

KIC 009532117

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})
009532117-01	OBS	3241.01	8.214292	135.008275	67.8	3.142	16.0	16.3	1.87	6277	1.80	701.80
009532117-02	OBS	No	8.214114	138.055260	56.8	3.035	12.6	13.7	1.87	6277	1.67	701.82

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009532117-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
009532117-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

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 009532117-01

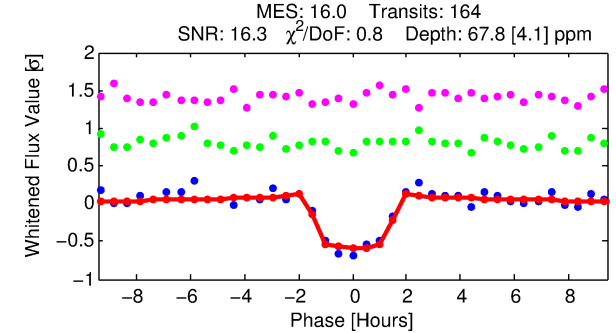
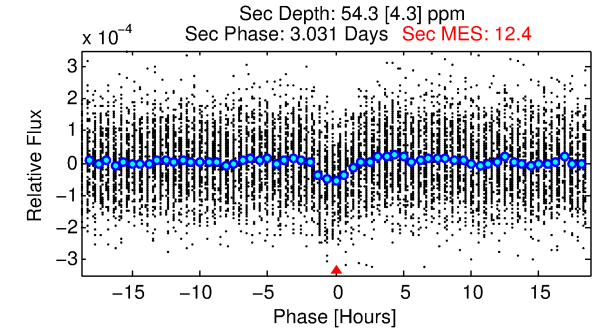
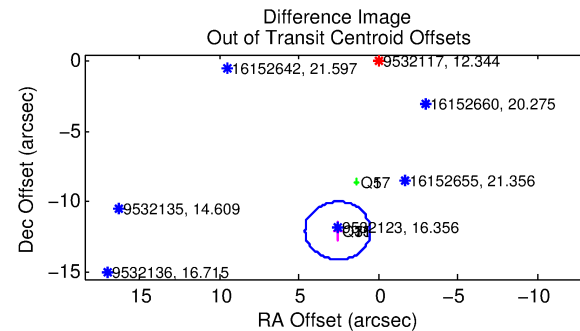
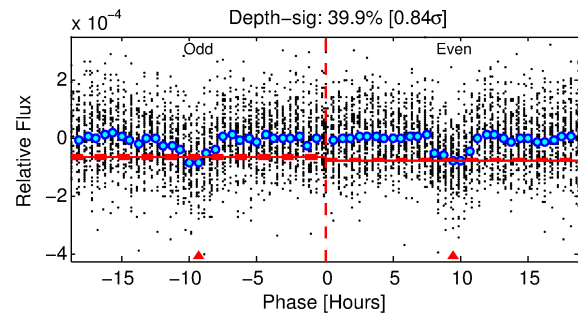
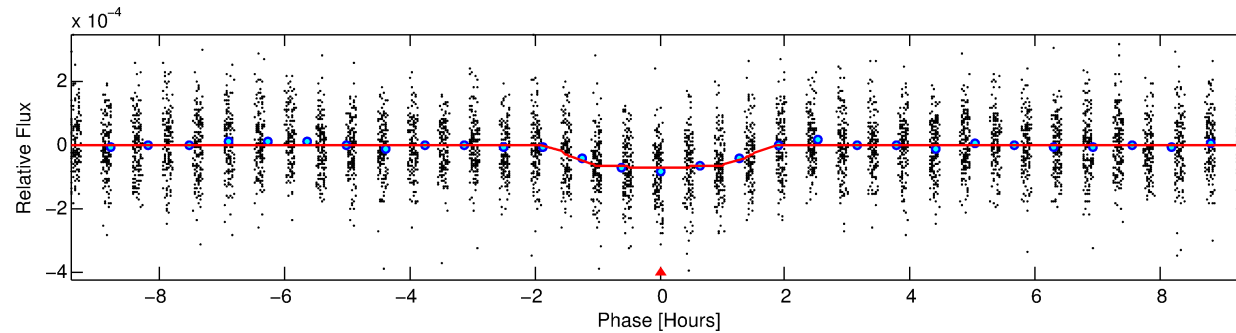
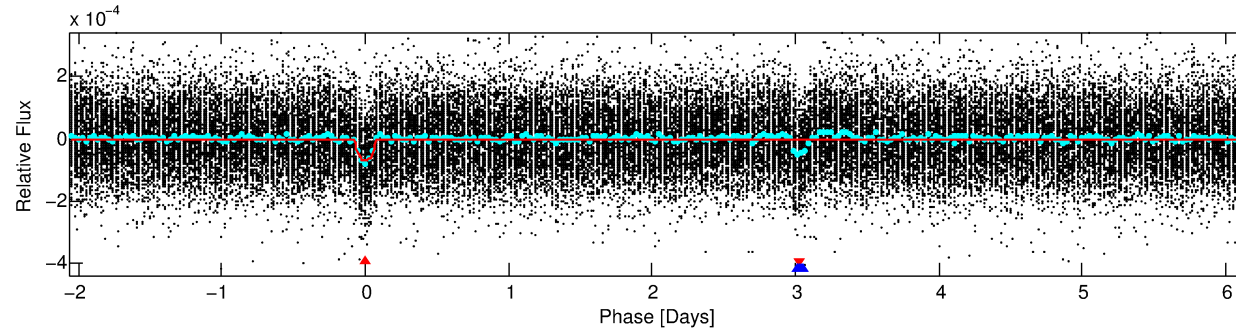
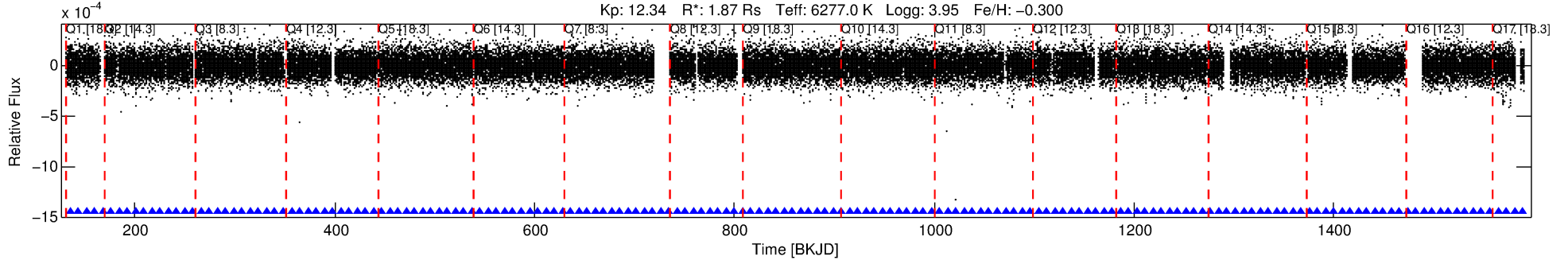
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
009532117-01	9532117	6069.01	9532123	1:1	12.1	-1	-3	16.36	12.35	1197.40	Direct-PRF	0	0.30	0.06

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 9532117 Candidate: 1 of 2 Period: 8.214 d
KOI: K03241.01 Corr: 0.984

Kp: 12.34 R*: 1.87 Rs Teff: 6277.0 K Logg: 3.95 Fe/H: -0.300



DV Fit Results:

Period = 8.21429 [0.00004] d
Epoch = 135.0083 [0.0032] BKJD
Rp/R* = 0.0088 [0.0034]
a/R* = 9.11 [19.92]
b = 0.90 [0.47]
Seff = 701.80 [338.40]
Teq = 1312 [158] K
Rp = 1.80 [0.91] Re
a = 0.0832 [0.0248] AU
Ag = 63.53 [57.99] [1.08σ]
Teff = 5729 [1132] K [3.86σ]

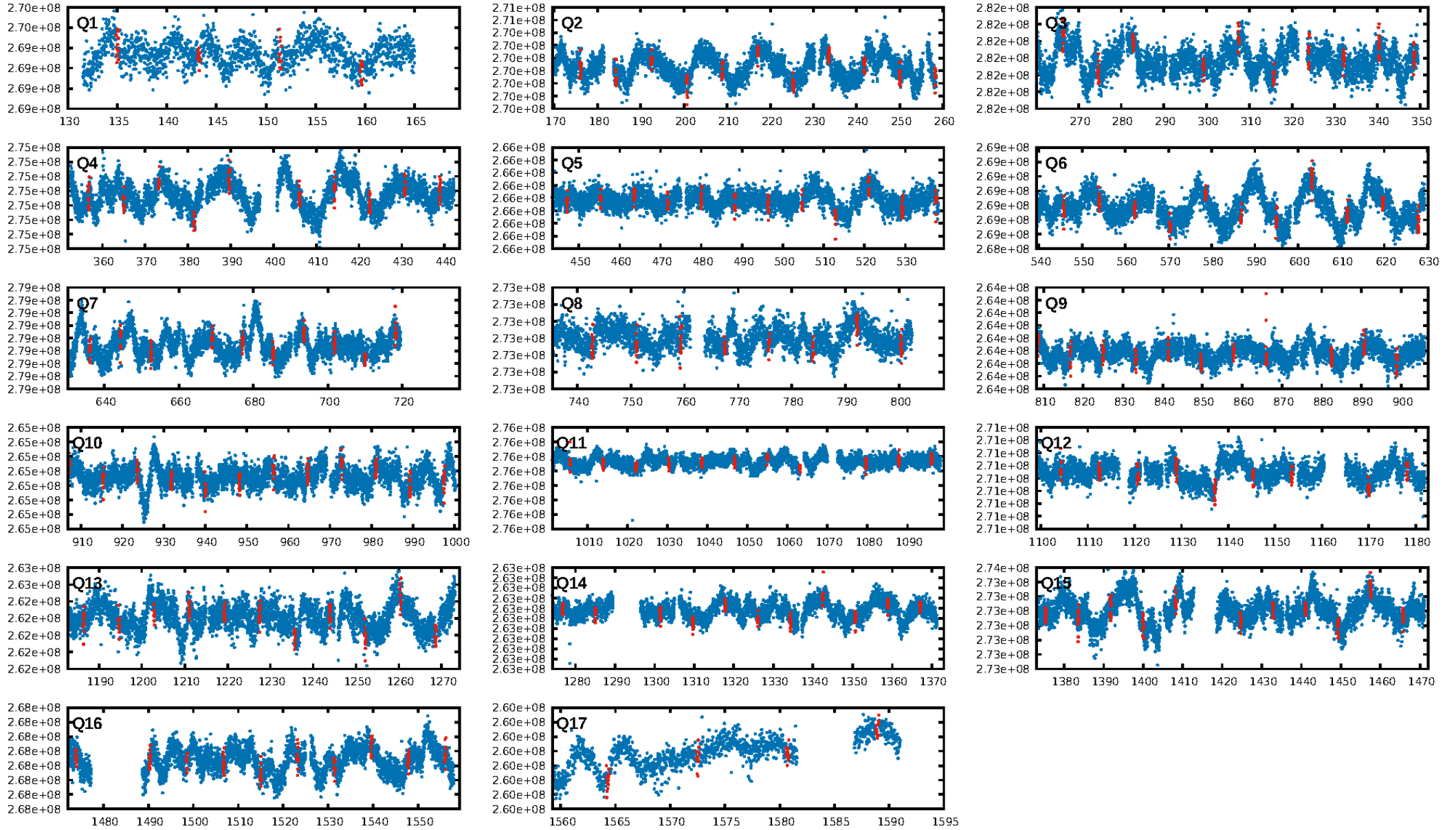
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.3%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: 1.67e-54
RollingBand-fgt: 1.00 [156/156]
GhostDiagnostic-chr: -0.1971
Centroid-sig: N/A
Centroid-so: 58.175 arcsec [102.59σ]
OotOffset-rm: 12.324 arcsec [17.97σ]
KicOffset-rm: 12.326 arcsec [21.71σ]
OotOffset-st: 0/4/0/2 [6]
KicOffset-st: 0/4/0/2 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 1.00 [17/17]

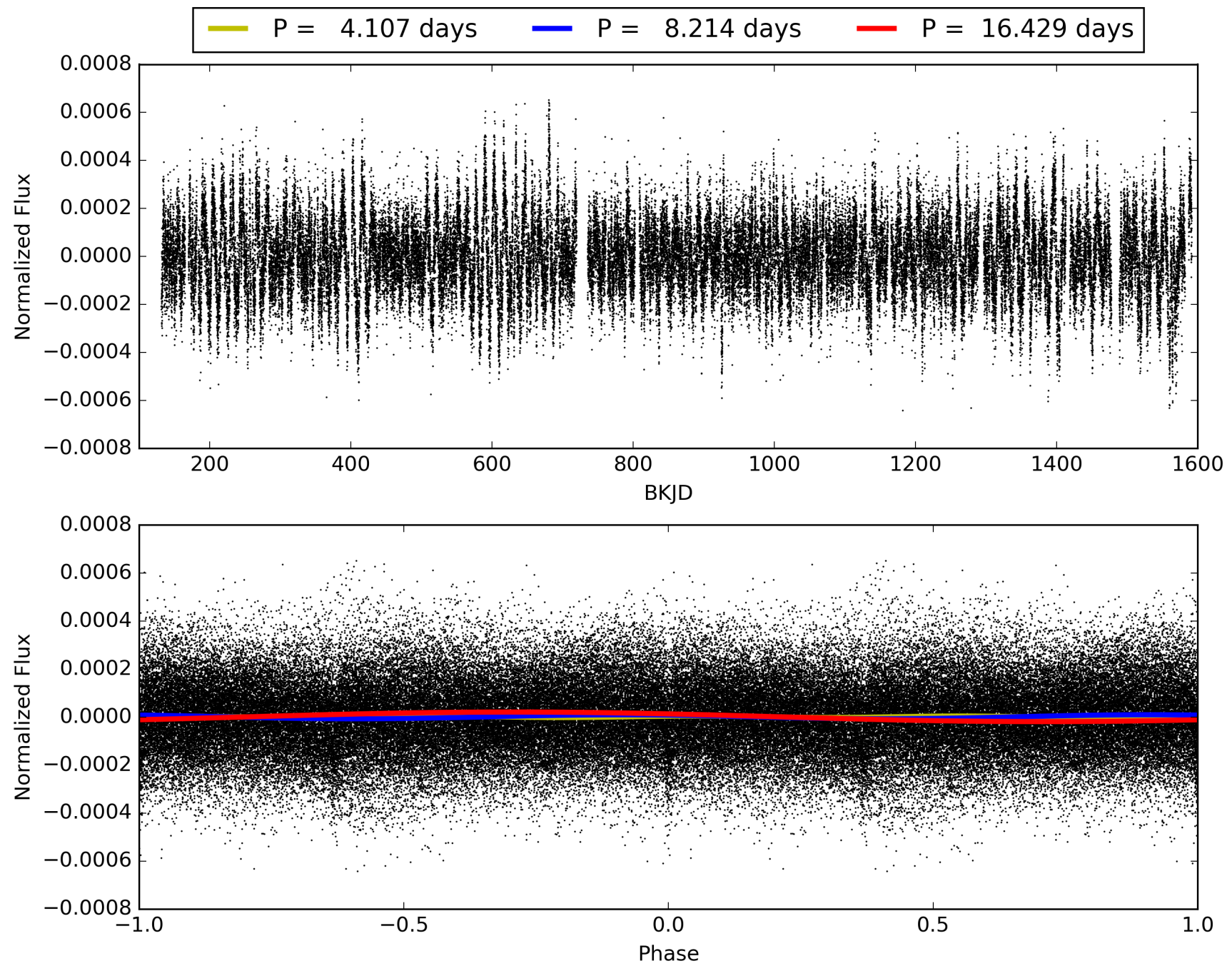
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 19:34:10 Z

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

TCE 009532117-01, PDC Light Curves

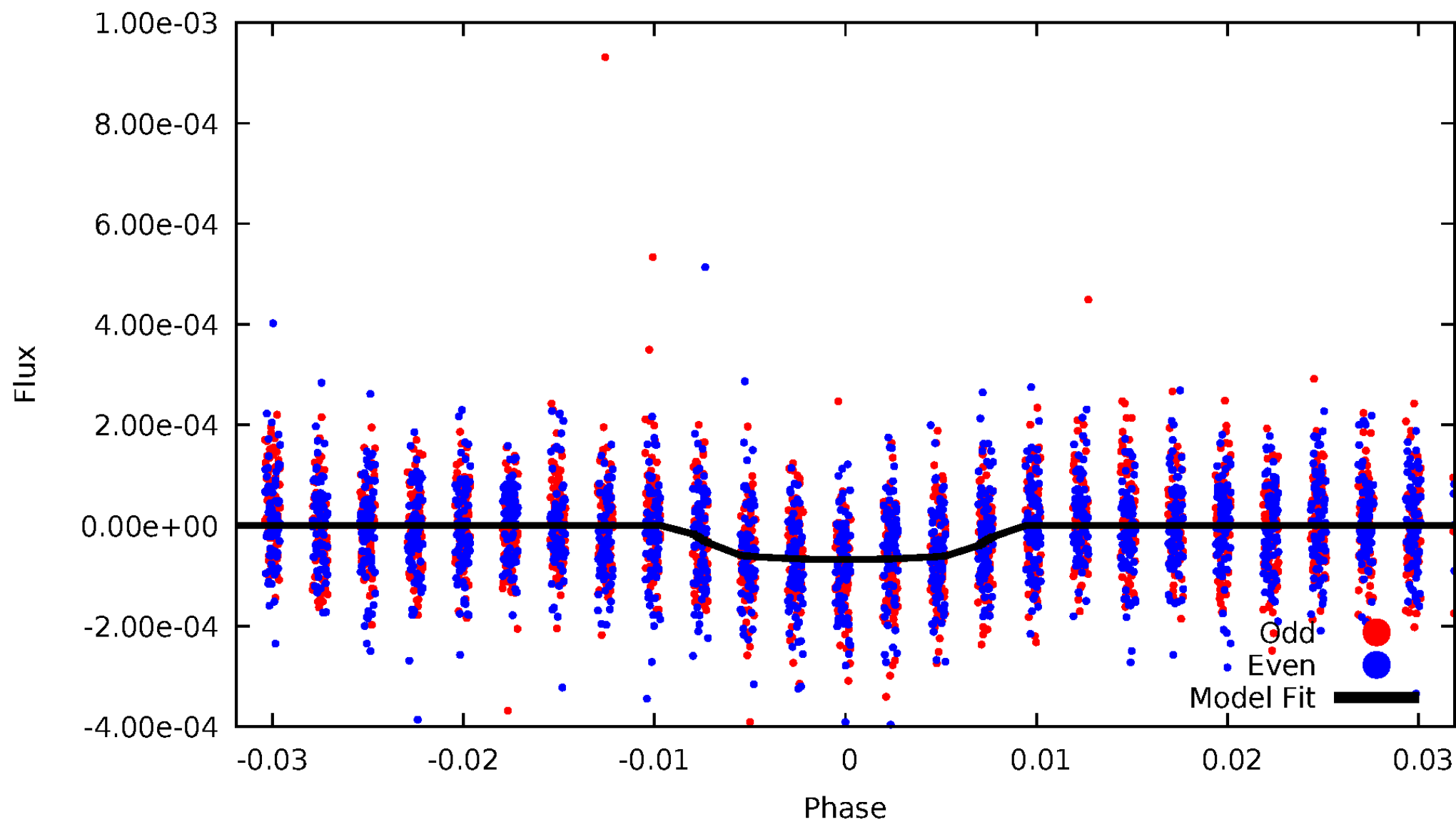


TCE 009532117-01



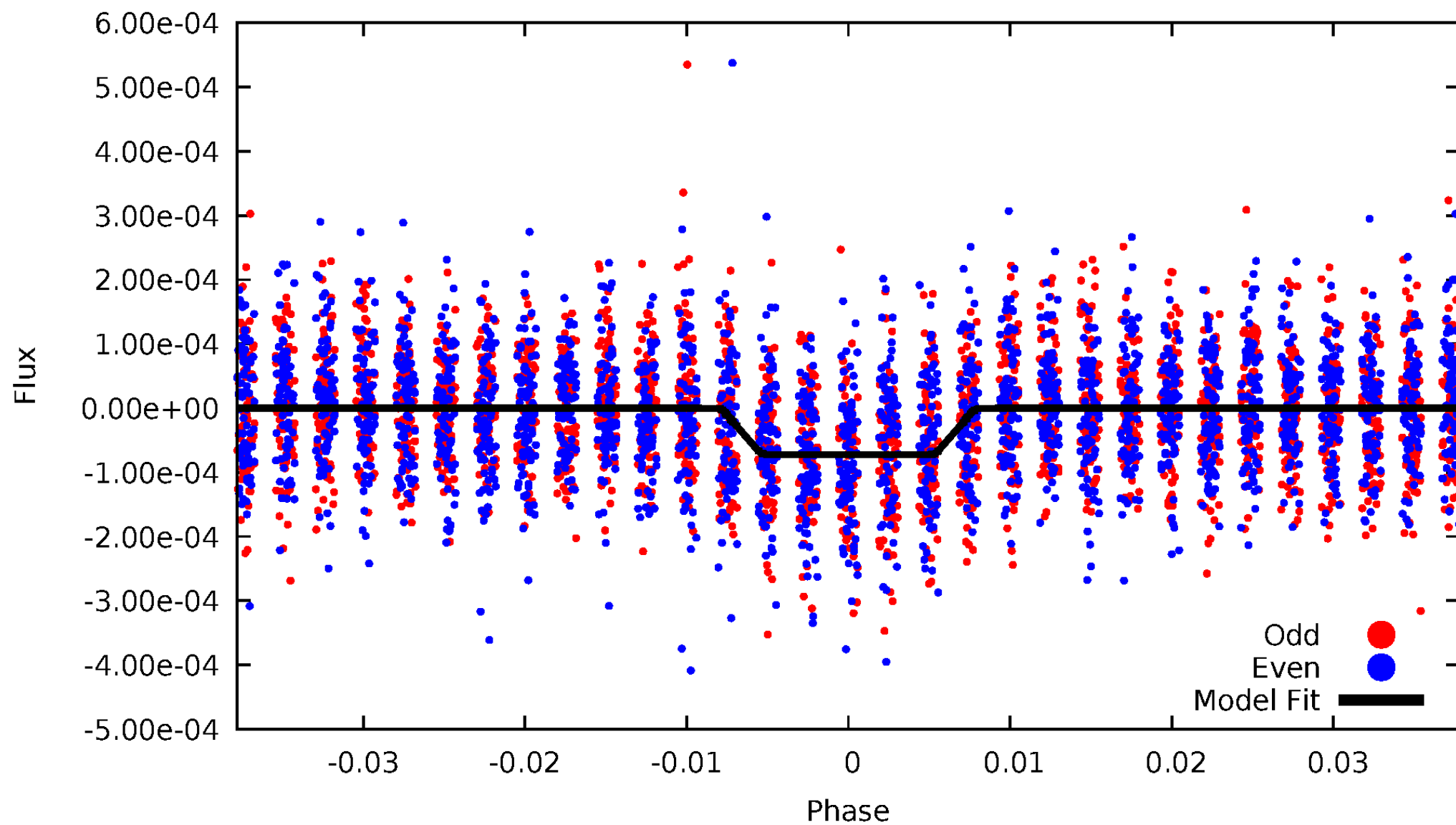
DV Odd/Even

TCE 009532117-01

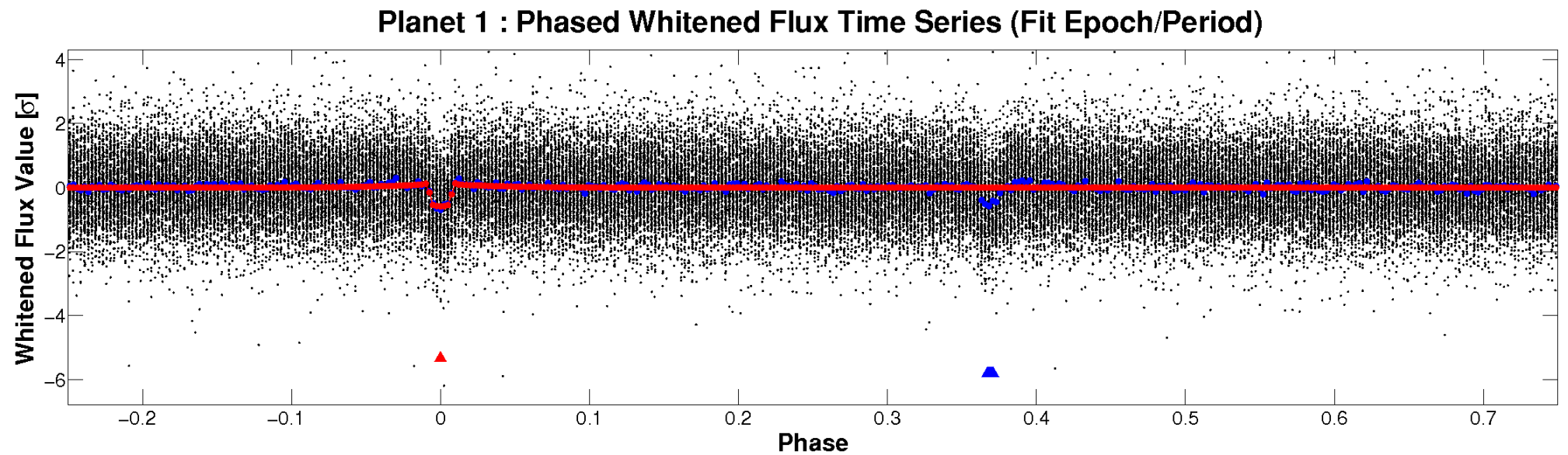
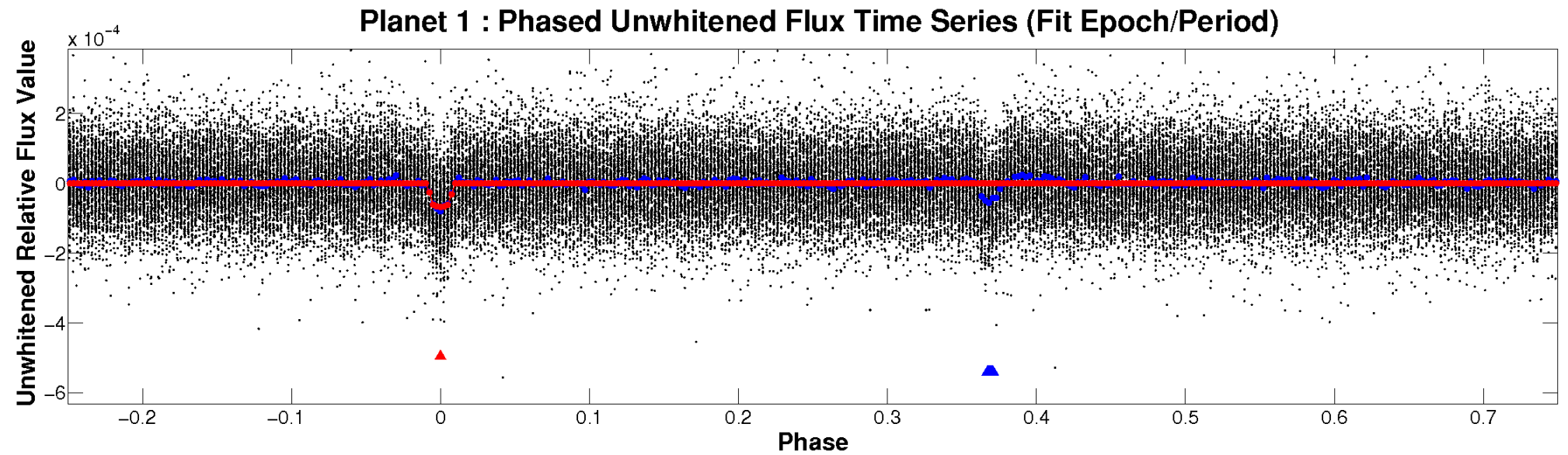


ALT Odd/Even

TCE 009532117-01

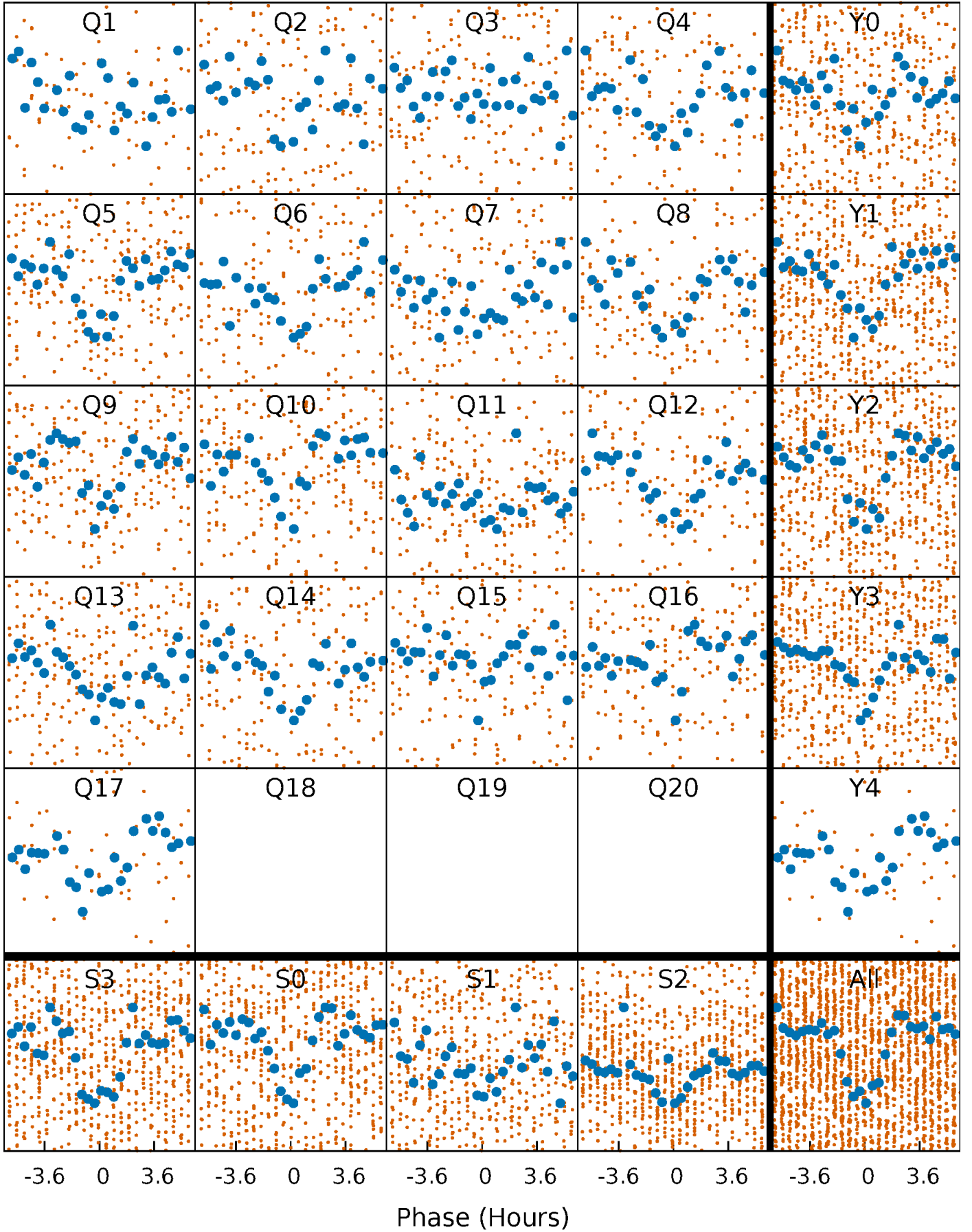


Non-Whitened Vs. Whitened Light Curve



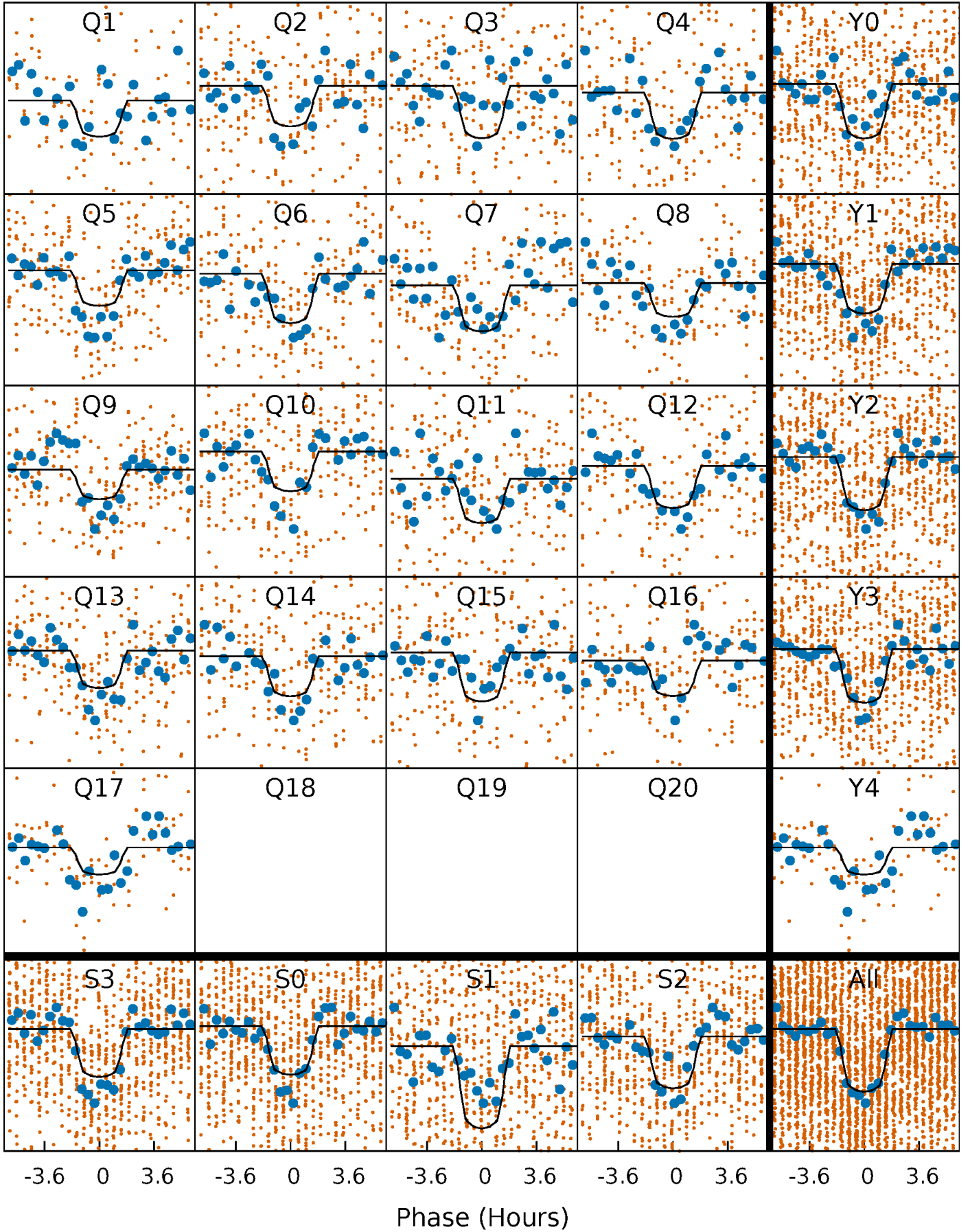
PDC Quarter-Phased Transit Curves

TCE 009532117-01 P= 8.214292 Days $T_0=135.008275$ (BKJD)



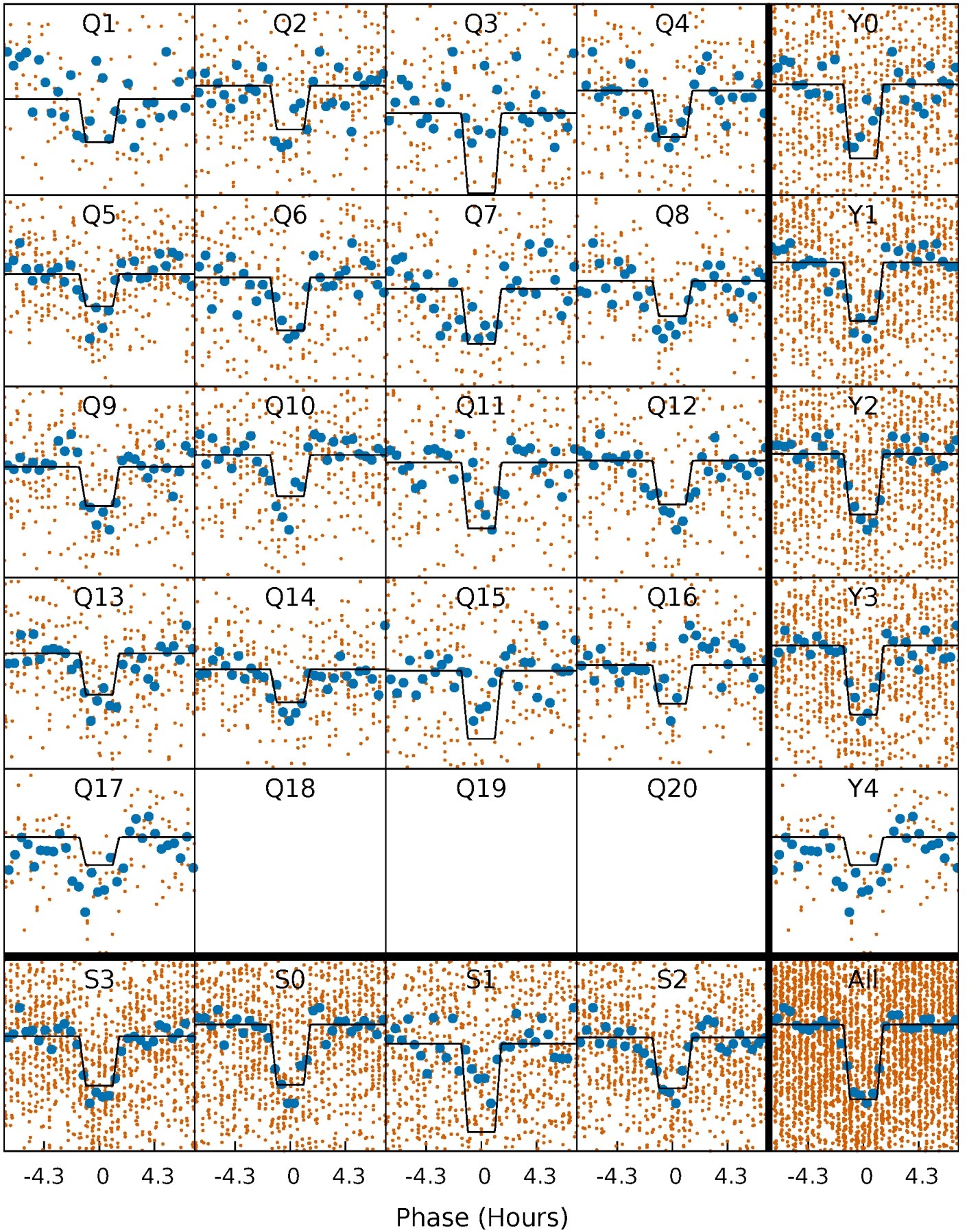
DV Quarter-Phased Transit Curves

TCE 009532117-01 P= 8.214292 Days $T_0=135.008275$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

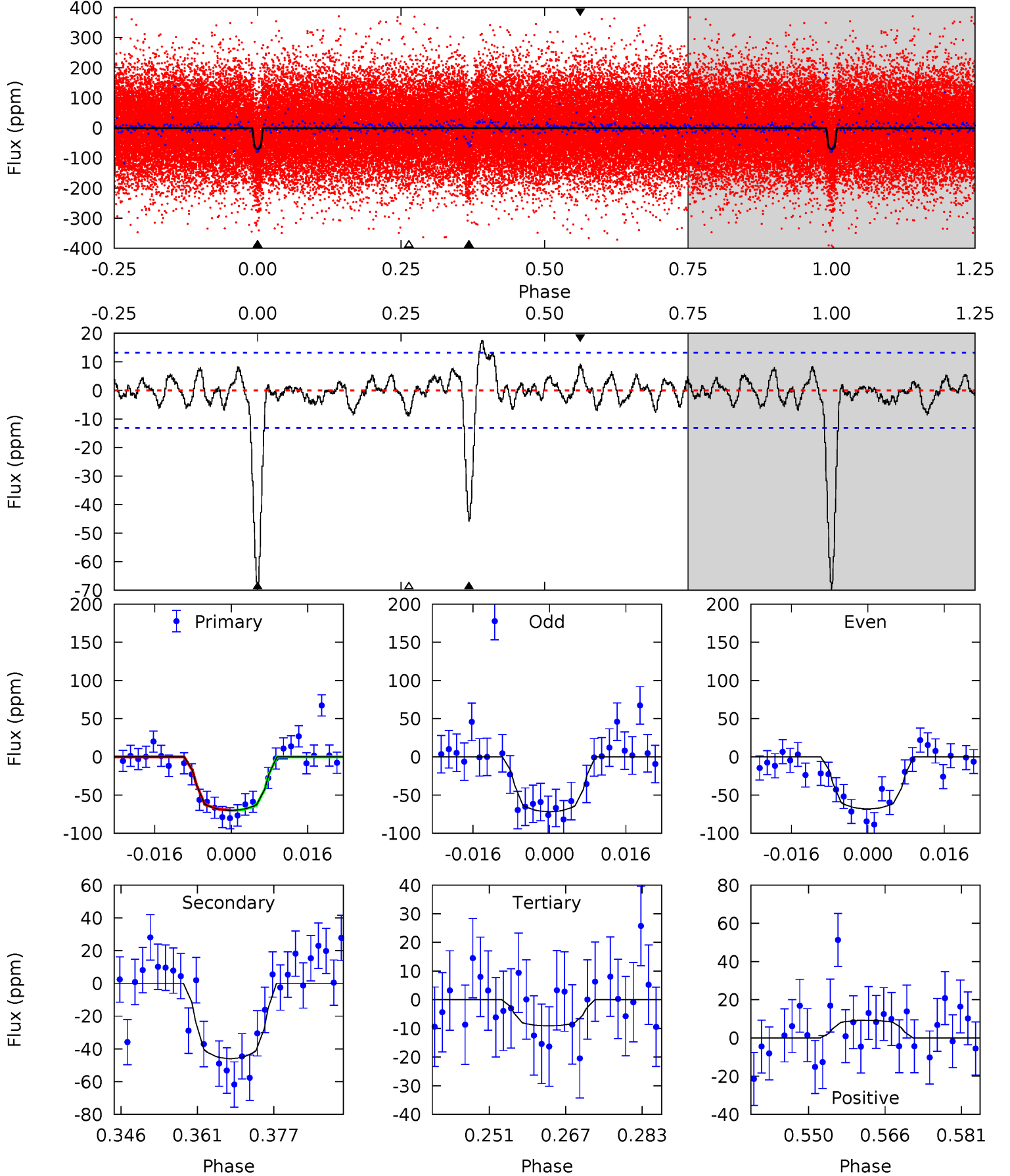
TCE 009532117-01 P= 8.214265 Days $T_0=135.009673$ (BKJD)



DV Model-Shift Uniqueness Test

009532117-01, P = 8.214292 Days, E = 126.793983 Days

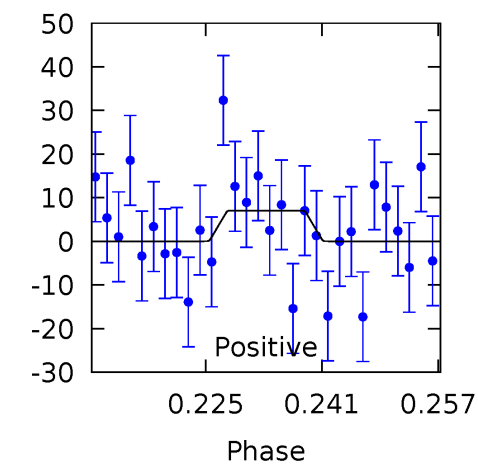
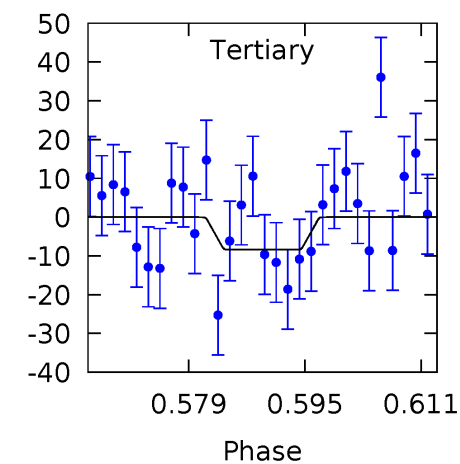
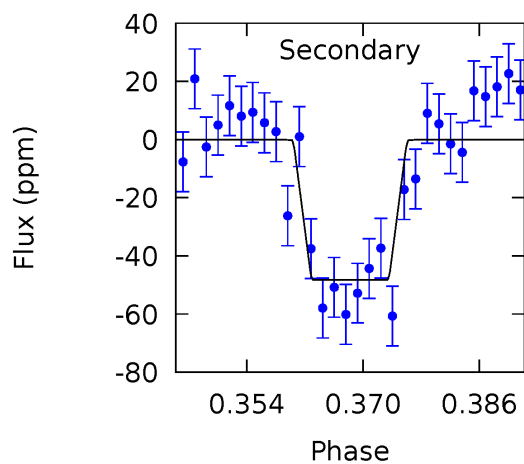
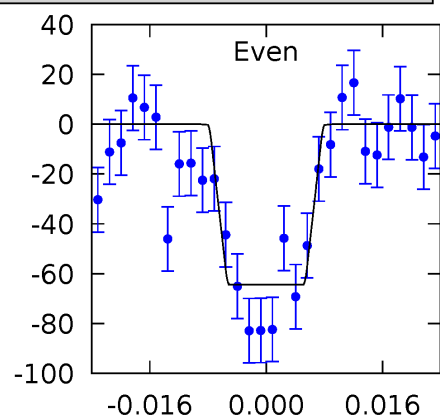
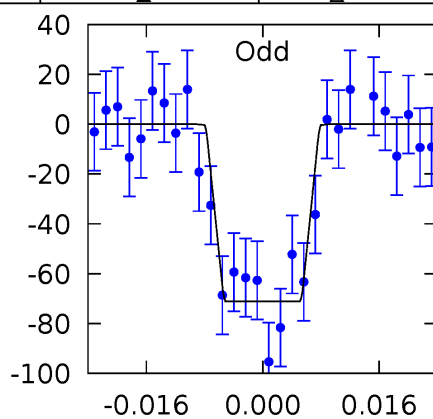
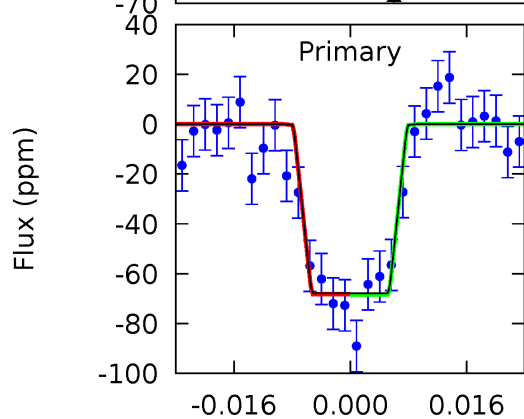
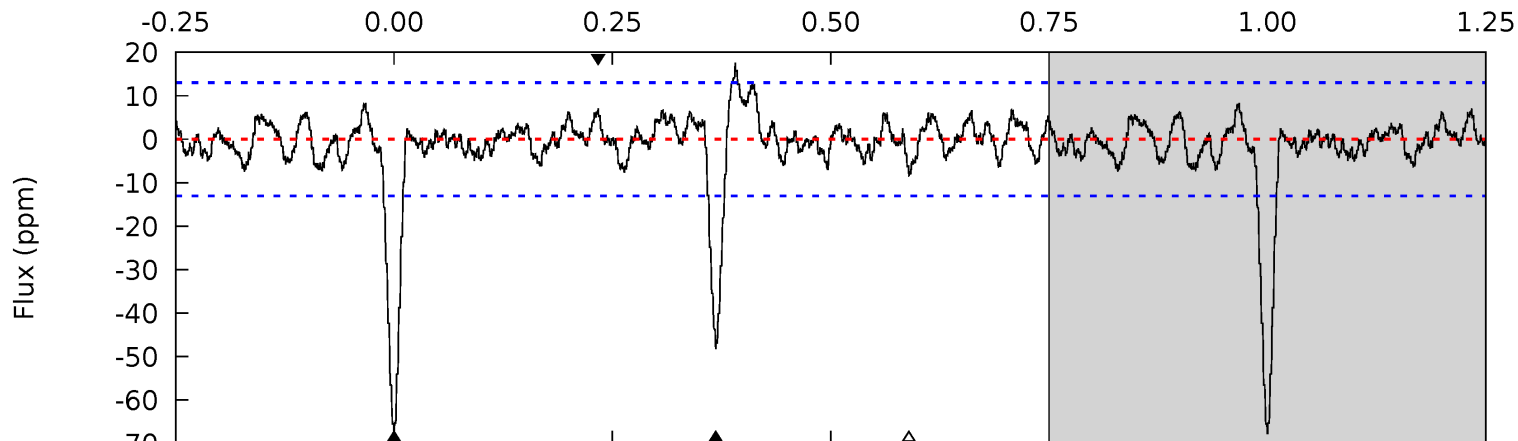
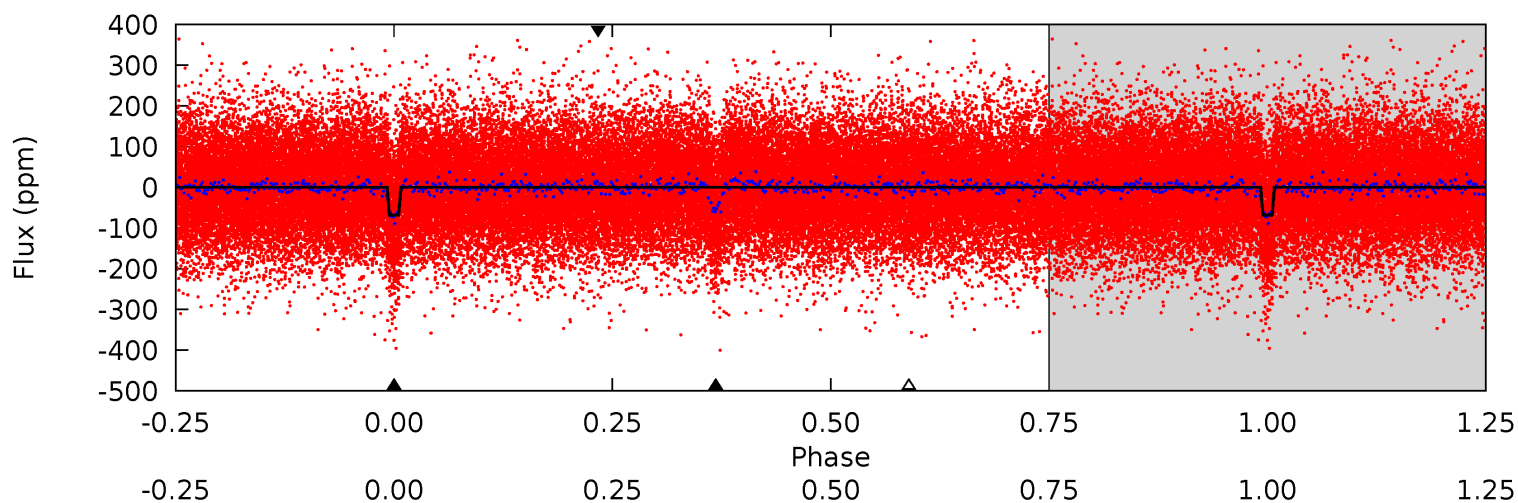
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.3	17.3	3.42	3.46	4.94	2.42	1.52	22.9	22.8	13.9	13.8	0.70	0.93	0.20	0.11



Alt Model-Shift Uniqueness Test

009532117-01, P = 8.214265 Days, E = 126.795408 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.7	18.3	3.16	2.67	4.93	2.41	1.42	22.5	23.0	15.1	15.6	1.25	0.93	0.21	0.04



Stellar Parameters For KIC 009532117

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6277^{+174}_{-174}	$3.951^{+0.273}_{-0.117}$	$-0.300^{+0.300}_{-0.300}$	$1.869^{+0.395}_{-0.592}$	$1.138^{+0.210}_{-0.172}$	$0.245^{+0.436}_{-0.087}$
	+3%/-3%	+7%/-3%	+100%/-100%	+21%/-32%	+18%/-15%	+178%/-36%
Source	PHO1	FLK73	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 009532117-01 / KOI 3241.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-46 ± 3	$1.73^{+0.75}_{-0.67}$	1806^{+119}_{-149}	5504^{+1471}_{-719}	60^{+95}_{-31}
Alt.	-48 ± 3	$1.62^{+0.79}_{-0.69}$	1809^{+111}_{-147}	5697^{+1838}_{-829}	71^{+141}_{-38}

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 $A_{\text{obs}} \gg 1.0$

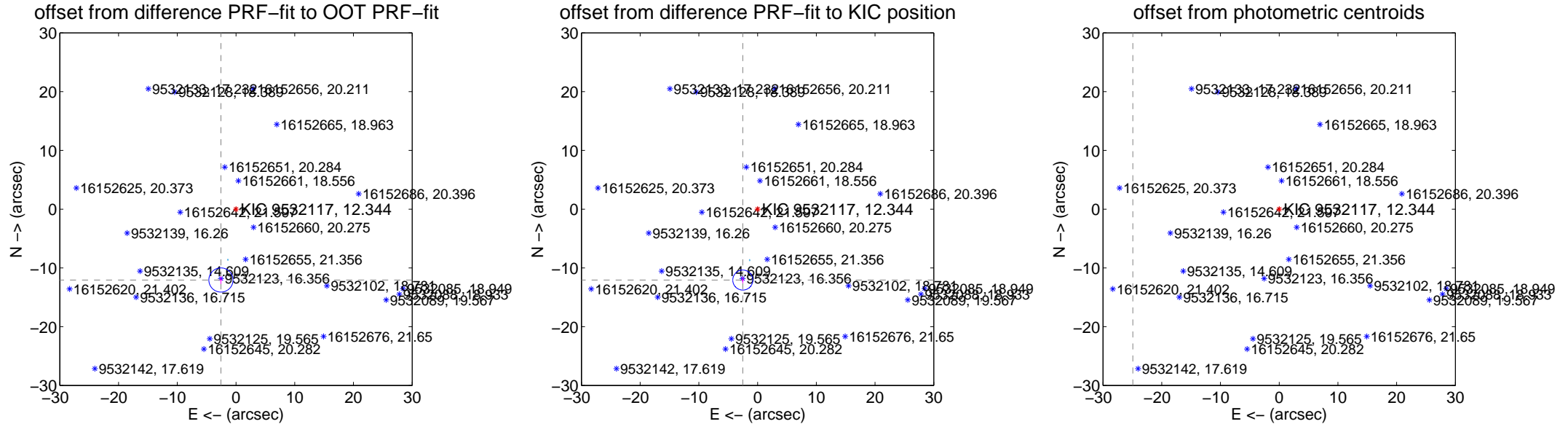
DV Centroid Data

Supplemental centroid analysis for 009532117-01. Kepler magnitude: 12.34. Transit SNR 16.30

There are 6 quarters with good PRF difference image offsets

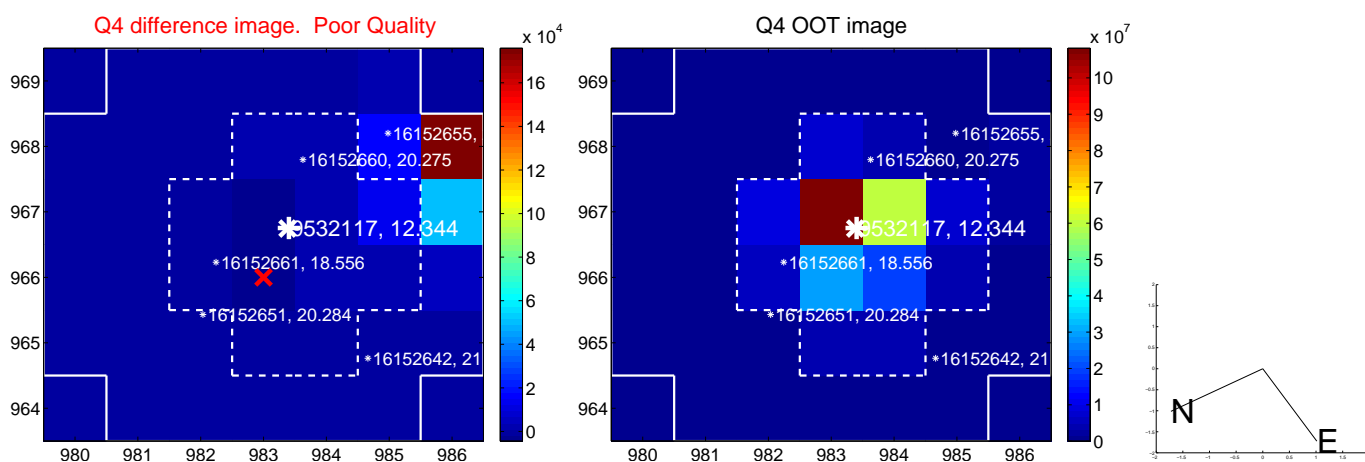
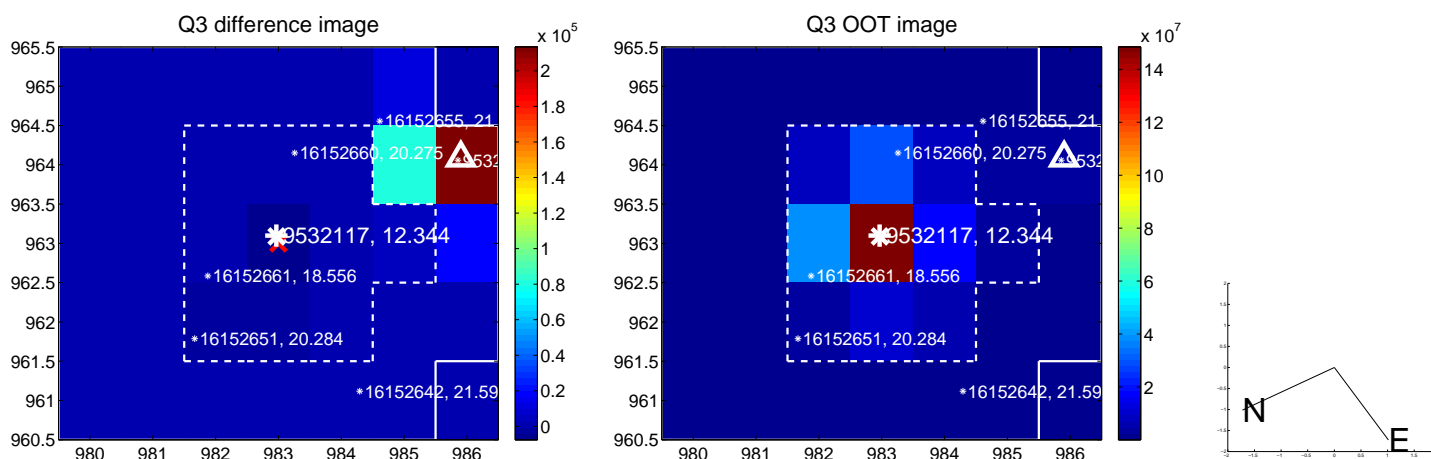
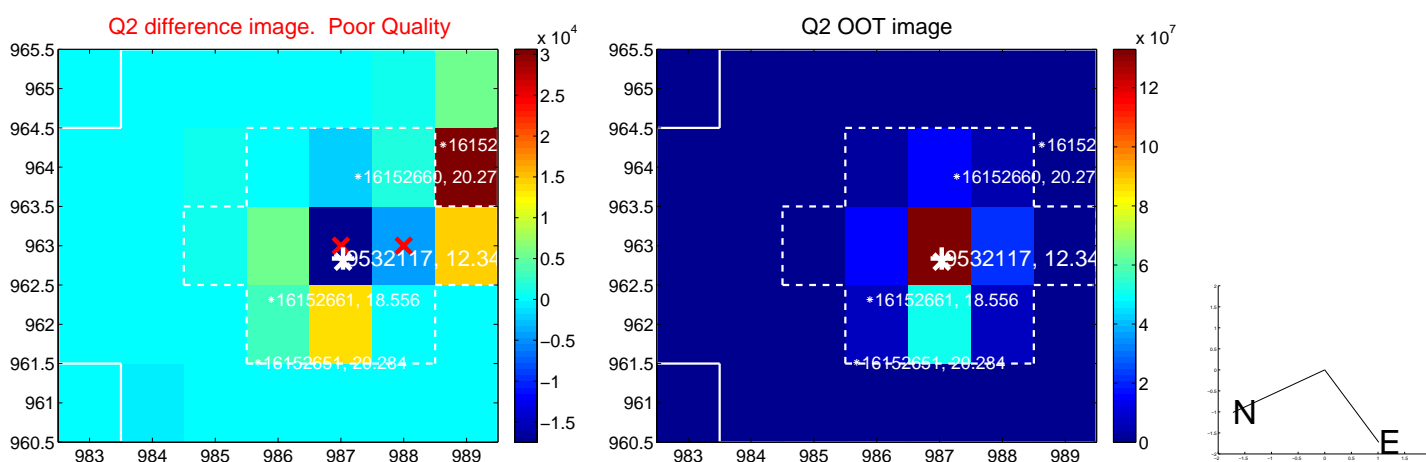
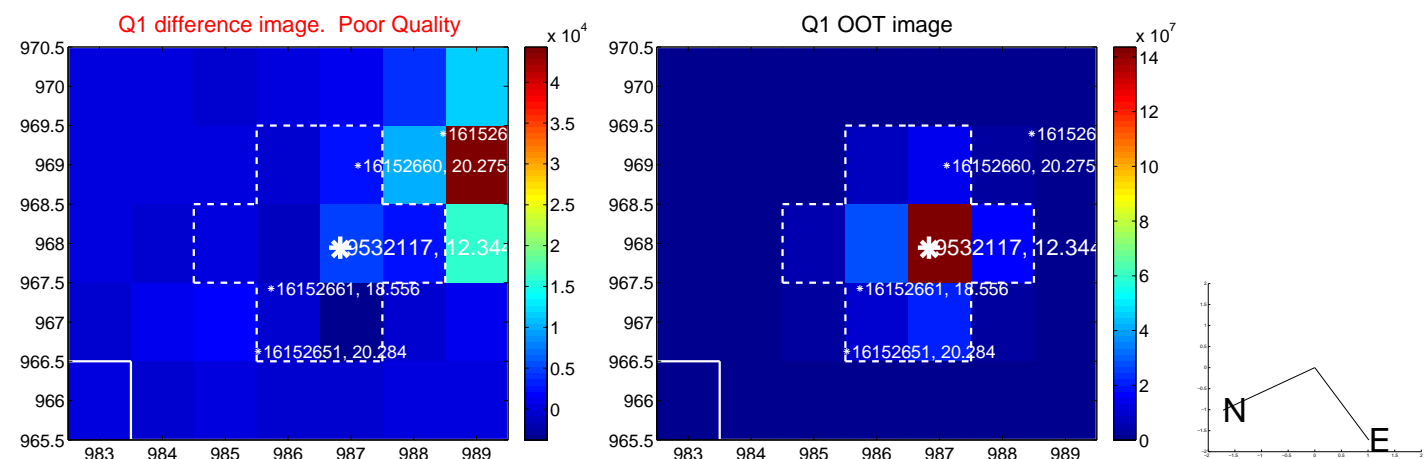
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	12.324 \pm 0.686	17.97	2.563 \pm 0.233	-12.055 \pm 0.654
PRF-fit source offset from KIC position	12.326 \pm 0.568	21.71	2.521 \pm 0.192	-12.065 \pm 0.543
photometric centroid source offset	58.18 \pm 0.57	102.59	24.92 \pm 0.48	-52.57 \pm 0.58

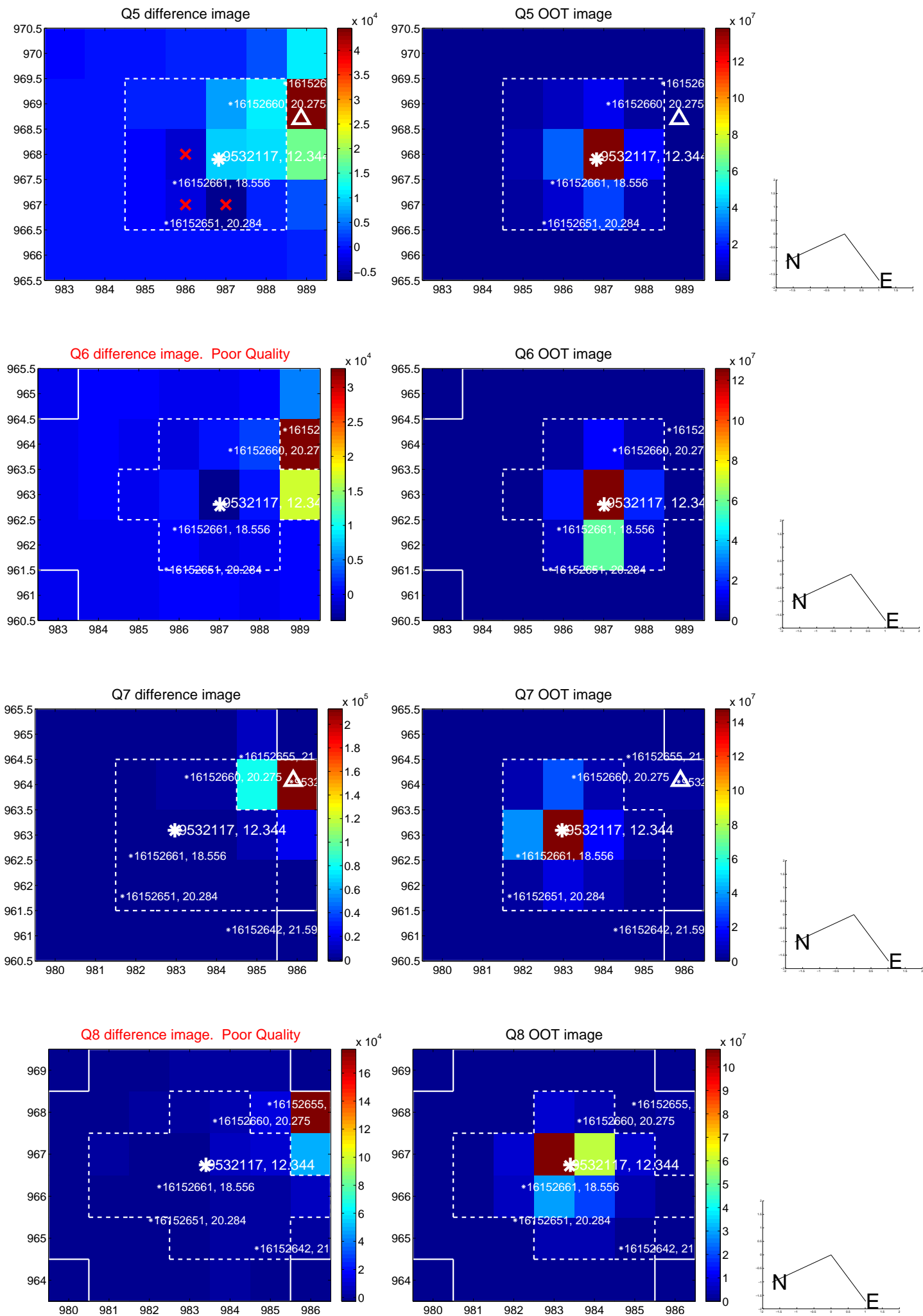


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

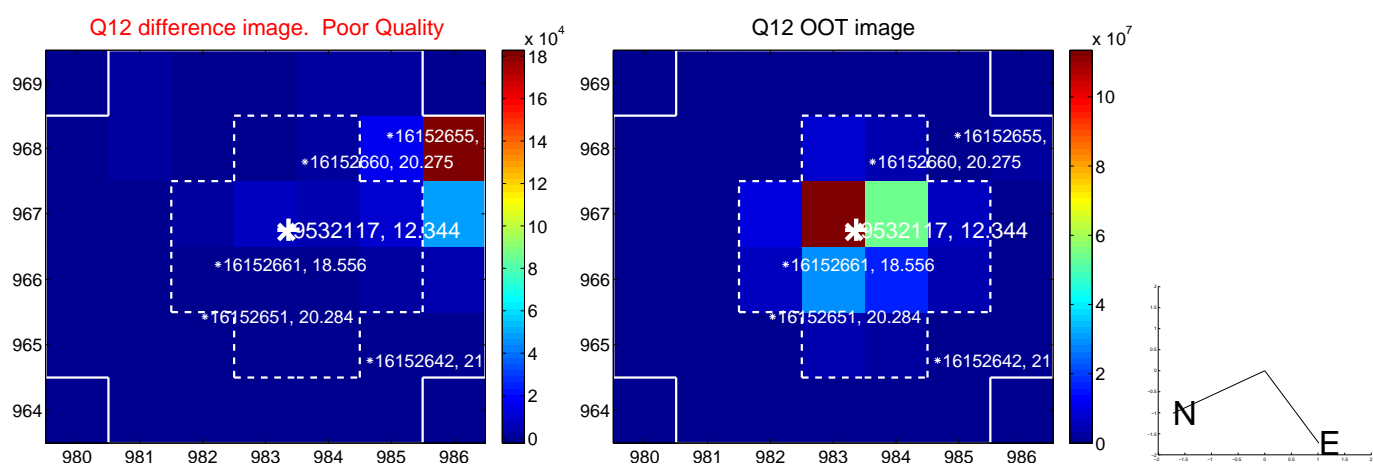
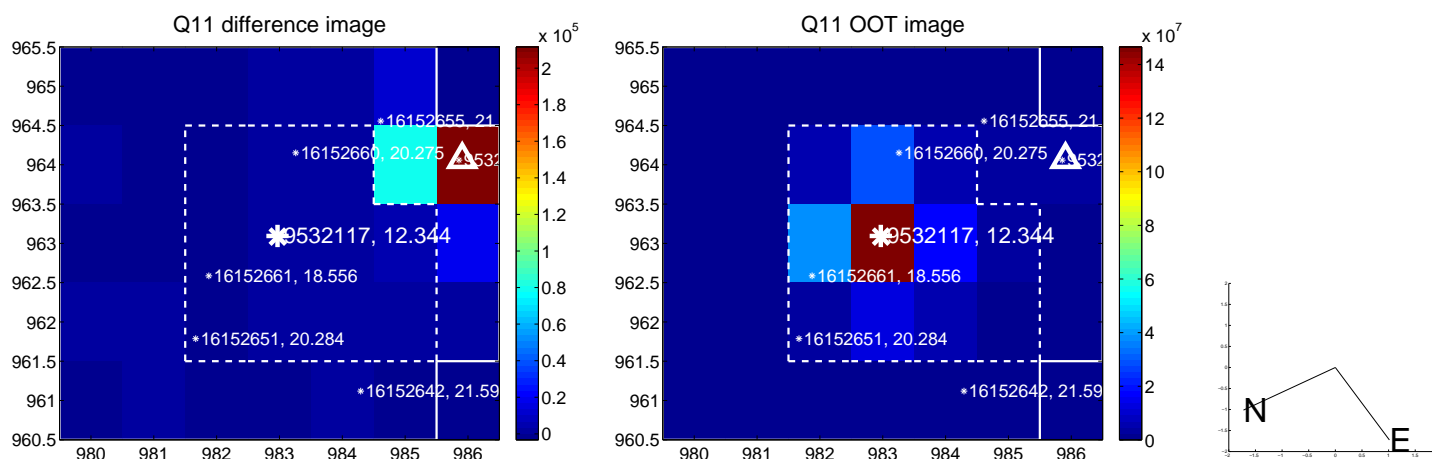
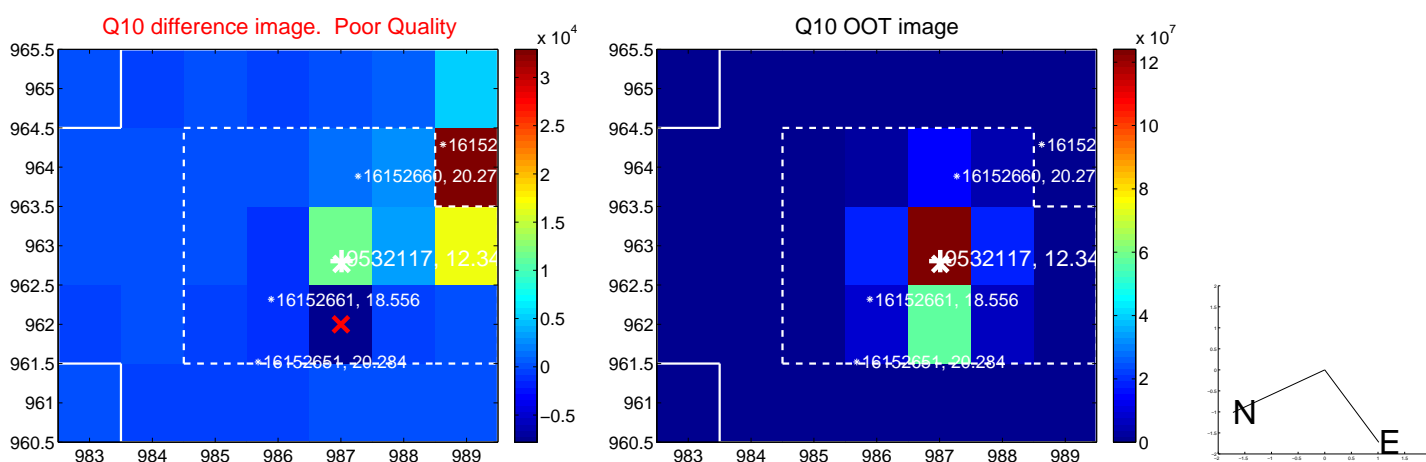
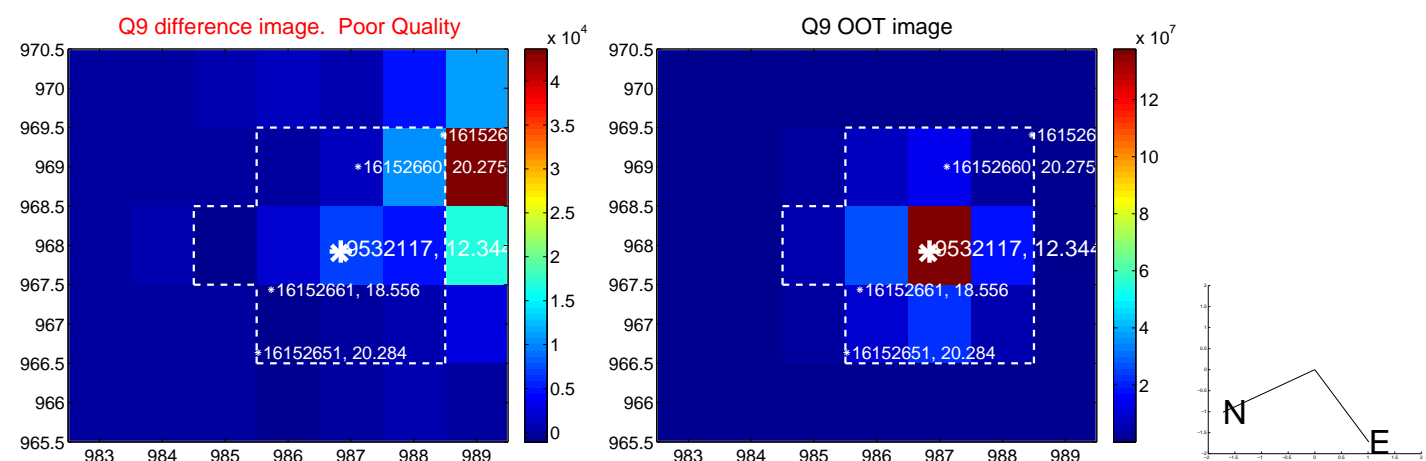
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



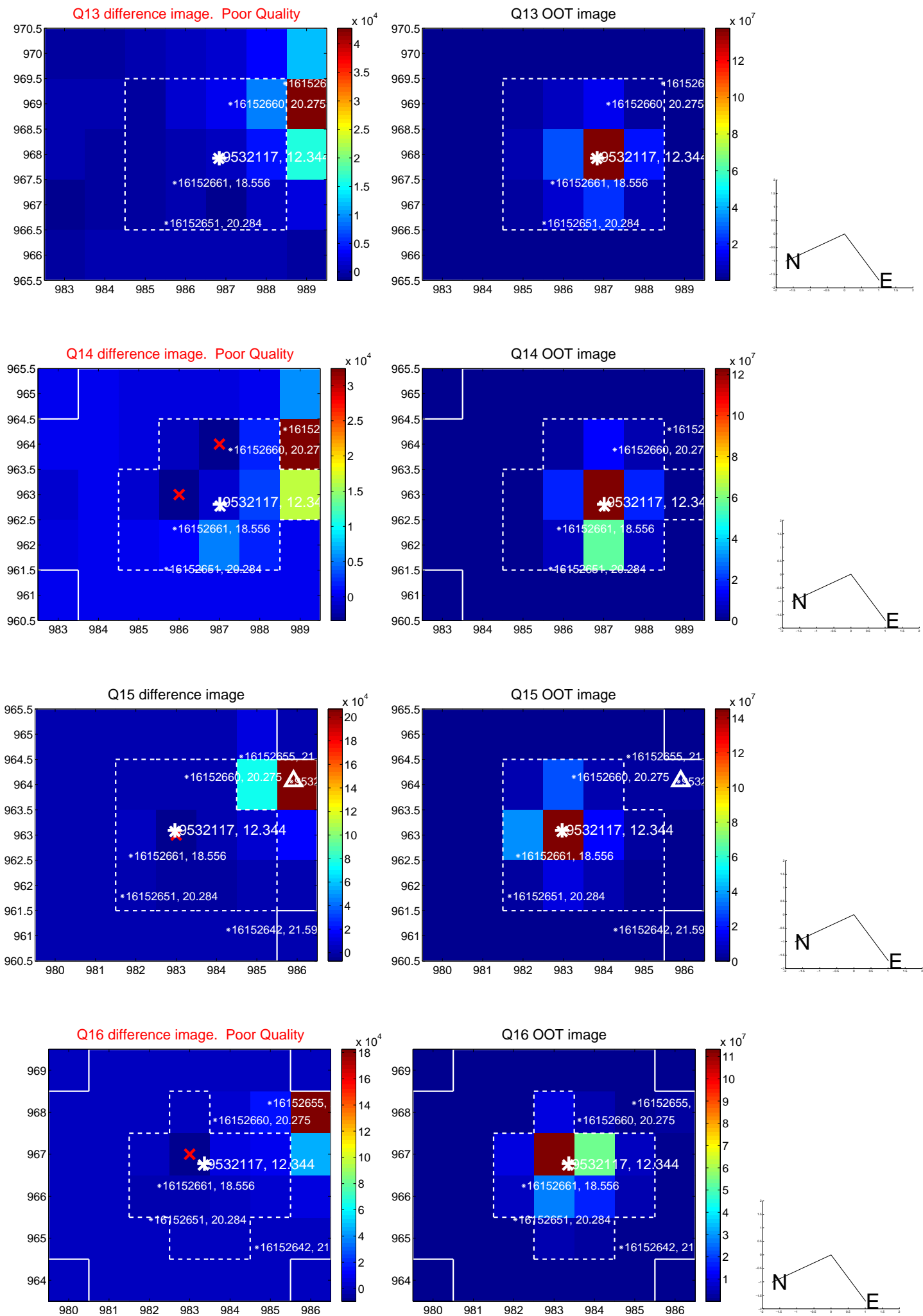
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



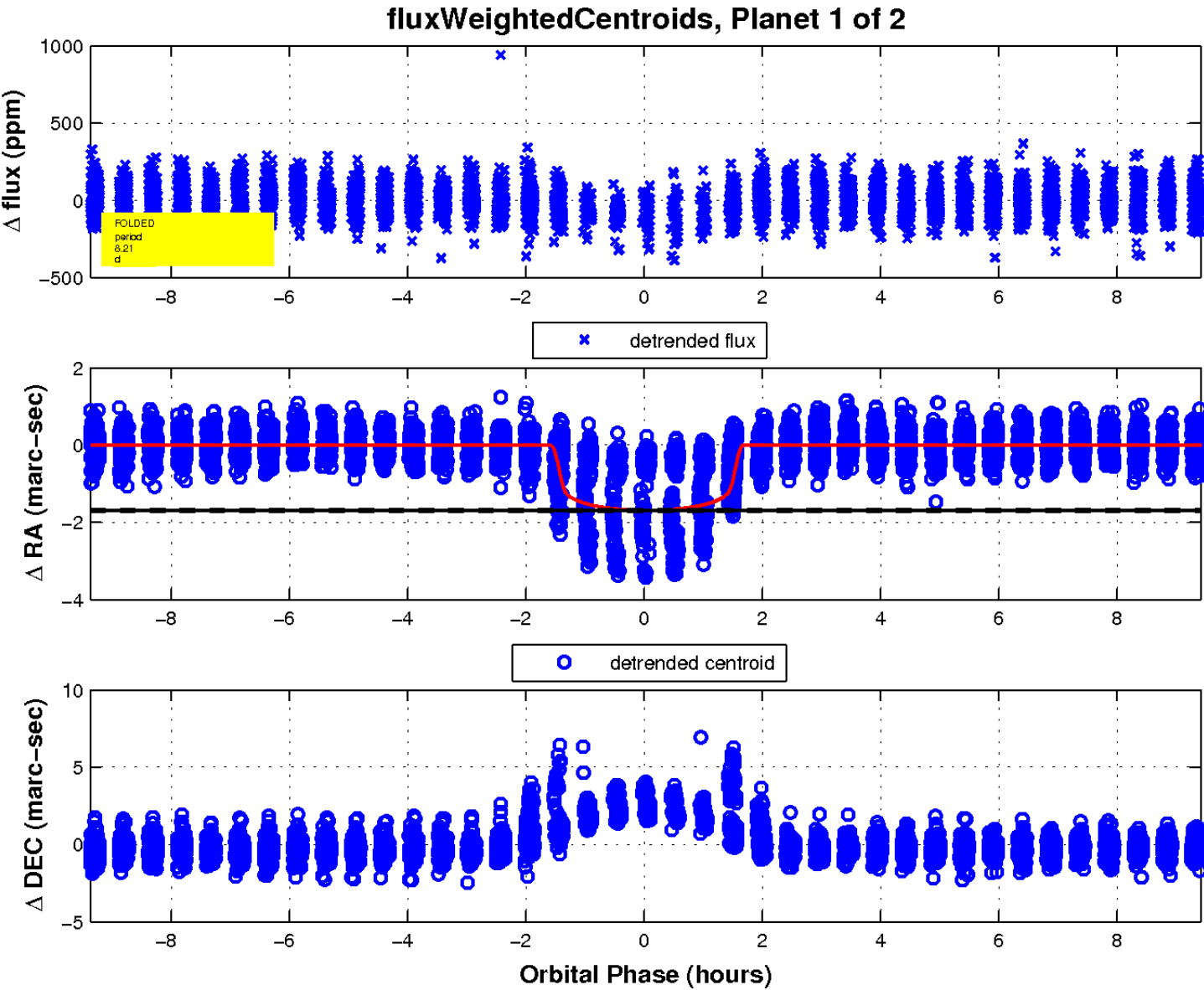
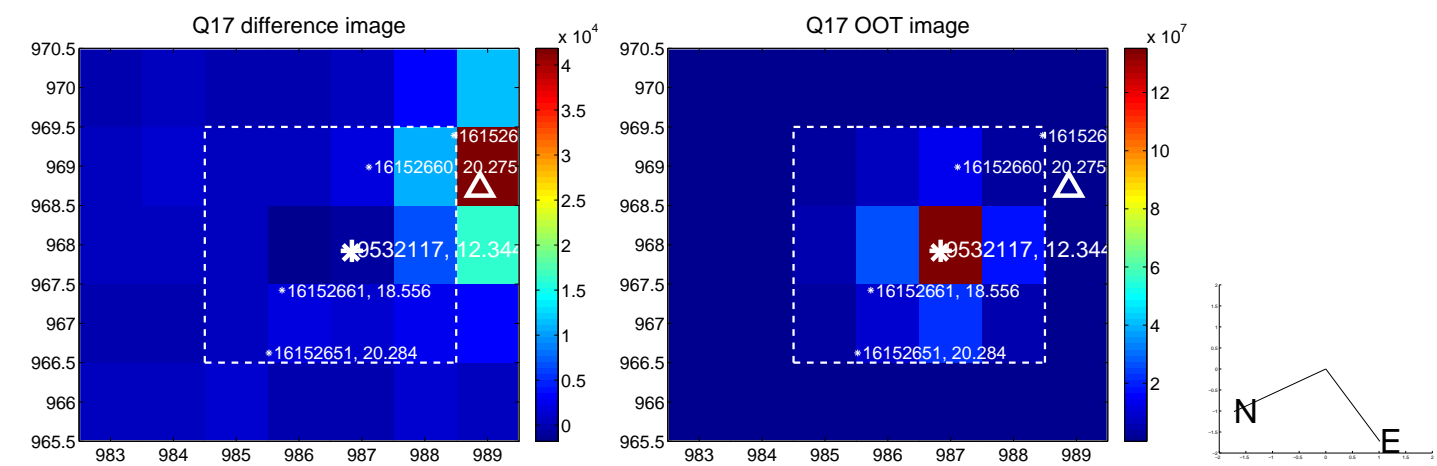
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

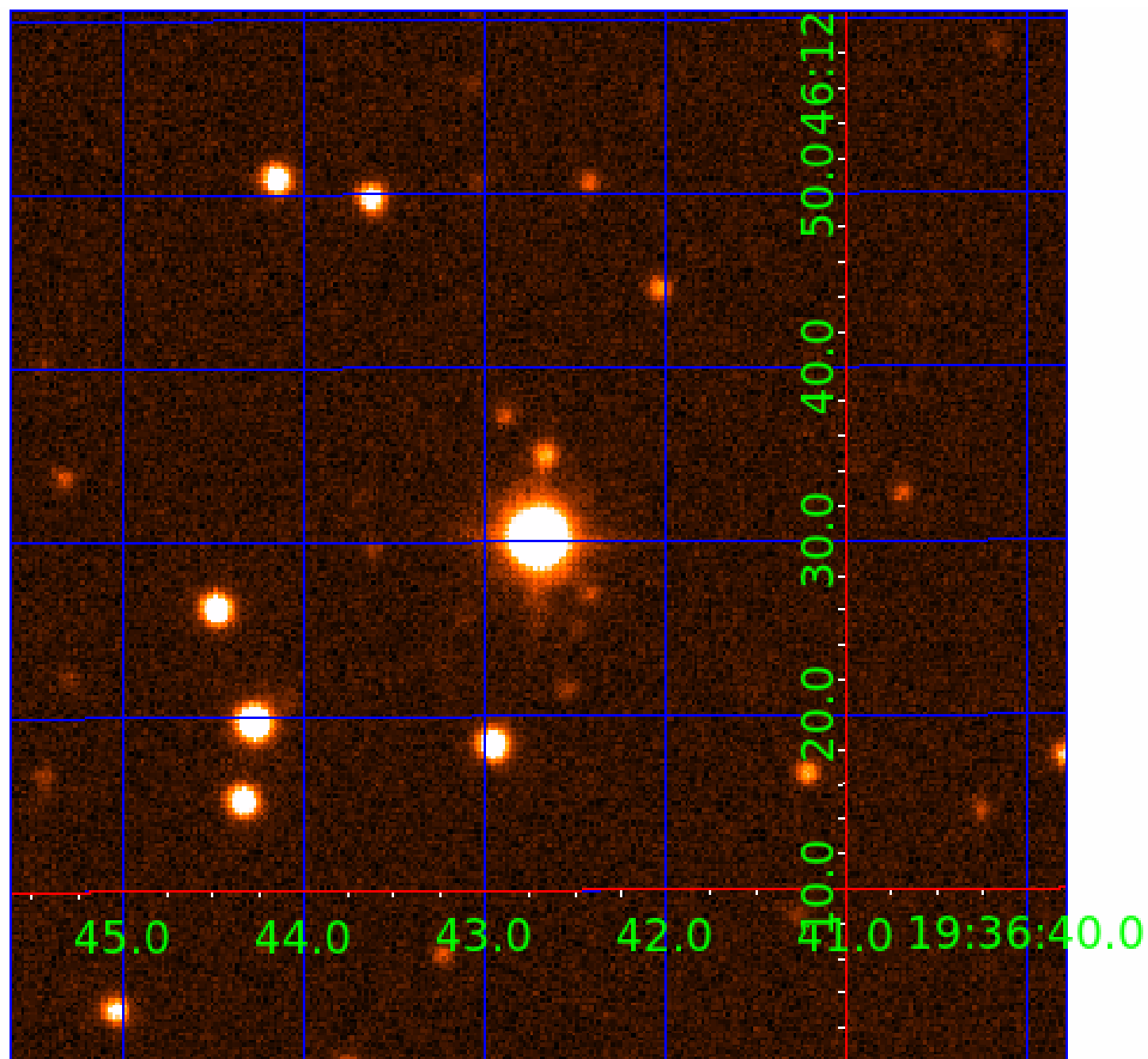


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009532117

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})
009532117-01	OBS	3241.01	8.214292	135.008275	67.8	3.142	16.0	16.3	1.87	6277	1.80	701.80
009532117-02	OBS	No	8.214114	138.055260	56.8	3.035	12.6	13.7	1.87	6277	1.67	701.82

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009532117-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
009532117-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

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 009532117-02

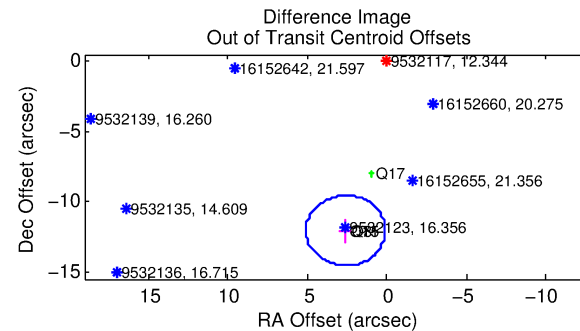
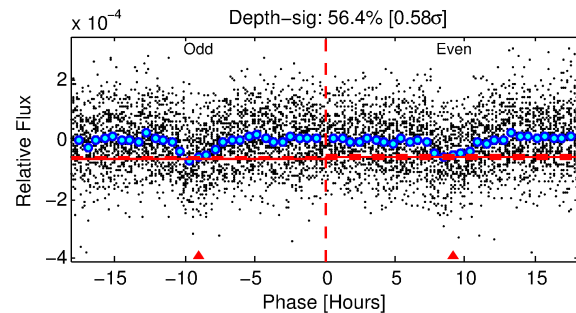
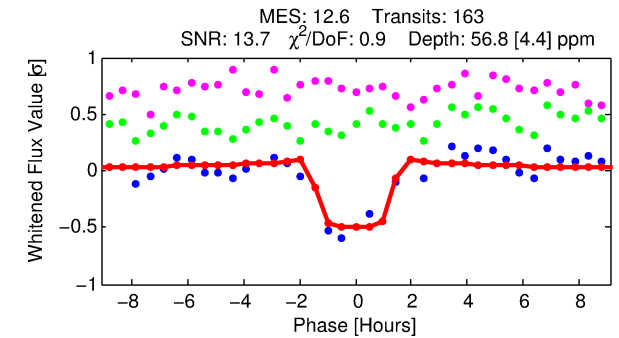
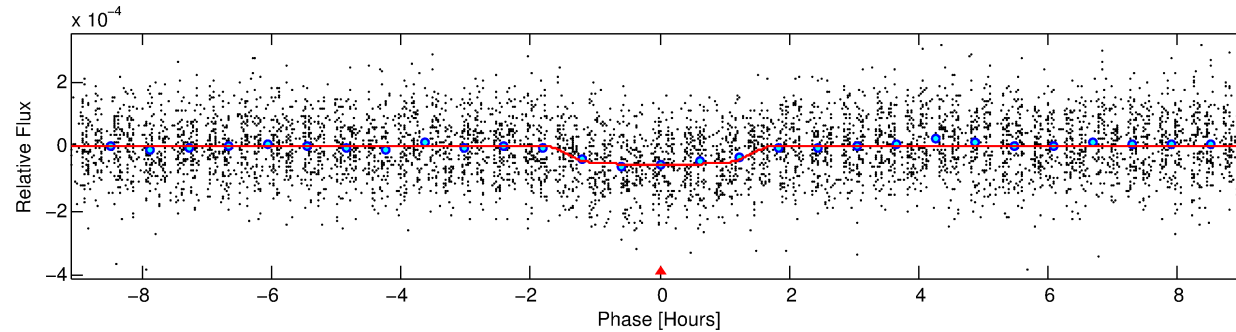
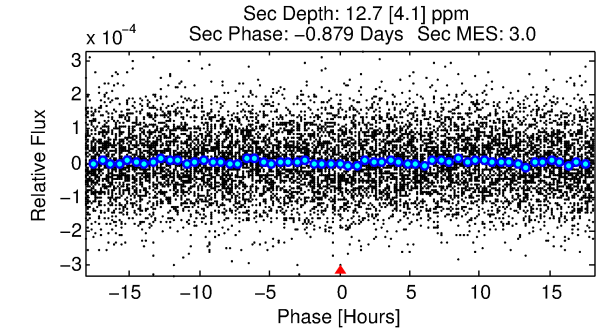
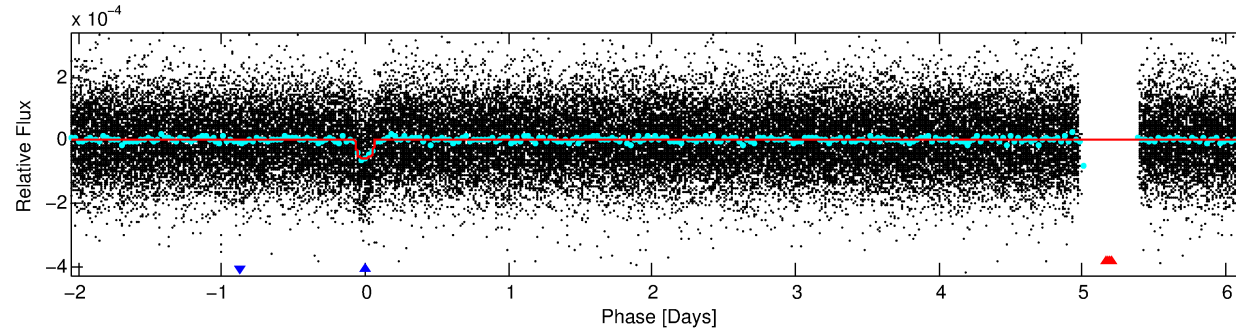
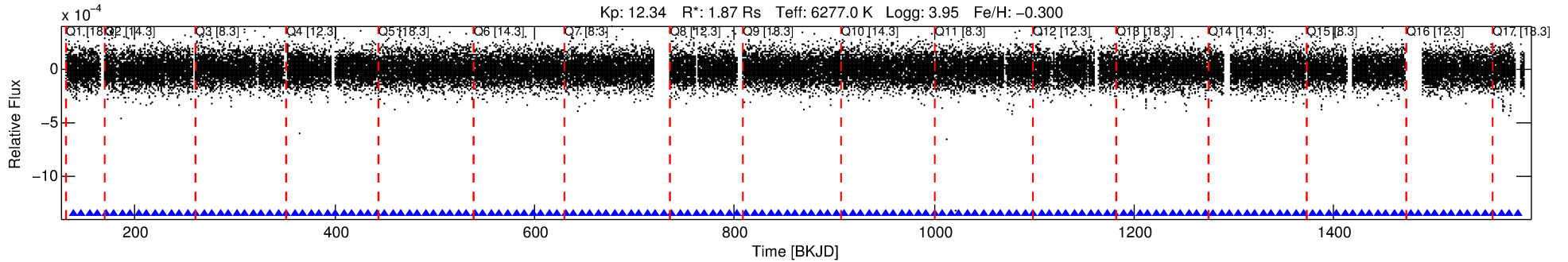
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ($''$)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
009532117-02	9532117	009532123-02	9532123	1:1	12.1	-1	-3	16.36	12.35	999.16	Direct-PRF	0	0.50	0.47

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 9532117 Candidate: 2 of 2 Period: 8.214 d
KOI: K03241 Corr: No Ephemeris Match

Kp: 12.34 R*: 1.87 Rs Teff: 6277.0 K Logg: 3.95 Fe/H: -0.300



DV Fit Results:

Period = 8.21411 [0.00004] d
Epoch = 138.0553 [0.0041] BKJD
Rp/R* = 0.0082 [0.0030]
a/R* = 8.96 [18.11]
b = 0.91 [0.39]
Seff = 701.82 [338.41]
Teq = 1312 [158] K
Rp = 1.67 [0.80] Re
a = 0.0832 [0.0248] AU
Ag = 17.43 [16.03] [1.03σ]
Teff = 4146 [828] K [3.36σ]

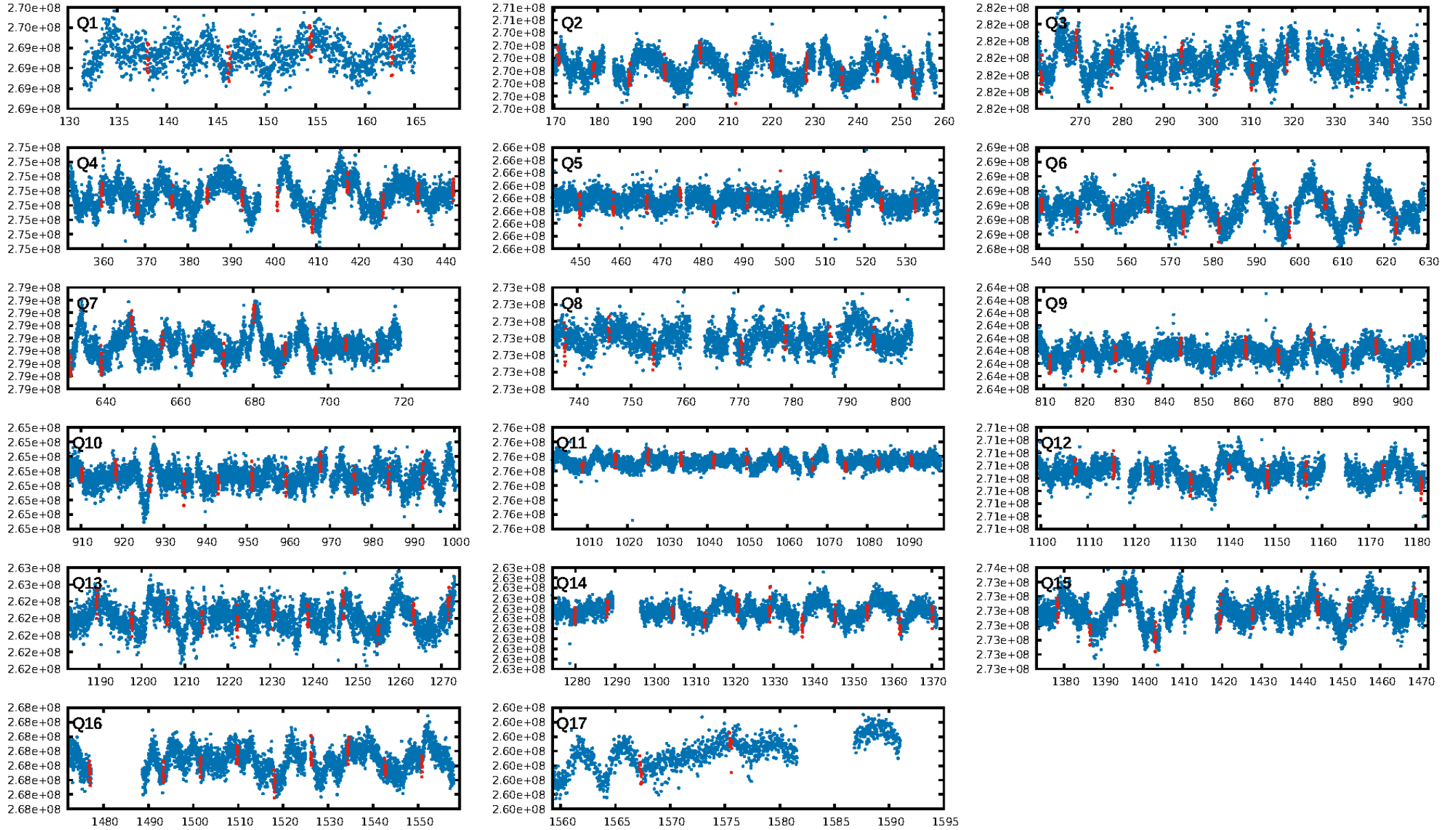
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 85.4%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: 1.40e-34
RollingBand-fgt: 1.00 [157/157]
GhostDiagnostic-chr: -0.1554
Centroid-sig: N/A
Centroid-so: 86.314 arcsec [126.51σ]
OotOffset-rm: 12.324 arcsec [14.80σ]
KicOffset-rm: 12.325 arcsec [16.51σ]
OotOffset-st: 0/4/0/1 [5]
KicOffset-st: 0/4/0/1 [5]
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DiffImageOverlap-fno: 1.00 [17/17]

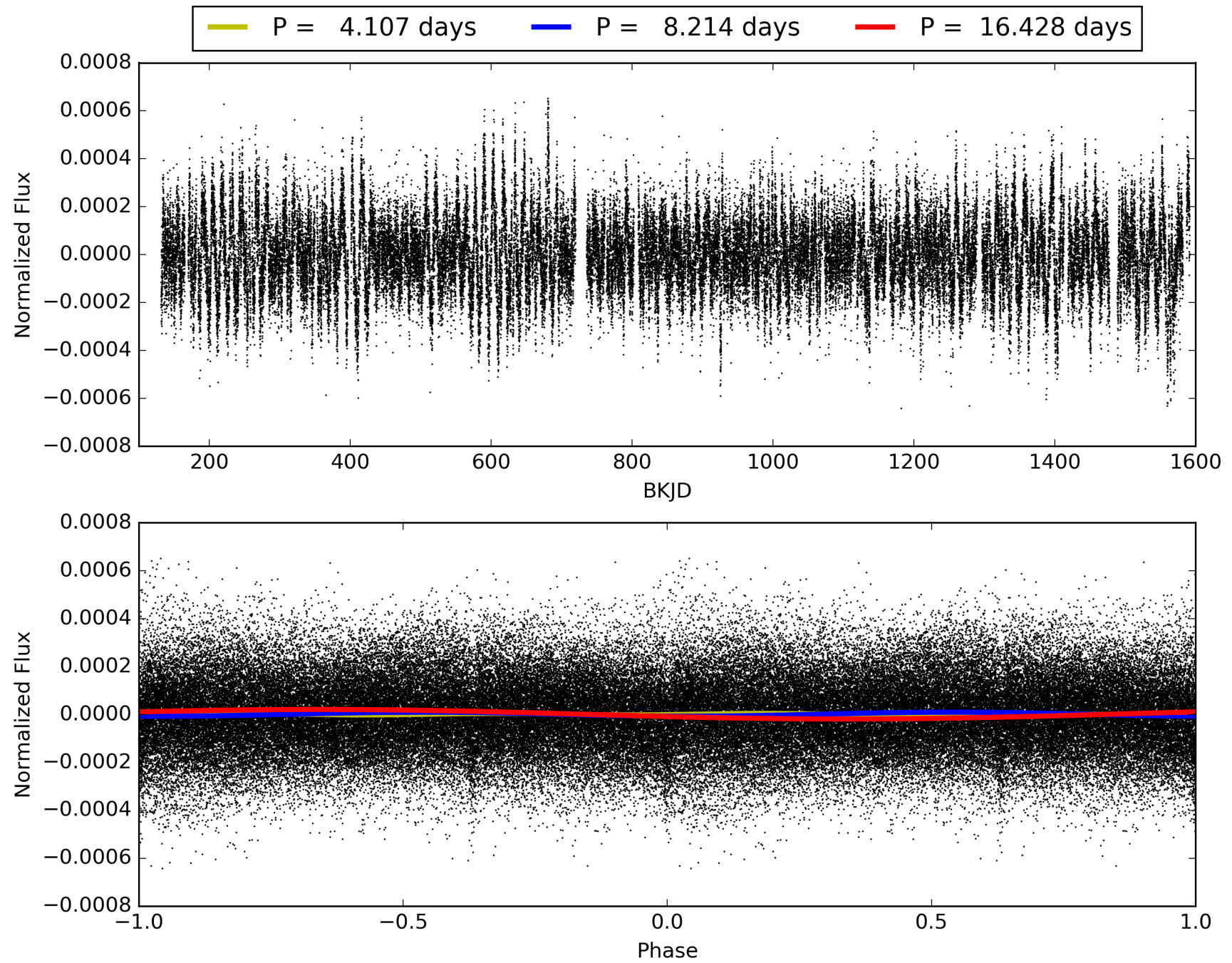
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009532117-02, PDC Light Curves

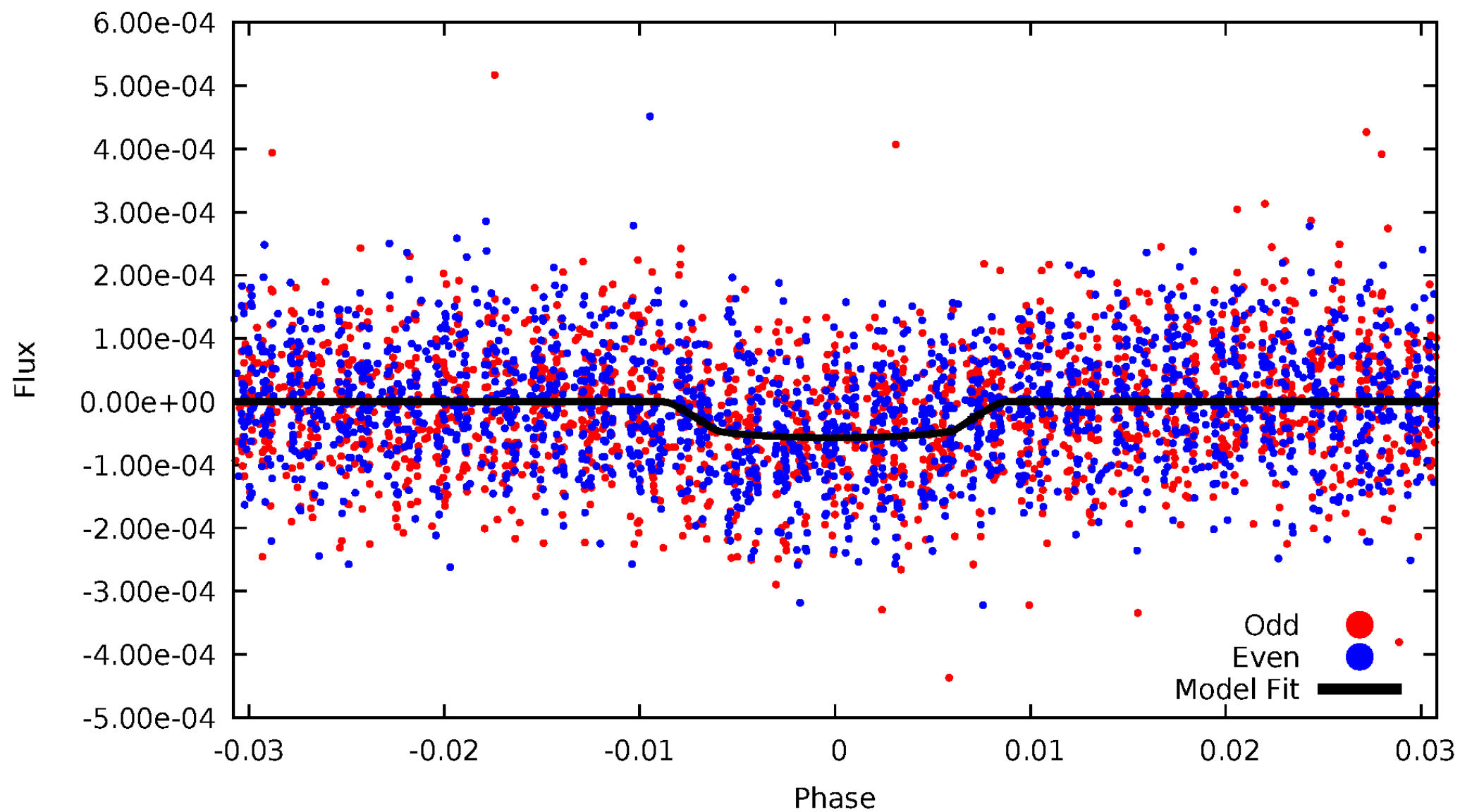


TCE 009532117-02



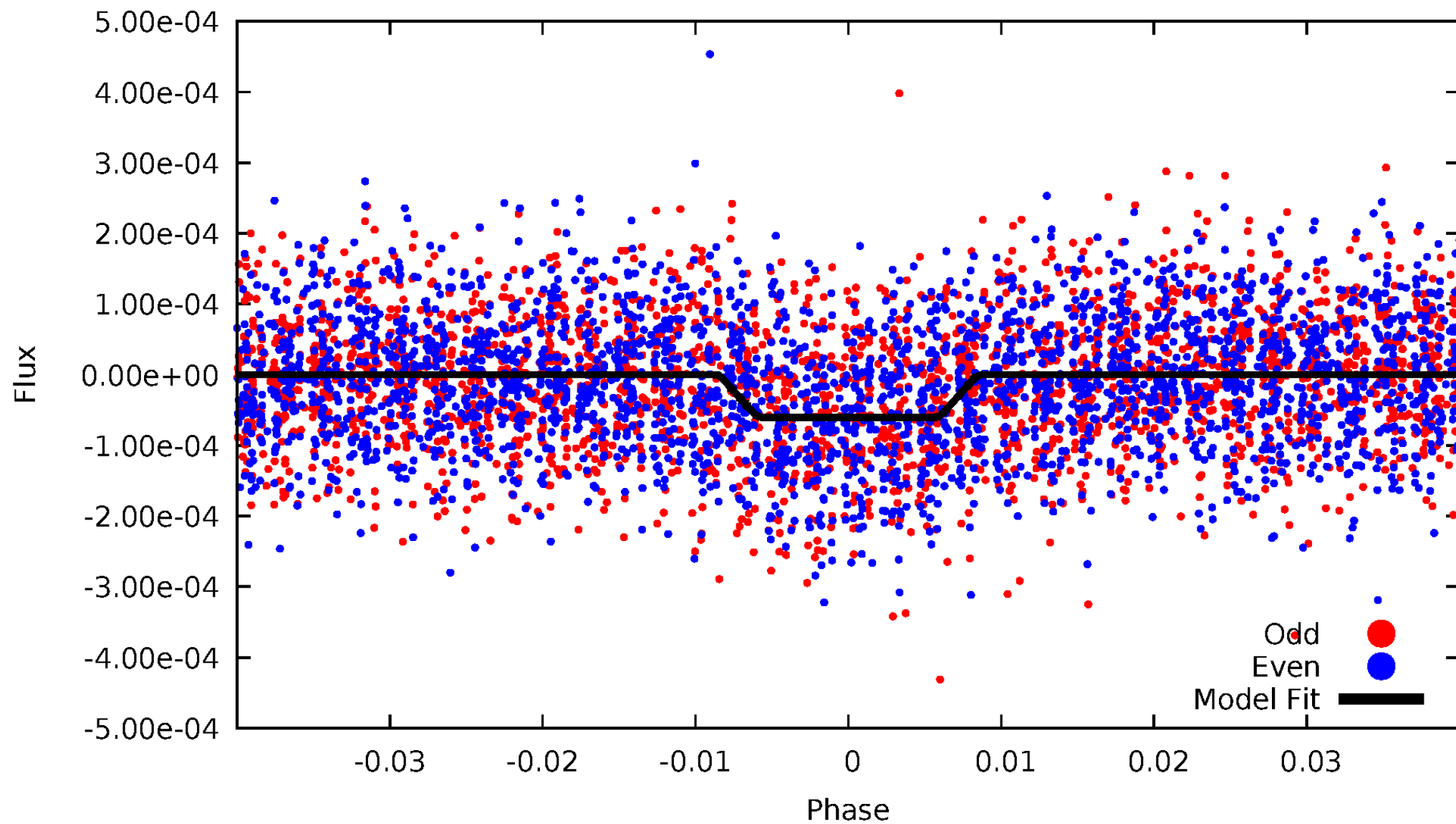
DV Odd/Even

TCE 009532117-02



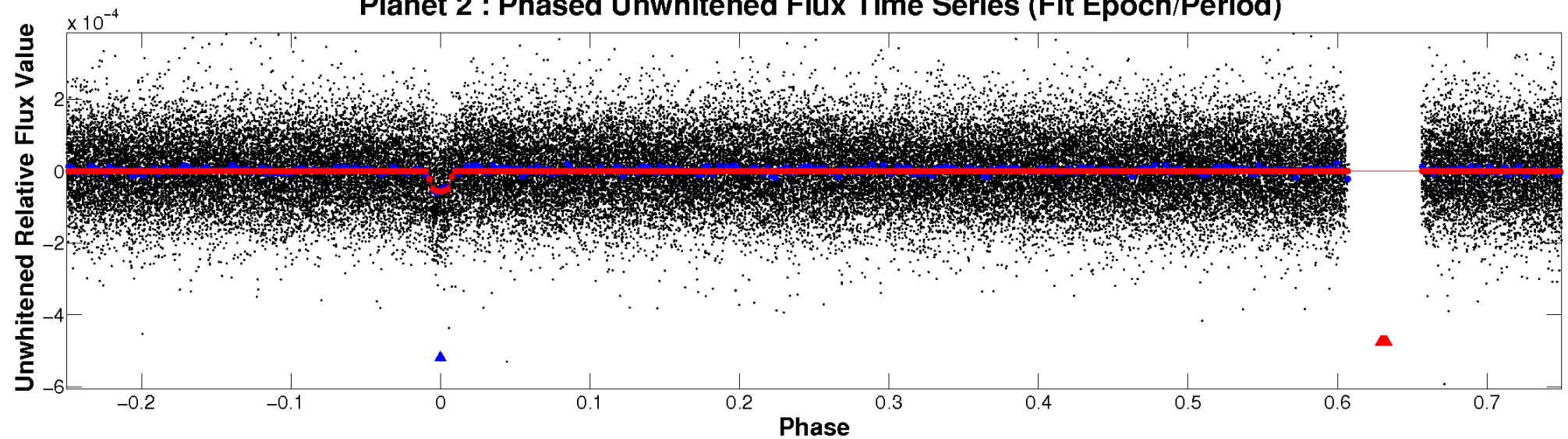
ALT Odd/Even

TCE 009532117-02

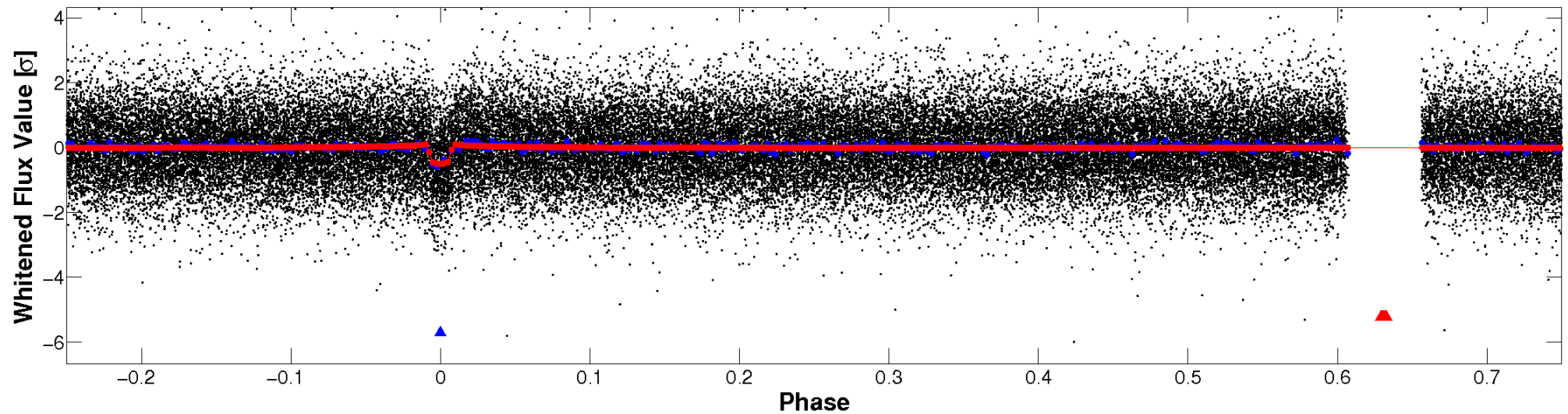


Non-Whitened Vs. Whitened Light Curve

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

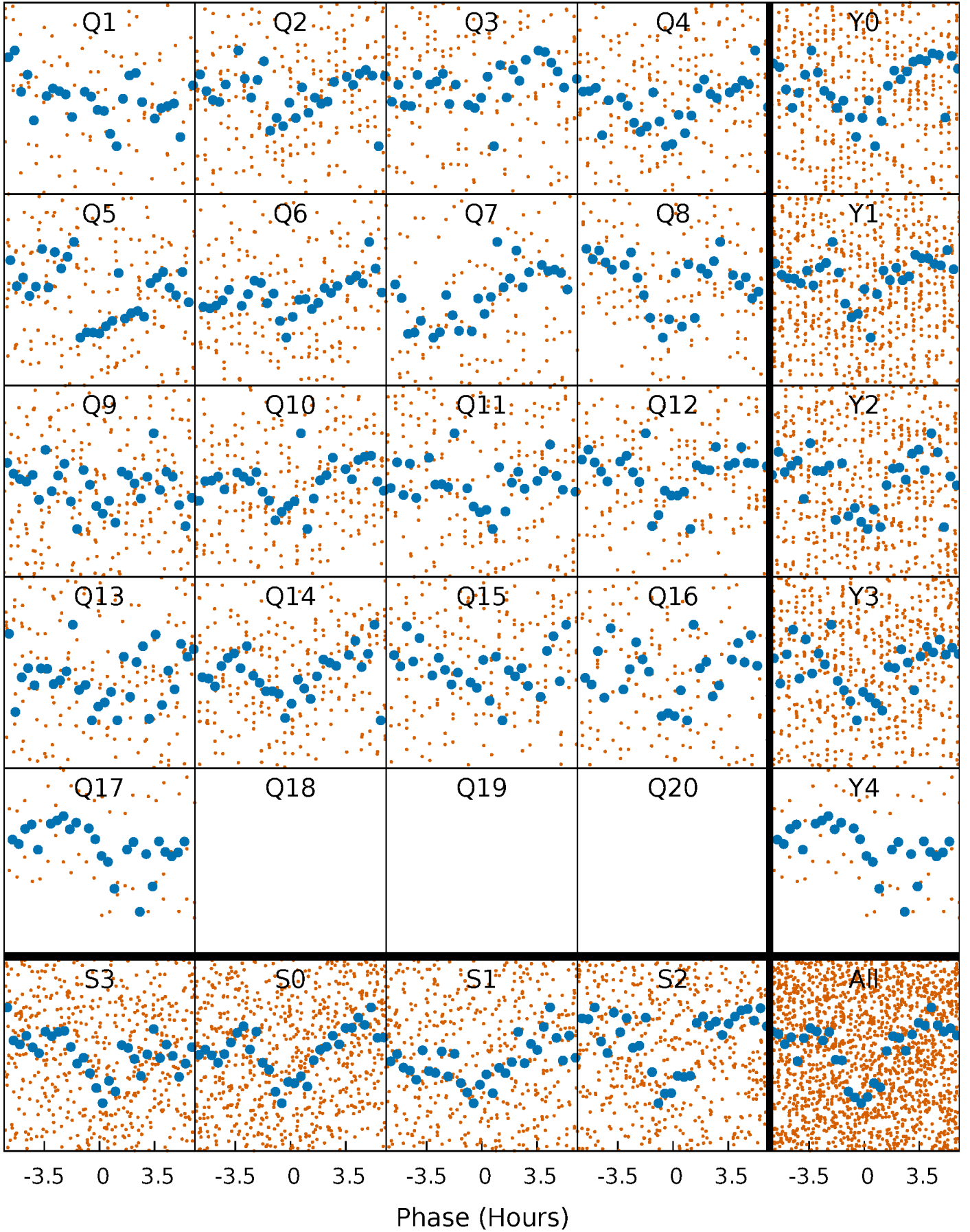


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



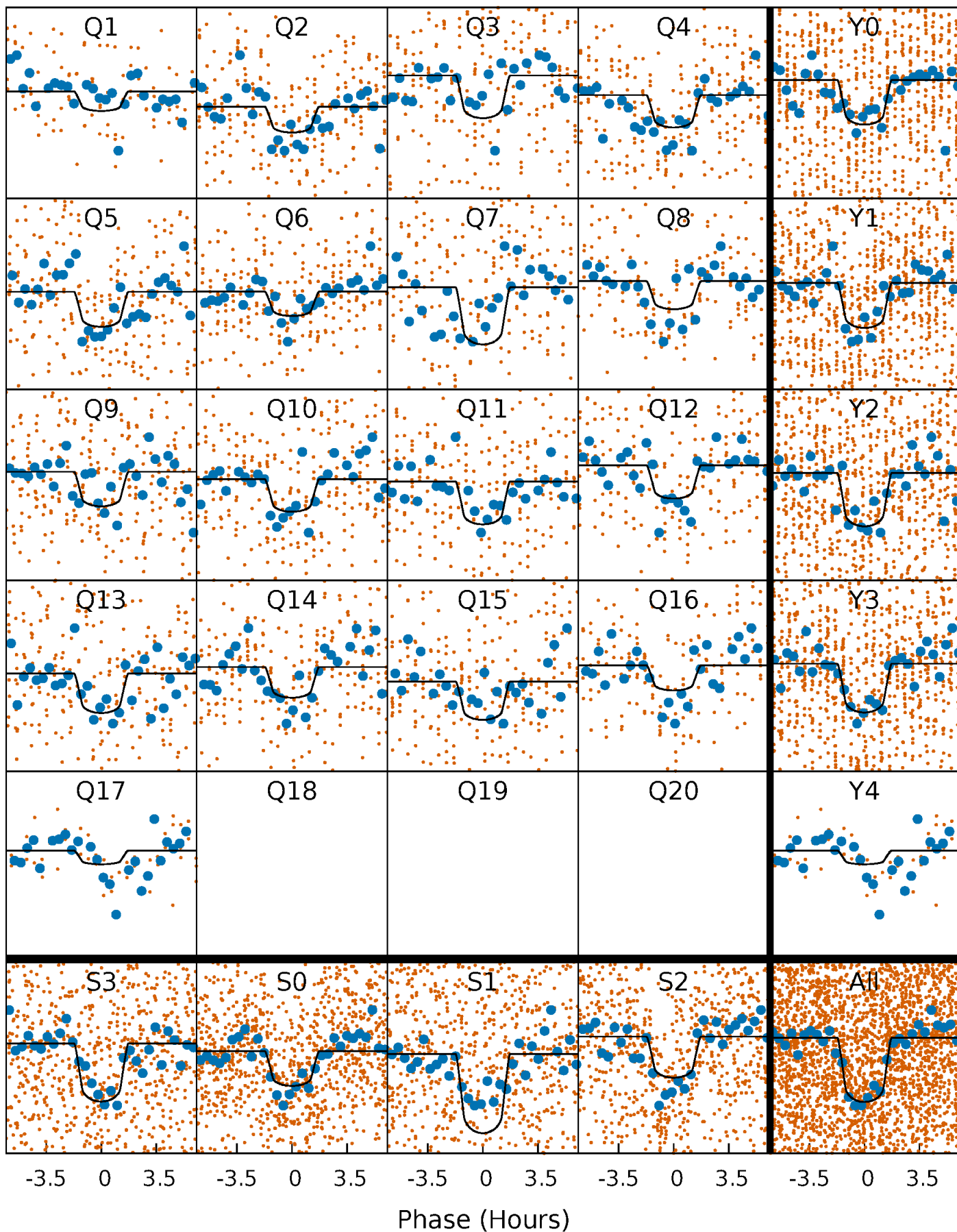
PDC Quarter-Phased Transit Curves

TCE 009532117-02 $P = 8.214114$ Days $T_0 = 138.055260$ (BKJD)



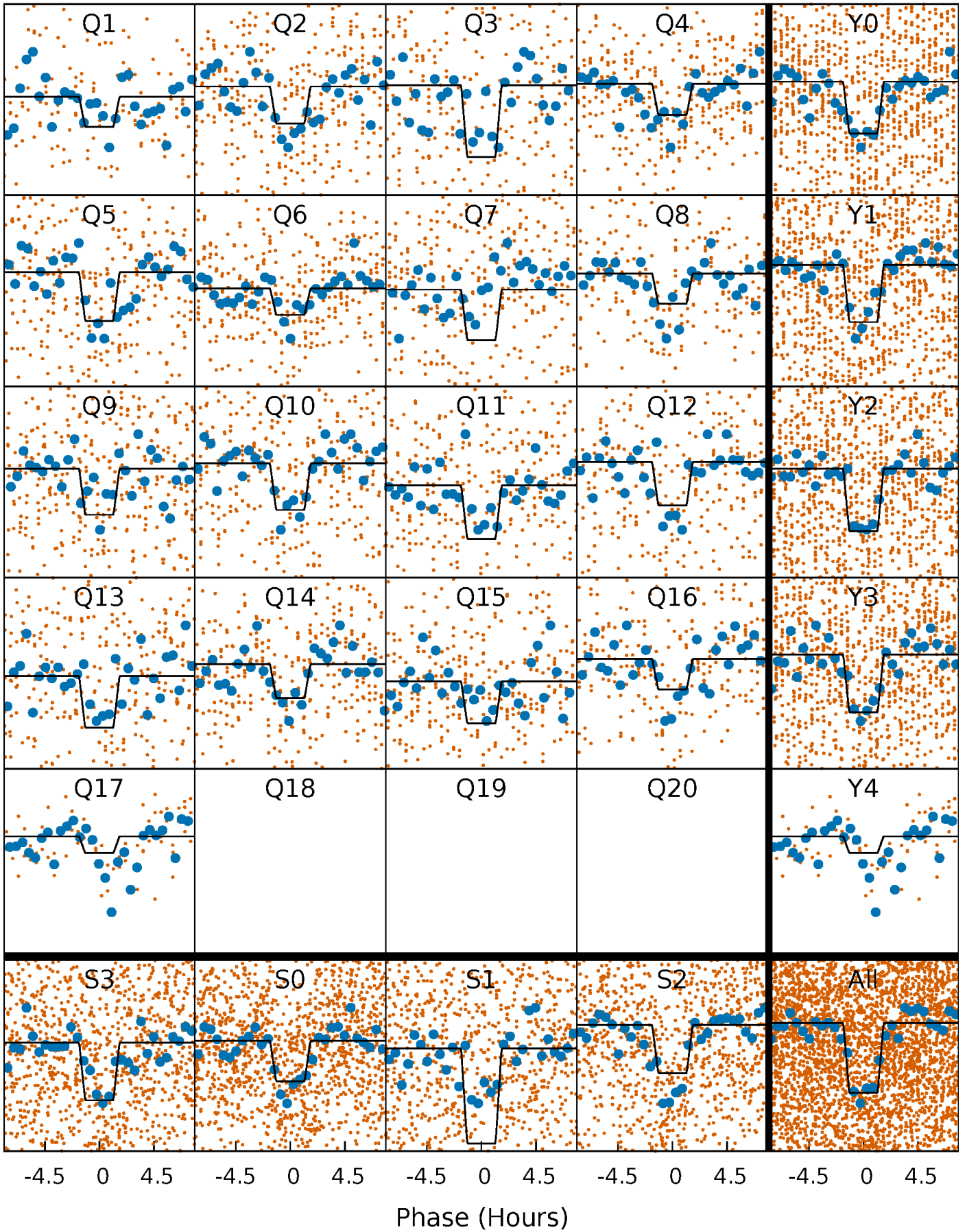
DV Quarter-Phased Transit Curves

TCE 009532117-02 P= 8.214114 Days $T_0=138.055260$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

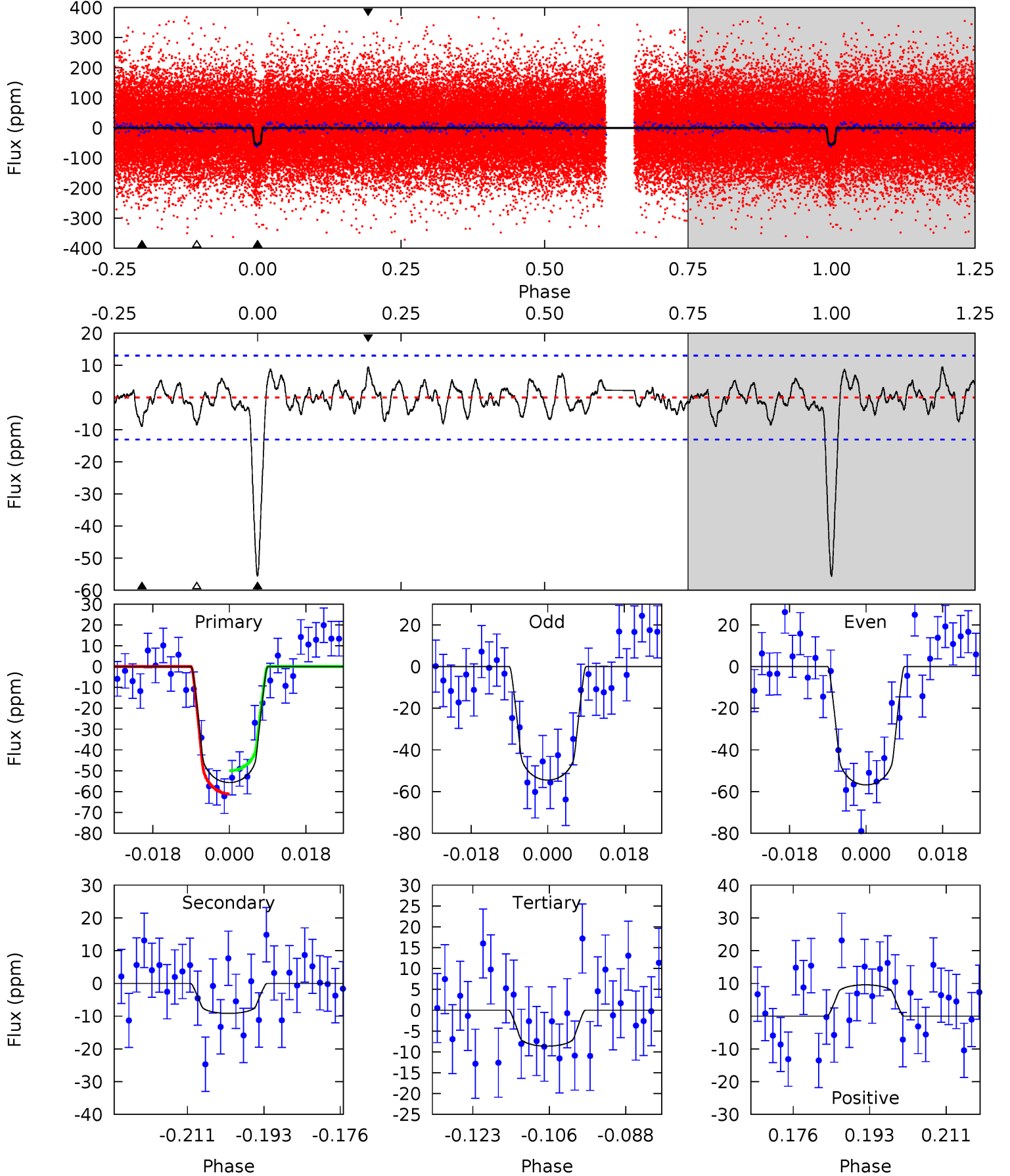
TCE 009532117-02 P= 8.214131 Days $T_0=138.051000$ (BKJD)



DV Model-Shift Uniqueness Test

009532117-02, P = 8.214114 Days, E = 129.841146 Days

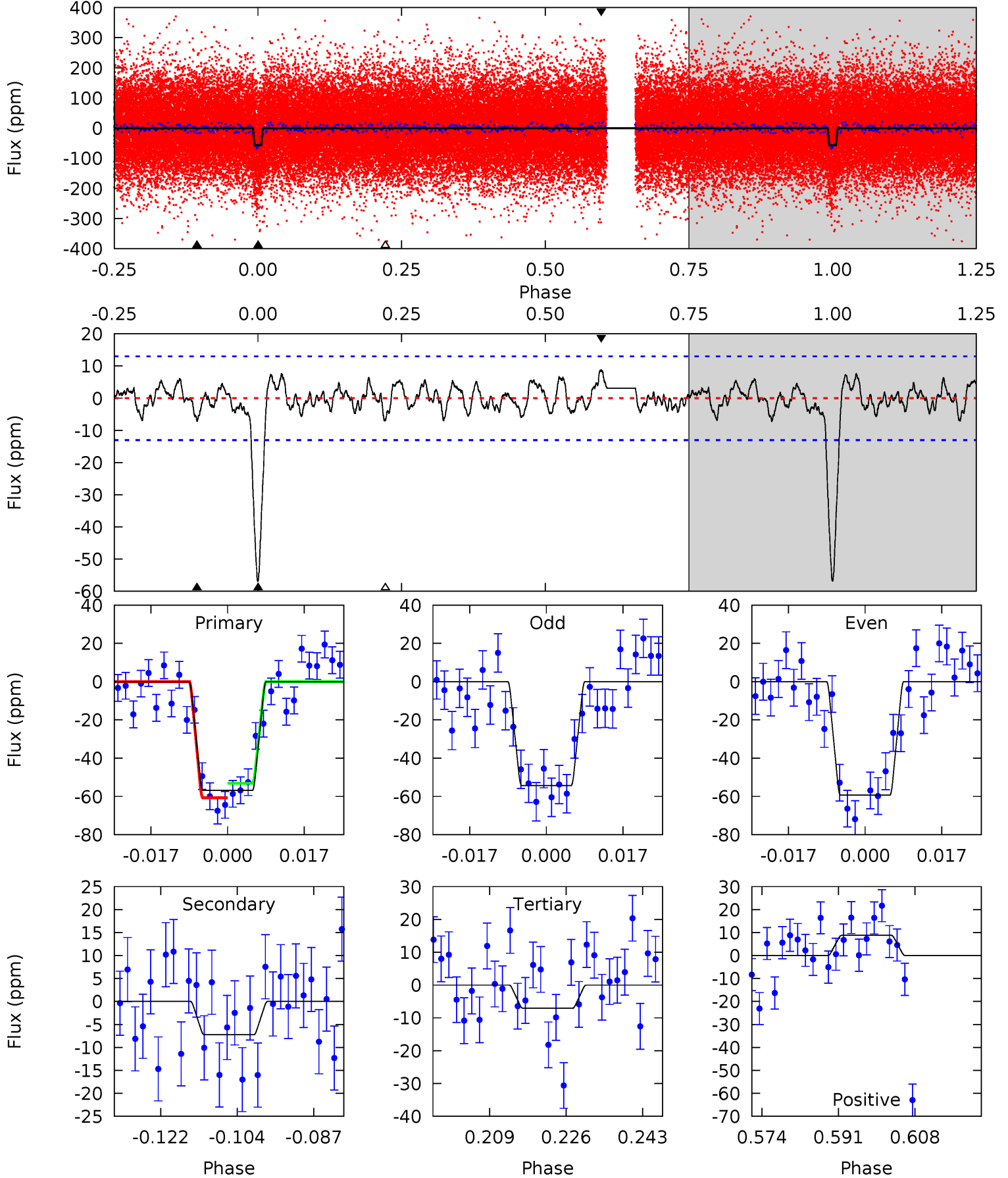
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.0	3.45	3.25	3.60	4.92	2.37	1.25	17.7	17.4	0.20	-0.15	0.44	1.08	0.15	2.09



Alt Model-Shift Uniqueness Test

009532117-02, P = 8.214131 Days, E = 129.836869 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.5	2.74	2.66	3.32	4.92	2.38	1.19	18.8	18.1	0.08	-0.58	0.93	1.00	0.13	1.43



Stellar Parameters For KIC 009532117

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6277^{+174}_{-174}	$3.951^{+0.273}_{-0.117}$	$-0.300^{+0.300}_{-0.300}$	$1.869^{+0.395}_{-0.592}$	$1.138^{+0.210}_{-0.172}$	$0.245^{+0.436}_{-0.087}$
	+3%/-3%	+7%/-3%	+100%/-100%	+21%/-32%	+18%/-15%	+178%/-36%
Source	PHO1	FLK73	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 009532117-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-9 ± 3	$1.62^{+0.68}_{-0.64}$	1807^{+117}_{-148}	4039^{+818}_{-455}	13^{+24}_{-7}
Alt.	-7 ± 3	$1.52^{+0.66}_{-0.60}$	1813^{+104}_{-155}	3975^{+837}_{-479}	12^{+23}_{-7}

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 $A_{obs} \gg 1.0$

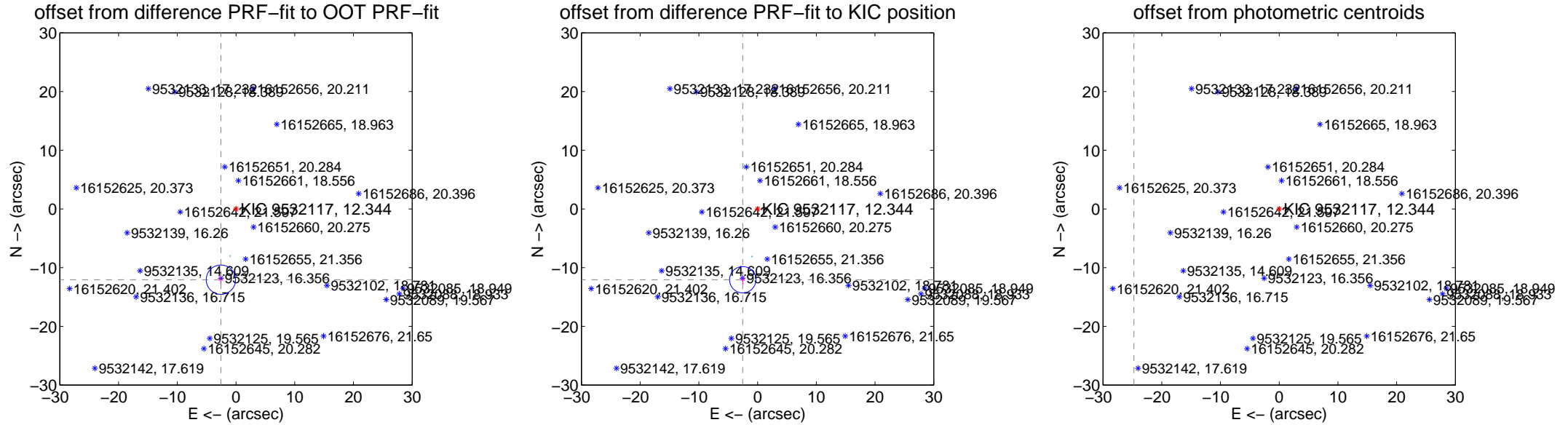
DV Centroid Data

Supplemental centroid analysis for 009532117-02. Kepler magnitude: 12.34. Transit SNR 13.72

There are 5 quarters with good PRF difference image offsets

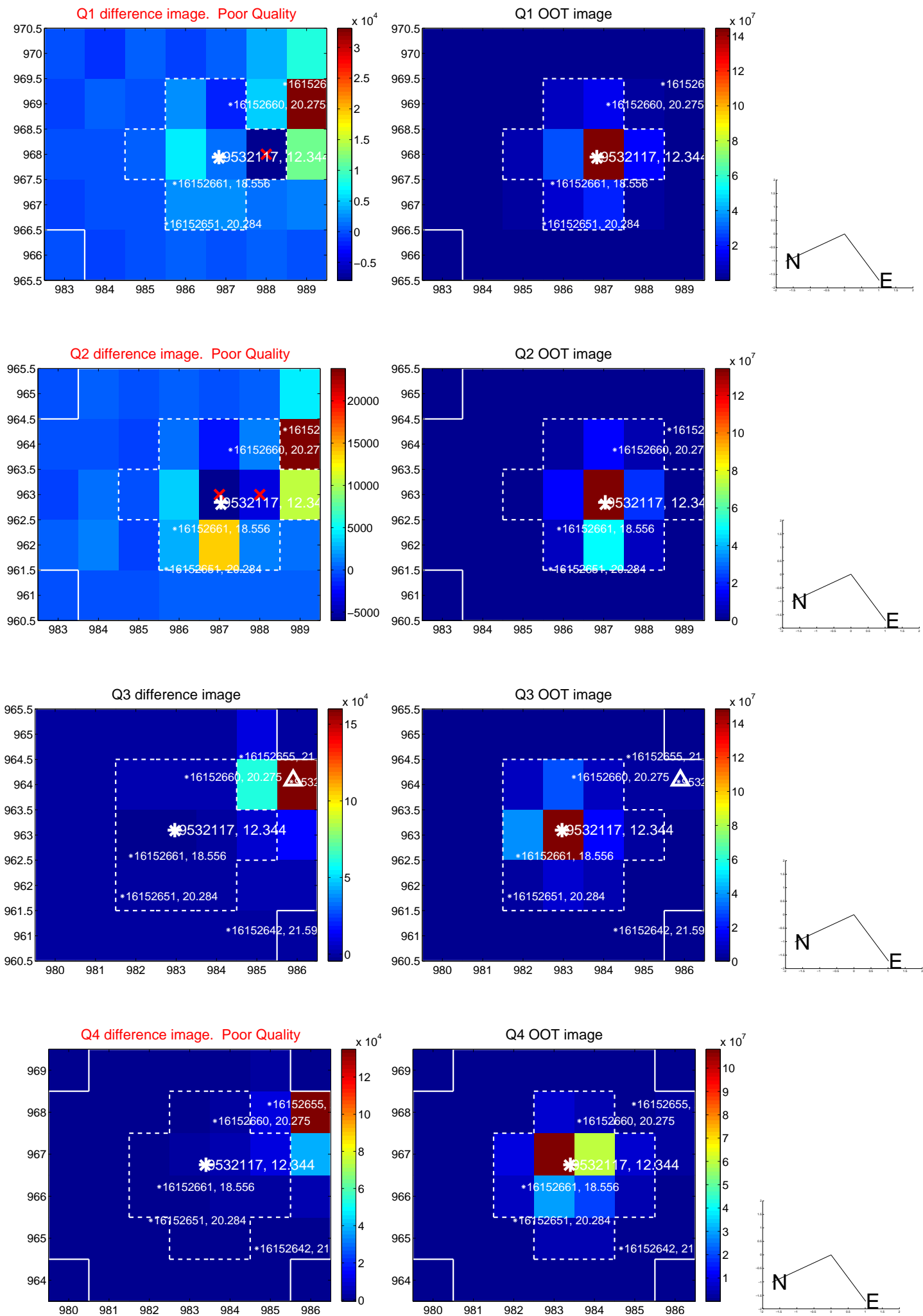
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	12.324 \pm 0.833	14.80	2.567 \pm 0.316	-12.054 \pm 0.786
PRF-fit source offset from KIC position	12.325 \pm 0.746	16.51	2.528 \pm 0.291	-12.063 \pm 0.703
photometric centroid source offset	86.32 \pm 0.68	126.51	24.73 \pm 0.59	-82.70 \pm 0.69

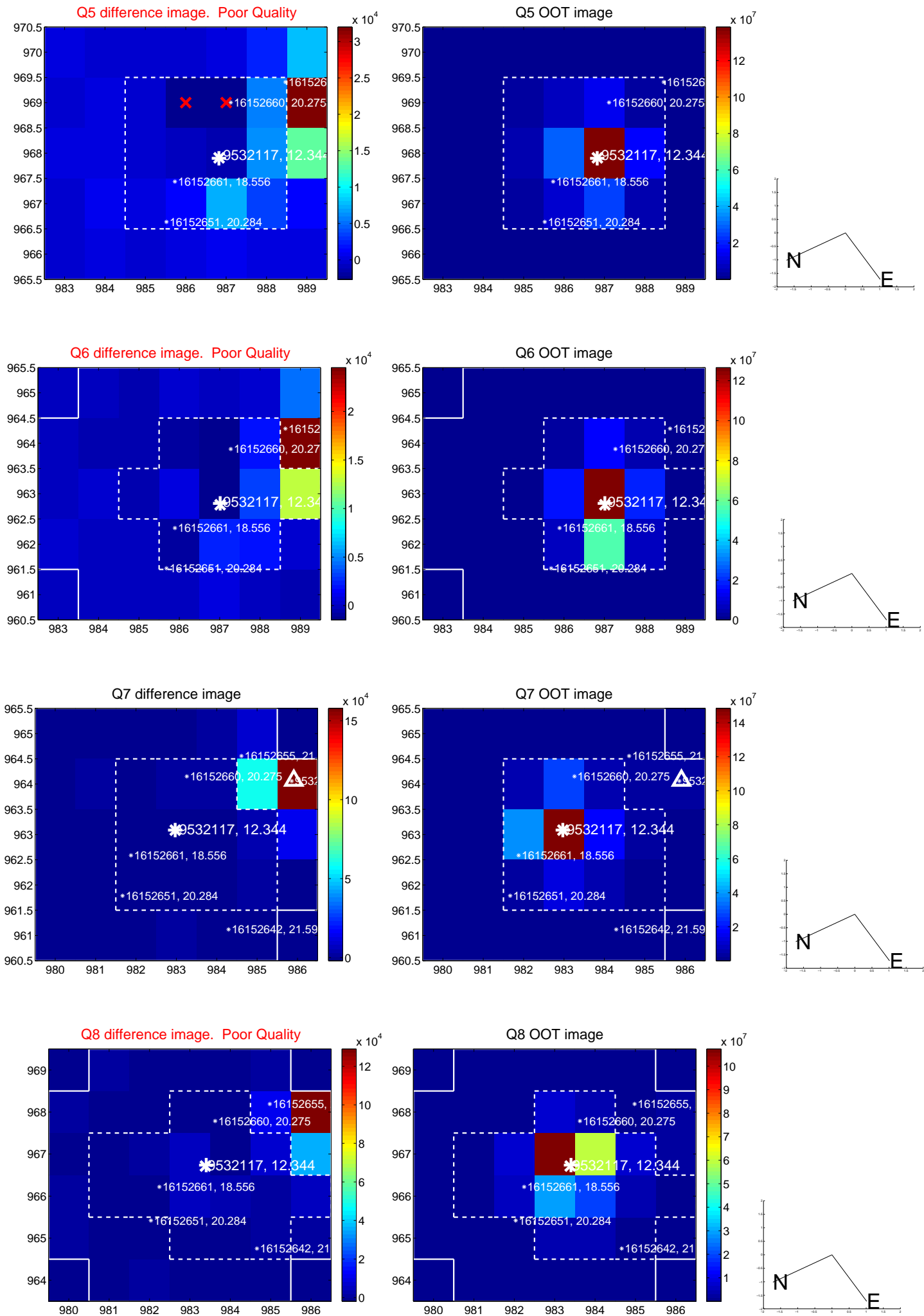


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

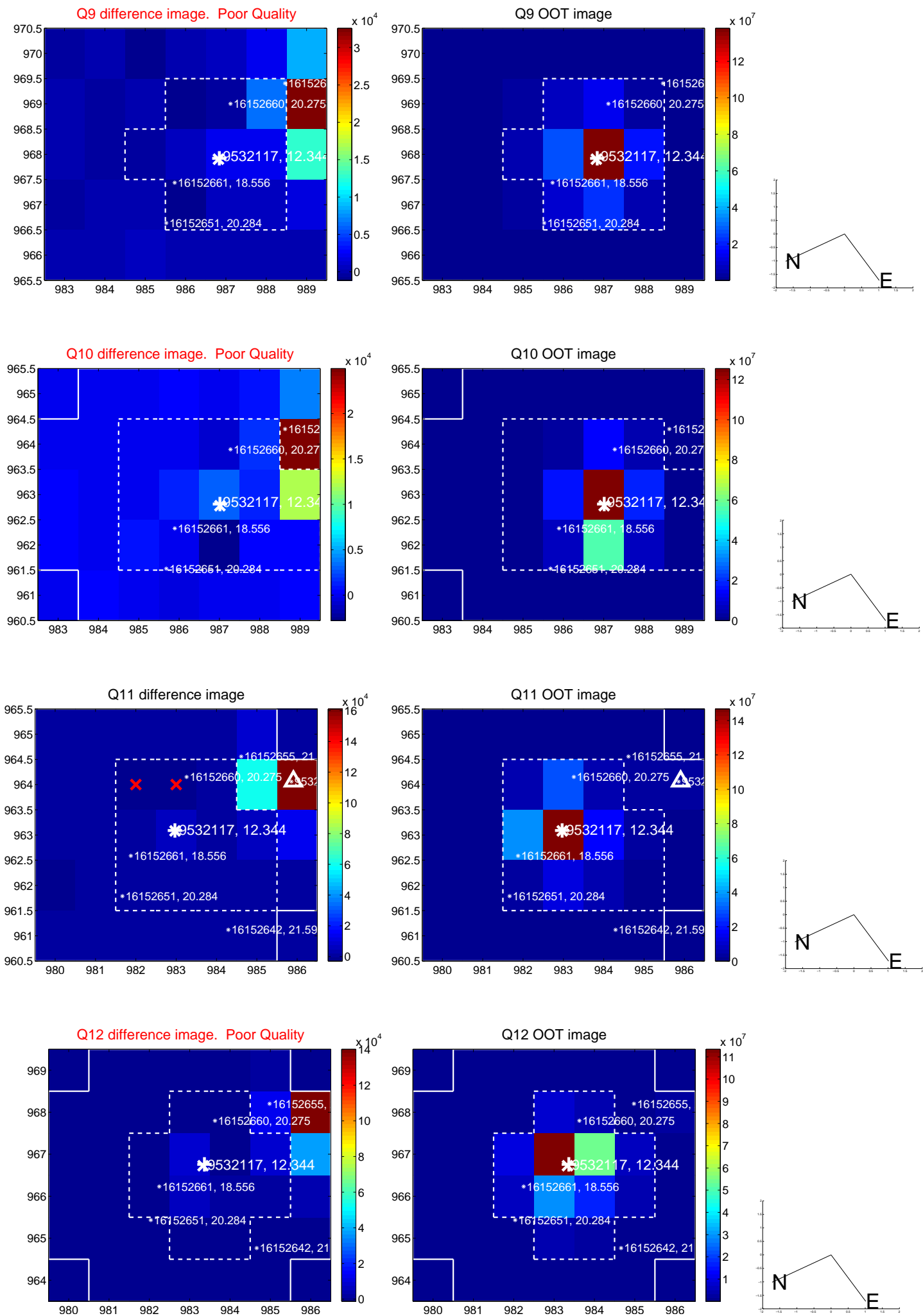
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



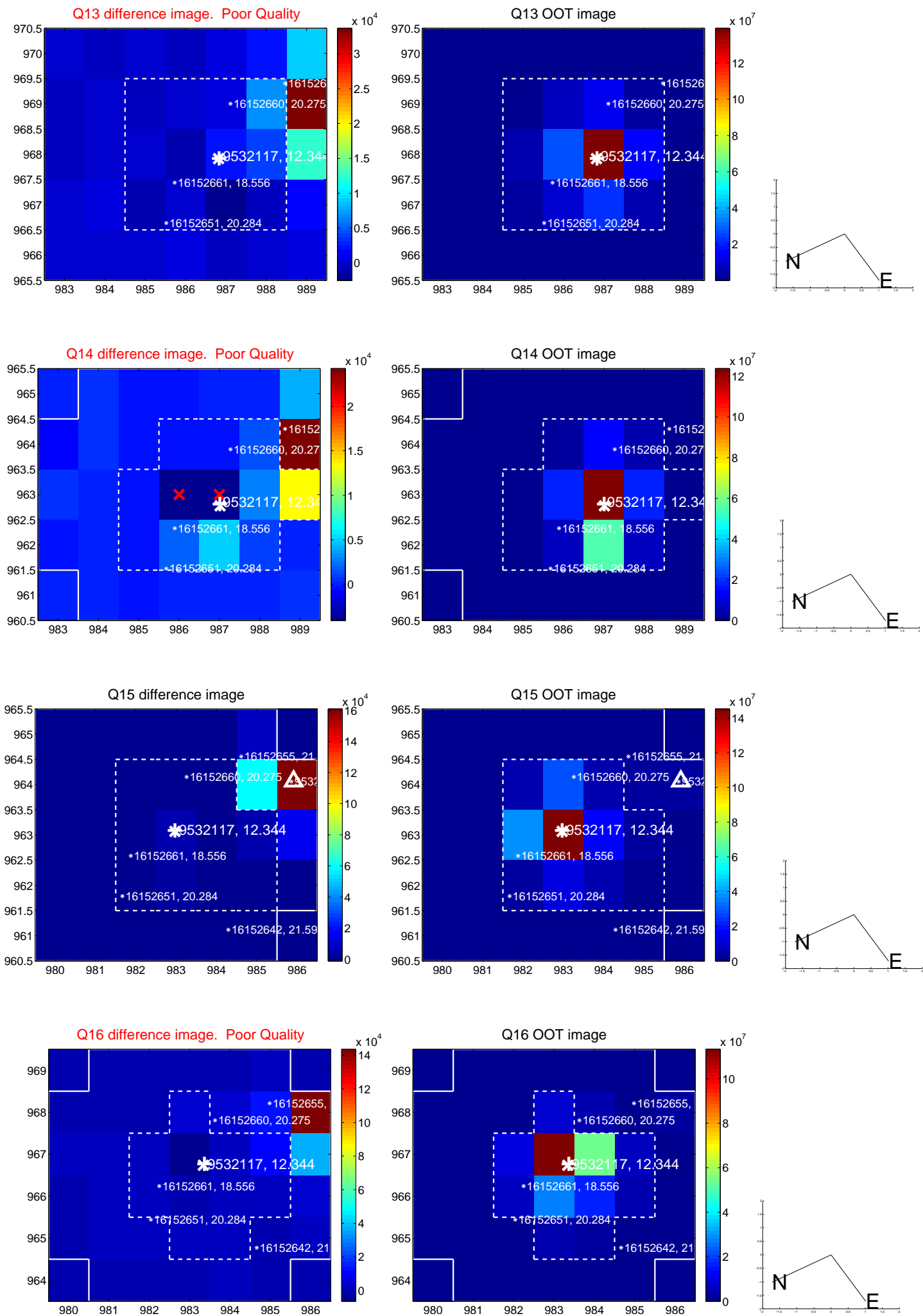
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



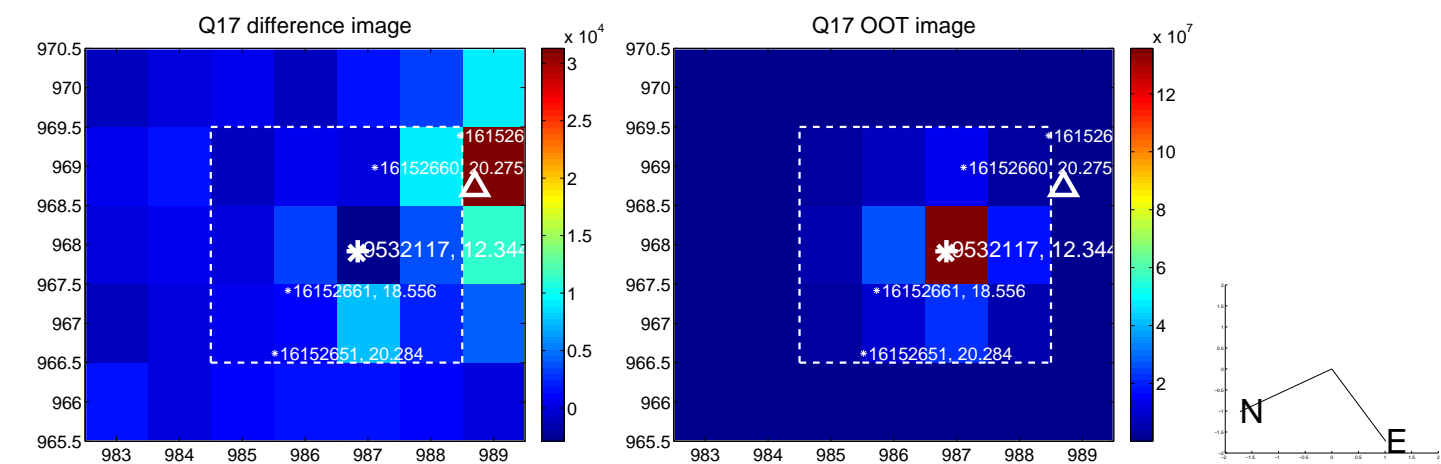
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



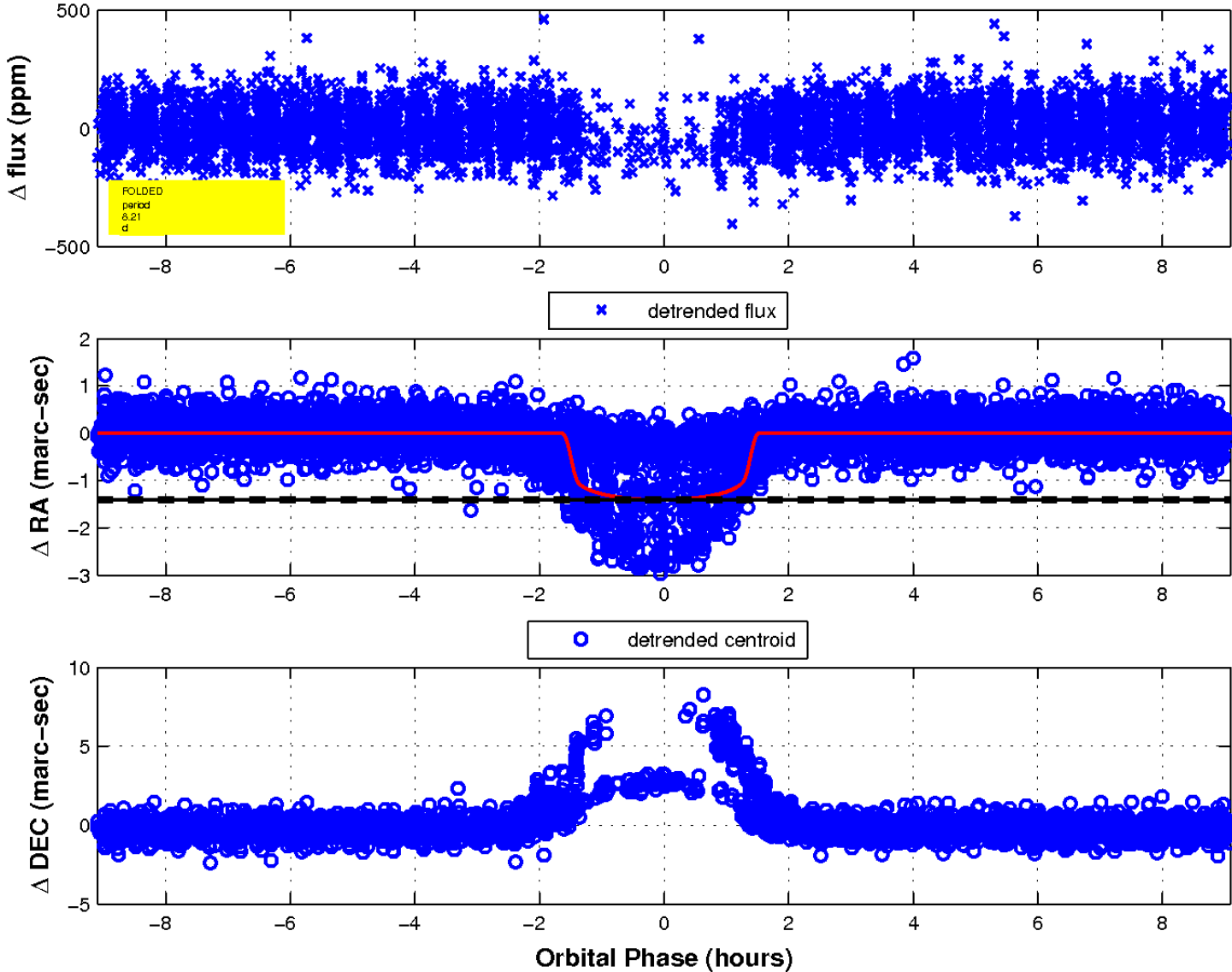
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

