

KIC 005531694

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})
005531694-01	OBS	0647.01	5.169512	134.125109	194.2	4.681	49.8	56.1	1.41	6011	2.31	696.13
005531694-02	OBS	0647.02	8.113473	132.805572	43.8	4.097	8.4	9.2	1.41	6011	1.06	381.66

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005531694-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005531694-02	OBS	PC	0.94	0	0	0	0	NO_COMMENT

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

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

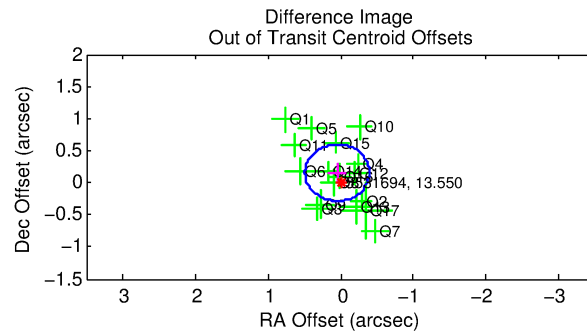
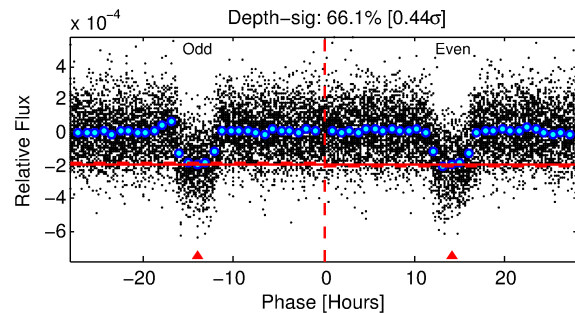
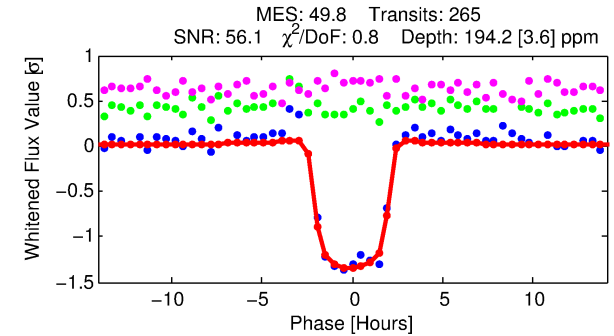
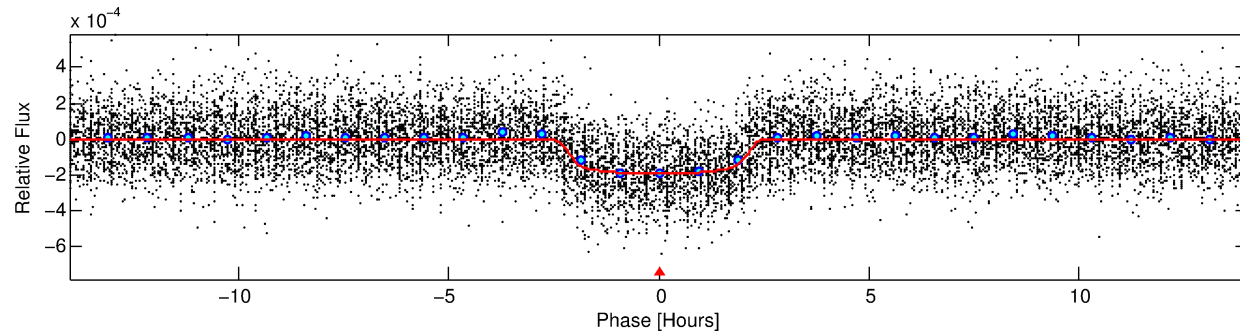
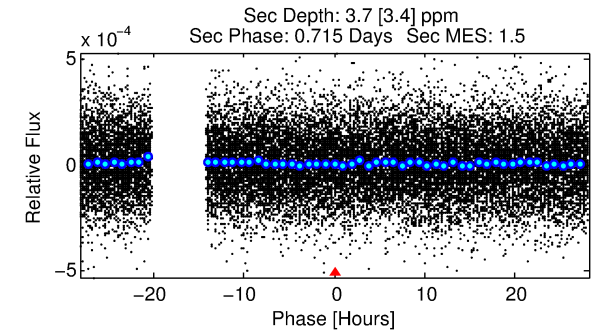
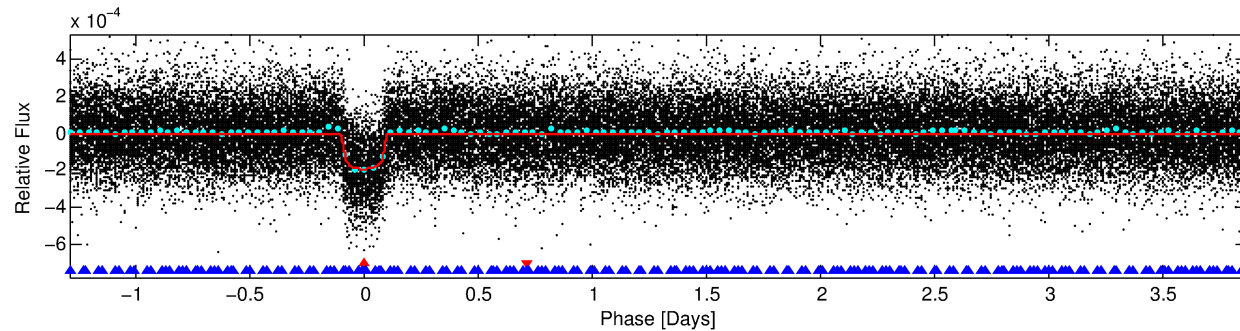
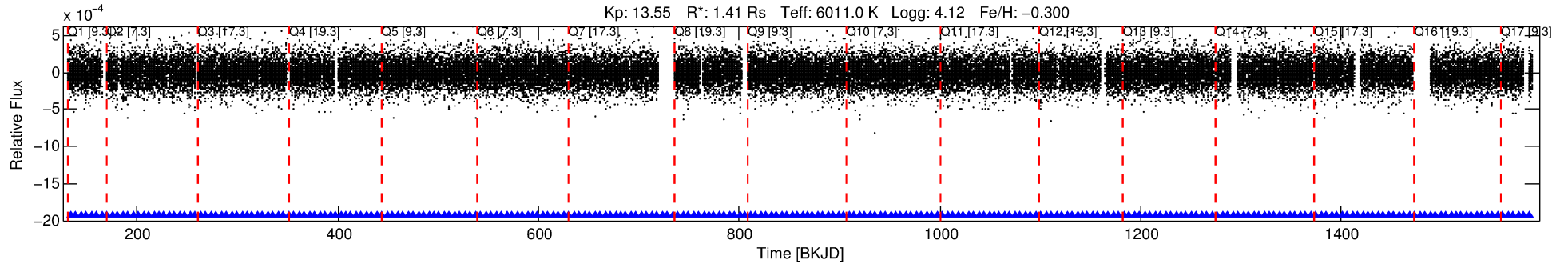
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005531694-01

No Significant Match Found

DV One-Page Summary

KIC: 5531694 Candidate: 1 of 2 Period: 5.170 d
KOI: K00647.01 Corr: 0.981



DV Fit Results:

Period = 5.16951 [0.00001] d
Epoch = 134.1251 [0.0013] BKJD
Rp/R* = 0.0150 [0.0010]
a/R* = 4.08 [1.34]
b = 0.90 [0.08]
Seff = 696.13 [237.77]
Teq = 1310 [112] K
Rp = 2.31 [0.51] Re
a = 0.0578 [0.0118] AU
Ag = 1.28 [1.27] [0.22σ]
Teffp = 2153 [506] K [1.63σ]

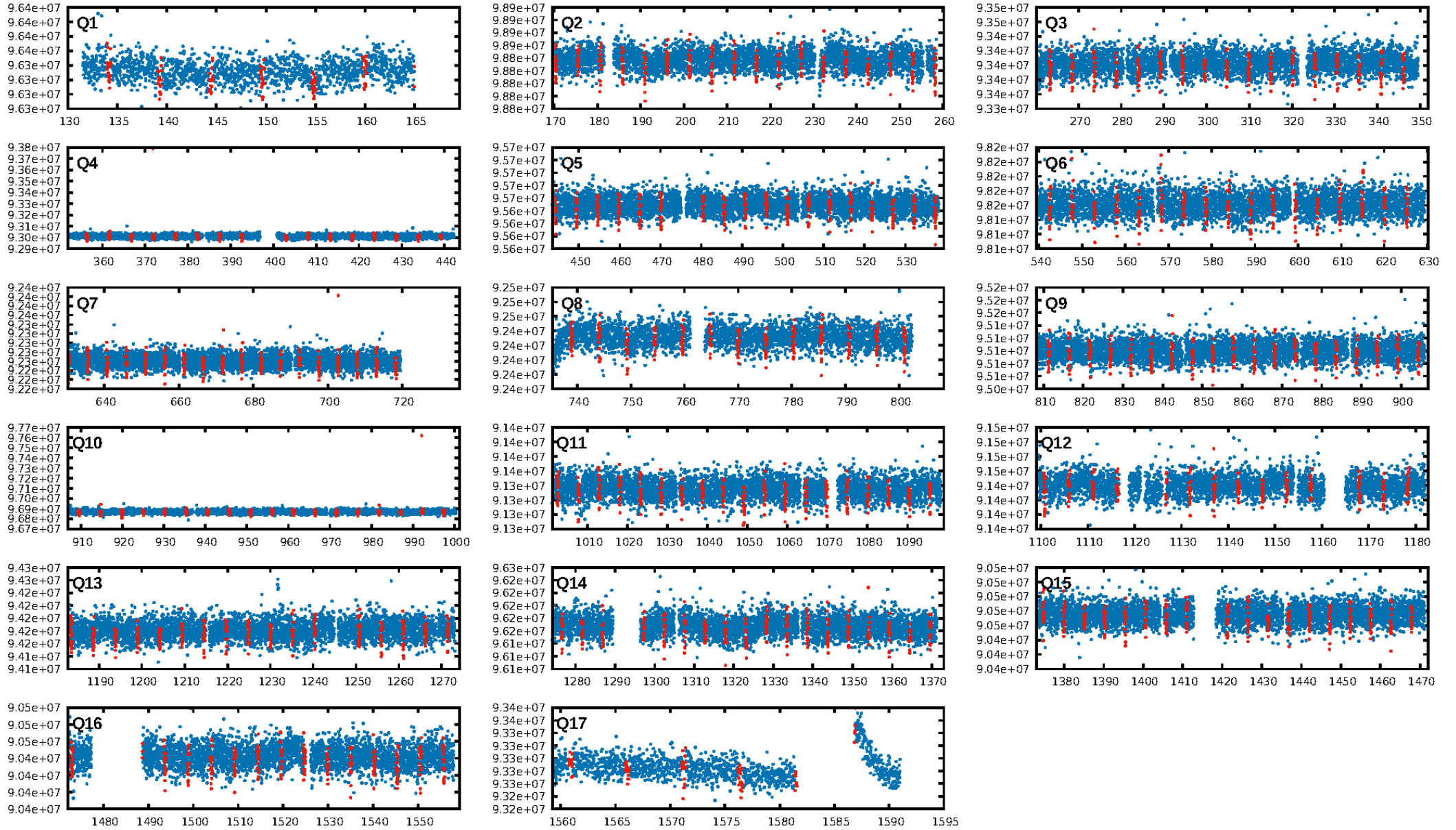
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [11.36σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [253/253]
GhostDiagnostic-chr: 5.67
Centroid-sig: 54.7%
Centroid-so: 0.295 arcsec [1.48σ]
OotOffset-rm: 0.163 arcsec [1.11σ]
KicOffset-rm: 0.306 arcsec [2.14σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

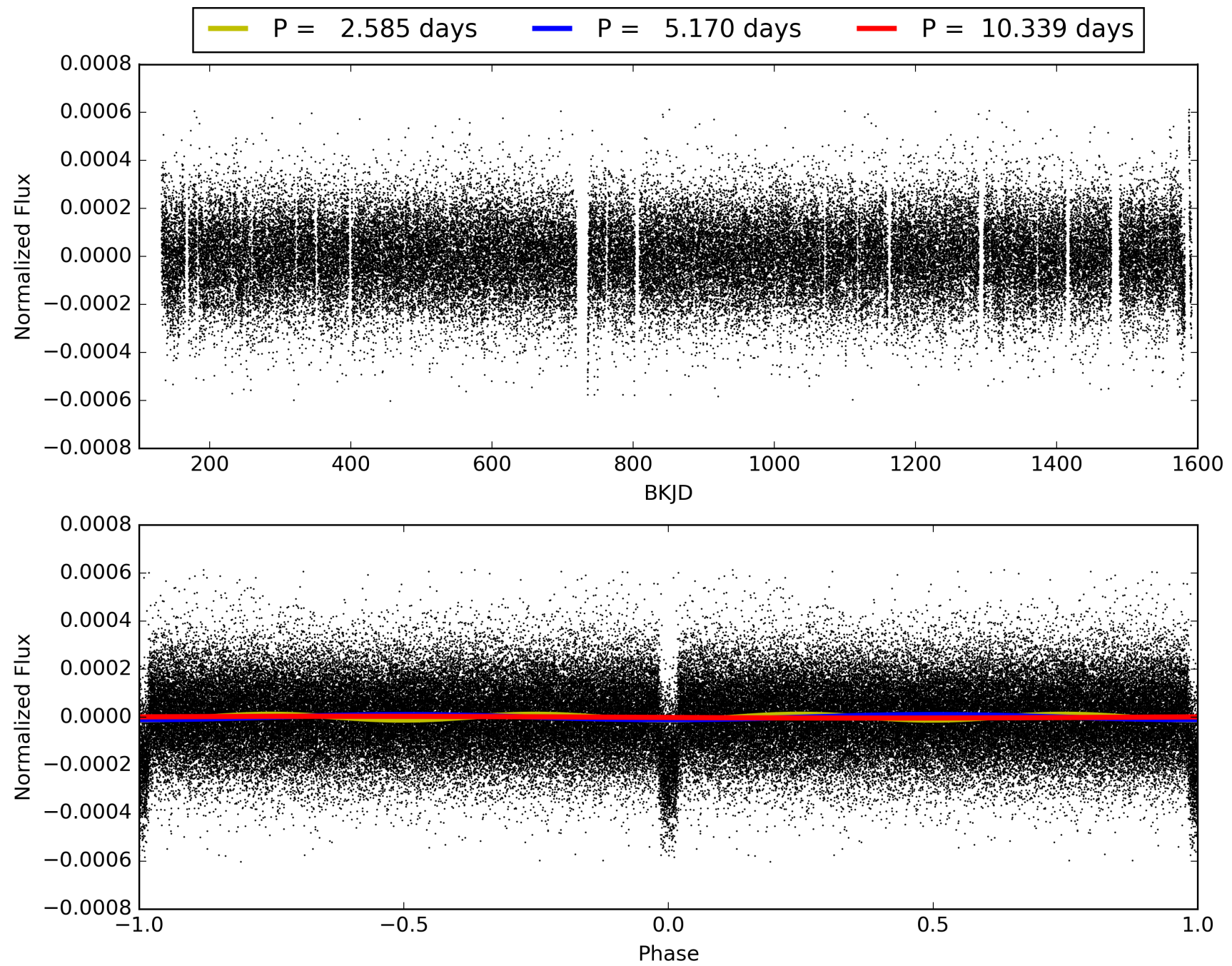
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:01:56 Z

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

TCE 005531694-01, PDC Light Curves

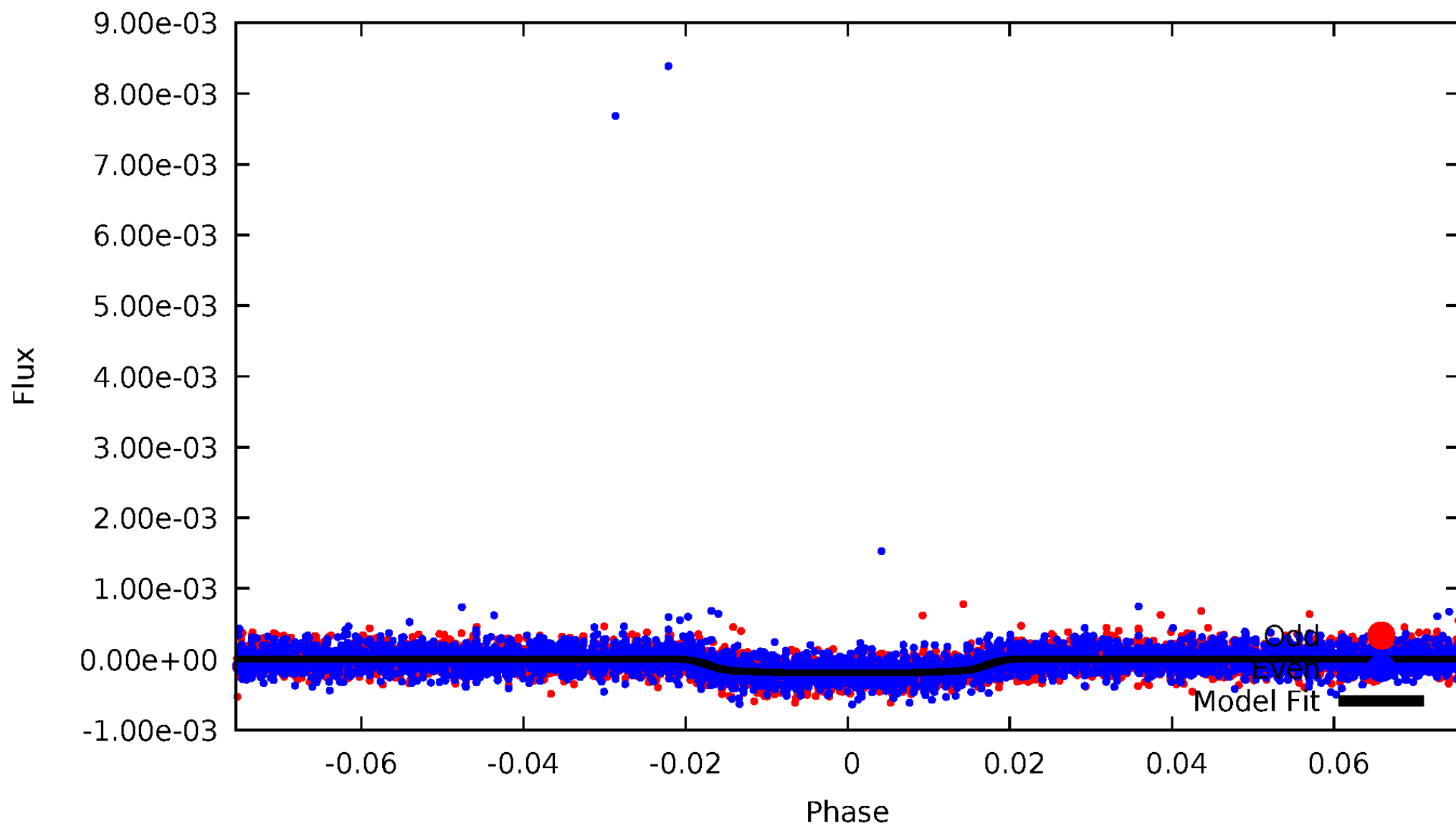


TCE 005531694-01



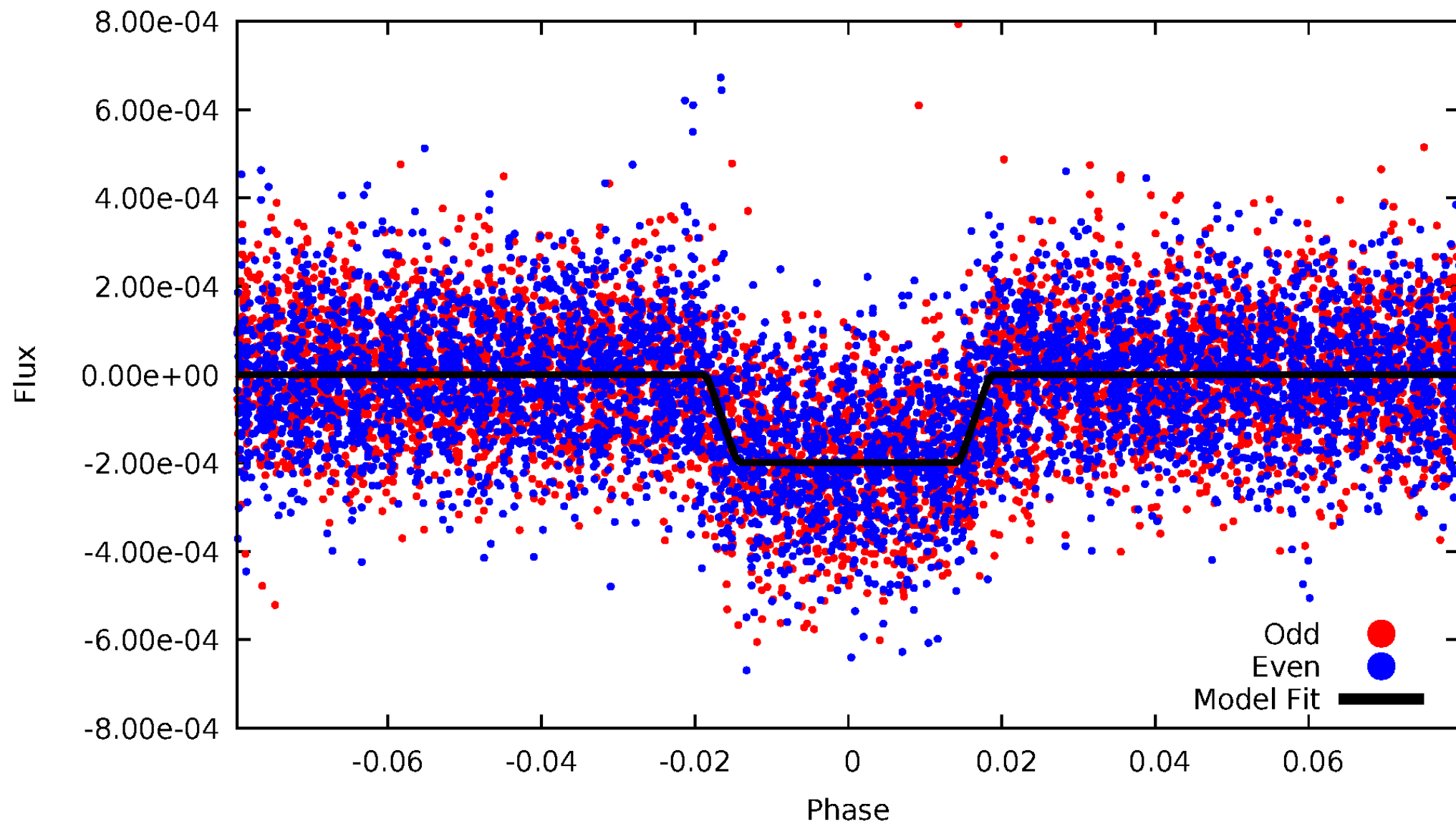
DV Odd/Even

TCE 005531694-01



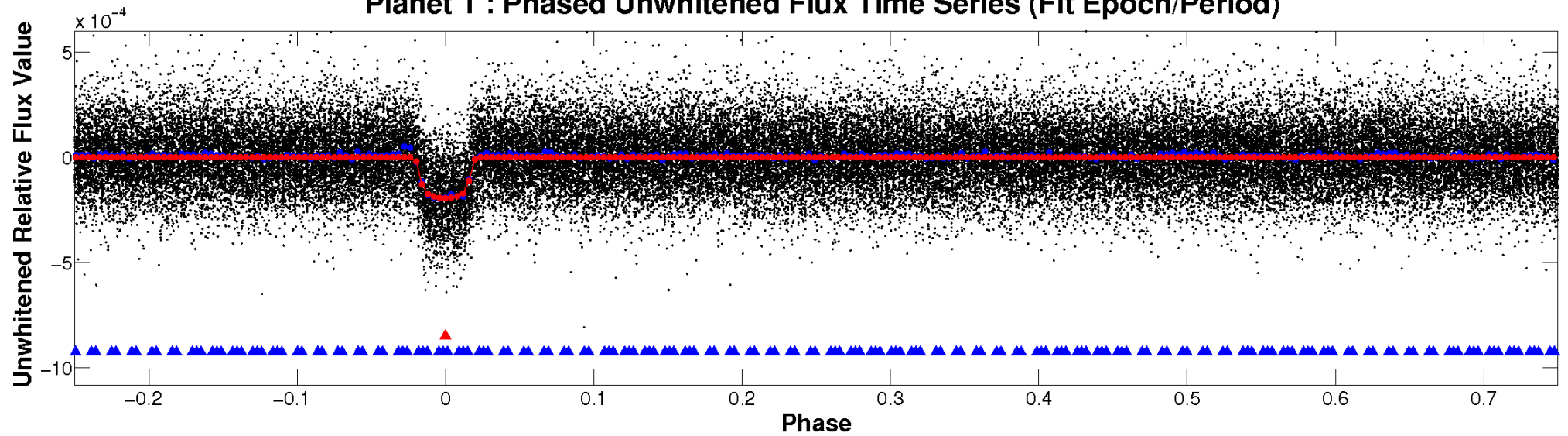
ALT Odd/Even

TCE 005531694-01

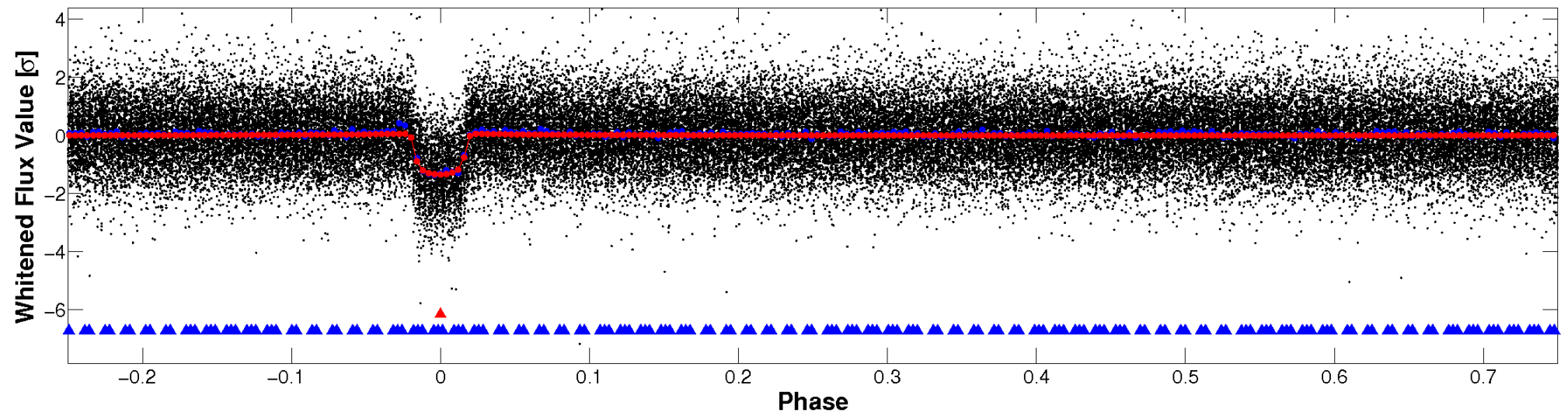


Non-Whitened Vs. Whitened Light Curve

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

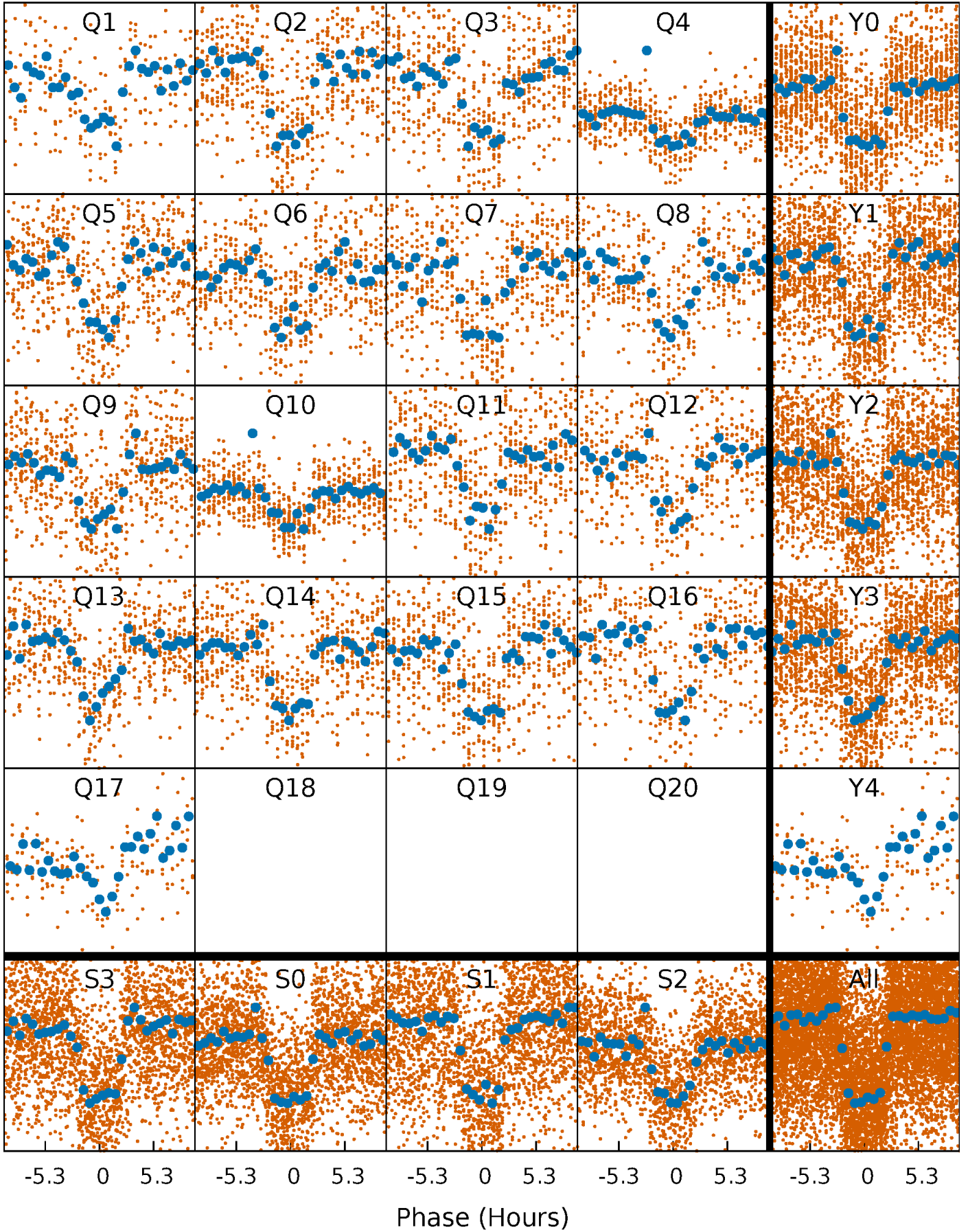


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



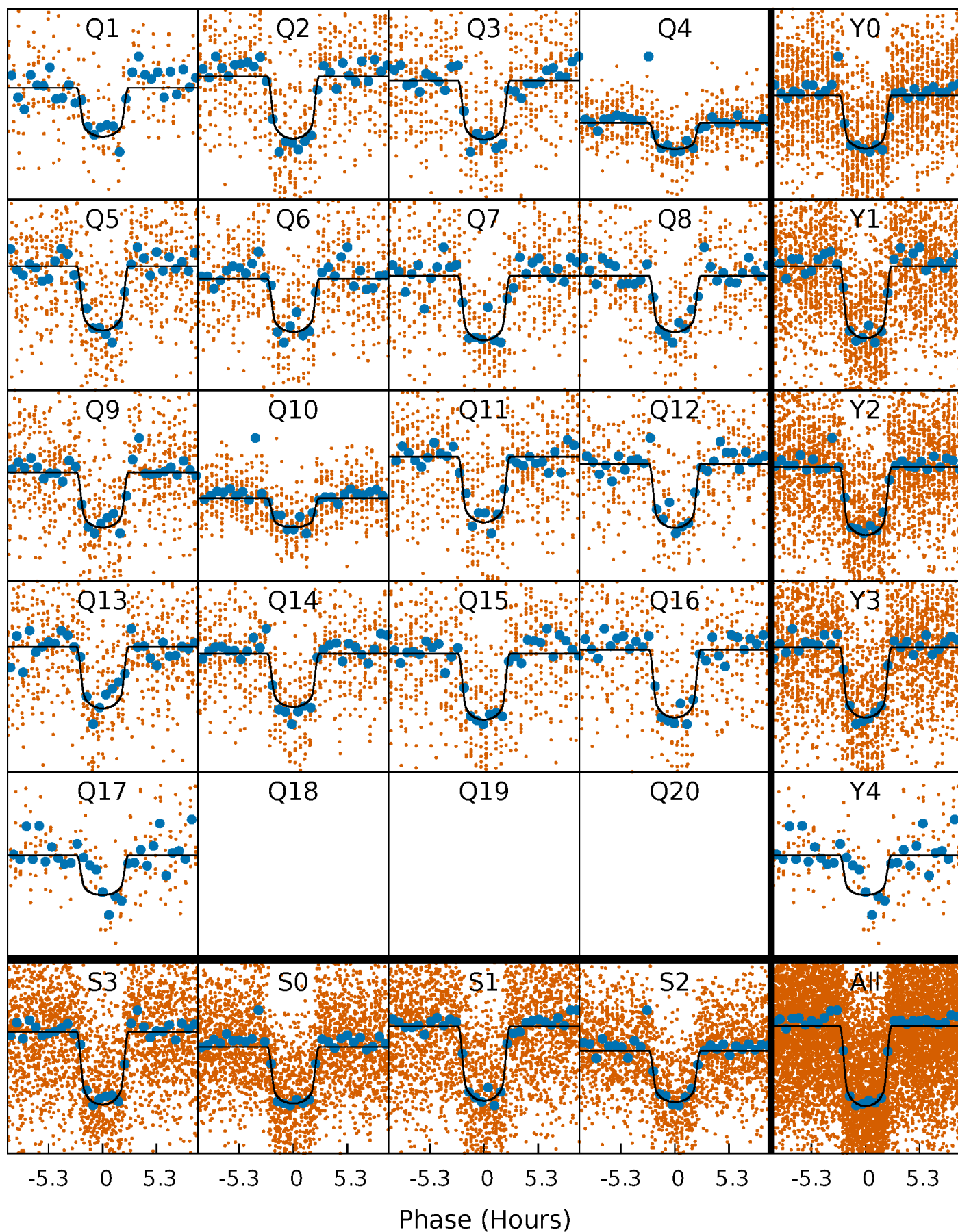
PDC Quarter-Phased Transit Curves

TCE 005531694-01 P= 5.169512 Days $T_0=134.125109$ (BKJD)



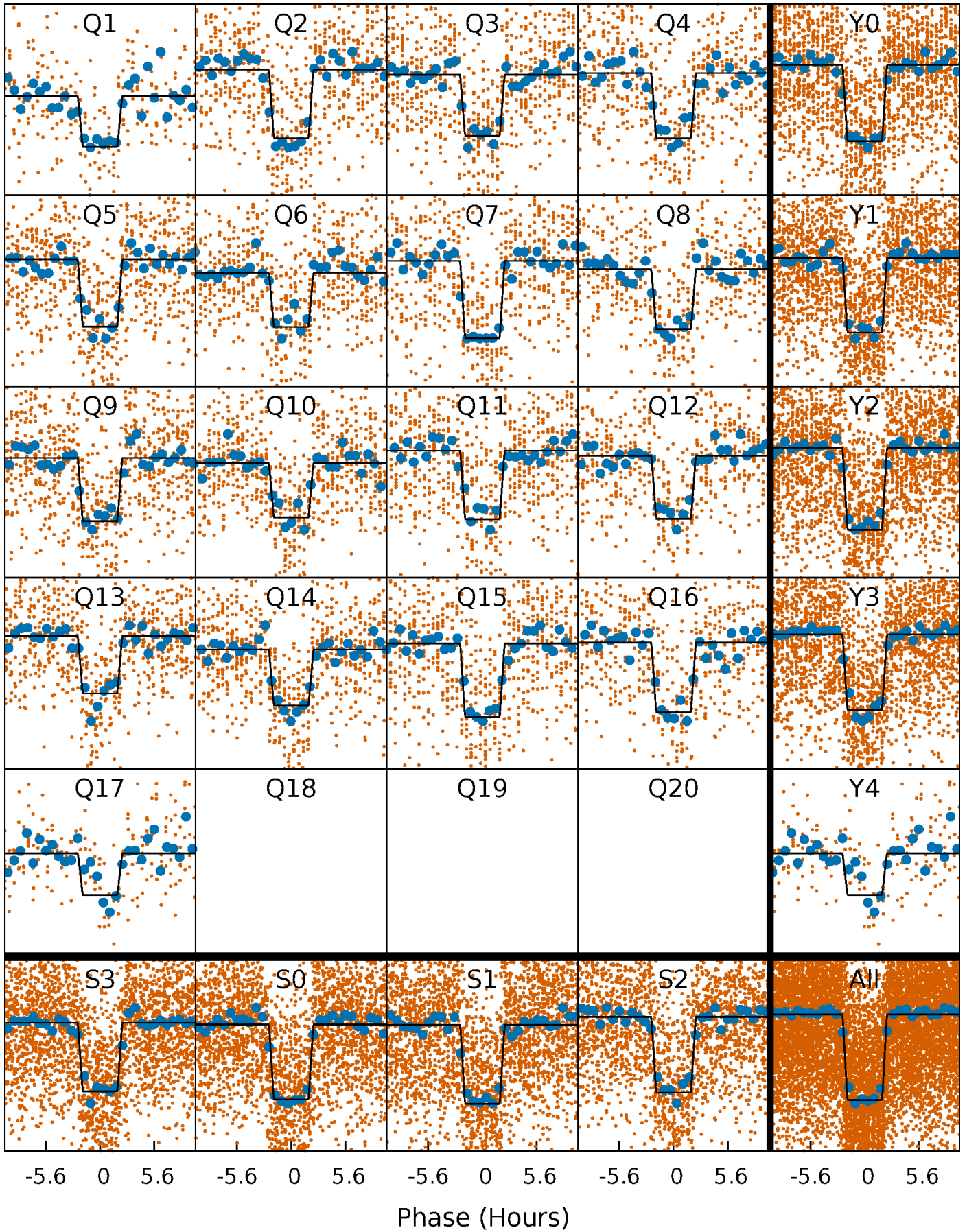
DV Quarter-Phased Transit Curves

TCE 005531694-01 P= 5.169512 Days $T_0=134.125109$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

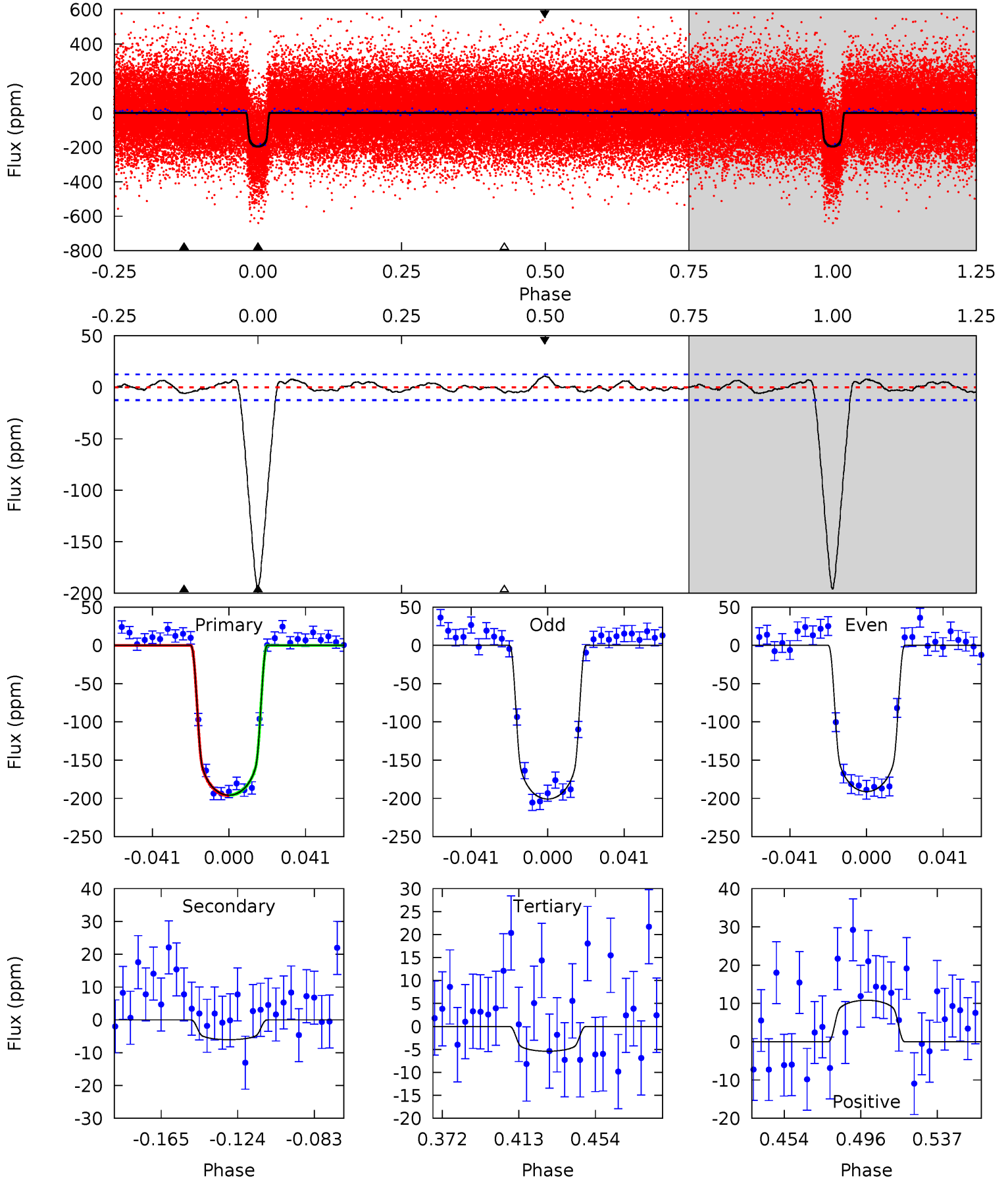
TCE 005531694-01 P= 5.169466 Days $T_0=134.131656$ (BKJD)



DV Model-Shift Uniqueness Test

005531694-01, P = 5.169512 Days, E = 128.955597 Days

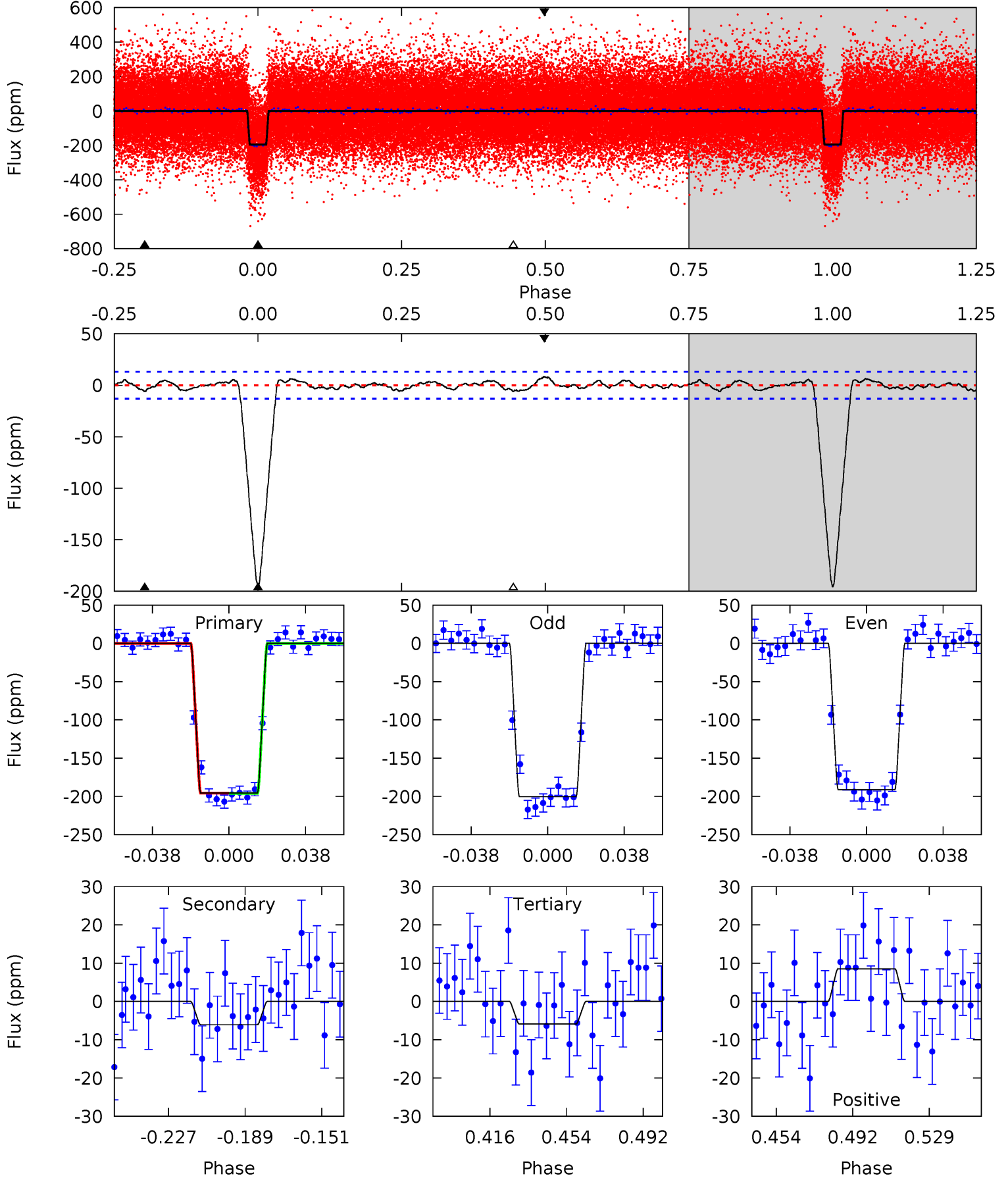
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
74.1	2.29	2.04	4.10	4.75	2.04	1.30	72.0	70.0	0.24	-1.81	1.83	1.01	0.05	0.10



Alt Model-Shift Uniqueness Test

005531694-01, P = 5.169466 Days, E = 128.962190 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
71.2	2.21	2.15	3.11	4.76	2.08	1.07	69.1	68.1	0.07	-0.90	1.67	1.00	0.04	0.10



Stellar Parameters For KIC 005531694

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6011^{+108}_{-132}	$4.123^{+0.195}_{-0.105}$	$-0.300^{+0.150}_{-0.150}$	$1.409^{+0.214}_{-0.294}$	$0.963^{+0.075}_{-0.082}$	$0.484^{+0.495}_{-0.153}$
	+2%/-2%	+5%/-3%	+50%/-50%	+15%/-21%	+8%/-9%	+102%/-32%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 005531694-01 / KOI 0647.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-6 ± 3	$2.27^{+0.30}_{-0.28}$	1818^{+89}_{-106}	2994^{+209}_{-318}	$2.072^{+1.258}_{-0.955}$
Alt.	-6 ± 3	$2.14^{+0.26}_{-0.28}$	1819^{+90}_{-107}	3049^{+231}_{-307}	$2.304^{+1.446}_{-1.081}$

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

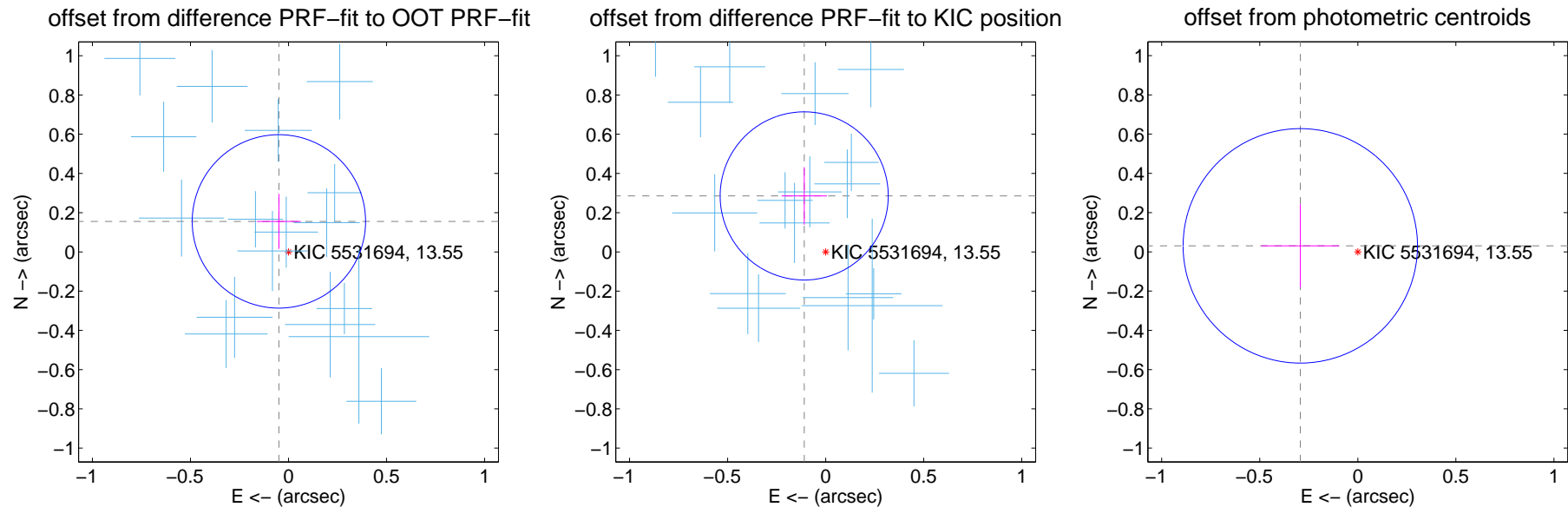
DV Centroid Data

Supplemental centroid analysis for 005531694-01. Kepler magnitude: 13.55. Transit SNR 56.09

There are 17 quarters with good PRF difference image offsets

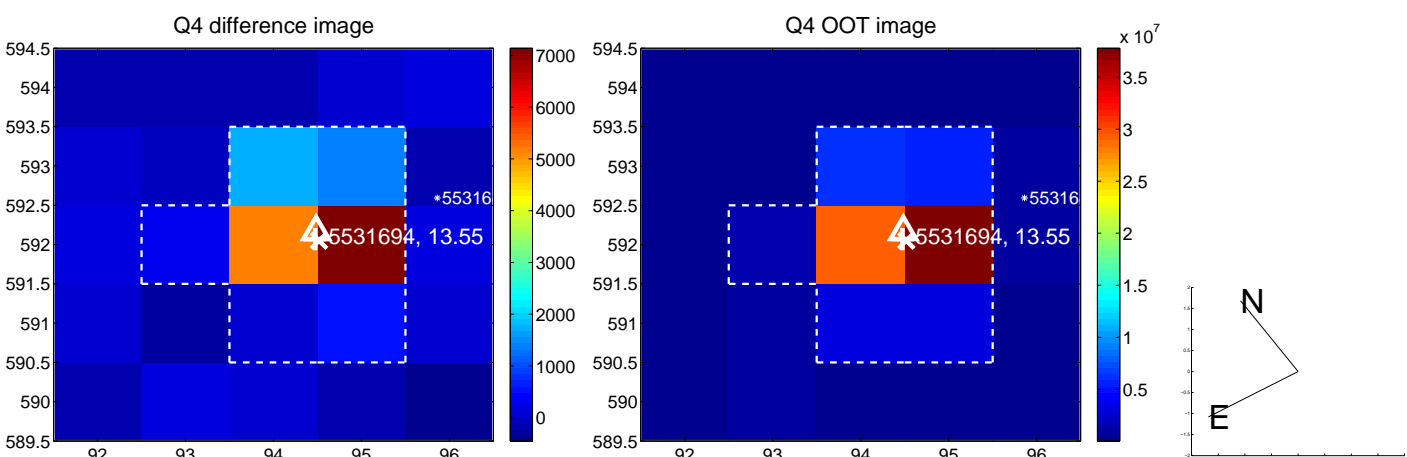
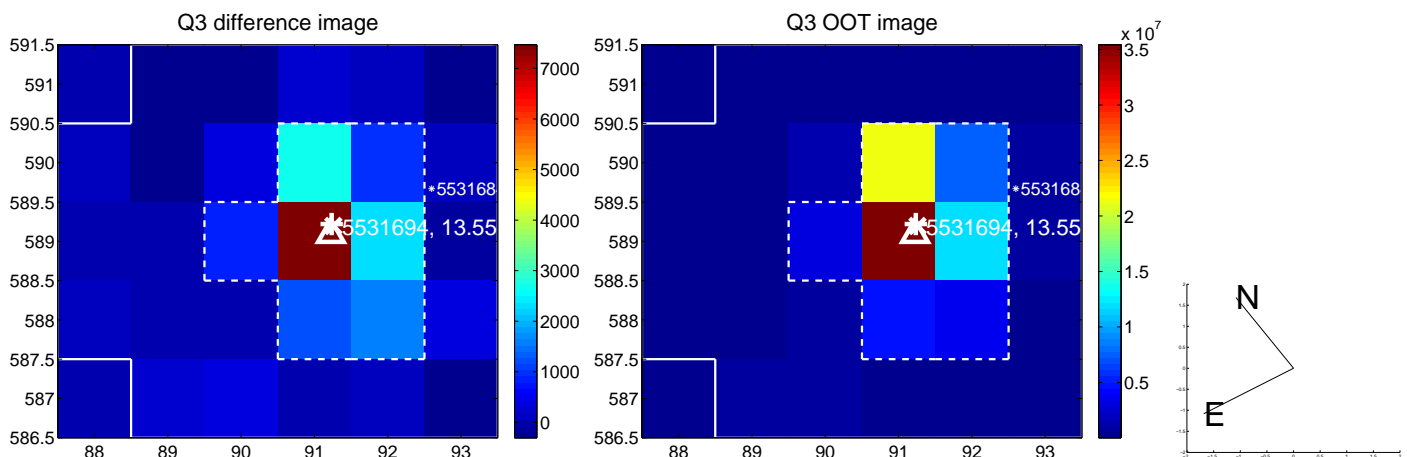
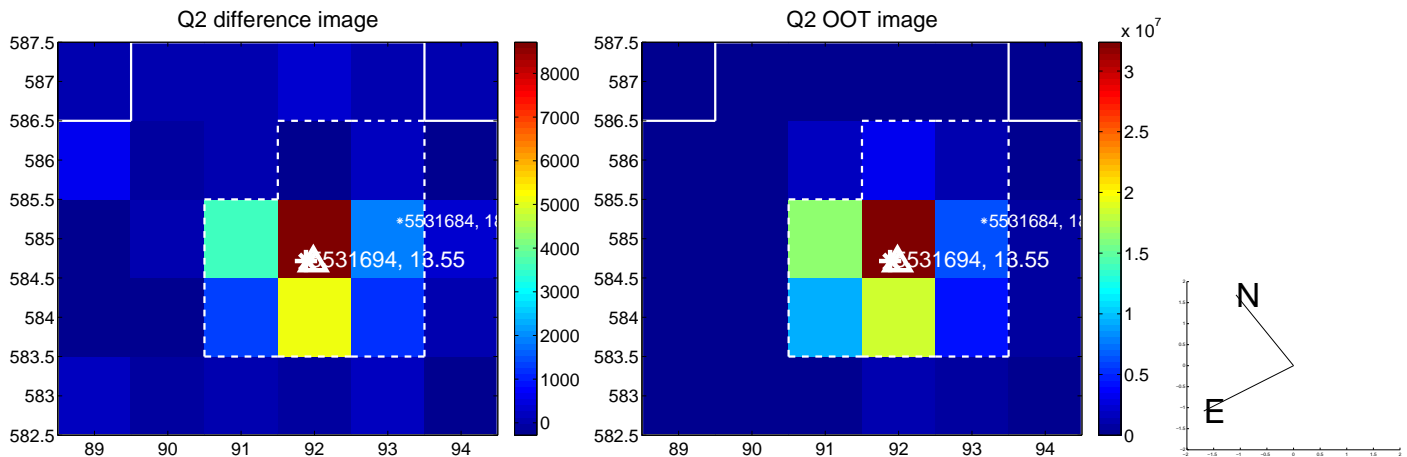
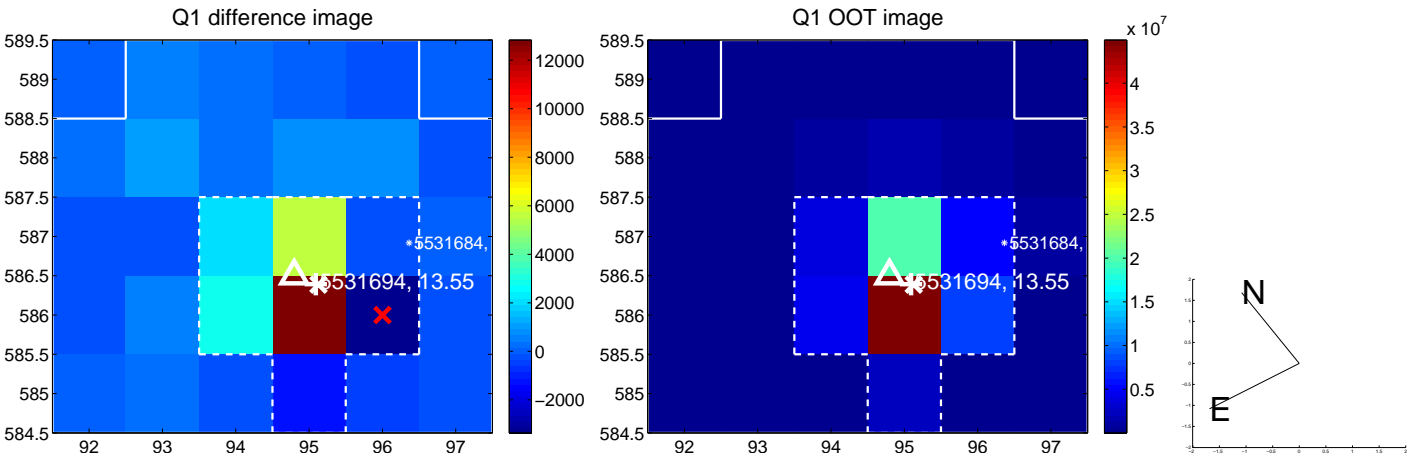
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.163 ± 0.147	1.11	0.049 ± 0.112	0.156 ± 0.140
PRF-fit source offset from KIC position	0.306 ± 0.143	2.14	0.109 ± 0.115	0.285 ± 0.146
photometric centroid source offset	0.29 ± 0.20	1.48	0.29 ± 0.20	0.03 ± 0.21

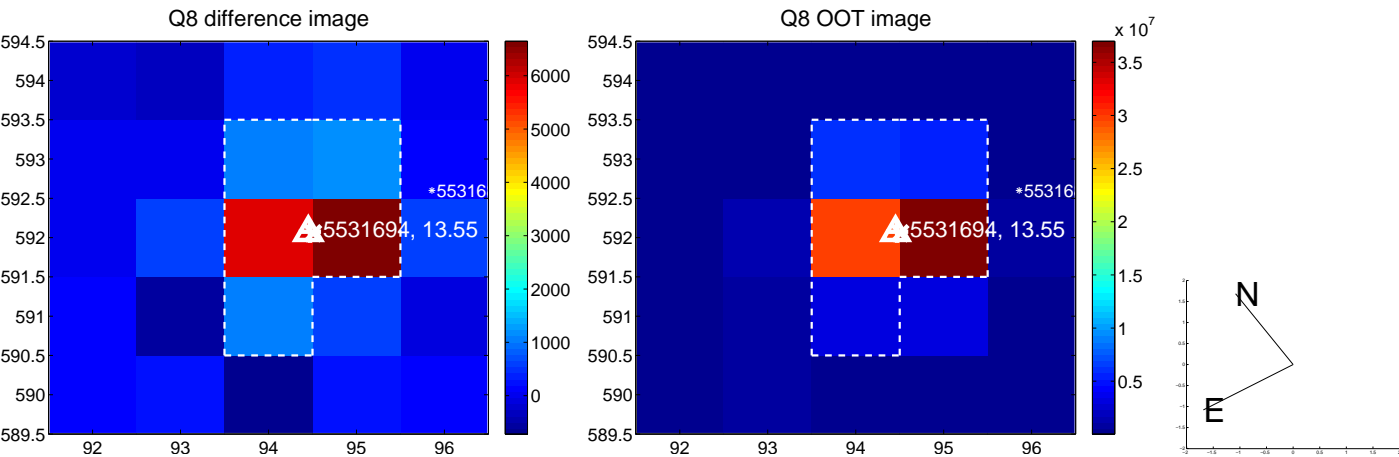
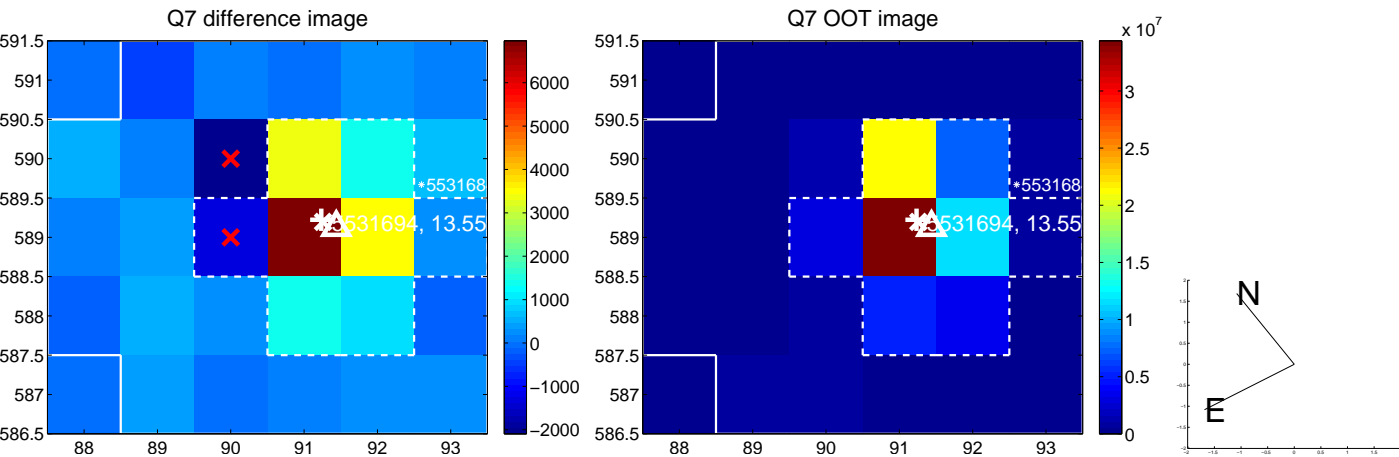
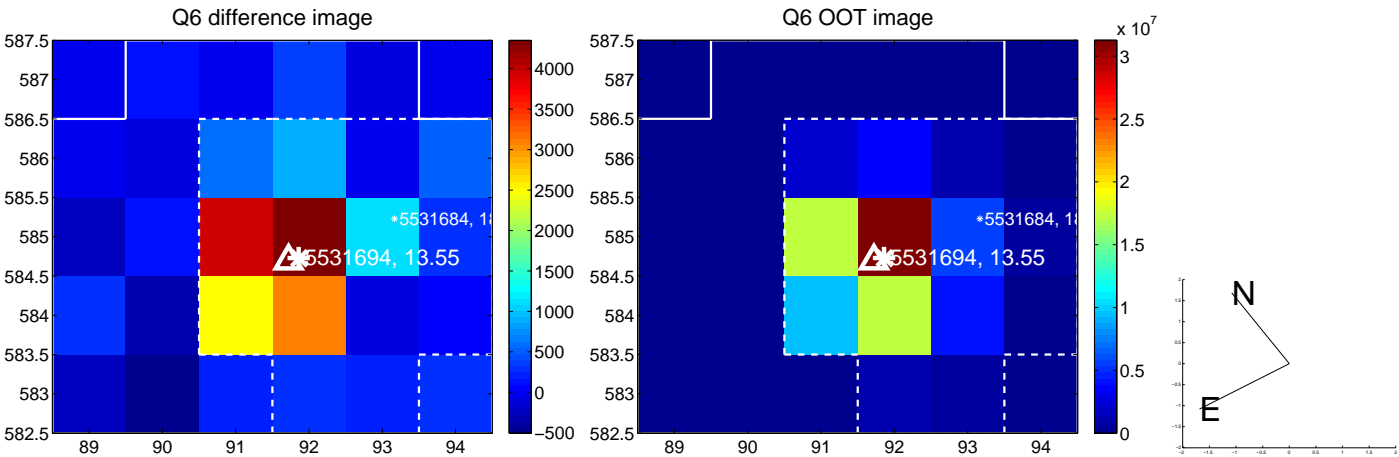
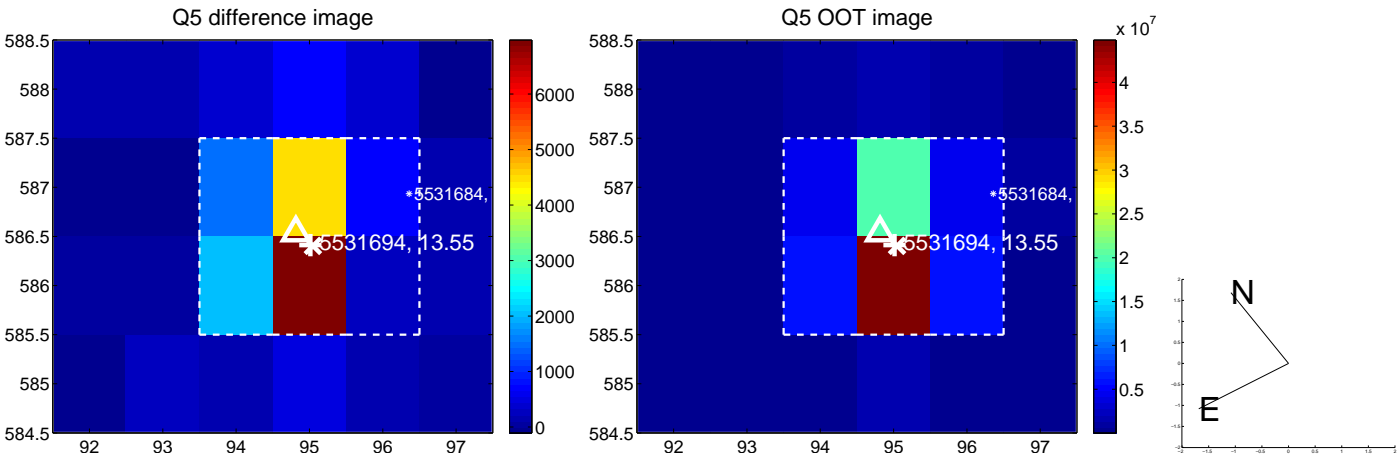


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

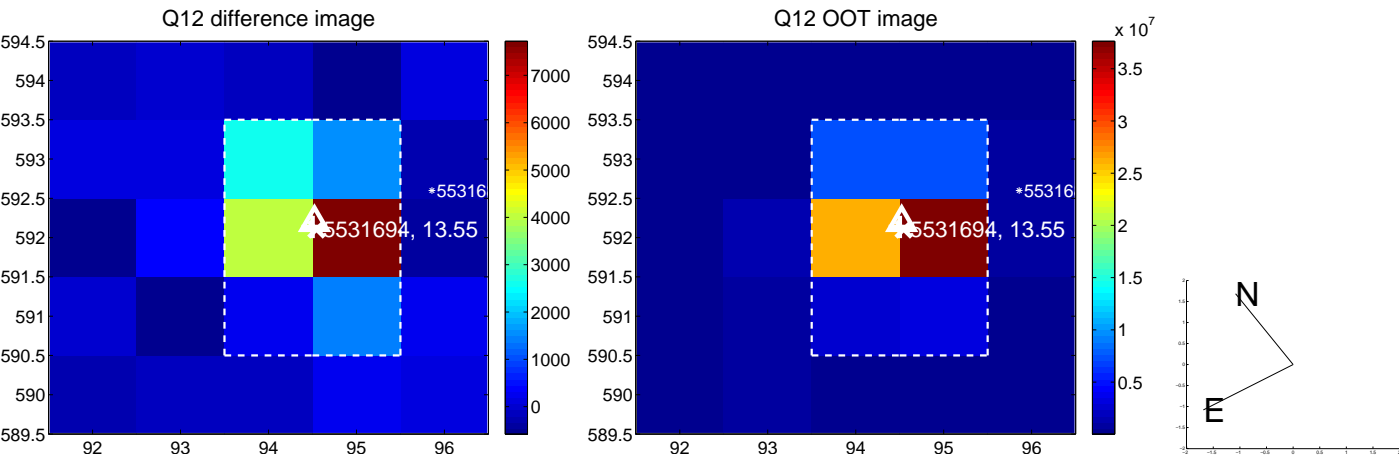
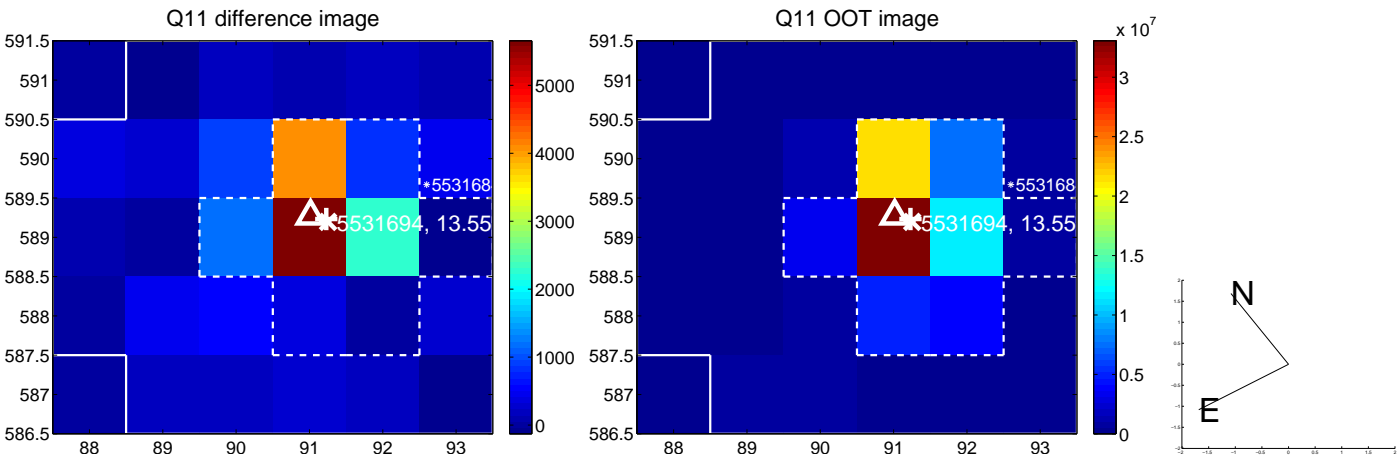
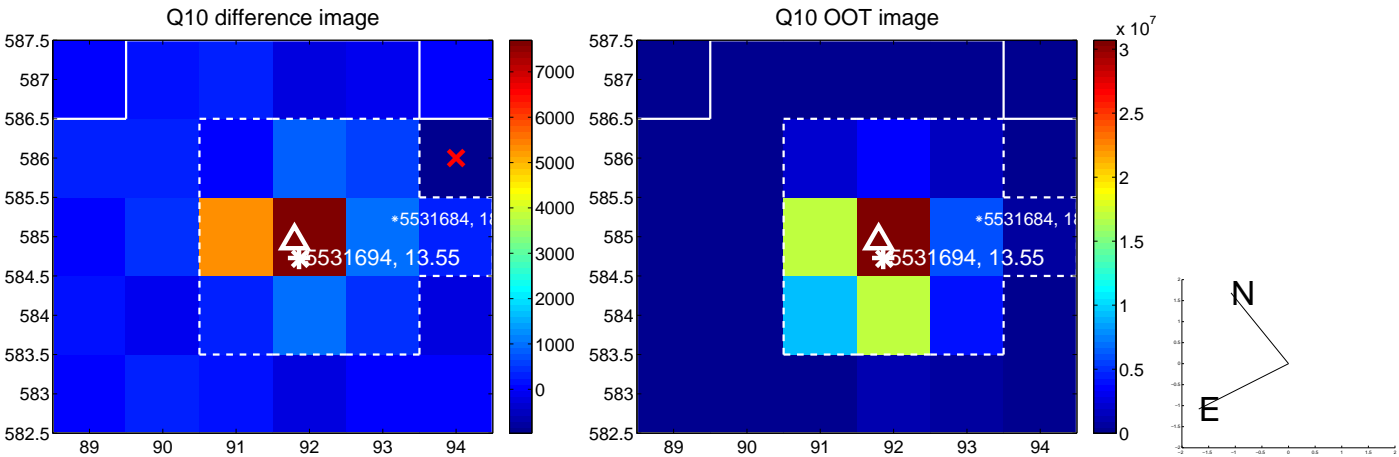
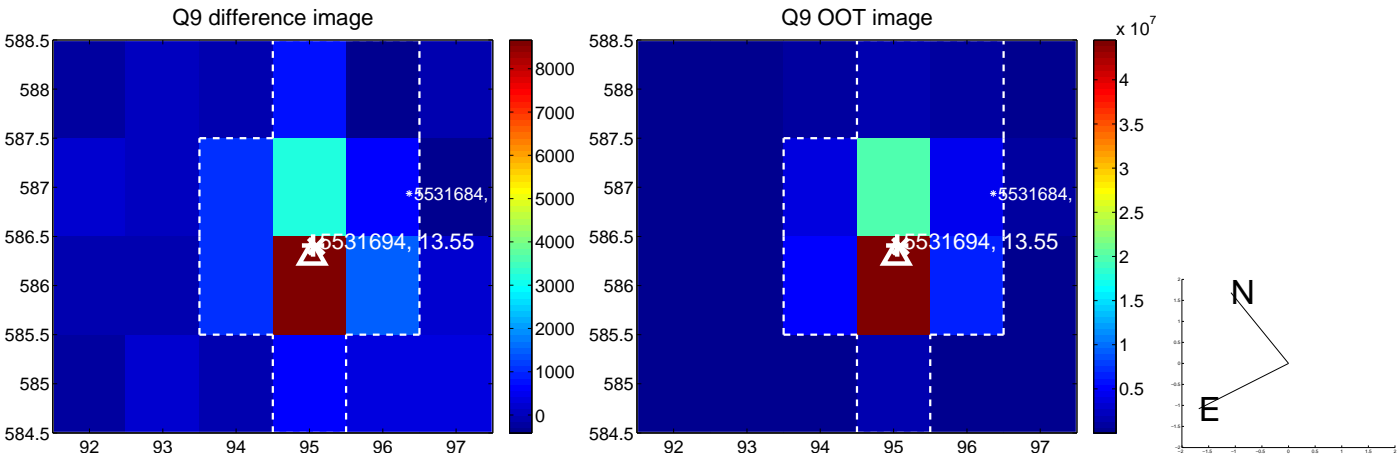
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



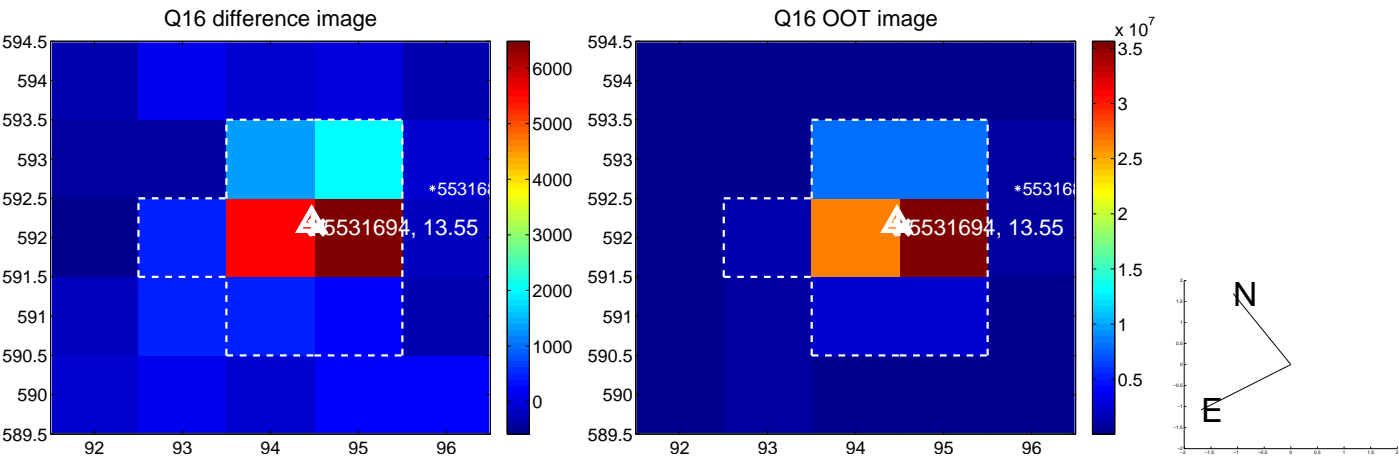
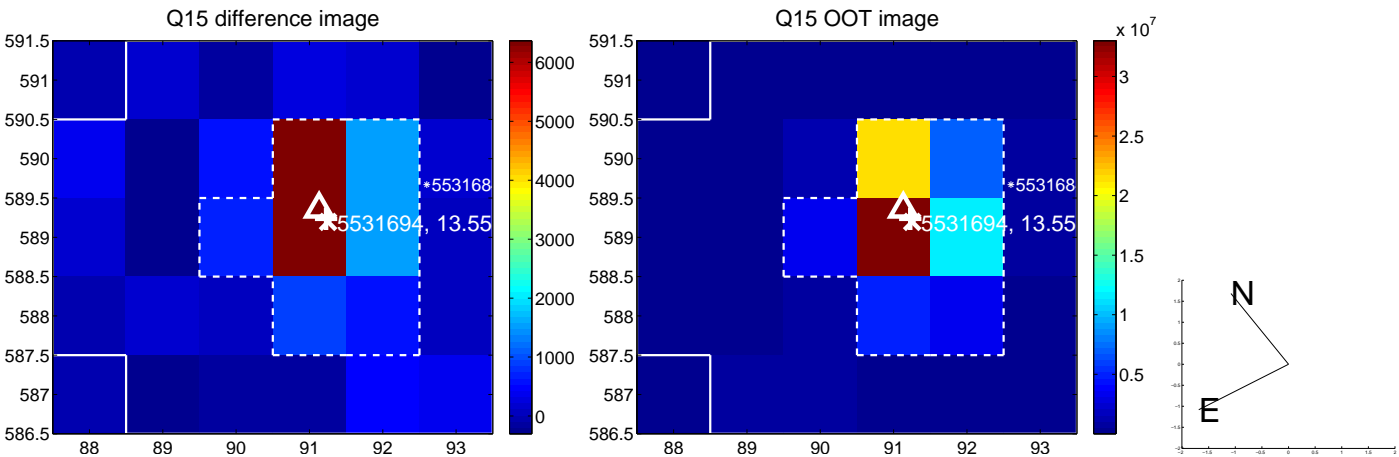
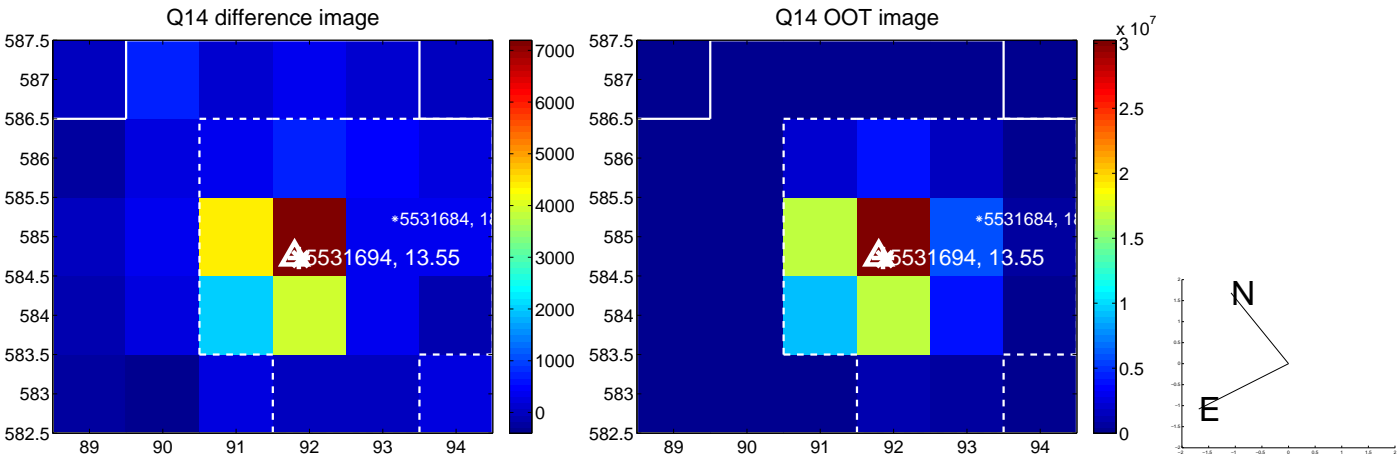
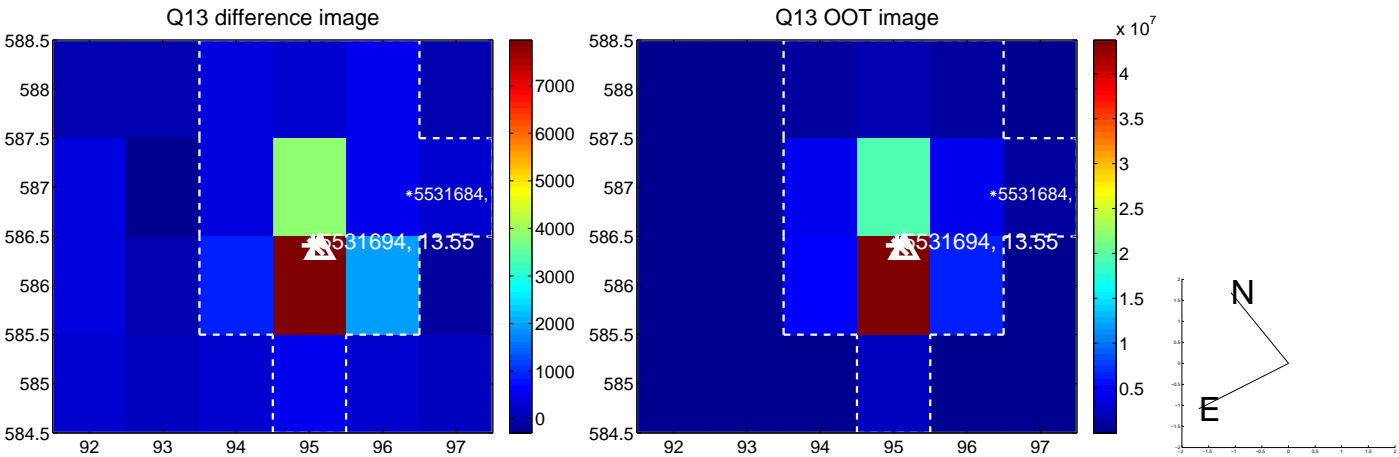
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



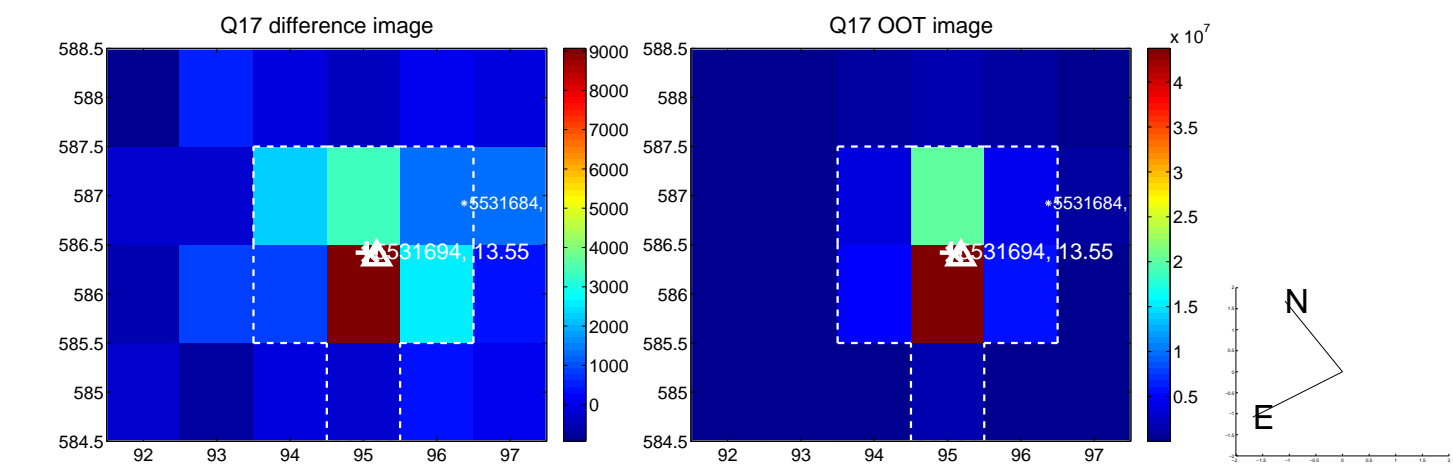
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



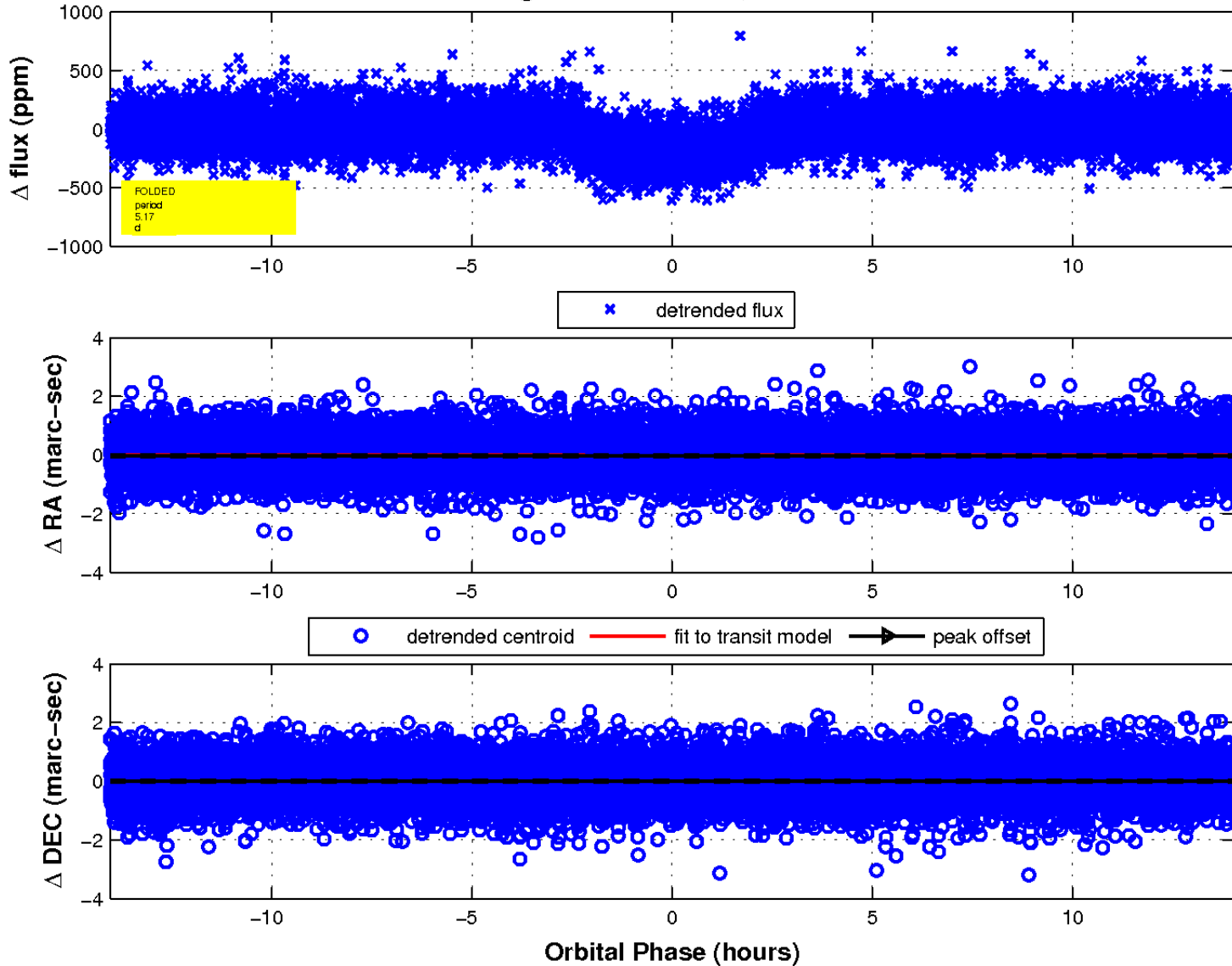
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

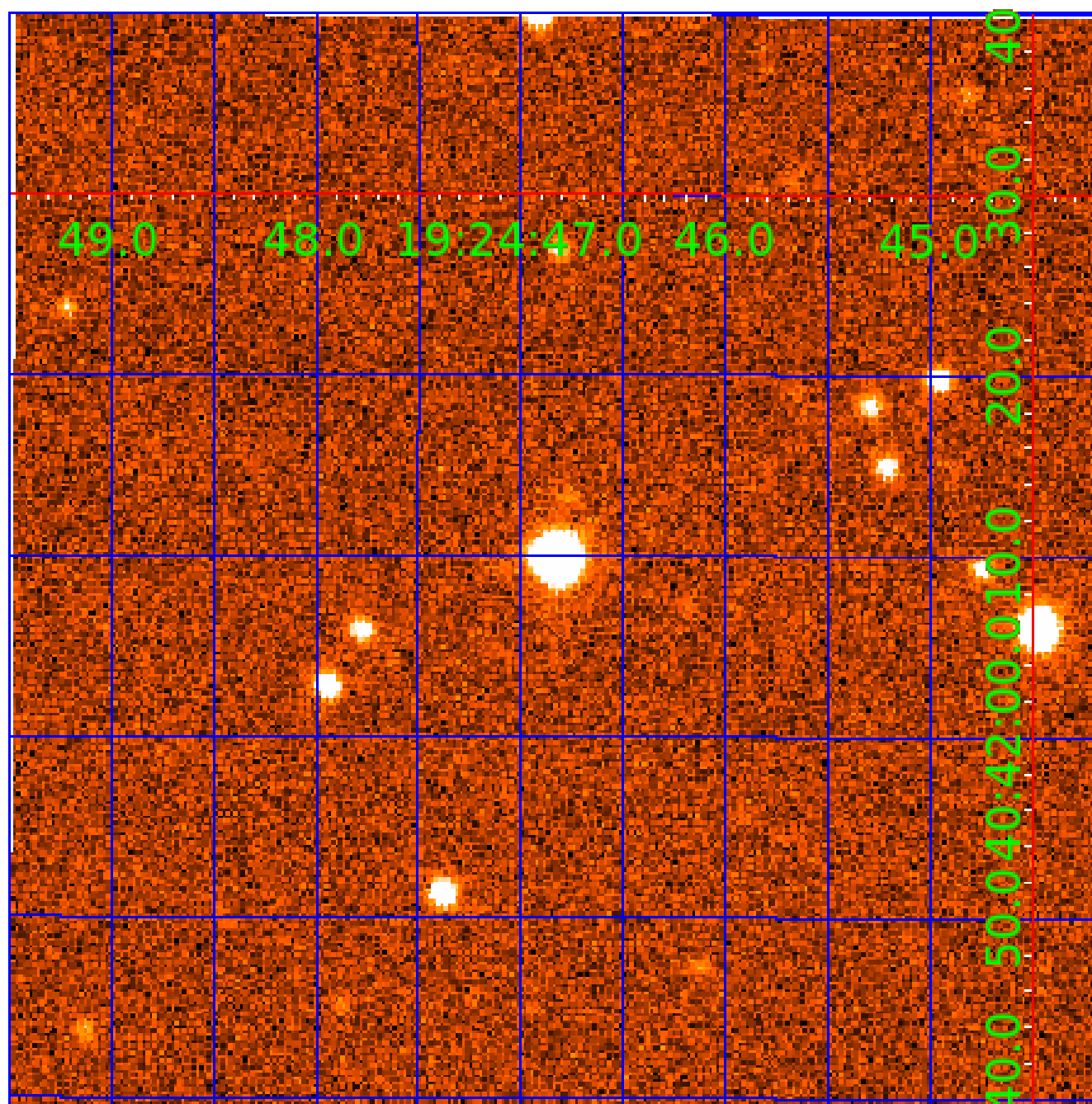


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 005531694

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})
005531694-01	OBS	0647.01	5.169512	134.125109	194.2	4.681	49.8	56.1	1.41	6011	2.31	696.13
005531694-02	OBS	0647.02	8.113473	132.805572	43.8	4.097	8.4	9.2	1.41	6011	1.06	381.66

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005531694-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005531694-02	OBS	PC	0.94	0	0	0	0	NO_COMMENT

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

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

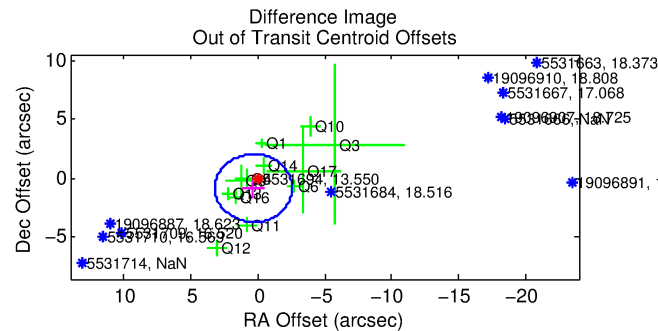
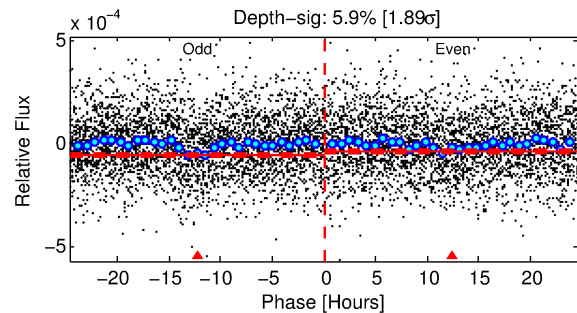
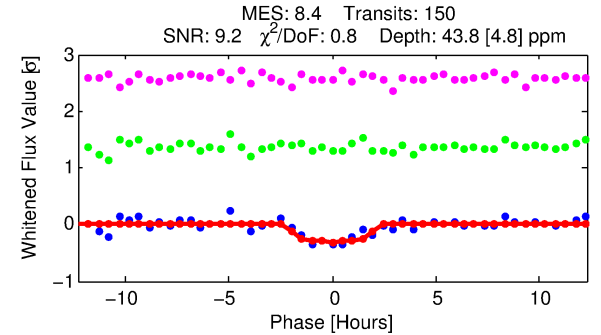
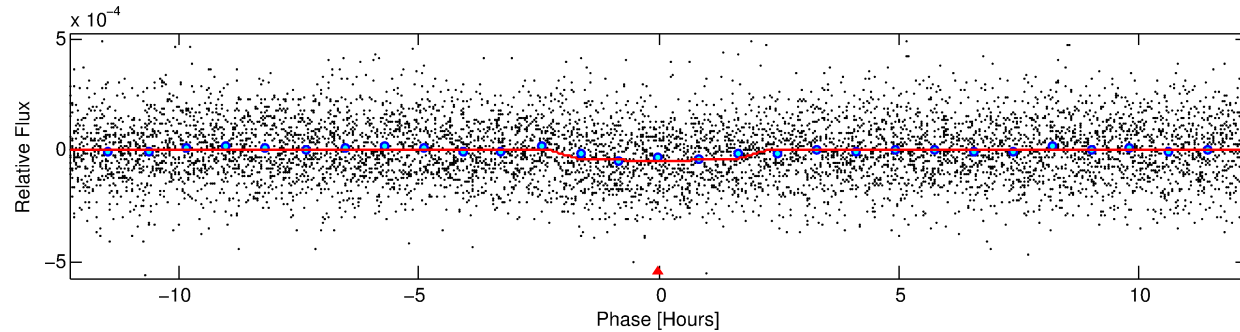
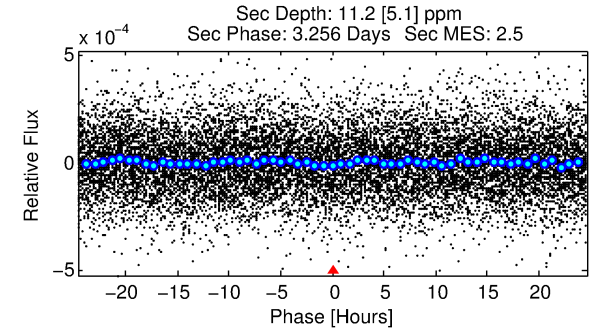
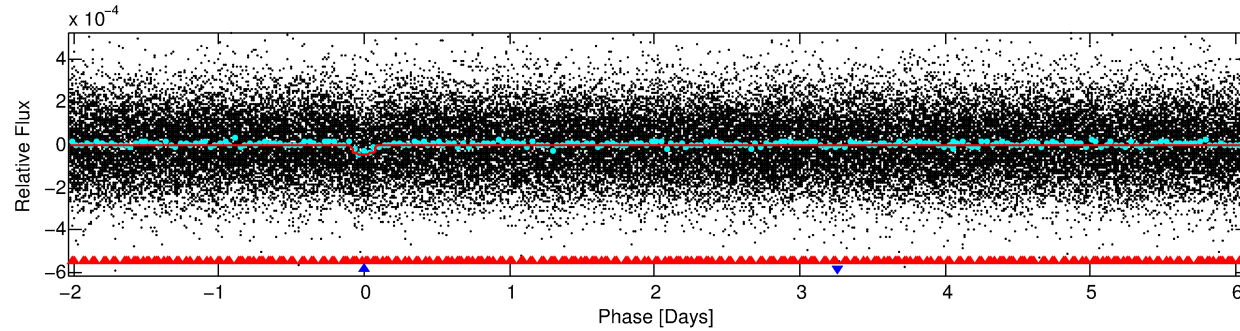
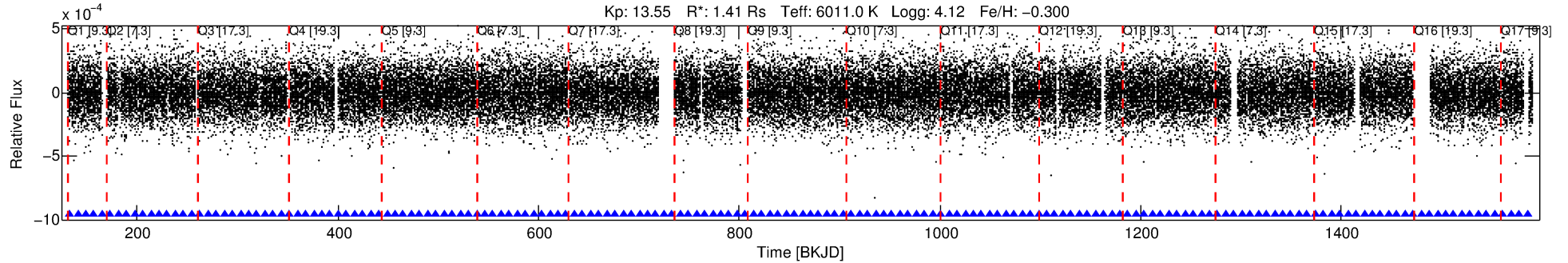
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005531694-02

No Significant Match Found

DV One-Page Summary

KIC: 5531694 Candidate: 2 of 2 Period: 8.113 d
KOI: K00647.02 Corr: 0.906



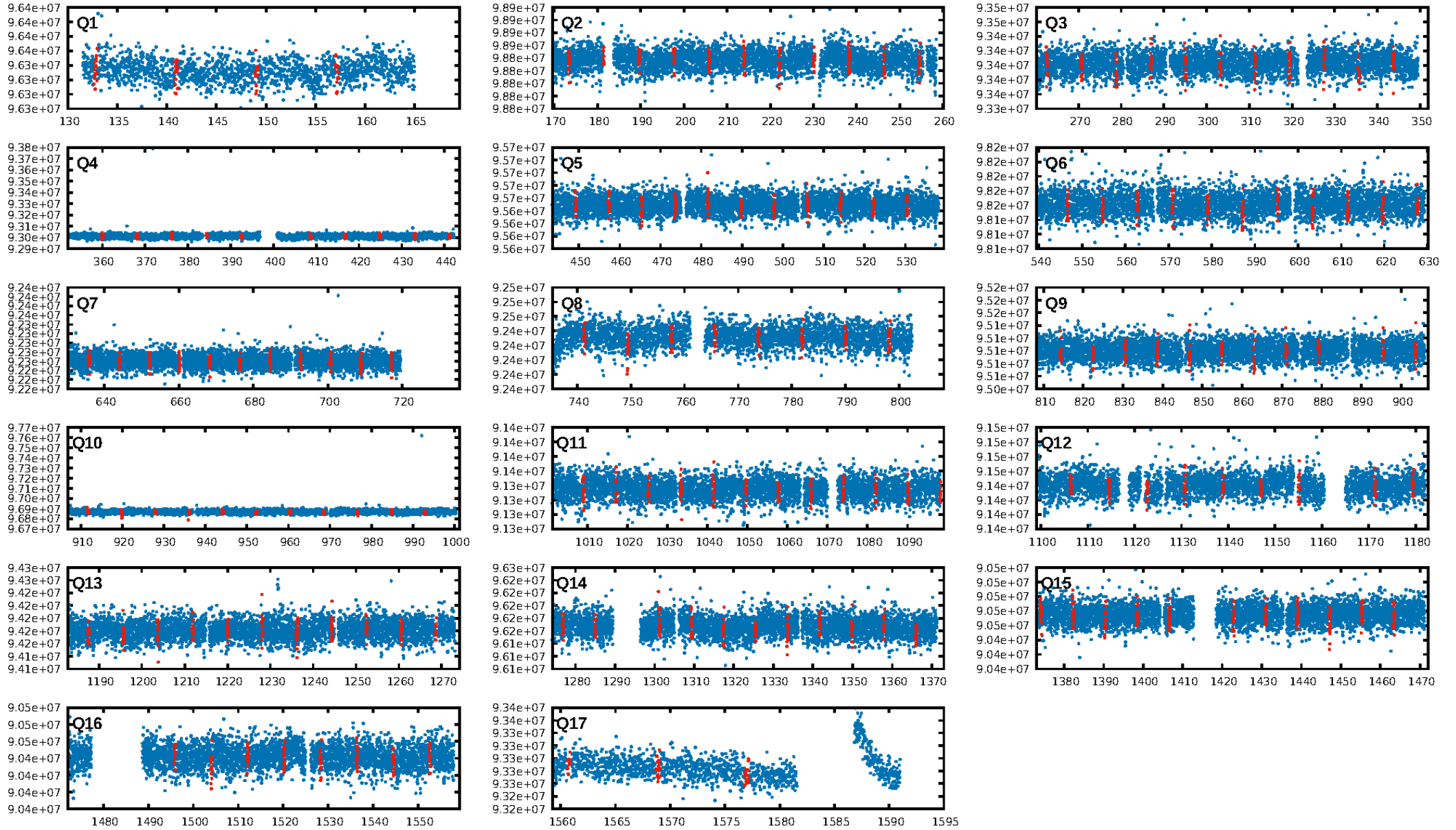
DV Fit Results:

Period = 8.11347 [0.00009] d
Epoch = 132.8056 [0.0086] BKJD
Rp/R* = 0.0069 [0.0039]
a/R* = 8.26 [23.66]
b = 0.85 [0.98]
Seff = 381.66 [130.36]
Teff = 1127 [96] K
Rp = 1.06 [0.63] Re
a = 0.0780 [0.0159] AU
Ag = 33.51 [42.04] [0.77σ]
Teffp = 4192 [1272] K [2.40σ]

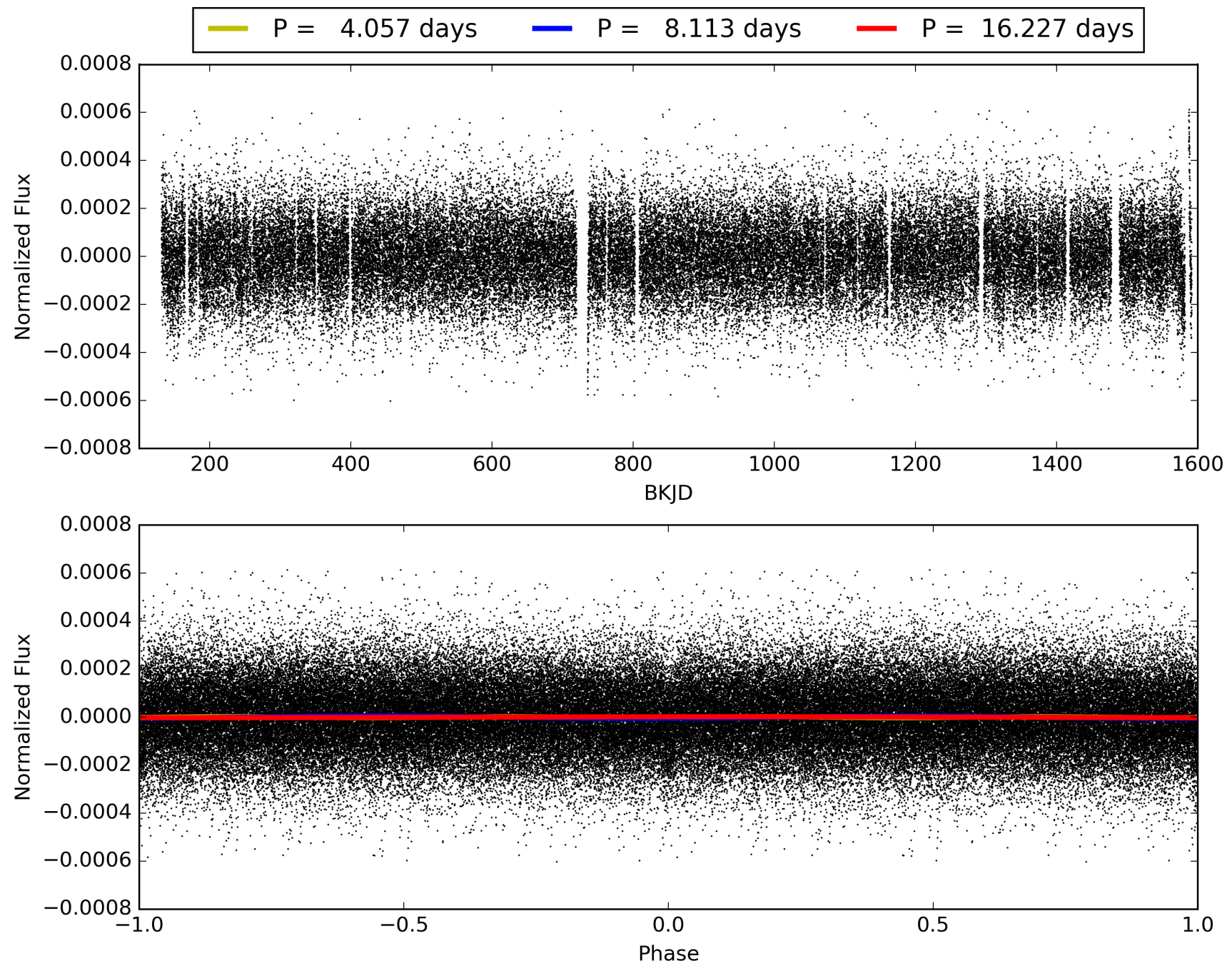
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.36σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.47e-17
RollingBand-fgt: 1.00 [144/144]
GhostDiagnostic-chr: -1769
Centroid-sig: 1.4%
Centroid-so: 2.299 arcsec [1.95σ]
OotOffset-rm: 0.872 arcsec [0.91σ]
KicOffset-rm: 0.798 arcsec [0.75σ]
OotOffset-st: 3/2/3/4 [12]
KicOffset-st: 3/2/3/4 [12]
DiffImageQuality-fgm: 0.42 [5/12]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 005531694-02, PDC Light Curves

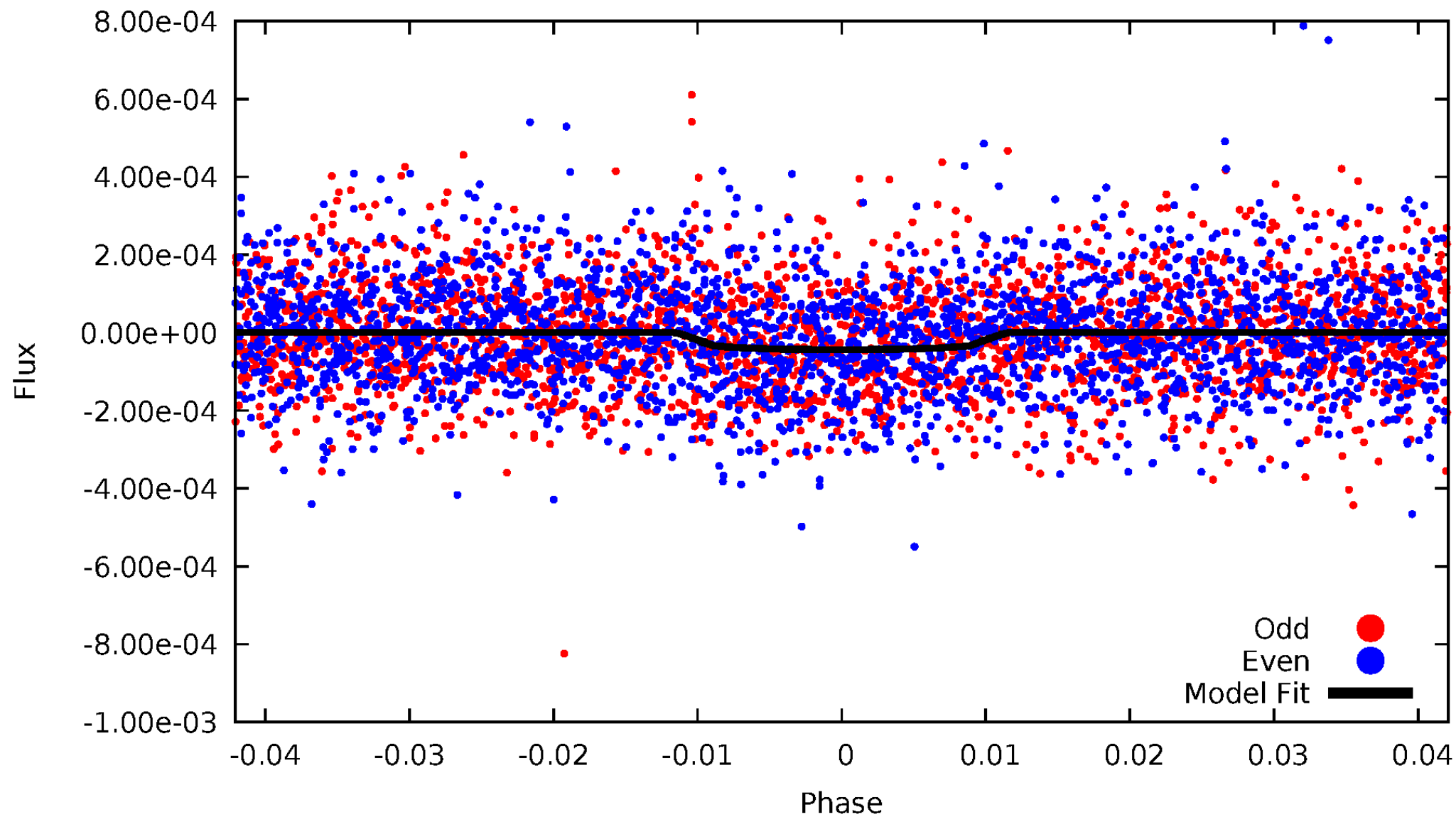


TCE 005531694-02



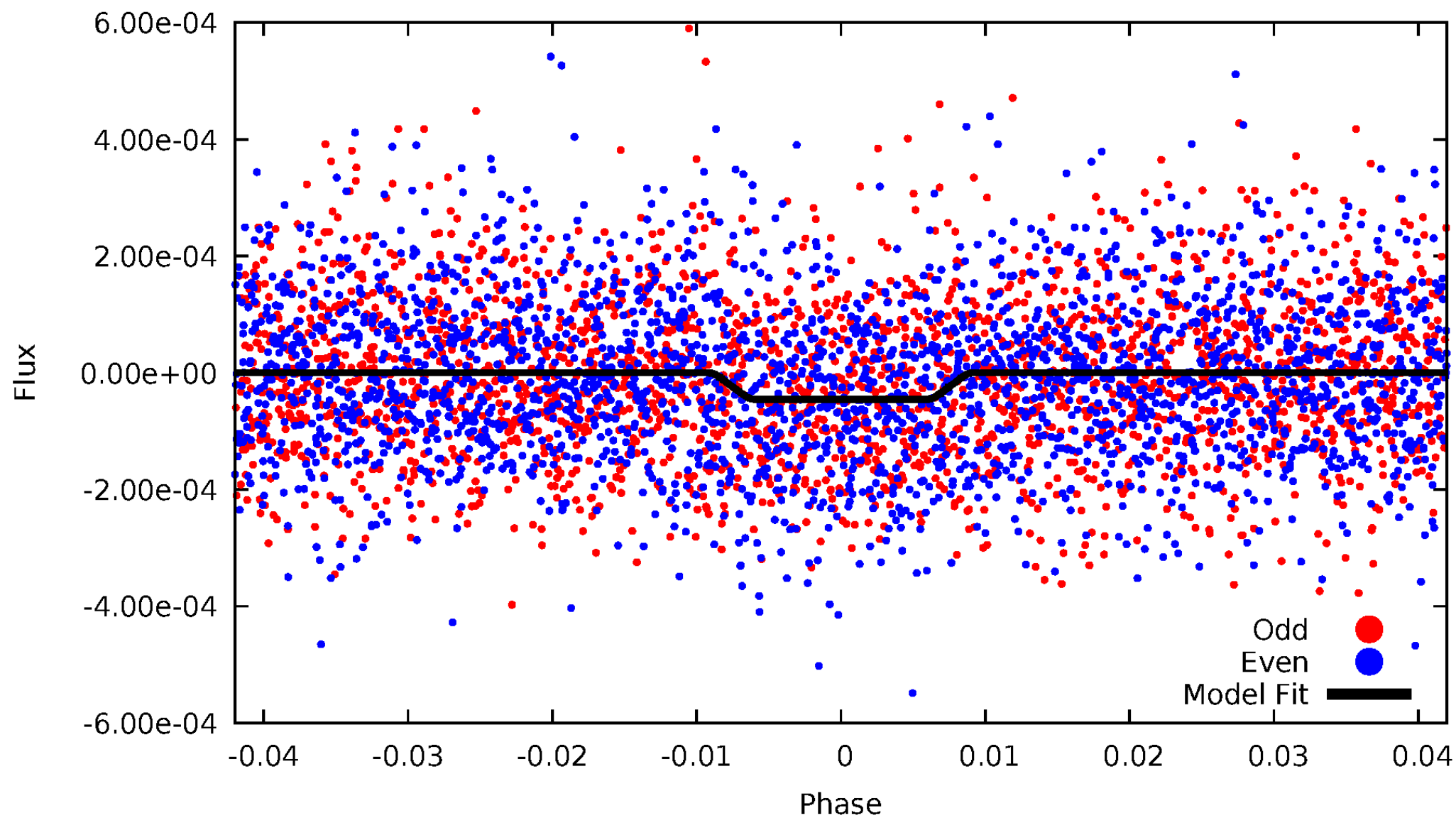
DV Odd/Even

TCE 005531694-02



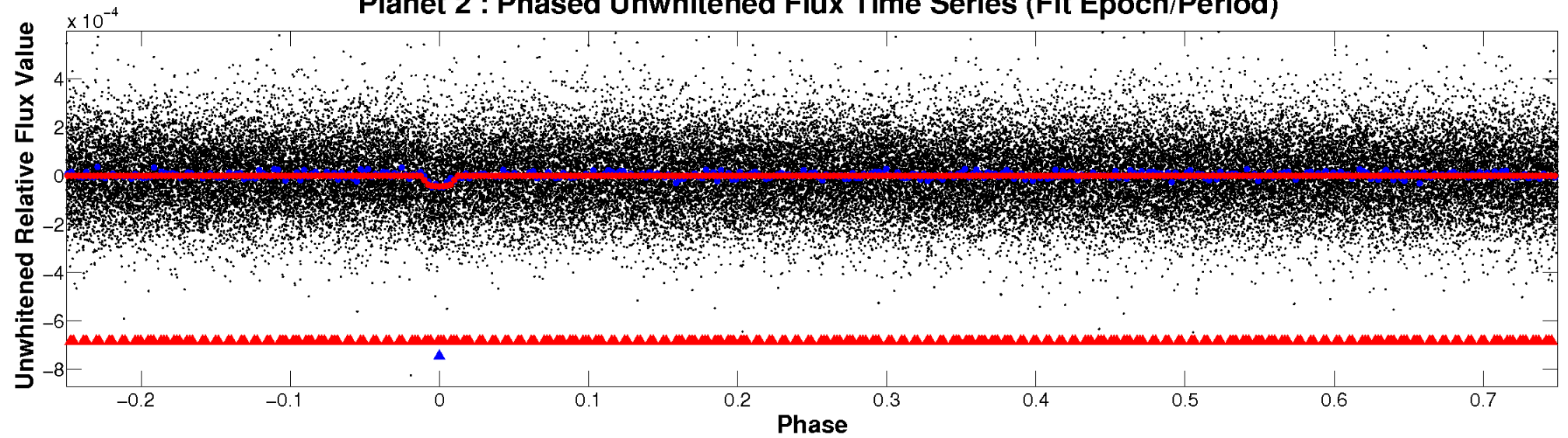
ALT Odd/Even

TCE 005531694-02

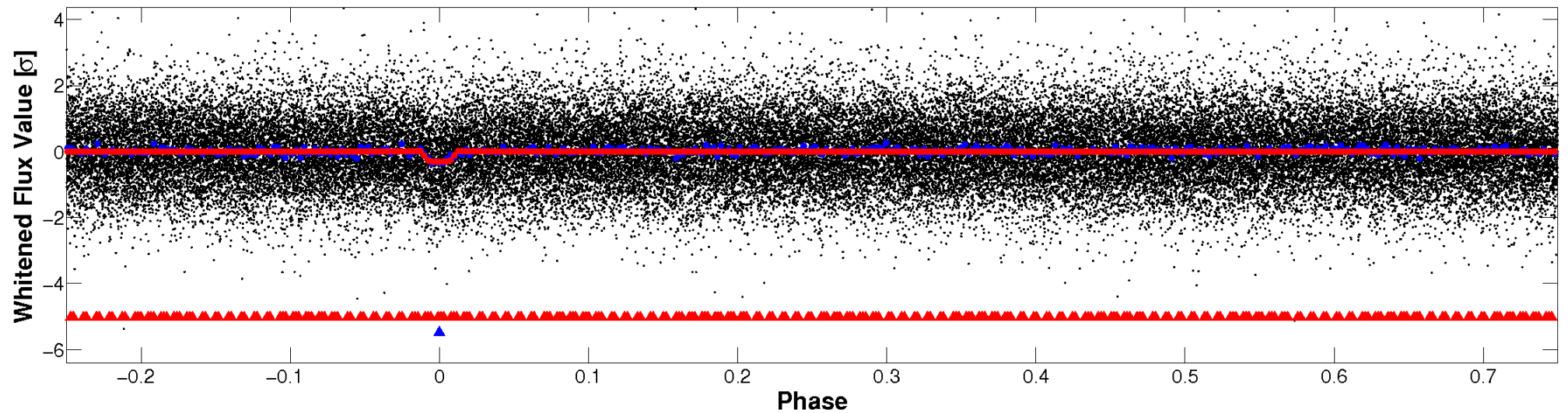


Non-Whitened Vs. Whitened Light Curve

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

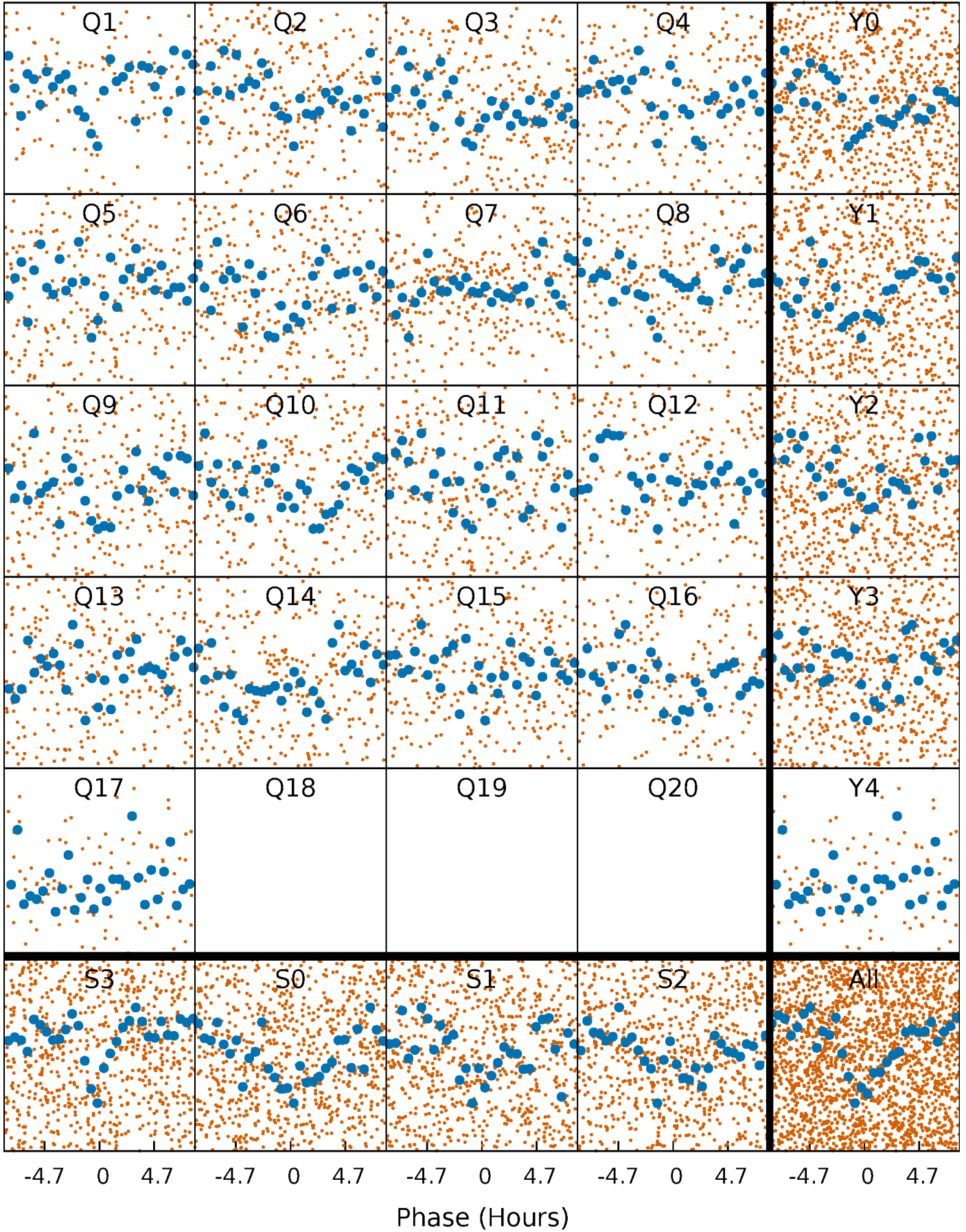


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



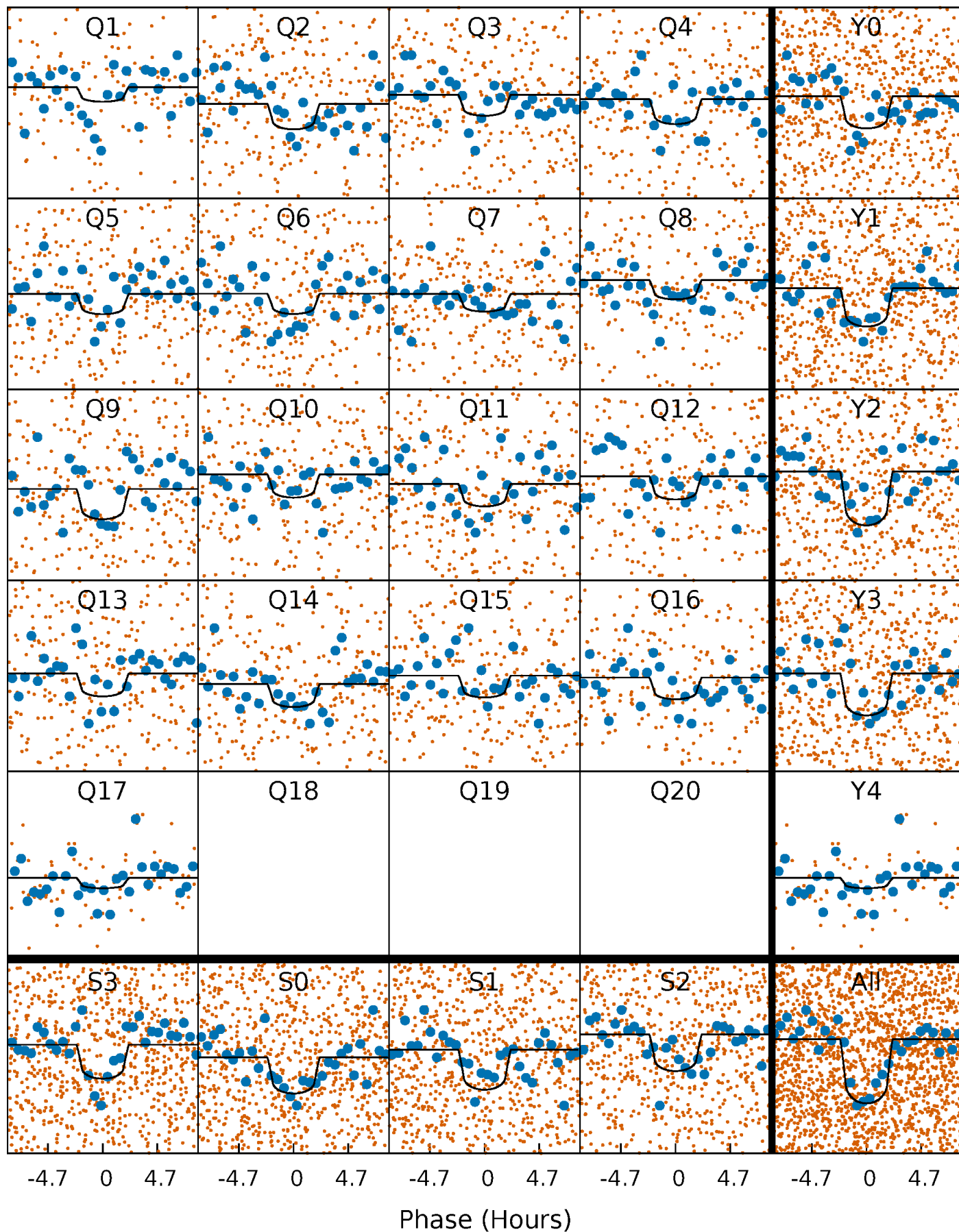
PDC Quarter-Phased Transit Curves

TCE 005531694-02 P= 8.113473 Days $T_0=132.805572$ (BKJD)



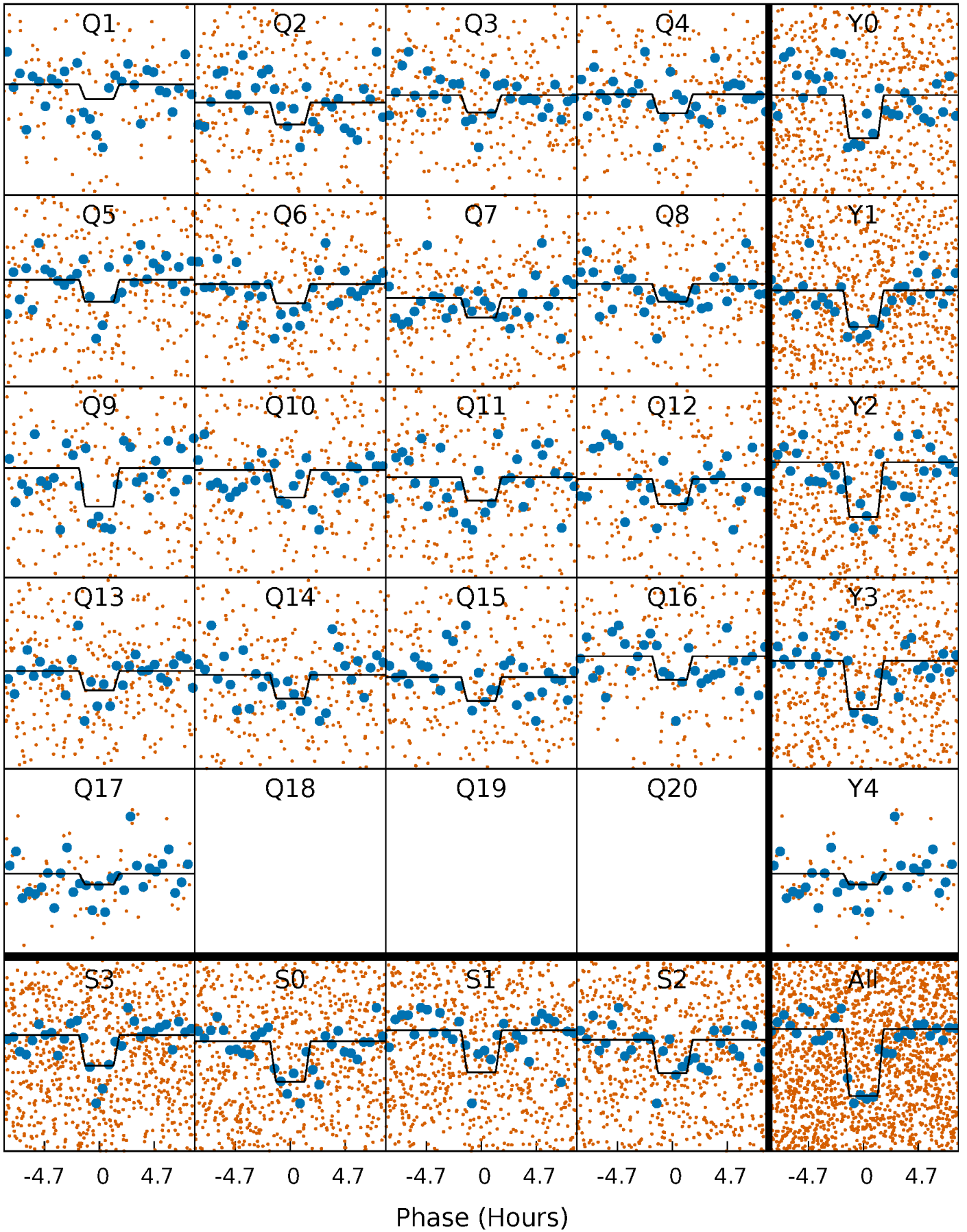
DV Quarter-Phased Transit Curves

TCE 005531694-02 P= 8.113473 Days $T_0=132.805572$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

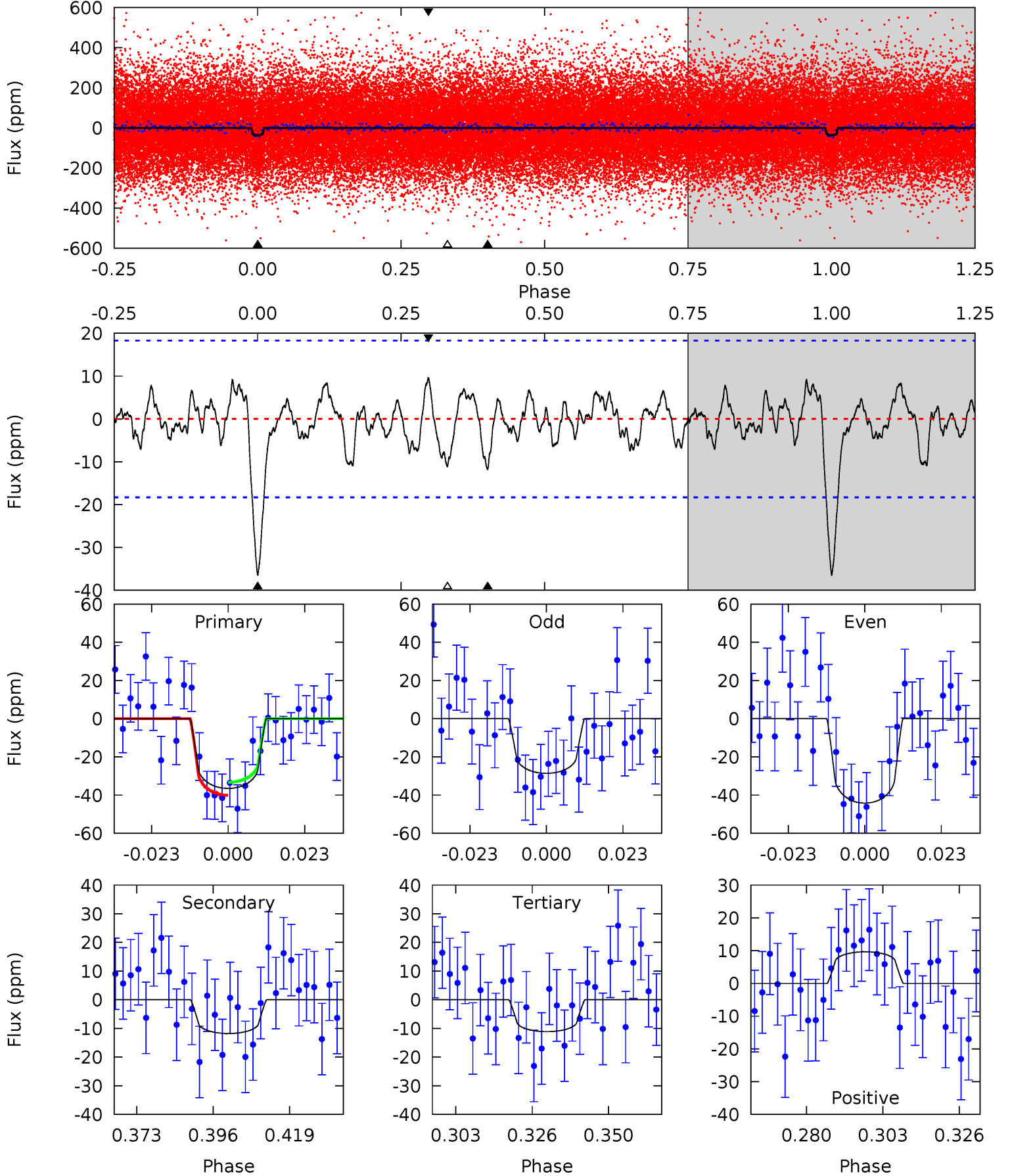
TCE 005531694-02 P= 8.113576 Days $T_0=132.792648$ (BKJD)



DV Model-Shift Uniqueness Test

005531694-02, P = 8.113473 Days, E = 124.692099 Days

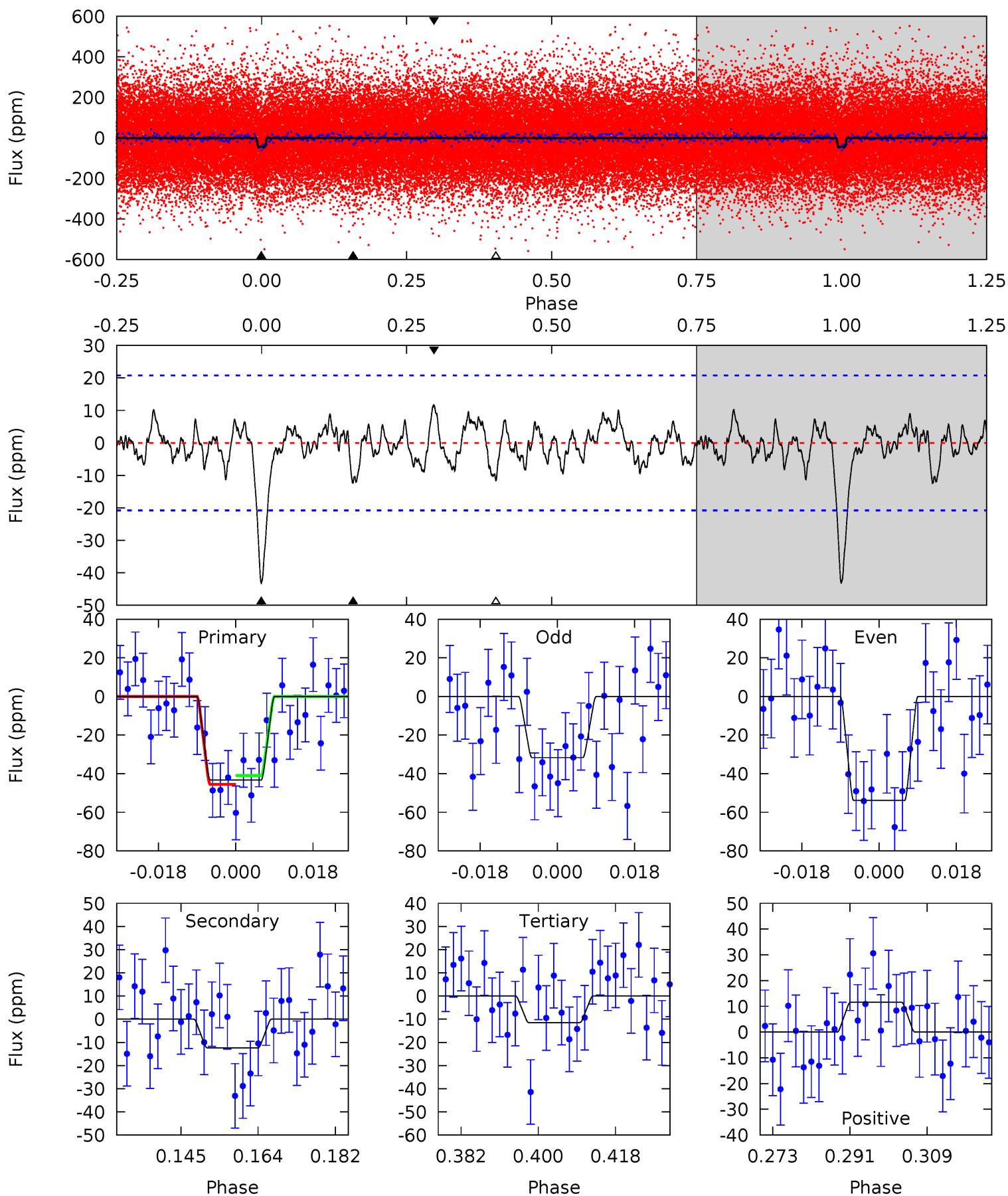
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.71	3.13	2.96	2.56	4.86	2.27	1.11	6.75	7.14	0.17	0.57	2.08	1.08	0.21	0.90



Alt Model-Shift Uniqueness Test

005531694-02, P = 8.113576 Days, E = 124.679072 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	2.91	2.71	2.74	4.91	2.36	1.05	7.50	7.47	0.20	0.17	2.62	1.04	0.21	0.55



Stellar Parameters For KIC 005531694

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6011^{+108}_{-132}	$4.123^{+0.195}_{-0.105}$	$-0.300^{+0.150}_{-0.150}$	$1.409^{+0.214}_{-0.294}$	$0.963^{+0.075}_{-0.082}$	$0.484^{+0.495}_{-0.153}$
	+2%/-2%	+5%/-3%	+50%/-50%	+15%/-21%	+8%/-9%	+102%/-32%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 005531694-02 / KOI 0647.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-12 ± 4	$1.06^{+0.61}_{-0.49}$	1563^{+75}_{-97}	4358^{+1279}_{-692}	34^{+89}_{-21}
Alt.	-12 ± 4	$1.01^{+0.60}_{-0.50}$	1563^{+77}_{-95}	4442^{+1690}_{-689}	37^{+126}_{-22}

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

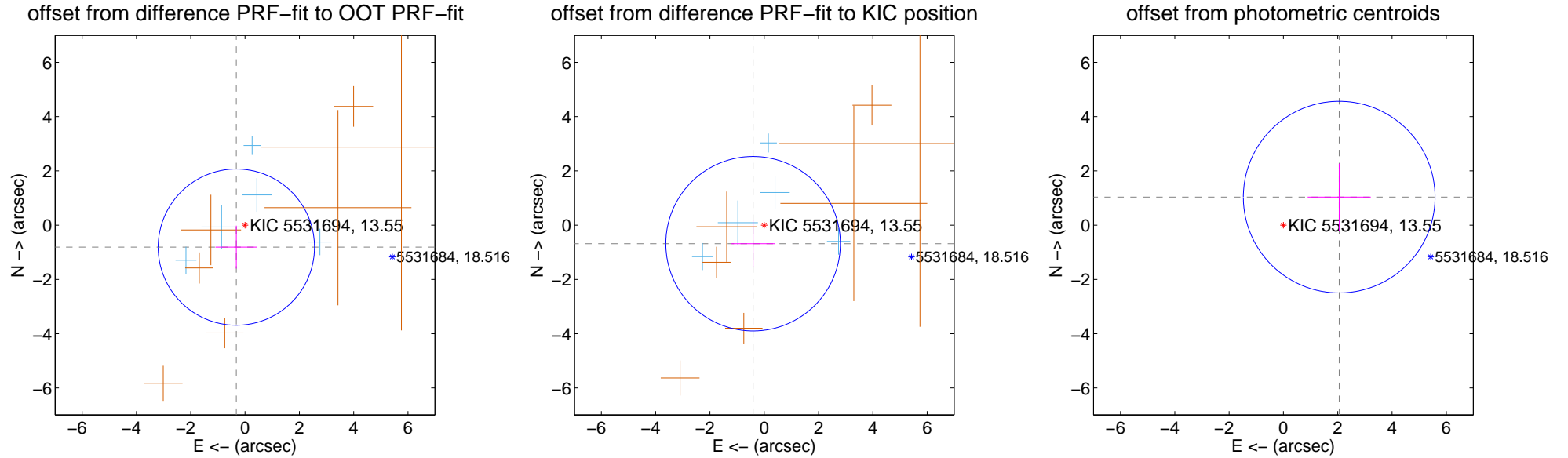
DV Centroid Data

Supplemental centroid analysis for 005531694-02. Kepler magnitude: 13.55. Transit SNR 9.15

There are 5 quarters with good PRF difference image offsets

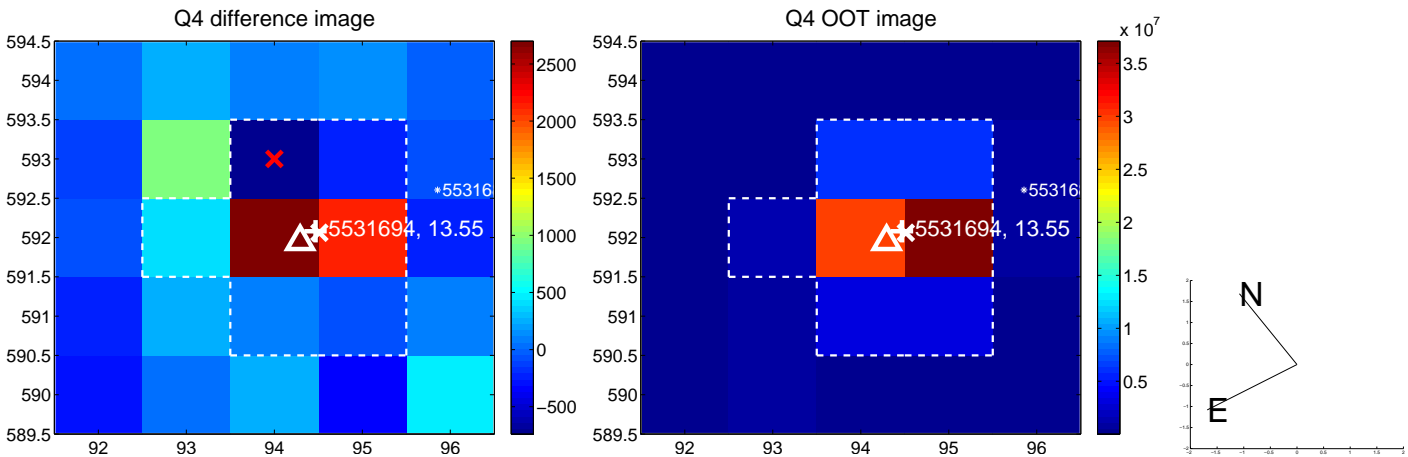
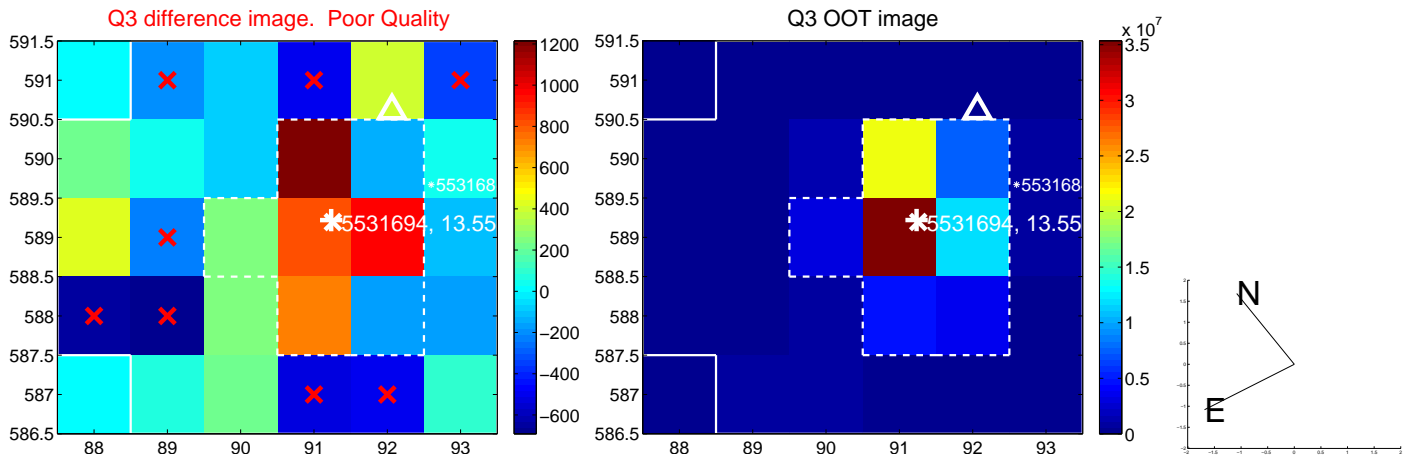
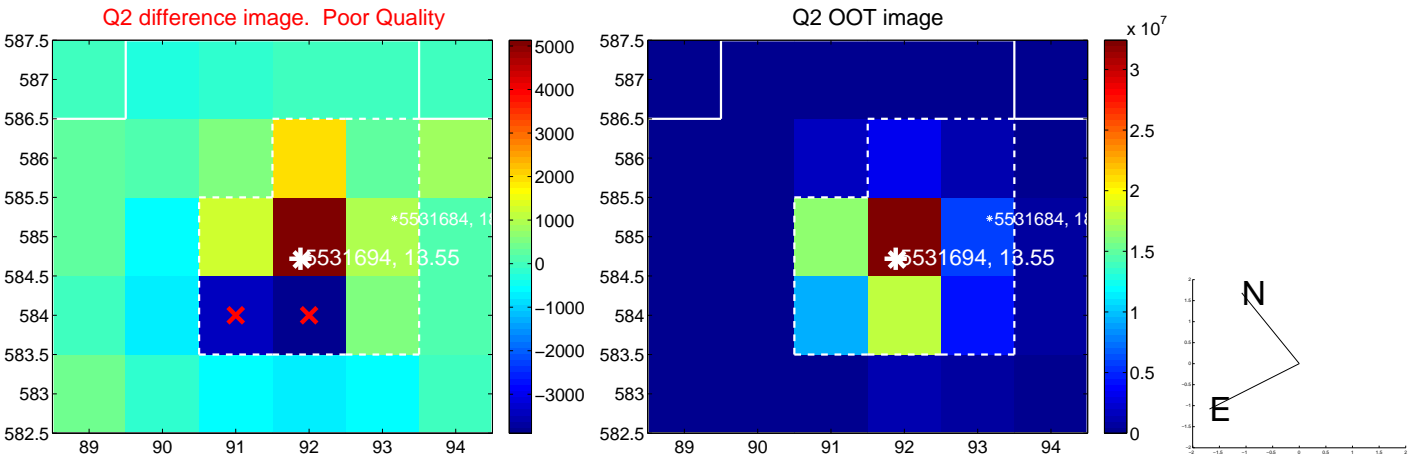
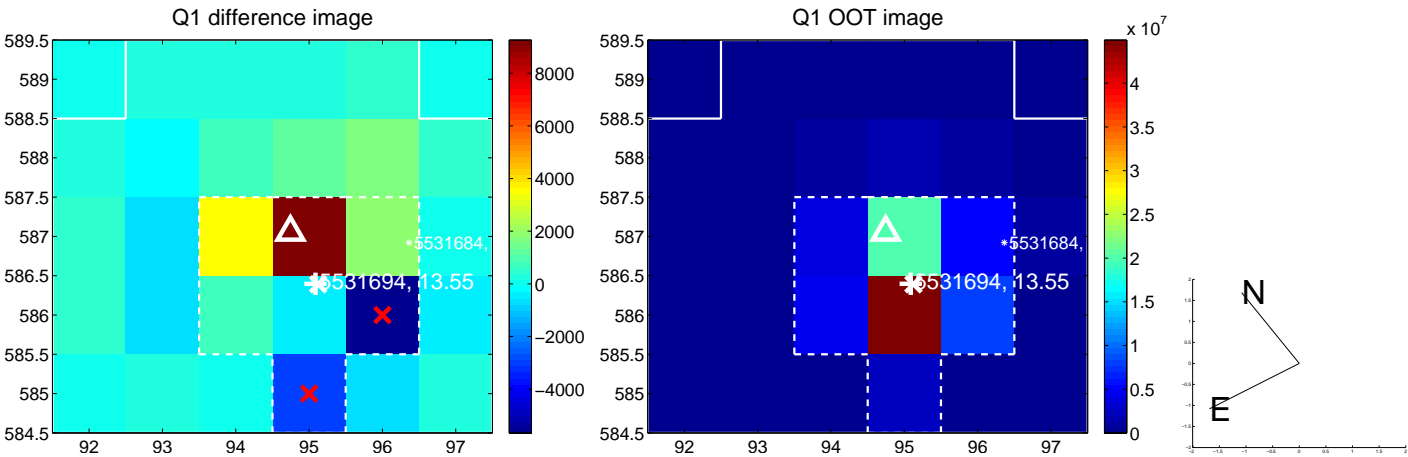
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.872 ± 0.960	0.91	0.322 ± 0.770	-0.810 ± 0.792
PRF-fit source offset from KIC position	0.798 ± 1.071	0.75	0.411 ± 0.795	-0.684 ± 0.853
photometric centroid source offset	2.30 ± 1.18	1.95	-2.05 ± 1.16	1.03 ± 1.23

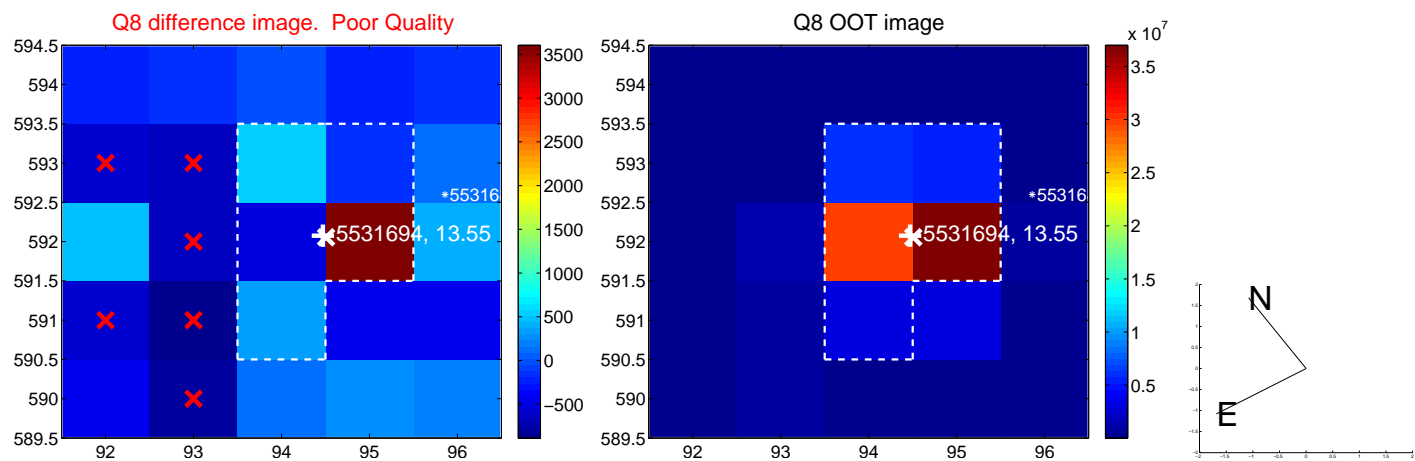
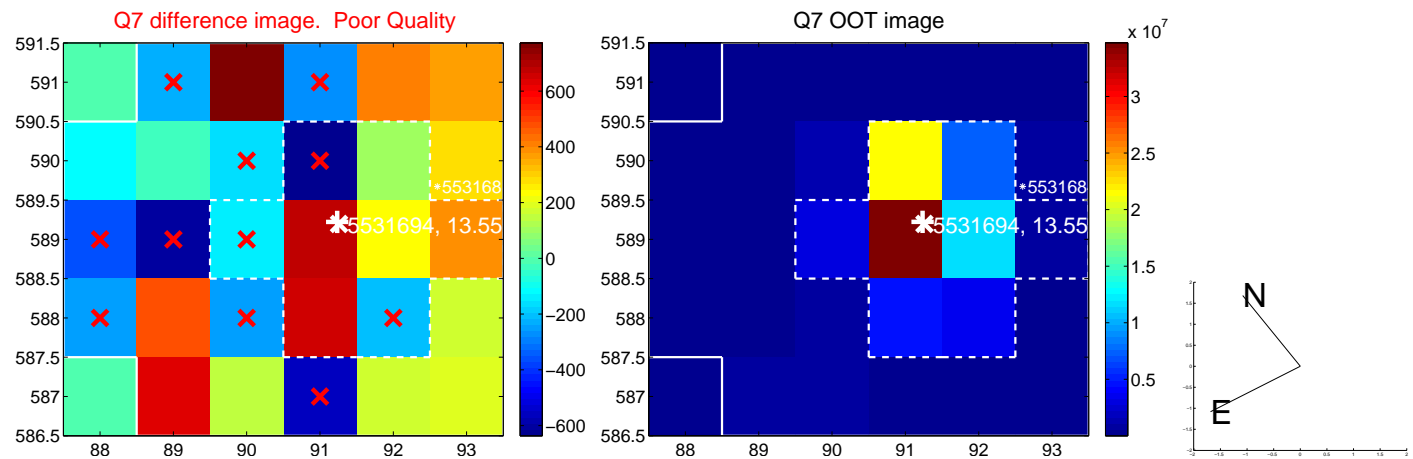
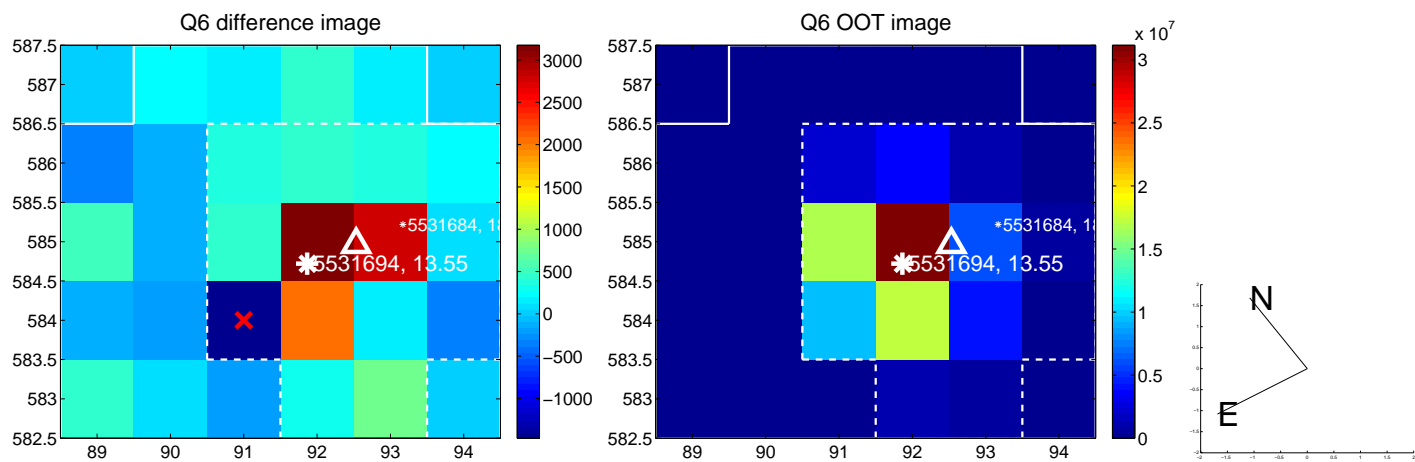
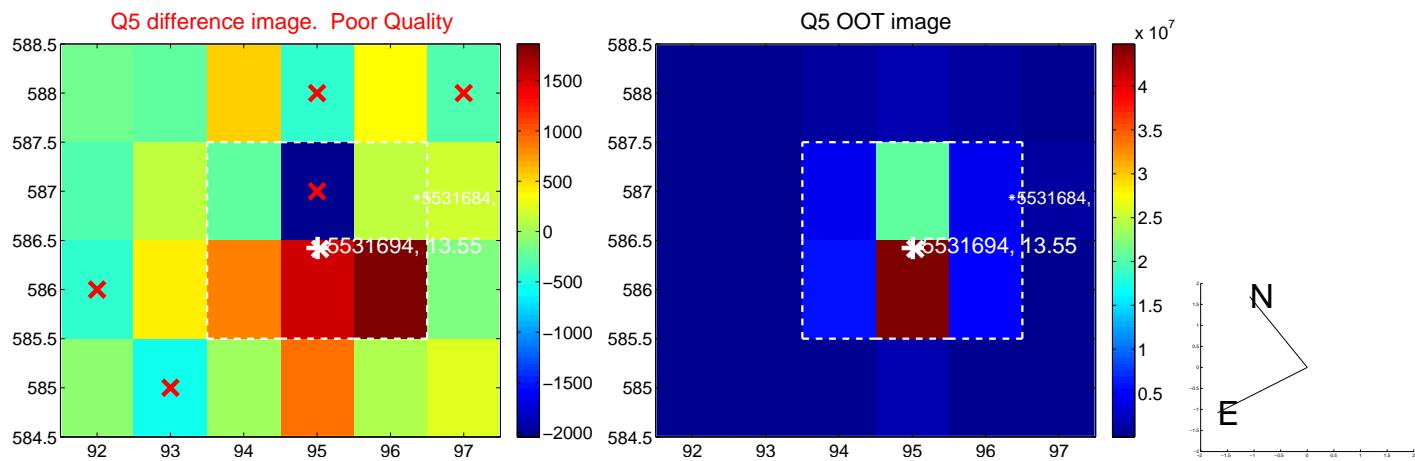


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

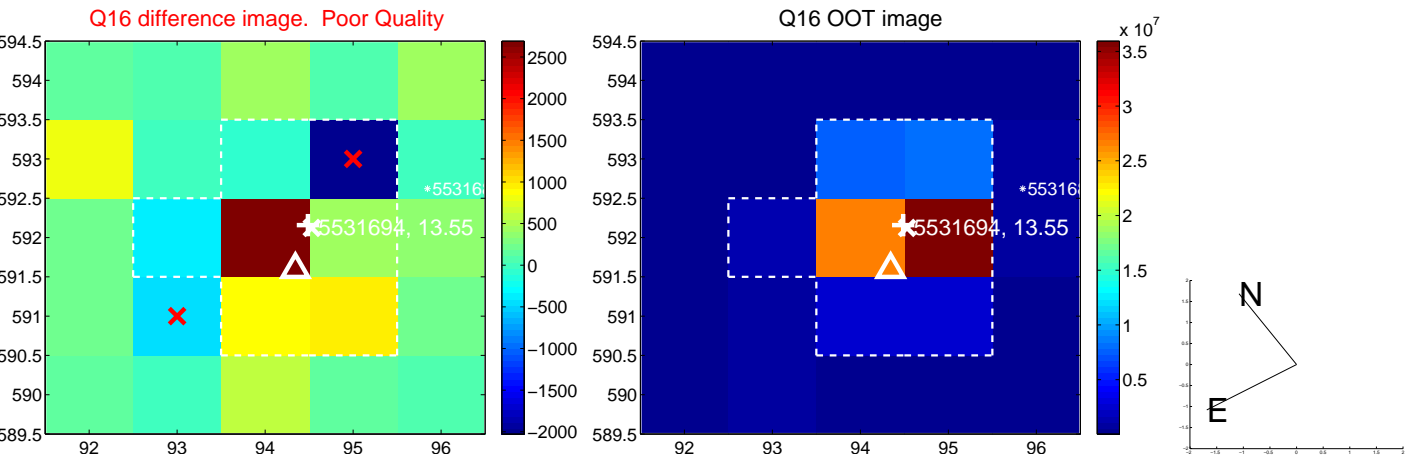
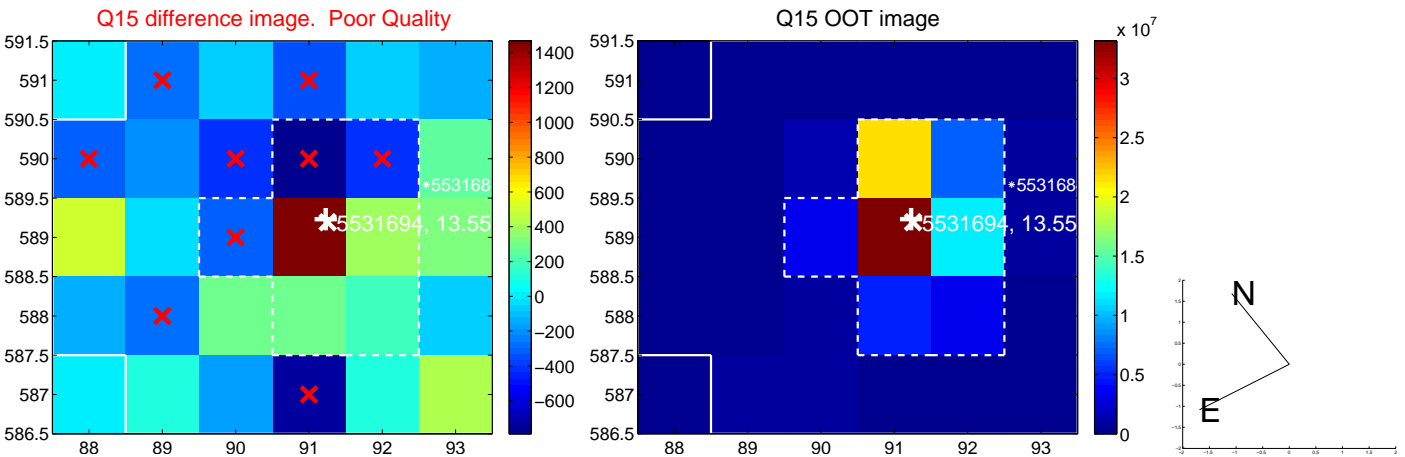
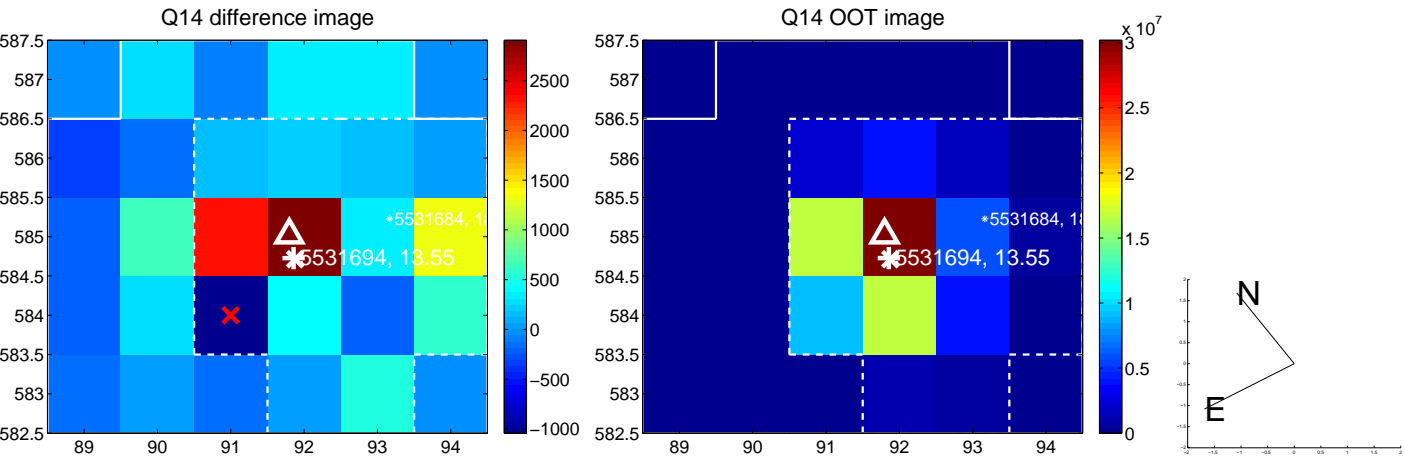
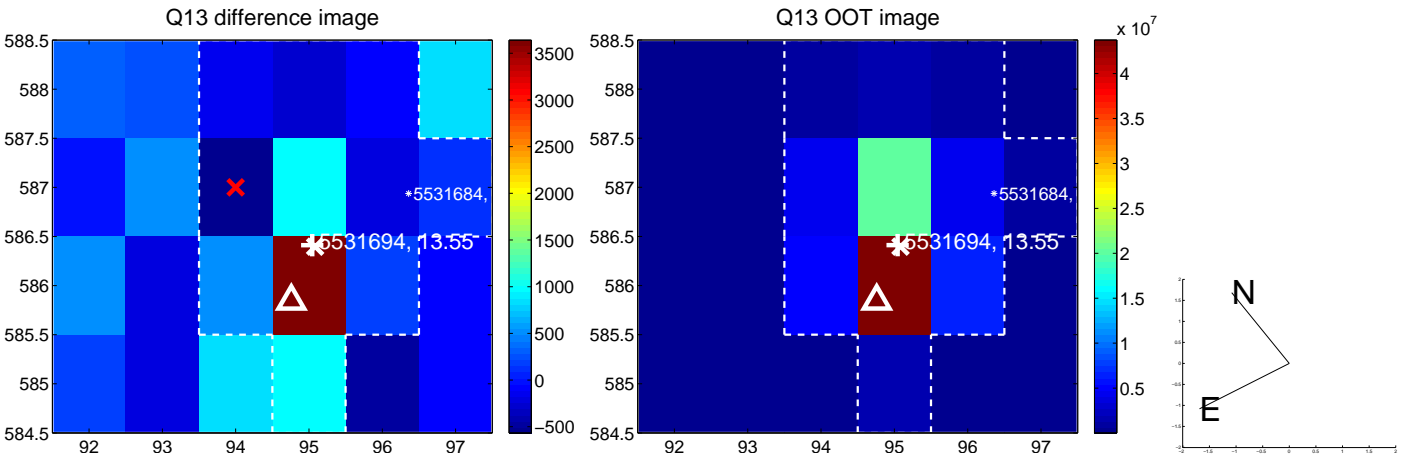
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



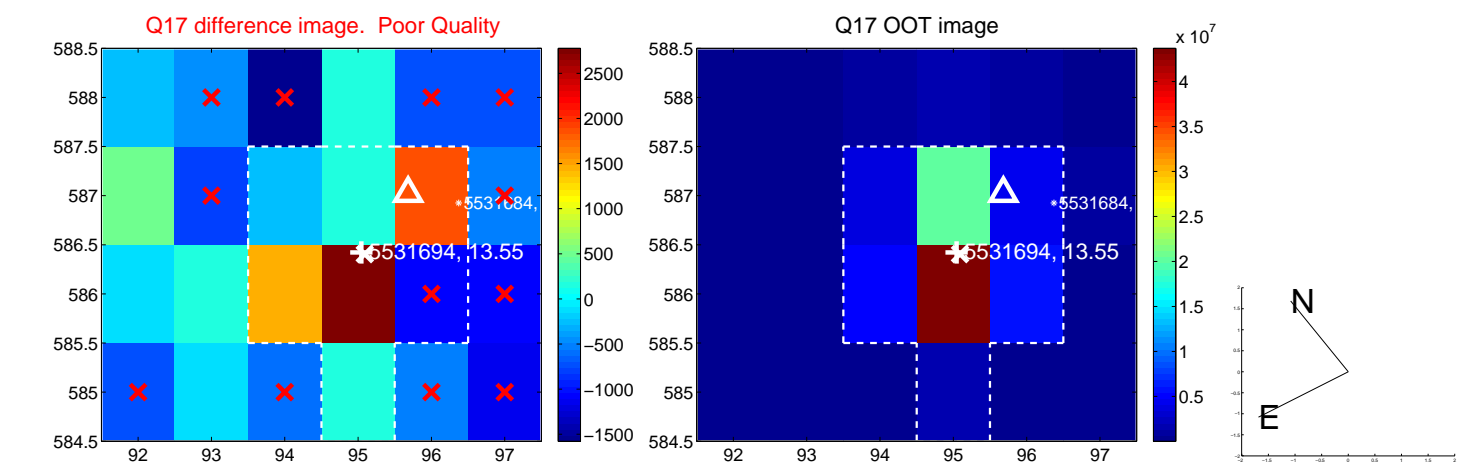
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



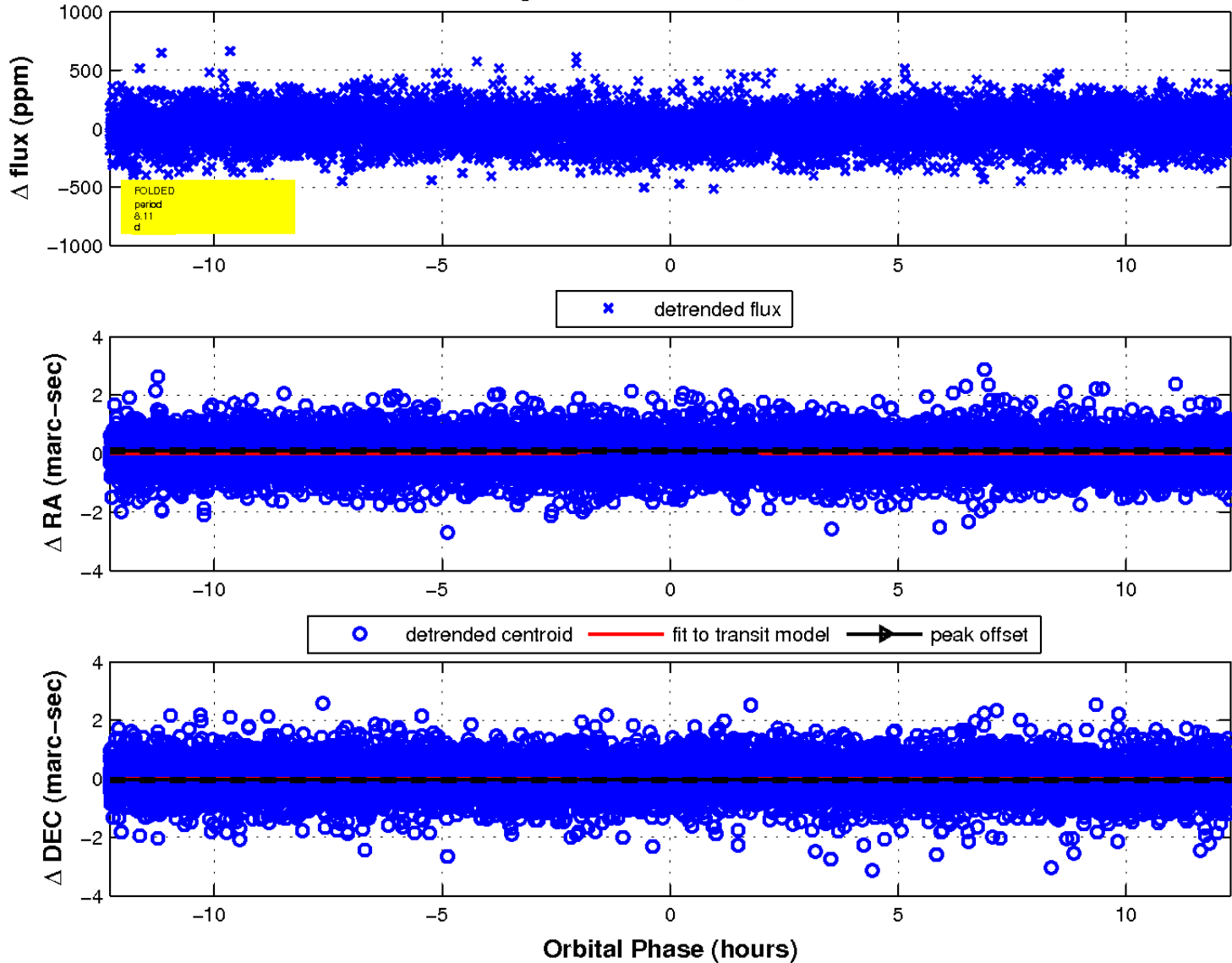
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

