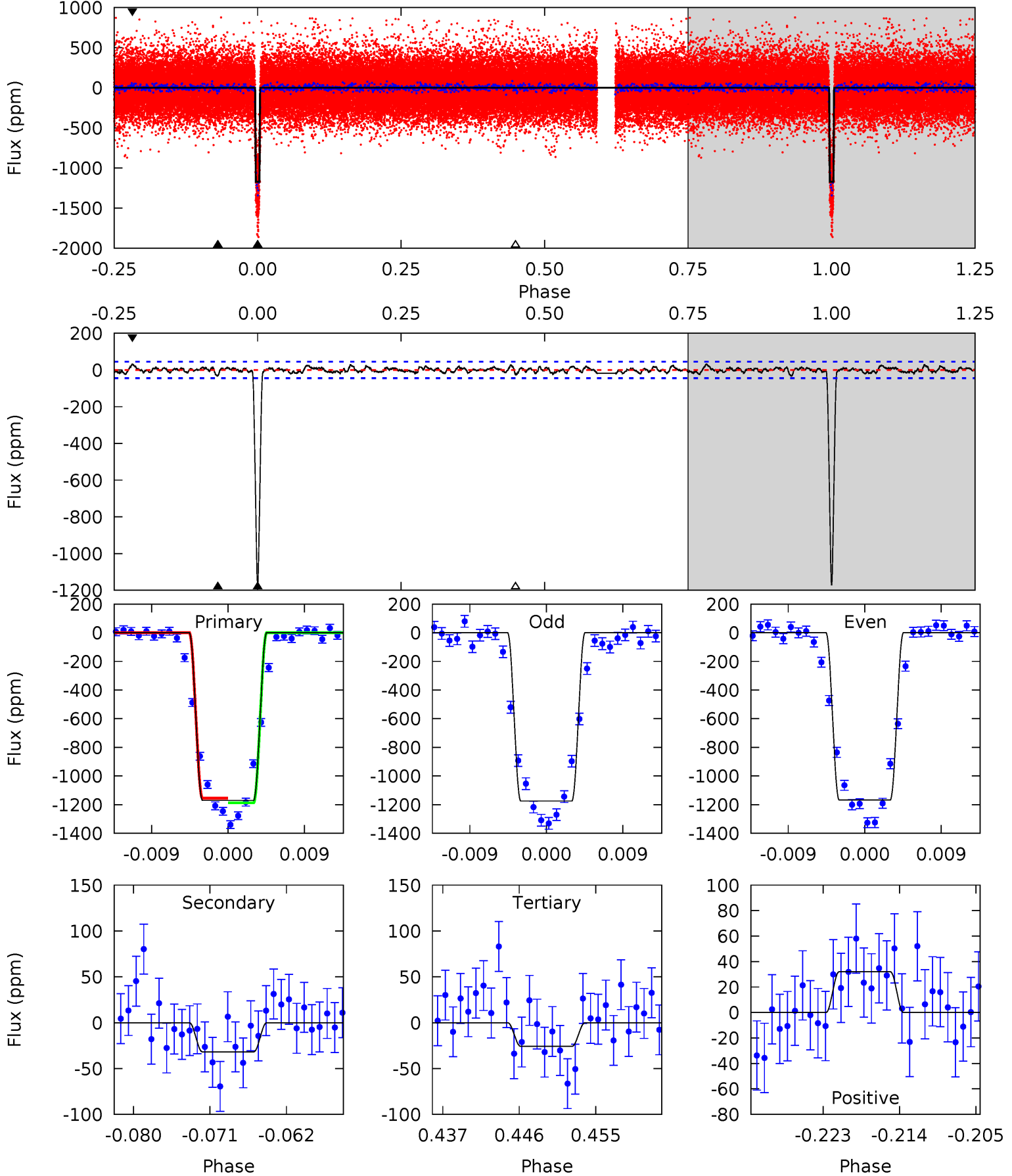




# Alt Model-Shift Uniqueness Test

004862625-02, P = 20.000230 Days, E = 122.674594 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
131.8	3.59	2.91	3.60	5.05	2.62	1.15	128.9	128.2	0.68	-0.01	0.42	0.99	0.03	1.77



### Stellar Parameters For KIC 004862625

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6373^{+151}_{-189}$	$4.438^{+0.062}_{-0.188}$	$-0.240^{+0.250}_{-0.300}$	$1.047^{+0.298}_{-0.106}$	$1.094^{+0.143}_{-0.143}$	$1.343^{+0.431}_{-0.636}$
	+2%/-3%	+1%/-4%	+104%/-125%	+28%/-10%	+13%/-13%	+32%/-47%
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 004862625-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-31 \pm 7$	$4.81^{+0.76}_{-0.36}$	$1058^{+75}_{-47}$	$2989^{+110}_{-127}$	$15^{+5}_{-5}$
Alt.	$-32 \pm 9$	$4.13^{+0.72}_{-0.29}$	$1062^{+68}_{-49}$	$3130^{+130}_{-165}$	$21^{+7}_{-7}$

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

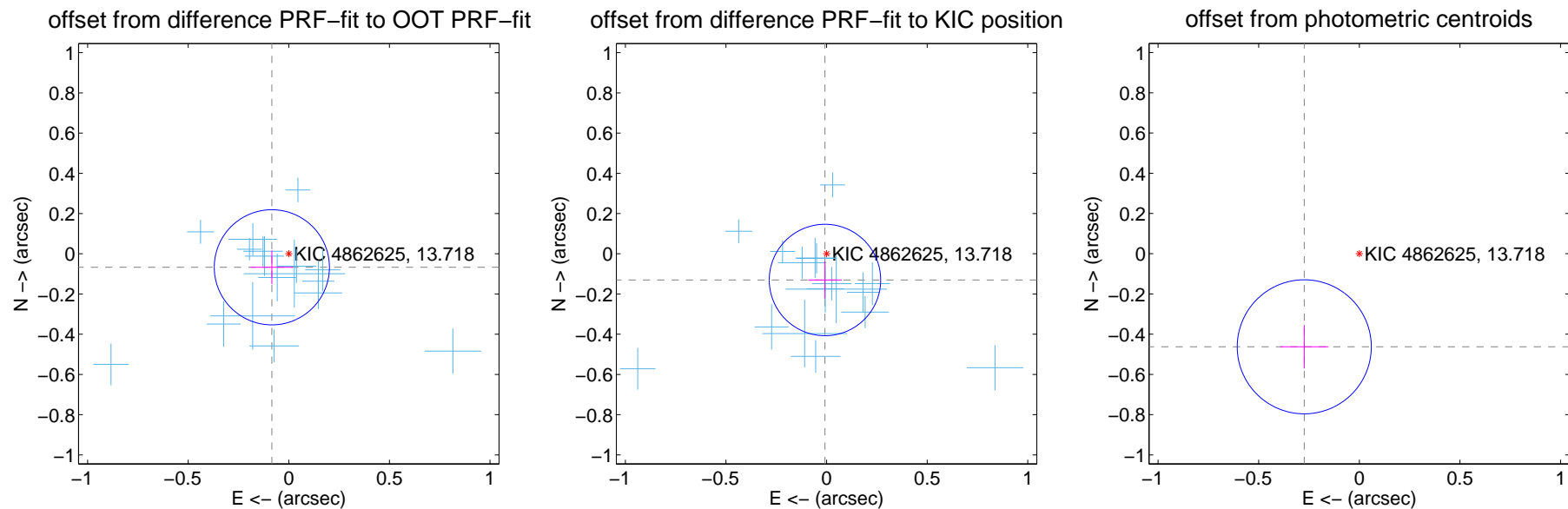
## DV Centroid Data

Supplemental centroid analysis for 004862625-02. Kepler magnitude: 13.72. Transit SNR 90.47

There are 17 quarters with good PRF difference image offsets

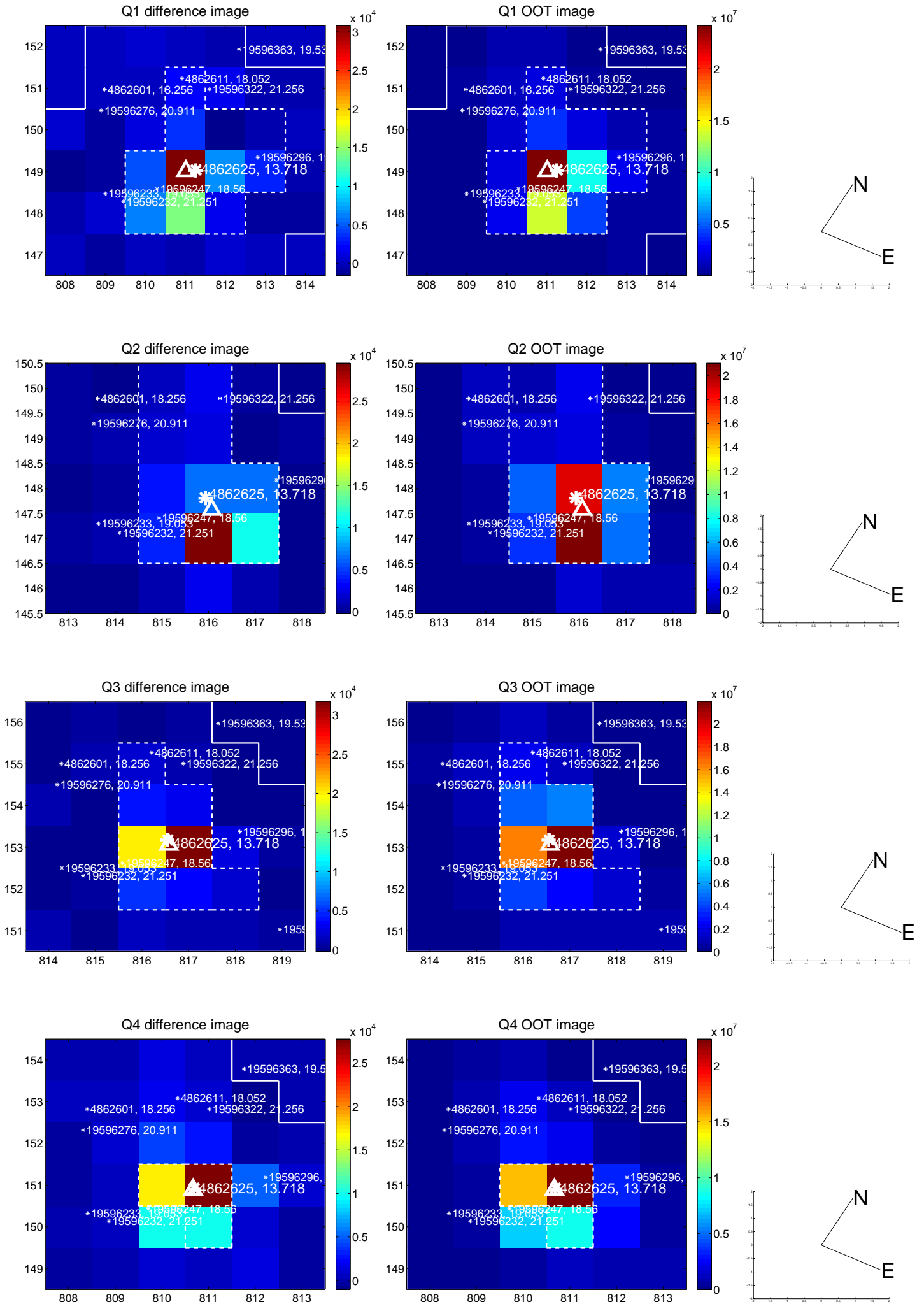
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.108 \pm 0.095$	1.13	$0.084 \pm 0.104$	$-0.067 \pm 0.084$
PRF-fit source offset from KIC position	$0.131 \pm 0.092$	1.41	$0.008 \pm 0.083$	$-0.130 \pm 0.092$
photometric centroid source offset	$0.54 \pm 0.11$	4.84	$0.27 \pm 0.12$	$-0.46 \pm 0.11$

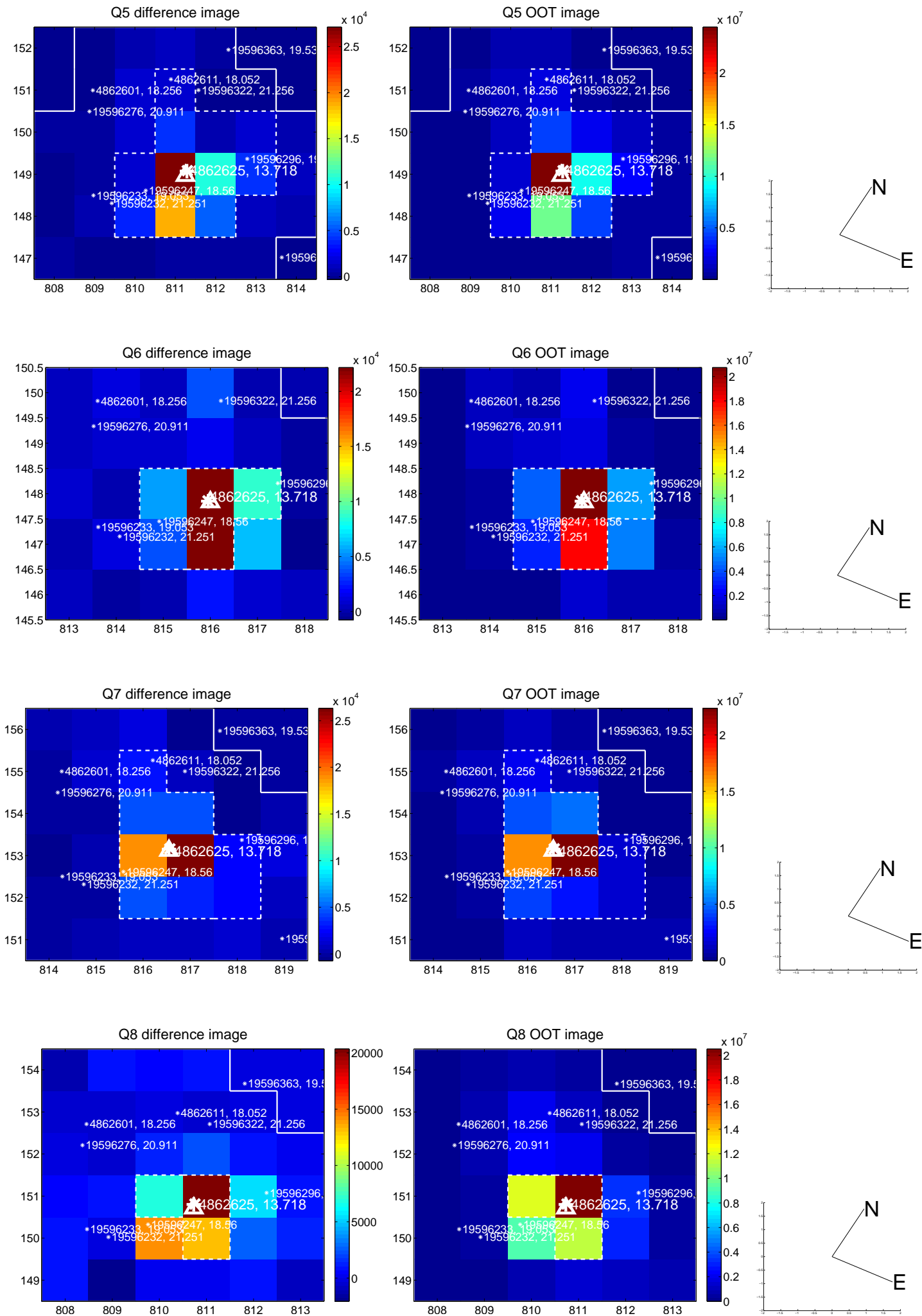


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

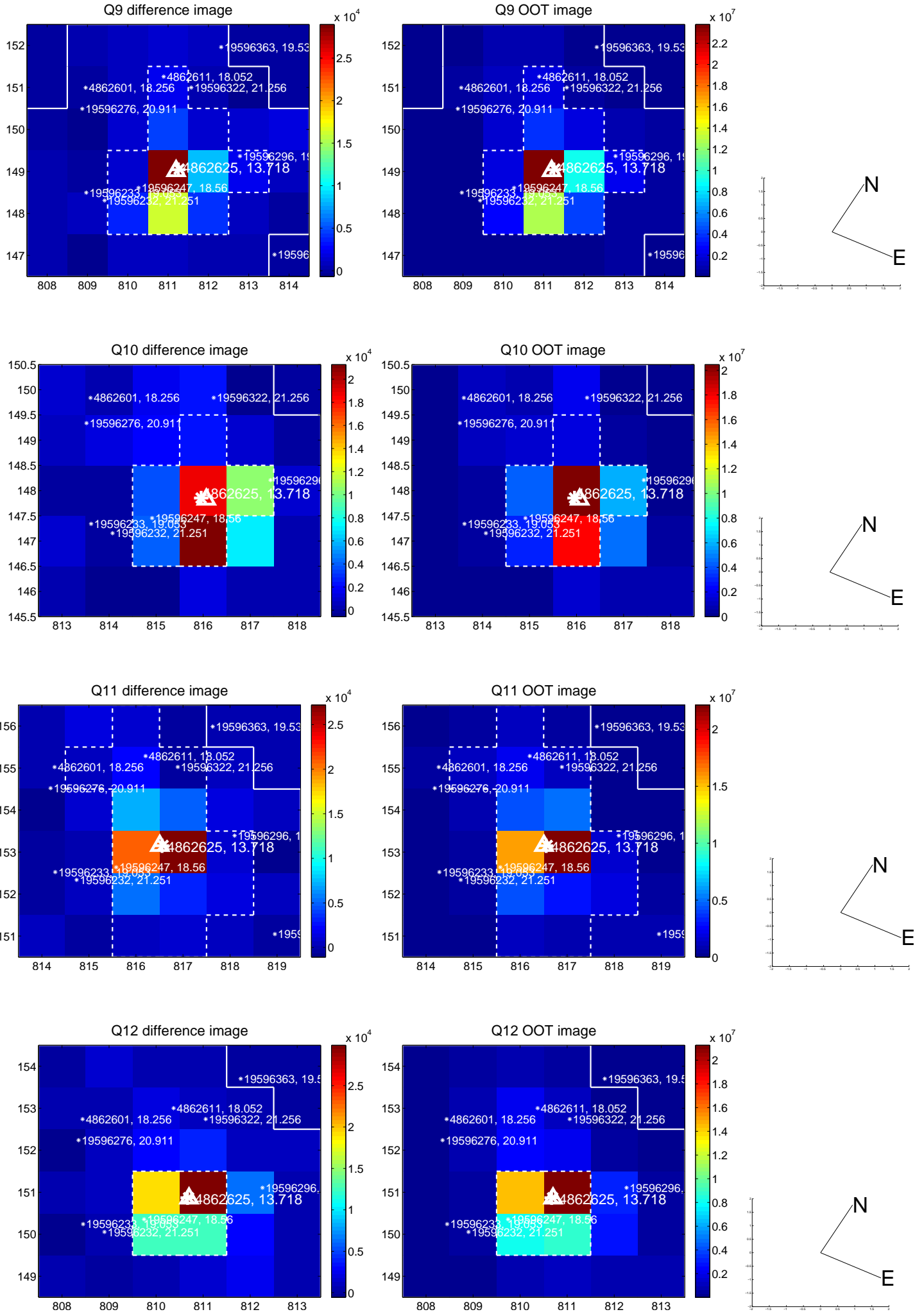
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



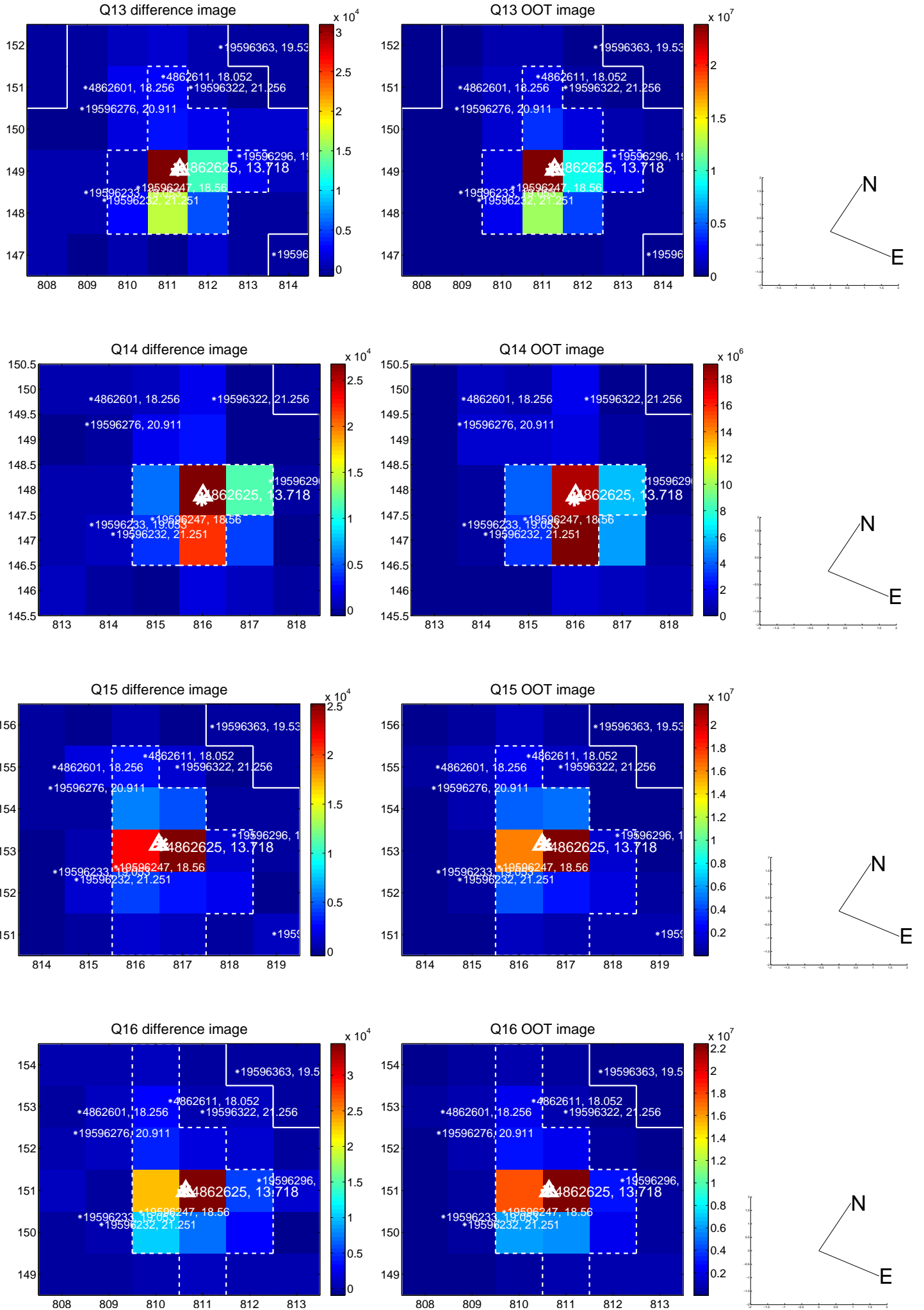
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

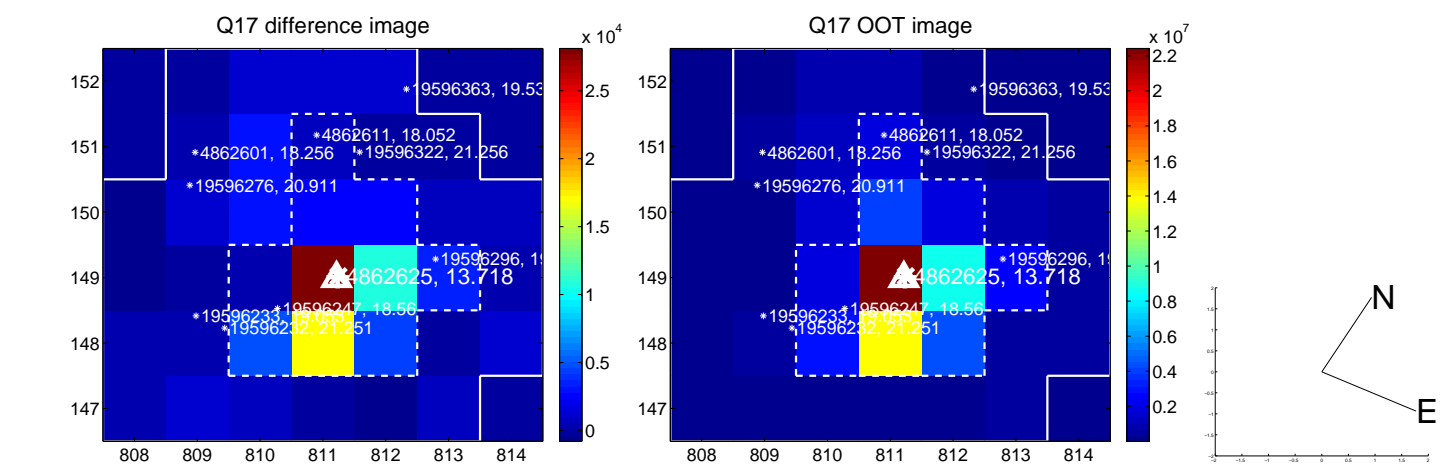


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

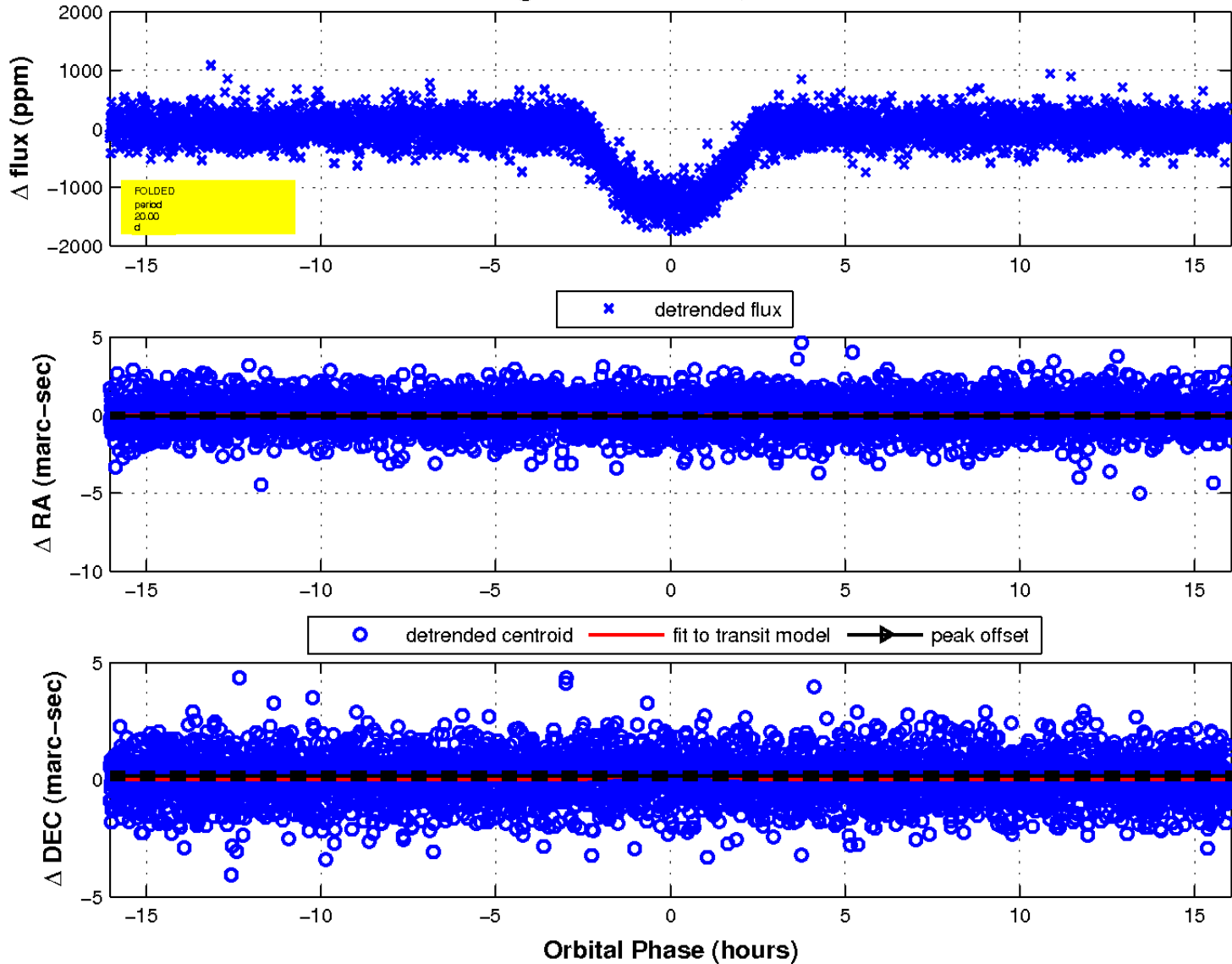




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

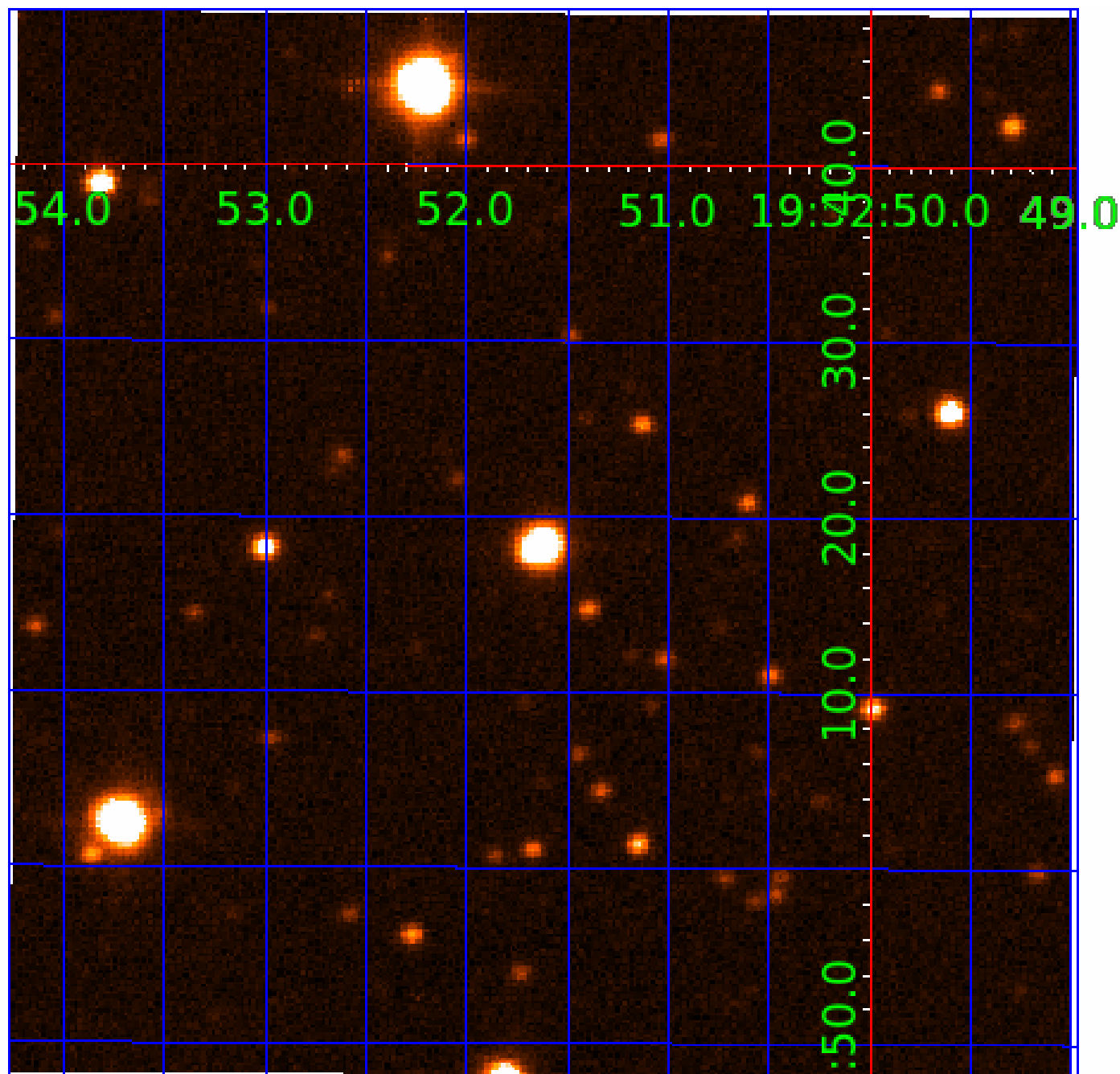


fluxWeightedCentroids, Planet 2 of 5



UKIRT Image

Declination



# KIC 004862625

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004862625-01	OBS	6464.01	20.000245	134.820264	13093.7	4.977	859.7	824.9	1.05	6373	19.43	73.26
004862625-02	OBS	No	20.000232	142.675005	1288.6	5.354	91.7	90.5	1.05	6373	4.71	73.26
004862625-03	OBS	6464.03	541.743332	374.454915	1089.0	10.423	17.8	19.2	1.05	6373	3.52	0.90
004862625-04	OBS	No	409.130099	237.836116	621.1	16.754	16.4	13.5	1.05	6373	3.24	1.31
004862625-05	OBS	No	270.882617	240.260490	616.5	10.407	11.9	14.4	1.05	6373	2.76	2.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004862625-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
004862625-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
004862625-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004862625-04	OBS	FP	0.00	1	0	0	0	ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004862625-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

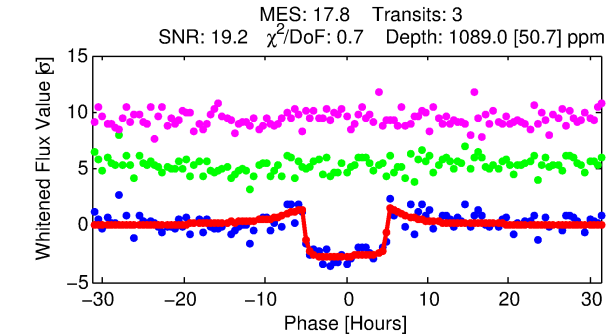
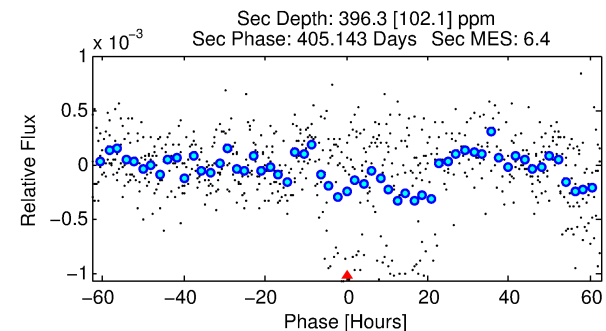
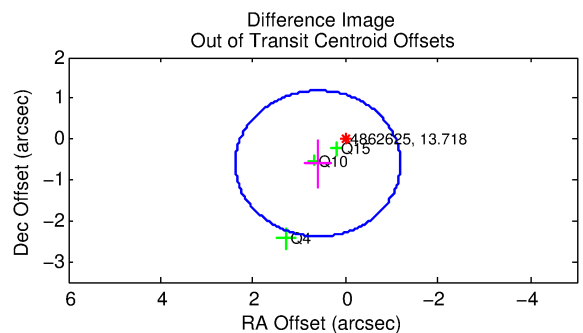
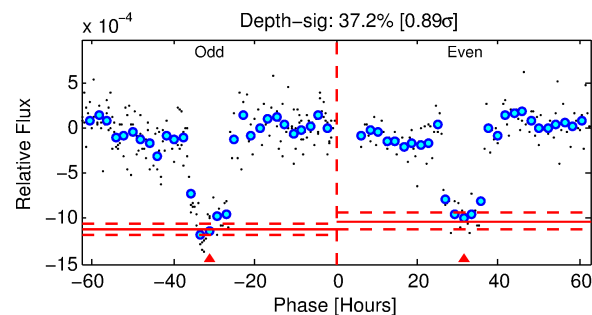
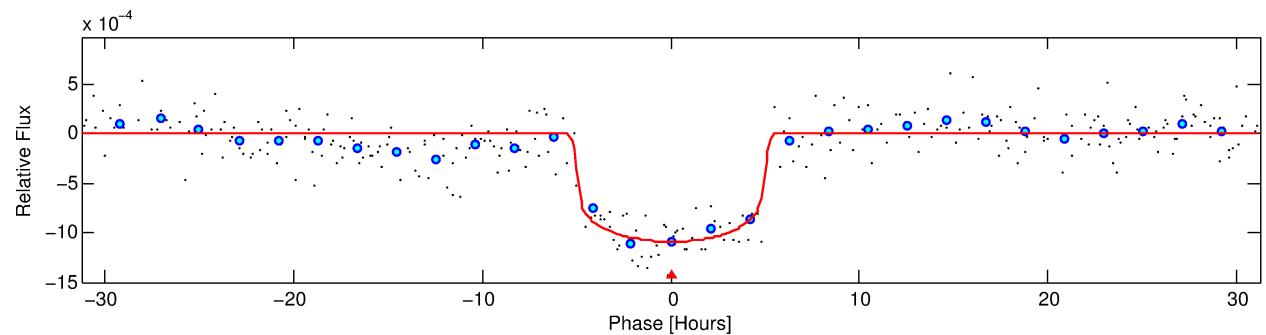
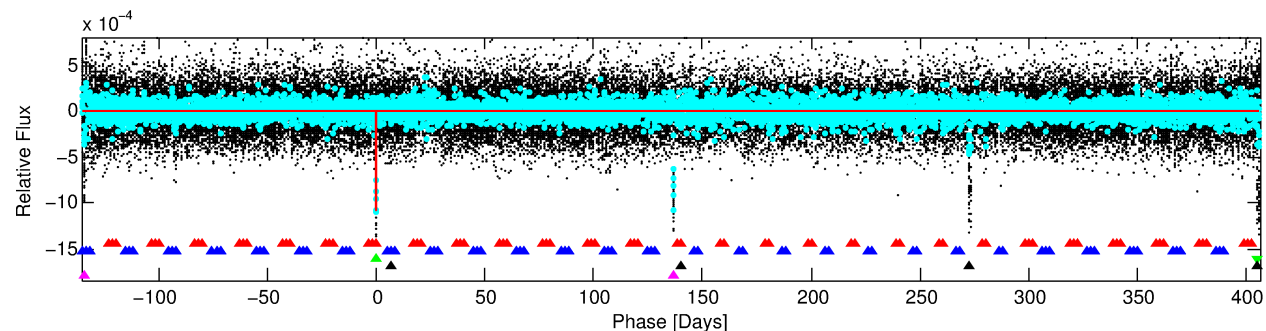
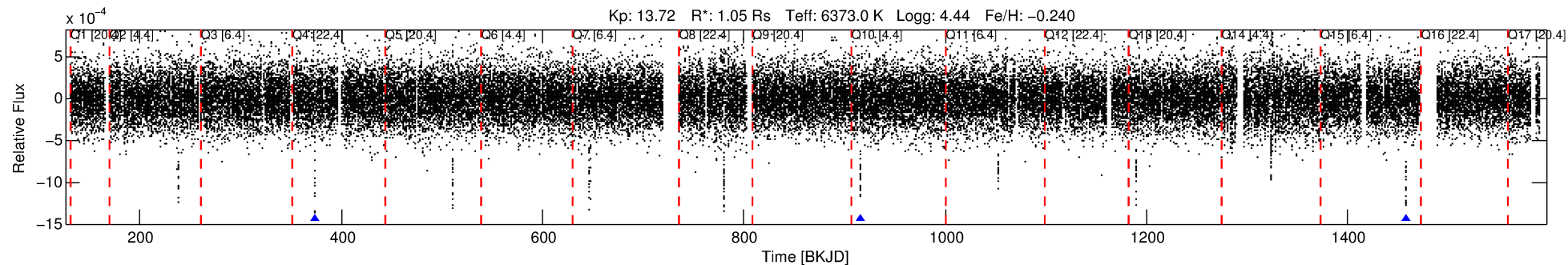
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 004862625-03

No Significant Match Found

# DV One-Page Summary

KIC: 4862625 Candidate: 3 of 5 Period: 541.743 d  
KOI: K06464.03 Corr: 0.913



## DV Fit Results:

Period = 541.74333 [0.00365] d  
Epoch = 374.4549 [0.0053] BKJD  
Rp/R\* = 0.0308 [0.0053]  
a/R\* = 381.92 [333.87]  
b = 0.37 [2.05]  
Seff = 0.90 [0.33]  
Teq = 248 [23] K  
Rp = 3.52 [1.17] Re  
a = 1.3413 [0.3197] AU  
Ag = 31708.61 [17469.62] [1.82 $\sigma$ ]  
Teffp = 5125 [571] K [8.54 $\sigma$ ]

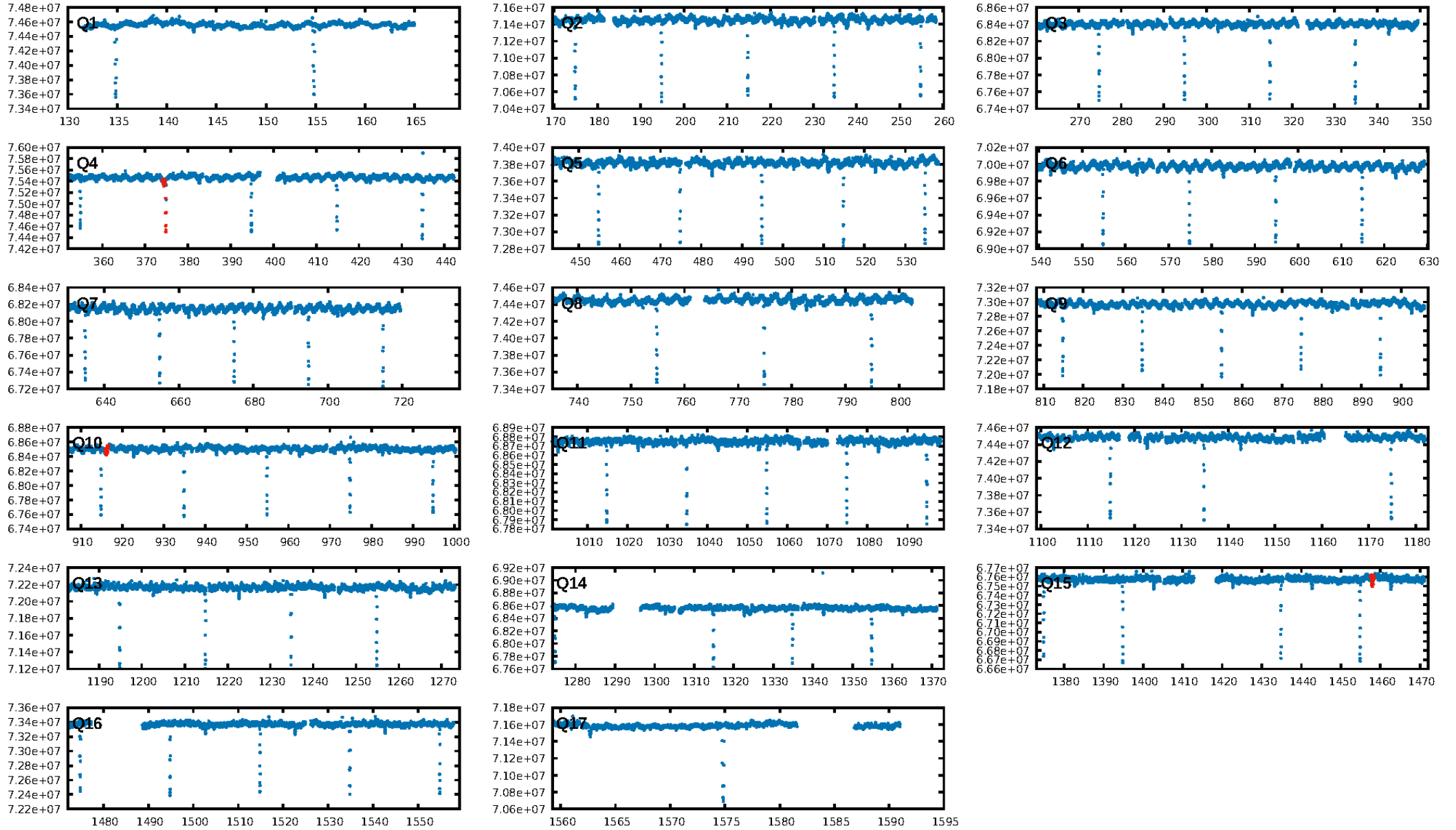
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [161.30 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 3.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.32e-83  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 6.523  
Centroid-sig: 66.7%  
Centroid-so: 0.418 arcsec [1.26 $\sigma$ ]  
OotOffset-rm: 0.850 arcsec [1.43 $\sigma$ ]  
KicOffset-rm: 0.866 arcsec [1.74 $\sigma$ ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 0.67 [2/3]

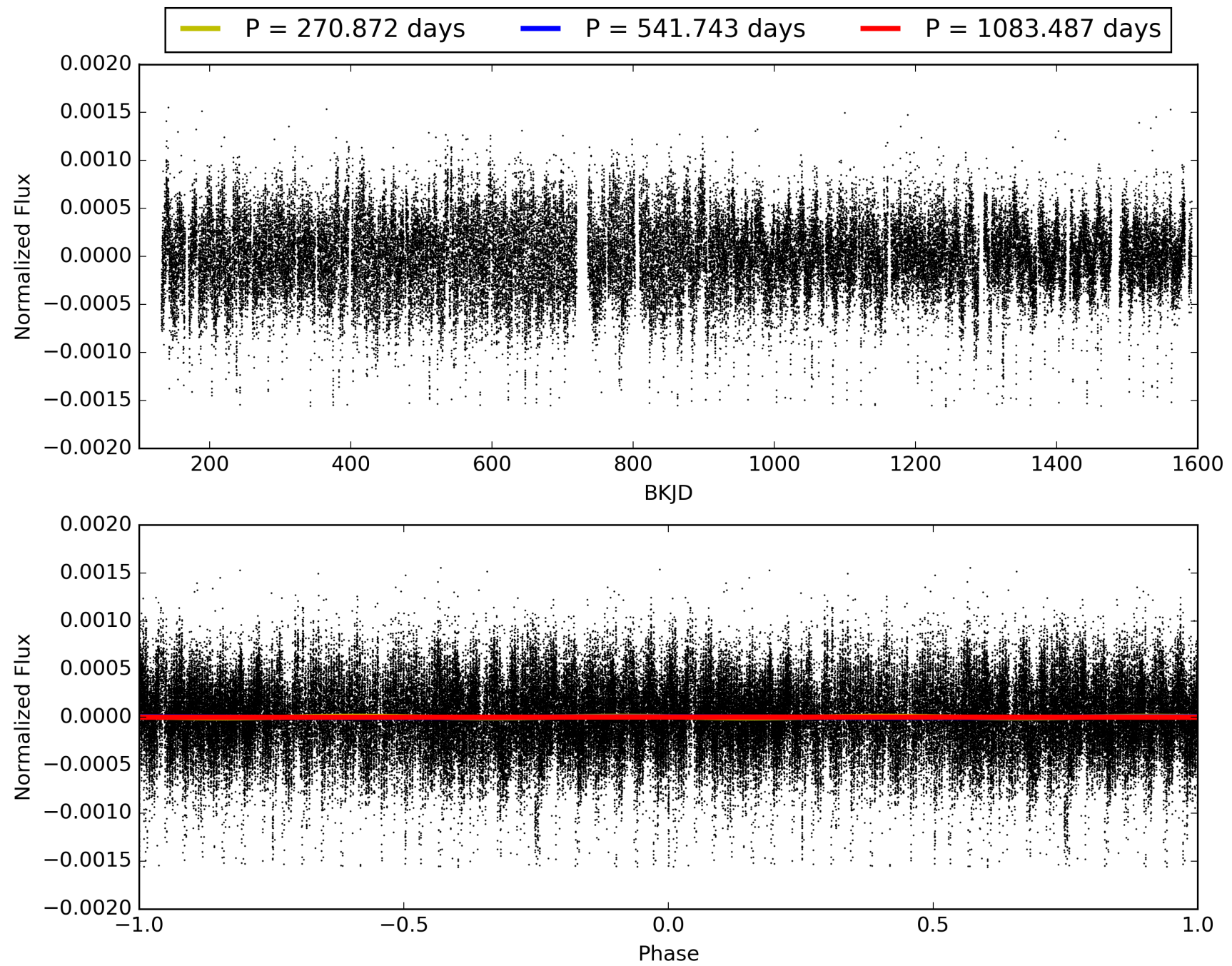
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:20:53 Z

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

# TCE 004862625-03, PDC Light Curves

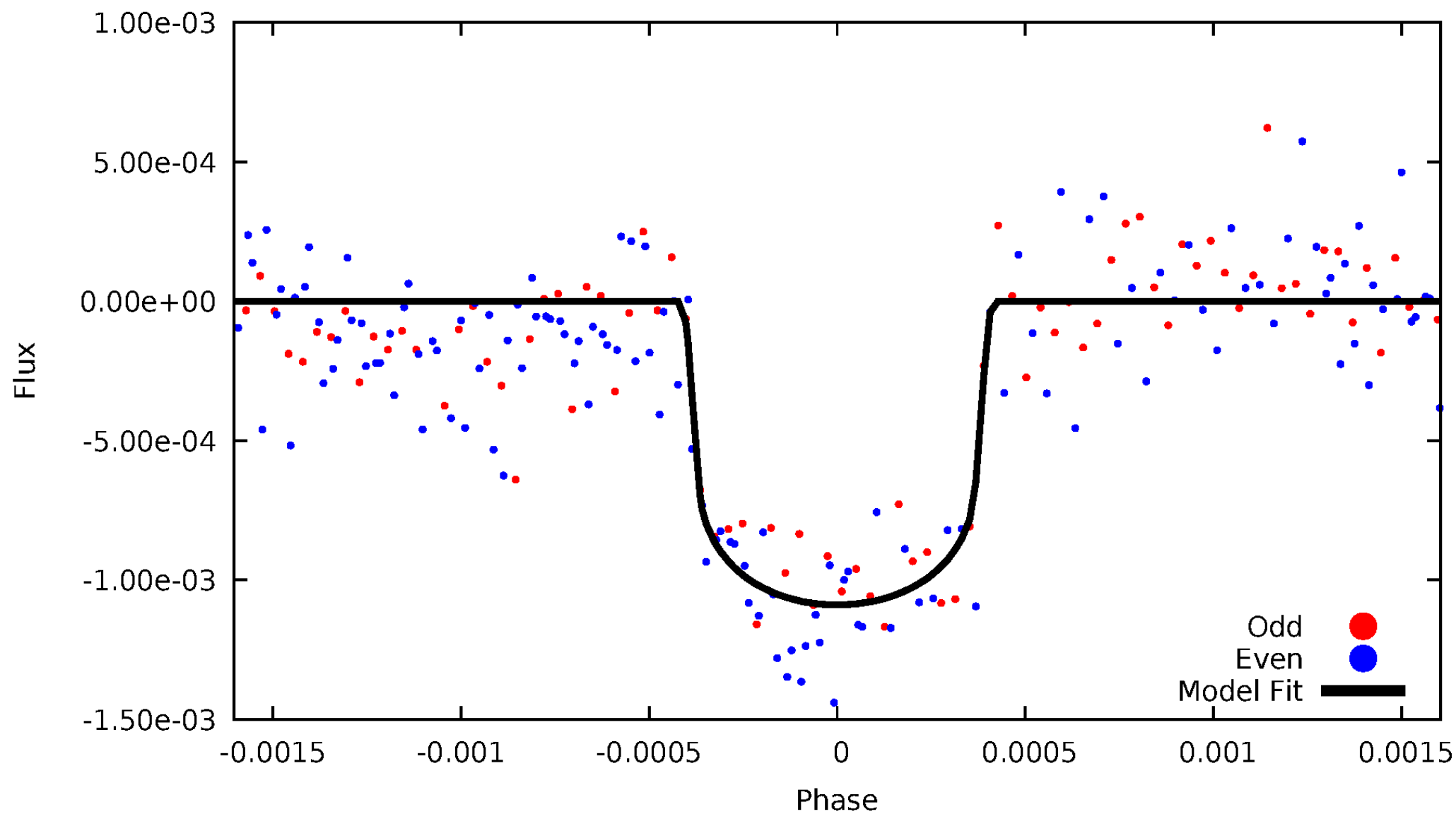


TCE 004862625-03



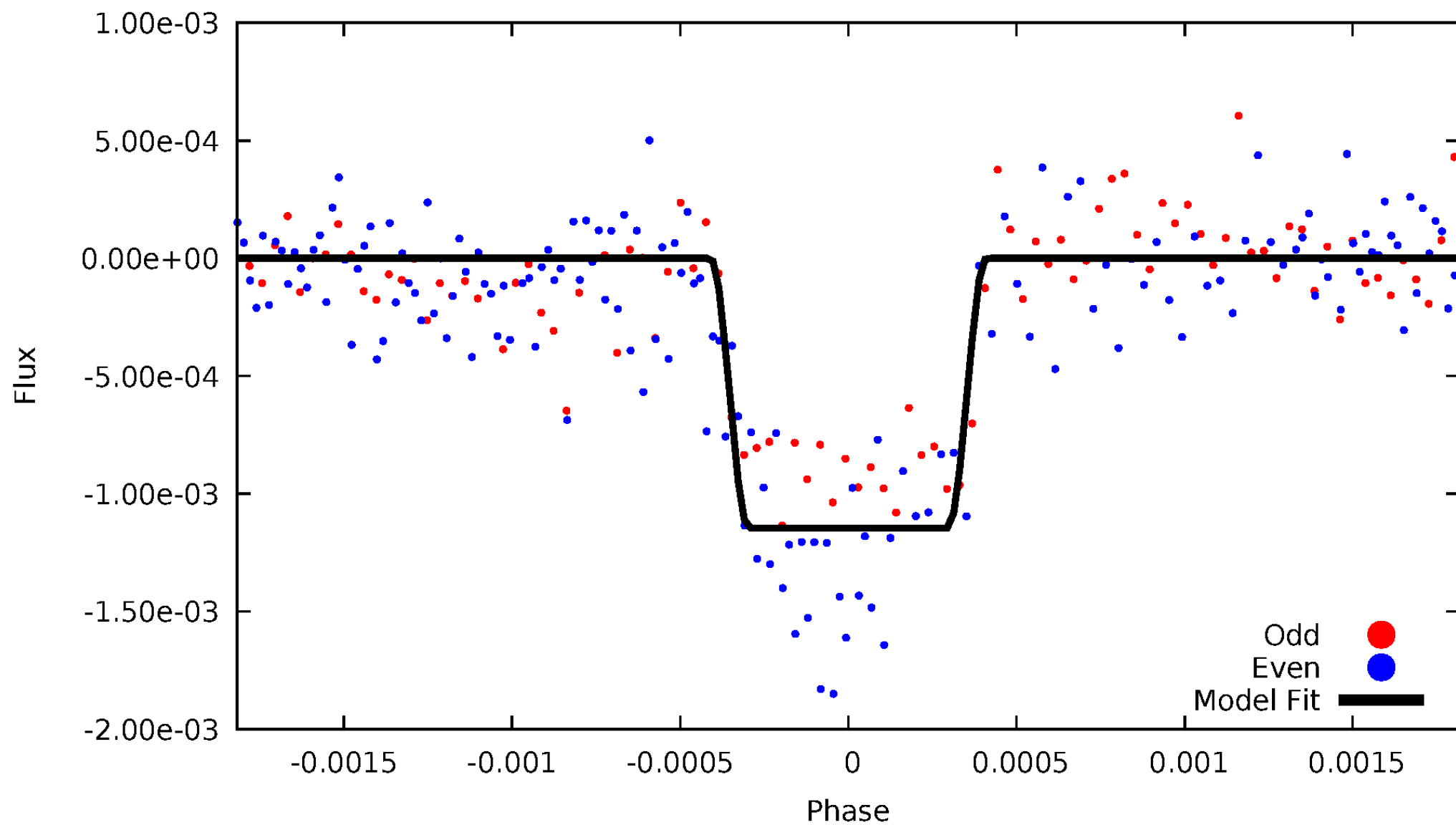
# DV Odd/Even

TCE 004862625-03



# ALT Odd/Even

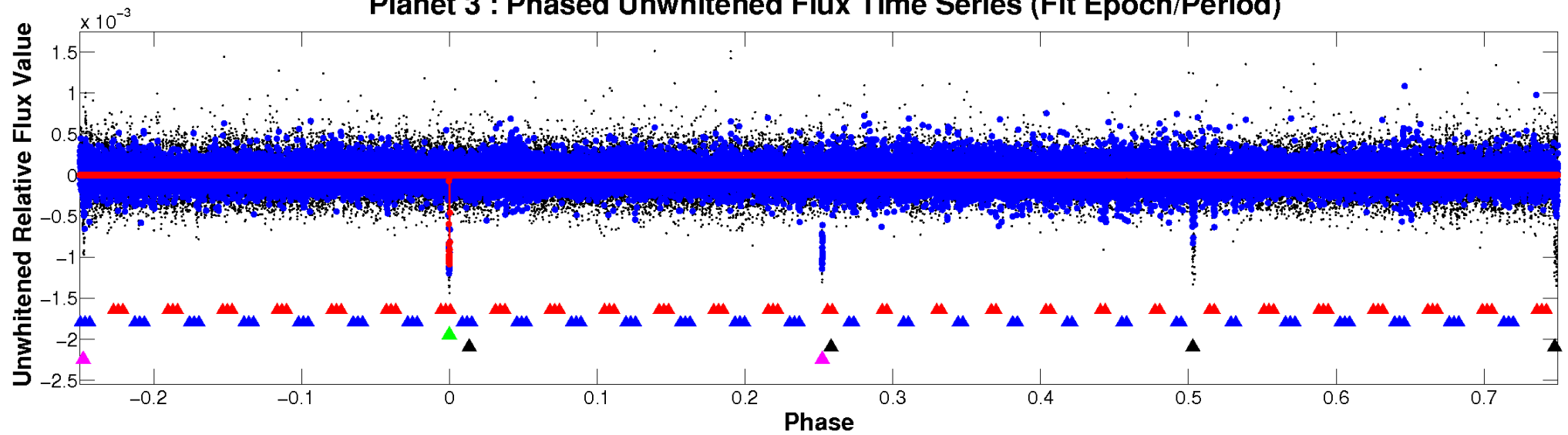
TCE 004862625-03



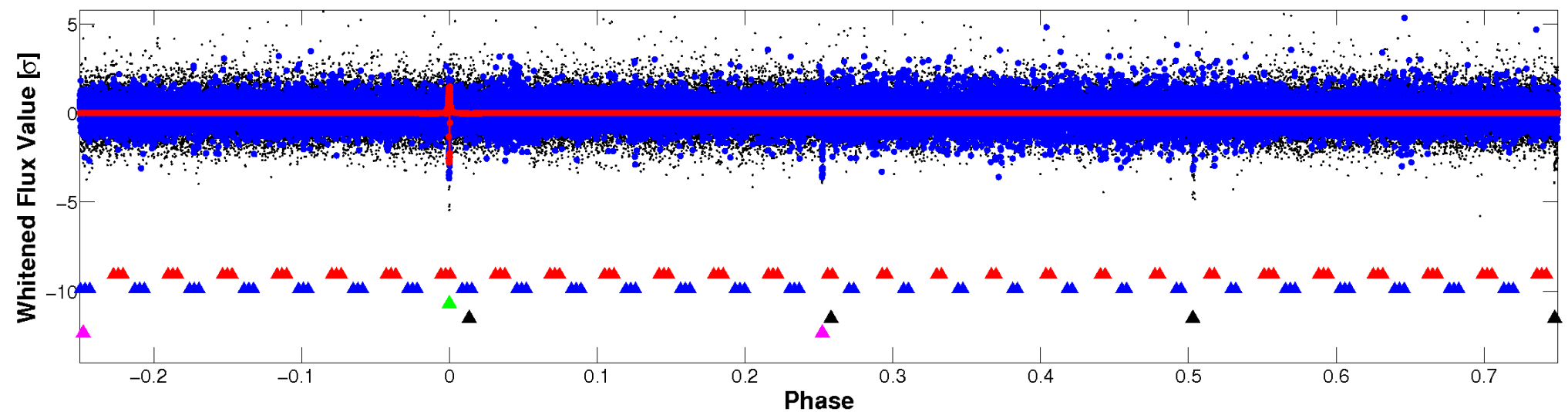


# Non-Whitened Vs. Whitened Light Curve

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



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



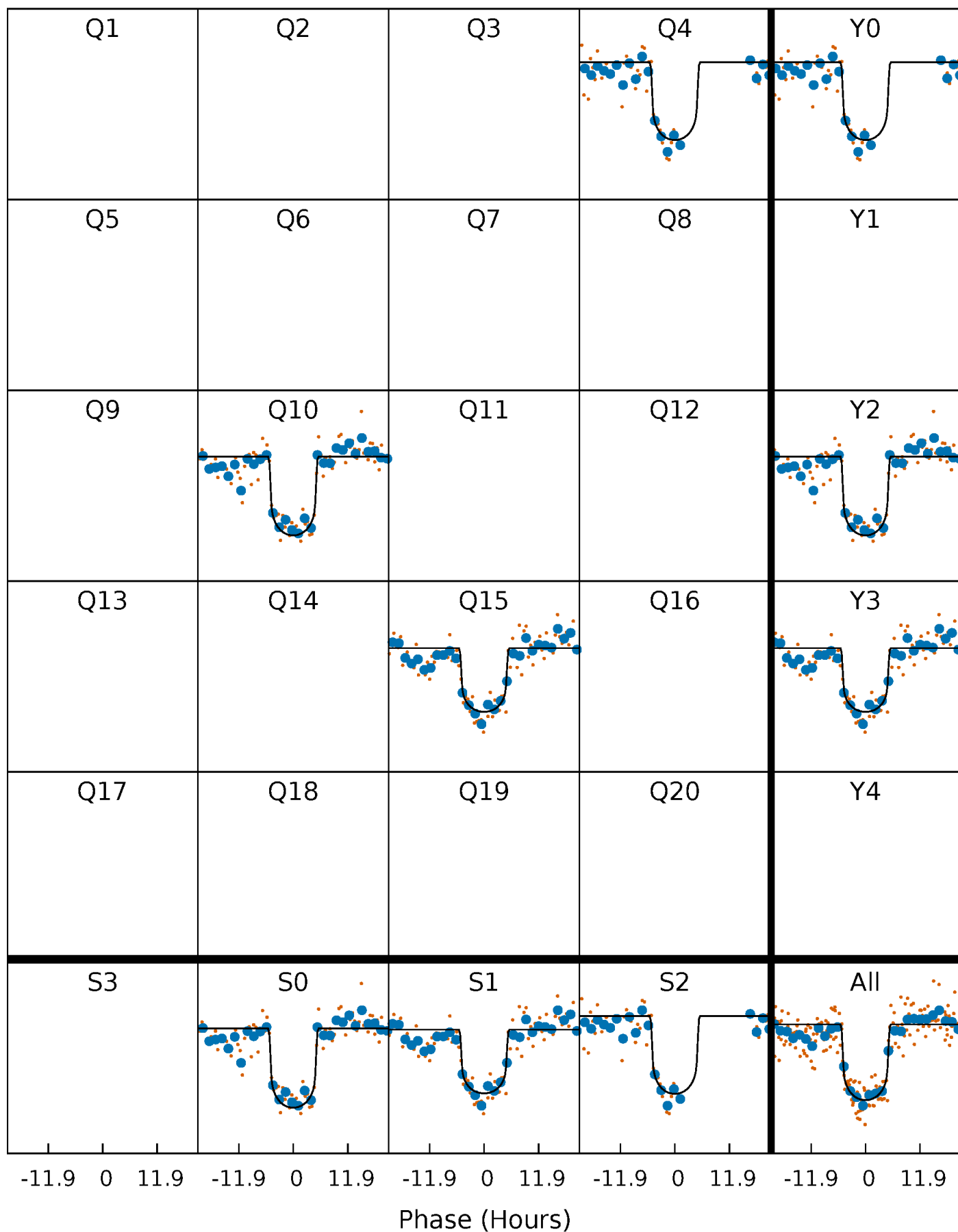
# PDC Quarter-Phased Transit Curves

TCE 004862625-03     $P=541.743332$  Days     $T_0=374.454915$  (BKJD)



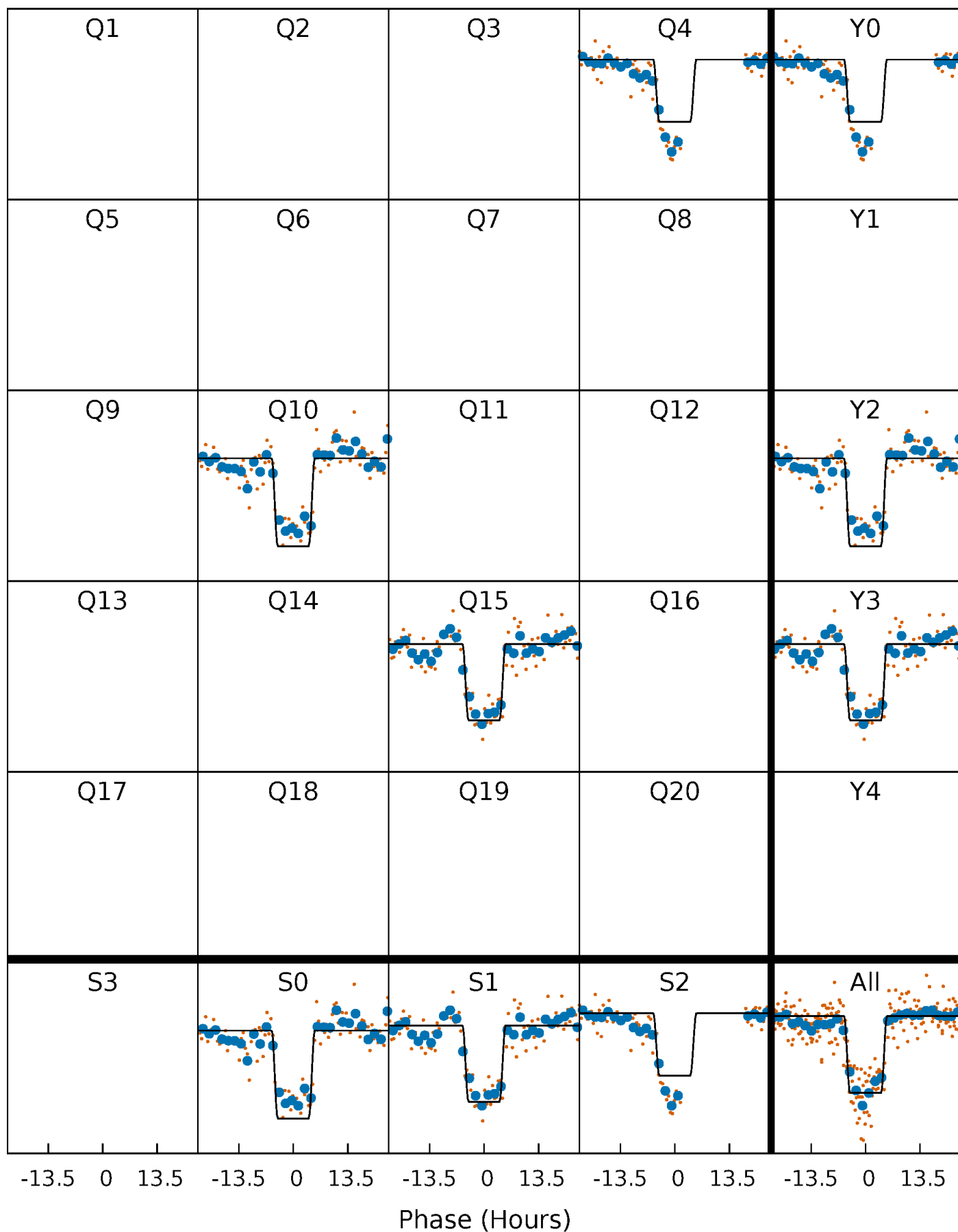
# DV Quarter-Phased Transit Curves

TCE 004862625-03     $P=541.743332$  Days     $T_0=374.454915$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

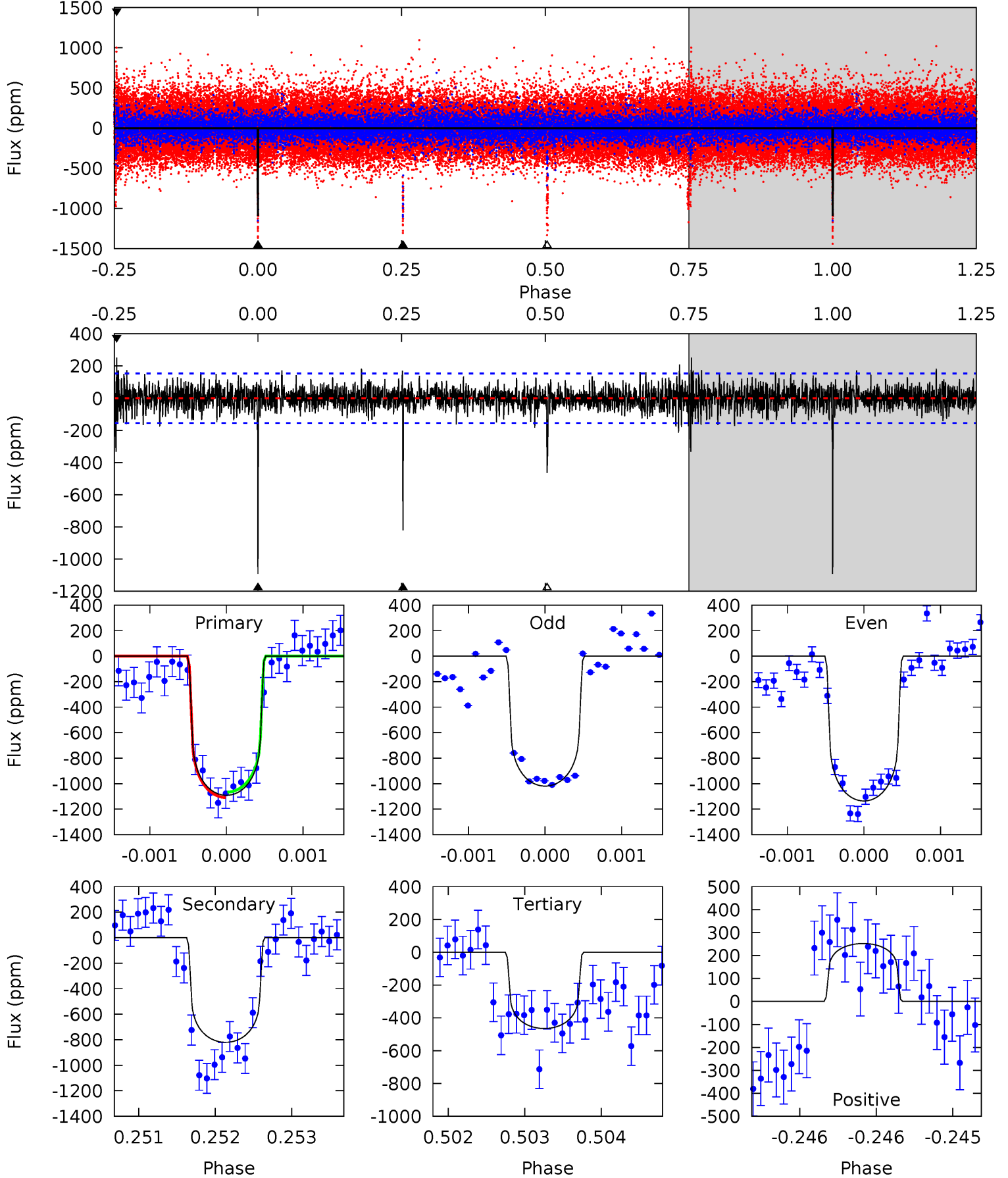
TCE 004862625-03   P=541.761787 Days    $T_0=374.427403$  (BKJD)



# DV Model-Shift Uniqueness Test

004862625-03, P = 541.743332 Days, E = 374.454915 Days

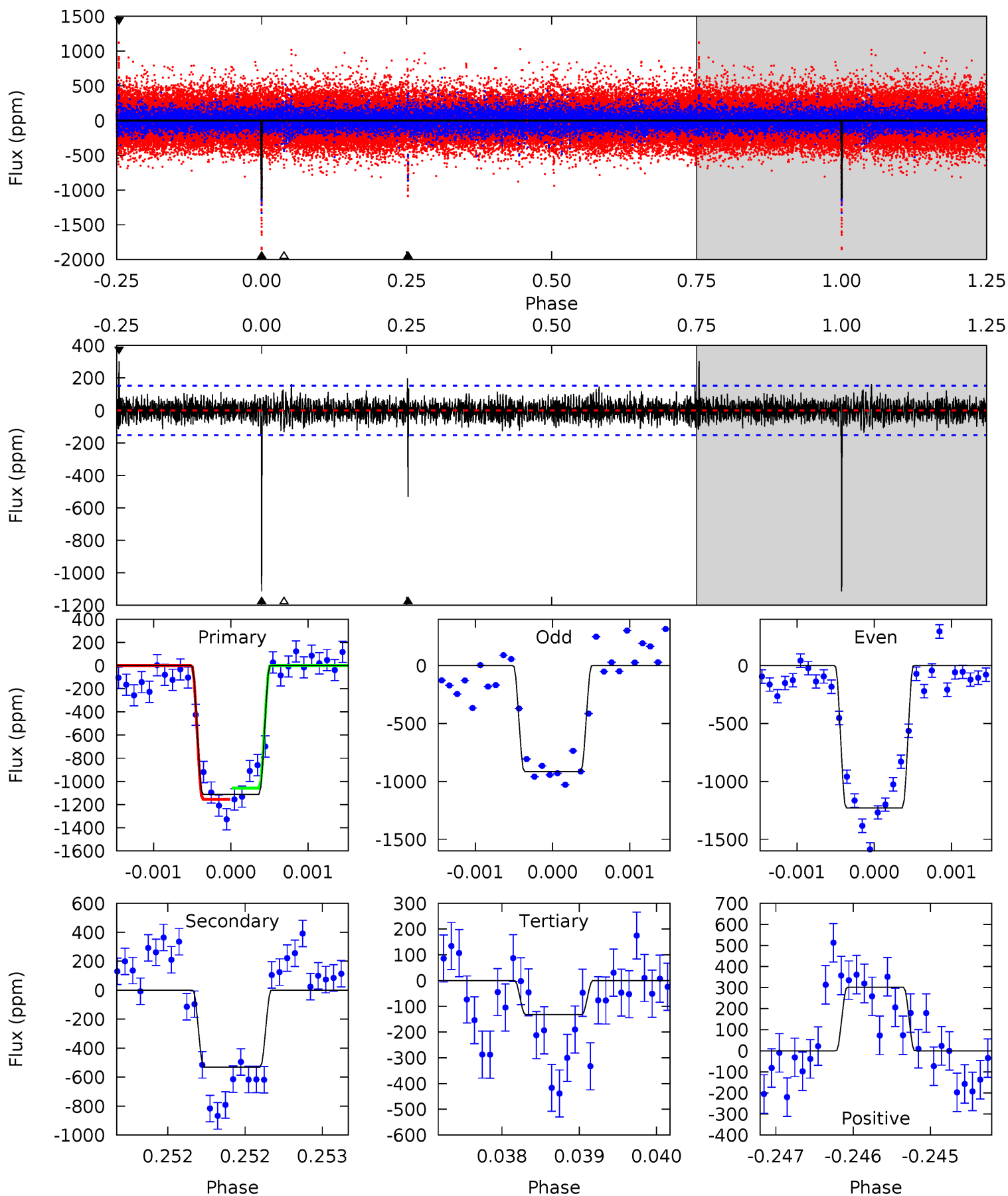
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.8	29.2	16.5	8.98	5.48	3.34	1.95	22.3	29.9	12.7	20.2	2.01	0.97	0.19	0.75



# Alt Model-Shift Uniqueness Test

004862625-03, P = 541.761787 Days, E = 374.427403 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
40.1	19.1	4.77	10.9	5.49	3.35	1.47	35.4	29.3	14.4	8.25	5.49	1.09	0.21	1.74



### Stellar Parameters For KIC 004862625

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6373^{+151}_{-189}$	$4.438^{+0.062}_{-0.188}$	$-0.240^{+0.250}_{-0.300}$	$1.047^{+0.298}_{-0.106}$	$1.094^{+0.143}_{-0.143}$	$1.343^{+0.431}_{-0.636}$
	+2%/-3%	+1%/-4%	+104%/-125%	+28%/-10%	+13%/-13%	+32%/-47%
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 004862625-03 / KOI 6464.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-820 \pm 28$	$3.66^{+0.76}_{-0.69}$	$352^{+21}_{-16}$	$6117^{+618}_{-475}$	$60158^{+29675}_{-18407}$
Alt.	$-530 \pm 28$	$4.00^{+0.79}_{-0.73}$	$352^{+24}_{-16}$	$5290^{+424}_{-335}$	$32319^{+14555}_{-9738}$

$T_{\text{max}}$  = 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

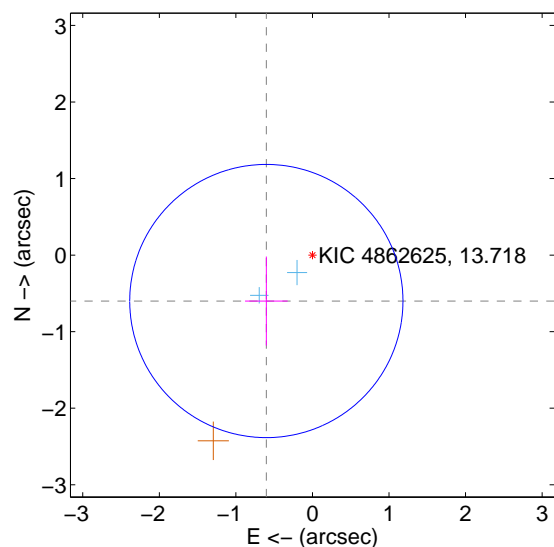
Supplemental centroid analysis for 004862625-03. Kepler magnitude: 13.72. Transit SNR 19.23

There are 2 quarters with good PRF difference image offsets

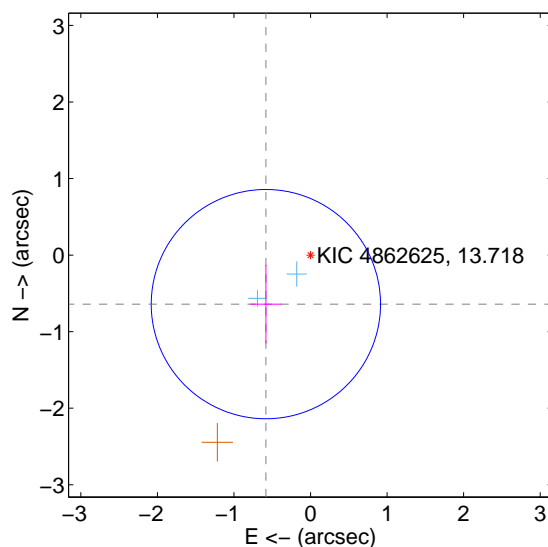
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.850 \pm 0.595$	1.43	$0.602 \pm 0.278$	$-0.600 \pm 0.581$
PRF-fit source offset from KIC position	$0.866 \pm 0.499$	1.74	$0.583 \pm 0.205$	$-0.640 \pm 0.512$
photometric centroid source offset	$0.42 \pm 0.33$	1.26	$0.04 \pm 0.39$	$-0.42 \pm 0.33$

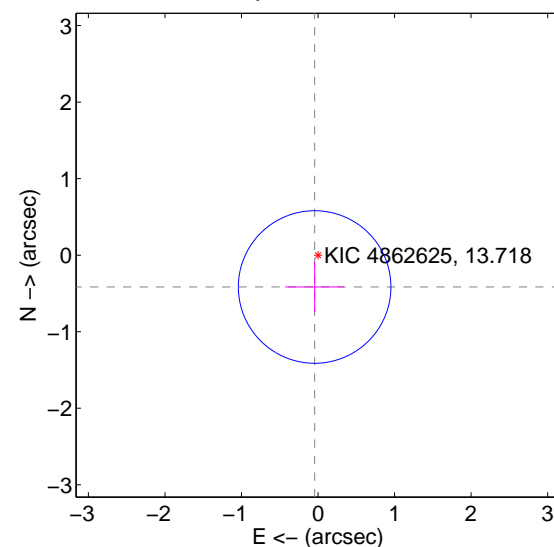
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



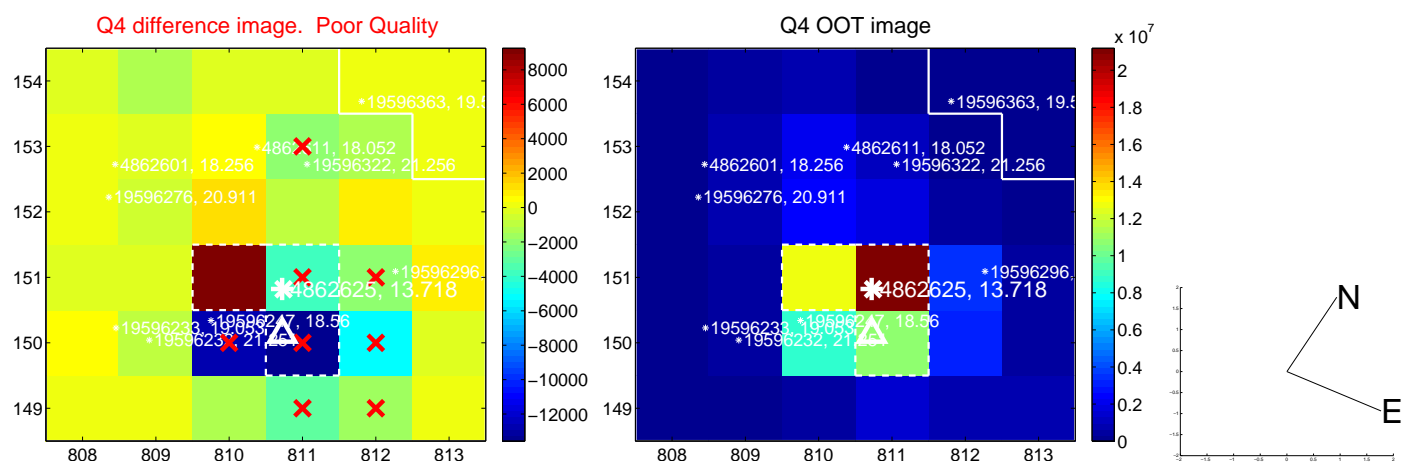
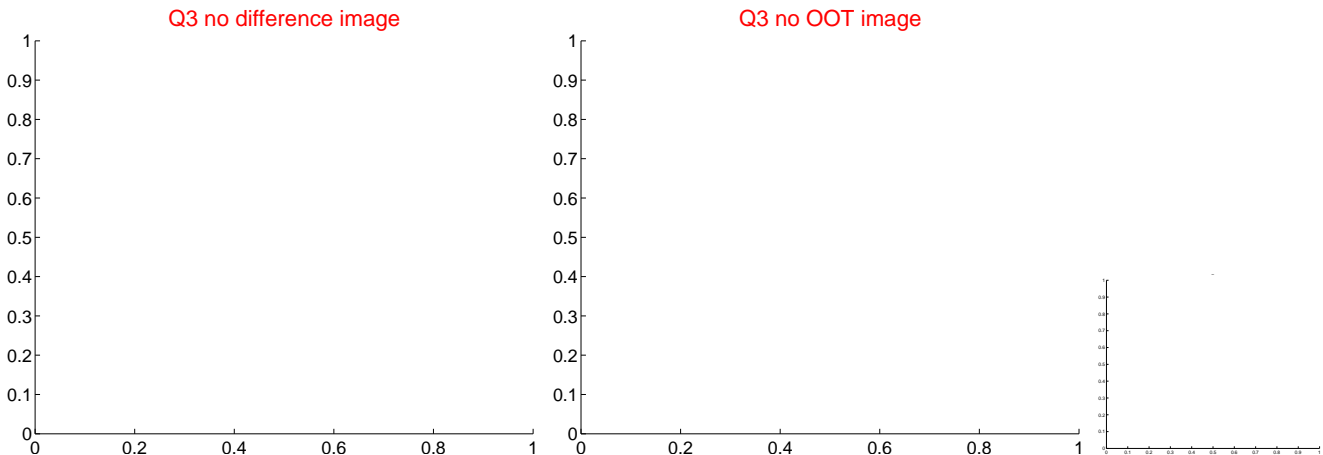
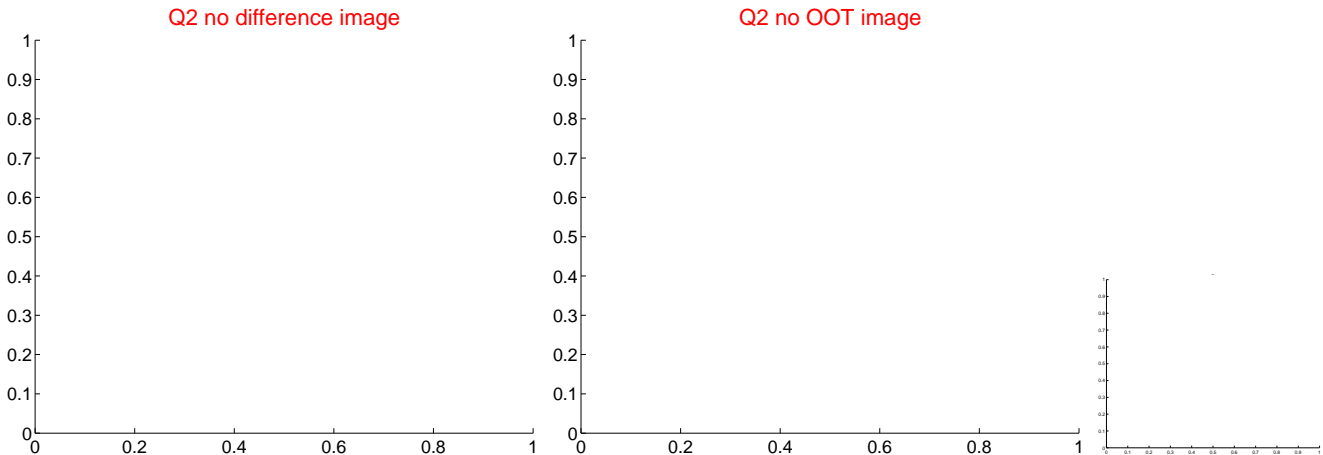
offset from photometric centroids



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



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



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



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

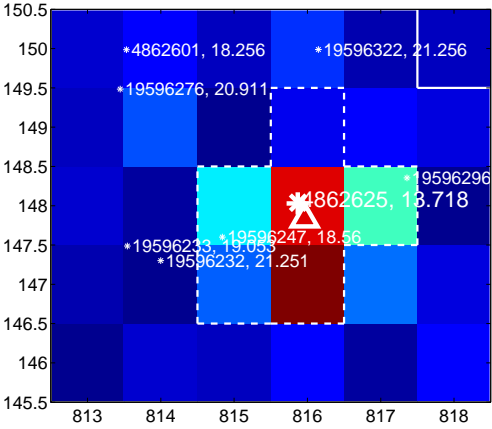
Q9 no difference image



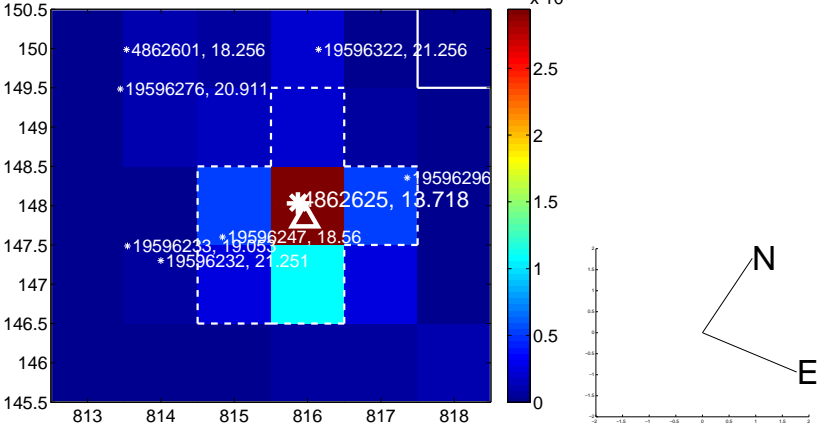
Q9 no OOT image



Q10 difference image



Q10 OOT image



Q11 no difference image



Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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

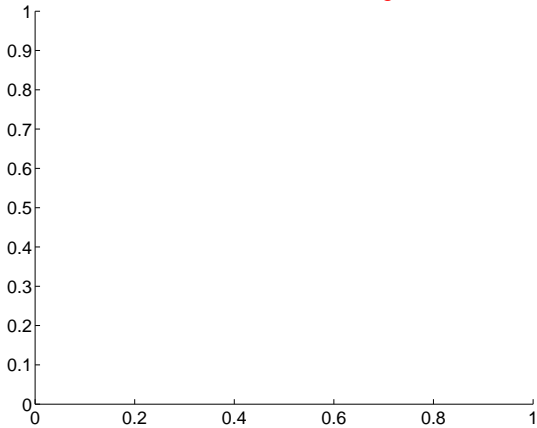
Q13 no difference image



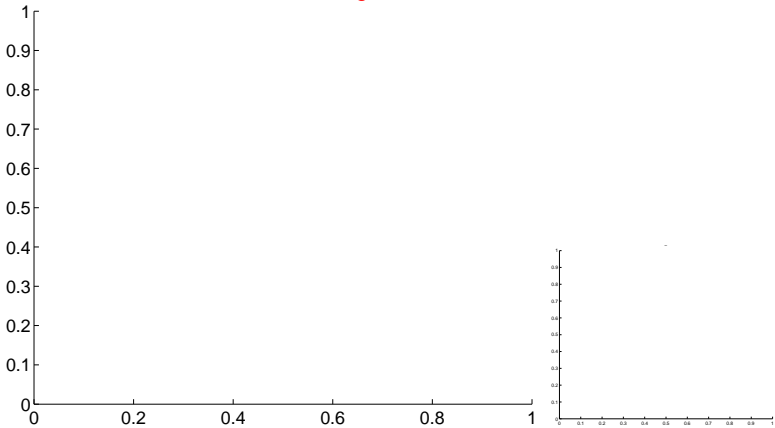
Q13 no OOT image



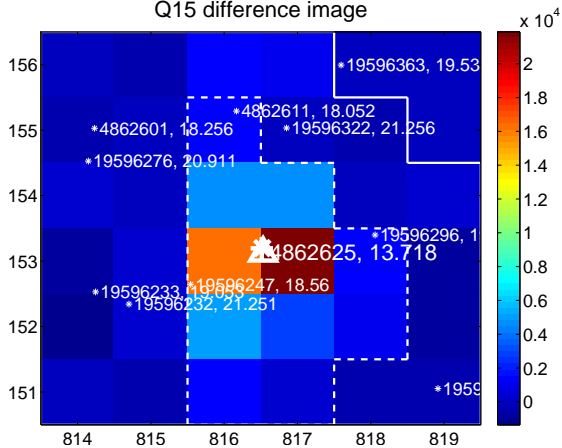
Q14 no difference image



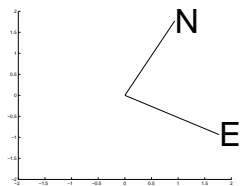
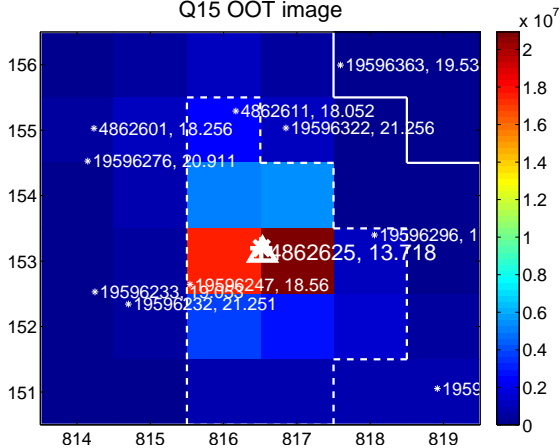
Q14 no OOT image



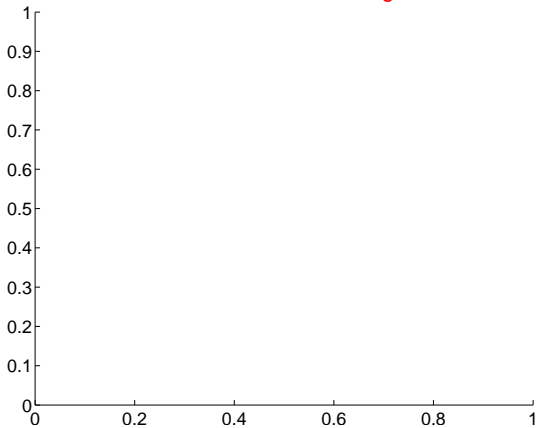
Q15 difference image



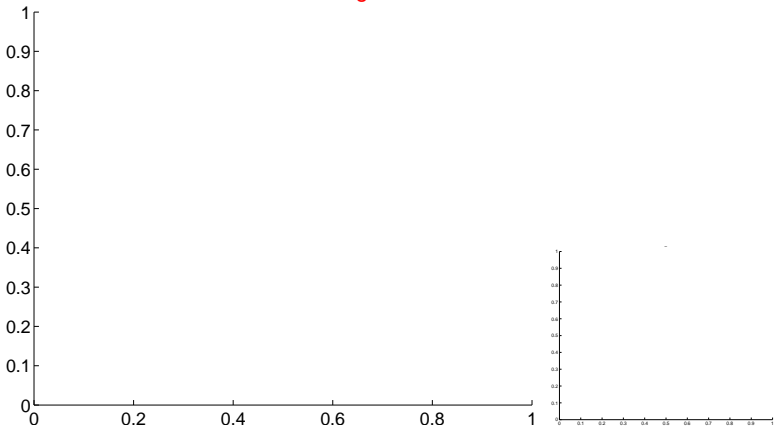
Q15 OOT image



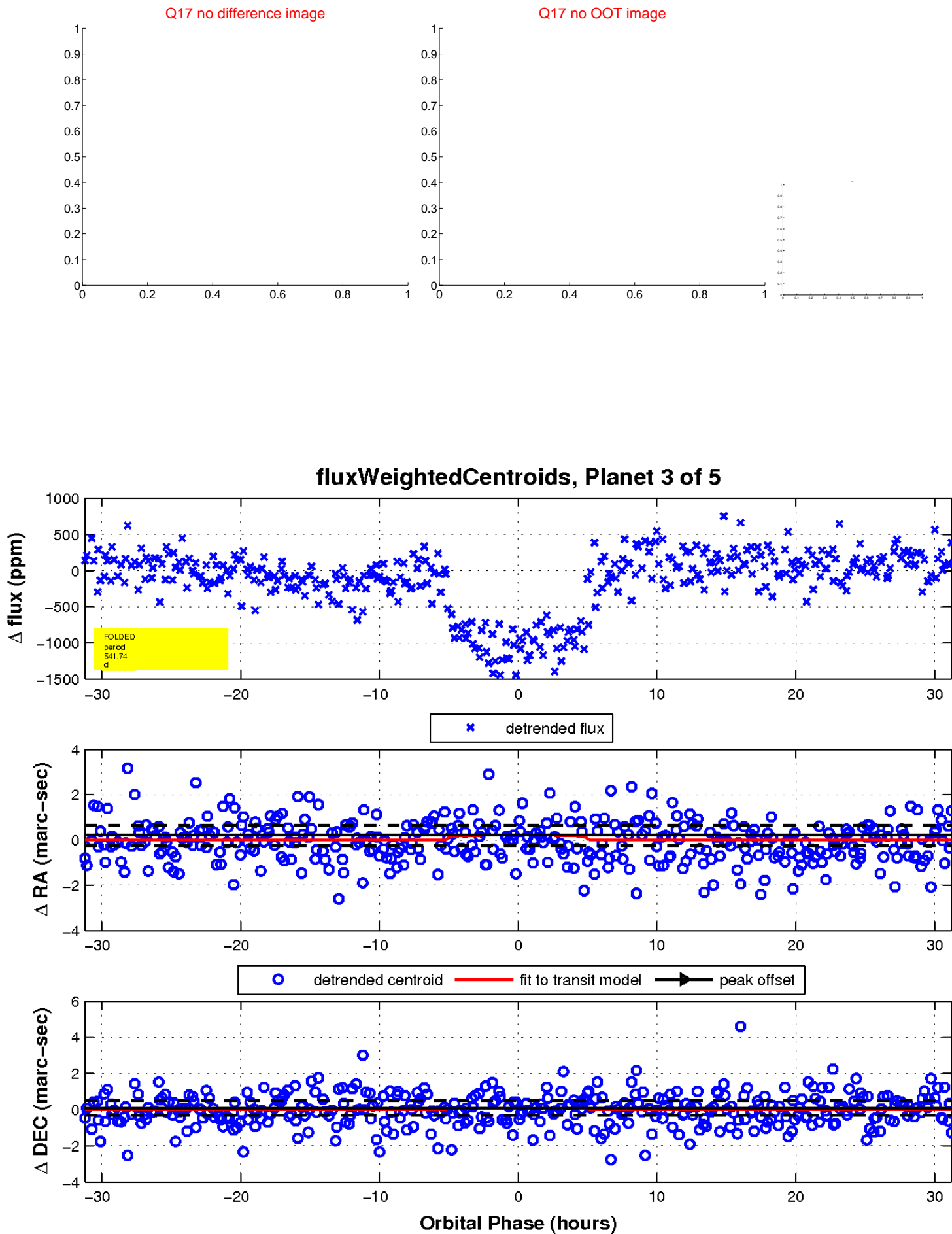
Q16 no difference image



Q16 no OOT image

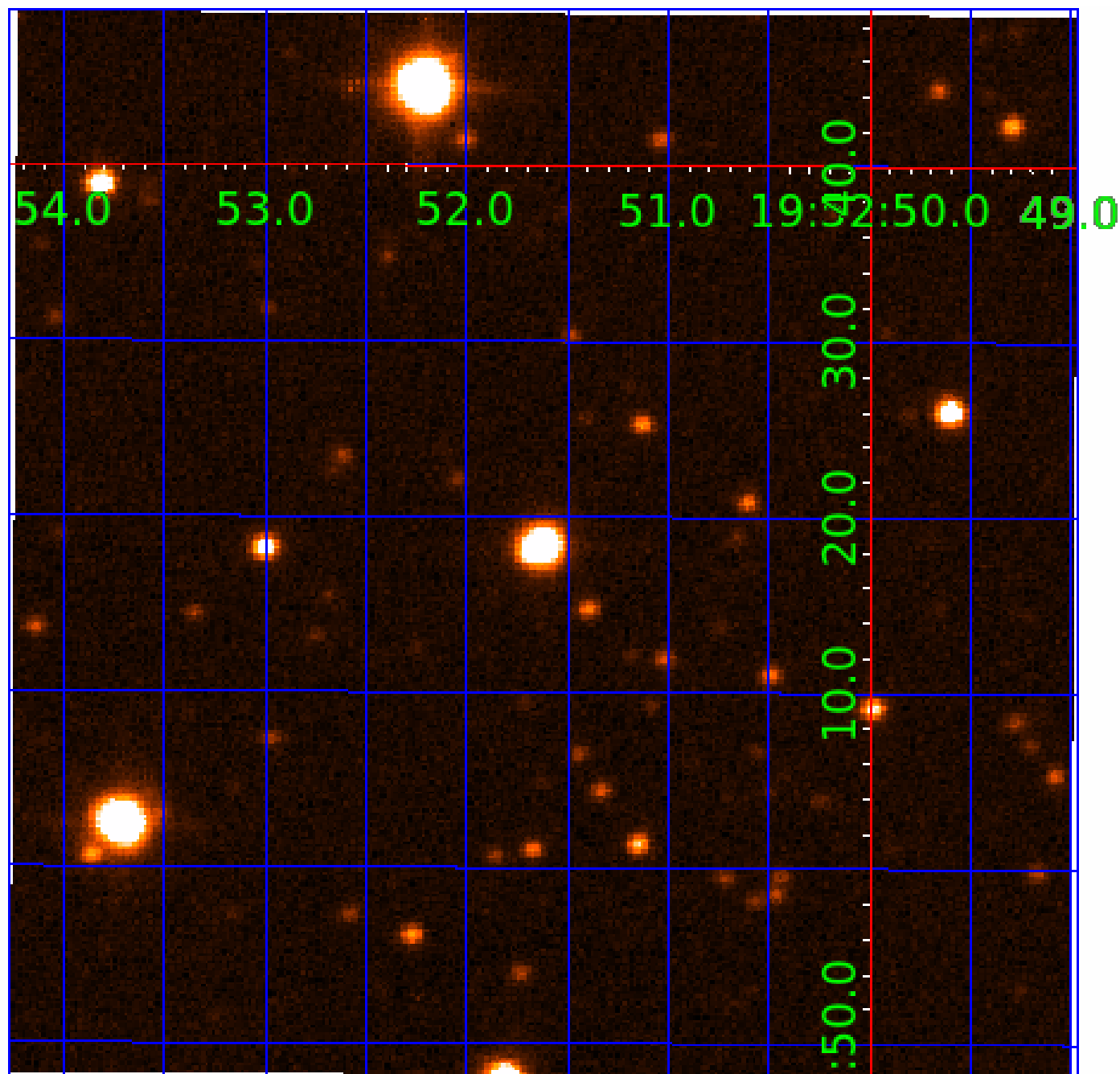


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 004862625

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004862625-01	OBS	6464.01	20.000245	134.820264	13093.7	4.977	859.7	824.9	1.05	6373	19.43	73.26
004862625-02	OBS	No	20.000232	142.675005	1288.6	5.354	91.7	90.5	1.05	6373	4.71	73.26
004862625-03	OBS	6464.03	541.743332	374.454915	1089.0	10.423	17.8	19.2	1.05	6373	3.52	0.90
004862625-04	OBS	No	409.130099	237.836116	621.1	16.754	16.4	13.5	1.05	6373	3.24	1.31
004862625-05	OBS	No	270.882617	240.260490	616.5	10.407	11.9	14.4	1.05	6373	2.76	2.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004862625-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
004862625-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
004862625-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004862625-04	OBS	FP	0.00	1	0	0	0	ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004862625-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

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

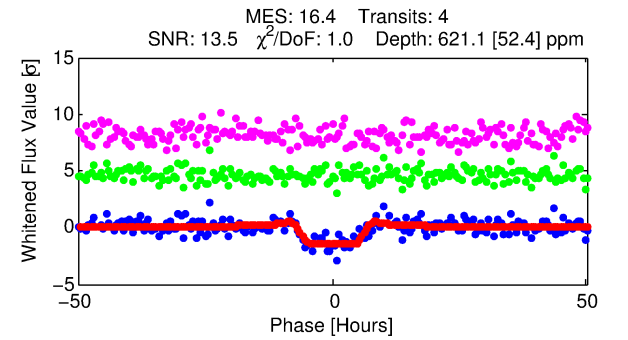
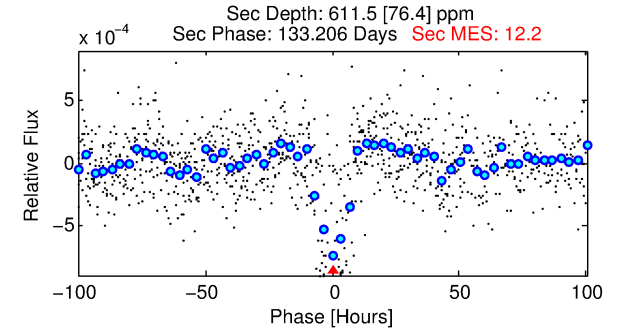
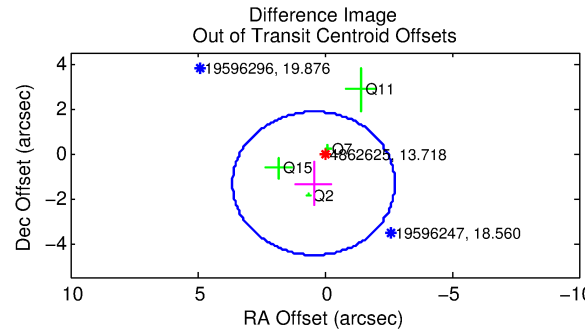
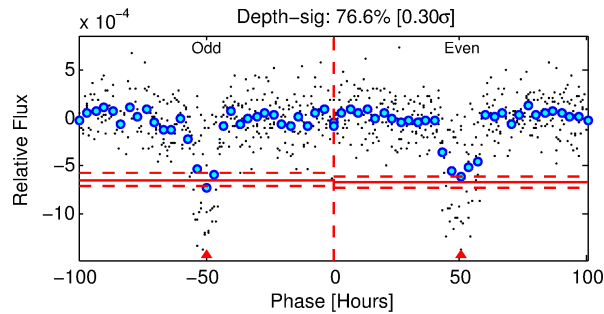
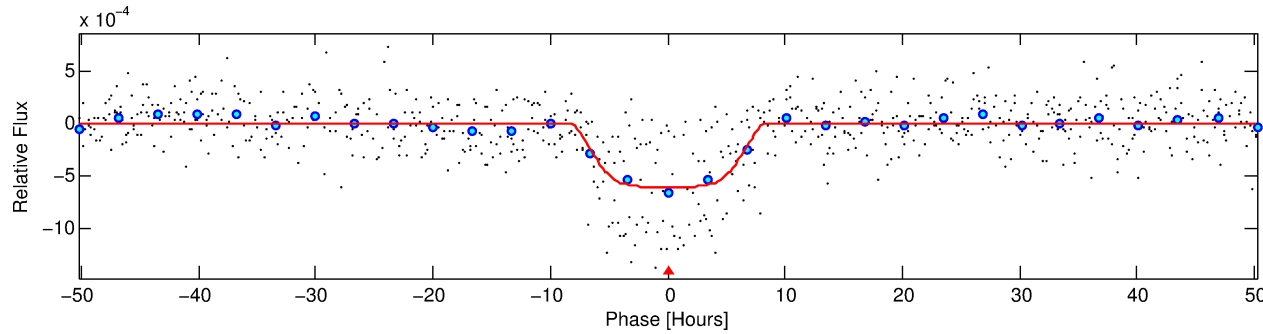
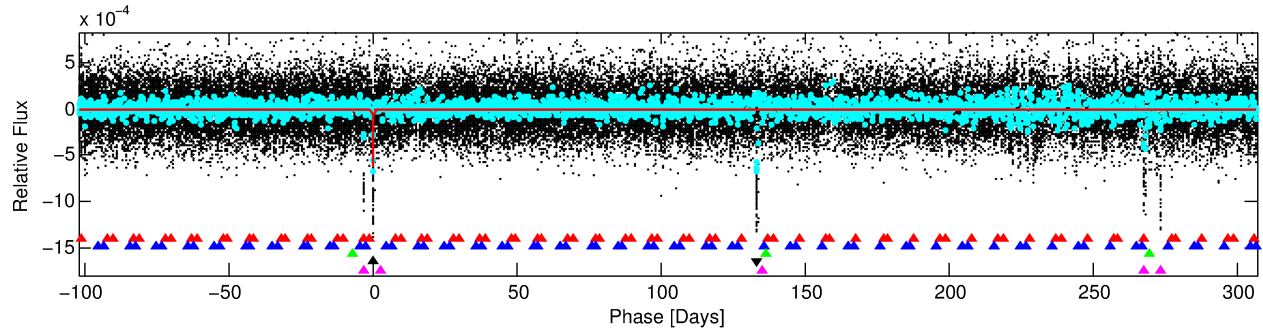
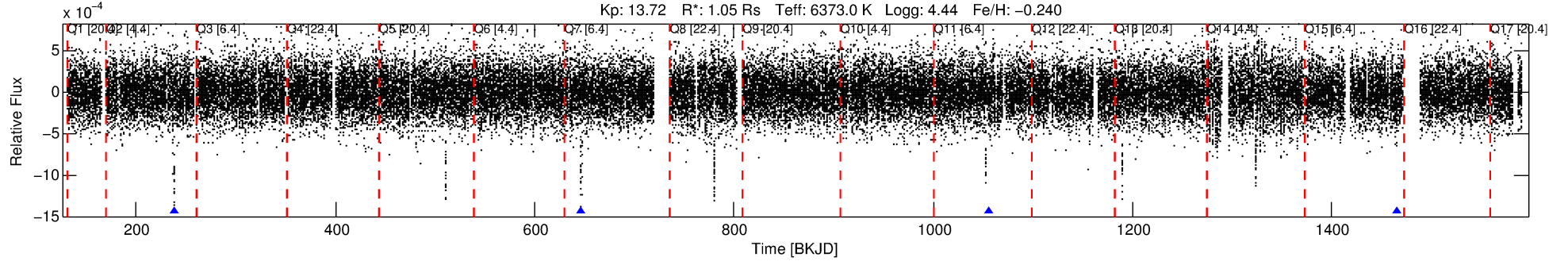
Ephemeris Match Information For 004862625-04

No Significant Match Found

# DV One-Page Summary

KIC: 4862625 Candidate: 4 of 5 Period: 409.130 d  
KOI: K06464 Corr: No Ephemeris Match

Kp: 13.72 R\*: 1.05 Rs Teff: 6373.0 K Logg: 4.44 Fe/H: -0.240



## DV Fit Results:

Period = 409.13010 [0.00926] d  
Epoch = 237.8361 [0.0174] BKJD  
Rp/R\* = 0.0284 [0.0015]  
a/R\* = 73.11 [8.88]  
b = 0.95 [0.01]  
Seff = 1.31 [0.48]  
Teq = 273 [25] K  
Rp = 3.24 [0.94] Re  
a = 1.1123 [0.2652] AU  
Ag = 39643.96 [15134.90] [2.62σ]  
Teffp = 5951 [300] K [18.89σ]

## DV Diagnostic Results:

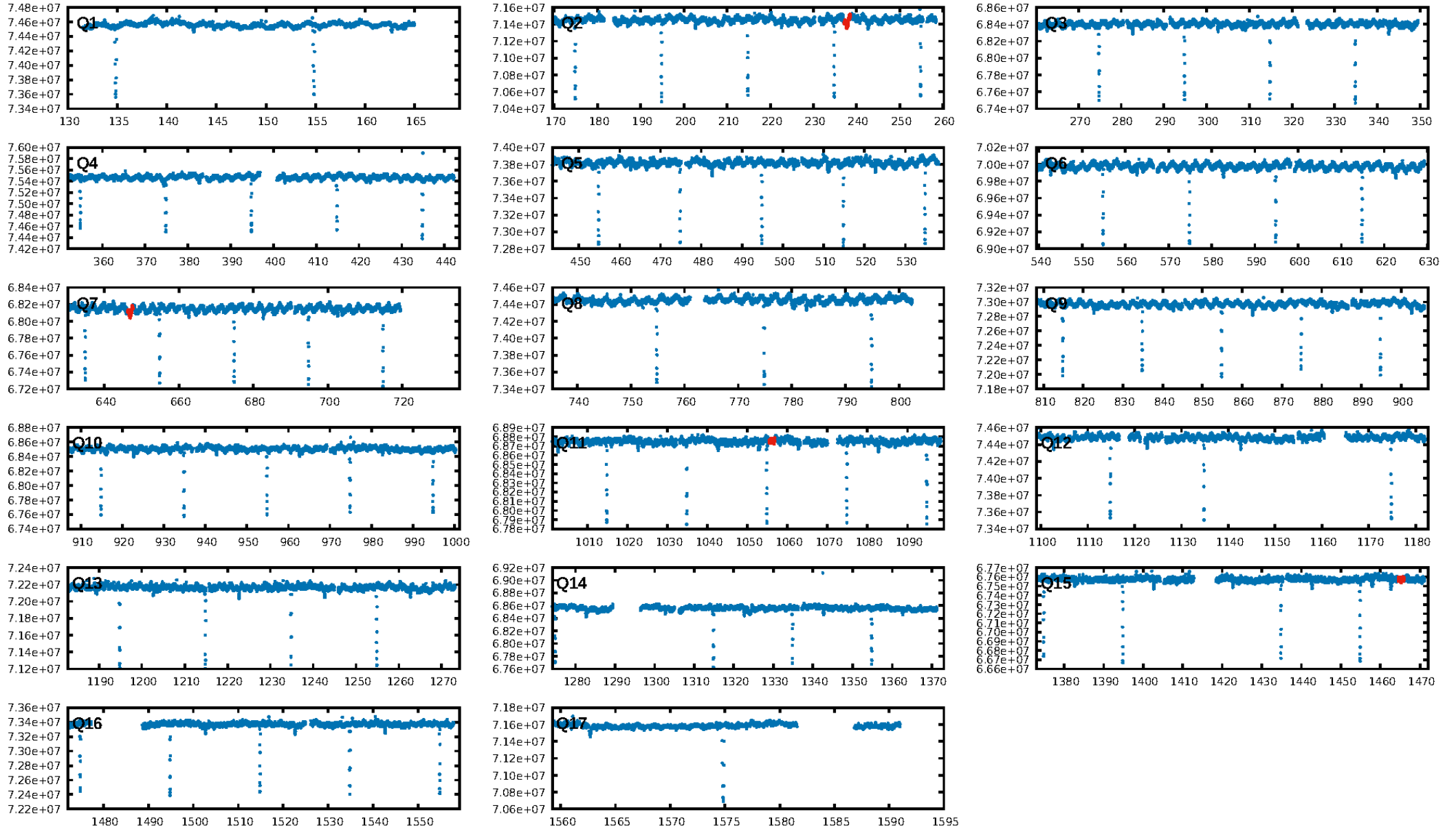
ShortPeriod-sig: 100.0% [168.22σ]  
LongPeriod-sig: 100.0% [161.30σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 65.9%  
Bootstrap-pfa: 2.64e-63  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 4.634  
Centroid-sig: 0.5%  
Centroid-so: 1.048 arcsec [1.71σ]  
OotOffset-rm: 1.403 arcsec [1.32σ]  
OotOffset-st: 1/3/0/0 [4]  
KicOffset-rm: 1.432 arcsec [1.71σ]  
KicOffset-st: 1/3/0/0 [4]  
DiffImageQuality-fgm: 0.50 [2/4]  
DiffImageOverlap-fno: 0.75 [3/4]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:21:01 Z

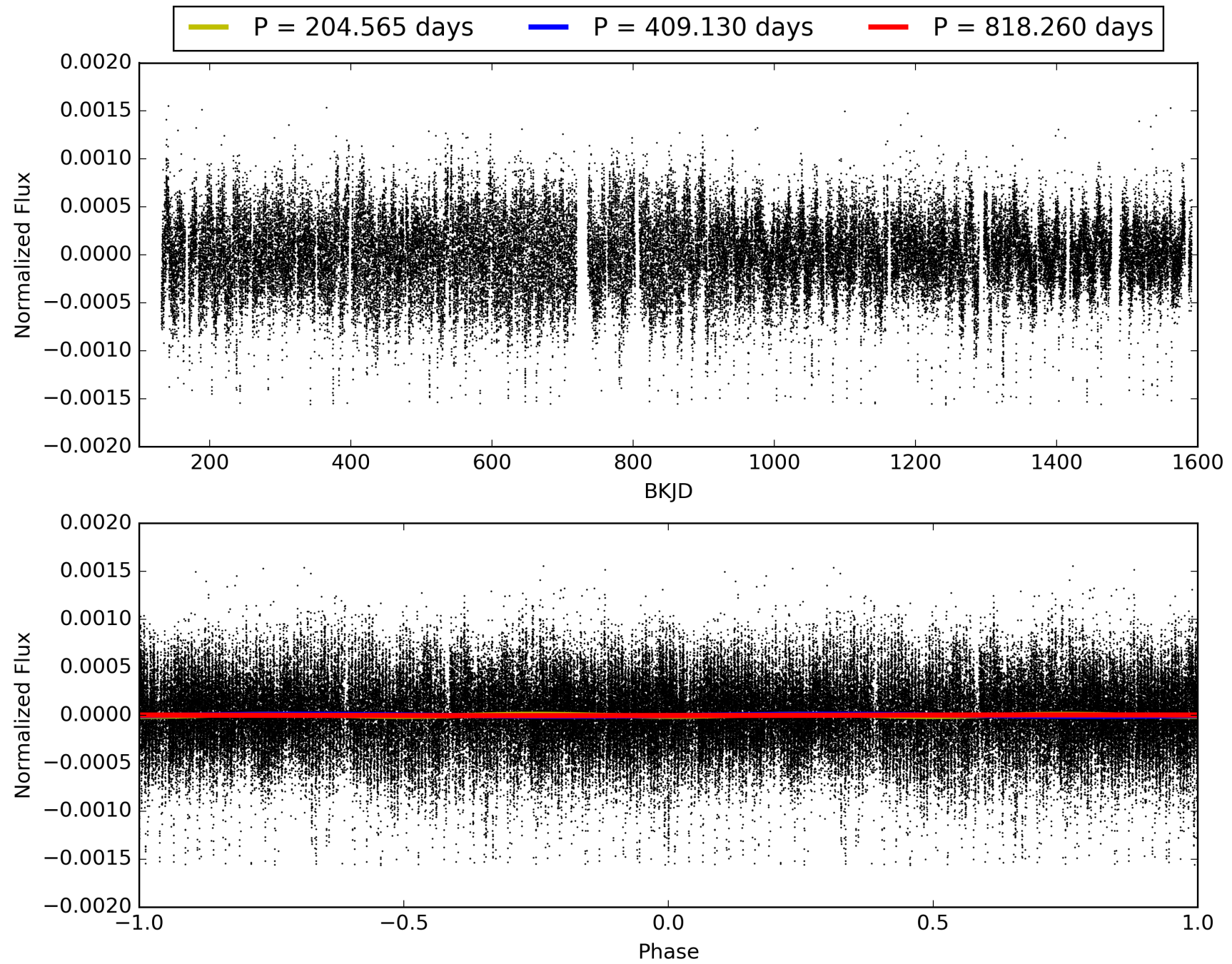
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 004862625-04, PDC Light Curves

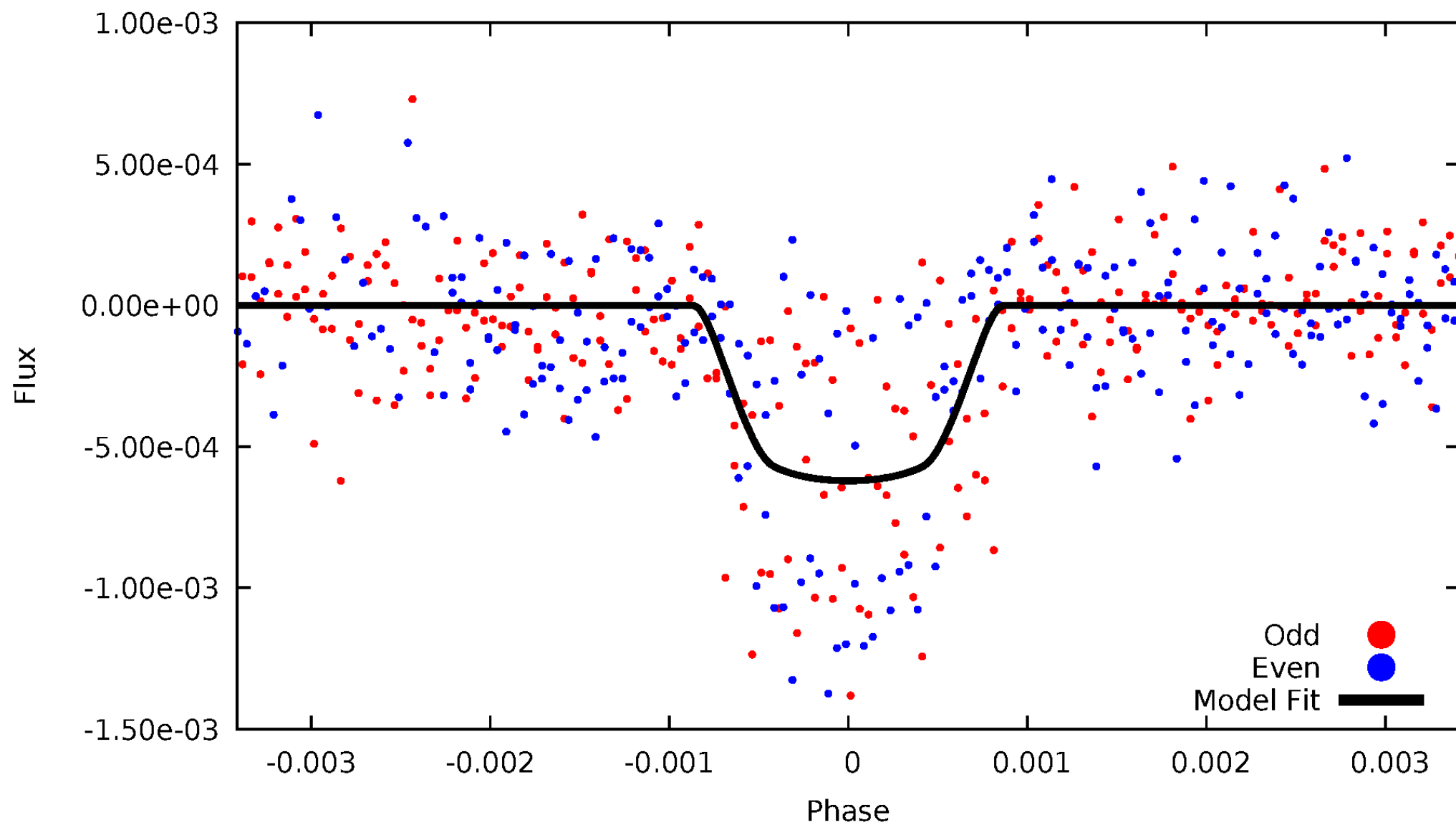


TCE 004862625-04



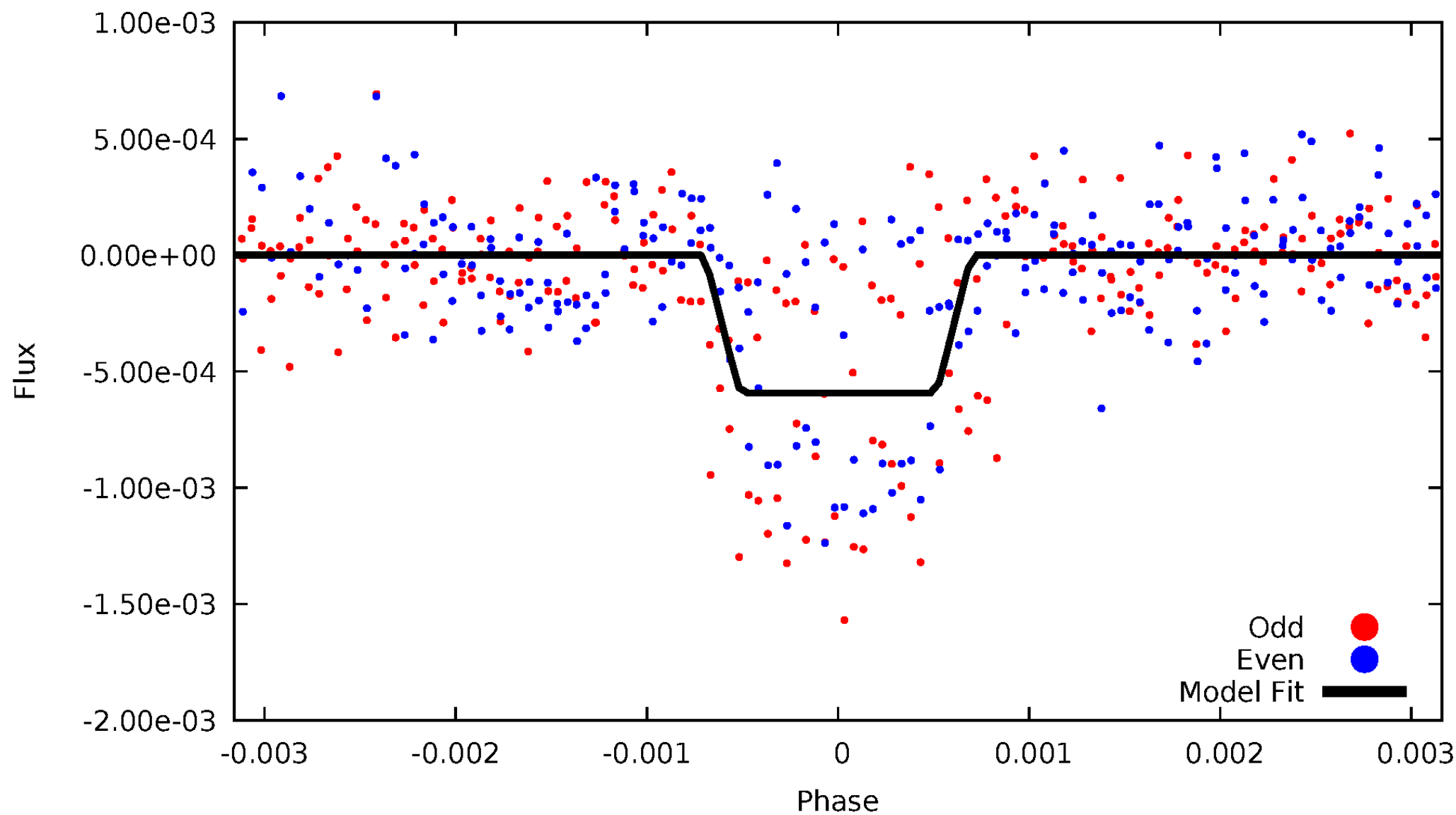
# DV Odd/Even

TCE 004862625-04



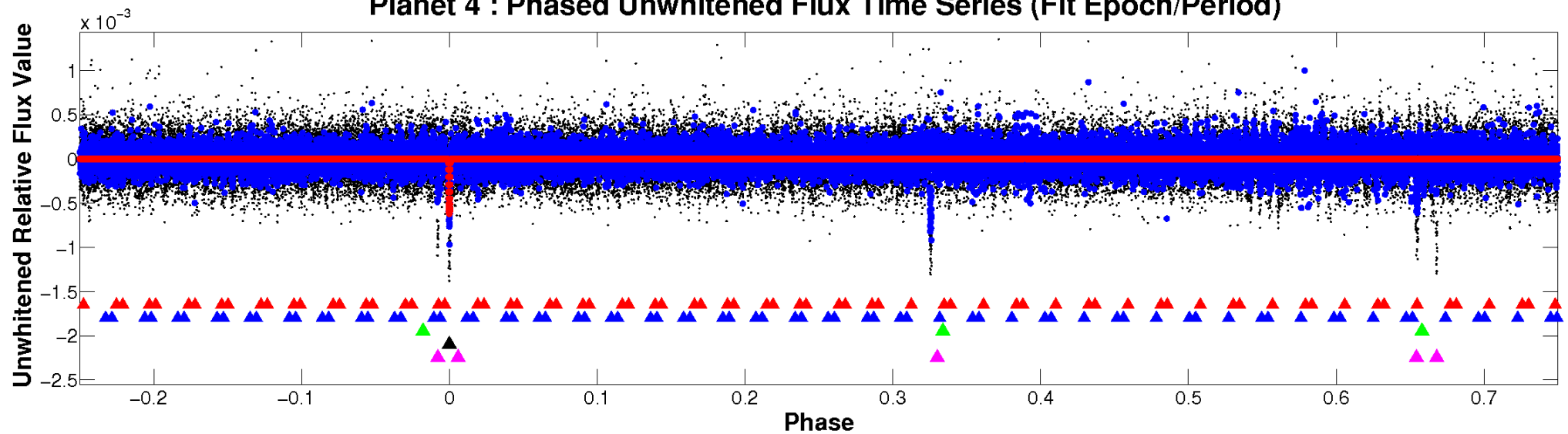
# ALT Odd/Even

TCE 004862625-04

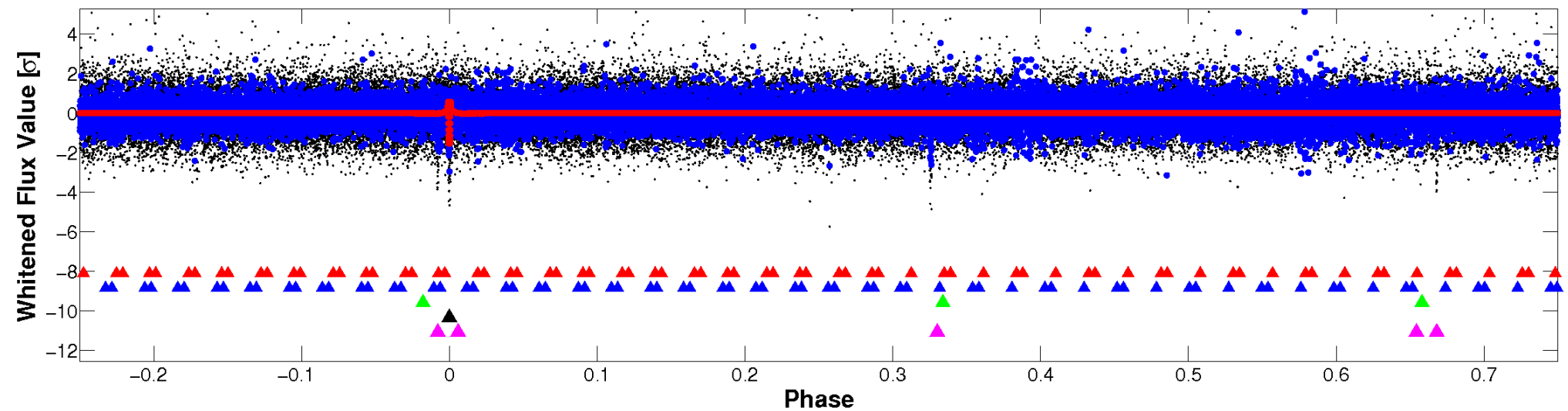


# Non-Whitened Vs. Whitened Light Curve

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

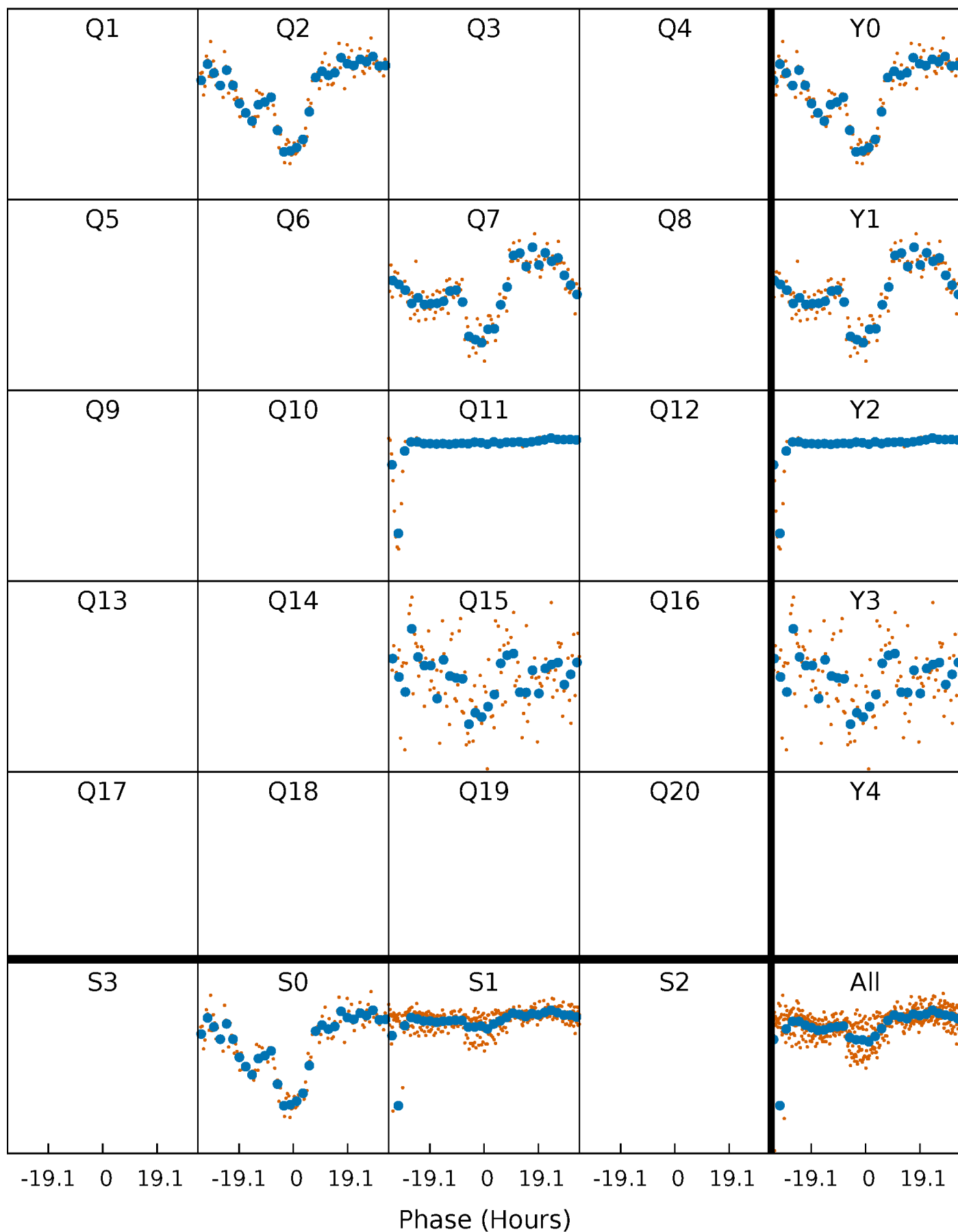


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



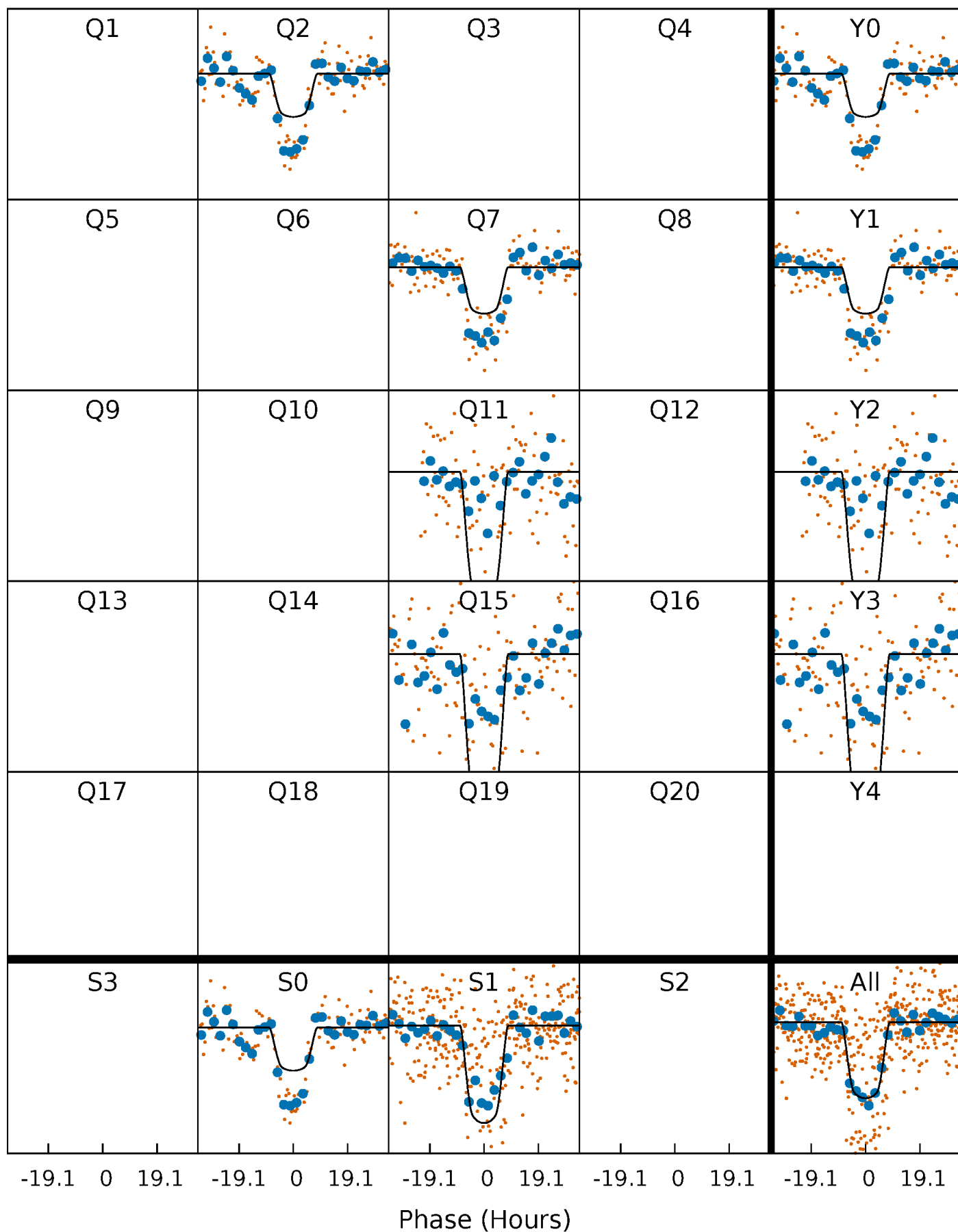
# PDC Quarter-Phased Transit Curves

TCE 004862625-04     $P=409.130099$  Days     $T_0=237.836116$  (BKJD)



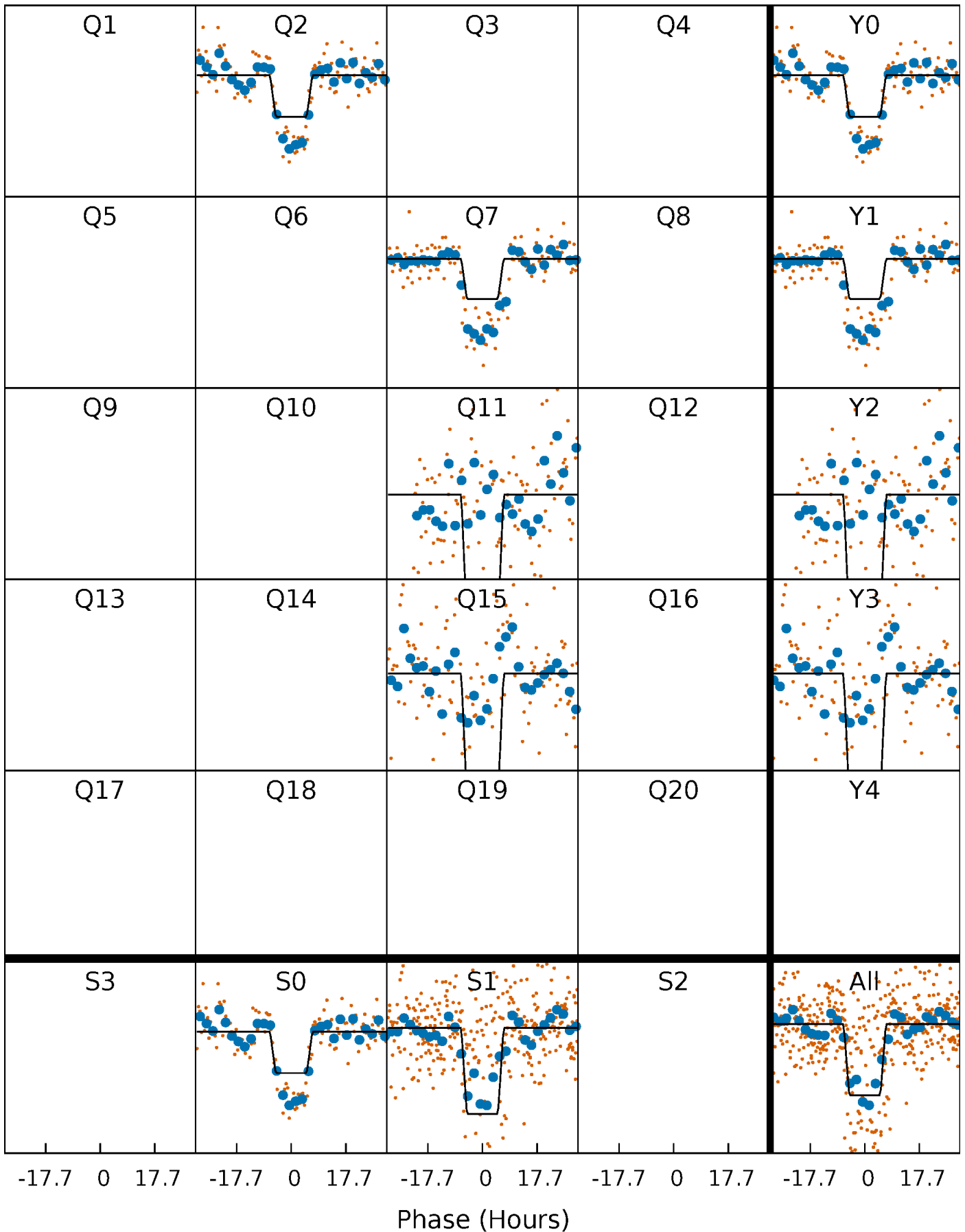
# DV Quarter-Phased Transit Curves

TCE 004862625-04     $P=409.130099$  Days     $T_0=237.836116$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 004862625-04     $P=409.141172$  Days     $T_0=237.817242$  (BKJD)

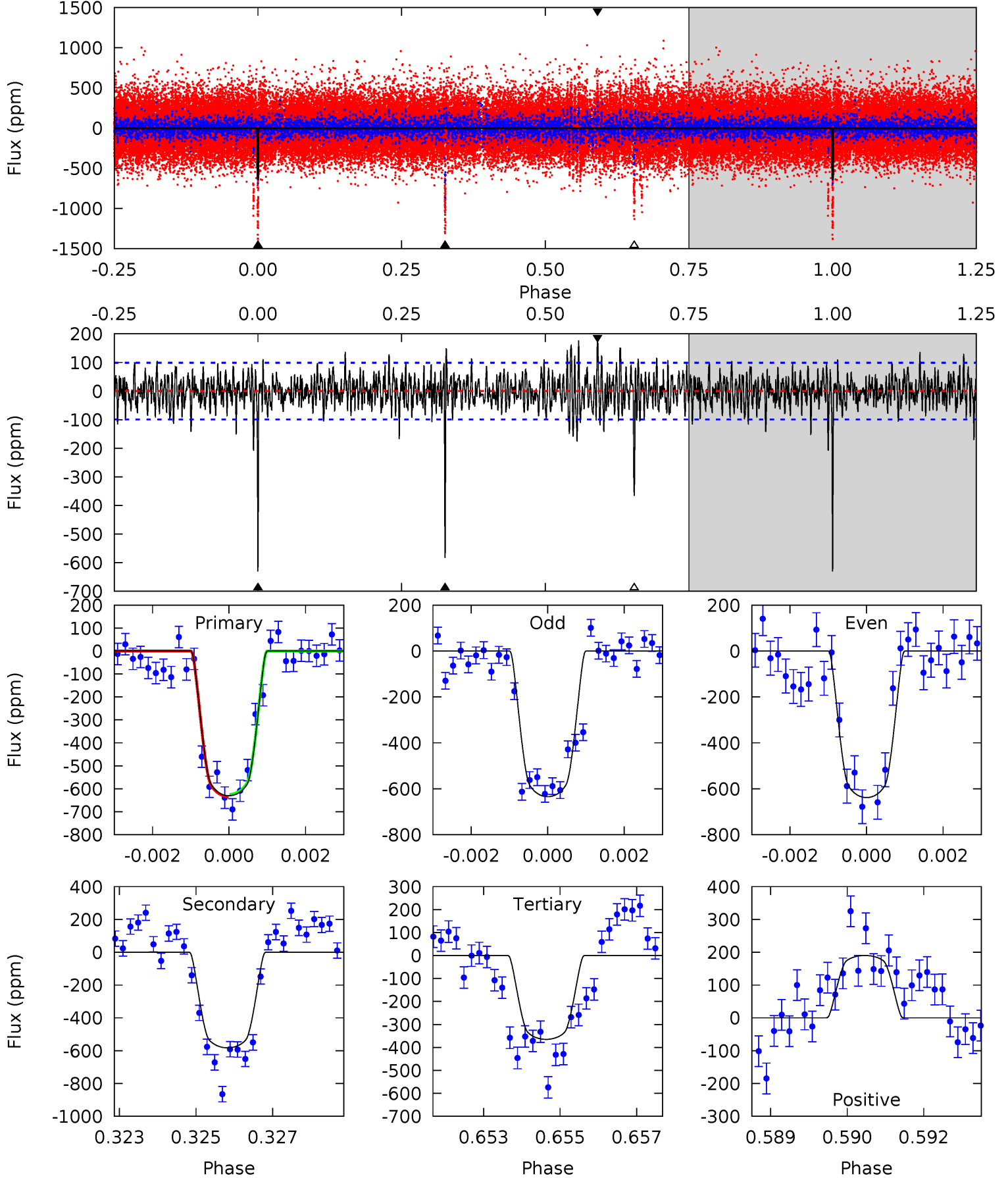




# DV Model-Shift Uniqueness Test

004862625-04, P = 409.130099 Days, E = 237.836116 Days

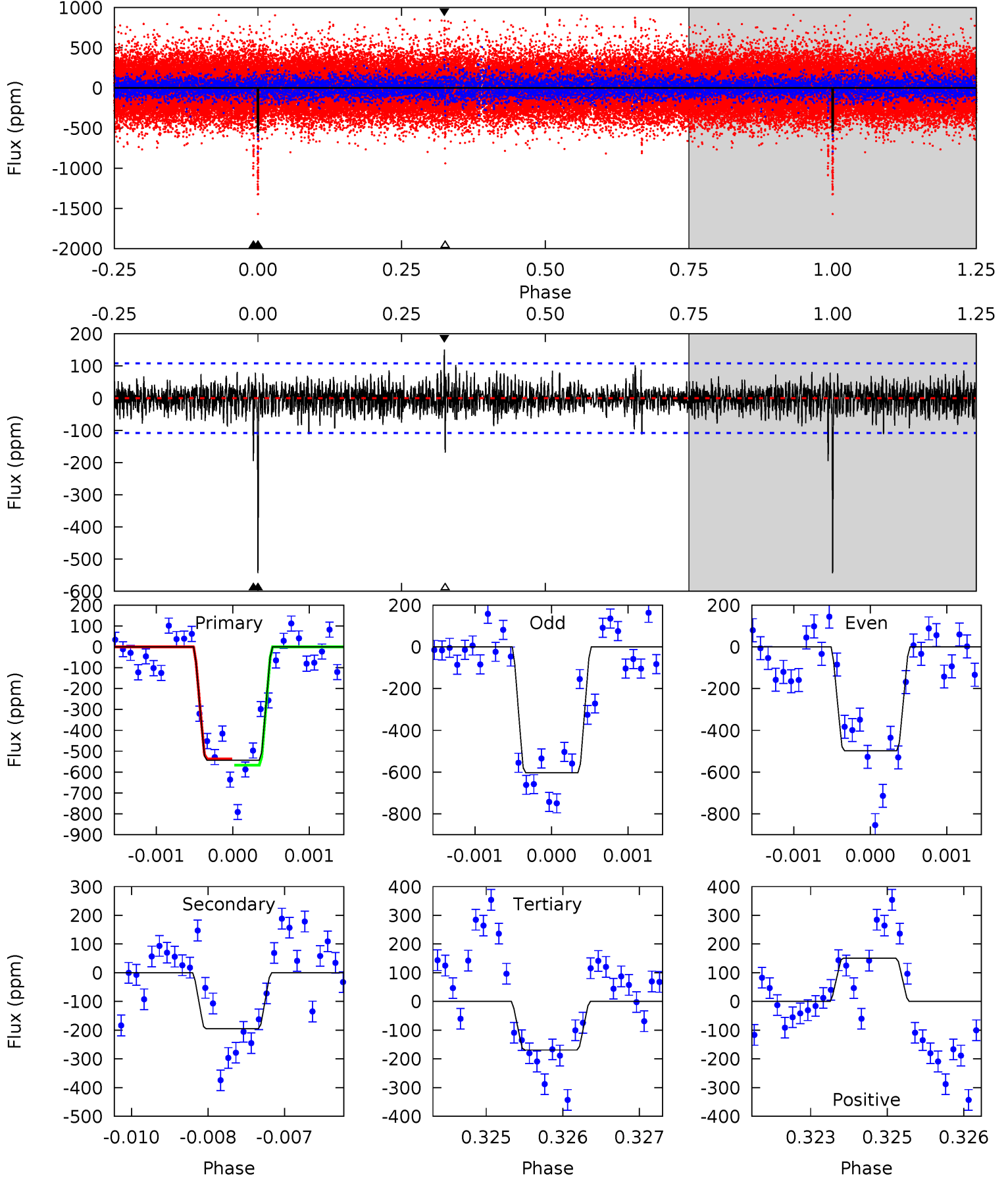
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.1	31.5	19.7	10.3	5.35	3.13	2.63	14.3	23.8	11.8	21.2	0.10	0.96	0.23	0.27



# Alt Model-Shift Uniqueness Test

004862625-04, P = 409.141172 Days, E = 237.817242 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
27.0	9.70	8.40	7.51	5.39	3.19	1.46	18.6	19.5	1.29	2.19	2.63	1.06	0.22	0.75



### Stellar Parameters For KIC 004862625

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6373^{+151}_{-189}$	$4.438^{+0.062}_{-0.188}$	$-0.240^{+0.250}_{-0.300}$	$1.047^{+0.298}_{-0.106}$	$1.094^{+0.143}_{-0.143}$	$1.343^{+0.431}_{-0.636}$
	+2%/-3%	+1%/-4%	+104%/-125%	+28%/-10%	+13%/-13%	+32%/-47%
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 004862625-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-583 \pm 19$	$3.32^{+0.55}_{-0.34}$	$387^{+29}_{-18}$	$5881^{+225}_{-205}$	$35303^{+7484}_{-8276}$
Alt.	$-195 \pm 20$	$2.89^{+0.41}_{-0.30}$	$389^{+24}_{-20}$	$4915^{+204}_{-202}$	$15725^{+3989}_{-3805}$

$T_{\text{max}}$  = 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

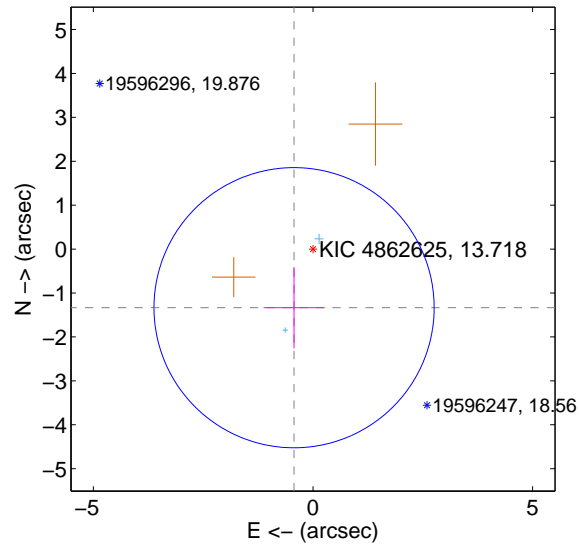
Supplemental centroid analysis for 004862625-04. Kepler magnitude: 13.72. Transit SNR 13.46

There are 2 quarters with good PRF difference image offsets

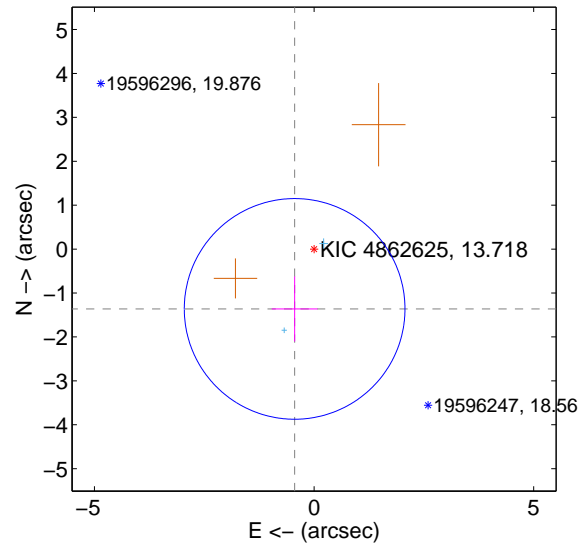
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.403 \pm 1.063$	1.32	$0.431 \pm 0.696$	$-1.335 \pm 0.923$
PRF-fit source offset from KIC position	$1.432 \pm 0.838$	1.71	$0.443 \pm 0.521$	$-1.362 \pm 0.741$
photometric centroid source offset	$1.05 \pm 0.61$	1.71	$0.97 \pm 0.63$	$0.40 \pm 0.52$

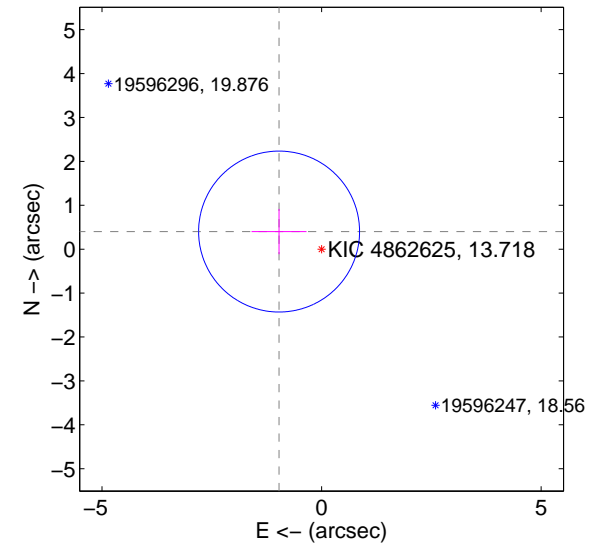
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

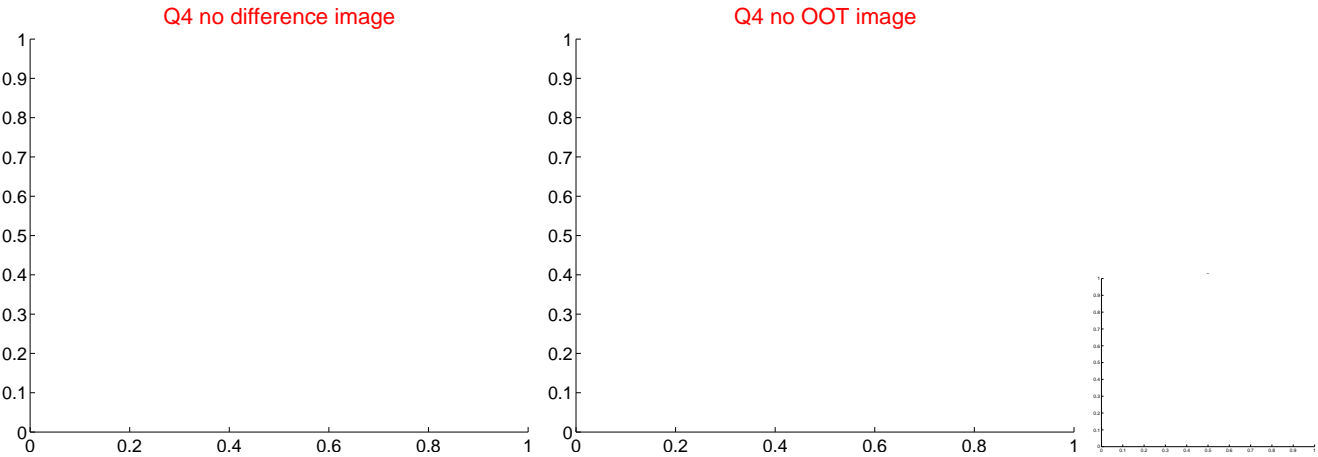
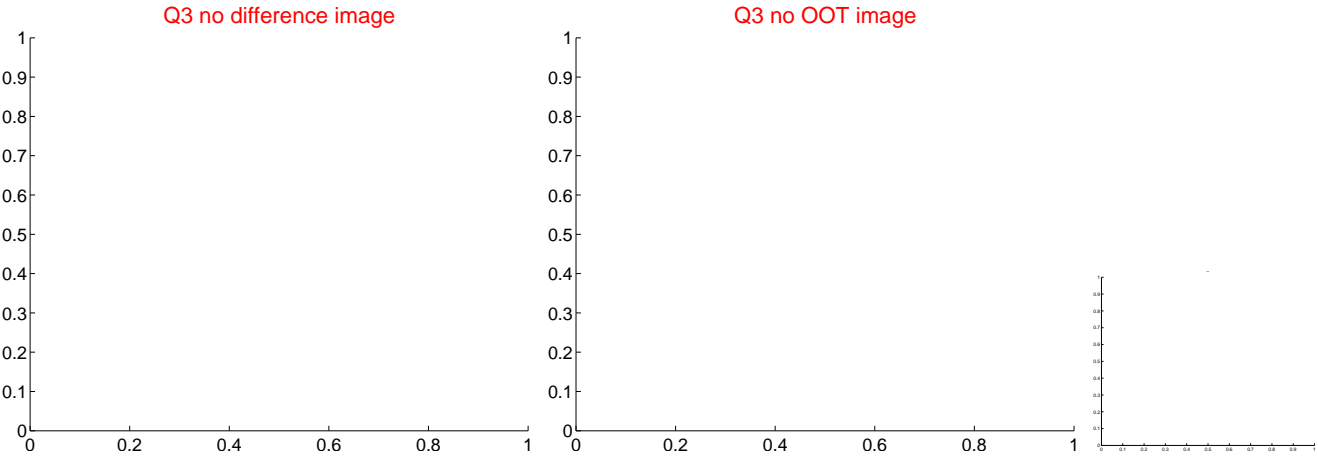
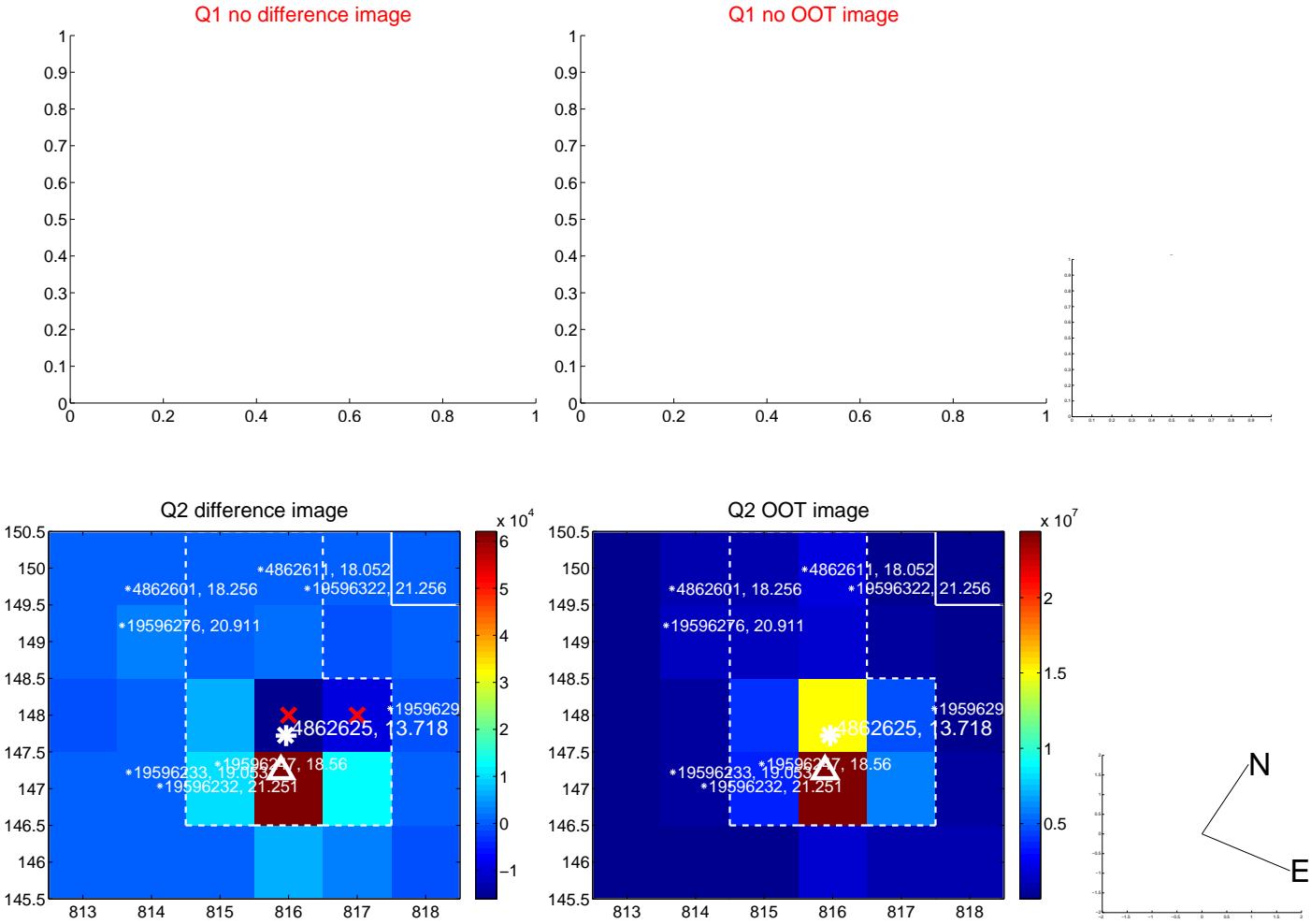


offset from photometric centroids



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

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



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

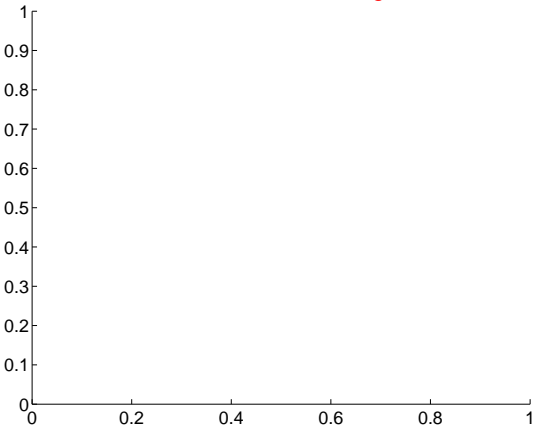
Q5 no difference image



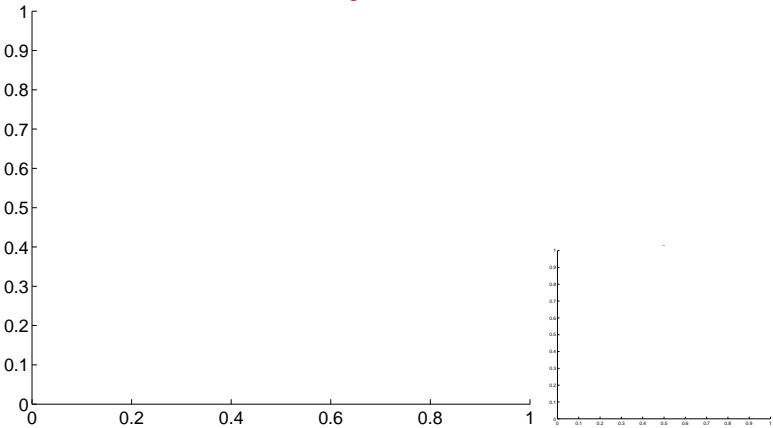
Q5 no OOT image



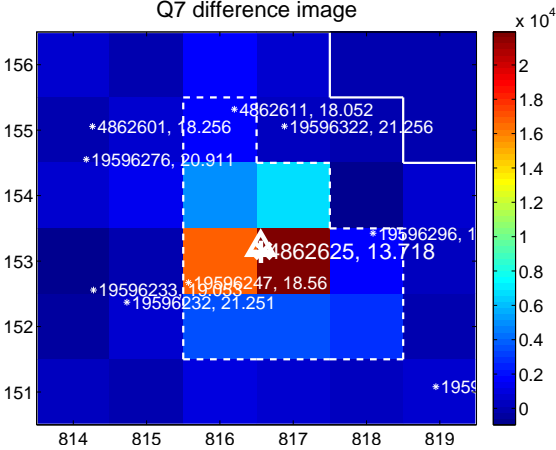
Q6 no difference image



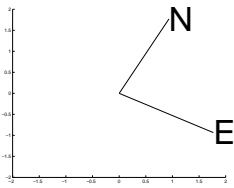
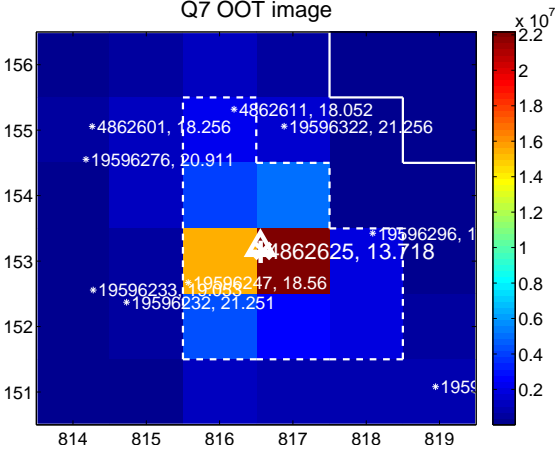
Q6 no OOT image



Q7 difference image



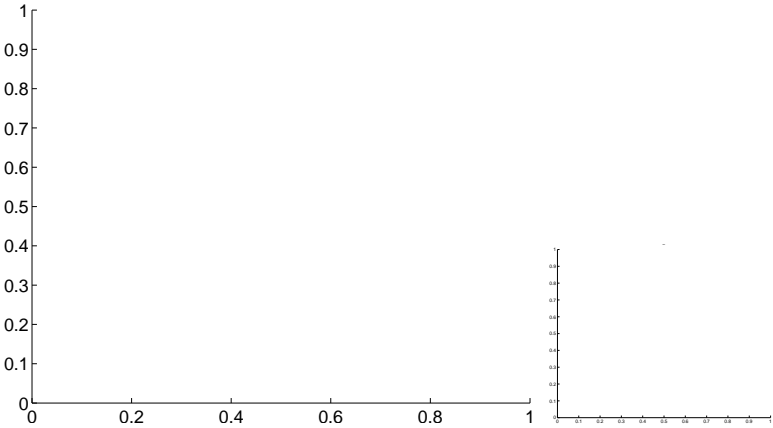
Q7 OOT image



Q8 no difference image



Q8 no OOT image



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

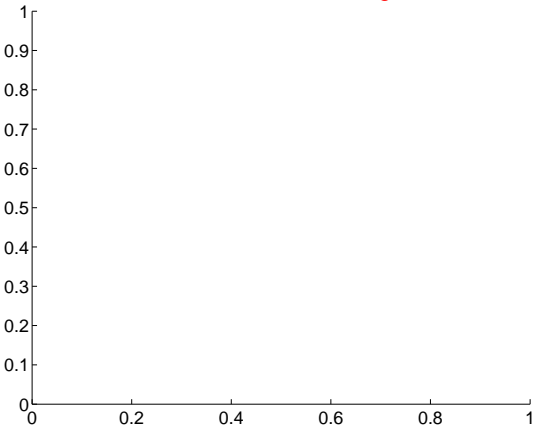
Q9 no difference image



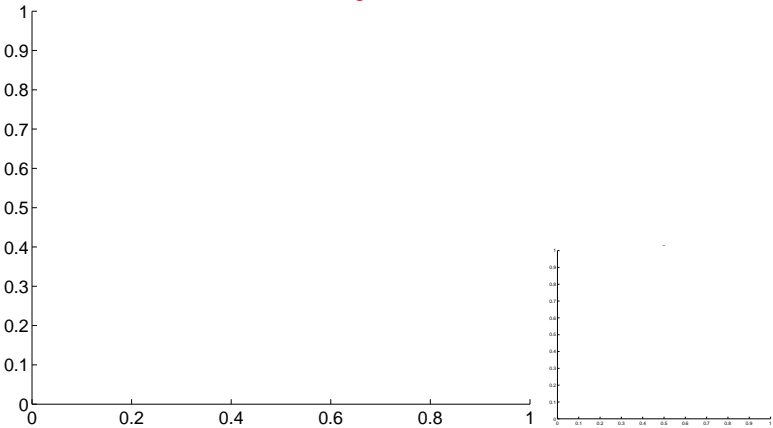
Q9 no OOT image



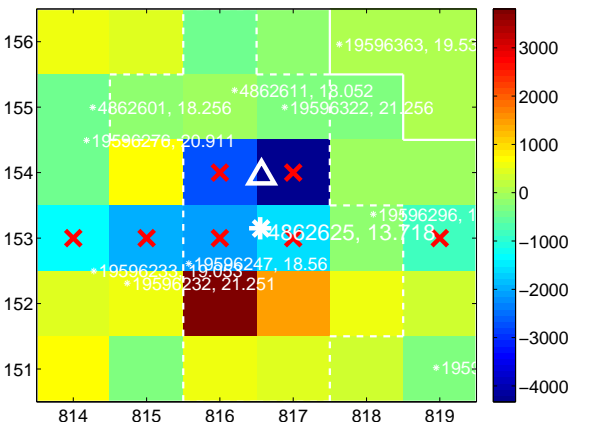
Q10 no difference image



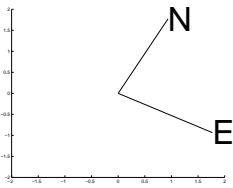
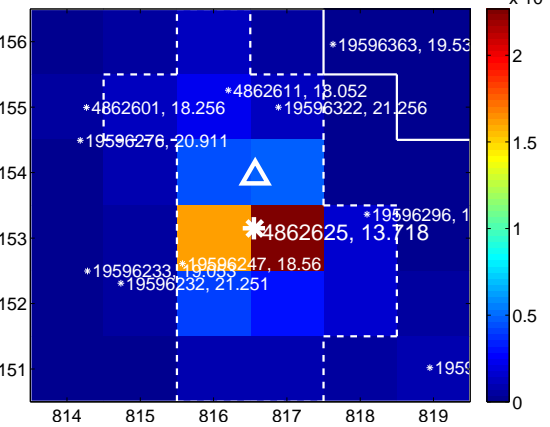
Q10 no OOT image



Q11 difference image. Poor Quality



Q11 OOT image



Q12 no difference image

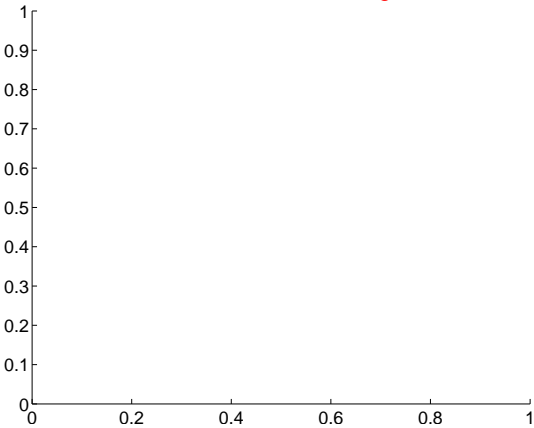


Q12 no OOT image

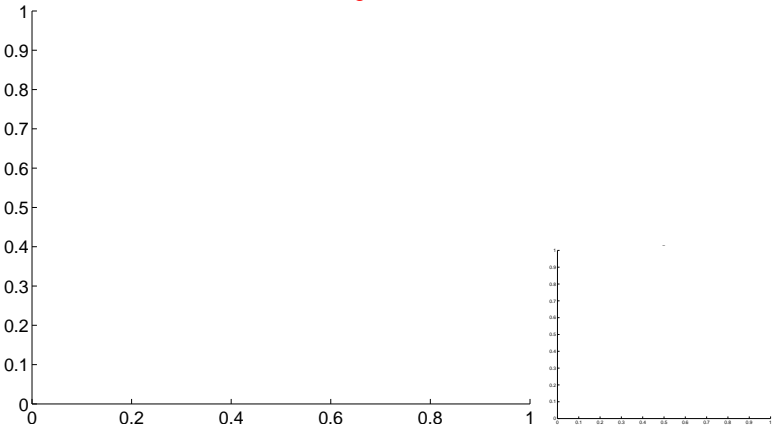


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

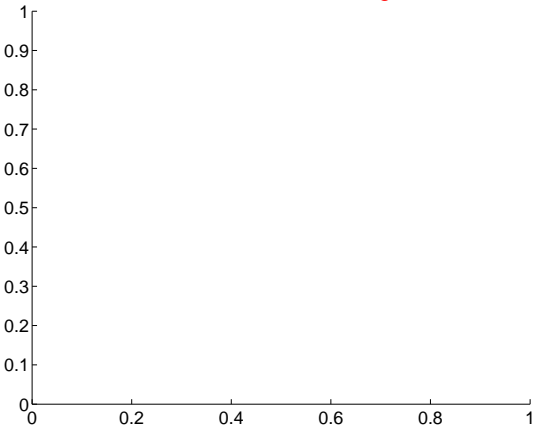
Q13 no difference image



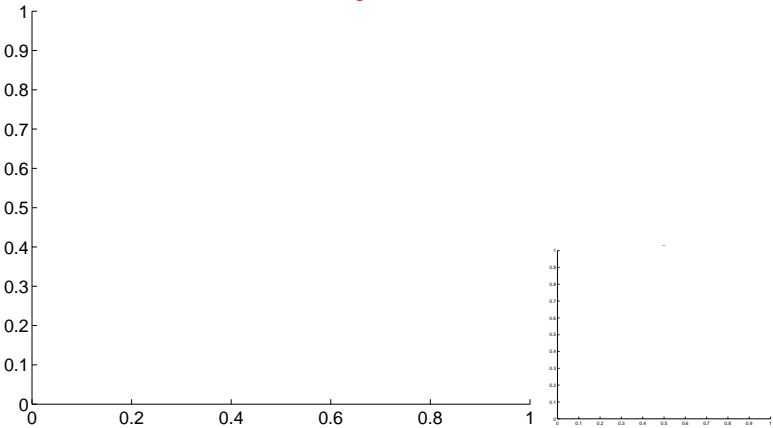
Q13 no OOT image



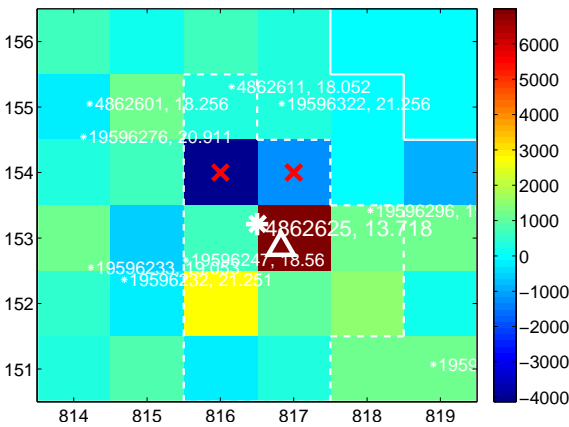
Q14 no difference image



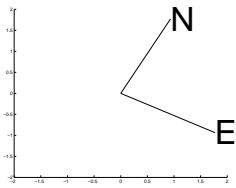
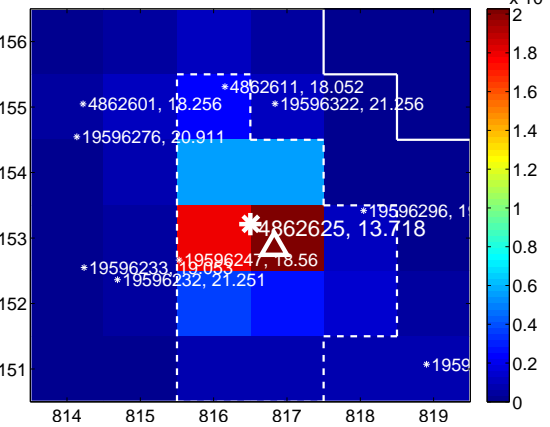
Q14 no OOT image



Q15 difference image. Poor Quality



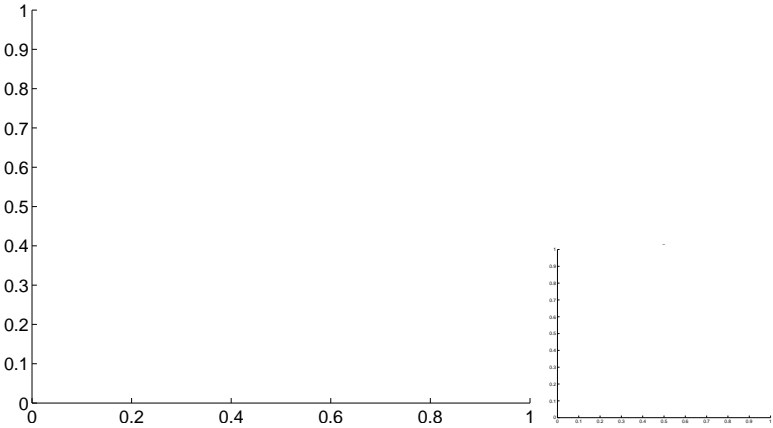
Q15 OOT image



Q16 no difference image

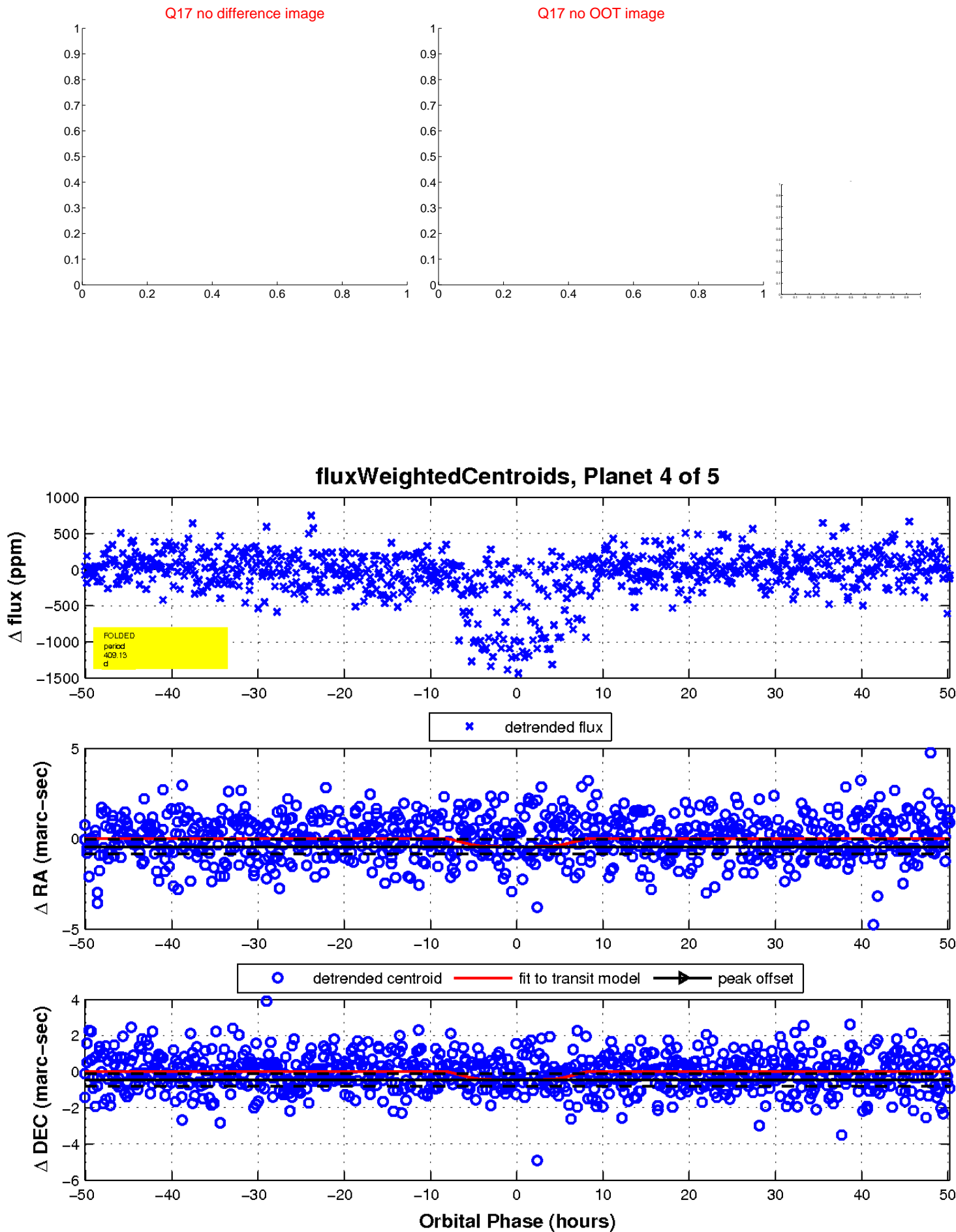


Q16 no OOT image



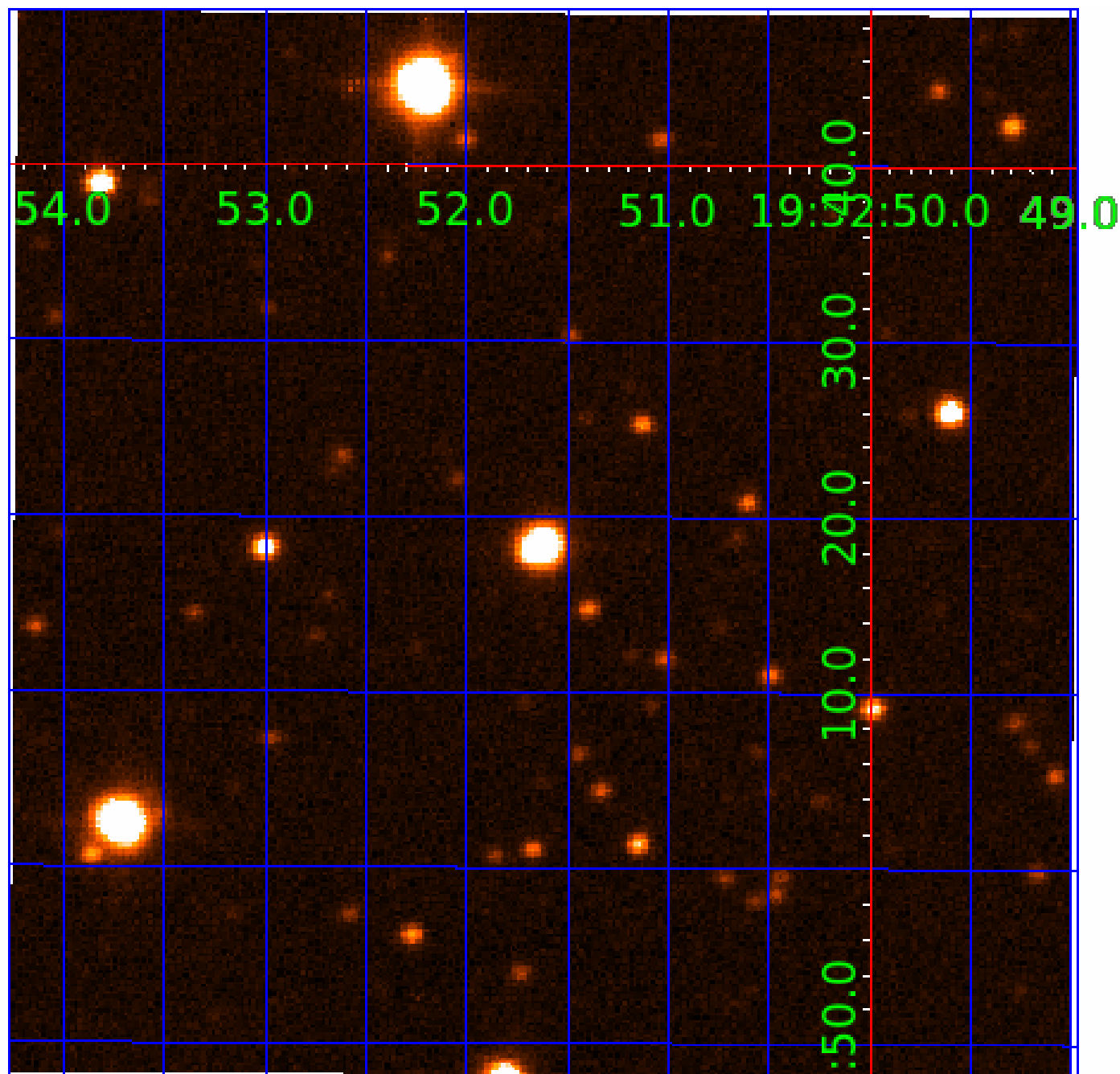


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 004862625

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004862625-01	OBS	6464.01	20.000245	134.820264	13093.7	4.977	859.7	824.9	1.05	6373	19.43	73.26
004862625-02	OBS	No	20.000232	142.675005	1288.6	5.354	91.7	90.5	1.05	6373	4.71	73.26
004862625-03	OBS	6464.03	541.743332	374.454915	1089.0	10.423	17.8	19.2	1.05	6373	3.52	0.90
004862625-04	OBS	No	409.130099	237.836116	621.1	16.754	16.4	13.5	1.05	6373	3.24	1.31
004862625-05	OBS	No	270.882617	240.260490	616.5	10.407	11.9	14.4	1.05	6373	2.76	2.27

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004862625-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
004862625-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
004862625-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—CENT_FEW_DIFFS
004862625-04	OBS	FP	0.00	1	0	0	0	ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004862625-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

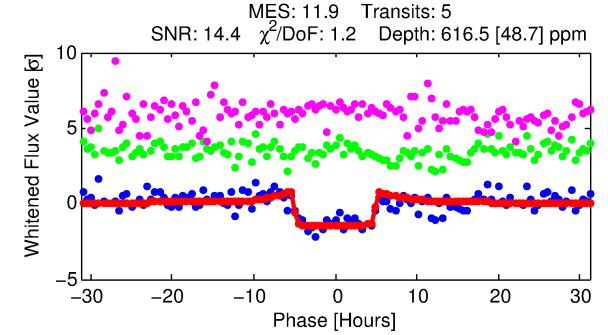
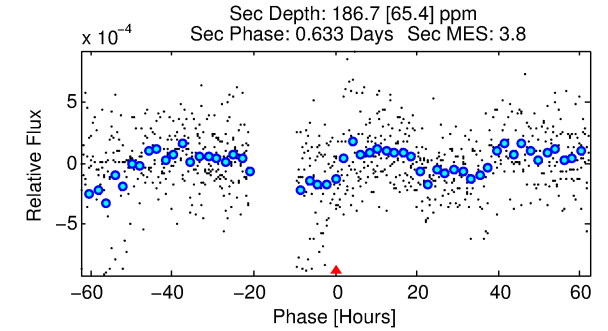
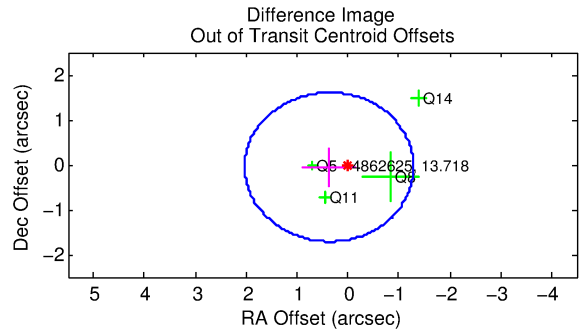
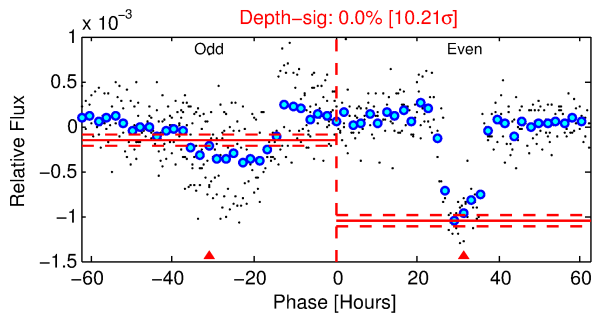
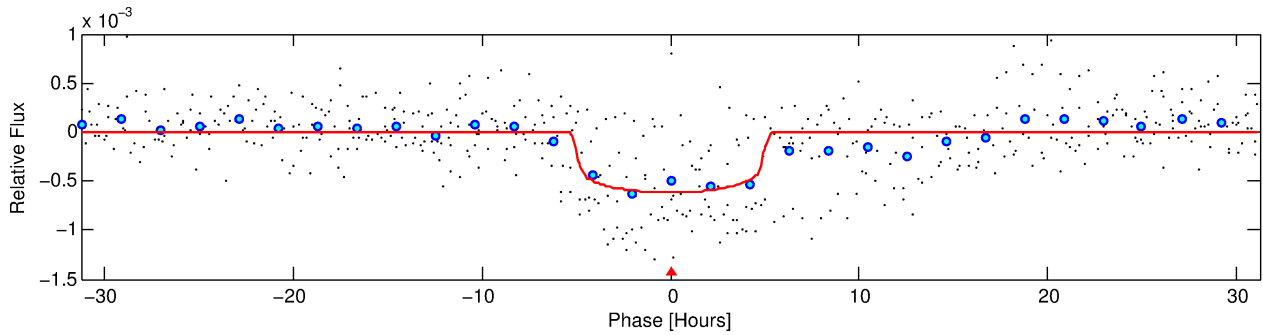
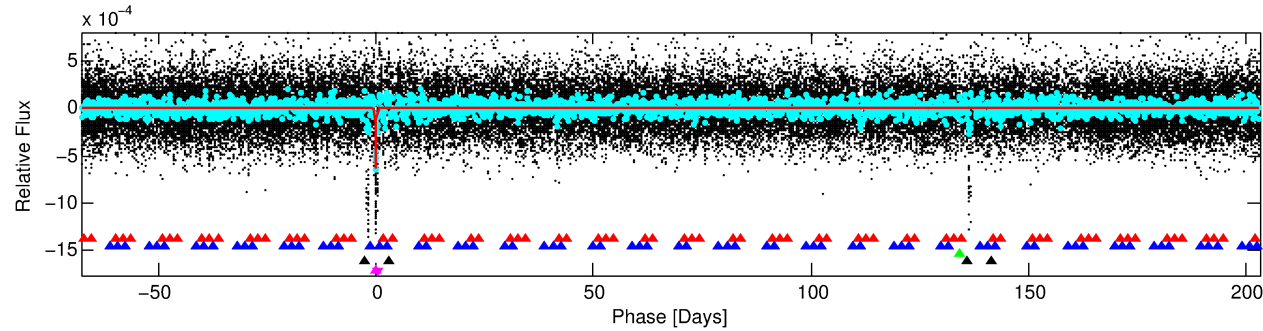
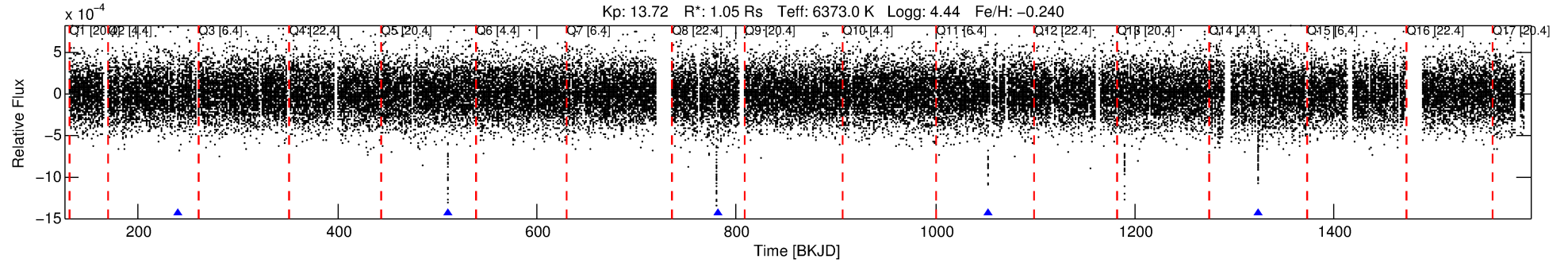
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 004862625-05

No Significant Match Found

# DV One-Page Summary

KIC: 4862625 Candidate: 5 of 5 Period: 270.883 d  
KOI: K06464 Corr: No Ephemeris Match



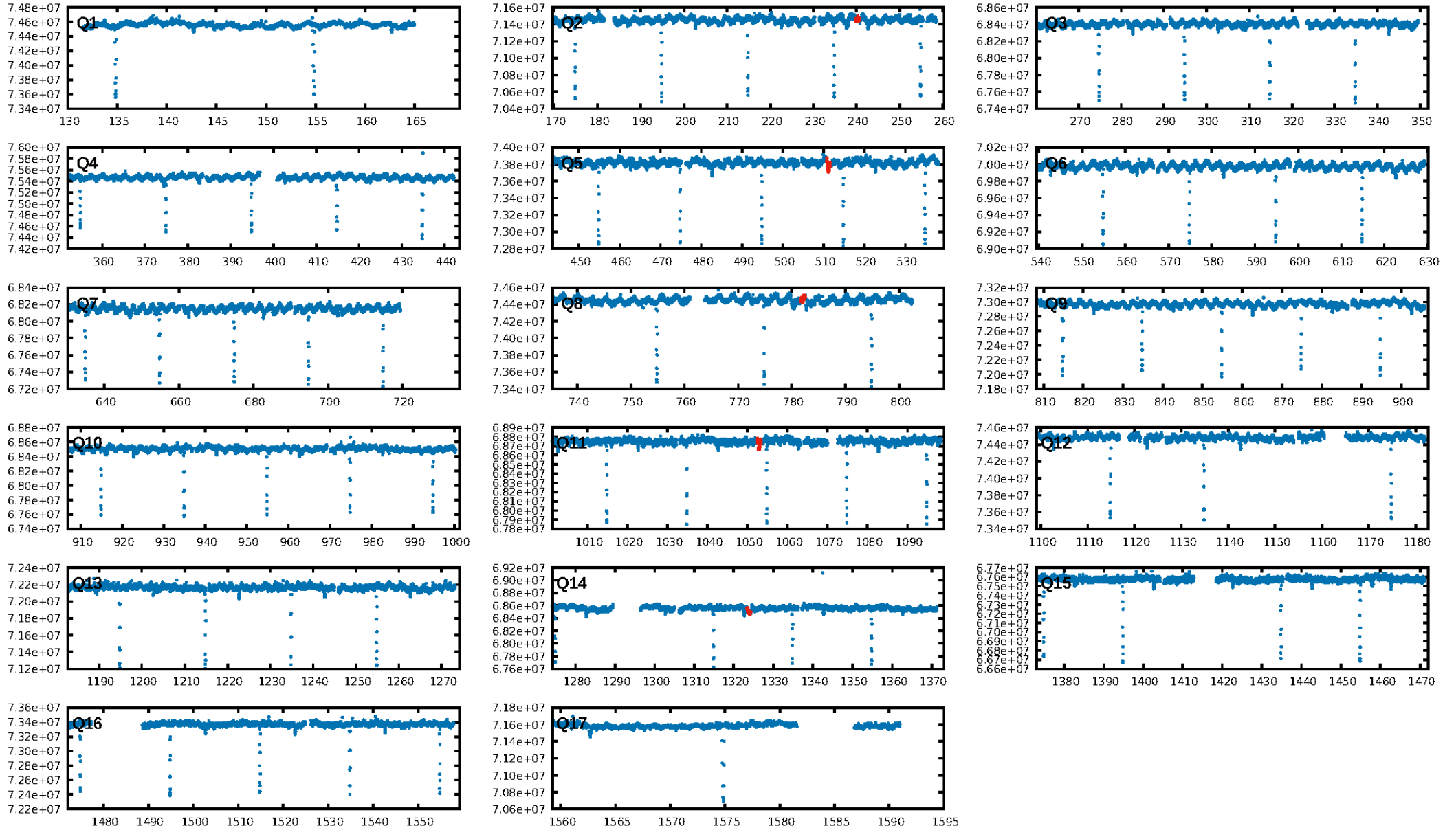
## DV Fit Results:

Period = 270.88262 [0.00285] d  
Epoch = 240.2605 [0.0071] BKJD  
Rp/R\* = 0.0242 [0.0050]  
a/R\* = 154.28 [164.53]  
b = 0.67 [0.88]  
Seff = 2.27 [0.83]  
Teq = 313 [29] K  
Rp = 2.76 [0.97] Re  
a = 0.8450 [0.2014] AU  
Ag = 9628.10 [6165.60] [1.56 $\sigma$ ]  
Teffp = 4793 [662] K [6.77 $\sigma$ ]

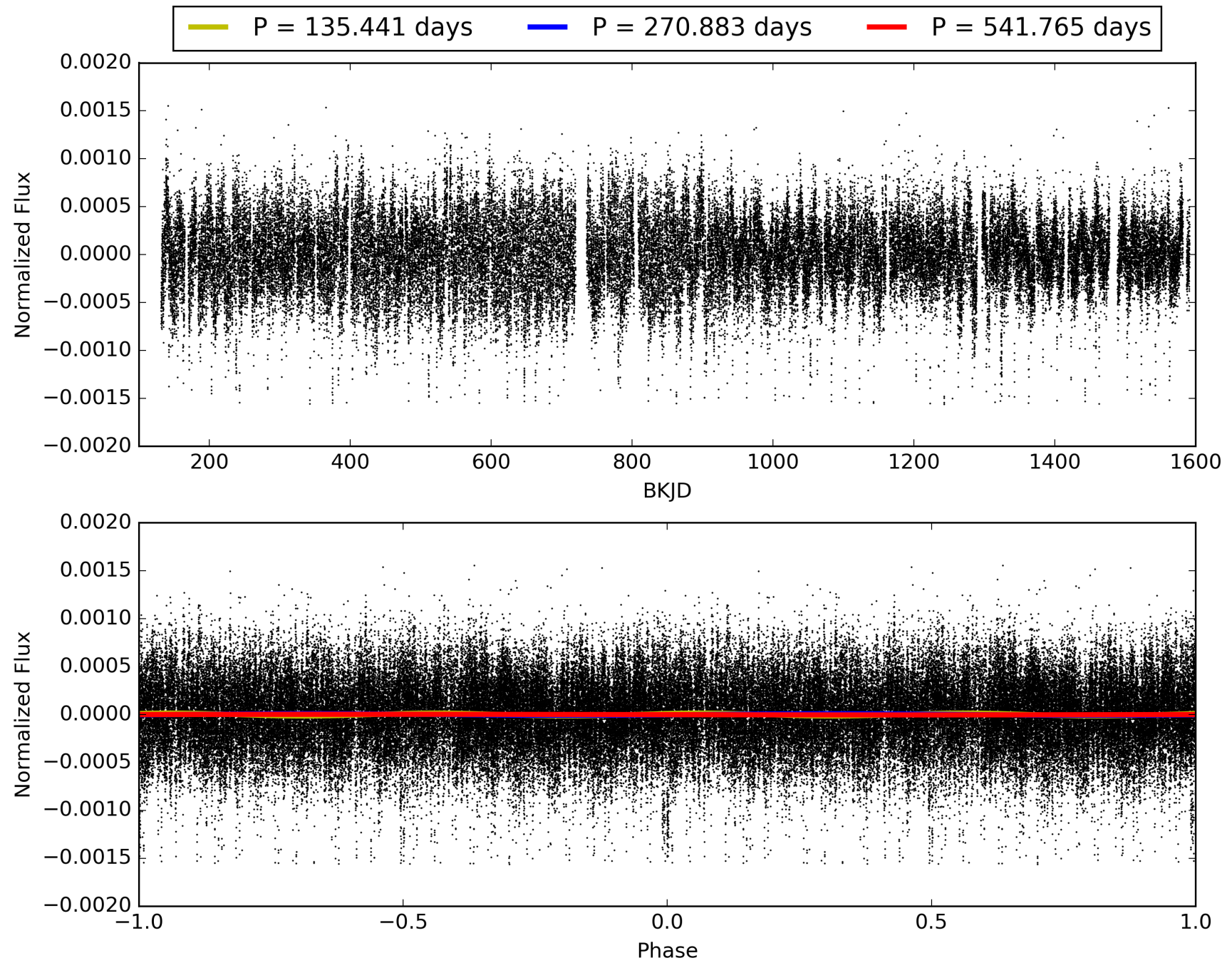
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [521.95 $\sigma$ ]  
LongPeriod-sig: 100.0% [168.22 $\sigma$ ]  
**ModelChiSquare2-sig: 0.0%**  
ModelChiSquareGof-sig: 58.4%  
Bootstrap-pfa: 2.01e-29  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 3.189  
Centroid-sig: 17.3%  
Centroid-so: 0.709 arcsec [1.26 $\sigma$ ]  
OotOffset-rm: 0.372 arcsec [0.67 $\sigma$ ]  
KicOffset-rm: 0.300 arcsec [0.53 $\sigma$ ]  
OotOffset-st: 1/1/1/1 [4]  
KicOffset-st: 1/1/1/1 [4]  
DiffImageQuality-fgm: 0.75 [3/4]  
DiffImageOverlap-fno: 0.80 [4/5]

# TCE 004862625-05, PDC Light Curves

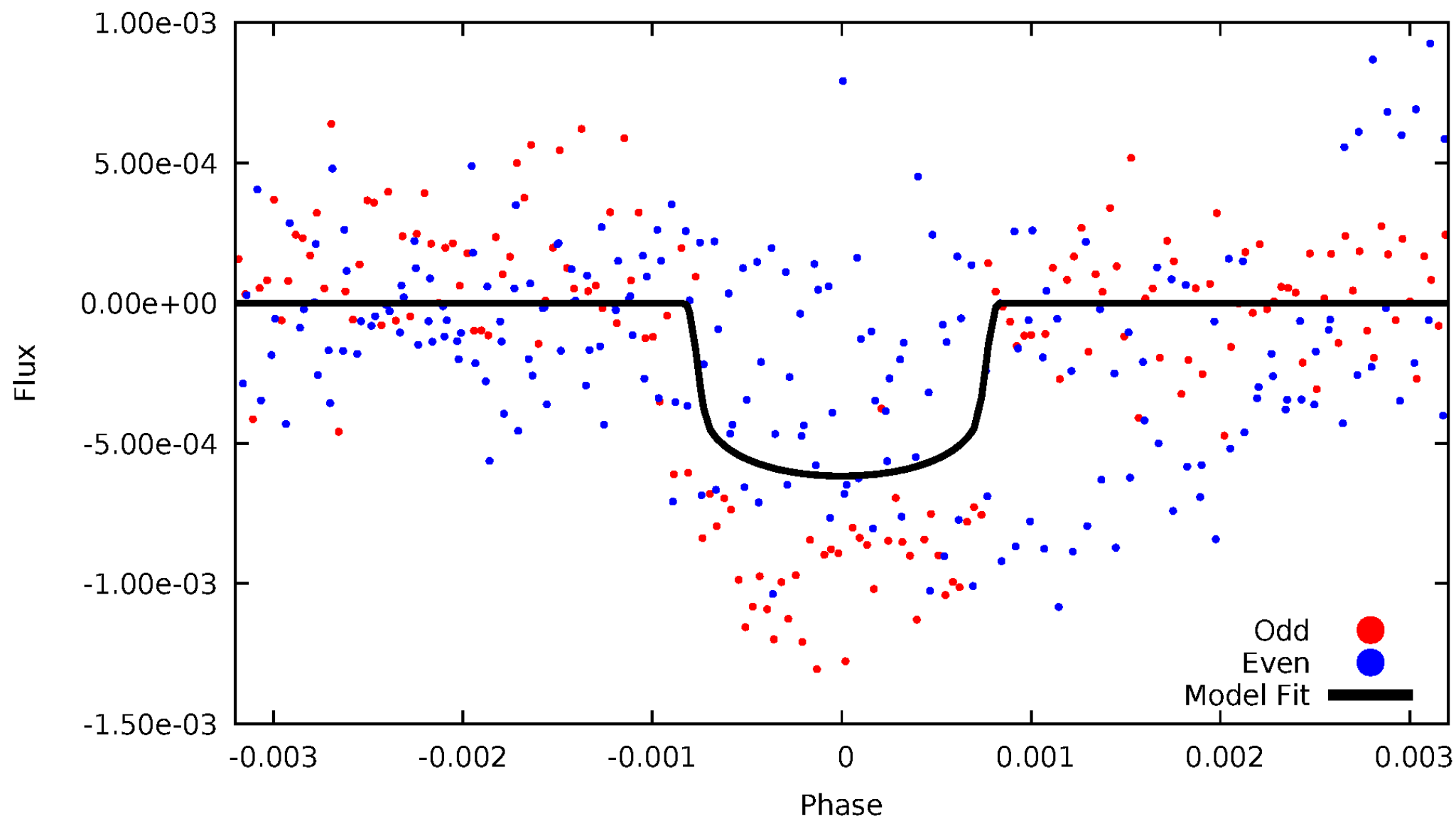


TCE 004862625-05



# DV Odd/Even

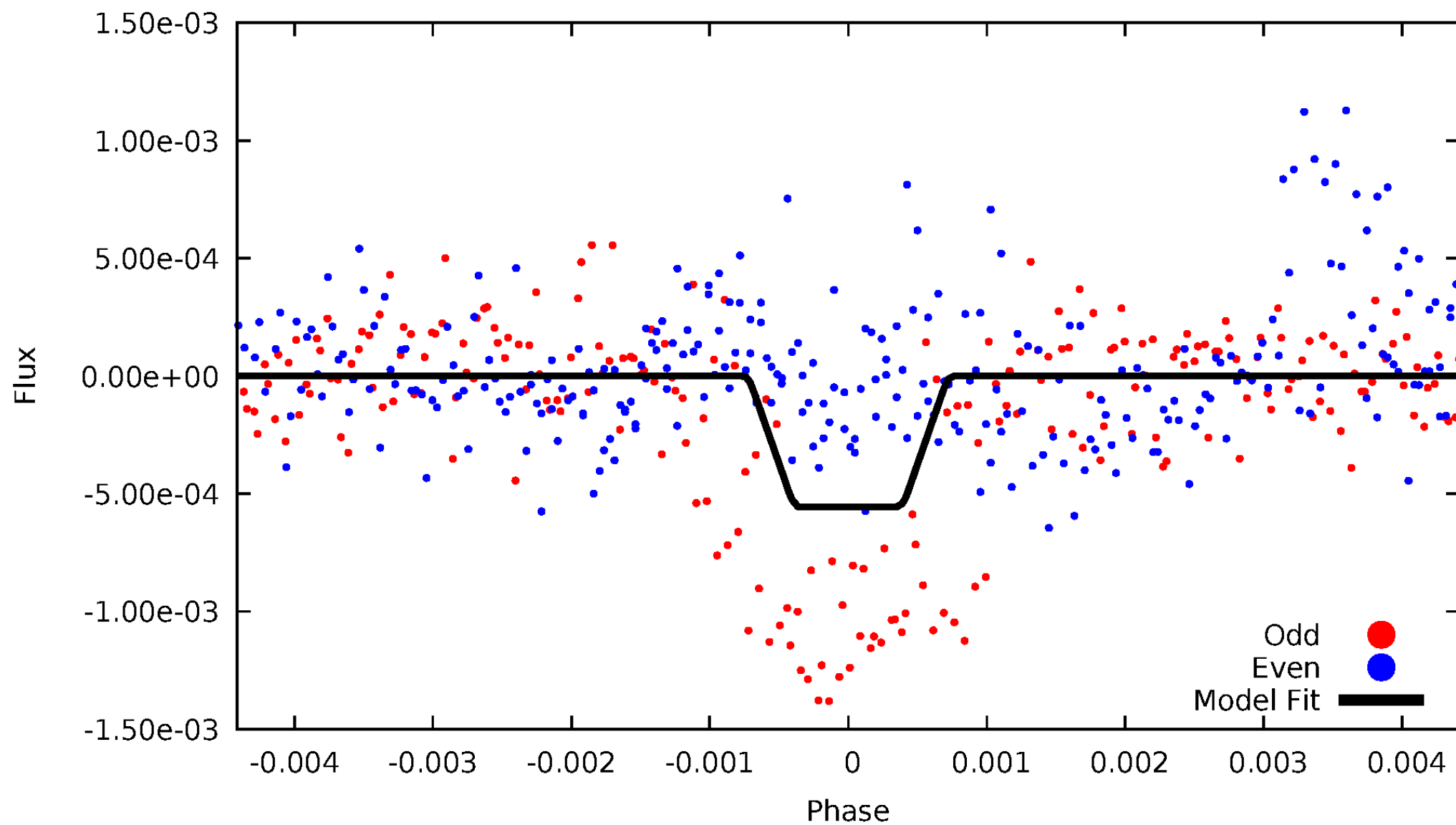
TCE 004862625-05





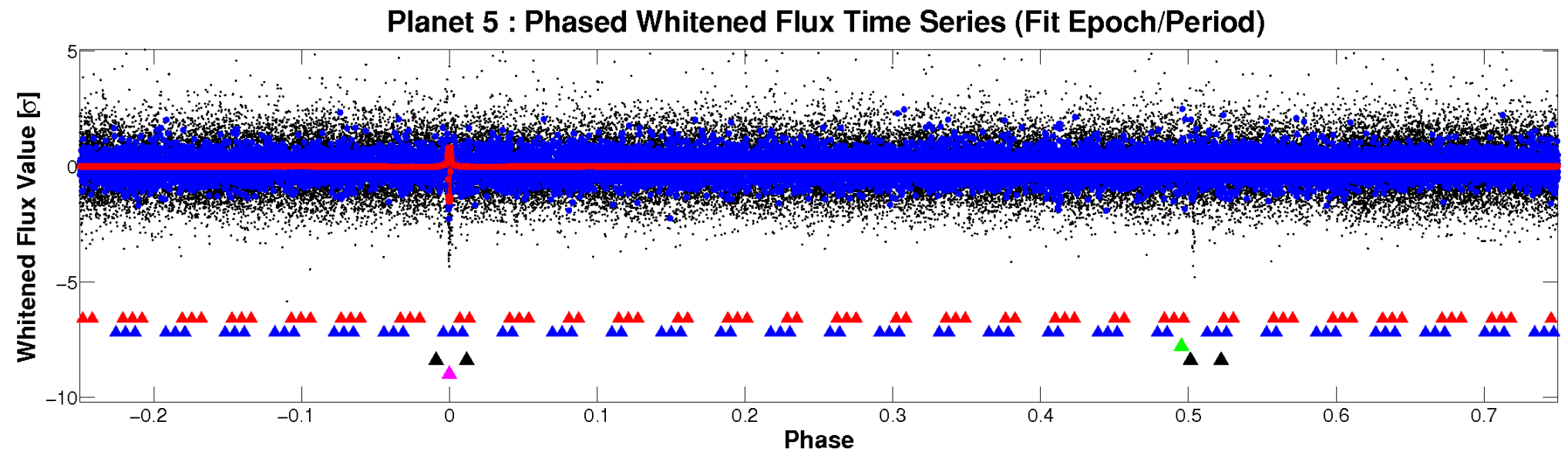
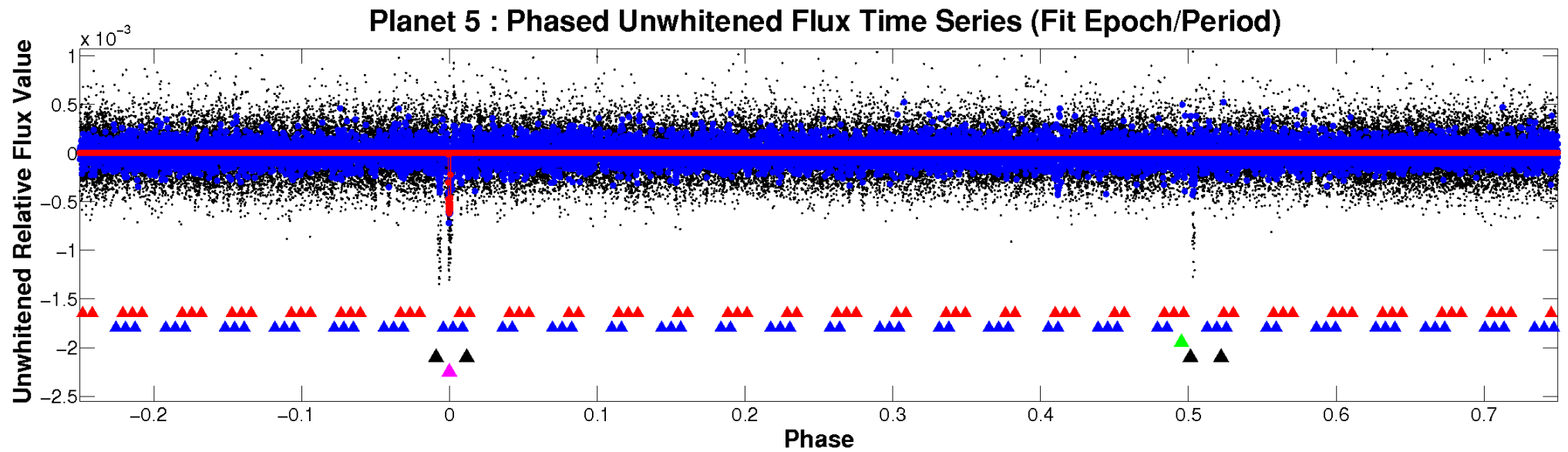
# ALT Odd/Even

TCE 004862625-05



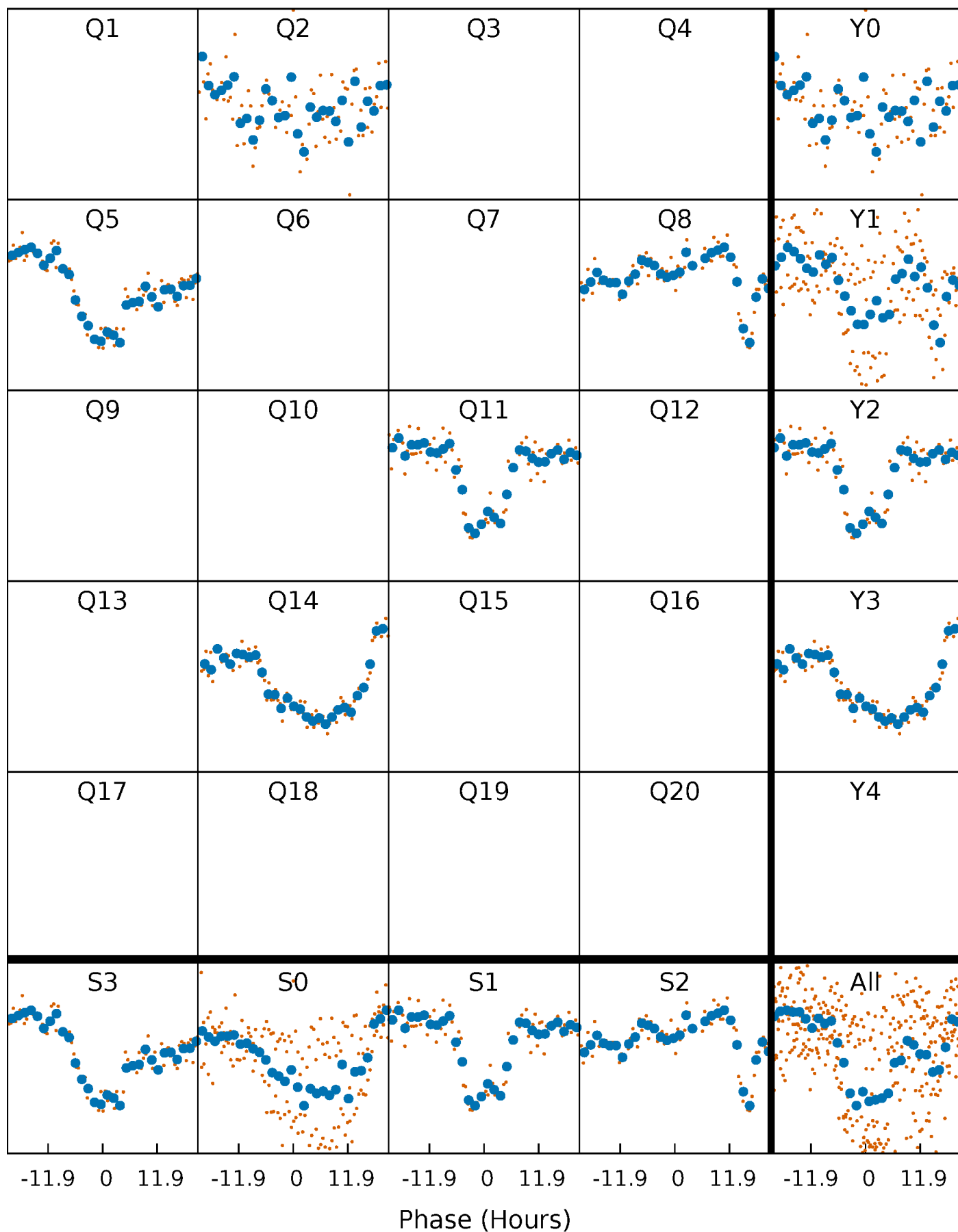


# Non-Whitened Vs. Whitened Light Curve



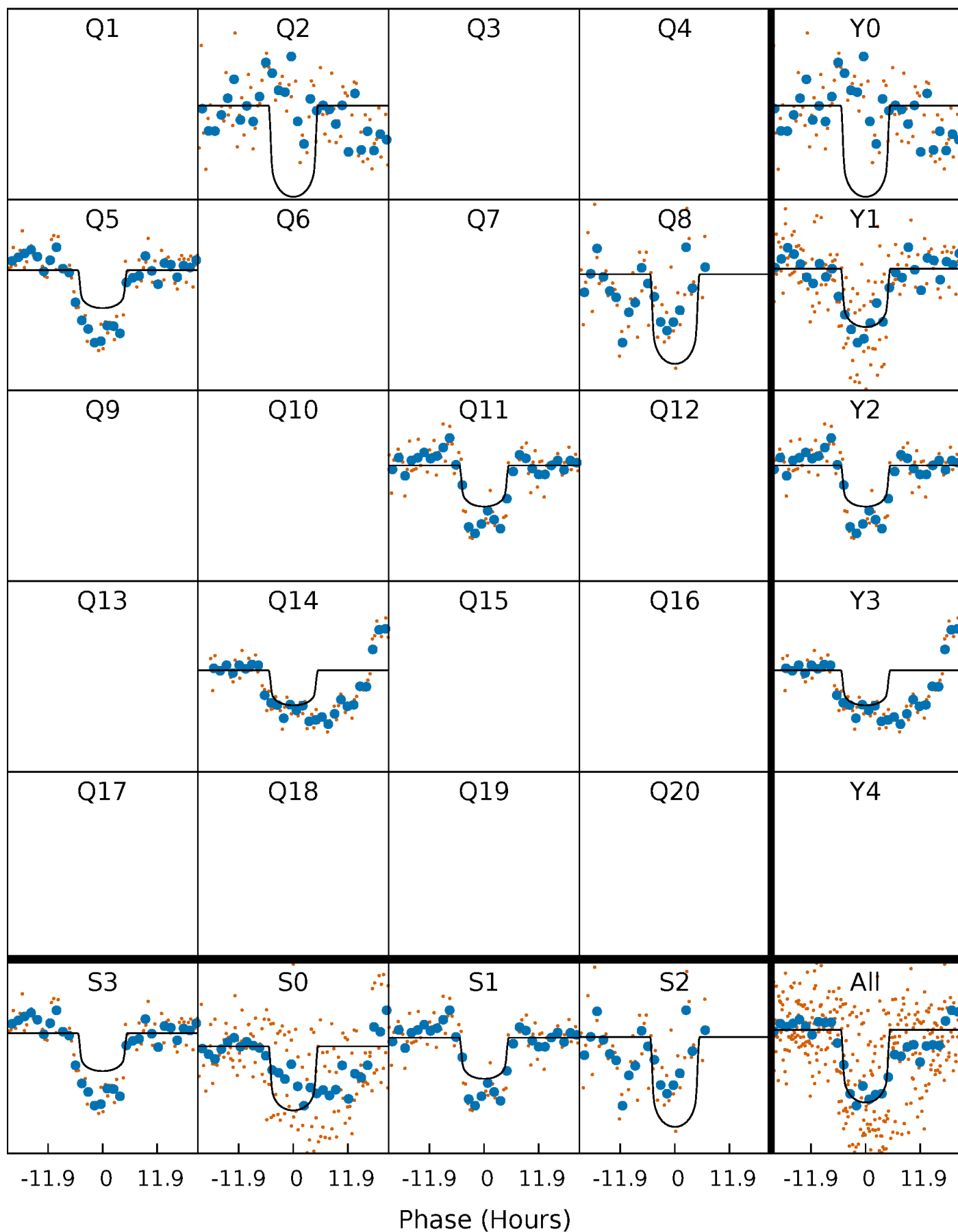
# PDC Quarter-Phased Transit Curves

TCE 004862625-05     $P=270.882616$  Days     $T_0=240.260490$  (BKJD)



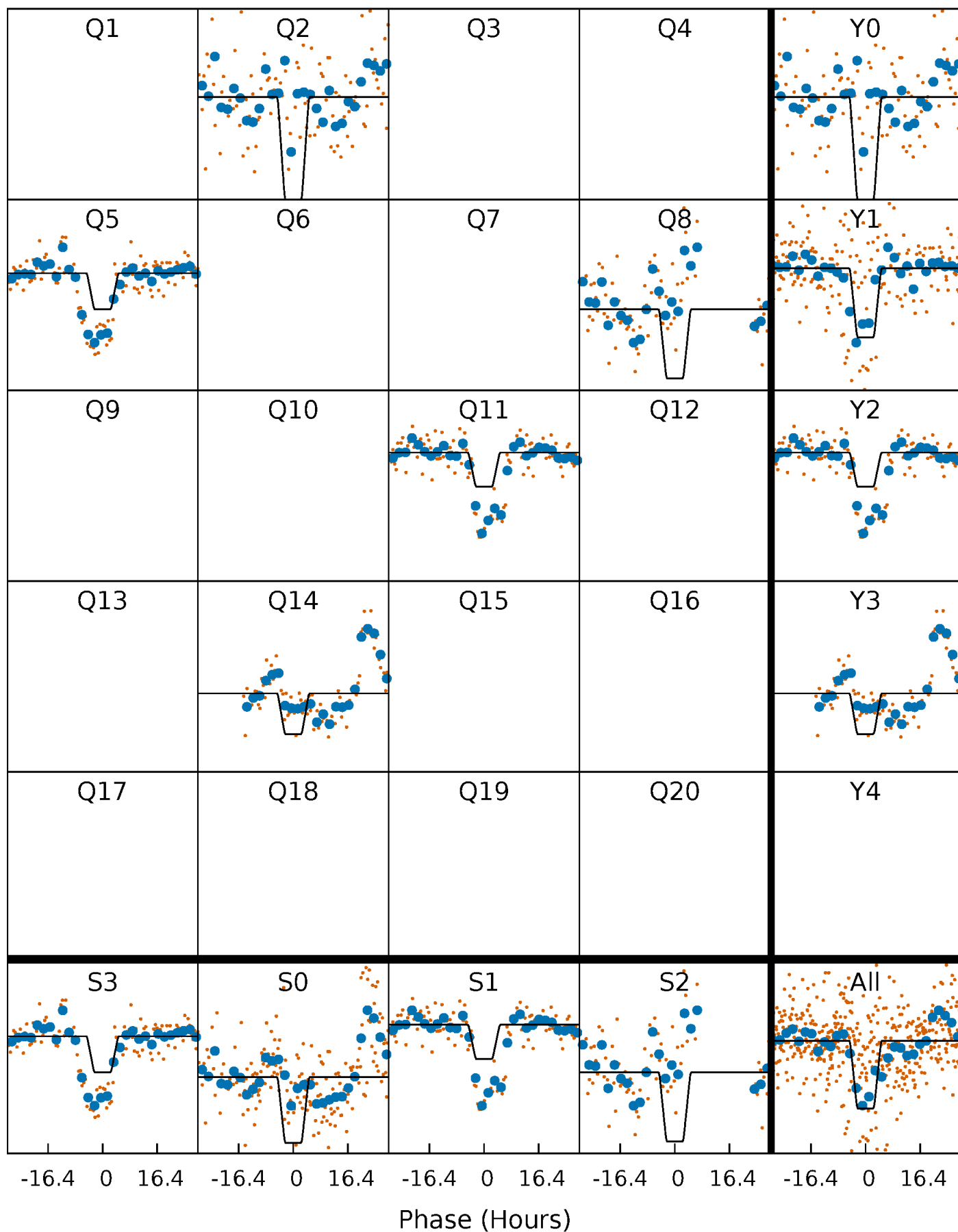
# DV Quarter-Phased Transit Curves

TCE 004862625-05     $P=270.882616$  Days     $T_0=240.260490$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

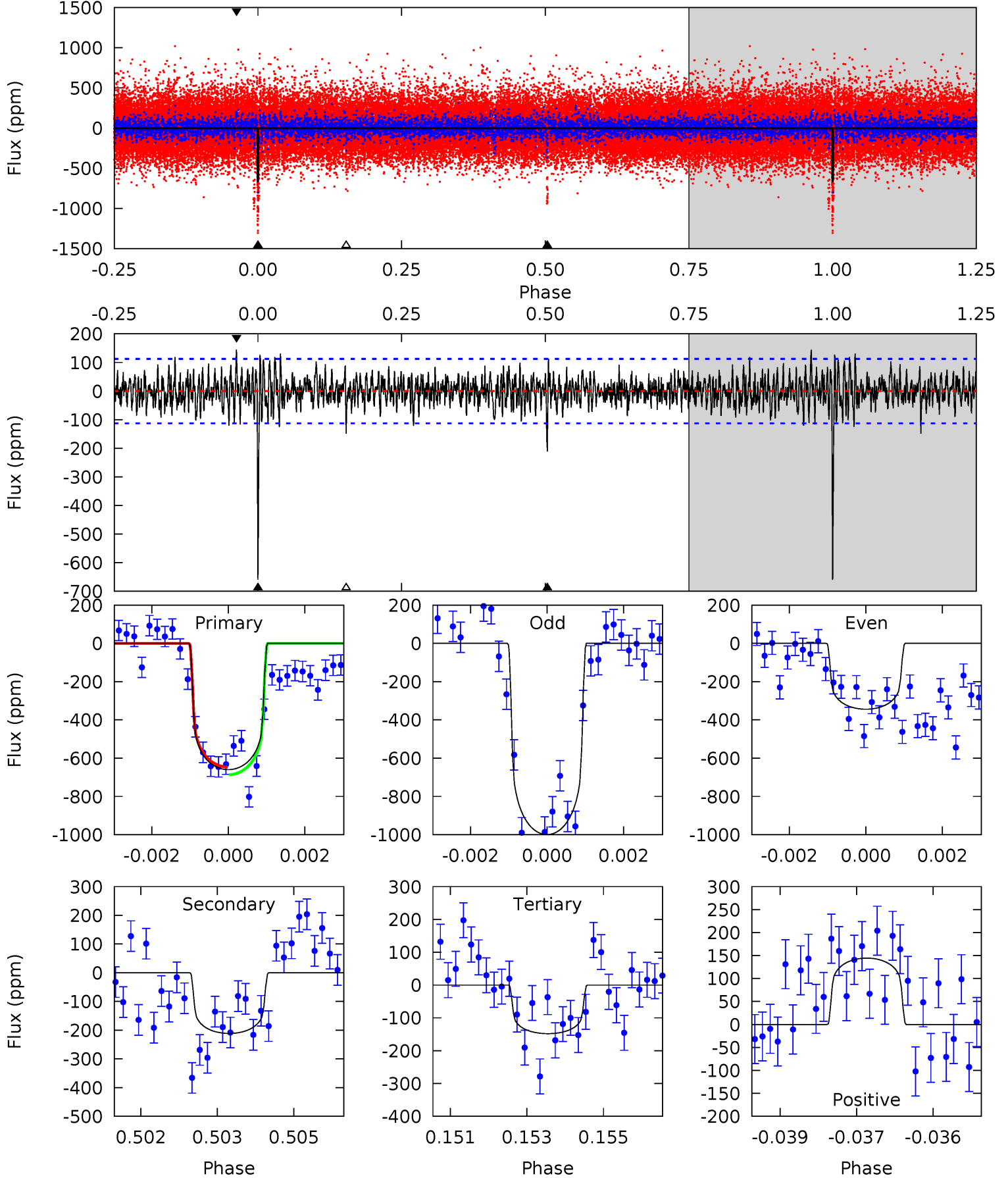
TCE 004862625-05     $P=270.819593$  Days     $T_0=240.380941$  (BKJD)



# DV Model-Shift Uniqueness Test

004862625-05, P = 270.882616 Days, E = 240.260490 Days

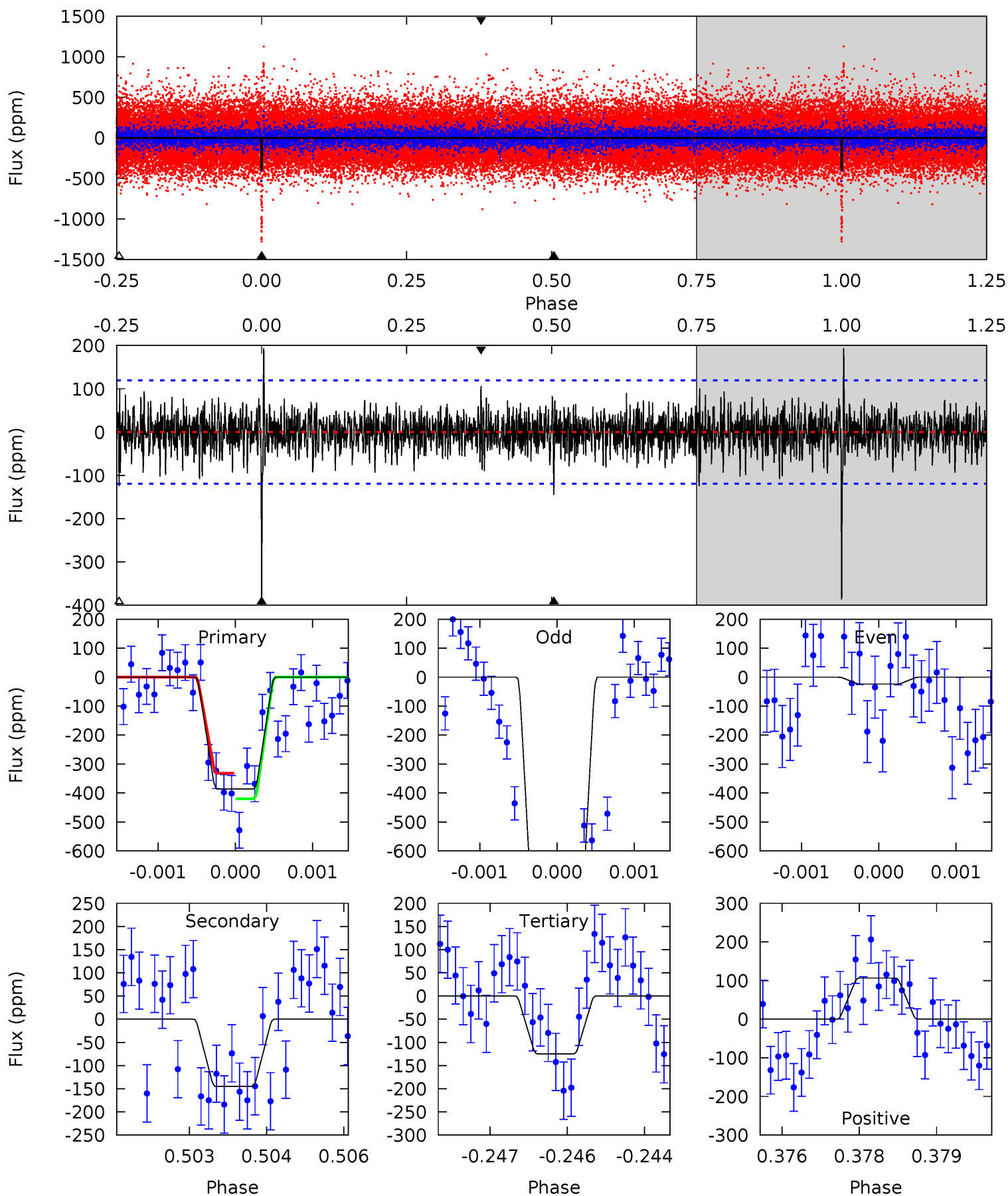
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.4	10.1	7.06	6.88	5.36	3.15	1.82	24.4	24.6	3.01	3.20	15.8	0.75	0.18	0.94



# Alt Model-Shift Uniqueness Test

004862625-05, P = 270.819593 Days, E = 240.380941 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
17.4	6.53	5.63	4.80	5.38	3.18	1.42	11.8	12.6	0.91	1.73	24.8	2.28	0.33	1.93



### Stellar Parameters For KIC 004862625

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6373^{+151}_{-189}$	$4.438^{+0.062}_{-0.188}$	$-0.240^{+0.250}_{-0.300}$	$1.047^{+0.298}_{-0.106}$	$1.094^{+0.143}_{-0.143}$	$1.343^{+0.431}_{-0.636}$
	+2%/-3%	+1%/-4%	+104%/-125%	+28%/-10%	+13%/-13%	+32%/-47%
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 004862625-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-211 \pm 21$	$2.84^{+0.78}_{-0.58}$	$445^{+27}_{-21}$	$5011^{+553}_{-394}$	$9942^{+5904}_{-3521}$
Alt.	$-145 \pm 22$	$2.76^{+0.76}_{-0.62}$	$443^{+29}_{-19}$	$4682^{+516}_{-384}$	$7170^{+4906}_{-2786}$

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

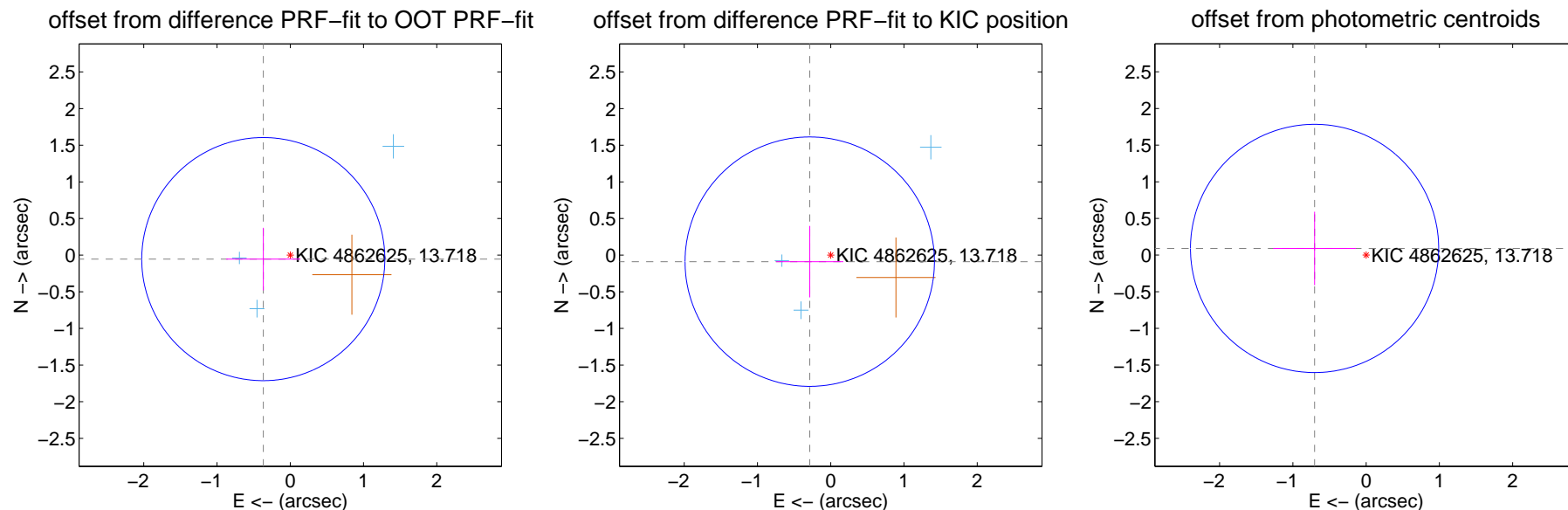
## DV Centroid Data

Supplemental centroid analysis for 004862625-05. Kepler magnitude: 13.72. Transit SNR 14.38

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.372 \pm 0.553$	0.67	$0.368 \pm 0.507$	$-0.054 \pm 0.428$
PRF-fit source offset from KIC position	$0.300 \pm 0.567$	0.53	$0.286 \pm 0.459$	$-0.089 \pm 0.488$
photometric centroid source offset	$0.71 \pm 0.56$	1.26	$0.70 \pm 0.57$	$0.09 \pm 0.50$



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.

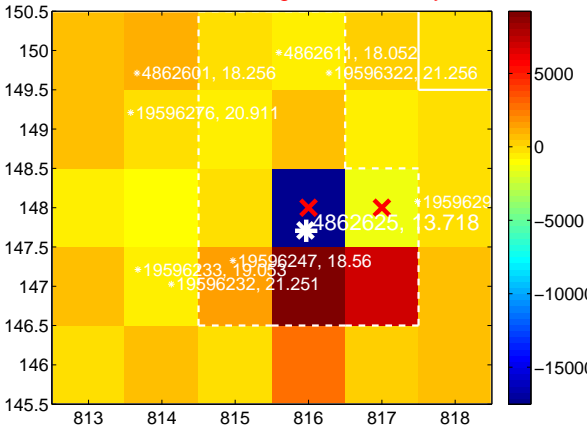
Q1 no difference image



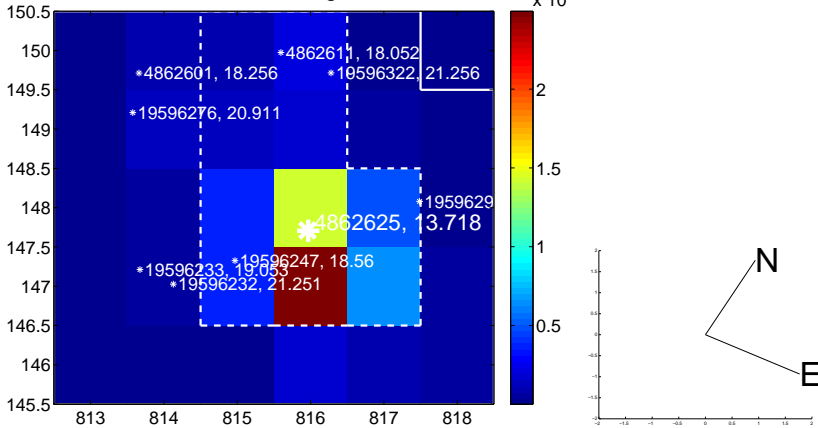
Q1 no OOT image



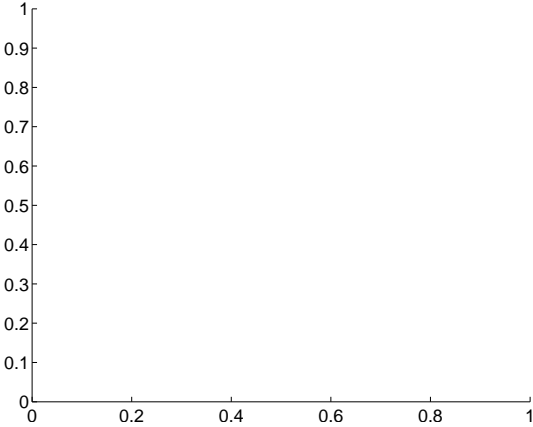
Q2 difference image. Poor Quality



Q2 OOT image



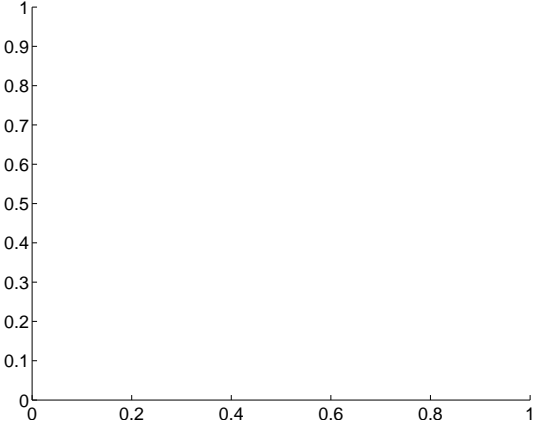
Q3 no difference image



Q3 no OOT image



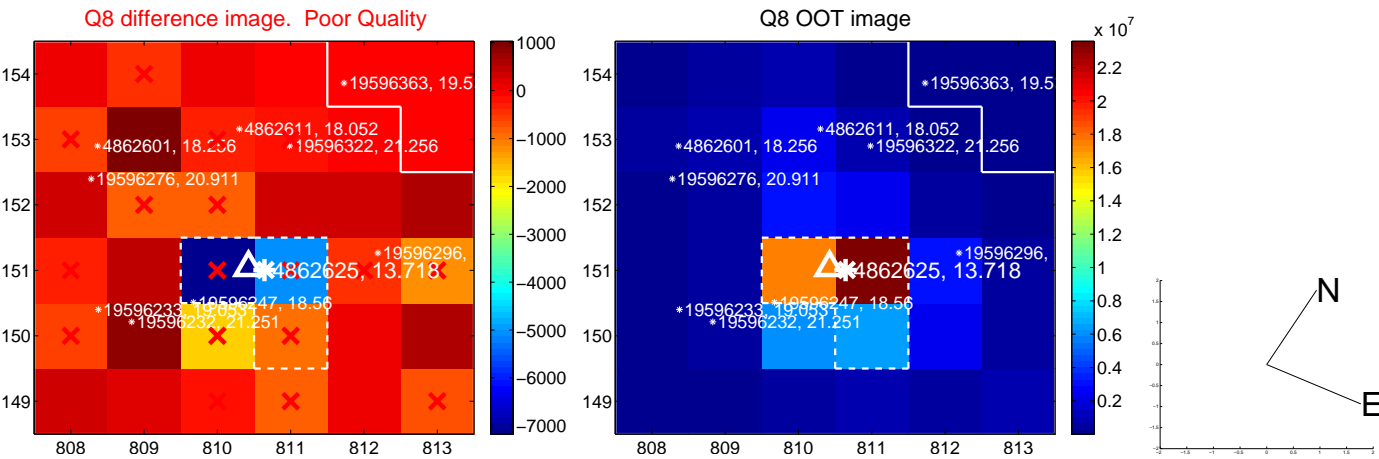
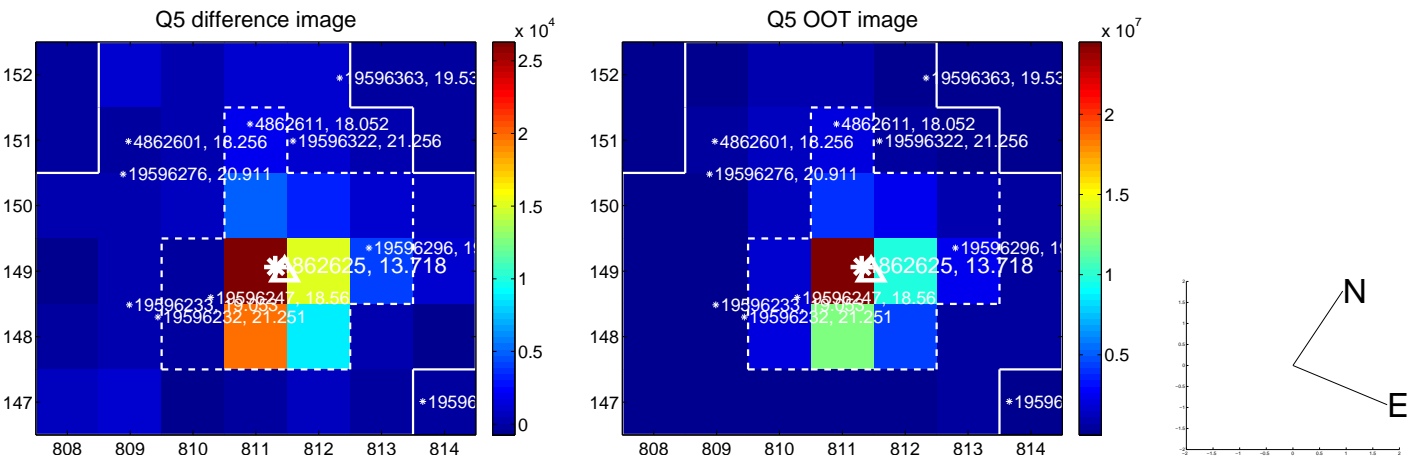
Q4 no difference image



Q4 no OOT image



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



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

Q9 no difference image



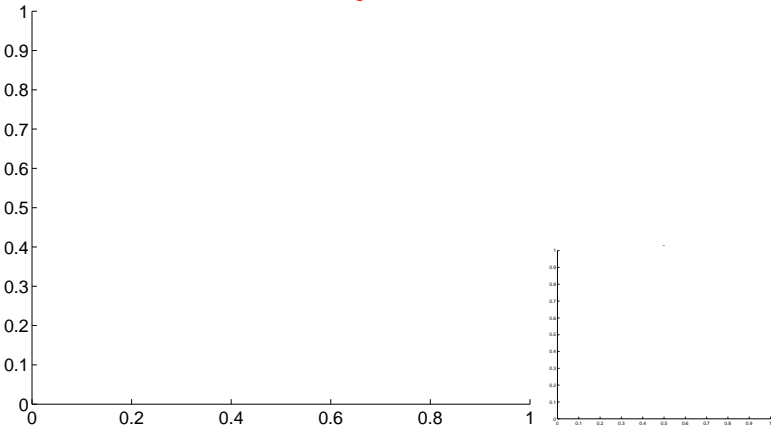
Q9 no OOT image



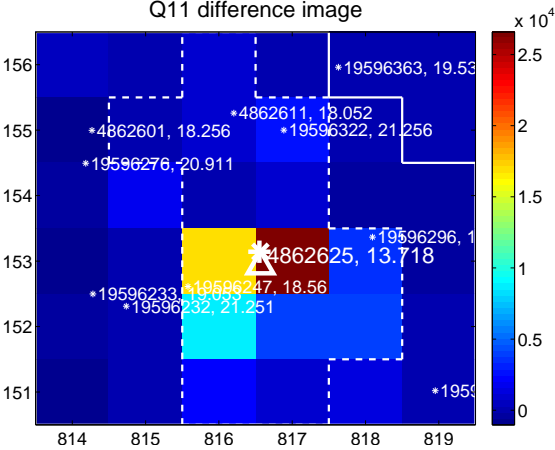
Q10 no difference image



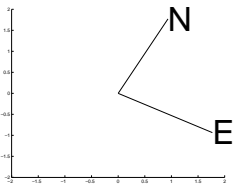
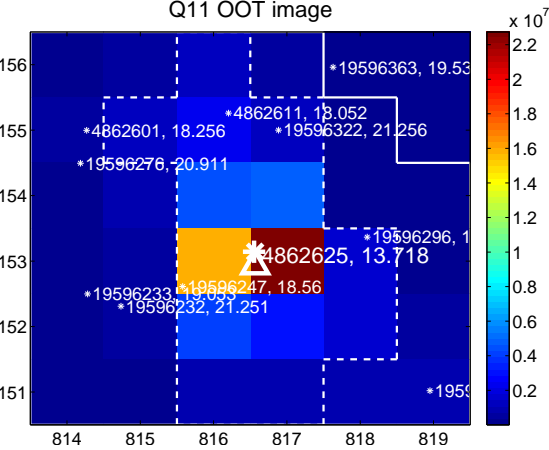
Q10 no OOT image



Q11 difference image



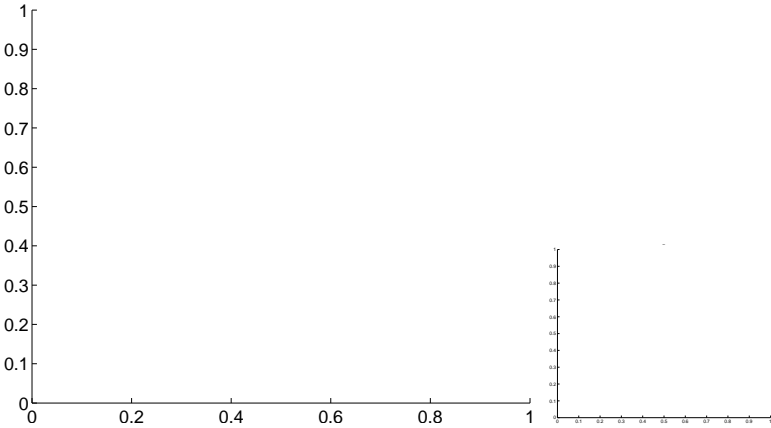
Q11 OOT image



Q12 no difference image



Q12 no OOT image



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

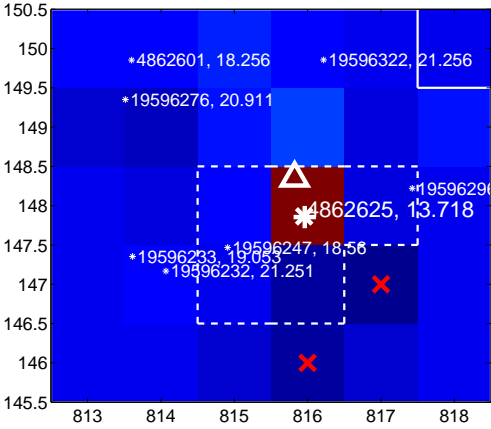
Q13 no difference image



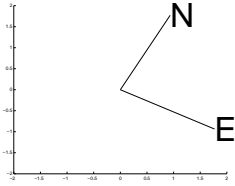
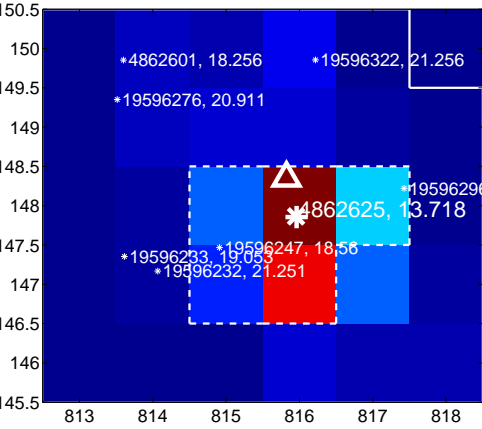
Q13 no OOT image



Q14 difference image



Q14 OOT image



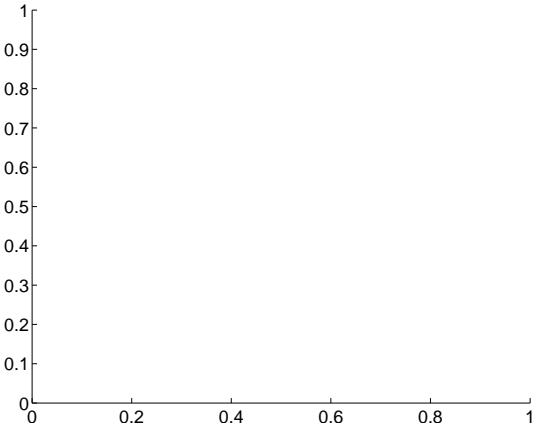
Q15 no difference image



Q15 no OOT image



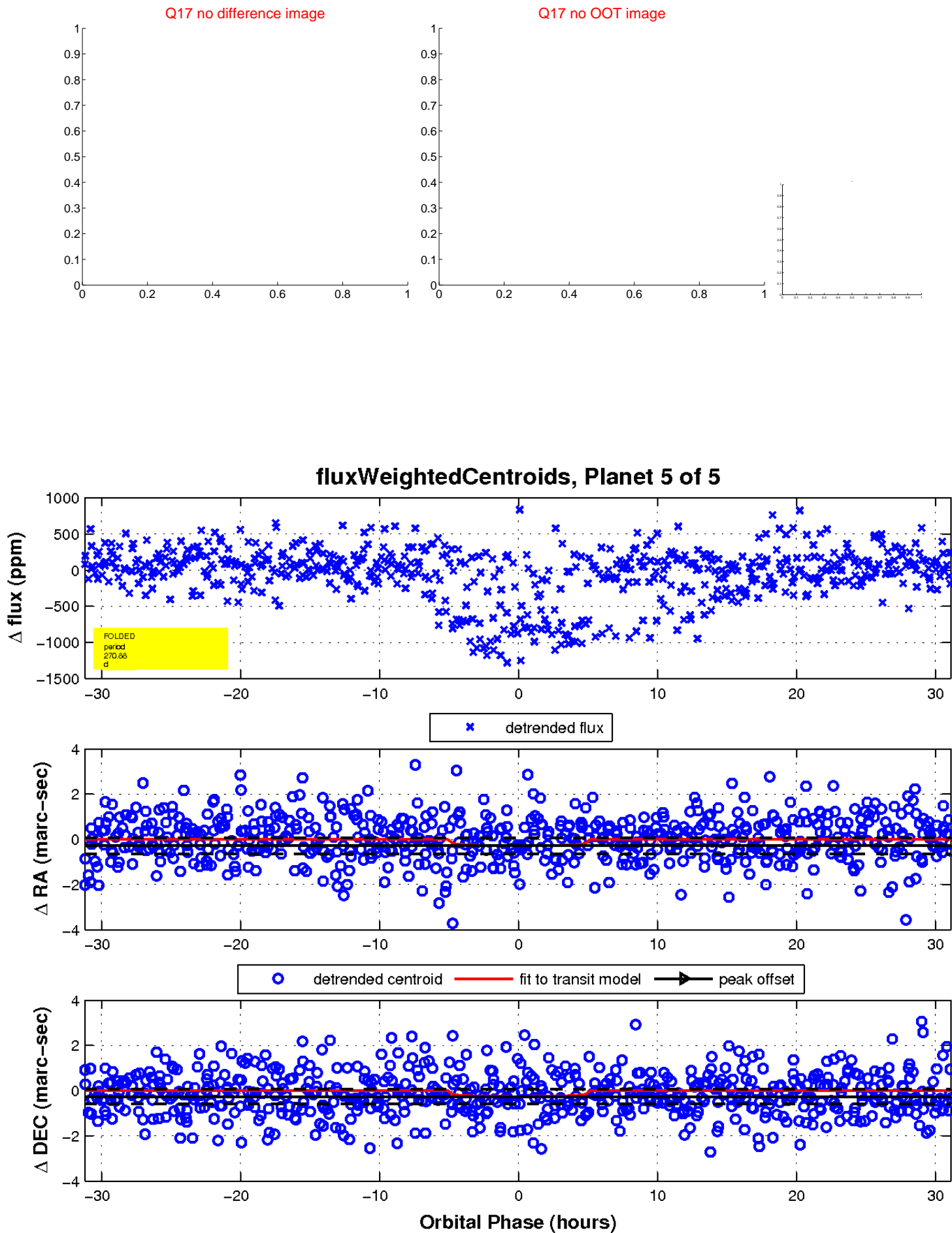
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

