

KIC 010340423

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})
010340423-01	OBS	0736.01	18.794185	140.205033	1552.1	3.518	33.8	36.7	0.60	4126	2.72	6.79
010340423-02	OBS	0736.02	6.738954	135.280051	561.1	3.009	19.5	20.8	0.60	4126	1.73	26.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010340423-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010340423-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

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

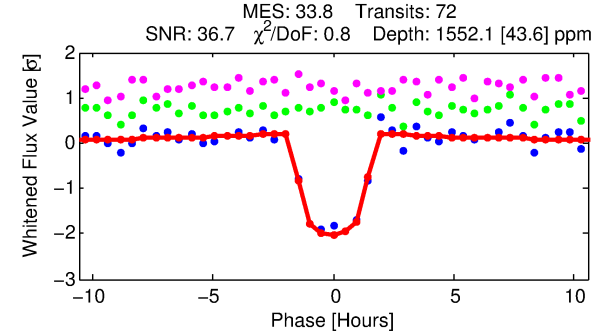
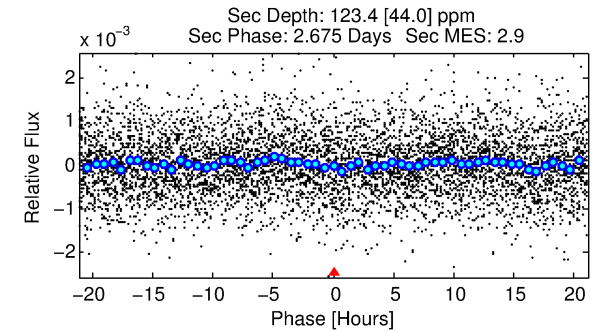
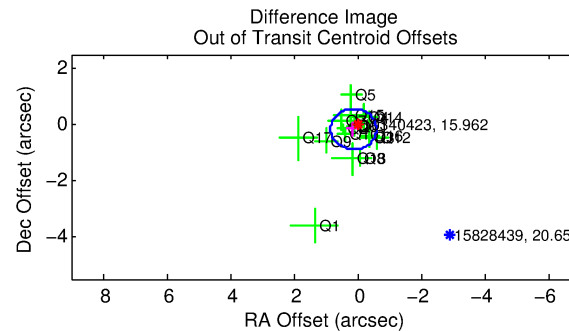
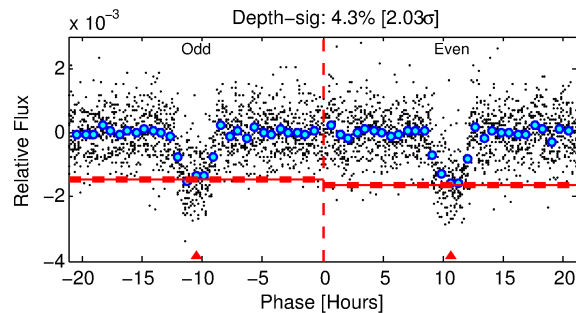
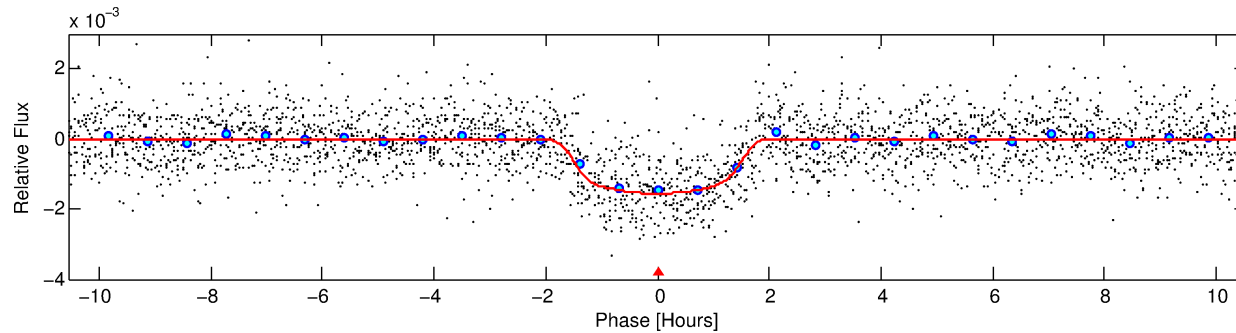
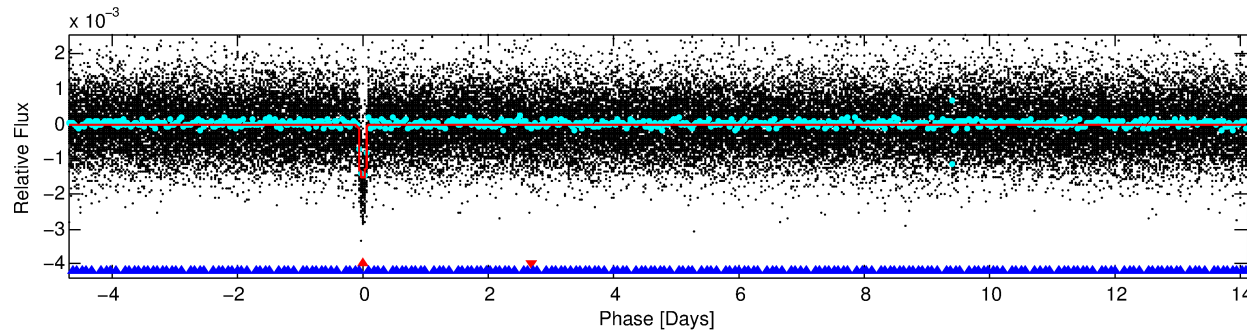
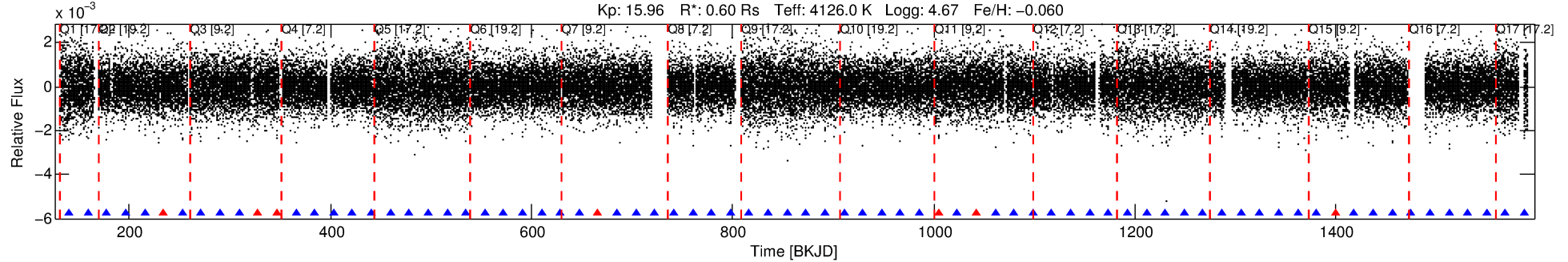
Ephemeris Match Information For 010340423-01

No Significant Match Found

DV One-Page Summary

KIC: 10340423 Candidate: 1 of 2 Period: 18.794 d
KOI: K00736.01 Name: Kepler-225c Corr: 0.962

Kp: 15.96 R*: 0.60 Rs Teff: 4126.0 K Logg: 4.67 Fe/H: -0.060



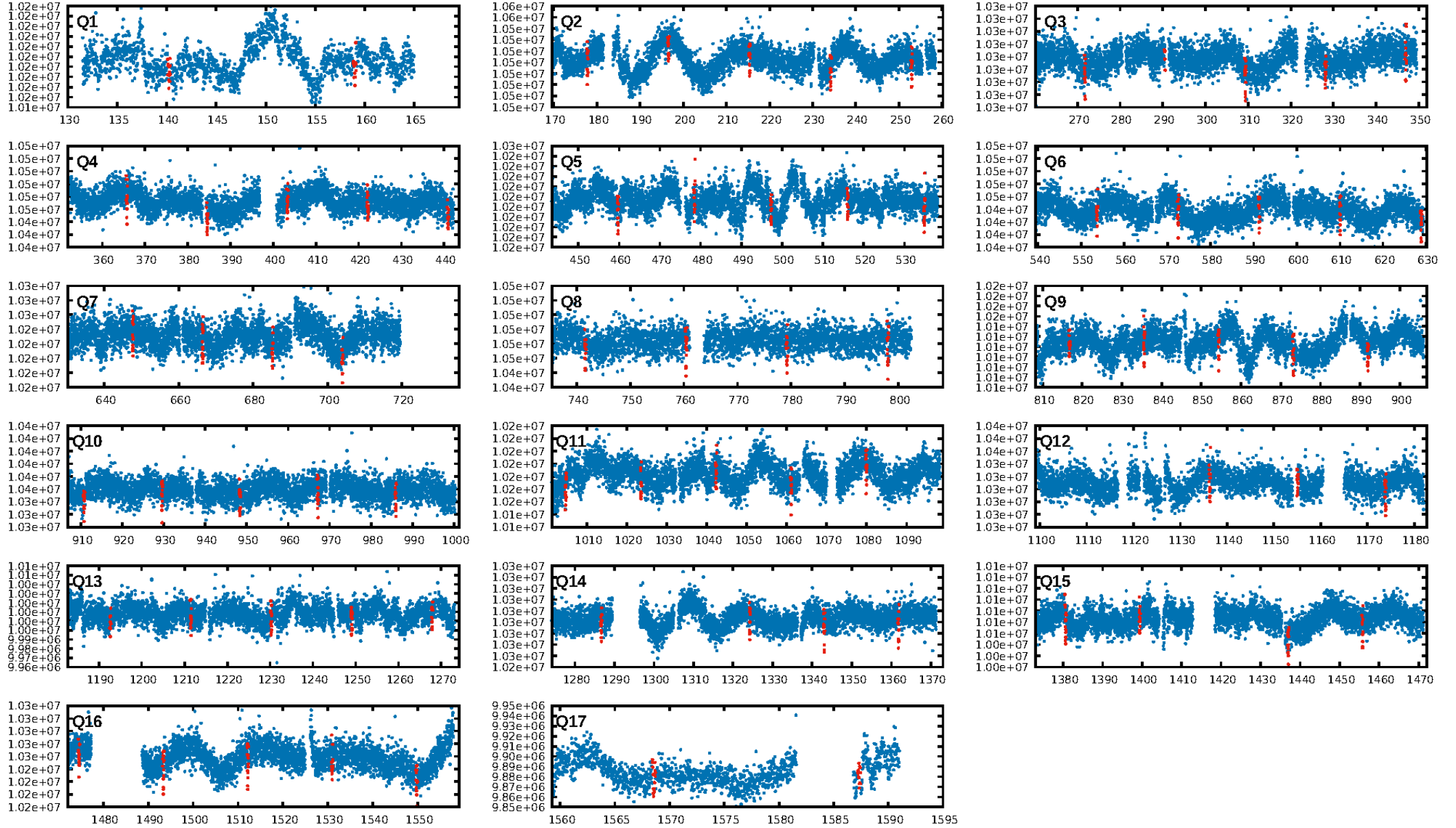
DV Fit Results:

Period = 18.79419 [0.00005] d
Epoch = 140.2050 [0.0021] BKJD
Rp/R* = 0.0414 [0.0039]
a/R* = 25.45 [8.56]
b = 0.83 [0.13]
Seff = 6.79 [0.62]
Teq = 412 [9] K
Rp = 2.72 [0.28] Re
a = 0.1177 [0.0042] AU
Ag = 127.27 [51.60] [2.45σ]
Teffp = 2138 [219] K [7.86σ]

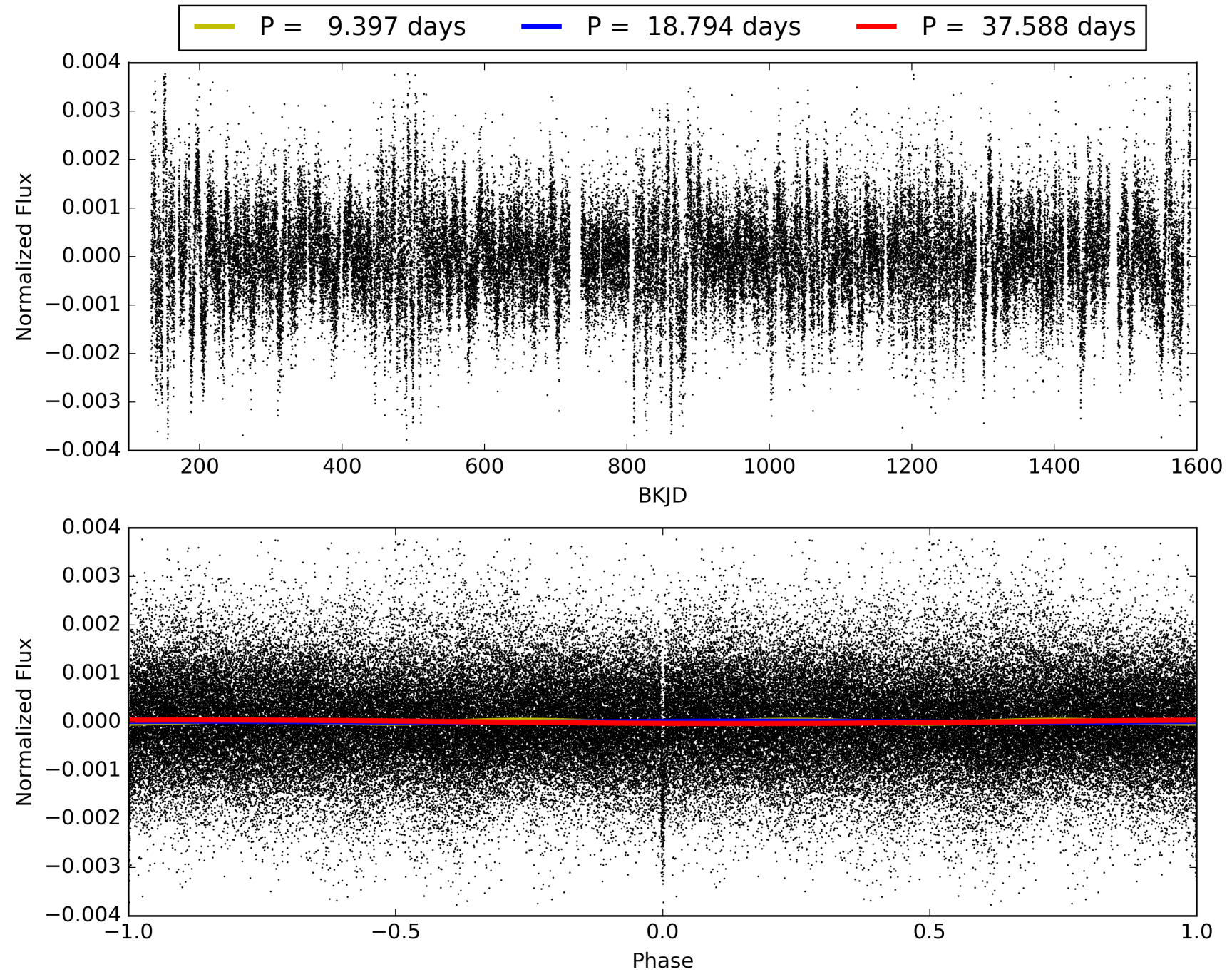
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [62.50σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 96.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.77e-239
RollingBand-fgt: 0.90 [61/68]
GhostDiagnostic-chr: 6.5
Centroid-sig: 21.4%
Centroid-so: 0.596 arcsec [1.28σ]
OotOffset-rm: 0.202 arcsec [0.84σ]
KicOffset-rm: 0.209 arcsec [0.92σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 010340423-01, PDC Light Curves

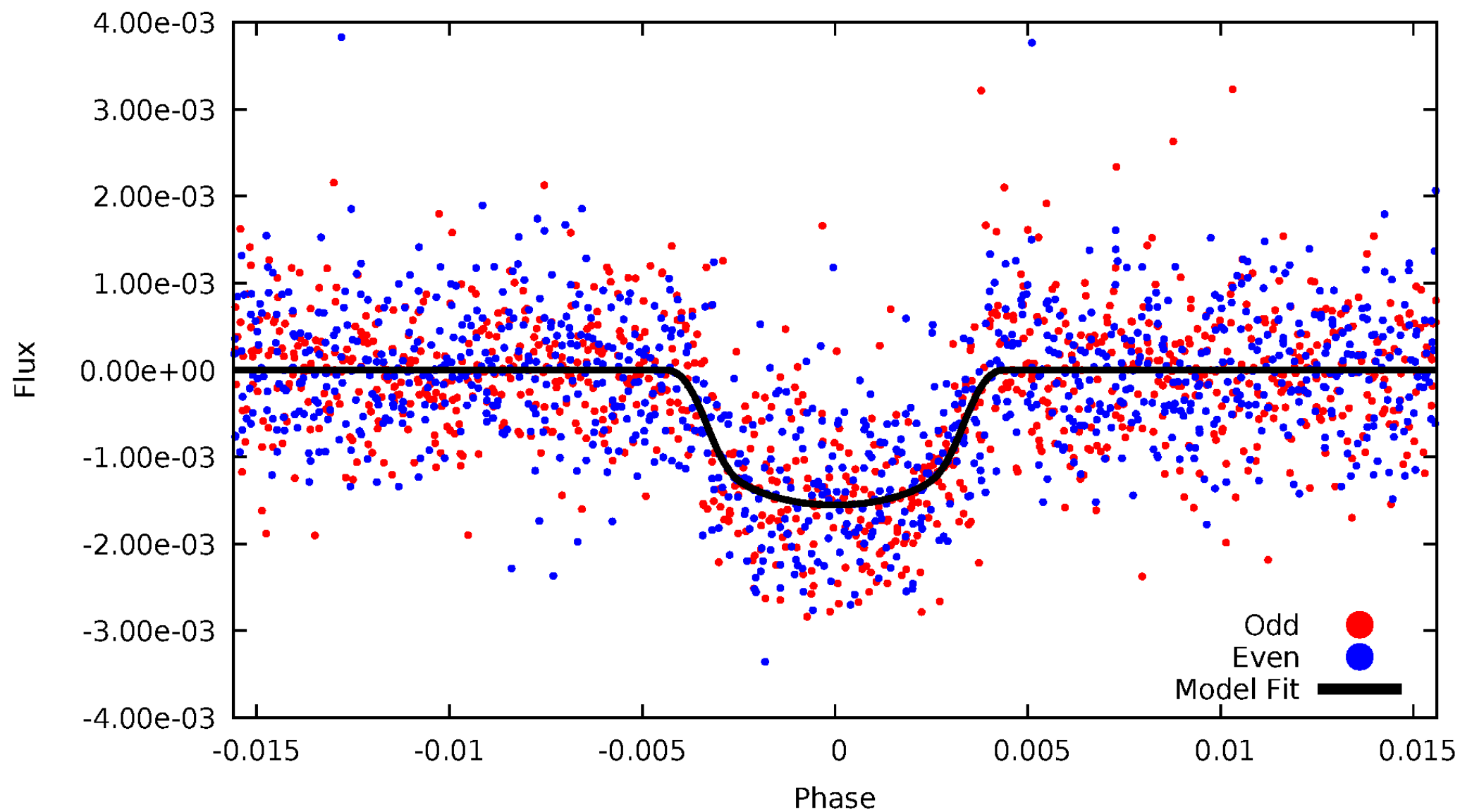


TCE 010340423-01



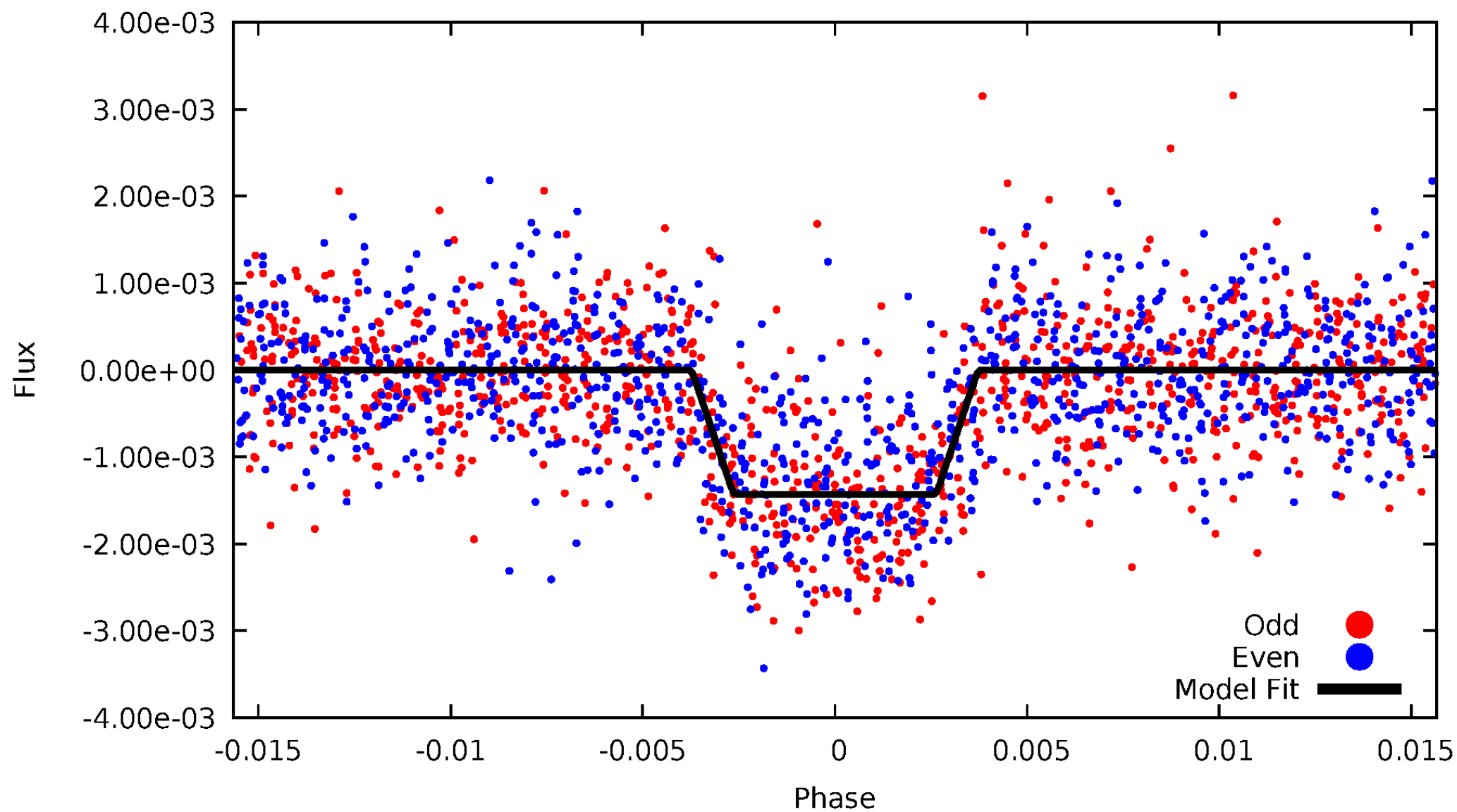
DV Odd/Even

TCE 010340423-01

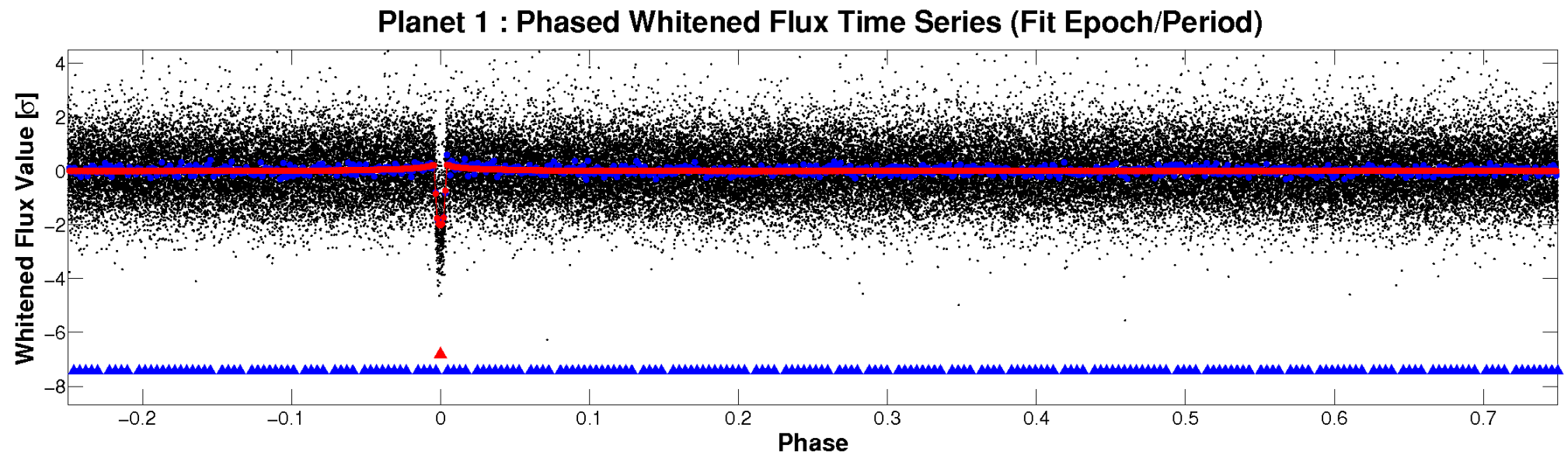
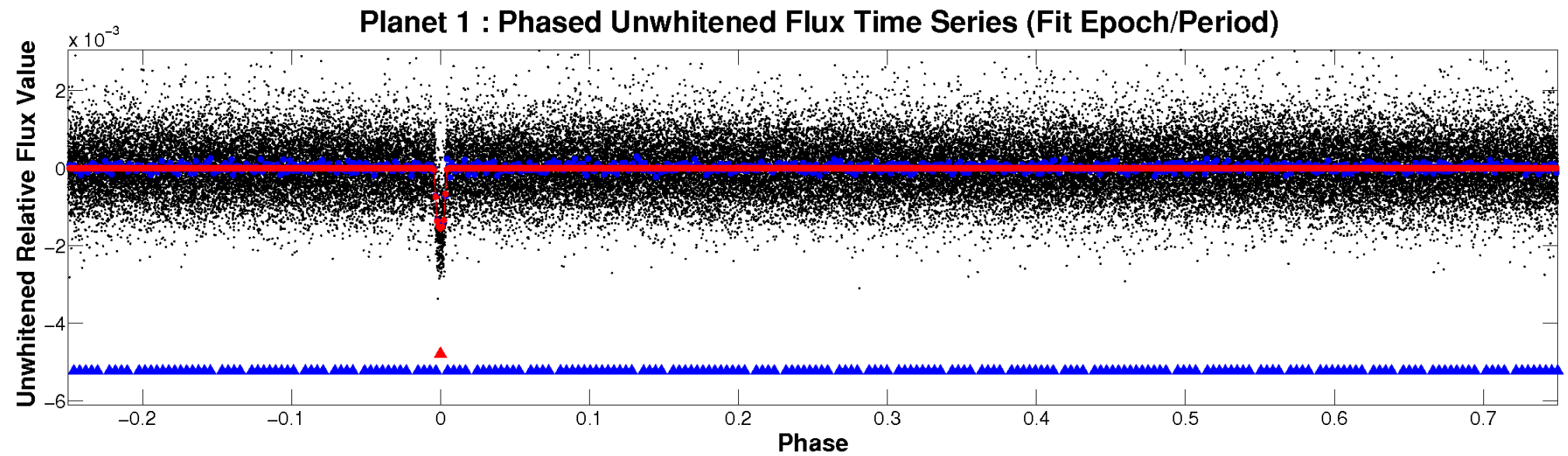


ALT Odd/Even

TCE 010340423-01

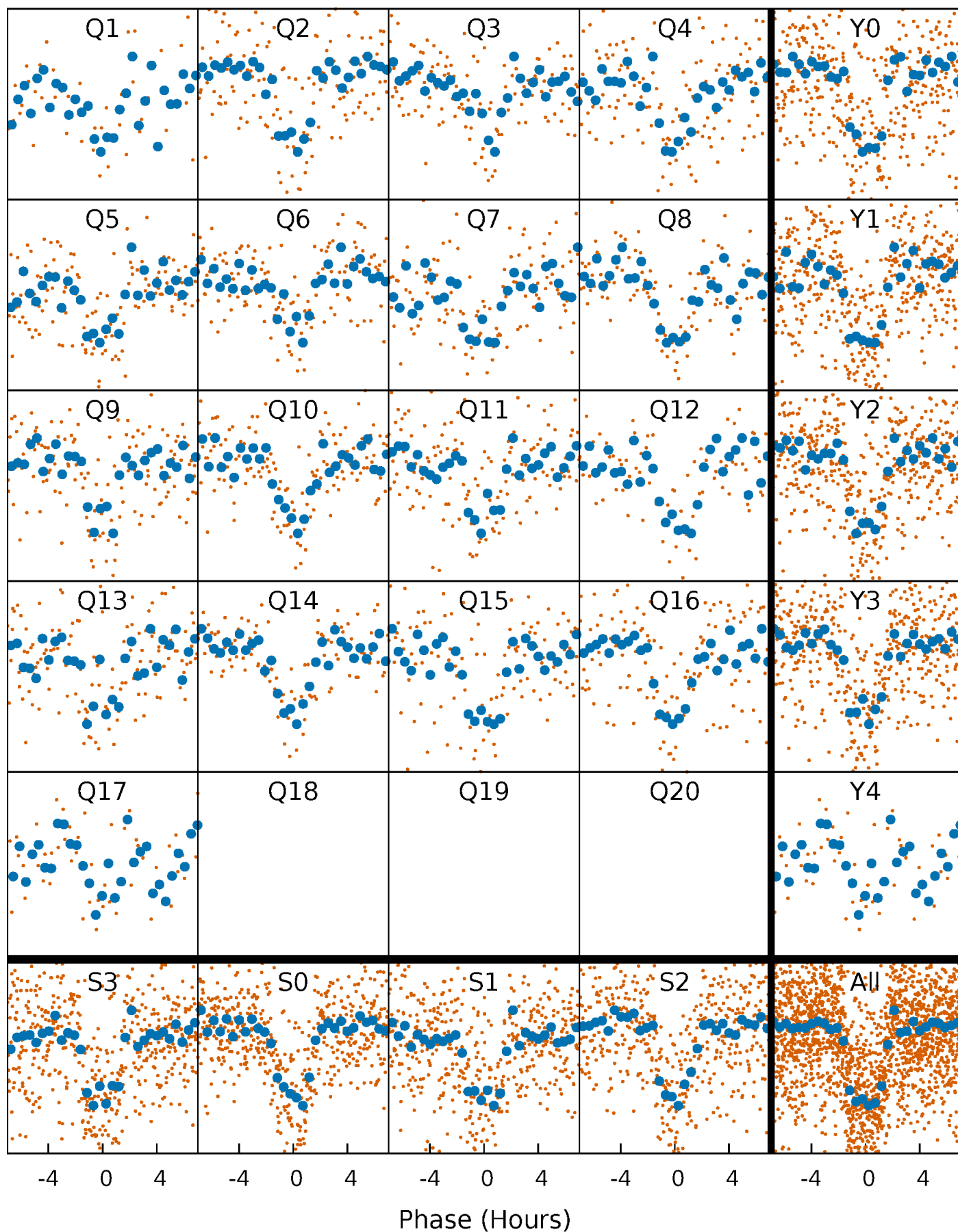


Non-Whitened Vs. Whitened Light Curve



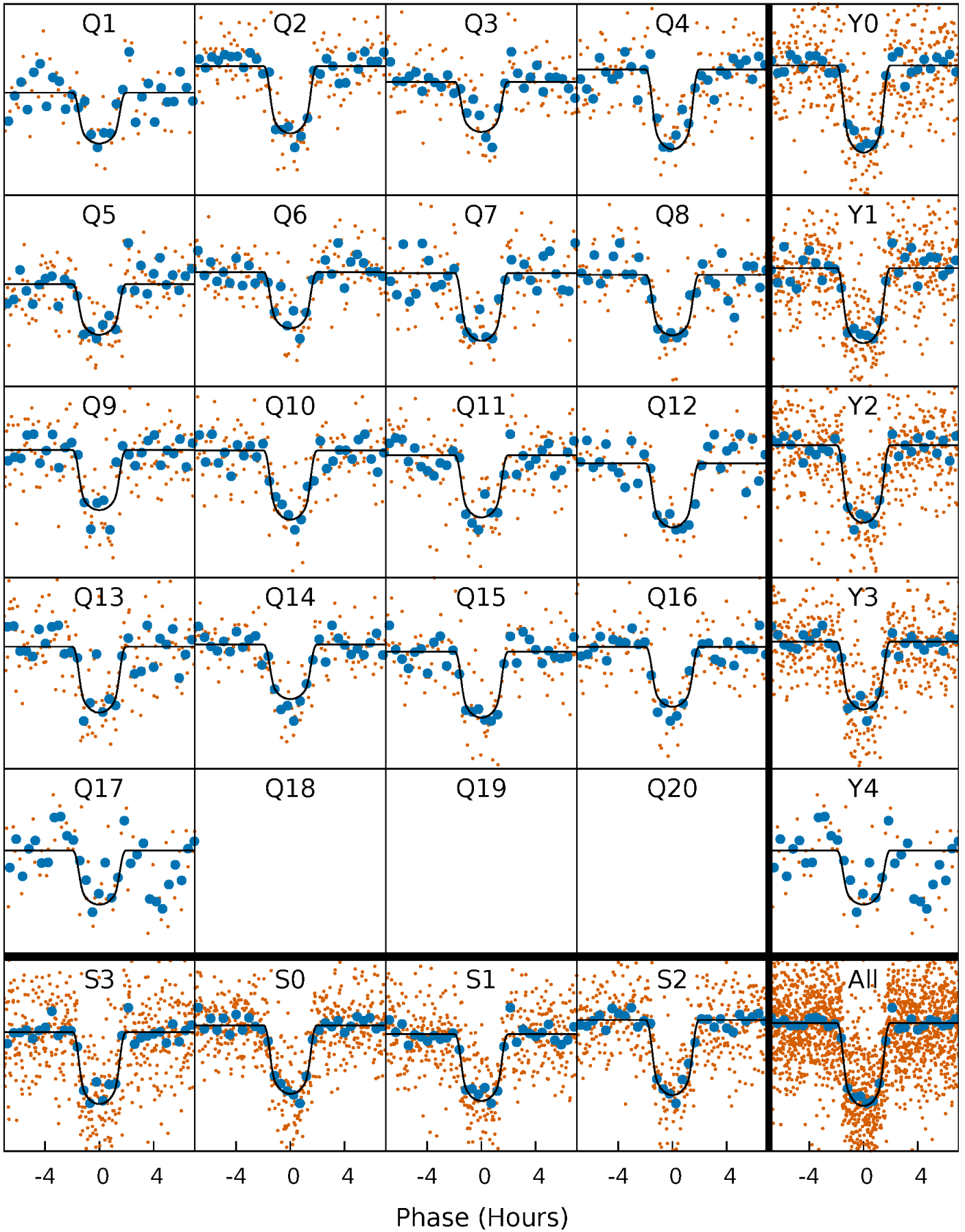
PDC Quarter-Phased Transit Curves

TCE 010340423-01 P= 18.794185 Days $T_0=140.205033$ (BKJD)



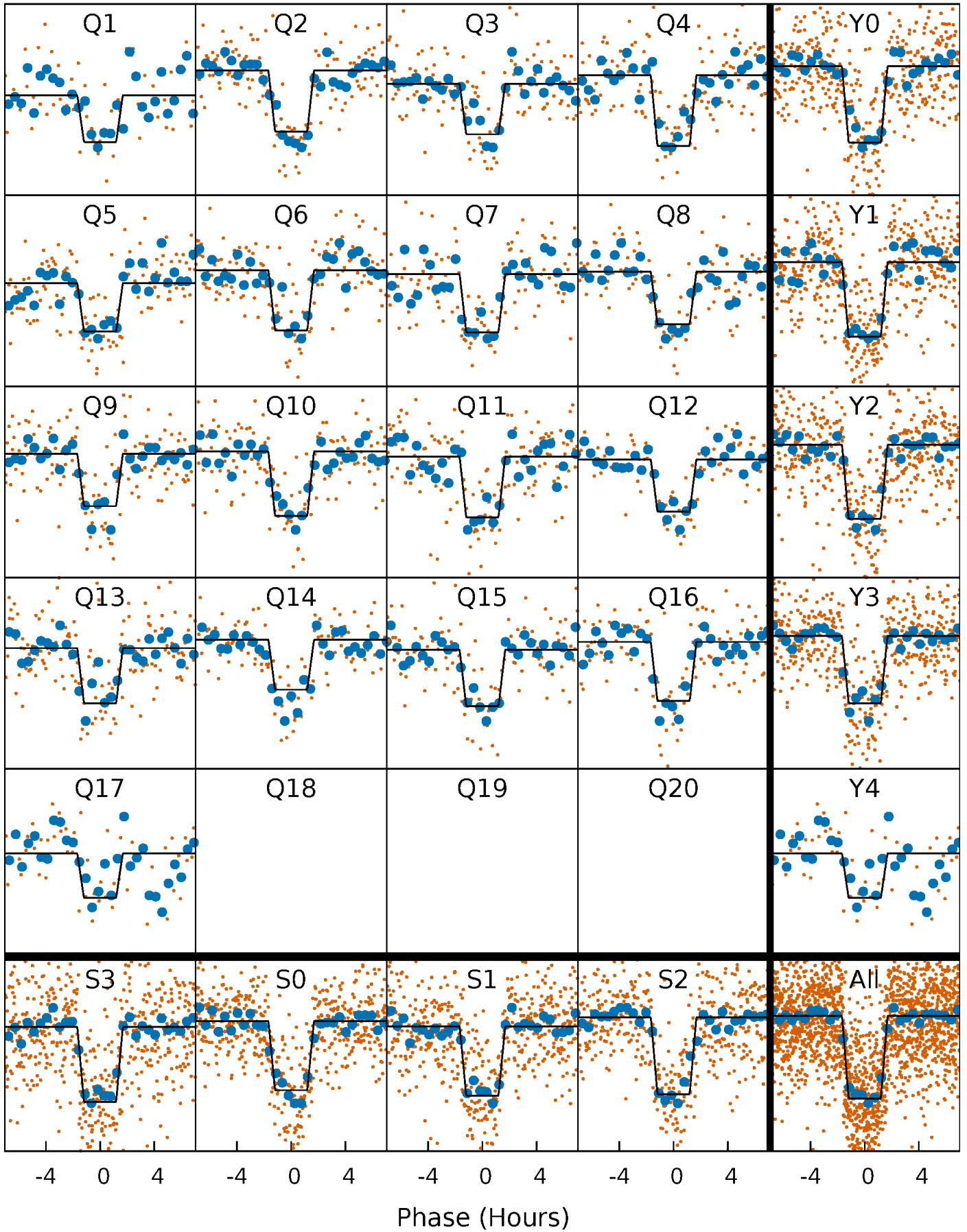
DV Quarter-Phased Transit Curves

TCE 010340423-01 P= 18.794185 Days $T_0=140.205033$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

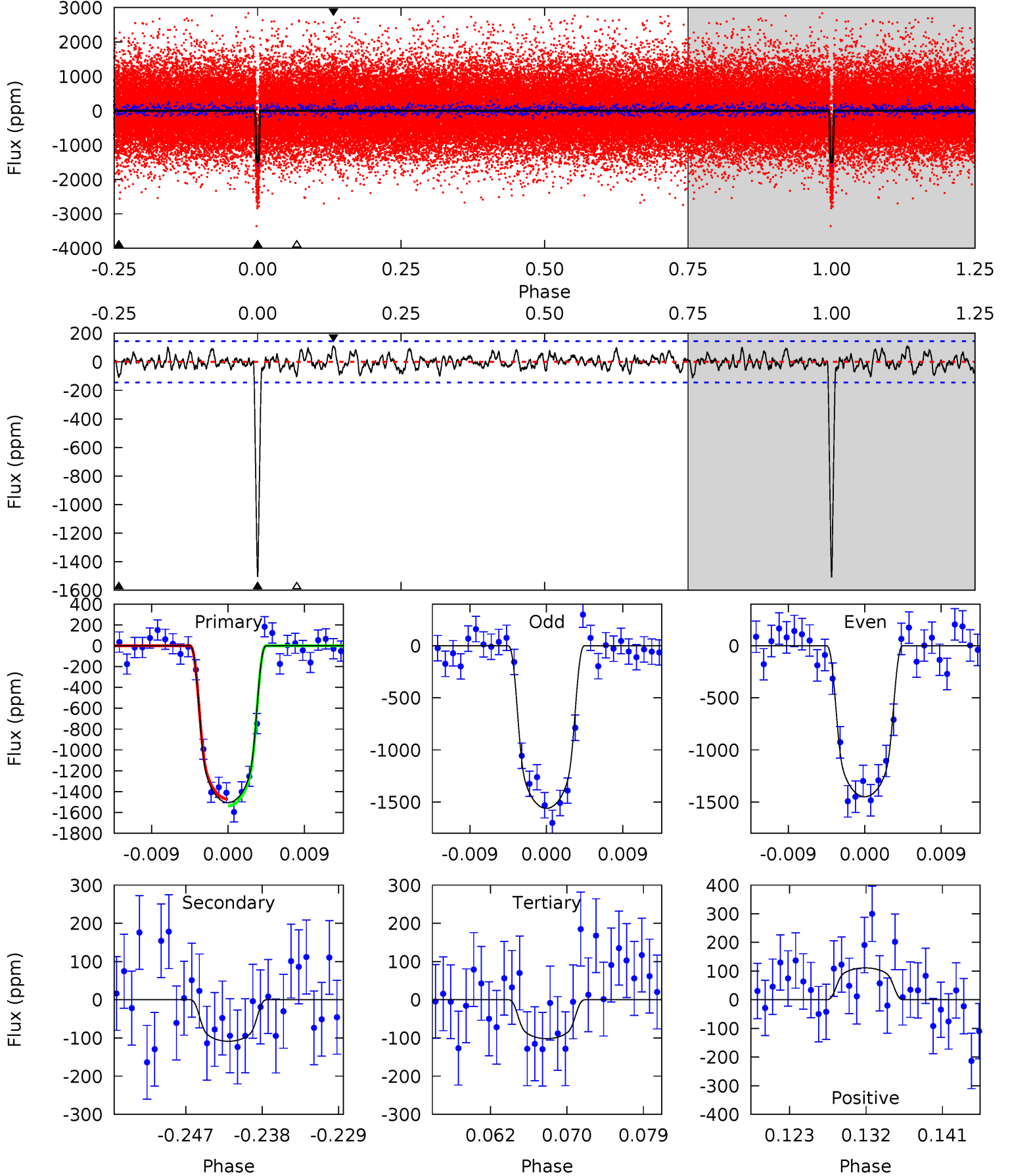
TCE 010340423-01 P= 18.794282 Days $T_0=140.202070$ (BKJD)



DV Model-Shift Uniqueness Test

010340423-01, $P = 18.794185$ Days, $E = 121.410848$ Days

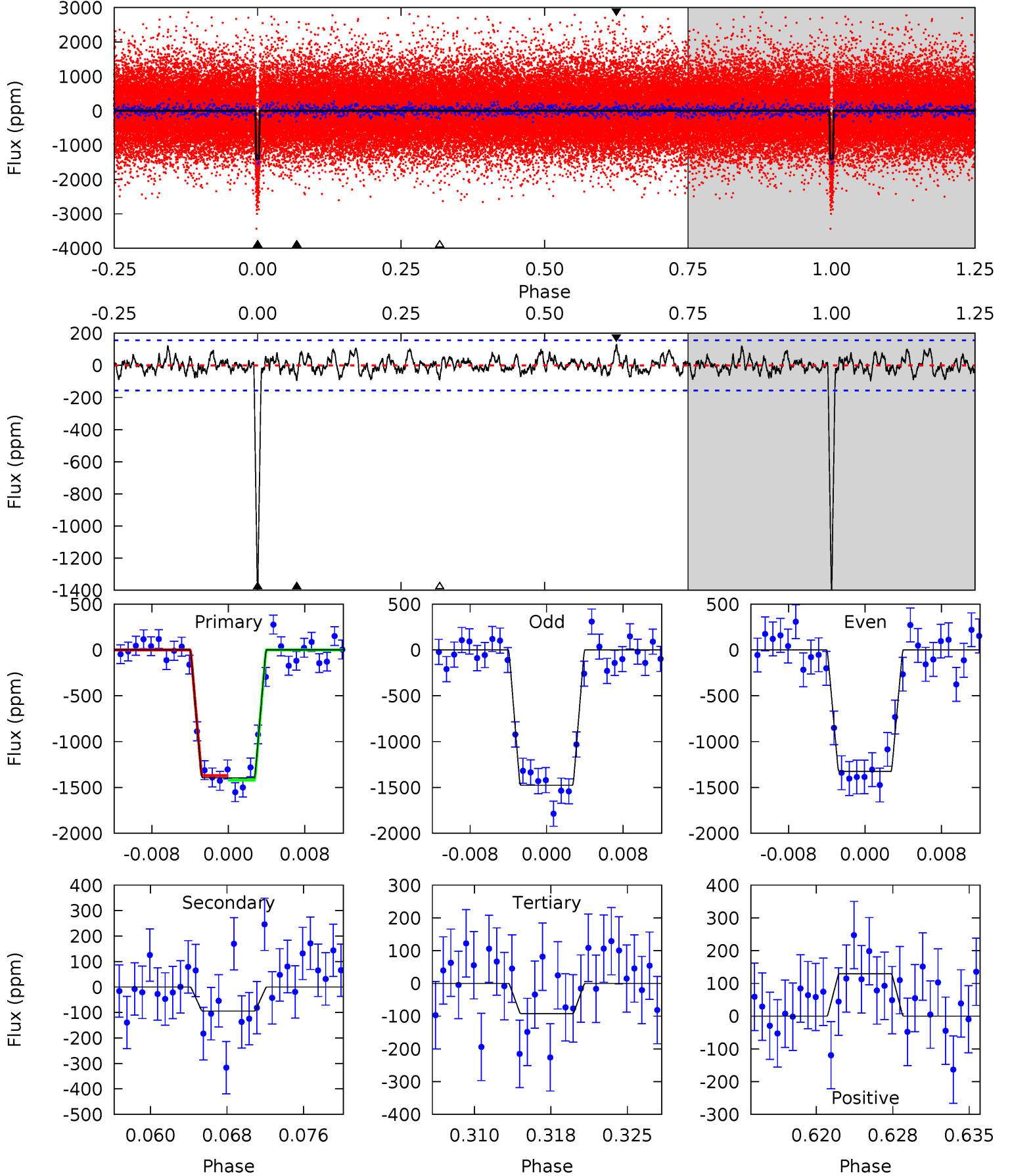
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
52.7	3.80	3.56	3.89	5.05	2.62	1.30	49.1	48.8	0.24	-0.09	1.96	0.97	0.07	1.14



Alt Model-Shift Uniqueness Test

010340423-01, $P = 18.794282$ Days, $E = 121.407788$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.3	3.07	3.00	4.20	5.08	2.67	1.22	42.3	41.1	0.07	-1.13	2.43	0.95	0.08	0.79



Stellar Parameters For KIC 010340423

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4126^{+82}_{-82}	$4.668^{+0.022}_{-0.022}$	$-0.060^{+0.150}_{-0.150}$	$0.602^{+0.028}_{-0.028}$	$0.616^{+0.033}_{-0.033}$	$3.979^{+0.424}_{-0.350}$
	+2%/-2%	+0%/-0%	+250%/-250%	+5%/-5%	+5%/-5%	+11%/-9%
Source	SPE60	SPE60	SPE60	DSEP		

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

Secondary Eclipse Parameters for KIC 010340423-01 / KOI 0736.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-109 ± 29	$2.73^{+0.27}_{-0.27}$	576^{+13}_{-11}	2706^{+119}_{-120}	111^{+39}_{-32}
Alt.	-94 ± 31	$2.49^{+0.28}_{-0.25}$	576^{+13}_{-13}	2722^{+135}_{-150}	115^{+48}_{-40}

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

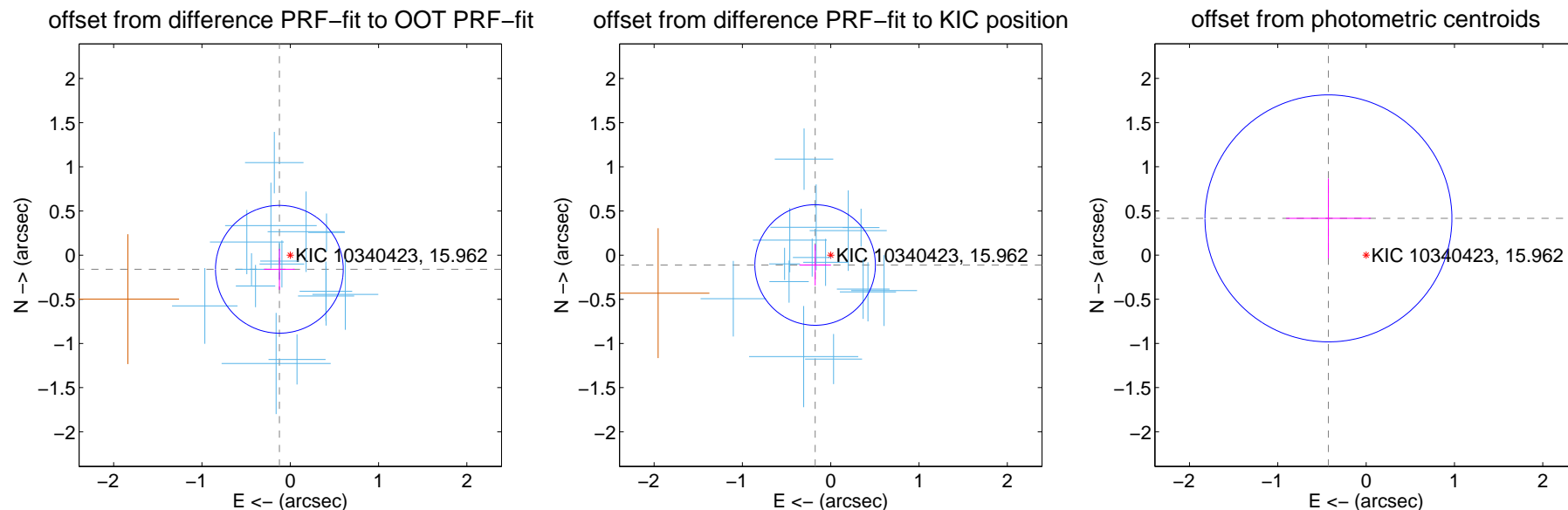
DV Centroid Data

Supplemental centroid analysis for 010340423-01. Kepler magnitude: 15.96. Transit SNR 36.66

There are 15 quarters with good PRF difference image offsets

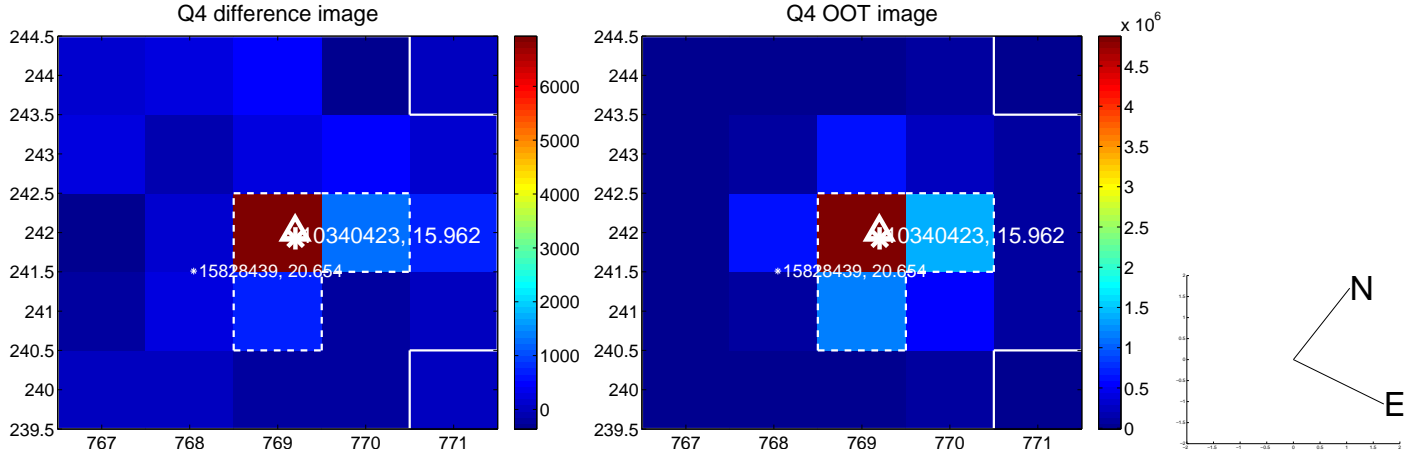
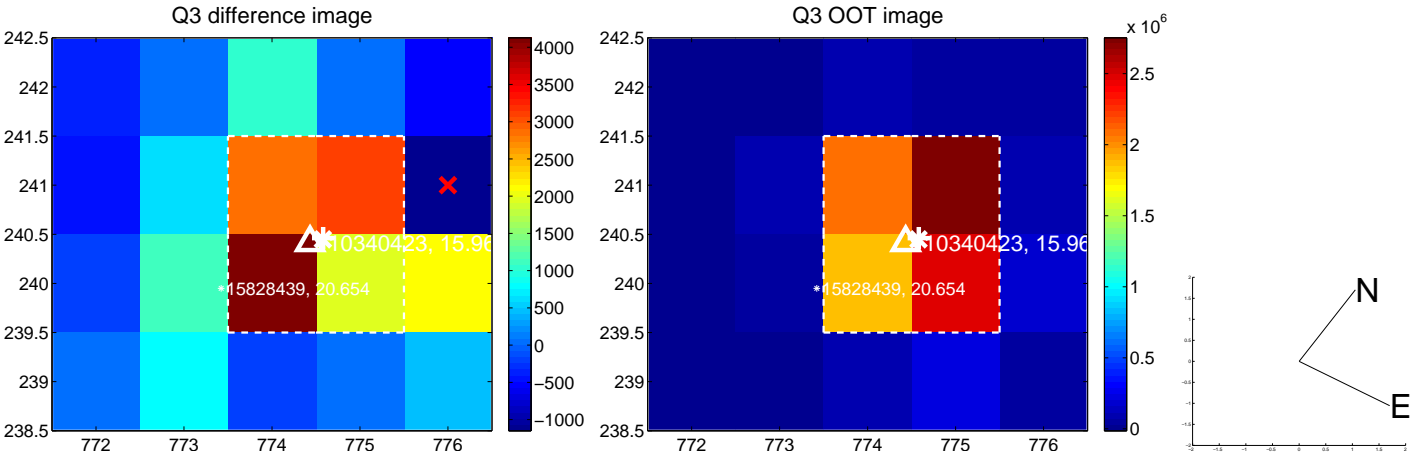
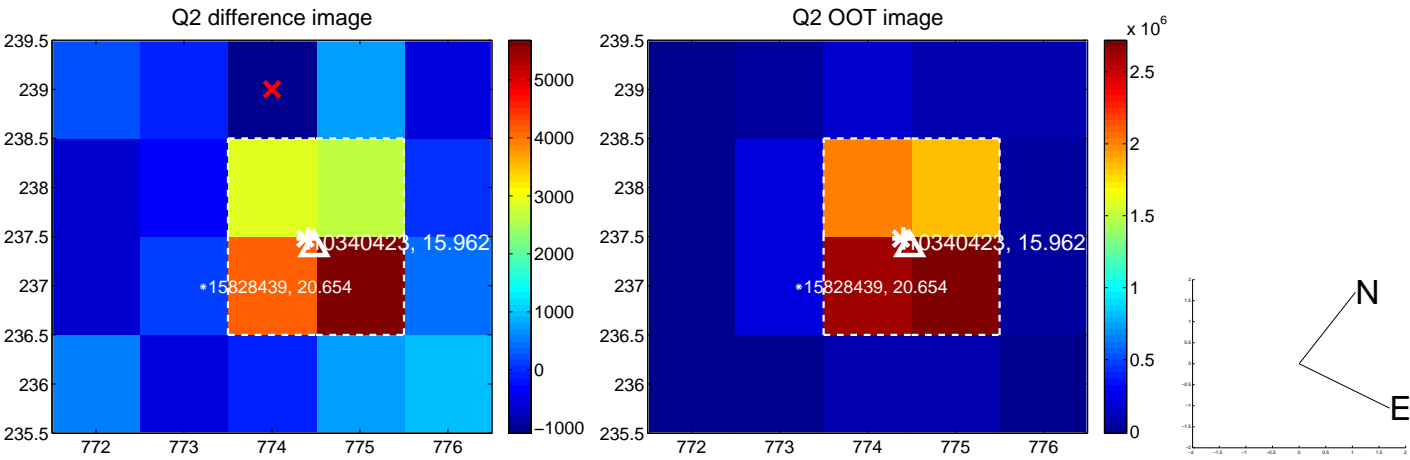
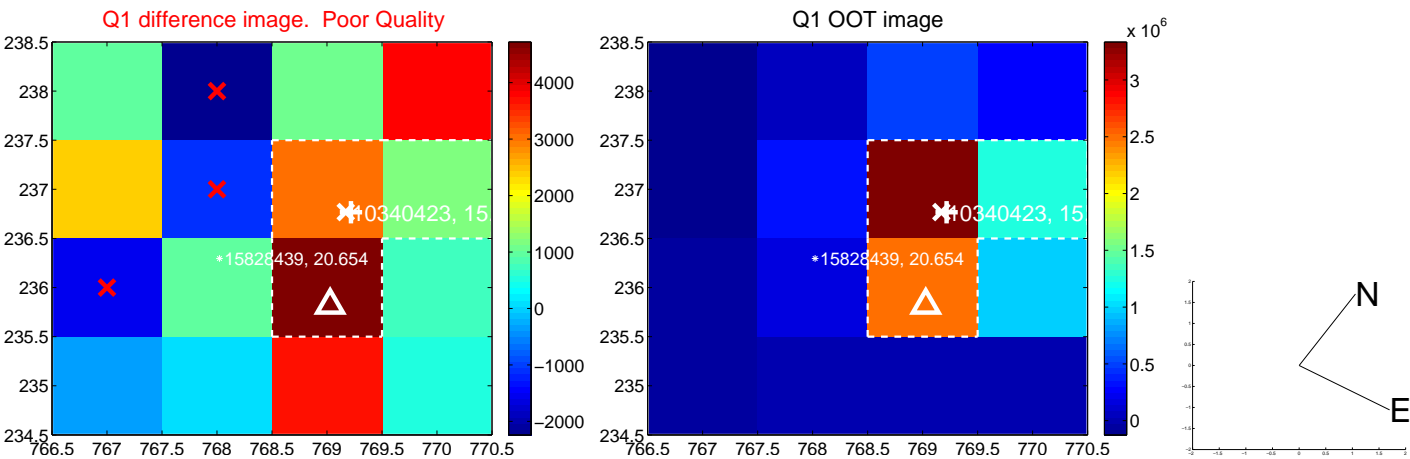
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.202 ± 0.241	0.84	0.123 ± 0.174	-0.160 ± 0.232
PRF-fit source offset from KIC position	0.209 ± 0.228	0.92	0.176 ± 0.179	-0.112 ± 0.233
photometric centroid source offset	0.60 ± 0.47	1.28	0.43 ± 0.48	0.42 ± 0.45

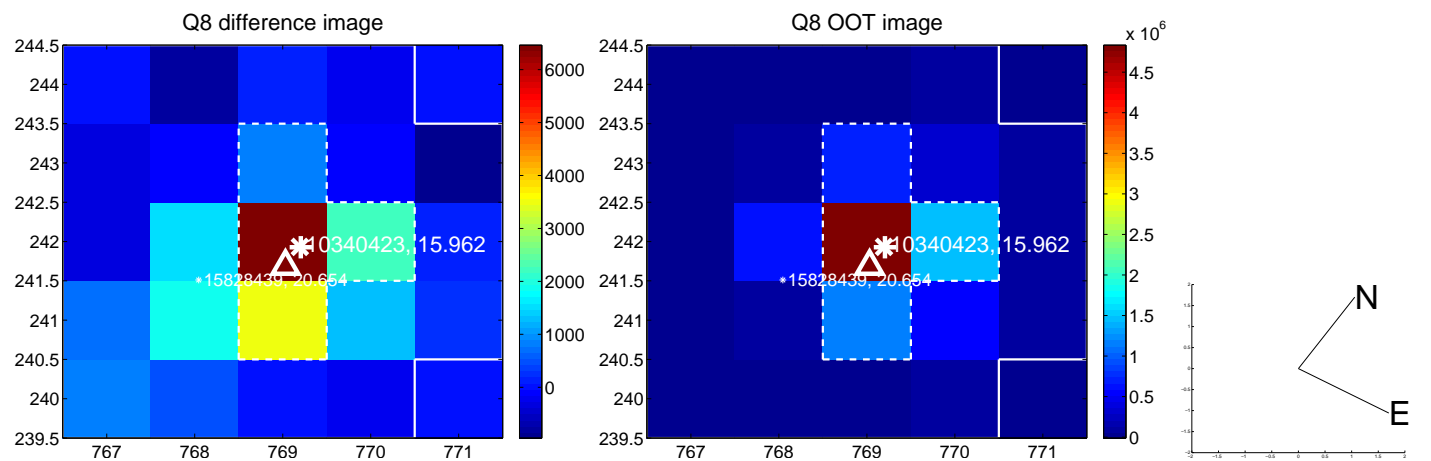
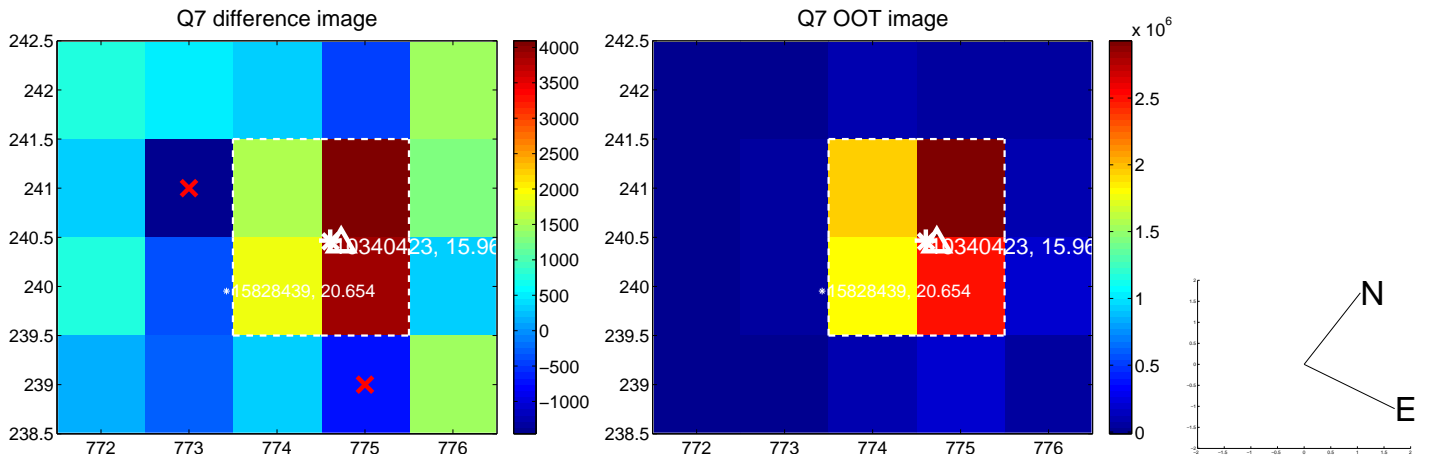
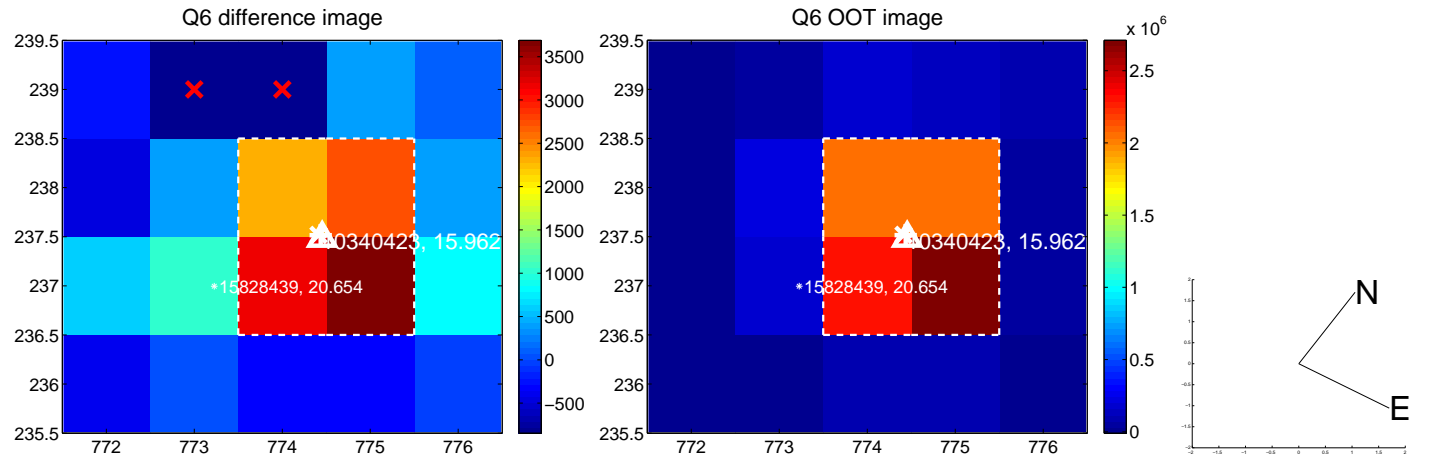
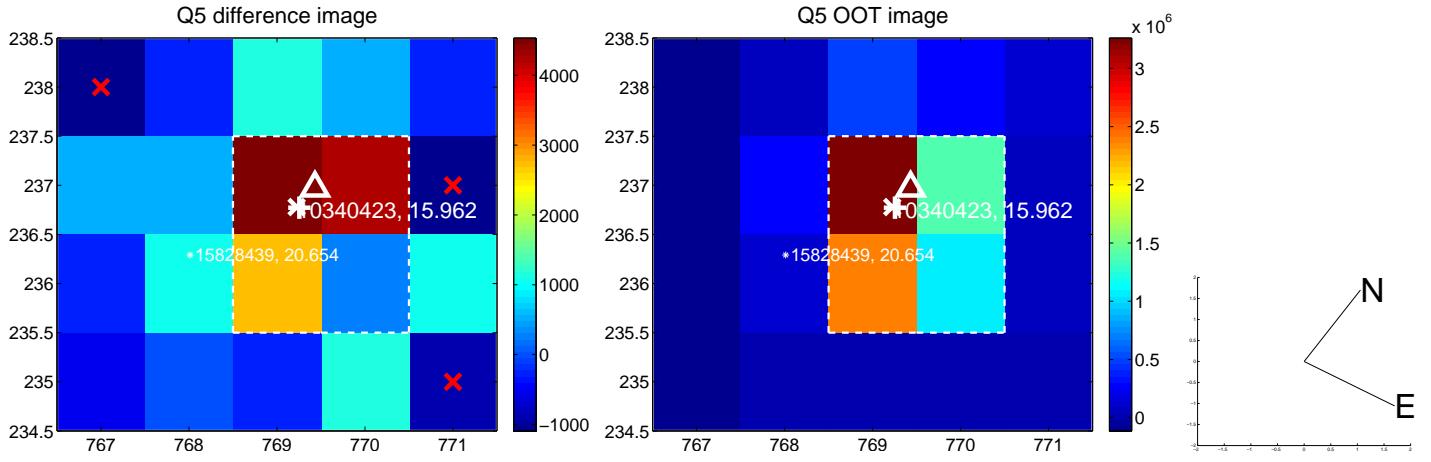


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

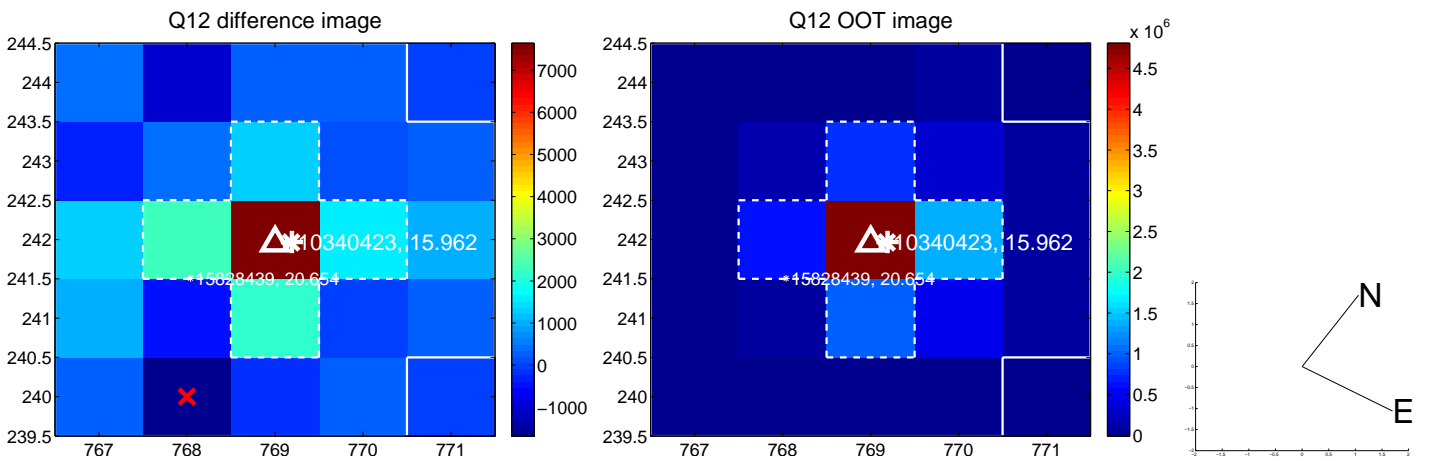
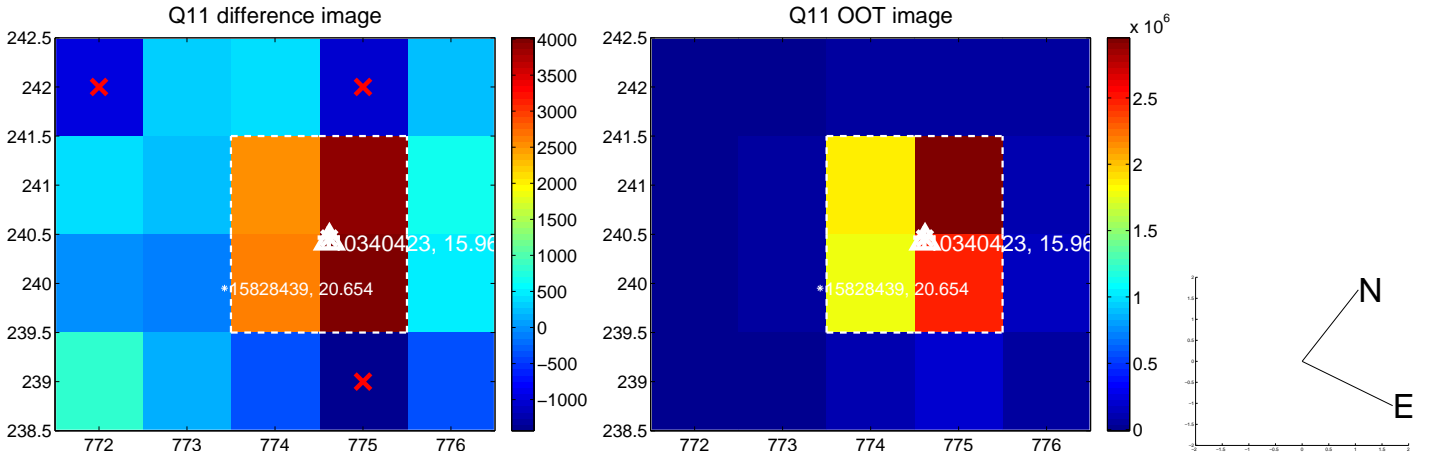
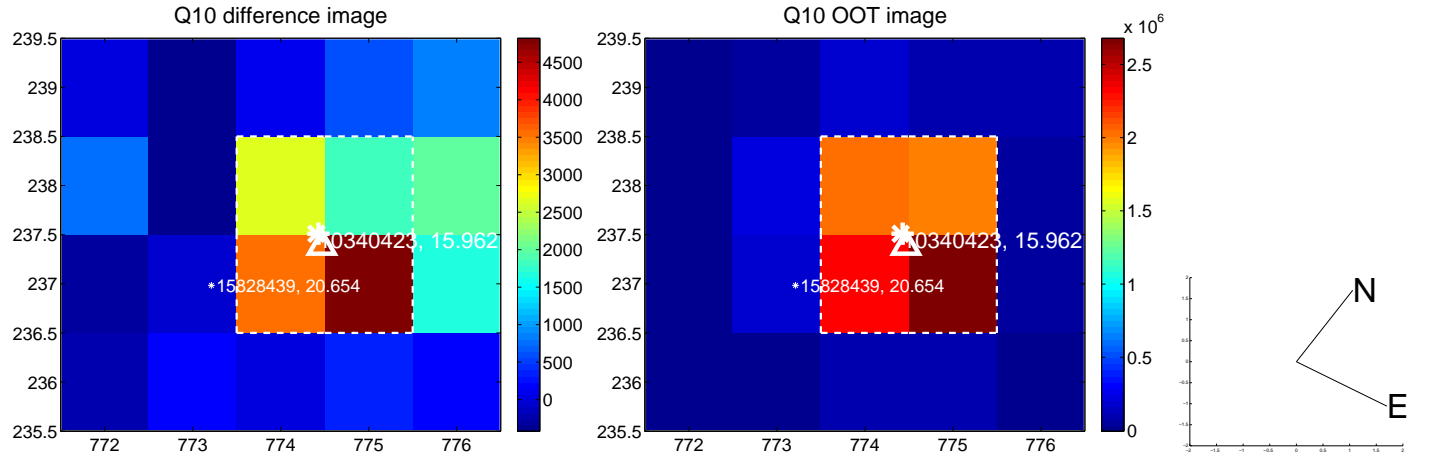
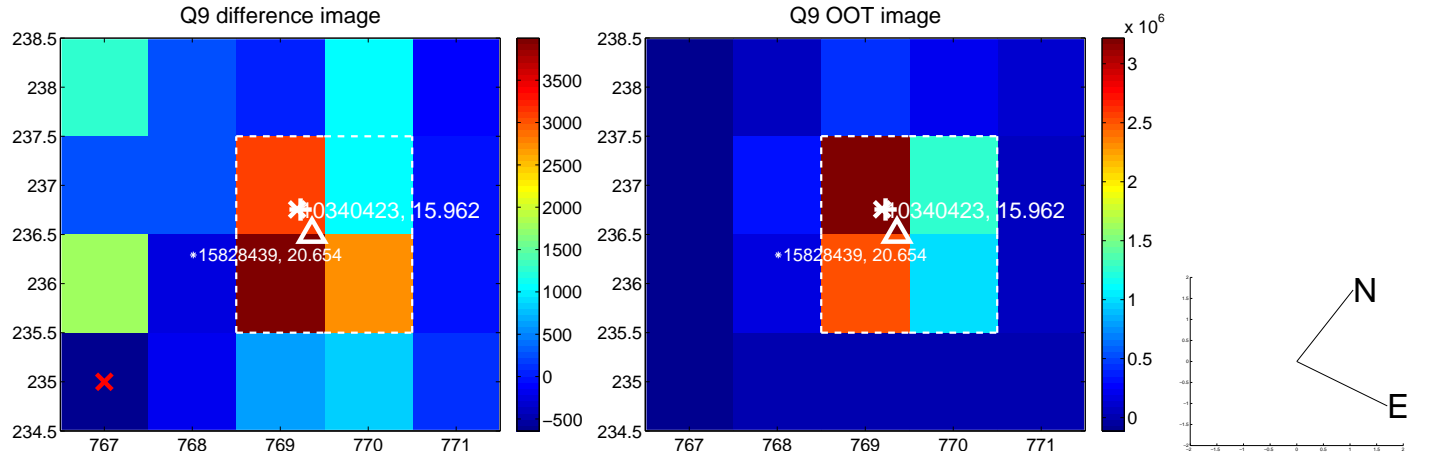
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



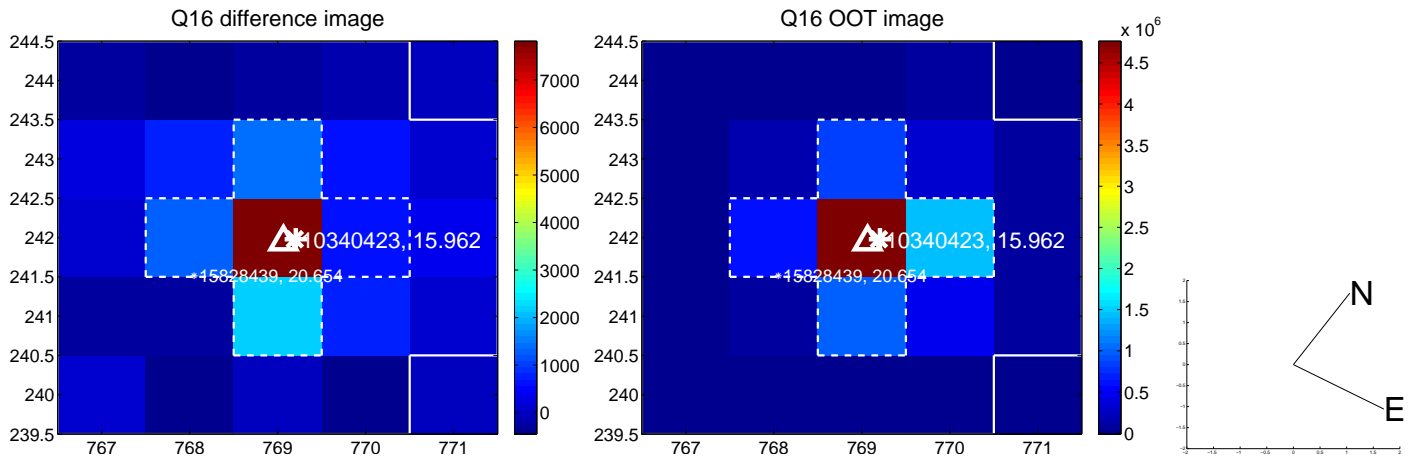
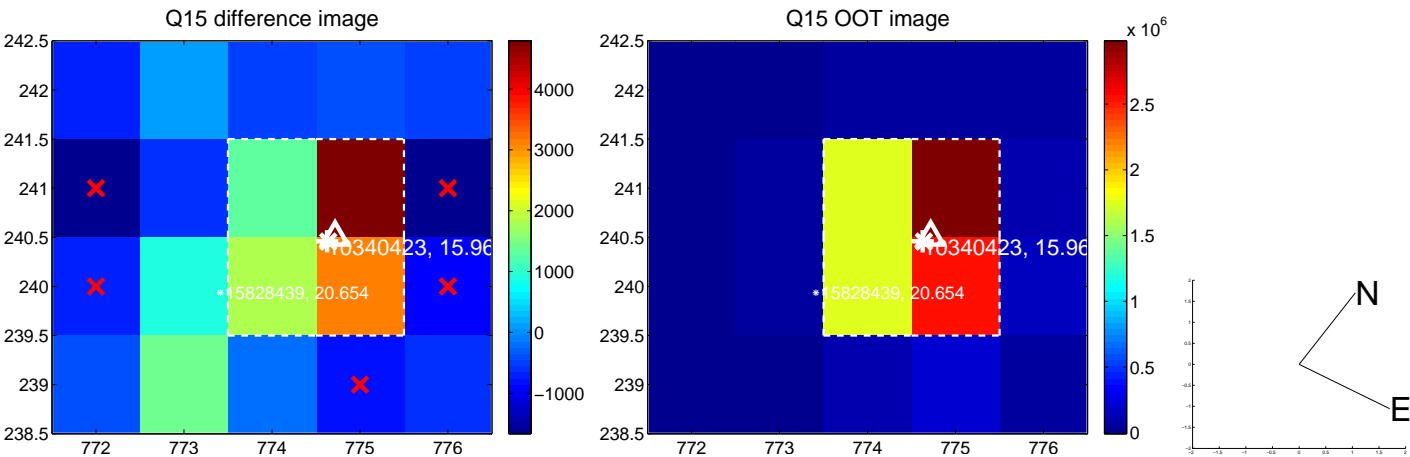
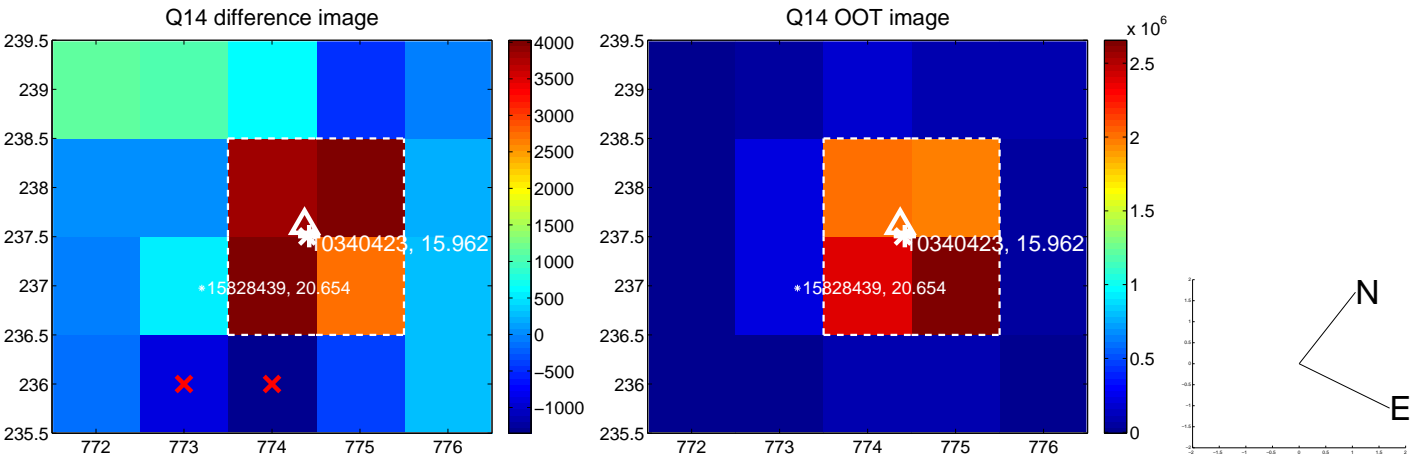
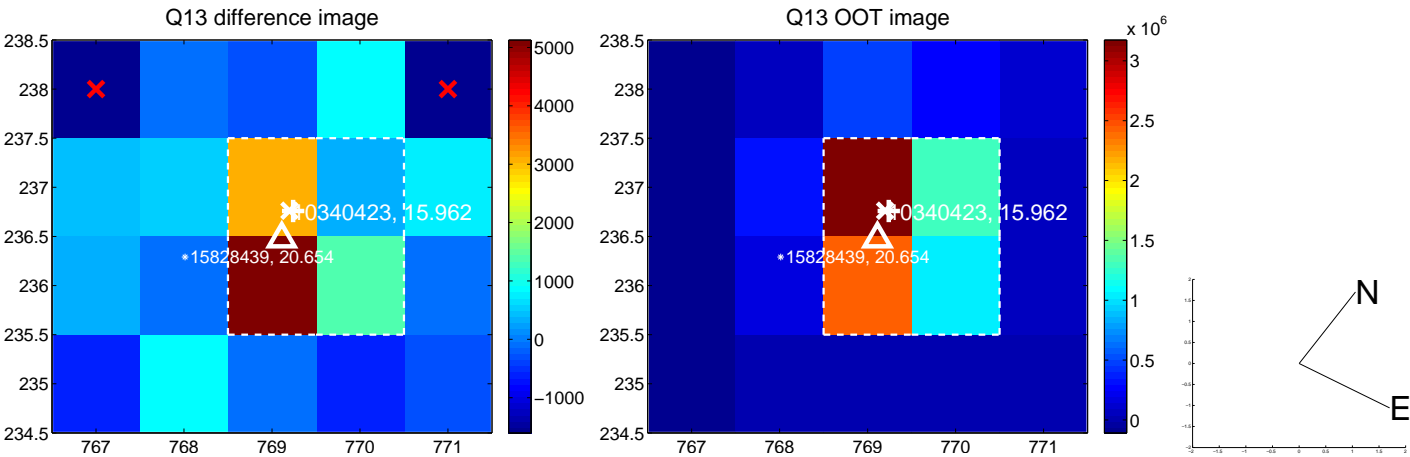
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



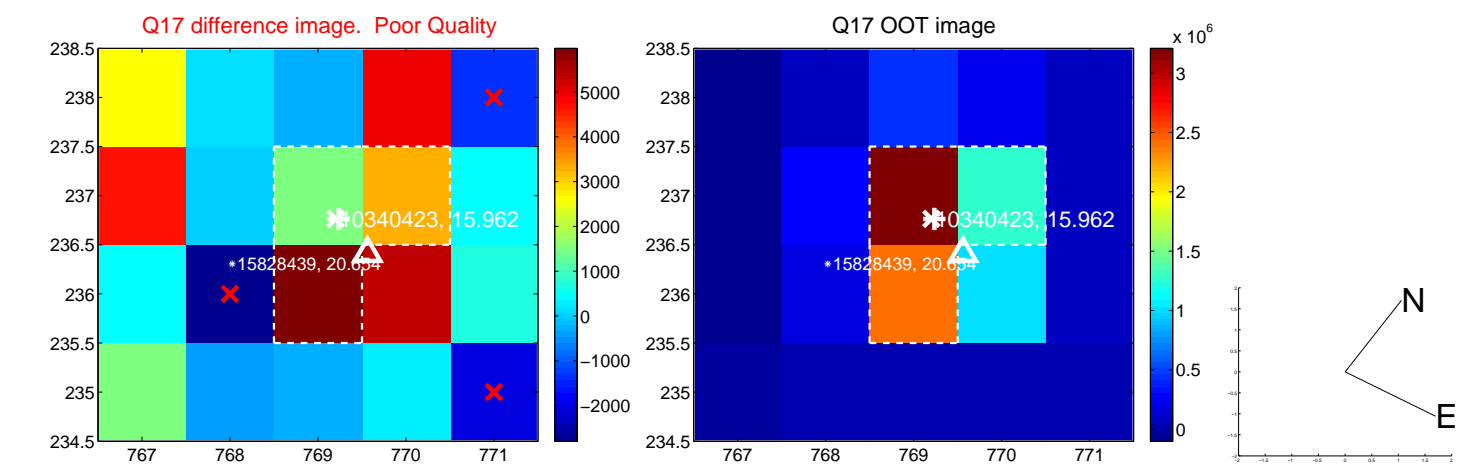
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



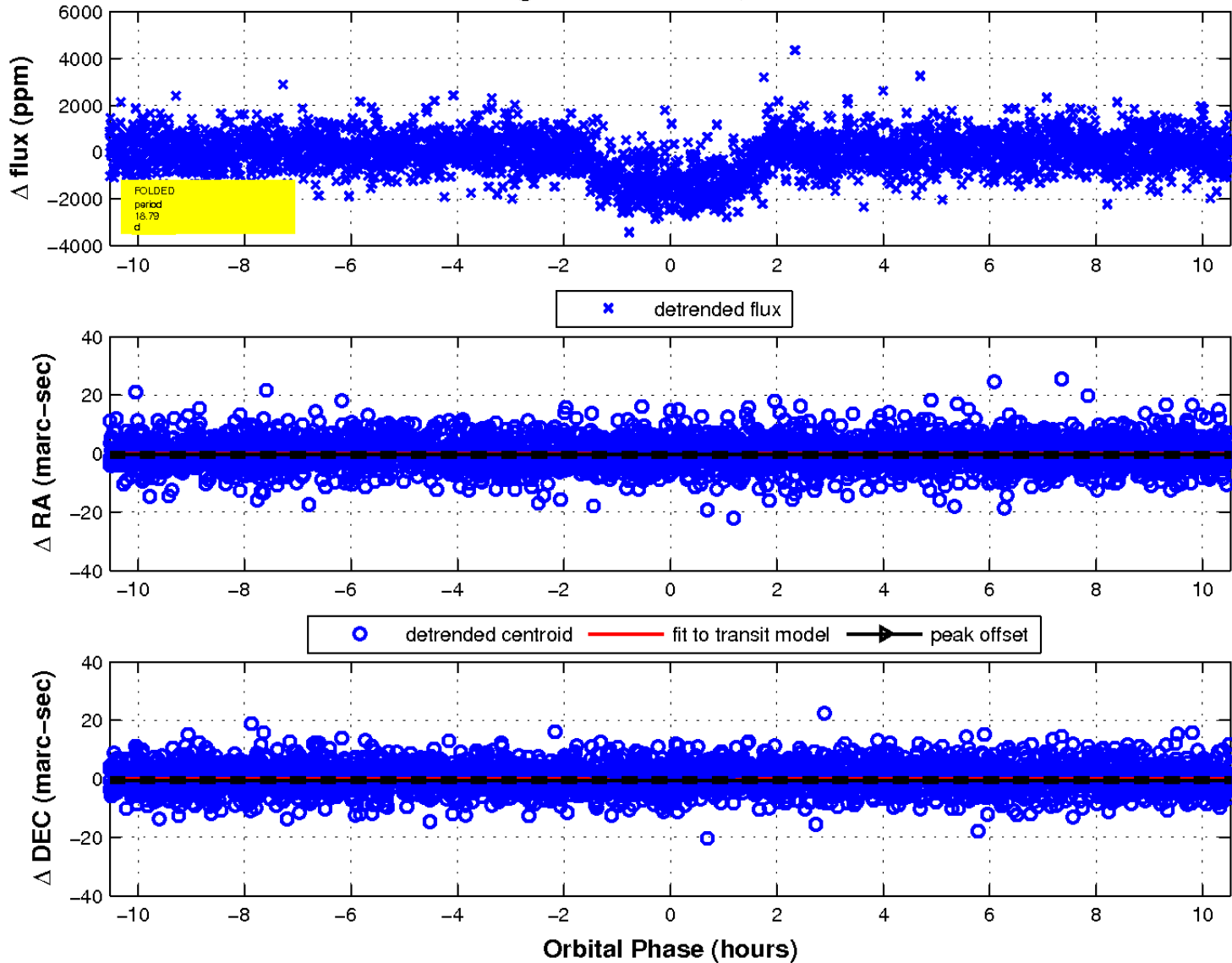
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

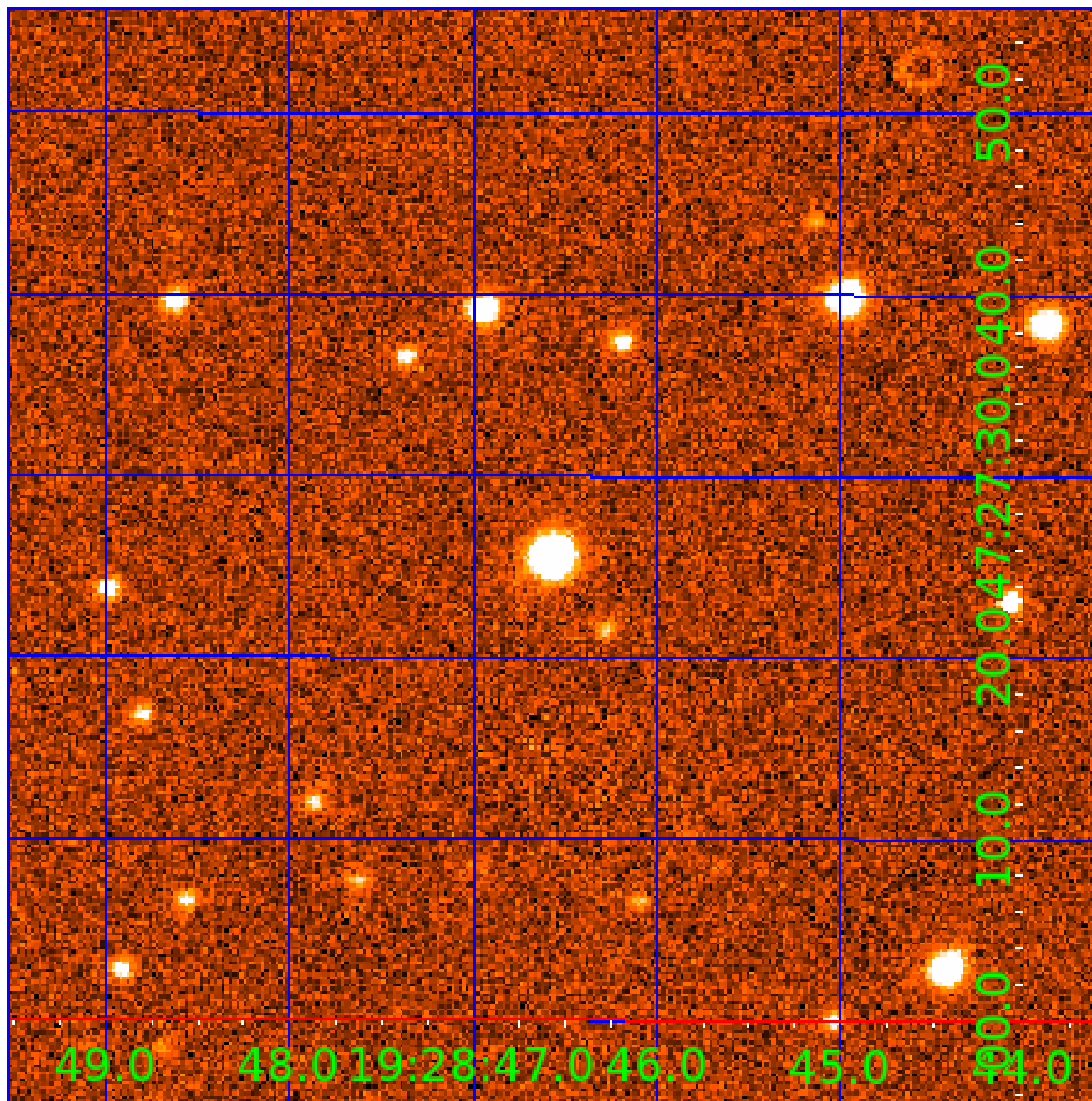


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 010340423

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})
010340423-01	OBS	0736.01	18.794185	140.205033	1552.1	3.518	33.8	36.7	0.60	4126	2.72	6.79
010340423-02	OBS	0736.02	6.738954	135.280051	561.1	3.009	19.5	20.8	0.60	4126	1.73	26.67

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010340423-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010340423-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

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

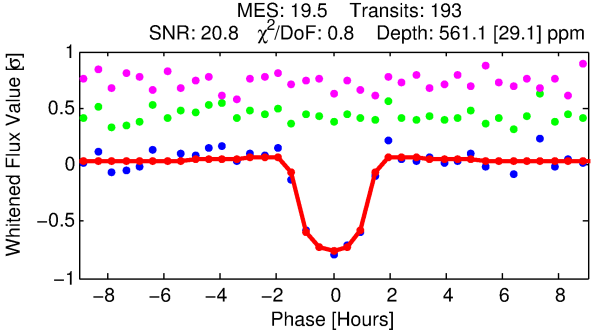
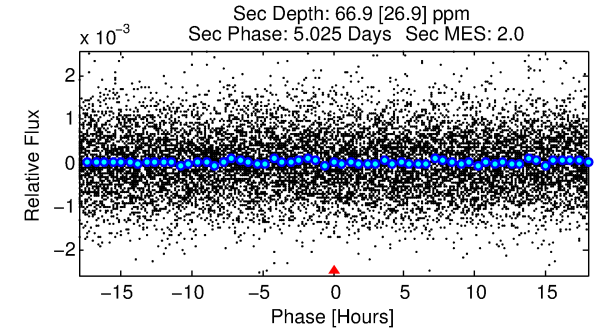
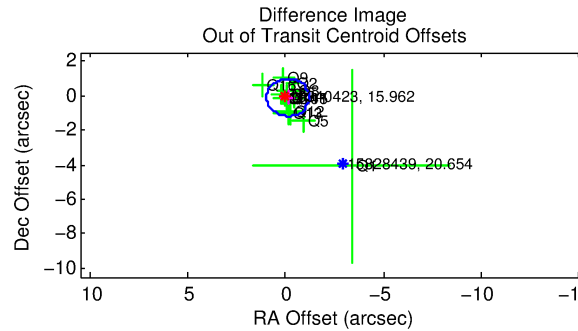
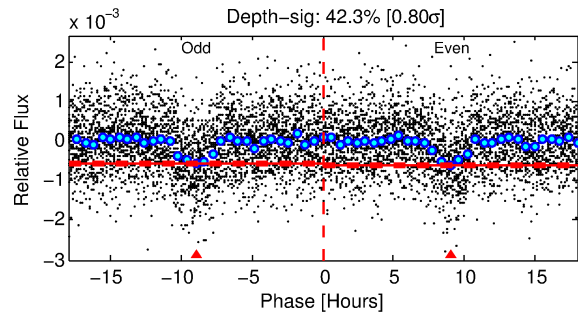
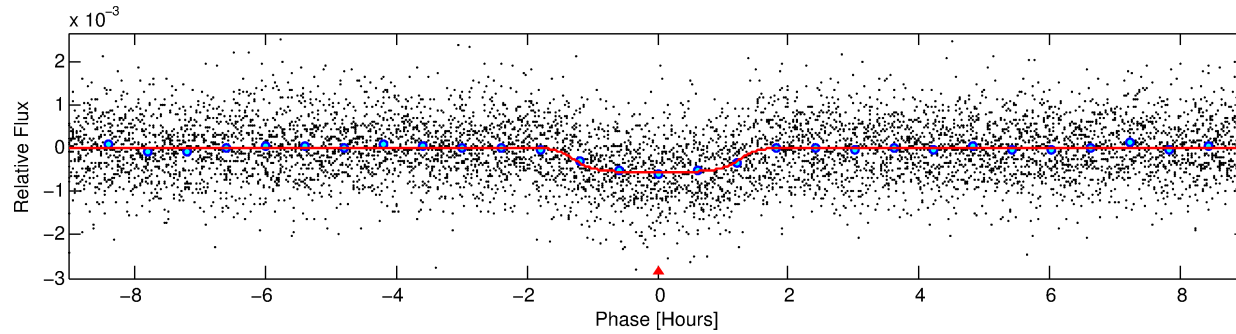
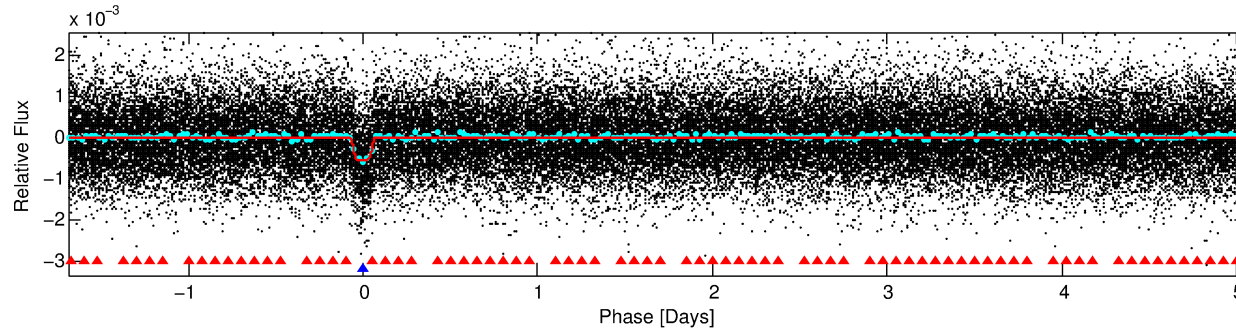
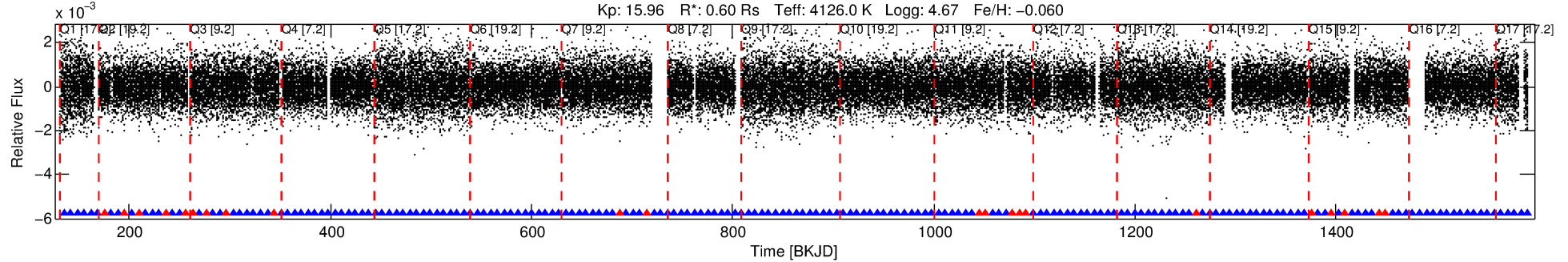
Ephemeris Match Information For 010340423-02

No Significant Match Found

DV One-Page Summary

KIC: 10340423 Candidate: 2 of 2 Period: 6.739 d
KOI: K00736.02 Name: Kepler-225b Corr: 0.992

Kp: 15.96 R*: 0.60 Rs Teff: 4126.0 K Logg: 4.67 Fe/H: -0.060



DV Fit Results:

Period = 6.73895 [0.00003] d
Epoch = 135.2801 [0.0028] BKJD
Rp/R* = 0.0264 [0.0046]
a/R* = 8.53 [5.68]
b = 0.90 [0.15]
Seff = 26.67 [2.45]
Teq = 579 [13] K
Rp = 1.73 [0.31] Re
a = 0.0594 [0.0021] AU
Ag = 43.33 [23.10] [1.83σ]
Teffp = 2299 [309] K [5.56σ]

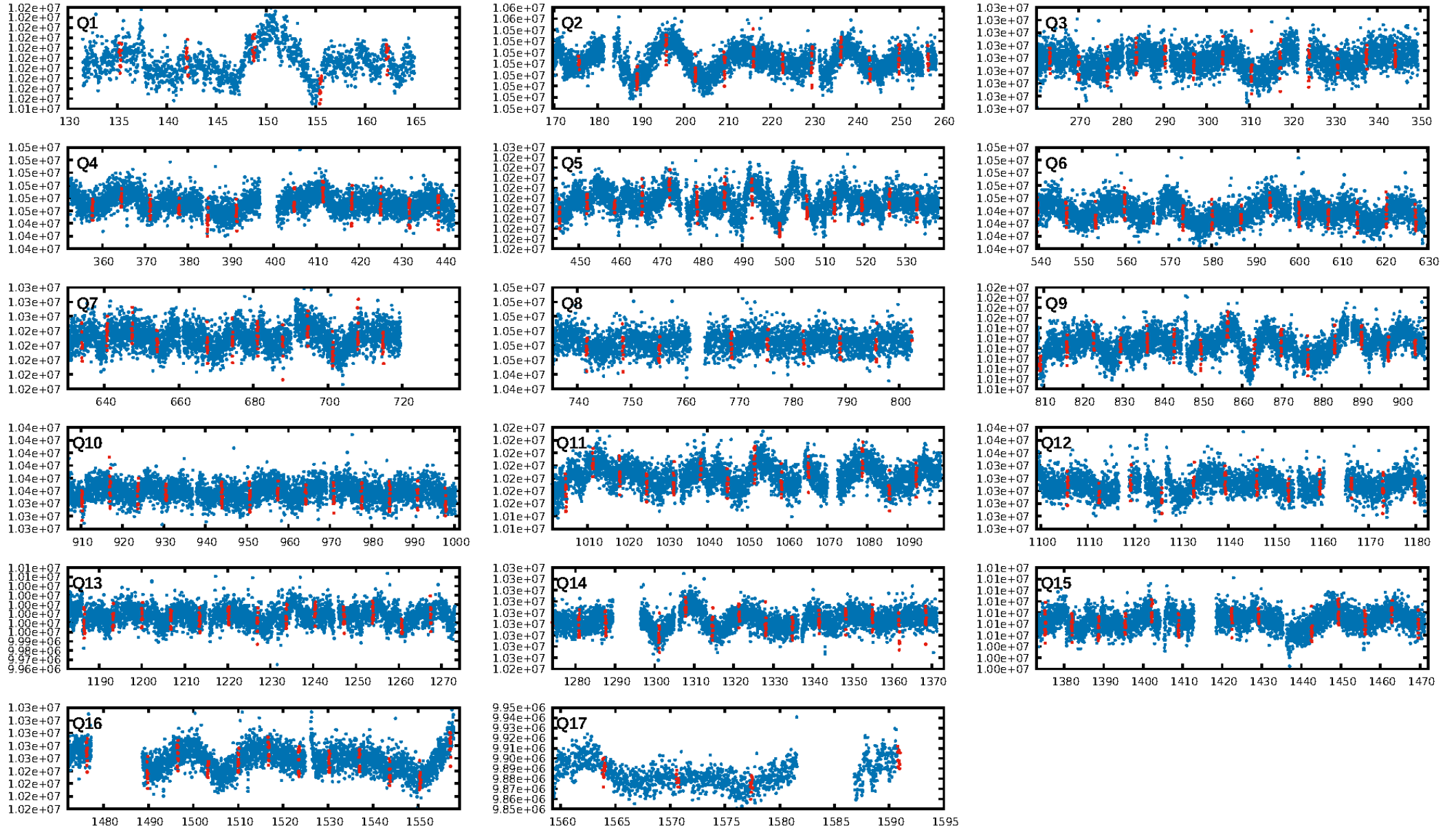
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [62.50σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.29e-82
RollingBand-fgt: 0.88 [162/184]
GhostDiagnostic-chr: 4.203
Centroid-sig: 4.2%
Centroid-so: 1.205 arcsec [1.44σ]
OotOffset-rm: 0.157 arcsec [0.43σ]
KicOffset-rm: 0.108 arcsec [0.30σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.94 [15/16]
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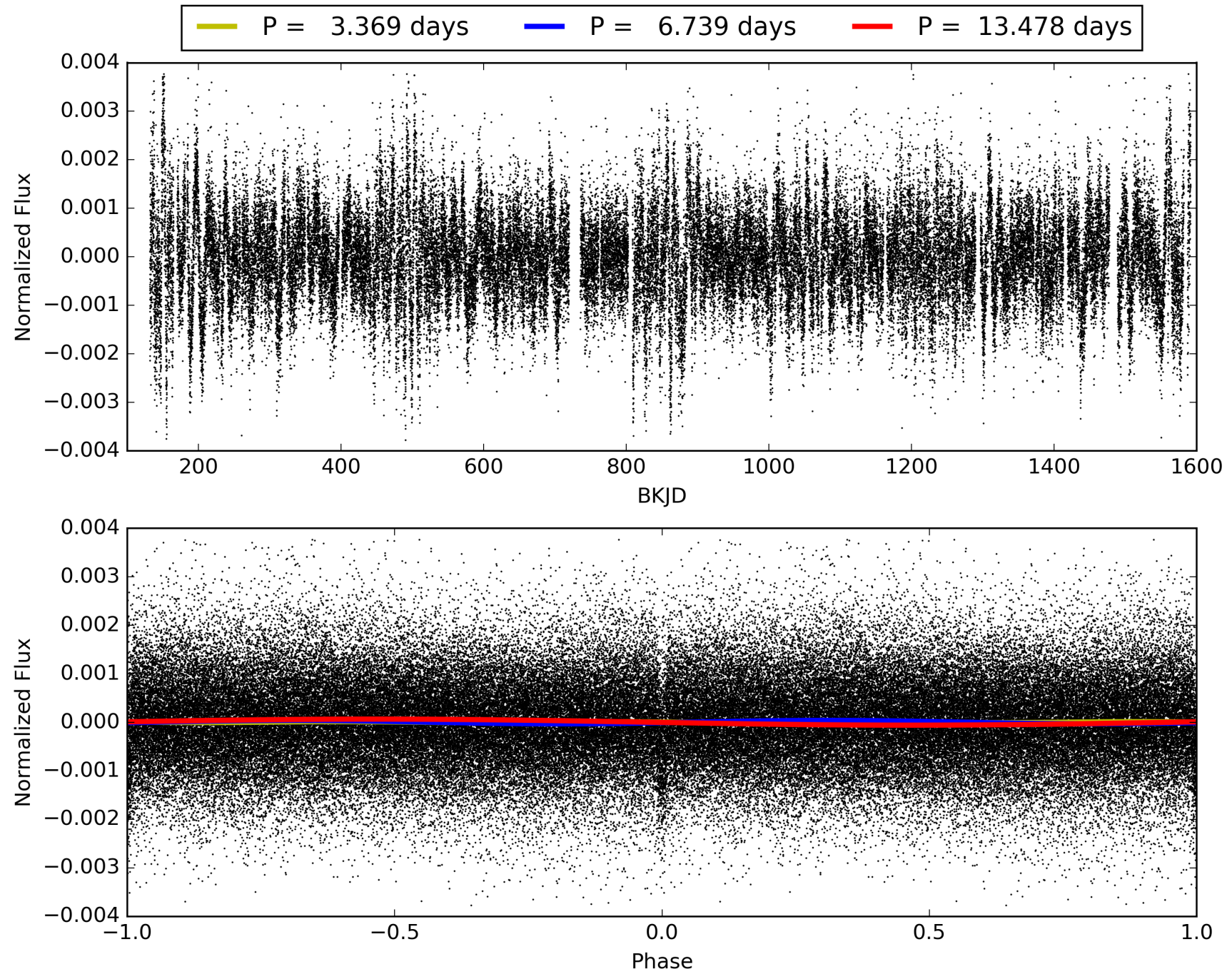
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010340423-02, PDC Light Curves

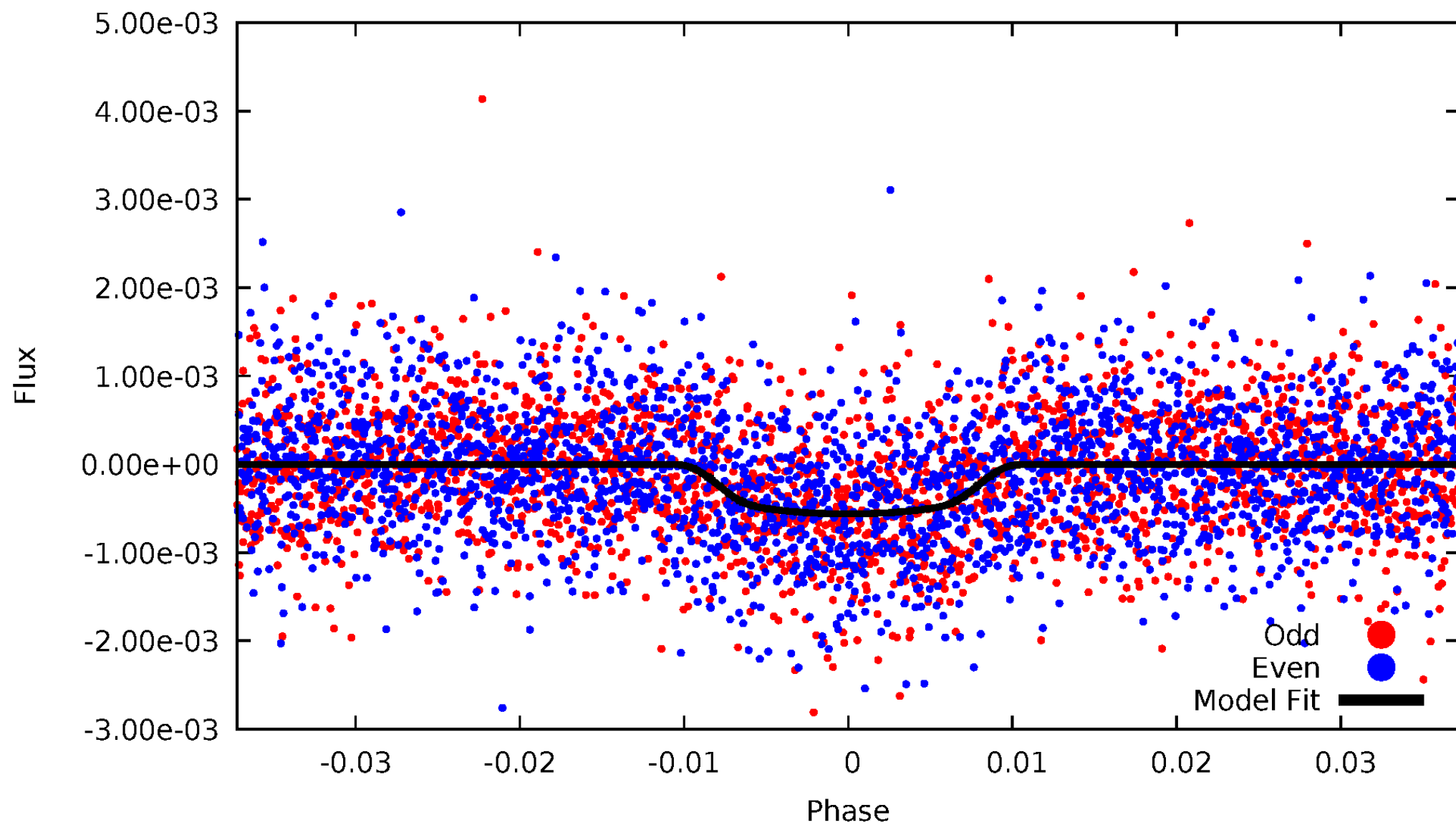


TCE 010340423-02



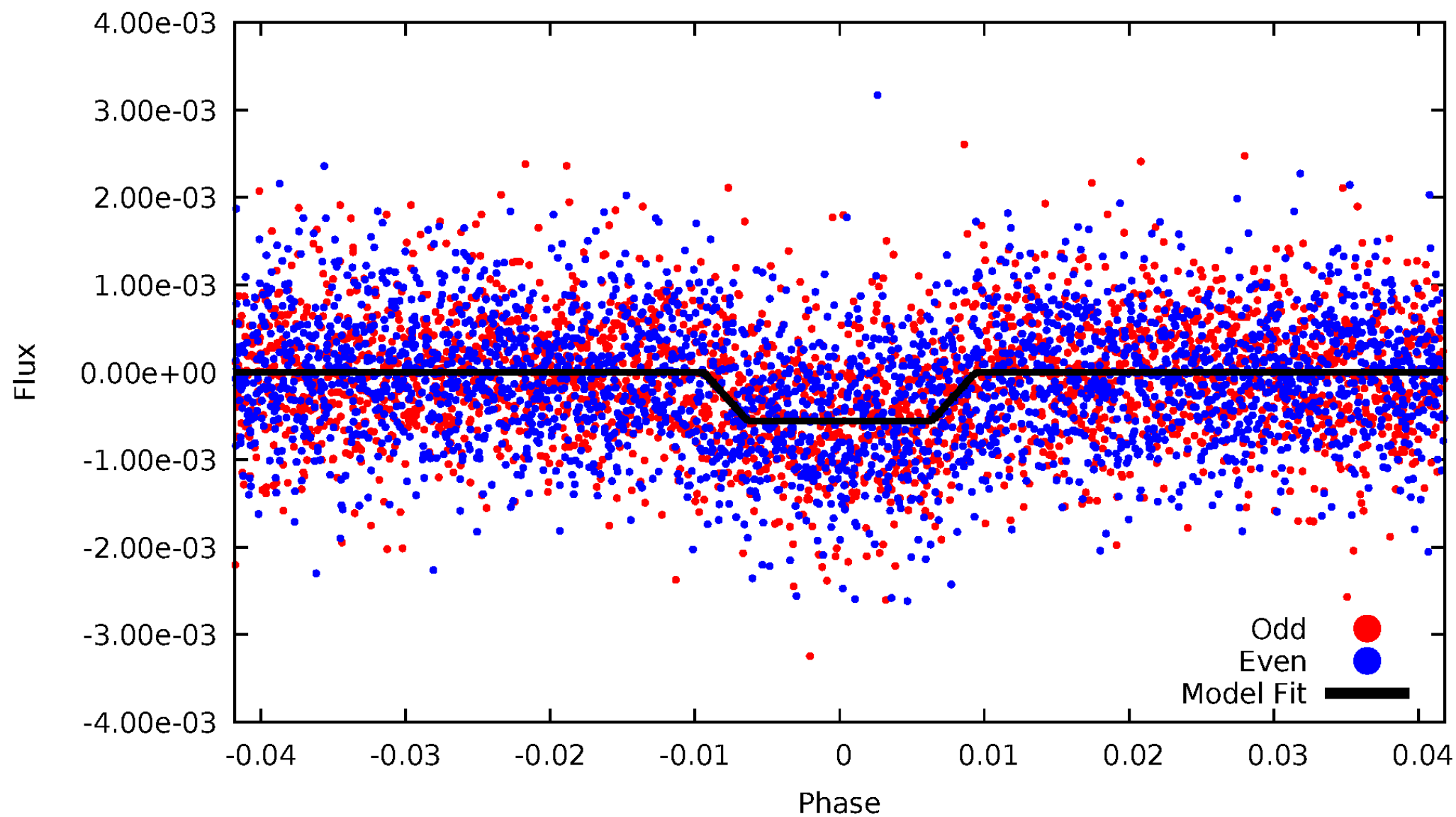
DV Odd/Even

TCE 010340423-02



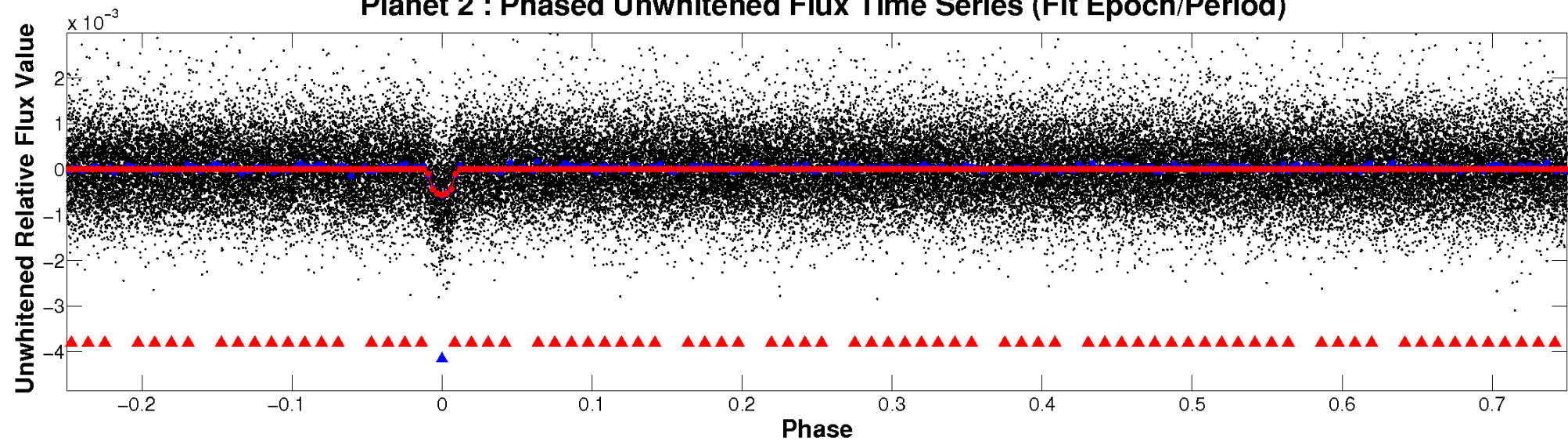
ALT Odd/Even

TCE 010340423-02

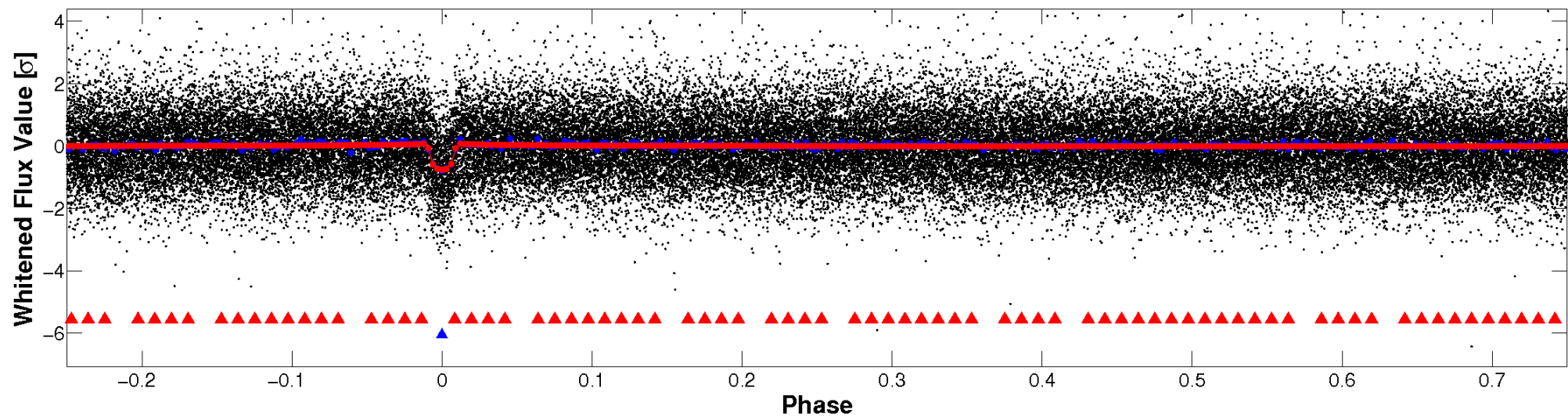


Non-Whitened Vs. Whitened Light Curve

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

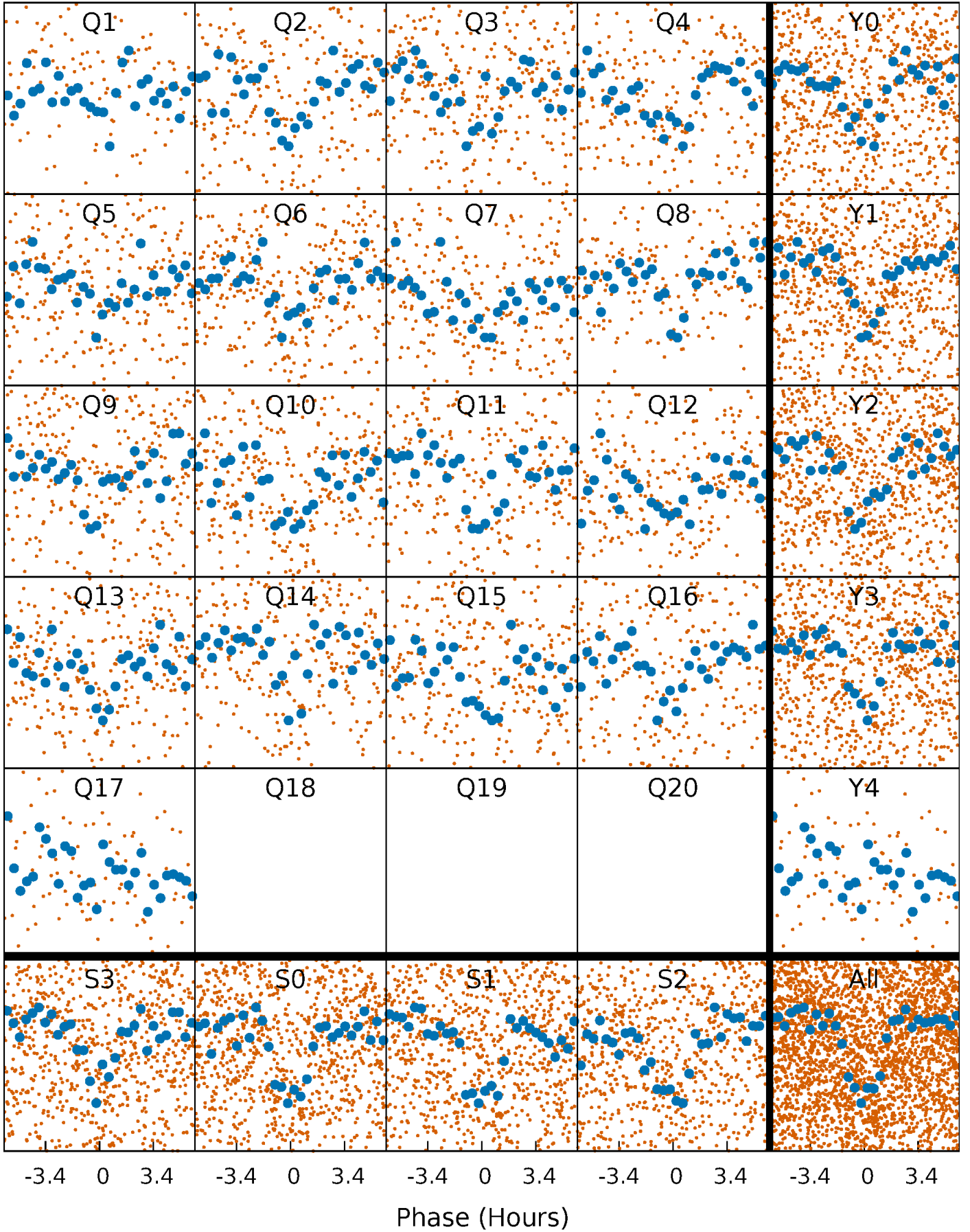


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



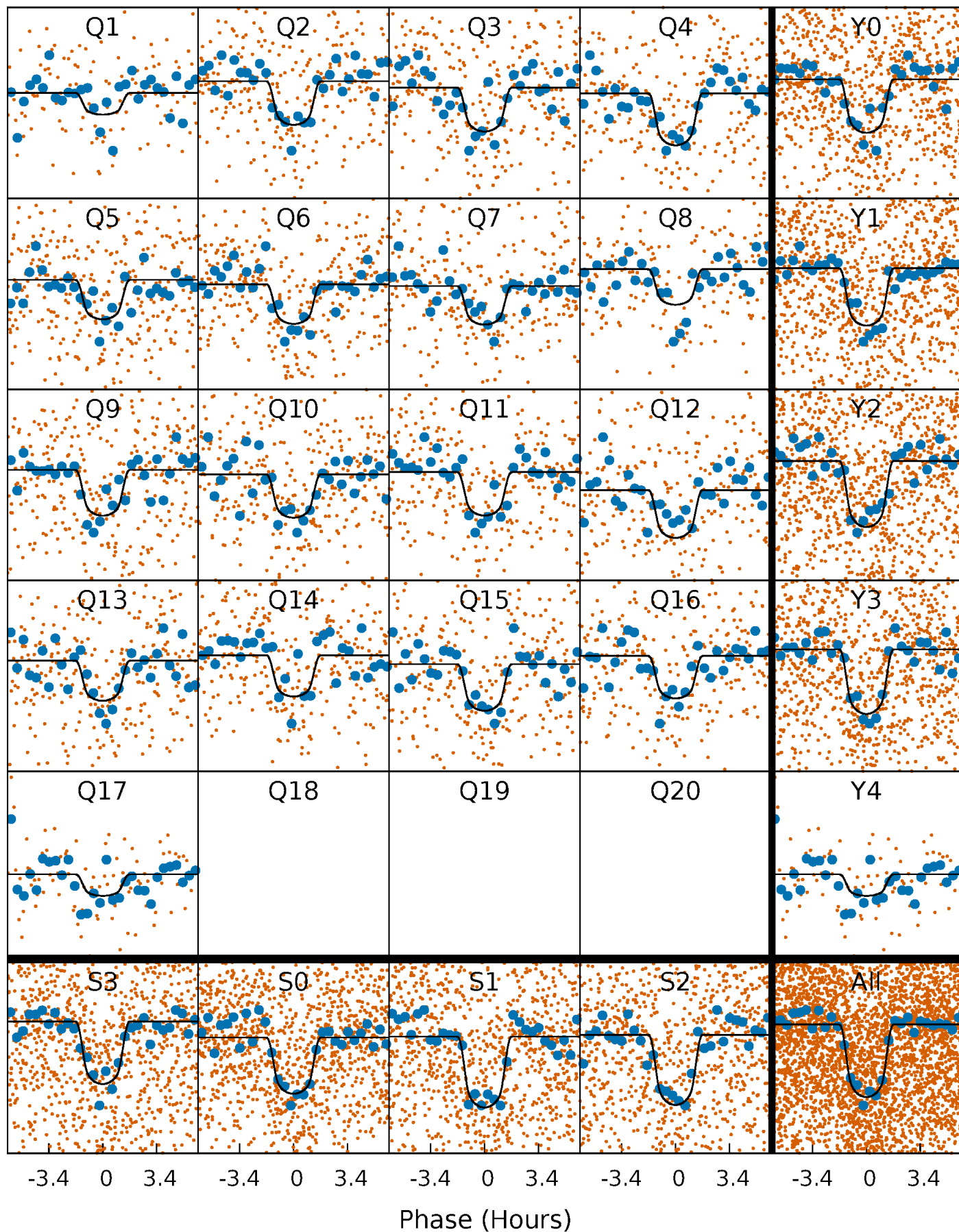
PDC Quarter-Phased Transit Curves

TCE 010340423-02 P= 6.738954 Days $T_0=135.280051$ (BKJD)



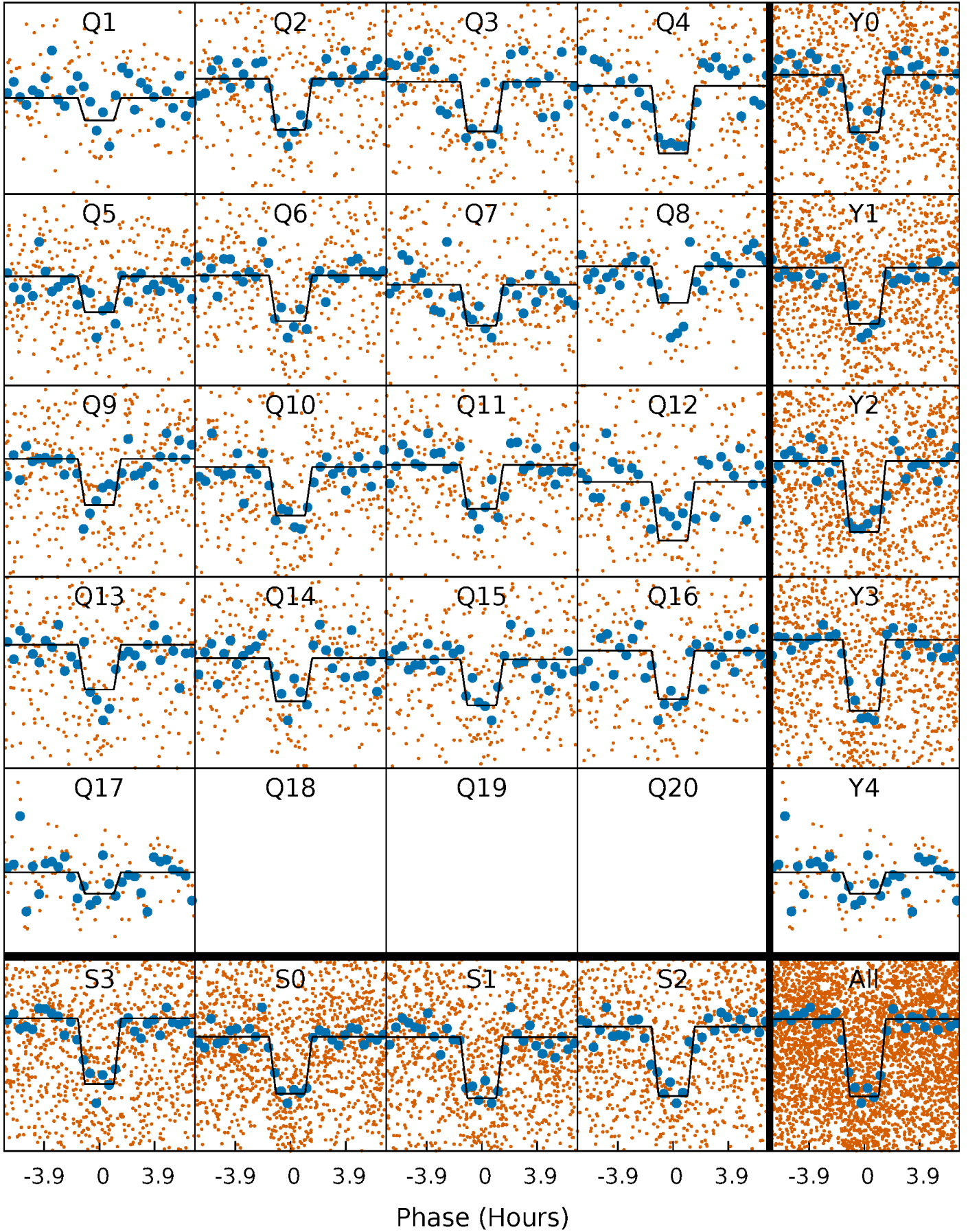
DV Quarter-Phased Transit Curves

TCE 010340423-02 P= 6.738954 Days $T_0=135.280051$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

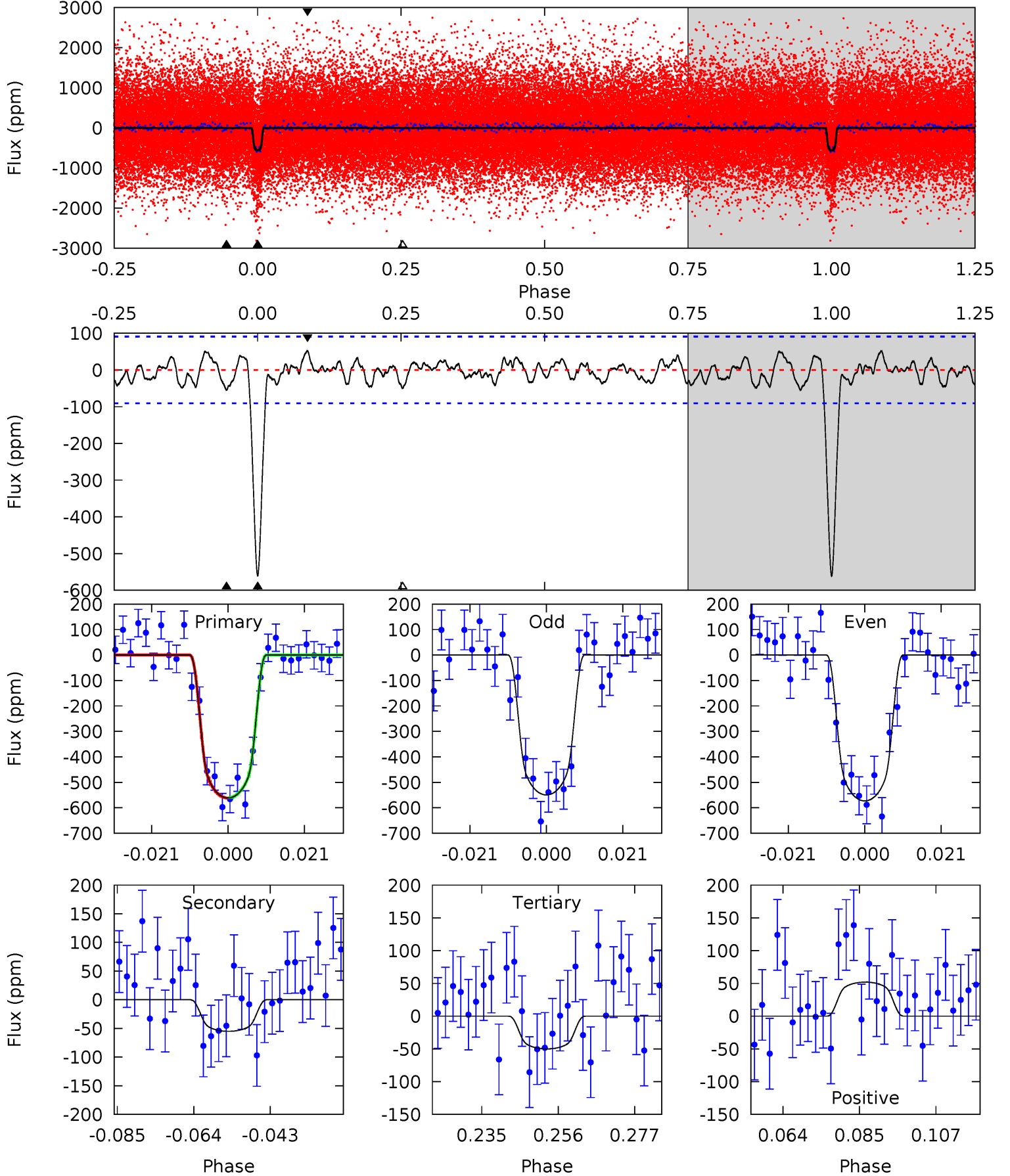
TCE 010340423-02 P= 6.738955 Days $T_0=135.279667$ (BKJD)



DV Model-Shift Uniqueness Test

010340423-02, P = 6.738954 Days, E = 128.541097 Days

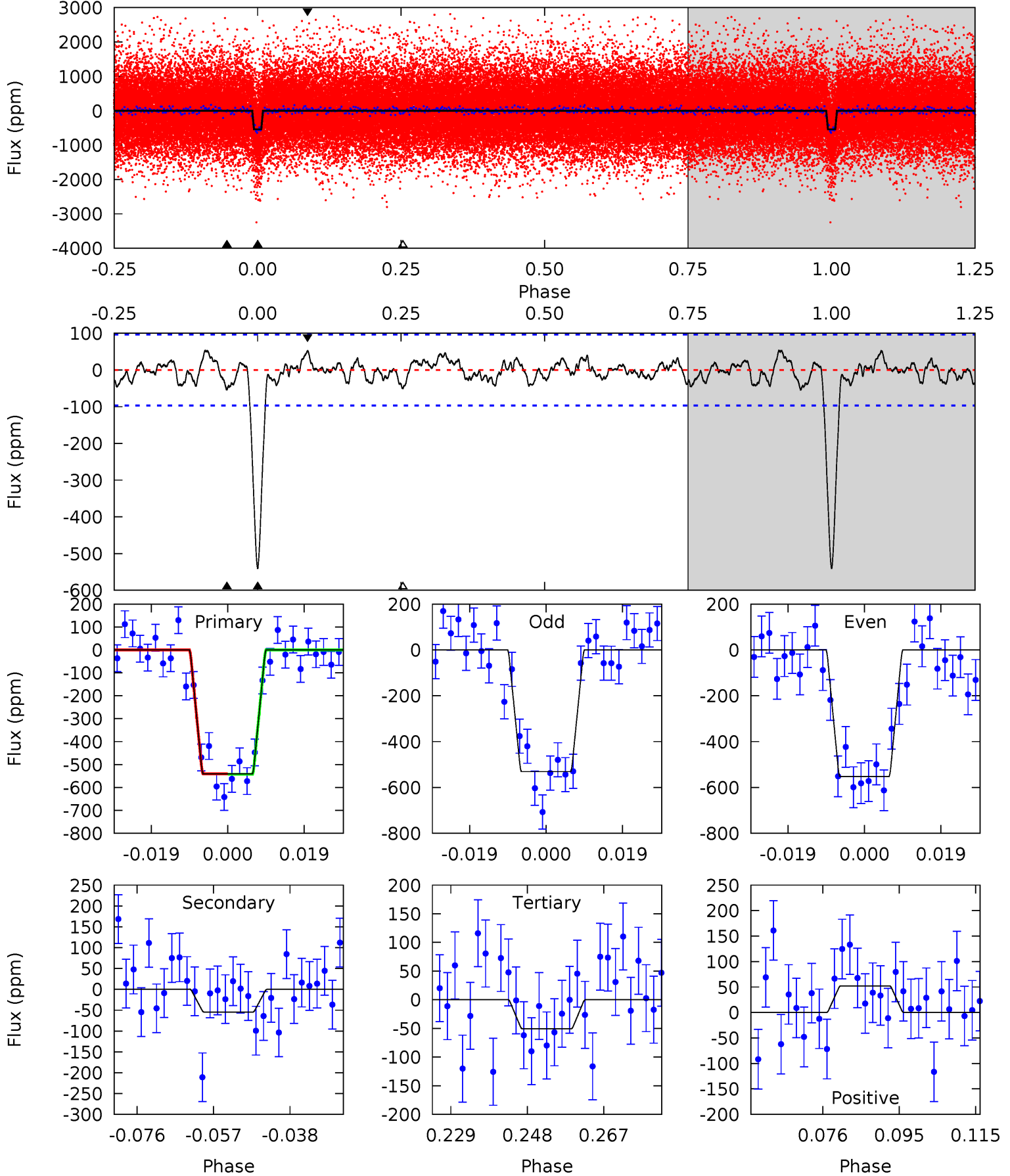
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.2	2.96	2.69	2.79	4.88	2.30	1.17	27.5	27.4	0.27	0.16	0.63	0.99	0.08	0.03



Alt Model-Shift Uniqueness Test

010340423-02, P = 6.738955 Days, E = 128.540712 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.4	2.76	2.56	2.64	4.90	2.34	1.08	24.8	24.8	0.20	0.11	0.53	0.96	0.09	0.05



Stellar Parameters For KIC 010340423

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4126^{+82}_{-82}	$4.668^{+0.022}_{-0.022}$	$-0.060^{+0.150}_{-0.150}$	$0.602^{+0.028}_{-0.028}$	$0.616^{+0.033}_{-0.033}$	$3.979^{+0.424}_{-0.350}$
	+2%/-2%	+0%/-0%	+250%/-250%	+5%/-5%	+5%/-5%	+11%/-9%
Source	SPE60	SPE60	SPE60	DSEP		

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

Secondary Eclipse Parameters for KIC 010340423-02 / KOI 0736.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-55 ± 19	$1.75^{+0.29}_{-0.31}$	809^{+18}_{-17}	2783^{+178}_{-196}	35^{+23}_{-15}
Alt.	-54 ± 20	$1.56^{+0.33}_{-0.30}$	810^{+18}_{-18}	2856^{+217}_{-218}	44^{+28}_{-19}

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 $A_{obs} \gg 1.0$

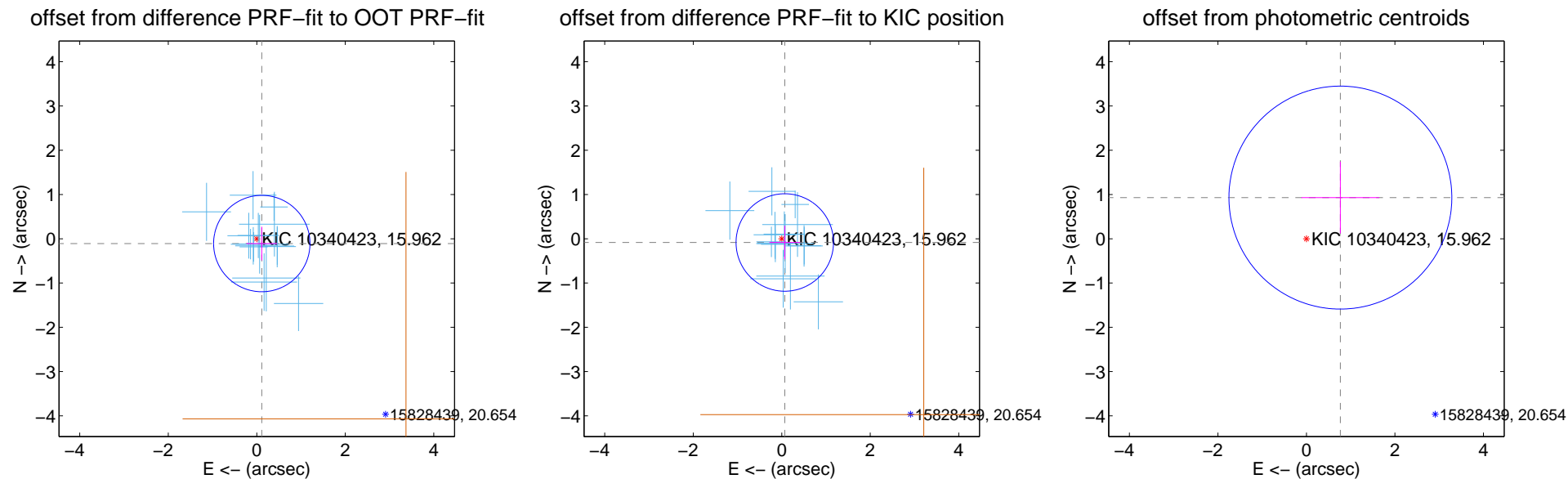
DV Centroid Data

Supplemental centroid analysis for 010340423-02. Kepler magnitude: 15.96. Transit SNR 20.79

There are 15 quarters with good PRF difference image offsets

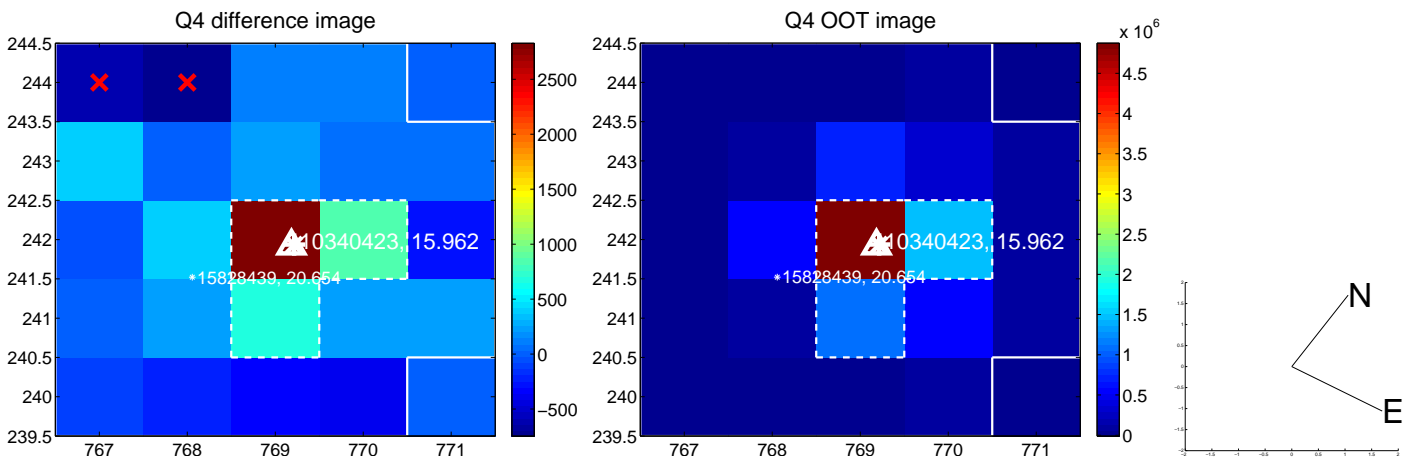
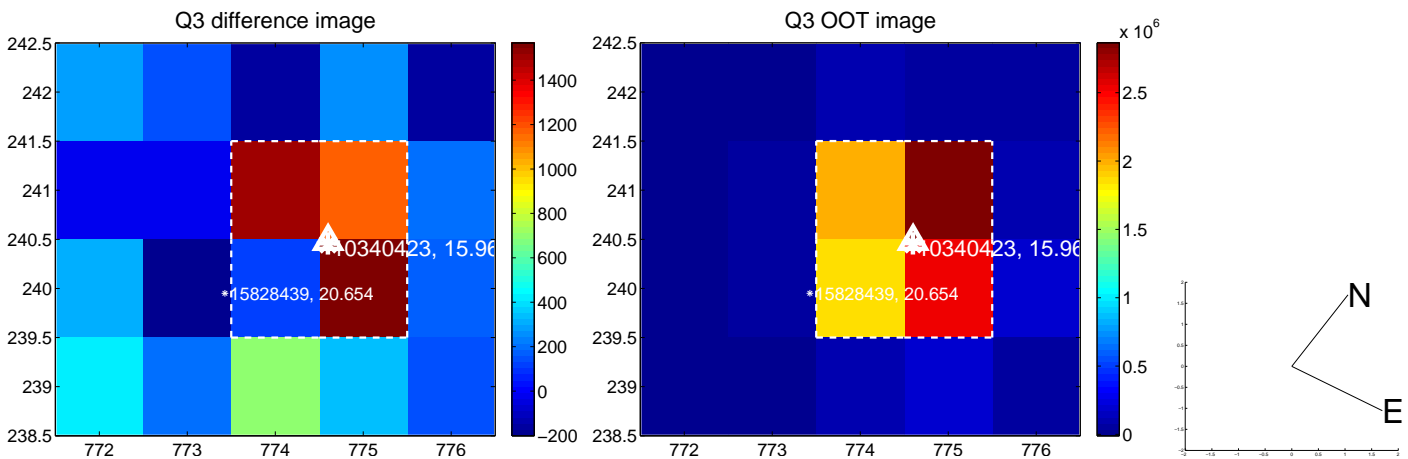
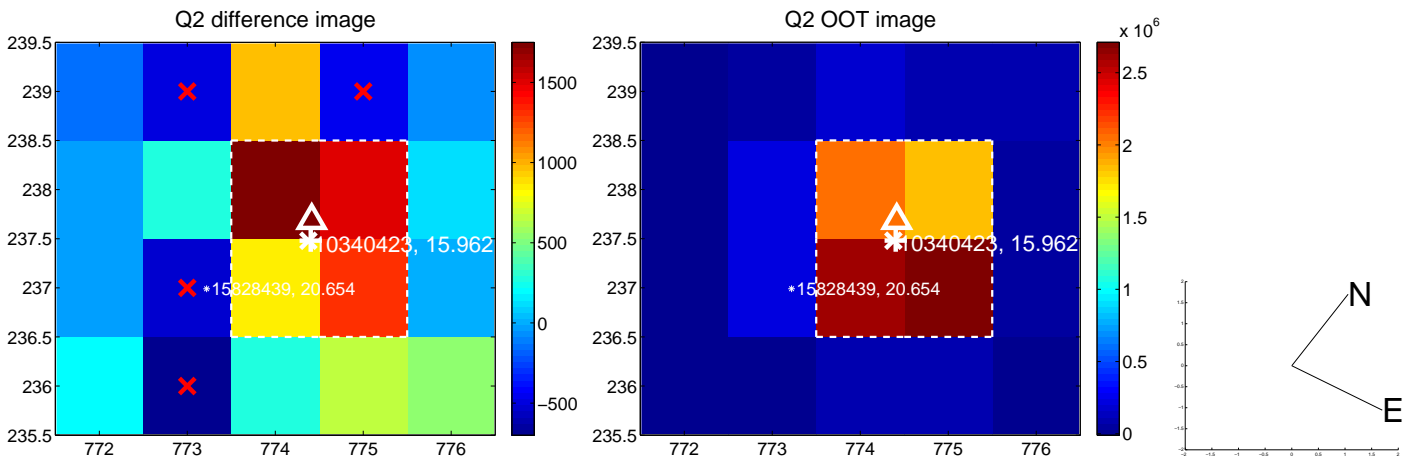
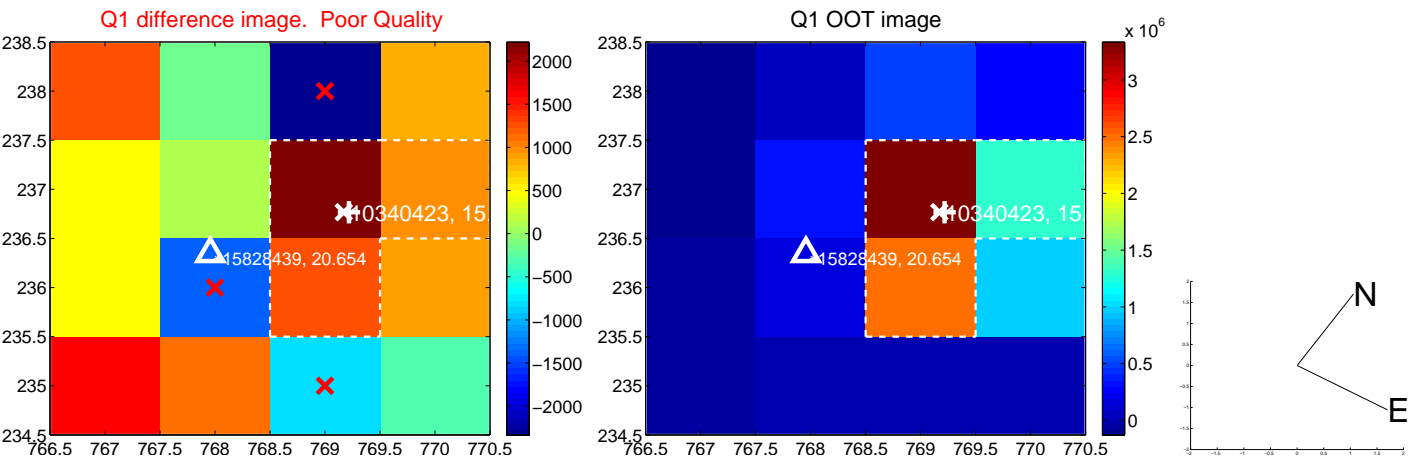
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.157 ± 0.363	0.43	-0.114 ± 0.348	-0.108 ± 0.379
PRF-fit source offset from KIC position	0.108 ± 0.367	0.30	-0.068 ± 0.348	-0.084 ± 0.379
photometric centroid source offset	1.21 ± 0.84	1.44	-0.77 ± 0.88	0.93 ± 0.81

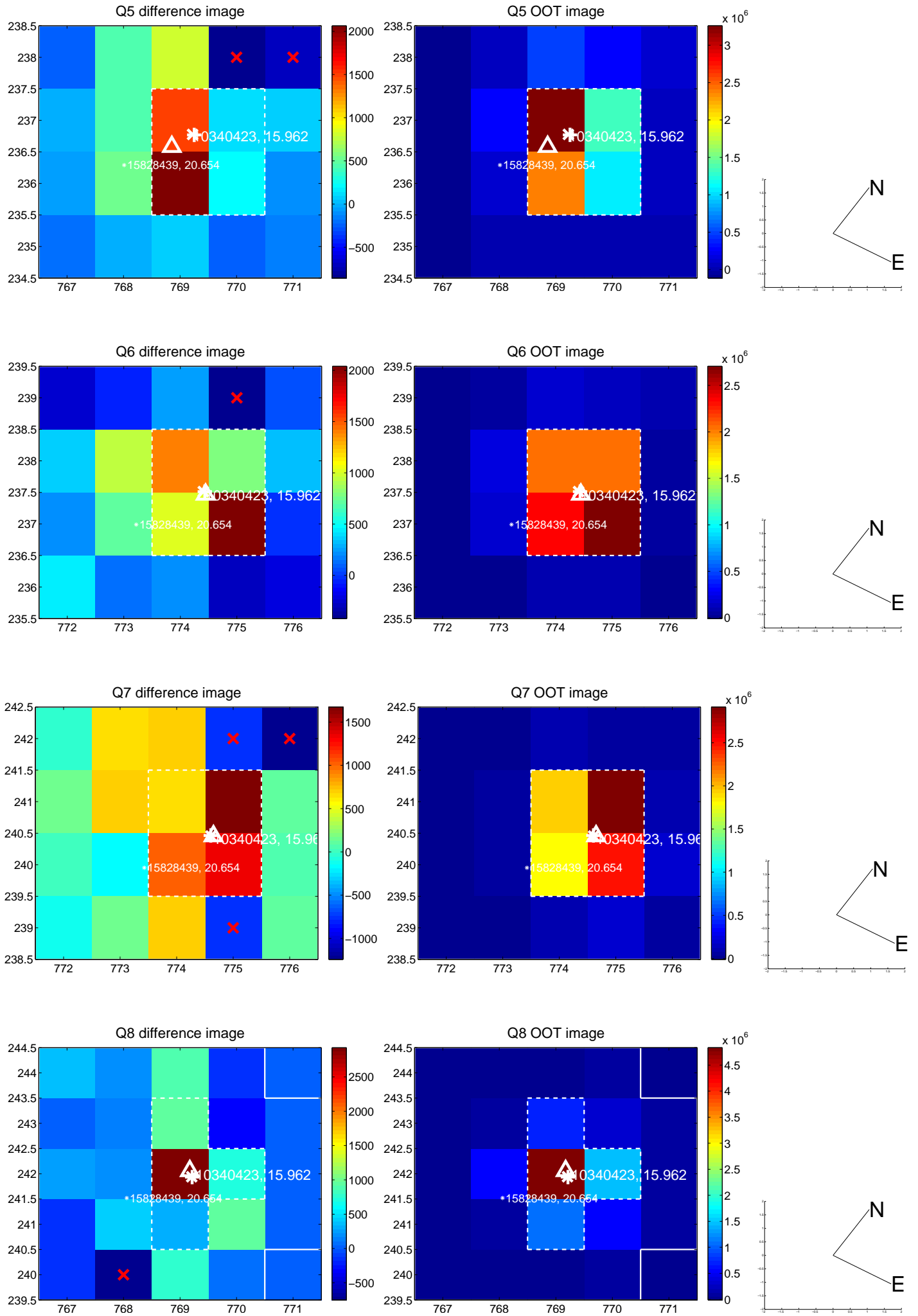


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

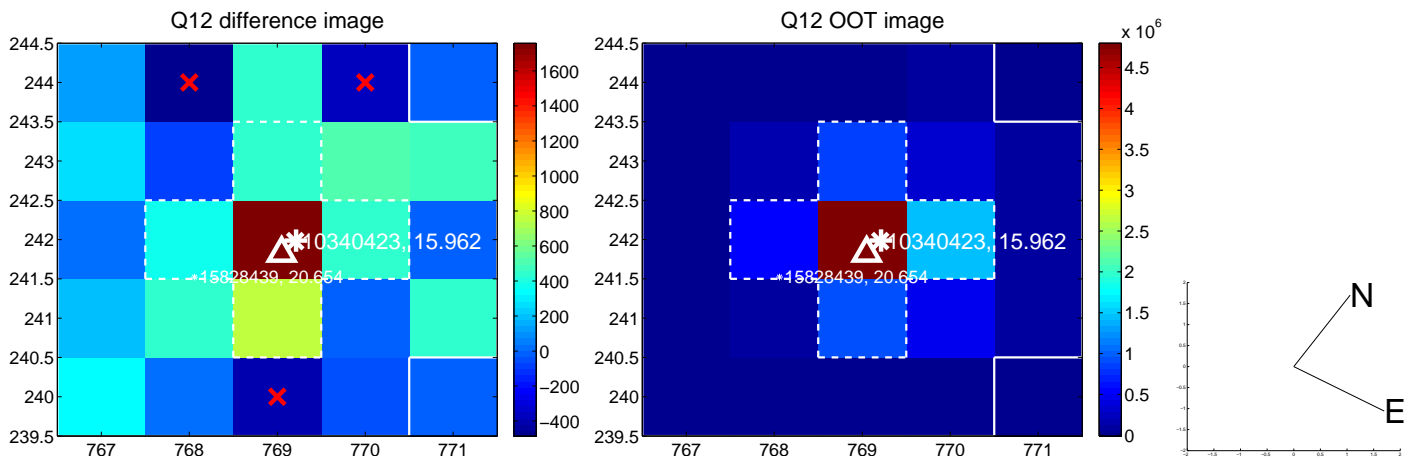
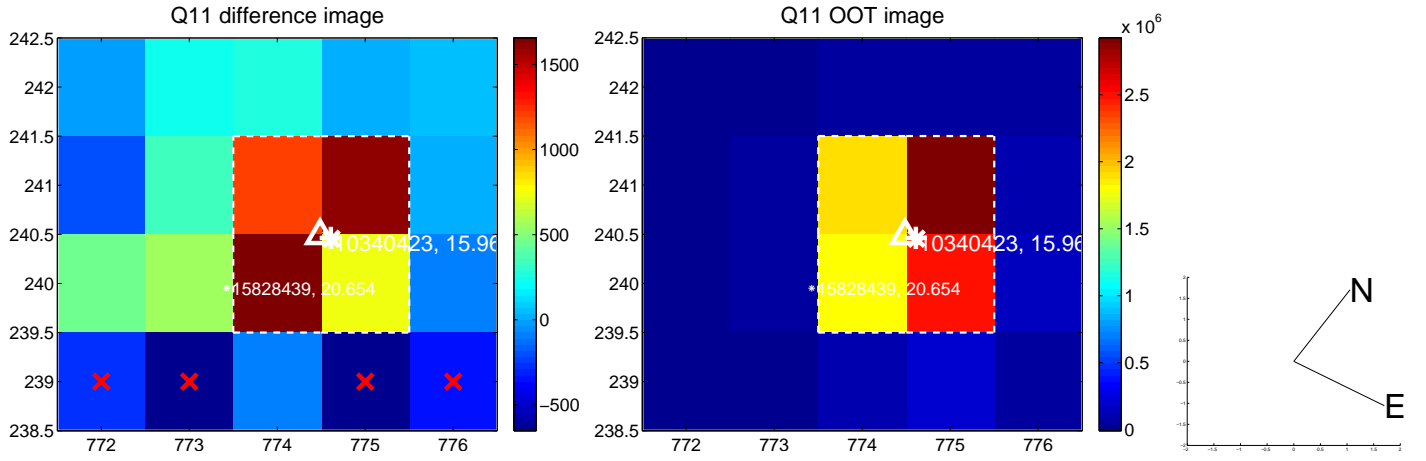
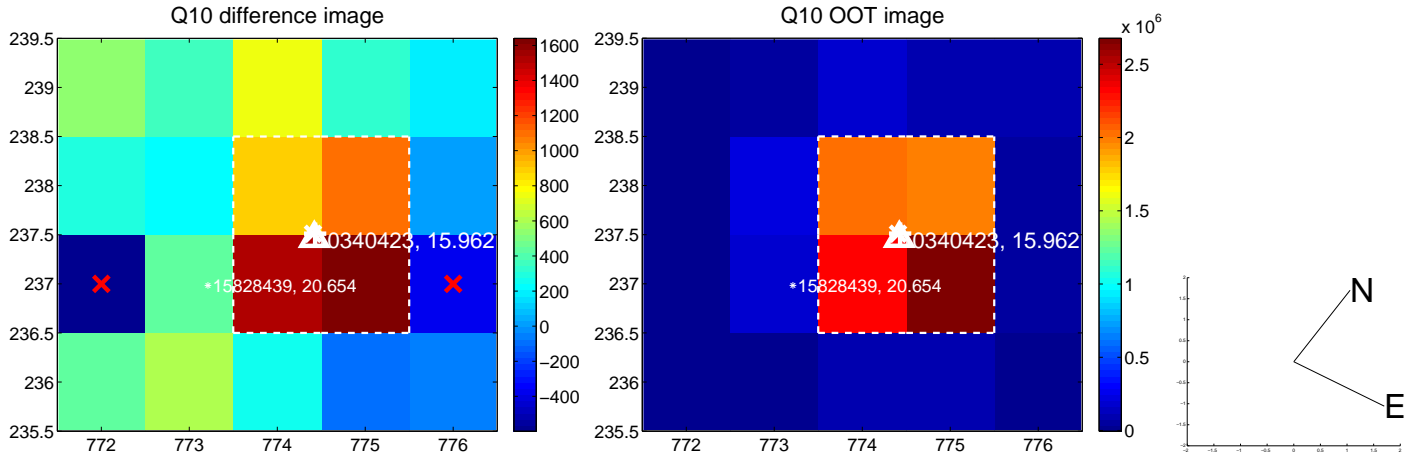
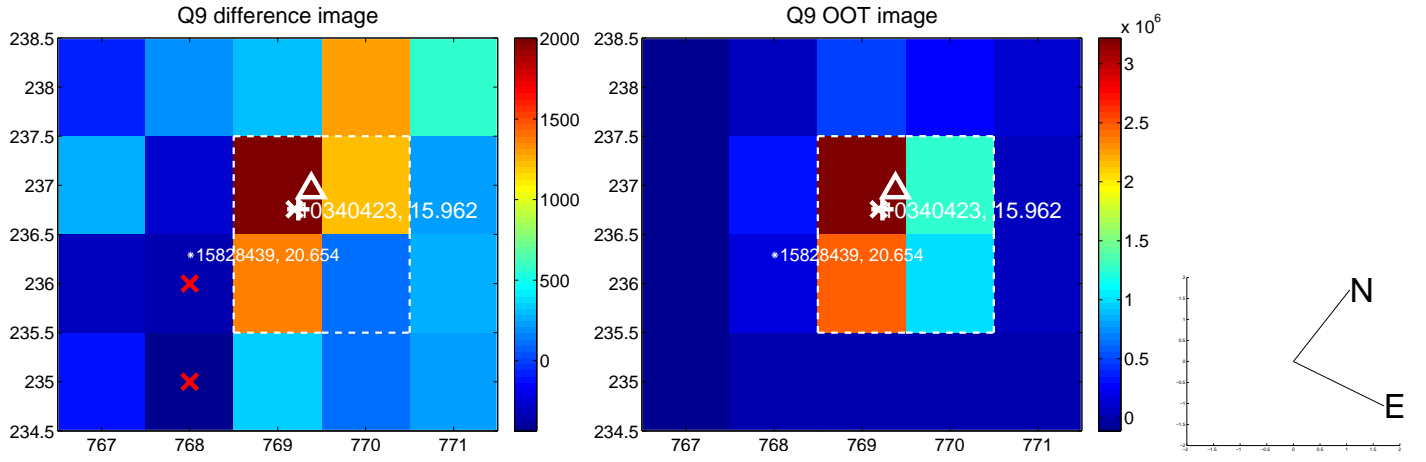
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



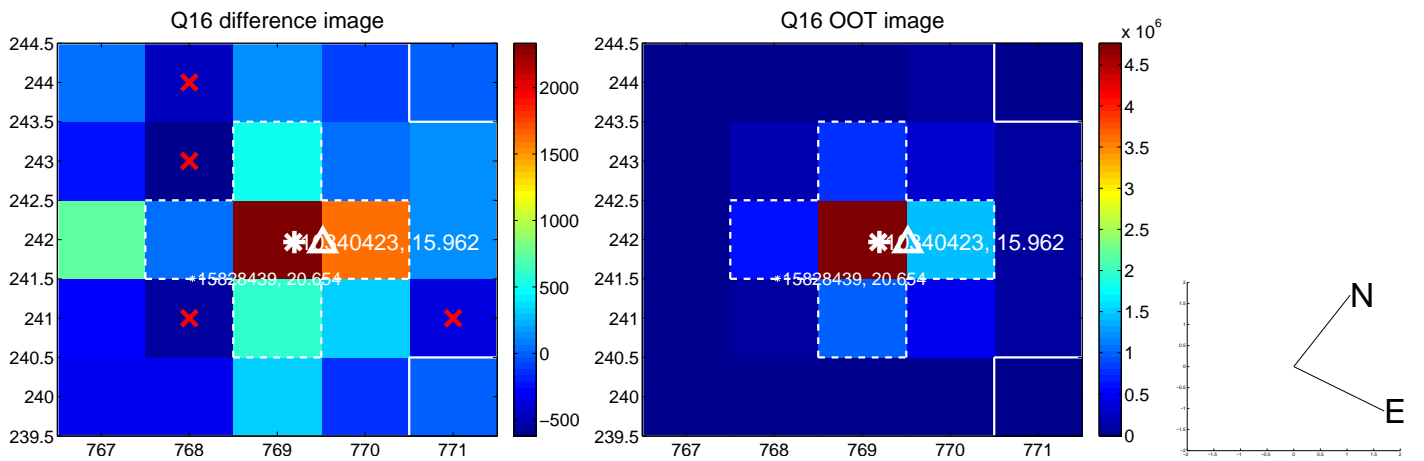
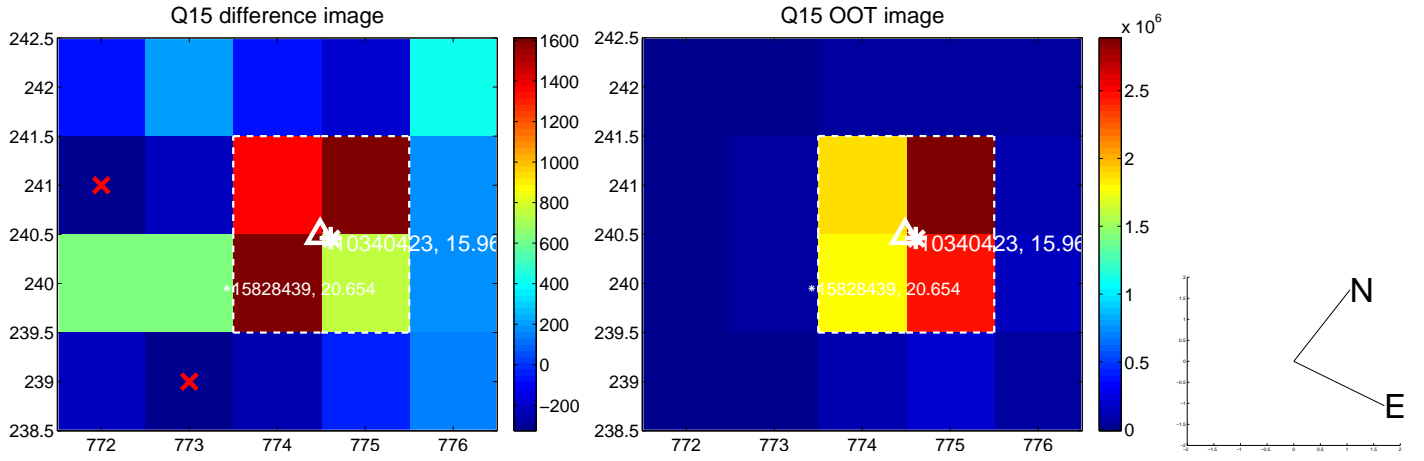
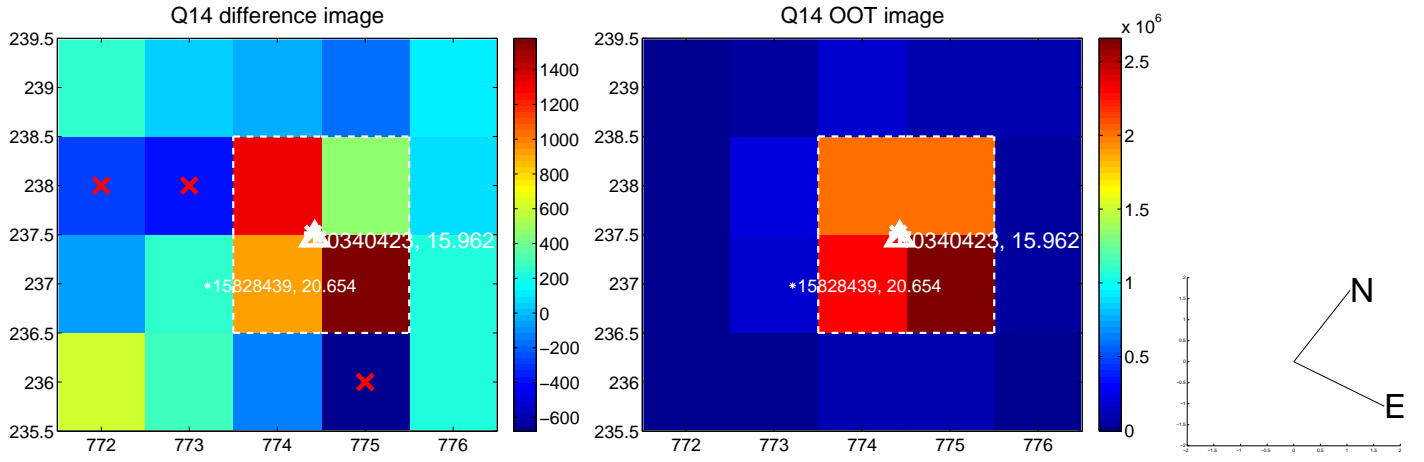
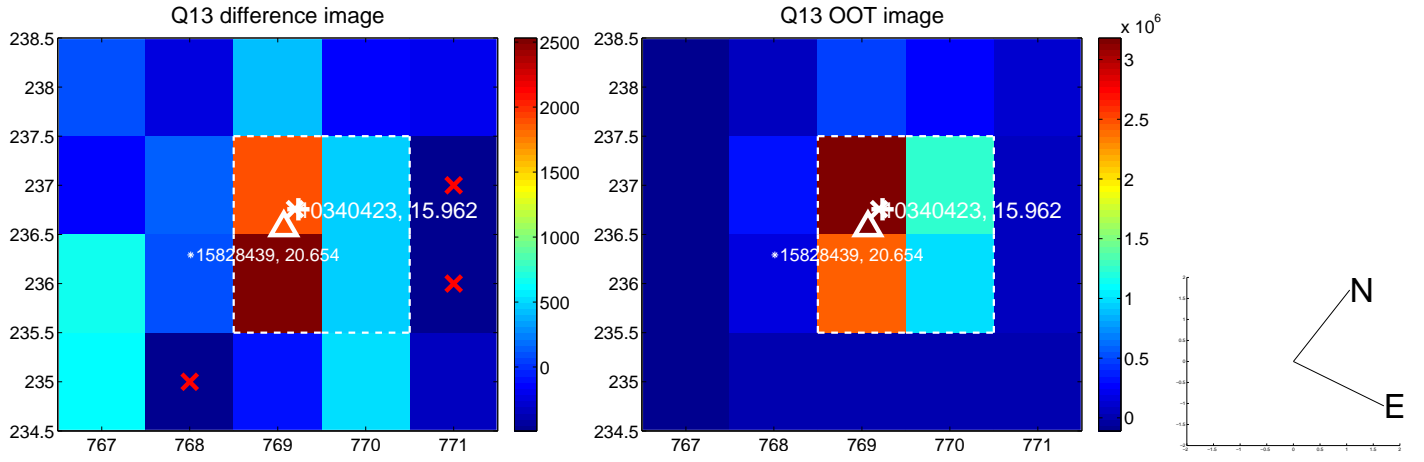
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



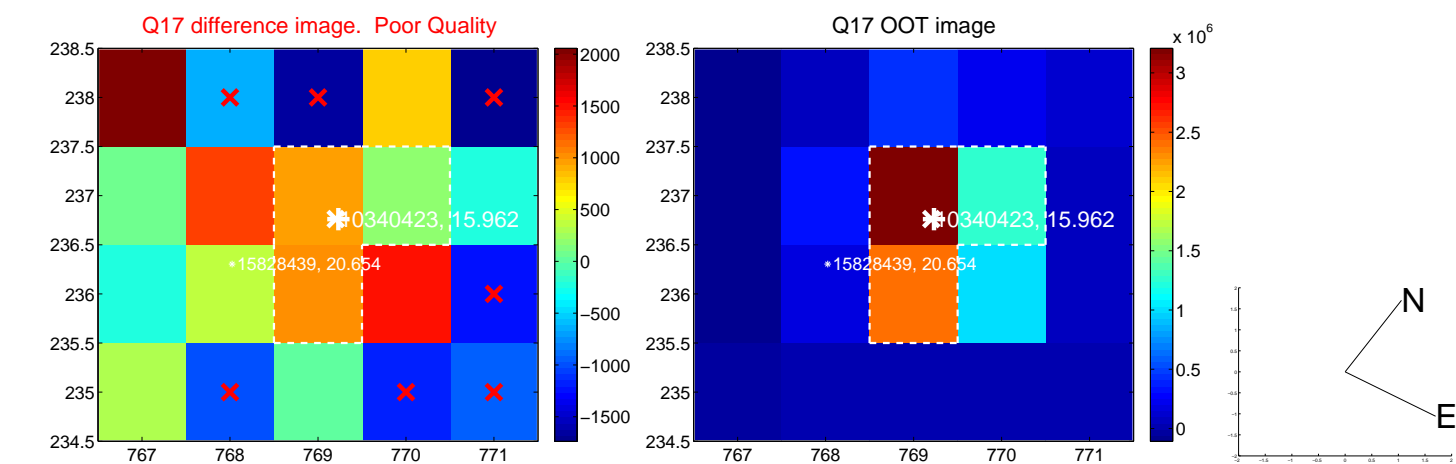
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



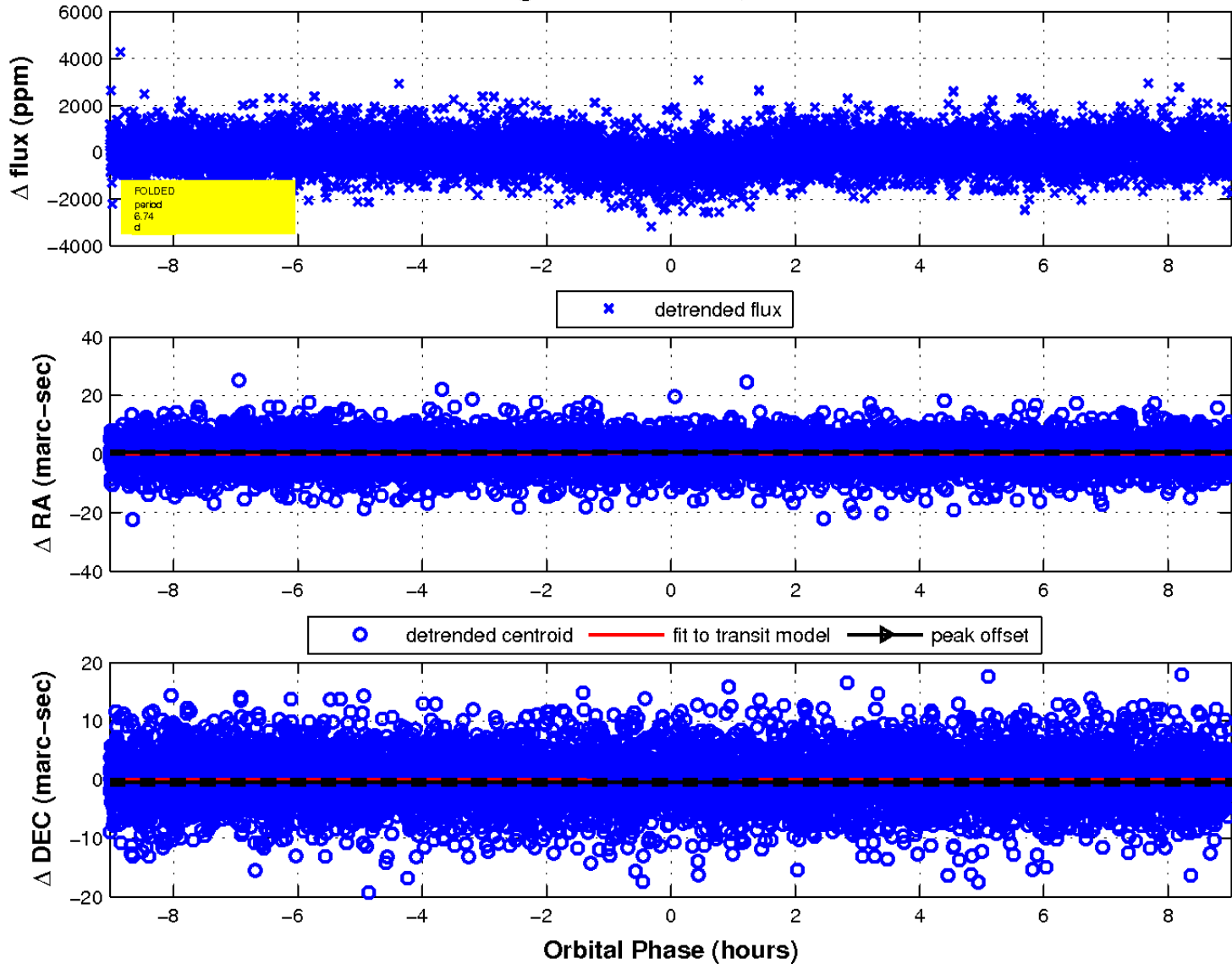
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

