

KIC 012643589

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})
012643589-01	OBS	0376.01	44.145906	167.388196	3954.7	3.755	93.0	87.9	1.15	6692	13.11	35.94
012643589-02	OBS	0376.02	1.411637	131.676611	292.4	1.095	32.8	42.9	1.15	6692	2.32	3540.97
012643589-03	OBS	No	0.705923	131.667817	40.6	1.451	9.4	7.8	1.15	6692	0.80	8920.93

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012643589-01	OBS	FP	0.00	0	1	1	1	DEEP_V_SHAPED—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
012643589-02	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
012643589-03	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

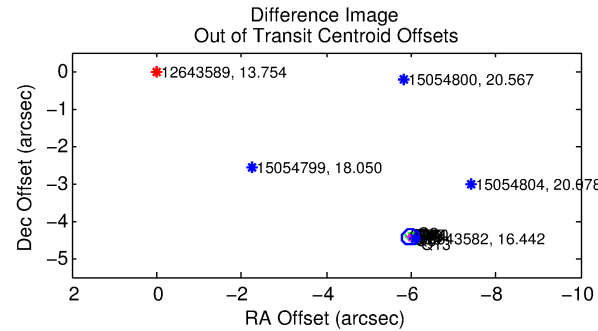
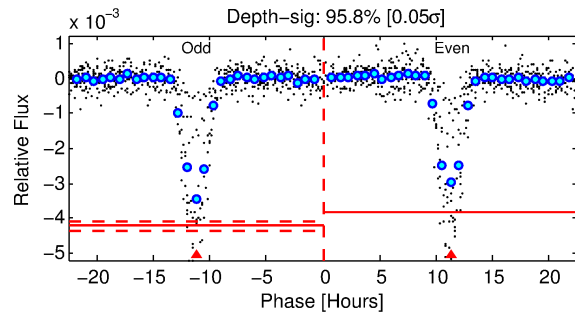
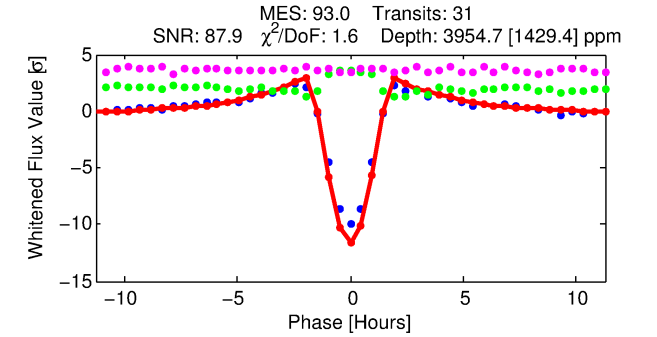
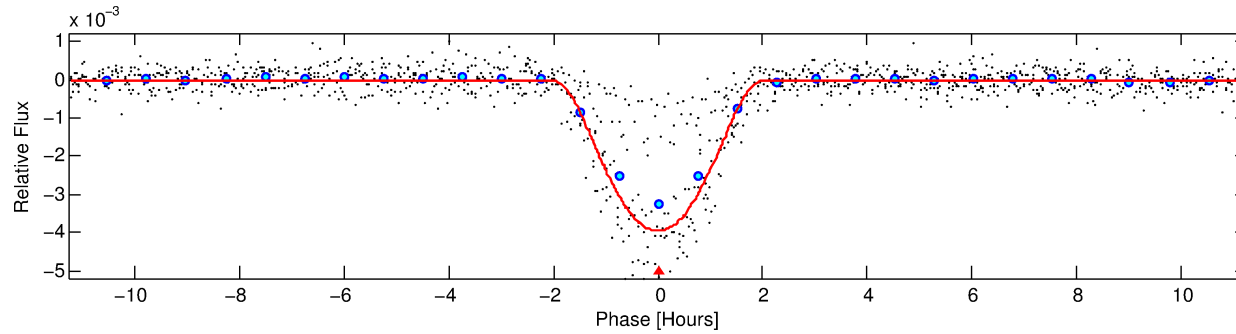
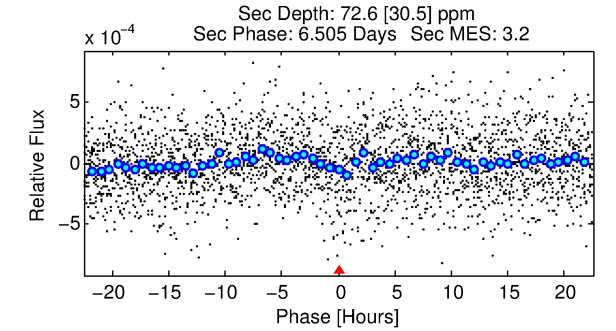
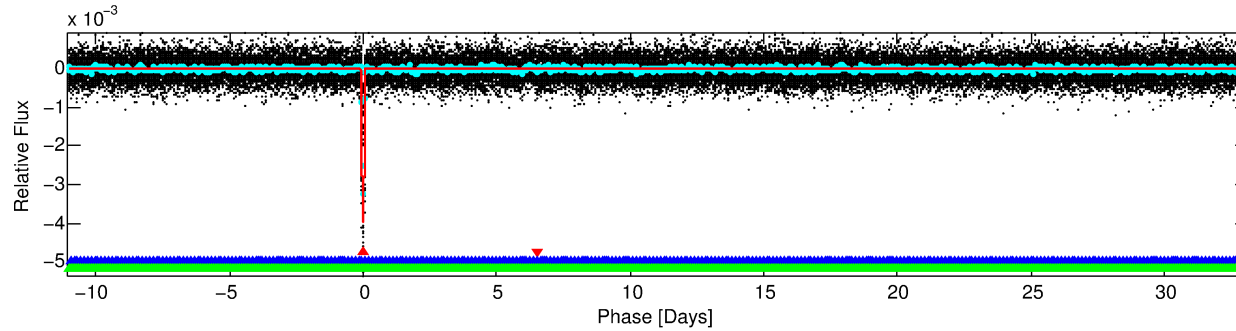
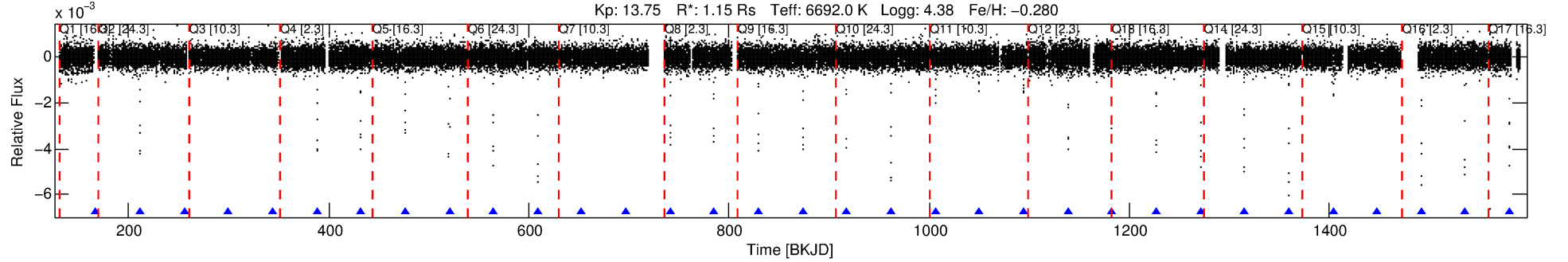
Ephemeris Match Information For 012643589-01

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist (μ)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
012643589-01	12643589	3626.01	12643582	1:1	7.5	-1	2	16.44	13.75	65.67	Direct-PRF	0	0.06	0.08

Notes: P₁:P₂ 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. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ 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: 12643589 Candidate: 1 of 3 Period: 44.146 d
KOI: K00376.01 Corr: 0.979



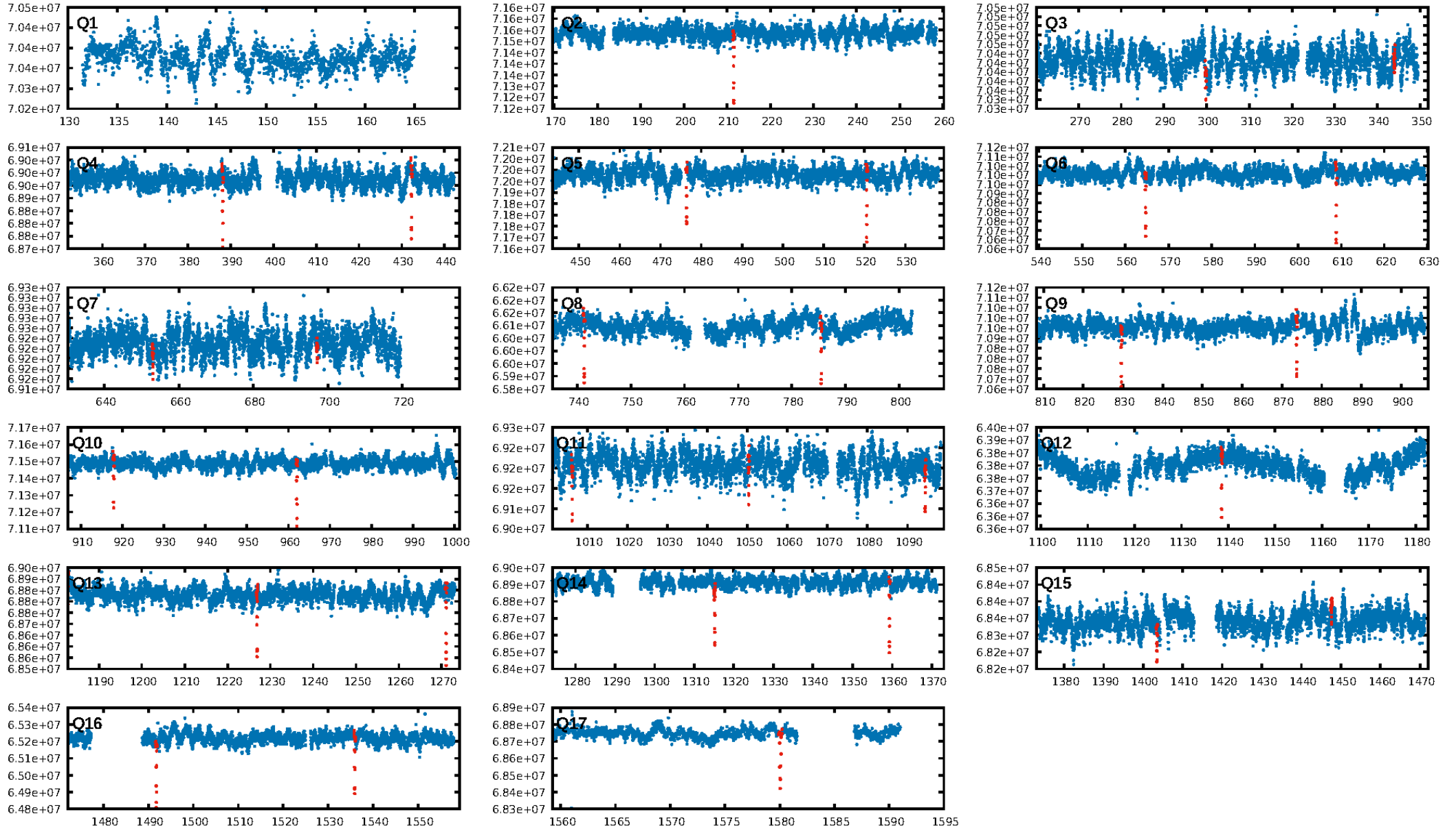
DV Fit Results:

Period = 44.14591 [0.00005] d
Epoch = 167.3882 [0.0010] BKJD
Rp/R* = 0.1043 [0.0454]
a/R* = 42.09 [3.69]
b = 1.00 [0.09]
Seff = 35.94 [14.65]
Teq = 624 [64] K
Rp = 13.11 [7.12] Re
a = 0.2576 [0.0693] AU
Ag = 15.41 [16.05] [0.90σ]
Teff = 1913 [467] K [2.73σ]

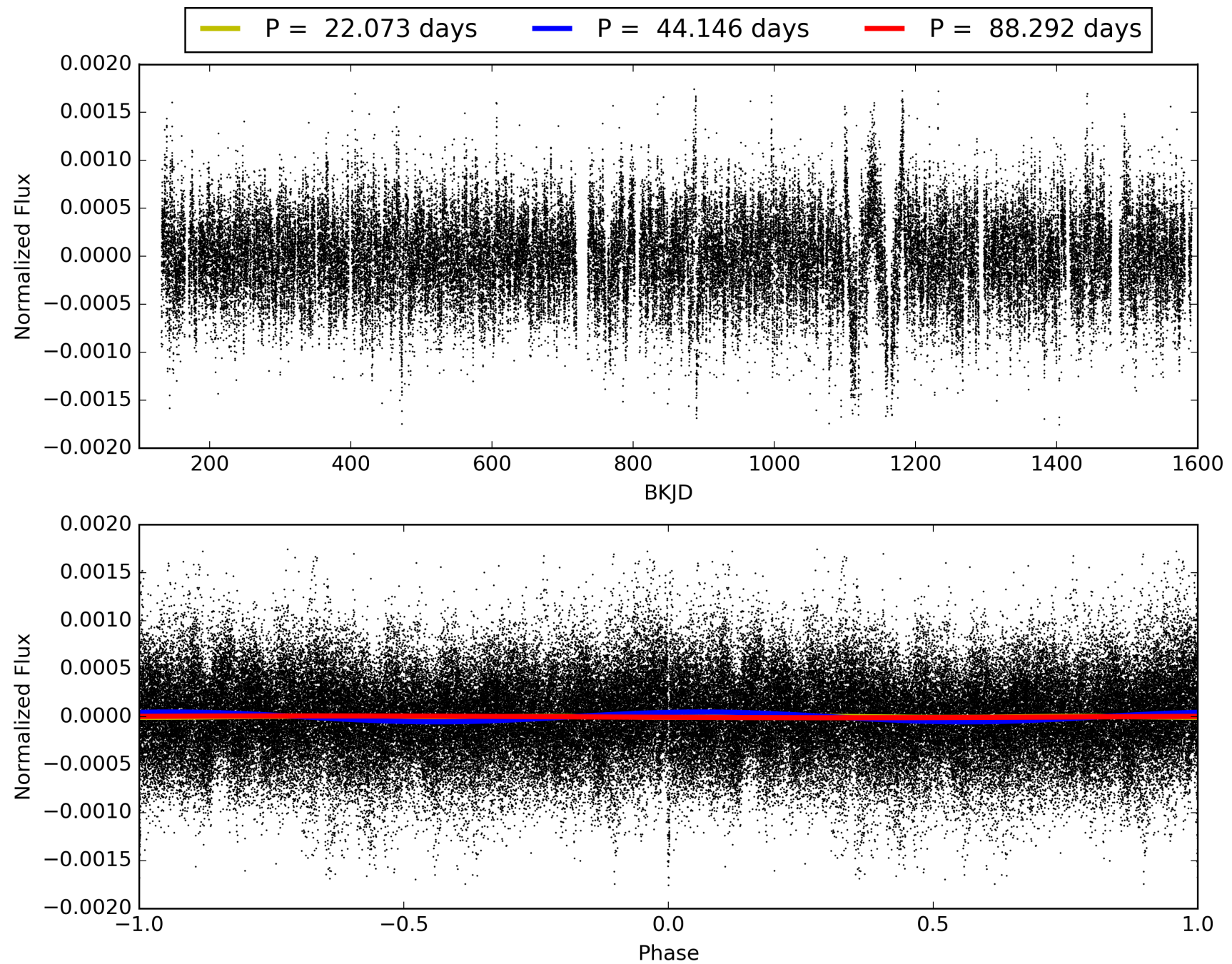
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [262.23σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [30/30]
GhostDiagnostic-chr: -0.1463
Centroid-sig: 0.0%
Centroid-so: 18.183 arcsec [242.02σ]
OotOffset-rm: 7.441 arcsec [107.29σ]
KicOffset-rm: 7.441 arcsec [106.32σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 0.00 [0/16]

TCE 012643589-01, PDC Light Curves

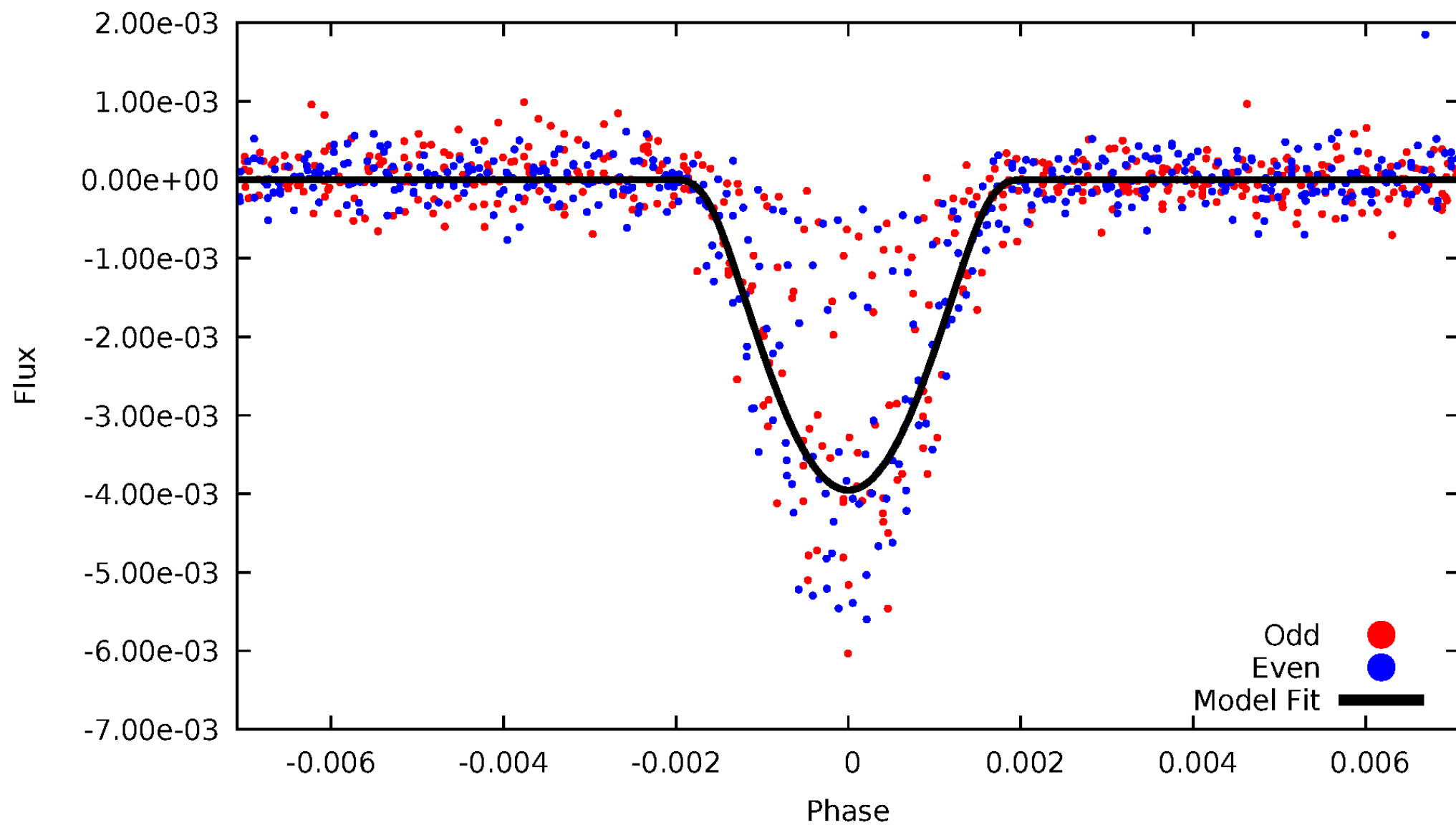


TCE 012643589-01



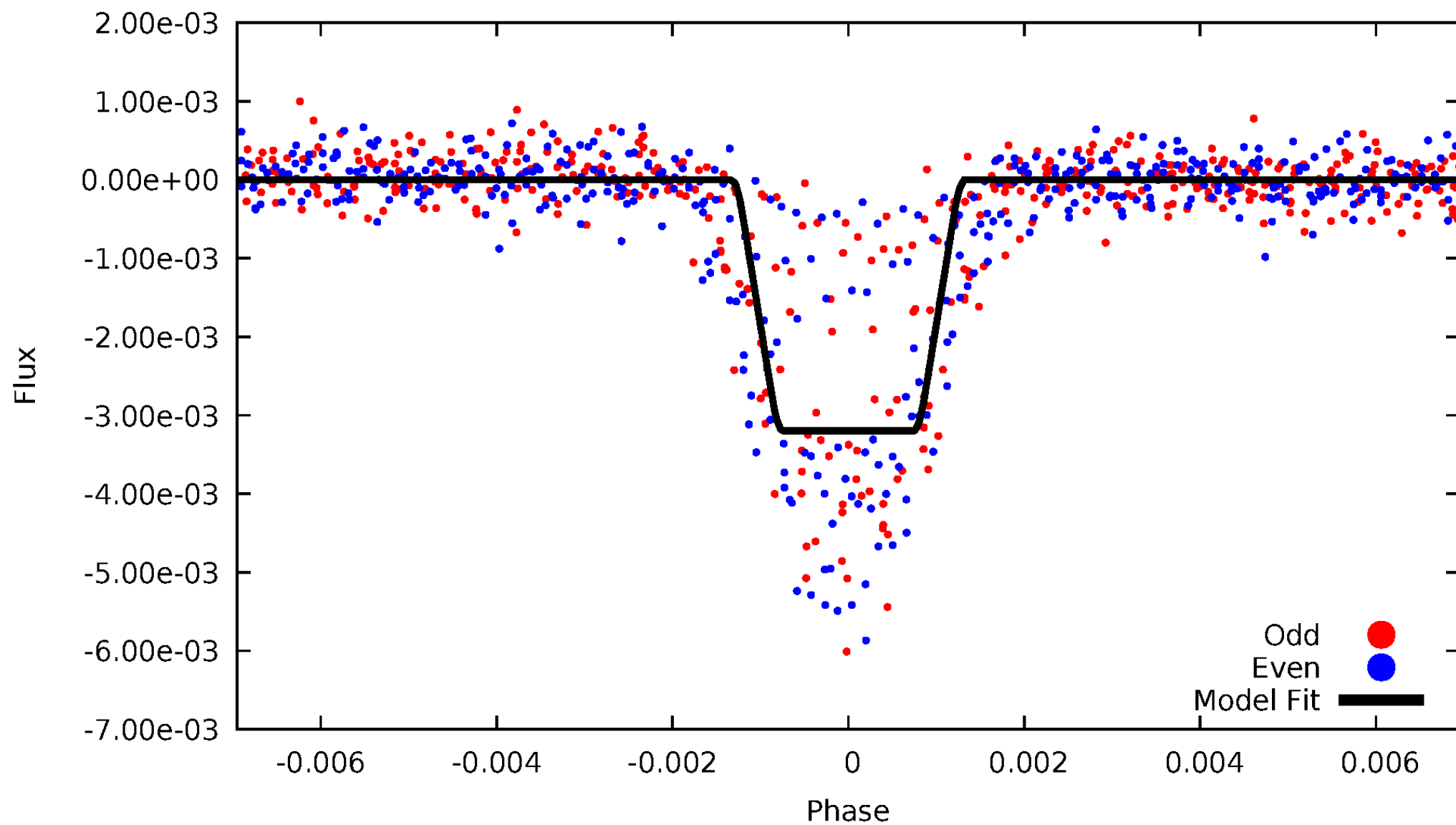
DV Odd/Even

TCE 012643589-01



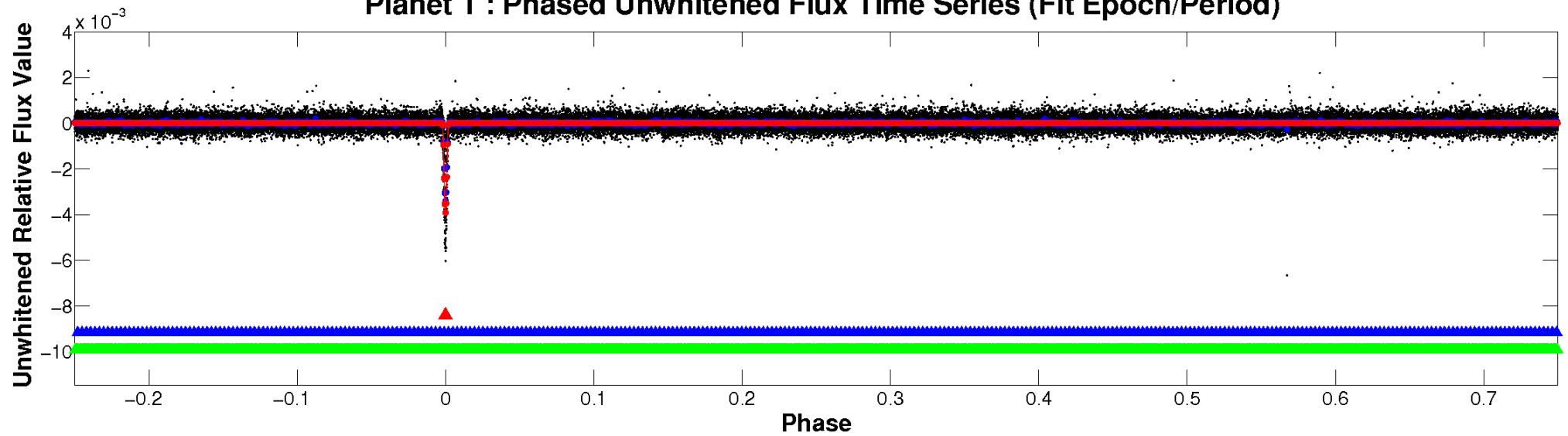
ALT Odd/Even

TCE 012643589-01

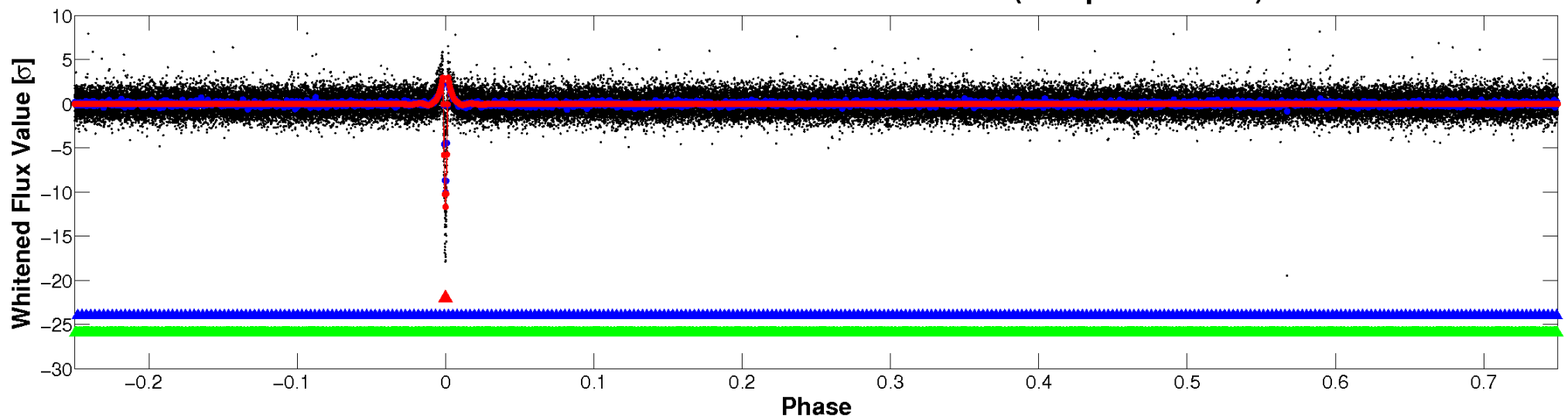


Non-Whitened Vs. Whitened Light Curve

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

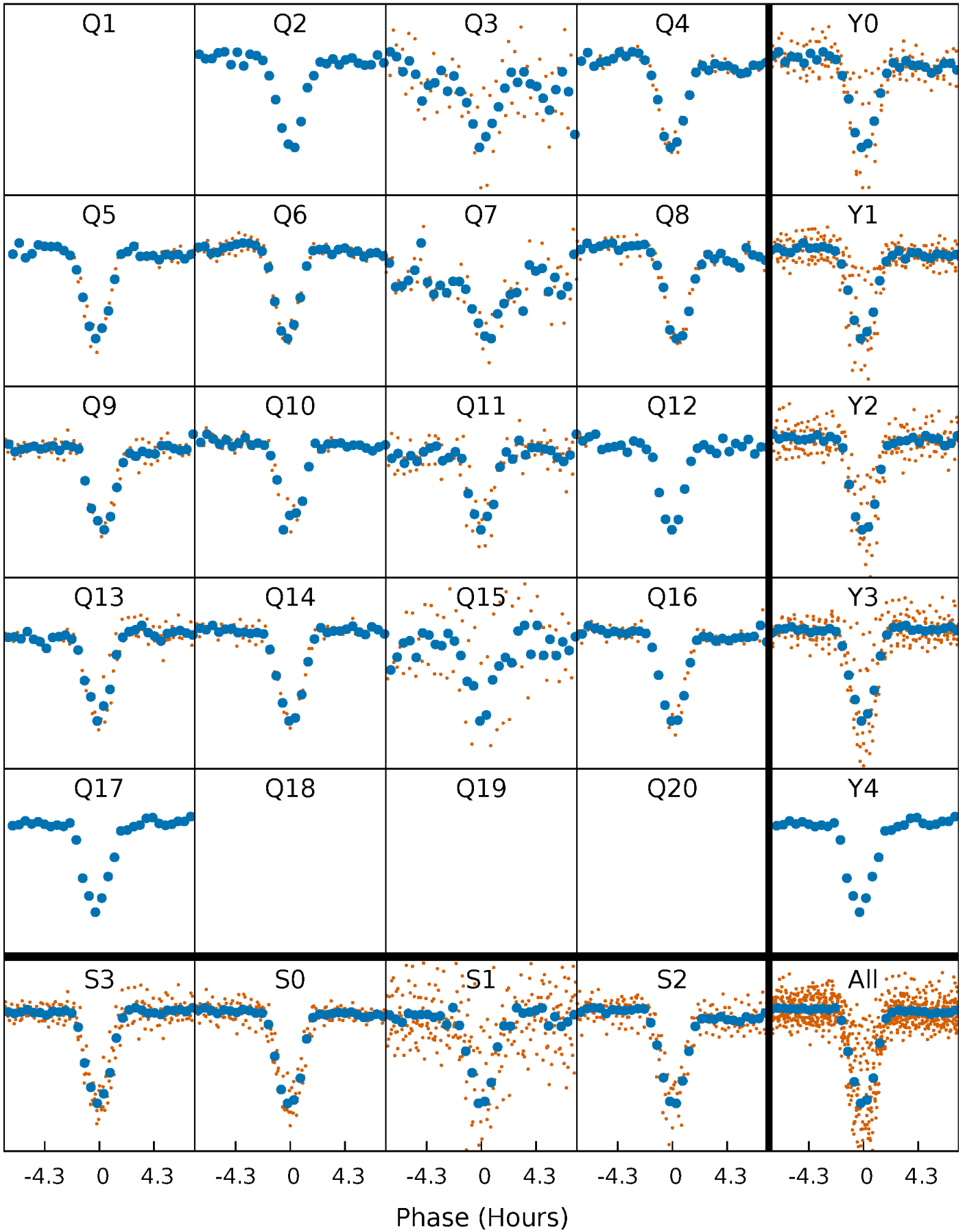


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



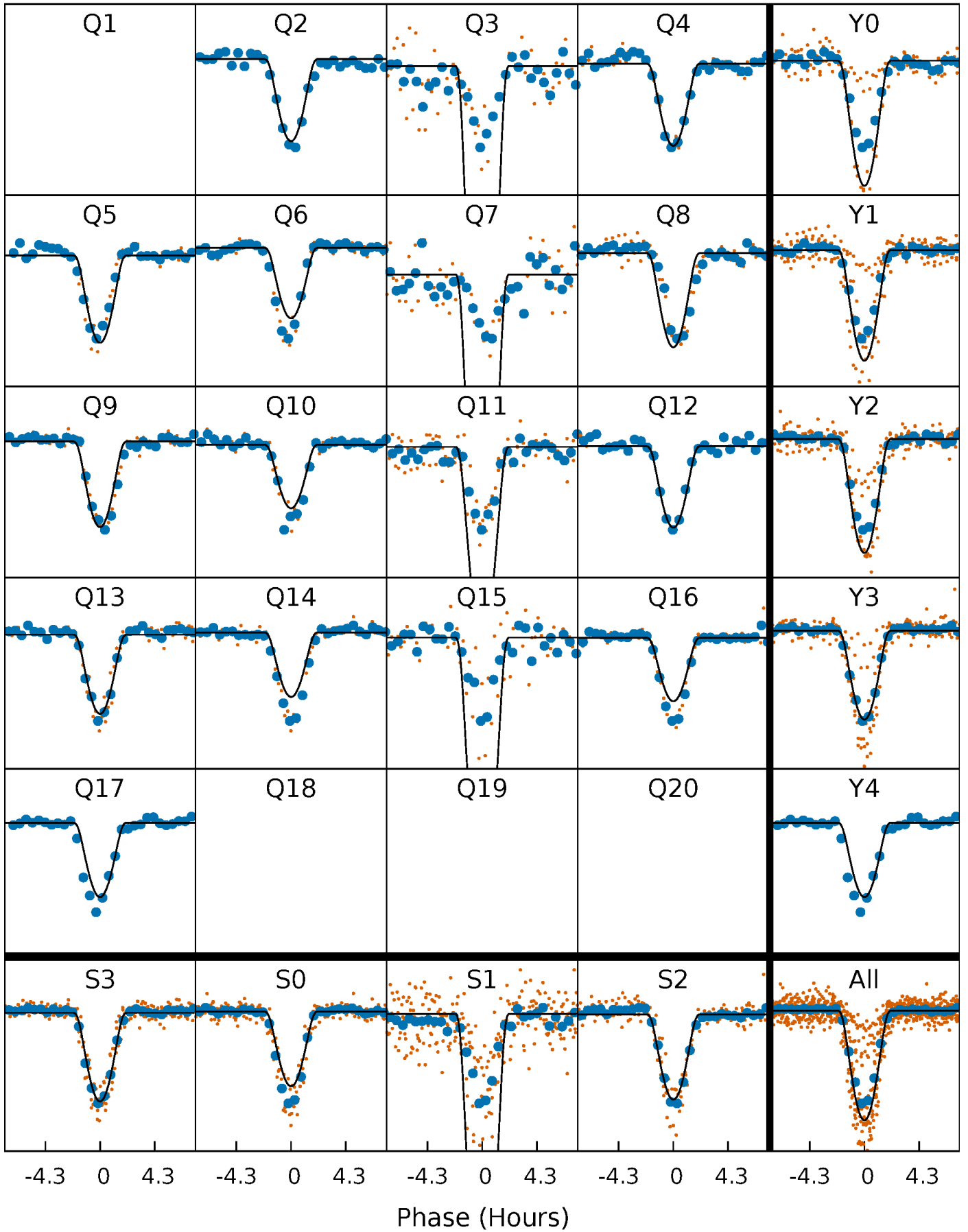
PDC Quarter-Phased Transit Curves

TCE 012643589-01 P= 44.145906 Days $T_0=167.388196$ (BKJD)



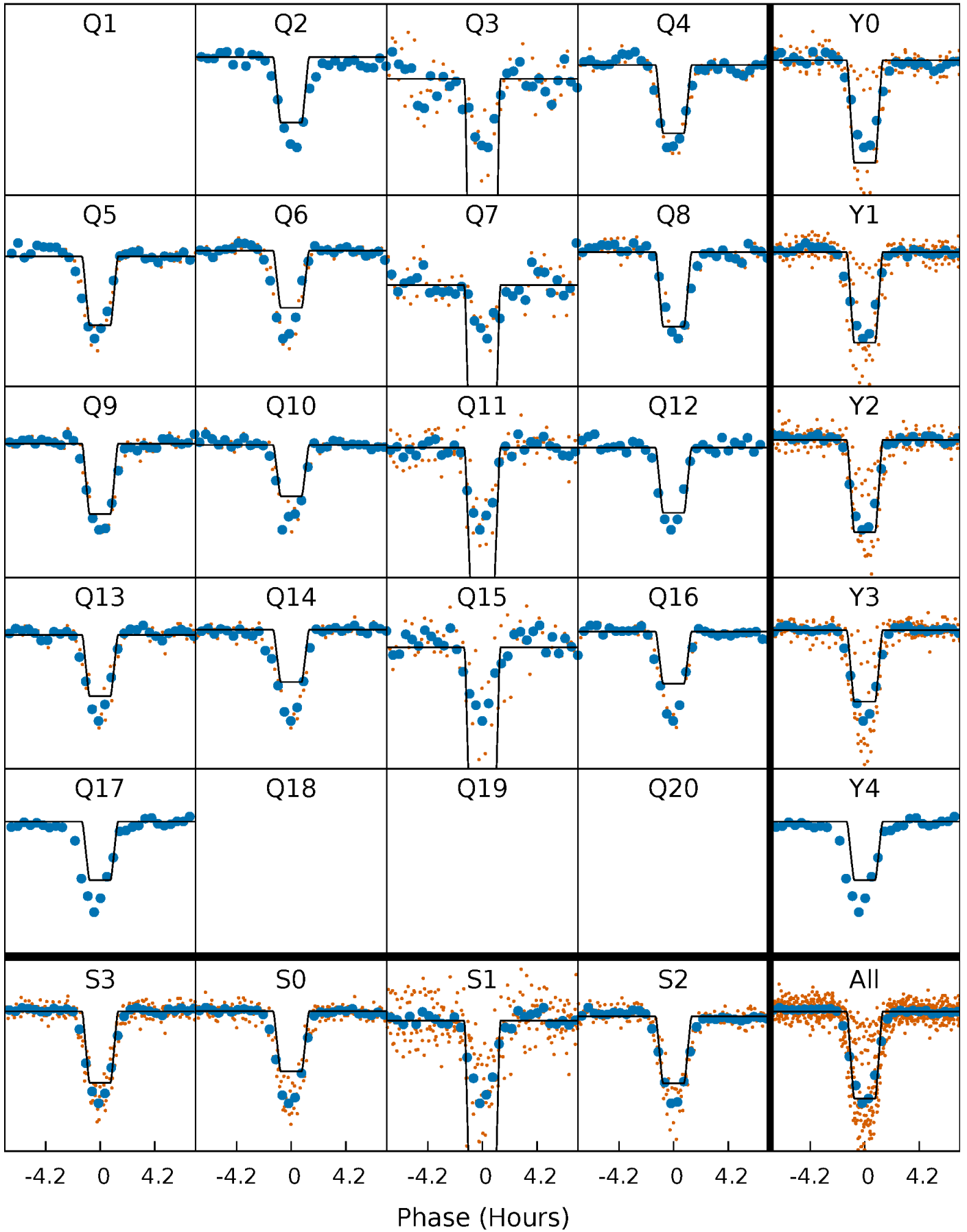
DV Quarter-Phased Transit Curves

TCE 012643589-01 P= 44.145906 Days $T_0=167.388196$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

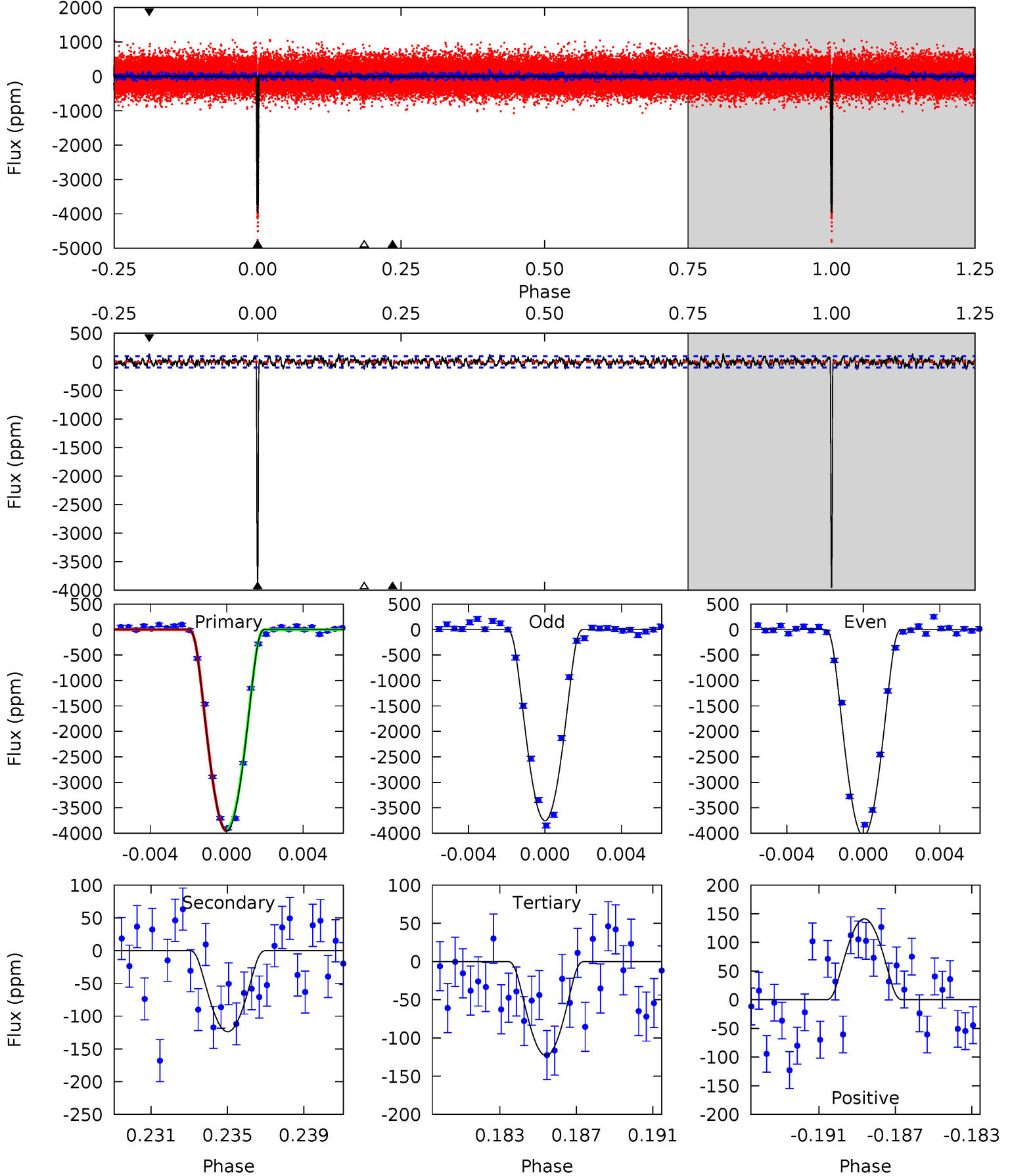
TCE 012643589-01 P= 44.145916 Days $T_0=167.388479$ (BKJD)



DV Model-Shift Uniqueness Test

012643589-01, P = 44.145906 Days, E = 123.242290 Days

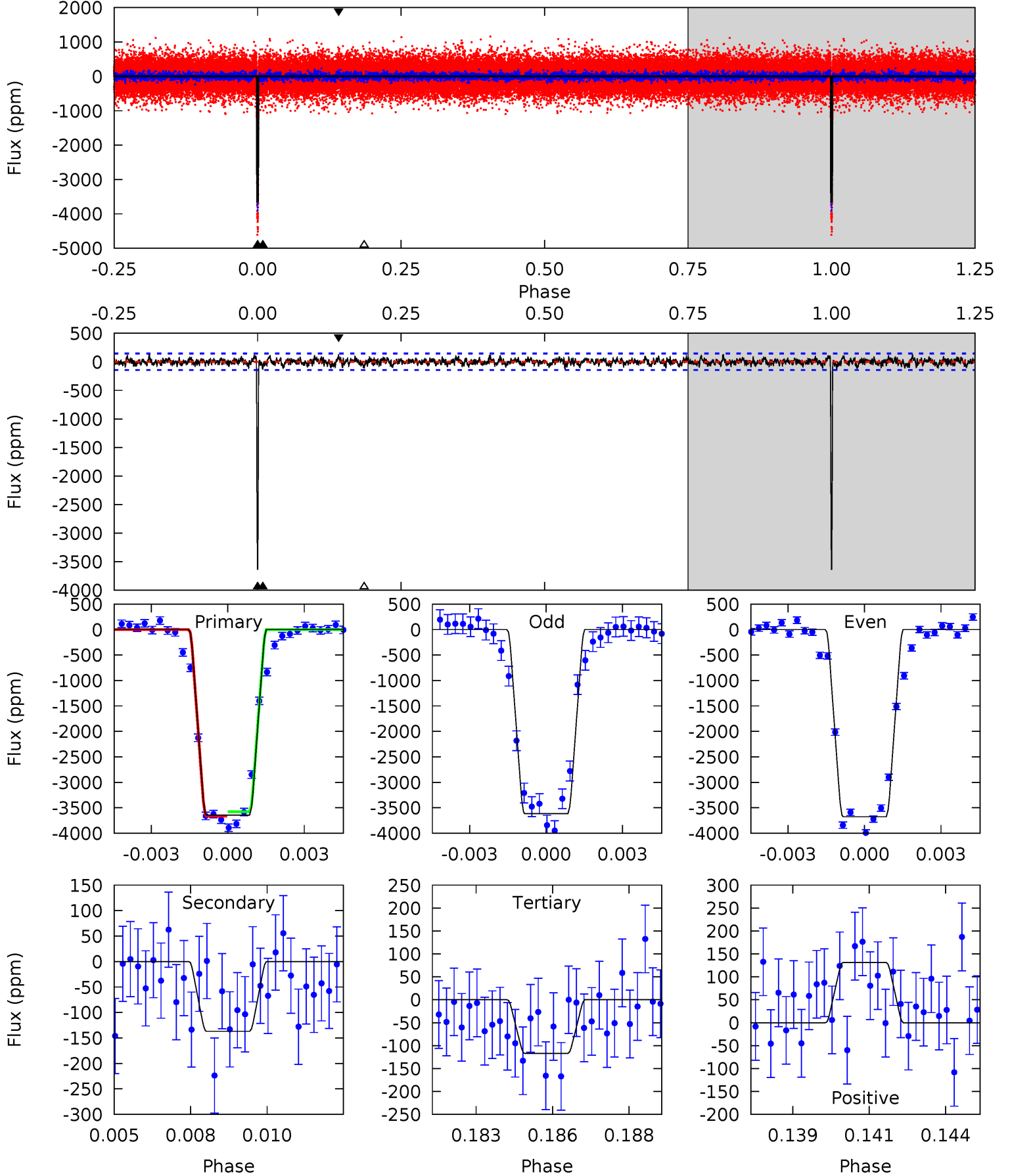
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
210.7	6.59	6.55	7.52	5.20	2.88	2.13	204.2	203.2	0.04	-0.92	8.00	0.87	0.03	0



Alt Model-Shift Uniqueness Test

012643589-01, $P = 44.145916$ Days, $E = 123.242563$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
133.3	5.01	4.28	4.81	5.28	3.01	1.37	129.0	128.5	0.73	0.20	1.10	0.87	0.03	0



Stellar Parameters For KIC 012643589

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6692^{+160}_{-220}	$4.383^{+0.065}_{-0.208}$	$-0.280^{+0.250}_{-0.300}$	$1.152^{+0.374}_{-0.125}$	$1.176^{+0.167}_{-0.150}$	$1.083^{+0.303}_{-0.565}$
	+2%/-3%	+1%/-5%	+89%/-107%	+32%/-11%	+14%/-13%	+28%/-52%
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 012643589-01 / KOI 0376.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-124 ± 19	$14.27^{+6.11}_{-5.71}$	891^{+69}_{-46}	2850^{+431}_{-249}	22^{+38}_{-11}
Alt.	-137 ± 27	$8.25^{+5.89}_{-5.16}$	883^{+62}_{-38}	3375^{+1370}_{-471}	70^{+440}_{-45}

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 $A_{obs} \gg 1.0$

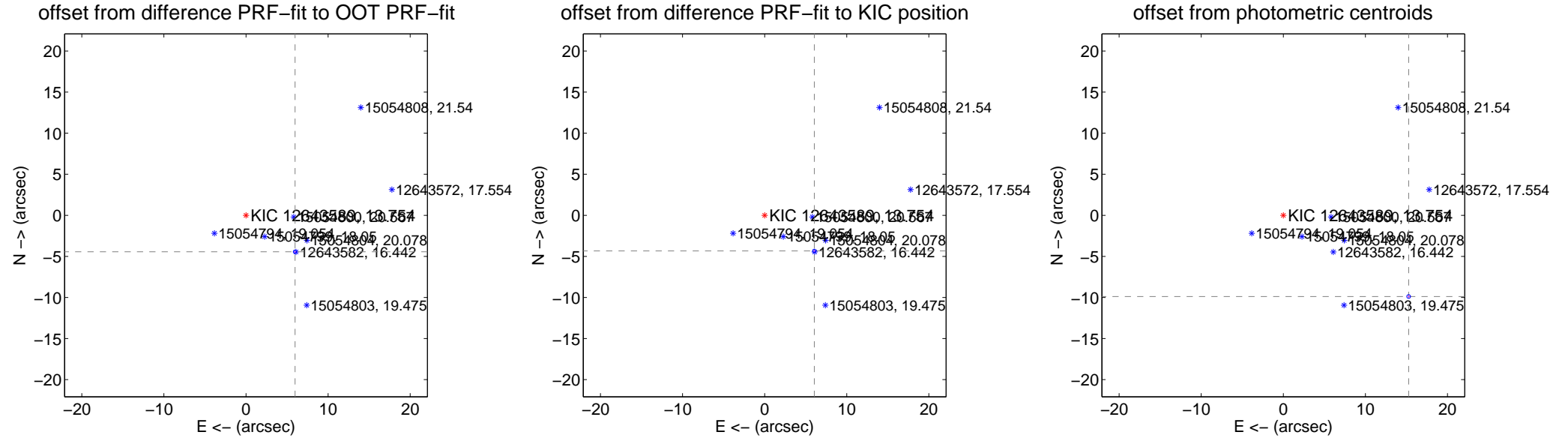
DV Centroid Data

Supplemental centroid analysis for 012643589-01. Kepler magnitude: 13.75. Transit SNR 87.92

There are 16 quarters with good PRF difference image offsets

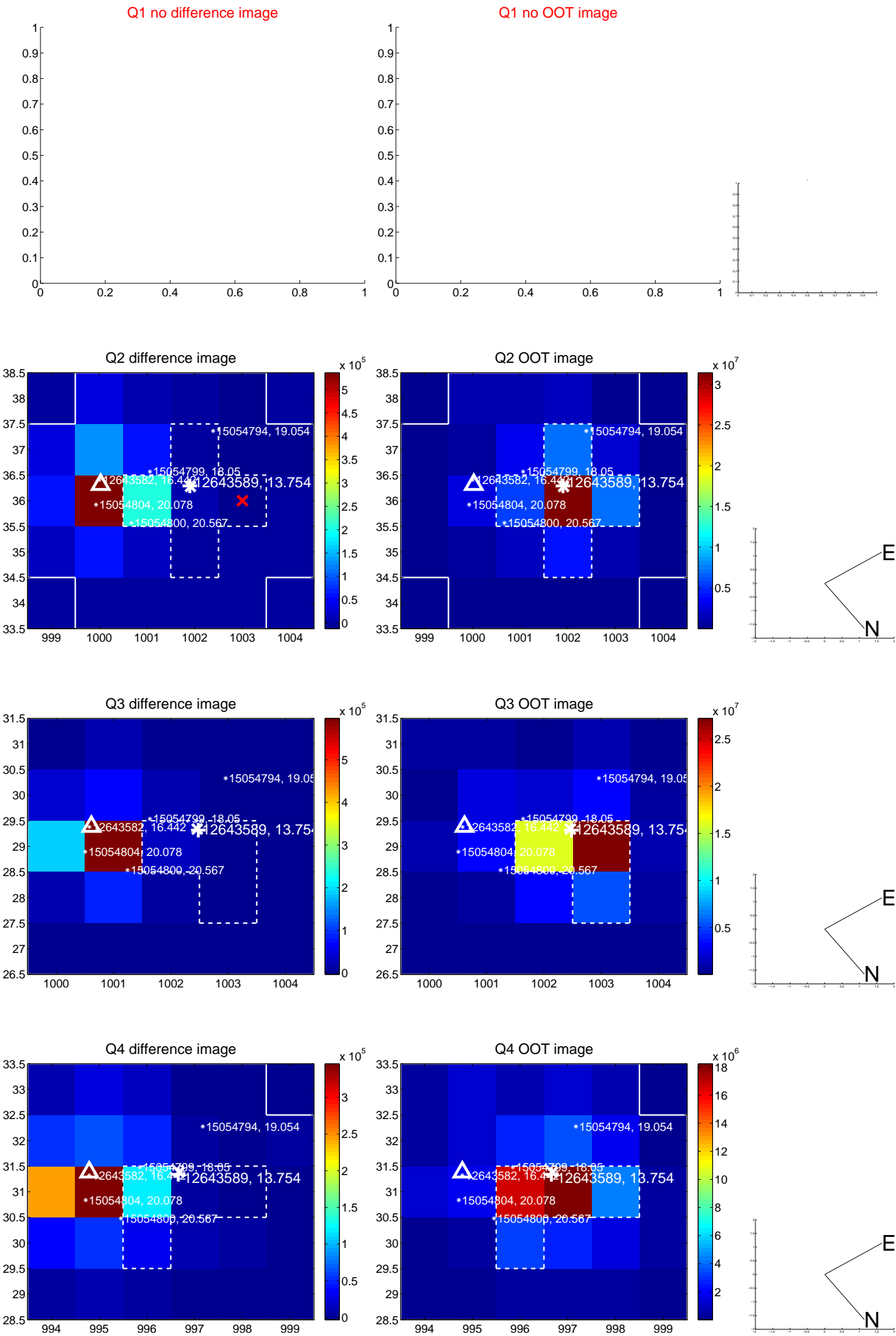
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.441 ± 0.069	107.29	-5.975 ± 0.069	-4.434 ± 0.069
PRF-fit source offset from KIC position	7.441 ± 0.070	106.32	-6.046 ± 0.070	-4.338 ± 0.070
photometric centroid source offset	18.18 ± 0.08	242.02	-15.27 ± 0.08	-9.88 ± 0.07

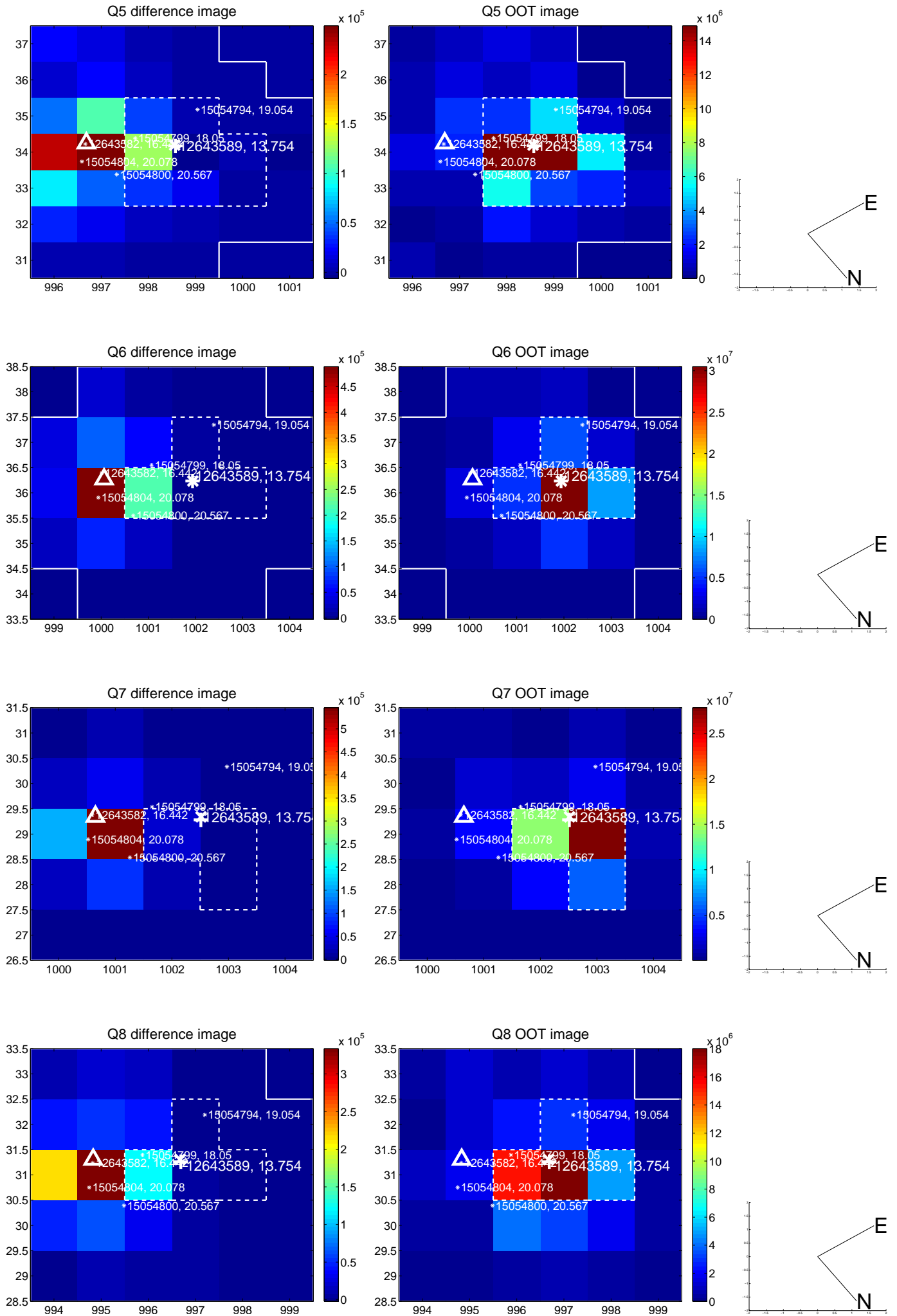


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

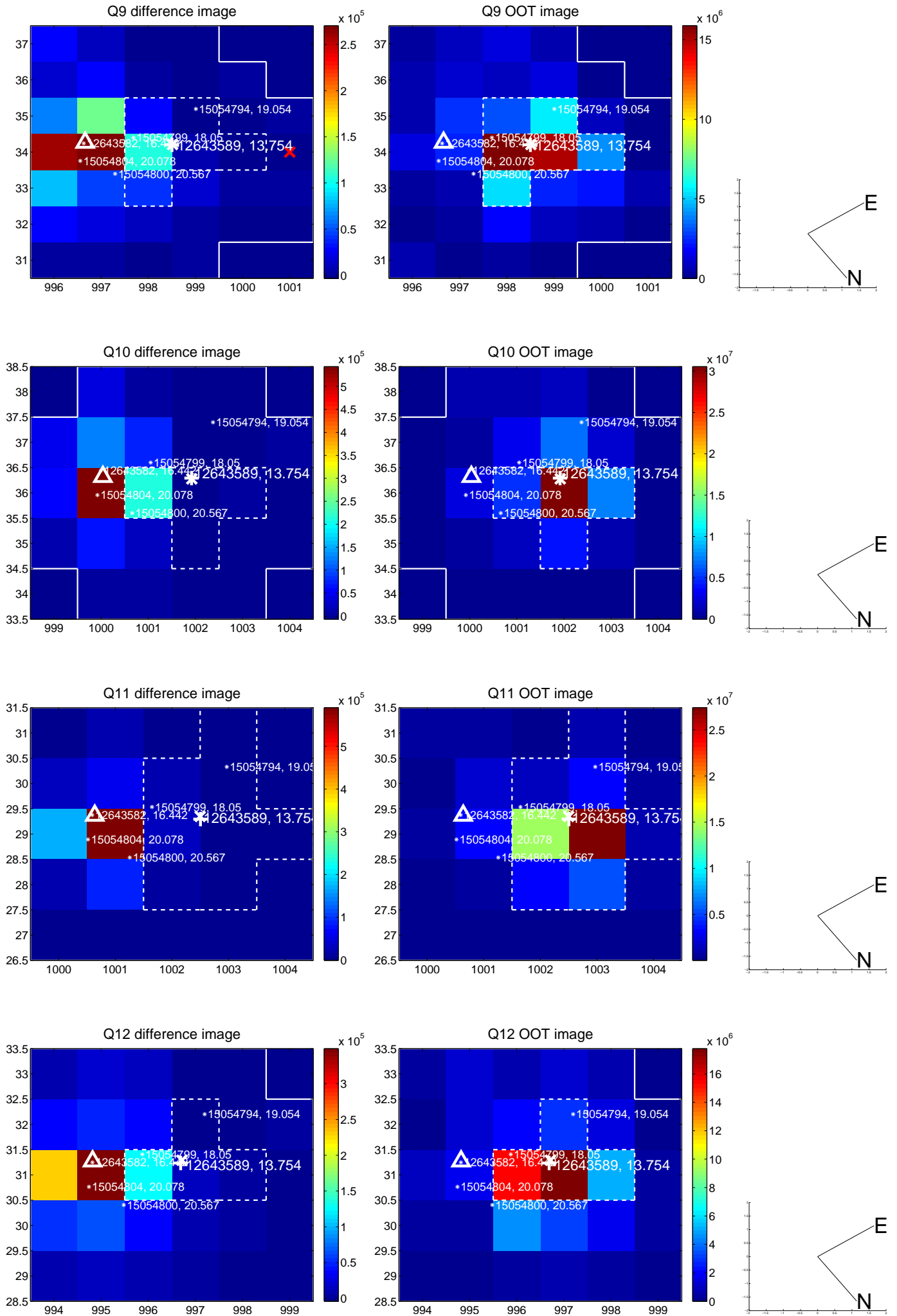
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



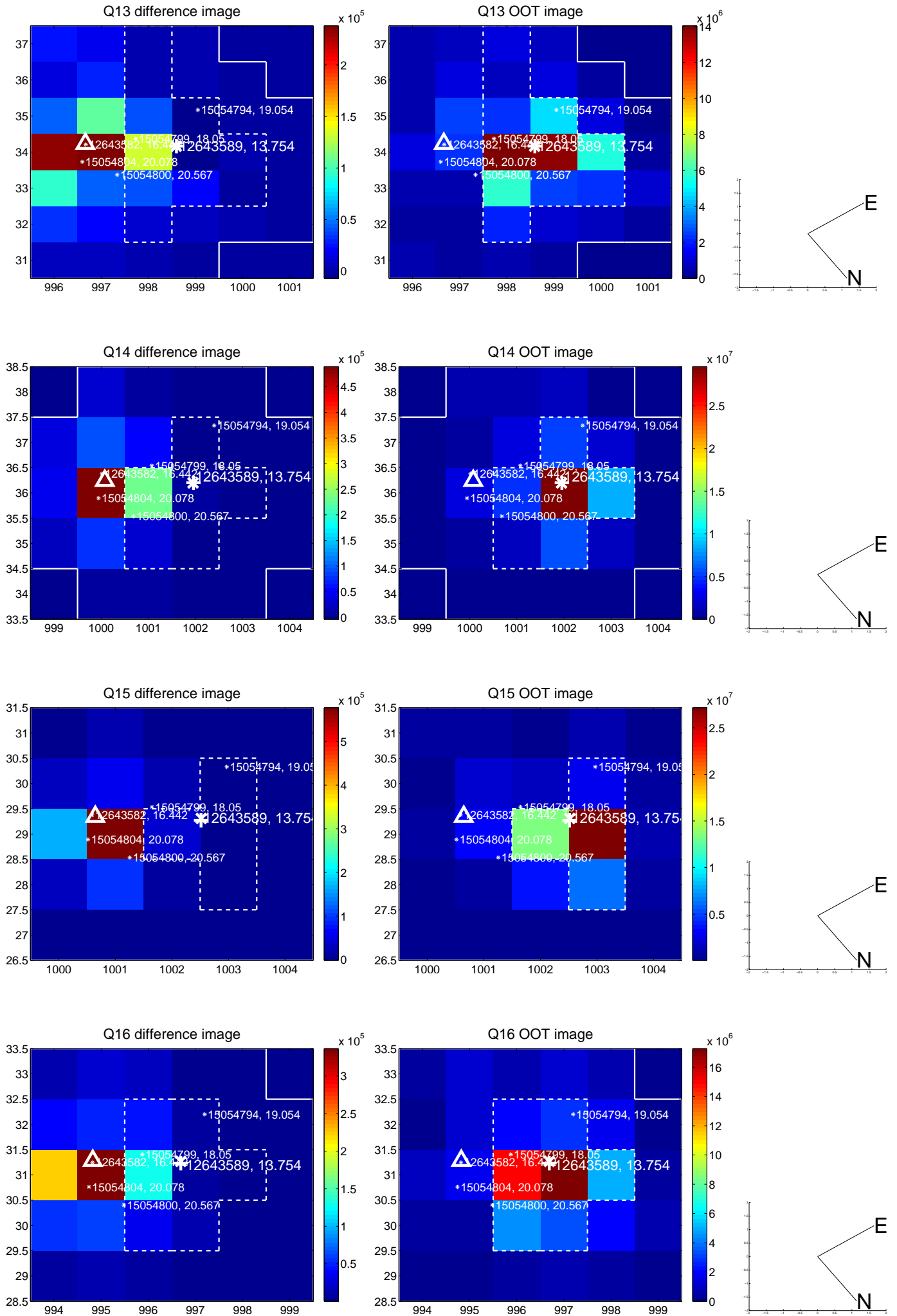
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



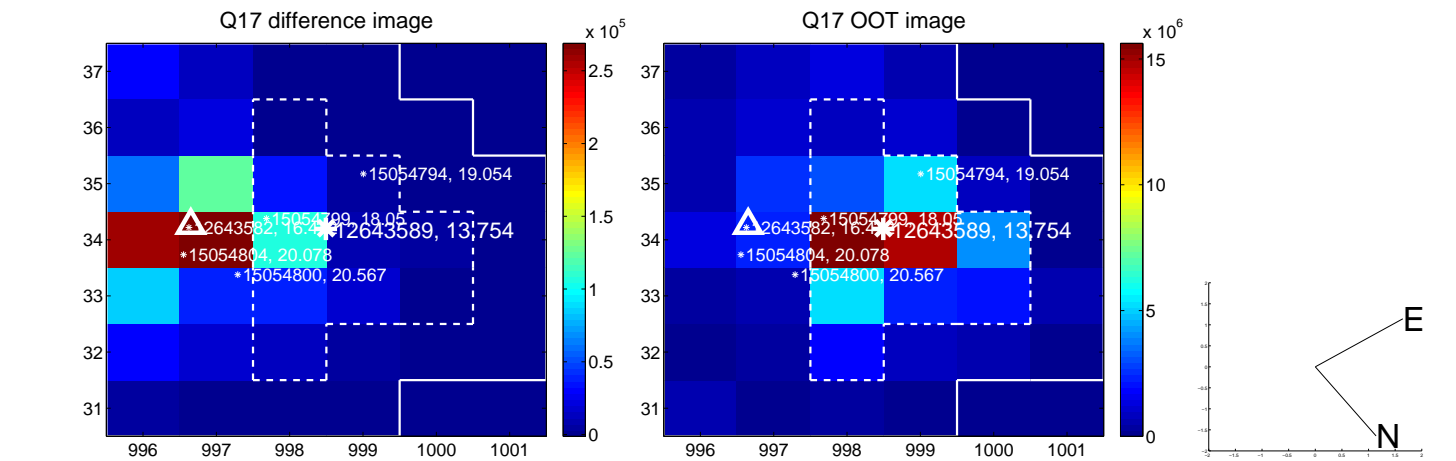
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



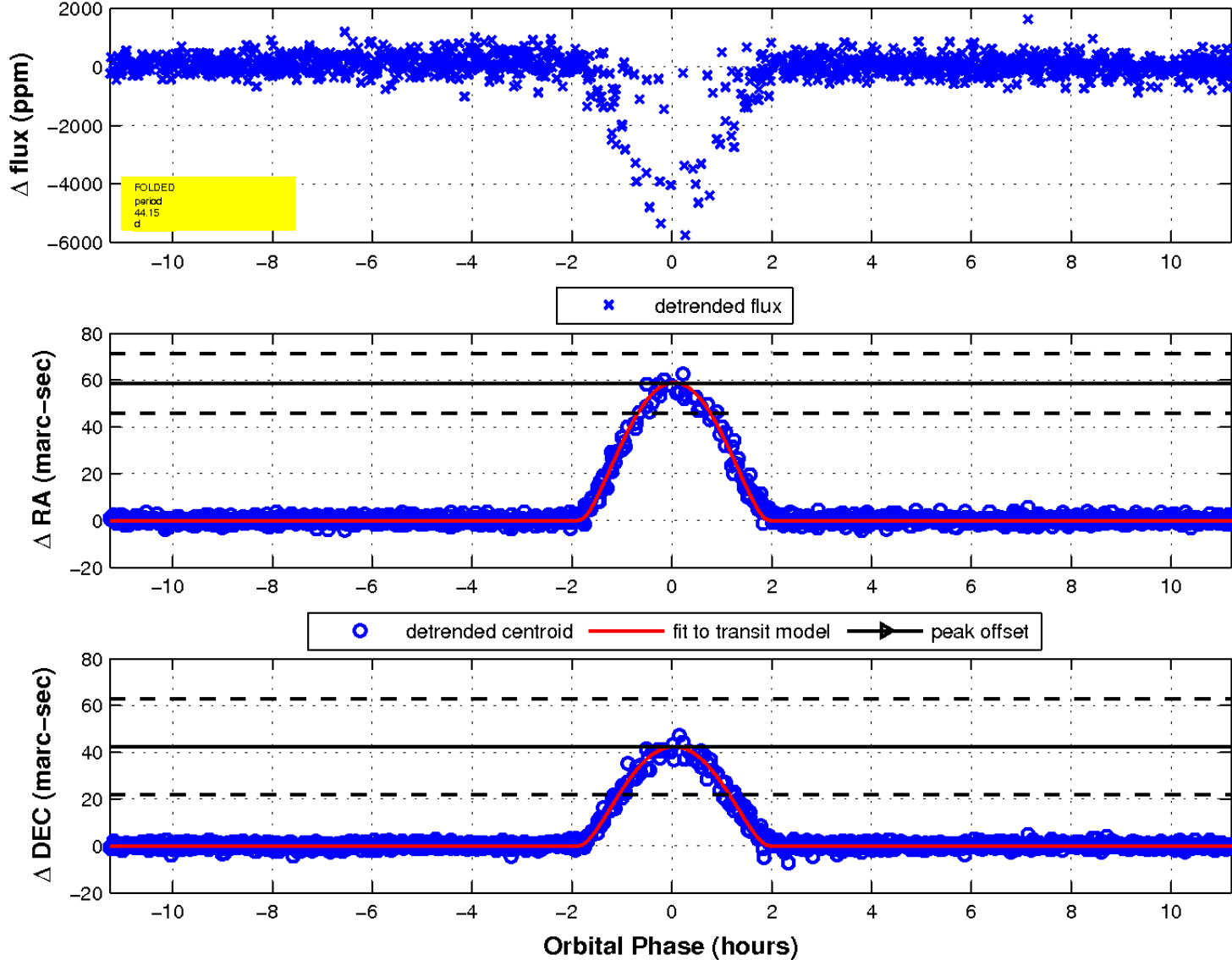
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



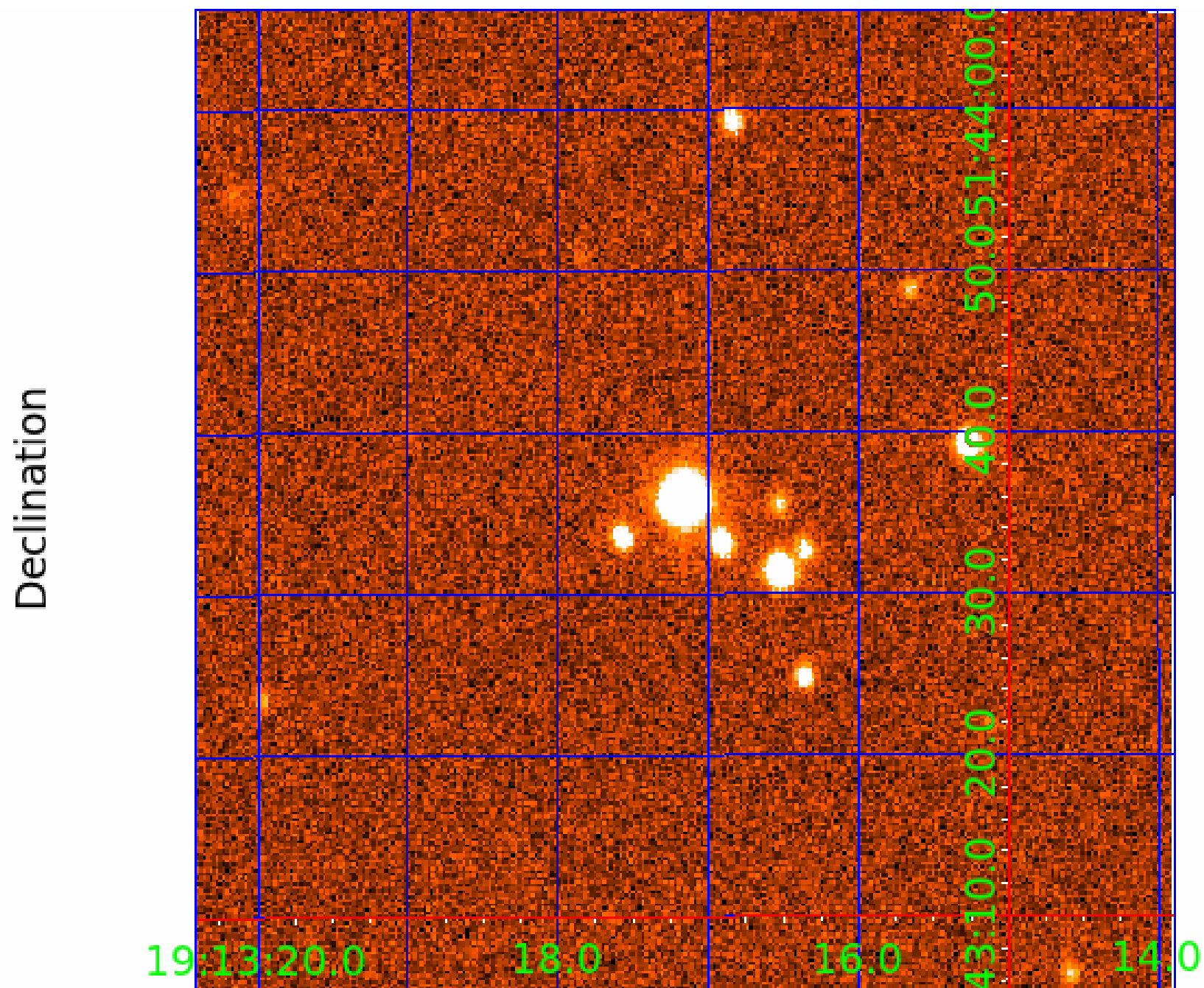
white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 3



UKIRT Image



KIC 012643589

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})
012643589-01	OBS	0376.01	44.145906	167.388196	3954.7	3.755	93.0	87.9	1.15	6692	13.11	35.94
012643589-02	OBS	0376.02	1.411637	131.676611	292.4	1.095	32.8	42.9	1.15	6692	2.32	3540.97
012643589-03	OBS	No	0.705923	131.667817	40.6	1.451	9.4	7.8	1.15	6692	0.80	8920.93

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012643589-01	OBS	FP	0.00	0	1	1	1	DEEP_V_SHAPED—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
012643589-02	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
012643589-03	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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

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

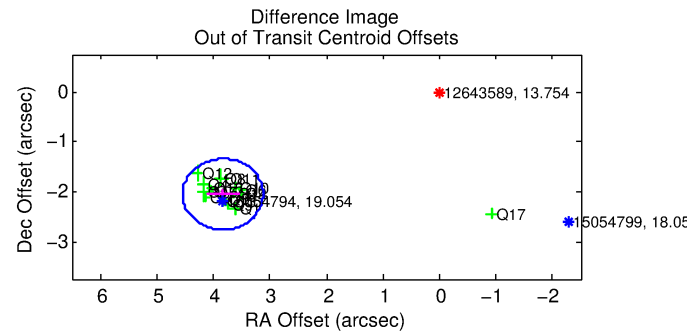
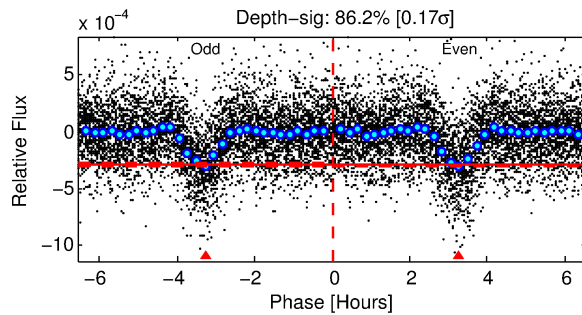
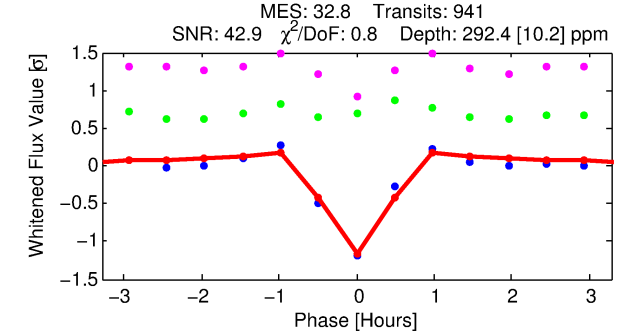
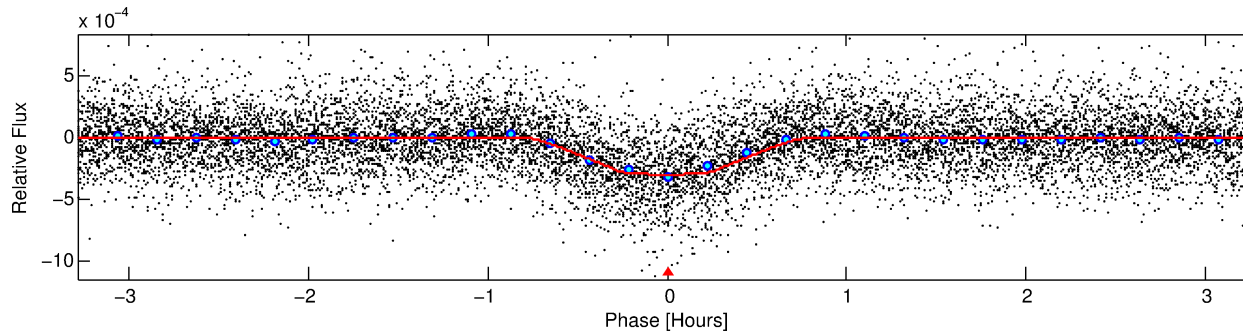
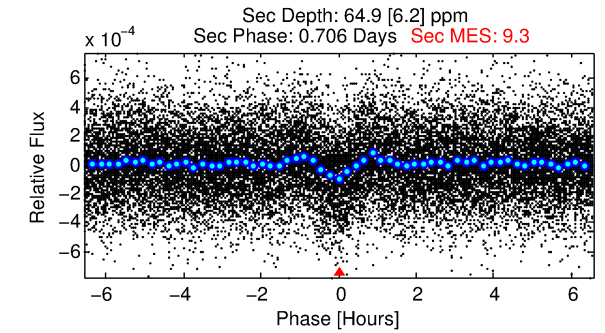
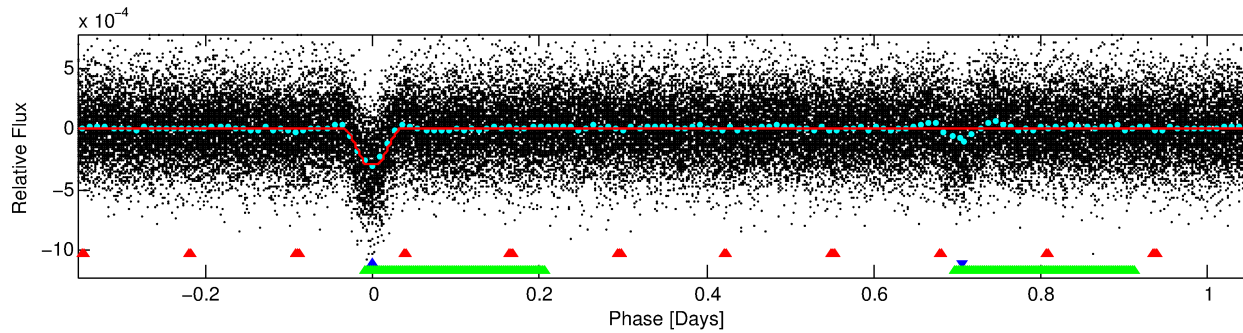
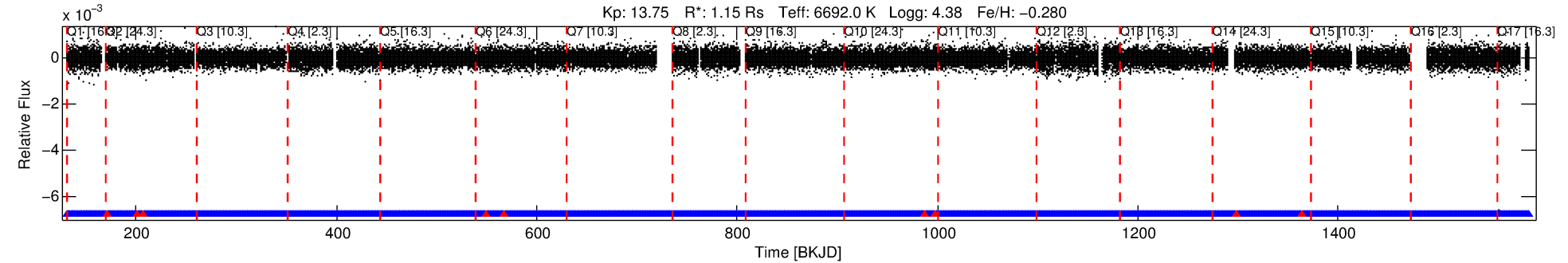
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012643589-02

No Significant Match Found

DV One-Page Summary

KIC: 12643589 Candidate: 2 of 3 Period: 1.412 d
KOI: K00376.02 Corr: 0.935



DV Fit Results:

Period = 1.41164 [0.00000] d
Epoch = 131.6766 [0.0004] BKJD
Rp/R* = 0.0185 [0.0023]
a/R* = 4.69 [3.26]
b = 0.91 [0.15]
Seff = 3540.97 [1443.06]
Teff = 1967 [200] K
Rp = 2.32 [0.81] Re
a = 0.0260 [0.0070] AU
Ag = 4.47 [2.10] [1.65σ]
Teffp = 4422 [330] K [6.35σ]

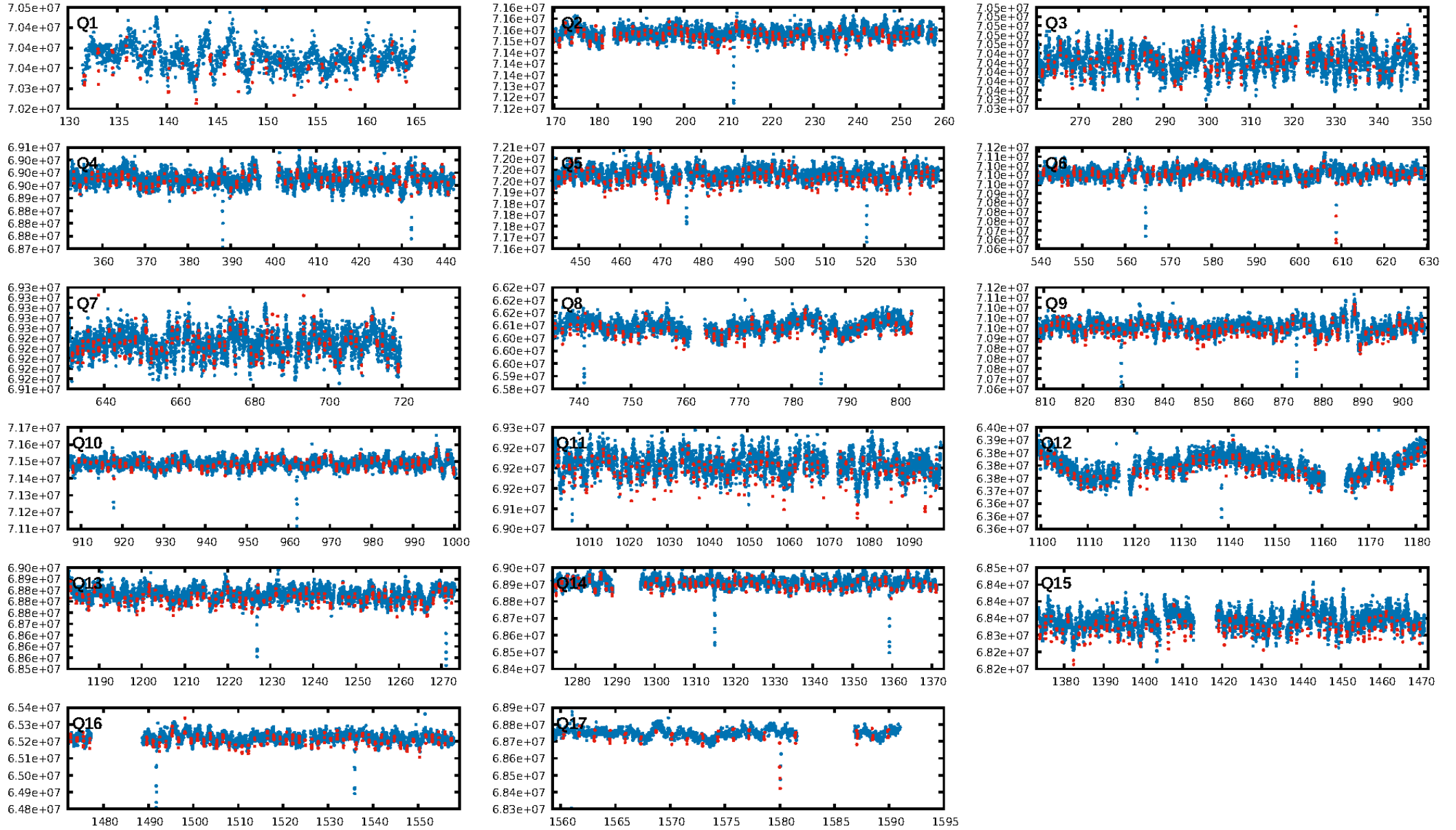
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.32σ]
LongPeriod-sig: 100.0% [262.23σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.16e-224
RollingBand-fgt: 0.99 [890/899]
GhostDiagnostic-chr: 0.5197
Centroid-sig: 0.0%
Centroid-so: 4.552 arcsec [17.77σ]
OotOffset-rm: 4.347 arcsec [18.34σ]
KicOffset-rm: 4.264 arcsec [19.43σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
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DiffImageOverlap-fno: 0.00 [0/17]

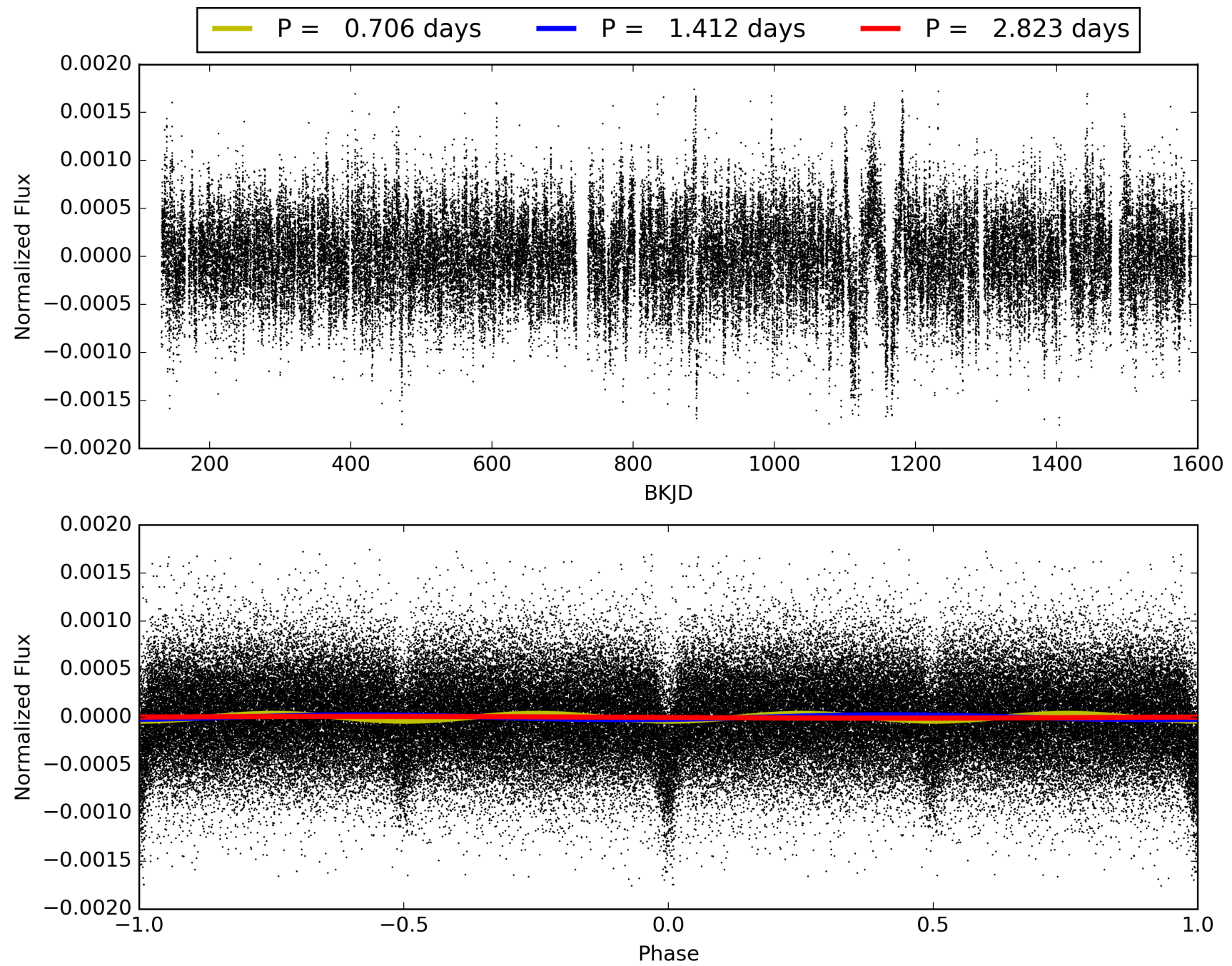
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 13:56:17 Z

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

TCE 012643589-02, PDC Light Curves

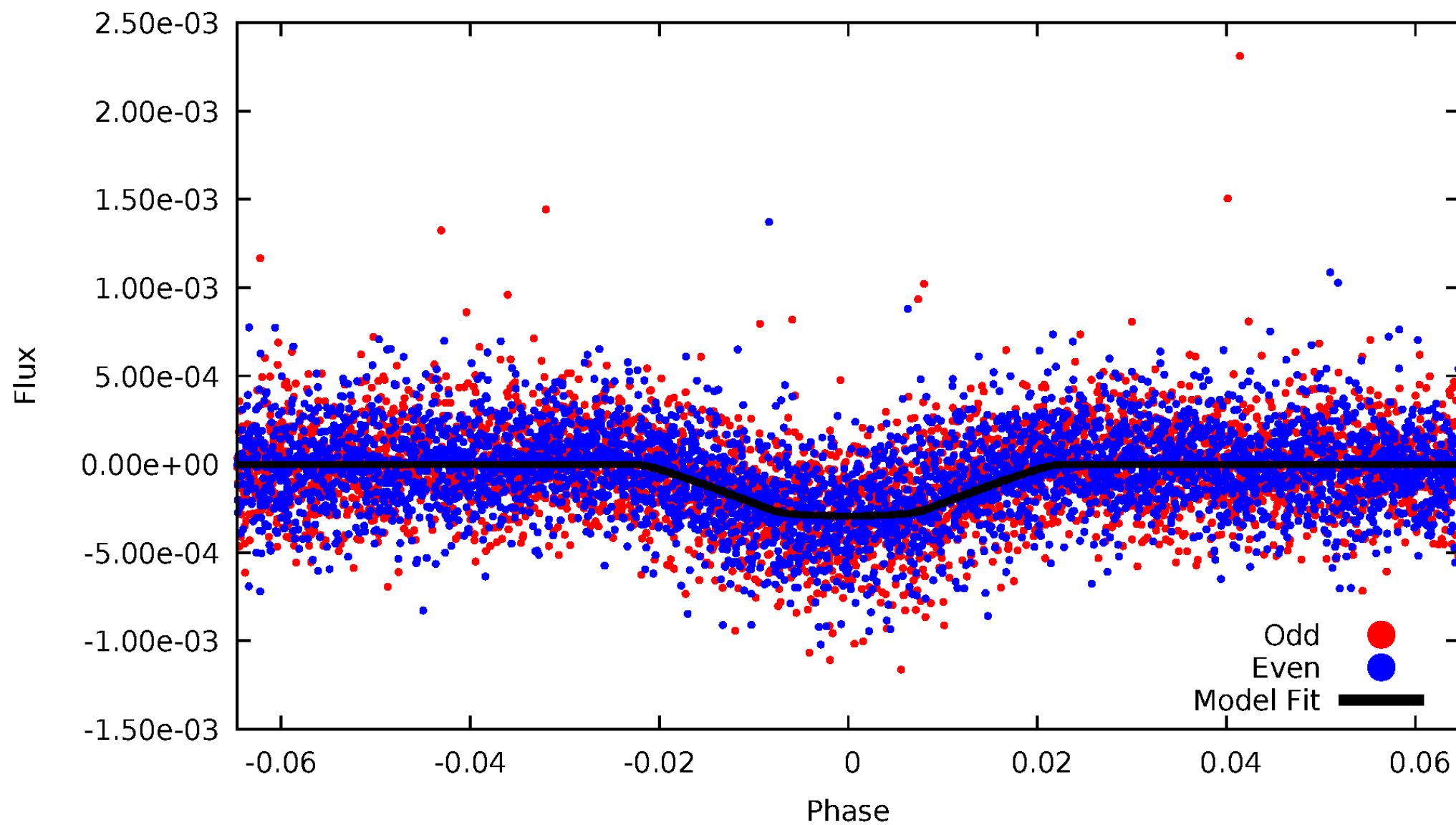


TCE 012643589-02



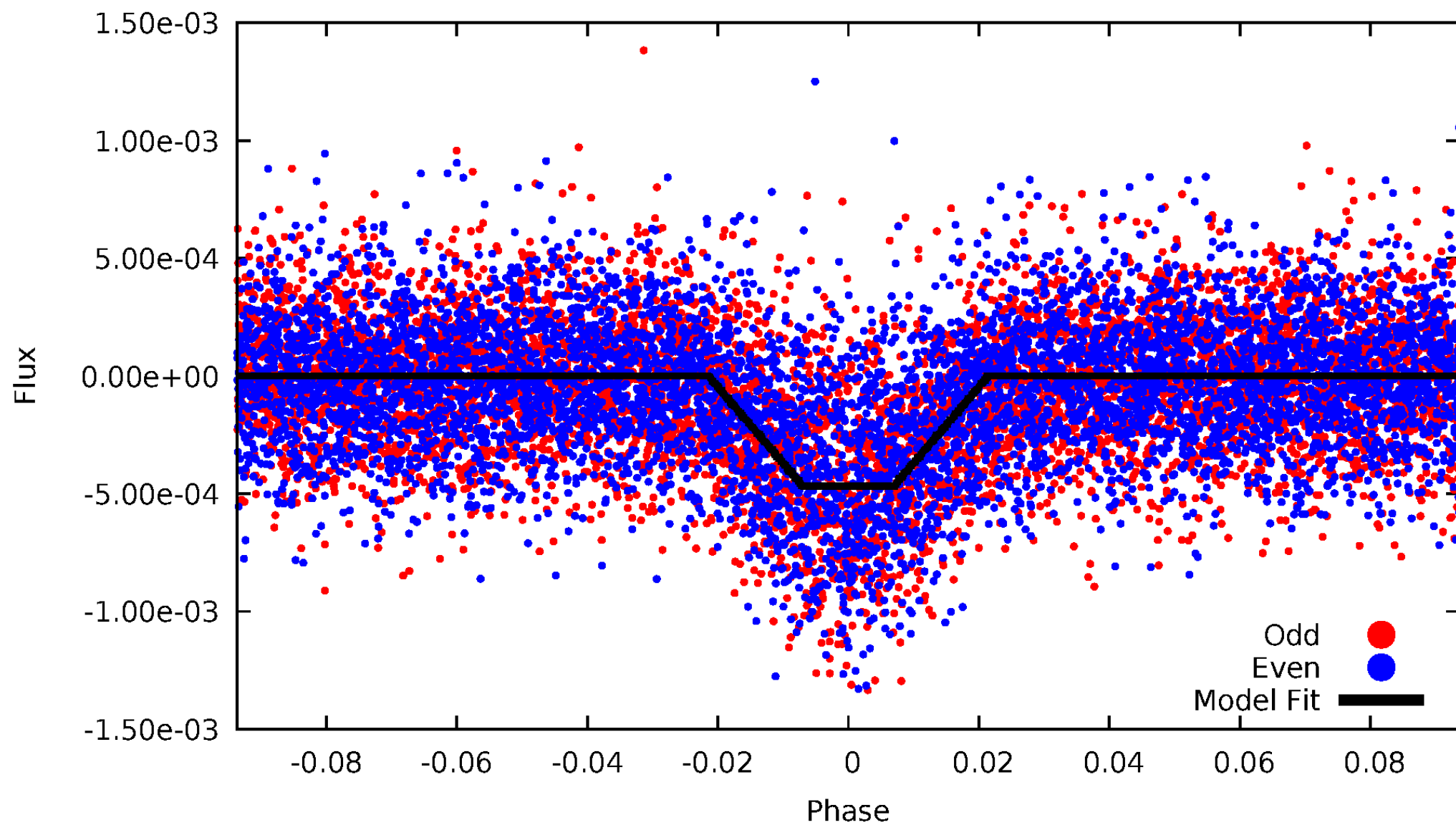
DV Odd/Even

TCE 012643589-02



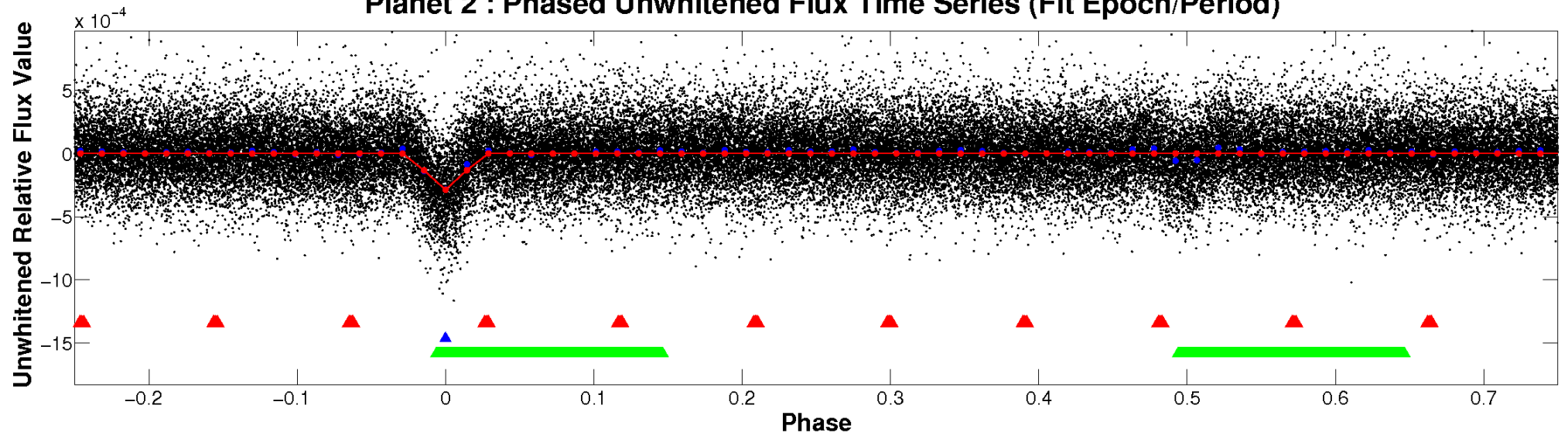
ALT Odd/Even

TCE 012643589-02

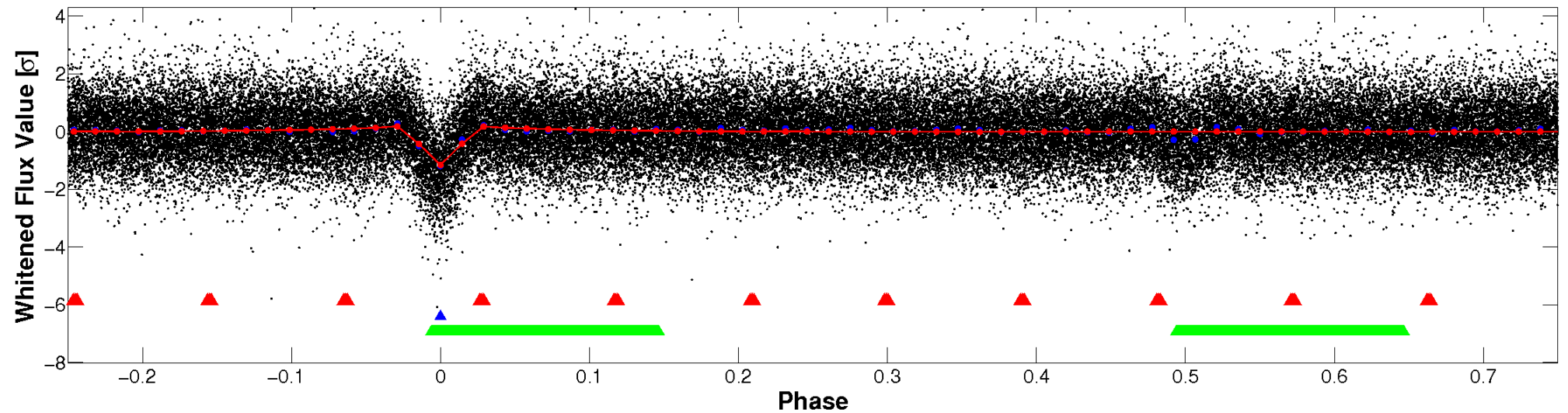


Non-Whitened Vs. Whitened Light Curve

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

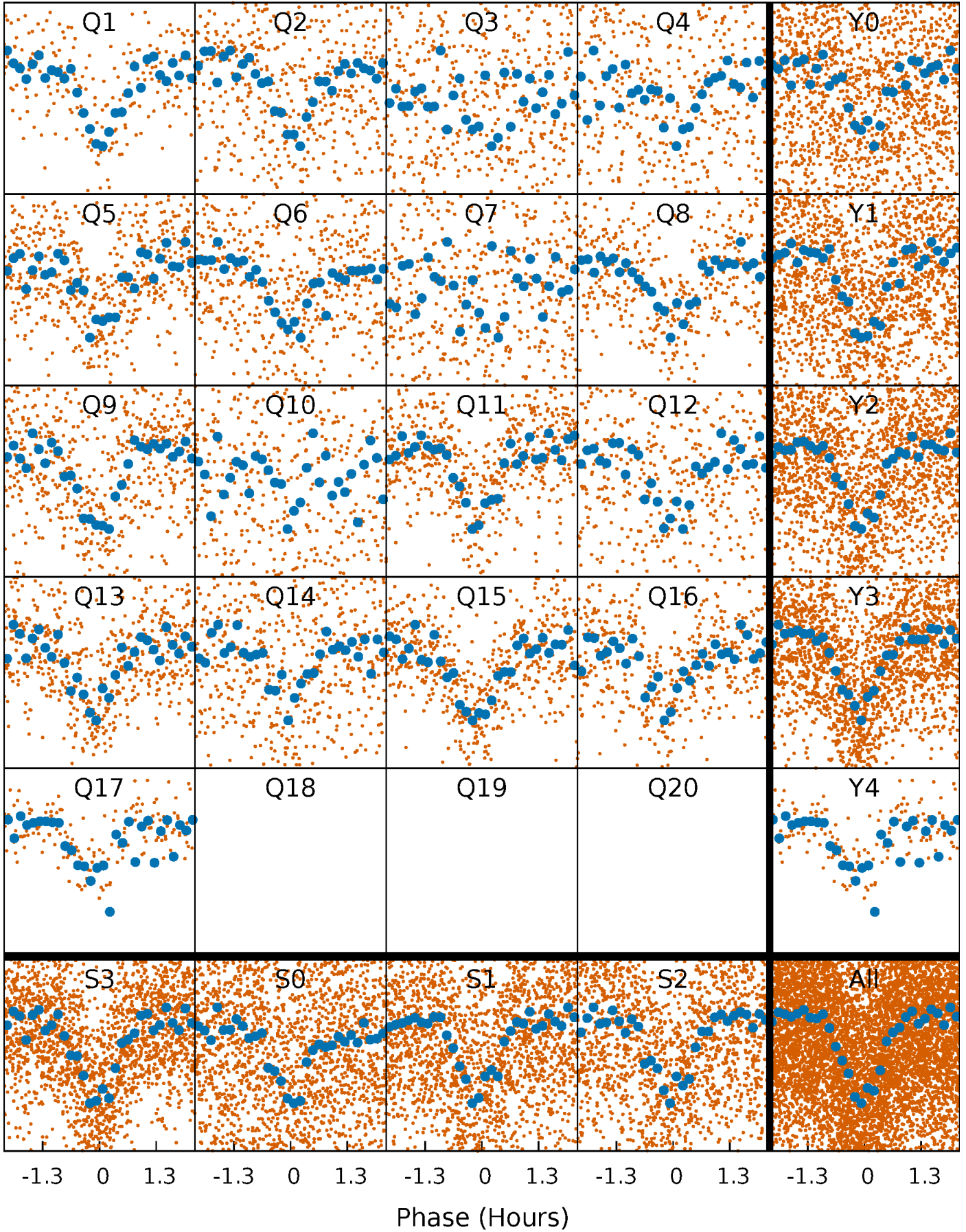


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



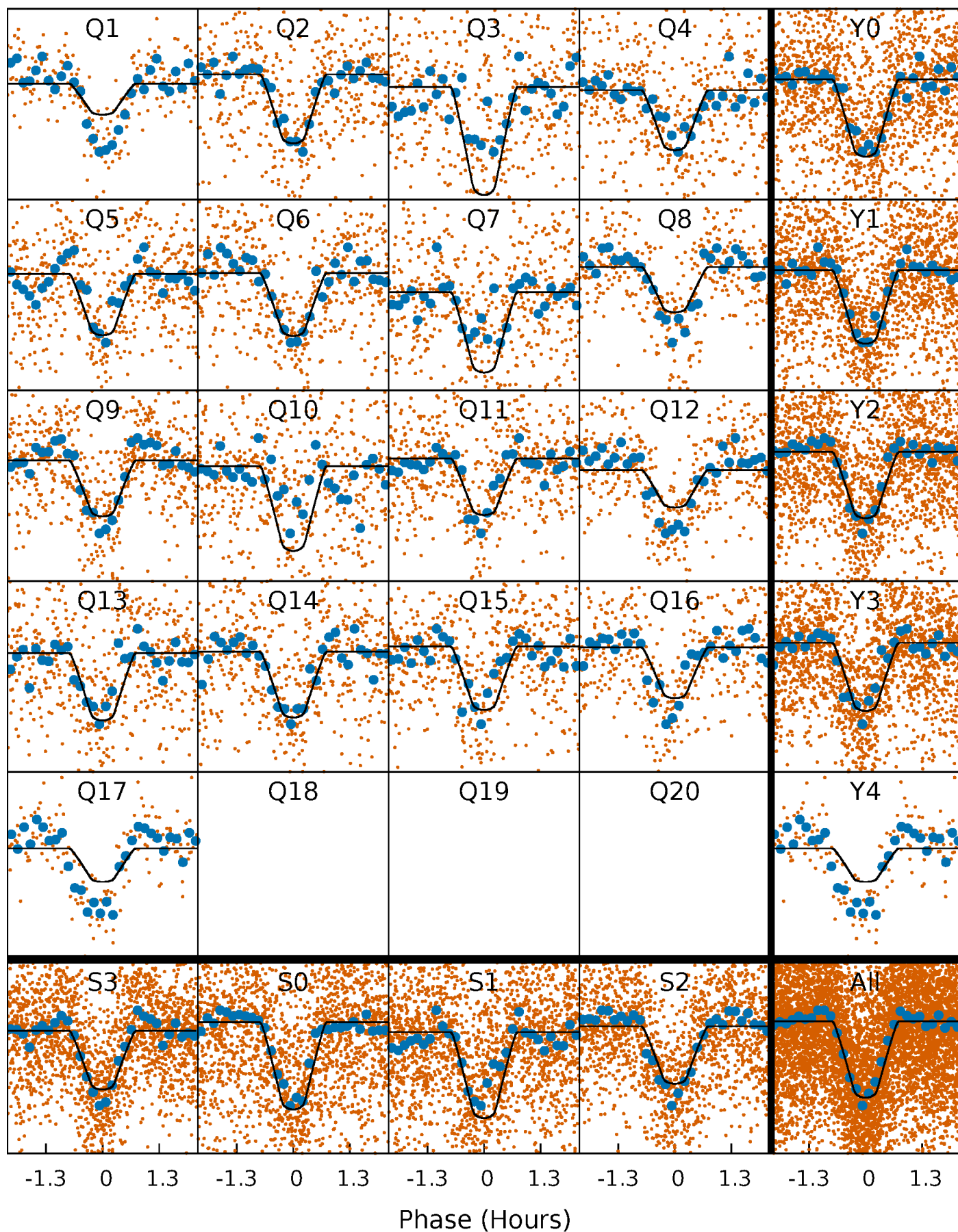
PDC Quarter-Phased Transit Curves

TCE 012643589-02 P= 1.411637 Days $T_0=131.676611$ (BKJD)



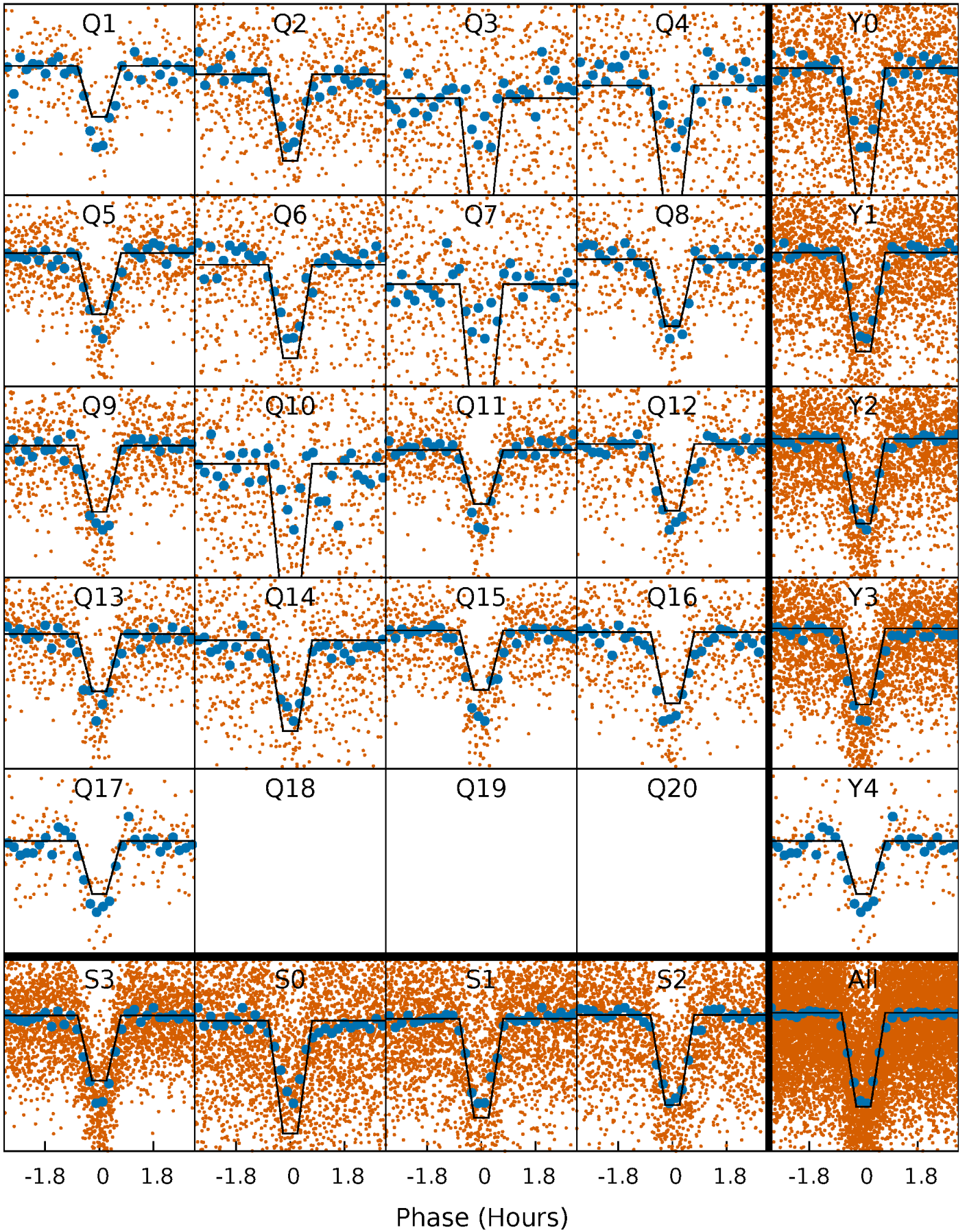
DV Quarter-Phased Transit Curves

TCE 012643589-02 P= 1.411637 Days $T_0=131.676611$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

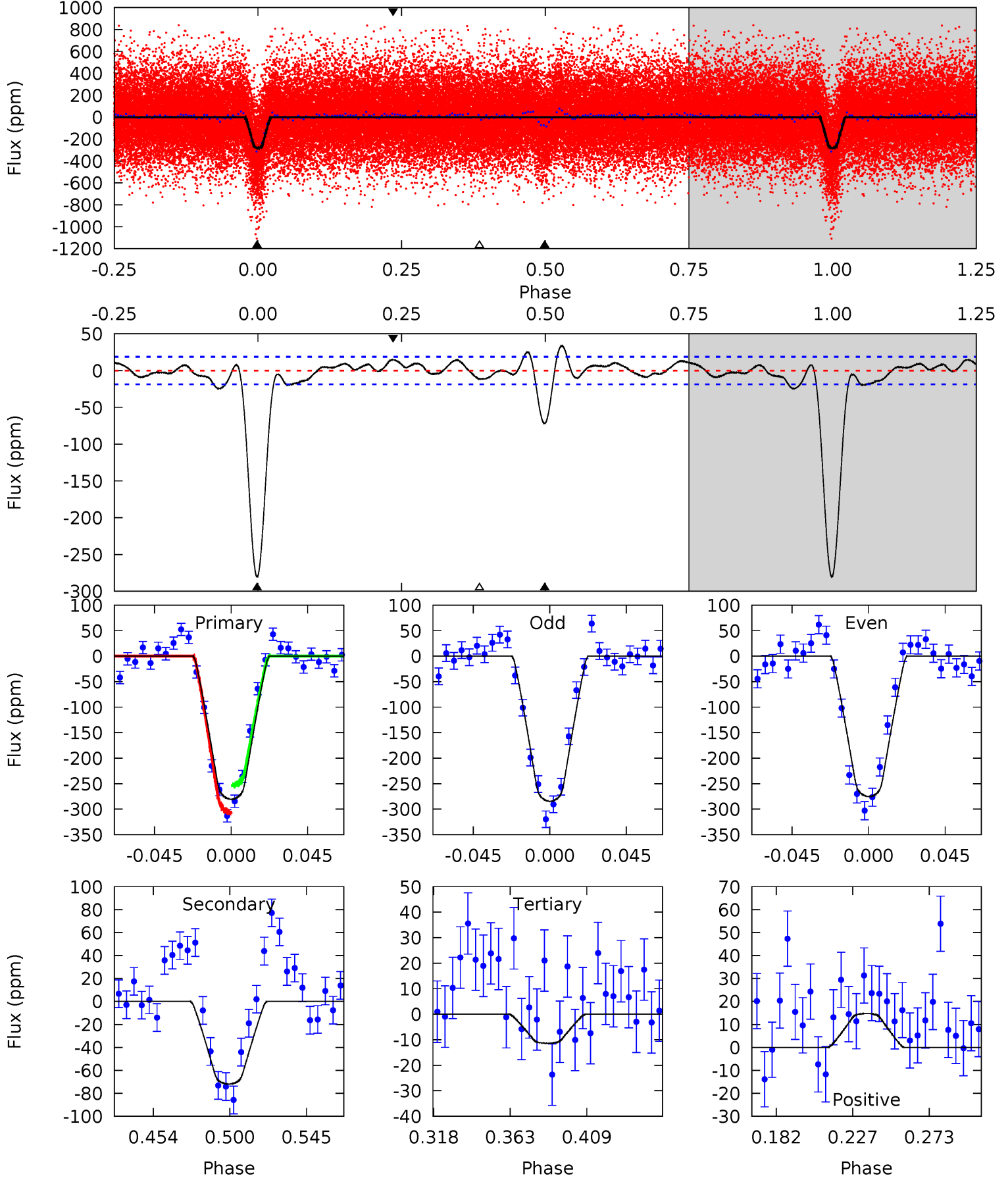
TCE 012643589-02 P= 1.411631 Days $T_0=131.677941$ (BKJD)



DV Model-Shift Uniqueness Test

012643589-02, P = 1.411637 Days, E = 130.264974 Days

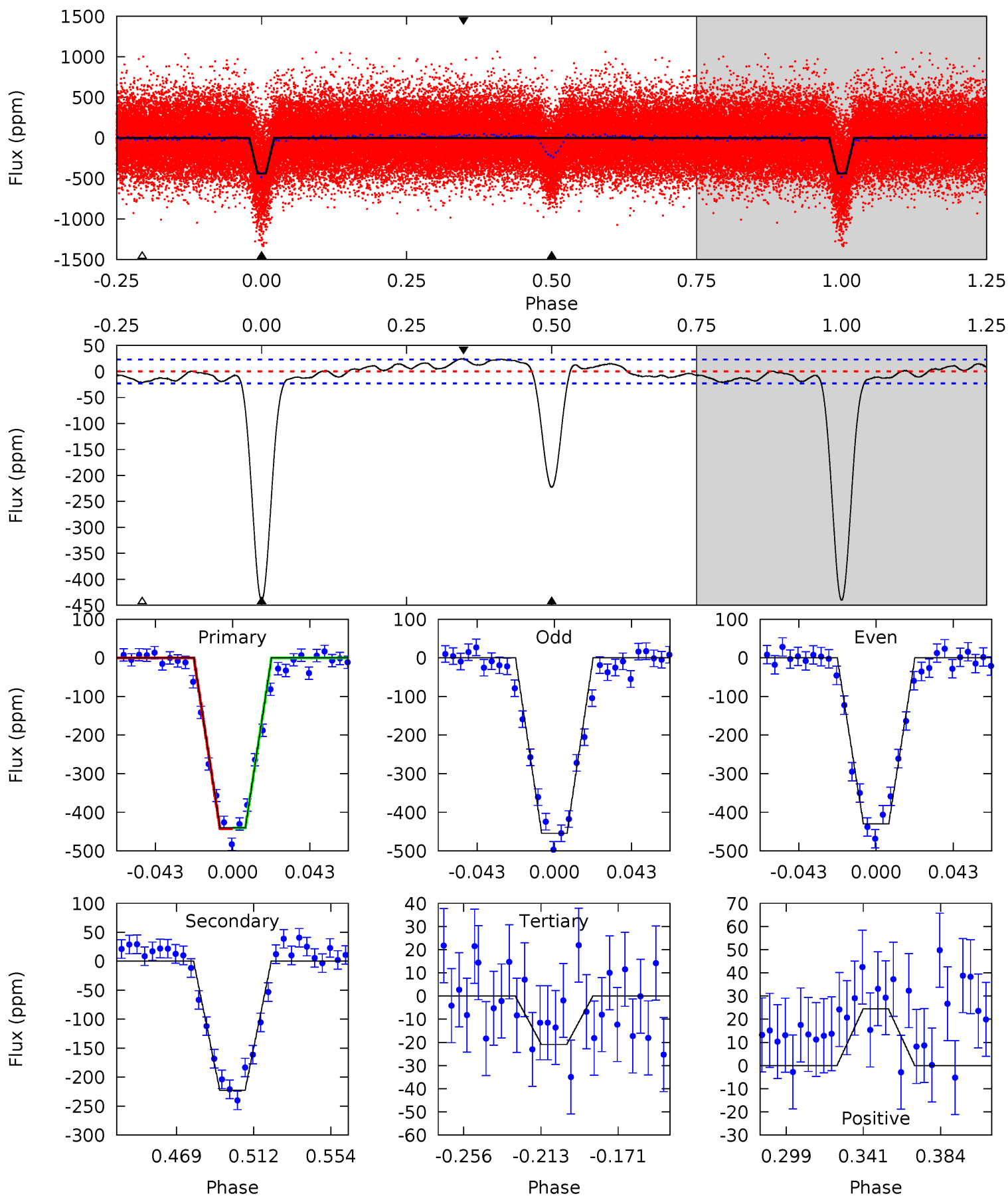
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
70.9	18.2	2.88	3.73	4.73	2.00	2.17	68.0	67.1	15.3	14.4	1.17	1.03	0.11	6.63



Alt Model-Shift Uniqueness Test

012643589-02, P = 1.411631 Days, E = 130.266310 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
90.8	45.9	4.31	5.04	4.74	2.03	2.56	86.4	85.7	41.6	40.9	2.52	0.96	0.05	0.18



Stellar Parameters For KIC 012643589

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6692^{+160}_{-220}	$4.383^{+0.065}_{-0.208}$	$-0.280^{+0.250}_{-0.300}$	$1.152^{+0.374}_{-0.125}$	$1.176^{+0.167}_{-0.150}$	$1.083^{+0.303}_{-0.565}$
	+2%/-3%	+1%/-5%	+89%/-107%	+32%/-11%	+14%/-13%	+28%/-52%
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 012643589-02 / KOI 0376.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-72 ± 4	$2.40^{+0.45}_{-0.39}$	2791^{+179}_{-133}	4590^{+343}_{-242}	$4.503^{+1.876}_{-1.251}$
Alt.	-223 ± 5	$2.82^{+0.55}_{-0.39}$	2790^{+214}_{-136}	5509^{+322}_{-280}	10^{+3}_{-3}

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

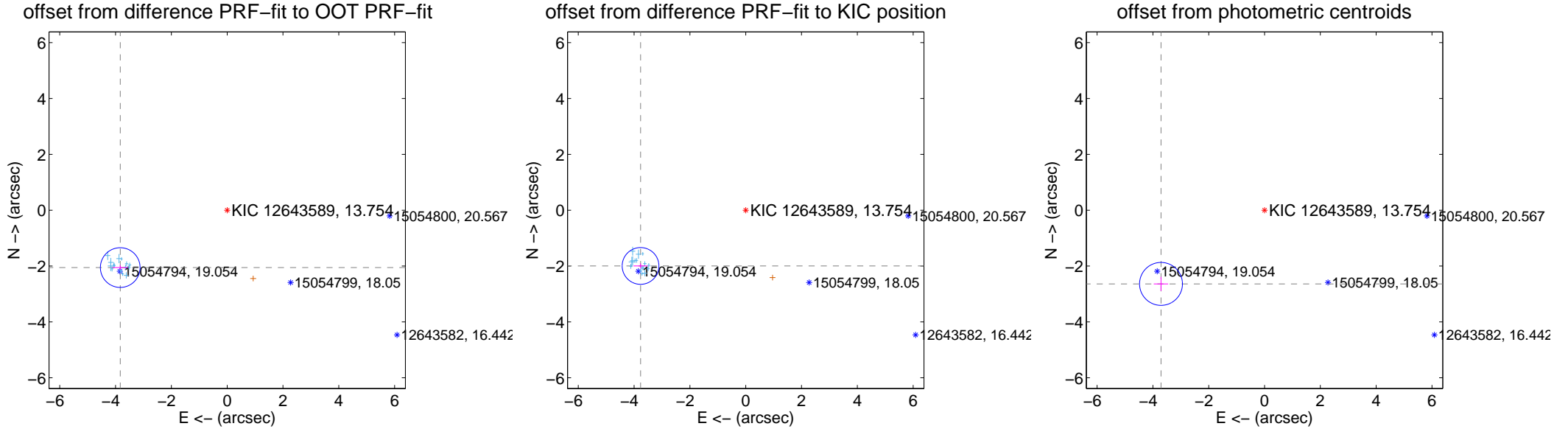
DV Centroid Data

Supplemental centroid analysis for 012643589-02. Kepler magnitude: 13.75. Transit SNR 42.88

There are 16 quarters with good PRF difference image offsets

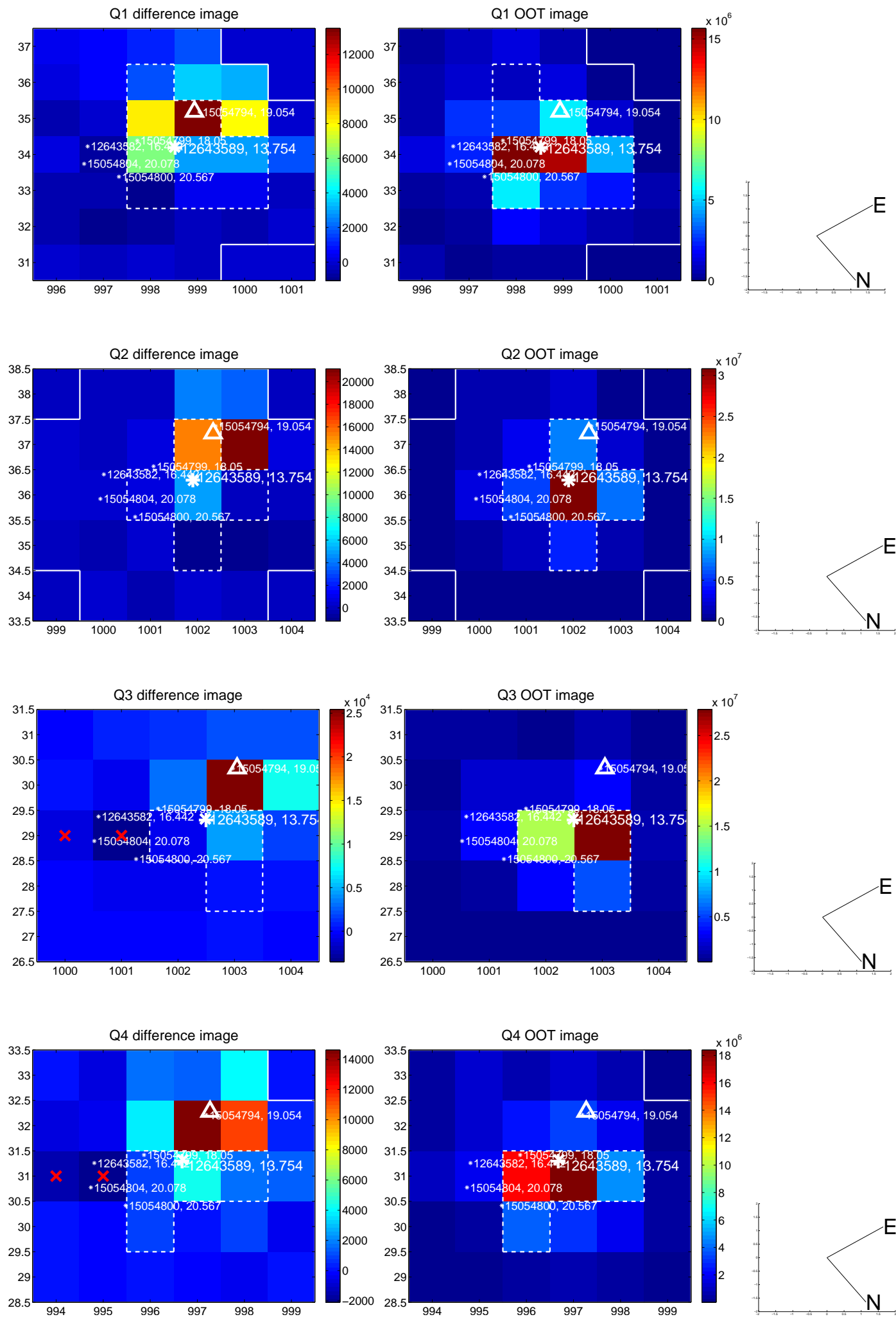
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.347 ± 0.237	18.34	3.831 ± 0.279	-2.054 ± 0.084
PRF-fit source offset from KIC position	4.264 ± 0.219	19.43	3.768 ± 0.257	-1.995 ± 0.090
photometric centroid source offset	4.55 ± 0.26	17.77	3.71 ± 0.26	-2.64 ± 0.25

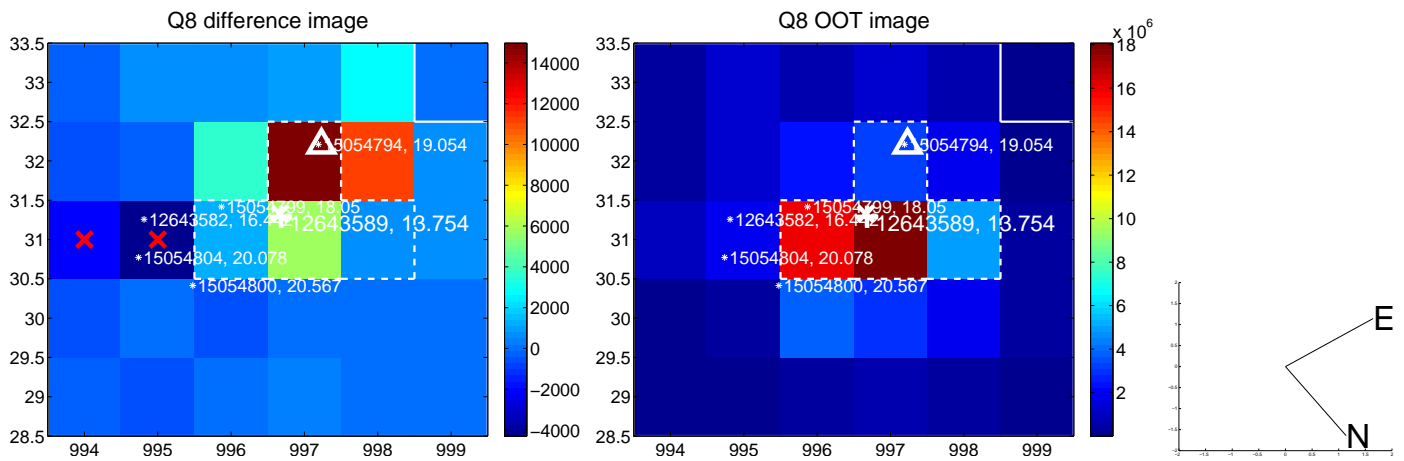
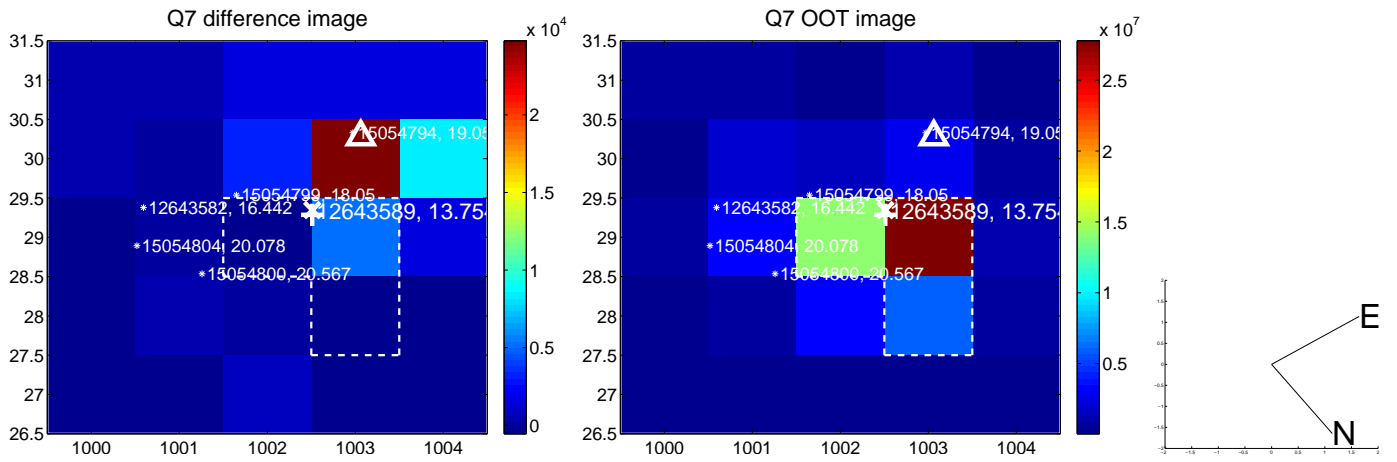
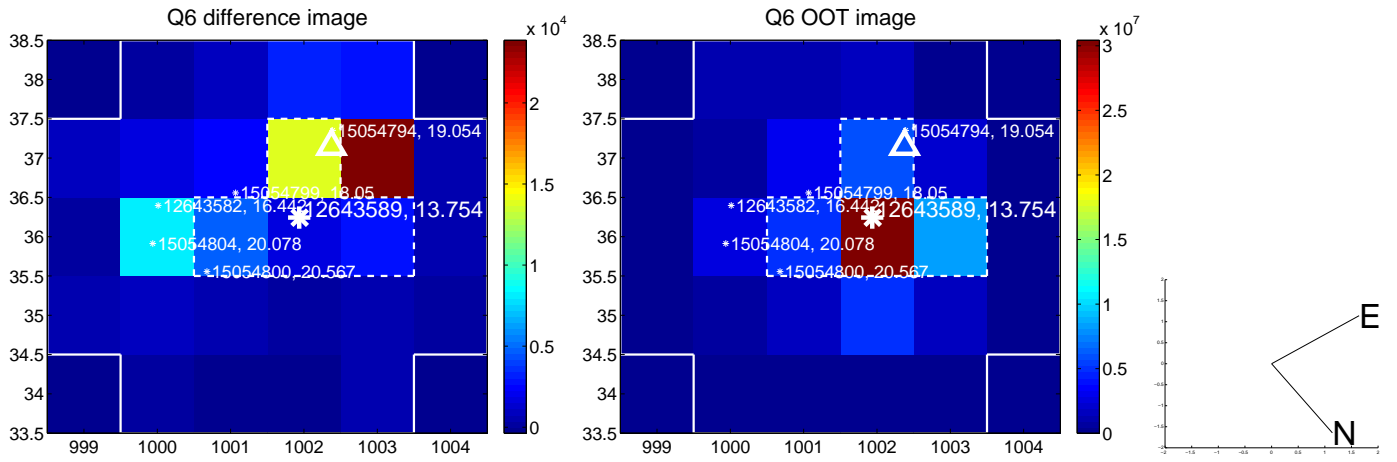
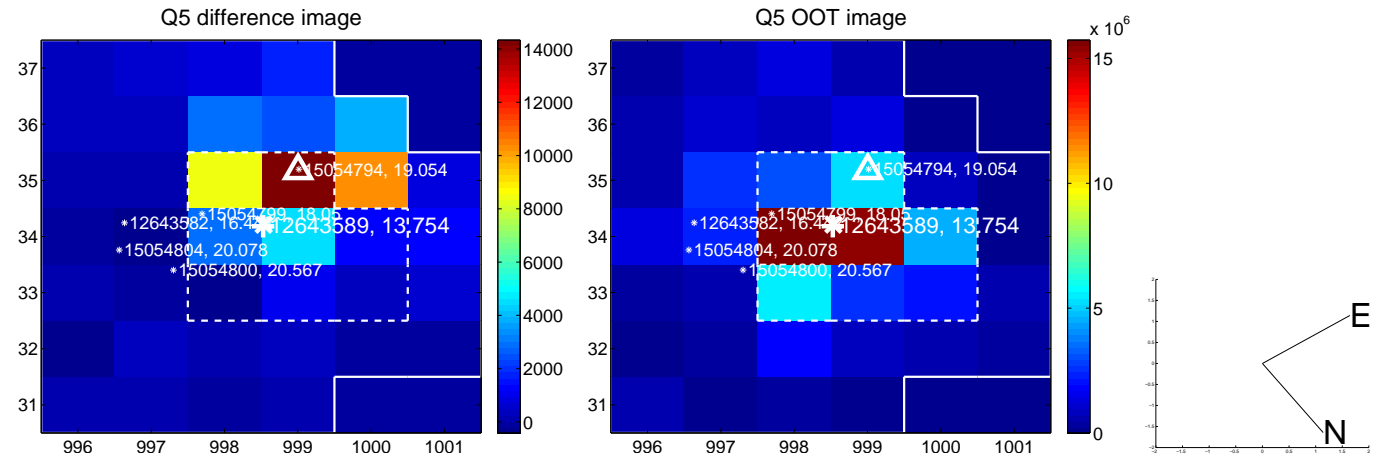


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

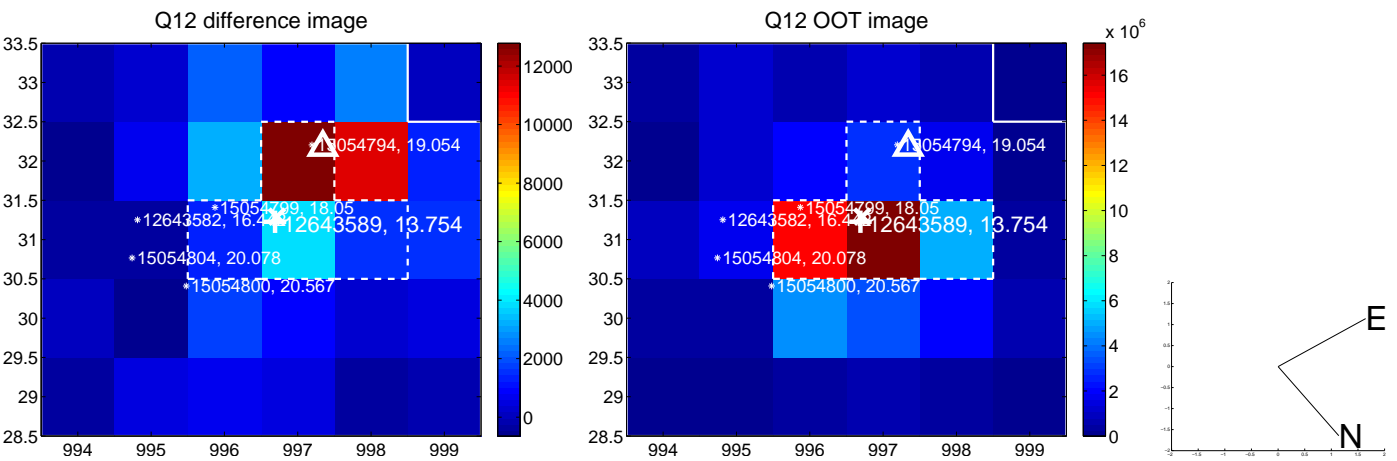
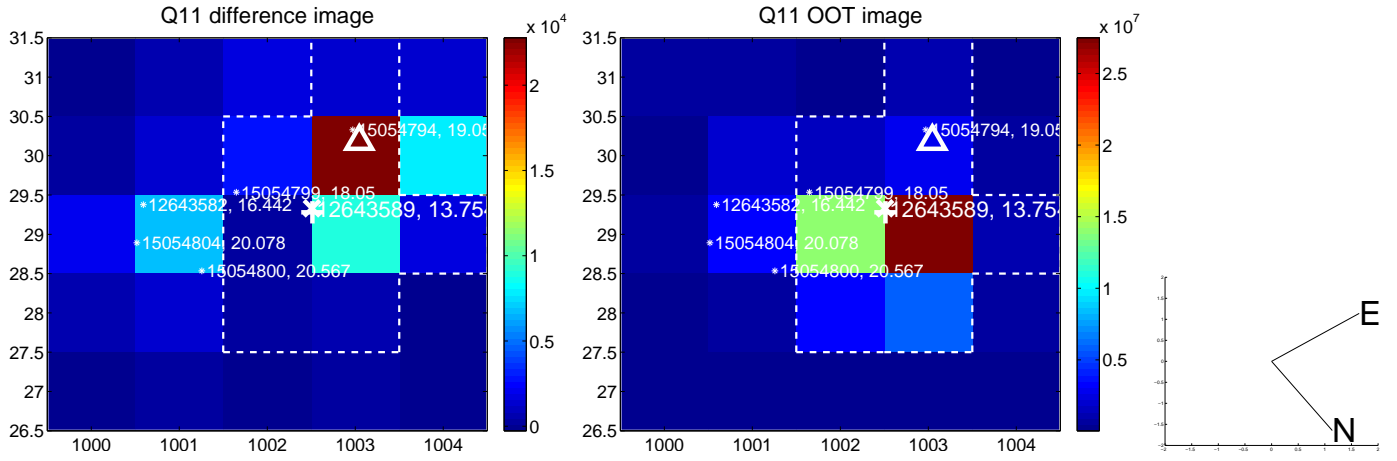
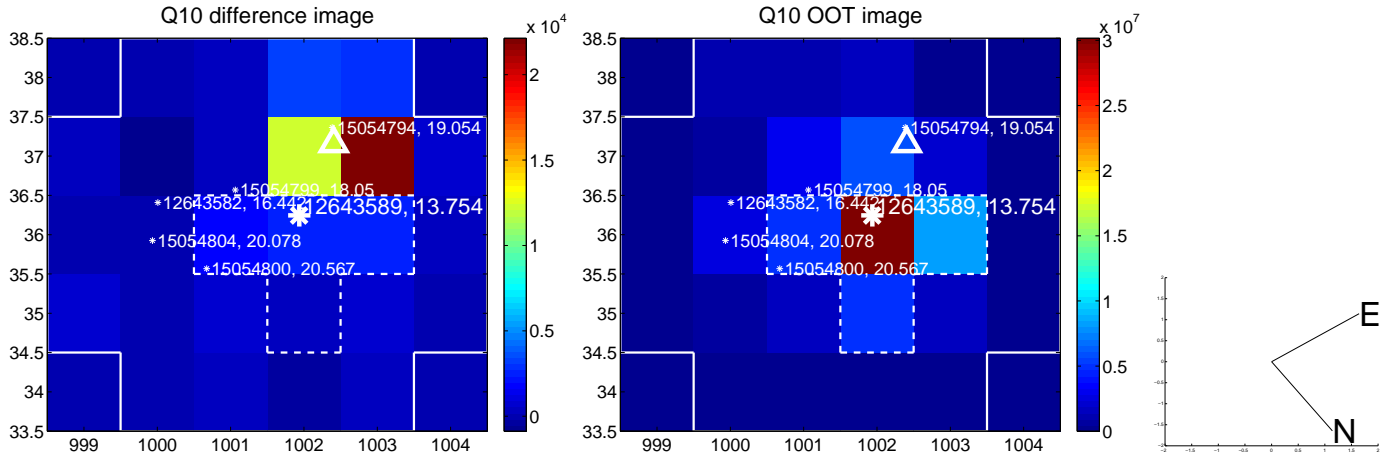
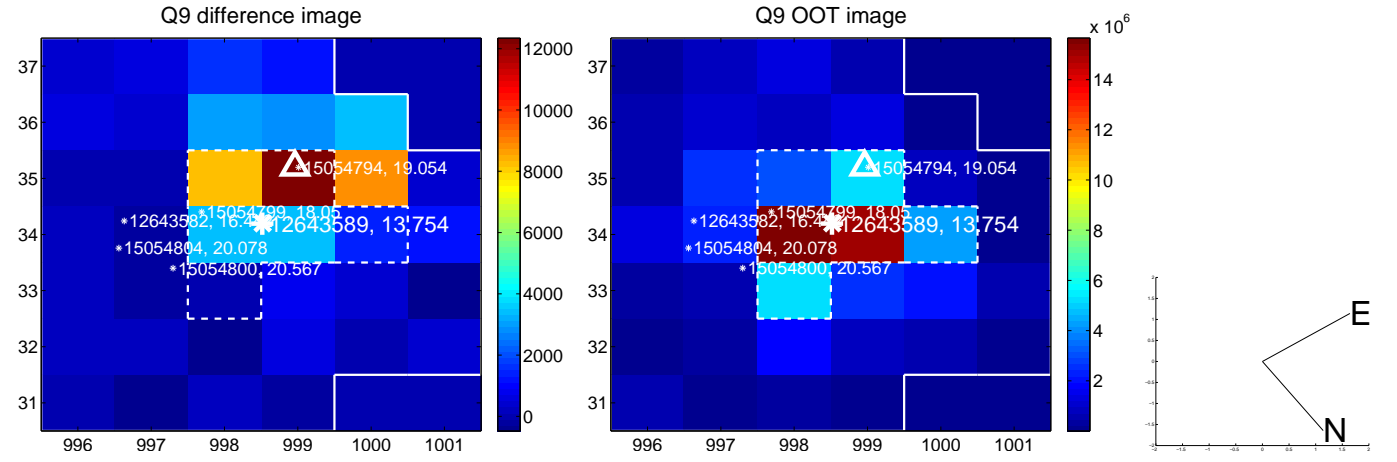
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



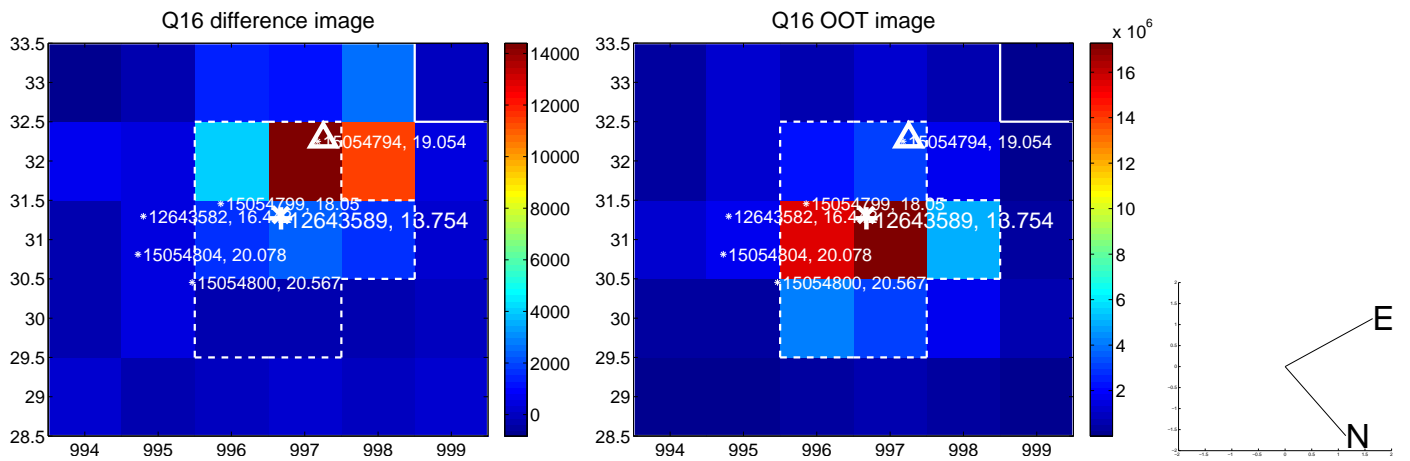
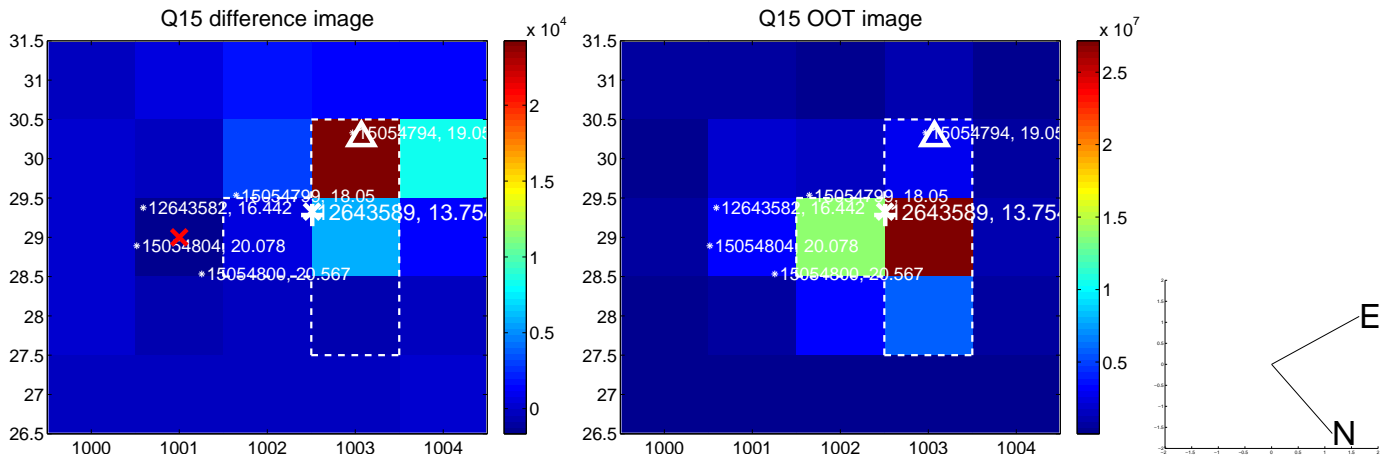
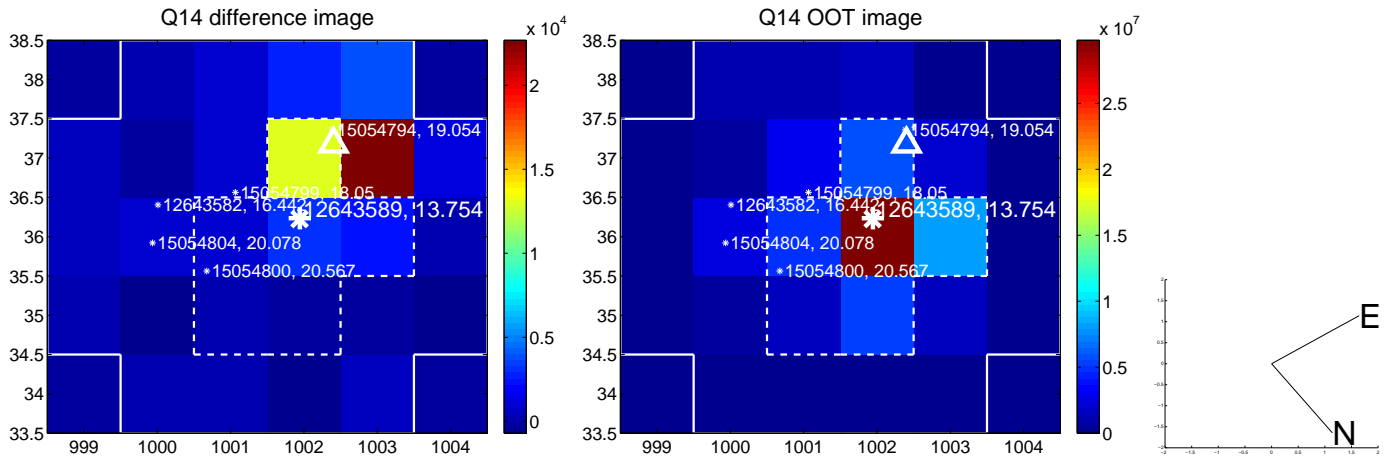
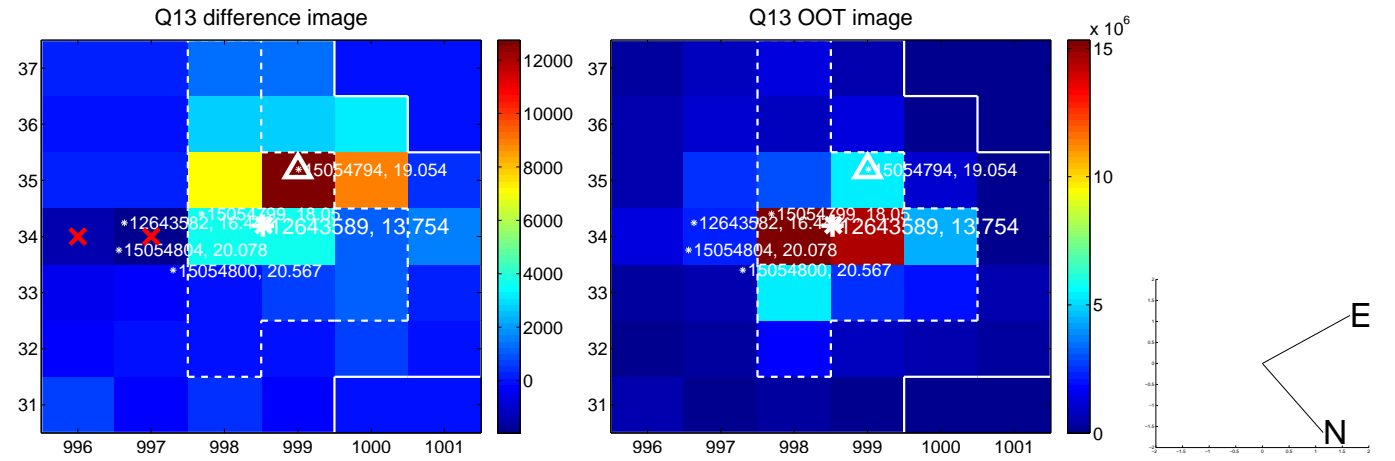
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



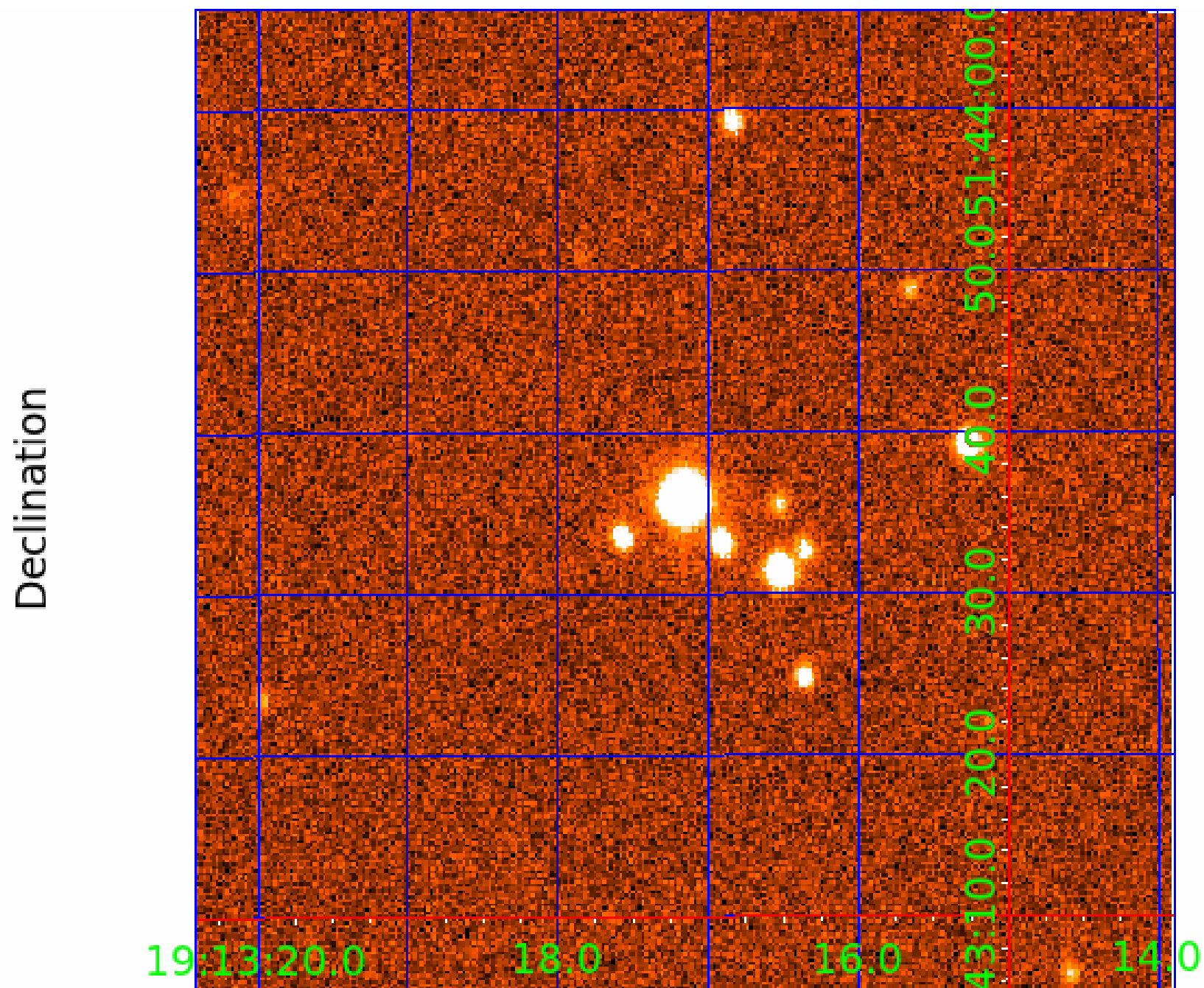
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 012643589

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})
012643589-01	OBS	0376.01	44.145906	167.388196	3954.7	3.755	93.0	87.9	1.15	6692	13.11	35.94
012643589-02	OBS	0376.02	1.411637	131.676611	292.4	1.095	32.8	42.9	1.15	6692	2.32	3540.97
012643589-03	OBS	No	0.705923	131.667817	40.6	1.451	9.4	7.8	1.15	6692	0.80	8920.93

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012643589-01	OBS	FP	0.00	0	1	1	1	DEEP_V_SHAPED—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH
012643589-02	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
012643589-03	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

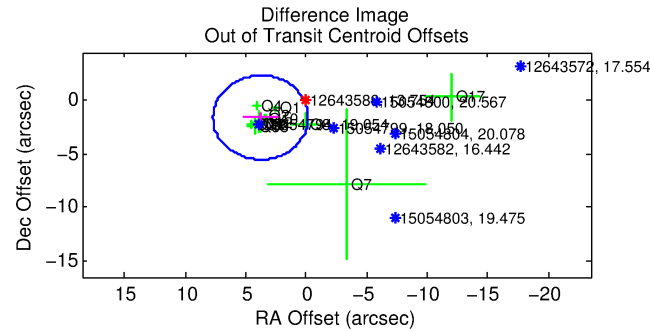
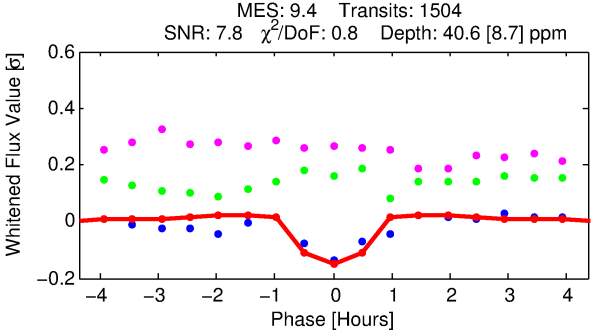
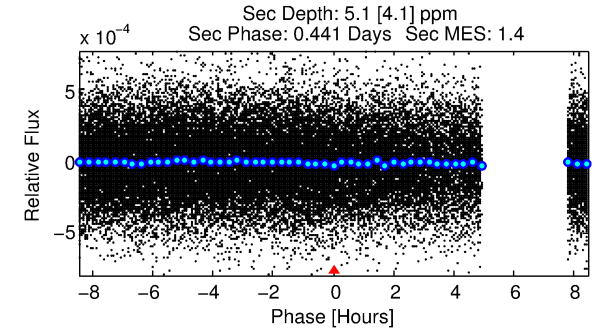
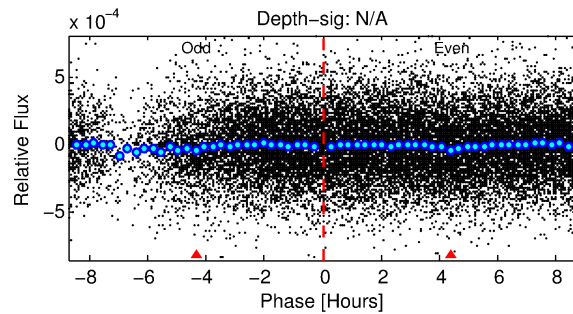
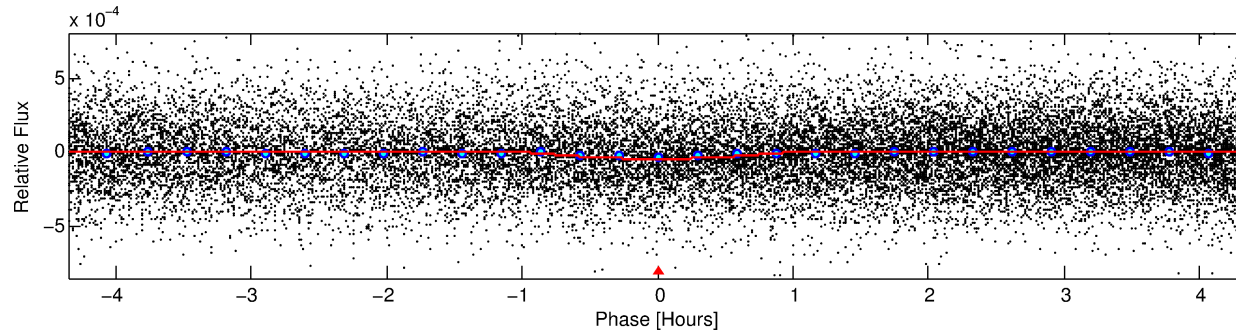
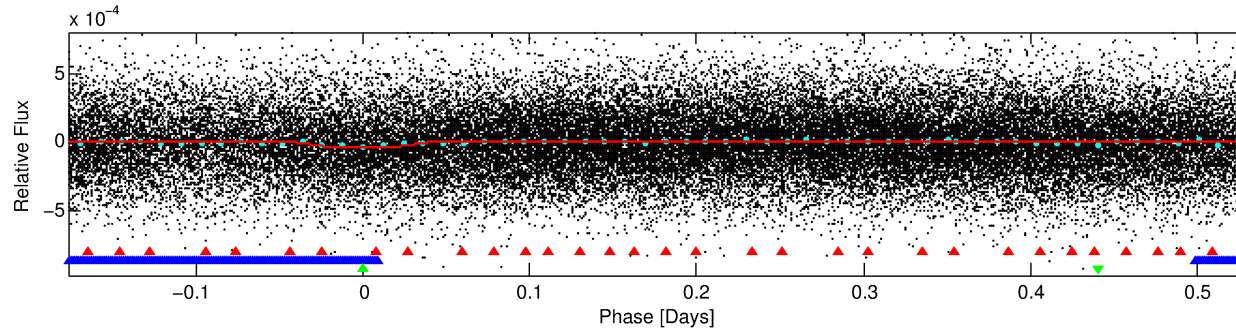
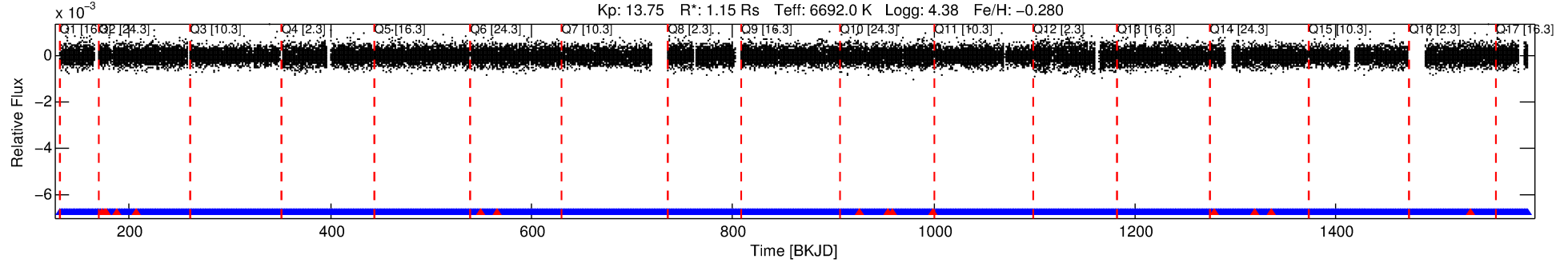
Ephemeris Match Information For 012643589-03

No Significant Match Found

DV One-Page Summary

KIC: 12643589 Candidate: 3 of 3 Period: 0.706 d
KOI: K00376 Corr: No Ephemeris Match

Kp: 13.75 R*: 1.15 Rs Teff: 6692.0 K Logg: 4.38 Fe/H: -0.280



DV Fit Results:

Period = 0.70592 [0.00002] d
Epoch = 131.6678 [0.0025] BKJD
Rp/R* = 0.0064 [0.0019]
a/R* = 2.56 [3.54]
b = 0.77 [0.87]
Seff = 8920.93 [3635.58]
Teq = 2478 [252] K
Rp = 0.80 [0.36] Re
a = 0.0163 [0.0044] AU
Ag = 1.16 [1.25] [0.13σ]
Teffp = 3976 [1005] K [1.45σ]

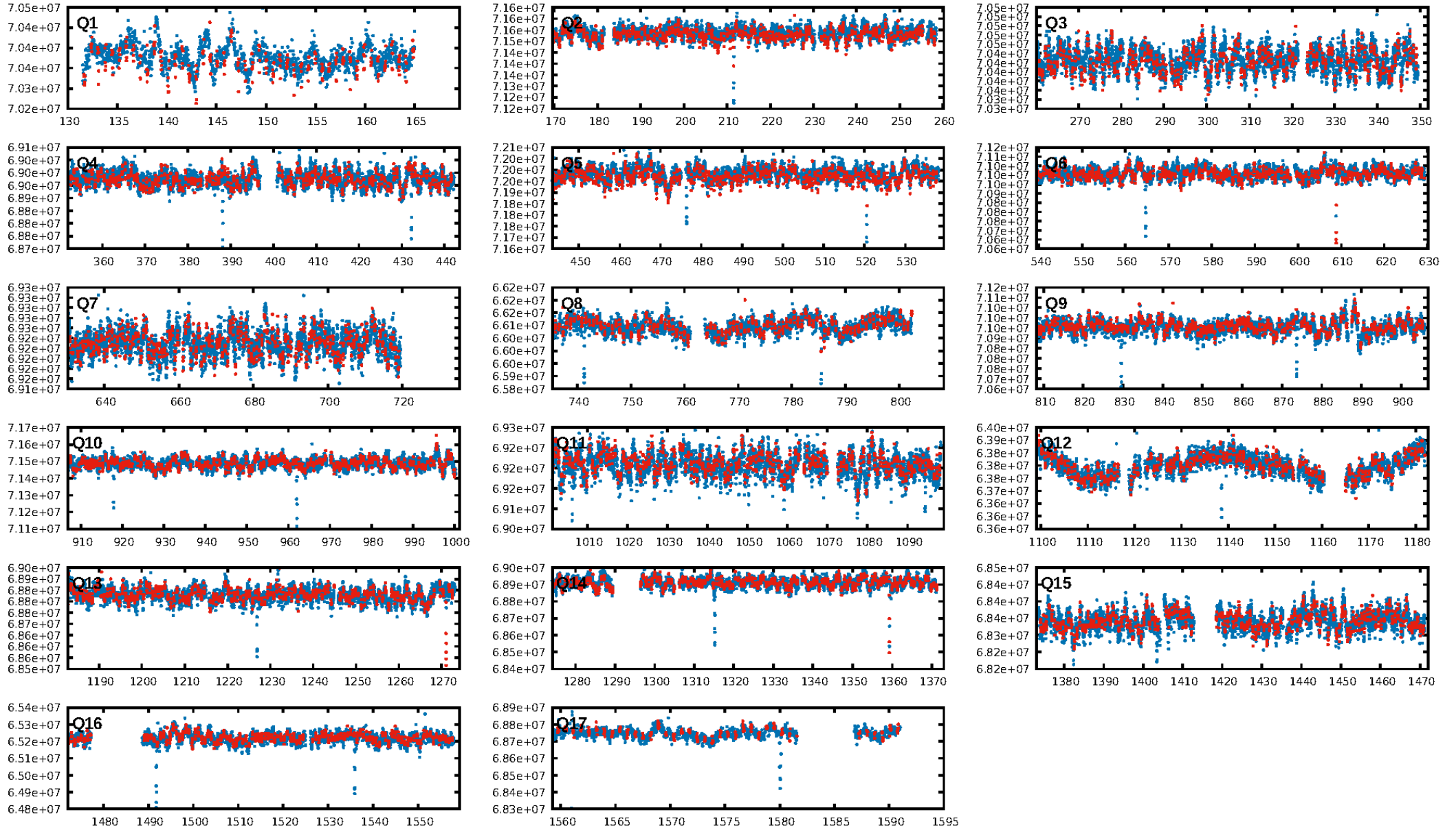
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [9.32σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 9.84e-21
RollingBand-fgt: 0.99 [1429/1444]
GhostDiagnostic-chr: 11.94
Centroid-sig: 40.6%
Centroid-so: 0.639 arcsec [0.59σ]
OotOffset-rm: 4.095 arcsec [3.13σ]
KicOffset-rm: 4.105 arcsec [3.65σ]
OotOffset-st: 2/3/3/5 [13]
KicOffset-st: 2/3/3/5 [13]
DiffImageQuality-fgm: 0.31 [4/13]
DiffImageOverlap-fno: 1.00 [17/17]

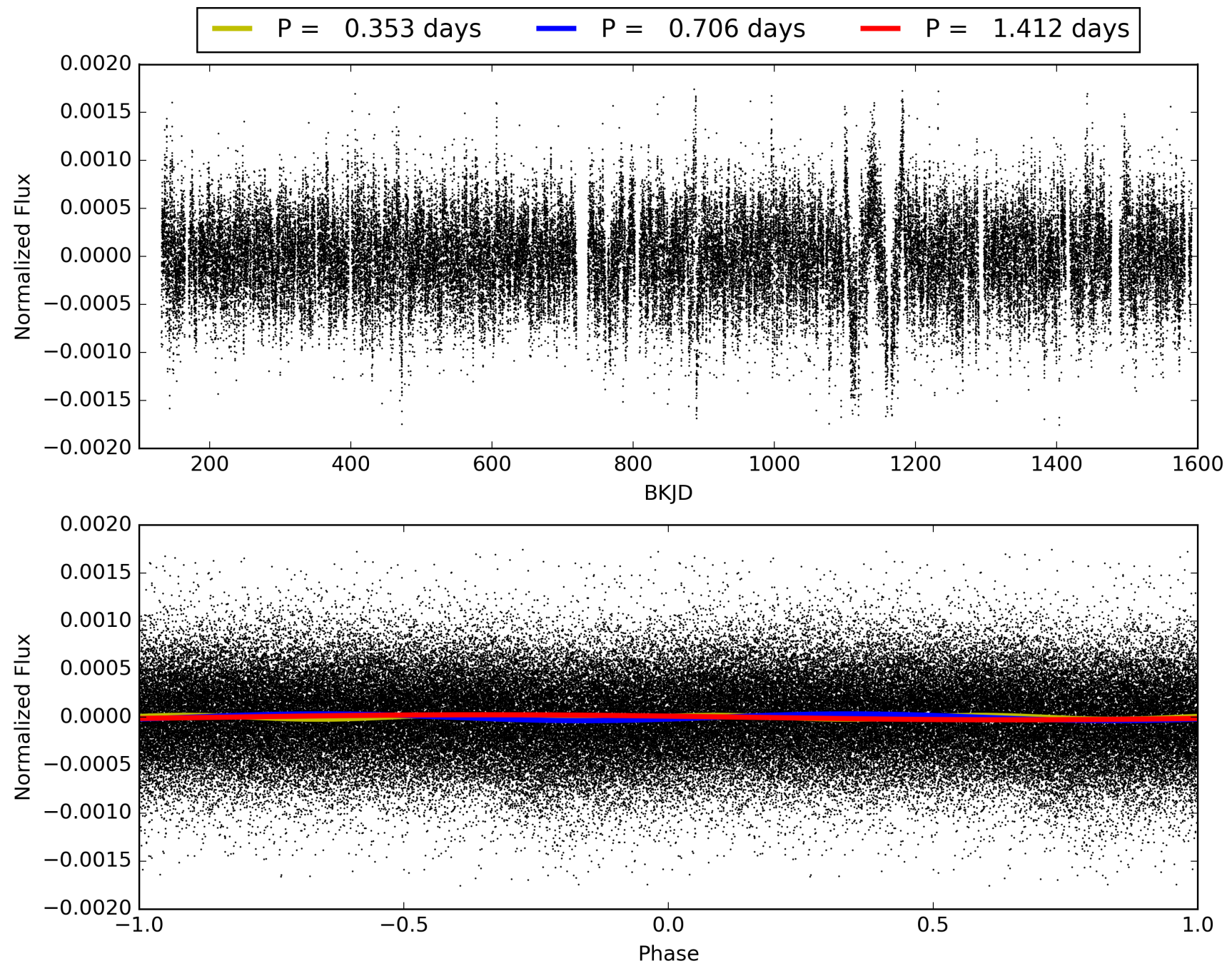
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 13:56:26 Z

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

TCE 012643589-03, PDC Light Curves

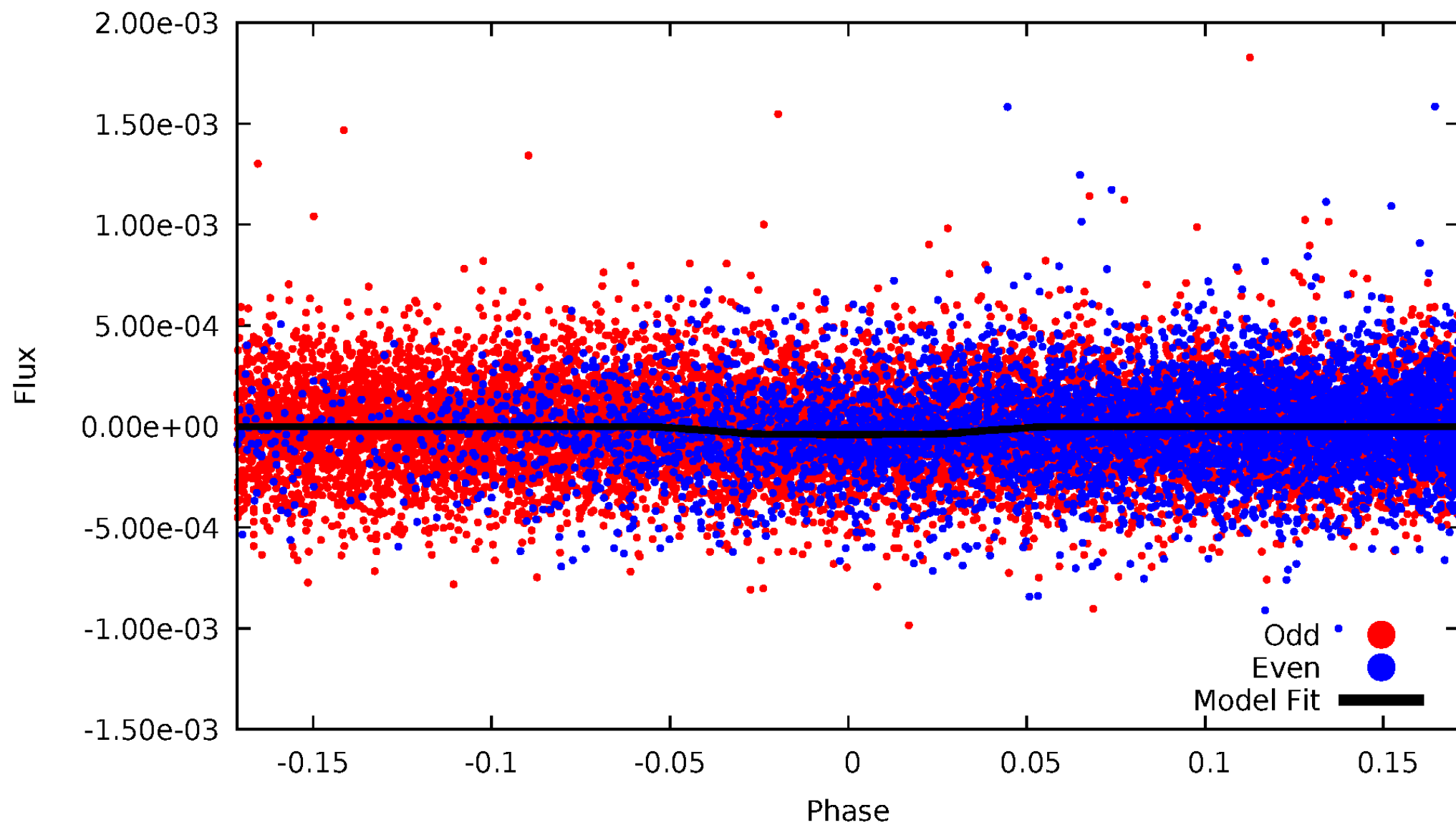


TCE 012643589-03



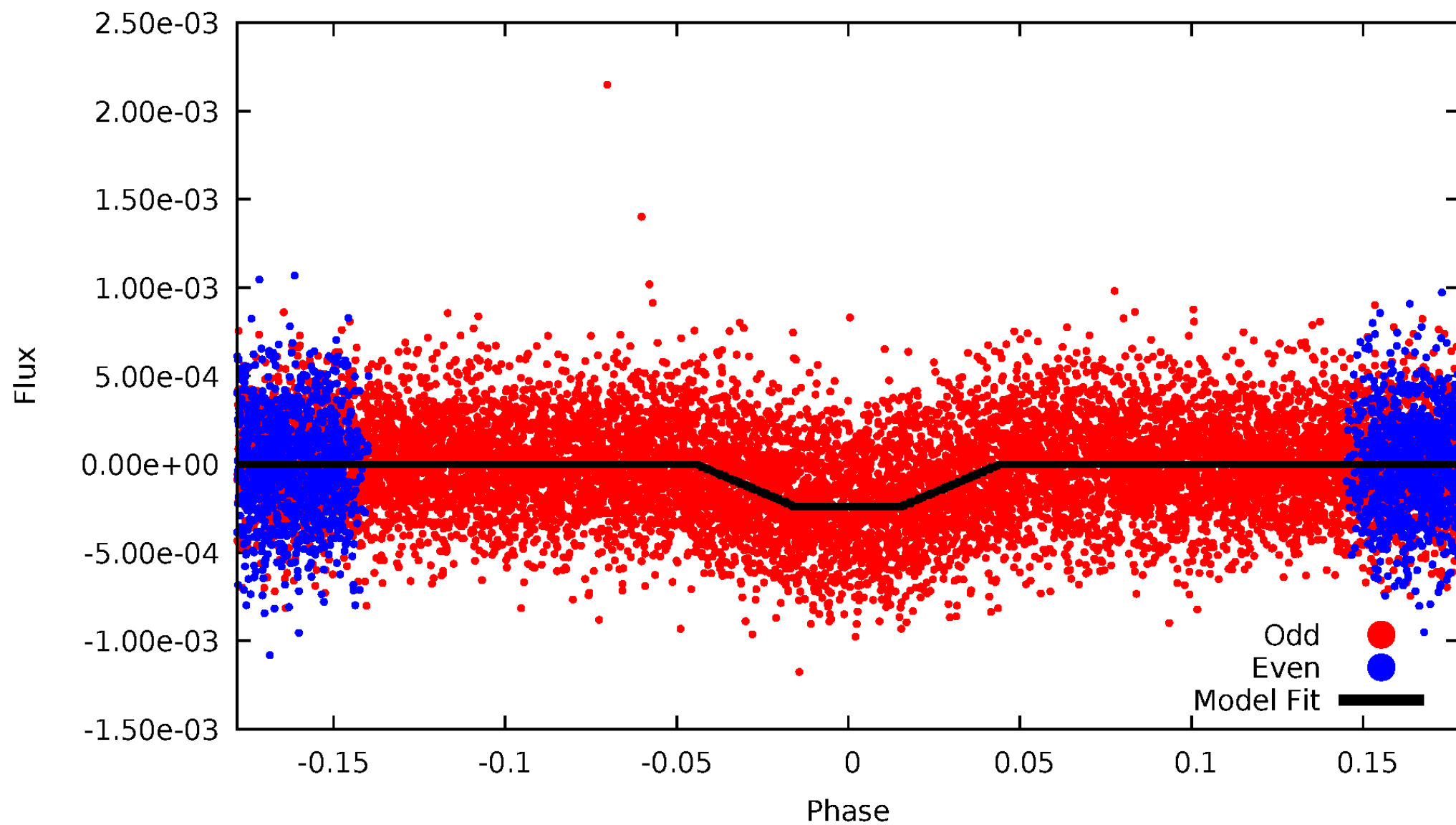
DV Odd/Even

TCE 012643589-03

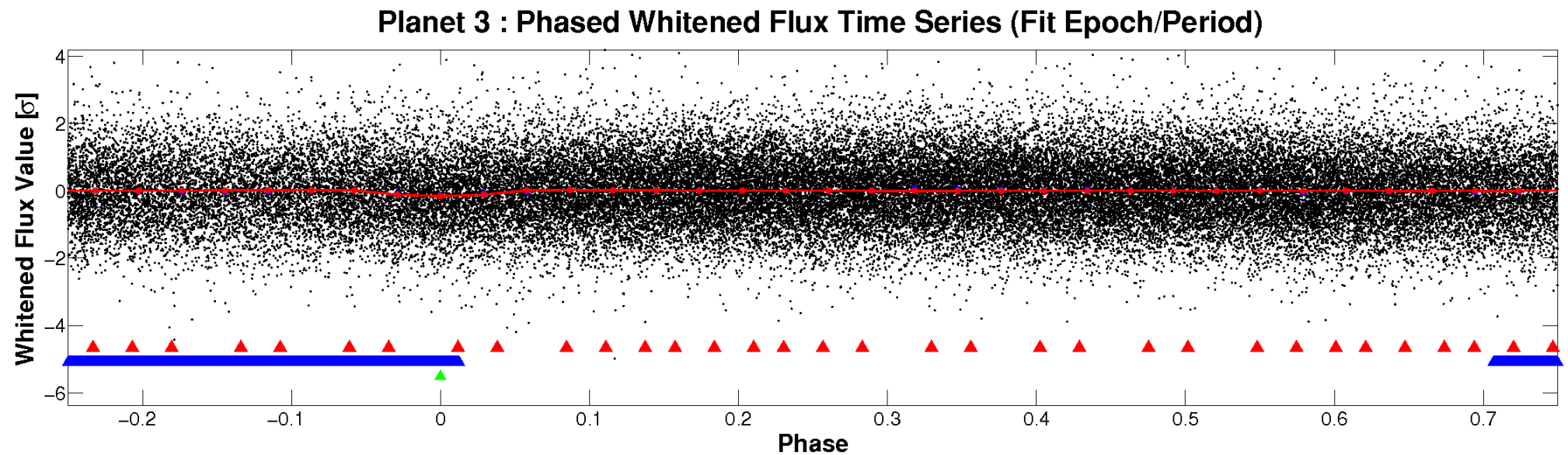
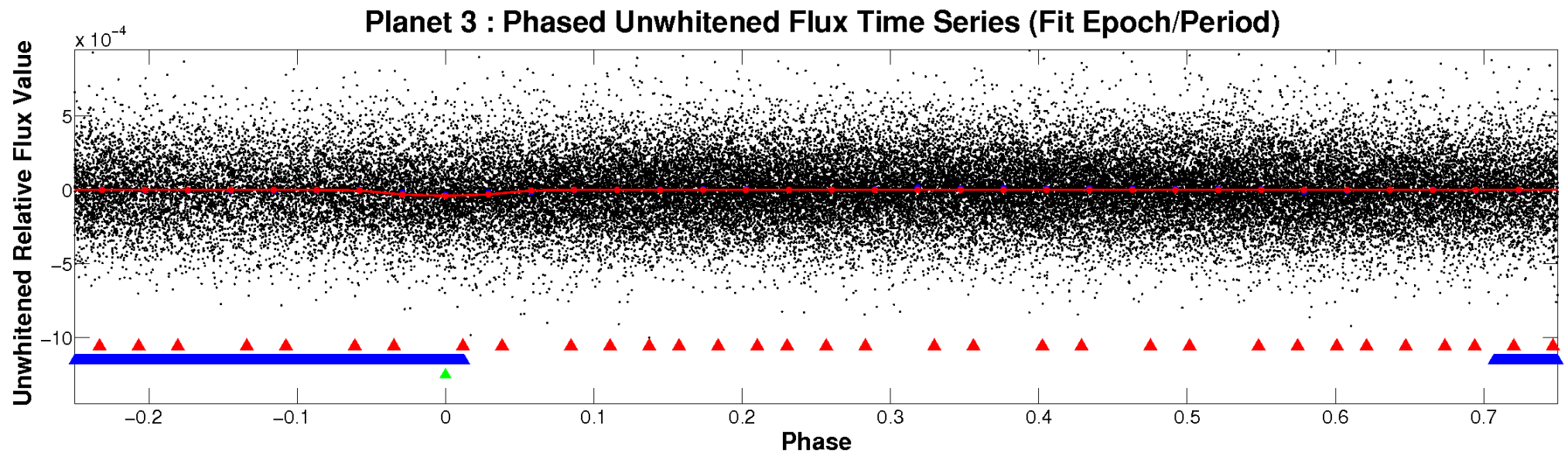


ALT Odd/Even

TCE 012643589-03

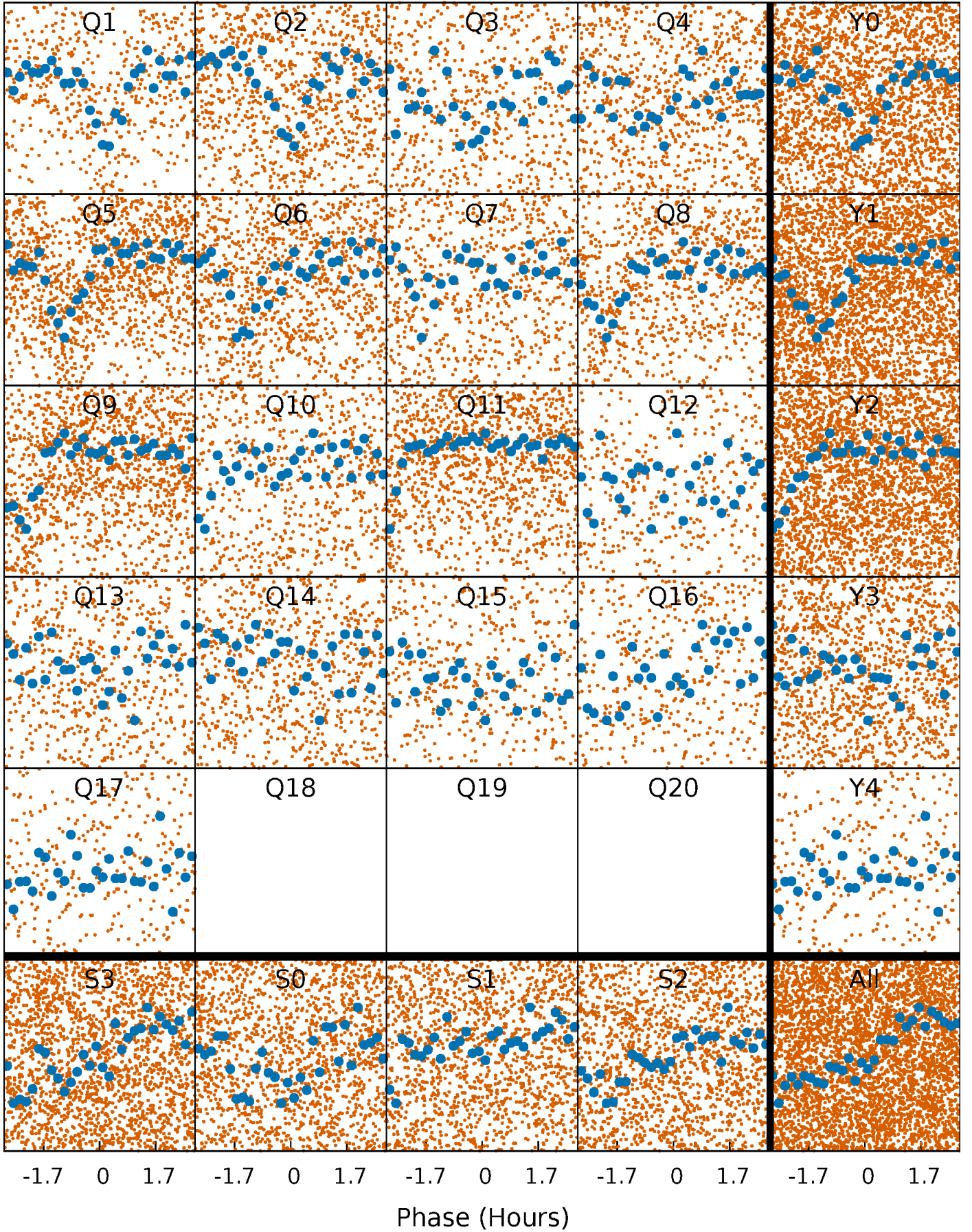


Non-Whitened Vs. Whitened Light Curve



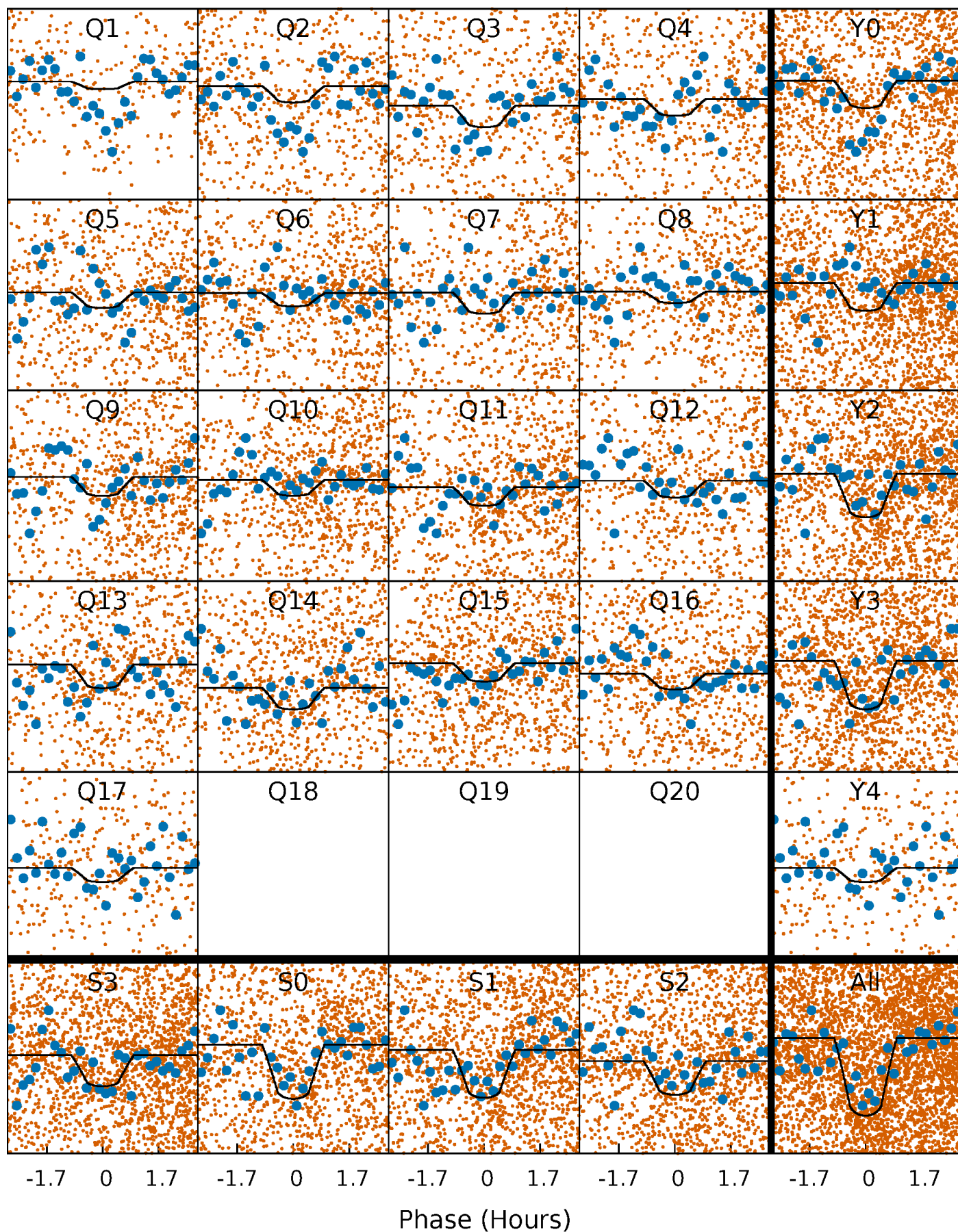
PDC Quarter-Phased Transit Curves

TCE 012643589-03 $P = 0.705923$ Days $T_0 = 131.667817$ (BKJD)



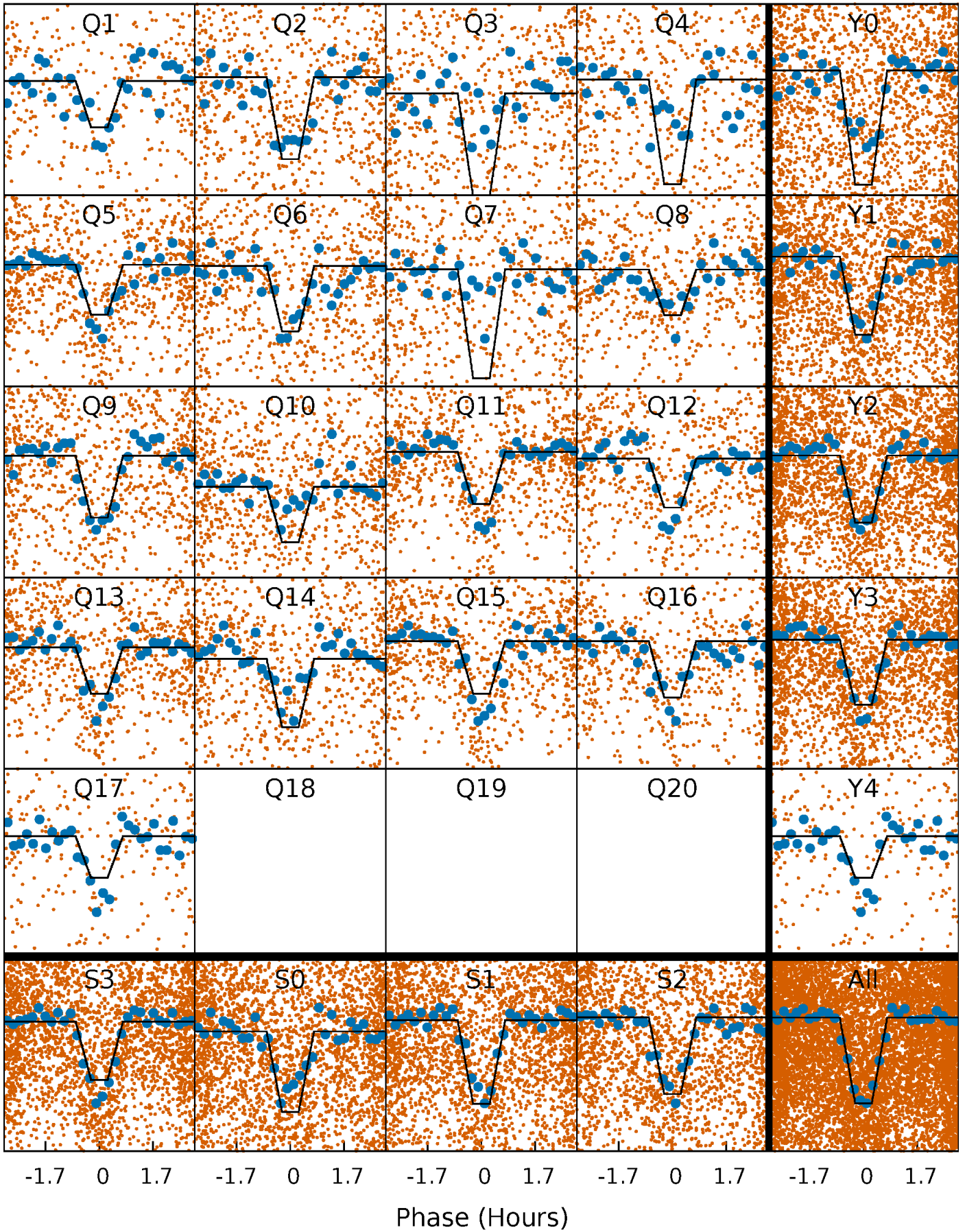
DV Quarter-Phased Transit Curves

TCE 012643589-03 P= 0.705923 Days $T_0=131.667817$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

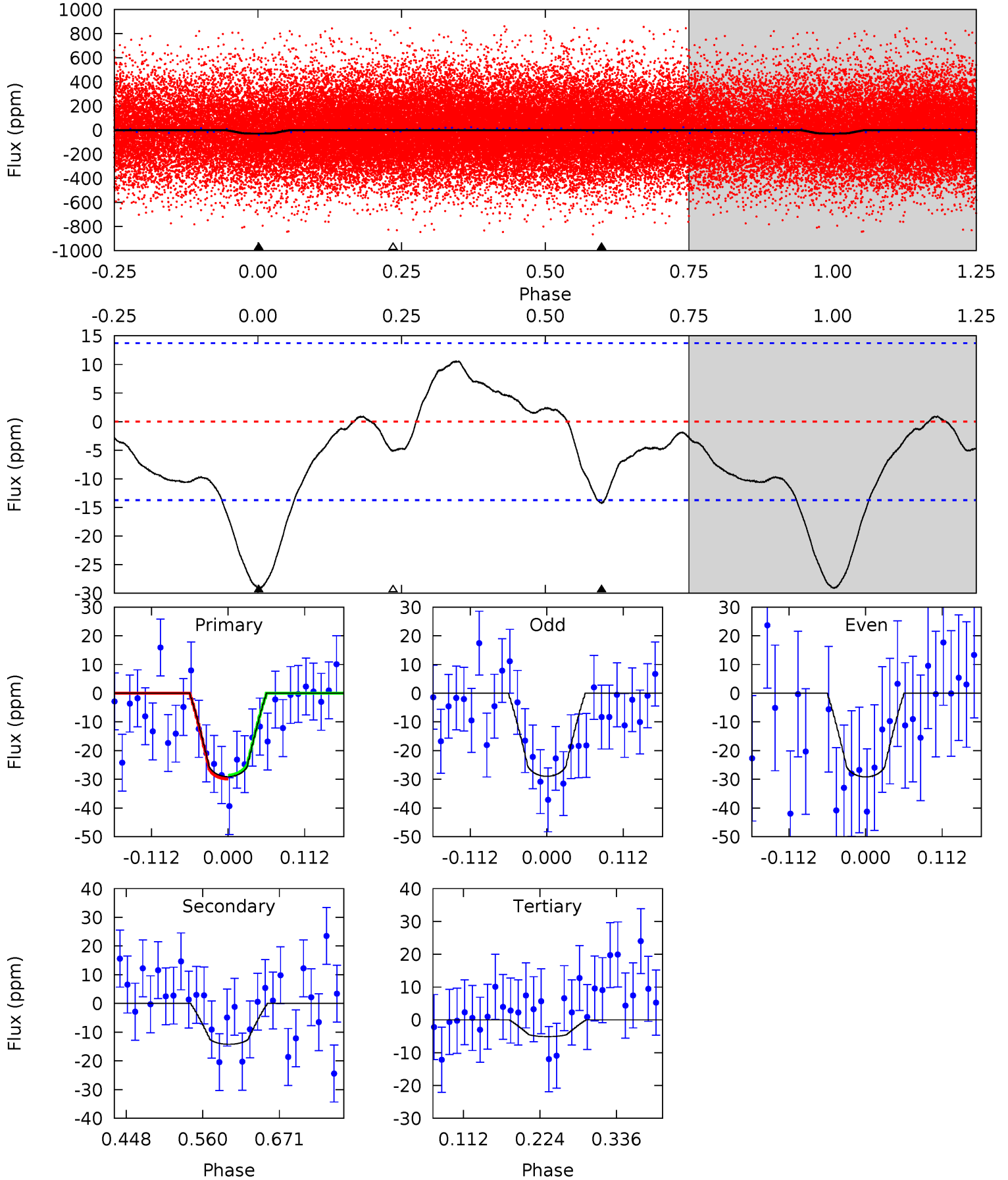
TCE 012643589-03 P= 0.705815 Days $T_0=131.678987$ (BKJD)



DV Model-Shift Uniqueness Test

012643589-03, P = 0.705923 Days, E = 130.961894 Days

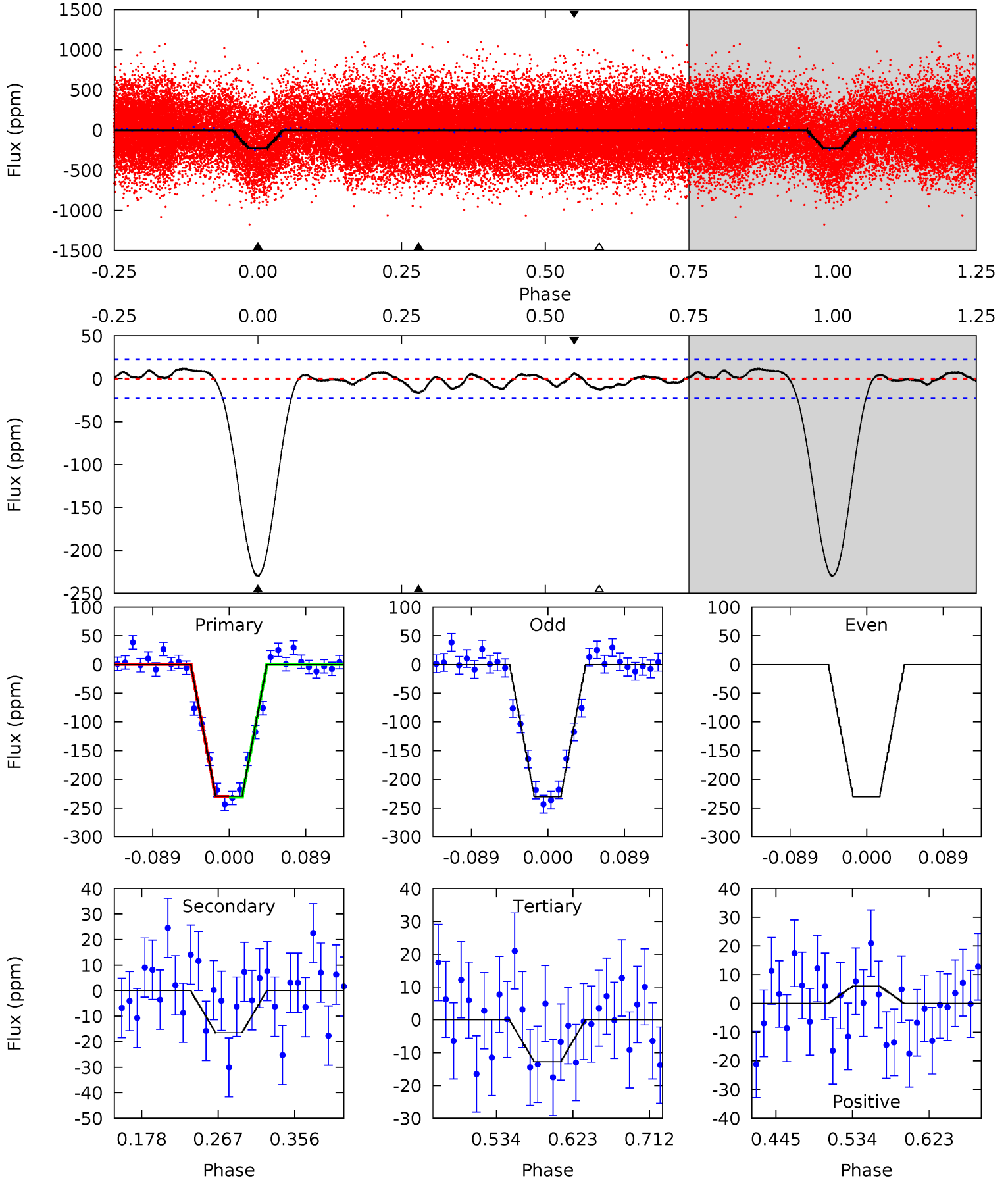
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.64	4.71	1.69	0	4.54	1.59	1.92	7.95	9.64	3.02	4.71	0.03	0.82	0.27	0.22



Alt Model-Shift Uniqueness Test

012643589-03, P = 0.705815 Days, E = 130.973172 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.5	3.33	2.59	1.23	4.59	1.70	1.14	43.9	45.3	0.74	2.10	0	0.94	0.05	0.14



Stellar Parameters For KIC 012643589

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6692^{+160}_{-220}	$4.383^{+0.065}_{-0.208}$	$-0.280^{+0.250}_{-0.300}$	$1.152^{+0.374}_{-0.125}$	$1.176^{+0.167}_{-0.150}$	$1.083^{+0.303}_{-0.565}$
	+2%/-3%	+1%/-5%	+89%/-107%	+32%/-11%	+14%/-13%	+28%/-52%
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 012643589-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-14 ± 3	$0.85^{+0.25}_{-0.24}$	3516^{+292}_{-165}	5065^{+910}_{-649}	$2.901^{+2.916}_{-1.282}$
Alt.	-16 ± 5	$2.04^{+0.41}_{-0.32}$	3518^{+287}_{-179}	3359^{+372}_{-723}	$0.566^{+0.296}_{-0.223}$

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

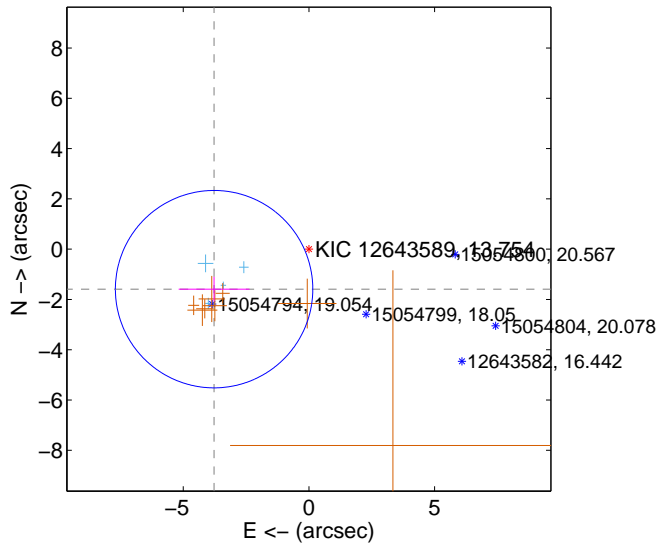
Supplemental centroid analysis for 012643589-03. Kepler magnitude: 13.75. Transit SNR 7.81

There are 4 quarters with good PRF difference image offsets

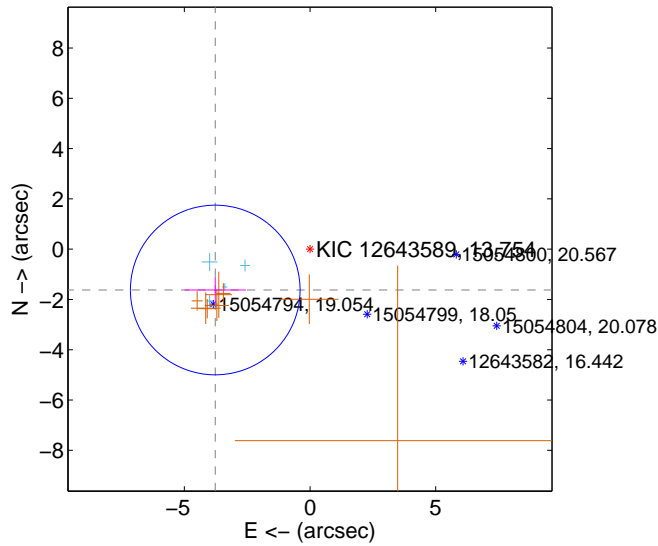
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.095 ± 1.309	3.13	3.773 ± 1.411	-1.591 ± 0.491
PRF-fit source offset from KIC position	4.105 ± 1.125	3.65	3.770 ± 1.221	-1.624 ± 0.523
photometric centroid source offset	0.64 ± 1.08	0.59	0.55 ± 1.09	0.33 ± 1.06

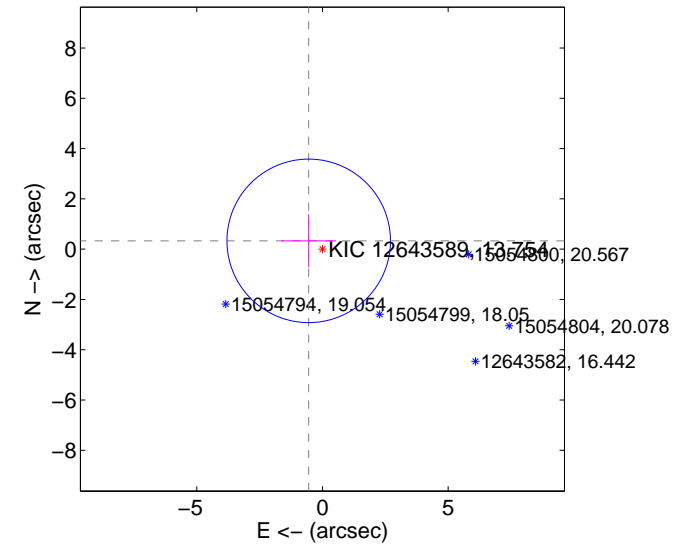
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

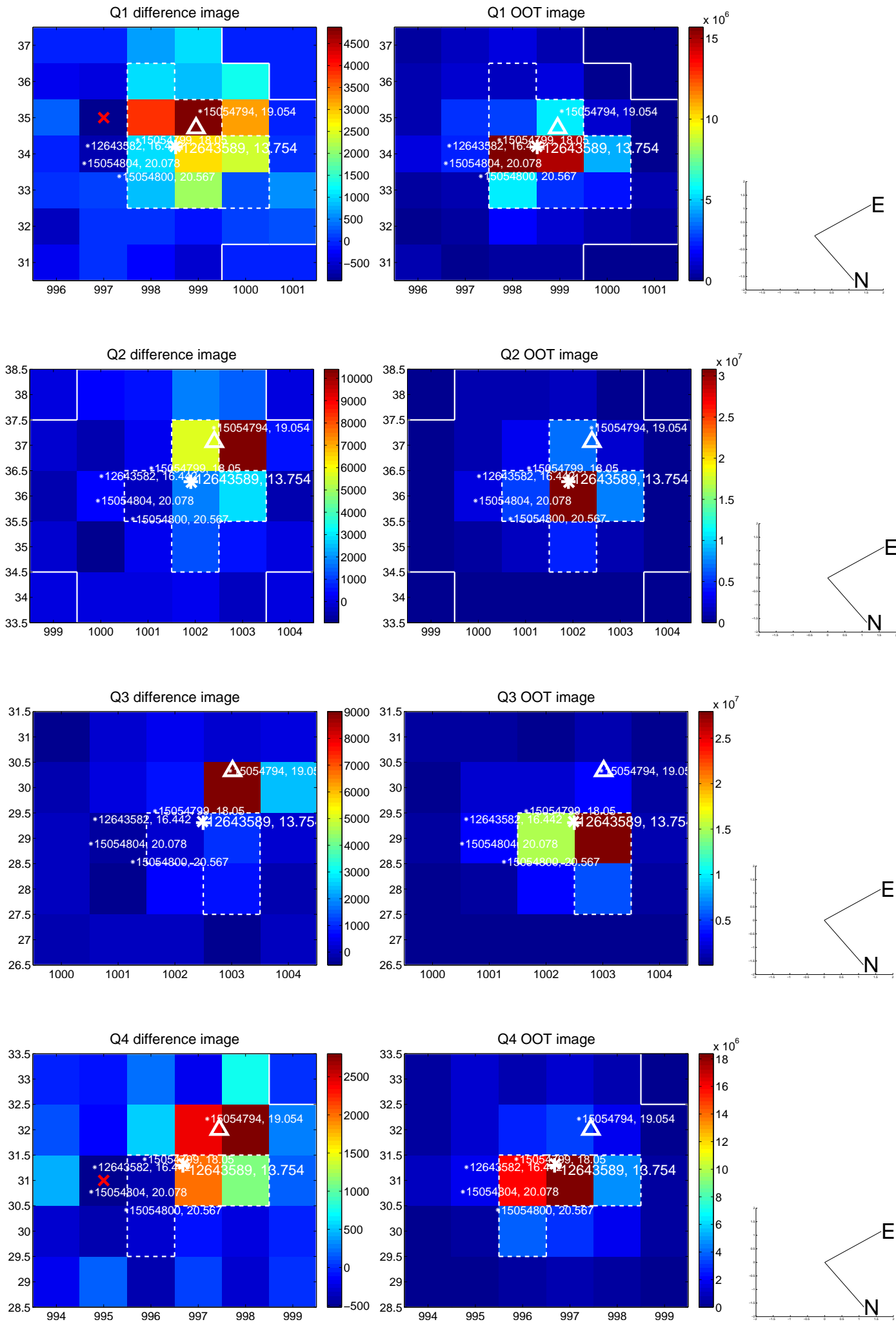


offset from photometric centroids

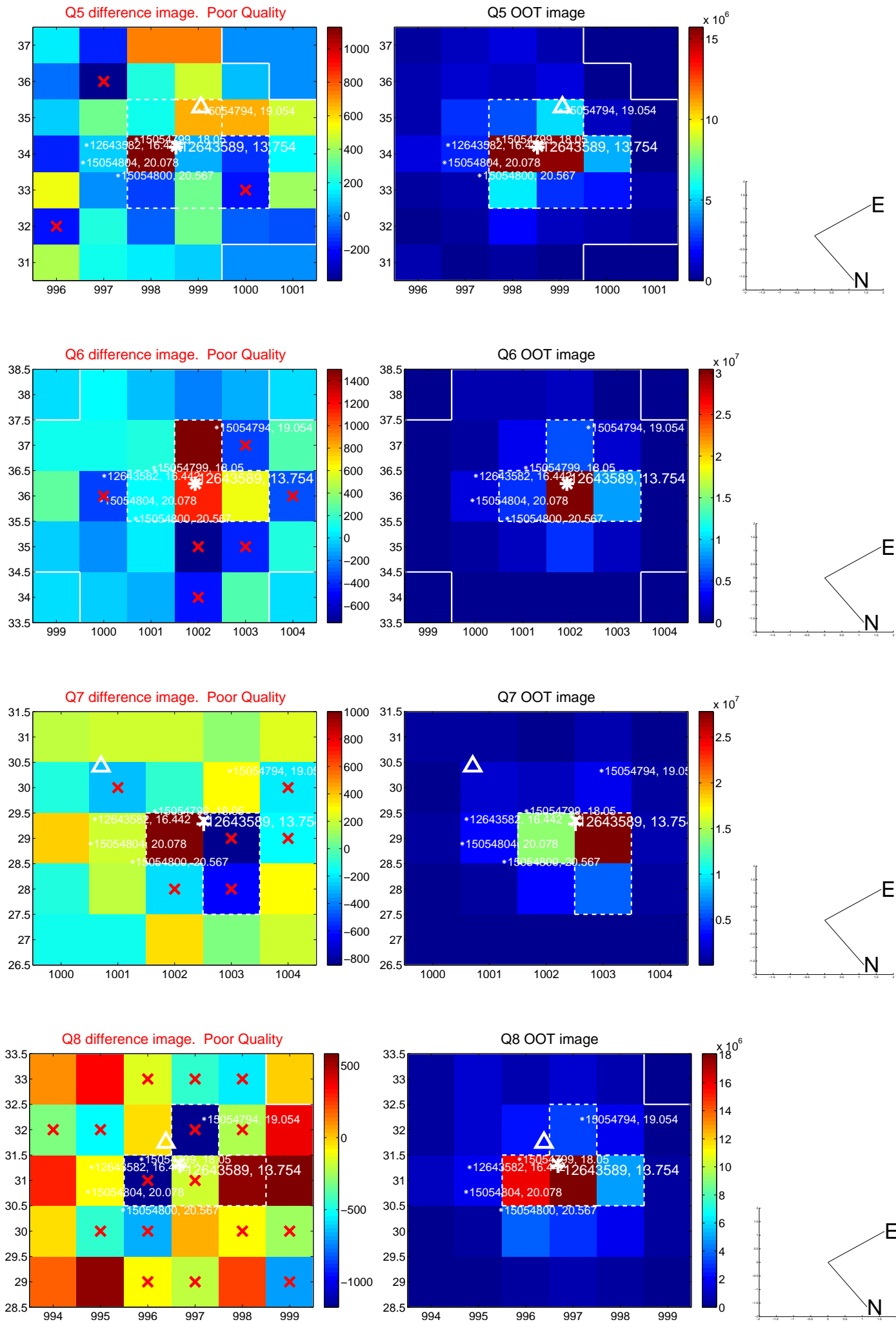


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

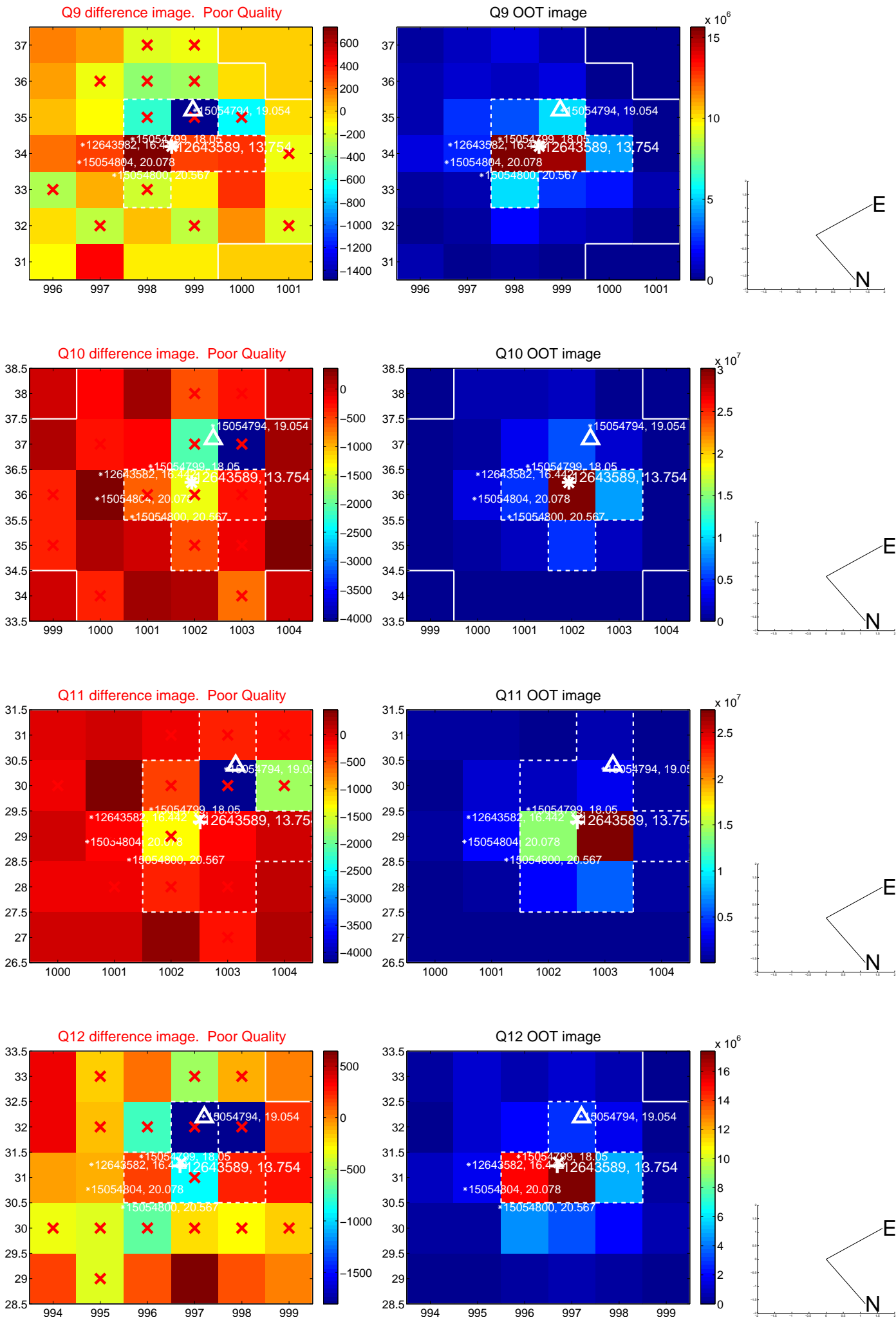
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



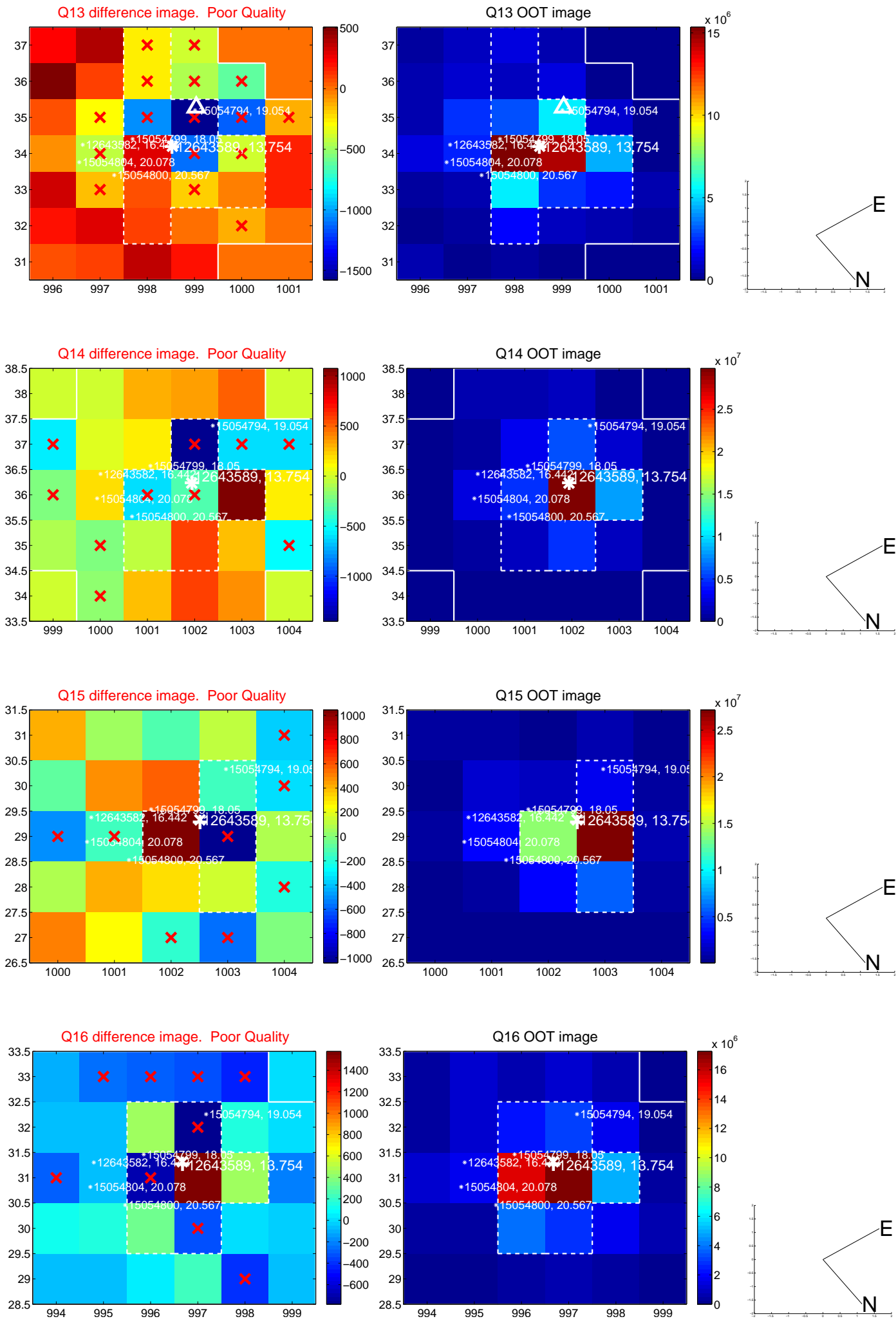
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

