

# KIC 007282154

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007282154-01	OBS	7830.01	0.566788	131.825777	1228.6	2.000	8.4	-1.0	0.81	5341	2.79	3219.32
007282154-02	OBS	No	512.328349	406.409345	804.9	9.554	7.5	7.7	0.81	5341	2.53	0.37

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007282154-01	OBS	FP	0.00	1	0	0	1	MOD_NONUNIQ_ALT—CENT_NOFITS—EPHEM_MATCH
007282154-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

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

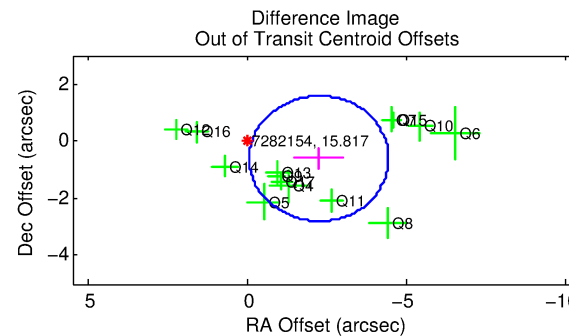
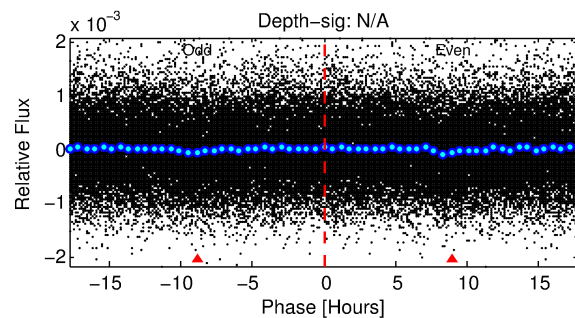
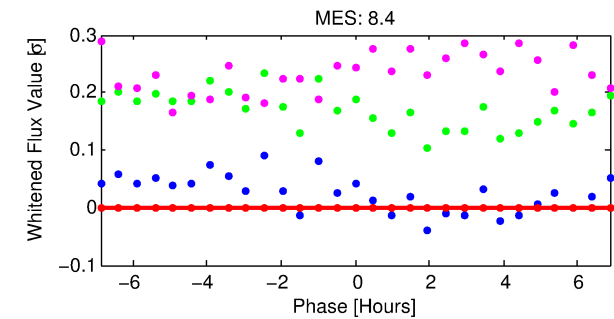
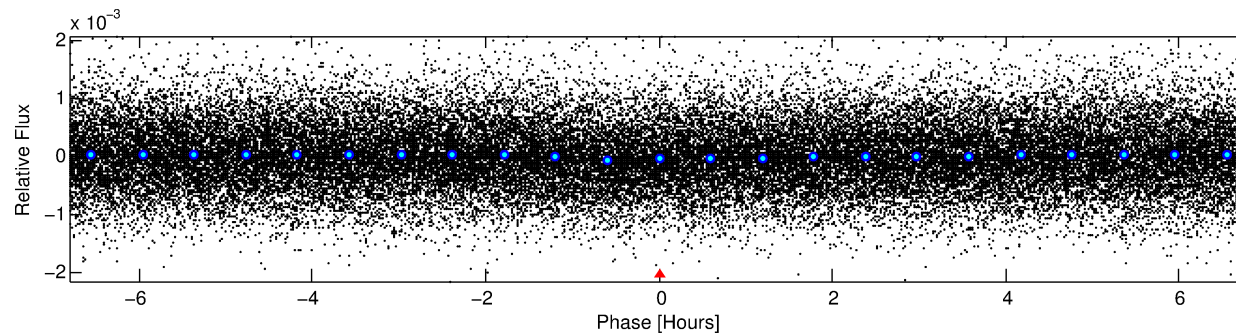
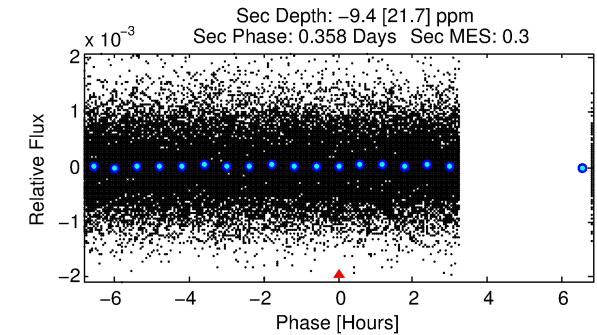
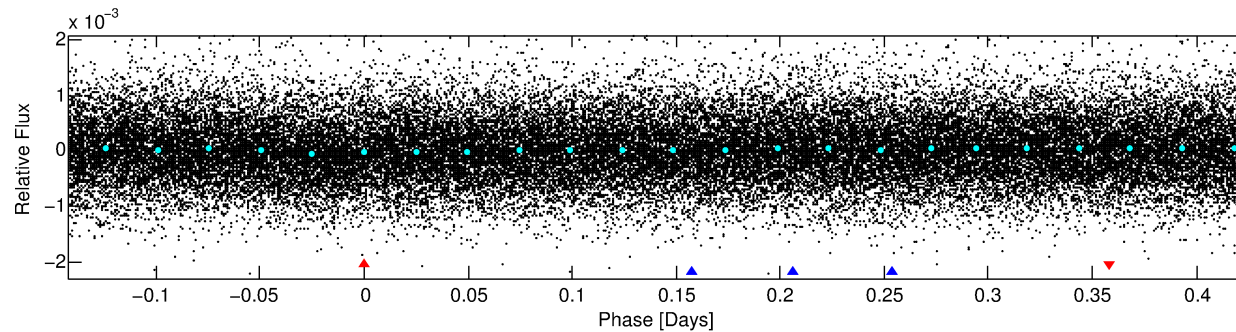
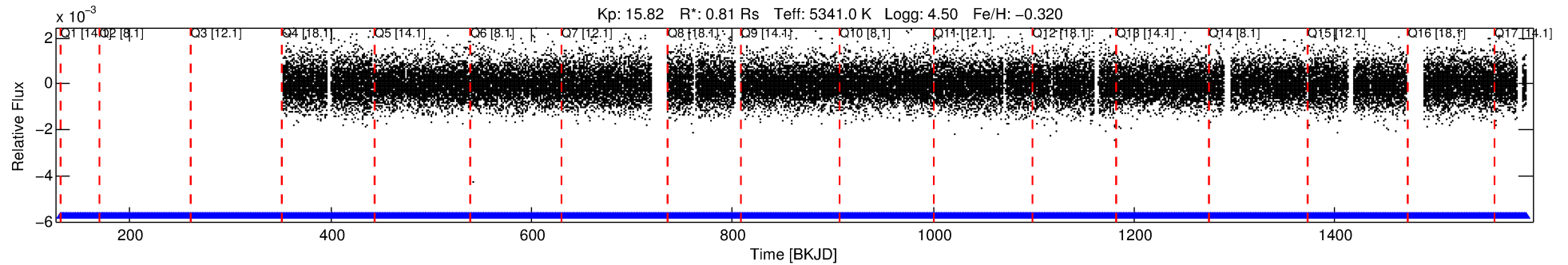
## Ephemeris Match Information For 007282154-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (")	$\Delta\text{Row}$	$\Delta\text{Col}$	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
007282154-01	7282154	RR-Lyr-pri	7198959	1:1	1246.8	100	297	7.86	15.82	507.16	Direct-PRF	0	1.93	18.96

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta\text{Row}$  and  $\Delta\text{Col}$  are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  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: 7282154 Candidate: 1 of 2 Period: 0.567 d



## TPS TCE Results:

Period = 0.56679 d  
Epoch = 131.8258 BKJD

DV fit results are unavailable

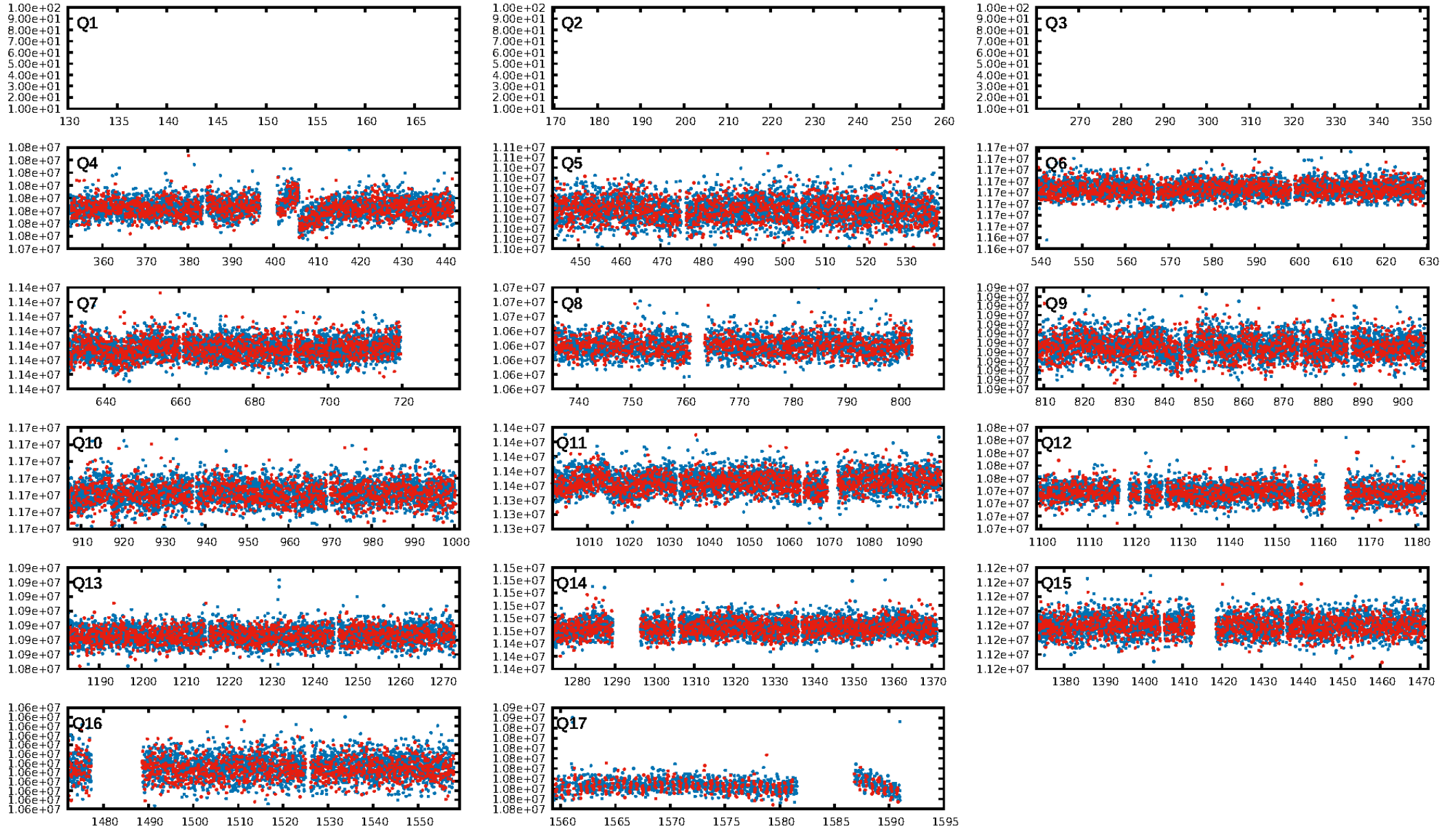
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [1258.29σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.65e-18  
RollingBand-fgt: 1.00 [1961/1961]  
GhostDiagnostic-chr: 0.2682  
Centroid-sig: 0.0%  
Centroid-so: 4.017 arcsec [2.98σ]  
OotOffset-rm: 2.326 arcsec [3.18σ]  
KicOffset-rm: 2.443 arcsec [3.43σ]  
OotOffset-st: 3/3/4/4 [14]  
KicOffset-st: 3/3/4/4 [14]  
DiffImageQuality-fgm: 0.07 [1/14]  
DiffImageOverlap-fno: 1.00 [14/14]

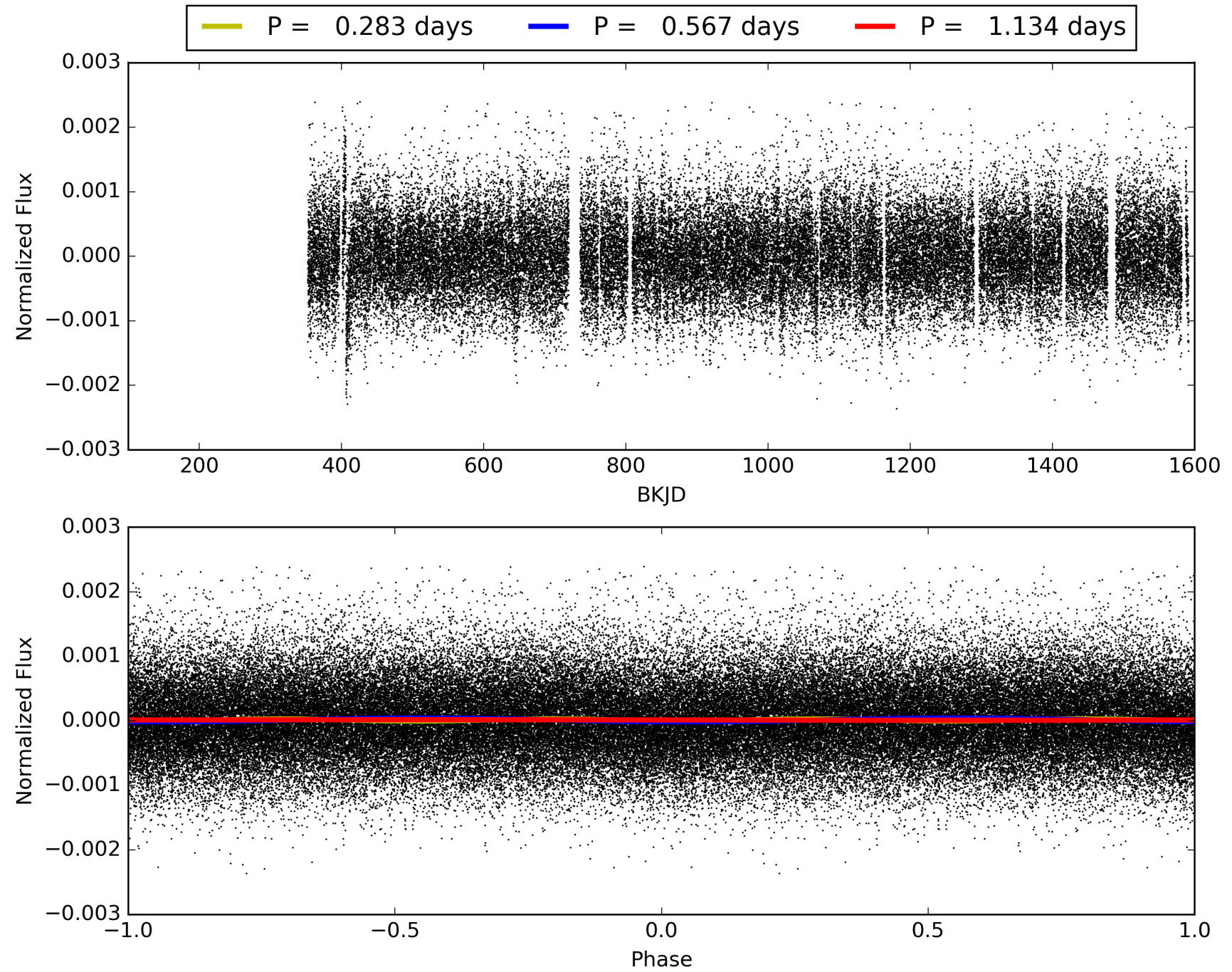
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:34:08 Z

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

# TCE 007282154-01, PDC Light Curves



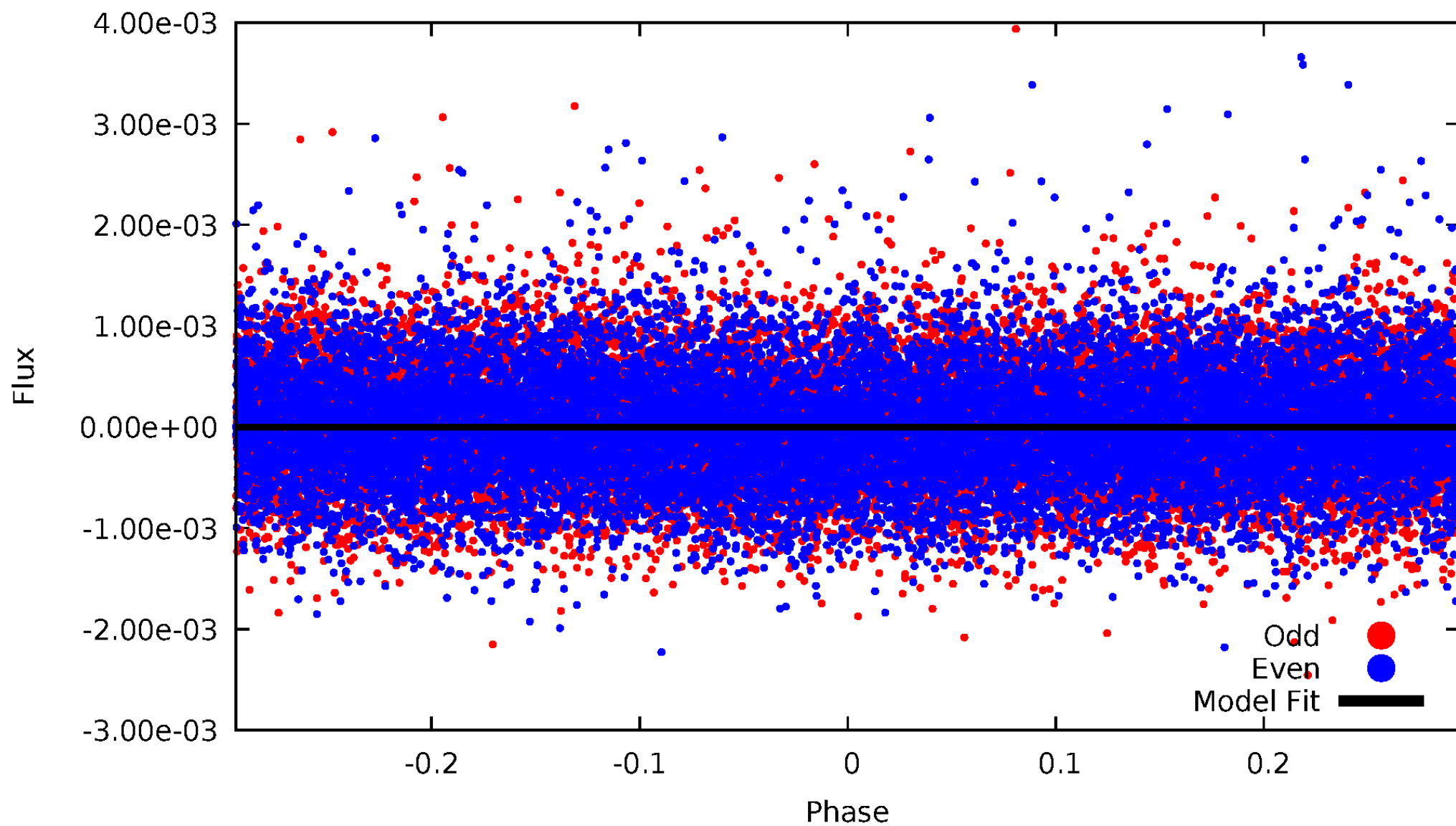
# TCE 007282154-01





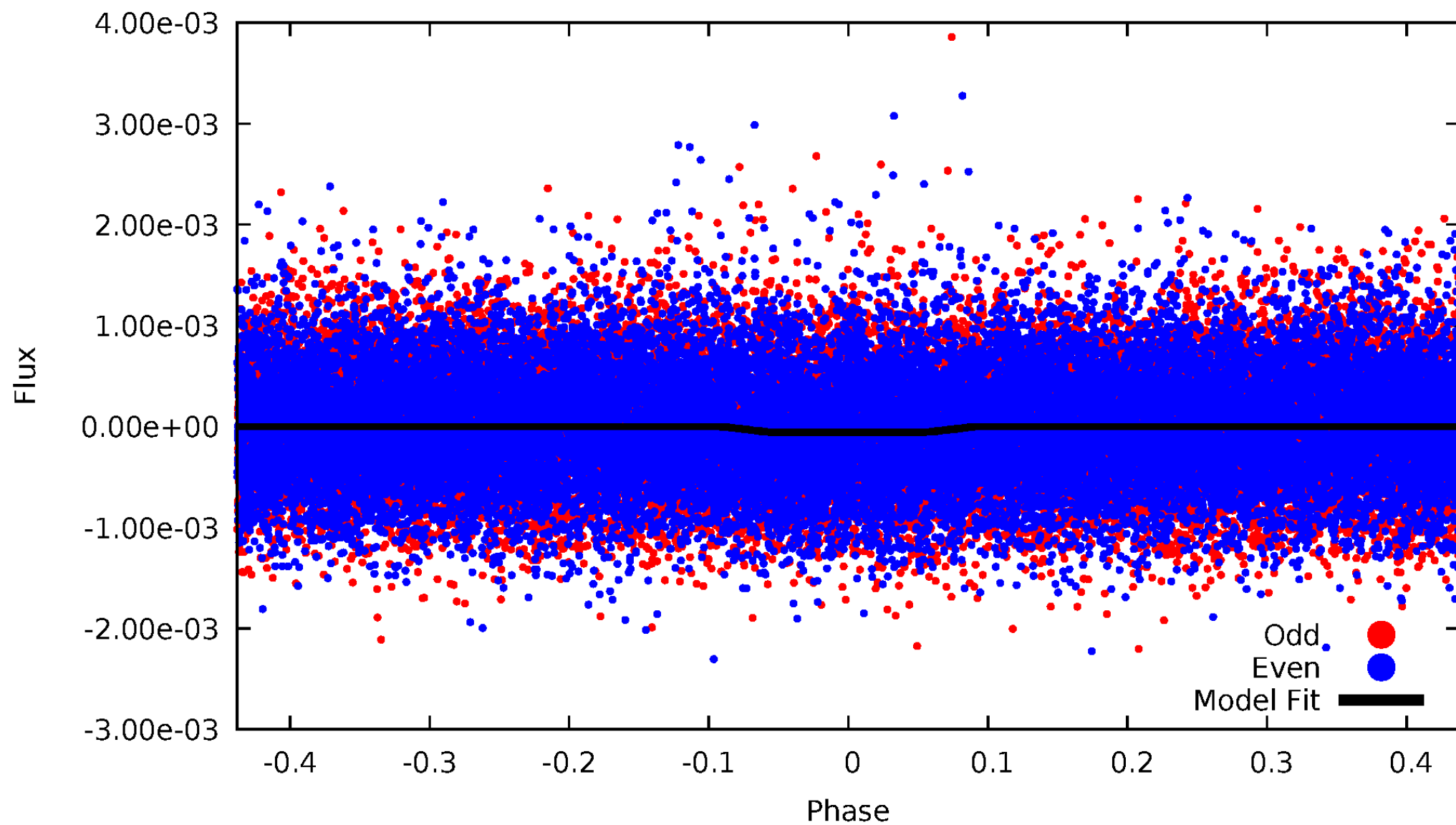
# DV Odd/Even

TCE 007282154-01



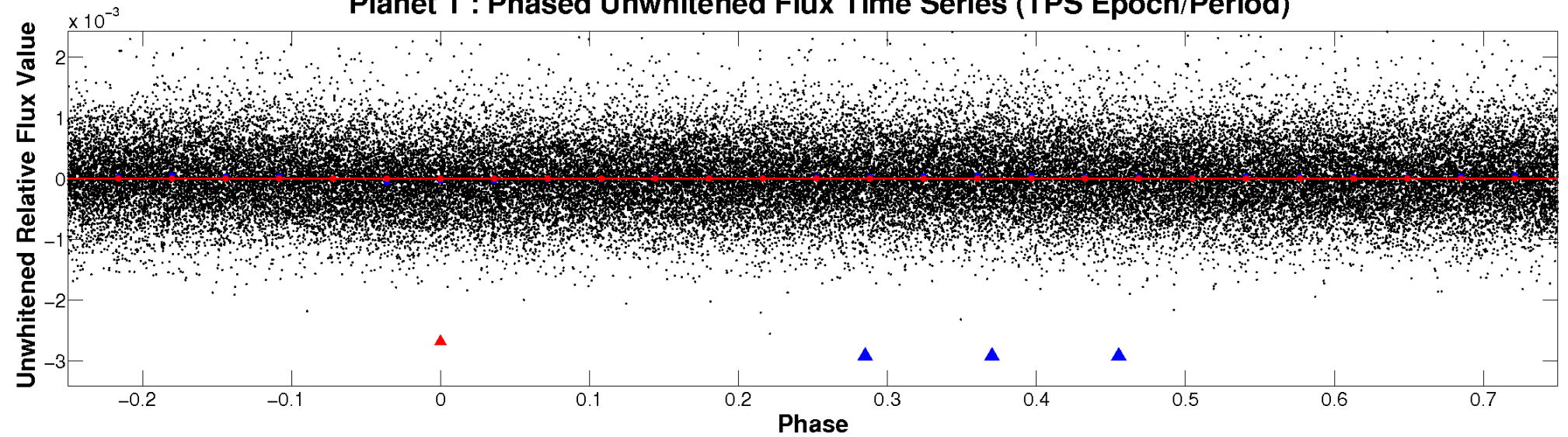
# ALT Odd/Even

TCE 007282154-01



# Non-Whitened Vs. Whitened Light Curve

**Planet 1 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

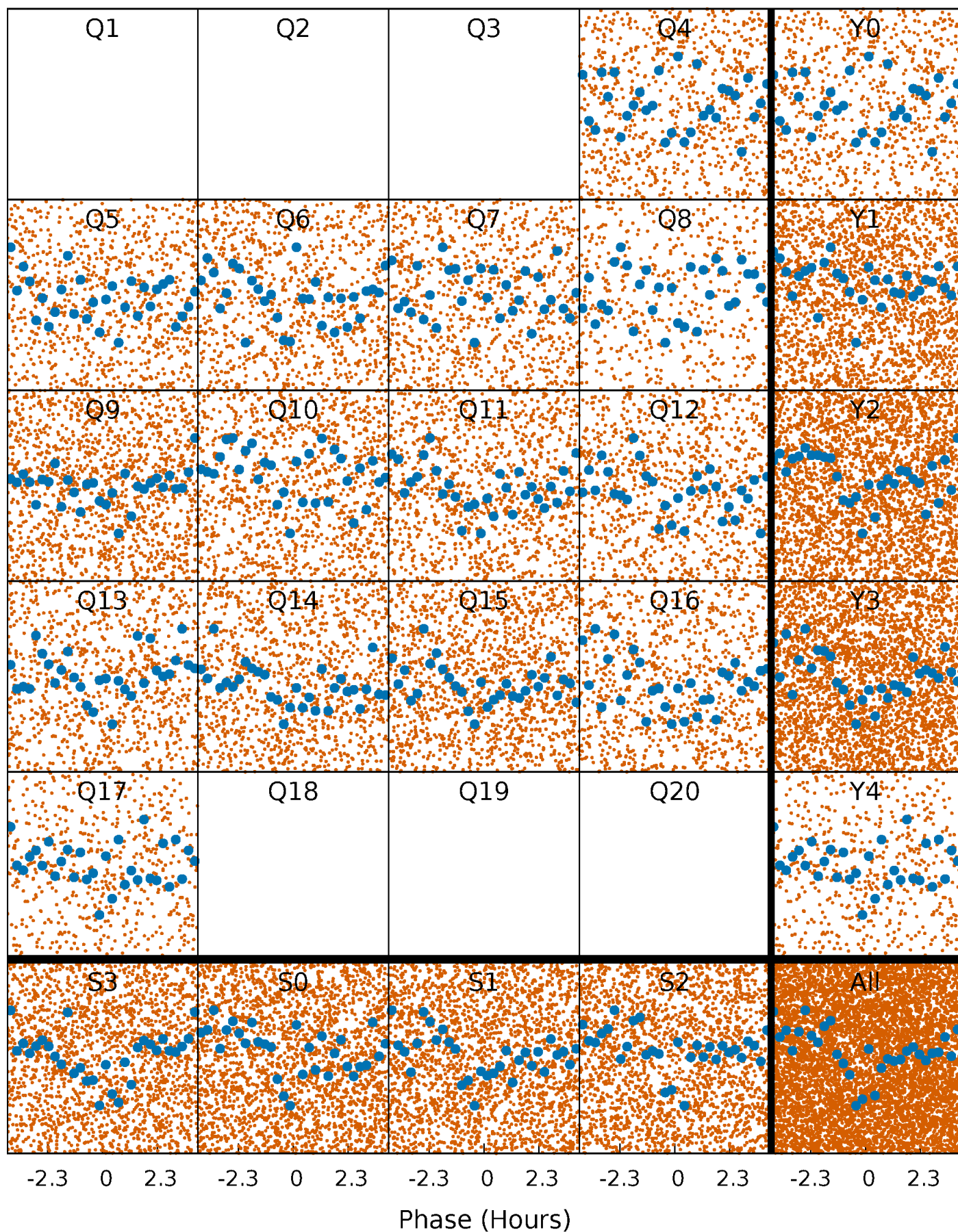


**Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

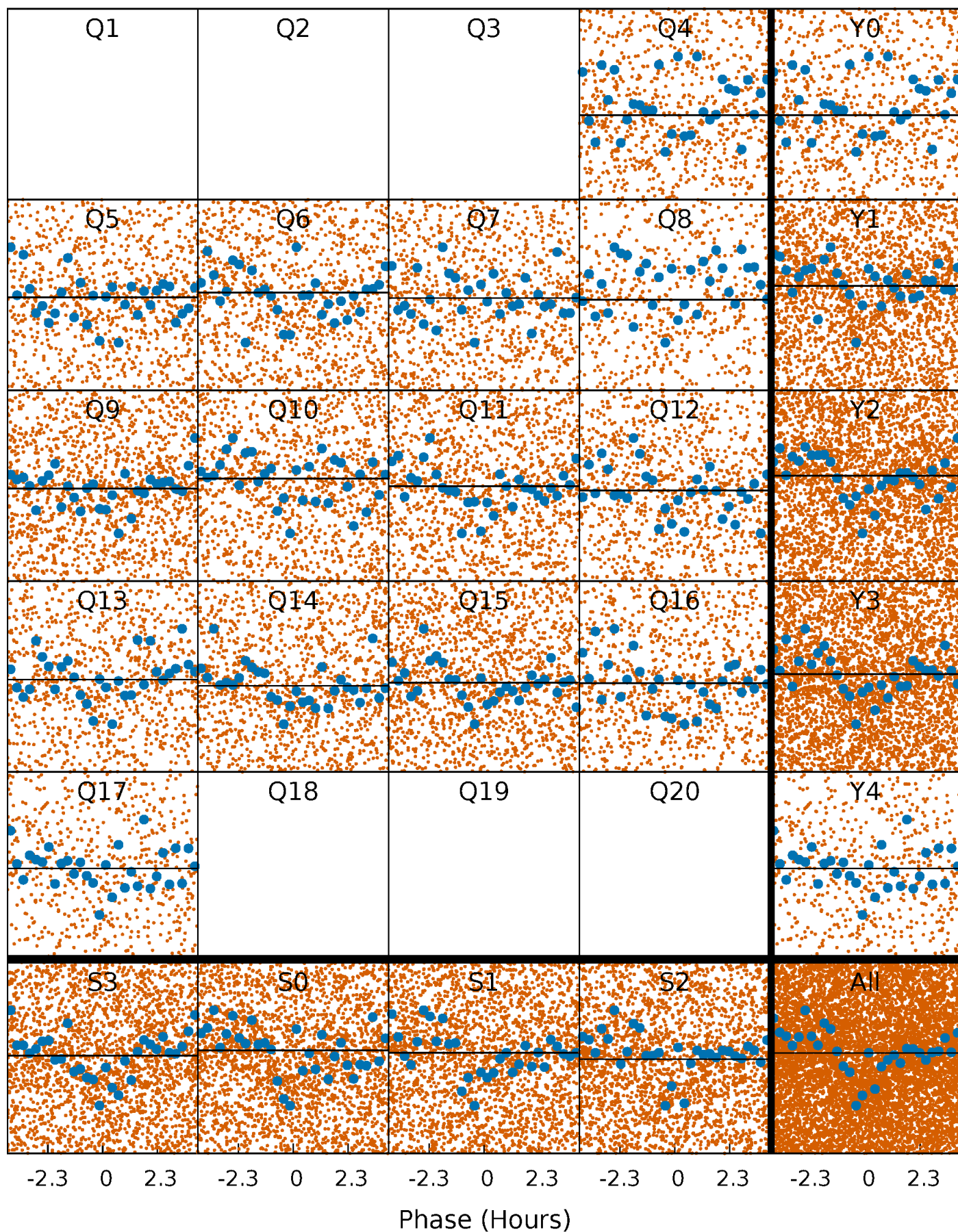
TCE 007282154-01 P= 0.566788 Days  $T_0=131.825777$  (BKJD)





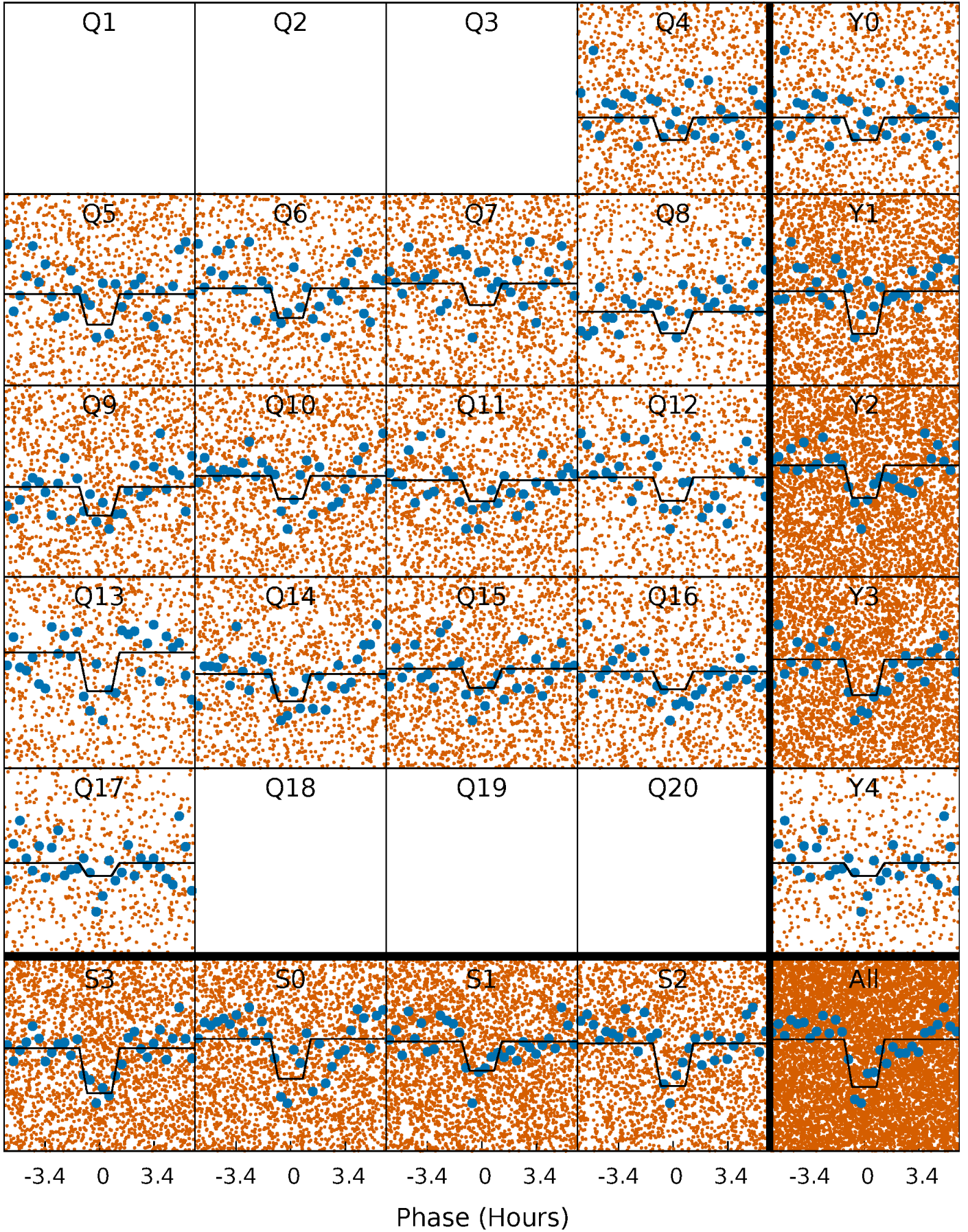
# DV Quarter-Phased Transit Curves

TCE 007282154-01 P= 0.566788 Days  $T_0=131.825777$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

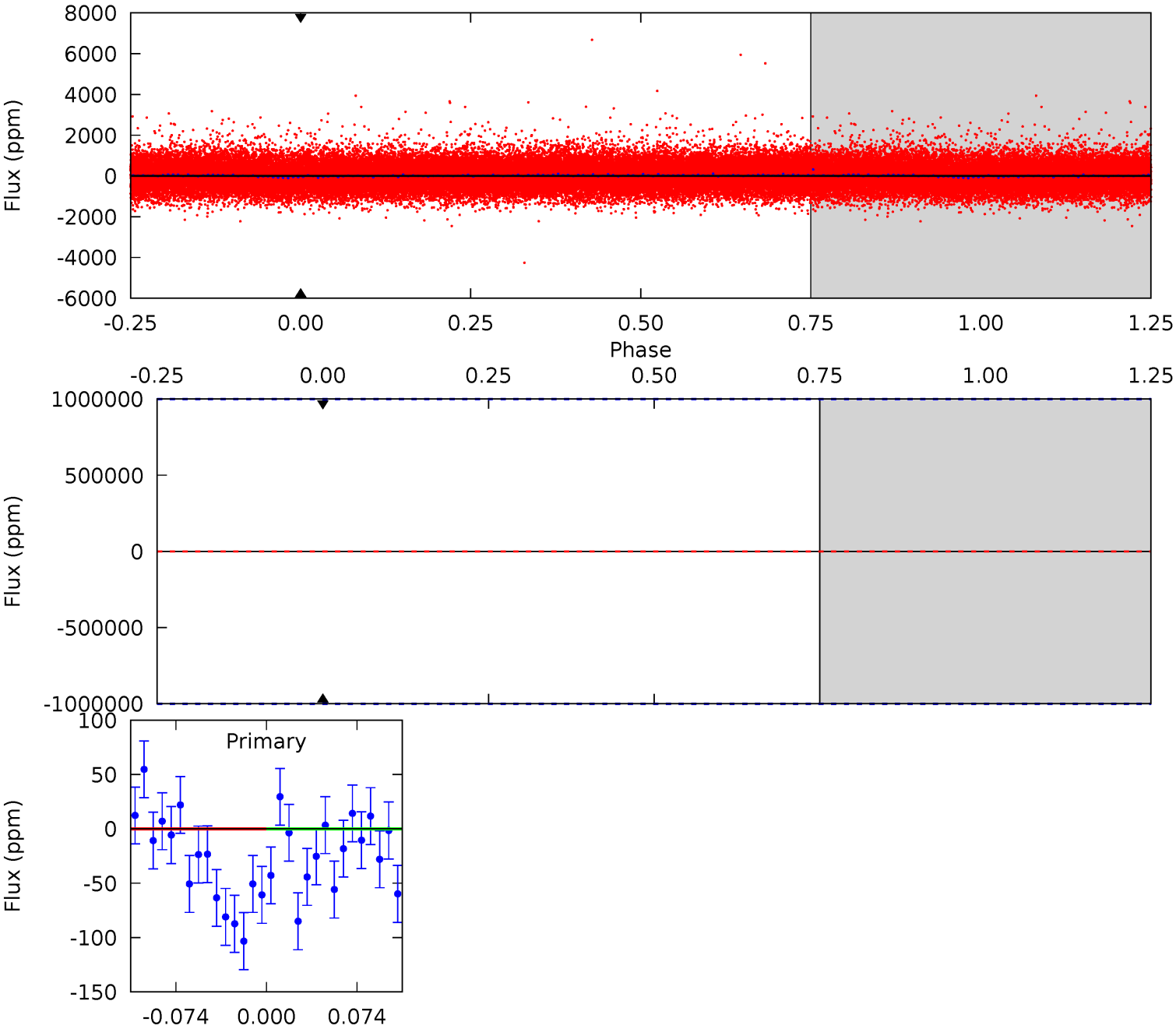
TCE 007282154-01 P= 0.566788 Days  $T_0=131.829674$  (BKJD)



# DV Model-Shift Uniqueness Test

007282154-01, P = 0.566788 Days, E = 131.825777 Days

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

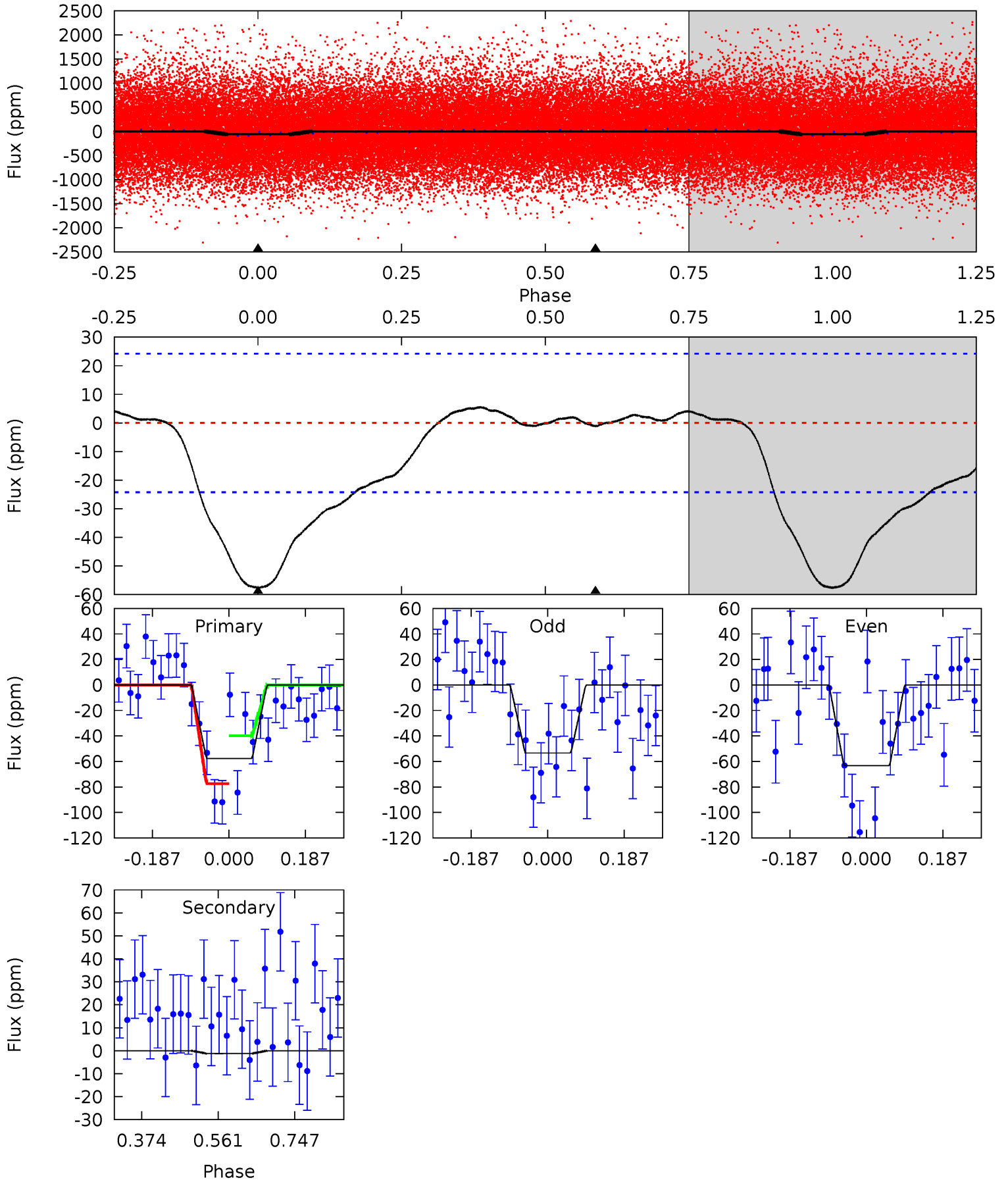




# Alt Model-Shift Uniqueness Test

007282154-01, P = 0.566788 Days, E = 131.829674 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
10.6	0.22	0	0	4.43	1.32	1.78	10.6	10.6	0.22	0.22	0.93	0.80	0.09	3.46





### Stellar Parameters For KIC 007282154

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5341^{+204}_{-185}$	$4.496^{+0.105}_{-0.105}$	$-0.320^{+0.350}_{-0.300}$	$0.808^{+0.130}_{-0.106}$	$0.747^{+0.113}_{-0.052}$	$1.994^{+0.889}_{-0.615}$
	+4%/-3%	+2%/-2%	+109%/-94%	+16%/-13%	+15%/-7%	+45%/-31%
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 007282154-01 / KOI 7830.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$7.83^{+7.13}_{-5.35}$	$2698^{+147}_{-144}$	$3345^{+12463}_{-16733}$	$0.941^{+252.460}_{-187.603}$
Alt.	$-1 \pm 5$	$6.29^{+6.49}_{-4.29}$	$2686^{+141}_{-133}$	$-2881^{+119}_{-120}$	$0.001^{+0.028}_{-0.012}$

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

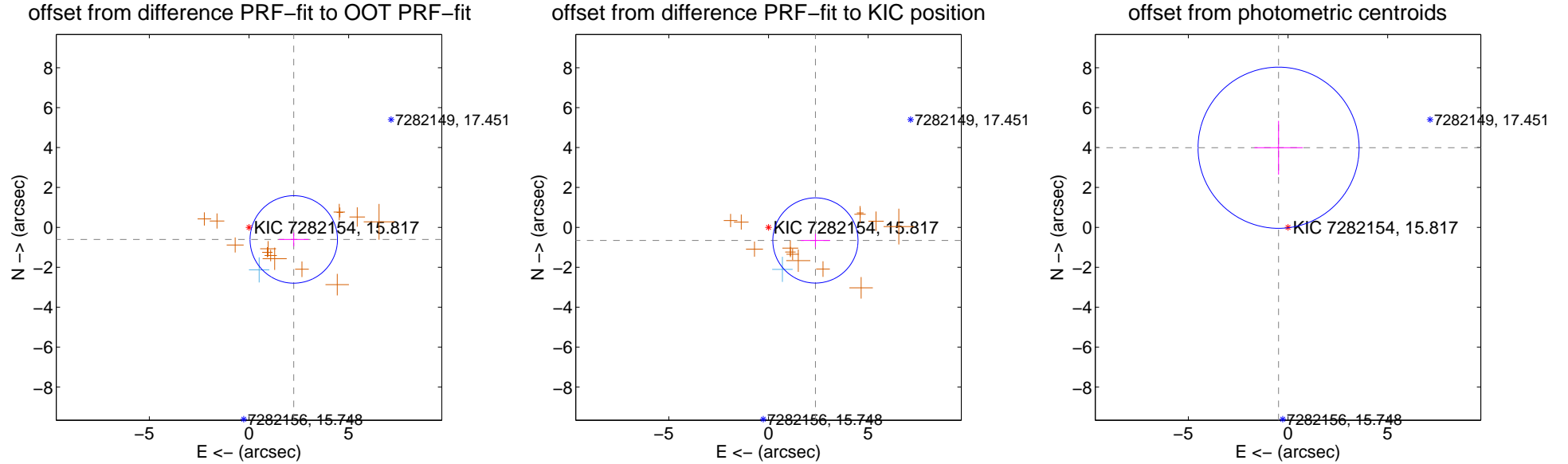
## DV Centroid Data

Supplemental centroid analysis for 007282154-01. Kepler magnitude: 15.82. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

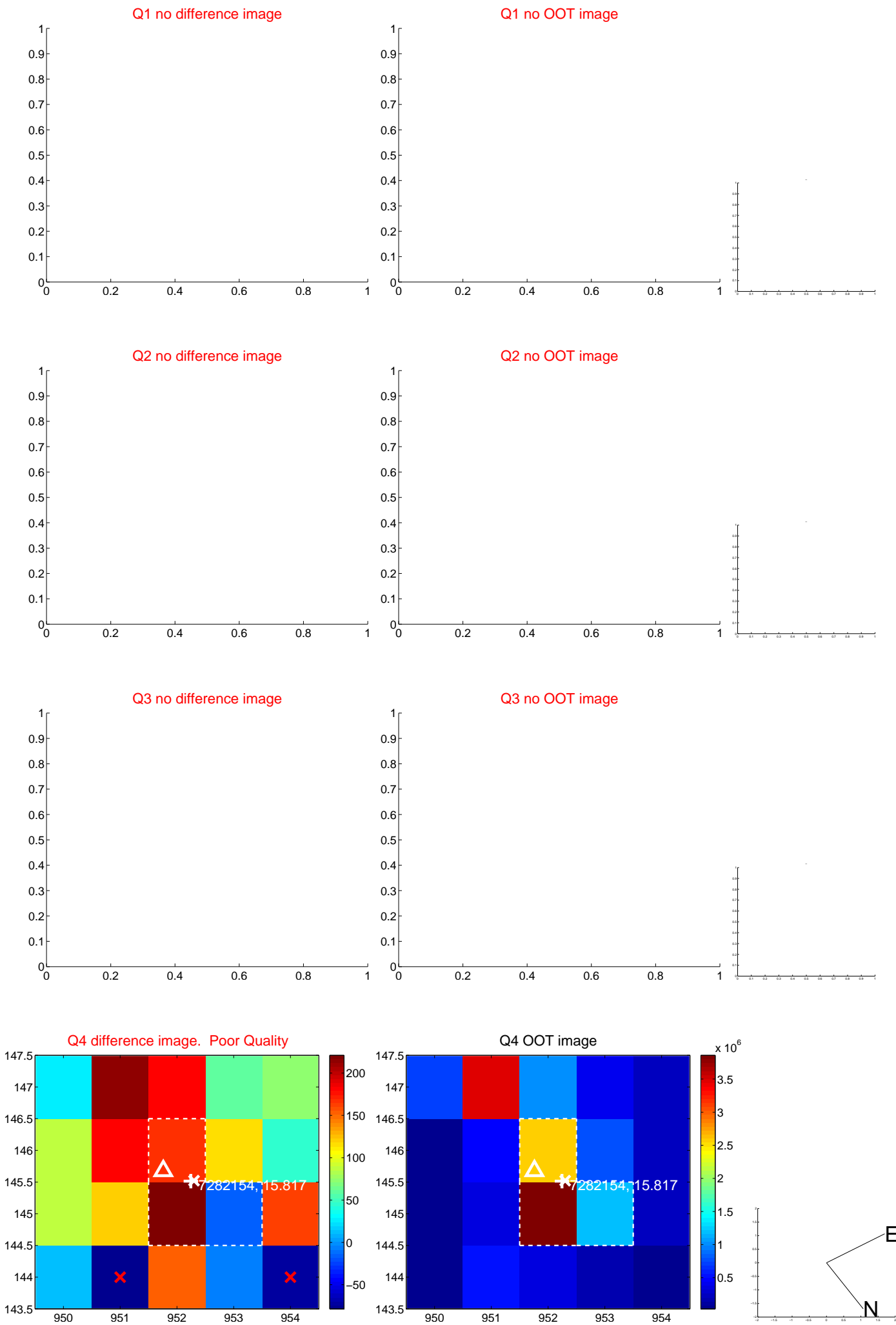
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.326 \pm 0.731$	3.18	$-2.245 \pm 0.751$	$-0.606 \pm 0.338$
PRF-fit source offset from KIC position	$2.443 \pm 0.712$	3.43	$-2.353 \pm 0.733$	$-0.657 \pm 0.331$
photometric centroid source offset	$4.02 \pm 1.35$	2.98	$0.47 \pm 1.21$	$3.99 \pm 1.35$

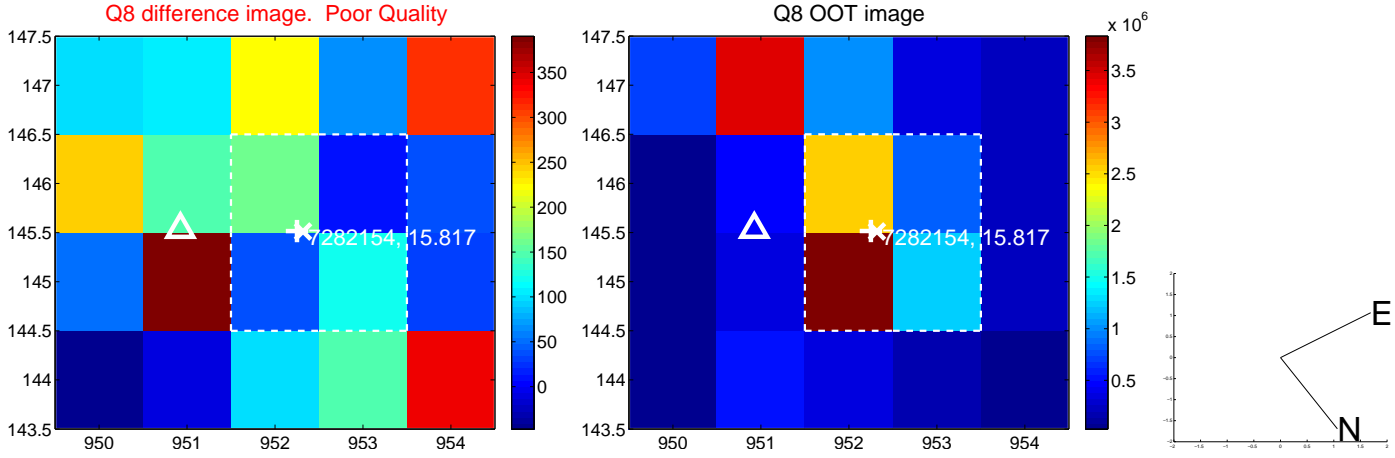
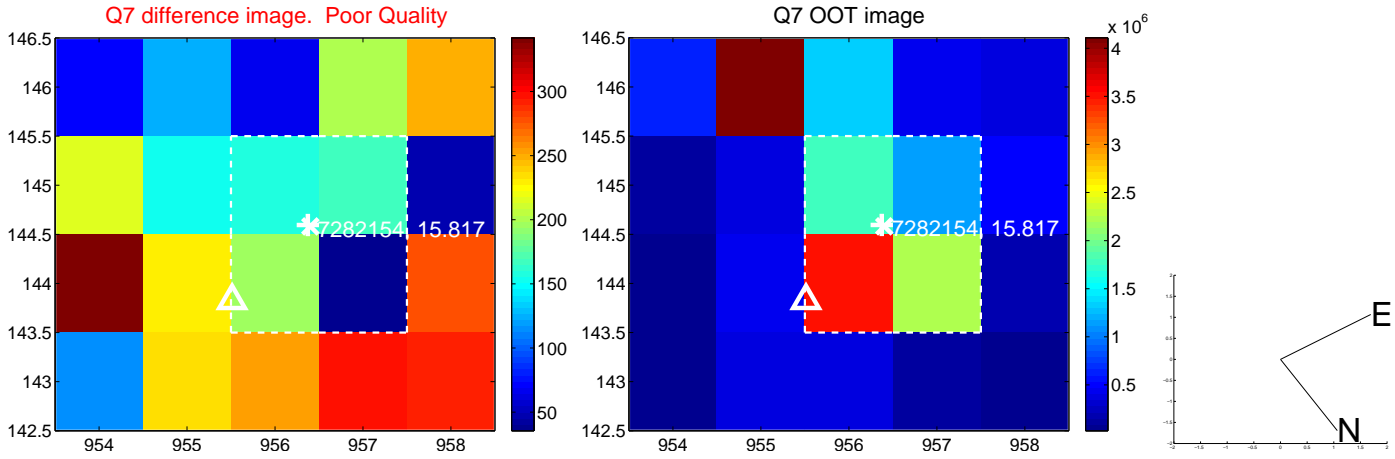
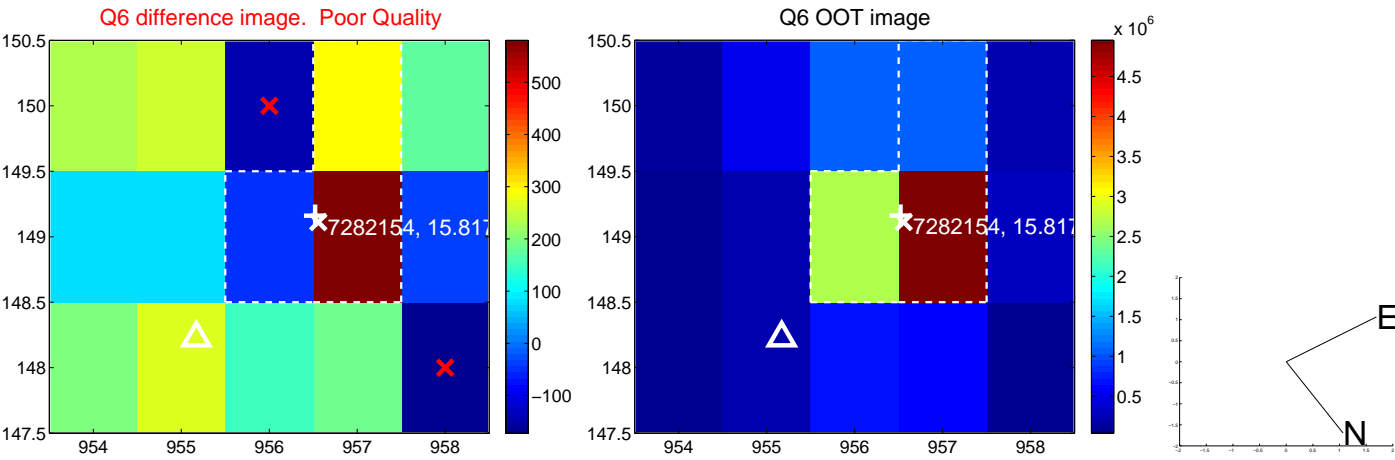
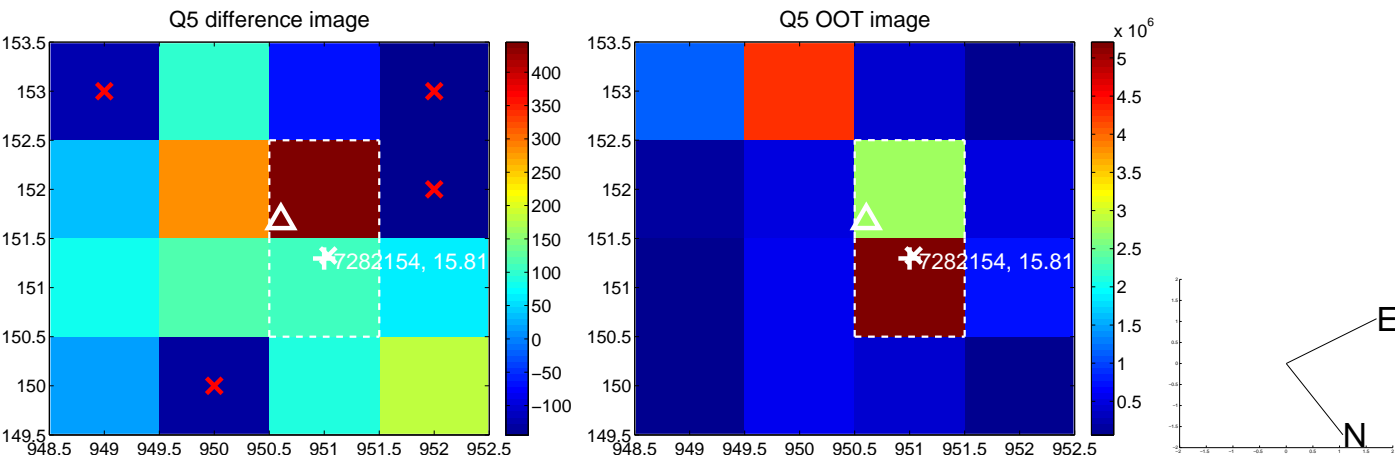


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

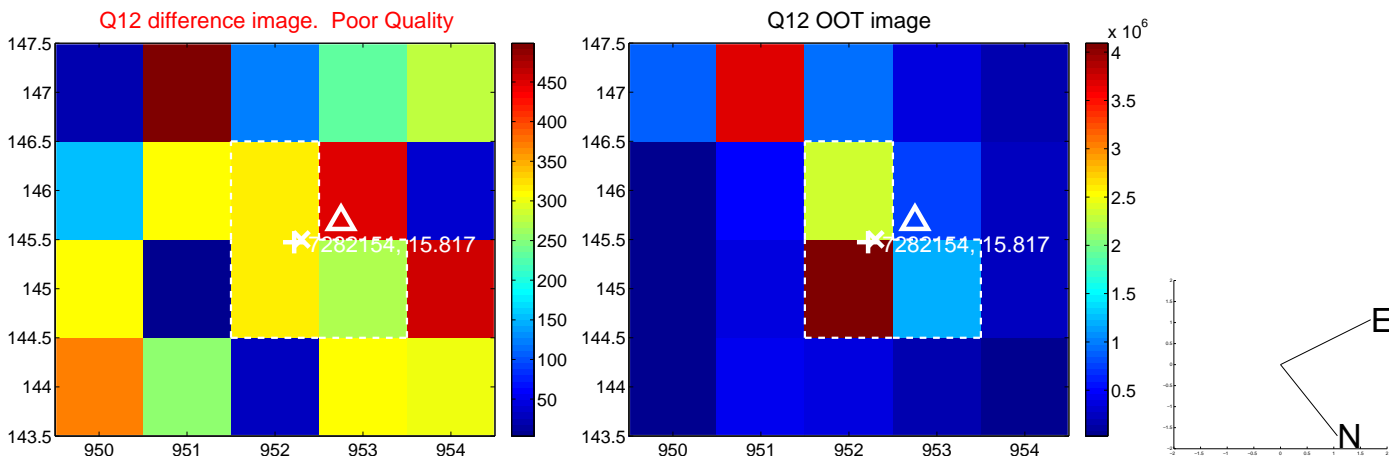
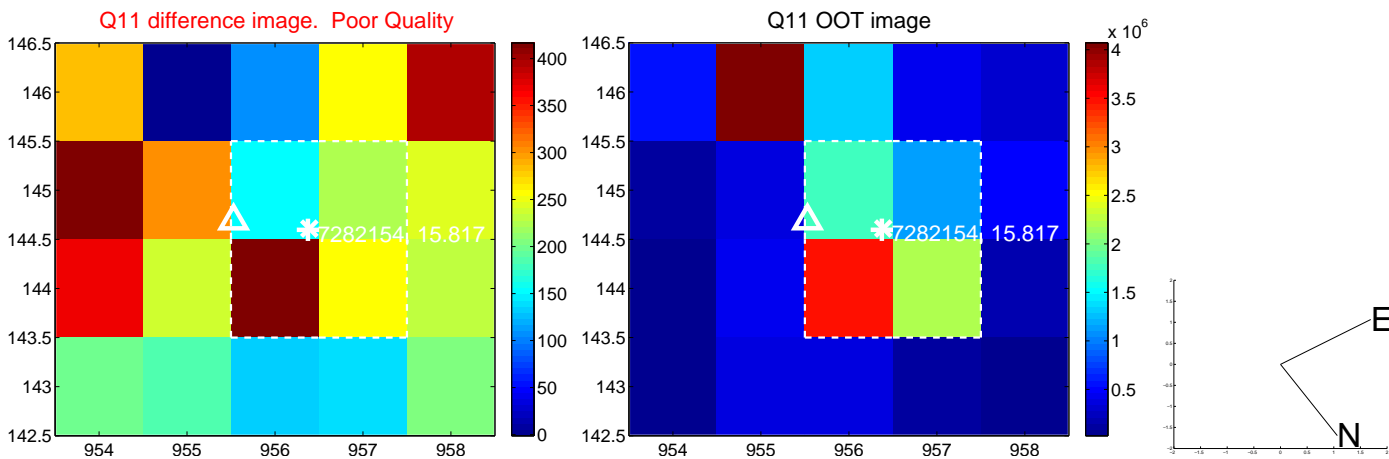
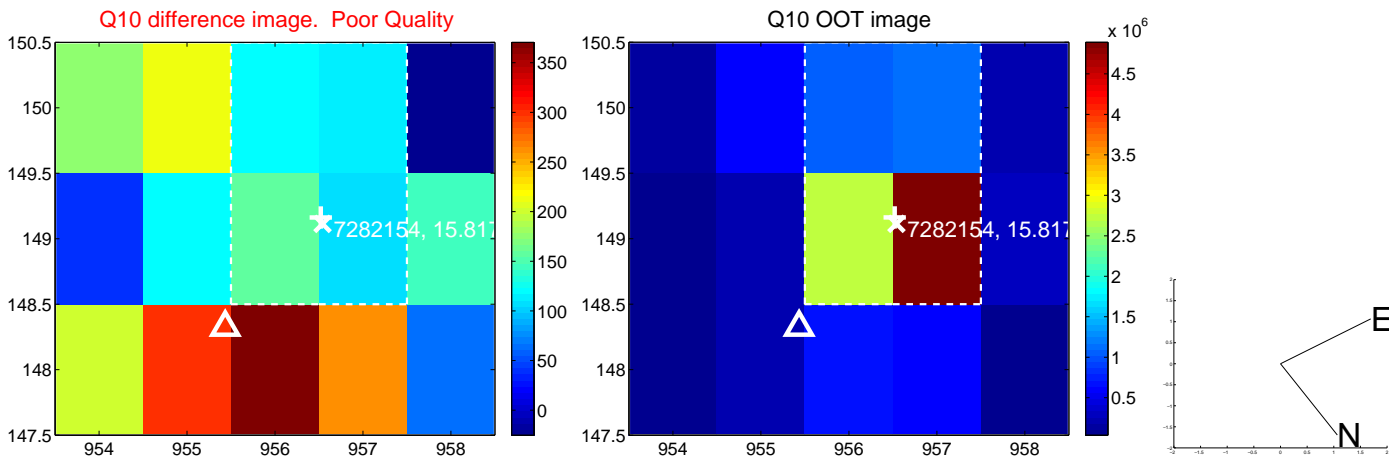
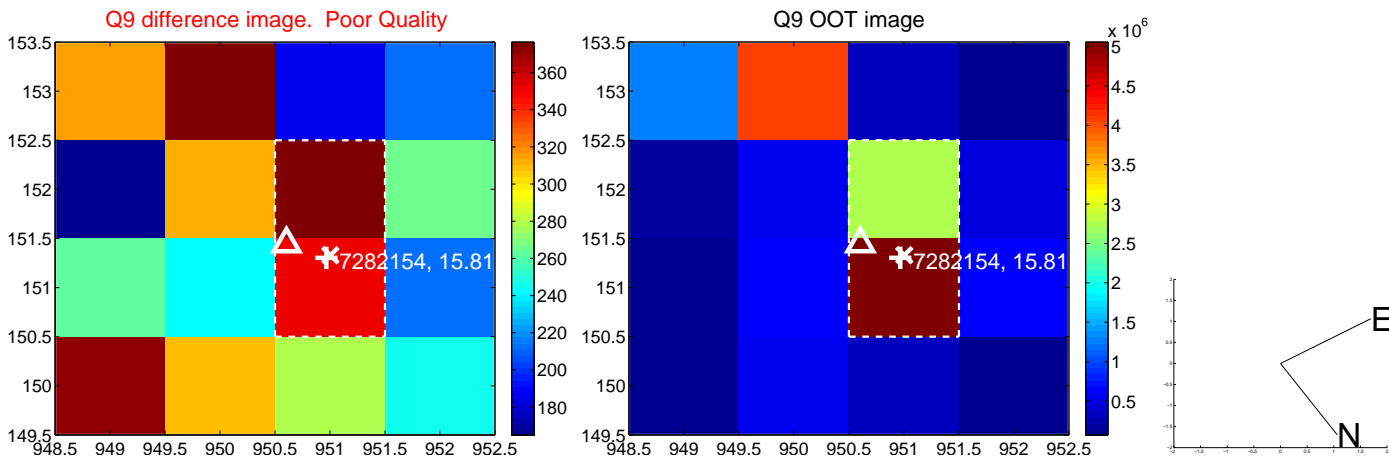


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

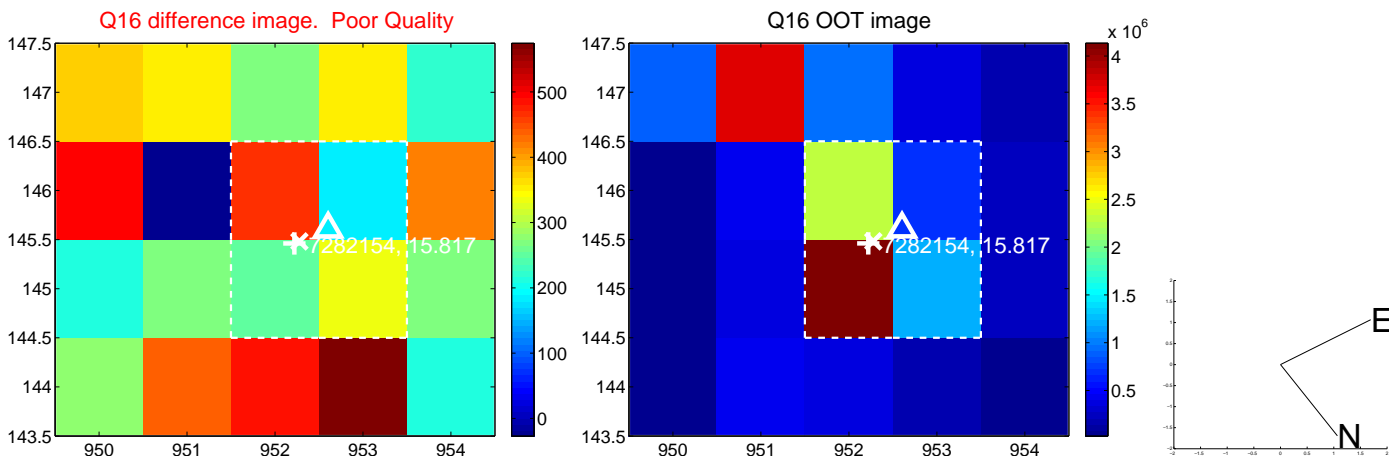
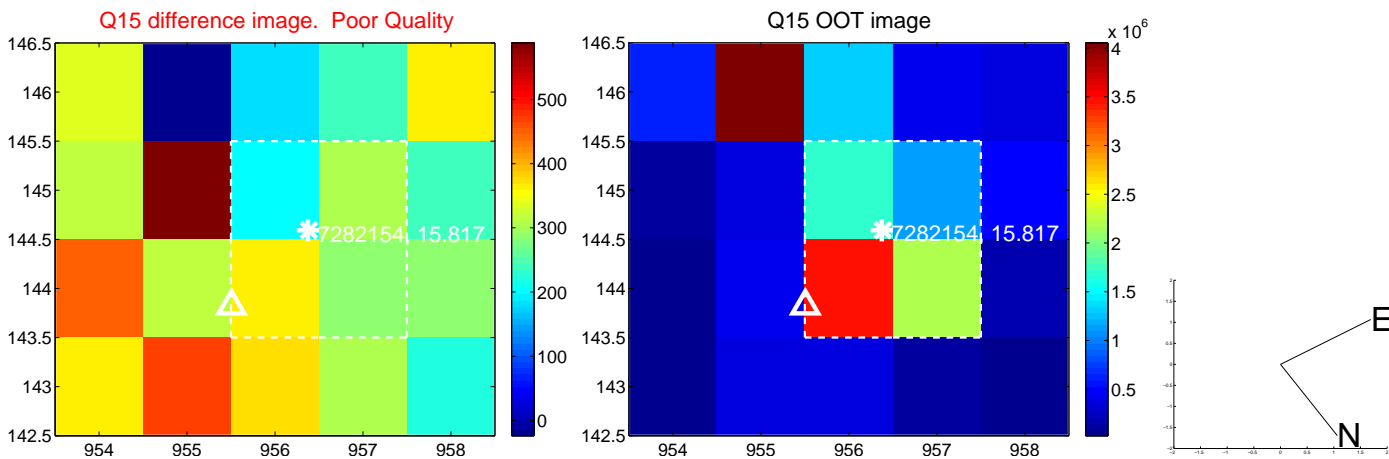
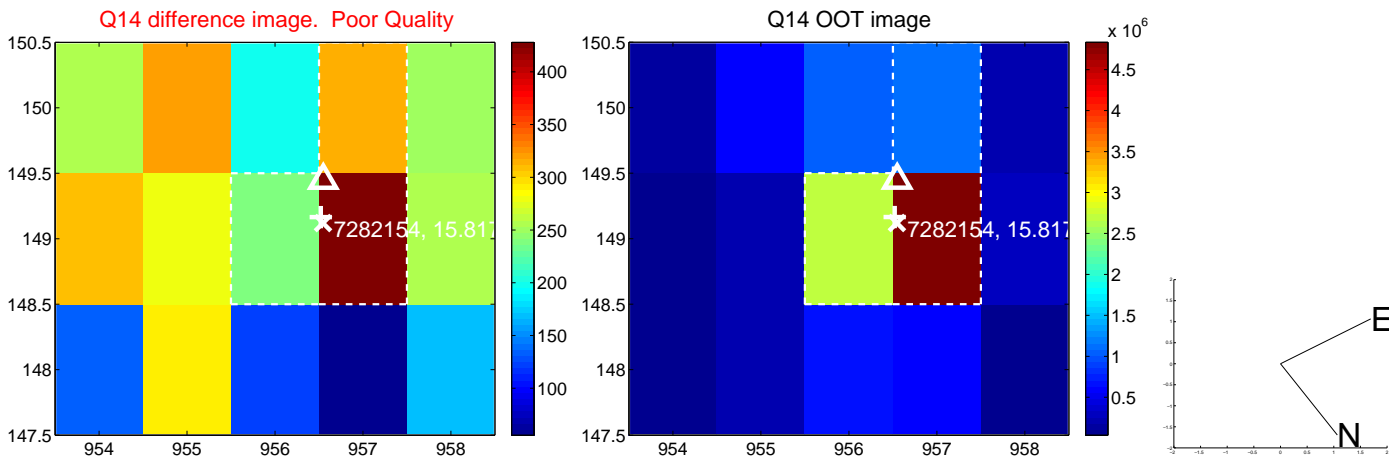
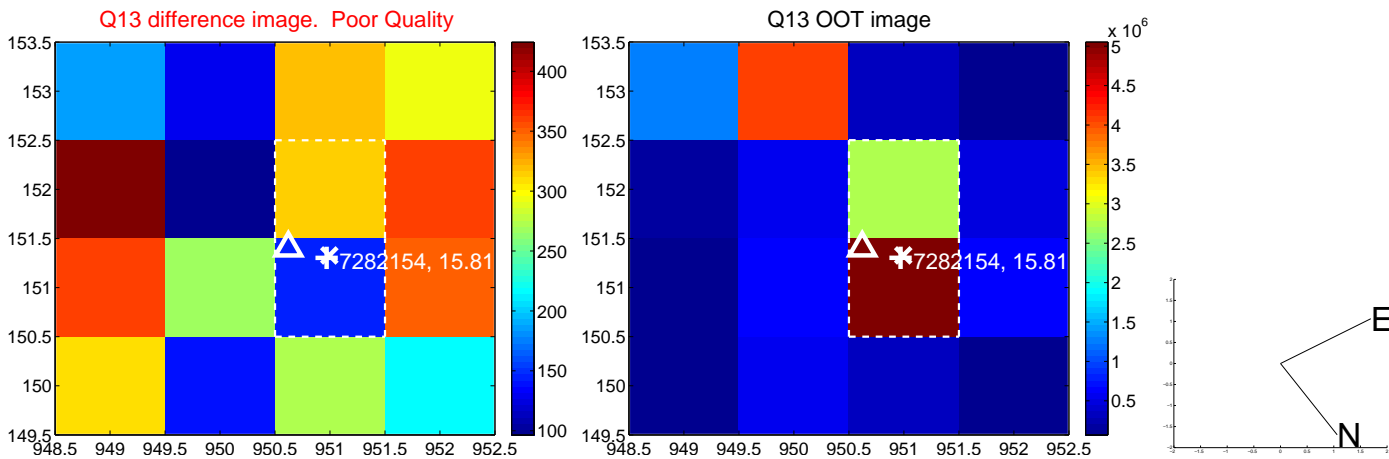




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



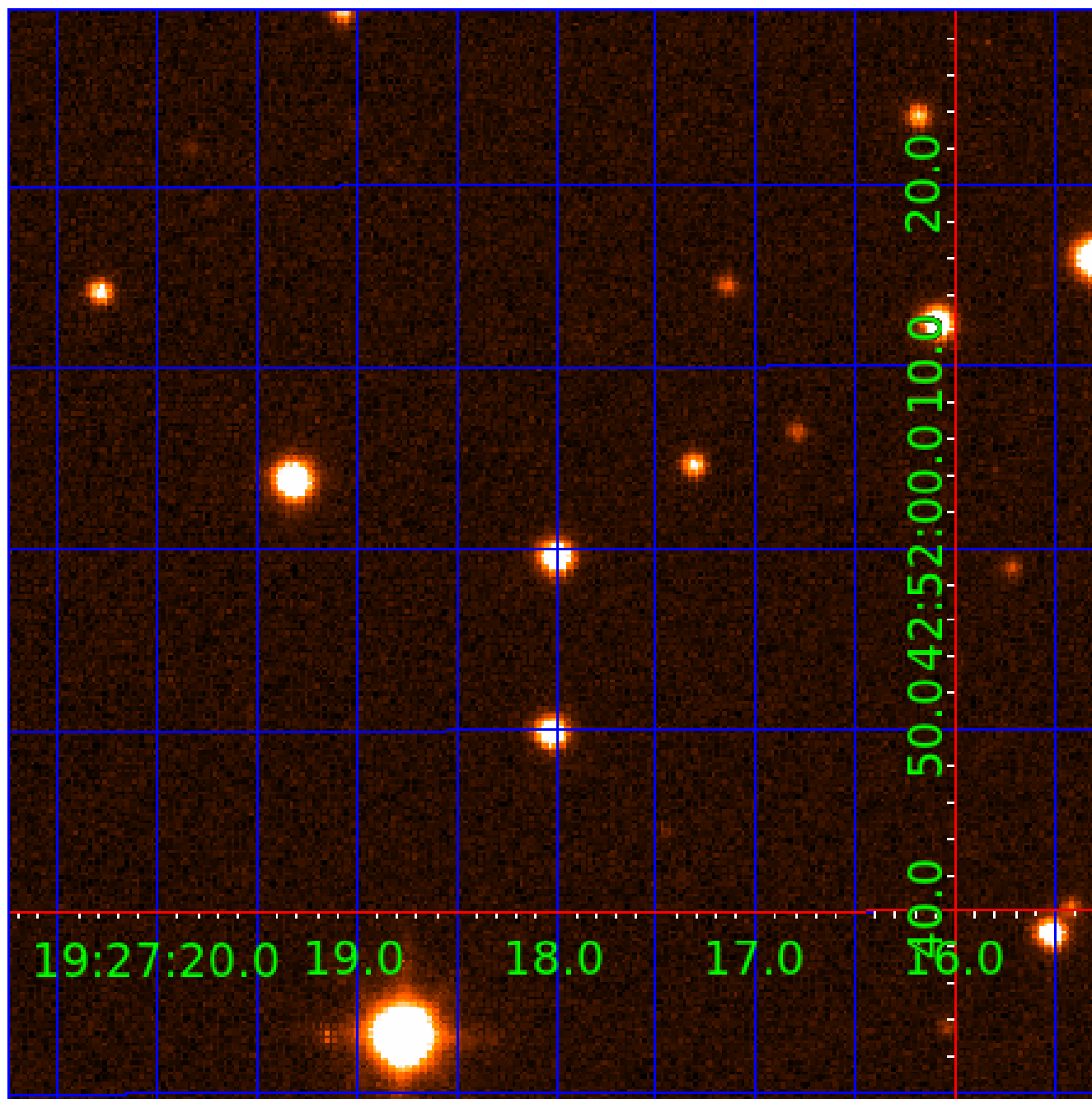
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination





# KIC 007282154

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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007282154-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

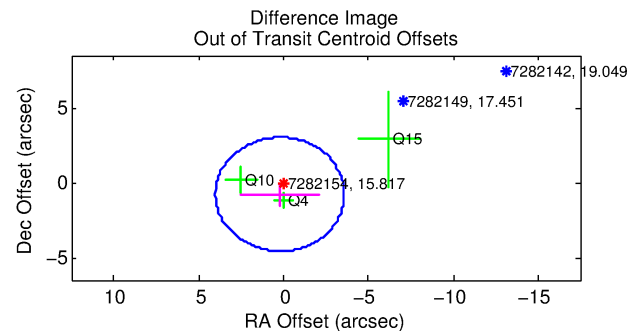
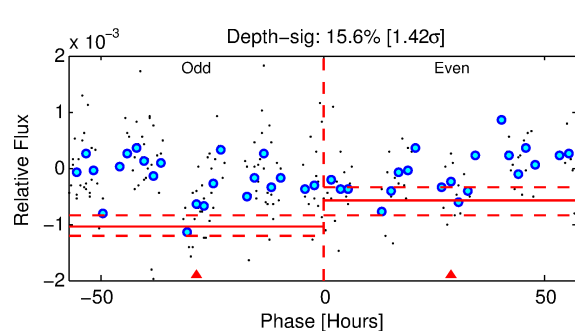
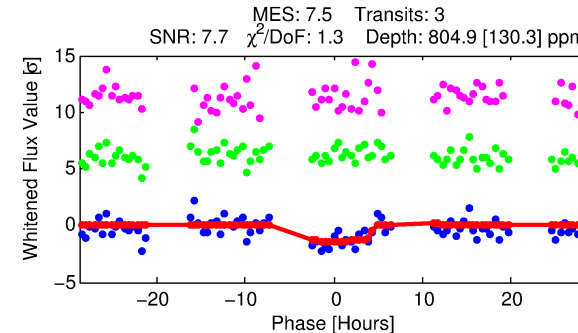
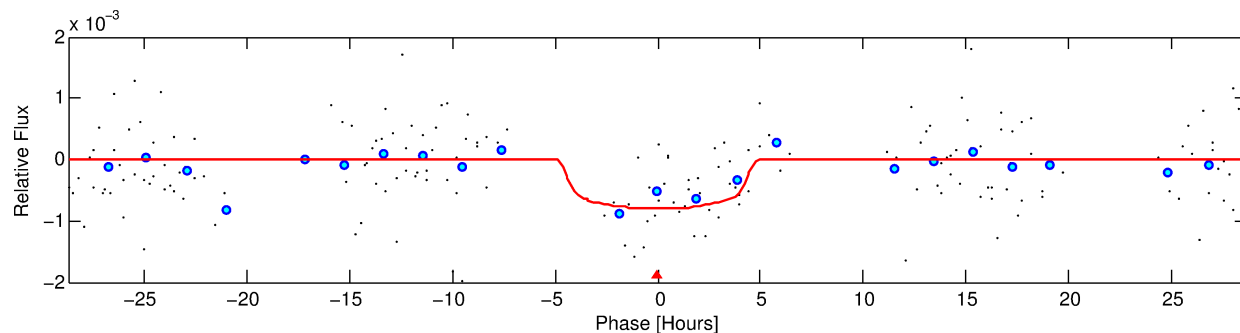
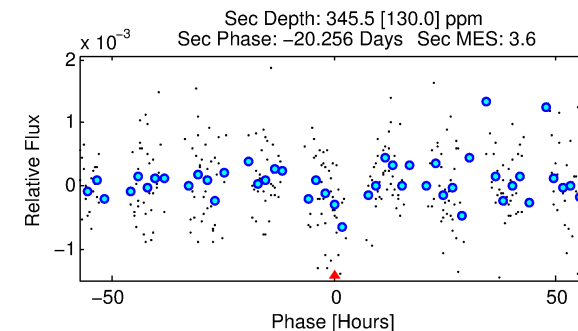
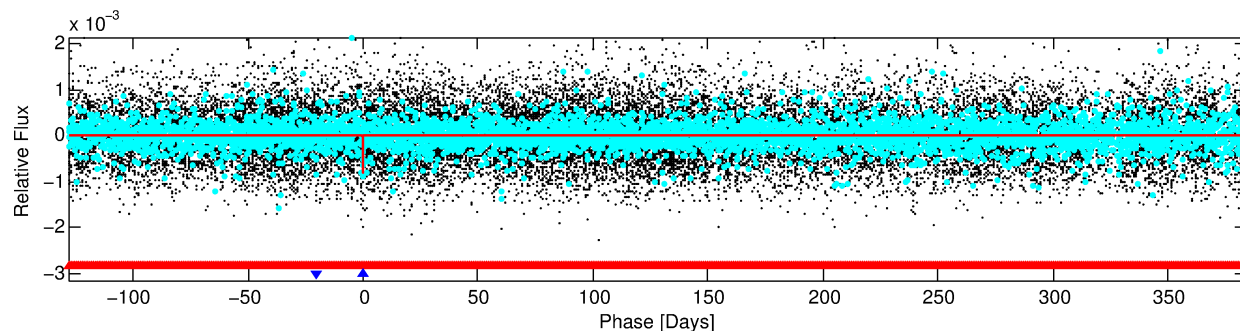
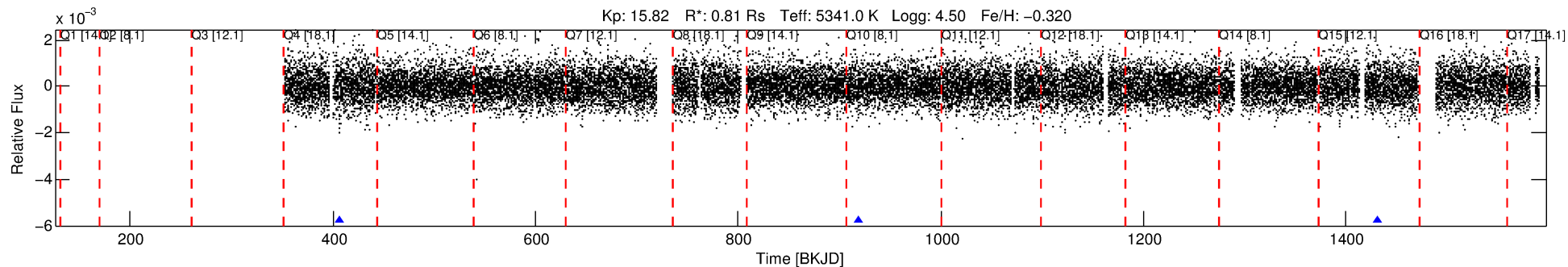
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007282154-02

No Significant Match Found

# DV One-Page Summary

KIC: 7282154 Candidate: 2 of 2 Period: 512.328 d



## DV Fit Results:

Period = 512.32835 [0.03562] d  
Epoch = 406.4093 [0.1136] BKJD  
Rp/R\* = 0.0287 [0.0458]  
a/R\* = 272.68 [1843.90]  
b = 0.78 [3.25]  
Seff = 0.37 [0.09]  
Teq = 199 [12] K  
Rp = 2.53 [4.06] Re  
a = 1.1368 [0.1525] AU  
Ag = 38348.90 [123469.49] [0.31σ]  
Teff = 4298 [3457] K [1.19σ]

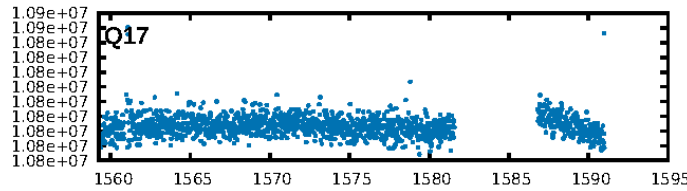
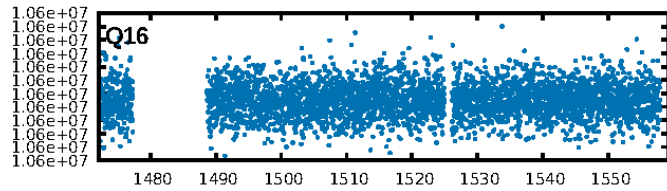
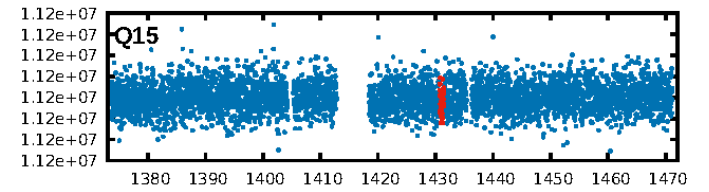
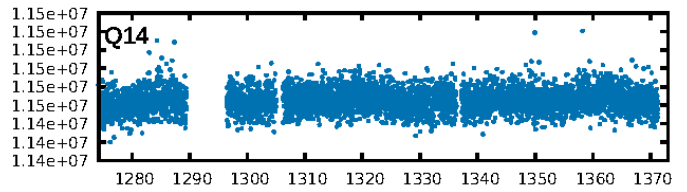
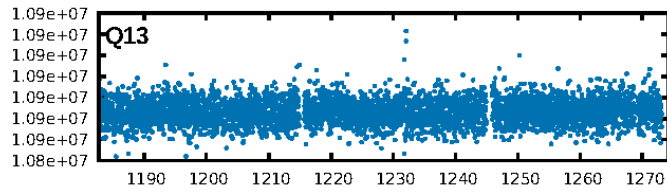
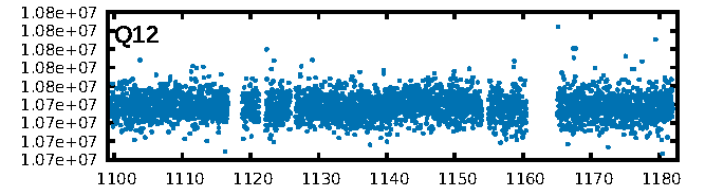
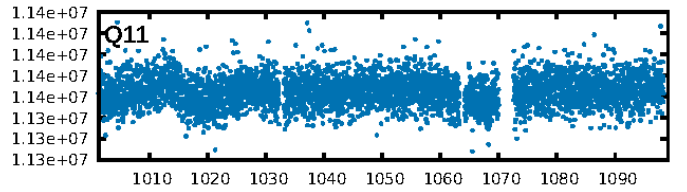
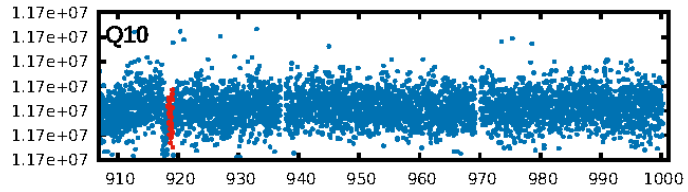
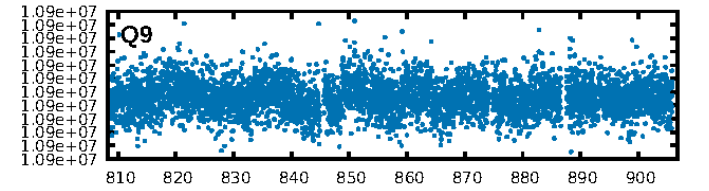
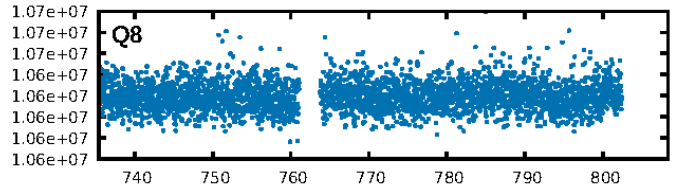
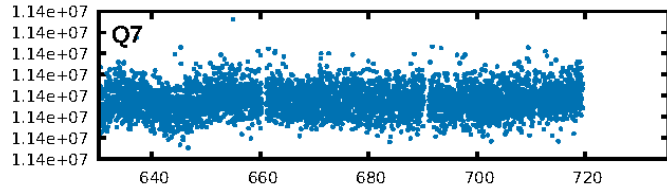
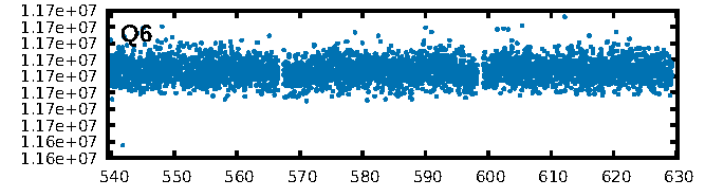
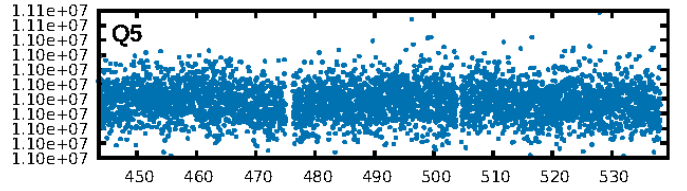
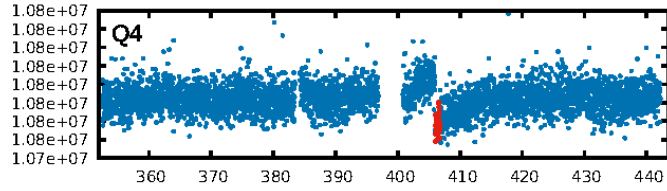
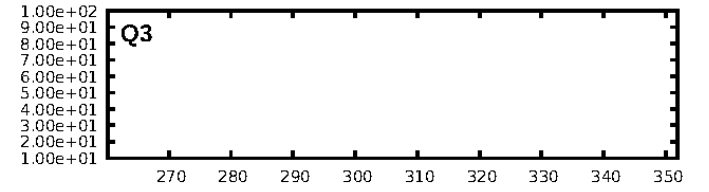
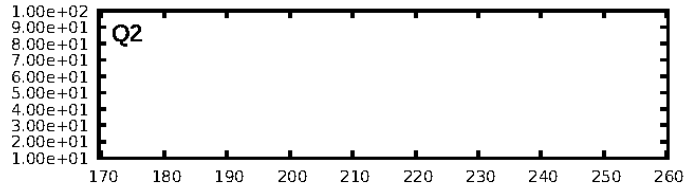
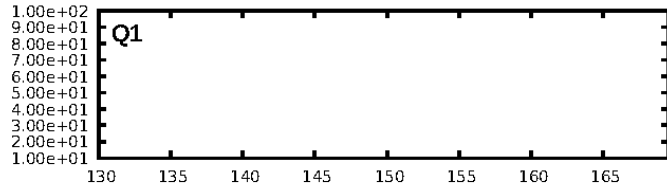
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1258.29σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 8.2%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.22e-12**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 3.322  
Centroid-sig: 0.3%  
**Centroid-so: 4.349 arcsec [3.01σ]**  
OotOffset-rm: 0.806 arcsec [0.64σ]  
KicOffset-rm: 0.889 arcsec [0.74σ]  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 0.00 [0/3]

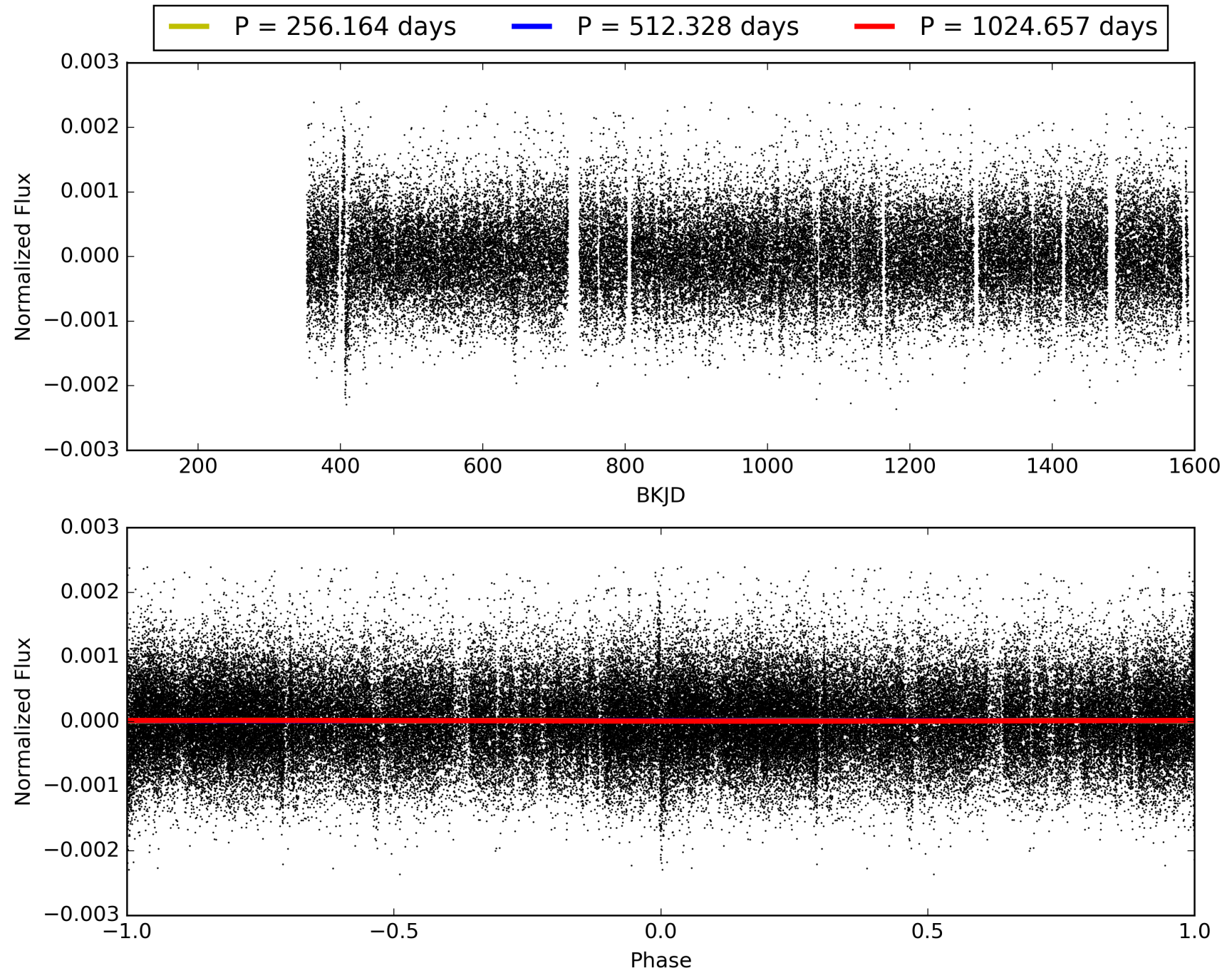
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:34:20 Z

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

## TCE 007282154-02, PDC Light Curves



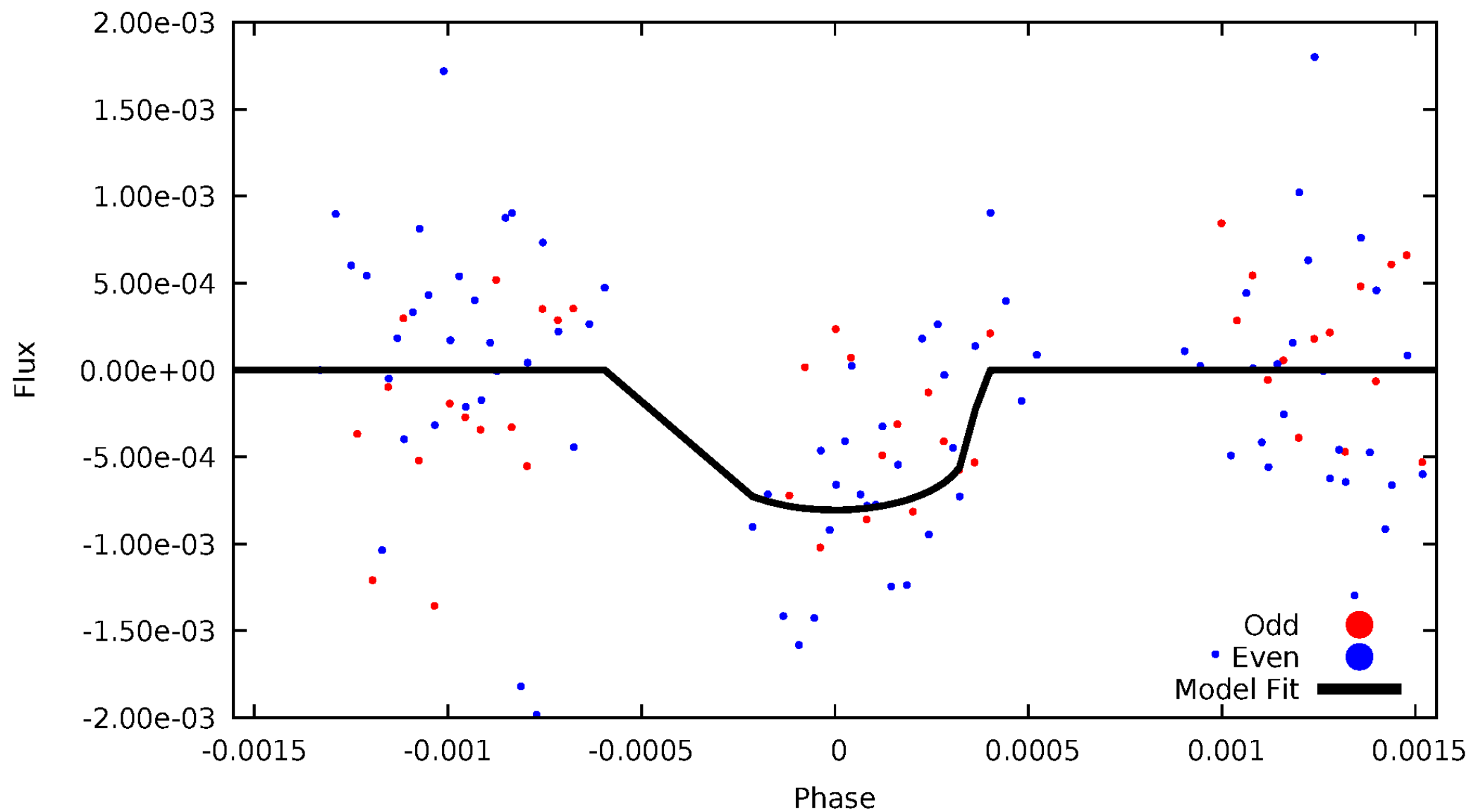
# TCE 007282154-02





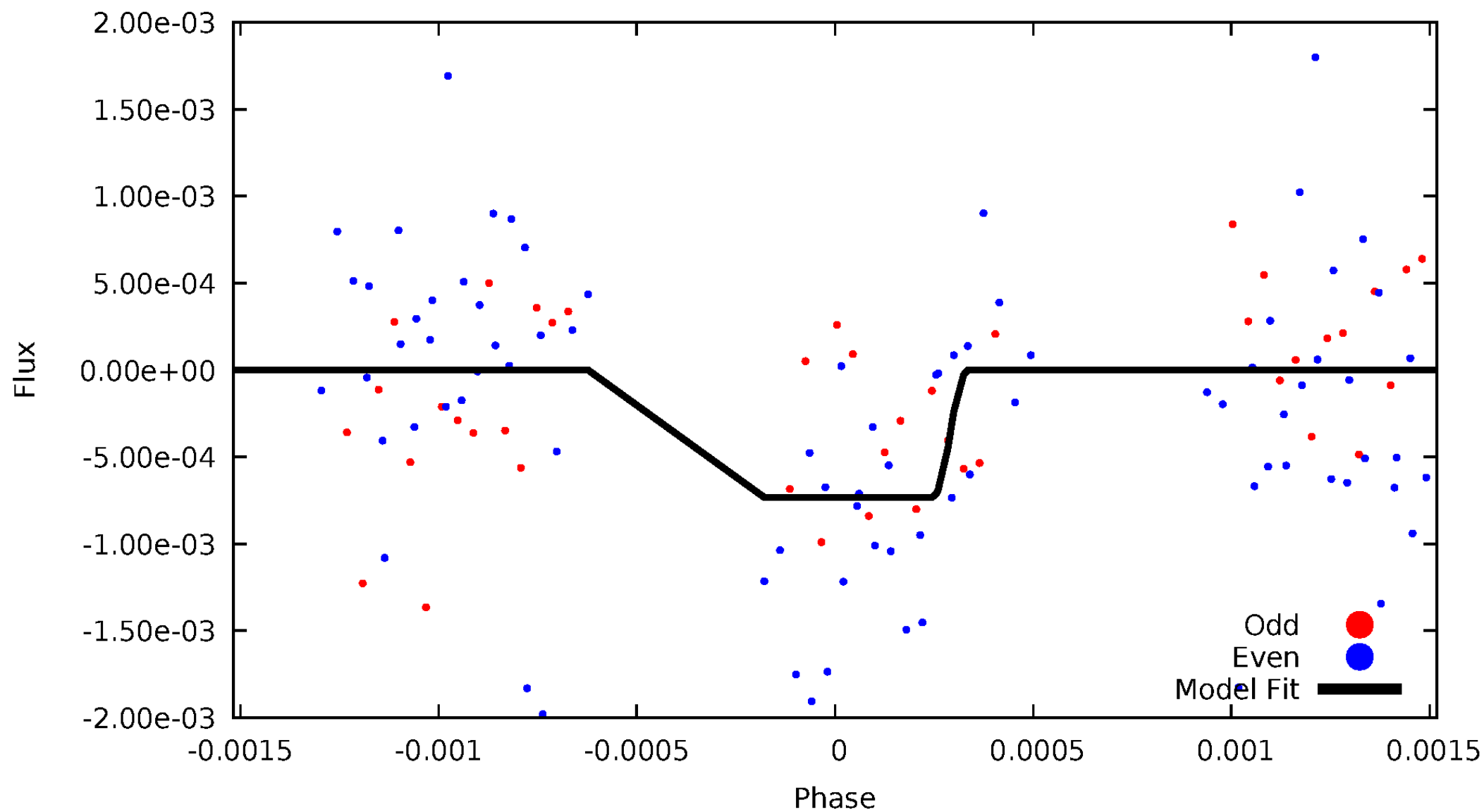
# DV Odd/Even

TCE 007282154-02



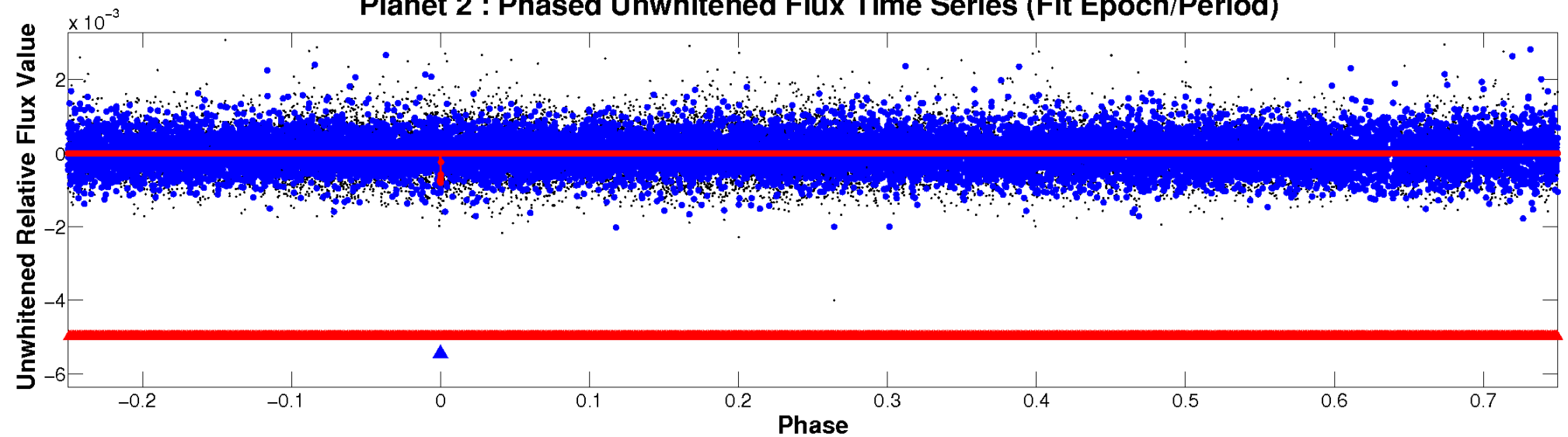
# ALT Odd/Even

TCE 007282154-02

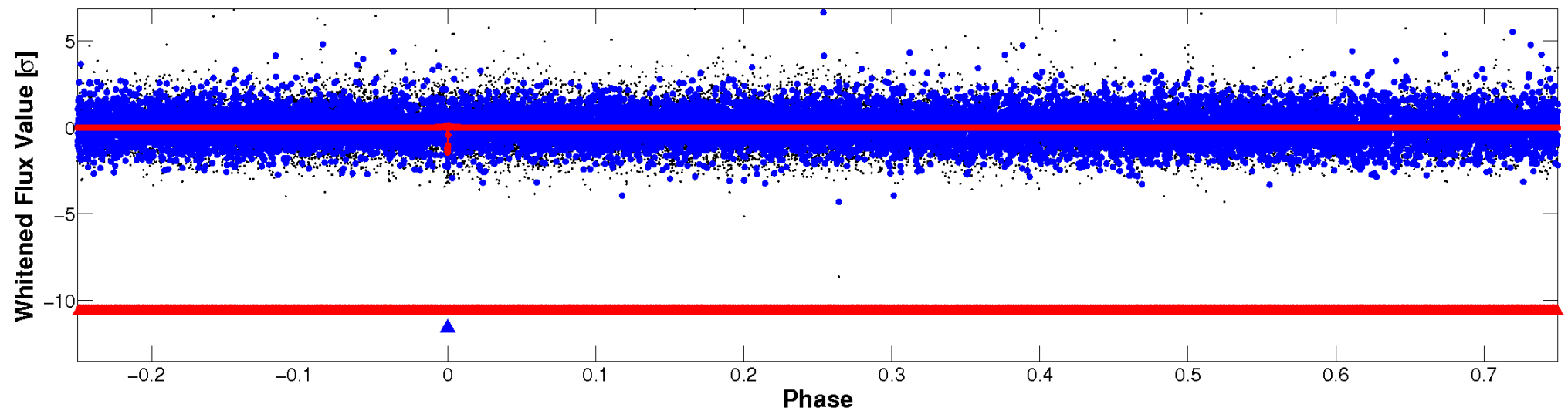


# Non-Whitened Vs. Whitened Light Curve

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



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



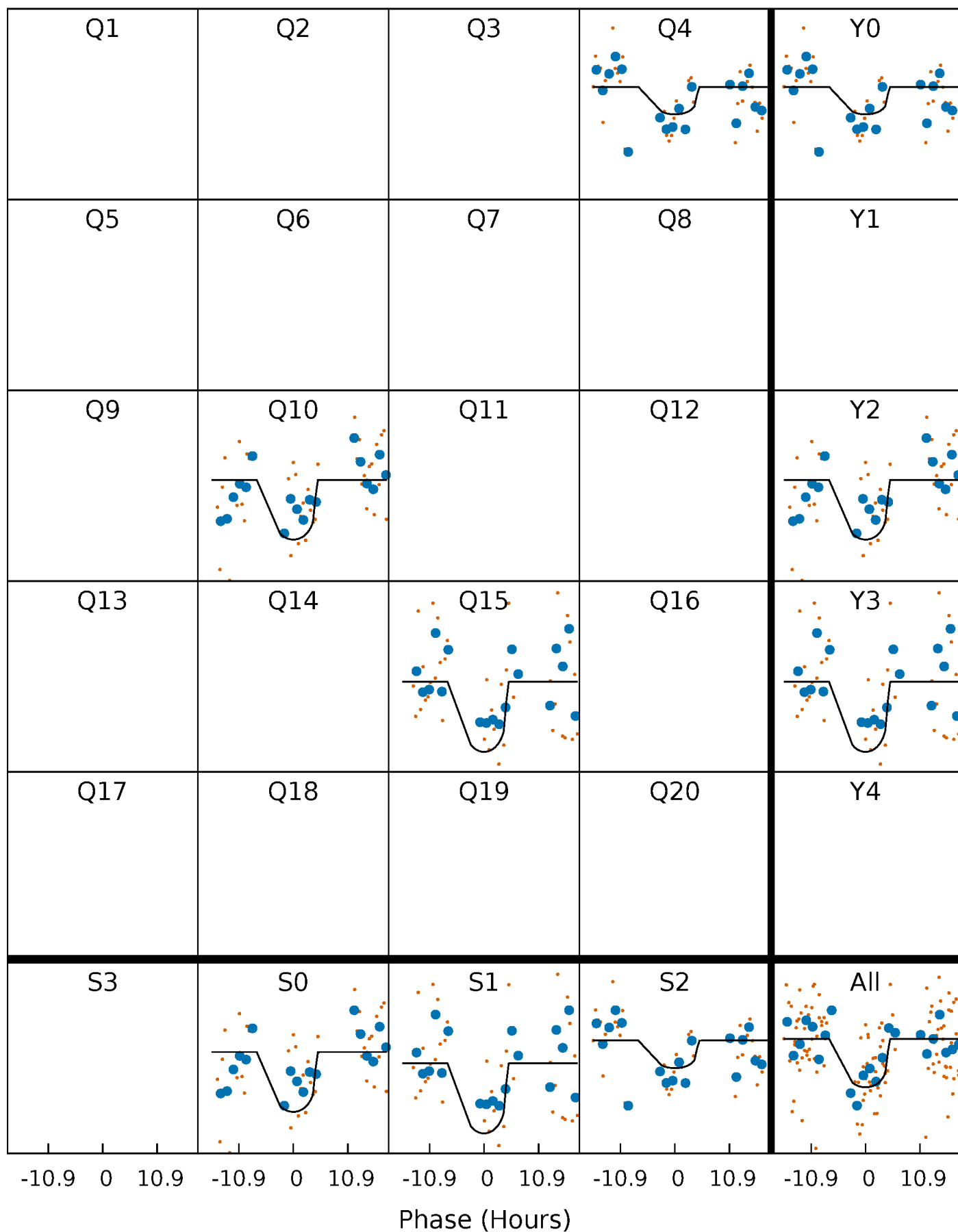
# PDC Quarter-Phased Transit Curves

TCE 007282154-02 P=512.328349 Days  $T_0=406.409345$  (BKJD)



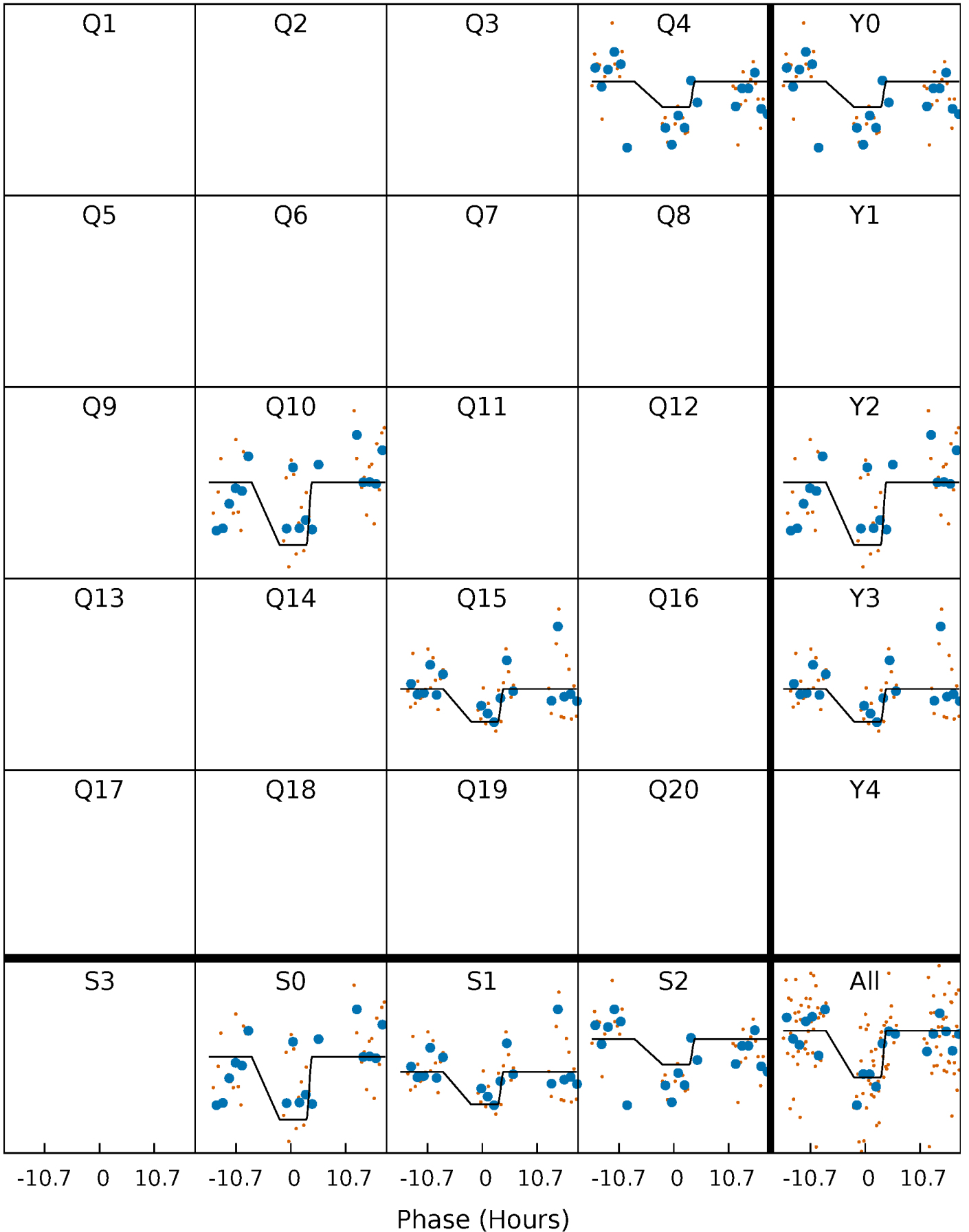
# DV Quarter-Phased Transit Curves

TCE 007282154-02 P=512.328349 Days  $T_0=406.409345$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

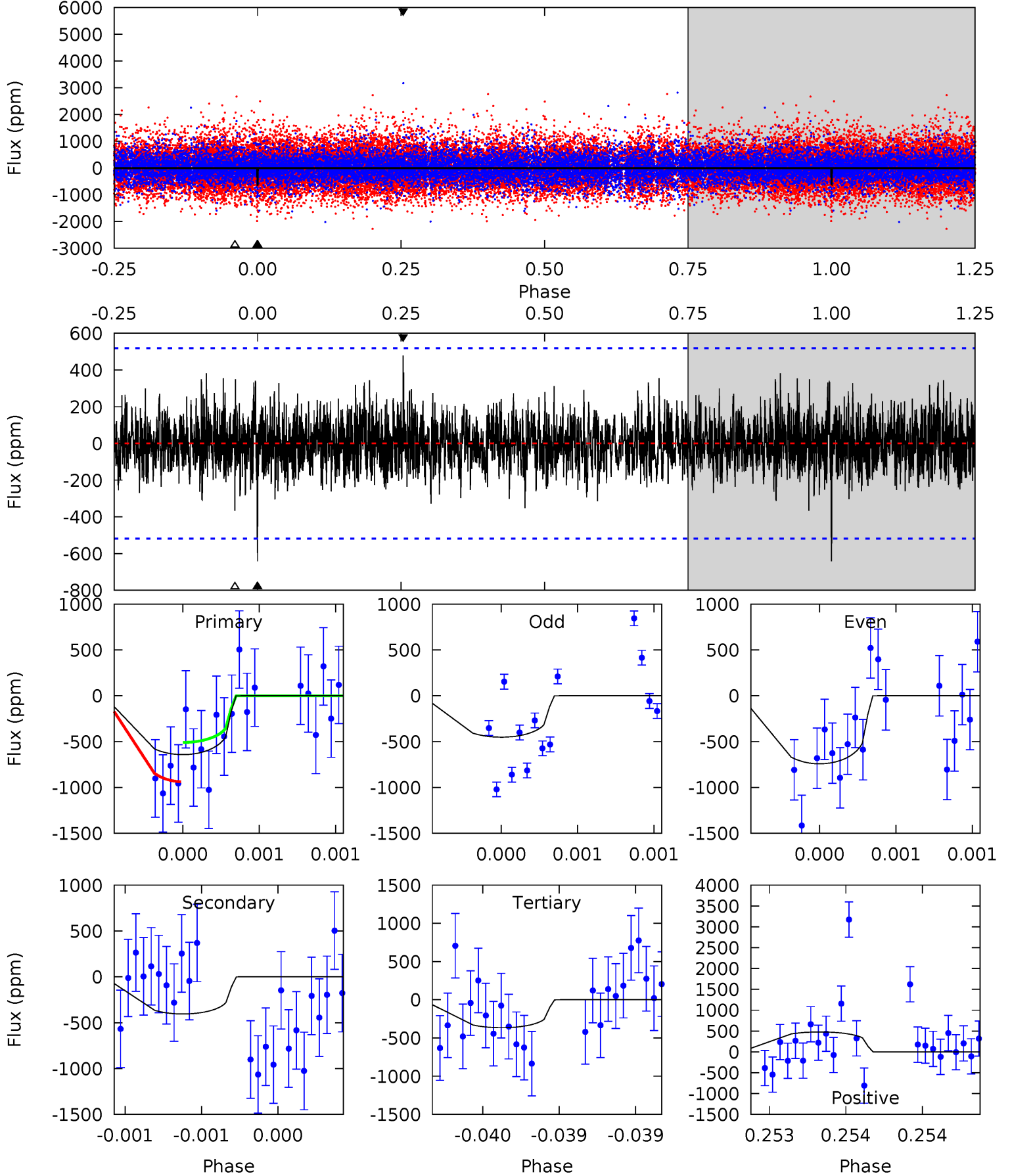
TCE 007282154-02 P=512.344272 Days  $T_0=406.391789$  (BKJD)



# DV Model-Shift Uniqueness Test

007282154-02, P = 512.328349 Days, E = 406.409345 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
6.87	4.33	3.92	5.11	5.55	3.44	1.12	2.95	1.76	0.41	-0.78	1.52	1.20	0.43	1.91

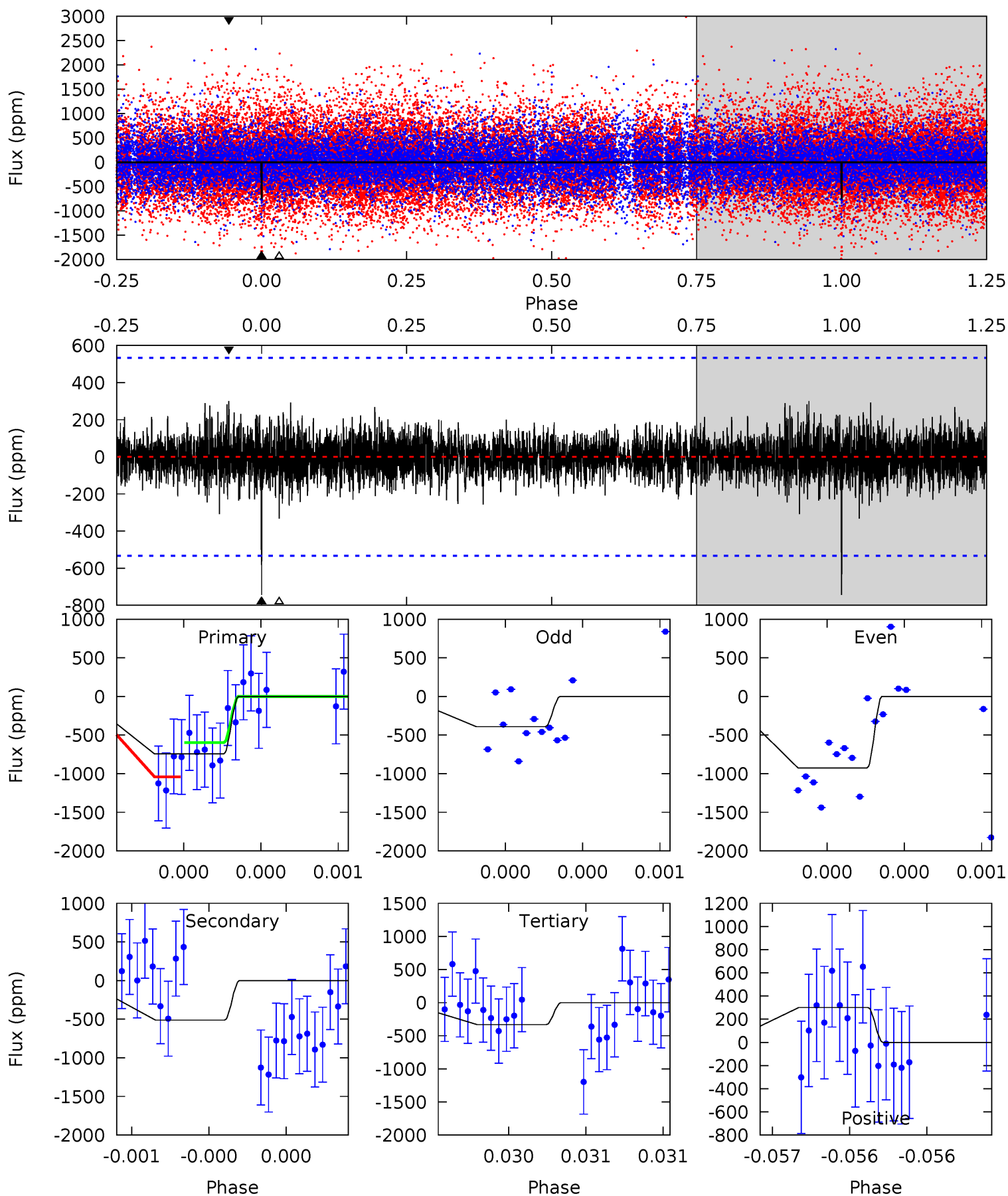




# Alt Model-Shift Uniqueness Test

007282154-02, P = 512.344272 Days, E = 406.391789 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
7.79	5.36	3.48	3.15	5.58	3.50	0.77	4.31	4.64	1.88	2.21	2.71	1.40	0.29	2.01



### Stellar Parameters For KIC 007282154

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5341^{+204}_{-185}$	$4.496^{+0.105}_{-0.105}$	$-0.320^{+0.350}_{-0.300}$	$0.808^{+0.130}_{-0.106}$	$0.747^{+0.113}_{-0.052}$	$1.994^{+0.889}_{-0.615}$
	+4%/-3%	+2%/-2%	+109%/-94%	+16%/-13%	+15%/-7%	+45%/-31%
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 007282154-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-405 \pm 93$	$3.92^{+3.21}_{-2.59}$	$278^{+14}_{-15}$	$3880^{+2326}_{-678}$	$17906^{+153455}_{-12602}$
Alt.	$-512 \pm 96$	$3.80^{+3.53}_{-2.45}$	$277^{+15}_{-14}$	$4087^{+2271}_{-758}$	$24708^{+176245}_{-17793}$

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

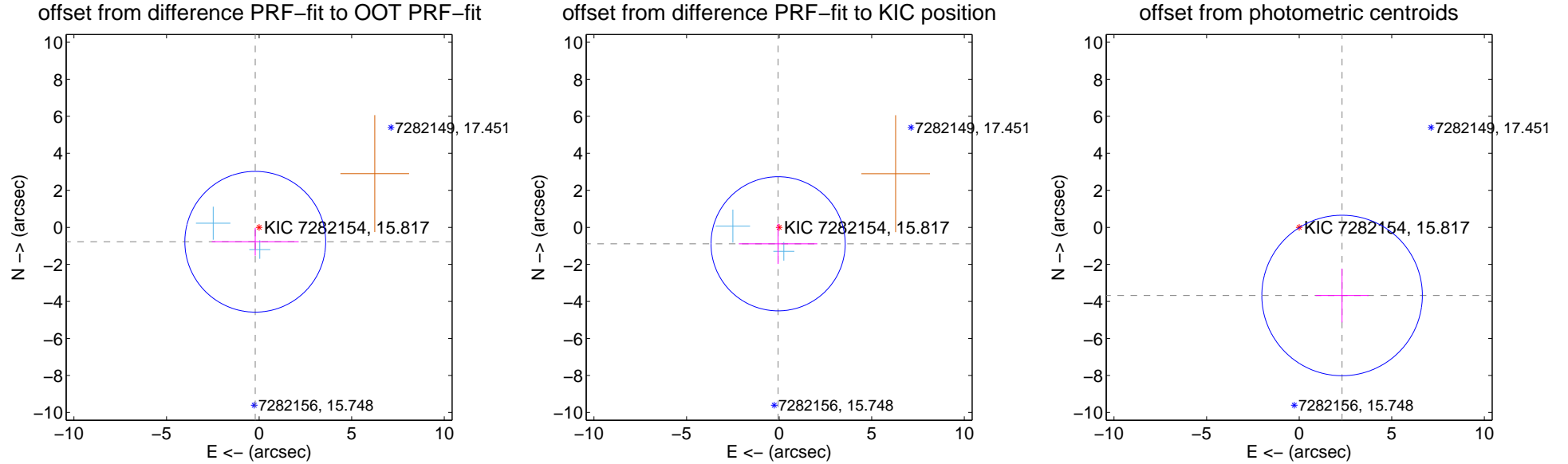
## DV Centroid Data

Supplemental centroid analysis for 007282154-02. Kepler magnitude: 15.82. Transit SNR 7.73

There are 2 quarters with good PRF difference image offsets

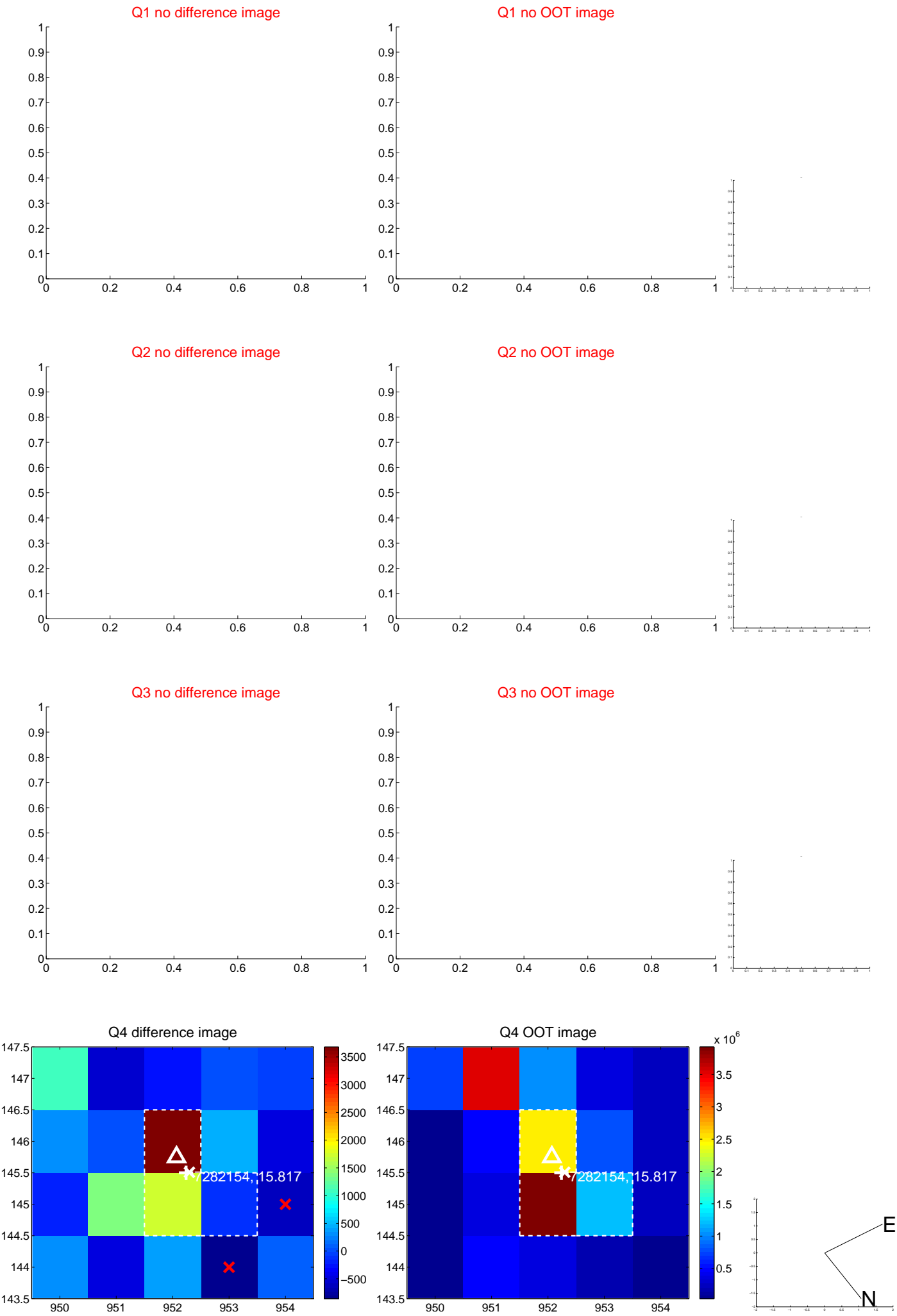
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.806 \pm 1.267$	0.64	$0.208 \pm 2.344$	$-0.779 \pm 0.749$
PRF-fit source offset from KIC position	$0.889 \pm 1.208$	0.74	$0.056 \pm 2.120$	$-0.888 \pm 1.092$
photometric centroid source offset	$4.35 \pm 1.44$	3.01	$-2.32 \pm 1.43$	$-3.68 \pm 1.45$

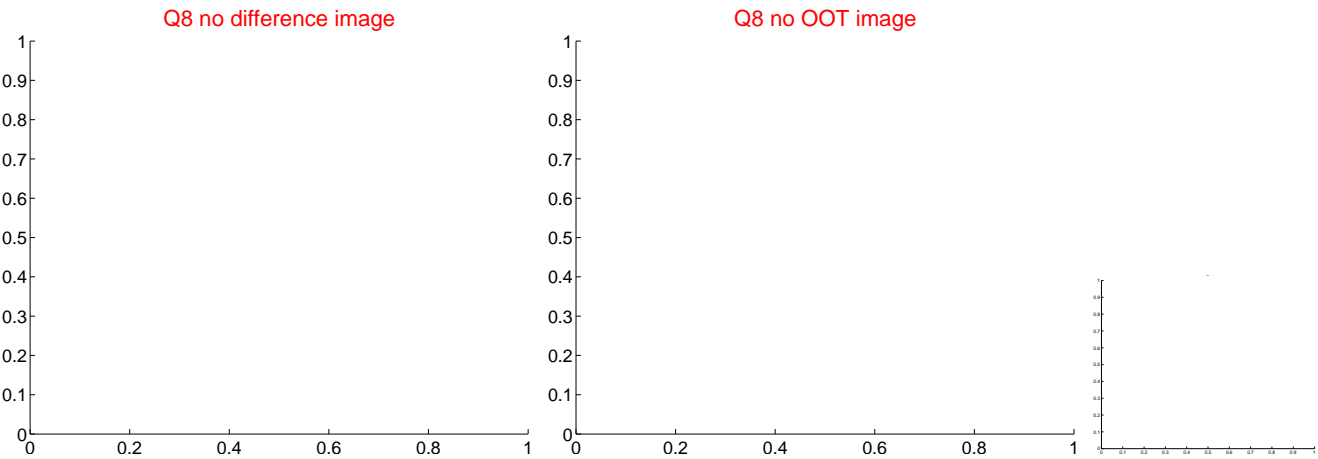
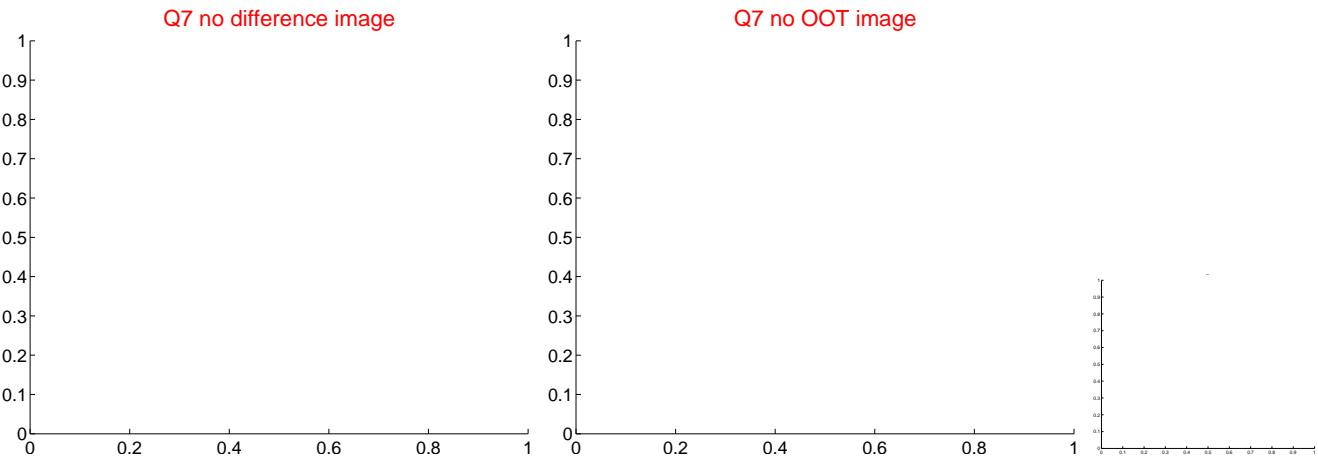
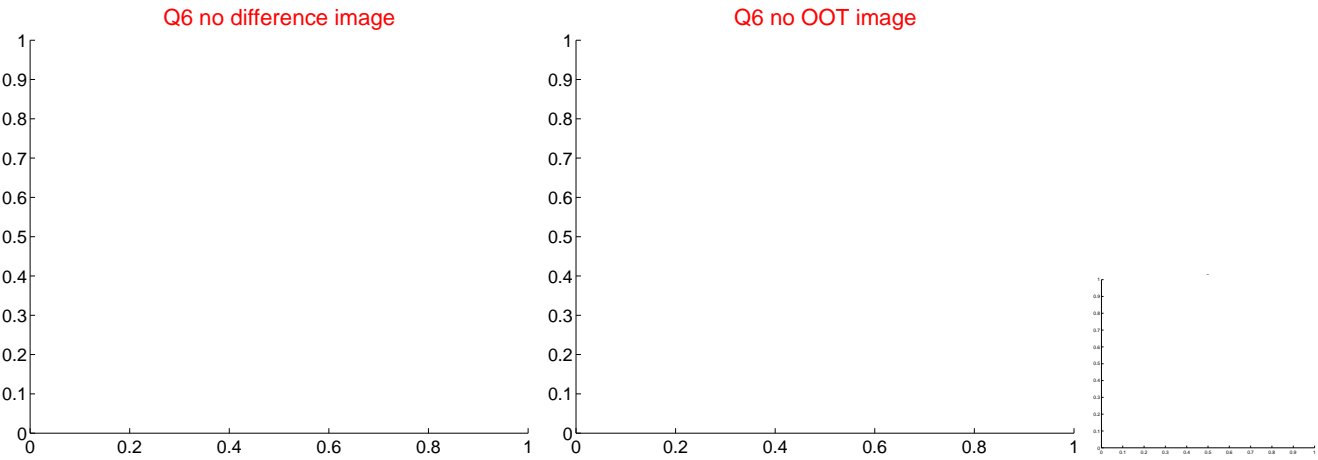
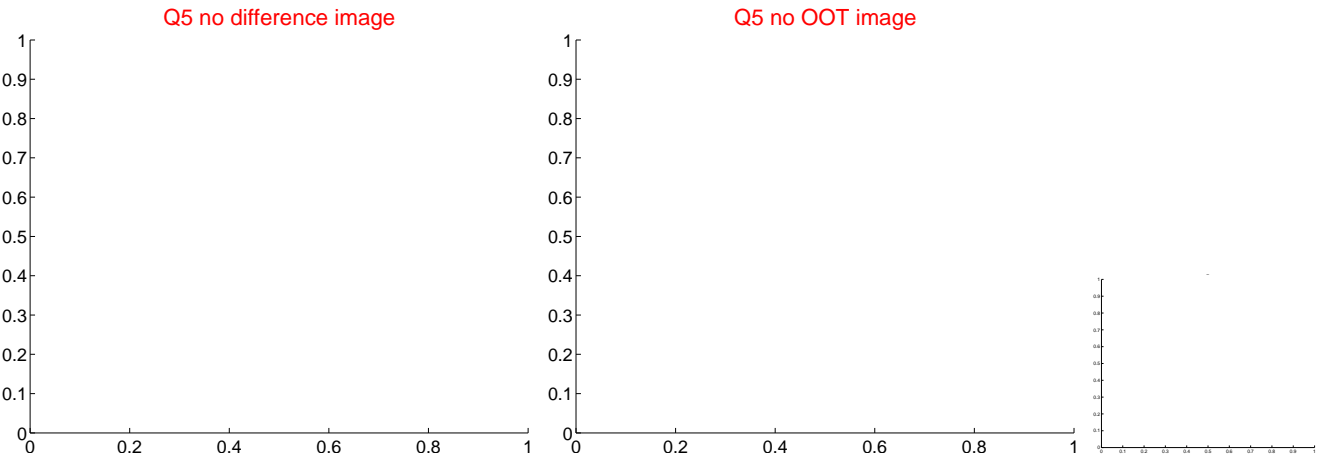


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

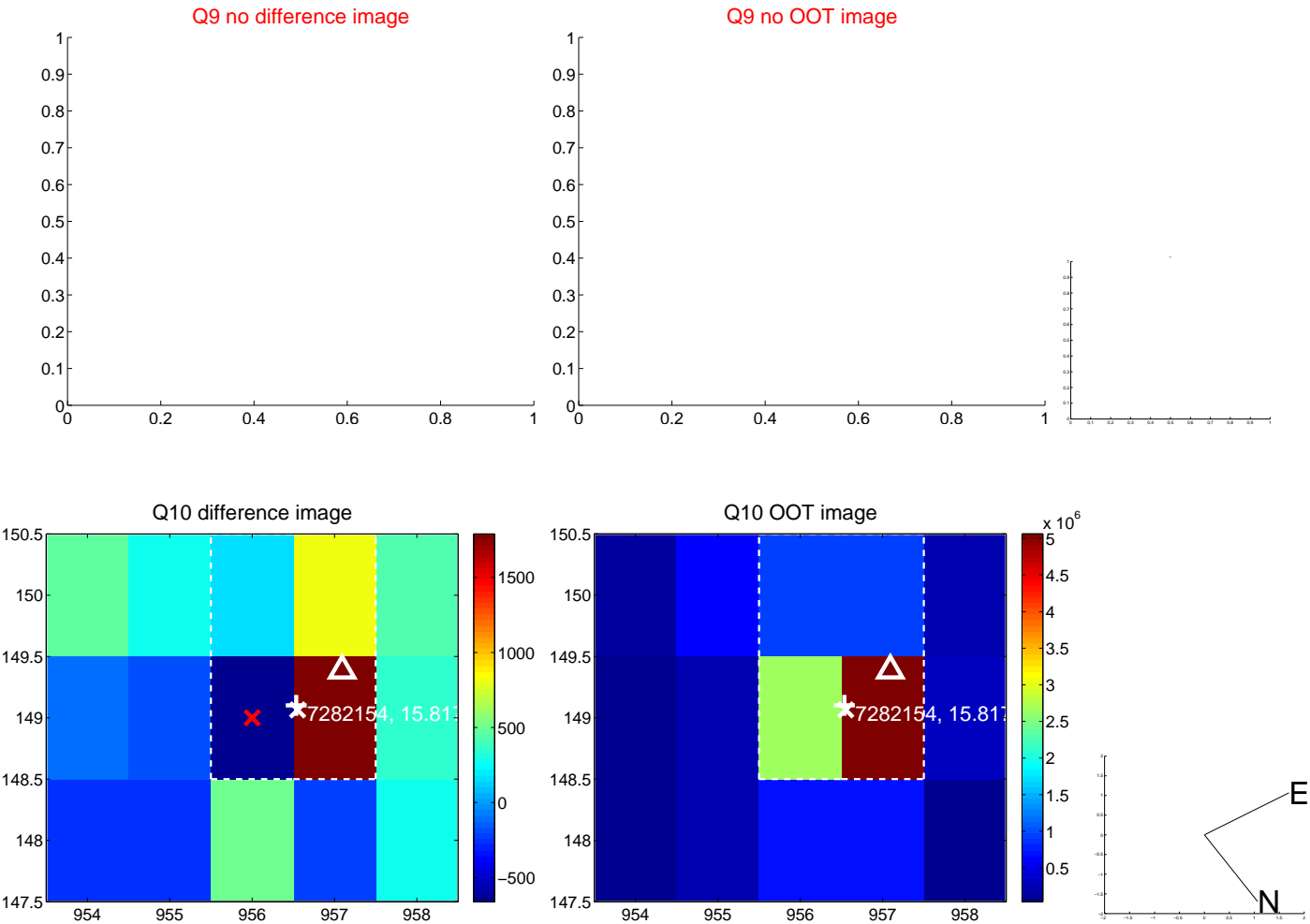
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



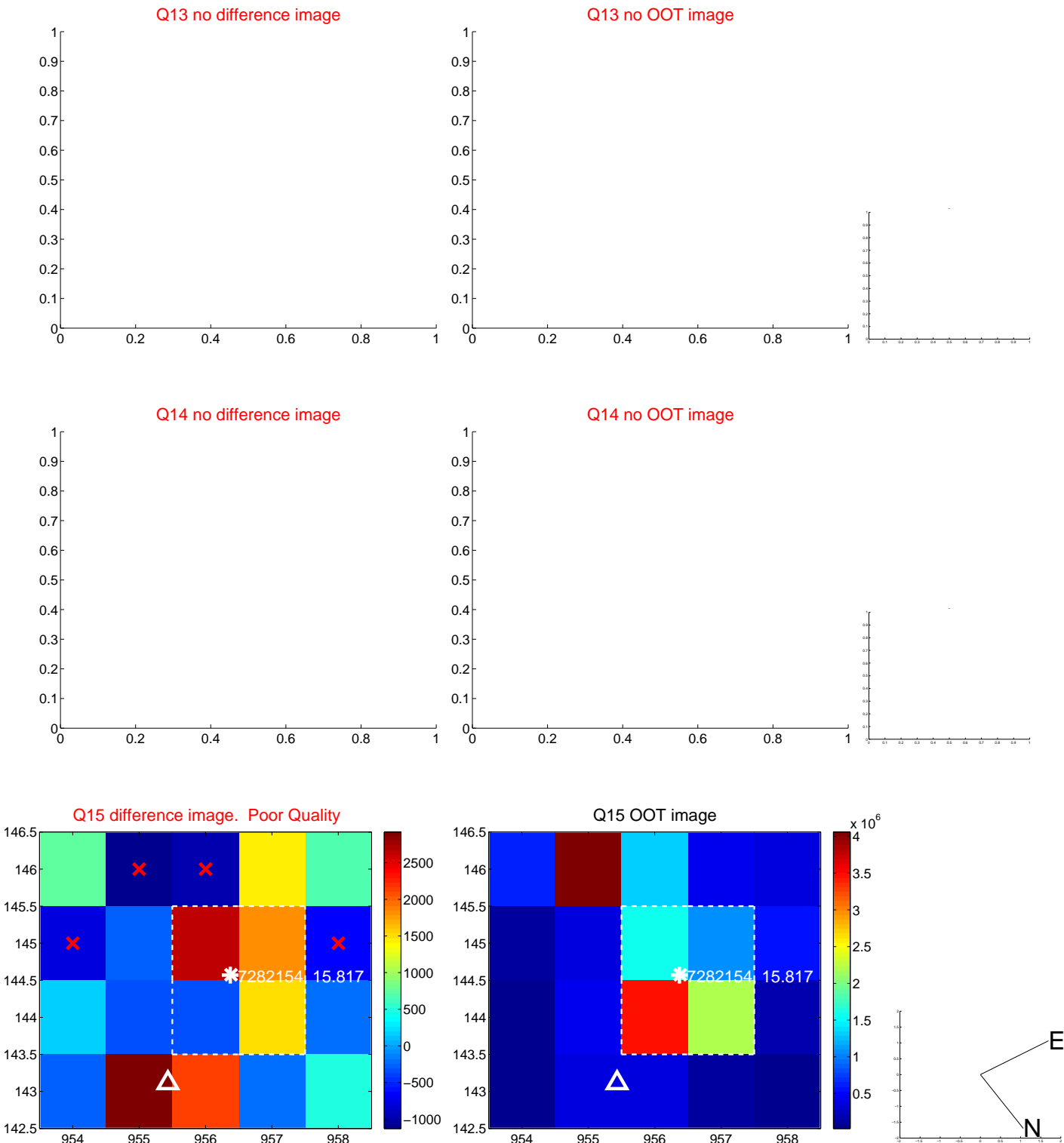
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

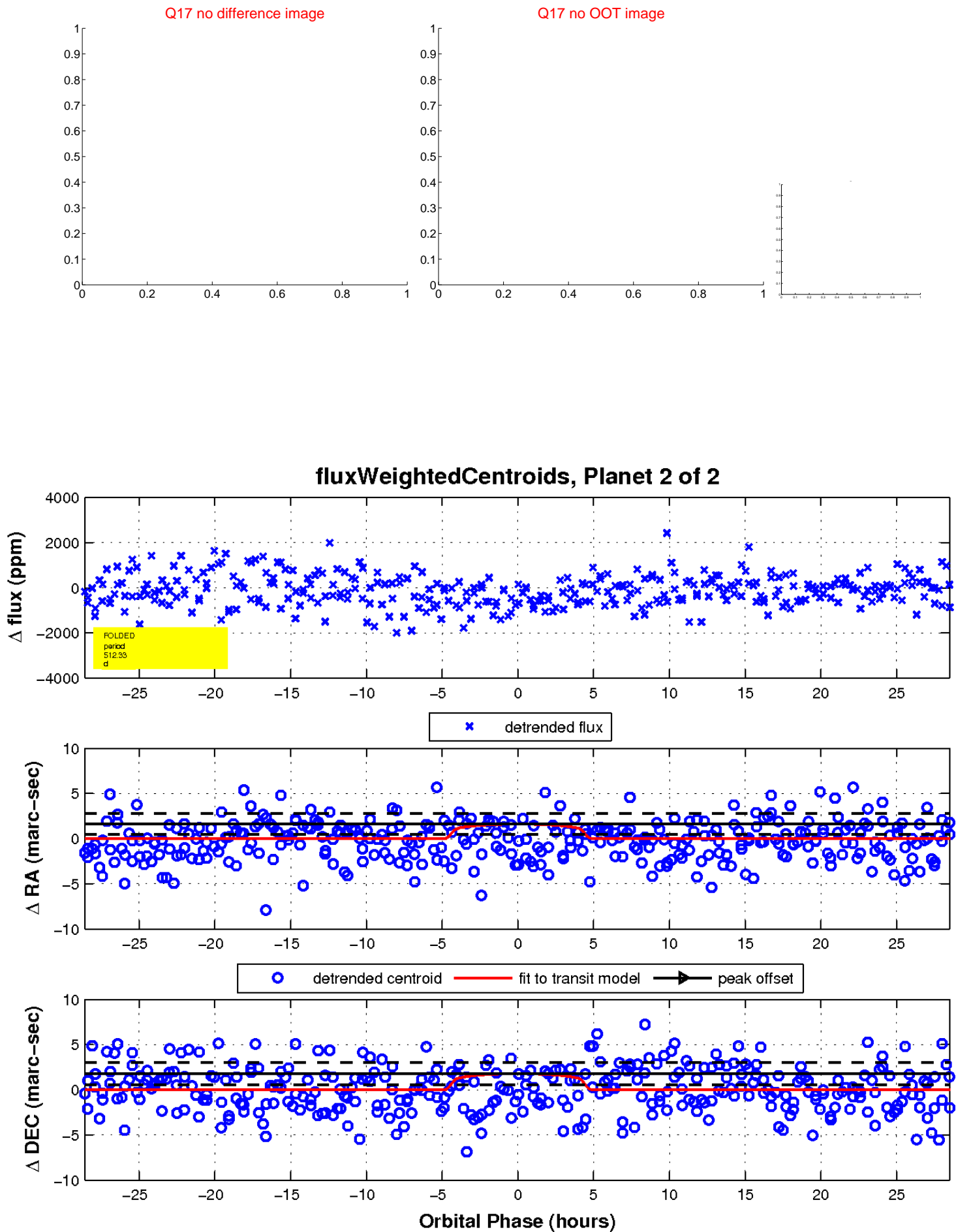


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.





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



UKIRT Image

Declination

