

# KIC 003558981

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003558981-01	OBS	0052.01	2.987865	132.156622	43178.5	2.642	2451.9	1601.1	0.82	5231	18.13	303.14
003558981-02	OBS	No	1.493931	132.160874	1380.4	2.375	67.9	78.6	0.82	5231	3.70	763.87
003558981-03	OBS	No	2.987234	132.530824	147.7	3.358	8.0	6.4	0.82	5231	0.99	303.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003558981-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
003558981-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
003558981-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_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.

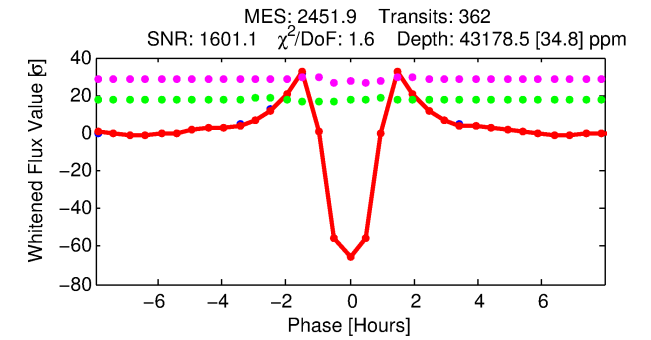
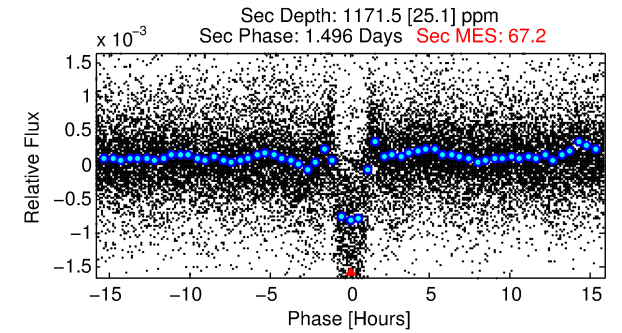
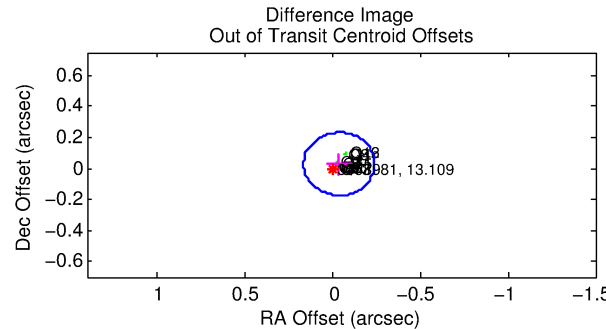
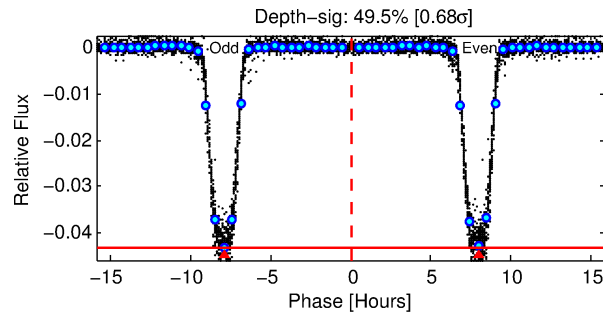
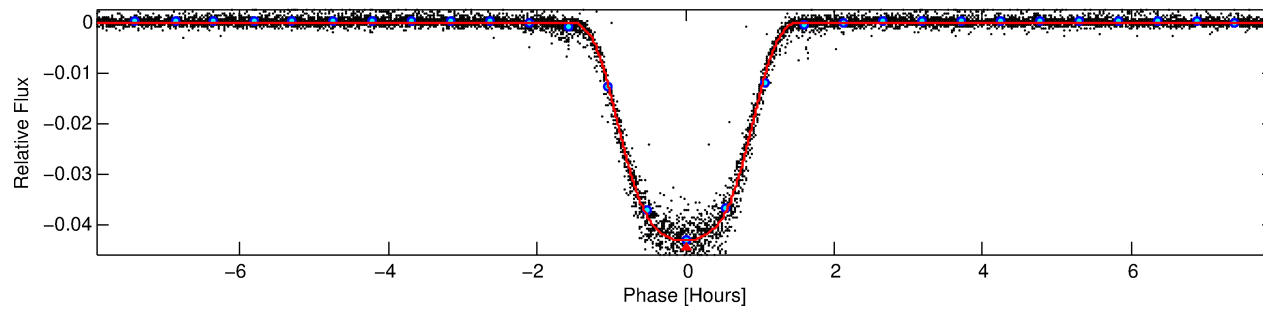
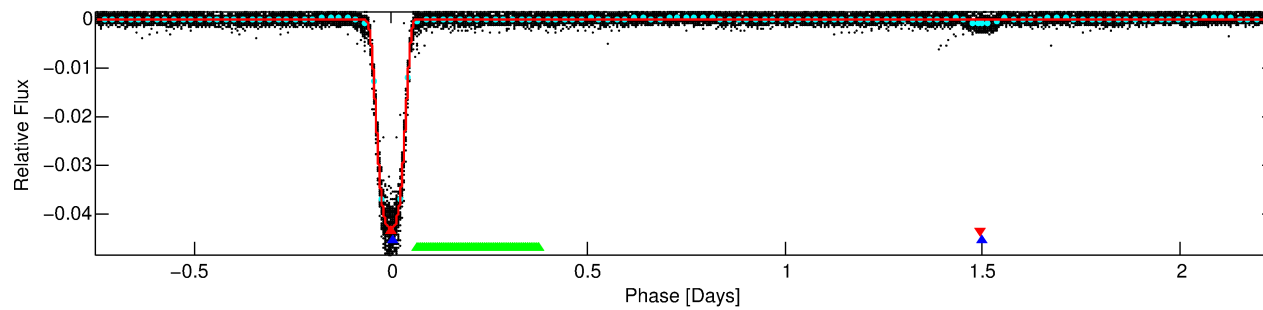
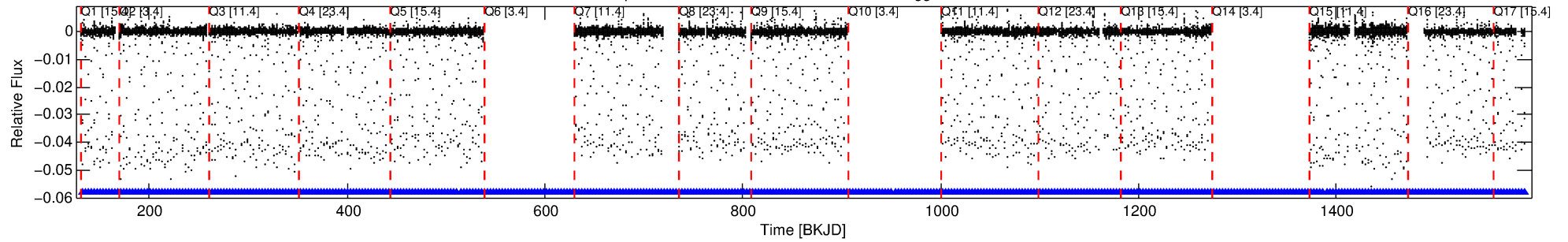
Ephemeris Match Information For 003558981-01

No Significant Match Found

# DV One-Page Summary

KIC: 3558981 Candidate: 1 of 3 Period: 2.988 d  
KOI: K00052.01 Corr: 0.988

Kp: 13.11 R\*: 0.82 Rs Teff: 5231.0 K Logg: 4.54 Fe/H: 0.070



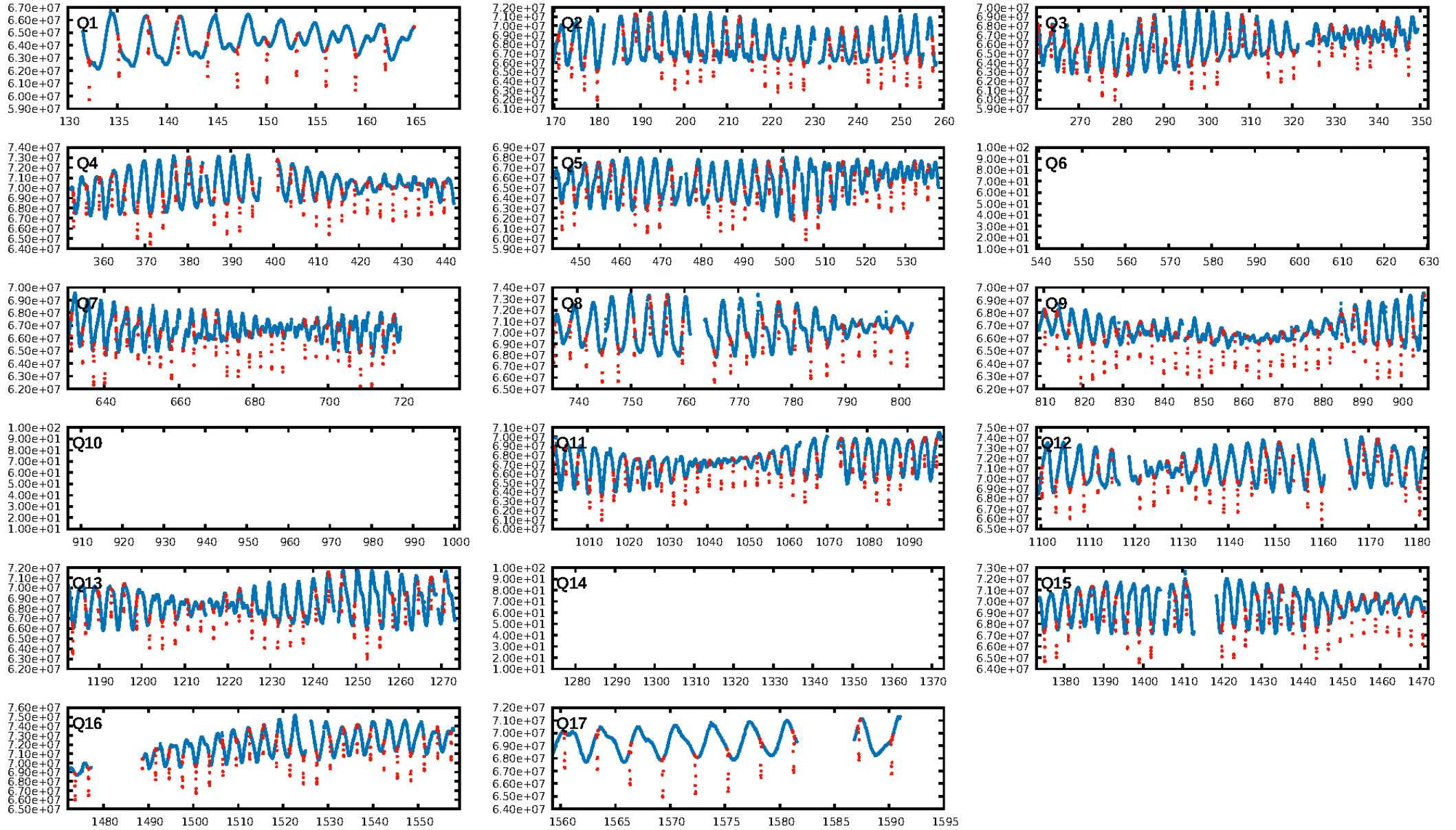
## DV Fit Results:

Period = 2.98787 [0.00000] d  
Epoch = 132.1566 [0.0000] BKJD  
Rp/R\* = 0.2024 [0.0001]  
a/R\* = 8.73 [0.01]  
b = 0.66 [0.00]  
Seff = 303.14 [72.60]  
Teq = 1064 [64] K  
Rp = 18.13 [2.81] Re  
a = 0.0386 [0.0049] AU  
Ag = 2.92 [0.54] [3.58σ]  
Teffp = 2151 [84] K [10.29σ]

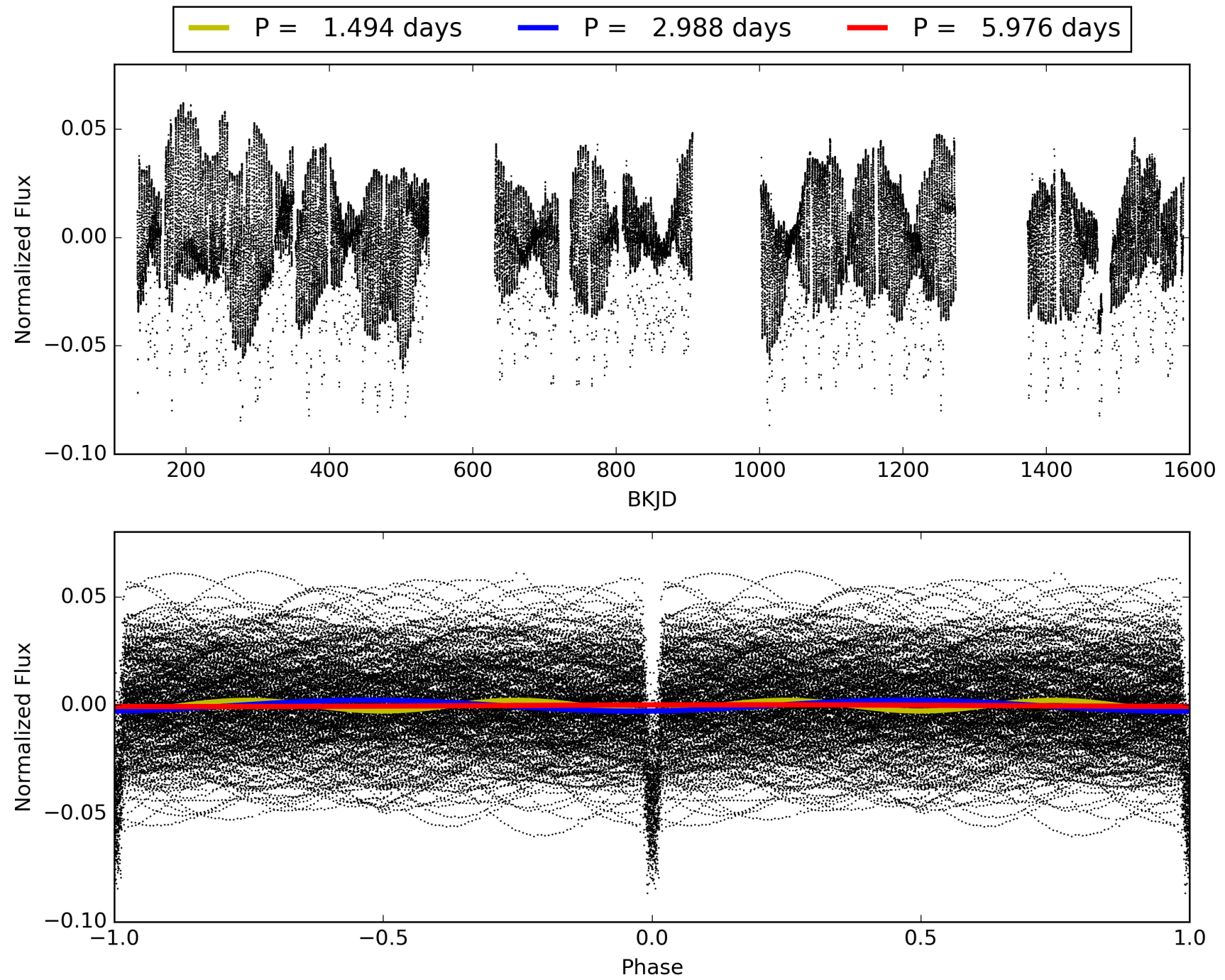
## DV Diagnostic Results:

ShortPeriod-sig: 0.3% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [340/340]  
GhostDiagnostic-chr: 1.801  
Centroid-sig: N/A  
Centroid-so: 0.670 arcsec [145.86σ]  
OotOffset-rm: 0.048 arcsec [0.71σ]  
KicOffset-rm: 0.095 arcsec [1.42σ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 0.00 [0/14]

# TCE 003558981-01, PDC Light Curves

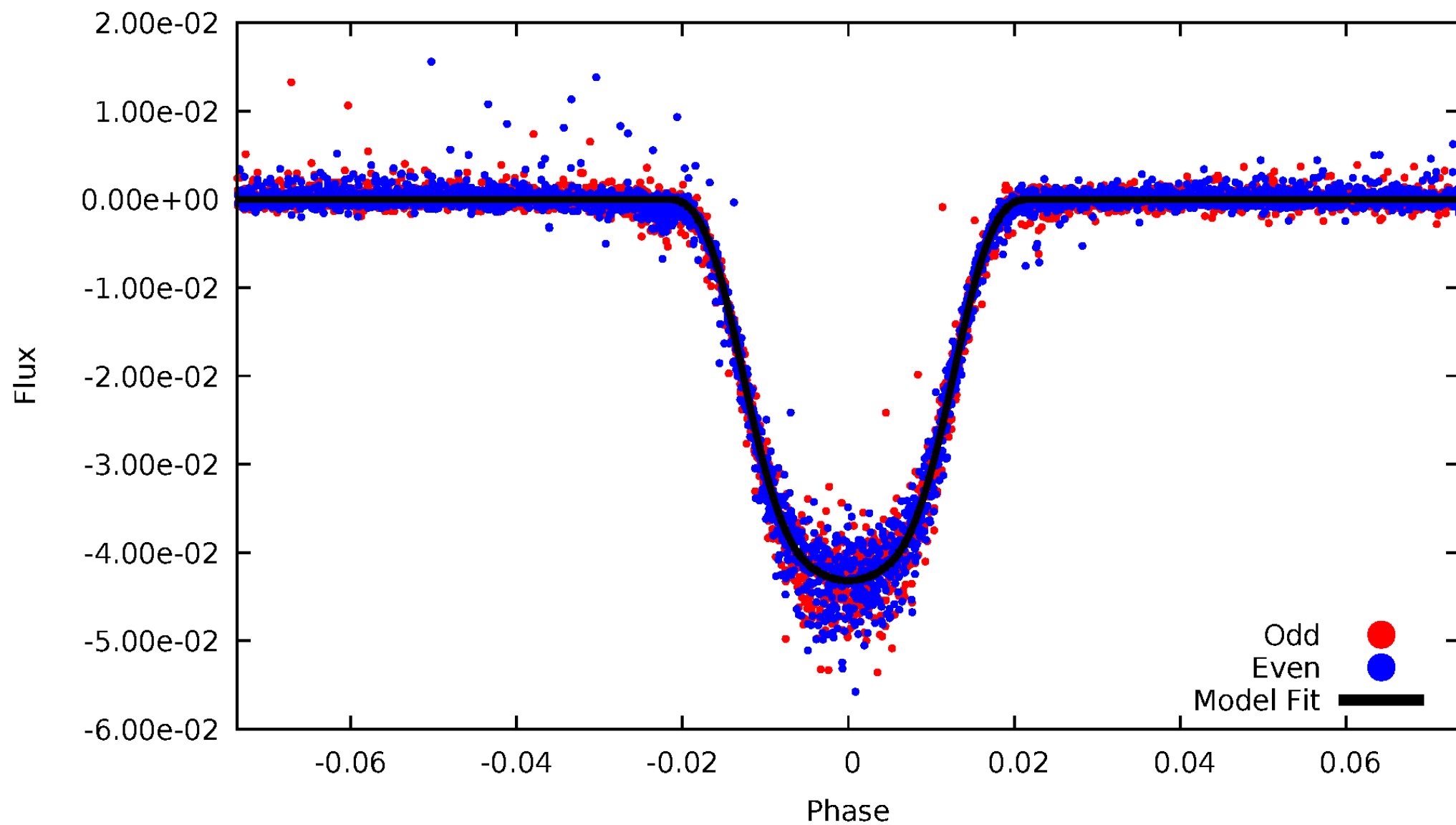


TCE 003558981-01



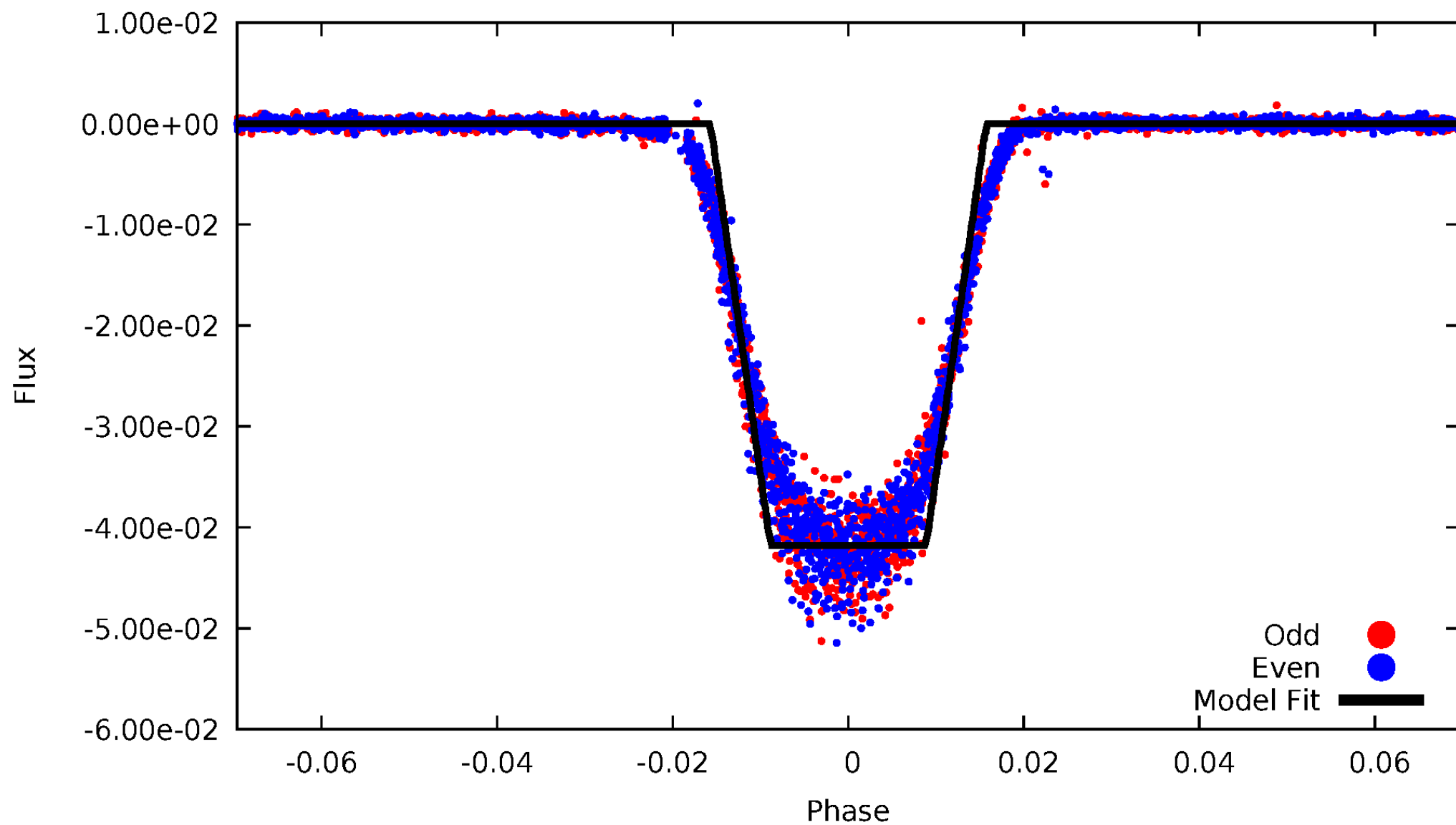
# DV Odd/Even

TCE 003558981-01



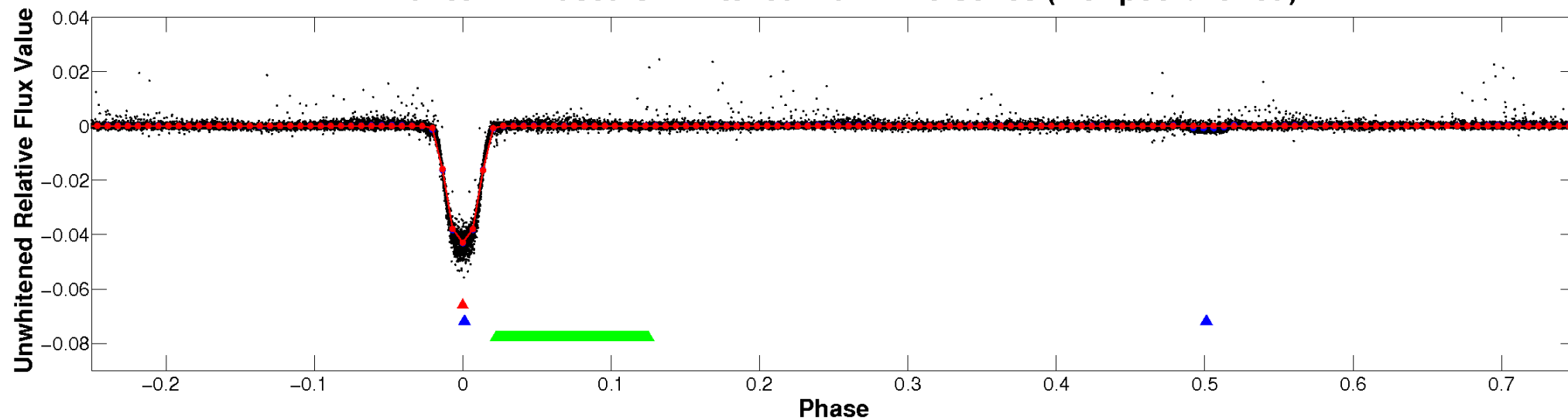
# ALT Odd/Even

TCE 003558981-01

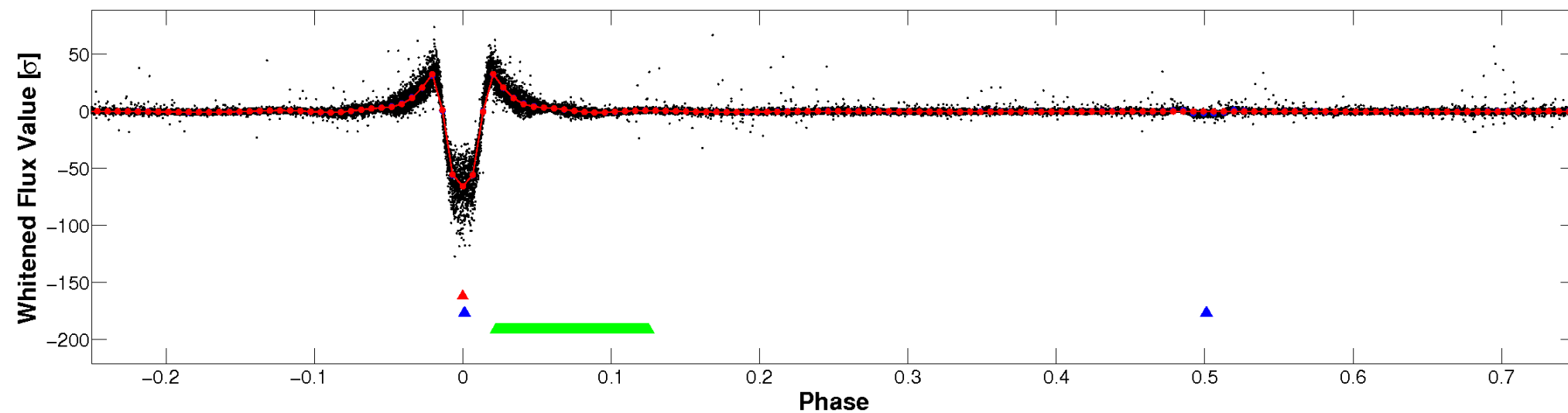


# Non-Whitened Vs. Whitened Light Curve

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



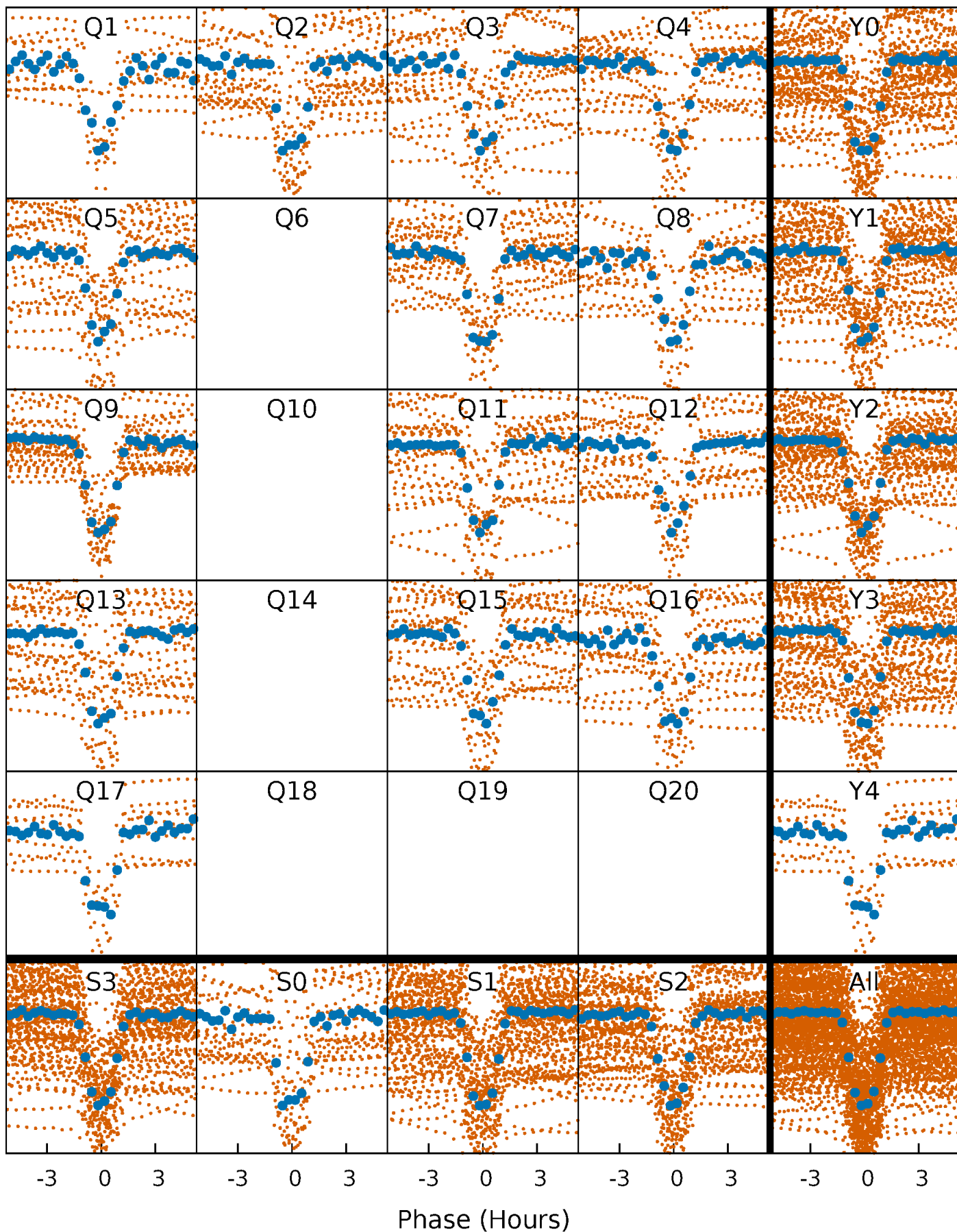
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

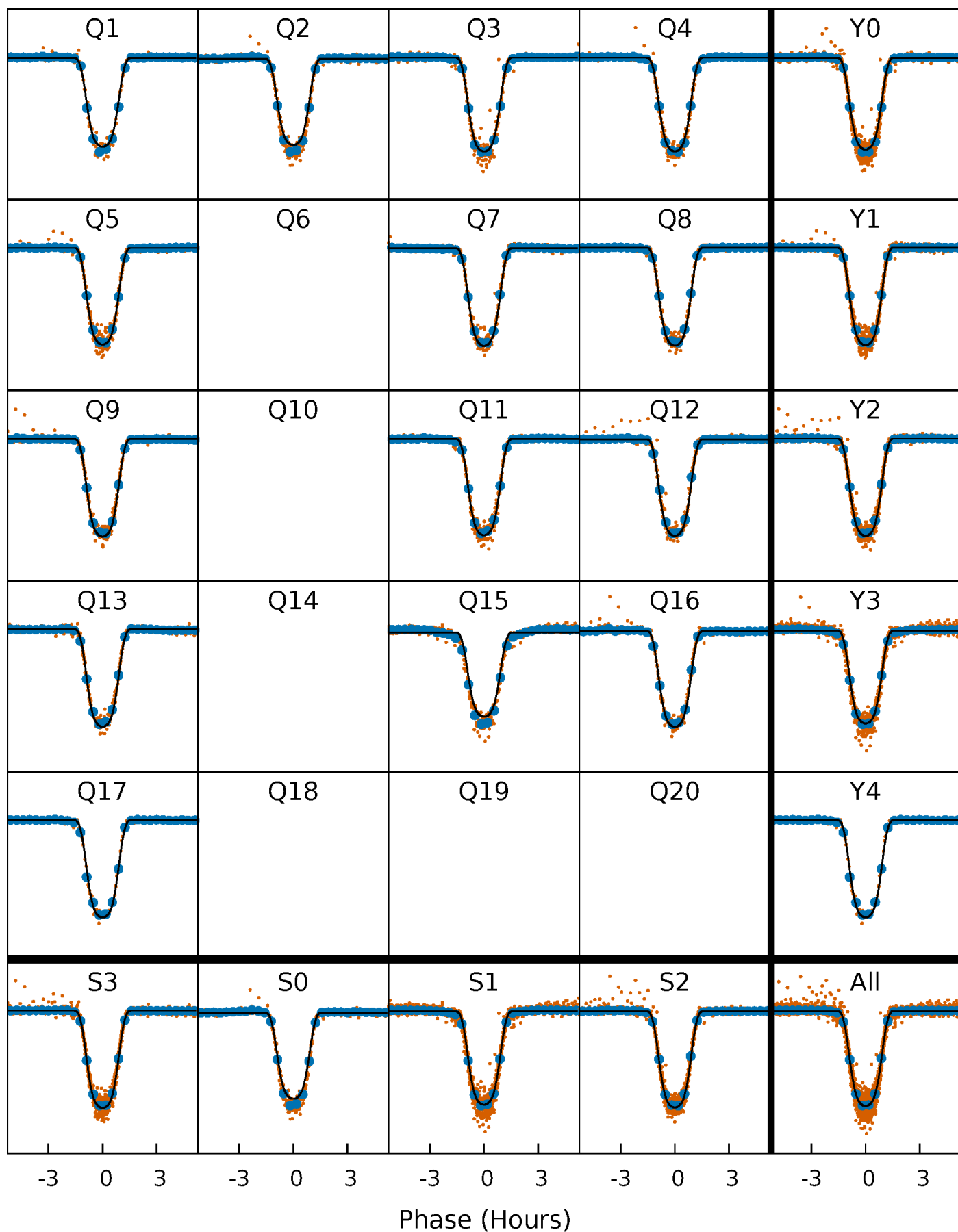
TCE 003558981-01 P= 2.987865 Days  $T_0=132.156622$  (BKJD)





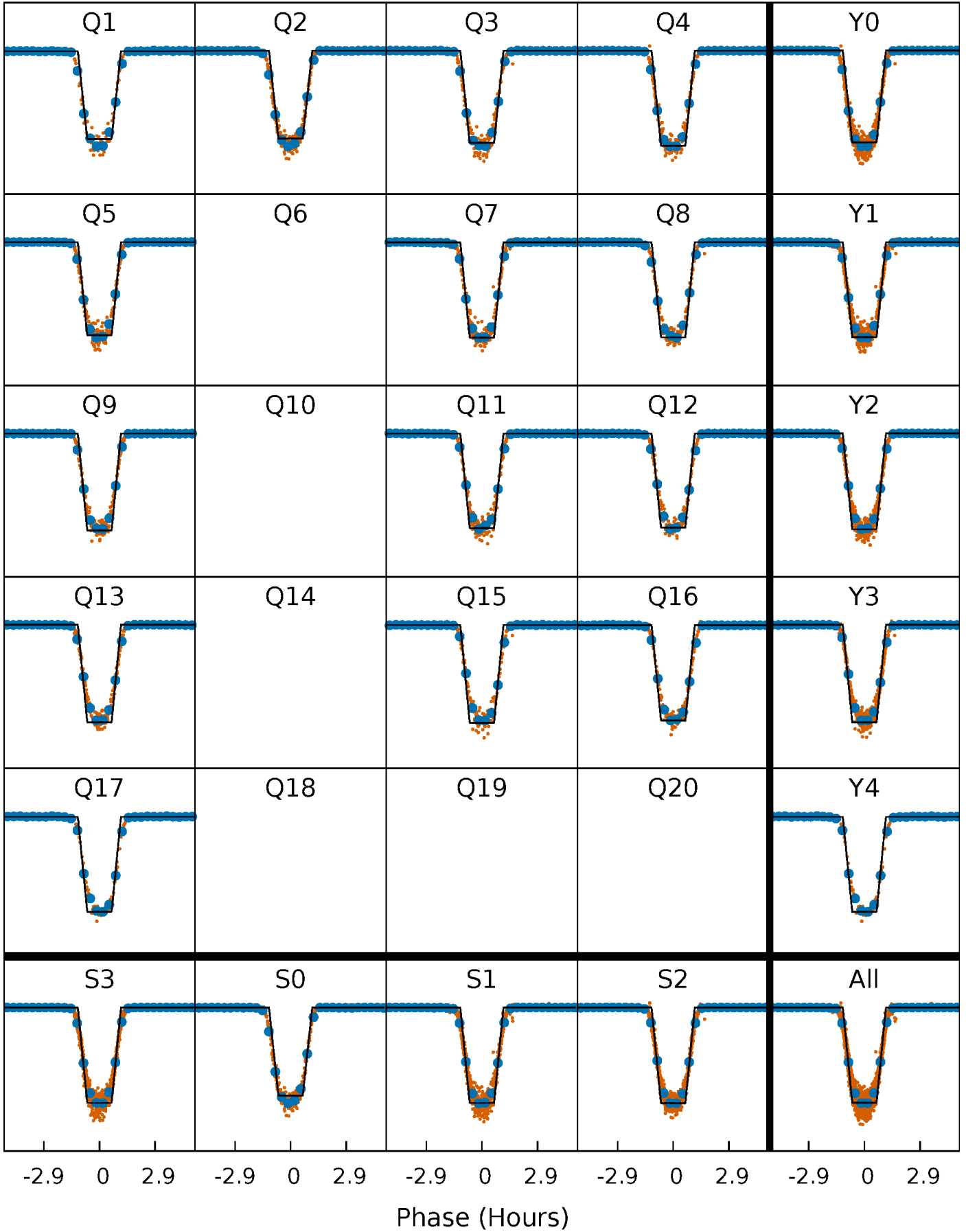
# DV Quarter-Phased Transit Curves

TCE 003558981-01 P= 2.987865 Days  $T_0=132.156622$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

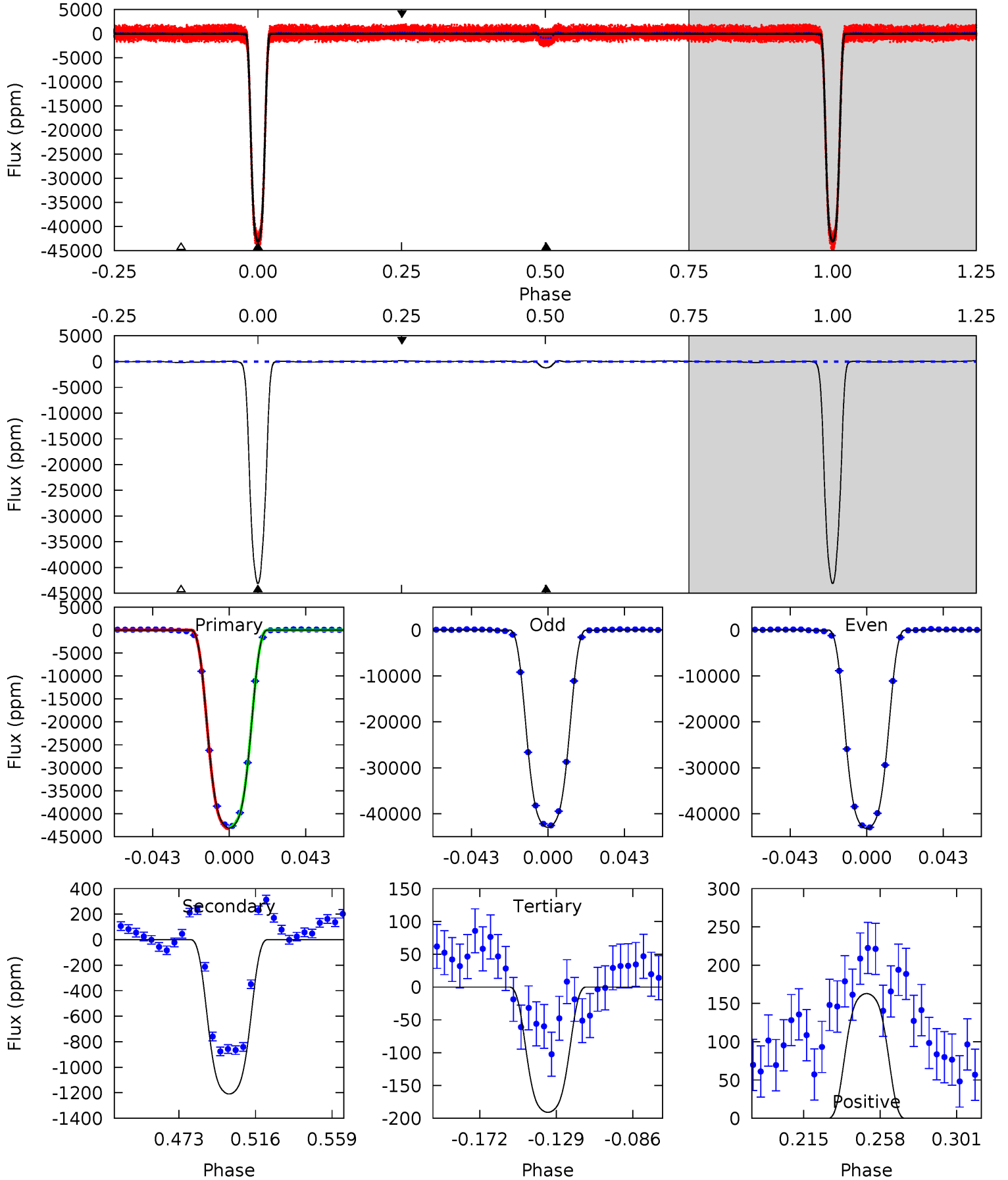
TCE 003558981-01   P= 2.987855 Days    $T_0=132.158801$  (BKJD)



# DV Model-Shift Uniqueness Test

003558981-01, P = 2.987865 Days, E = 129.168757 Days

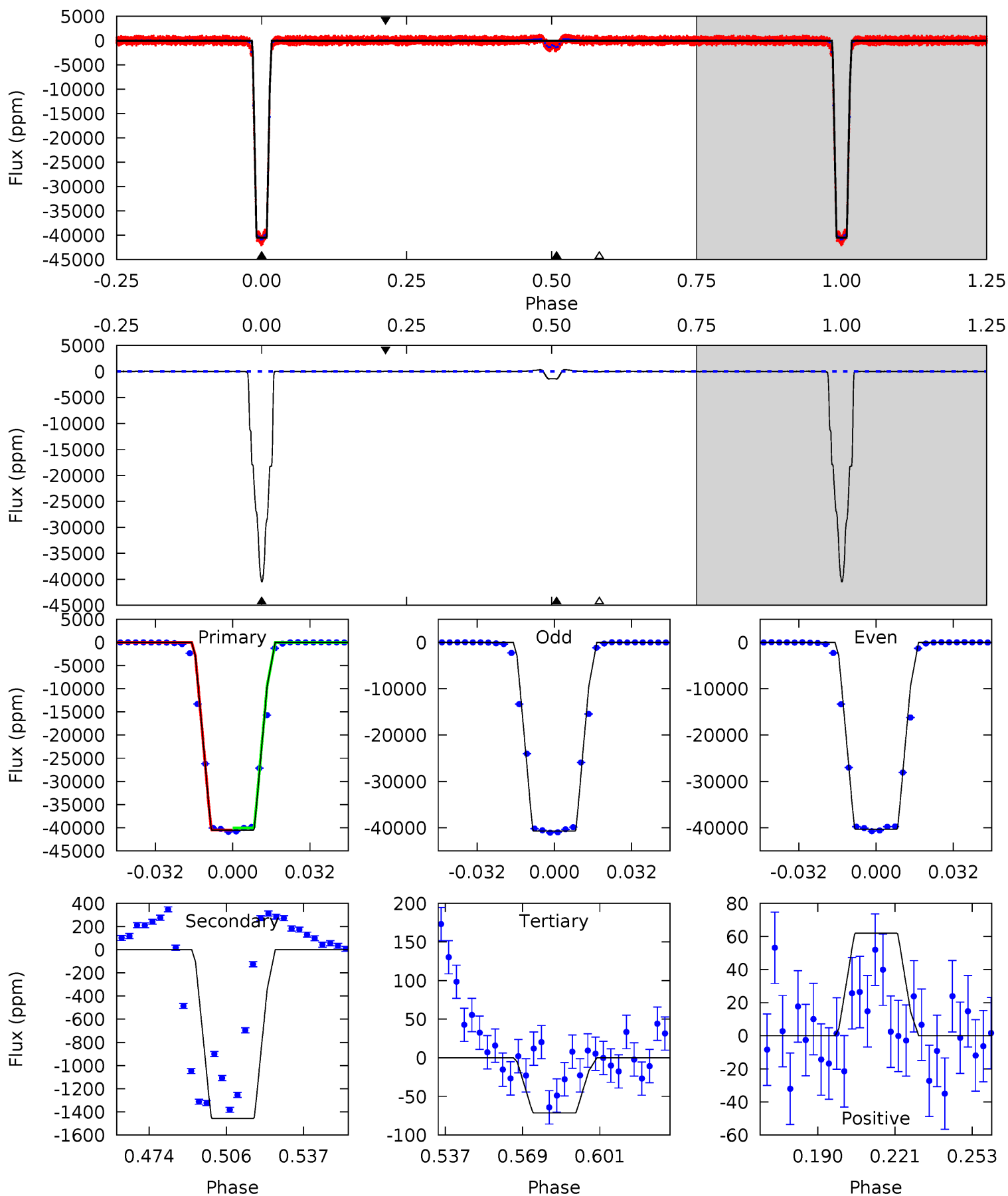
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3295	92.5	14.6	12.5	4.74	2.02	5.24	3280	3282	77.9	80.0	10.4	1.01	0.00	14.3



# Alt Model-Shift Uniqueness Test

003558981-01, P = 2.987855 Days, E = 129.170946 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
2991	107.6	5.27	4.57	4.80	2.15	2.43	2985	2986	102.3	103.0	13.9	1.01	0.01	0



### Stellar Parameters For KIC 003558981

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5231^{+203}_{-166}$	$4.544^{+0.049}_{-0.098}$	$0.070^{+0.250}_{-0.300}$	$0.821^{+0.127}_{-0.078}$	$0.859^{+0.073}_{-0.080}$	$2.189^{+0.490}_{-0.685}$
	+4%/-3%	+1%/-2%	+357%/-429%	+15%/-10%	+8%/-9%	+22%/-31%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 003558981-01 / KOI 0052.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1210 \pm 13$	$18.46^{+1.49}_{-1.09}$	$1508^{+83}_{-64}$	$2831^{+65}_{-56}$	$2.928^{+0.286}_{-0.390}$
Alt.	$-1457 \pm 14$	$18.54^{+1.52}_{-1.11}$	$1506^{+69}_{-61}$	$2899^{+63}_{-54}$	$3.482^{+0.345}_{-0.470}$

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

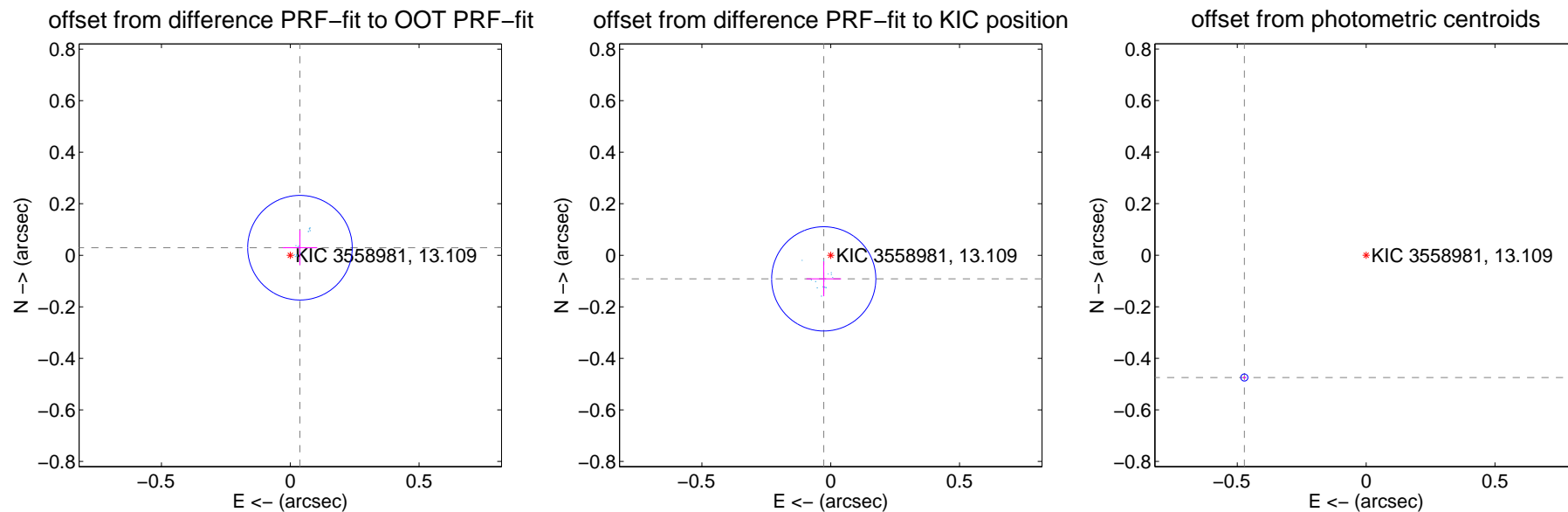
## DV Centroid Data

Supplemental centroid analysis for 003558981-01. Kepler magnitude: 13.11. Transit SNR 1601.05

There are 14 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

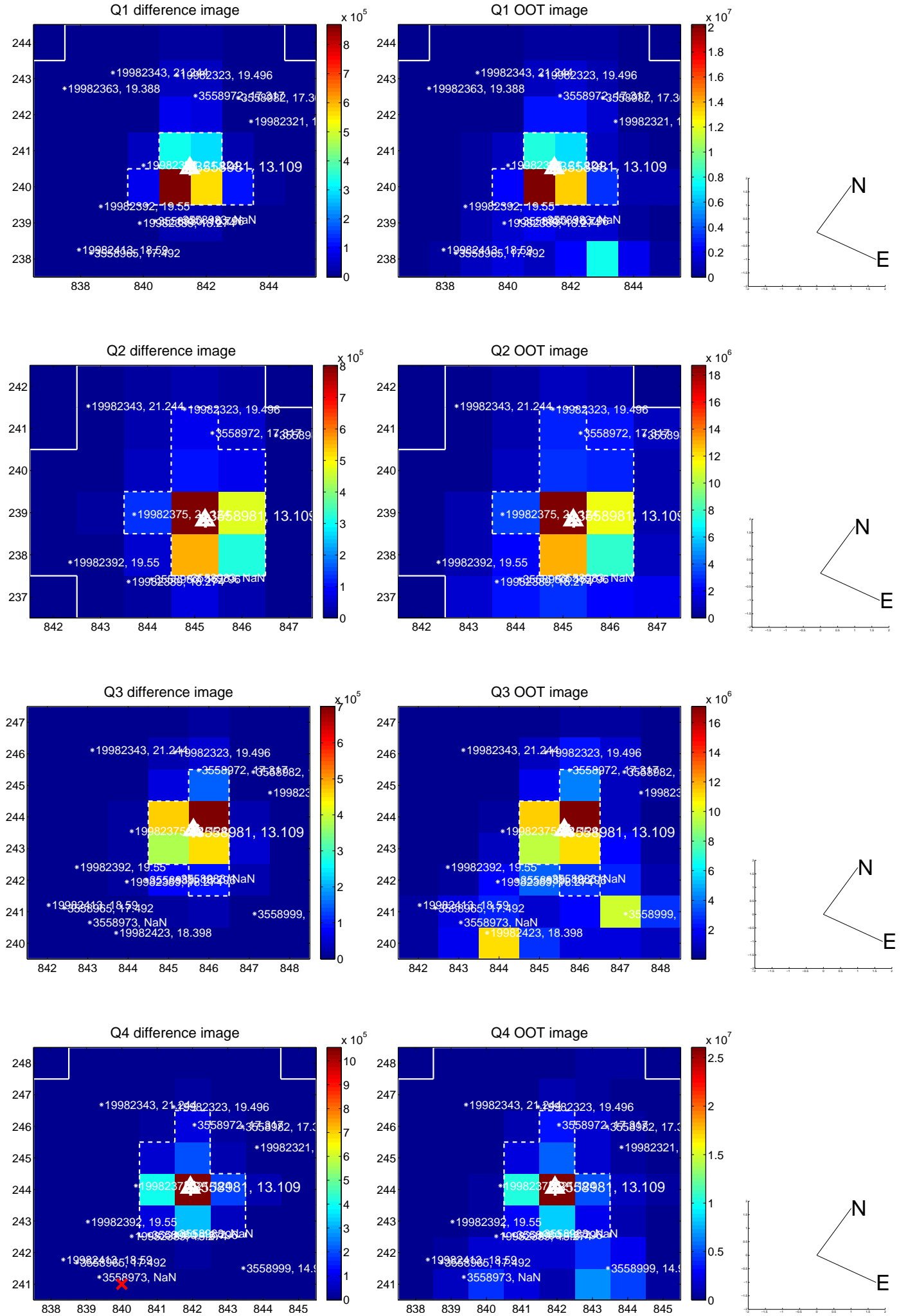
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.048 \pm 0.068$	0.71	$-0.038 \pm 0.067$	$0.029 \pm 0.068$
PRF-fit source offset from KIC position	$0.095 \pm 0.067$	1.42	$0.027 \pm 0.067$	$-0.092 \pm 0.067$
photometric centroid source offset	$0.67 \pm 0.00$	145.86	$0.47 \pm 0.00$	$-0.47 \pm 0.00$



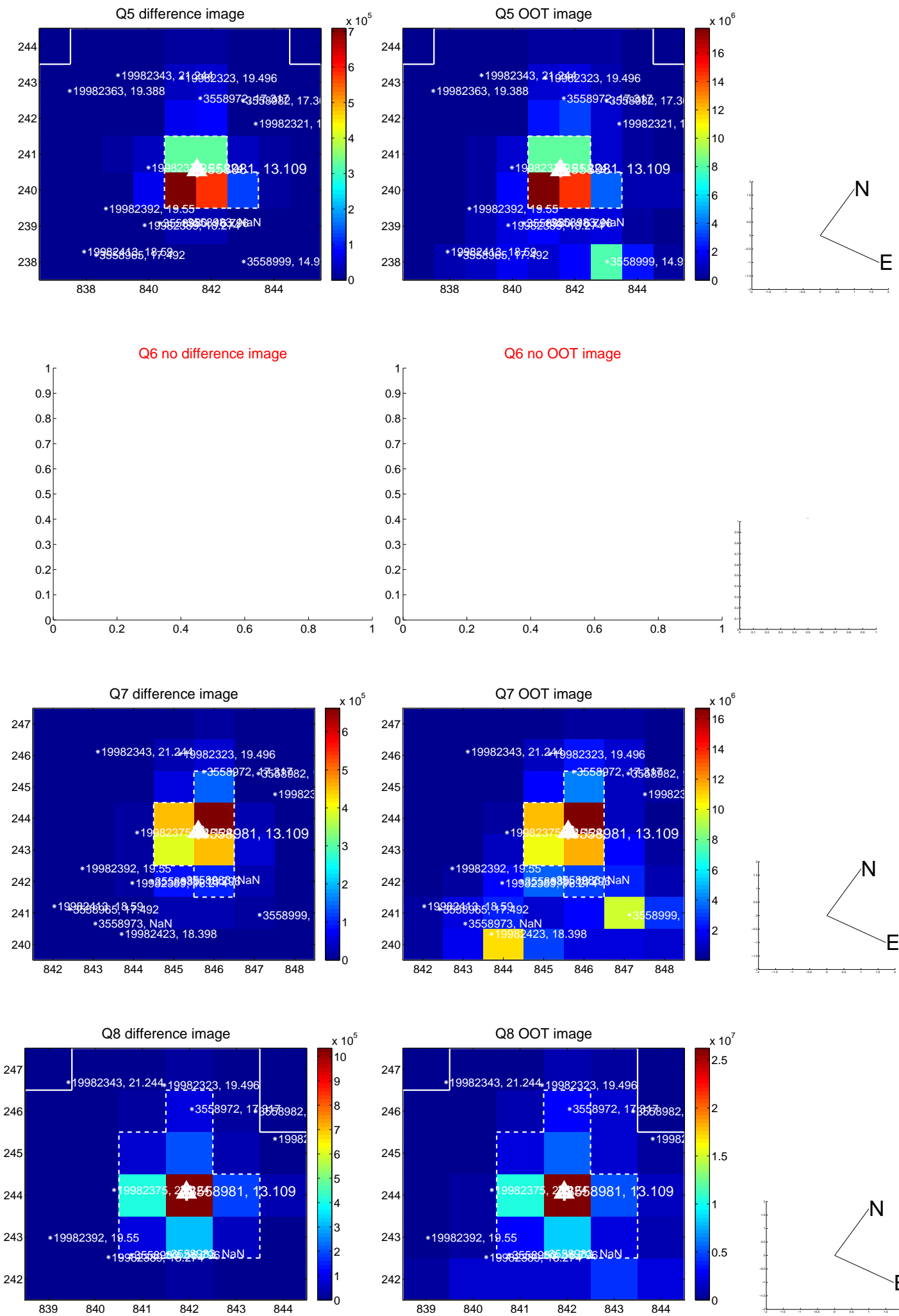
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



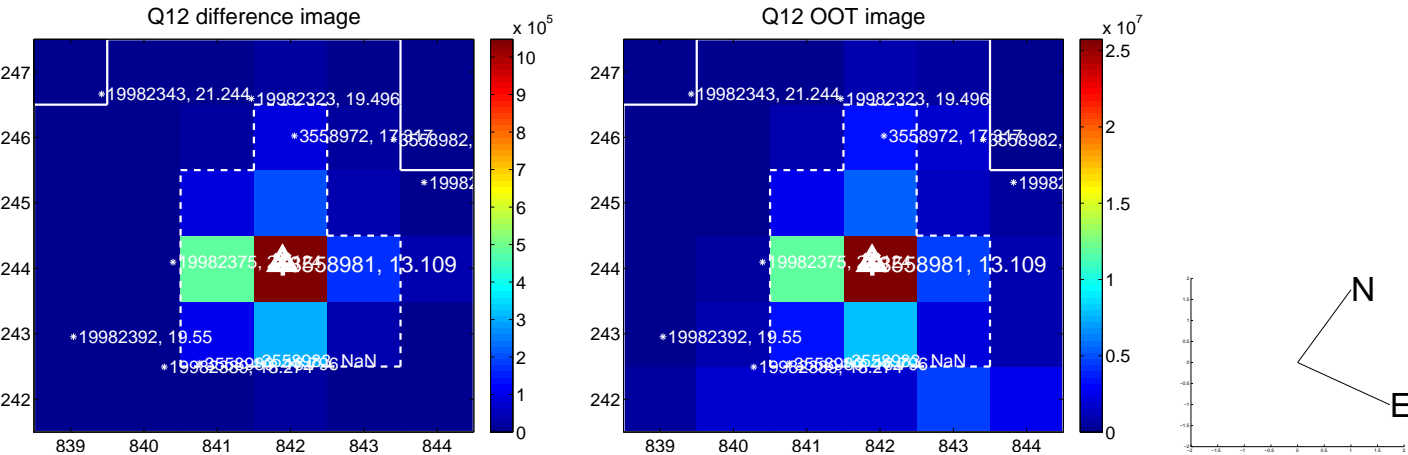
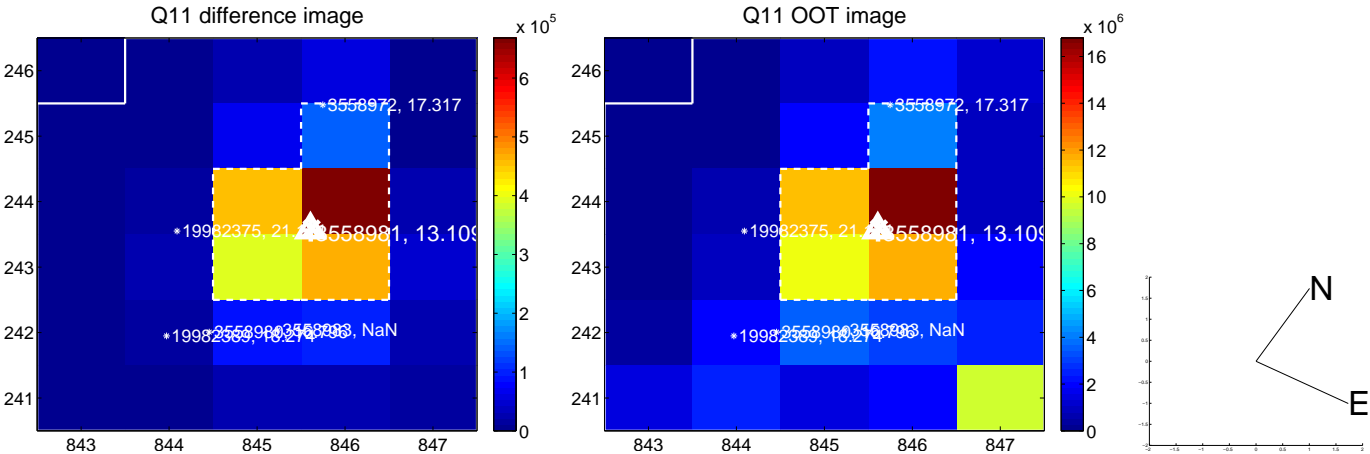
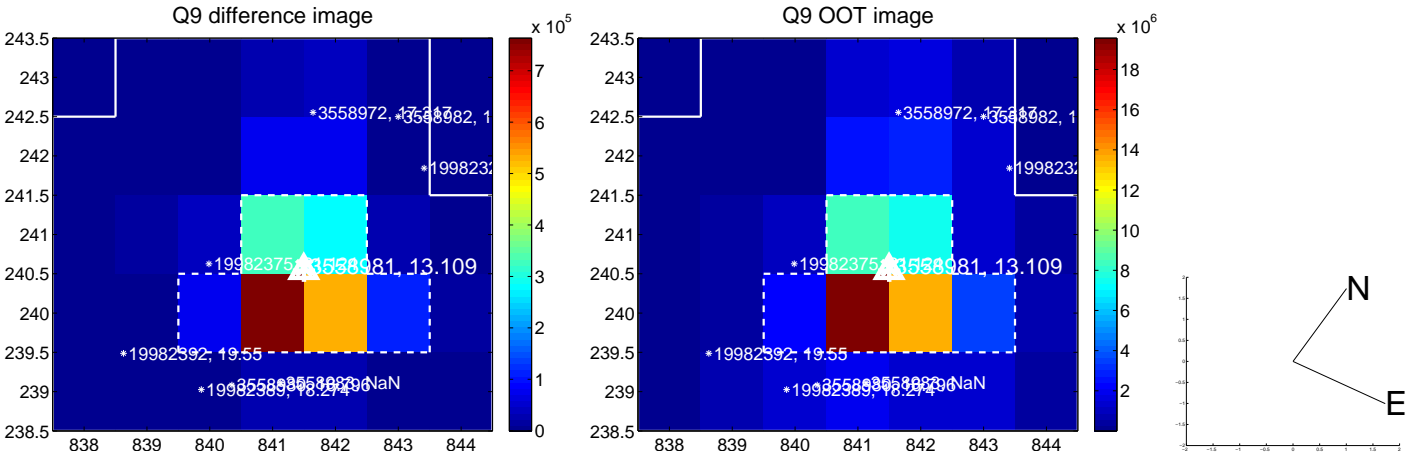
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



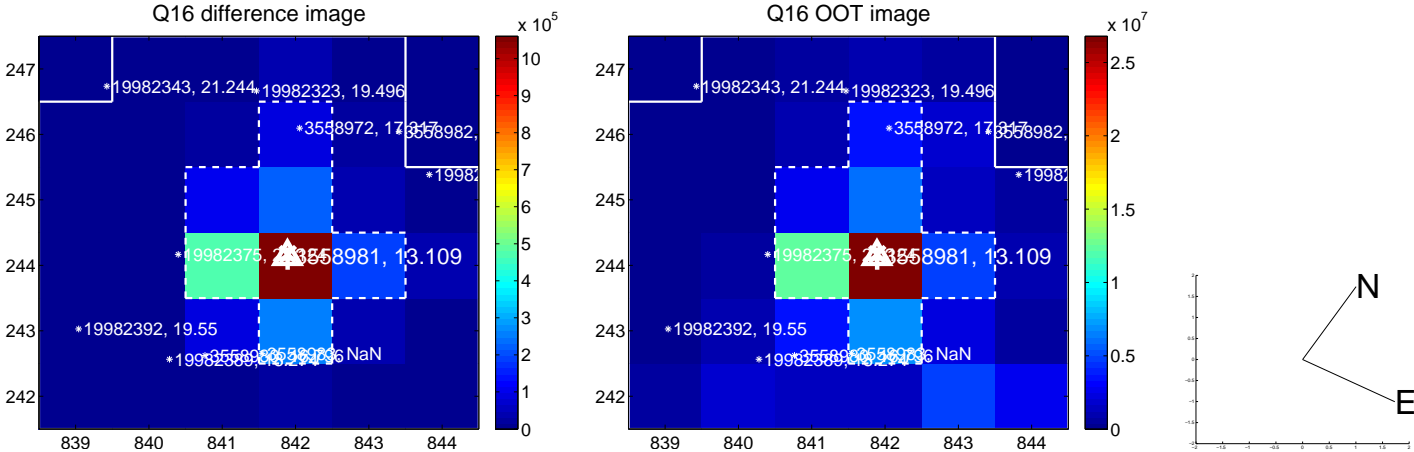
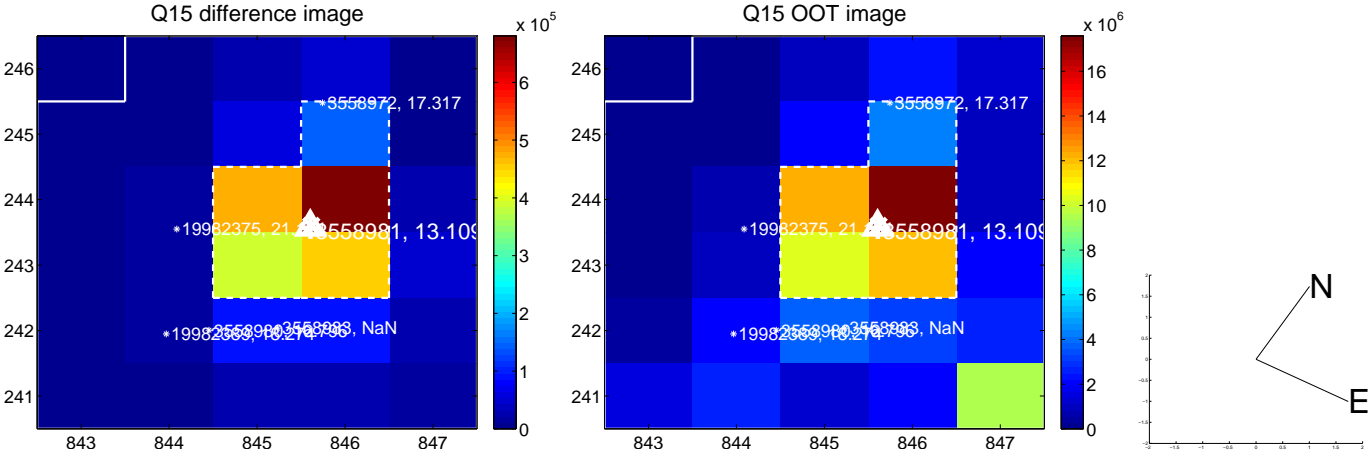
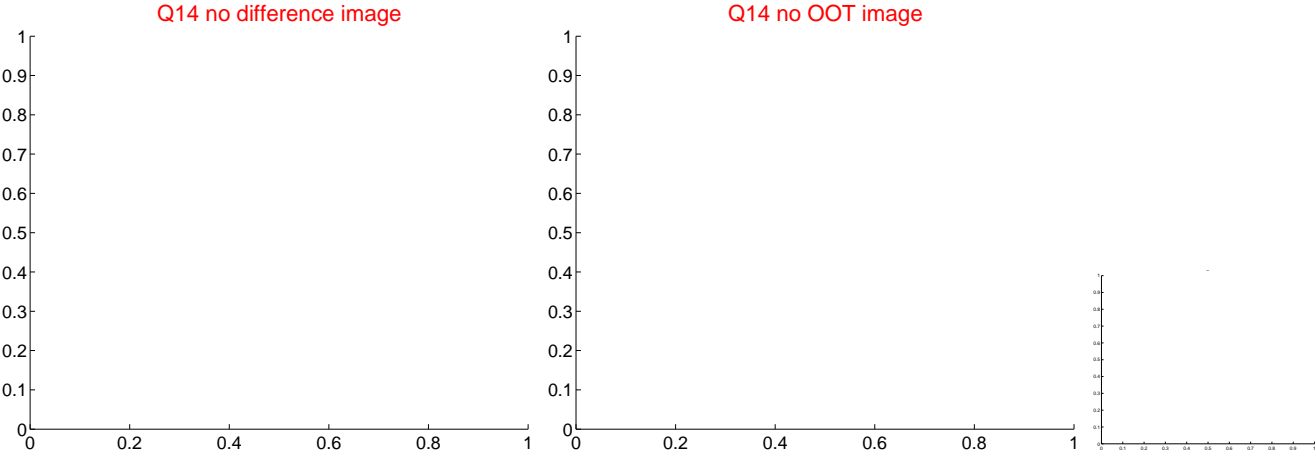
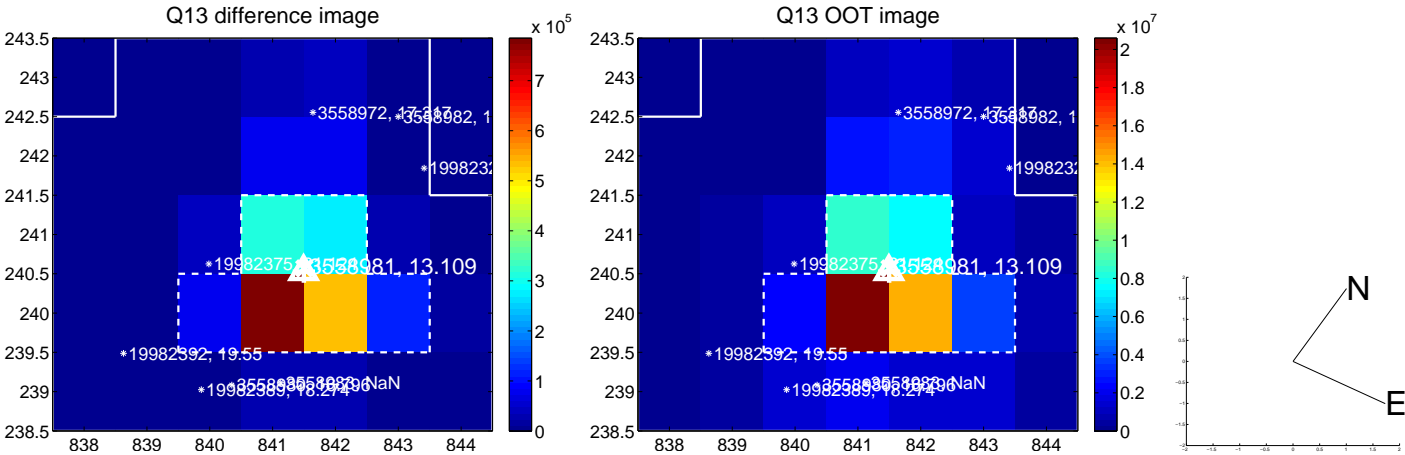
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



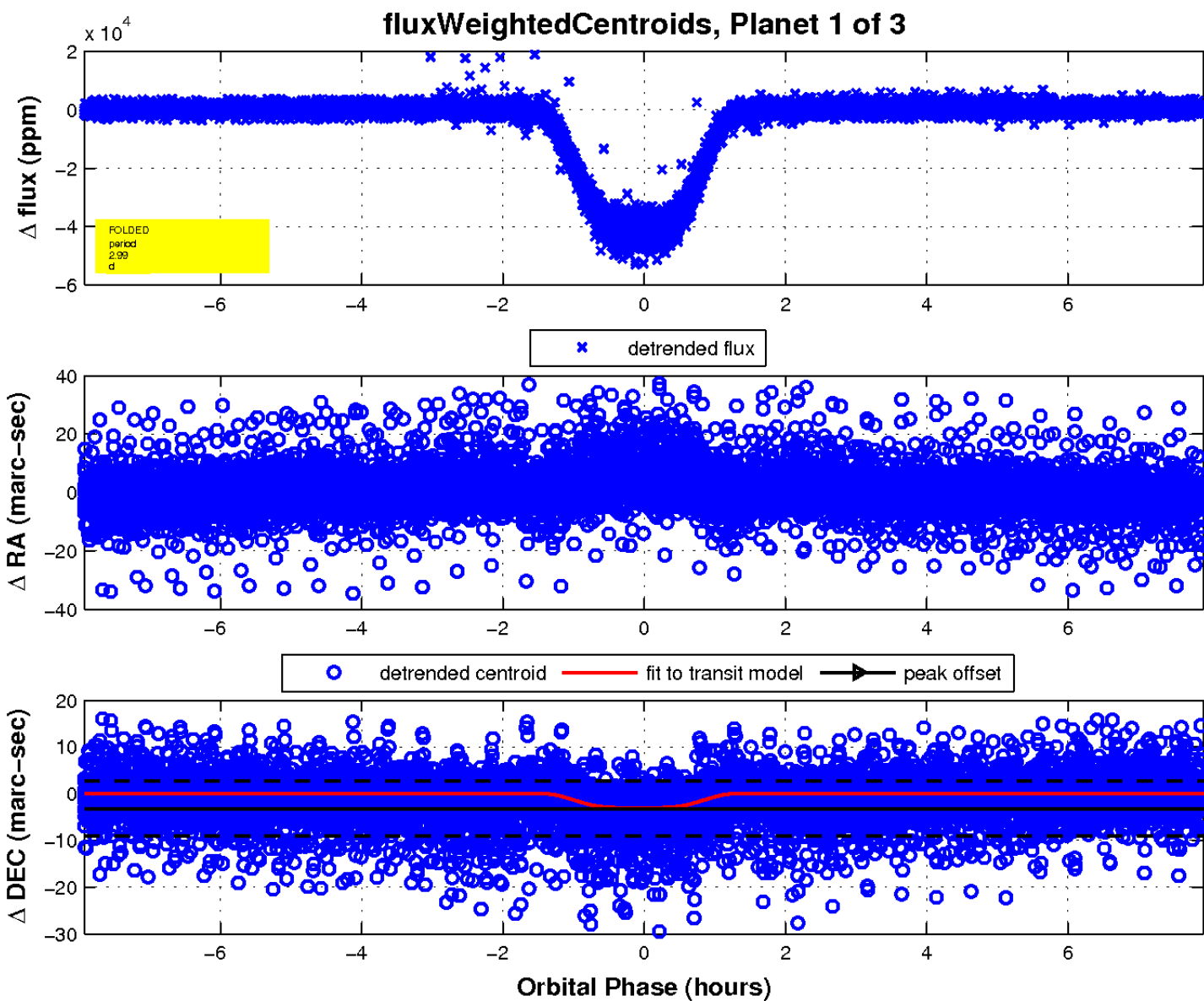
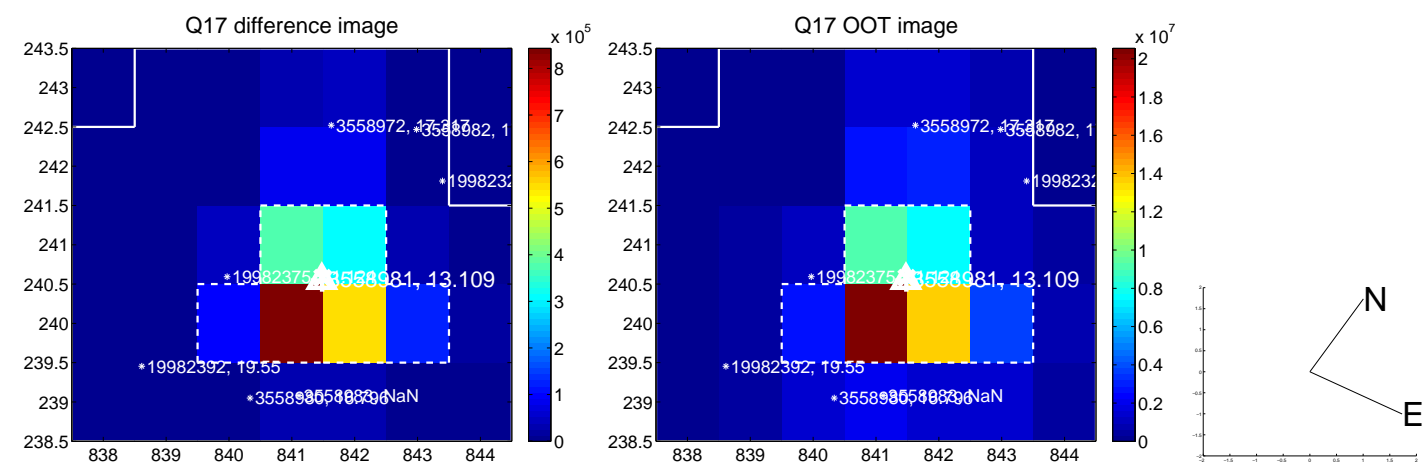
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

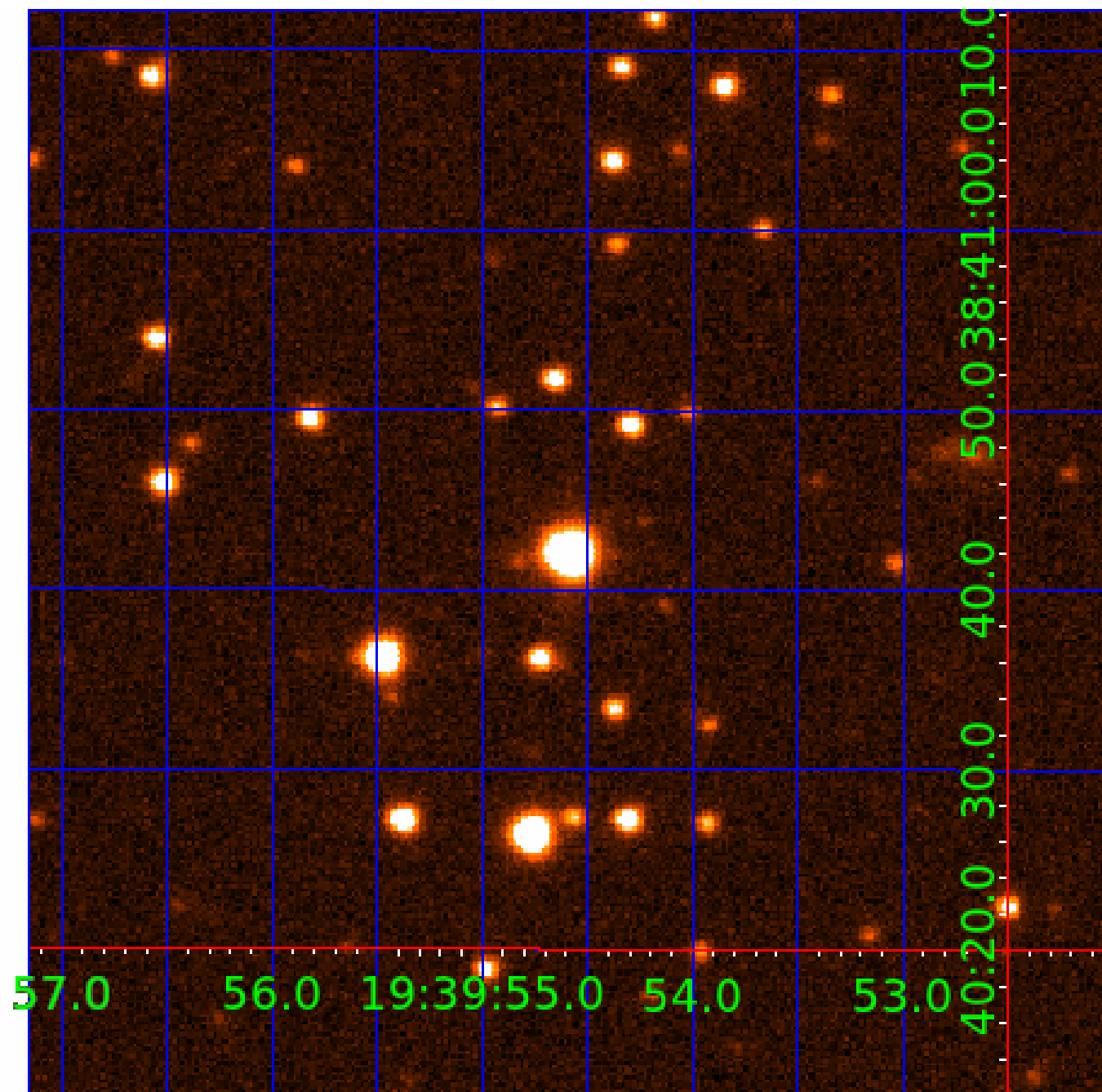


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 003558981

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003558981-01	OBS	0052.01	2.987865	132.156622	43178.5	2.642	2451.9	1601.1	0.82	5231	18.13	303.14
003558981-02	OBS	No	1.493931	132.160874	1380.4	2.375	67.9	78.6	0.82	5231	3.70	763.87
003558981-03	OBS	No	2.987234	132.530824	147.7	3.358	8.0	6.4	0.82	5231	0.99	303.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003558981-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
003558981-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
003558981-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_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.

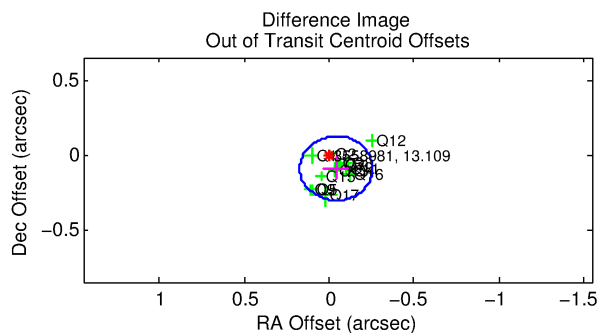
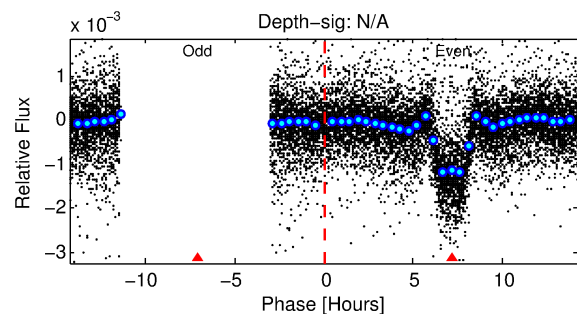
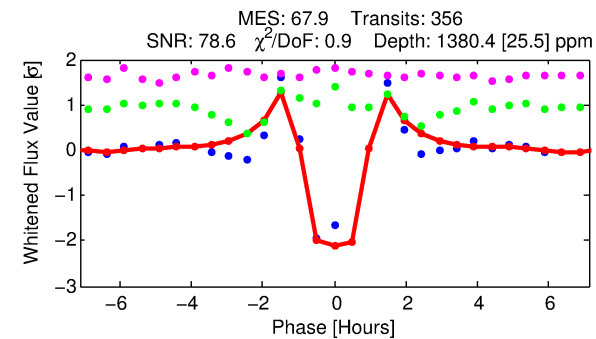
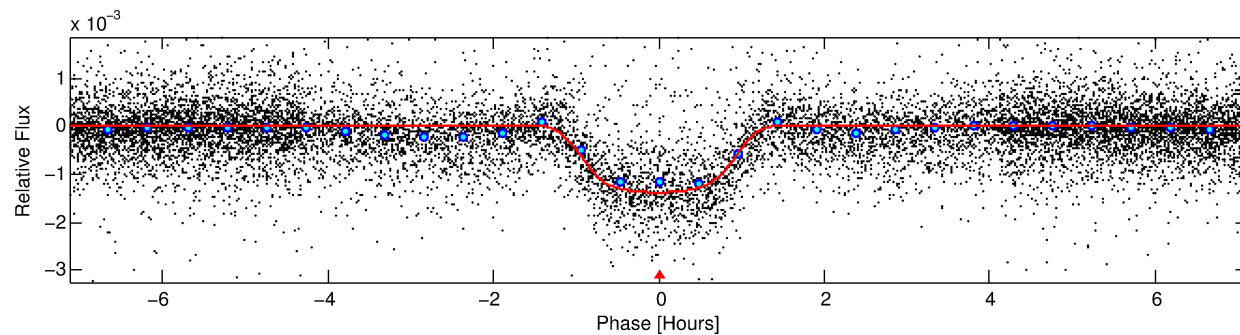
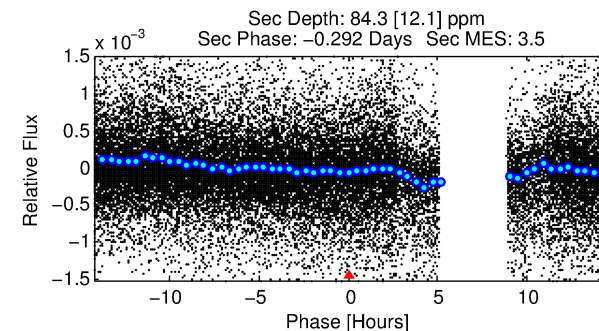
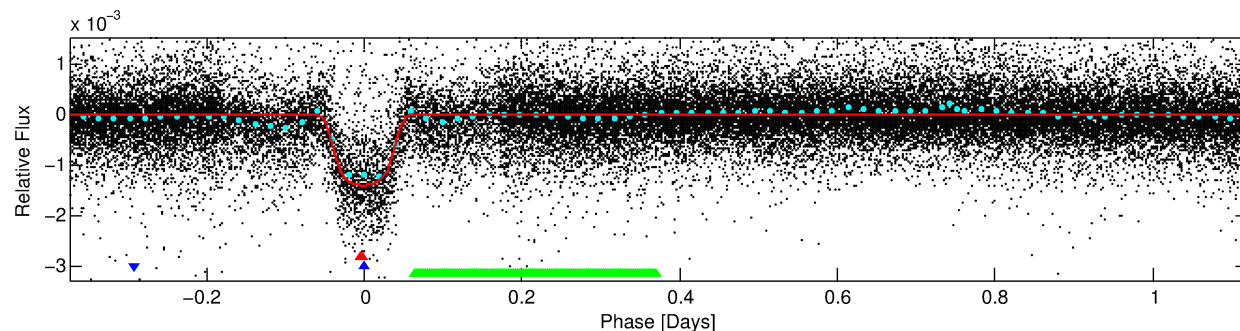
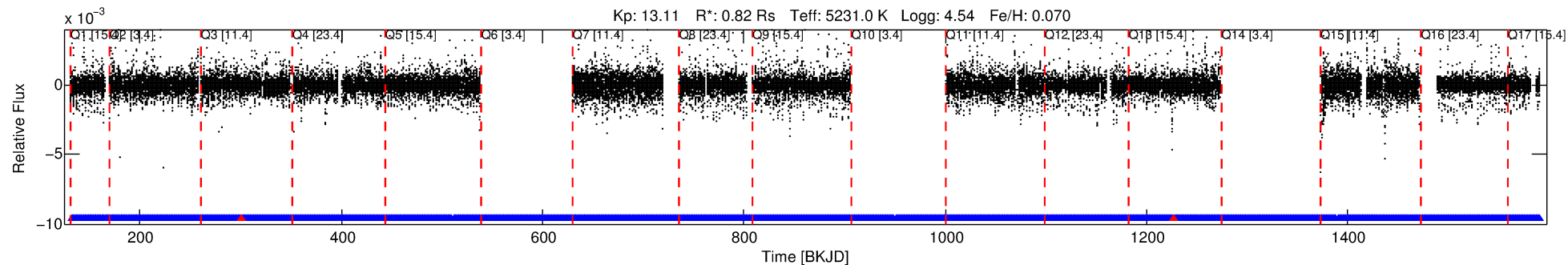
## Ephemeris Match Information For 003558981-02

No Significant Match Found

# DV One-Page Summary

KIC: 3558981 Candidate: 2 of 3 Period: 1.494 d  
KOI: K00052 Corr: No Ephemeris Match

Kp: 13.11 R\*: 0.82 Rs Teff: 5231.0 K Logg: 4.54 Fe/H: 0.070



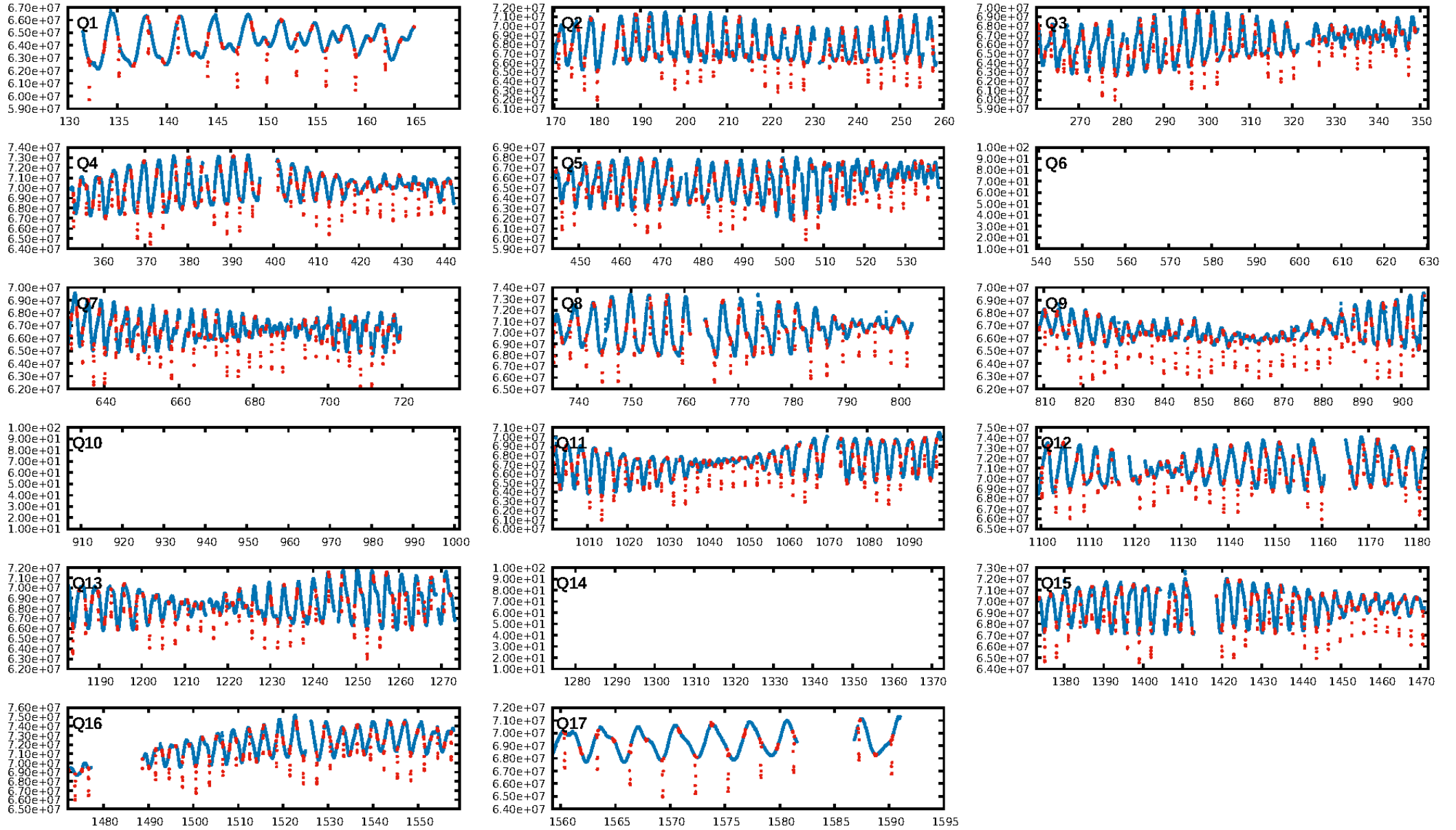
## DV Fit Results:

Period = 1.49393 [0.00000] d  
Epoch = 132.1609 [0.0003] BKJD  
Rp/R\* = 0.0413 [0.0008]  
a/R\* = 2.69 [0.13]  
b = 0.90 [0.01]  
Seff = 763.87 [182.95]  
Teff = 1341 [80] K  
Rp = 3.70 [0.58] Re  
a = 0.0243 [0.0031] AU  
Ag = 2.00 [0.47] [2.12σ]  
Teffp = 2465 [133] K [7.25σ]

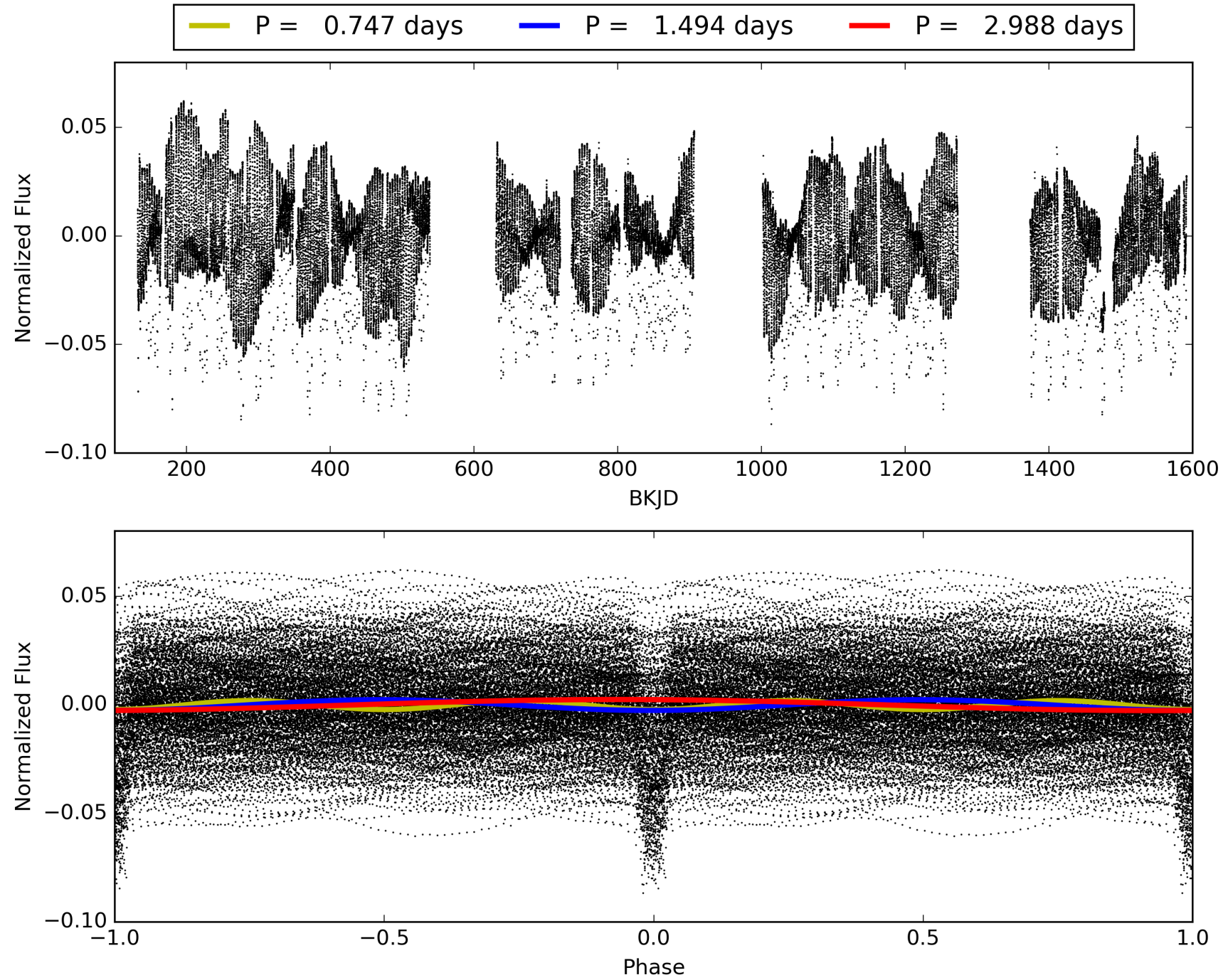
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [8.71σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.99 [335/337]  
GhostDiagnostic-chr: 1.646  
Centroid-sig: N/A  
Centroid-so: 0.882 arcsec [9.46σ]  
OotOffset-rm: 0.100 arcsec [1.40σ]  
KicOffset-rm: 0.225 arcsec [3.09σ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 003558981-02, PDC Light Curves

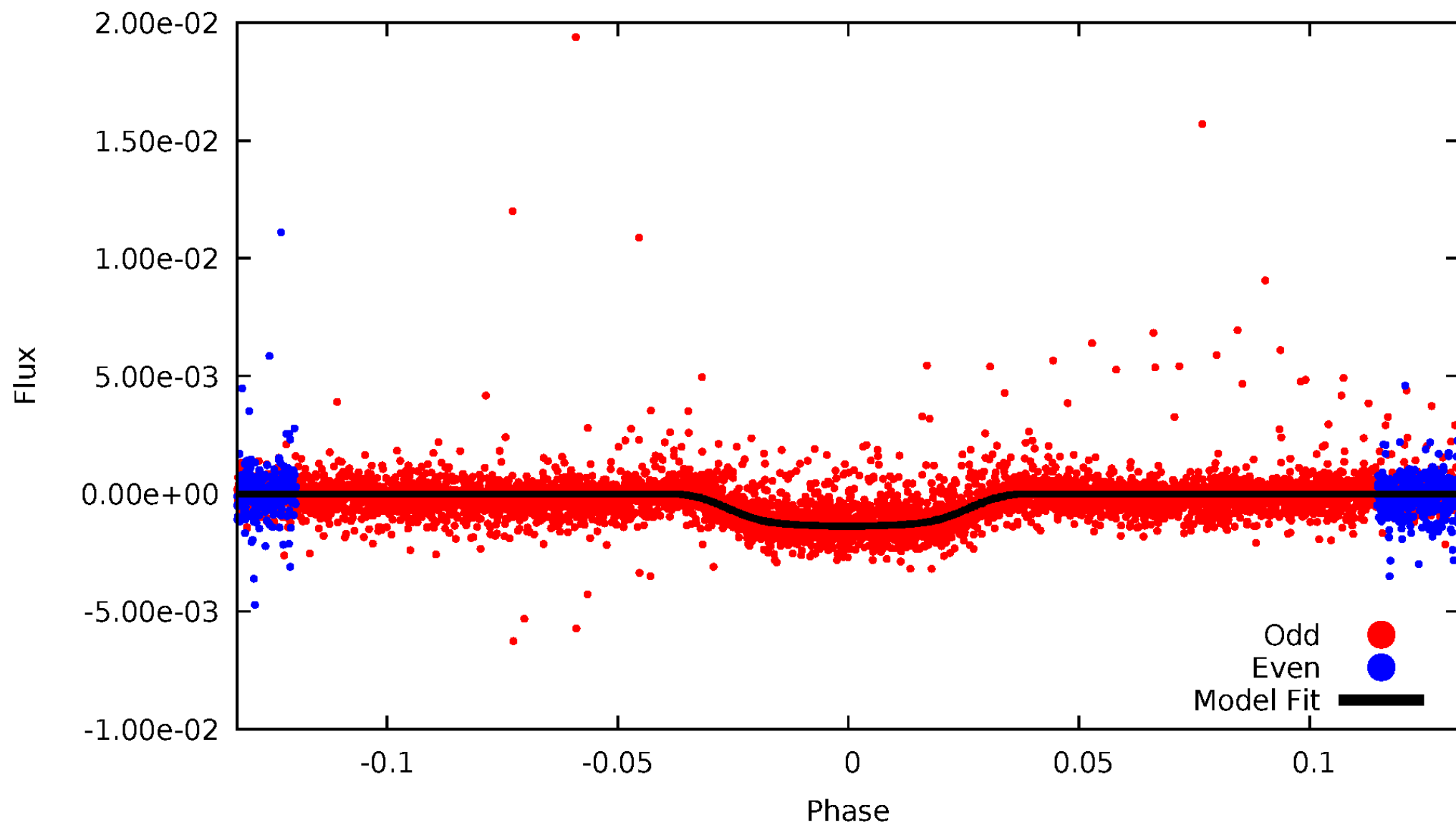


TCE 003558981-02



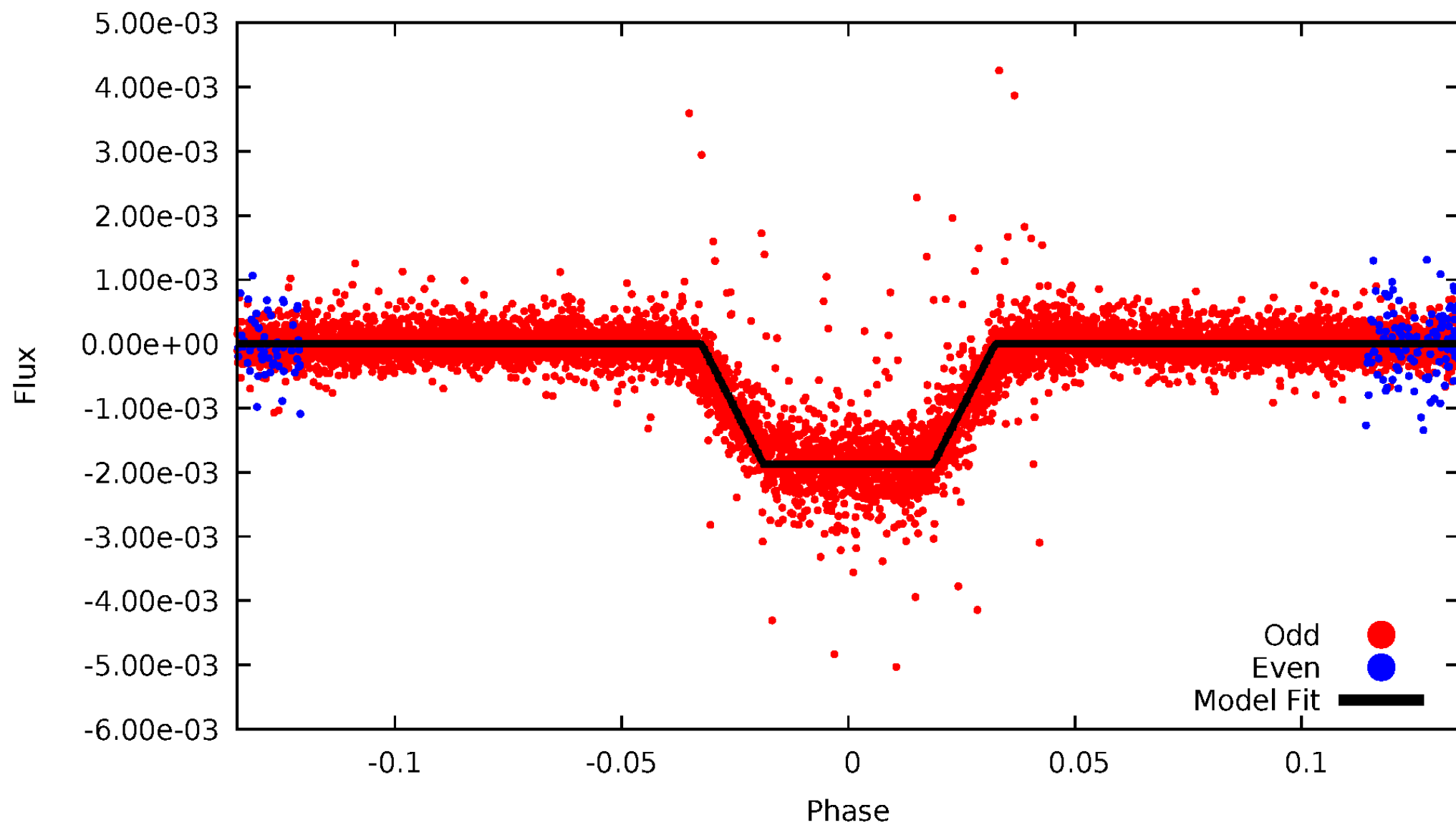
# DV Odd/Even

TCE 003558981-02



# ALT Odd/Even

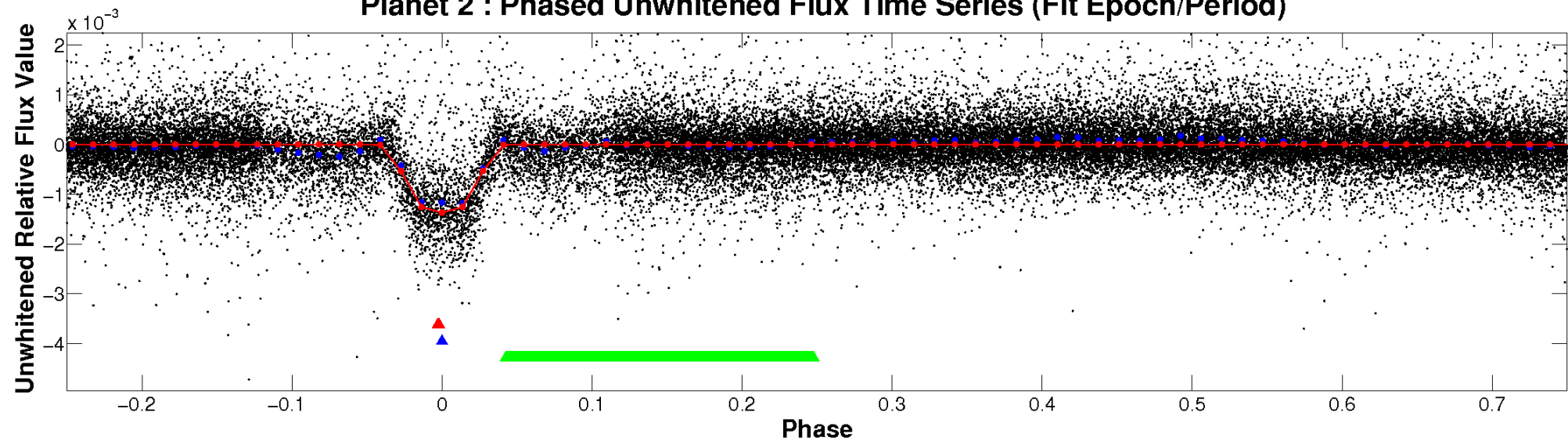
TCE 003558981-02



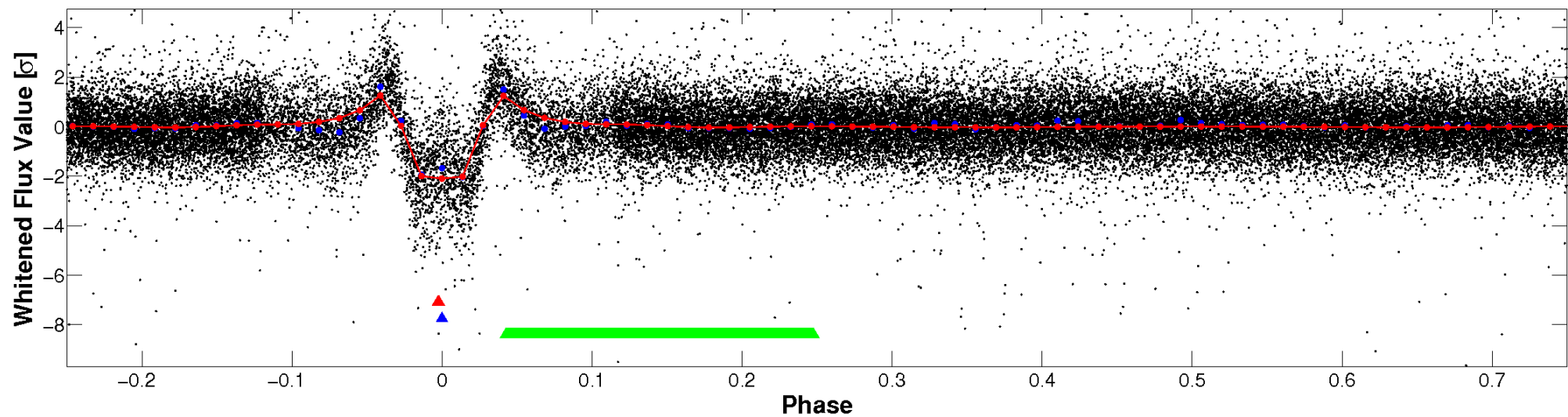


# Non-Whitened Vs. Whitened Light Curve

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

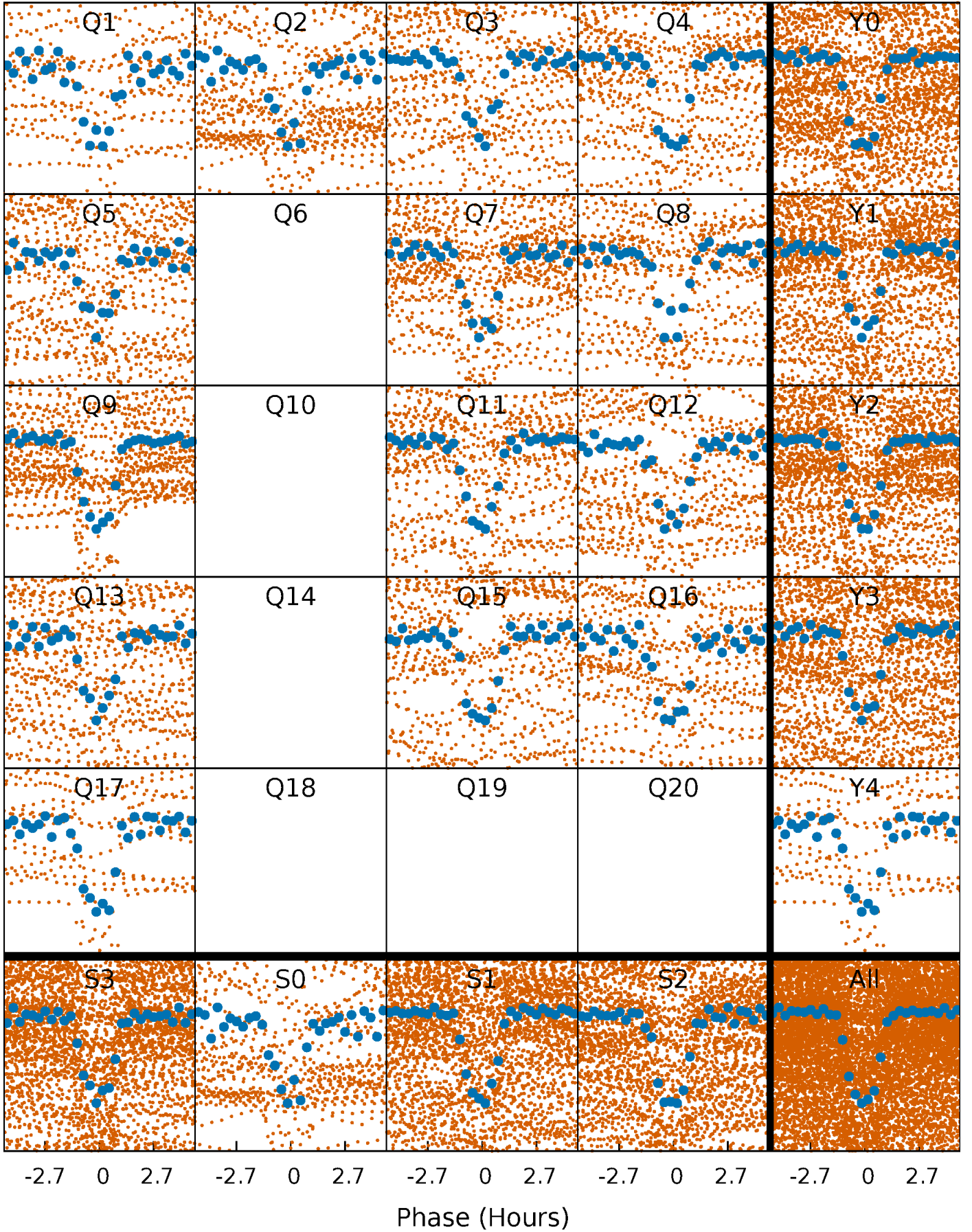


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



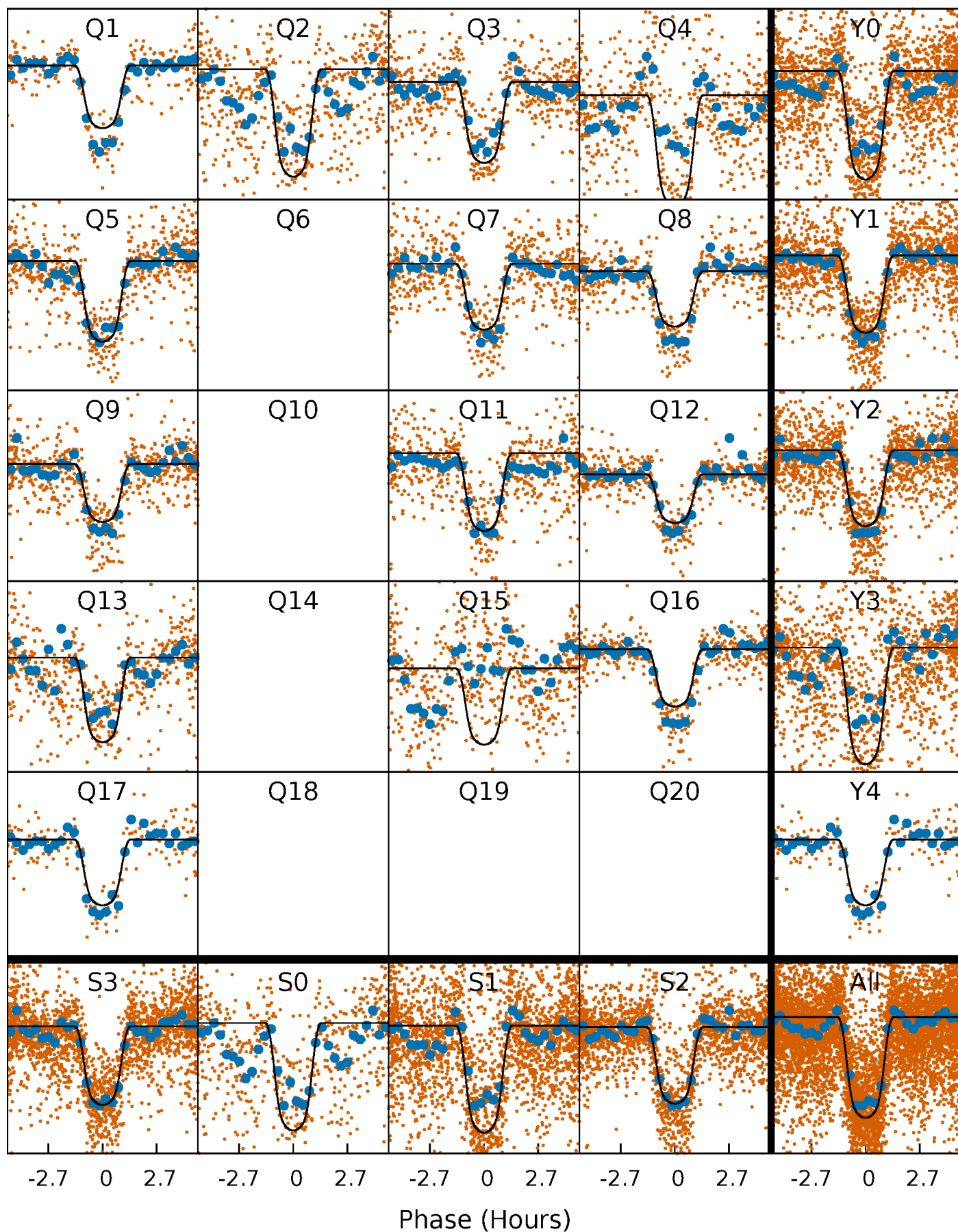
# PDC Quarter-Phased Transit Curves

TCE 003558981-02   P= 1.493931 Days    $T_0=132.160874$  (BKJD)



# DV Quarter-Phased Transit Curves

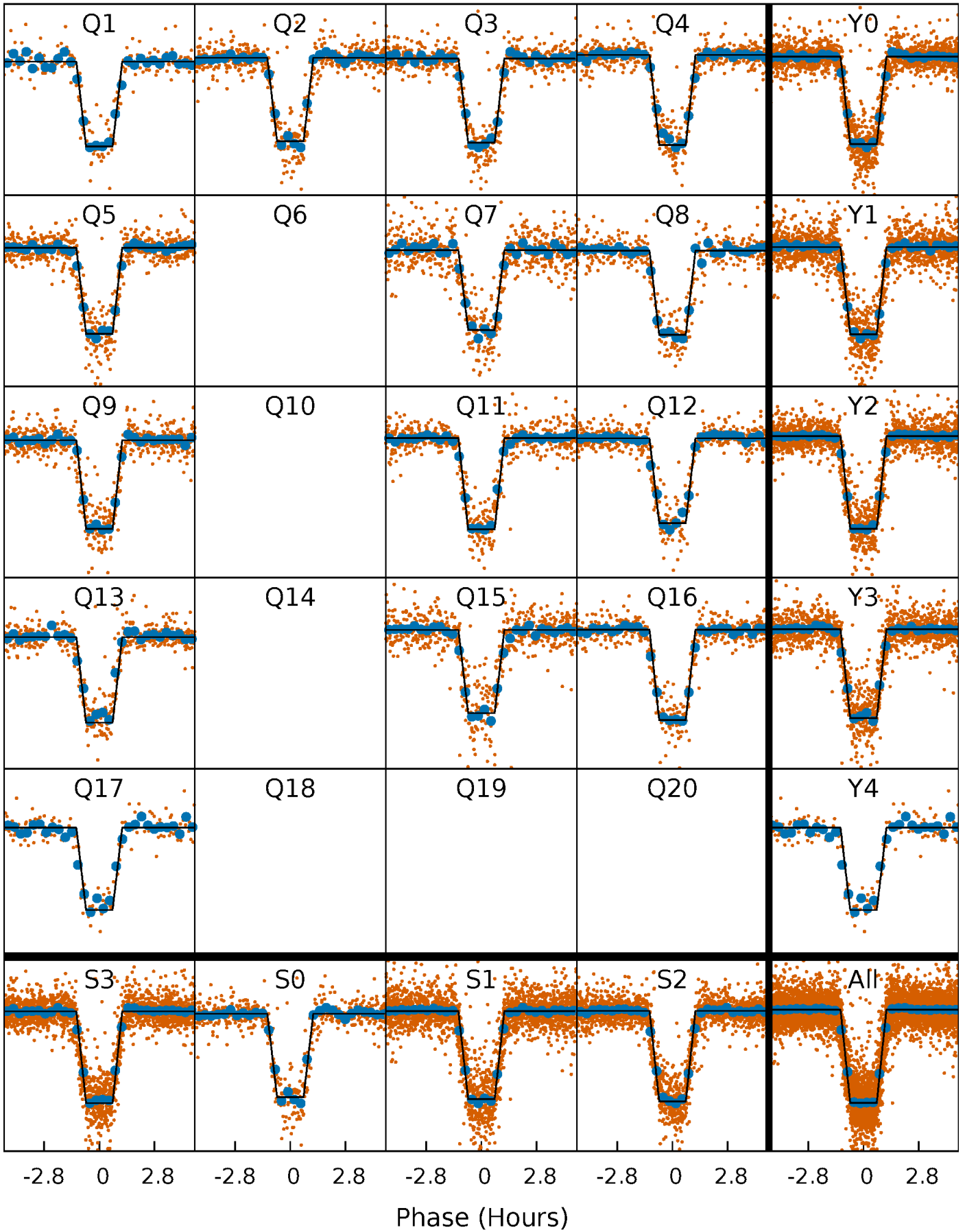
TCE 003558981-02   P= 1.493931 Days    $T_0=132.160874$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

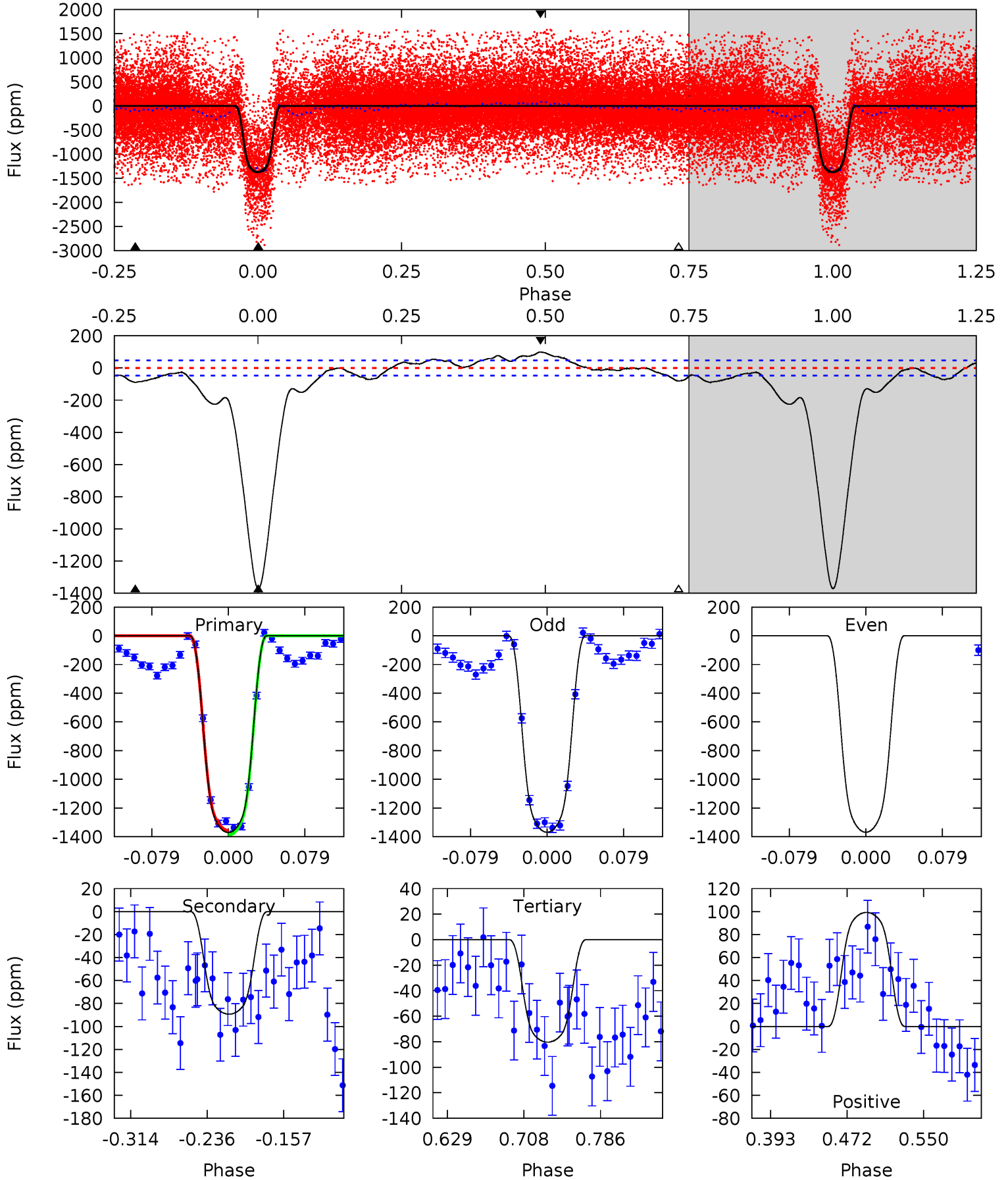
TCE 003558981-02   P= 1.493933 Days    $T_0=132.160831$  (BKJD)



# DV Model-Shift Uniqueness Test

003558981-02, P = 1.493931 Days, E = 130.666943 Days

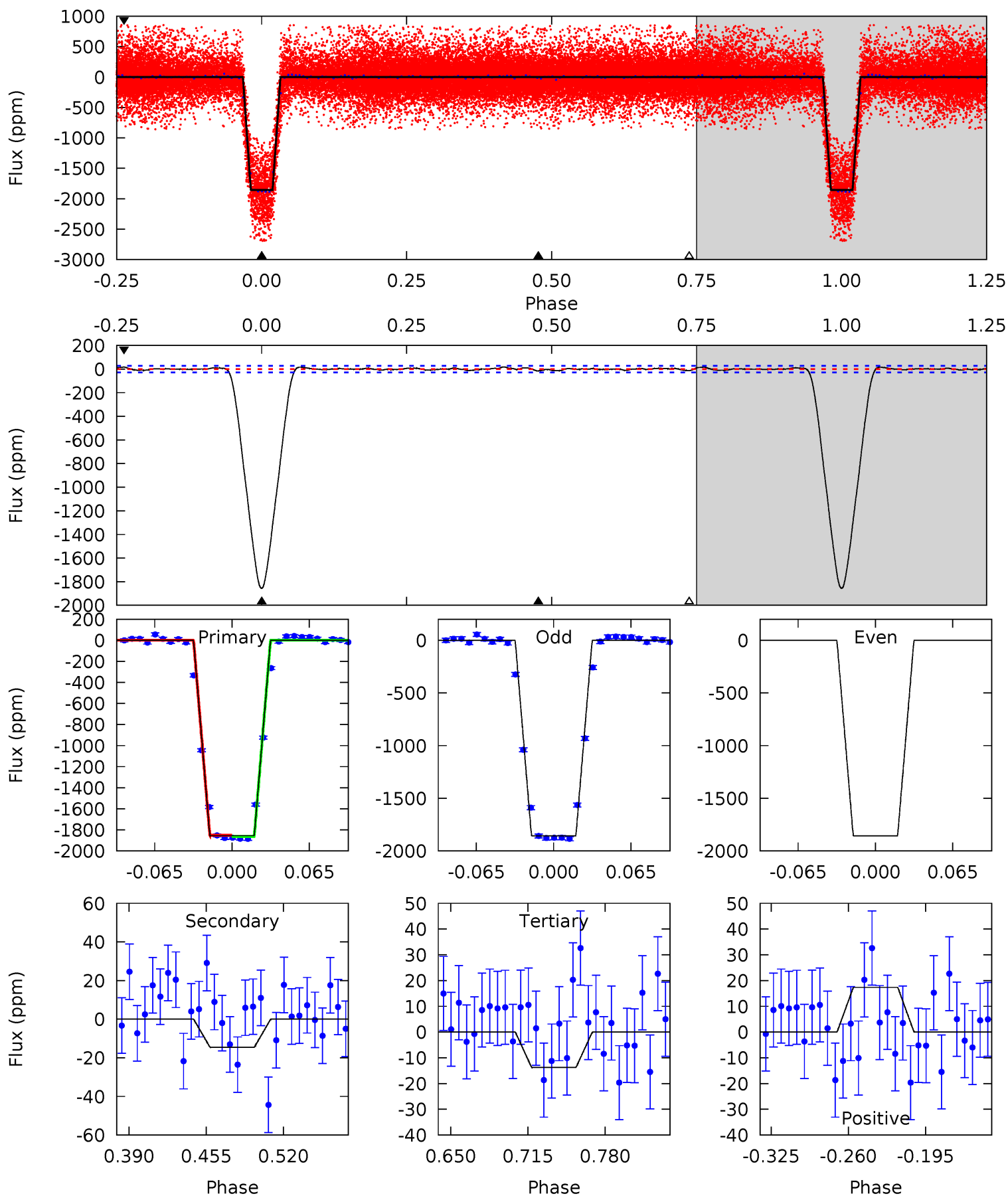
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
133.9	8.73	7.85	9.70	4.62	1.76	5.35	126.1	124.2	0.88	-0.97	0	0.90	0.07	1.49



# Alt Model-Shift Uniqueness Test

003558981-02, P = 1.493933 Days, E = 130.666898 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
311.7	2.43	2.30	2.91	4.65	1.84	0.98	309.4	308.8	0.13	-0.48	0	1.00	0.01	0.97





### Stellar Parameters For KIC 003558981

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5231^{+203}_{-166}$	$4.544^{+0.049}_{-0.098}$	$0.070^{+0.250}_{-0.300}$	$0.821^{+0.127}_{-0.078}$	$0.859^{+0.073}_{-0.080}$	$2.189^{+0.490}_{-0.685}$
	+4%/-3%	+1%/-2%	+357%/-429%	+15%/-10%	+8%/-9%	+22%/-31%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 003558981-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-89 \pm 10$	$3.75^{+0.31}_{-0.22}$	$1889^{+103}_{-80}$	$3031^{+91}_{-90}$	$2.022^{+0.367}_{-0.339}$
Alt.	$-14 \pm 6$	$3.91^{+0.32}_{-0.22}$	$1890^{+96}_{-79}$	$-1677^{+3870}_{-517}$	$0.290^{+0.139}_{-0.113}$

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

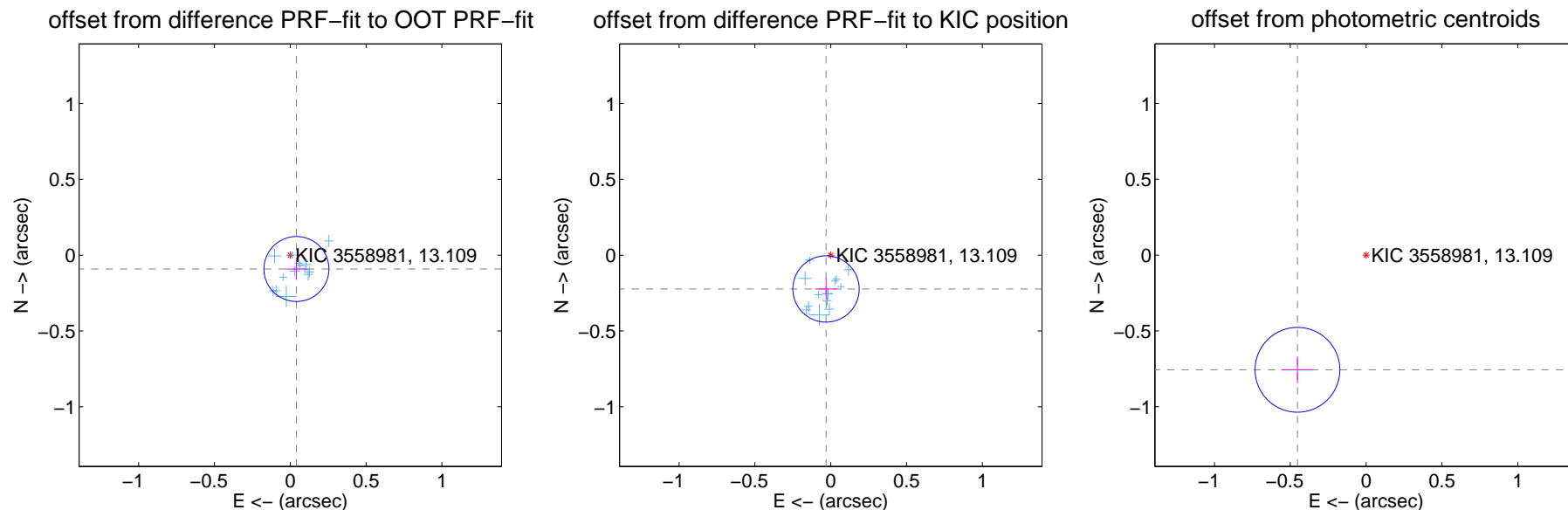
## DV Centroid Data

Supplemental centroid analysis for 003558981-02. Kepler magnitude: 13.11. Transit SNR 78.56

There are 14 quarters with good PRF difference image offsets

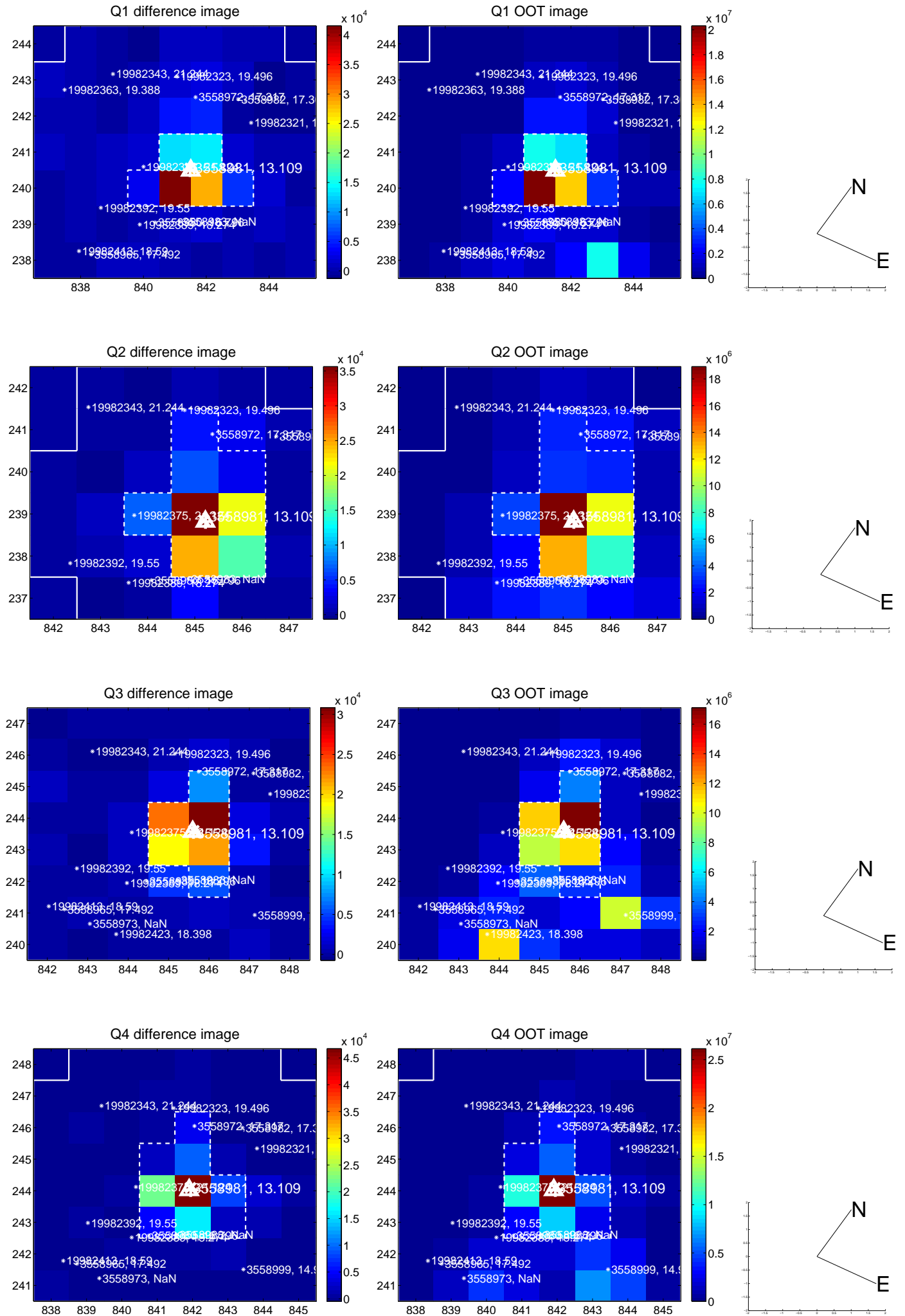
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.100 \pm 0.071$	1.40	$-0.041 \pm 0.073$	$-0.091 \pm 0.071$
PRF-fit source offset from KIC position	$0.225 \pm 0.073$	3.09	$0.031 \pm 0.071$	$-0.223 \pm 0.073$
photometric centroid source offset	$0.88 \pm 0.09$	9.46	$0.45 \pm 0.10$	$-0.76 \pm 0.09$

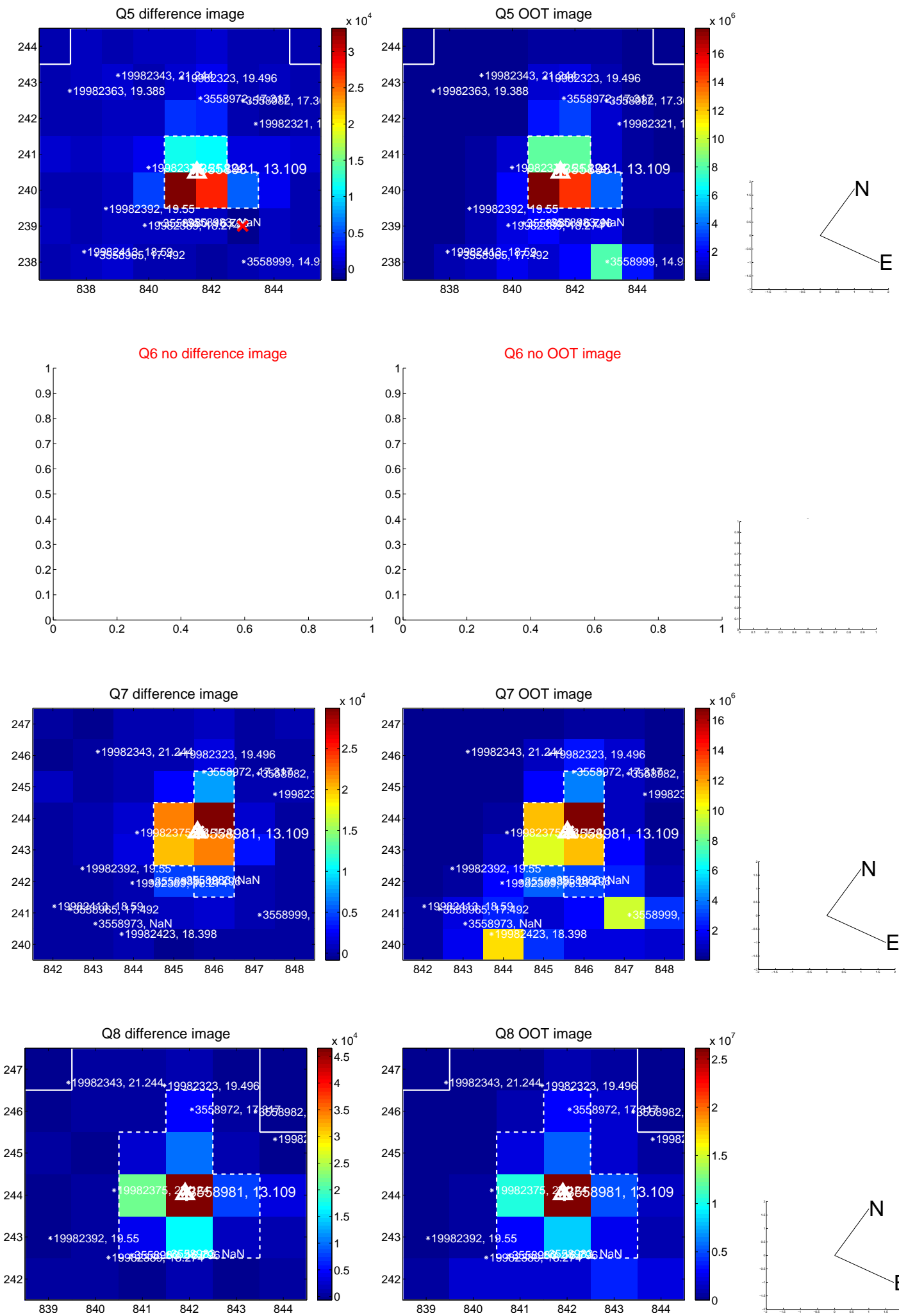


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

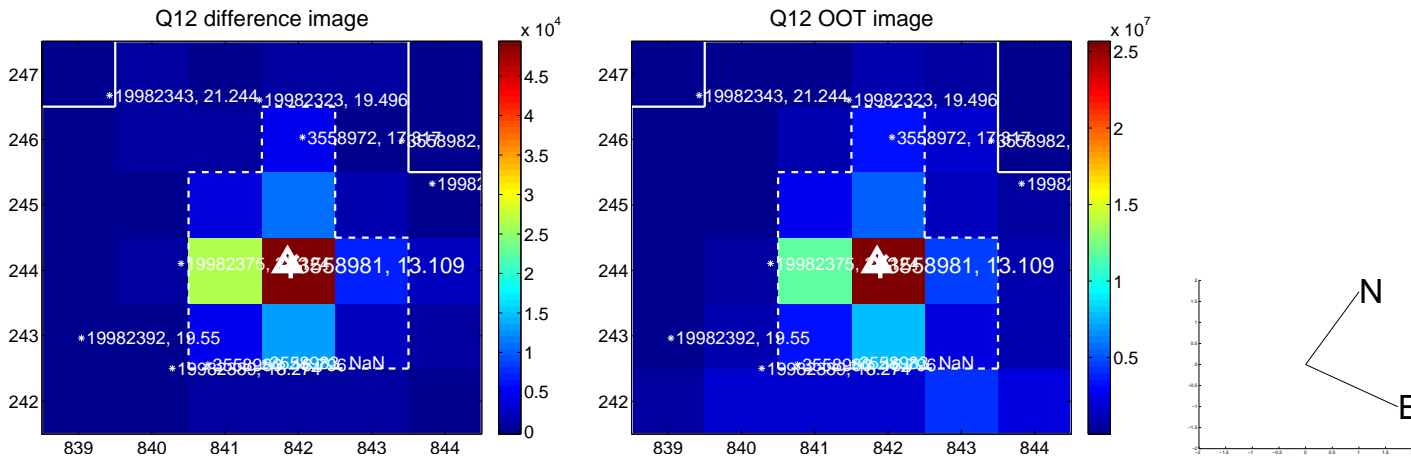
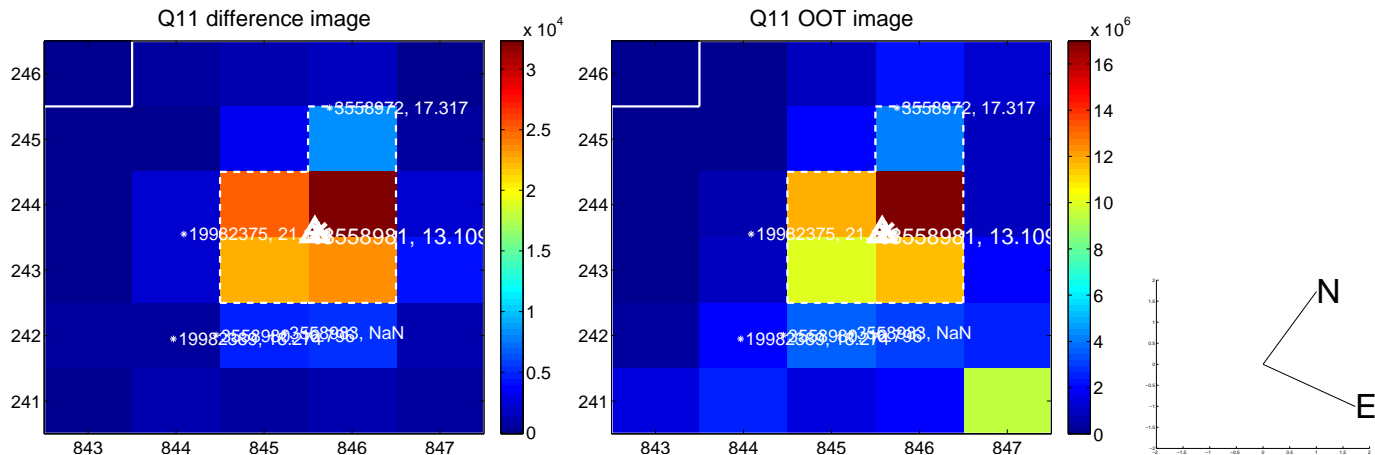
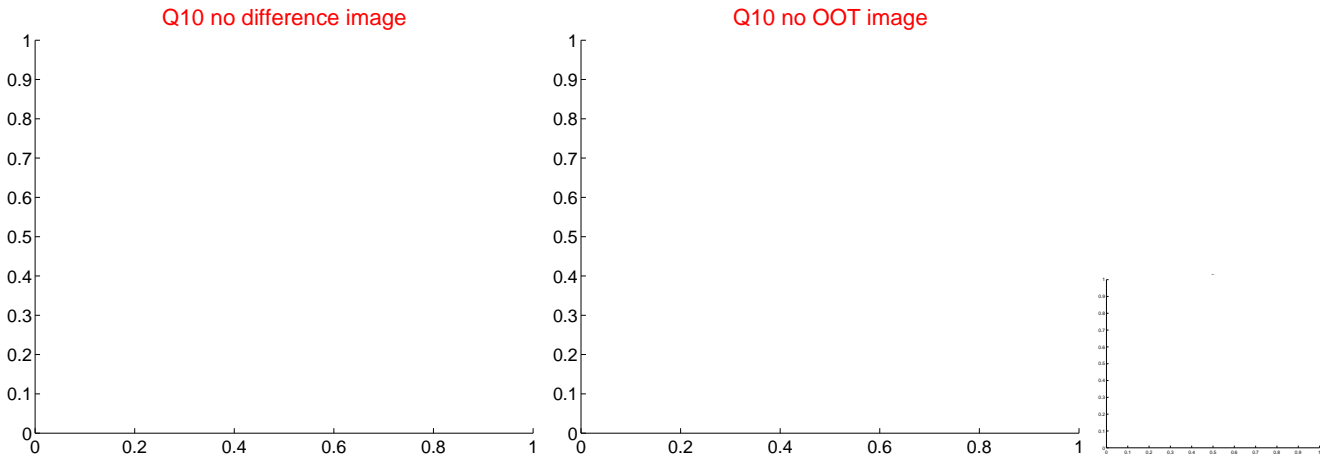
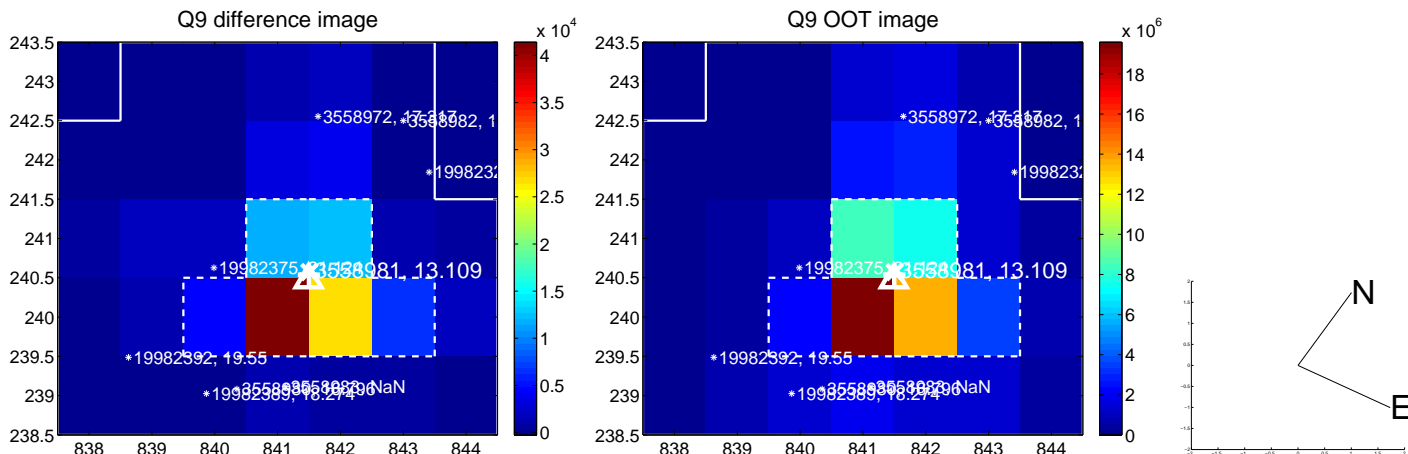
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



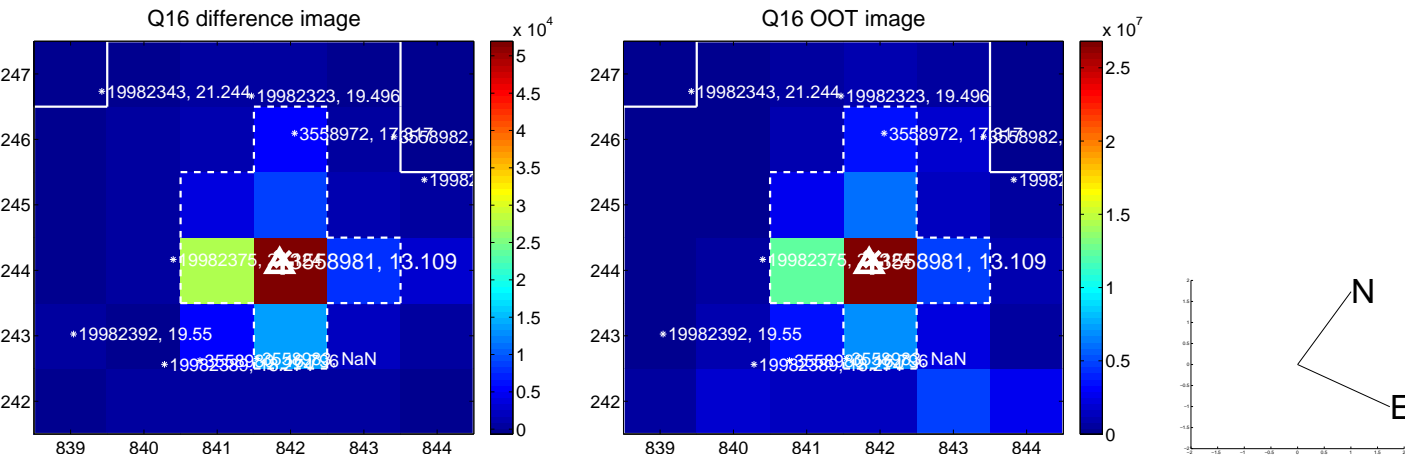
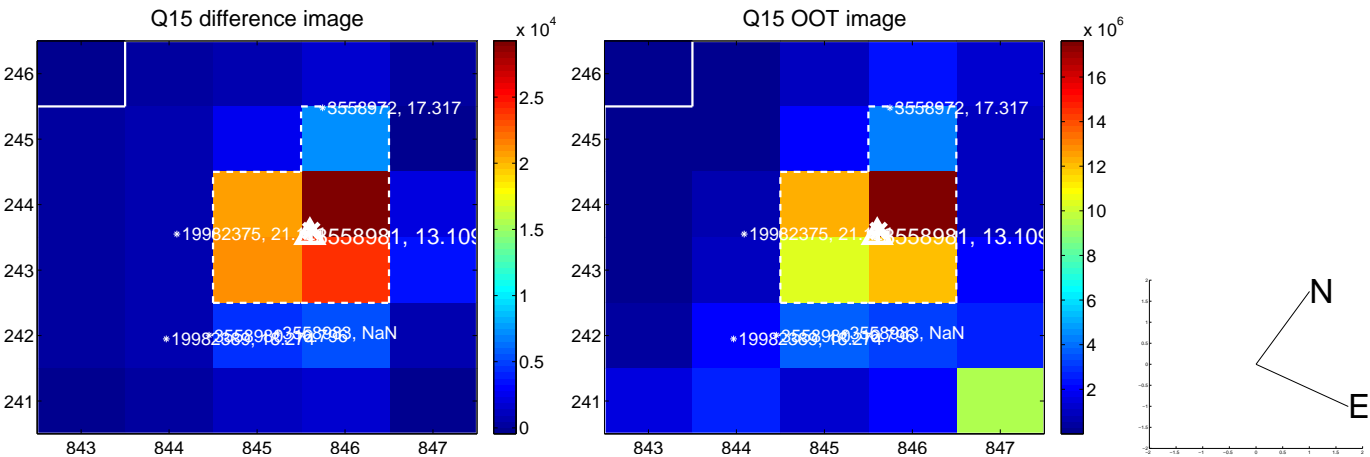
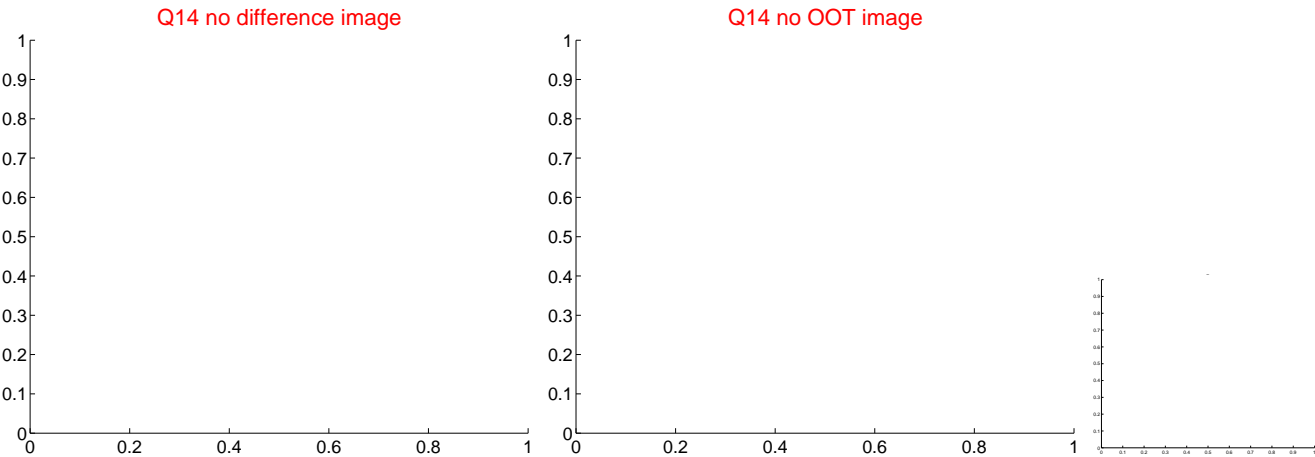
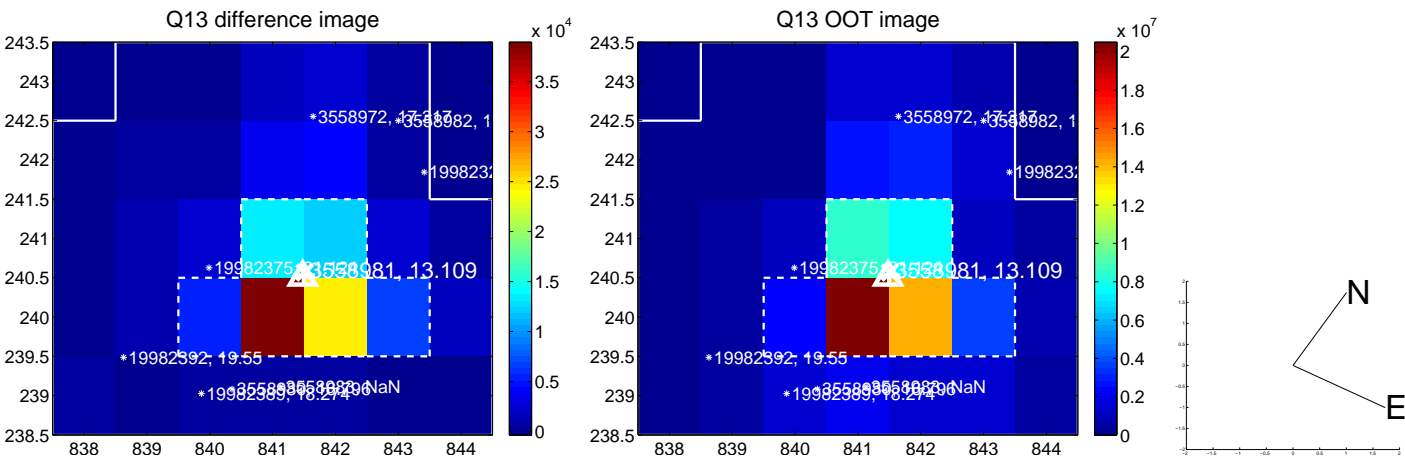
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



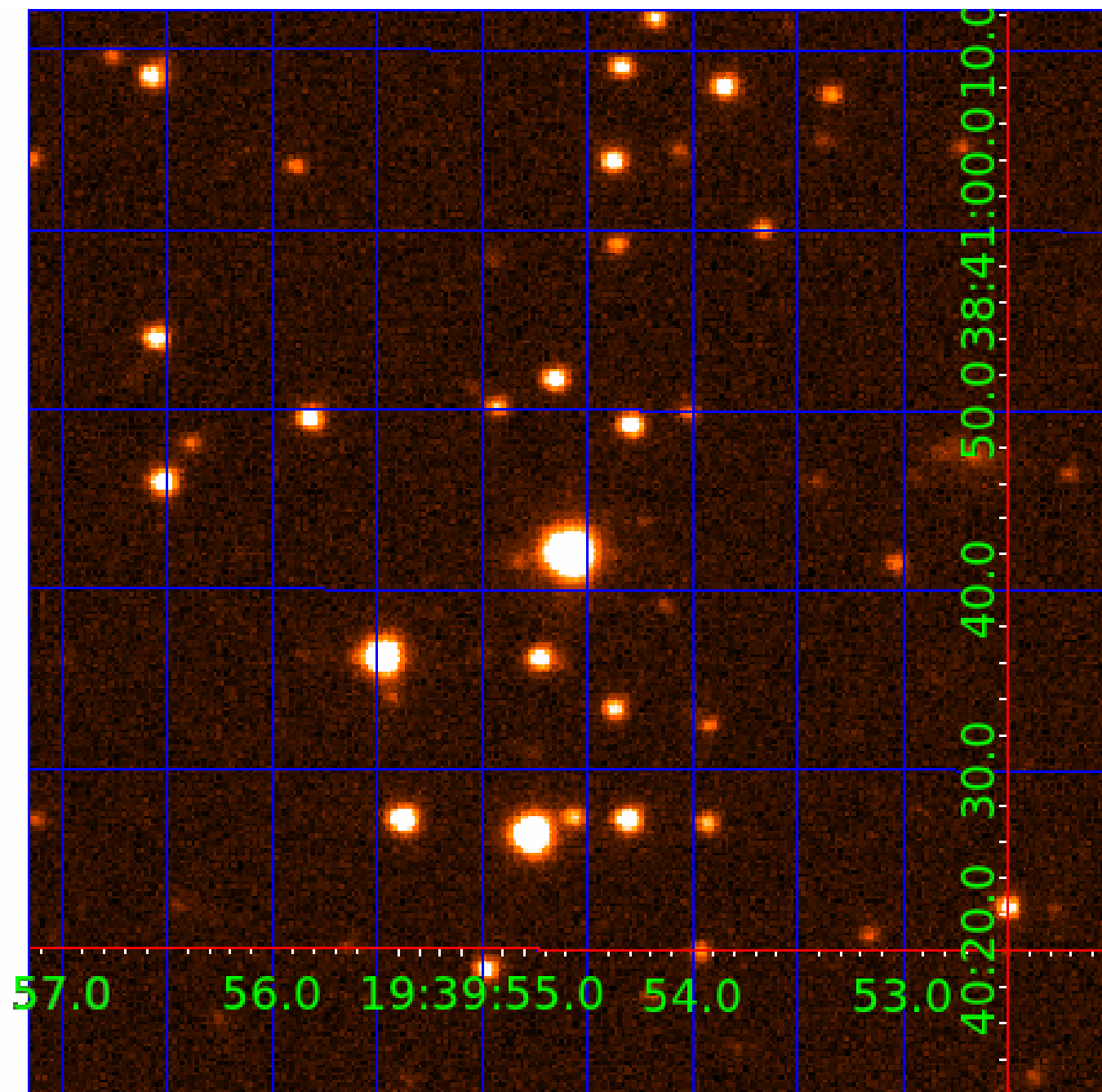
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination





# KIC 003558981

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003558981-01	OBS	0052.01	2.987865	132.156622	43178.5	2.642	2451.9	1601.1	0.82	5231	18.13	303.14
003558981-02	OBS	No	1.493931	132.160874	1380.4	2.375	67.9	78.6	0.82	5231	3.70	763.87
003558981-03	OBS	No	2.987234	132.530824	147.7	3.358	8.0	6.4	0.82	5231	0.99	303.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003558981-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
003558981-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
003558981-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE

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

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

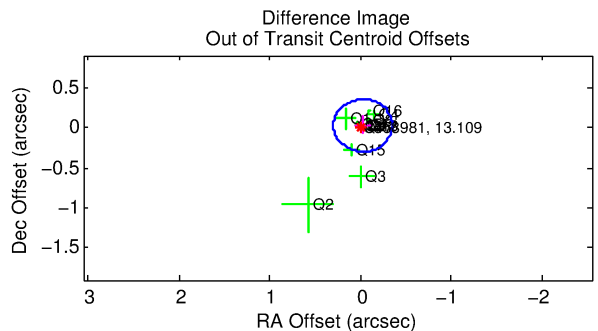
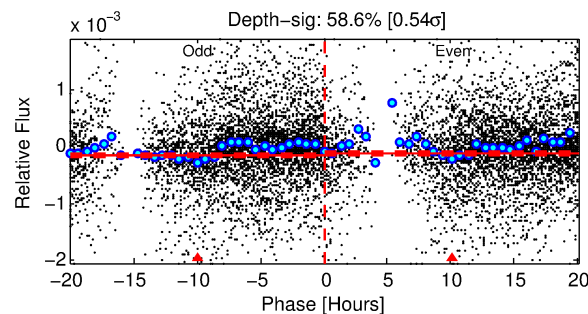
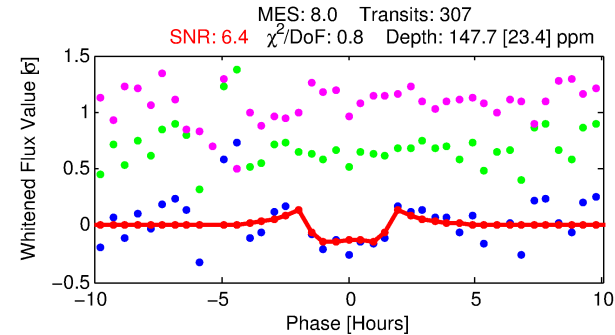
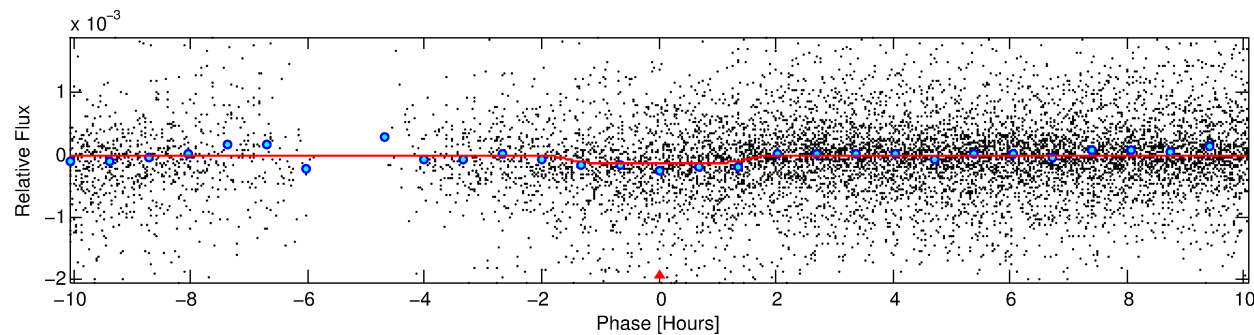
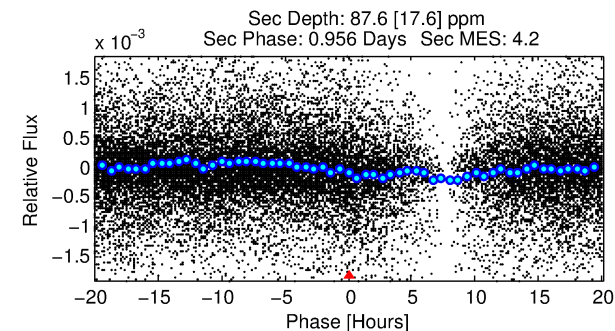
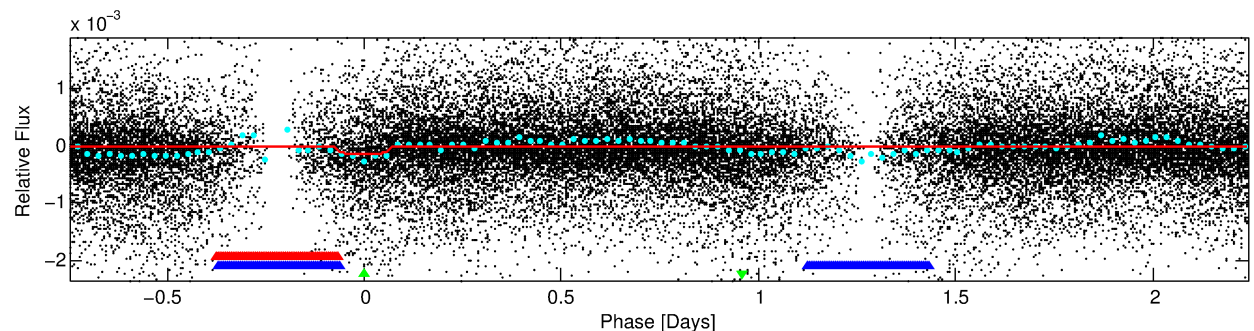
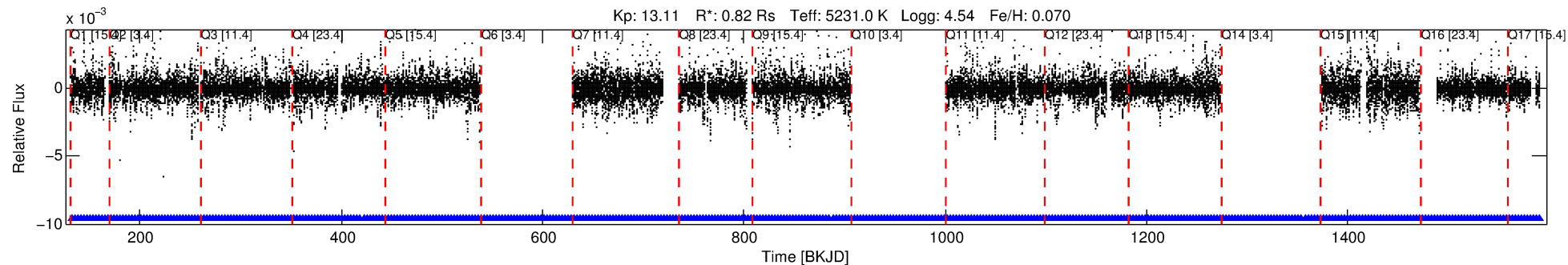
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003558981-03

No Significant Match Found

# DV One-Page Summary

KIC: 3558981 Candidate: 3 of 3 Period: 2.987 d  
KOI: K00052 Corr: No Ephemeris Match



## DV Fit Results:

Period = 2.98723 [0.00002] d  
Epoch = 132.5308 [0.0036] BKJD  
Rp/R\* = 0.0111 [0.0090]  
a/R\* = 6.43 [18.50]  
b = 0.37 [6.98]  
Seff = 303.23 [72.62]  
Teq = 1064 [64] K  
Rp = 0.99 [0.82] Re  
a = 0.0386 [0.0049] AU  
Ag = 73.19 [120.57] [0.60σ]  
Teffp = 4812 [1978] K [1.89σ]

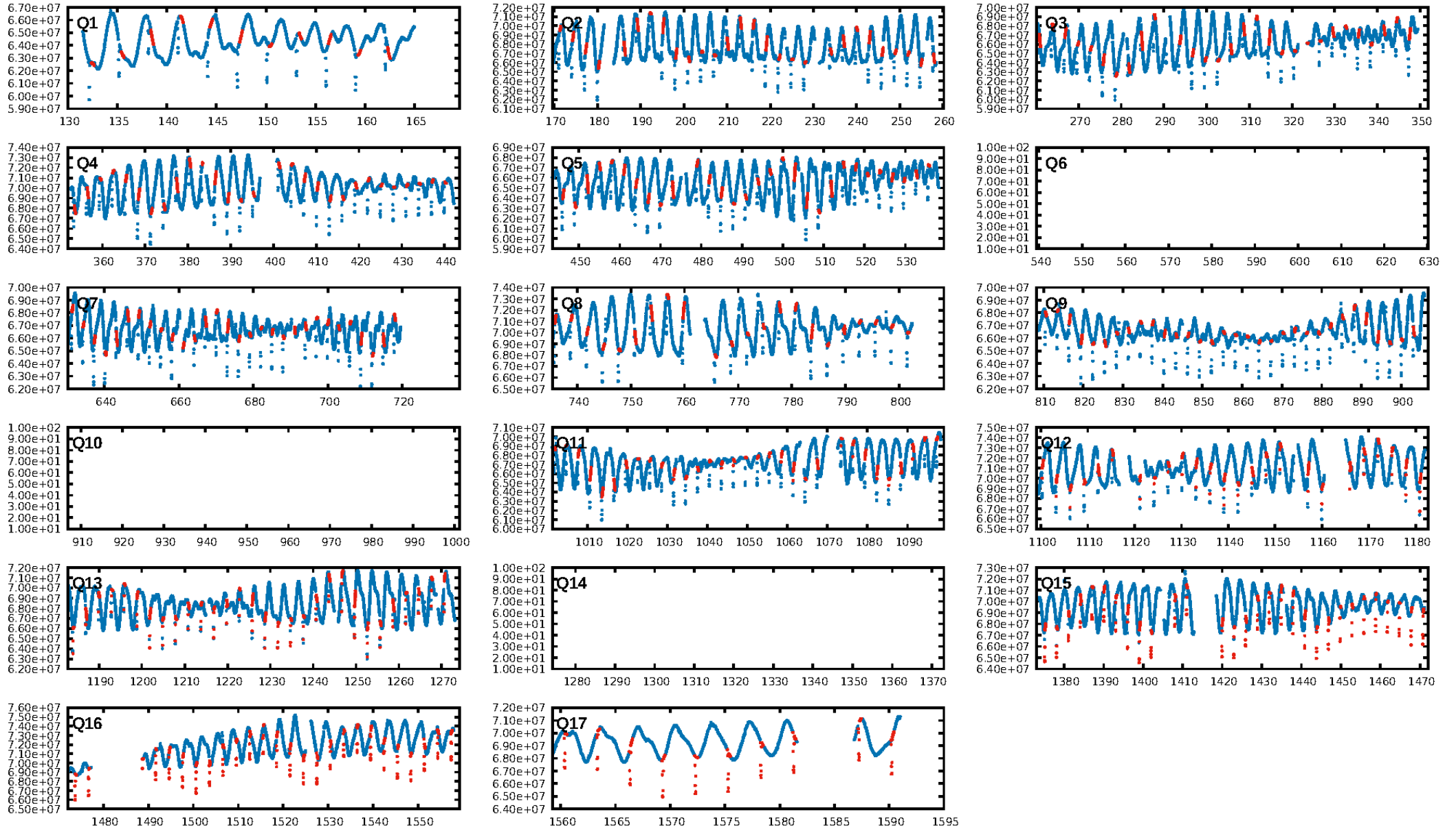
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.71σ]  
LongPeriod-sig: 0.3% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.18e-12  
RollingBand-fgt: 1.00 [296/296]  
GhostDiagnostic-chr: -0.6564  
Centroid-sig: N/A  
Centroid-so: 0.578 arcsec [0.65σ]  
OotOffset-rm: 0.038 arcsec [0.35σ]  
KicOffset-rm: 0.098 arcsec [0.94σ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.29 [4/14]  
DiffImageOverlap-fno: 0.00 [0/14]

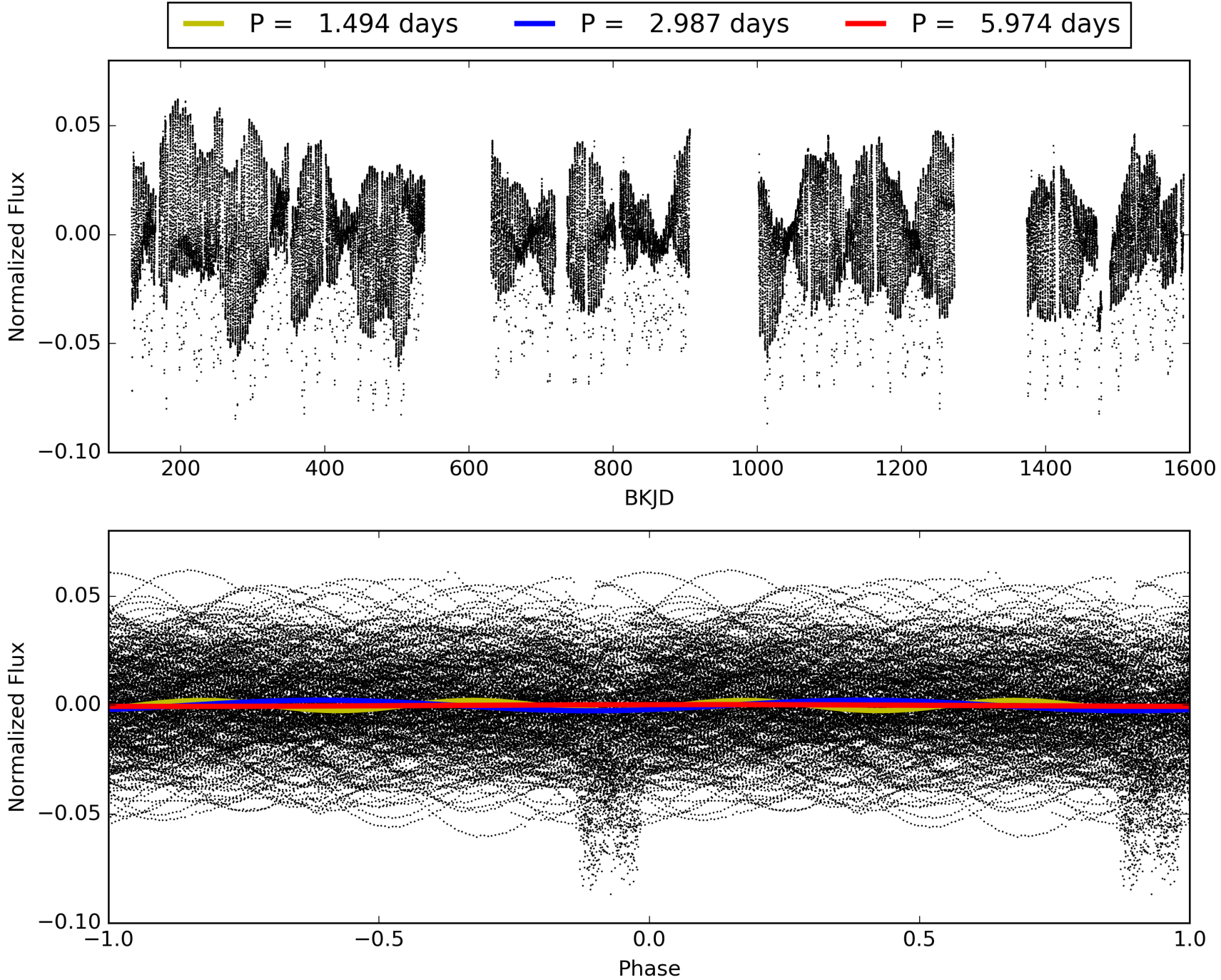
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:09:04 Z

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

# TCE 003558981-03, PDC Light Curves

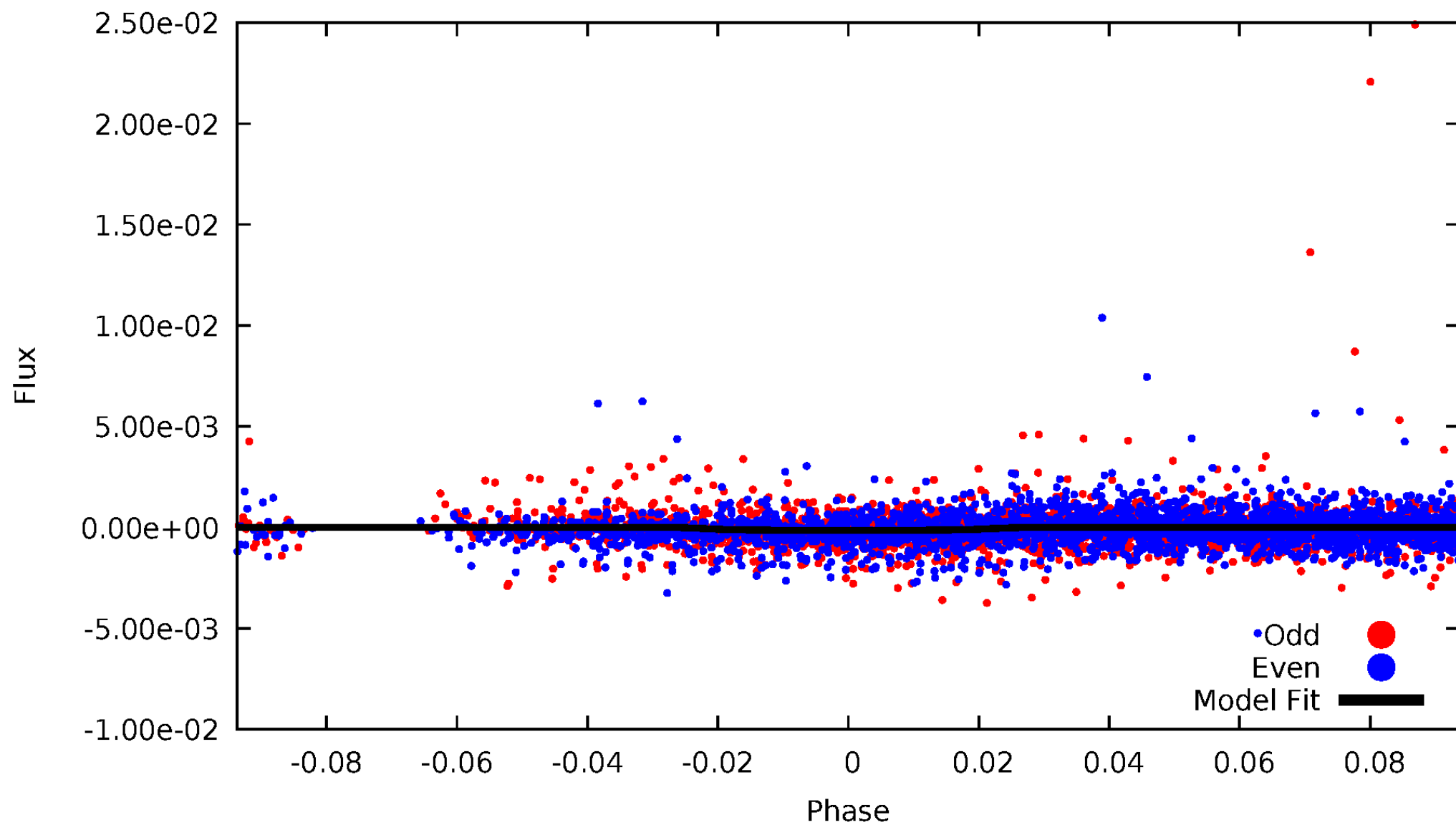


TCE 003558981-03



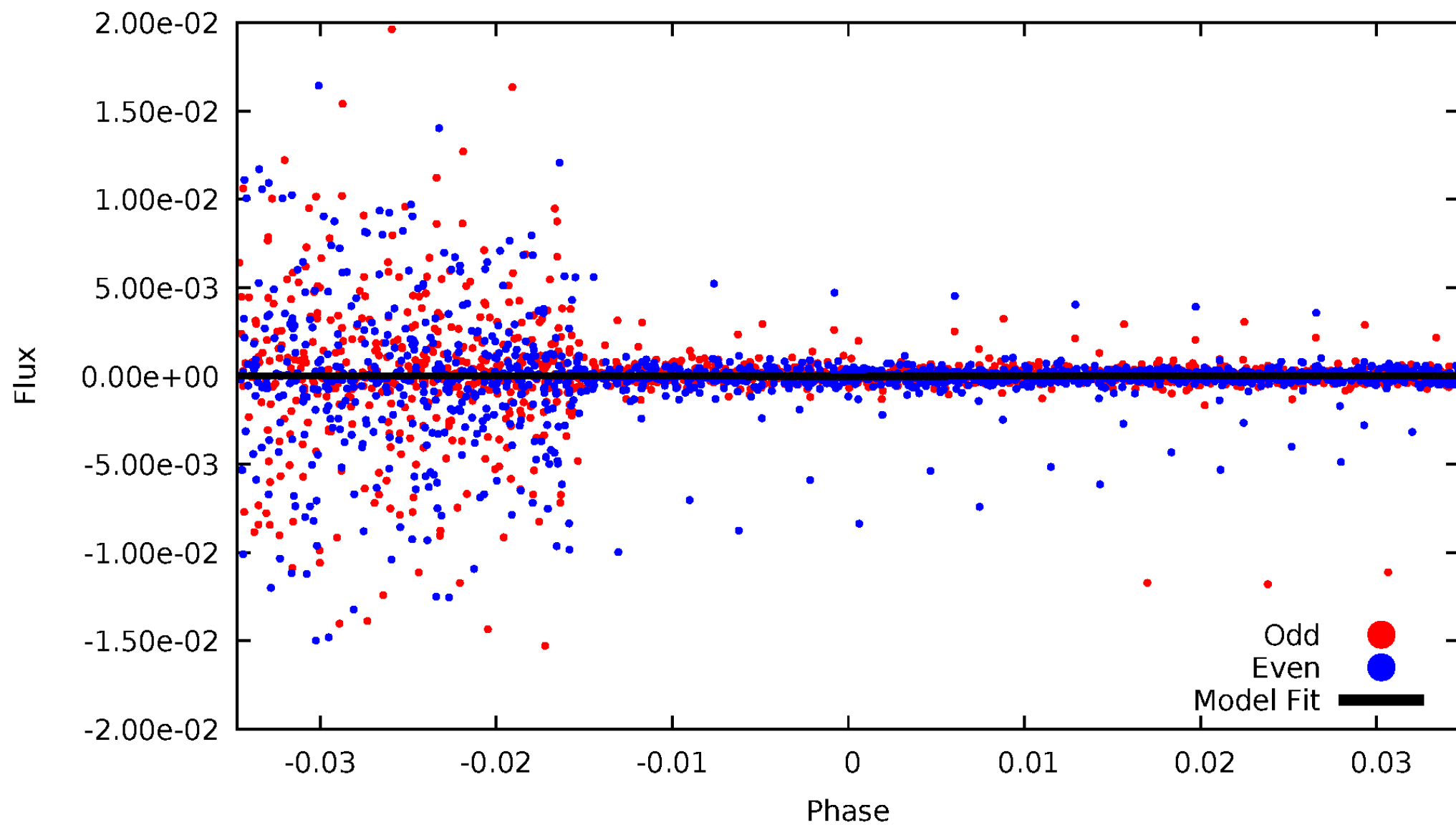
# DV Odd/Even

TCE 003558981-03



# ALT Odd/Even

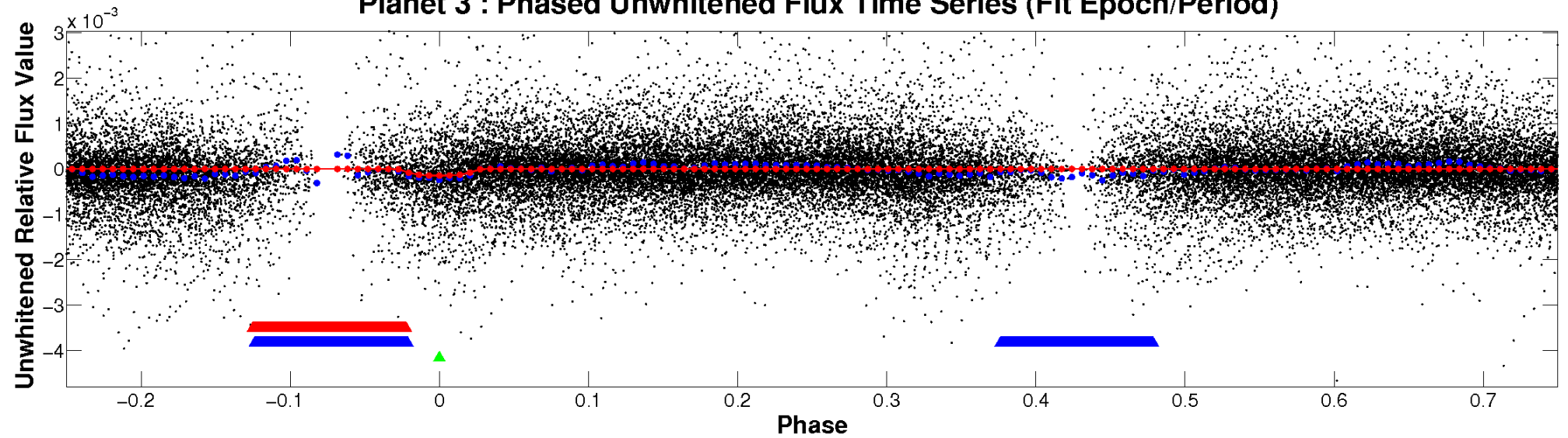
TCE 003558981-03



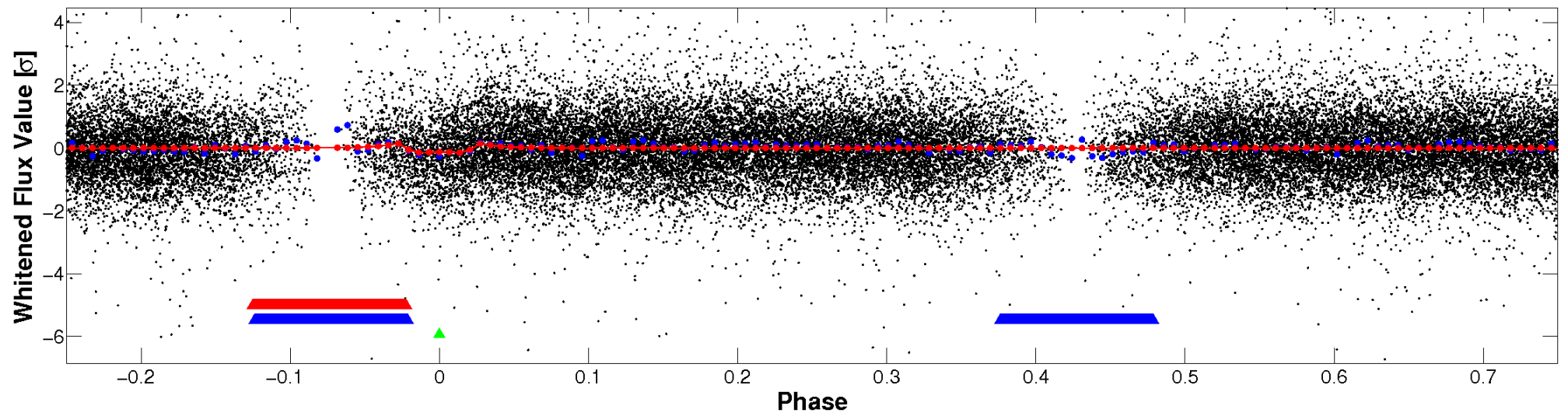


# Non-Whitened Vs. Whitened Light Curve

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

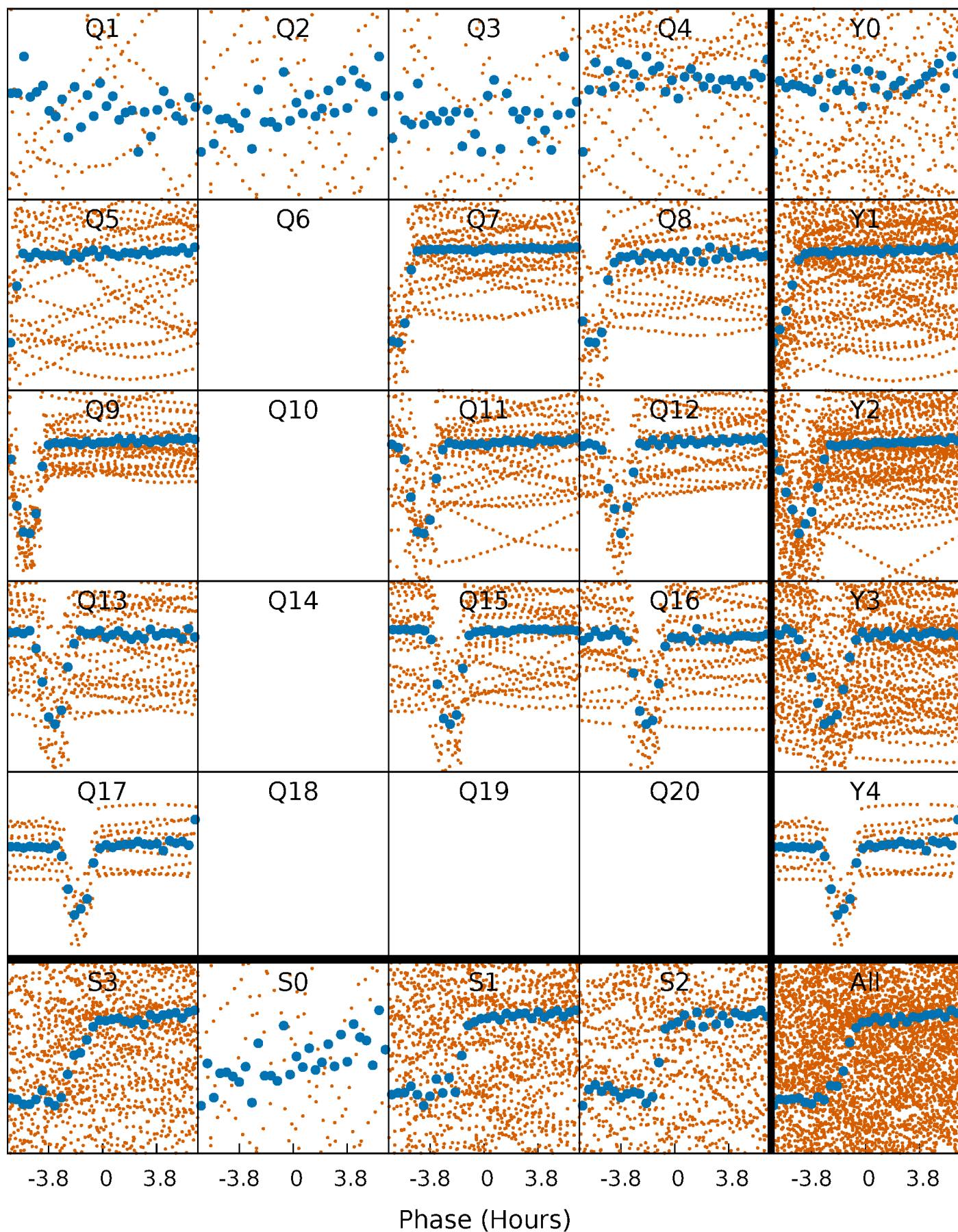


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

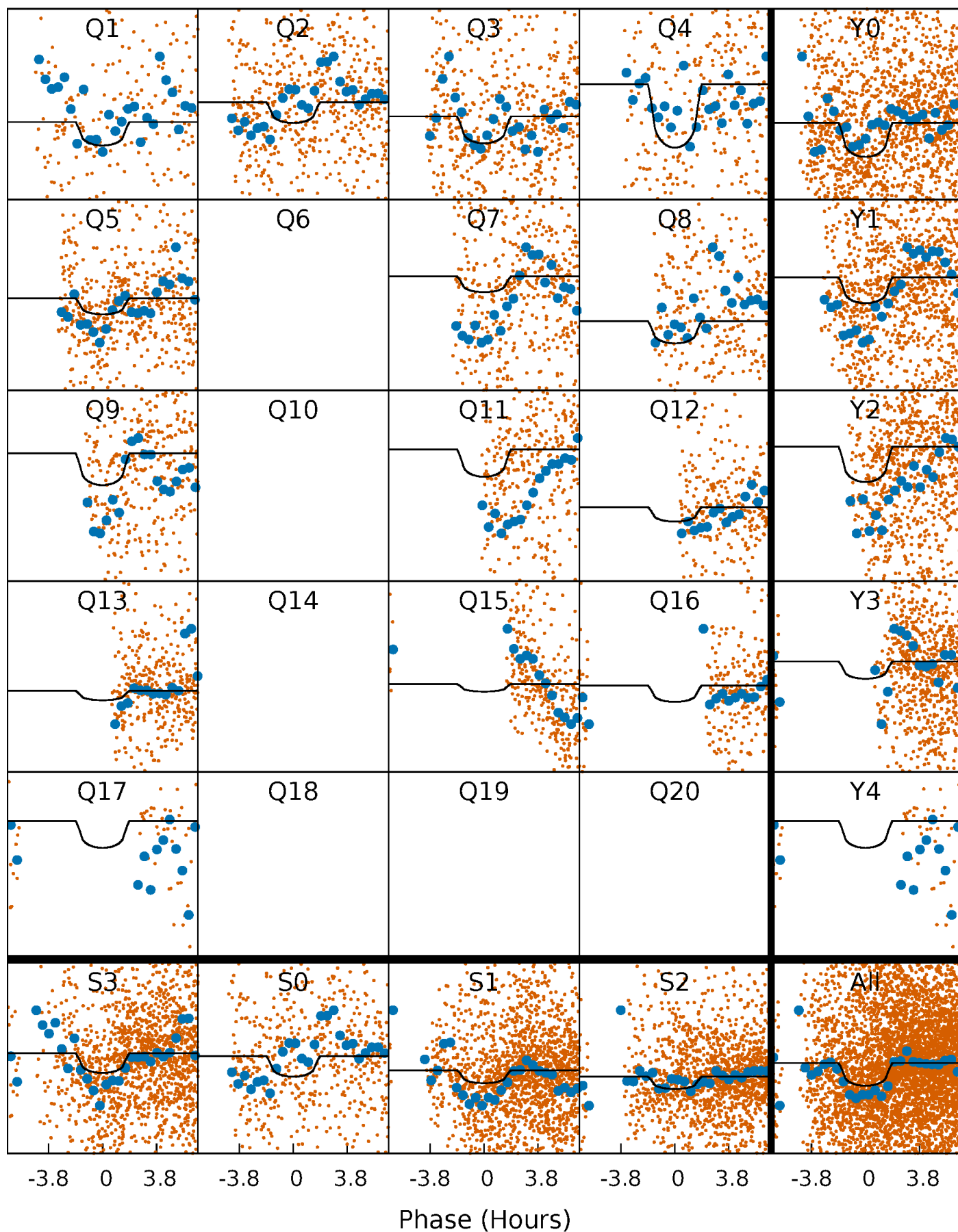
TCE 003558981-03     $P = 2.987234$  Days     $T_0 = 132.530824$  (BKJD)





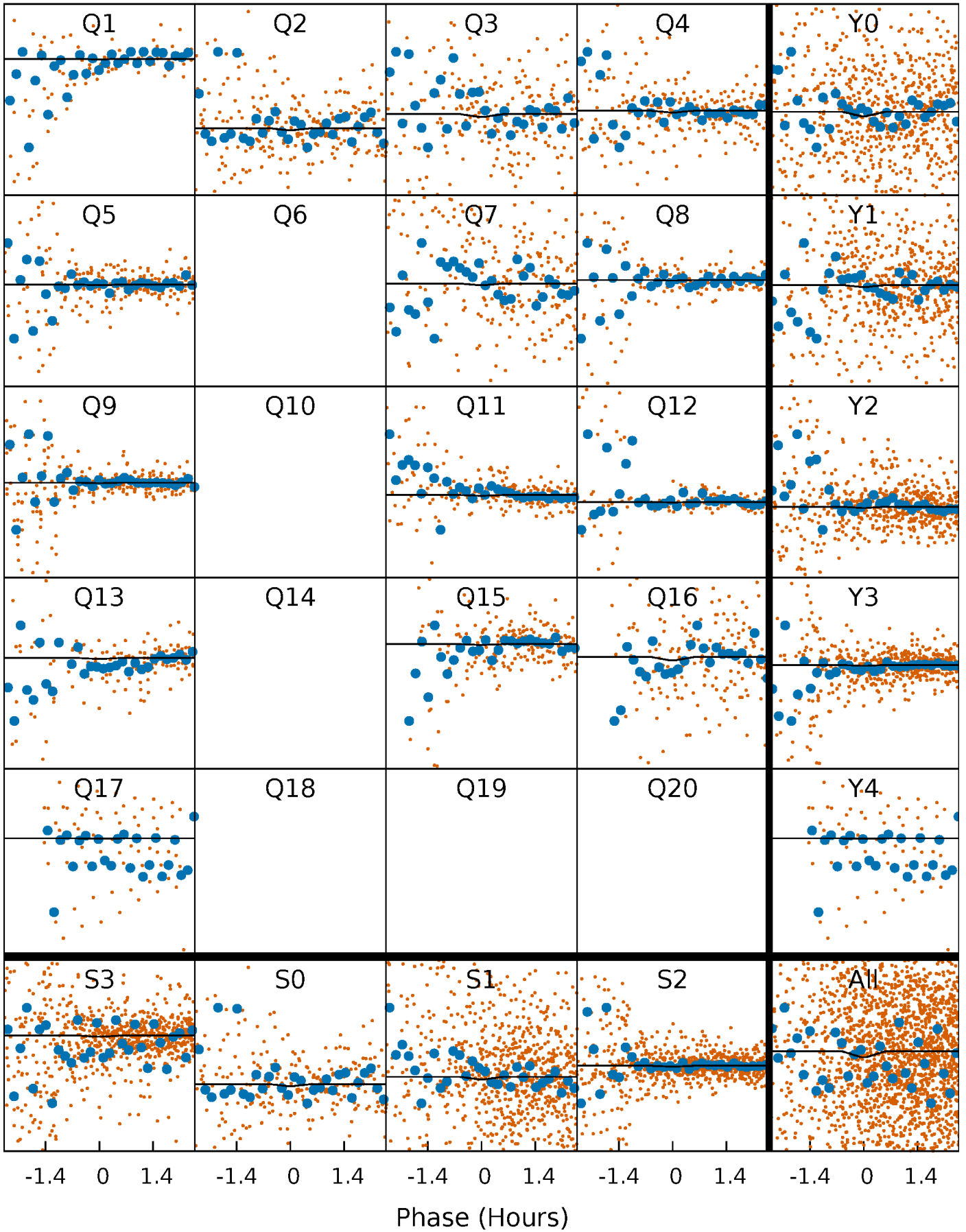
# DV Quarter-Phased Transit Curves

TCE 003558981-03   P= 2.987234 Days    $T_0=132.530824$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

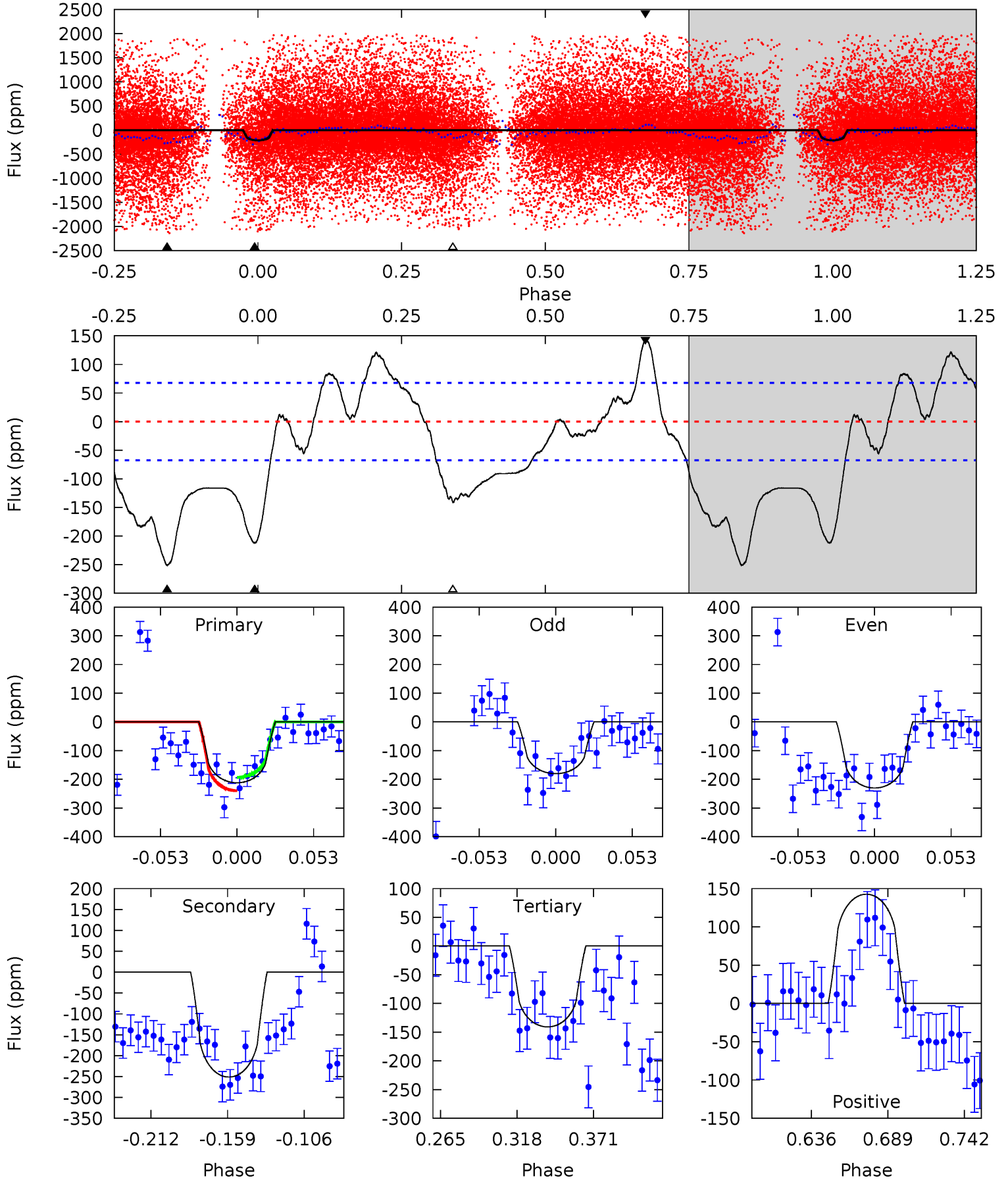
TCE 003558981-03   P= 2.987506 Days    $T_0=132.565224$  (BKJD)



# DV Model-Shift Uniqueness Test

003558981-03, P = 2.987234 Days, E = 129.543590 Days

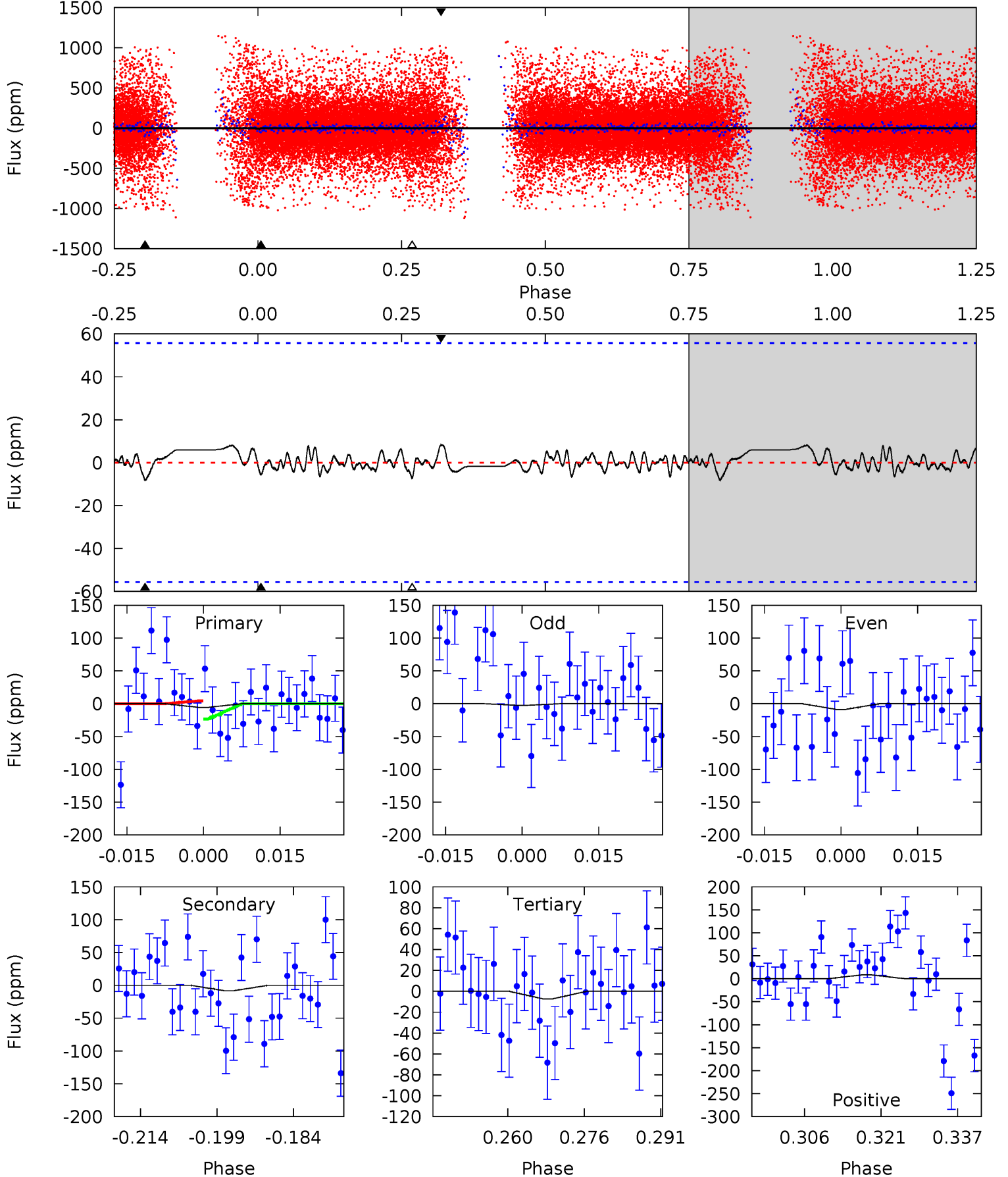
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.7	17.5	9.78	9.91	4.70	1.93	5.12	4.95	4.82	7.68	7.55	1.75	1.40	0.36	1.62



# Alt Model-Shift Uniqueness Test

003558981-03, P = 2.987506 Days, E = 129.577718 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
0.50	0.73	0.65	0.75	4.94	2.43	0.26	-0.15	-0.25	0.08	-0.02	0.28	-21.9	0.51	0



### Stellar Parameters For KIC 003558981

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5231^{+203}_{-166}$	$4.544^{+0.049}_{-0.098}$	$0.070^{+0.250}_{-0.300}$	$0.821^{+0.127}_{-0.078}$	$0.859^{+0.073}_{-0.080}$	$2.189^{+0.490}_{-0.685}$
	+4%/-3%	+1%/-2%	+357%/-429%	+15%/-10%	+8%/-9%	+22%/-31%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 003558981-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	-251±14	$1.10^{+0.76}_{-0.67}$	$1505^{+79}_{-64}$	$6017^{+4673}_{-1345}$	$171^{+904}_{-112}$
Alt.	-8±11	$0.71^{+0.69}_{-0.49}$	$1502^{+76}_{-62}$	$3347^{+2122}_{-6219}$	$8.626^{+104.289}_{-11.324}$

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

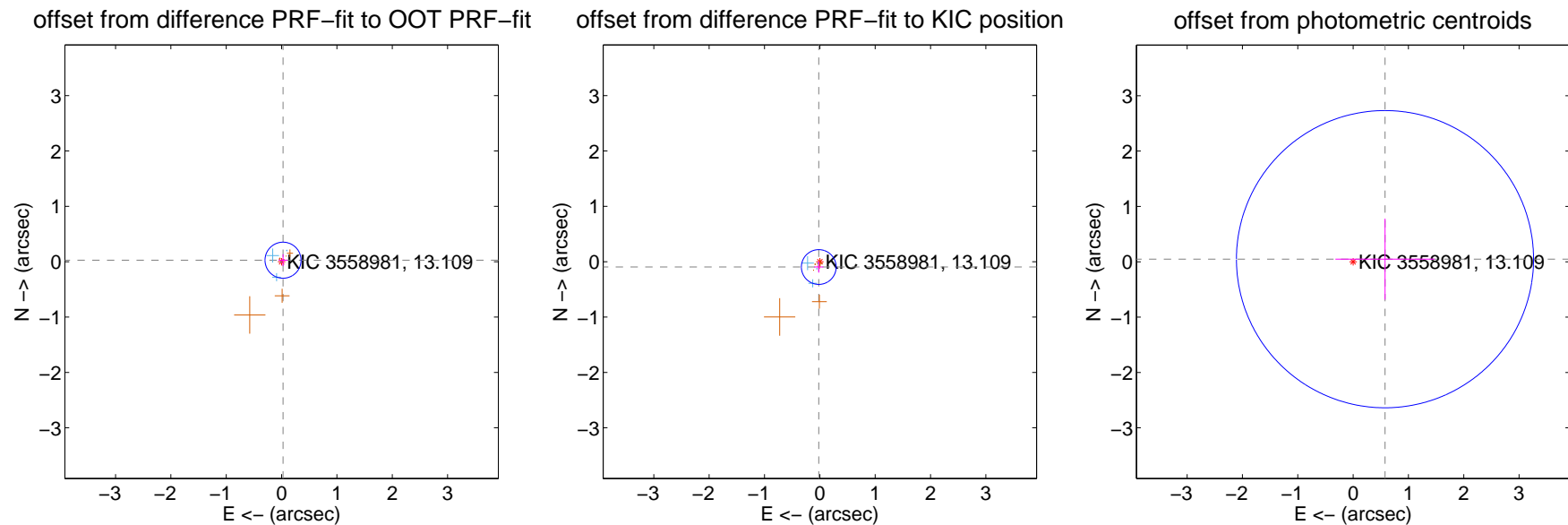
## DV Centroid Data

Supplemental centroid analysis for 003558981-03. Kepler magnitude: 13.11. Transit SNR 6.38

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.038 \pm 0.109$	0.35	$-0.026 \pm 0.080$	$0.027 \pm 0.107$
PRF-fit source offset from KIC position	$0.098 \pm 0.105$	0.94	$0.019 \pm 0.082$	$-0.096 \pm 0.101$
photometric centroid source offset	$0.58 \pm 0.89$	0.65	$-0.58 \pm 0.90$	$0.05 \pm 0.73$

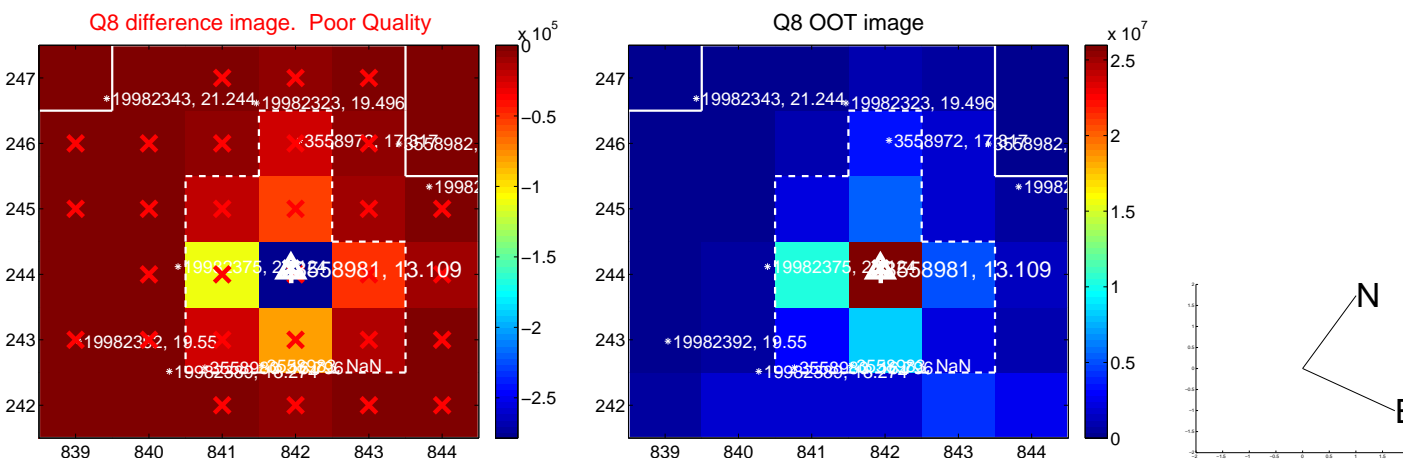
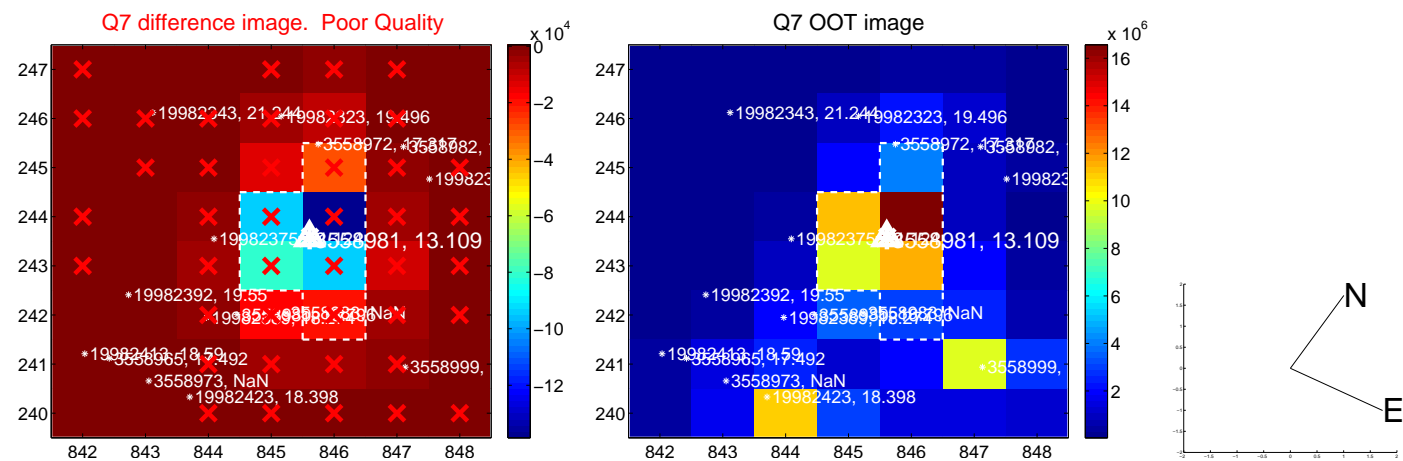
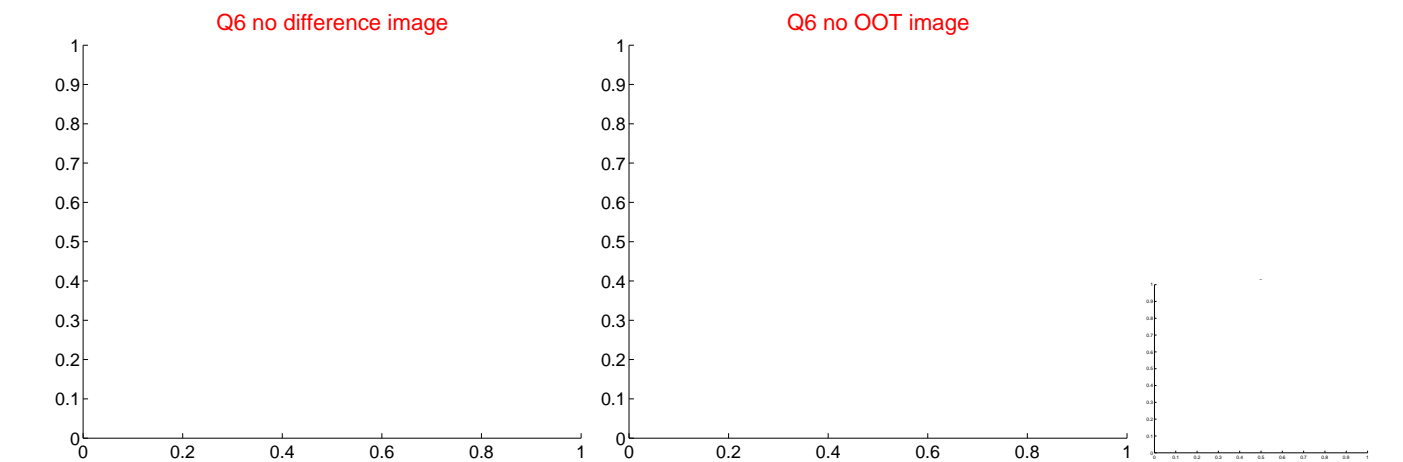
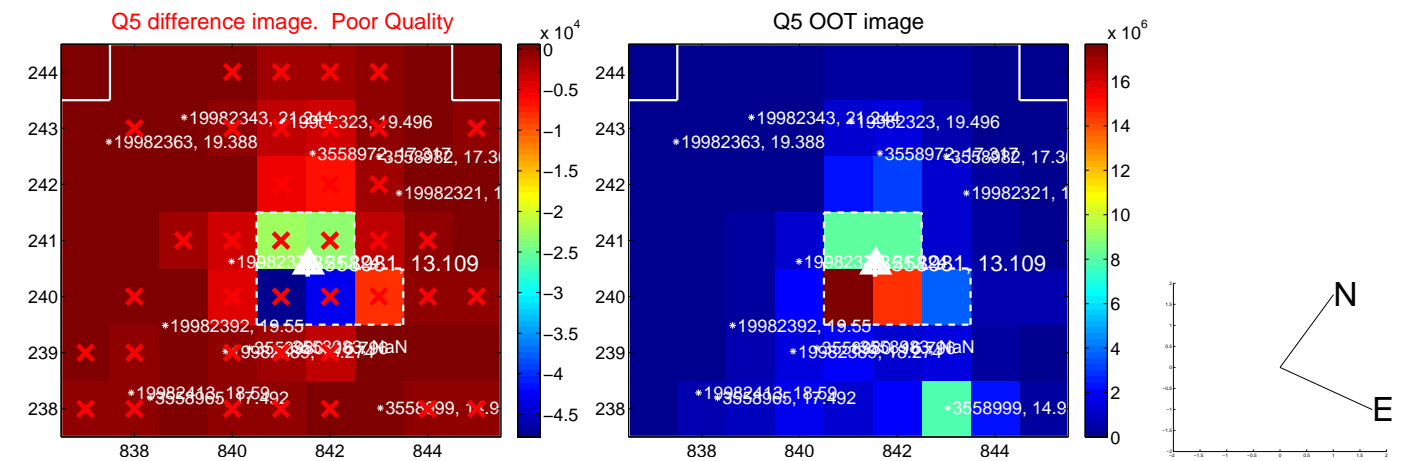


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

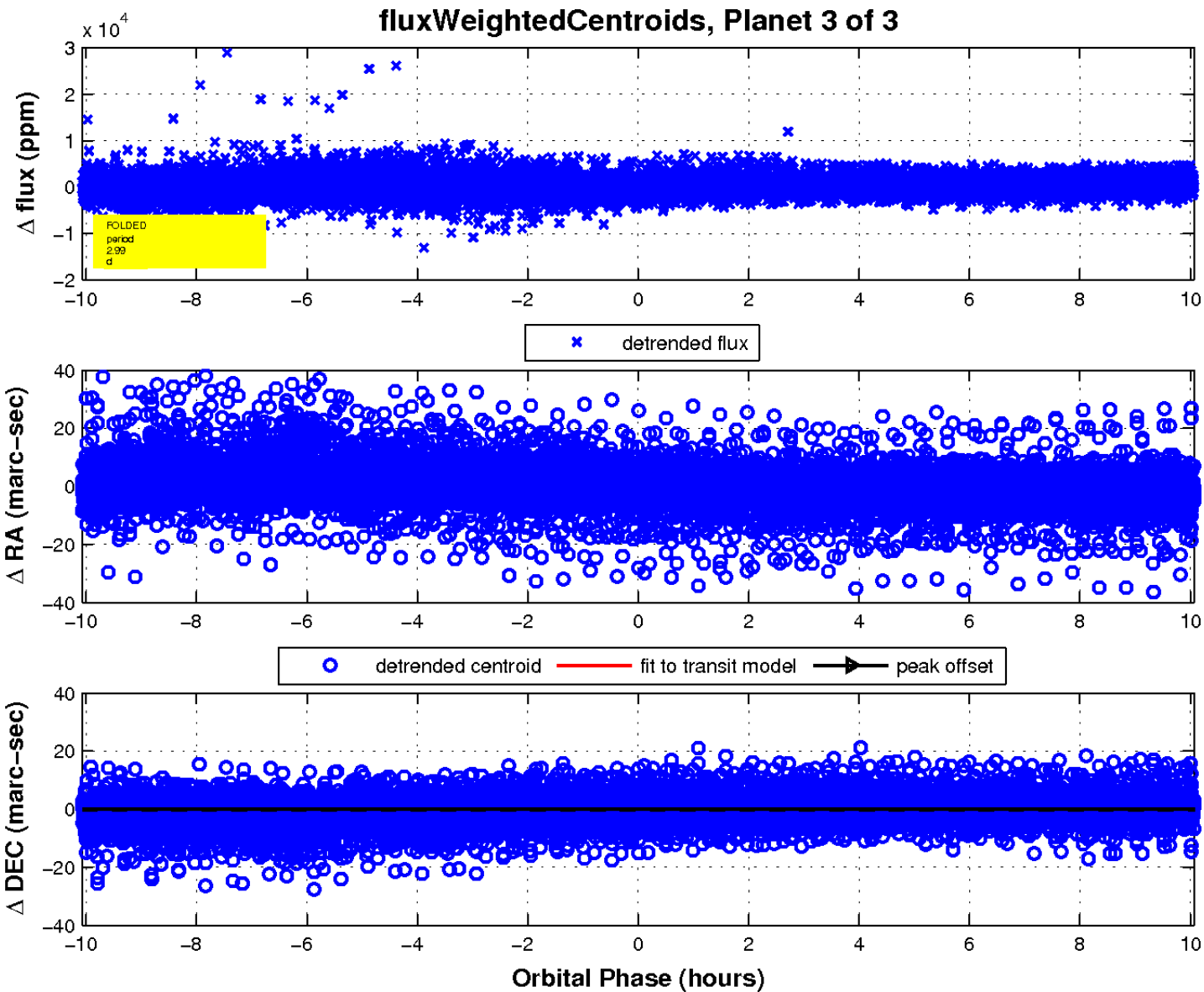
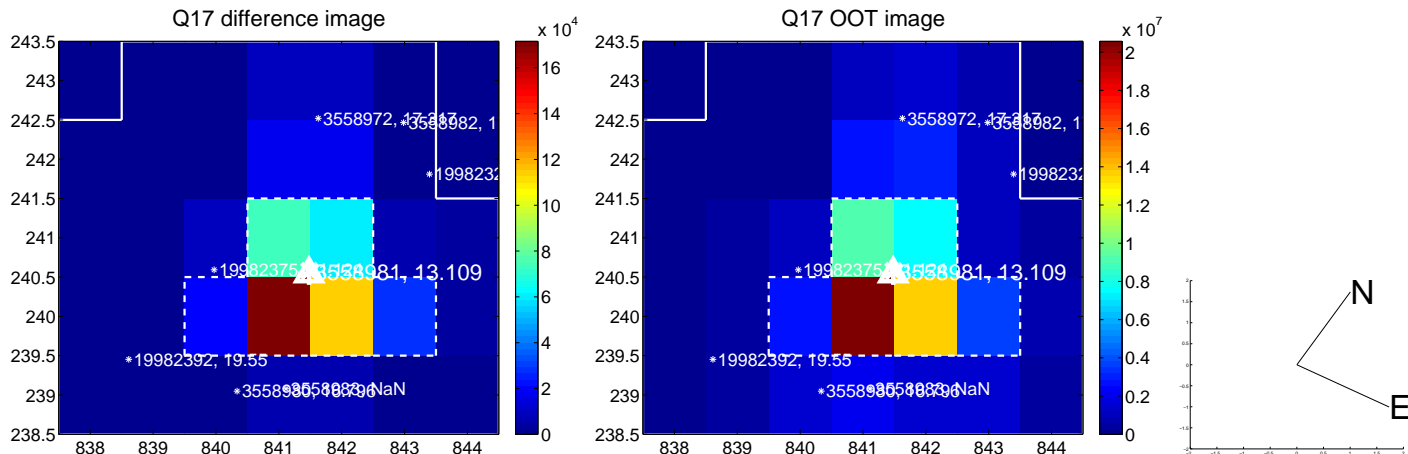








white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

