

# KIC 011558882

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011558882-01	OBS	6241.01	73.919731	154.681775	183583.4	6.758	2830.9	1576.4	1.06	6300	64.09	12.98
011558882-02	OBS	No	73.904754	134.468134	6331.8	6.016	70.3	73.2	1.06	6300	14.82	12.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011558882-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
011558882-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

**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.

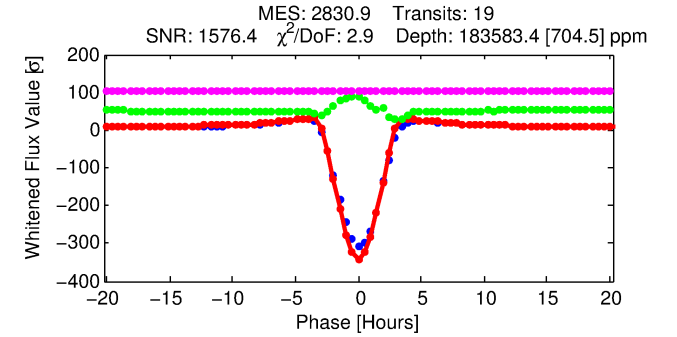
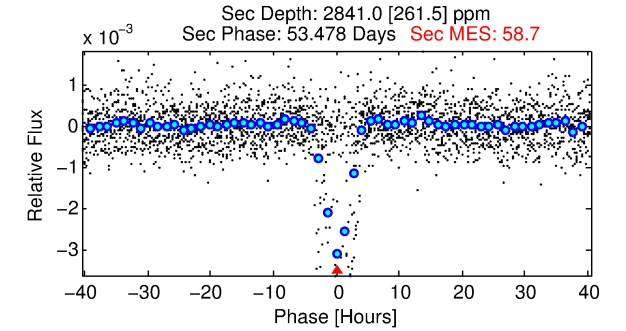
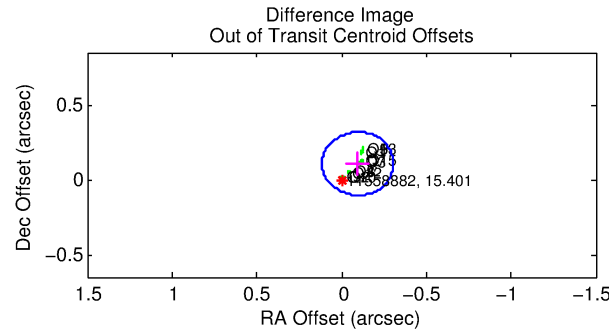
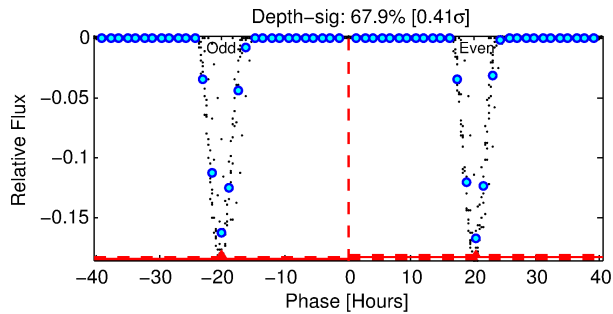
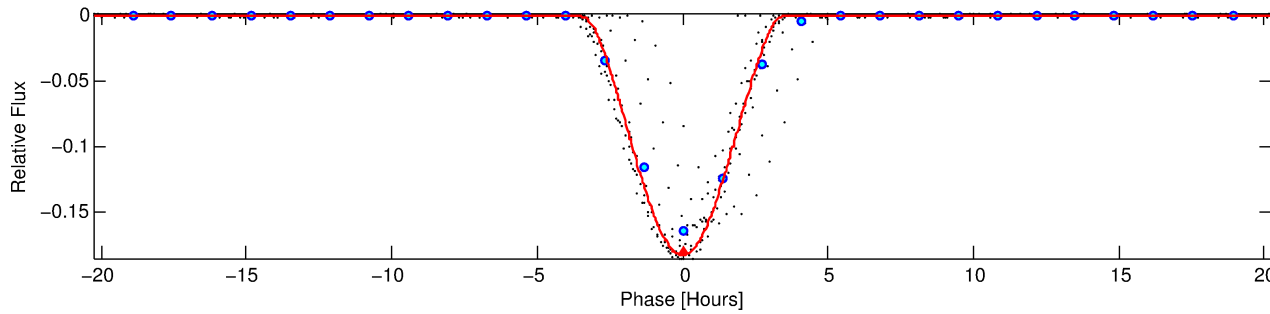
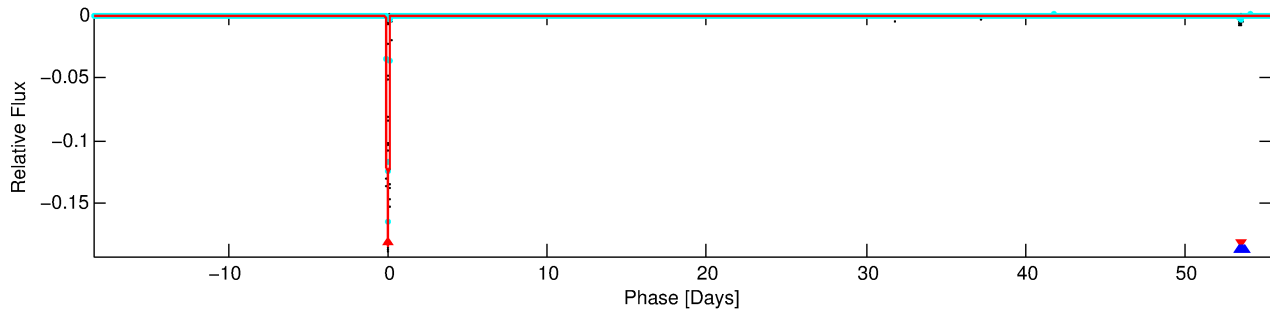
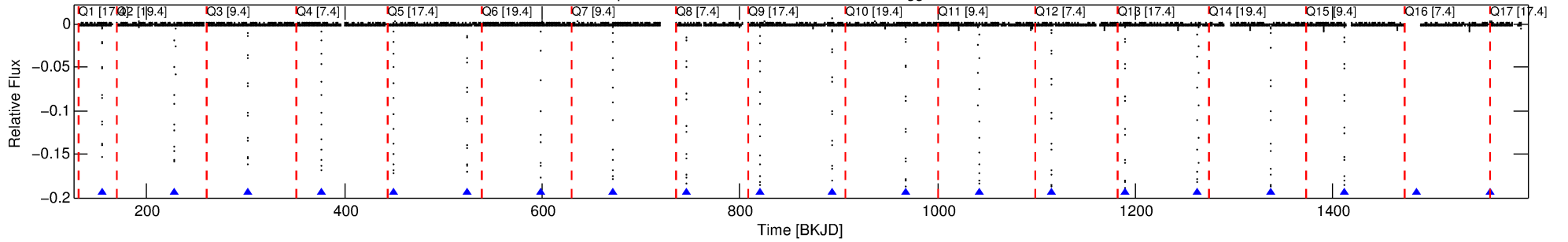
## Ephemeris Match Information For 011558882-01

No Significant Match Found

# DV One-Page Summary

KIC: 11558882 Candidate: 1 of 2 Period: 73.920 d  
KOI: K06241.01 Corr: 0.963

Kp: 15.40 R\*: 1.06 Rs Teff: 6300.0 K Logg: 4.40 Fe/H: -0.260



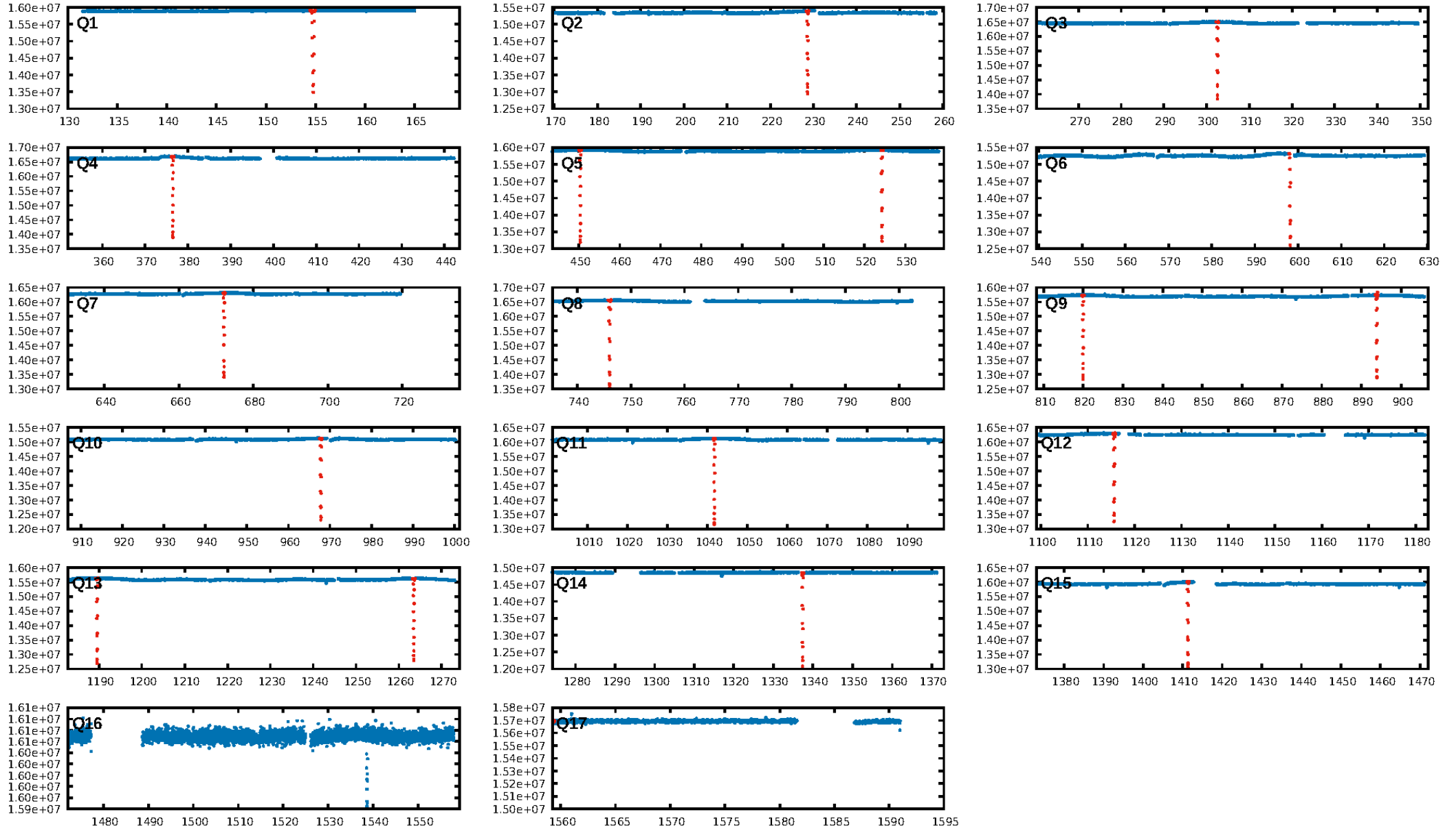
## DV Fit Results:

Period = 73.91973 [0.00002] d  
Epoch = 154.6818 [0.0002] BKJD  
Rp/R\* = 0.5557 [0.1885]  
a/R\* = 108.76 [4.28]  
b = 0.85 [0.27]  
Seff = 12.98 [5.40]  
Teq = 484 [50] K  
Rp = 64.09 [30.34] Re  
a = 0.3485 [0.0951] AU  
Ag = 46.22 [36.43] [1.24σ]  
Teffp = 1951 [341] K [4.25σ]

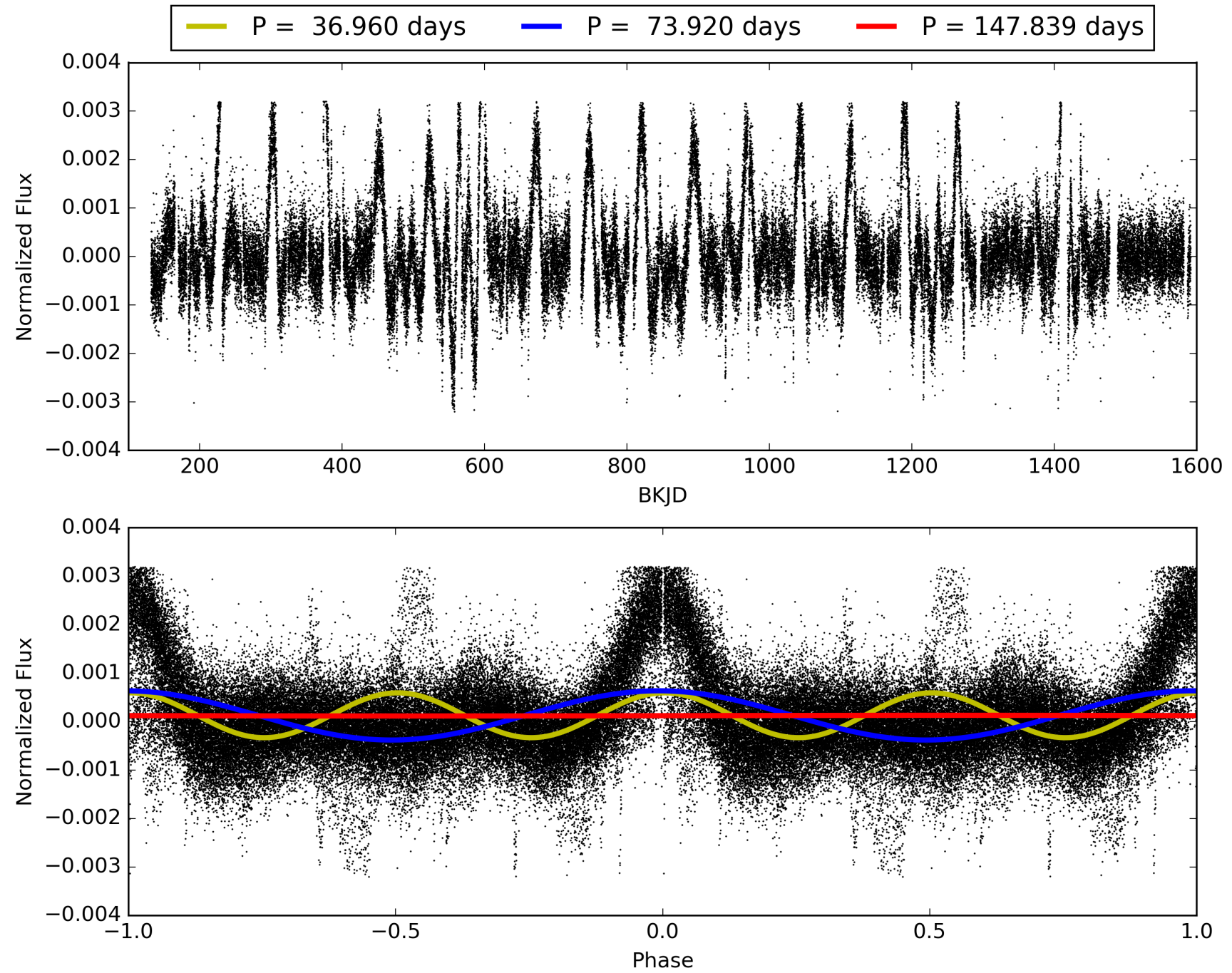
## DV Diagnostic Results:

ShortPeriod-sig: 3.2% [0.04σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 20.8%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [17/17]  
GhostDiagnostic-chr: 4.834  
Centroid-sig: 0.0%  
Centroid-so: 0.146 arcsec [38.52σ]  
OotOffset-rm: 0.143 arcsec [2.03σ]  
OotOffset-st: 2/3/3/4 [12]  
KicOffset-rm: 0.090 arcsec [1.32σ]  
KicOffset-st: 2/3/3/4 [12]  
DiffImageQuality-fgm: 1.00 [12/12]  
DiffImageOverlap-fno: 1.00 [12/12]

# TCE 011558882-01, PDC Light Curves

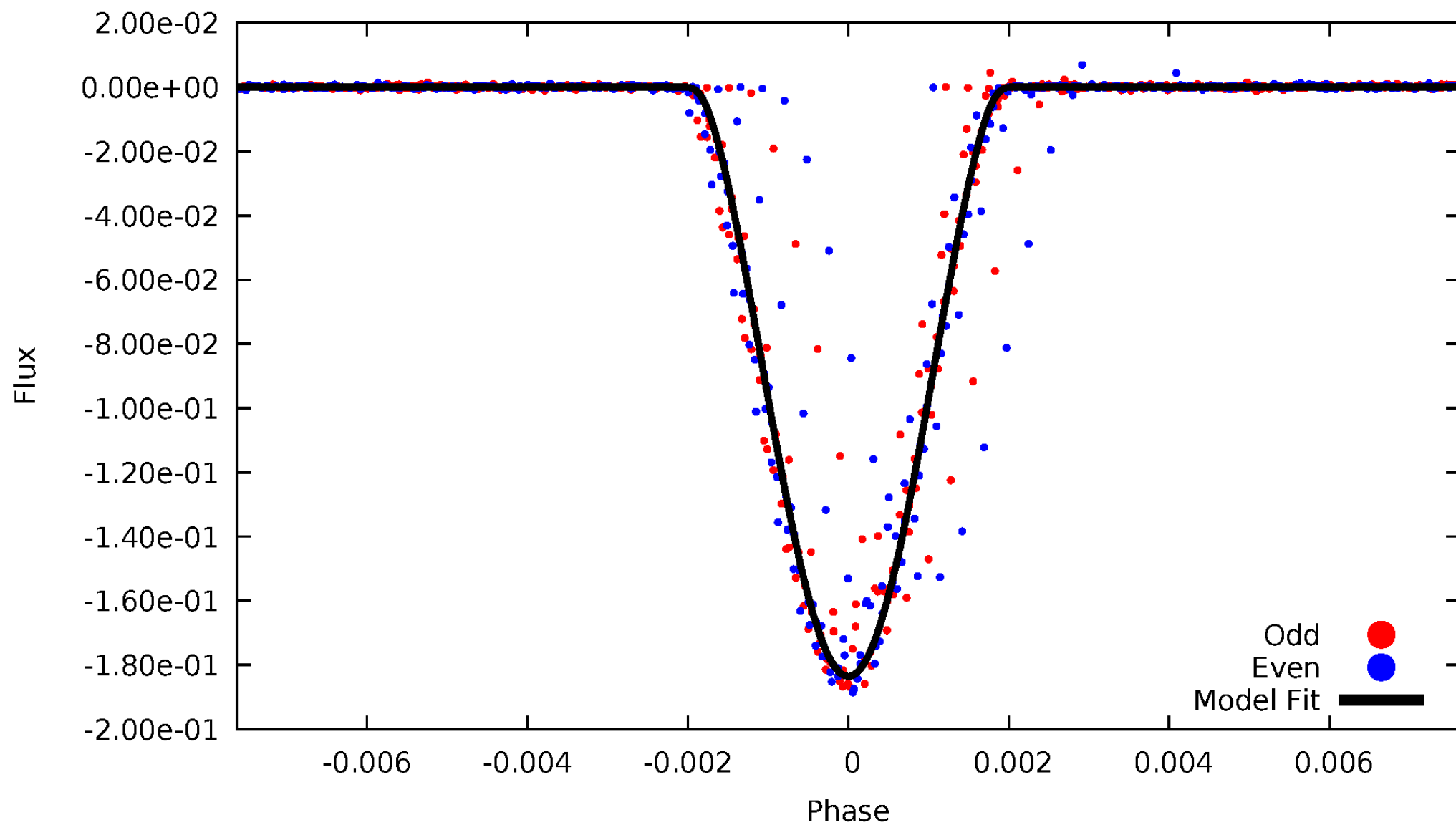


# TCE 011558882-01



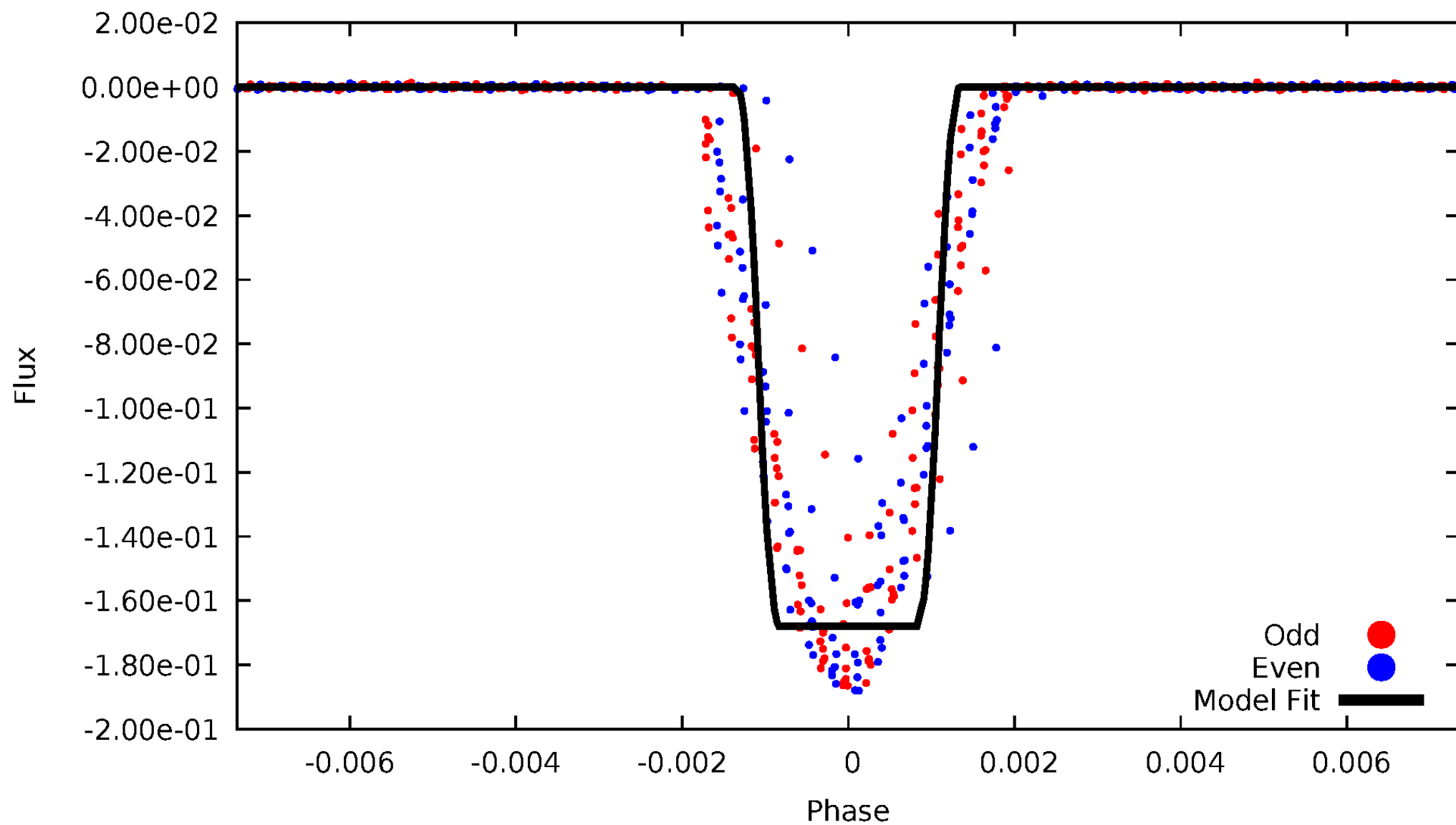
# DV Odd/Even

TCE 01155882-01



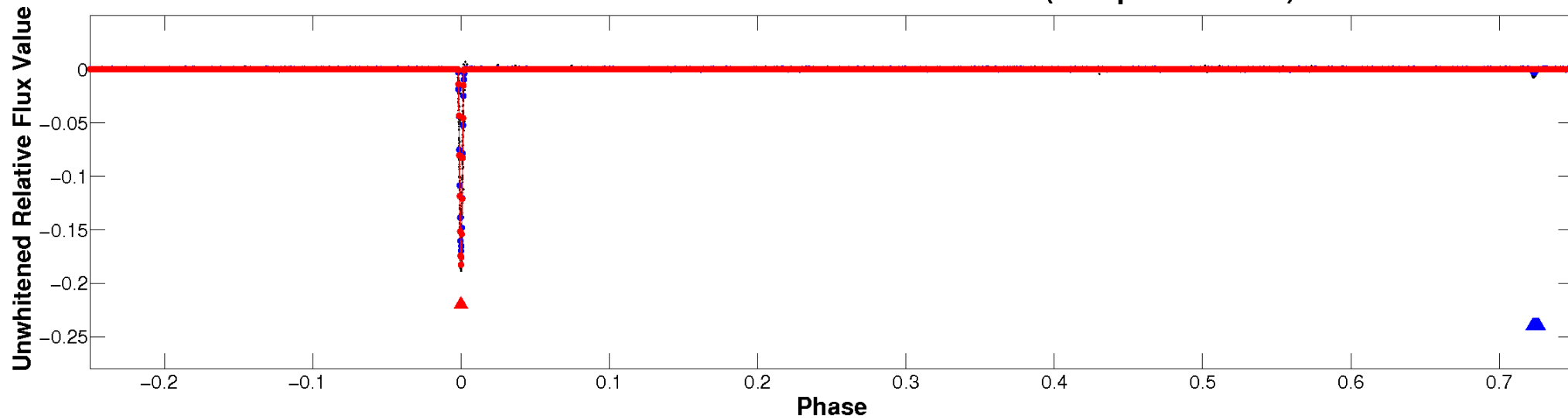
# ALT Odd/Even

TCE 01155882-01

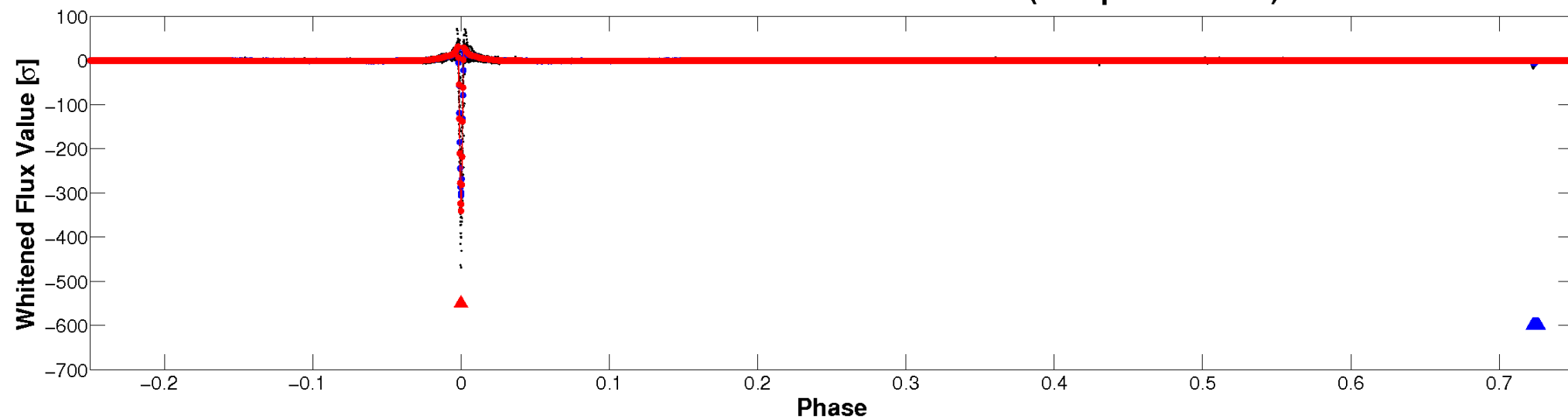


# Non-Whitened Vs. Whitened Light Curve

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

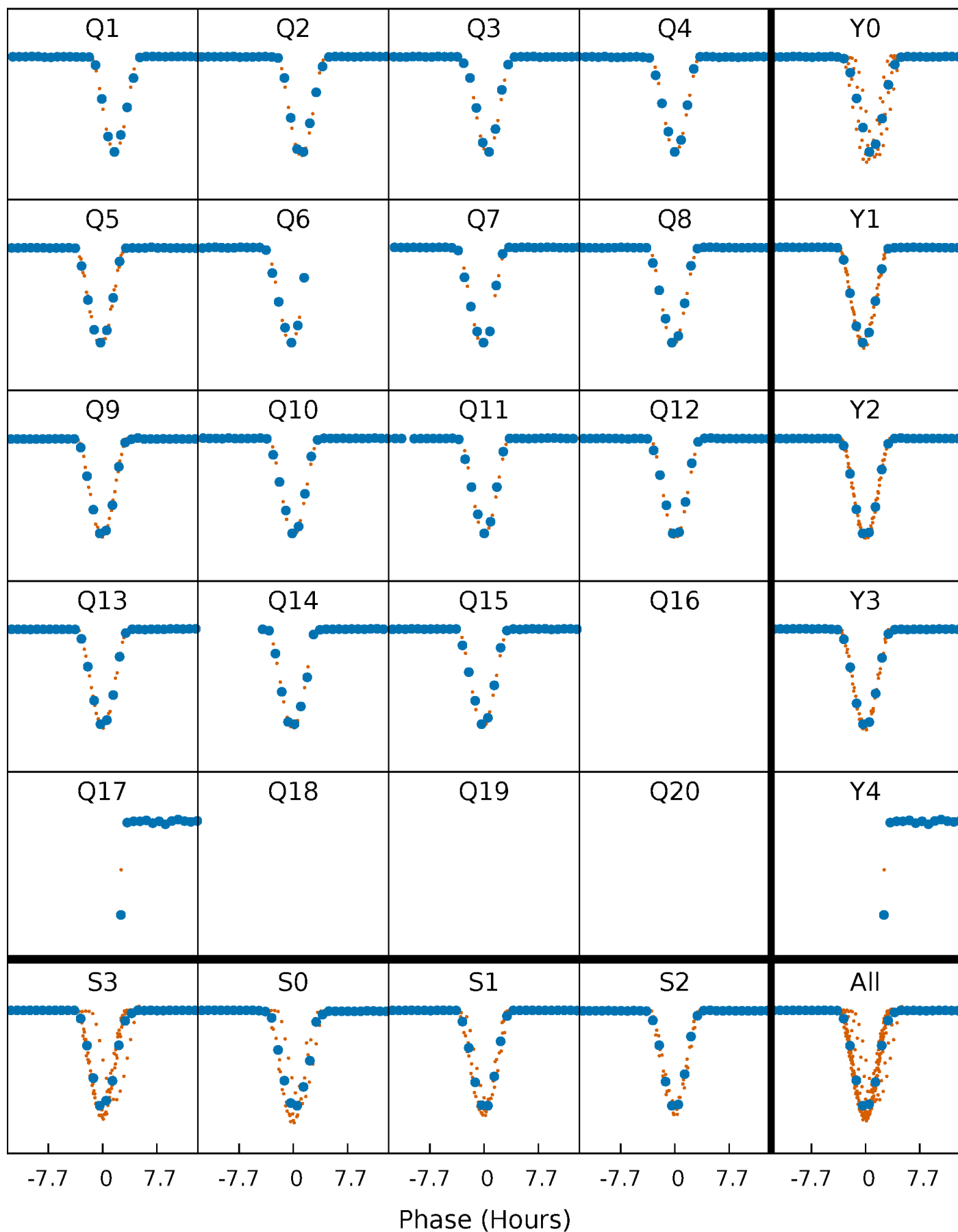


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

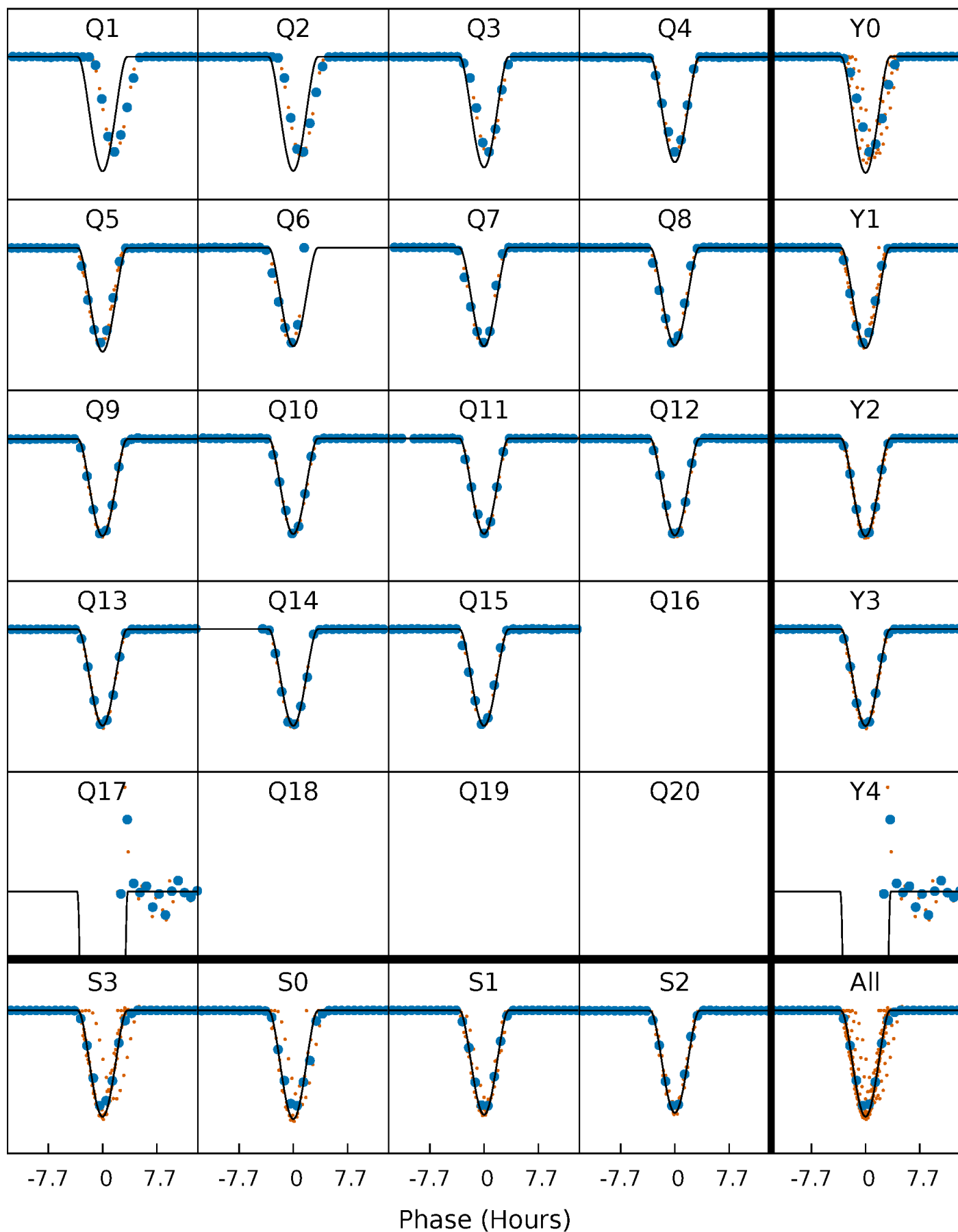
TCE 011558882-01 P= 73.919731 Days  $T_0=154.681775$  (BKJD)





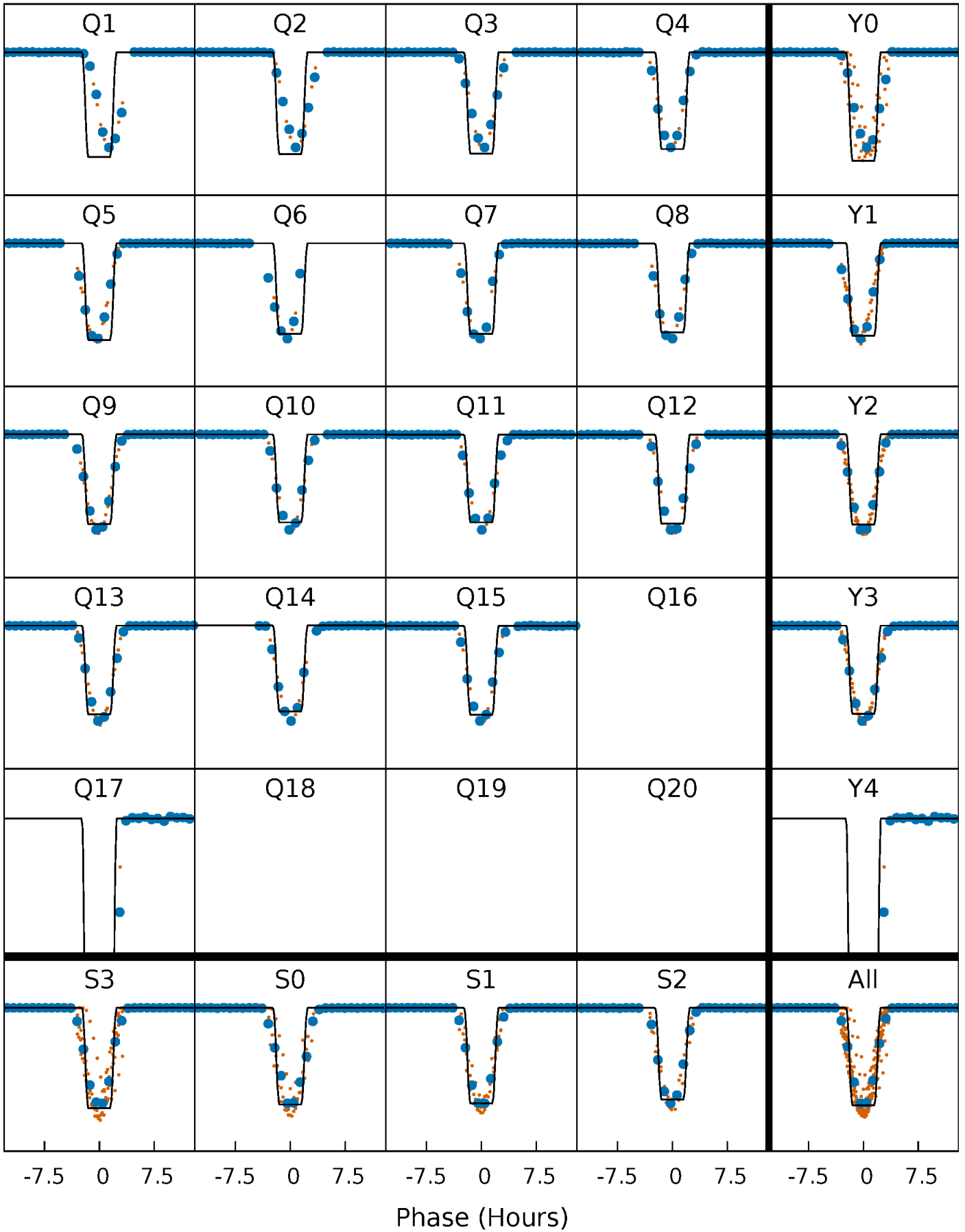
# DV Quarter-Phased Transit Curves

TCE 011558882-01 P= 73.919731 Days  $T_0=154.681775$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

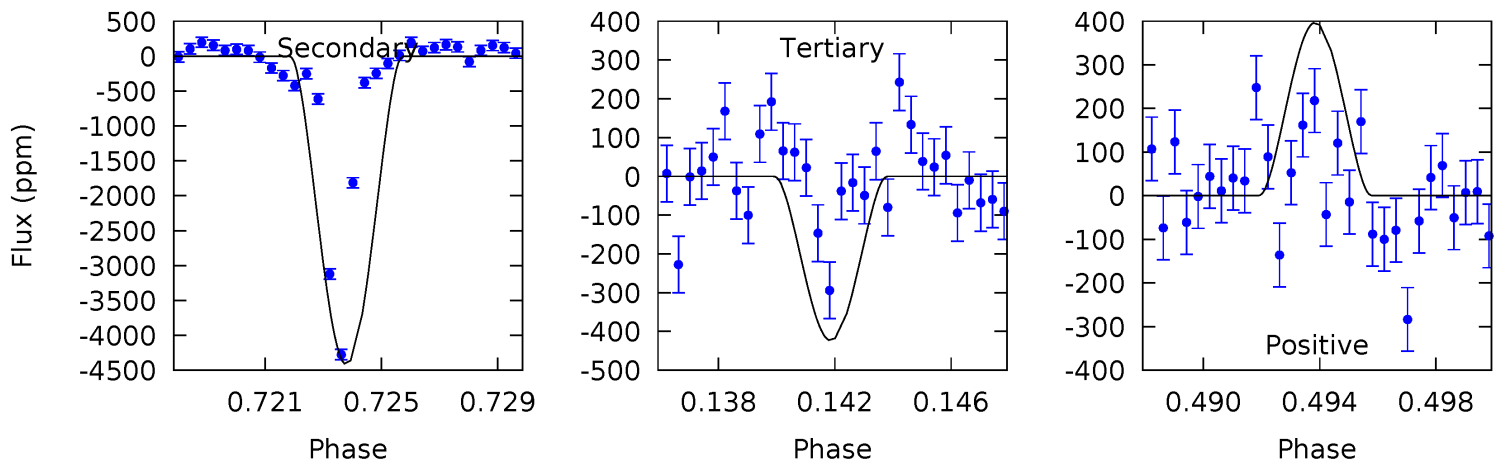
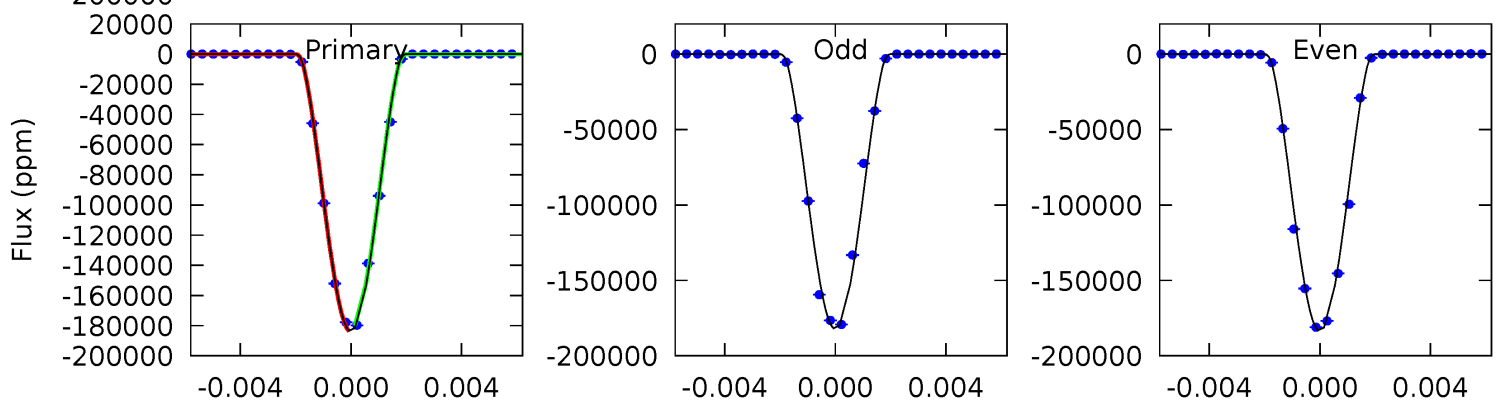
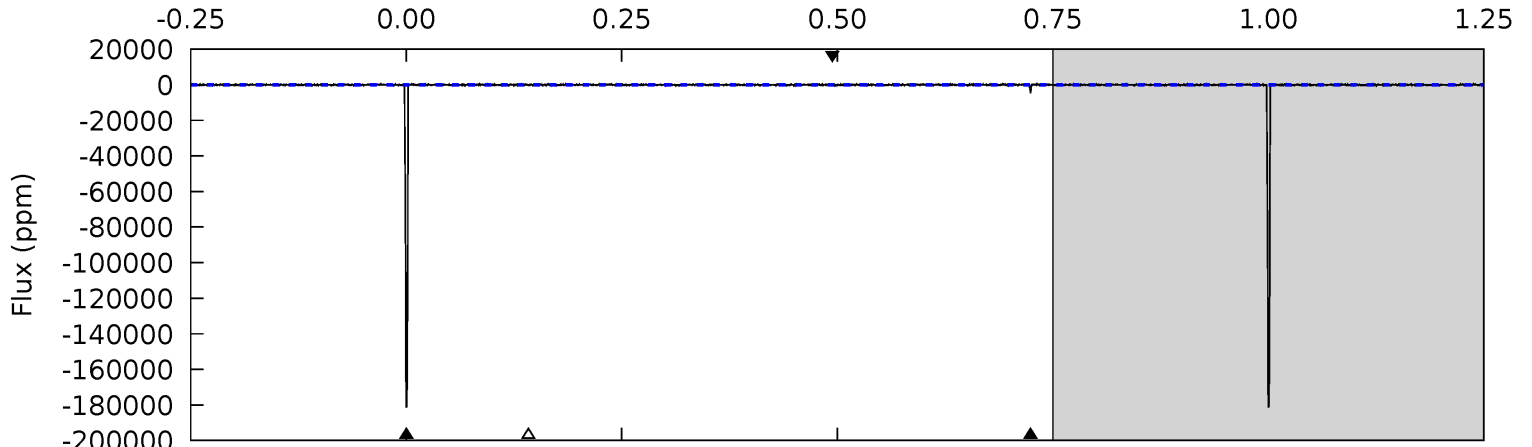
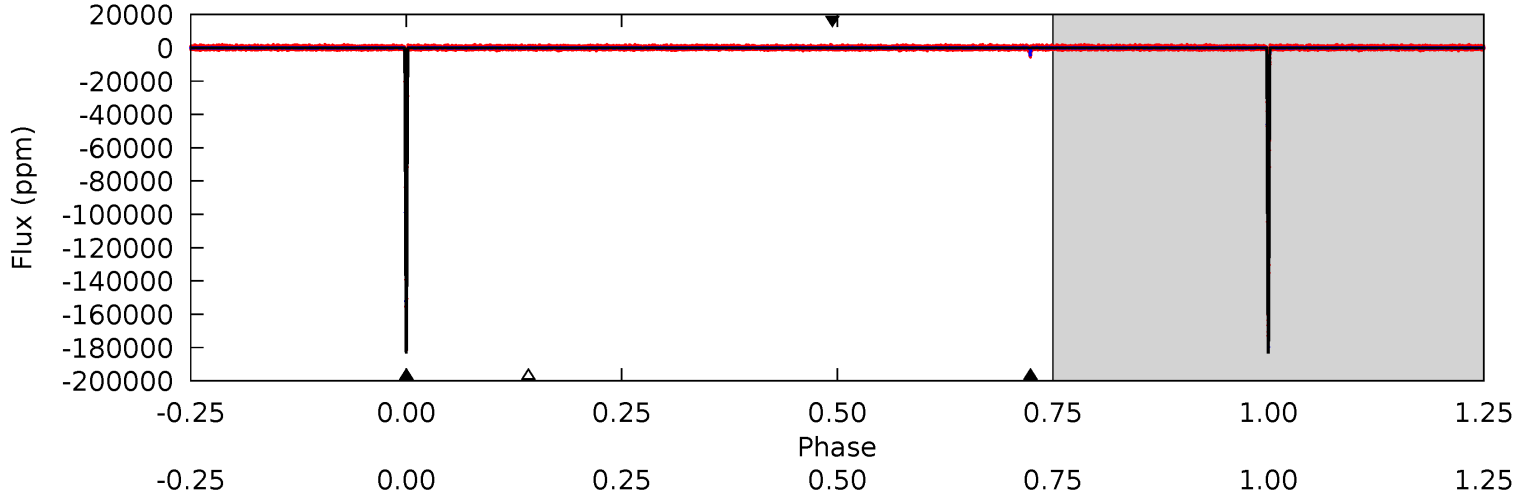
TCE 011558882-01 P= 73.918576 Days  $T_0=154.696004$  (BKJD)



# DV Model-Shift Uniqueness Test

011558882-01, P = 73.919731 Days, E = 80.762044 Days

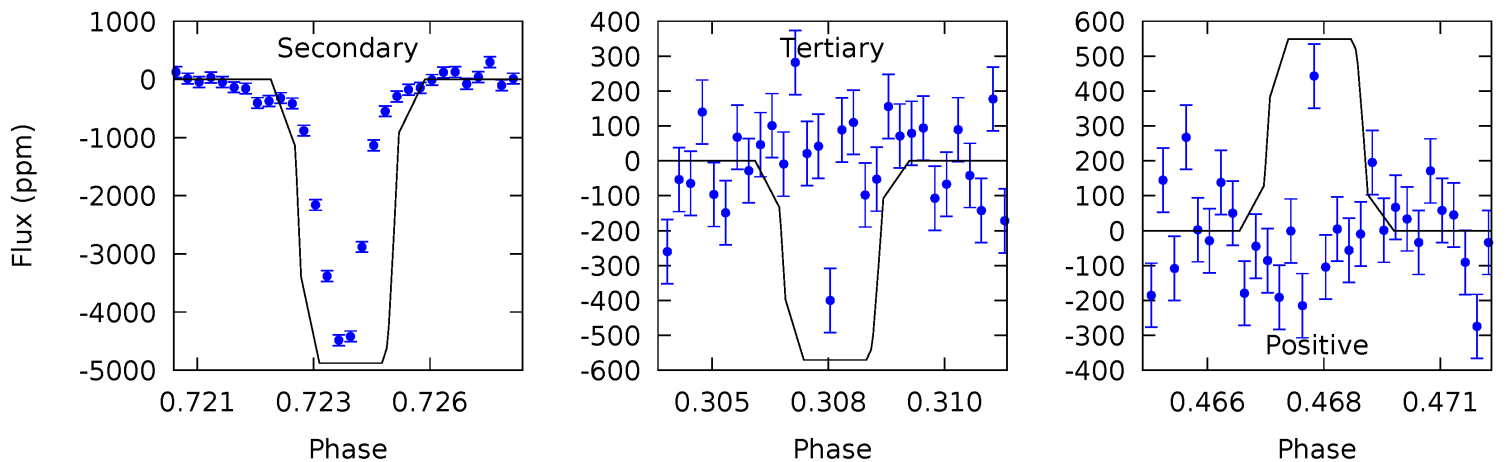
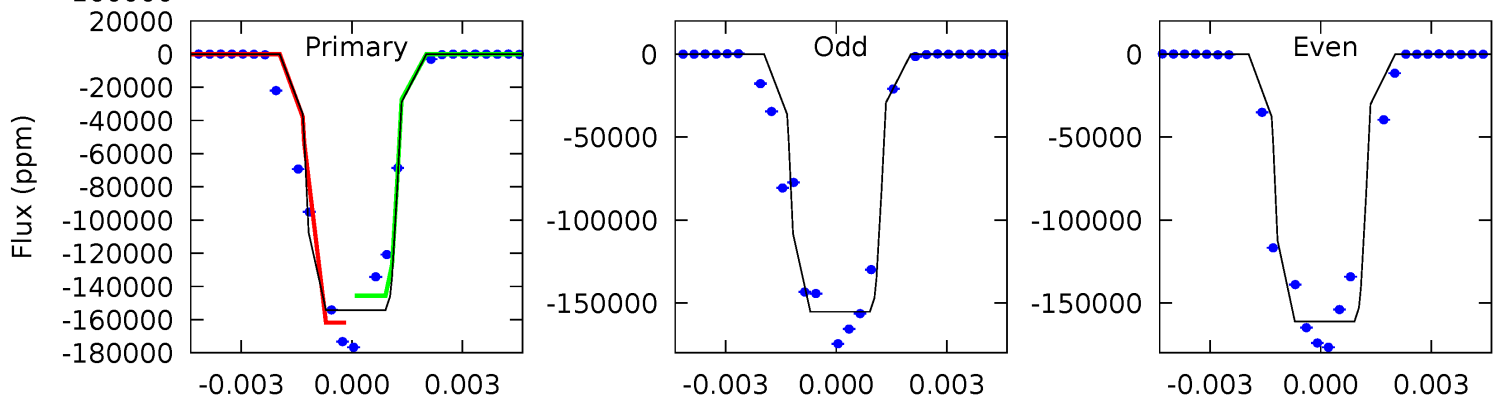
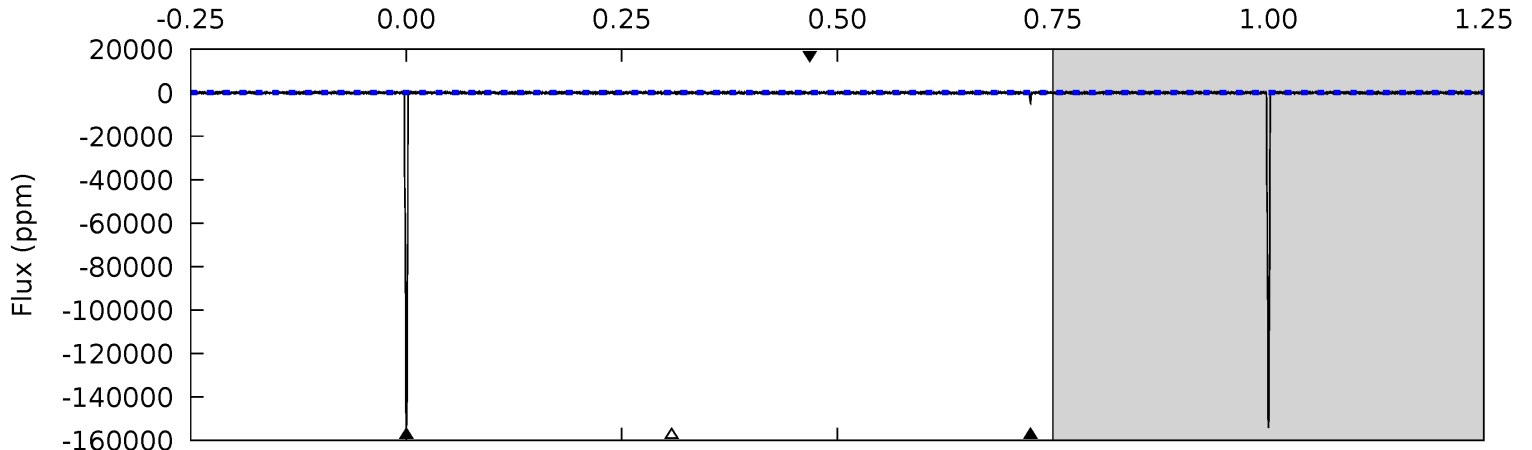
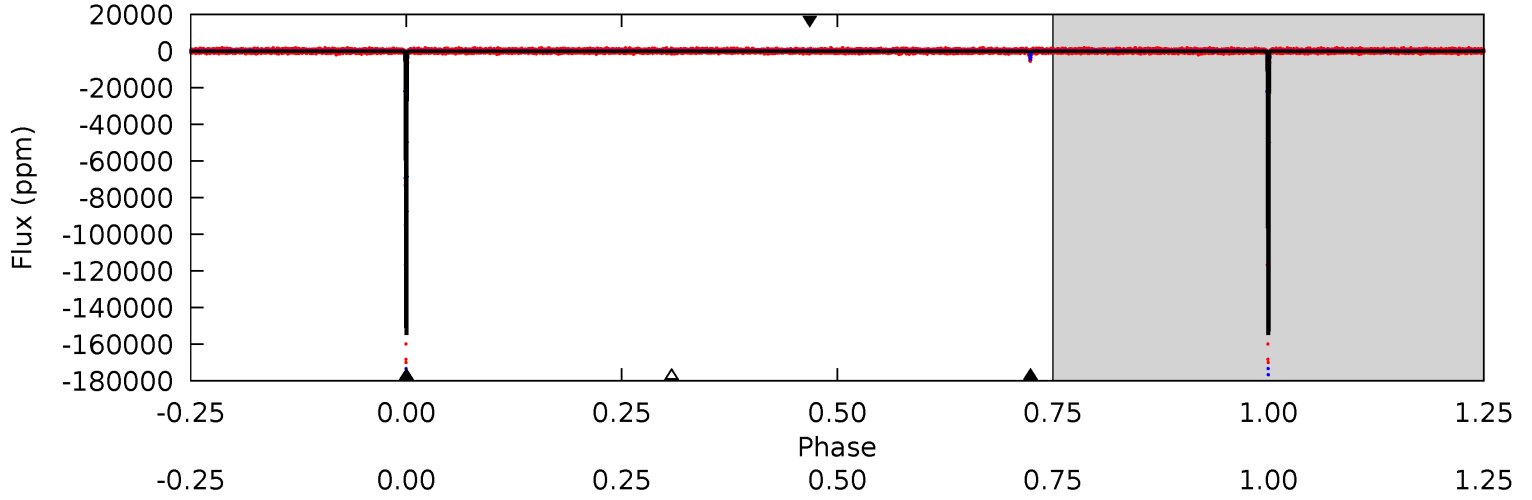
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3131	75.2	7.21	6.76	5.20	2.87	1.93	3124	3124	68.0	68.4	11.1	0.90	0.00	0



# Alt Model-Shift Uniqueness Test

011558882-01, P = 73.918576 Days, E = 80.777428 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
1399	44.2	5.17	4.98	5.28	3.01	1.17	1394	1394	39.0	39.2	32.3	0.96	0.00	0



### Stellar Parameters For KIC 011558882

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6300^{+169}_{-225}$	$4.404^{+0.084}_{-0.210}$	$-0.260^{+0.250}_{-0.300}$	$1.057^{+0.349}_{-0.140}$	$1.028^{+0.158}_{-0.115}$	$1.226^{+0.449}_{-0.628}$
	+3%/-4%	+2%/-5%	+96%/-115%	+33%/-13%	+15%/-11%	+37%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011558882-01 / KOI 6241.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-4360 \pm 58$	$65.61^{+25.39}_{-21.89}$	$685^{+48}_{-38}$	$2888^{+348}_{-227}$	$67^{+86}_{-31}$
Alt.	$-4877 \pm 110$	$47.67^{+25.95}_{-22.31}$	$688^{+48}_{-39}$	$3198^{+707}_{-335}$	$140^{+353}_{-80}$

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

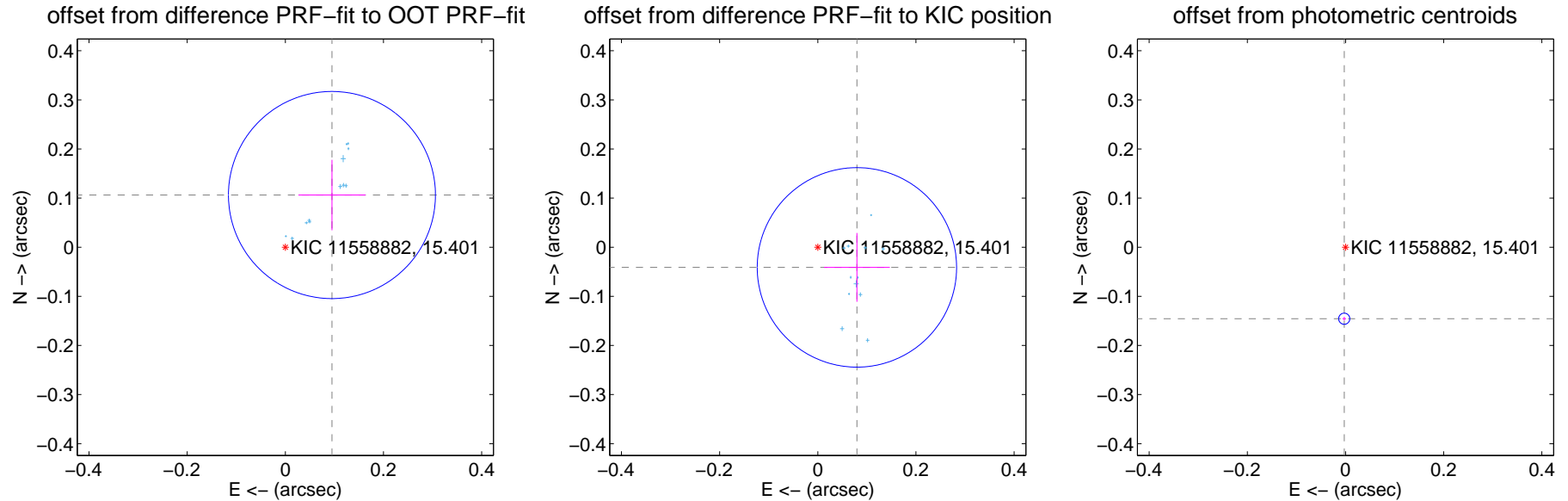
## DV Centroid Data

Supplemental centroid analysis for 011558882-01. Kepler magnitude: 15.40. Transit SNR 1576.36

There are 12 quarters with good PRF difference image offsets

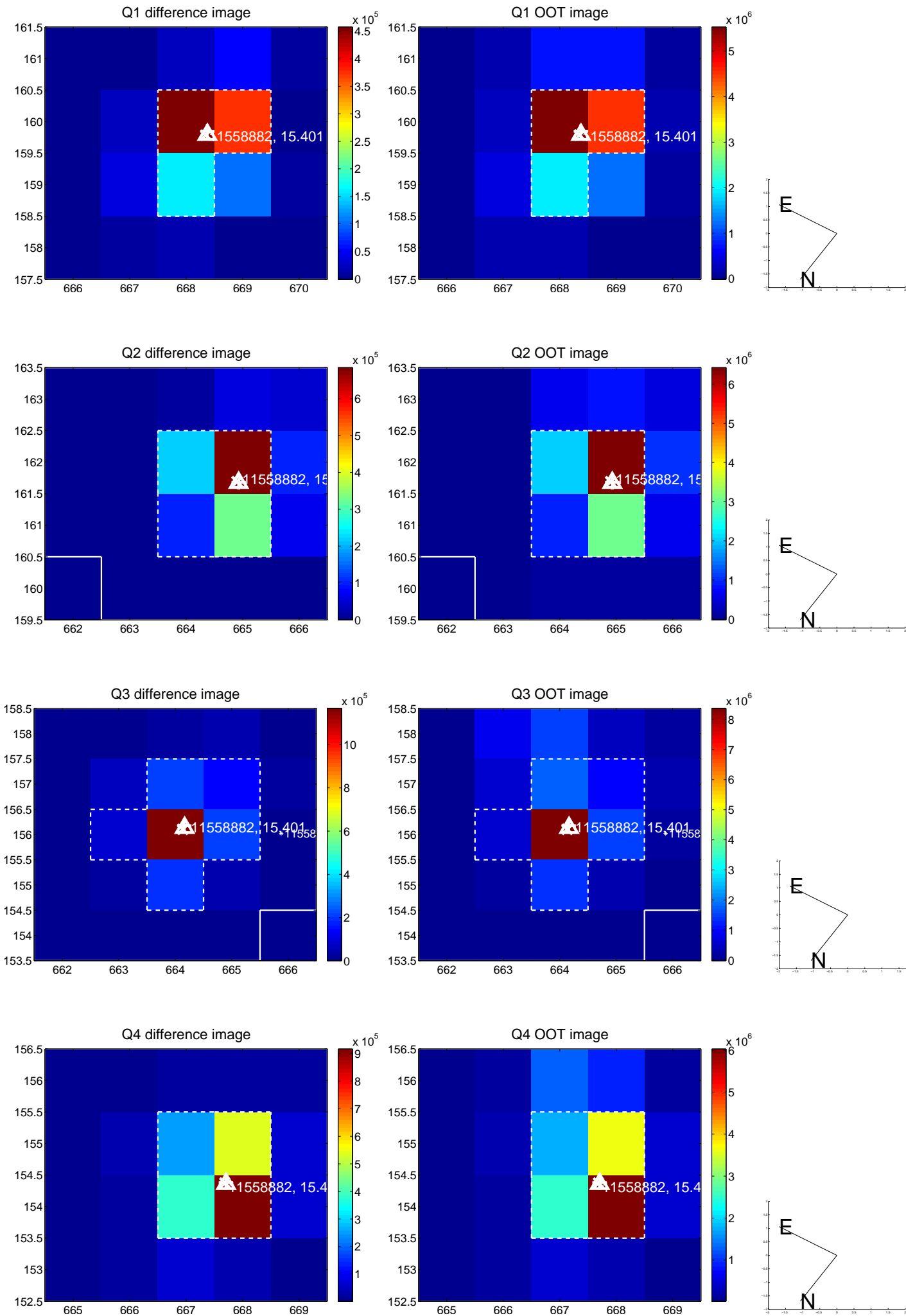
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.143 \pm 0.070$	2.03	$-0.095 \pm 0.068$	$0.106 \pm 0.072$
PRF-fit source offset from KIC position	$0.090 \pm 0.068$	1.32	$-0.080 \pm 0.067$	$-0.041 \pm 0.070$
photometric centroid source offset	$0.15 \pm 0.00$	38.52	$0.00 \pm 0.00$	$-0.15 \pm 0.00$

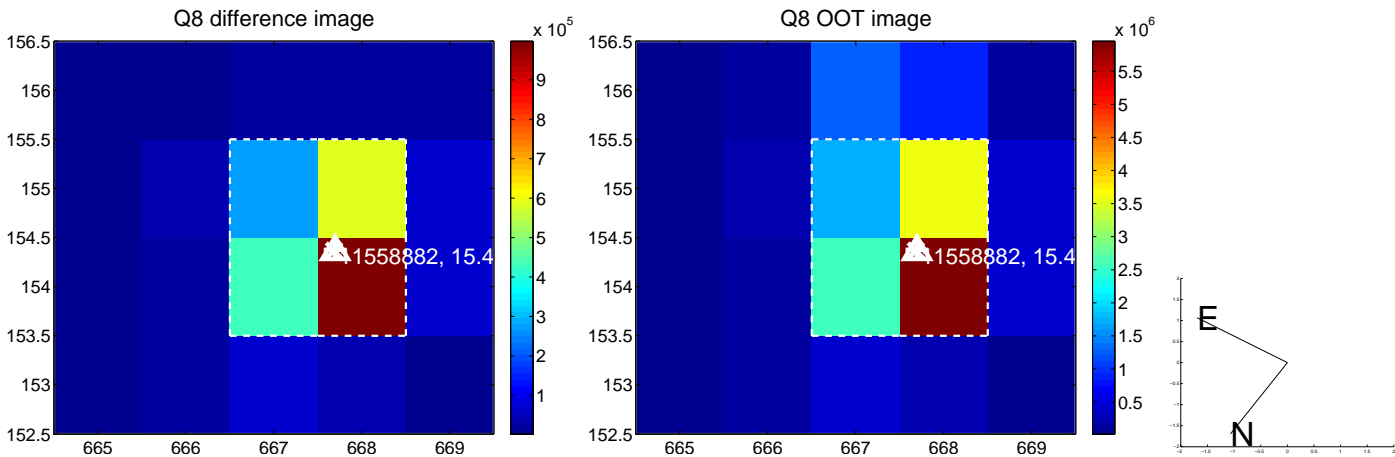
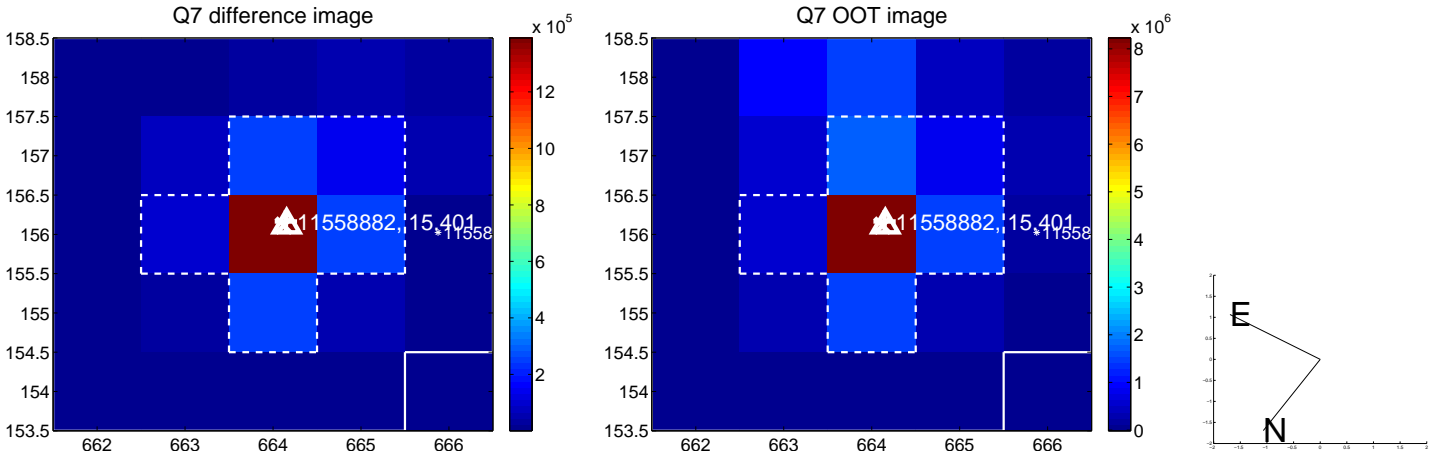
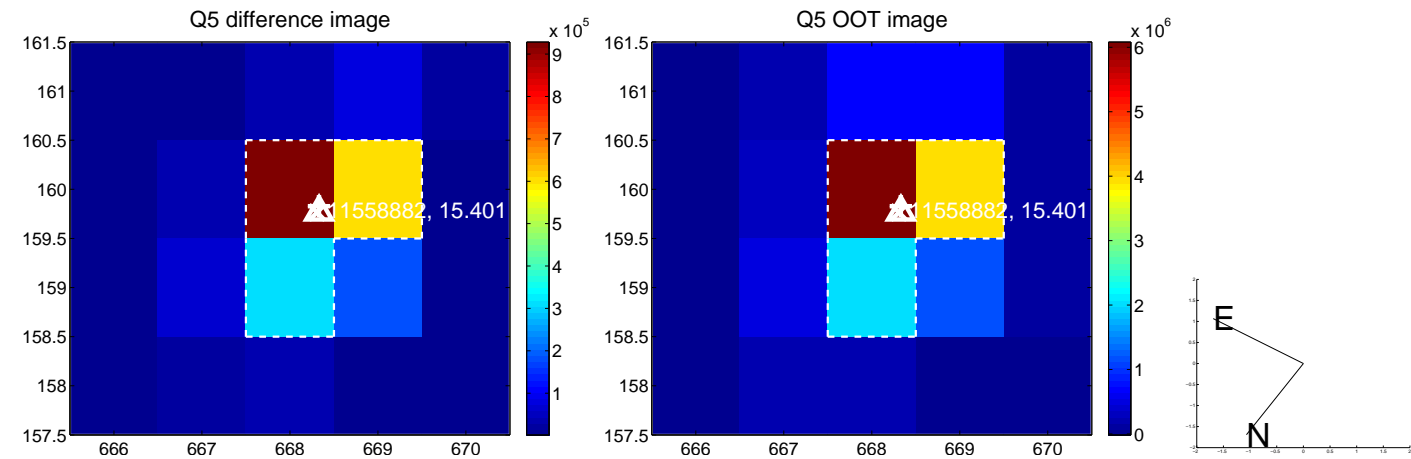


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

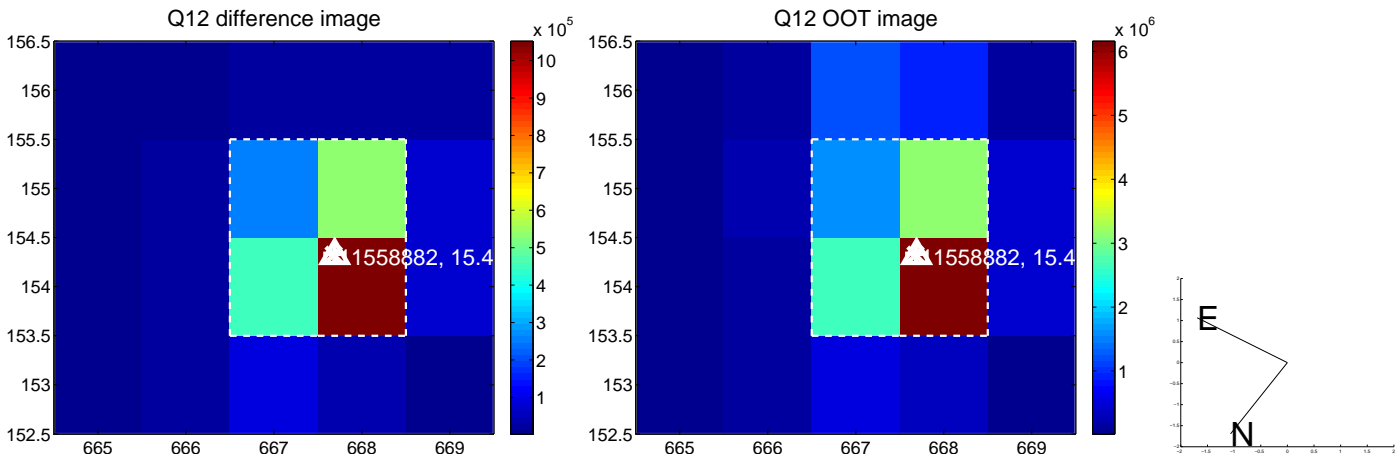
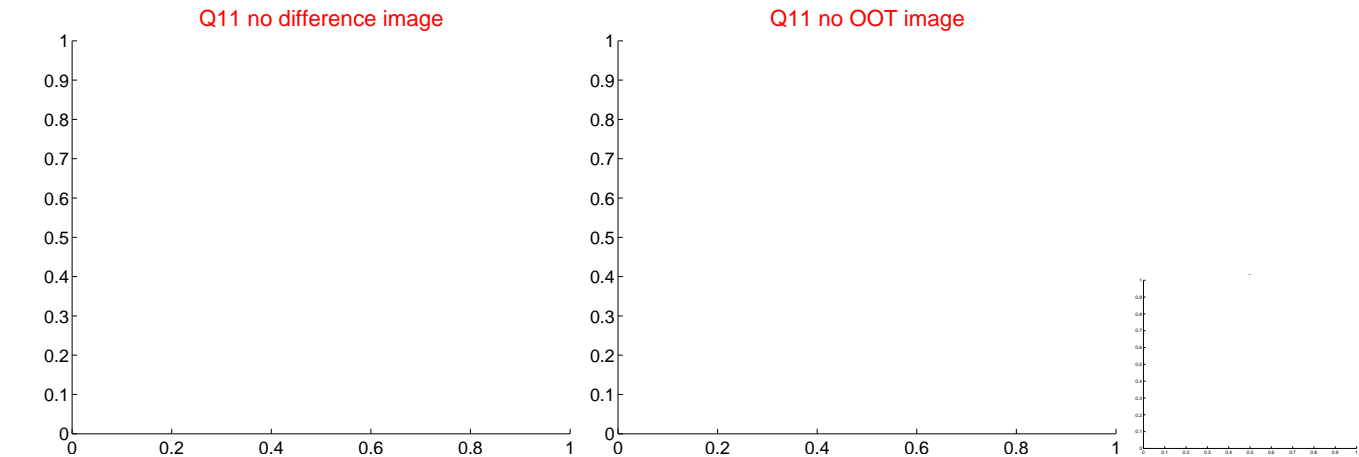
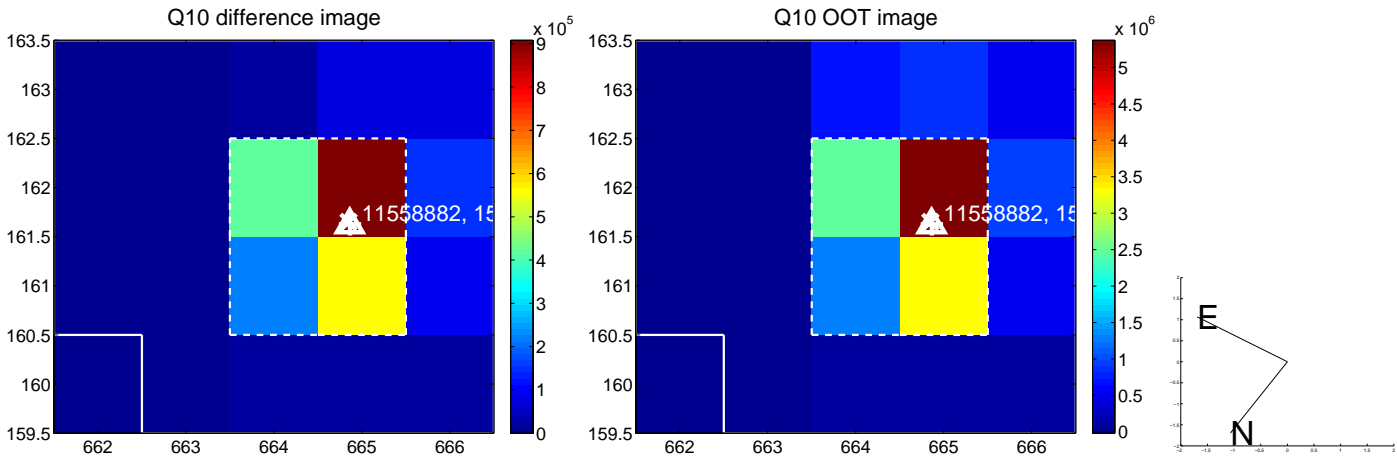
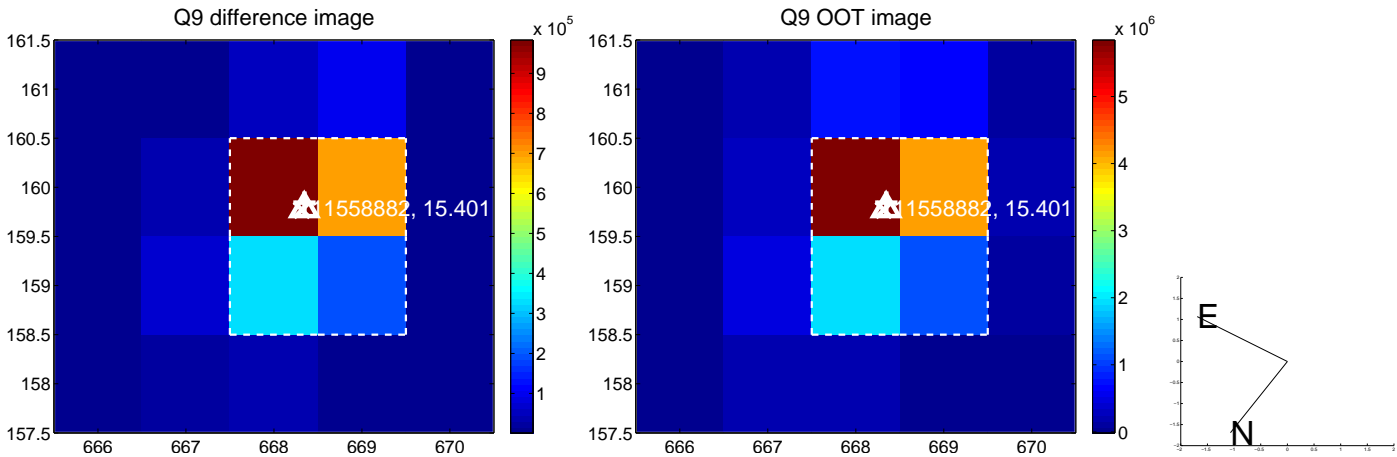


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

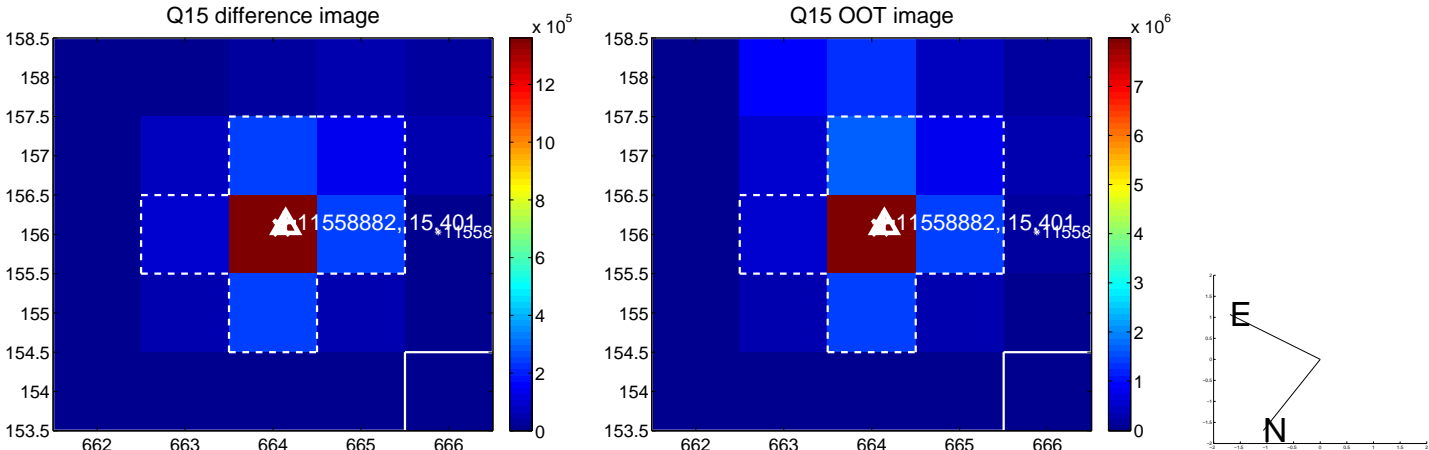
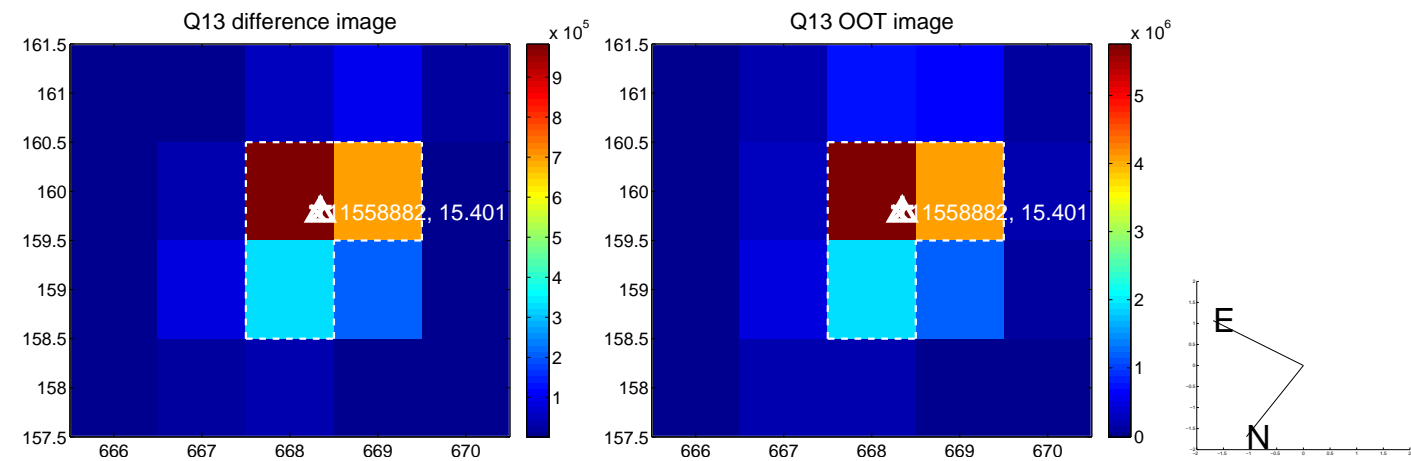




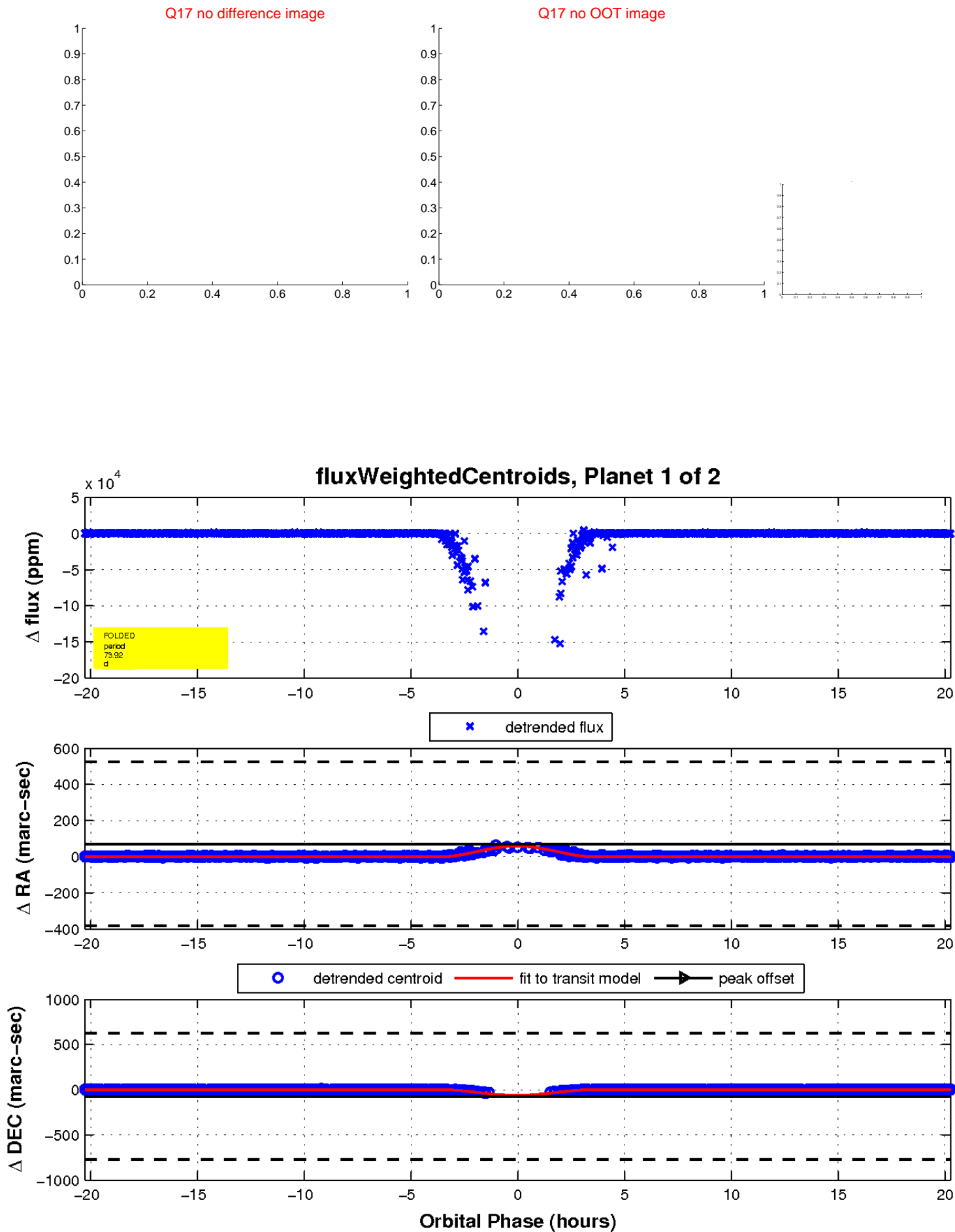
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

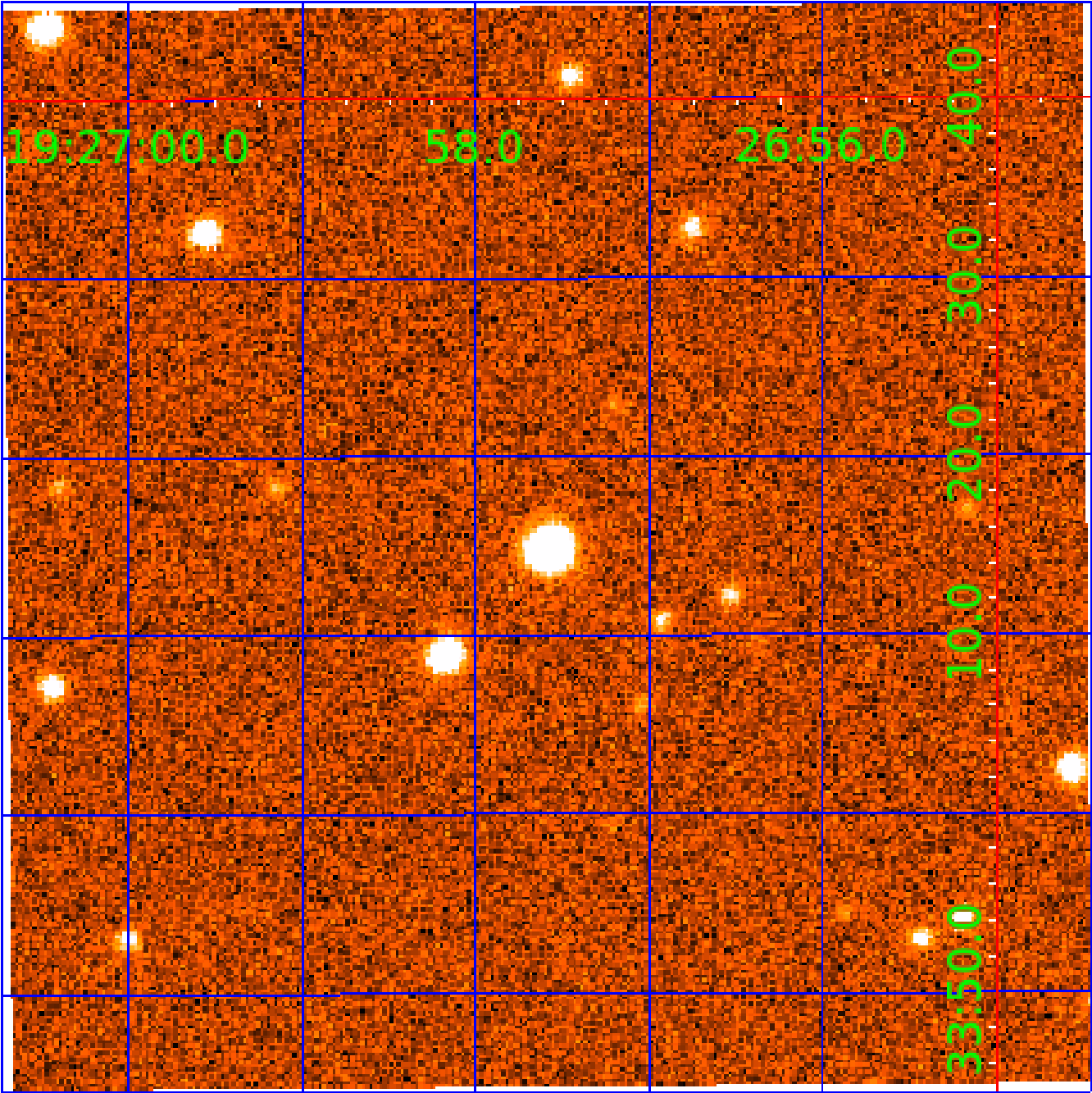


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011558882

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011558882-01	OBS	6241.01	73.919731	154.681775	183583.4	6.758	2830.9	1576.4	1.06	6300	64.09	12.98
011558882-02	OBS	No	73.904754	134.468134	6331.8	6.016	70.3	73.2	1.06	6300	14.82	12.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011558882-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
011558882-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

**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.

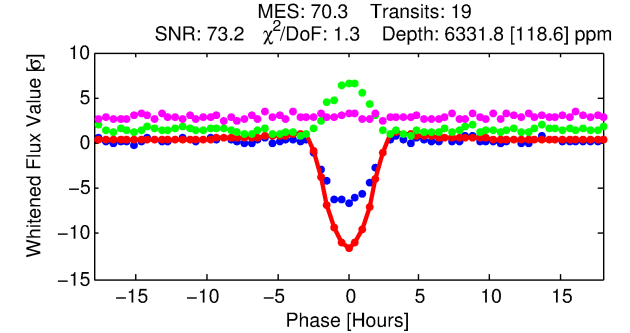
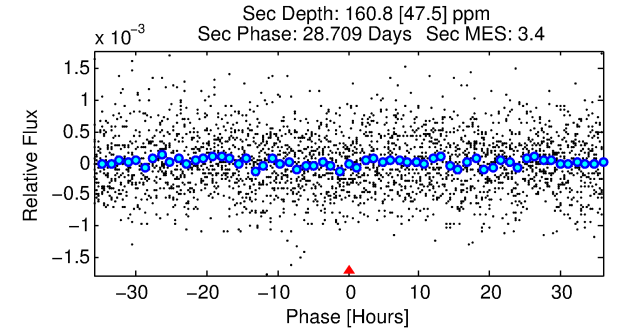
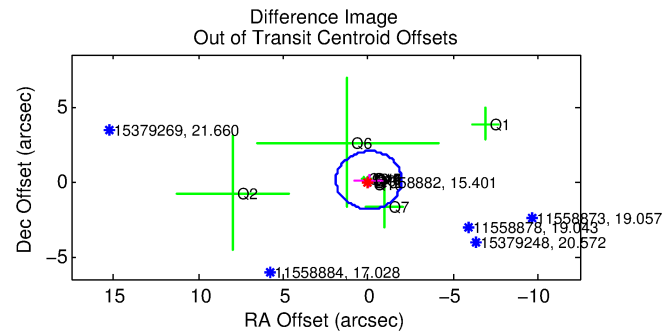
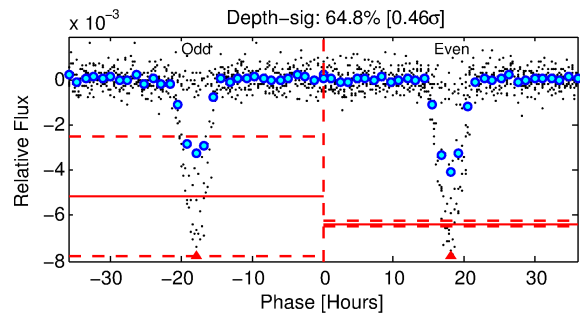
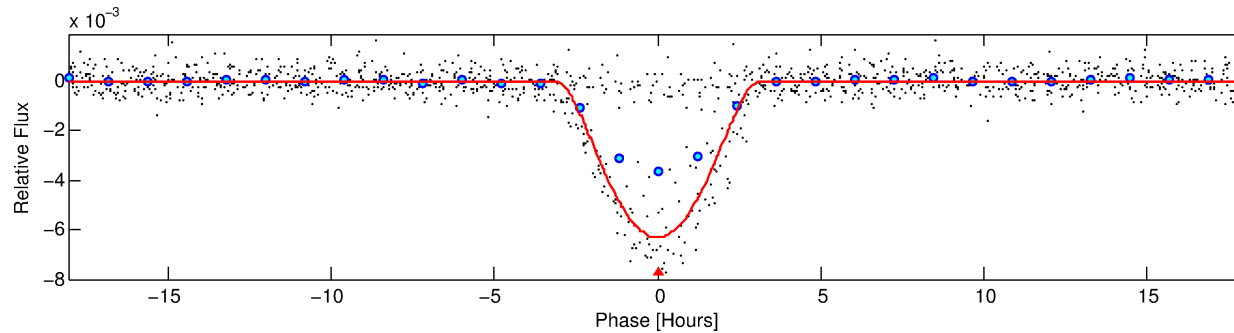
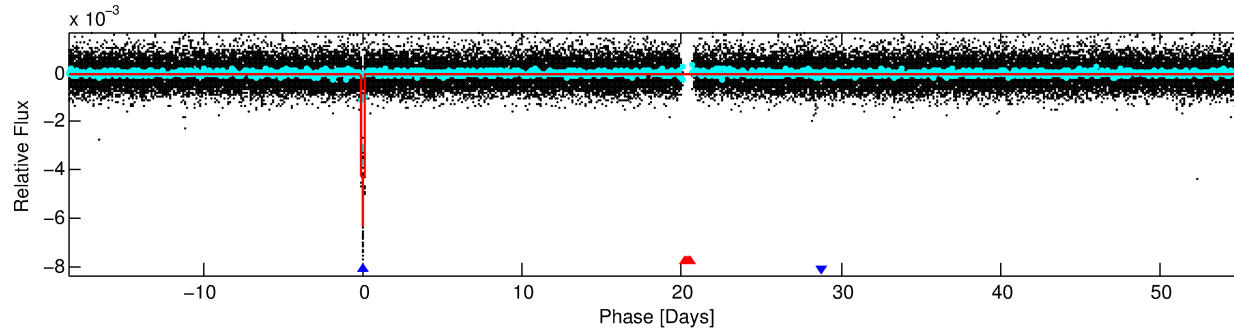
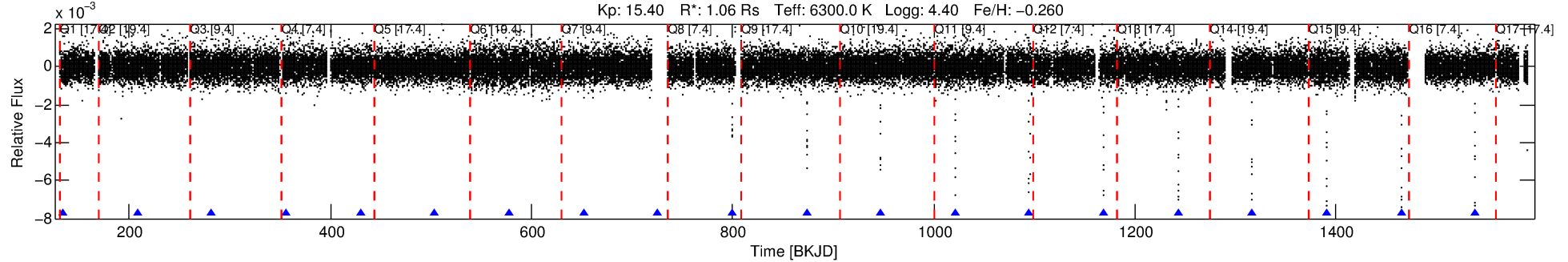
## Ephemeris Match Information For 011558882-02

No Significant Match Found

# DV One-Page Summary

KIC: 11558882 Candidate: 2 of 2 Period: 73.905 d  
KOI: K06241 Corr: No Ephemeris Match

Kp: 15.40 R\*: 1.06 Rs Teff: 6300.0 K Logg: 4.40 Fe/H: -0.260



## DV Fit Results:

Period = 73.90475 [0.00013] d  
Epoch = 134.4681 [0.0014] BKJD  
Rp/R\* = 0.1285 [0.0582]  
a/R\* = 49.74 [4.10]  
b = 1.00 [0.08]  
Seff = 12.98 [5.40]  
Teq = 484 [50] K  
Rp = 14.82 [8.31] Re  
a = 0.3485 [0.0951] AU  
Ag = 48.90 [50.35] [0.95σ]  
Teffp = 1979 [477] K [3.12σ]

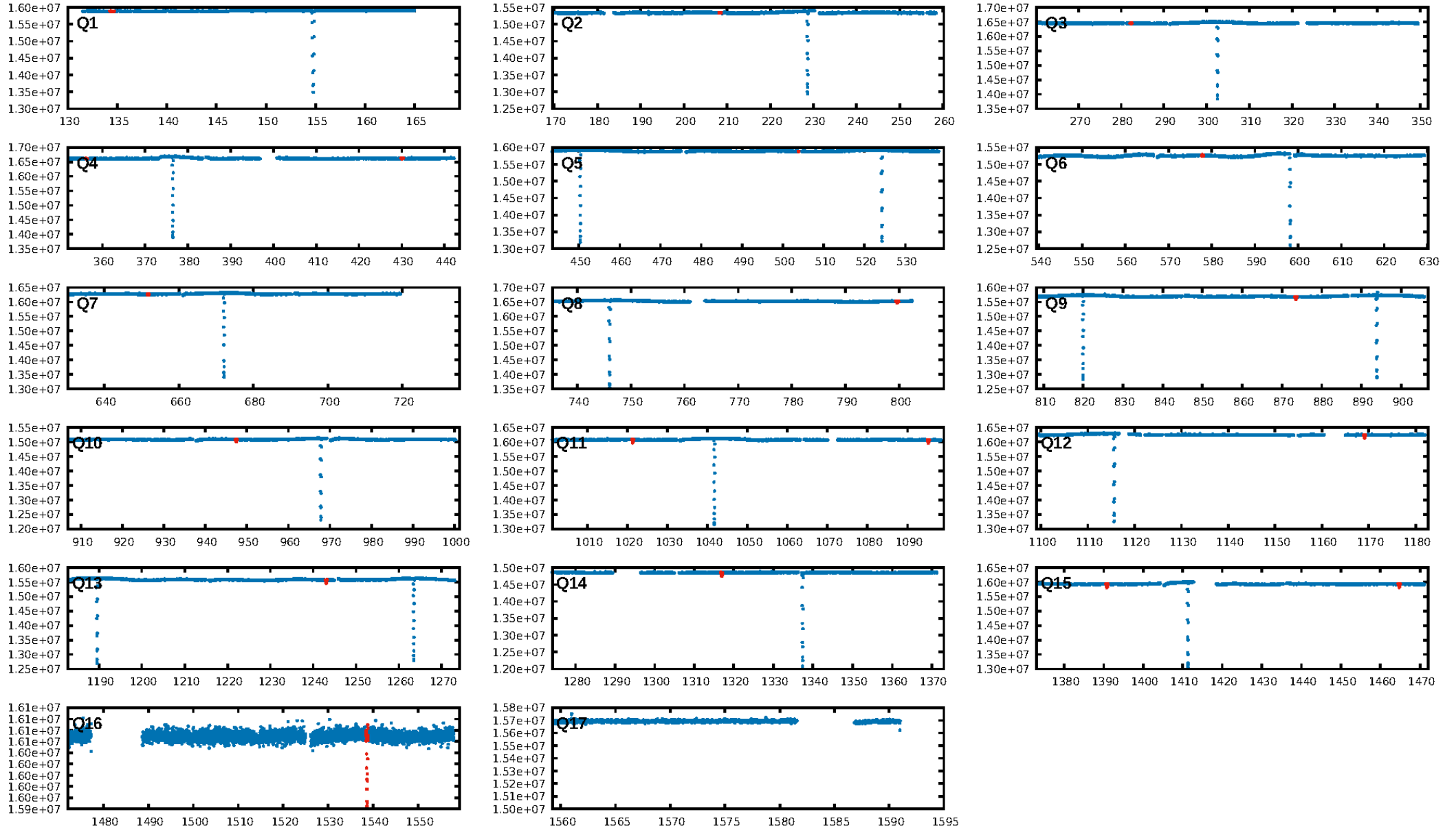
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 3.2% [0.04σ]  
**ModelChiSquare2-sig: 0.0%**  
ModelChiSquareGof-sig: 84.1%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [18/18]  
GhostDiagnostic-chr: 8.194  
**Centroid-sig: 0.0%**  
**Centroid-so: 0.348 arcsec [3.18σ]**  
OotOffset-rm: 0.108 arcsec [0.17σ]  
KicOffset-rm: 0.096 arcsec [0.15σ]  
OotOffset-st: 4/3/3/3 [13]  
KicOffset-st: 4/3/3/3 [13]  
DiffImageQuality-fgm: 0.69 [9/13]  
DiffImageOverlap-fno: 1.00 [15/15]

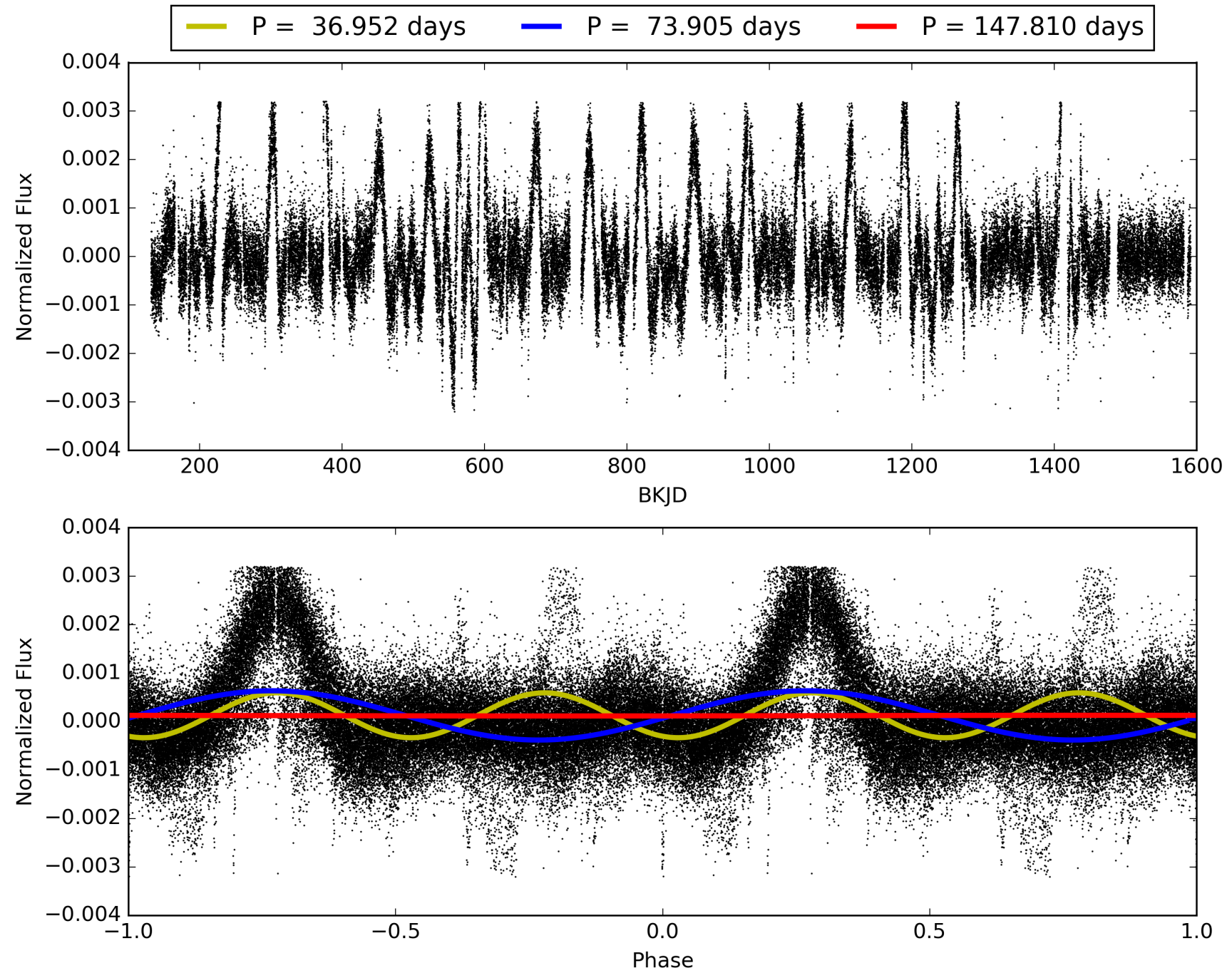
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:48:42 Z

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

# TCE 011558882-02, PDC Light Curves



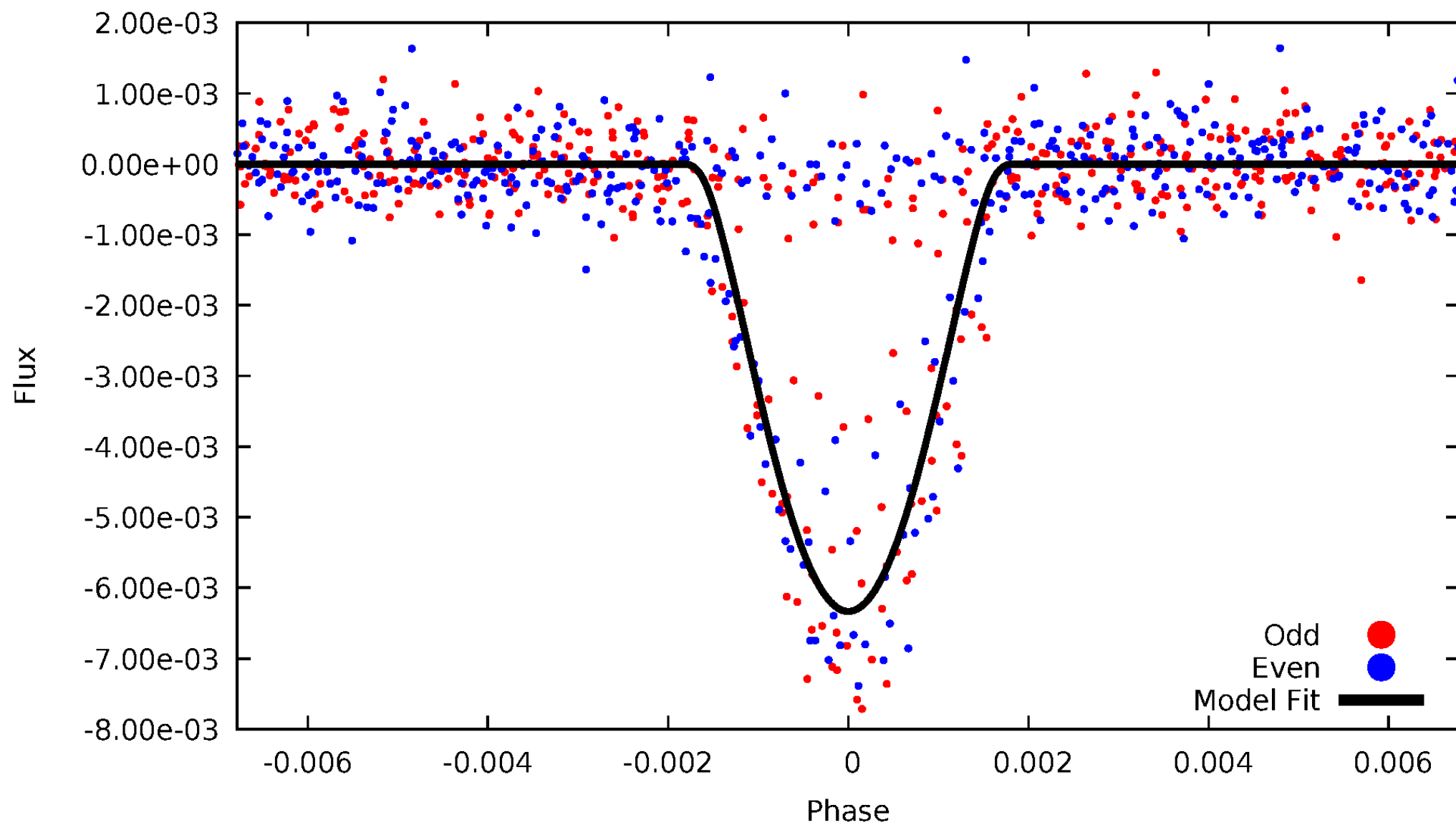
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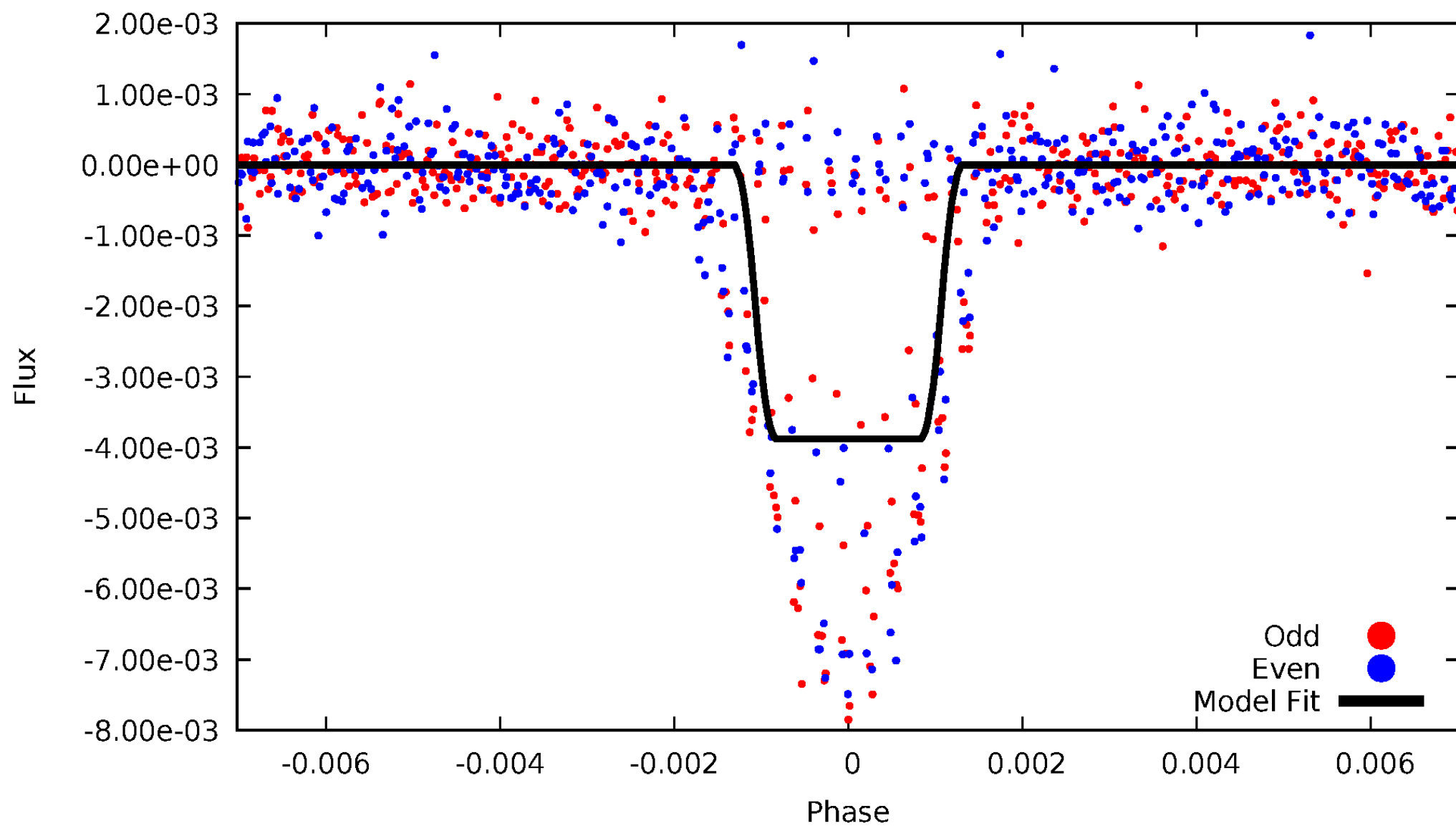
# DV Odd/Even

TCE 01155882-02



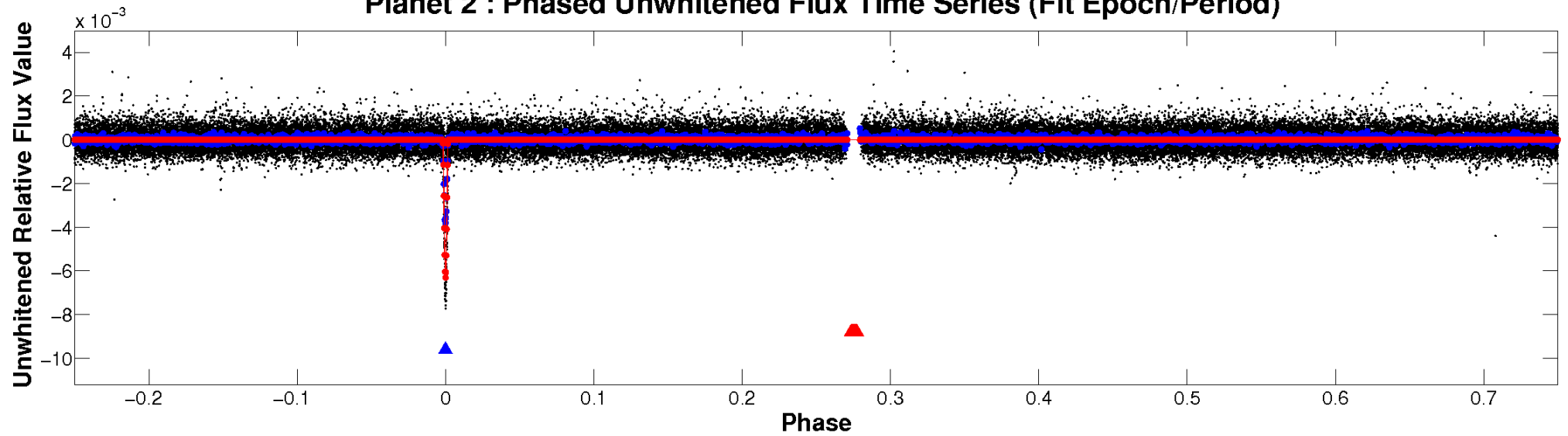
# ALT Odd/Even

TCE 01155882-02

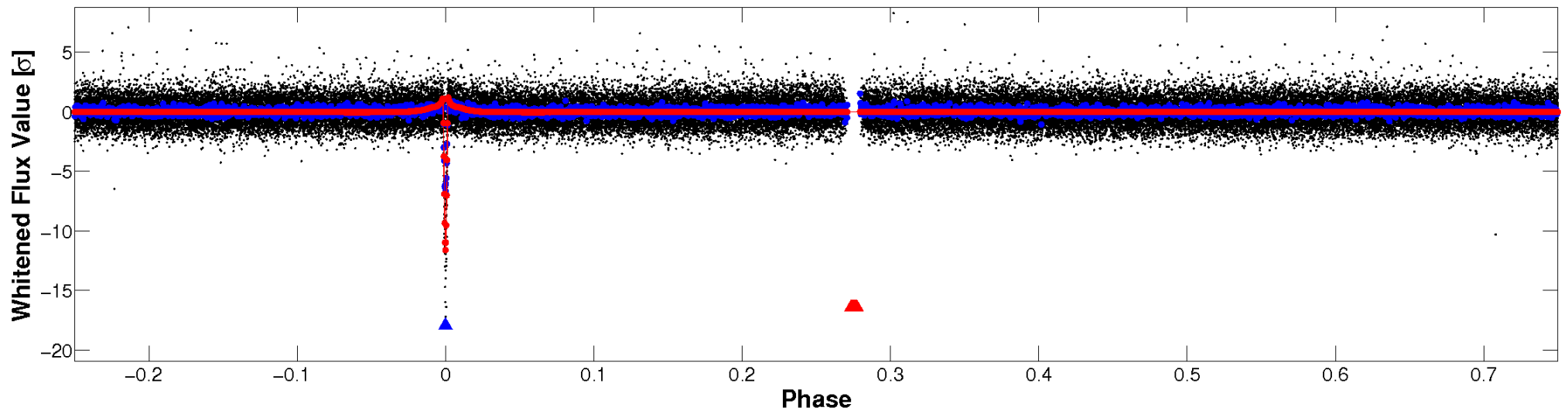


# Non-Whitened Vs. Whitened Light Curve

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

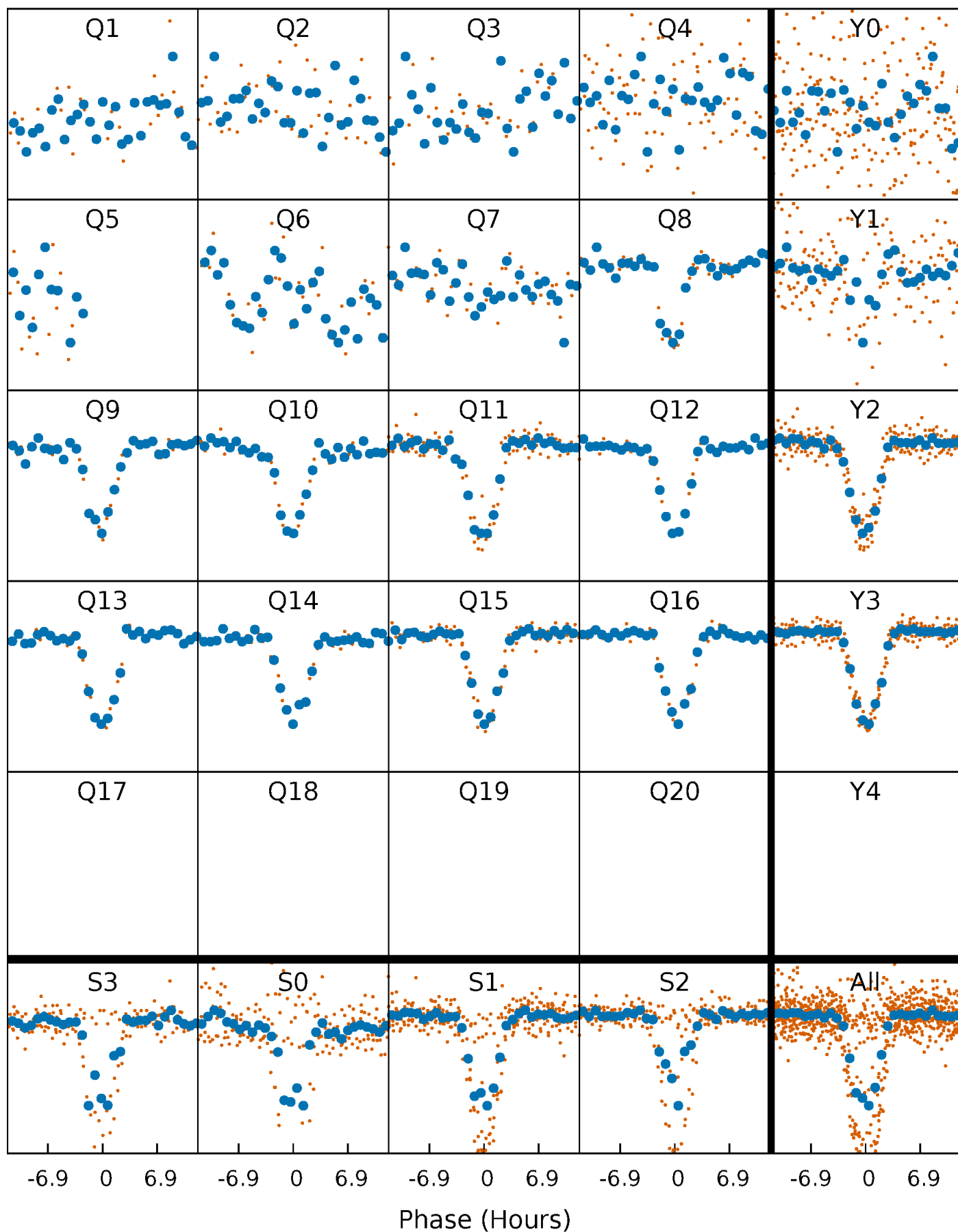


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



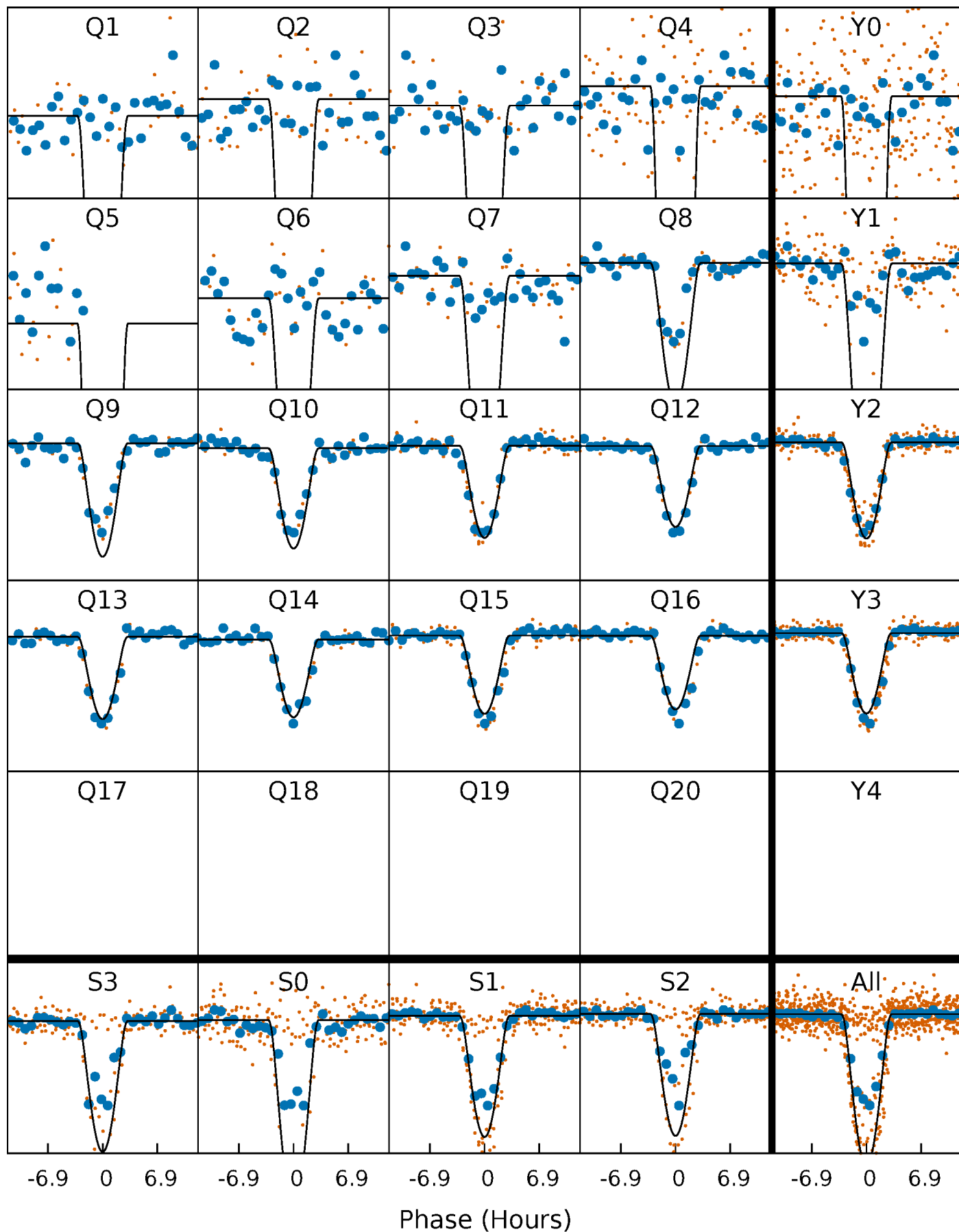
# PDC Quarter-Phased Transit Curves

TCE 011558882-02   P= 73.904754 Days    $T_0=134.468134$  (BKJD)



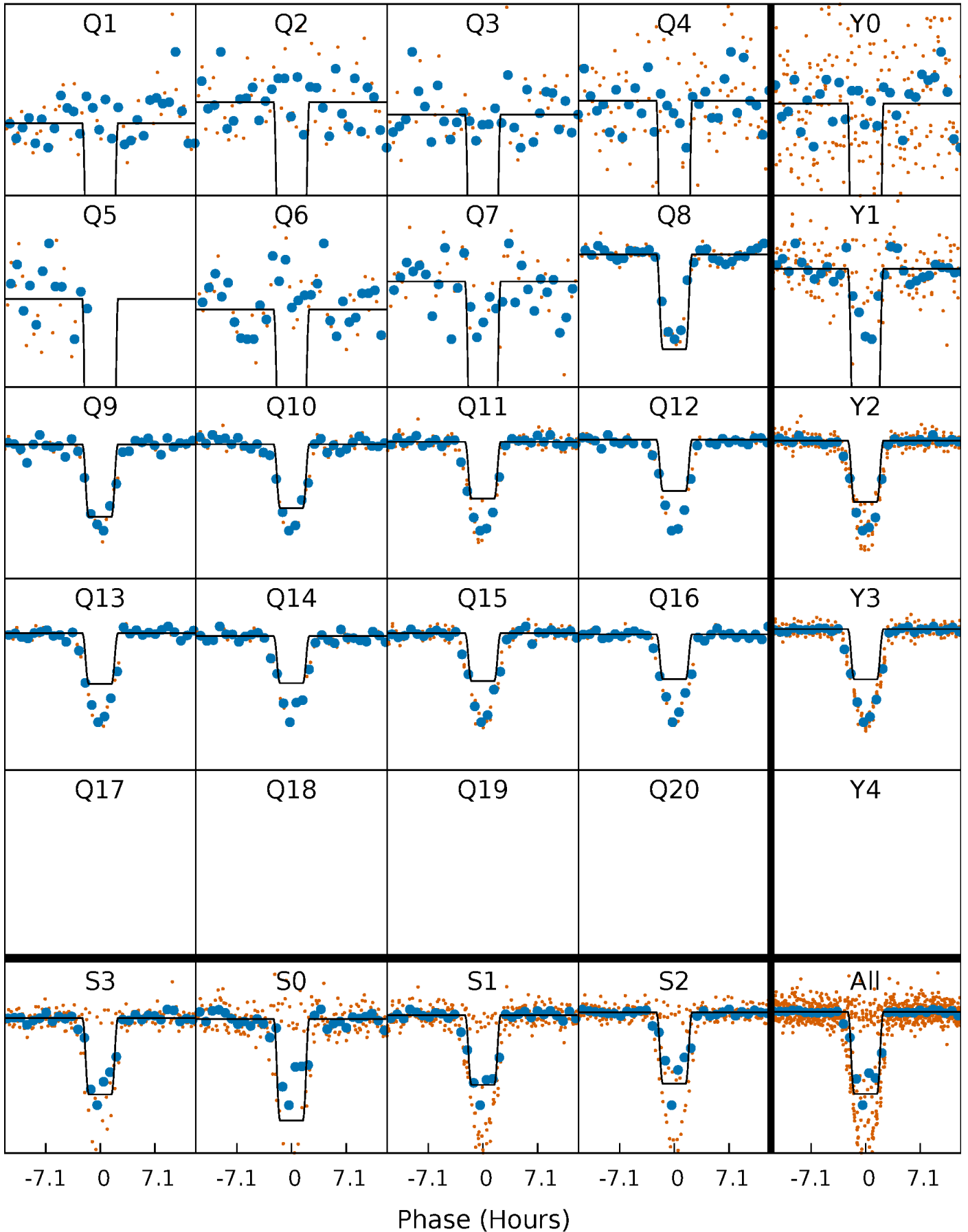
# DV Quarter-Phased Transit Curves

TCE 011558882-02 P= 73.904754 Days  $T_0=134.468134$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

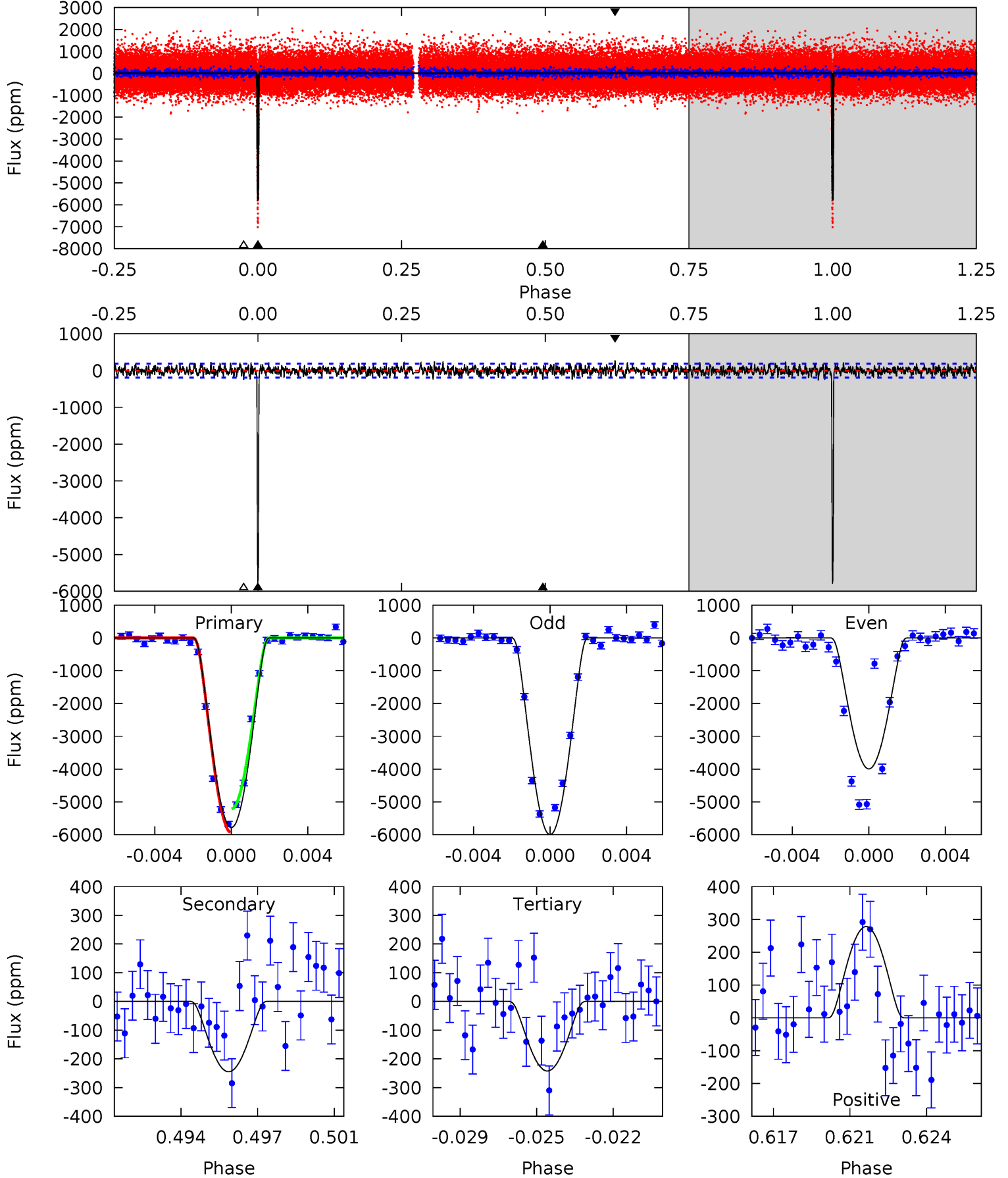
TCE 011558882-02 P= 73.907326 Days  $T_0=134.430412$  (BKJD)



# DV Model-Shift Uniqueness Test

011558882-02, P = 73.904754 Days, E = 60.563380 Days

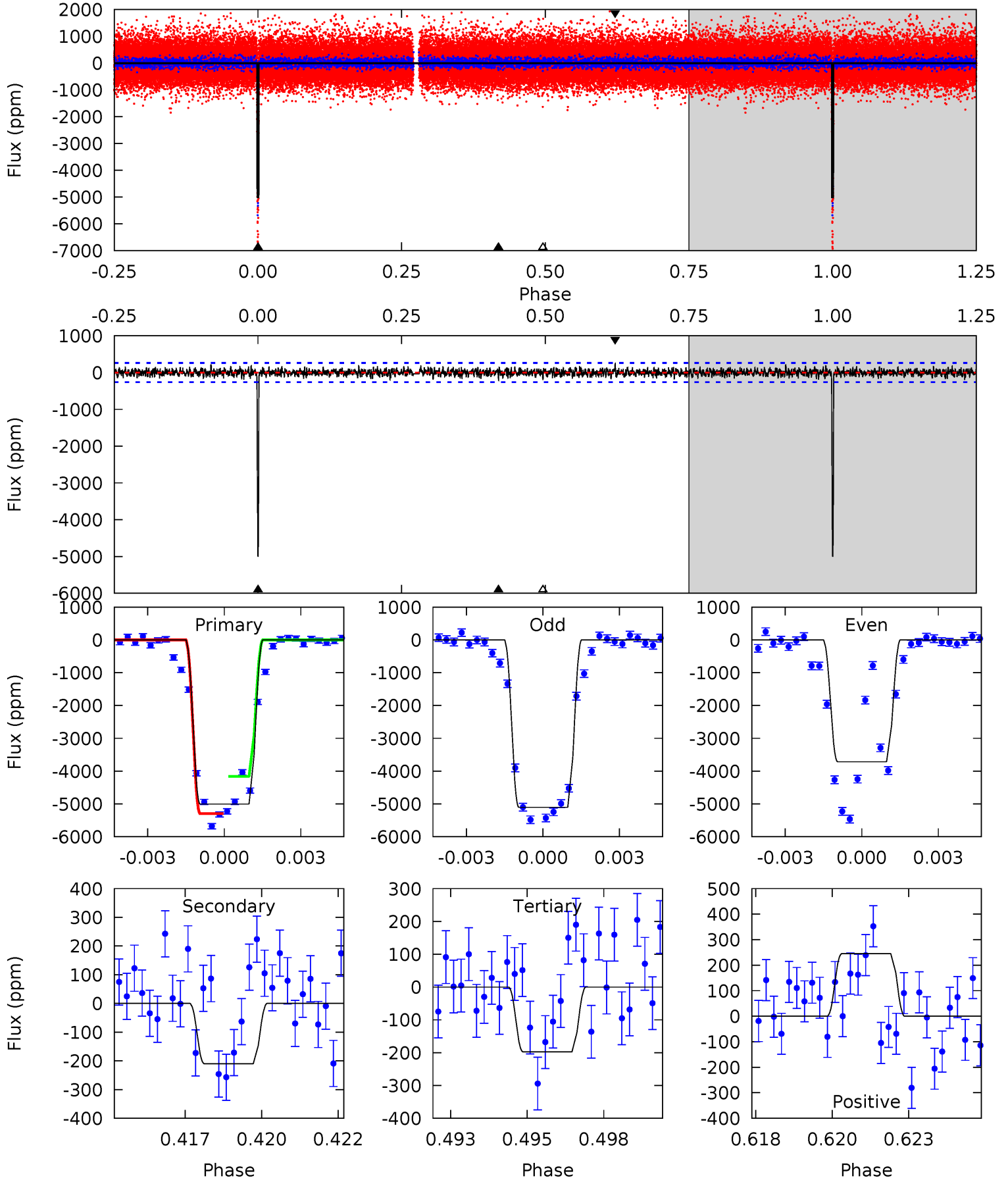
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
157.5	6.66	6.59	7.57	5.22	2.91	2.08	150.9	149.9	0.07	-0.91	27.8	0.76	0.05	0



# Alt Model-Shift Uniqueness Test

011558882-02, P = 73.907326 Days, E = 60.523086 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
101.6	4.26	4.01	4.97	5.28	3.01	1.20	97.6	96.6	0.25	-0.71	14.6	0.78	0.05	0





### Stellar Parameters For KIC 011558882

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6300^{+169}_{-225}$	$4.404^{+0.084}_{-0.210}$	$-0.260^{+0.250}_{-0.300}$	$1.057^{+0.349}_{-0.140}$	$1.028^{+0.158}_{-0.115}$	$1.226^{+0.449}_{-0.628}$
	+3%/-4%	+2%/-5%	+96%/-115%	+33%/-13%	+15%/-11%	+37%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011558882-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-245 \pm 37$	$16.29^{+7.44}_{-7.59}$	$685^{+57}_{-38}$	$2867^{+523}_{-263}$	$63^{+136}_{-34}$
Alt.	$-210 \pm 49$	$8.44^{+6.88}_{-5.41}$	$685^{+51}_{-39}$	$3374^{+1477}_{-541}$	$190^{+1333}_{-135}$

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

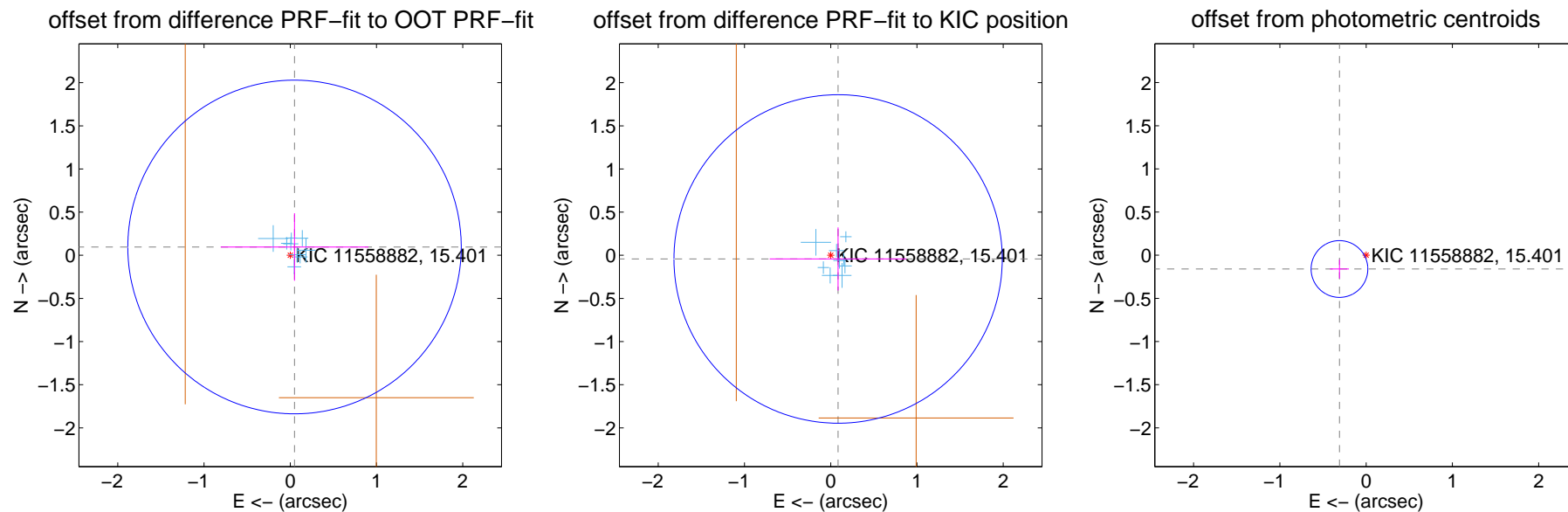
## DV Centroid Data

Supplemental centroid analysis for 011558882-02. Kepler magnitude: 15.40. Transit SNR 73.21

There are 9 quarters with good PRF difference image offsets

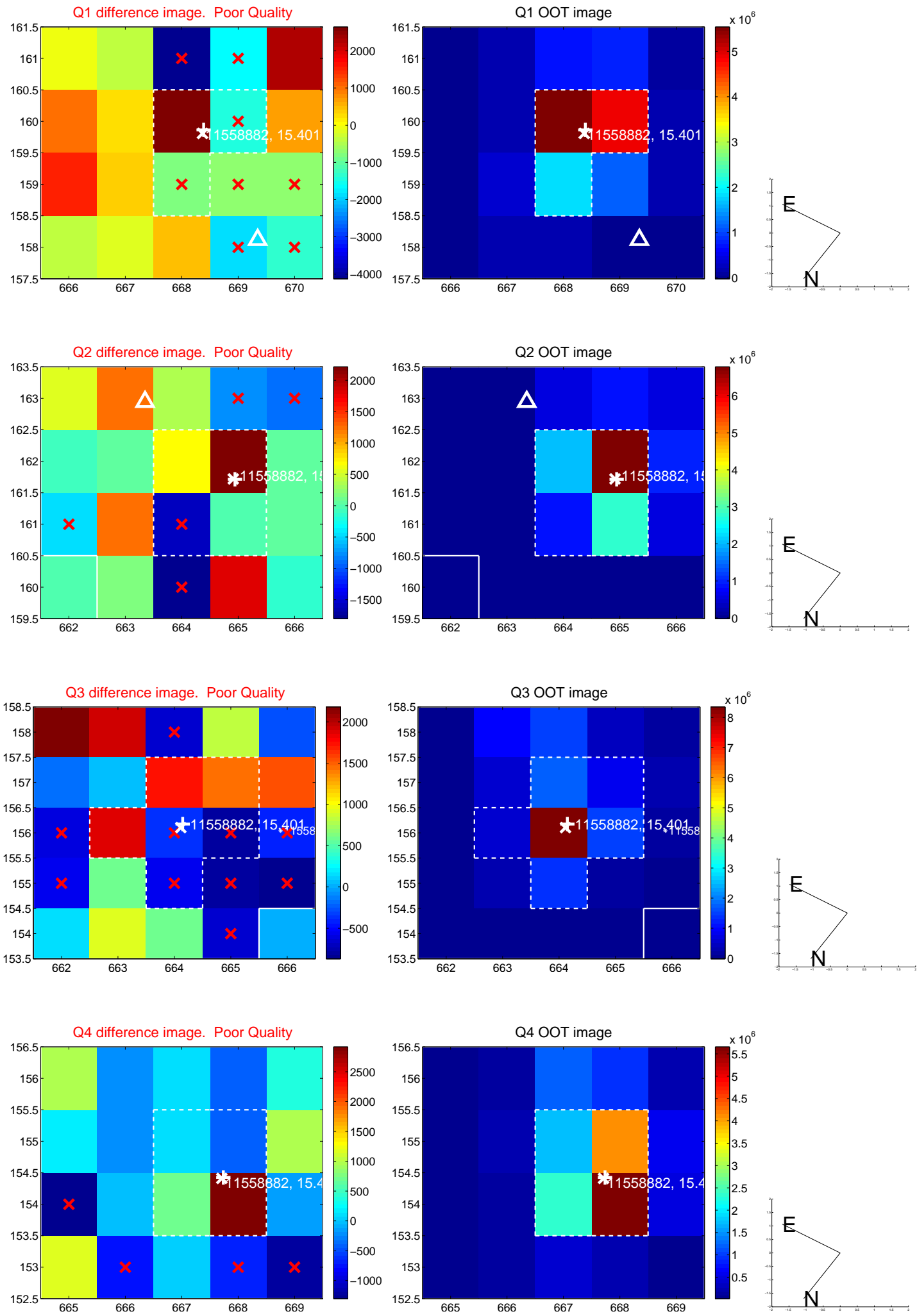
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.108 \pm 0.644$	0.17	$-0.049 \pm 0.856$	$0.096 \pm 0.391$
PRF-fit source offset from KIC position	$0.096 \pm 0.635$	0.15	$-0.086 \pm 0.793$	$-0.043 \pm 0.365$
photometric centroid source offset	$0.35 \pm 0.11$	3.18	$0.31 \pm 0.11$	$-0.16 \pm 0.11$

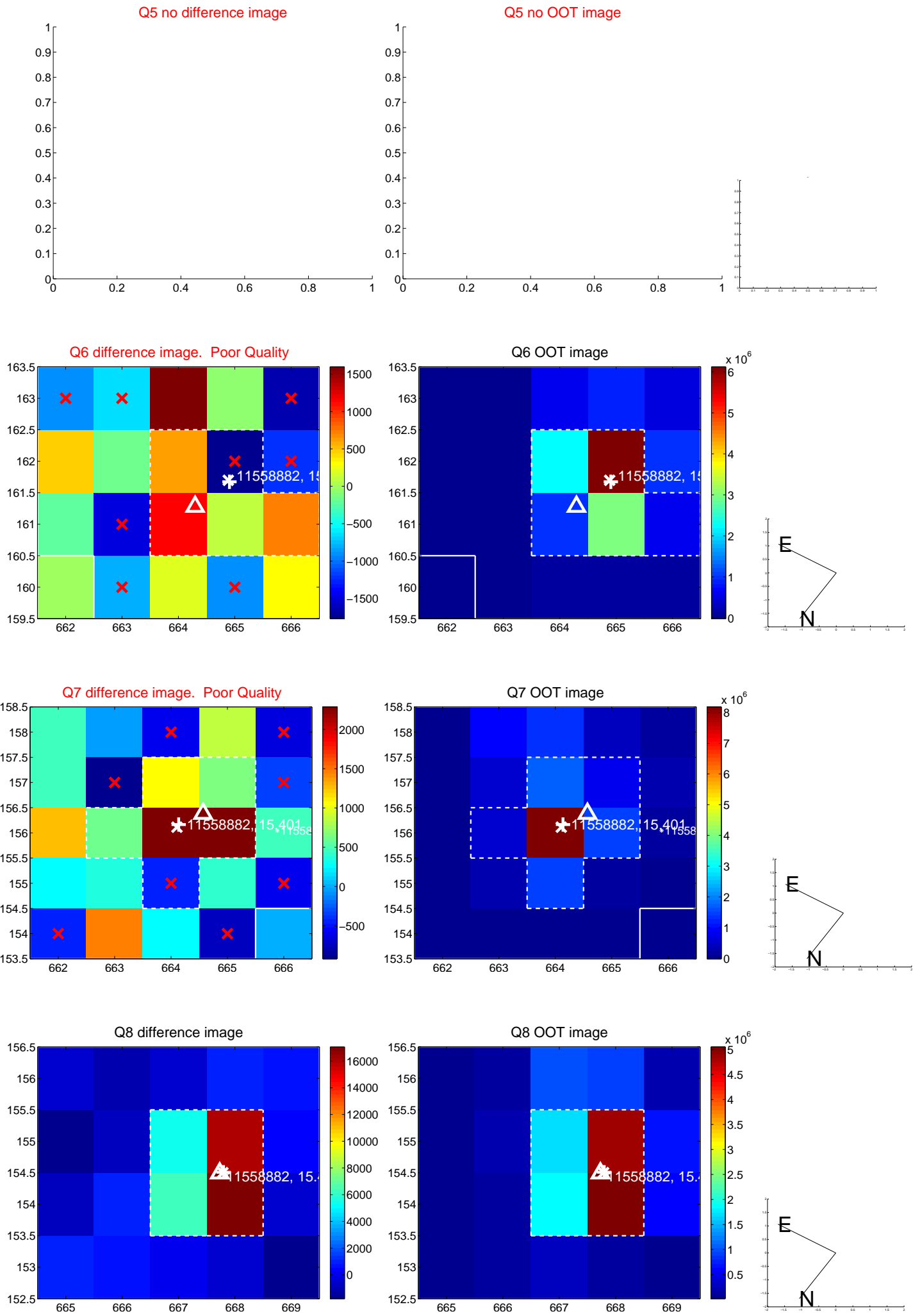


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

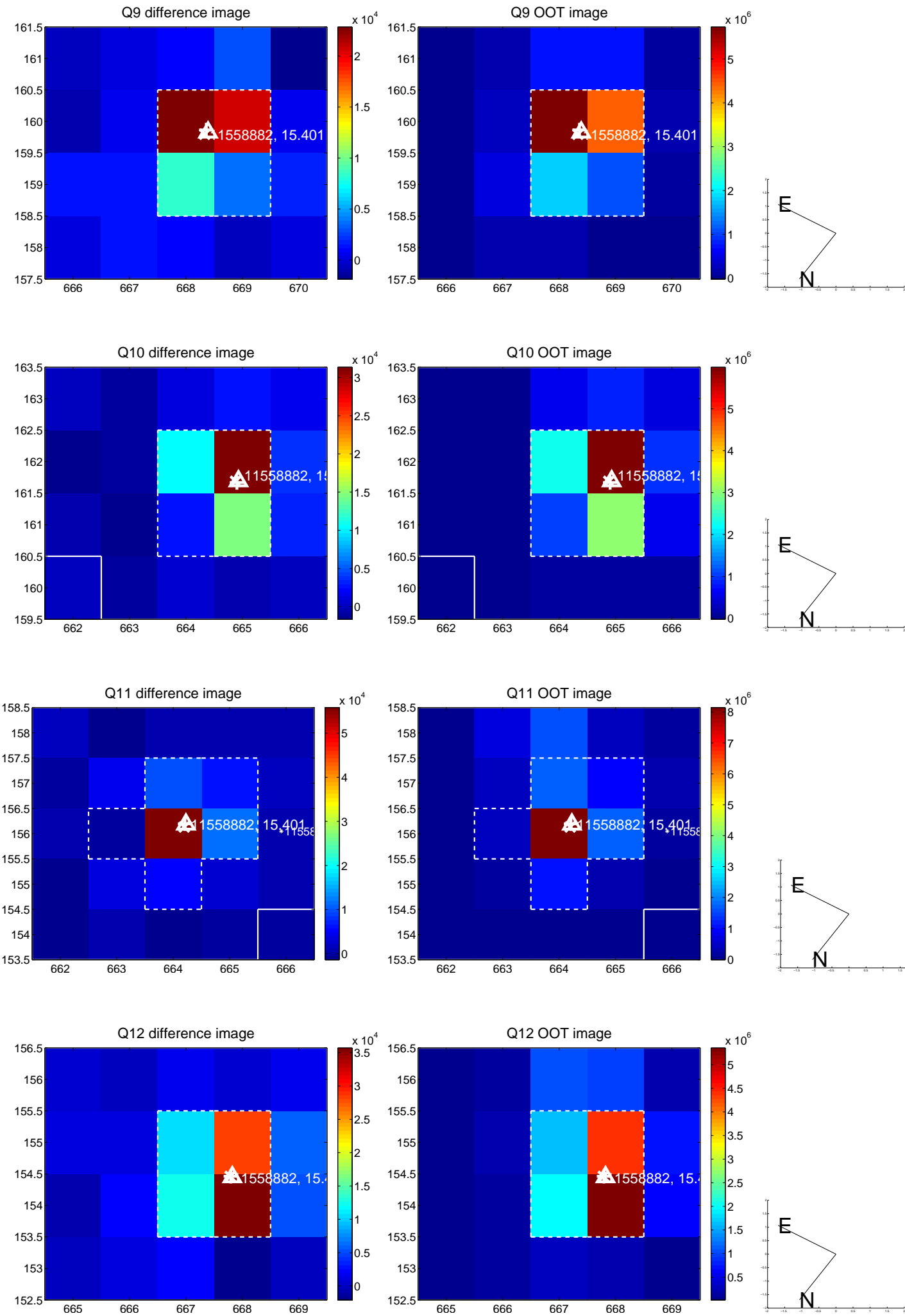
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



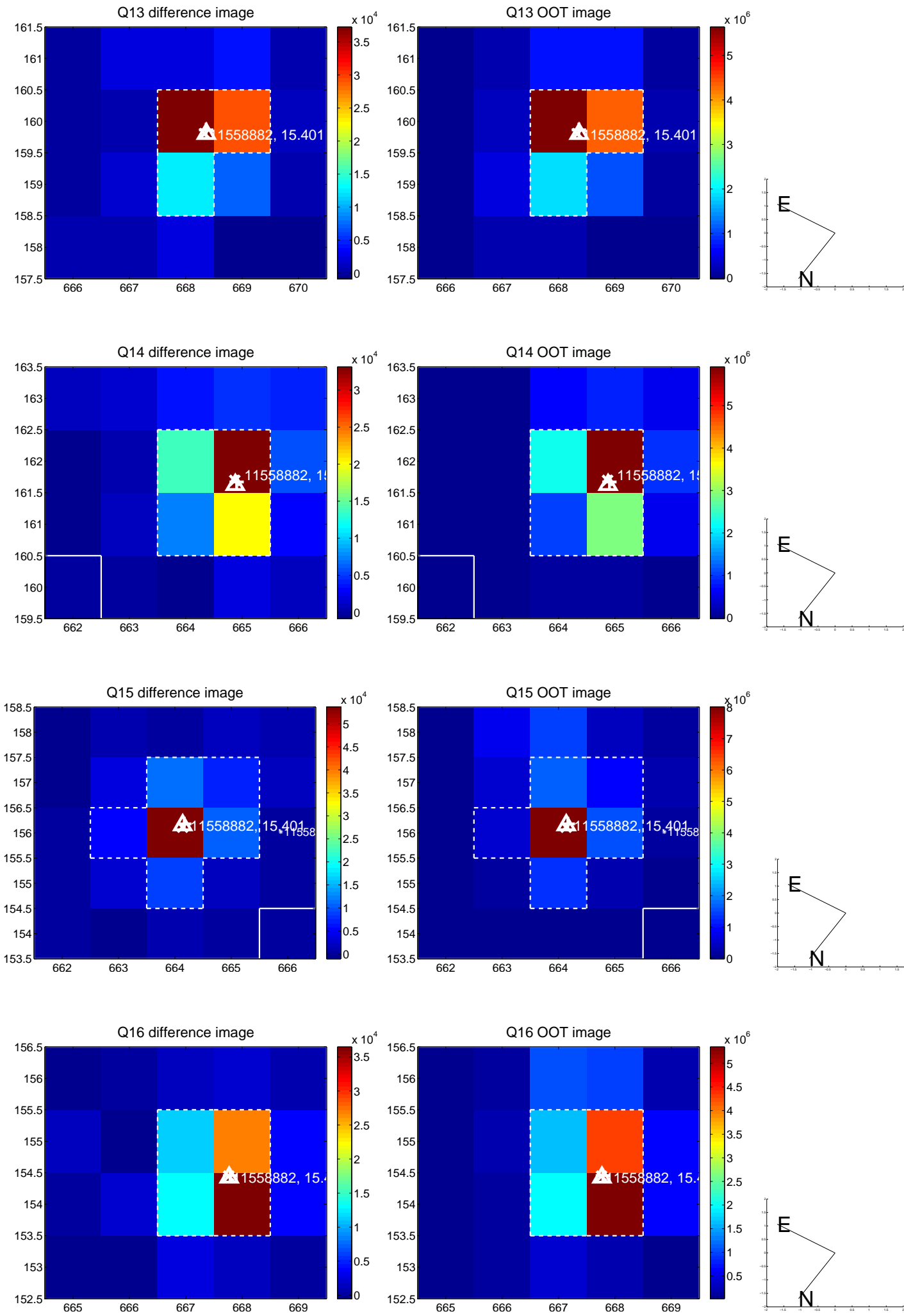
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



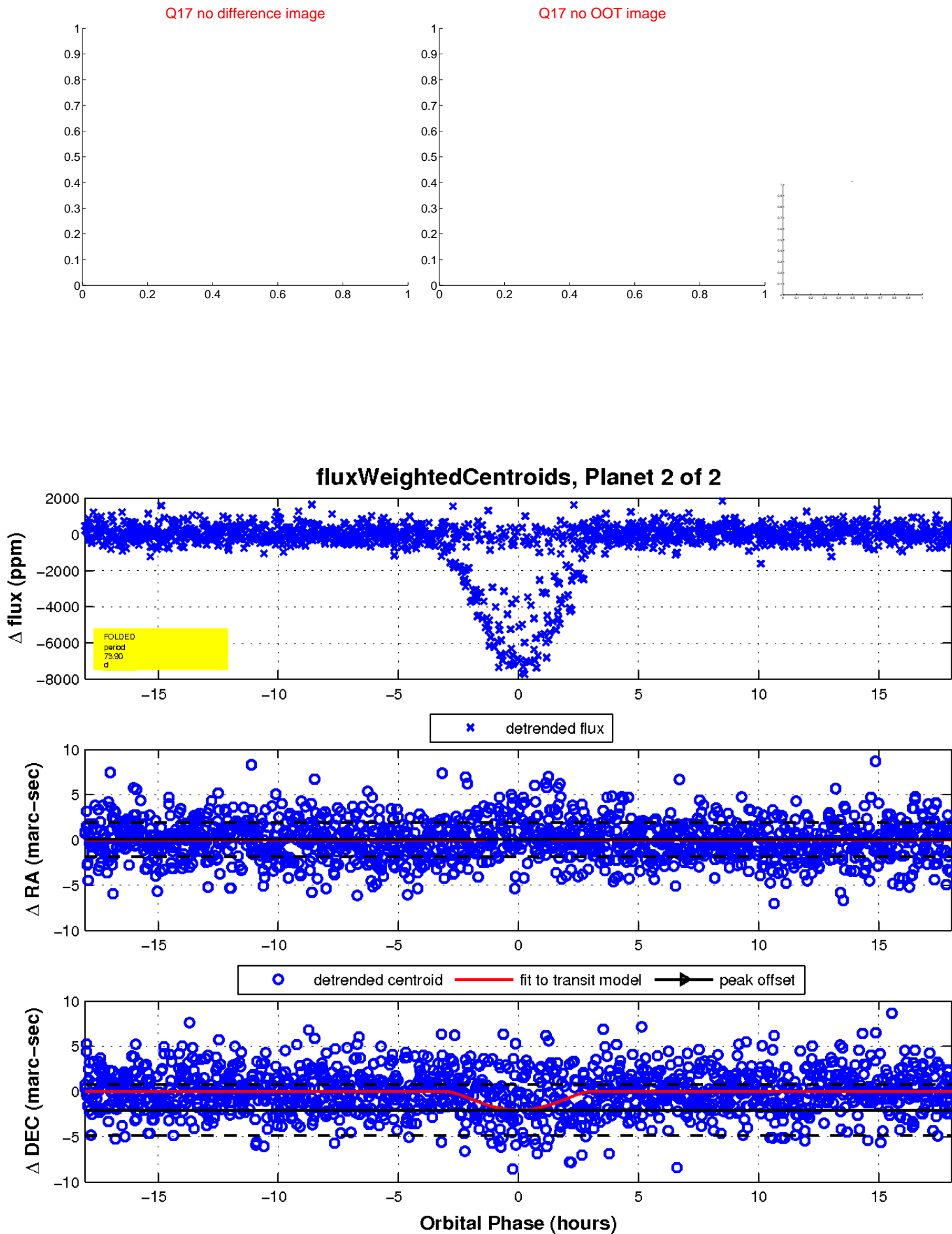
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



# UKIRT Image

Declination

