

KIC 004048168

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})
004048168-01	OBS	No	3.216885	132.306312	43.3	10.113	8.2	8.6	2.65	7110	1.99	6543.88
004048168-02	OBS	No	3.216770	134.504601	49.9	13.870	9.8	11.2	2.65	7110	2.52	6544.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004048168-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
004048168-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

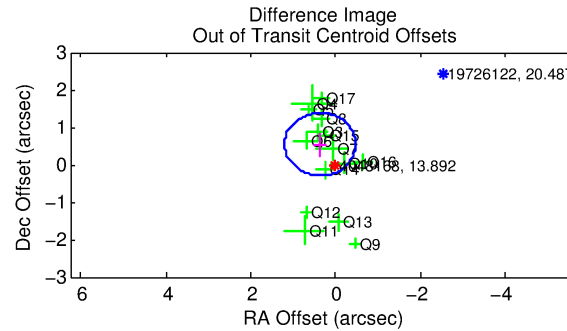
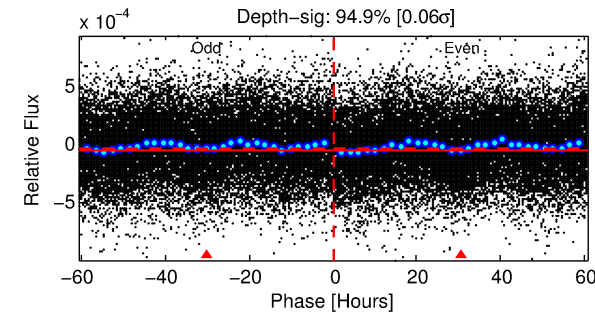
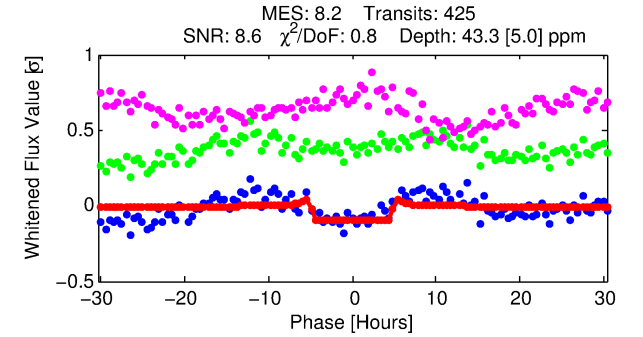
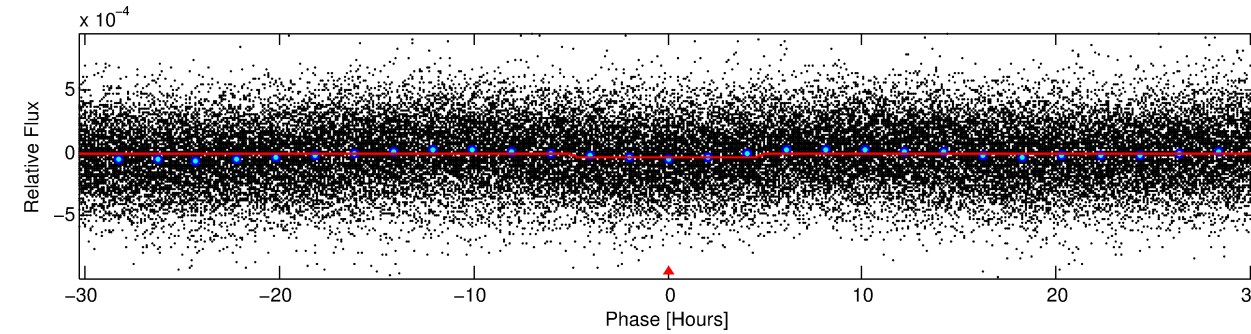
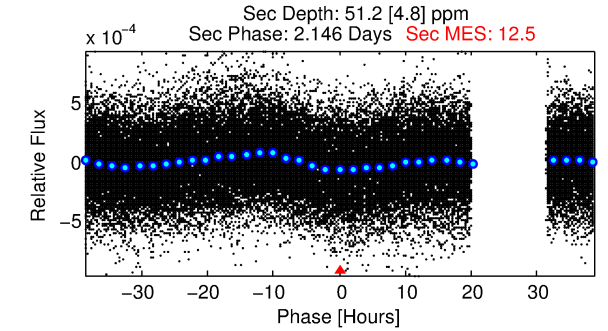
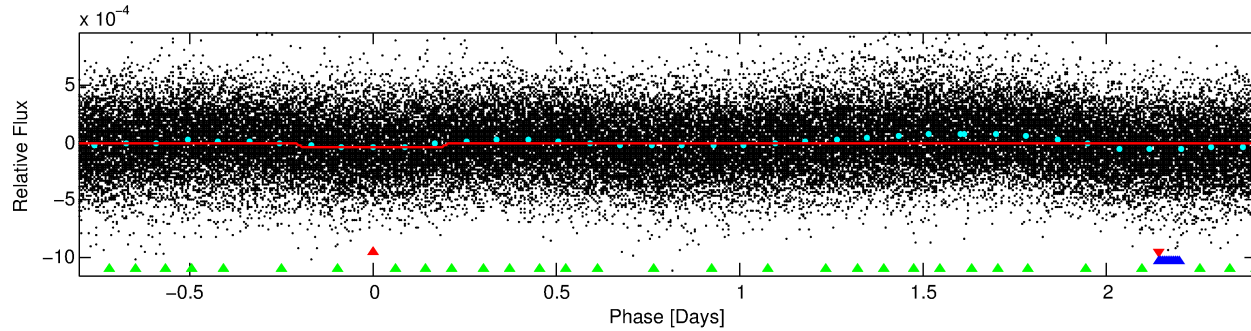
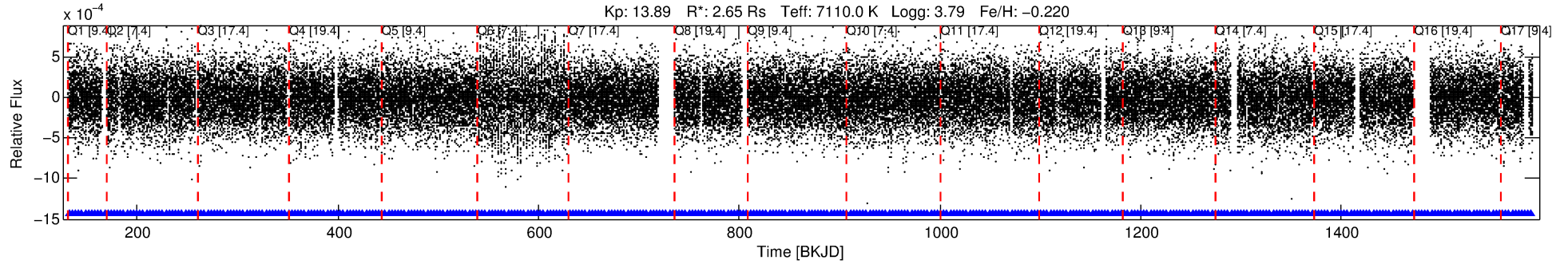
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004048168-01

No Significant Match Found

DV One-Page Summary

KIC: 4048168 Candidate: 1 of 3 Period: 3.217 d



DV Fit Results:

Period = 3.21689 [0.00004] d
Epoch = 132.3063 [0.0070] BKJD
Rp/R* = 0.0069 [0.0015]
a/R* = 1.56 [1.11]
b = 0.86 [0.36]
Seff = 6543.88 [4685.52]
Teq = 2293 [411] K
Rp = 1.99 [0.98] Re
a = 0.0497 [0.0214] AU
Ag = 17.56 [14.45] [1.15σ]
Teffp = 7259 [872] K [5.15σ]

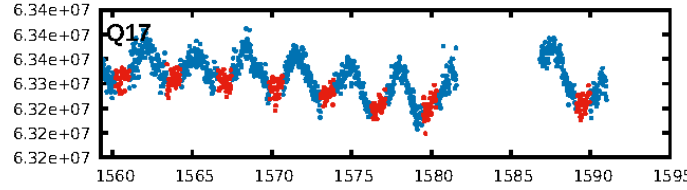
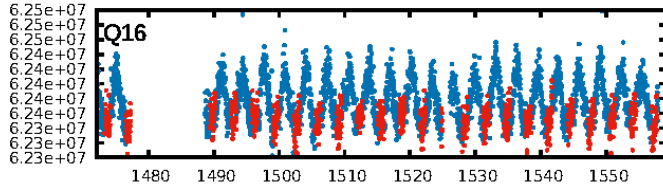
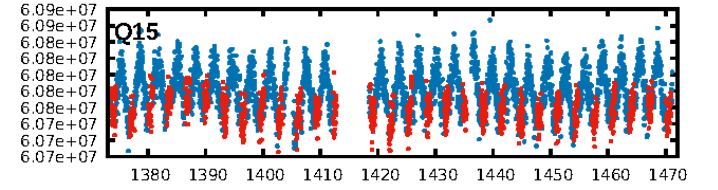
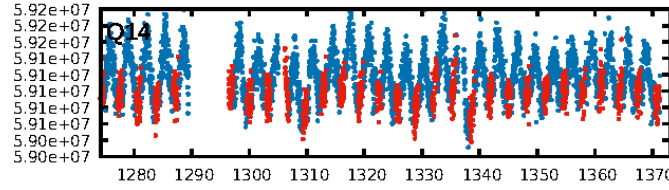
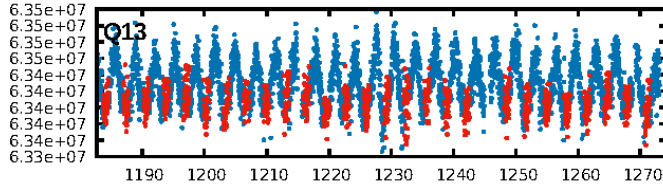
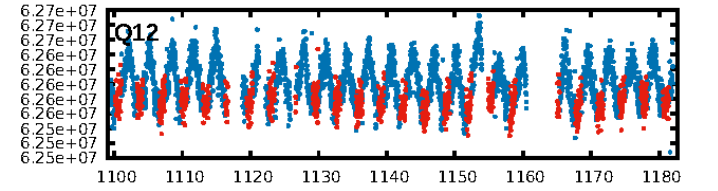
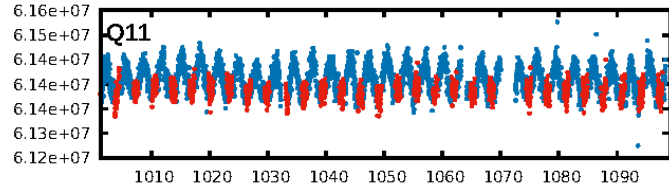
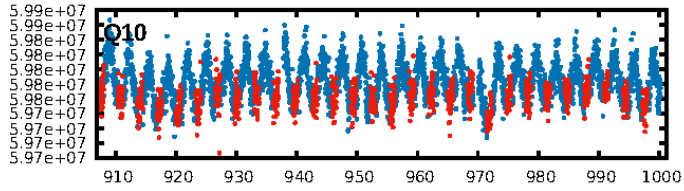
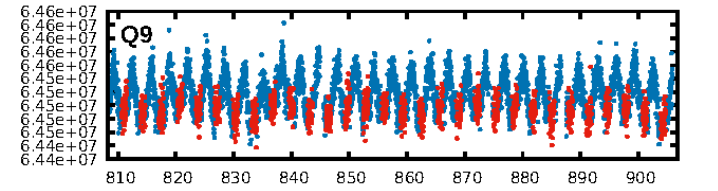
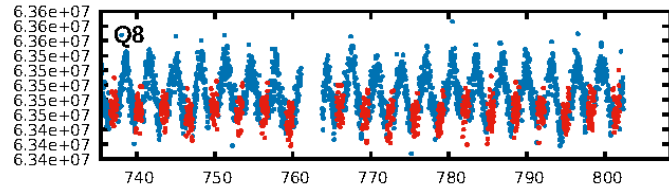
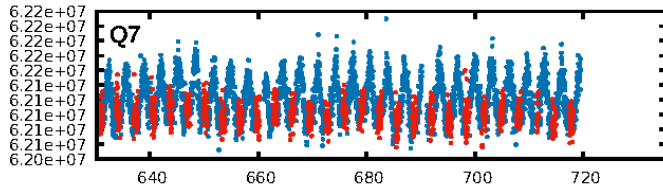
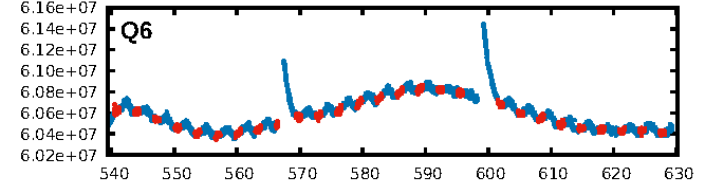
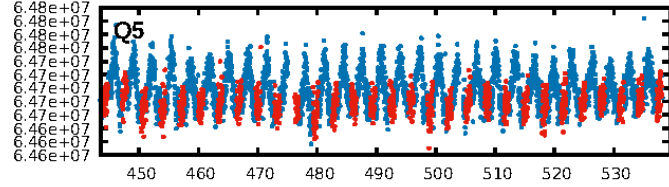
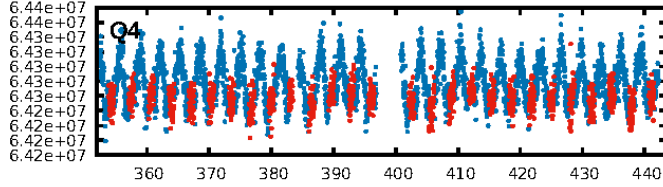
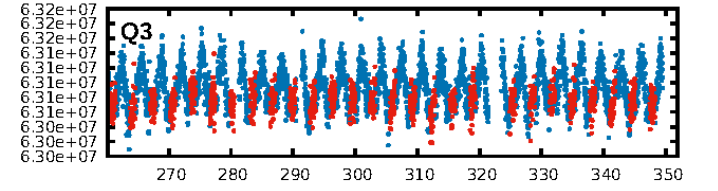
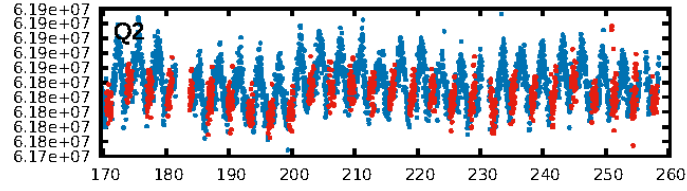
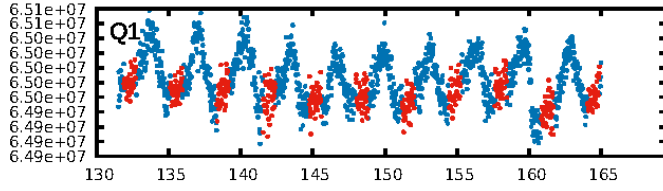
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [97.56σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.44e-07
RollingBand-fgt: 1.00 [406/406]
GhostDiagnostic-chr: 13.76
Centroid-sig: 0.3%
Centroid-so: 1.330 arcsec [1.97σ]
OotOffset-rm: 0.651 arcsec [2.34σ]
KicOffset-rm: 0.732 arcsec [2.21σ]
OotOffset-st: 3/4/4/4 [15]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.93 [14/15]
DiffImageOverlap-fno: 0.47 [8/17]

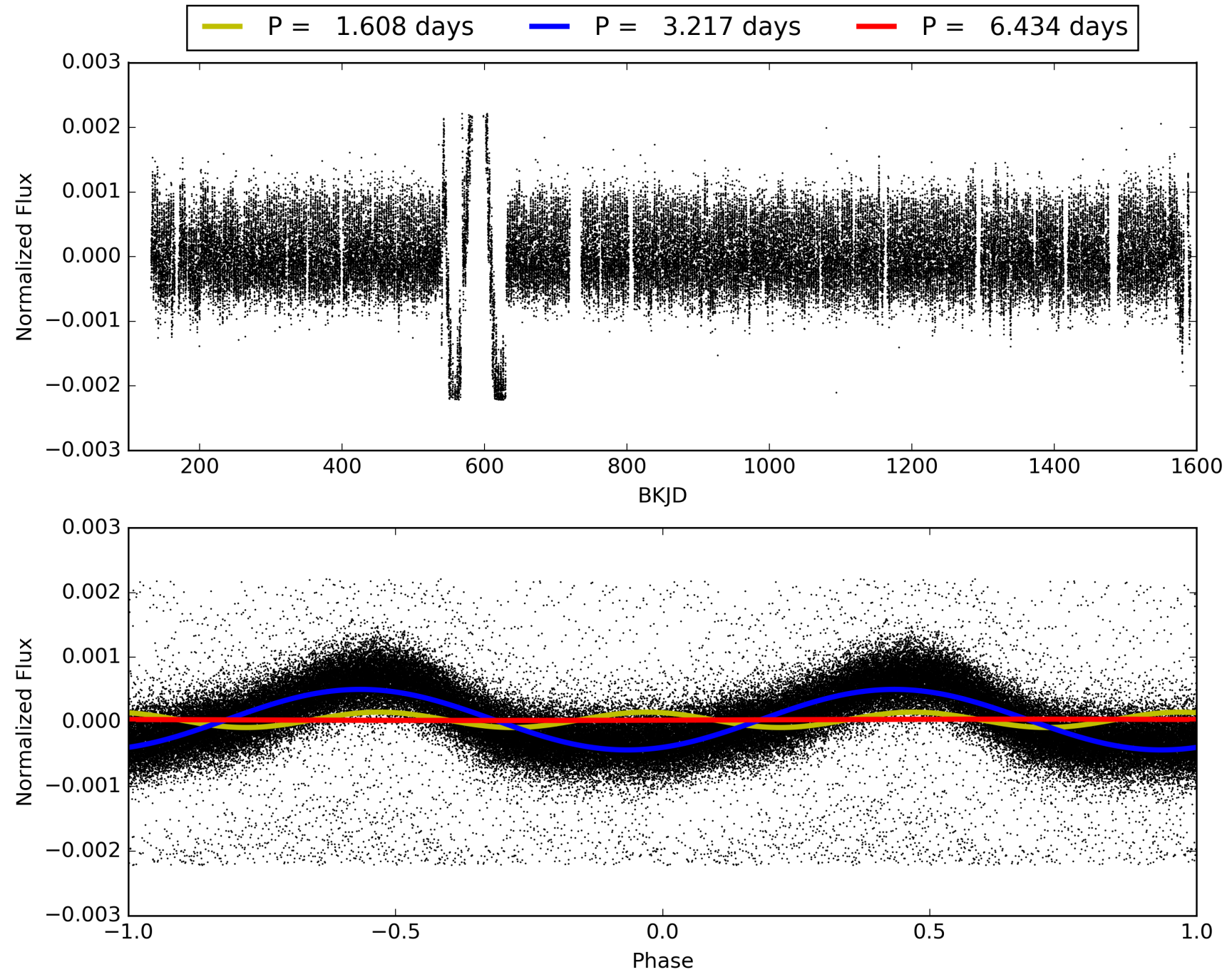
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:00:27 Z

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

TCE 004048168-01, PDC Light Curves

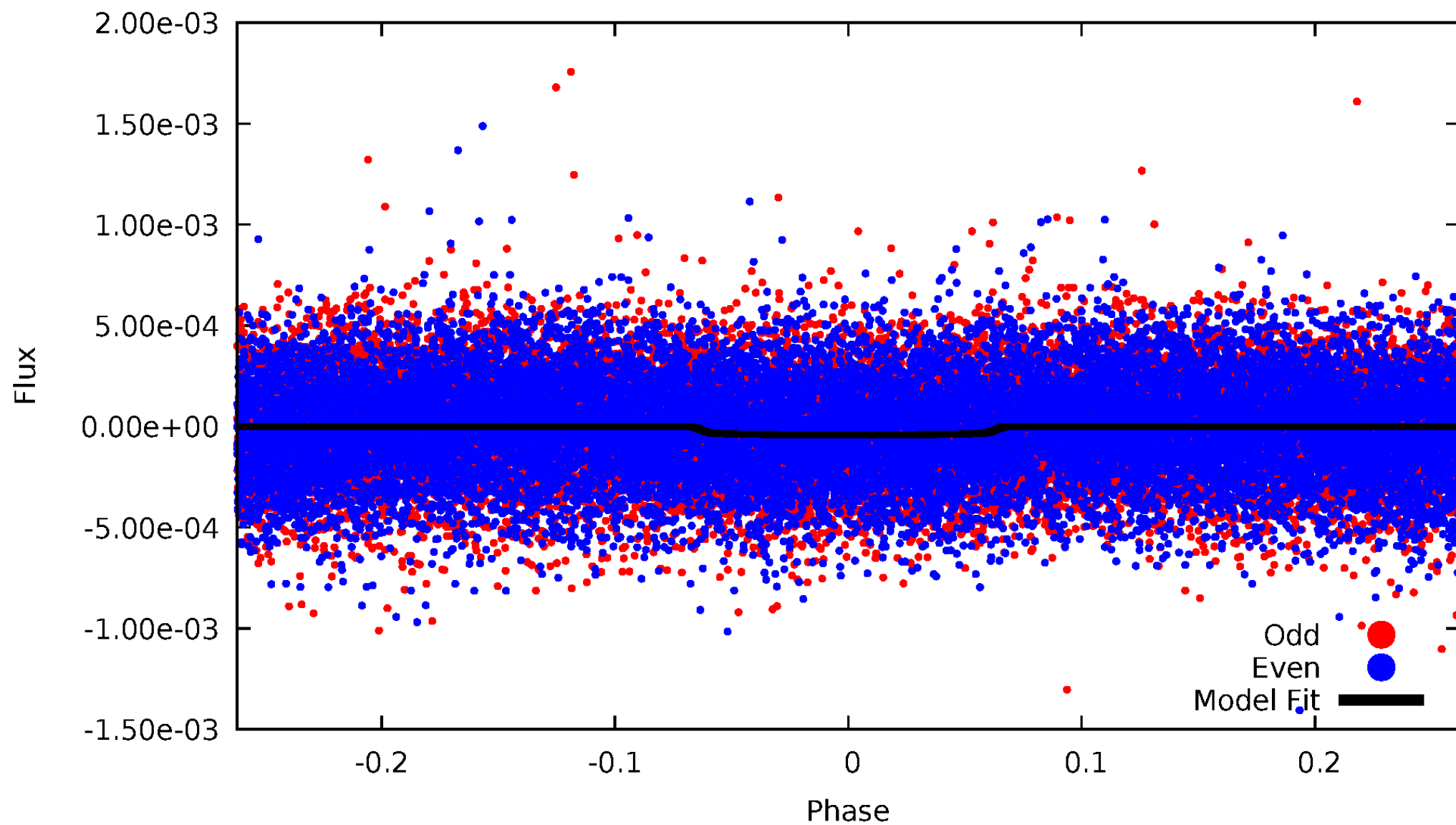


TCE 004048168-01



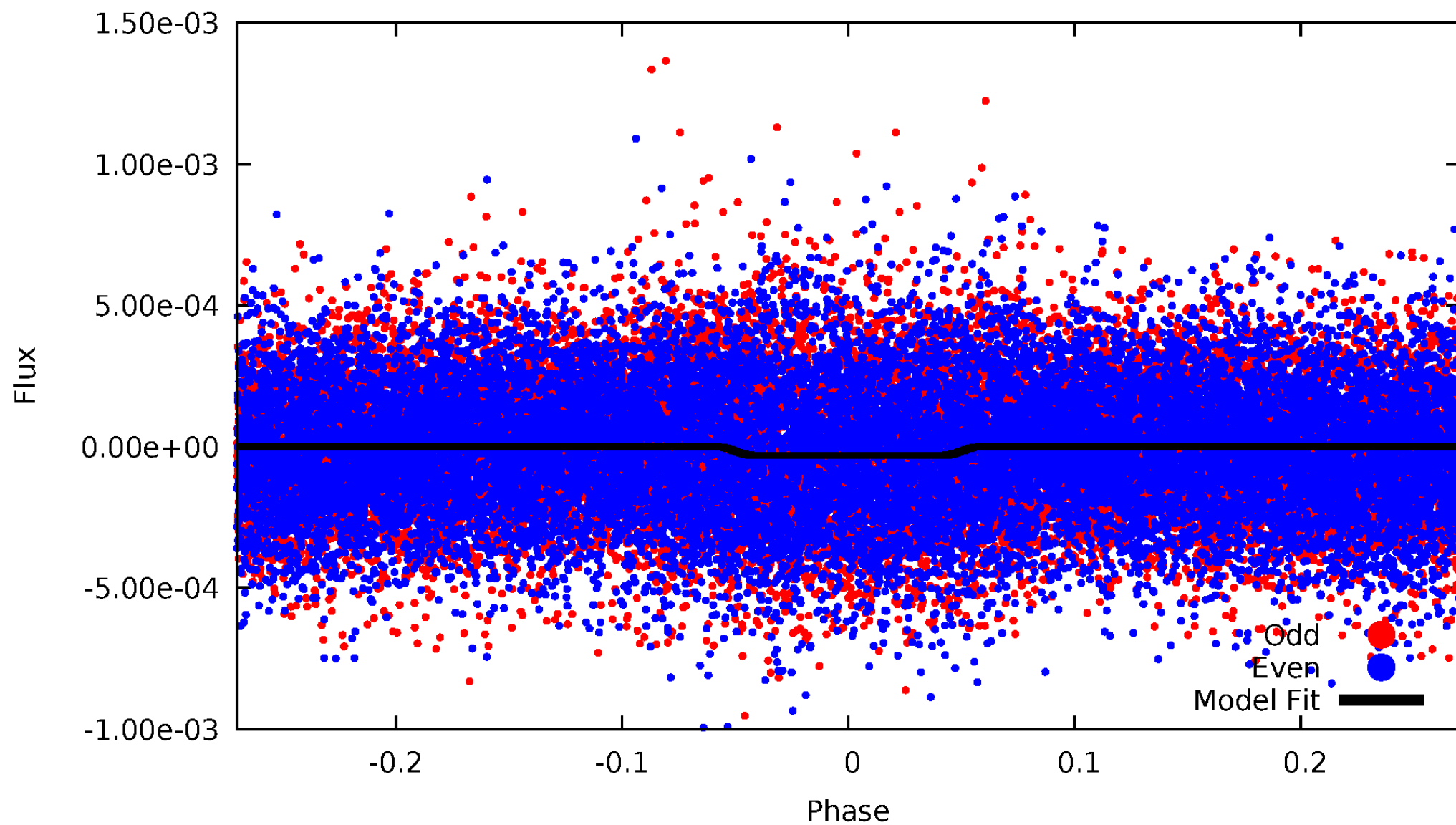
DV Odd/Even

TCE 004048168-01



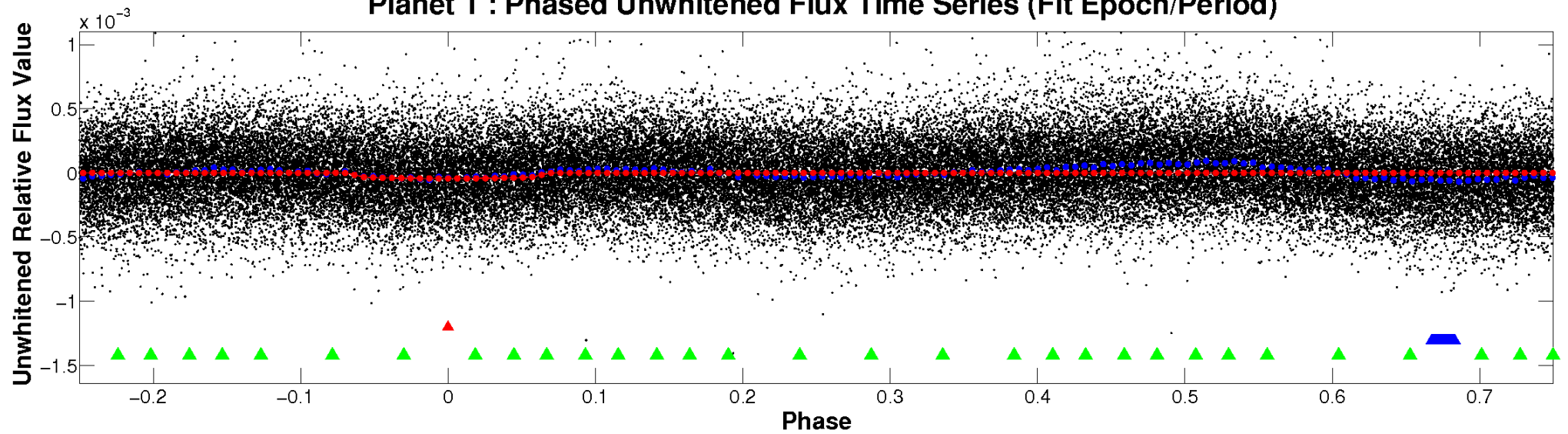
ALT Odd/Even

TCE 004048168-01

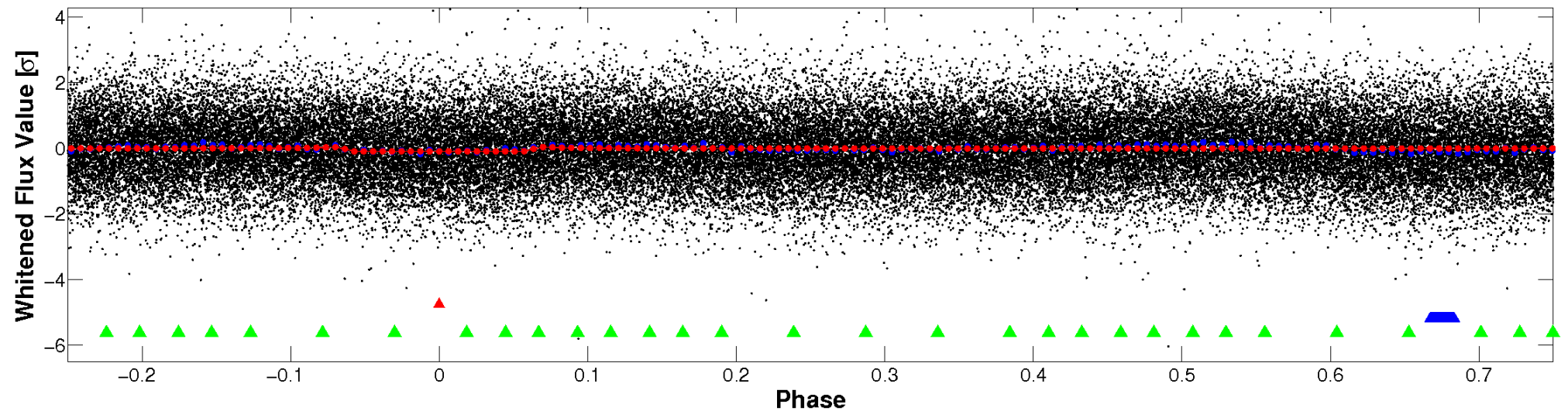


Non-Whitened Vs. Whitened Light Curve

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

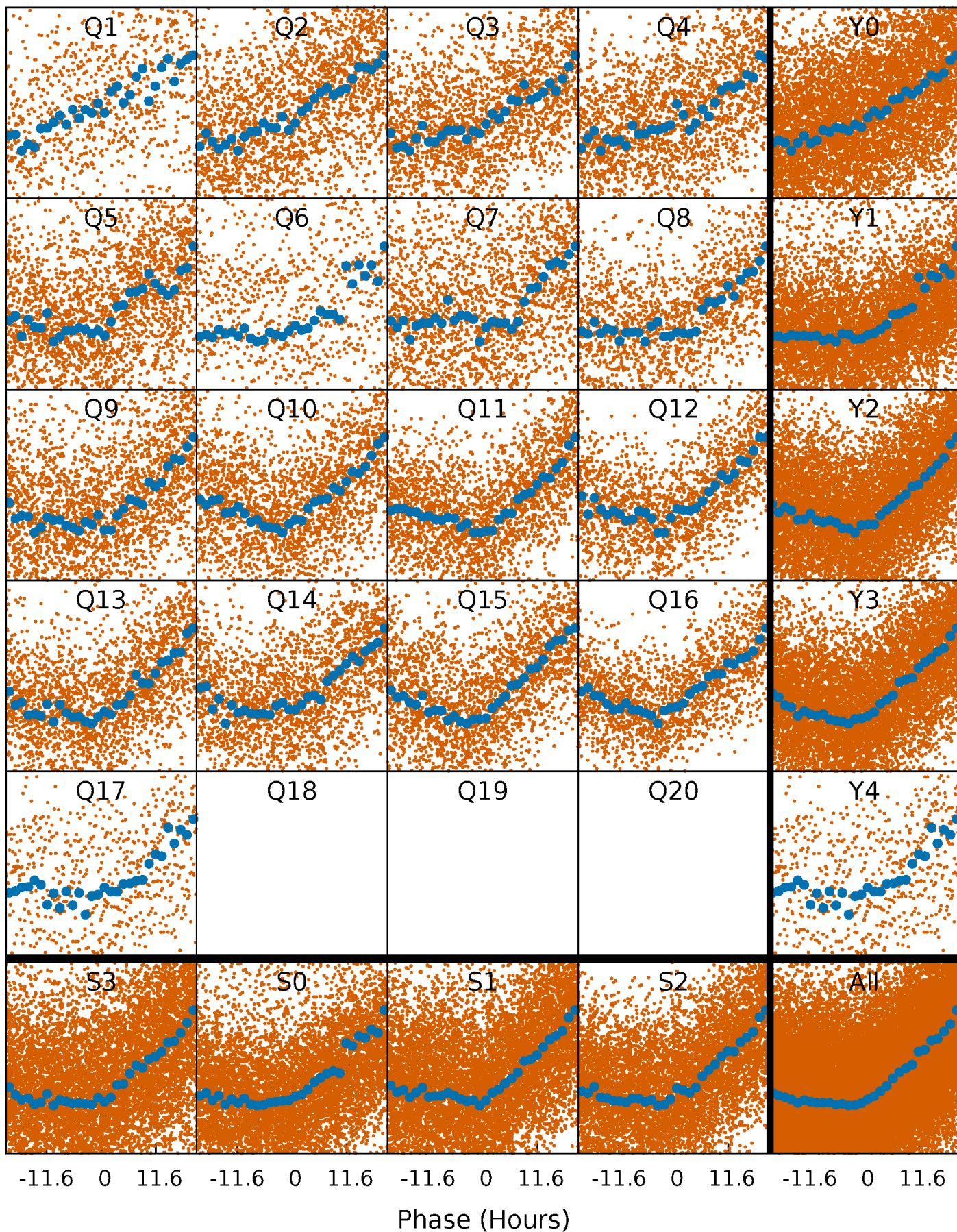


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



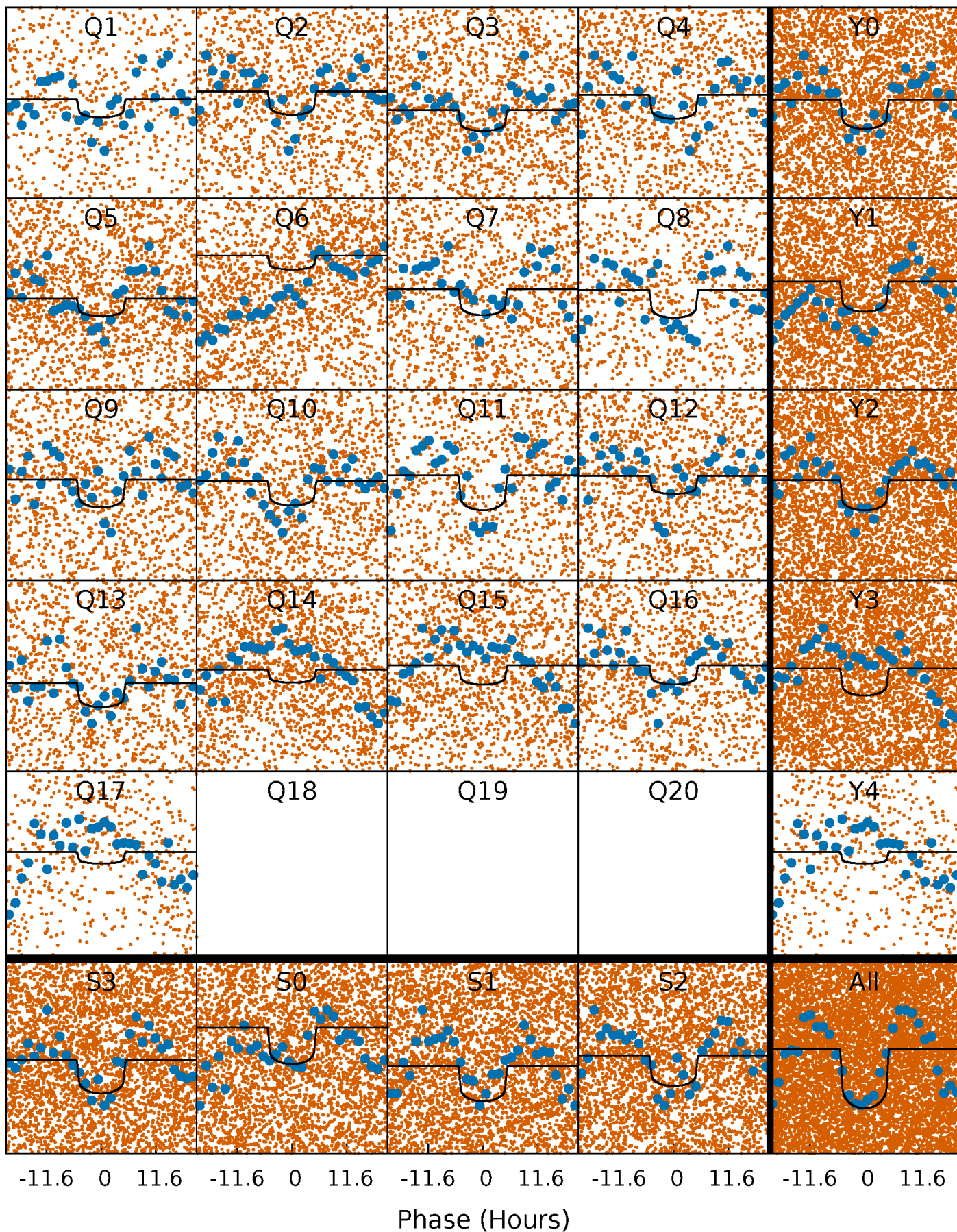
PDC Quarter-Phased Transit Curves

TCE 004048168-01 P= 3.216885 Days $T_0=132.306312$ (BKJD)



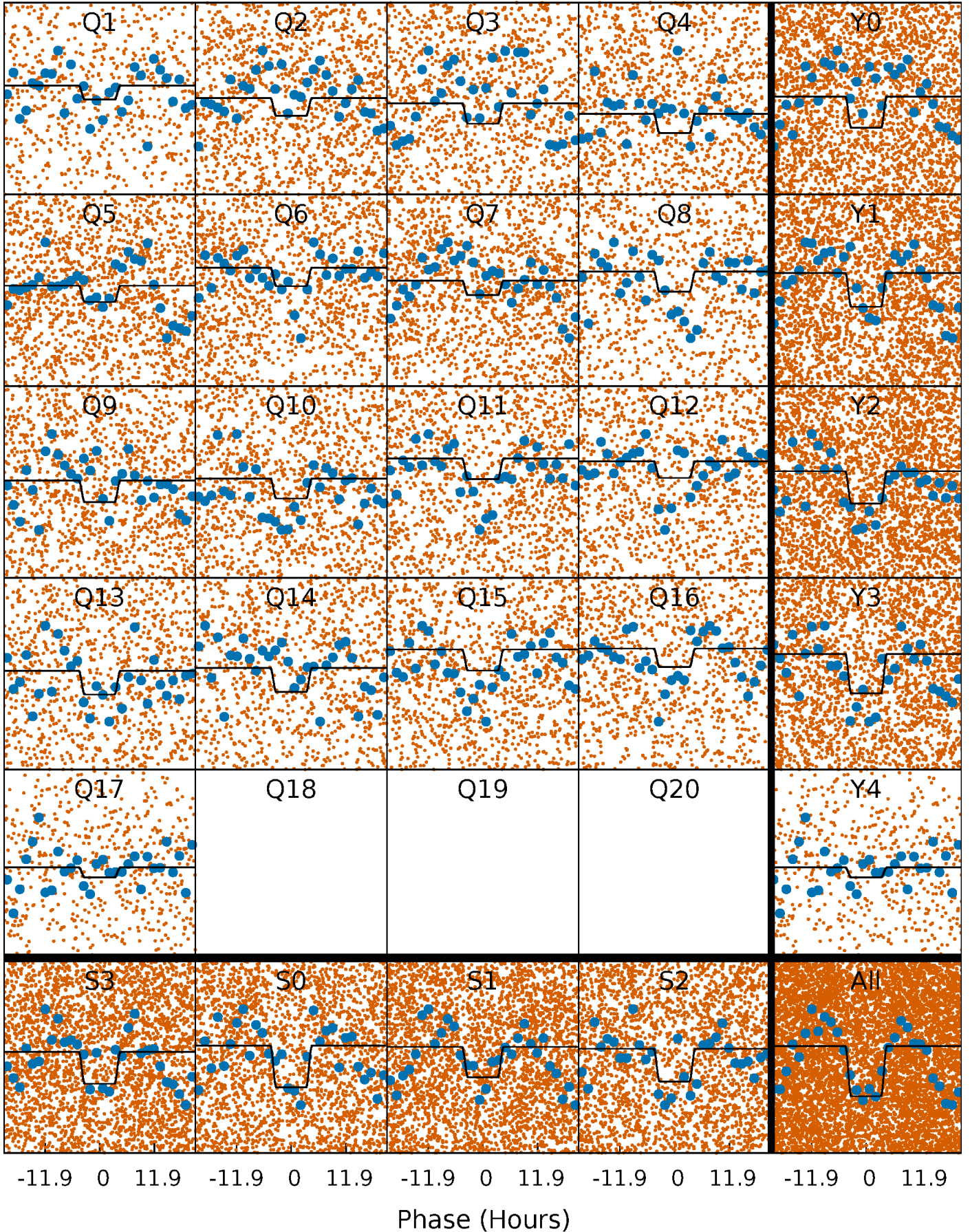
DV Quarter-Phased Transit Curves

TCE 004048168-01 P= 3.216885 Days $T_0=132.306312$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

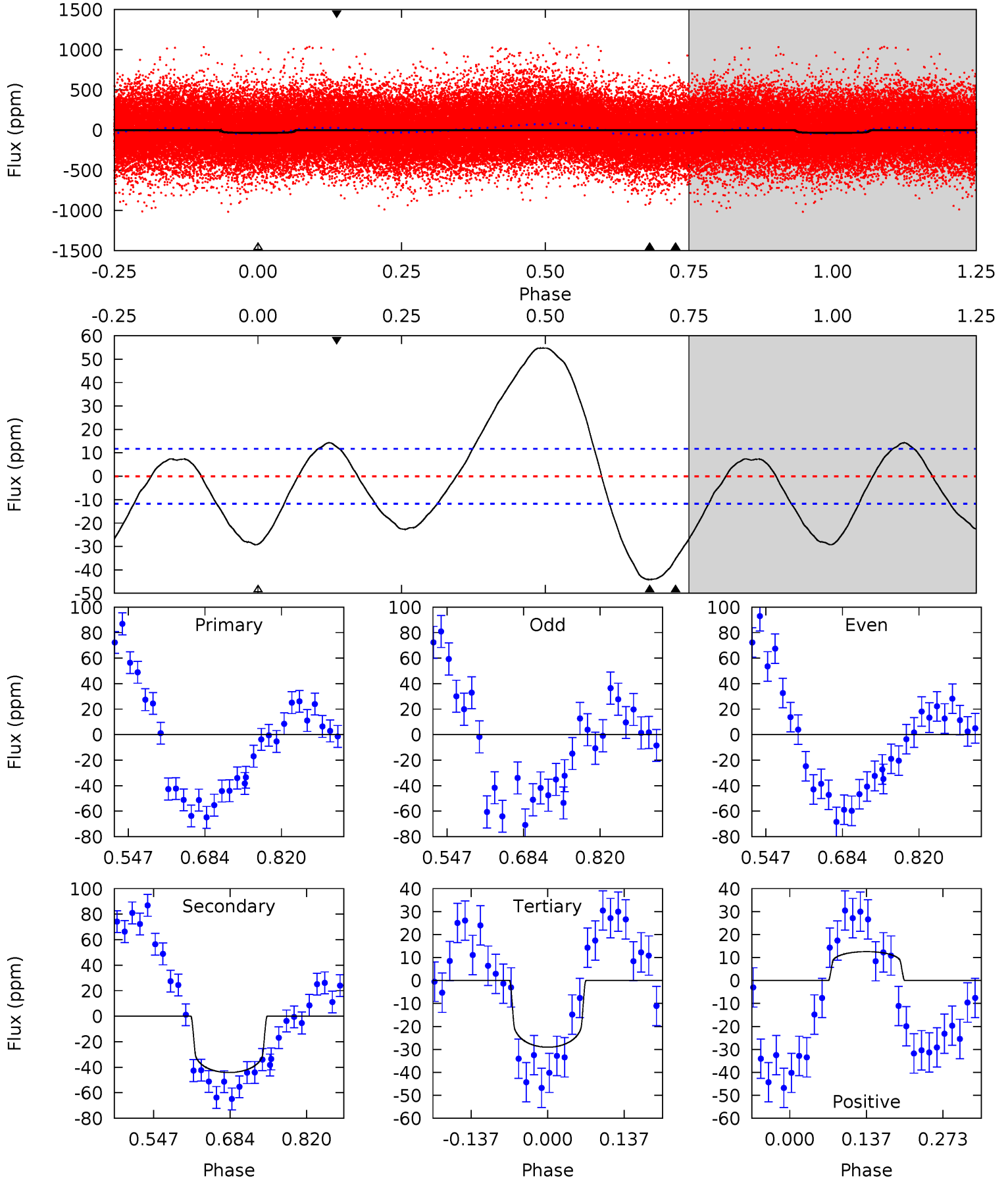
TCE 004048168-01 P= 3.216845 Days $T_0=132.312464$ (BKJD)



DV Model-Shift Uniqueness Test

004048168-01, P = 3.216885 Days, E = 129.089427 Days

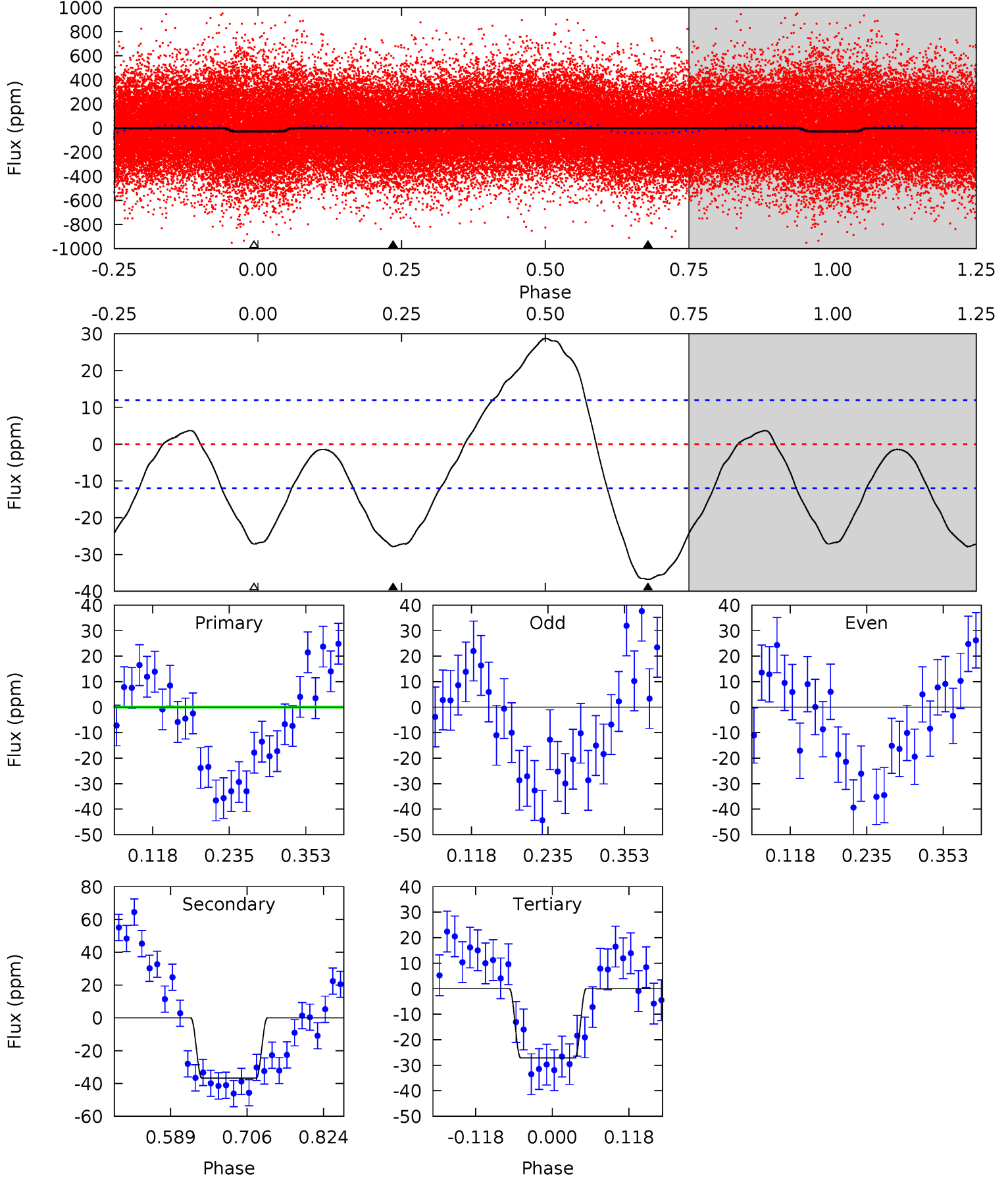
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	16.9	11.1	4.82	4.50	1.49	9.50	2.40	8.71	5.78	12.1	0.24	0.88	0.55	2.02



Alt Model-Shift Uniqueness Test

004048168-01, P = 3.216845 Days, E = 129.095619 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.5	13.9	10.3	0	4.53	1.56	6.26	0.26	10.5	3.64	13.9	2.00	0.91	0.44	0.31



Stellar Parameters For KIC 004048168

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7110^{+224}_{-324}	$3.788^{+0.408}_{-0.102}$	$-0.220^{+0.250}_{-0.300}$	$2.655^{+0.504}_{-1.176}$	$1.578^{+0.228}_{-0.342}$	$0.119^{+0.423}_{-0.037}$
	+3%/-5%	+11%/-3%	+114%/-136%	+19%/-44%	+14%/-22%	+356%/-31%
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 004048168-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-44 ± 3	$1.84^{+0.53}_{-0.52}$	3100^{+251}_{-328}	6866^{+1092}_{-691}	17^{+16}_{-7}
Alt.	-37 ± 3	$1.46^{+0.55}_{-0.51}$	3105^{+251}_{-387}	7476^{+1665}_{-1058}	23^{+29}_{-11}

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

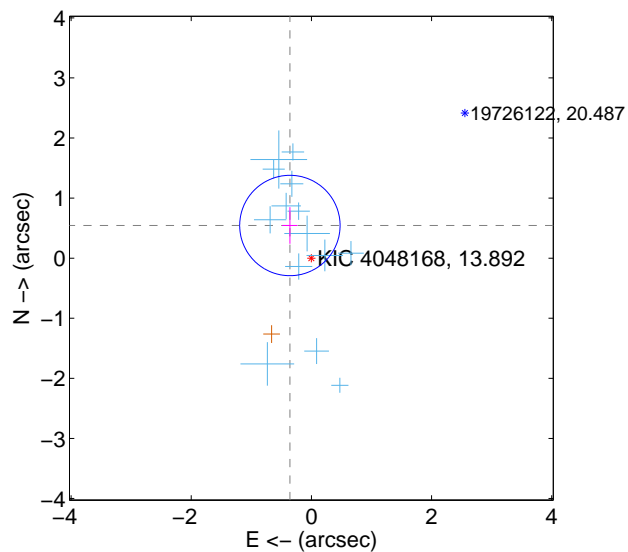
Supplemental centroid analysis for 004048168-01. Kepler magnitude: 13.89. Transit SNR 8.59

There are 14 quarters with good PRF difference image offsets

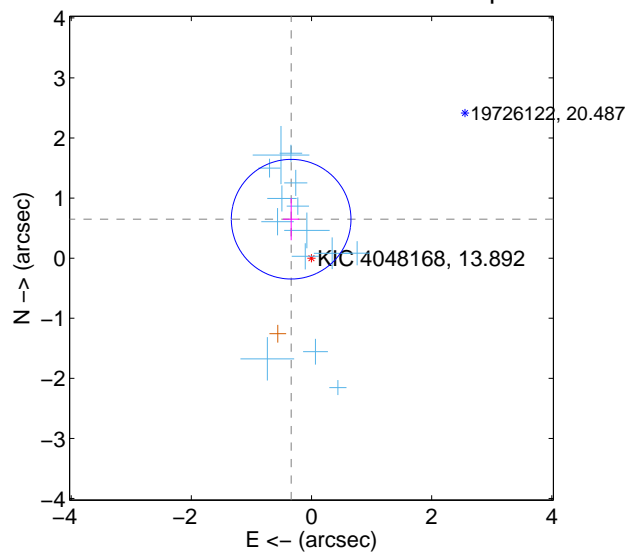
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.651 ± 0.278	2.34	0.358 ± 0.126	0.544 ± 0.305
PRF-fit source offset from KIC position	0.732 ± 0.332	2.21	0.339 ± 0.135	0.649 ± 0.350
photometric centroid source offset	1.33 ± 0.68	1.97	0.61 ± 0.61	1.18 ± 0.69

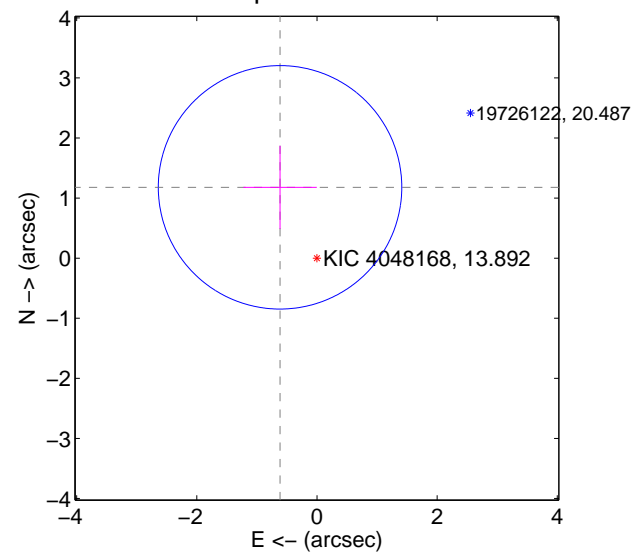
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

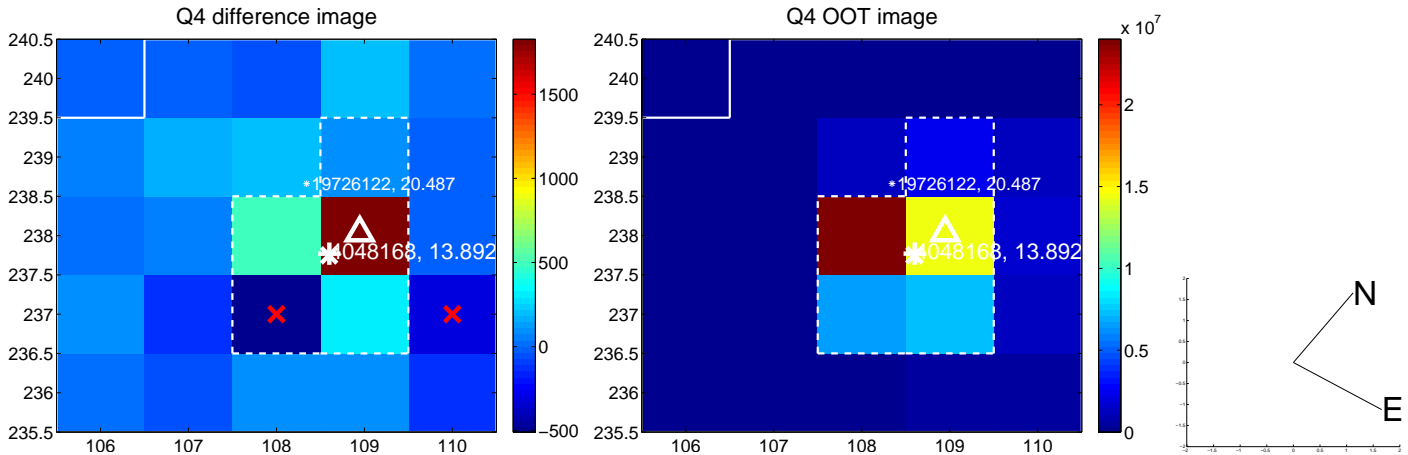
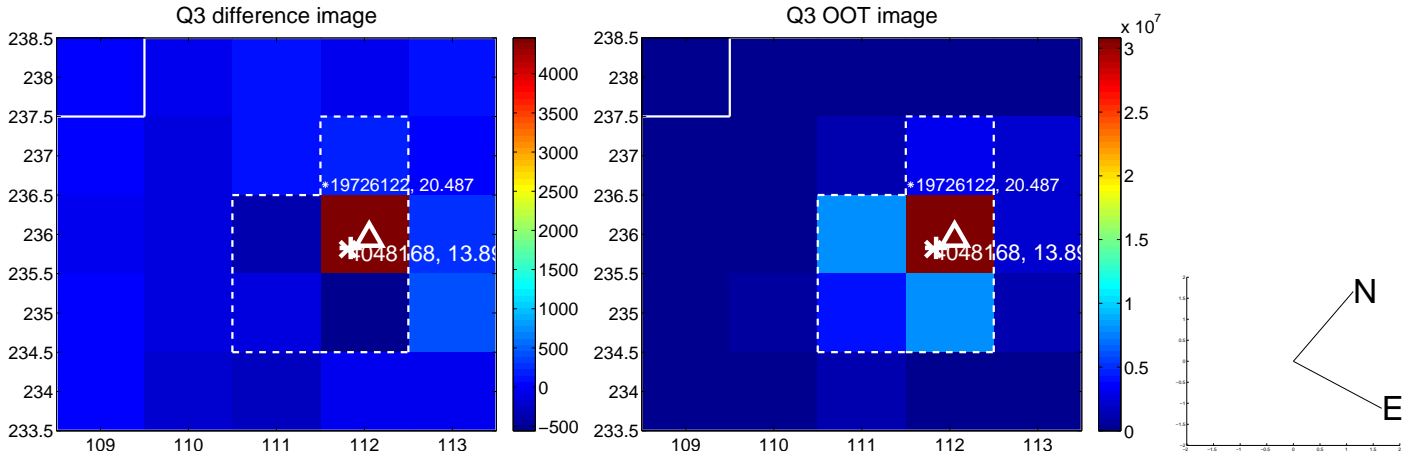
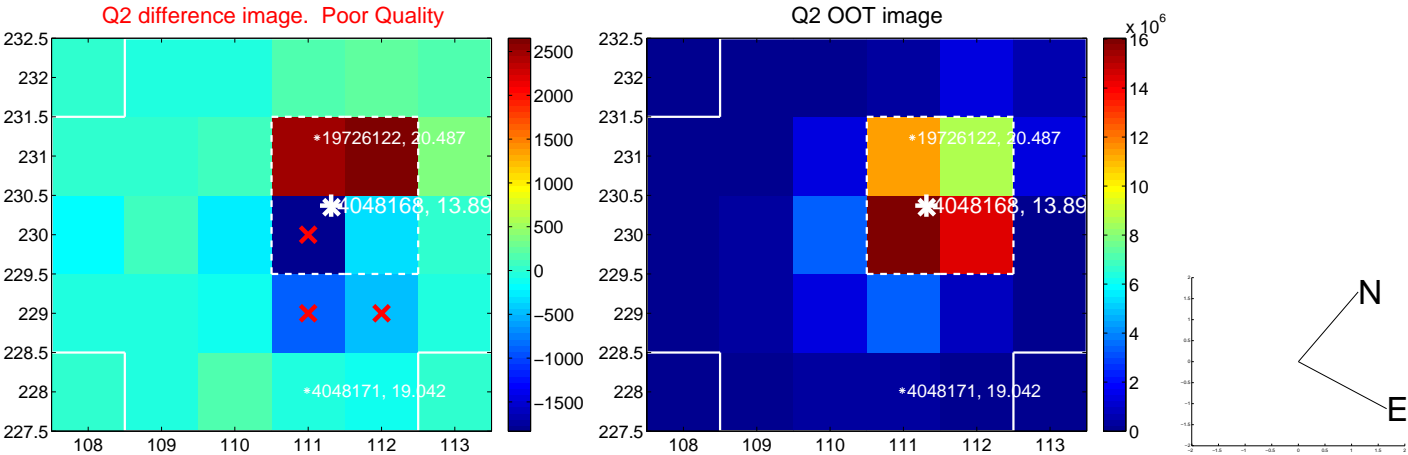
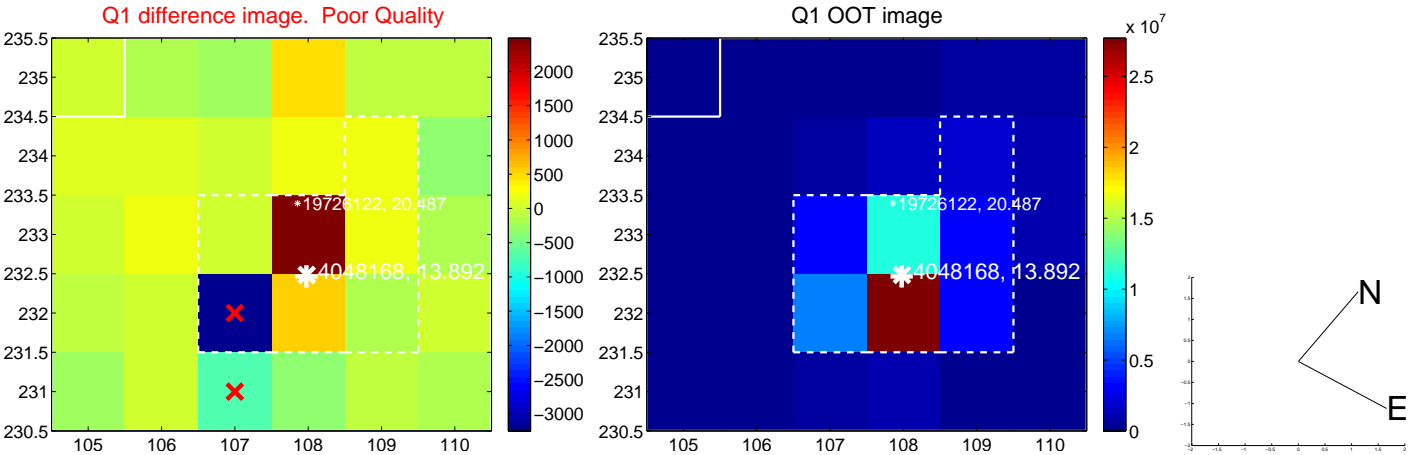


offset from photometric centroids

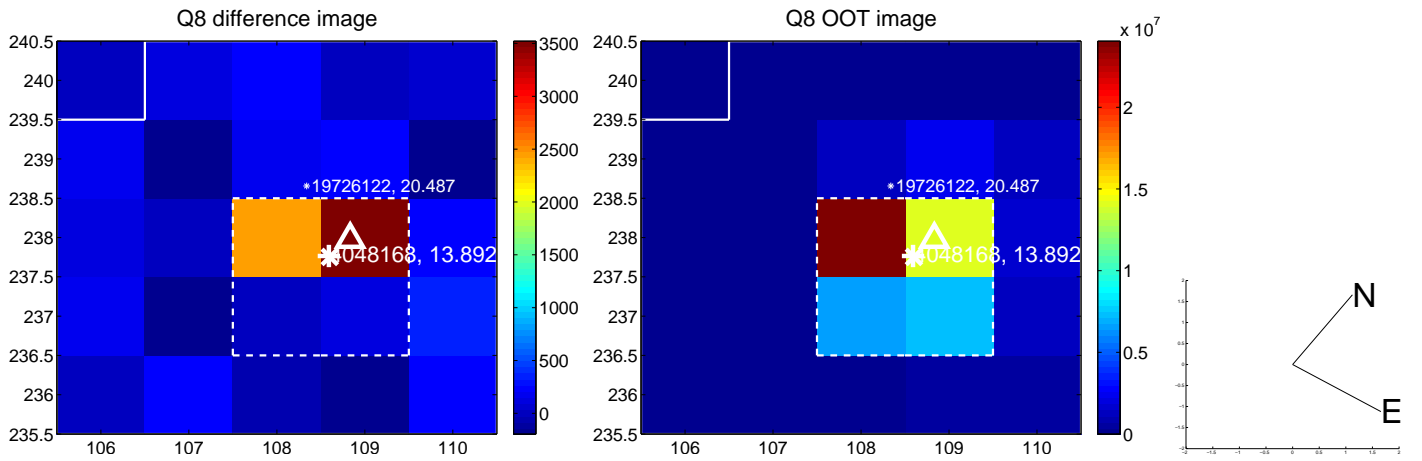
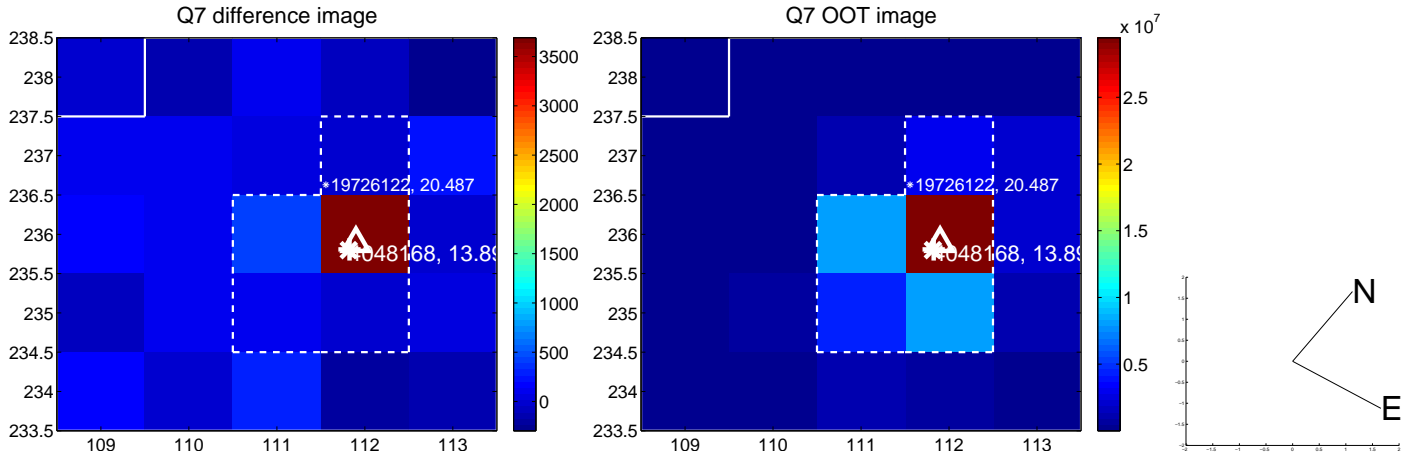
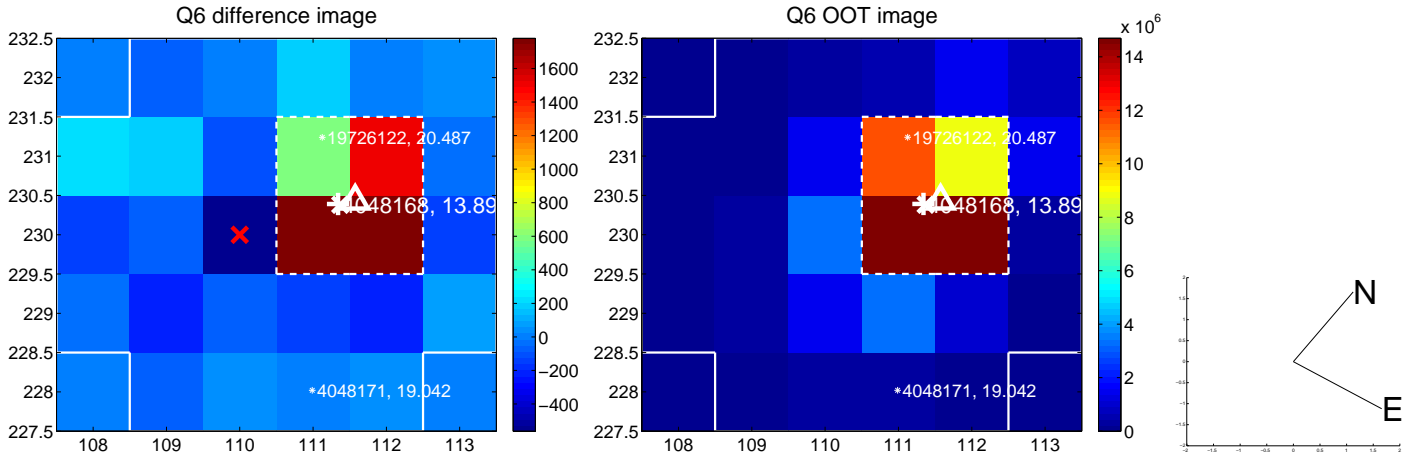
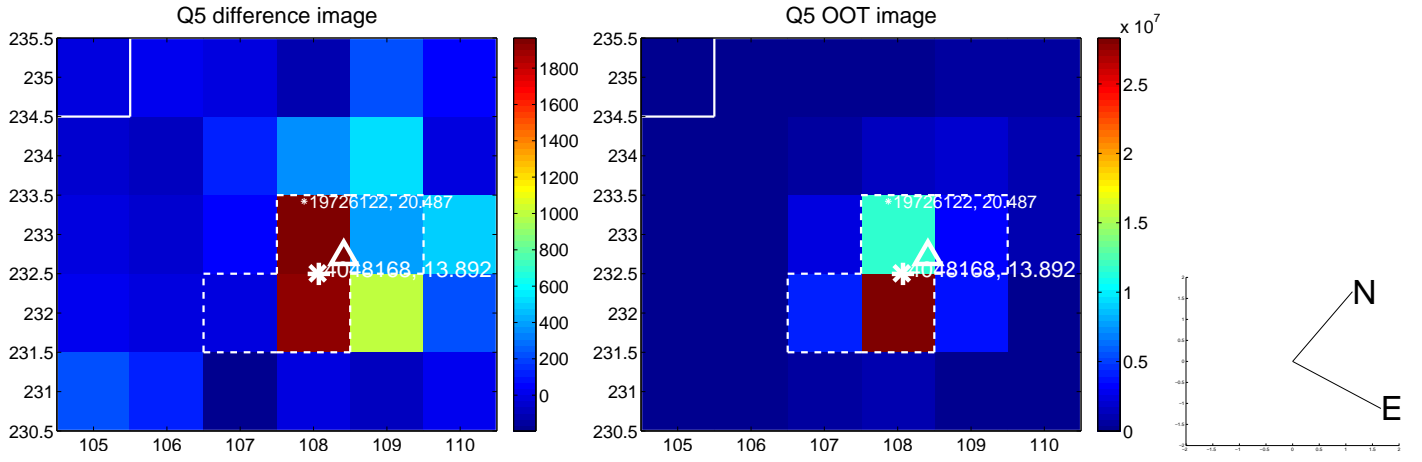


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

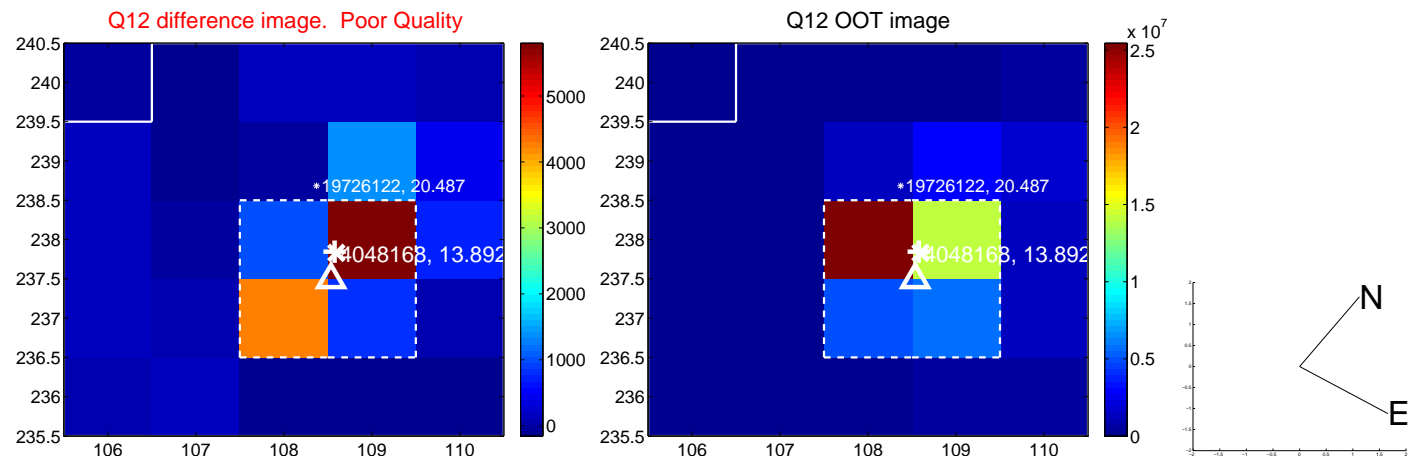
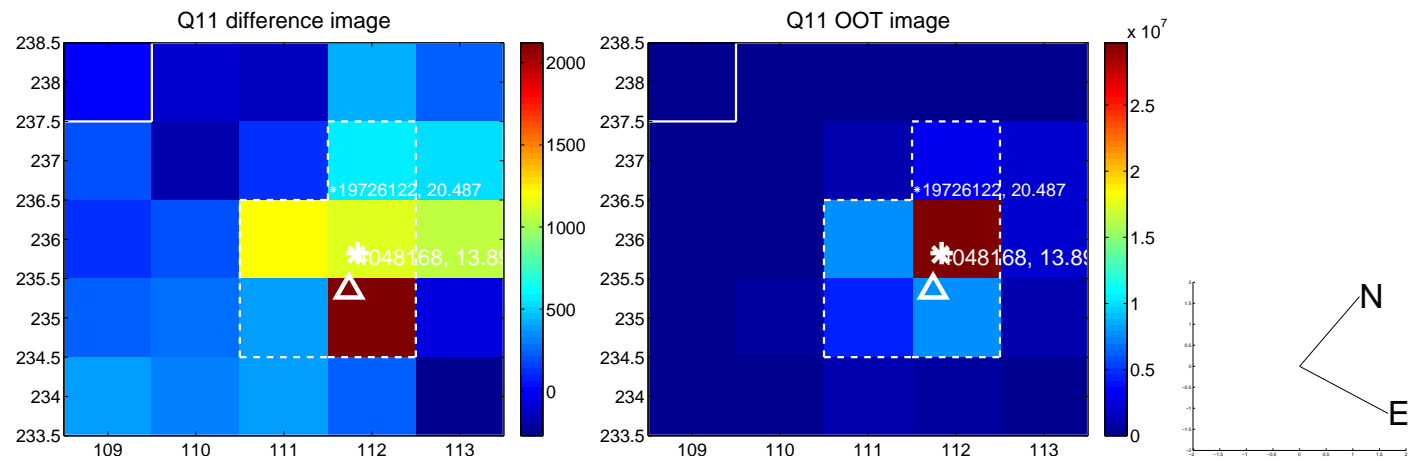
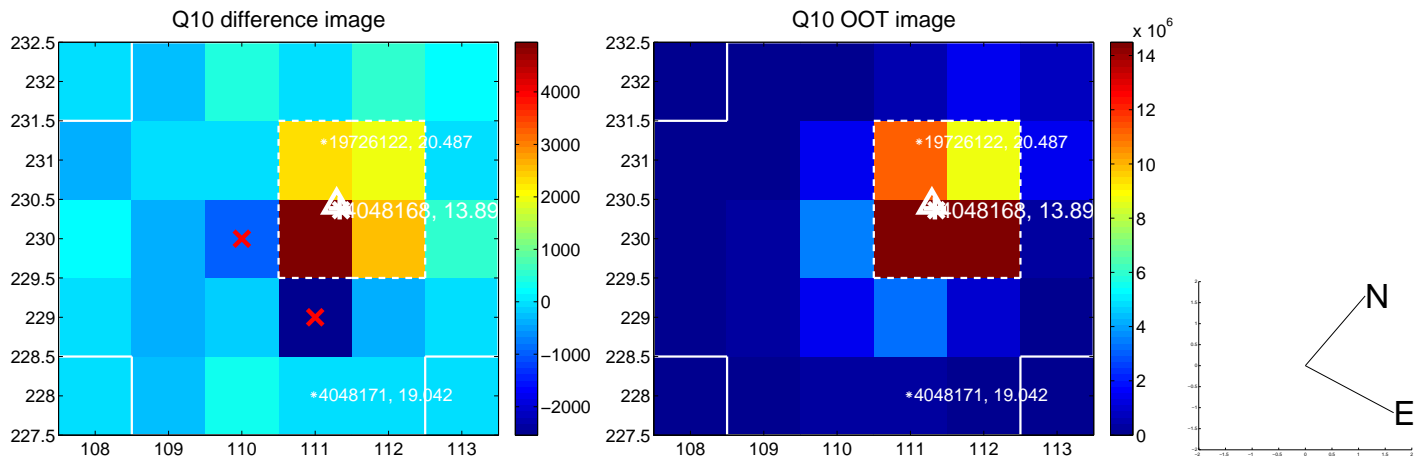
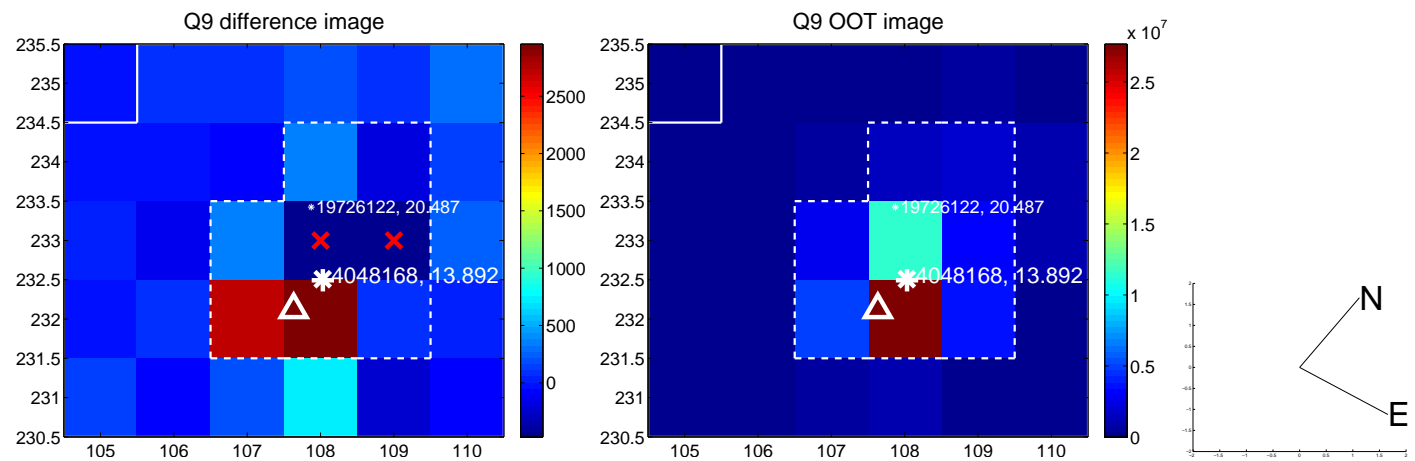
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



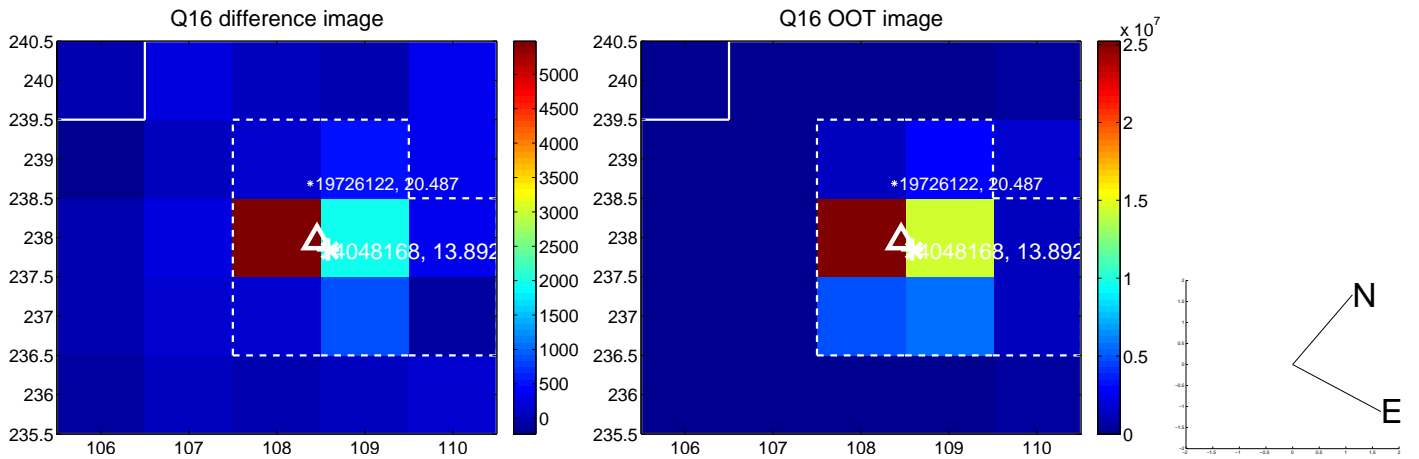
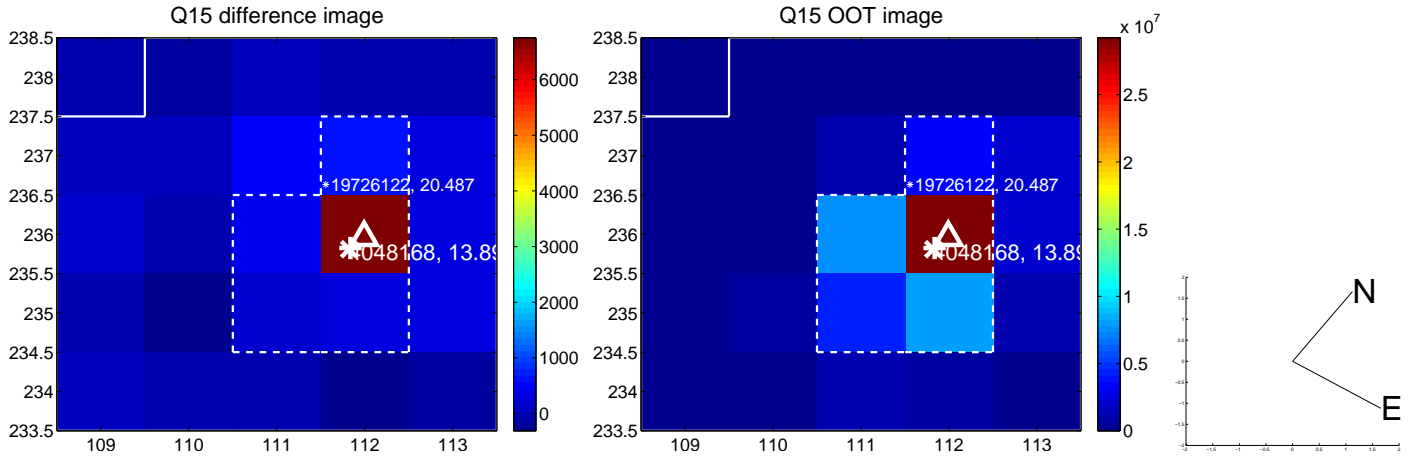
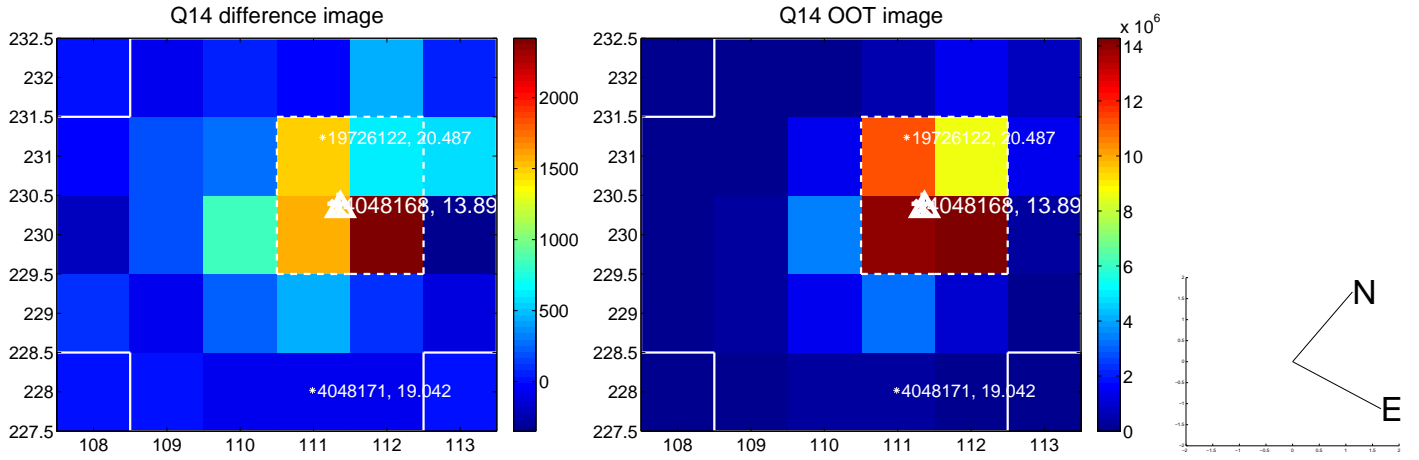
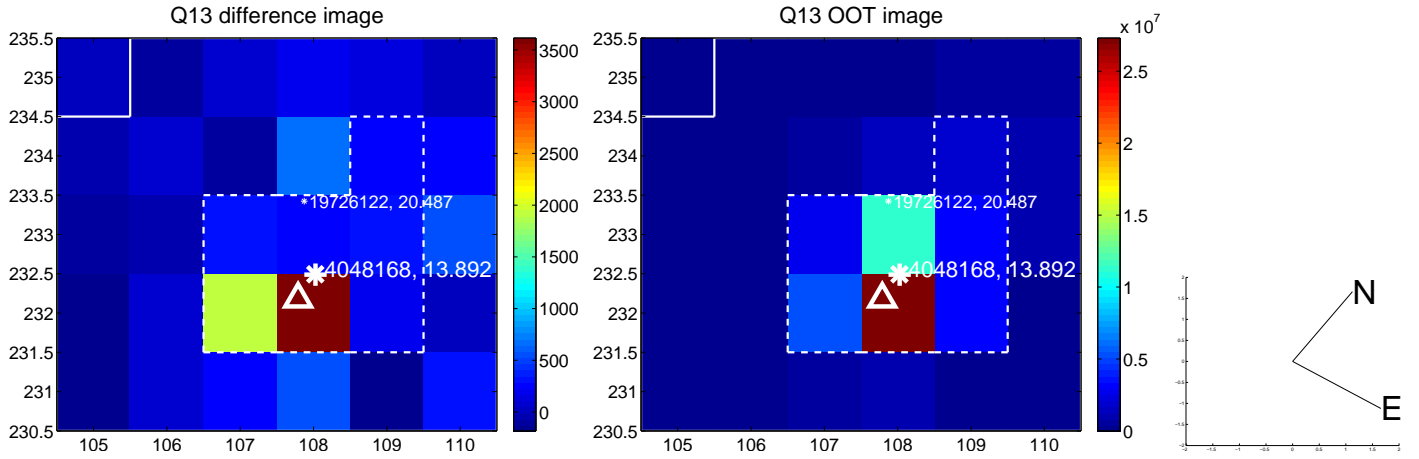
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



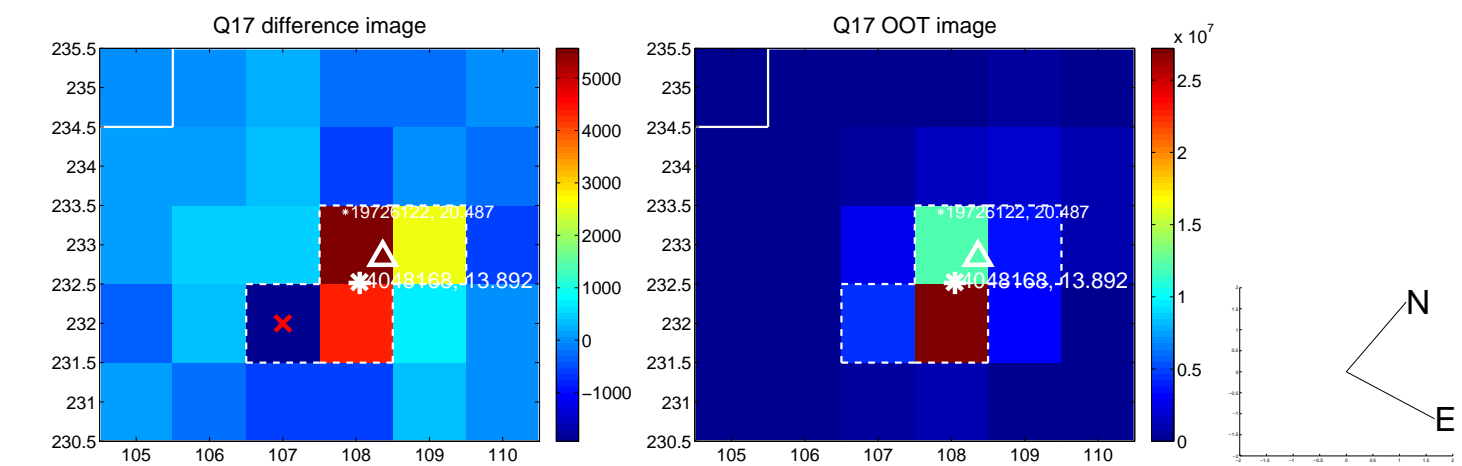
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



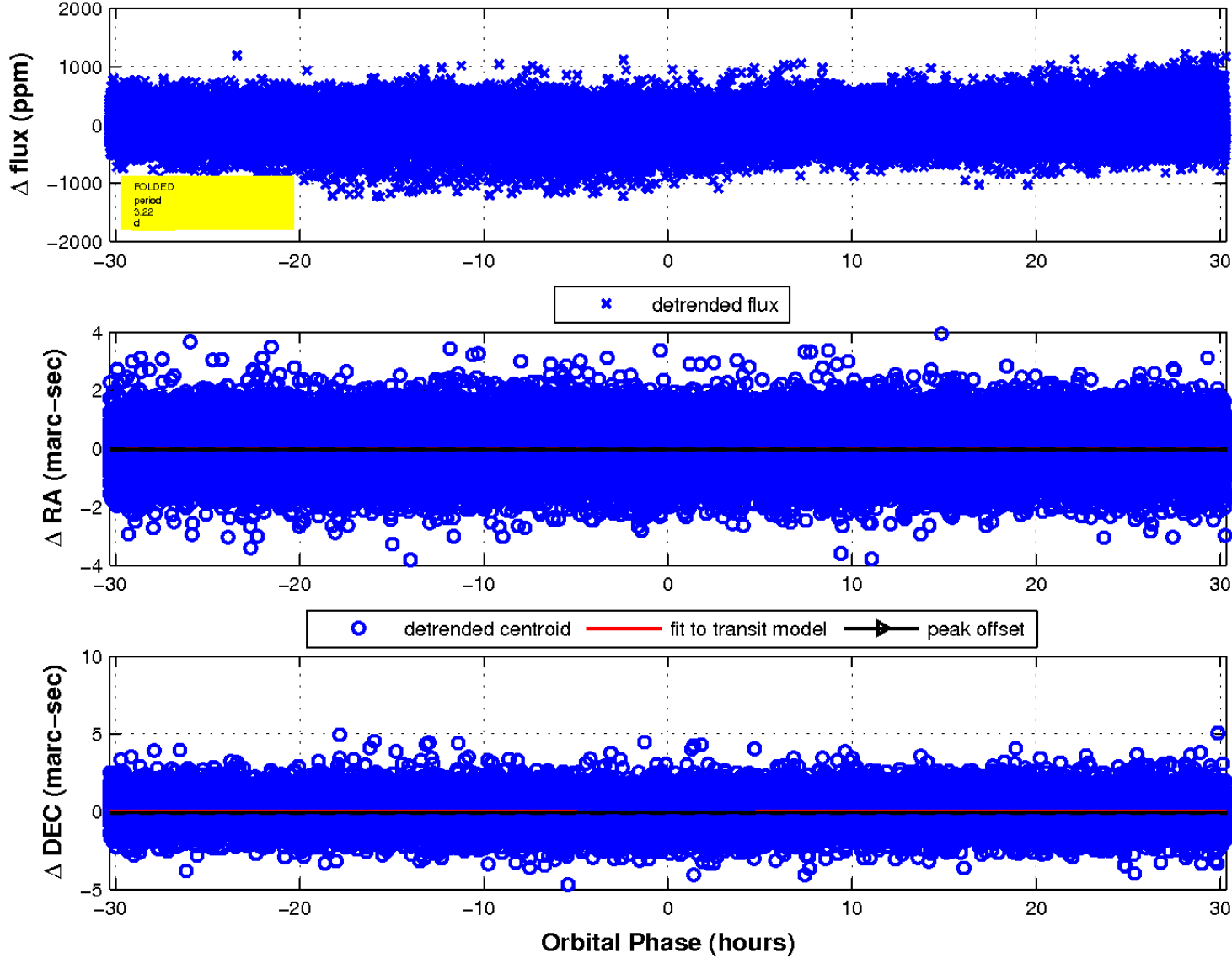
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

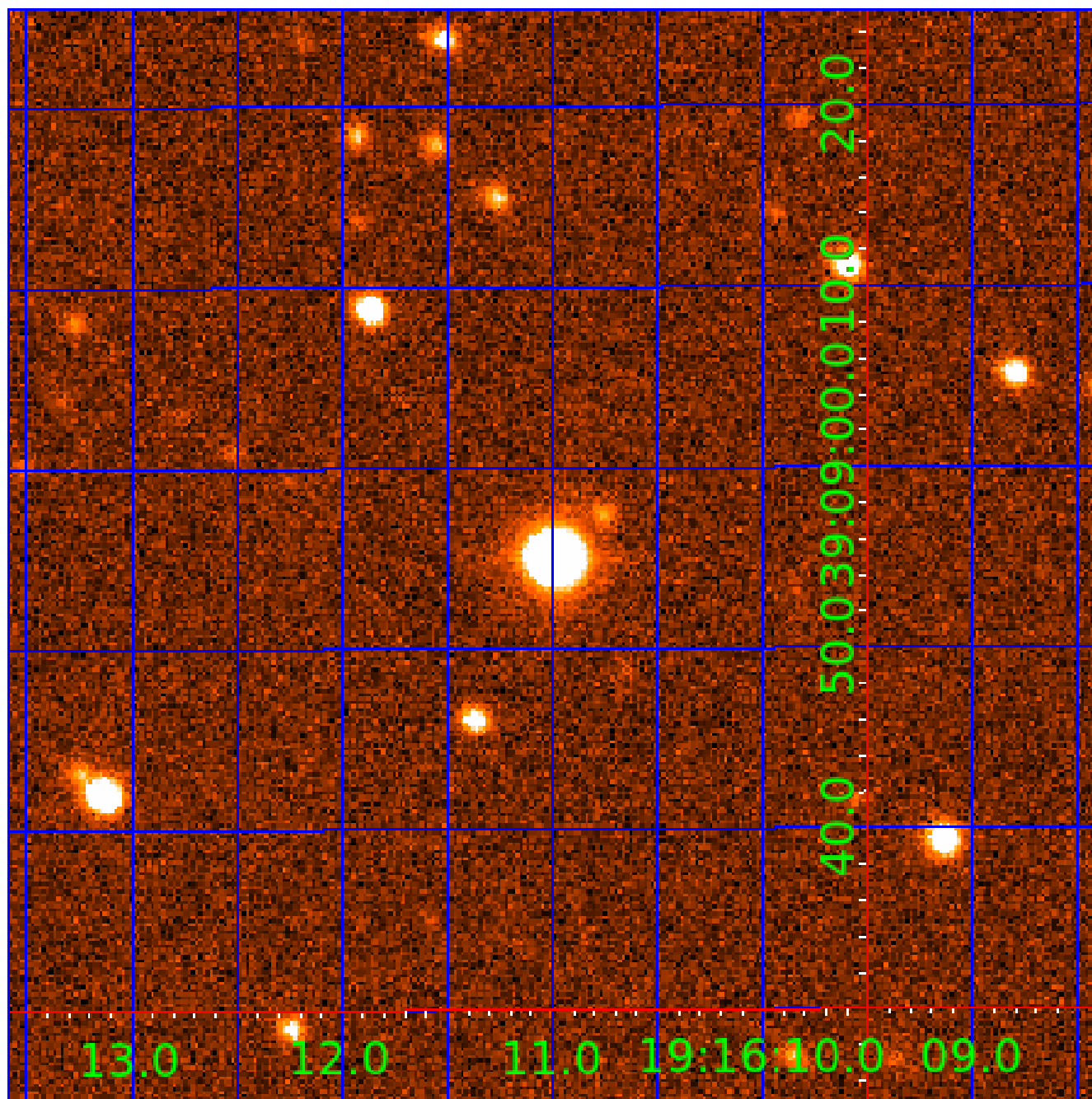


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 004048168

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004048168-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
004048168-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

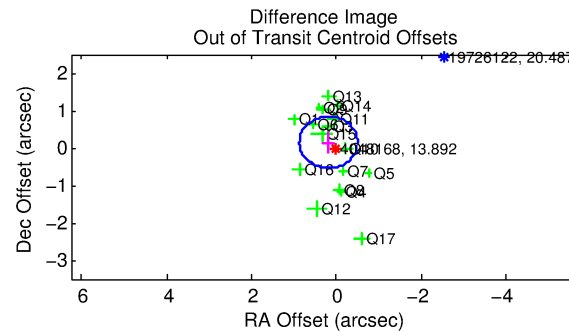
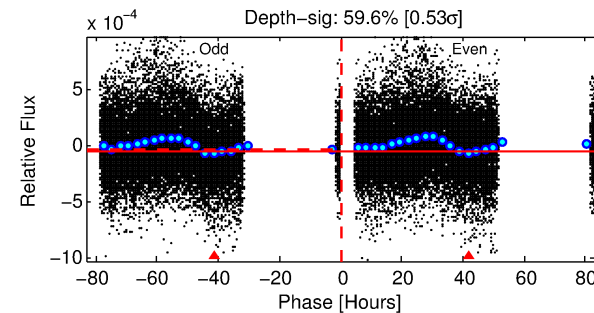
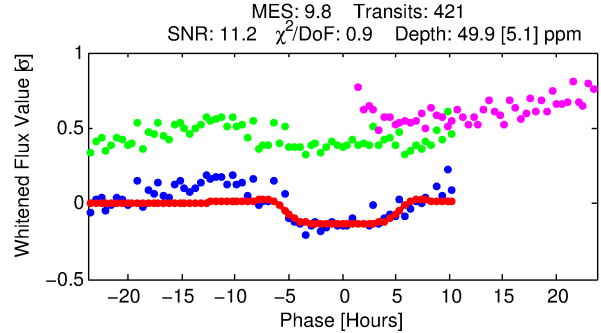
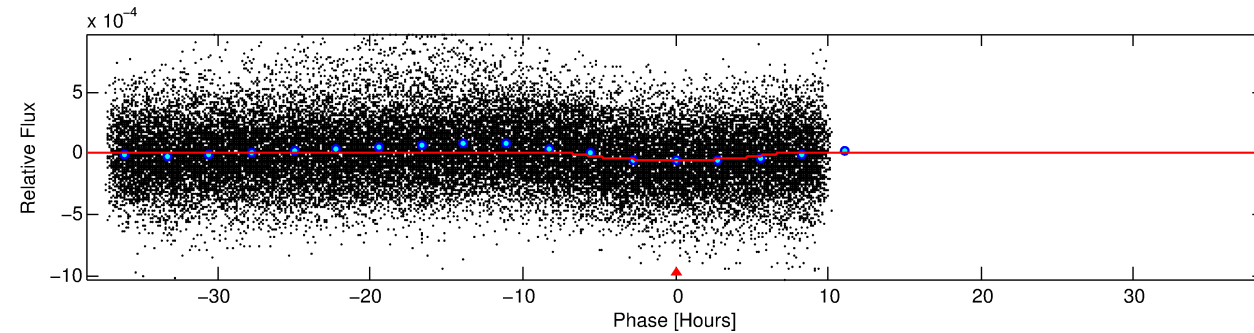
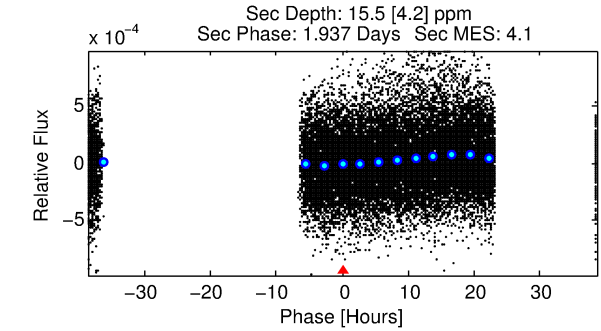
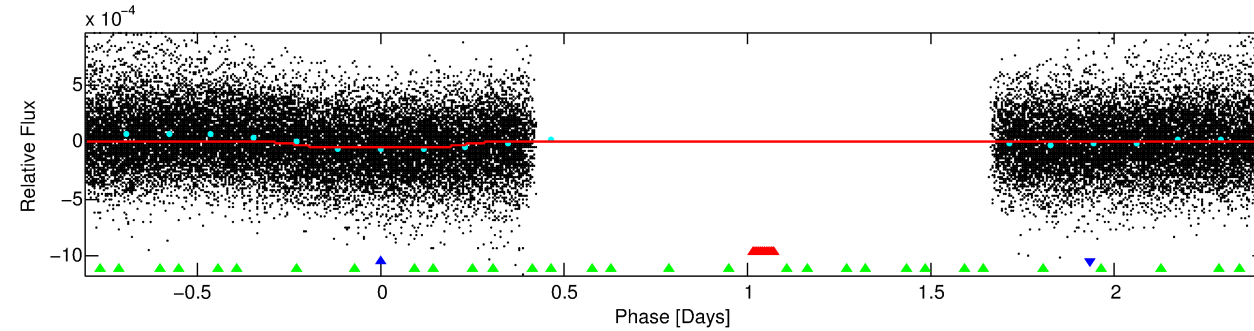
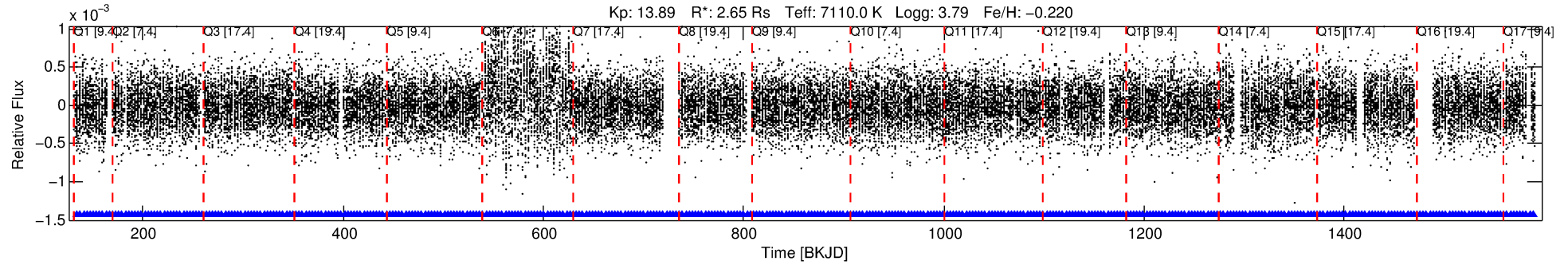
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004048168-02

No Significant Match Found

DV One-Page Summary

KIC: 4048168 Candidate: 2 of 3 Period: 3.217 d



DV Fit Results:

Period = 3.21677 [0.00009] d
Epoch = 134.5046 [0.0219] BKJD
Rp/R* = 0.0087 [0.0005]
a/R* = 1.07 [0.02]
b = 0.98 [0.01]
Seff = 6544.19 [4685.74]
Teq = 2293 [411] K
Rp = 2.52 [1.13] Re
a = 0.0497 [0.0214] AU
Ag = 3.32 [2.50] [0.93σ]
Teffp = 4786 [416] K [4.2σ]

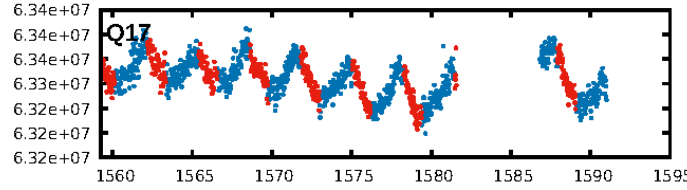
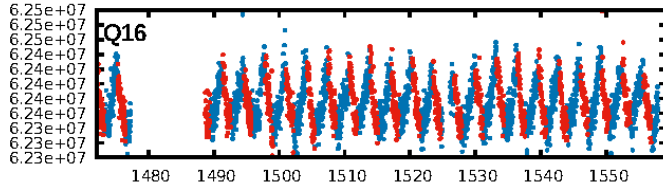
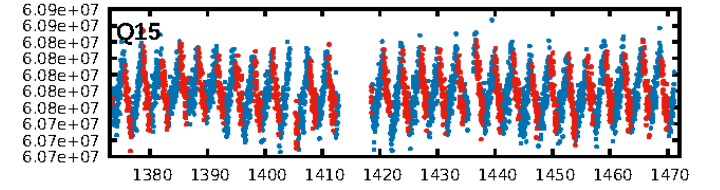
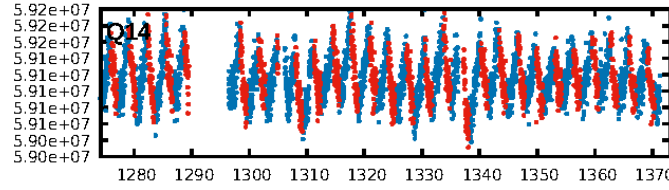
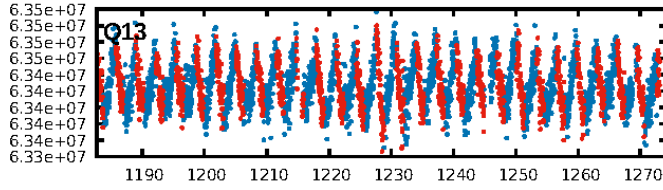
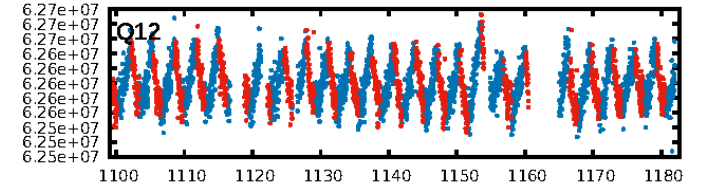
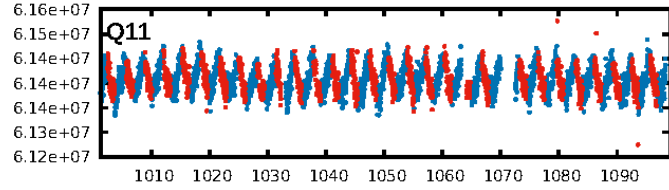
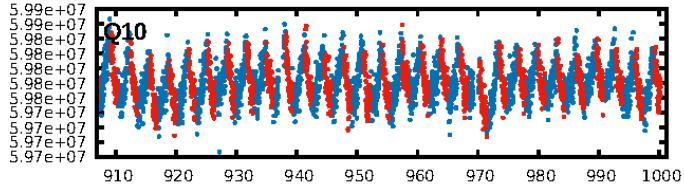
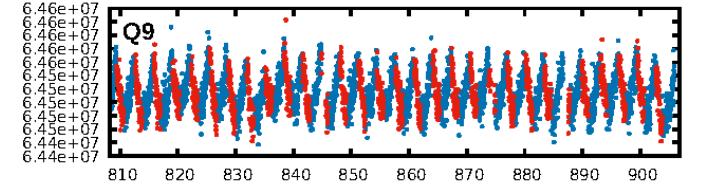
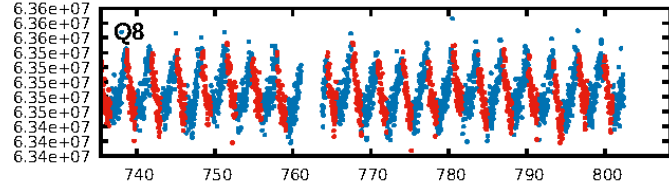
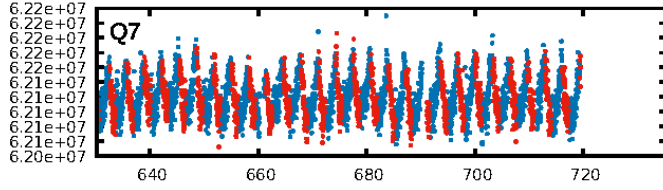
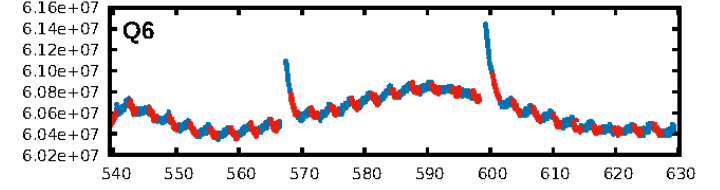
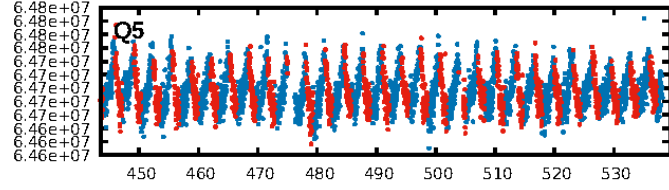
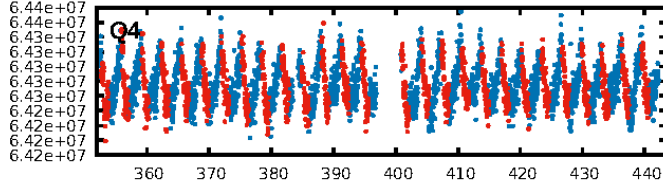
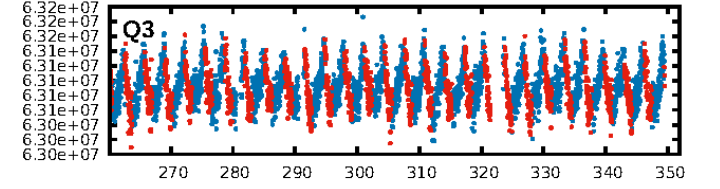
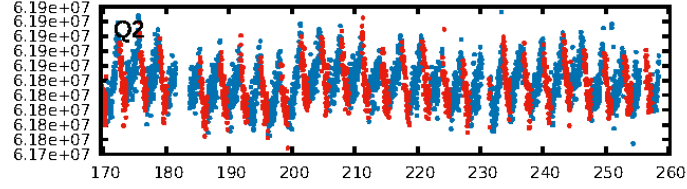
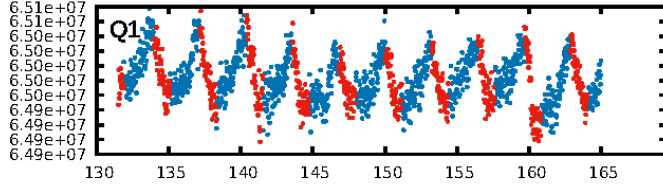
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.26e-09
RollingBand-fgt: 1.00 [402/402]
GhostDiagnostic-chr: 1.039
Centroid-sig: 5.2%
Centroid-so: 0.835 arcsec [1.49σ]
OotOffset-rm: 0.235 arcsec [1.02σ]
KicOffset-rm: 0.205 arcsec [0.76σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.94 [16/17]
DiffImageOverlap-fno: 0.00 [0/17]

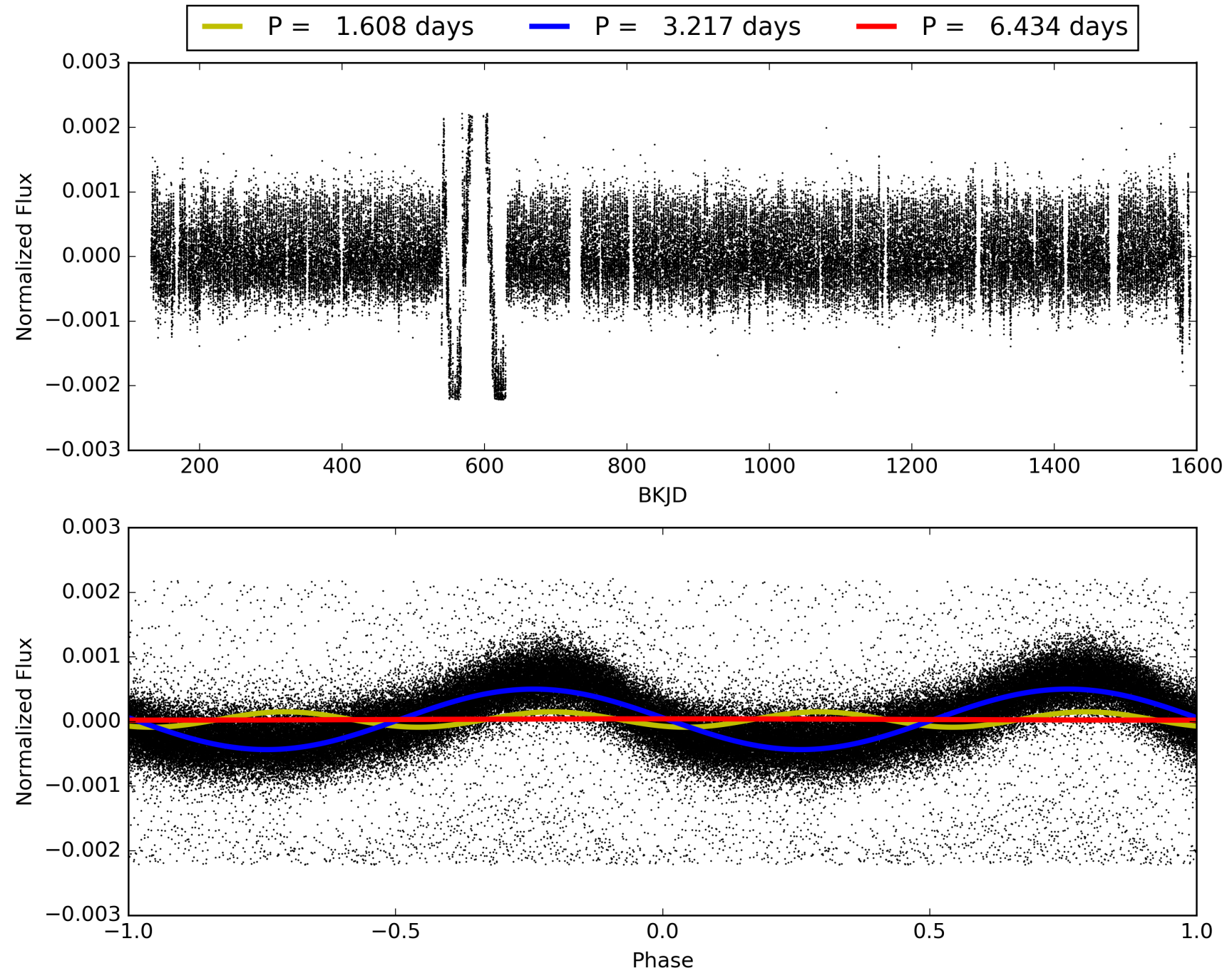
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:00:39 Z

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

TCE 004048168-02, PDC Light Curves

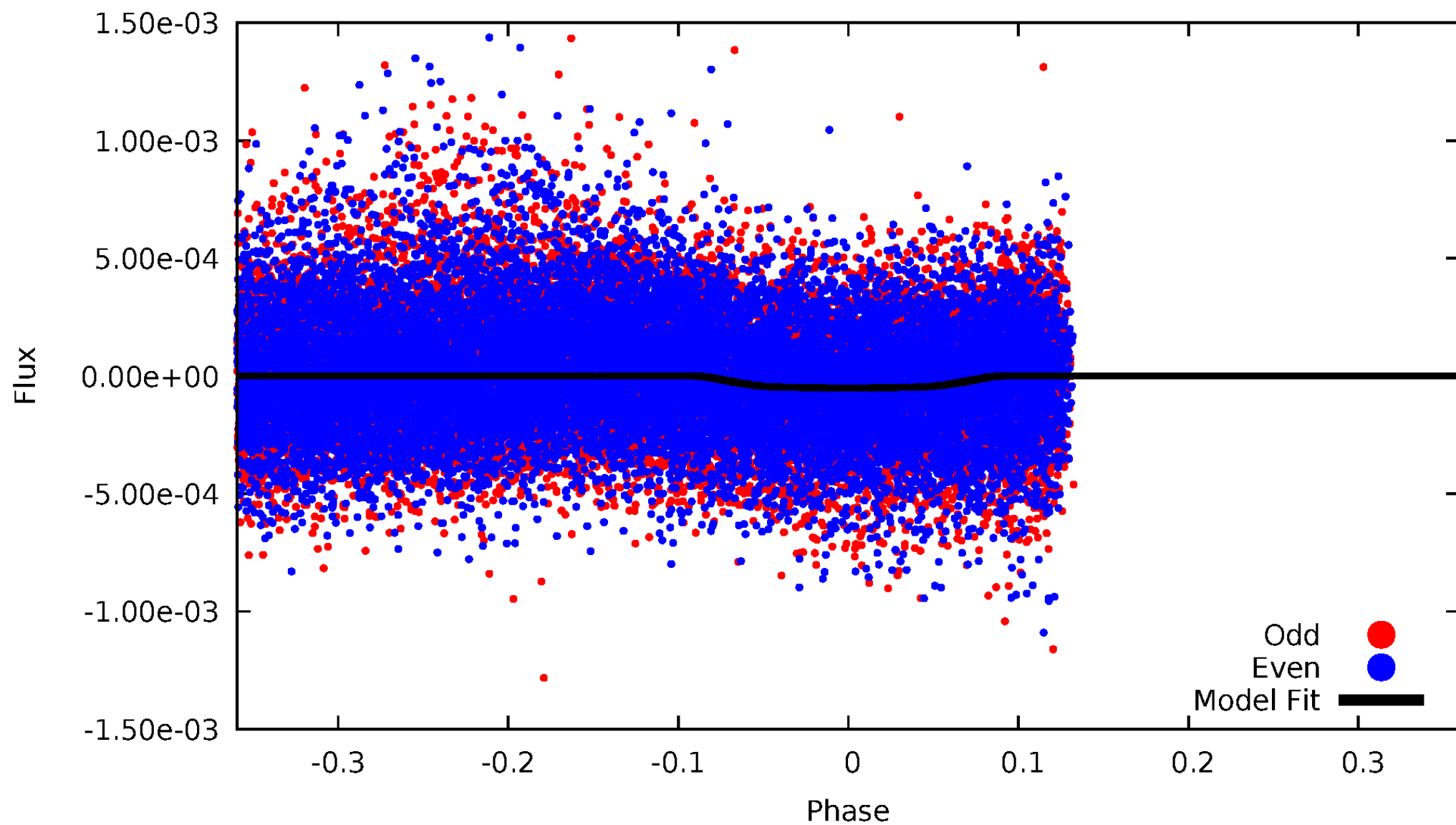


TCE 004048168-02



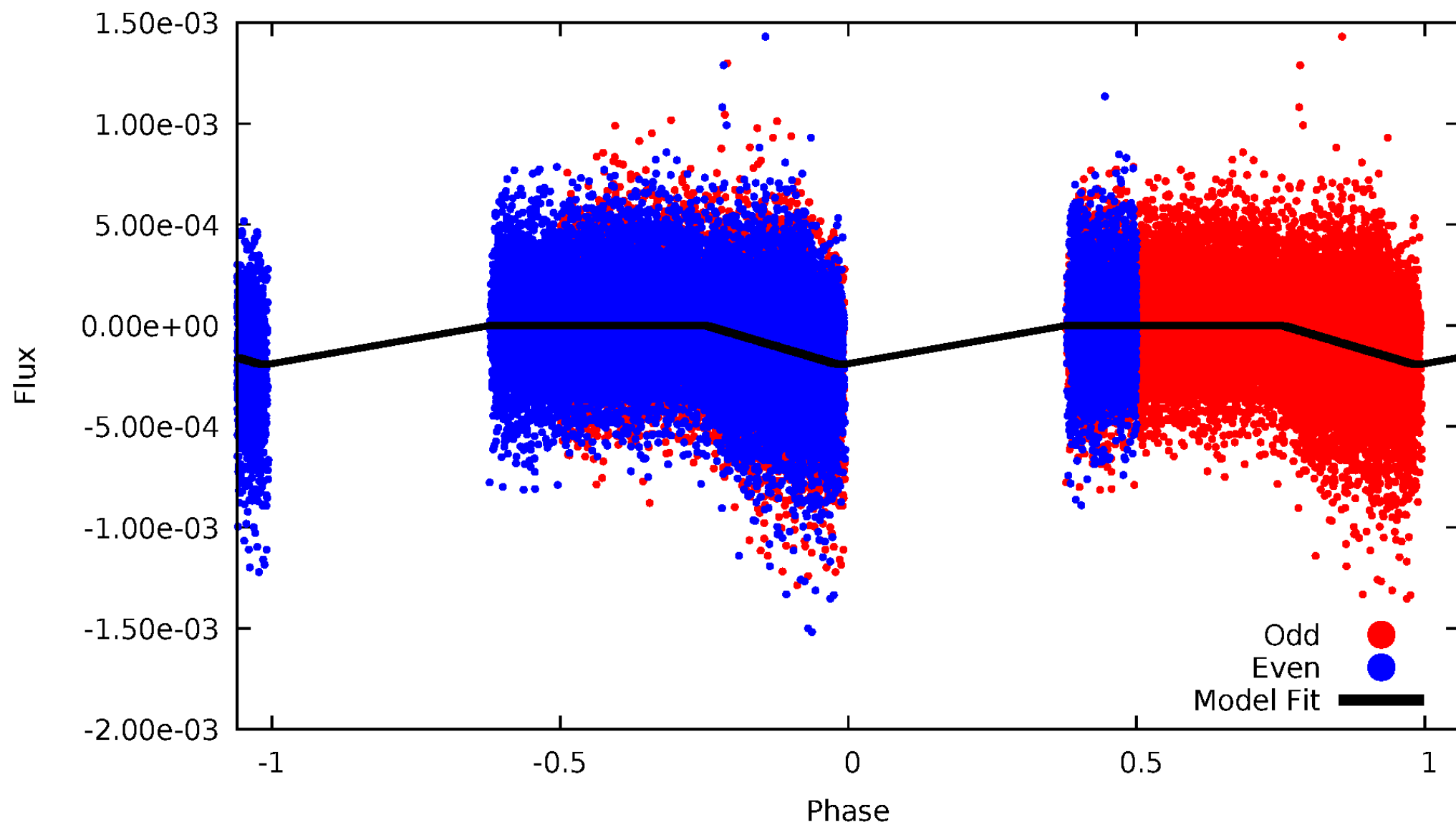
DV Odd/Even

TCE 004048168-02



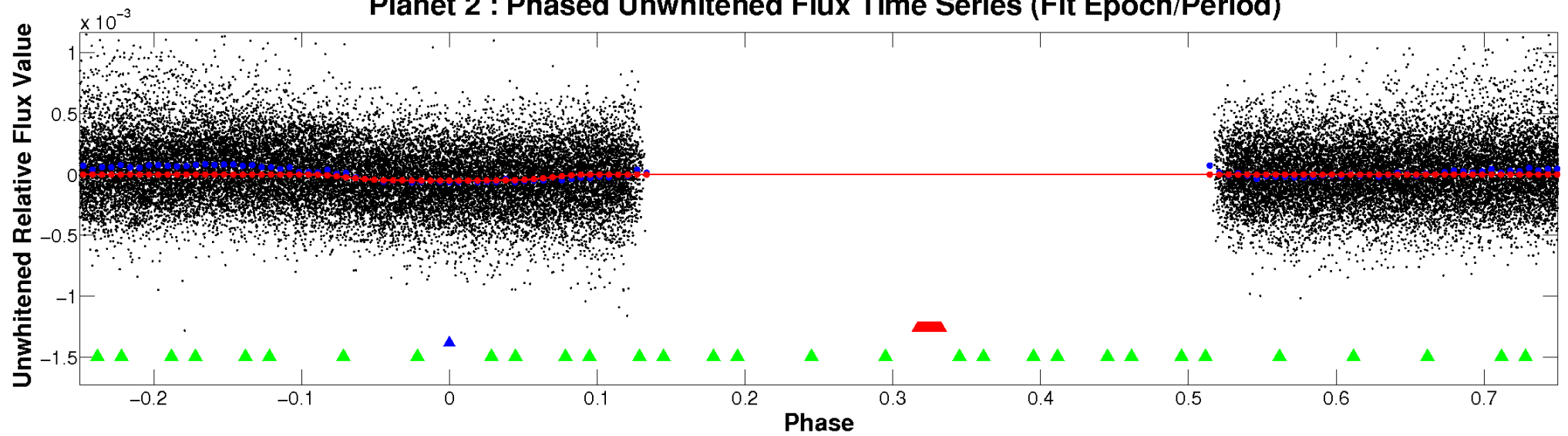
ALT Odd/Even

TCE 004048168-02

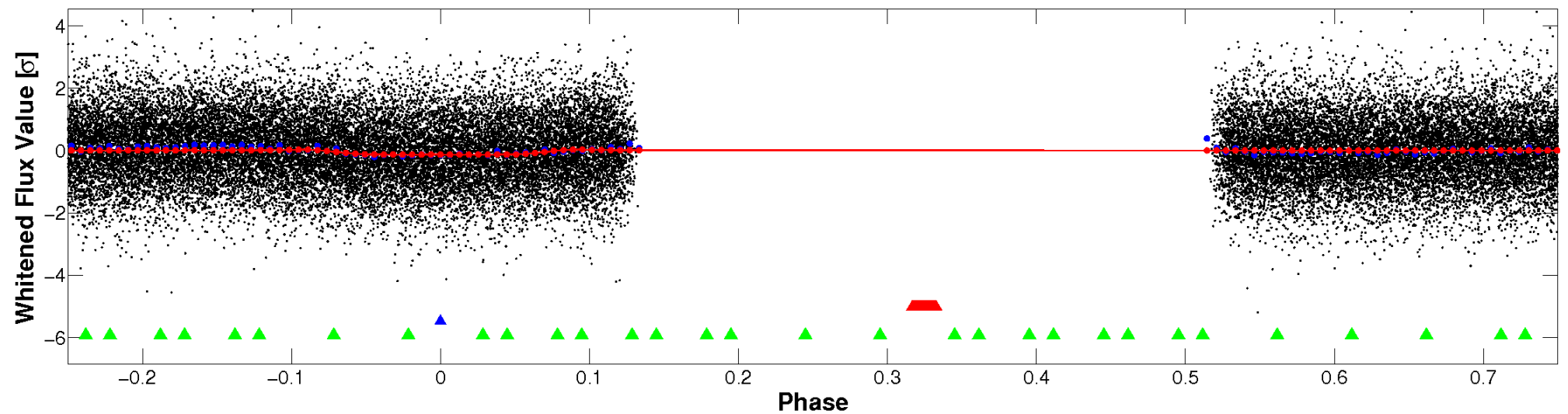


Non-Whitened Vs. Whitened Light Curve

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

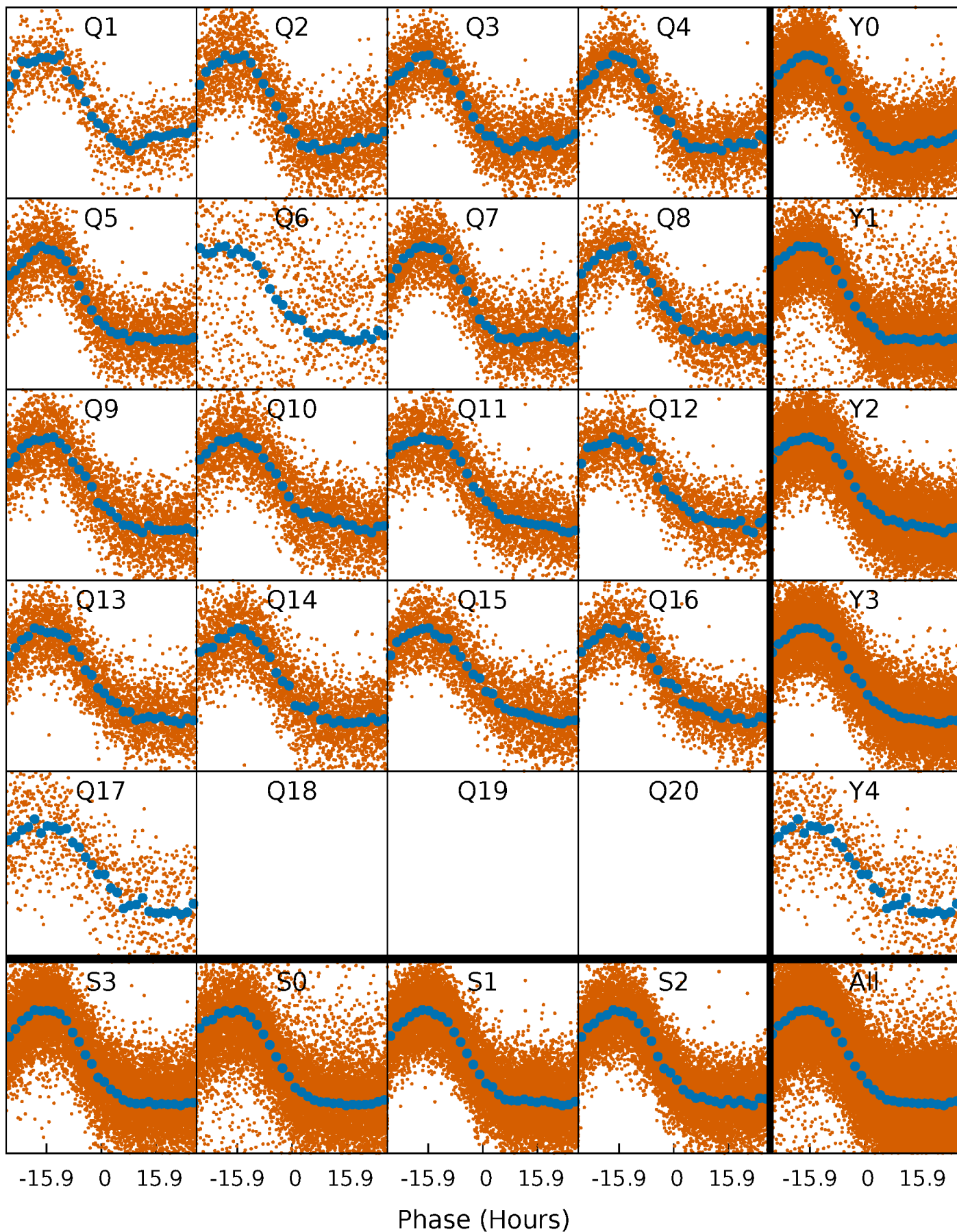


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



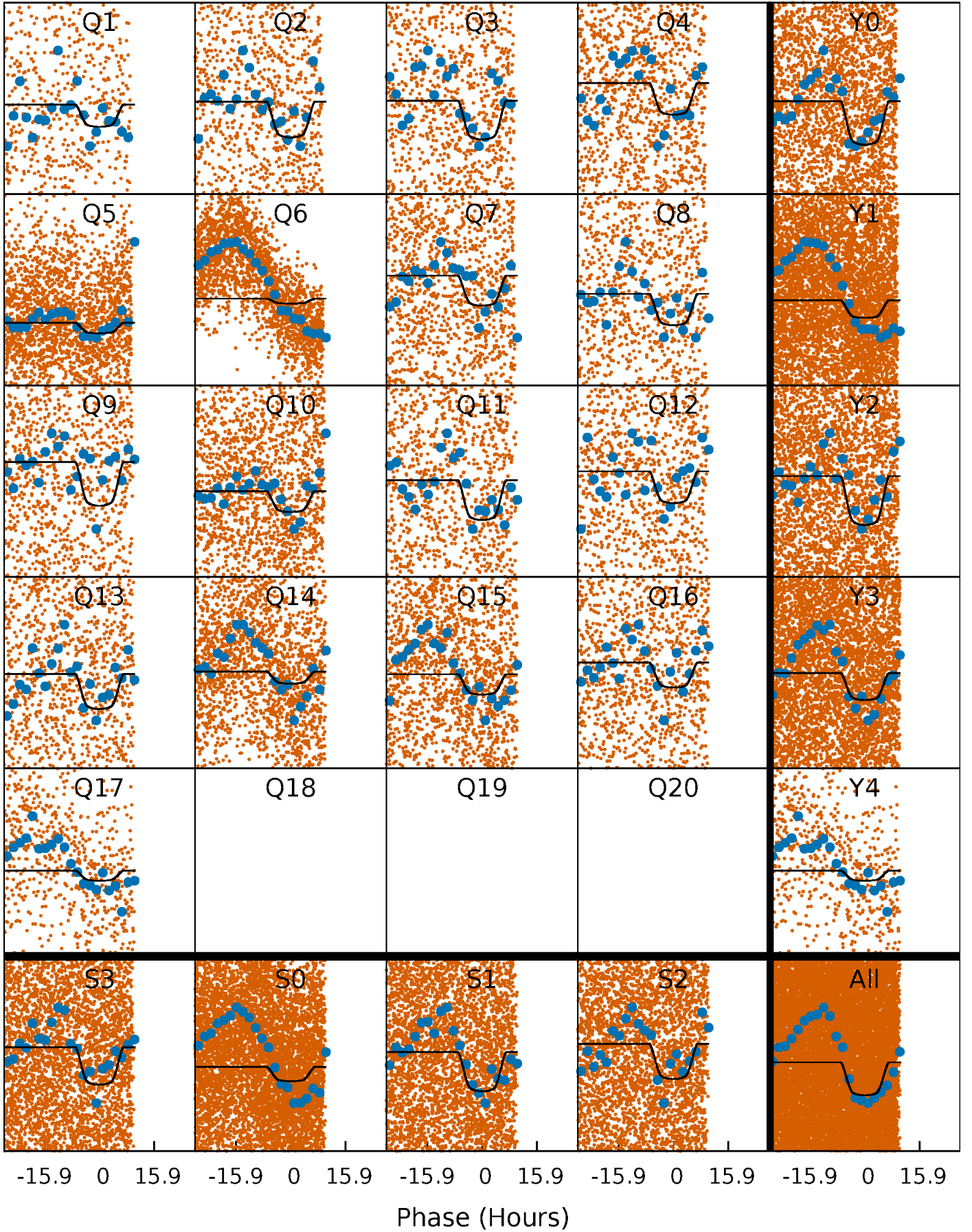
PDC Quarter-Phased Transit Curves

TCE 004048168-02 P= 3.216770 Days $T_0=134.504601$ (BKJD)



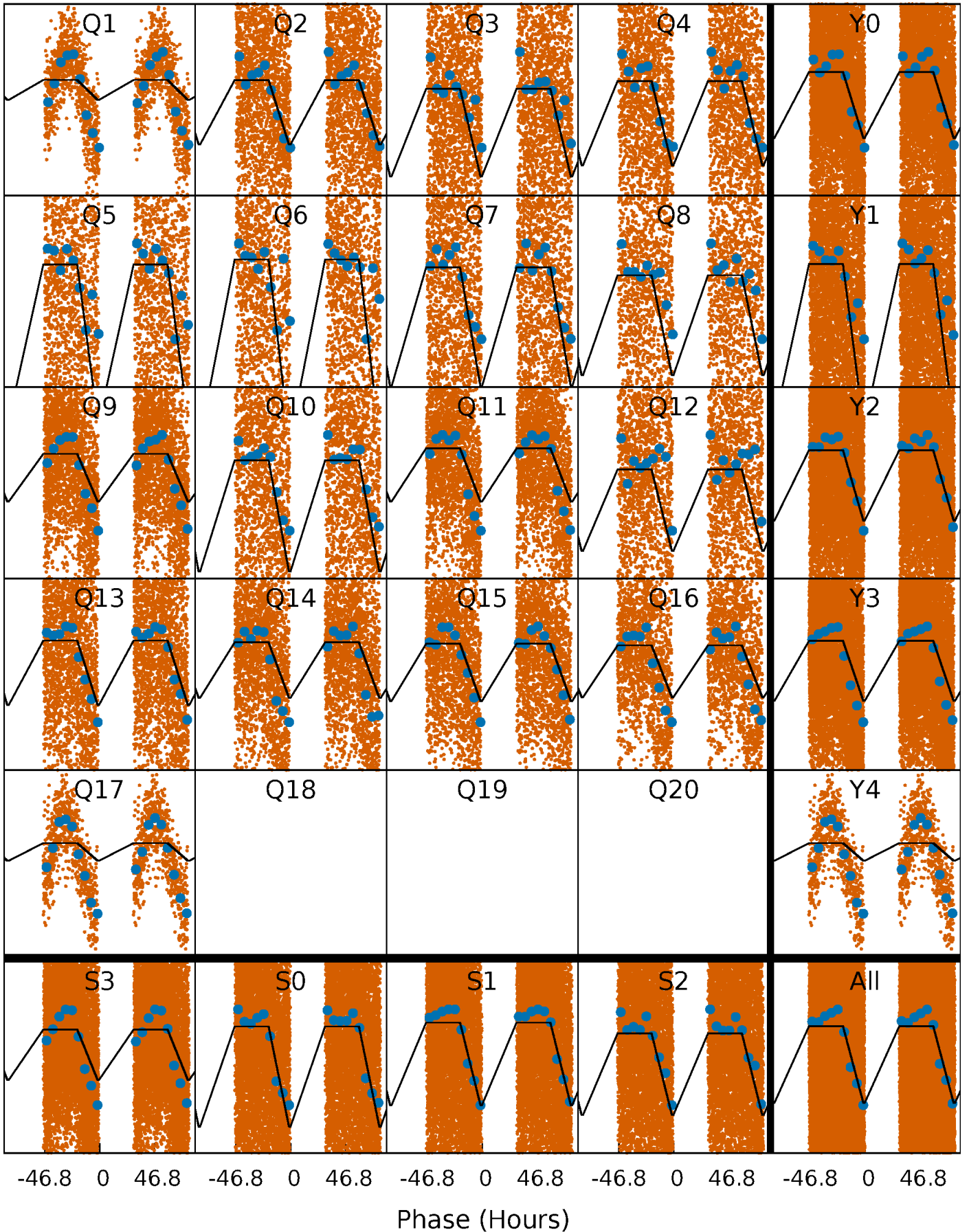
DV Quarter-Phased Transit Curves

TCE 004048168-02 P= 3.216770 Days $T_0=134.504601$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

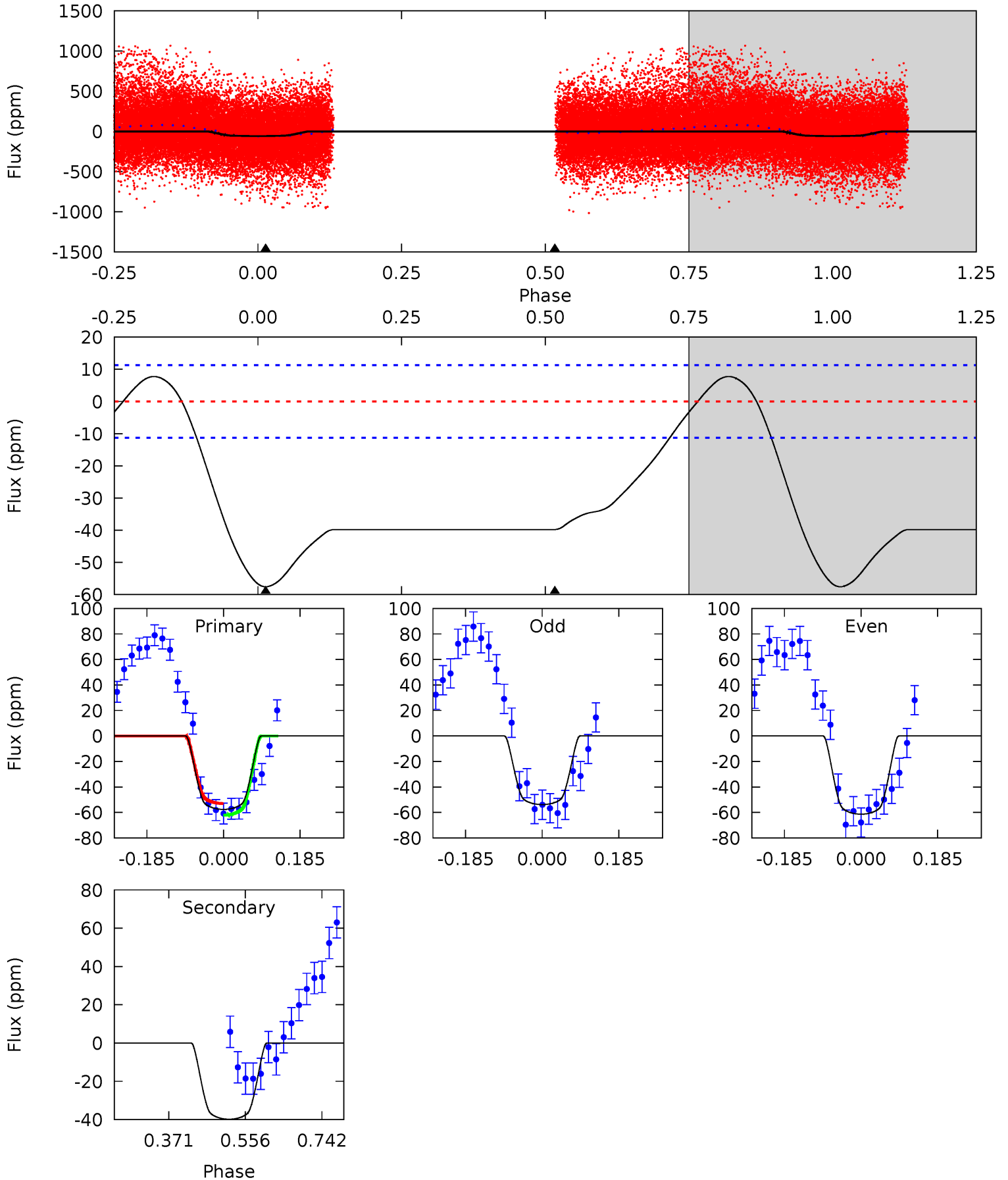
TCE 004048168-02 $P = 3.217010$ Days $T_0 = 134.894921$ (BKJD)



DV Model-Shift Uniqueness Test

004048168-02, P = 3.216770 Days, E = 131.287831 Days

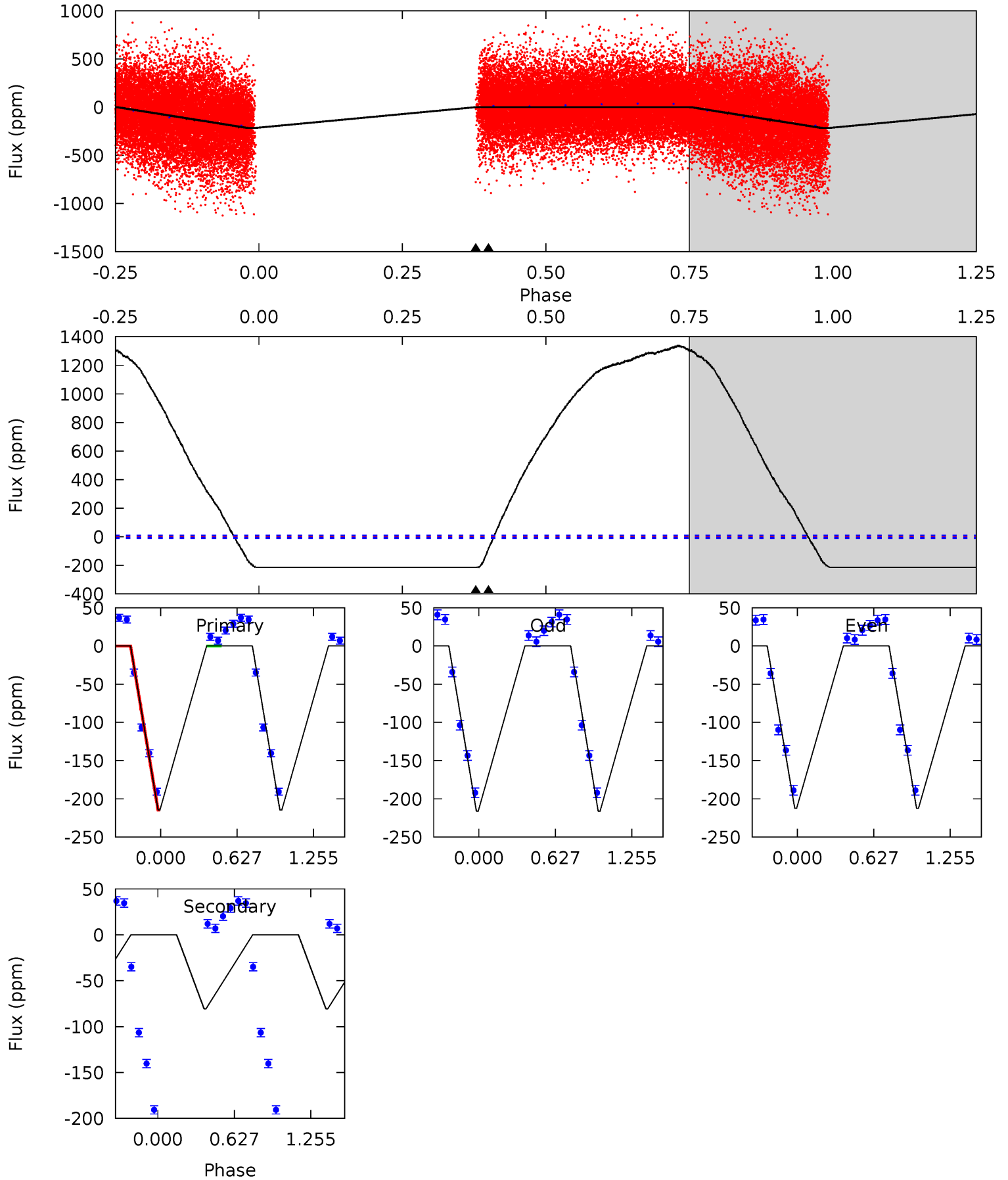
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.6	15.6	0	0	4.43	1.32	2.81	22.6	22.6	15.6	15.6	1.49	1.16	0.12	1.88



Alt Model-Shift Uniqueness Test

004048168-02, P = 3.217010 Days, E = 128.460901 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
102.2	38.4	0	0	4.16	0.49	60.5	102.2	102.2	38.4	38.4	0.87	0	0.86	0



Stellar Parameters For KIC 004048168

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7110^{+224}_{-324}	$3.788^{+0.408}_{-0.102}$	$-0.220^{+0.250}_{-0.300}$	$2.655^{+0.504}_{-1.176}$	$1.578^{+0.228}_{-0.342}$	$0.119^{+0.423}_{-0.037}$
	+3%/-5%	+11%/-3%	+114%/-136%	+19%/-44%	+14%/-22%	+356%/-31%
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 004048168-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-40 ± 3	$2.44^{+0.37}_{-0.56}$	3122^{+227}_{-347}	5927^{+287}_{-289}	$9.120^{+5.730}_{-2.072}$
Alt.	-81 ± 2	$3.89^{+0.54}_{-0.87}$	3111^{+230}_{-312}	5617^{+200}_{-212}	$7.311^{+4.071}_{-1.496}$

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

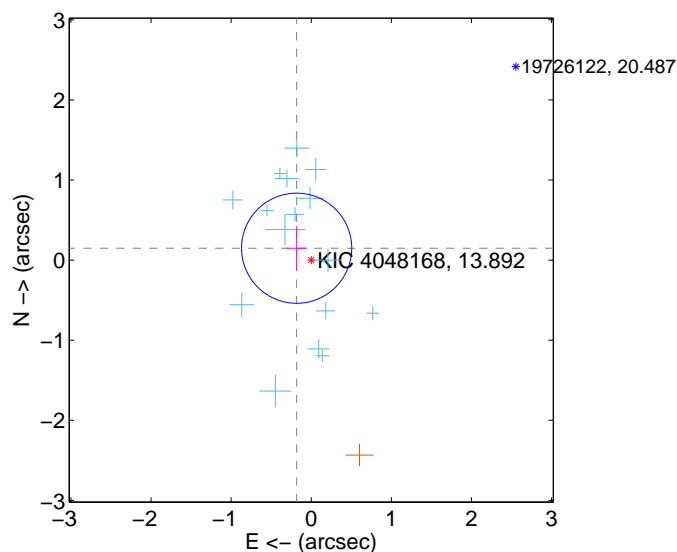
Supplemental centroid analysis for 004048168-02. Kepler magnitude: 13.89. Transit SNR 11.20

There are 16 quarters with good PRF difference image offsets

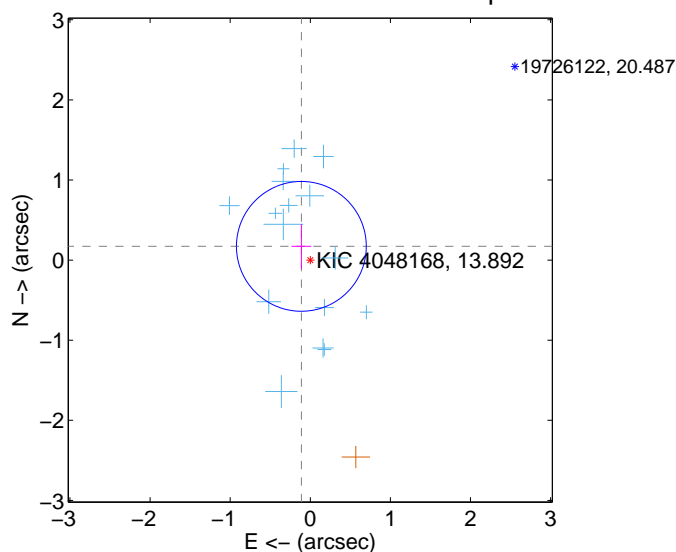
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.235 ± 0.229	1.02	0.182 ± 0.127	0.148 ± 0.274
PRF-fit source offset from KIC position	0.205 ± 0.270	0.76	0.111 ± 0.124	0.172 ± 0.280
photometric centroid source offset	0.83 ± 0.56	1.49	-0.55 ± 0.52	0.62 ± 0.59

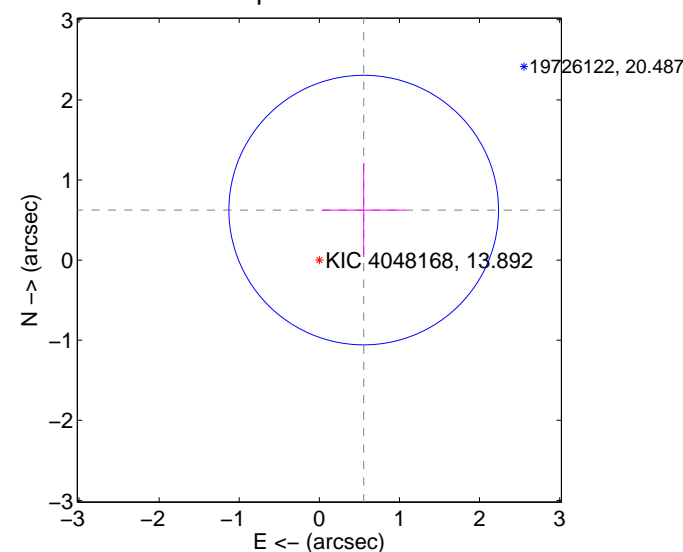
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

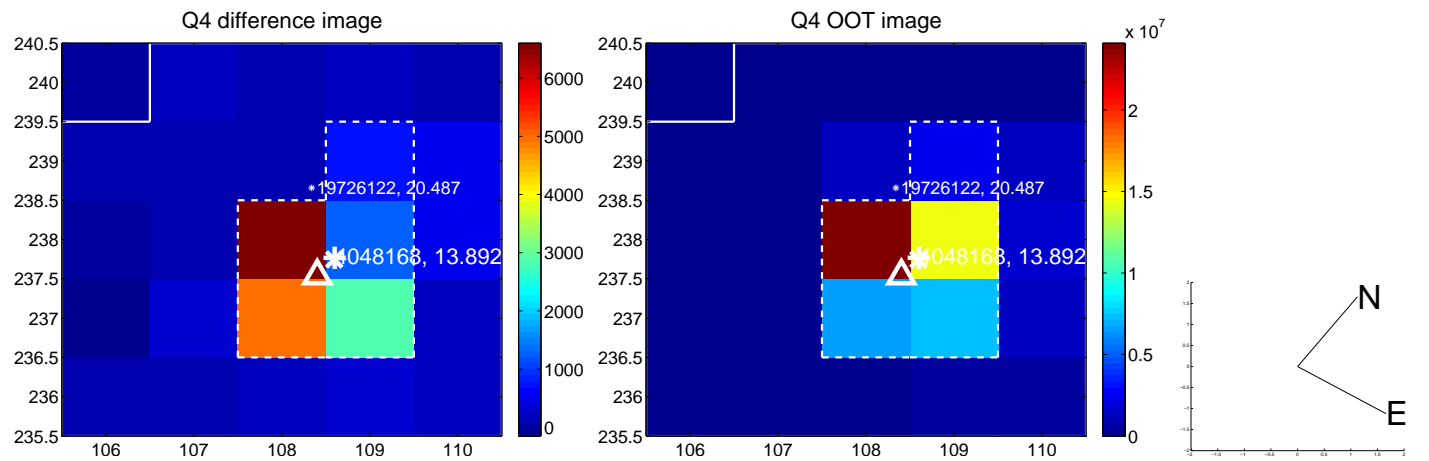
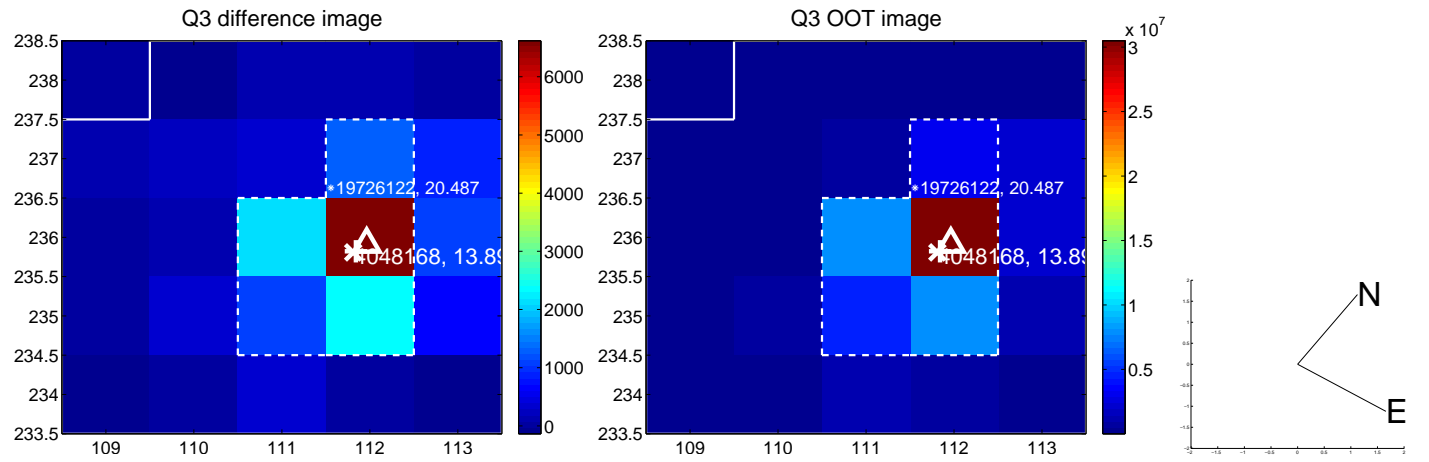
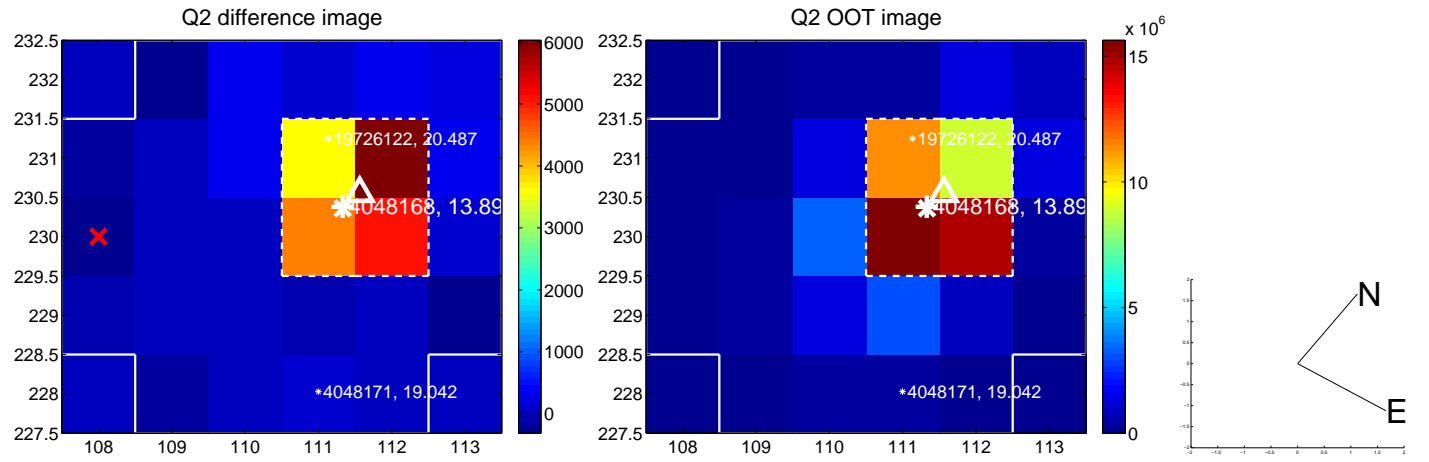
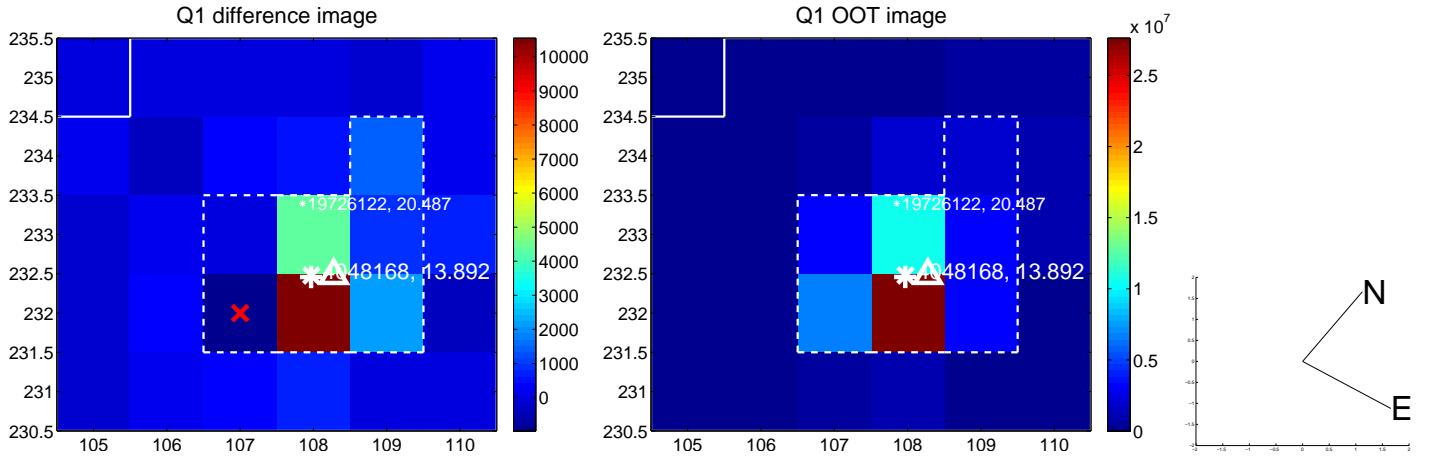


offset from photometric centroids

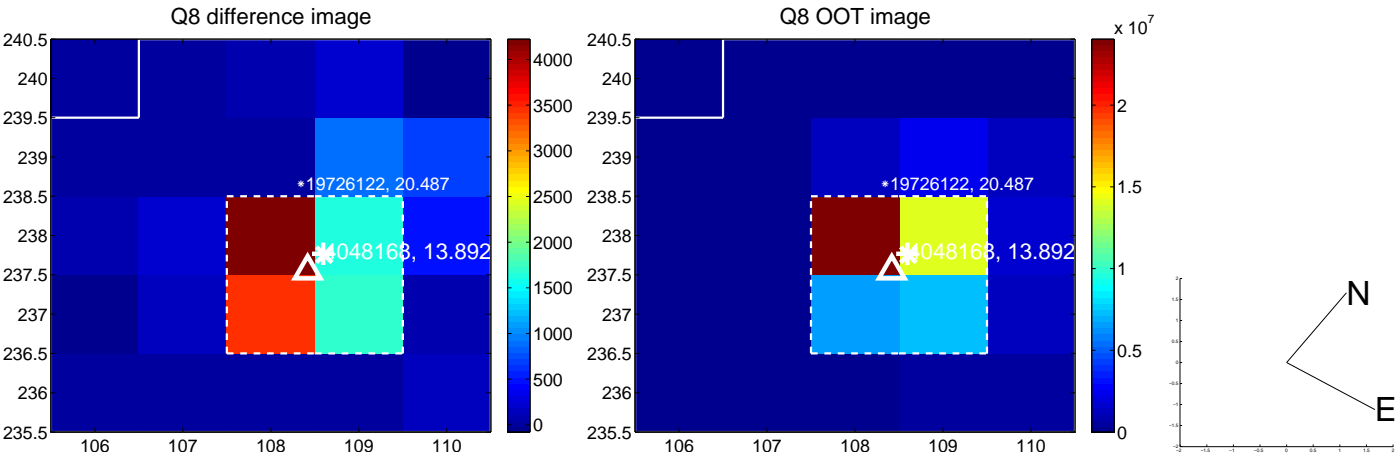
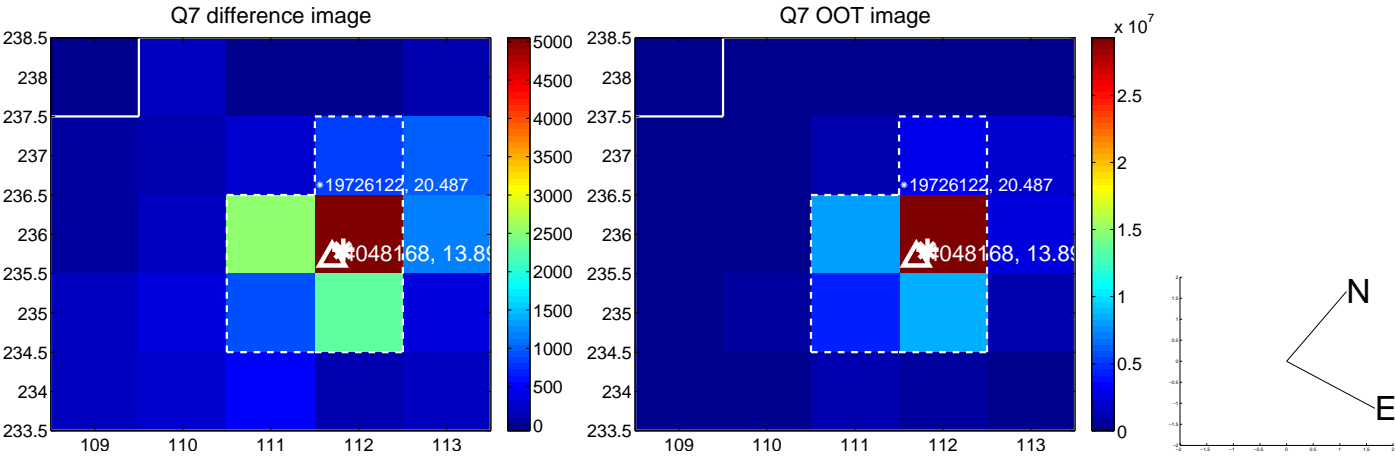
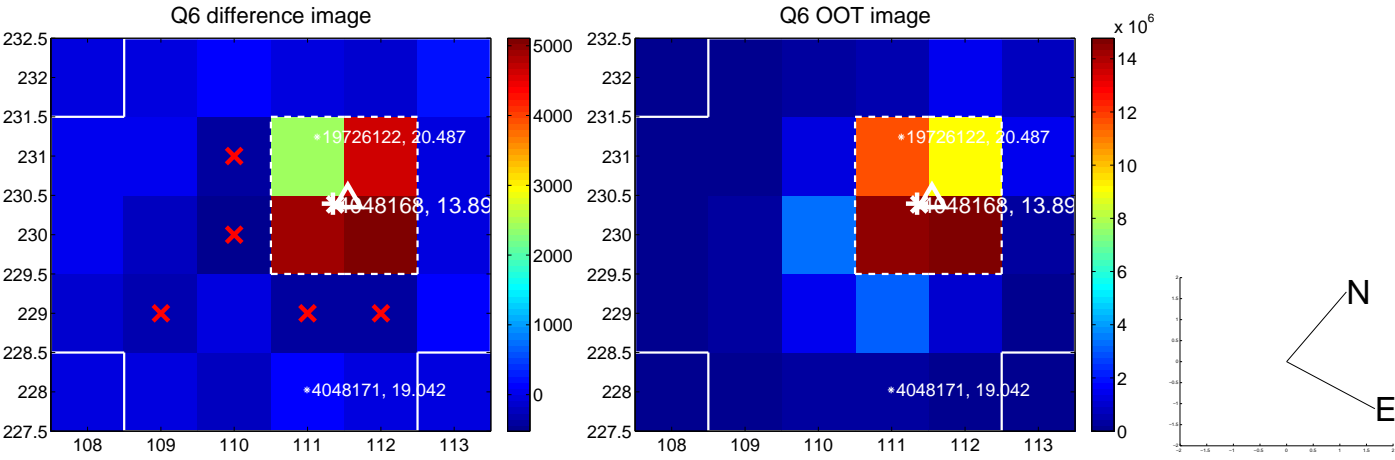
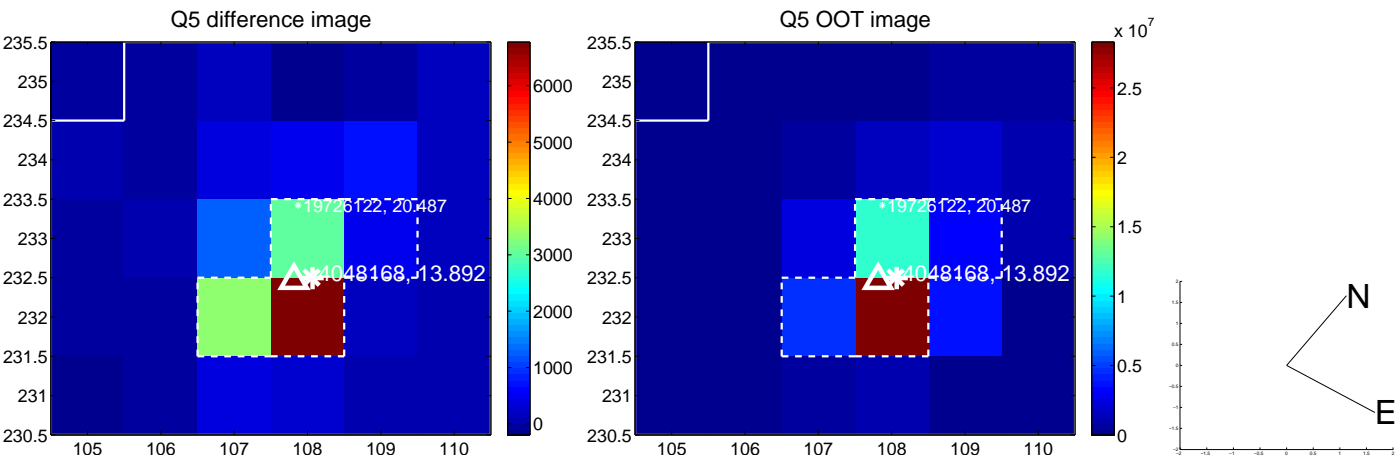


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

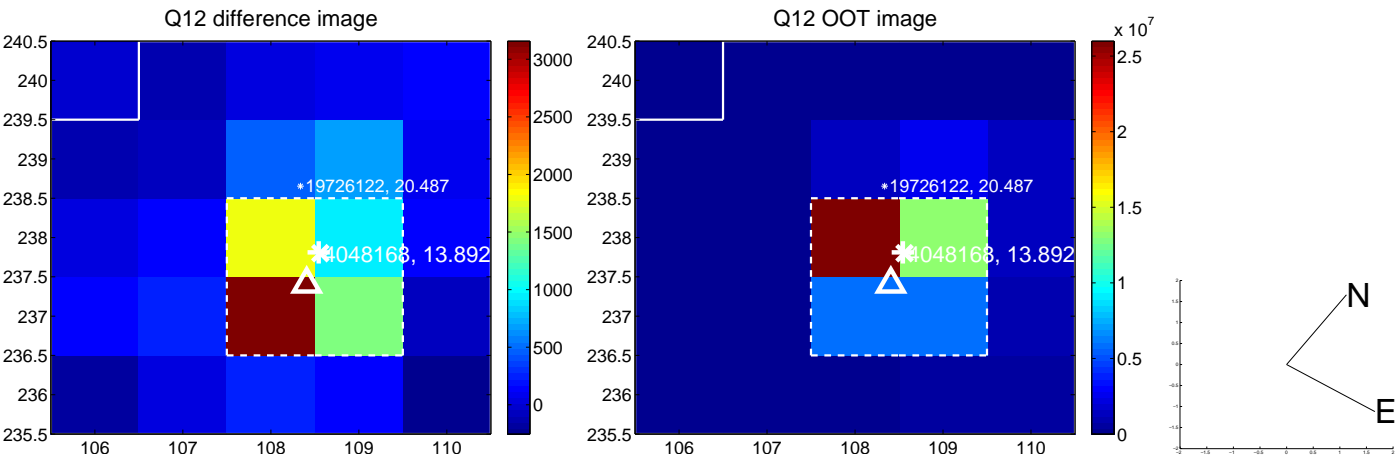
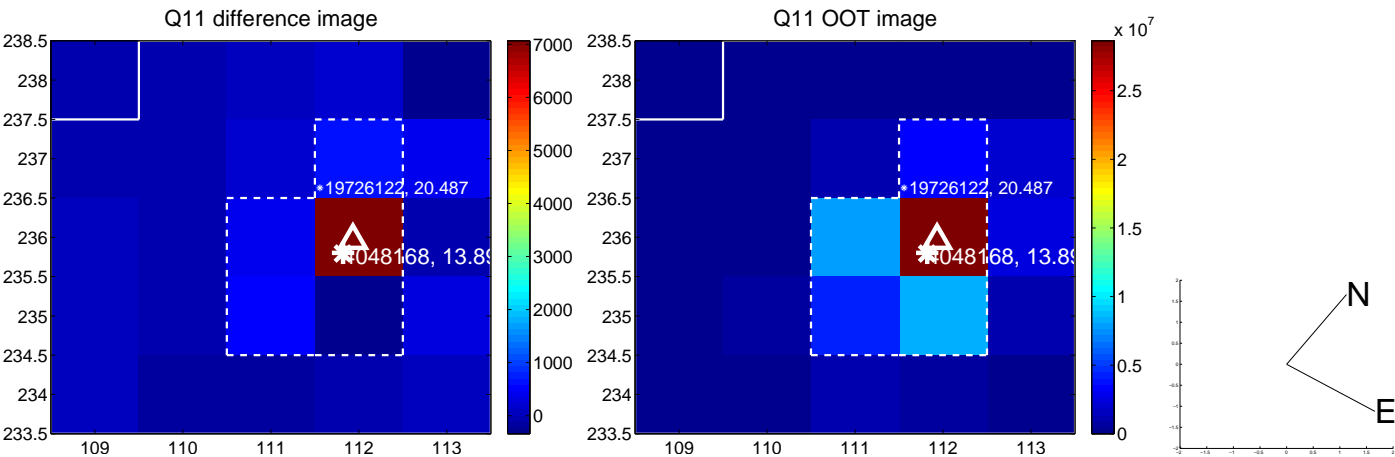
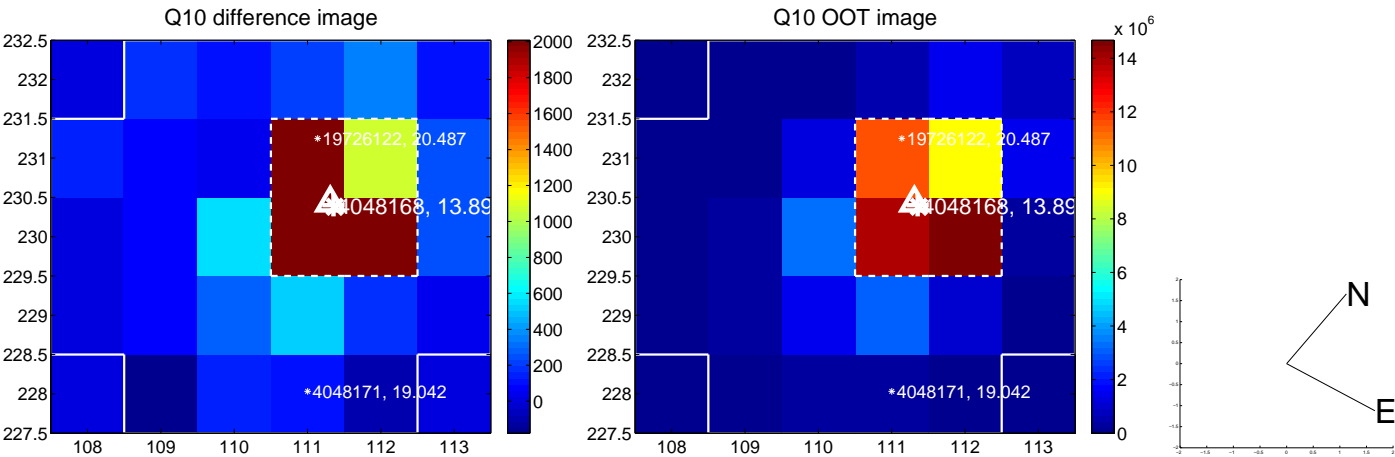
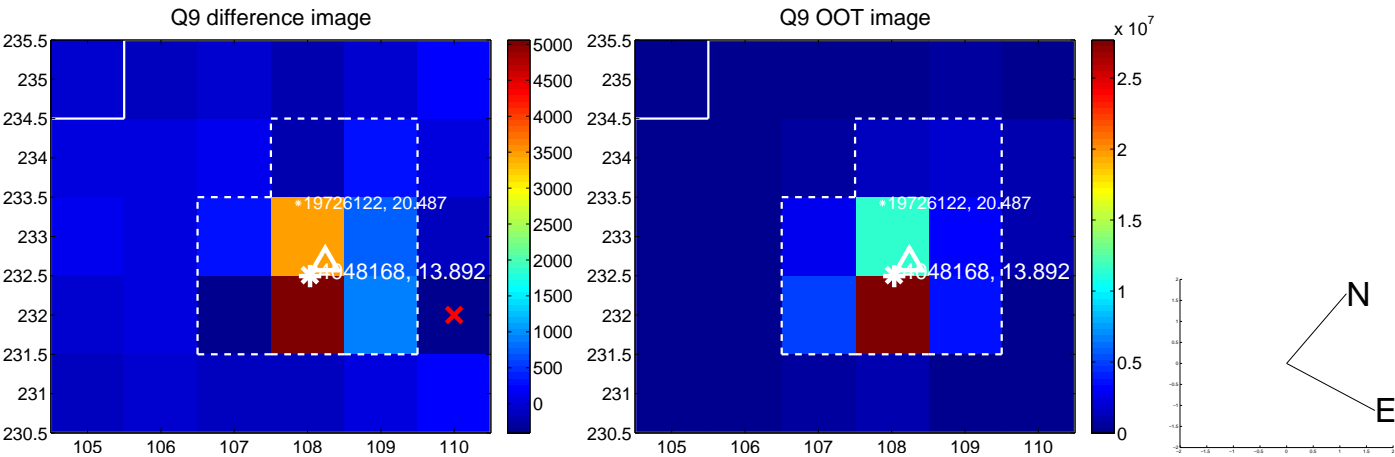
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



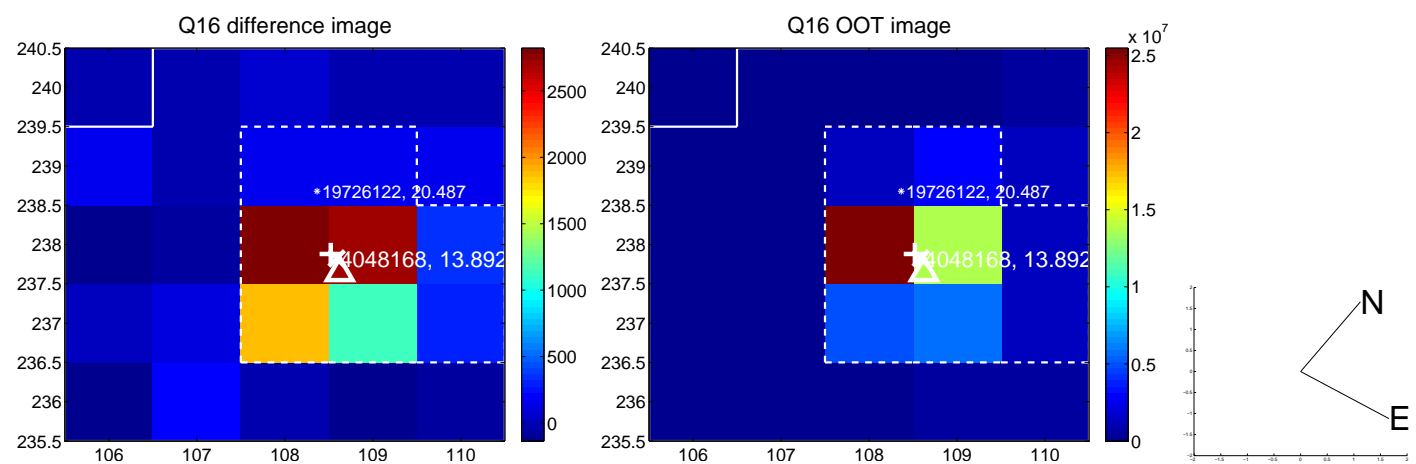
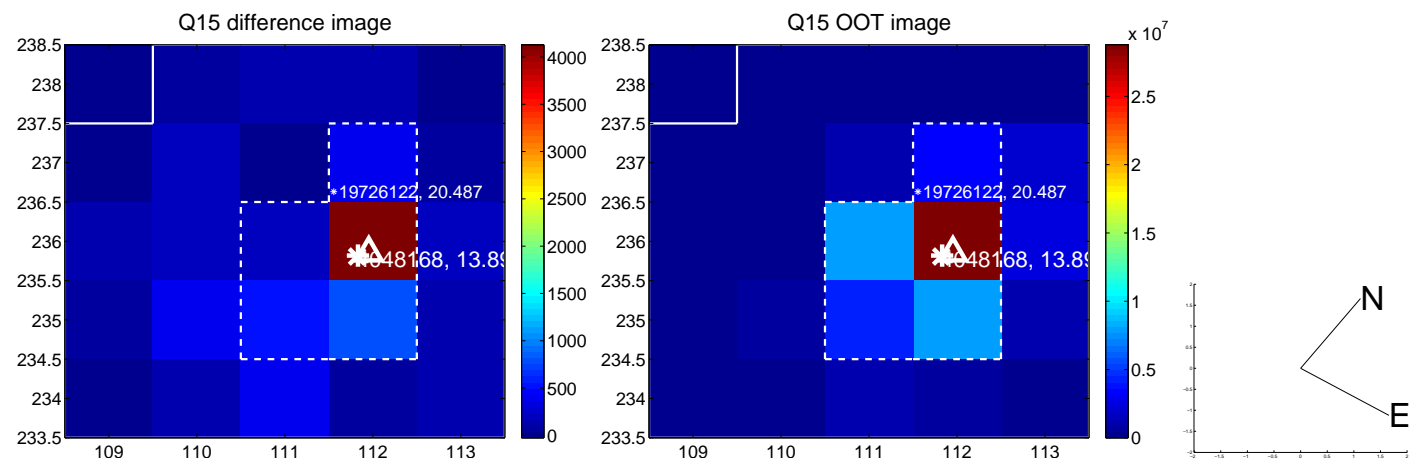
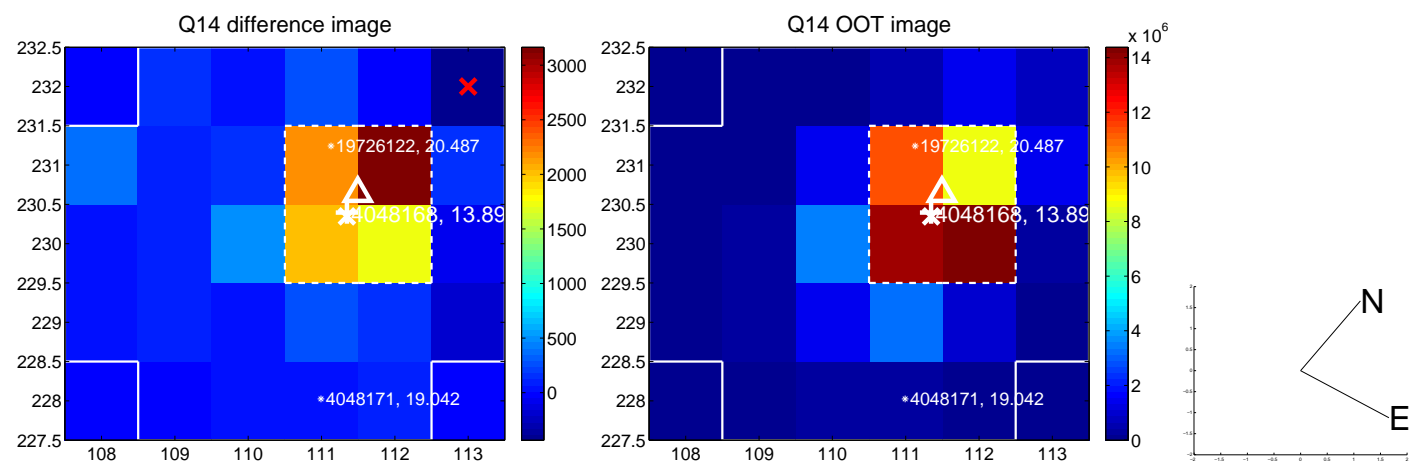
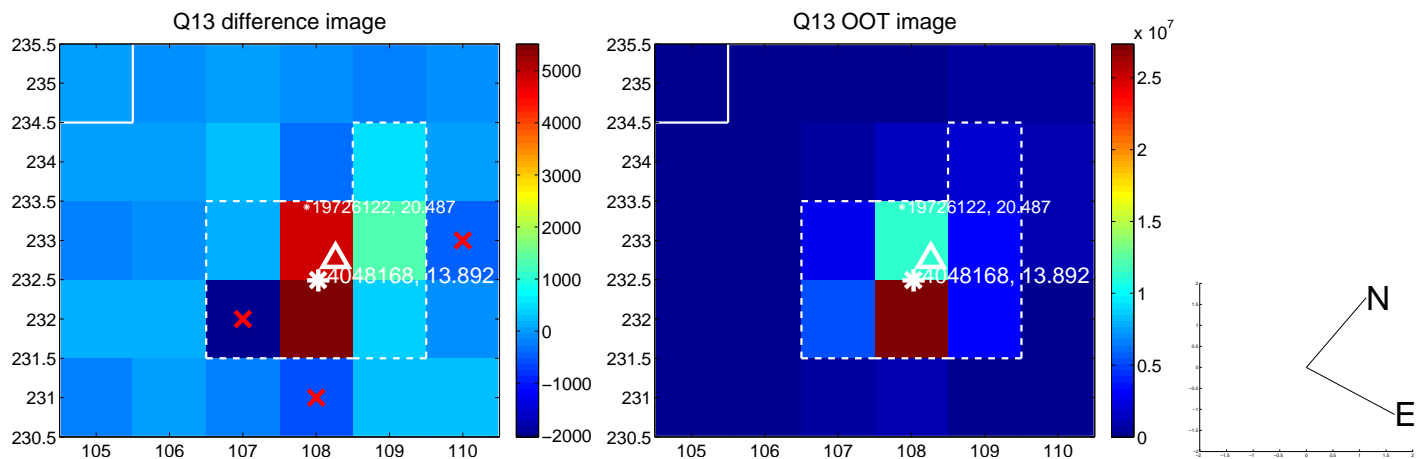
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



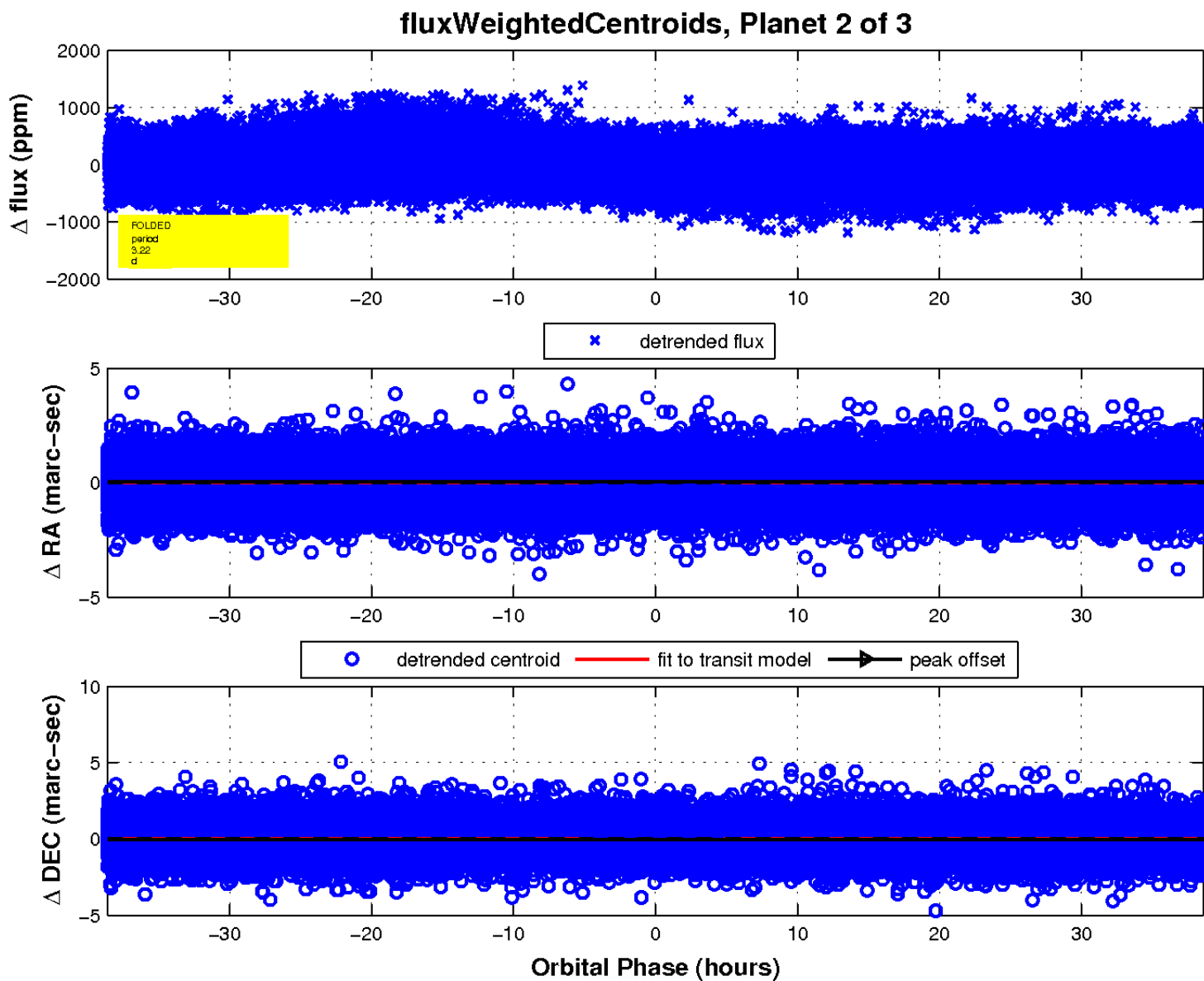
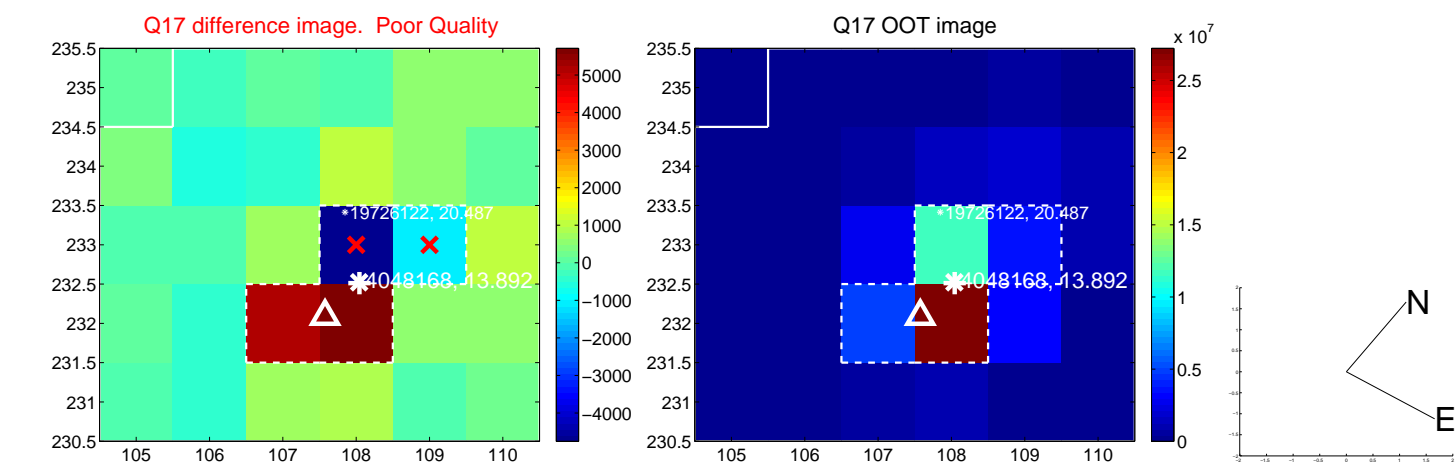
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

