

# KIC 010514429

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010514429-01	OBS	1614.01	20.719366	143.295984	224.6	4.532	26.4	30.2	1.37	5837	2.58	92.35
010514429-02	OBS	No	390.756631	168.967932	1591.2	3.482	10.0	8.6	1.37	5837	5.87	1.84
010514429-03	OBS	No	368.641513	258.704483	1247.9	5.299	10.0	9.0	1.37	5837	4.82	1.99

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010514429-01	OBS	FP	0.00	0	0	1	1	CENT_SATURATED—HALO_GHOST—EPHEM_MATCH
010514429-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010514429-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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 010514429-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist ( $\mu$ )	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
010514429-01	10514429	010514430-03	10514430	1:4	2.1	-1	-1	10.82	11.41	1.33	Direct-PRF	0	1.17	0.22

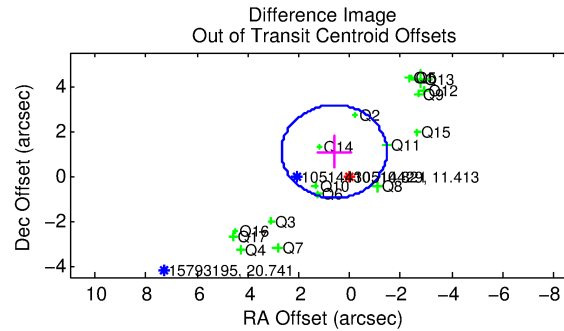
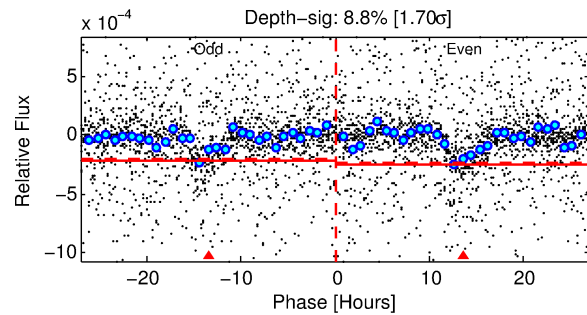
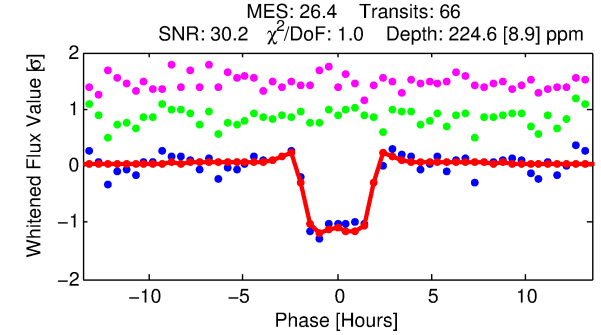
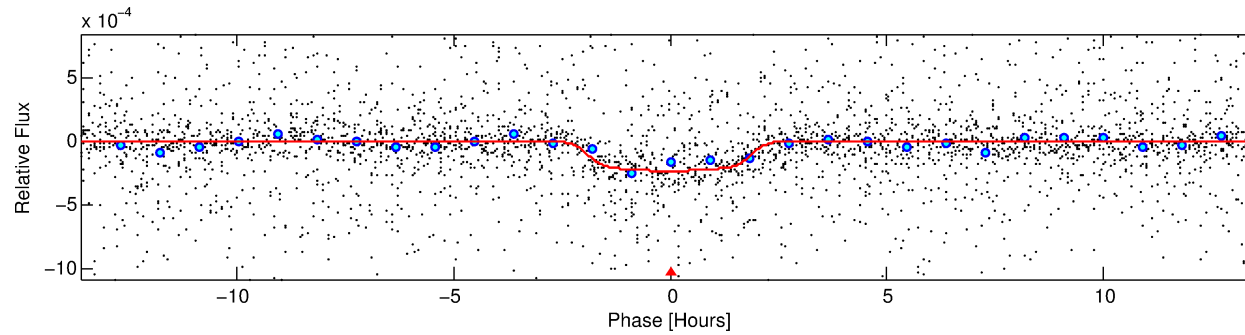
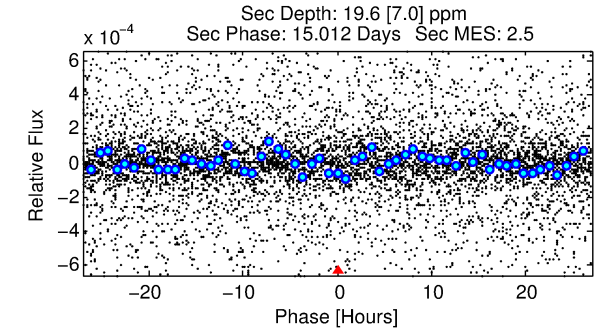
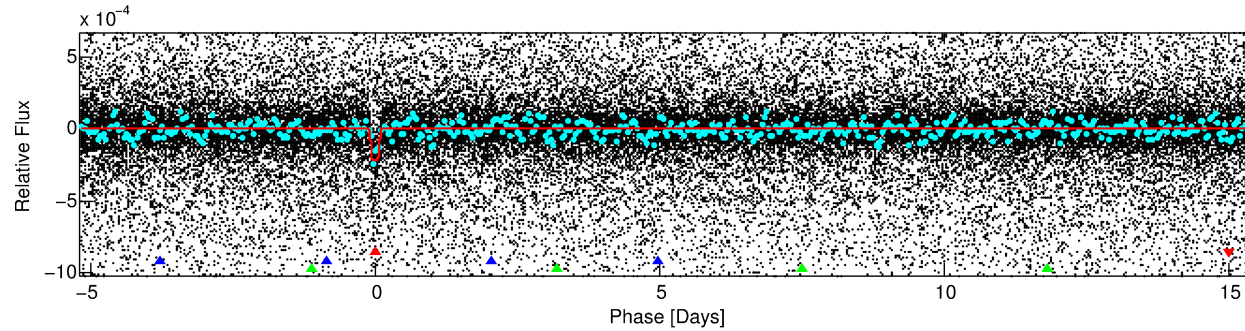
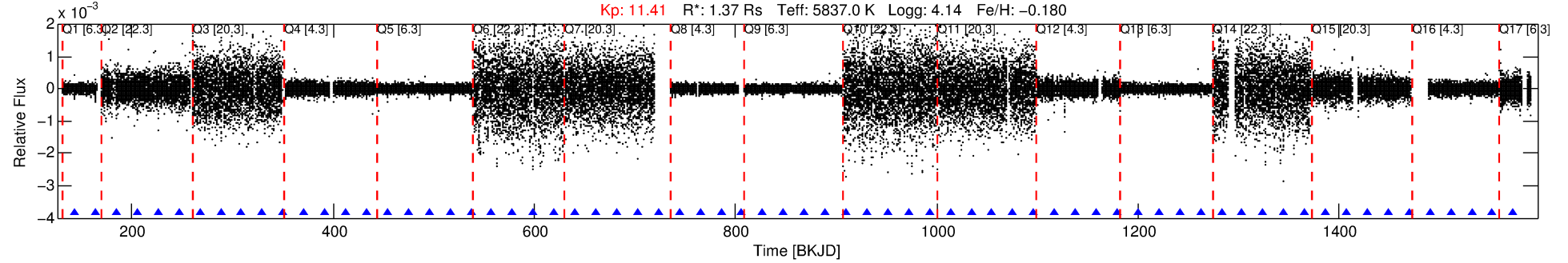
**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 10514429 Candidate: 1 of 3 Period: 20.719 d

KOI: K01614.01 Corr: 0.982

Kp: 11.41 R\*: 1.37 Rs Teff: 5837.0 K Logg: 4.14 Fe/H: -0.180



## DV Fit Results:

Period = 20.71937 [0.00008] d  
Epoch = 143.2960 [0.0031] BKJD  
Rp/R\* = 0.0173 [0.0007]  
a/R\* = 12.72 [1.96]  
b = 0.95 [0.02]  
Seff = 92.35 [31.27]  
Teff = 790 [67] K  
Rp = 2.58 [0.56] Re  
a = 0.1450 [0.0298] AU  
Ag = 33.87 [16.75] [1.96σ]  
Teffp = 2948 [276] K [7.59σ]

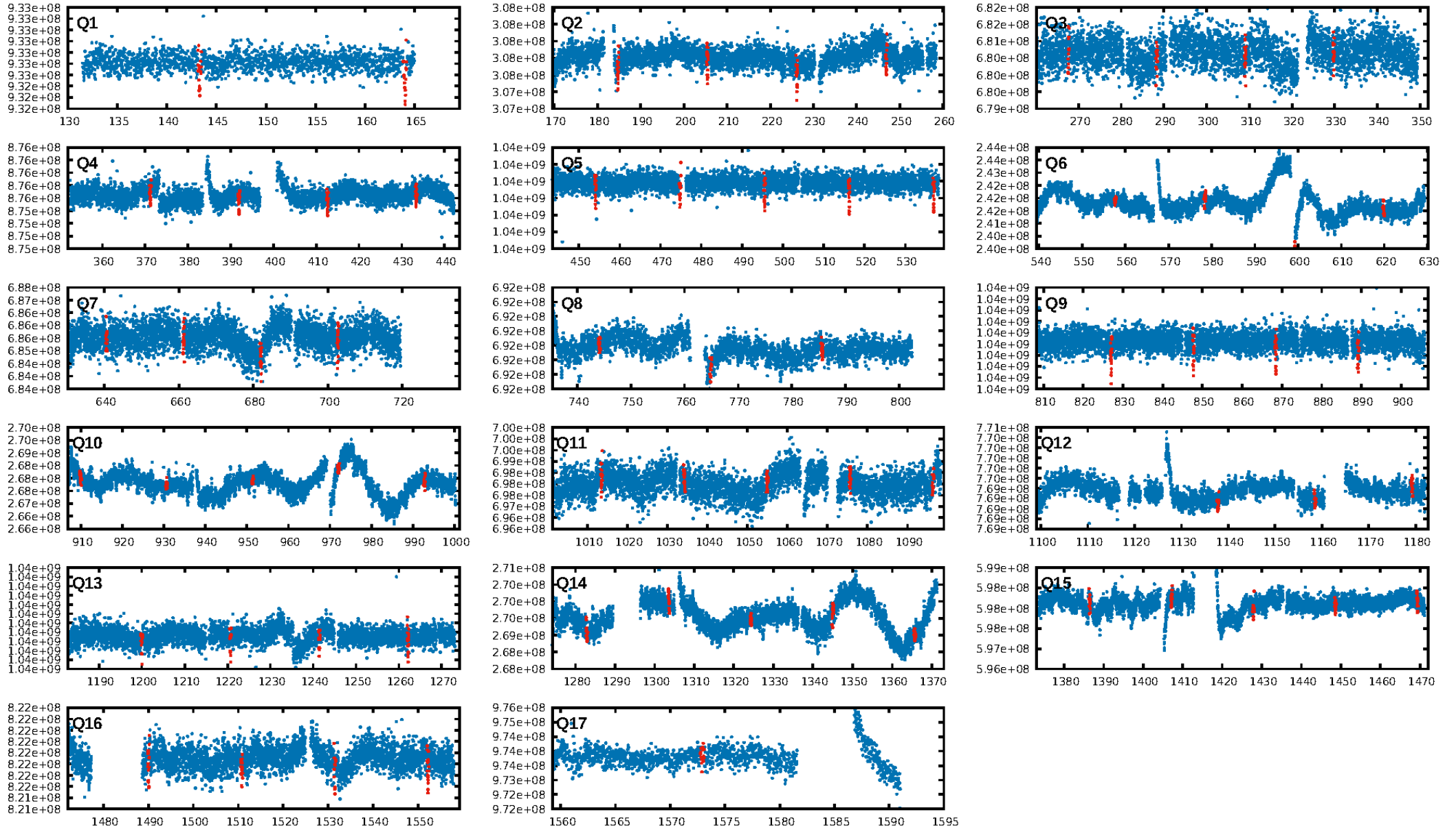
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [1197.54σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.83e-140  
RollingBand-figt: 1.00 [63/63]  
GhostDiagnostic-chr: 0.1574  
Centroid-sig: 0.0%  
Centroid-so: 1.454 arcsec [9.44σ]  
OotOffset-rm: 1.245 arcsec [1.80σ]  
KicOffset-rm: 2.543 arcsec [3.79σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.71 [12/17]  
DiffImageOverlap-fno: 1.00 [17/17]

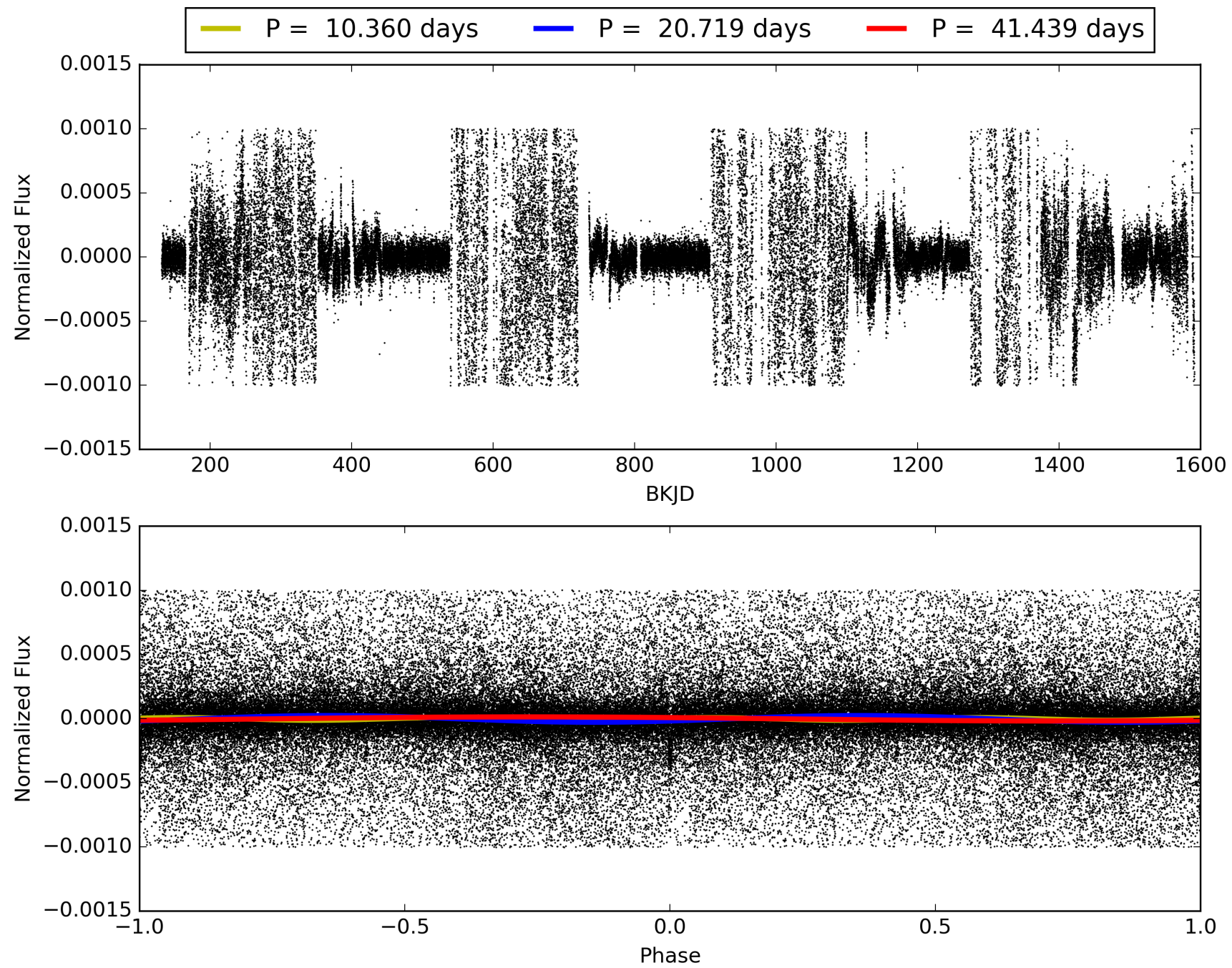
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:51:54 Z

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

# TCE 010514429-01, PDC Light Curves

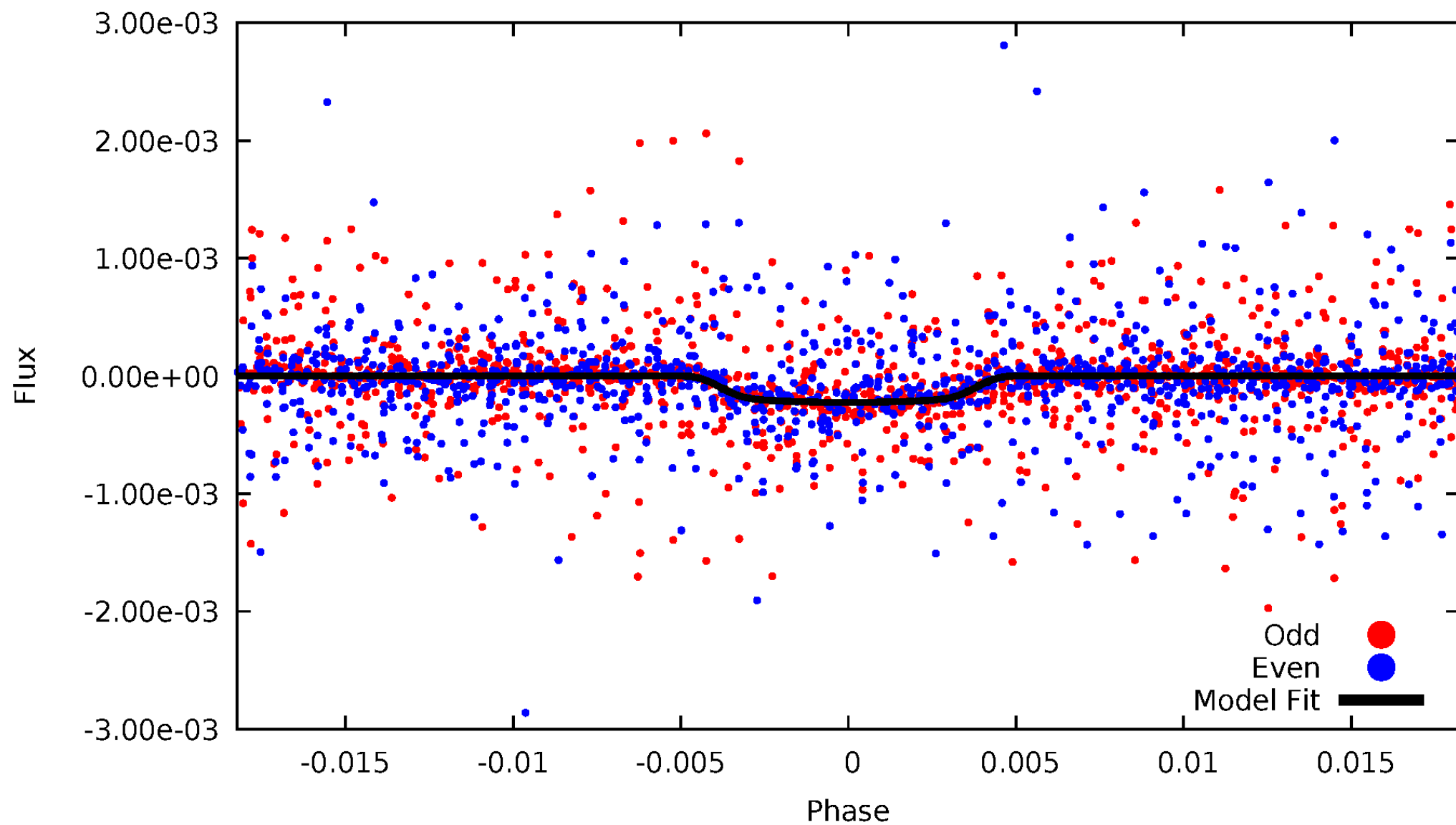


# TCE 010514429-01



# DV Odd/Even

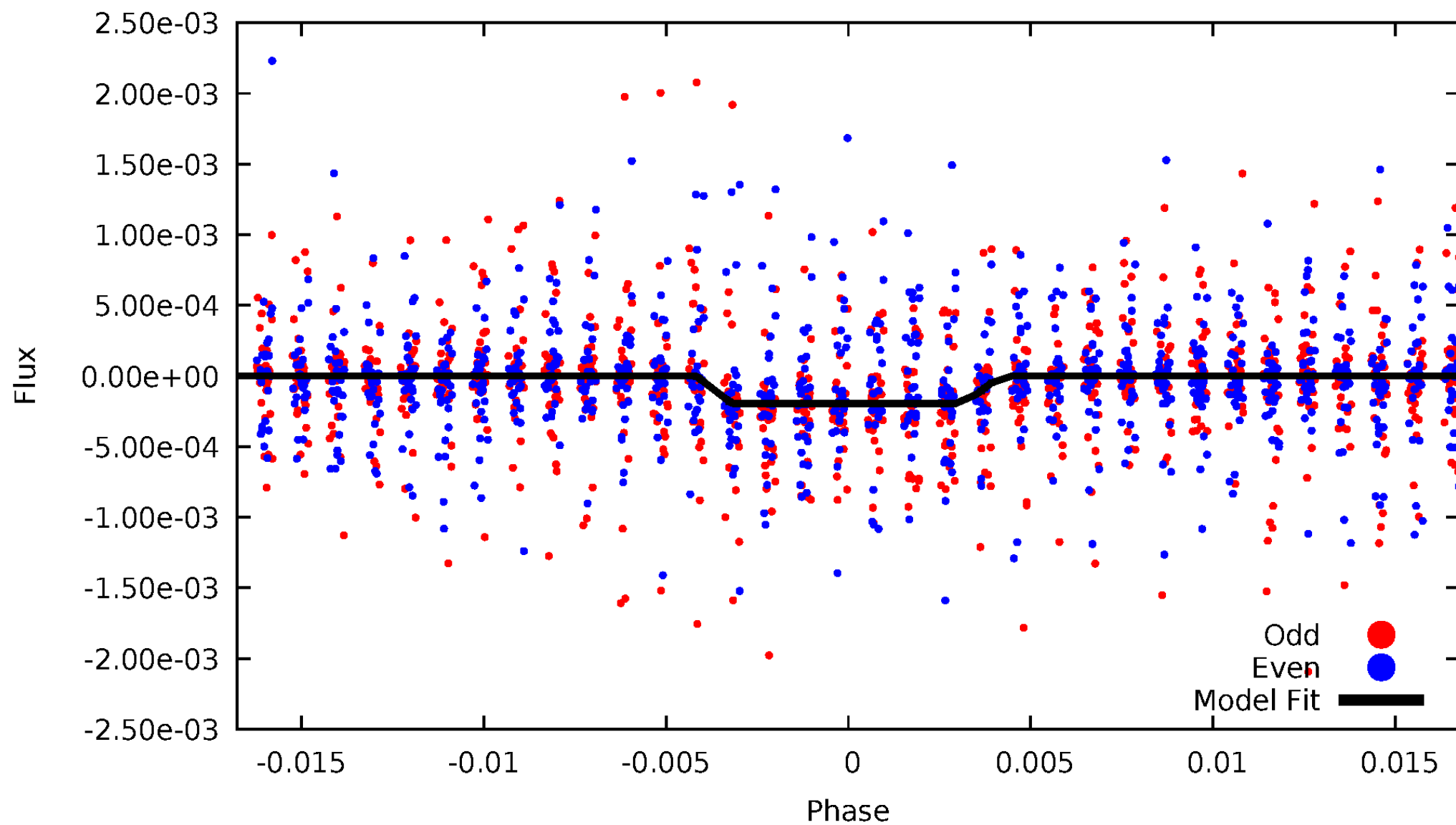
TCE 010514429-01



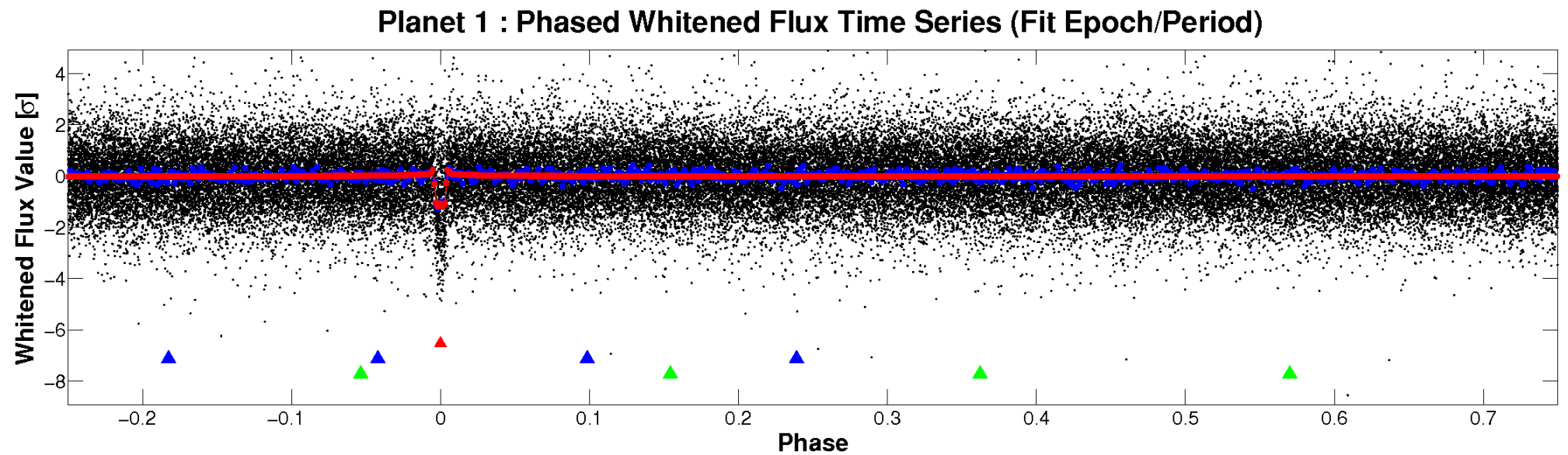
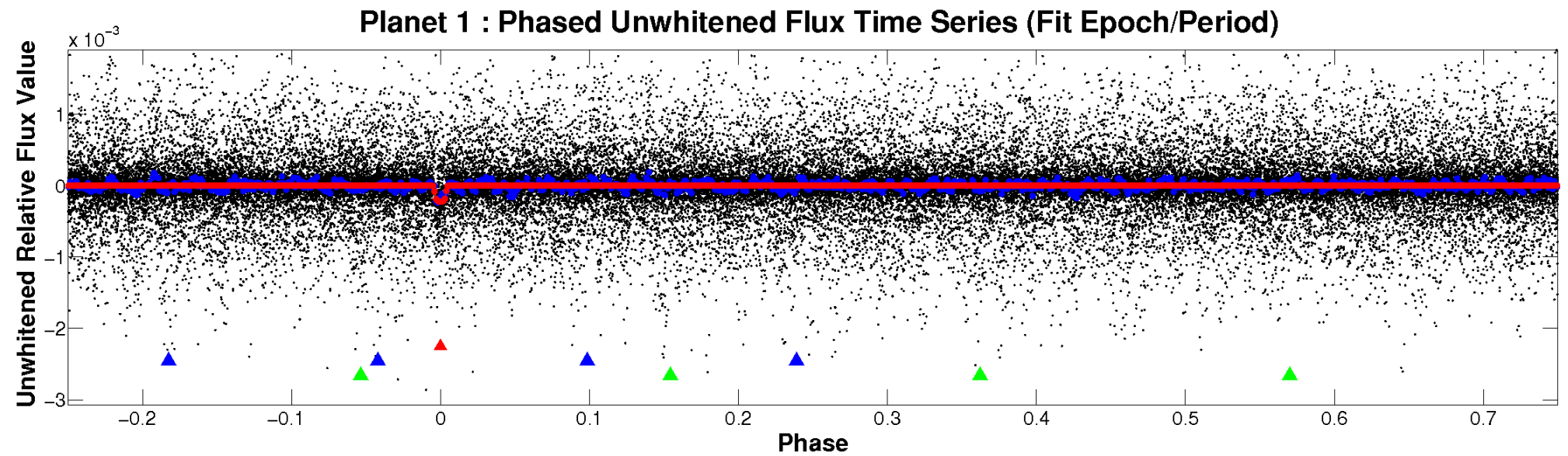


# ALT Odd/Even

TCE 010514429-01

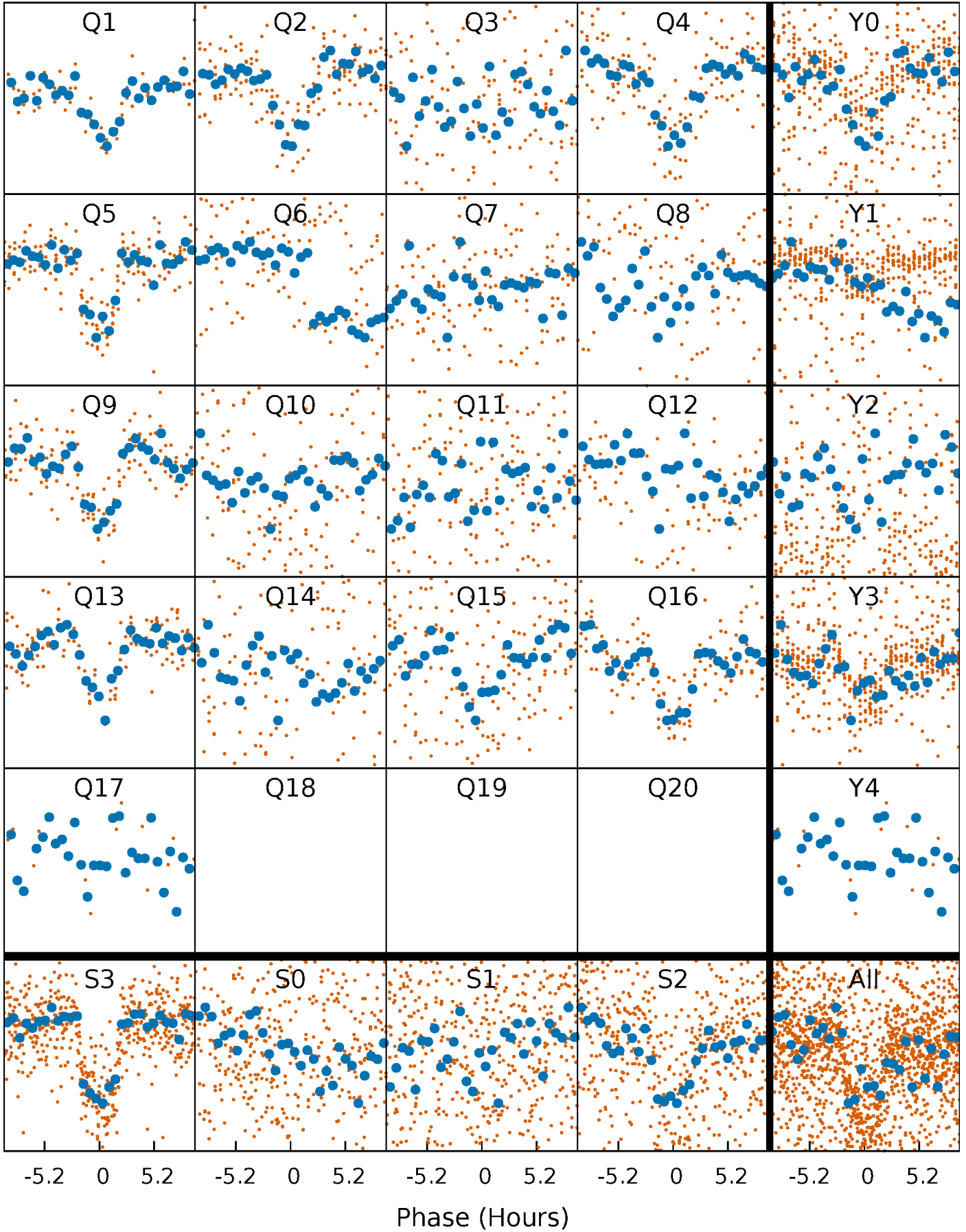


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

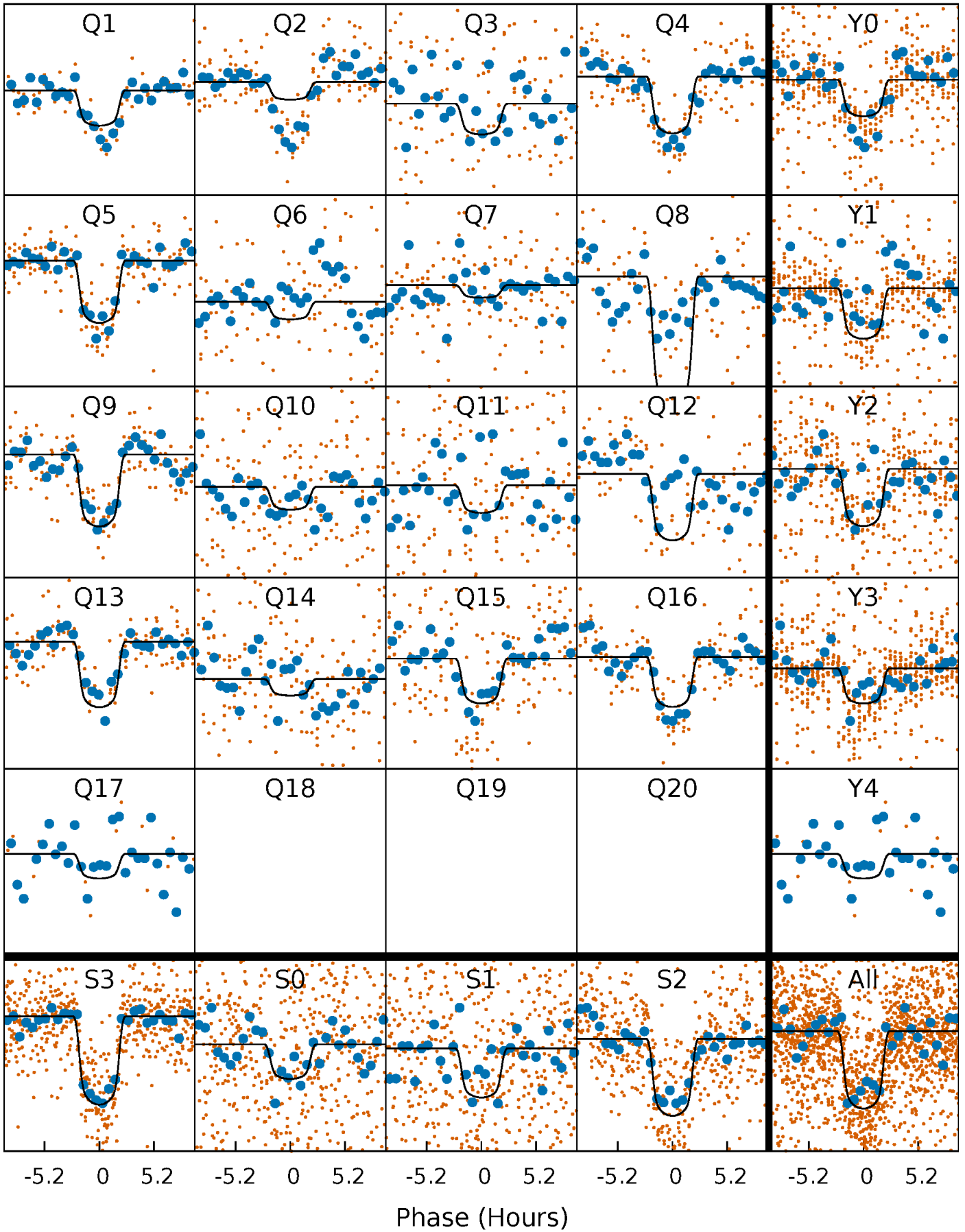
TCE 010514429-01 P= 20.719366 Days  $T_0=143.295984$  (BKJD)





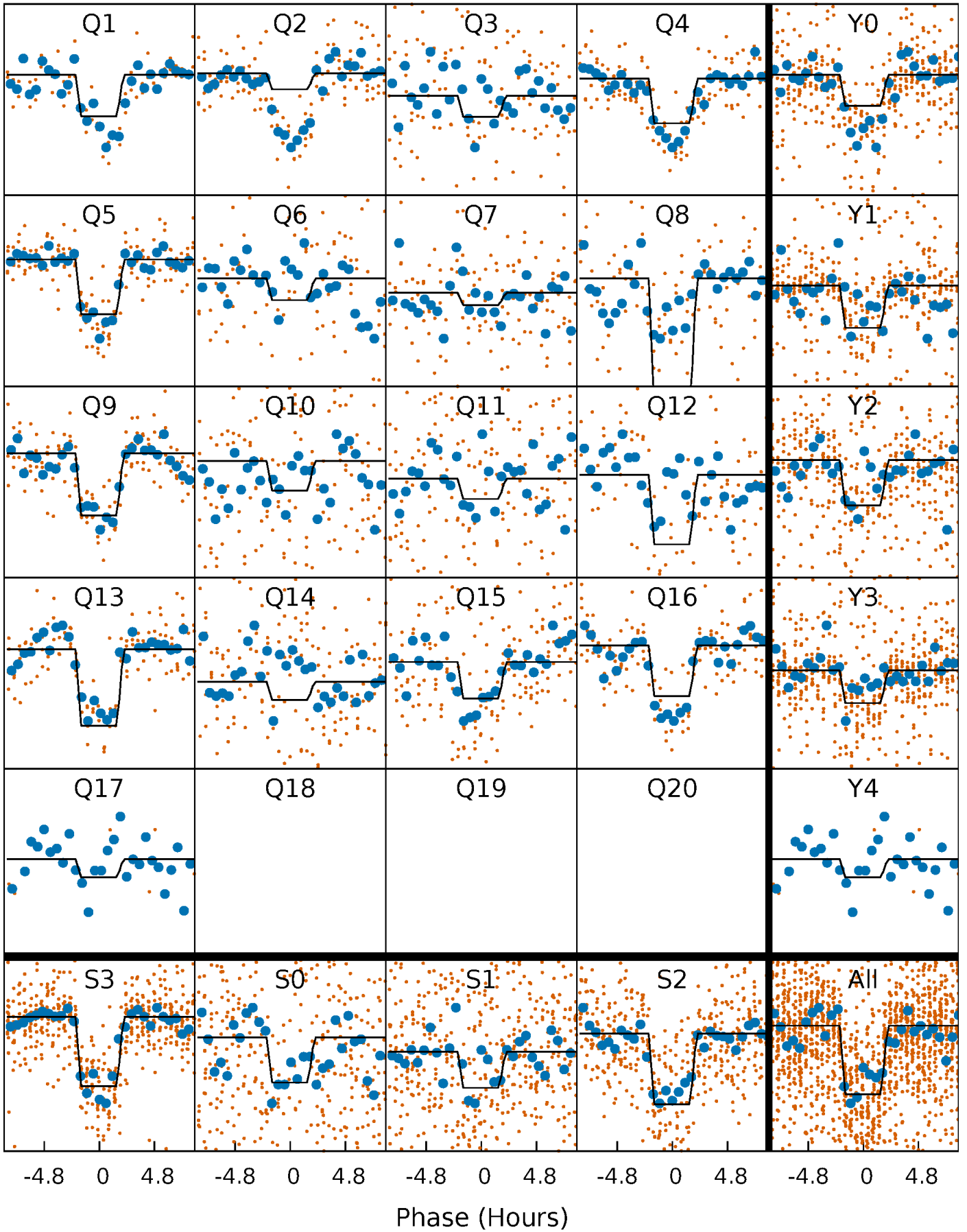
# DV Quarter-Phased Transit Curves

TCE 010514429-01 P= 20.719366 Days  $T_0=143.295984$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

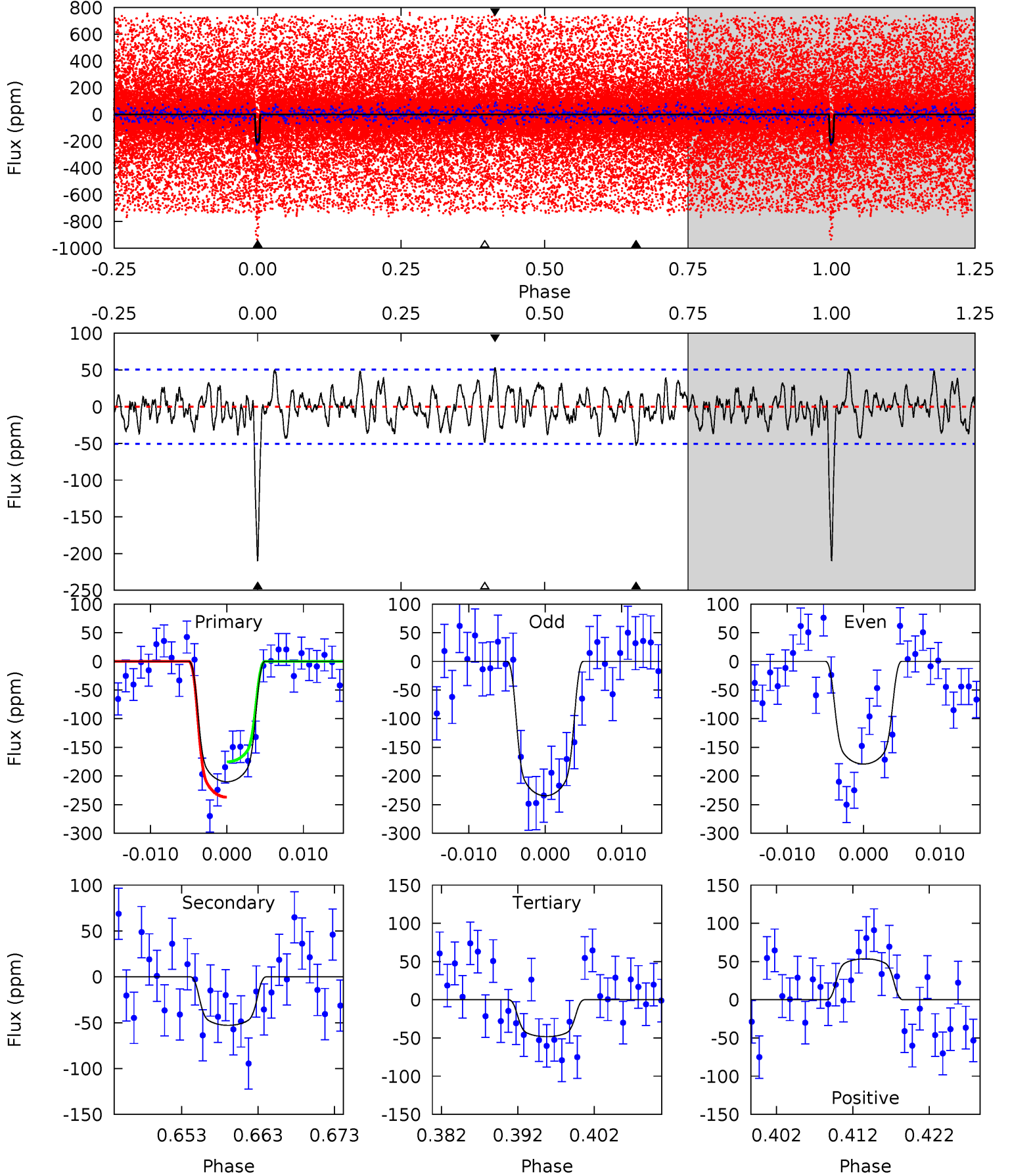
TCE 010514429-01 P= 20.719563 Days  $T_0=143.289887$  (BKJD)



# DV Model-Shift Uniqueness Test

010514429-01, P = 20.719366 Days, E = 122.576618 Days

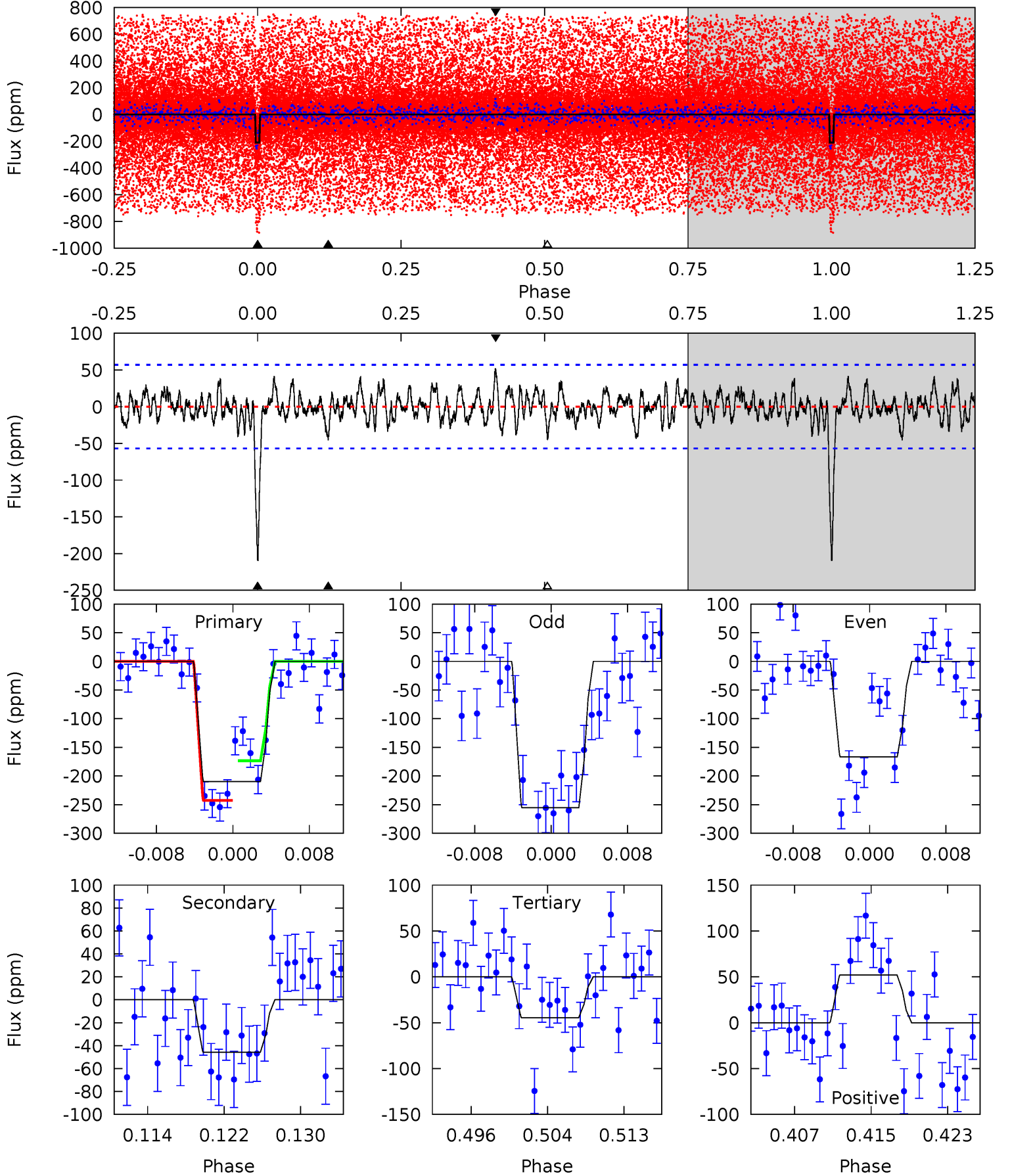
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.9	5.25	4.79	5.31	5.03	2.57	1.78	16.1	15.5	0.46	-0.07	2.80	0.89	0.20	3.14



# Alt Model-Shift Uniqueness Test

010514429-01, P = 20.719563 Days, E = 122.570324 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.7	4.08	3.98	4.64	5.07	2.65	1.41	14.7	14.0	0.10	-0.56	4.04	0.88	0.20	0



### Stellar Parameters For KIC 010514429

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5837^{+105}_{-105}$	$4.143^{+0.195}_{-0.105}$	$-0.180^{+0.150}_{-0.150}$	$1.366^{+0.210}_{-0.289}$	$0.946^{+0.082}_{-0.067}$	$0.523^{+0.538}_{-0.166}$
	+2%/-2%	+5%/-3%	+83%/-83%	+15%/-21%	+9%/-7%	+103%/-32%
Source	SPE18	SPE18	SPE18	DSEP		

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

### Secondary Eclipse Parameters for KIC 010514429-01 / KOI 1614.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-53 \pm 10$	$2.57^{+0.24}_{-0.31}$	$1101^{+46}_{-69}$	$4066^{+159}_{-162}$	$94^{+31}_{-25}$
Alt.	$-46 \pm 11$	$2.04^{+0.24}_{-0.24}$	$1095^{+55}_{-65}$	$4292^{+215}_{-255}$	$124^{+54}_{-37}$

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



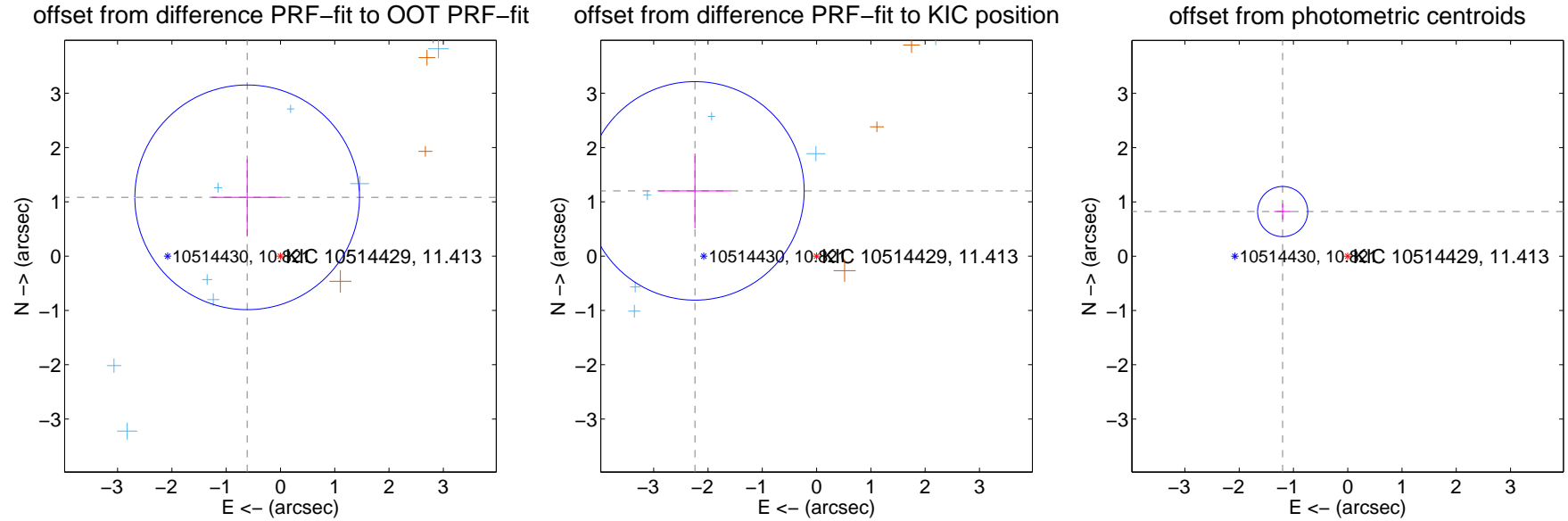
## DV Centroid Data

Supplemental centroid analysis for 010514429-01. **Kepler magnitude: 11.41.** Transit SNR 30.24

There are 12 quarters with good PRF difference image offsets

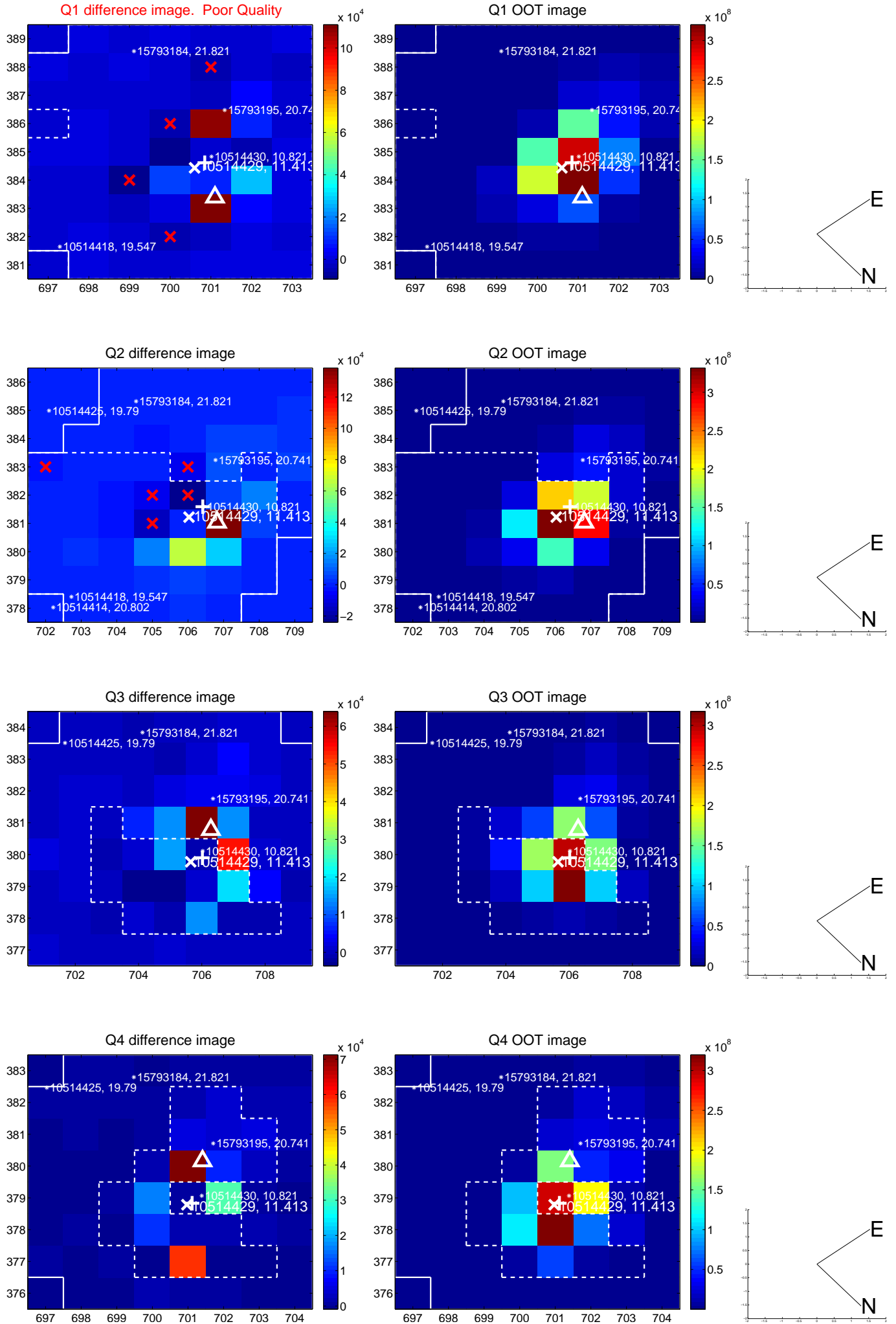
The direct PRF centroid is offset from the target star catalog position by about 0.99 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.245 \pm 0.690$	1.80	$0.613 \pm 0.652$	$1.083 \pm 0.701$
PRF-fit source offset from KIC position	<b><math>2.543 \pm 0.671</math></b>	<b>3.79</b>	$2.241 \pm 0.665$	$1.202 \pm 0.689$
photometric centroid source offset	<b><math>1.45 \pm 0.15</math></b>	<b>9.44</b>	$1.20 \pm 0.16$	$0.82 \pm 0.15$

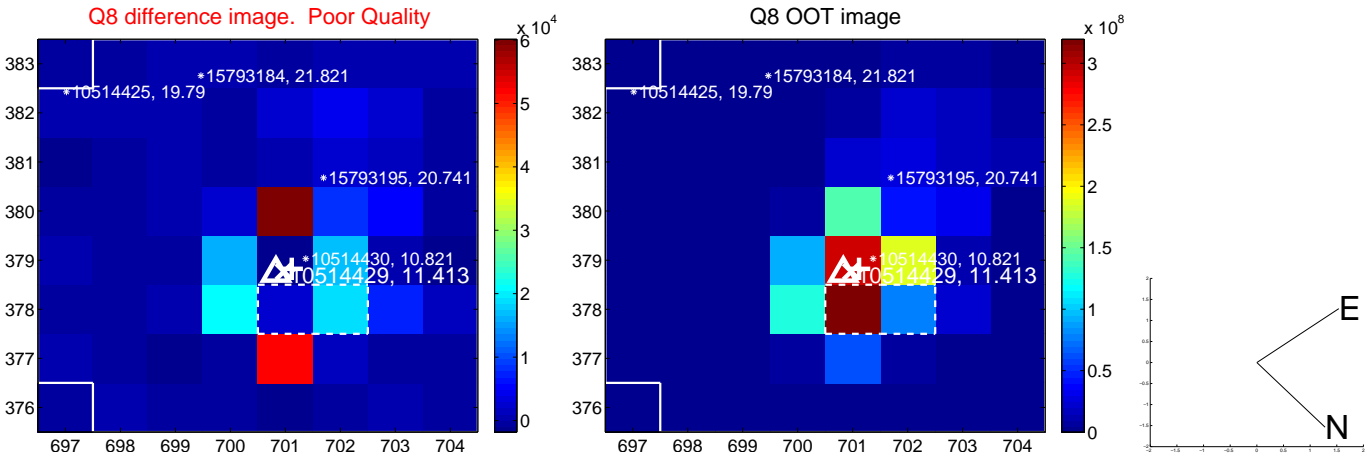
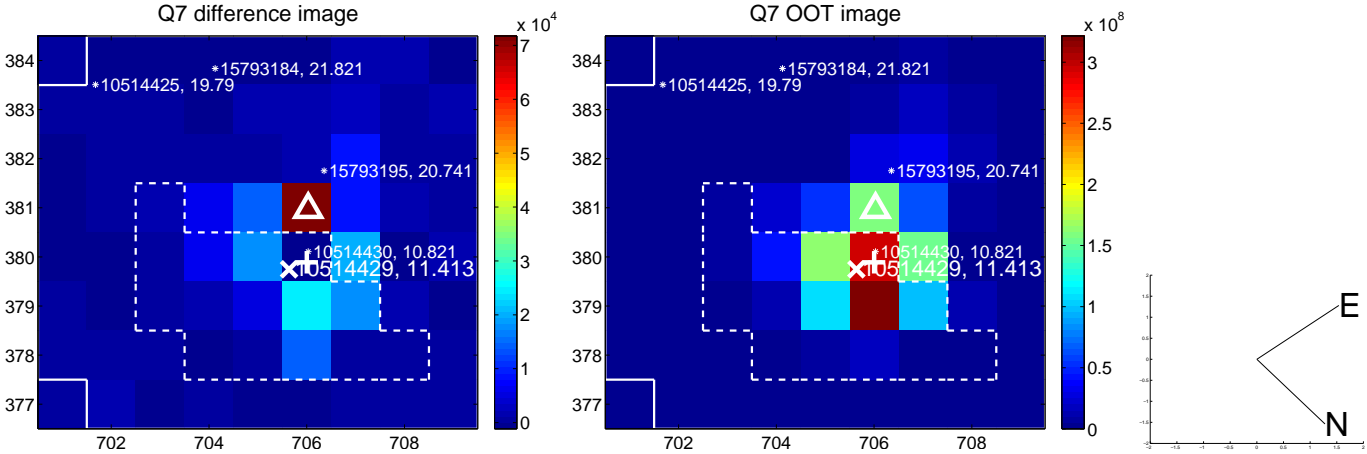
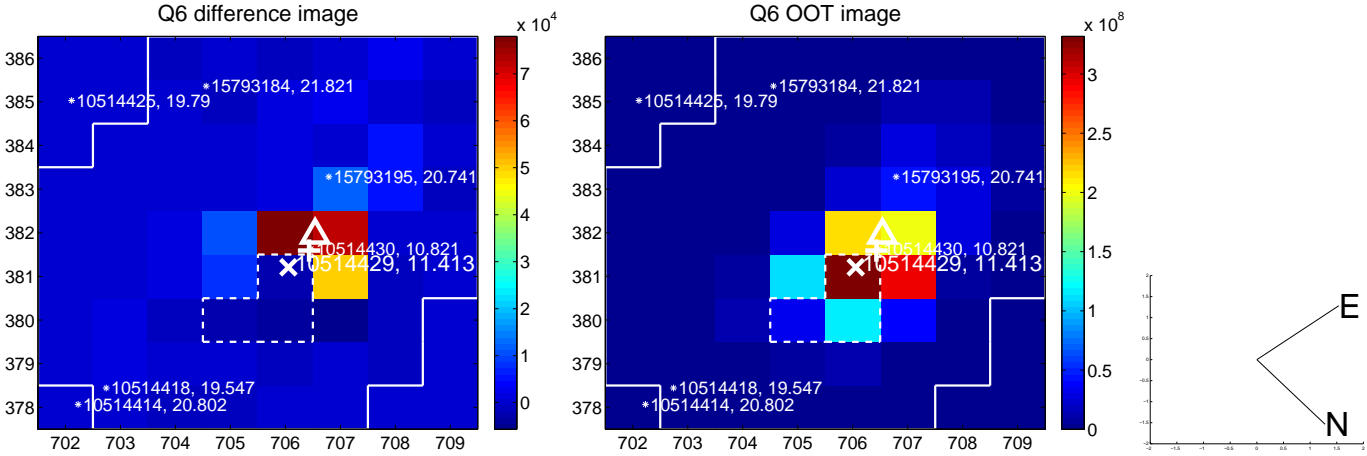
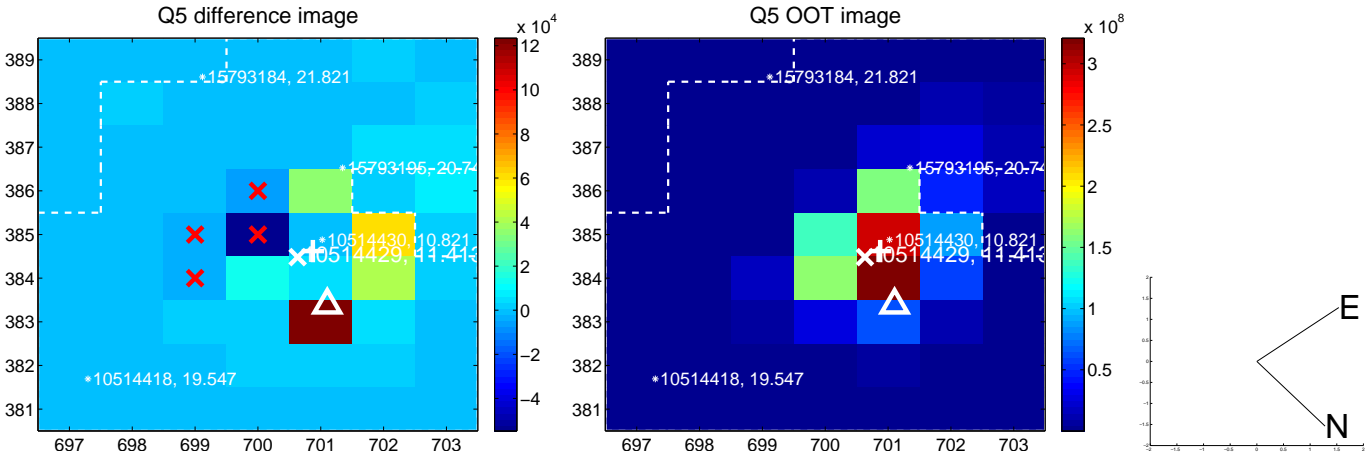


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

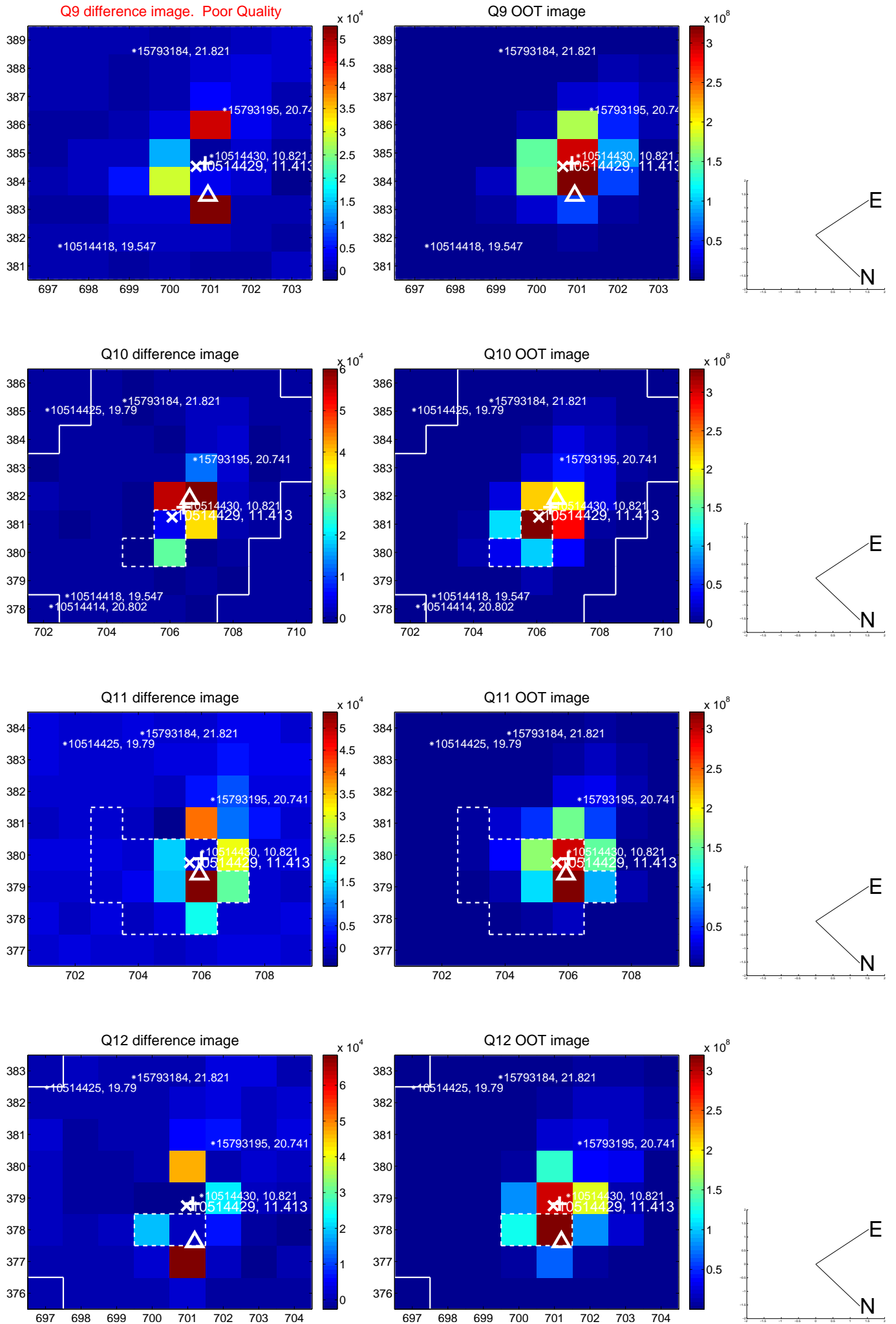
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



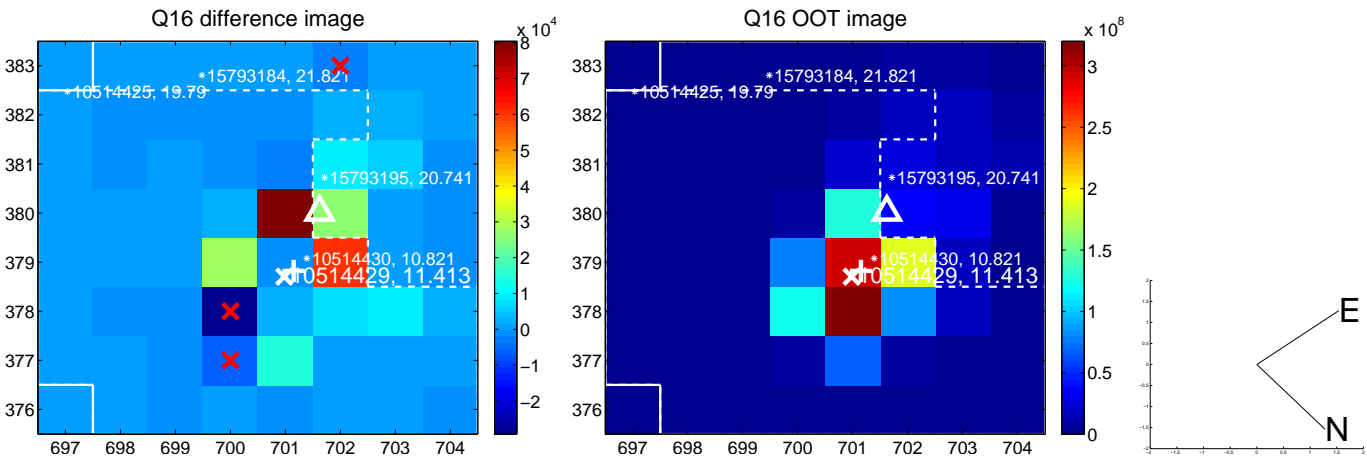
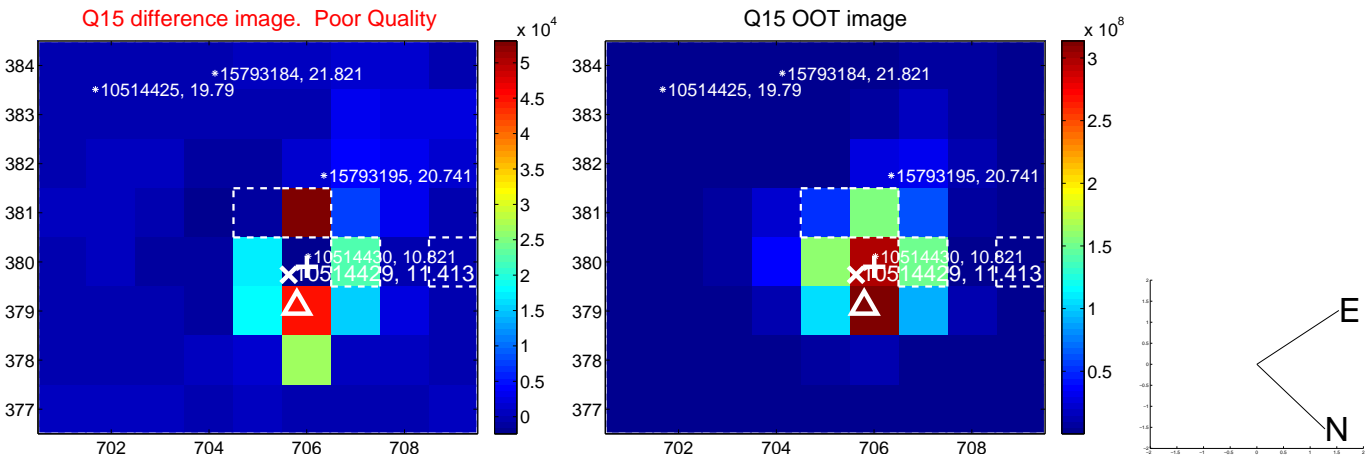
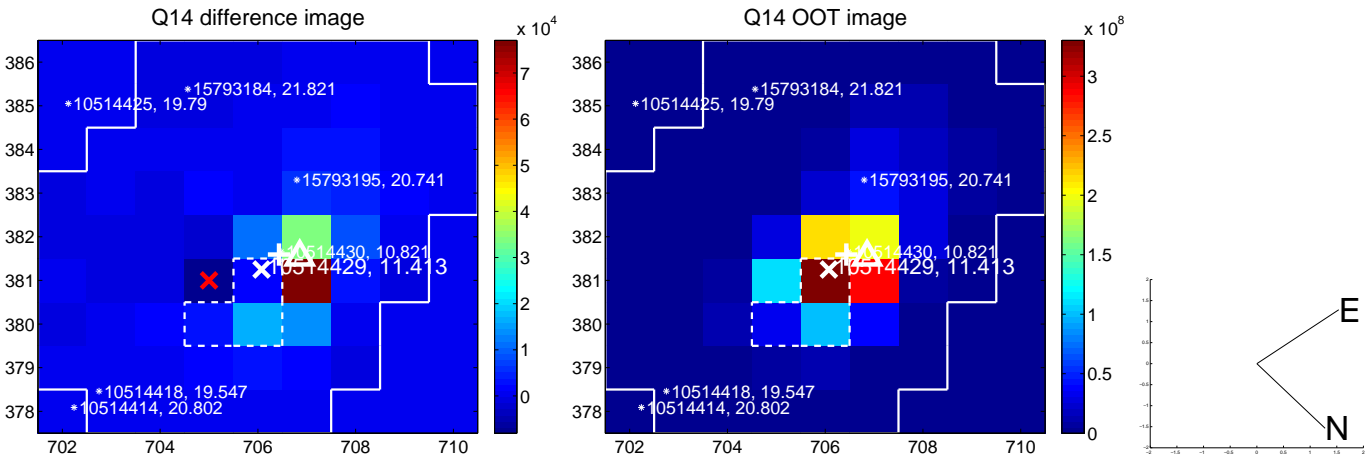
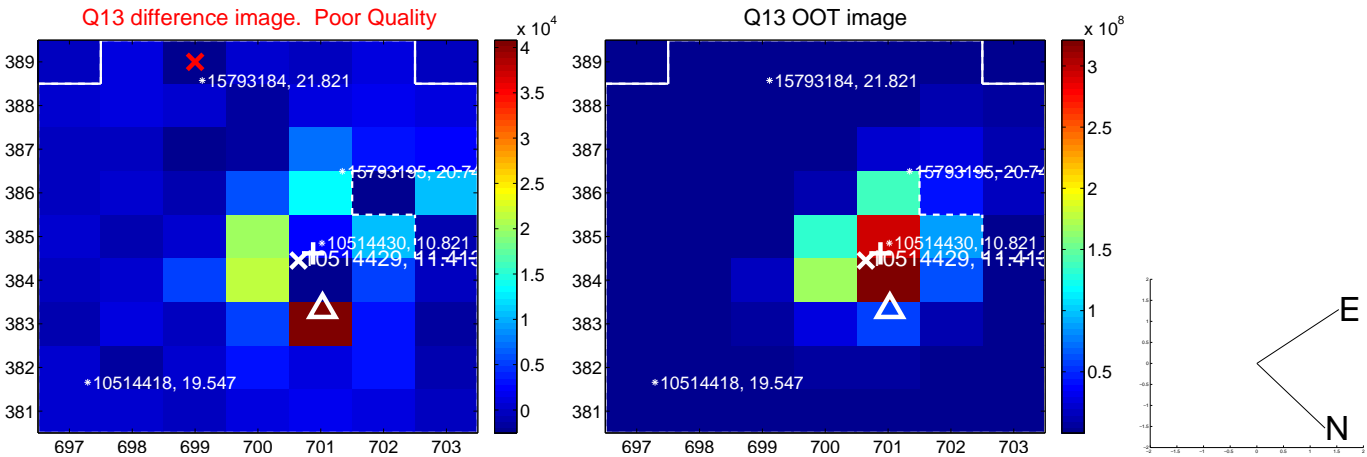
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

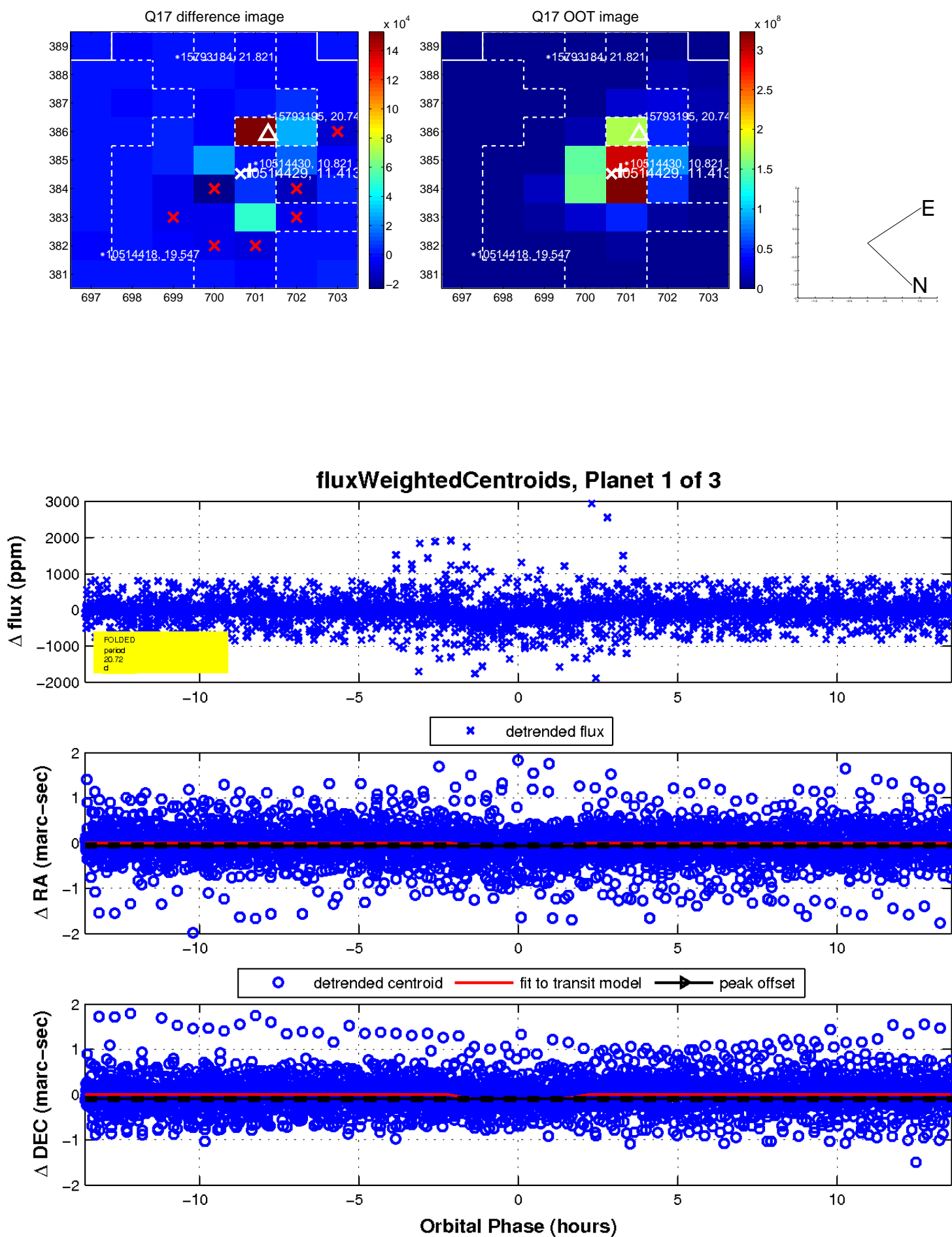


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



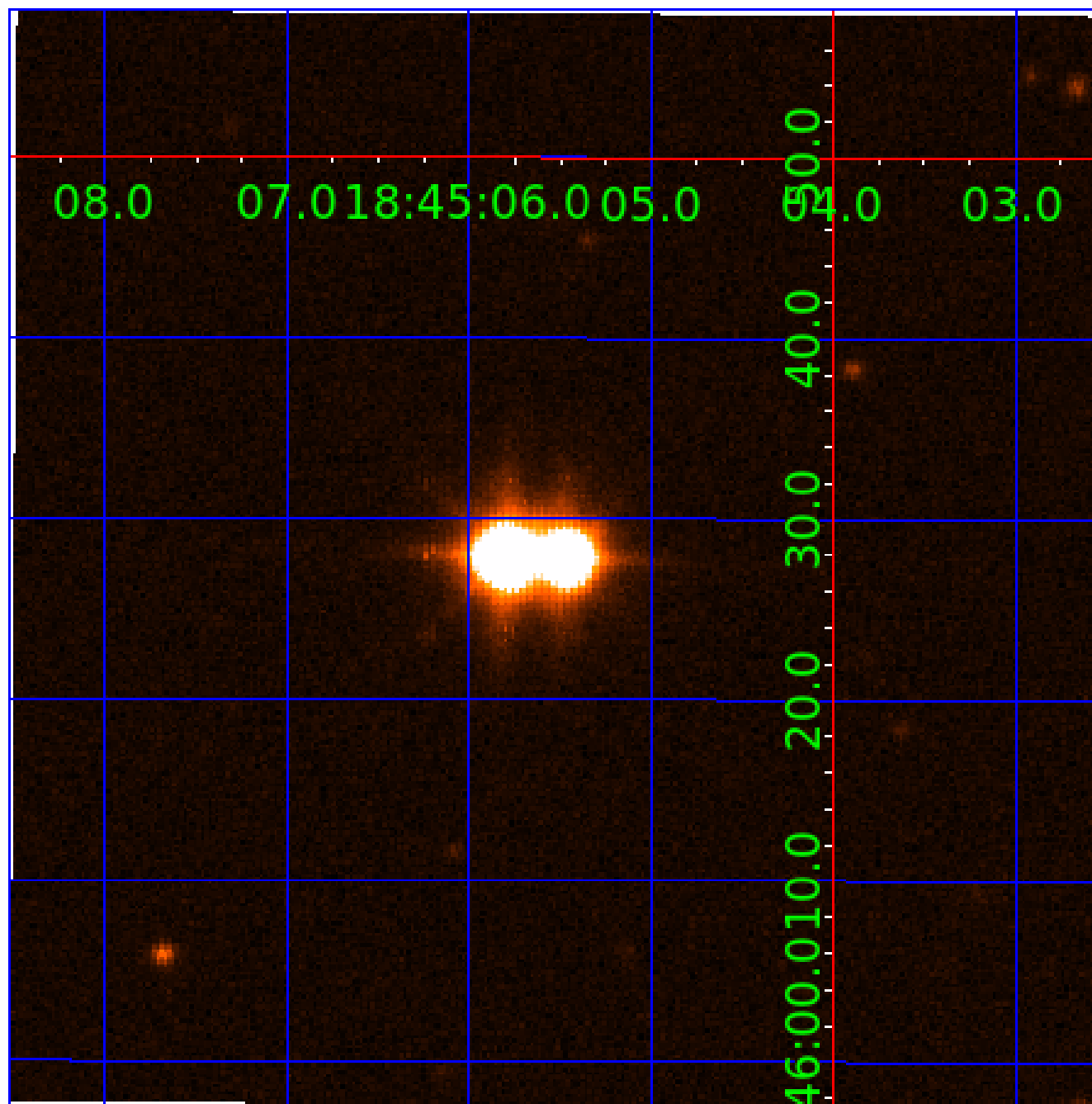


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010514429

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010514429-01	OBS	1614.01	20.719366	143.295984	224.6	4.532	26.4	30.2	1.37	5837	2.58	92.35
010514429-02	OBS	No	390.756631	168.967932	1591.2	3.482	10.0	8.6	1.37	5837	5.87	1.84
010514429-03	OBS	No	368.641513	258.704483	1247.9	5.299	10.0	9.0	1.37	5837	4.82	1.99

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010514429-01	OBS	FP	0.00	0	0	1	1	CENT_SATURATED—HALO_GHOST—EPHEM_MATCH
010514429-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010514429-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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 010514429-02

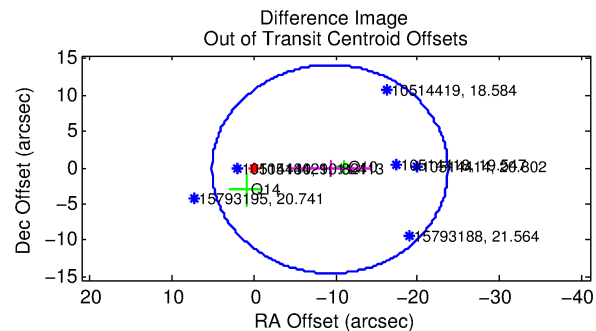
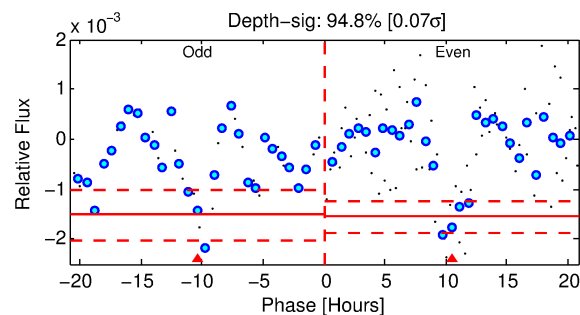
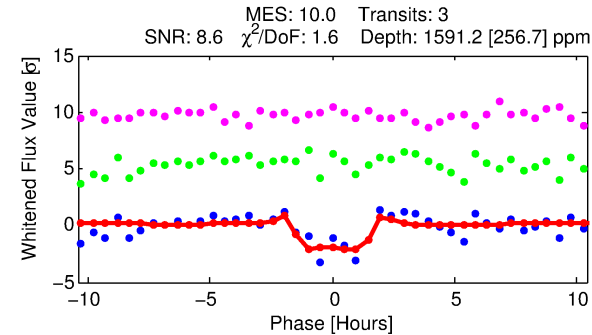
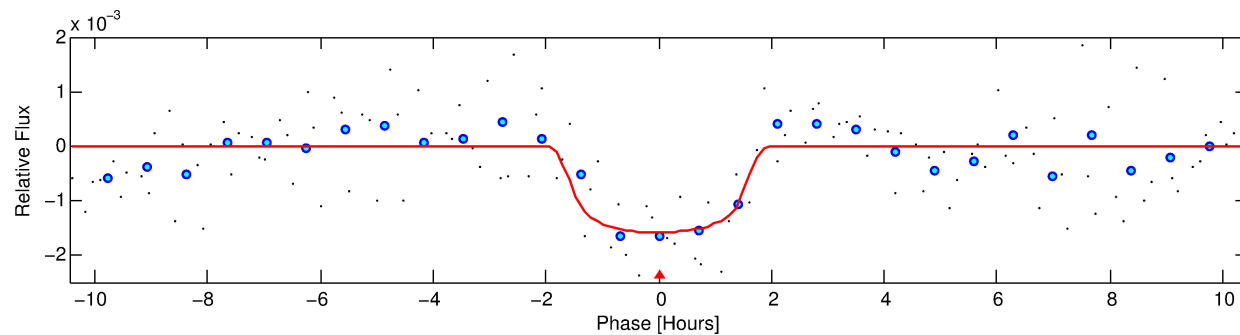
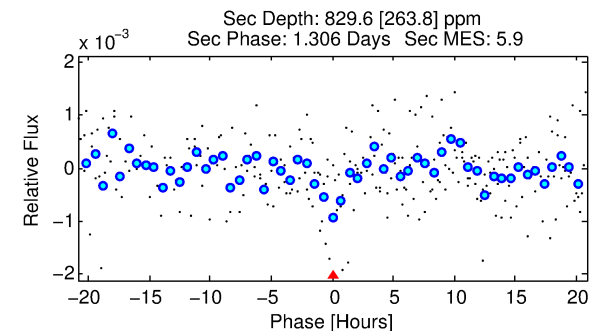
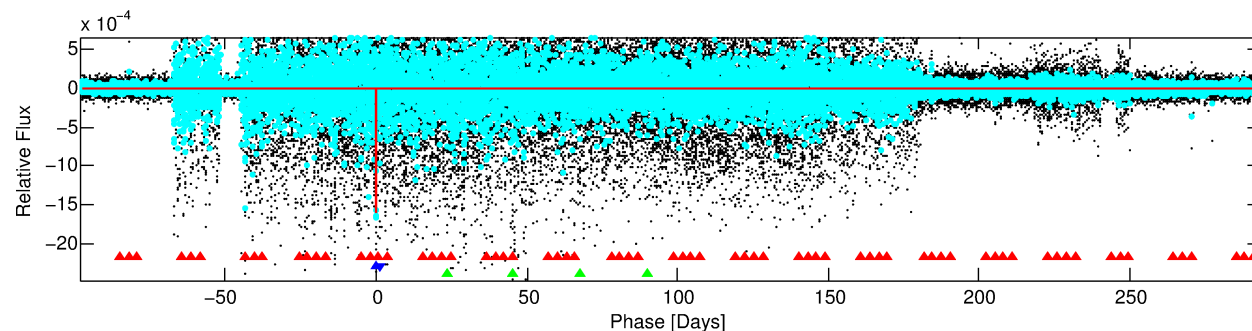
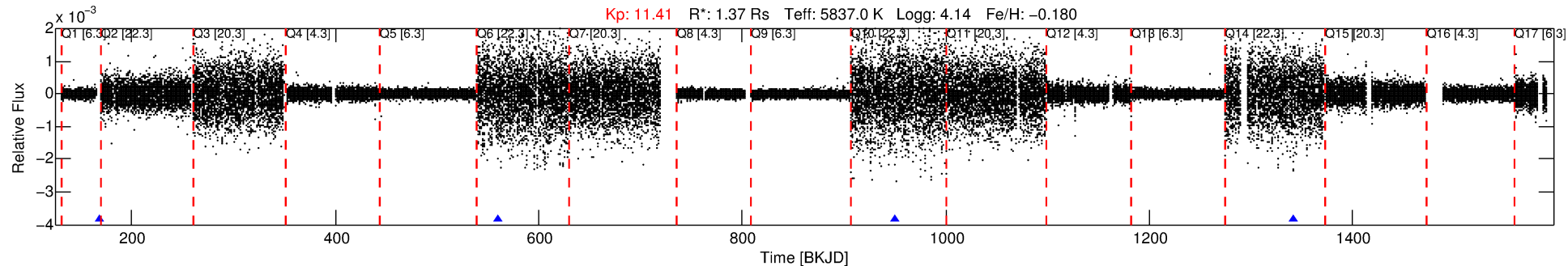
No Significant Match Found

# DV One-Page Summary

KIC: 10514429 Candidate: 2 of 3 Period: 390.757 d

KOI: K01614 Corr: No Ephemeris Match

Kp: 11.41 R\*: 1.37 Rs Teff: 5837.0 K Logg: 4.14 Fe/H: -0.180



## DV Fit Results:

Period = 390.75663 [0.00517] d  
Epoch = 168.9679 [0.0110] BKJD  
Rp/R\* = 0.0394 [0.0167]  
a/R\* = 640.09 [1175.84]  
b = 0.72 [1.23]  
Seff = 1.84 [0.62]  
Teq = 297 [25] K  
Rp = 5.87 [2.78] Re  
a = 1.0271 [0.2112] AU  
Ag = 13989.82 [13496.66] [1.04σ]  
Teffp = 4994 [1135] K [4.14σ]

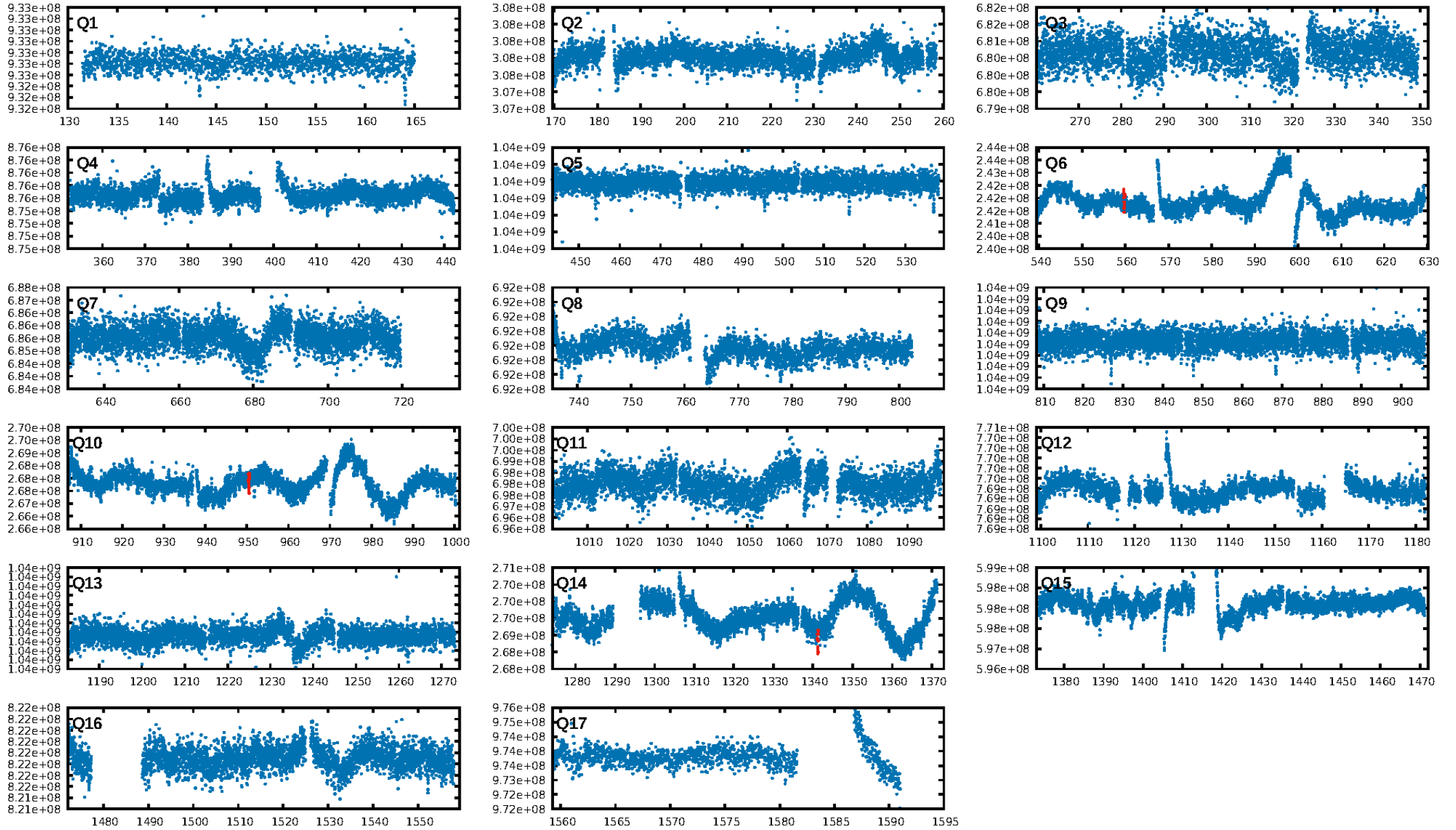
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [83.70σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 10.1%  
ModelChiSquareGof-sig: 24.7%  
**Bootstrap-pfa: 1.23e-08**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 17.6%  
**Centroid-so: 1.178 arcsec [10.23σ]**  
OotOffset-rm: 9.321 arcsec [1.94σ]  
OotOffset-st: 2/0/0/0 [2]  
KicOffset-rm: 7.343 arcsec [1.30σ]  
KicOffset-st: 2/0/0/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:52:11 Z

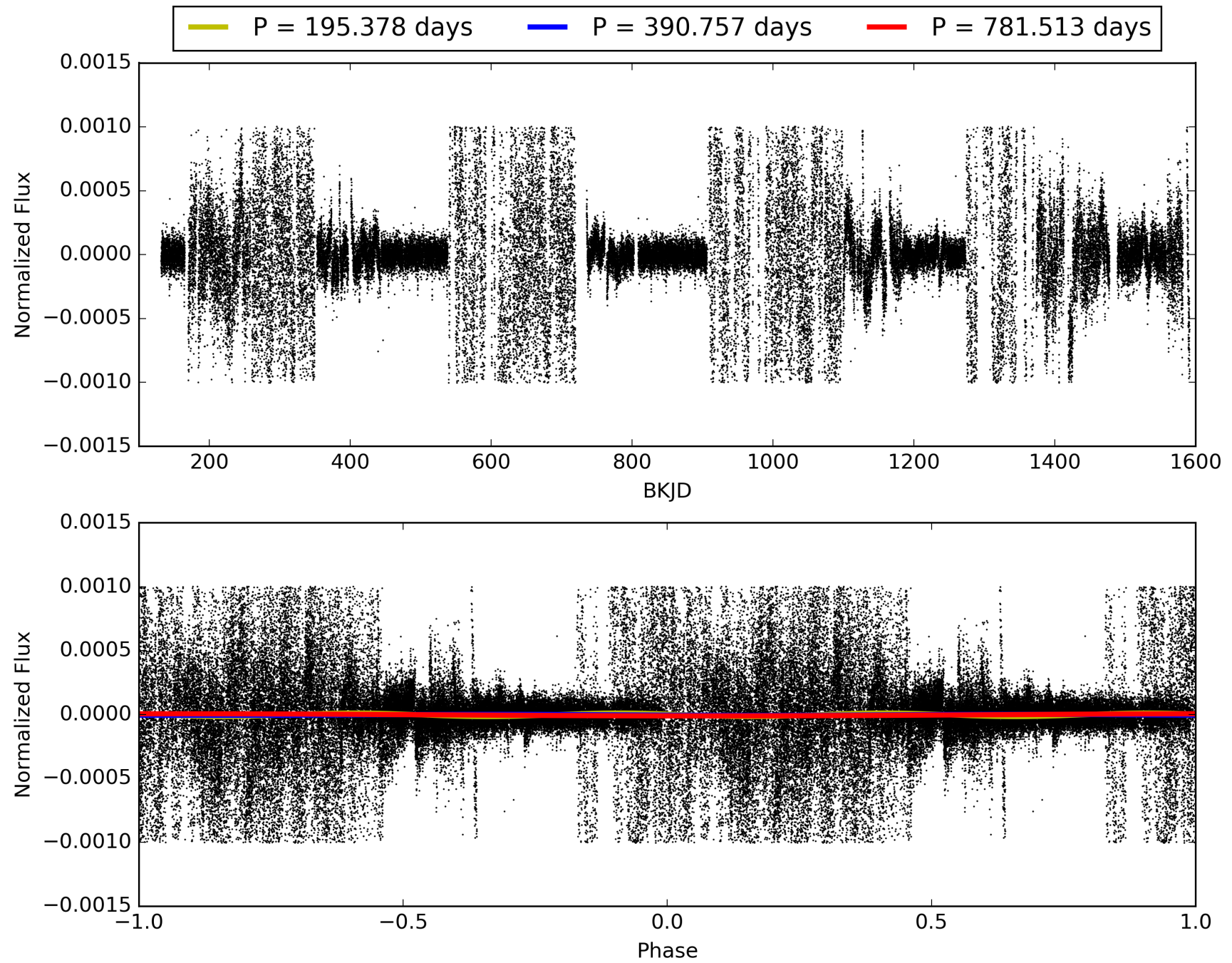
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010514429-02, PDC Light Curves



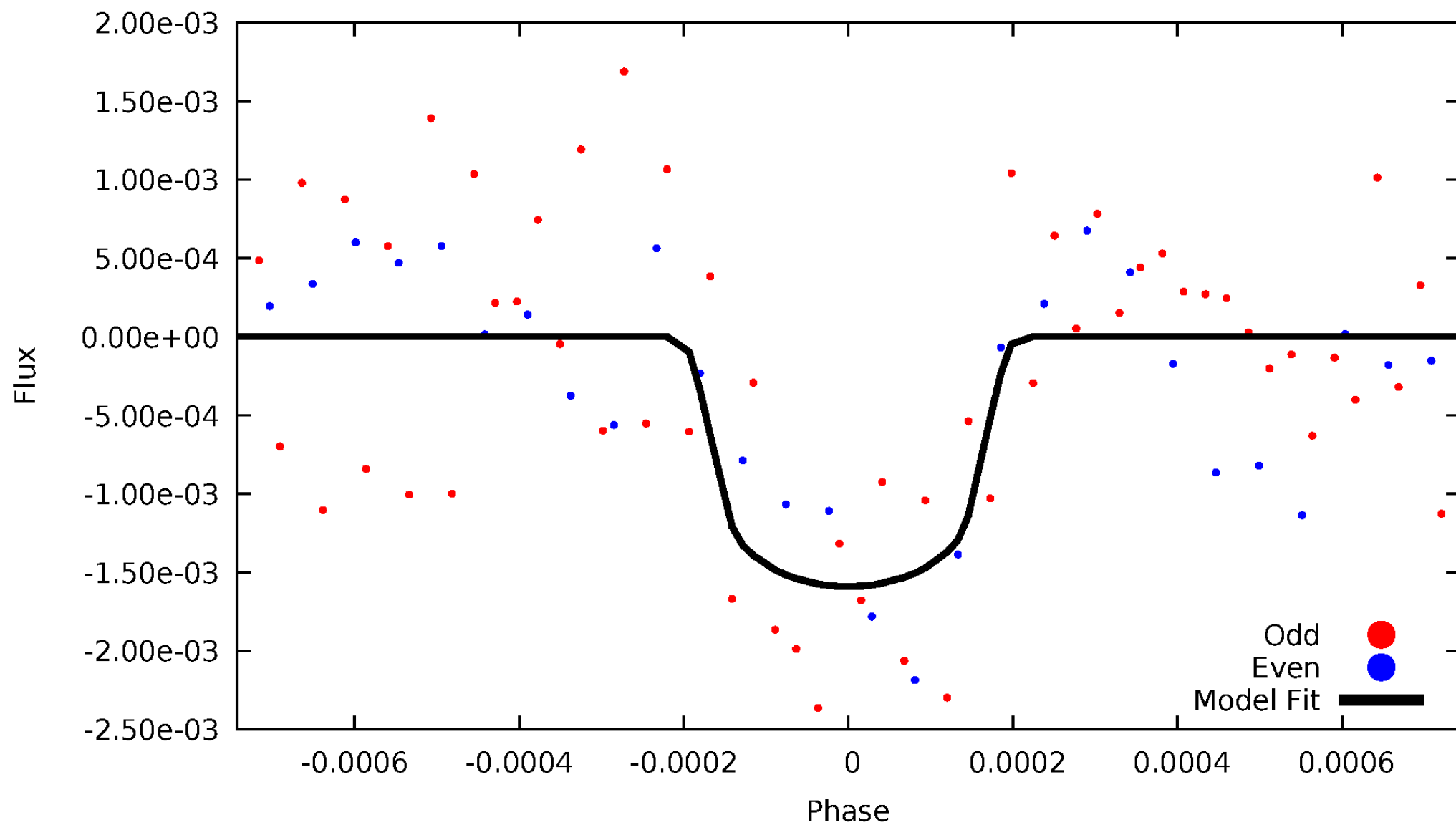


# TCE 010514429-02



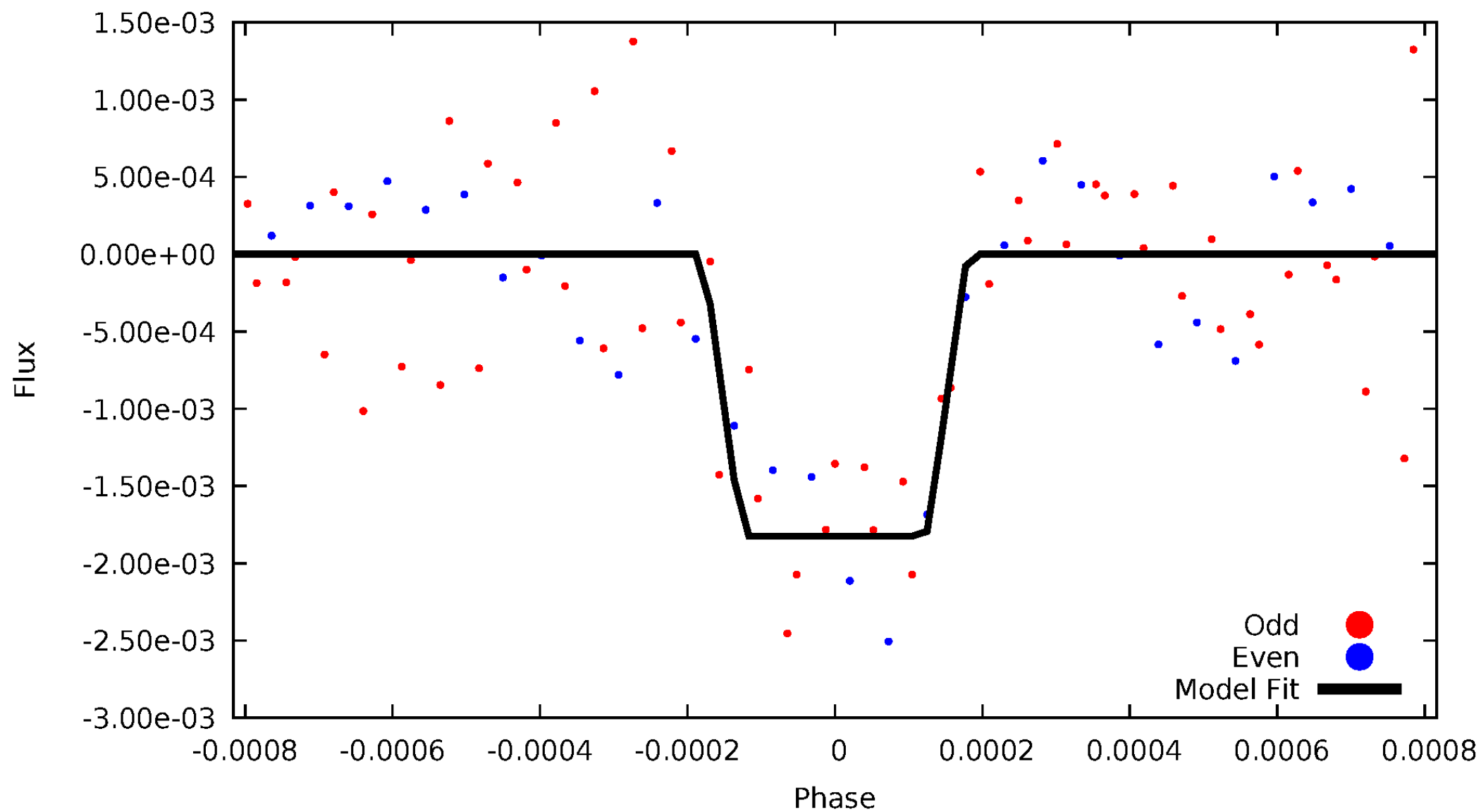
# DV Odd/Even

TCE 010514429-02



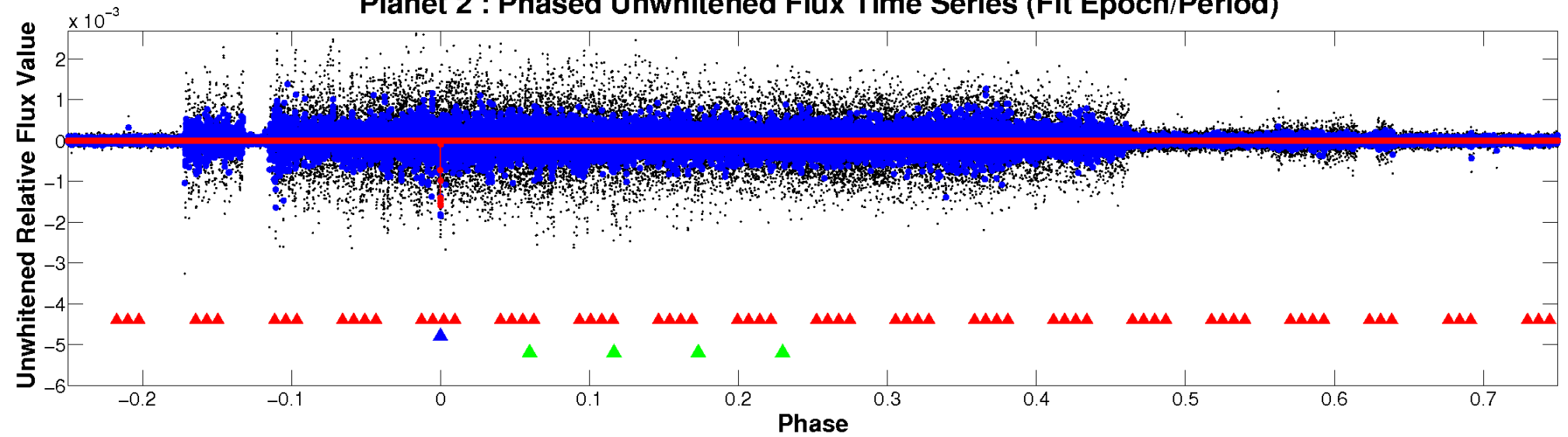
# ALT Odd/Even

TCE 010514429-02

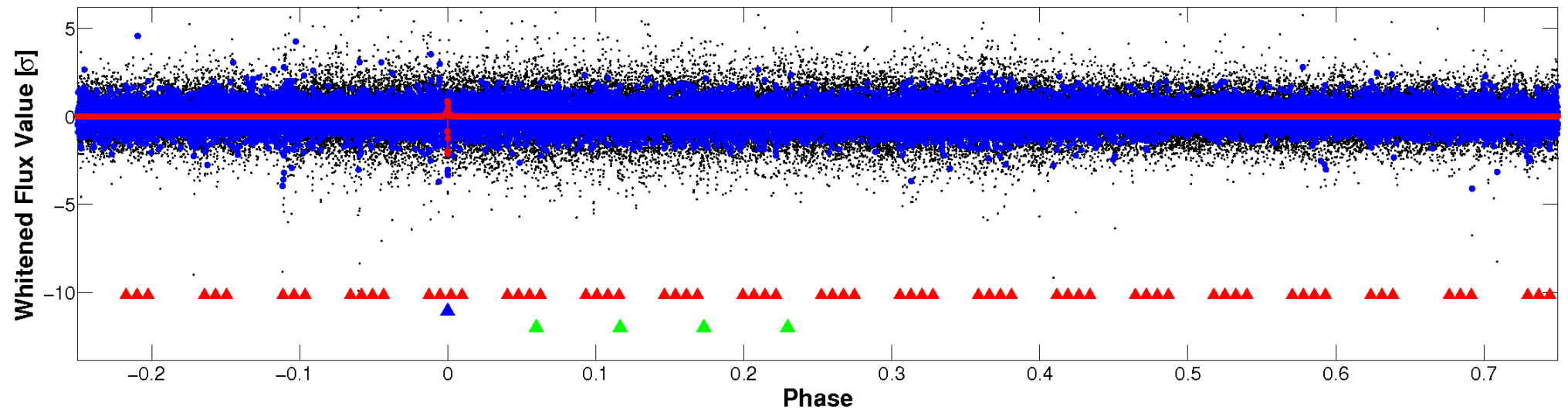


# Non-Whitened Vs. Whitened Light Curve

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

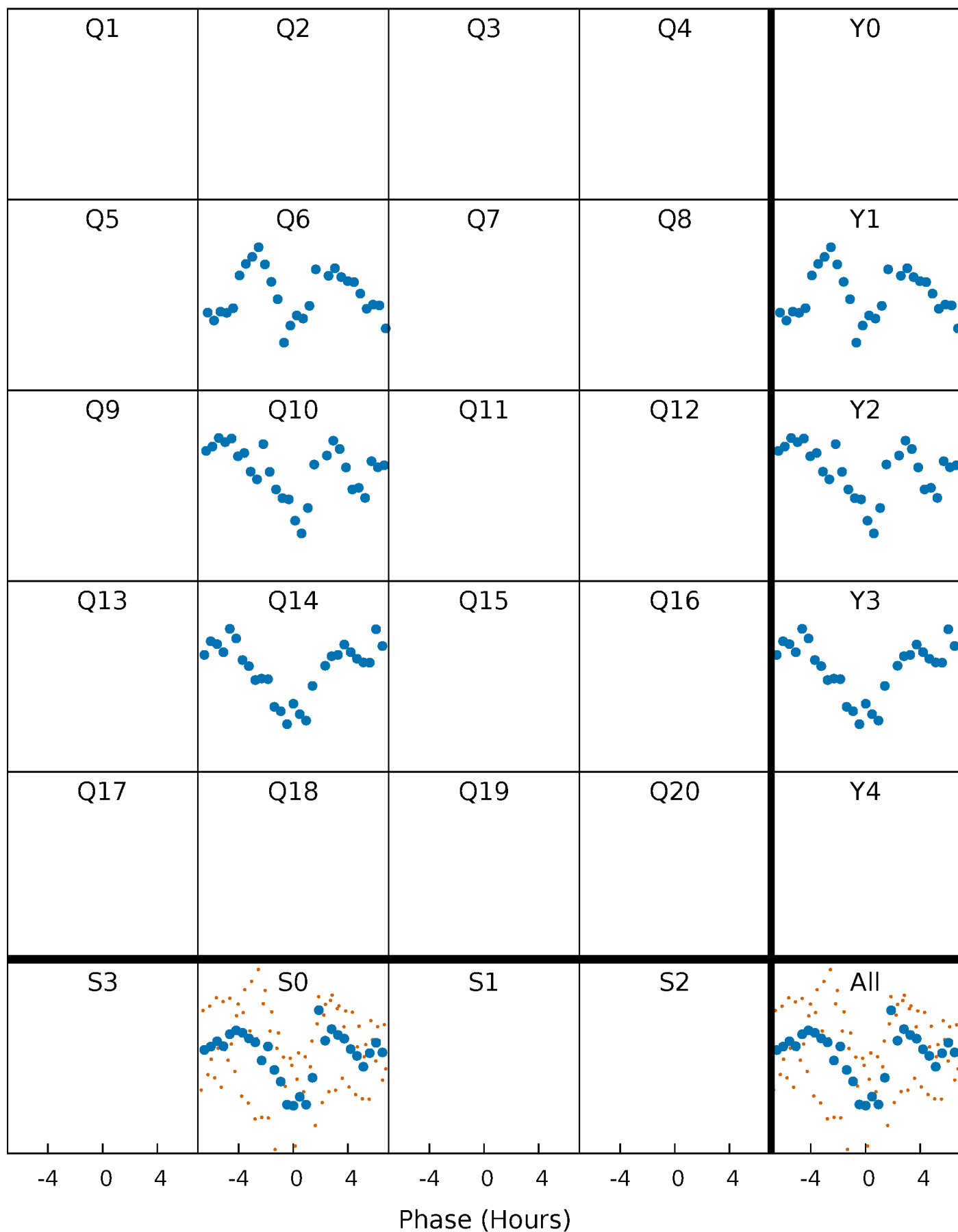


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

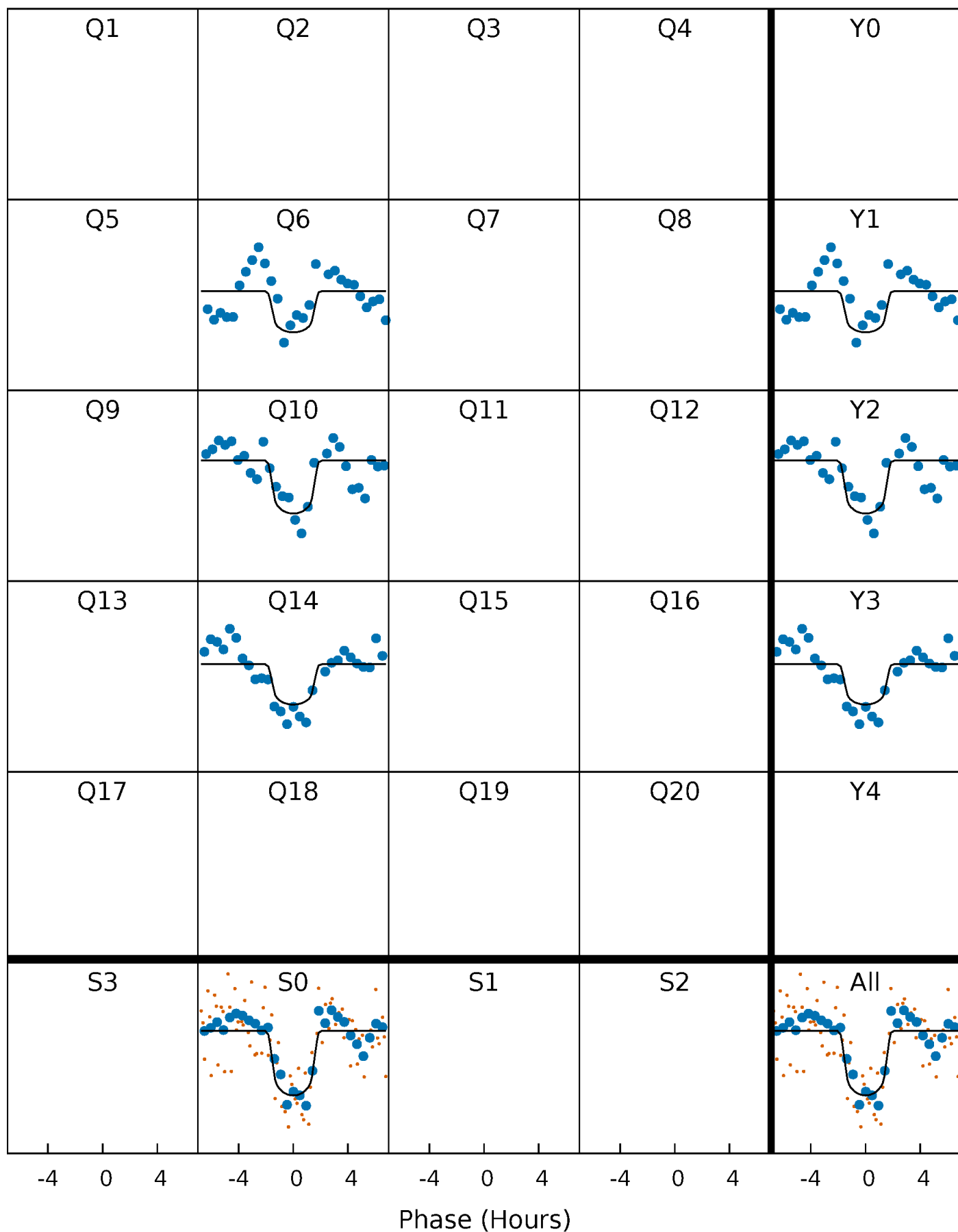
TCE 010514429-02     $P=390.756631$  Days     $T_0=168.967932$  (BKJD)





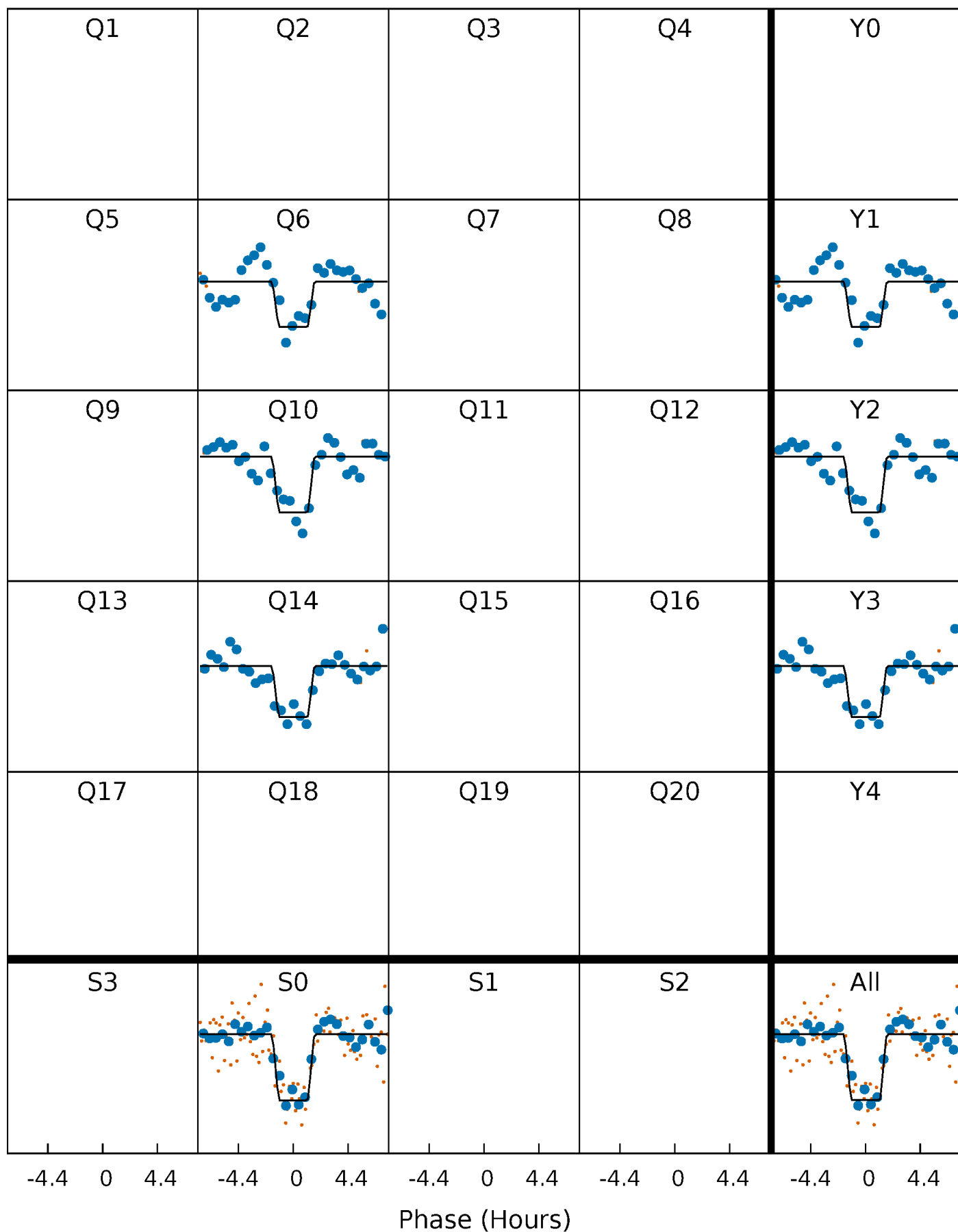
# DV Quarter-Phased Transit Curves

TCE 010514429-02 P=390.756631 Days  $T_0=168.967932$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

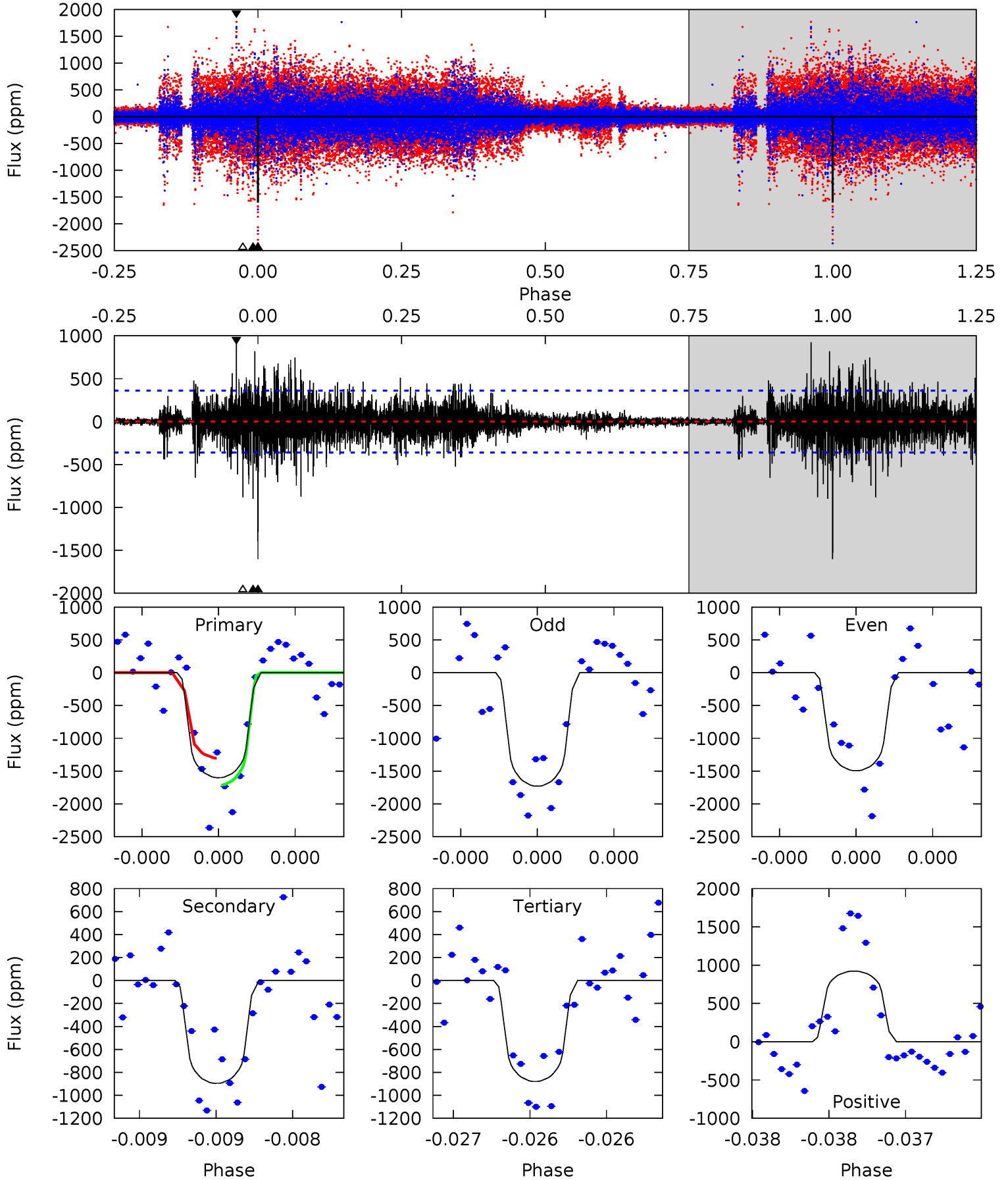
TCE 010514429-02 P=390.759443 Days  $T_0=168.965581$  (BKJD)



# DV Model-Shift Uniqueness Test

010514429-02, P = 390.756631 Days, E = 168.967932 Days

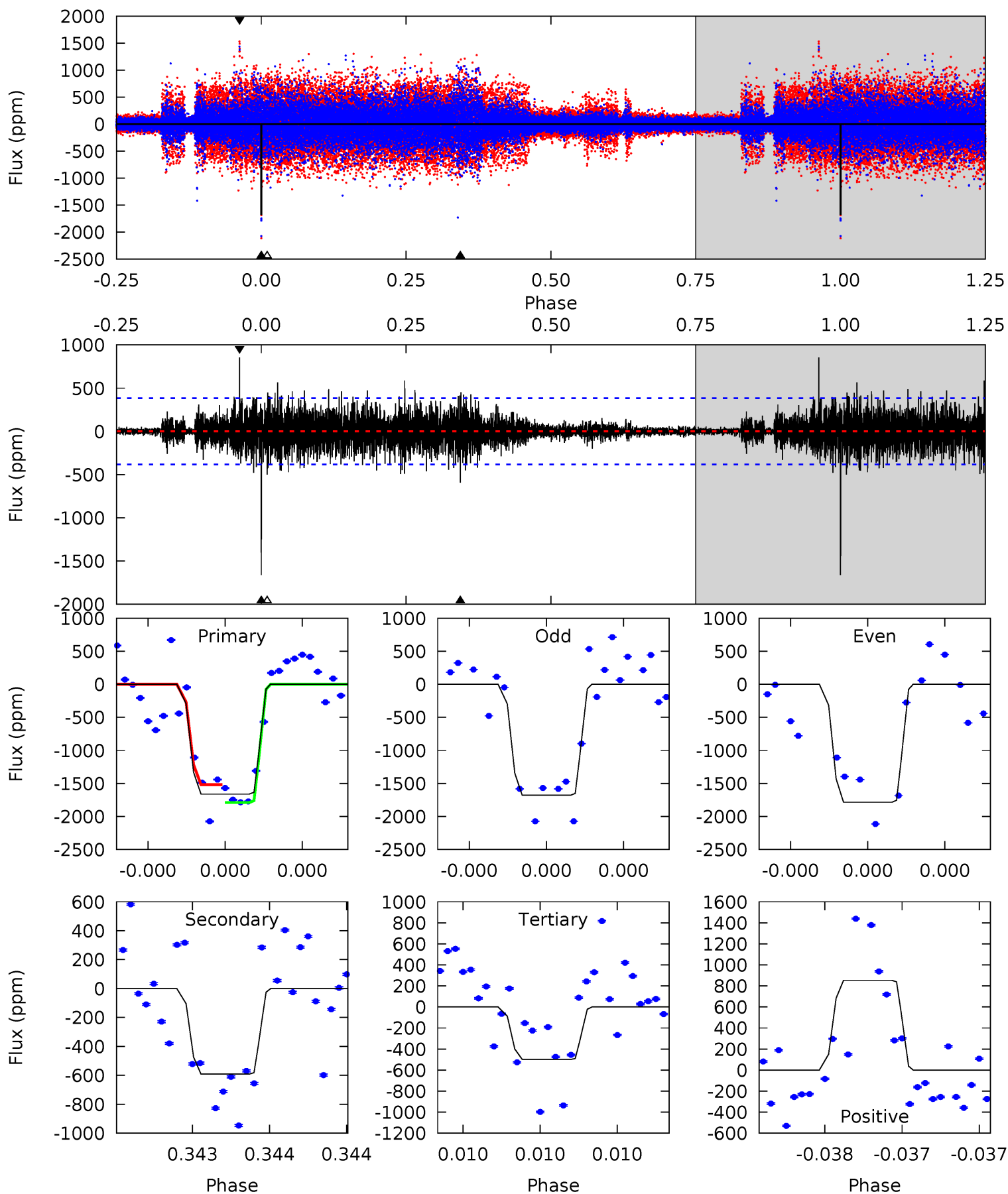
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.9	13.9	13.7	14.4	5.61	3.54	1.96	11.2	10.5	0.25	-0.42	1.45	1.06	0.37	2.80



# Alt Model-Shift Uniqueness Test

010514429-02, P = 390.759443 Days, E = 168.965581 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
24.5	8.72	7.35	12.6	5.64	3.59	1.54	17.1	11.9	1.36	-3.85	0.73	0.97	0.34	1.88



### Stellar Parameters For KIC 010514429

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5837^{+105}_{-105}$	$4.143^{+0.195}_{-0.105}$	$-0.180^{+0.150}_{-0.150}$	$1.366^{+0.210}_{-0.289}$	$0.946^{+0.082}_{-0.067}$	$0.523^{+0.538}_{-0.166}$
	+2%/-2%	+5%/-3%	+83%/-83%	+15%/-21%	+9%/-7%	+103%/-32%
Source	SPE18	SPE18	SPE18	DSEP		

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

### Secondary Eclipse Parameters for KIC 010514429-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-896 \pm 64$	$5.93^{+2.49}_{-2.46}$	$413^{+20}_{-26}$	$5090^{+1439}_{-651}$	$14955^{+27448}_{-7509}$
Alt.	$-592 \pm 68$	$6.31^{+2.46}_{-2.52}$	$411^{+19}_{-25}$	$4546^{+967}_{-527}$	$9005^{+14397}_{-4649}$

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

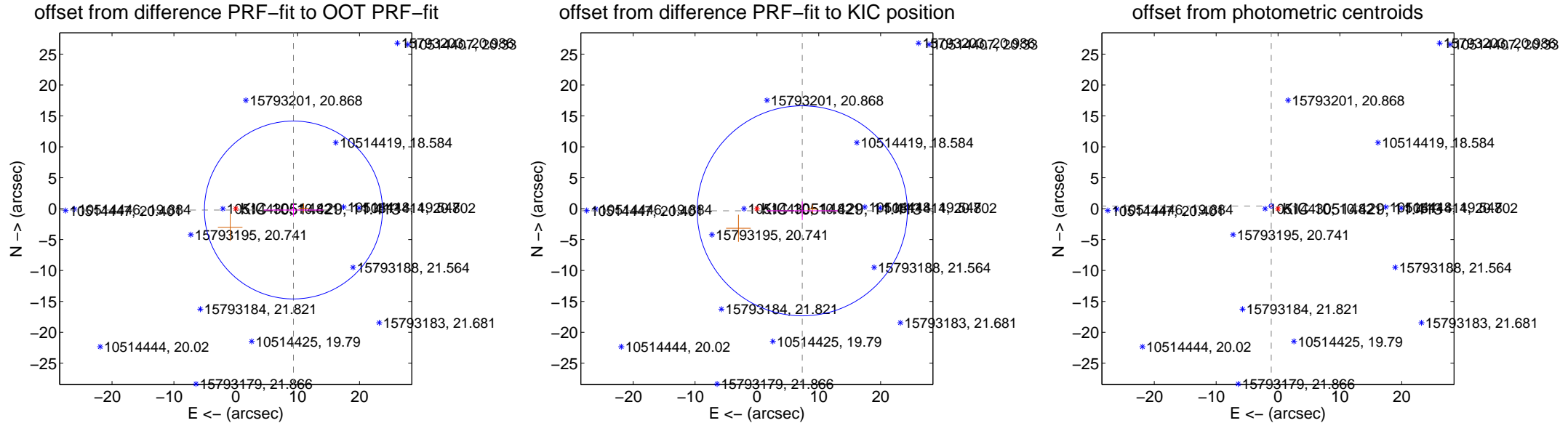
## DV Centroid Data

Supplemental centroid analysis for 010514429-02. **Kepler magnitude: 11.41.** Transit SNR 8.63

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 2.09 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$9.321 \pm 4.795$	1.94	$-9.319 \pm 4.796$	$-0.216 \pm 1.060$
PRF-fit source offset from KIC position	$7.343 \pm 5.661$	1.30	$-7.335 \pm 5.738$	$-0.347 \pm 1.497$
photometric centroid source offset	$1.18 \pm 0.12$	10.23	$1.10 \pm 0.12$	$0.43 \pm 0.09$



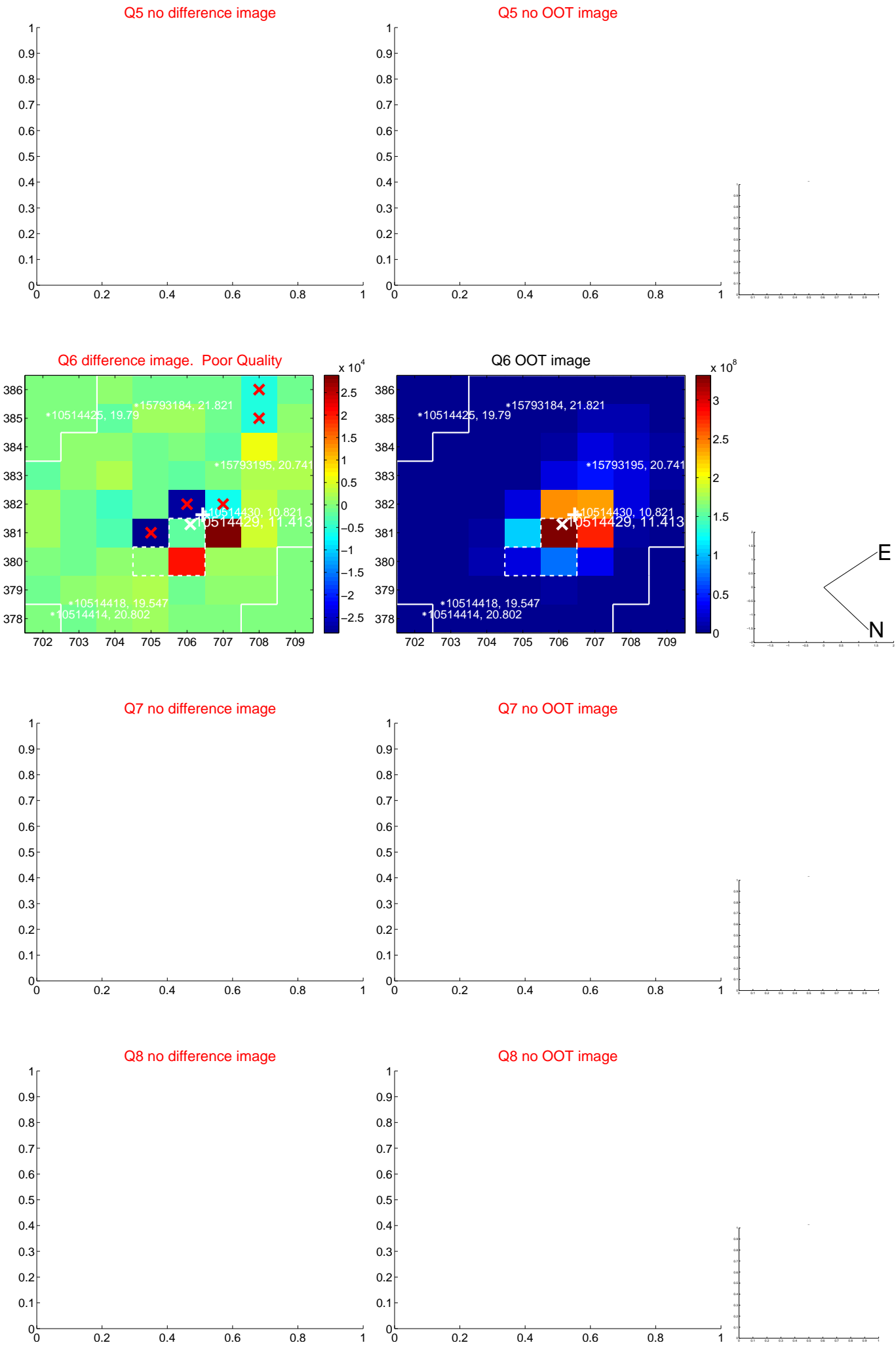
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

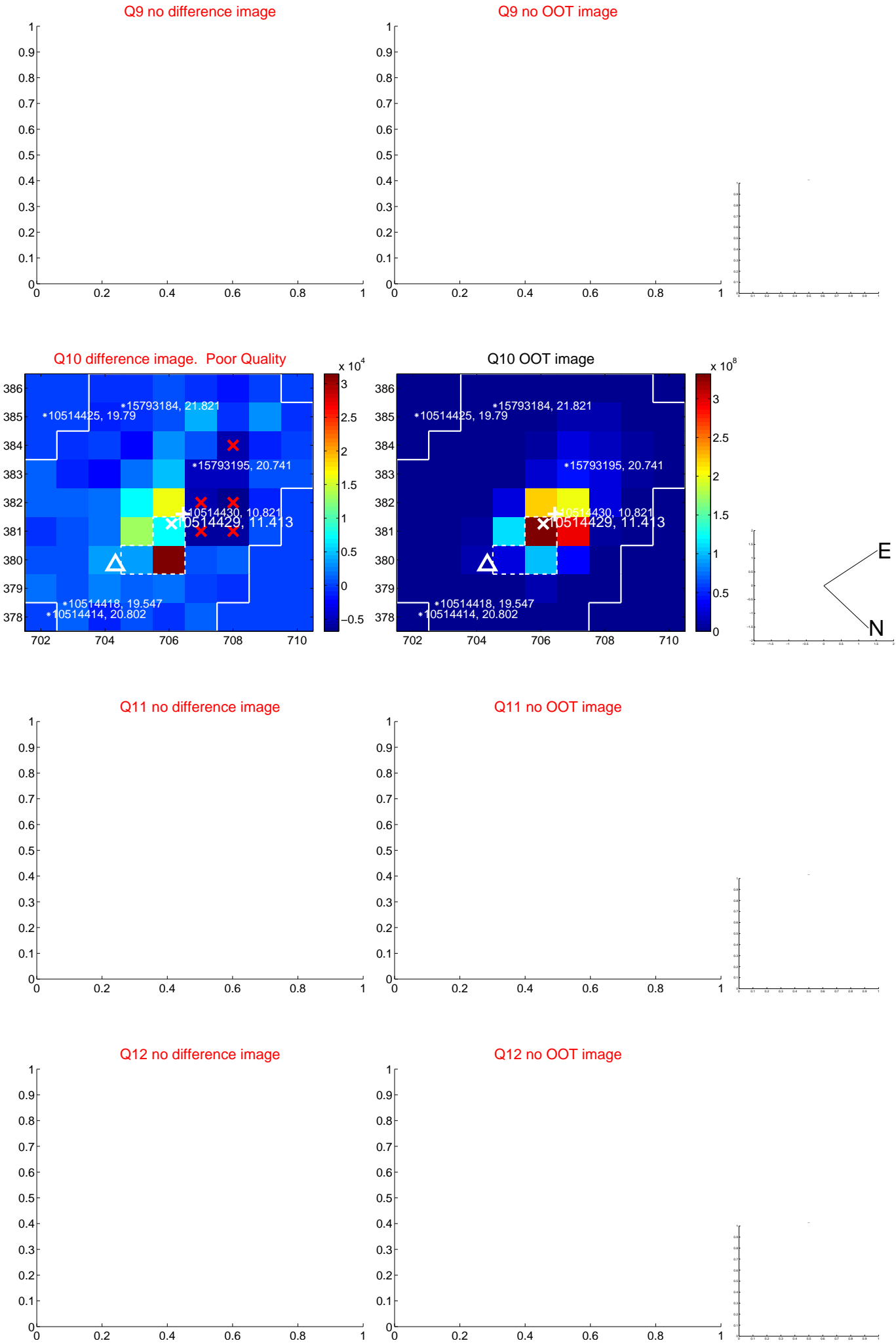




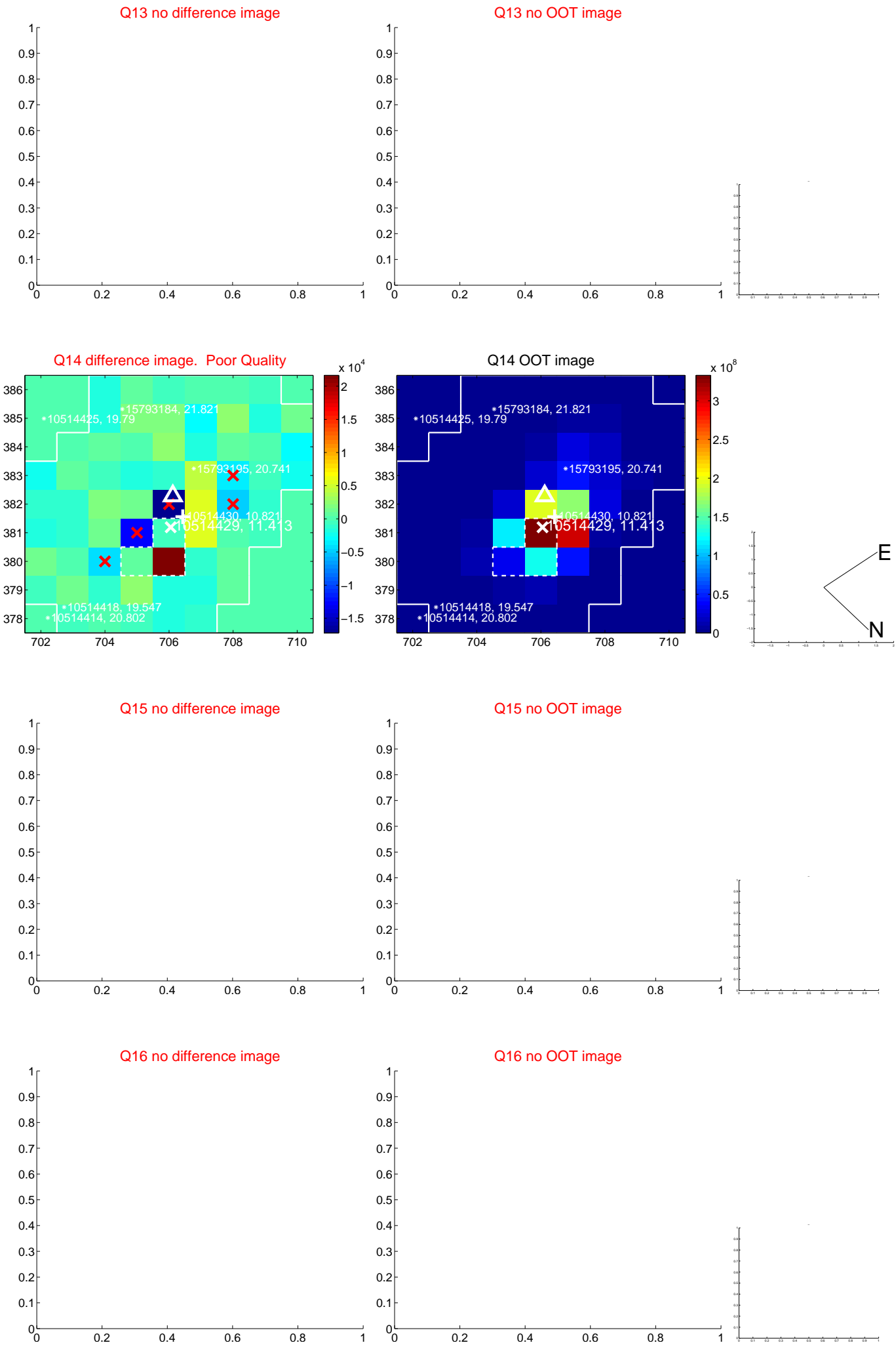
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



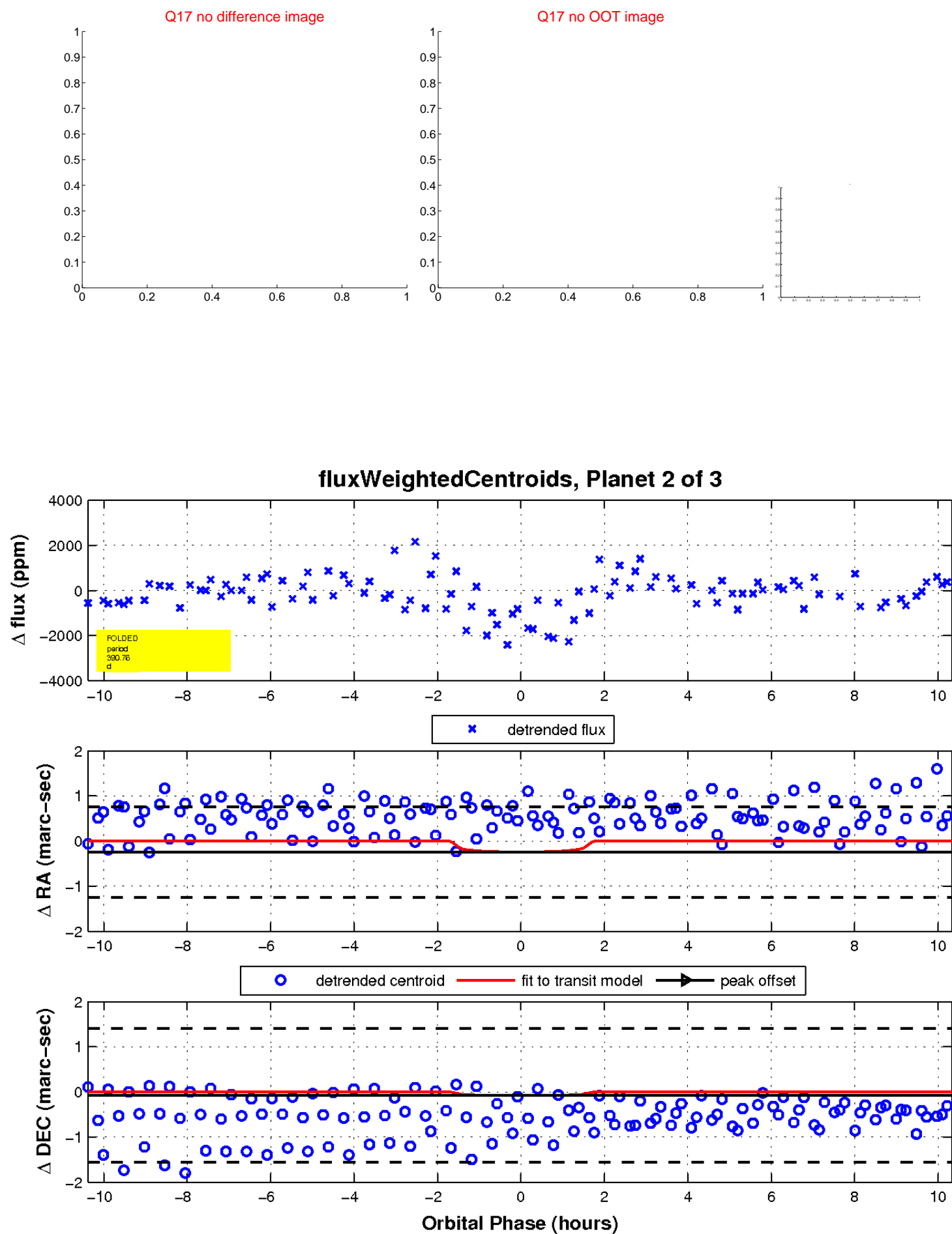
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

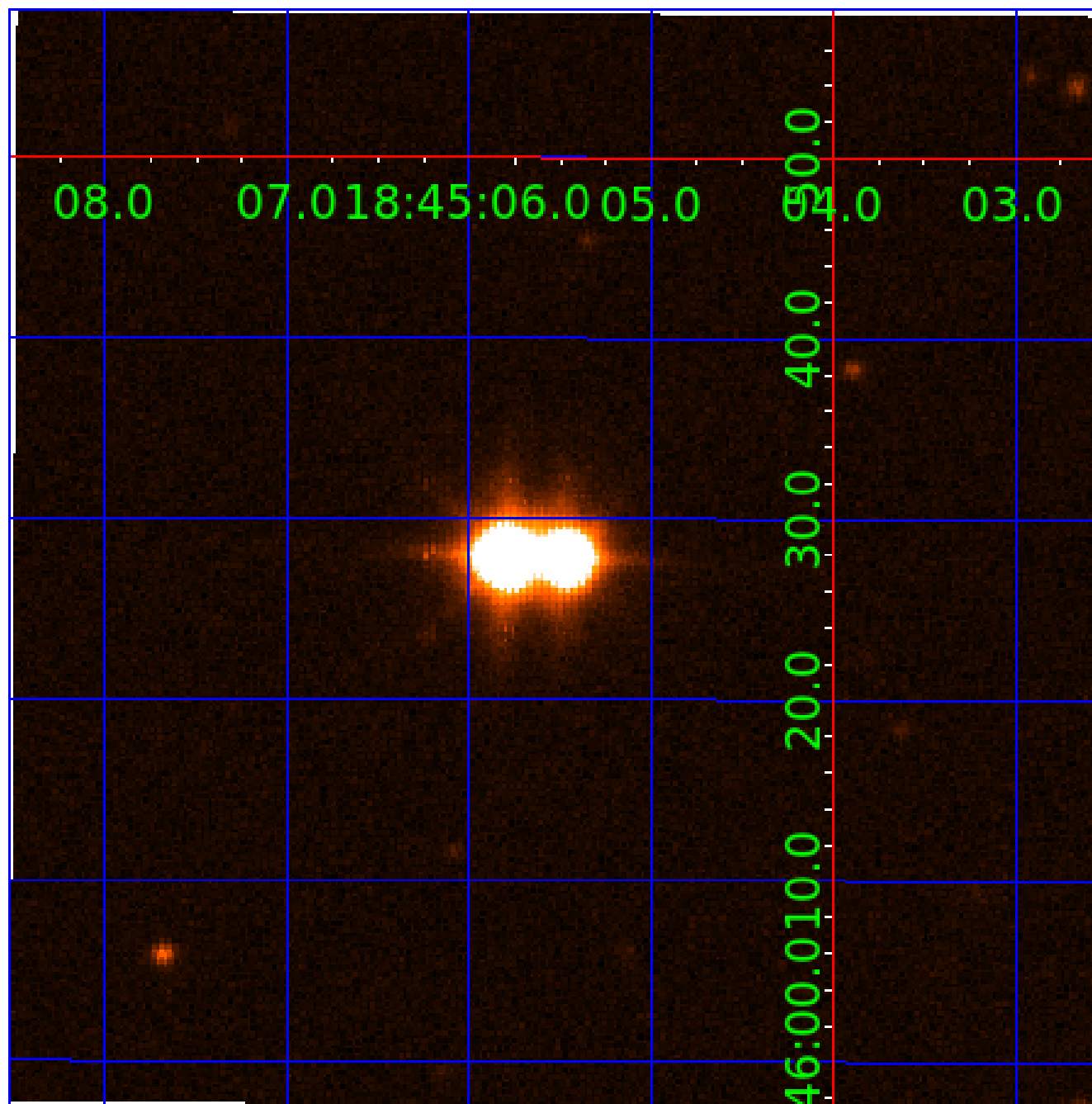


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010514429

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010514429-01	OBS	1614.01	20.719366	143.295984	224.6	4.532	26.4	30.2	1.37	5837	2.58	92.35
010514429-02	OBS	No	390.756631	168.967932	1591.2	3.482	10.0	8.6	1.37	5837	5.87	1.84
010514429-03	OBS	No	368.641513	258.704483	1247.9	5.299	10.0	9.0	1.37	5837	4.82	1.99

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010514429-01	OBS	FP	0.00	0	0	1	1	CENT_SATURATED—HALO_GHOST—EPHEM_MATCH
010514429-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010514429-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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 010514429-03

No Significant Match Found

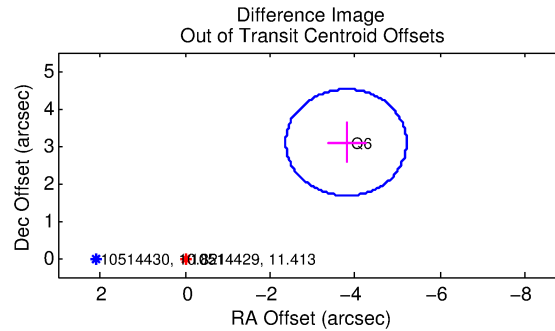
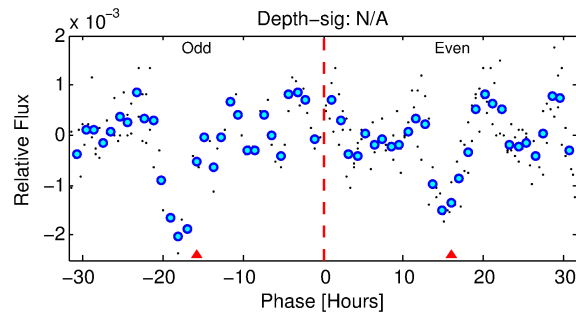
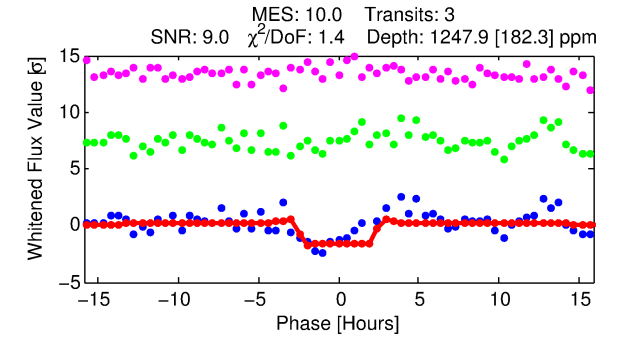
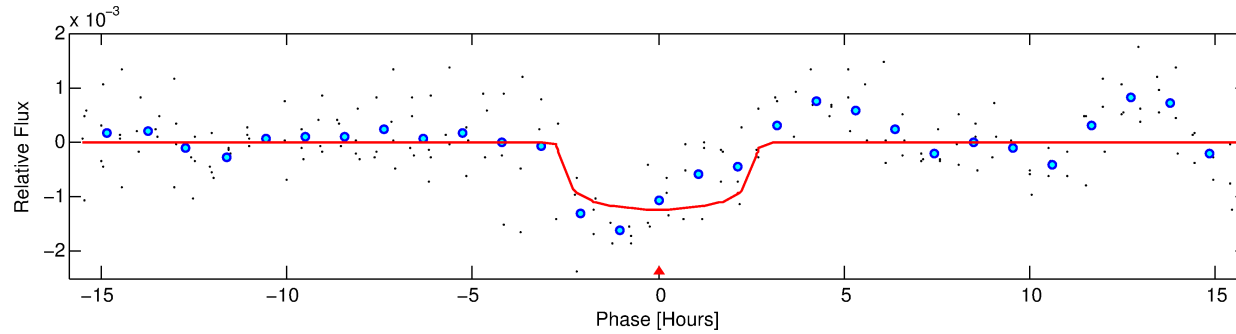
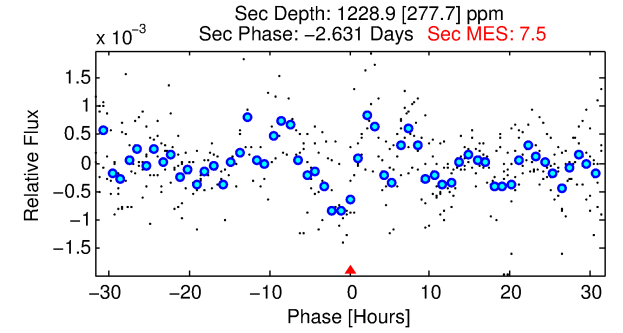
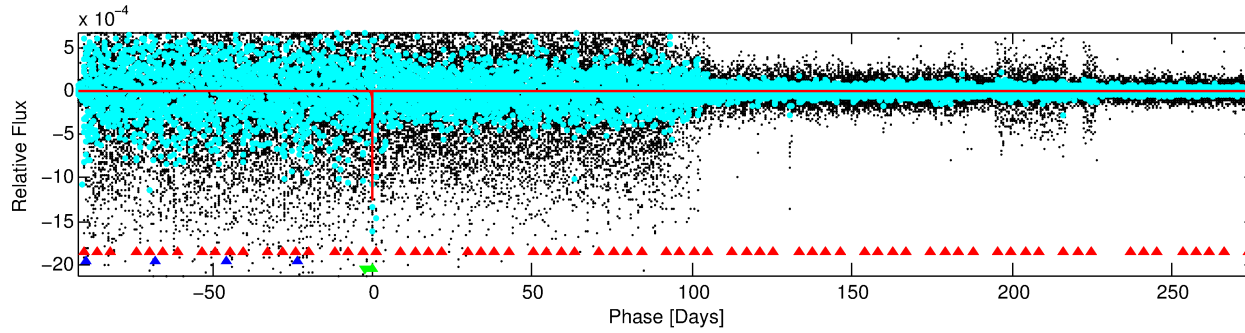
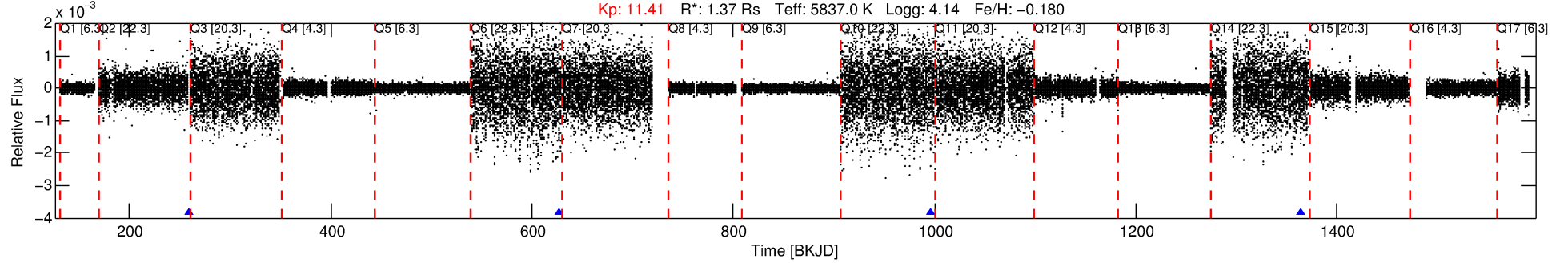


# DV One-Page Summary

KIC: 10514429 Candidate: 3 of 3 Period: 368.642 d

KOI: K01614 Corr: No Ephemeris Match

Kp: 11.41 R\*: 1.37 Rs Teff: 5837.0 K Logg: 4.14 Fe/H: -0.180



## DV Fit Results:

Period = 368.64151 [0.00596] d  
Epoch = 258.7045 [0.0153] BKJD  
Rp/R\* = 0.0323 [0.1128]  
a/R\* = 535.24 [8542.69]  
b = 0.23 [67.36]  
Seff = 1.99 [0.67]  
Teq = 303 [26] K  
Rp = 4.82 [16.85] Re  
a = 0.9879 [0.2032] AU  
Ag = 28380.33 [198307.36] [0.14σ]  
Teffp = 6076 [10603] K [0.54σ]

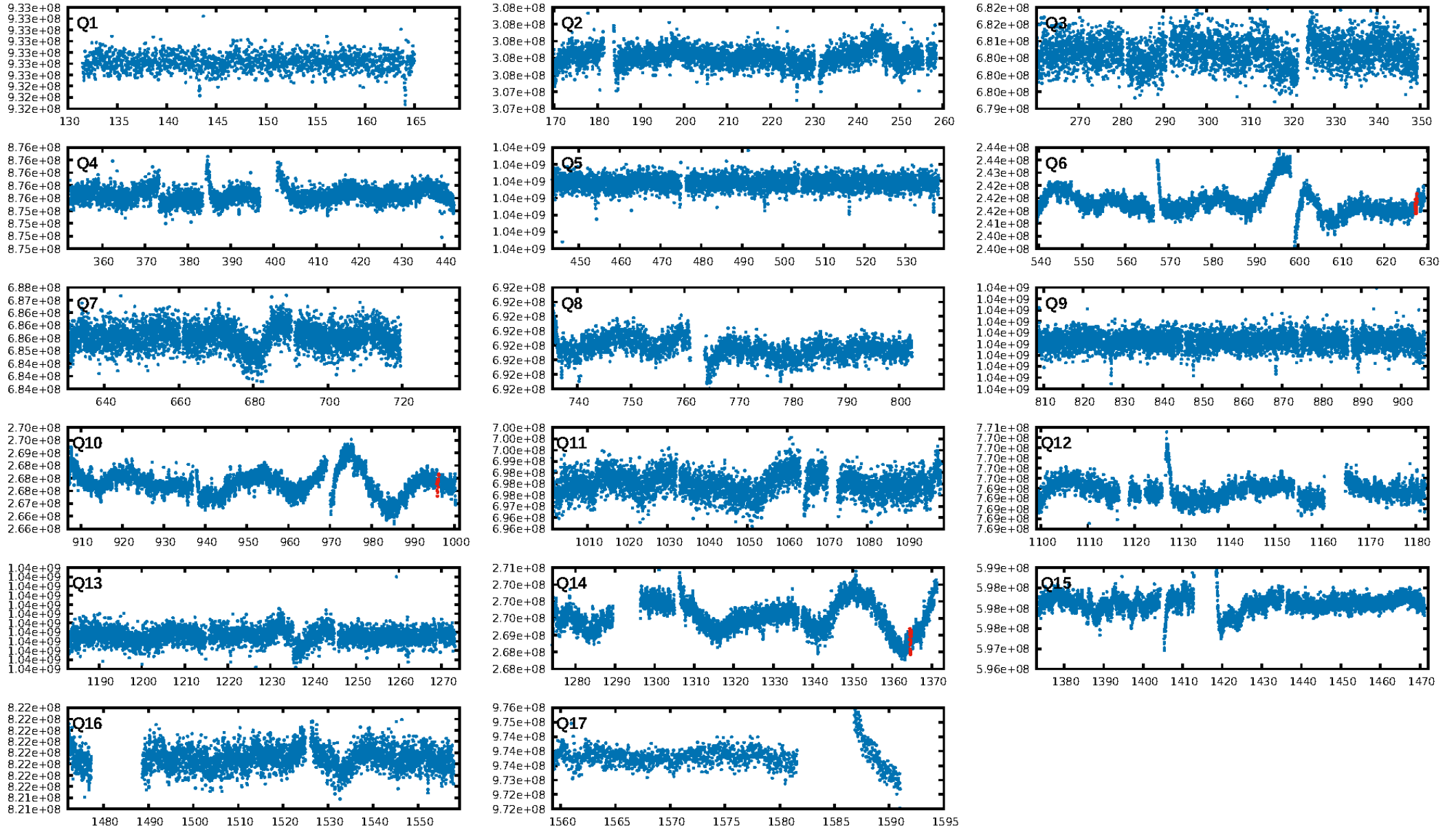
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1197.54σ]  
LongPeriod-sig: 100.0% [83.70σ]  
ModelChiSquare2-sig: 30.3%  
ModelChiSquareGof-sig: 49.8%  
Bootstrap-pfa: 1.30e-08  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 76.2%  
Centroid-so: 1.022 arcsec [7.60σ]  
OotOffset-rm: 4.894 arcsec [10.31σ]  
KicOffset-rm: 3.134 arcsec [6.19σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [3/3]

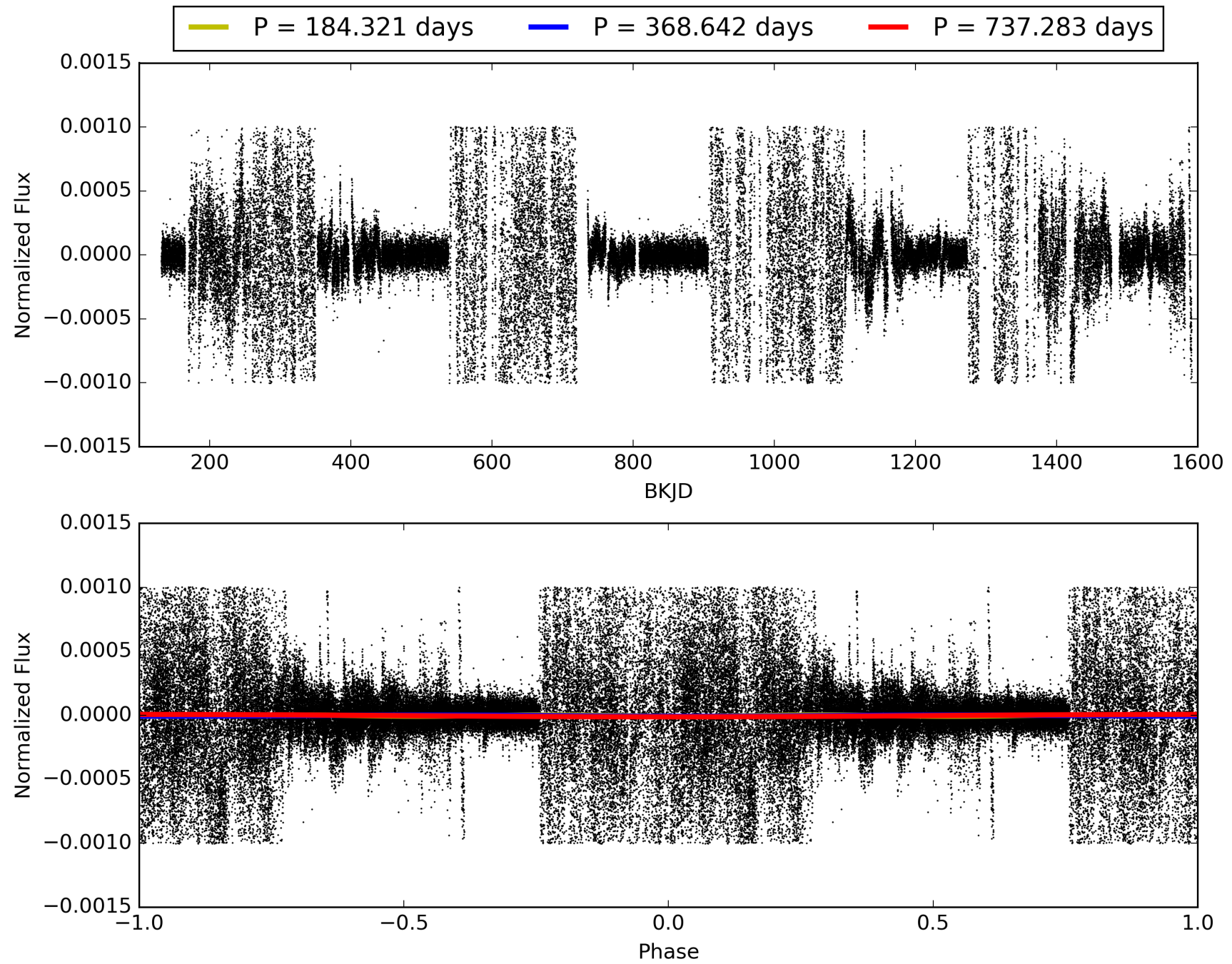
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:52:23 Z

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

# TCE 010514429-03, PDC Light Curves

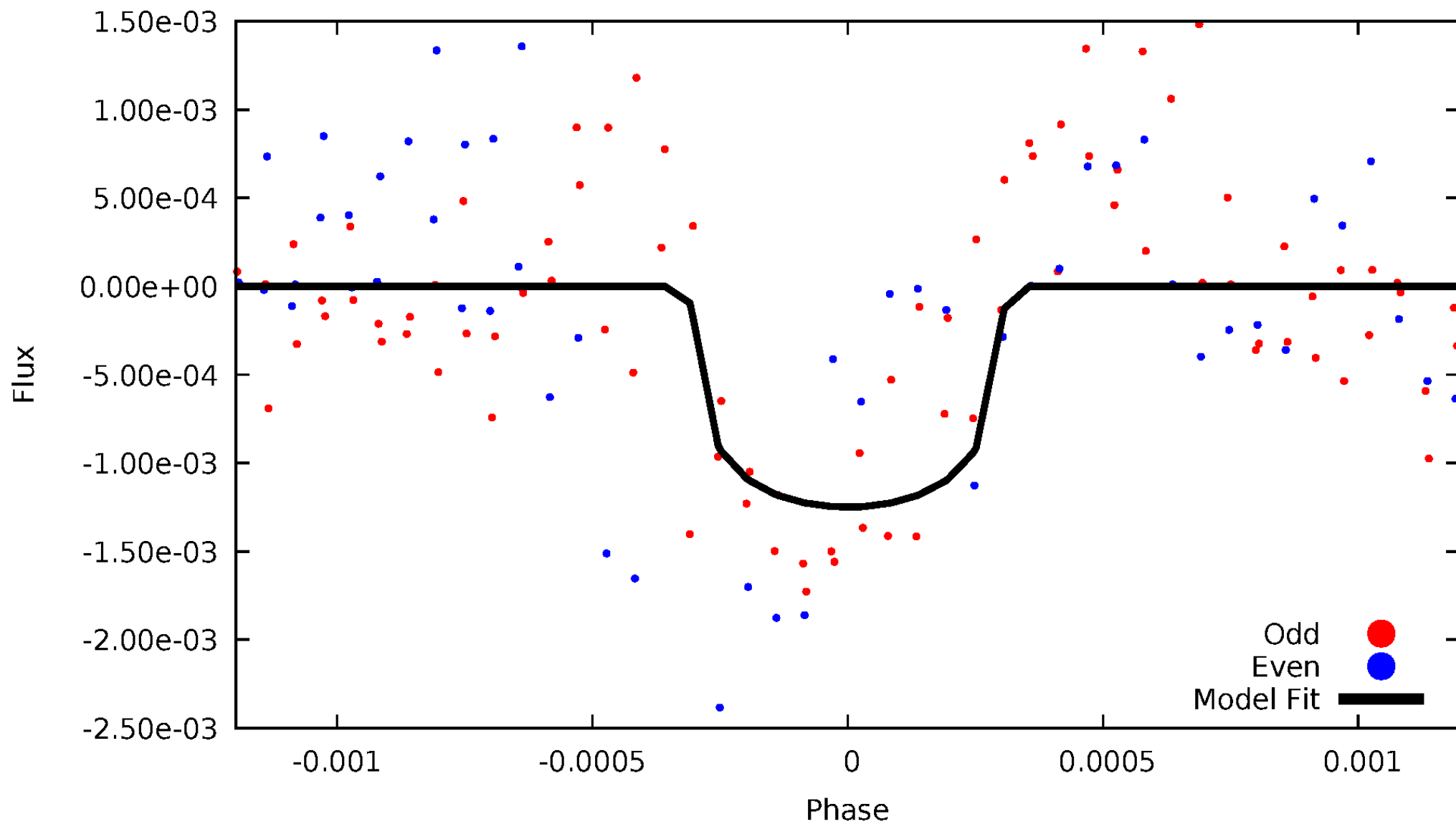


# TCE 010514429-03



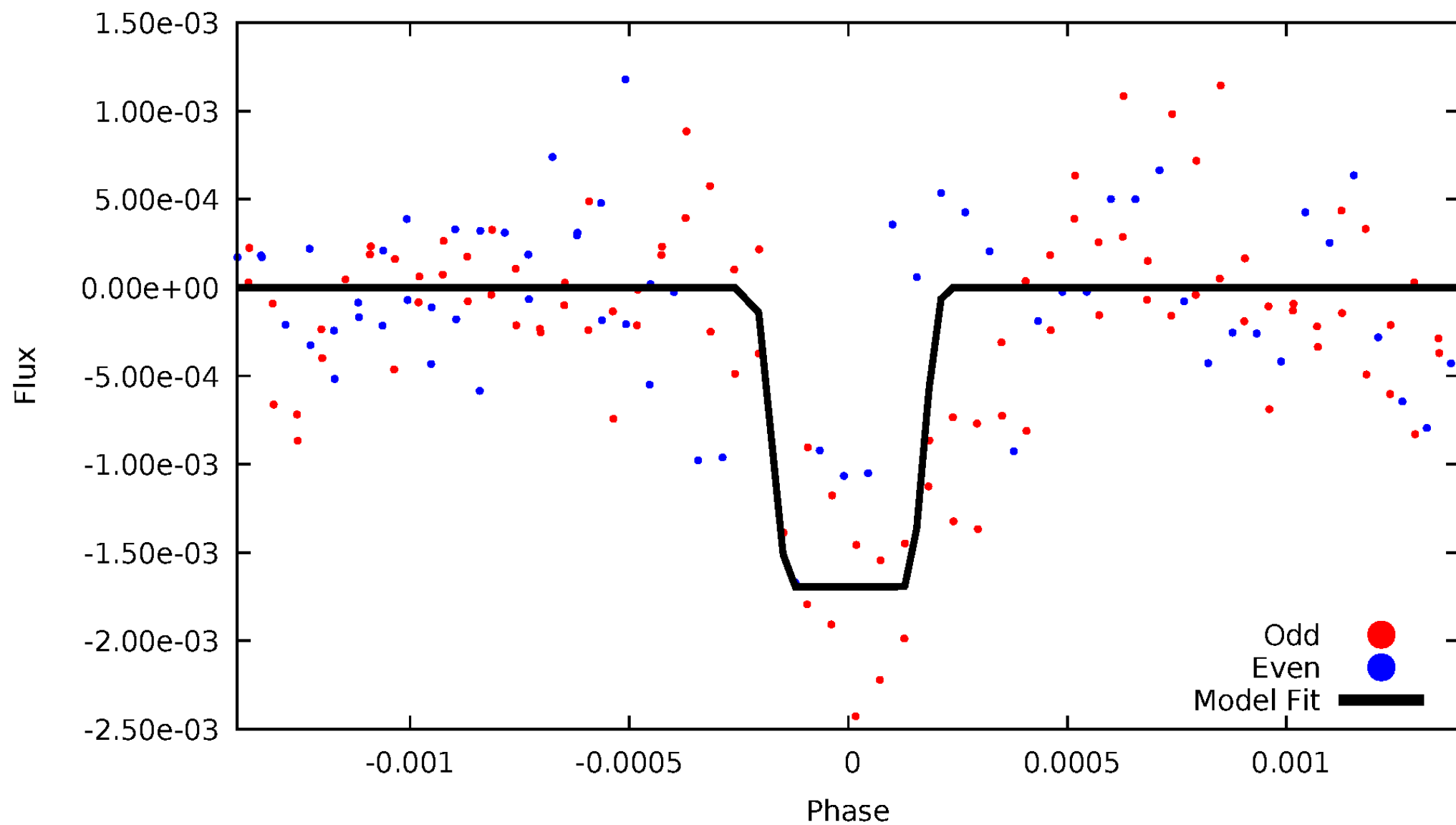
# DV Odd/Even

TCE 010514429-03



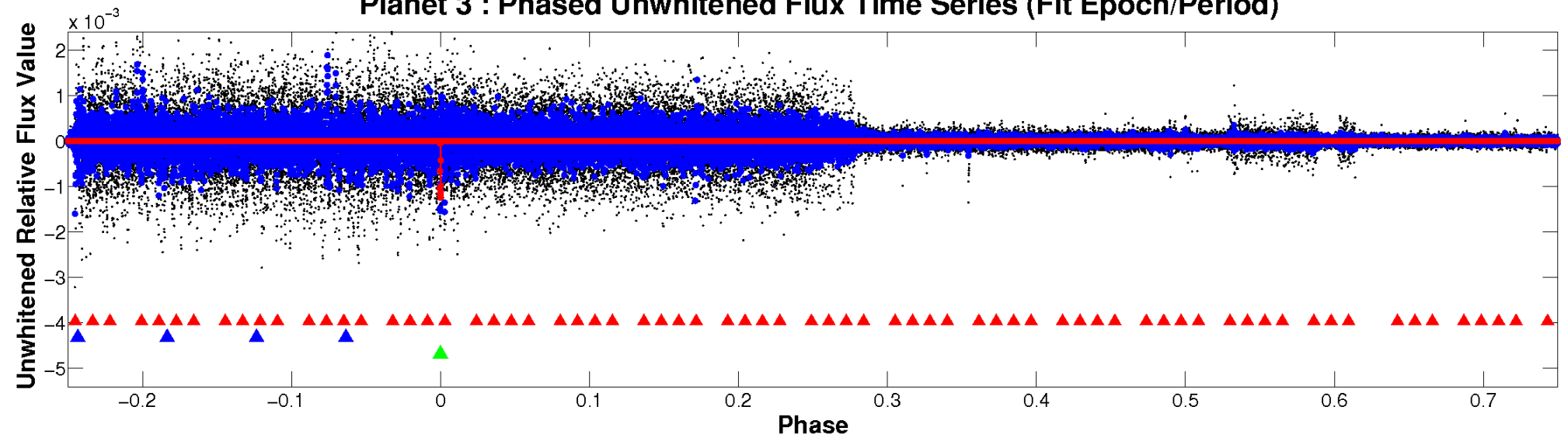
# ALT Odd/Even

TCE 010514429-03

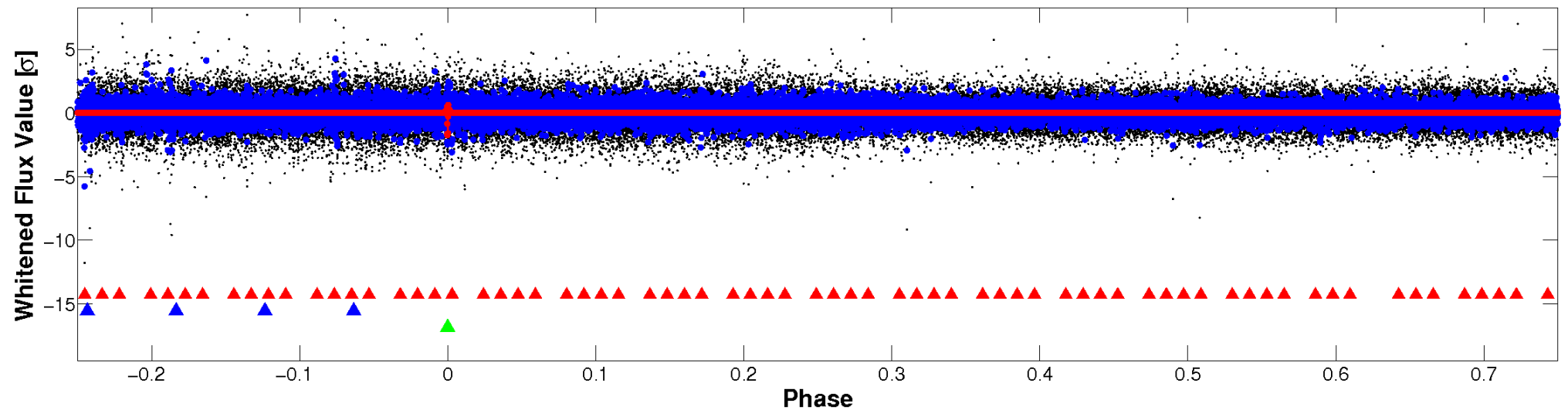


# Non-Whitened Vs. Whitened Light Curve

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

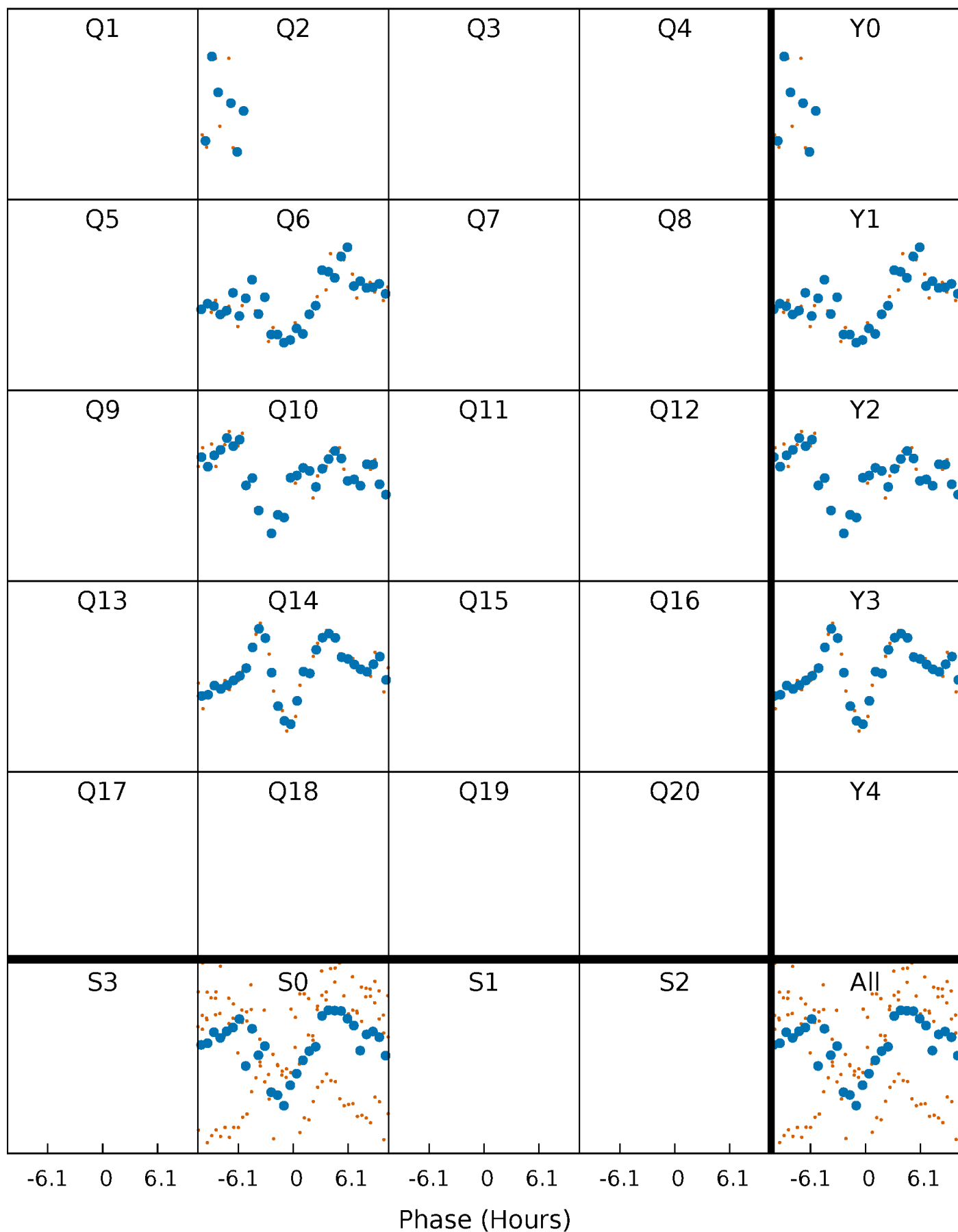


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

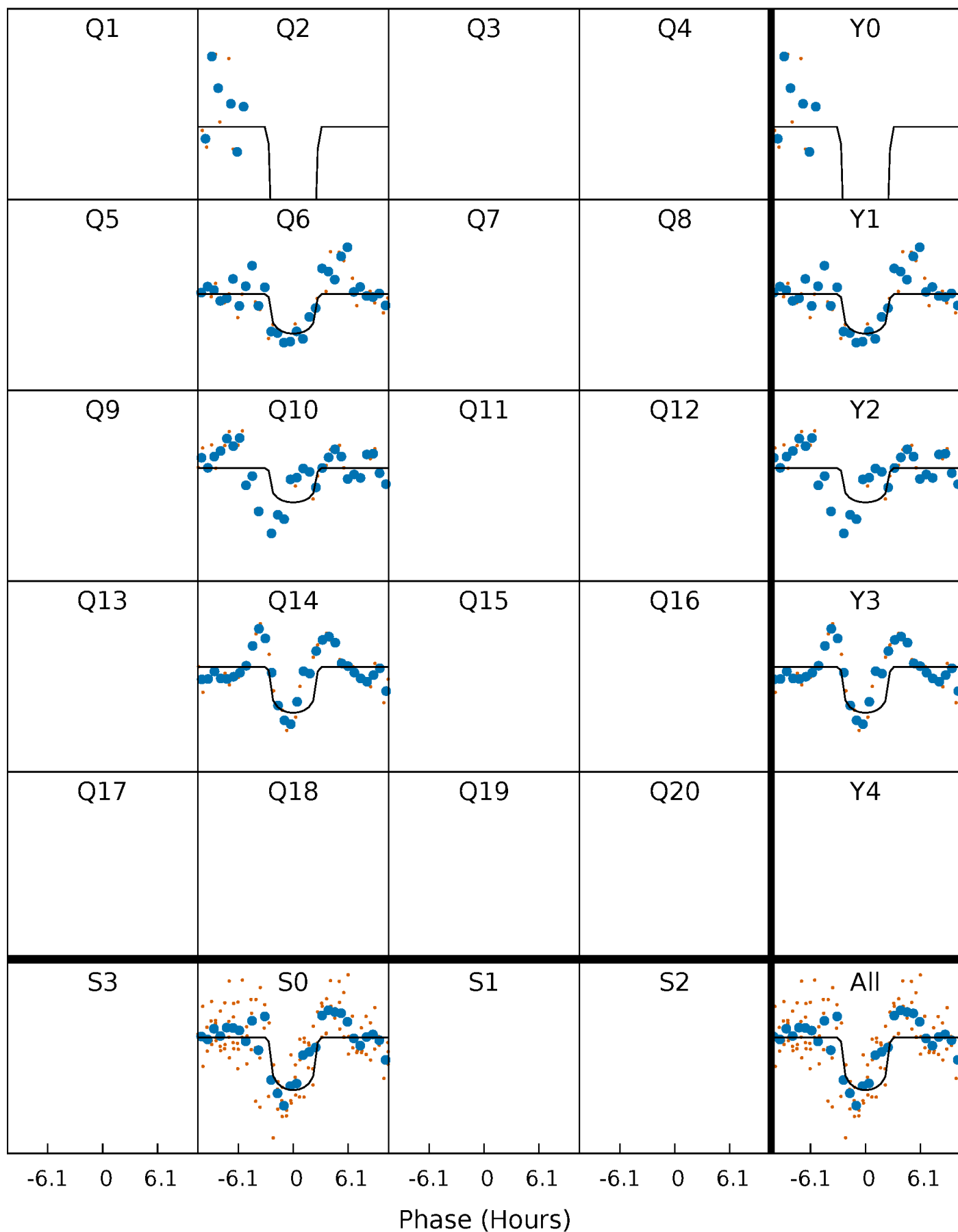
TCE 010514429-03     $P=368.641513$  Days     $T_0=258.704483$  (BKJD)





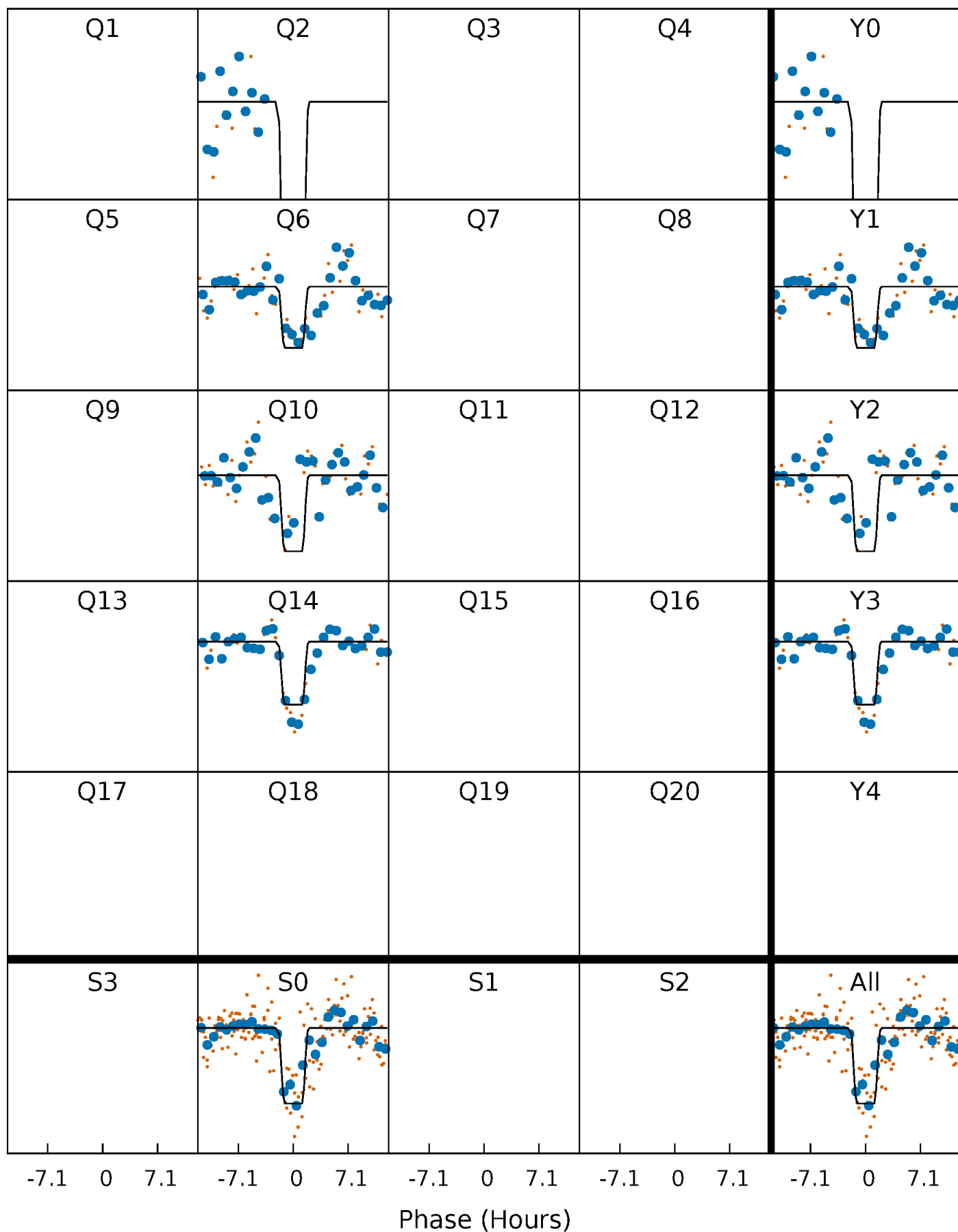
# DV Quarter-Phased Transit Curves

TCE 010514429-03 P=368.641513 Days  $T_0=258.704483$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

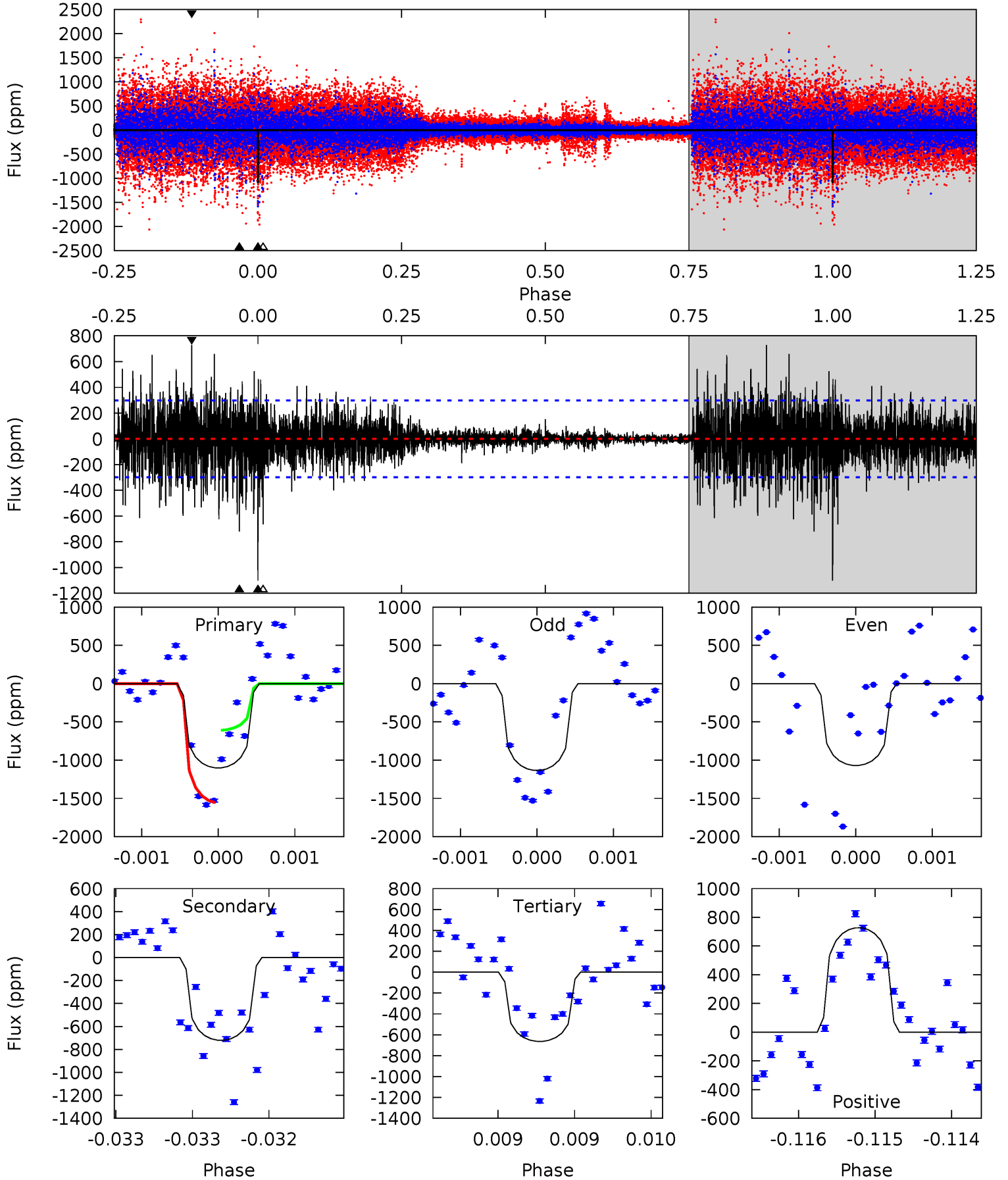
TCE 010514429-03 P=368.653188 Days  $T_0=258.633332$  (BKJD)



# DV Model-Shift Uniqueness Test

010514429-03, P = 368.641513 Days, E = 258.704483 Days

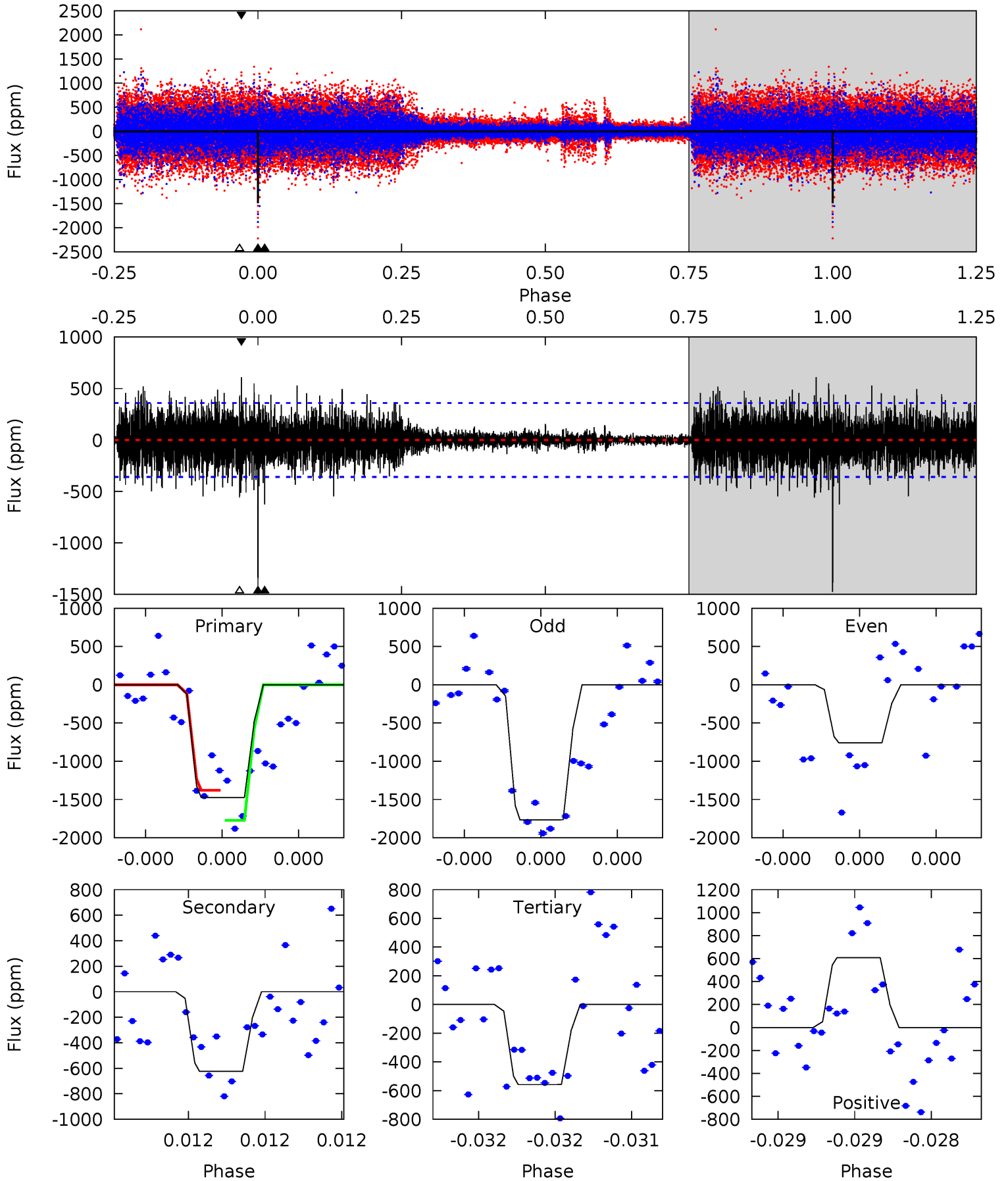
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.4	13.3	12.3	13.5	5.52	3.40	2.07	8.10	6.92	1.06	-0.12	0.49	1.03	0.40	9.12



# Alt Model-Shift Uniqueness Test

010514429-03, P = 368.653188 Days, E = 258.633332 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
23.0	9.72	8.68	9.47	5.59	3.51	1.61	14.3	13.5	1.03	0.25	7.42	1.02	0.29	3.08



### Stellar Parameters For KIC 010514429

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5837^{+105}_{-105}$	$4.143^{+0.195}_{-0.105}$	$-0.180^{+0.150}_{-0.150}$	$1.366^{+0.210}_{-0.289}$	$0.946^{+0.082}_{-0.067}$	$0.523^{+0.538}_{-0.166}$
	+2%/-2%	+5%/-3%	+83%/-83%	+15%/-21%	+9%/-7%	+103%/-32%
Source	SPE18	SPE18	SPE18	DSEP		

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

### Secondary Eclipse Parameters for KIC 010514429-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-720 \pm 54$	$12.20^{+13.73}_{-8.11}$	$419^{+20}_{-22}$	$3669^{+2055}_{-719}$	$2638^{+20090}_{-2065}$
Alt.	$-624 \pm 64$	$13.73^{+12.80}_{-9.16}$	$421^{+20}_{-25}$	$3494^{+1740}_{-623}$	$1778^{+14361}_{-1311}$

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

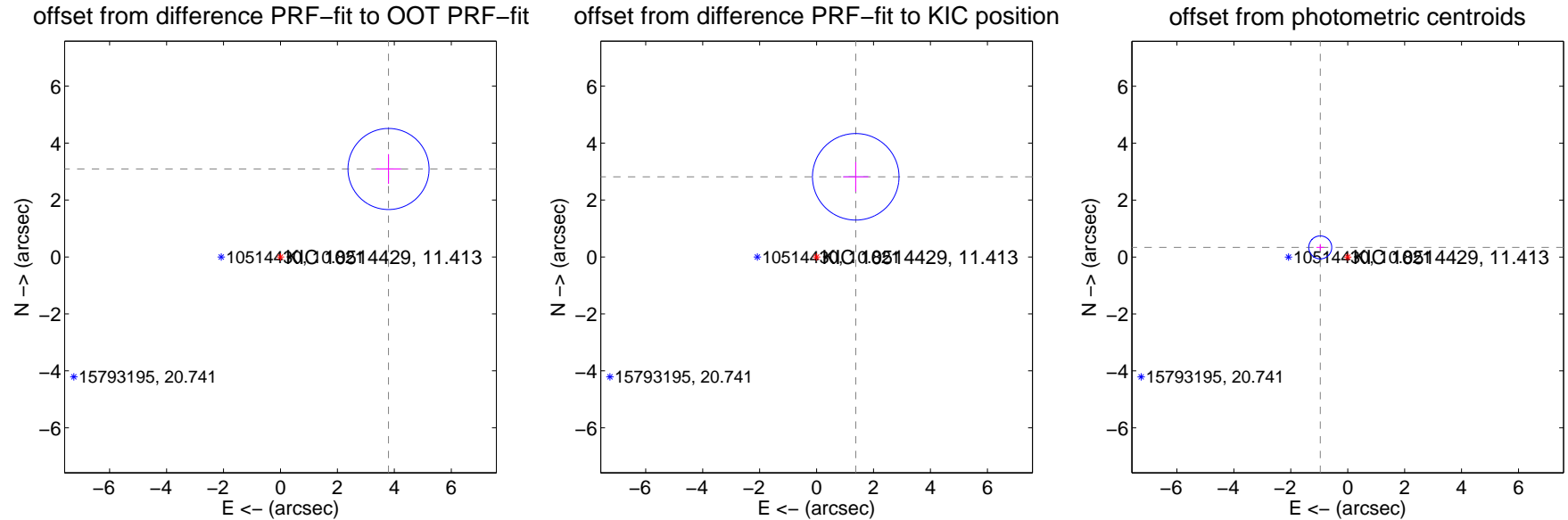
## DV Centroid Data

Supplemental centroid analysis for 010514429-03. **Kepler magnitude: 11.41.** Transit SNR 8.95

There are 1 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 2.43 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.894 \pm 0.475$	<b>10.31</b>	$-3.795 \pm 0.441$	$3.090 \pm 0.521$
PRF-fit source offset from KIC position	$3.134 \pm 0.507$	<b>6.19</b>	$-1.376 \pm 0.441$	$2.816 \pm 0.521$
photometric centroid source offset	$1.02 \pm 0.13$	<b>7.60</b>	$0.96 \pm 0.14$	$0.34 \pm 0.12$



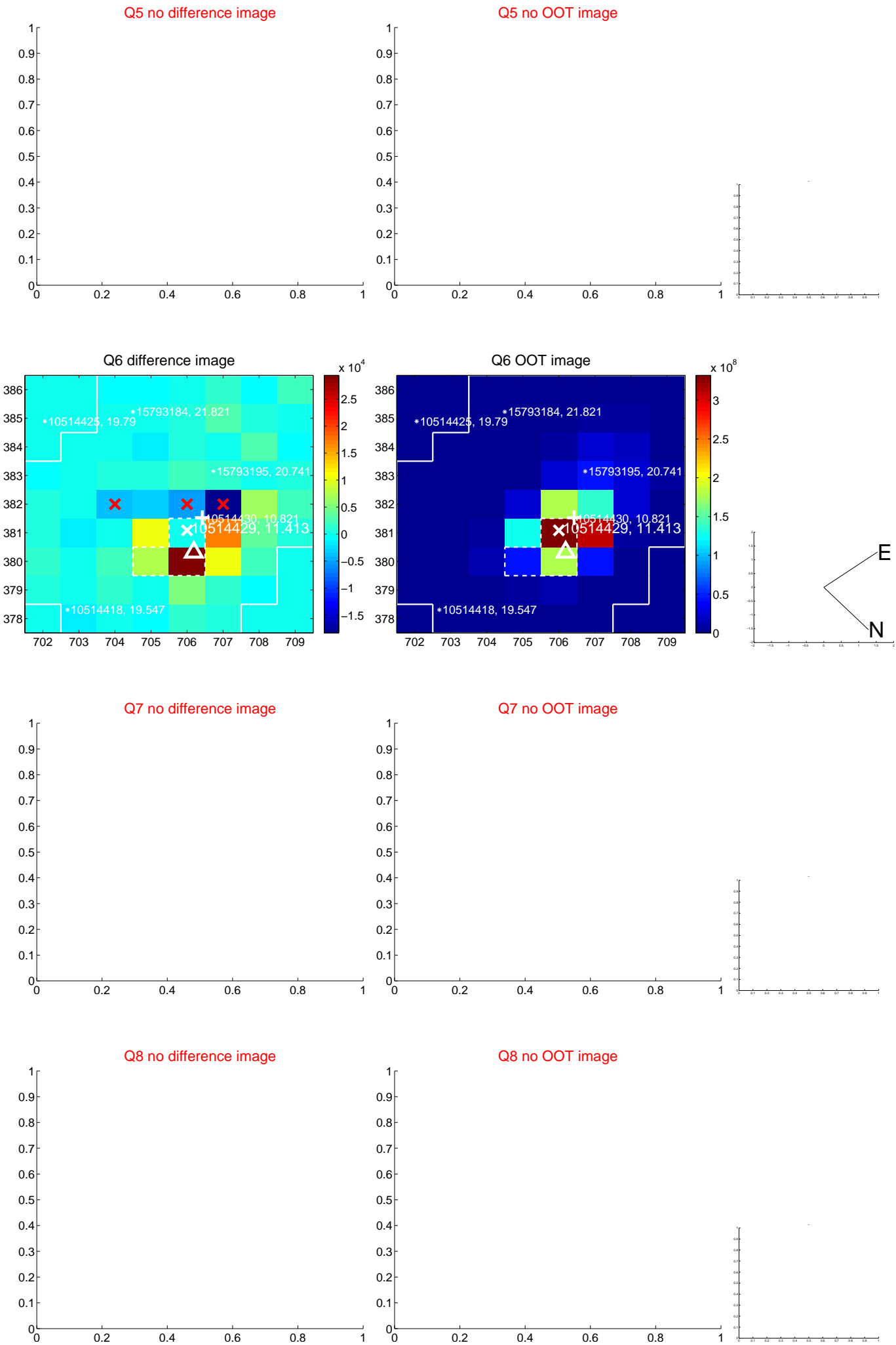
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

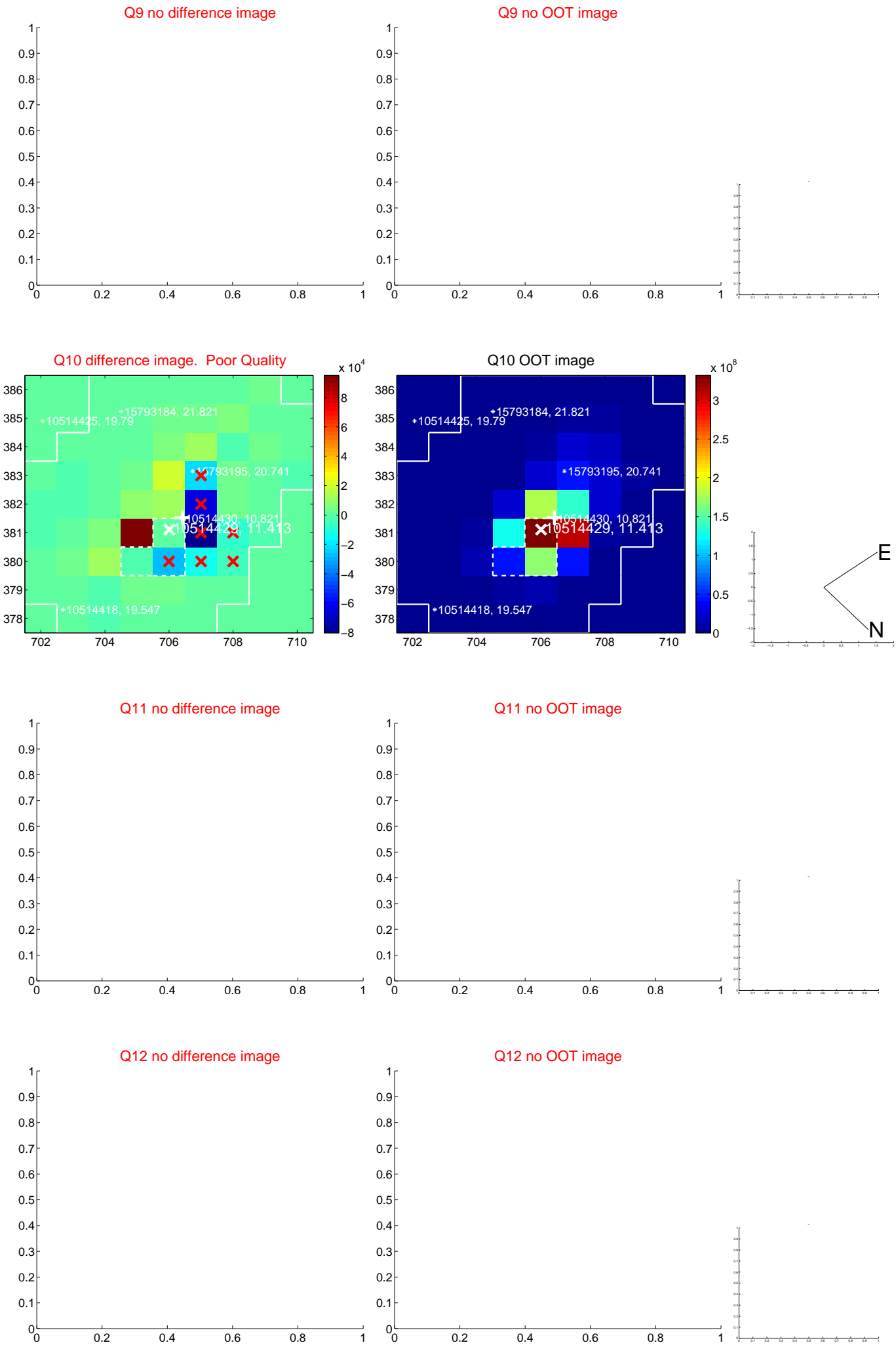




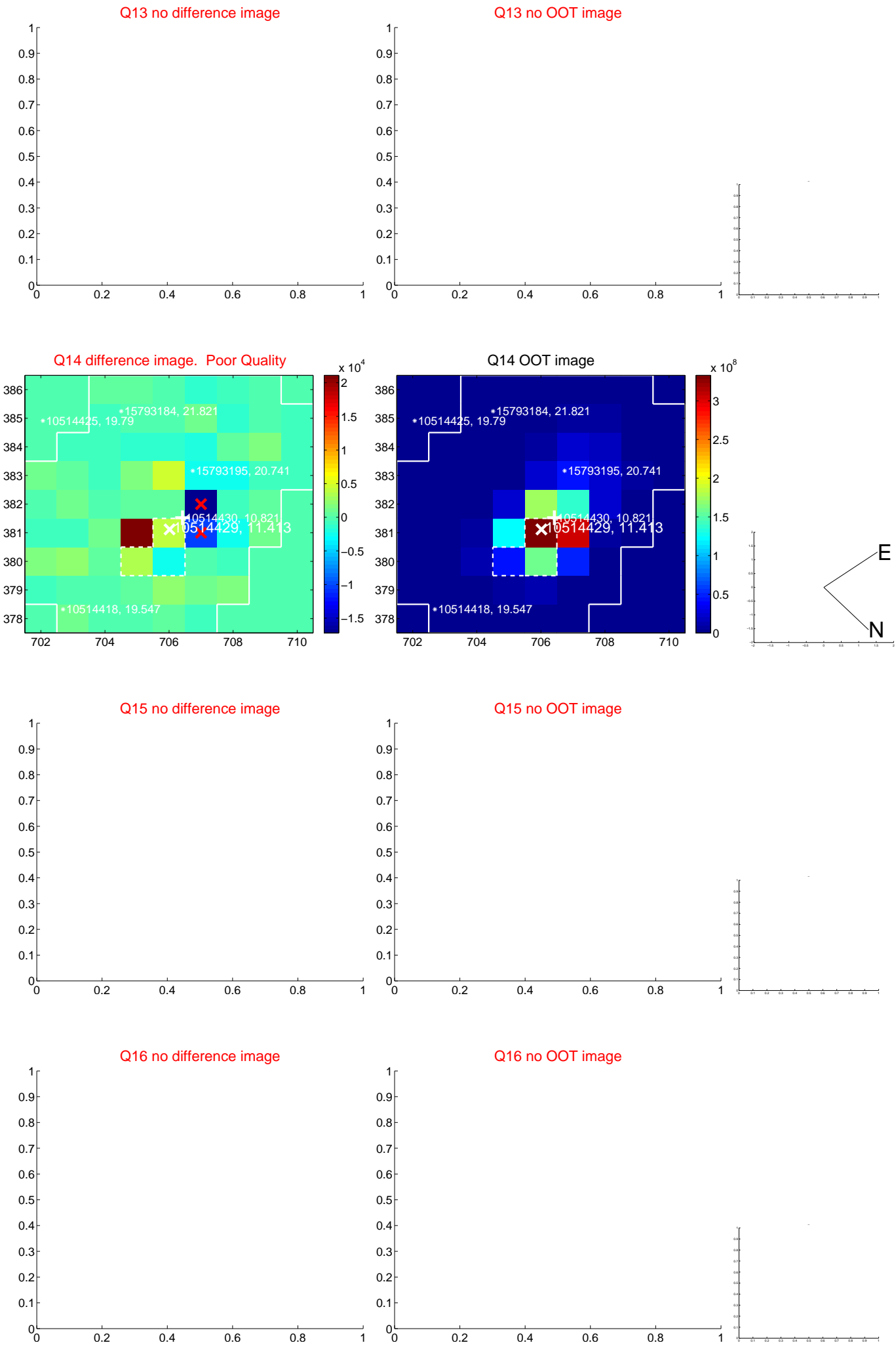
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



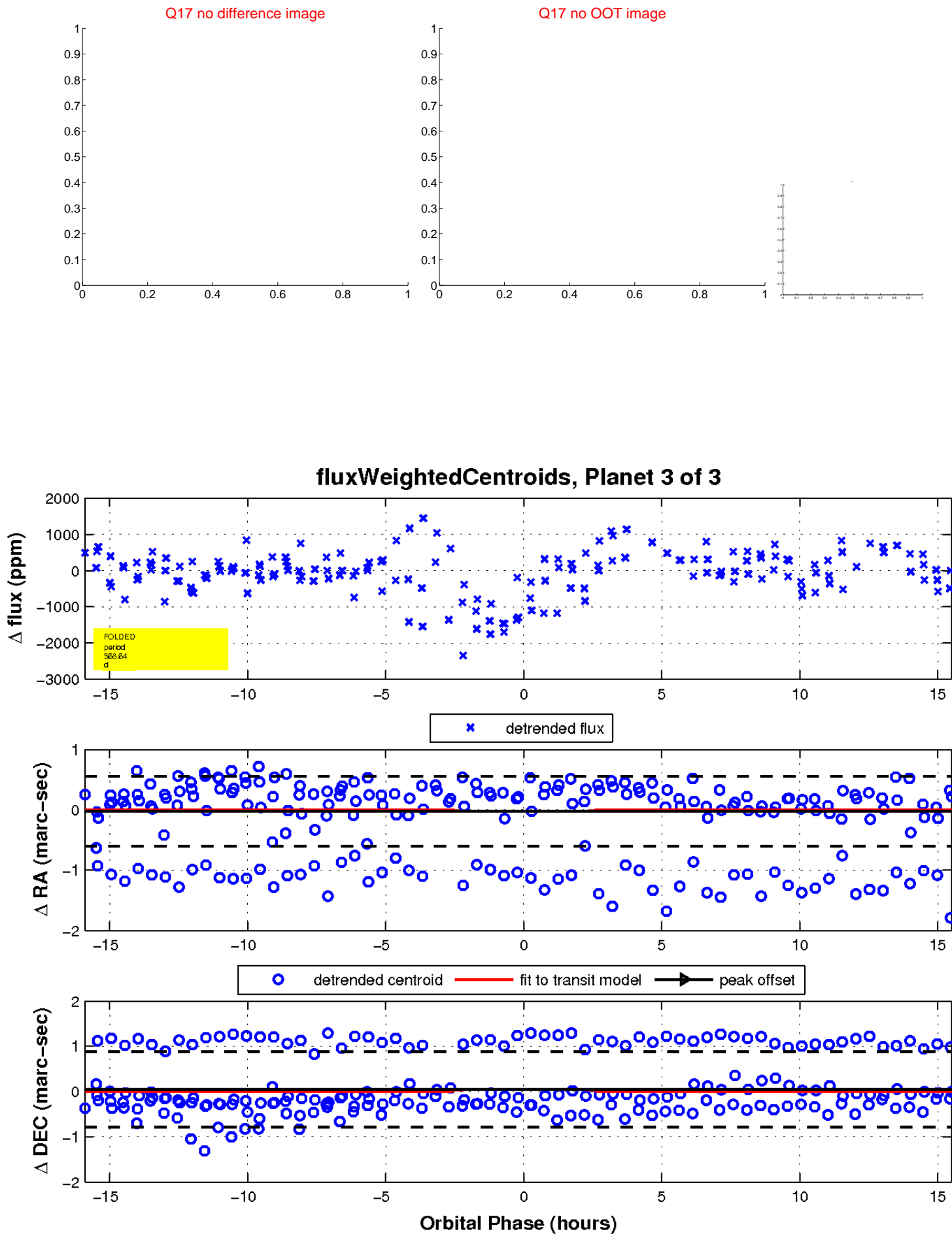
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

