

KIC 005370302

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})
005370302-01	OBS	0831.01	3.904348	134.349181	16100.9	3.843	1224.3	1097.5	0.90	5810	12.31	352.41
005370302-02	OBS	No	3.904363	132.392996	444.0	3.568	33.7	36.0	0.90	5810	2.25	352.41

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005370302-01	OBS	FP	0.01	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
005370302-02	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.

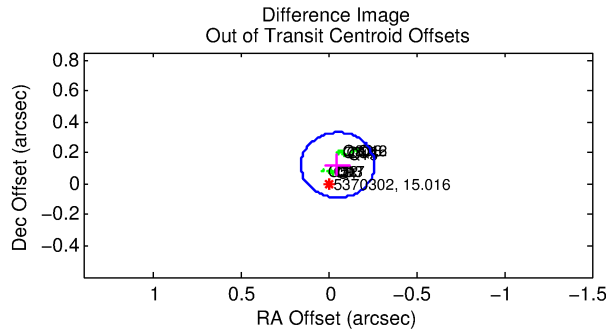
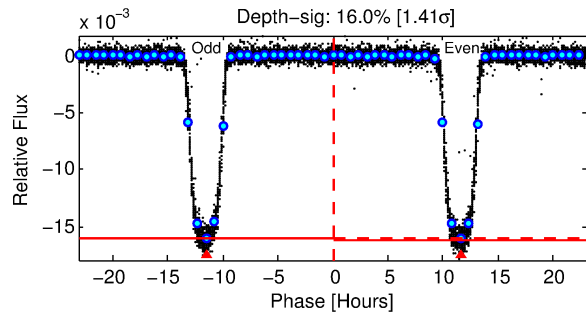
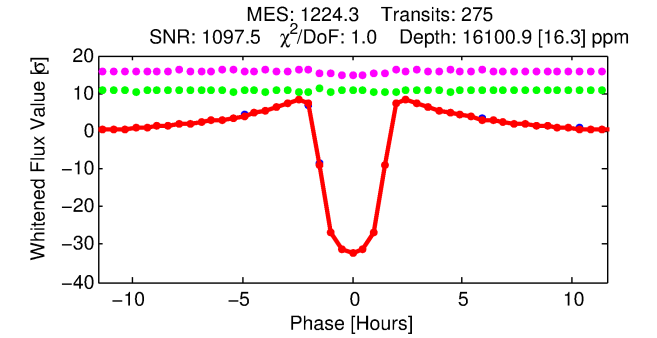
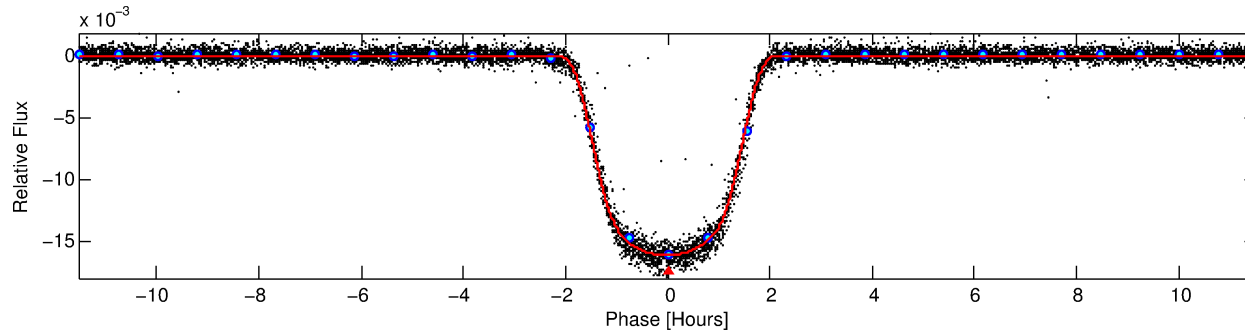
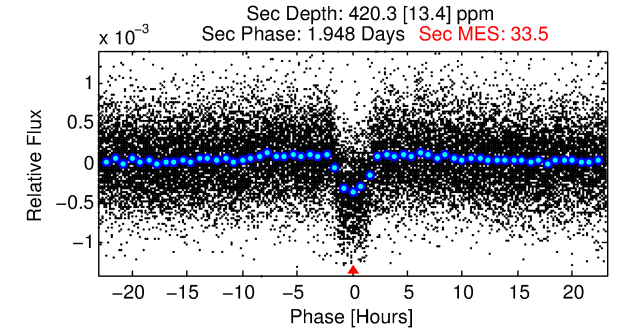
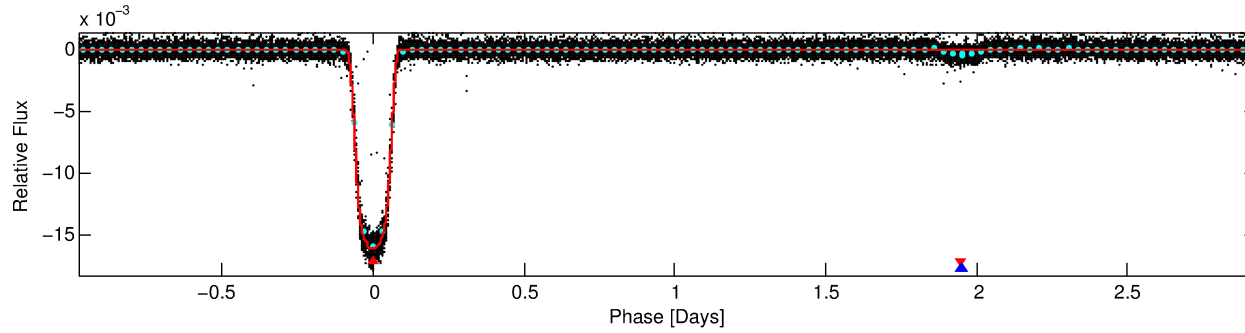
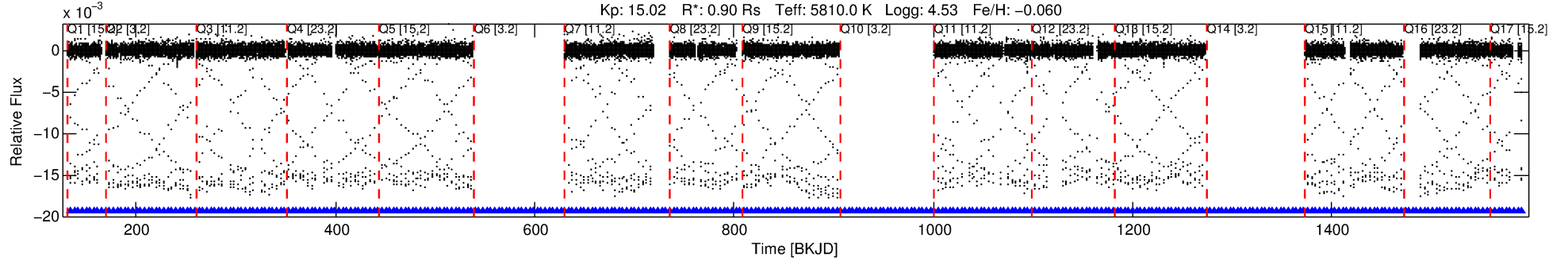
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005370302-01

No Significant Match Found

DV One-Page Summary

KIC: 5370302 Candidate: 1 of 2 Period: 3.904 d
KOI: K00831.01 Corr: 0.996



DV Fit Results:

Period = 3.90435 [0.00000] d
Epoch = 134.3492 [0.0001] BKJD
Rp/R* = 0.1256 [0.0001]
a/R* = 6.75 [0.02]
b = 0.72 [0.00]
Seff = 352.41 [134.67]
Teq = 1105 [106] K
Rp = 12.31 [3.56] Re
a = 0.0483 [0.0119] AU
Ag = 3.56 [1.30] [1.98 σ]
Teffp = 2347 [73] K [9.67 σ]

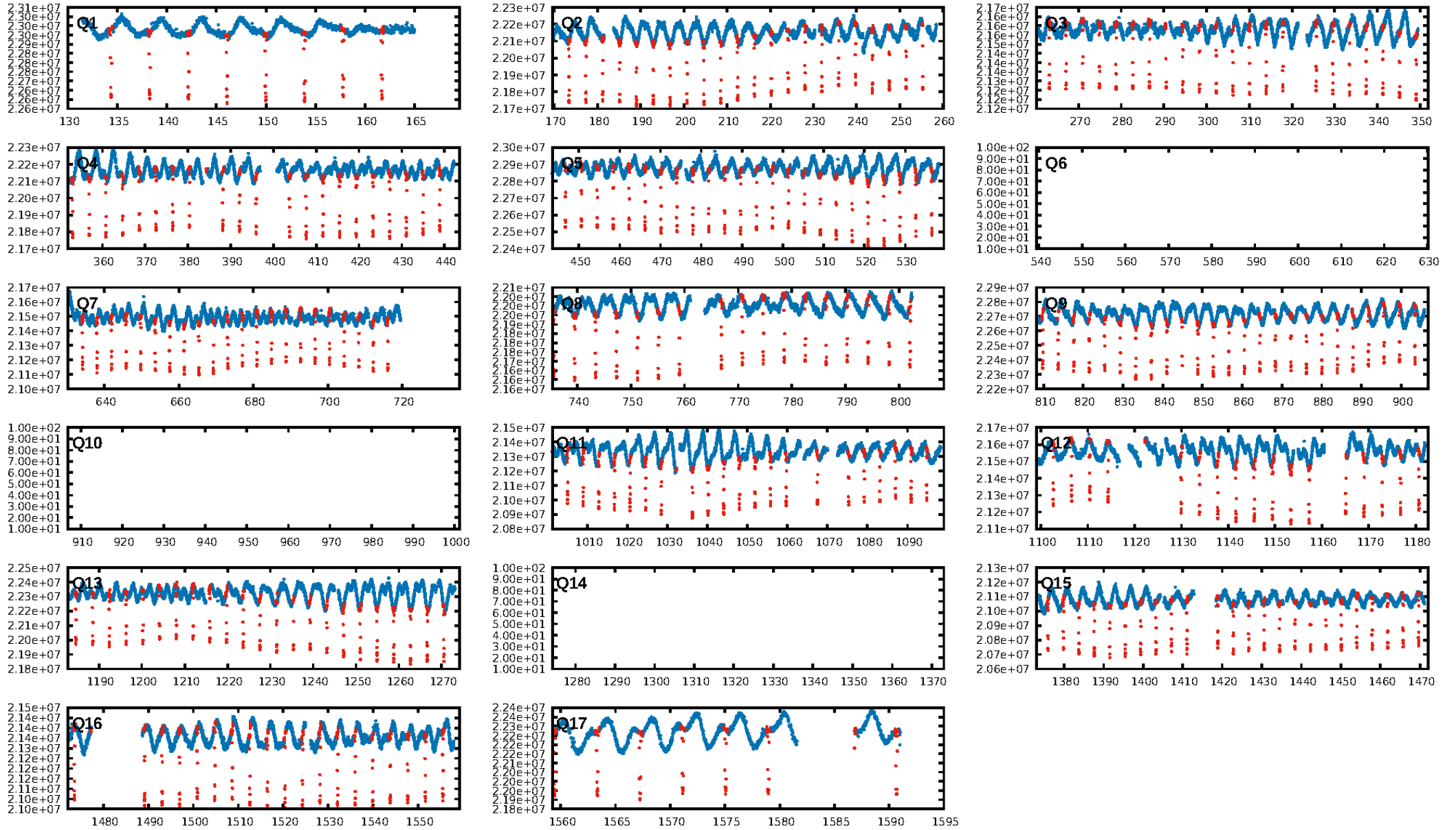
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [259/259]
GhostDiagnostic-chr: 3.949
Centroid-sig: 0.0%
Centroid-so: 0.072 arcsec [7.81 σ]
OotOffset-rm: 0.132 arcsec [1.89 σ]
KicOffset-rm: 0.075 arcsec [1.09 σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

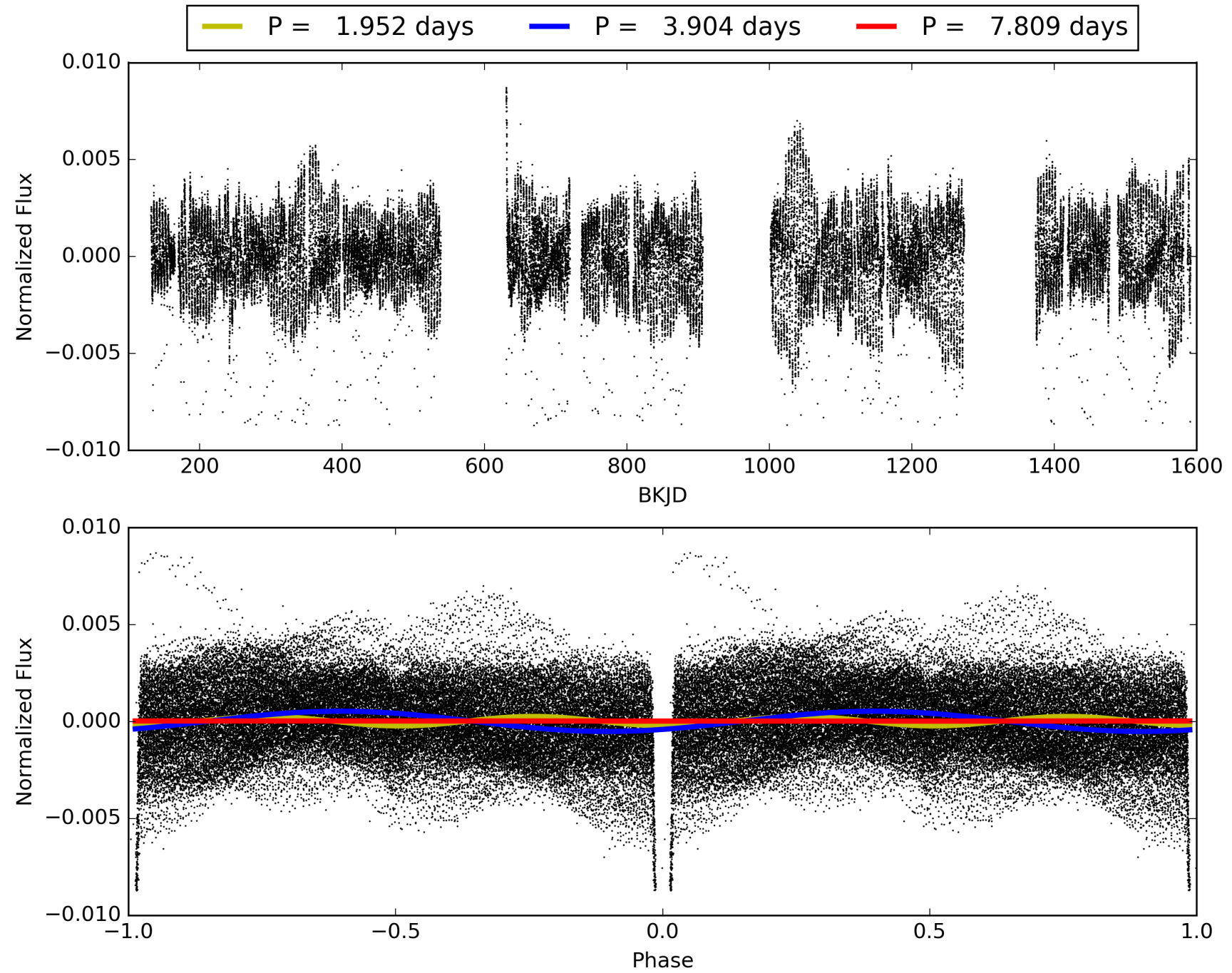
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 12:49:54 Z

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

TCE 005370302-01, PDC Light Curves

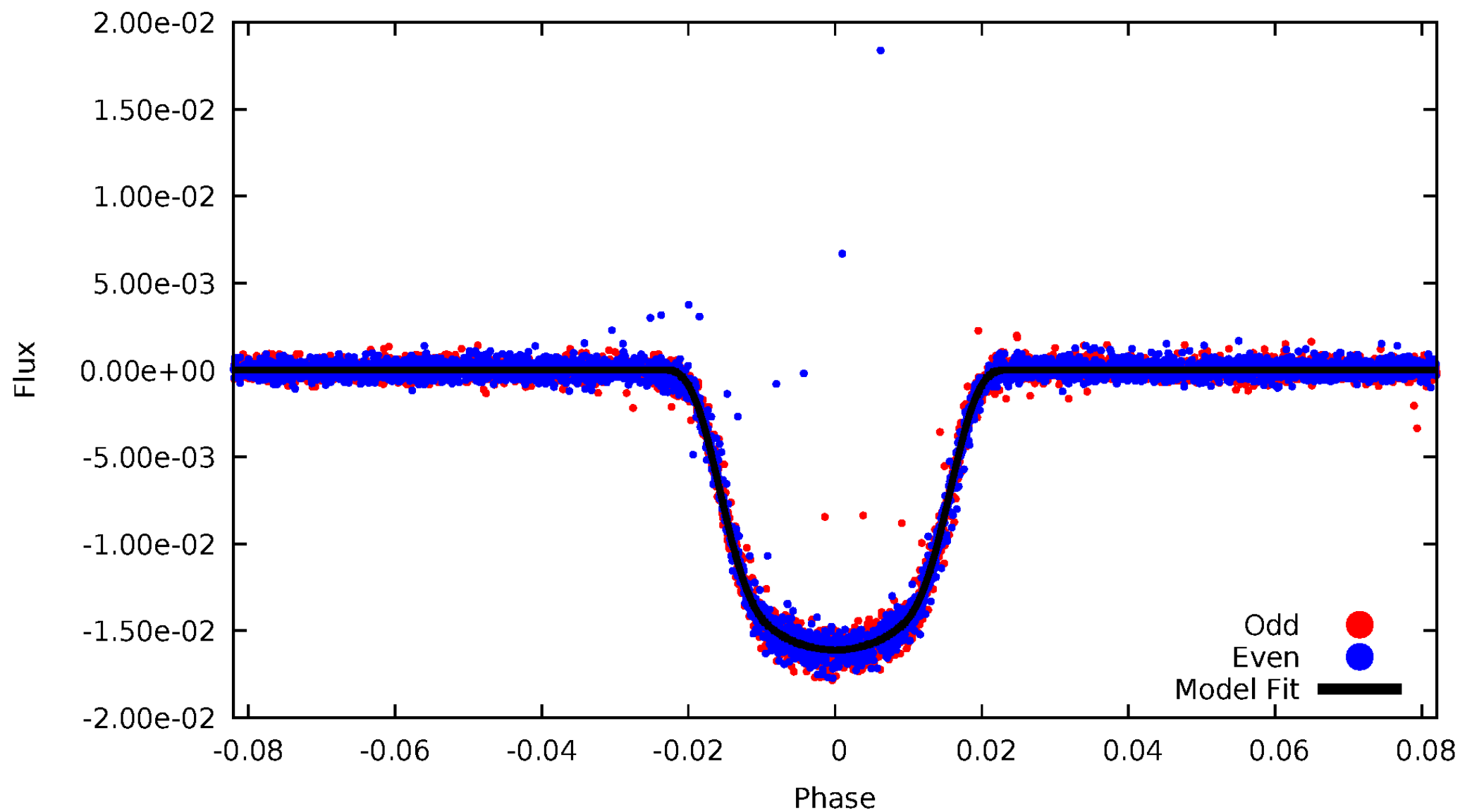


TCE 005370302-01



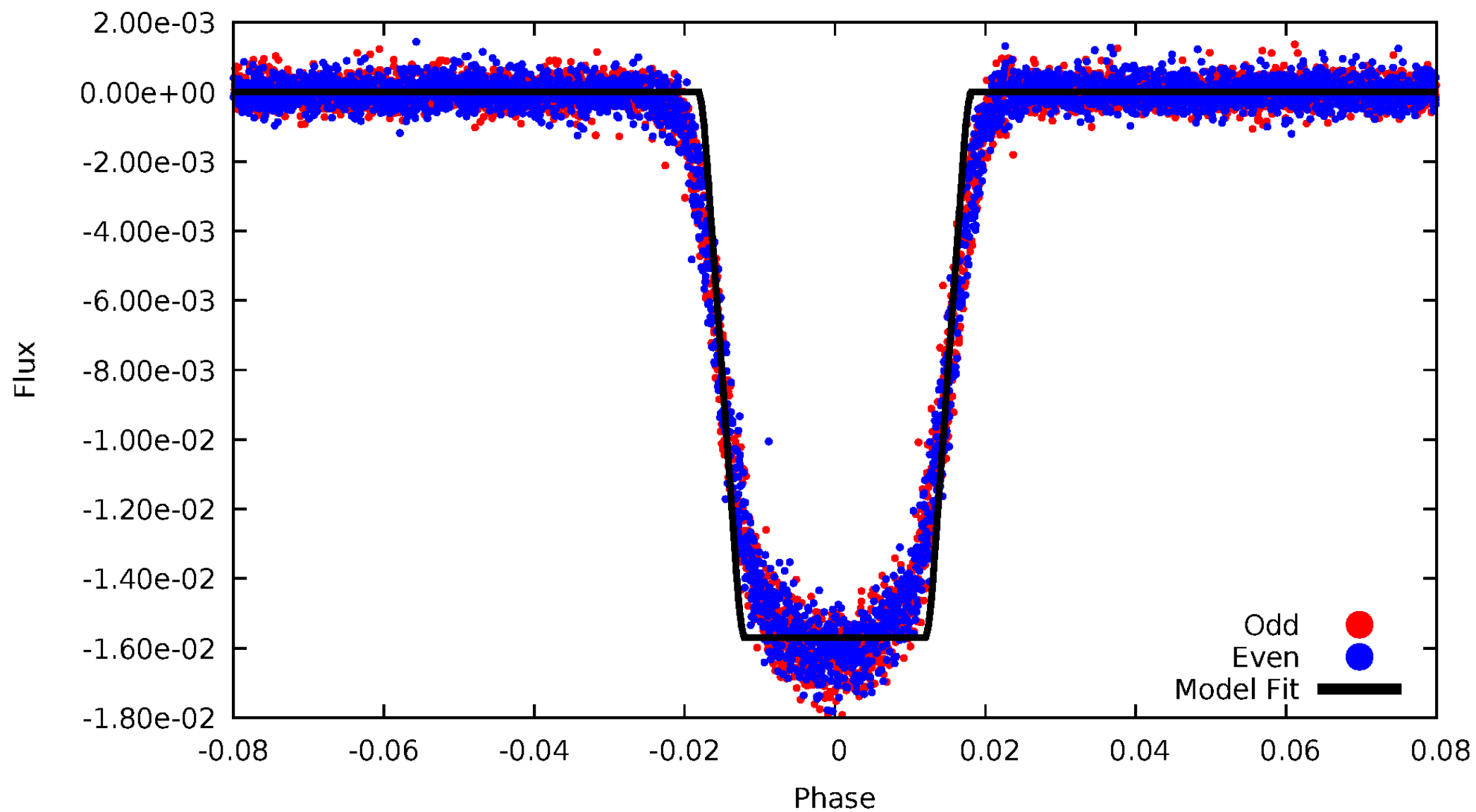
DV Odd/Even

TCE 005370302-01



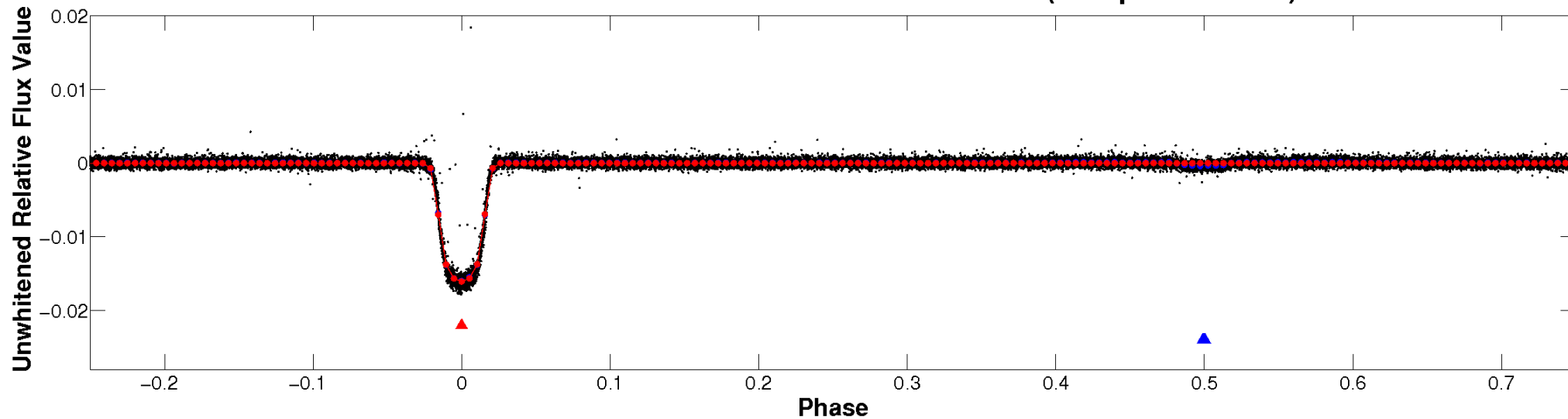
ALT Odd/Even

TCE 005370302-01

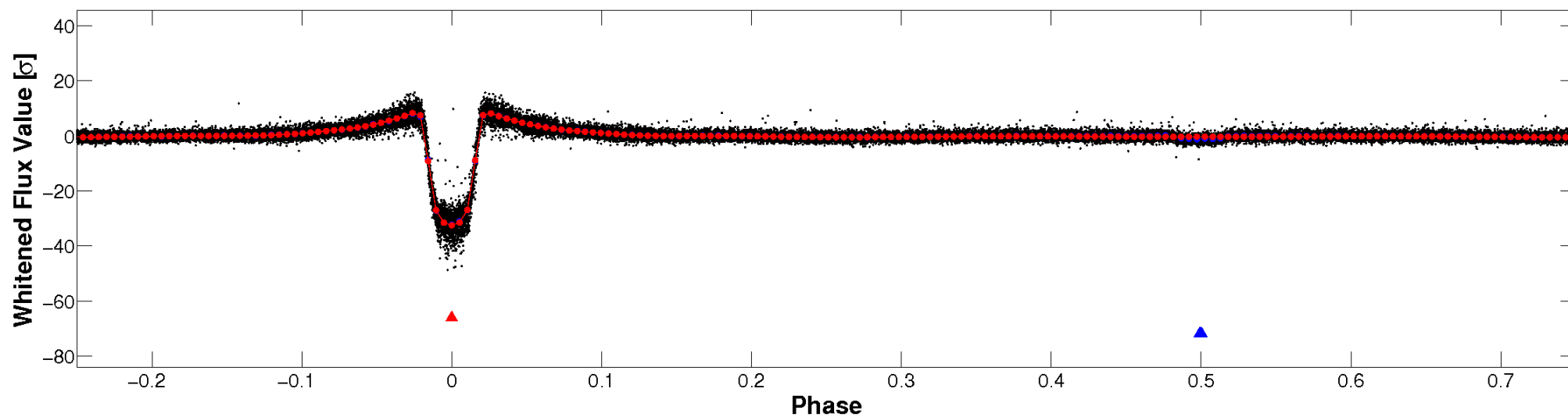


Non-Whitened Vs. Whitened Light Curve

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

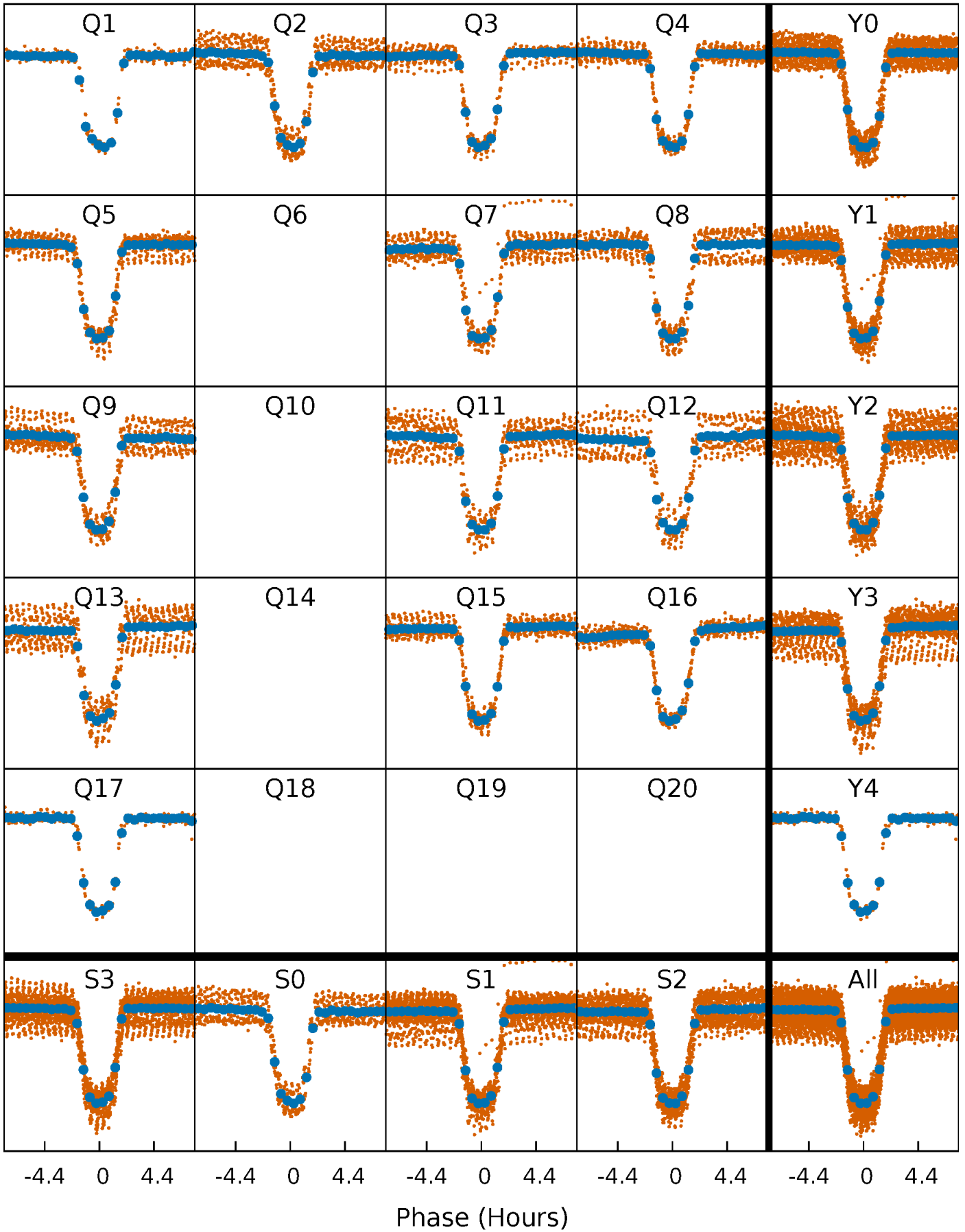


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



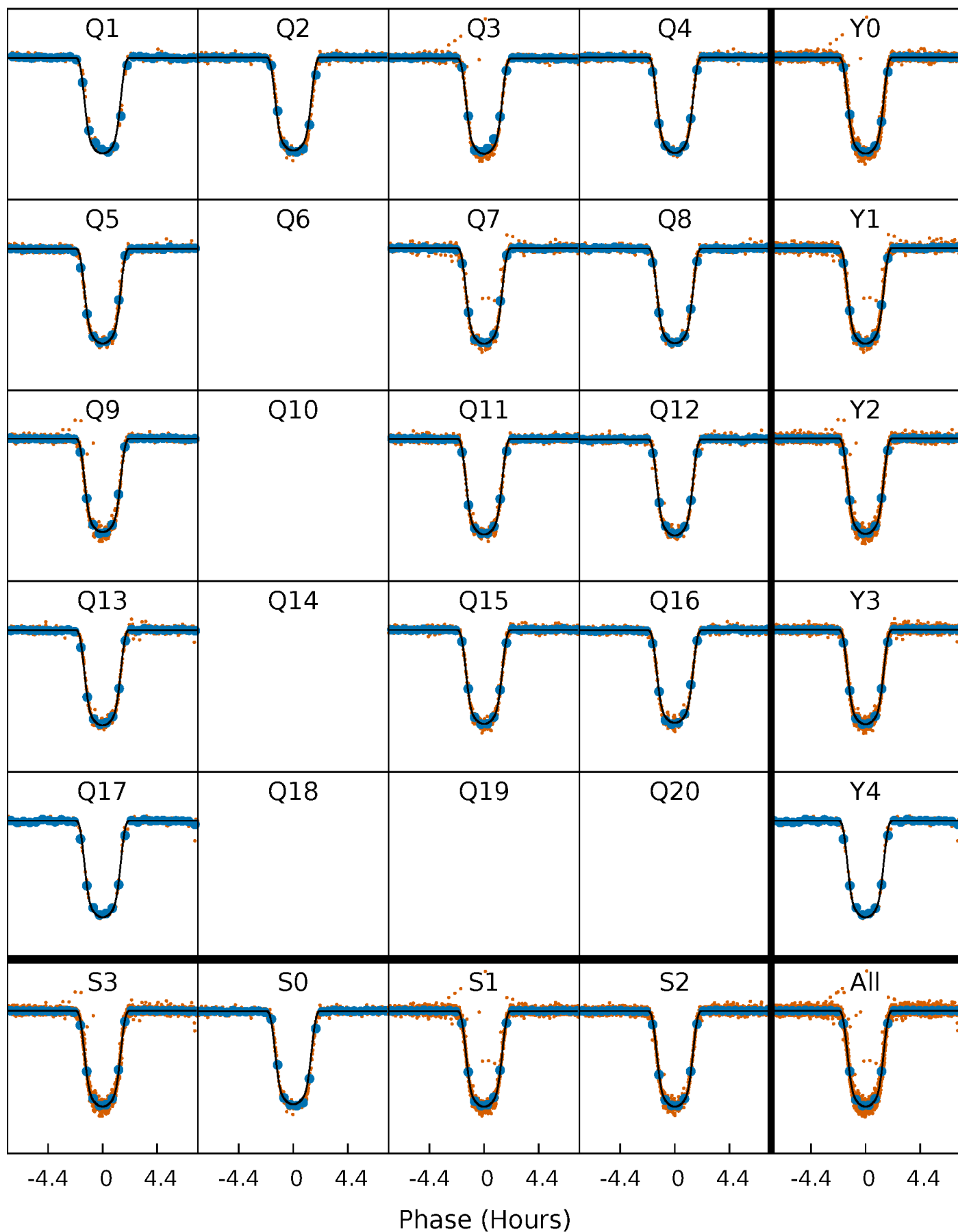
PDC Quarter-Phased Transit Curves

TCE 005370302-01 P= 3.904348 Days $T_0=134.349181$ (BKJD)



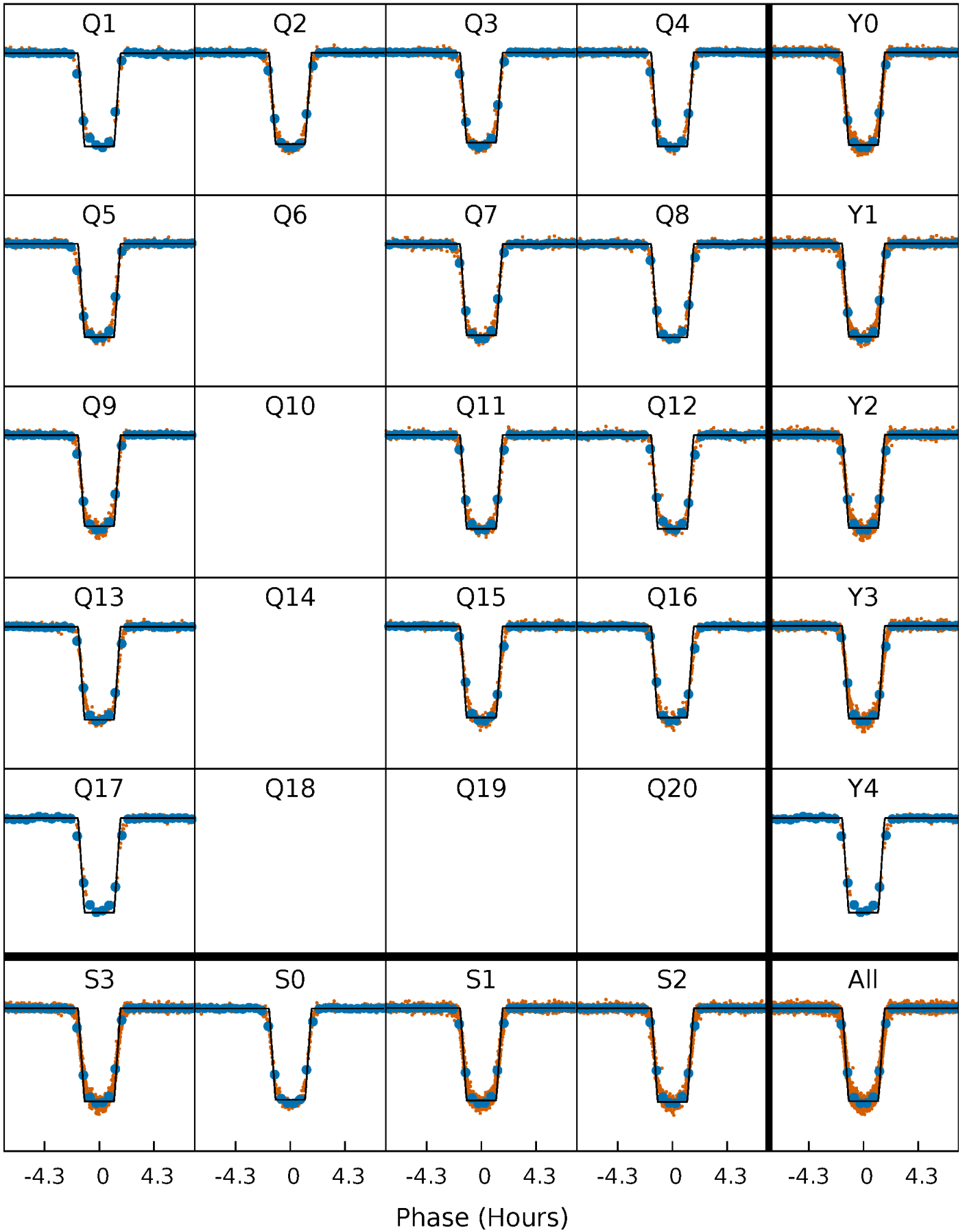
DV Quarter-Phased Transit Curves

TCE 005370302-01 P= 3.904348 Days $T_0=134.349181$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

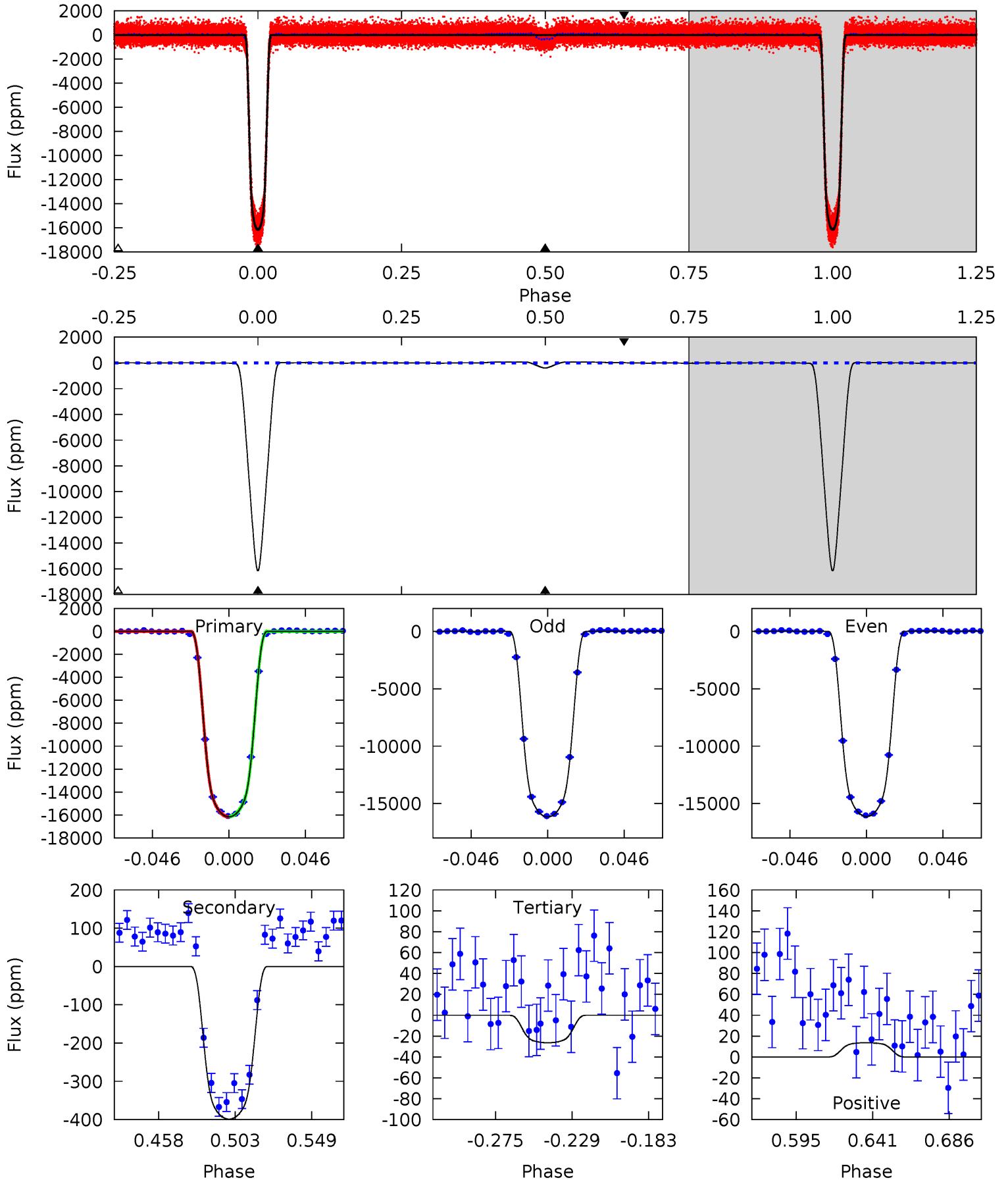
TCE 005370302-01 P= 3.904327 Days $T_0=134.353024$ (BKJD)



DV Model-Shift Uniqueness Test

005370302-01, P = 3.904348 Days, E = 130.444833 Days

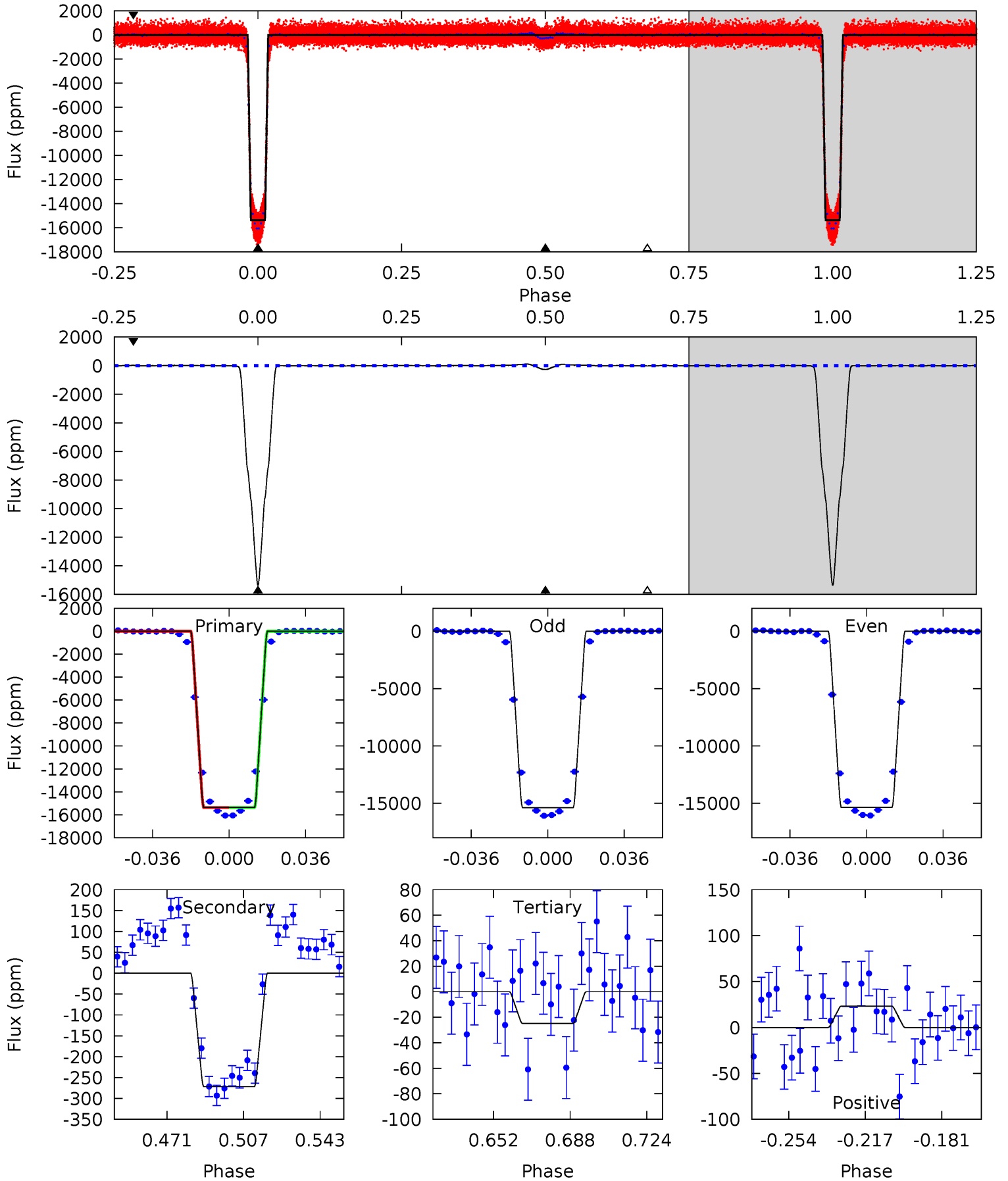
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2093	51.7	3.42	1.78	4.73	2.00	3.33	2090	2091	48.3	49.9	2.49	0.99	0.00	1.42



Alt Model-Shift Uniqueness Test

005370302-01, P = 3.904327 Days, E = 130.448697 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1748	30.9	2.82	2.64	4.77	2.09	1.94	1745	1745	28.1	28.3	1.10	1.00	0.01	0.45



Stellar Parameters For KIC 005370302

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5810^{+157}_{-175}	$4.526^{+0.050}_{-0.200}$	$-0.060^{+0.250}_{-0.300}$	$0.898^{+0.260}_{-0.087}$	$0.989^{+0.116}_{-0.116}$	$1.920^{+0.388}_{-1.000}$
	+3%/-3%	+1%/-4%	+417%/-500%	+29%/-10%	+12%/-12%	+20%/-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 005370302-01 / KOI 0831.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-399 ± 8	$12.65^{+1.75}_{-0.95}$	1571^{+97}_{-72}	2942^{+49}_{-54}	$3.182^{+0.463}_{-0.706}$
Alt.	-272 ± 9	$12.46^{+1.91}_{-0.79}$	1572^{+102}_{-76}	2778^{+47}_{-56}	$2.181^{+0.293}_{-0.466}$

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 $A_{obs} \gg 1.0$

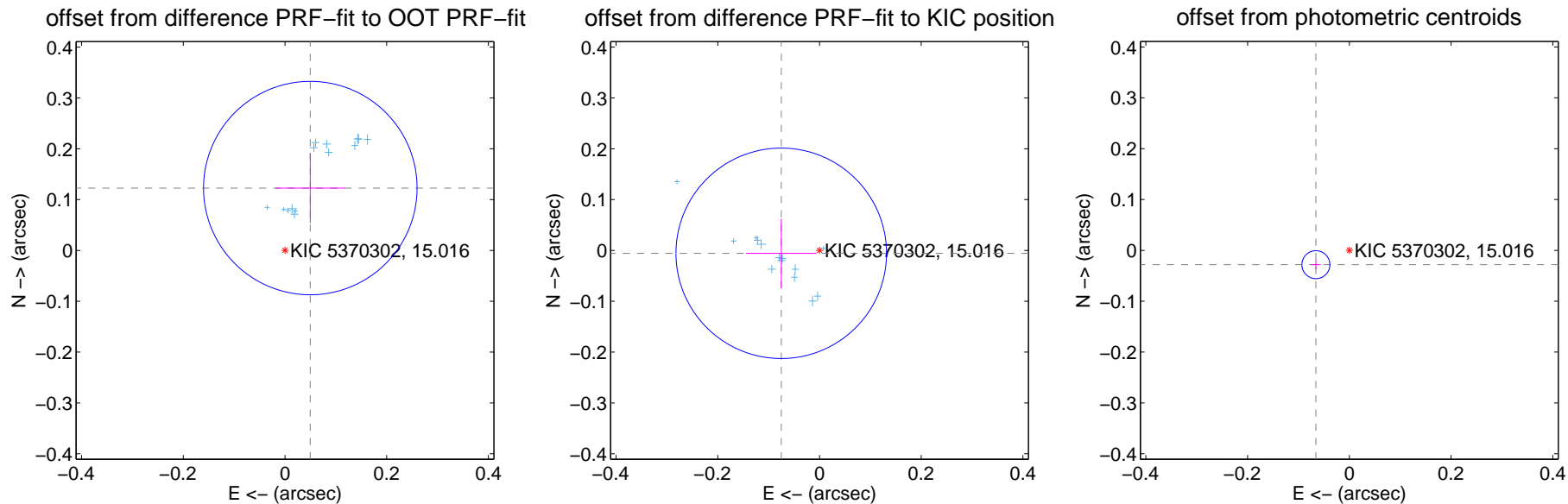
DV Centroid Data

Supplemental centroid analysis for 005370302-01. Kepler magnitude: 15.02. Transit SNR 1097.50

There are 14 quarters with good PRF difference image offsets

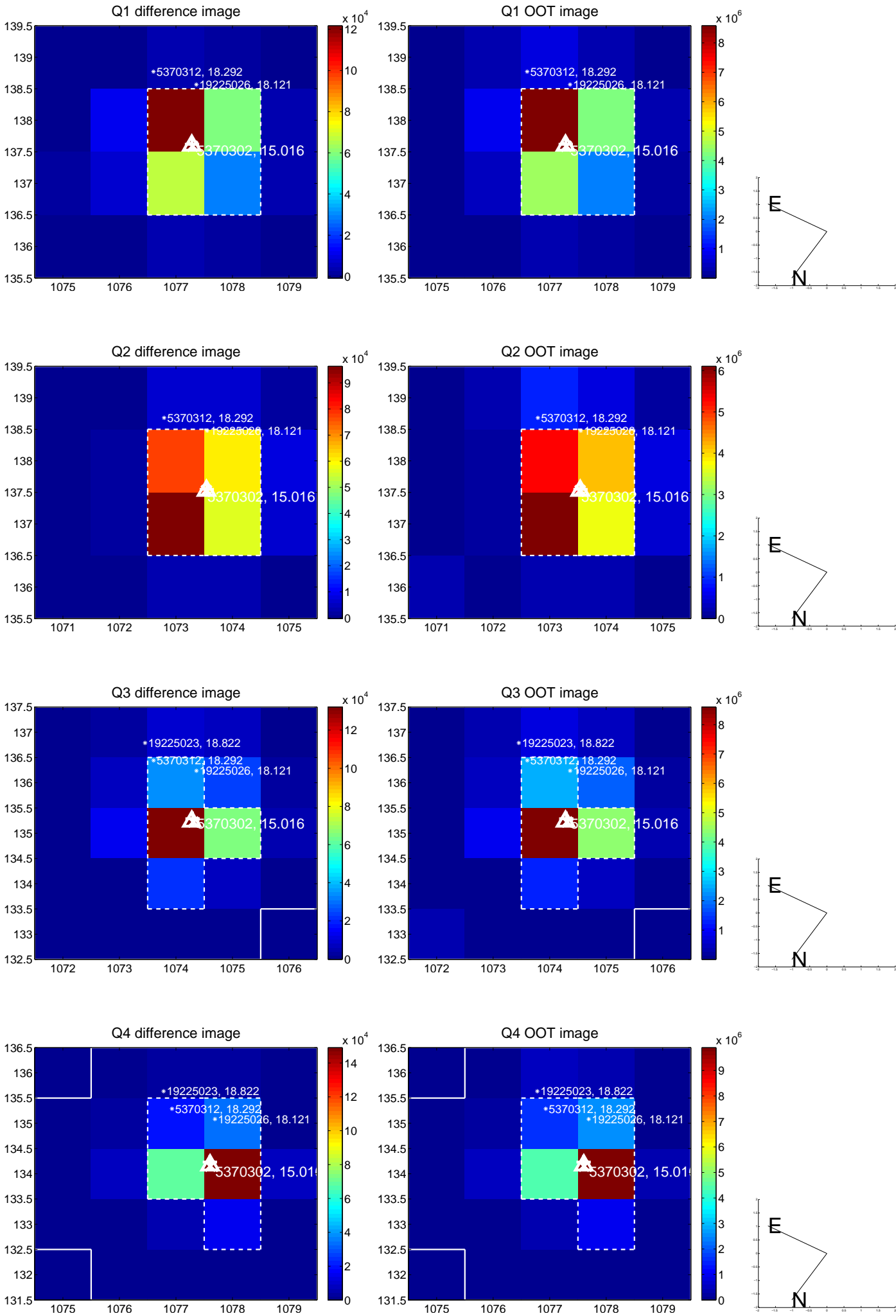
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.132 ± 0.070	1.89	-0.050 ± 0.068	0.123 ± 0.069
PRF-fit source offset from KIC position	0.075 ± 0.069	1.09	0.075 ± 0.069	-0.006 ± 0.068
photometric centroid source offset	0.07 ± 0.01	7.81	0.07 ± 0.01	-0.03 ± 0.01

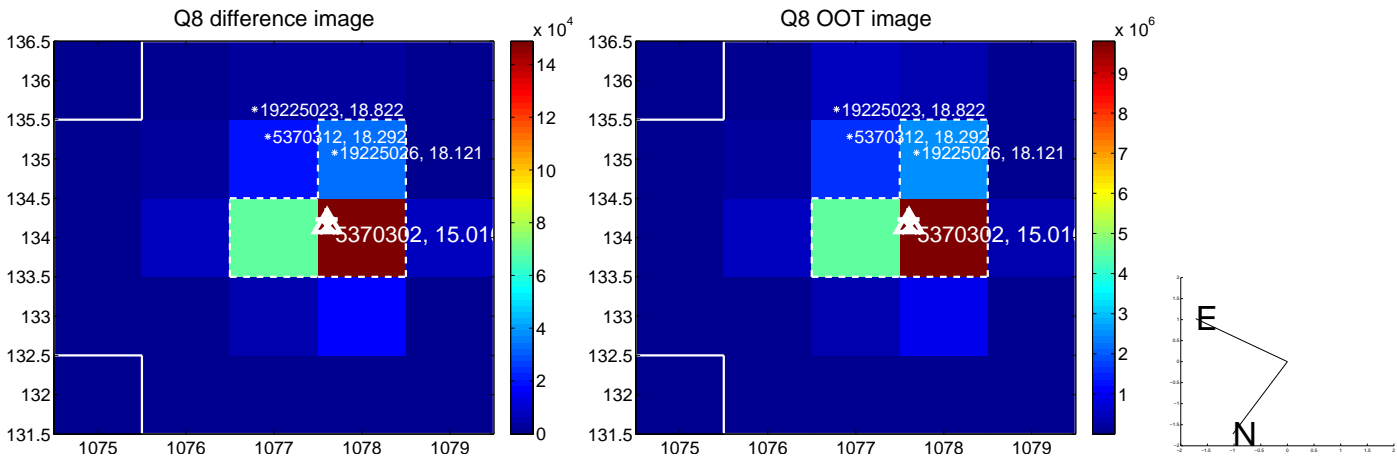
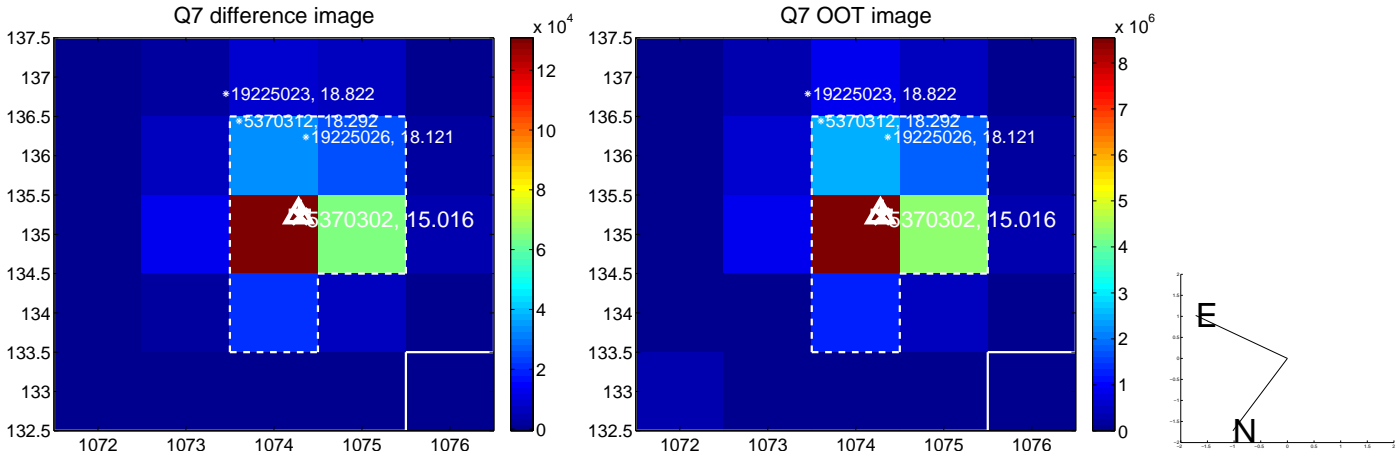
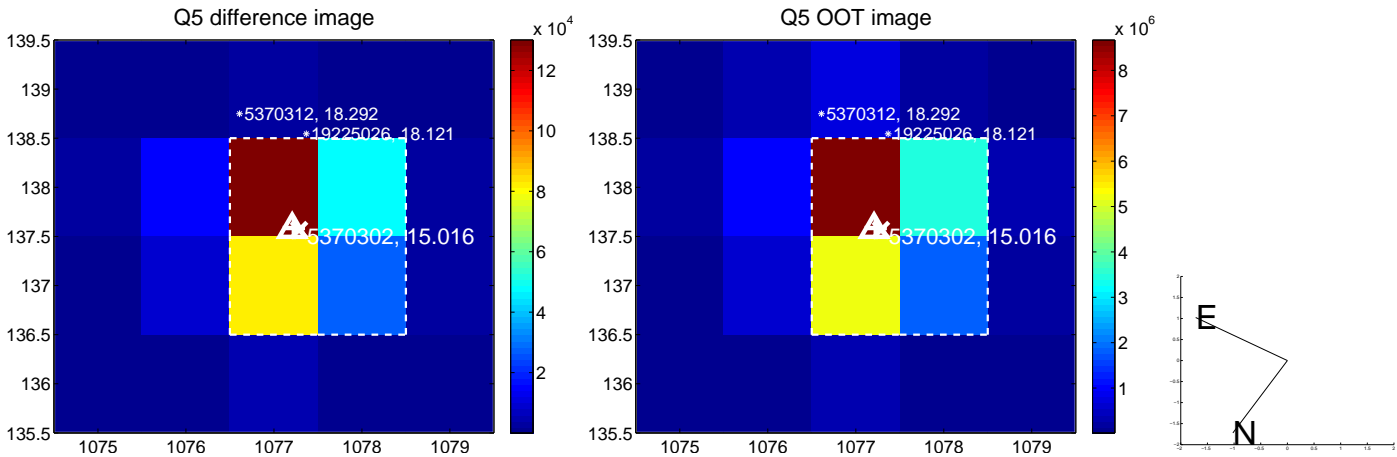


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

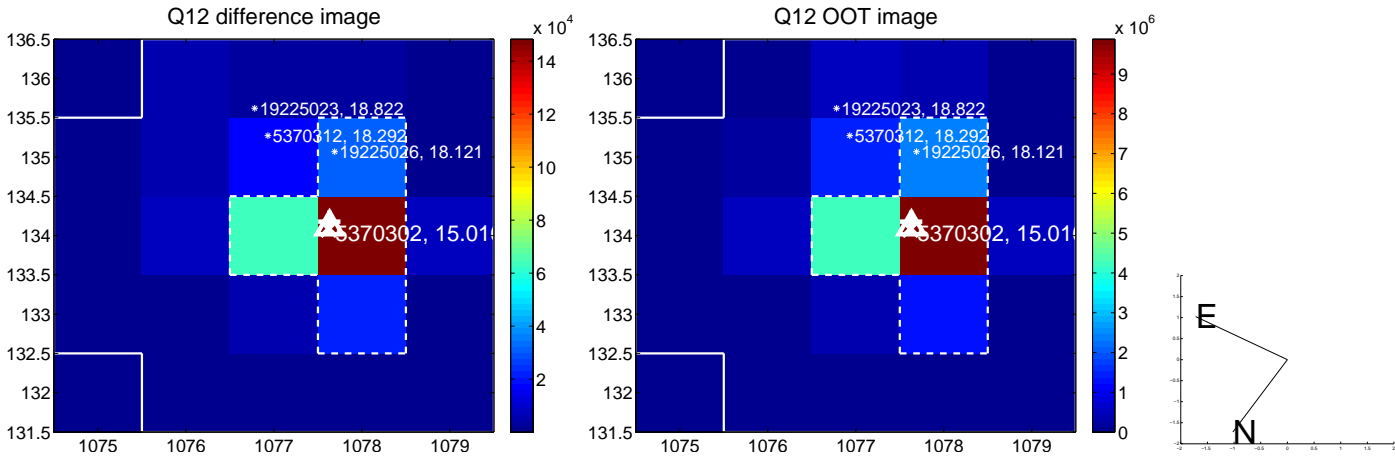
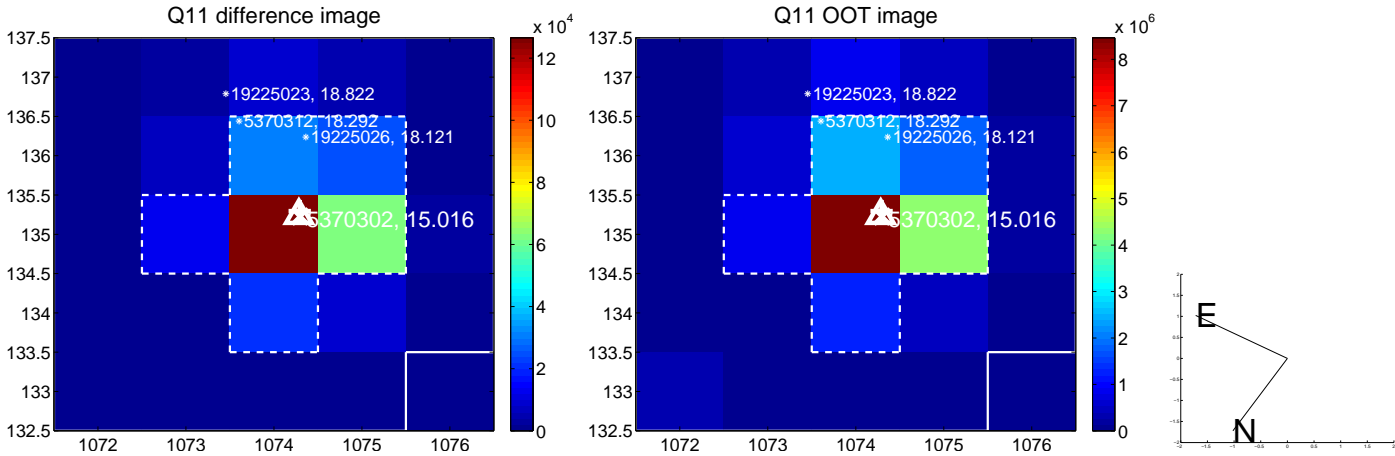
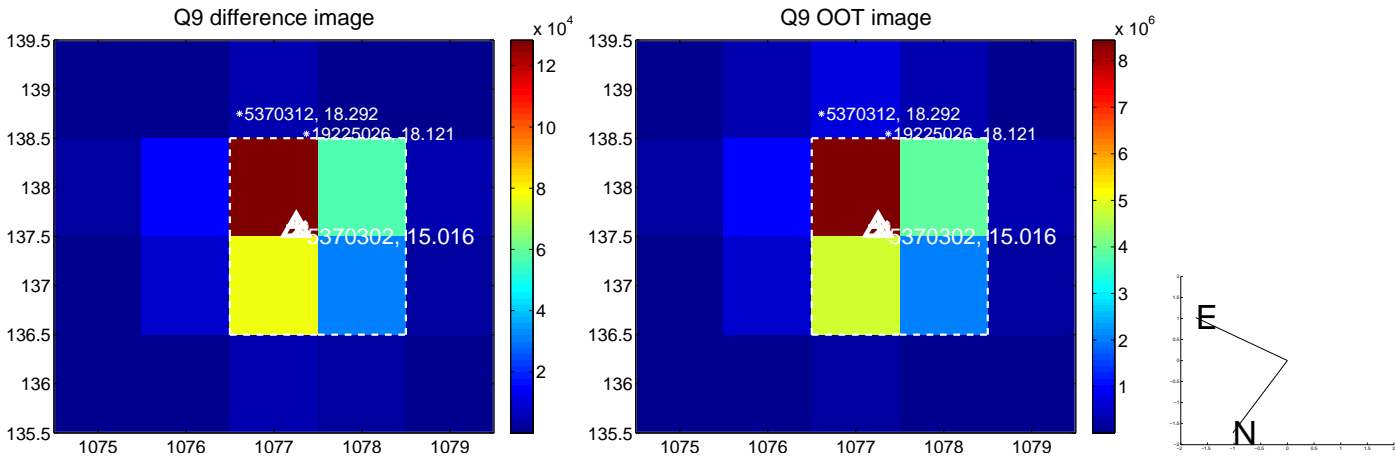
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



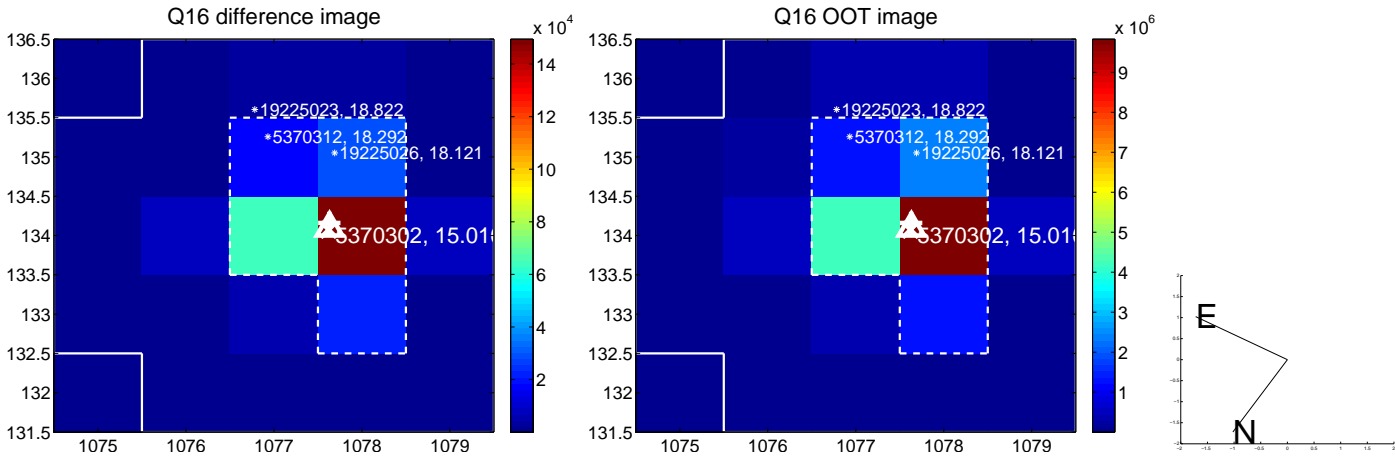
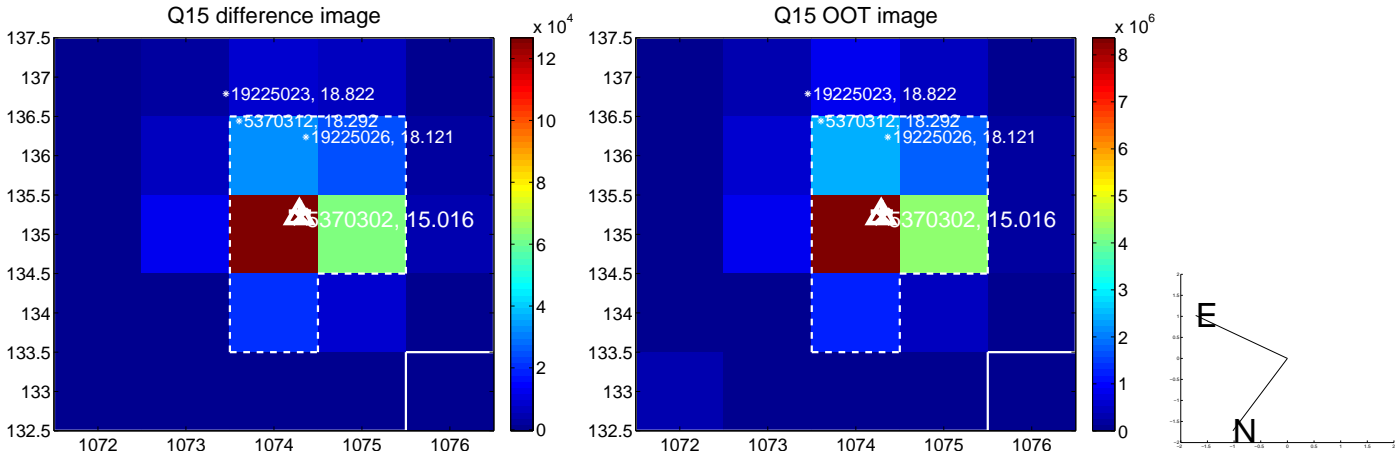
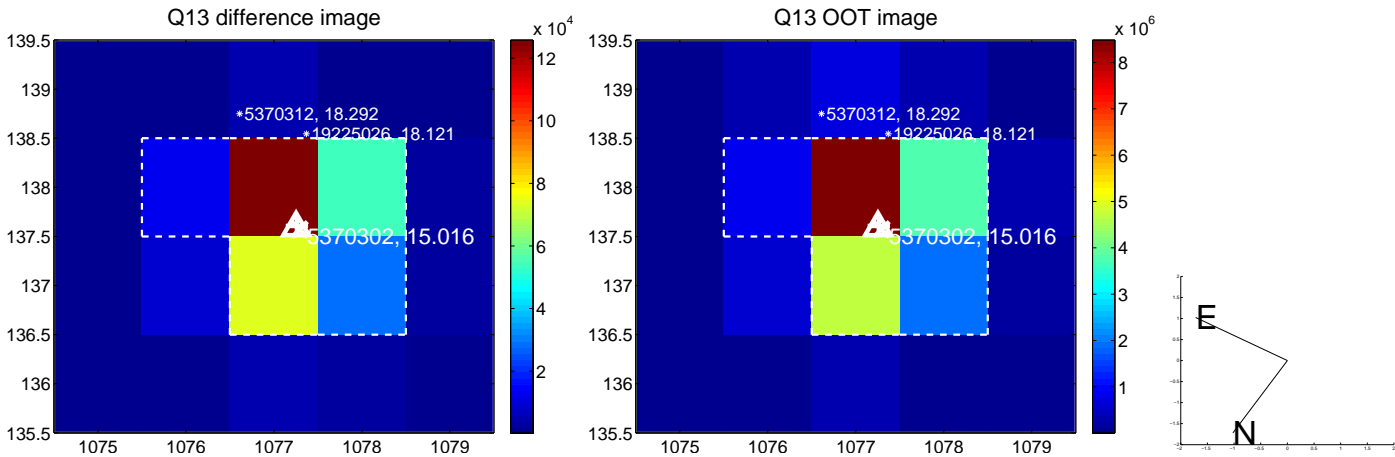
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



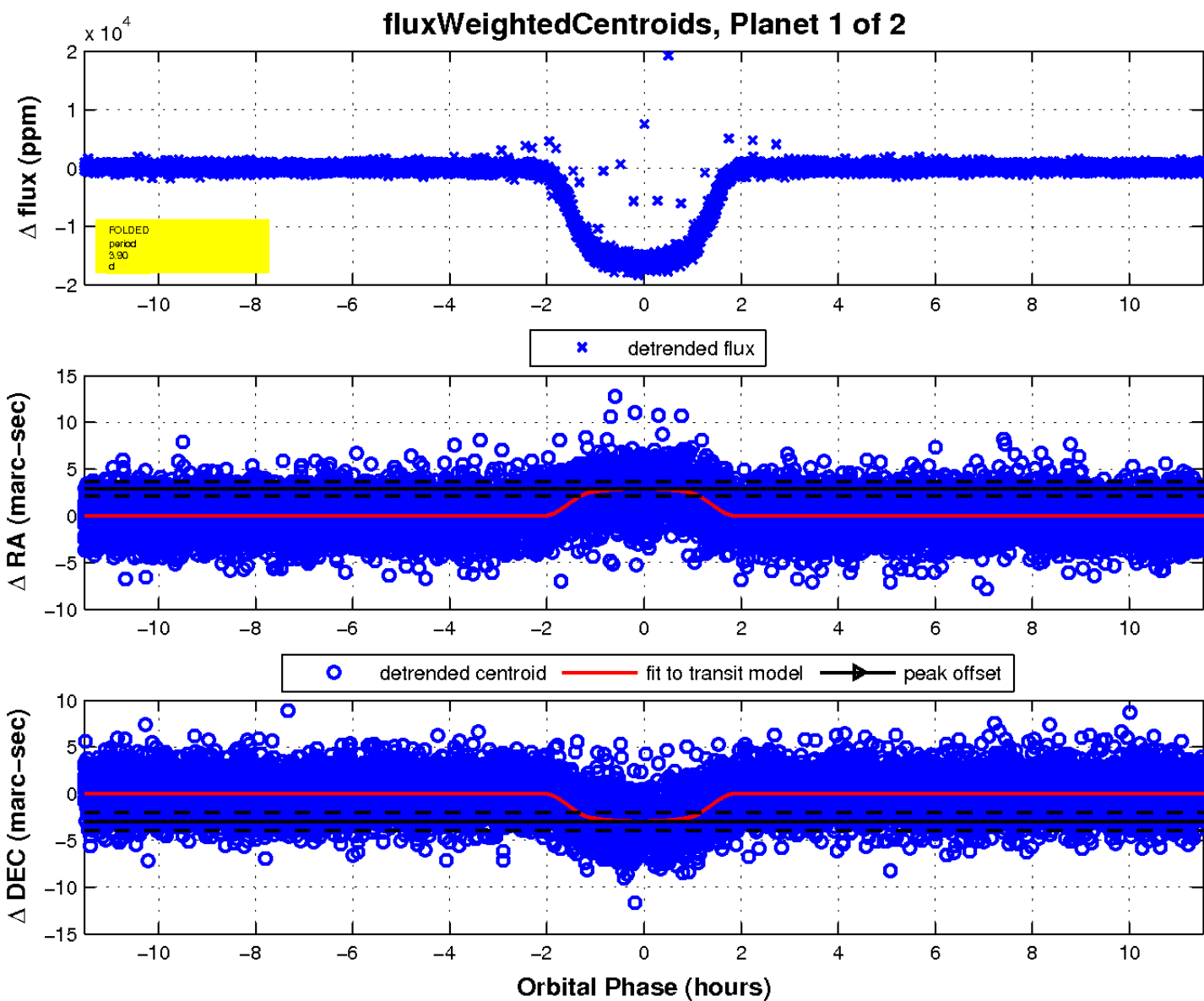
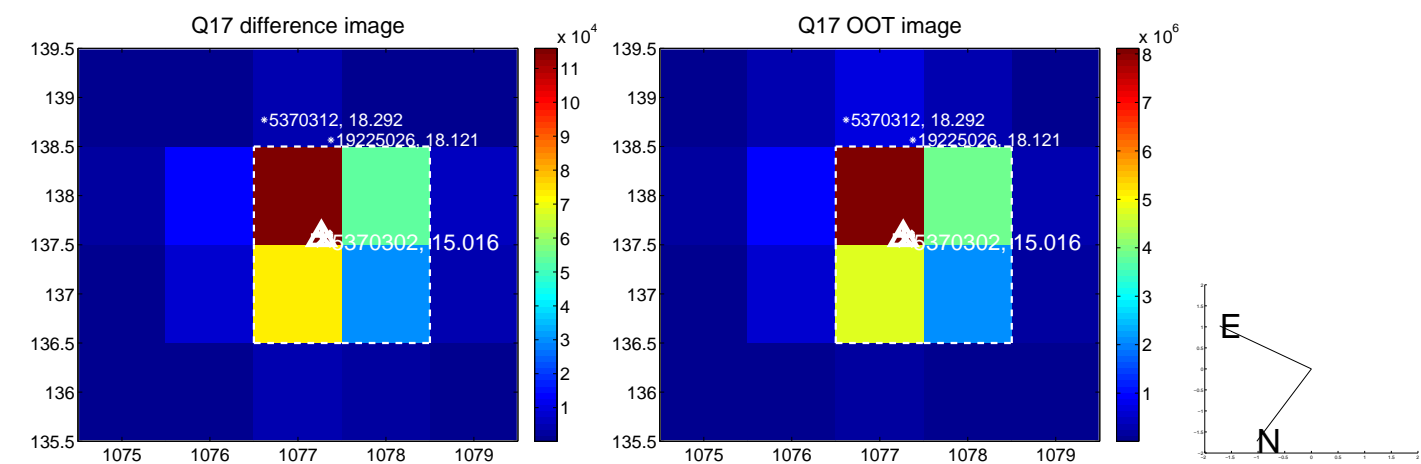
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

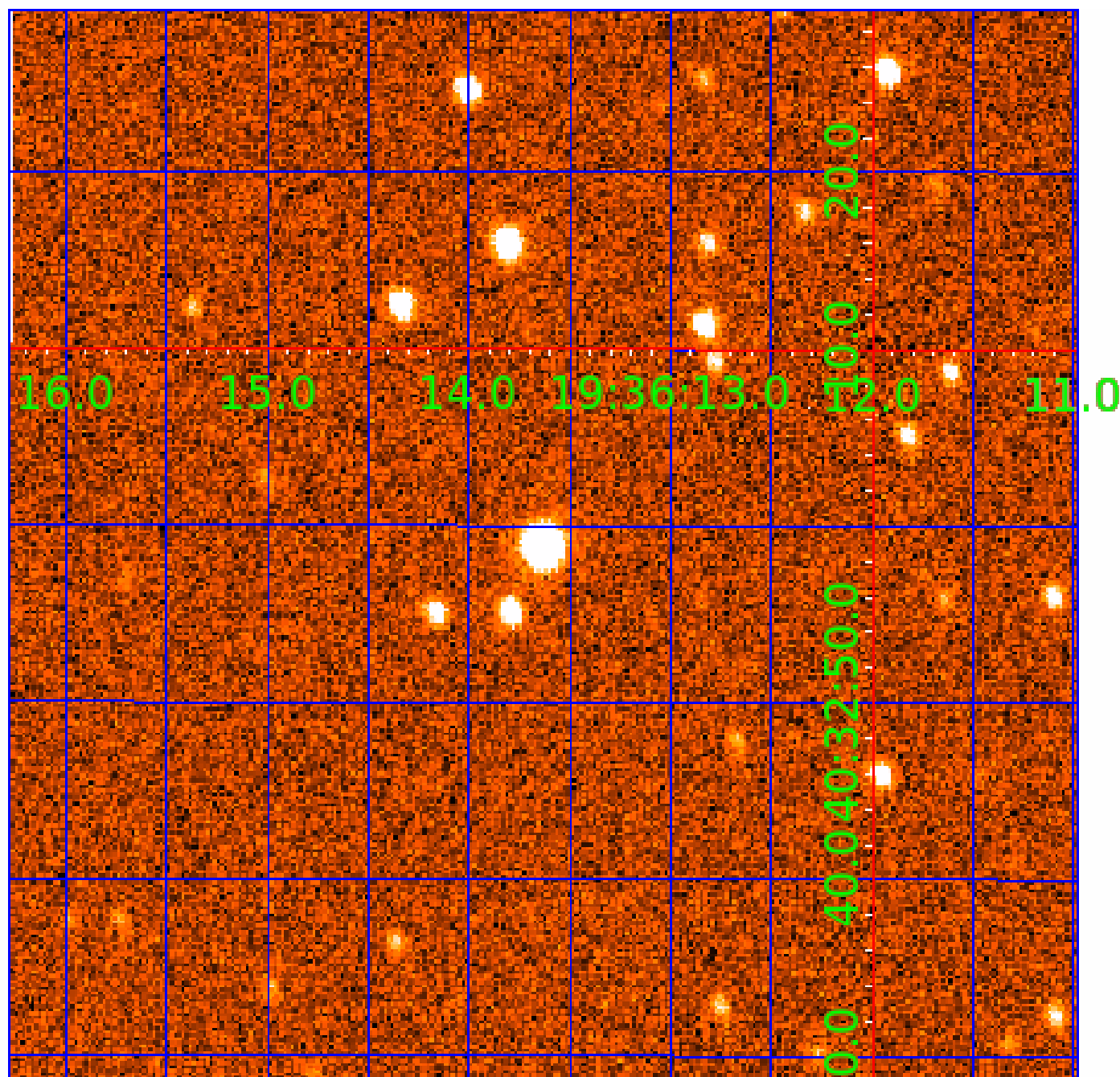


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005370302

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})
005370302-01	OBS	0831.01	3.904348	134.349181	16100.9	3.843	1224.3	1097.5	0.90	5810	12.31	352.41
005370302-02	OBS	No	3.904363	132.392996	444.0	3.568	33.7	36.0	0.90	5810	2.25	352.41

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005370302-01	OBS	FP	0.01	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
005370302-02	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 005370302-02

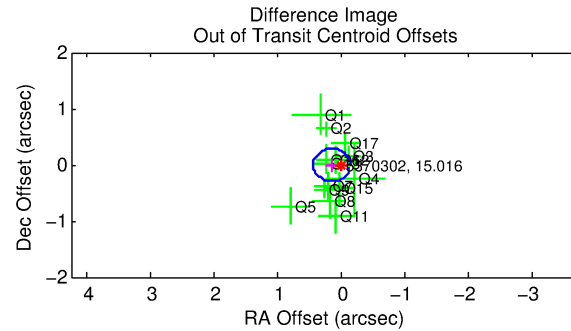
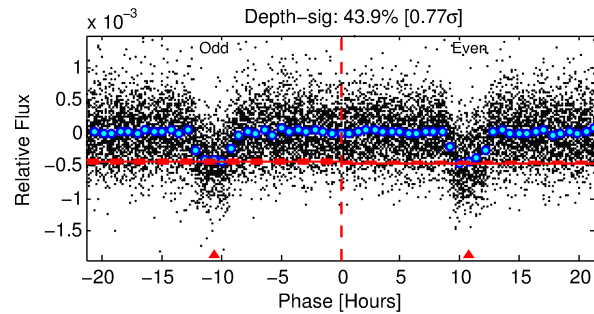
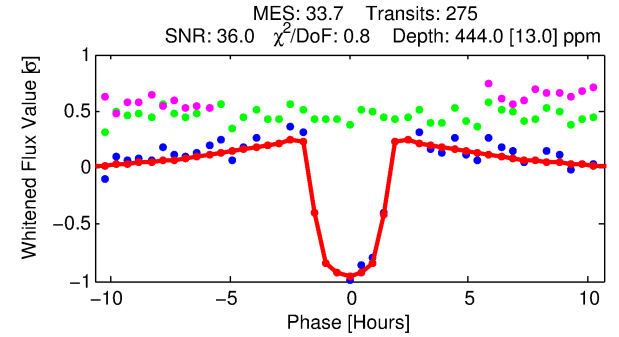
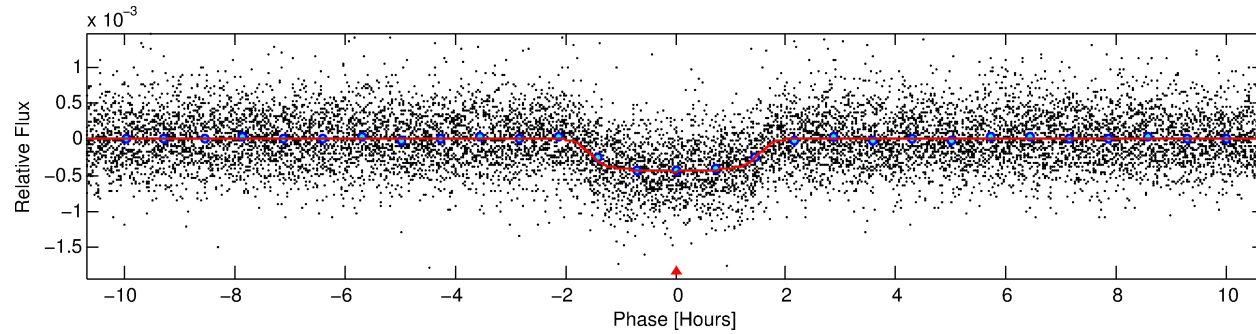
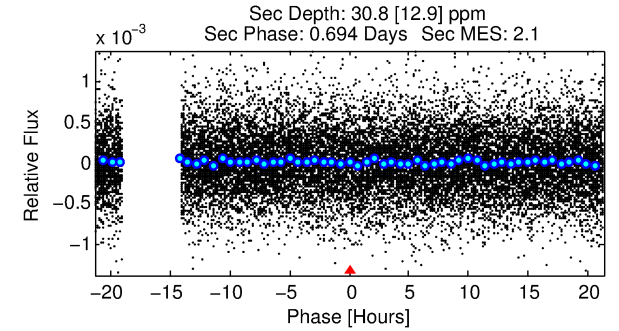
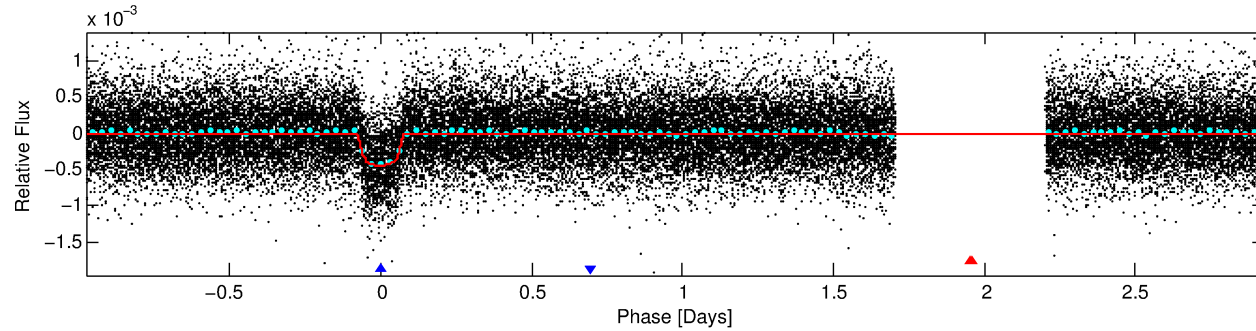
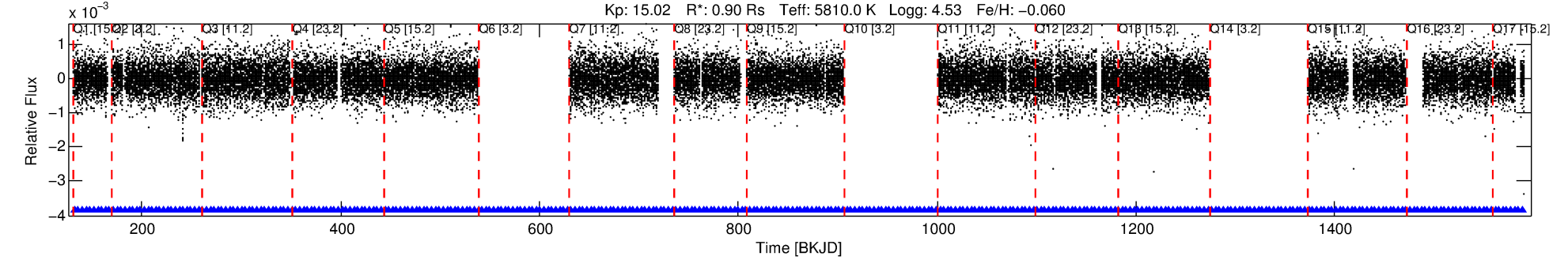
No Significant Match Found

DV One-Page Summary

KIC: 5370302 Candidate: 2 of 2 Period: 3.904 d

KOI: K00831 Corr: No Ephemeris Match

Kp: 15.02 R*: 0.90 Rs Teff: 5810.0 K Logg: 4.53 Fe/H: -0.060



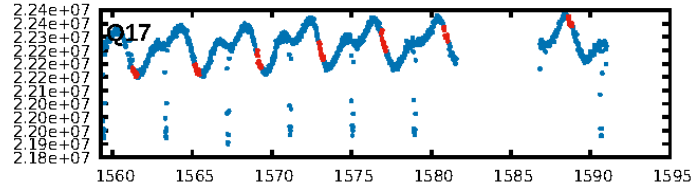
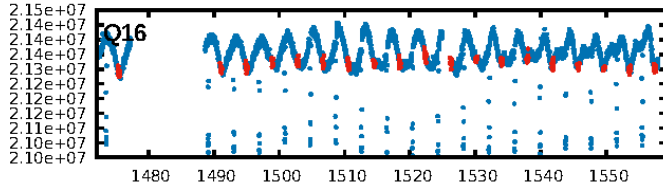
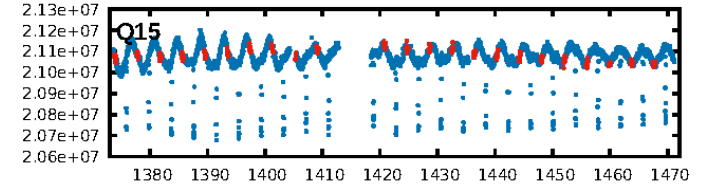
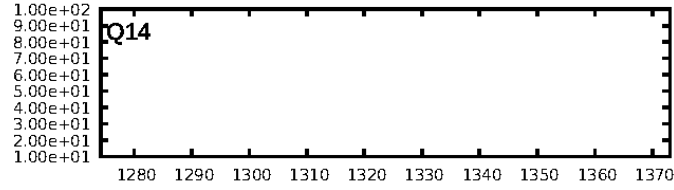
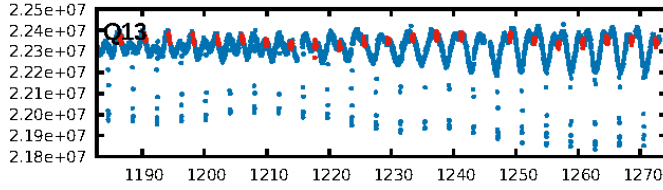
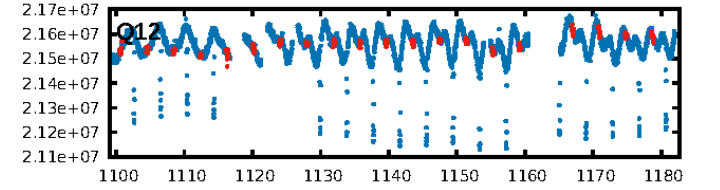
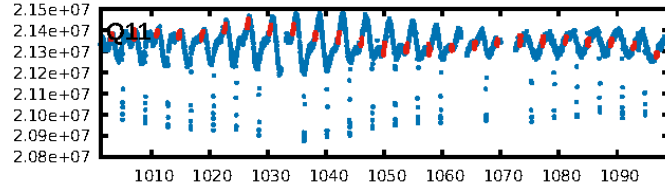
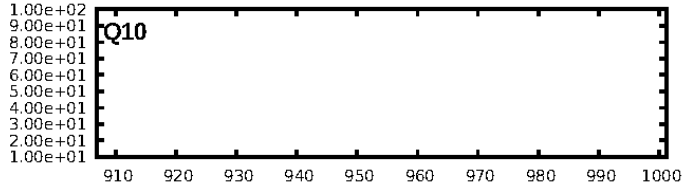
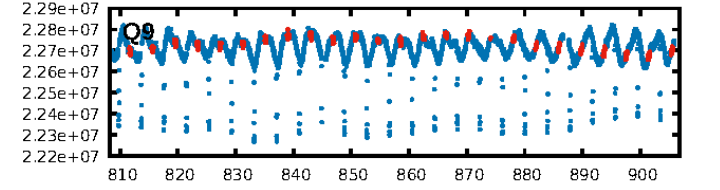
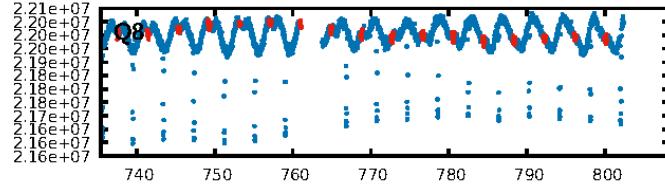
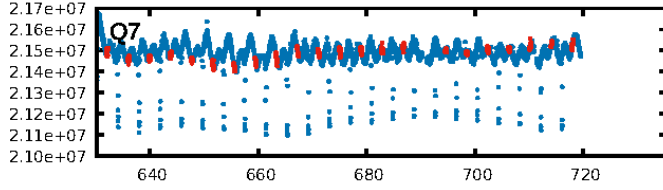
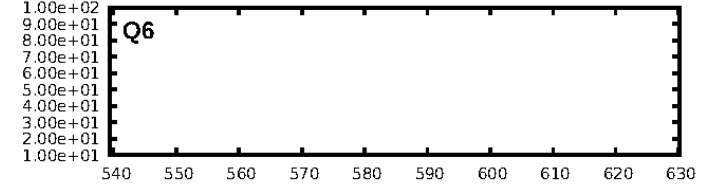
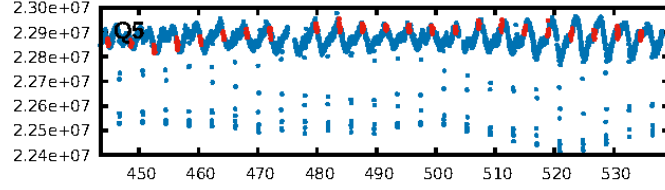
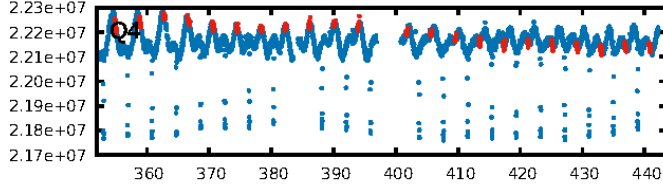
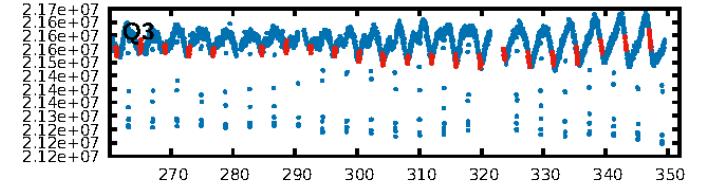
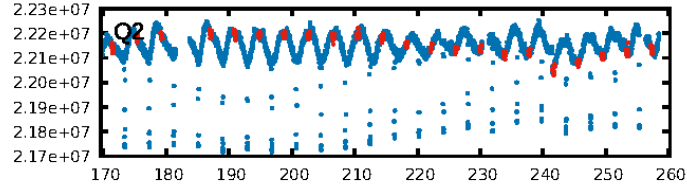
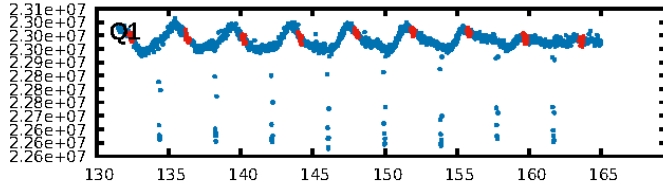
DV Fit Results:

Period = 3.90436 [0.00001] d
Epoch = 132.3930 [0.0013] BKJD
Rp/R* = 0.0229 [0.0016]
a/R* = 4.17 [1.28]
b = 0.90 [0.07]
Seff = 352.41 [134.67]
Teff = 1105 [106] K
Rp = 2.25 [0.67] Re
a = 0.0483 [0.0119] AU
Ag = 7.83 [4.48] [1.53σ]
Teffp = 2857 [327] K [5.10σ]

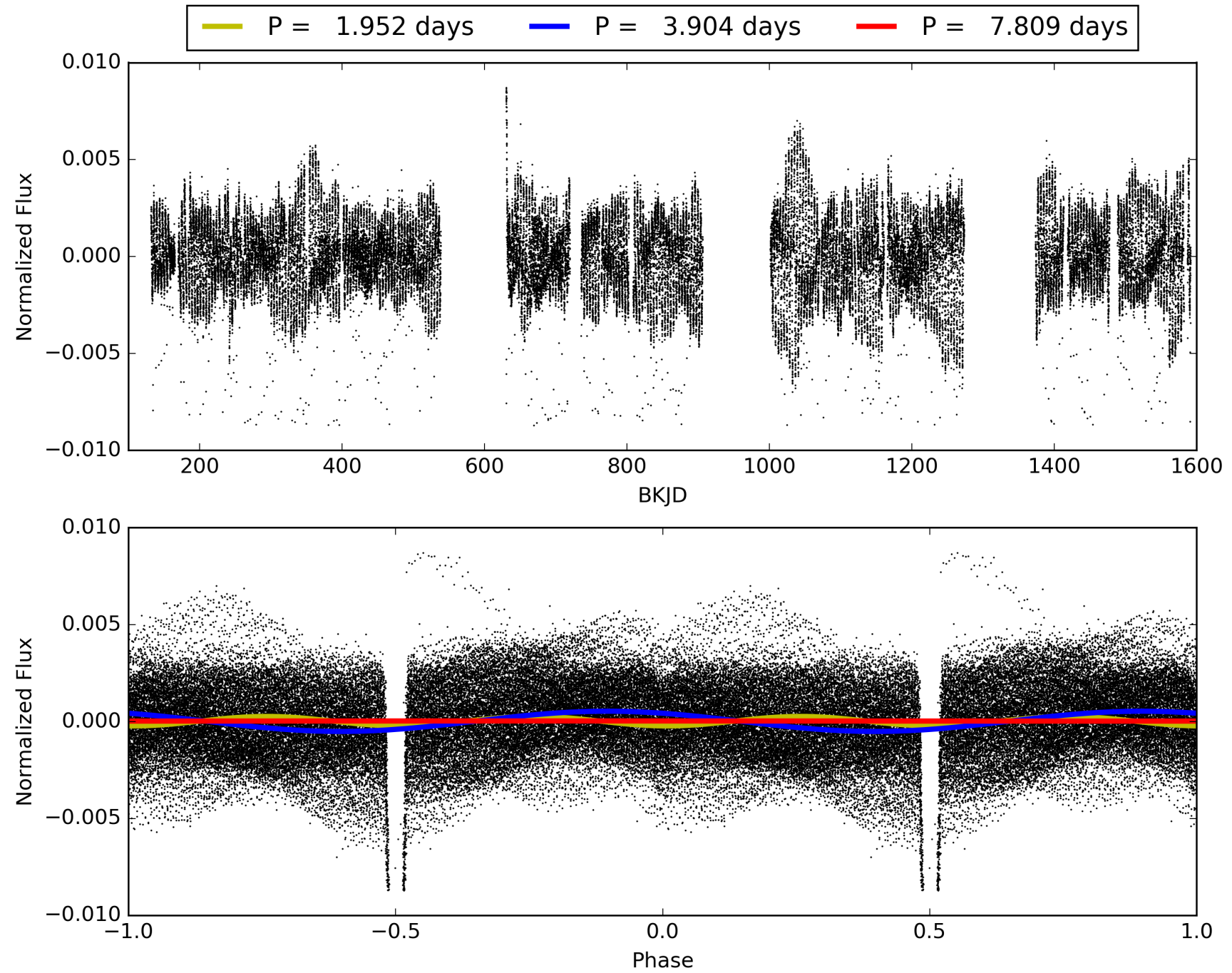
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.49e-236
RollingBand-fgt: 1.00 [259/259]
GhostDiagnostic-chr: 2.735
Centroid-sig: 50.7%
Centroid-so: 0.302 arcsec [0.91σ]
OotOffset-rm: 0.153 arcsec [1.58σ]
KicOffset-rm: 0.321 arcsec [2.65σ]
OotOffset-st: 1/4/4/5 [14]
KicOffset-st: 1/4/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 005370302-02, PDC Light Curves

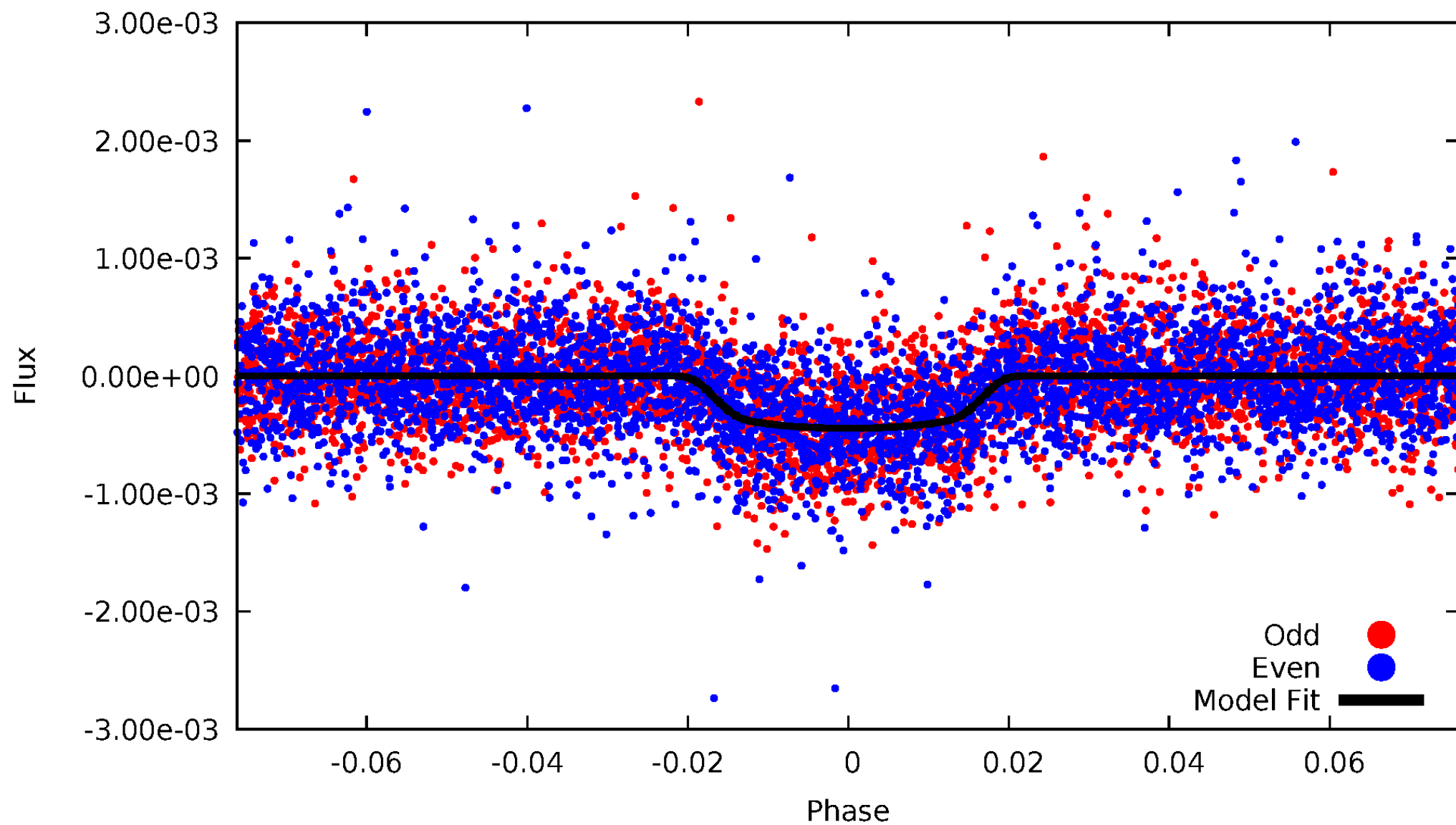


TCE 005370302-02



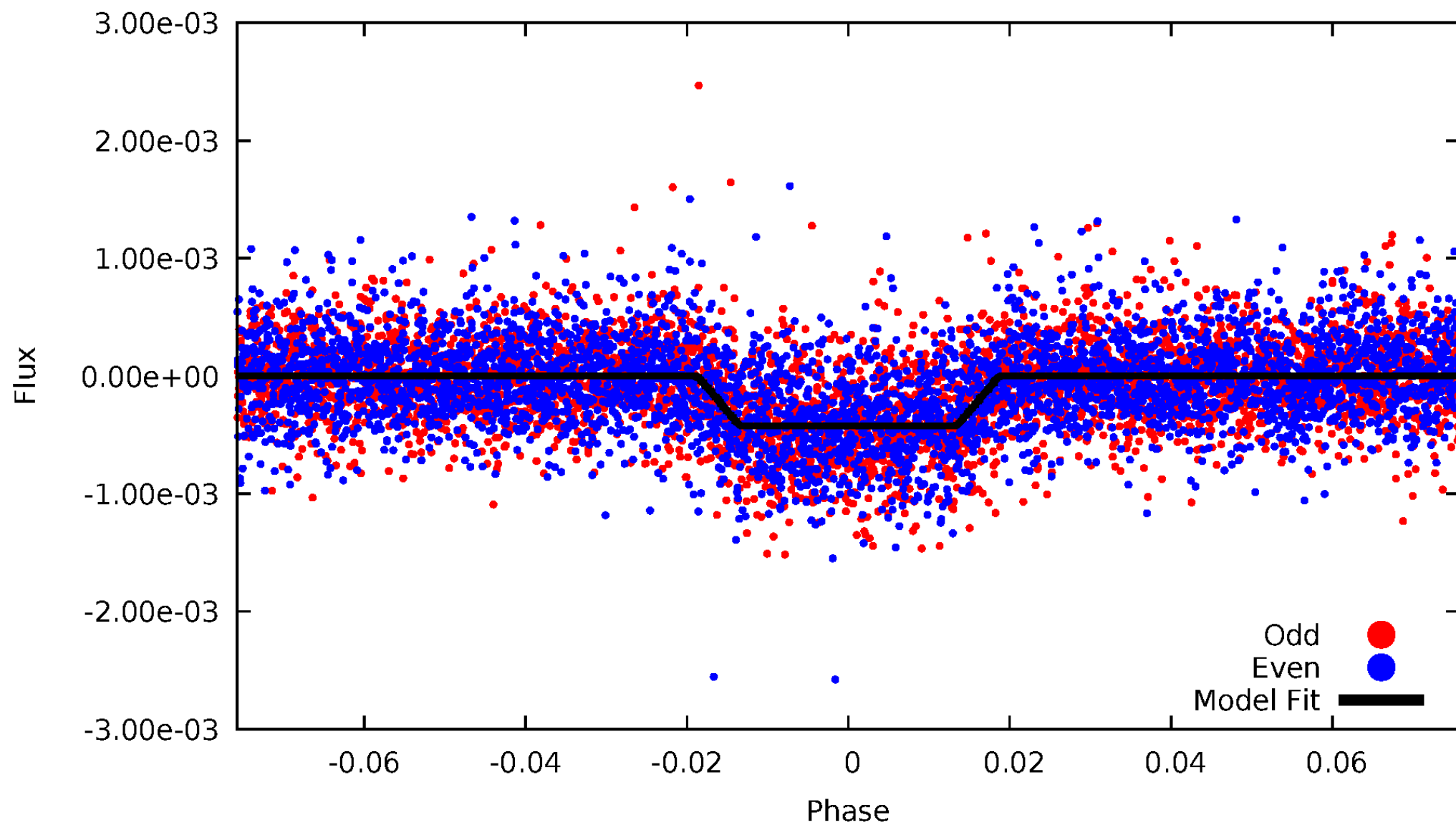
DV Odd/Even

TCE 005370302-02



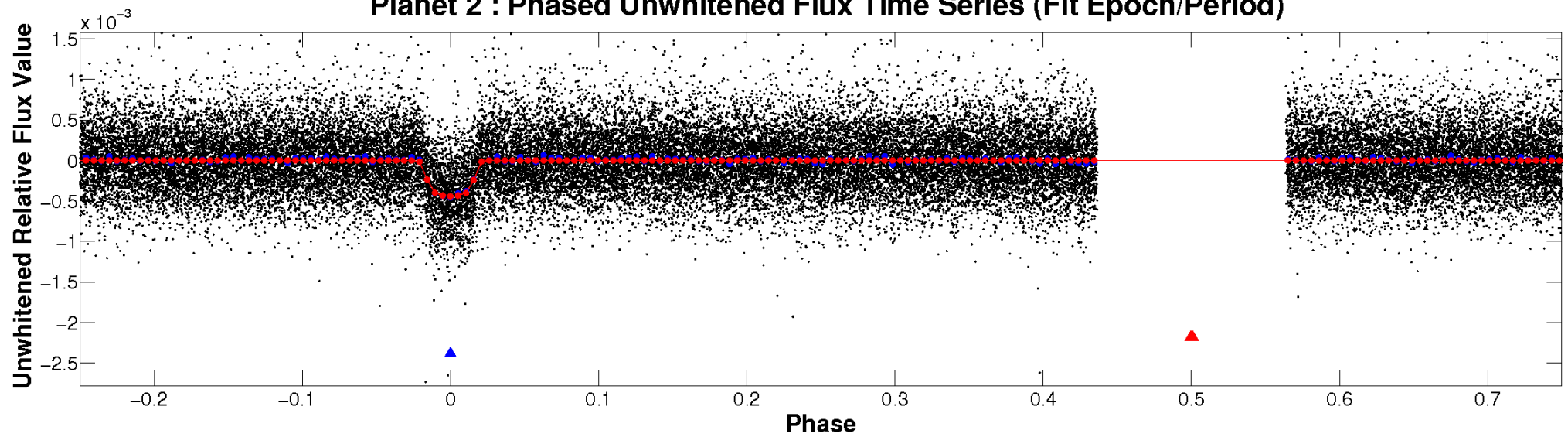
ALT Odd/Even

TCE 005370302-02

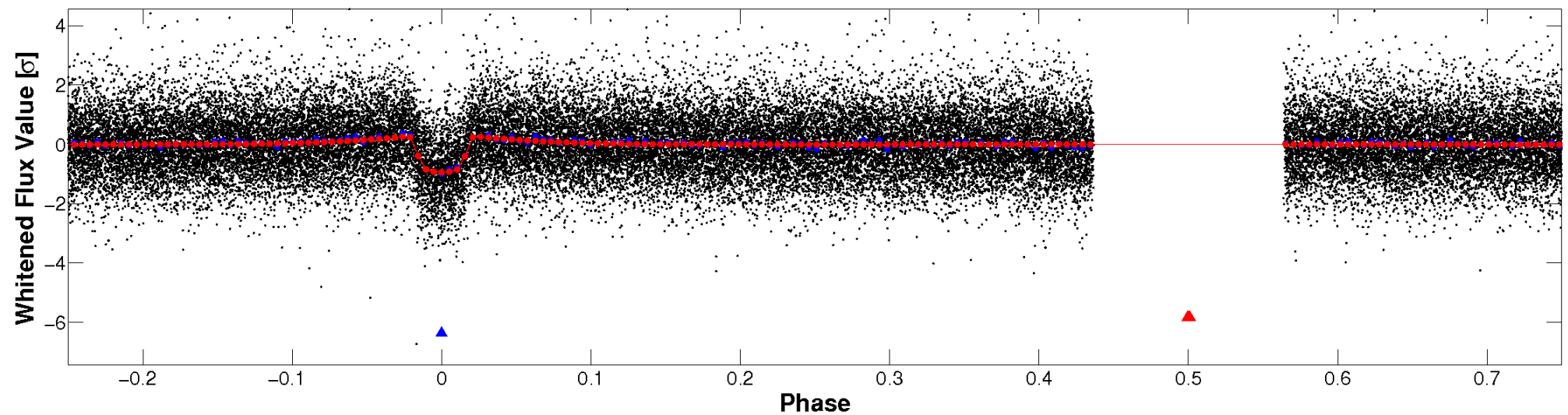


Non-Whitened Vs. Whitened Light Curve

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

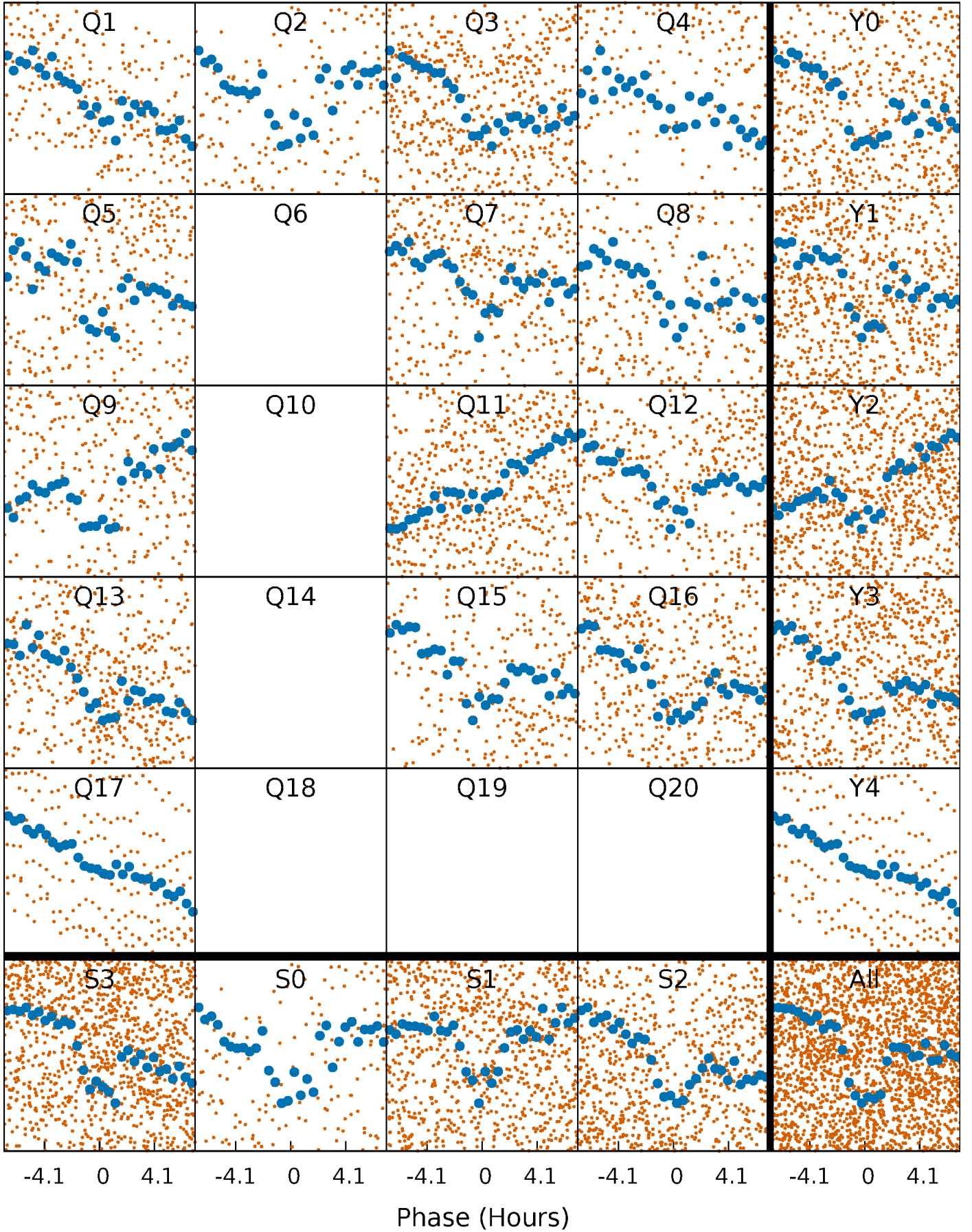


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



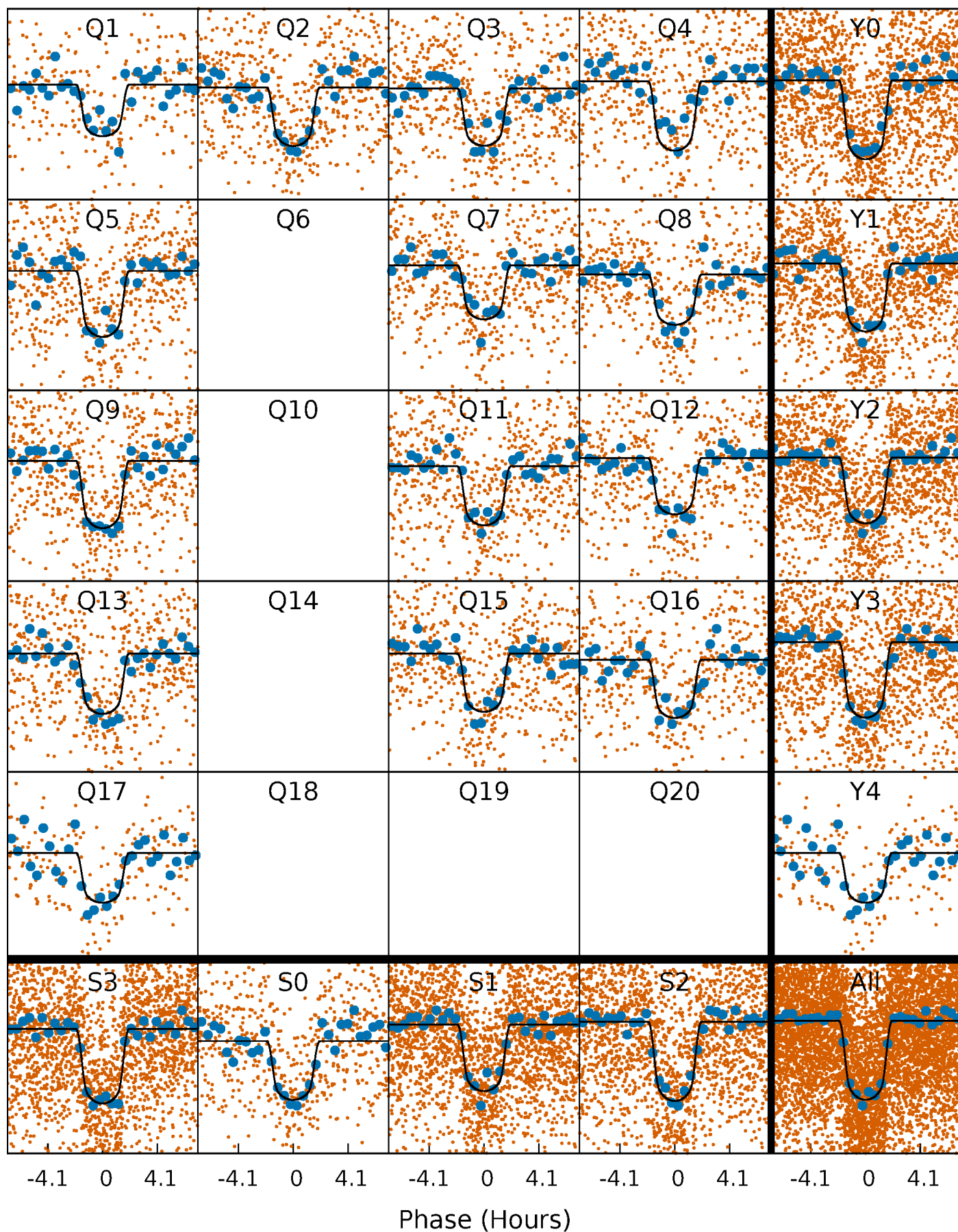
PDC Quarter-Phased Transit Curves

TCE 005370302-02 $P = 3.904363$ Days $T_0 = 132.392996$ (BKJD)



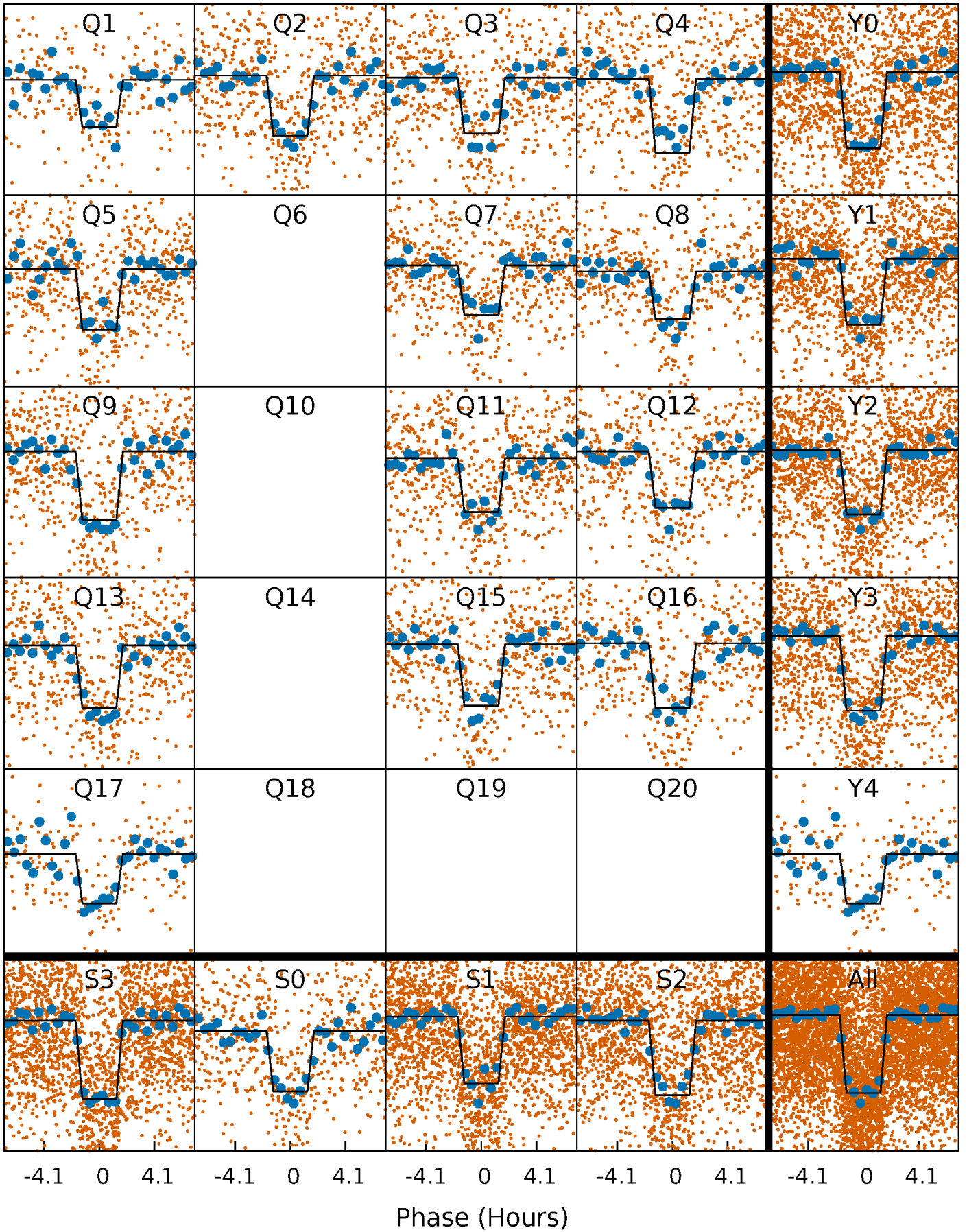
DV Quarter-Phased Transit Curves

TCE 005370302-02 P= 3.904363 Days $T_0=132.392996$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

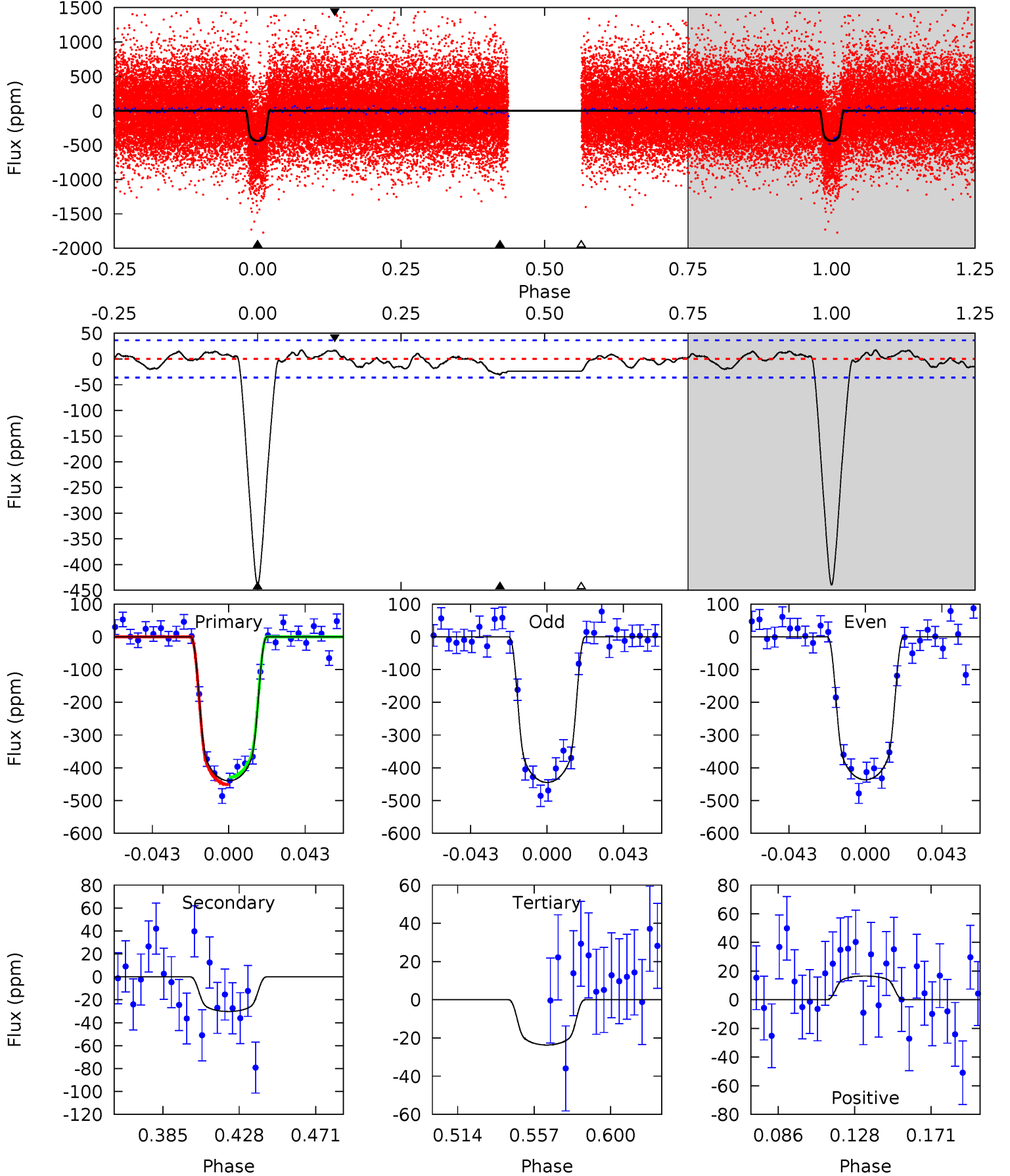
TCE 005370302-02 P= 3.904363 Days $T_0=132.392845$ (BKJD)



DV Model-Shift Uniqueness Test

005370302-02, P = 3.904363 Days, E = 128.488633 Days

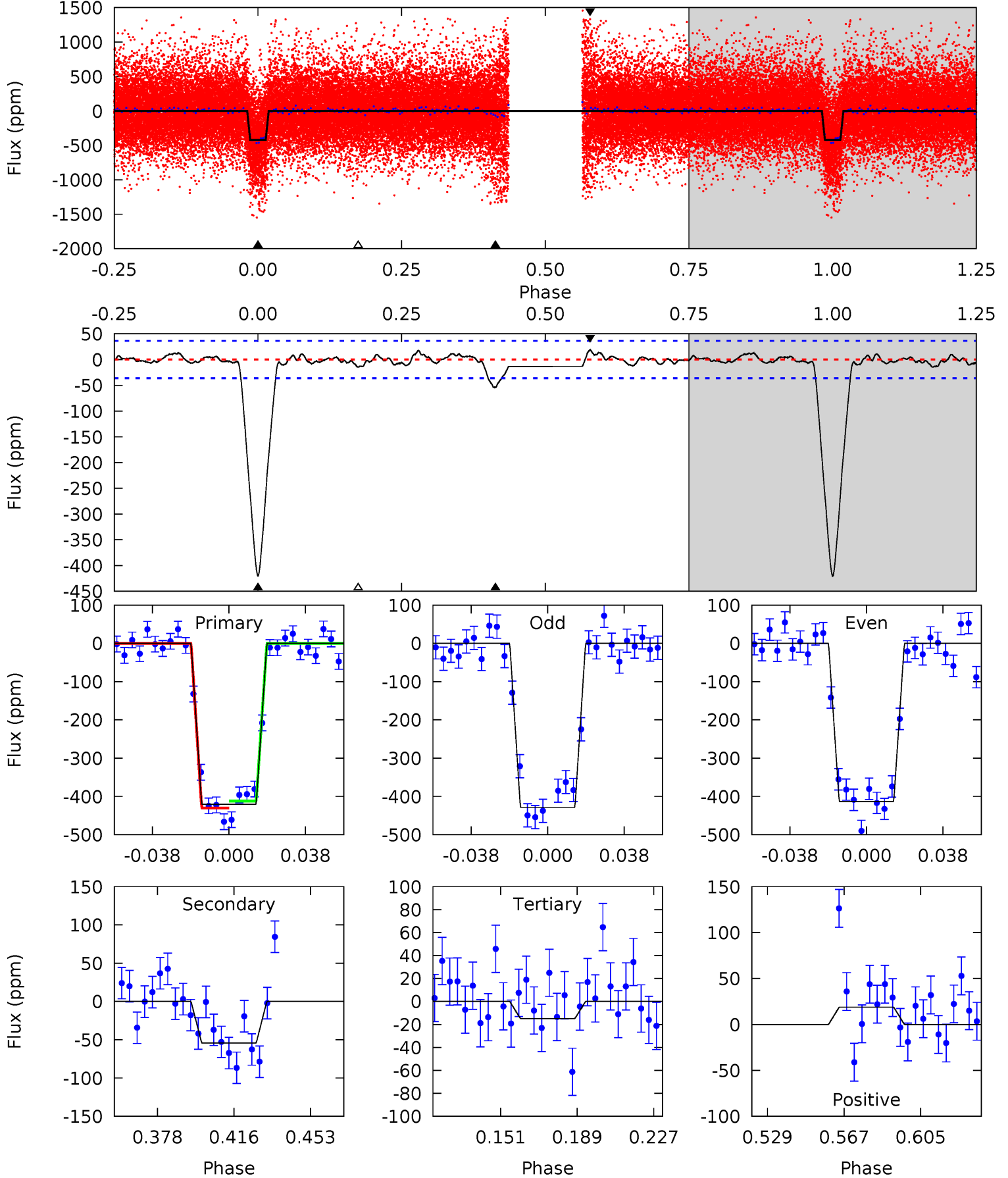
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
57.4	3.95	3.09	2.17	4.74	2.03	1.21	54.3	55.2	0.86	1.79	0.52	1.02	0.04	1.45



Alt Model-Shift Uniqueness Test

005370302-02, P = 3.904363 Days, E = 128.488482 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
55.3	7.13	1.96	2.47	4.76	2.08	0.86	53.3	52.8	5.17	4.66	0.99	1.05	0.04	1.24



Stellar Parameters For KIC 005370302

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5810^{+157}_{-175}	$4.526^{+0.050}_{-0.200}$	$-0.060^{+0.250}_{-0.300}$	$0.898^{+0.260}_{-0.087}$	$0.989^{+0.116}_{-0.116}$	$1.920^{+0.388}_{-1.000}$
	+3%/-3%	+1%/-4%	+417%/-500%	+29%/-10%	+12%/-12%	+20%/-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 005370302-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-30 ± 8	$2.30^{+0.38}_{-0.23}$	1572^{+109}_{-74}	3355^{+155}_{-180}	$6.948^{+2.684}_{-2.344}$
Alt.	-54 ± 8	$2.08^{+0.35}_{-0.24}$	1576^{+102}_{-72}	3827^{+160}_{-159}	15^{+5}_{-4}

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

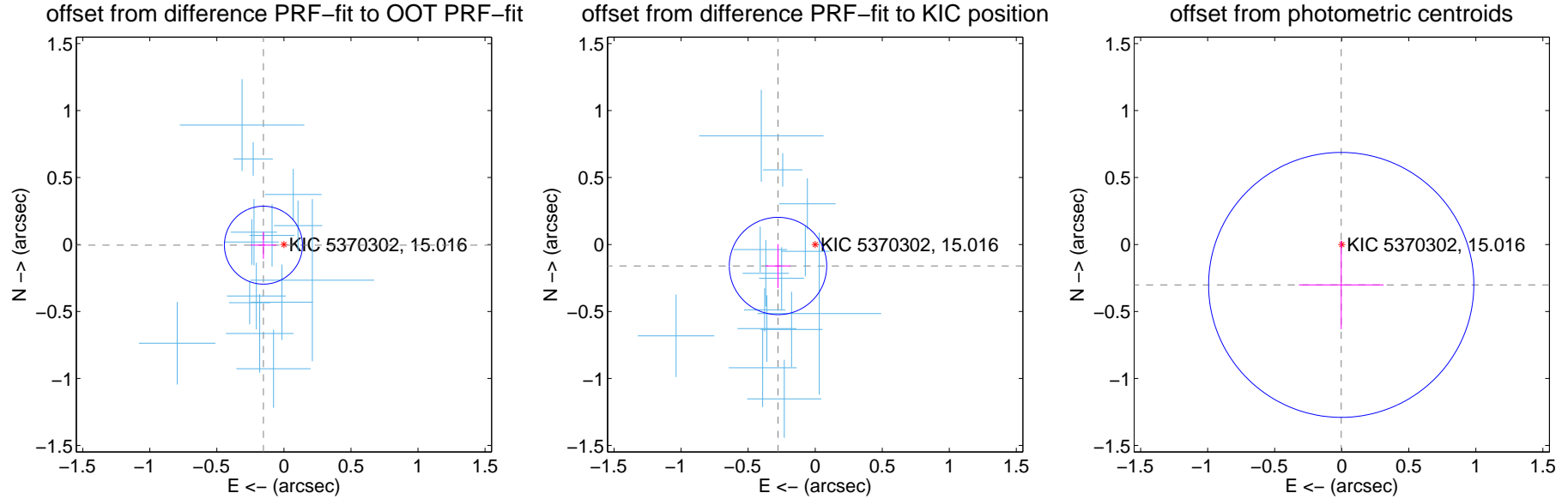
DV Centroid Data

Supplemental centroid analysis for 005370302-02. Kepler magnitude: 15.02. Transit SNR 35.98

There are 14 quarters with good PRF difference image offsets

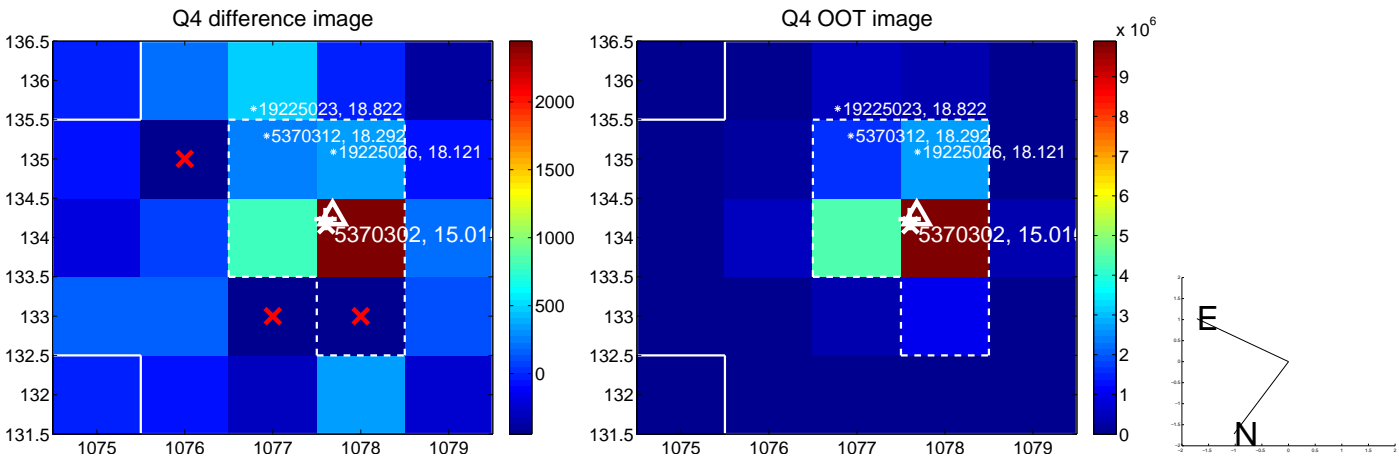
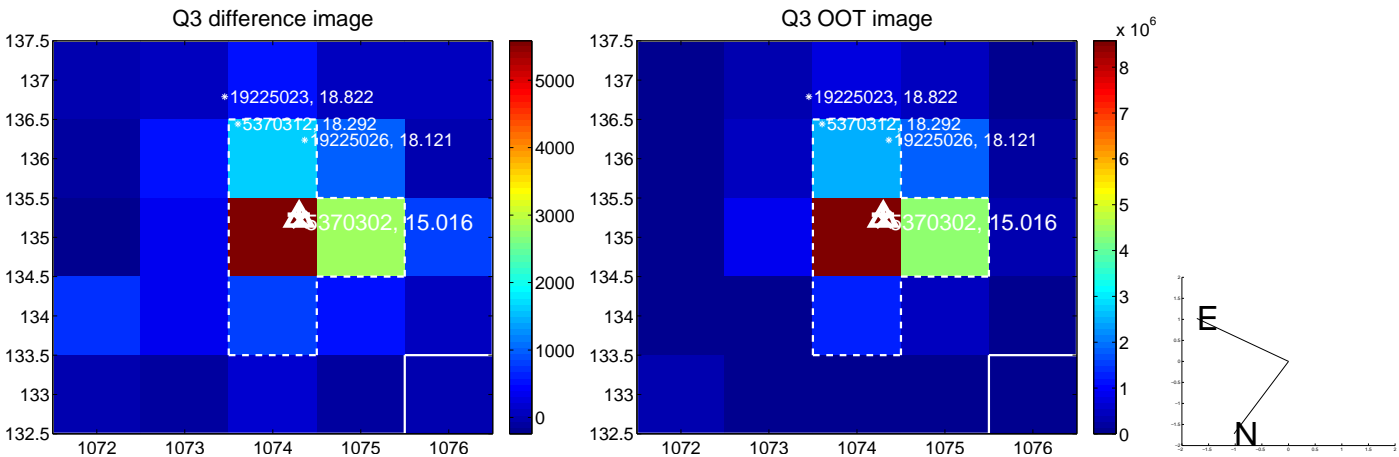
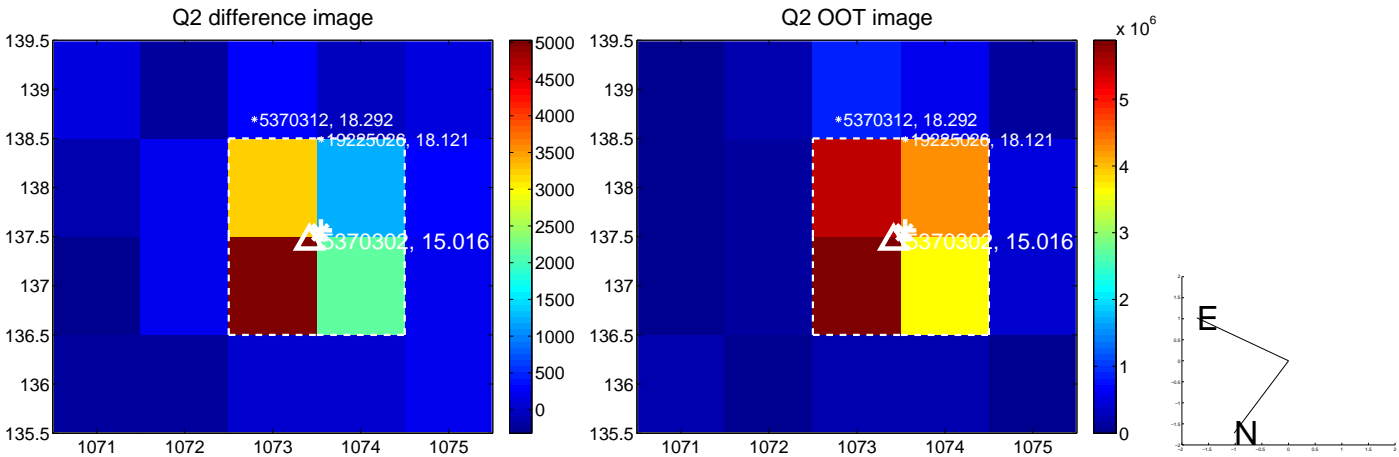
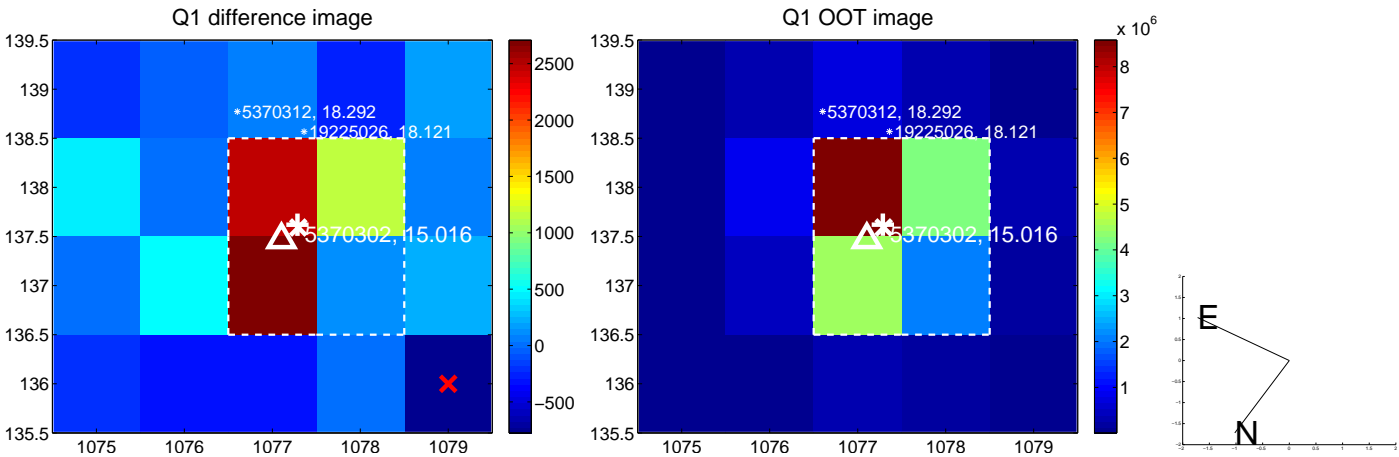
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.153 ± 0.097	1.58	0.153 ± 0.097	-0.005 ± 0.102
PRF-fit source offset from KIC position	0.321 ± 0.121	2.65	0.277 ± 0.092	-0.160 ± 0.164
photometric centroid source offset	0.30 ± 0.33	0.91	0.00 ± 0.32	-0.30 ± 0.33

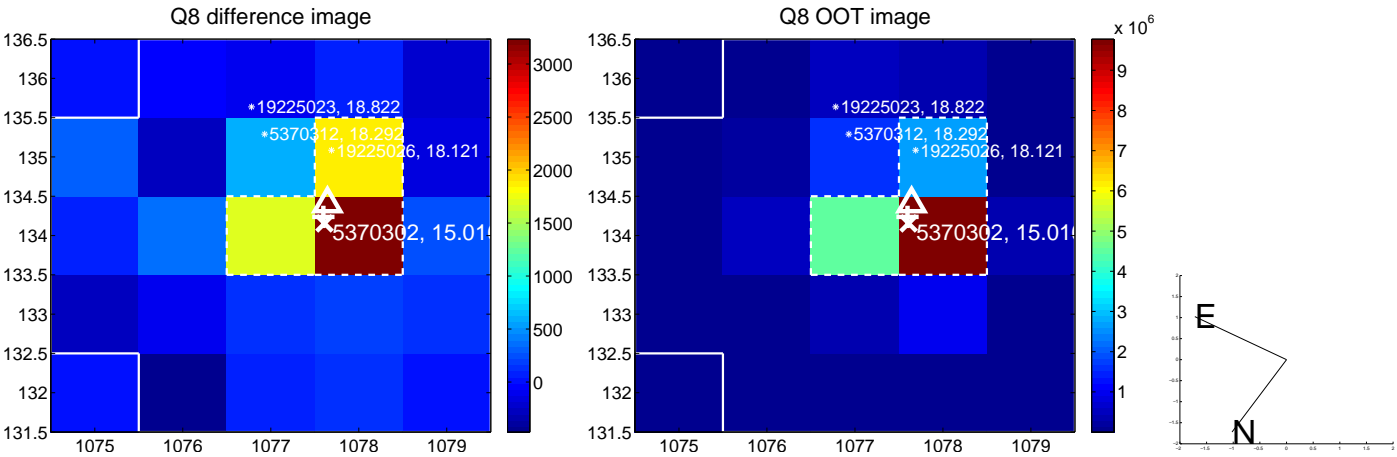
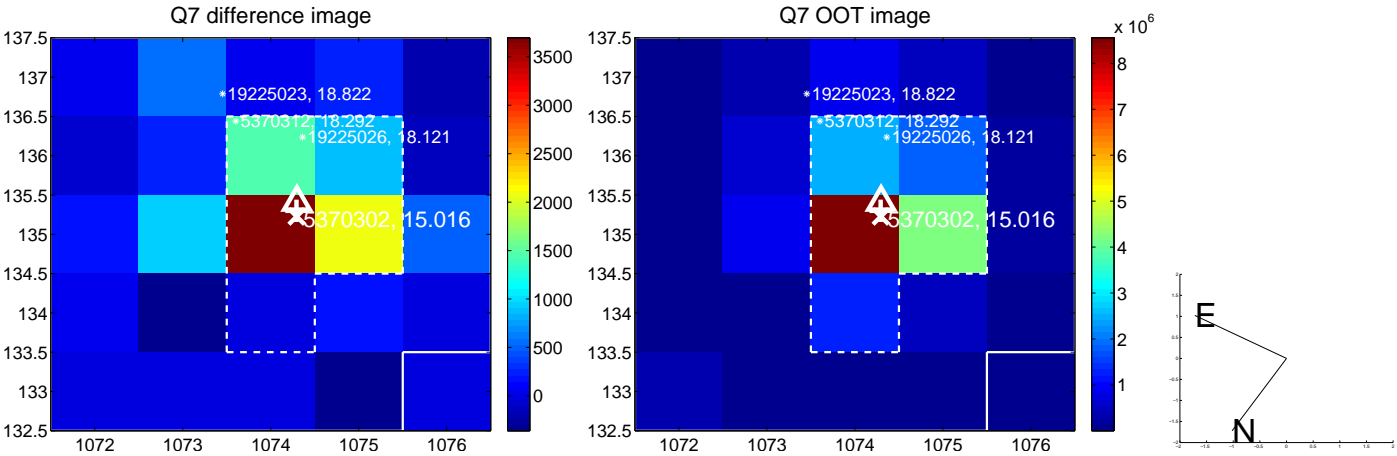
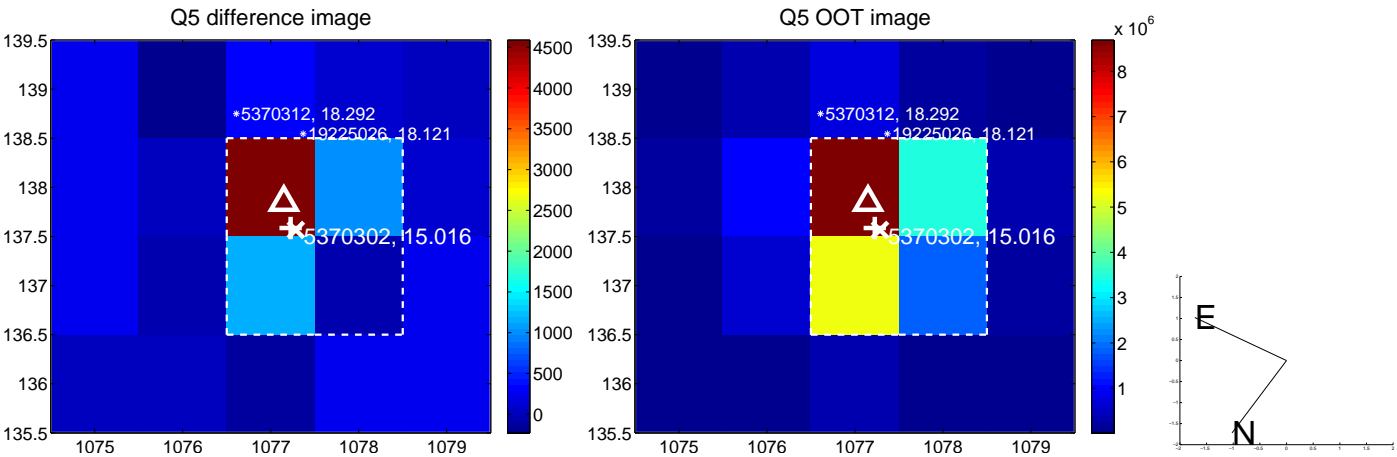


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

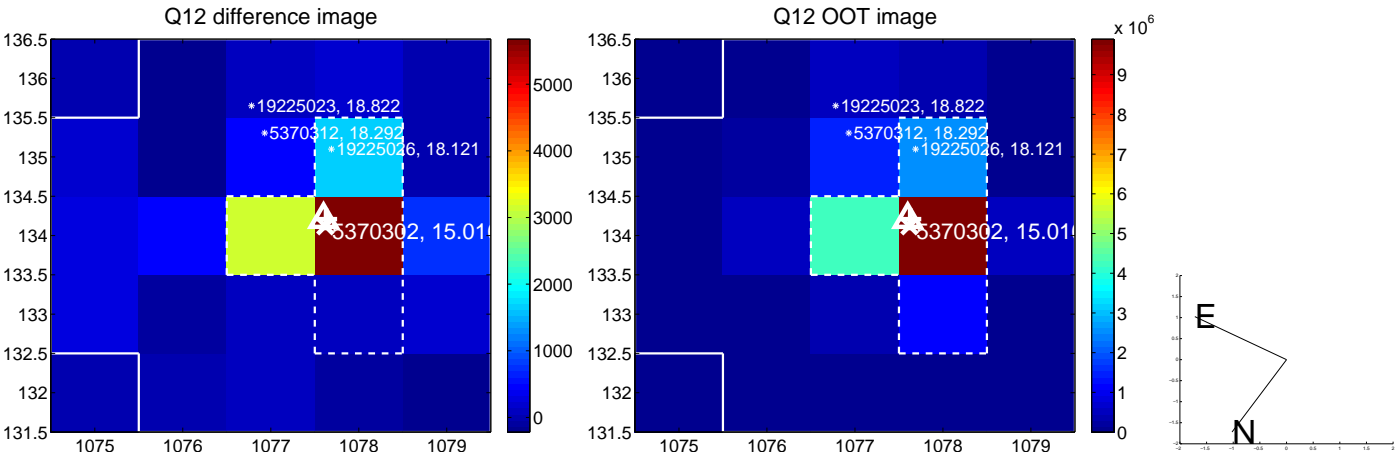
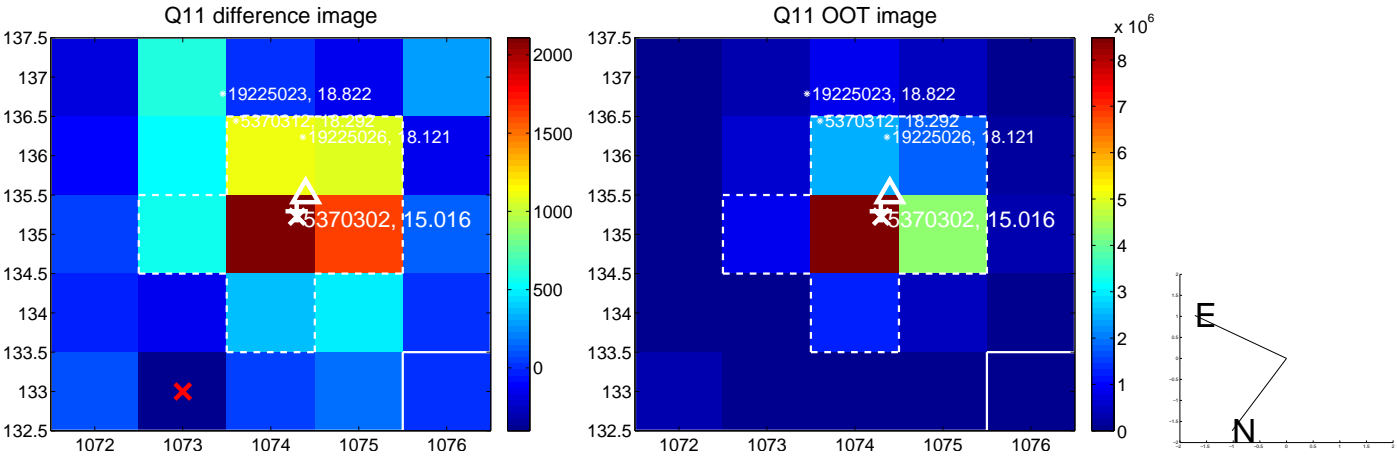
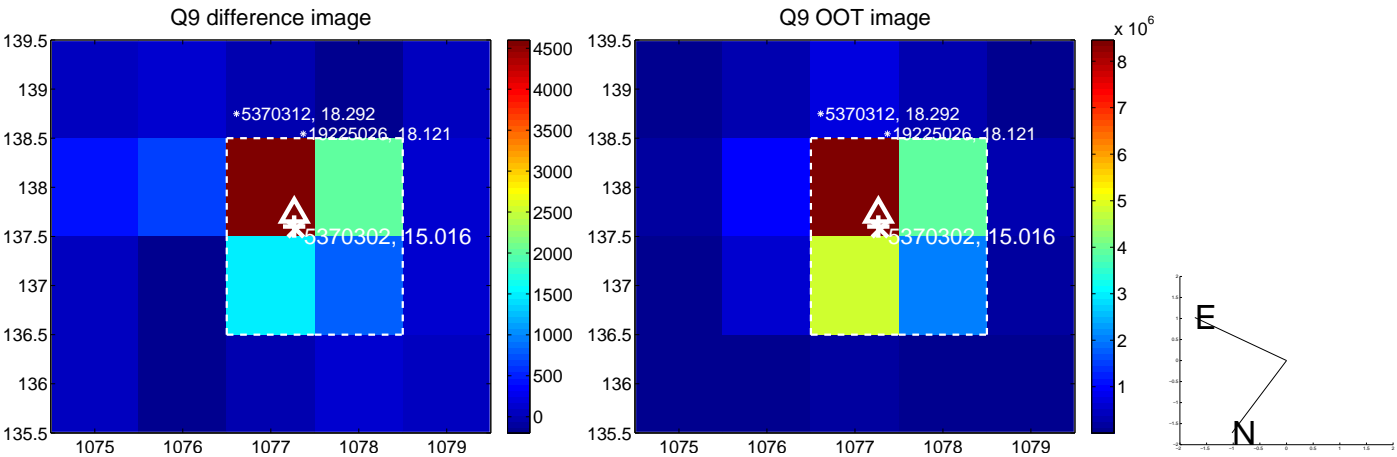
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



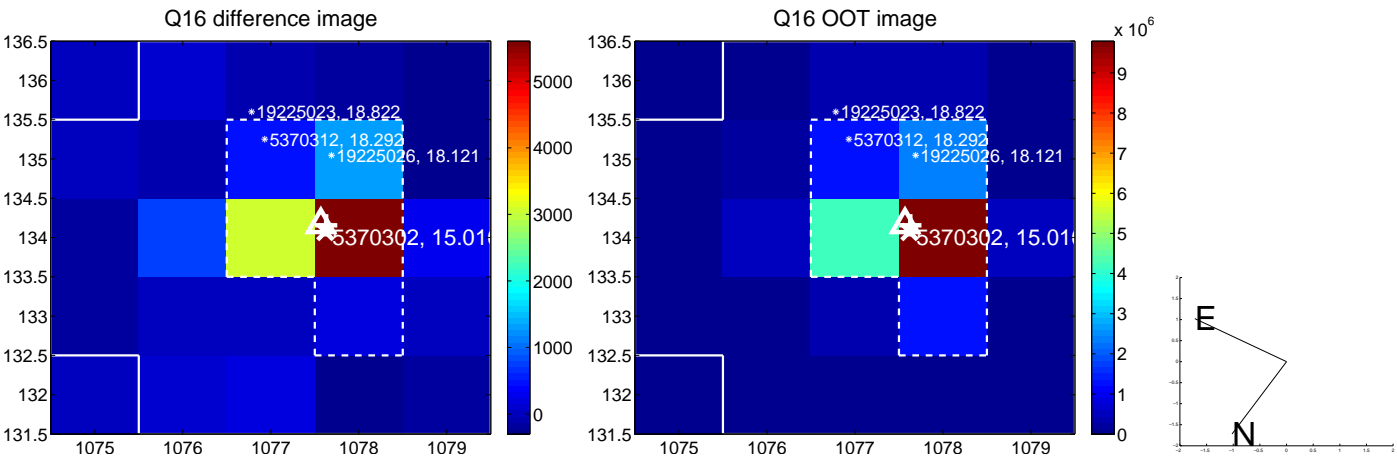
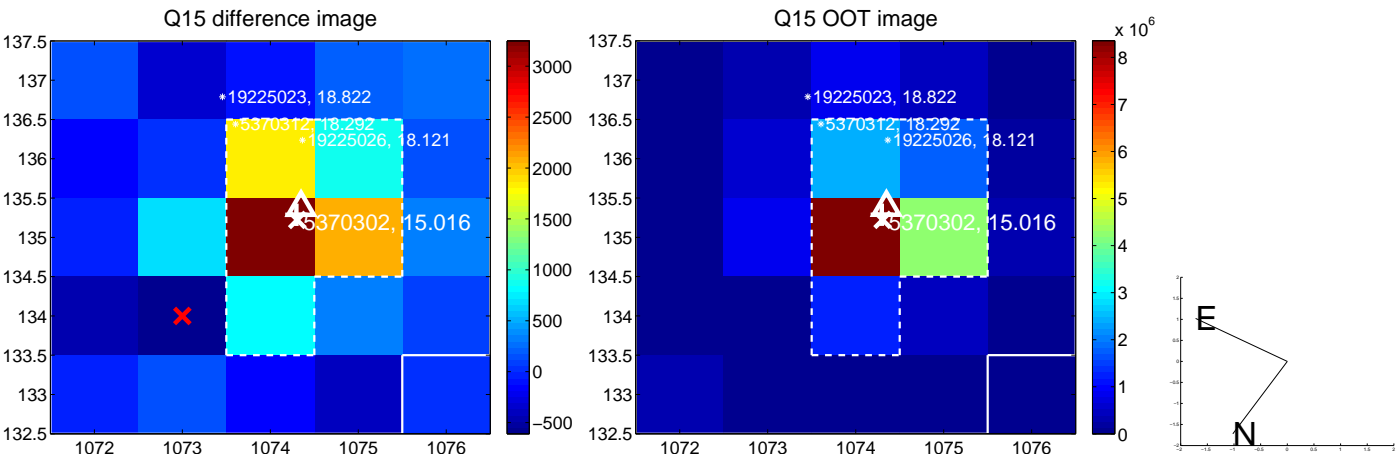
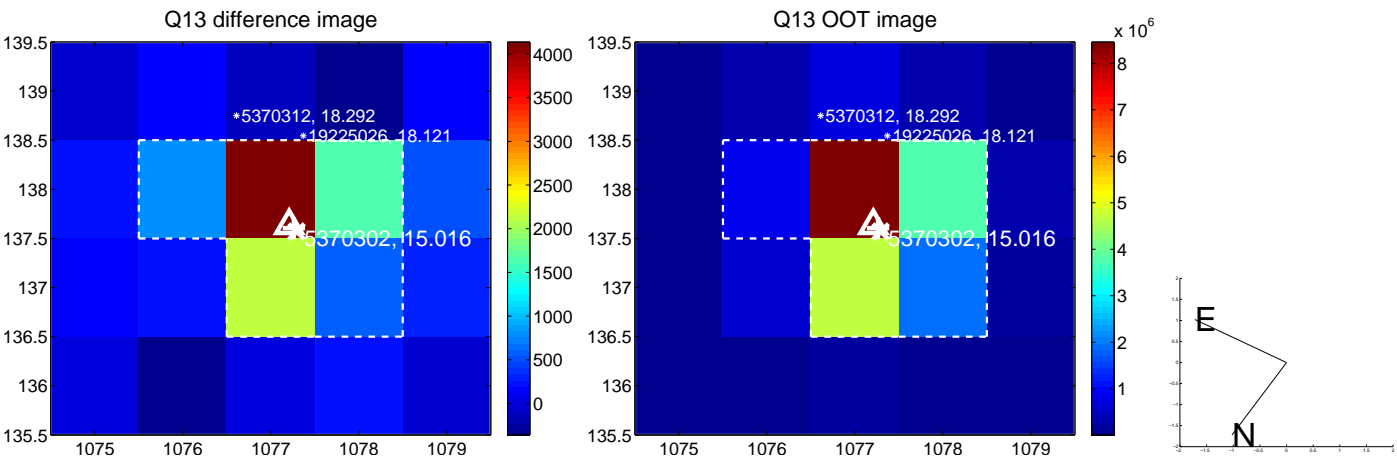
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



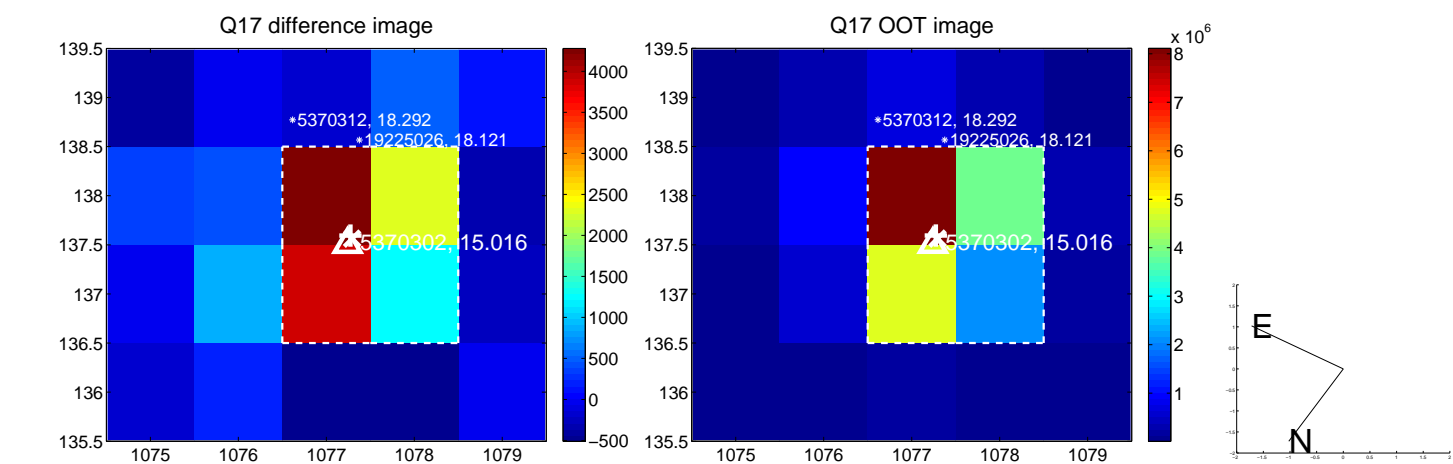
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



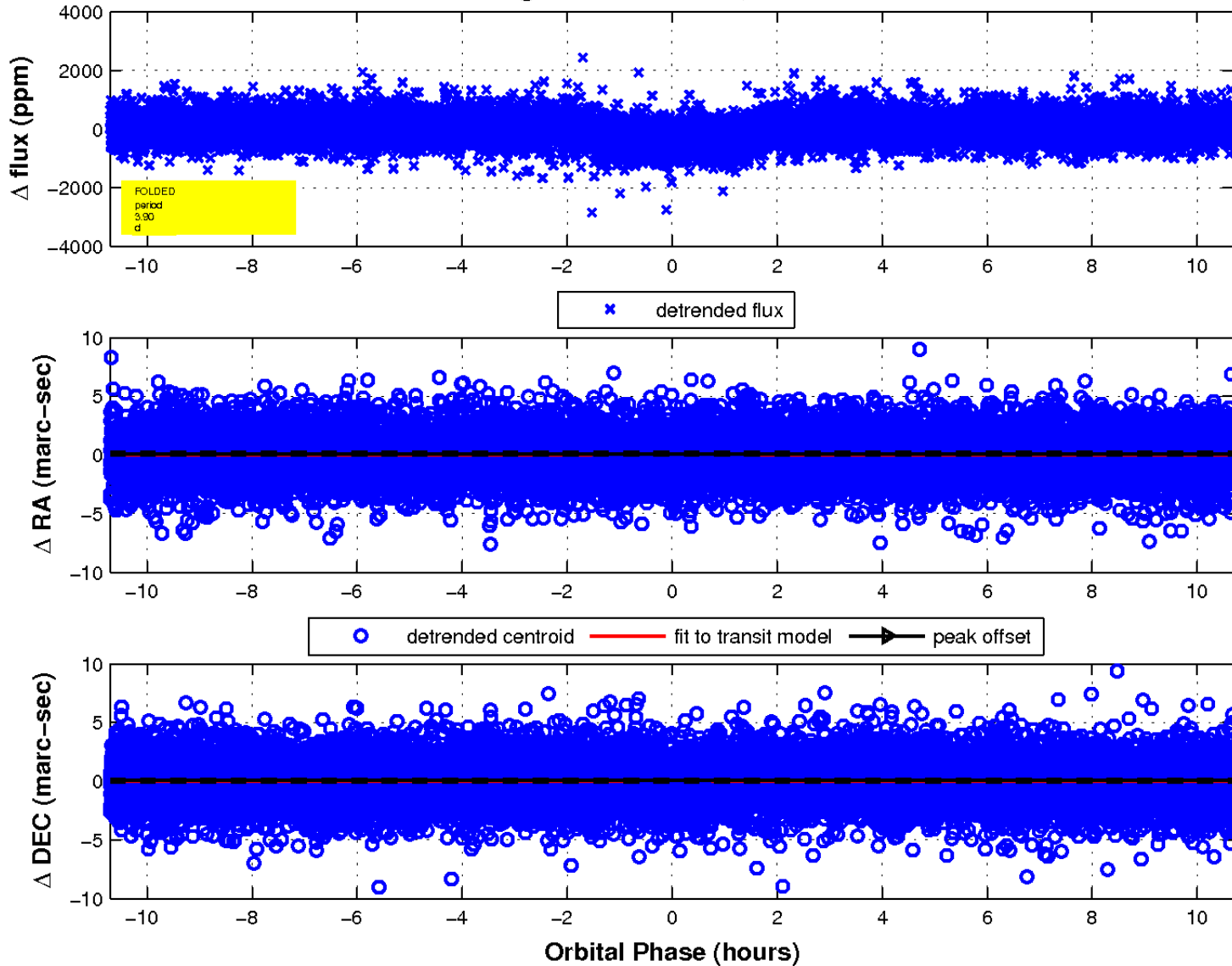
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

