

# KIC 003548900

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003548900-01	OBS	No	2.061431	132.623949	122.7	5.792	9.2	9.6	1.77	7618	2.27	6784.41
003548900-02	OBS	No	6.186587	135.551302	300.9	22.326	9.3	11.6	1.77	7618	3.88	1567.24

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003548900-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
003548900-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—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.

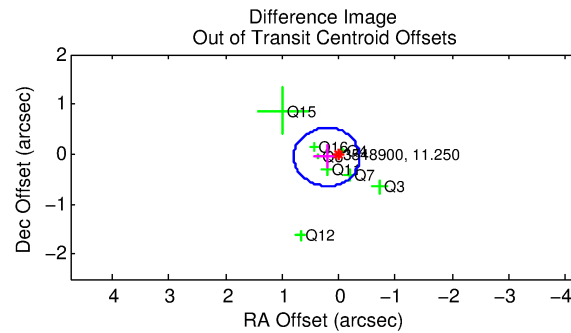
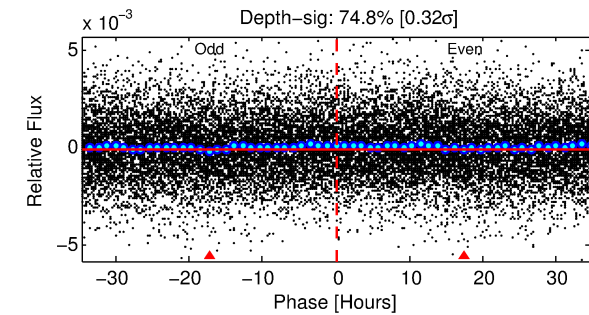
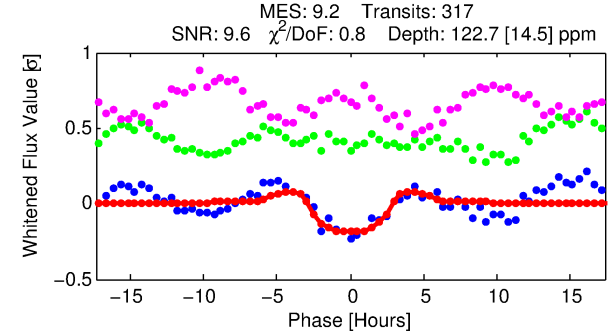
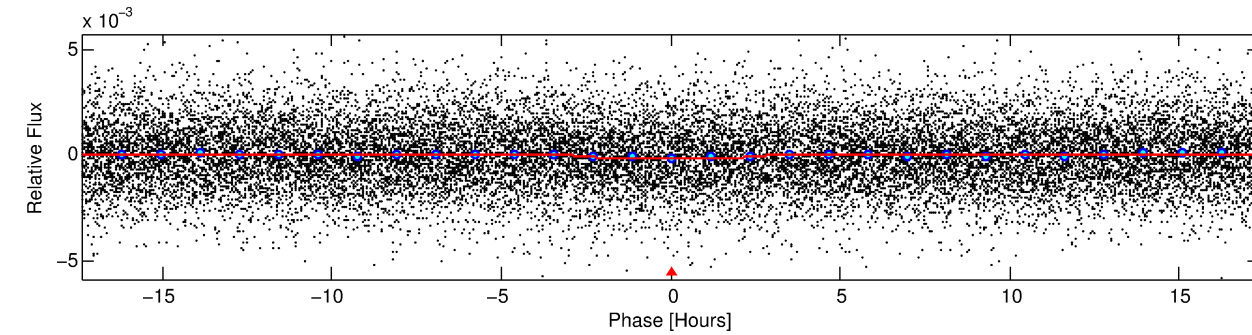
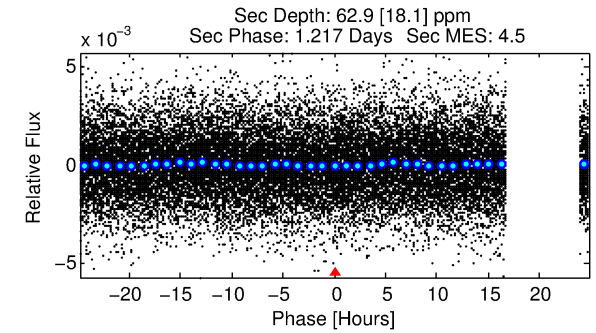
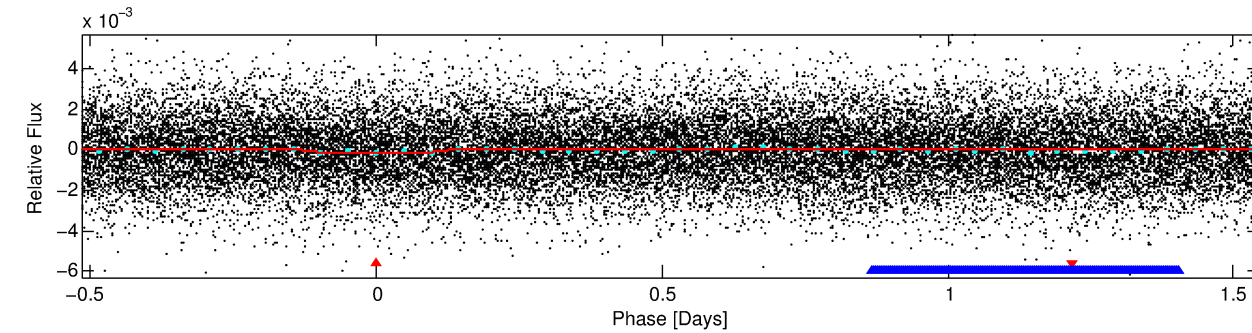
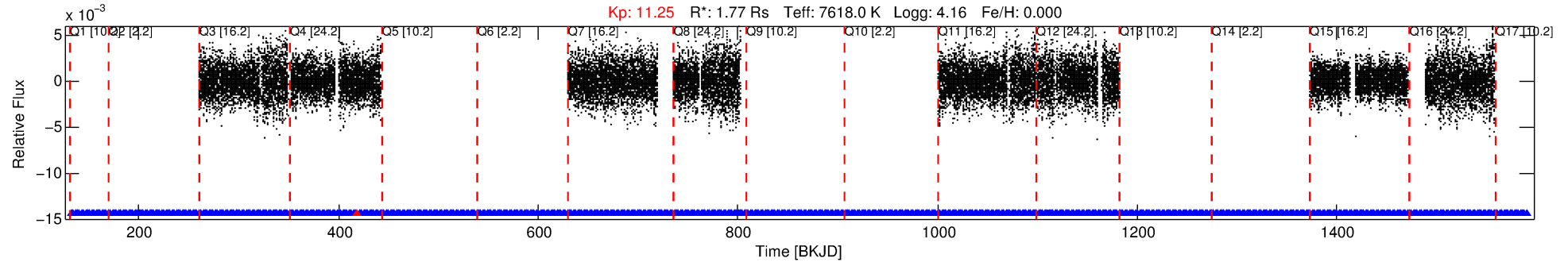
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003548900-01

No Significant Match Found

# DV One-Page Summary

KIC: 3548900 Candidate: 1 of 2 Period: 2.061 d



## DV Fit Results:

Period = 2.06143 [0.00003] d  
Epoch = 132.6239 [0.0093] BKJD  
Rp/R\* = 0.0118 [0.0062]  
a/R\* = 1.55 [3.16]  
b = 0.90 [0.71]  
Seff = 6784.41 [2731.88]  
Teq = 2314 [233] K  
Rp = 2.27 [1.38] Re  
a = 0.0373 [0.0093] AU  
Ag = 9.34 [10.77] [0.77σ]  
Teffp = 6255 [1737] K [2.25σ]

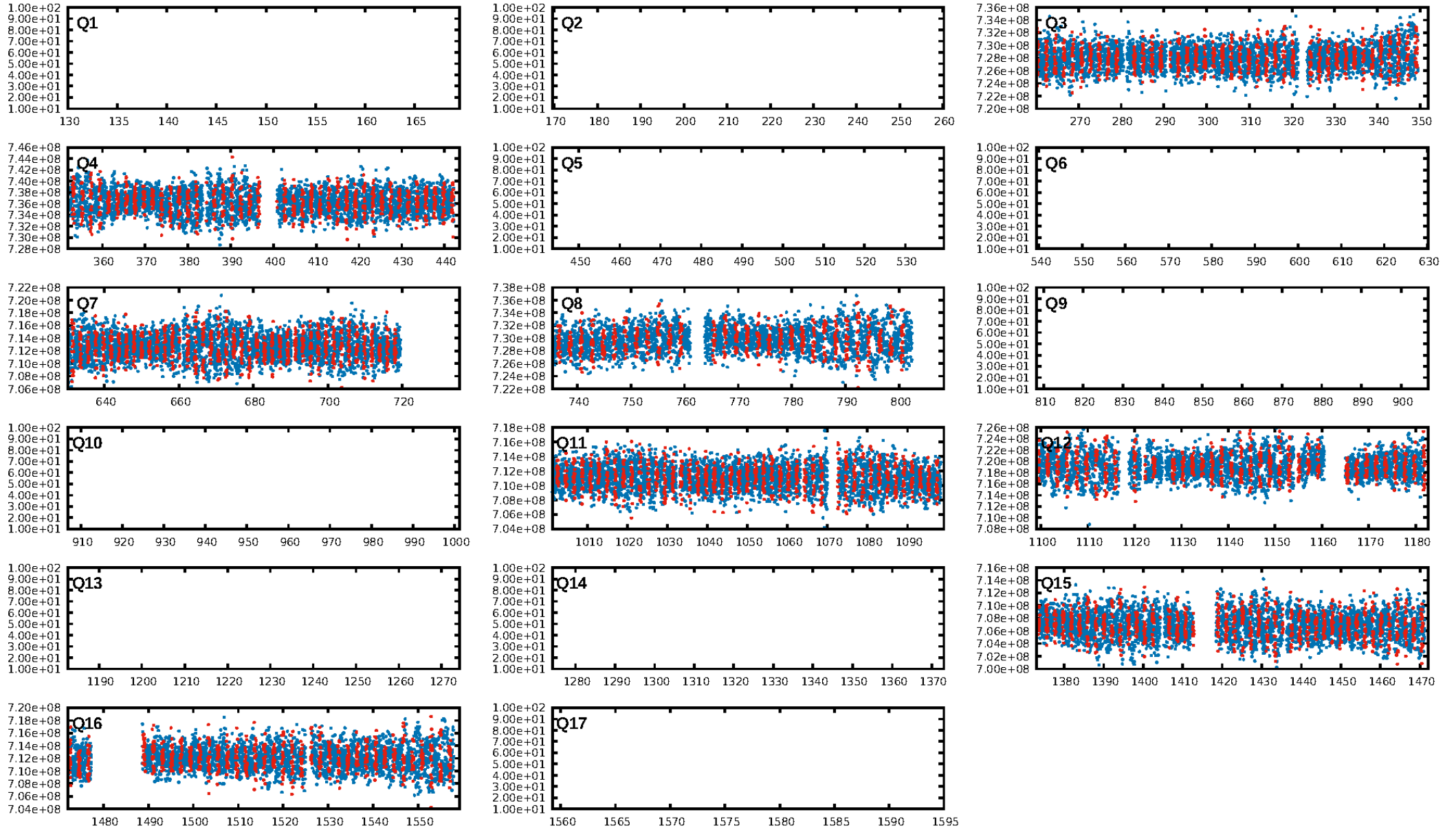
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [4.29σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.00e-23  
RollingBand-fgt: 1.00 [316/317]  
GhostDiagnostic-chr: 1.074  
Centroid-sig: 0.0%  
Centroid-so: 0.351 arcsec [2.06σ]  
OotOffset-rm: 0.222 arcsec [1.14σ]  
KicOffset-rm: 0.314 arcsec [1.54σ]  
OotOffset-st: 0/4/4/0 [8]  
KicOffset-st: 0/4/4/0 [8]  
DiffImageQuality-fgm: 1.00 [8/8]  
DiffImageOverlap-fno: 1.00 [8/8]

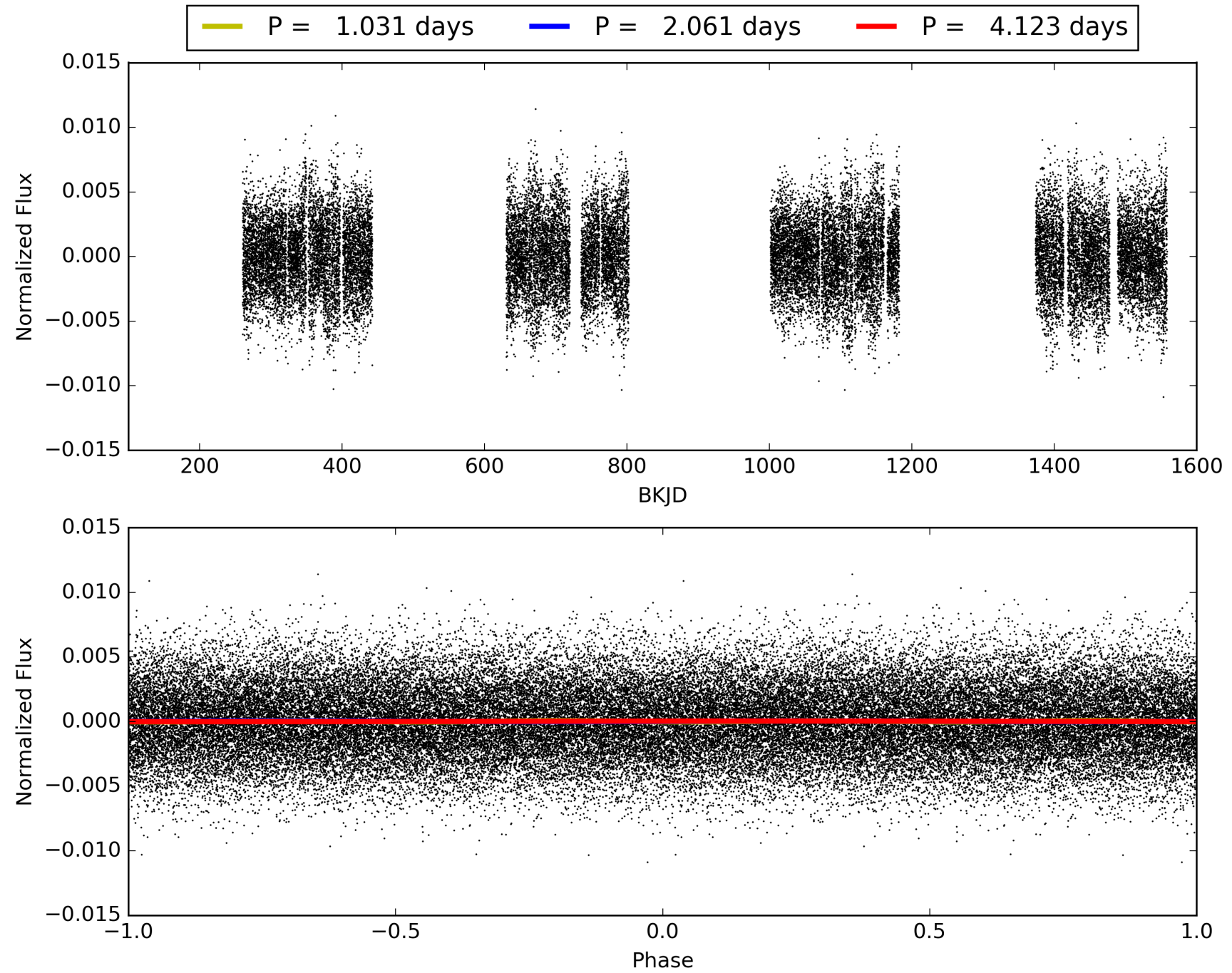
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:08:47 Z

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

# TCE 003548900-01, PDC Light Curves

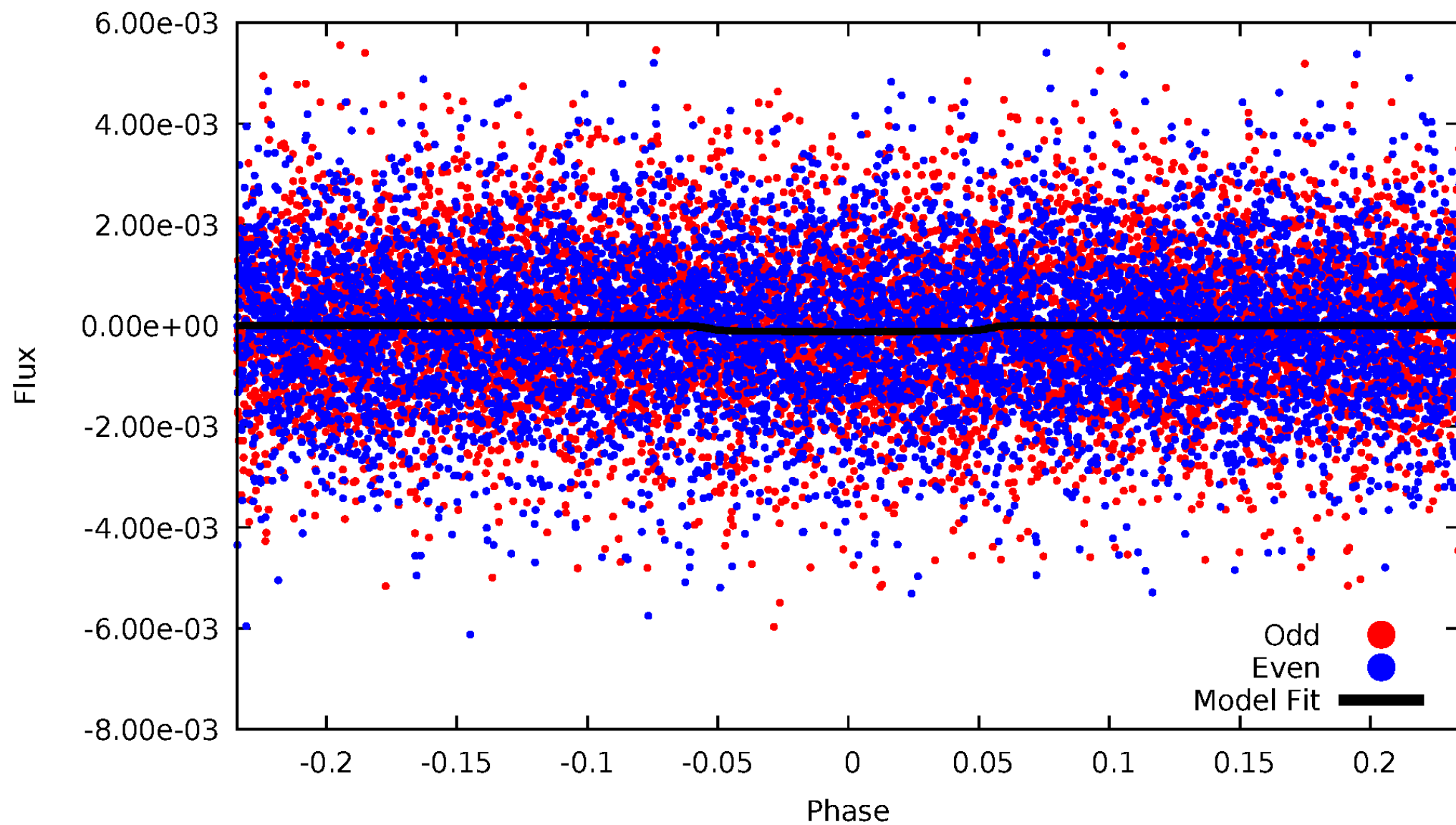


TCE 003548900-01



# DV Odd/Even

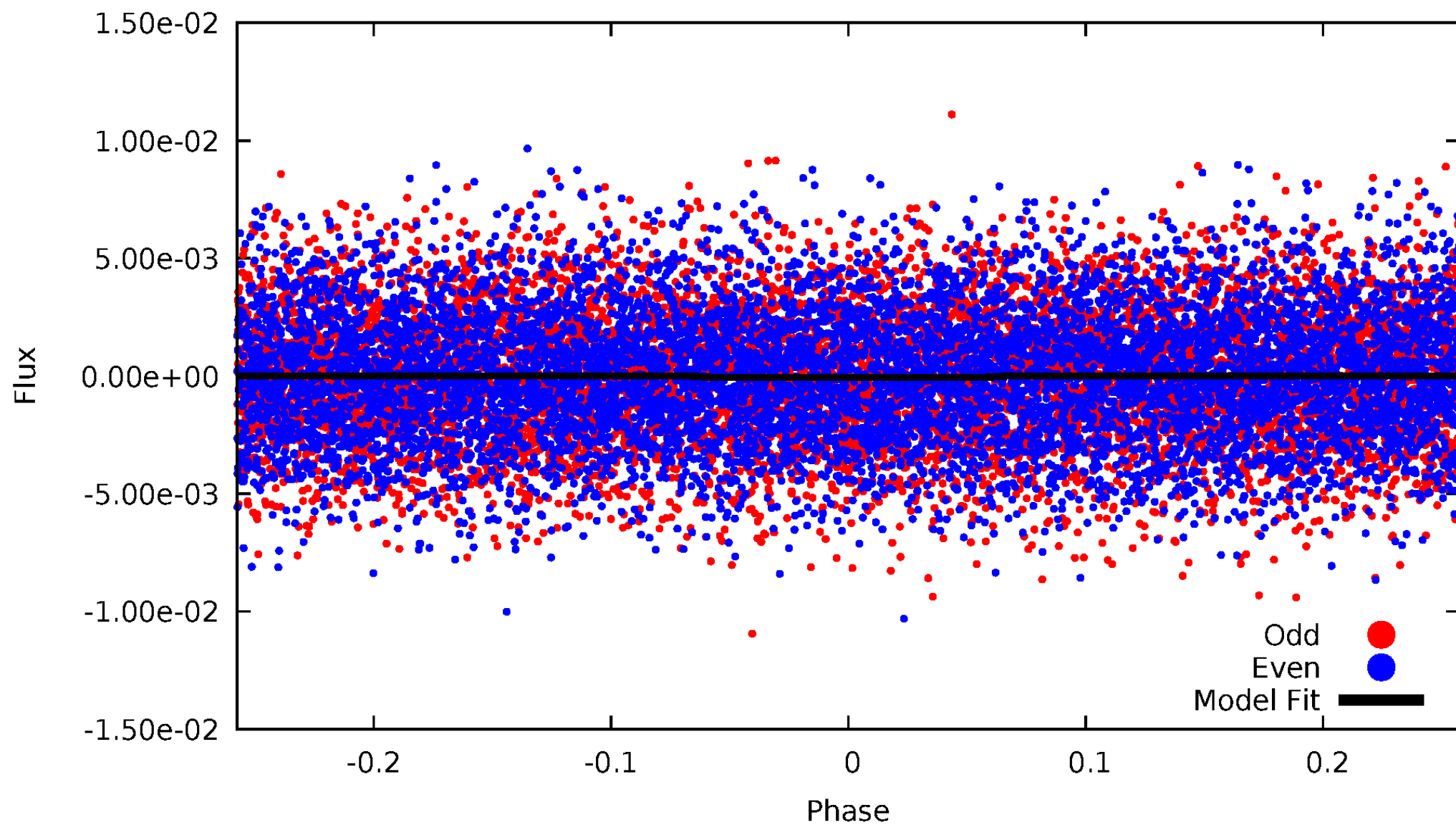
TCE 003548900-01



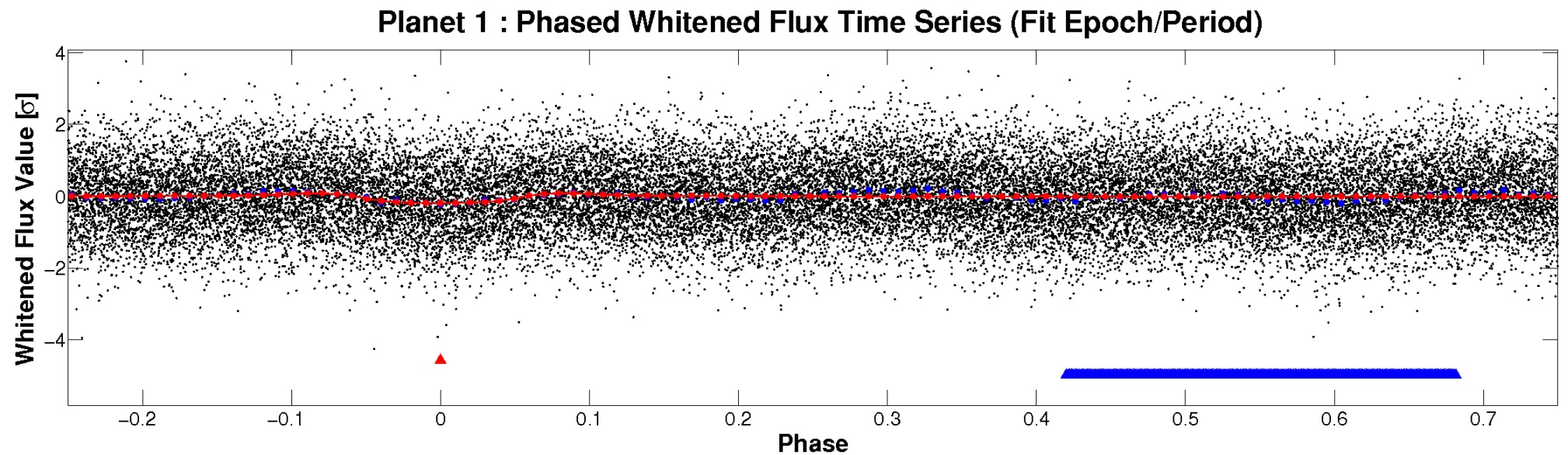
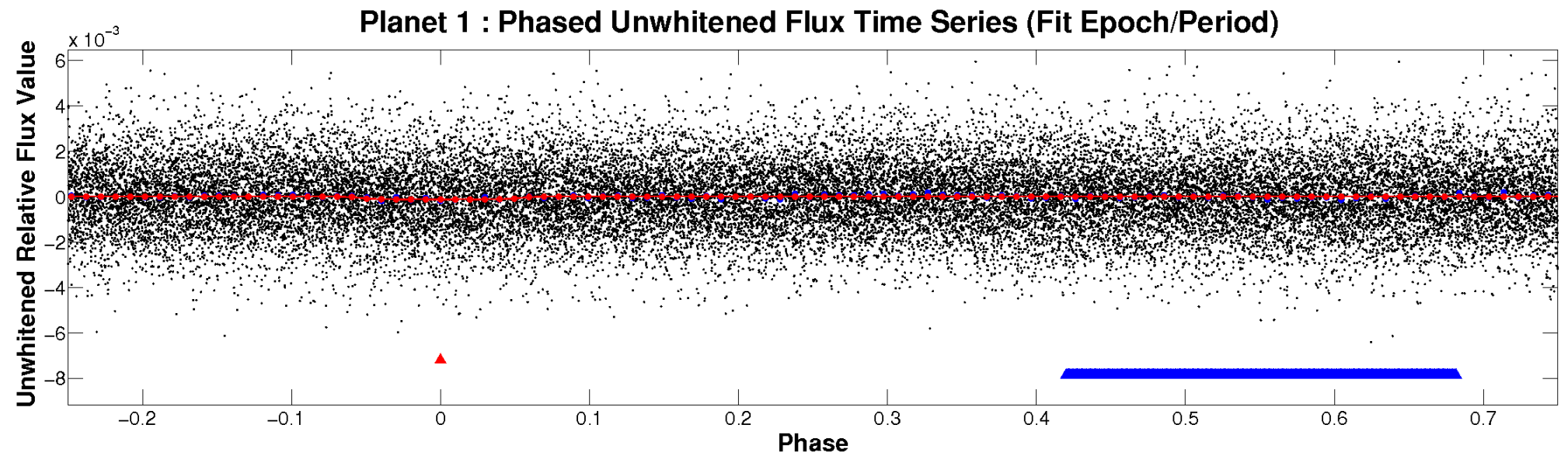


# ALT Odd/Even

TCE 003548900-01

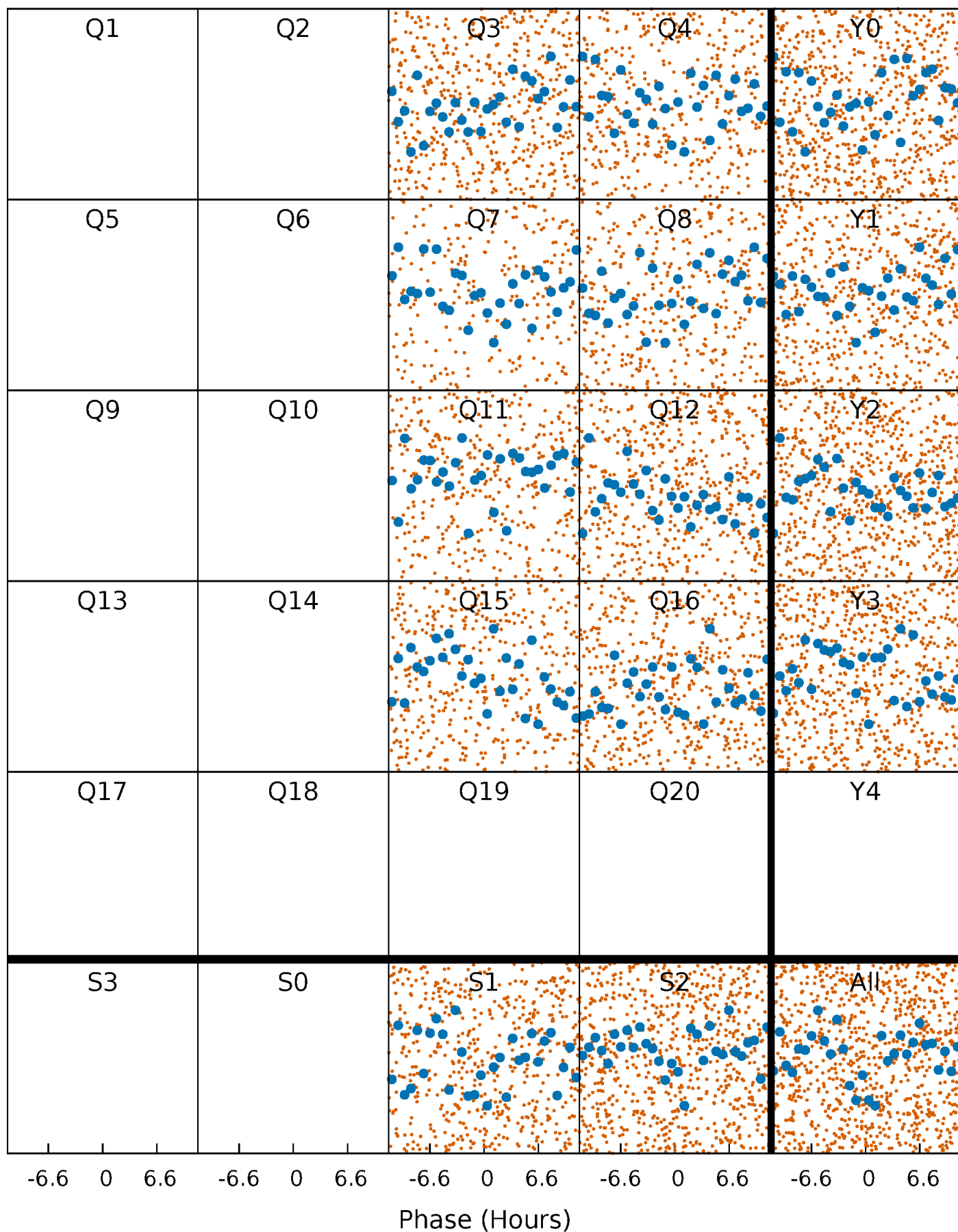


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

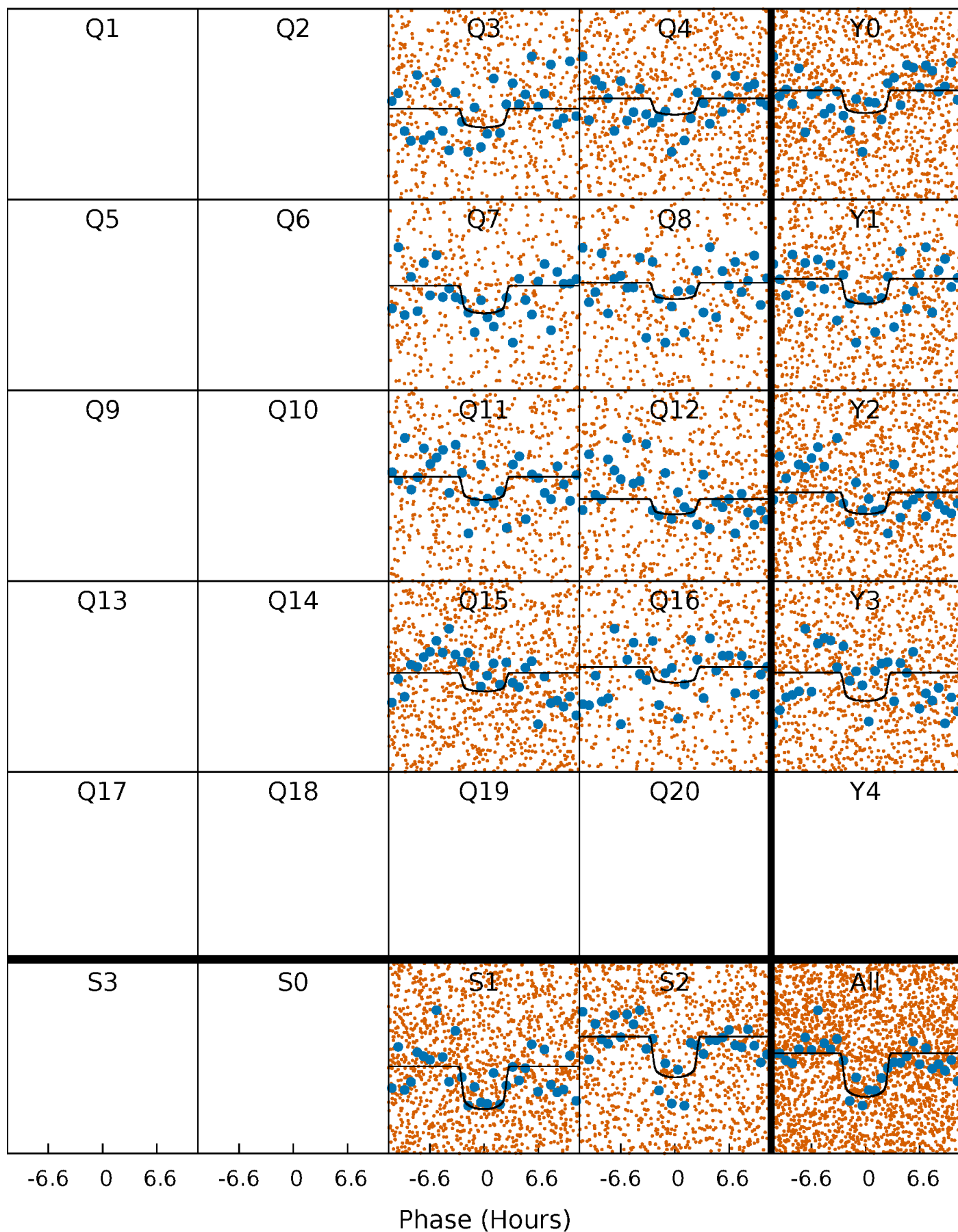
TCE 003548900-01 P= 2.061431 Days  $T_0=132.623949$  (BKJD)





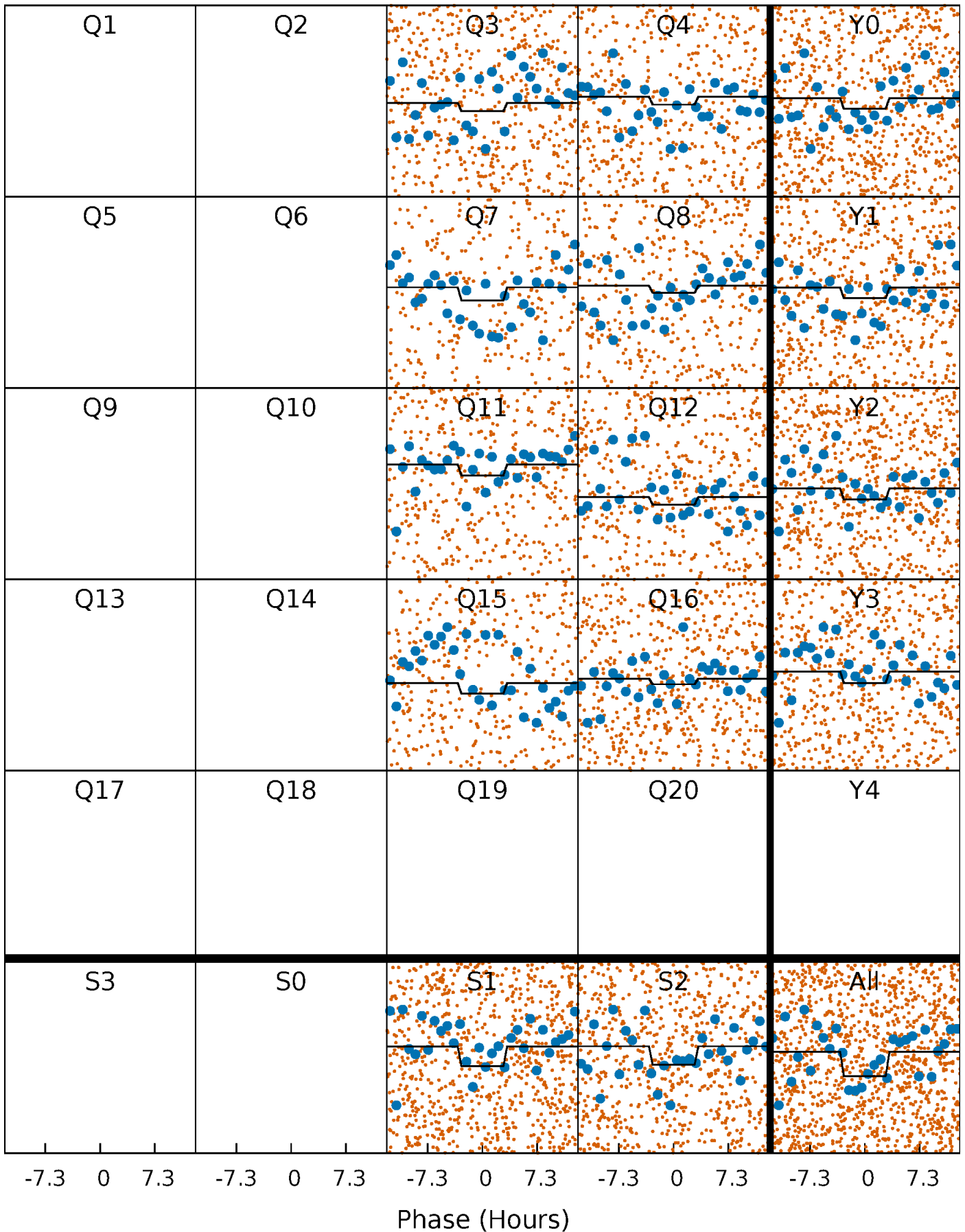
# DV Quarter-Phased Transit Curves

TCE 003548900-01   P= 2.061431 Days    $T_0=132.623949$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

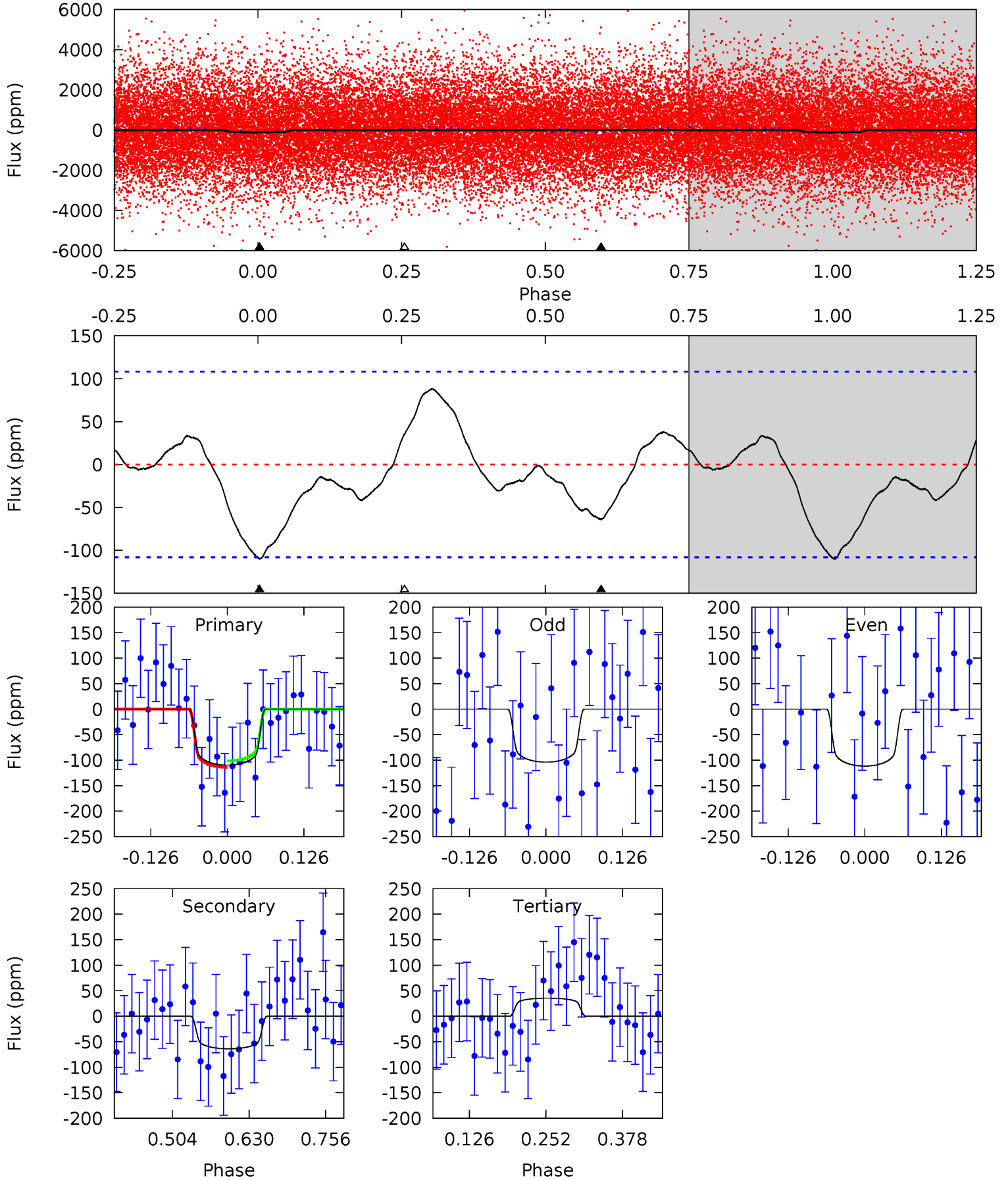
TCE 003548900-01   P= 2.061494 Days    $T_0=132.605532$  (BKJD)



# DV Model-Shift Uniqueness Test

003548900-01, P = 2.061431 Days, E = 132.623949 Days

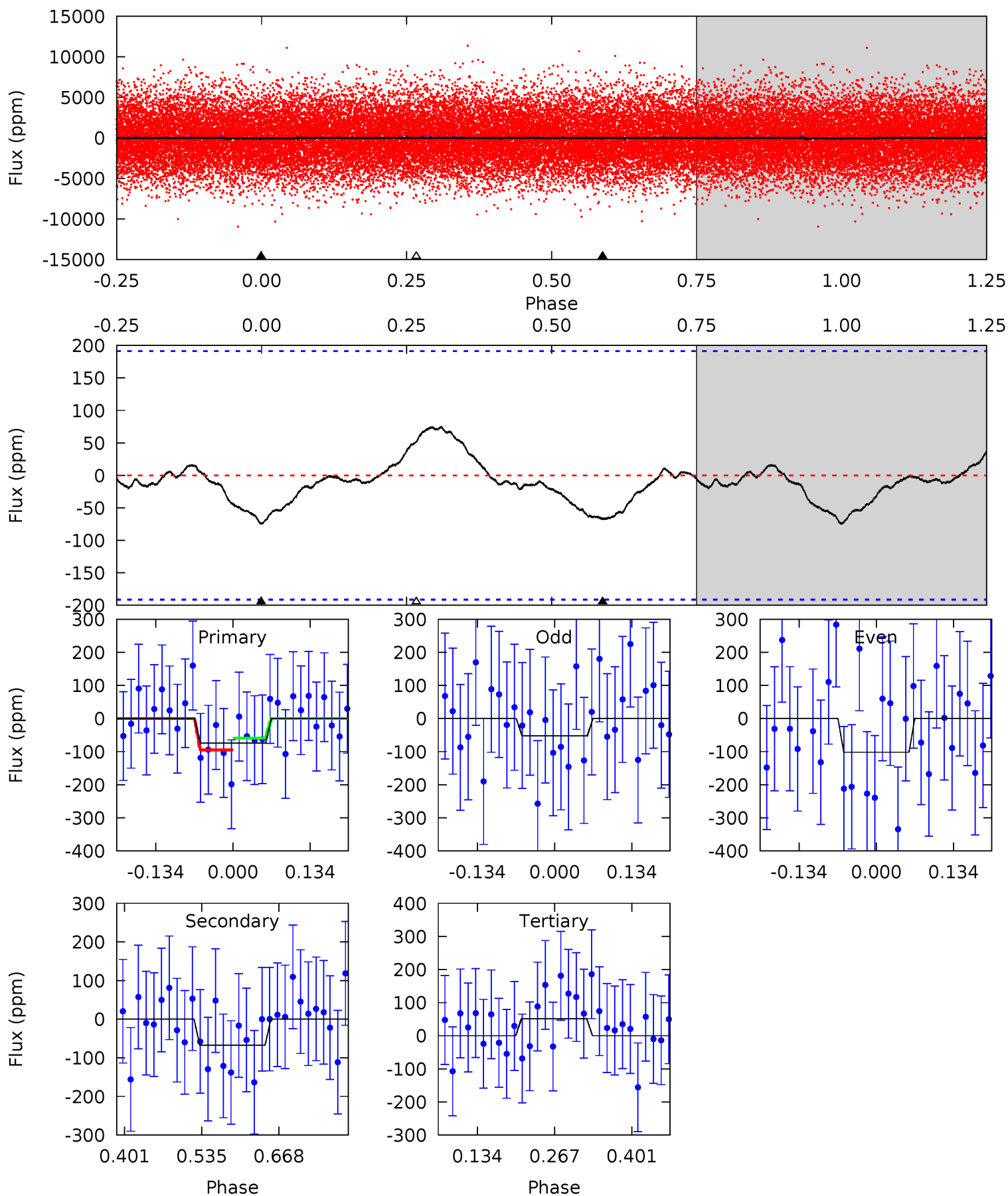
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.58	2.66	-1.48	0	4.52	1.53	1.49	6.06	4.58	4.14	2.66	0.16	1.29	0.45	0.26



# Alt Model-Shift Uniqueness Test

003548900-01, P = 2.061494 Days, E = 132.605532 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.75	1.59	-1.21	0	4.50	1.50	0.69	2.96	1.75	2.80	1.59	0.59	0.97	0.50	0.42



### Stellar Parameters For KIC 003548900

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7618^{+211}_{-343}$	$4.155^{+0.105}_{-0.195}$	$0.000^{+0.200}_{-0.350}$	$1.771^{+0.532}_{-0.310}$	$1.634^{+0.210}_{-0.257}$	$0.414^{+0.230}_{-0.199}$
	+3%/-5%	+3%/-5%	+inf%/-inf%	+30%/-18%	+13%/-16%	+56%/-48%
Source	KIC0	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 003548900-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-64 \pm 24$	$2.40^{+1.26}_{-1.20}$	$3260^{+245}_{-207}$	$5946^{+2749}_{-1225}$	$8.212^{+24.462}_{-5.344}$
Alt.	$-67 \pm 42$	$1.69^{+1.28}_{-1.01}$	$3261^{+235}_{-195}$	$7169^{+7404}_{-2158}$	$16^{+99}_{-12}$

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



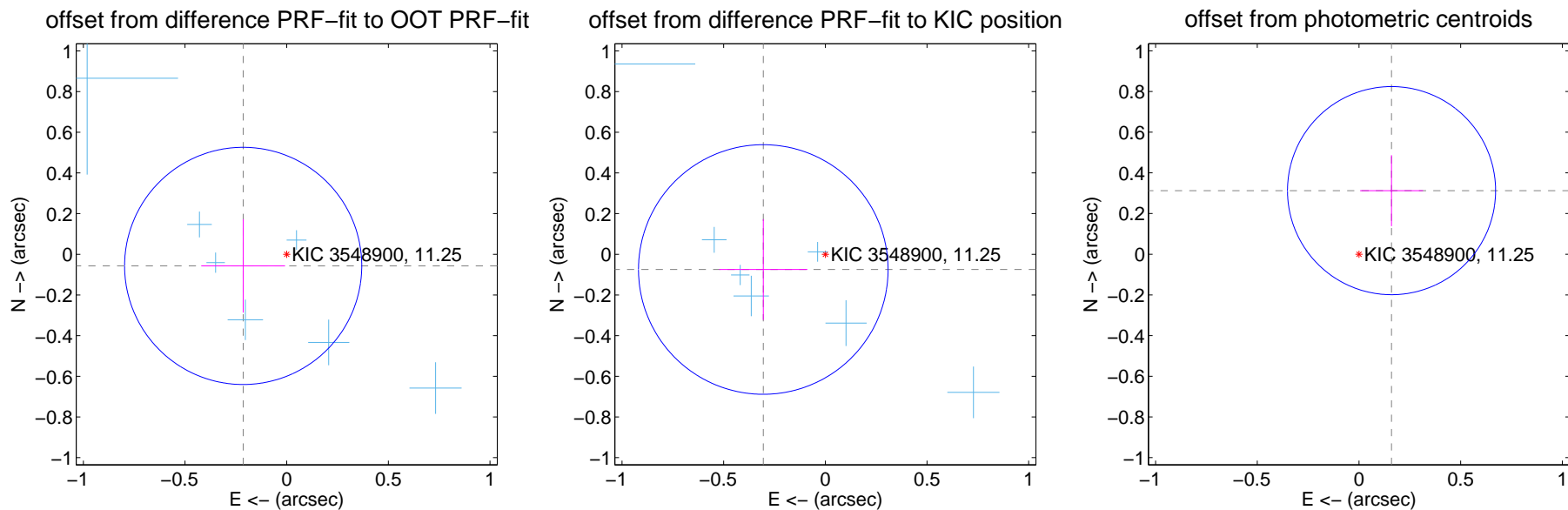
## DV Centroid Data

Supplemental centroid analysis for 003548900-01. **Kepler magnitude: 11.25**. Transit SNR 9.60

There are 8 quarters with good PRF difference image offsets

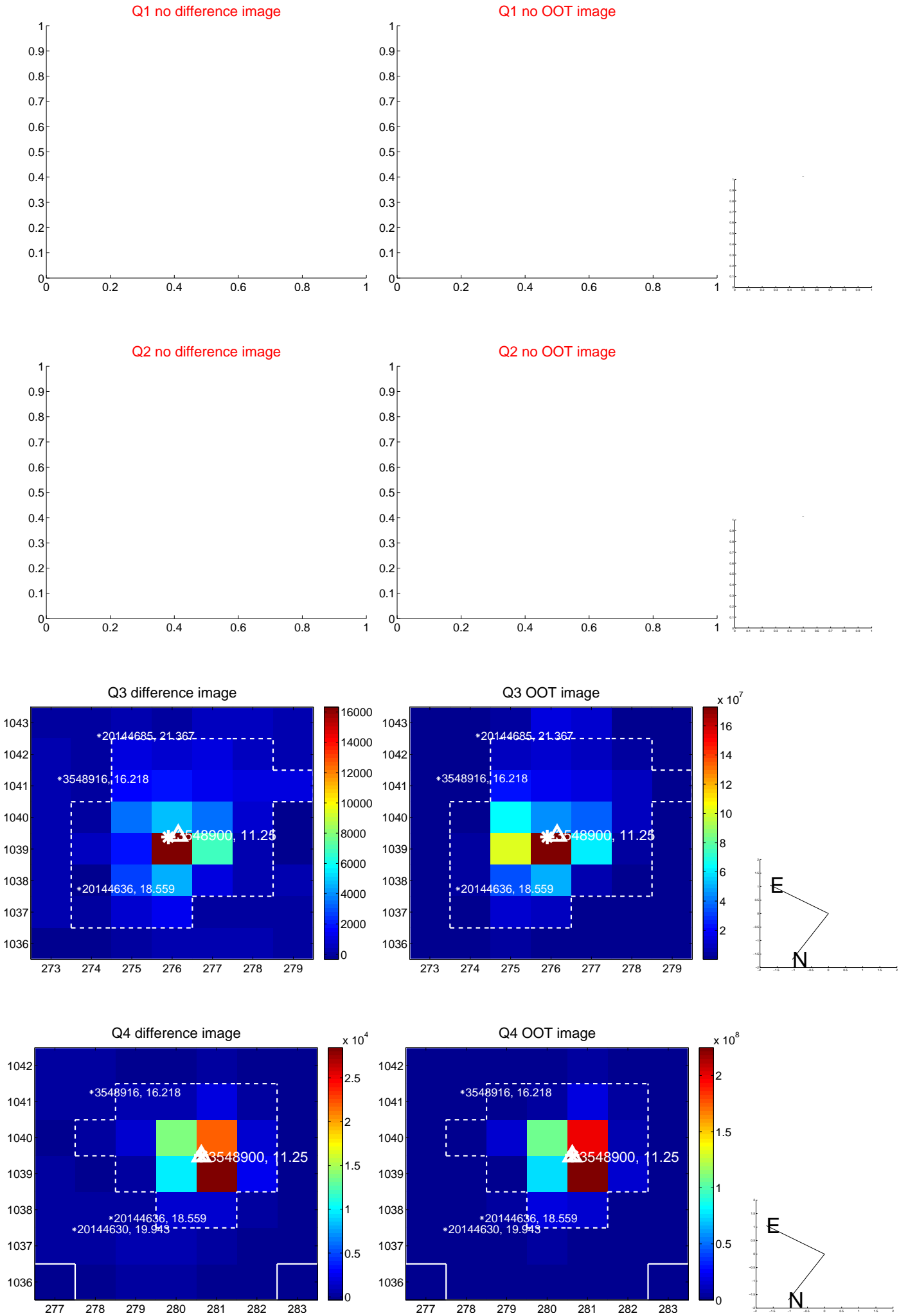
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.222 \pm 0.194$	1.14	$0.214 \pm 0.206$	$-0.057 \pm 0.230$
PRF-fit source offset from KIC position	$0.314 \pm 0.205$	1.54	$0.305 \pm 0.217$	$-0.075 \pm 0.248$
photometric centroid source offset	$0.35 \pm 0.17$	2.06	$-0.16 \pm 0.15$	$0.31 \pm 0.17$



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



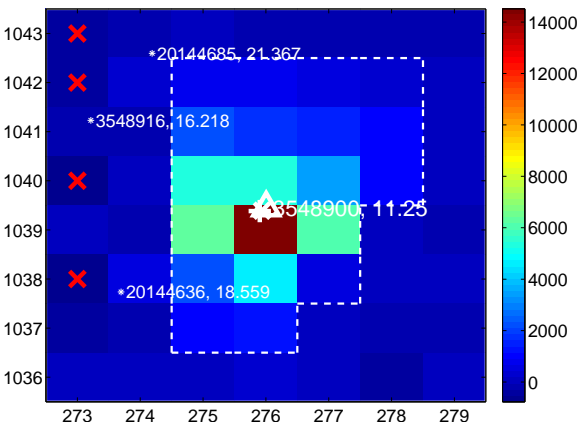
Q6 no difference image



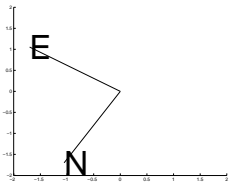
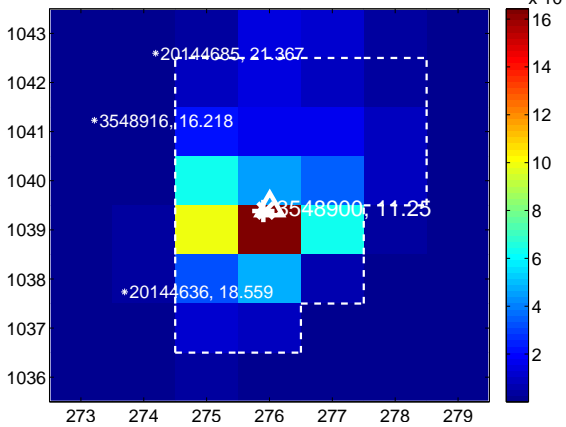
Q6 no OOT image



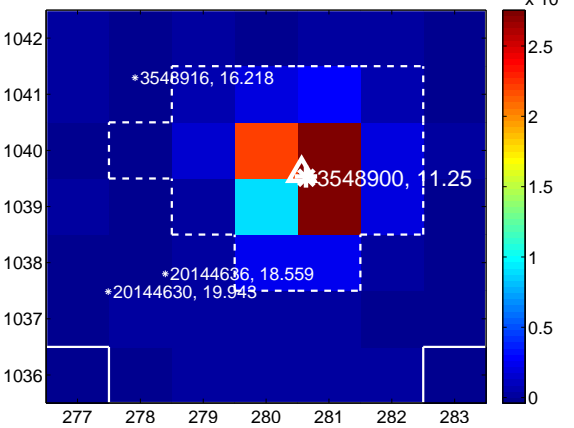
Q7 difference image



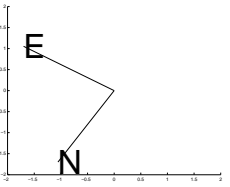
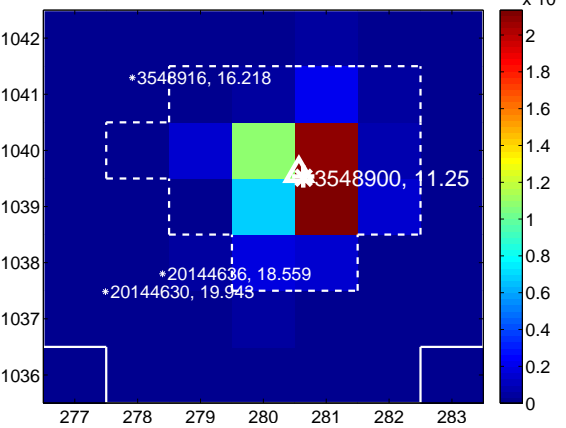
Q7 OOT image



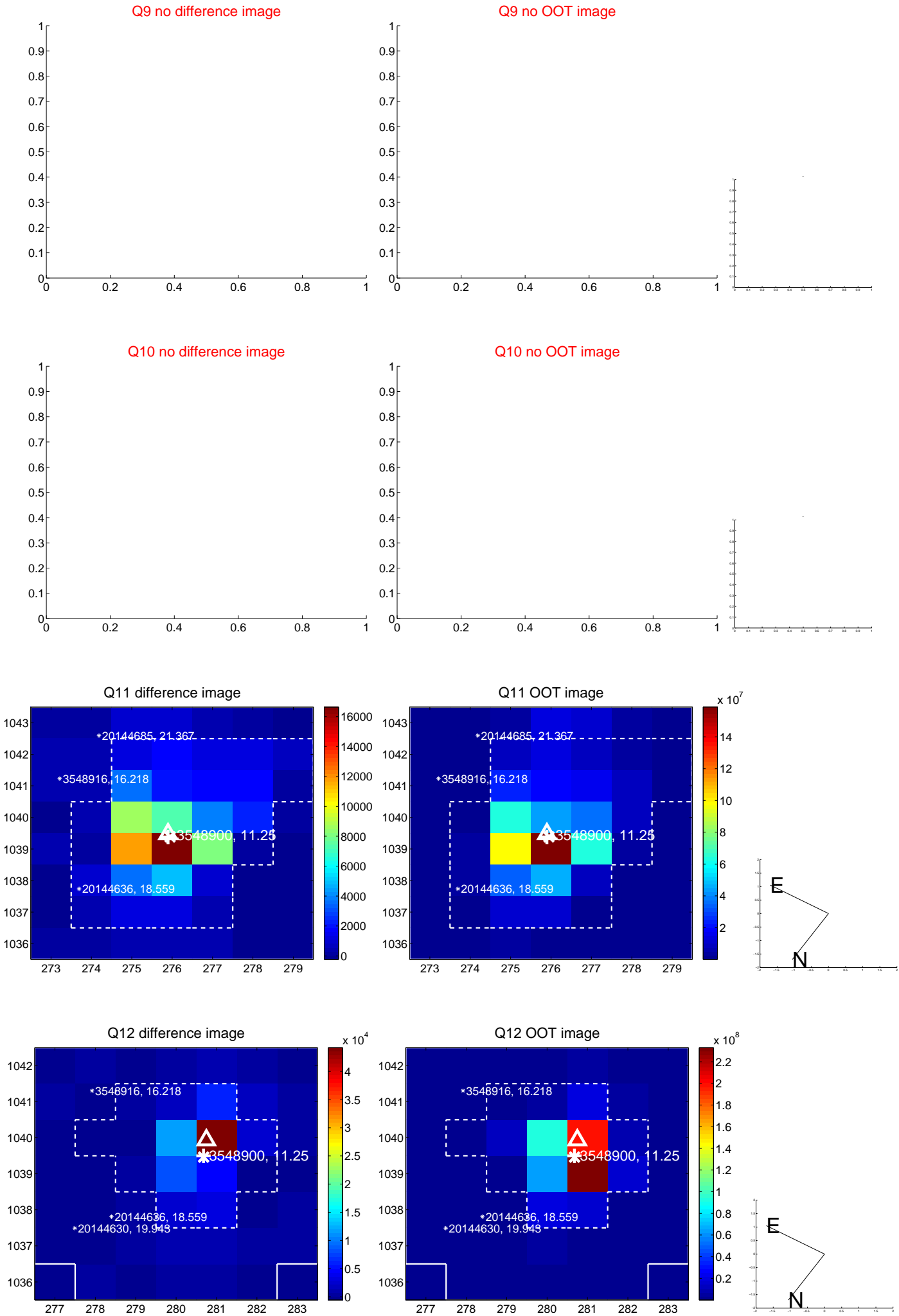
Q8 difference image



Q8 OOT image

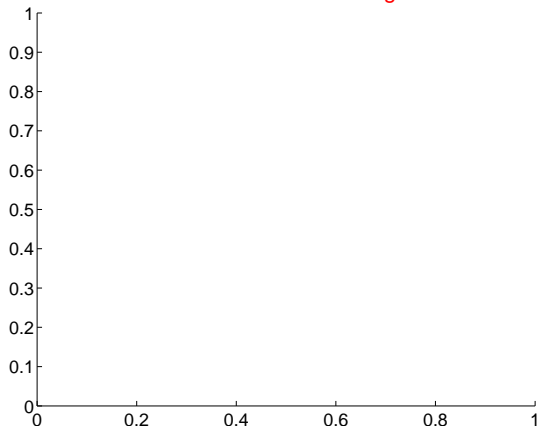


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

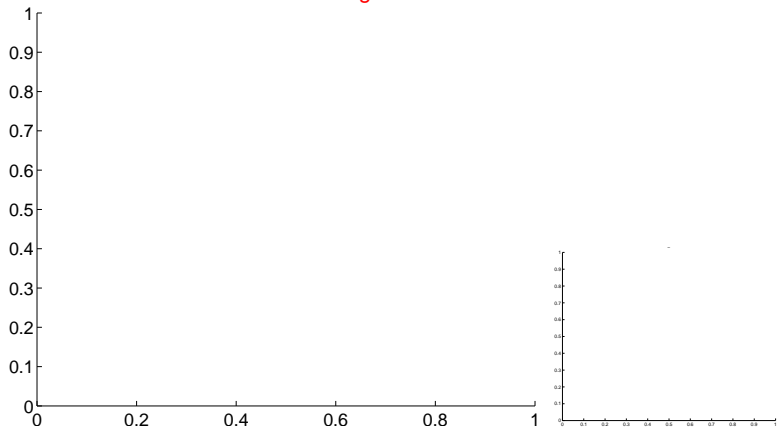


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

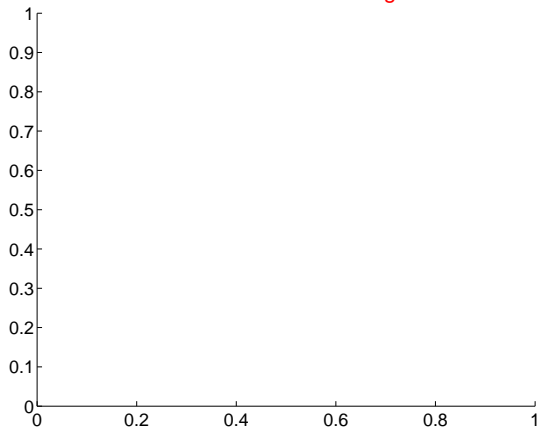
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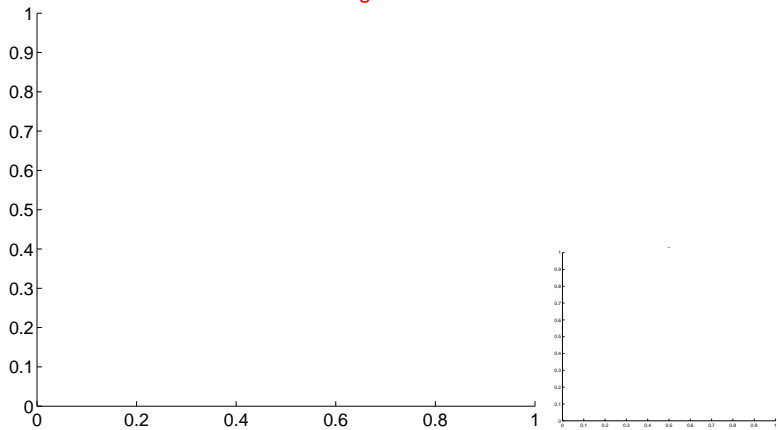
Q13 no OOT image



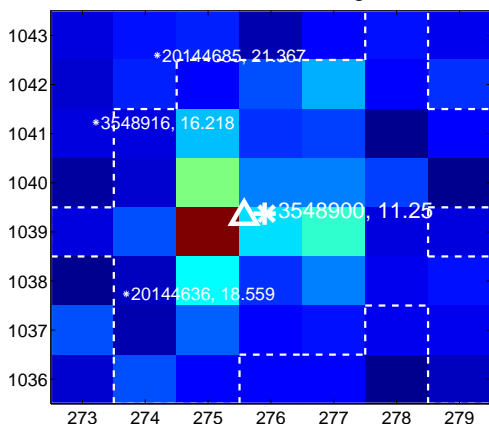
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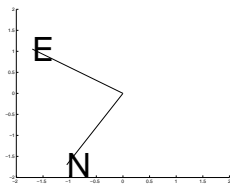
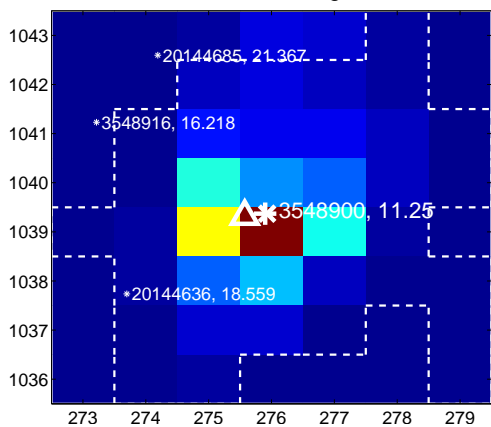
Q14 no OOT image



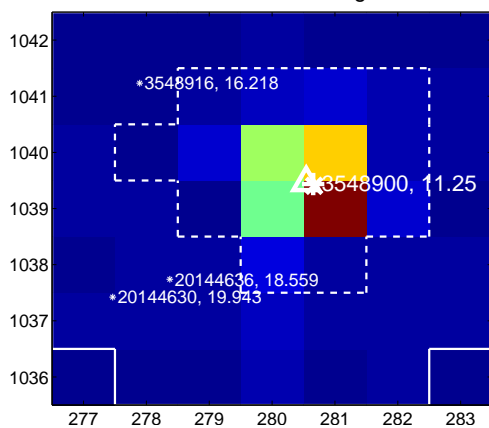
Q15 difference image



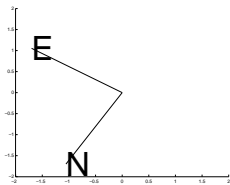
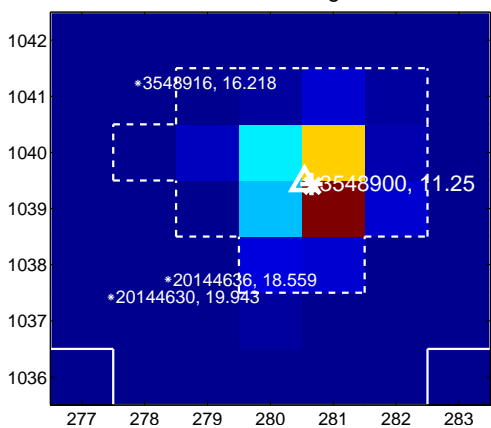
Q15 OOT image



Q16 difference image

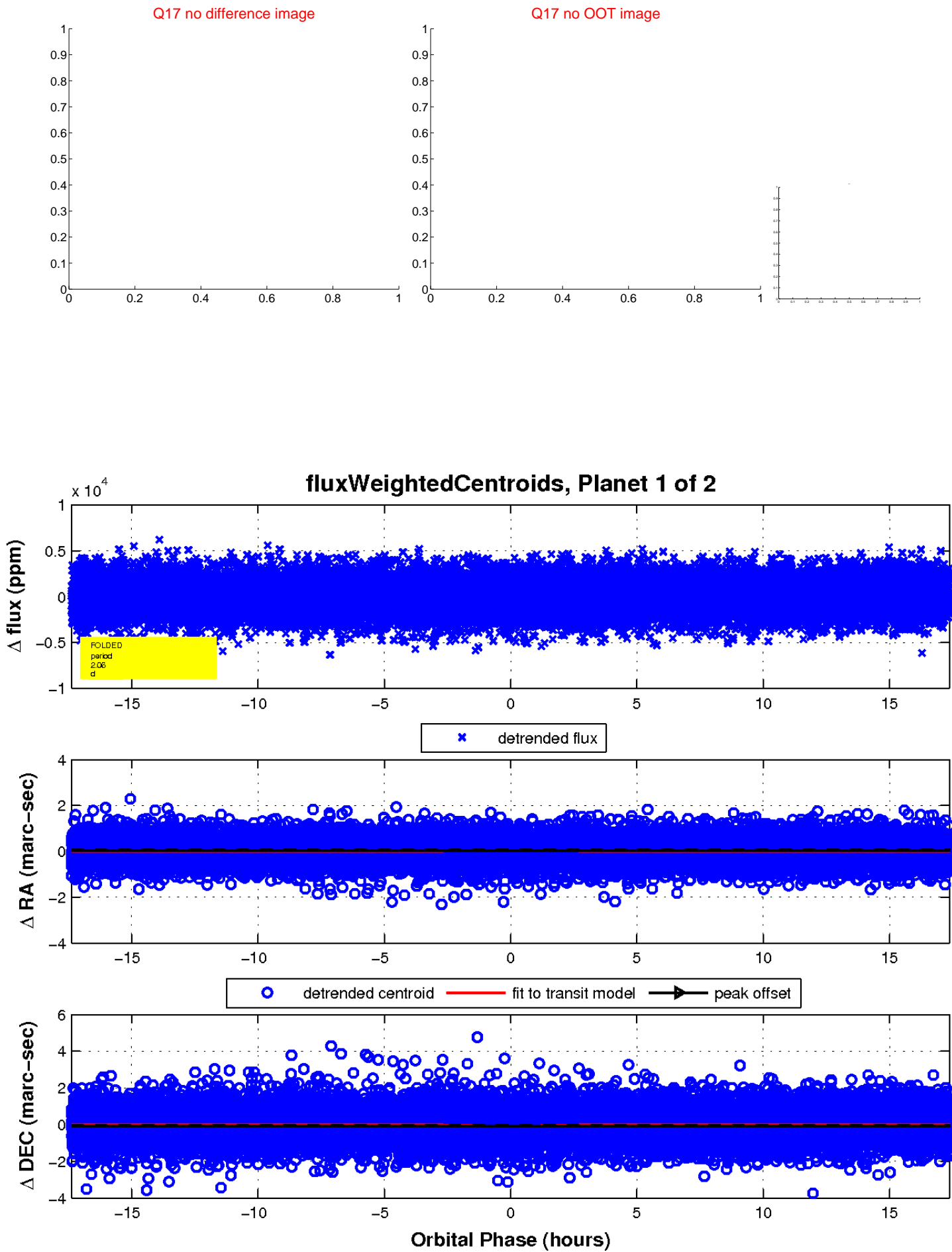


Q16 OOT image



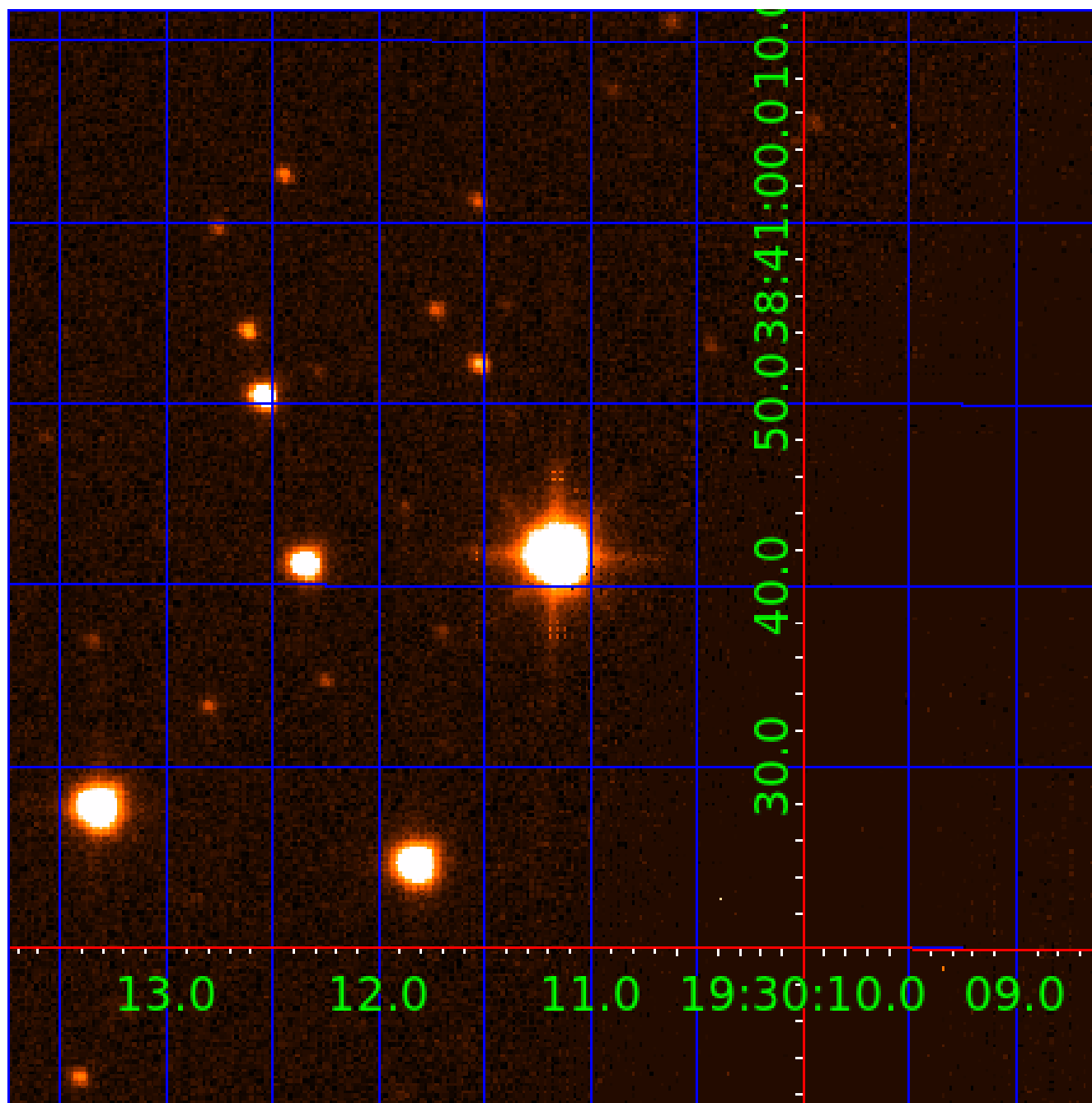


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 003548900

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003548900-01	OBS	No	2.061431	132.623949	122.7	5.792	9.2	9.6	1.77	7618	2.27	6784.41
003548900-02	OBS	No	6.186587	135.551302	300.9	22.326	9.3	11.6	1.77	7618	3.88	1567.24

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003548900-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
003548900-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—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.

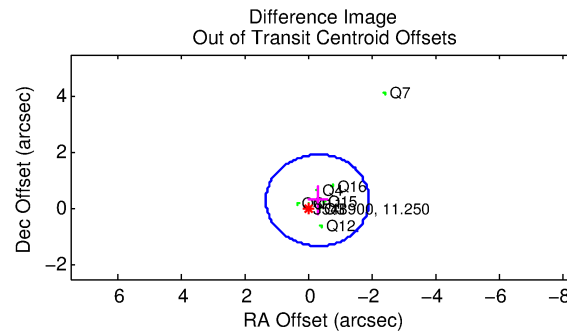
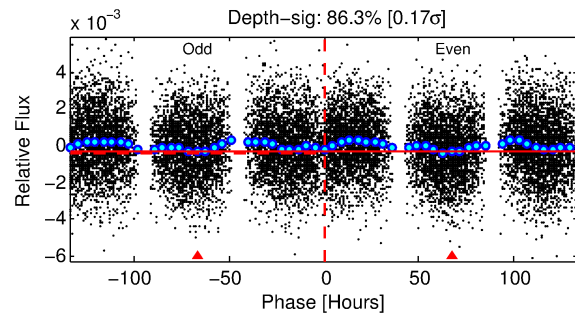
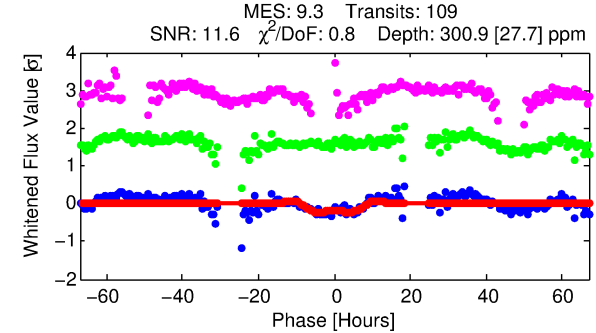
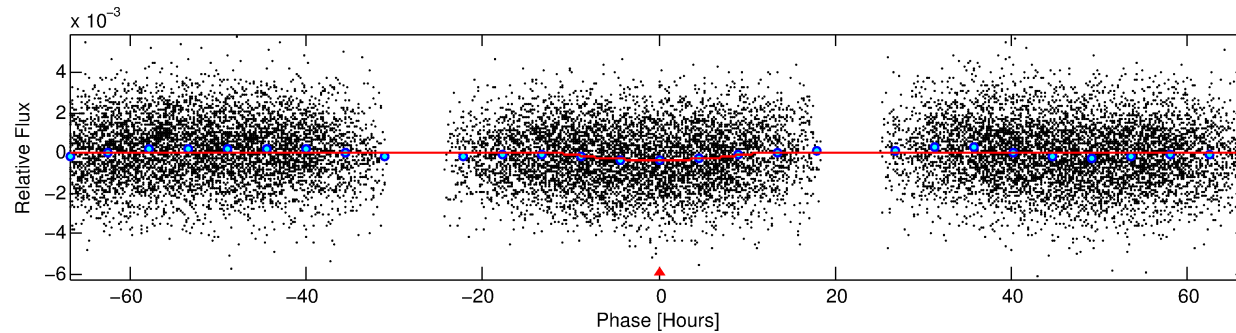
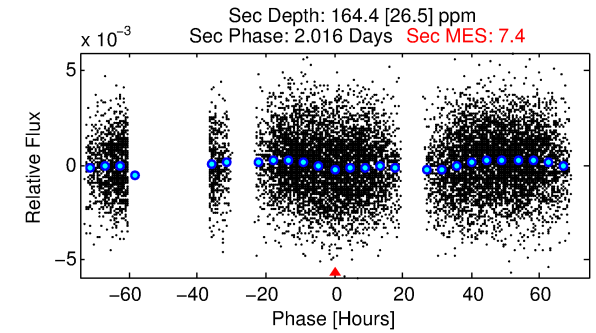
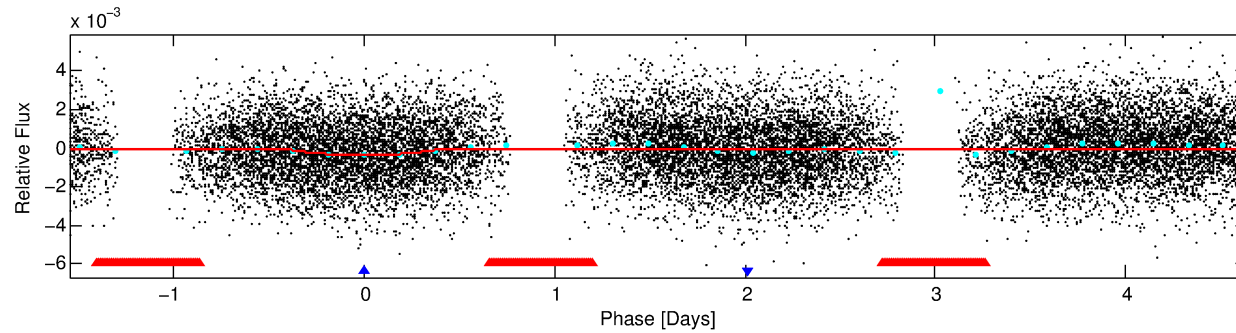
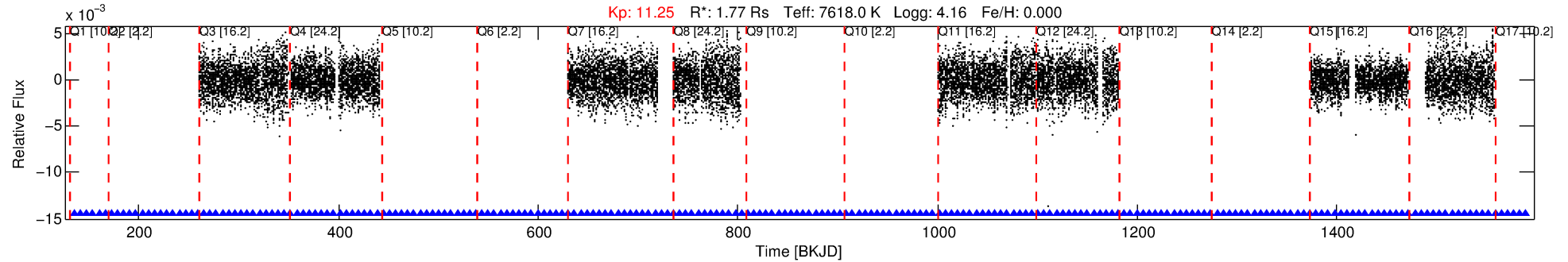
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003548900-02

No Significant Match Found

# DV One-Page Summary

KIC: 3548900 Candidate: 2 of 2 Period: 6.187 d



## DV Fit Results:

Period = 6.18659 [0.00024] d  
Epoch = 135.5513 [0.0318] BKJD  
Rp/R\* = 0.0201 [0.0010]  
a/R\* = 1.19 [0.03]  
b = 0.97 [0.01]  
Seff = 1567.24 [631.08]  
Teq = 1604 [162] K  
Rp = 3.88 [1.18] Re  
a = 0.0777 [0.0194] AU  
Ag = 36.18 [14.76] [2.38σ]  
**Teffp = 6084 [400] K [10.38σ]**

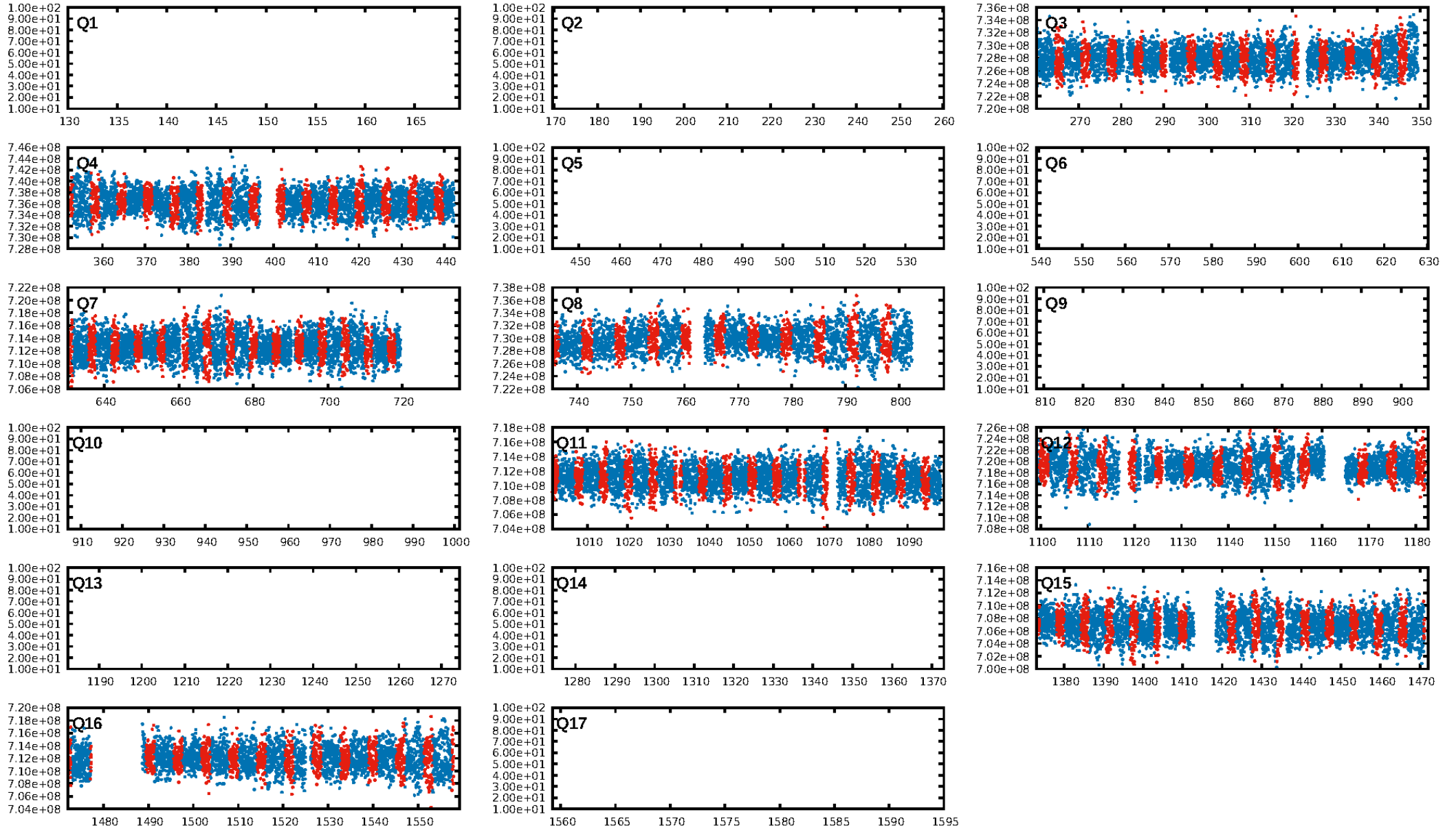
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.29σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.87e-21  
RollingBand-fgt: 1.00 [109/109]  
GhostDiagnostic-chr: 1.925  
Centroid-sig: 0.4%  
Centroid-so: 0.124 arcsec [0.97σ]  
OotOffset-rm: 0.410 arcsec [0.76σ]  
OotOffset-st: 0/4/4/0 [8]  
KicOffset-rm: 0.357 arcsec [0.69σ]  
KicOffset-st: 0/4/4/0 [8]  
DiffImageQuality-fgm: 0.88 [7/8]  
DiffImageOverlap-fno: 0.00 [0/8]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:08:56 Z

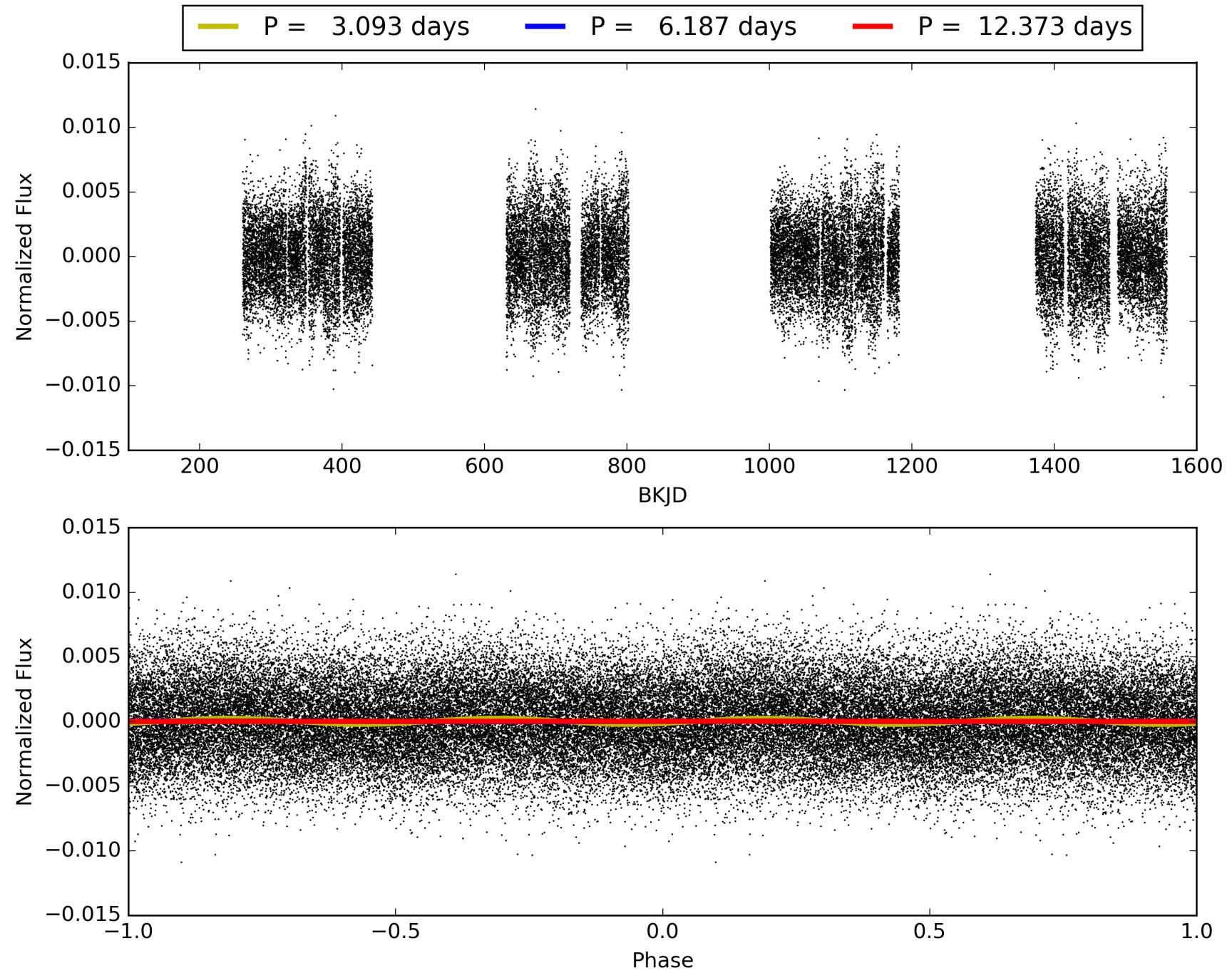
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003548900-02, PDC Light Curves



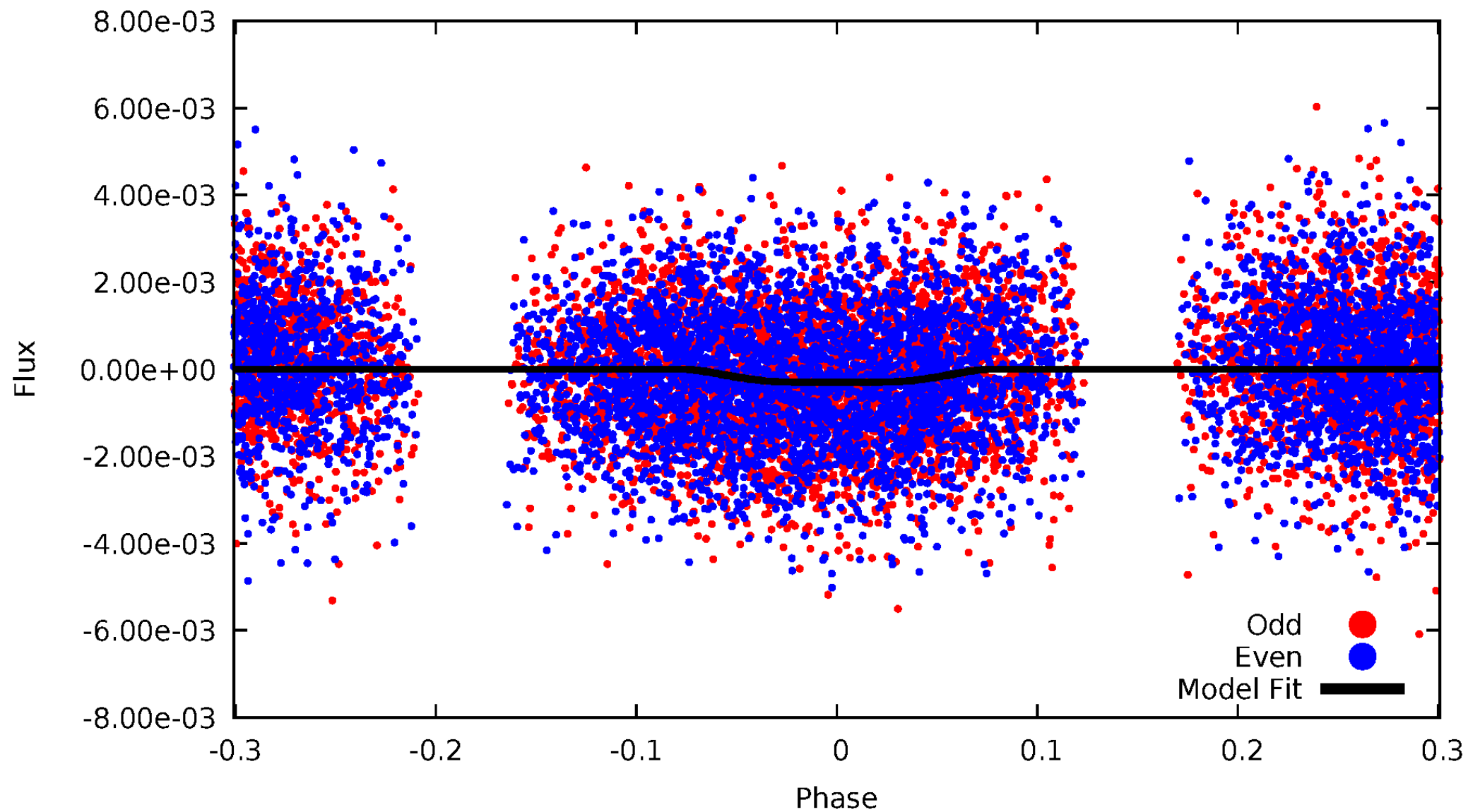


TCE 003548900-02



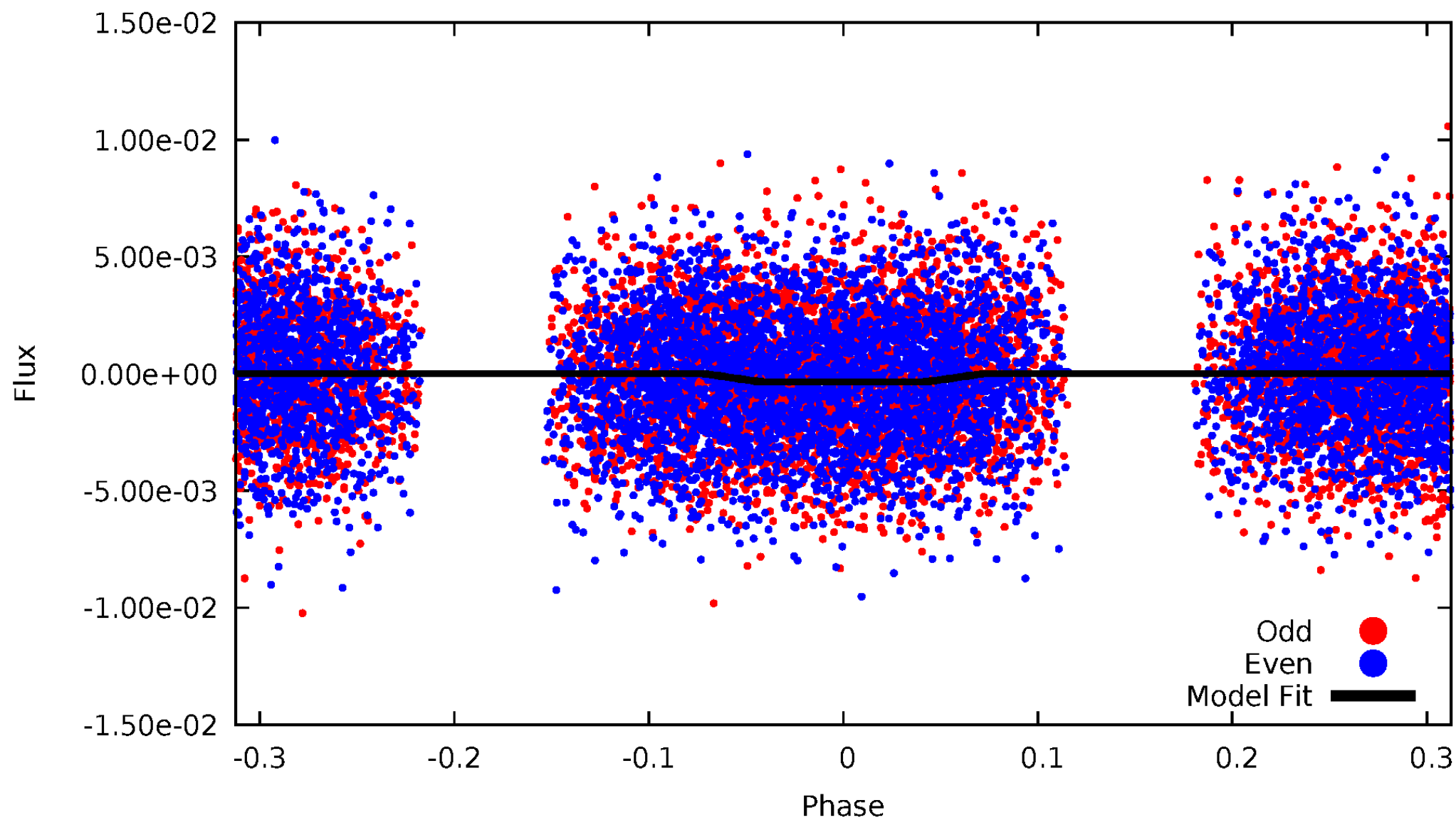
DV Odd/Even

TCE 003548900-02



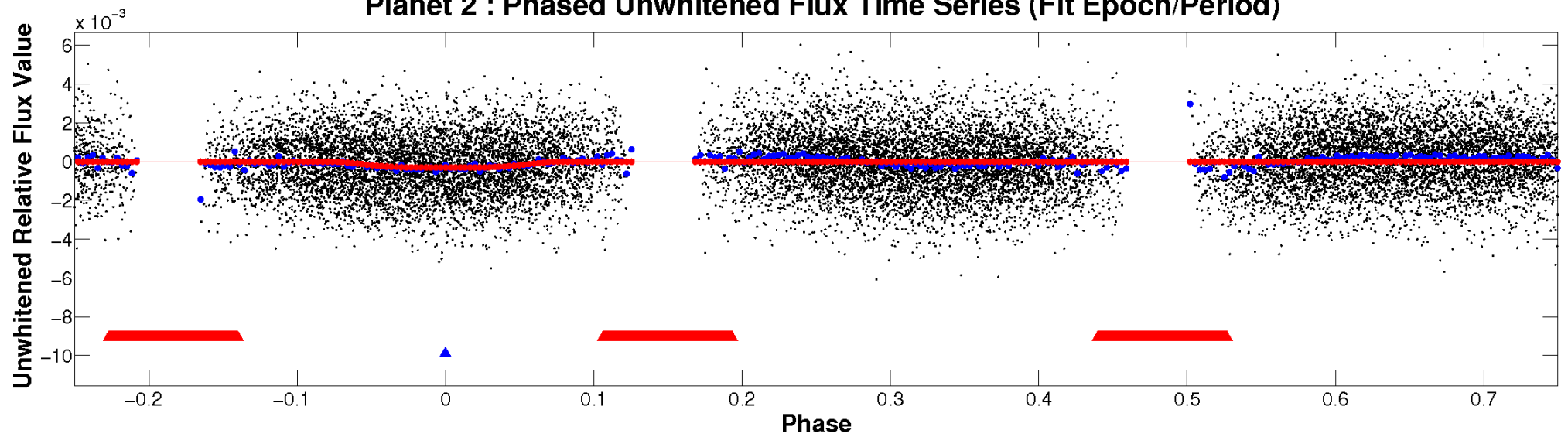
# ALT Odd/Even

TCE 003548900-02

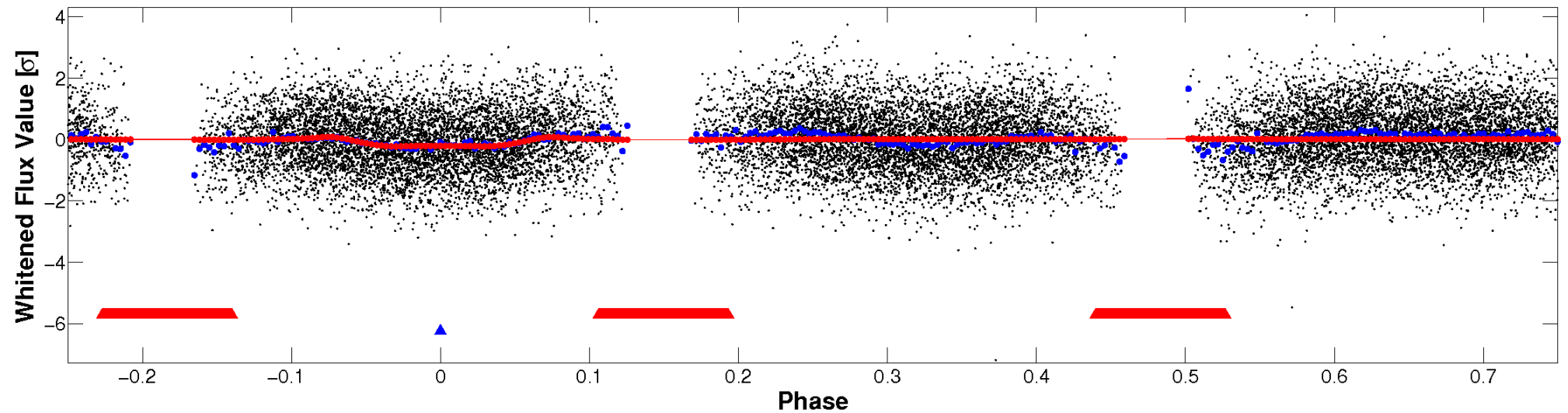


# Non-Whitened Vs. Whitened Light Curve

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

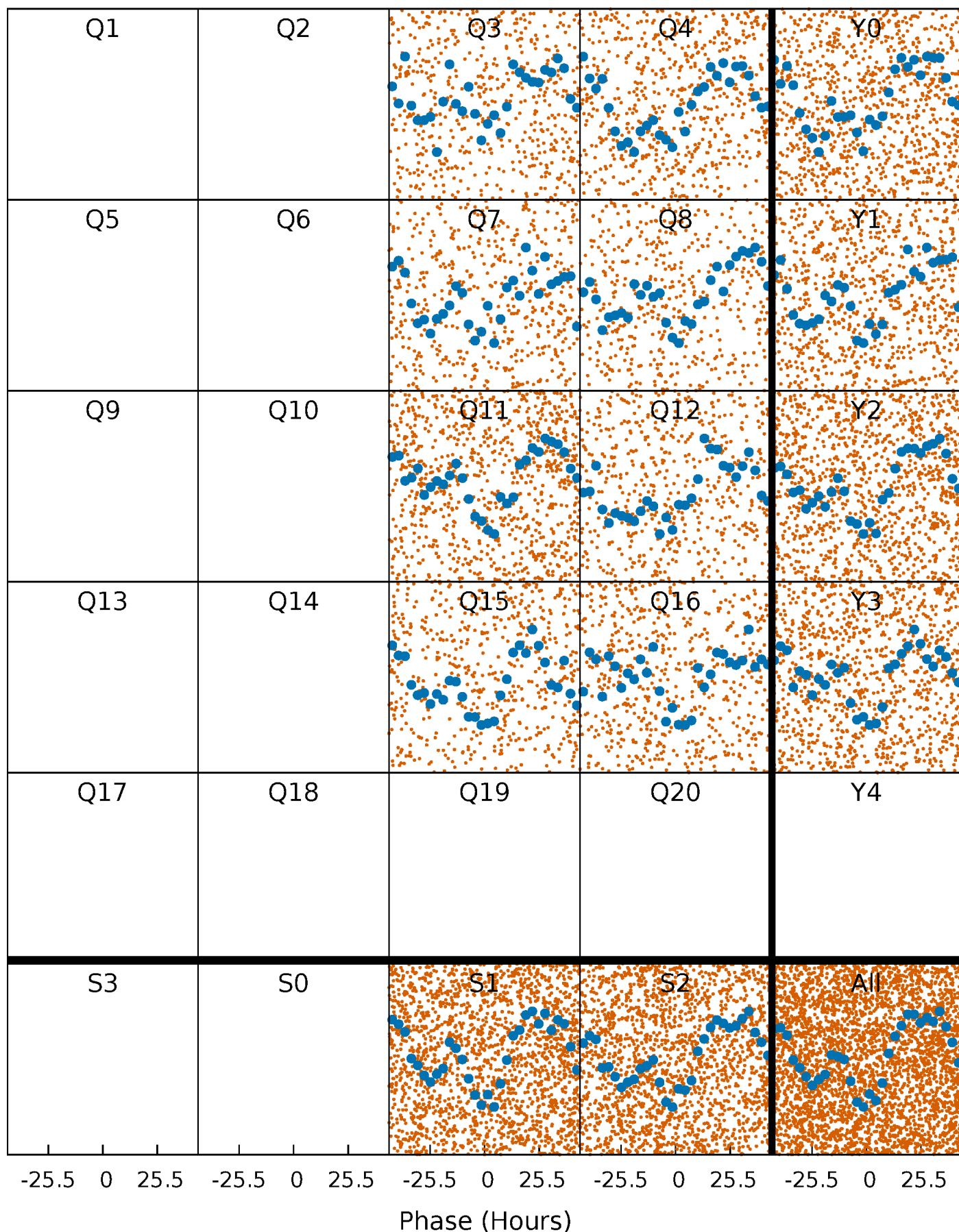


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

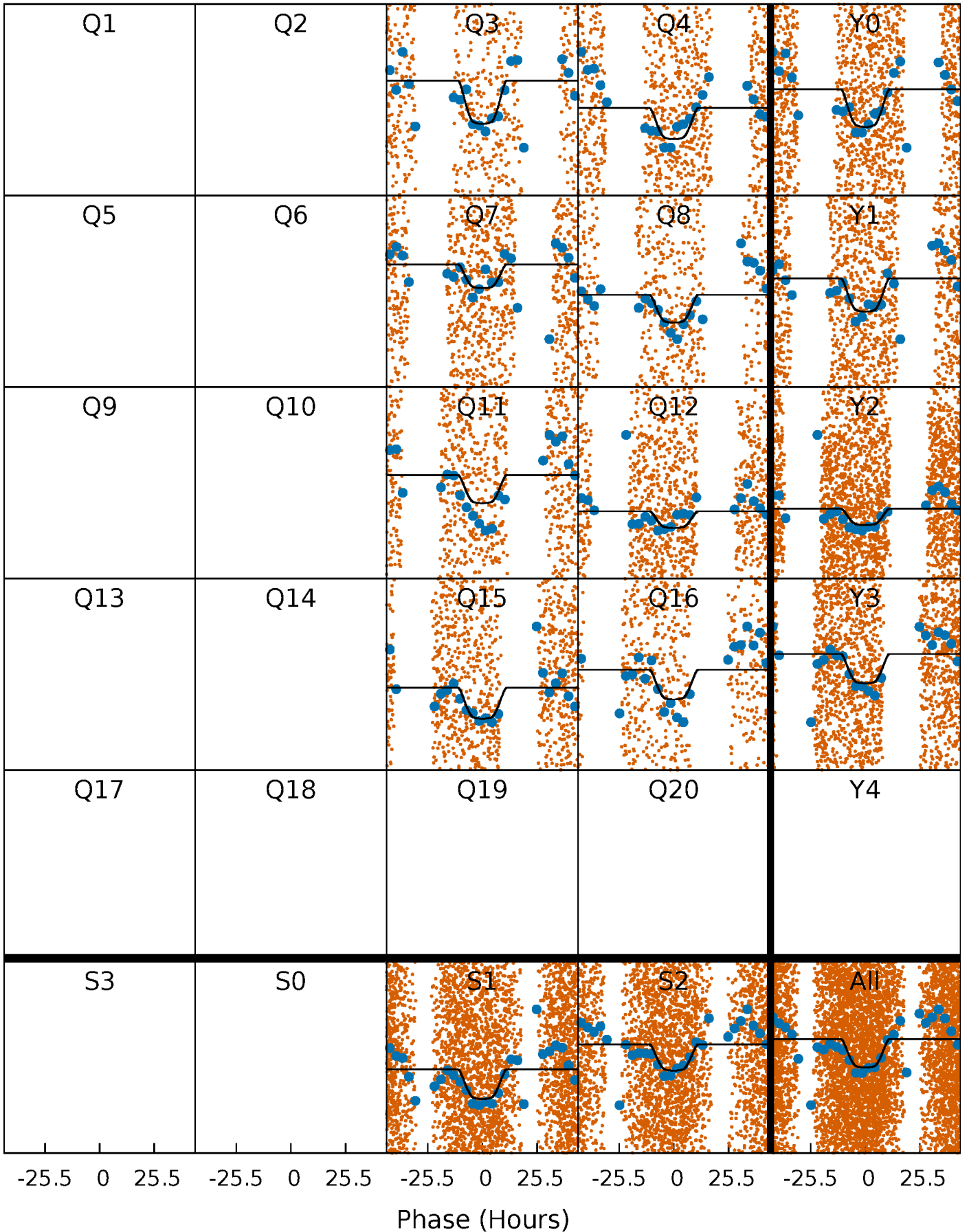
TCE 003548900-02 P= 6.186587 Days  $T_0=135.551302$  (BKJD)





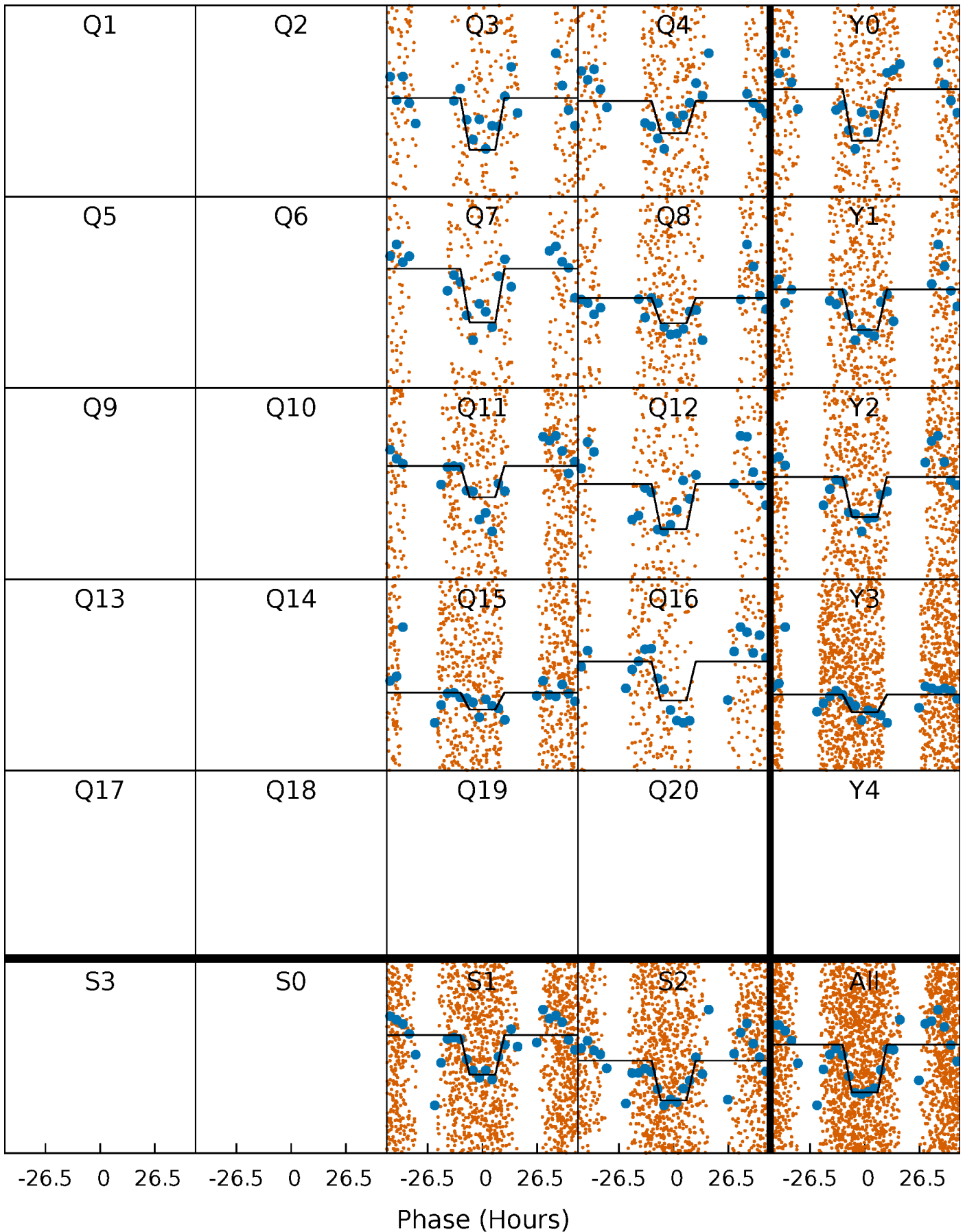
# DV Quarter-Phased Transit Curves

TCE 003548900-02    P= 6.186587 Days     $T_0=135.551302$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

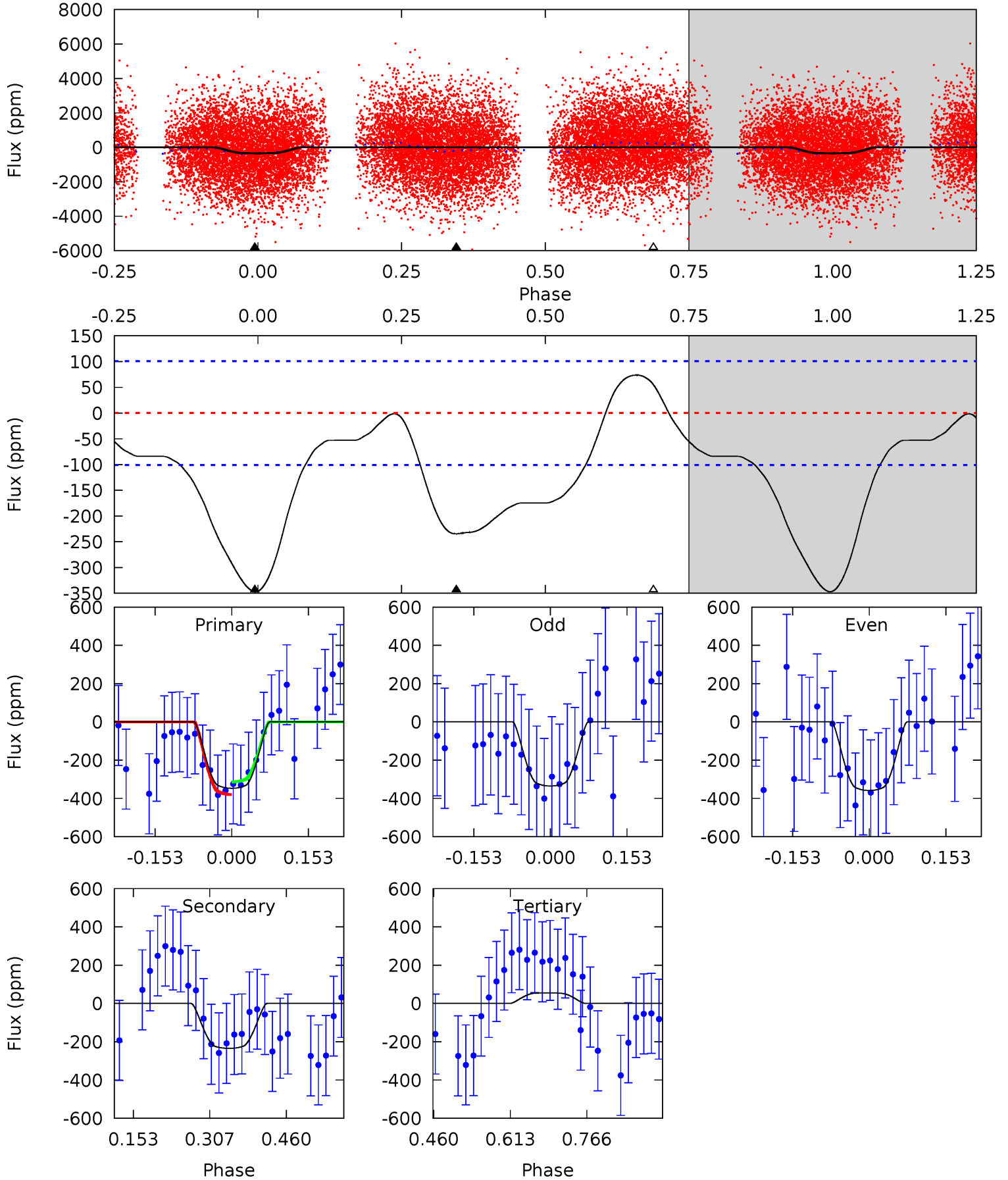
TCE 003548900-02 P= 6.186012 Days  $T_0=135.614619$  (BKJD)



# DV Model-Shift Uniqueness Test

003548900-02, P = 6.186587 Days, E = 135.551302 Days

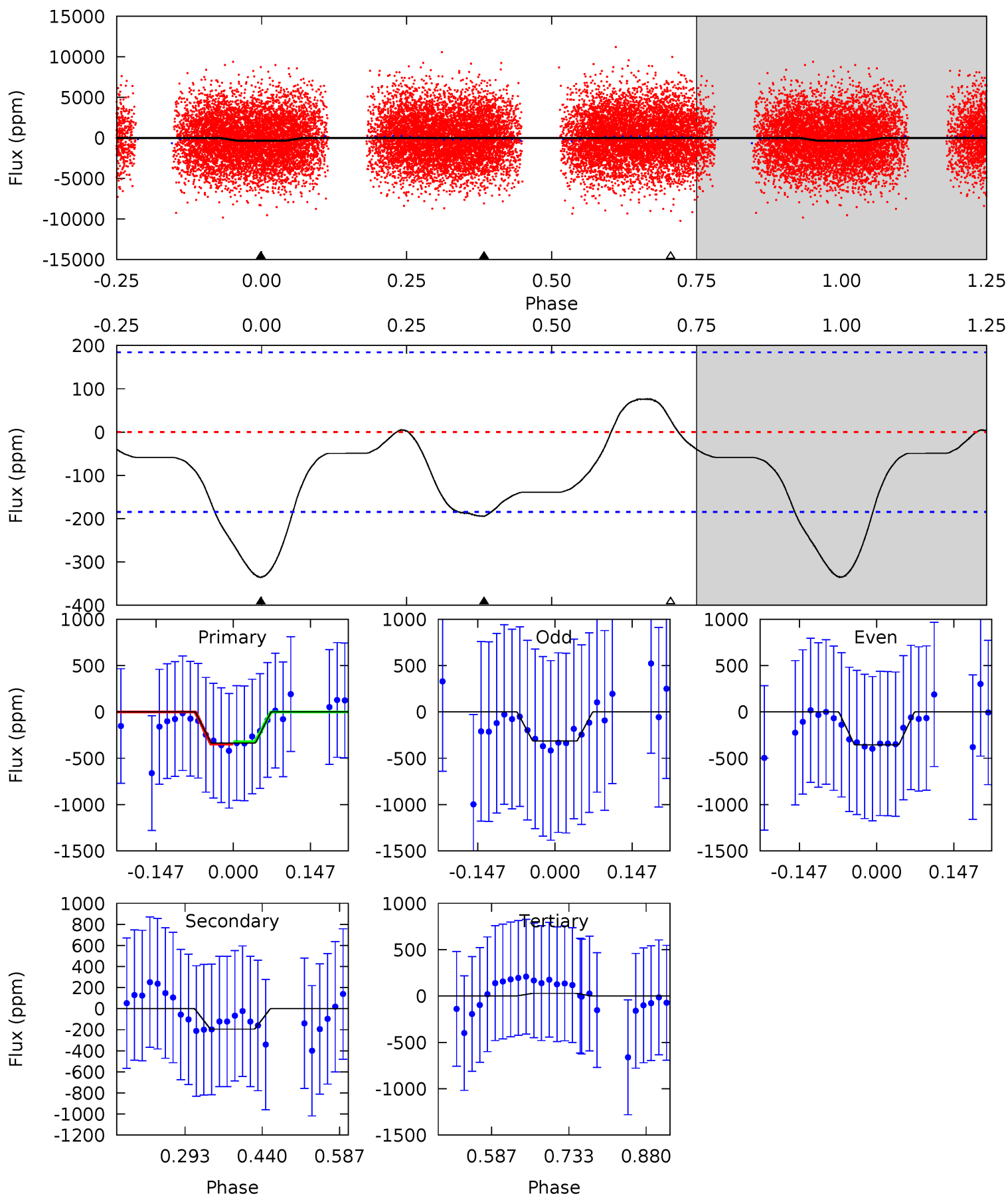
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.4	10.4	-2.45	0	4.47	1.43	3.22	17.8	15.4	12.9	10.4	0.52	1.22	0.18	1.47



# Alt Model-Shift Uniqueness Test

003548900-02, P = 6.186012 Days, E = 135.614619 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
8.14	4.72	-0.68	0	4.48	1.45	1.44	8.82	8.14	5.40	4.72	0.51	0.99	0.19	0.33



### Stellar Parameters For KIC 003548900

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7618^{+211}_{-343}$	$4.155^{+0.105}_{-0.195}$	$0.000^{+0.200}_{-0.350}$	$1.771^{+0.532}_{-0.310}$	$1.634^{+0.210}_{-0.257}$	$0.414^{+0.230}_{-0.199}$
	+3%/-5%	+3%/-5%	+inf%/-inf%	+30%/-18%	+13%/-16%	+56%/-48%
Source	KIC0	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 003548900-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-235 \pm 23$	$3.97^{+0.59}_{-0.45}$	$2264^{+166}_{-139}$	$6484^{+350}_{-314}$	$48^{+13}_{-12}$
Alt.	$-194 \pm 41$	$3.66^{+0.61}_{-0.42}$	$2256^{+172}_{-137}$	$6409^{+455}_{-464}$	$46^{+16}_{-15}$

$T_{max}$  = 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

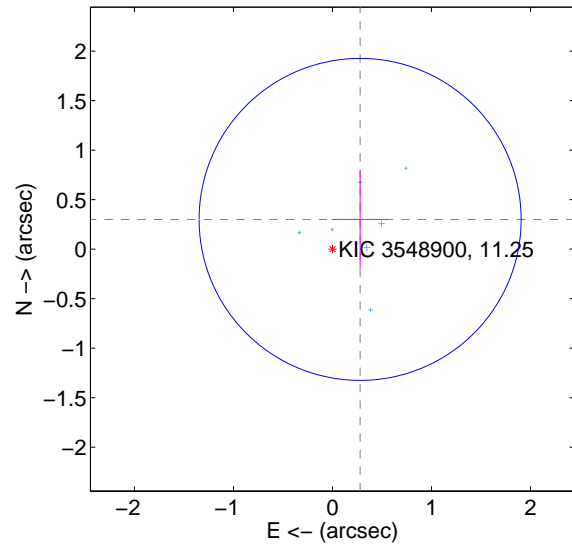
Supplemental centroid analysis for 003548900-02. **Kepler magnitude: 11.25**. Transit SNR 11.56

There are 7 quarters with good PRF difference image offsets

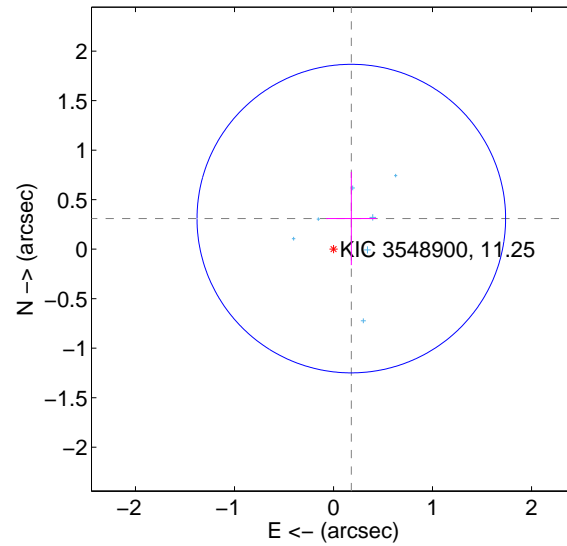
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.410 \pm 0.542$	0.76	$-0.279 \pm 0.287$	$0.301 \pm 0.493$
PRF-fit source offset from KIC position	$0.357 \pm 0.519$	0.69	$-0.180 \pm 0.254$	$0.309 \pm 0.471$
photometric centroid source offset	$0.12 \pm 0.13$	0.97	$-0.05 \pm 0.10$	$-0.12 \pm 0.13$

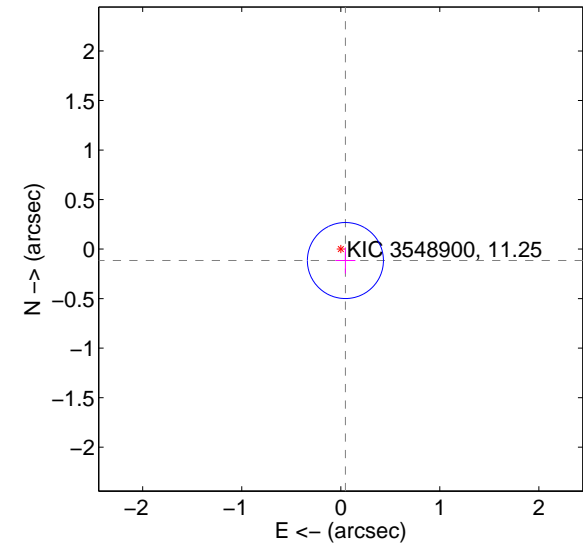
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



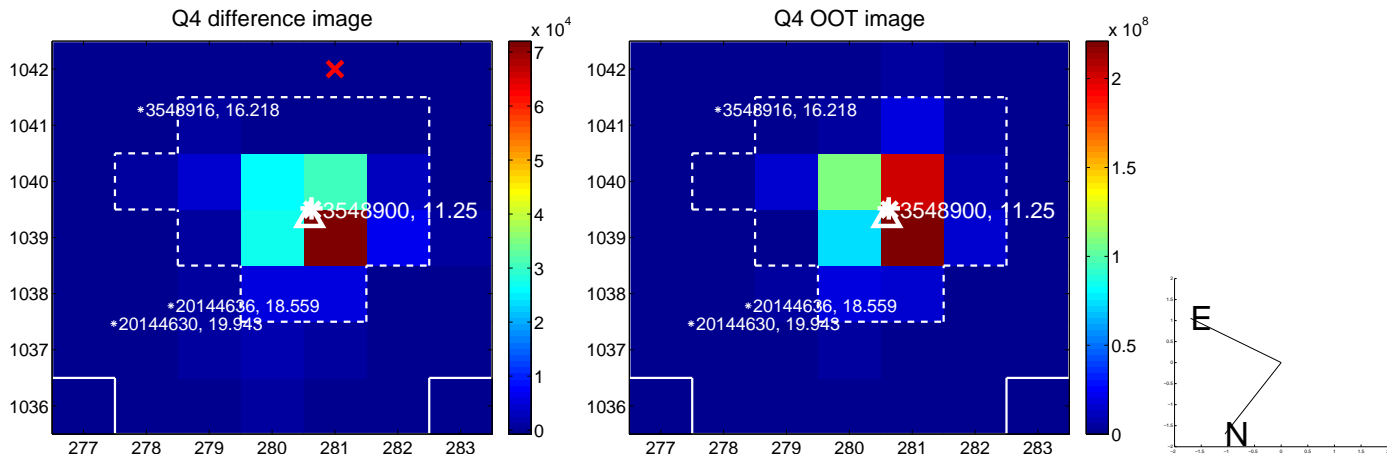
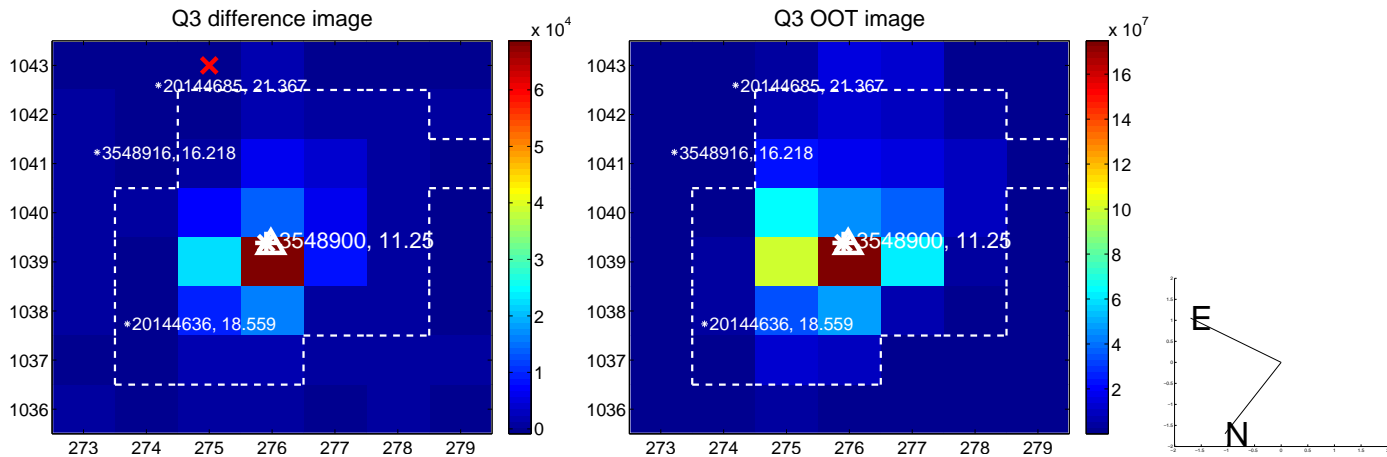
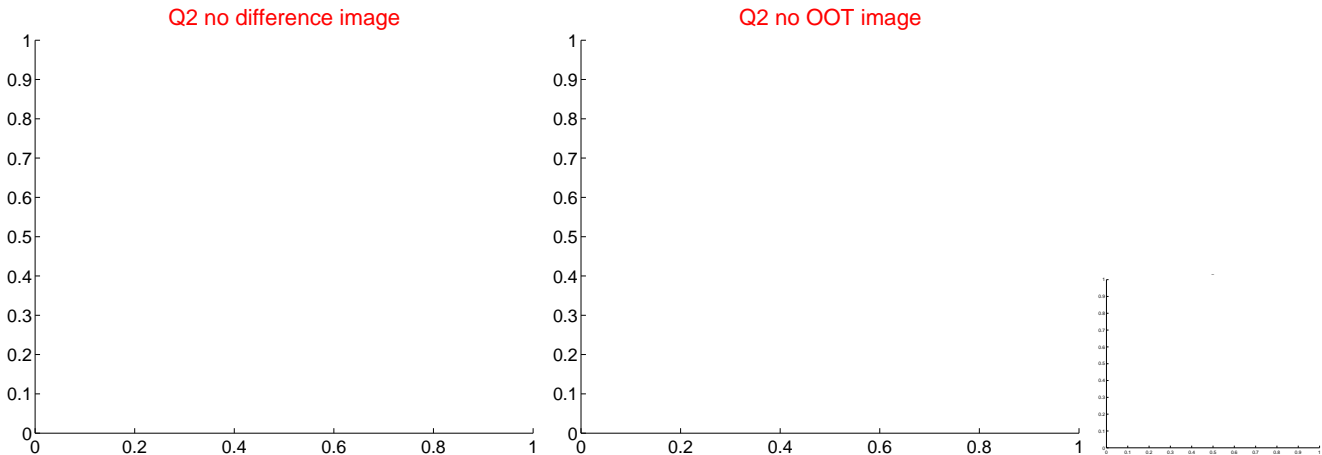
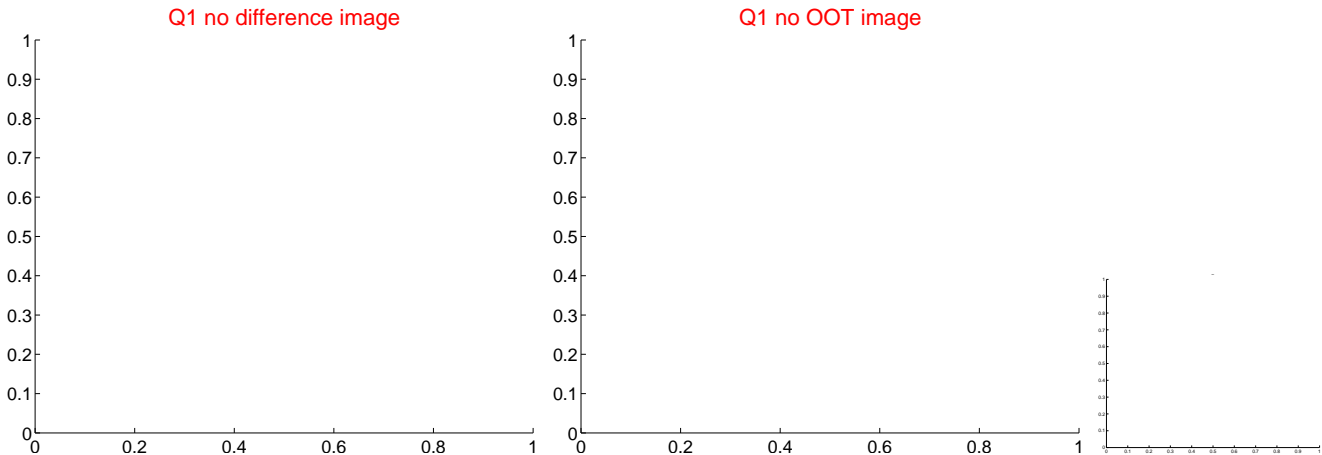
offset from photometric centroids



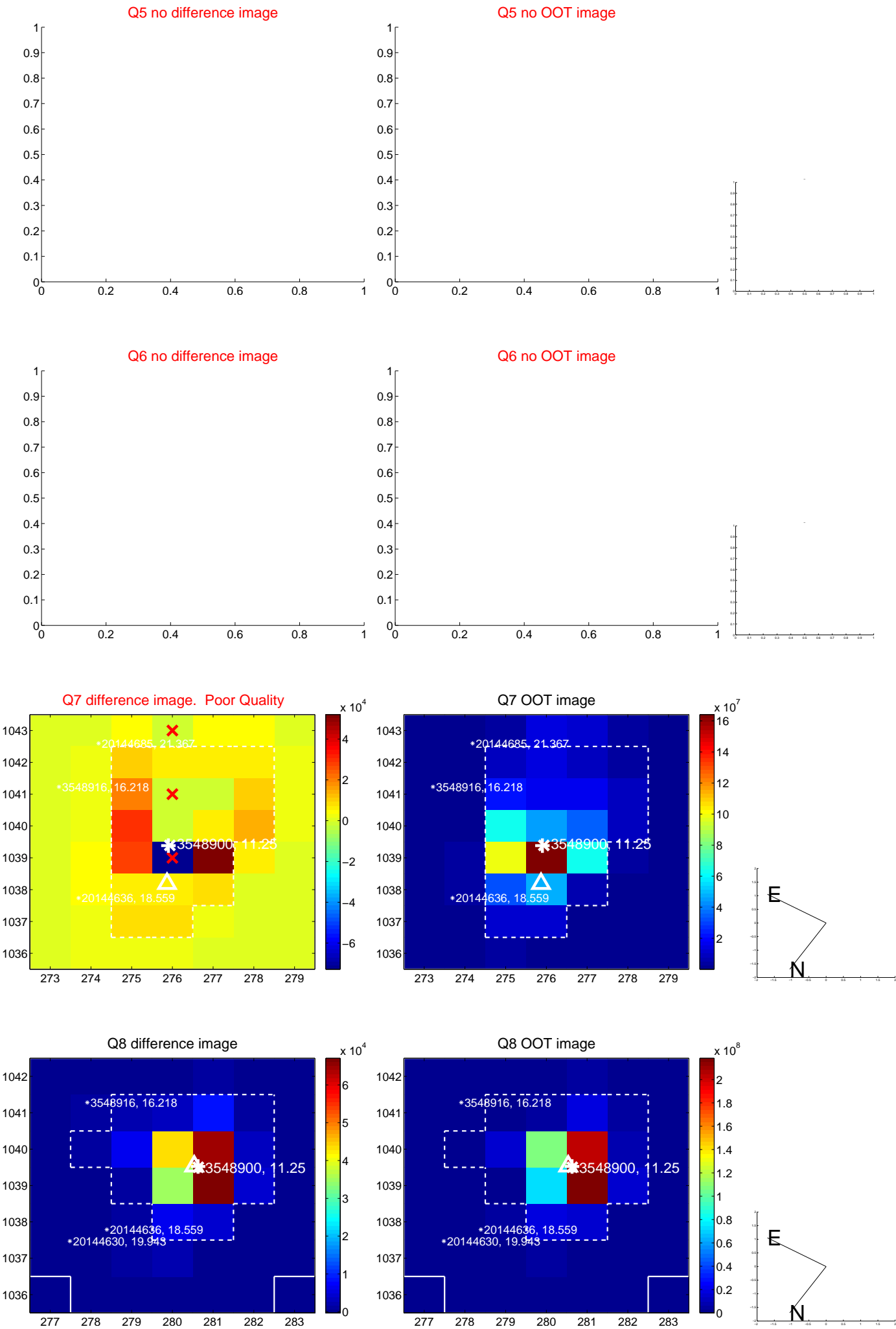
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



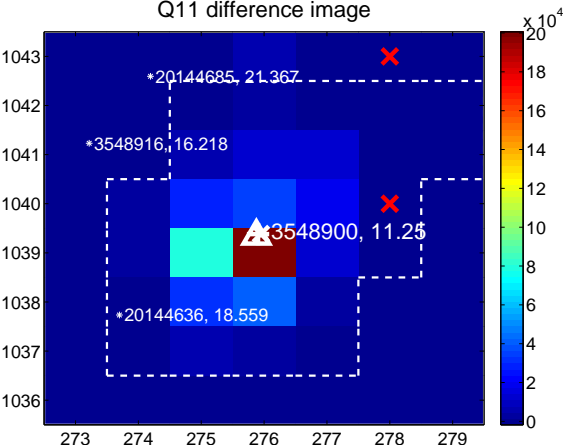
Q10 no difference image



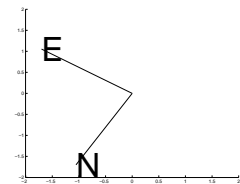
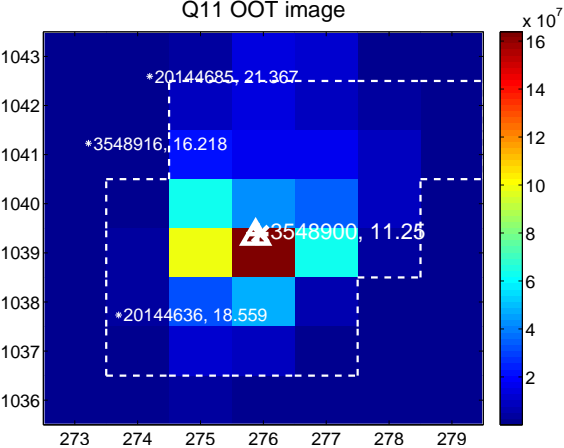
Q10 no OOT image



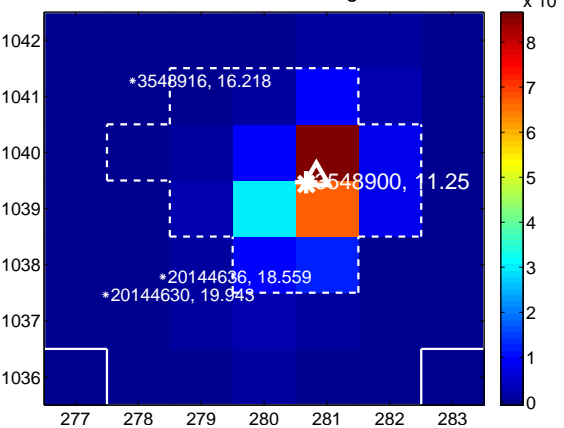
Q11 difference image



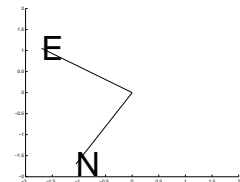
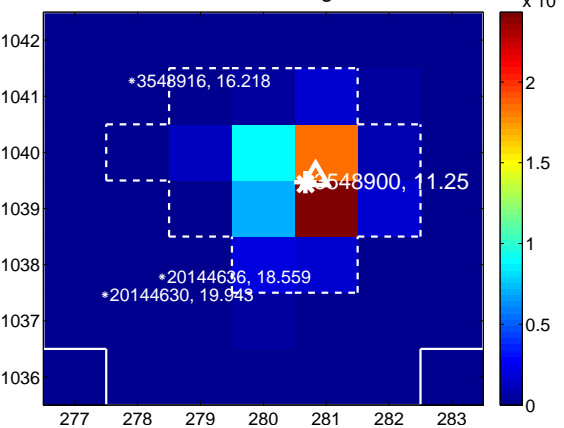
Q11 OOT image



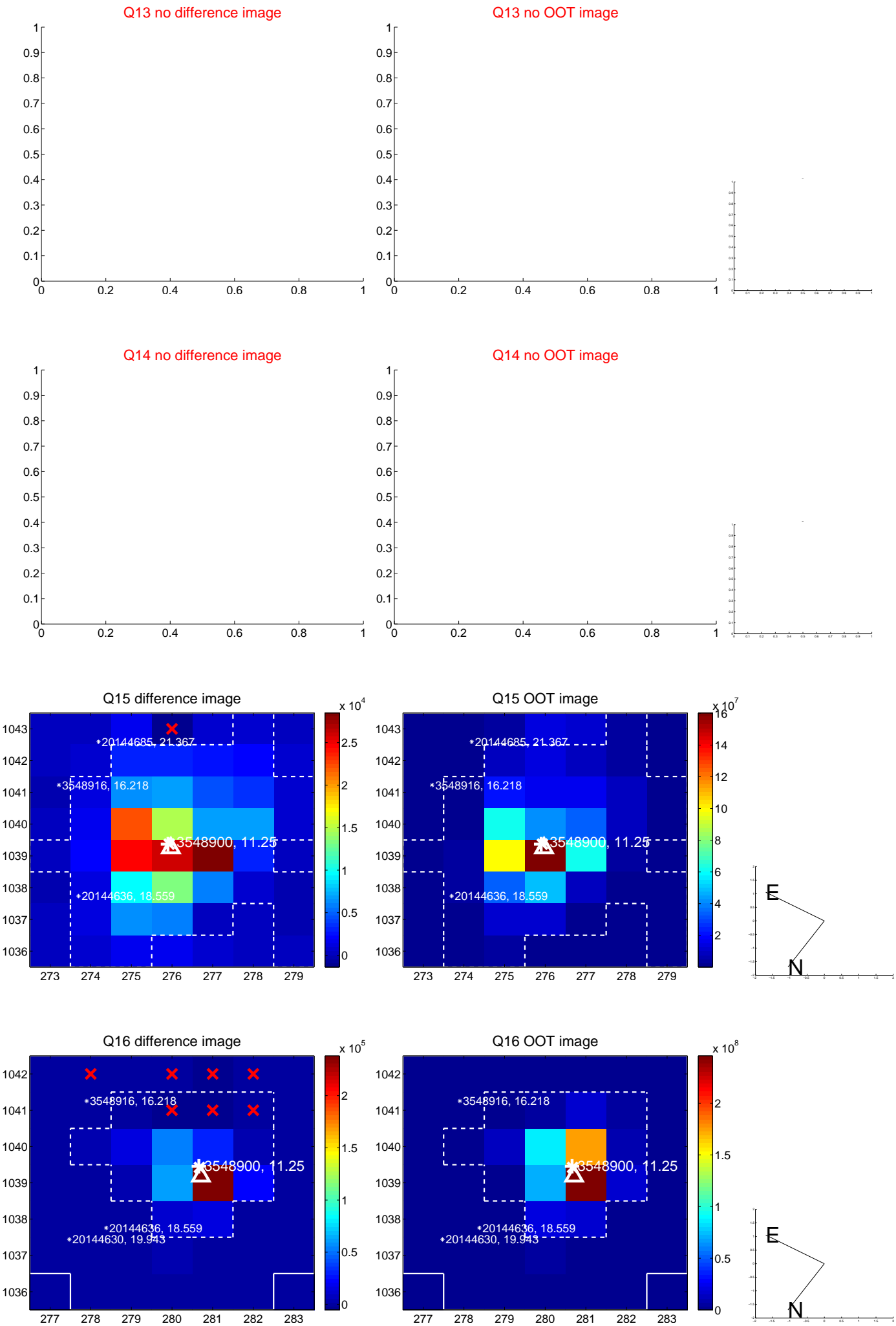
Q12 difference image



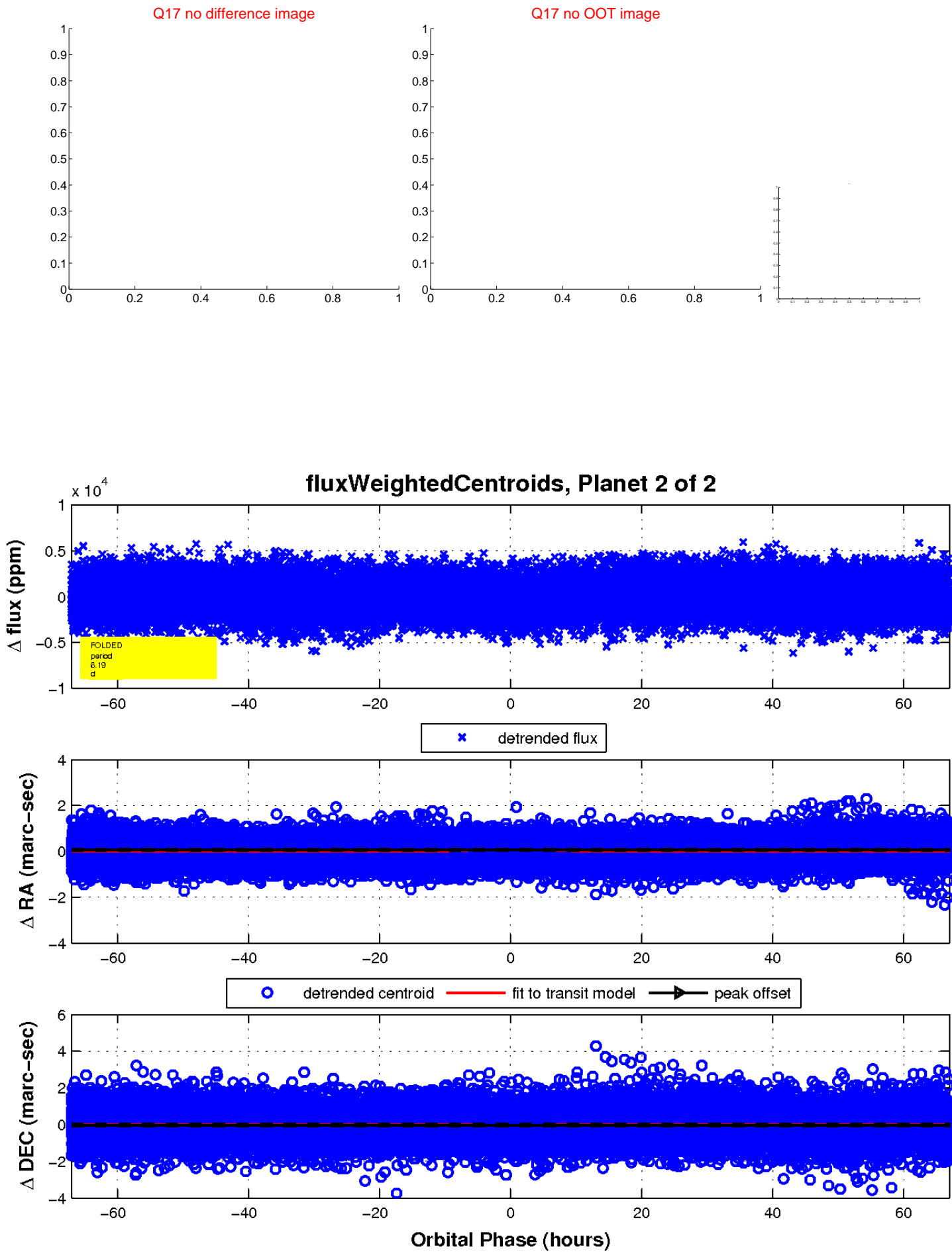
Q12 OOT image



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.



UKIRT Image

Declination

