

# KIC 008378462

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008378462-01	OBS	No	118.334897	140.944024	1235.1	3.852	312.3	118.5	9.47	4999	67.35	123.75
008378462-02	OBS	No	154.845785	191.422481	295.3	8.456	12.1	21.8	9.47	4999	18.33	86.46
008378462-03	OBS	No	147.830539	234.274101	115.9	1.984	10.7	10.5	9.47	4999	12.25	91.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008378462-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
008378462-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
008378462-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

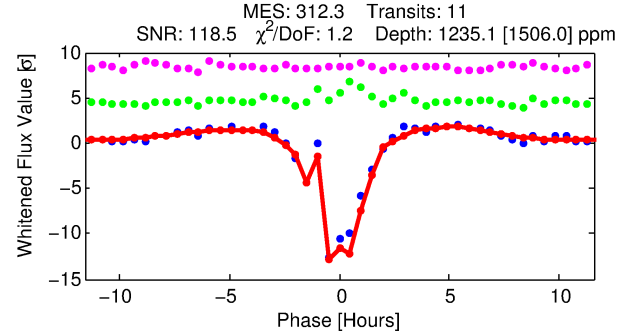
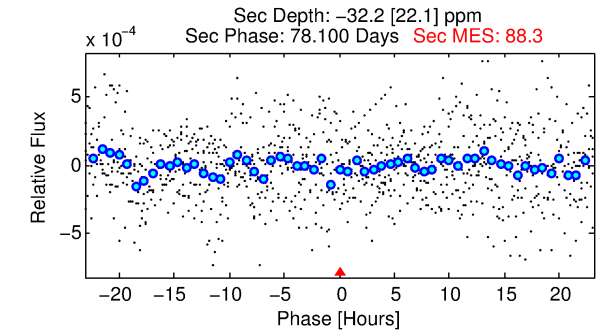
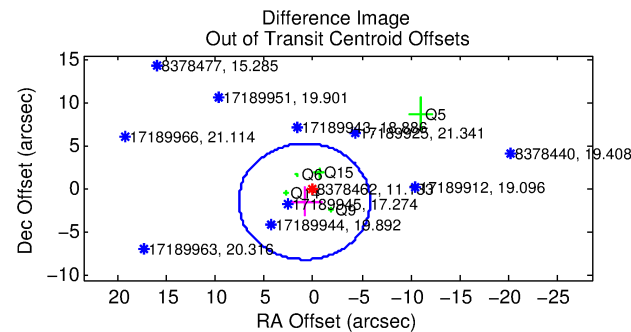
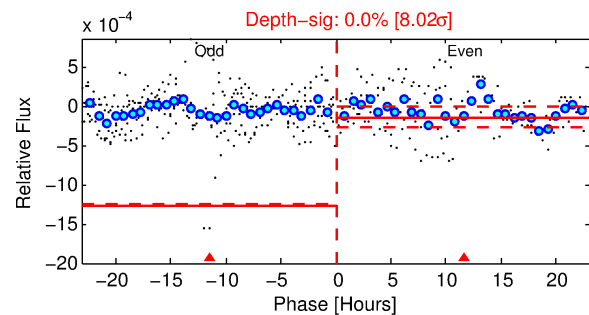
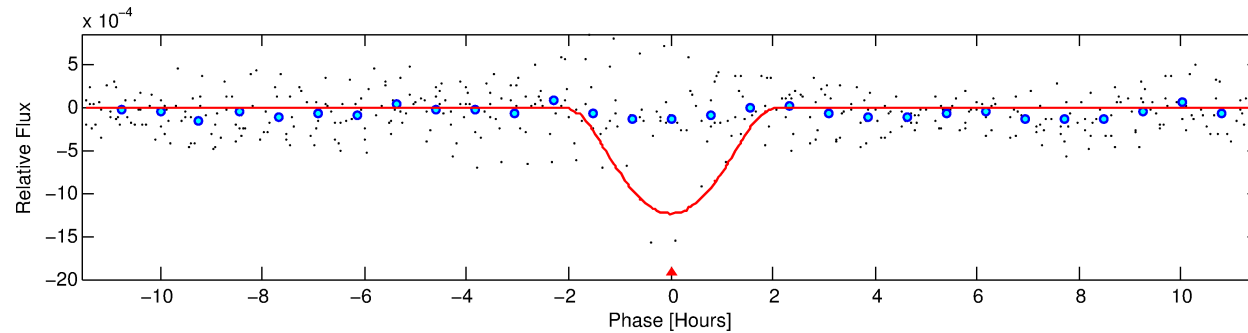
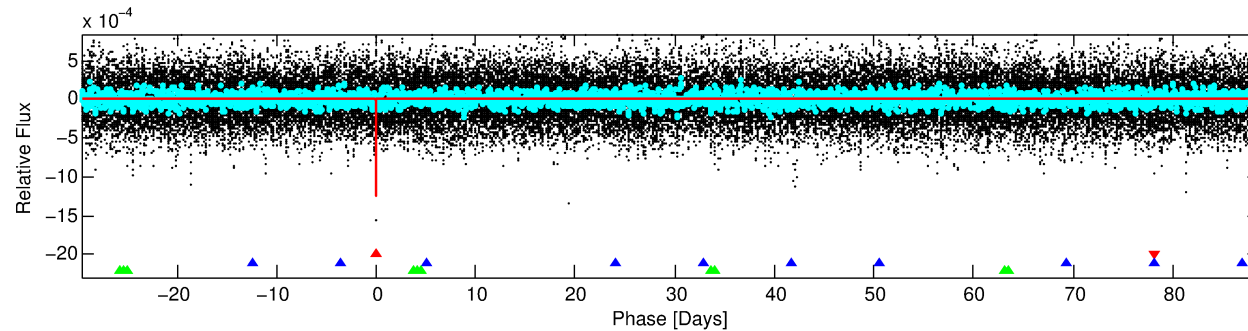
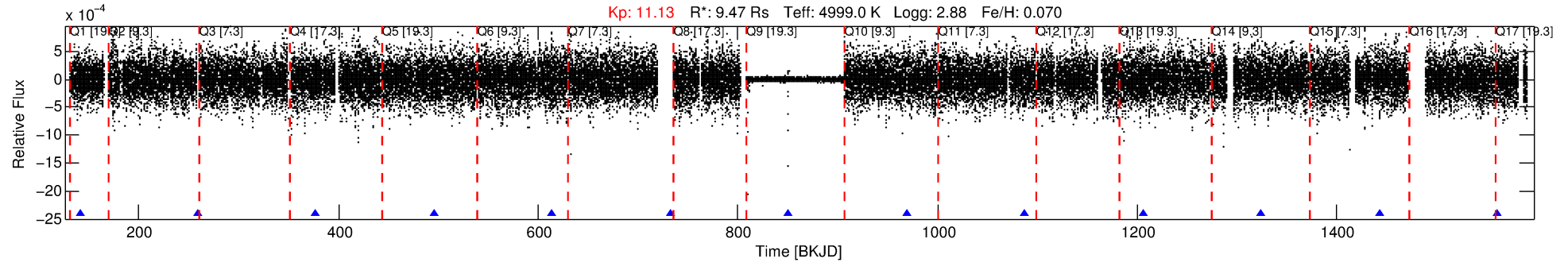
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008378462-01

No Significant Match Found

# DV One-Page Summary

KIC: 8378462 Candidate: 1 of 3 Period: 118.335 d



## DV Fit Results:

Period = 118.33490 [0.00063] d  
Epoch = 140.9440 [0.0038] BKJD  
Rp/R\* = 0.0652 [0.0608]  
a/R\* = 86.10 [17.57]  
b = 1.00 [0.03]  
Seff = 123.75 [24.11]  
Teff = 850 [41] K  
Rp = 67.35 [64.83] Re  
a = 0.6368 [0.1011] AU  
Ag = N/A  
Teffp = N/A

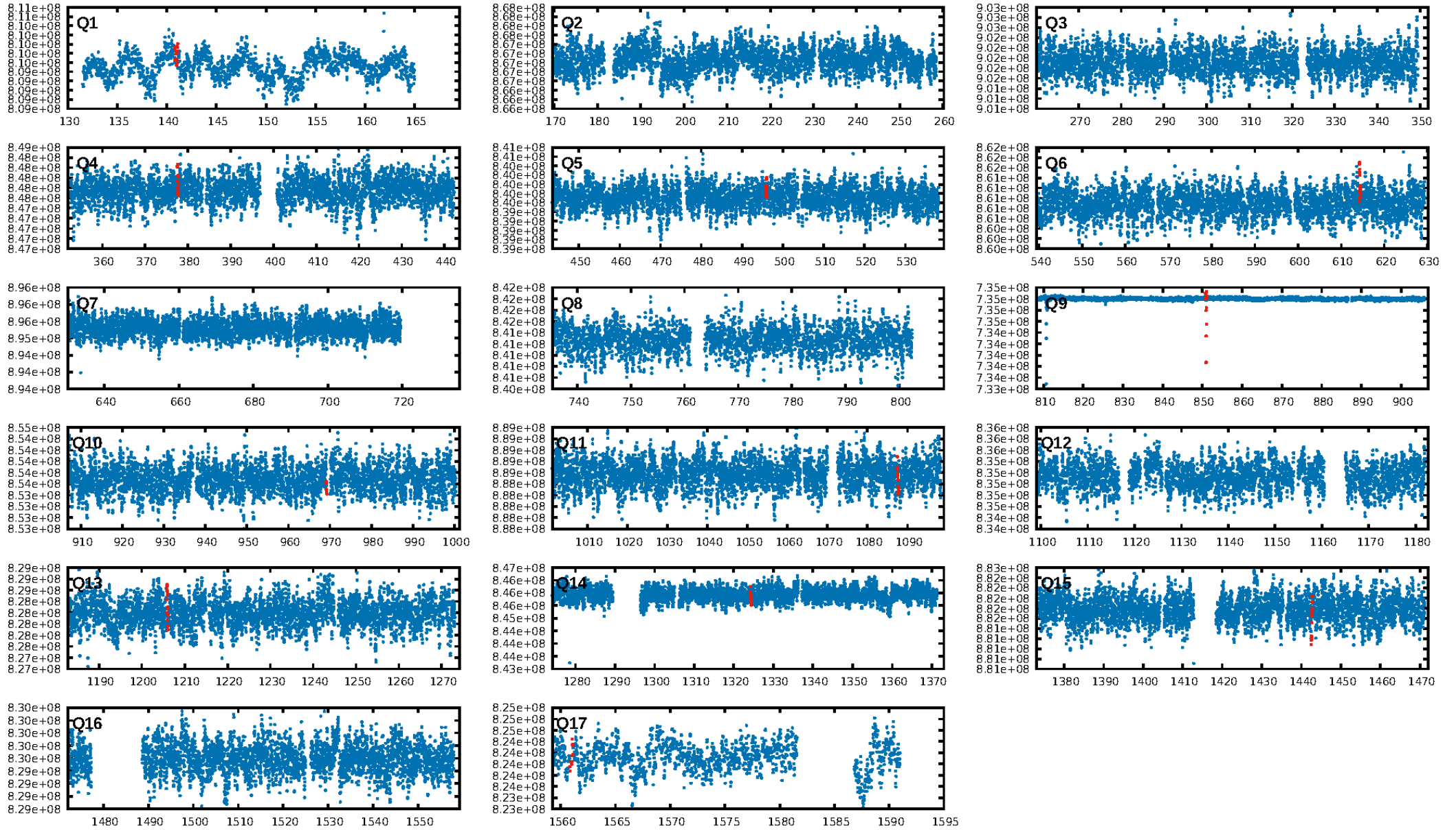
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [163.37 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 41.4%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: 0.07927  
Centroid-sig: 13.0%  
Centroid-so: 0.144 arcsec [1.02 $\sigma$ ]  
OotOffset-rm: 1.676 arcsec [0.75 $\sigma$ ]  
KicOffset-rm: 2.109 arcsec [0.77 $\sigma$ ]  
OotOffset-st: 2/1/0/2 [5]  
KicOffset-st: 2/1/0/2 [5]  
DiffImageQuality-fgm: 0.20 [1/5]  
DiffImageOverlap-fno: 1.00 [8/8]

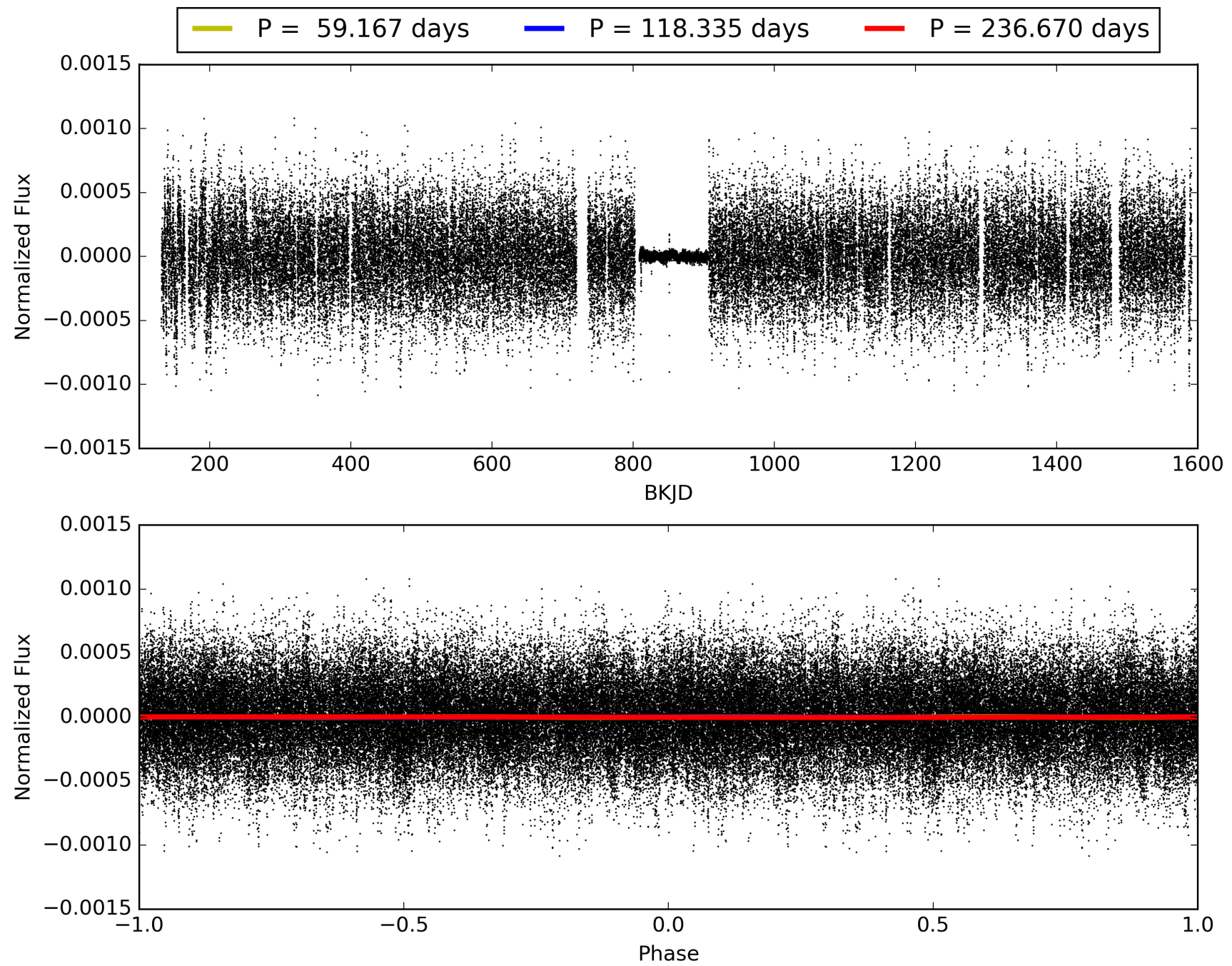
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 10:22:02 Z

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

# TCE 008378462-01, PDC Light Curves

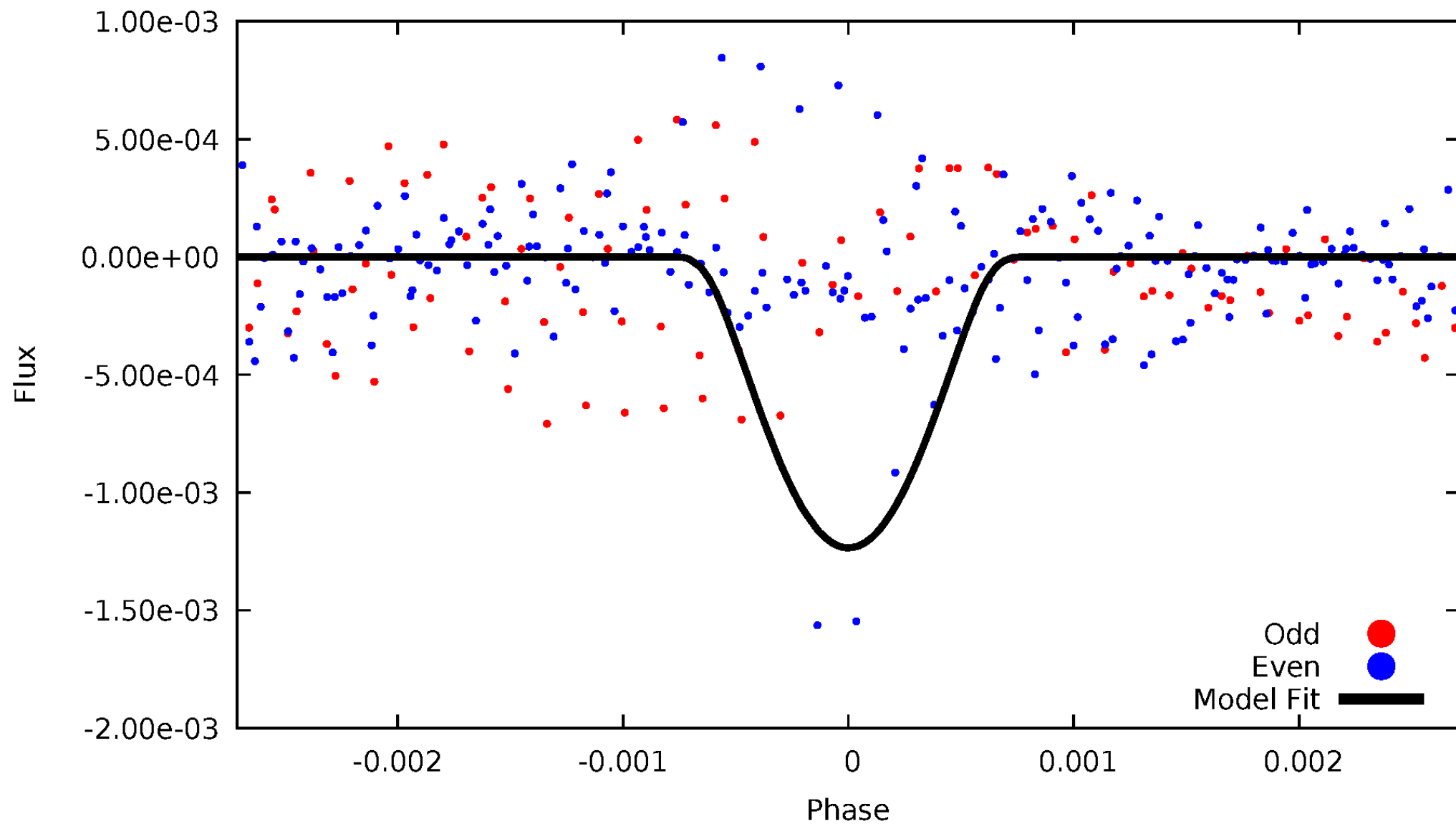


TCE 008378462-01



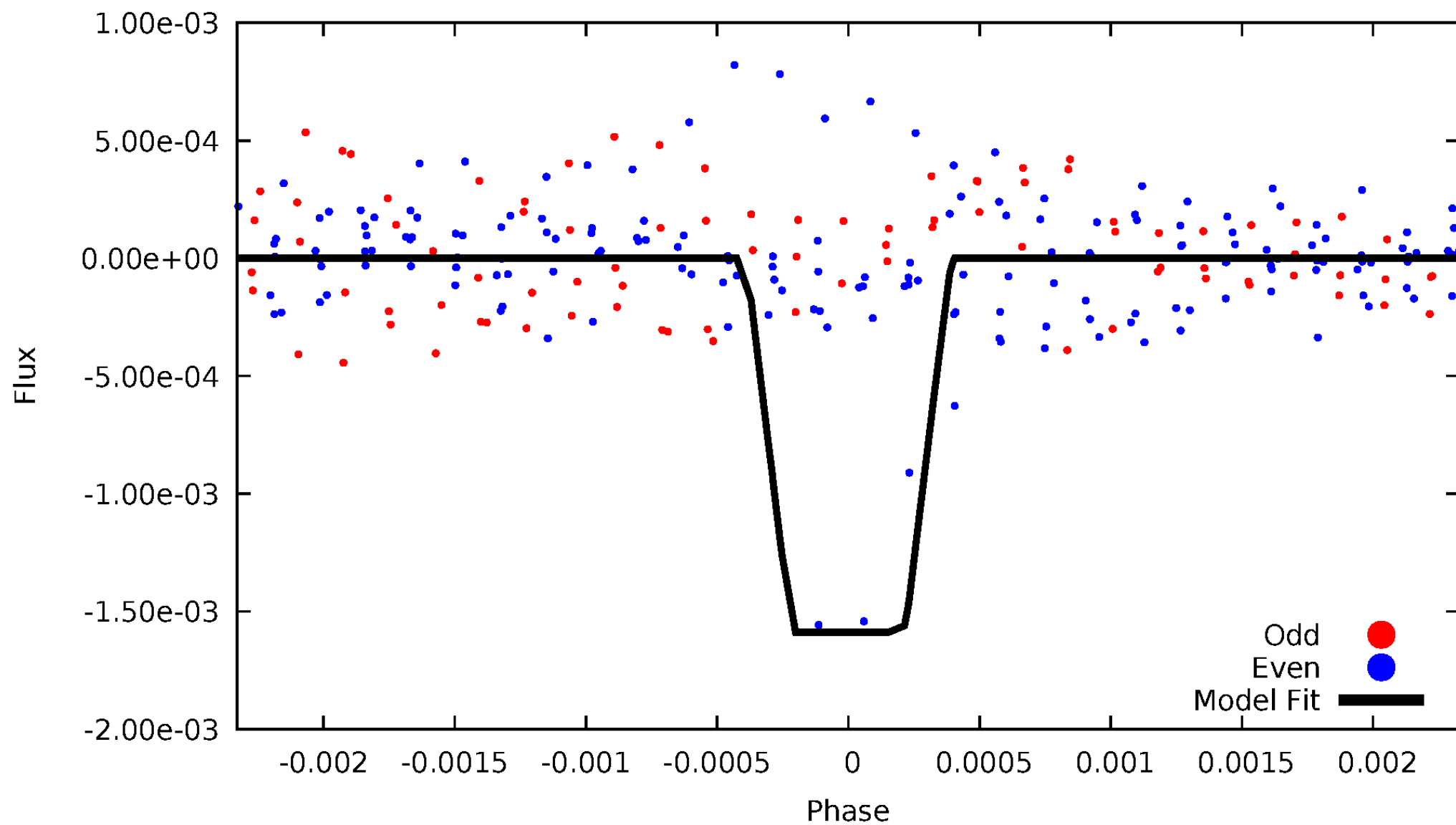
# DV Odd/Even

TCE 008378462-01



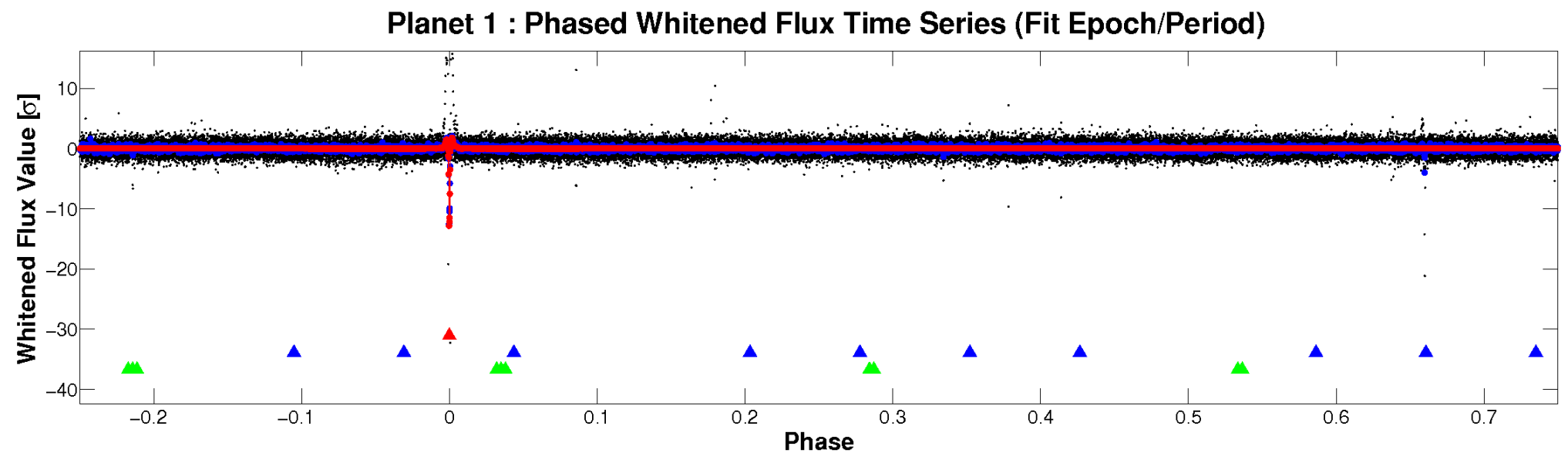
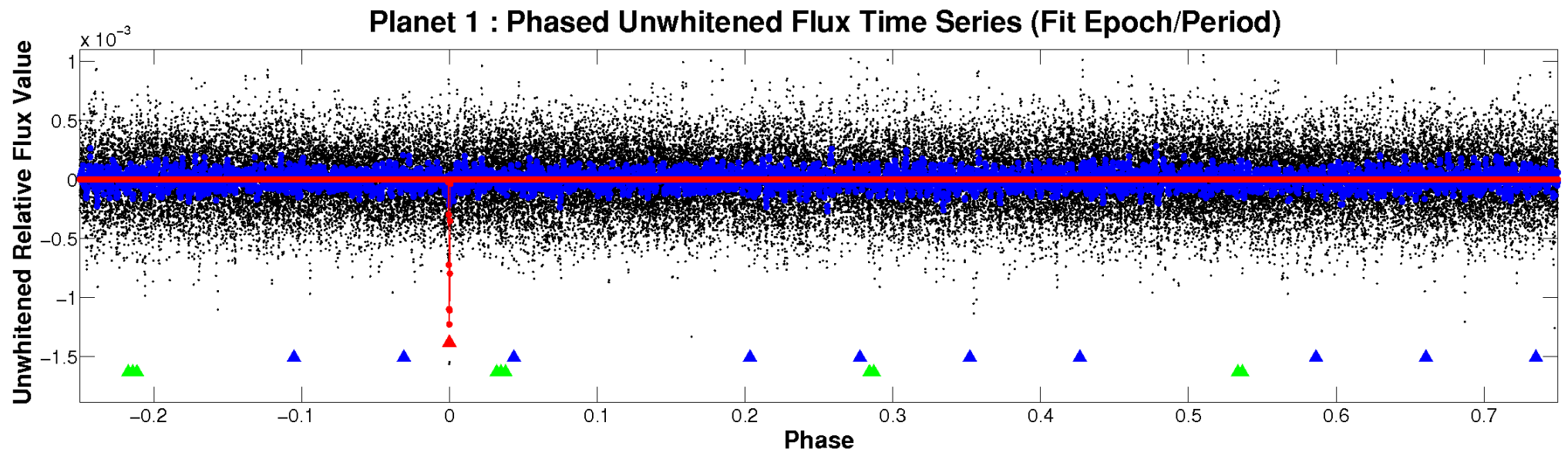
# ALT Odd/Even

TCE 008378462-01



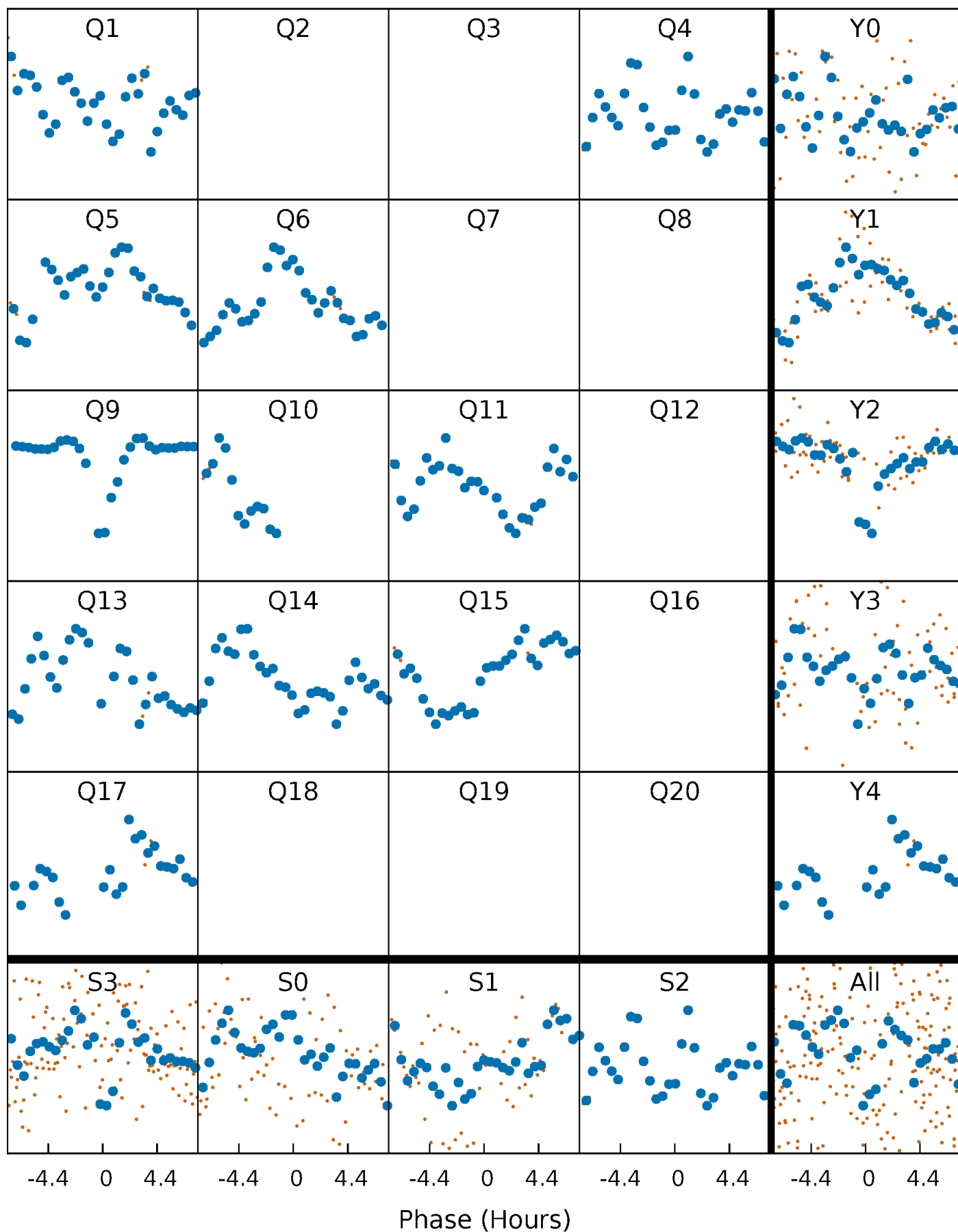


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

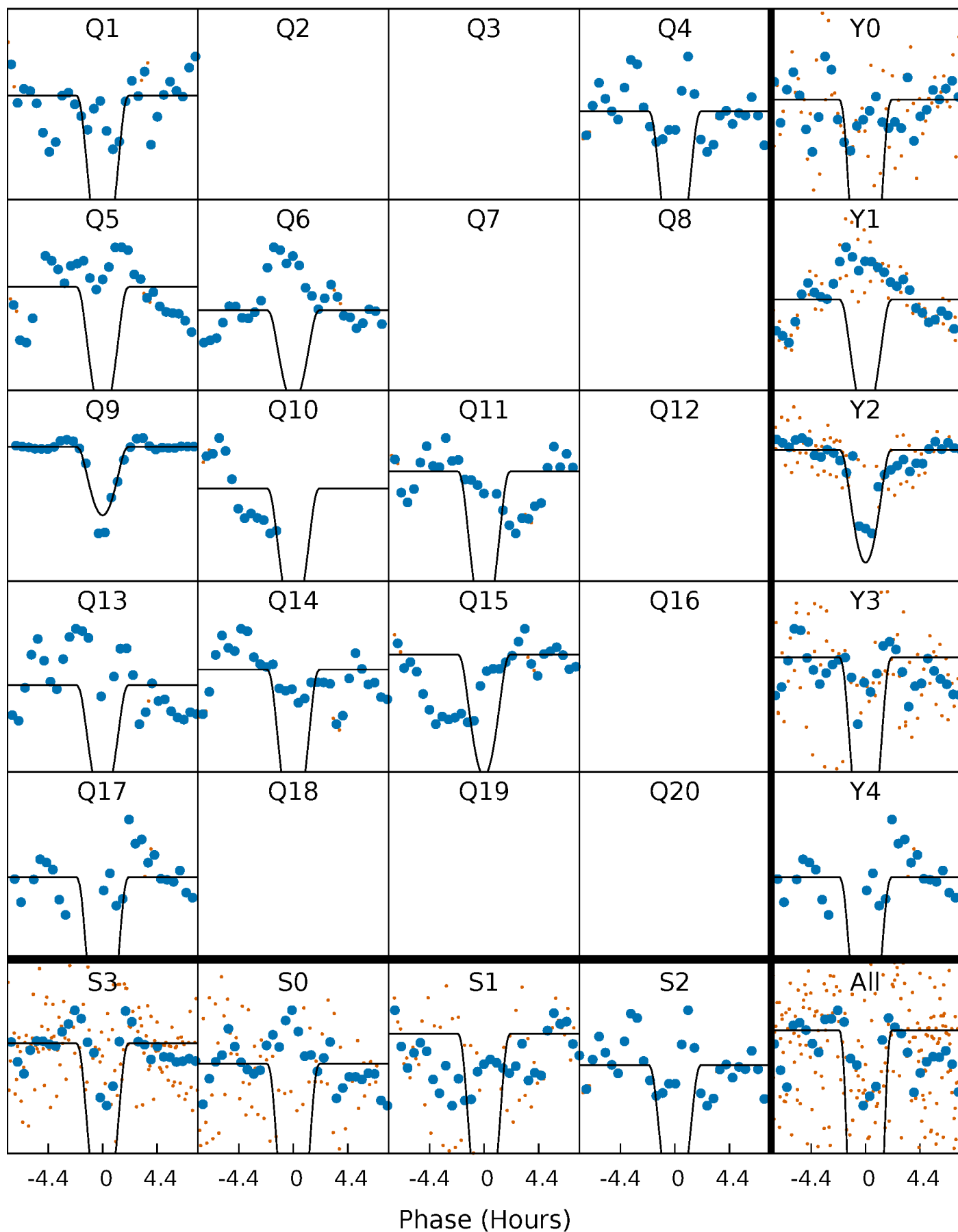
TCE 008378462-01 P=118.334897 Days  $T_0=140.944024$  (BKJD)





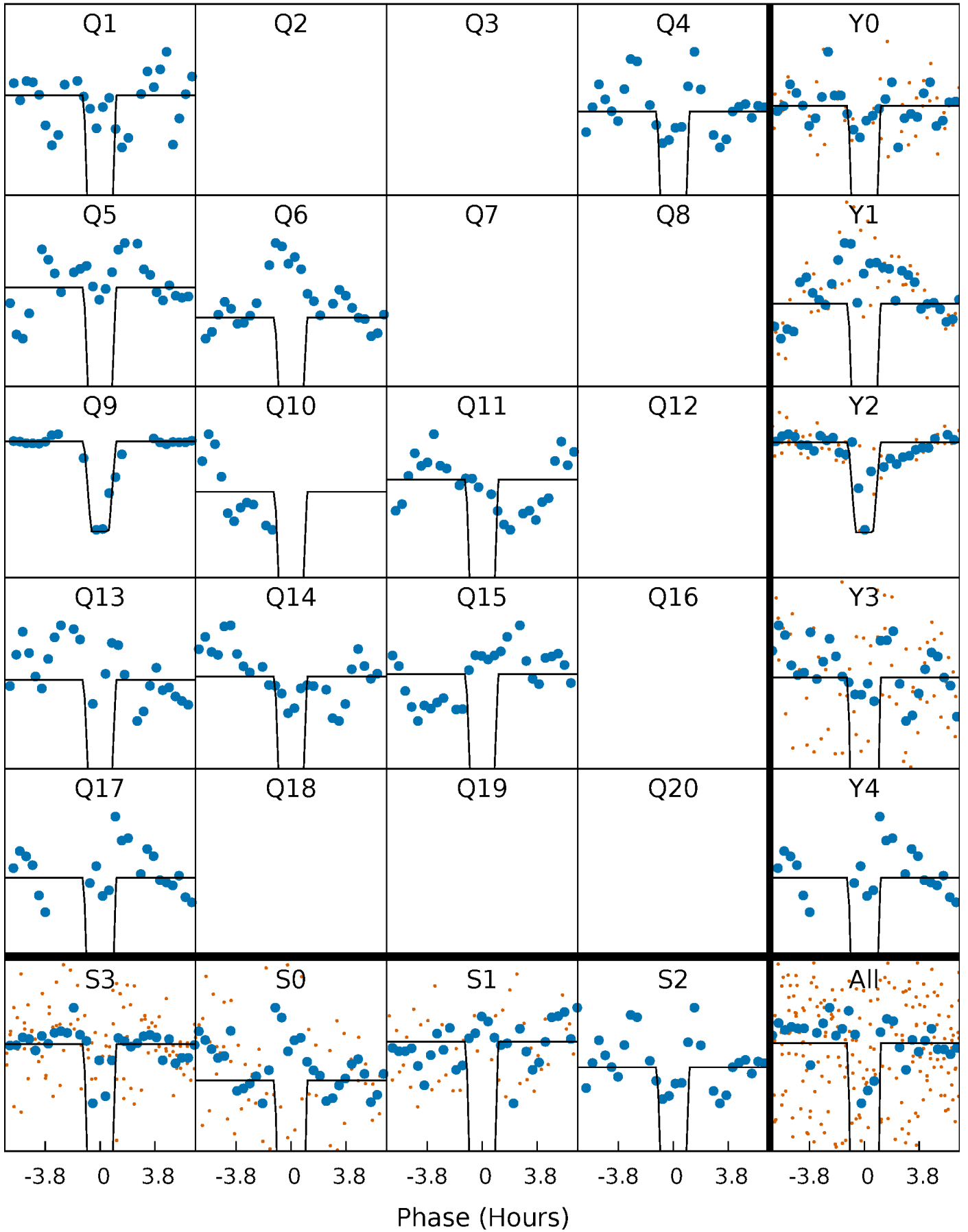
# DV Quarter-Phased Transit Curves

TCE 008378462-01 P=118.334897 Days  $T_0=140.944024$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

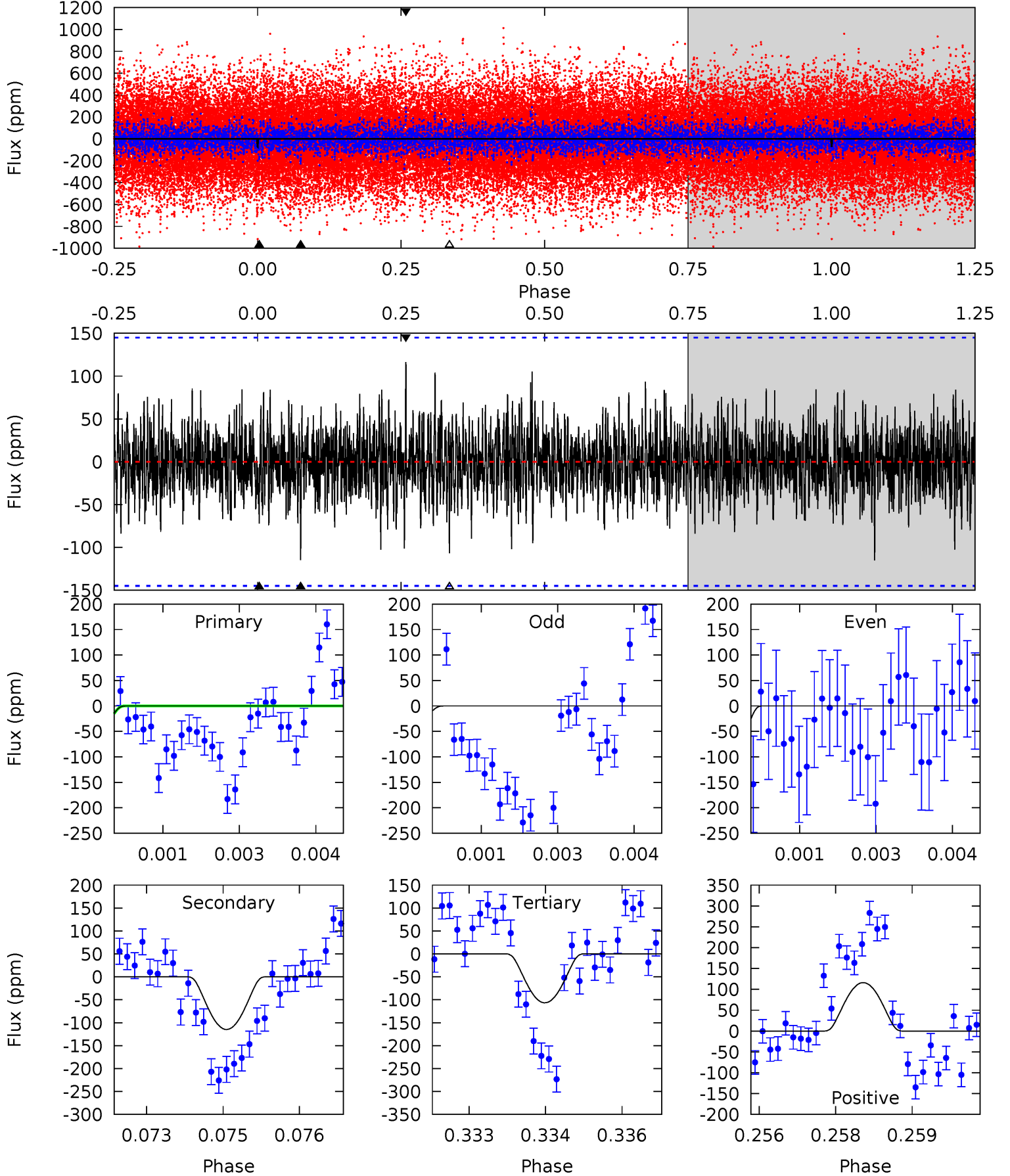
TCE 008378462-01 P=118.341035 Days  $T_0=140.904334$  (BKJD)



# DV Model-Shift Uniqueness Test

008378462-01,  $P = 118.334897$  Days,  $E = 22.609127$  Days

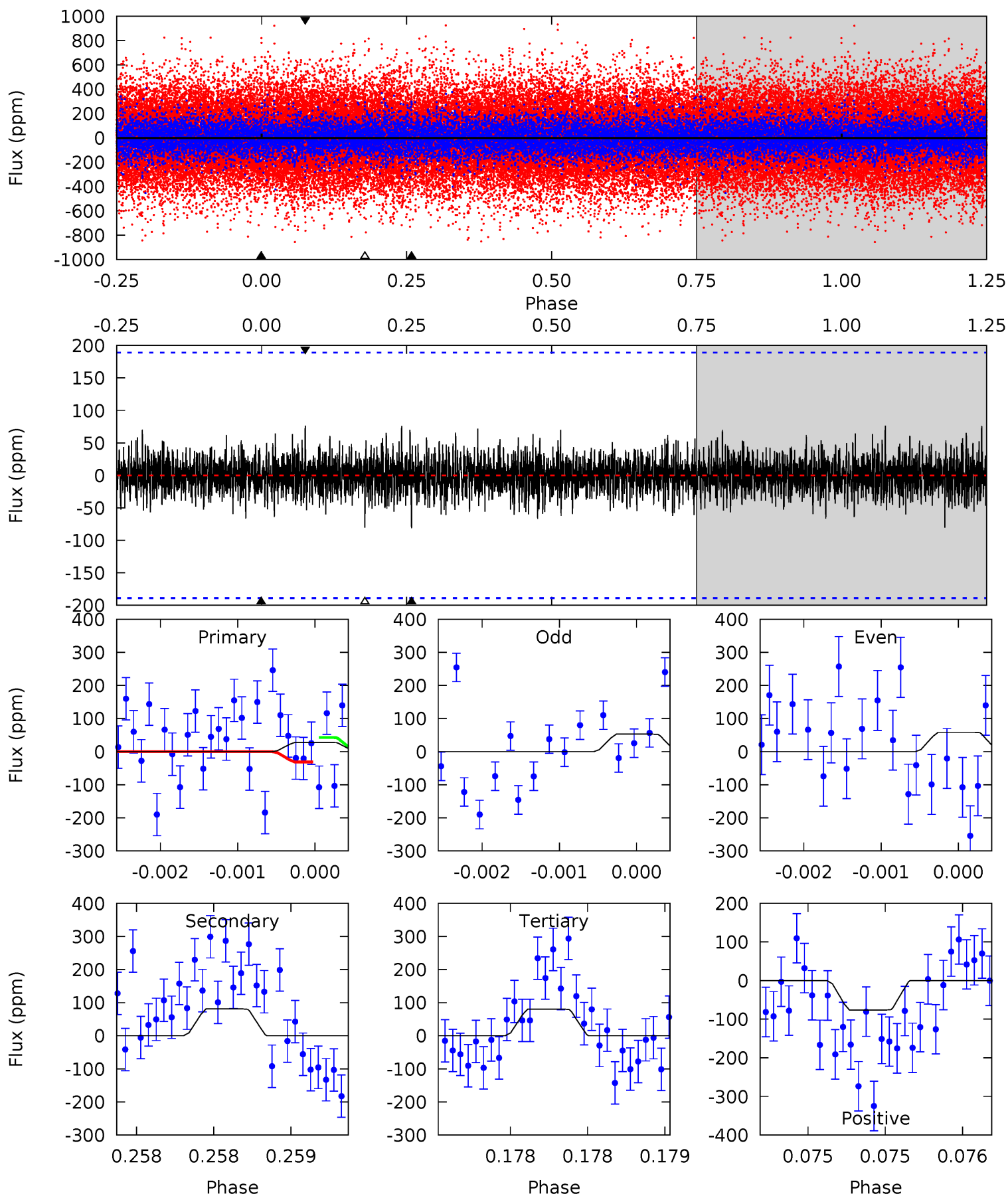
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.68	4.26	3.96	4.31	5.38	3.17	1.14	-1.28	-1.63	0.30	-0.05	1.39	1.18	0.50	0.00



# Alt Model-Shift Uniqueness Test

008378462-01, P = 118.341035 Days, E = 22.563299 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
0.81	2.36	2.34	2.23	5.50	3.36	0.61	-1.53	-1.42	0.03	0.14	0.07	2.06	0.48	0.17



### Stellar Parameters For KIC 008378462

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4999^{+20}_{-130}$	$2.876^{+0.033}_{-0.033}$	$0.070^{+0.150}_{-0.250}$	$9.471^{+0.742}_{-2.227}$	$2.459^{+0.113}_{-1.013}$	$0.004^{+0.002}_{-0.001}$
	+0%/-3%	+1%/-1%	+214%/-357%	+8%/-24%	+5%/-41%	+37%/-16%
Source	SPE74	AST11	SPE74	DSEP		

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

### Secondary Eclipse Parameters for KIC 008378462-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-115 \pm 27$	$77.96^{+60.03}_{-47.45}$	$1186^{+21}_{-33}$	$2618^{+815}_{-400}$	$4.148^{+22.660}_{-2.854}$
Alt.	$-81 \pm 34$	$59.06^{+56.28}_{-40.01}$	$1185^{+20}_{-34}$	$2666^{+1034}_{-475}$	$4.755^{+40.824}_{-3.591}$

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

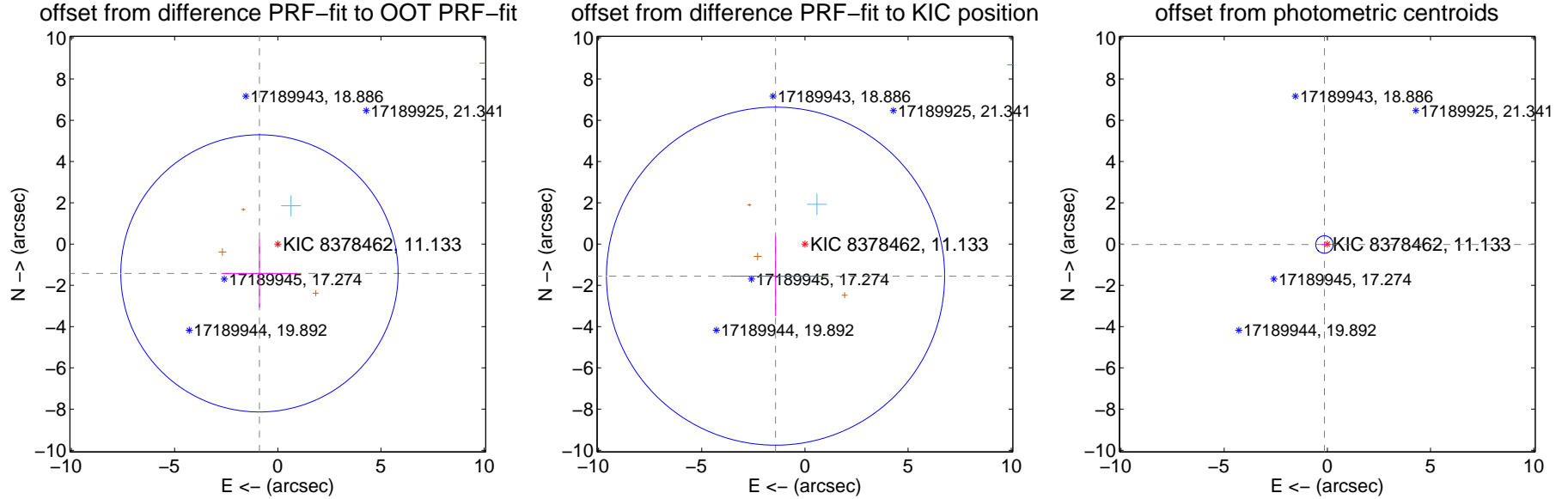
## DV Centroid Data

Supplemental centroid analysis for 008378462-01. **Kepler magnitude: 11.13.** Transit SNR 118.51

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

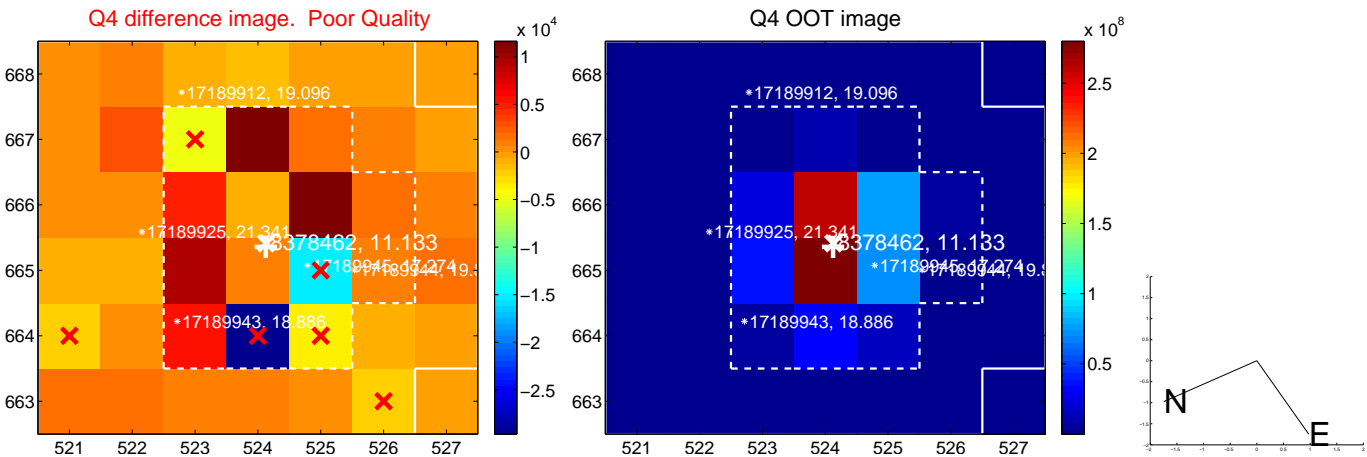
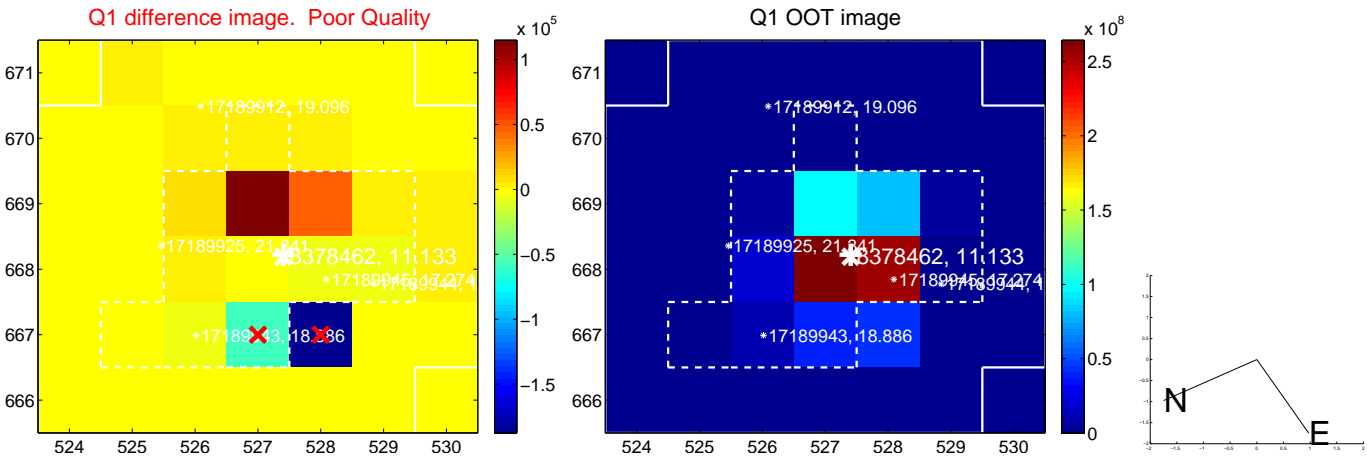
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.676 \pm 2.239$	0.75	$0.888 \pm 1.839$	$-1.421 \pm 1.646$
PRF-fit source offset from KIC position	$2.109 \pm 2.731$	0.77	$1.424 \pm 2.211$	$-1.556 \pm 1.942$
photometric centroid source offset	$0.14 \pm 0.14$	1.02	$0.14 \pm 0.14$	$-0.02 \pm 0.13$



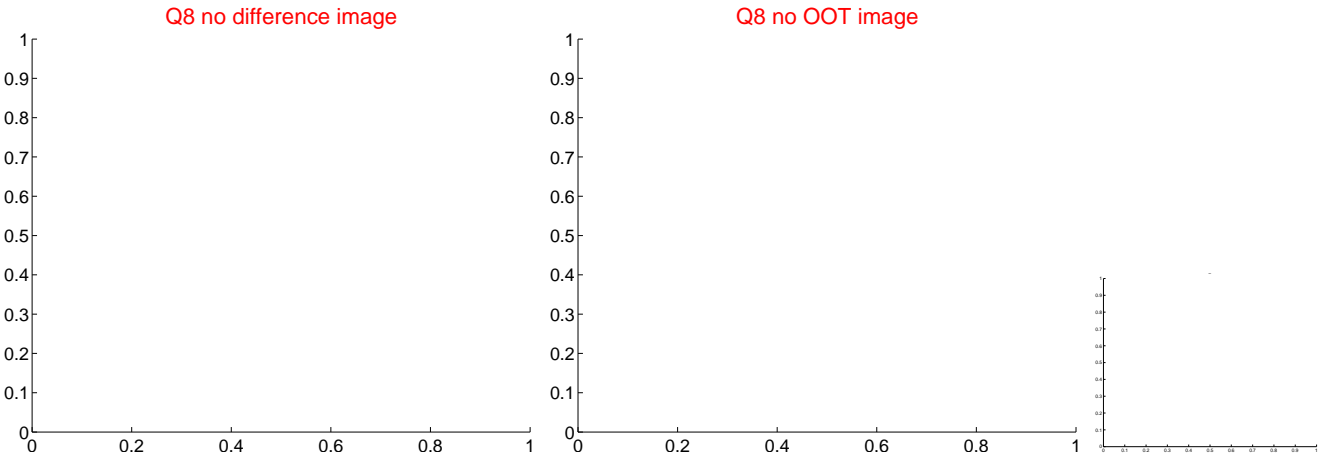
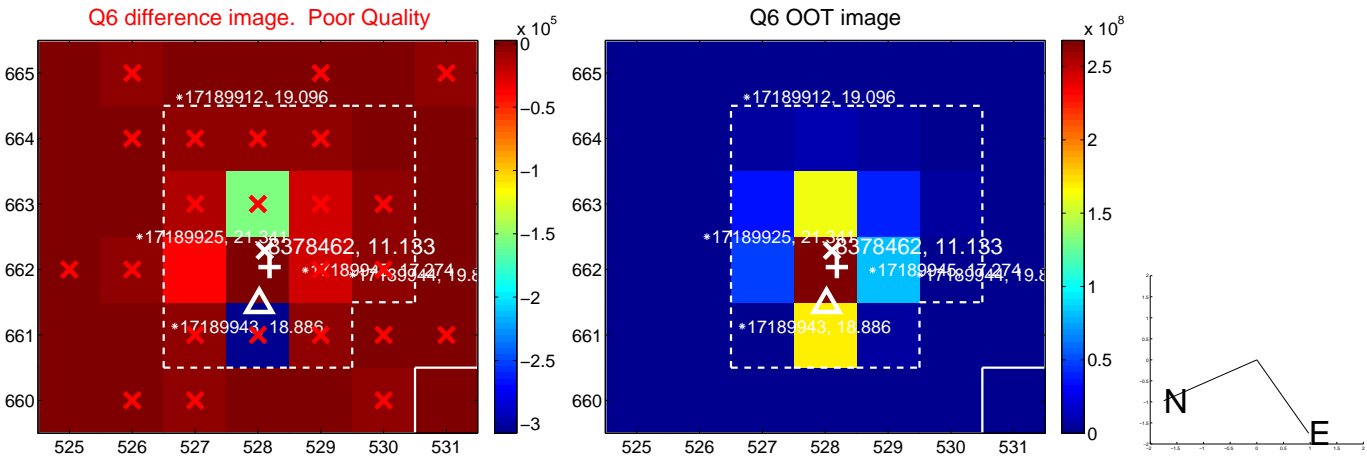
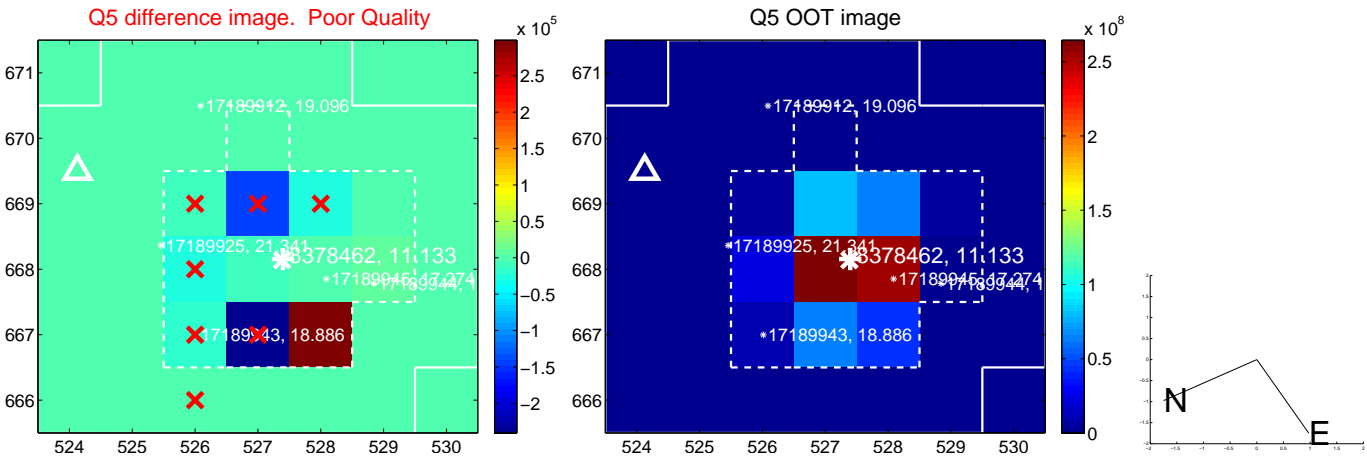
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

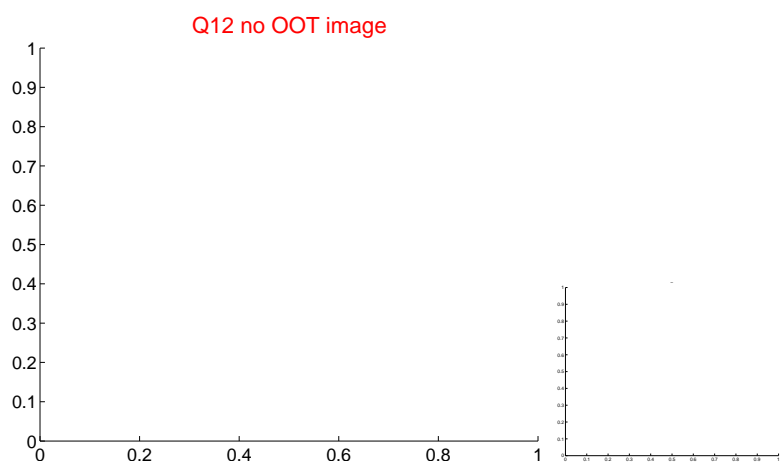
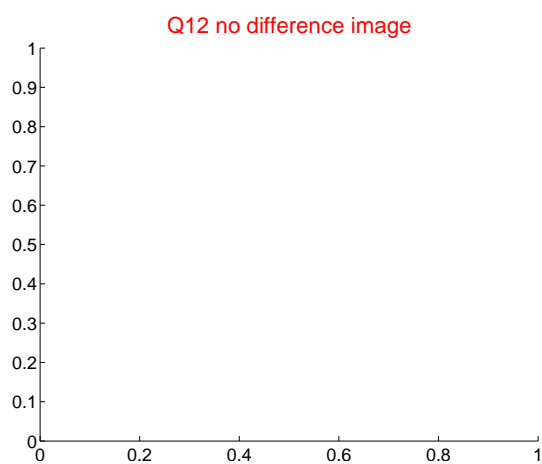
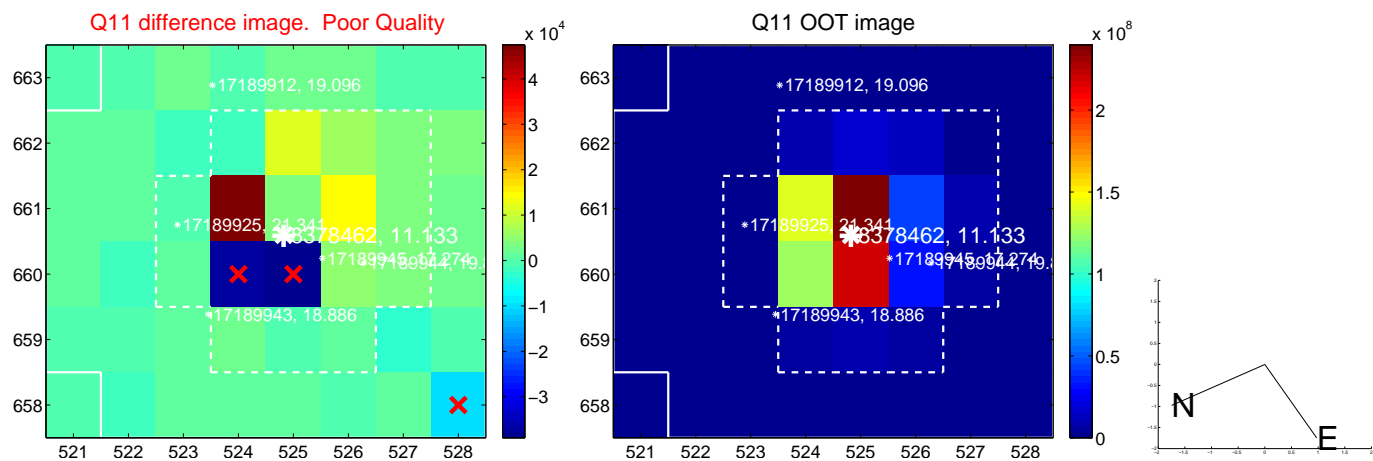
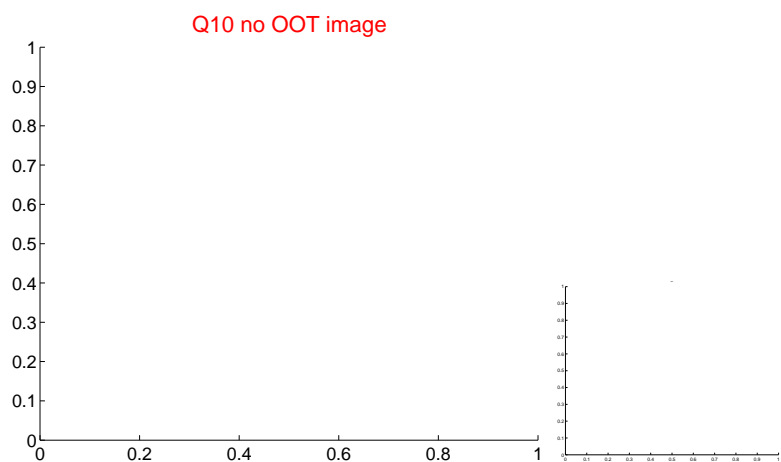
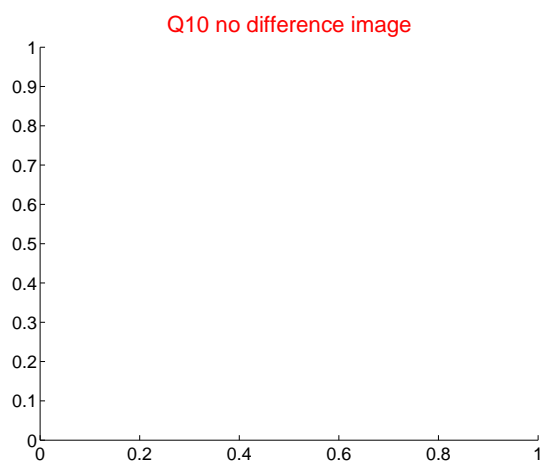
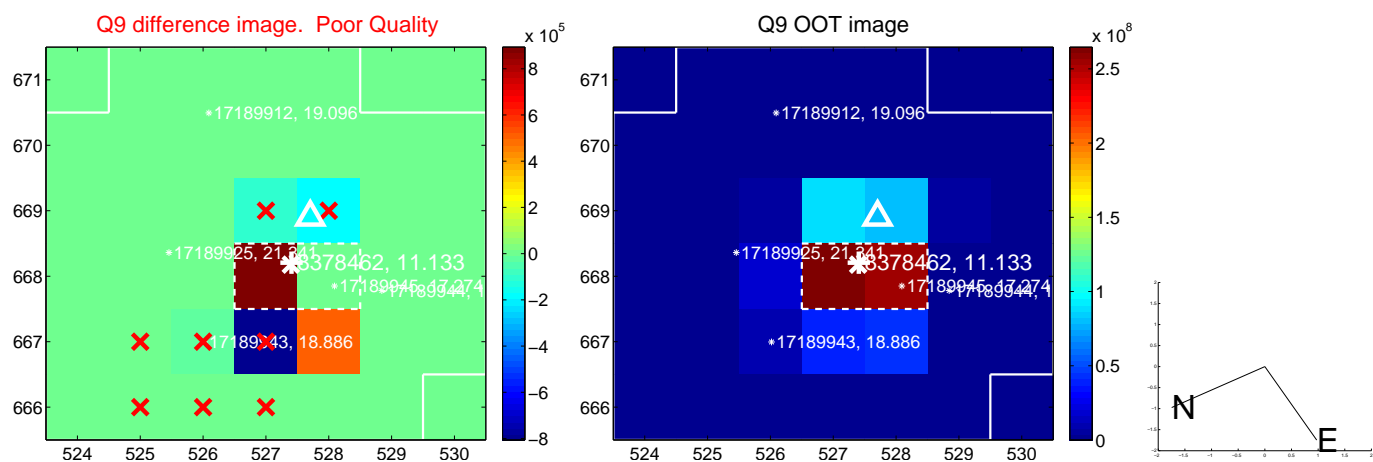




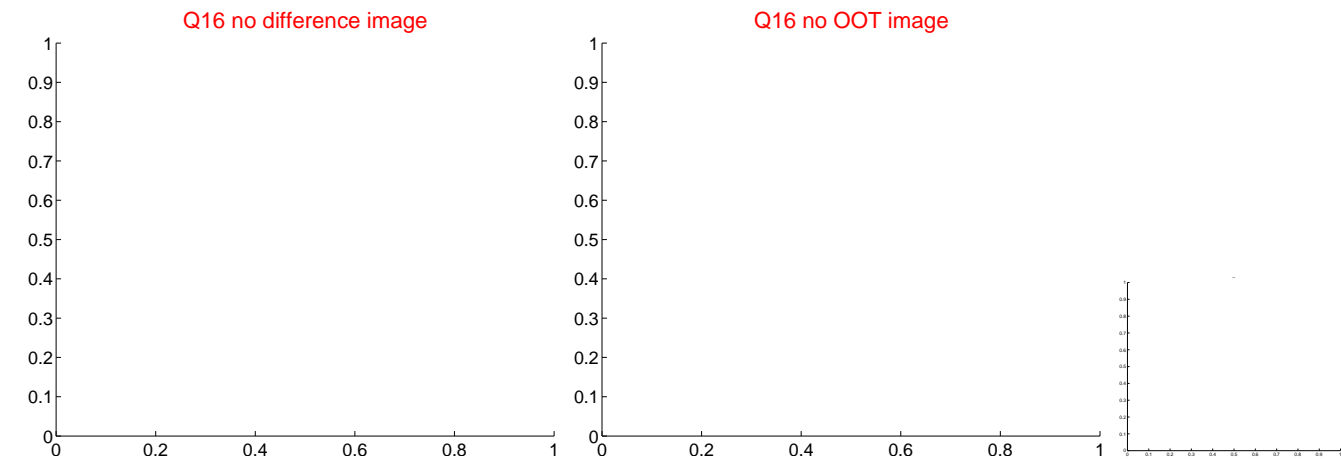
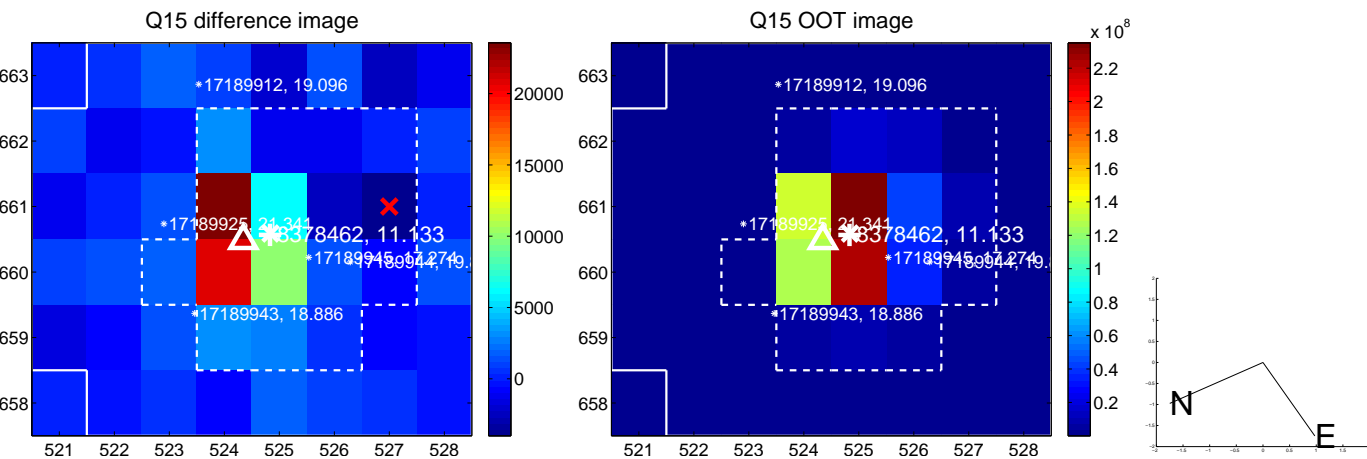
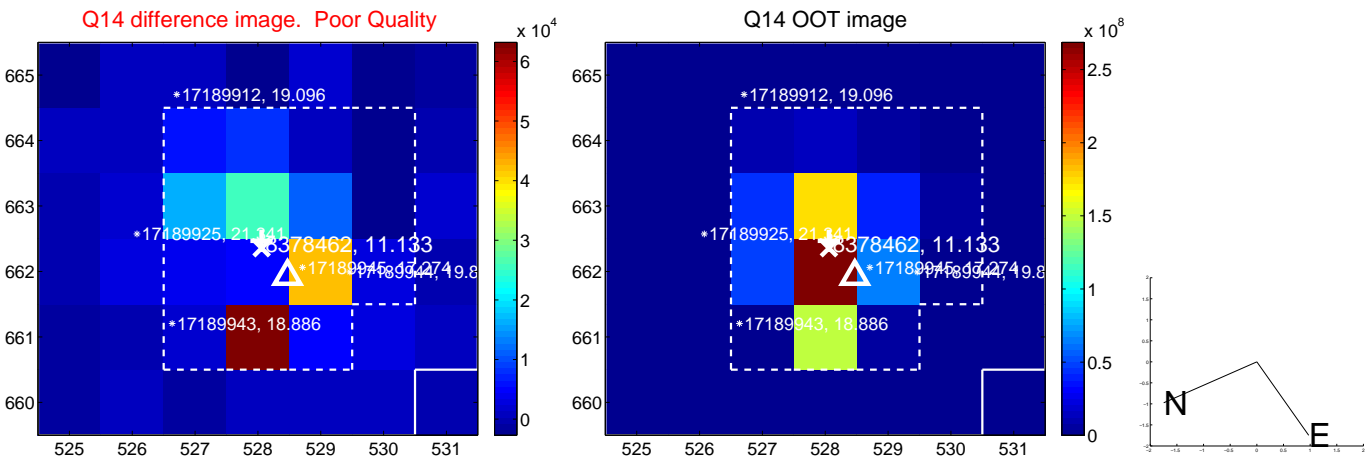
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



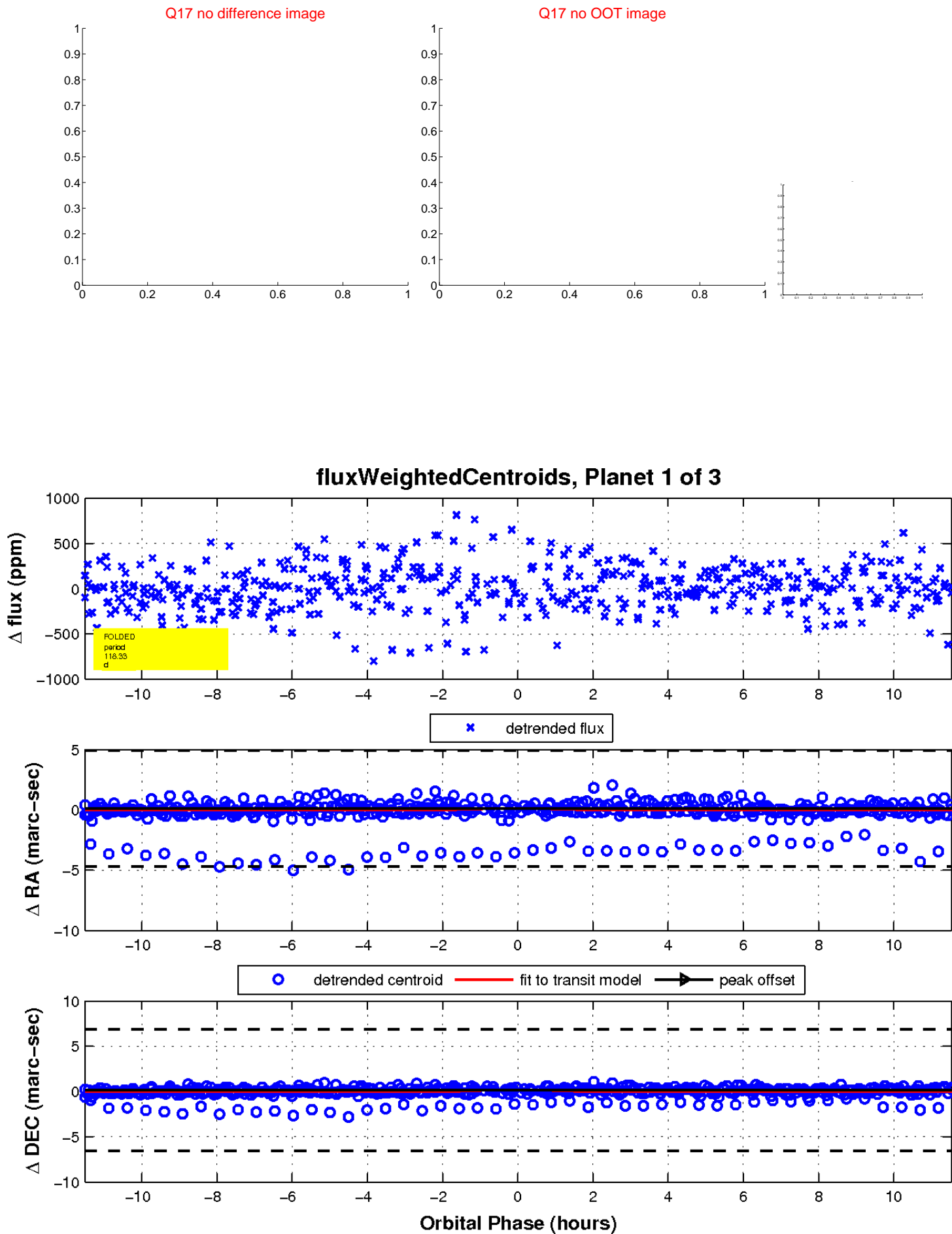
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



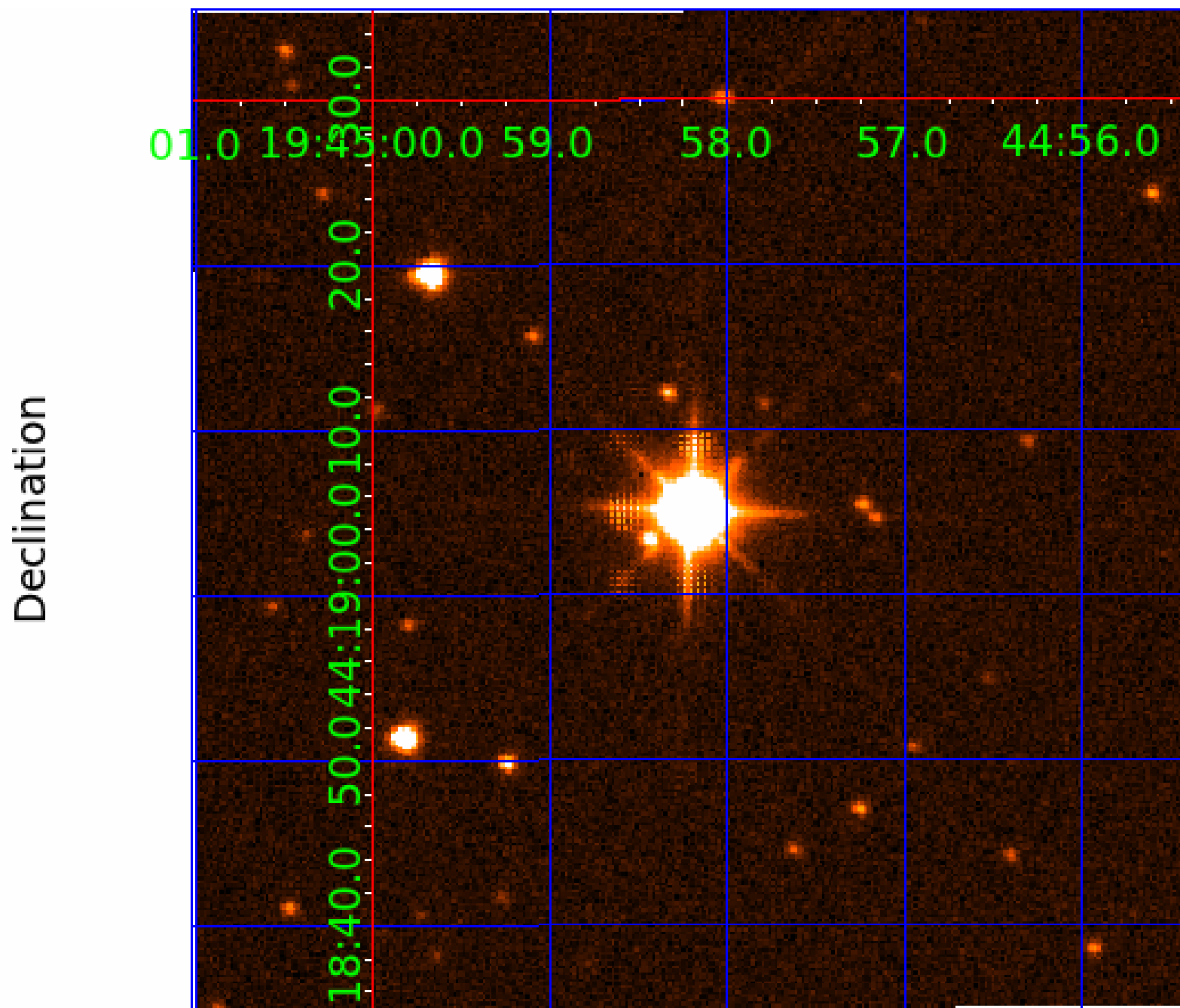
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



UKIRT Image



# KIC 008378462

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008378462-01	OBS	No	118.334897	140.944024	1235.1	3.852	312.3	118.5	9.47	4999	67.35	123.75
008378462-02	OBS	No	154.845785	191.422481	295.3	8.456	12.1	21.8	9.47	4999	18.33	86.46
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008378462-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
008378462-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_SATURATED
008378462-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS— CENT_SATURATED

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

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

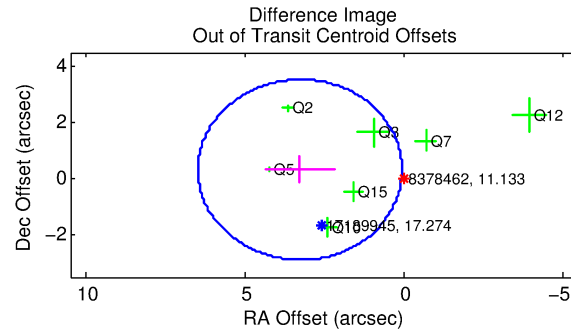
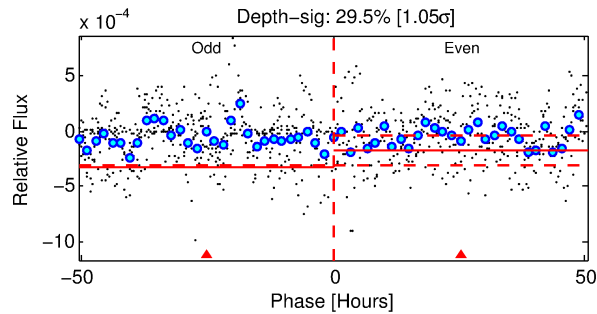
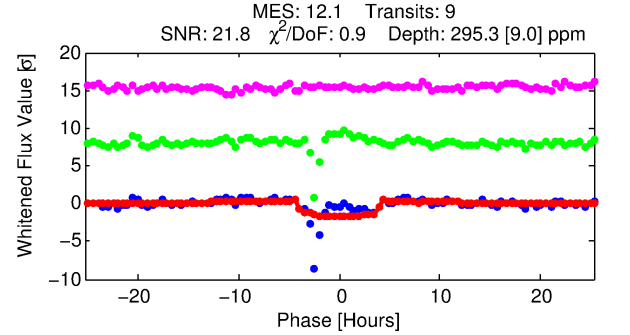
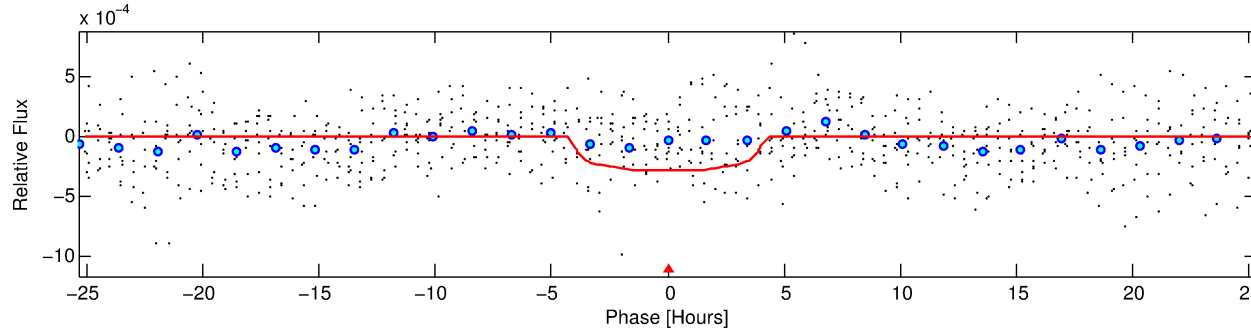
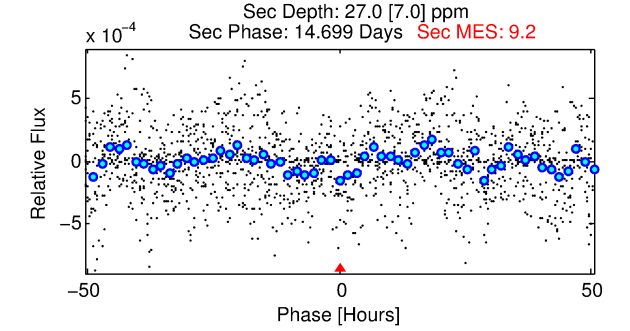
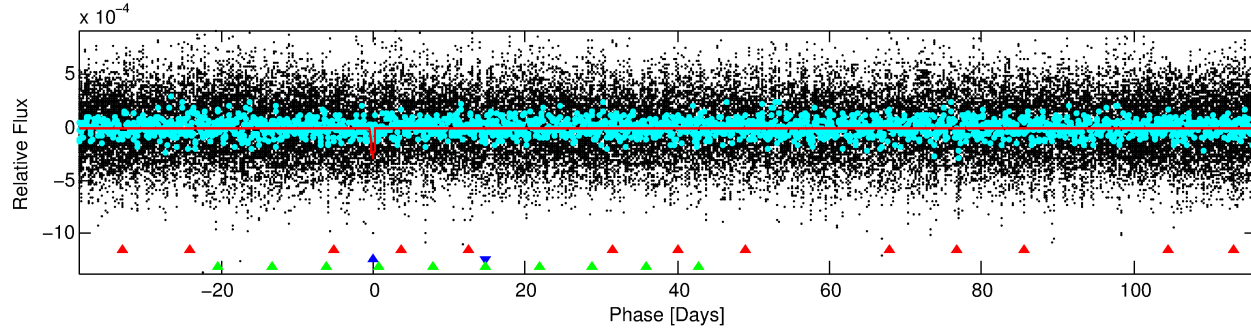
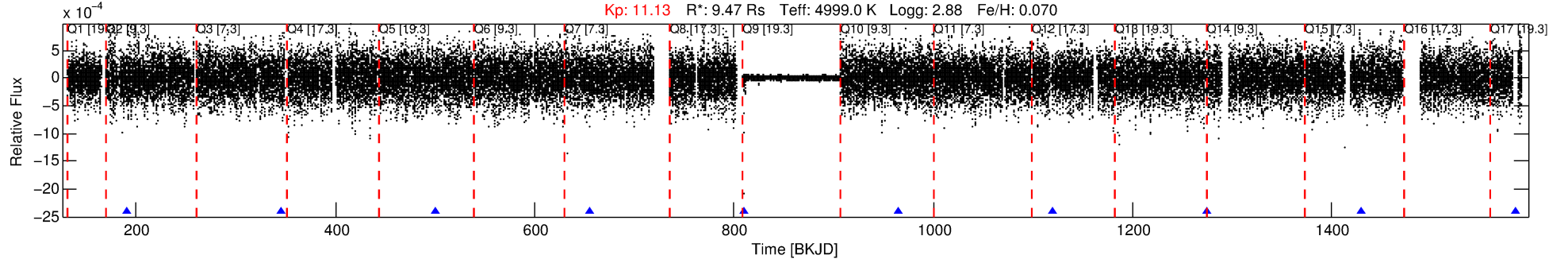
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008378462-02

No Significant Match Found

# DV One-Page Summary

KIC: 8378462 Candidate: 2 of 3 Period: 154.846 d



## DV Fit Results:

Period = 154.84578 [0.00123] d  
Epoch = 191.4225 [0.0056] BKJD  
Rp/R\* = 0.0177 [0.0030]  
a/R\* = 86.13 [55.06]  
b = 0.81 [0.27]  
Seff = 86.46 [16.85]  
Teq = 778 [38] K  
Rp = 18.33 [5.31] Re  
a = 0.7619 [0.1210] AU  
Ag = 25.69 [11.75] [2.10 $\sigma$ ]  
Teffp = 2706 [297] K [6.44 $\sigma$ ]

## DV Diagnostic Results:

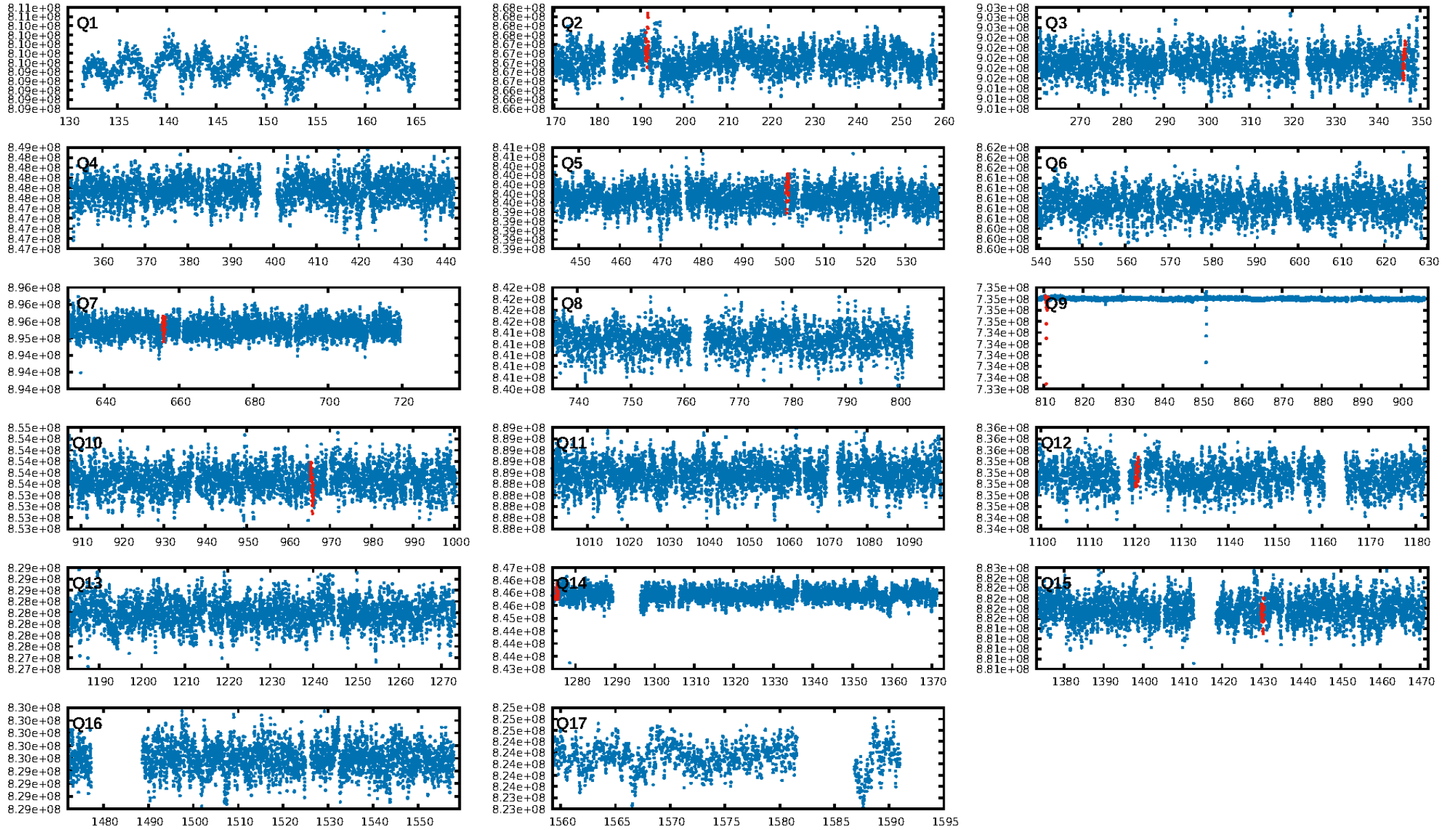
ShortPeriod-sig: 100.0% [19.38 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 1.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.33e-44  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -1.829  
Centroid-sig: 3.7%  
Centroid-so: 0.544 arcsec [1.76 $\sigma$ ]  
OotOffset-rm: 3.288 arcsec [3.07 $\sigma$ ]  
OotOffset-st: 2/3/1/1 [7]  
KicOffset-rm: 2.315 arcsec [2.97 $\sigma$ ]  
KicOffset-st: 2/3/1/1 [7]  
DiffImageQuality-fgm: 0.57 [4/7]  
DiffImageOverlap-fno: 1.00 [8/8]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 10:22:10 Z

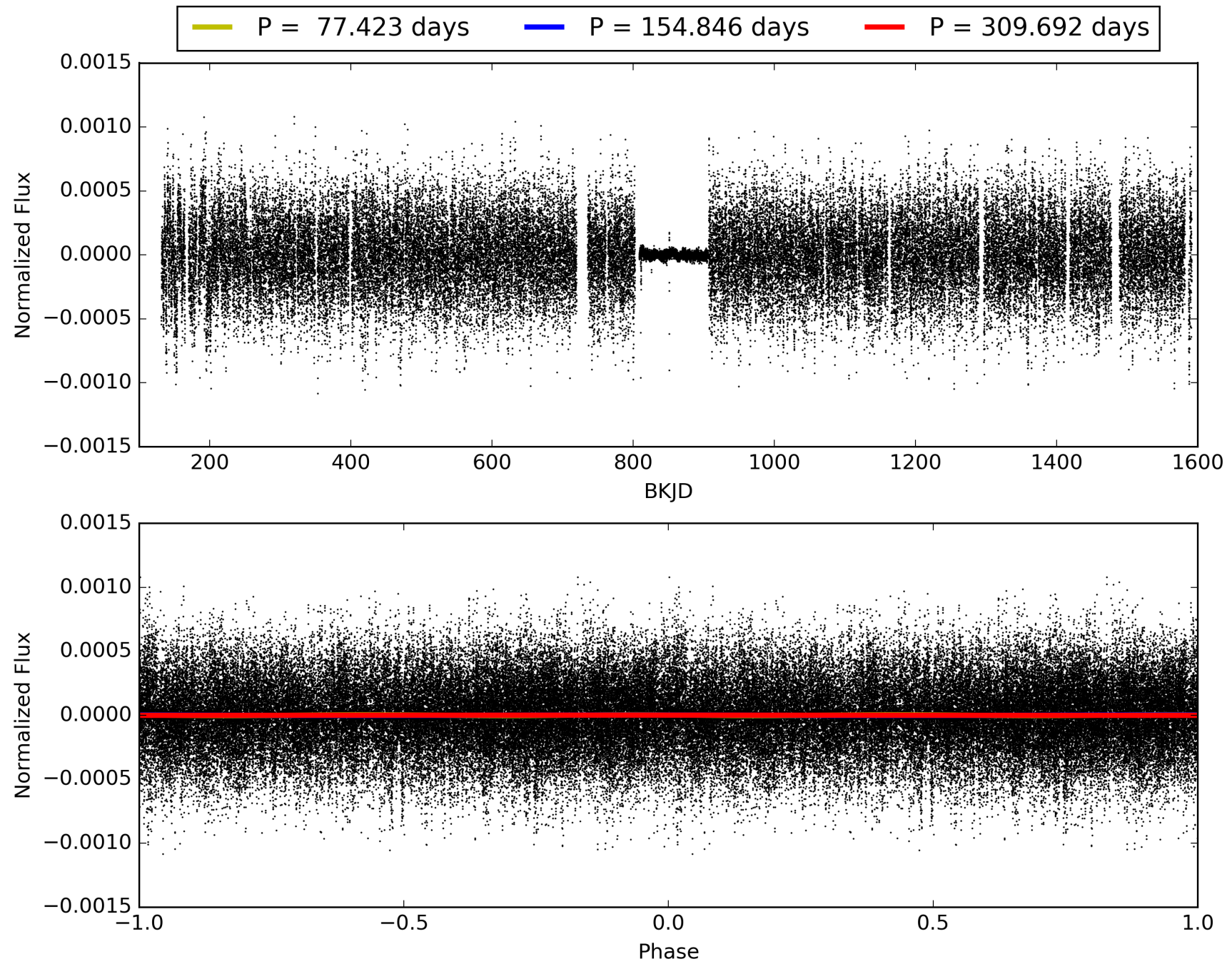
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008378462-02, PDC Light Curves

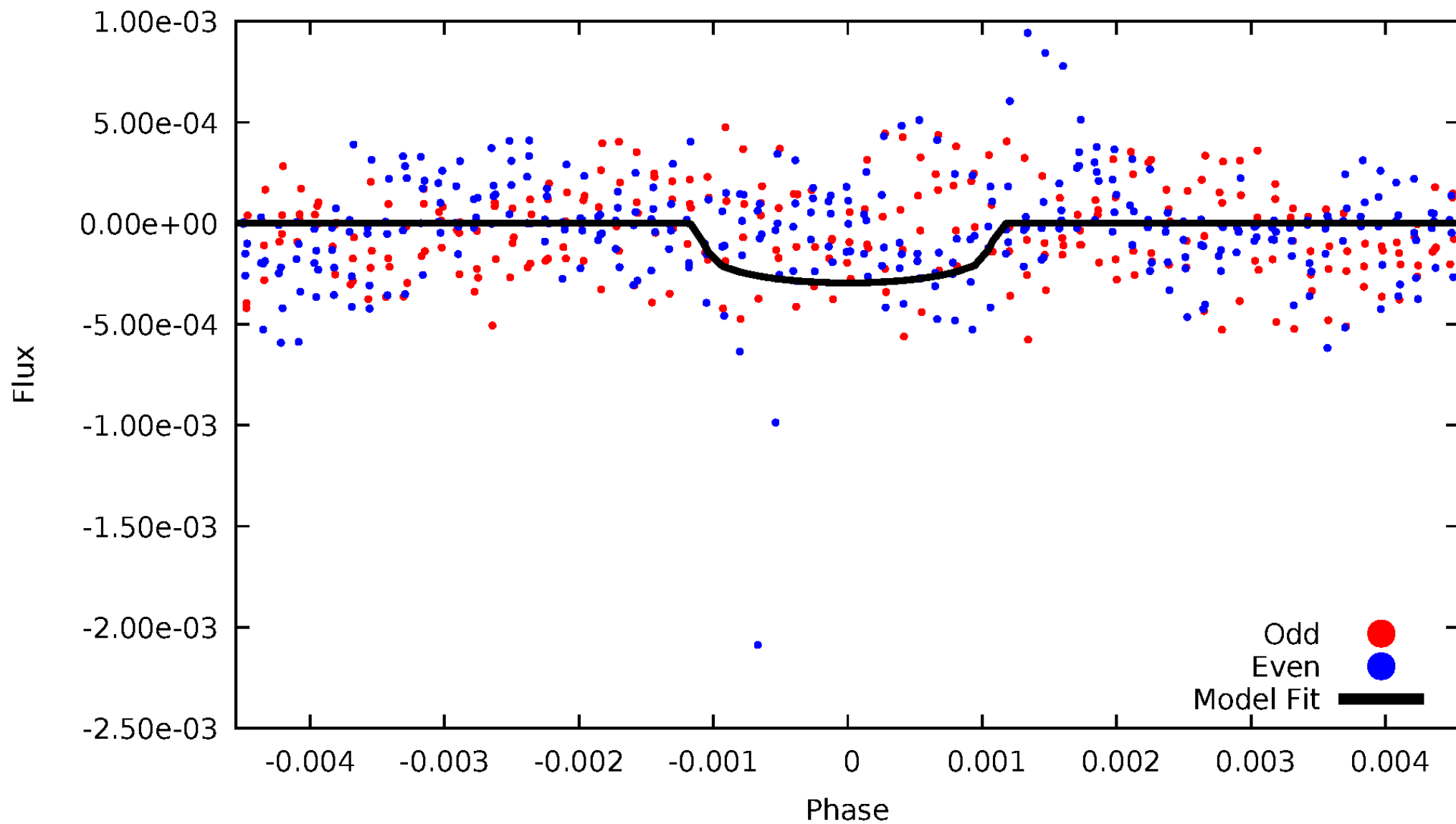


TCE 008378462-02



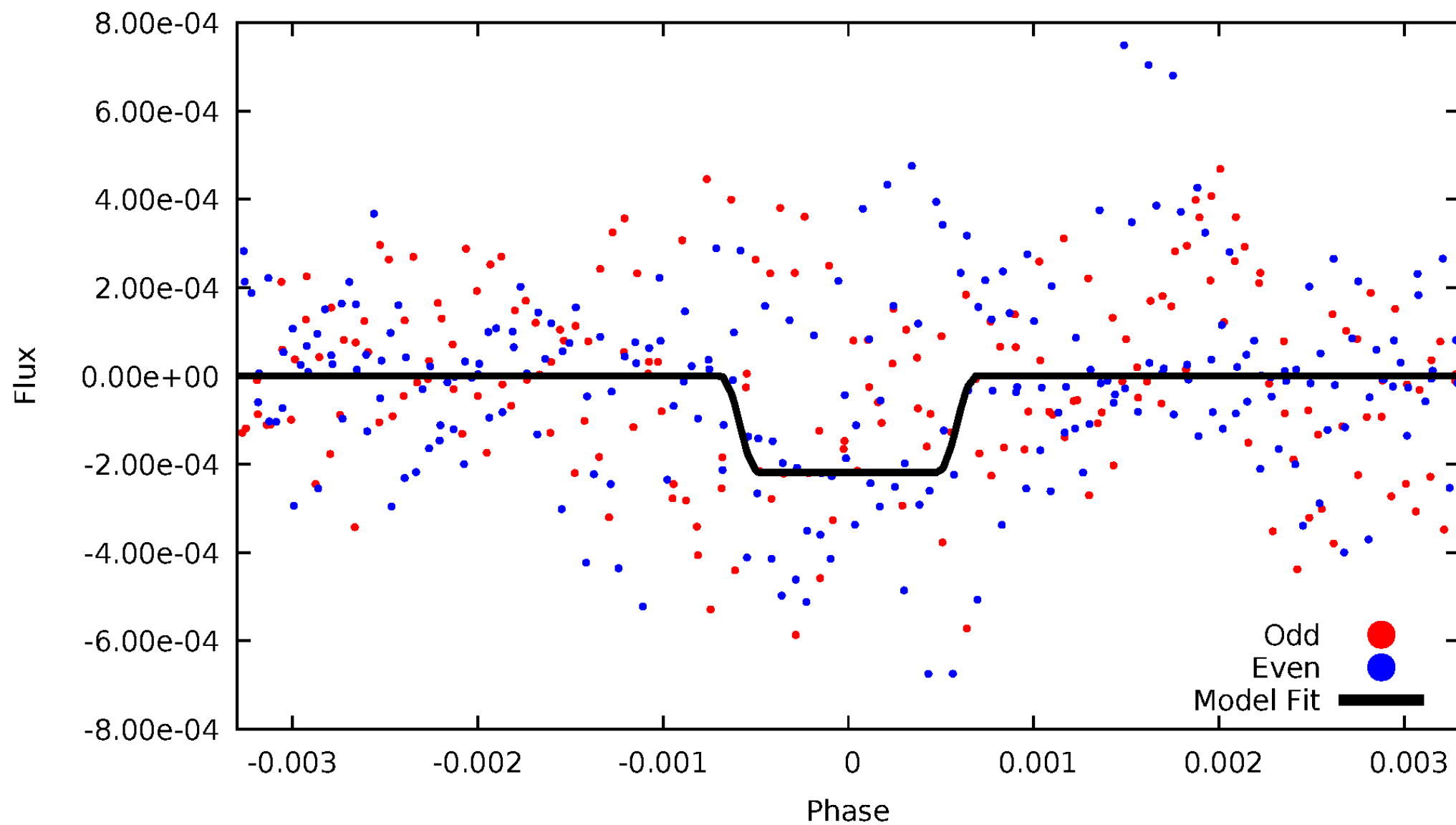
# DV Odd/Even

TCE 008378462-02



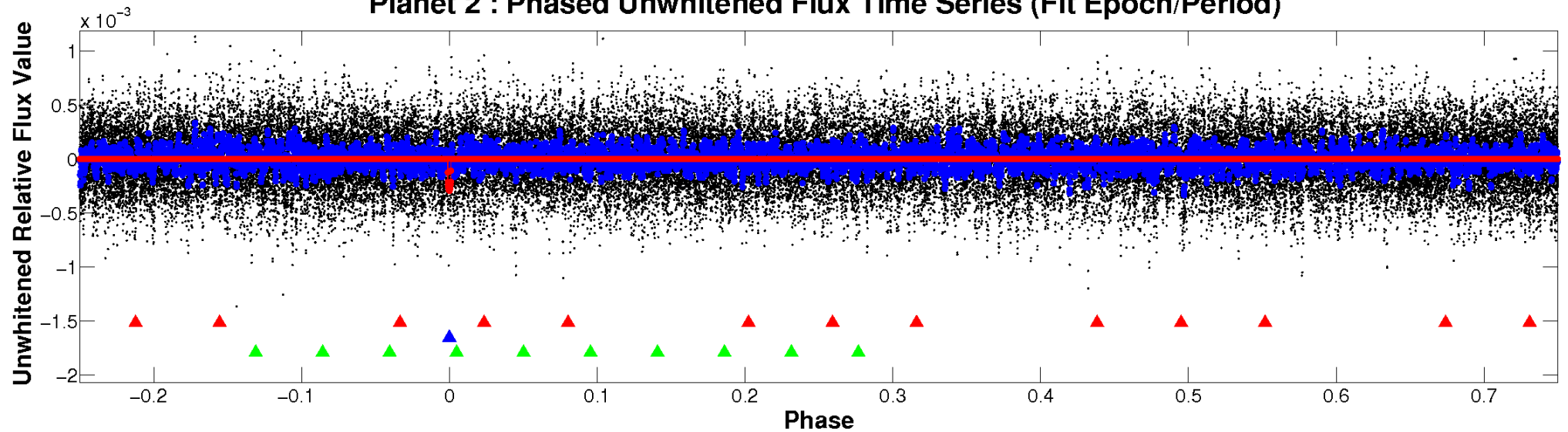
# ALT Odd/Even

TCE 008378462-02

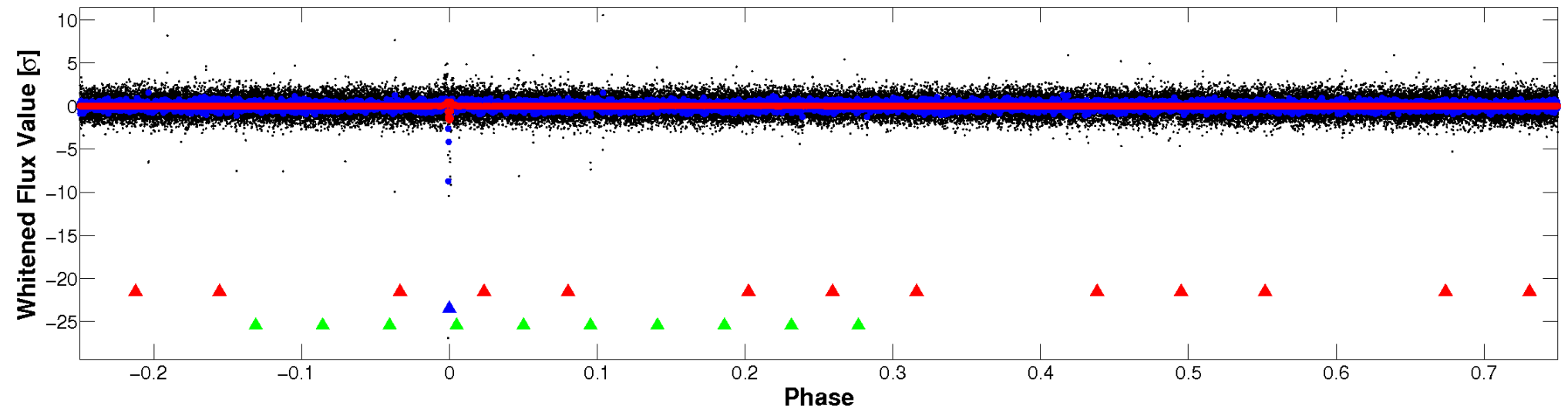


# Non-Whitened Vs. Whitened Light Curve

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

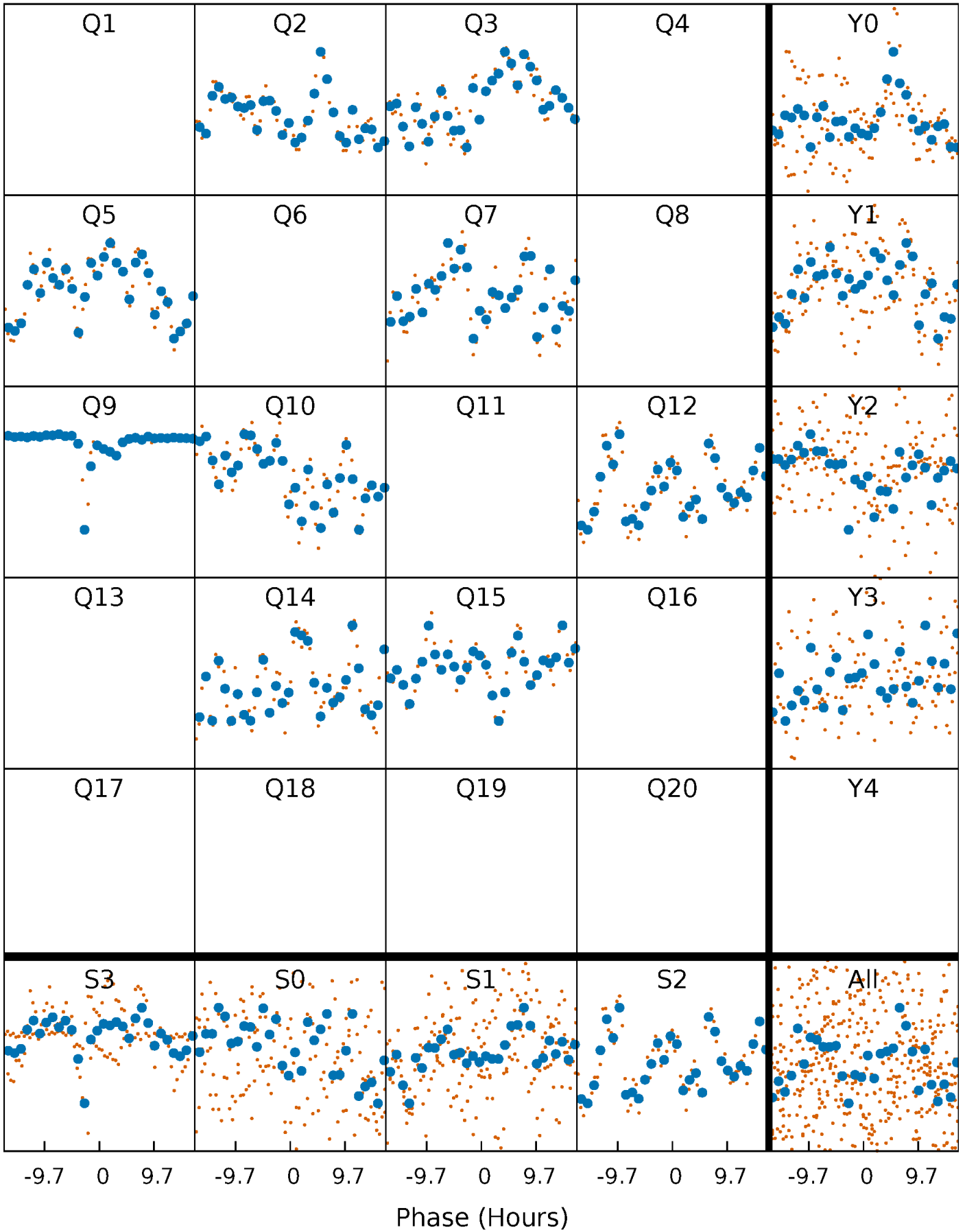


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



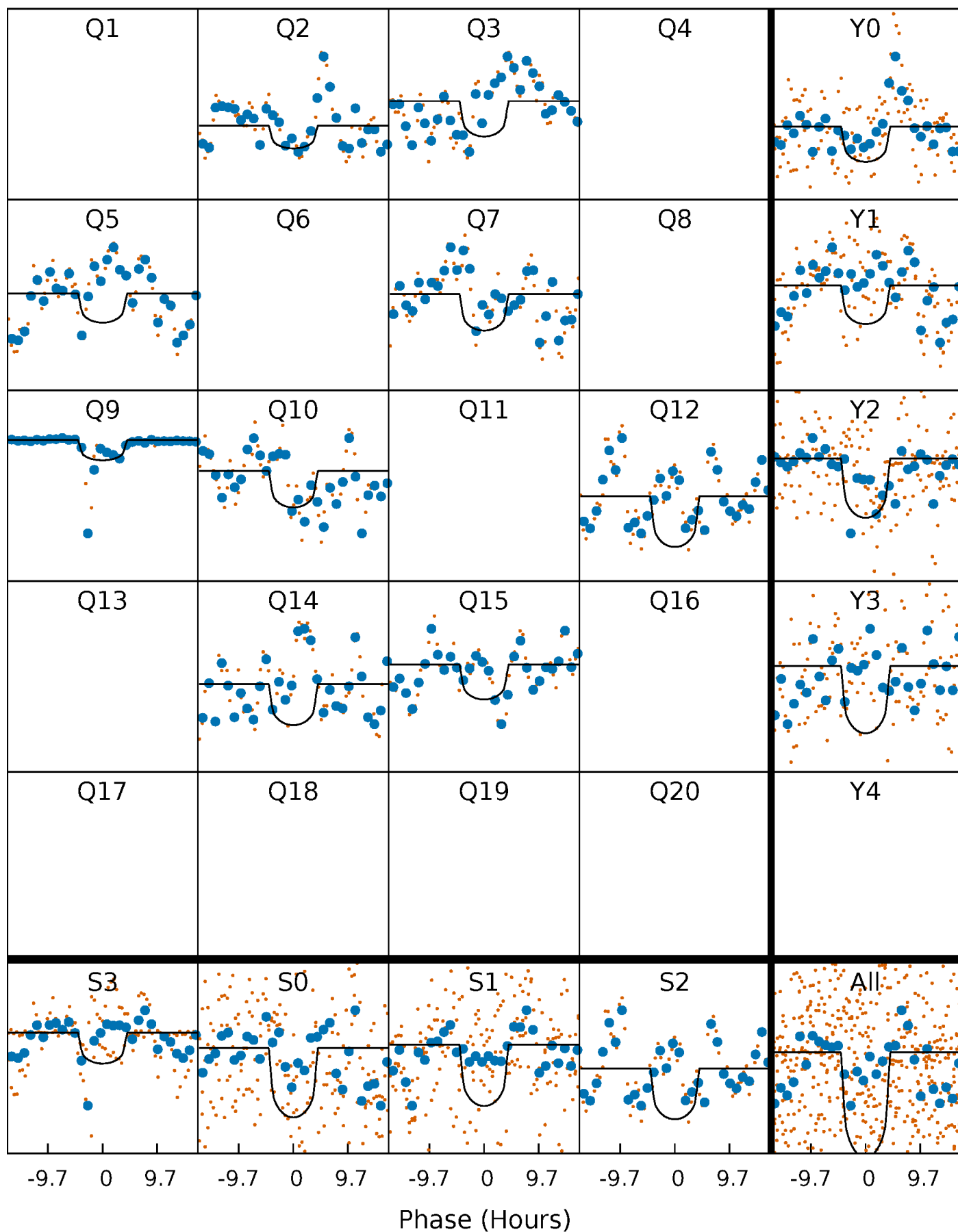
# PDC Quarter-Phased Transit Curves

TCE 008378462-02   P=154.845785 Days    $T_0=191.422481$  (BKJD)



# DV Quarter-Phased Transit Curves

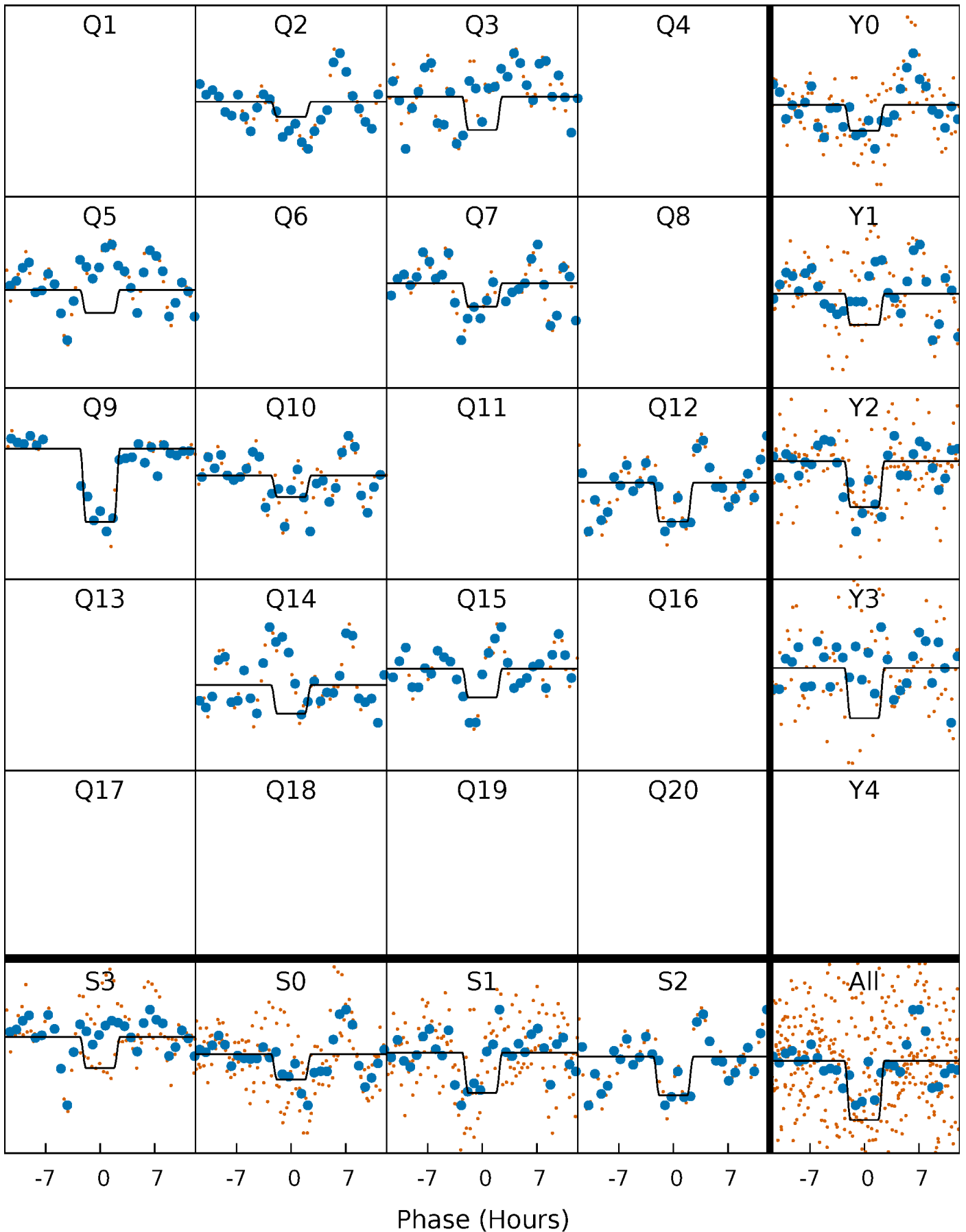
TCE 008378462-02   P=154.845785 Days    $T_0=191.422481$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

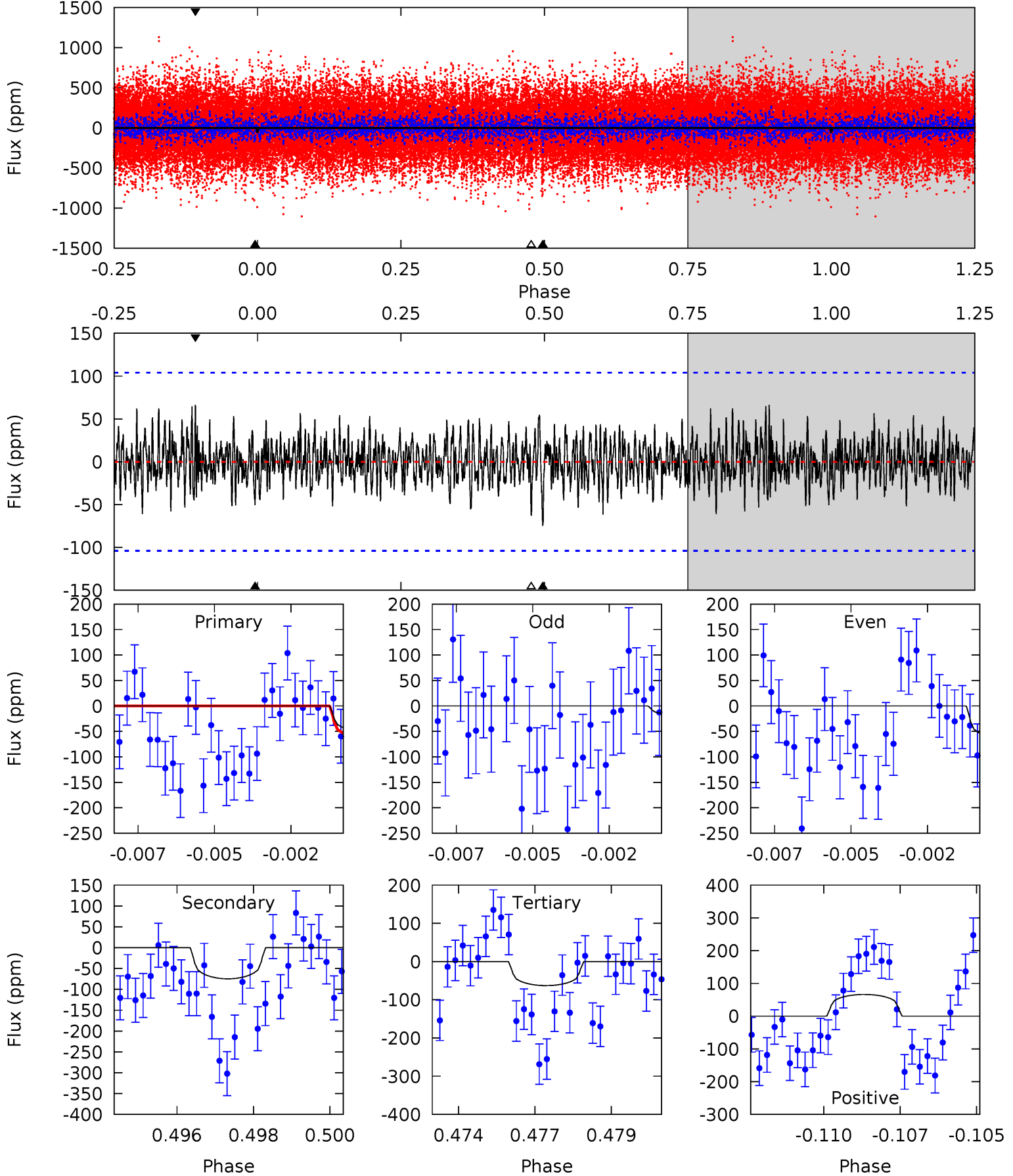
TCE 008378462-02     $P=154.872154$  Days     $T_0=191.399252$  (BKJD)



# DV Model-Shift Uniqueness Test

008378462-02,  $P = 154.845785$  Days,  $E = 36.576696$  Days

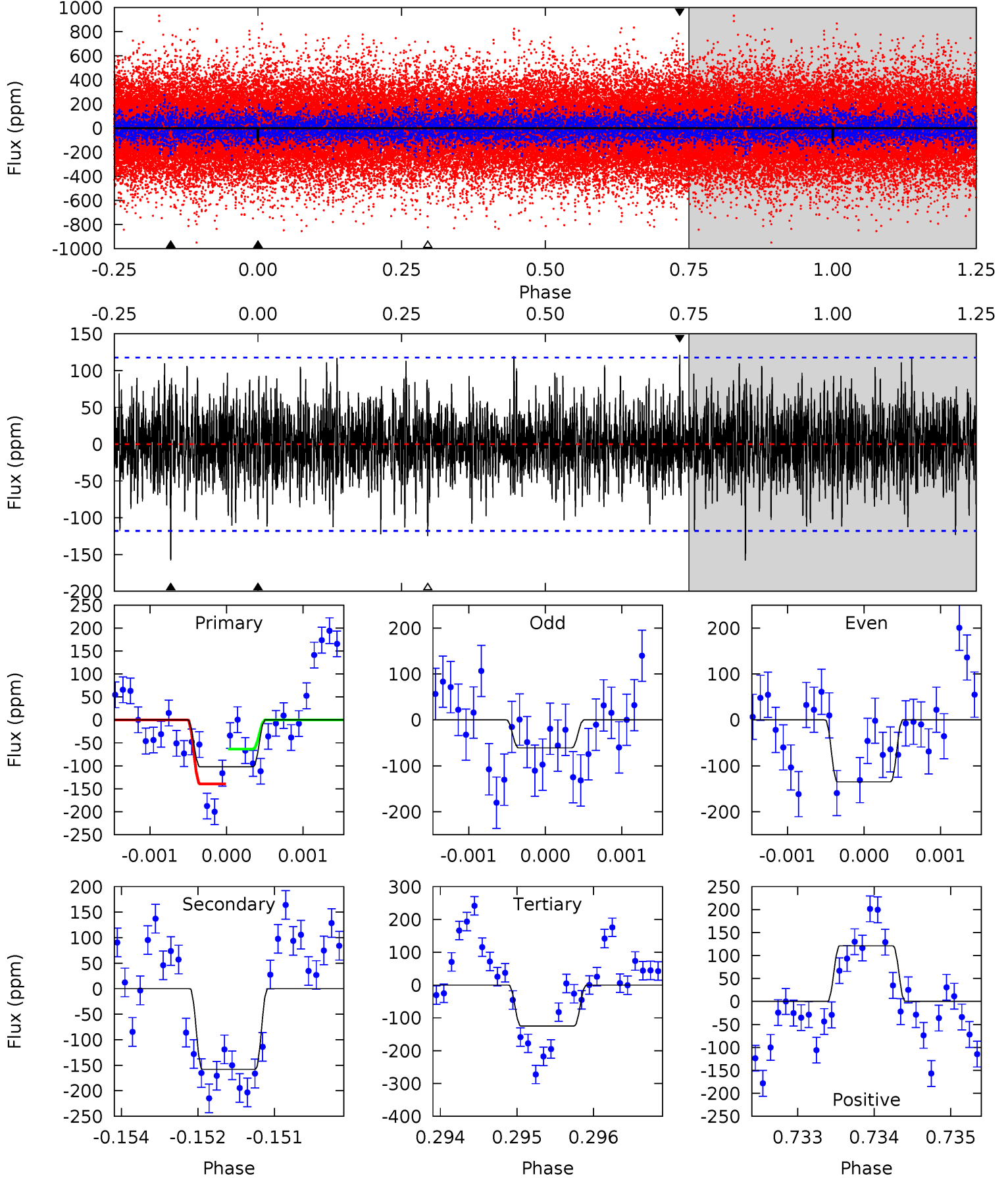
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.57	3.81	3.21	3.37	5.29	3.04	1.06	-0.64	-0.80	0.60	0.44	1.16	1.23	0.47	0.66



# Alt Model-Shift Uniqueness Test

008378462-02, P = 154.872154 Days, E = 36.527098 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.68	7.23	5.72	5.54	5.39	3.20	1.65	-1.04	-0.87	1.51	1.69	1.67	0.58	0.43	1.74



### Stellar Parameters For KIC 008378462

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4999^{+20}_{-130}$	$2.876^{+0.033}_{-0.033}$	$0.070^{+0.150}_{-0.250}$	$9.471^{+0.742}_{-2.227}$	$2.459^{+0.113}_{-1.013}$	$0.004^{+0.002}_{-0.001}$
	+0%/-3%	+1%/-1%	+214%/-357%	+8%/-24%	+5%/-41%	+37%/-16%
Source	SPE74	AST11	SPE74	DSEP		

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

### Secondary Eclipse Parameters for KIC 008378462-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-75 \pm 20$	$18.18^{+3.70}_{-3.25}$	$1084^{+18}_{-32}$	$3774^{+346}_{-286}$	$70^{+43}_{-27}$
Alt.	$-158 \pm 22$	$15.27^{+3.19}_{-3.14}$	$1081^{+22}_{-30}$	$4620^{+474}_{-336}$	$211^{+131}_{-68}$

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

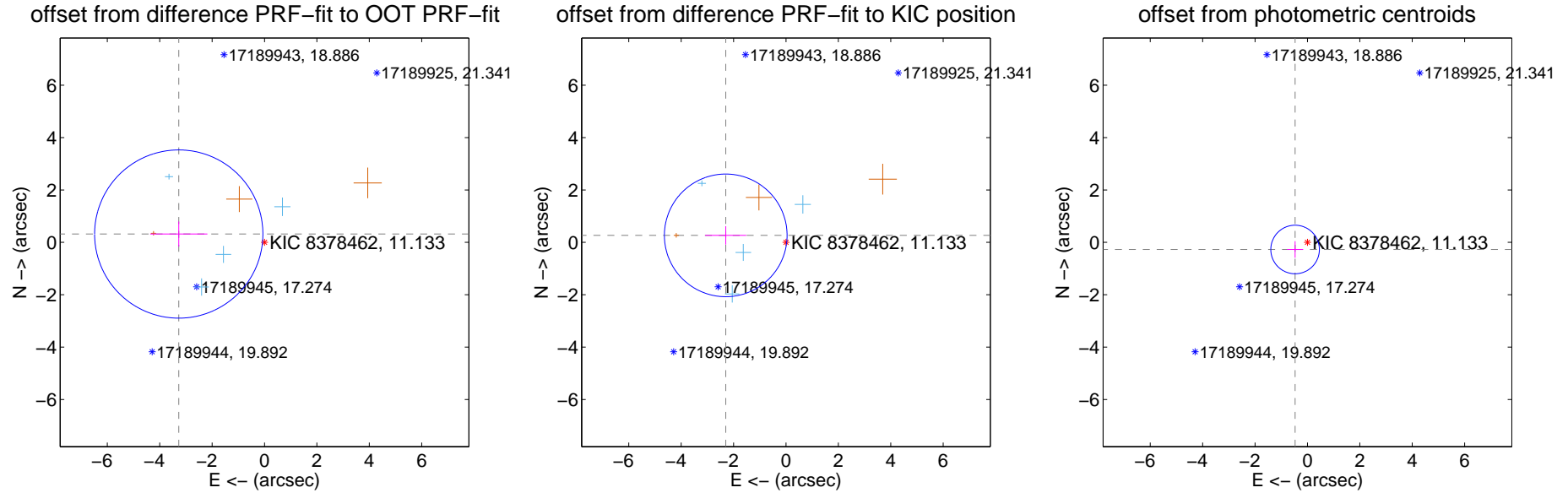
## DV Centroid Data

Supplemental centroid analysis for 008378462-02. **Kepler magnitude: 11.13.** Transit SNR 21.76

There are 4 quarters with good PRF difference image offsets

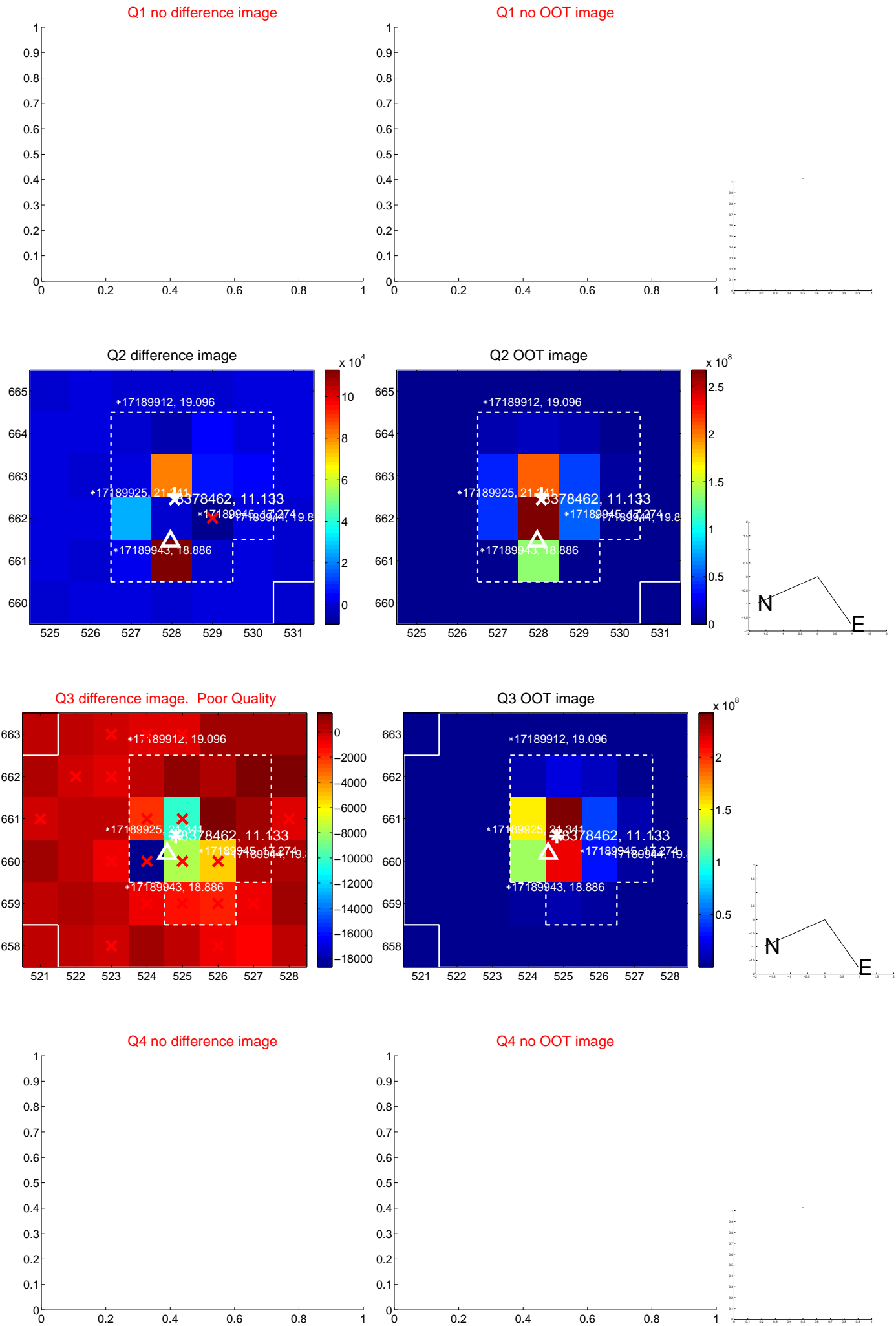
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>3.288 \pm 1.071</math></b>	<b>3.07</b>	$3.273 \pm 1.093$	$0.318 \pm 0.477$
PRF-fit source offset from KIC position	$2.315 \pm 0.781$	2.97	$2.299 \pm 0.785$	$0.267 \pm 0.352$
photometric centroid source offset	$0.54 \pm 0.31$	1.76	$0.47 \pm 0.31$	$-0.27 \pm 0.32$

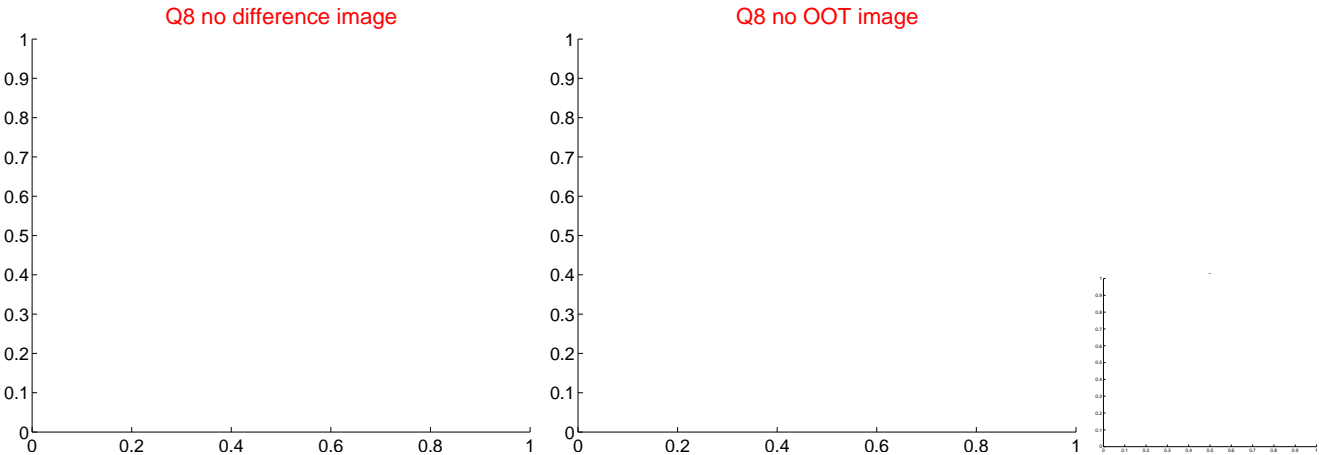
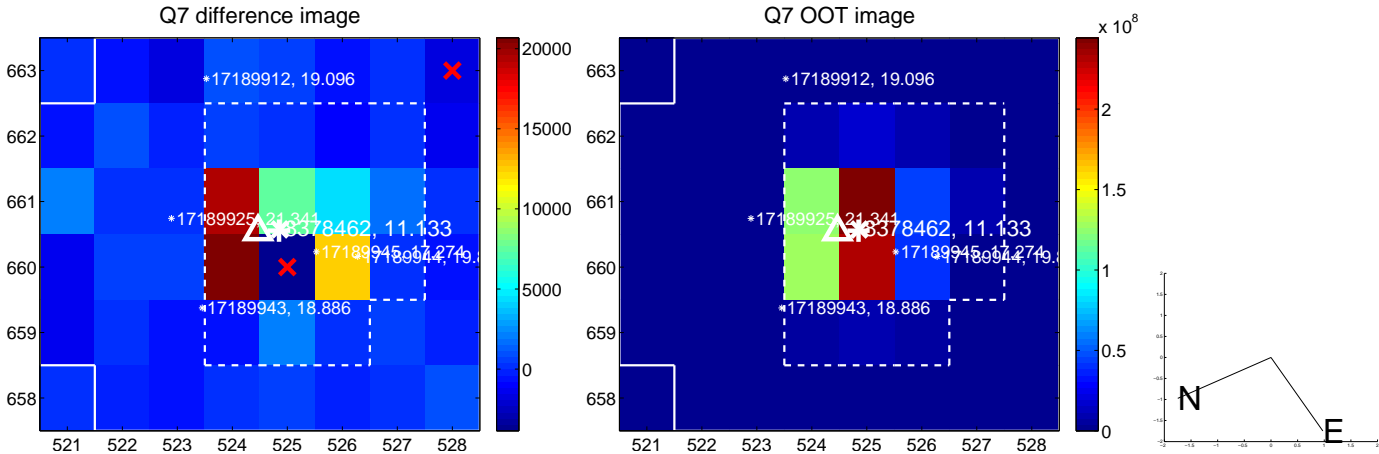
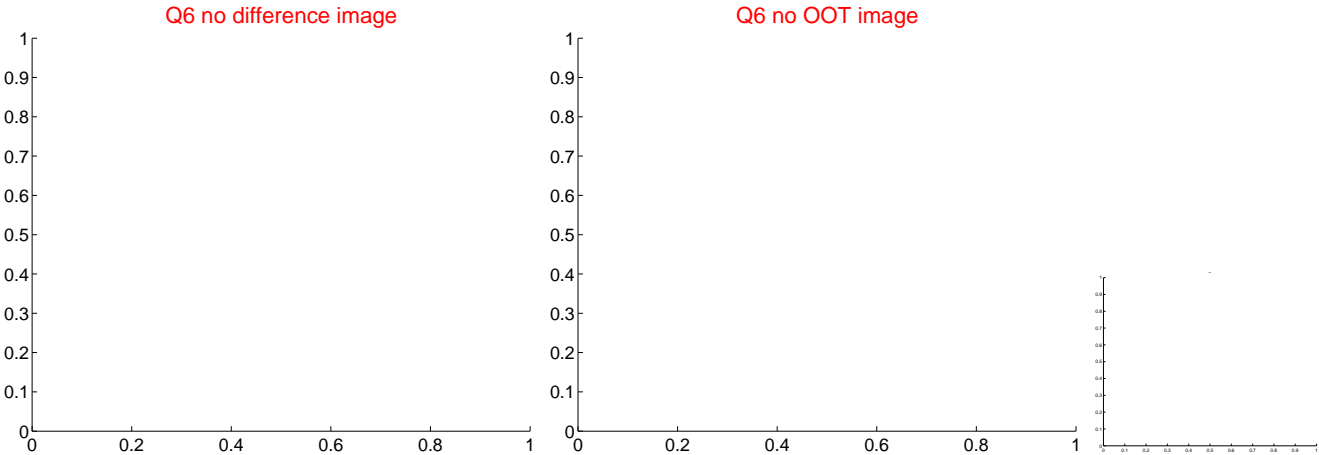
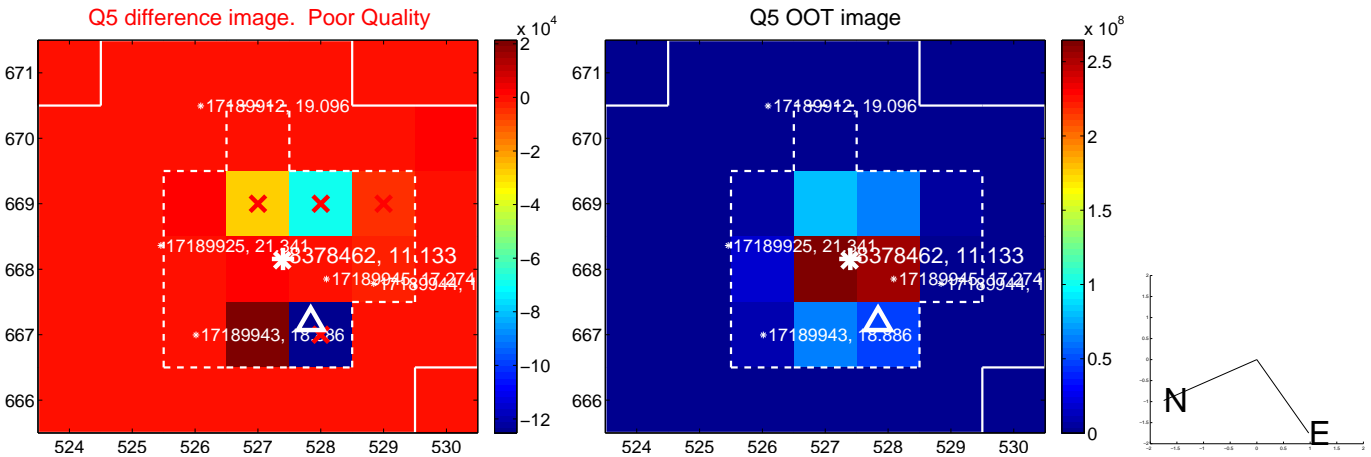


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

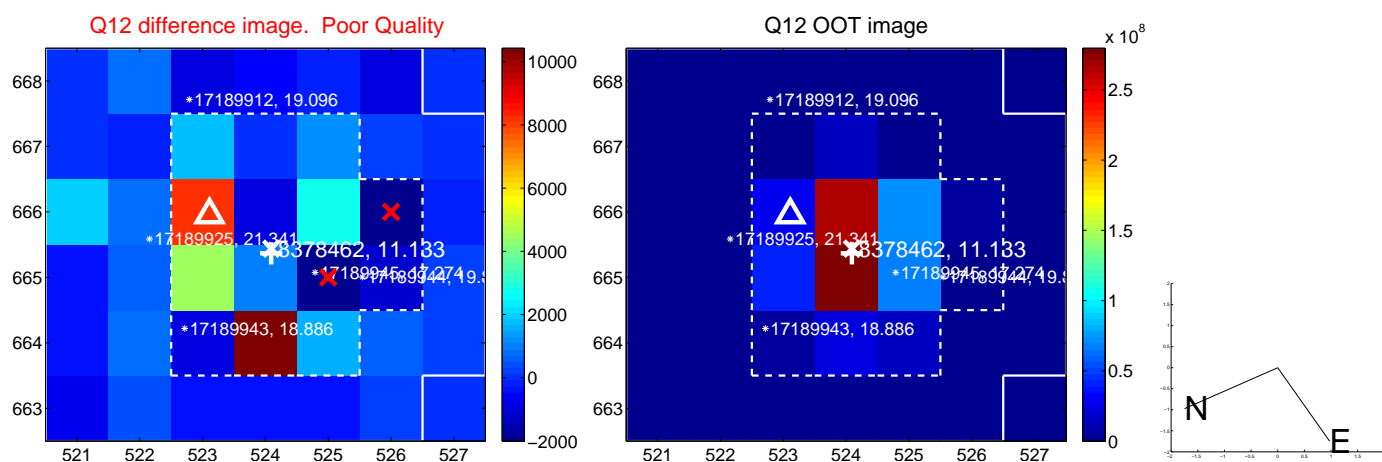
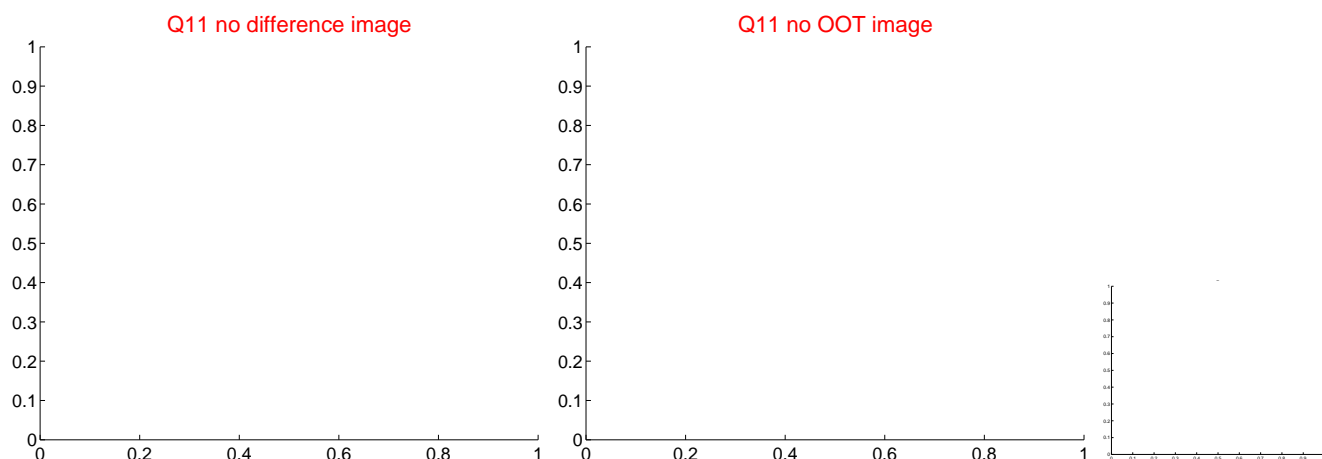
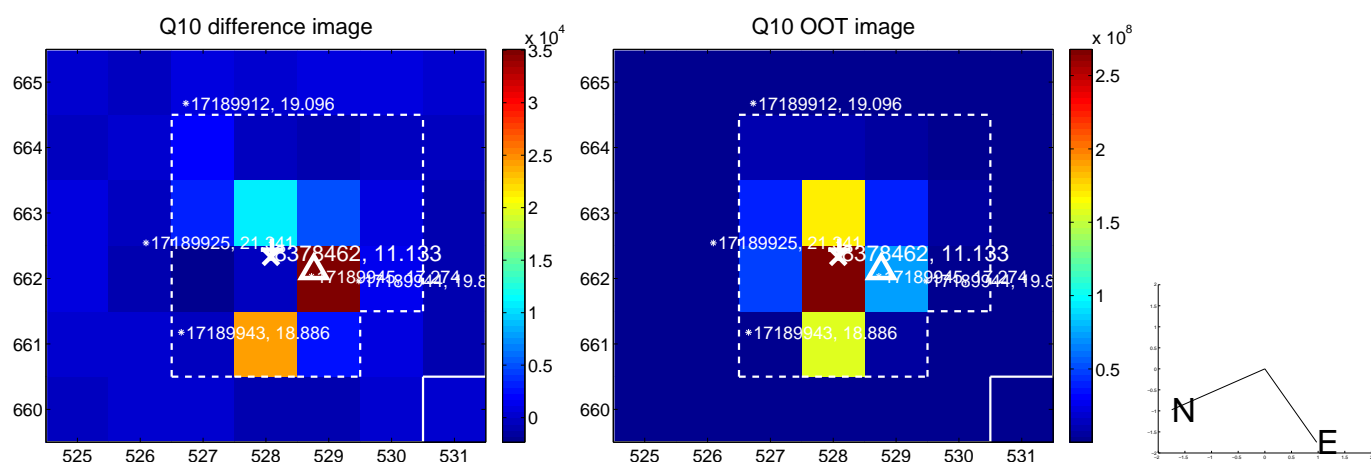
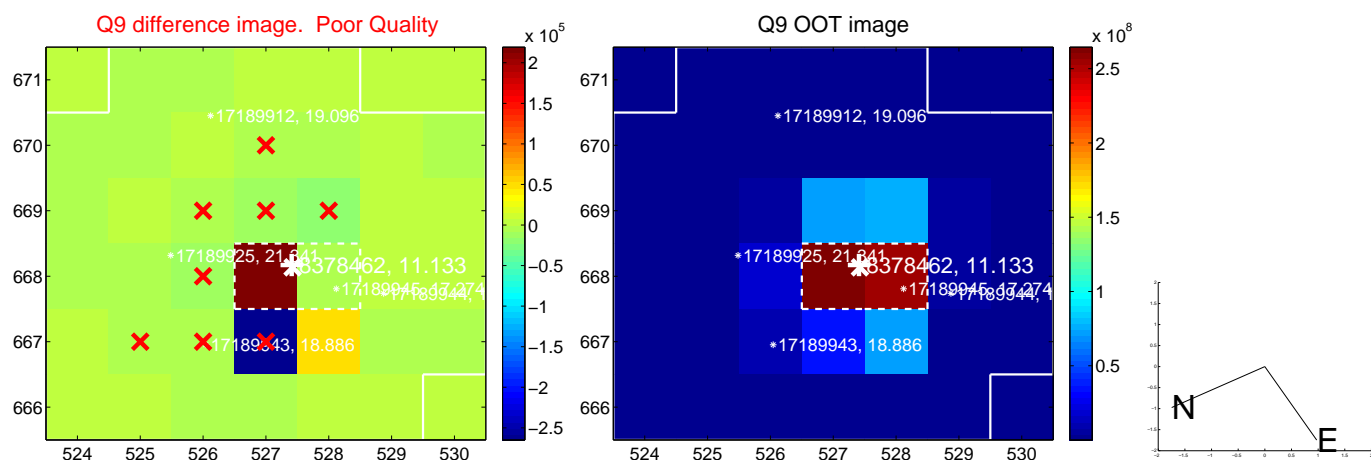


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

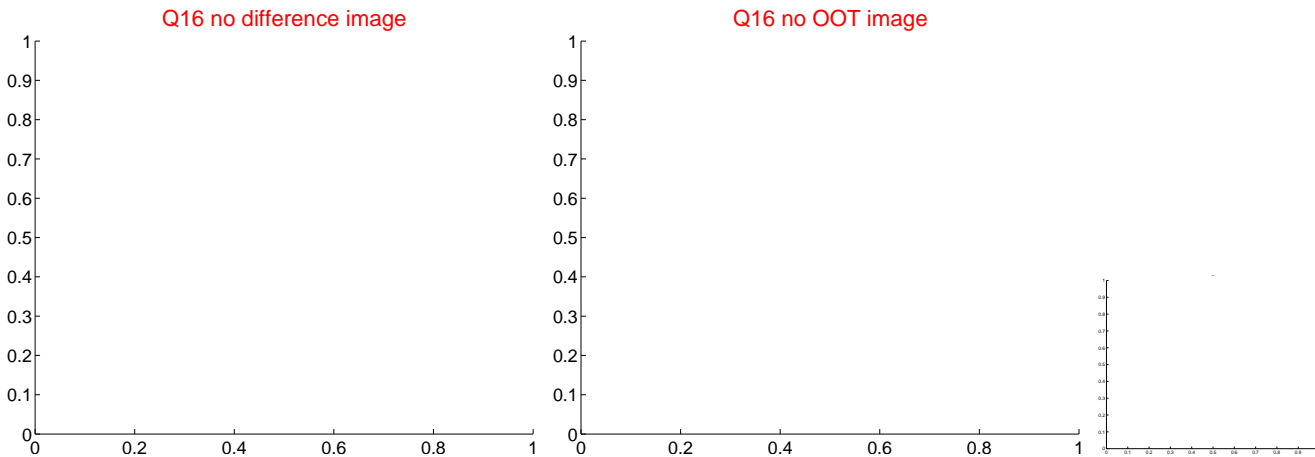
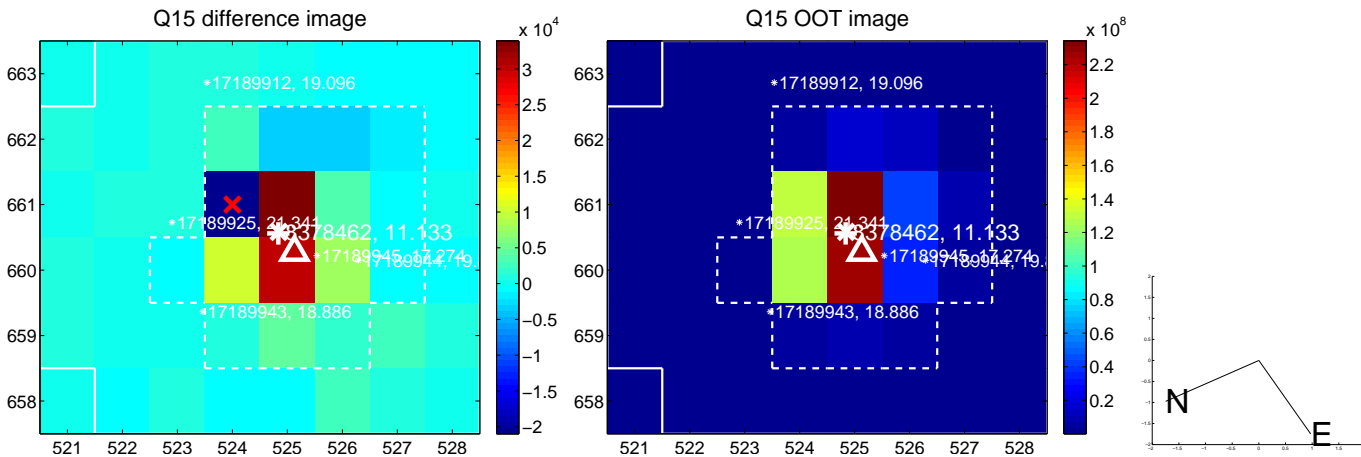
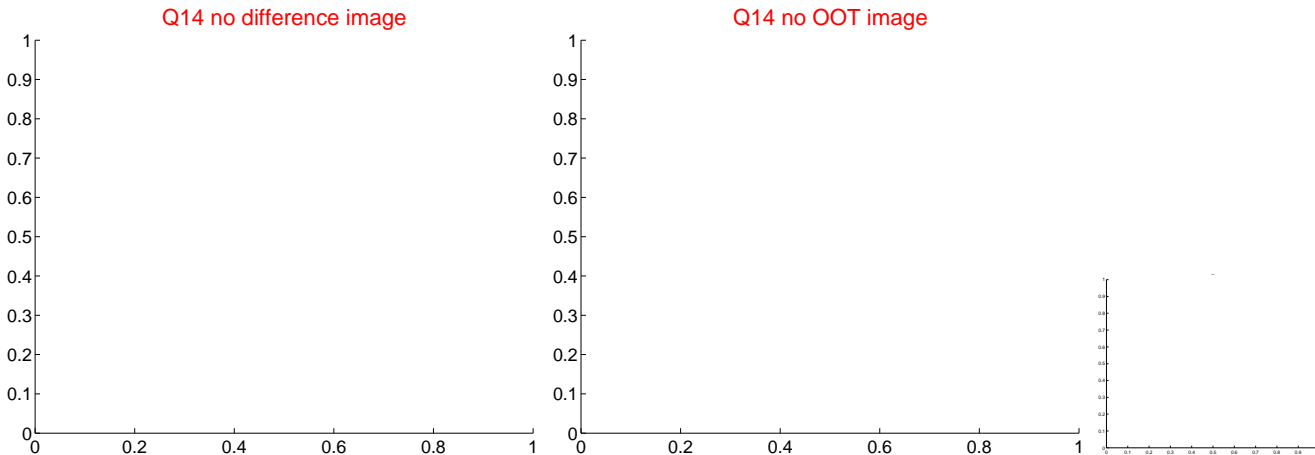
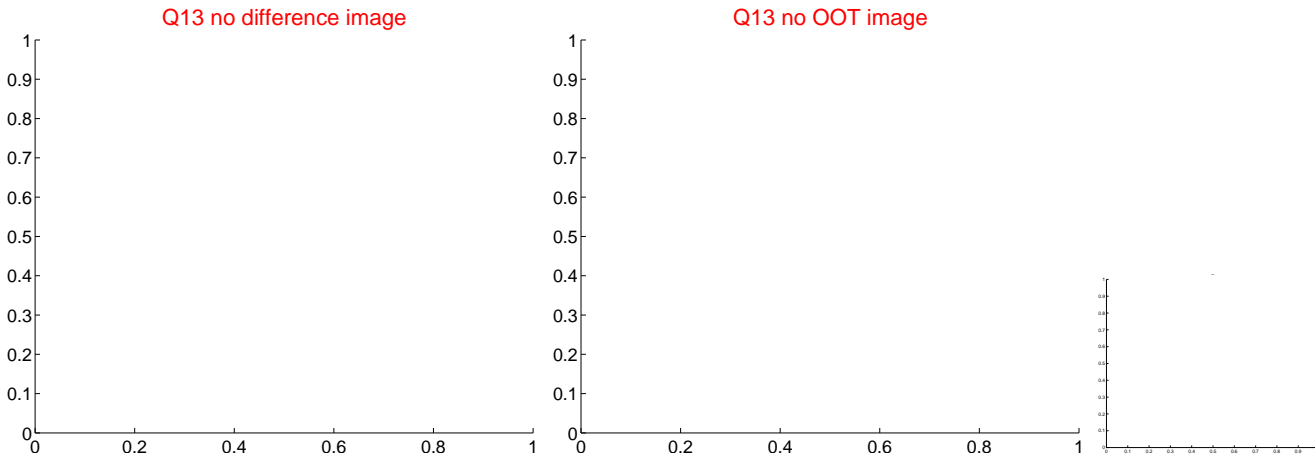




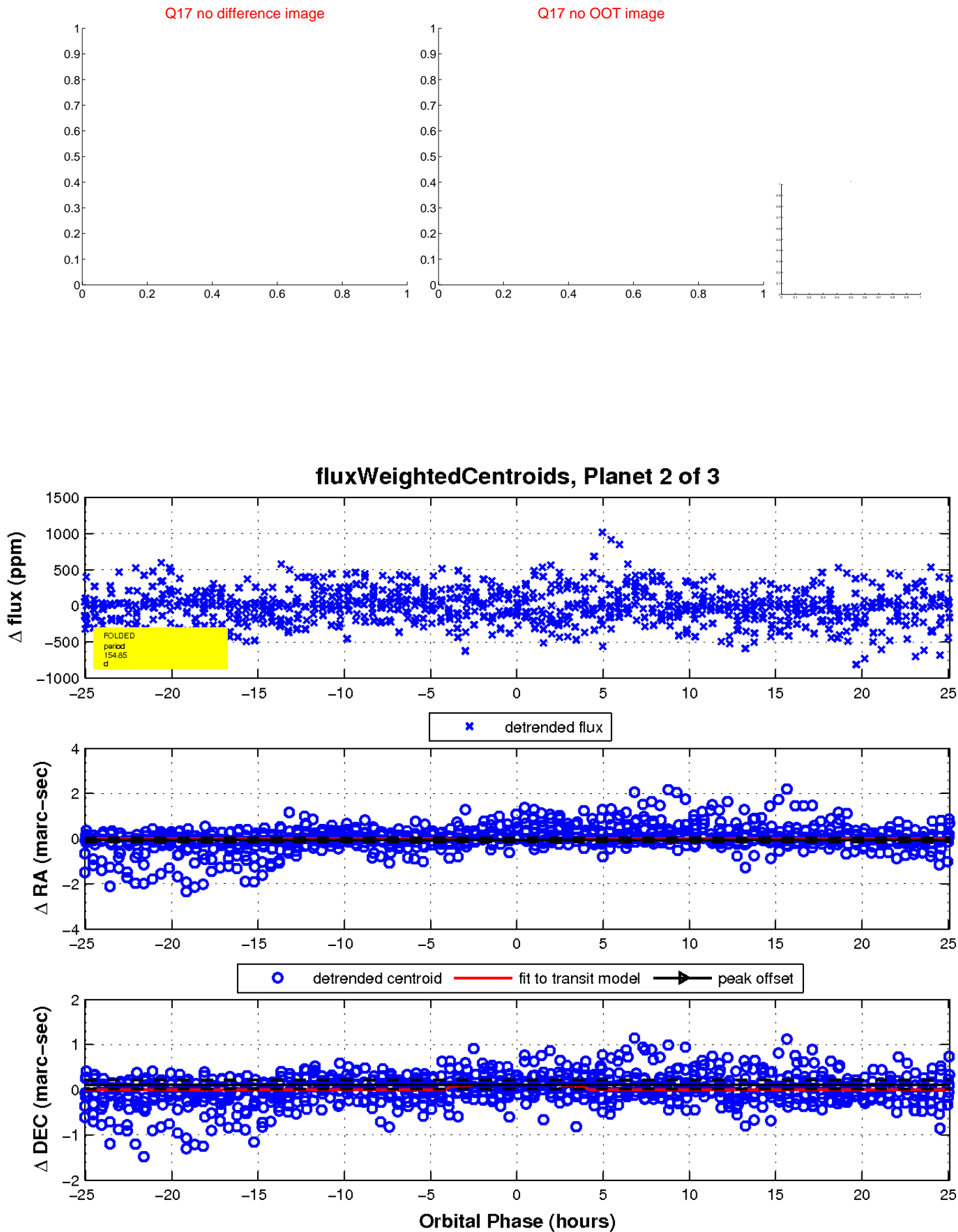
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



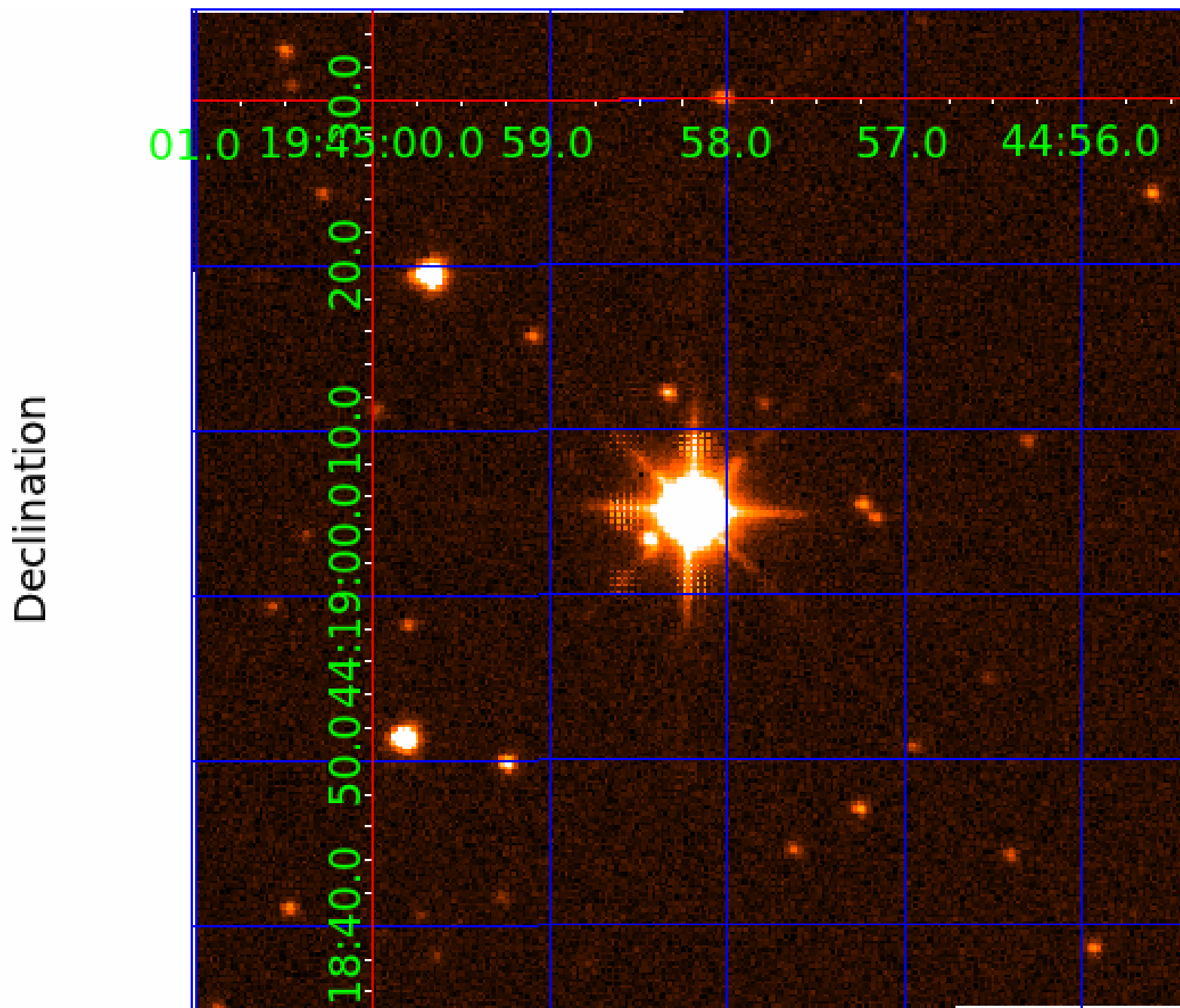
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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



UKIRT Image



# KIC 008378462

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008378462-01	OBS	No	118.334897	140.944024	1235.1	3.852	312.3	118.5	9.47	4999	67.35	123.75
008378462-02	OBS	No	154.845785	191.422481	295.3	8.456	12.1	21.8	9.47	4999	18.33	86.46
008378462-03	OBS	No	147.830539	234.274101	115.9	1.984	10.7	10.5	9.47	4999	12.25	91.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008378462-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
008378462-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
008378462-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

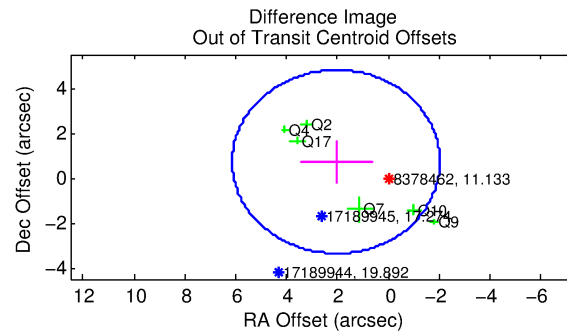
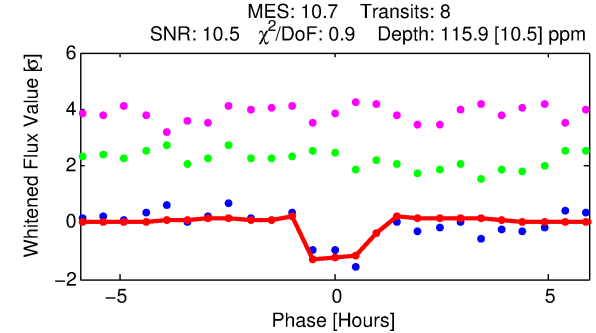
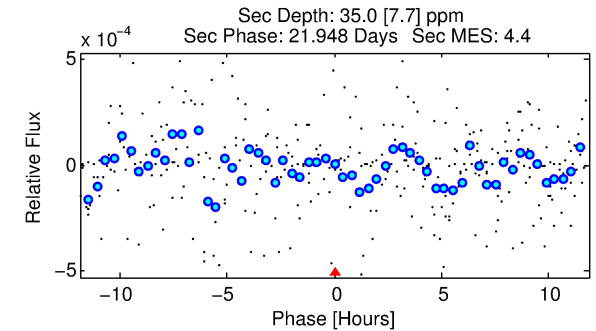
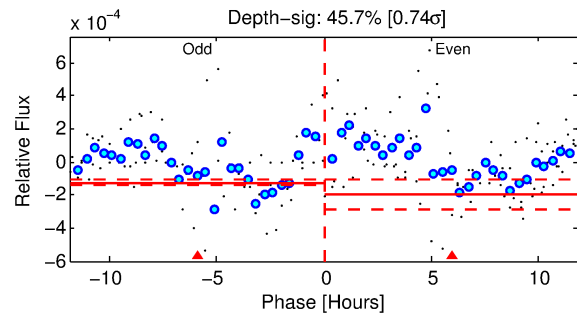
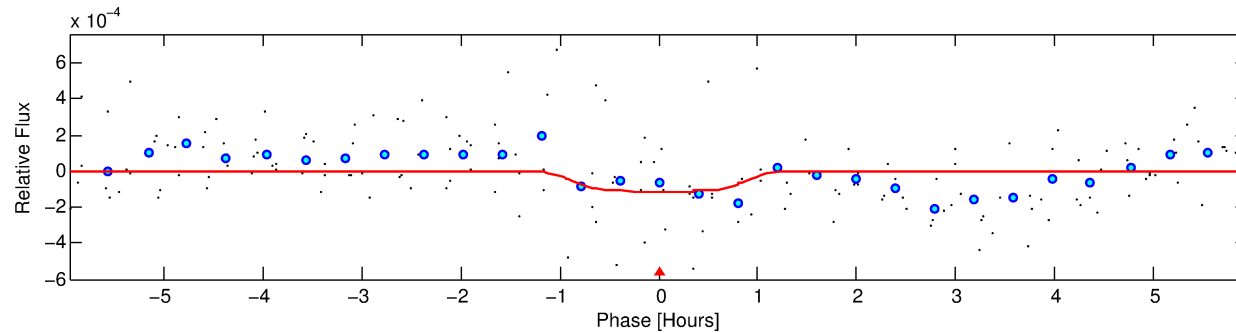
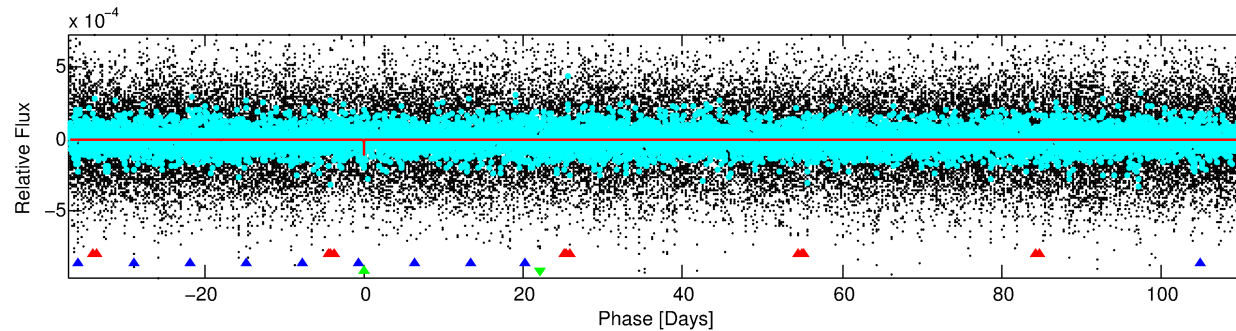
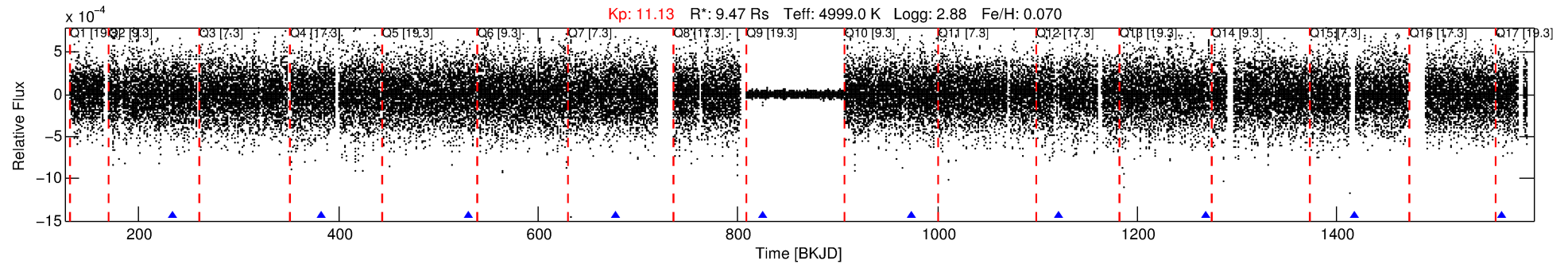
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008378462-03

No Significant Match Found

# DV One-Page Summary

KIC: 8378462 Candidate: 3 of 3 Period: 147.831 d



## DV Fit Results:

Period = 147.83054 [0.00227] d  
Epoch = 234.2741 [0.0093] BKJD  
Rp/R\* = 0.0118 [0.0163]  
a/R\* = 277.42 [1510.47]  
b = 0.89 [1.36]  
Seff = 91.98 [17.92]  
Teq = 790 [38] K  
Rp = 12.25 [17.07] Re  
a = 0.7387 [0.1173] AU  
Ag = 70.14 [193.74] [0.36 $\sigma$ ]  
Teffp = 3533 [2437] K [1.13 $\sigma$ ]

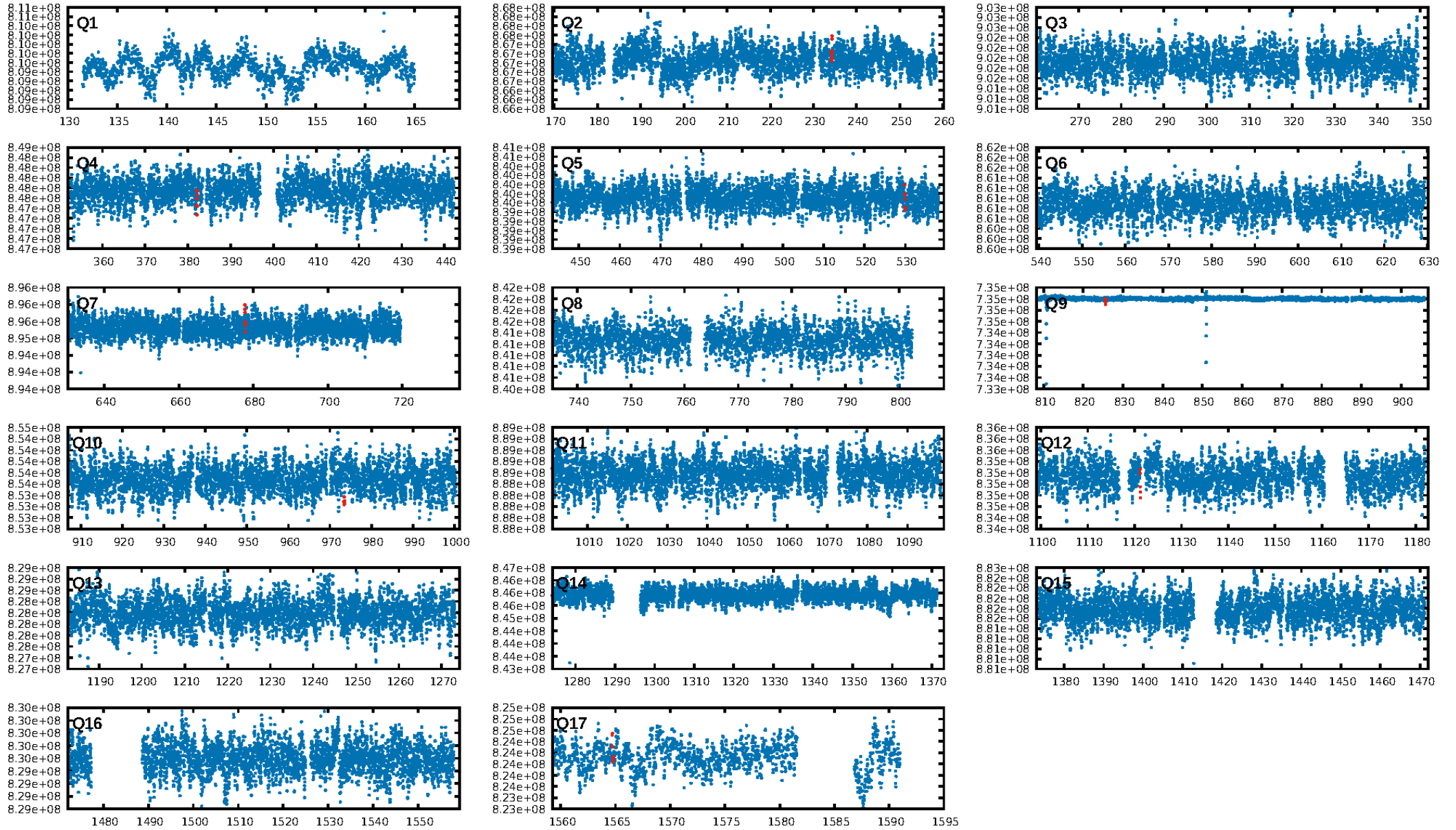
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [163.37 $\sigma$ ]  
LongPeriod-sig: 100.0% [19.38 $\sigma$ ]  
ModelChiSquare2-sig: 44.8%  
ModelChiSquareGof-sig: 82.6%  
Bootstrap-pfa: 1.08e-33  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: -0.6341  
Centroid-sig: 31.0%  
Centroid-so: 1.425 arcsec [0.86 $\sigma$ ]  
OotOffset-rm: 2.171 arcsec [1.59 $\sigma$ ]  
KicOffset-rm: 1.993 arcsec [1.37 $\sigma$ ]  
OotOffset-st: 2/1/1/2 [6]  
KicOffset-st: 2/1/1/2 [6]  
DiffImageQuality-fgm: 0.17 [1/6]  
DiffImageOverlap-fno: 1.00 [7/7]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 10:22:32 Z

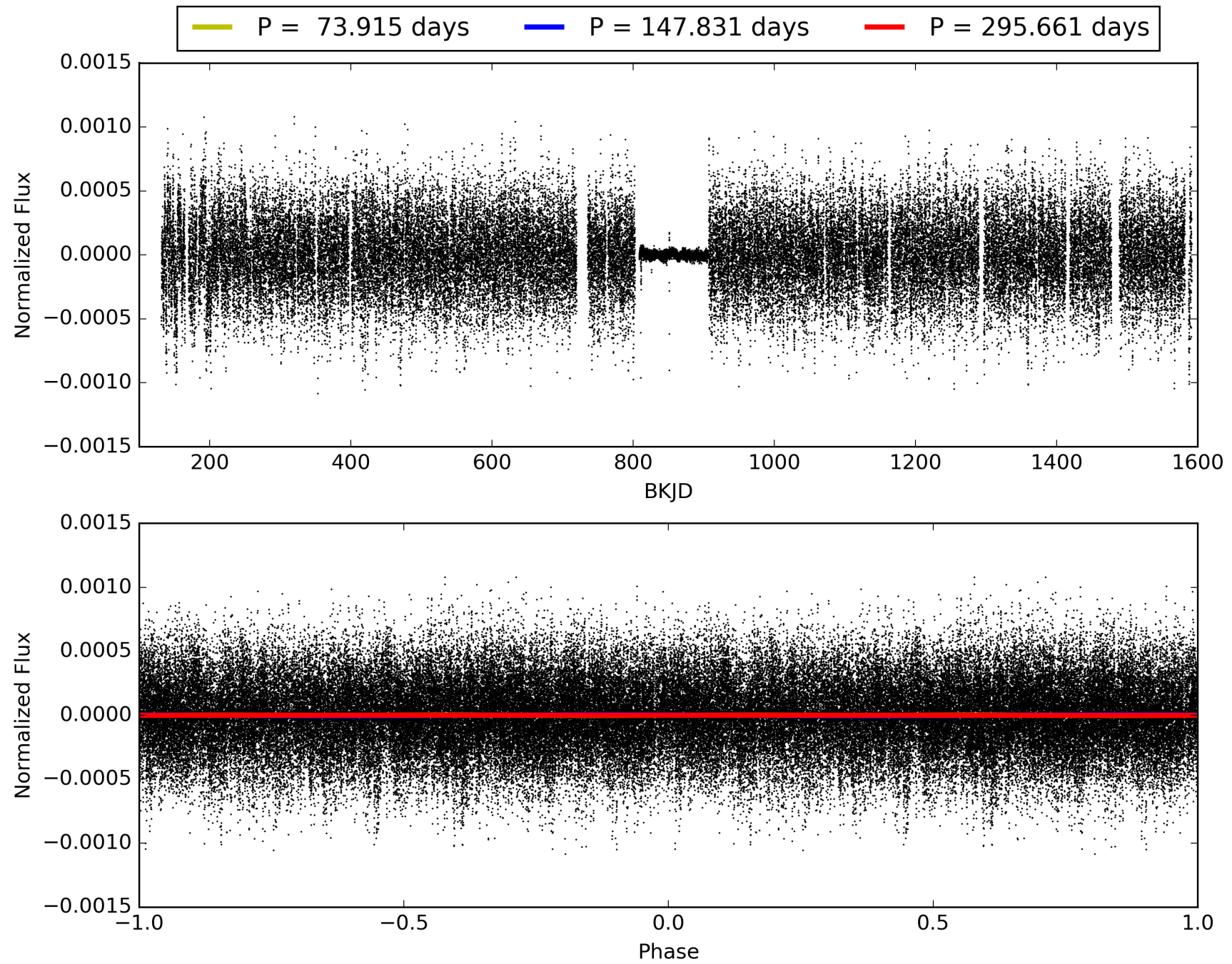
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008378462-03, PDC Light Curves





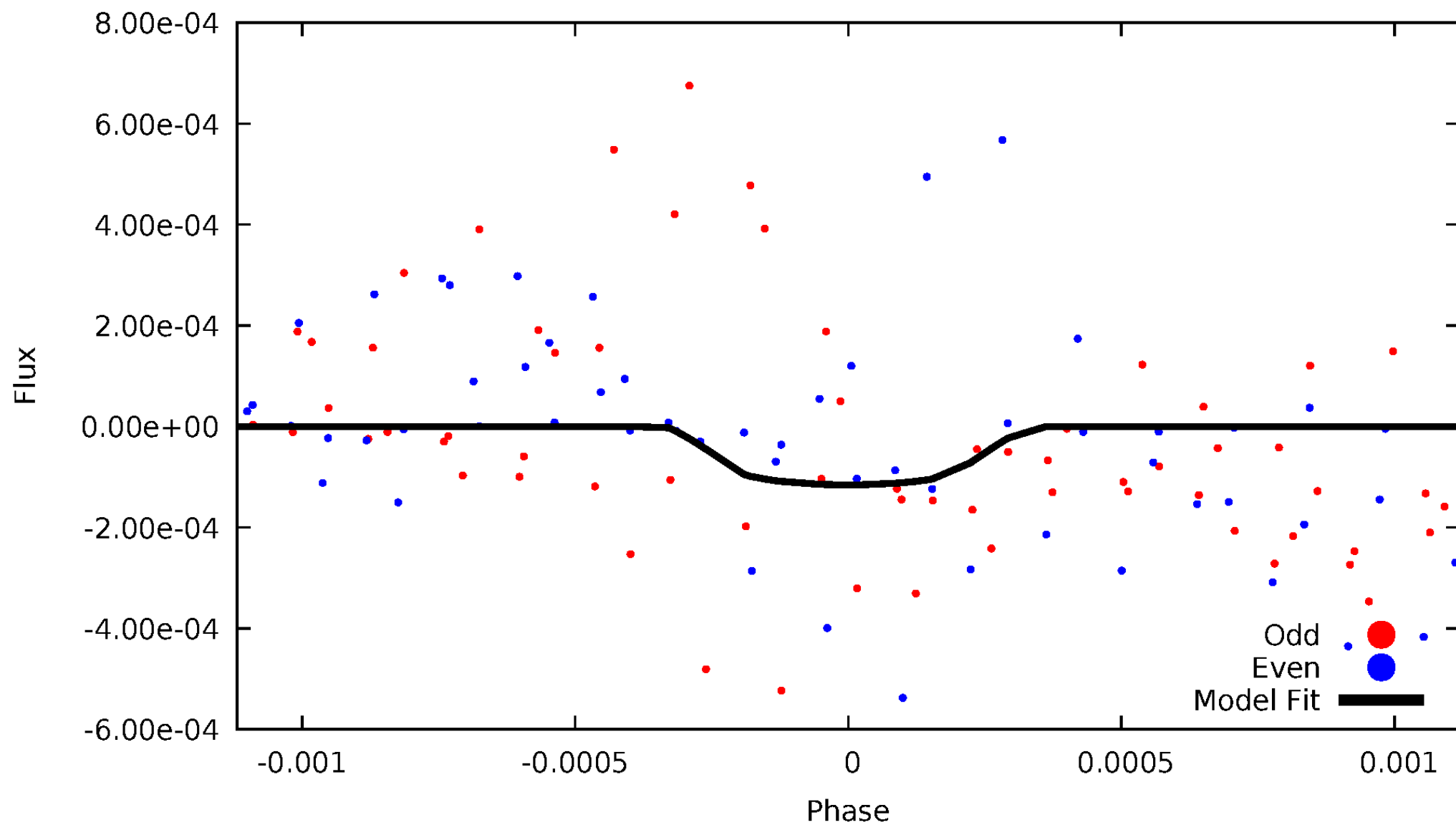
TCE 008378462-03





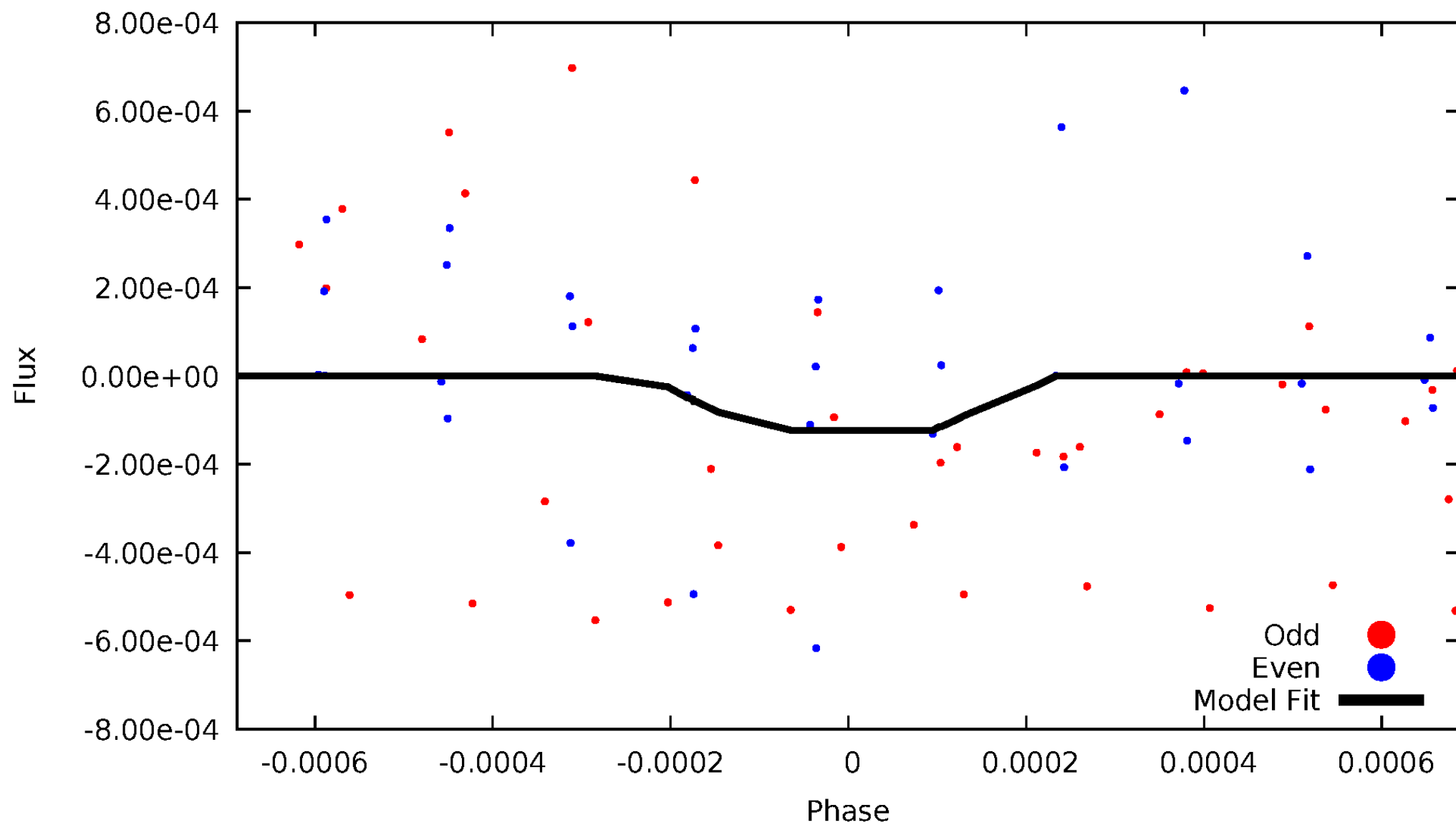
# DV Odd/Even

TCE 008378462-03

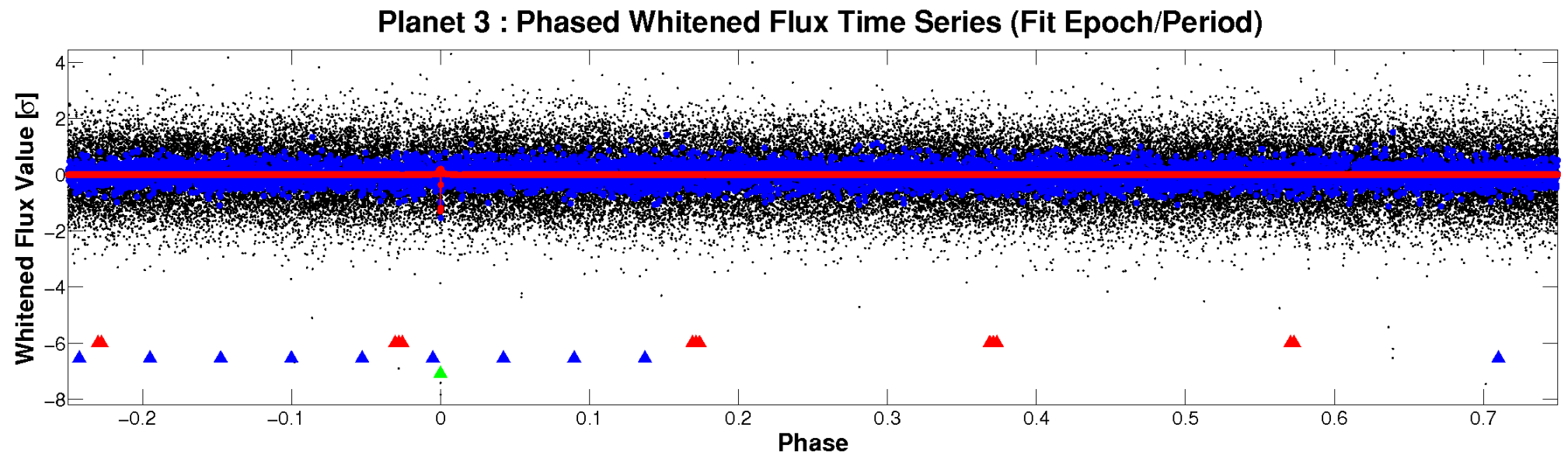
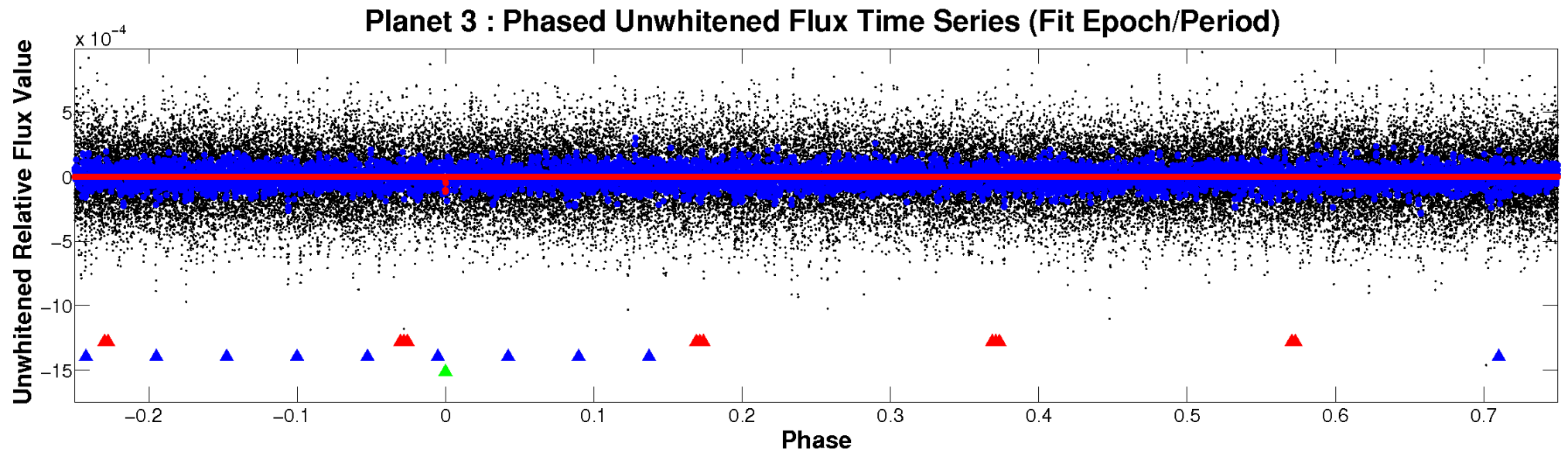


# ALT Odd/Even

TCE 008378462-03

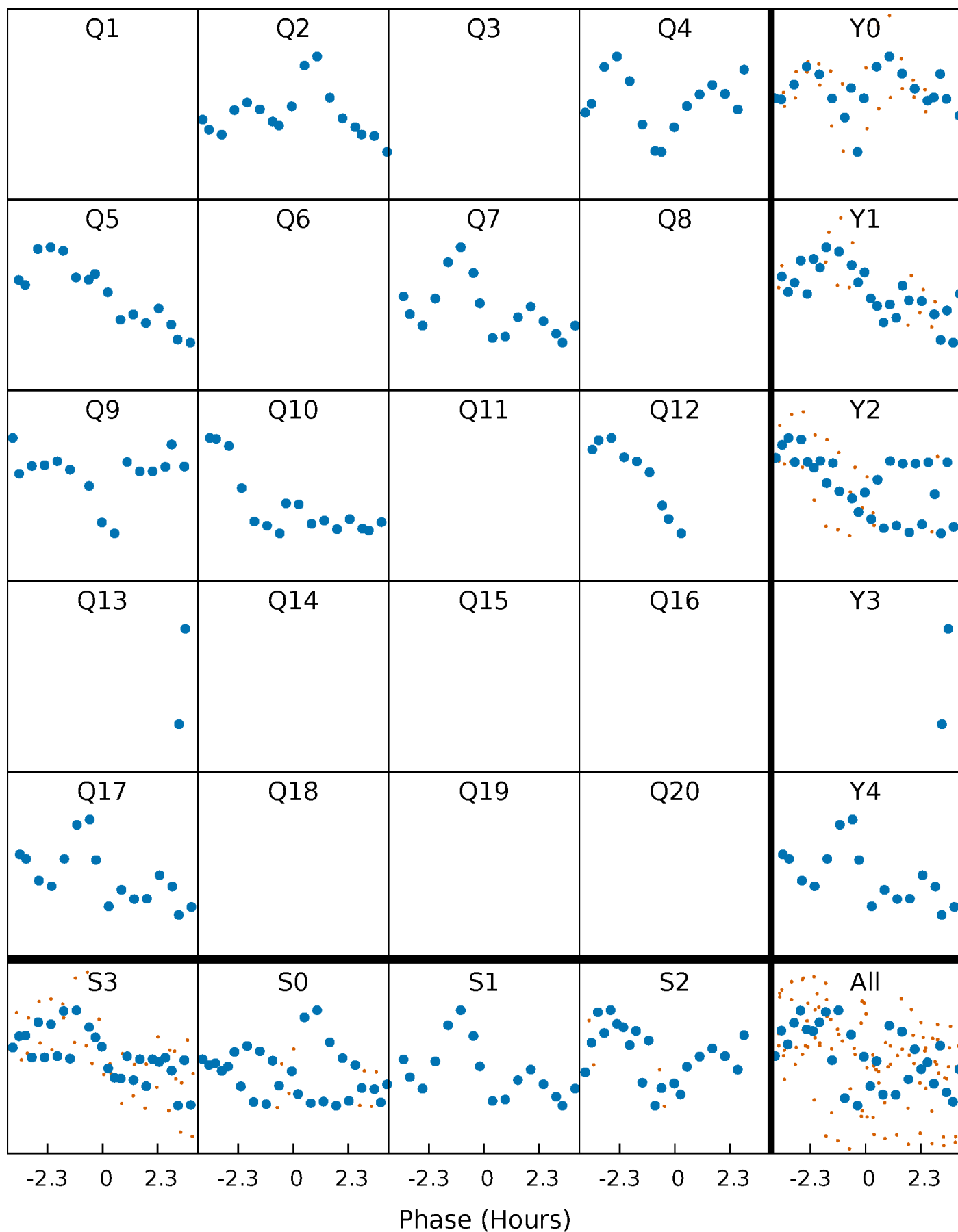


# Non-Whitened Vs. Whitened Light Curve



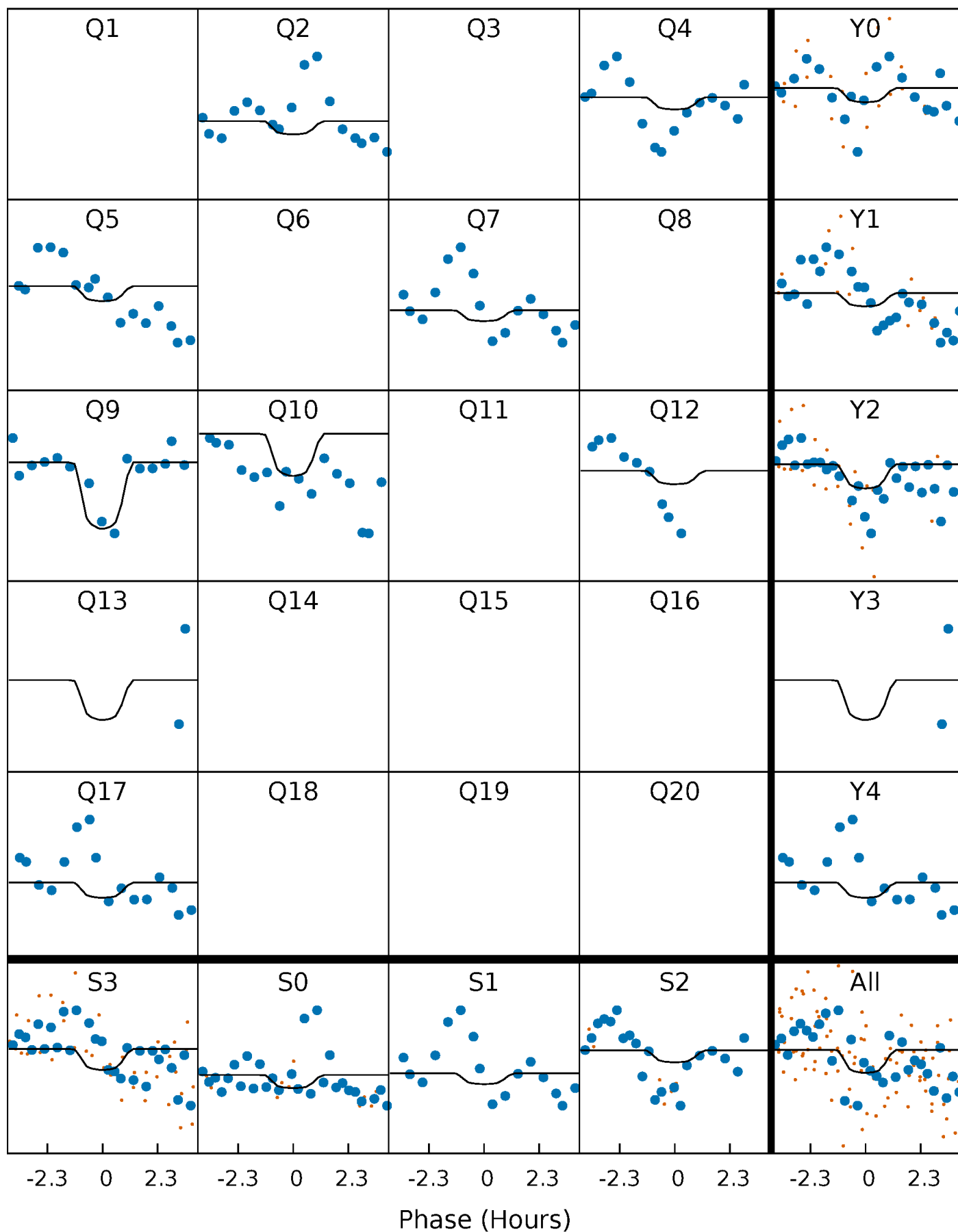
# PDC Quarter-Phased Transit Curves

TCE 008378462-03   P=147.830539 Days    $T_0=234.274102$  (BKJD)



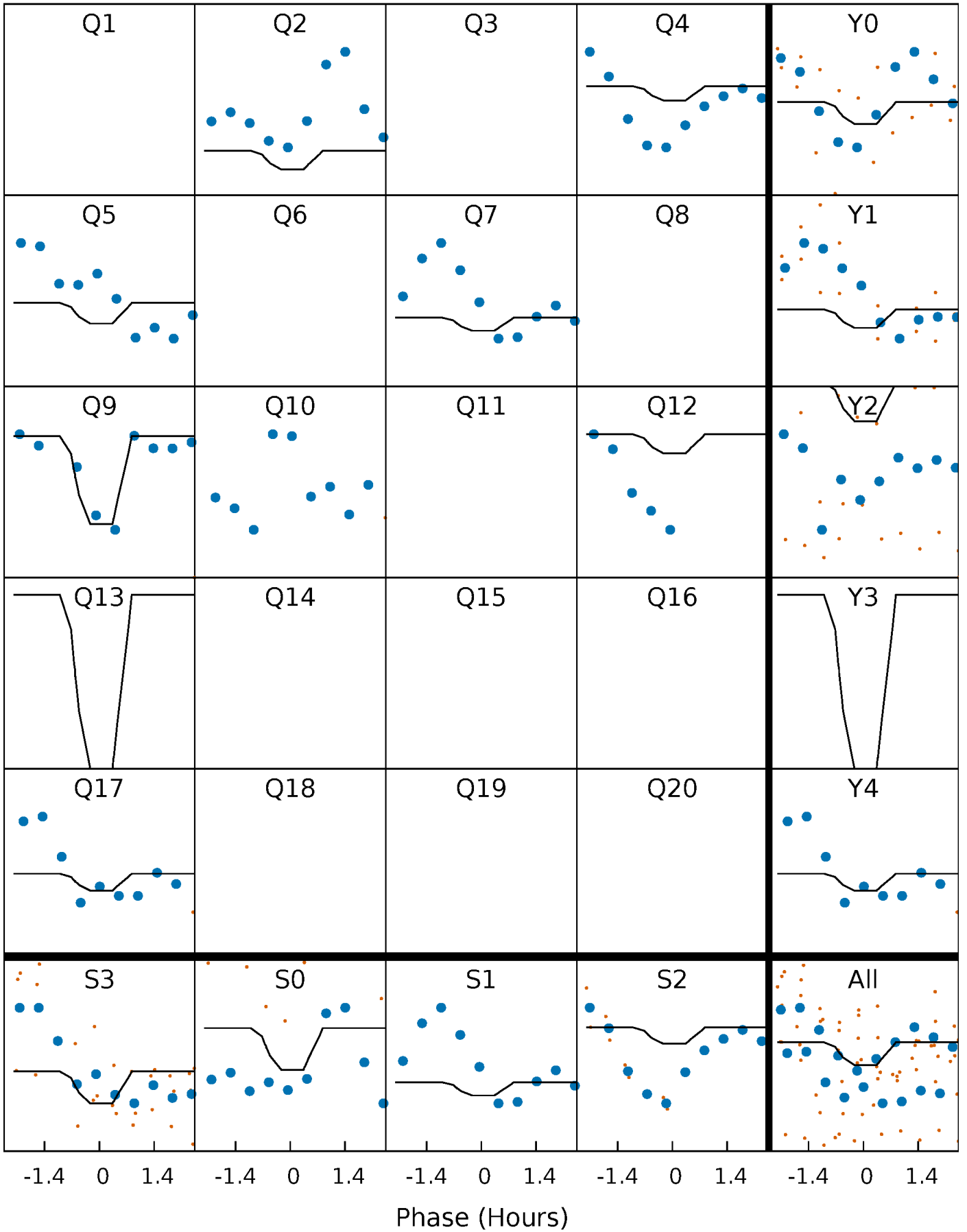
# DV Quarter-Phased Transit Curves

TCE 008378462-03     $P=147.830539$  Days     $T_0=234.274102$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

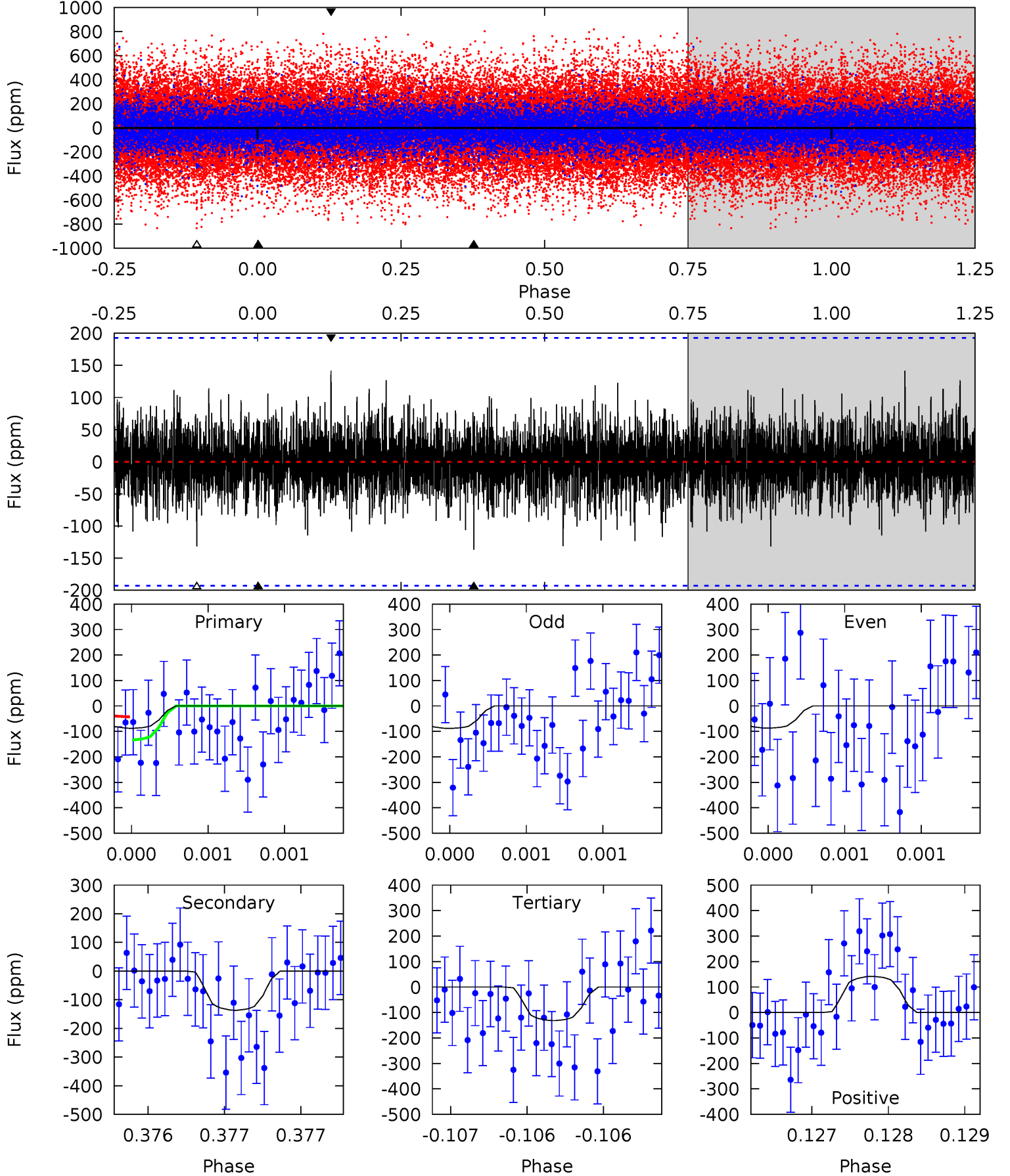
TCE 008378462-03 P=147.836250 Days  $T_0=234.259893$  (BKJD)



# DV Model-Shift Uniqueness Test

008378462-03,  $P = 147.830539$  Days,  $E = 86.443563$  Days

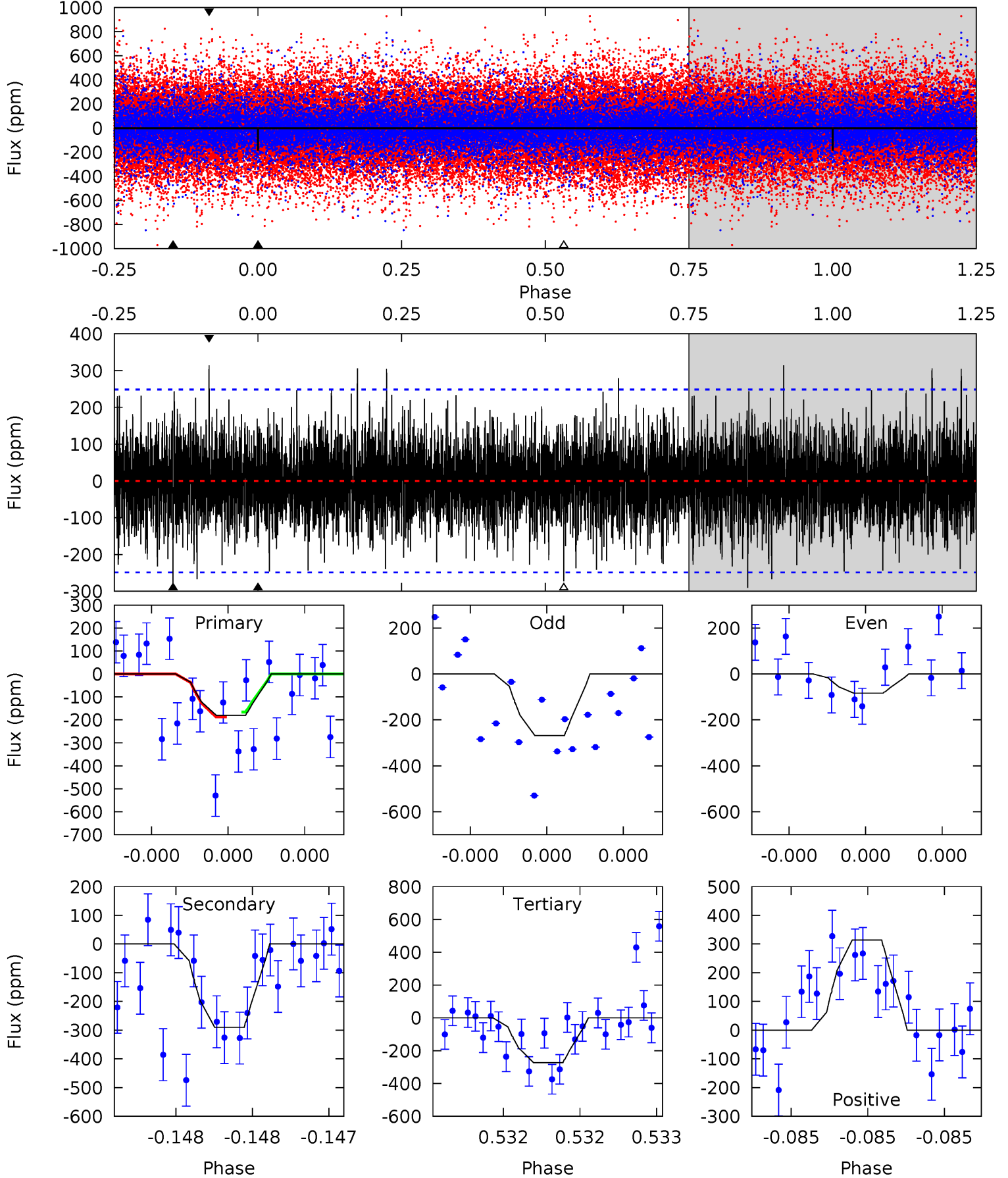
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.52	3.92	3.78	4.07	5.54	3.42	1.02	-1.26	-1.55	0.14	-0.15	0.02	1.12	0.51	1.30



# Alt Model-Shift Uniqueness Test

008378462-03, P = 147.836250 Days, E = 86.423643 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.05	6.55	6.14	7.08	5.61	3.53	1.65	-2.09	-3.03	0.41	-0.53	2.09	1.42	0.52	0.23





### Stellar Parameters For KIC 008378462

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4999^{+20}_{-130}$	$2.876^{+0.033}_{-0.033}$	$0.070^{+0.150}_{-0.250}$	$9.471^{+0.742}_{-2.227}$	$2.459^{+0.113}_{-1.013}$	$0.004^{+0.002}_{-0.001}$
	+0%/-3%	+1%/-1%	+214%/-357%	+8%/-24%	+5%/-41%	+37%/-16%
Source	SPE74	AST11	SPE74	DSEP		

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

### Secondary Eclipse Parameters for KIC 008378462-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-137 \pm 35$	$16.77^{+13.72}_{-11.08}$	$1100^{+20}_{-33}$	$4308^{+2738}_{-829}$	$143^{+1084}_{-102}$
Alt.	$-290 \pm 44$	$17.10^{+14.21}_{-11.61}$	$1098^{+20}_{-32}$	$4961^{+4318}_{-1009}$	$283^{+2572}_{-196}$

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

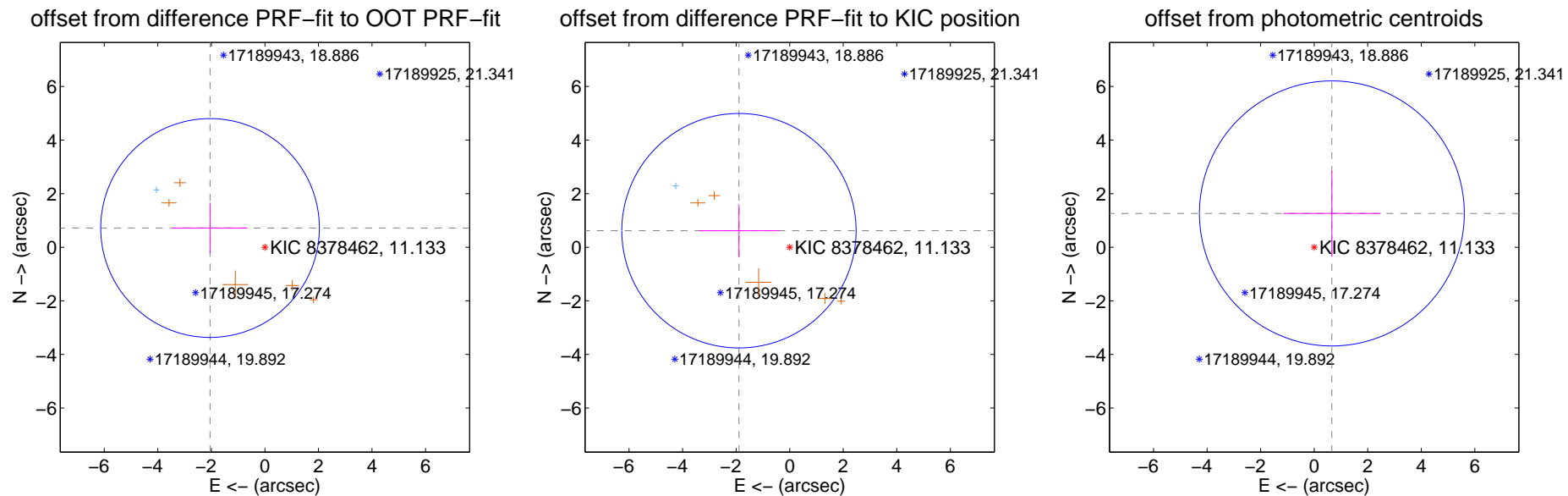
## DV Centroid Data

Supplemental centroid analysis for 008378462-03. **Kepler magnitude: 11.13.** Transit SNR 10.54

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

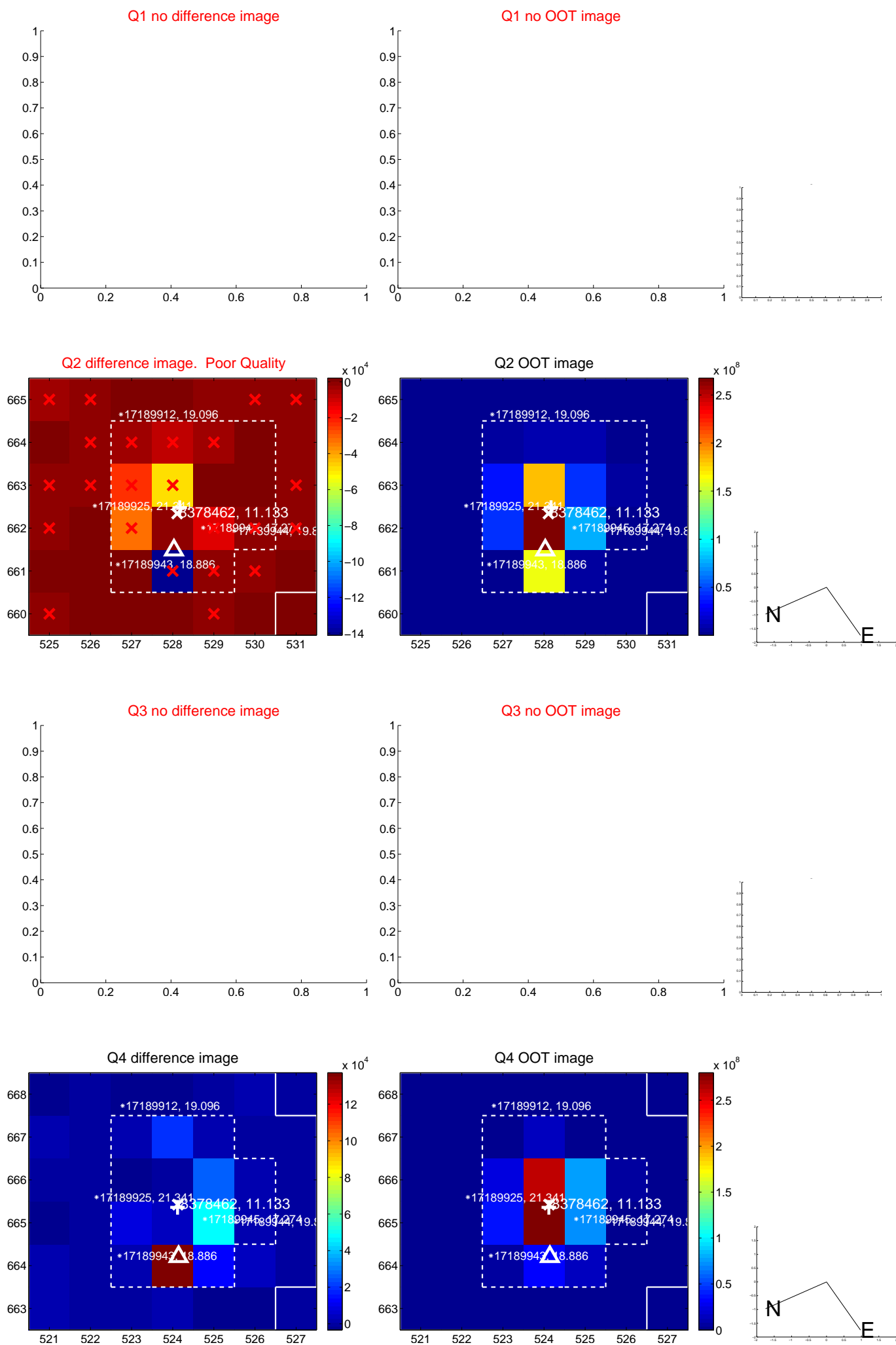
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.171 \pm 1.361$	1.59	$2.049 \pm 1.404$	$0.718 \pm 0.944$
PRF-fit source offset from KIC position	$1.993 \pm 1.459$	1.37	$1.895 \pm 1.500$	$0.617 \pm 0.987$
photometric centroid source offset	$1.42 \pm 1.65$	0.86	$-0.66 \pm 1.82$	$1.26 \pm 1.60$

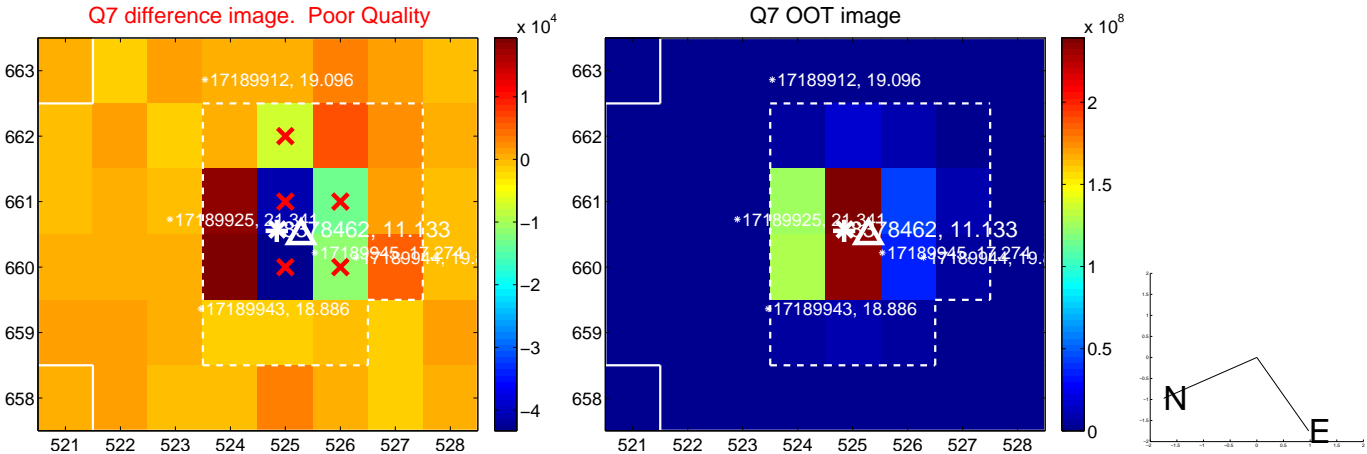
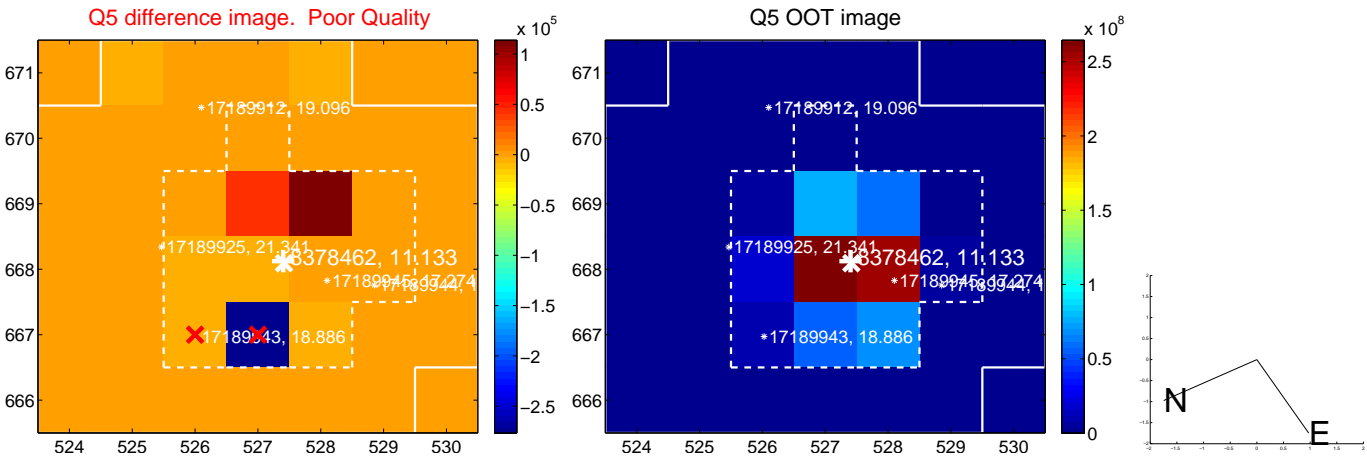


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

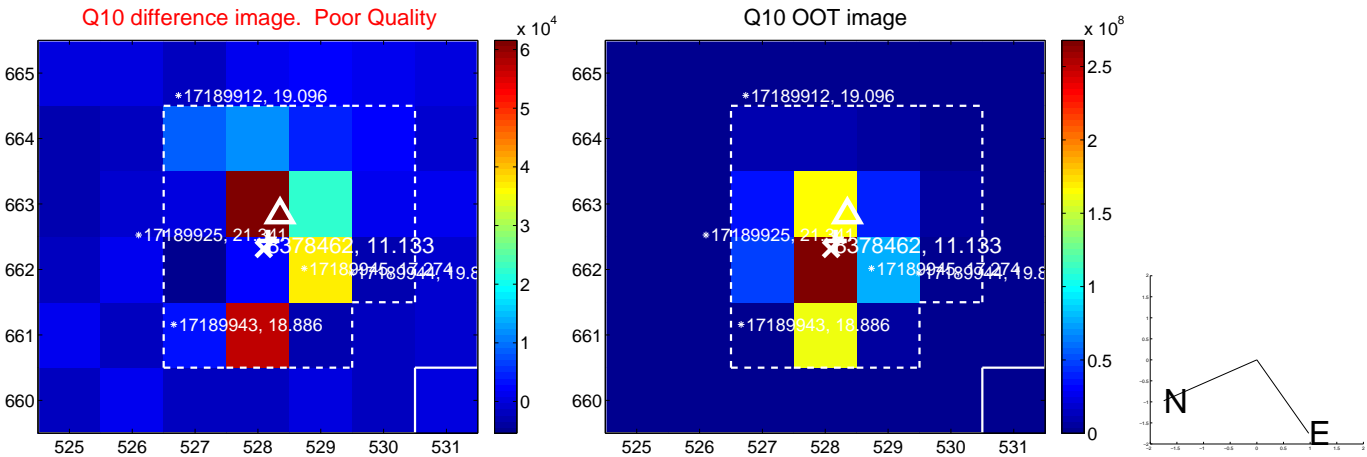
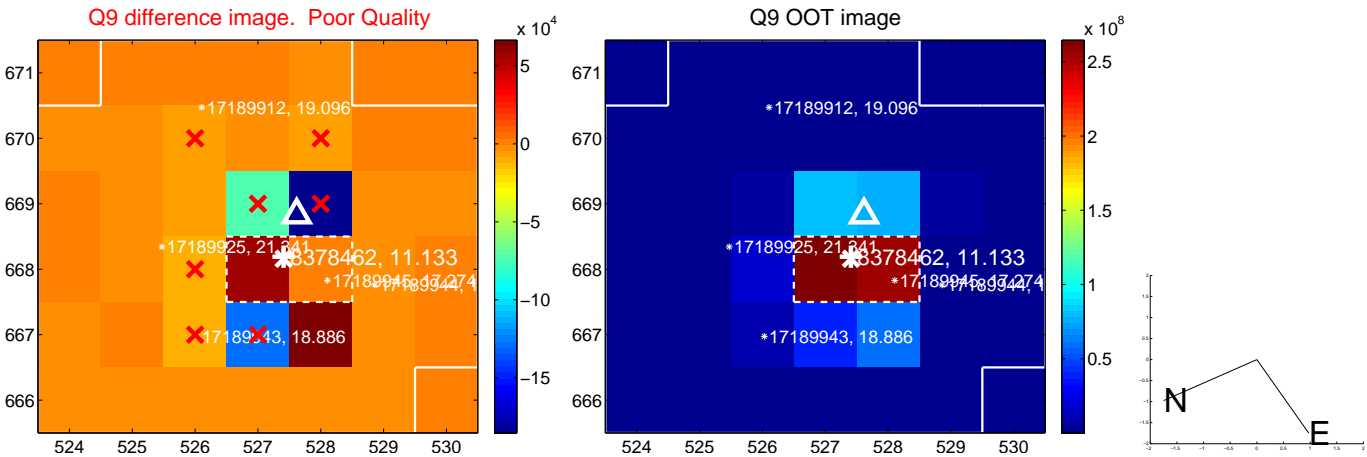
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



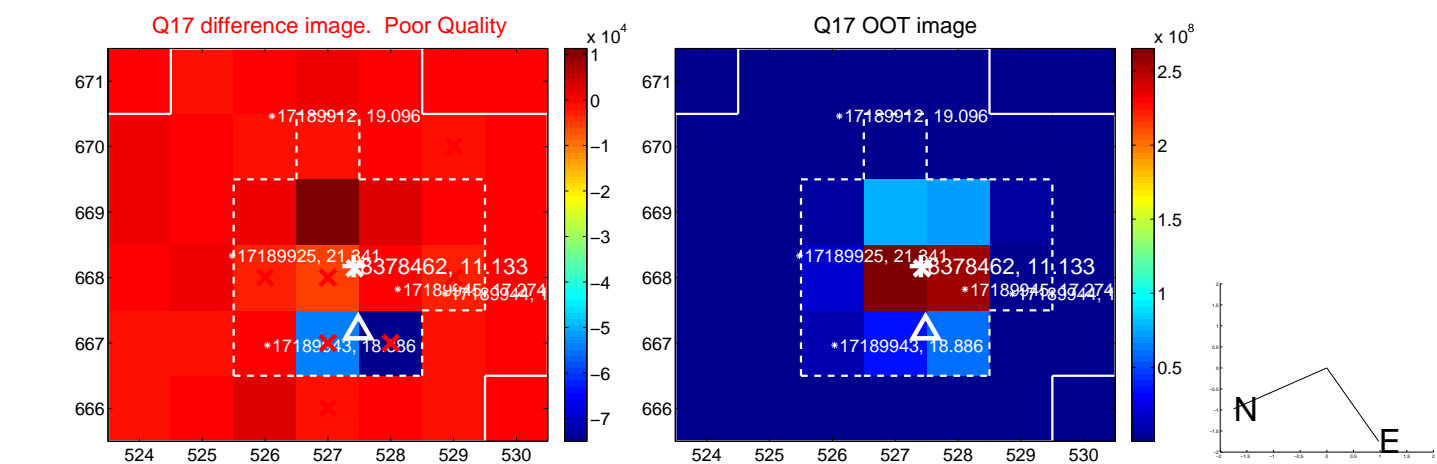
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



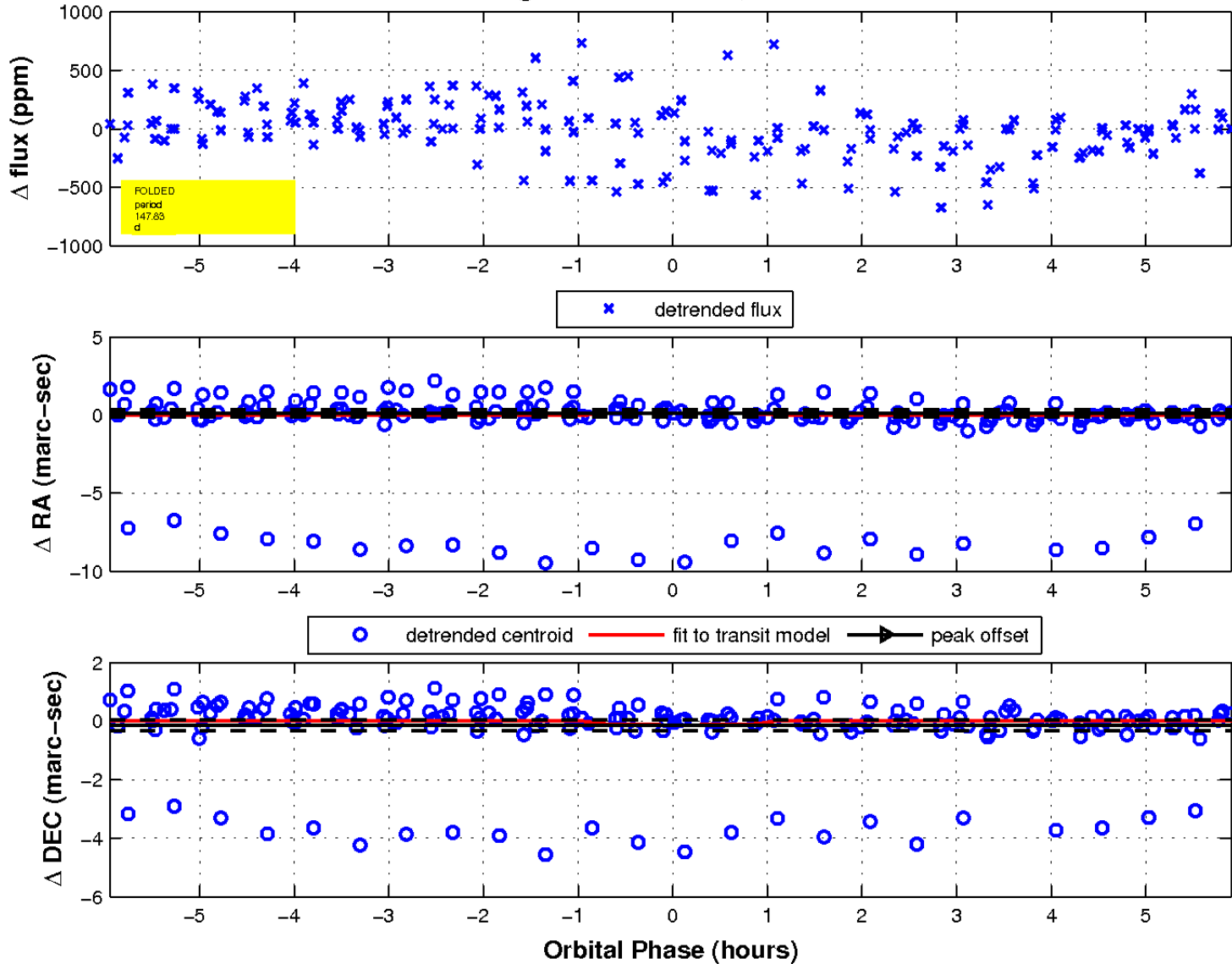
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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UKIRT Image

