

KIC 011662440

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})
011662440-01	OBS	7469.01	13.639480	144.531425	78876.1	3.176	1841.8	1085.2	0.85	5461	36.04	50.56
011662440-02	OBS	No	13.639471	140.505275	28086.9	3.720	697.4	577.5	0.85	5461	21.75	50.56

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011662440-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
011662440-02	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.

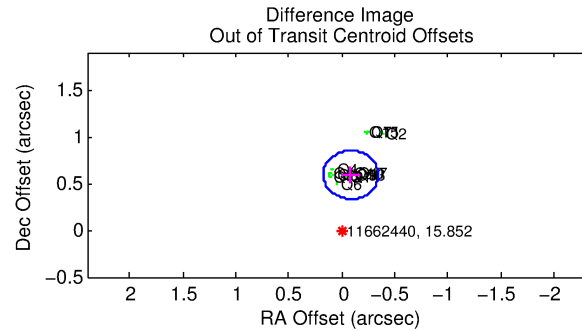
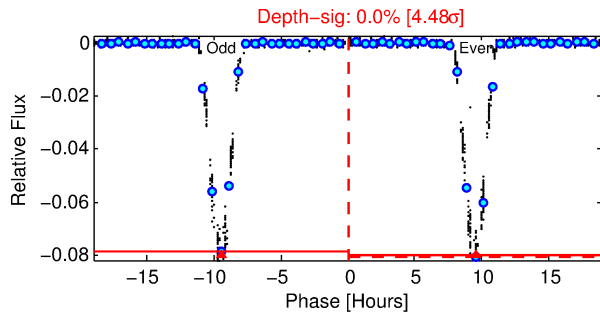
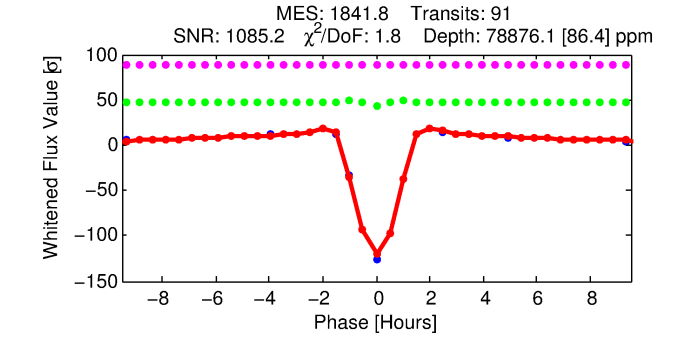
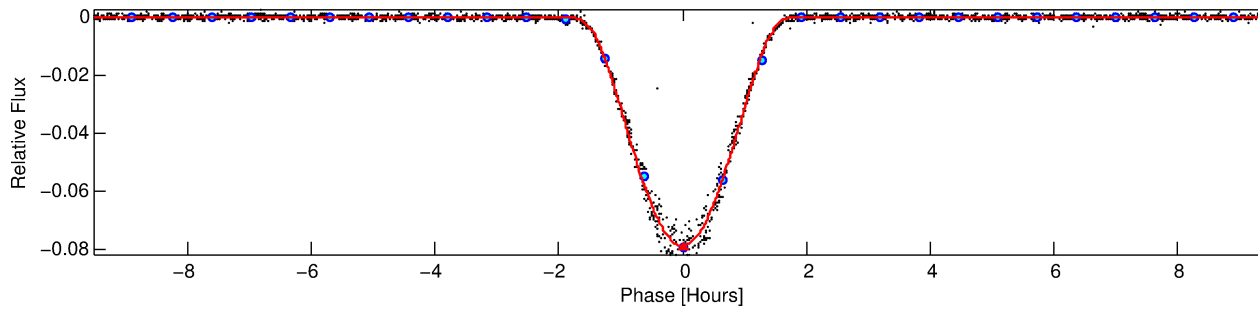
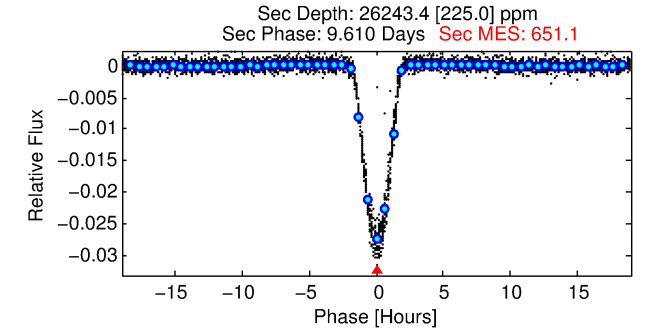
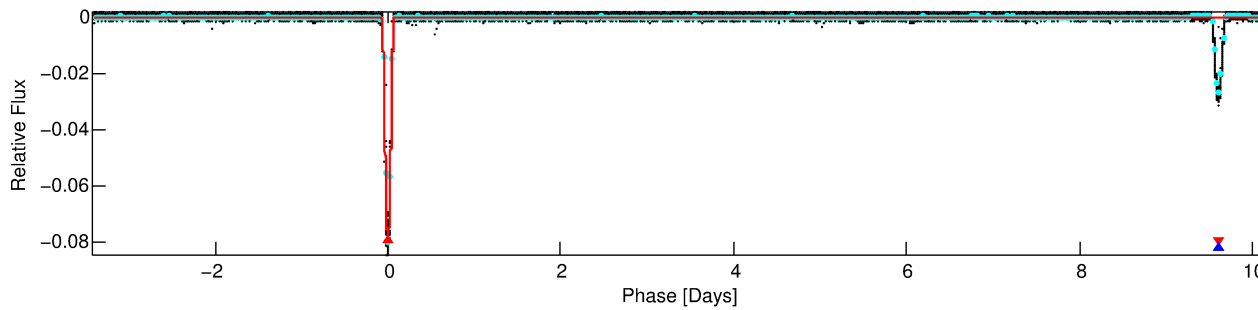
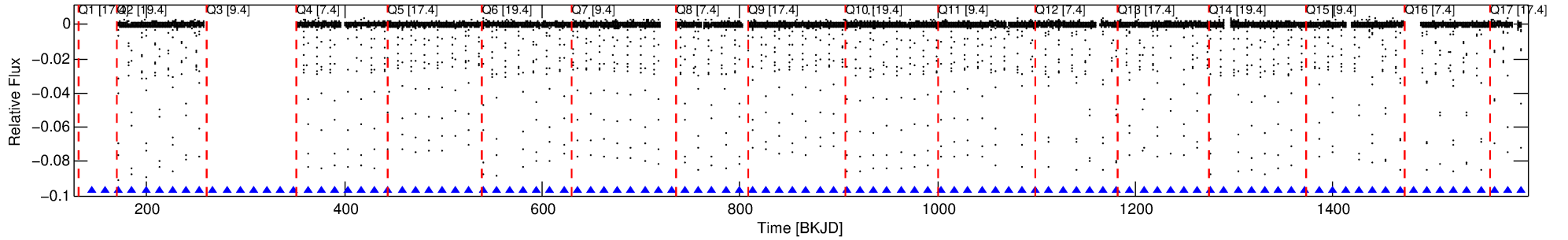
Ephemeris Match Information For 011662440-01

No Significant Match Found

DV One-Page Summary

KIC: 11662440 Candidate: 1 of 2 Period: 13.639 d
KOI: K07469.01 Corr: 0.996

Kp: 15.85 R*: 0.85 Rs Teff: 5461.0 K Logg: 4.52 Fe/H: -0.100



DV Fit Results:

Period = 13.63948 [0.00000] d
Epoch = 144.5314 [0.0001] BKJD
Rp/R* = 0.3904 [0.0306]
a/R* = 34.05 [0.04]
b = 0.93 [0.04]
Seff = 50.56 [14.71]
Teq = 680 [49] K
Rp = 36.04 [8.33] Re
a = 0.1062 [0.0192] AU
Ag = 125.38 [38.02] [3.27σ]
Teffp = 3518 [180] K [15.17σ]

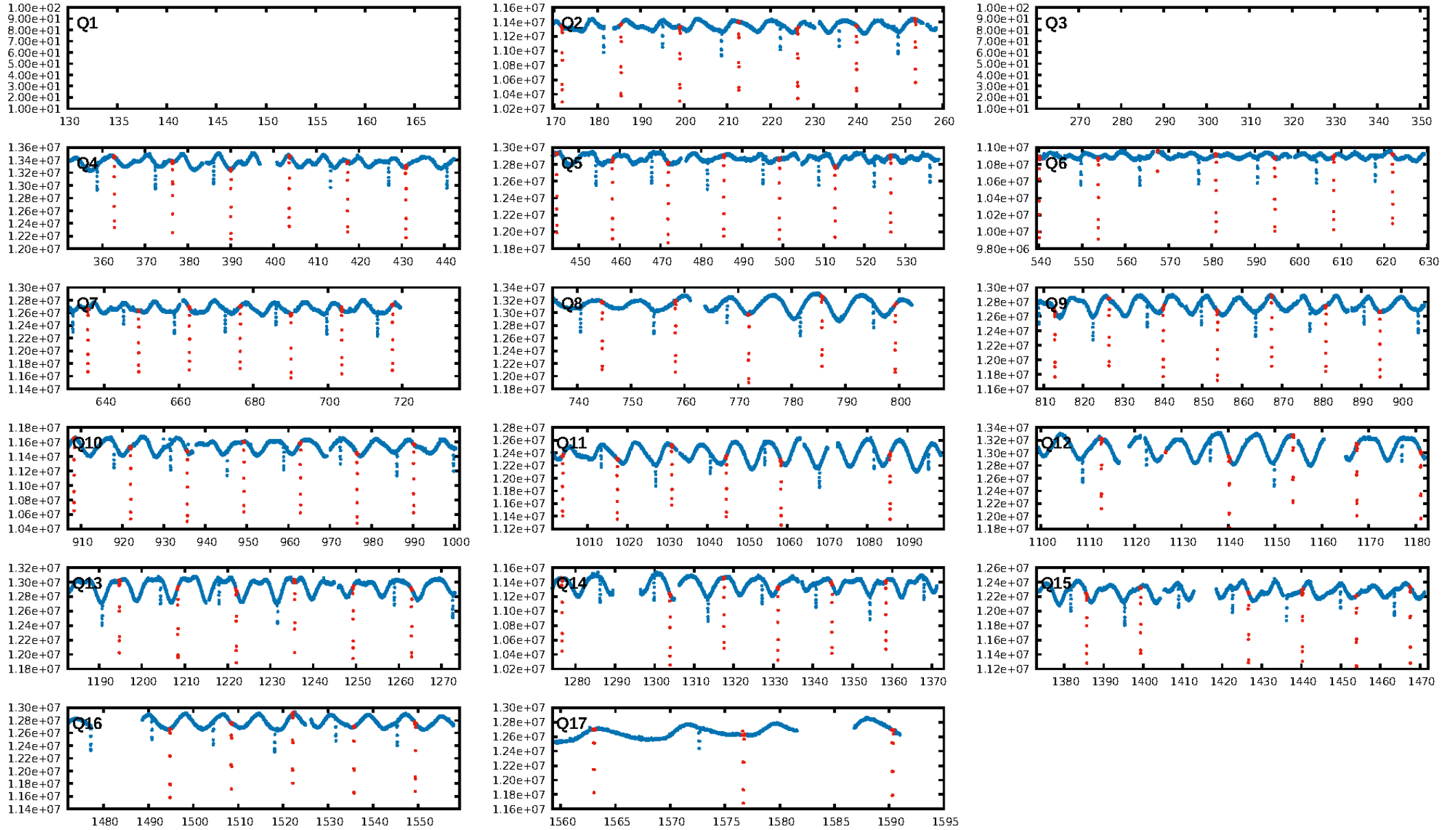
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.3%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [88/88]
GhostDiagnostic-chr: 1.973
Centroid-sig: 0.0%
Centroid-so: 0.055 arcsec [8.58σ]
OotOffset-rm: 0.597 arcsec [6.91σ]
KicOffset-rm: 0.198 arcsec [2.89σ]
OotOffset-st: 4/3/4/4 [15]
KicOffset-st: 4/3/4/4 [15]
DiffImageQuality-fgm: 1.00 [15/15]
DiffImageOverlap-fno: 1.00 [15/15]

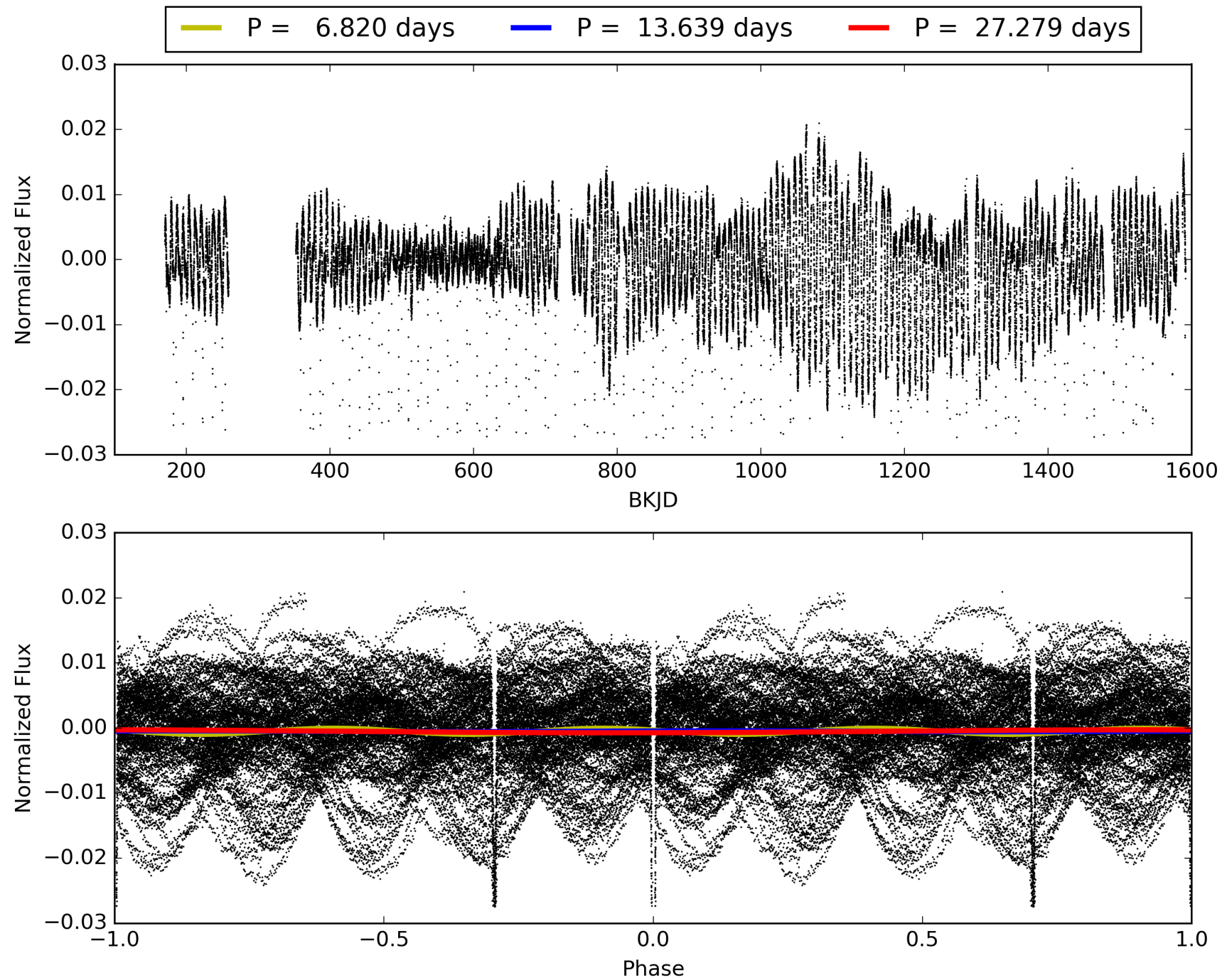
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:00:05 Z

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

TCE 011662440-01, PDC Light Curves

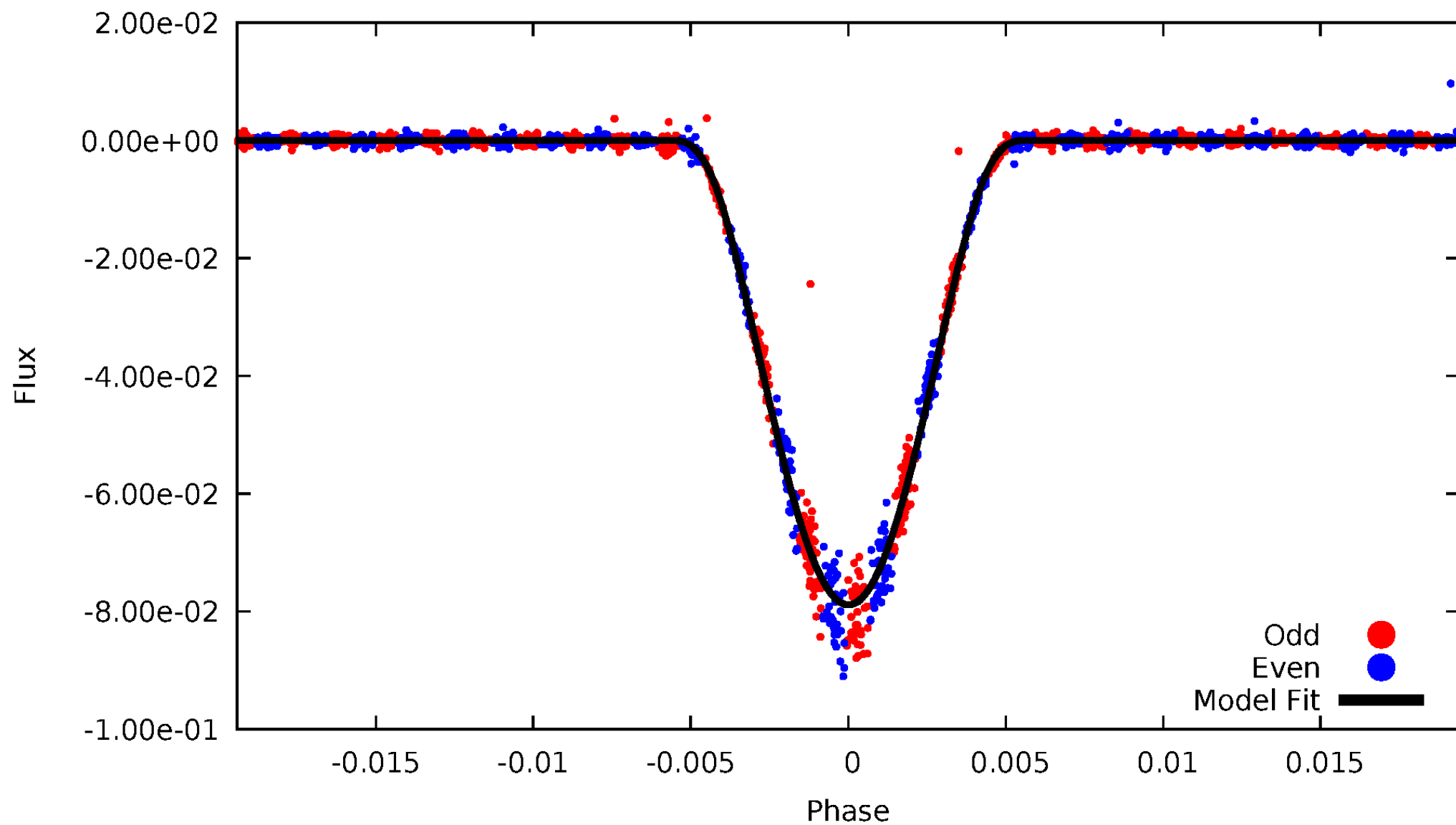


TCE 011662440-01



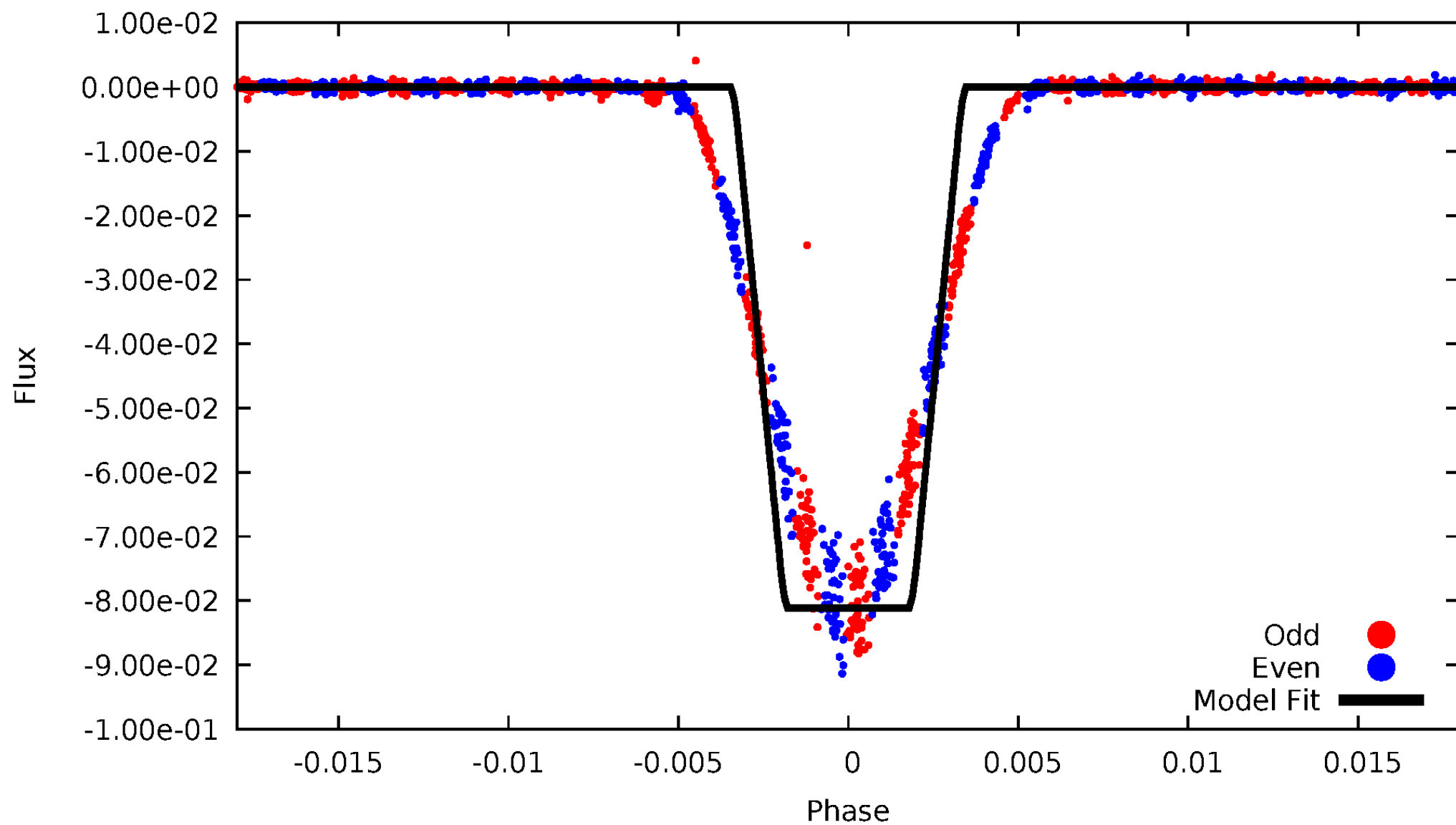
DV Odd/Even

TCE 011662440-01



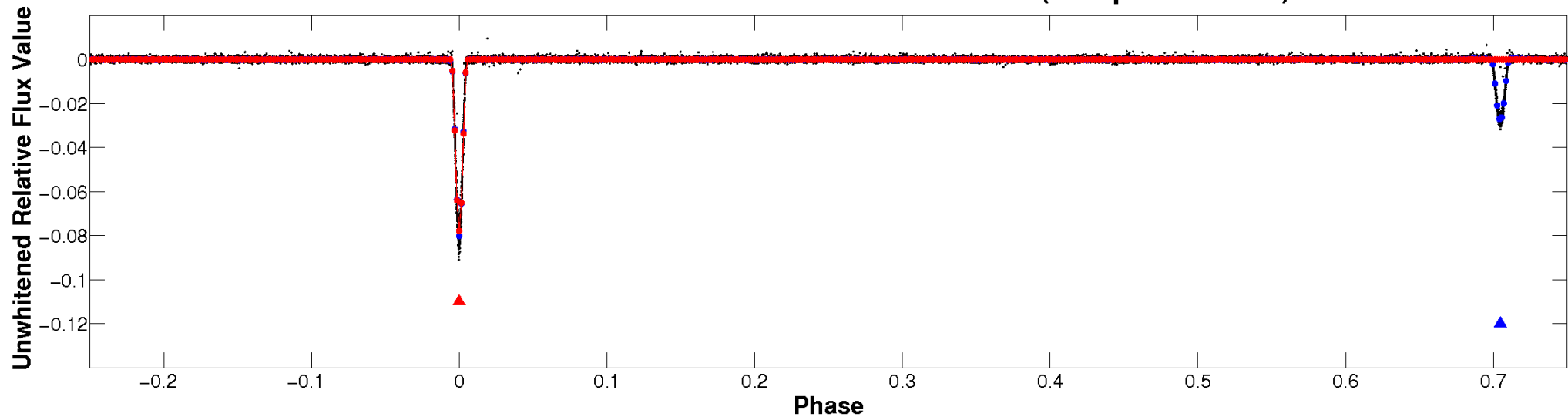
ALT Odd/Even

TCE 011662440-01

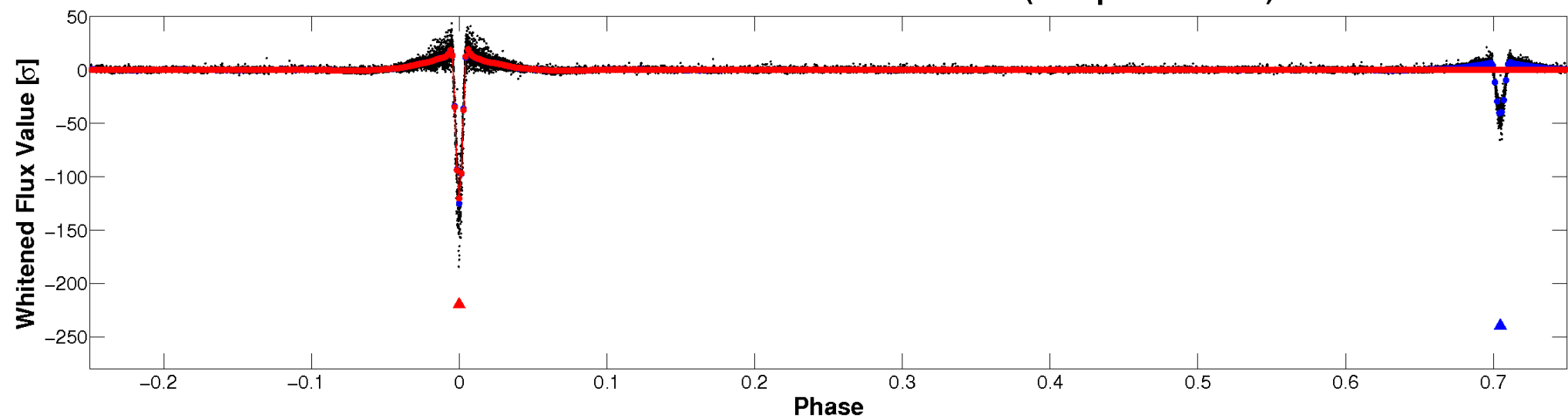


Non-Whitened Vs. Whitened Light Curve

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

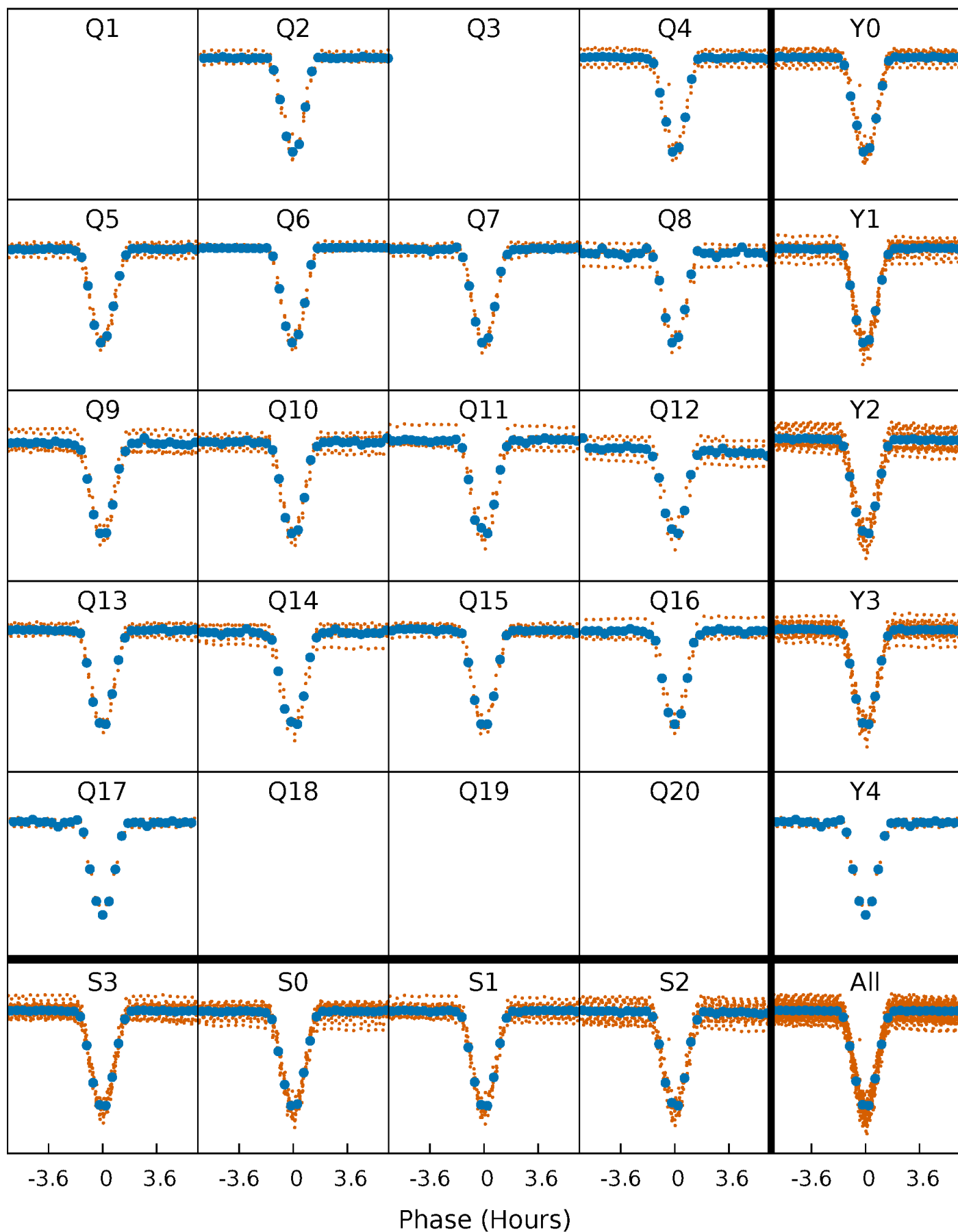


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



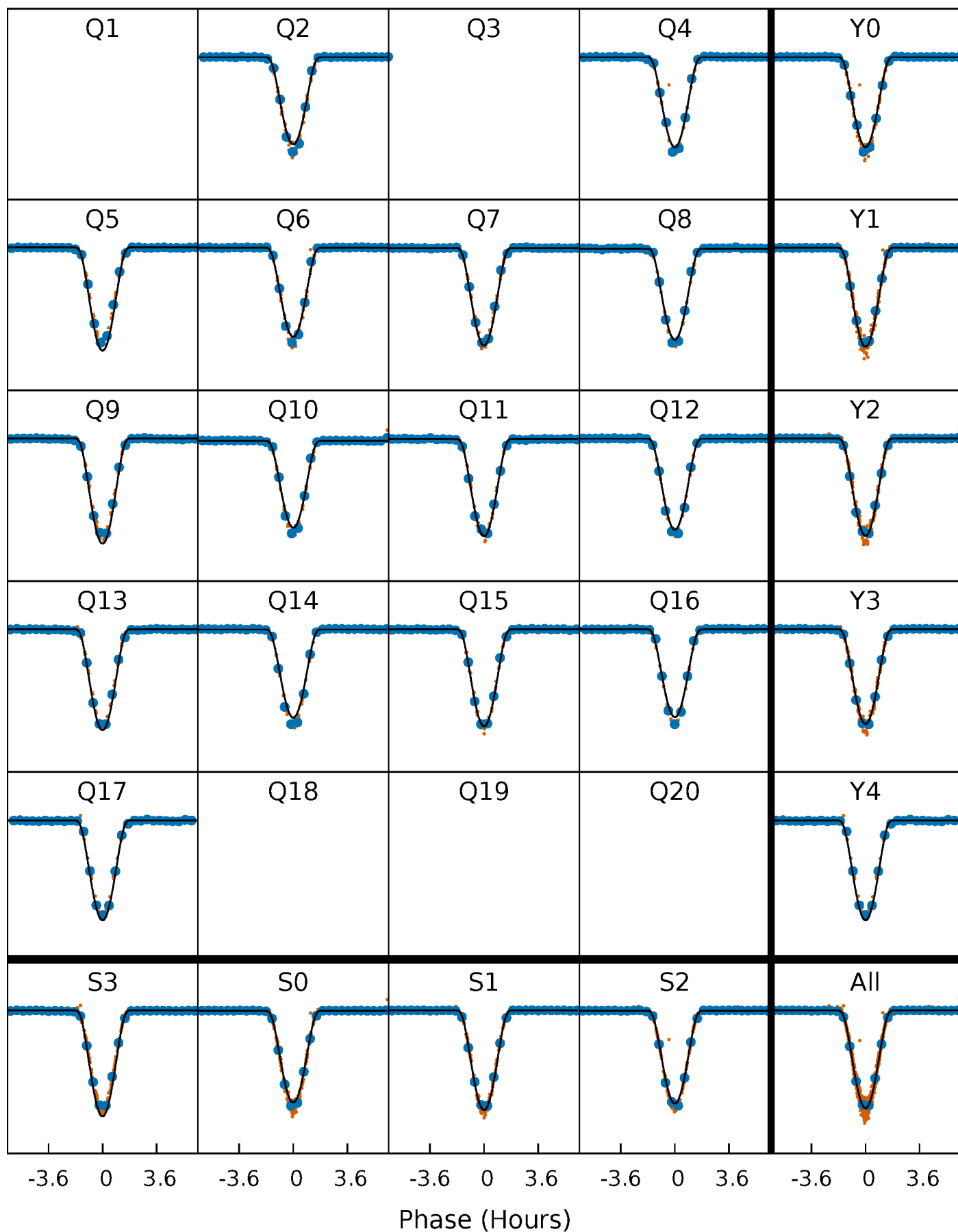
PDC Quarter-Phased Transit Curves

TCE 011662440-01 P= 13.639480 Days $T_0=144.531425$ (BKJD)



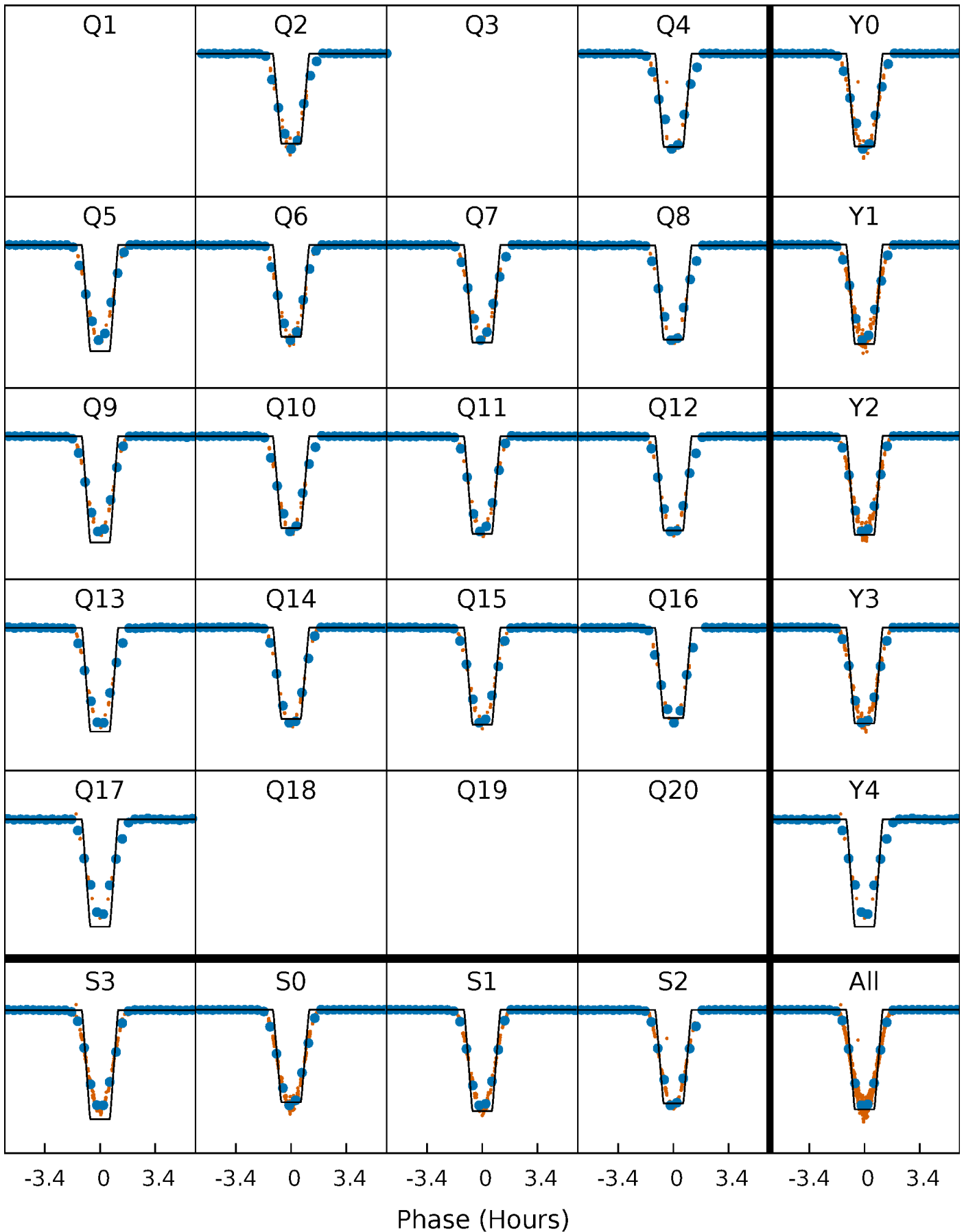
DV Quarter-Phased Transit Curves

TCE 011662440-01 P= 13.639480 Days $T_0=144.531425$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

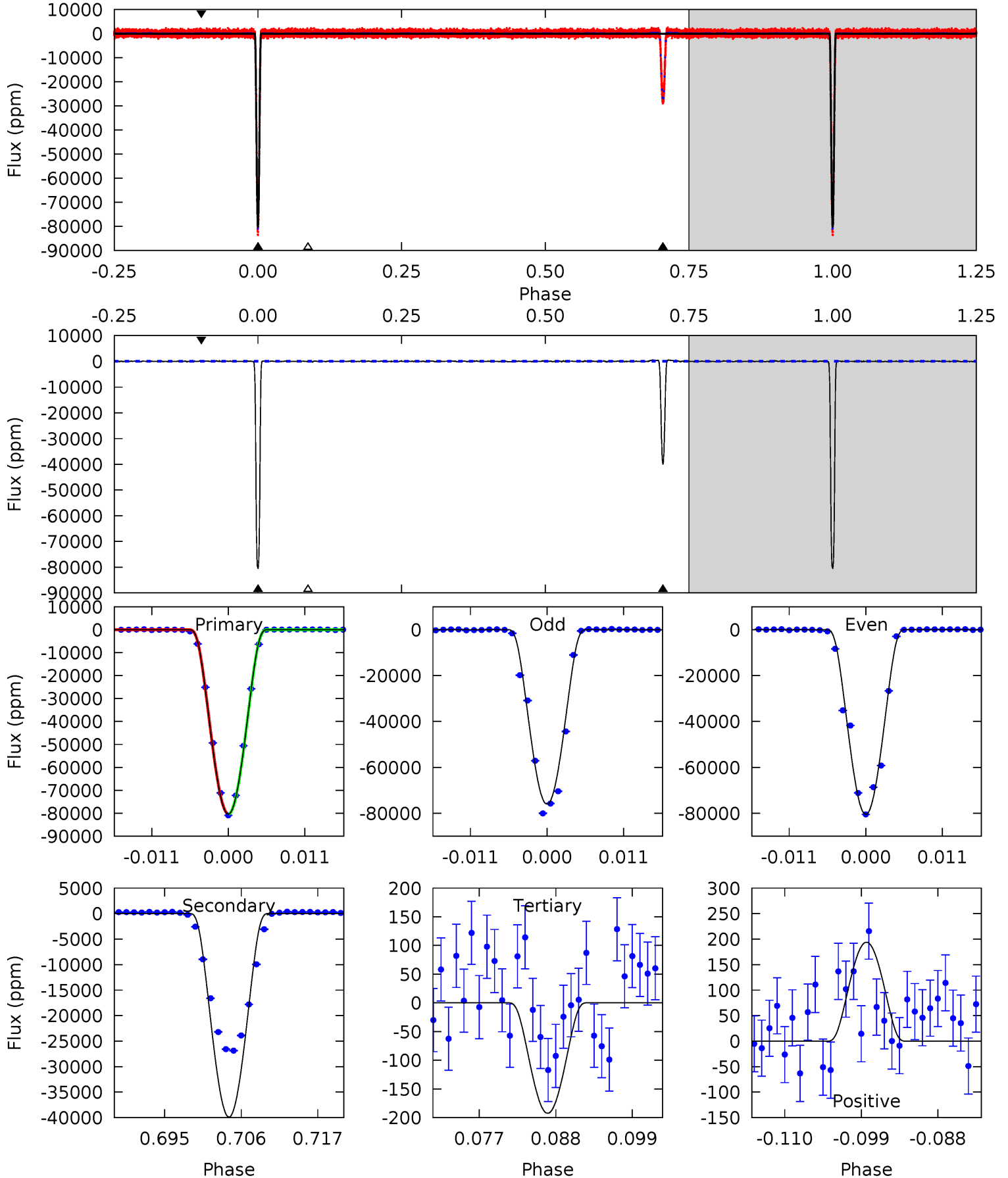
TCE 011662440-01 P= 13.639478 Days $T_0=144.531658$ (BKJD)



DV Model-Shift Uniqueness Test

011662440-01, P = 13.639480 Days, E = 144.531425 Days

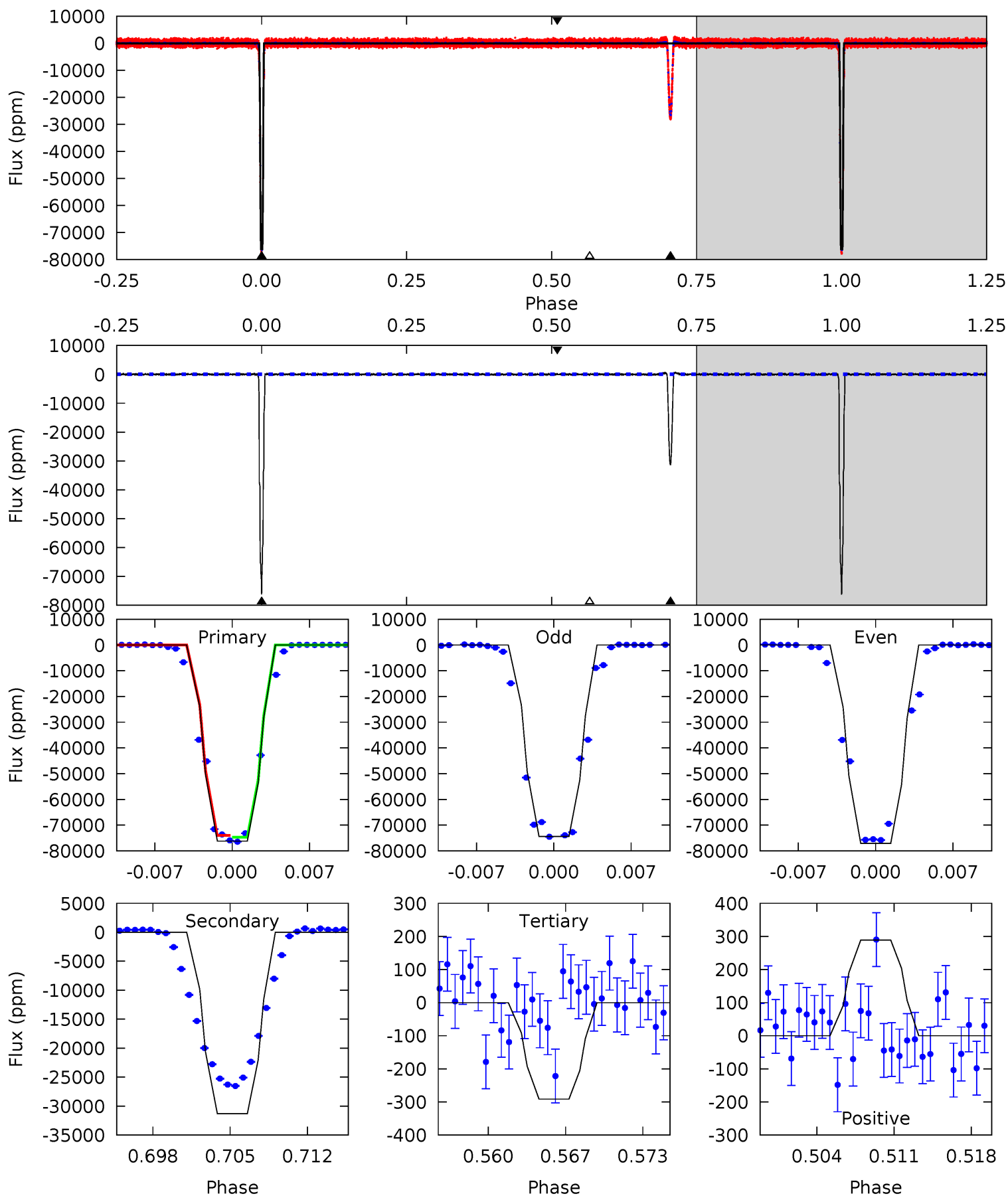
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2958	1467	7.08	7.14	5.01	2.54	3.29	2951	2951	1460	1460	81.5	0.98	0.01	0



Alt Model-Shift Uniqueness Test

011662440-01, P = 13.639478 Days, E = 144.531658 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1284	527.8	4.91	4.87	5.10	2.70	1.62	1279	1279	522.9	522.9	26.2	0.99	0.01	0



Stellar Parameters For KIC 011662440

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5461^{+180}_{-164}	$4.517^{+0.060}_{-0.140}$	$-0.100^{+0.300}_{-0.300}$	$0.846^{+0.184}_{-0.085}$	$0.858^{+0.101}_{-0.082}$	$1.998^{+0.603}_{-0.771}$
	+3%/-3%	+1%/-3%	+300%/-300%	+22%/-10%	+12%/-10%	+30%/-39%
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 011662440-01 / KOI 7469.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-39879 ± 27	$37.04^{+4.77}_{-4.05}$	965^{+53}_{-46}	4193^{+173}_{-154}	188^{+46}_{-38}
Alt.	-31331 ± 59	$27.06^{+4.10}_{-3.55}$	962^{+52}_{-40}	4510^{+233}_{-234}	273^{+83}_{-65}

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 $A_{obs} \gg 1.0$

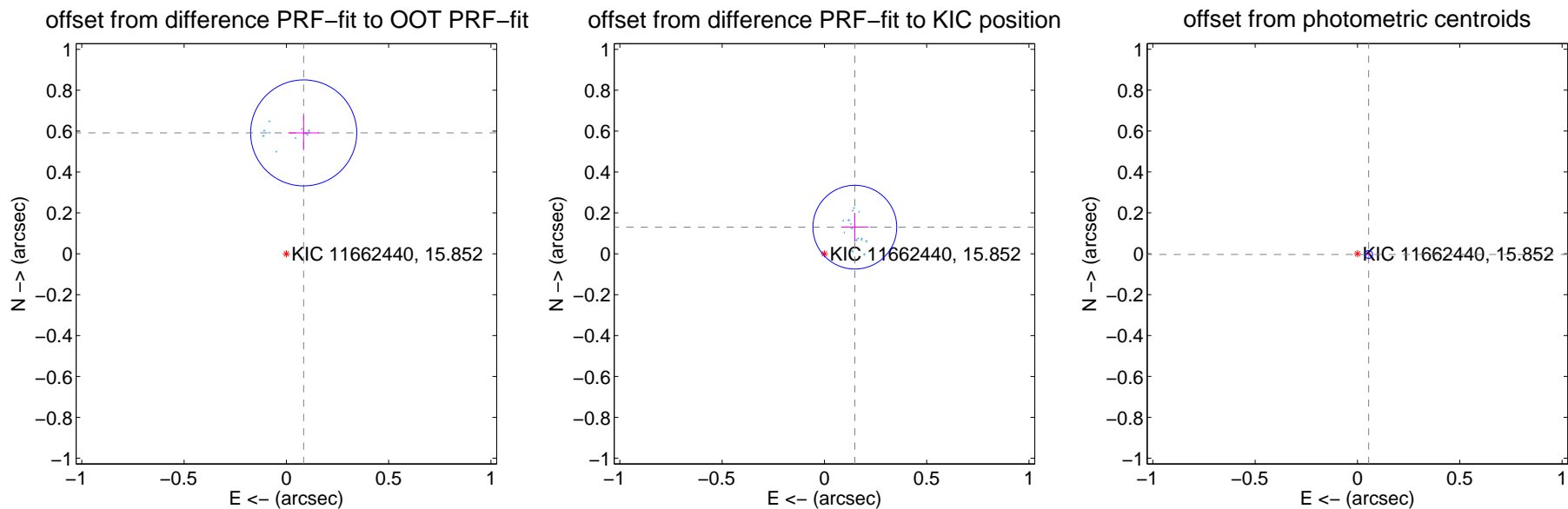
DV Centroid Data

Supplemental centroid analysis for 011662440-01. Kepler magnitude: 15.85. Transit SNR 1085.17

There are 15 quarters with good PRF difference image offsets

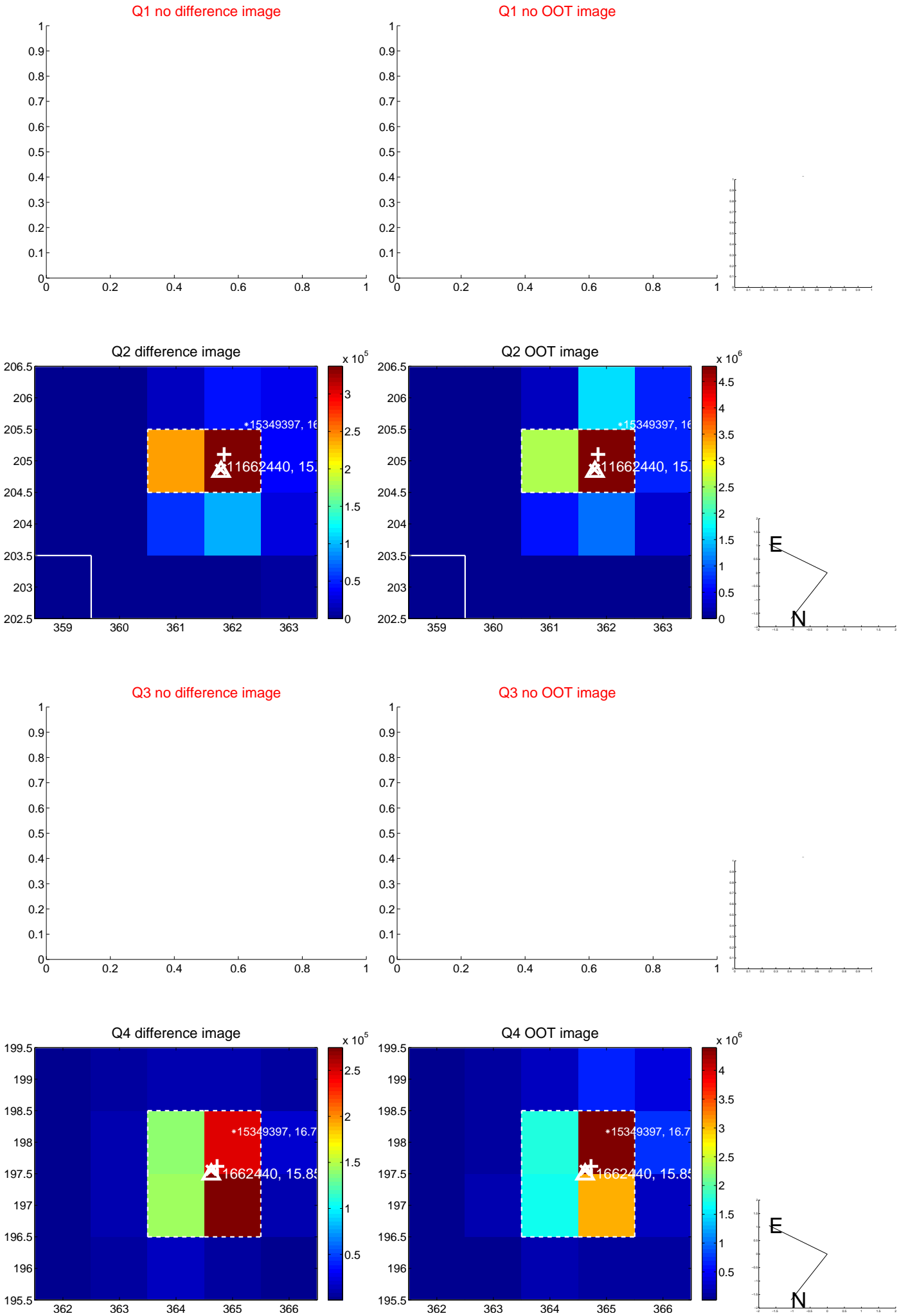
The direct PRF centroid is offset from the target star catalog position by about 0.55 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.597 ± 0.086	6.91	-0.085 ± 0.076	0.591 ± 0.084
PRF-fit source offset from KIC position	0.198 ± 0.068	2.89	-0.149 ± 0.067	0.130 ± 0.069
photometric centroid source offset	0.05 ± 0.01	8.58	-0.05 ± 0.01	-0.00 ± 0.01

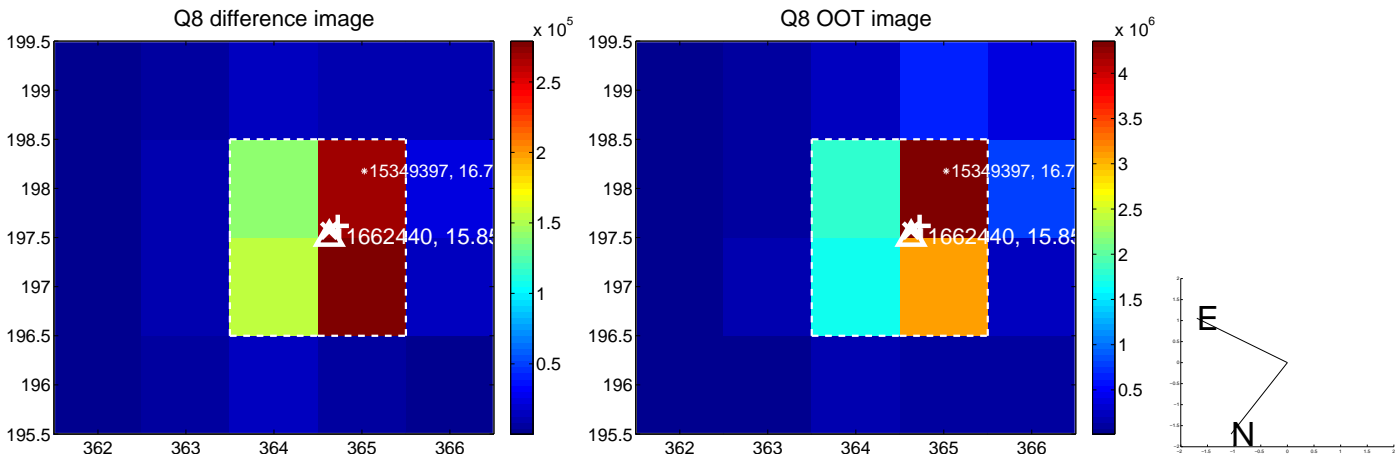
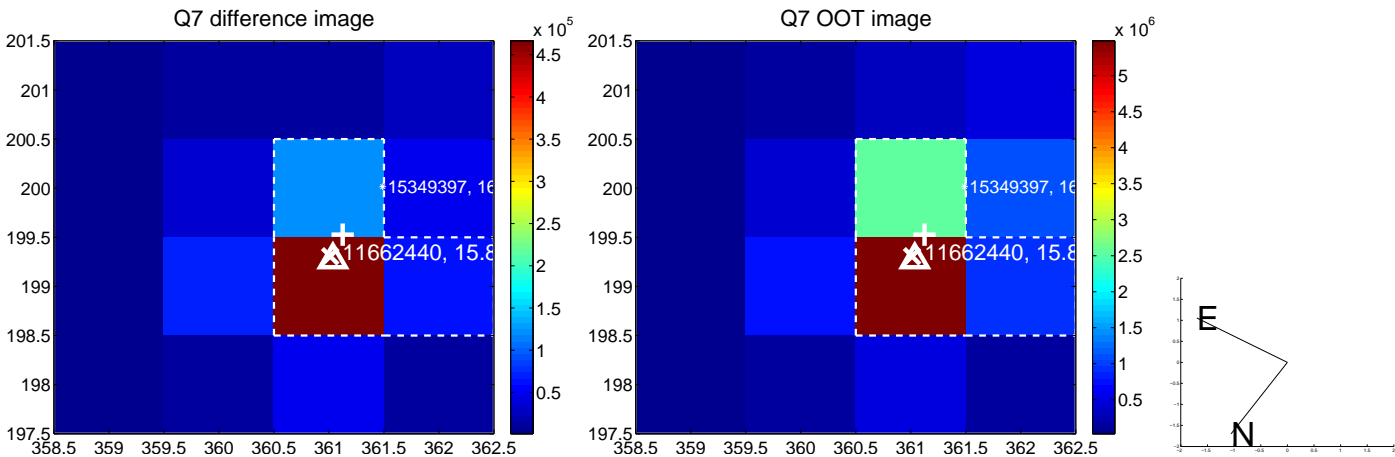
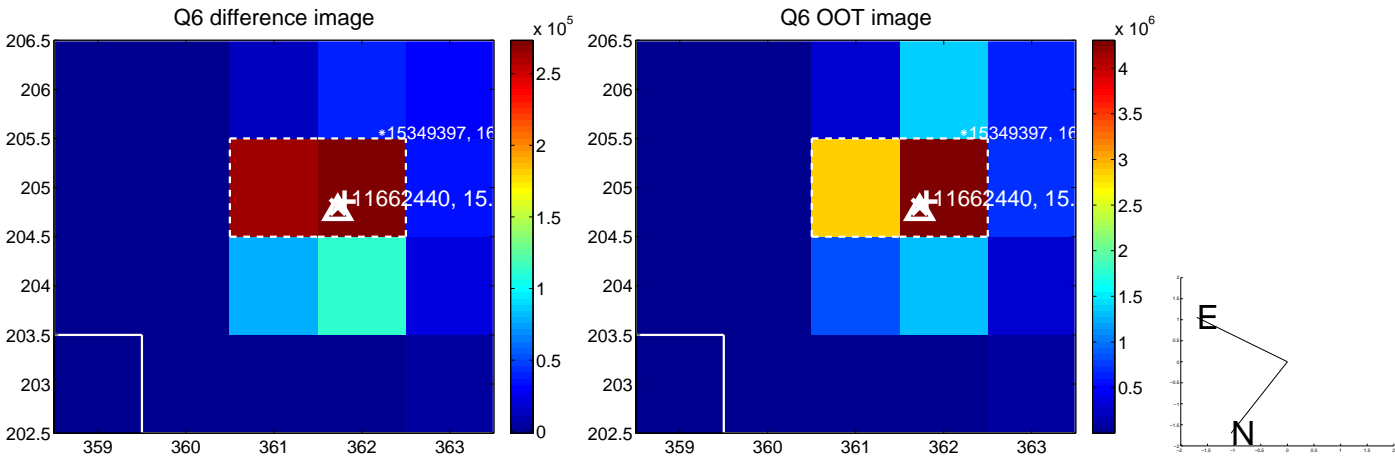
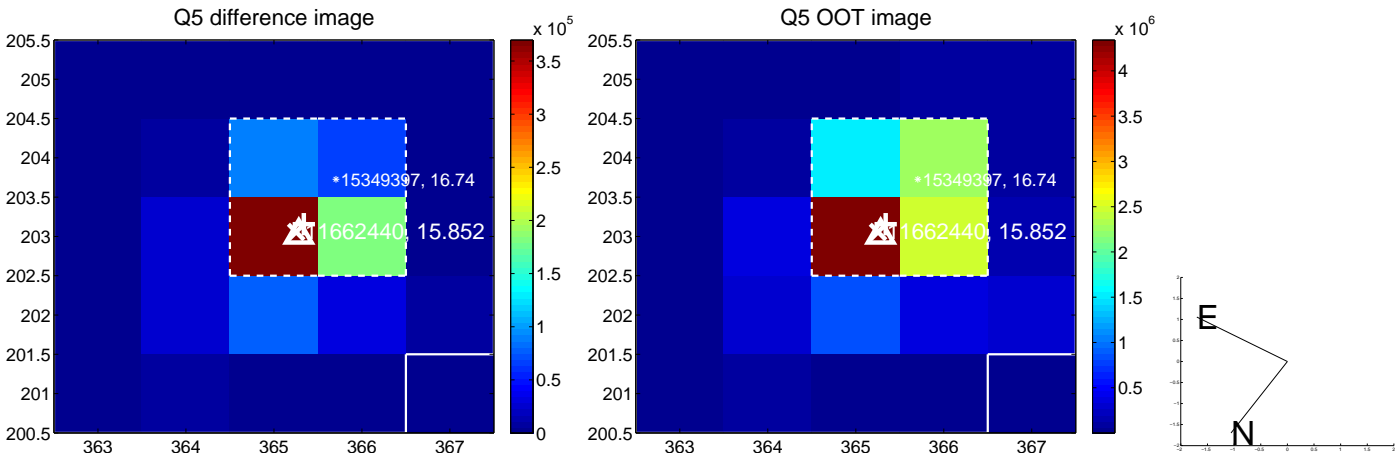


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

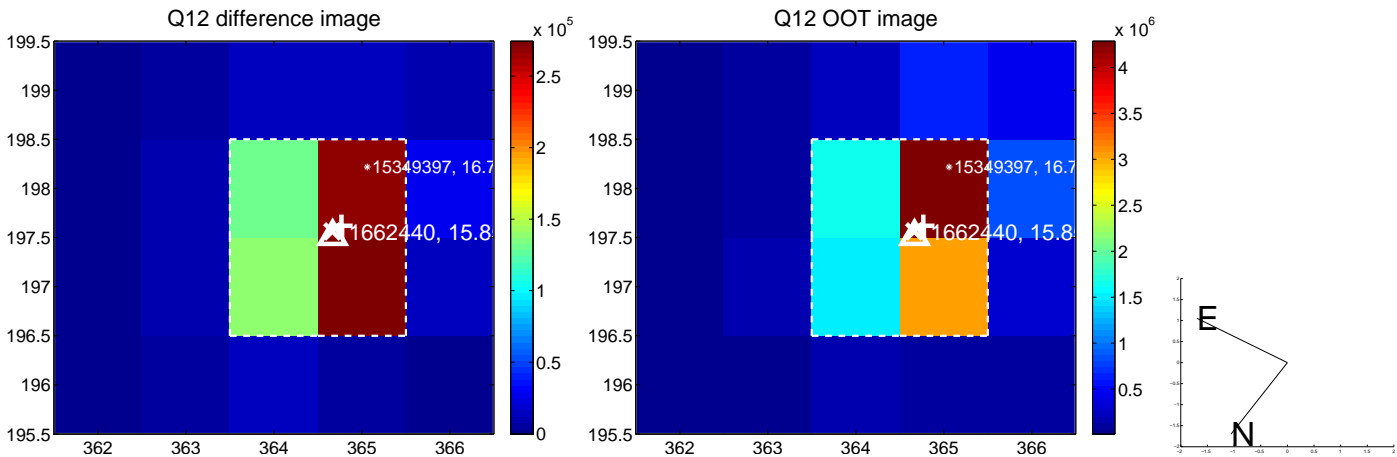
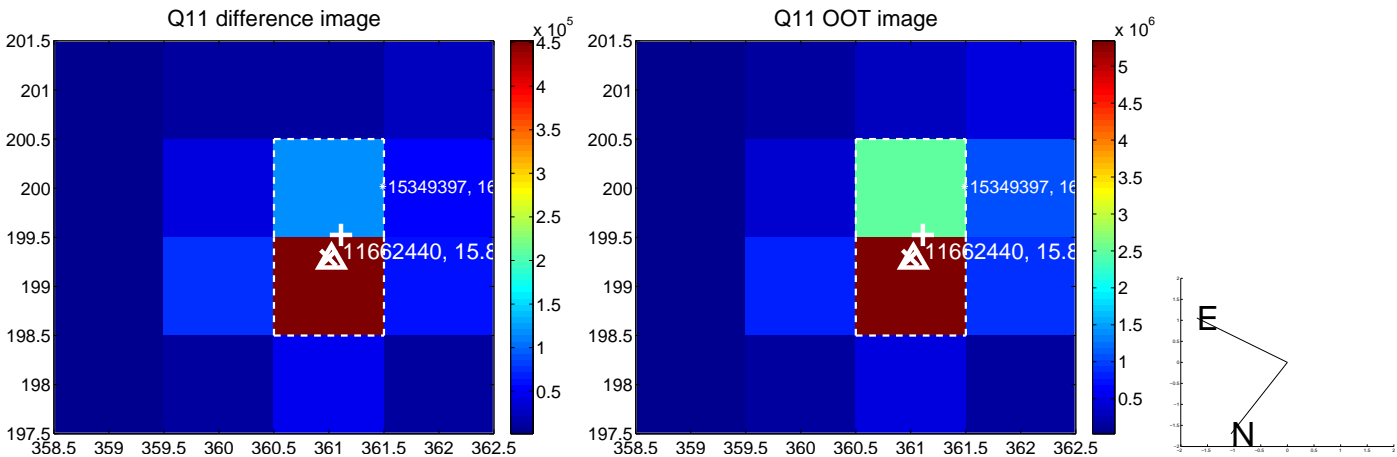
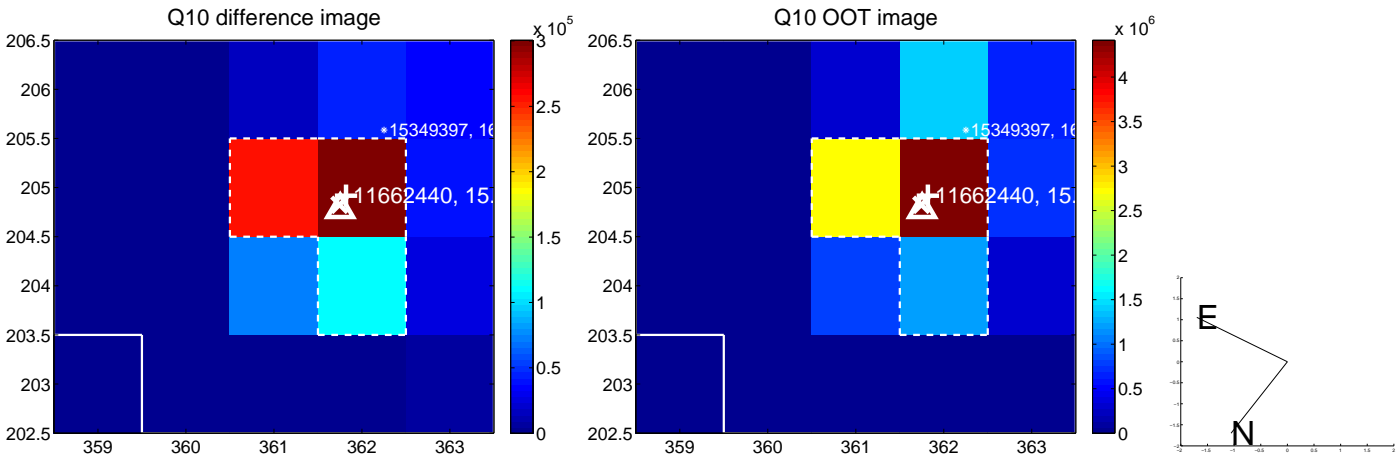
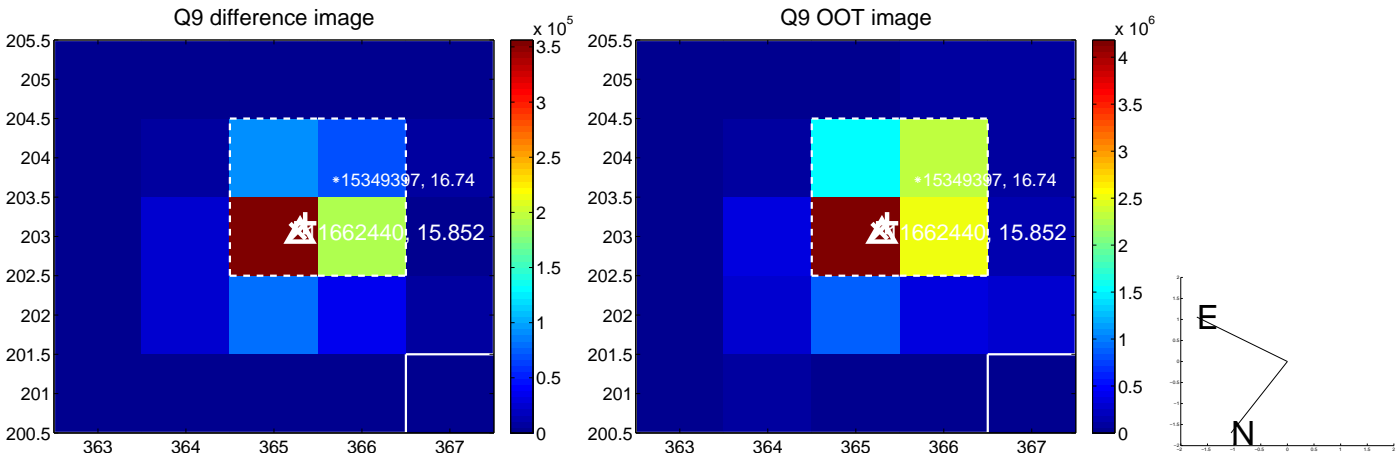
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



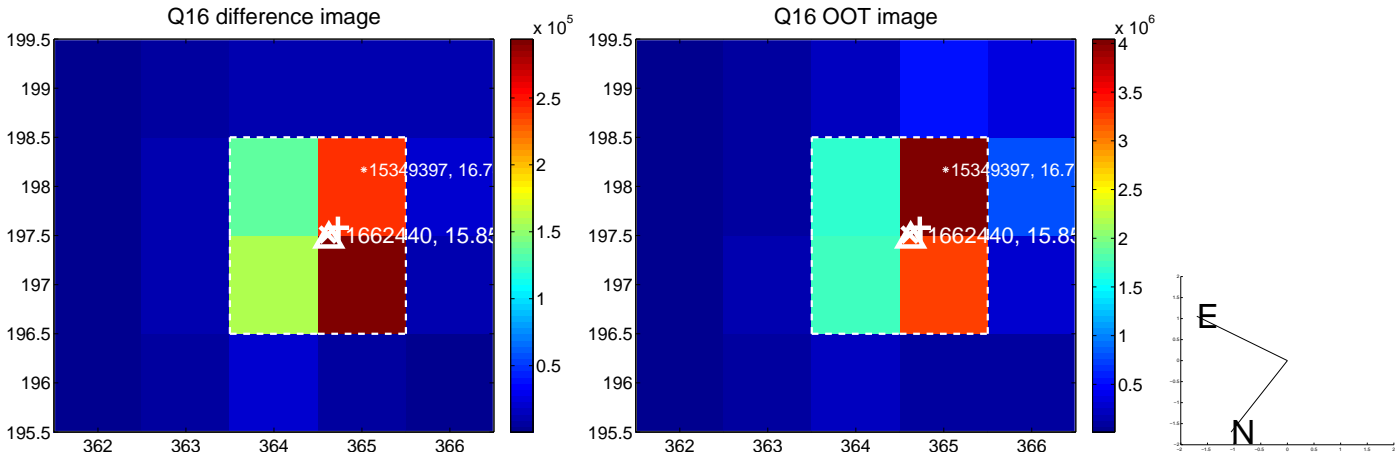
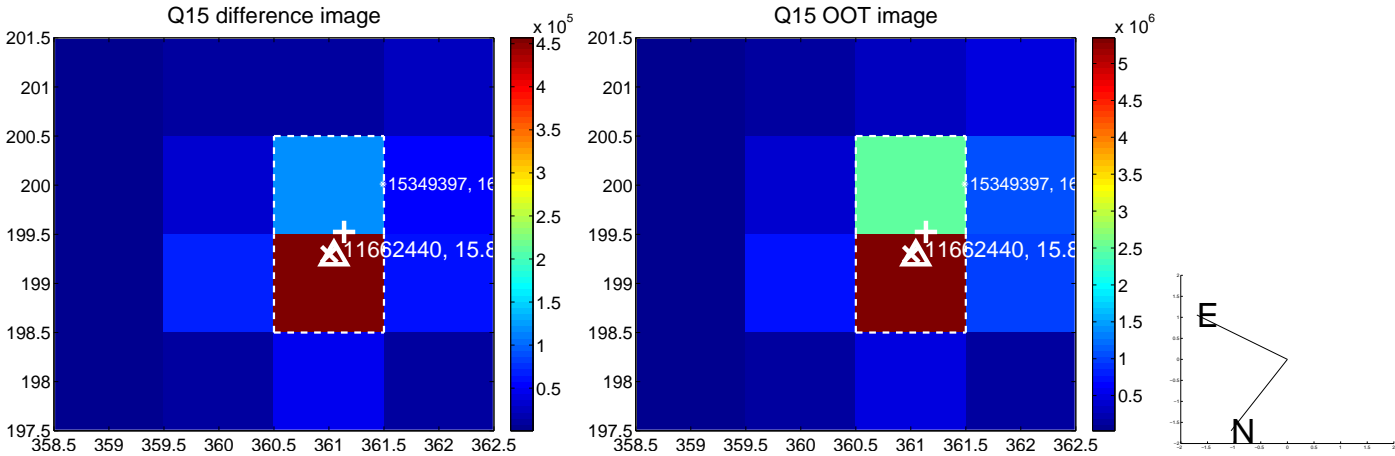
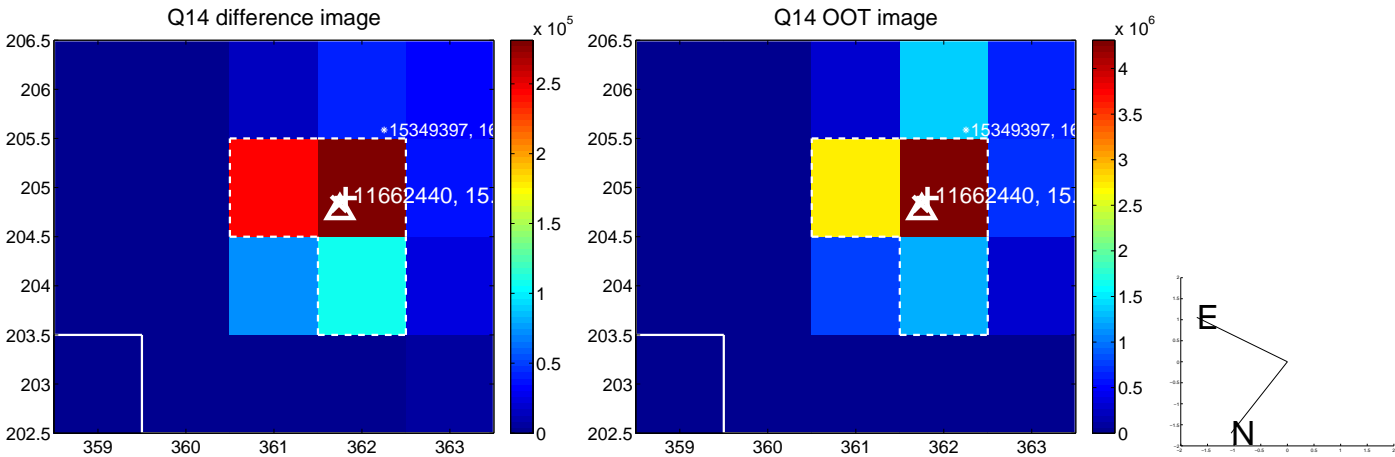
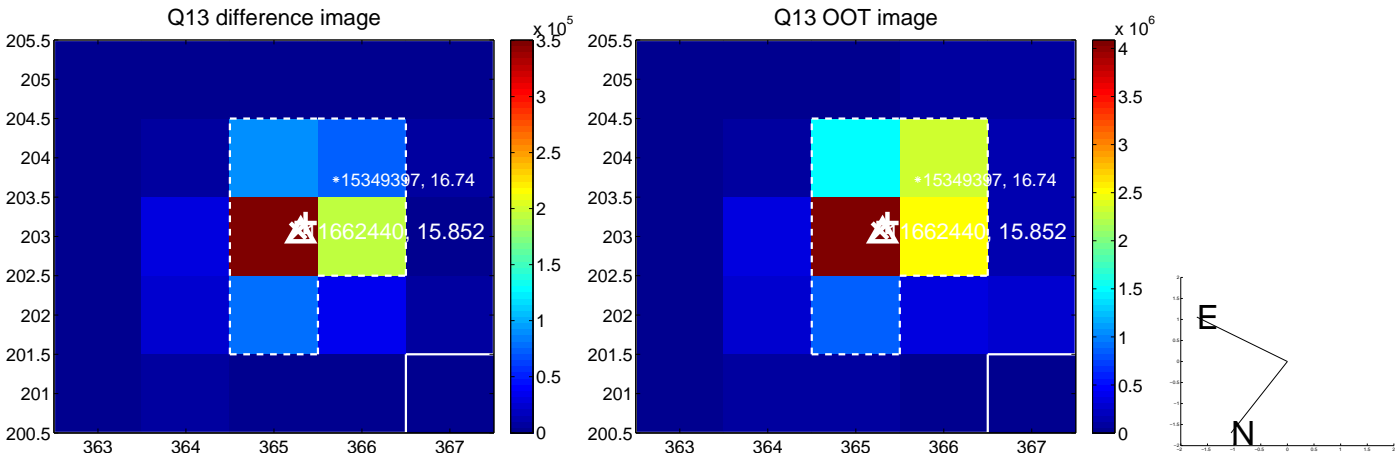
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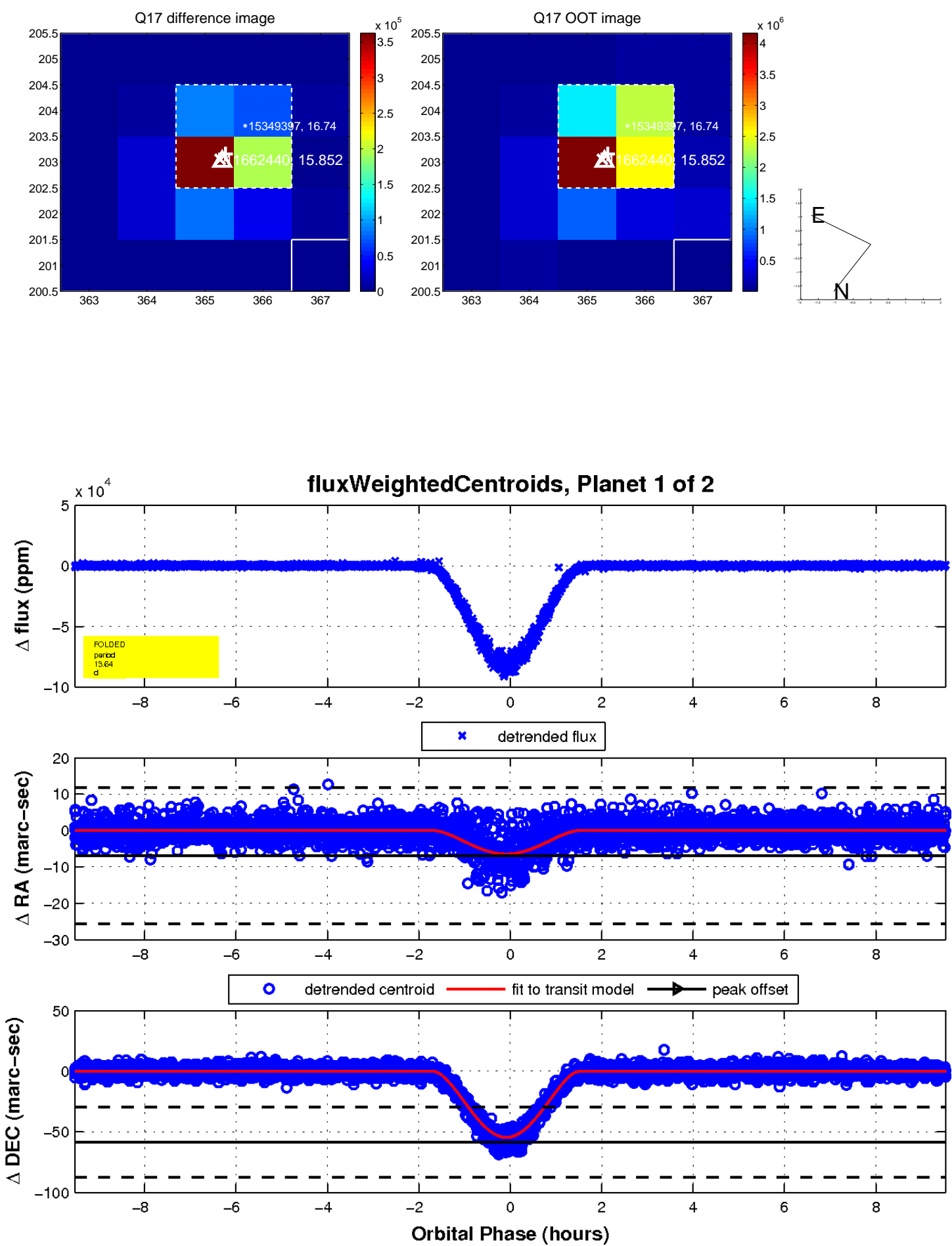
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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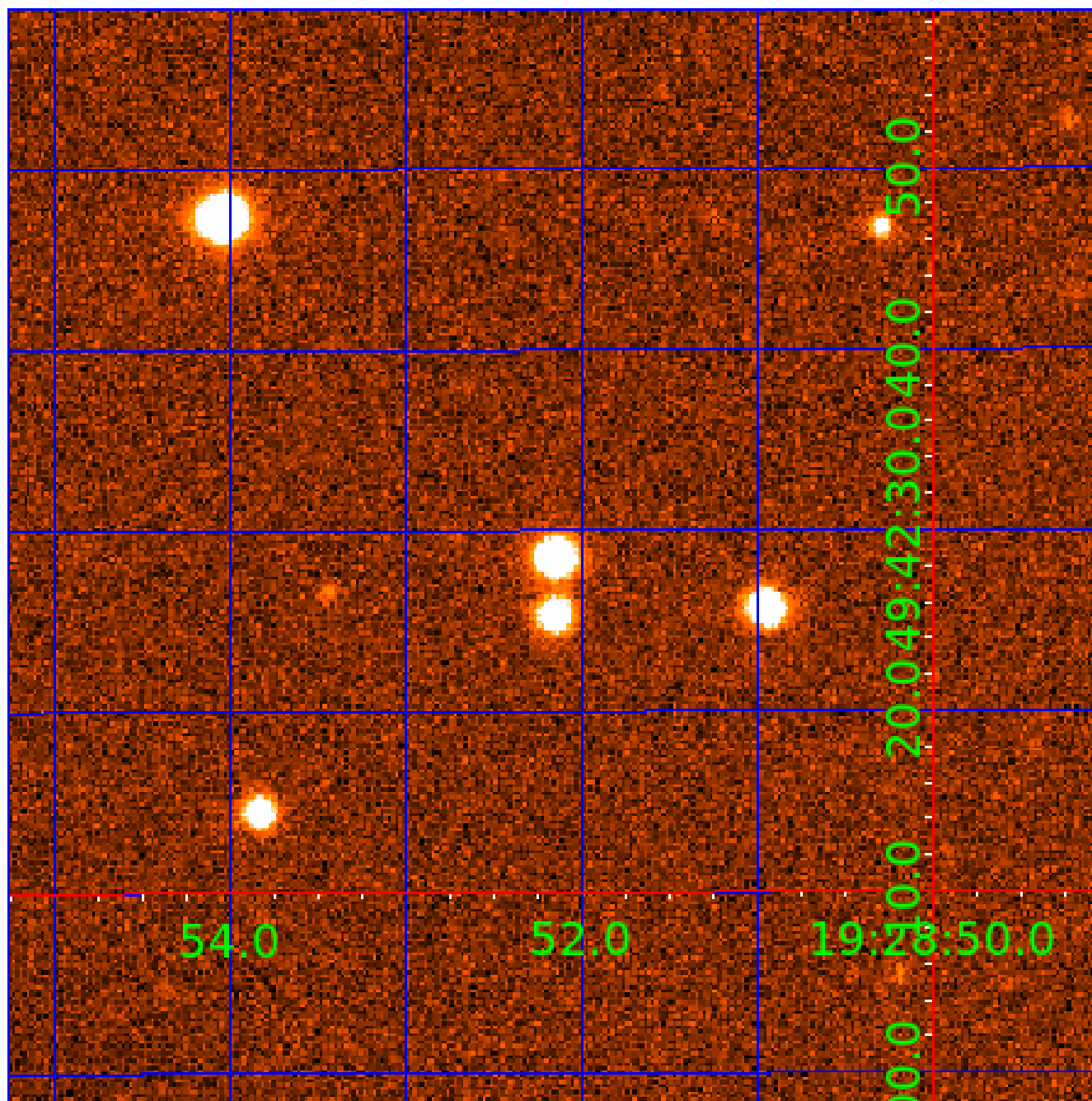


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011662440

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})
011662440-01	OBS	7469.01	13.639480	144.531425	78876.1	3.176	1841.8	1085.2	0.85	5461	36.04	50.56
011662440-02	OBS	No	13.639471	140.505275	28086.9	3.720	697.4	577.5	0.85	5461	21.75	50.56

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011662440-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
011662440-02	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.

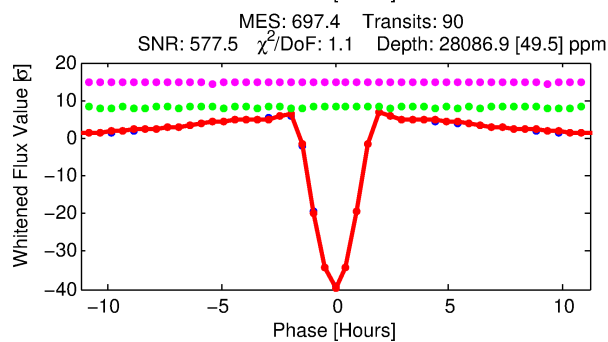
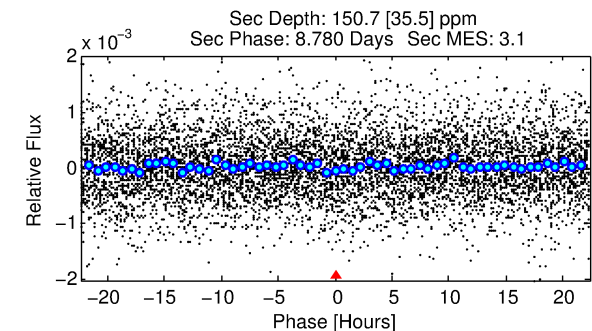
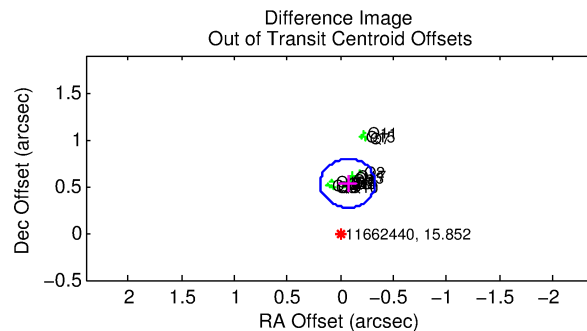
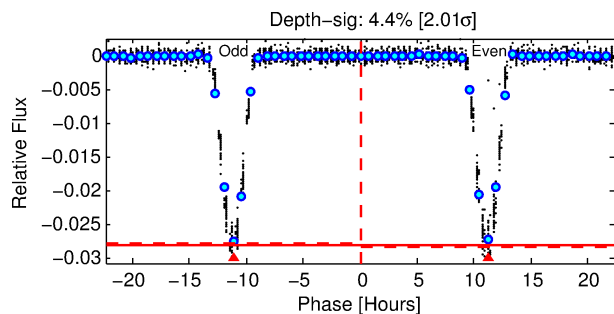
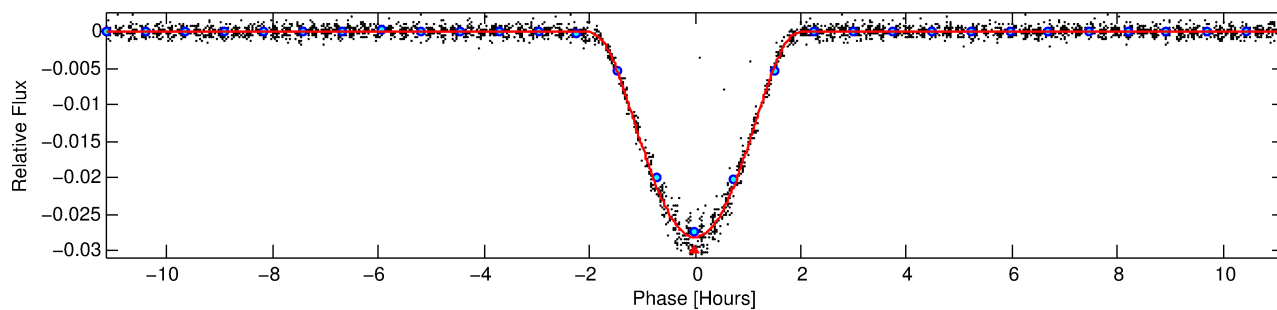
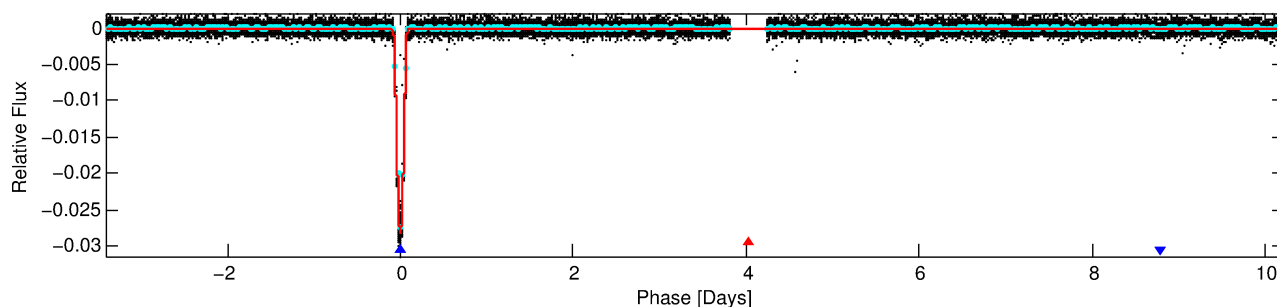
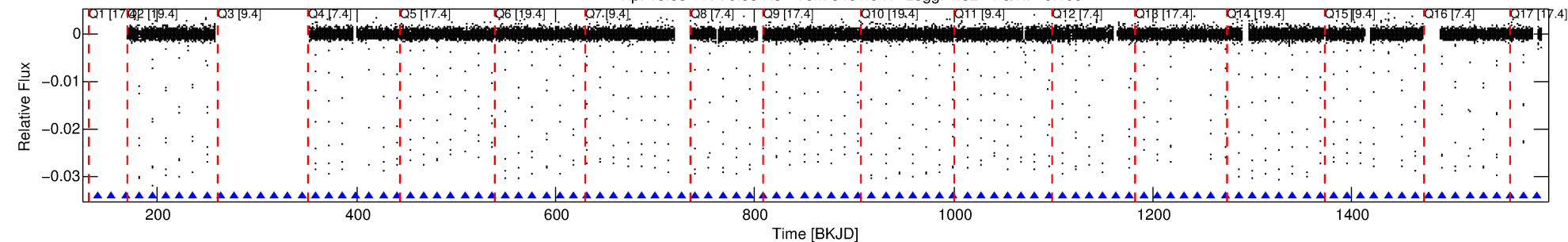
Ephemeris Match Information For 011662440-02

No Significant Match Found

DV One-Page Summary

KIC: 11662440 Candidate: 2 of 2 Period: 13.639 d
KOI: K07469 Corr: No Ephemeris Match

Kp: 15.85 R*: 0.85 Rs Teff: 5461.0 K Logg: 4.52 Fe/H: -0.100



DV Fit Results:

Period = 13.63947 [0.00000] d
Epoch = 140.5053 [0.0001] BKJD
Rp/R* = 0.2356 [0.0145]
a/R* = 22.23 [0.17]
b = 0.95 [0.02]
Seff = 50.56 [14.71]
Teq = 680 [49] K
Rp = 21.75 [4.92] Re
a = 0.1062 [0.0192] AU
Ag = 1.98 [0.73] [1.33σ]
Teff = 1247 [92] K [5.40σ]

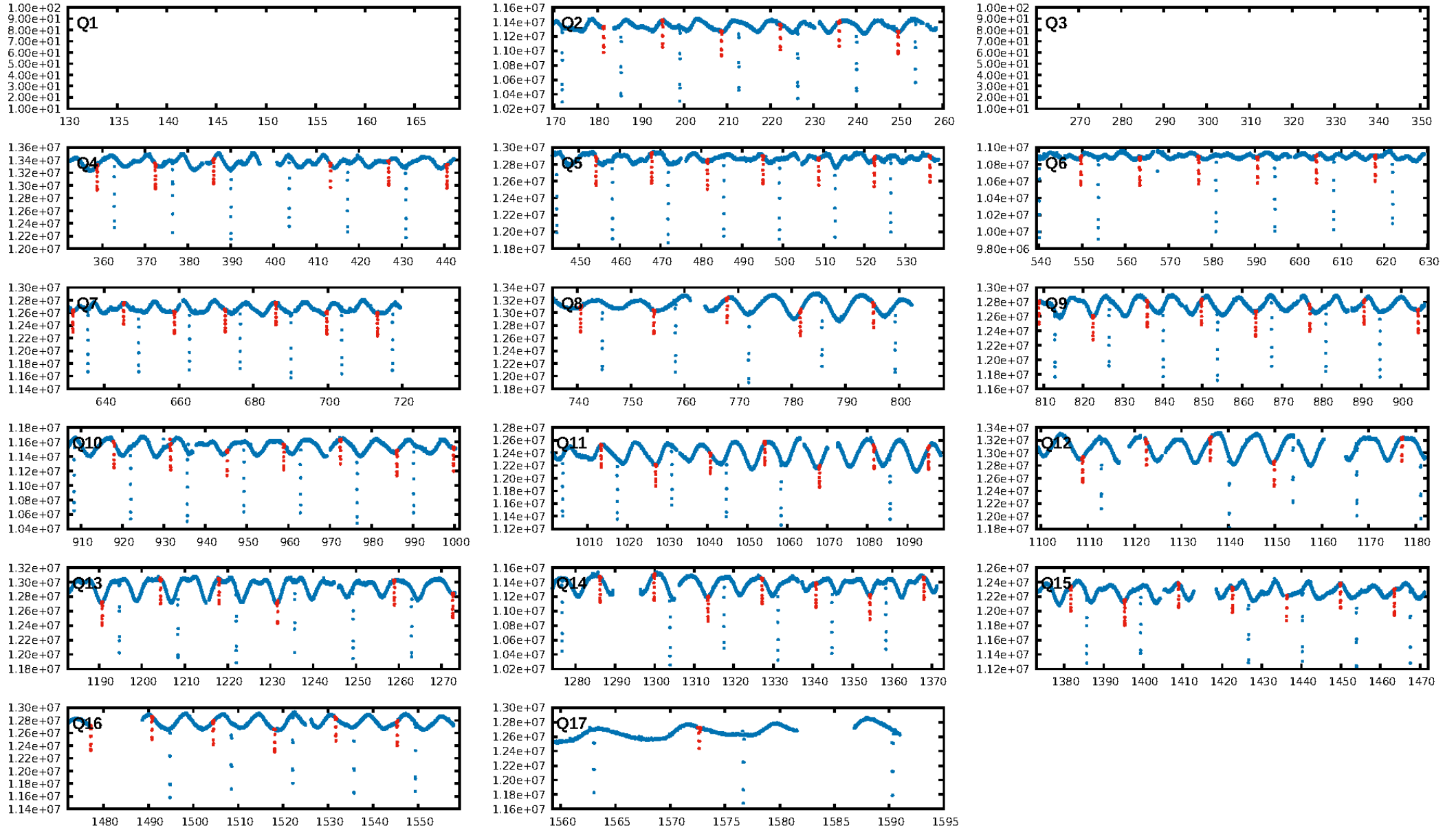
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGoF-sig: 99.3%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [89/89]
GhostDiagnostic-chr: 1.837
Centroid-sig: 0.0%
Centroid-so: 0.095 arcsec [5.82σ]
OotOffset-rm: 0.538 arcsec [6.22σ]
KicOffset-rm: 0.181 arcsec [2.69σ]
OotOffset-st: 4/3/4/4 [15]
KicOffset-st: 4/3/4/4 [15]
DiffImageQuality-fgm: 1.00 [15/15]
DiffImageOverlap-fno: 1.00 [15/15]

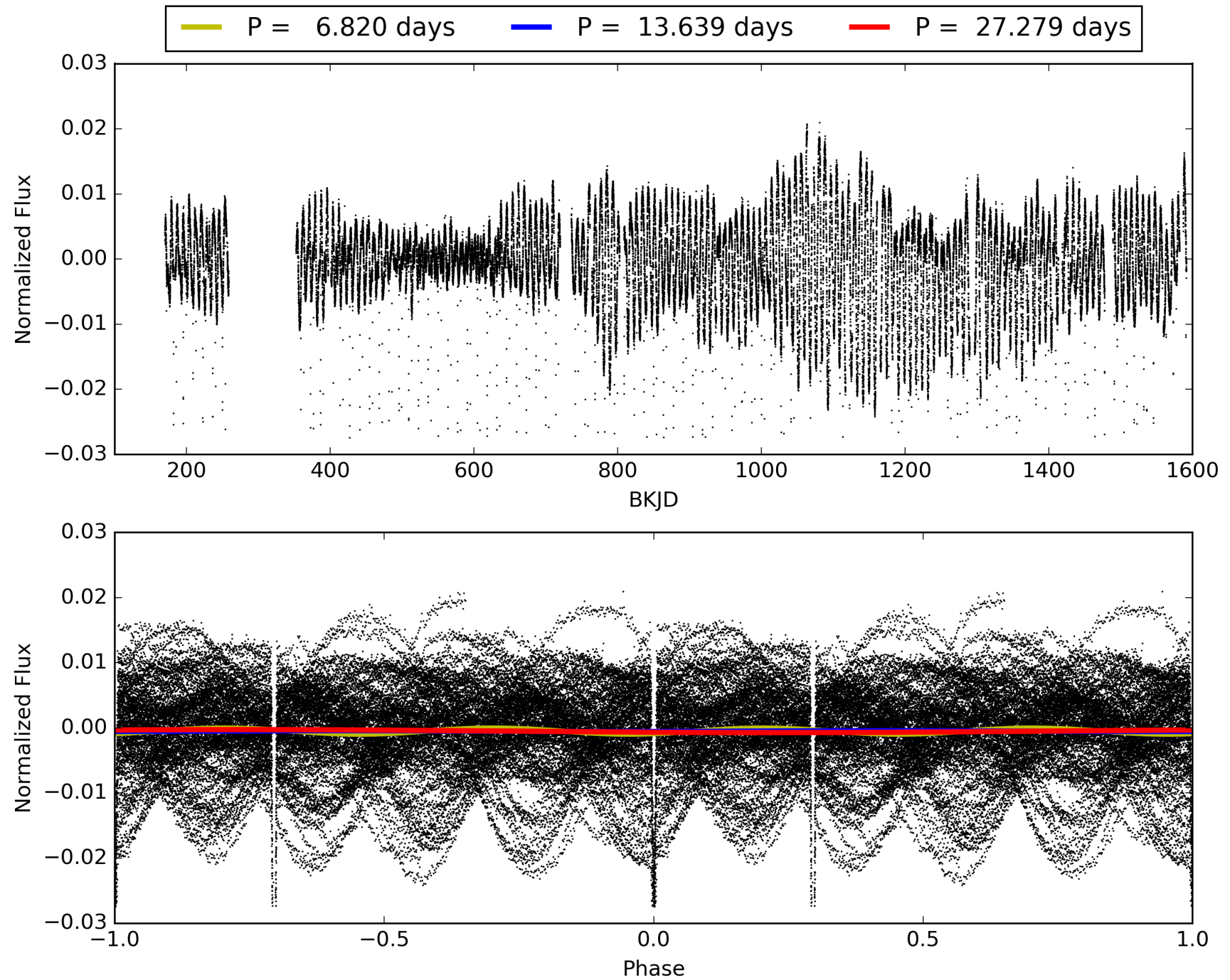
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:00:10 Z

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

TCE 011662440-02, PDC Light Curves

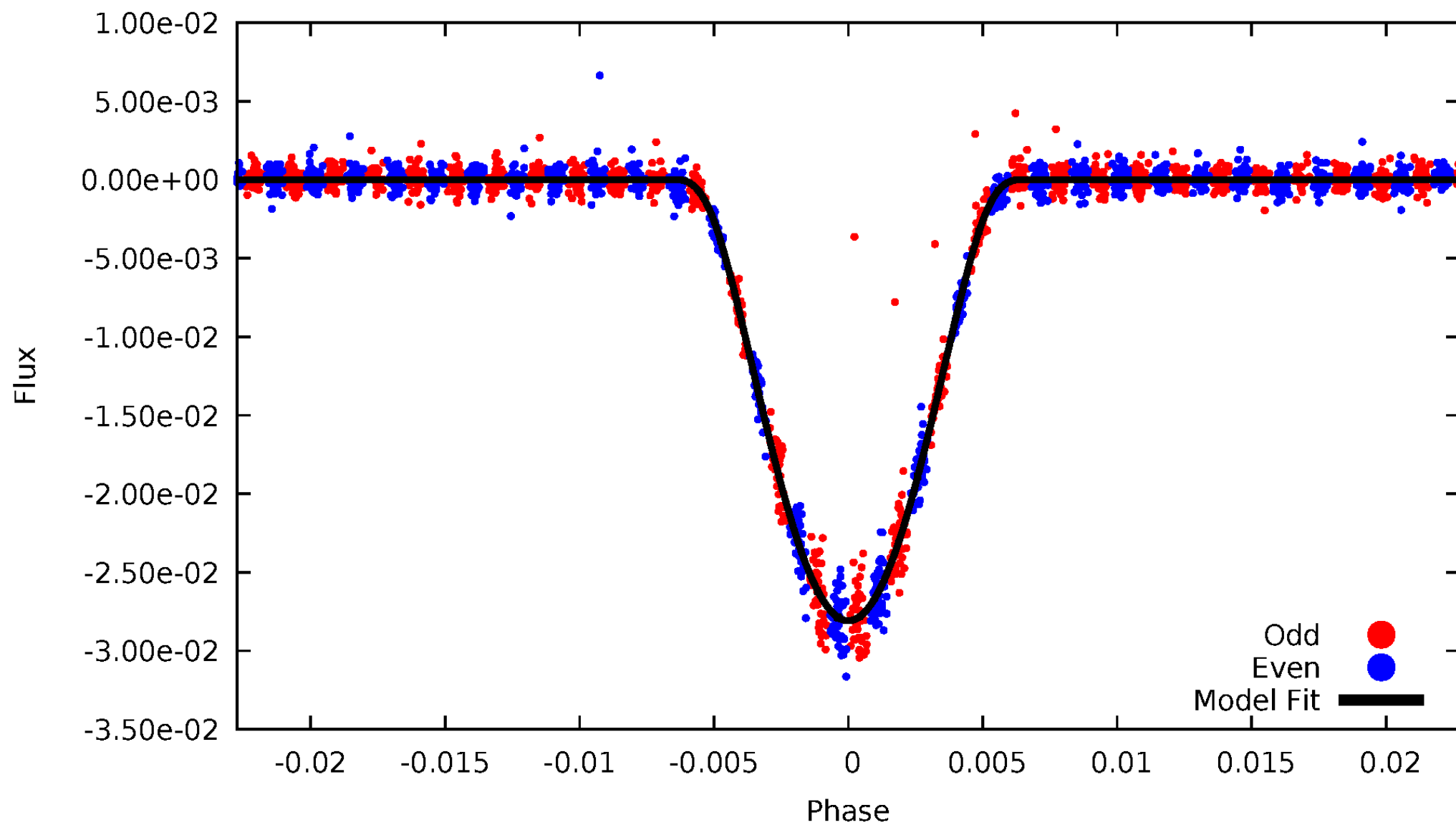


TCE 011662440-02



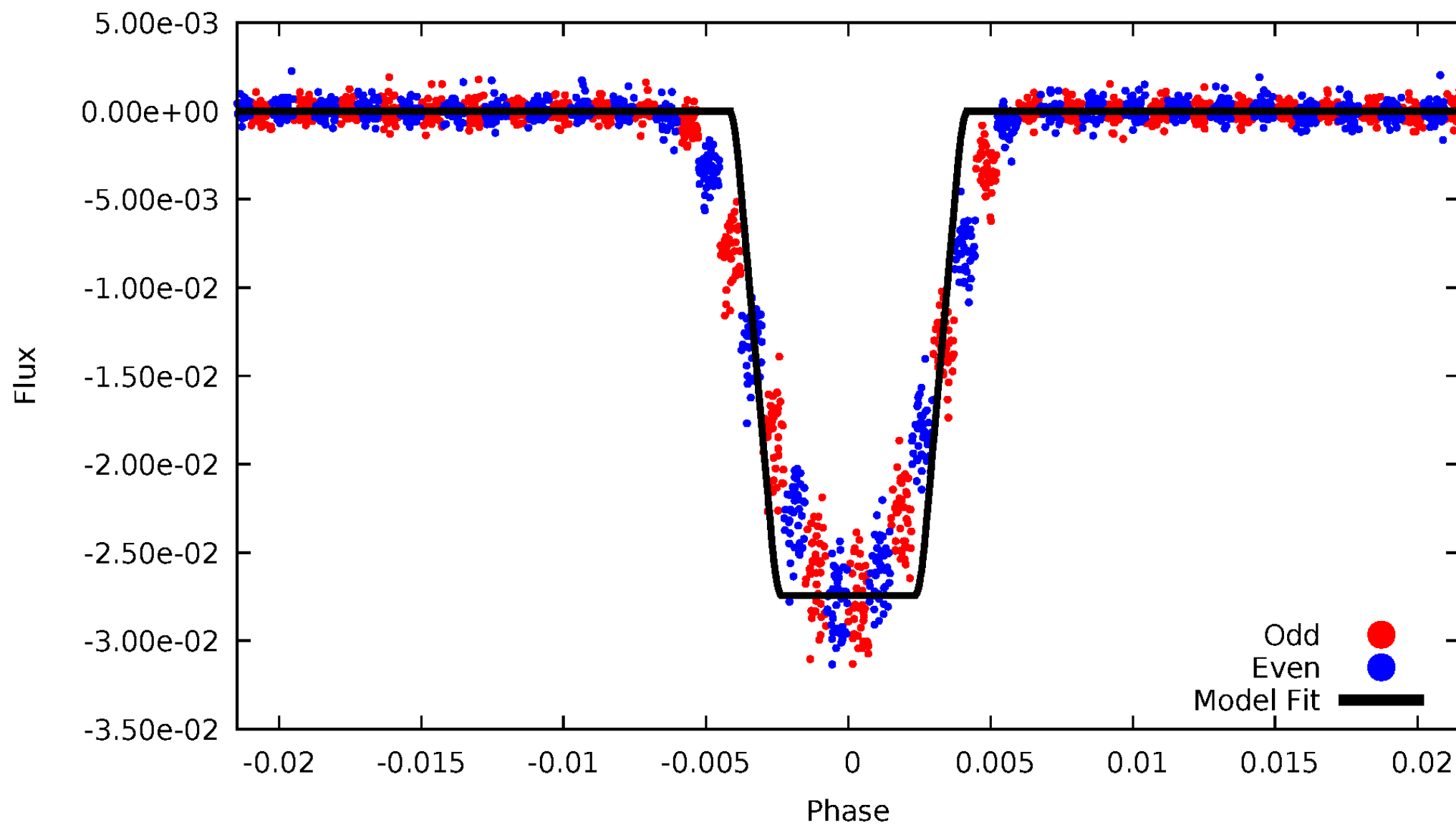
DV Odd/Even

TCE 011662440-02



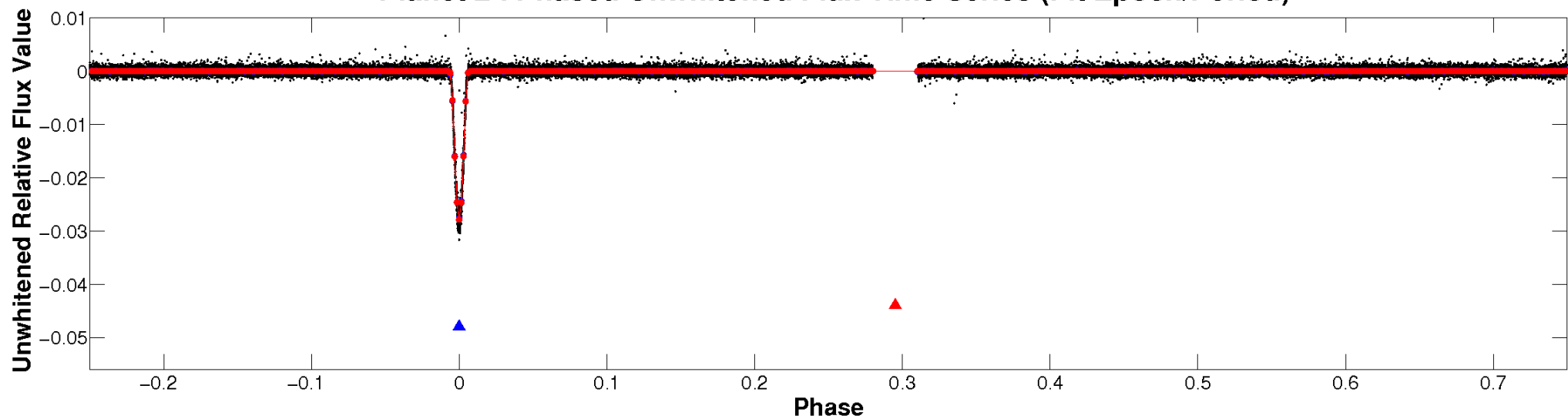
ALT Odd/Even

TCE 011662440-02

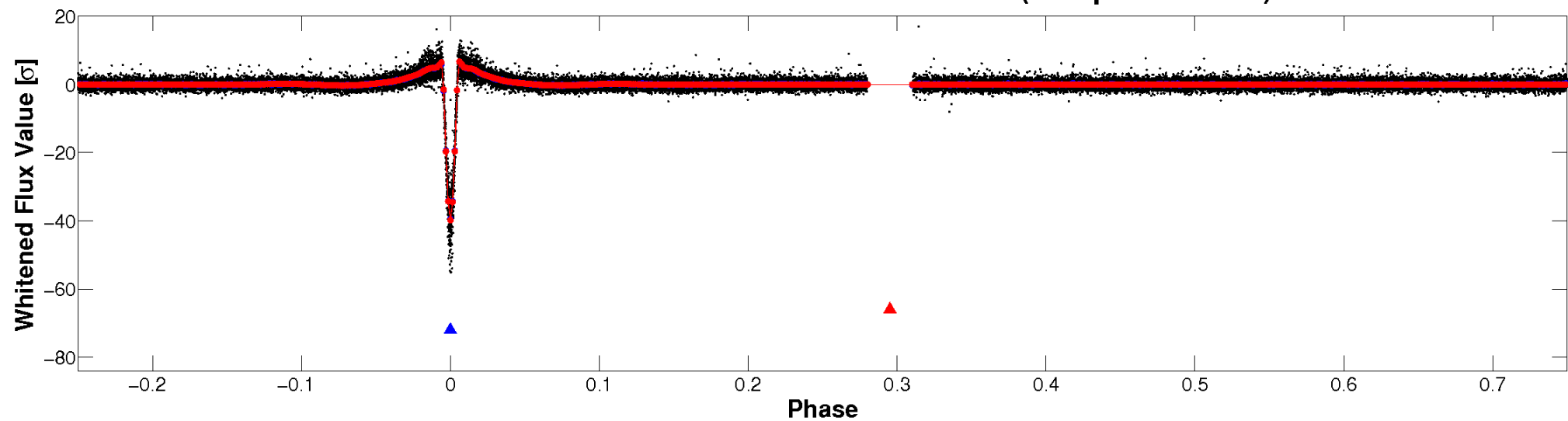


Non-Whitened Vs. Whitened Light Curve

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

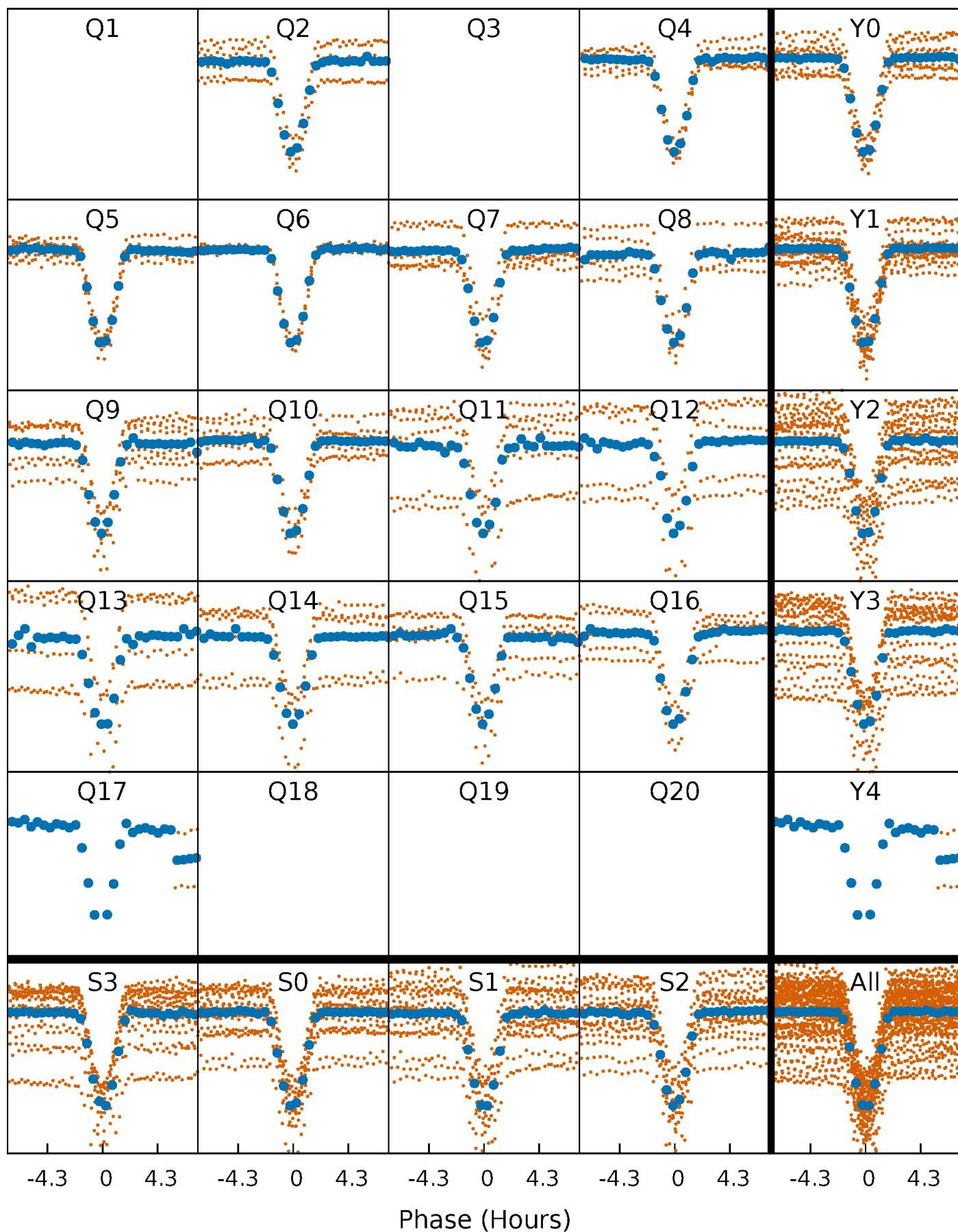


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



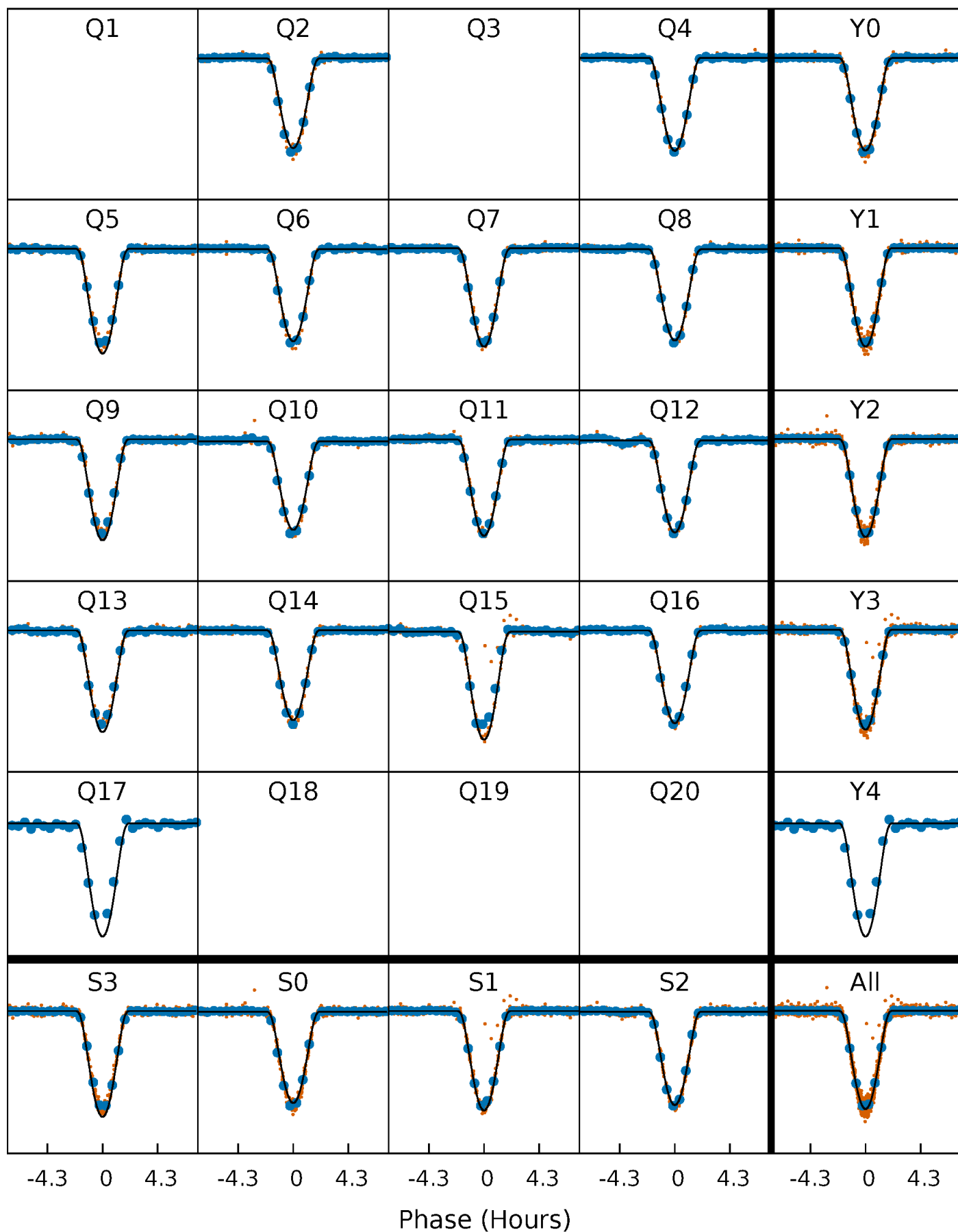
PDC Quarter-Phased Transit Curves

TCE 011662440-02 P= 13.639471 Days $T_0=140.505275$ (BKJD)



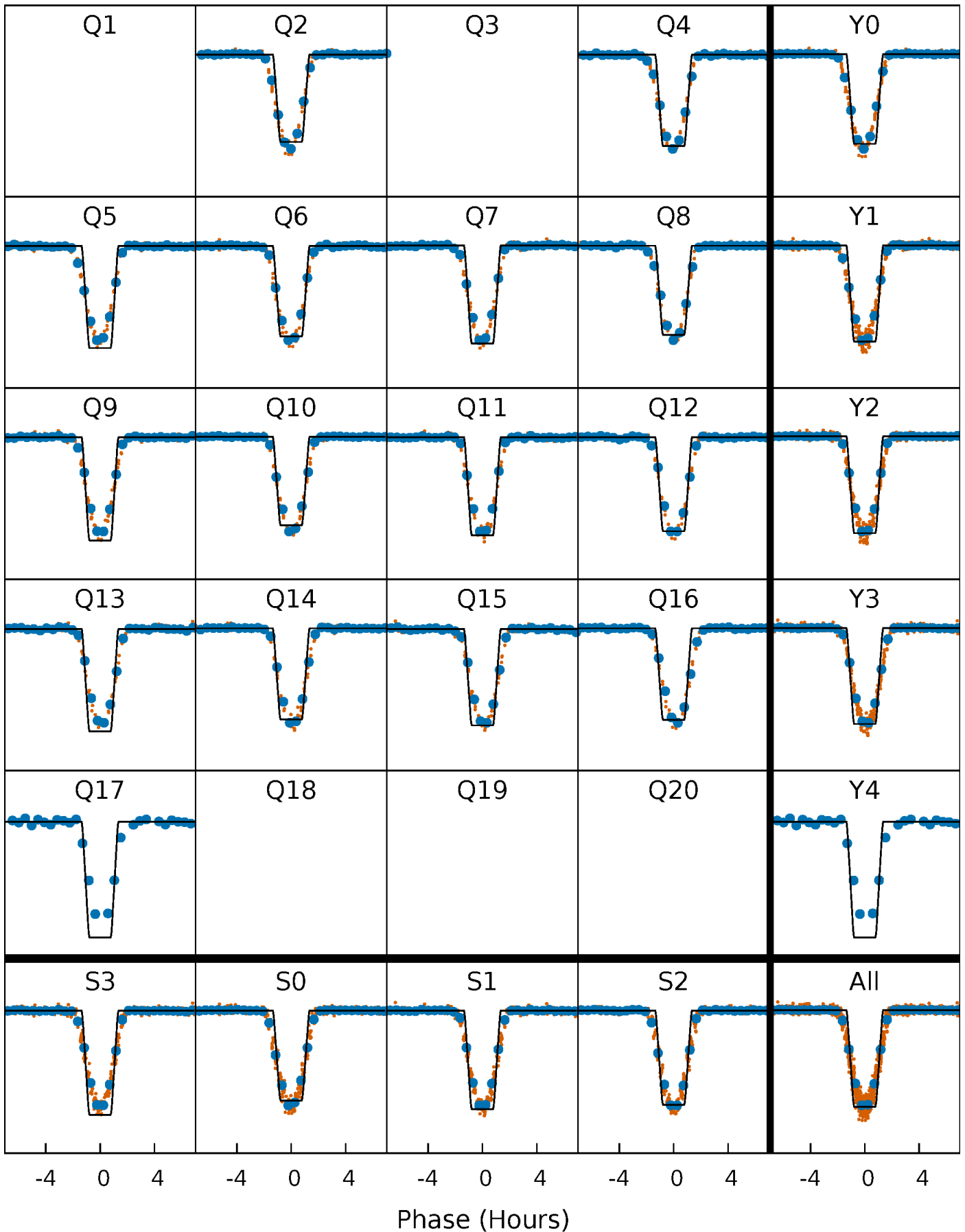
DV Quarter-Phased Transit Curves

TCE 011662440-02 P= 13.639471 Days $T_0=140.505275$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

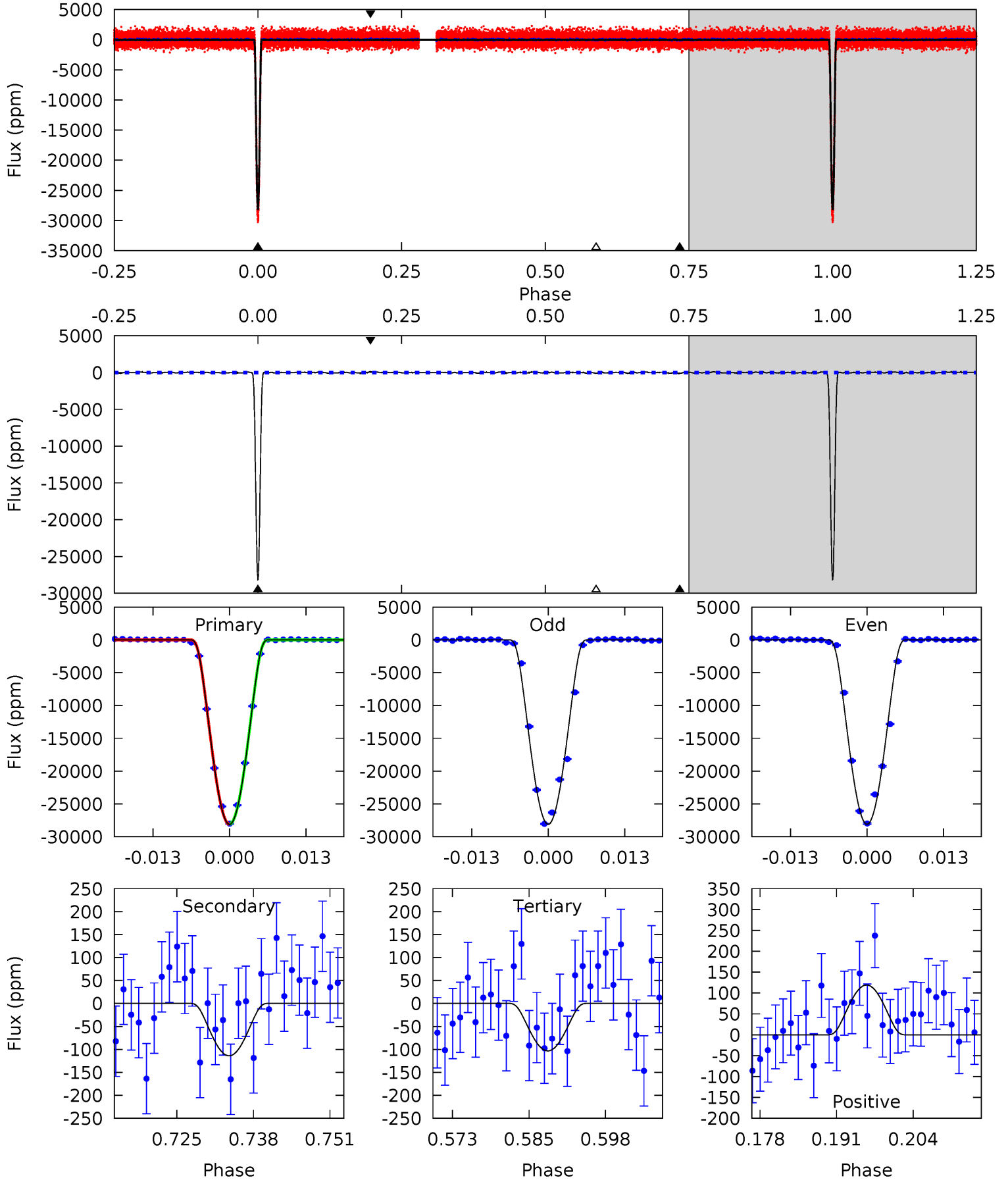
TCE 011662440-02 P= 13.639343 Days $T_0=140.512455$ (BKJD)



DV Model-Shift Uniqueness Test

011662440-02, P = 13.639471 Days, E = 140.505275 Days

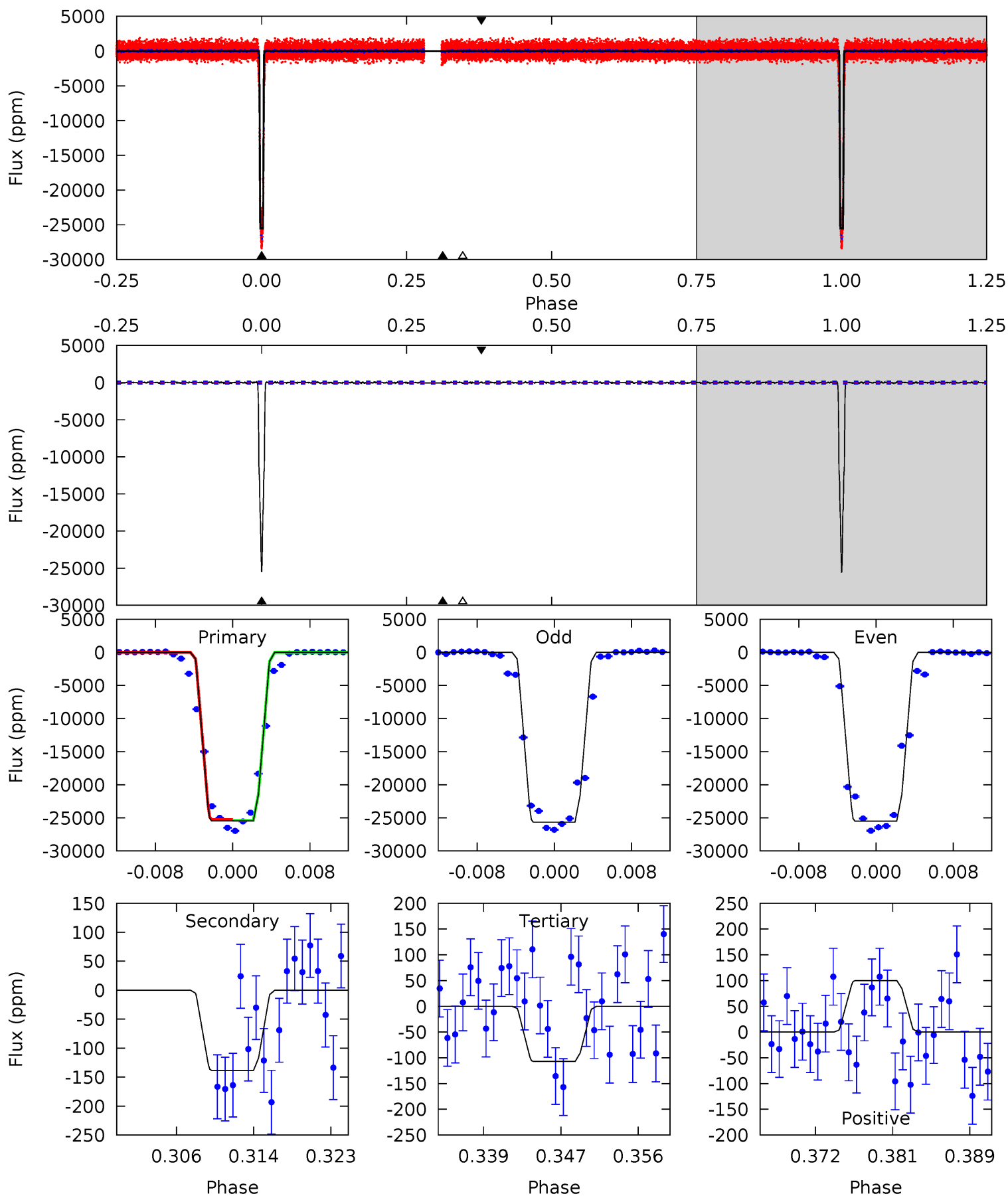
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1347	5.45	4.95	5.70	4.98	2.49	1.90	1342	1341	0.51	-0.25	0.15	0.99	0.00	0.52



Alt Model-Shift Uniqueness Test

011662440-02, P = 13.639343 Days, E = 140.512455 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
799.9	4.35	3.36	3.13	5.06	2.64	1.07	796.5	796.7	0.99	1.22	2.16	1.00	0.00	1.69



Stellar Parameters For KIC 011662440

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5461^{+180}_{-164}	$4.517^{+0.060}_{-0.140}$	$-0.100^{+0.300}_{-0.300}$	$0.846^{+0.184}_{-0.085}$	$0.858^{+0.101}_{-0.082}$	$1.998^{+0.603}_{-0.771}$
	+3%/-3%	+1%/-3%	+300%/-300%	+22%/-10%	+12%/-10%	+30%/-39%
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 011662440-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-114 ± 21	$22.09^{+2.94}_{-1.94}$	964^{+51}_{-46}	2078^{+64}_{-77}	$1.438^{+0.415}_{-0.389}$
Alt.	-139 ± 32	$15.65^{+2.03}_{-1.72}$	965^{+53}_{-45}	2333^{+96}_{-99}	$3.473^{+1.246}_{-1.028}$

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 $A_{obs} \gg 1.0$

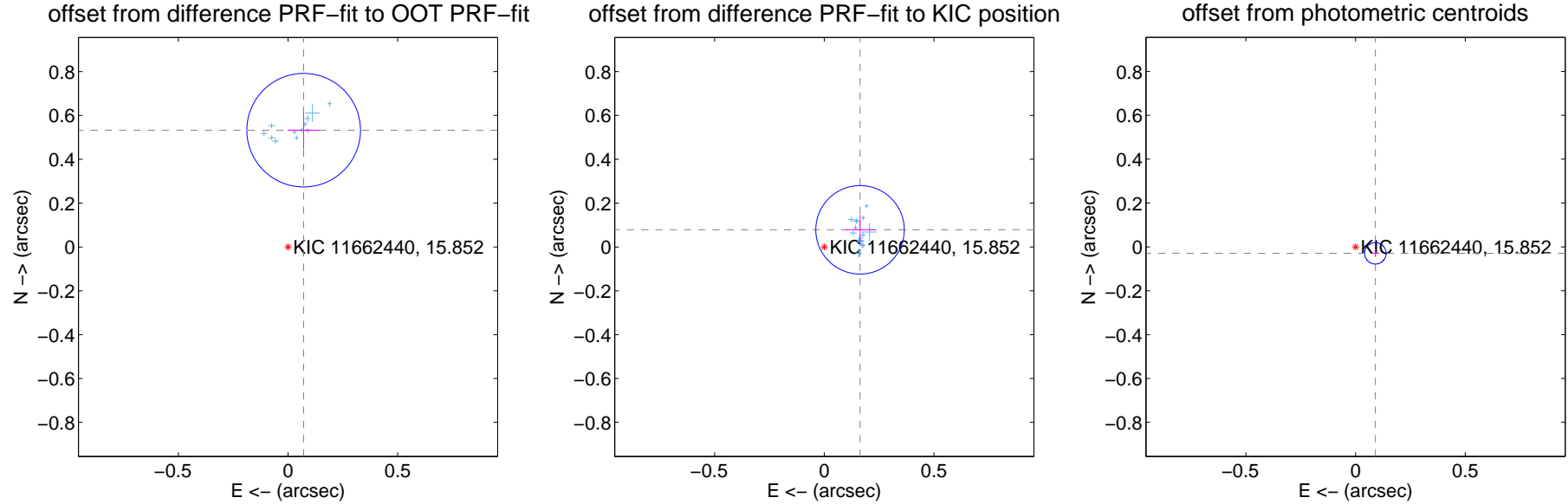
DV Centroid Data

Supplemental centroid analysis for 011662440-02. Kepler magnitude: 15.85. Transit SNR 577.53

There are 15 quarters with good PRF difference image offsets

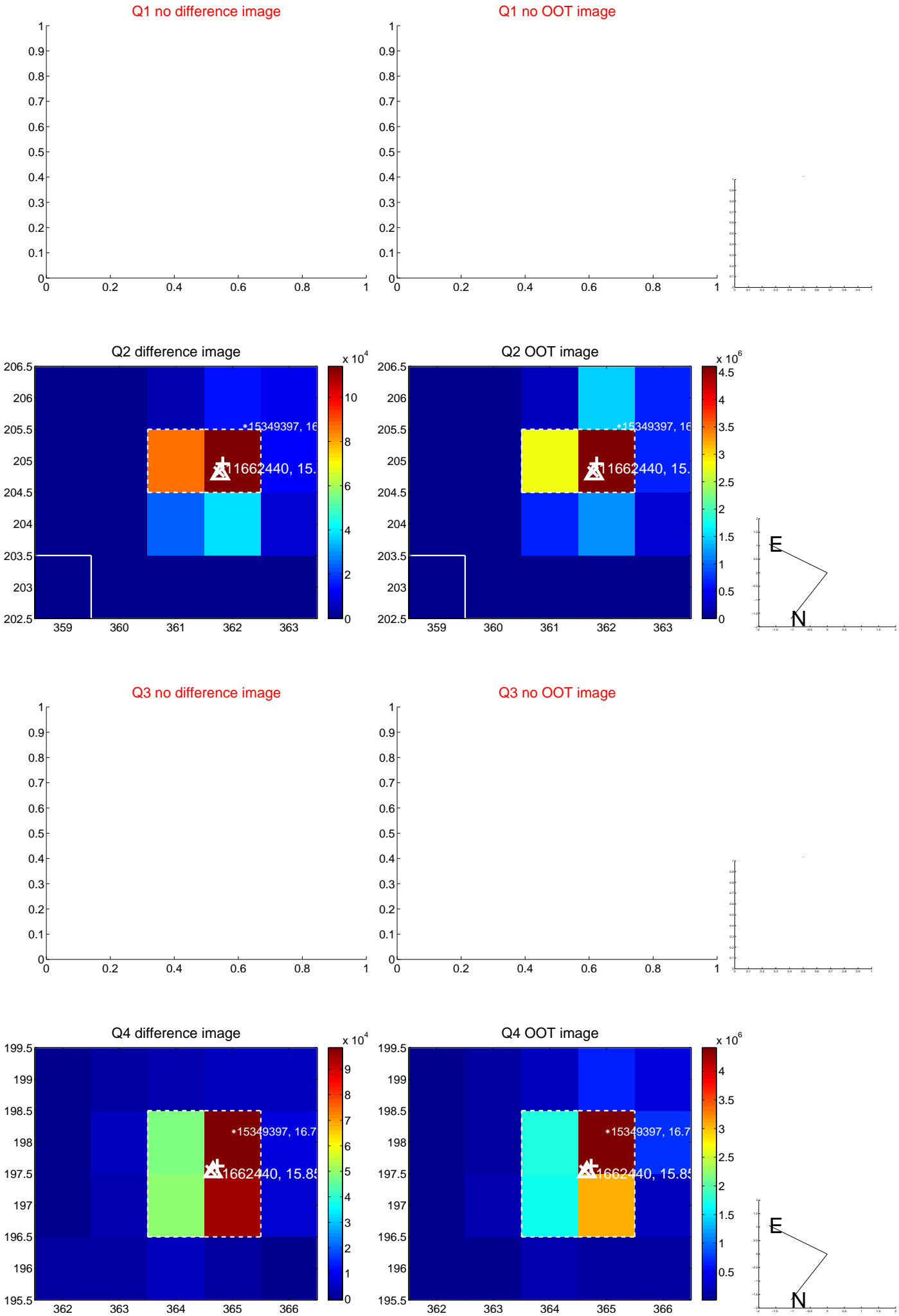
The direct PRF centroid is offset from the target star catalog position by about 0.55 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.538 ± 0.086	6.22	-0.071 ± 0.073	0.533 ± 0.085
PRF-fit source offset from KIC position	0.181 ± 0.067	2.69	-0.163 ± 0.067	0.078 ± 0.069
photometric centroid source offset	0.09 ± 0.02	5.82	-0.09 ± 0.02	-0.03 ± 0.02

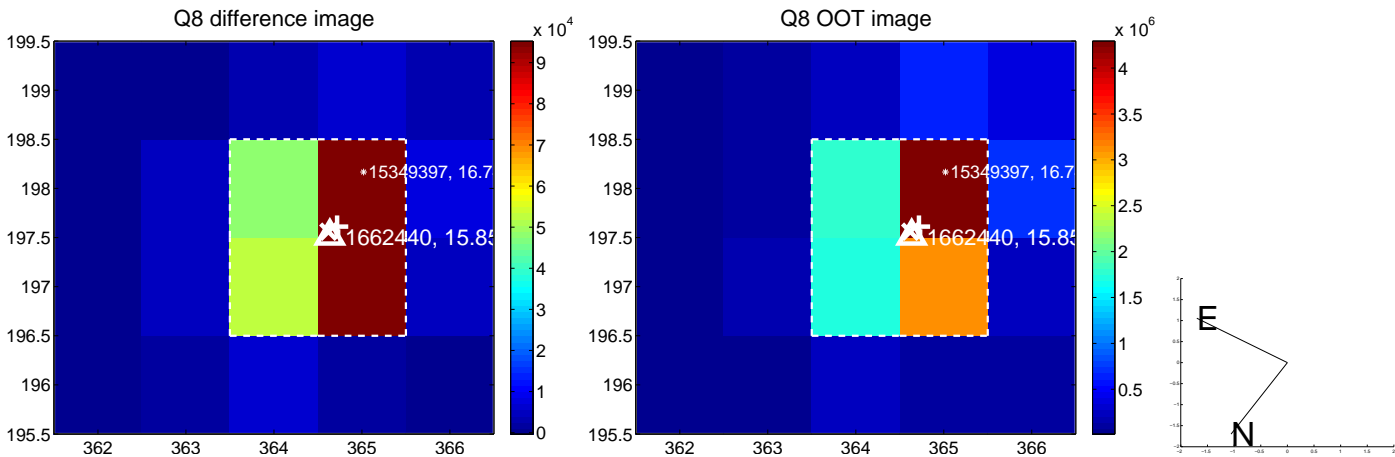
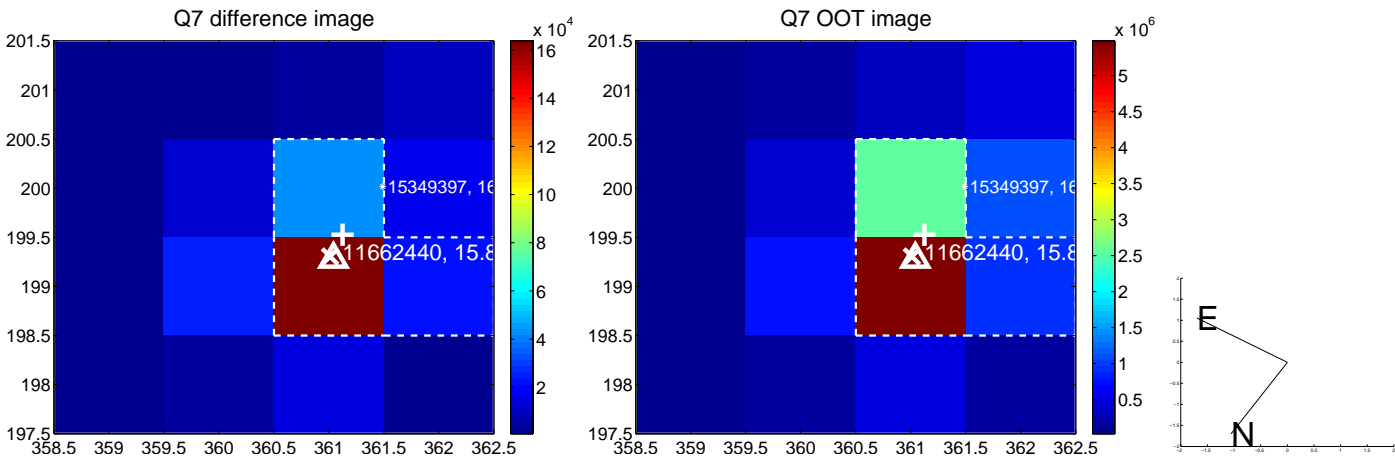
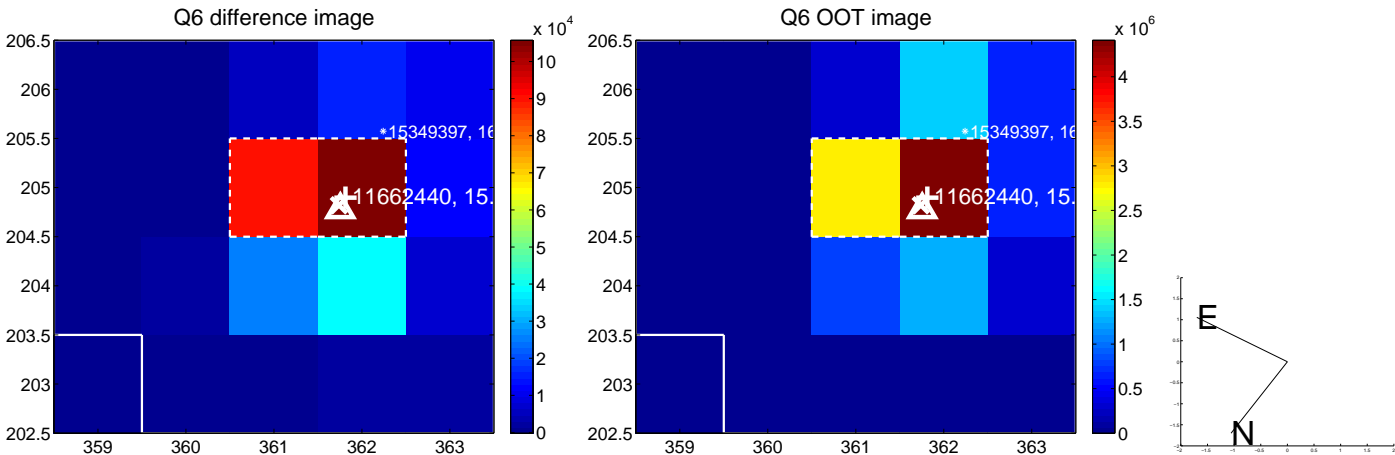
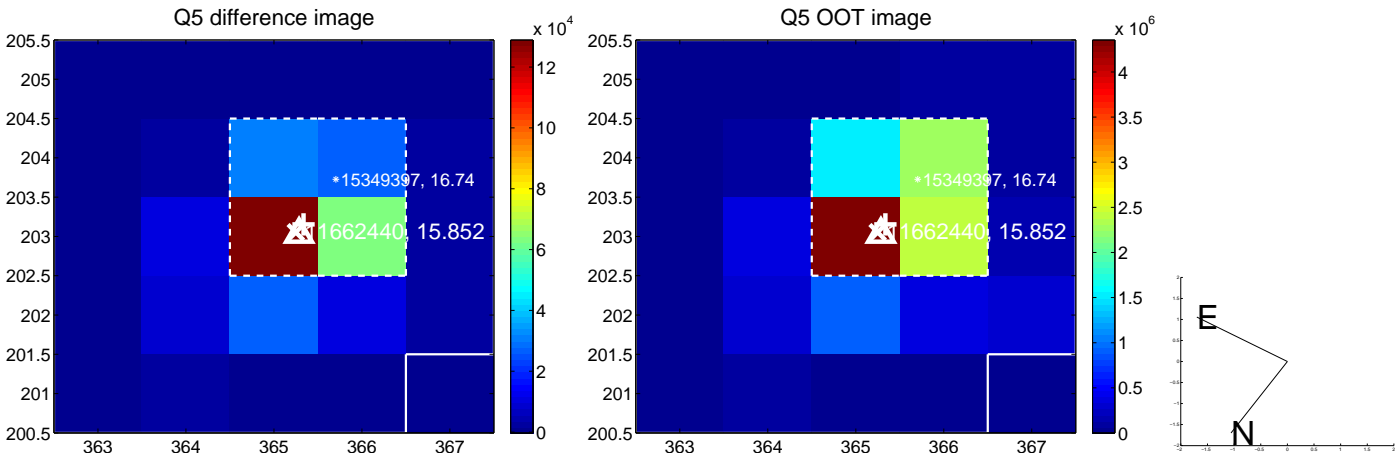


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

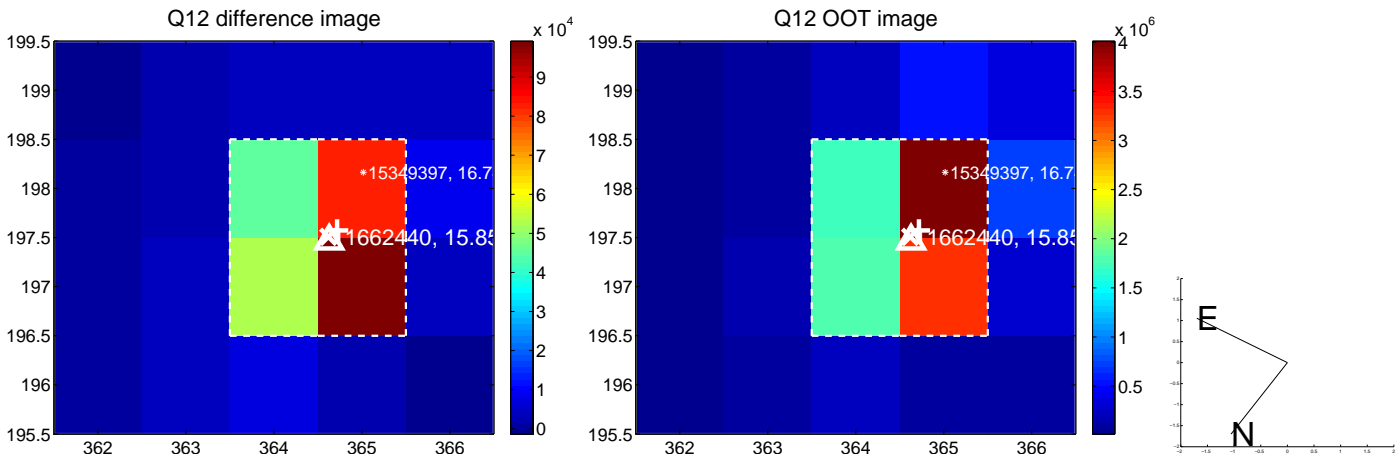
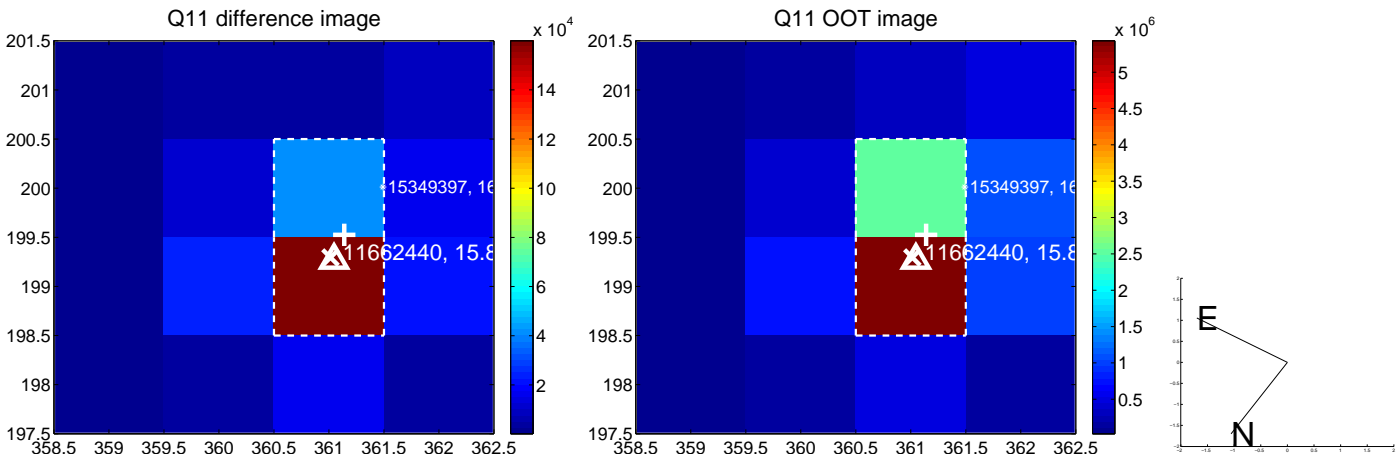
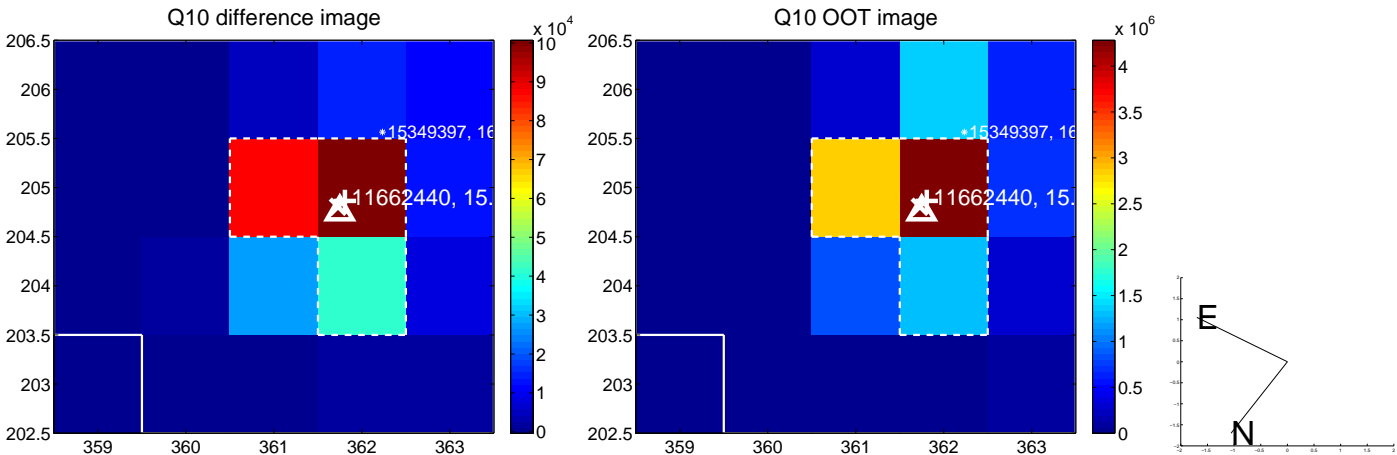
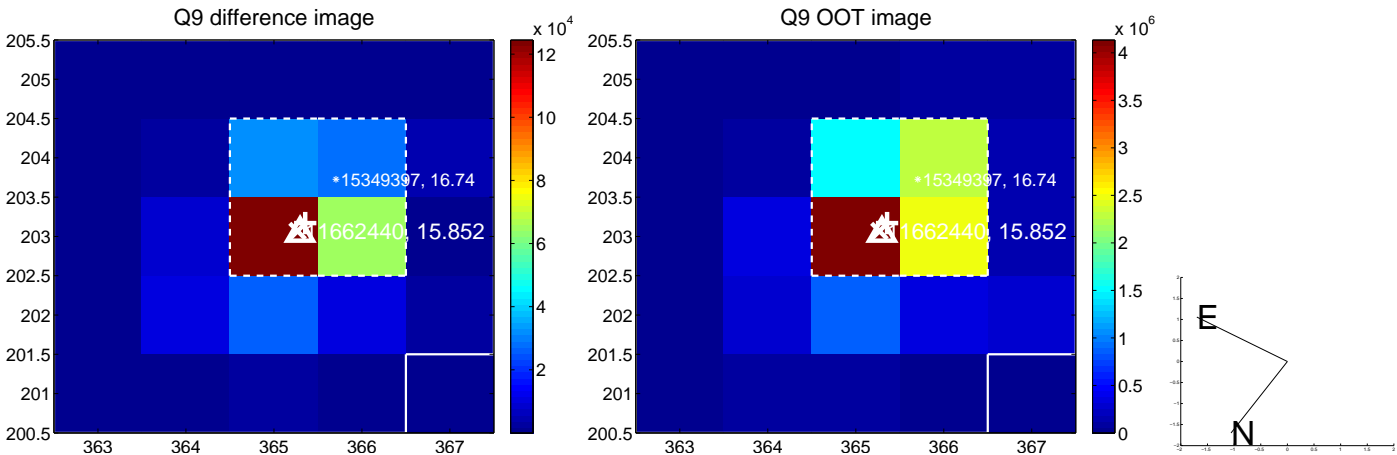
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



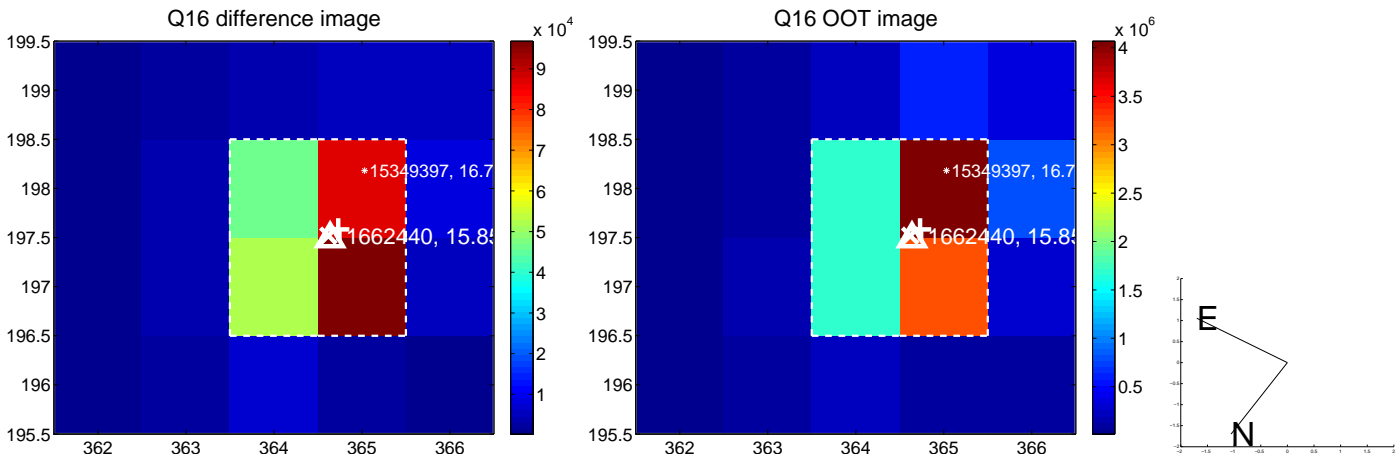
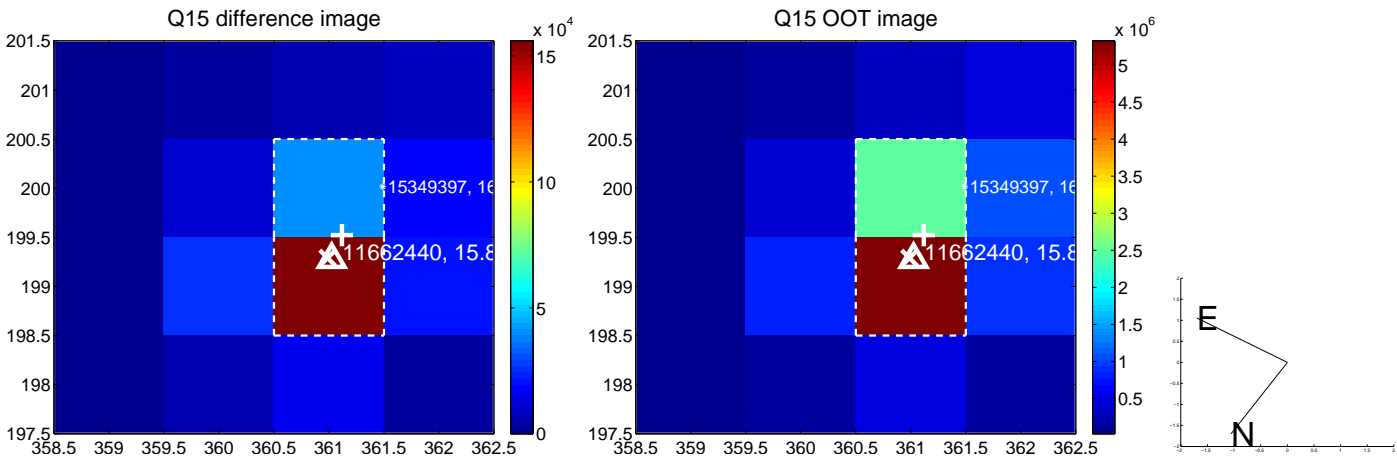
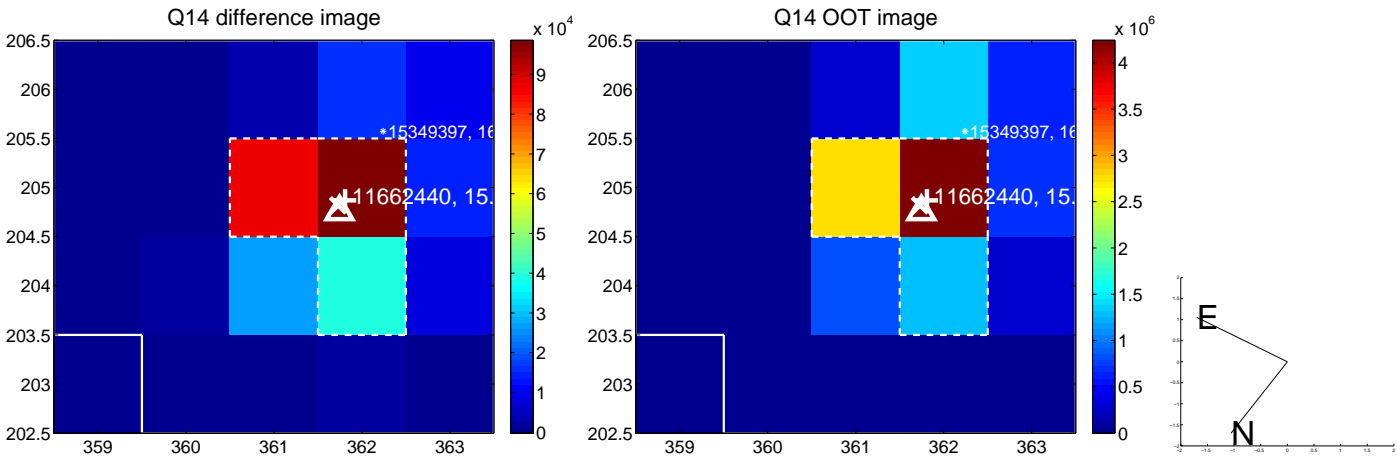
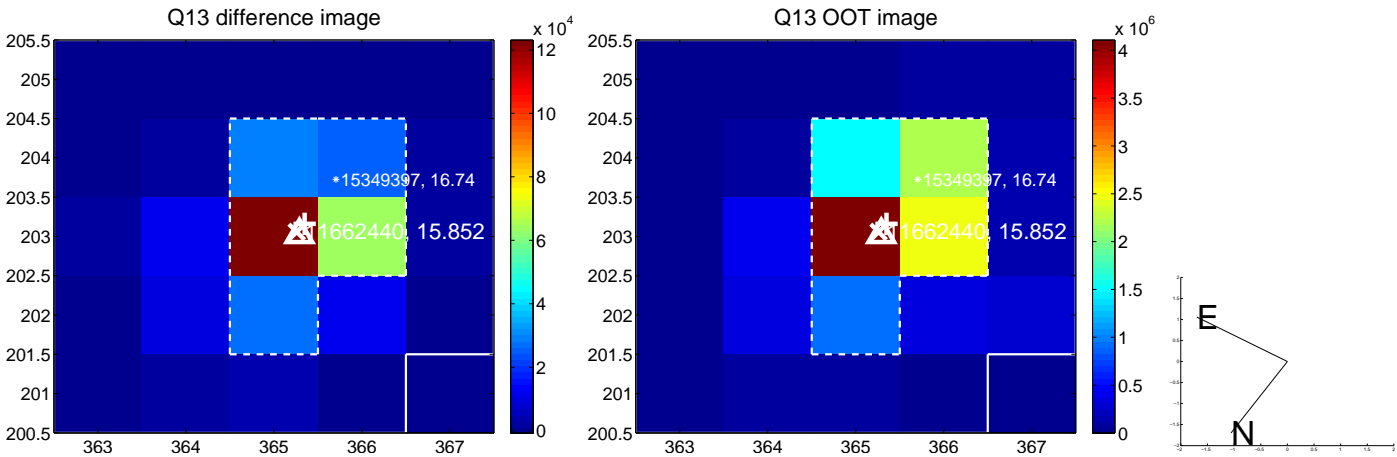
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



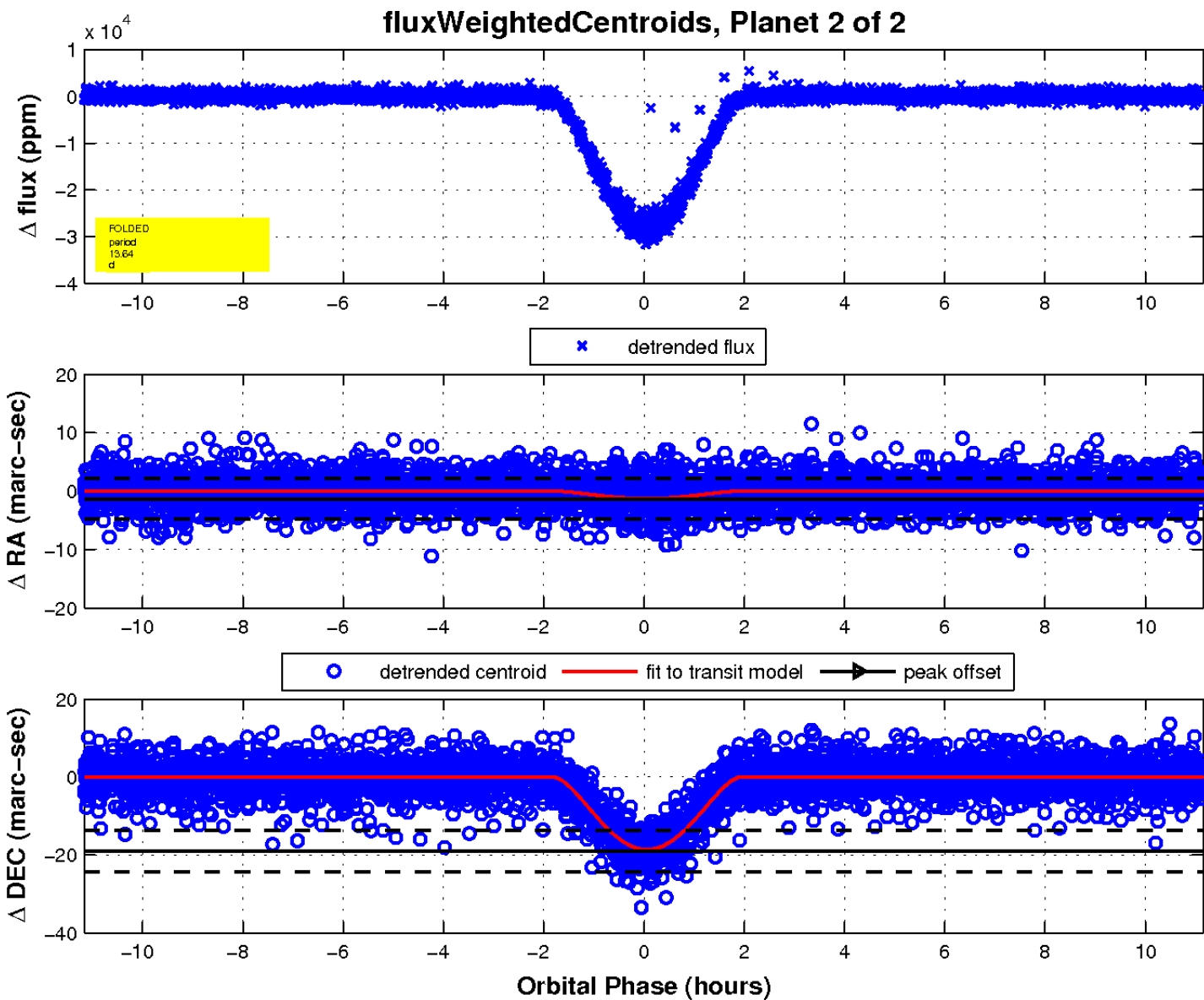
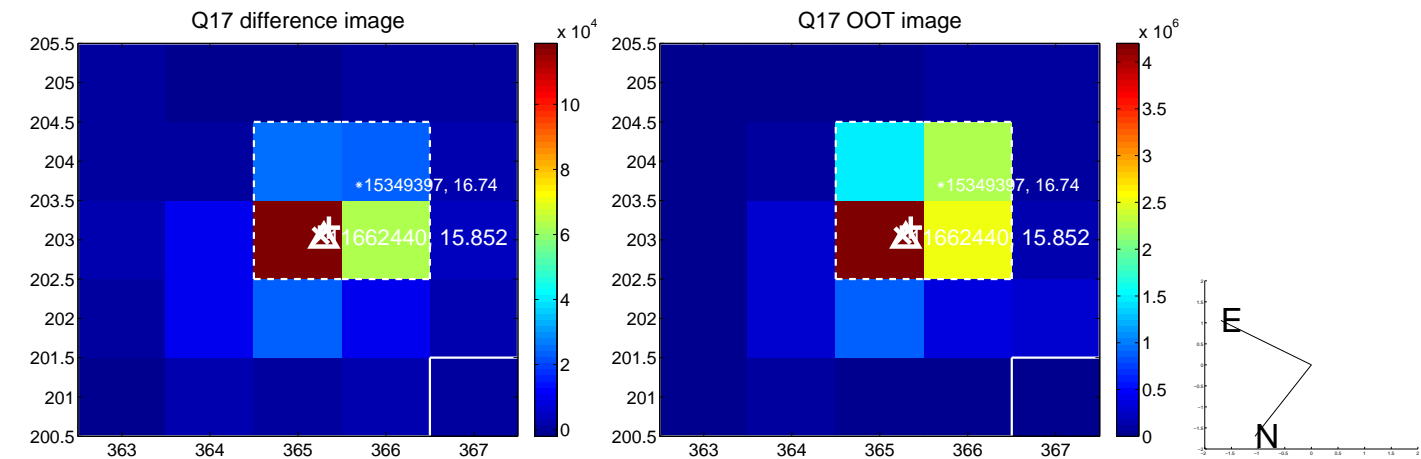
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

