

KIC 003973504

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})
003973504-01	OBS	6377.01	4.318725	131.605974	59179.3	2.688	1560.3	1385.6	0.92	5896	31.62	335.16
003973504-02	OBS	No	4.318730	133.764546	18109.8	2.594	481.0	445.8	0.92	5896	20.56	335.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003973504-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
003973504-02	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 003973504-01

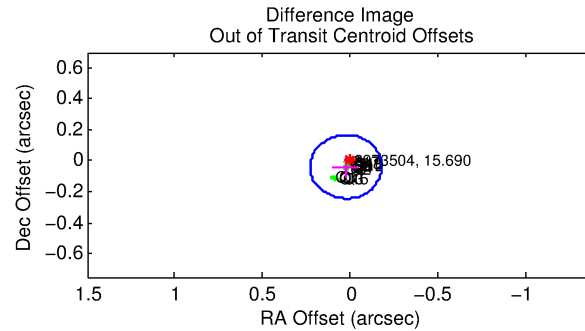
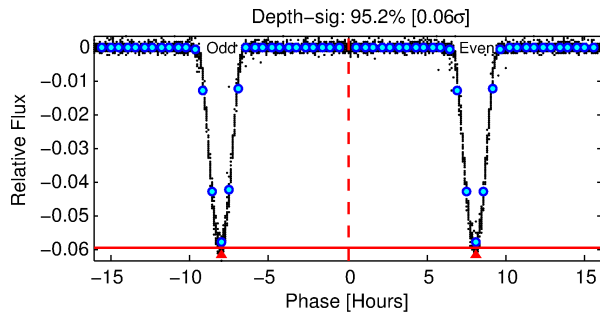
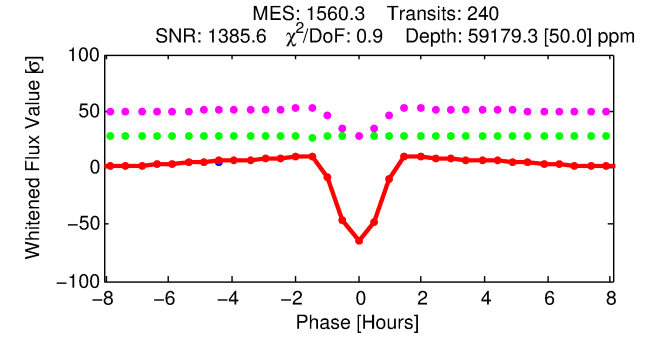
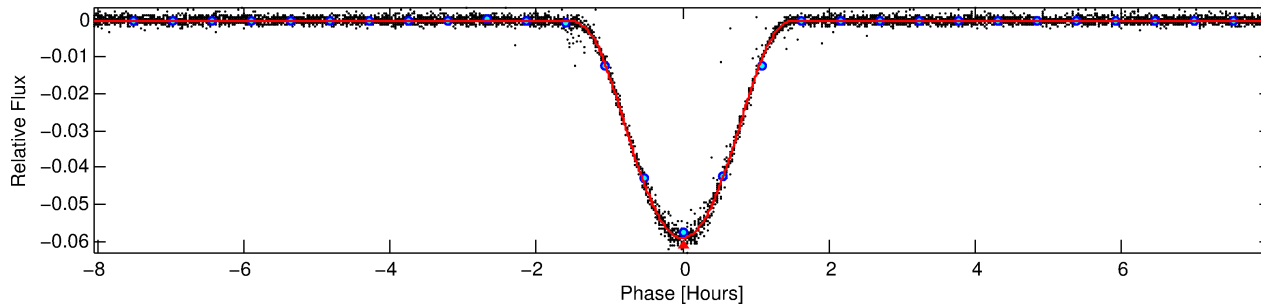
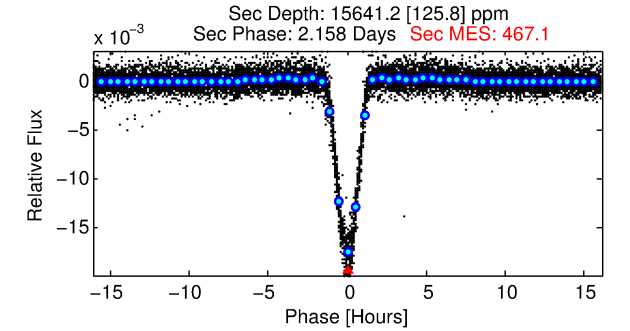
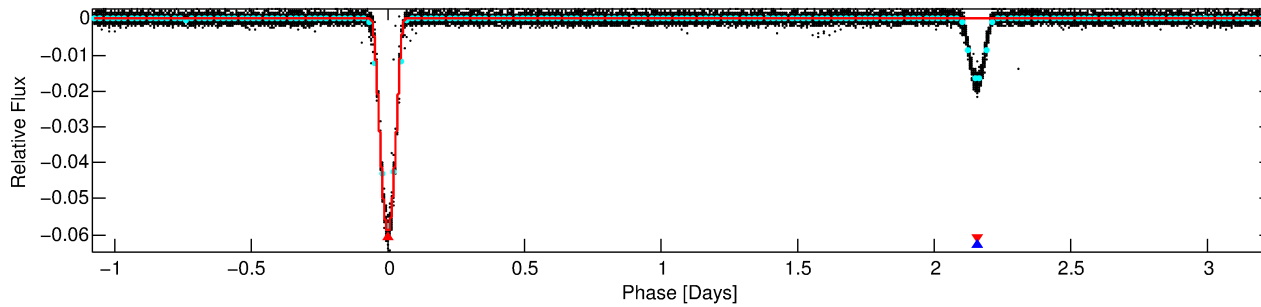
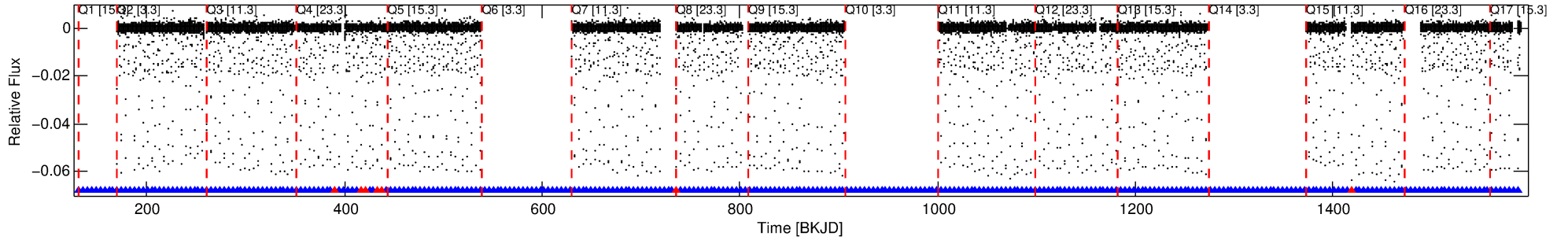
No Significant Match Found

DV One-Page Summary

KIC: 3973504 Candidate: 1 of 2 Period: 4.319 d

KOI: K06377.01 Corr: 0.998

Kp: 15.69 R*: 0.92 Rs Teff: 5896.0 K Logg: 4.52 Fe/H: -0.080



DV Fit Results:

Period = 4.31873 [0.00000] d
Epoch = 131.6060 [0.0000] BKJD
Rp/R* = 0.3163 [0.0095]
a/R* = 11.84 [0.03]
b = 0.90 [0.02]
Seff = 335.16 [136.63]
Teq = 1091 [111] K
Rp = 31.62 [9.78] Re
a = 0.0521 [0.0137] AU
Ag = 23.33 [9.12] [2.45σ]
Teffp = 3707 [134] K [15.04σ]

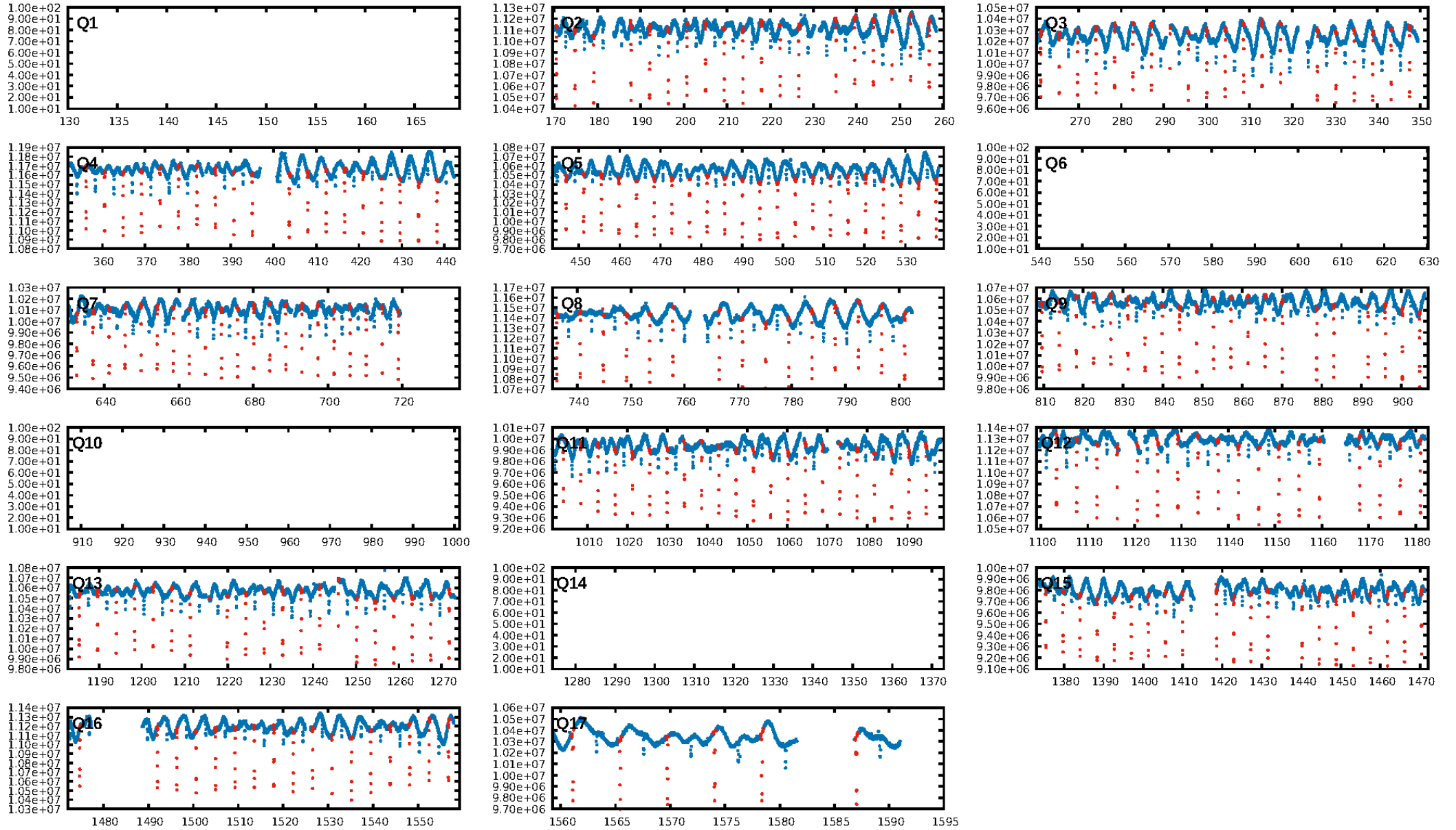
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.97 [227/234]
GhostDiagnostic-chr: 2.665
Centroid-sig: 0.0%
Centroid-so: 0.304 arcsec [37.86σ]
OotOffset-rm: 0.047 arcsec [0.68σ]
KicOffset-rm: 0.080 arcsec [1.18σ]
OotOffset-st: 1/4/4/4 [13]
KicOffset-st: 1/4/4/4 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

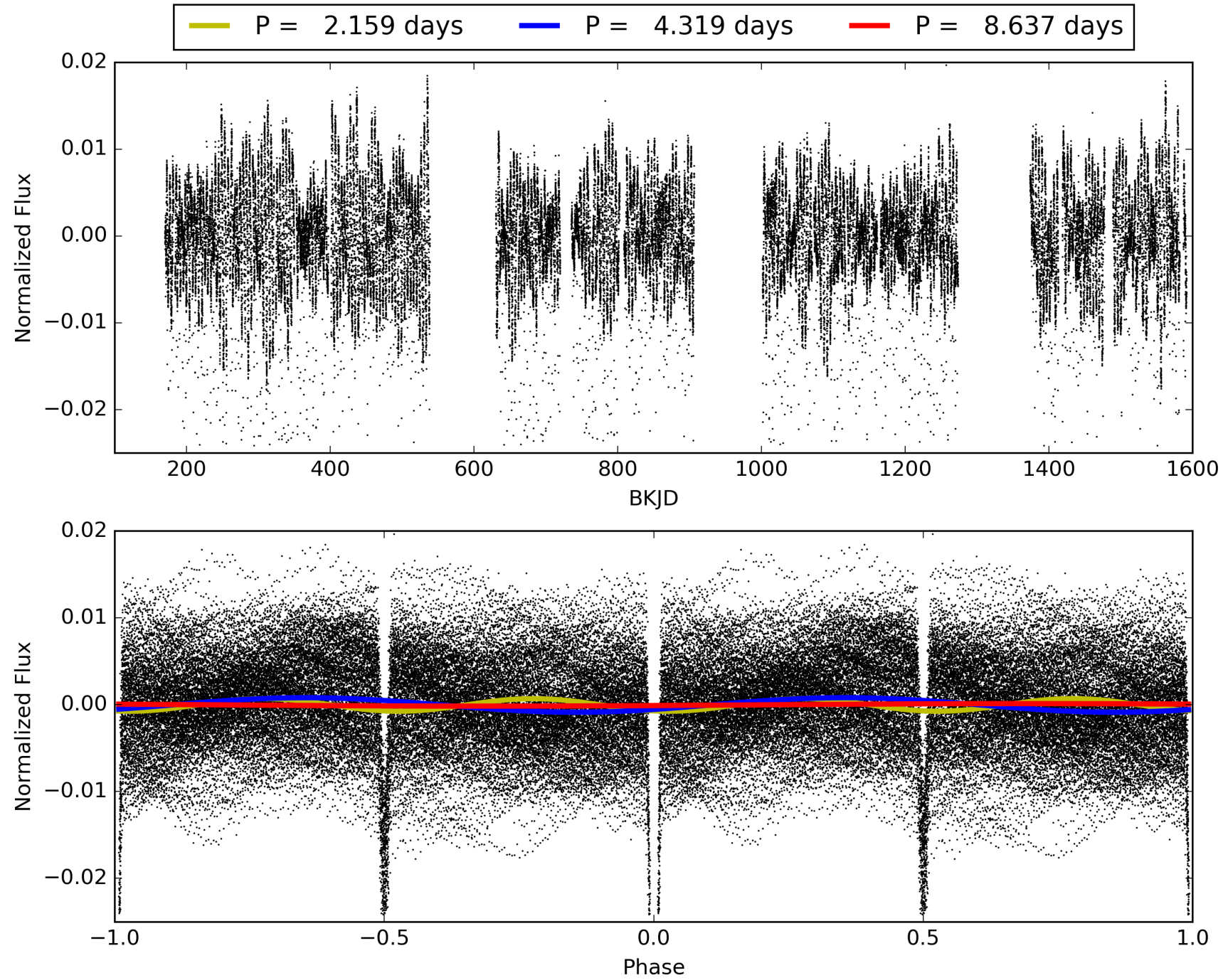
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:37:39 Z

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

TCE 003973504-01, PDC Light Curves

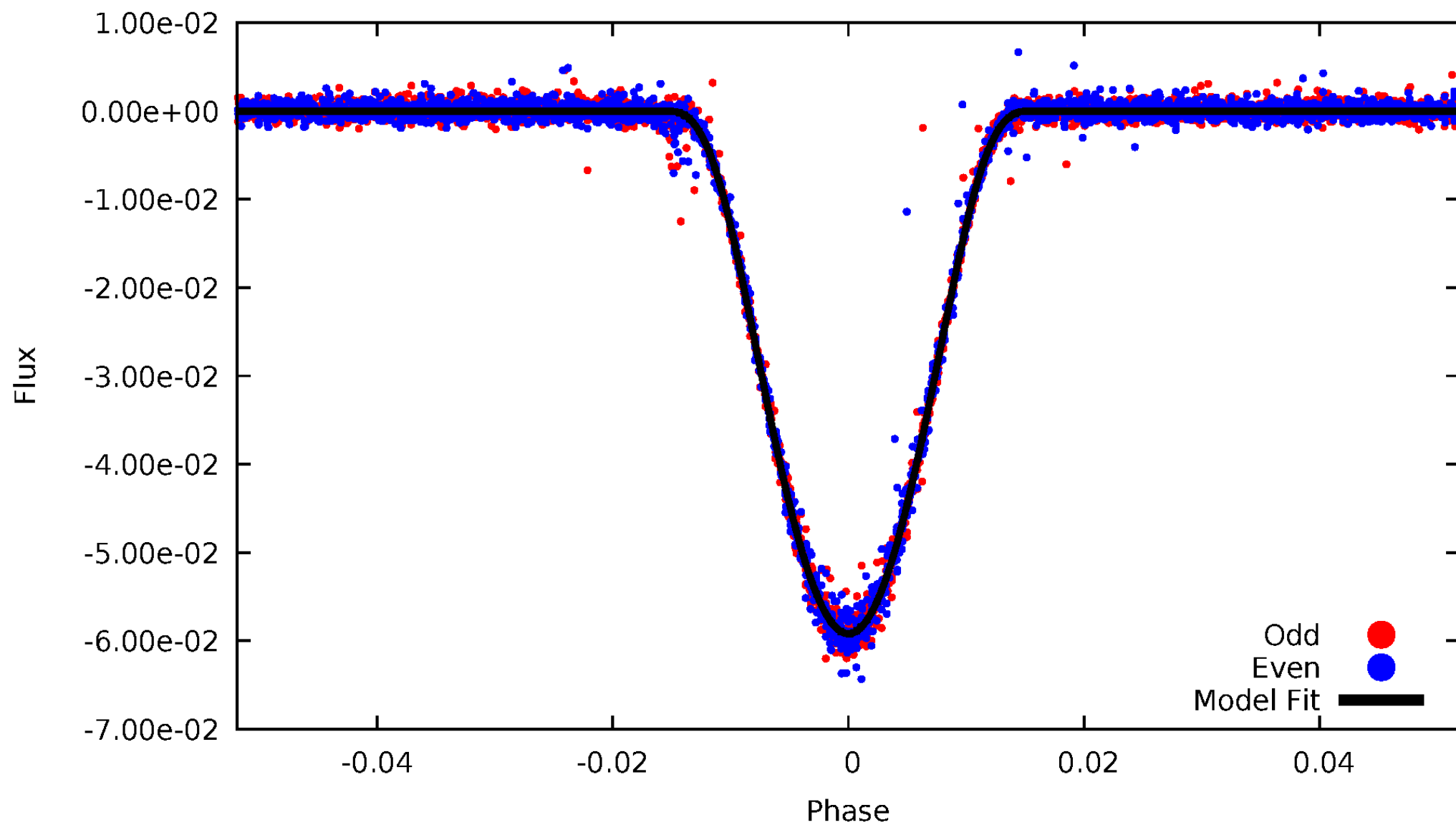


TCE 003973504-01



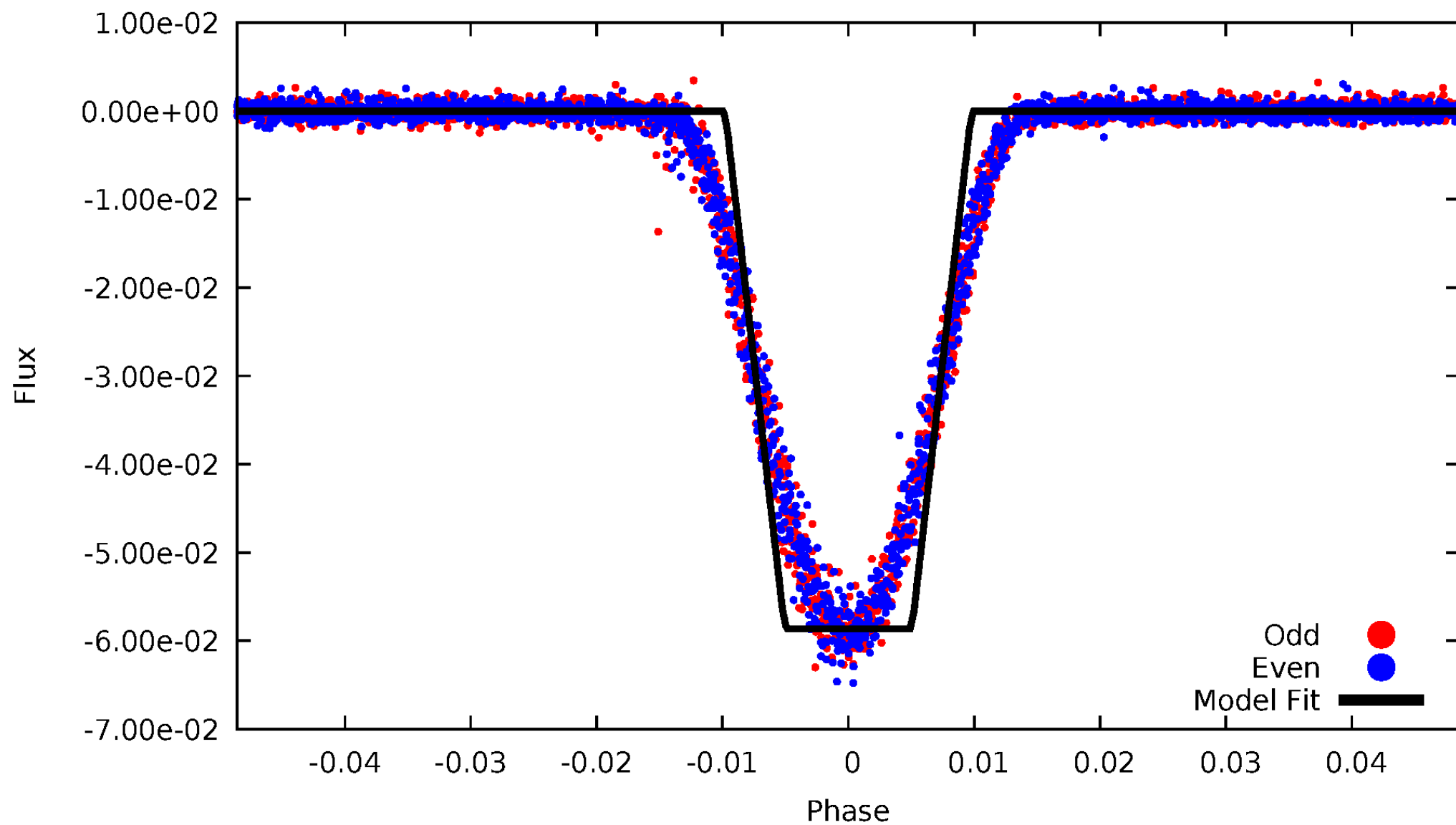
DV Odd/Even

TCE 003973504-01



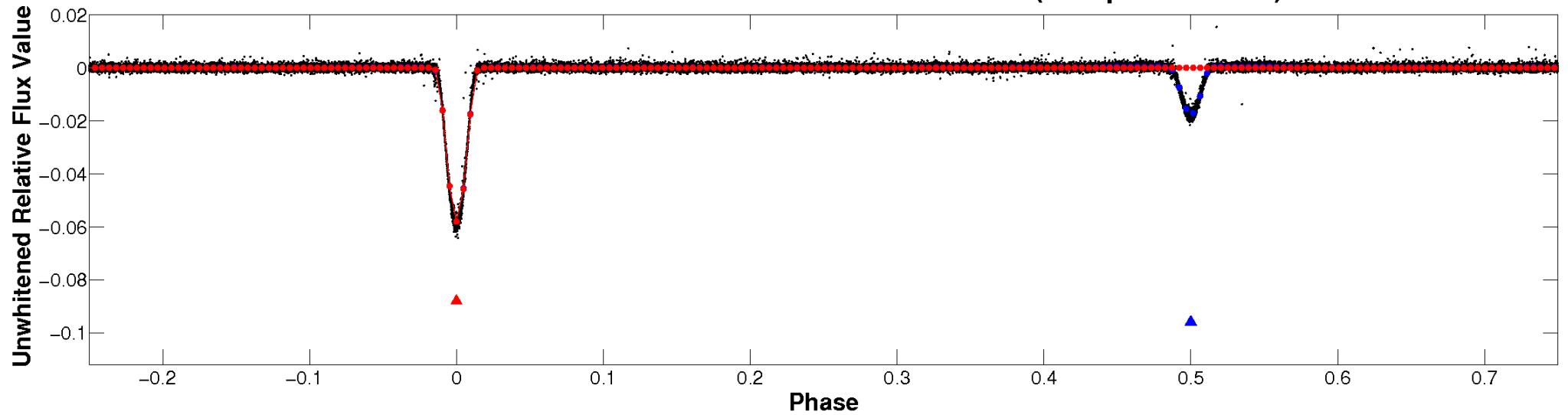
ALT Odd/Even

TCE 003973504-01

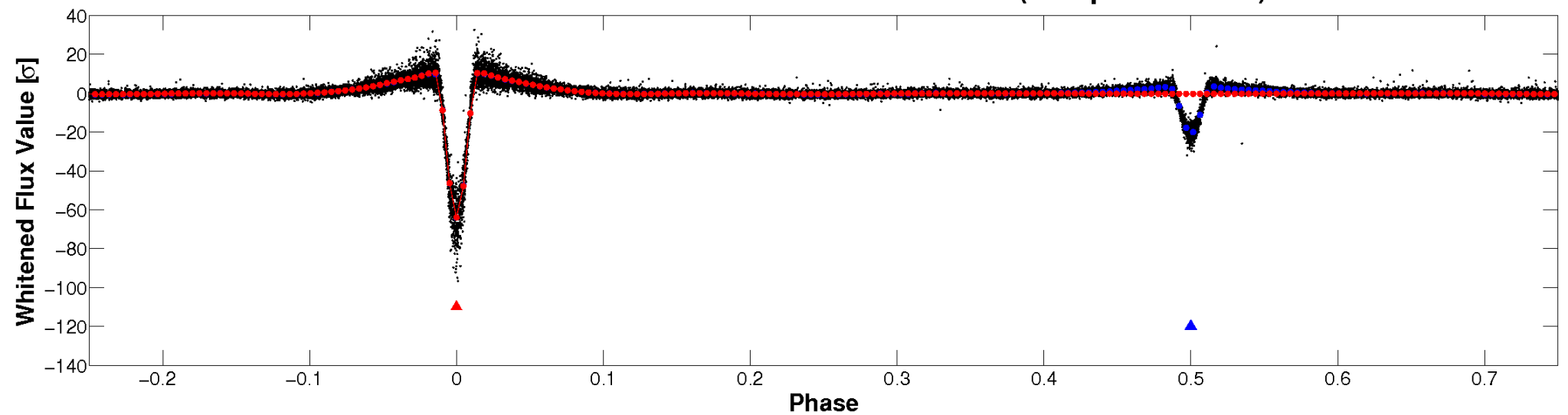


Non-Whitened Vs. Whitened Light Curve

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

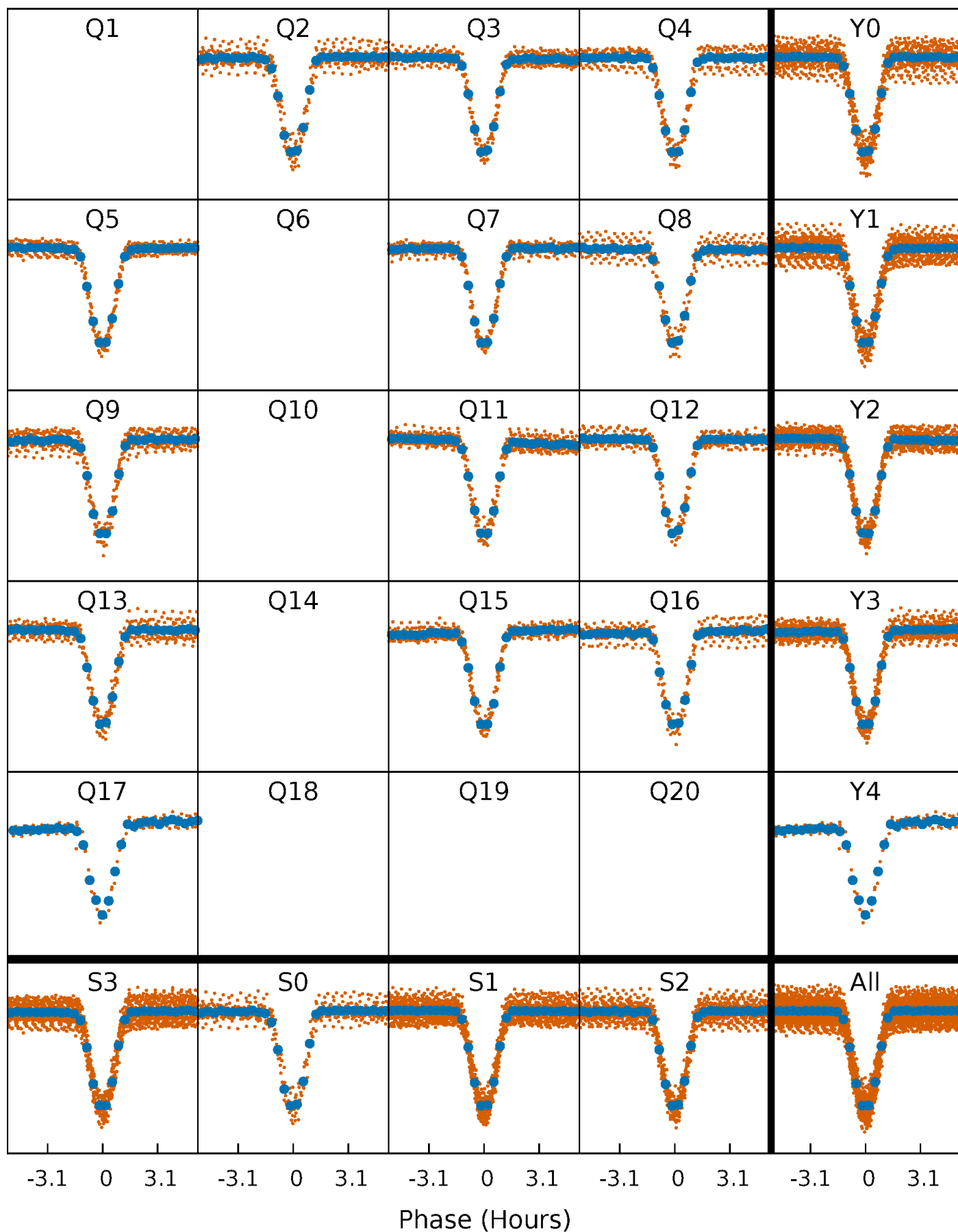


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



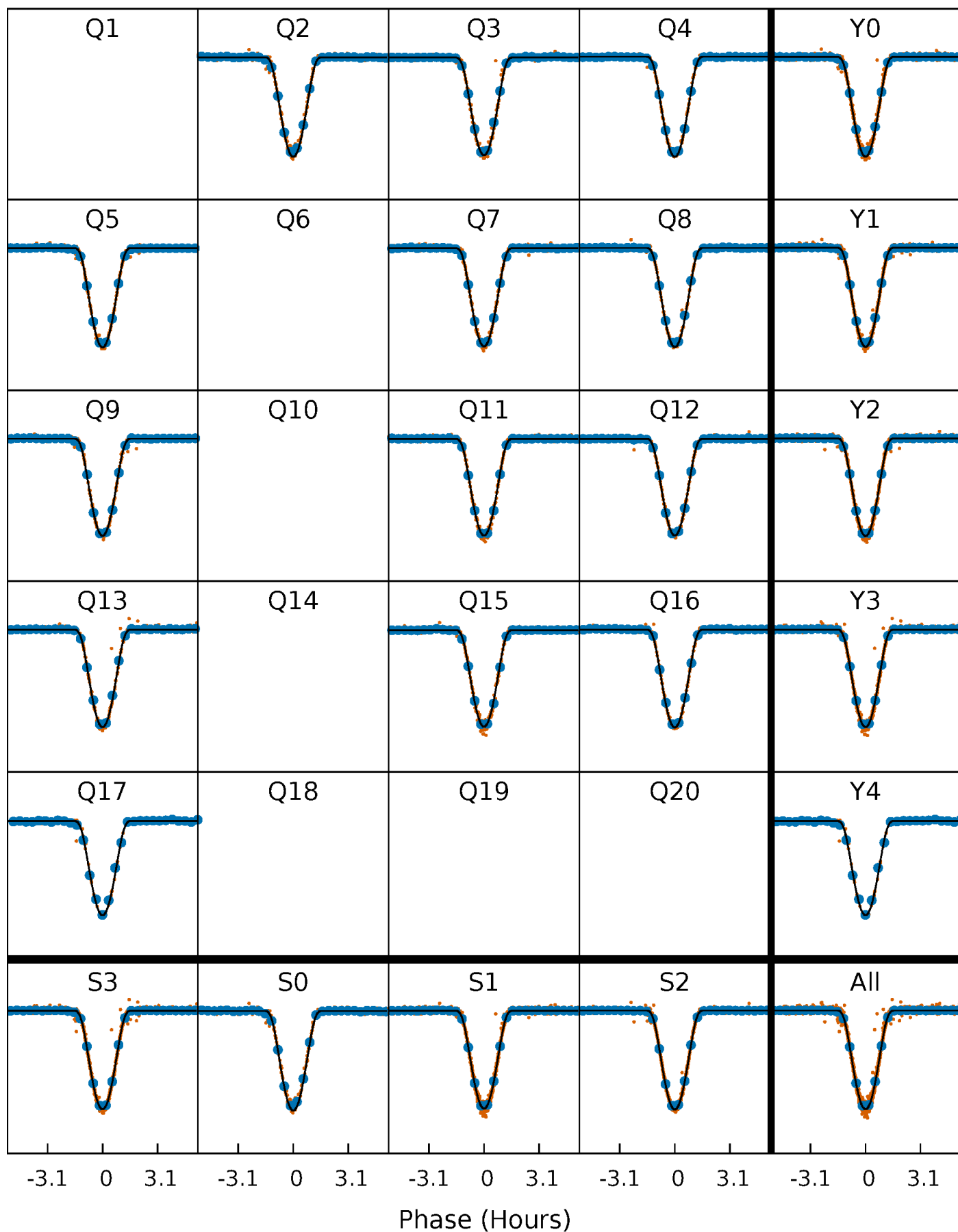
PDC Quarter-Phased Transit Curves

TCE 003973504-01 P= 4.318725 Days $T_0=131.605974$ (BKJD)



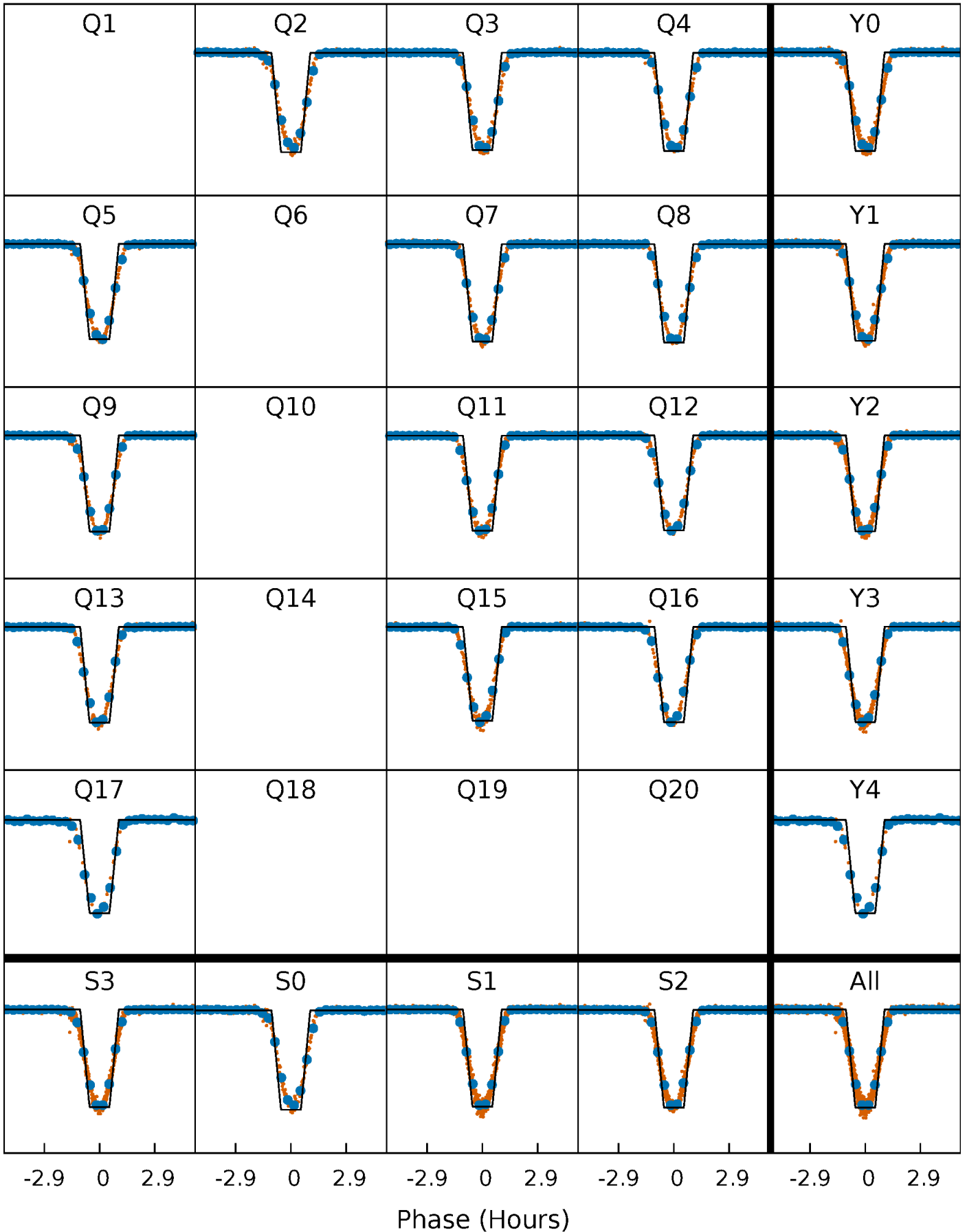
DV Quarter-Phased Transit Curves

TCE 003973504-01 P= 4.318725 Days $T_0=131.605974$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

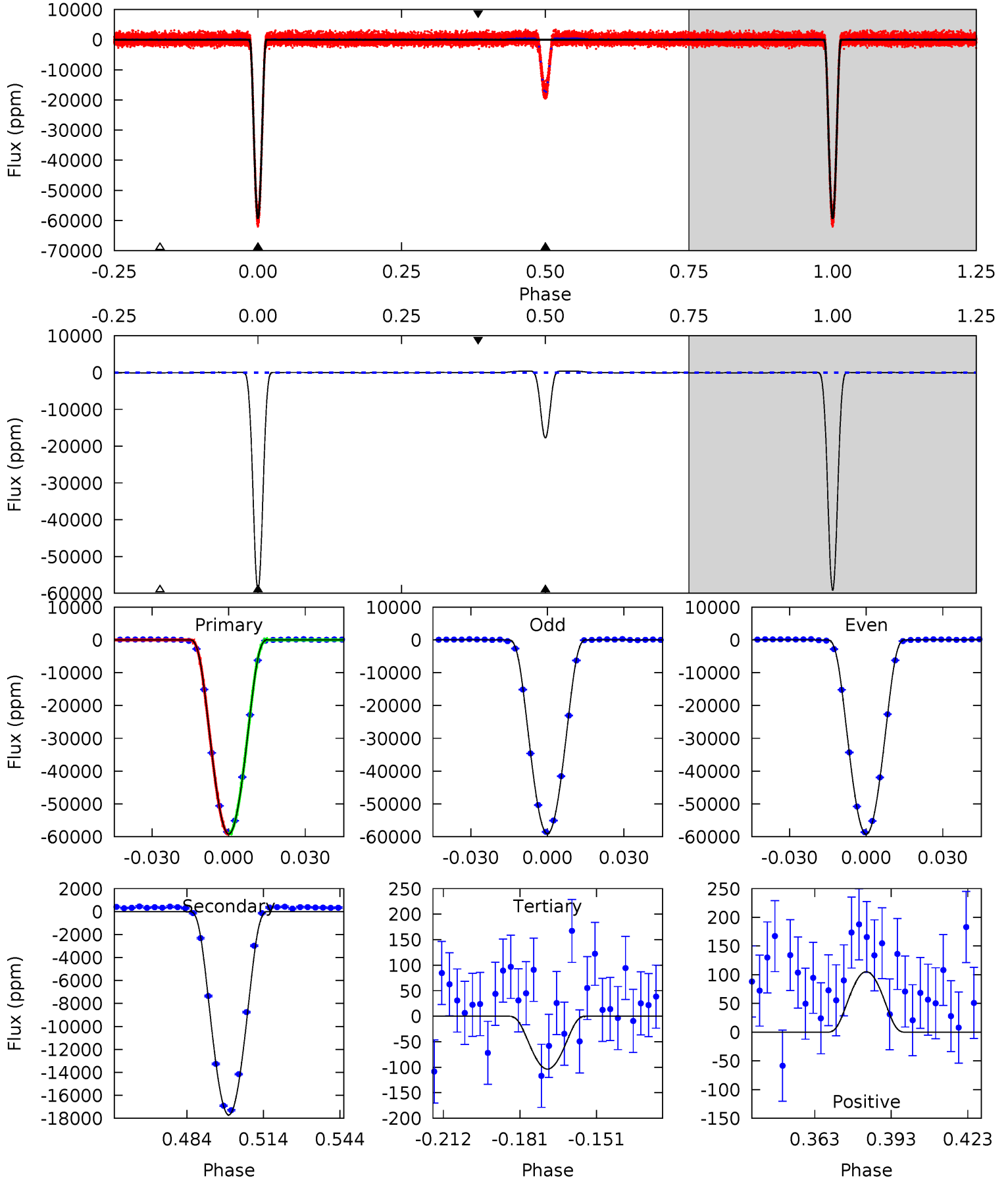
TCE 003973504-01 P= 4.318748 Days $T_0=131.602061$ (BKJD)



DV Model-Shift Uniqueness Test

003973504-01, P = 4.318725 Days, E = 131.605974 Days

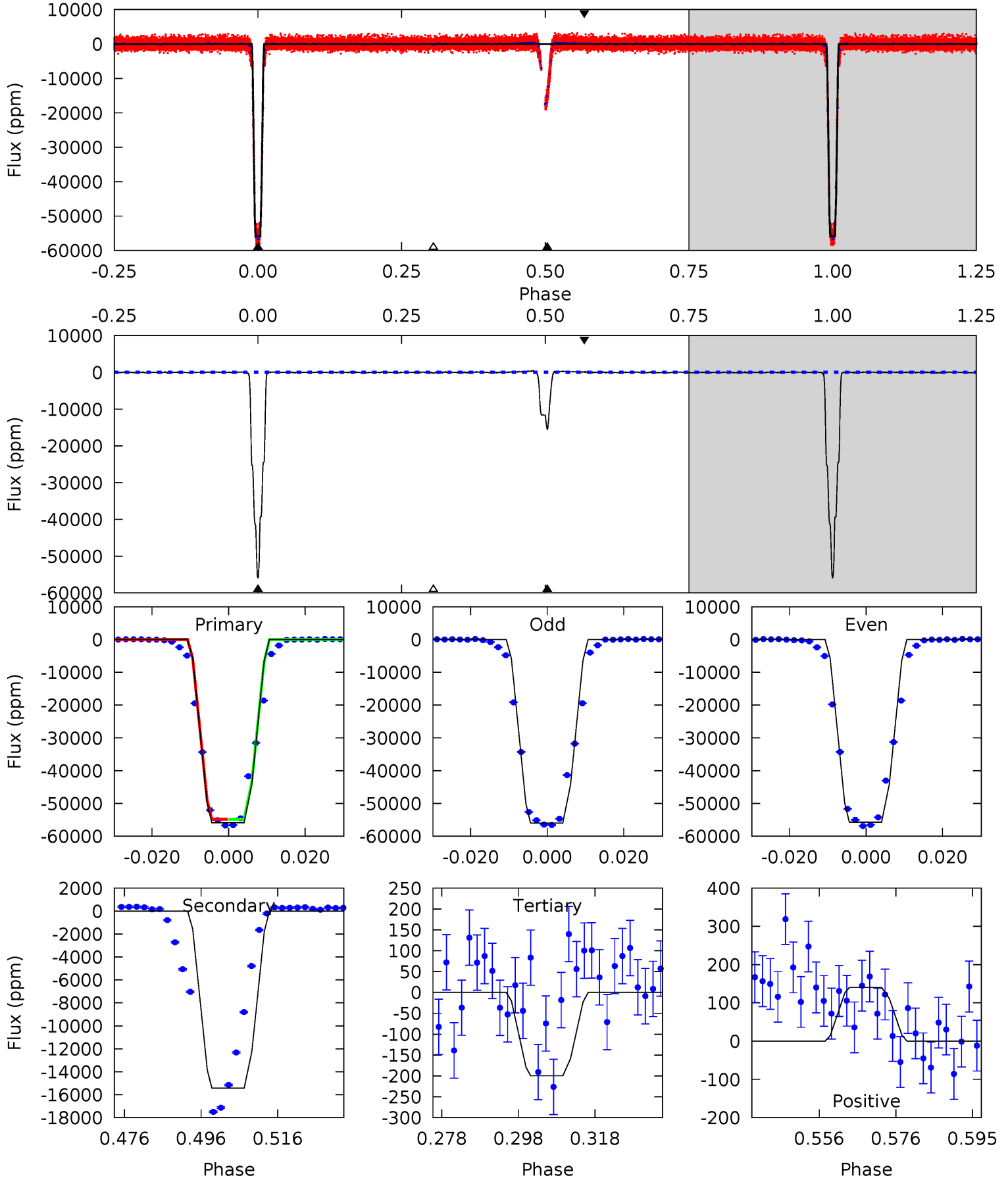
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2914	872.1	5.10	5.18	4.81	2.17	5.42	2909	2909	867.0	866.9	4.09	0.99	0.01	2.47



Alt Model-Shift Uniqueness Test

003973504-01, P = 4.318748 Days, E = 131.602061 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1472	406.6	5.26	3.70	4.89	2.33	2.10	1467	1468	401.4	402.9	3.13	1.00	0.01	0



Stellar Parameters For KIC 003973504

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5896^{+176}_{-193}	$4.518^{+0.050}_{-0.213}$	$-0.080^{+0.300}_{-0.300}$	$0.916^{+0.282}_{-0.094}$	$1.008^{+0.124}_{-0.124}$	$1.849^{+0.390}_{-0.996}$
	+3%/-3%	+1%/-5%	+375%/-375%	+31%/-10%	+12%/-12%	+21%/-54%
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 003973504-01 / KOI 6377.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-17708 ± 20	$32.38^{+5.35}_{-2.62}$	1557^{+113}_{-76}	4113^{+101}_{-108}	25^{+4}_{-6}
Alt.	-15436 ± 38	$25.14^{+3.90}_{-2.51}$	1562^{+114}_{-80}	4431^{+132}_{-124}	37^{+7}_{-8}

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

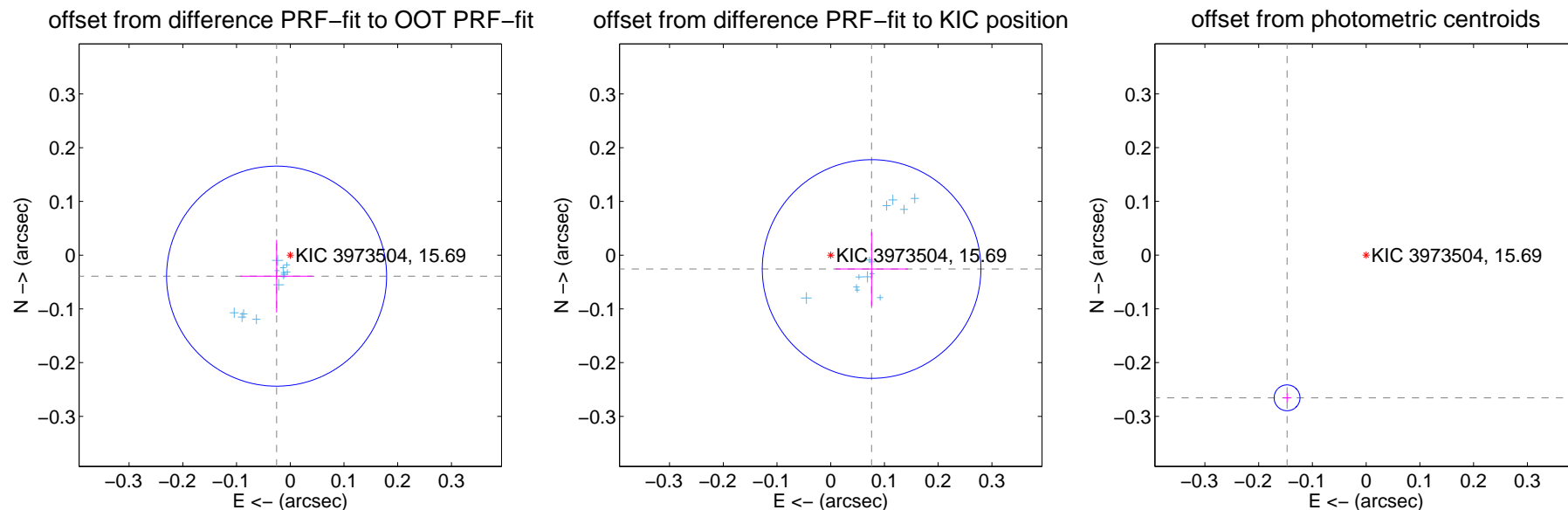
DV Centroid Data

Supplemental centroid analysis for 003973504-01. Kepler magnitude: 15.69. Transit SNR 1385.59

There are 13 quarters with good PRF difference image offsets

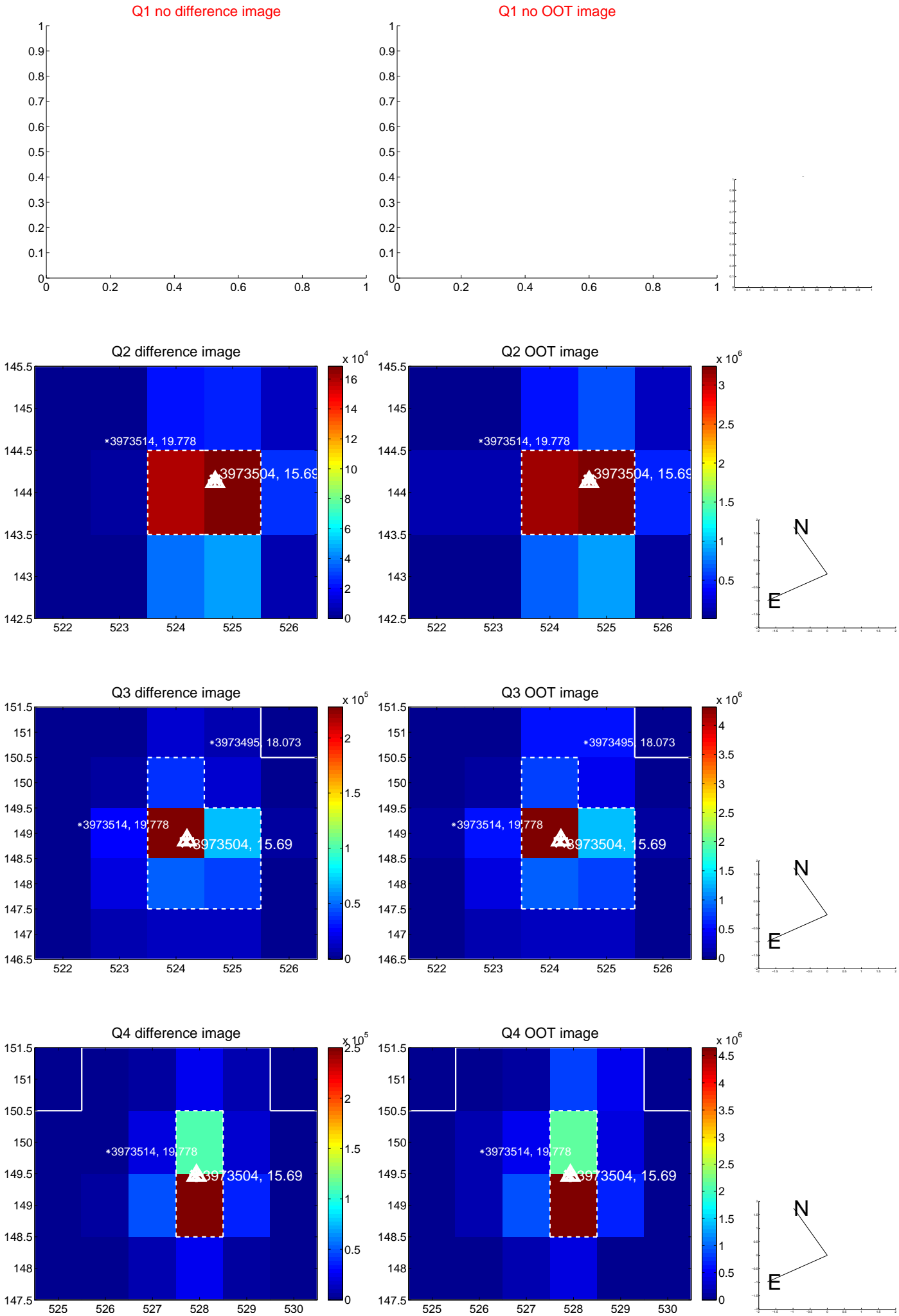
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.047 ± 0.068	0.68	0.025 ± 0.067	-0.039 ± 0.068
PRF-fit source offset from KIC position	0.080 ± 0.068	1.18	-0.076 ± 0.068	-0.026 ± 0.069
photometric centroid source offset	0.30 ± 0.01	37.86	0.15 ± 0.01	-0.27 ± 0.01

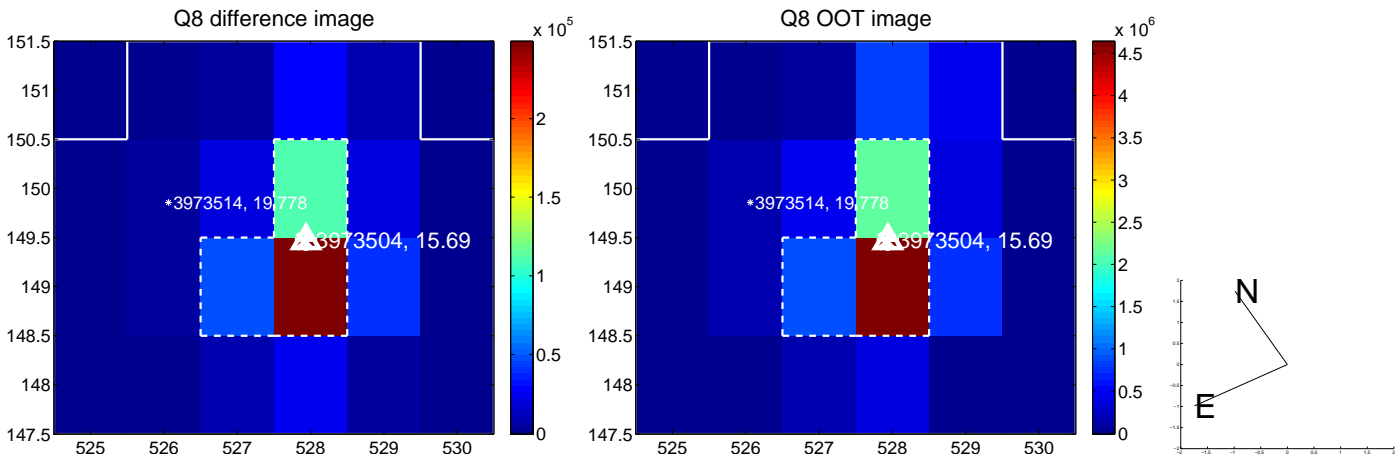
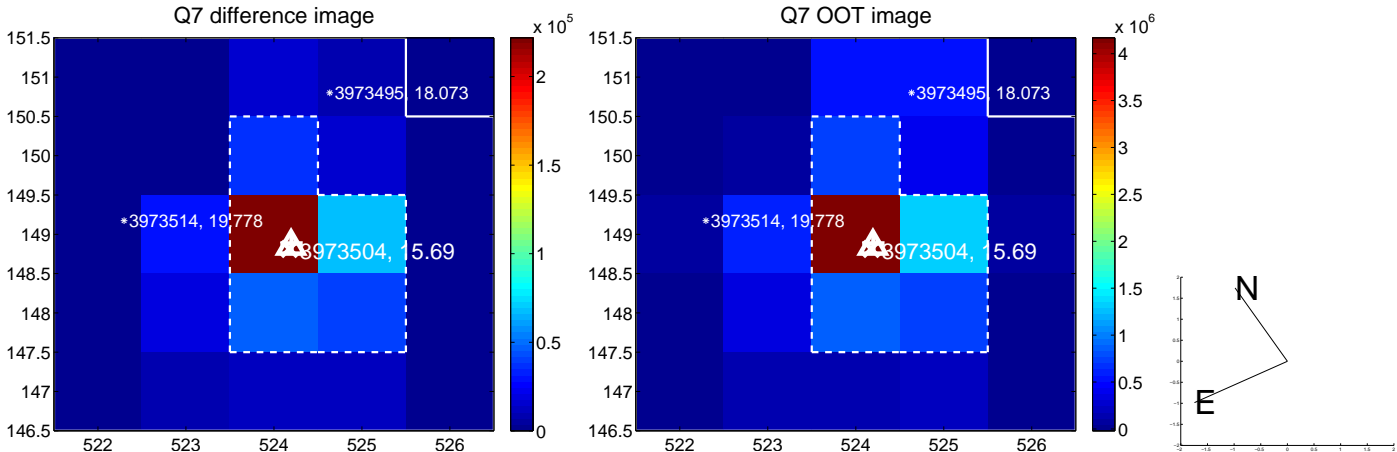
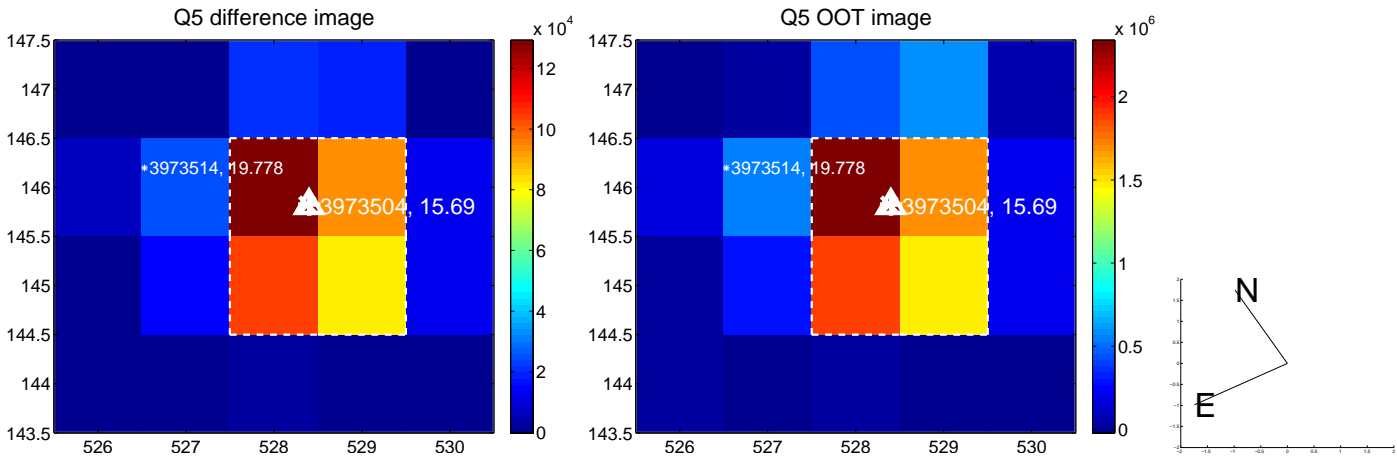


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

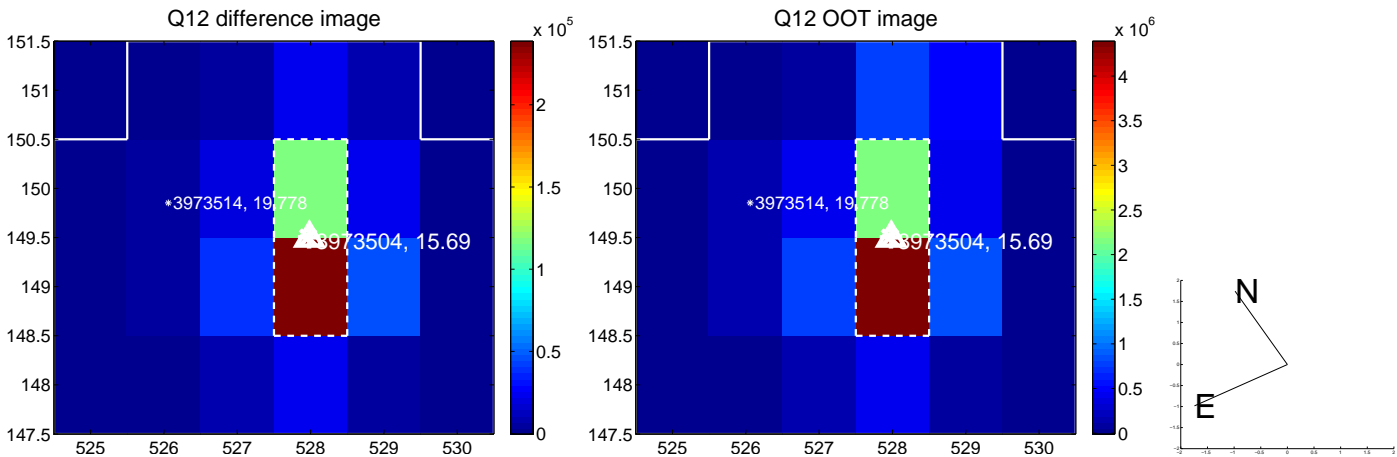
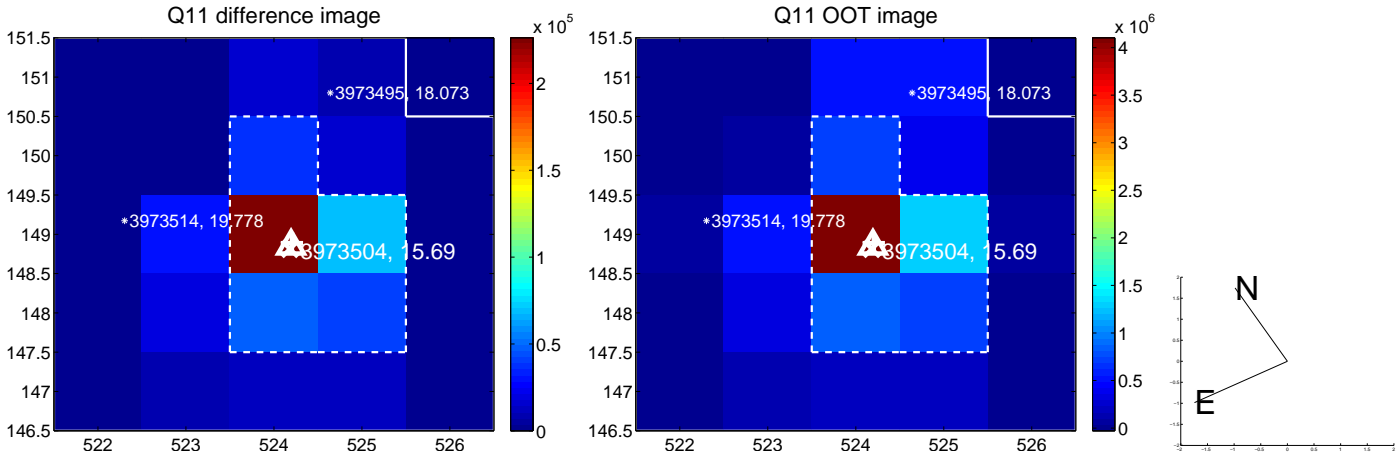
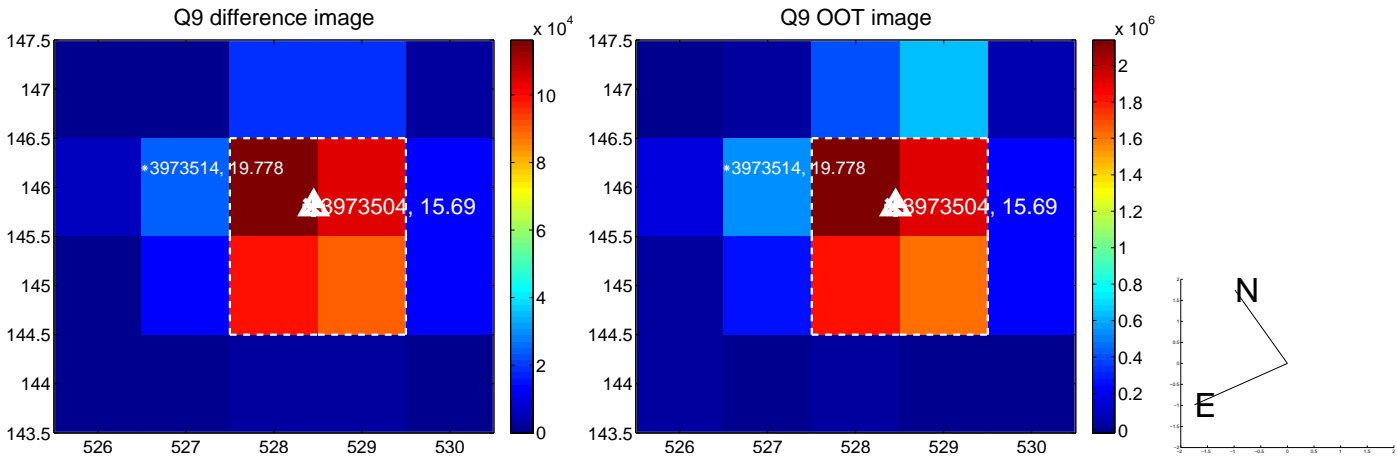
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



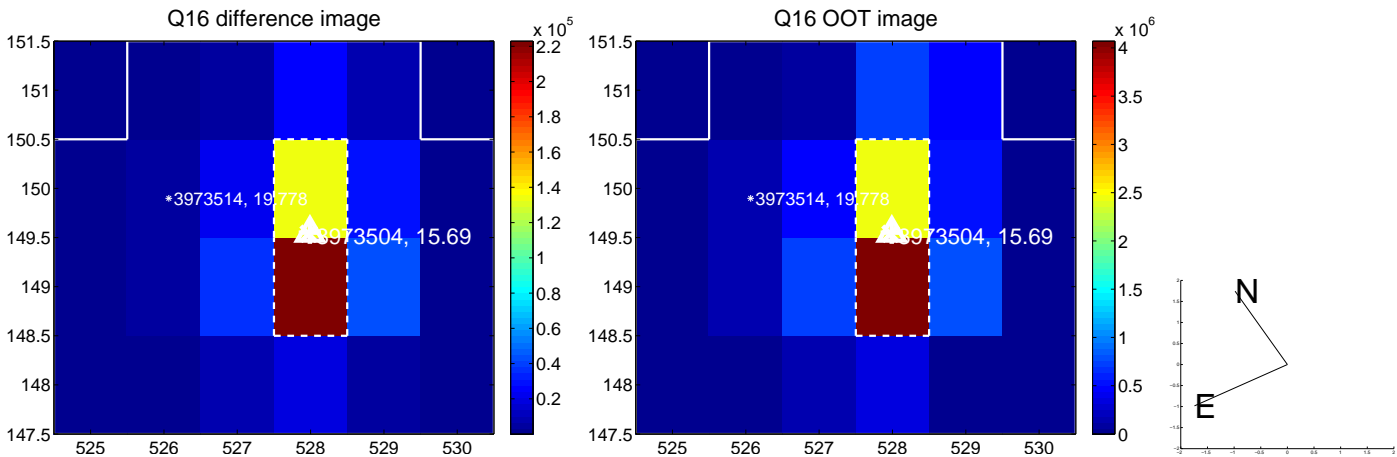
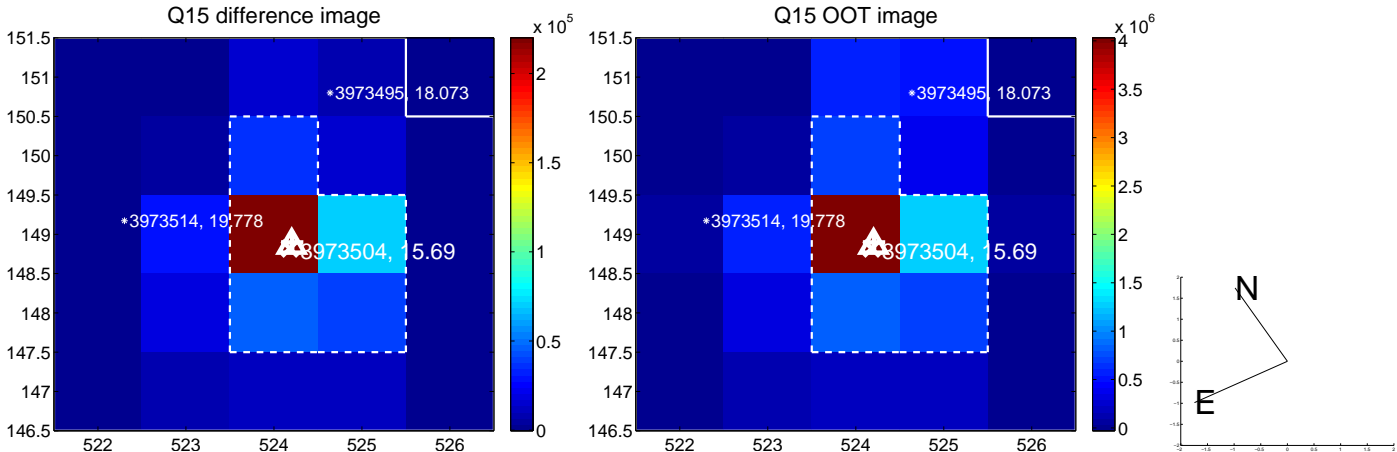
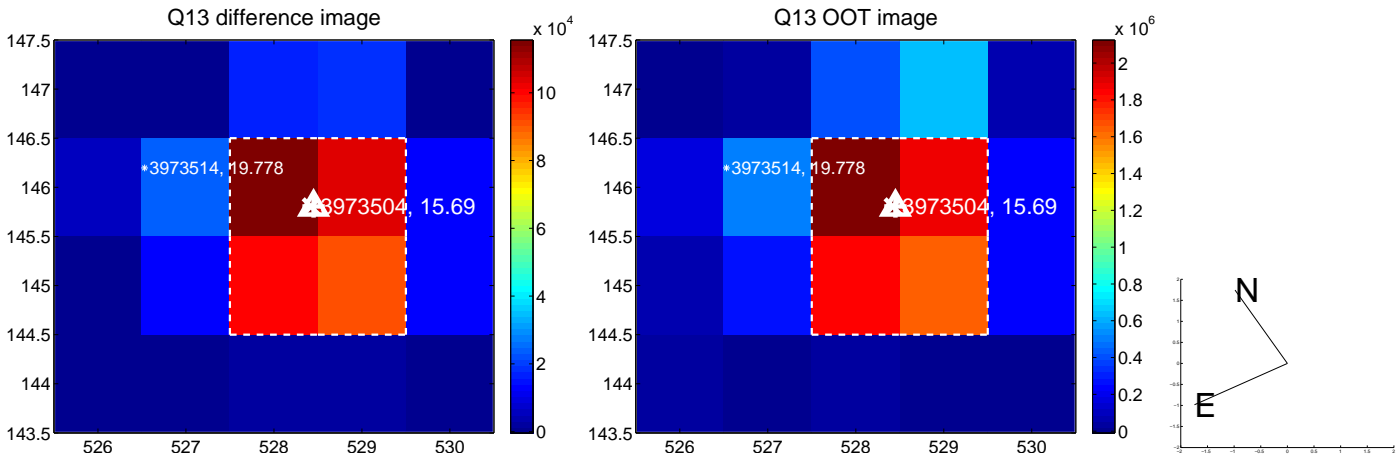
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



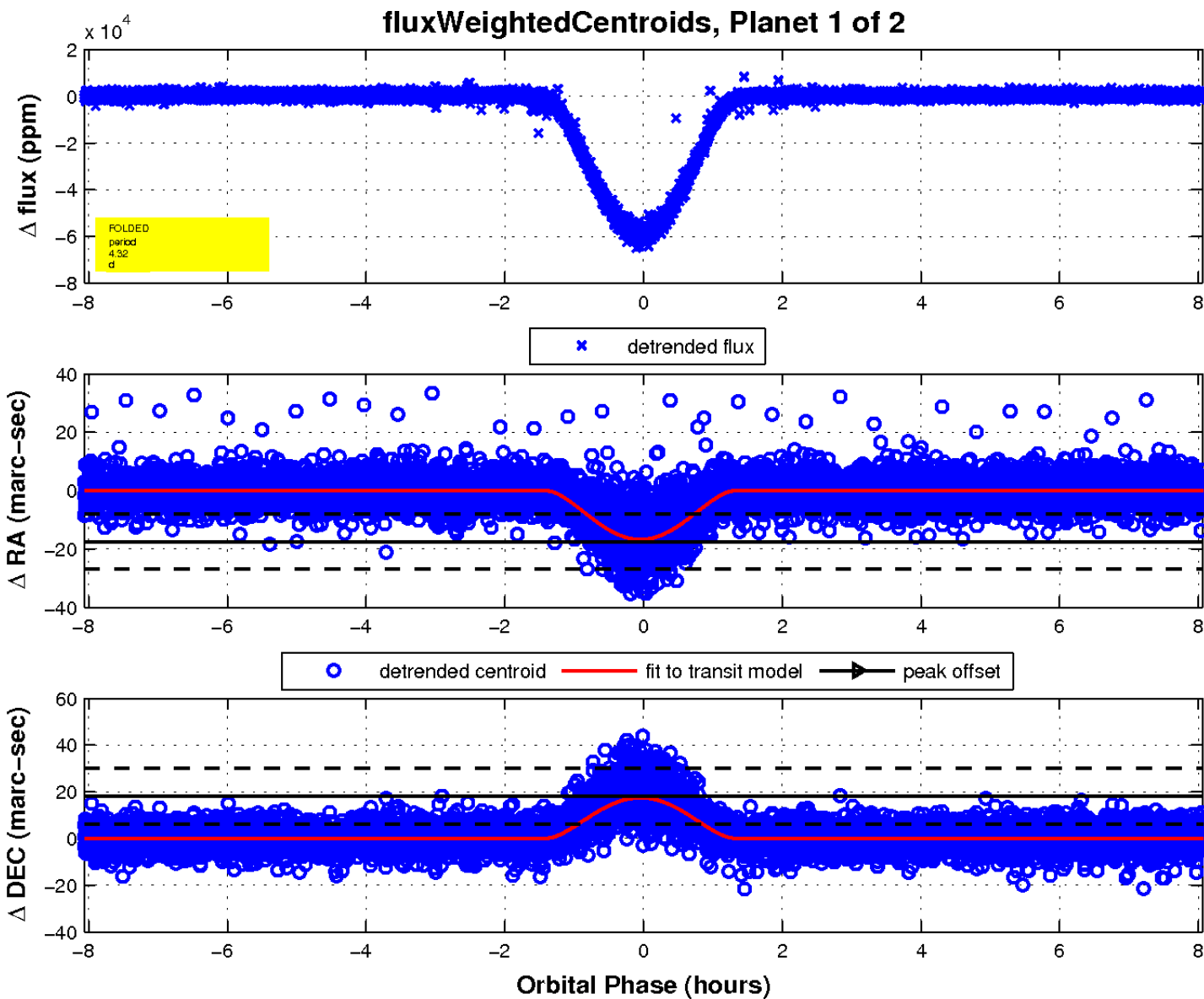
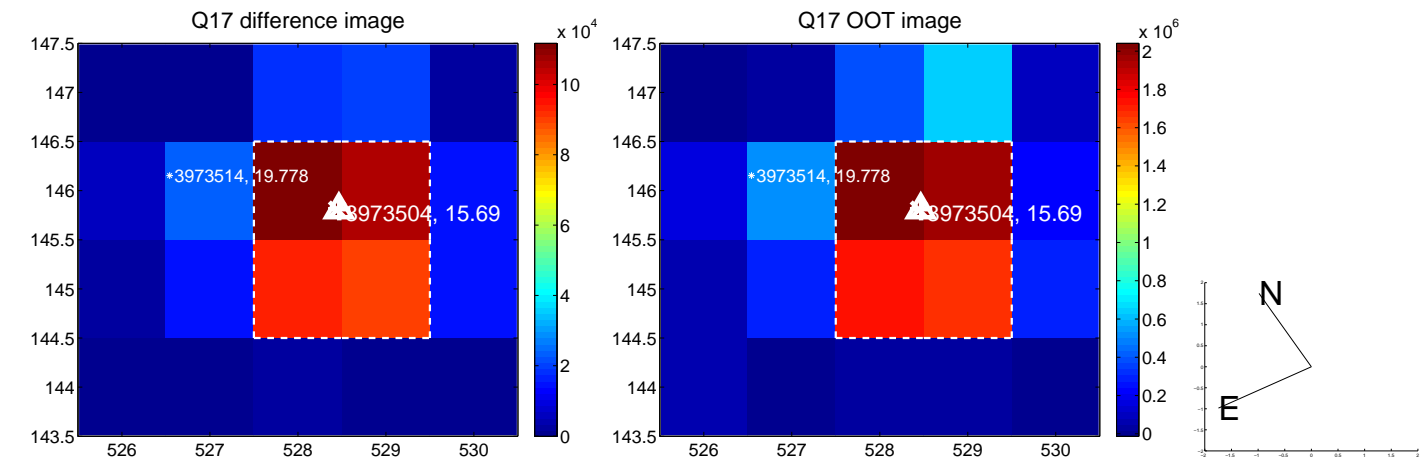
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

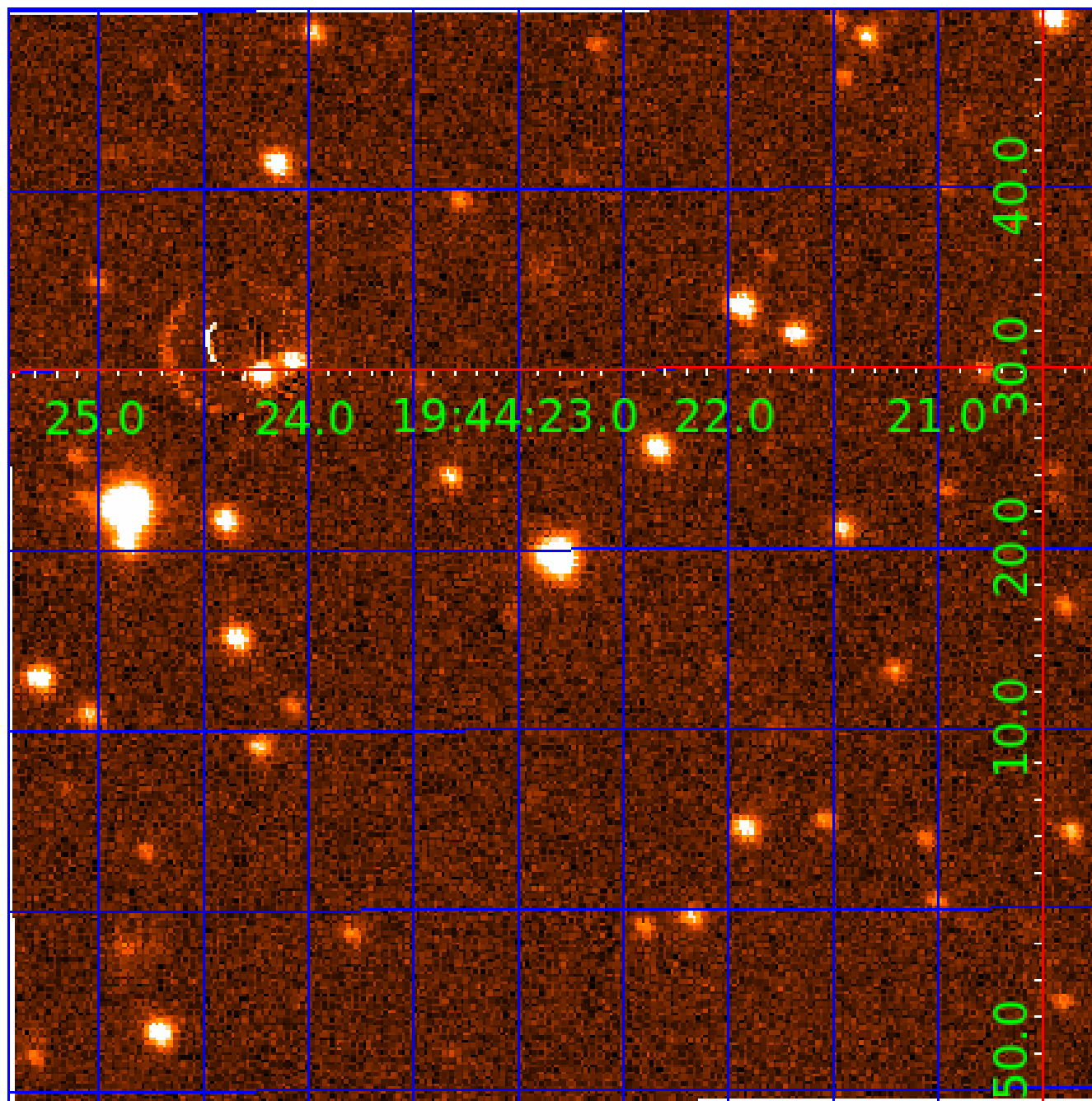


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003973504

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})
003973504-01	OBS	6377.01	4.318725	131.605974	59179.3	2.688	1560.3	1385.6	0.92	5896	31.62	335.16
003973504-02	OBS	No	4.318730	133.764546	18109.8	2.594	481.0	445.8	0.92	5896	20.56	335.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003973504-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
003973504-02	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.

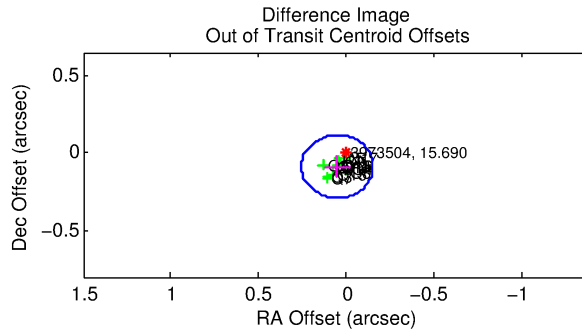
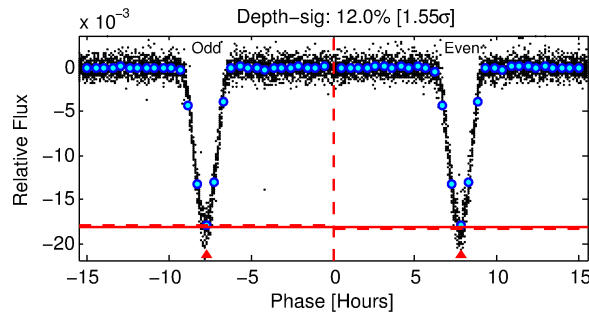
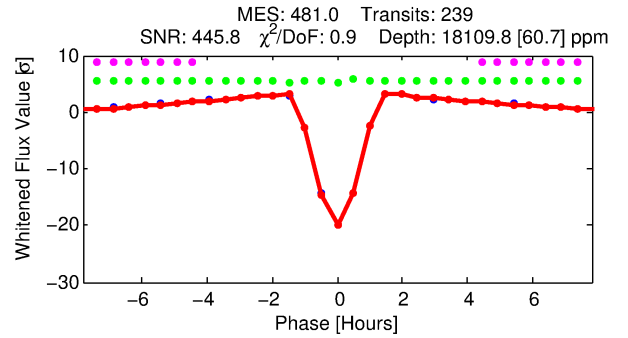
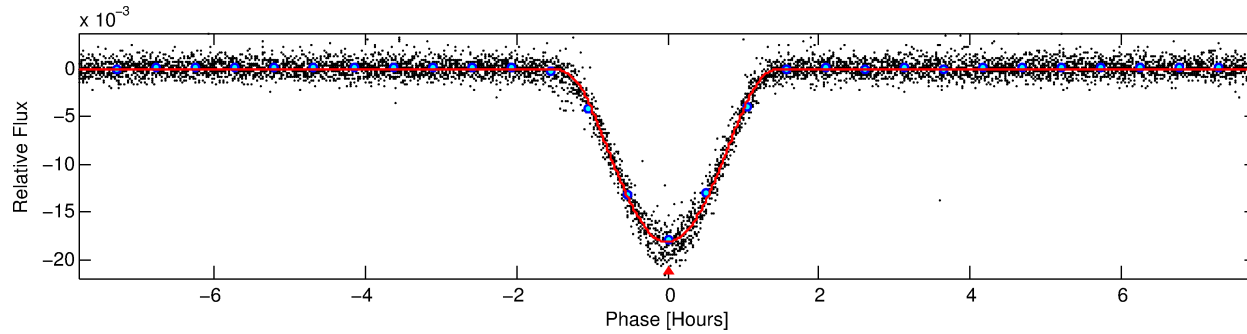
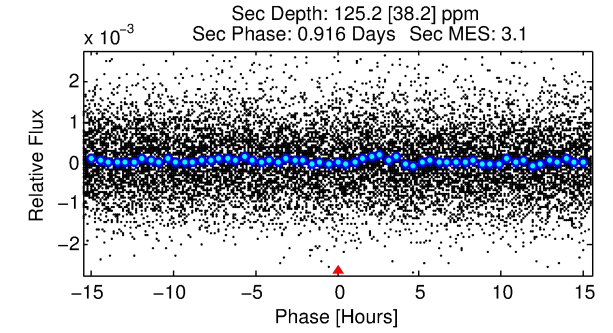
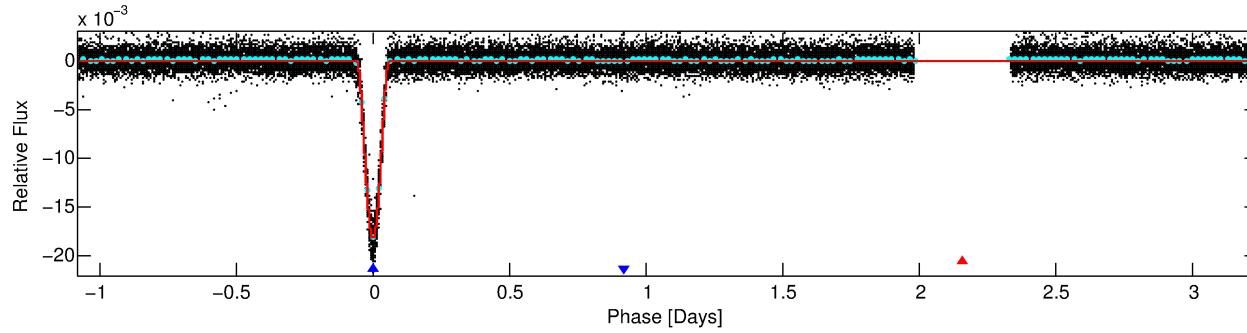
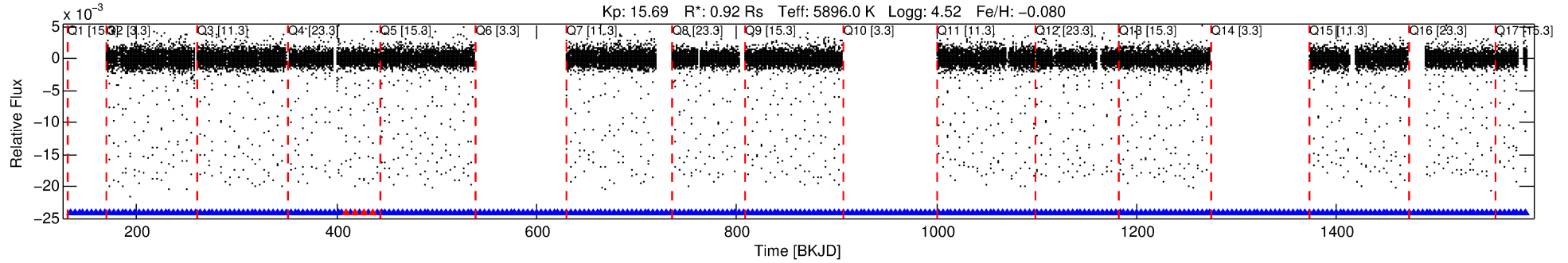
Ephemeris Match Information For 003973504-02

No Significant Match Found

DV One-Page Summary

KIC: 3973504 Candidate: 2 of 2 Period: 4.319 d
KOI: K06377 Corr: No Ephemeris Match

Kp: 15.69 R*: 0.92 Rs Teff: 5896.0 K Logg: 4.52 Fe/H: -0.080



DV Fit Results:

Period = 4.31873 [0.00000] d
Epoch = 133.7645 [0.0001] BKJD
Rp/R* = 0.2057 [0.0246]
a/R* = 8.99 [0.14]
b = 0.98 [0.04]
Seff = 335.16 [136.62]
Teff = 1091 [111] K
Rp = 20.56 [6.79] Re
a = 0.0521 [0.0137] AU
Ag = 0.44 [0.24] [-2.31σ]
Teffp = 1375 [141] K [1.58σ]

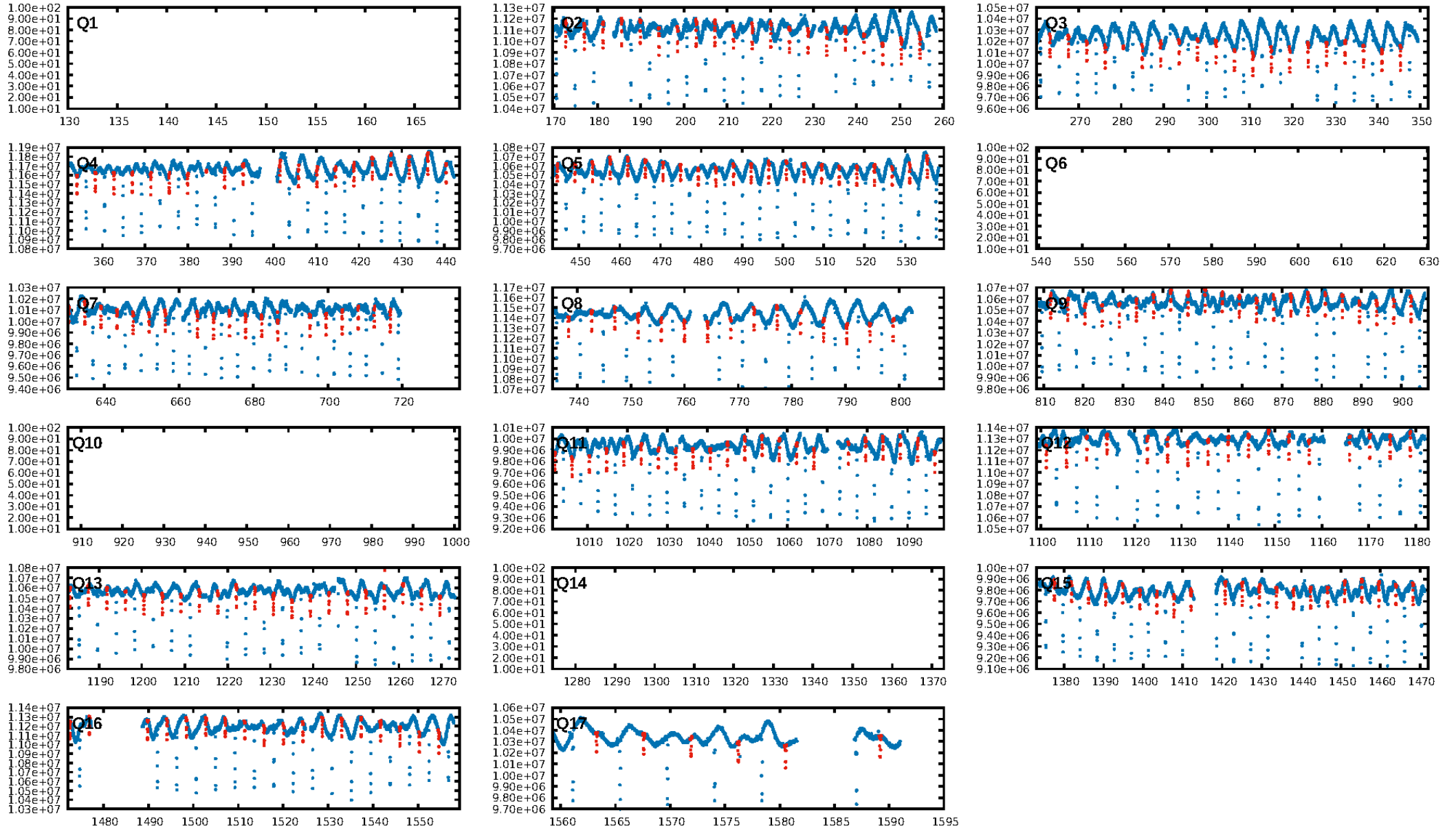
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.98 [229/233]
GhostDiagnostic-chr: 2.672
Centroid-sig: 0.0%
Centroid-so: 0.371 arcsec [14.31σ]
OotOffset-rm: 0.102 arcsec [1.51σ]
KicOffset-rm: 0.092 arcsec [1.31σ]
OotOffset-st: 1/4/4/4 [13]
KicOffset-st: 1/4/4/4 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

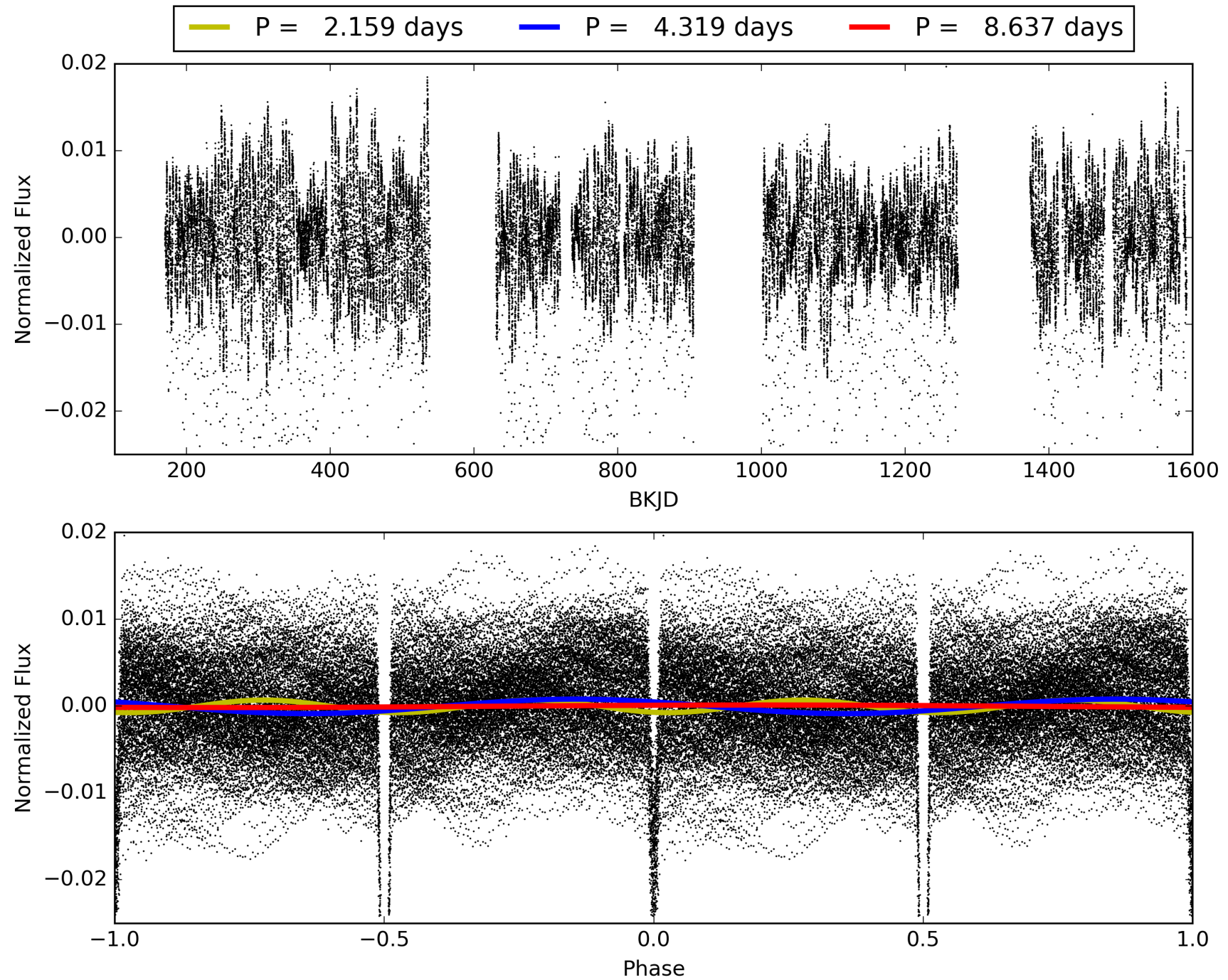
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:37:45 Z

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

TCE 003973504-02, PDC Light Curves

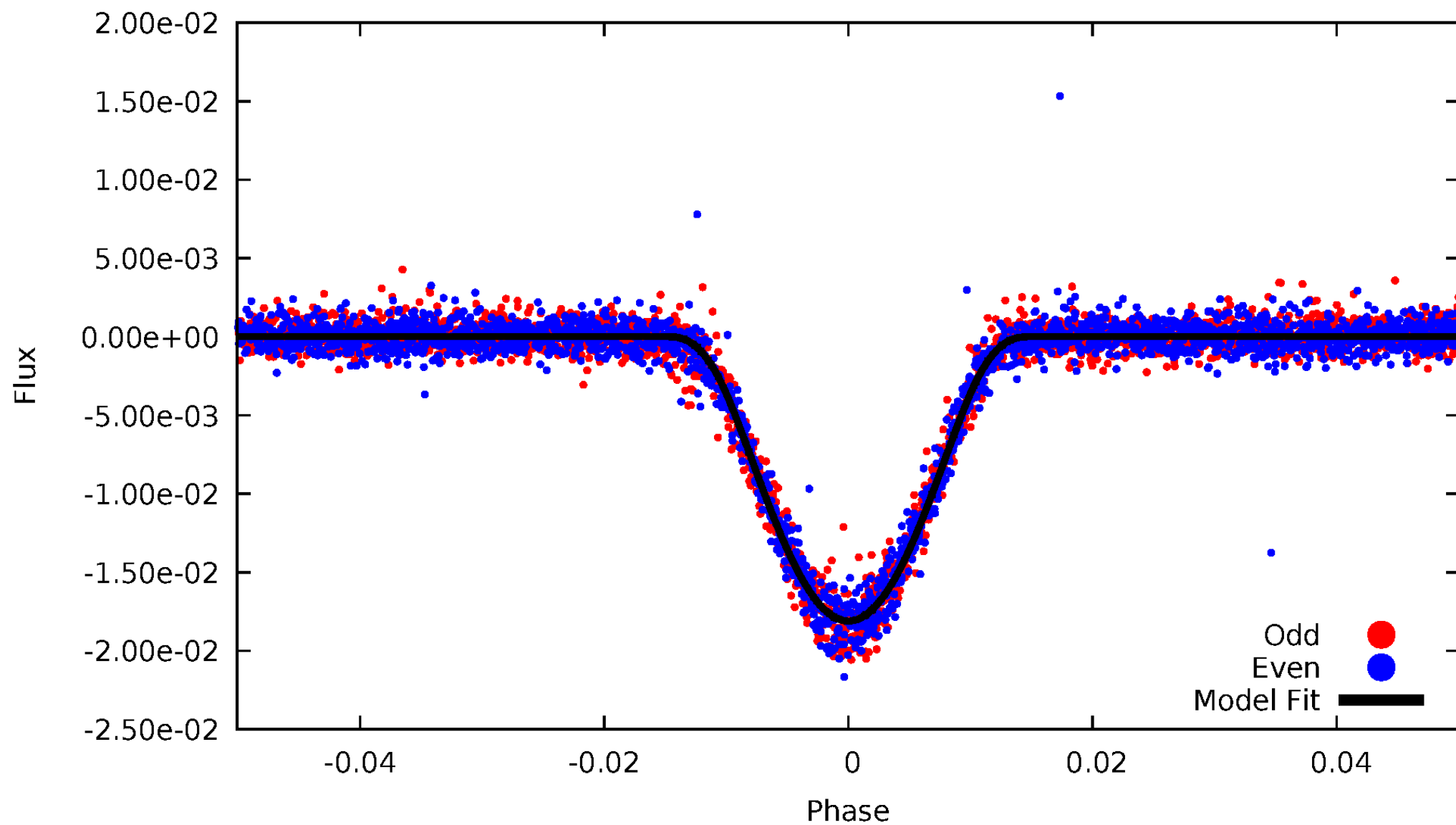


TCE 003973504-02



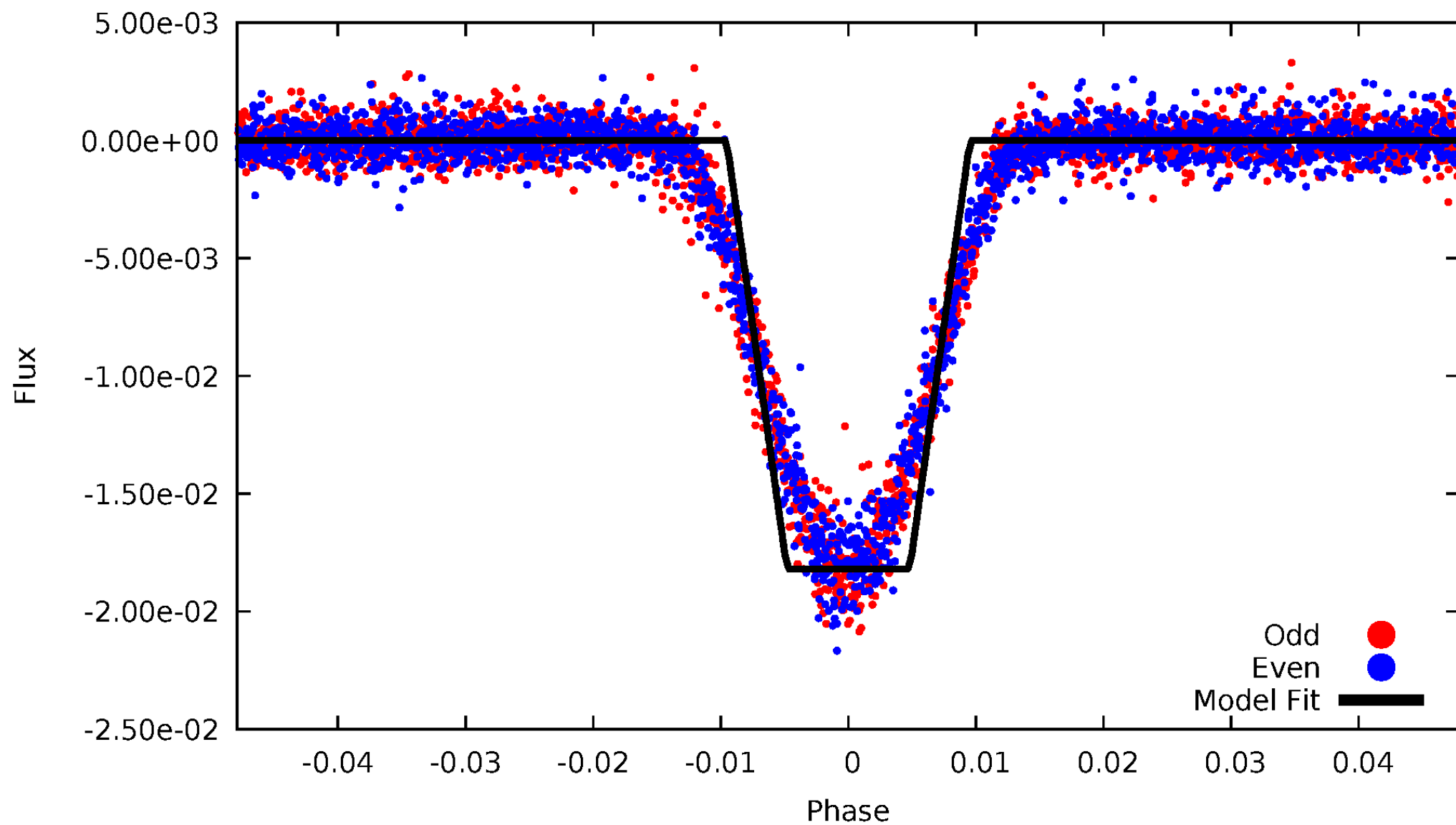
DV Odd/Even

TCE 003973504-02



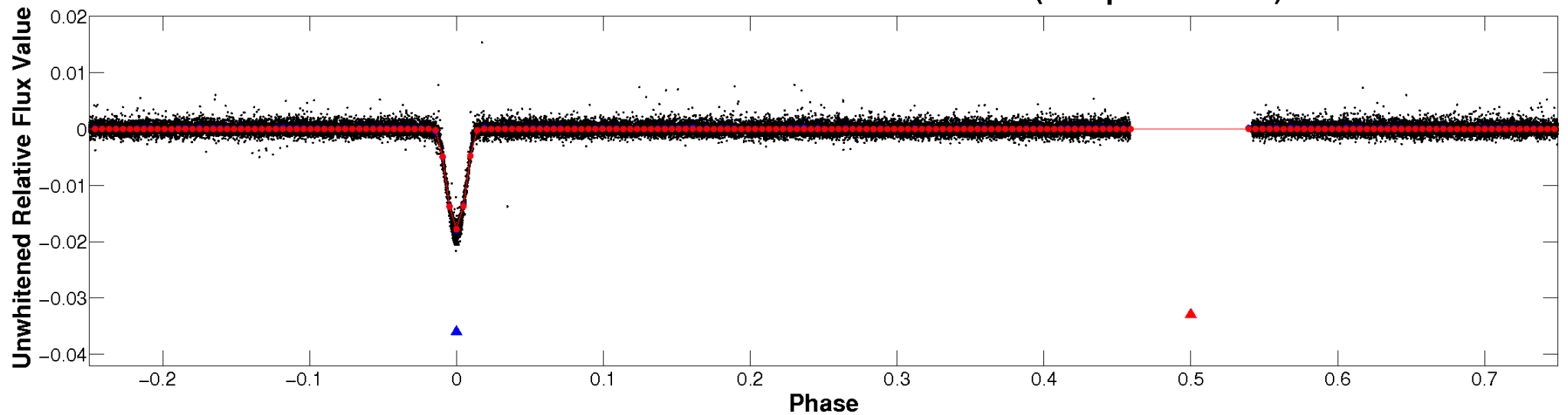
ALT Odd/Even

TCE 003973504-02

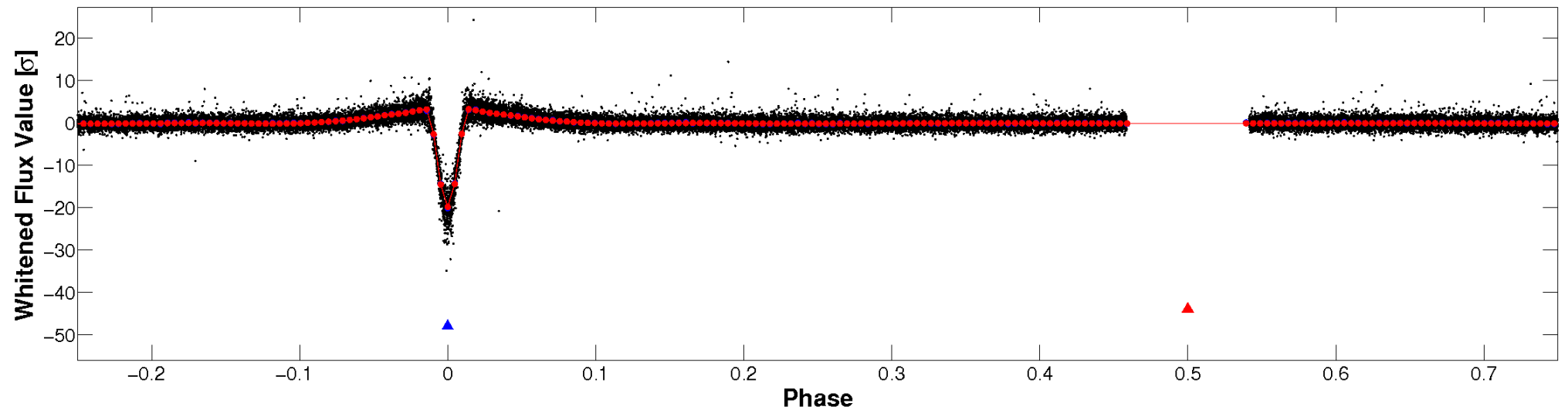


Non-Whitened Vs. Whitened Light Curve

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

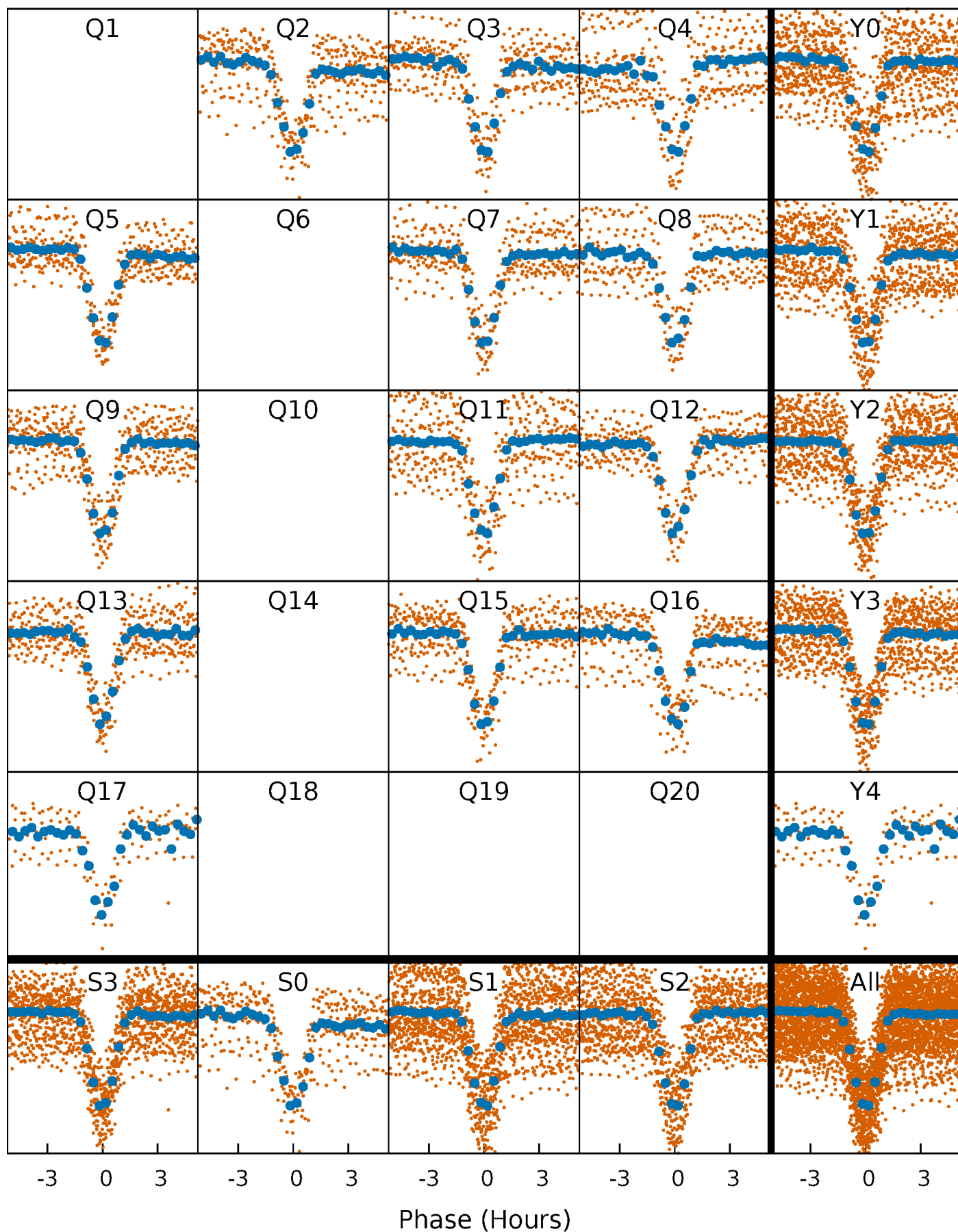


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



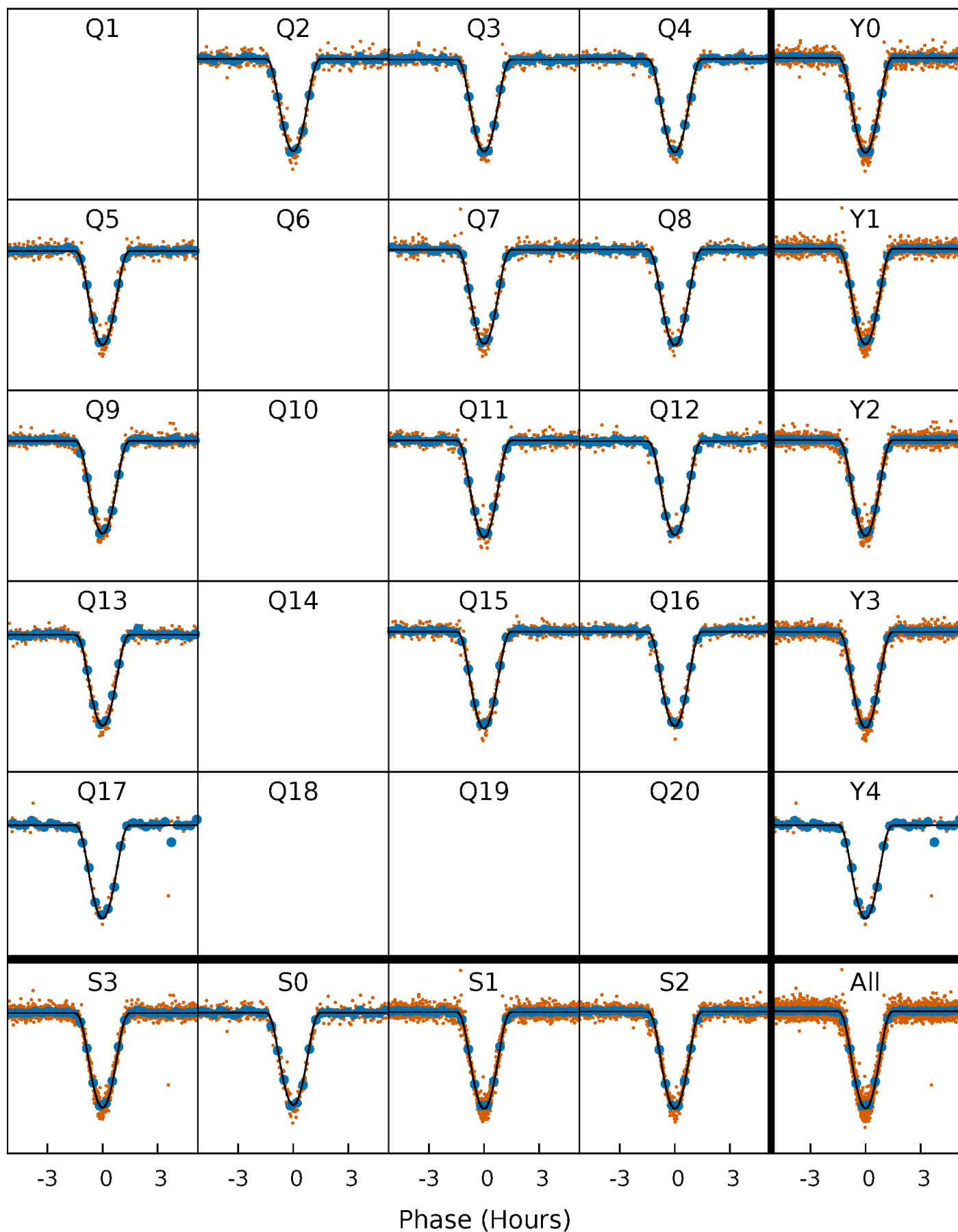
PDC Quarter-Phased Transit Curves

TCE 003973504-02 P= 4.318730 Days $T_0=133.764546$ (BKJD)



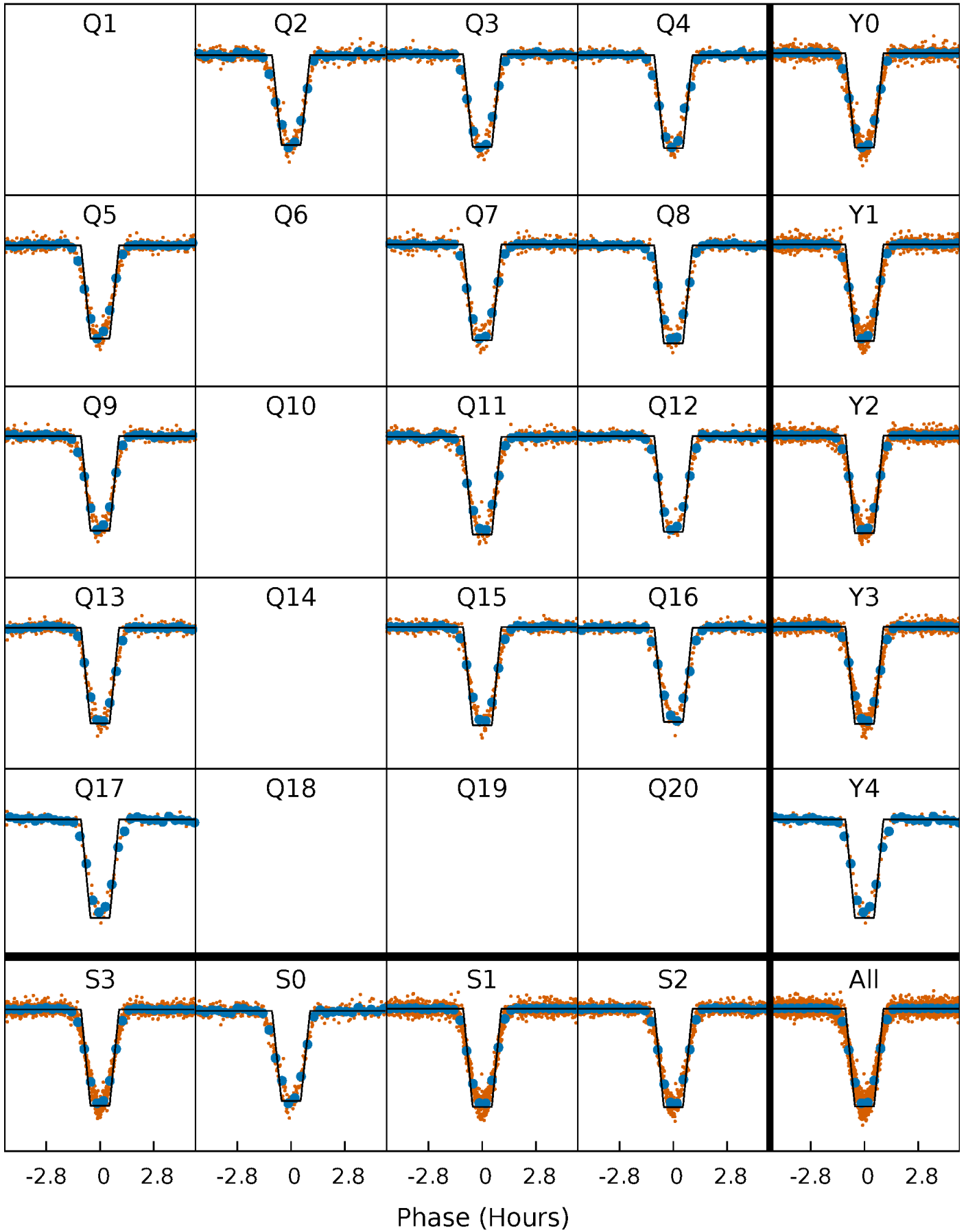
DV Quarter-Phased Transit Curves

TCE 003973504-02 P= 4.318730 Days $T_0=133.764546$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

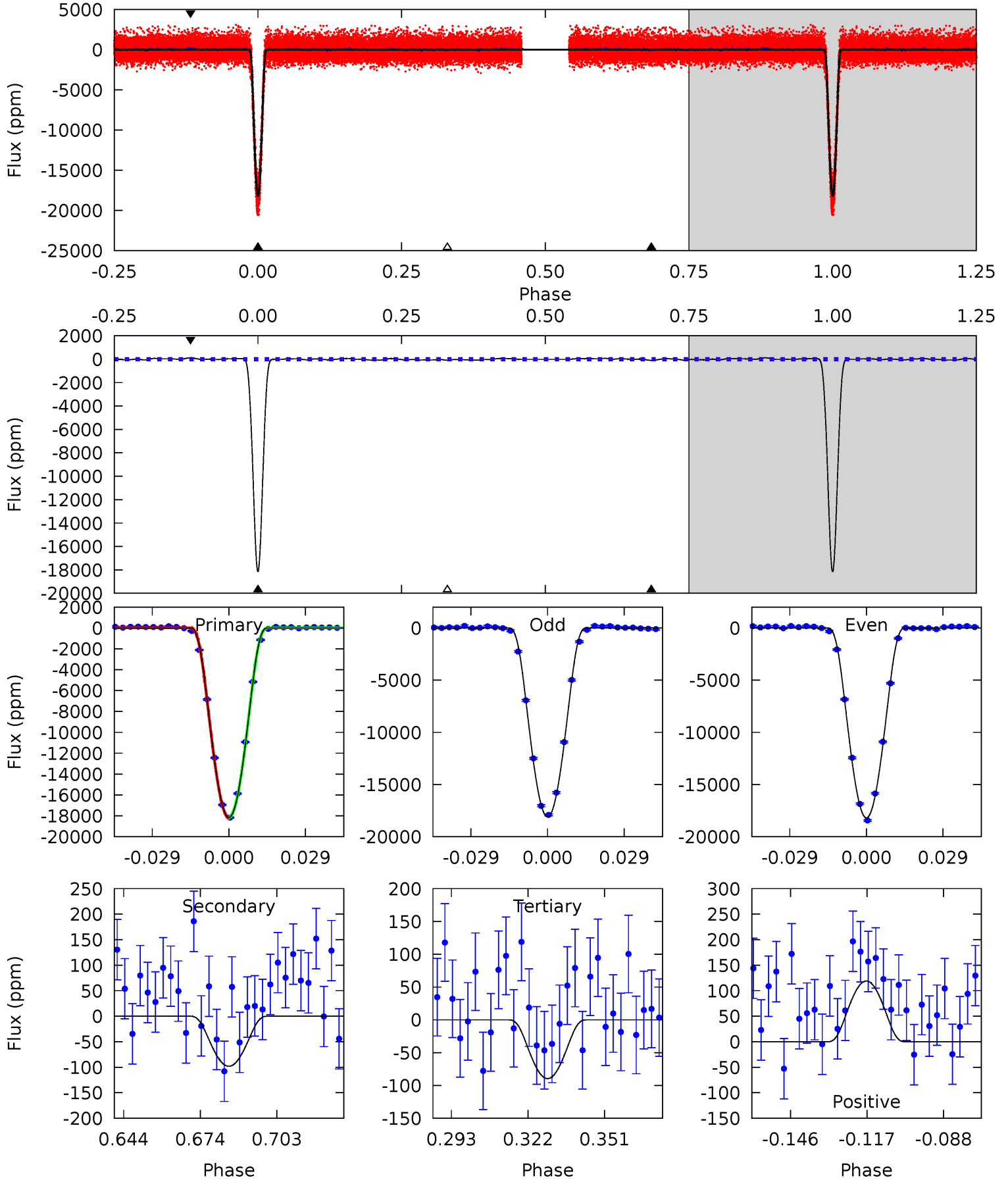
TCE 003973504-02 P= 4.318714 Days $T_0=133.767167$ (BKJD)



DV Model-Shift Uniqueness Test

003973504-02, P = 4.318730 Days, E = 133.764546 Days

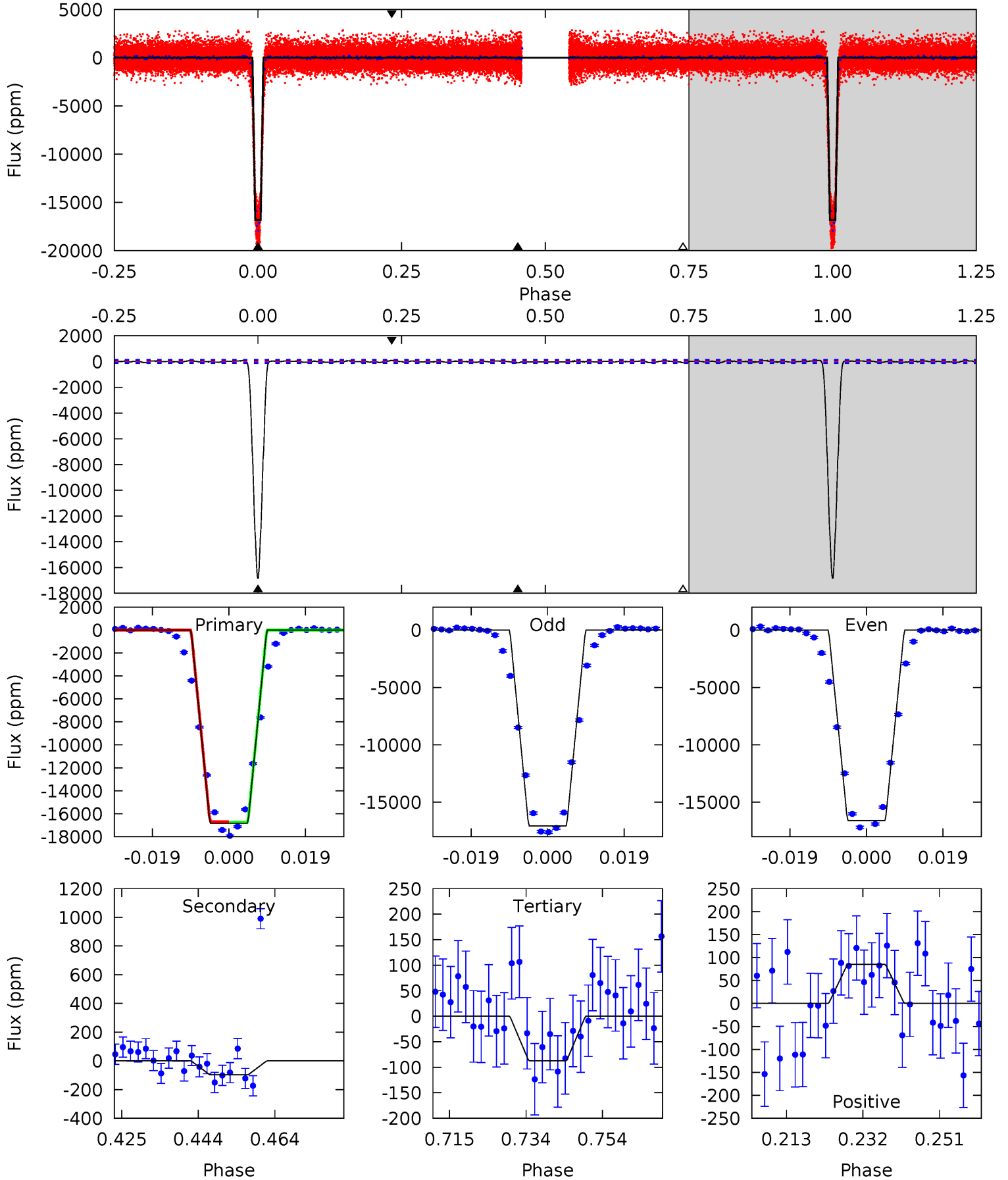
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
910.3	4.92	4.49	5.97	4.82	2.18	2.16	905.8	904.3	0.44	-1.04	2.38	1.00	0.01	1.50



Alt Model-Shift Uniqueness Test

003973504-02, P = 4.318714 Days, E = 133.767167 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
674.5	3.91	3.49	3.41	4.90	2.34	1.31	671.0	671.1	0.42	0.51	9.20	1.00	0.01	1.01



Stellar Parameters For KIC 003973504

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5896^{+176}_{-193}	$4.518^{+0.050}_{-0.213}$	$-0.080^{+0.300}_{-0.300}$	$0.916^{+0.282}_{-0.094}$	$1.008^{+0.124}_{-0.124}$	$1.849^{+0.390}_{-0.996}$
	+3%/-3%	+1%/-5%	+375%/-375%	+31%/-10%	+12%/-12%	+21%/-54%
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 003973504-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-98 ± 20	$21.46^{+4.03}_{-3.07}$	1558^{+113}_{-74}	1512^{+515}_{-3498}	$0.305^{+0.135}_{-0.103}$
Alt.	-98 ± 25	$14.11^{+3.28}_{-2.87}$	1555^{+113}_{-74}	2305^{+213}_{-262}	$0.718^{+0.451}_{-0.283}$

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

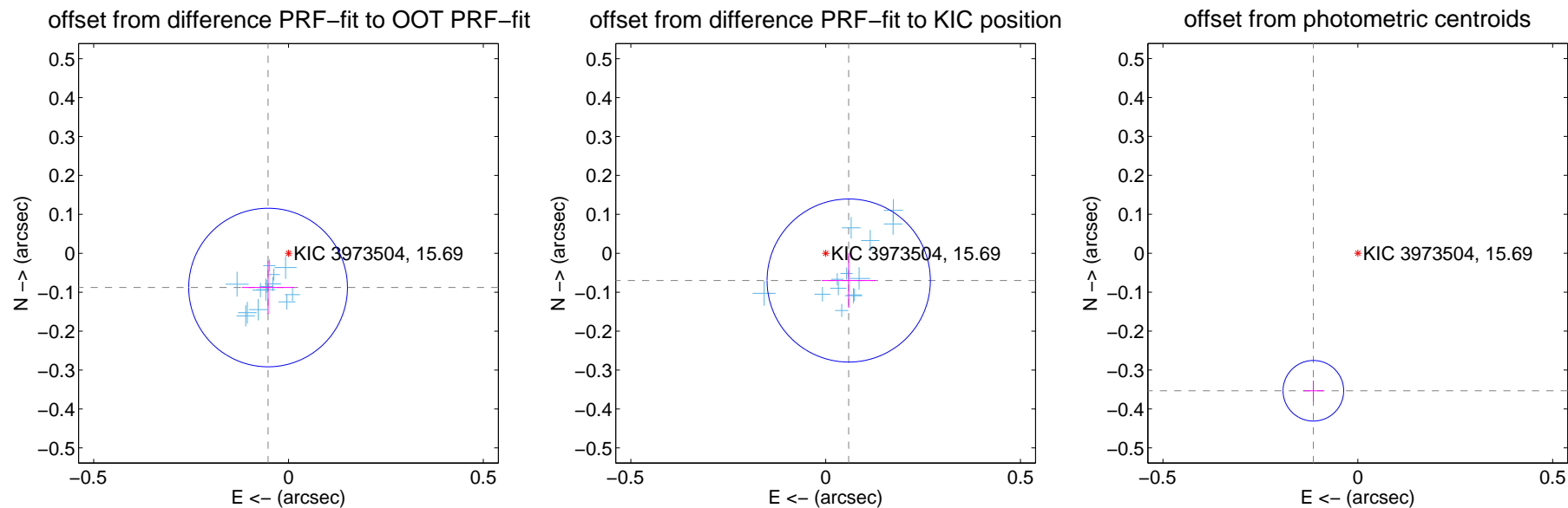
DV Centroid Data

Supplemental centroid analysis for 003973504-02. Kepler magnitude: 15.69. Transit SNR 445.76

There are 13 quarters with good PRF difference image offsets

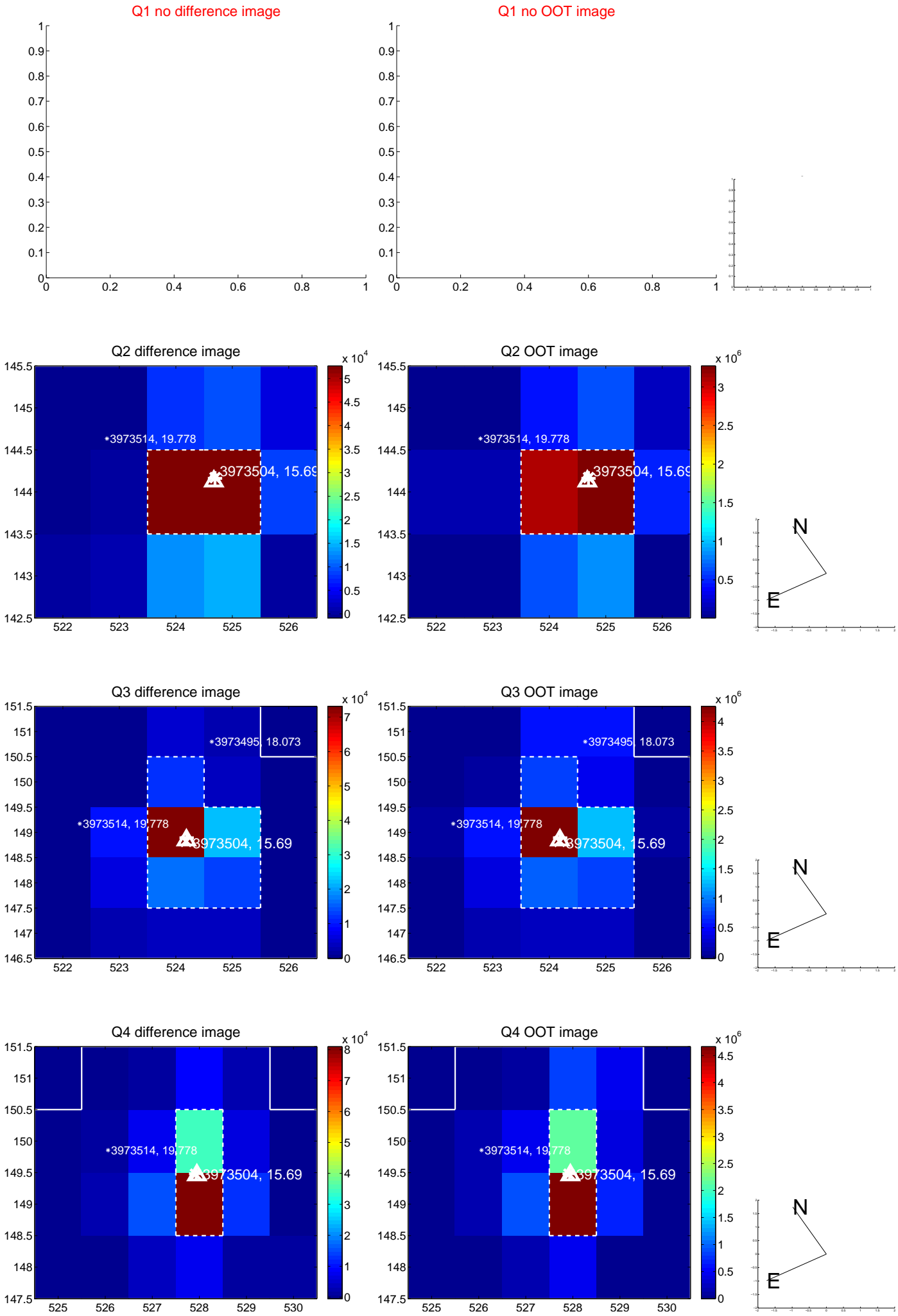
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.102 ± 0.068	1.51	0.052 ± 0.068	-0.088 ± 0.068
PRF-fit source offset from KIC position	0.092 ± 0.070	1.31	-0.059 ± 0.069	-0.070 ± 0.070
photometric centroid source offset	0.37 ± 0.03	14.31	0.11 ± 0.03	-0.35 ± 0.03

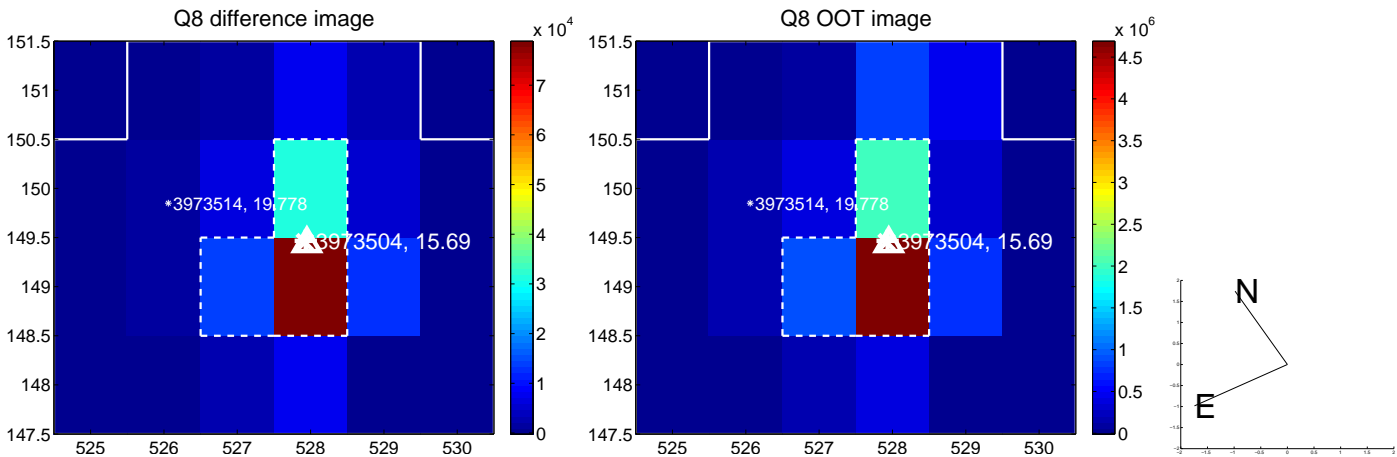
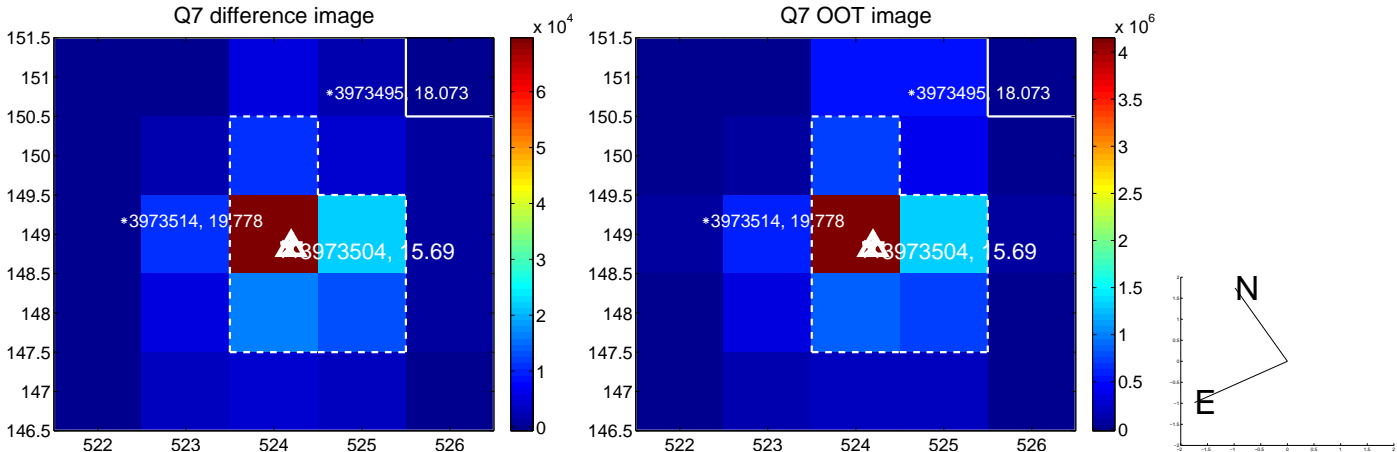
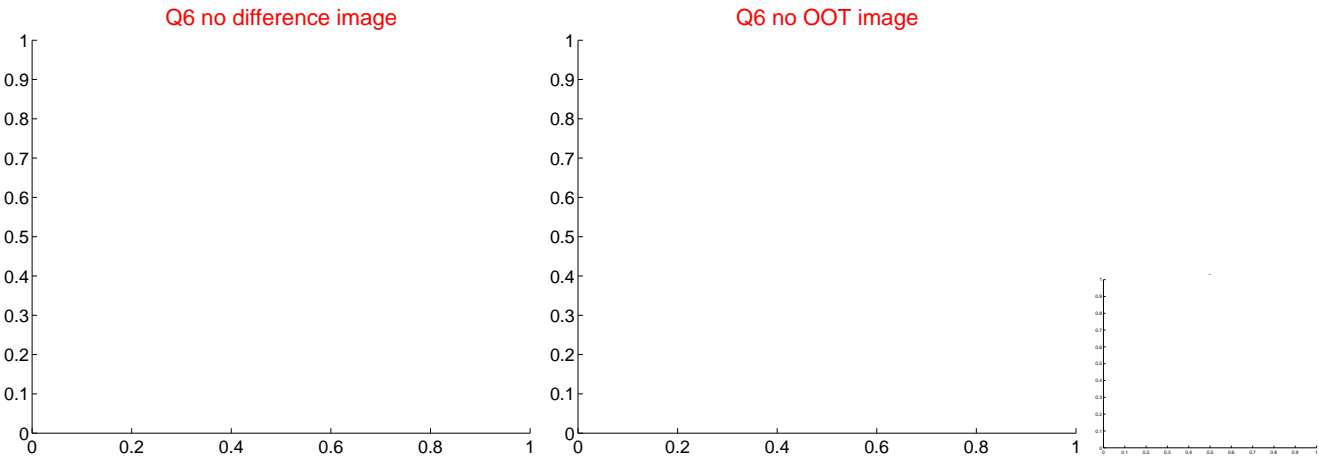
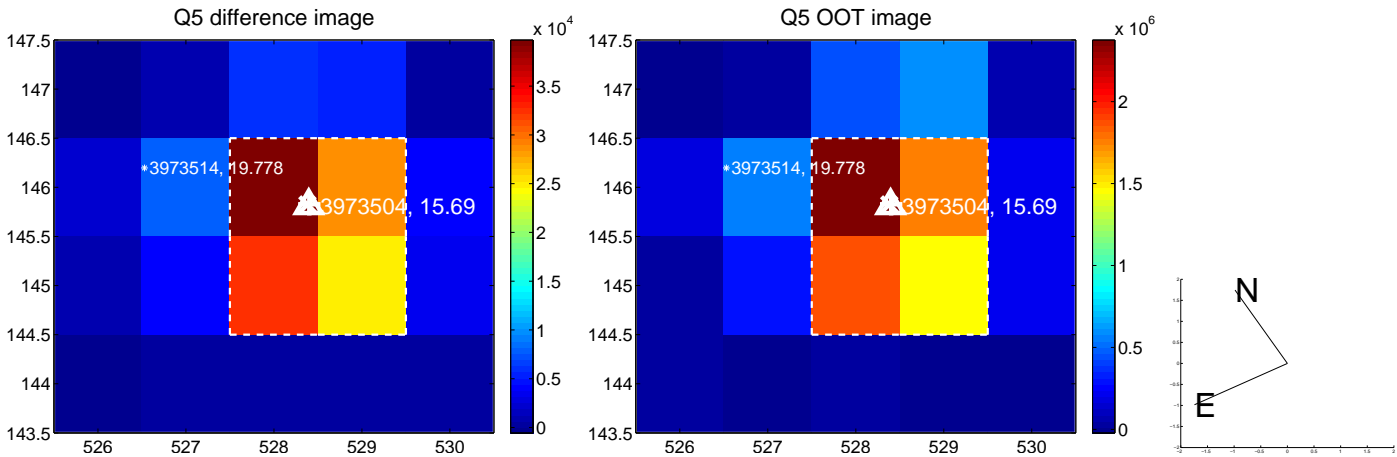


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

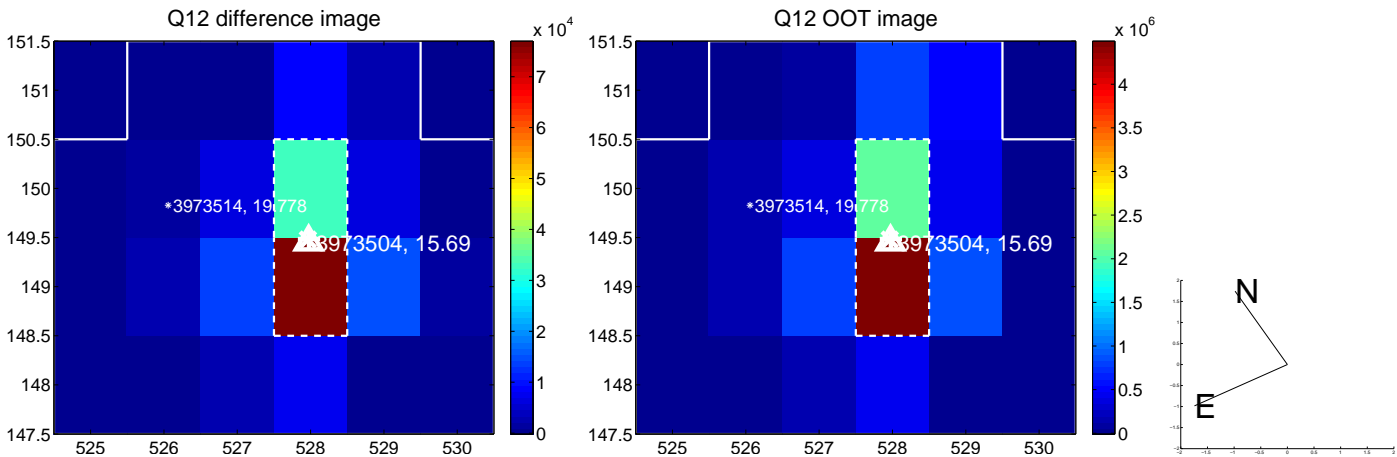
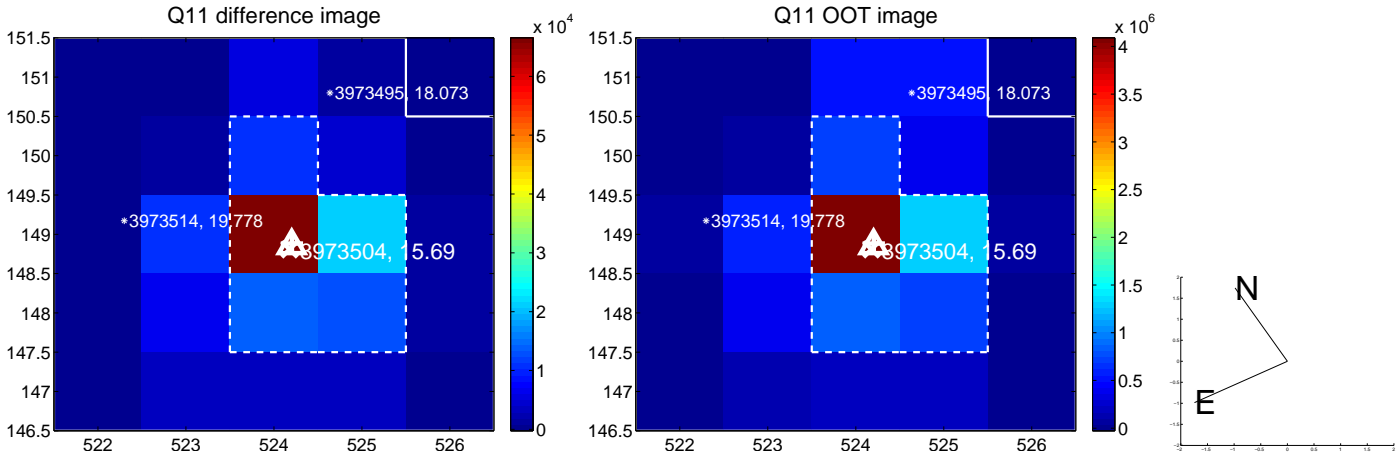
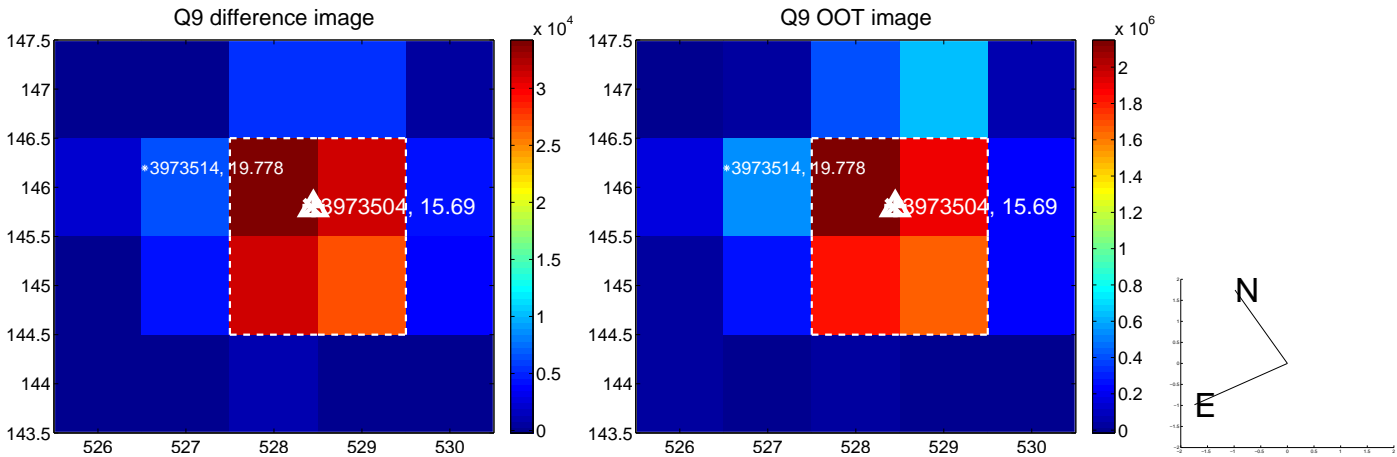
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



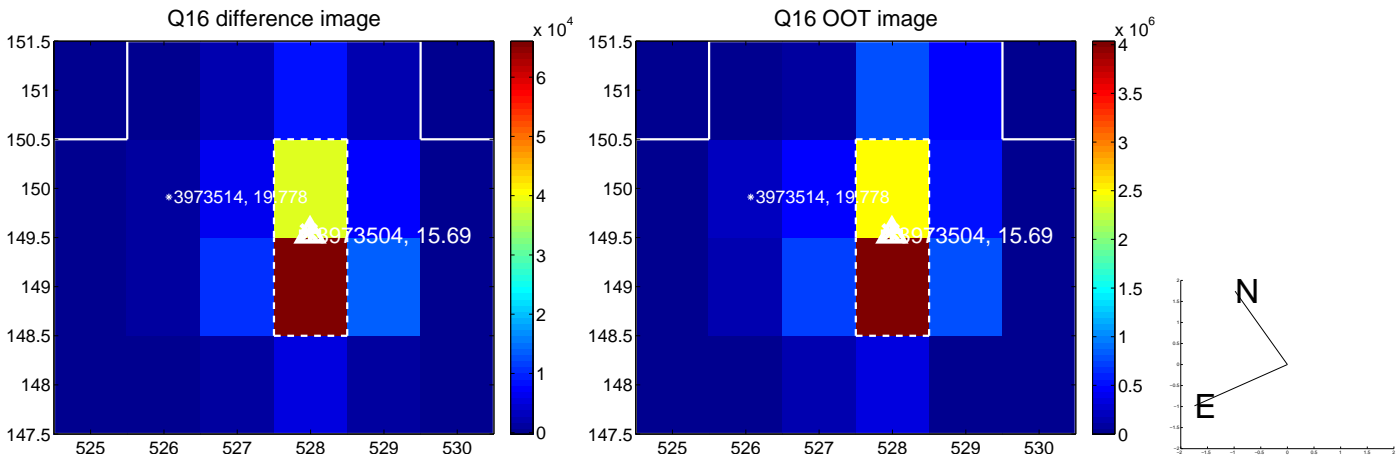
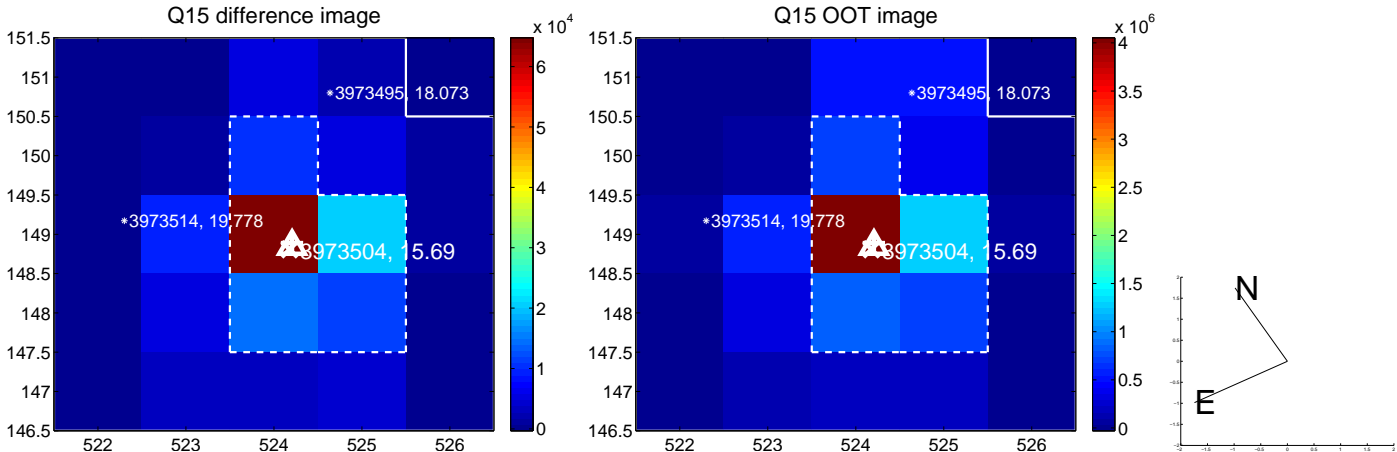
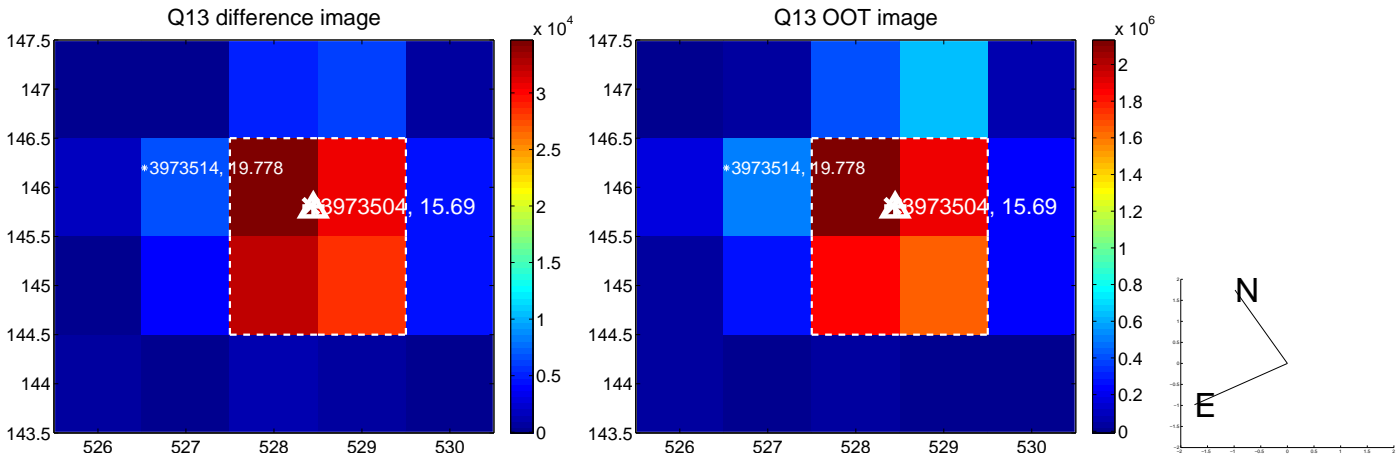
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



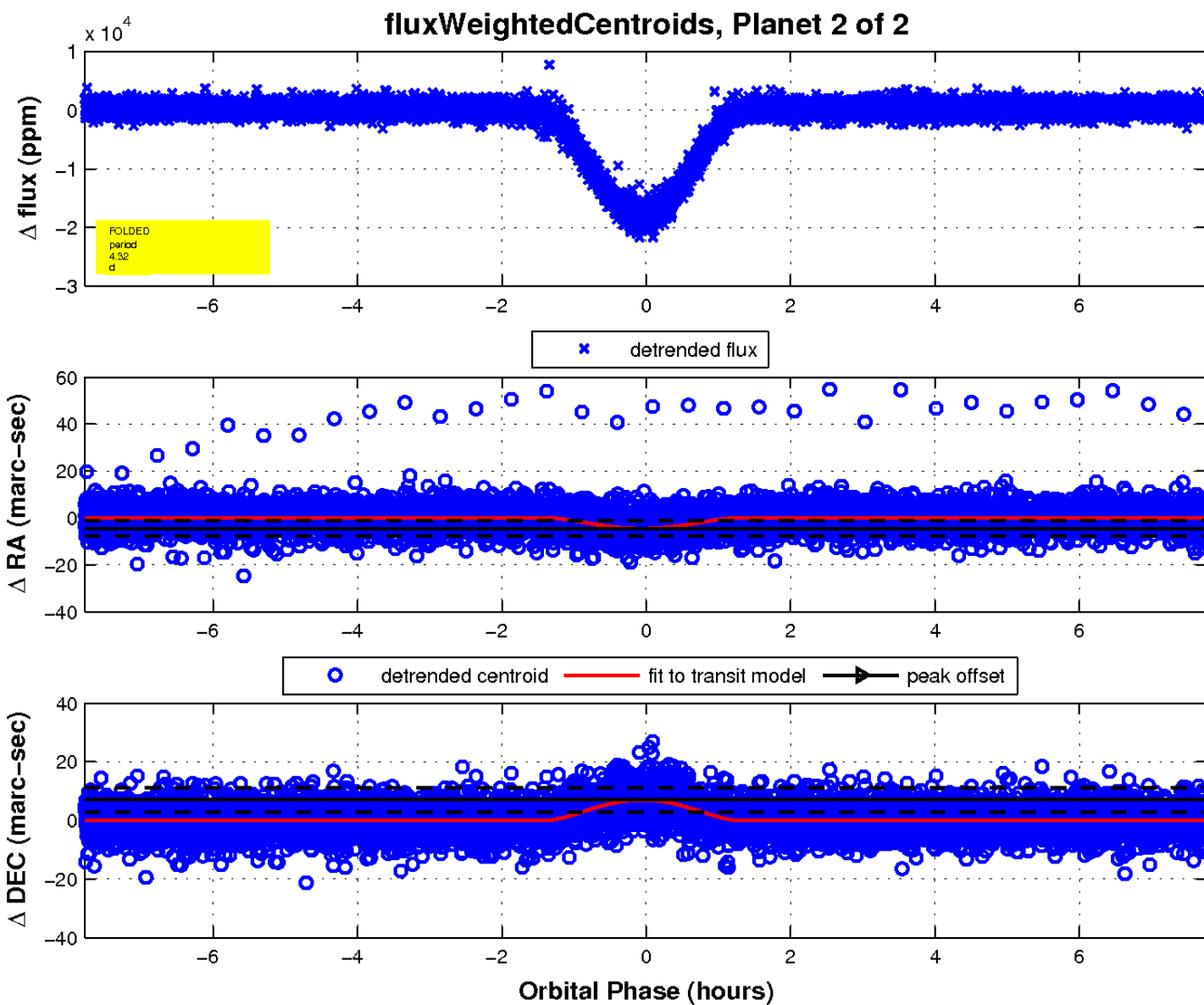
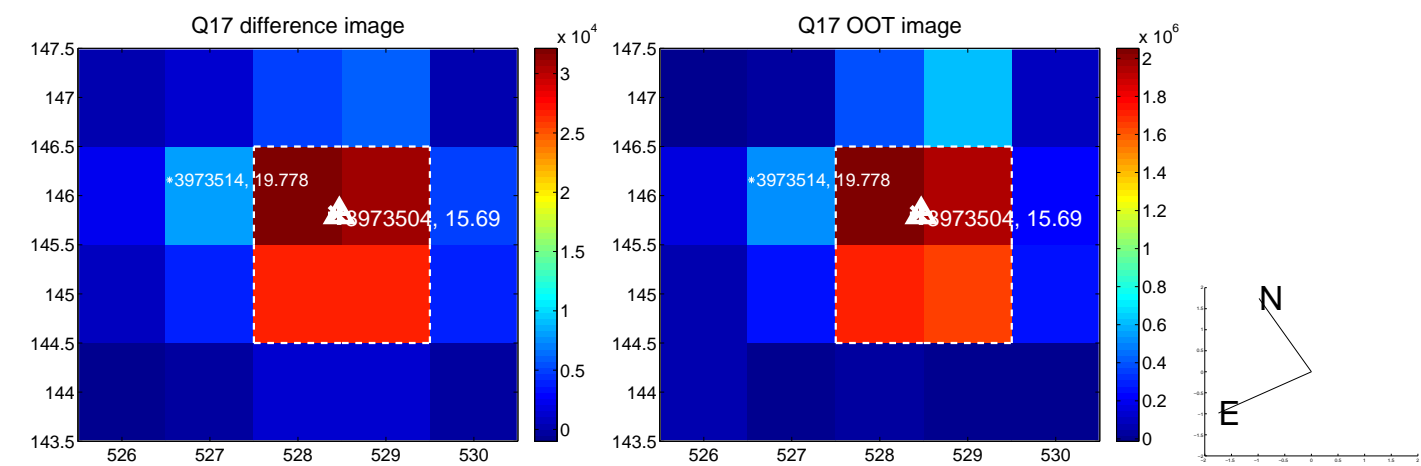
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

