

KIC 004844004

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})
004844004-01	OBS	1662.01	1.568073	131.811438	384.5	1.006	21.2	24.5	0.82	5435	1.97	794.00
004844004-02	OBS	No	0.784036	131.817364	176.7	1.109	8.9	12.1	0.82	5435	1.13	2000.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004844004-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
004844004-02	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.

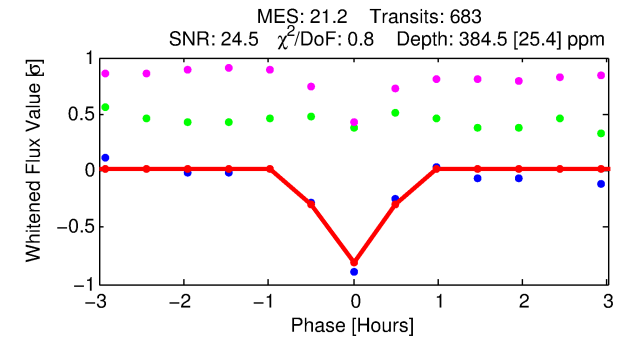
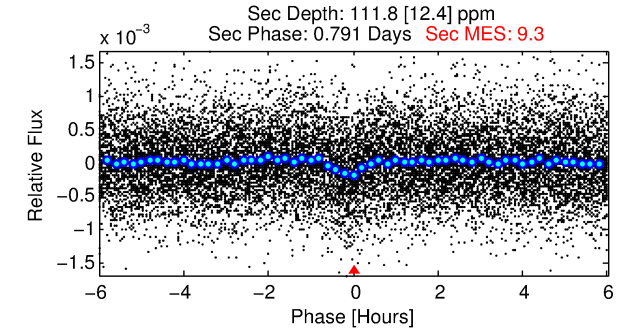
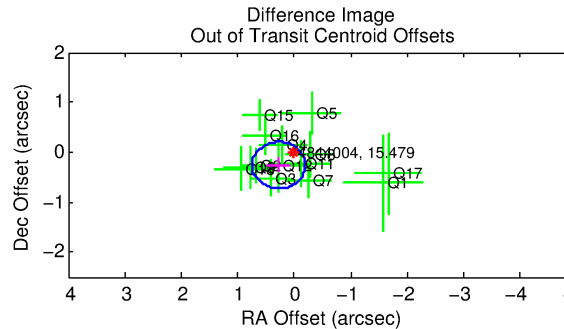
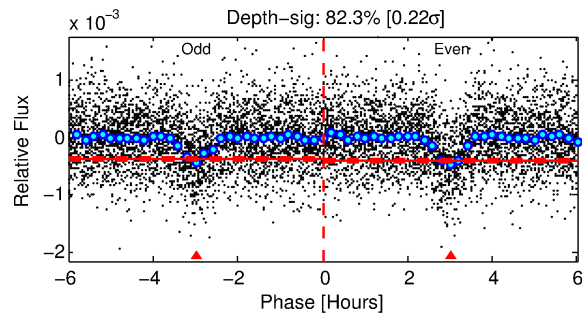
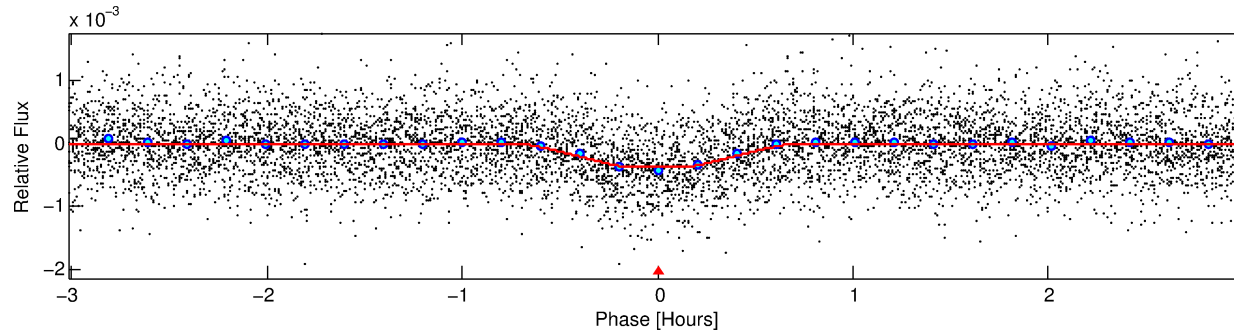
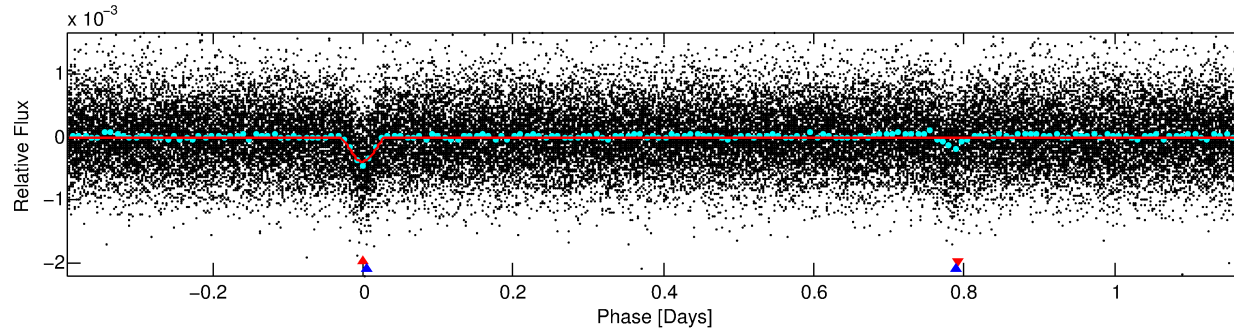
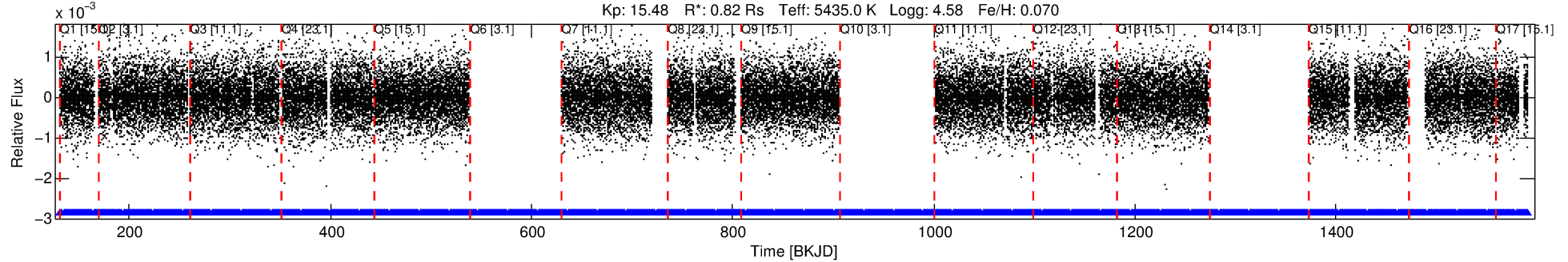
Ephemeris Match Information For 004844004-01

No Significant Match Found

DV One-Page Summary

KIC: 4844004 Candidate: 1 of 2 Period: 1.568 d
KOI: K01662 Corr: No Ephemeris Match

Kp: 15.48 R*: 0.82 Rs Teff: 5435.0 K Logg: 4.58 Fe/H: 0.070



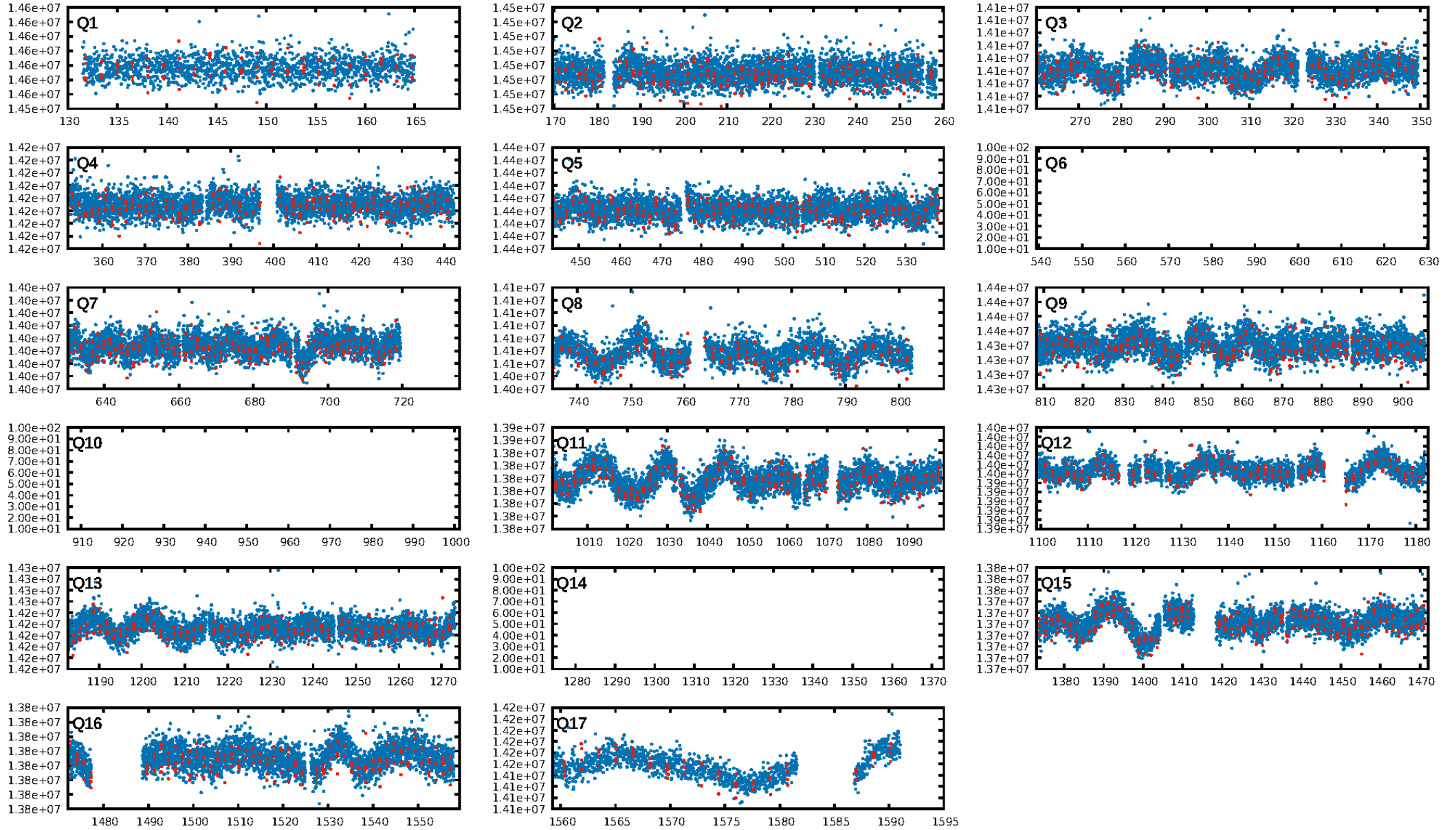
DV Fit Results:

Period = 1.56807 [0.00000] d
Epoch = 131.8114 [0.0007] BKJD
Rp/R* = 0.0219 [0.0079]
a/R* = 5.84 [8.69]
b = 0.90 [0.33]
Seff = 794.00 [232.90]
Teq = 1354 [99] K
Rp = 1.96 [0.82] Re
a = 0.0259 [0.0046] AU
Ag = 10.65 [8.28] [1.17σ]
Teffp = 3781 [703] K [3.42σ]

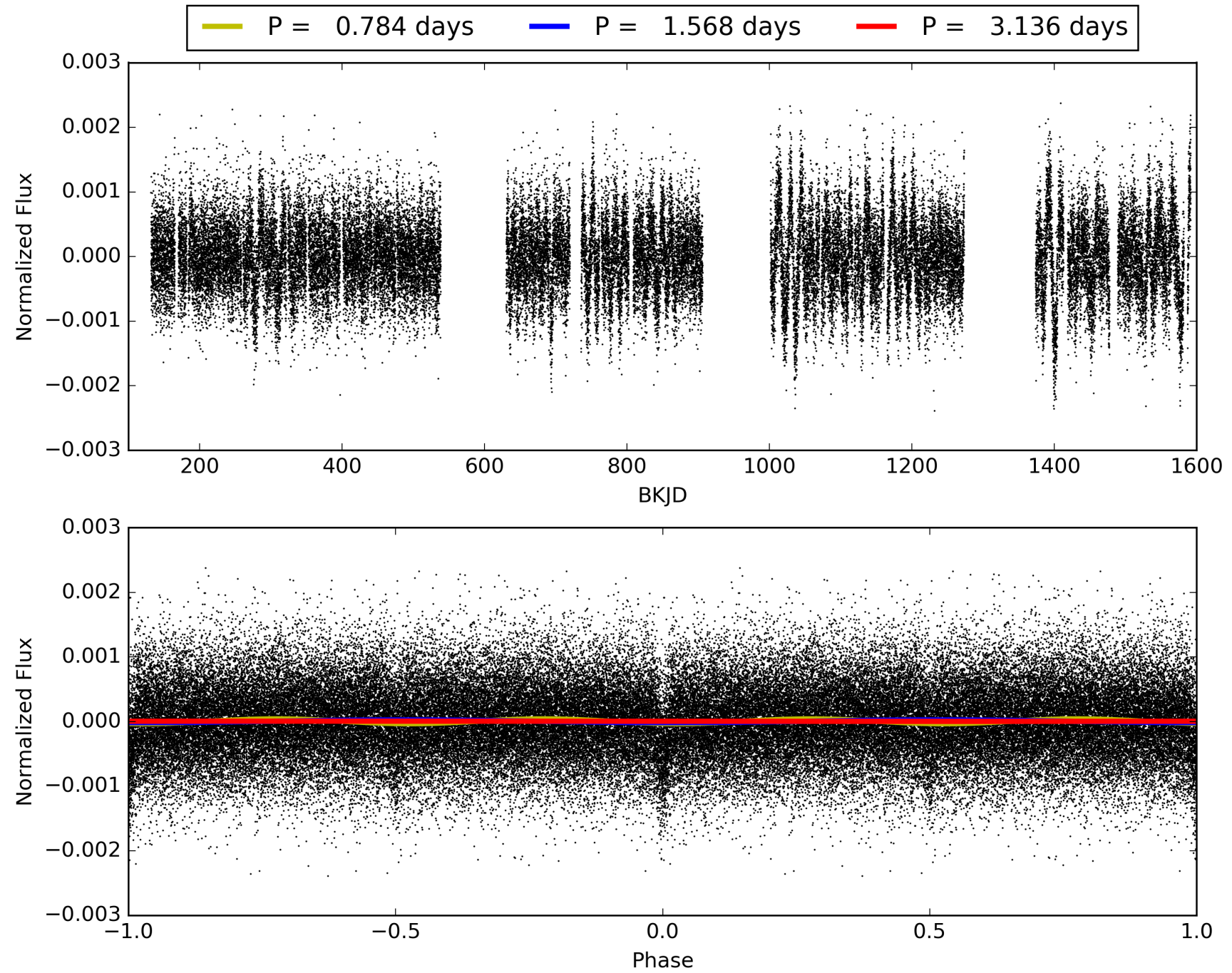
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.56σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.66e-95
RollingBand-fgt: 1.00 [644/644]
GhostDiagnostic-chr: 2.009
Centroid-sig: 0.0%
Centroid-so: 1.653 arcsec [2.07σ]
OotOffset-rm: 0.384 arcsec [2.46σ]
KicOffset-rm: 0.349 arcsec [1.98σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.00 [0/14]

TCE 004844004-01, PDC Light Curves

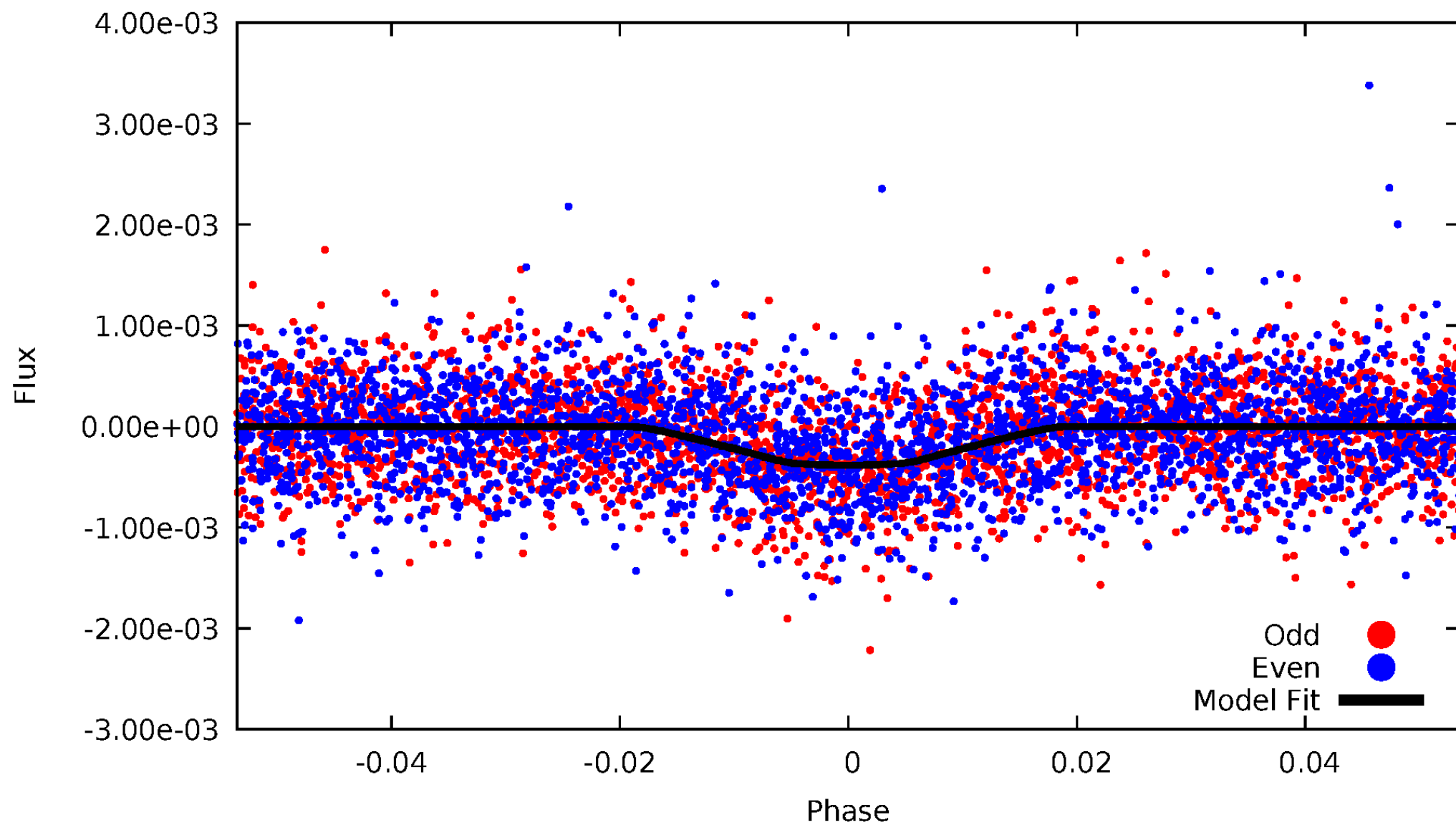


TCE 004844004-01



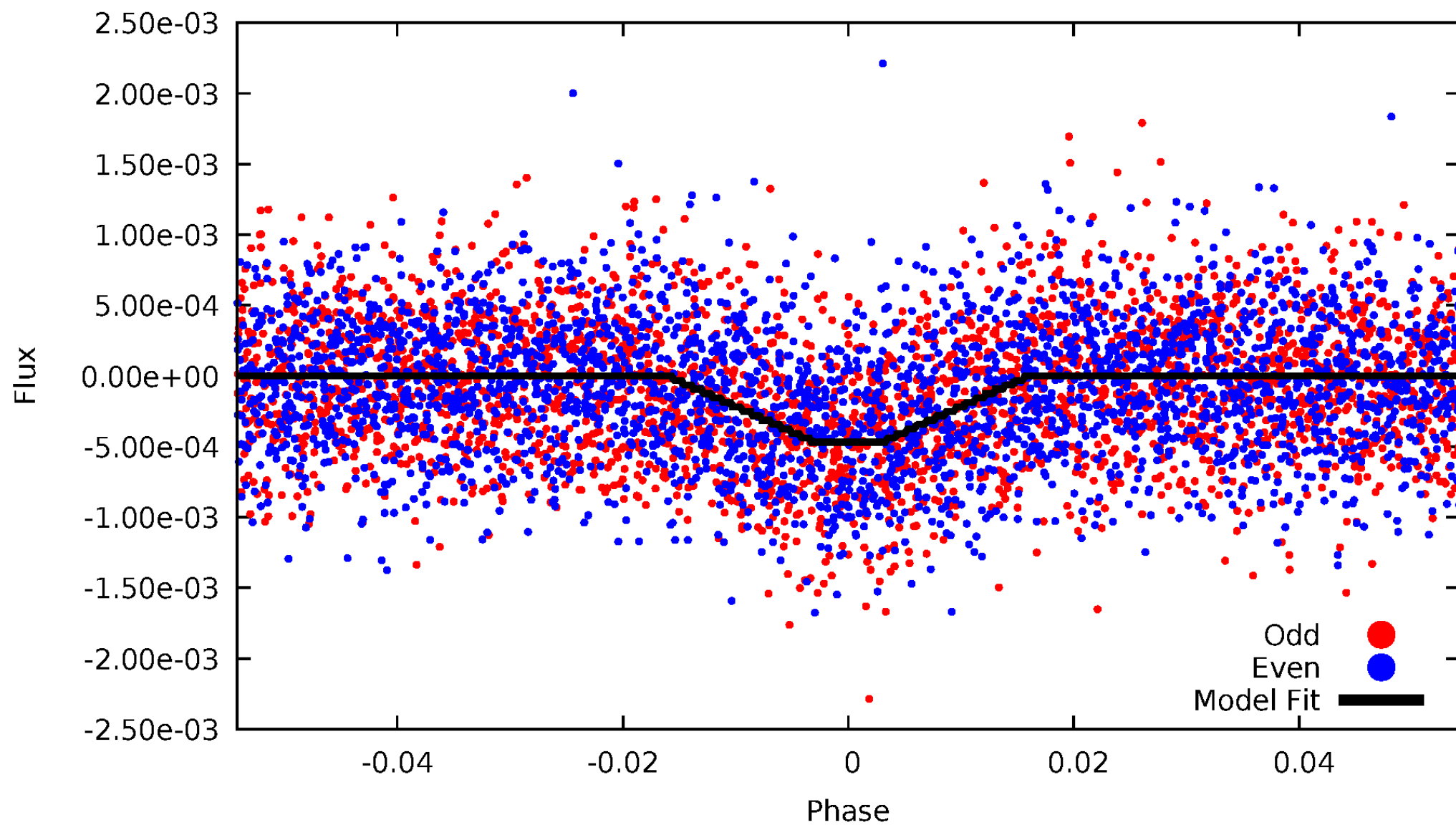
DV Odd/Even

TCE 004844004-01



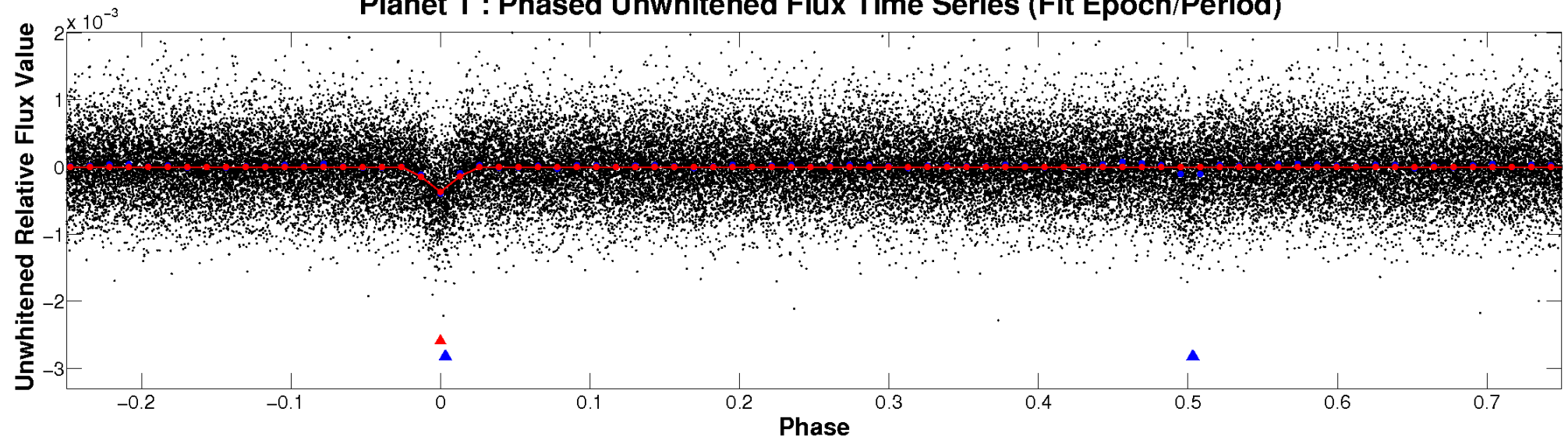
ALT Odd/Even

TCE 004844004-01

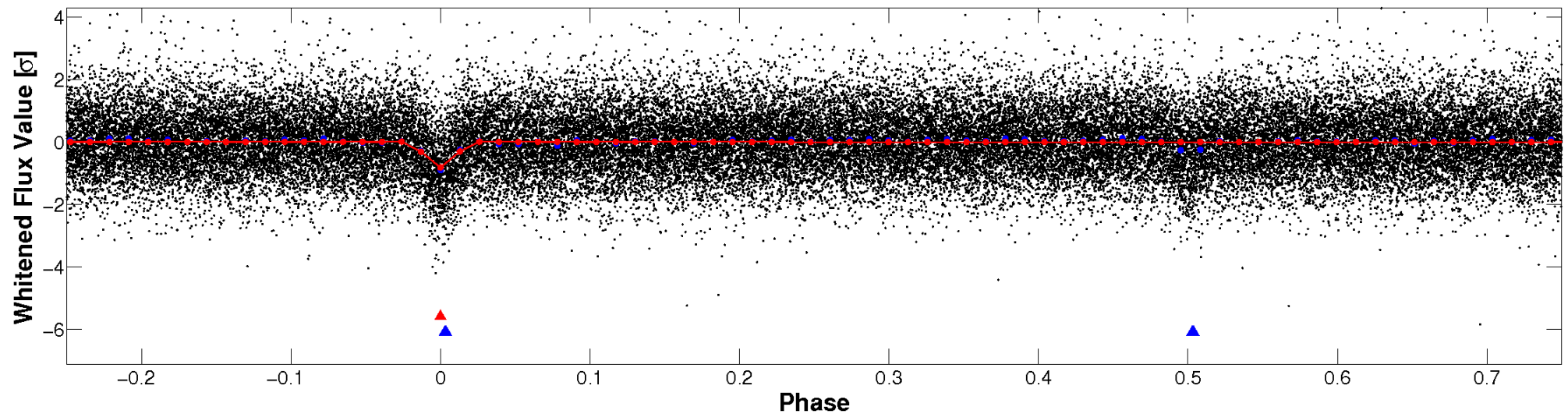


Non-Whitened Vs. Whitened Light Curve

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

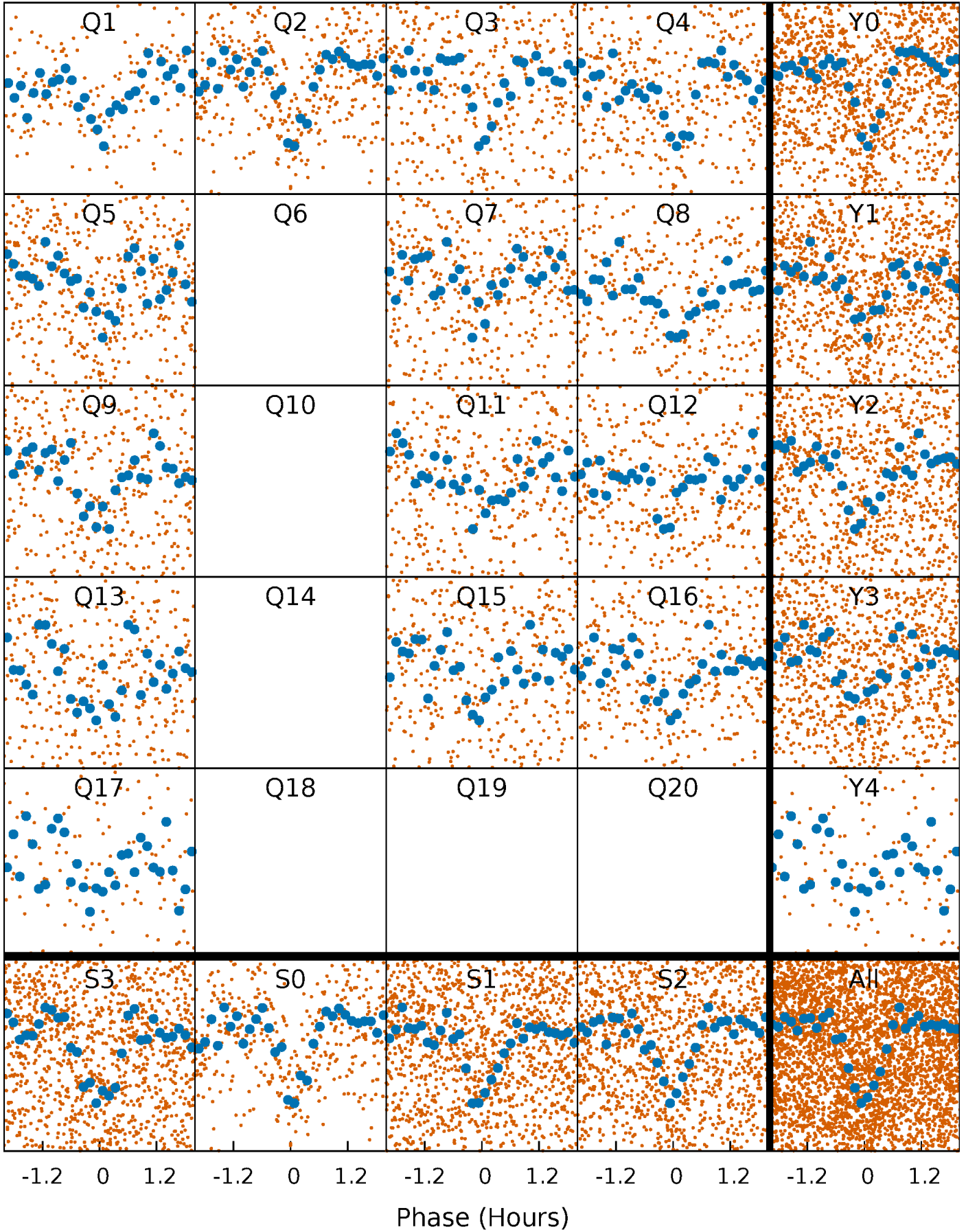


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



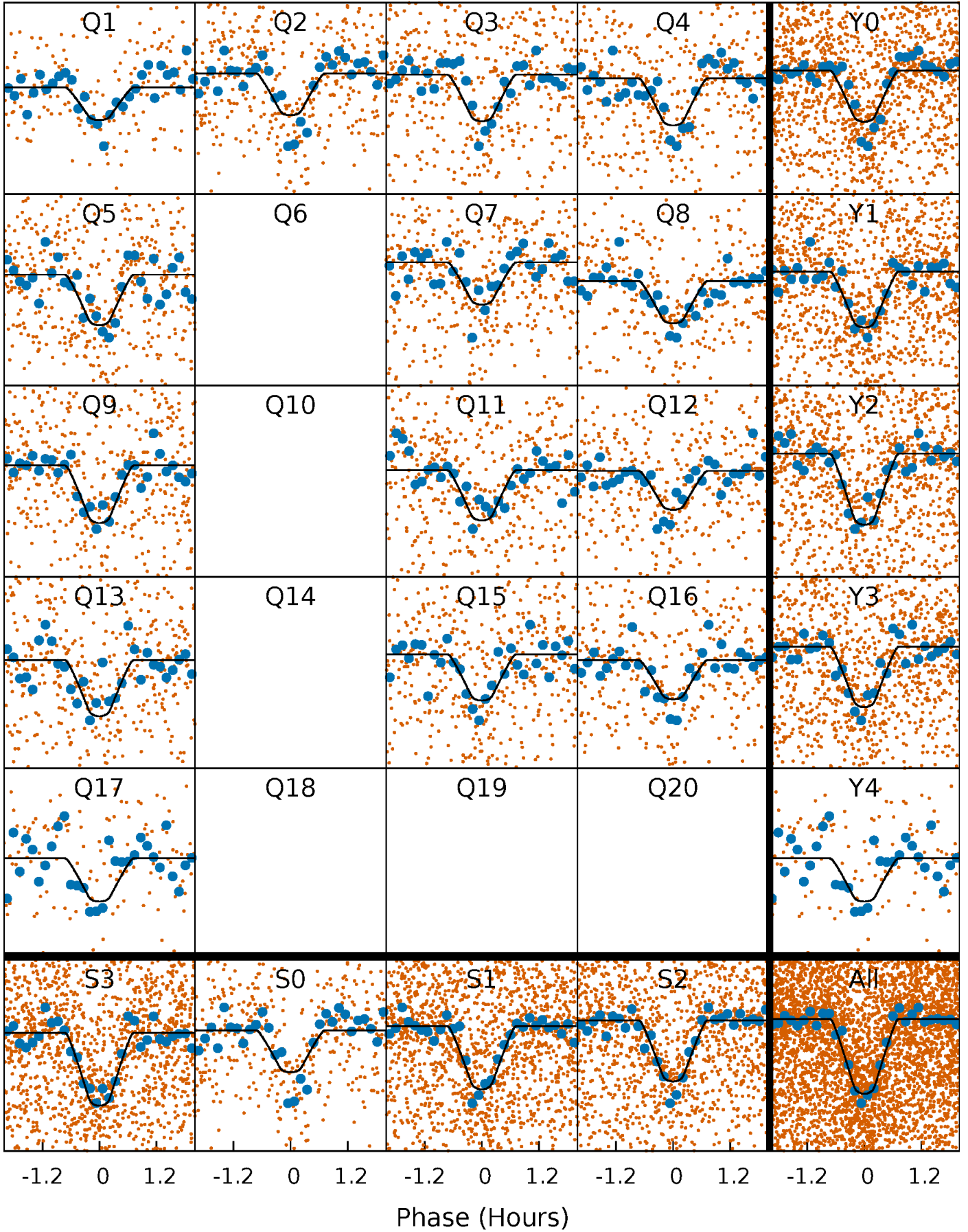
PDC Quarter-Phased Transit Curves

TCE 004844004-01 P= 1.568073 Days $T_0=131.811438$ (BKJD)



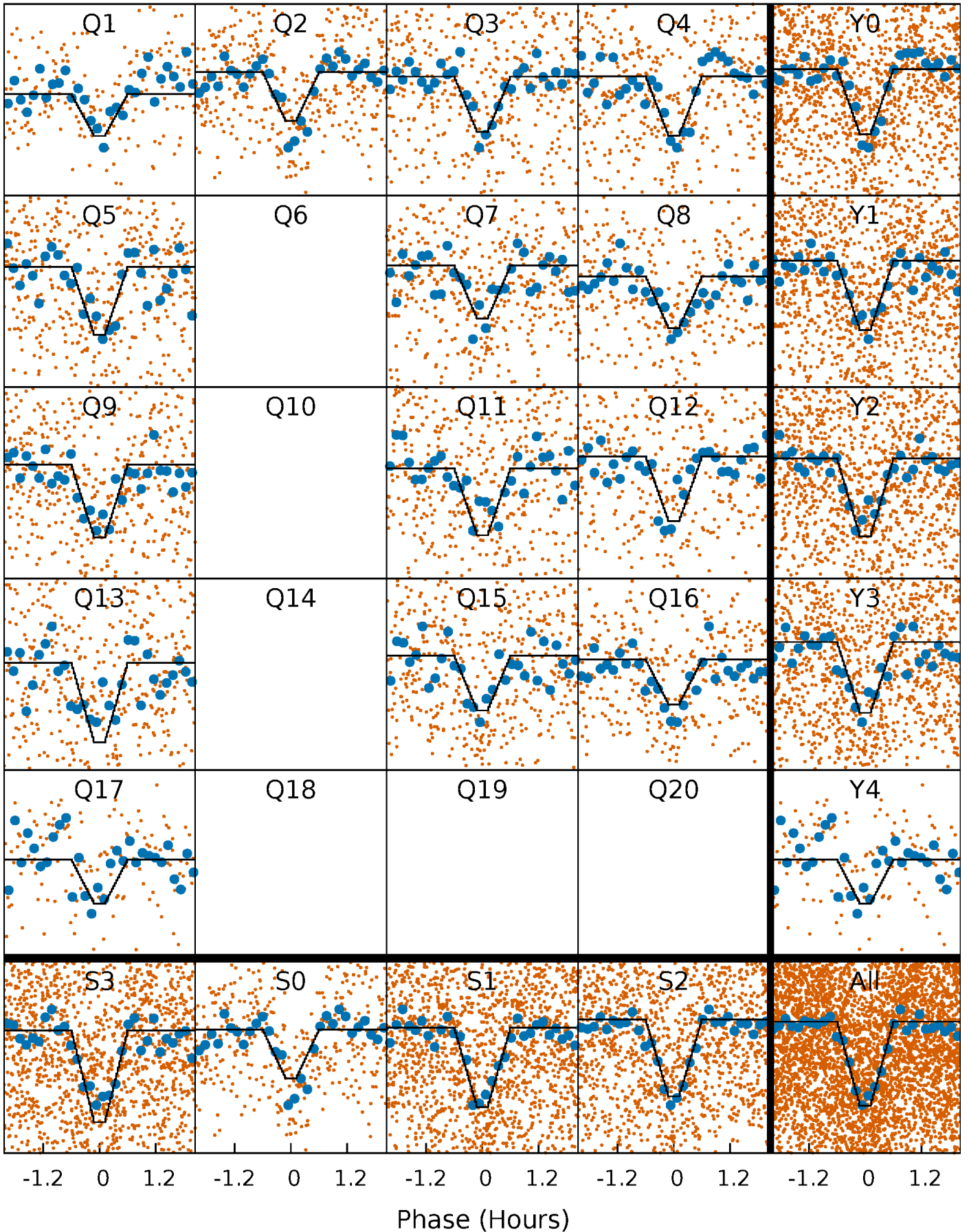
DV Quarter-Phased Transit Curves

TCE 004844004-01 P= 1.568073 Days $T_0=131.811438$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

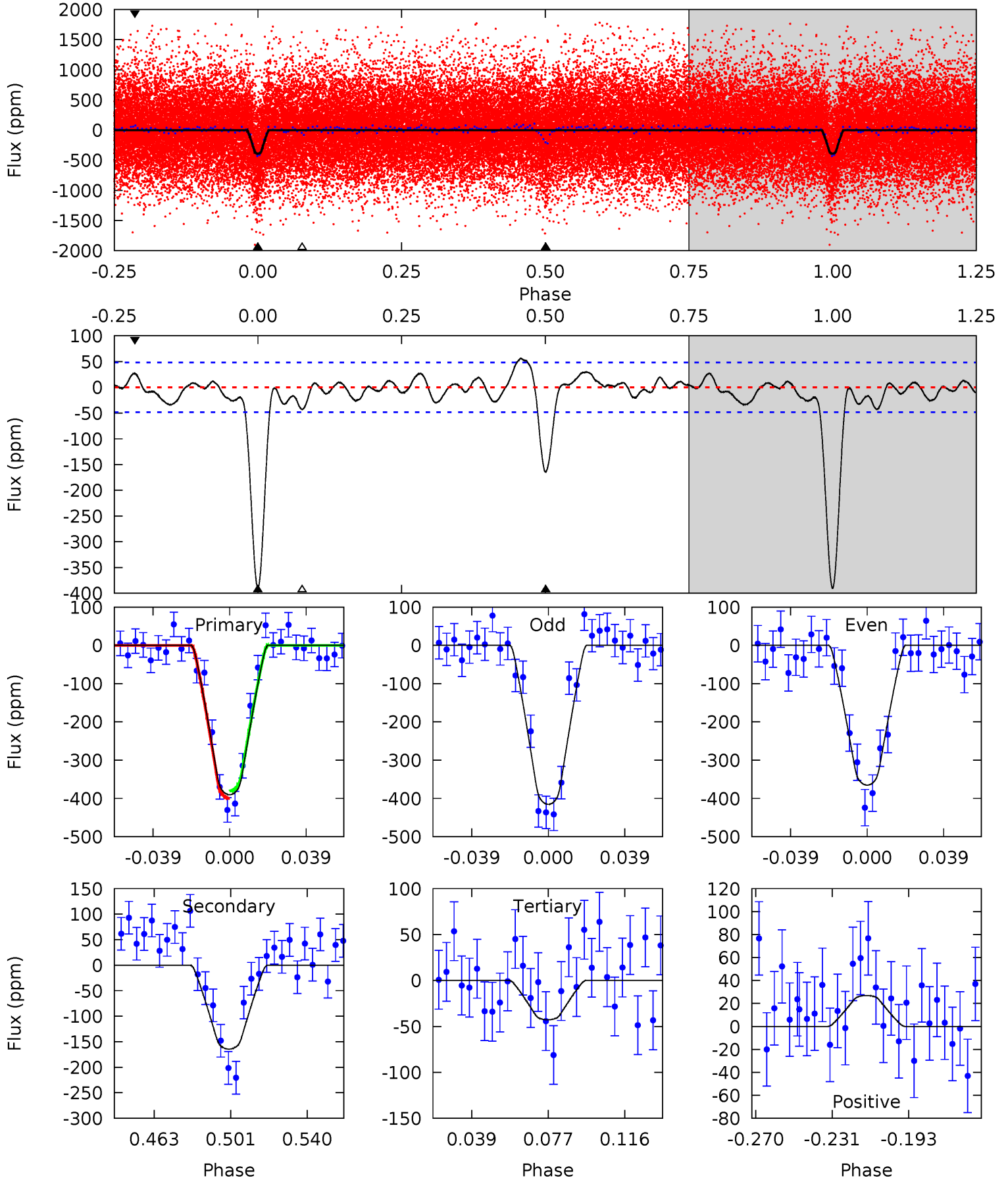
TCE 004844004-01 P= 1.568072 Days $T_0=131.811597$ (BKJD)



DV Model-Shift Uniqueness Test

004844004-01, P = 1.568073 Days, E = 130.243365 Days

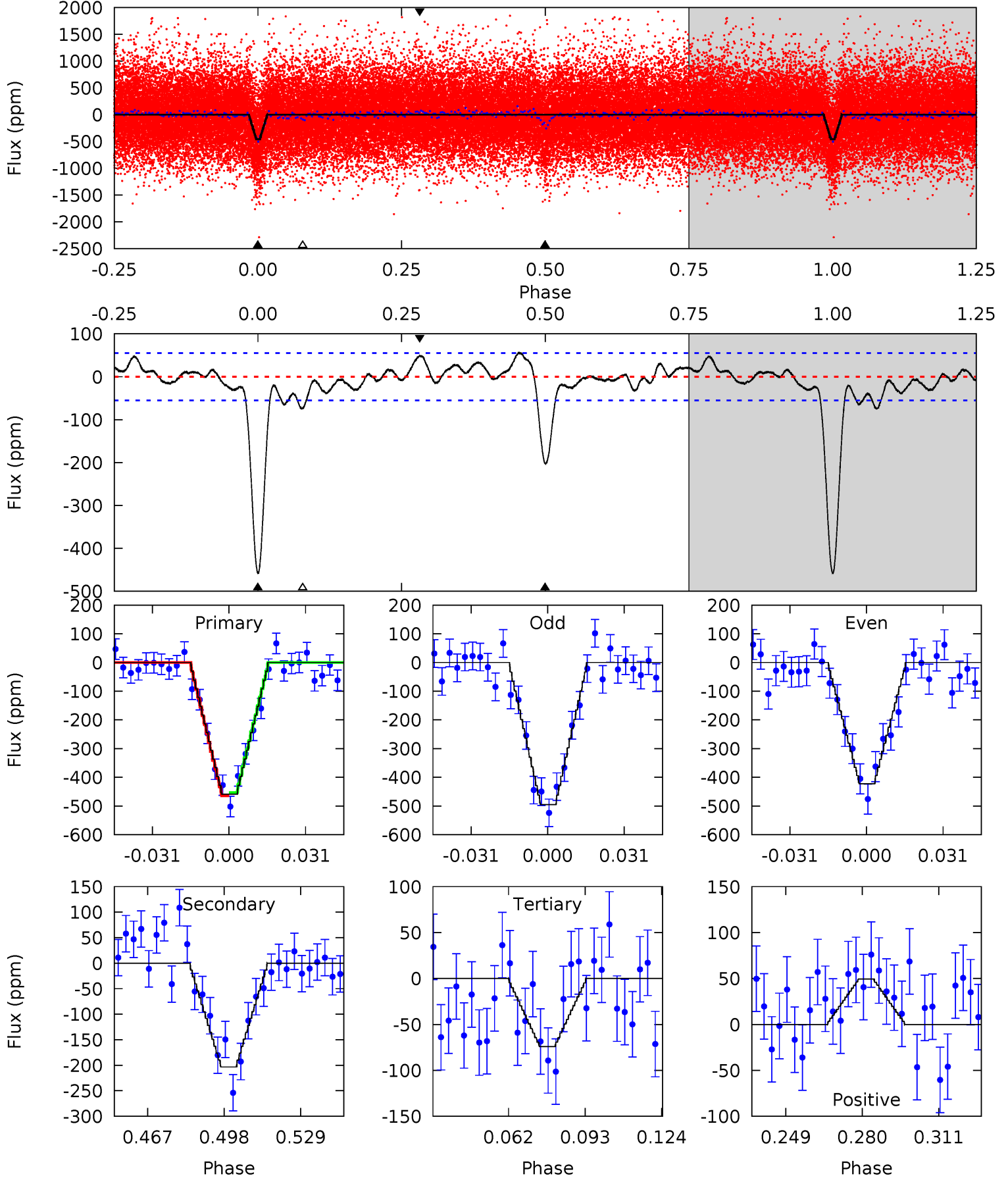
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.4	16.2	4.22	2.65	4.76	2.07	1.68	34.2	35.8	12.0	13.5	2.48	0.97	0.13	0.95



Alt Model-Shift Uniqueness Test

004844004-01, P = 1.568072 Days, E = 130.243525 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.8	17.6	6.44	4.28	4.80	2.16	2.08	33.4	35.5	11.2	13.4	3.17	0.94	0.11	0.49



Stellar Parameters For KIC 004844004

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5435^{+179}_{-163}	$4.578^{+0.027}_{-0.144}$	$0.070^{+0.250}_{-0.300}$	$0.824^{+0.174}_{-0.058}$	$0.937^{+0.074}_{-0.101}$	$2.358^{+0.408}_{-0.941}$
	+3%/-3%	+1%/-3%	+357%/-429%	+21%/-7%	+8%/-11%	+17%/-40%
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 004844004-01 / KOI 1662.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-164 ± 10	$2.05^{+0.79}_{-0.71}$	1928^{+99}_{-78}	4329^{+835}_{-469}	14^{+18}_{-7}
Alt.	-203 ± 12	$2.01^{+0.81}_{-0.76}$	1939^{+105}_{-79}	4571^{+1042}_{-556}	18^{+28}_{-9}

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

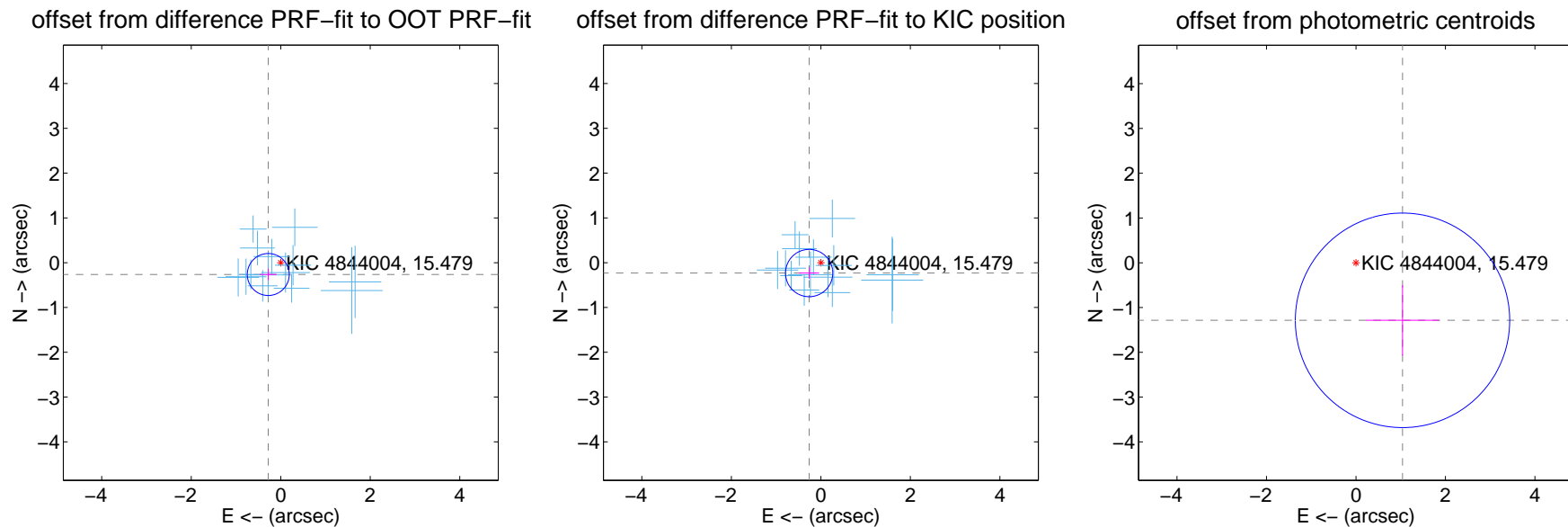
DV Centroid Data

Supplemental centroid analysis for 004844004-01. Kepler magnitude: 15.48. Transit SNR 24.50

There are 14 quarters with good PRF difference image offsets

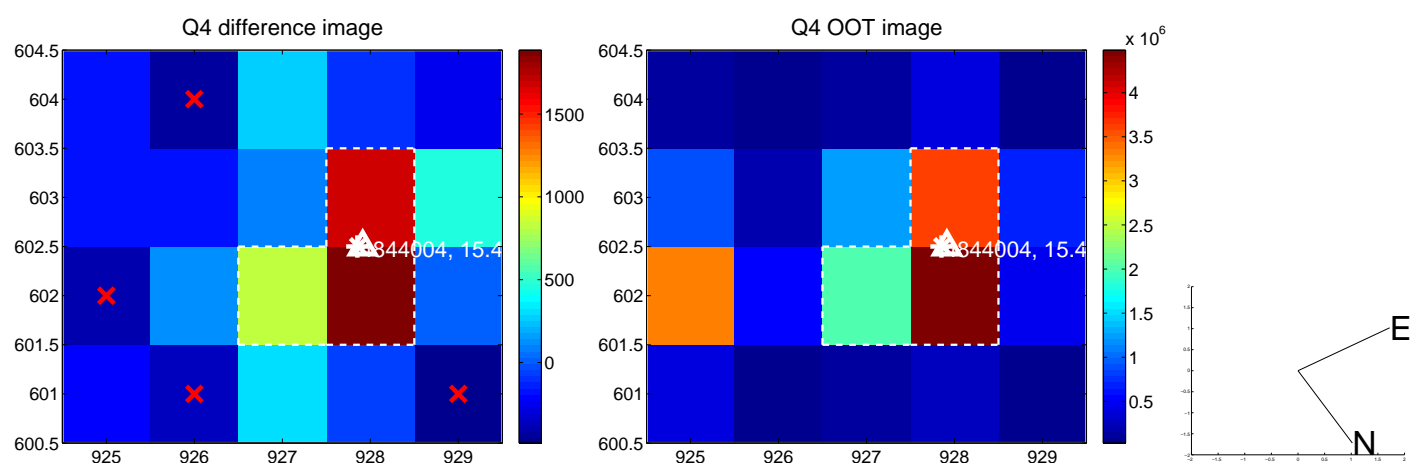
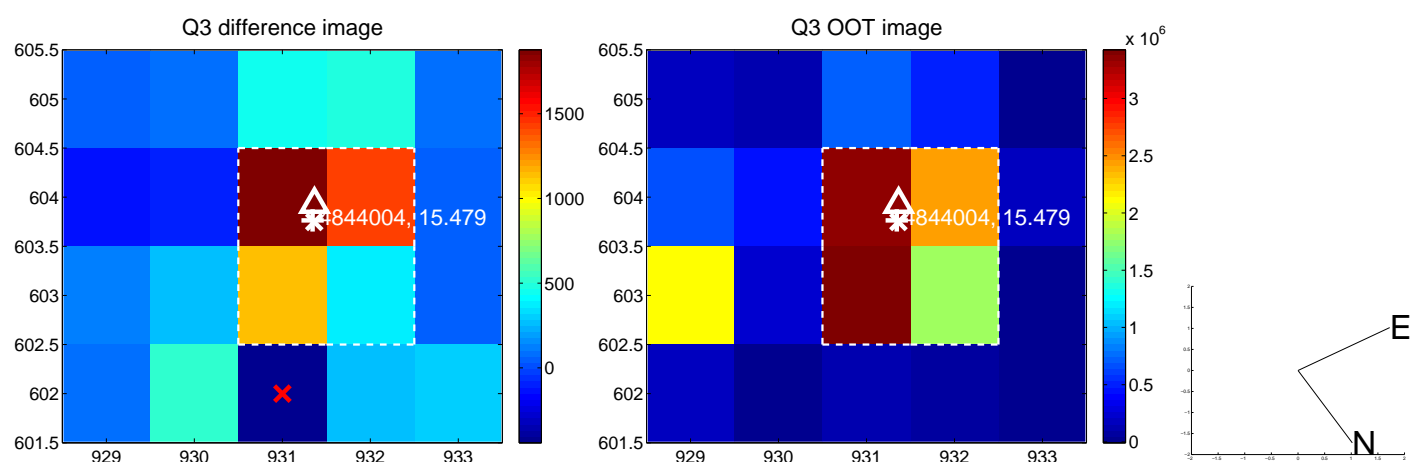
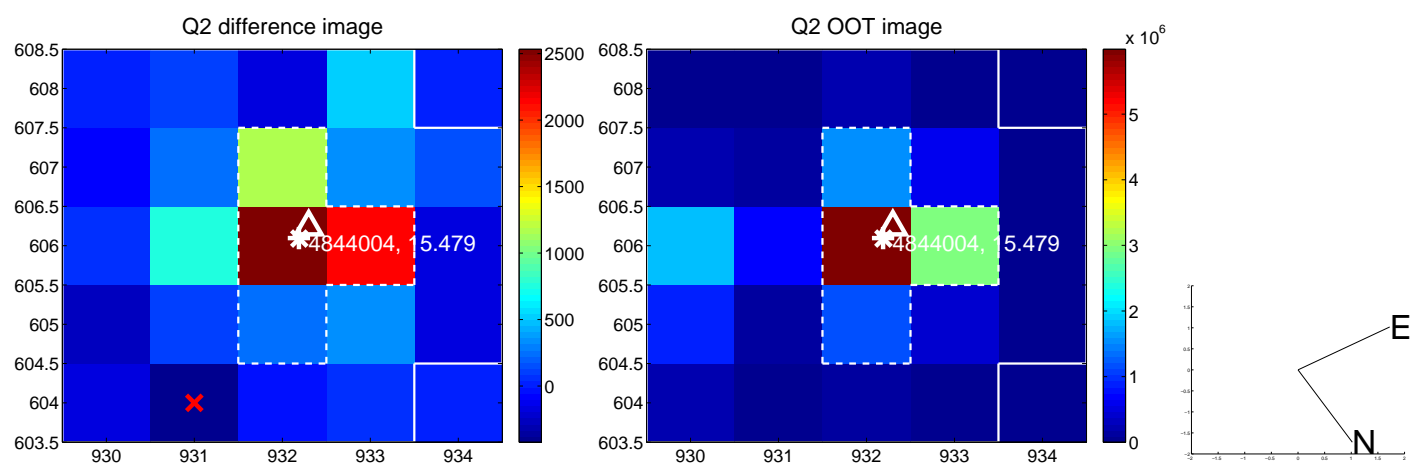
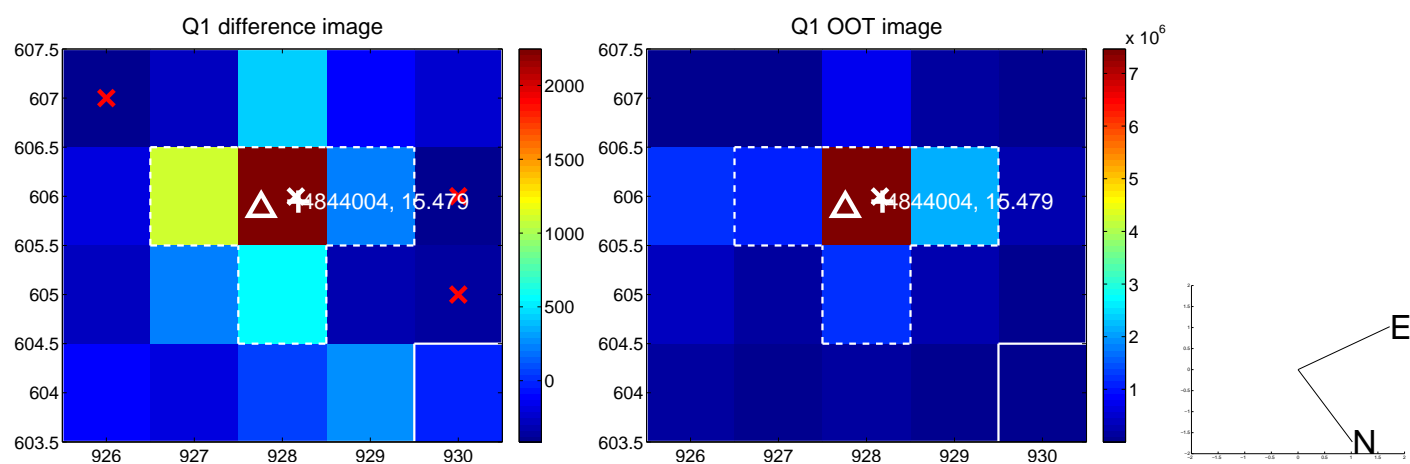
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.384 ± 0.156	2.46	0.279 ± 0.189	-0.263 ± 0.129
PRF-fit source offset from KIC position	0.349 ± 0.176	1.98	0.262 ± 0.222	-0.231 ± 0.130
photometric centroid source offset	1.65 ± 0.80	2.07	-1.04 ± 0.82	-1.29 ± 0.78

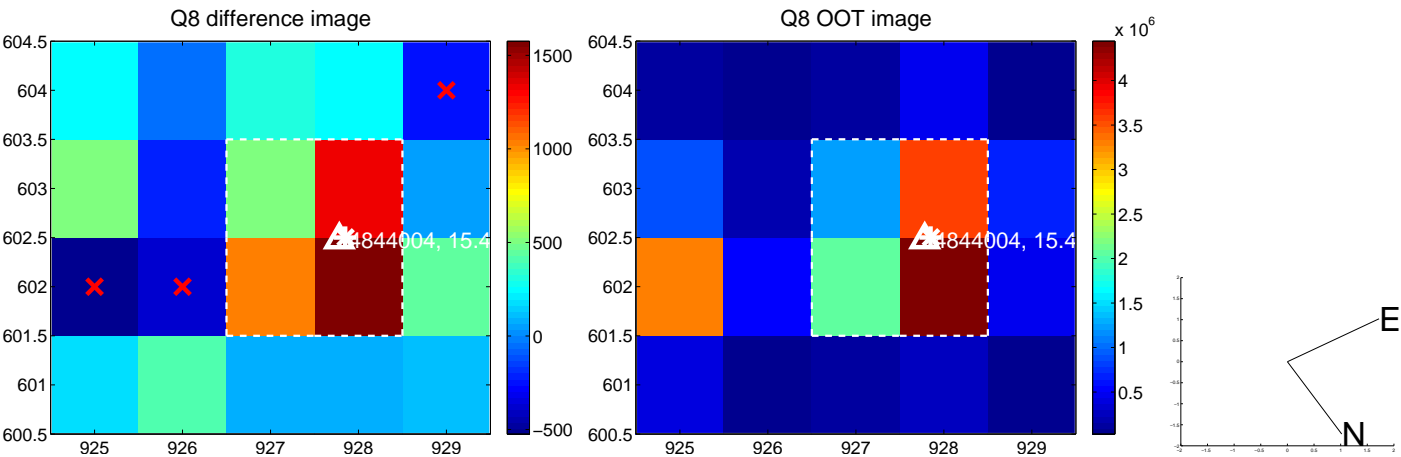
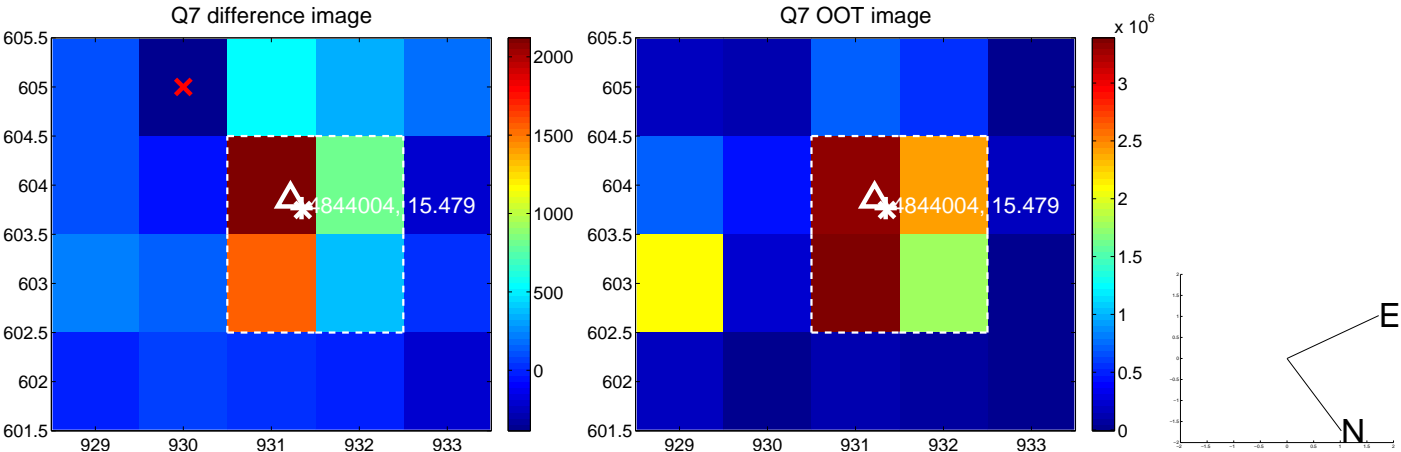
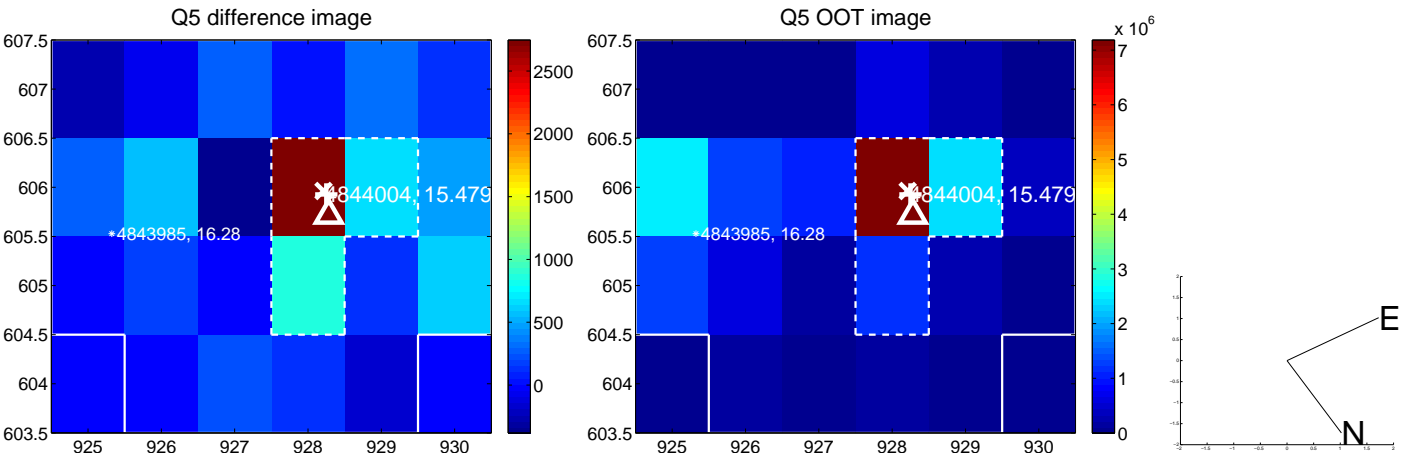


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

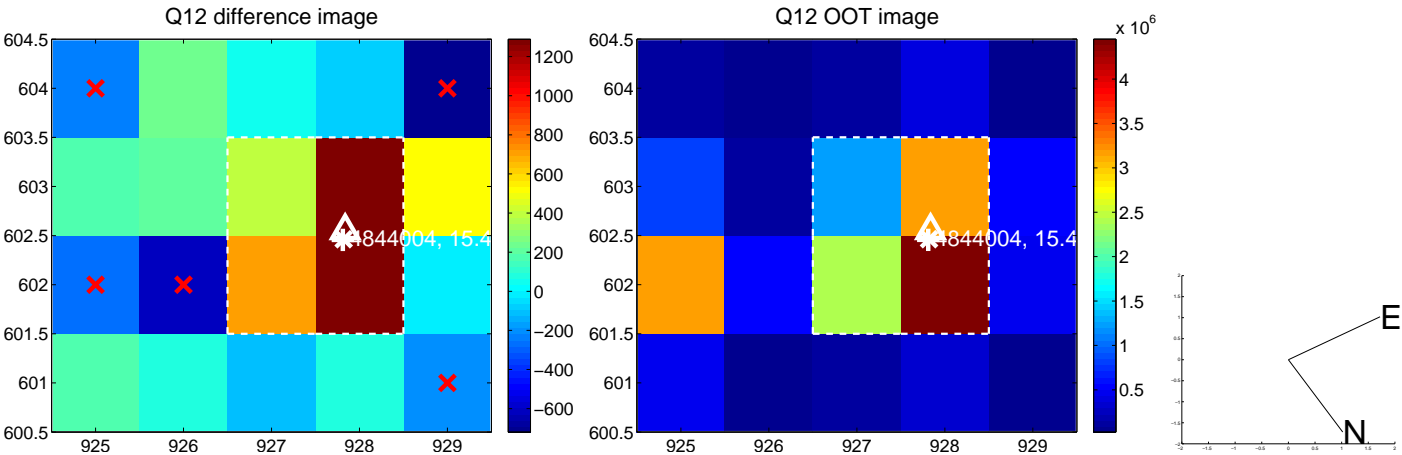
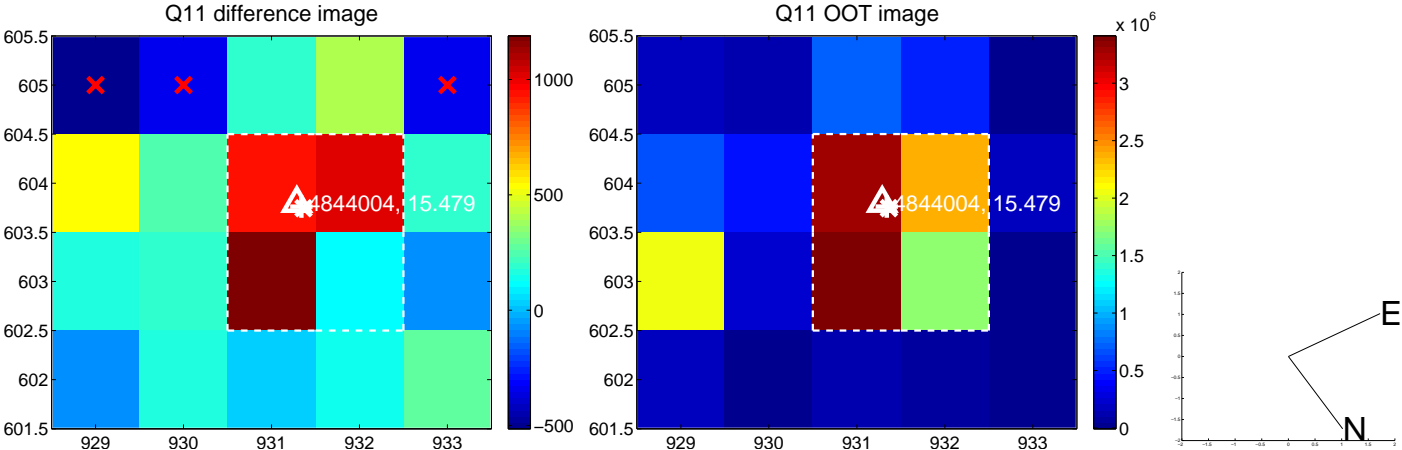
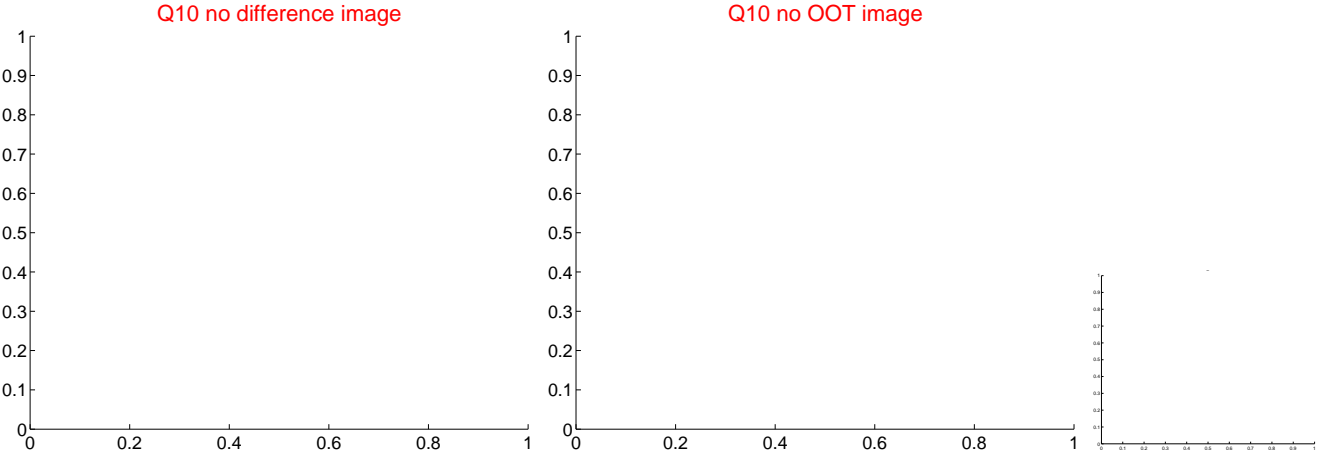
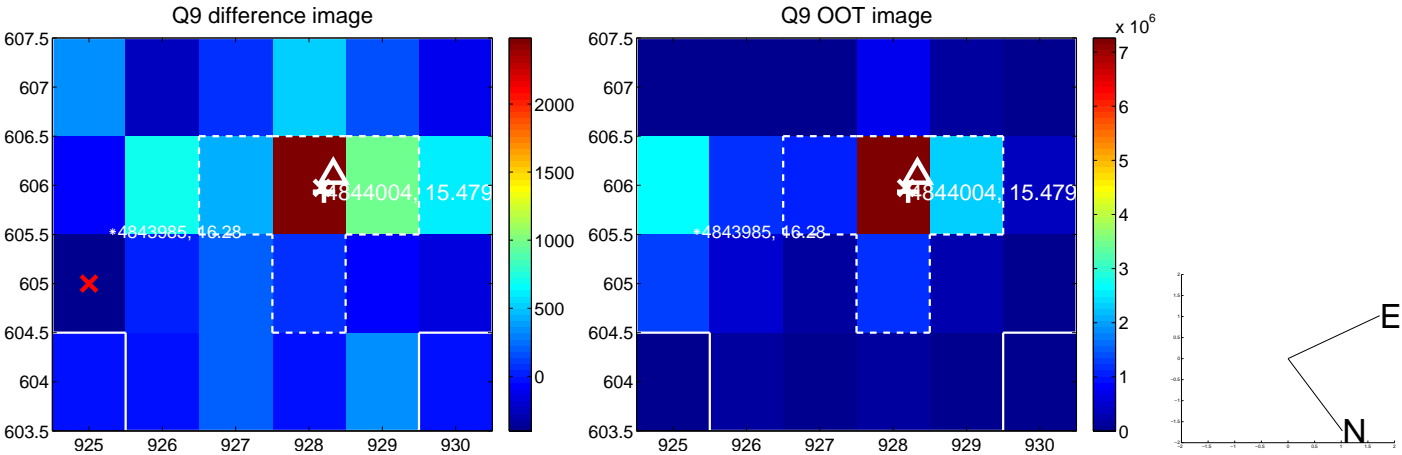
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



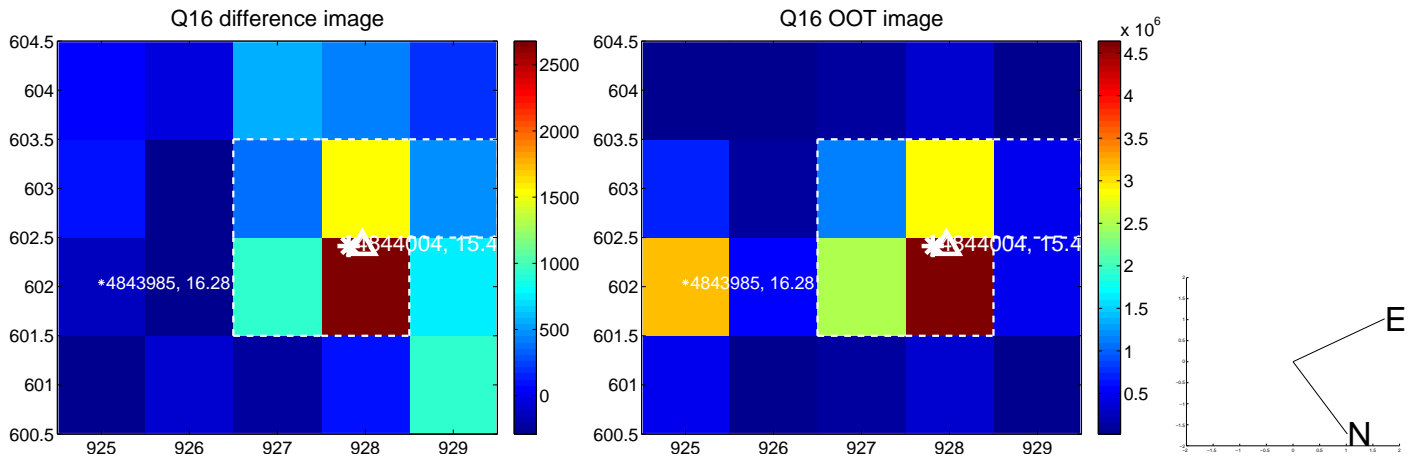
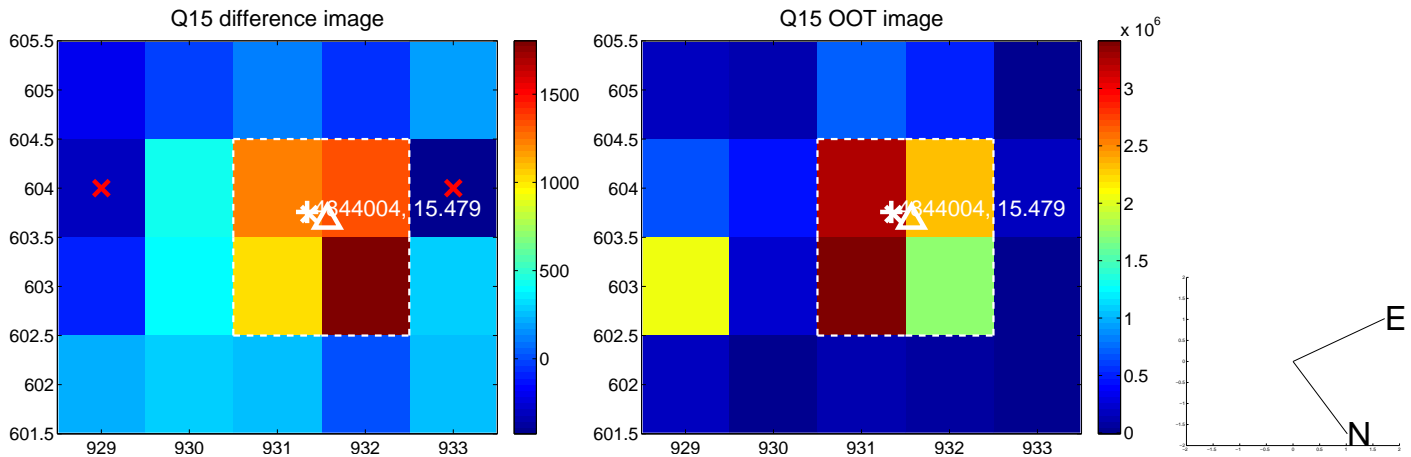
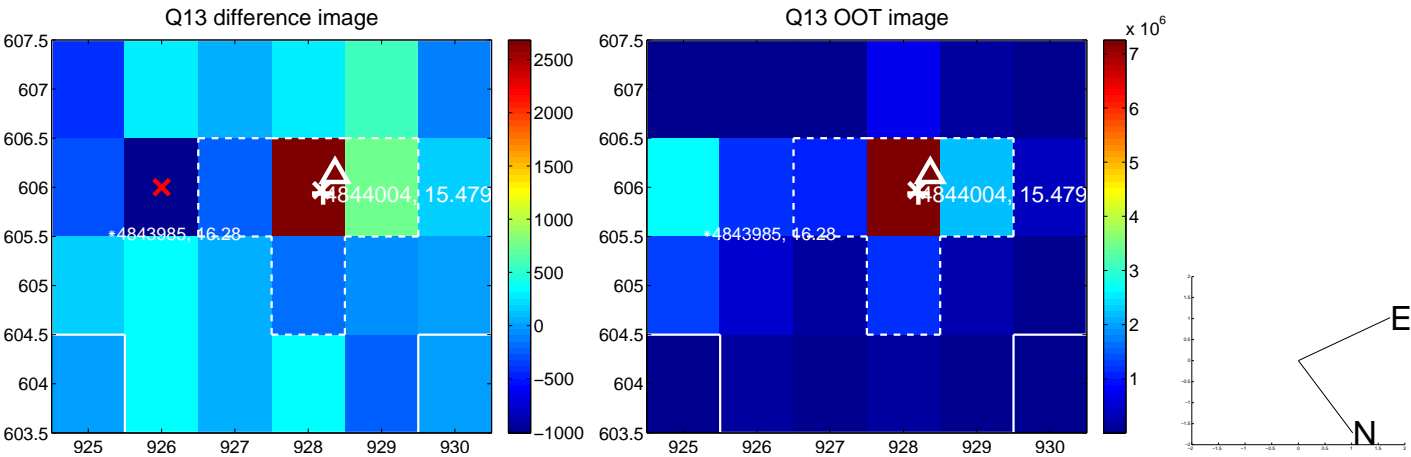
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



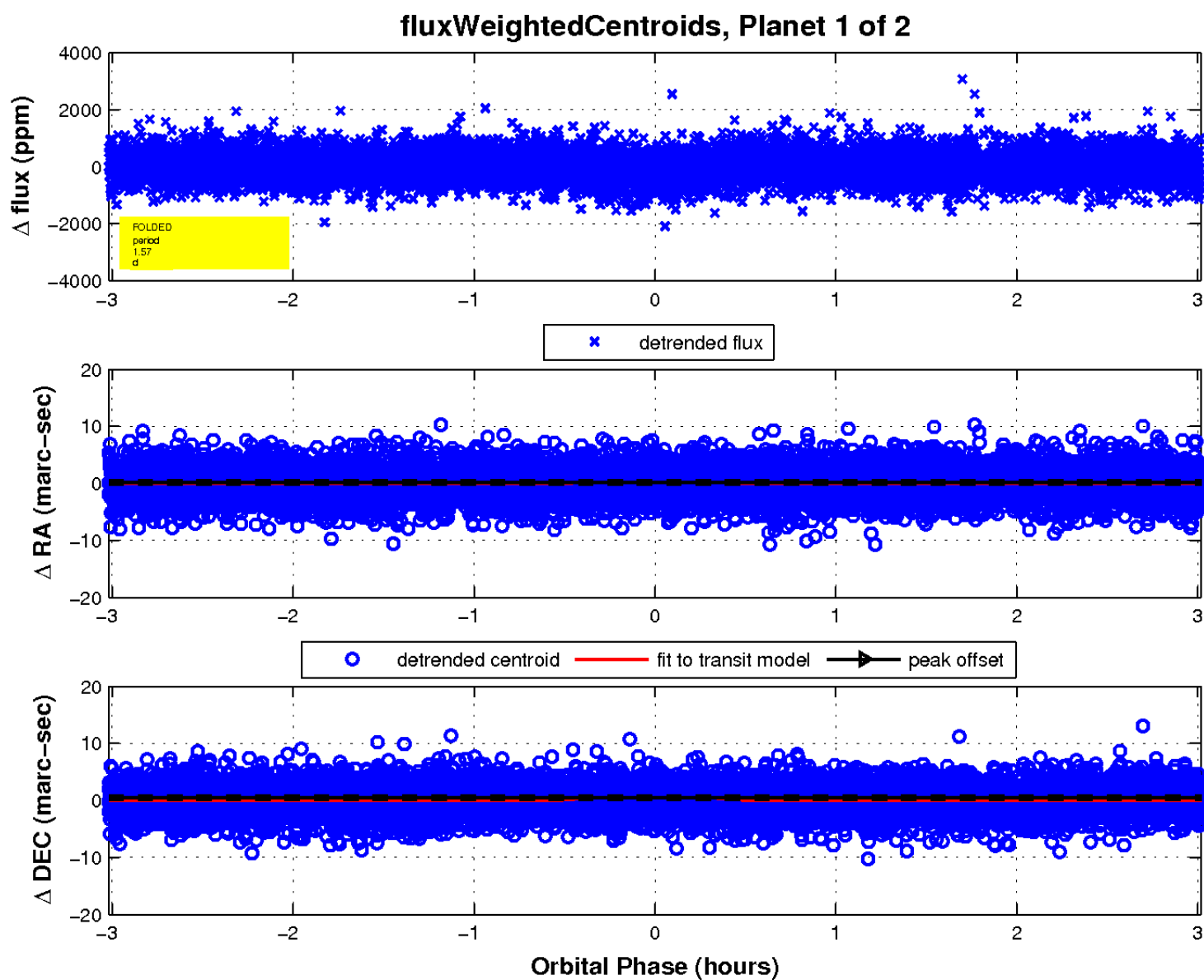
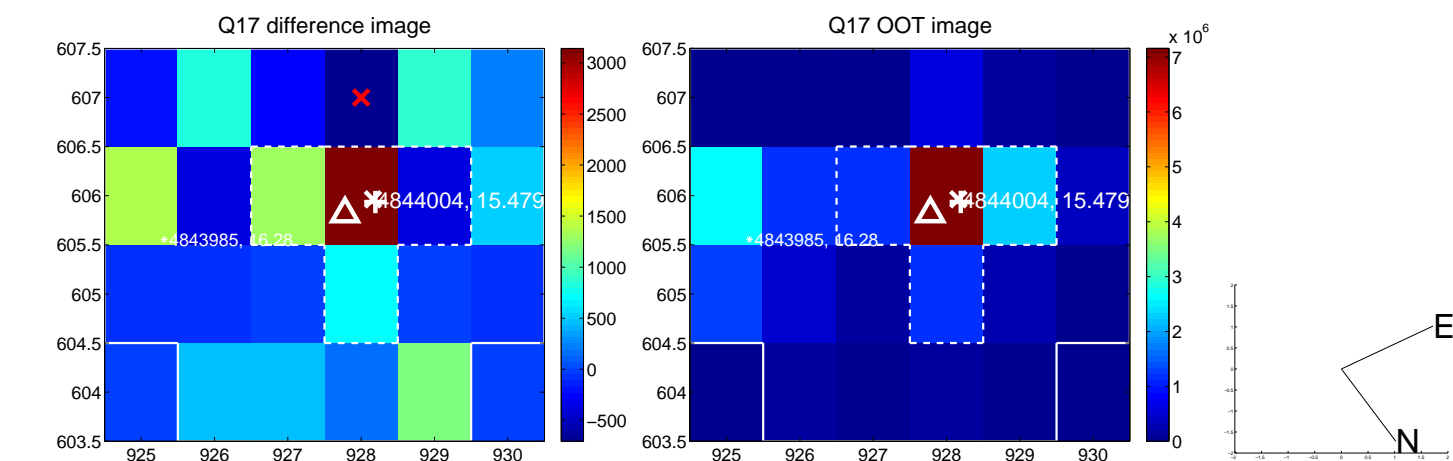
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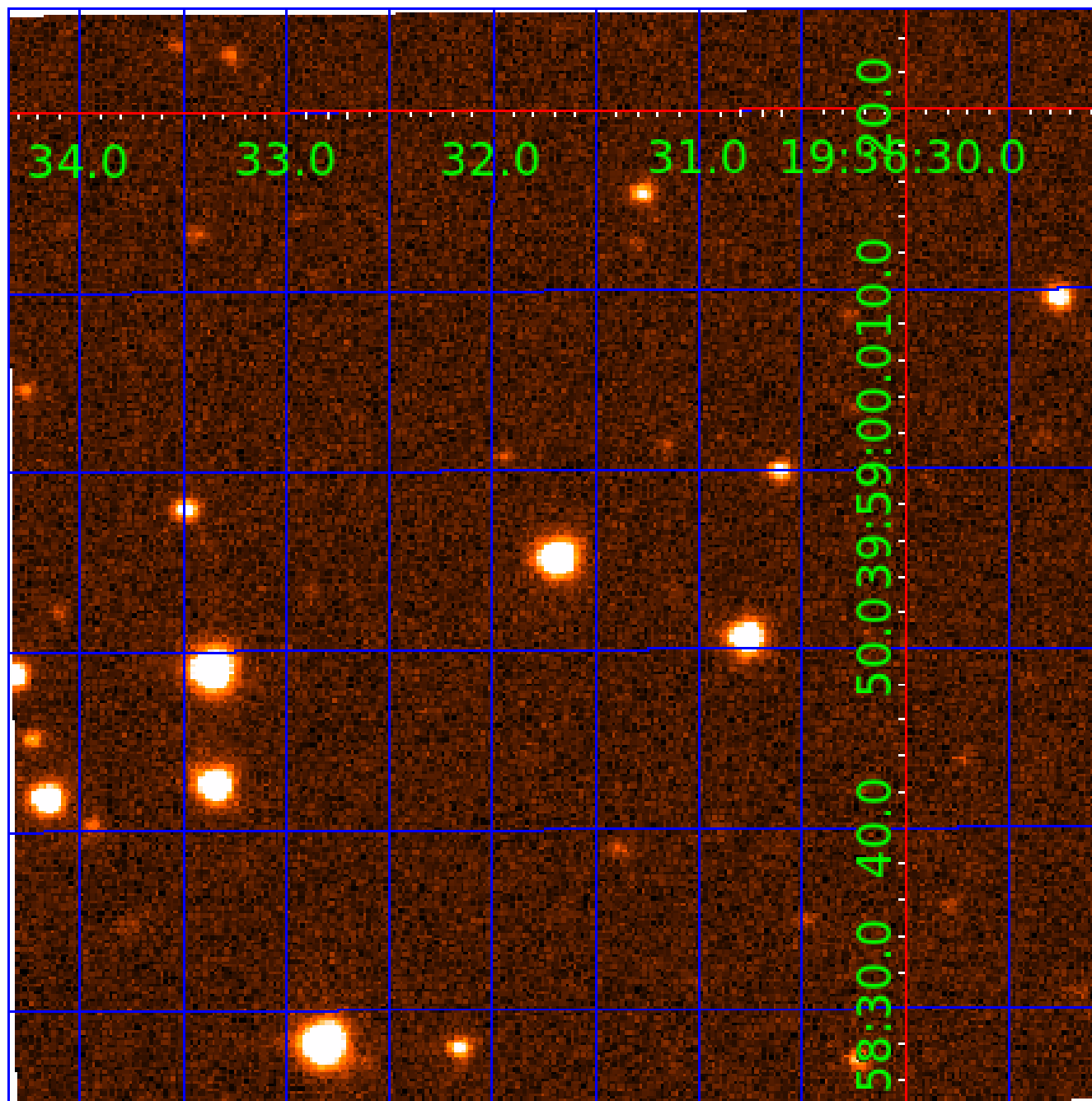


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004844004

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})
004844004-01	OBS	1662.01	1.568073	131.811438	384.5	1.006	21.2	24.5	0.82	5435	1.97	794.00
004844004-02	OBS	No	0.784036	131.817364	176.7	1.109	8.9	12.1	0.82	5435	1.13	2000.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004844004-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
004844004-02	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.

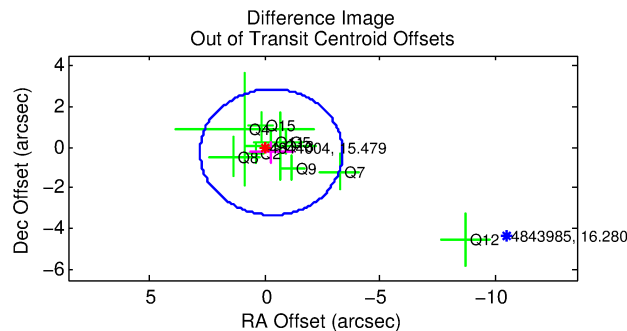
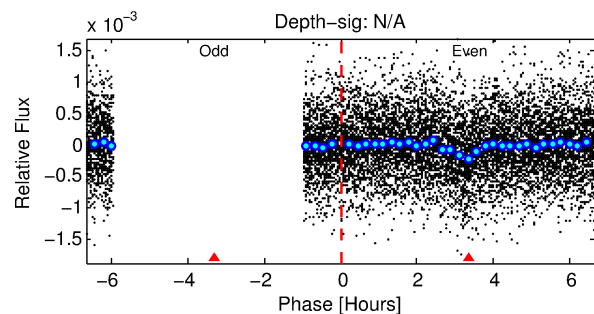
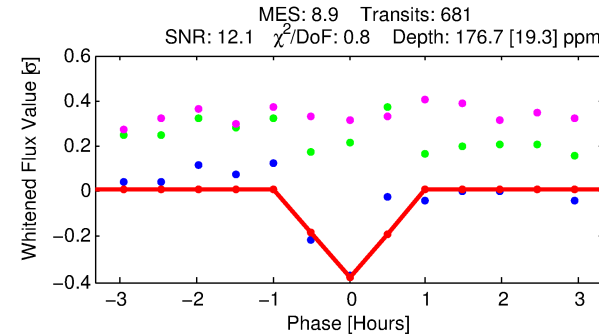
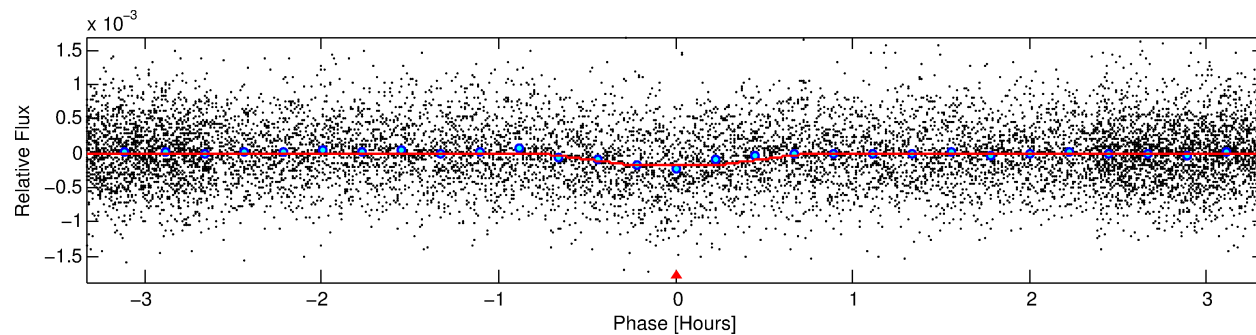
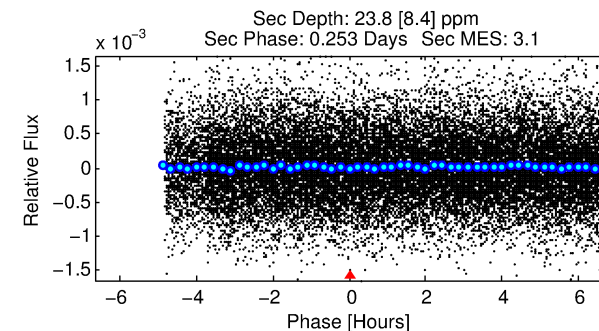
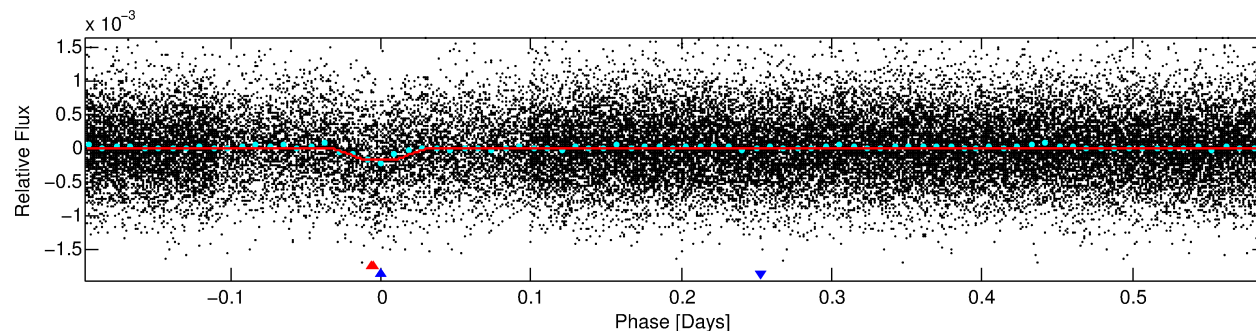
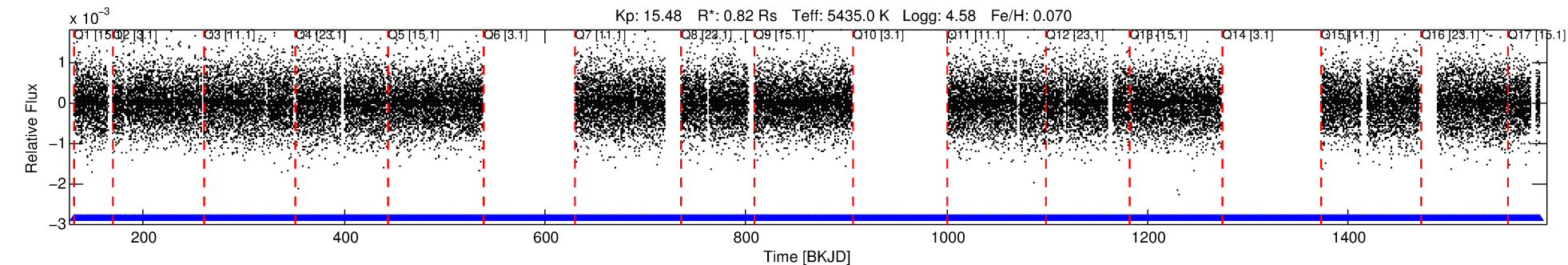
Ephemeris Match Information For 004844004-02

No Significant Match Found

DV One-Page Summary

KIC: 4844004 Candidate: 2 of 2 Period: 0.784 d

KOI: K01662.01 Corr: 0.832



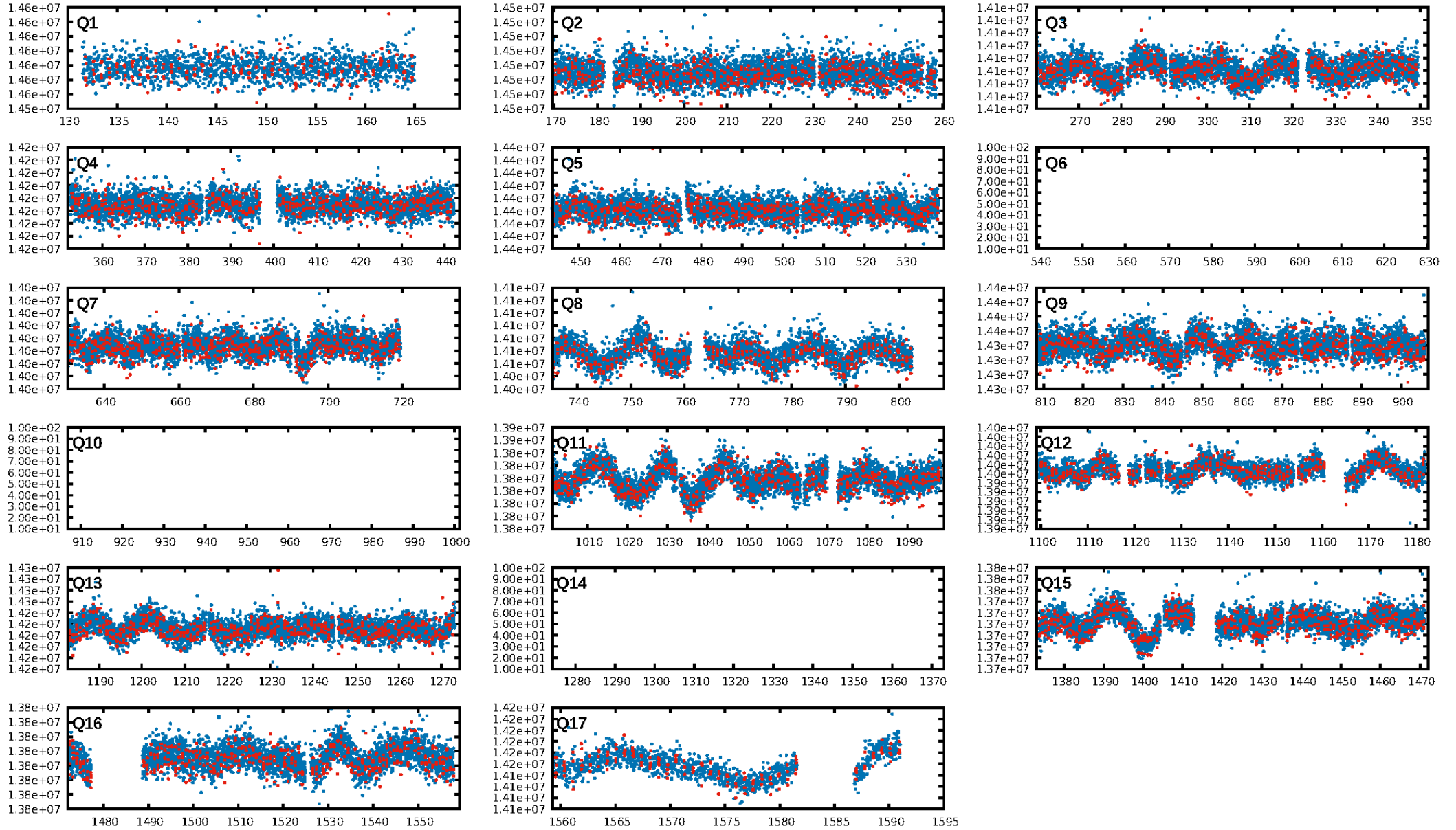
DV Fit Results:

Period = 0.78404 [0.00001] d
Epoch = 131.8174 [0.0016] BKJD
Rp/R* = 0.0126 [0.0098]
a/R* = 4.71 [13.69]
b = 0.53 [4.15]
Seff = 2000.77 [586.86]
Teq = 1705 [125] K
Rp = 1.13 [0.91] Re
a = 0.0163 [0.0029] AU
Ag = 2.72 [4.43] [0.39σ]
Teffp = 3387 [1363] K [1.23σ]

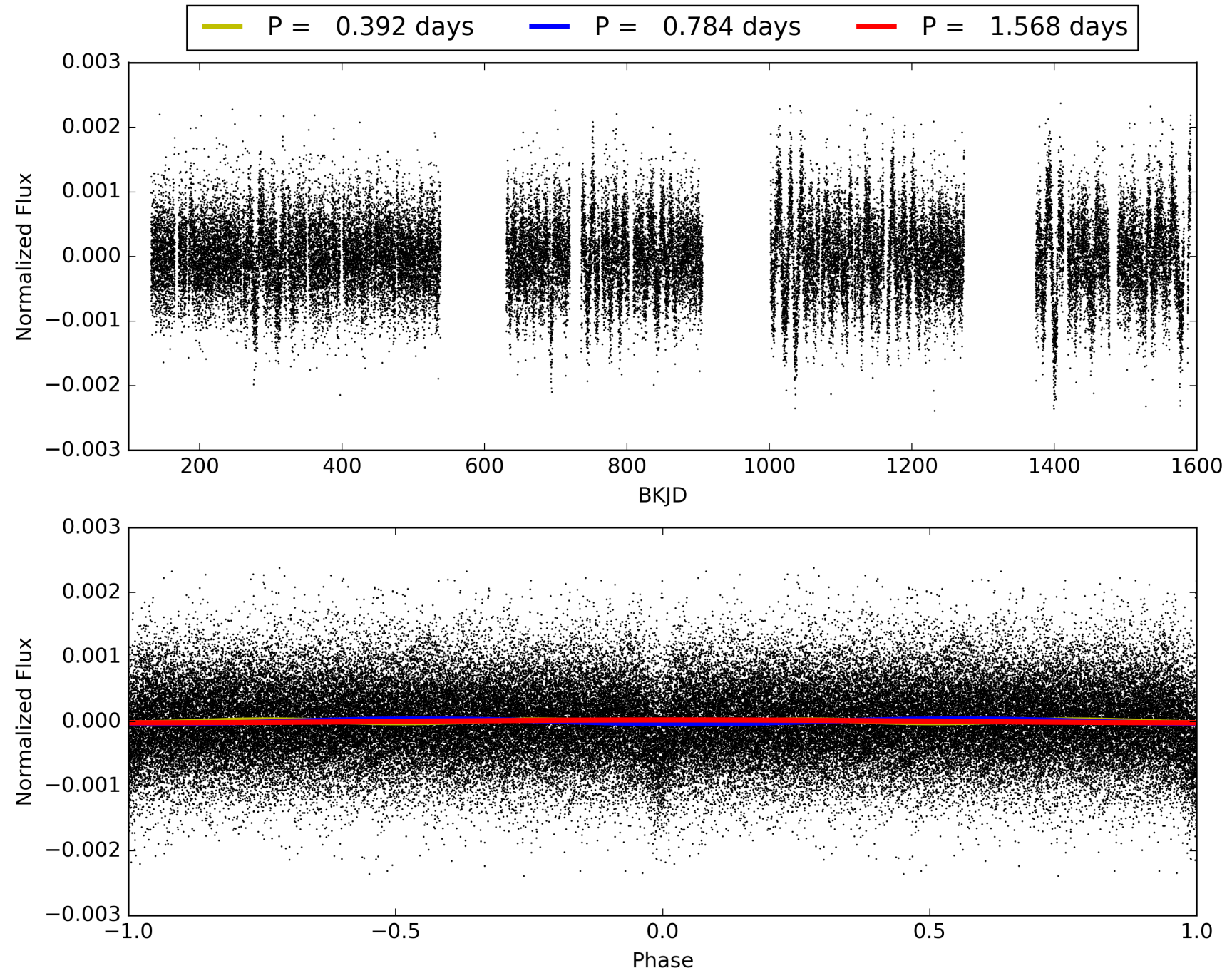
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [12.56σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.71e-20
RollingBand-fgt: 1.00 [642/642]
GhostDiagnostic-chr: 4.282
Centroid-sig: 19.1%
Centroid-so: 0.611 arcsec [0.55σ]
OotOffset-rm: 0.379 arcsec [0.37σ]
KicOffset-rm: 0.365 arcsec [0.43σ]
OotOffset-st: 1/3/3/3 [10]
KicOffset-st: 1/3/3/3 [10]
DiffImageQuality-fgm: 0.70 [7/10]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004844004-02, PDC Light Curves

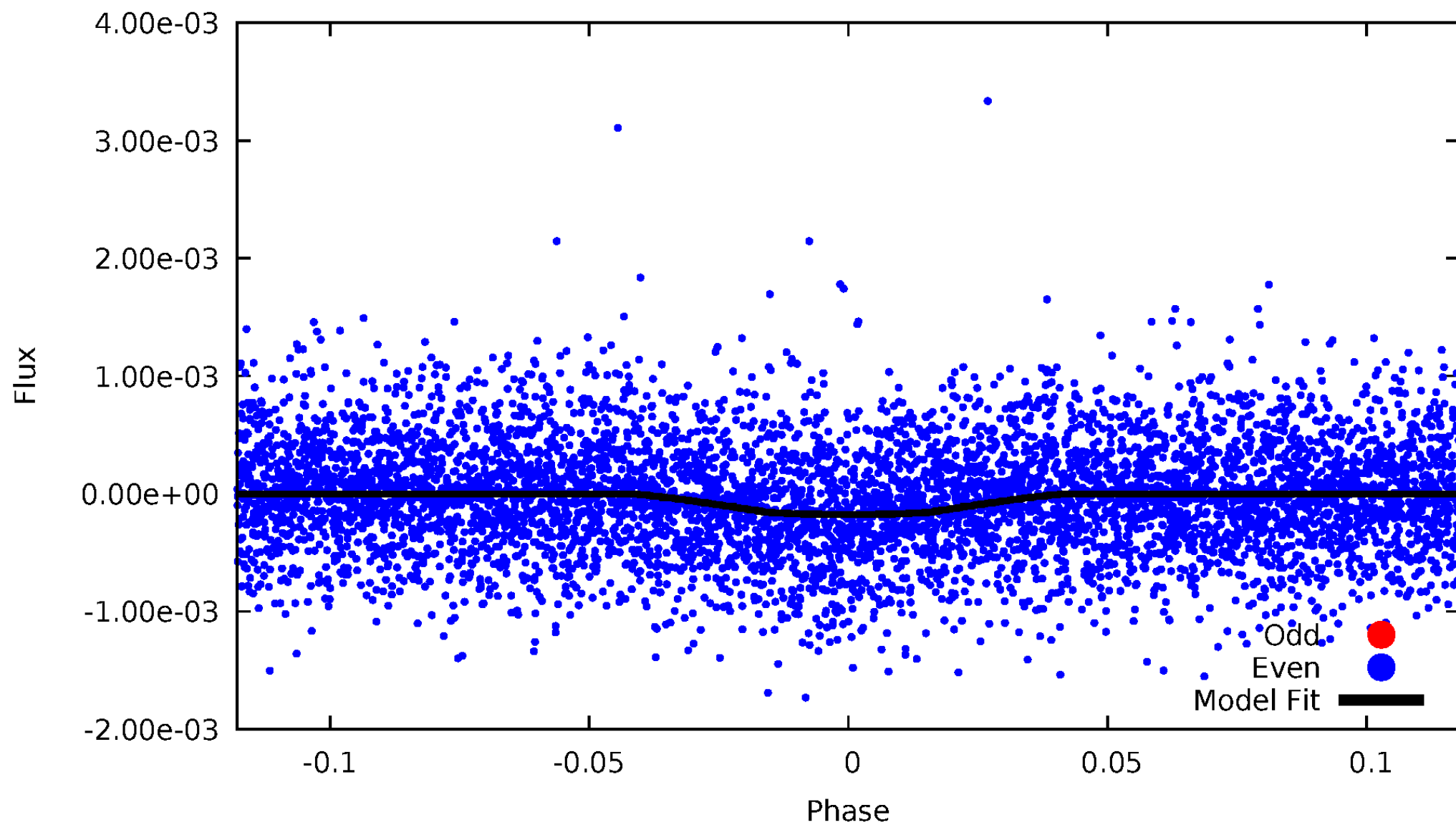


TCE 004844004-02



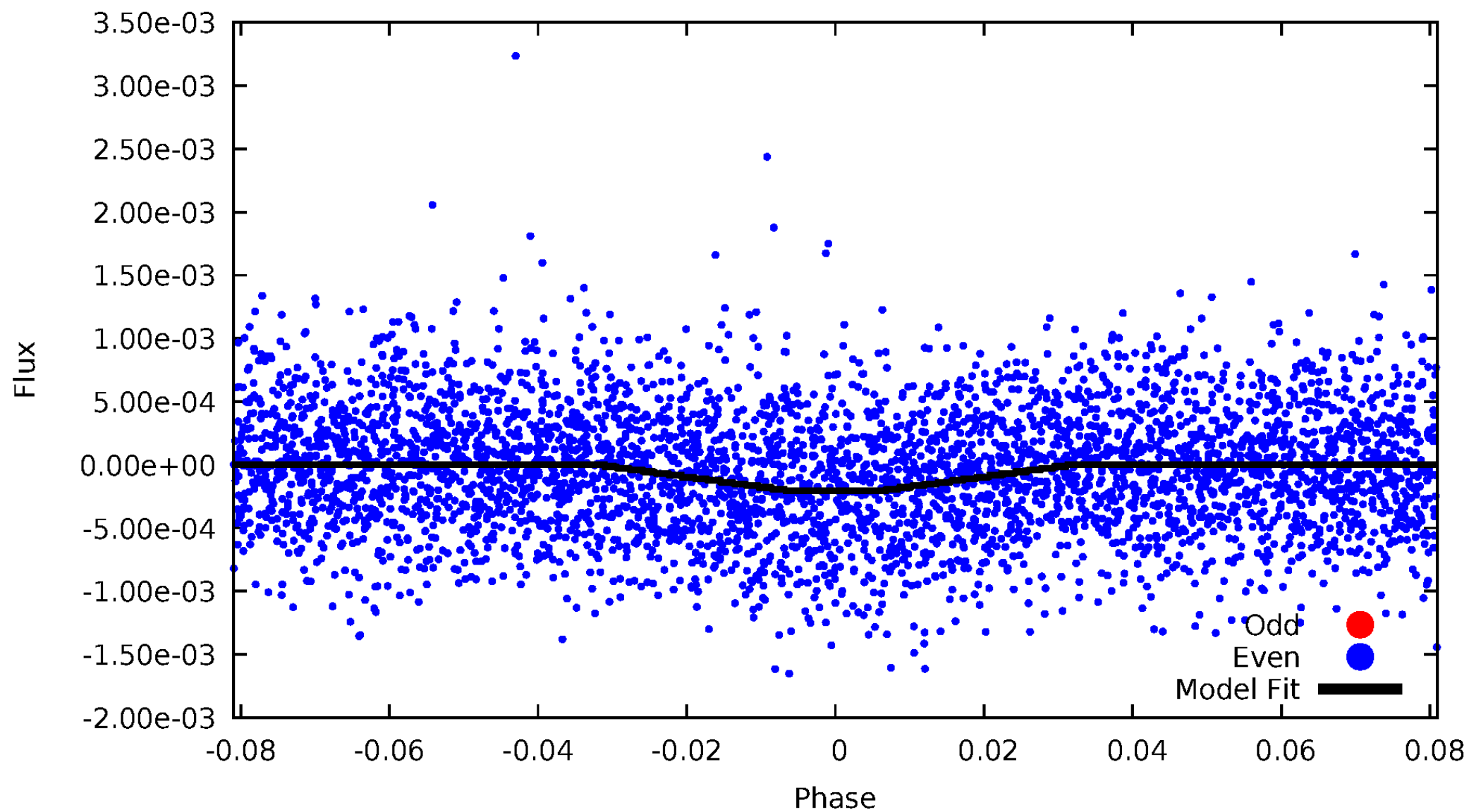
DV Odd/Even

TCE 004844004-02



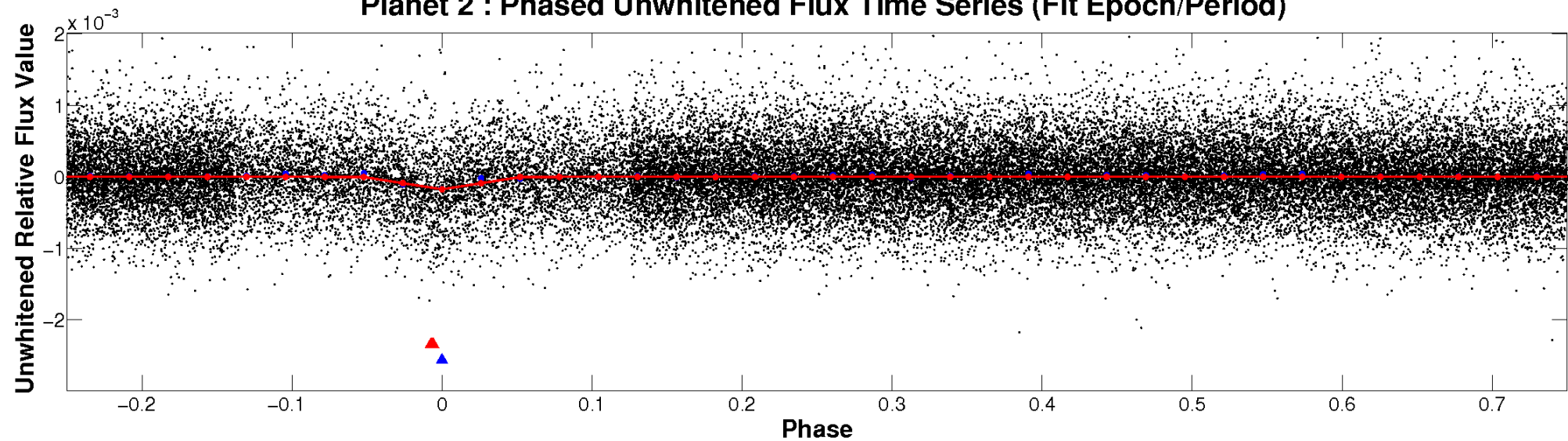
ALT Odd/Even

TCE 004844004-02

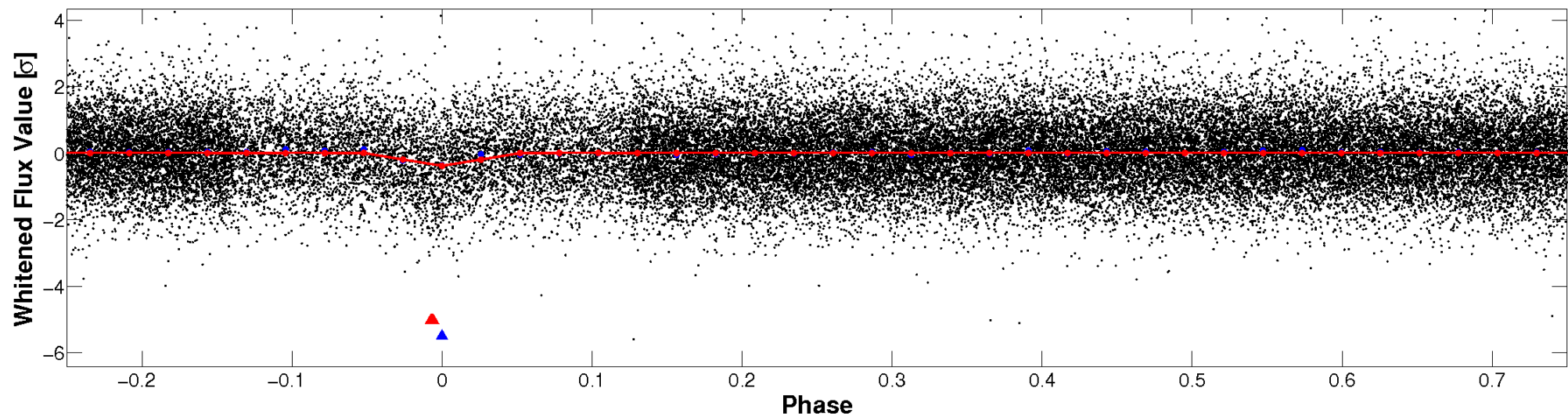


Non-Whitened Vs. Whitened Light Curve

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

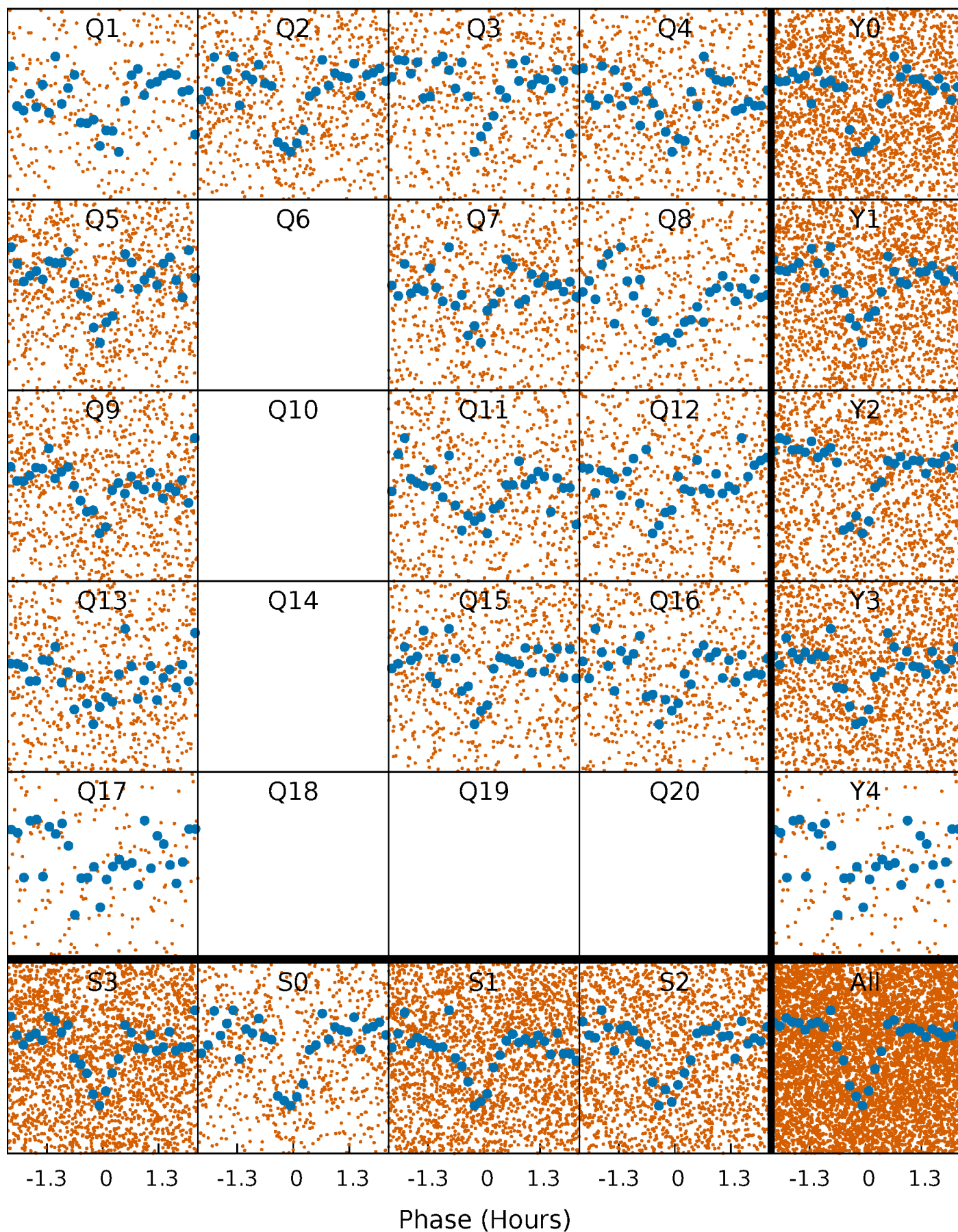


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



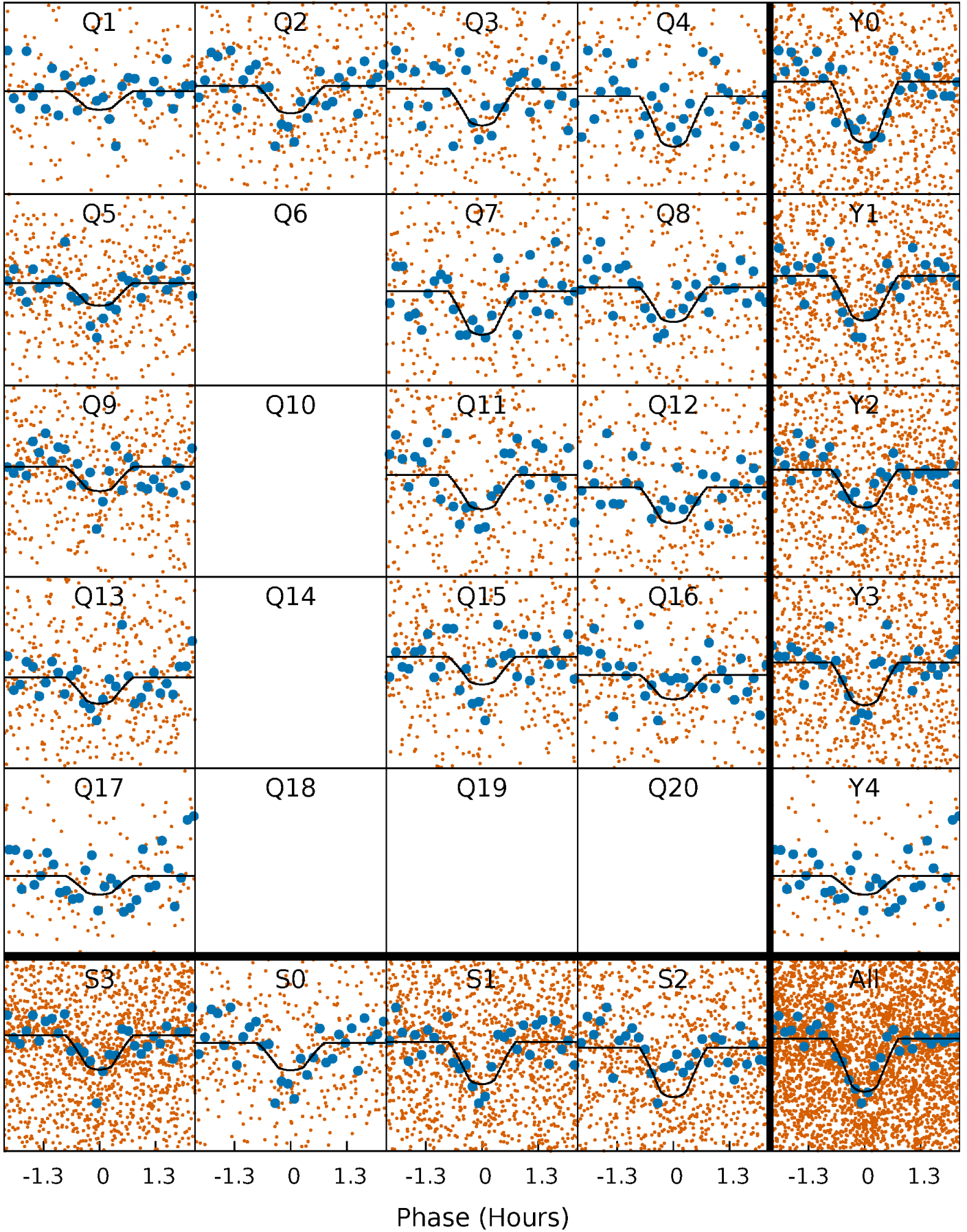
PDC Quarter-Phased Transit Curves

TCE 004844004-02 $P = 0.784036$ Days $T_0 = 131.817364$ (BKJD)



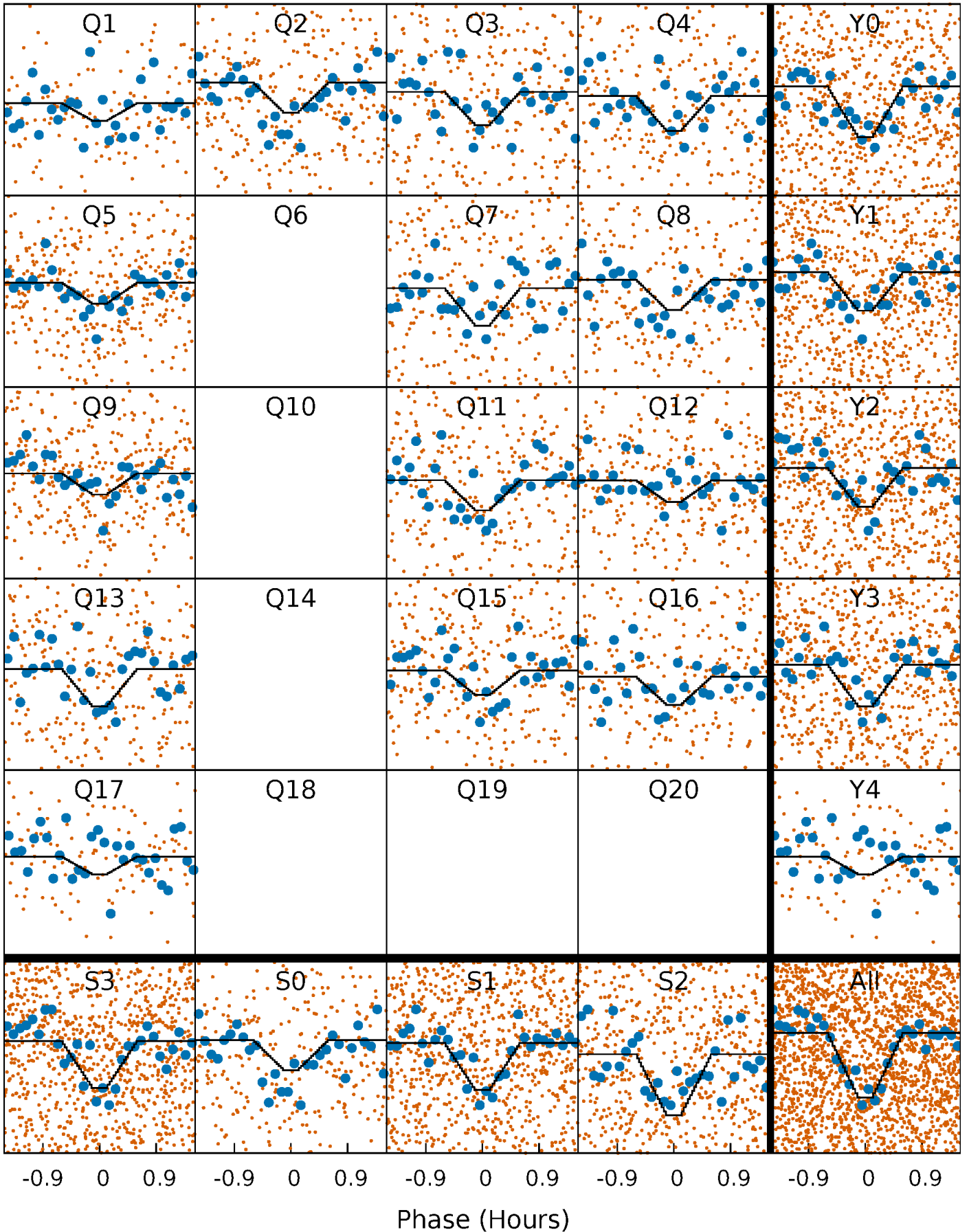
DV Quarter-Phased Transit Curves

TCE 004844004-02 $P = 0.784036$ Days $T_0 = 131.817364$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

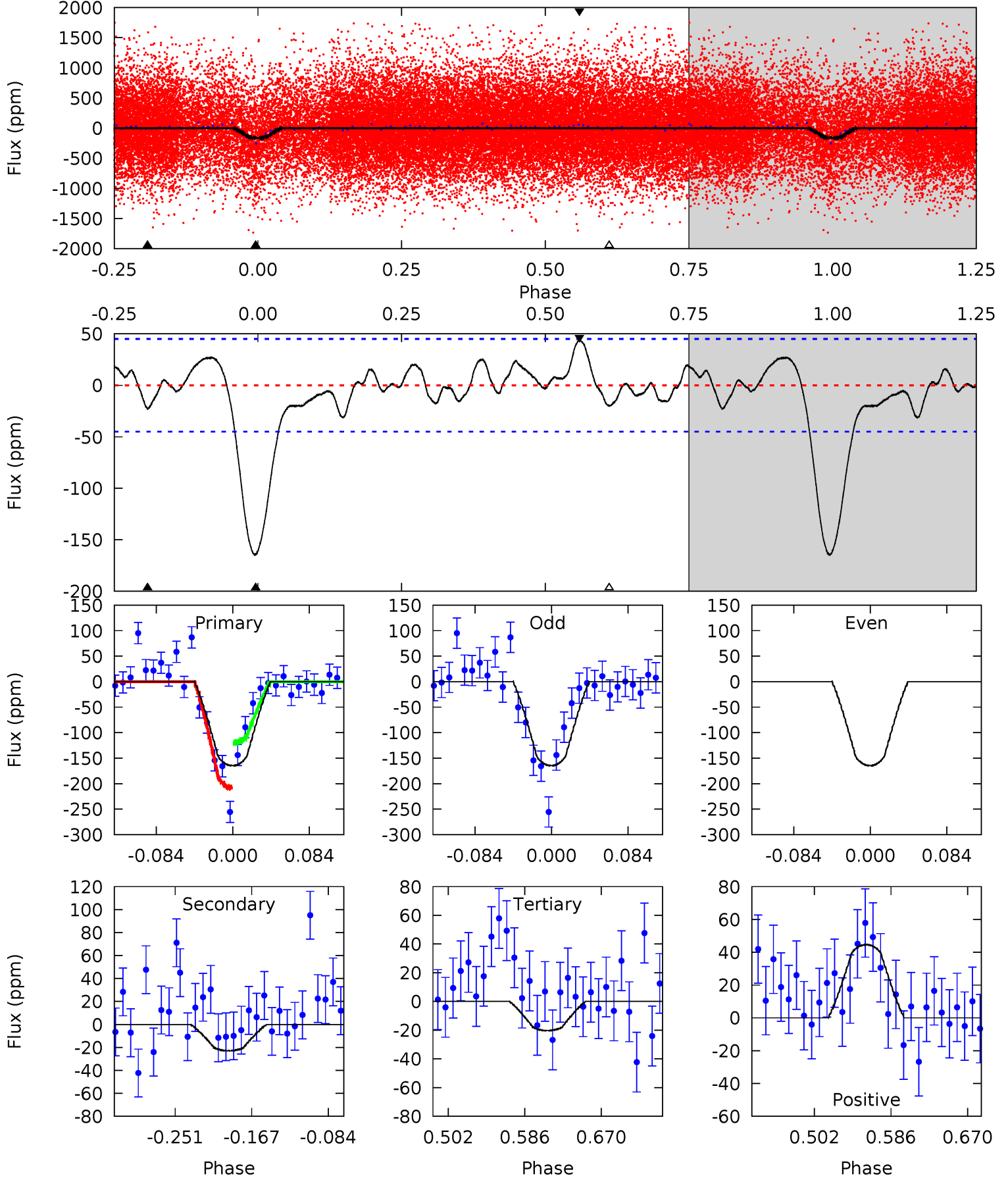
TCE 004844004-02 $P = 0.784030$ Days $T_0 = 131.818879$ (BKJD)



DV Model-Shift Uniqueness Test

004844004-02, P = 0.784036 Days, E = 131.033328 Days

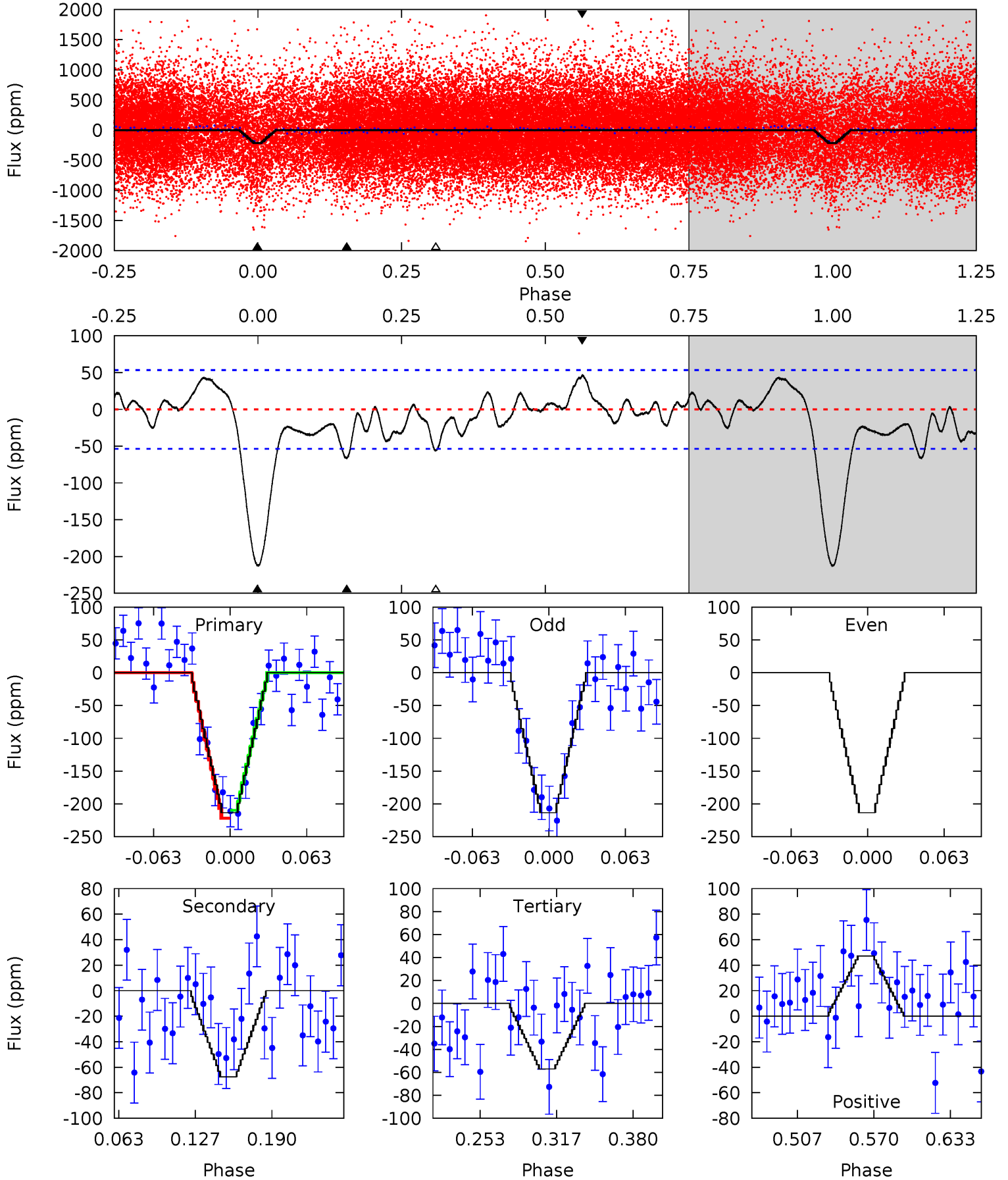
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	2.34	2.07	4.55	4.60	1.73	1.48	14.7	12.3	0.27	-2.21	0	0.96	0.21	4.53



Alt Model-Shift Uniqueness Test

004844004-02, P = 0.784030 Days, E = 131.034849 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.6	5.89	4.97	4.12	4.66	1.86	1.74	13.6	14.5	0.92	1.78	0	1.04	0.18	0.53



Stellar Parameters For KIC 004844004

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5435^{+179}_{-163}	$4.578^{+0.027}_{-0.144}$	$0.070^{+0.250}_{-0.300}$	$0.824^{+0.174}_{-0.058}$	$0.937^{+0.074}_{-0.101}$	$2.358^{+0.408}_{-0.941}$
	+3%/-3%	+1%/-3%	+357%/-429%	+21%/-7%	+8%/-11%	+17%/-40%
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 004844004-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-23 ± 10	$1.27^{+0.92}_{-0.70}$	2433^{+124}_{-103}	3478^{+1359}_{-787}	$1.820^{+8.790}_{-1.266}$
Alt.	-68 ± 11	$1.39^{+0.95}_{-0.83}$	2434^{+114}_{-101}	4195^{+2147}_{-754}	$4.921^{+25.086}_{-3.212}$

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

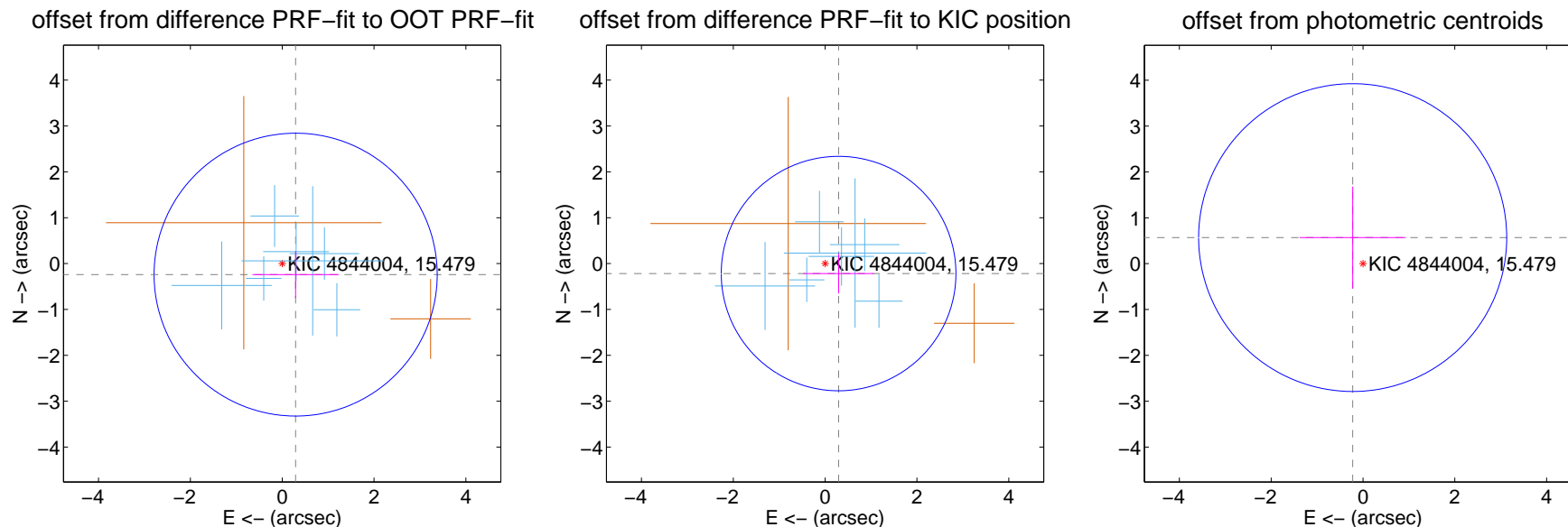
DV Centroid Data

Supplemental centroid analysis for 004844004-02. Kepler magnitude: 15.48. Transit SNR 12.14

There are 7 quarters with good PRF difference image offsets

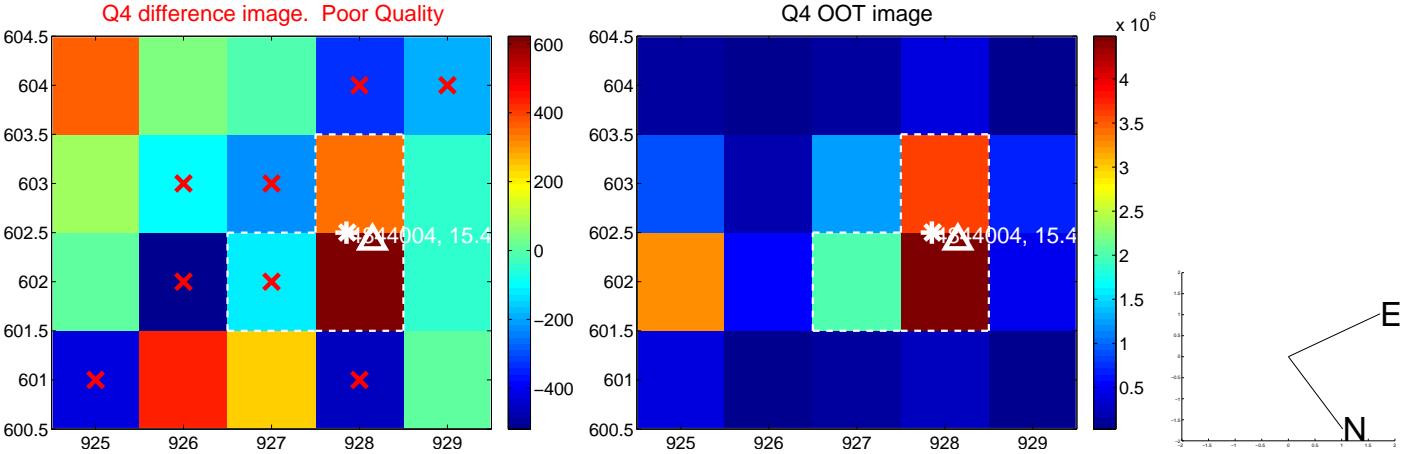
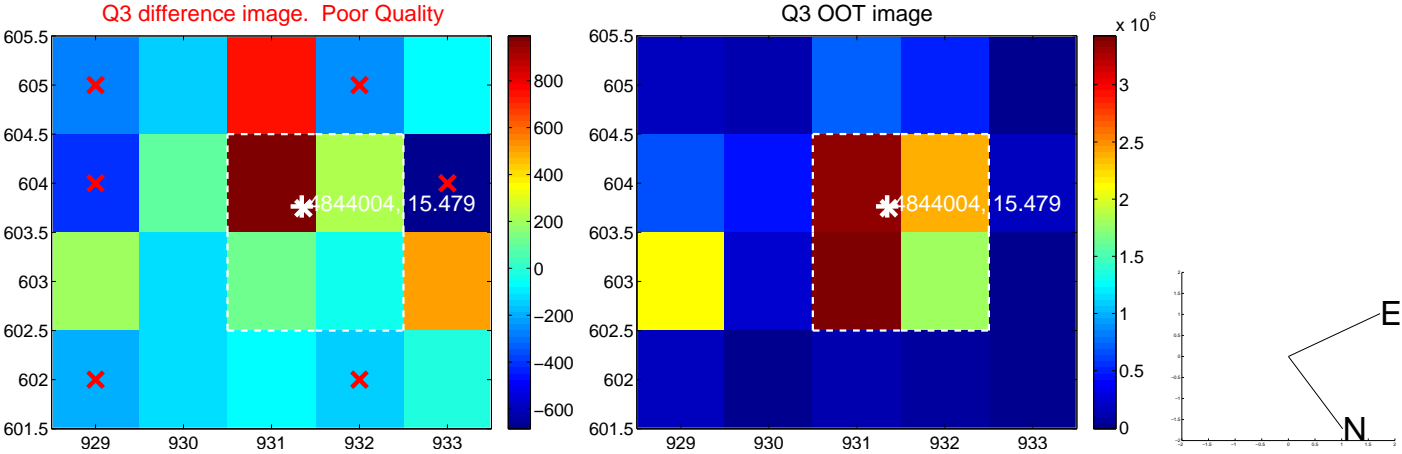
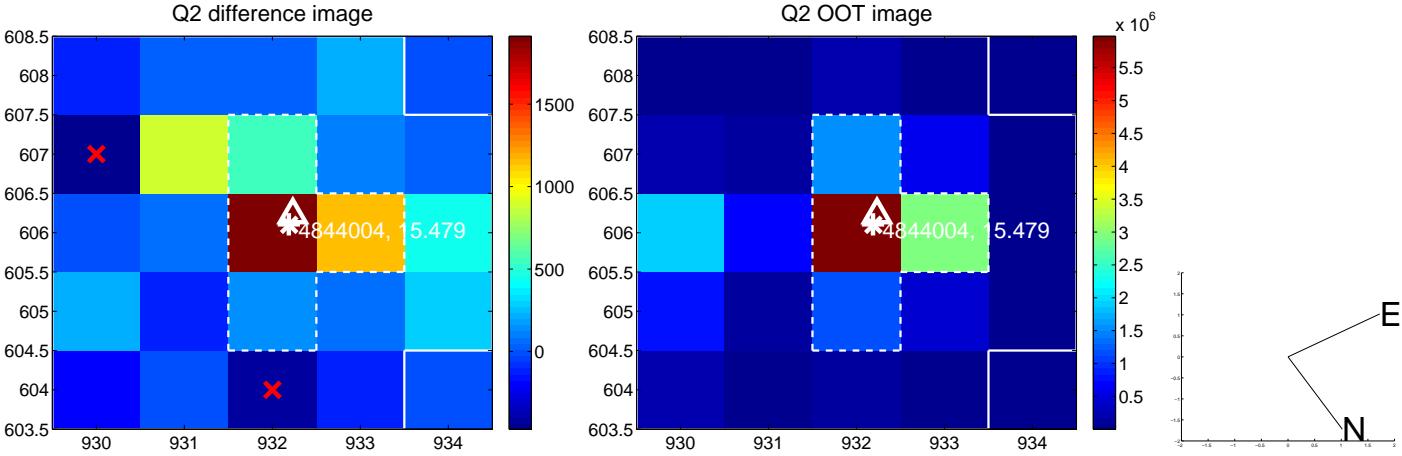
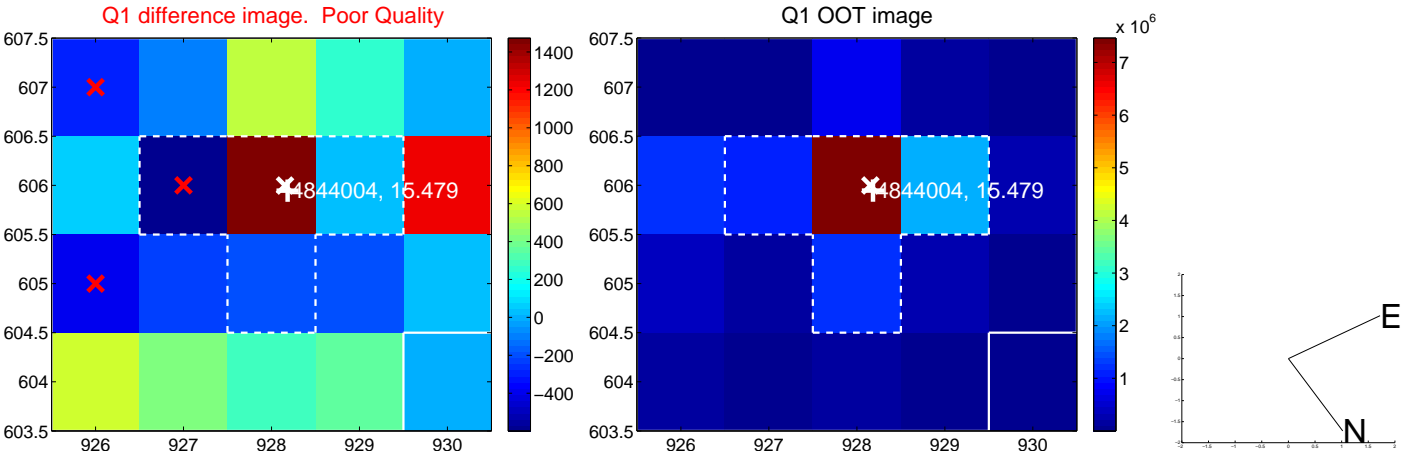
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.379 ± 1.028	0.37	-0.293 ± 0.939	-0.241 ± 0.511
PRF-fit source offset from KIC position	0.365 ± 0.852	0.43	-0.293 ± 0.766	-0.217 ± 0.432
photometric centroid source offset	0.61 ± 1.12	0.55	0.22 ± 1.16	0.57 ± 1.11

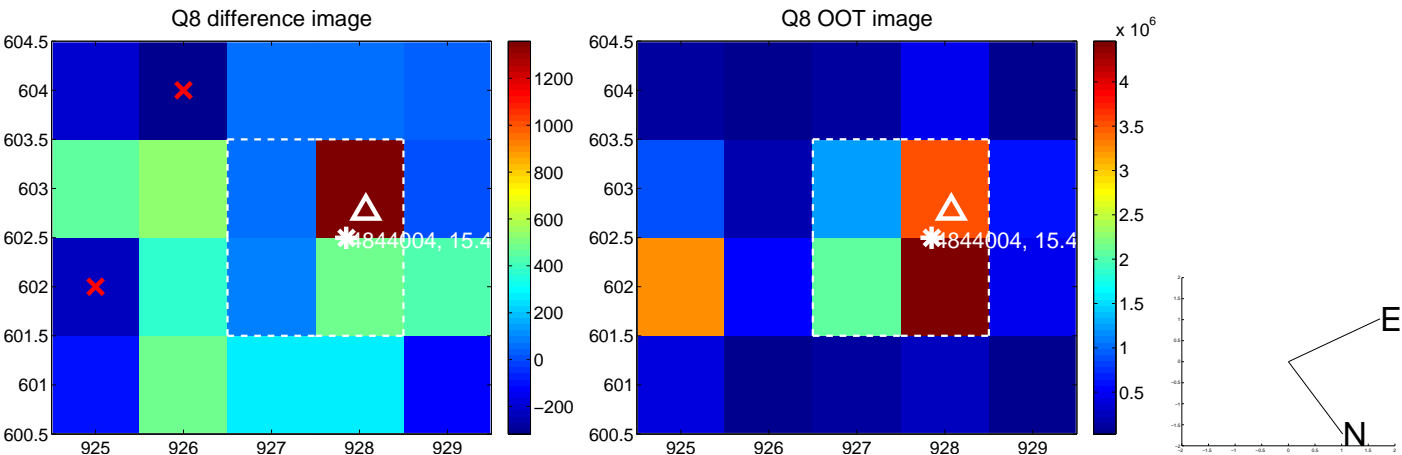
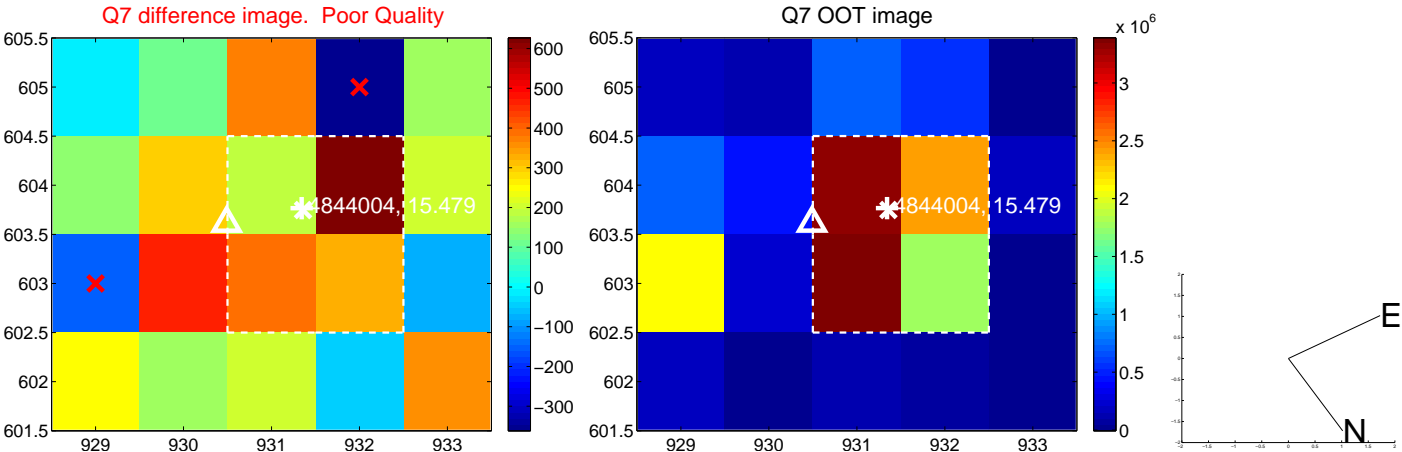
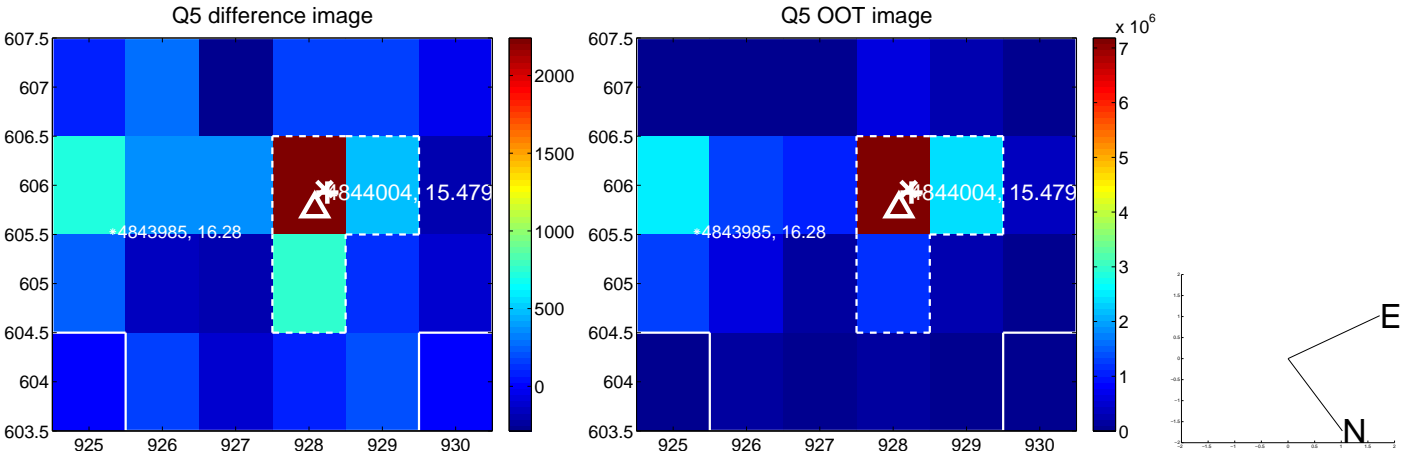


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

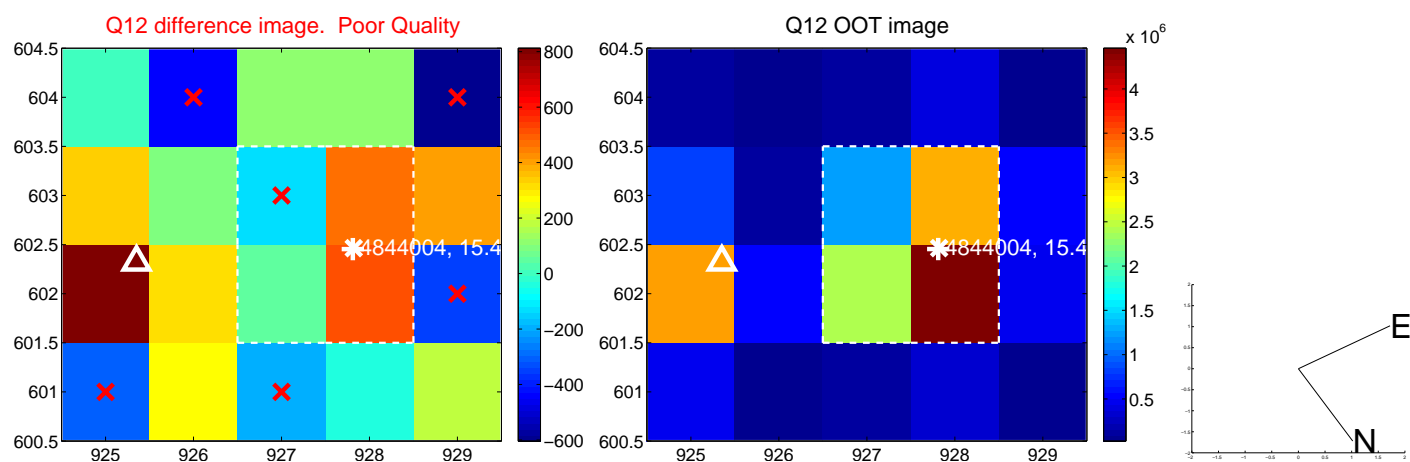
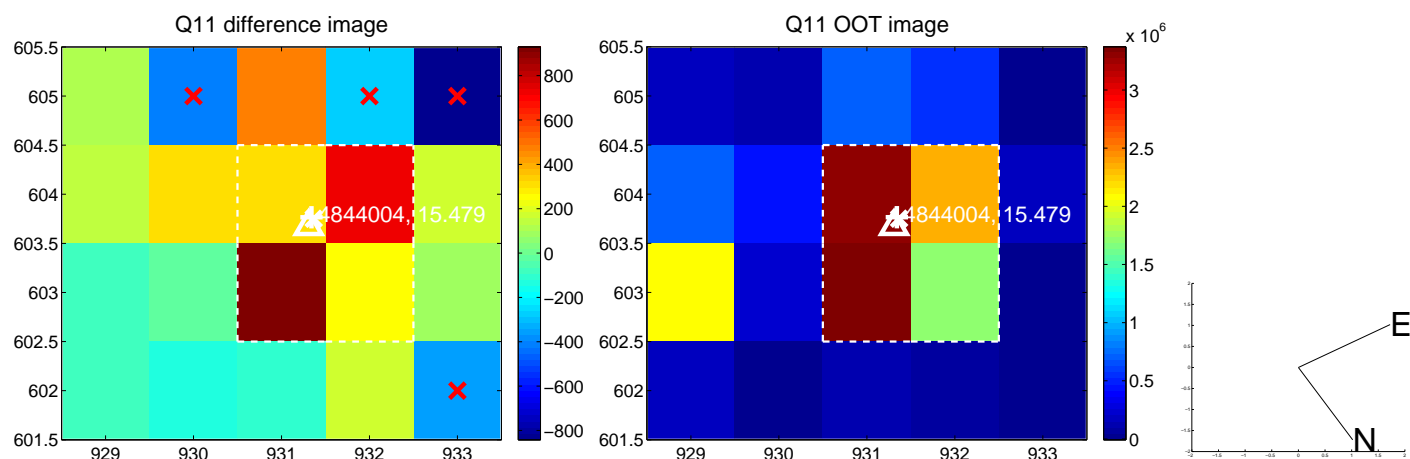
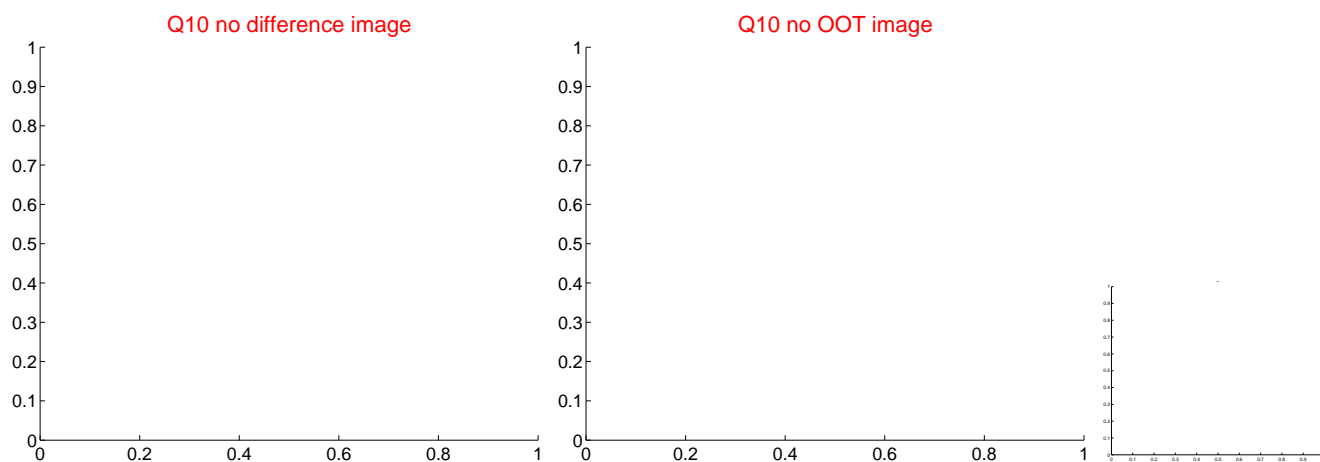
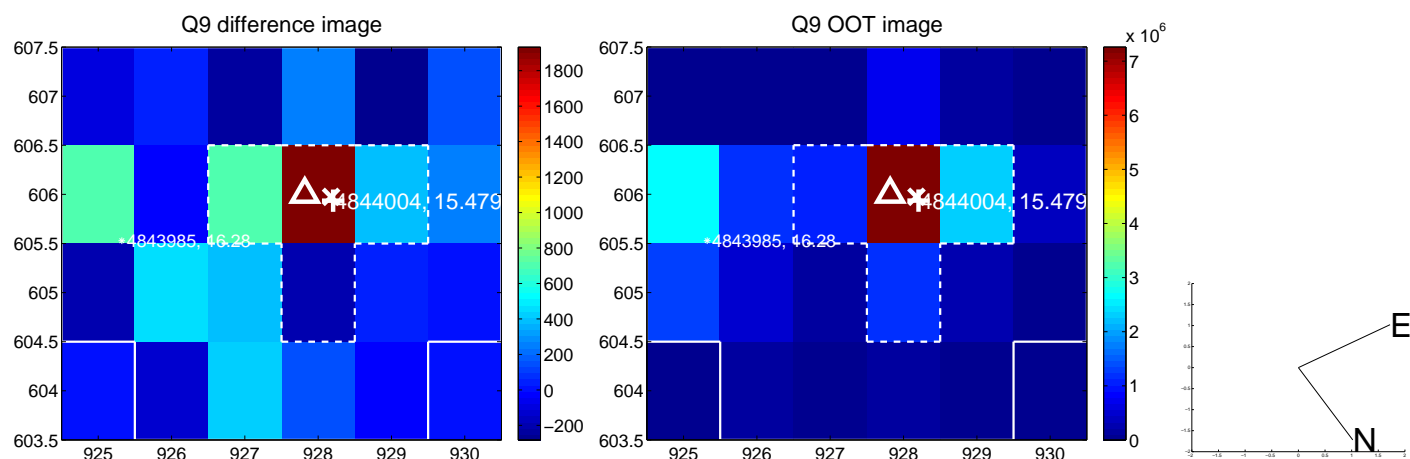
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



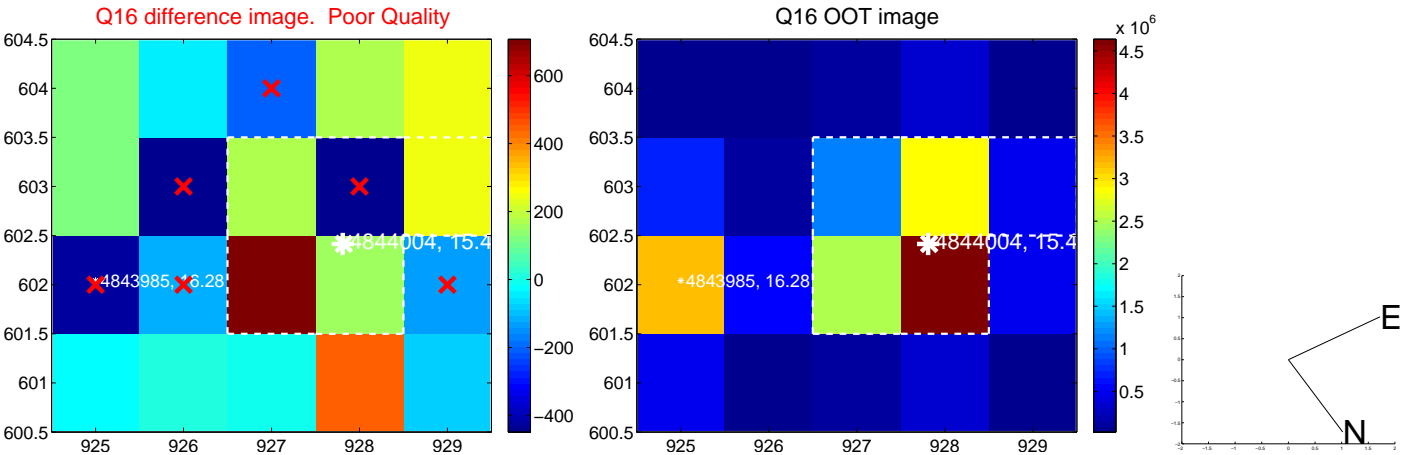
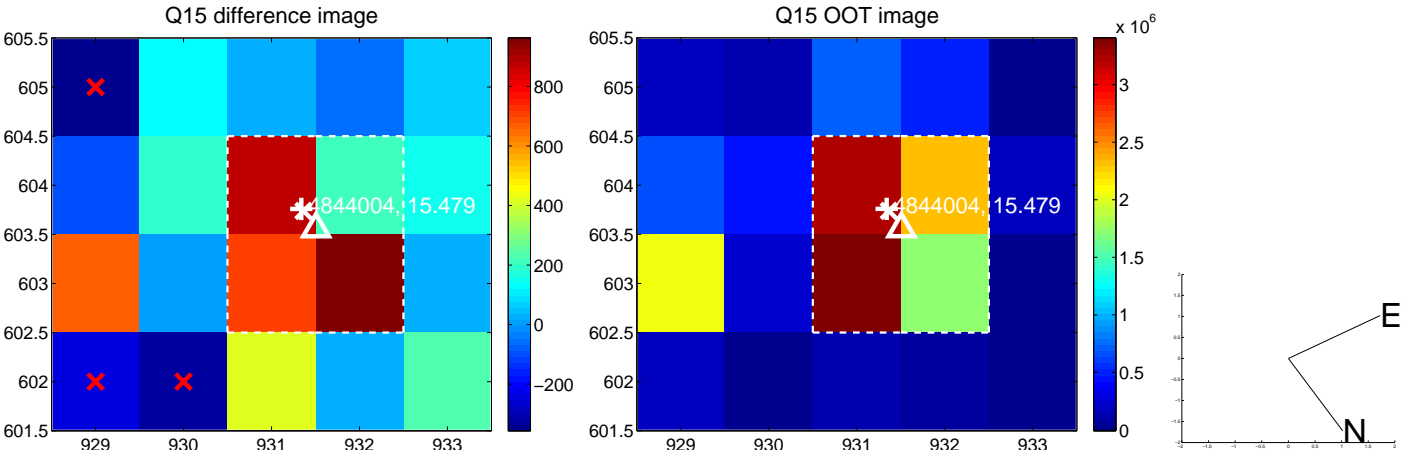
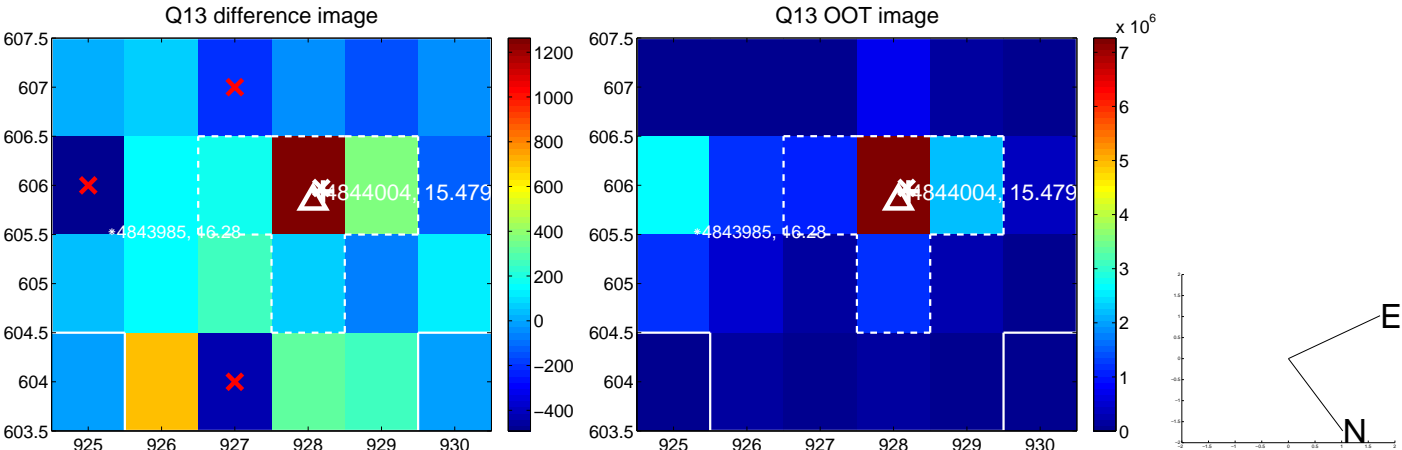
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



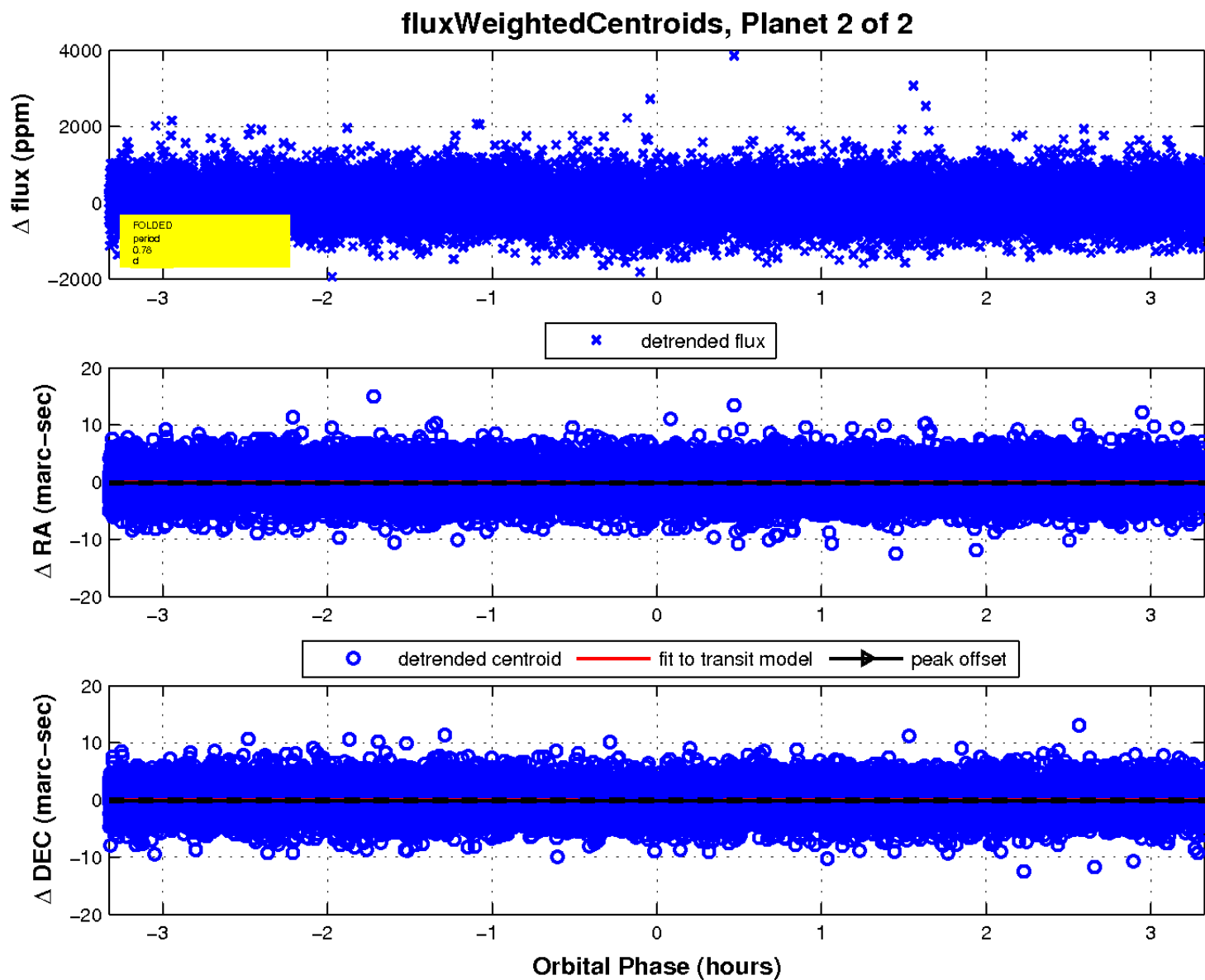
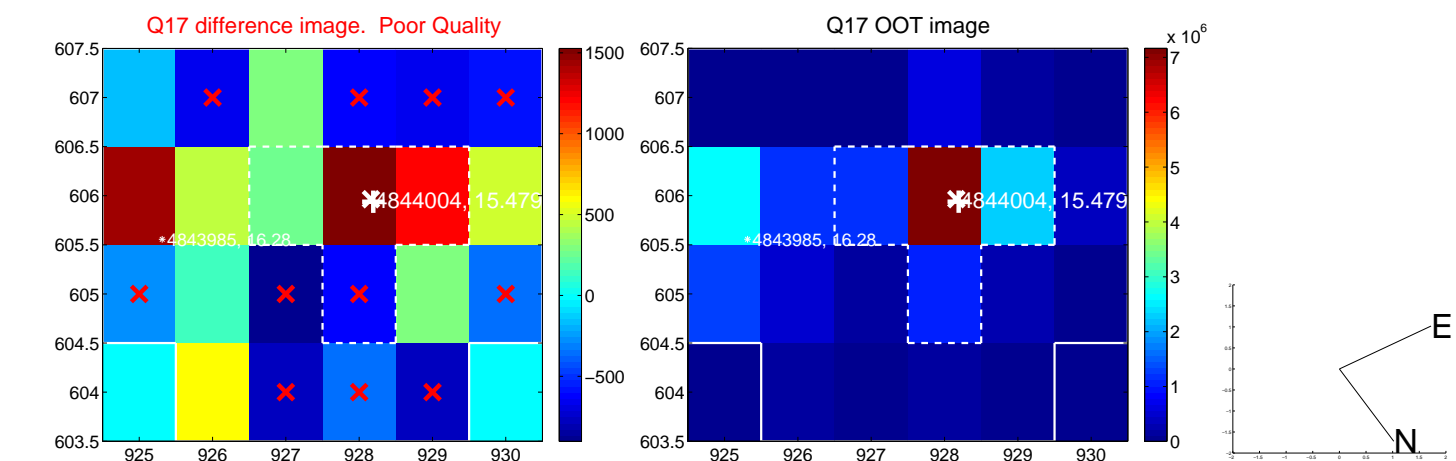
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



UKIRT Image

Declination

