

KIC 005959719

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})
005959719-01	OBS	2498.01	6.738026	133.338646	86.7	2.691	12.8	13.2	0.77	5168	0.89	90.38
005959719-02	OBS	2498.02	13.060189	144.325247	91.7	3.460	9.6	10.8	0.77	5168	0.89	37.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005959719-01	OBS	PC	0.92	0	0	0	0	CENT_KIC_POS
005959719-02	OBS	PC	0.91	0	0	0	0	CENT_KIC_POS

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

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

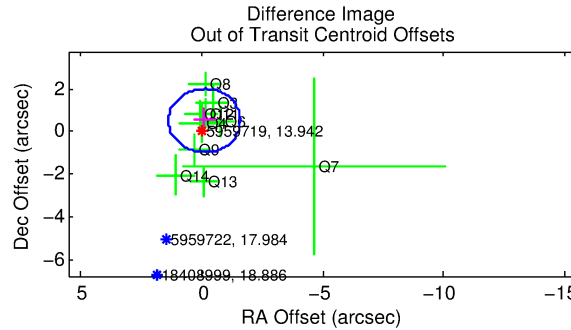
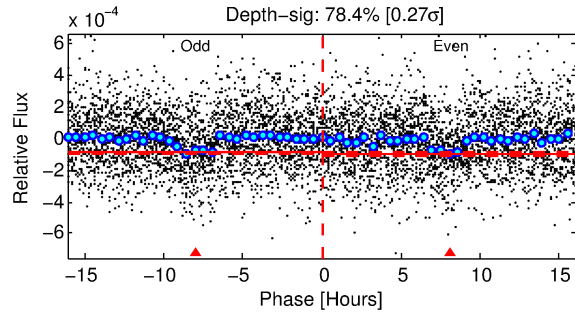
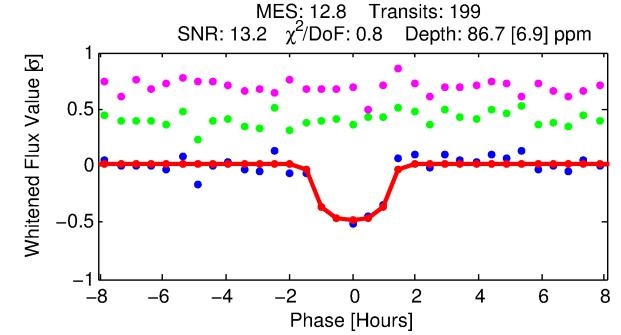
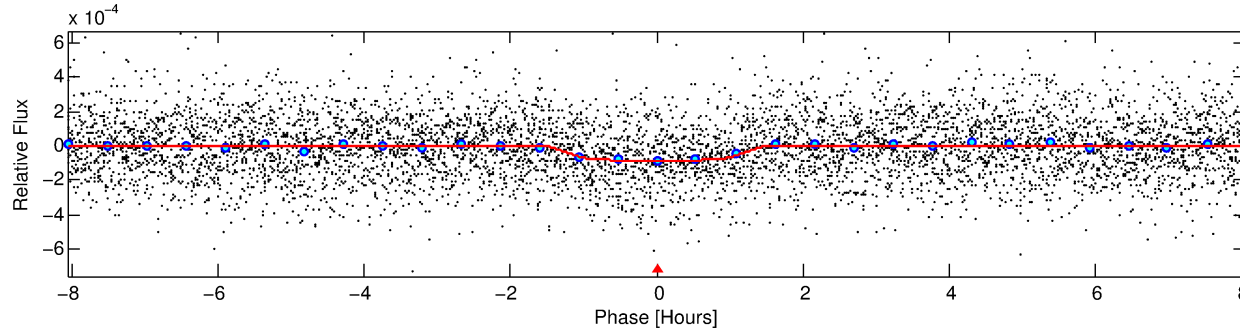
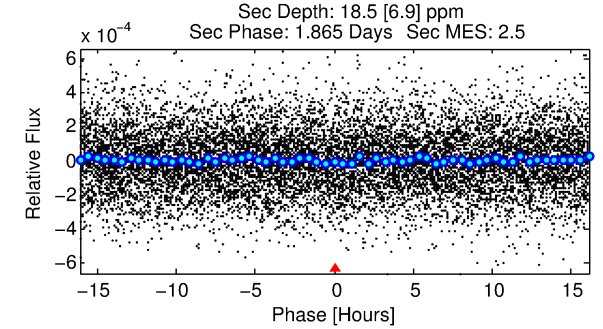
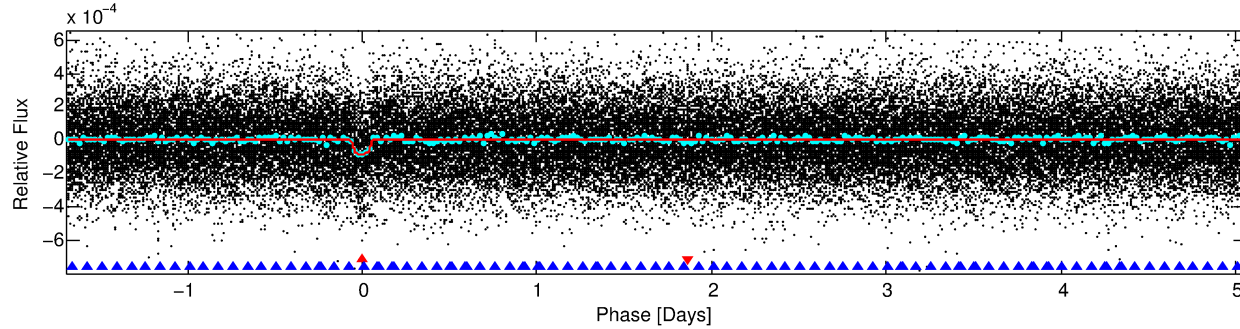
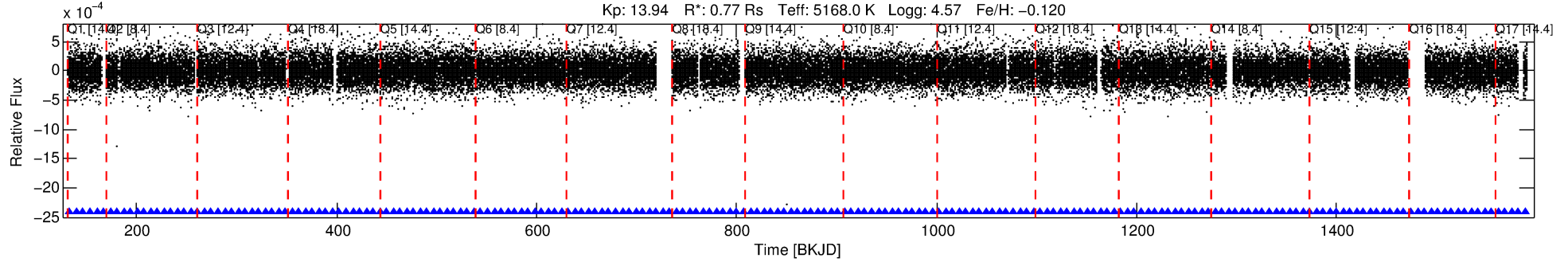
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005959719-01

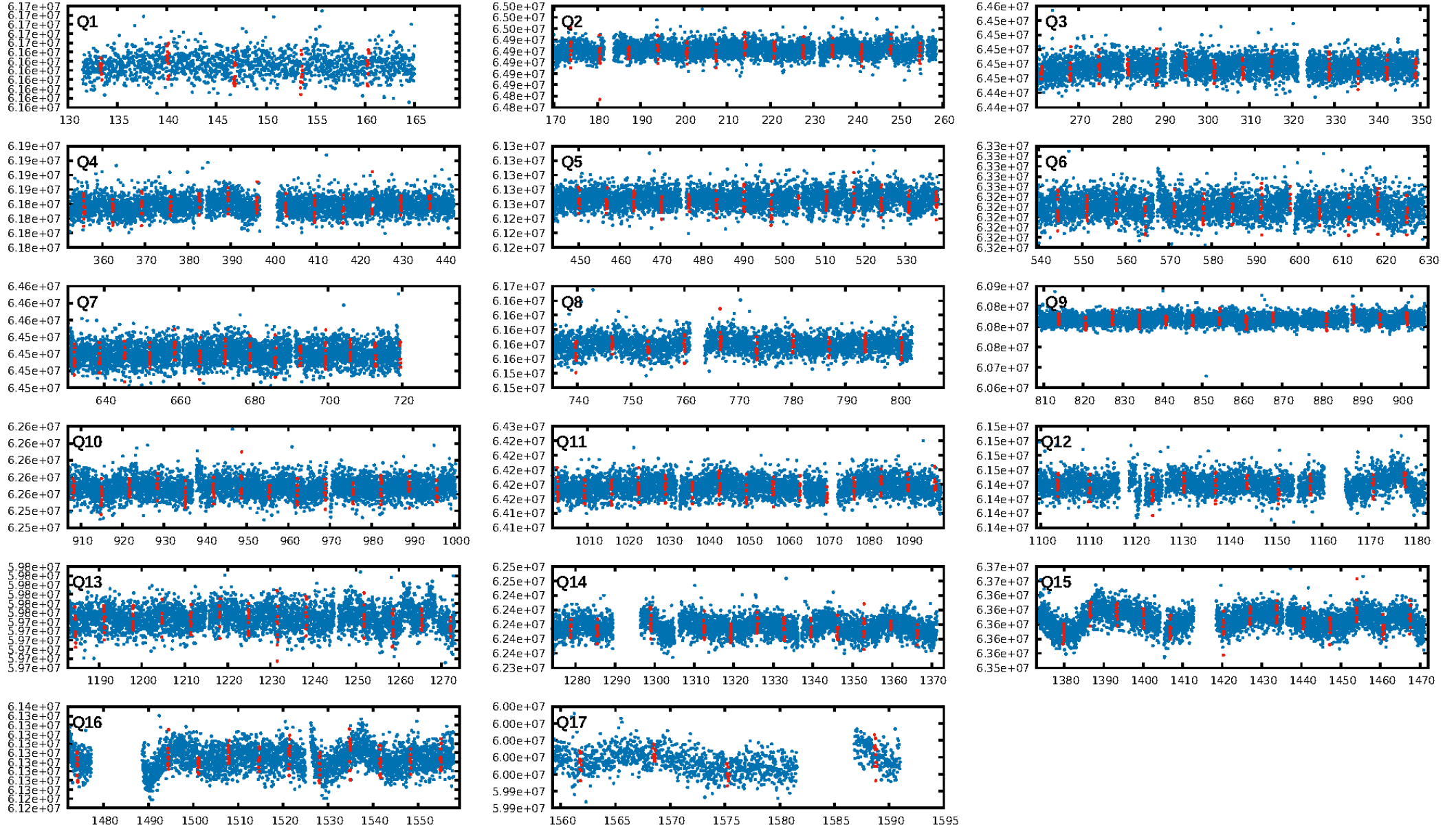
No Significant Match Found

DV One-Page Summary

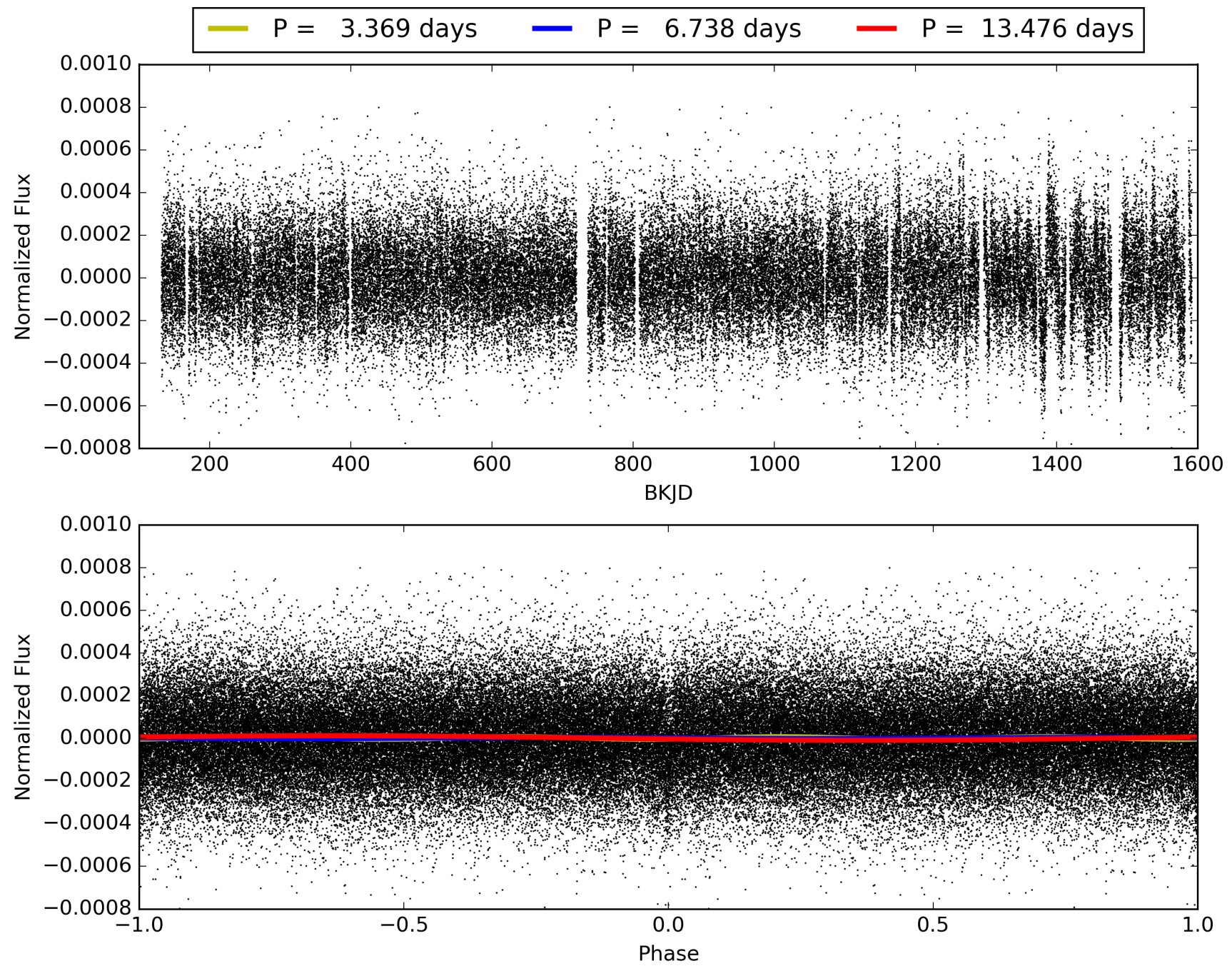
KIC: 5959719 Candidate: 1 of 2 Period: 6.738 d
KOI: K02498.01 Name: Kepler-390b Corr: 0.939



TCE 005959719-01, PDC Light Curves

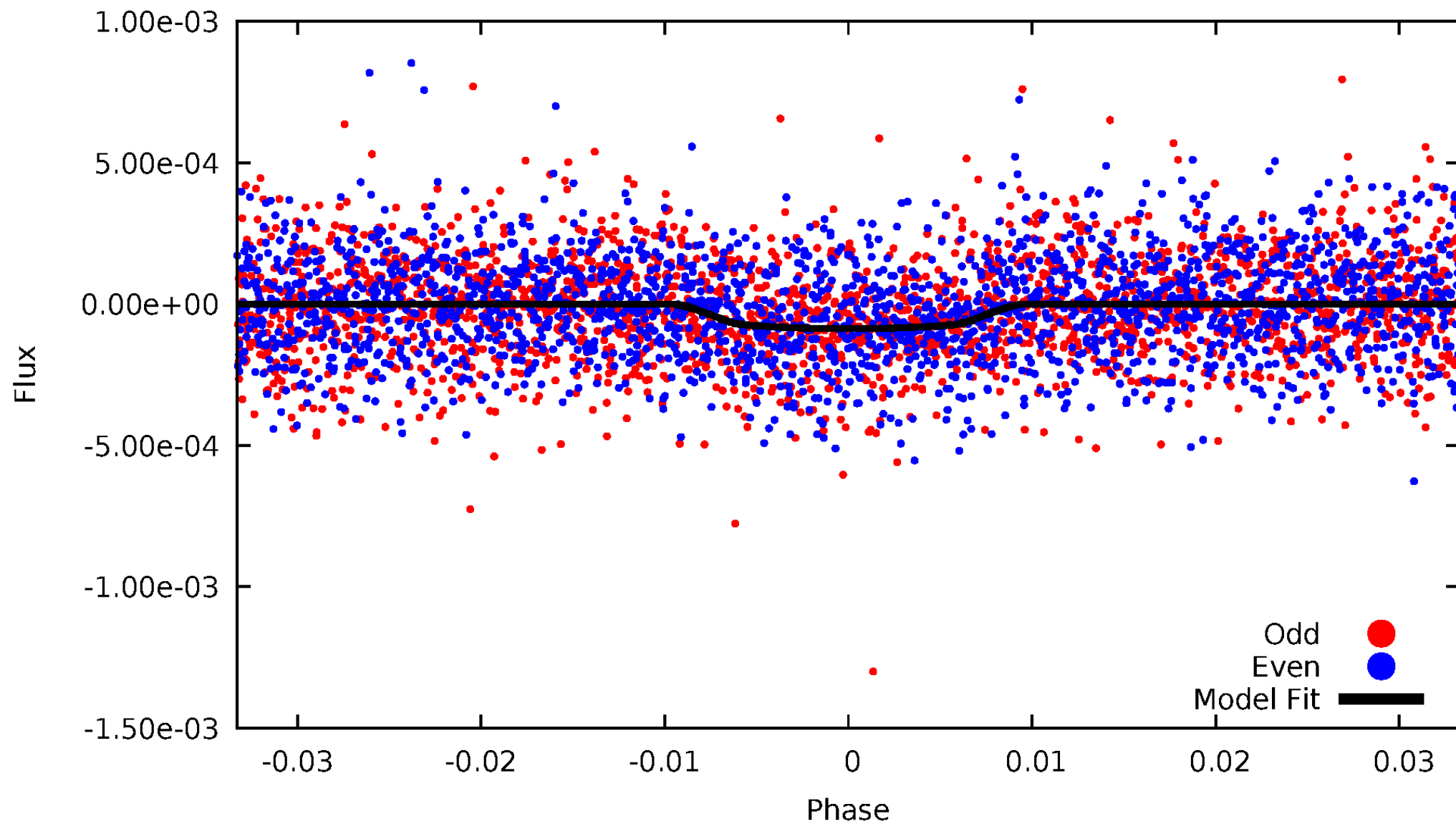


TCE 005959719-01



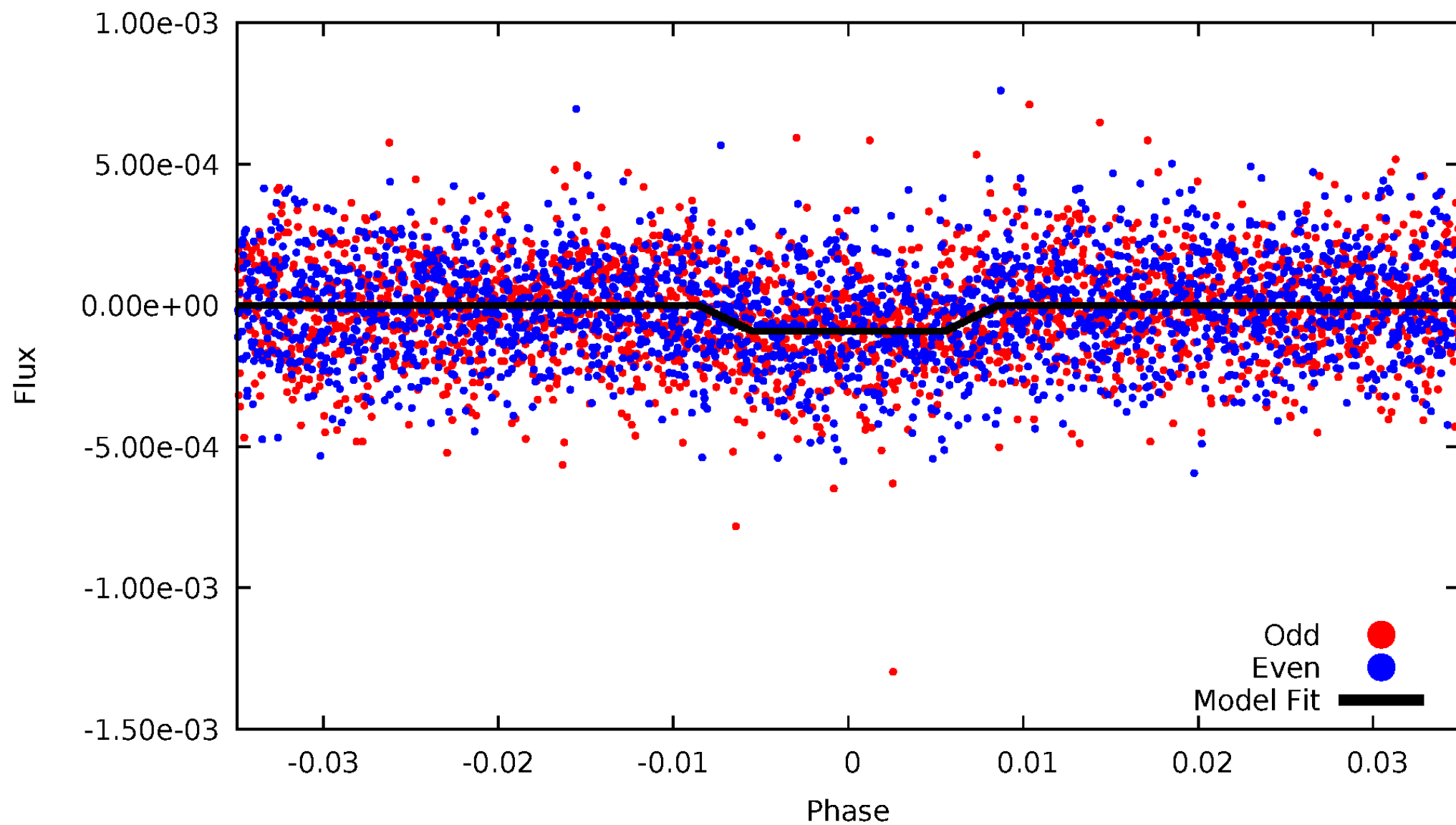
DV Odd/Even

TCE 005959719-01



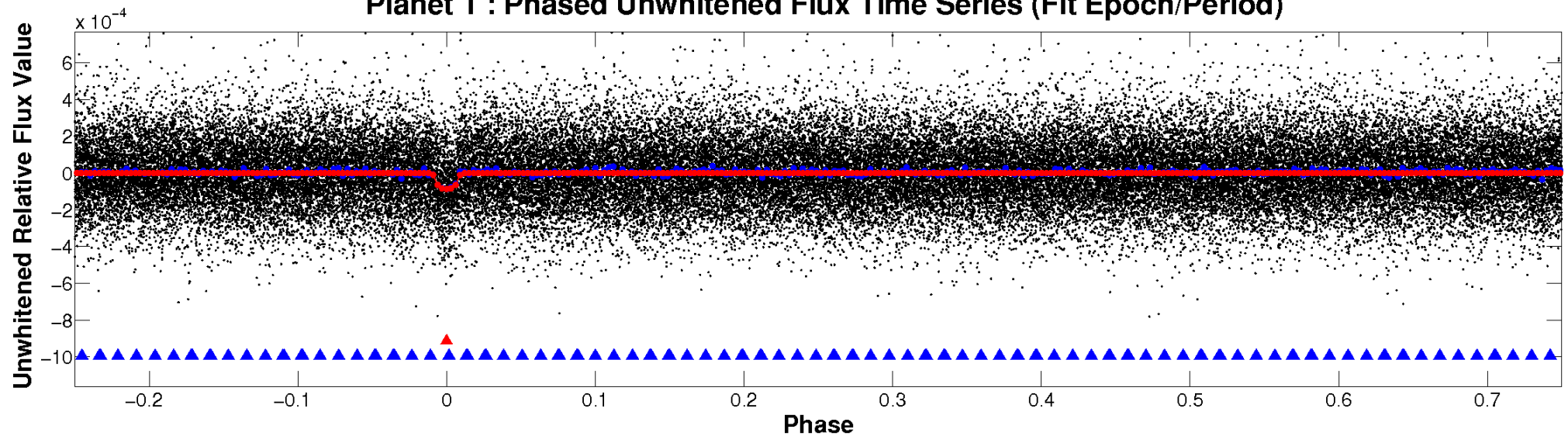
ALT Odd/Even

TCE 005959719-01

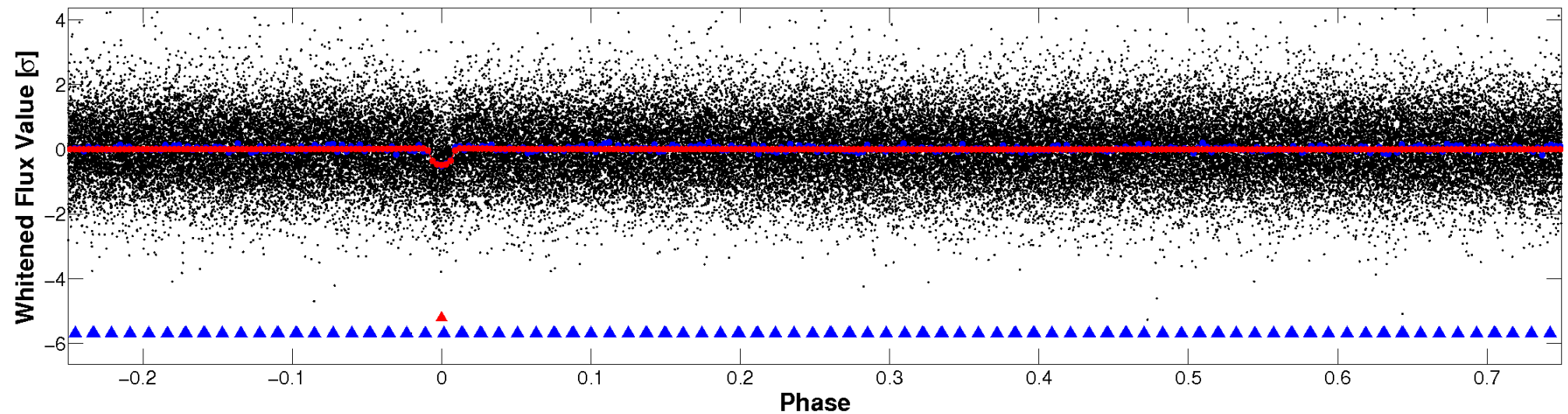


Non-Whitened Vs. Whitened Light Curve

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

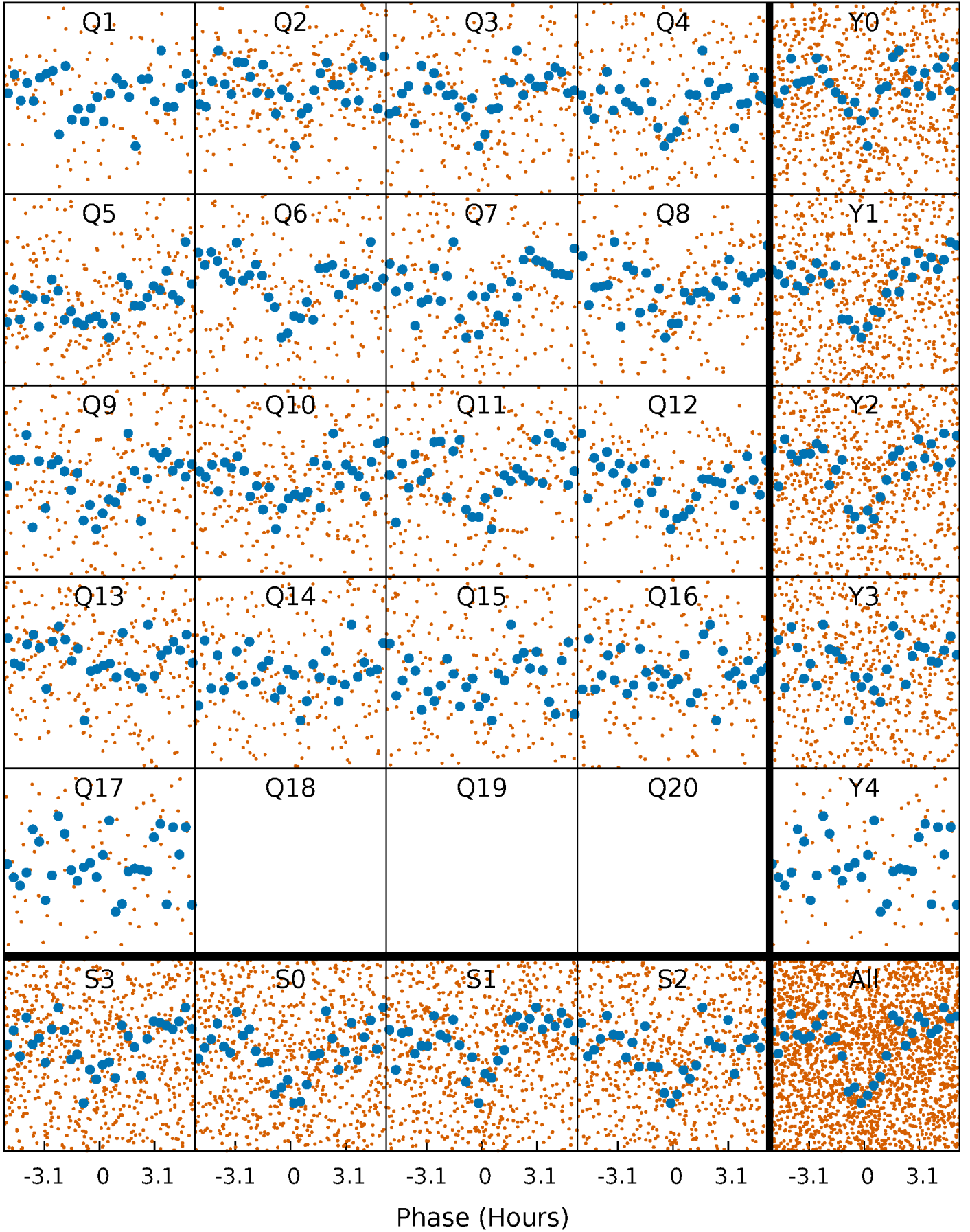


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



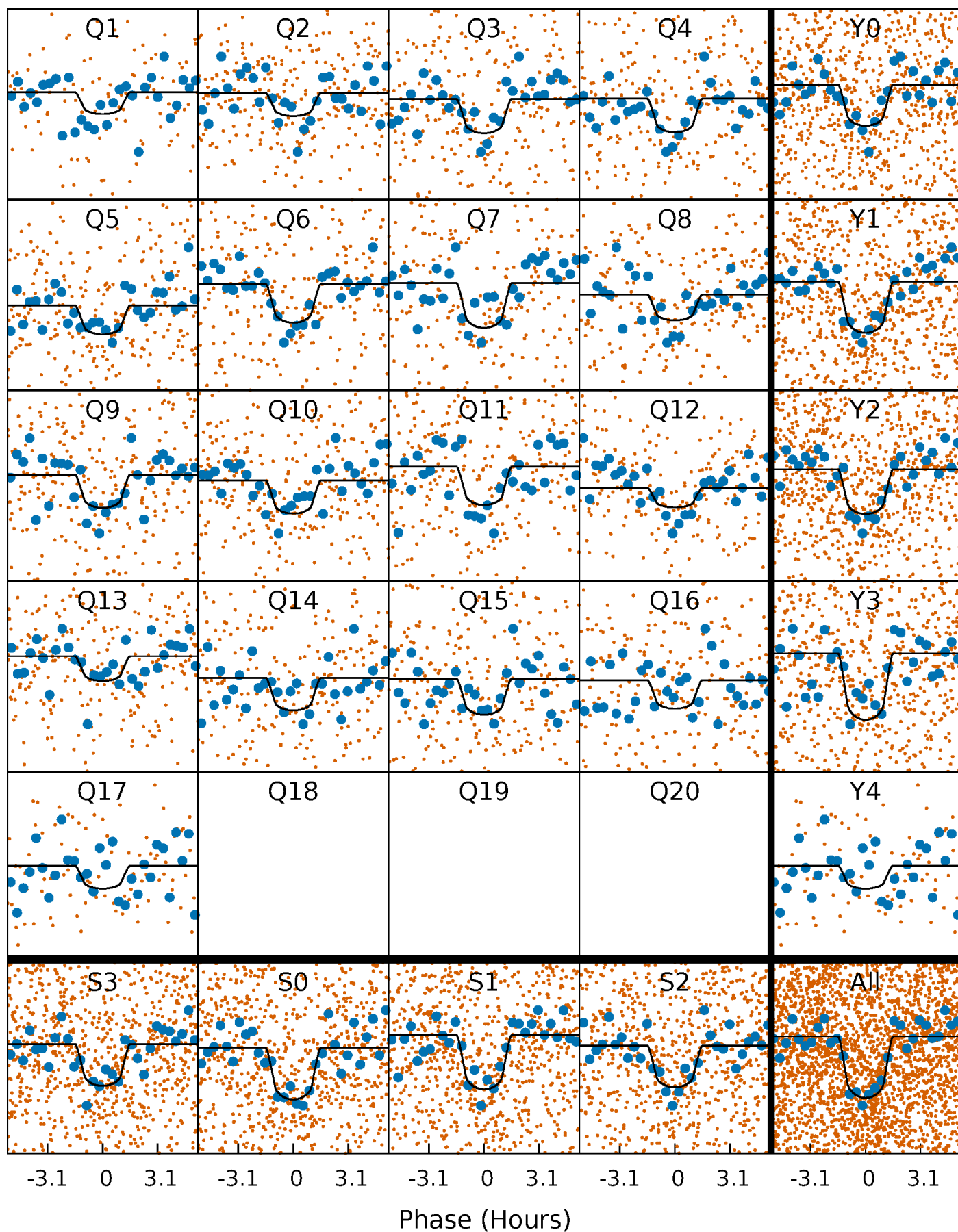
PDC Quarter-Phased Transit Curves

TCE 005959719-01 P= 6.738026 Days $T_0=133.338646$ (BKJD)



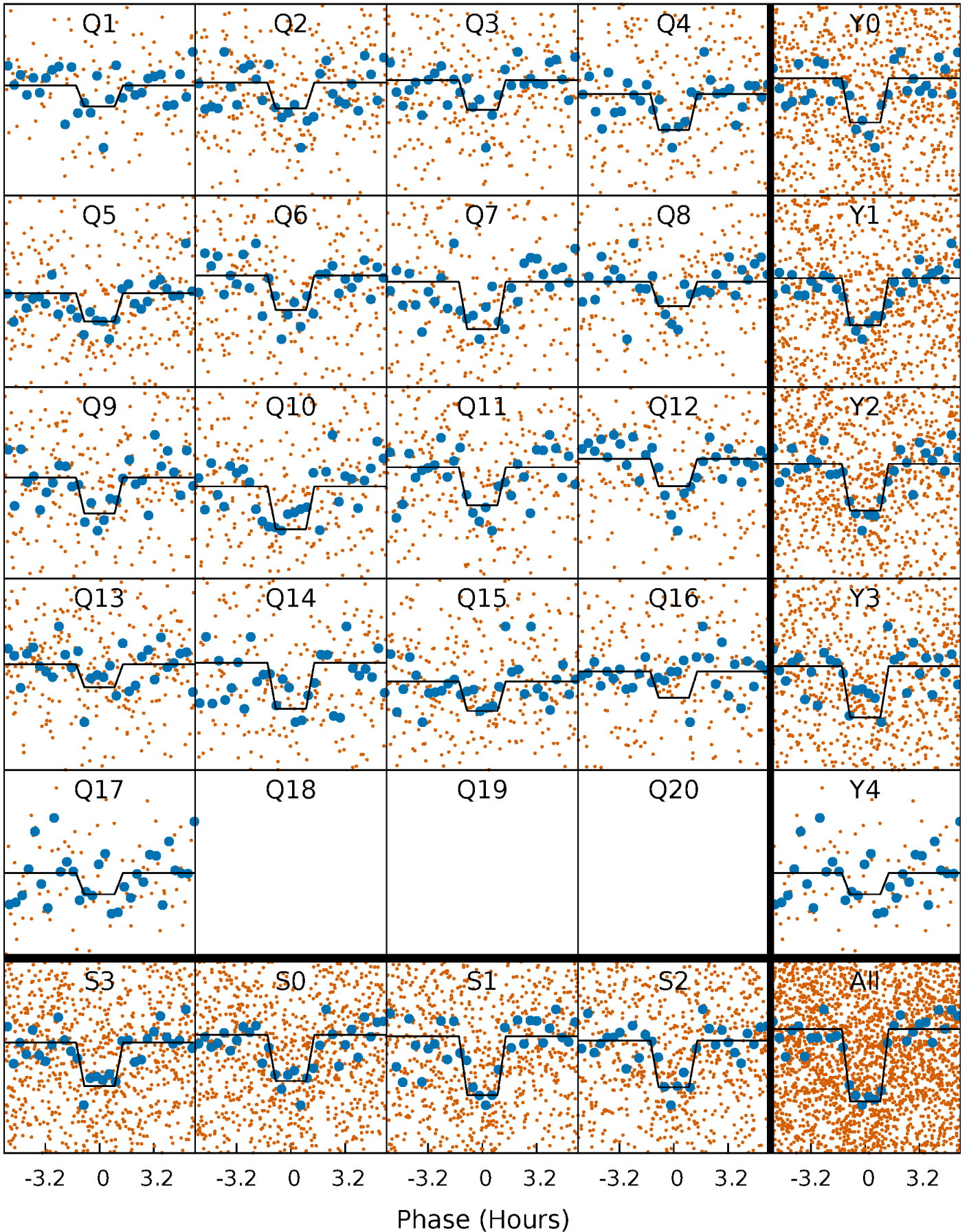
DV Quarter-Phased Transit Curves

TCE 005959719-01 P= 6.738026 Days $T_0=133.338646$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

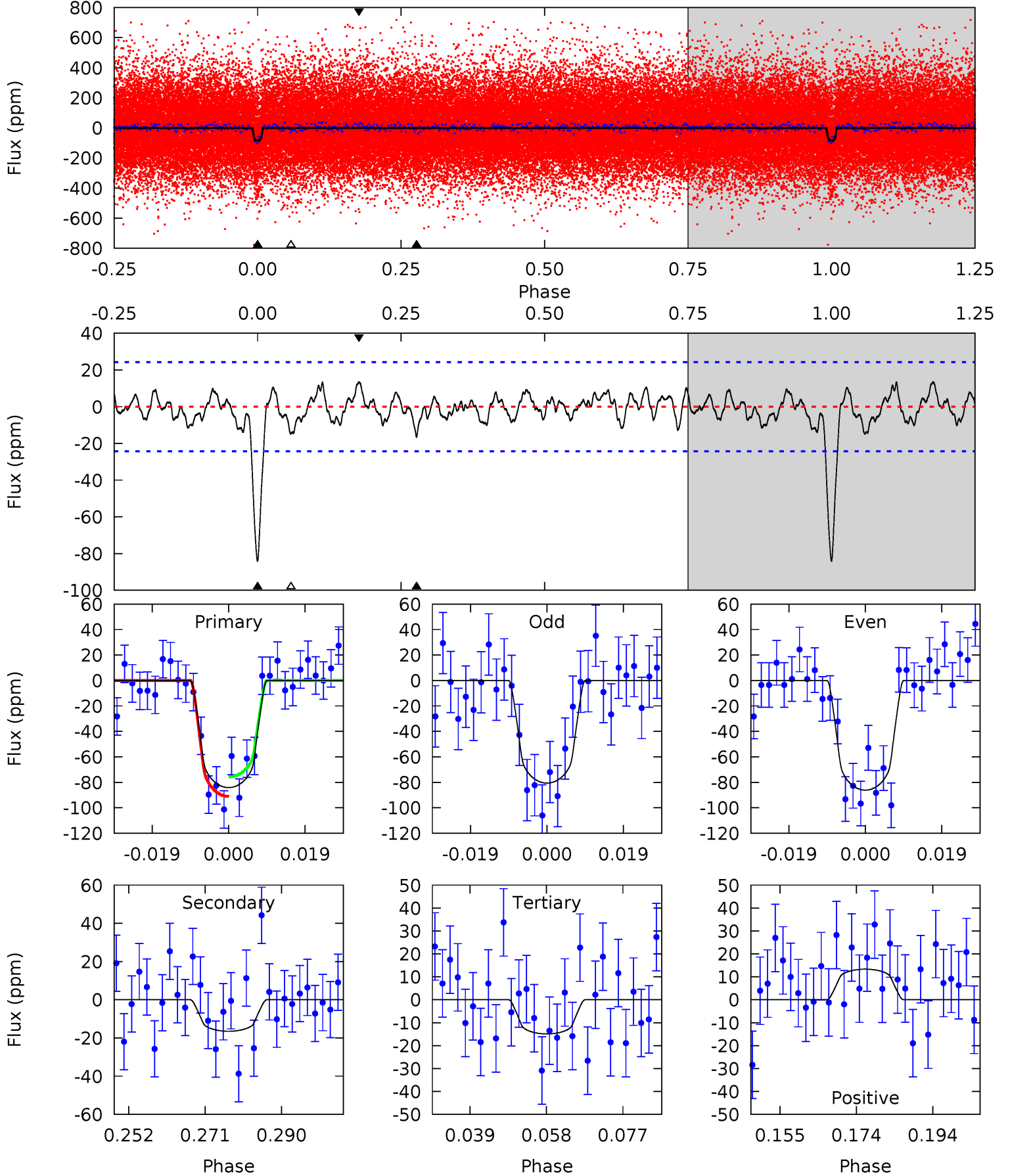
TCE 005959719-01 P= 6.738091 Days $T_0=133.330020$ (BKJD)



DV Model-Shift Uniqueness Test

005959719-01, P = 6.738026 Days, E = 126.600620 Days

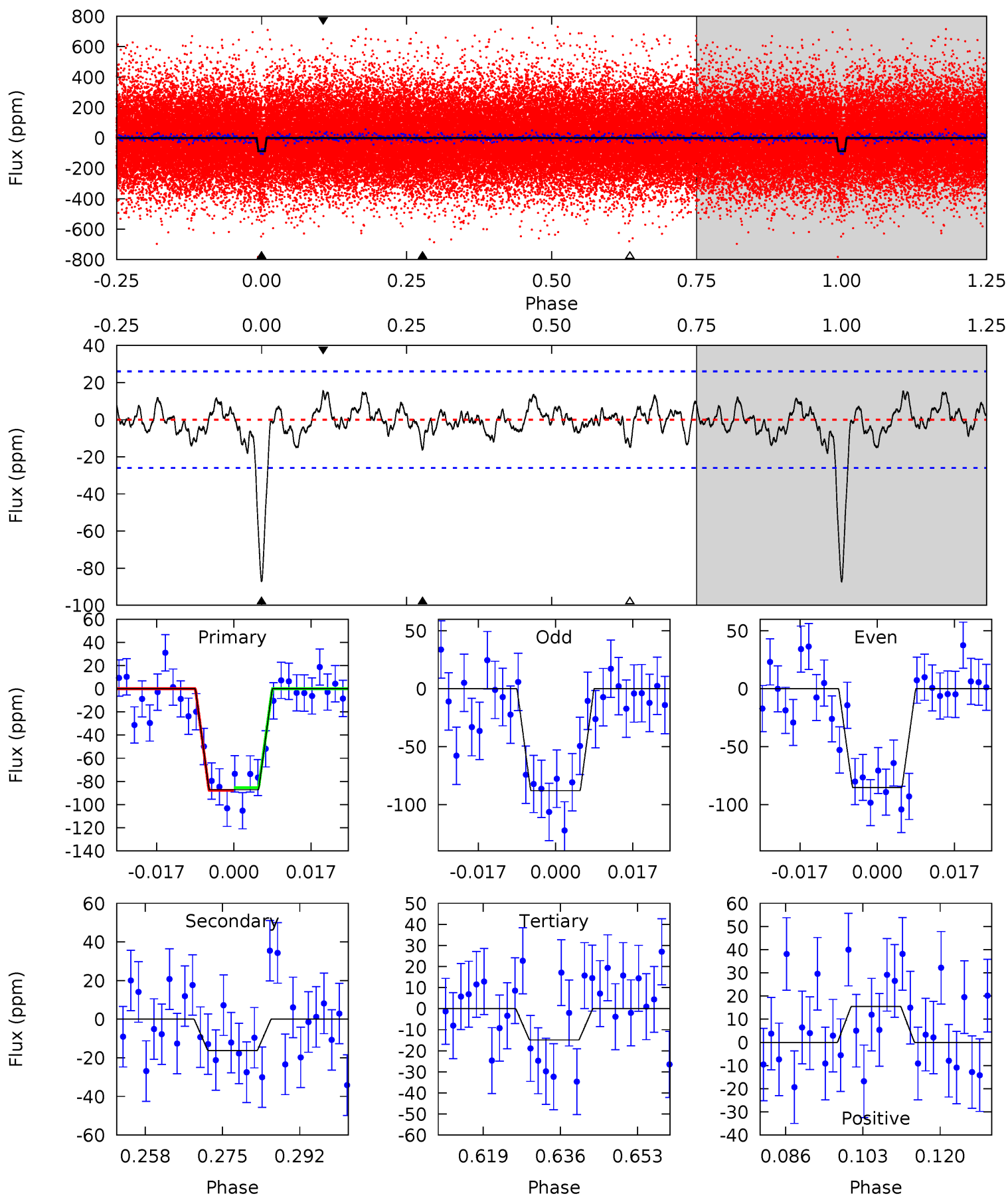
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.9	3.32	3.01	2.69	4.90	2.34	1.14	13.9	14.3	0.32	0.63	0.56	1.03	0.14	1.55



Alt Model-Shift Uniqueness Test

005959719-01, P = 6.738091 Days, E = 126.591929 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.5	3.07	2.81	2.94	4.92	2.38	1.13	13.7	13.6	0.26	0.13	0.27	1.07	0.15	0.22



Stellar Parameters For KIC 005959719

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5168^{+102}_{-102}	$4.566^{+0.036}_{-0.048}$	$-0.120^{+0.150}_{-0.150}$	$0.769^{+0.049}_{-0.040}$	$0.793^{+0.045}_{-0.045}$	$2.458^{+0.355}_{-0.374}$
	+2%/-2%	+1%/-1%	+125%/-125%	+6%/-5%	+6%/-6%	+14%/-15%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 005959719-01 / KOI 2498.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-16 ± 5	$0.92^{+0.52}_{-0.46}$	1101^{+28}_{-28}	3561^{+993}_{-479}	44^{+130}_{-27}
Alt.	-16 ± 5	$0.85^{+0.48}_{-0.43}$	1101^{+28}_{-29}	3636^{+1100}_{-513}	50^{+162}_{-31}

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

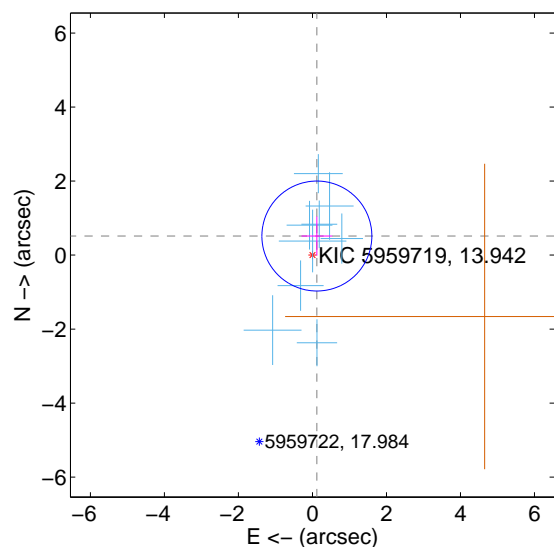
Supplemental centroid analysis for 005959719-01. Kepler magnitude: 13.94. Transit SNR 13.17

There are 9 quarters with good PRF difference image offsets

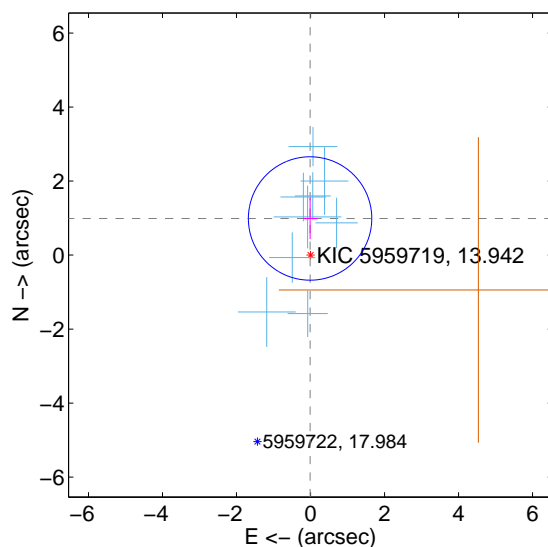
The direct PRF centroid is offset from the target star catalog position by about 0.50 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.529 ± 0.495	1.07	-0.119 ± 0.416	0.515 ± 0.528
PRF-fit source offset from KIC position	0.989 ± 0.556	1.78	0.012 ± 0.190	0.989 ± 0.556
photometric centroid source offset	2.76 ± 0.90	3.08	-1.56 ± 0.91	2.27 ± 0.89

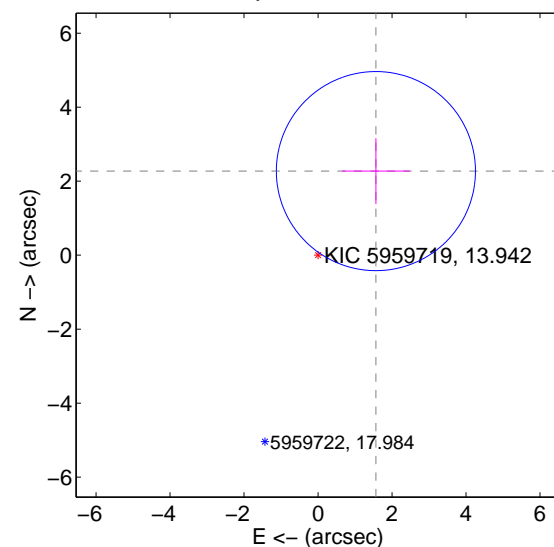
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

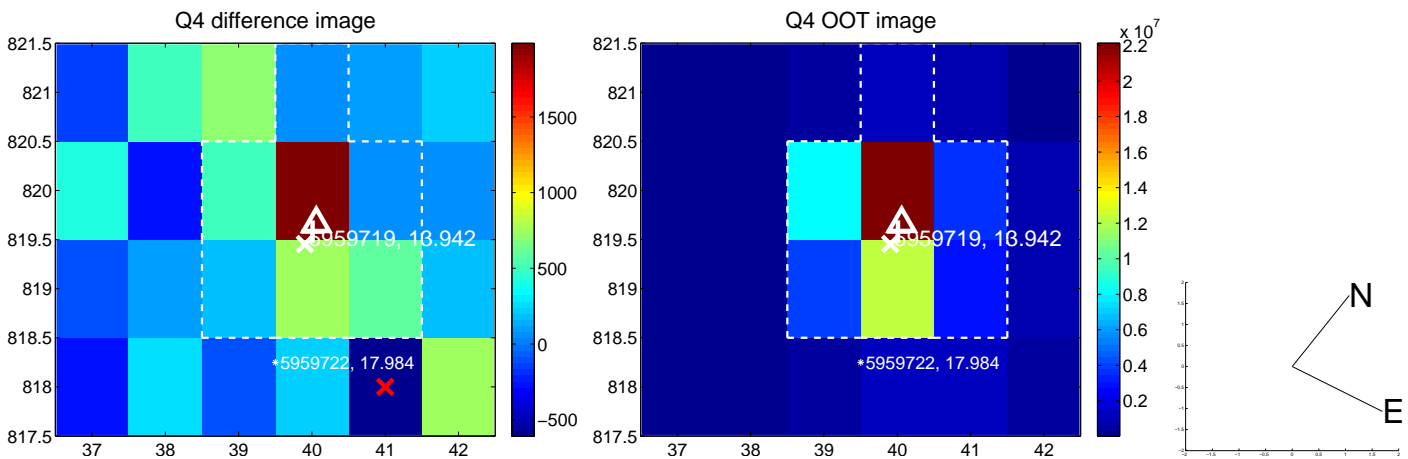
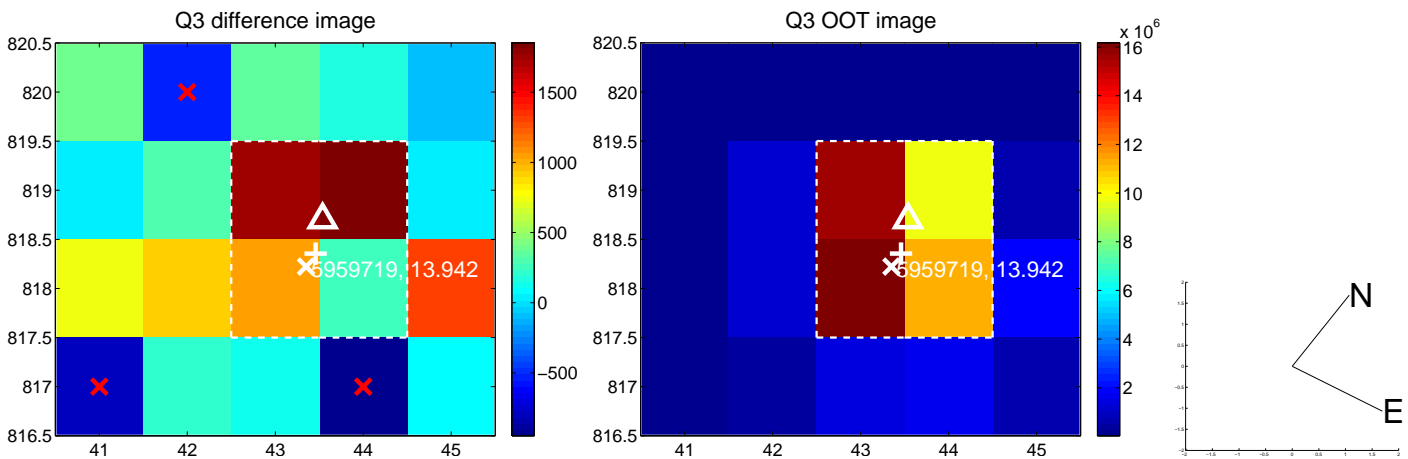
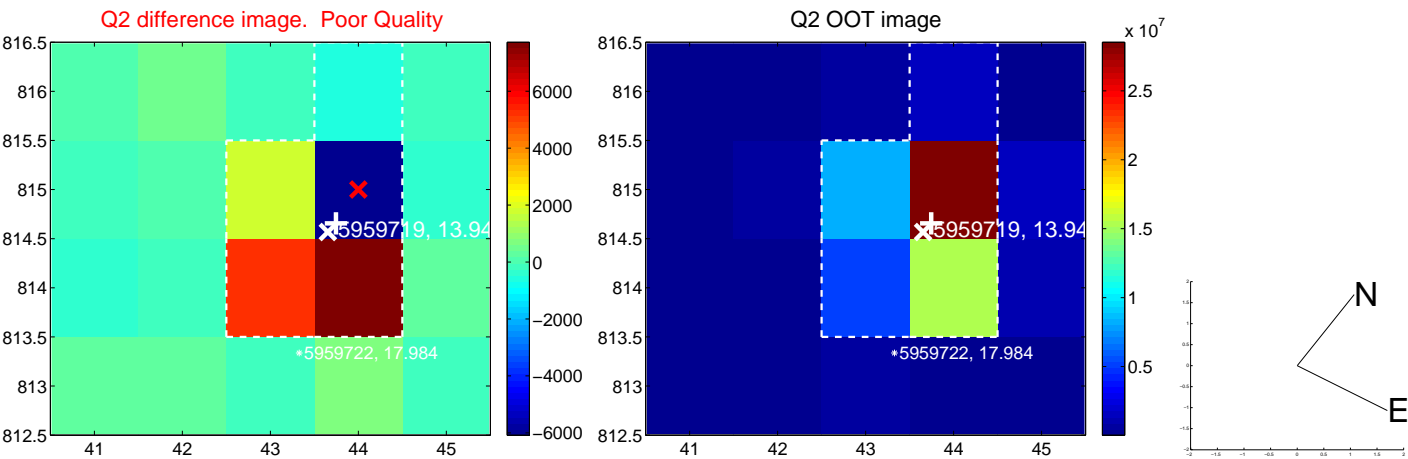
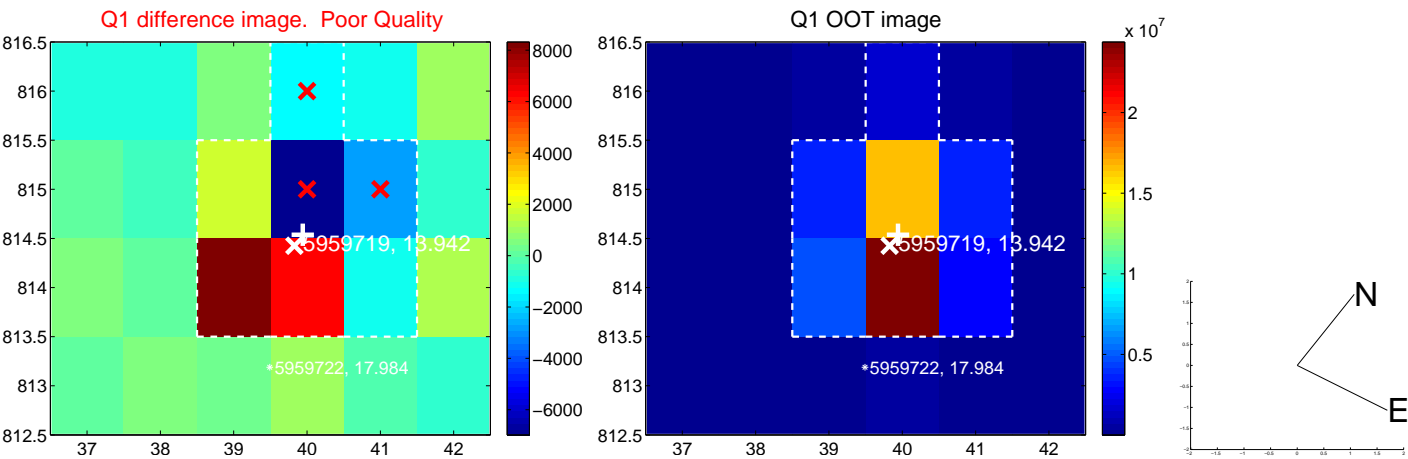


offset from photometric centroids

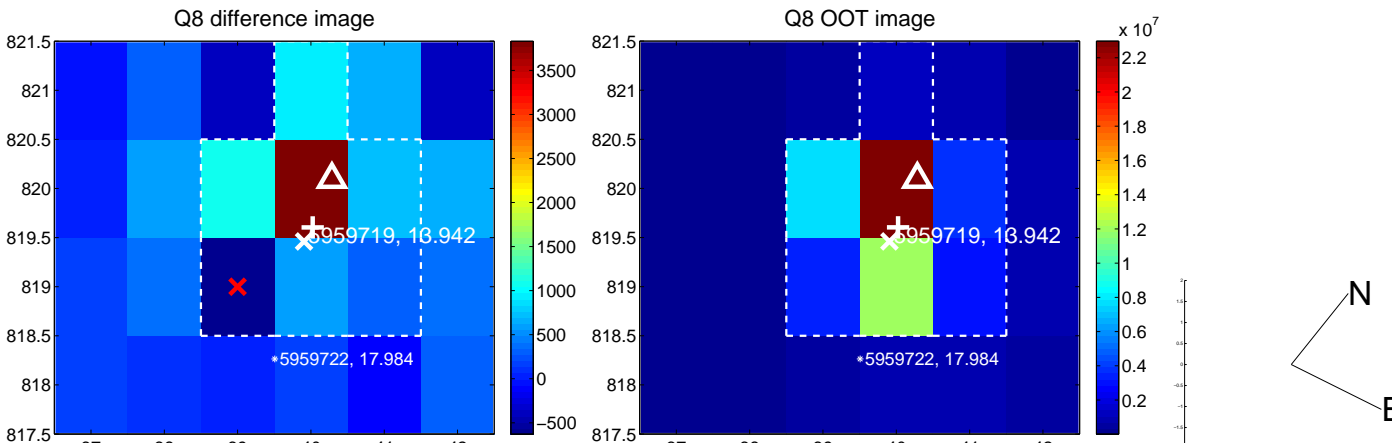
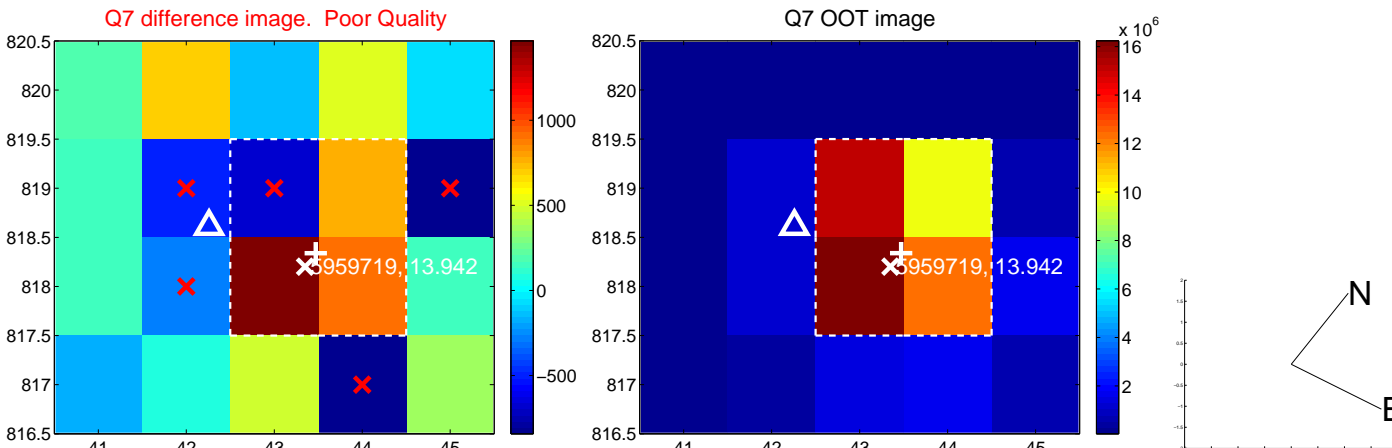
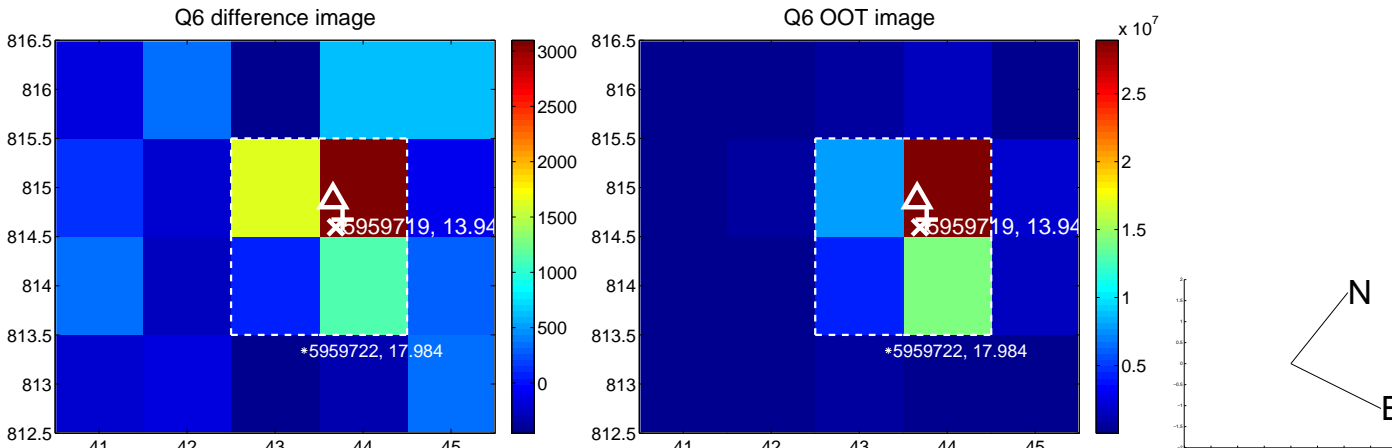
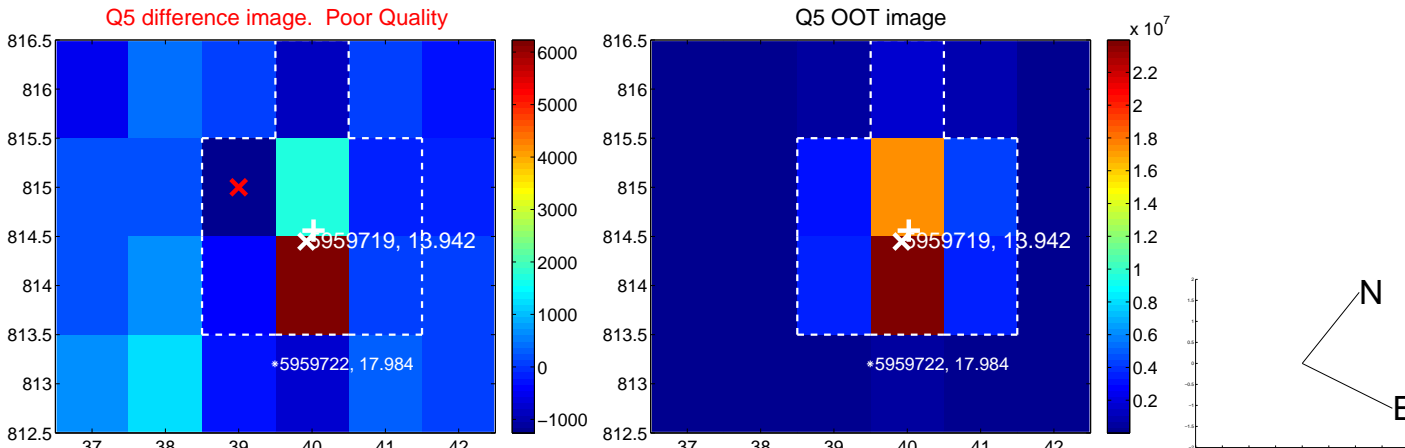


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

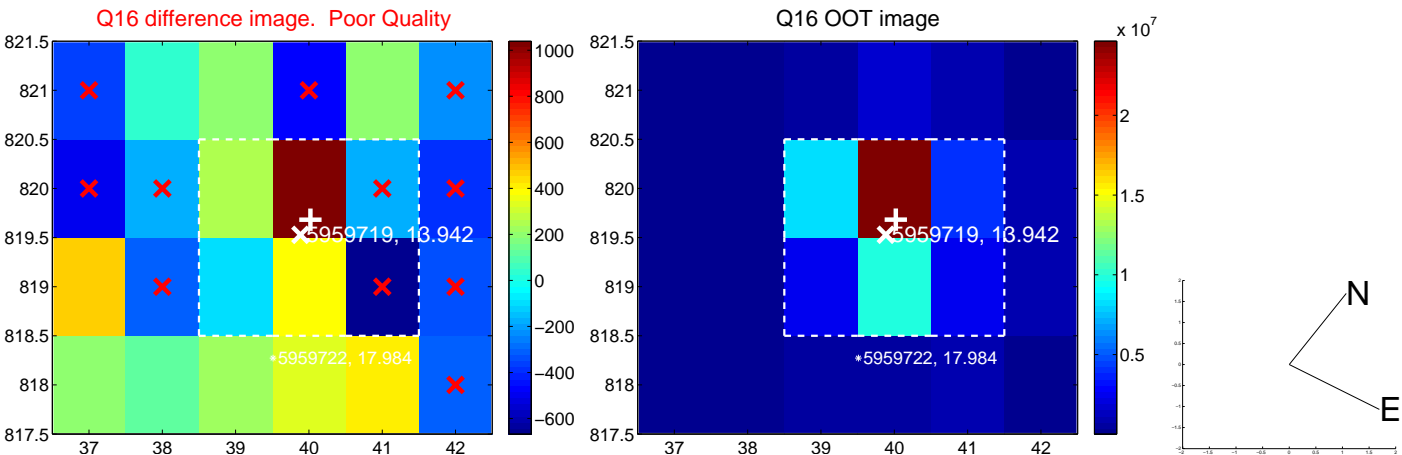
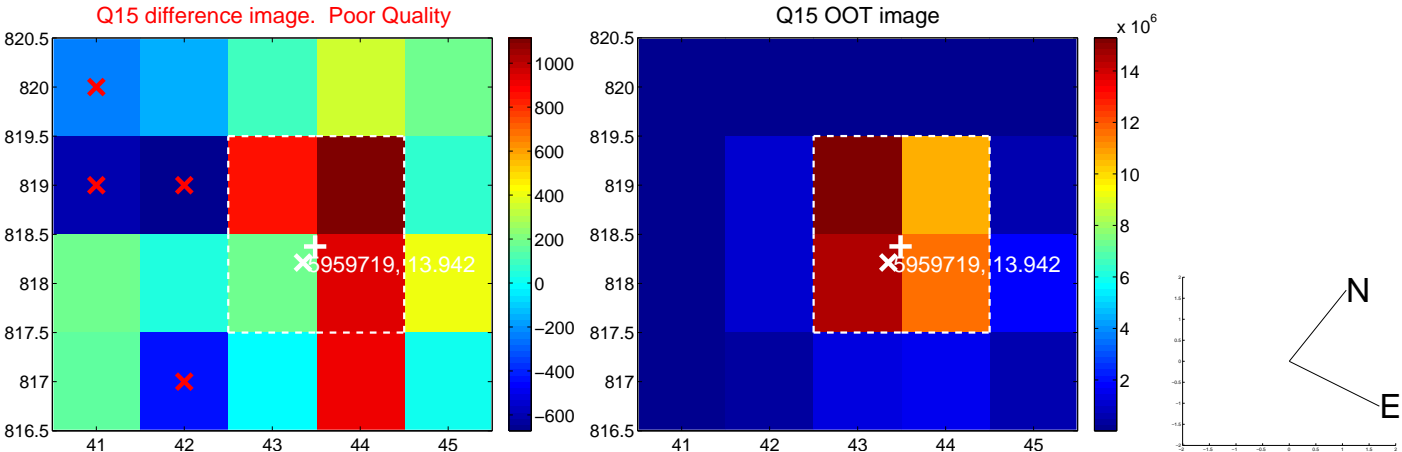
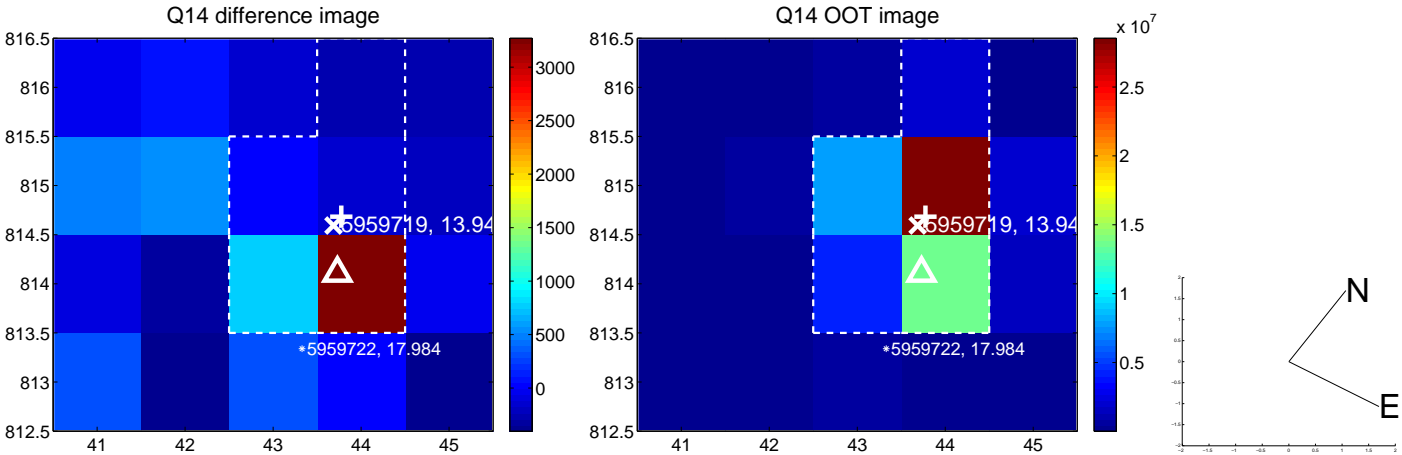
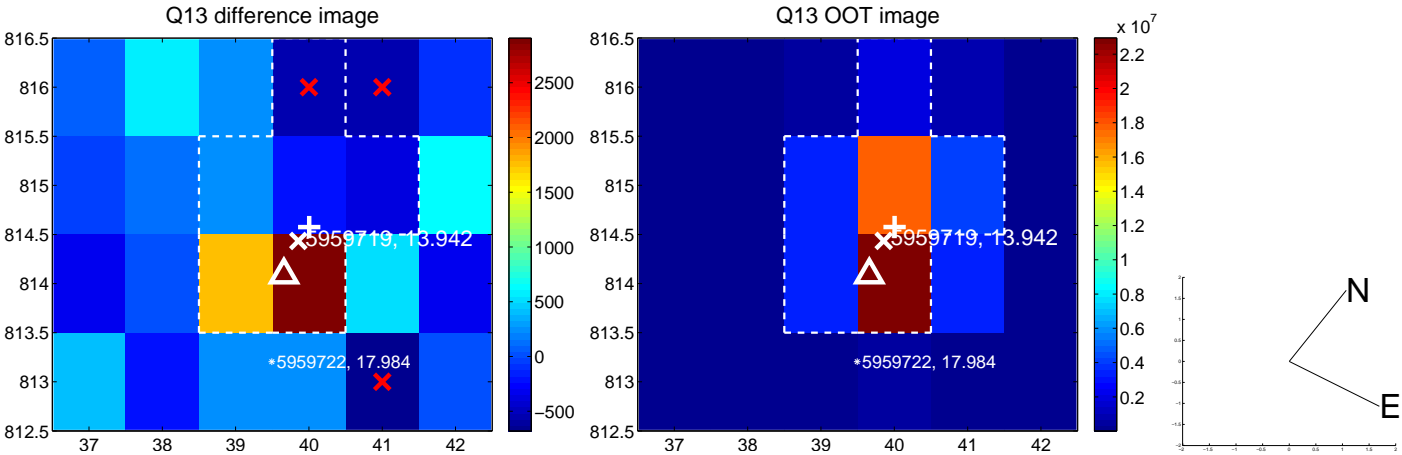
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



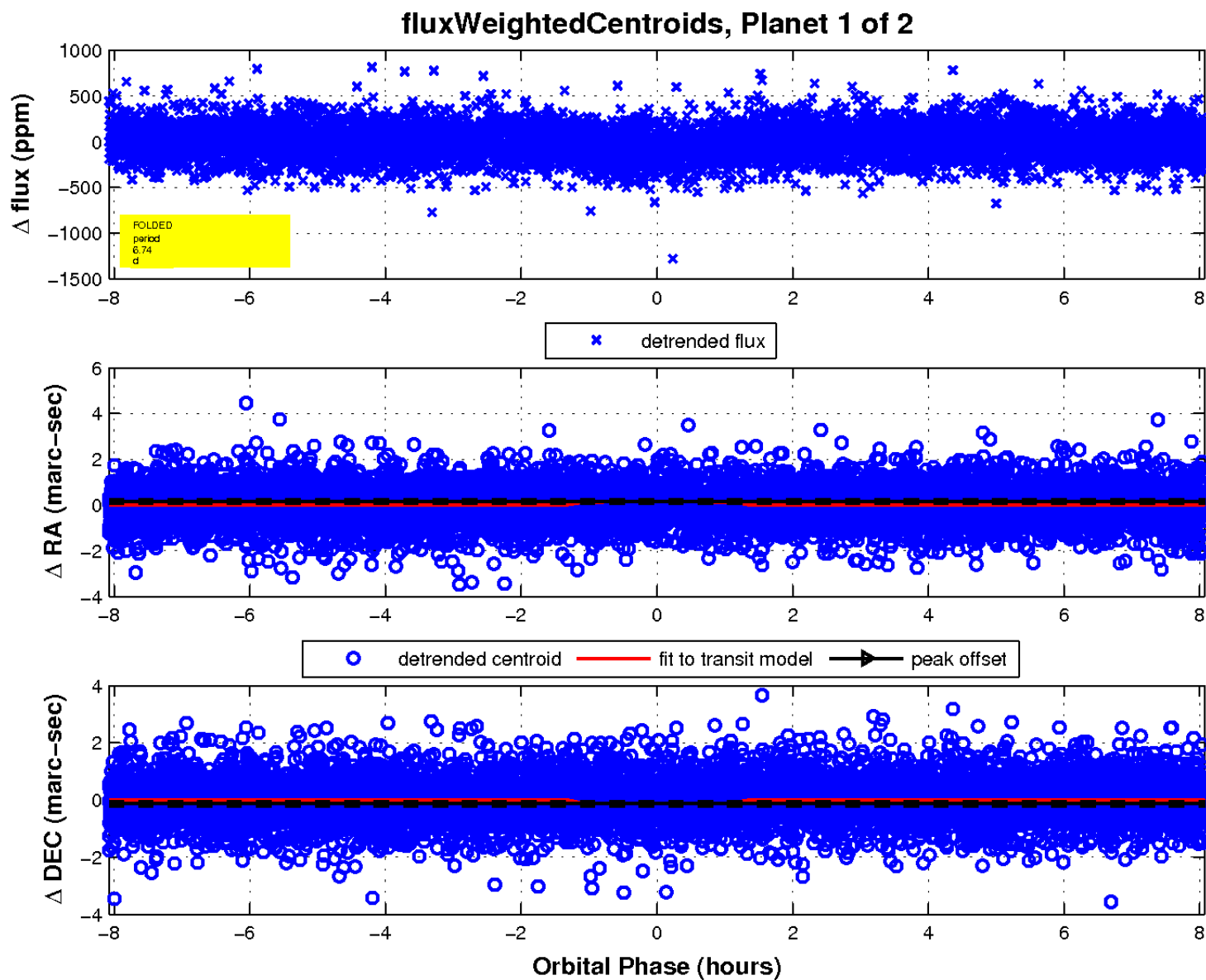
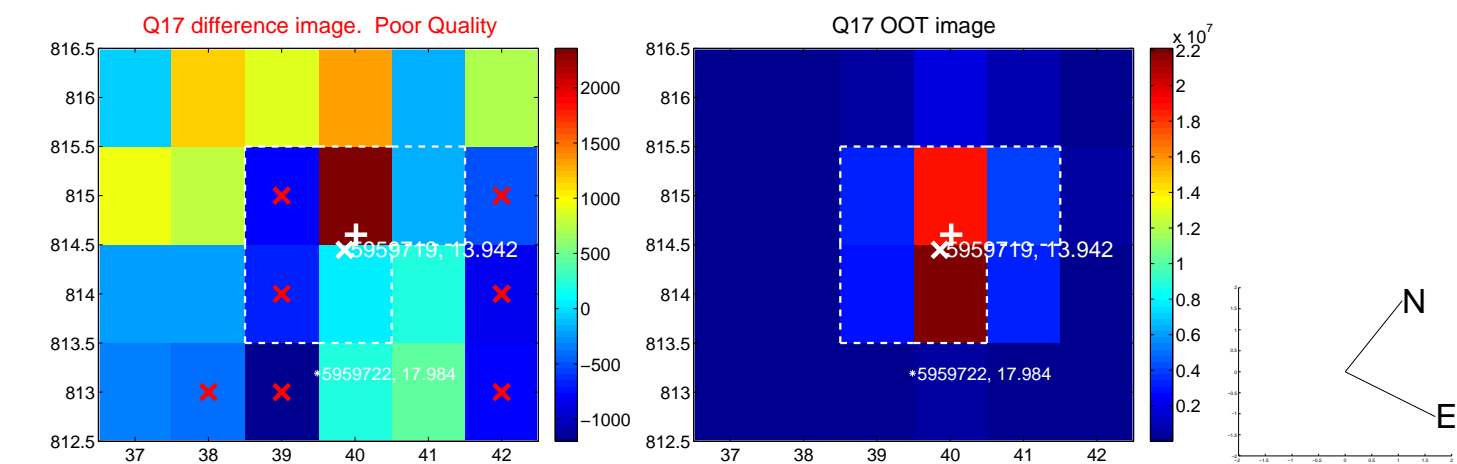
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

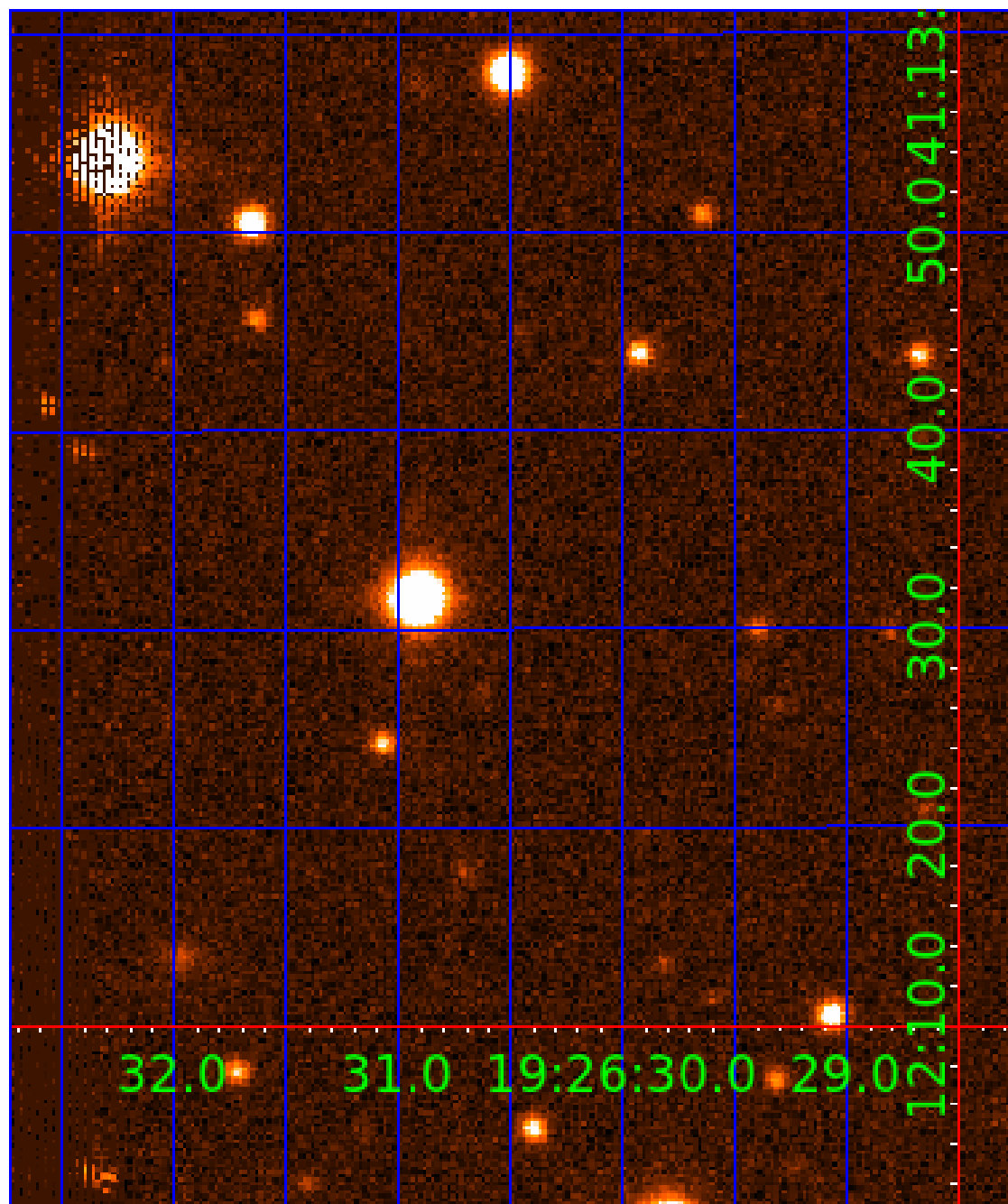


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005959719

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})
005959719-01	OBS	2498.01	6.738026	133.338646	86.7	2.691	12.8	13.2	0.77	5168	0.89	90.38
005959719-02	OBS	2498.02	13.060189	144.325247	91.7	3.460	9.6	10.8	0.77	5168	0.89	37.40

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005959719-01	OBS	PC	0.92	0	0	0	0	CENT_KIC_POS
005959719-02	OBS	PC	0.91	0	0	0	0	CENT_KIC_POS

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

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

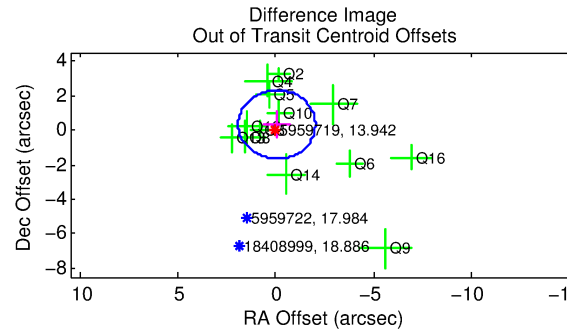
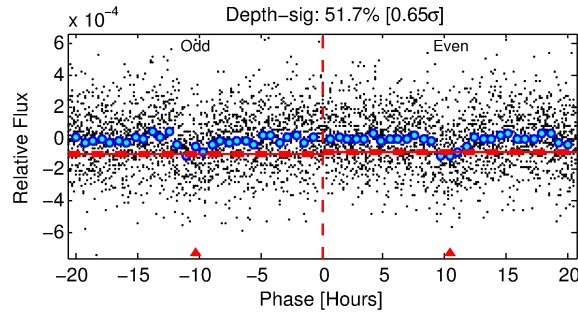
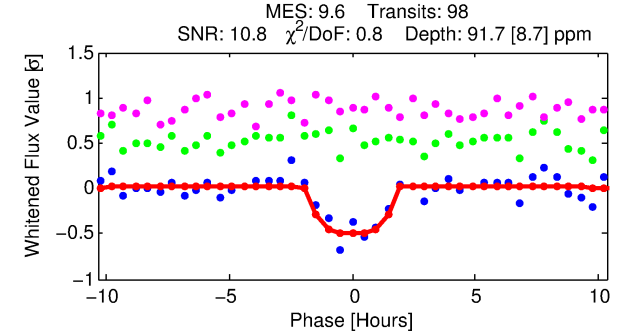
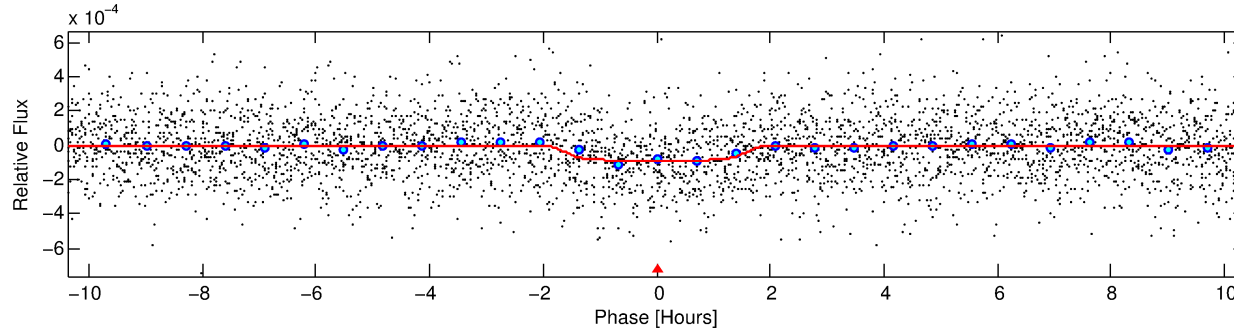
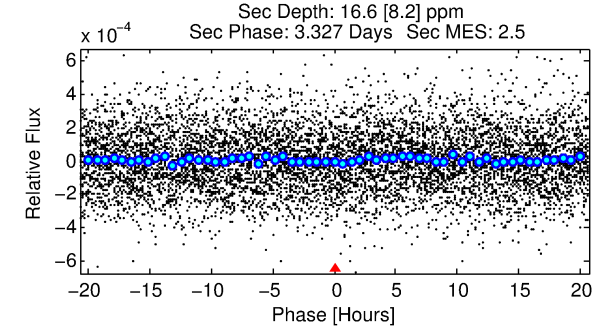
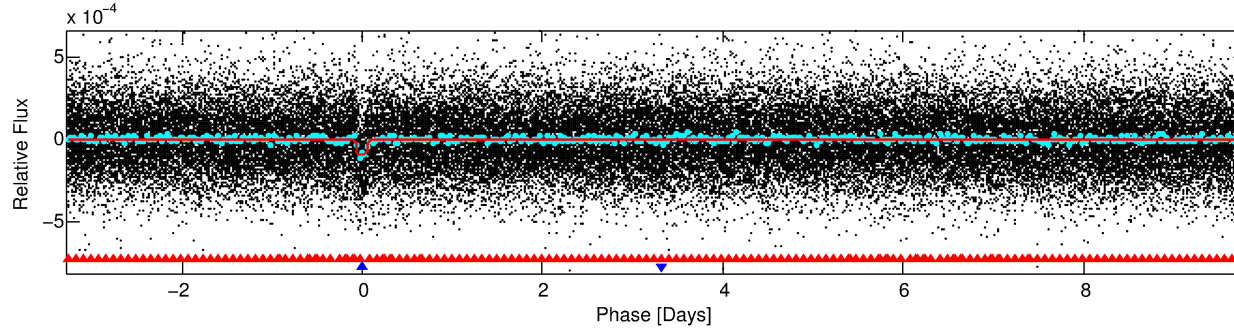
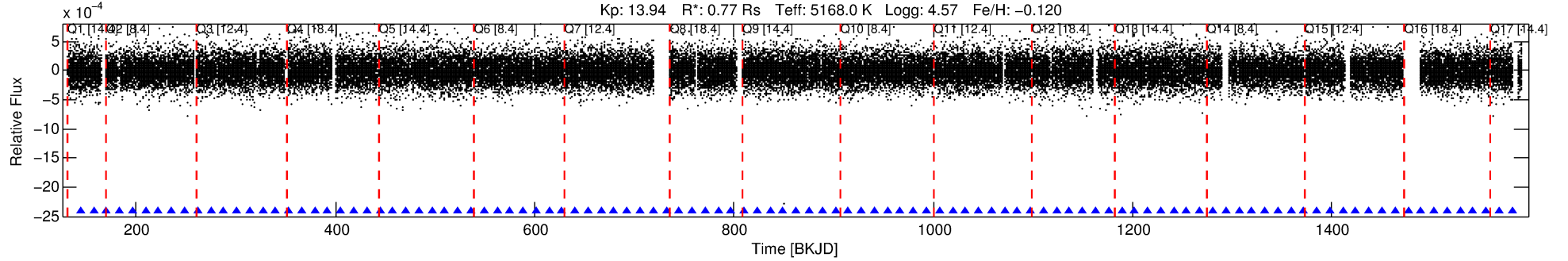
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005959719-02

No Significant Match Found

DV One-Page Summary

KIC: 5959719 Candidate: 2 of 2 Period: 13.060 d
KOI: K02498.02 Name: Kepler-390c Corr: 0.915



DV Fit Results:

Period = 13.06019 [0.00012] d
Epoch = 144.3252 [0.0072] BKJD
Rp/R* = 0.0106 [0.0070]
a/R* = 13.38 [37.09]
b = 0.90 [0.61]
Seff = 37.40 [4.34]
Teq = 631 [18] K
Rp = 0.89 [0.59] Re
a = 0.1005 [0.0057] AU
Ag = 116.59 [164.34] [0.70σ]
Teffp = 3204 [1129] K [2.28σ]

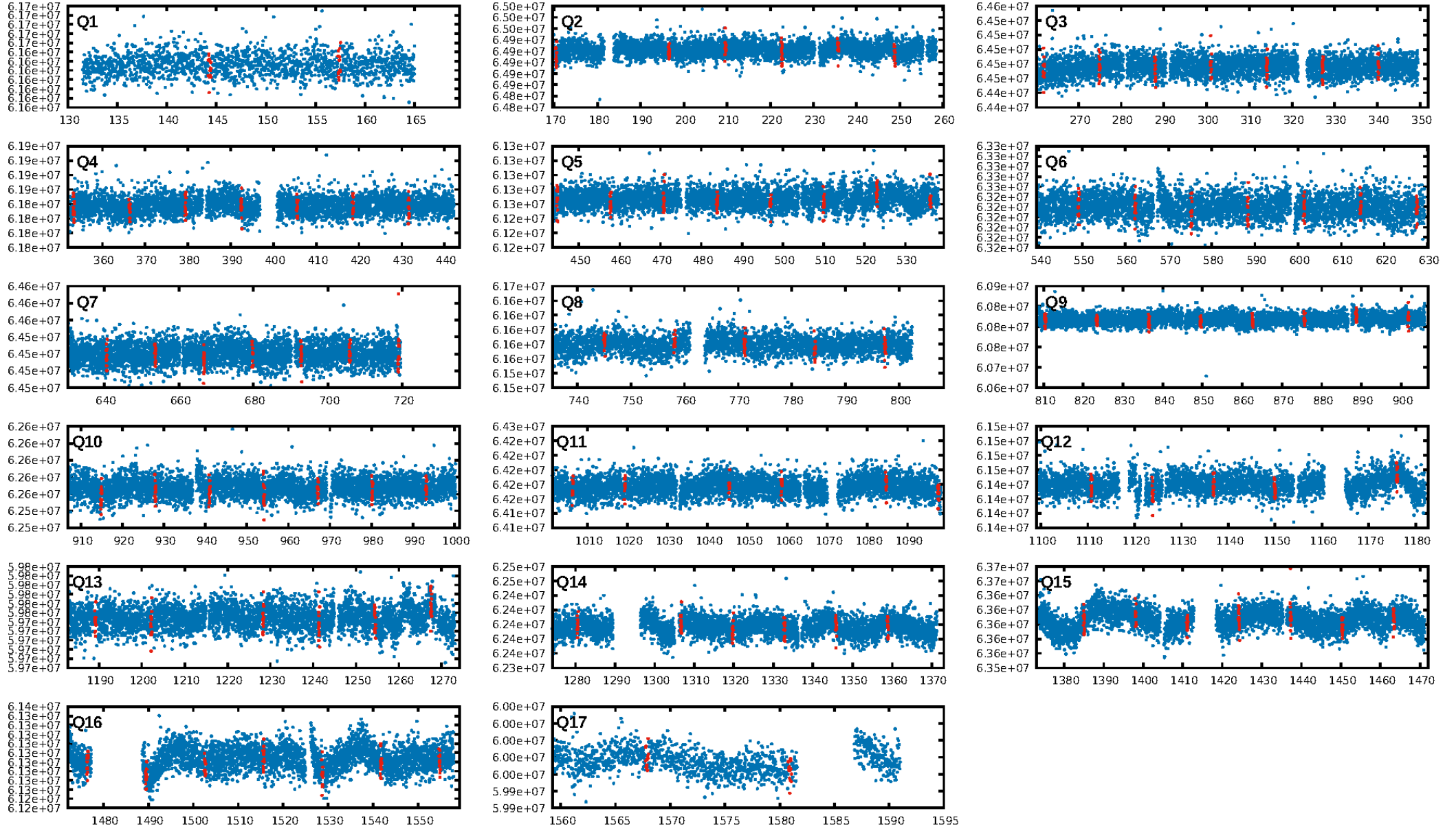
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [34.62σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.15e-21
RollingBand-fgt: 1.00 [94/94]
GhostDiagnostic-chr: 1.843
Centroid-sig: 88.3%
Centroid-so: 0.483 arcsec [0.46σ]
OotOffset-rm: 0.323 arcsec [0.49σ]
KicOffset-rm: 0.975 arcsec [1.32σ]
OotOffset-st: 4/2/4/3 [13]
KicOffset-st: 4/2/4/3 [13]
DiffImageQuality-fgm: 0.54 [7/13]
DiffImageOverlap-fno: 1.00 [17/17]

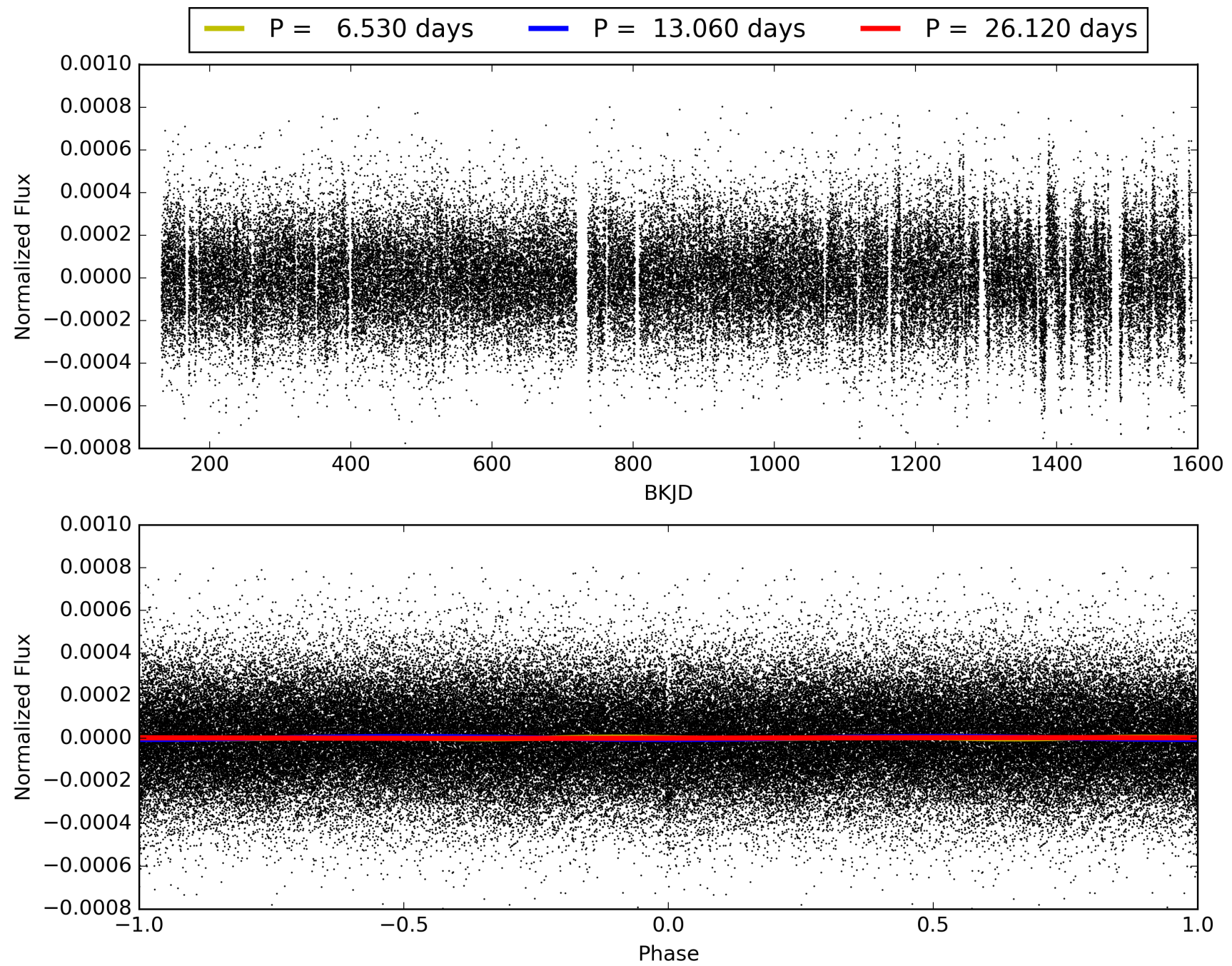
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:30:18 Z

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

TCE 005959719-02, PDC Light Curves

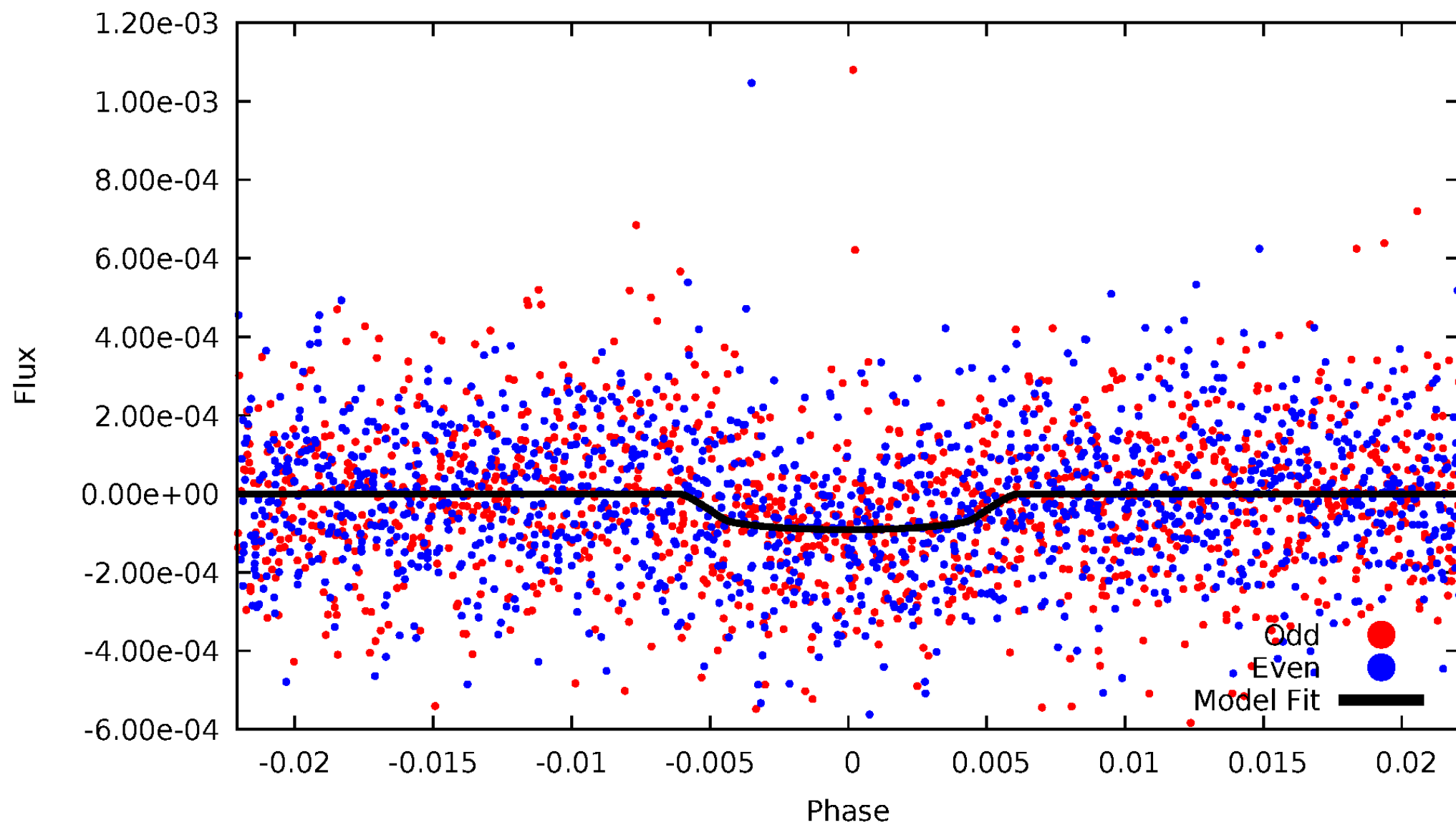


TCE 005959719-02



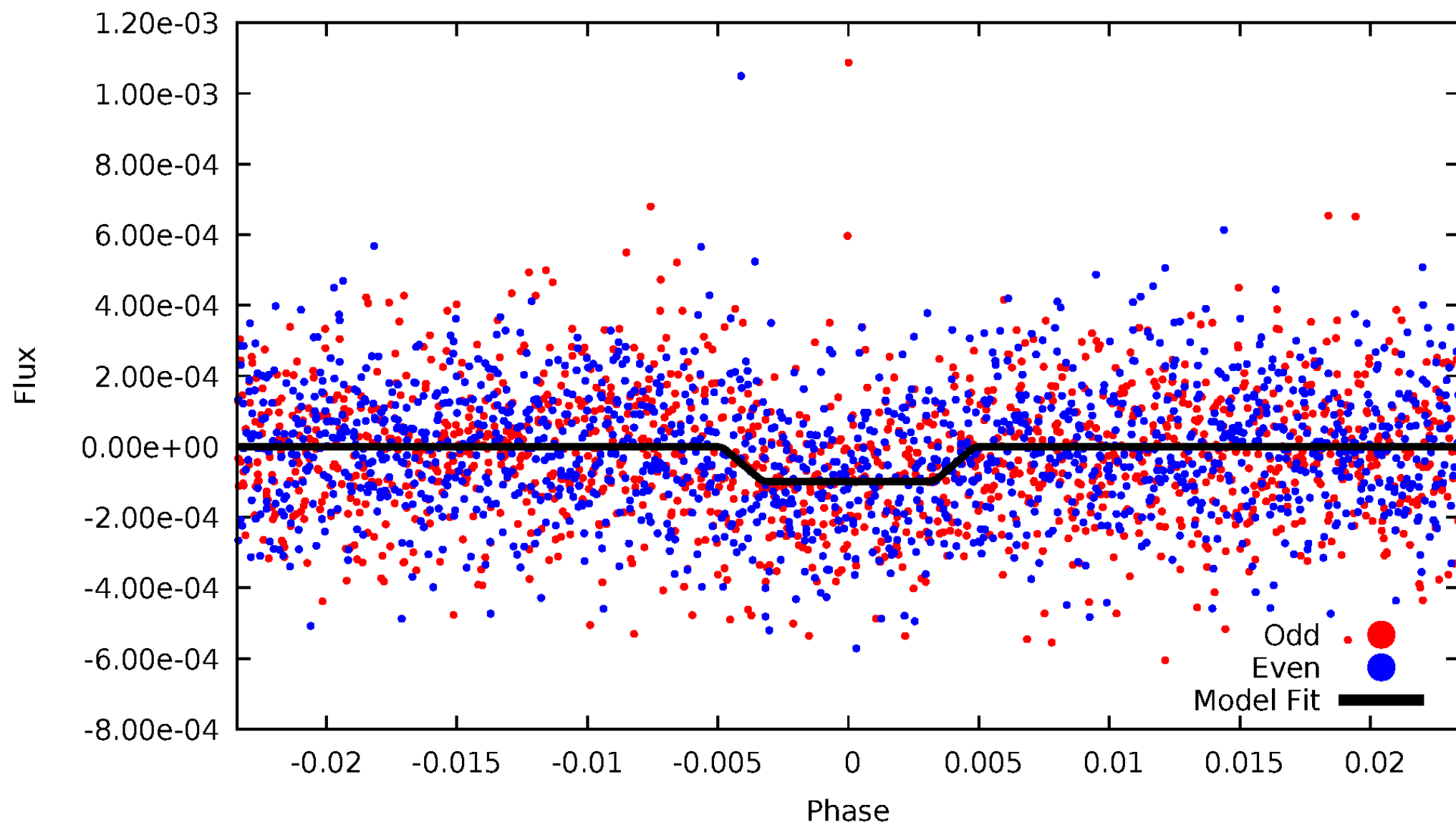
DV Odd/Even

TCE 005959719-02



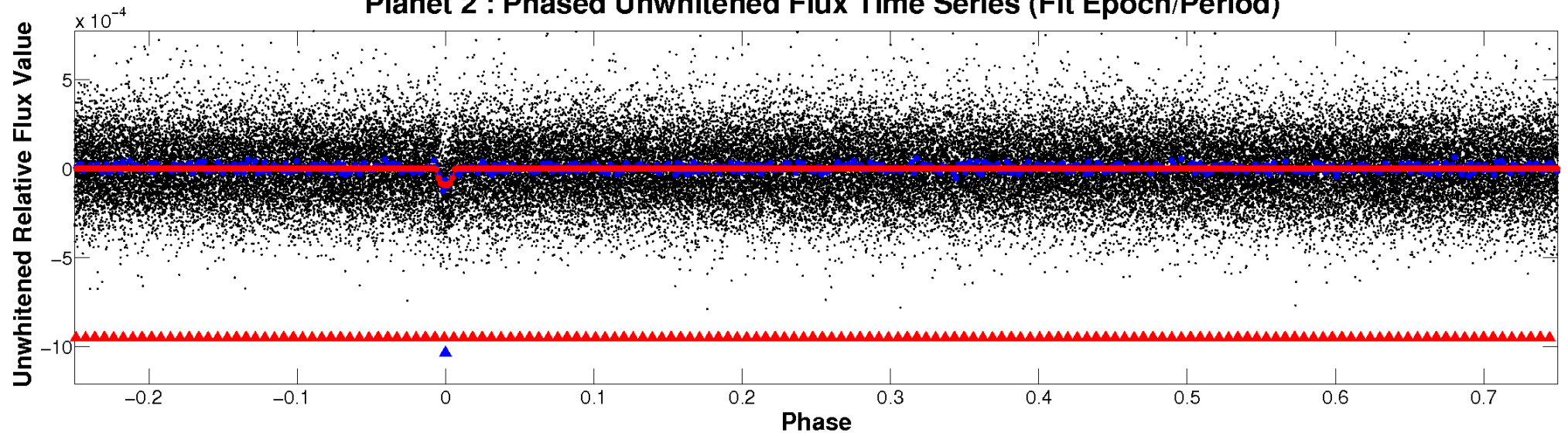
ALT Odd/Even

TCE 005959719-02

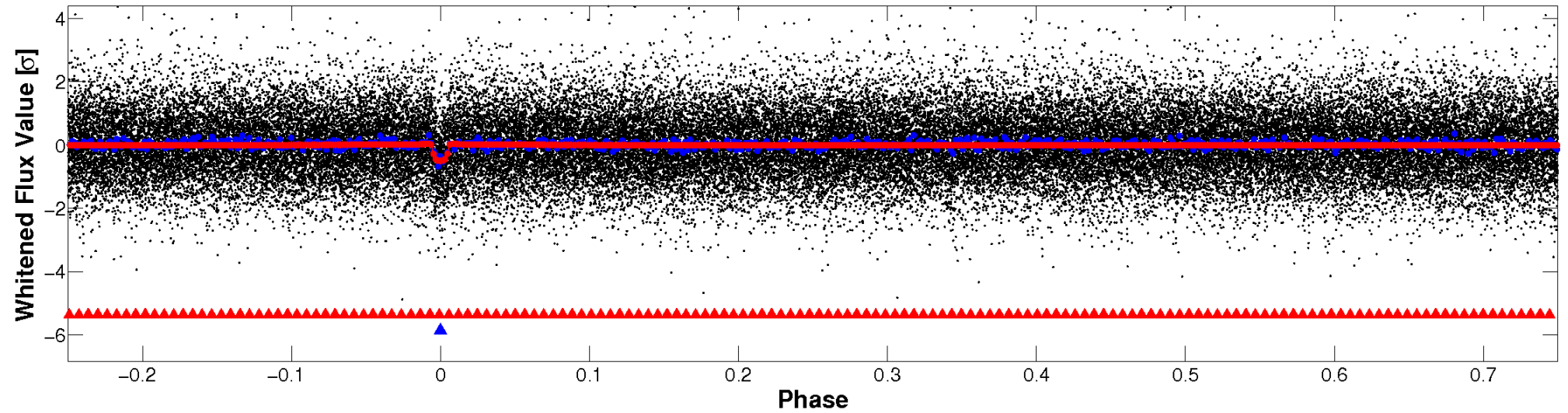


Non-Whitened Vs. Whitened Light Curve

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

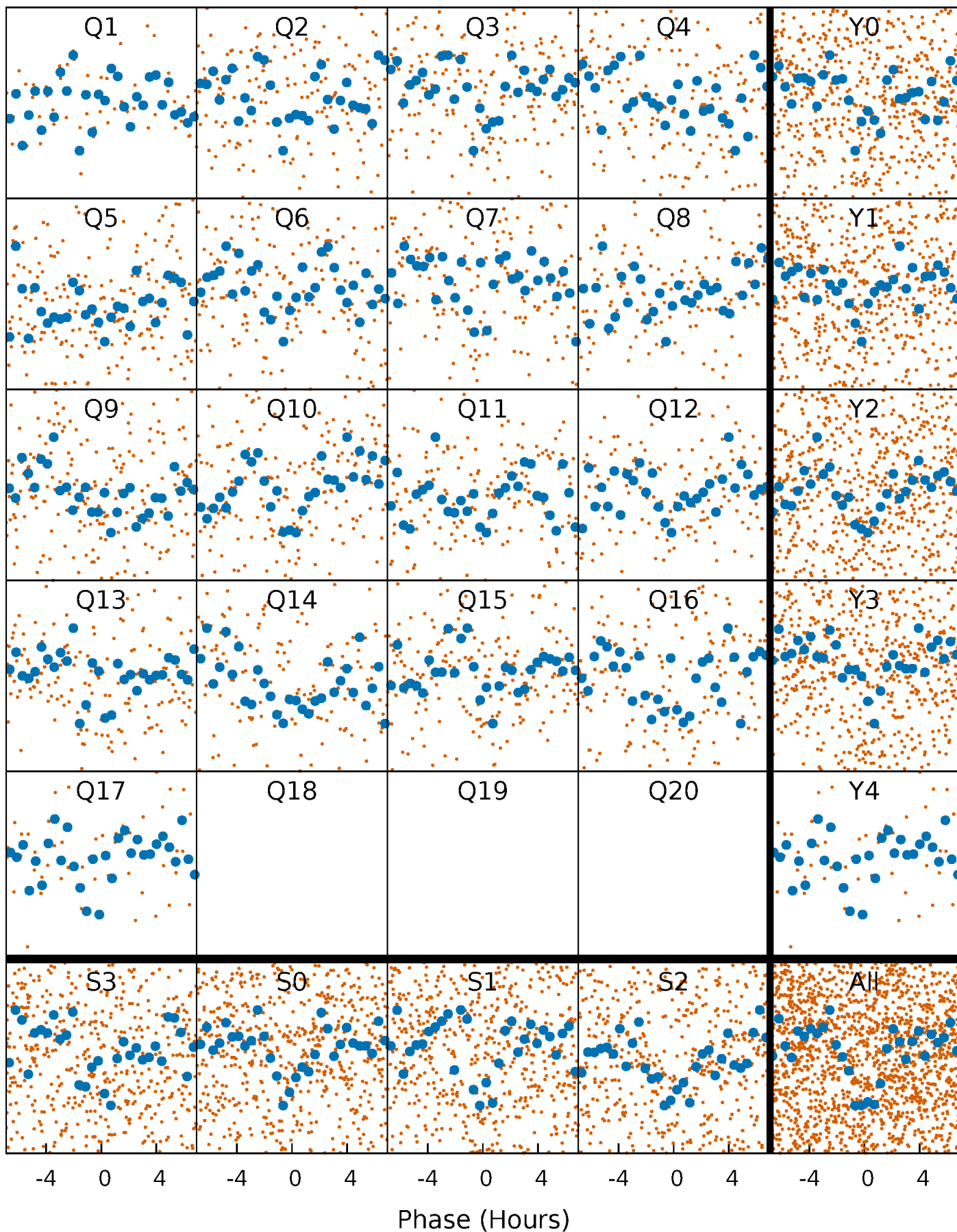


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



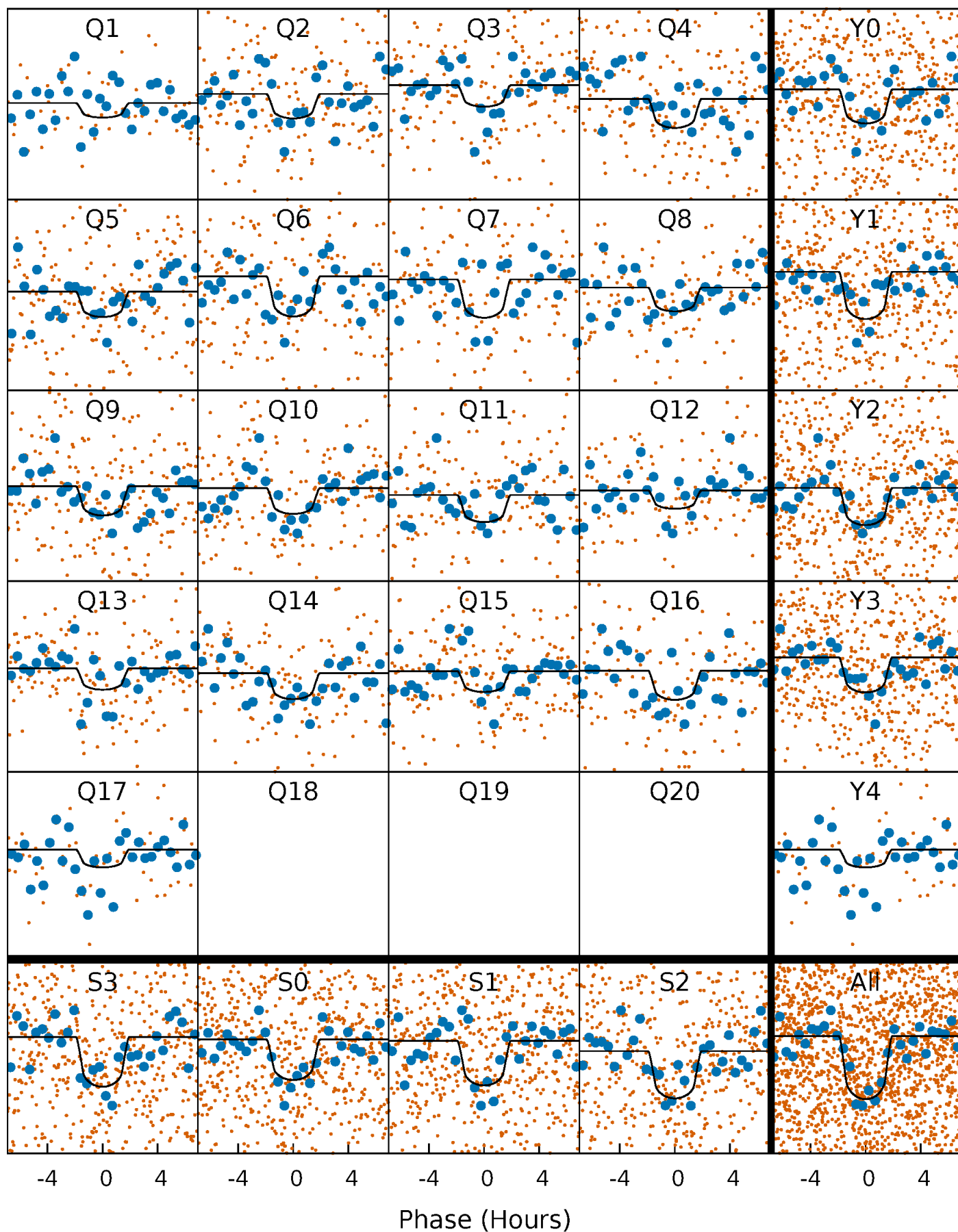
PDC Quarter-Phased Transit Curves

TCE 005959719-02 P= 13.060189 Days $T_0=144.325247$ (BKJD)



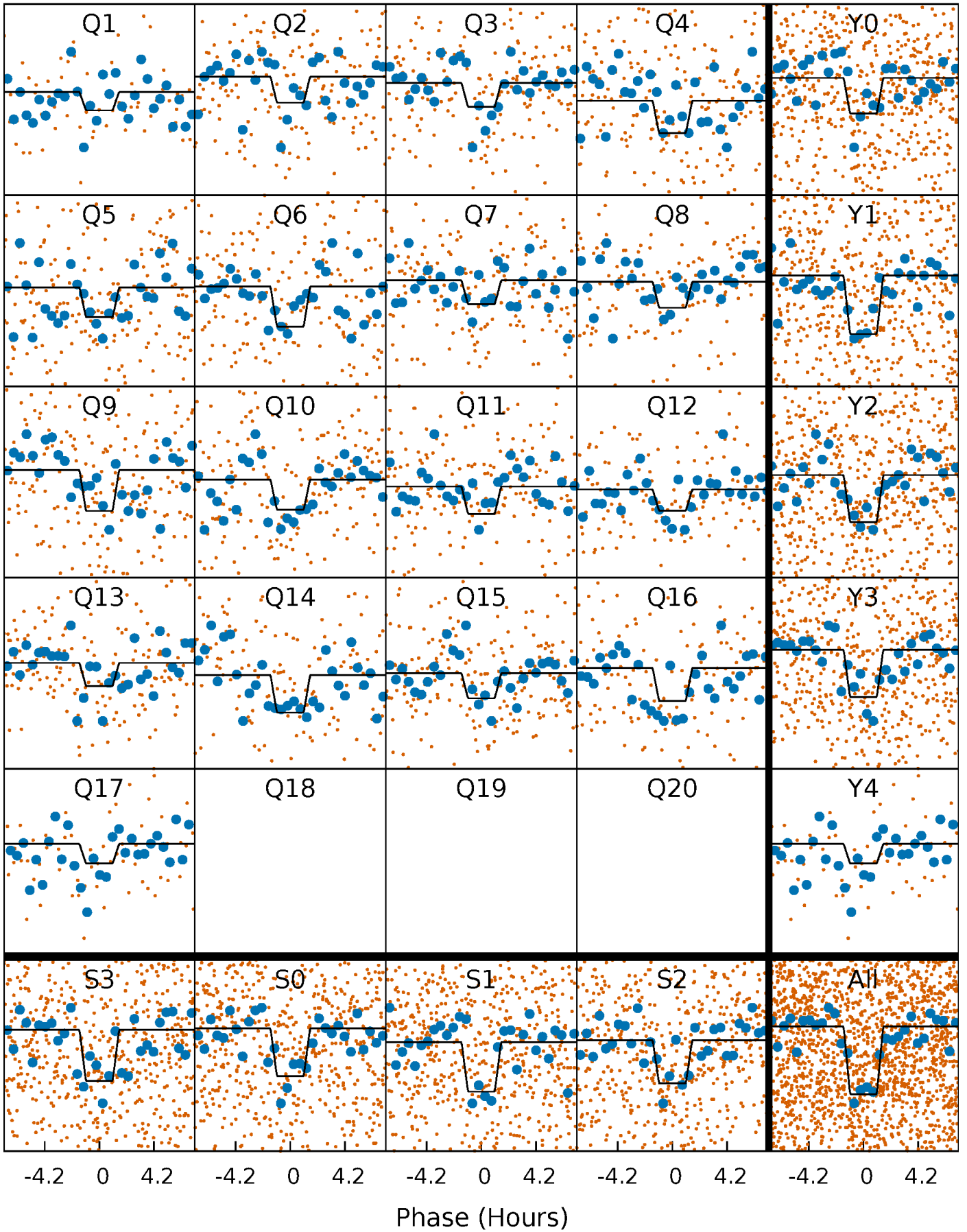
DV Quarter-Phased Transit Curves

TCE 005959719-02 P= 13.060189 Days $T_0=144.325247$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

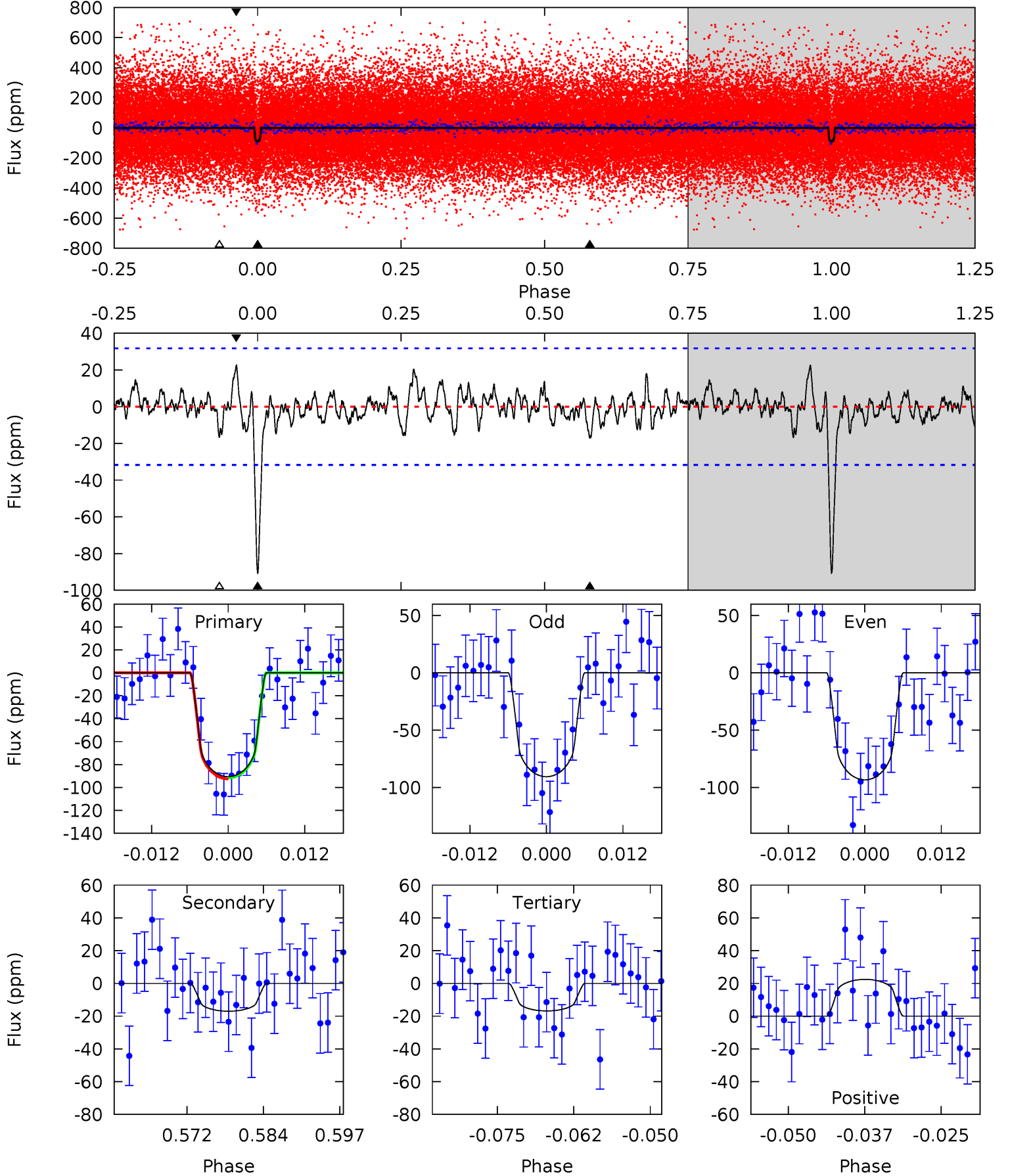
TCE 005959719-02 P= 13.060296 Days $T_0=144.322712$ (BKJD)



DV Model-Shift Uniqueness Test

005959719-02, P = 13.060189 Days, E = 131.265058 Days

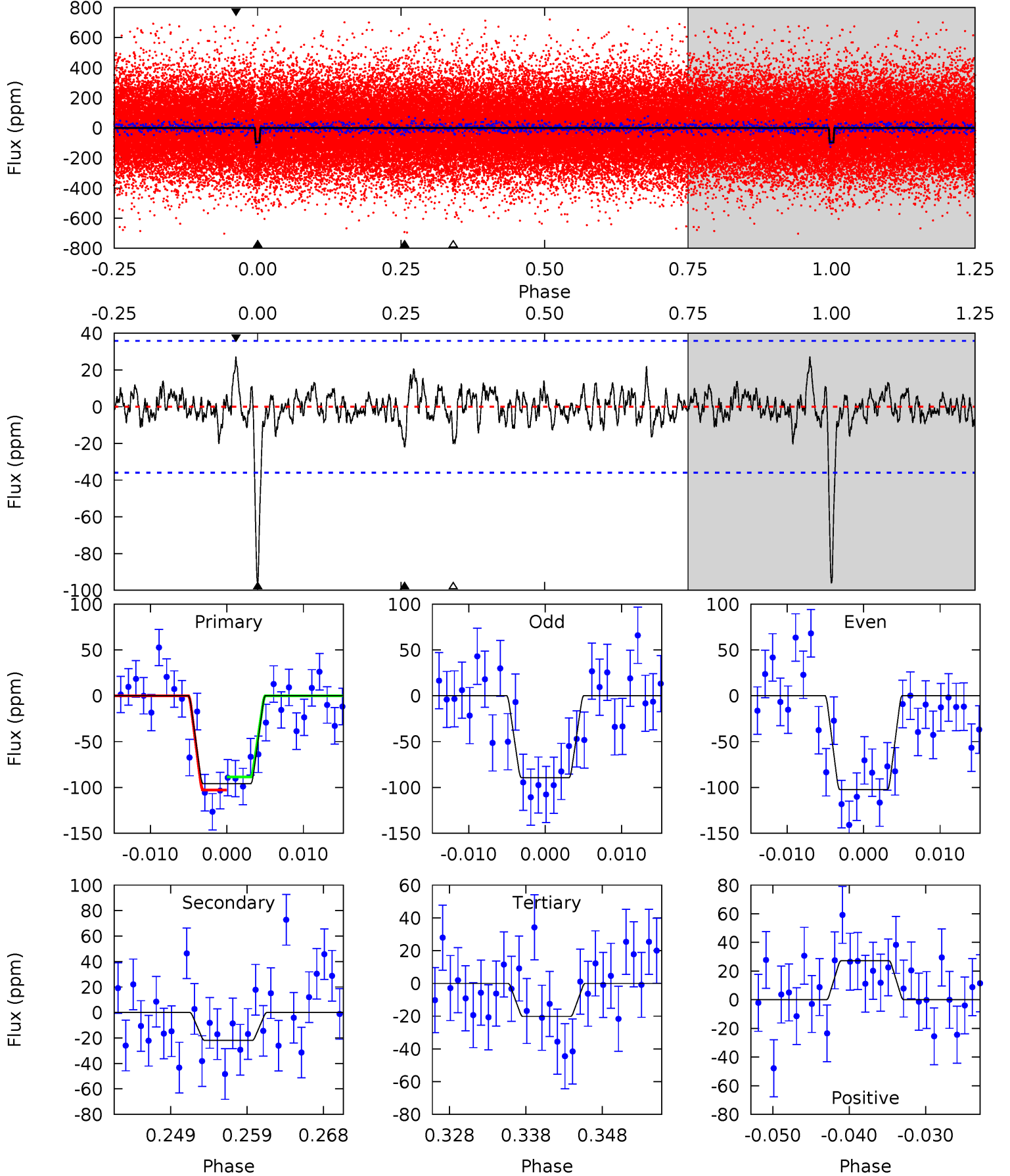
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	2.67	2.64	3.52	4.98	2.50	1.00	11.6	10.7	0.03	-0.85	0.22	0.95	0.20	0.08



Alt Model-Shift Uniqueness Test

005959719-02, P = 13.060296 Days, E = 131.262416 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	3.06	2.83	3.81	5.03	2.58	0.95	10.6	9.61	0.24	-0.74	0.91	1.00	0.22	1.00



Stellar Parameters For KIC 005959719

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5168^{+102}_{-102}	$4.566^{+0.036}_{-0.048}$	$-0.120^{+0.150}_{-0.150}$	$0.769^{+0.049}_{-0.040}$	$0.793^{+0.045}_{-0.045}$	$2.458^{+0.355}_{-0.374}$
	+2%/-2%	+1%/-1%	+125%/-125%	+6%/-5%	+6%/-6%	+14%/-15%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 005959719-02 / KOI 2498.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-17 ± 6	$0.95^{+0.56}_{-0.51}$	884^{+20}_{-24}	3564^{+1080}_{-543}	106^{+346}_{-69}
Alt.	-22 ± 7	$0.86^{+0.57}_{-0.49}$	883^{+22}_{-23}	3793^{+1495}_{-569}	156^{+746}_{-100}

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 $A_{obs} \gg 1.0$

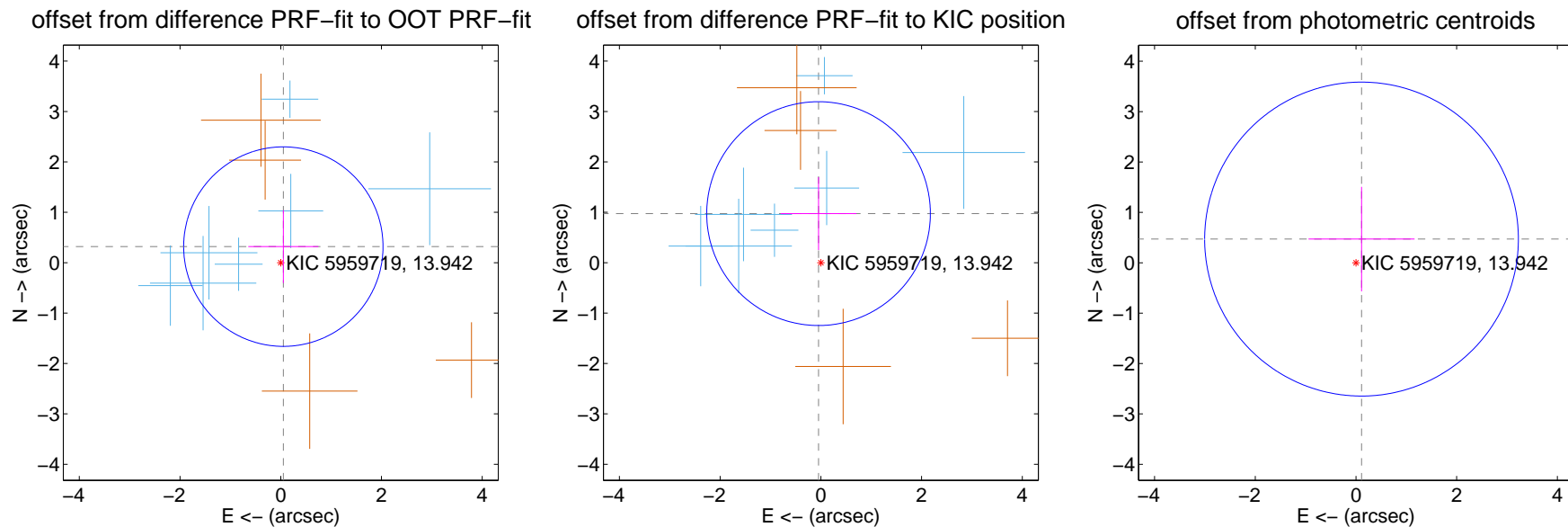
DV Centroid Data

Supplemental centroid analysis for 005959719-02. Kepler magnitude: 13.94. Transit SNR 10.82

There are 7 quarters with good PRF difference image offsets

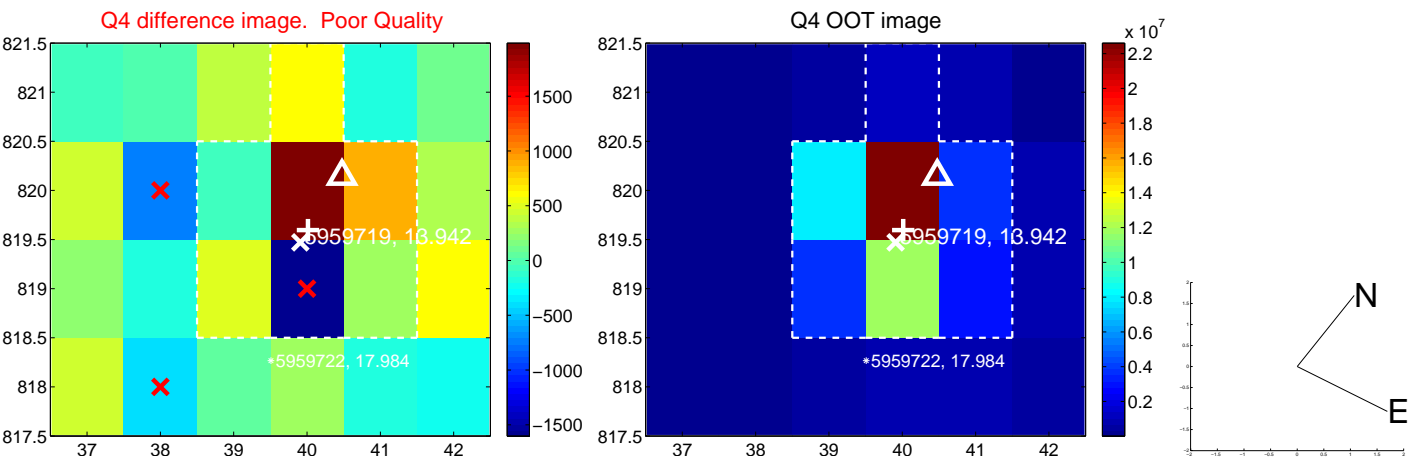
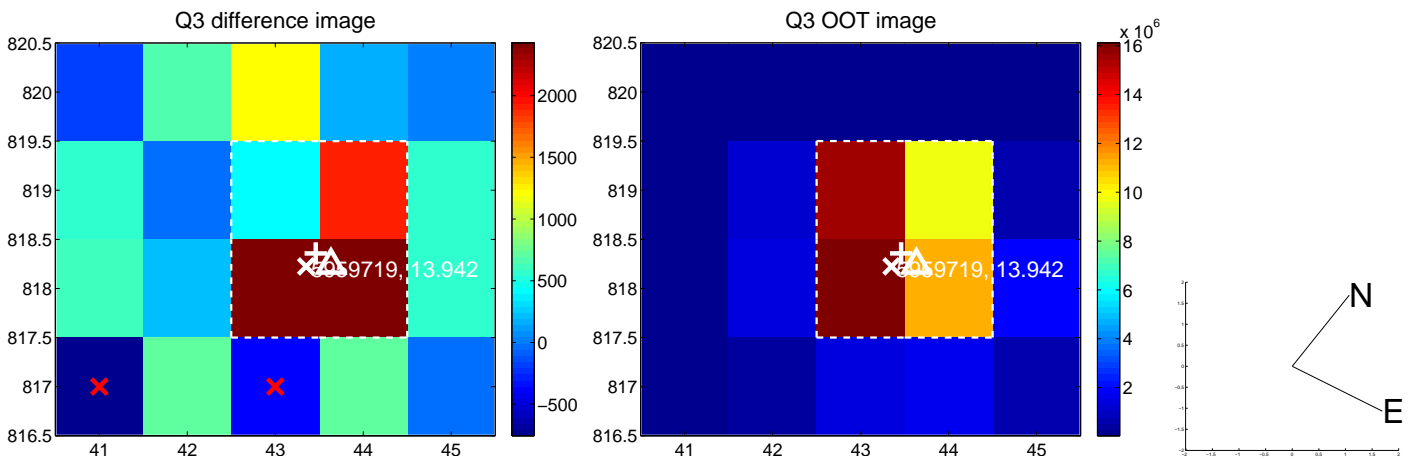
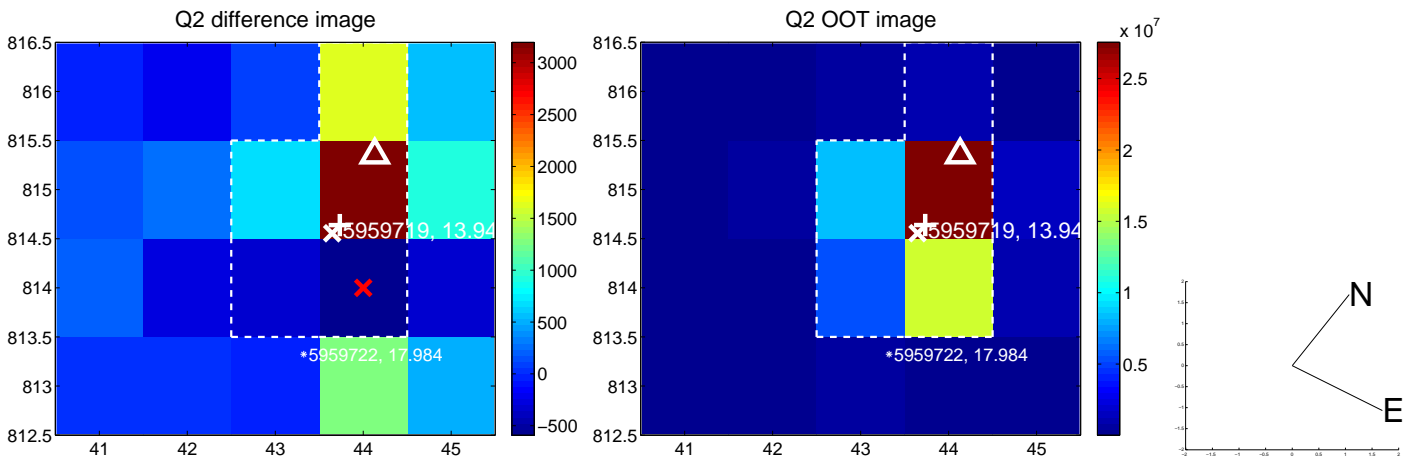
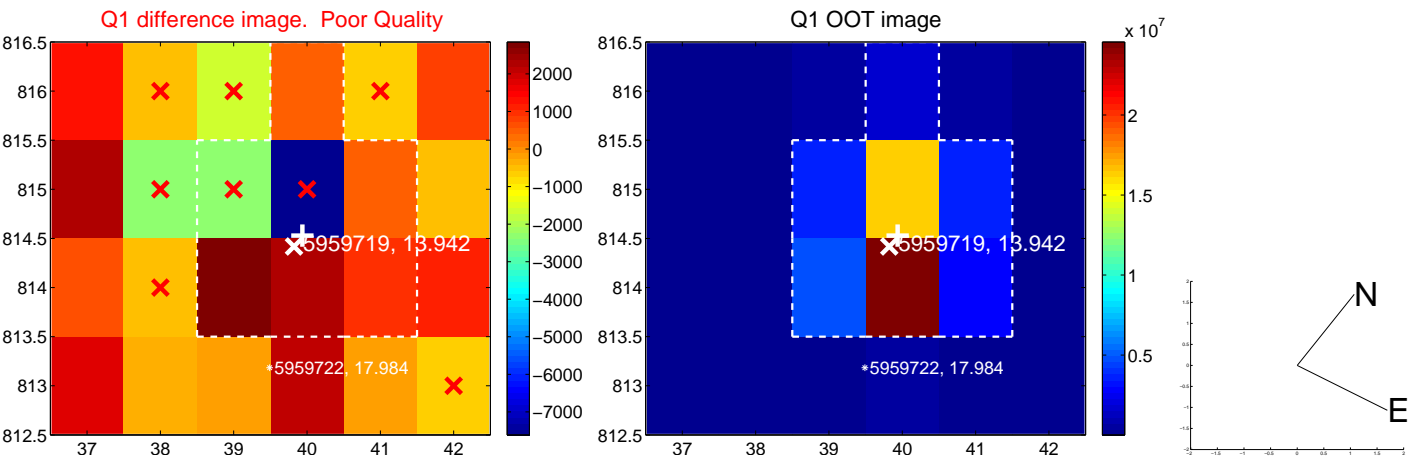
The direct PRF centroid is offset from the target star catalog position by about 0.81 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.323 ± 0.660	0.49	-0.052 ± 0.696	0.319 ± 0.723
PRF-fit source offset from KIC position	0.975 ± 0.740	1.32	0.046 ± 0.753	0.974 ± 0.723
photometric centroid source offset	0.48 ± 1.04	0.46	-0.11 ± 1.05	0.47 ± 1.04

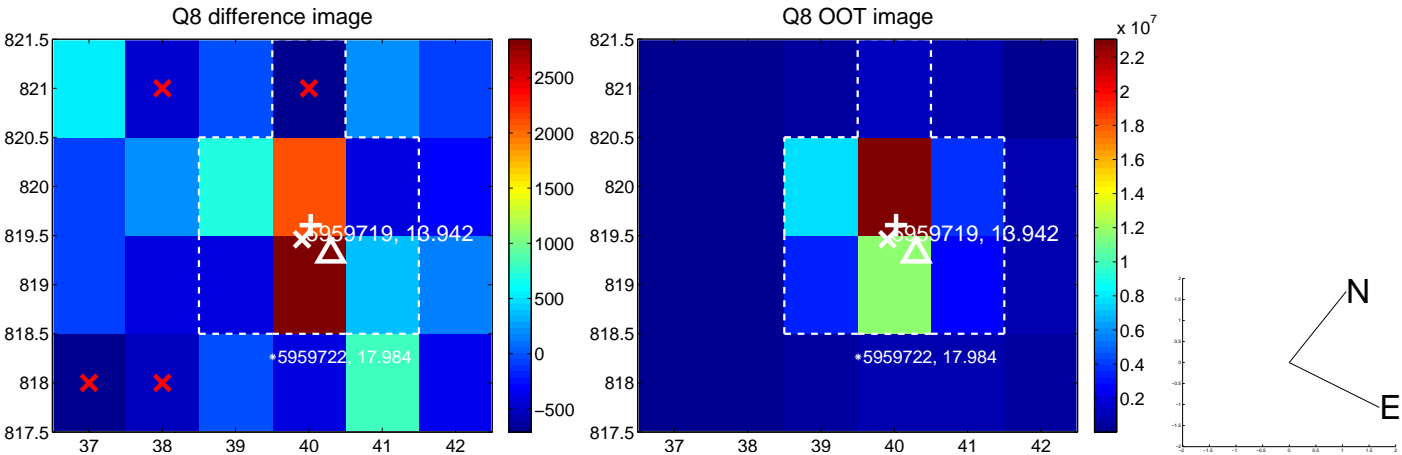
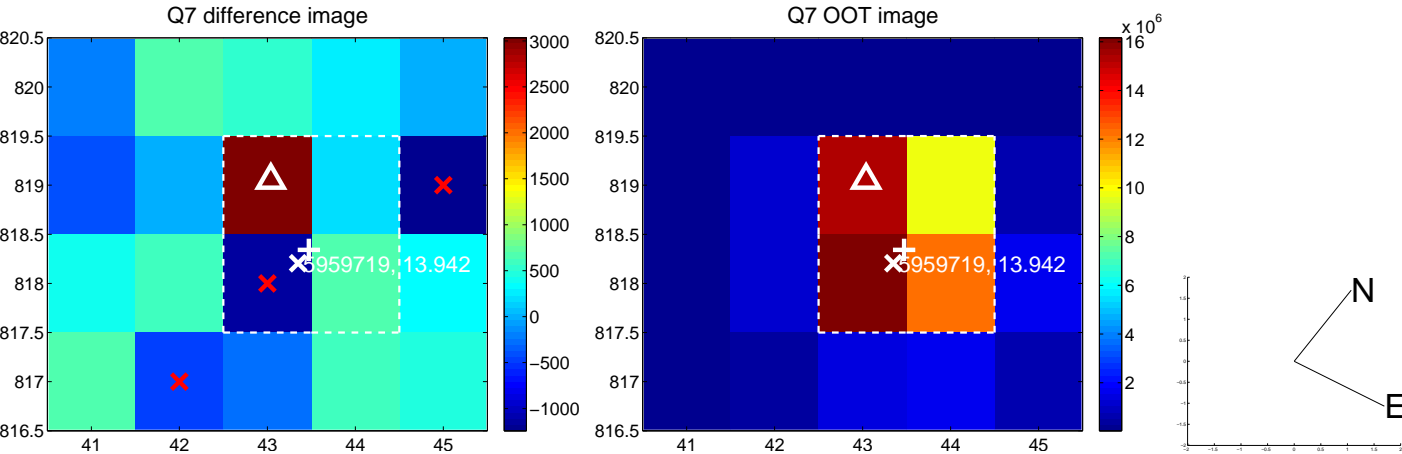
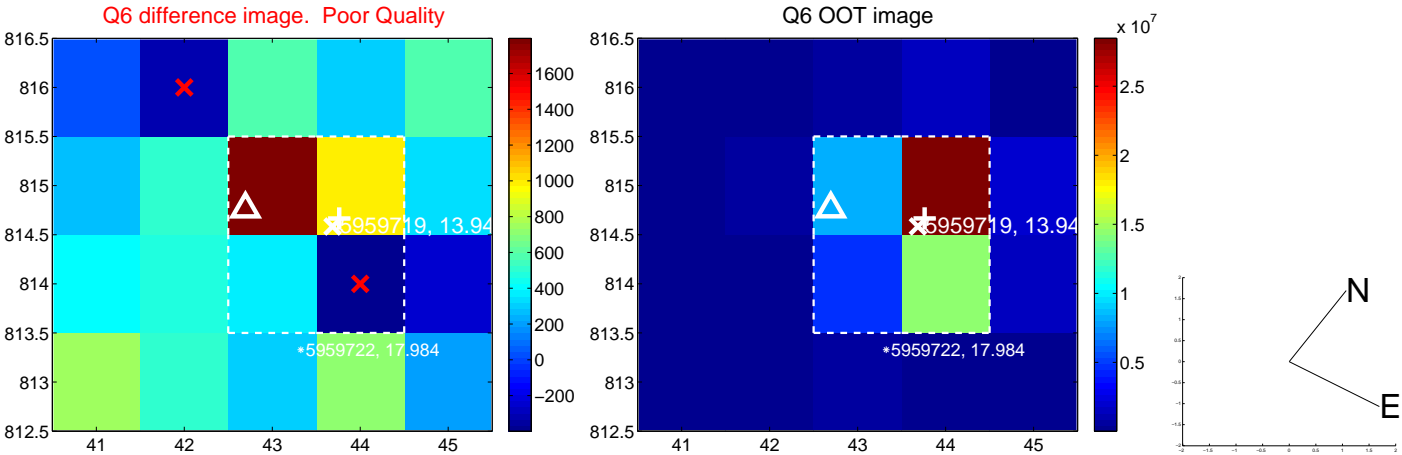
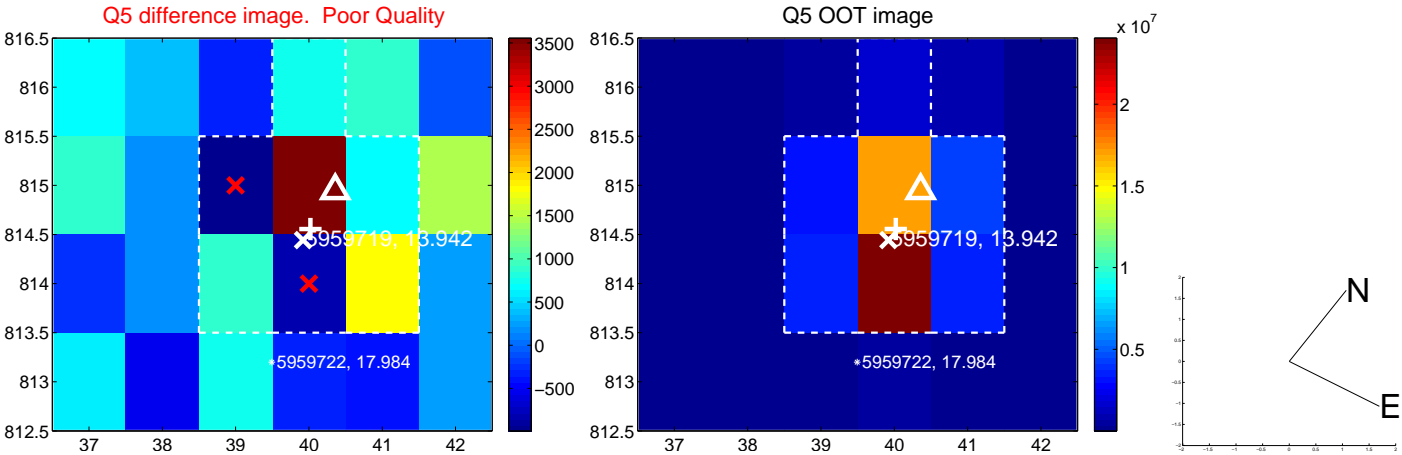


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

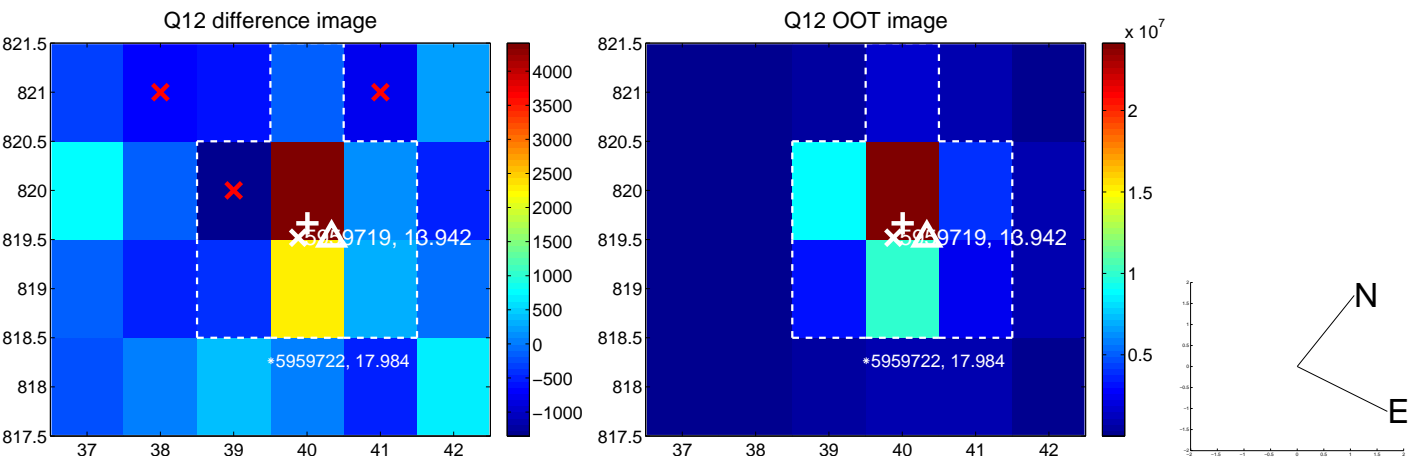
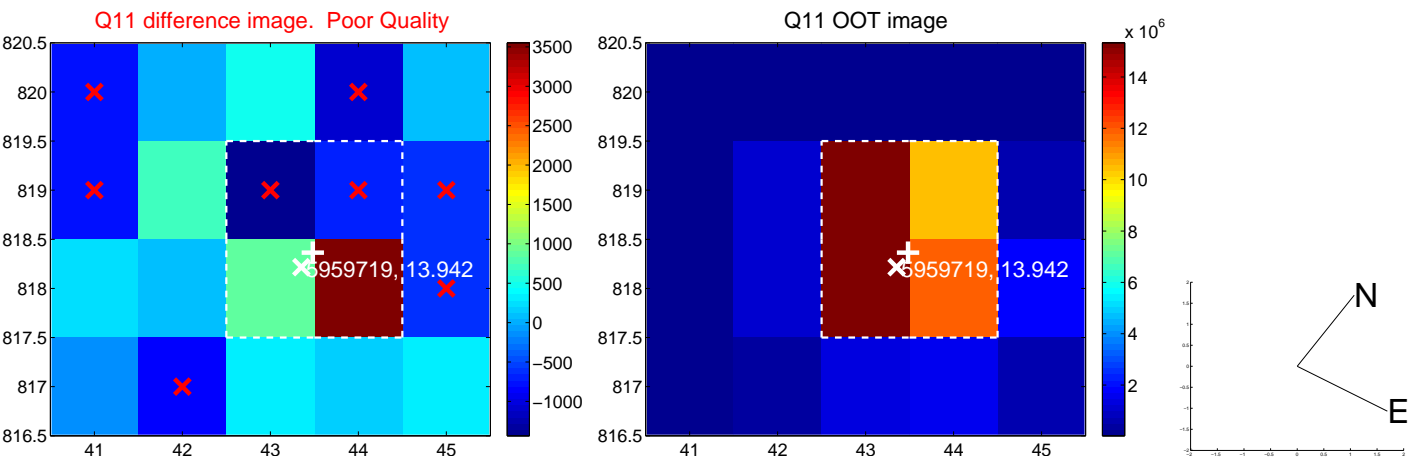
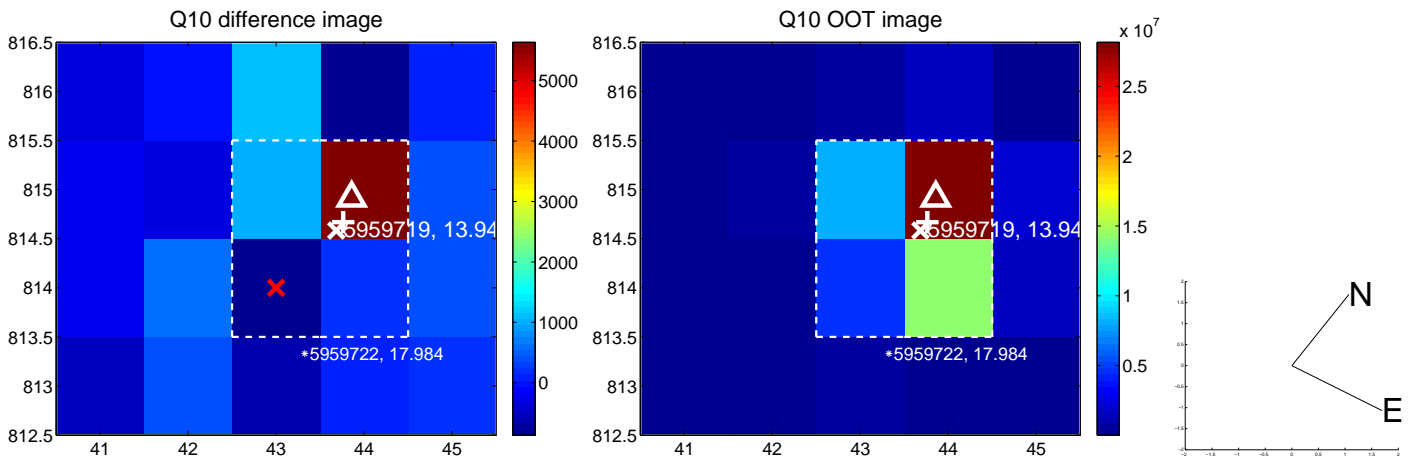
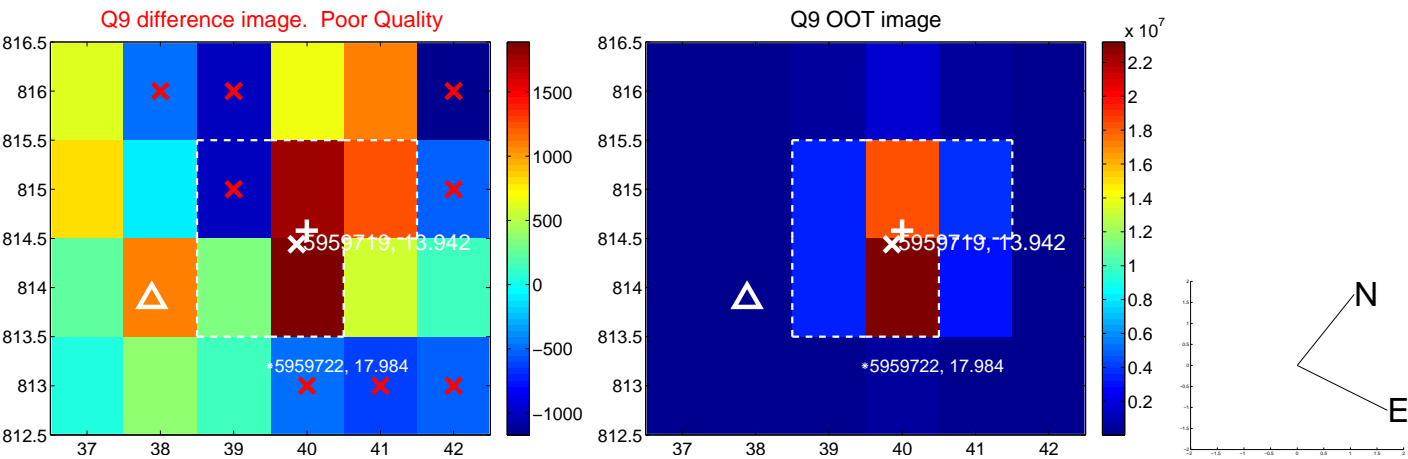
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



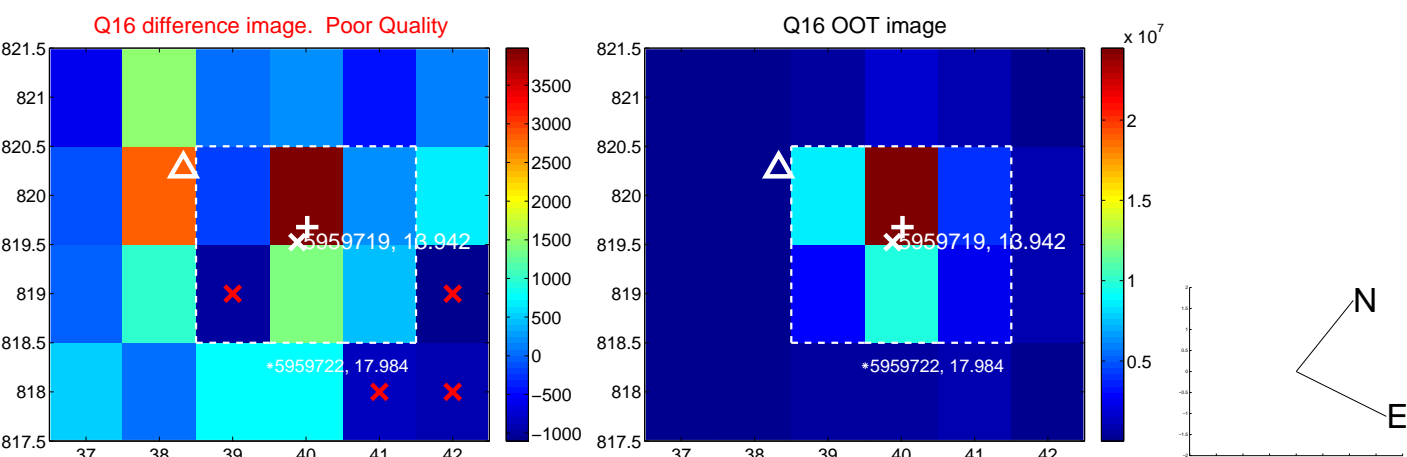
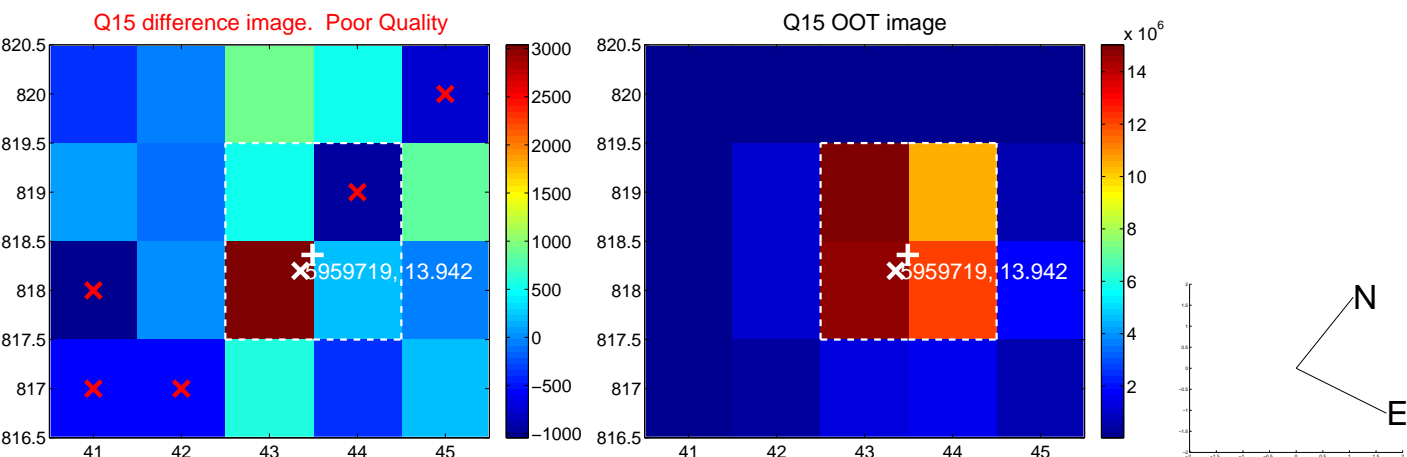
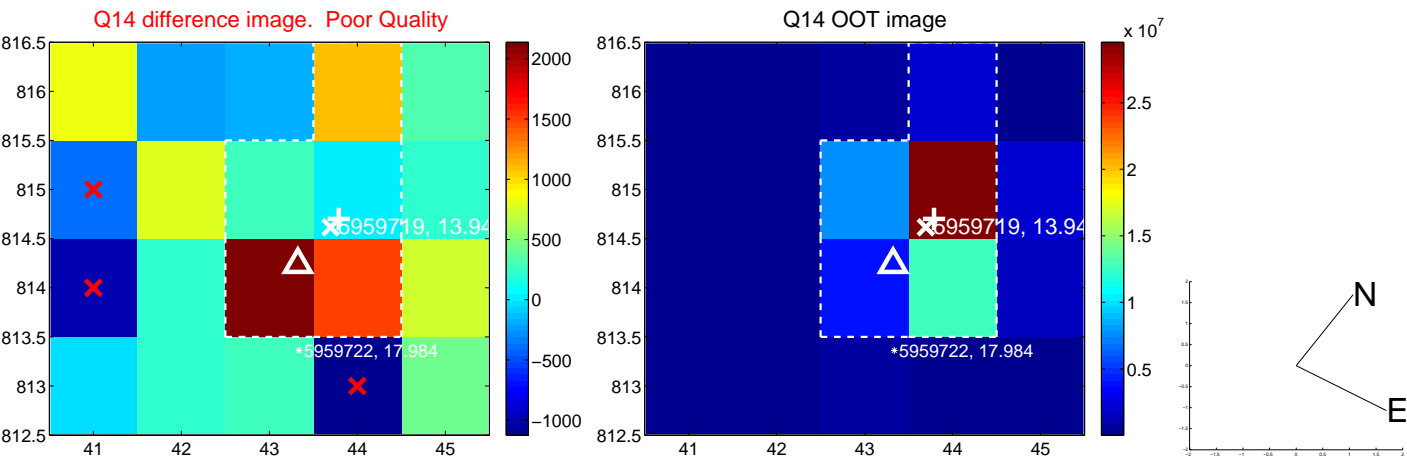
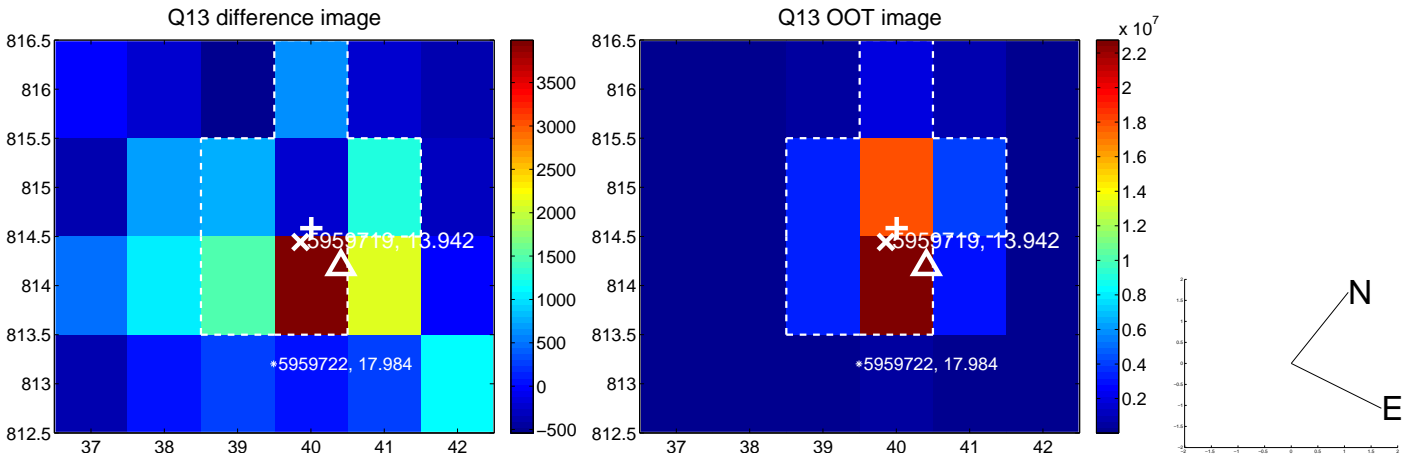
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



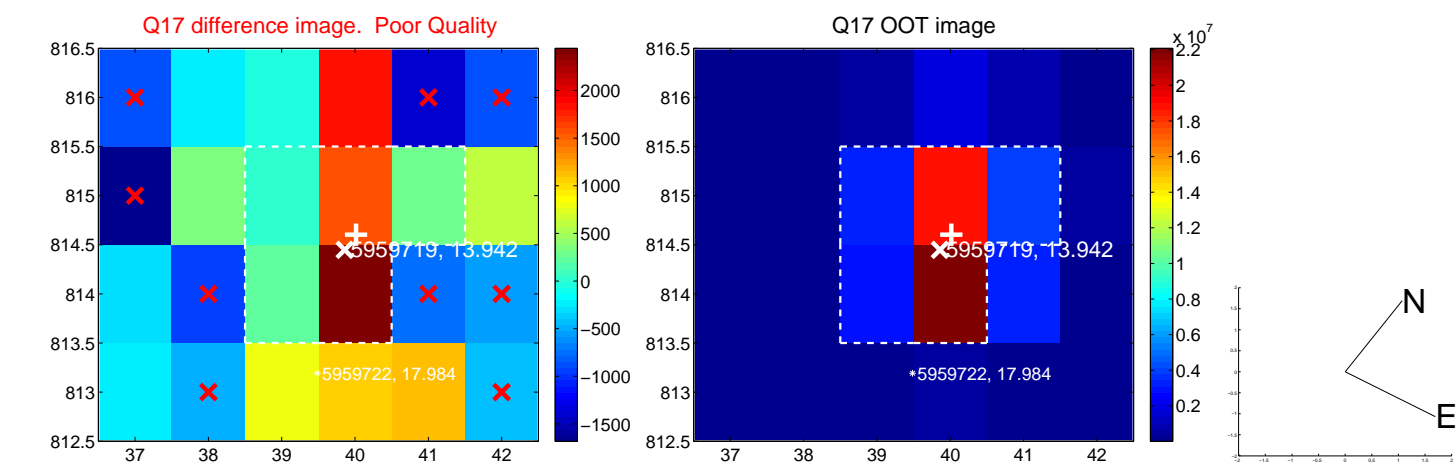
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



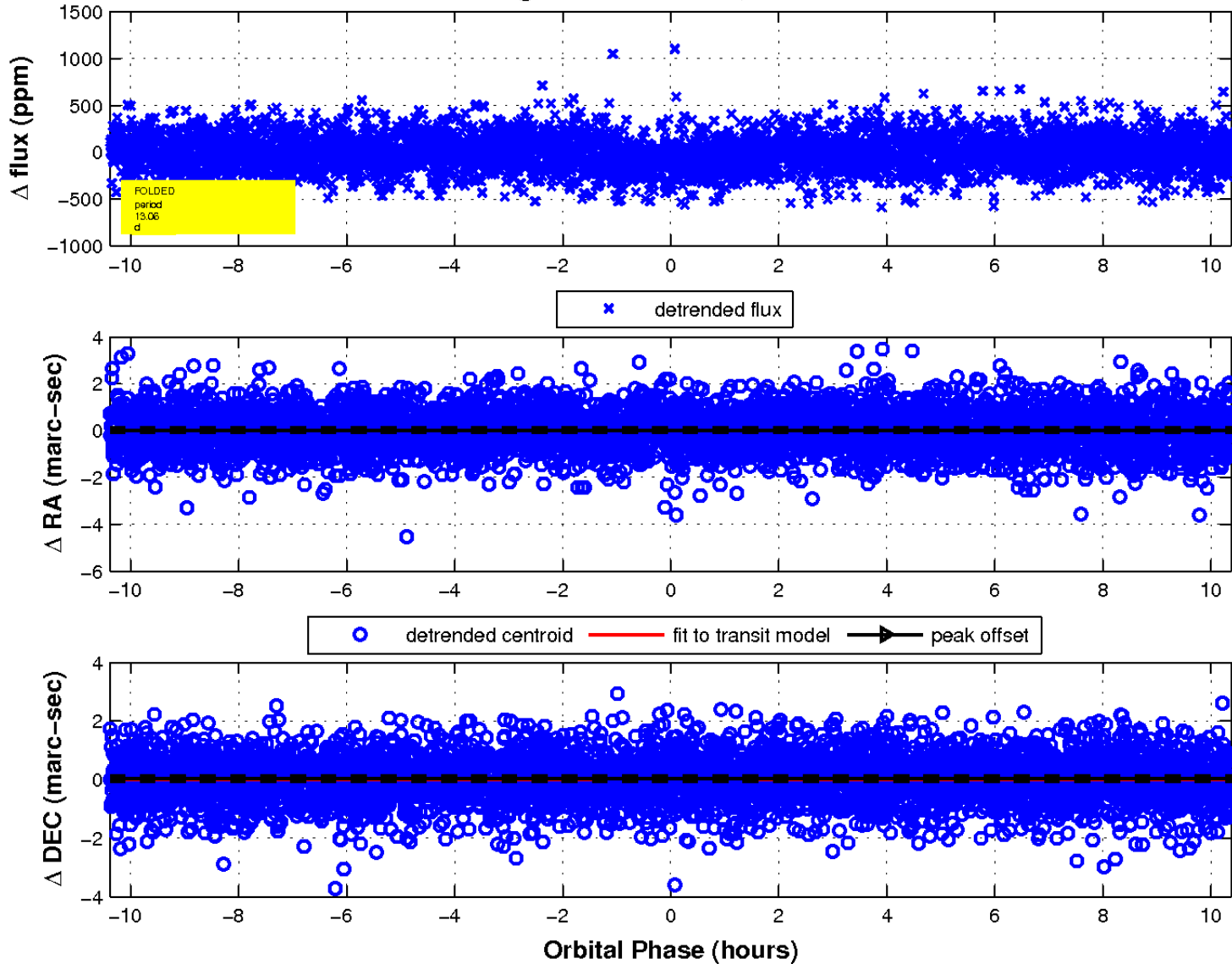
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

