

KIC 002442084

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})
002442084-01	OBS	6273.01	49.788605	175.192936	218896.7	7.382	3280.8	2274.0	0.54	3892	31.17	1.29
002442084-02	OBS	No	49.788626	134.384673	154827.4	3.782	1795.7	1096.0	0.54	3892	31.30	1.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002442084-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
002442084-02	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.

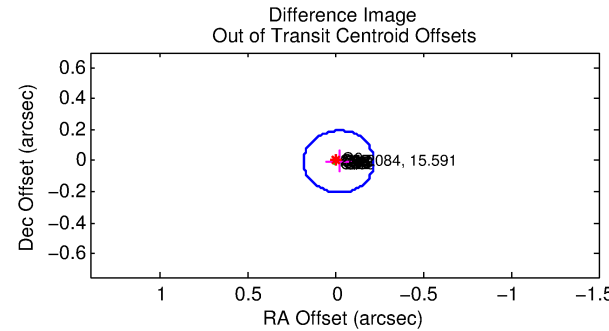
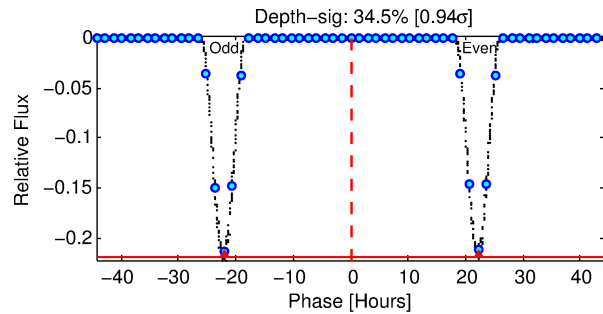
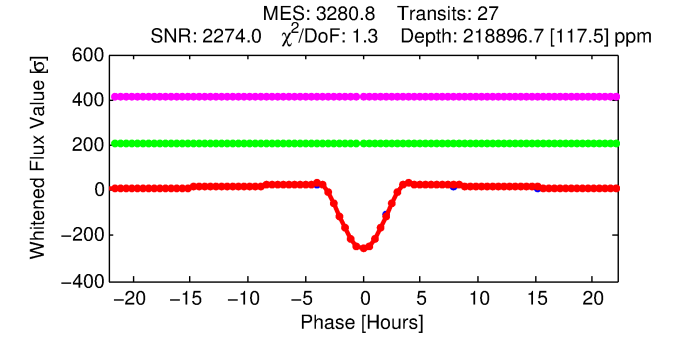
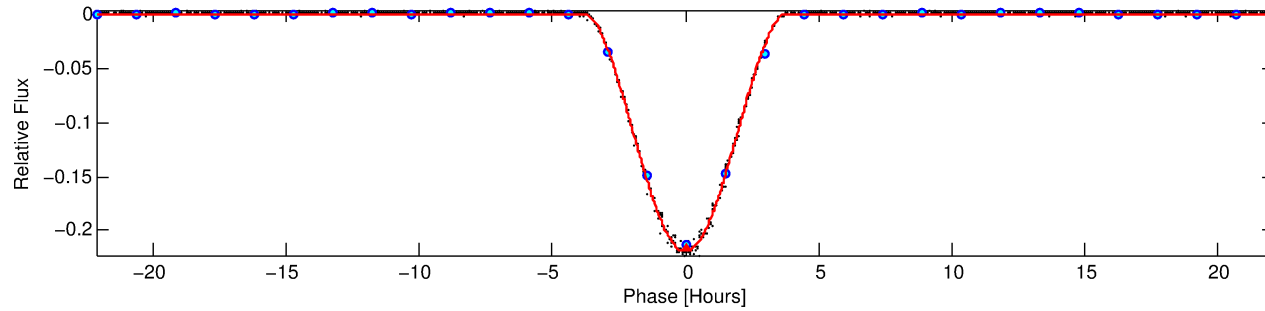
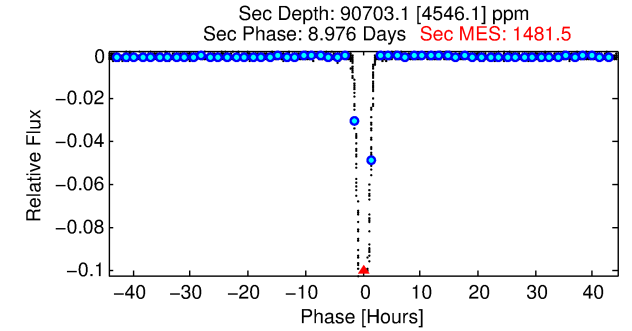
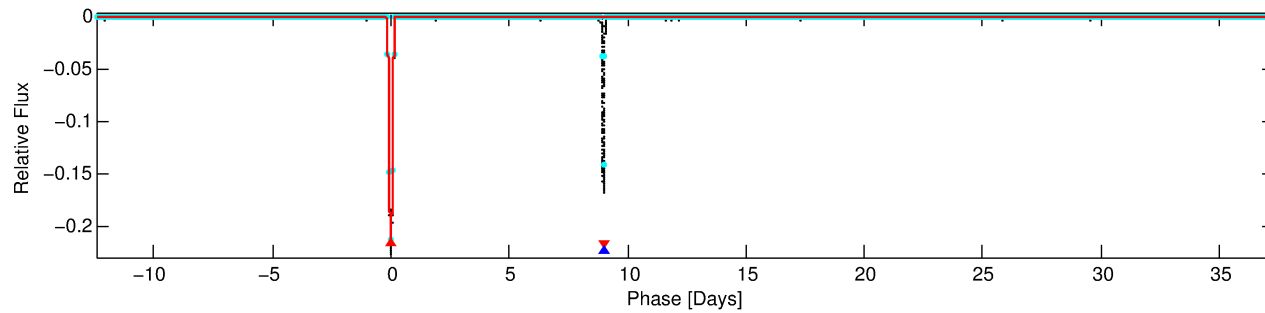
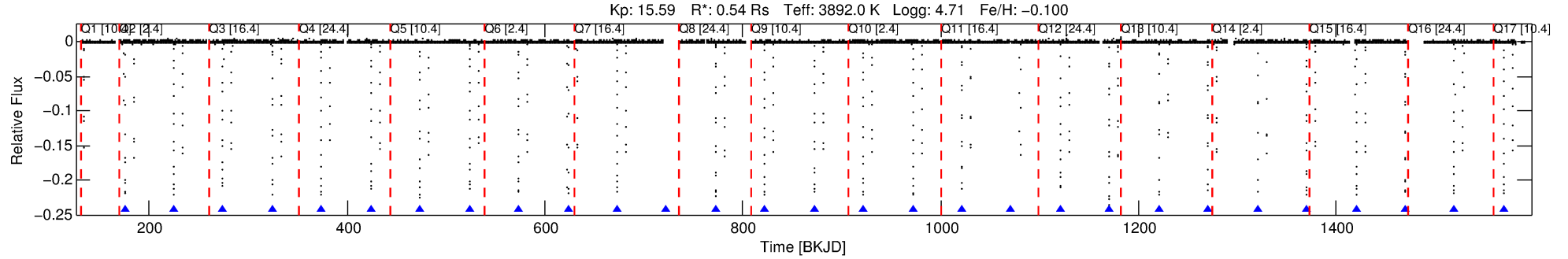
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002442084-01

No Significant Match Found

DV One-Page Summary

KIC: 2442084 Candidate: 1 of 2 Period: 49.789 d
KOI: K06273.01 Corr: 0.997



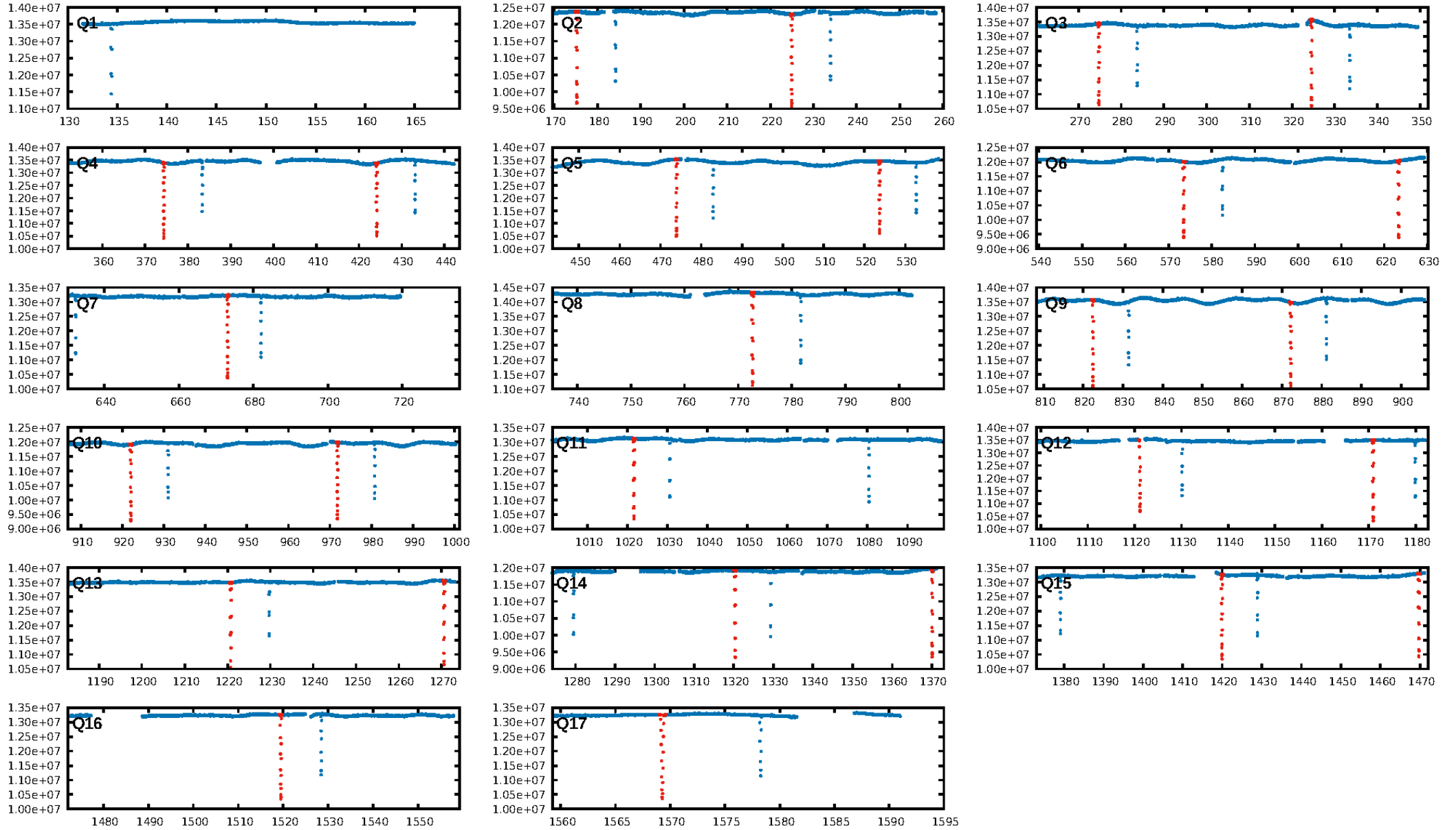
DV Fit Results:

Period = 49.78860 [0.00000] d
Epoch = 175.1929 [0.0001] BKJD
Rp/R* = 0.5269 [0.0159]
a/R* = 69.53 [0.19]
b = 0.72 [0.03]
Seff = 1.29 [0.15]
Teq = 272 [8] K
Rp = 31.17 [2.22] Re
a = 0.2167 [0.0111] AU
Ag = 2411.62 [253.78] [9.50σ]
Teffp = 2942 [87] K [30.59σ]

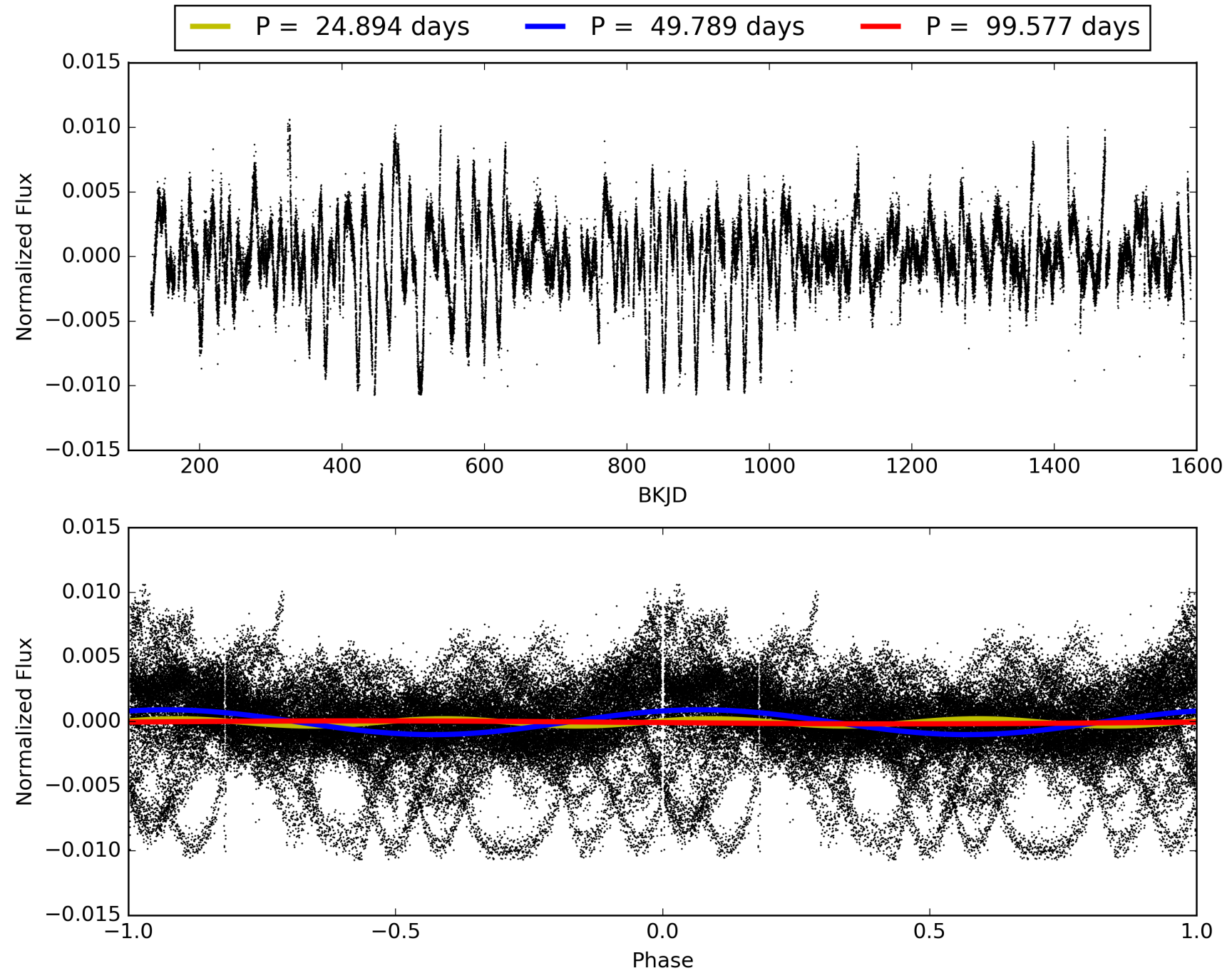
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 99.4%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [26/26]
GhostDiagnostic-chr: 2.915
Centroid-sig: N/A
Centroid-so: 0.882 arcsec [251.99σ]
OotOffset-rm: 0.020 arcsec [0.29σ]
KicOffset-rm: 0.235 arcsec [3.27σ]
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]

TCE 002442084-01, PDC Light Curves

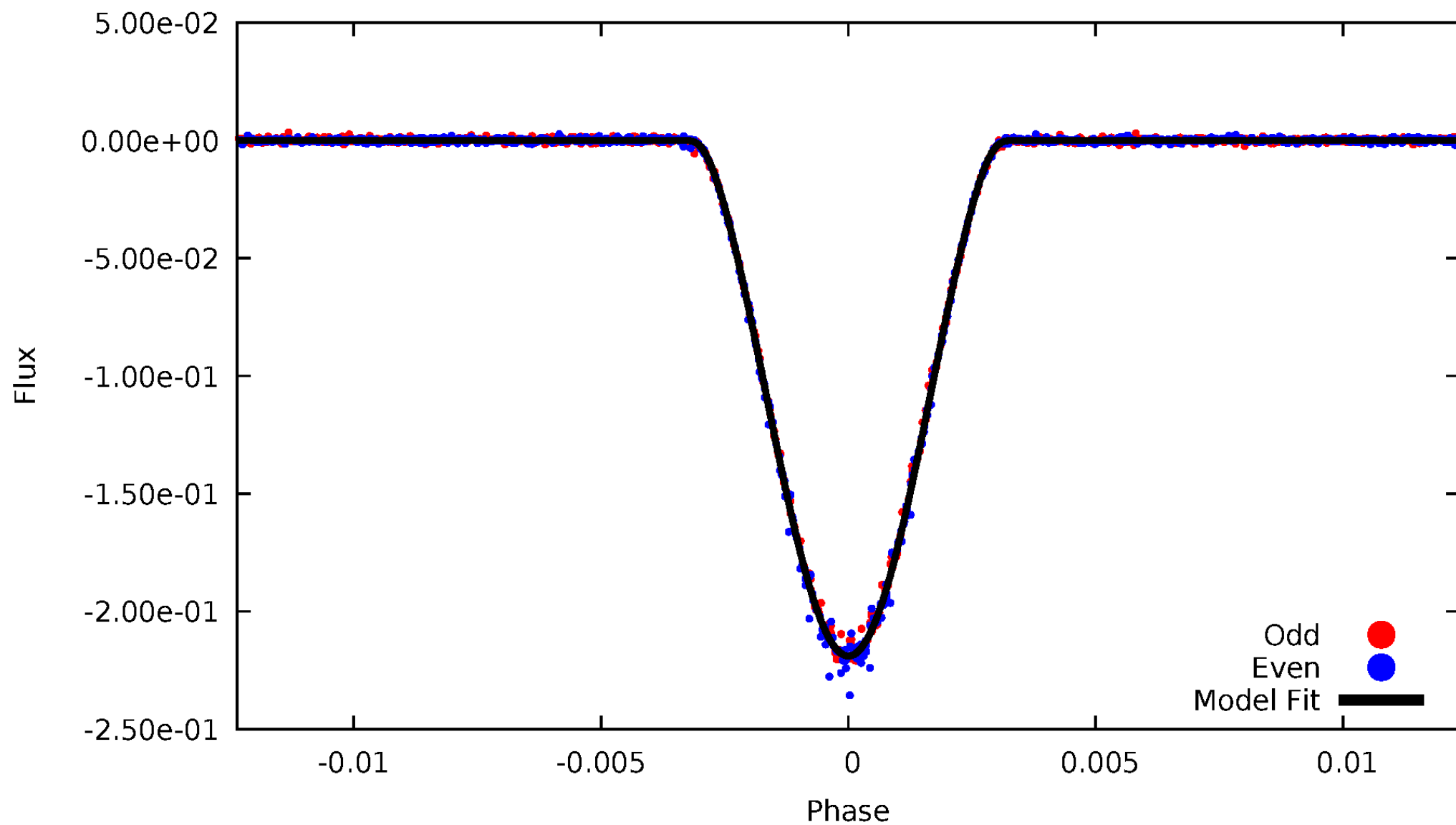


TCE 002442084-01



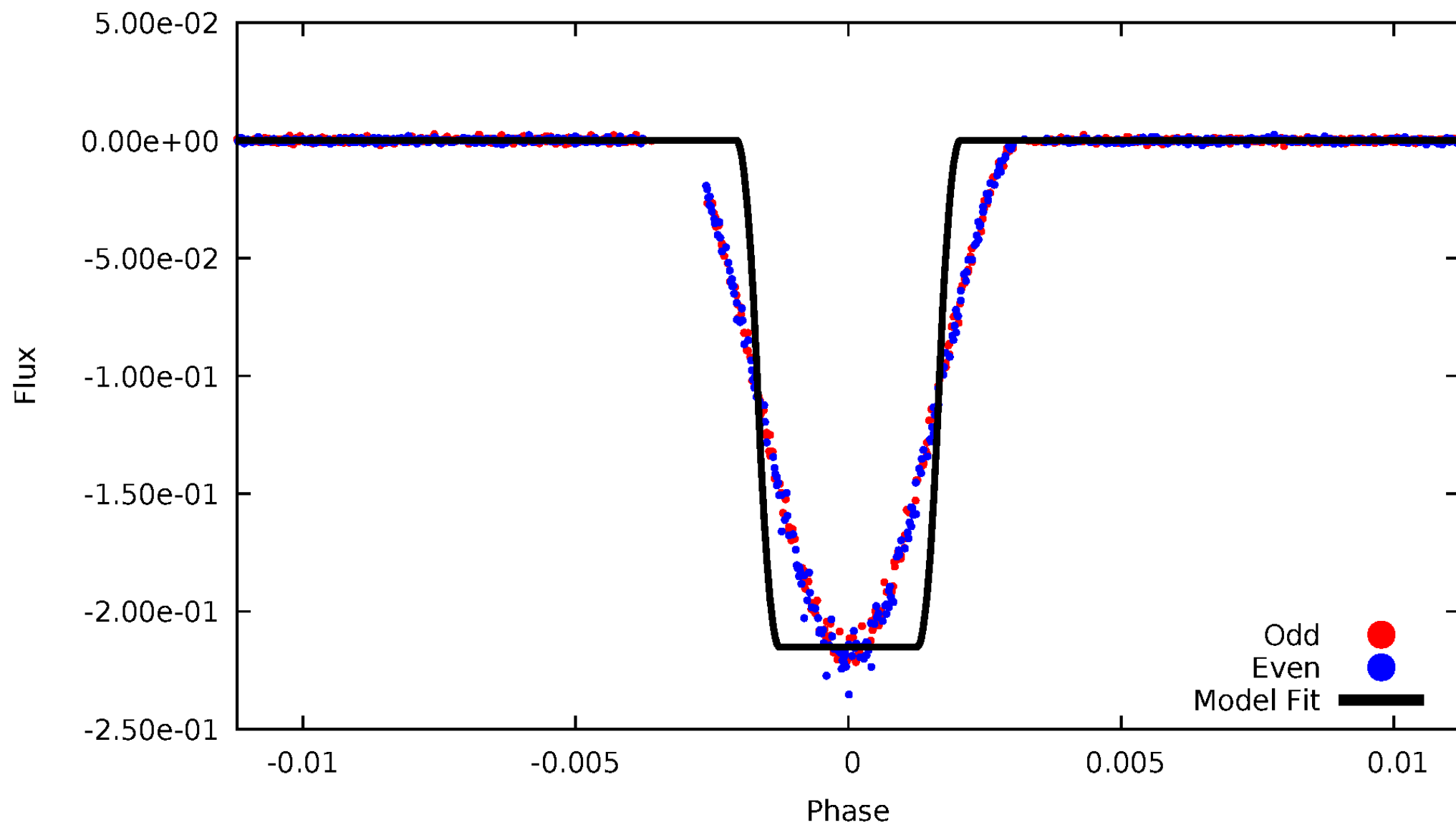
DV Odd/Even

TCE 002442084-01



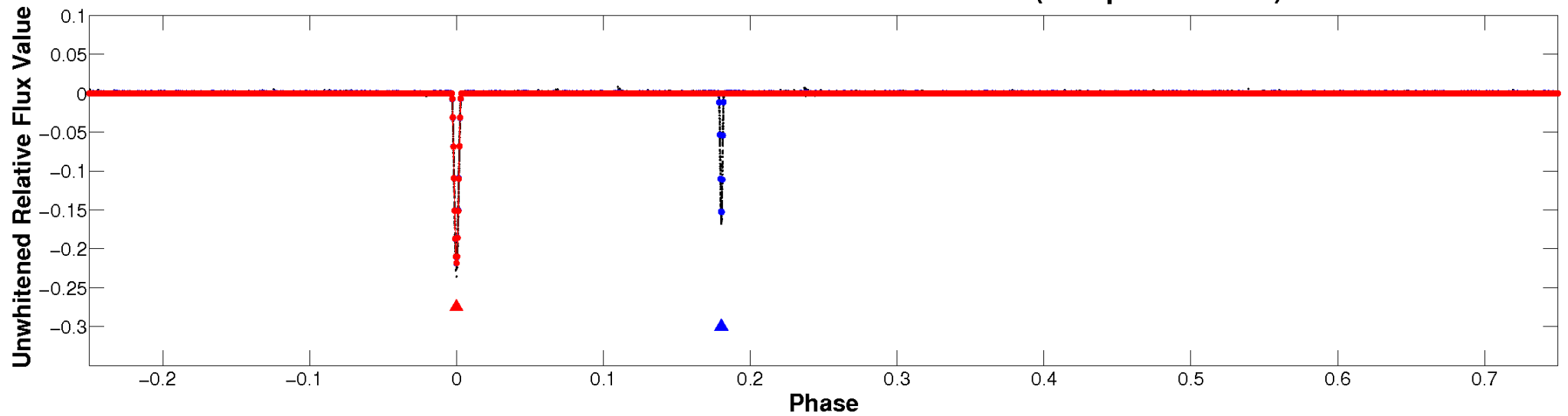
ALT Odd/Even

TCE 002442084-01

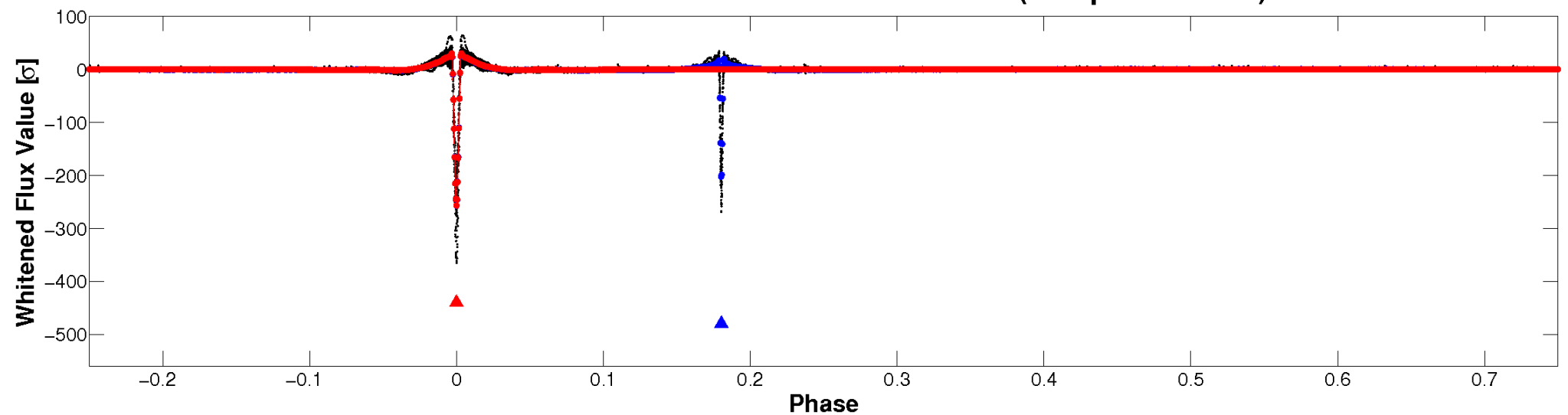


Non-Whitened Vs. Whitened Light Curve

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

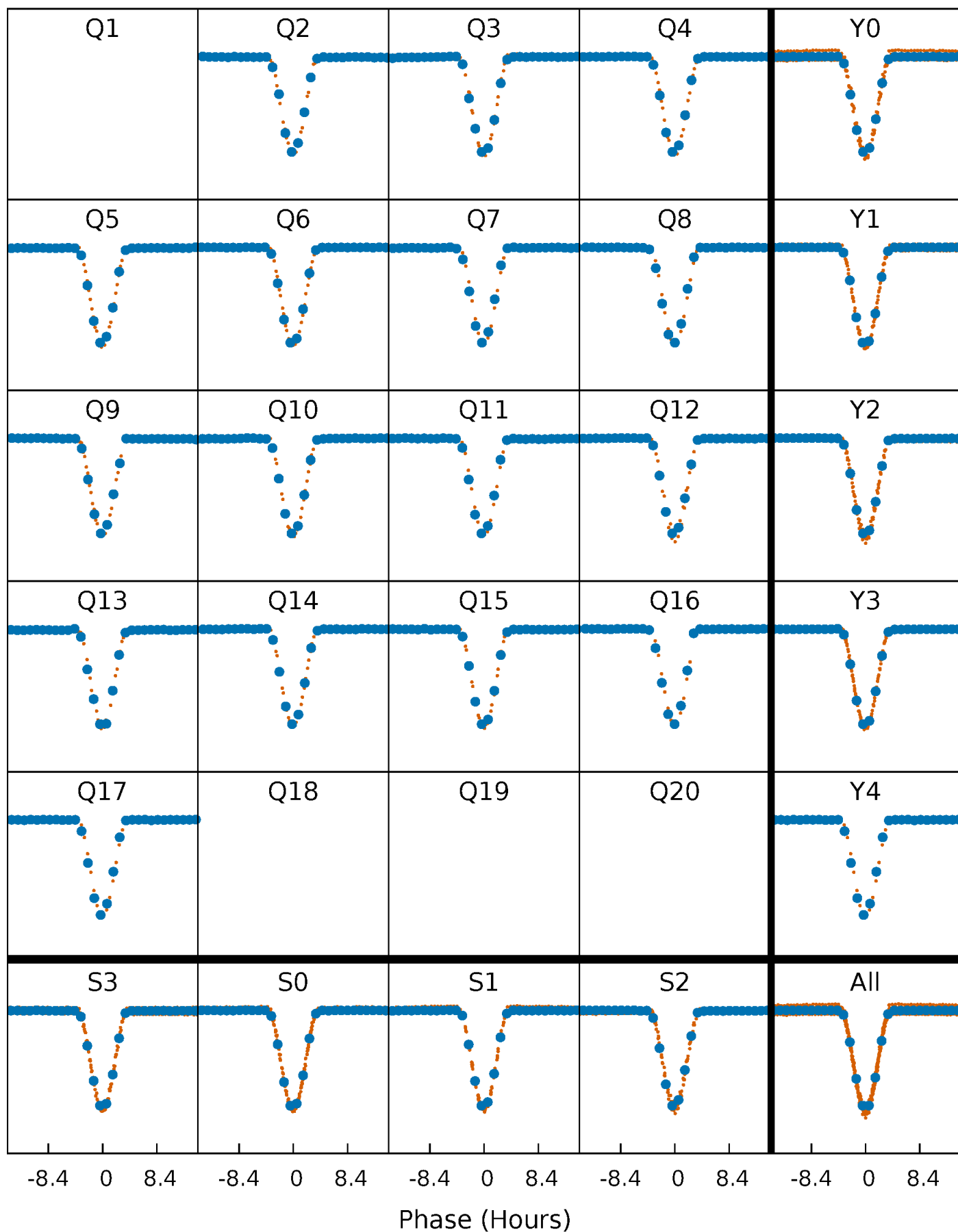


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



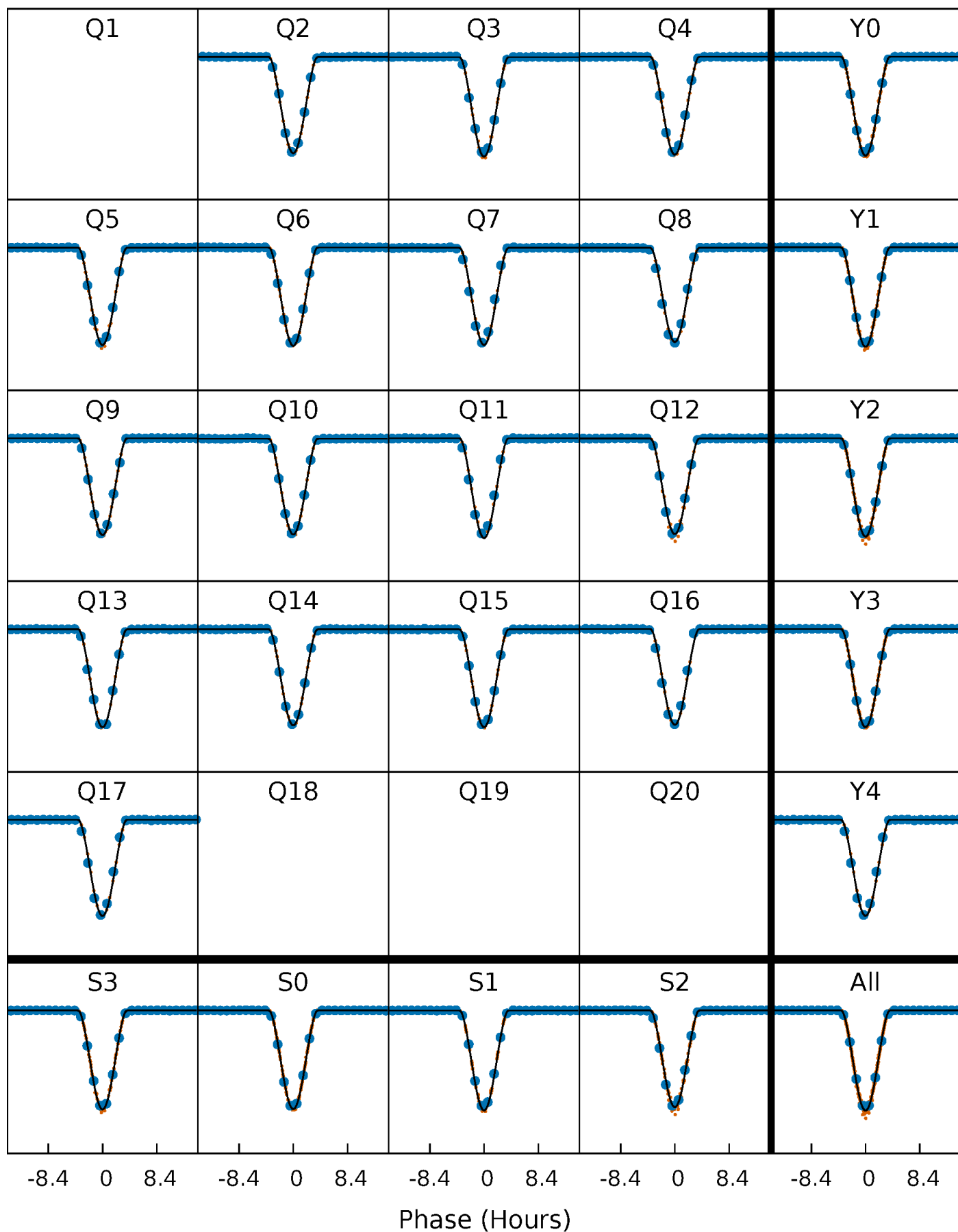
PDC Quarter-Phased Transit Curves

TCE 002442084-01 P= 49.788605 Days $T_0=175.192936$ (BKJD)



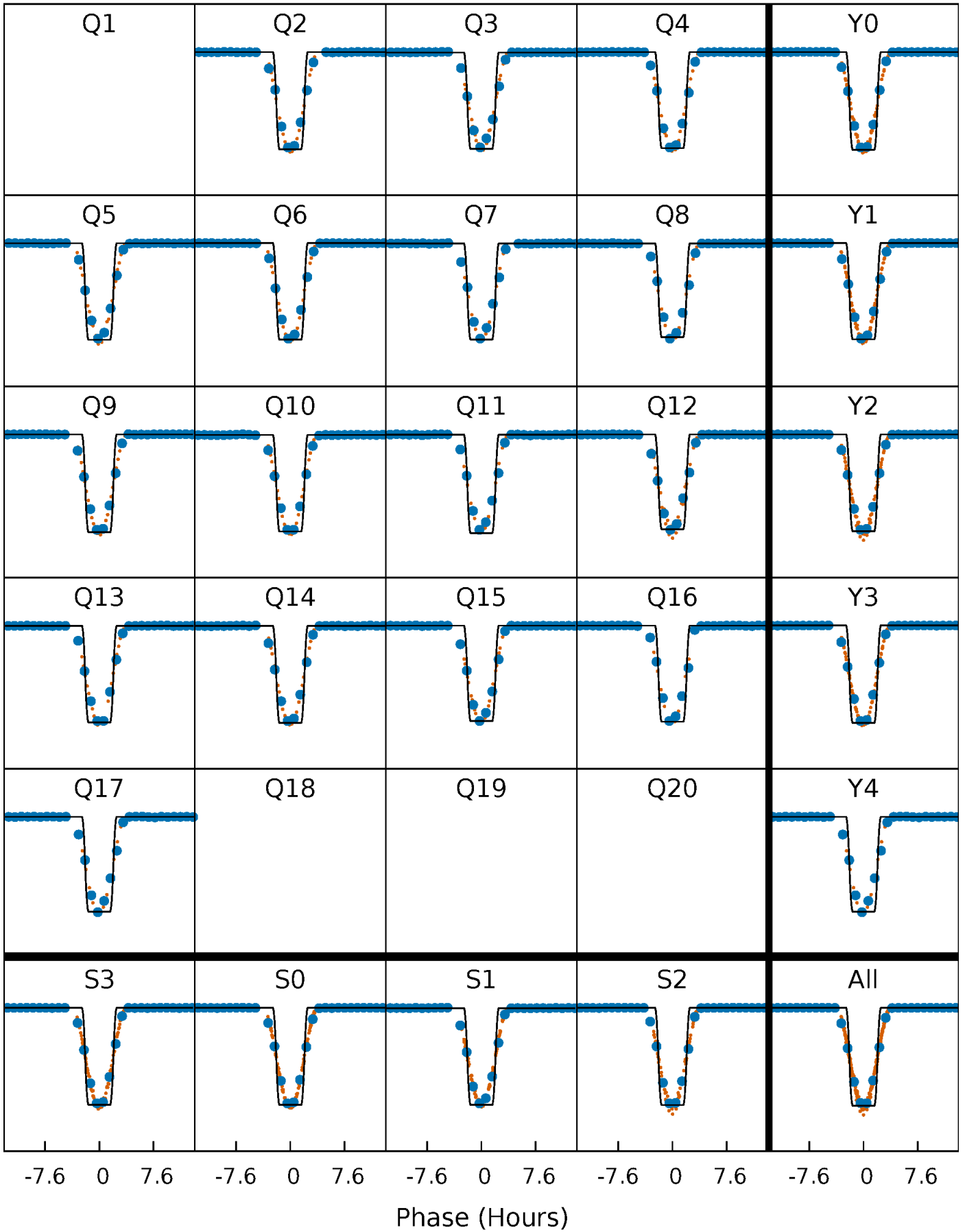
DV Quarter-Phased Transit Curves

TCE 002442084-01 P= 49.788605 Days $T_0=175.192936$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

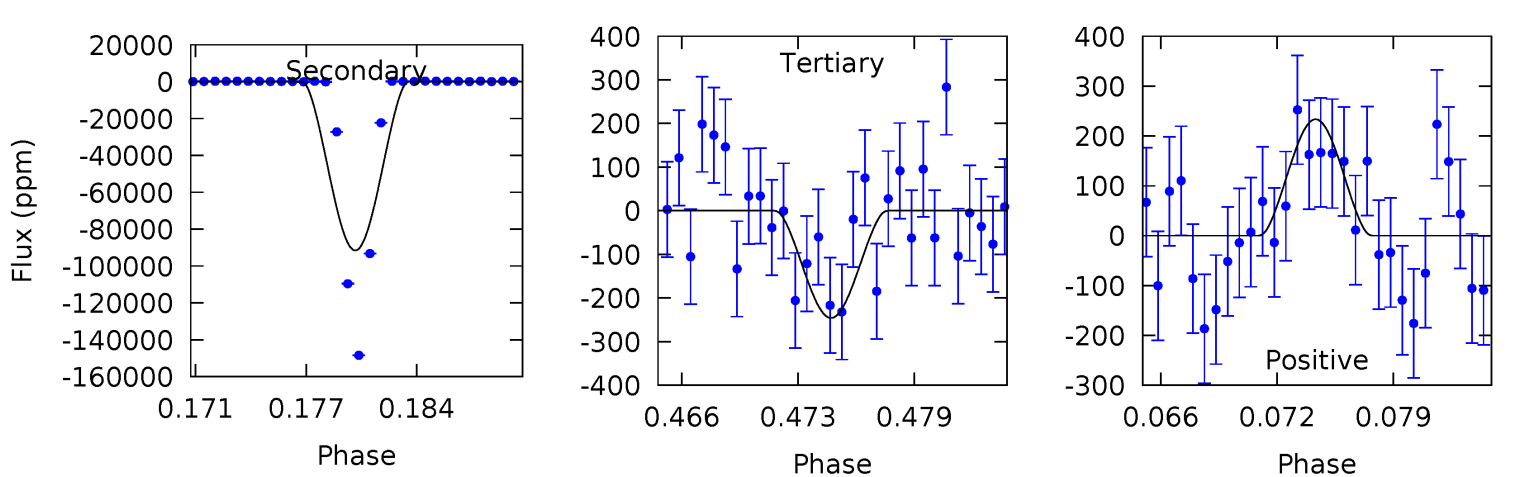
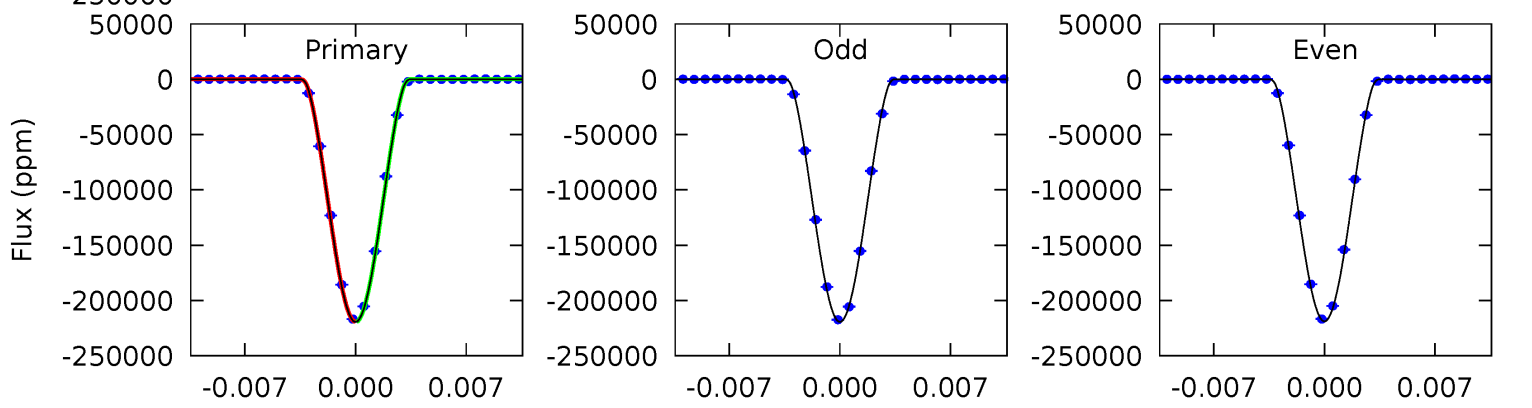
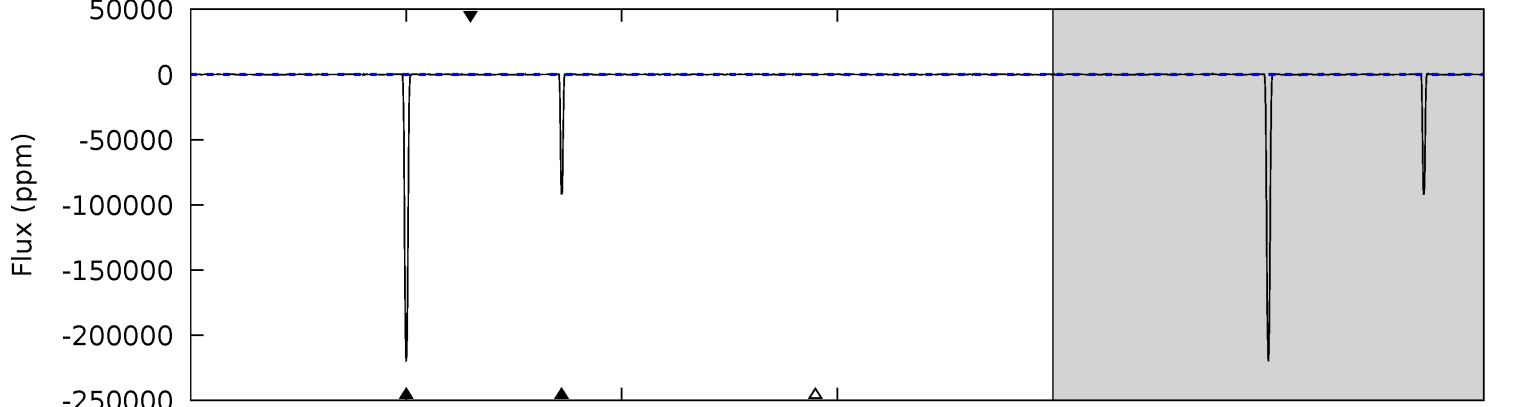
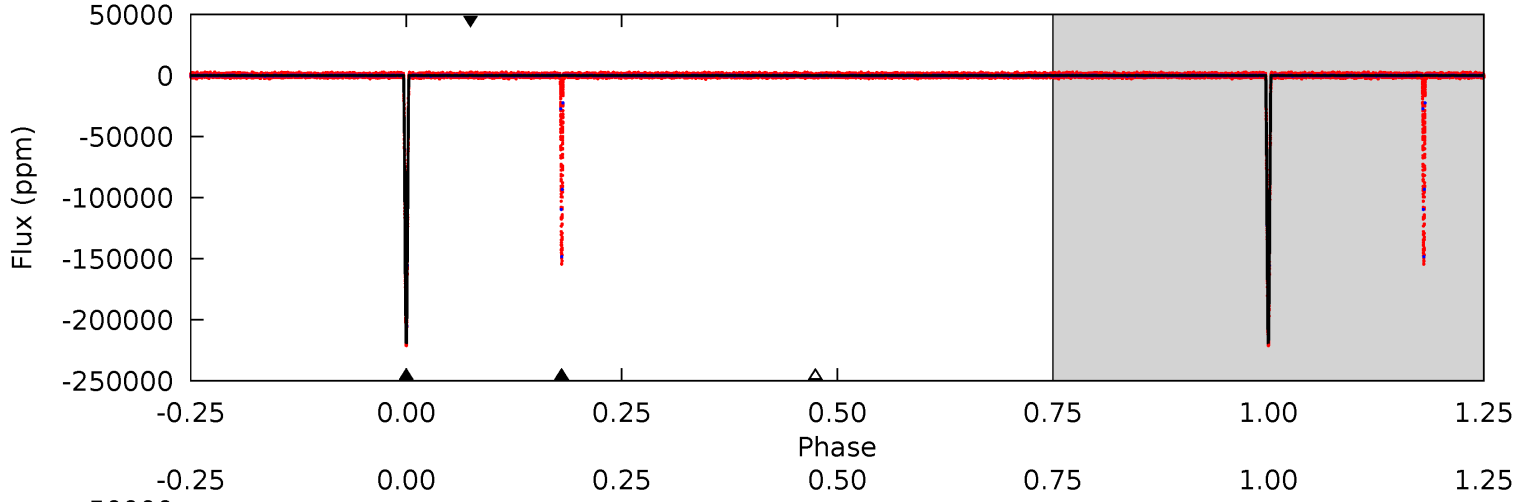
TCE 002442084-01 P= 49.788769 Days $T_0=175.190587$ (BKJD)



DV Model-Shift Uniqueness Test

002442084-01, P = 49.788605 Days, E = 125.404331 Days

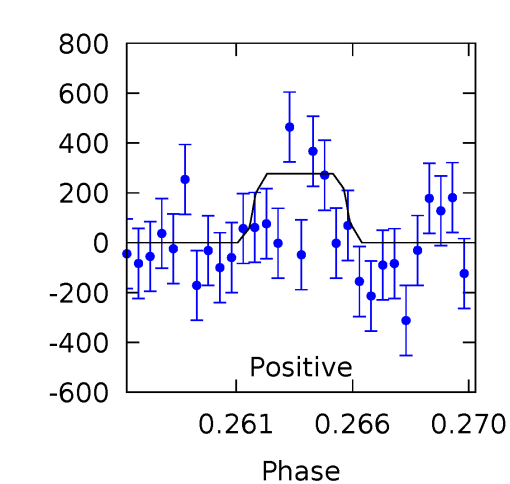
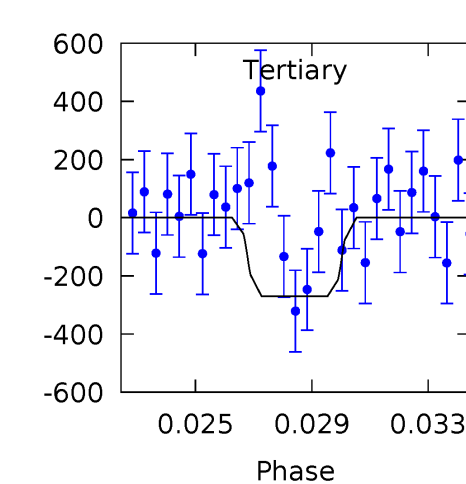
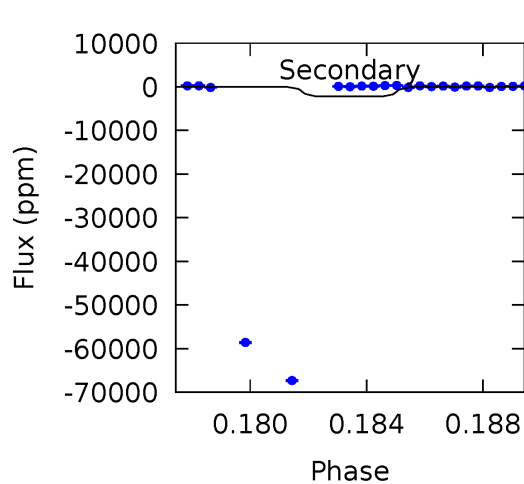
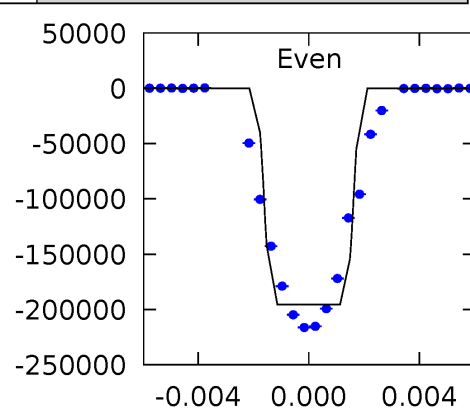
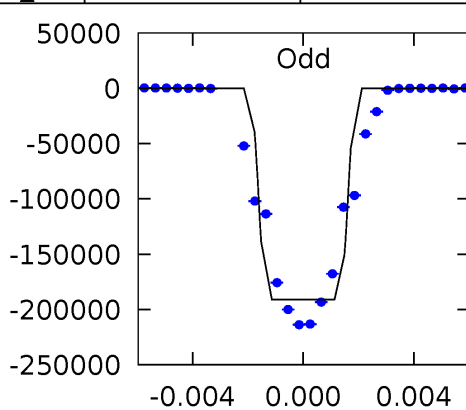
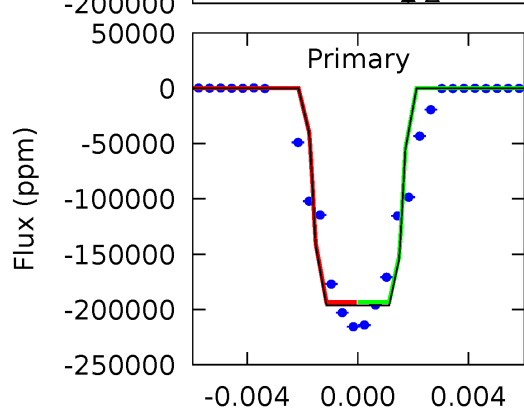
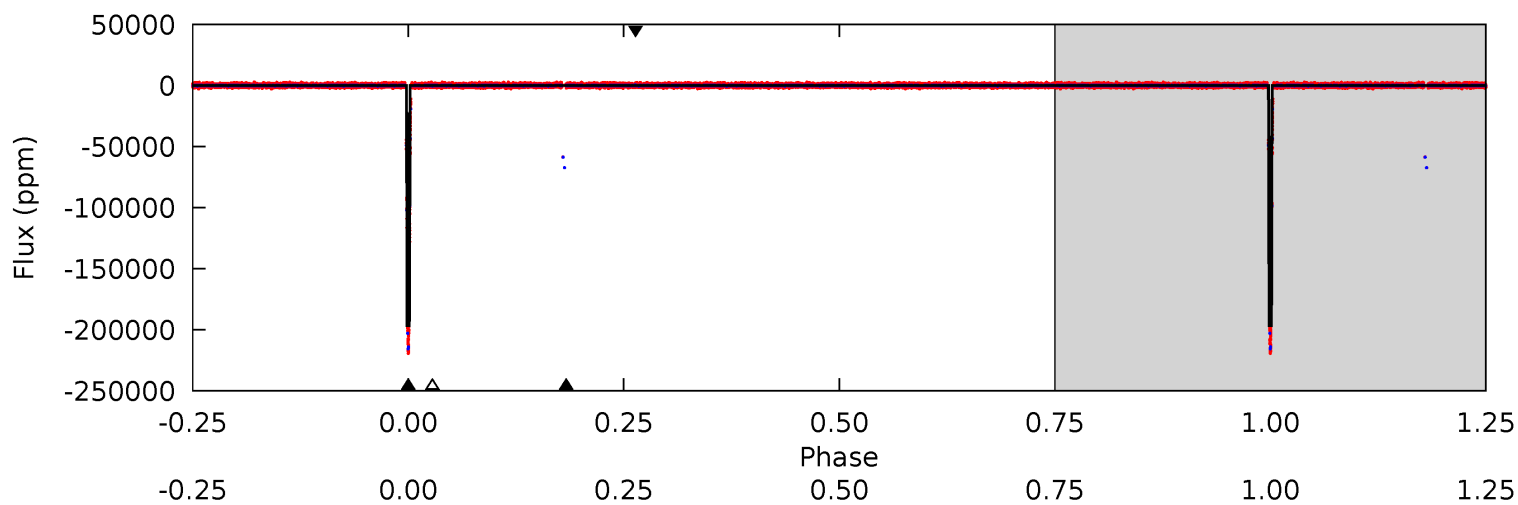
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5833	2434	6.53	6.21	5.11	2.72	2.13	5827	5827	2427	2428	5.43	1.00	0.00	0.35



Alt Model-Shift Uniqueness Test

002442084-01, P = 49.788769 Days, E = 125.401818 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2941	33.0	4.05	4.14	5.20	2.87	7.68	2937	2937	29.0	28.9	35.6	1.00	0.00	0



Stellar Parameters For KIC 002442084

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3892^{+86}_{-86}	$4.708^{+0.036}_{-0.021}$	$-0.100^{+0.100}_{-0.100}$	$0.542^{+0.027}_{-0.035}$	$0.546^{+0.030}_{-0.030}$	$4.838^{+0.777}_{-0.424}$
	+2%/-2%	+1%/-0%	+100%/-100%	+5%/-6%	+5%/-5%	+16%/-9%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 002442084-01 / KOI 6273.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-91515 ± 38	$31.10^{+1.36}_{-1.46}$	378^{+9}_{-10}	3301^{+70}_{-73}	2703^{+224}_{-202}
Alt.	-2206 ± 67	$27.35^{+1.32}_{-1.28}$	378^{+10}_{-9}	2105^{+34}_{-35}	77^{+7}_{-7}

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 $A_{obs} \gg 1.0$

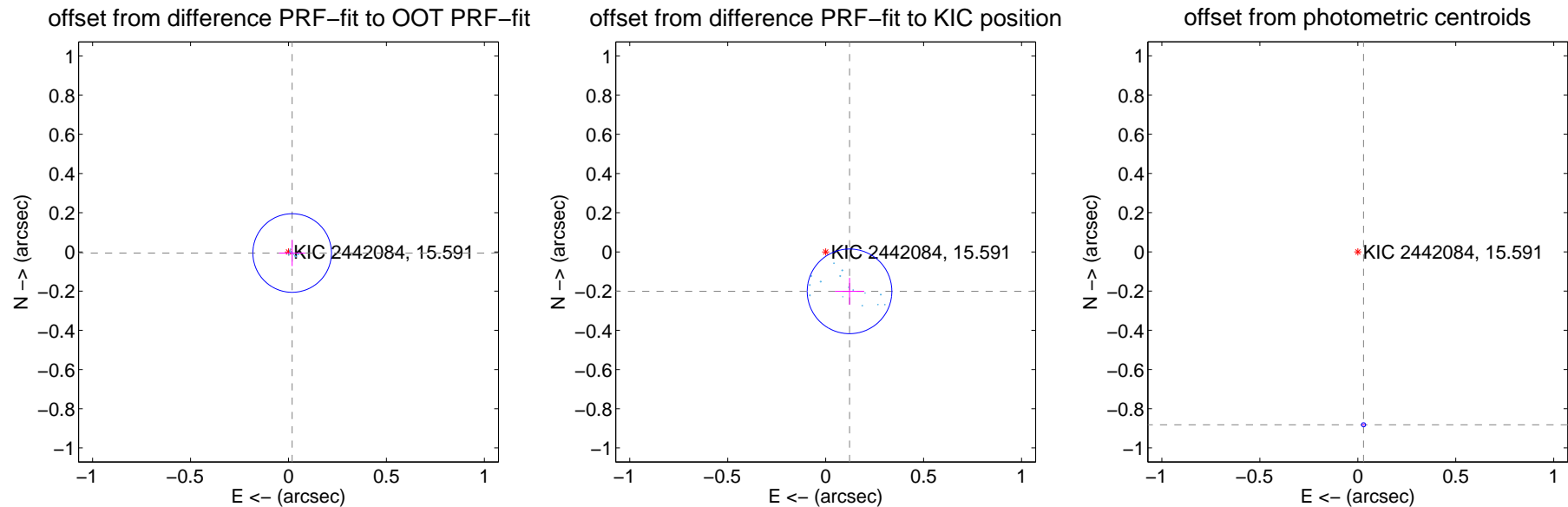
DV Centroid Data

Supplemental centroid analysis for 002442084-01. Kepler magnitude: 15.59. Transit SNR 2274.01

There are 15 quarters with good PRF difference image offsets

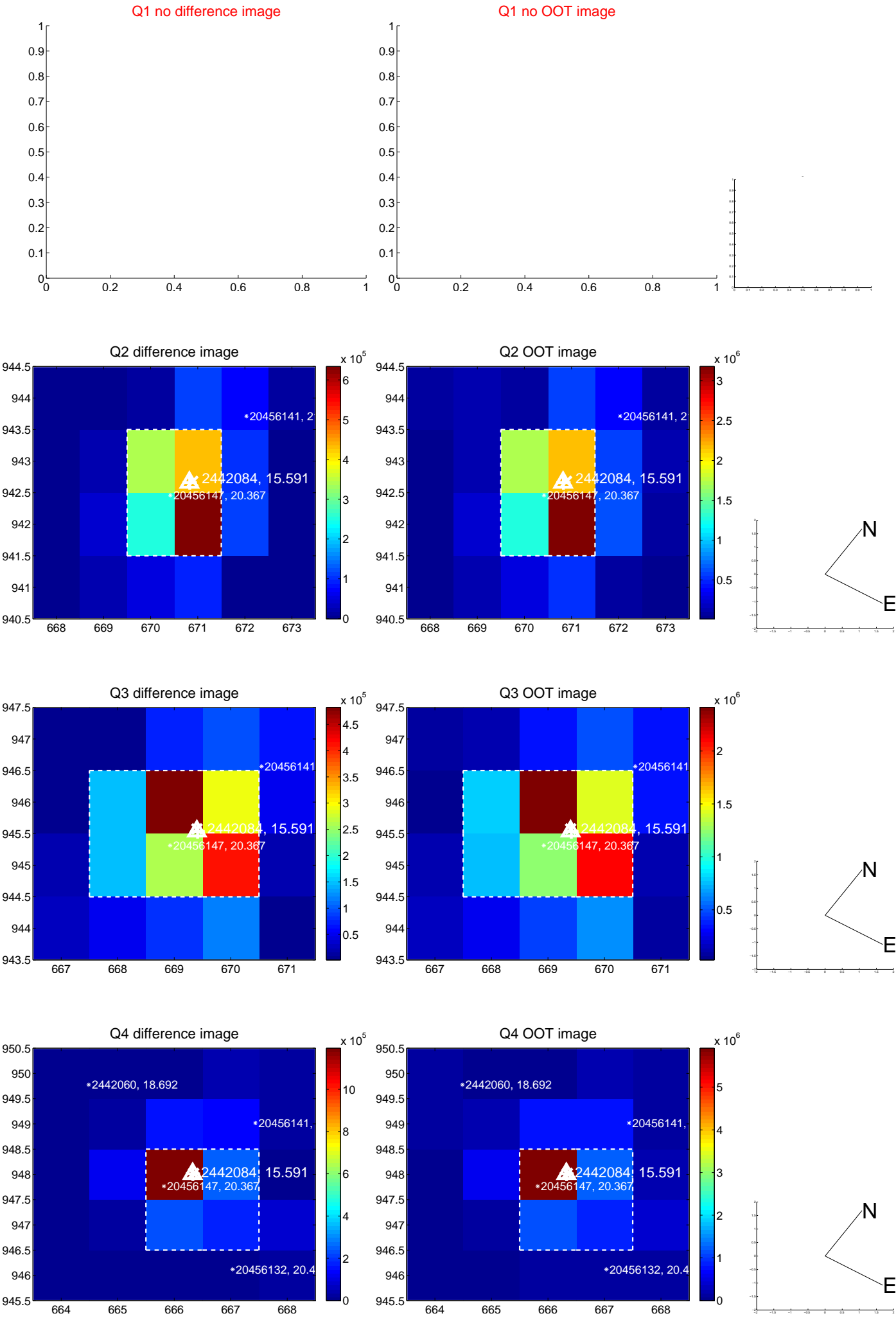
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.020 ± 0.067	0.29	-0.019 ± 0.067	-0.006 ± 0.067
PRF-fit source offset from KIC position	0.235 ± 0.072	3.27	-0.122 ± 0.074	-0.201 ± 0.069
photometric centroid source offset	0.88 ± 0.00	251.99	-0.03 ± 0.00	-0.88 ± 0.00

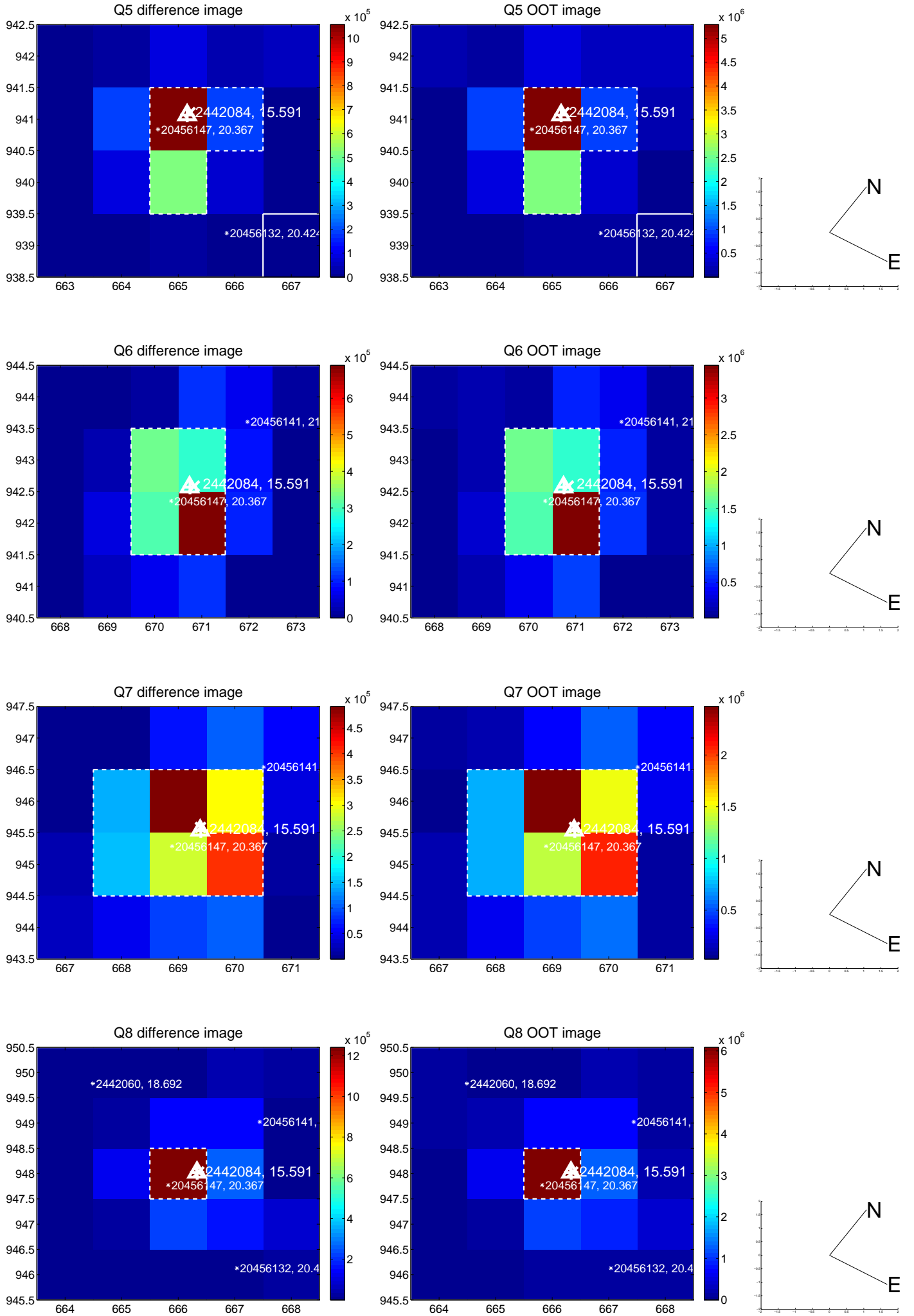


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

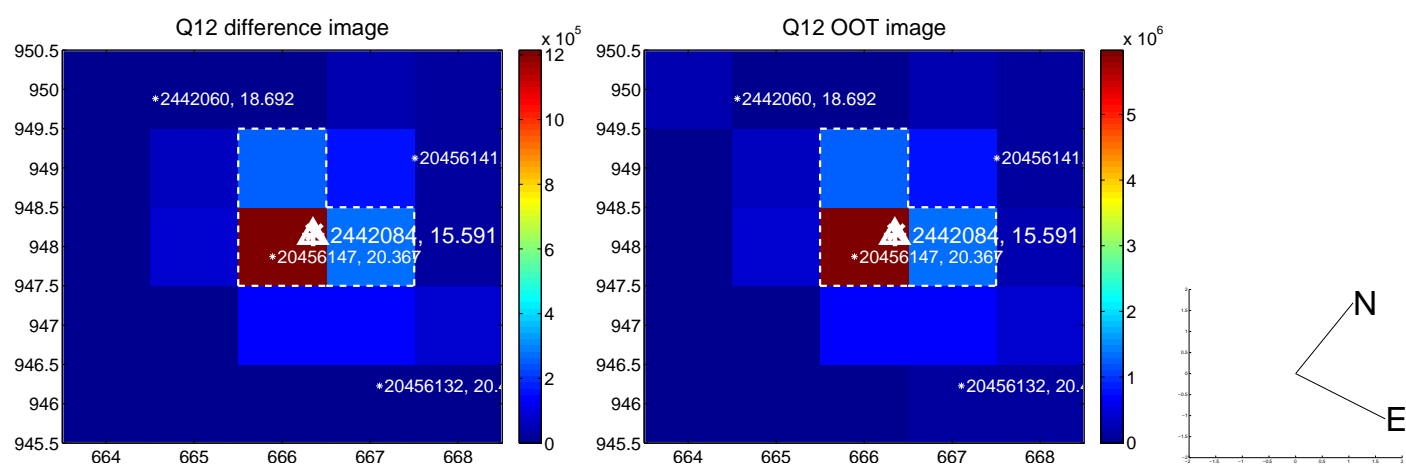
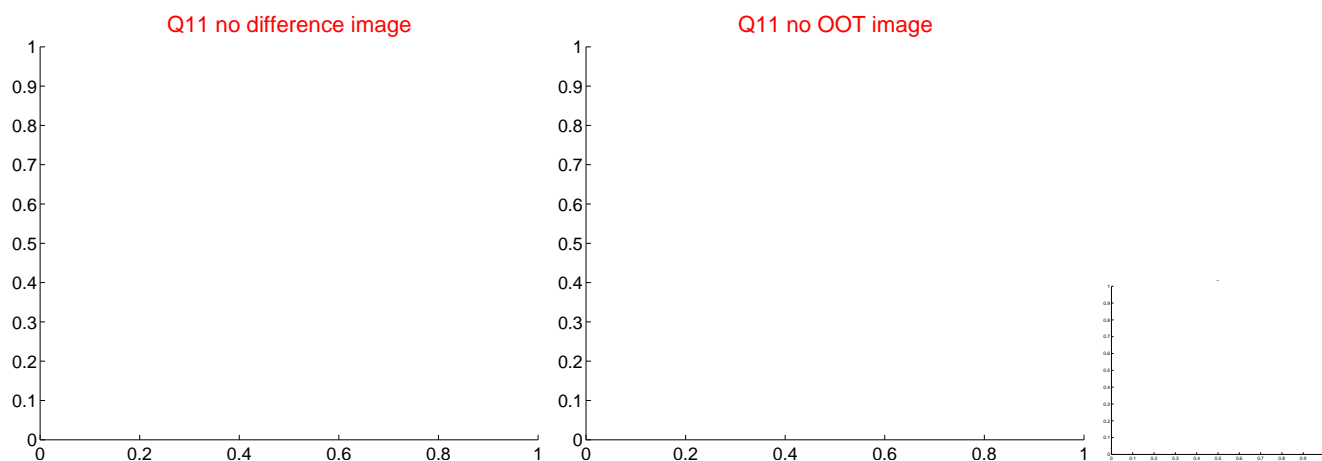
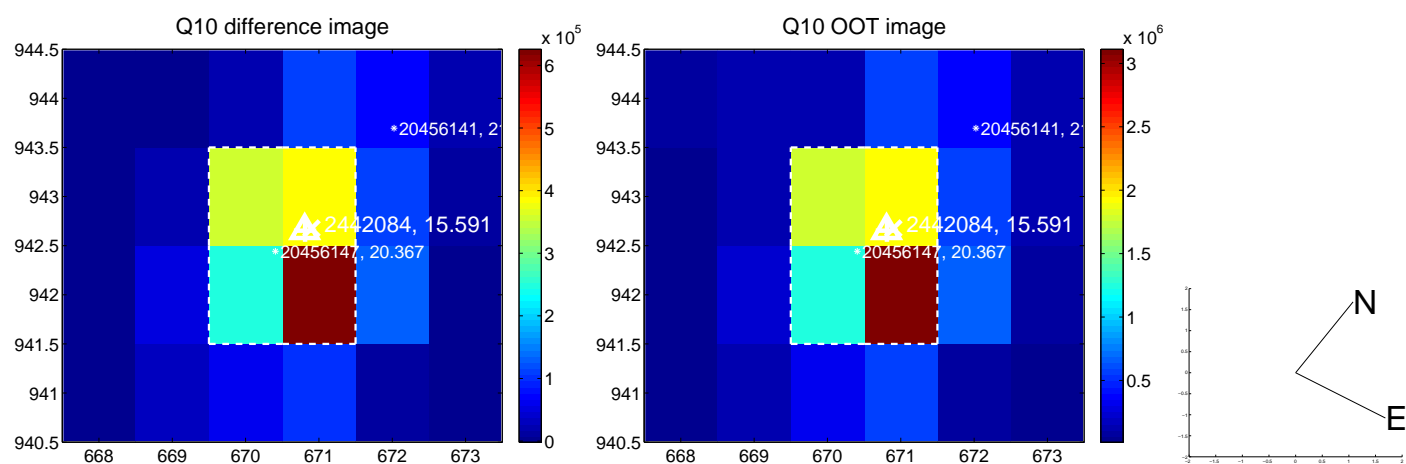
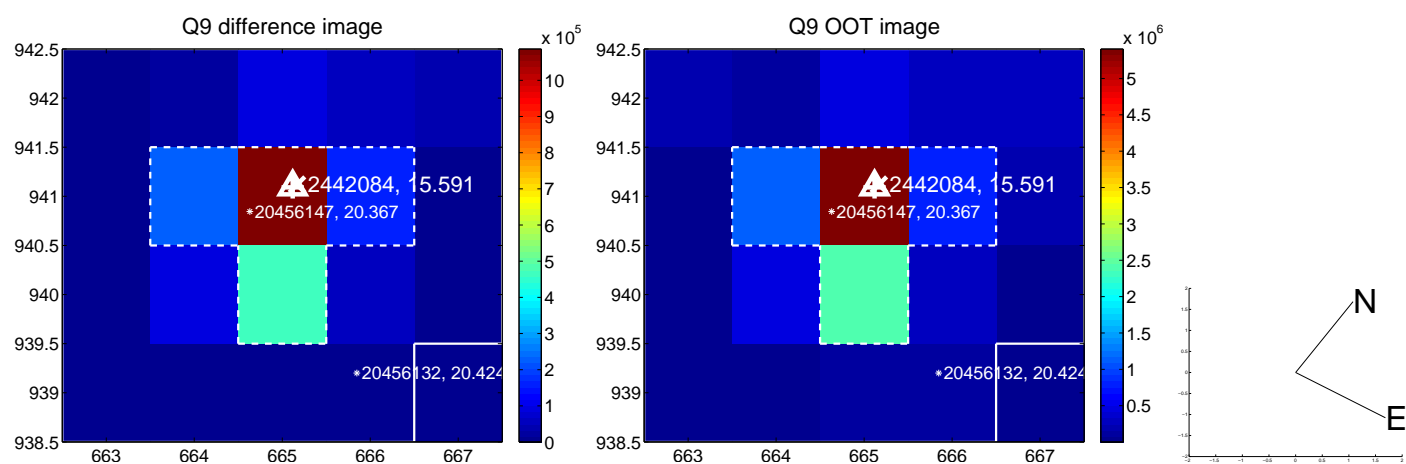
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



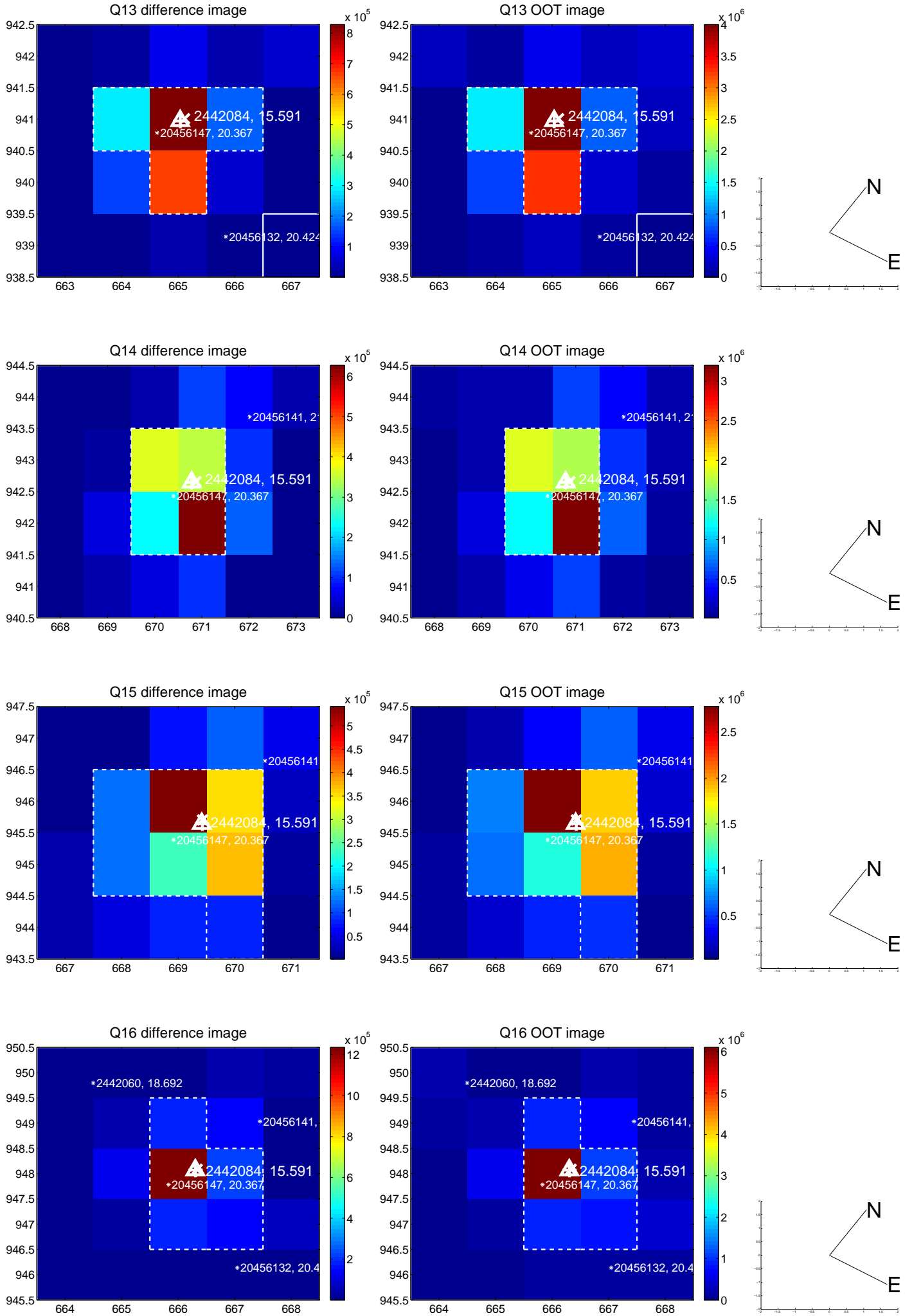
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



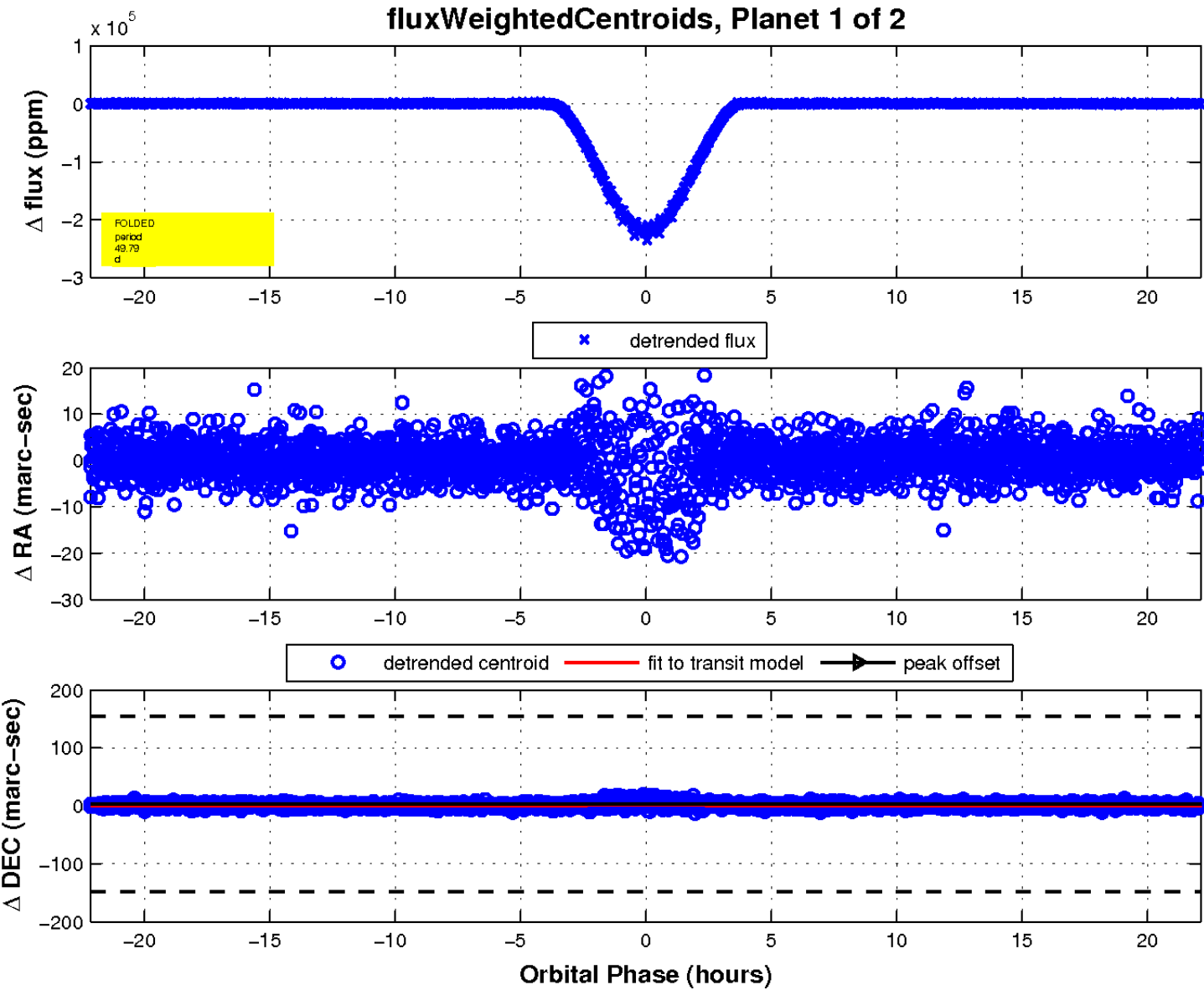
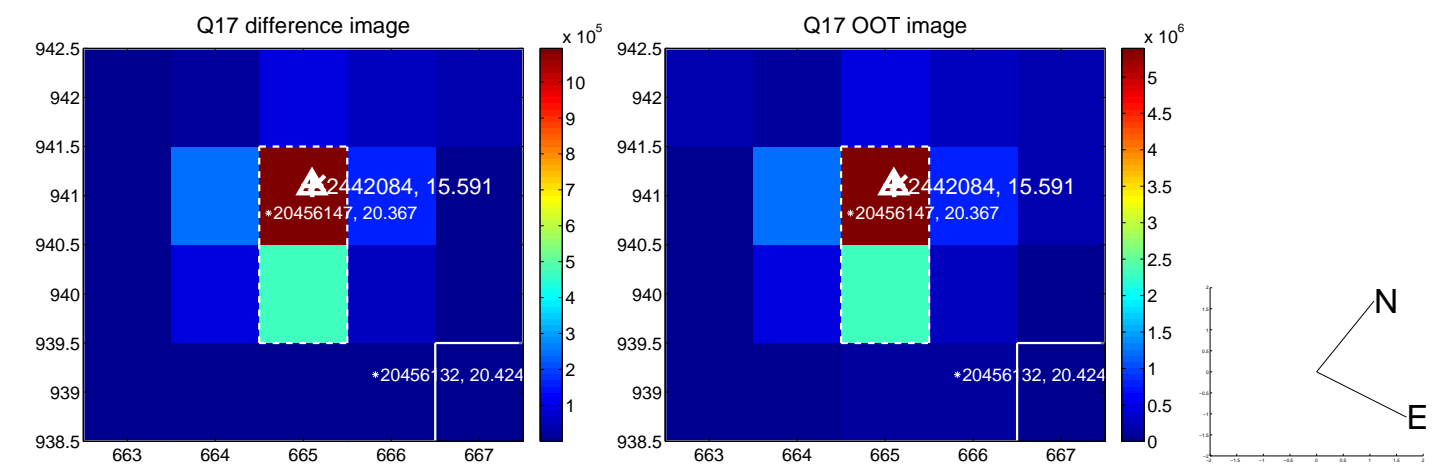
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

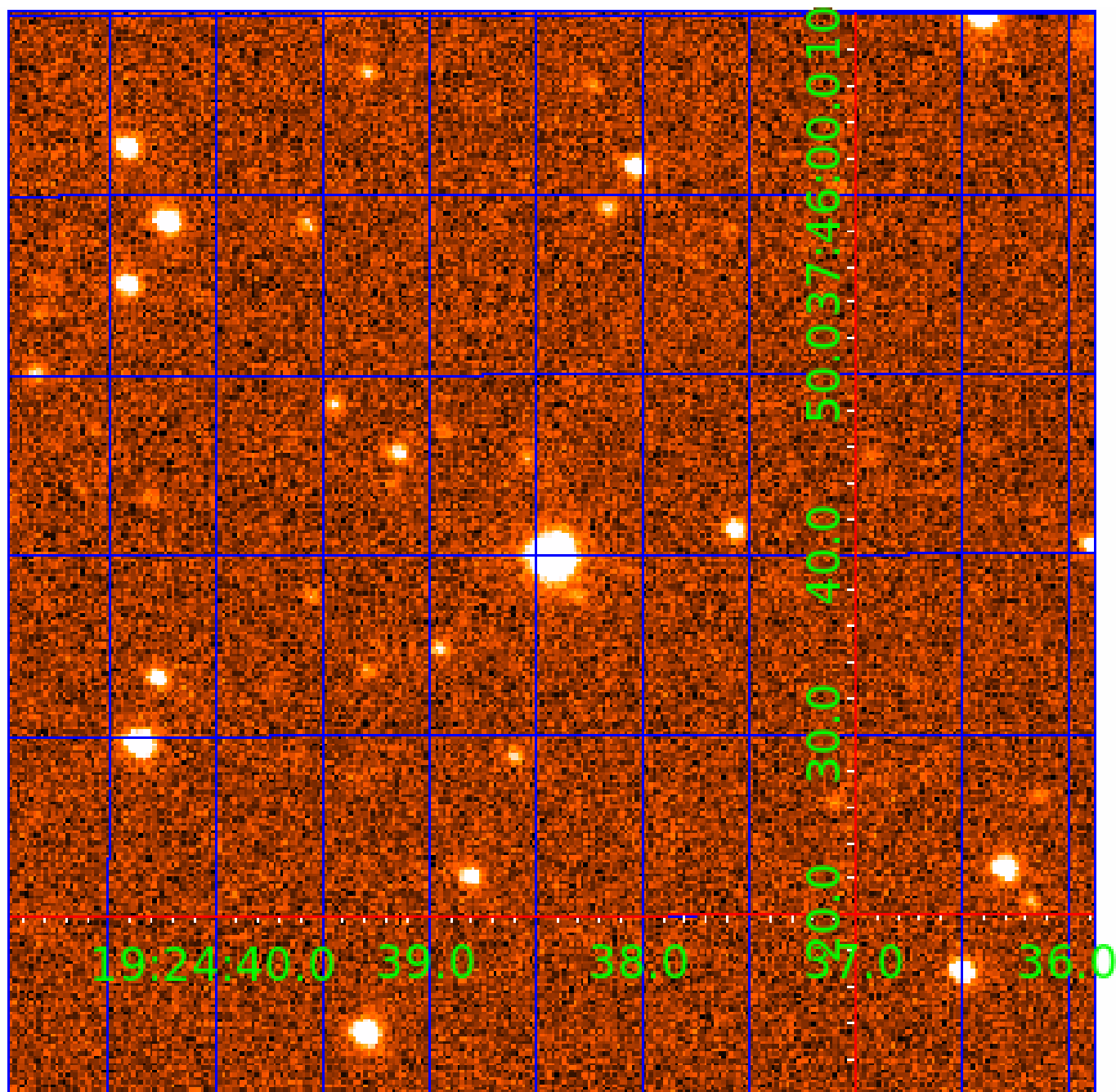


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002442084

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})
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002442084-02	OBS	No	49.788626	134.384673	154827.4	3.782	1795.7	1096.0	0.54	3892	31.30	1.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002442084-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
002442084-02	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.

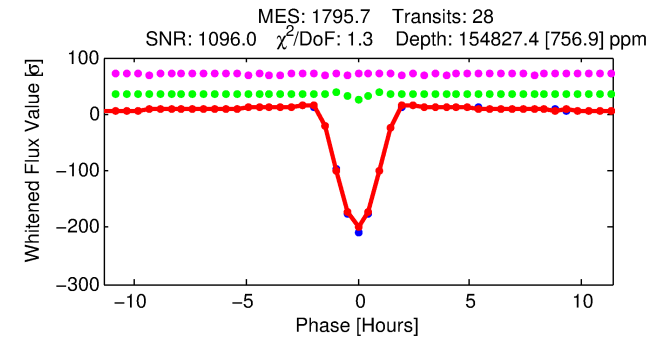
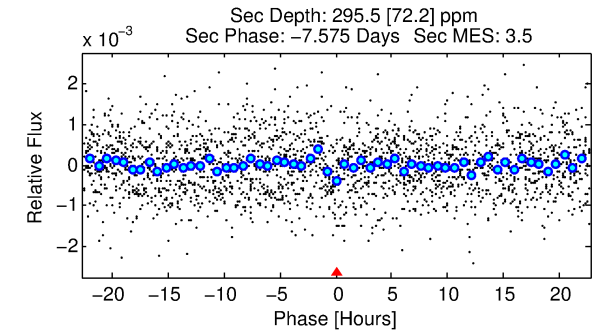
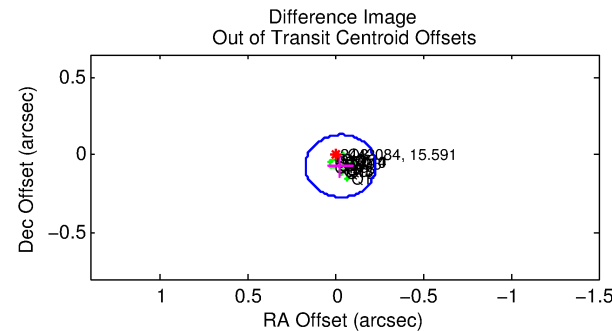
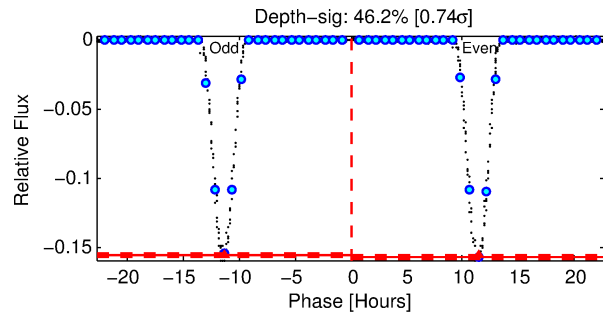
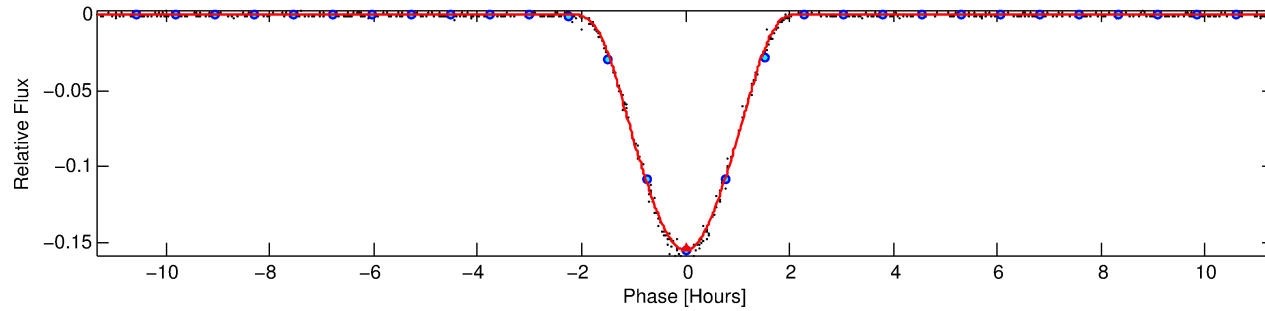
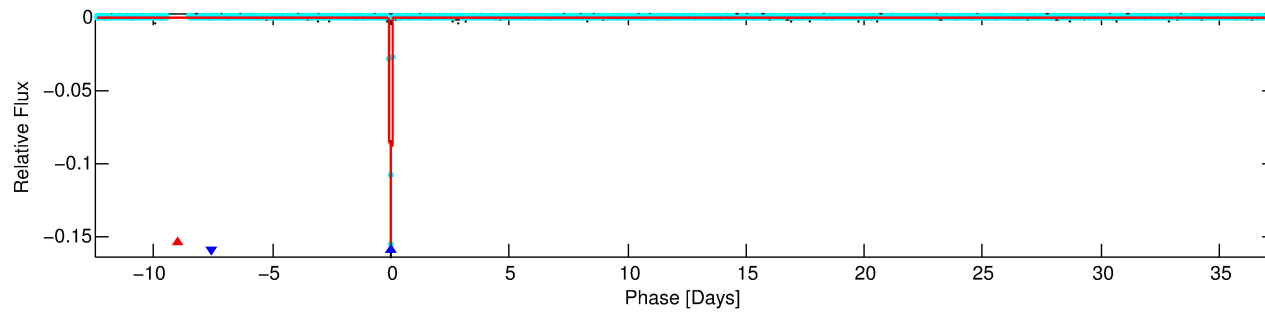
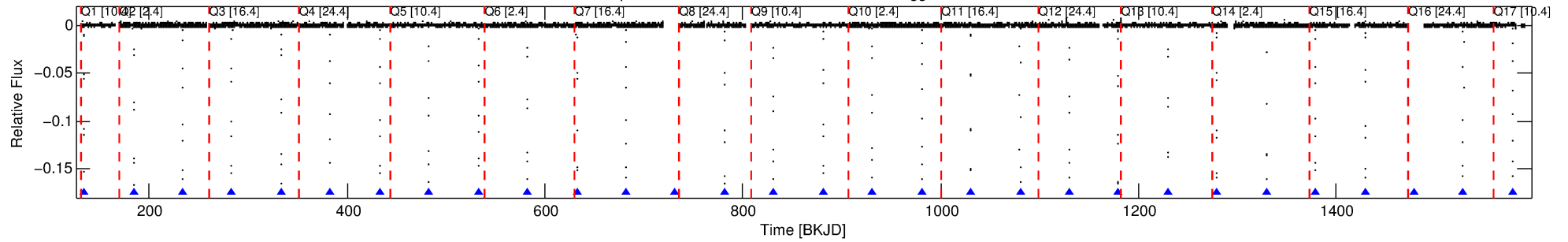
Ephemeris Match Information For 002442084-02

No Significant Match Found

DV One-Page Summary

KIC: 2442084 Candidate: 2 of 2 Period: 49.789 d
KOI: K06273 Corr: No Ephemeris Match

Kp: 15.59 R*: 0.54 Rs Teff: 3892.0 K Logg: 4.71 Fe/H: -0.100



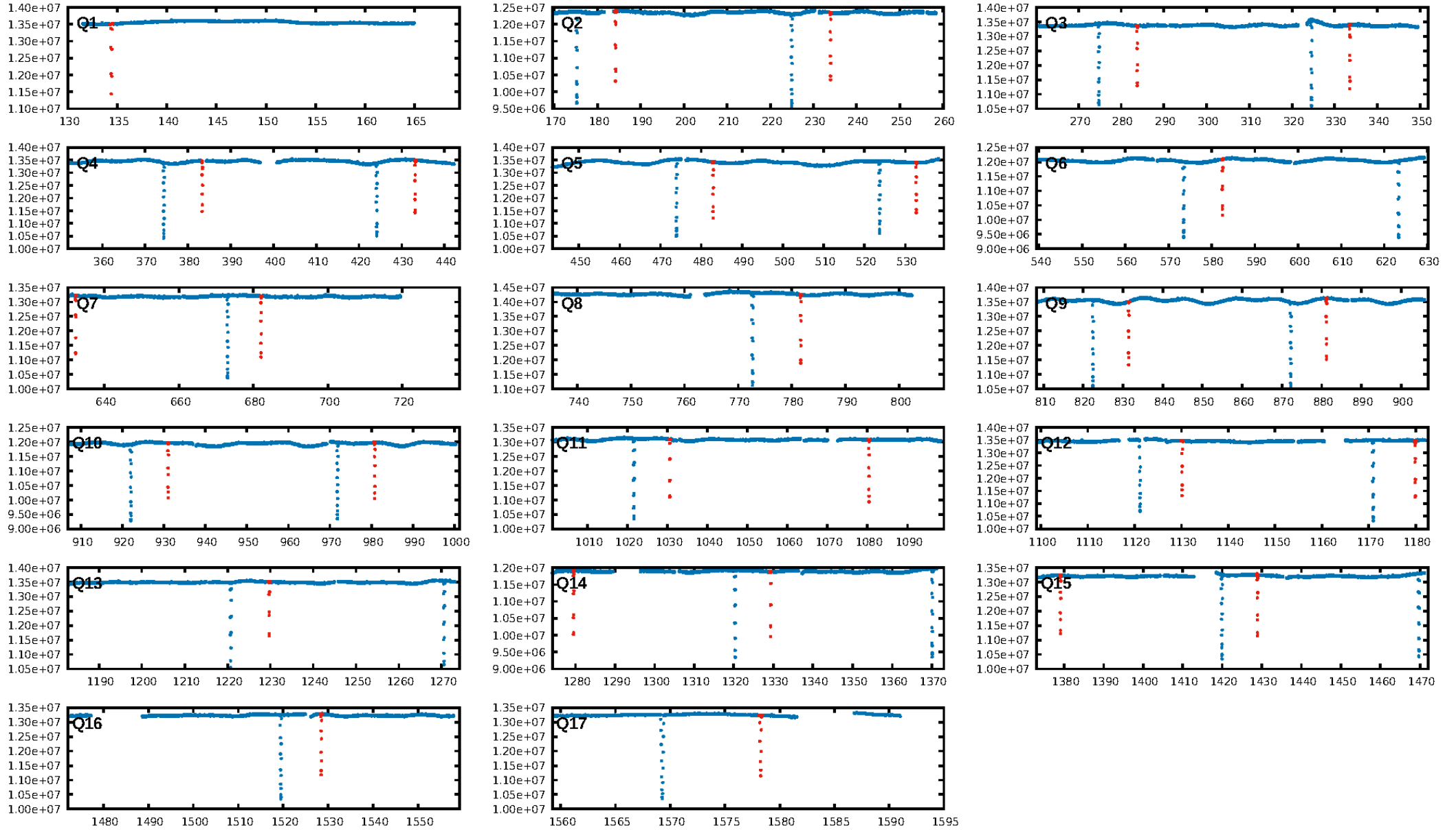
DV Fit Results:

Period = 49.78863 [0.00000] d
Epoch = 134.3847 [0.0001] BKJD
Rp/R* = 0.5292 [0.2008]
a/R* = 125.46 [4.90]
b = 0.88 [0.28]
Seff = 1.29 [0.15]
Teq = 272 [8] K
Rp = 31.30 [12.05] Re
a = 0.2167 [0.0111] AU
Ag = 7.79 [6.23] [1.09σ]
Teffp = 701 [141] K [3.05σ]

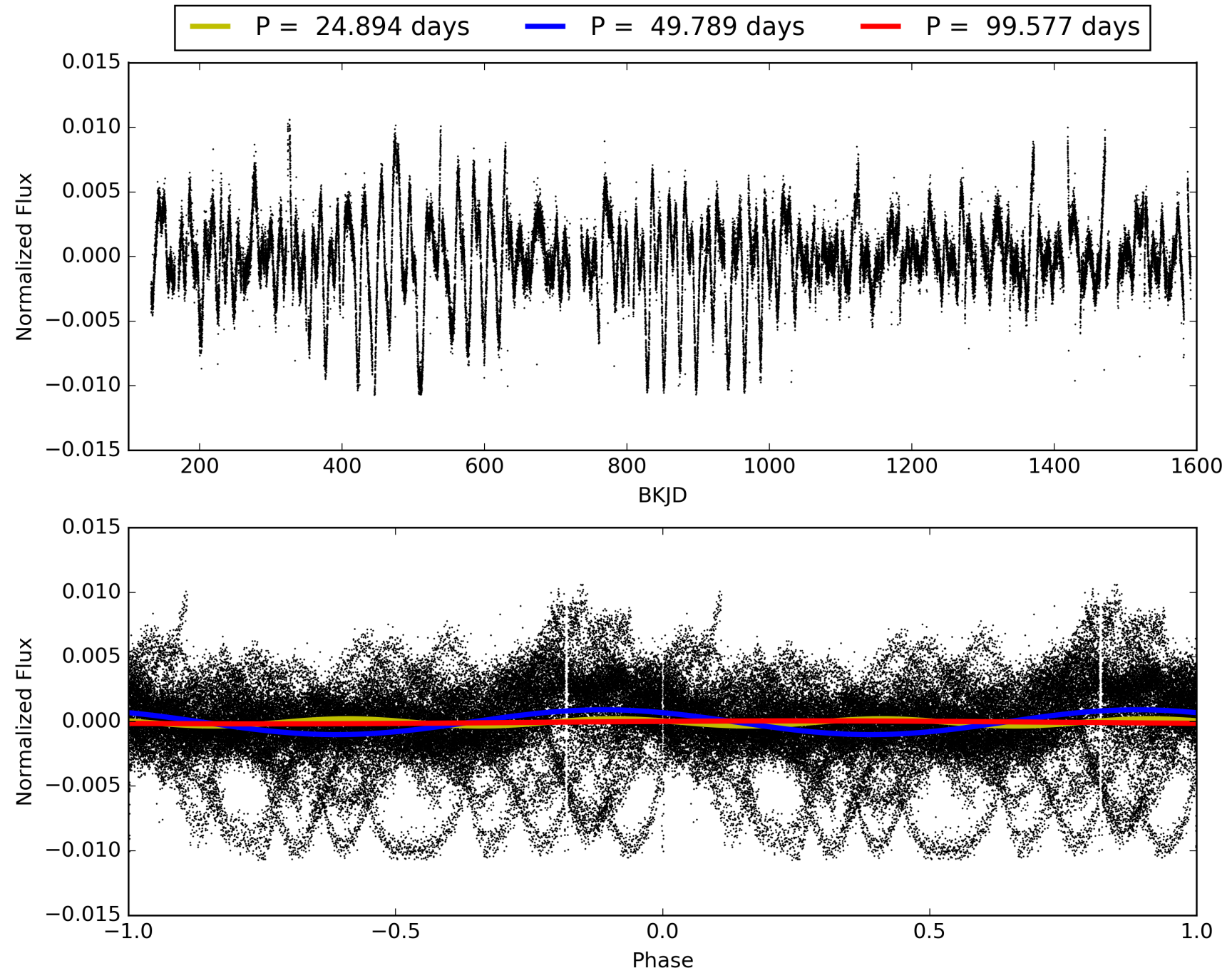
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 8.2%
ModelChiSquareGof-sig: 84.4%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [26/26]
GhostDiagnostic-chr: 2.94
Centroid-sig: N/A
Centroid-so: 0.903 arcsec [135.87σ]
OotOffset-rm: 0.076 arcsec [1.13σ]
KicOffset-rm: 0.274 arcsec [3.90σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 002442084-02, PDC Light Curves

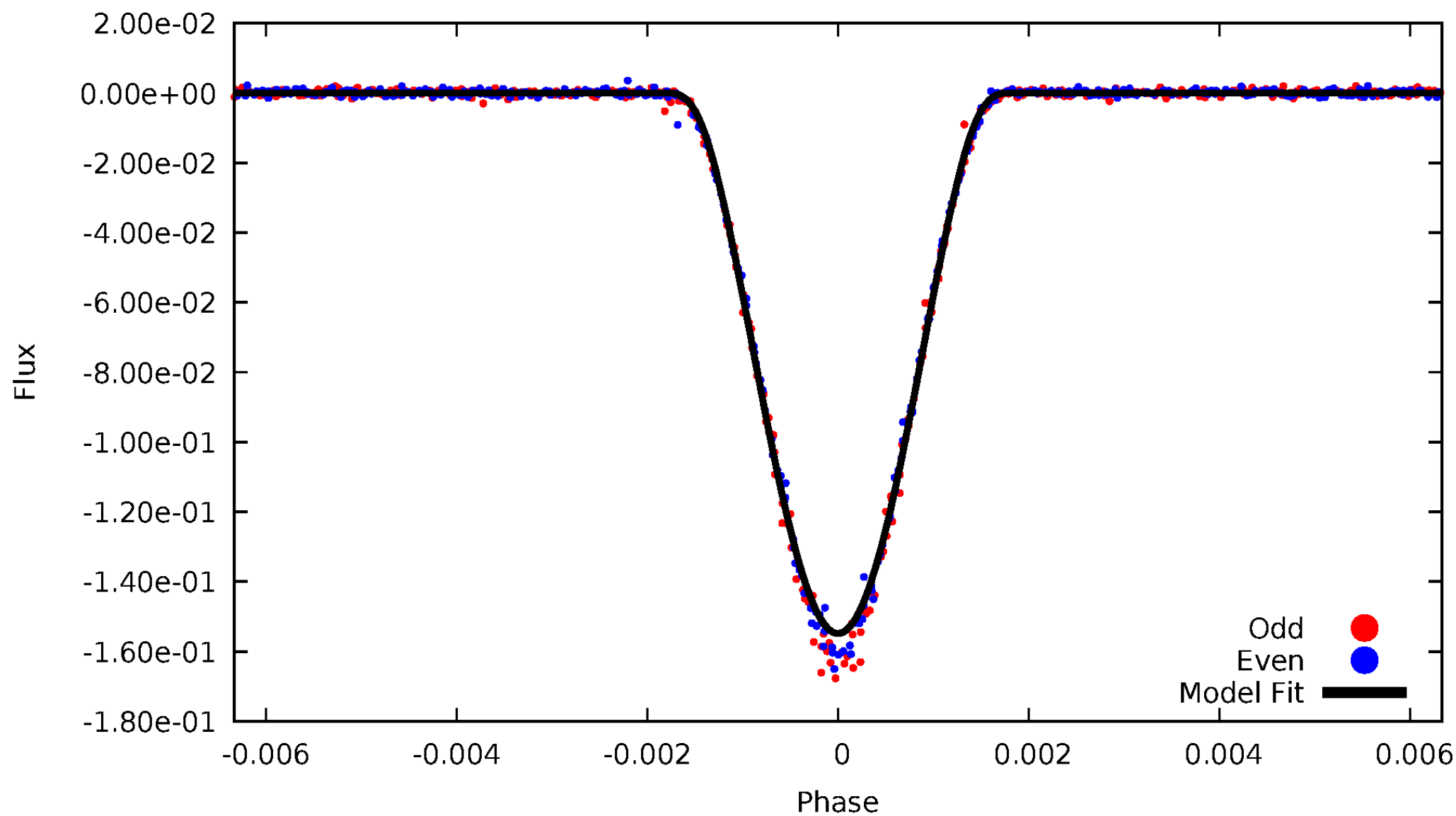


TCE 002442084-02



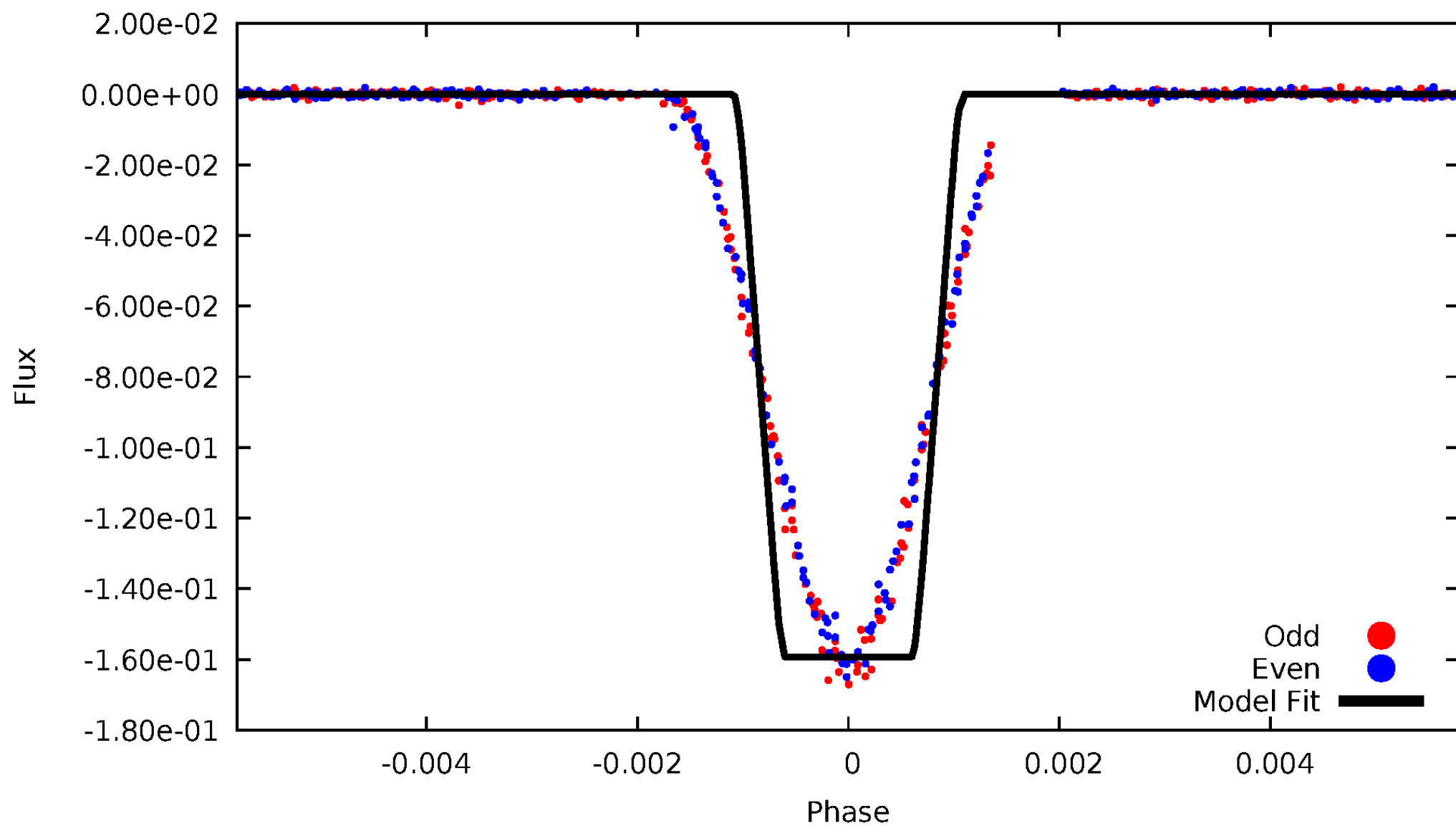
DV Odd/Even

TCE 002442084-02



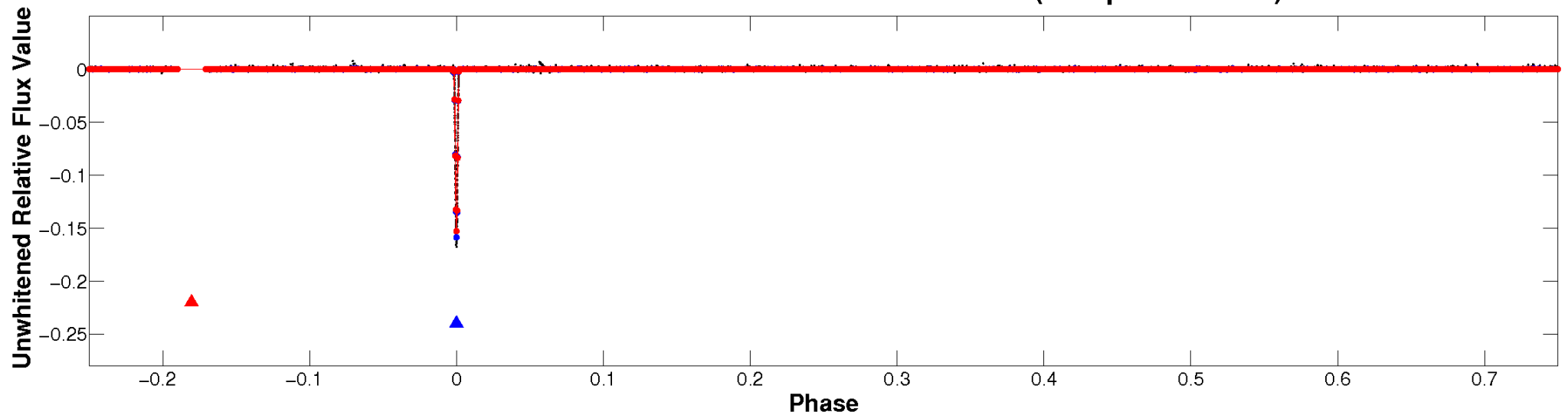
ALT Odd/Even

TCE 002442084-02

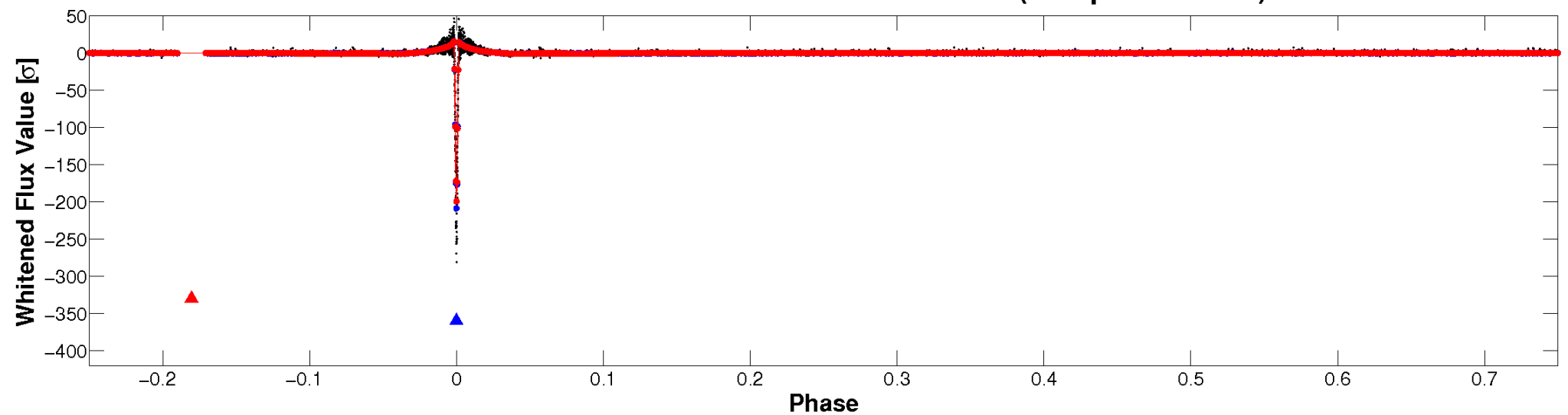


Non-Whitened Vs. Whitened Light Curve

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

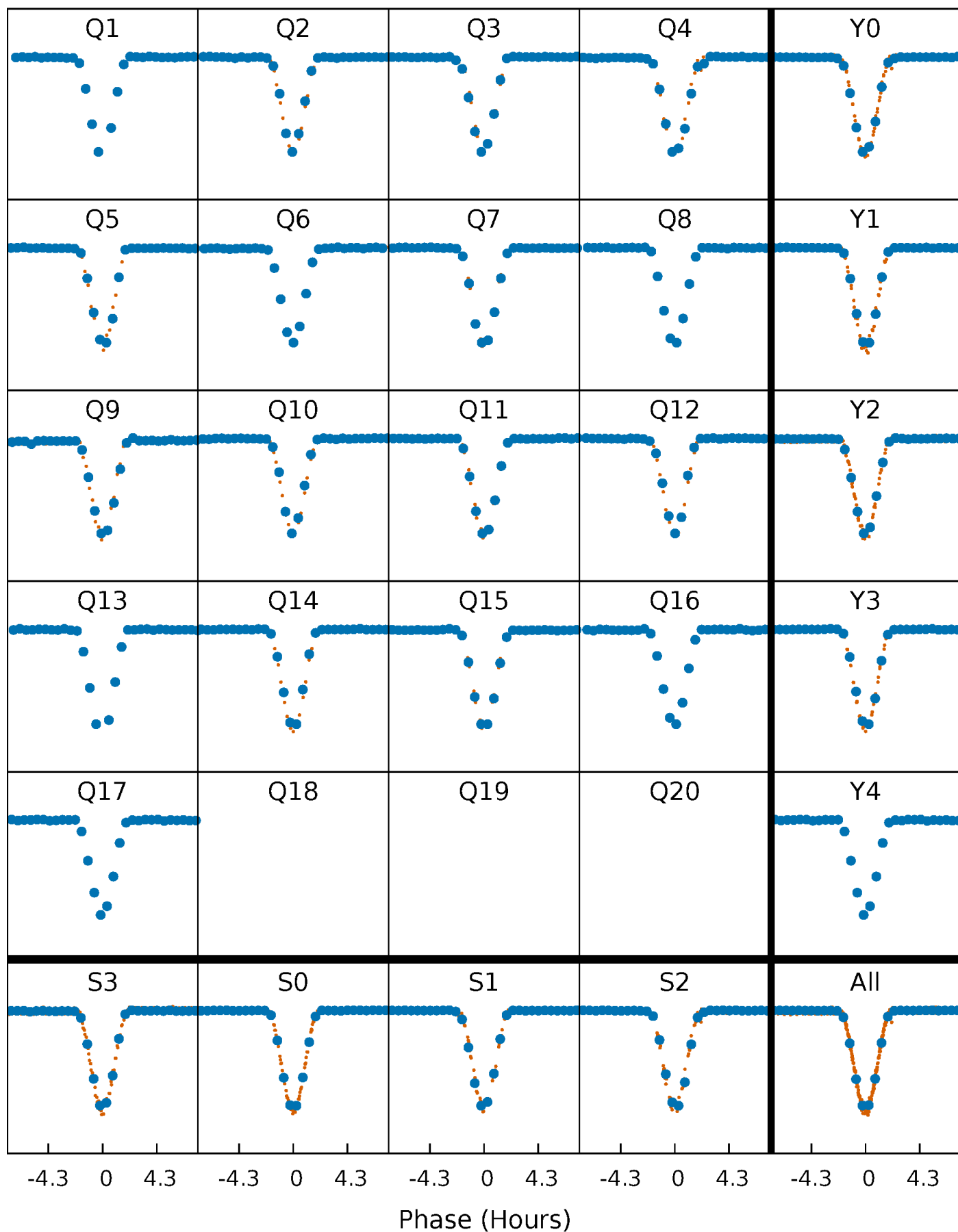


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



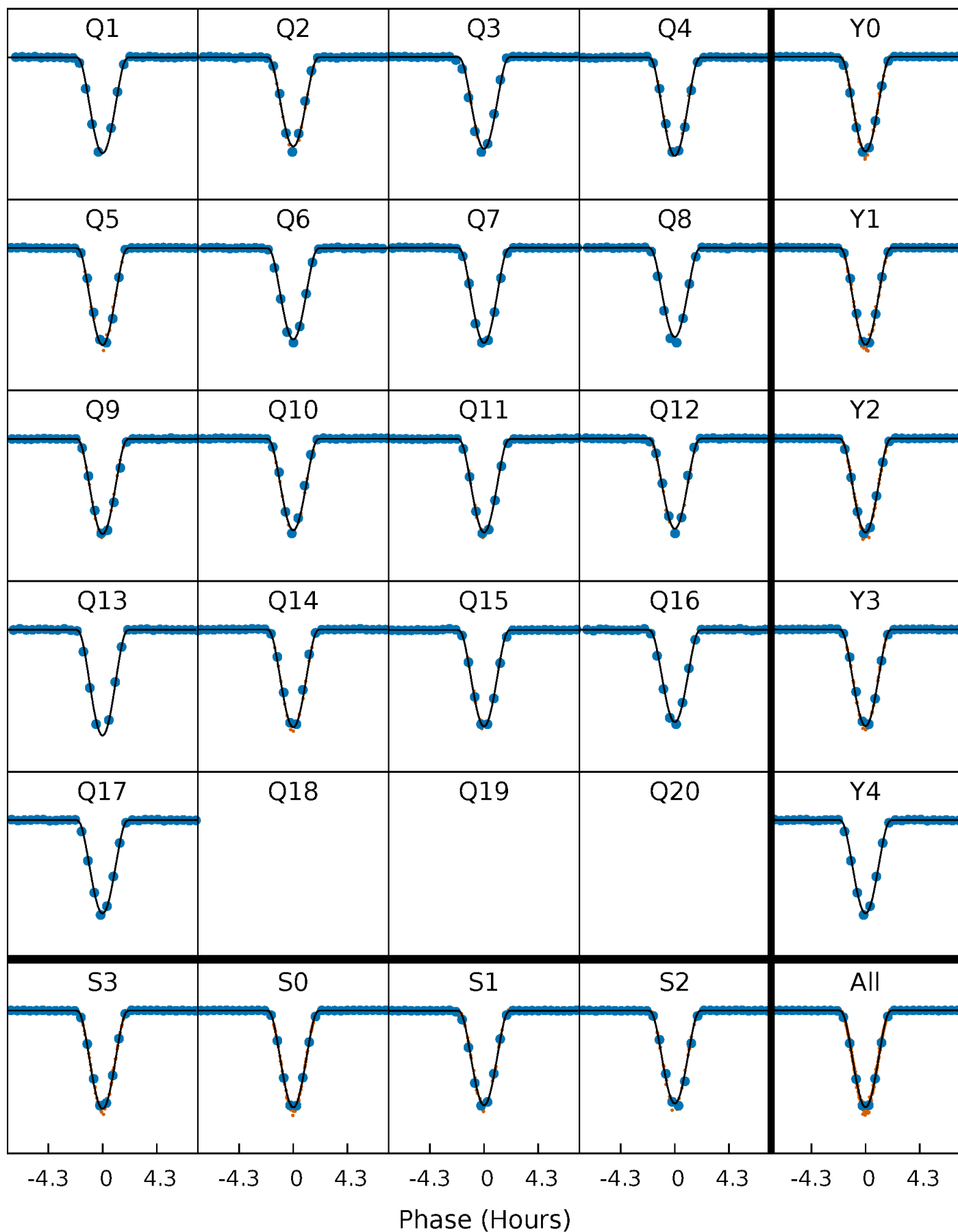
PDC Quarter-Phased Transit Curves

TCE 002442084-02 P= 49.788626 Days $T_0=134.384673$ (BKJD)



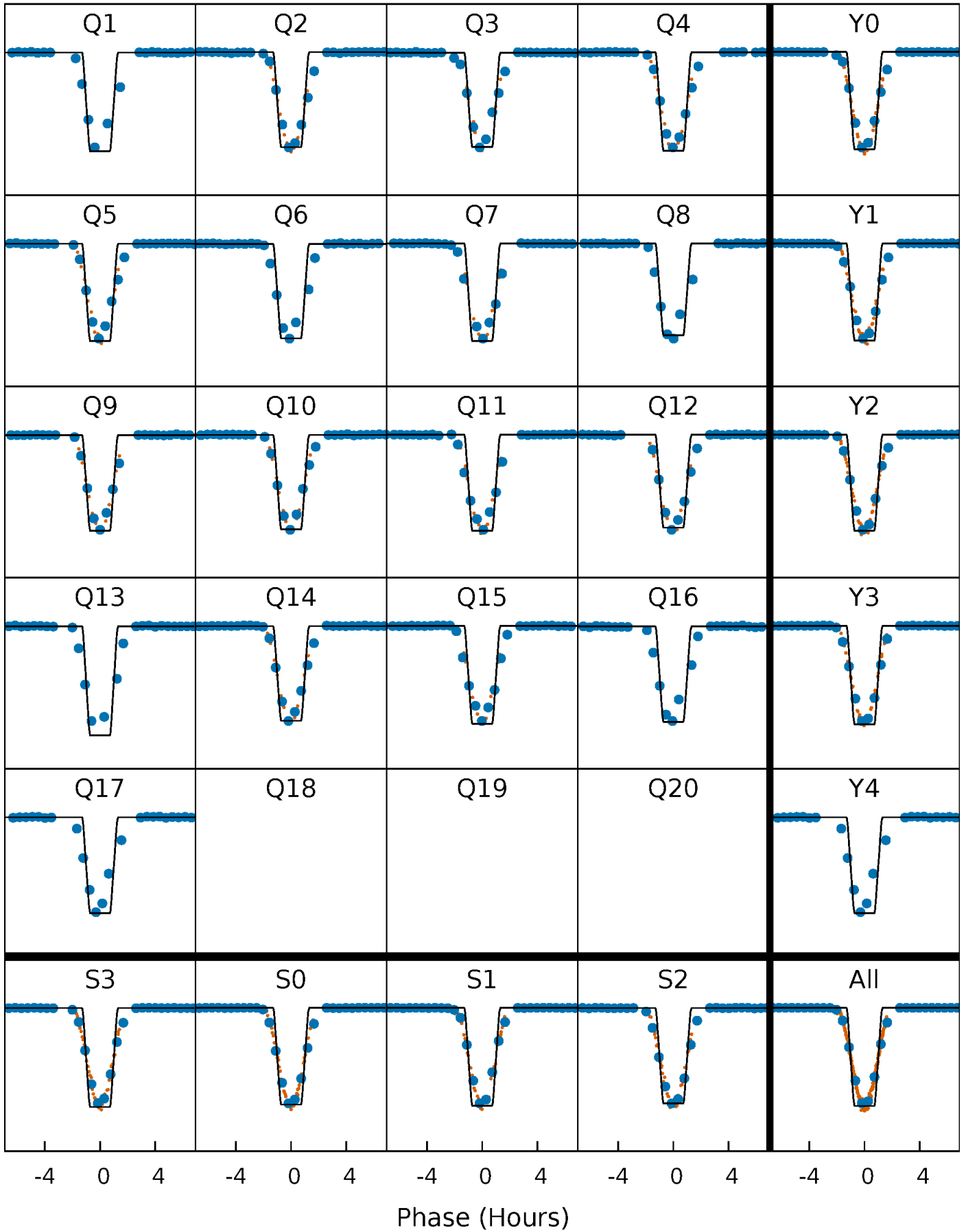
DV Quarter-Phased Transit Curves

TCE 002442084-02 P= 49.788626 Days $T_0=134.384673$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

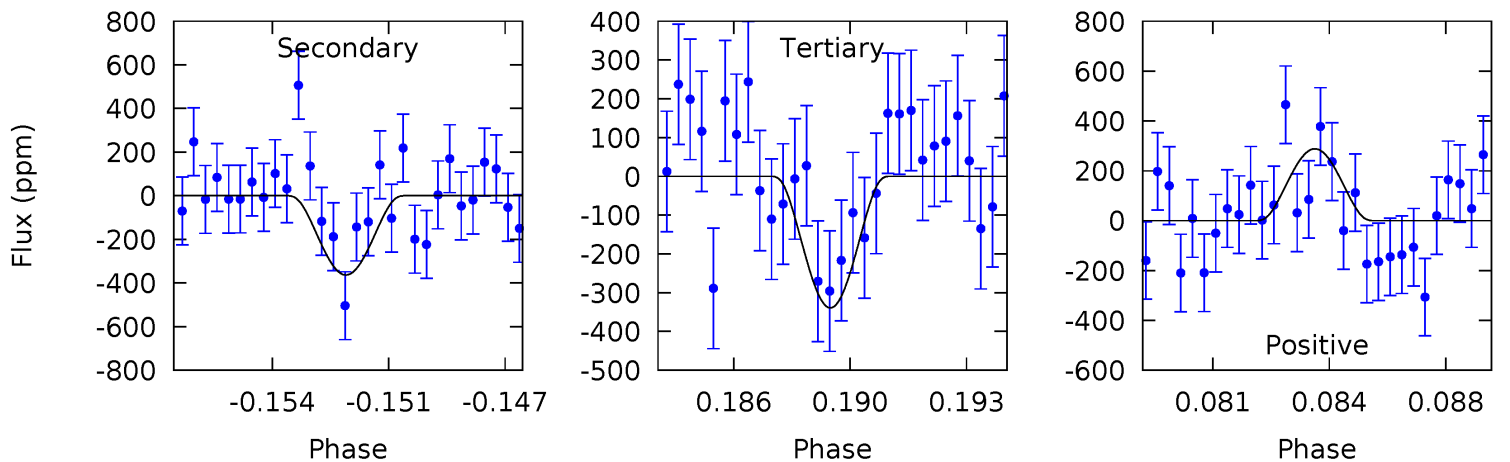
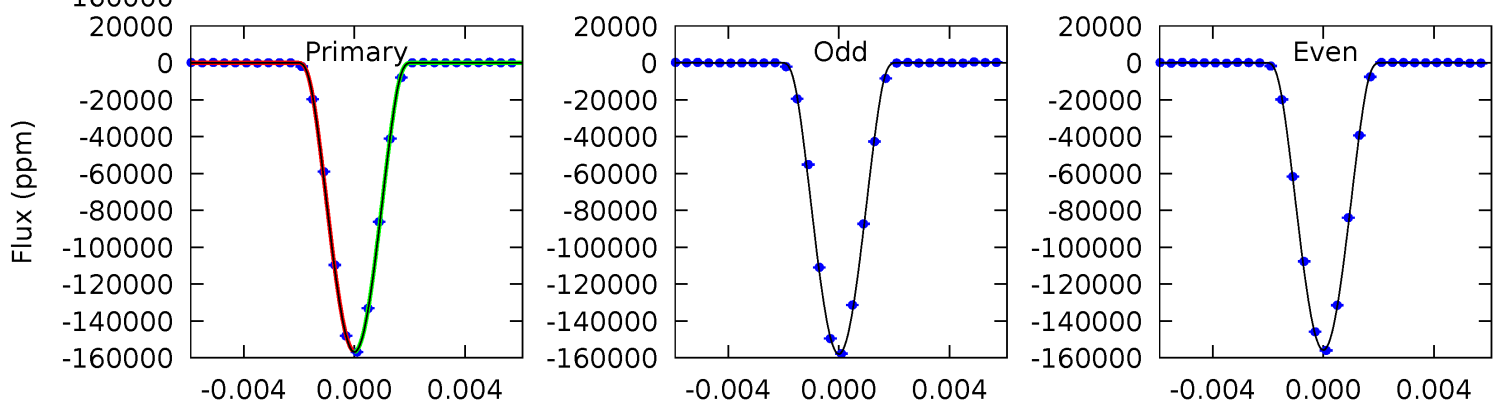
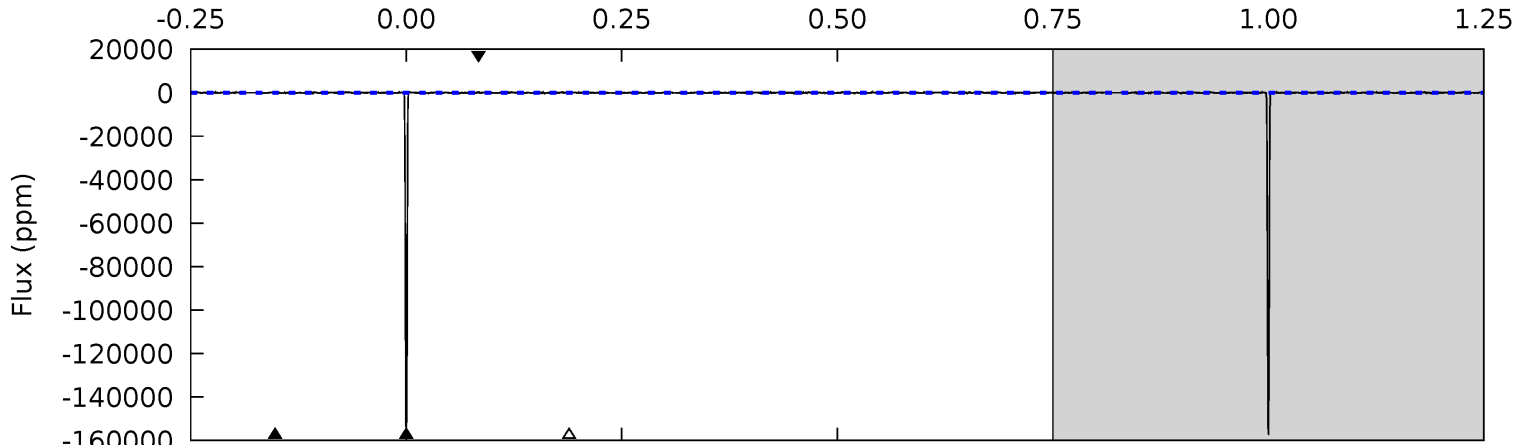
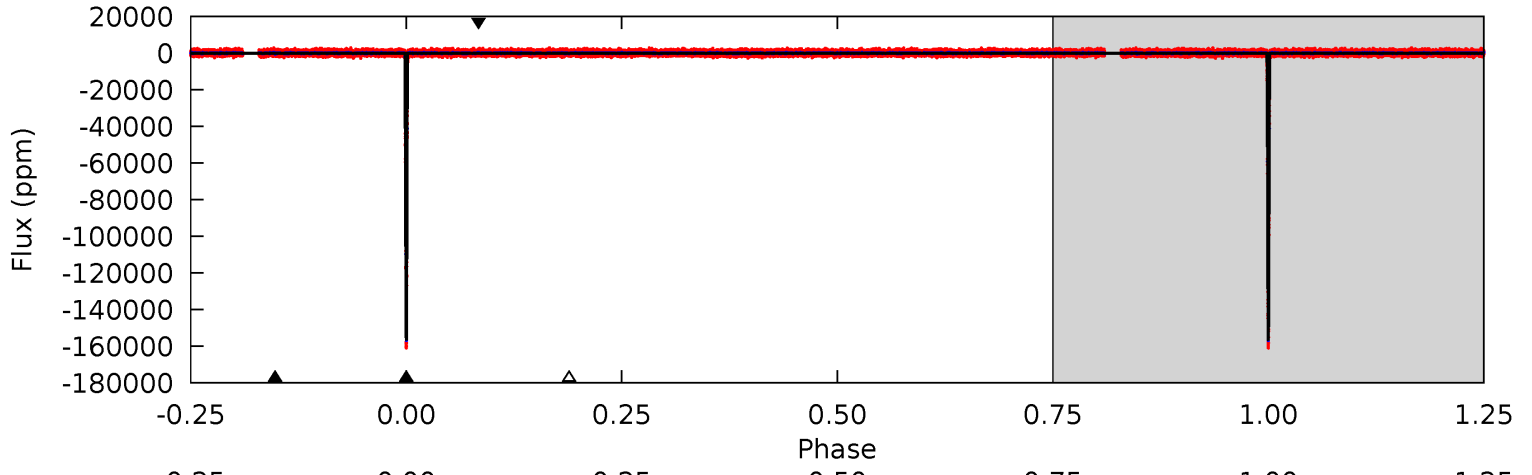
TCE 002442084-02 P= 49.788739 Days $T_0=134.383070$ (BKJD)



DV Model-Shift Uniqueness Test

002442084-02, P = 49.788626 Days, E = 84.596047 Days

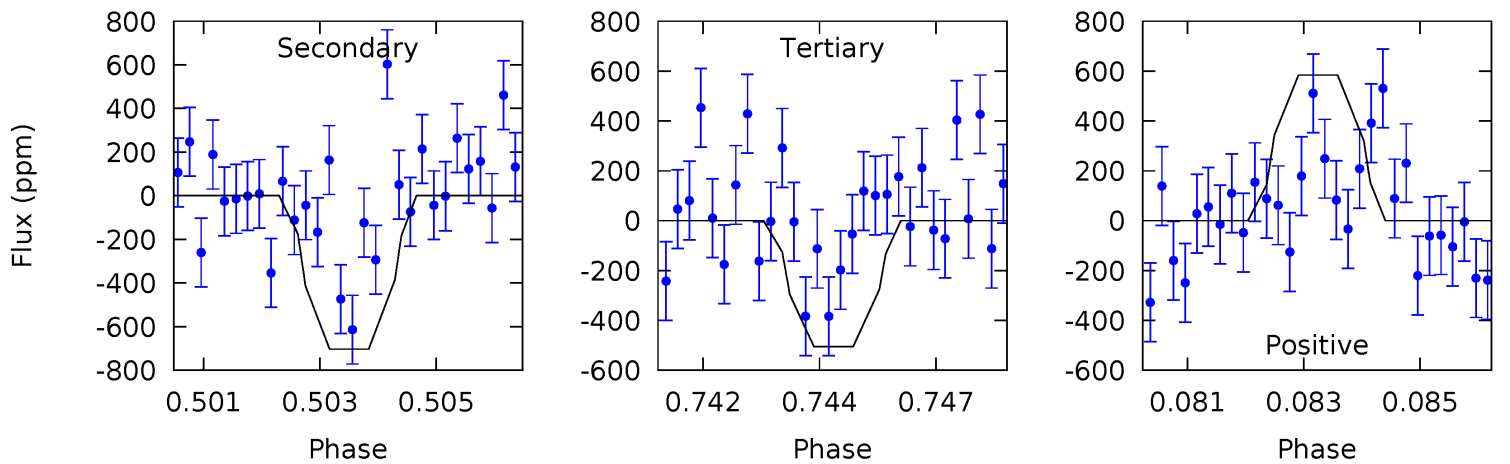
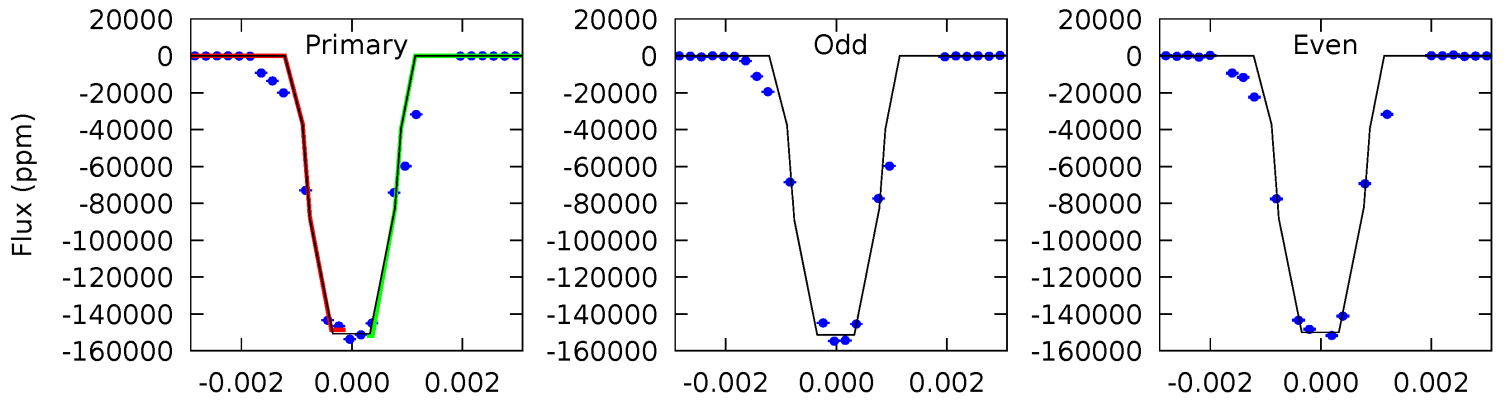
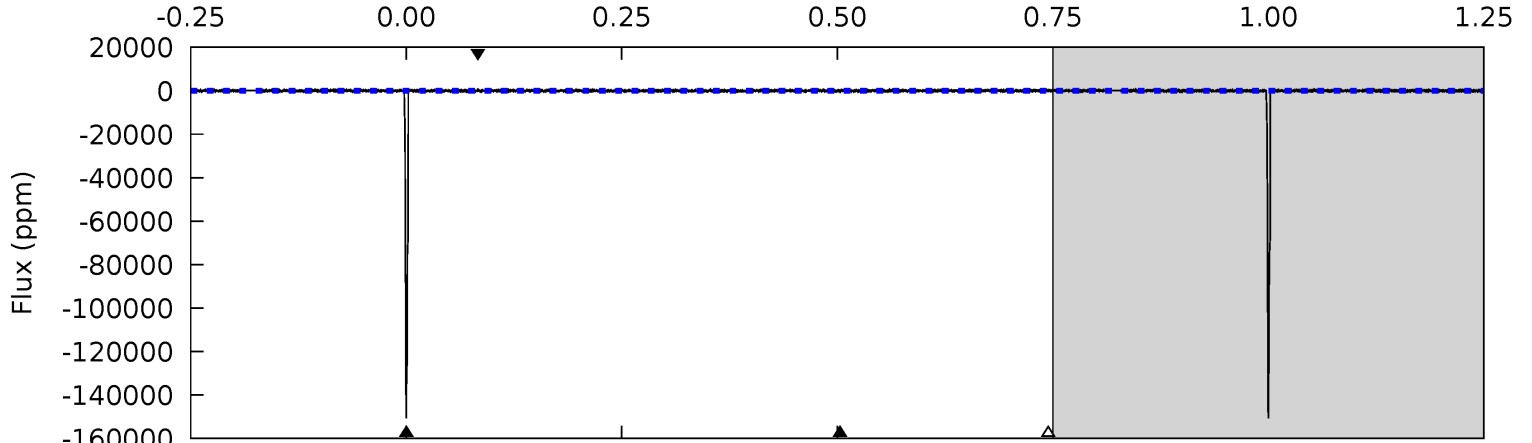
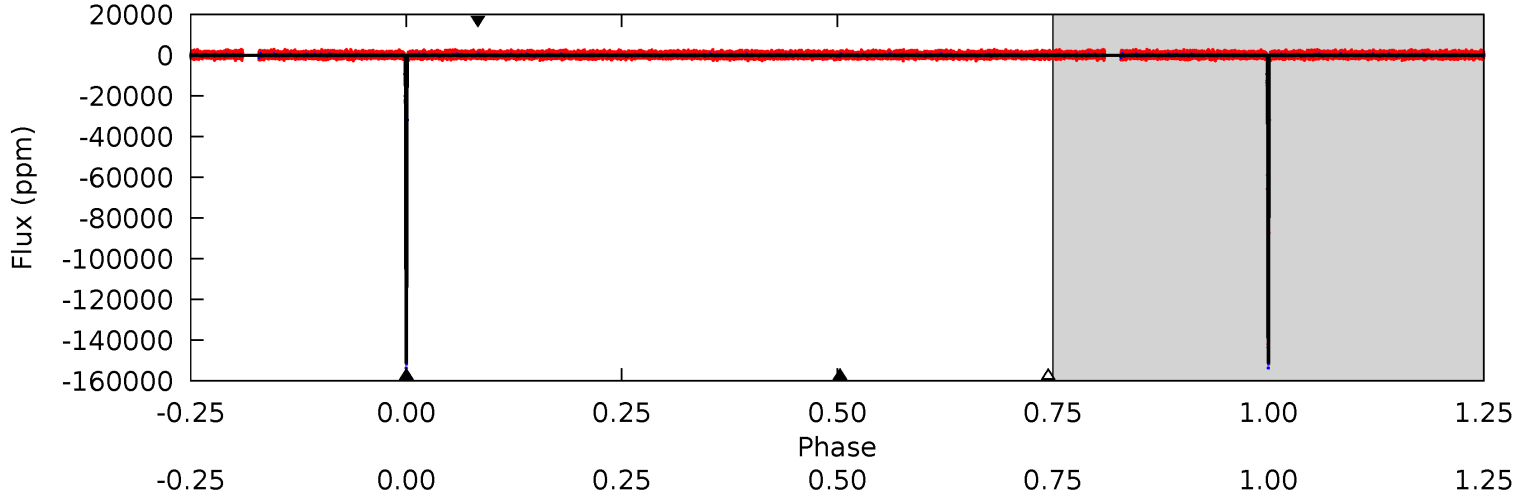
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3145	7.28	6.80	5.78	5.22	2.92	1.95	3138	3139	0.48	1.50	21.5	1.00	0.00	0



Alt Model-Shift Uniqueness Test

002442084-02, P = 49.788739 Days, E = 84.594331 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1296	6.05	4.35	5.02	5.32	3.07	1.70	1292	1291	1.70	1.02	5.42	1.00	0.00	0



Stellar Parameters For KIC 002442084

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3892^{+86}_{-86}	$4.708^{+0.036}_{-0.021}$	$-0.100^{+0.100}_{-0.100}$	$0.542^{+0.027}_{-0.035}$	$0.546^{+0.030}_{-0.030}$	$4.838^{+0.777}_{-0.424}$
	+2%/-2%	+1%/-0%	+100%/-100%	+5%/-6%	+5%/-5%	+16%/-9%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 002442084-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-363 ± 50	$31.54^{+11.26}_{-12.38}$	378^{+10}_{-9}	1714^{+177}_{-101}	$9.413^{+16.779}_{-4.446}$
Alt.	-703 ± 116	$23.32^{+11.92}_{-10.44}$	378^{+10}_{-10}	1938^{+256}_{-153}	34^{+77}_{-19}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

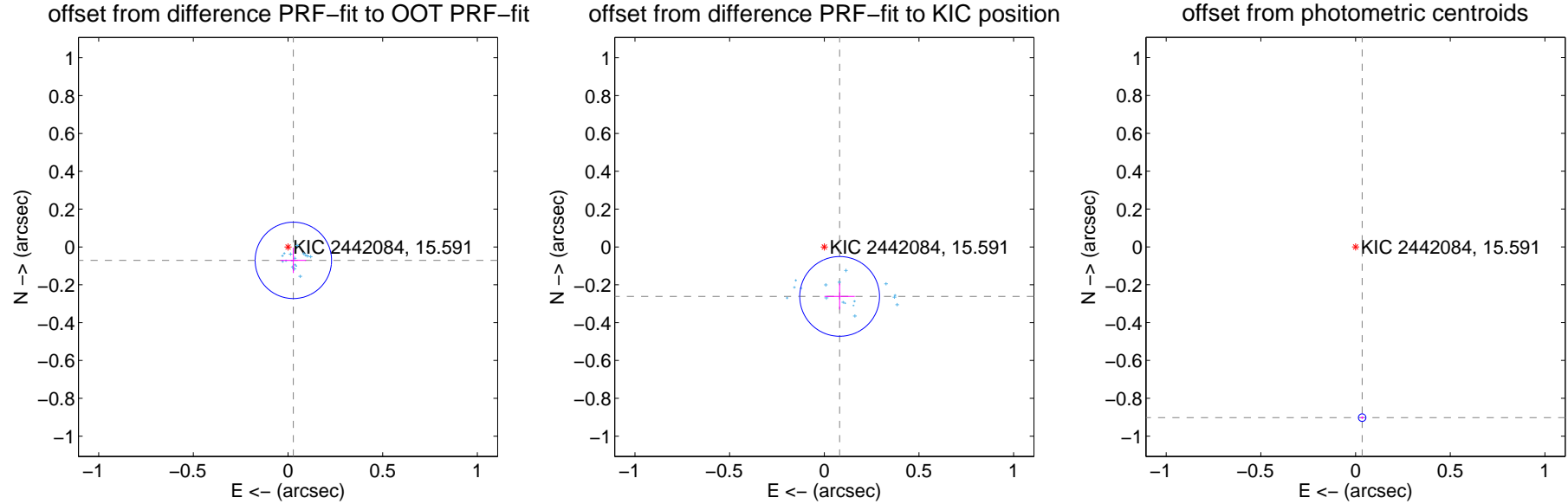
DV Centroid Data

Supplemental centroid analysis for 002442084-02. Kepler magnitude: 15.59. Transit SNR 1095.98

There are 17 quarters with good PRF difference image offsets

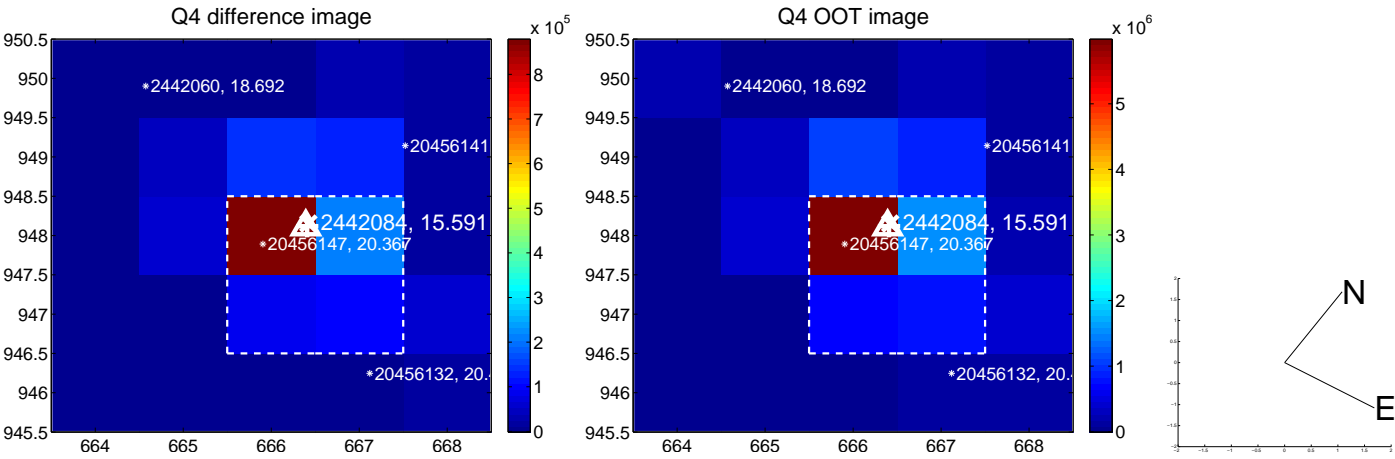
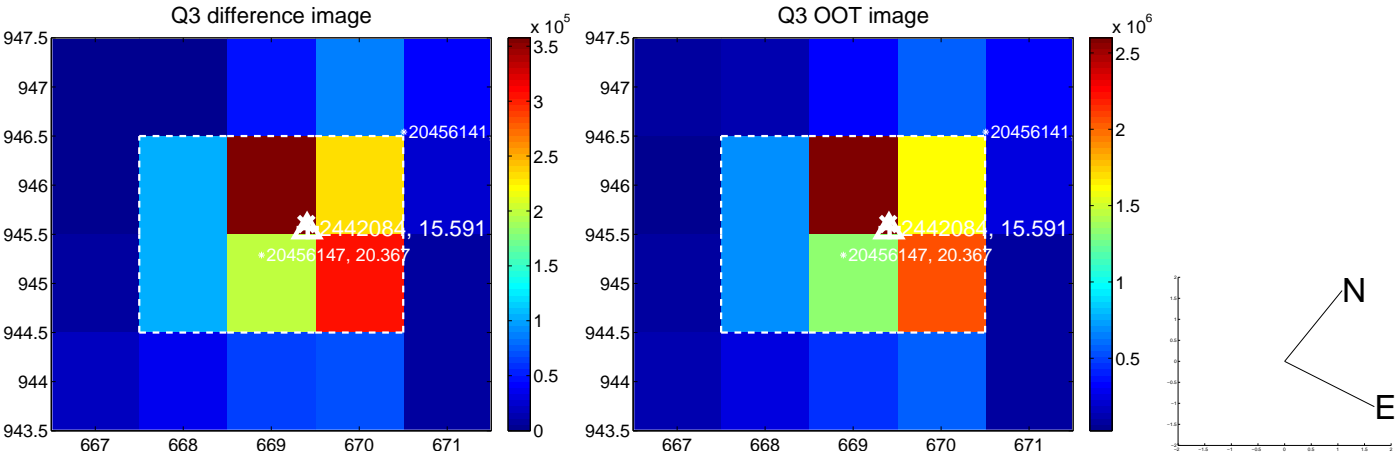
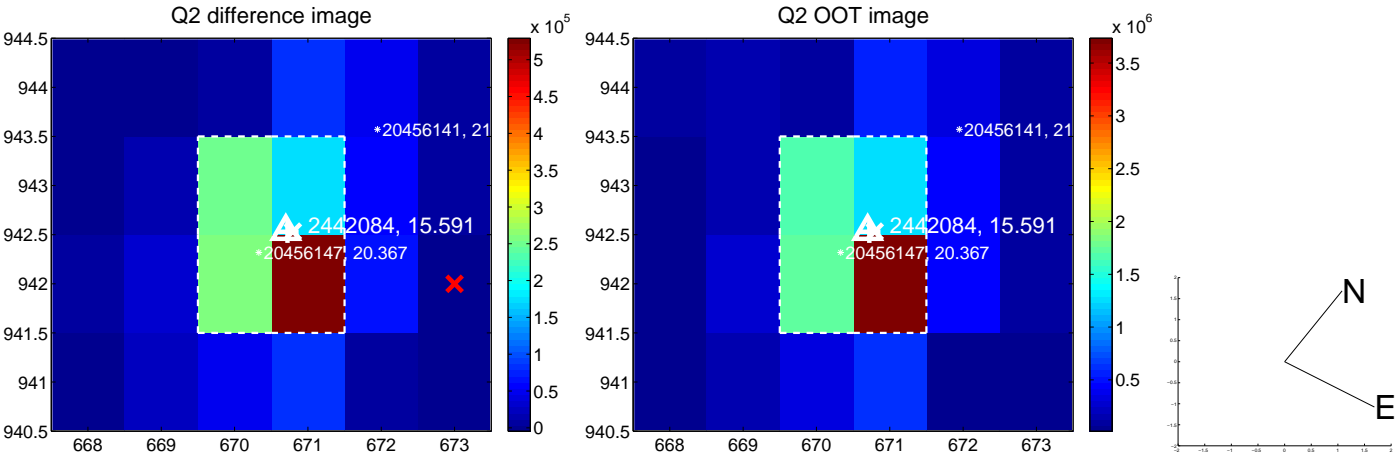
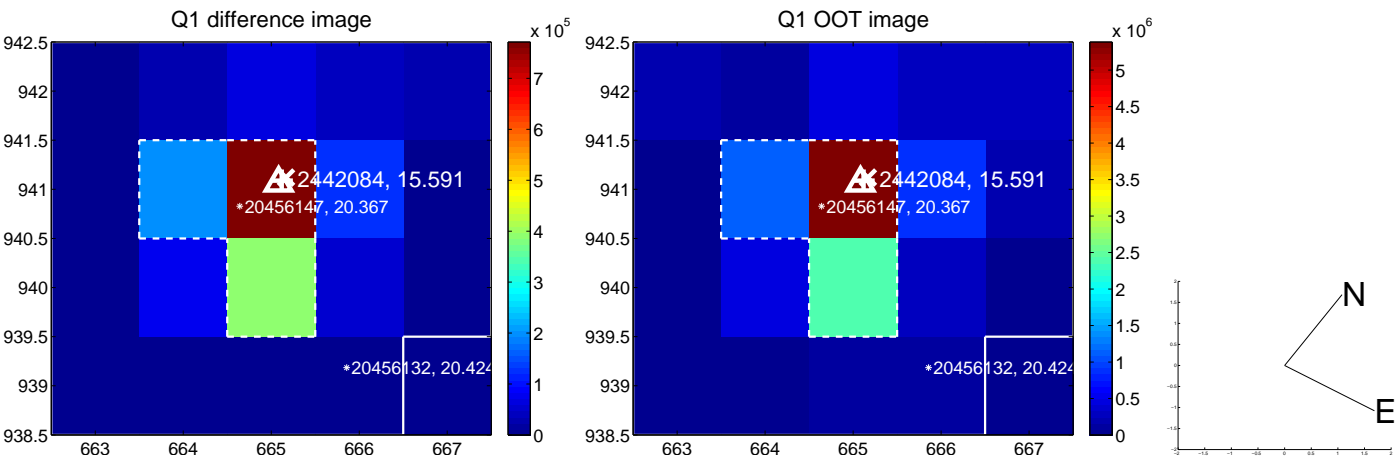
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.076 ± 0.067	1.13	-0.028 ± 0.068	-0.071 ± 0.067
PRF-fit source offset from KIC position	0.274 ± 0.070	3.90	-0.081 ± 0.080	-0.261 ± 0.068
photometric centroid source offset	0.90 ± 0.01	135.87	-0.03 ± 0.01	-0.90 ± 0.01

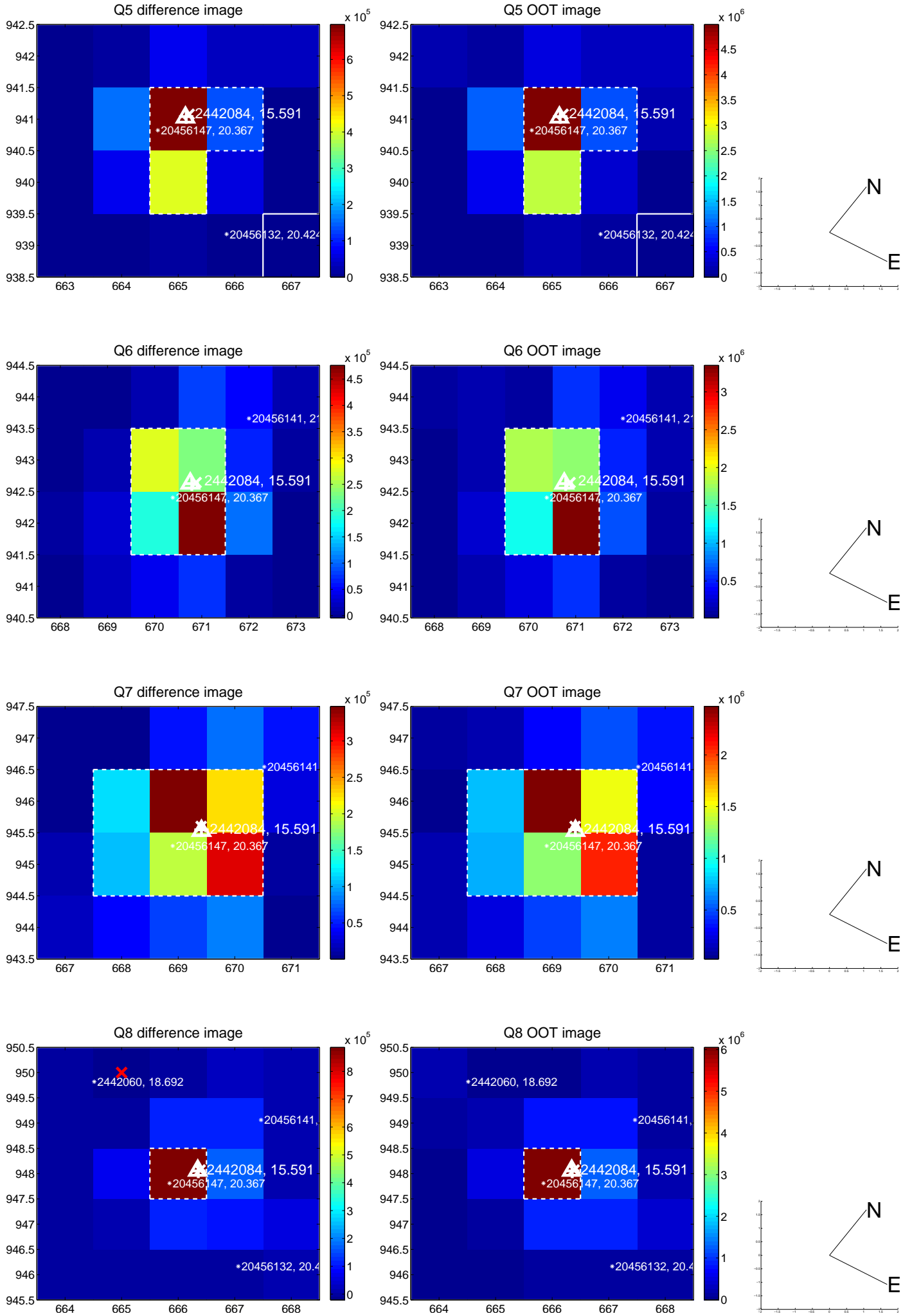


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

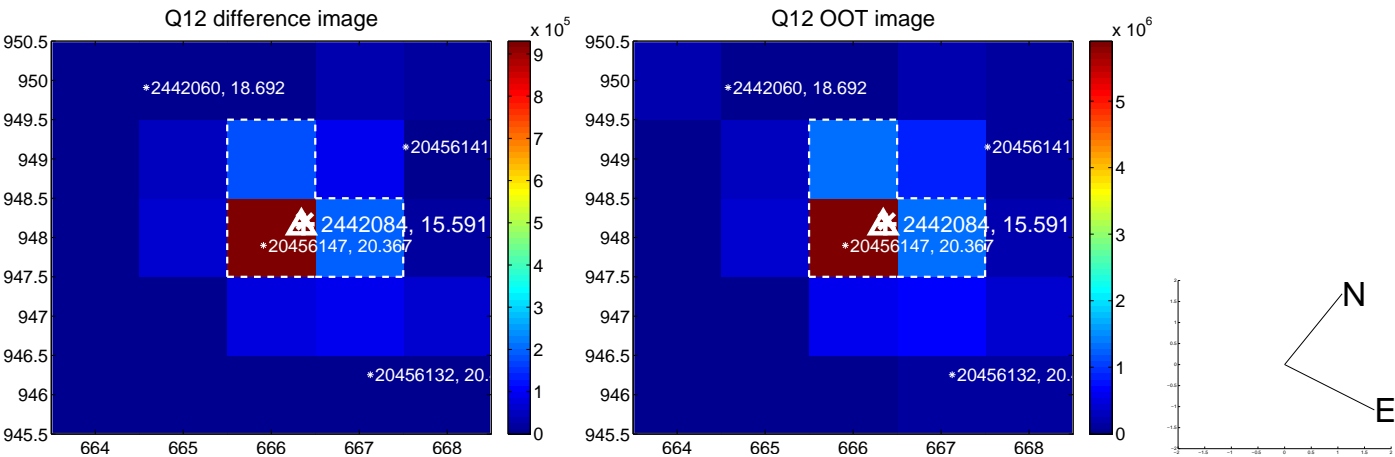
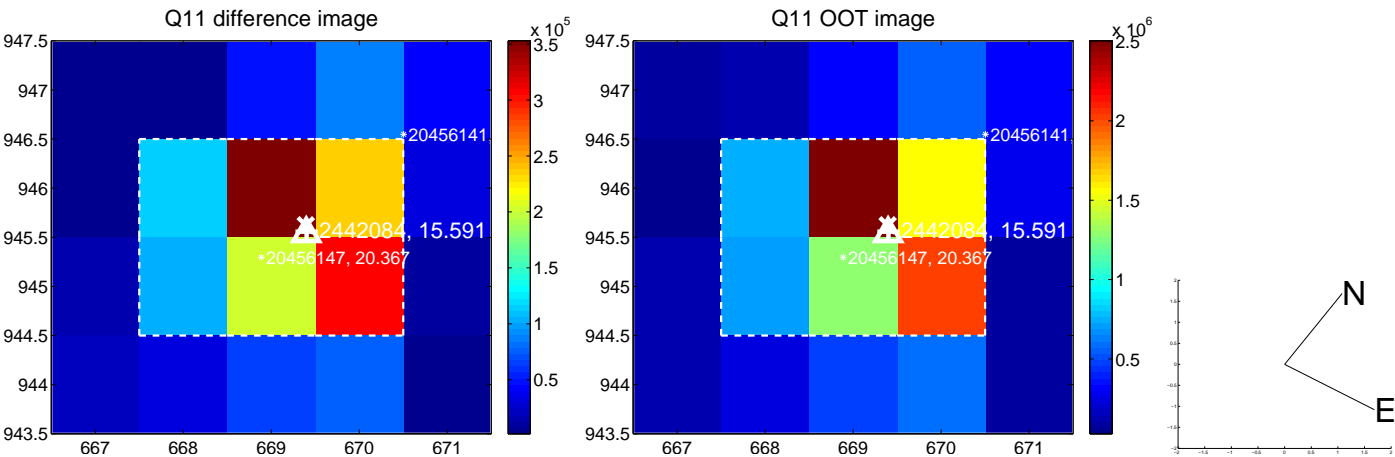
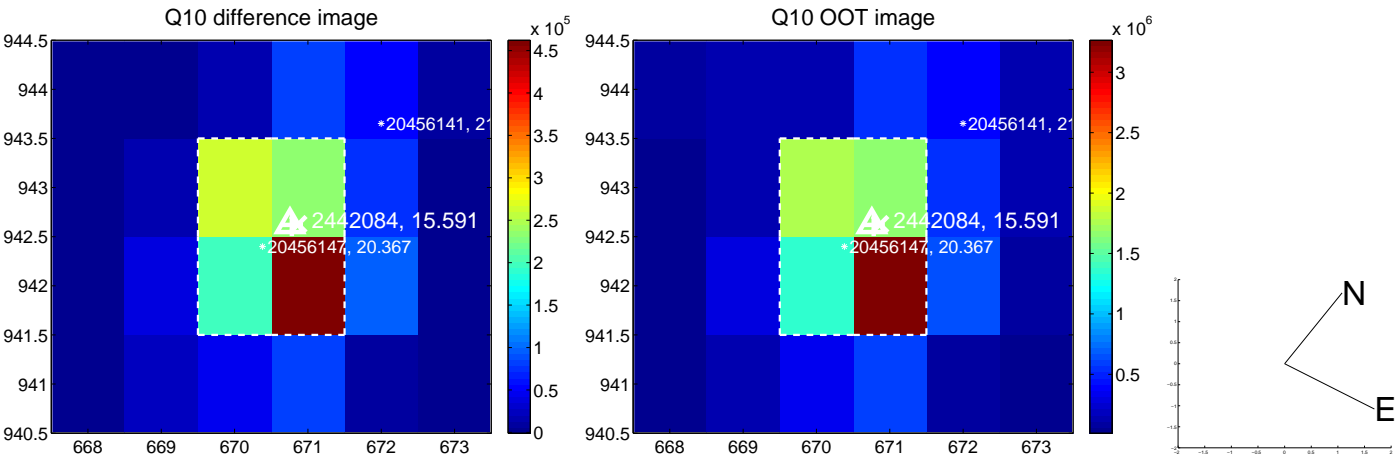
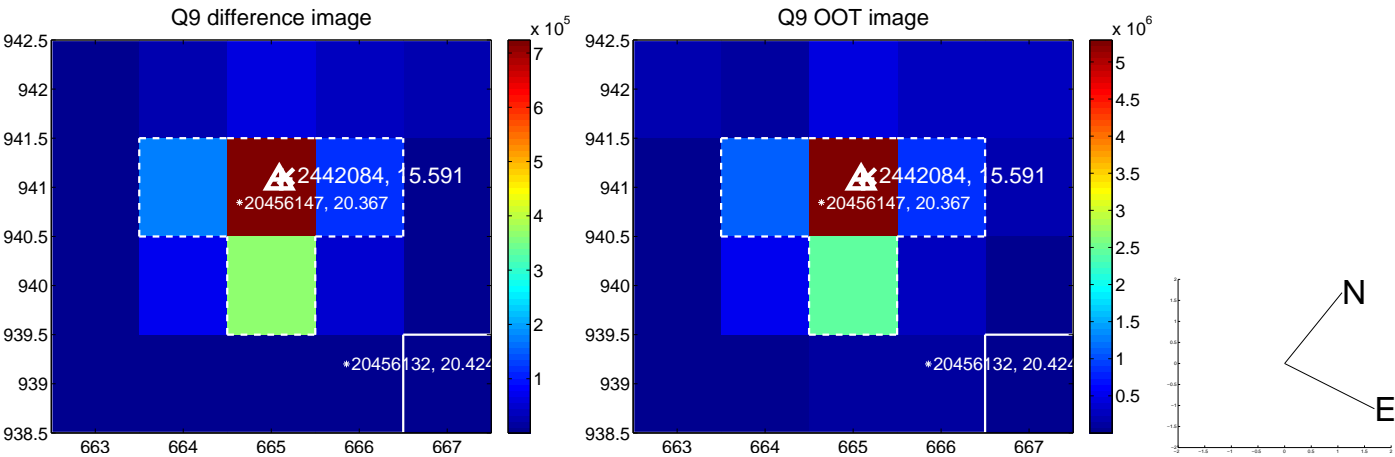
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



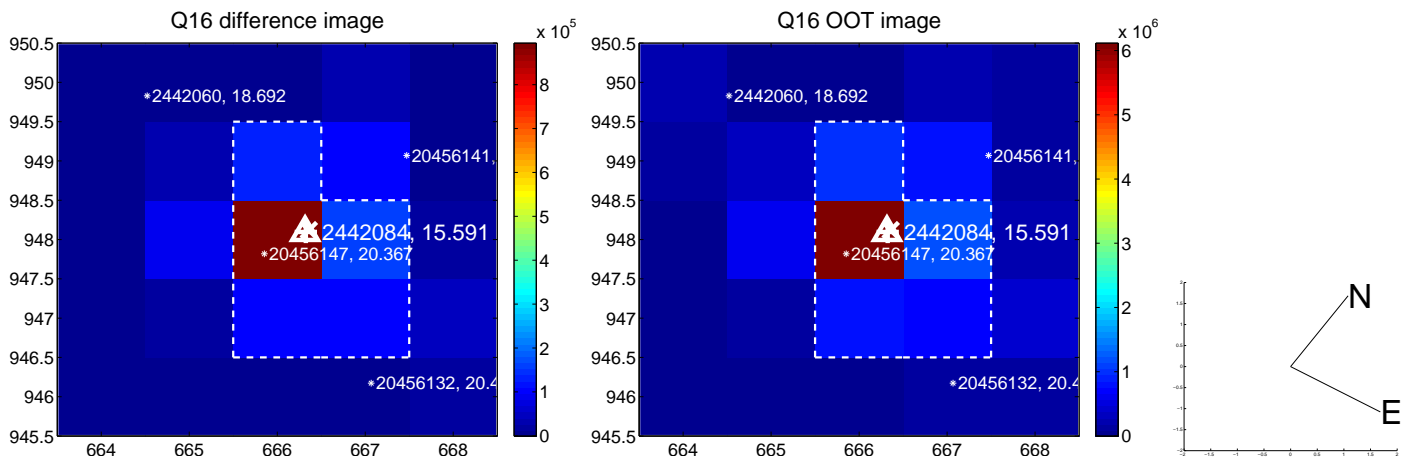
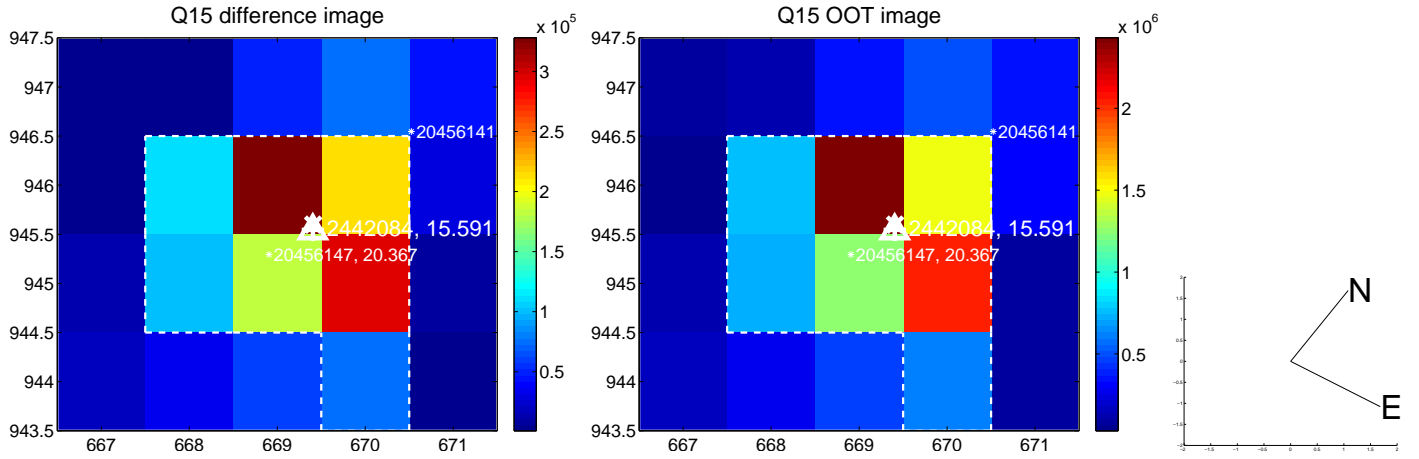
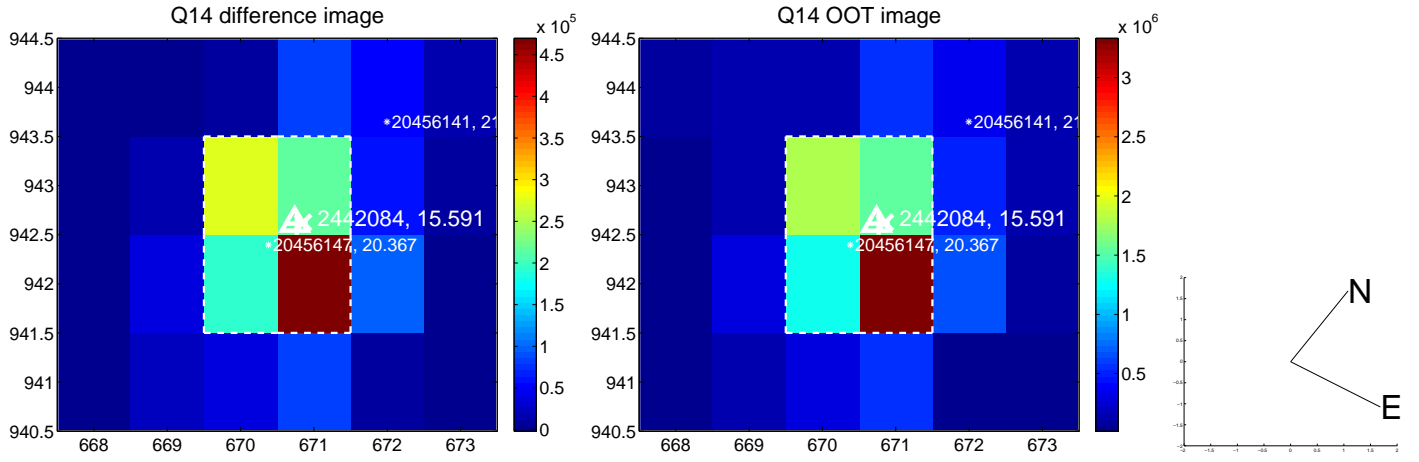
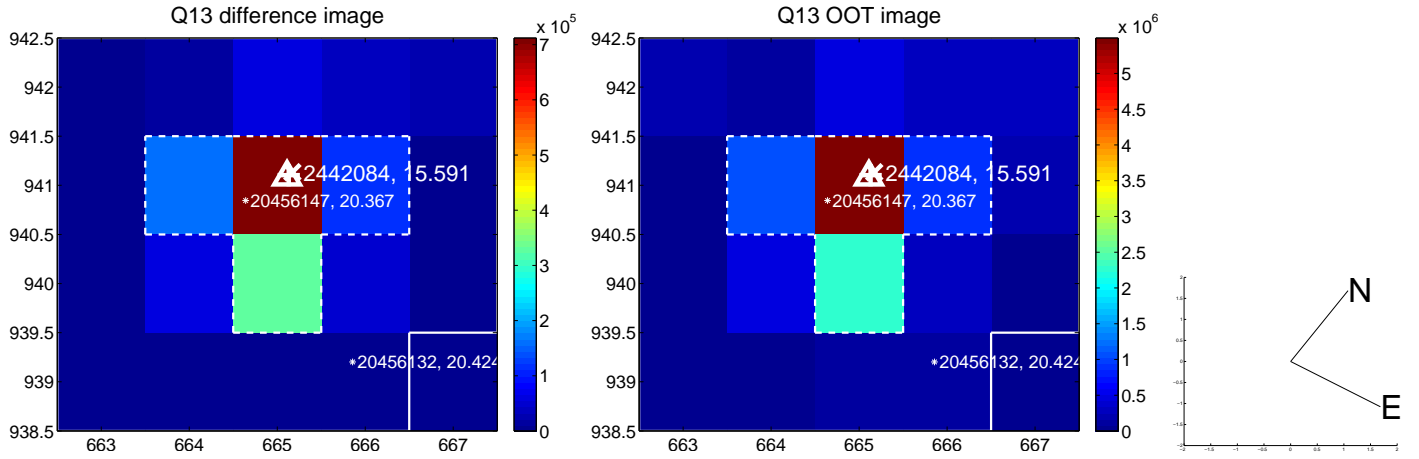
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



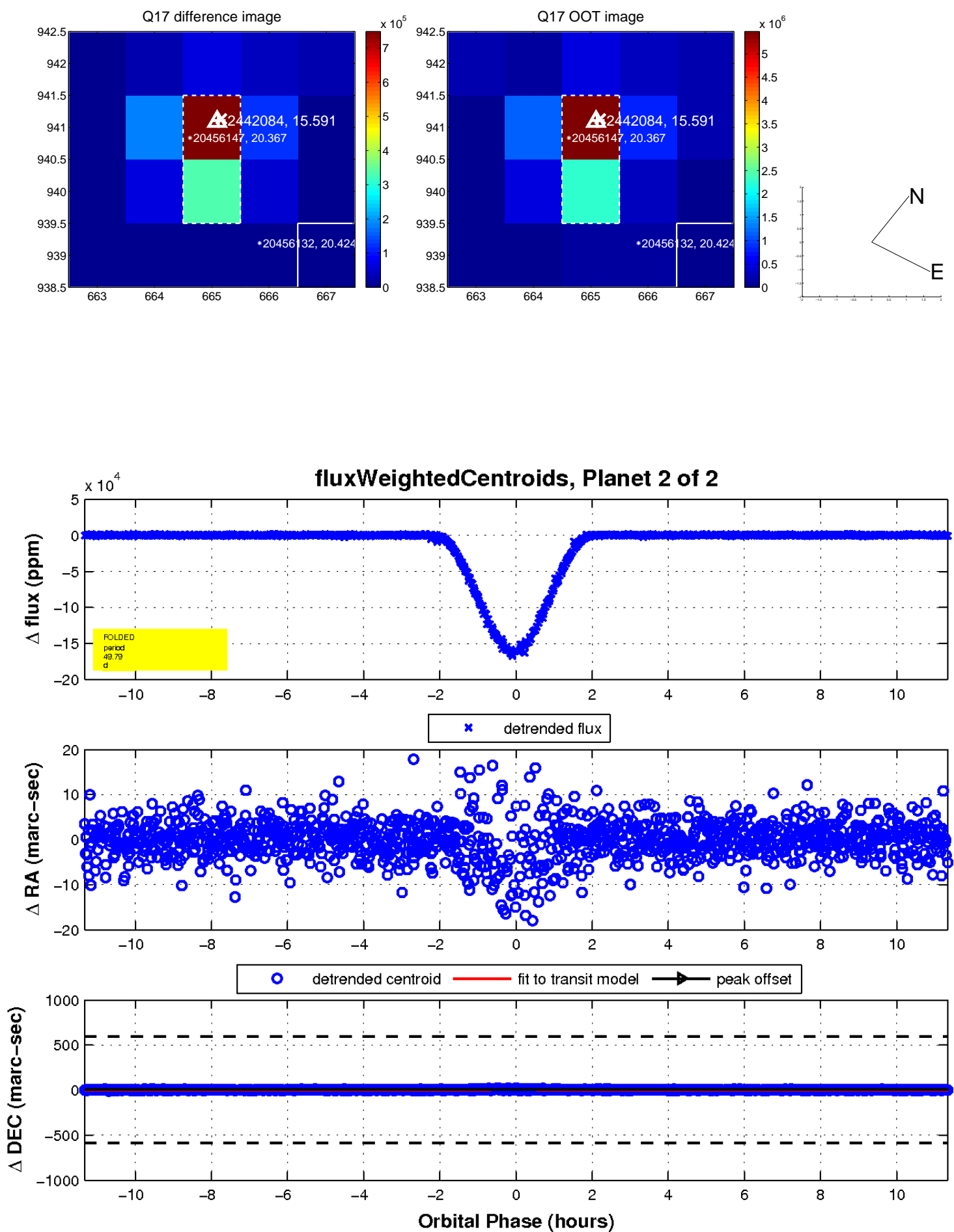
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

