

# KIC 001995519

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
001995519-01	OBS	2634.01	19.940163	142.347721	747.8	4.134	15.5	17.3	0.76	5623	2.32	28.32
001995519-02	OBS	No	462.304757	307.673044	1229.5	5.338	7.6	6.7	0.76	5623	2.92	0.43

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001995519-01	OBS	PC	0.95	0	0	0	0	NO_COMMENT
001995519-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_MEAS

**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 001995519-01

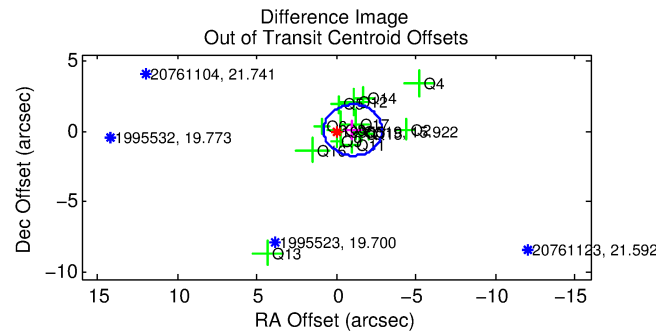
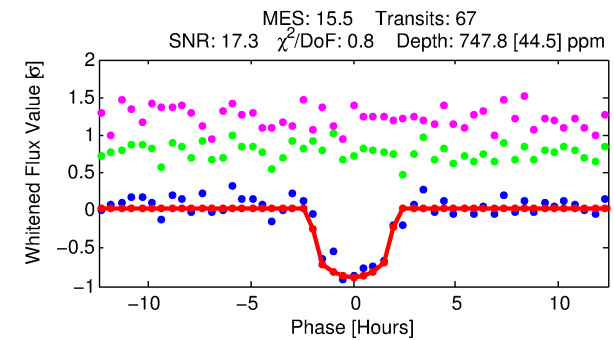
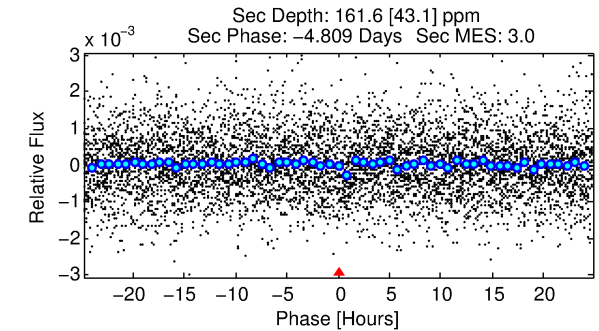
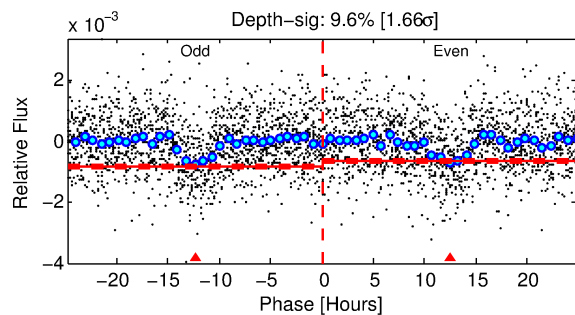
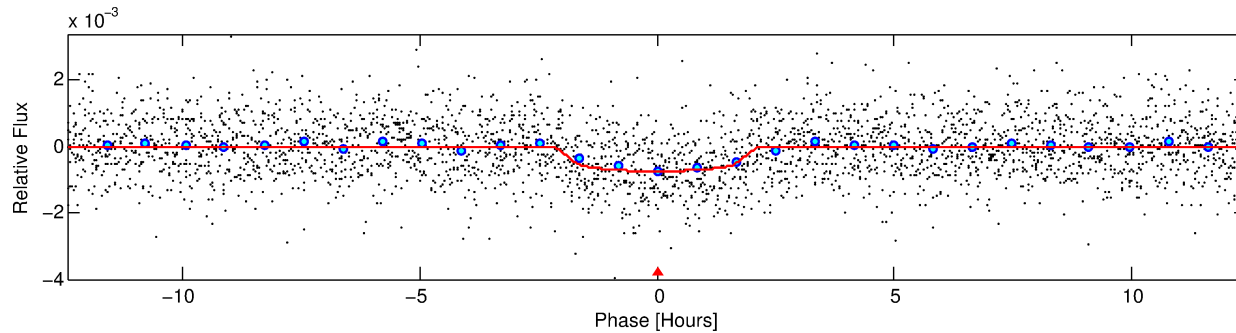
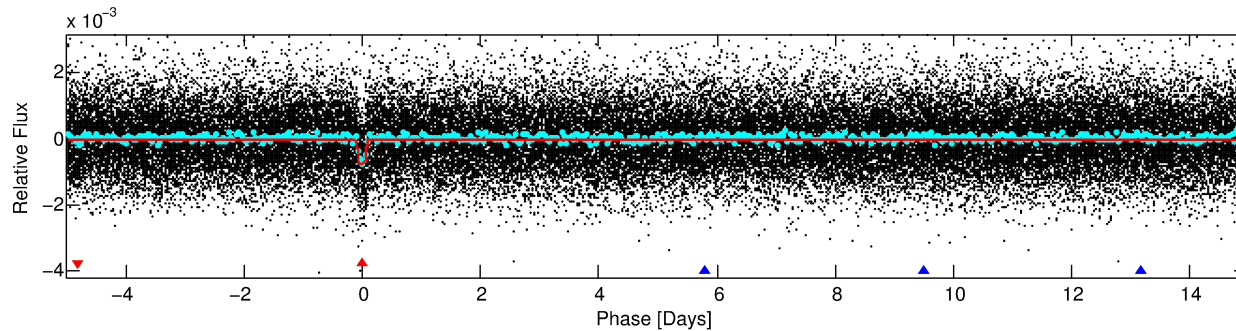
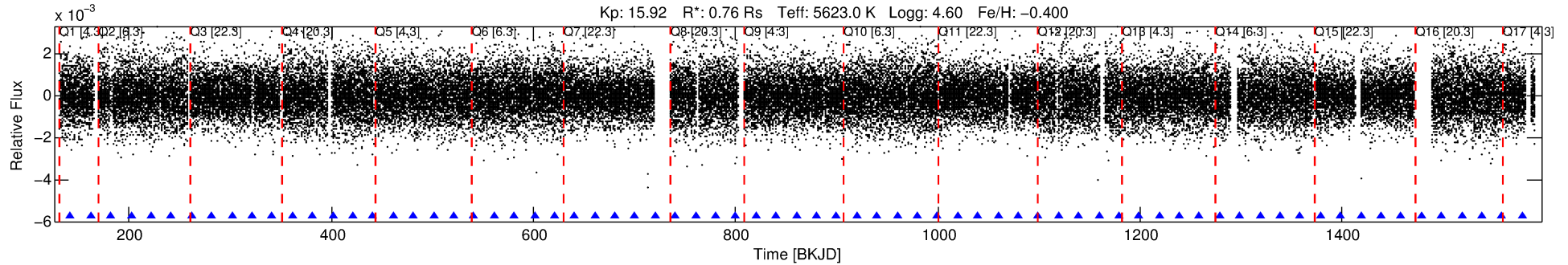
No Significant Match Found

# DV One-Page Summary

KIC: 1995519 Candidate: 1 of 2 Period: 19.940 d

KOI: K02634.01 Corr: 0.985

Kp: 15.92 R<sup>\*</sup>: 0.76 R<sub>s</sub> Teff: 5623.0 K Logg: 4.60 Fe/H: -0.400



## DV Fit Results:

Period = 19.94016 [0.00013] d  
Epoch = 142.3477 [0.0055] BKJD  
Rp/R<sup>\*</sup> = 0.0279 [0.0085]  
a/R<sup>\*</sup> = 23.58 [32.24]  
b = 0.80 [0.61]  
Seff = 28.32 [7.21]  
Teq = 588 [37] K  
Rp = 2.32 [0.84] Re  
a = 0.1357 [0.0214] AU  
Ag = 303.93 [213.50] [1.42σ]  
Teffp = 3797 [642] K [4.99σ]

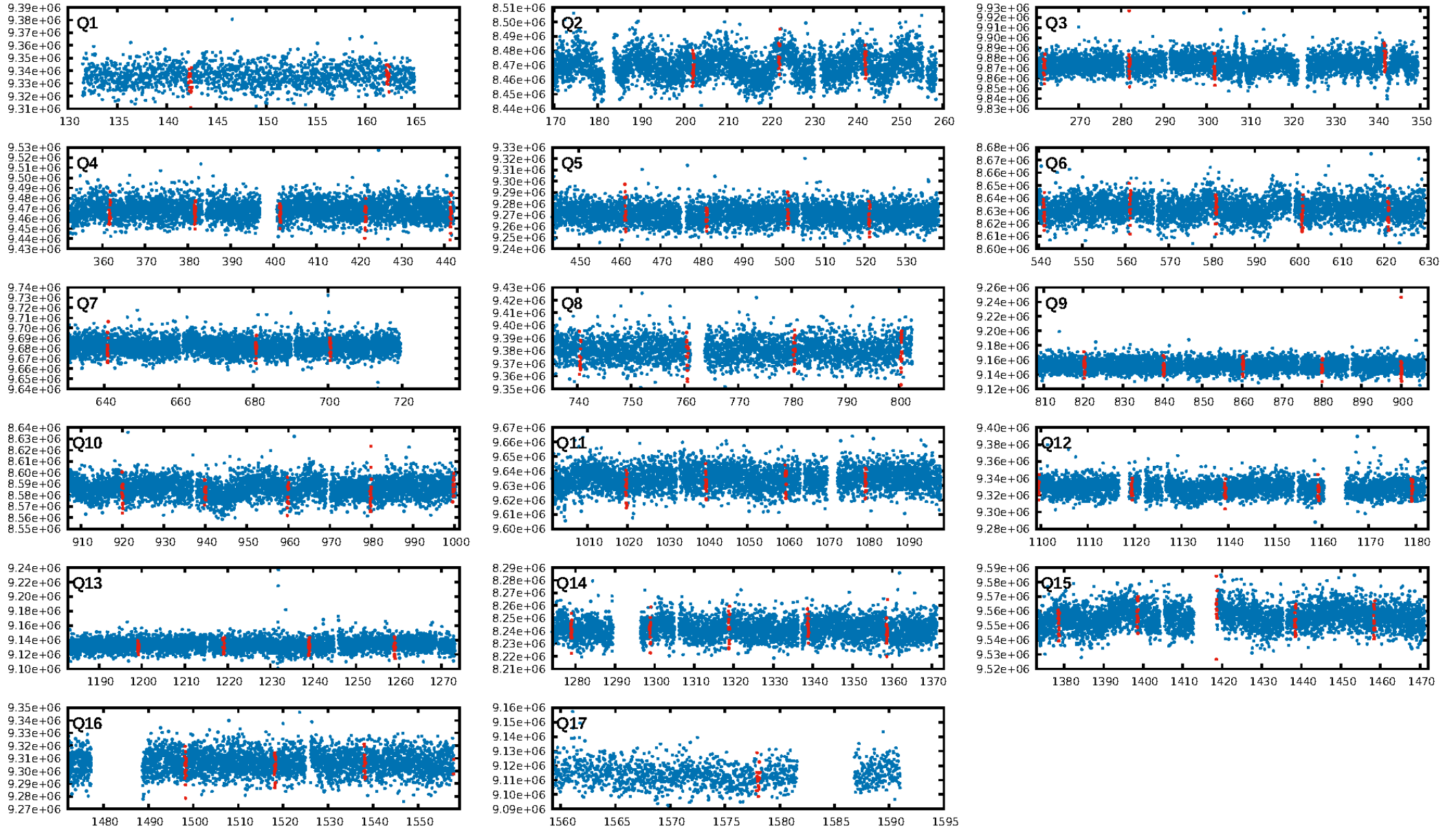
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [1572.53σ]  
ModelChiSquare2-sig: 89.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 7.59e-54  
RollingBand-fgt: 1.00 [64/64]  
GhostDiagnostic-chr: 1.848  
Centroid-sig: 66.4%  
Centroid-so: 0.906 arcsec [1.05σ]  
OotOffset-rm: 1.057 arcsec [1.74σ]  
KicOffset-rm: 1.193 arcsec [1.90σ]  
OotOffset-st: 3/4/4/4 [15]  
KicOffset-st: 3/4/4/4 [15]  
DiffImageQuality-fgm: 0.60 [9/15]  
DiffImageOverlap-fno: 1.00 [17/17]

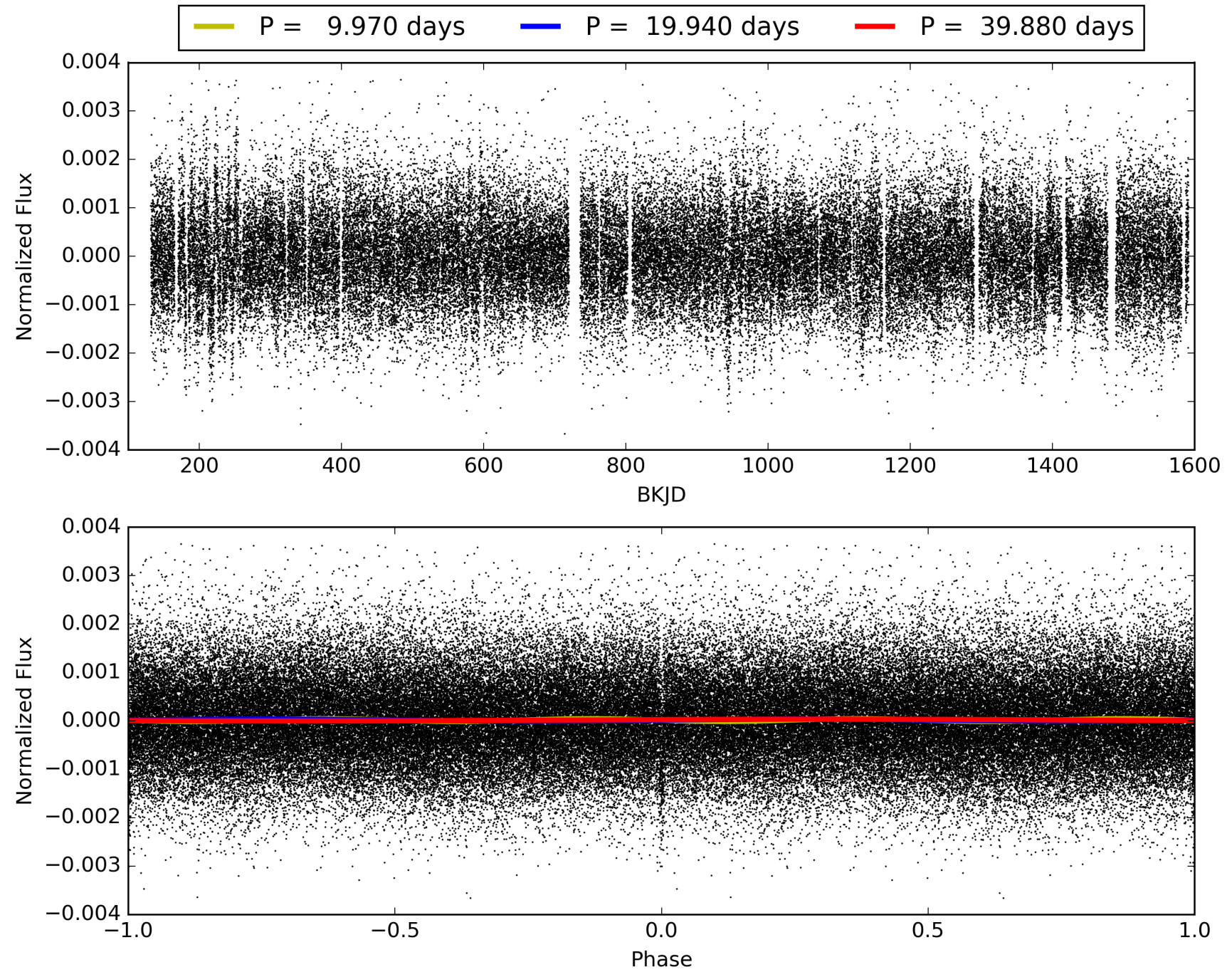
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:23:43 Z

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

# TCE 001995519-01, PDC Light Curves



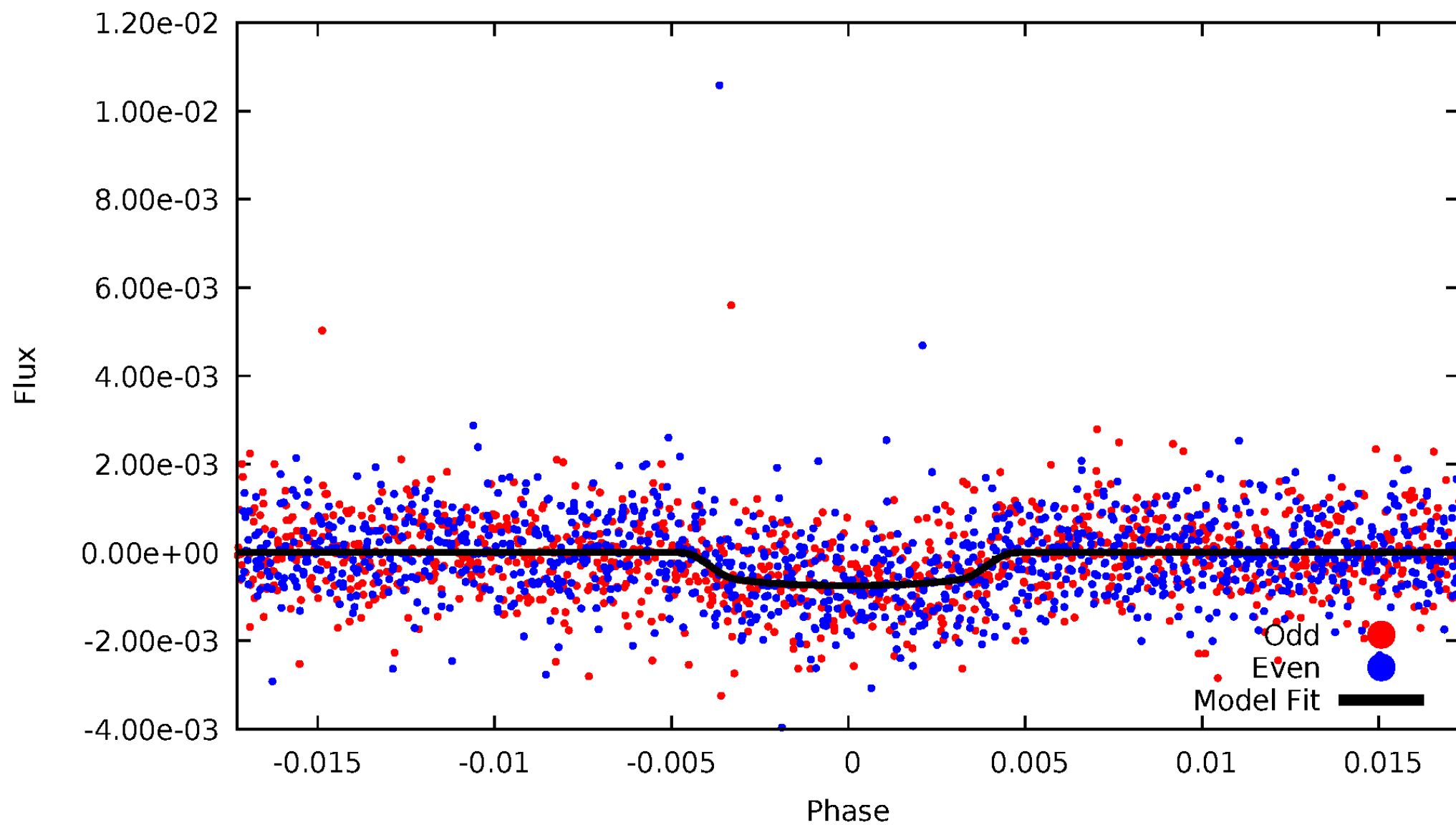
# TCE 001995519-01





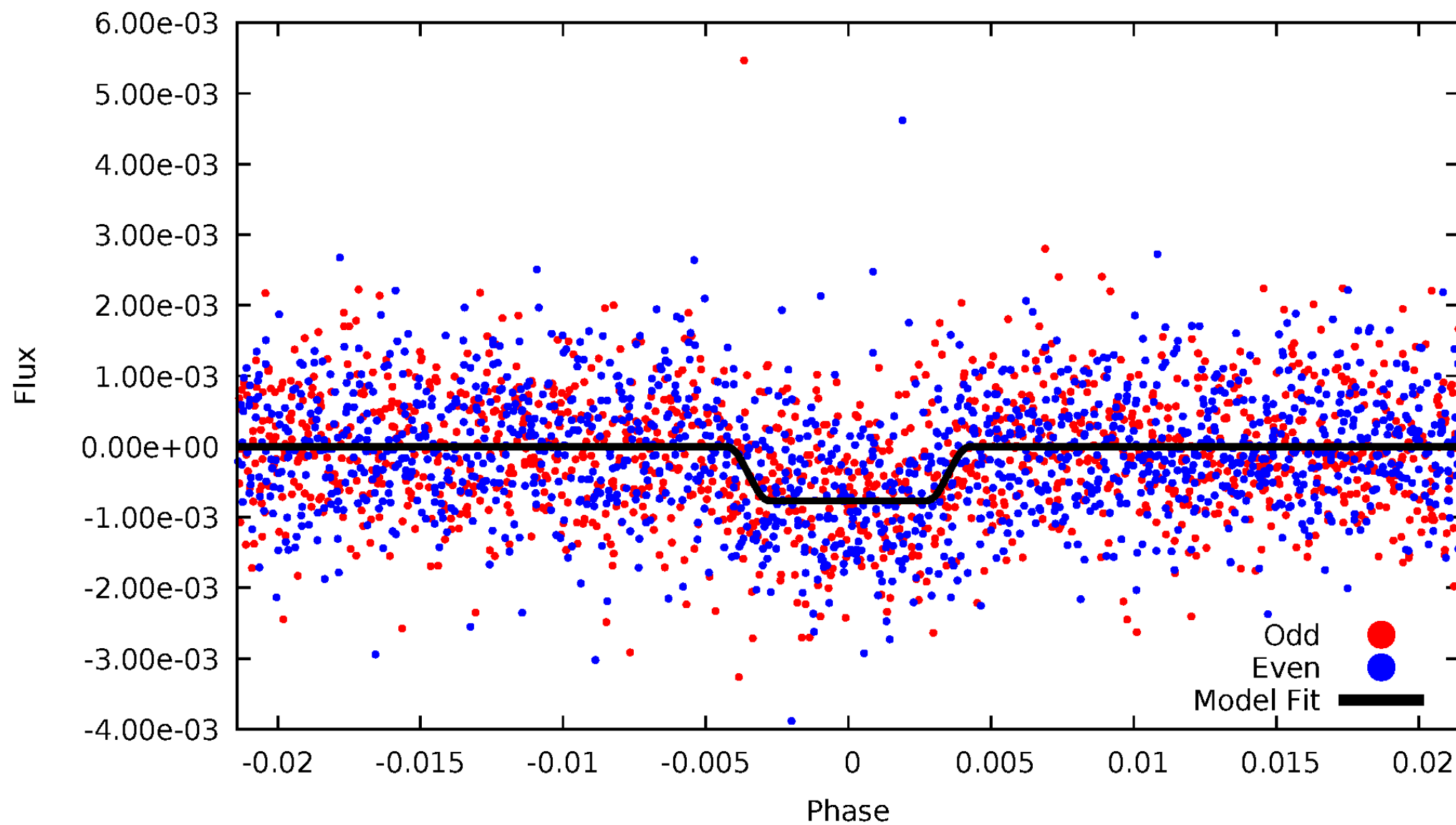
# DV Odd/Even

TCE 001995519-01

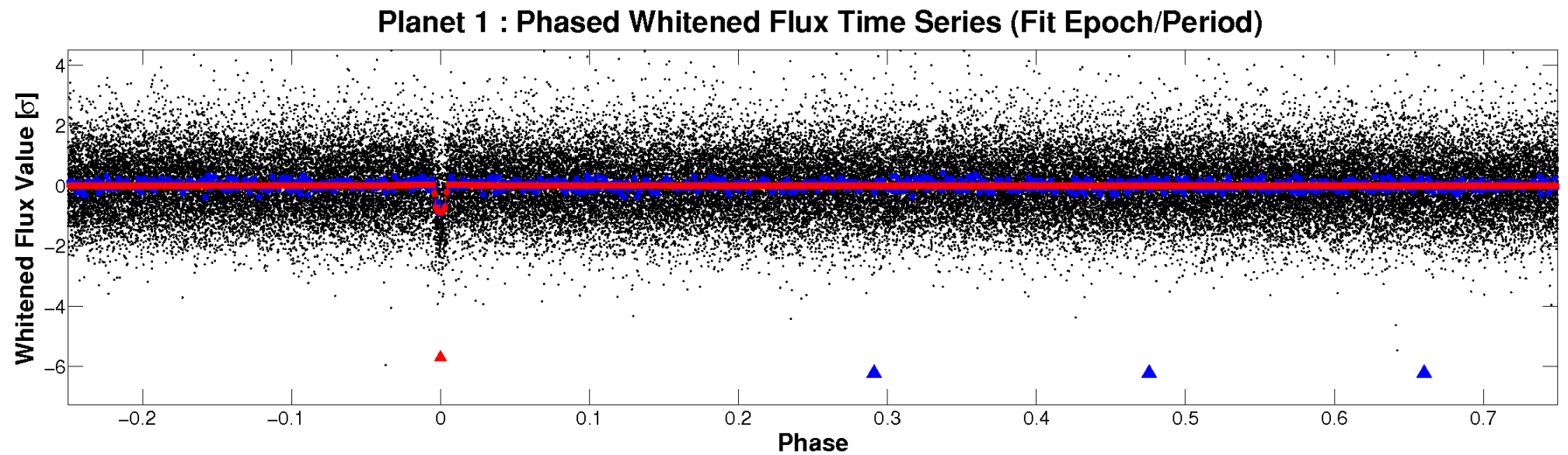
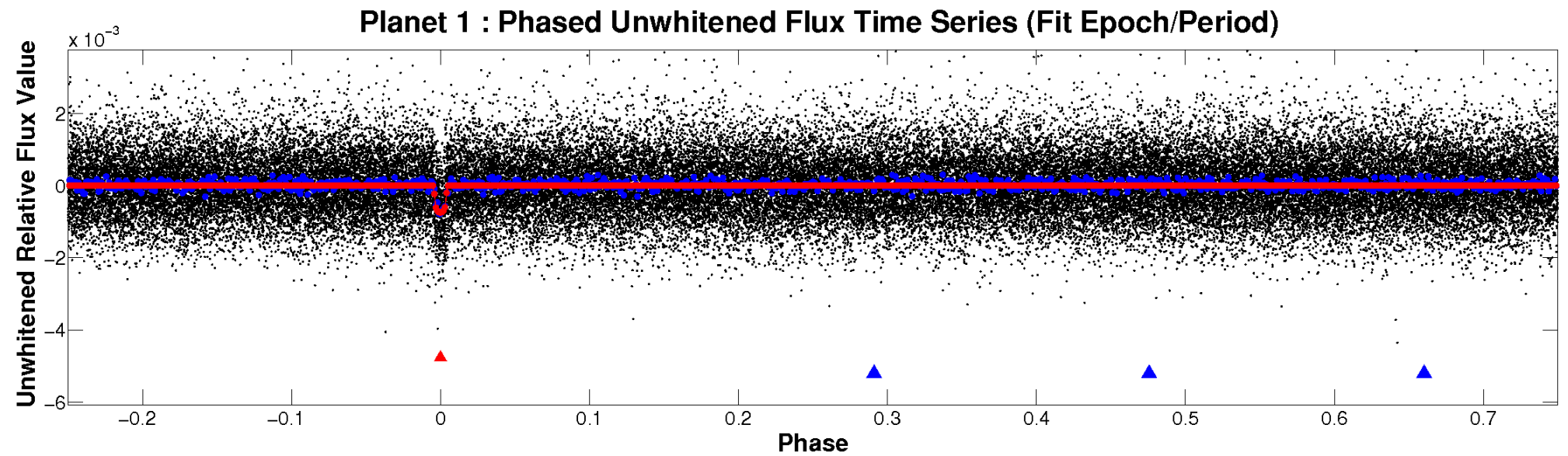


# ALT Odd/Even

TCE 001995519-01

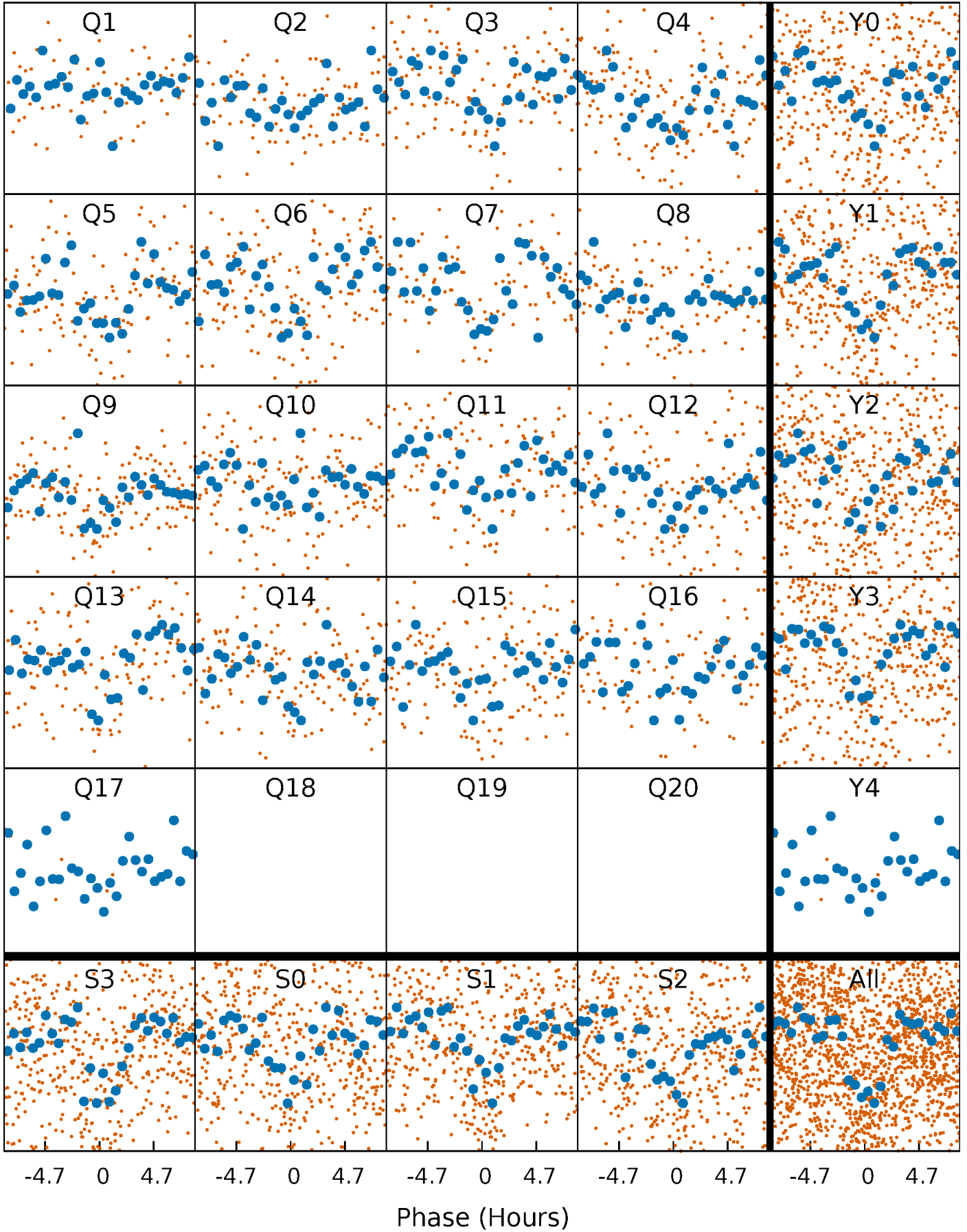


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

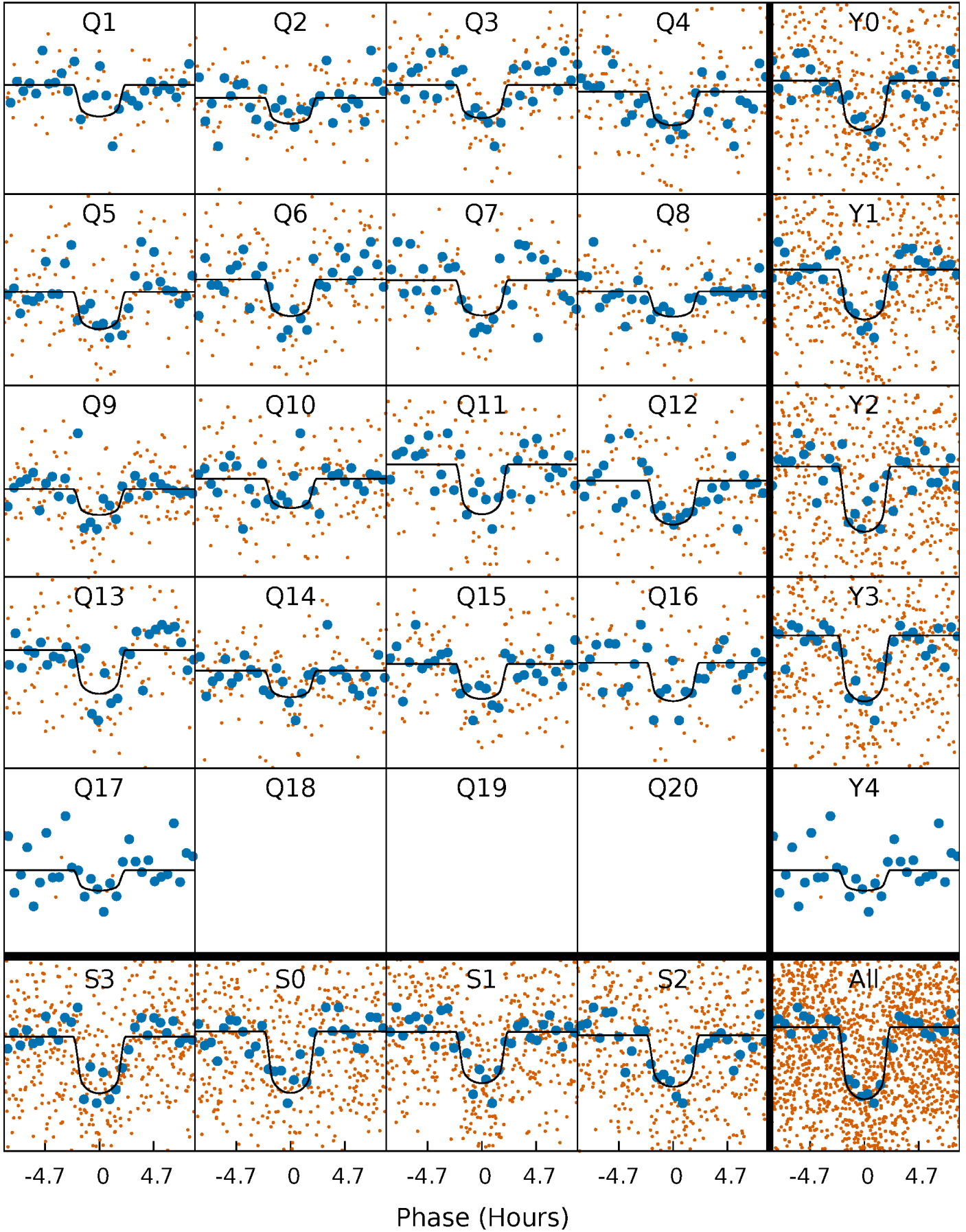
TCE 001995519-01 P= 19.940163 Days  $T_0=142.347721$  (BKJD)





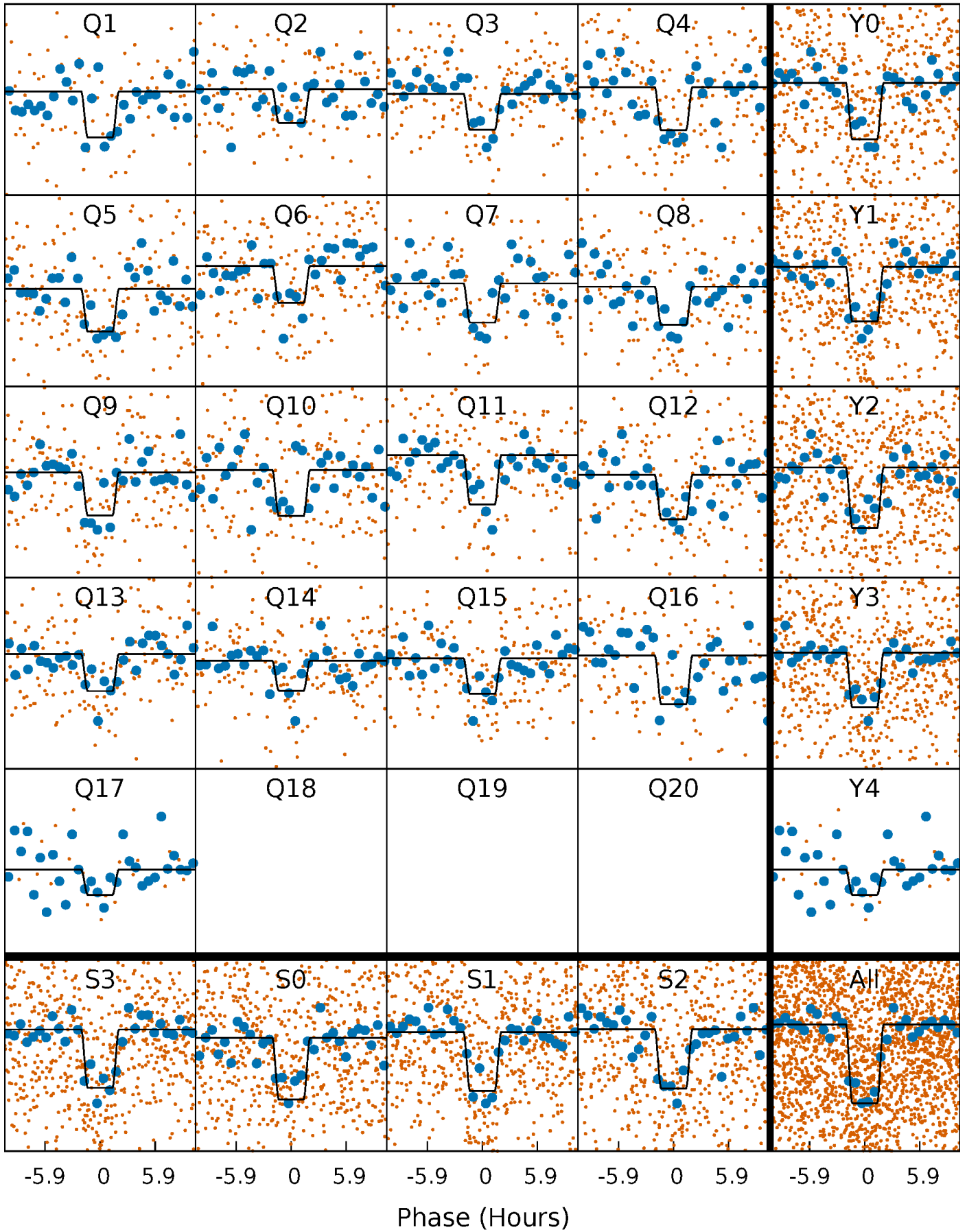
# DV Quarter-Phased Transit Curves

TCE 001995519-01 P= 19.940163 Days  $T_0=142.347721$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

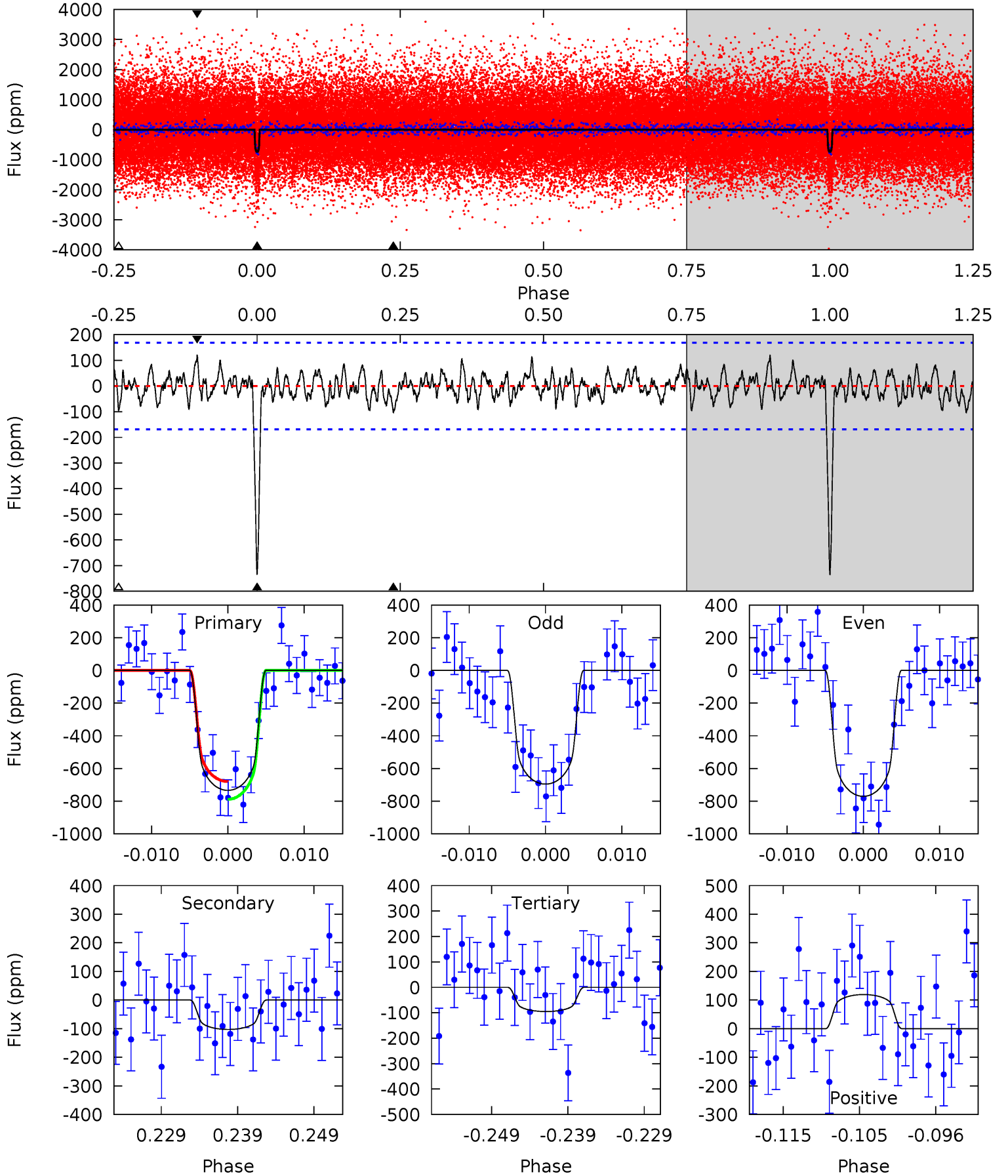
TCE 001995519-01 P= 19.940081 Days  $T_0=142.355279$  (BKJD)



# DV Model-Shift Uniqueness Test

001995519-01,  $P = 19.940163$  Days,  $E = 122.407558$  Days

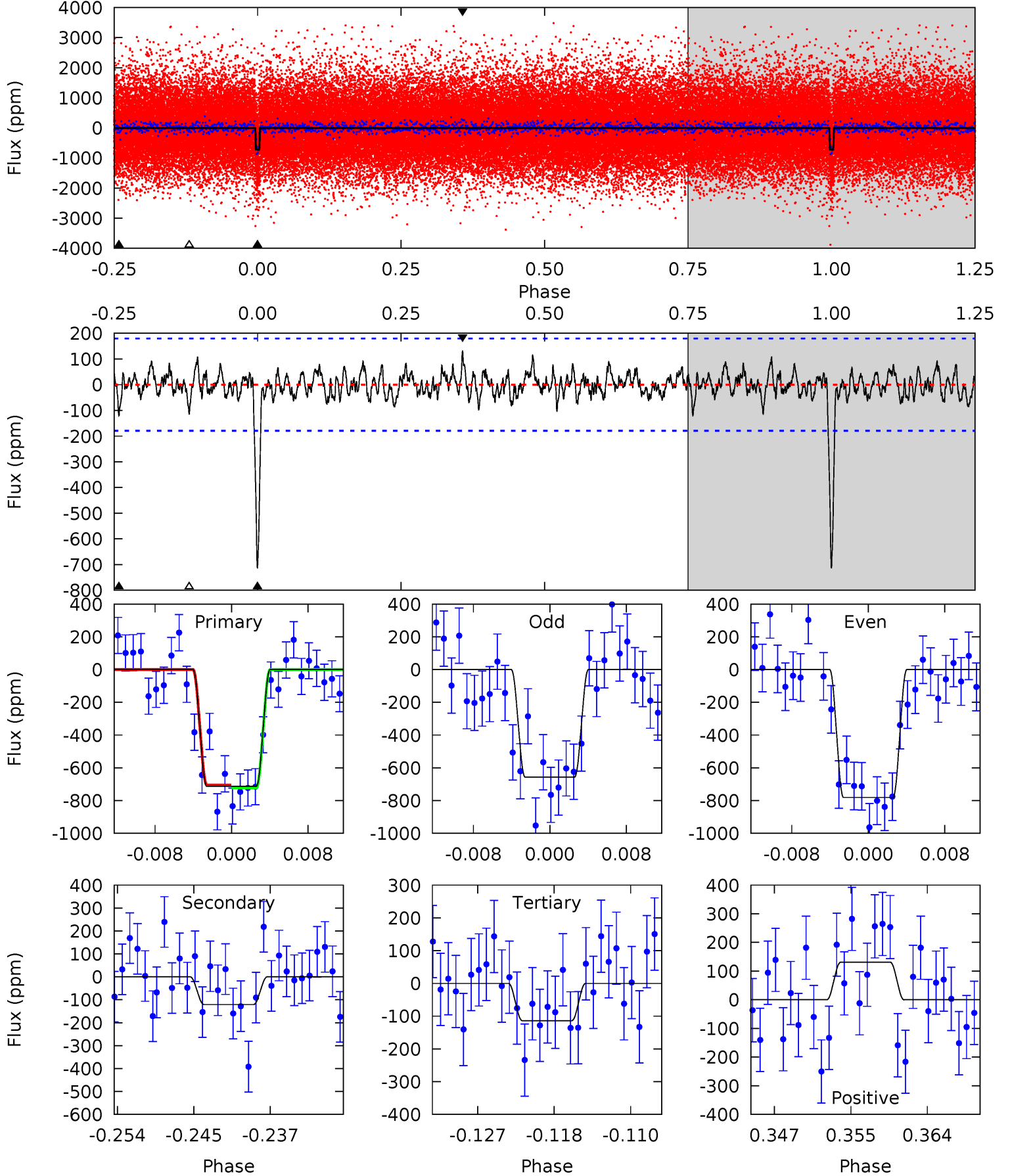
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.9	3.07	2.84	3.56	5.03	2.59	1.14	19.1	18.3	0.22	-0.49	1.12	1.00	0.14	1.63



# Alt Model-Shift Uniqueness Test

001995519-01, P = 19.940081 Days, E = 122.415198 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.1	3.41	3.21	3.70	5.06	2.63	1.04	16.9	16.4	0.20	-0.29	1.75	0.95	0.16	0.26



### Stellar Parameters For KIC 001995519

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5623^{+152}_{-169}$	$4.596^{+0.040}_{-0.120}$	$-0.400^{+0.300}_{-0.300}$	$0.763^{+0.147}_{-0.063}$	$0.853^{+0.080}_{-0.097}$	$2.704^{+0.454}_{-1.006}$
	+3%/-3%	+1%/-3%	+75%/-75%	+19%/-8%	+9%/-11%	+17%/-37%
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 001995519-01 / KOI 2634.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-103 \pm 34$	$2.41^{+0.73}_{-0.80}$	$833^{+39}_{-33}$	$3757^{+591}_{-371}$	$175^{+229}_{-82}$
Alt.	$-121 \pm 35$	$2.32^{+0.78}_{-0.71}$	$832^{+41}_{-31}$	$3881^{+560}_{-403}$	$213^{+226}_{-102}$

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



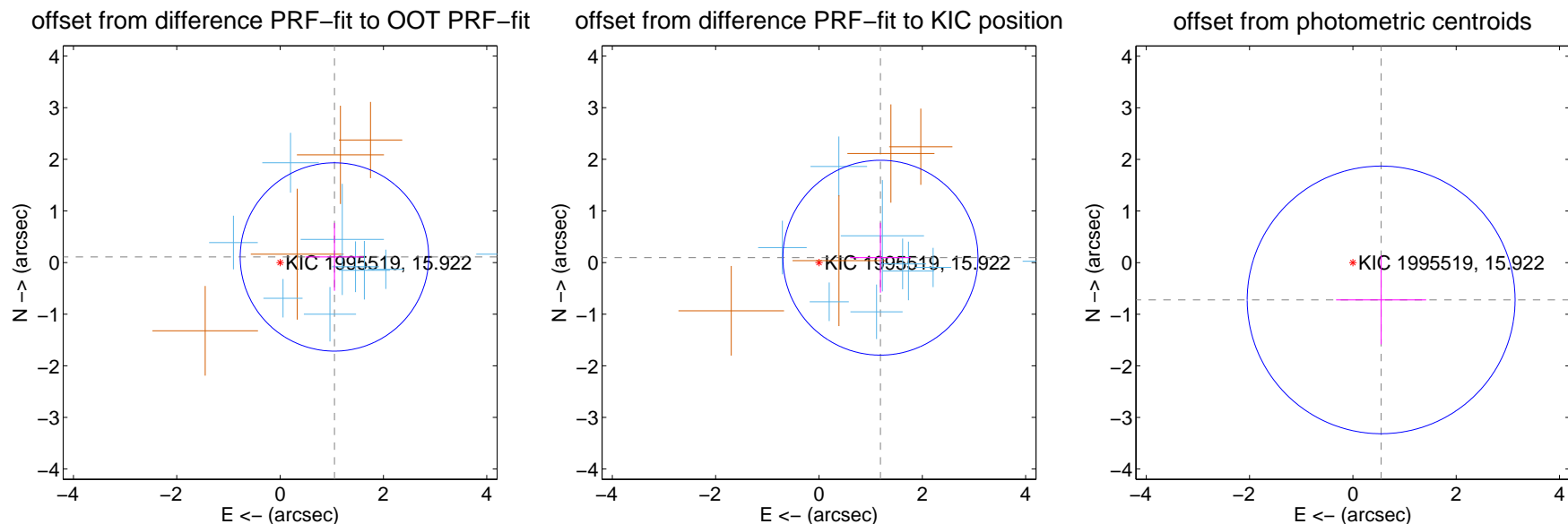
## DV Centroid Data

Supplemental centroid analysis for 001995519-01. Kepler magnitude: 15.92. Transit SNR 17.26

There are 9 quarters with good PRF difference image offsets

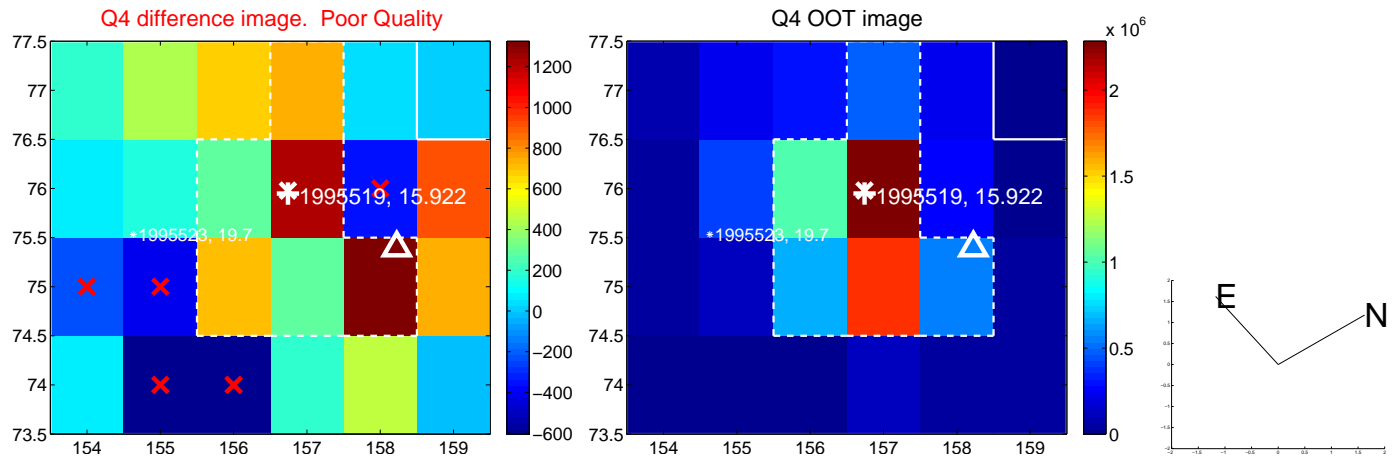
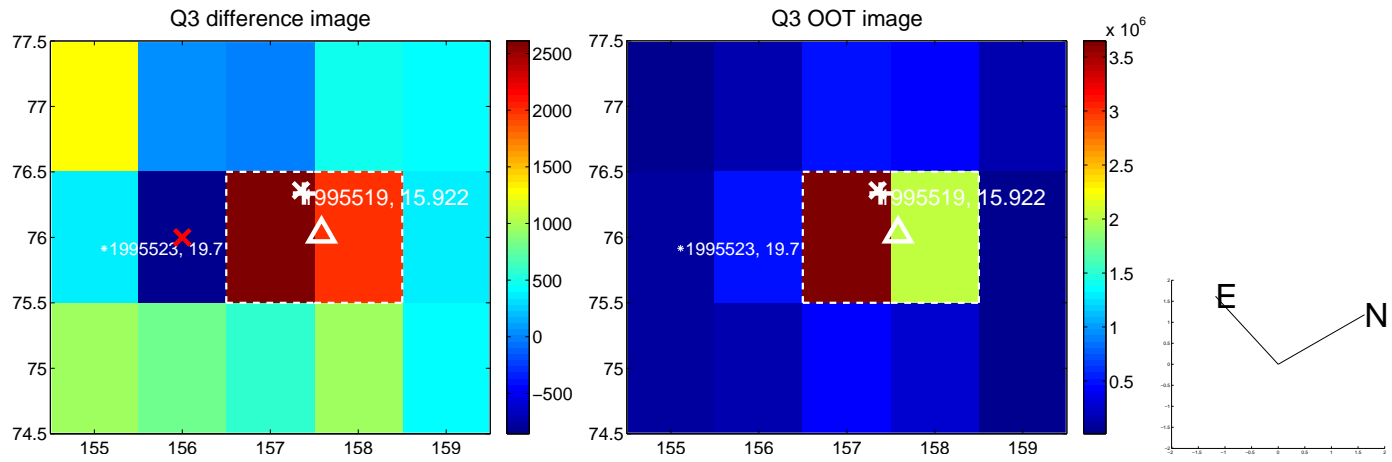
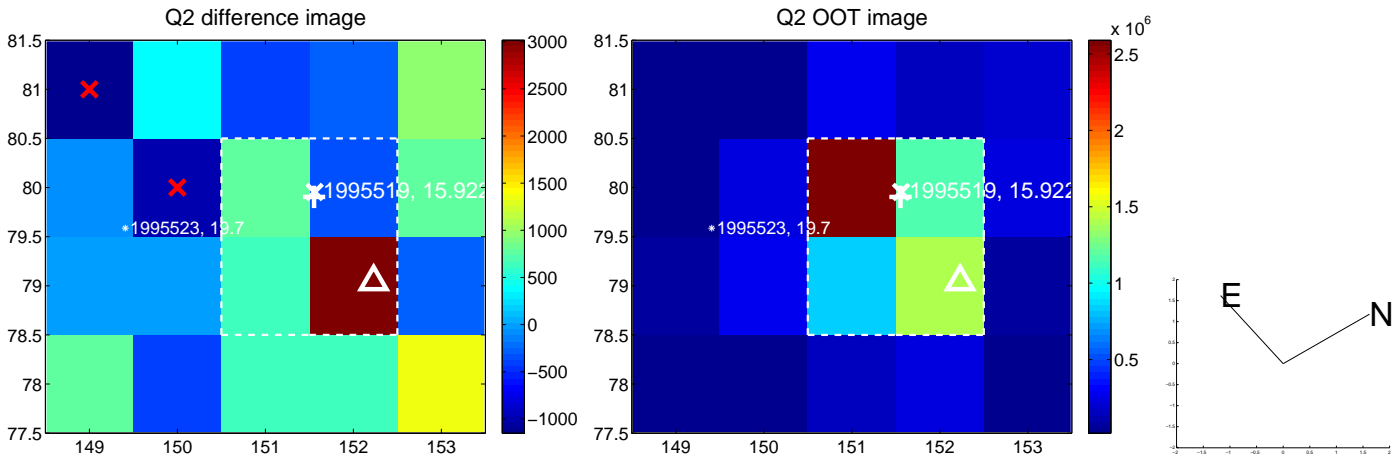
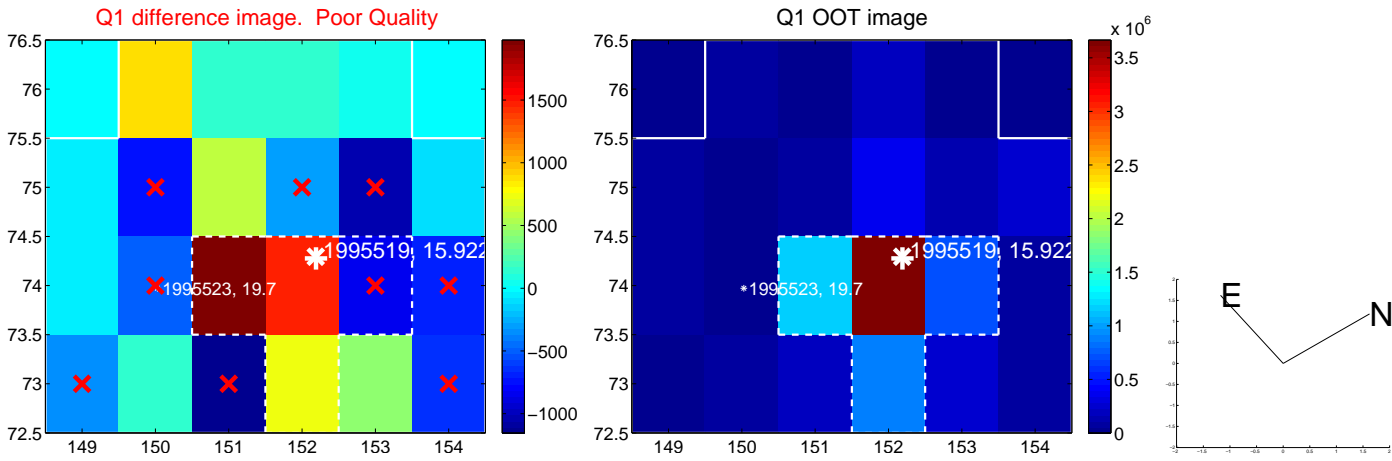
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.057 \pm 0.608$	1.74	$-1.052 \pm 0.561$	$0.108 \pm 0.656$
PRF-fit source offset from KIC position	$1.193 \pm 0.629$	1.90	$-1.189 \pm 0.589$	$0.094 \pm 0.677$
photometric centroid source offset	$0.91 \pm 0.86$	1.05	$-0.55 \pm 0.87$	$-0.72 \pm 0.86$

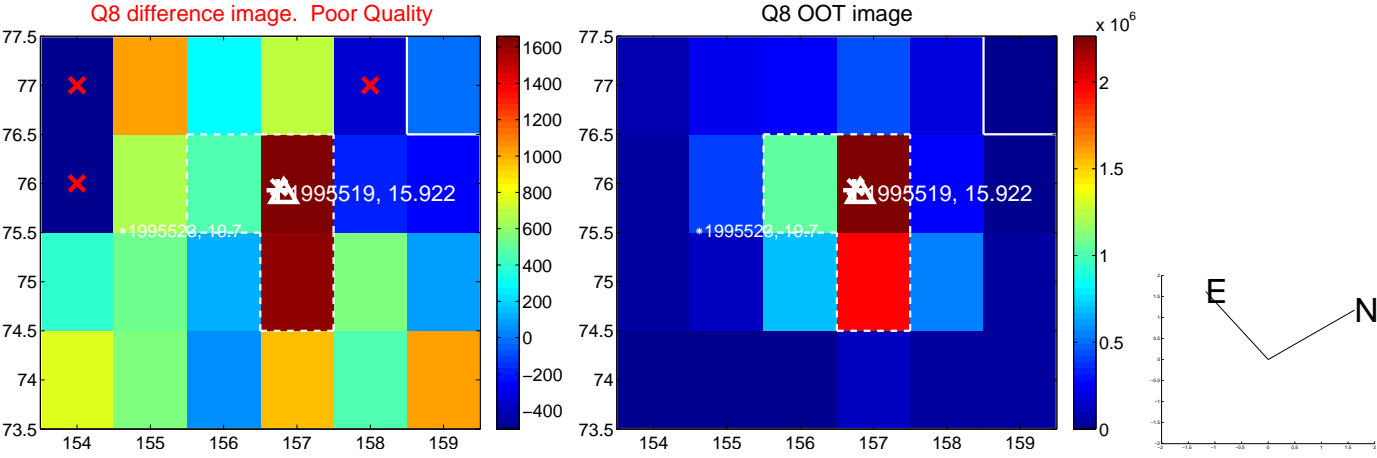
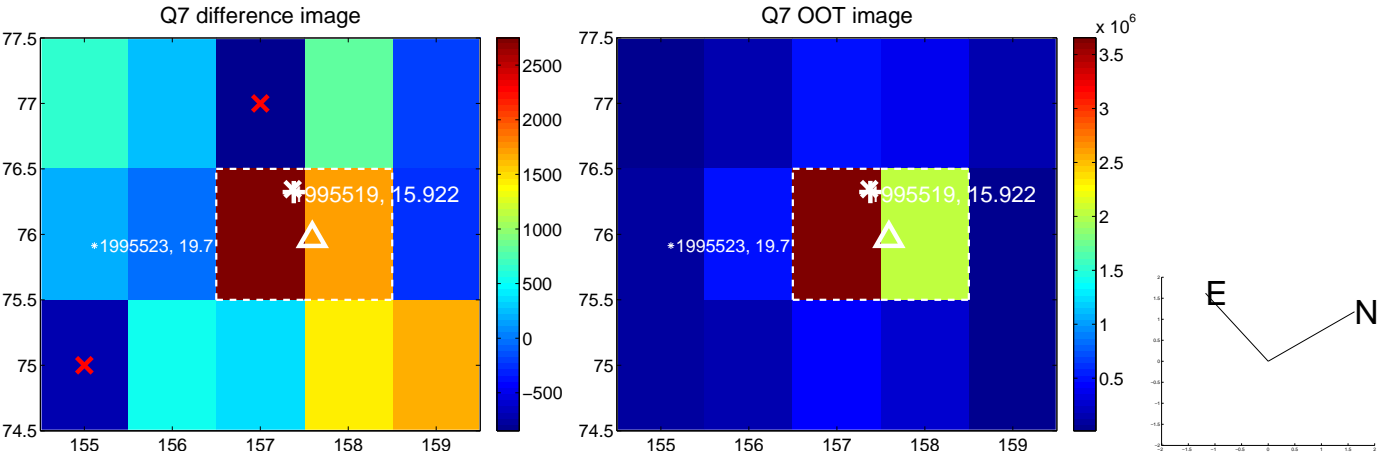
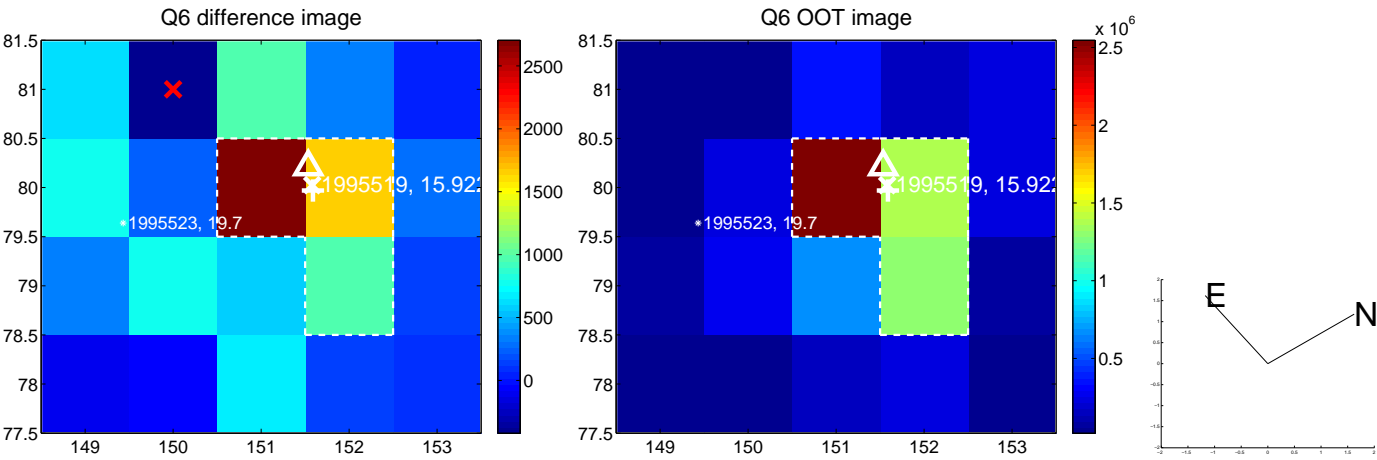
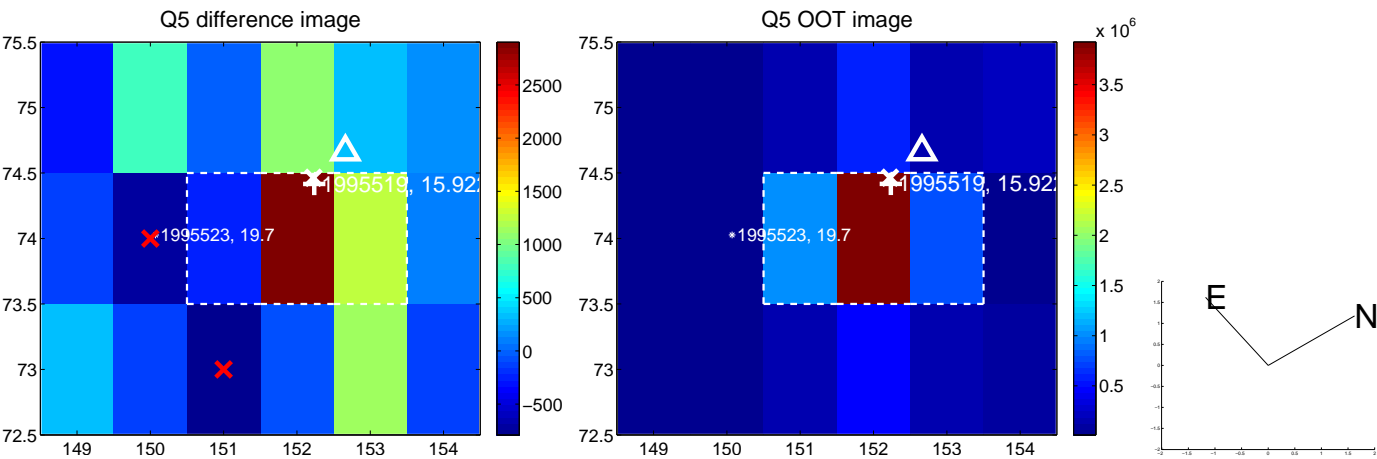


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

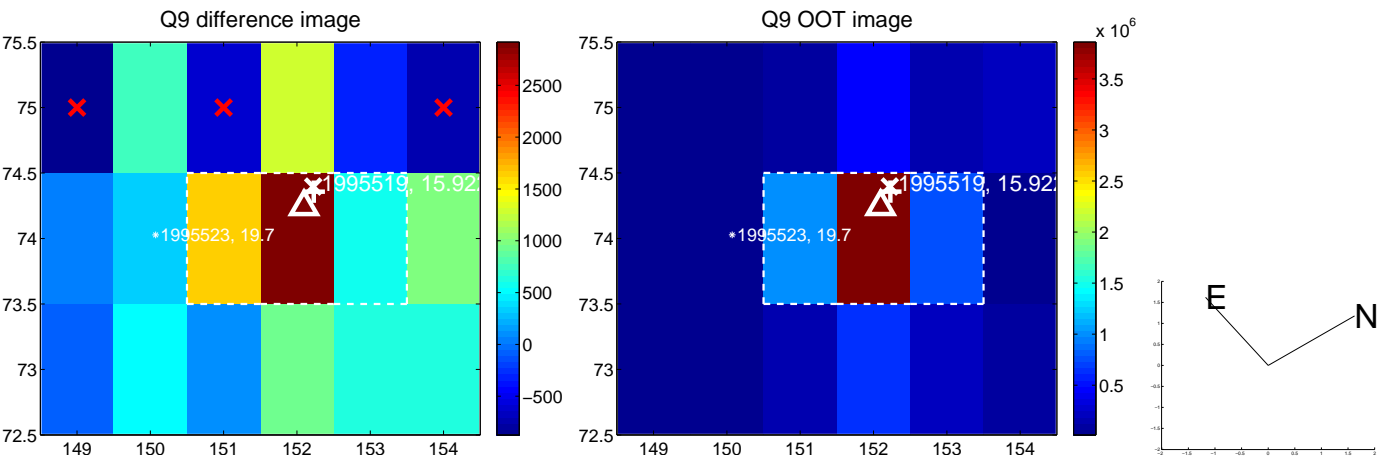
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



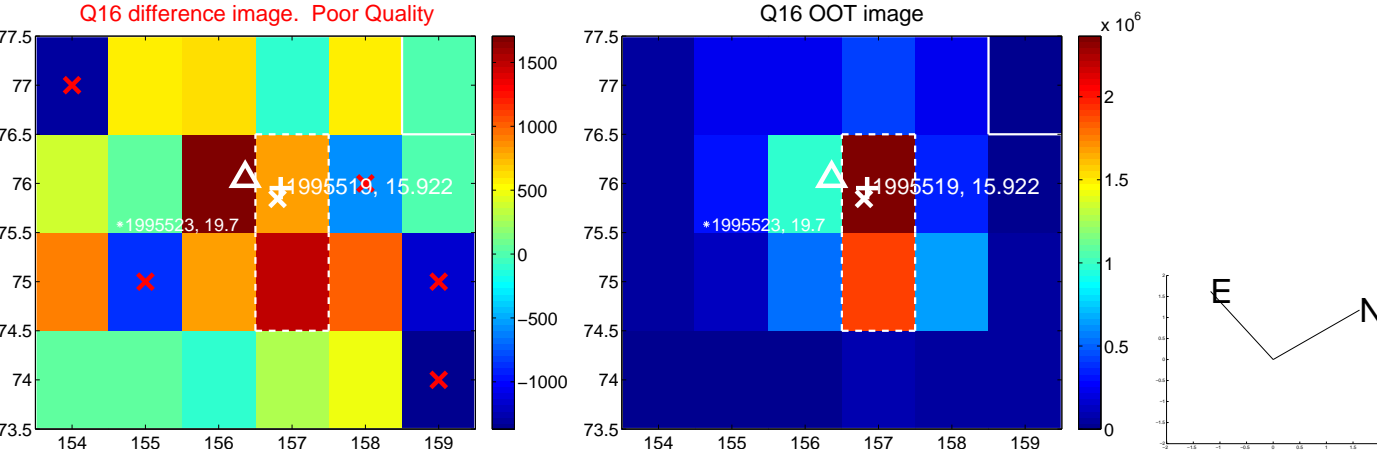
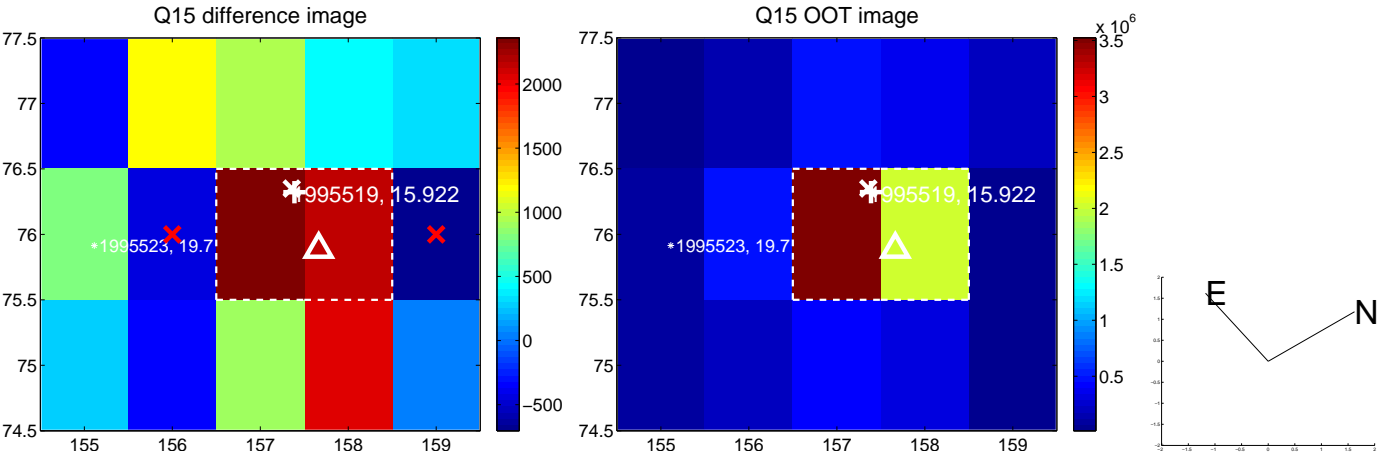
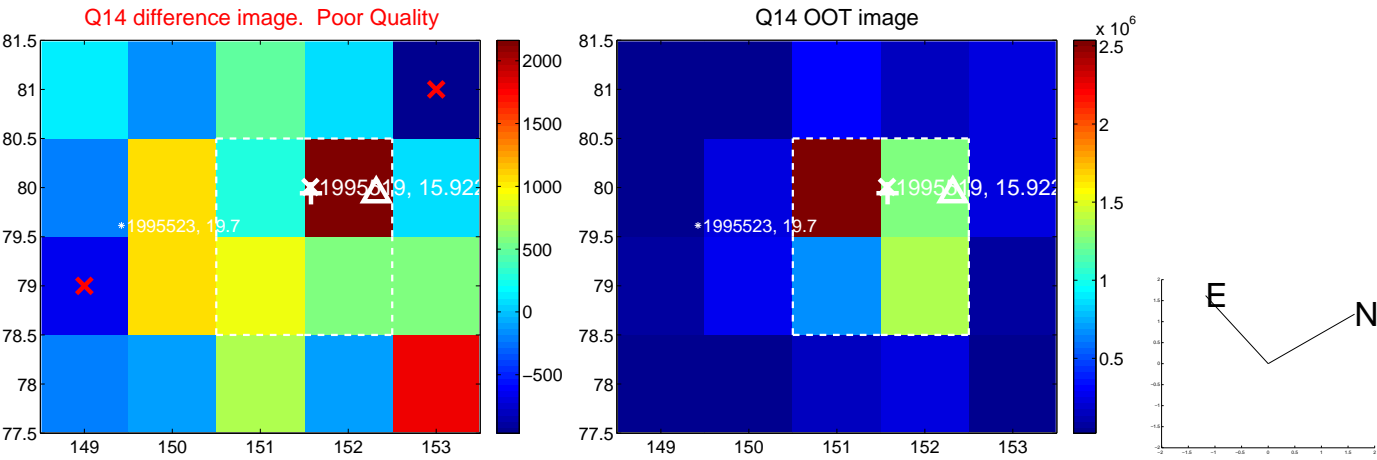
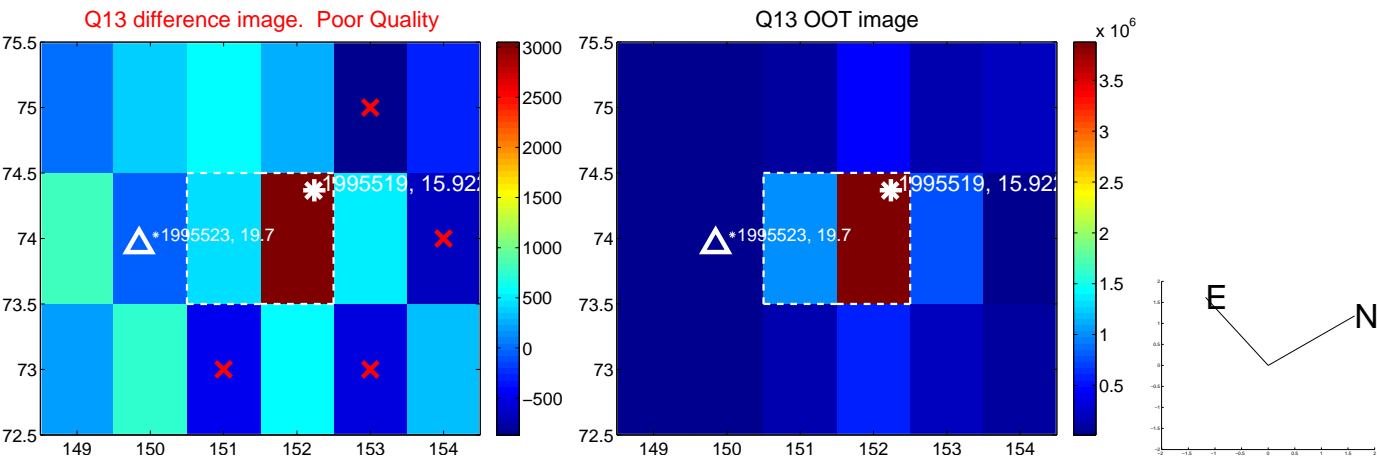
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

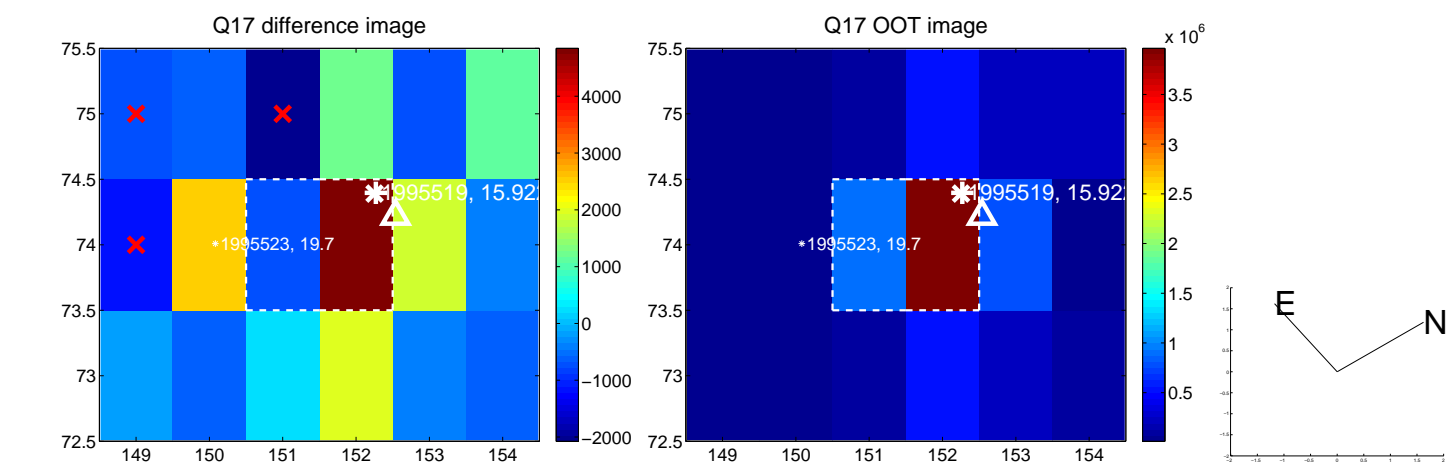


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

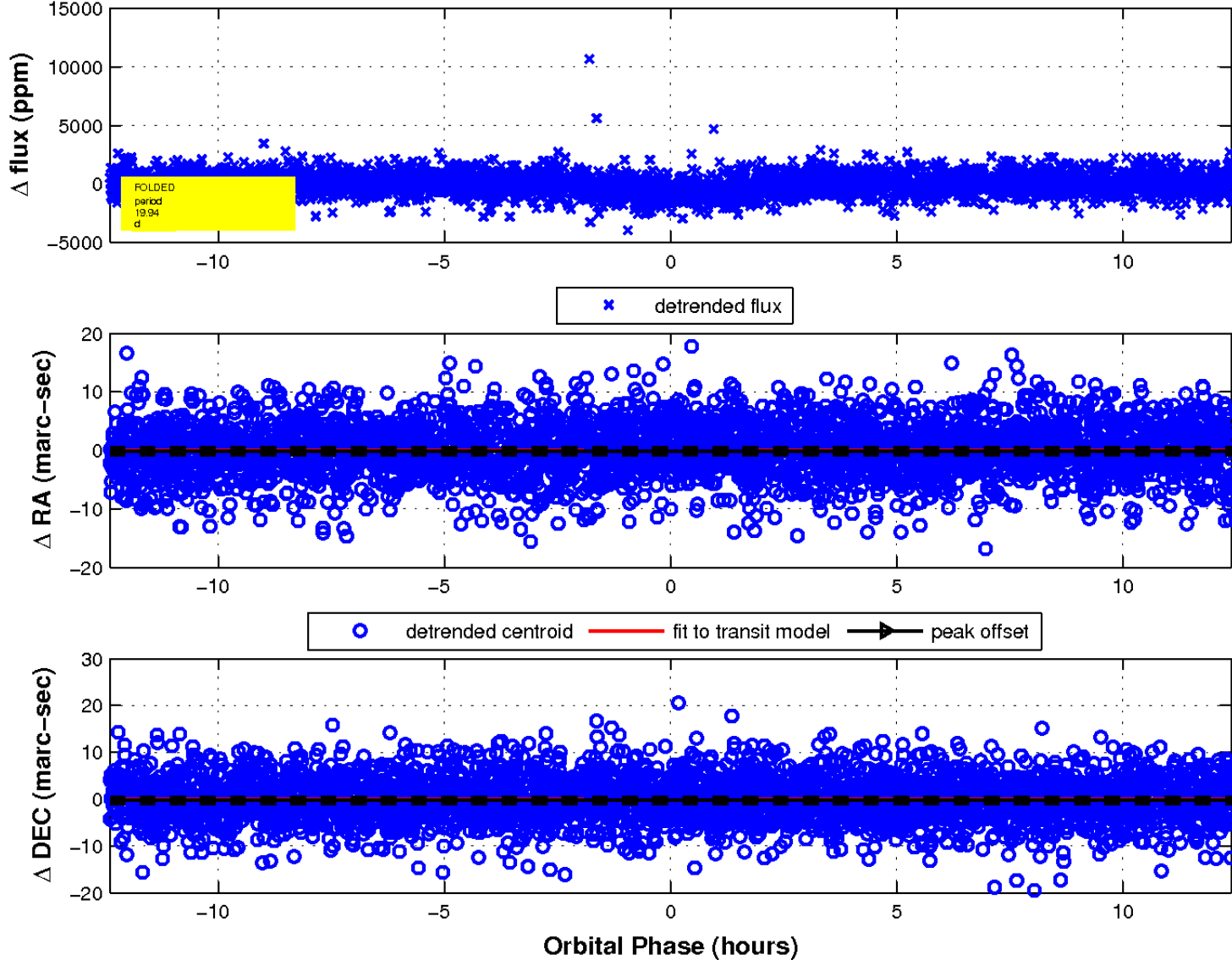




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

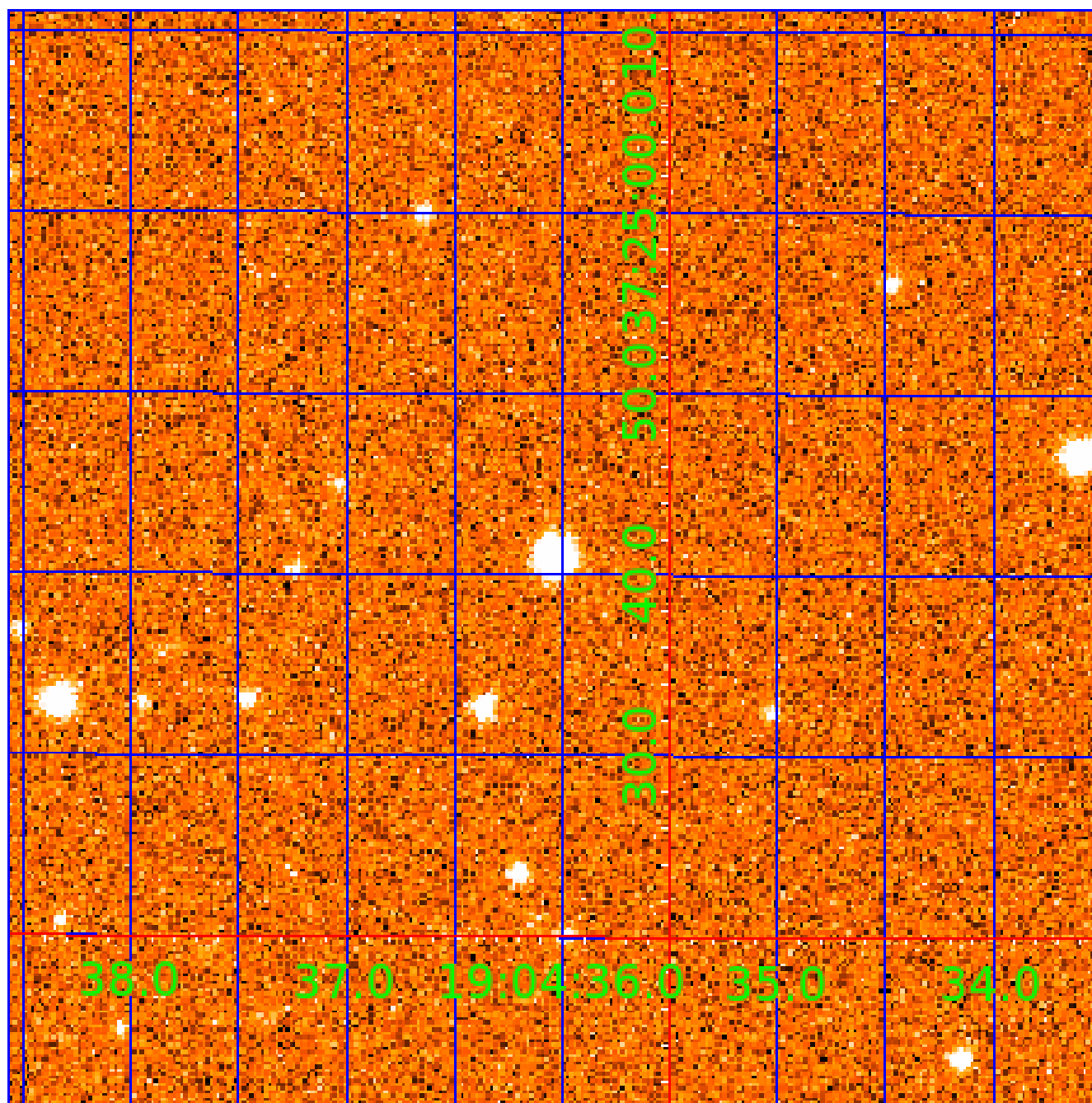


fluxWeightedCentroids, Planet 1 of 2



# UKIRT Image

Declination



# KIC 001995519

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
001995519-01	OBS	2634.01	19.940163	142.347721	747.8	4.134	15.5	17.3	0.76	5623	2.32	28.32
001995519-02	OBS	No	462.304757	307.673044	1229.5	5.338	7.6	6.7	0.76	5623	2.92	0.43

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
001995519-01	OBS	PC	0.95	0	0	0	0	NO_COMMENT
001995519-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_MEAS

**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 001995519-02

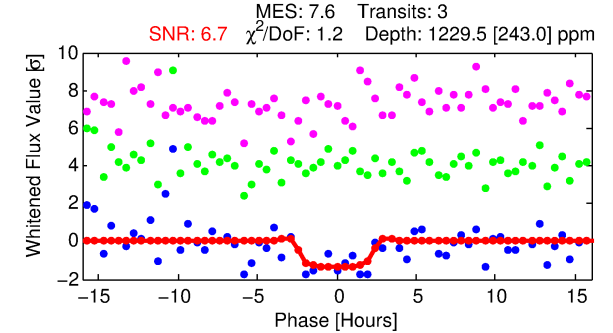
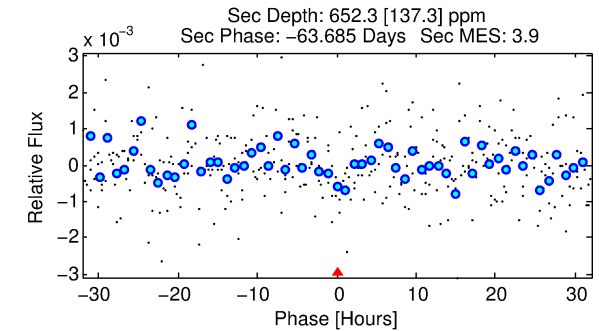
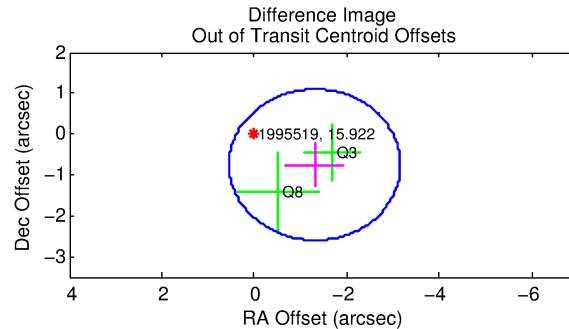
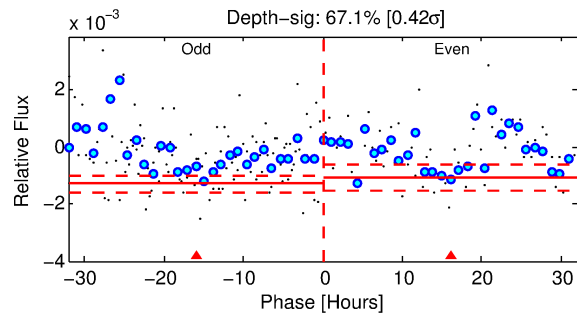
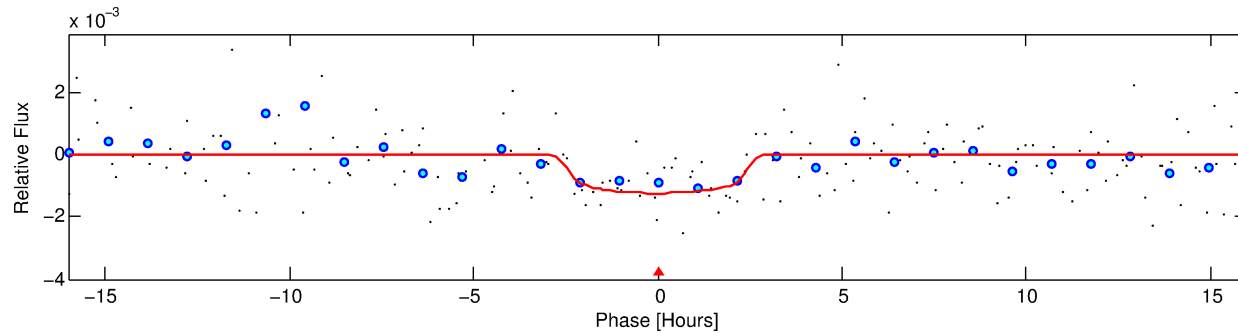
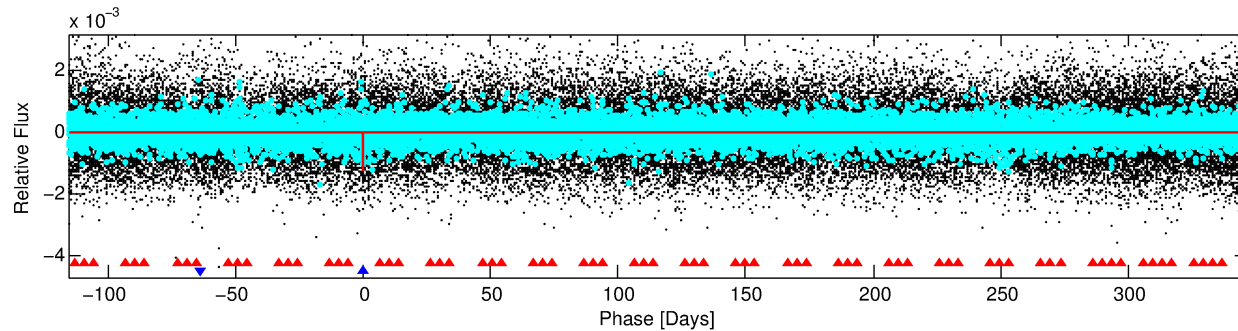
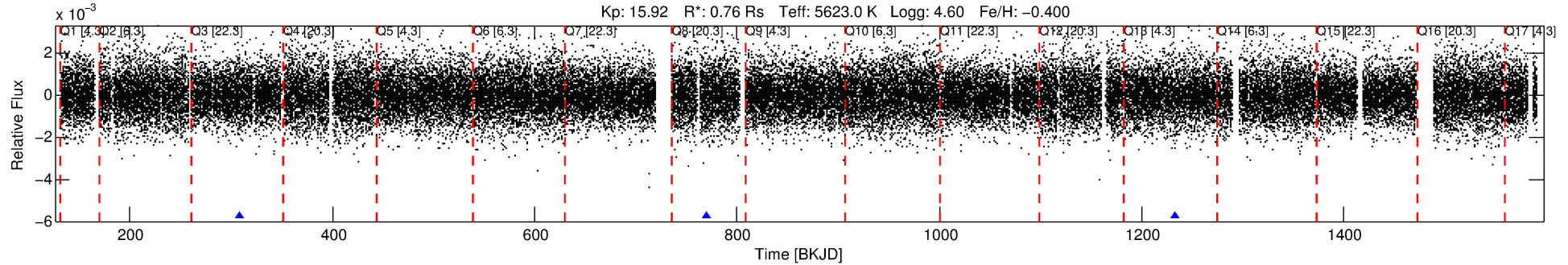
No Significant Match Found

# DV One-Page Summary

KIC: 1995519 Candidate: 2 of 2 Period: 462.305 d

KOI: K02634 Corr: No Ephemeris Match

Kp: 15.92 R\*: 0.76 Rs Teff: 5623.0 K Logg: 4.60 Fe/H: -0.400



## DV Fit Results:

Period = 462.30476 [0.01437] d  
Epoch = 307.6730 [0.0164] BKJD  
Rp/R\* = 0.0350 [0.0364]  
a/R\* = 465.60 [2135.74]  
b = 0.76 [2.60]  
Seff = 0.43 [0.11]  
Teq = 206 [13] K  
Rp = 2.92 [3.08] Re  
a = 1.1032 [0.1744] AU  
Ag = 51358.79 [107867.58] [0.48σ]  
Teff = 4802 [2511] K [1.83σ]

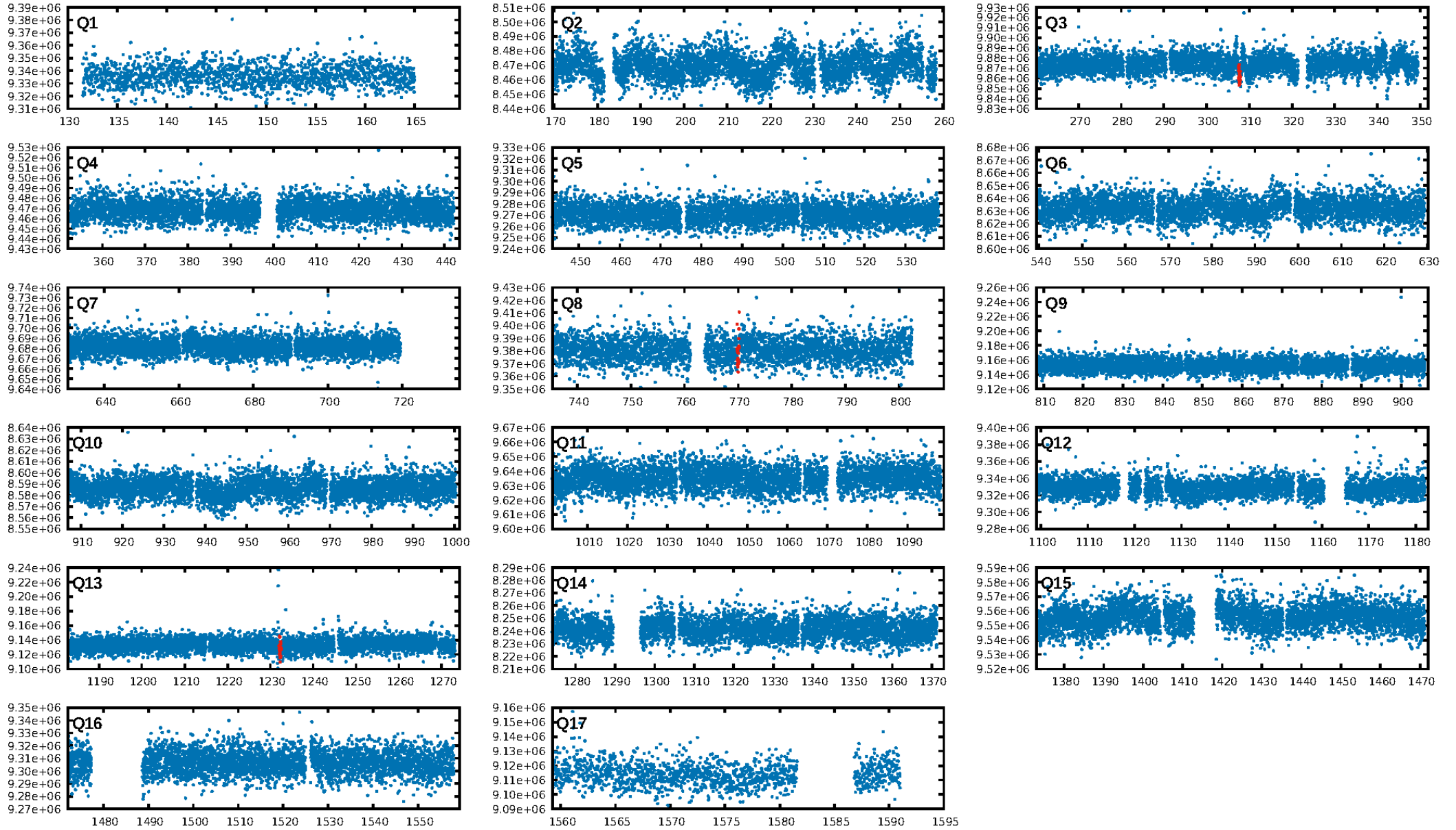
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1572.53σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 48.1%  
ModelChiSquareGof-sig: 96.6%  
Bootstrap-pfa: 4.59e-13  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 9.805  
Centroid-sig: 43.5%  
Centroid-so: 1.671 arcsec [0.84σ]  
OotOffset-rm: 1.505 arcsec [2.44σ]  
KicOffset-rm: 1.610 arcsec [2.38σ]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 19:23:58 Z

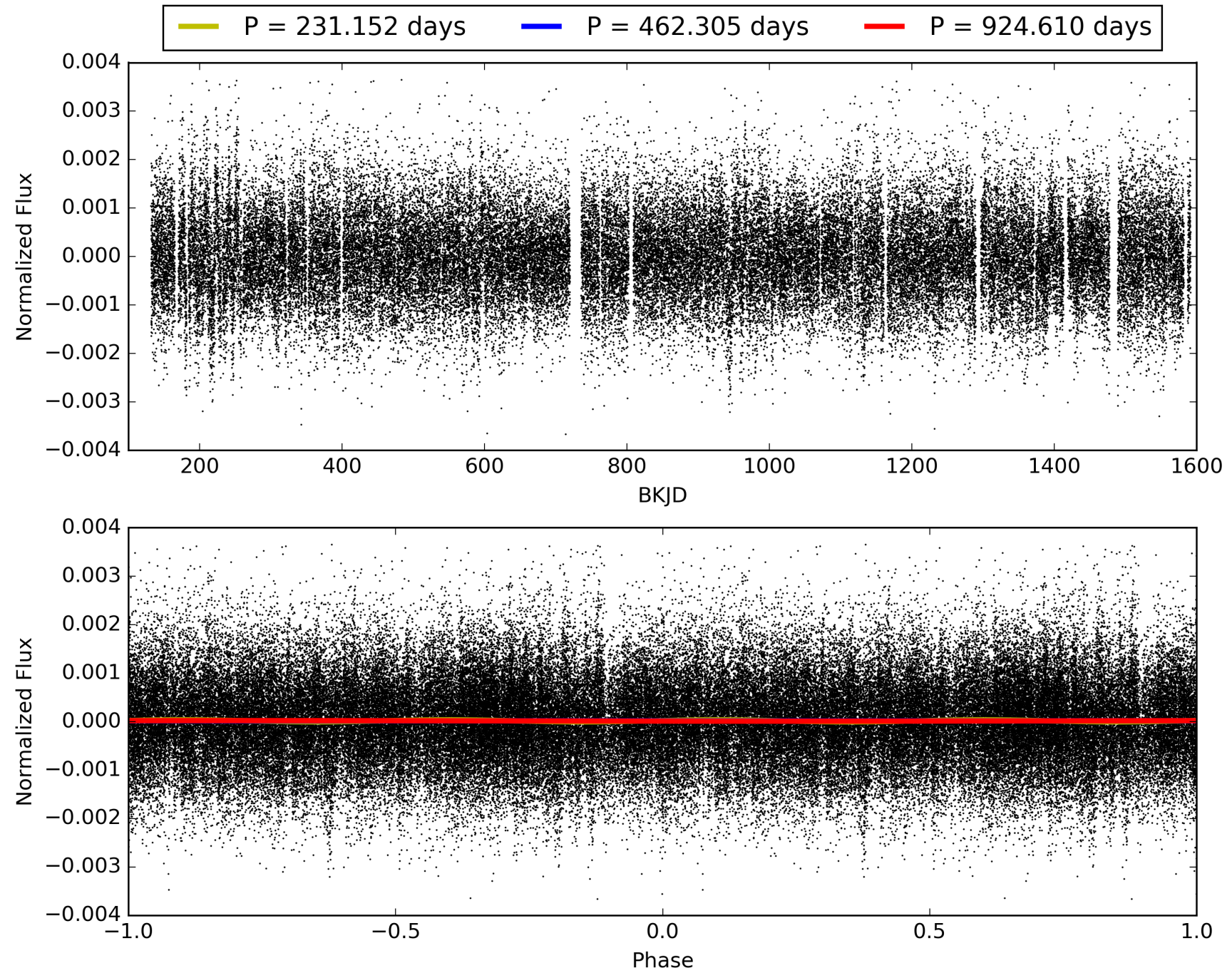
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 001995519-02, PDC Light Curves



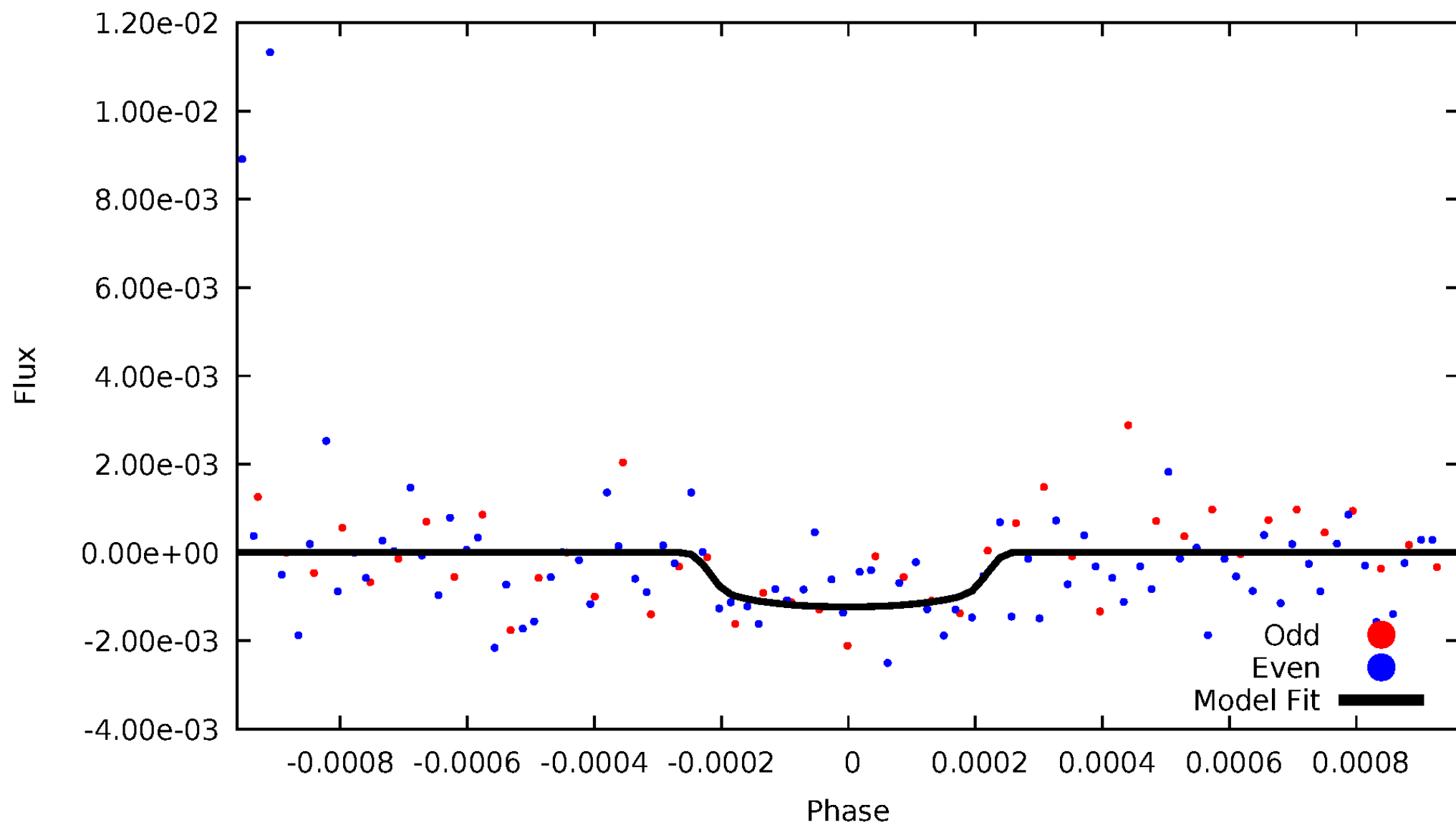


TCE 001995519-02



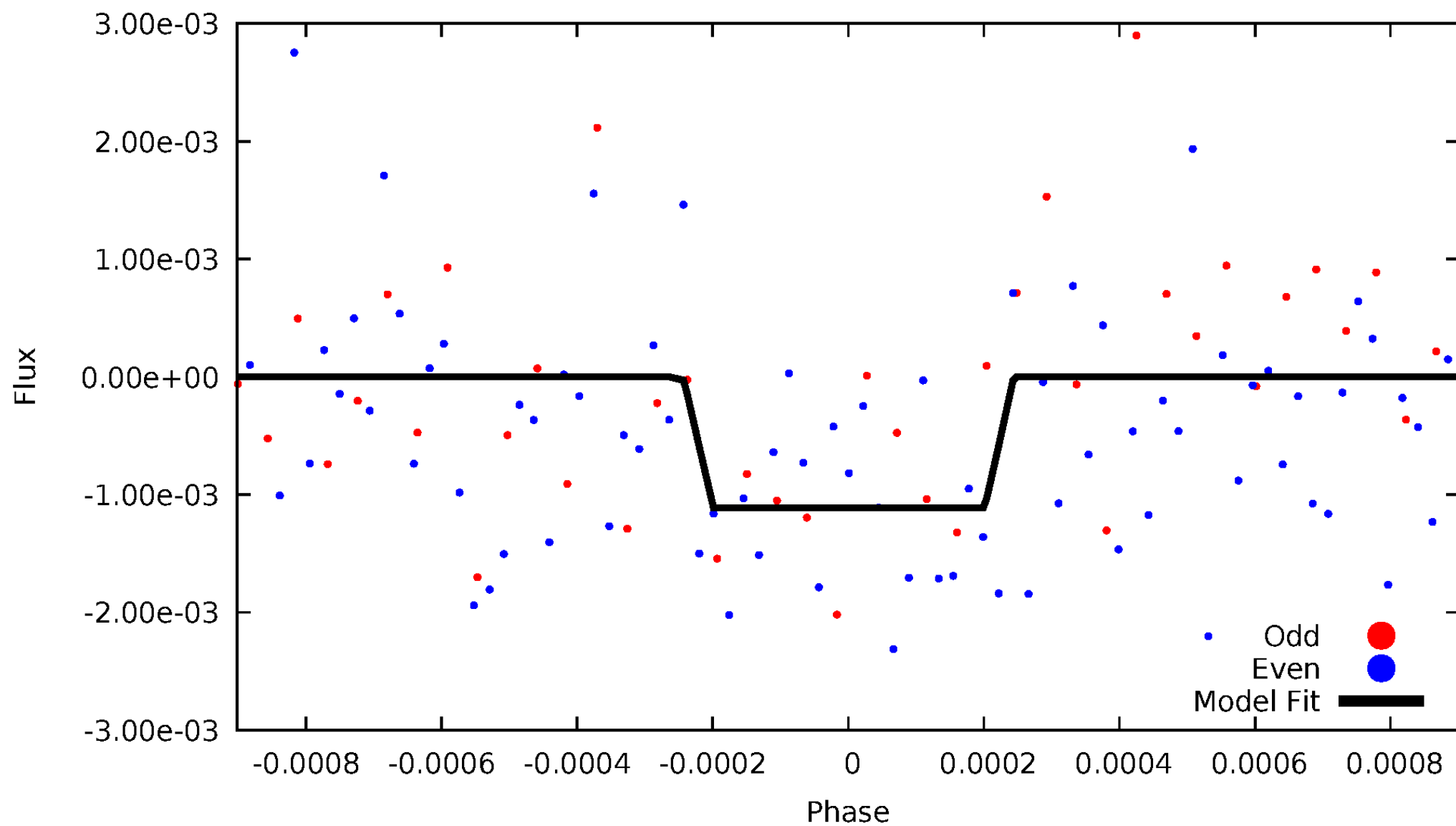
# DV Odd/Even

TCE 001995519-02



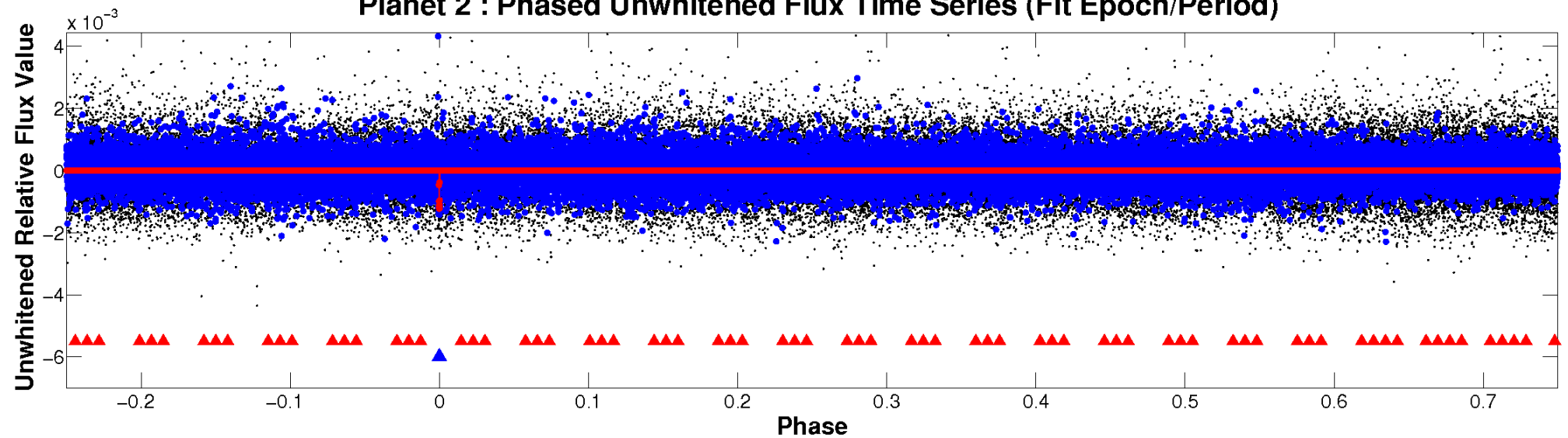
# ALT Odd/Even

TCE 001995519-02

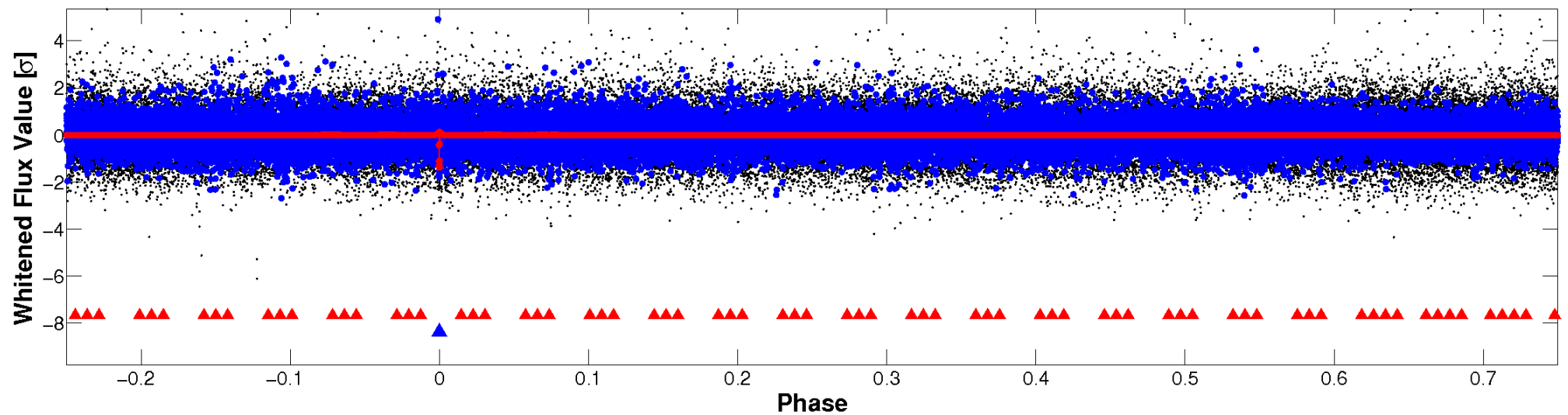


# Non-Whitened Vs. Whitened Light Curve

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

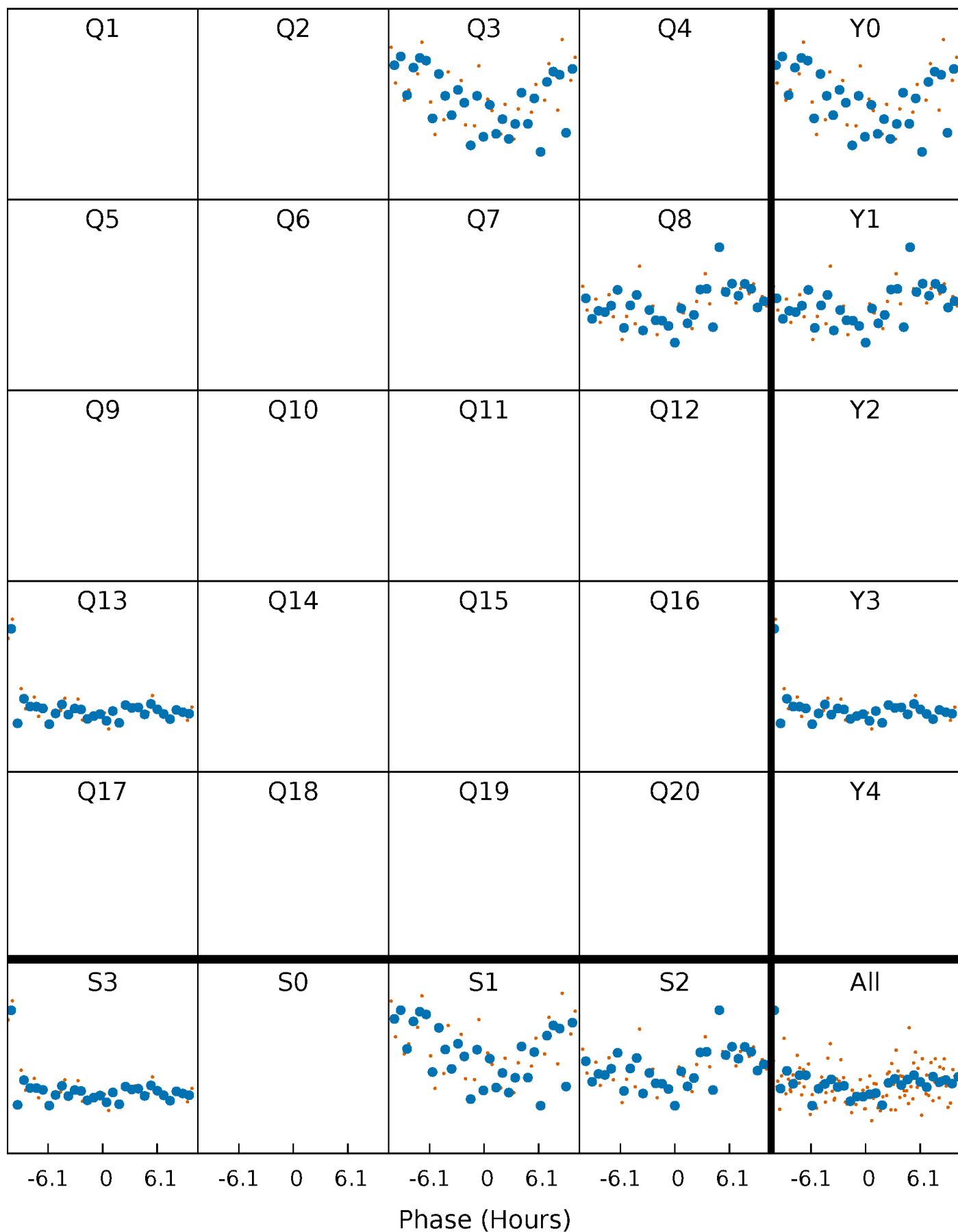


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

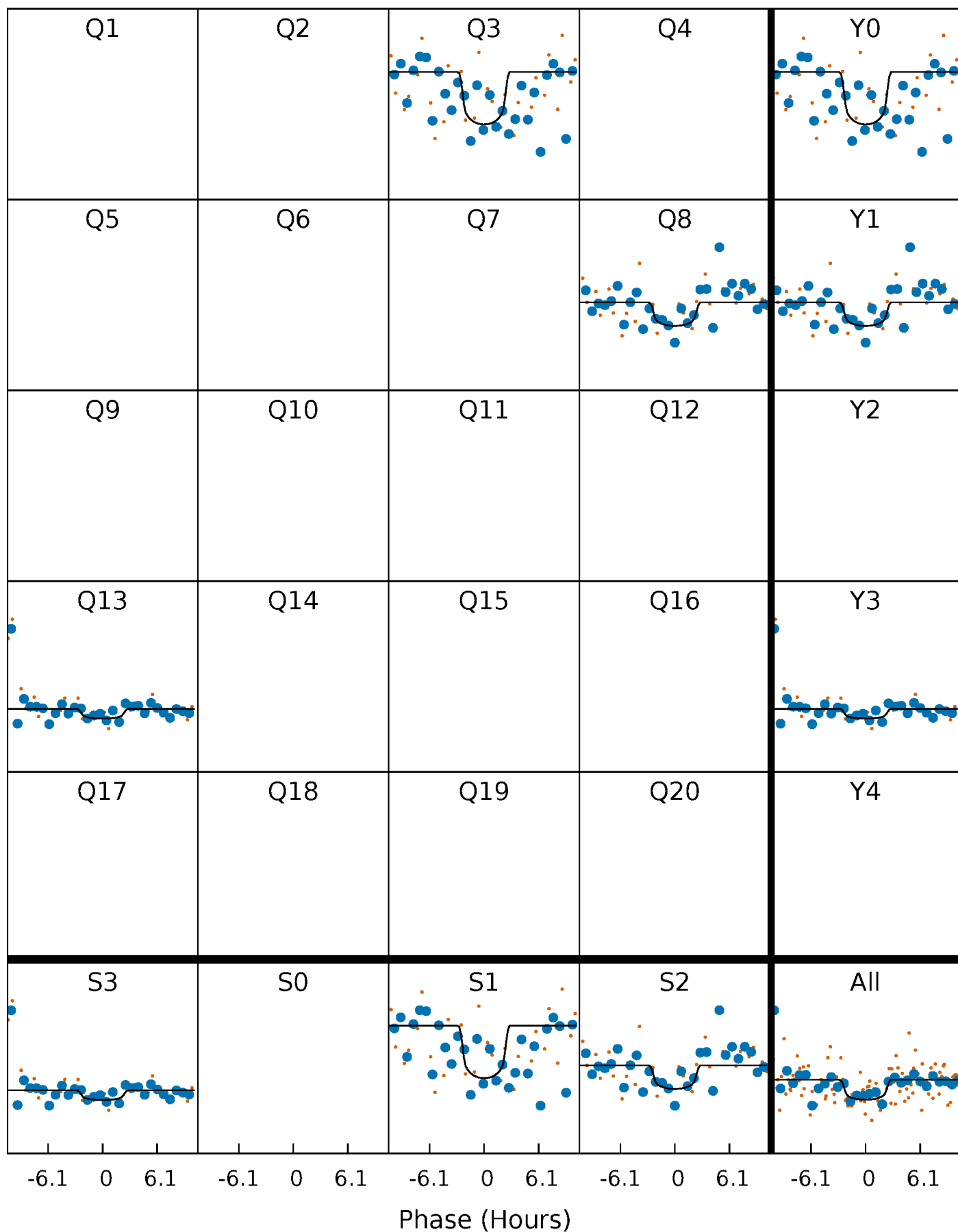
TCE 001995519-02     $P=462.304757$  Days     $T_0=307.673045$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 001995519-02     $P=462.304757$  Days     $T_0=307.673045$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

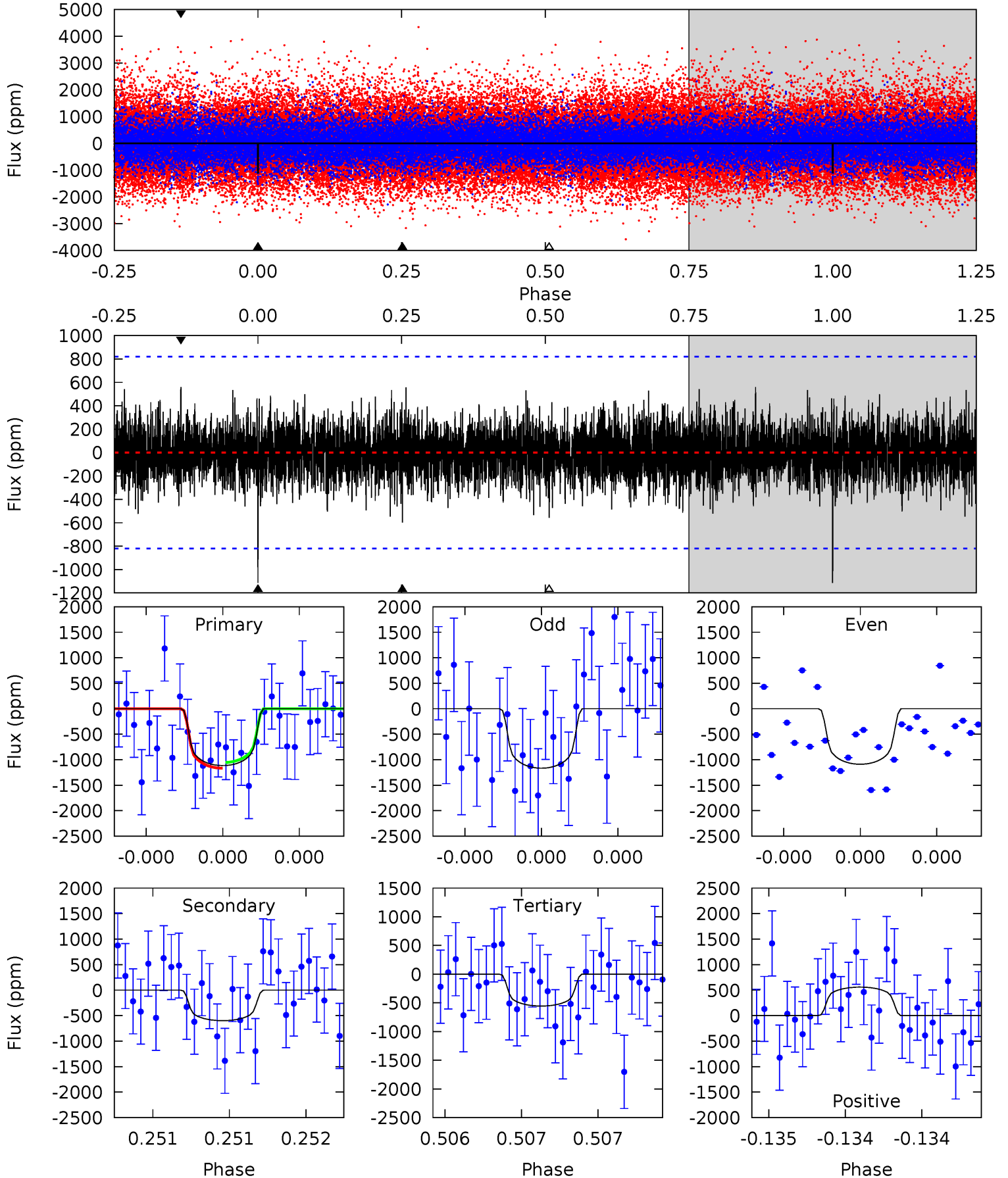
TCE 001995519-02     $P=462.295673$  Days     $T_0=307.689226$  (BKJD)



# DV Model-Shift Uniqueness Test

001995519-02, P = 462.304757 Days, E = 307.673045 Days

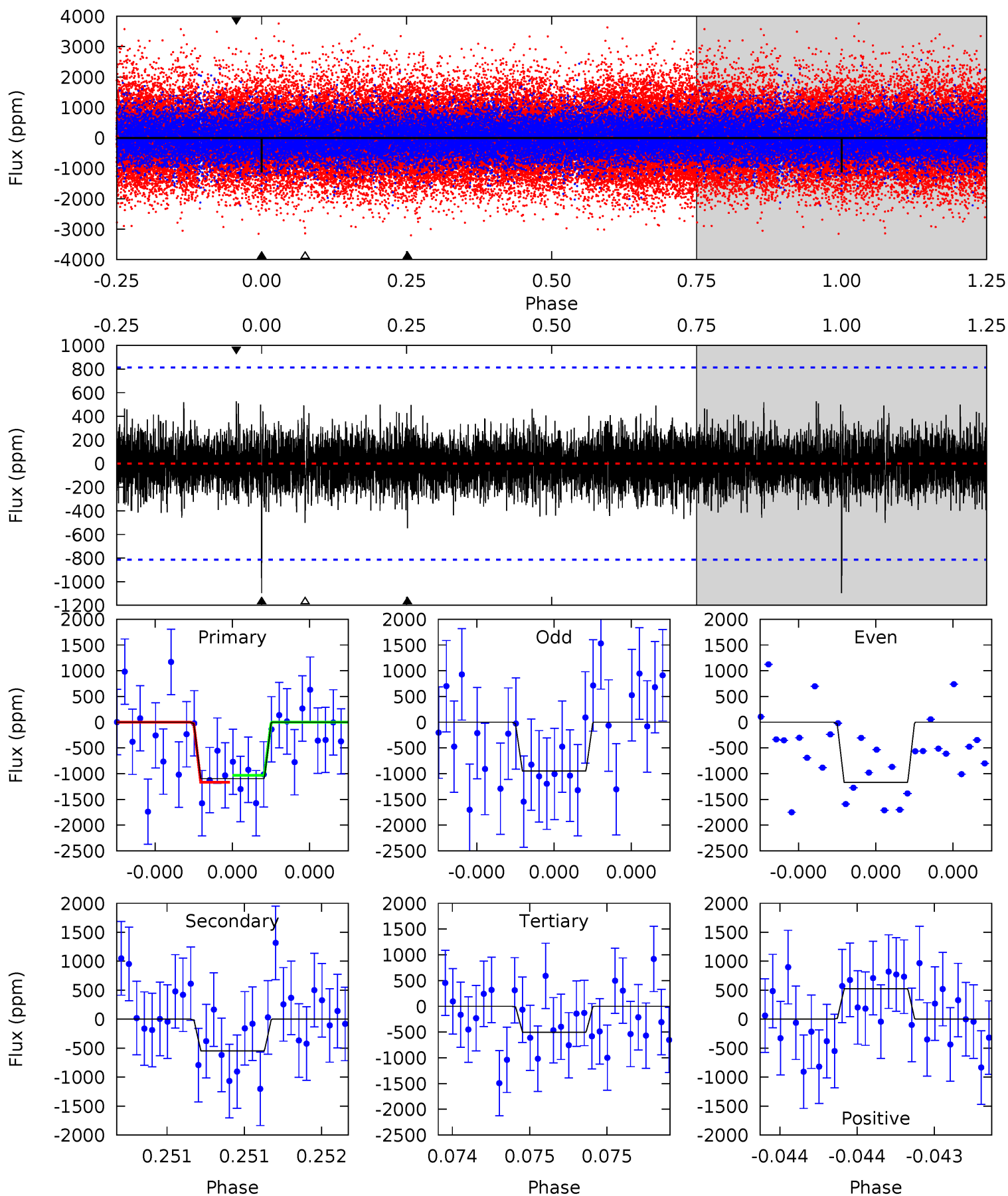
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.59	4.07	3.78	3.80	5.58	3.49	1.07	3.81	3.78	0.29	0.27	0.25	0.96	0.33	0.38



# Alt Model-Shift Uniqueness Test

001995519-02, P = 462.295673 Days, E = 307.689226 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
7.52	3.75	3.44	3.61	5.58	3.49	0.93	4.08	3.91	0.31	0.14	0.73	1.15	0.32	0.46



### Stellar Parameters For KIC 001995519

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5623^{+152}_{-169}$	$4.596^{+0.040}_{-0.120}$	$-0.400^{+0.300}_{-0.300}$	$0.763^{+0.147}_{-0.063}$	$0.853^{+0.080}_{-0.097}$	$2.704^{+0.454}_{-1.006}$
	+3%/-3%	+1%/-3%	+75%/-75%	+19%/-8%	+9%/-11%	+17%/-37%
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 001995519-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-598 \pm 147$	$3.77^{+2.61}_{-2.53}$	$292^{+14}_{-12}$	$4341^{+3105}_{-732}$	$26277^{+262631}_{-17125}$
Alt.	$-547 \pm 146$	$3.81^{+2.99}_{-2.39}$	$292^{+13}_{-11}$	$4302^{+2423}_{-840}$	$25128^{+155556}_{-18153}$

$T_{max}$  = 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

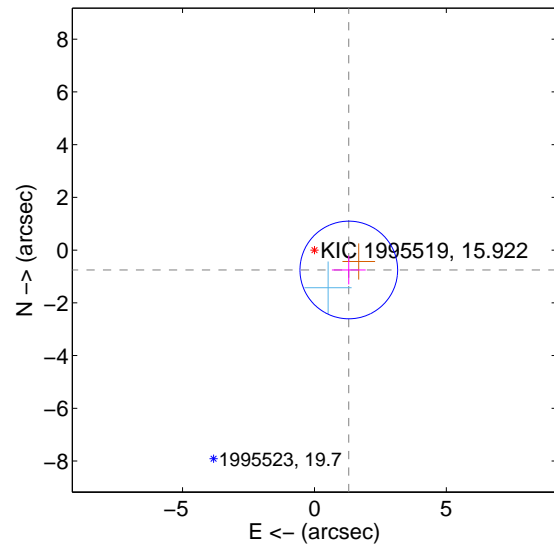
Supplemental centroid analysis for 001995519-02. Kepler magnitude: 15.92. Transit SNR 6.74

There are 1 quarters with good PRF difference image offsets

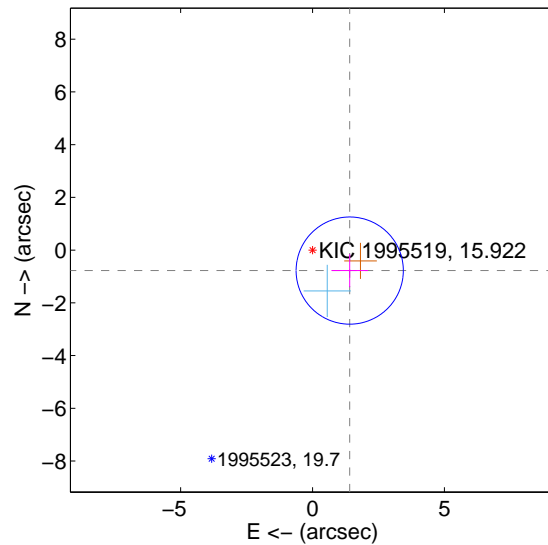
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.505 \pm 0.617$	2.44	$-1.303 \pm 0.639$	$-0.754 \pm 0.546$
PRF-fit source offset from KIC position	$1.610 \pm 0.678$	2.38	$-1.410 \pm 0.692$	$-0.777 \pm 0.627$
photometric centroid source offset	$1.67 \pm 1.99$	0.84	$0.79 \pm 2.09$	$-1.47 \pm 1.96$

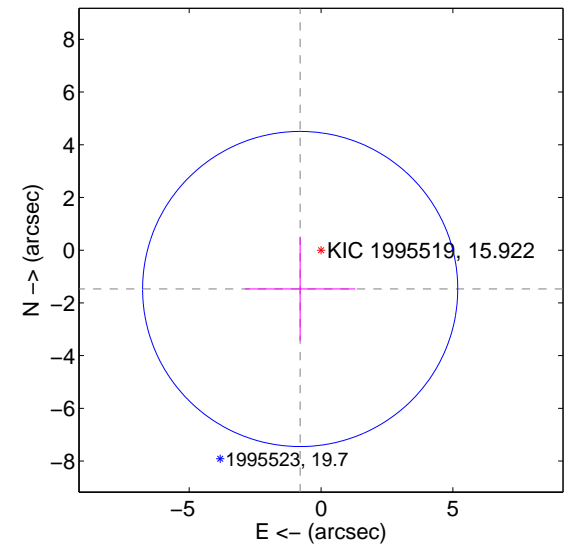
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

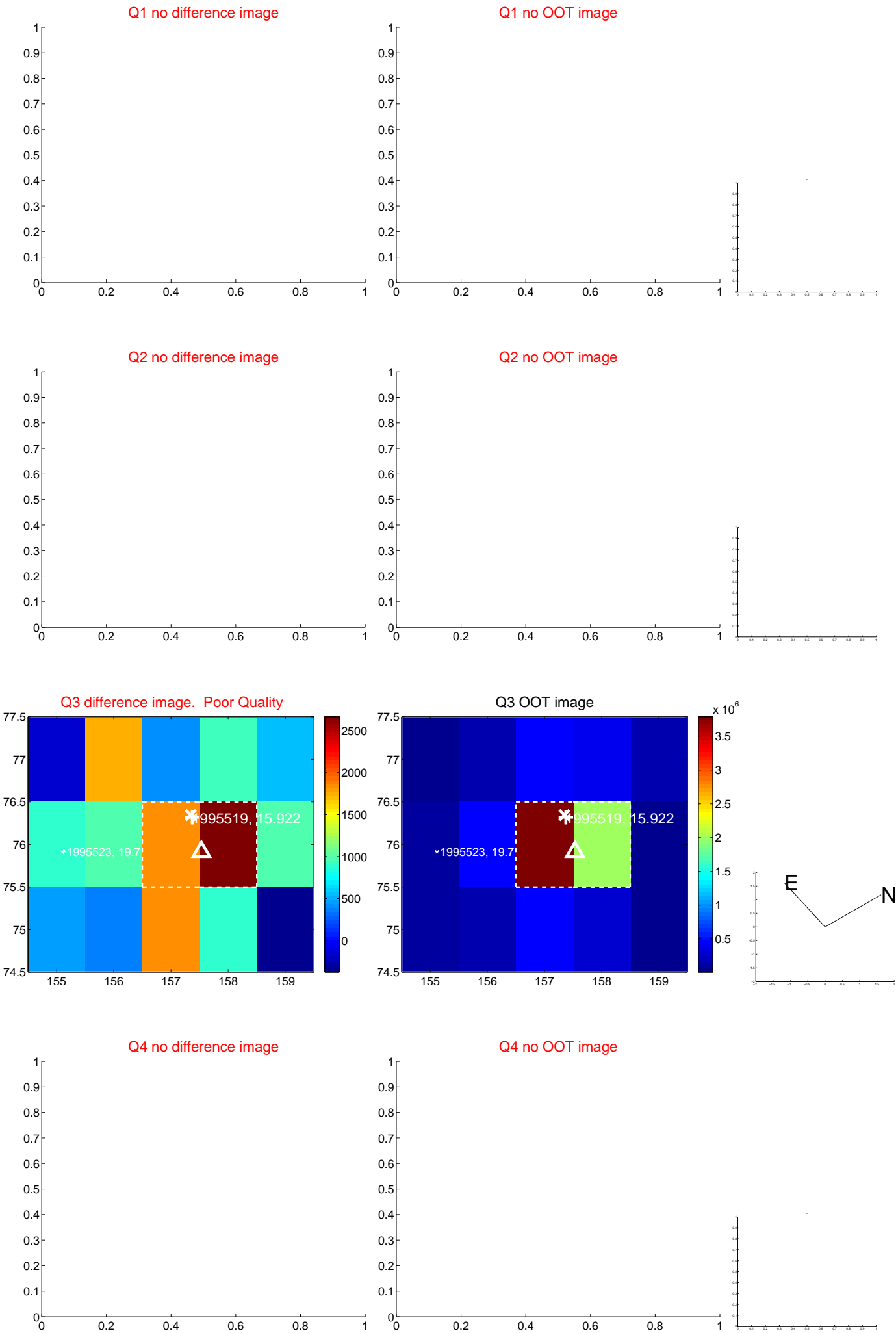


offset from photometric centroids



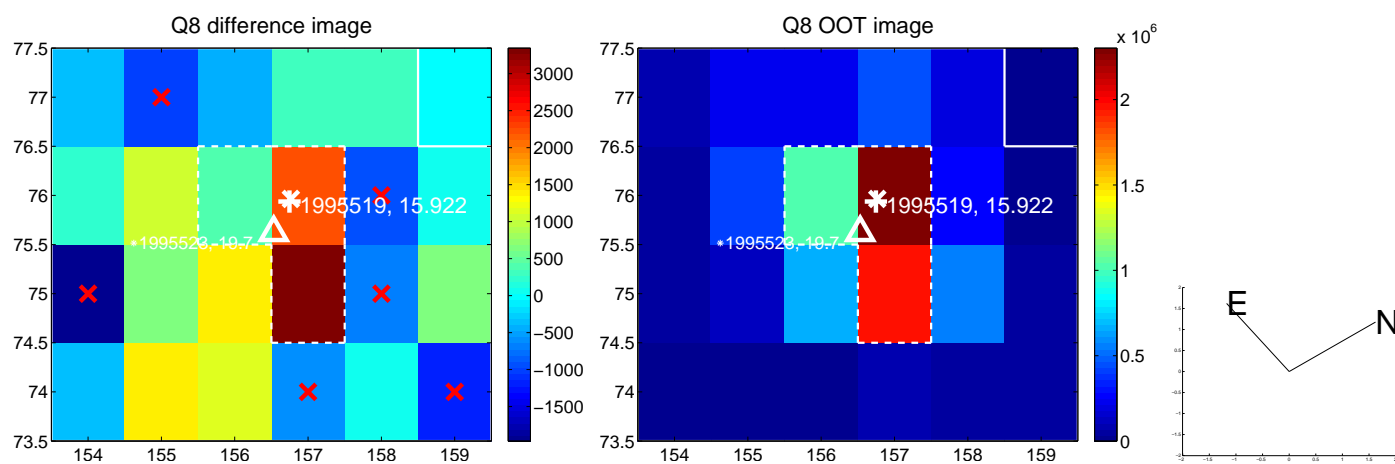
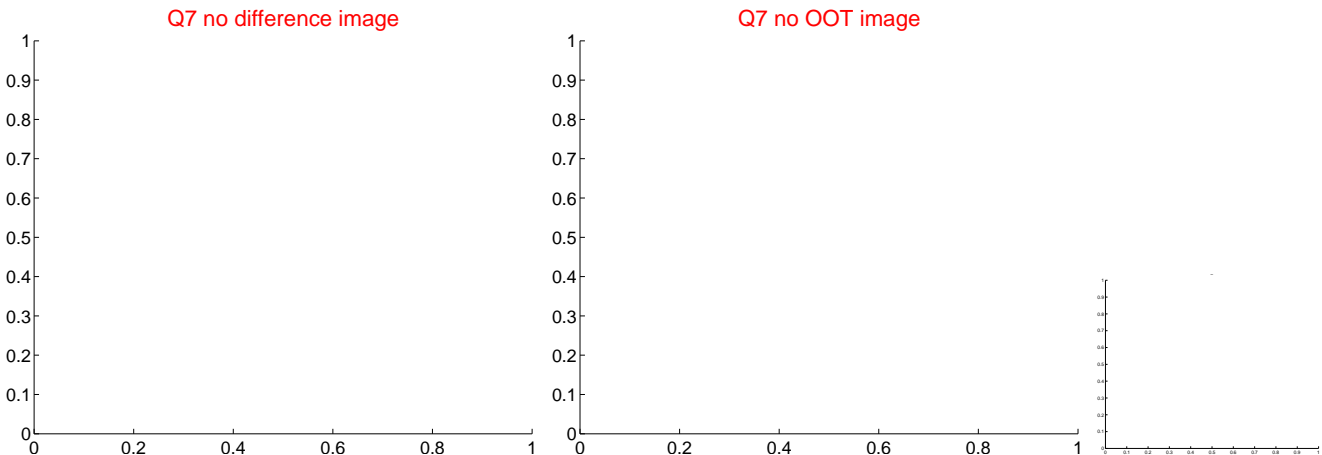
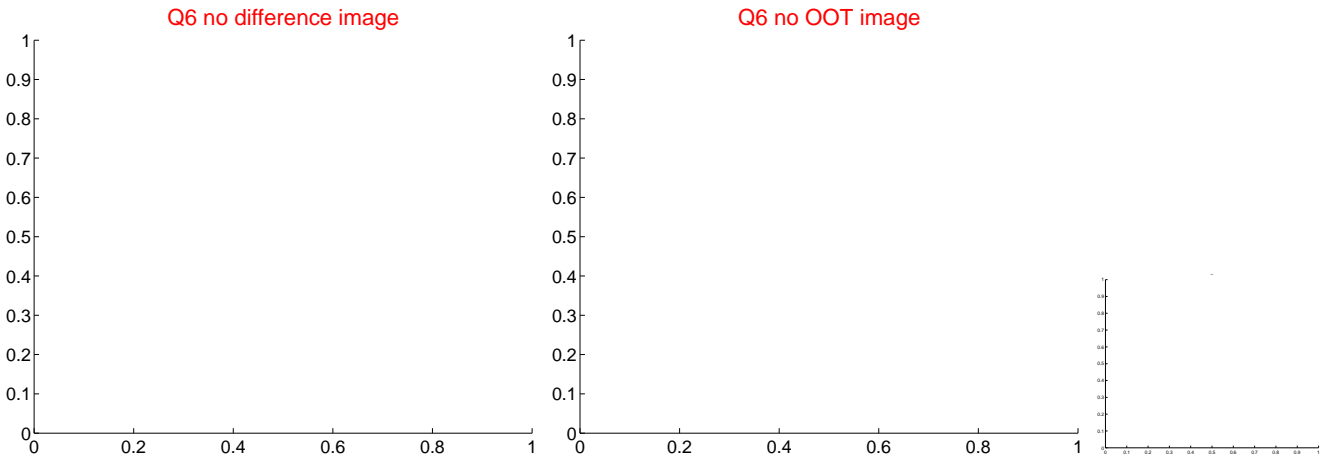
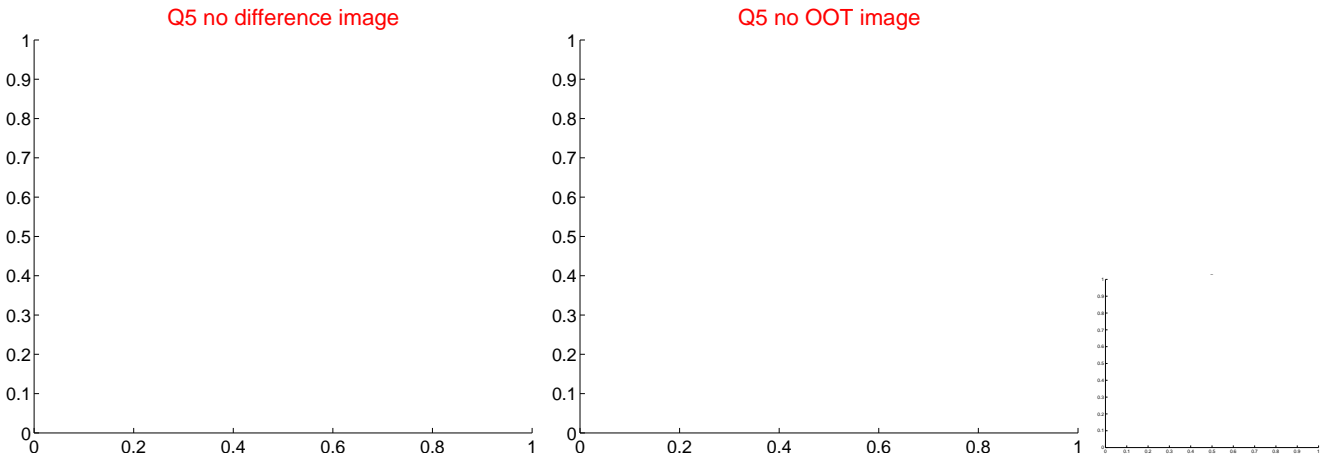
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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





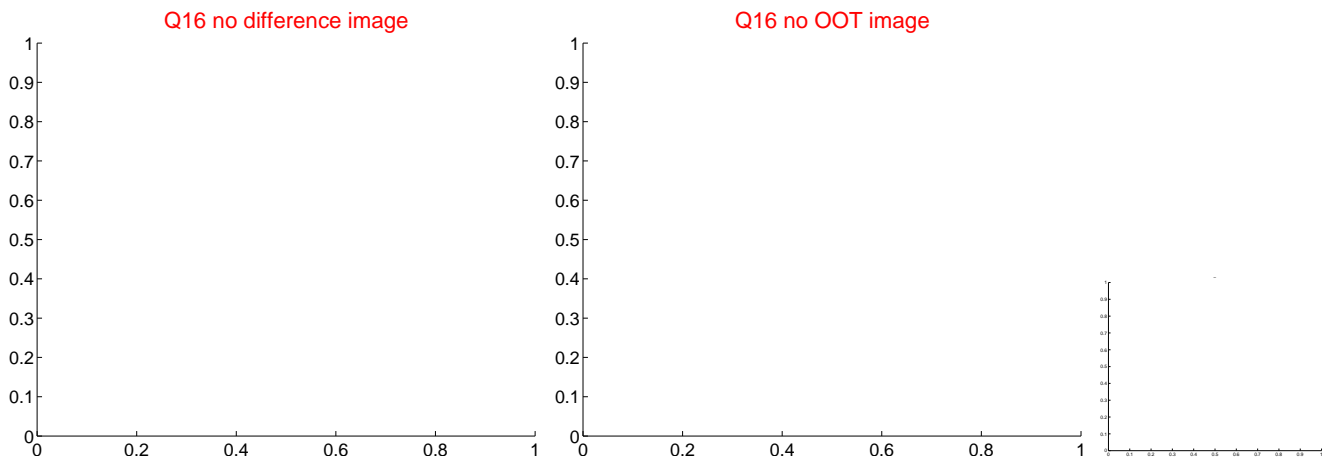
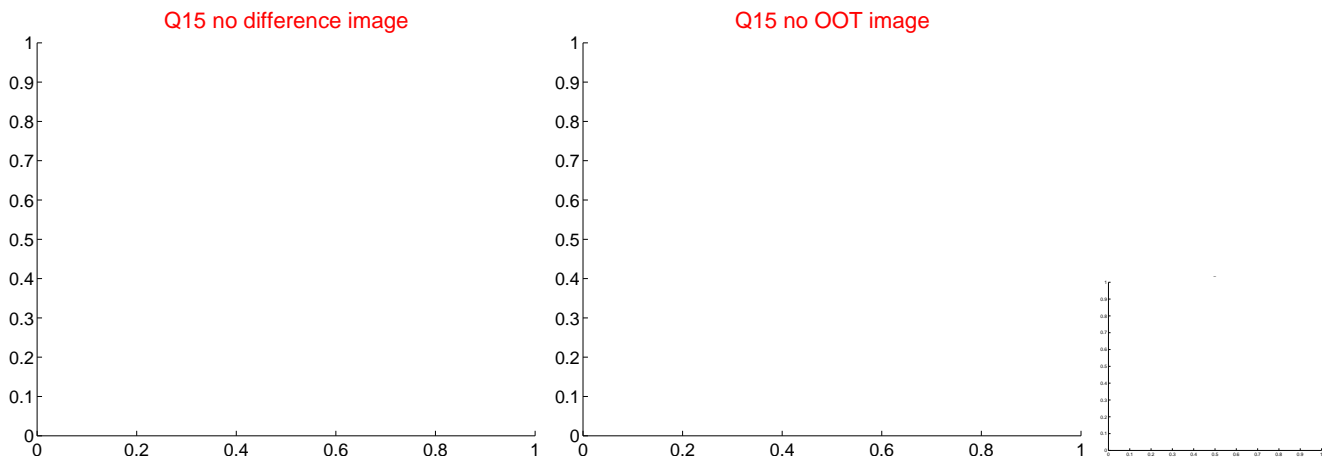
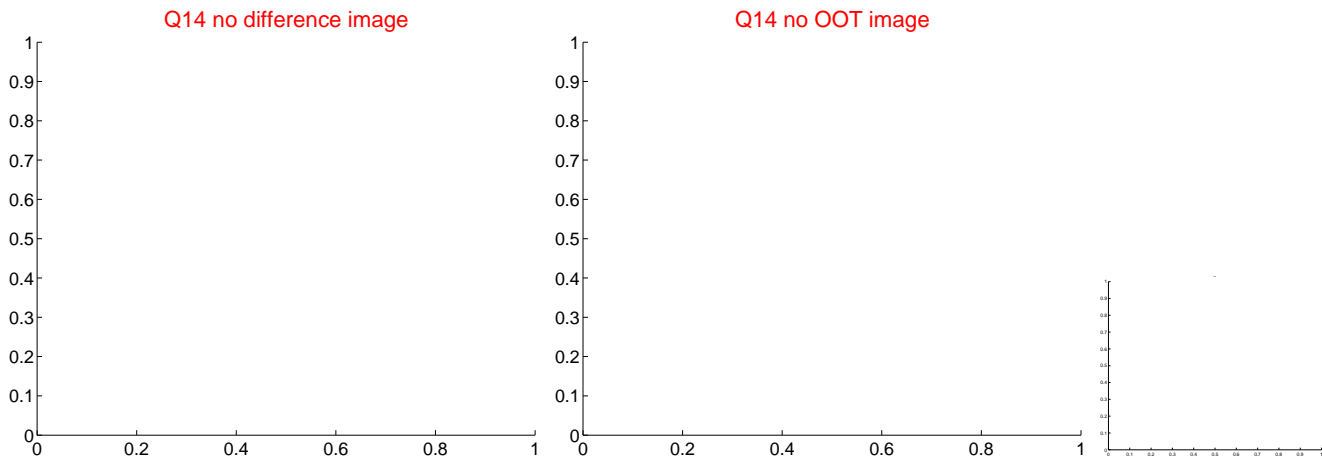
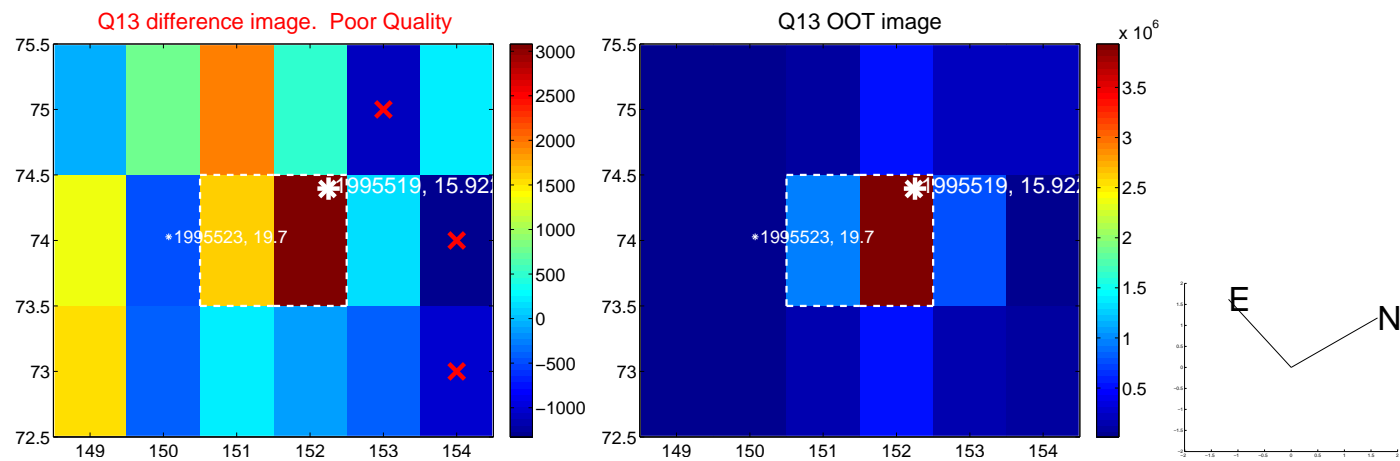
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



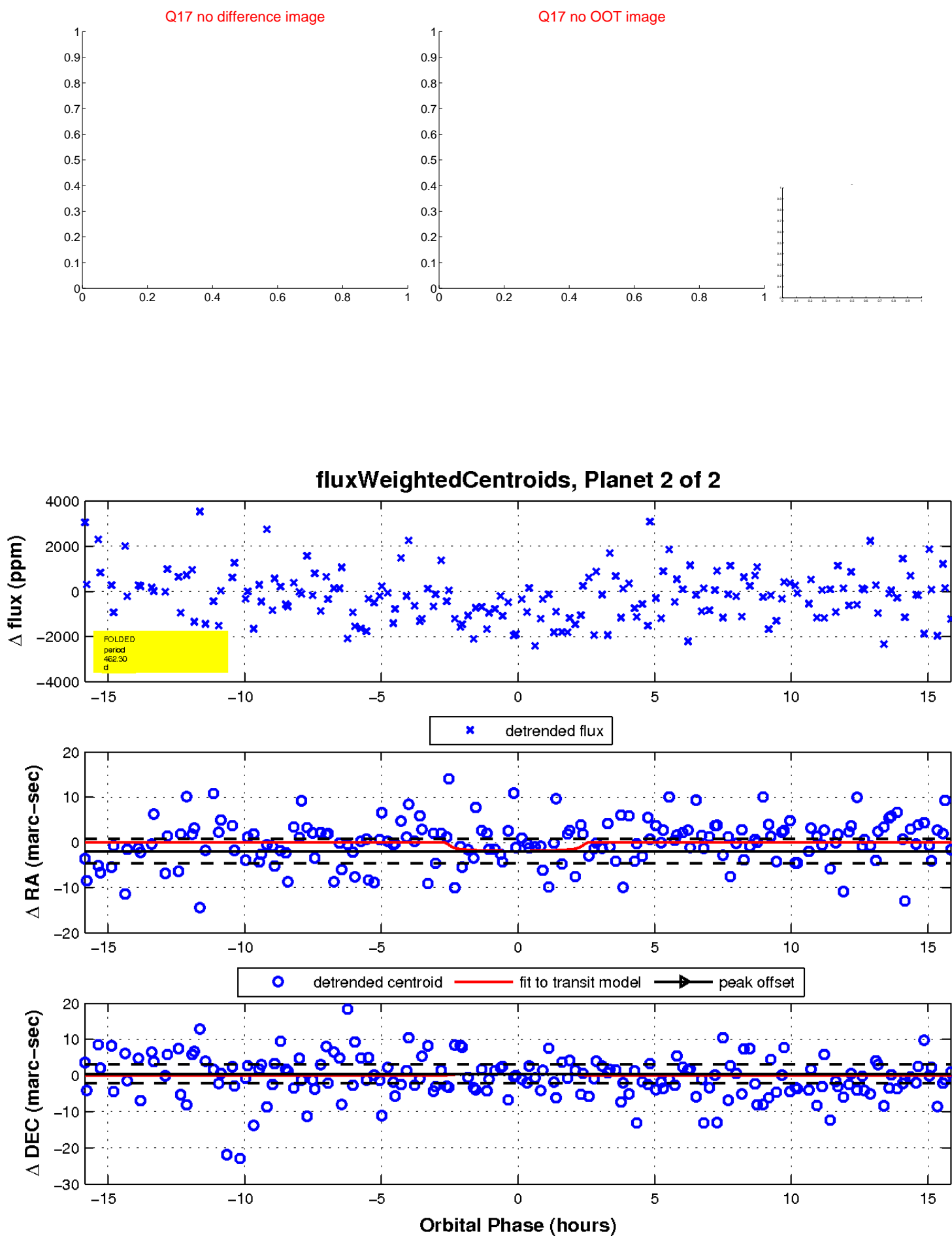
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

