

KIC 006442377

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})
006442377-01	OBS	0176.01	30.229060	134.521679	434.6	6.665	53.2	57.6	1.52	6325	3.50	77.05
006442377-02	OBS	No	306.075812	252.094683	116.2	30.220	7.2	7.4	1.52	6325	1.90	3.52

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006442377-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006442377-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—CENT_FEW_DIFFS

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

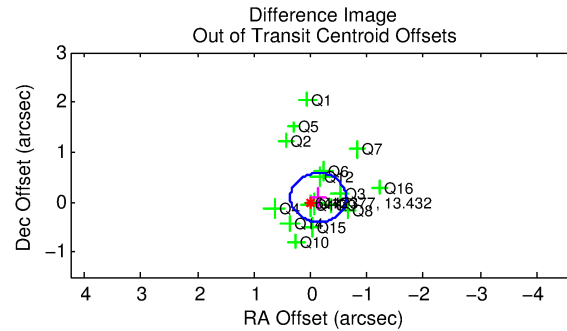
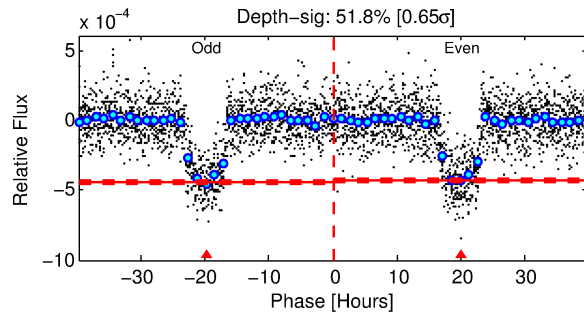
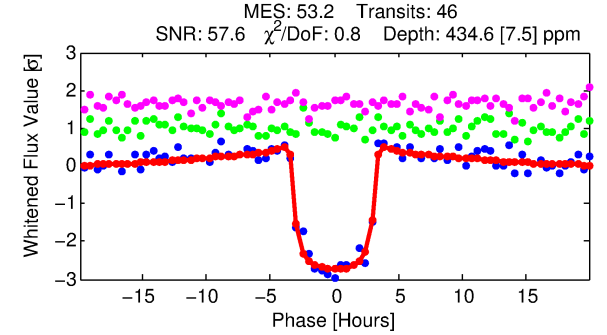
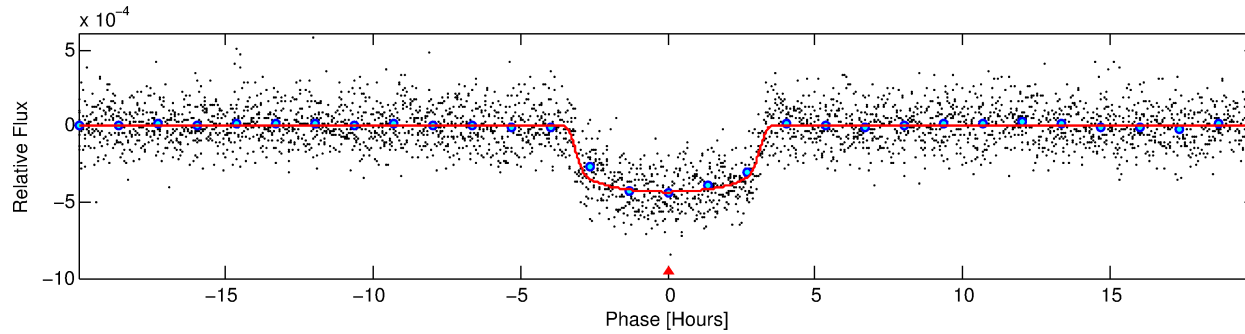
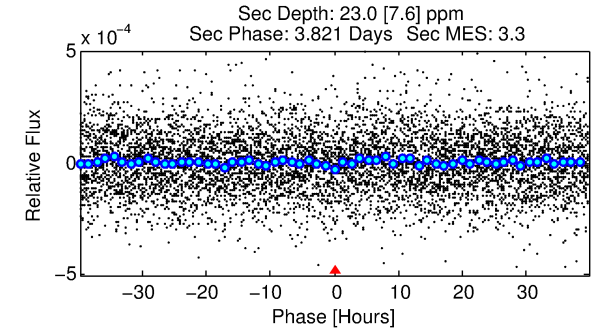
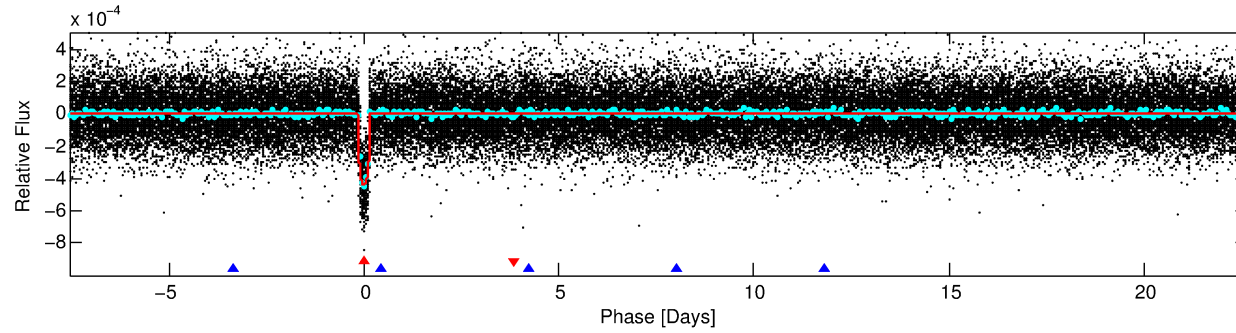
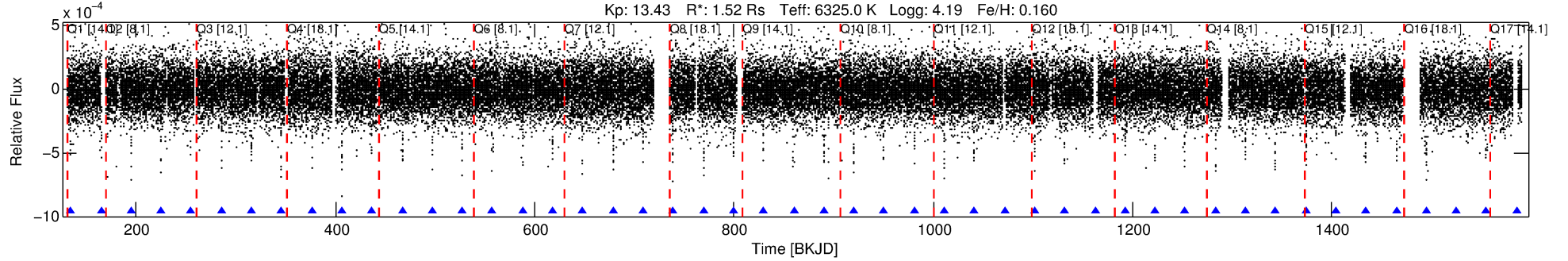
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006442377-01

No Significant Match Found

DV One-Page Summary

KIC: 6442377 Candidate: 1 of 2 Period: 30.229 d
KOI: K00176.01 Corr: 0.985



DV Fit Results:

Period = 30.22906 [0.00007] d
Epoch = 134.5217 [0.0020] BKJD
Rp/R* = 0.0211 [0.0013]
a/R* = 22.15 [6.71]
b = 0.80 [0.14]
Seff = 77.05 [18.65]
Teq = 755 [46] K
Rp = 3.50 [0.66] Re
a = 0.2071 [0.0317] AU
Ag = 44.48 [18.64] [2.33σ]
Teffp = 3016 [274] K [8.13σ]

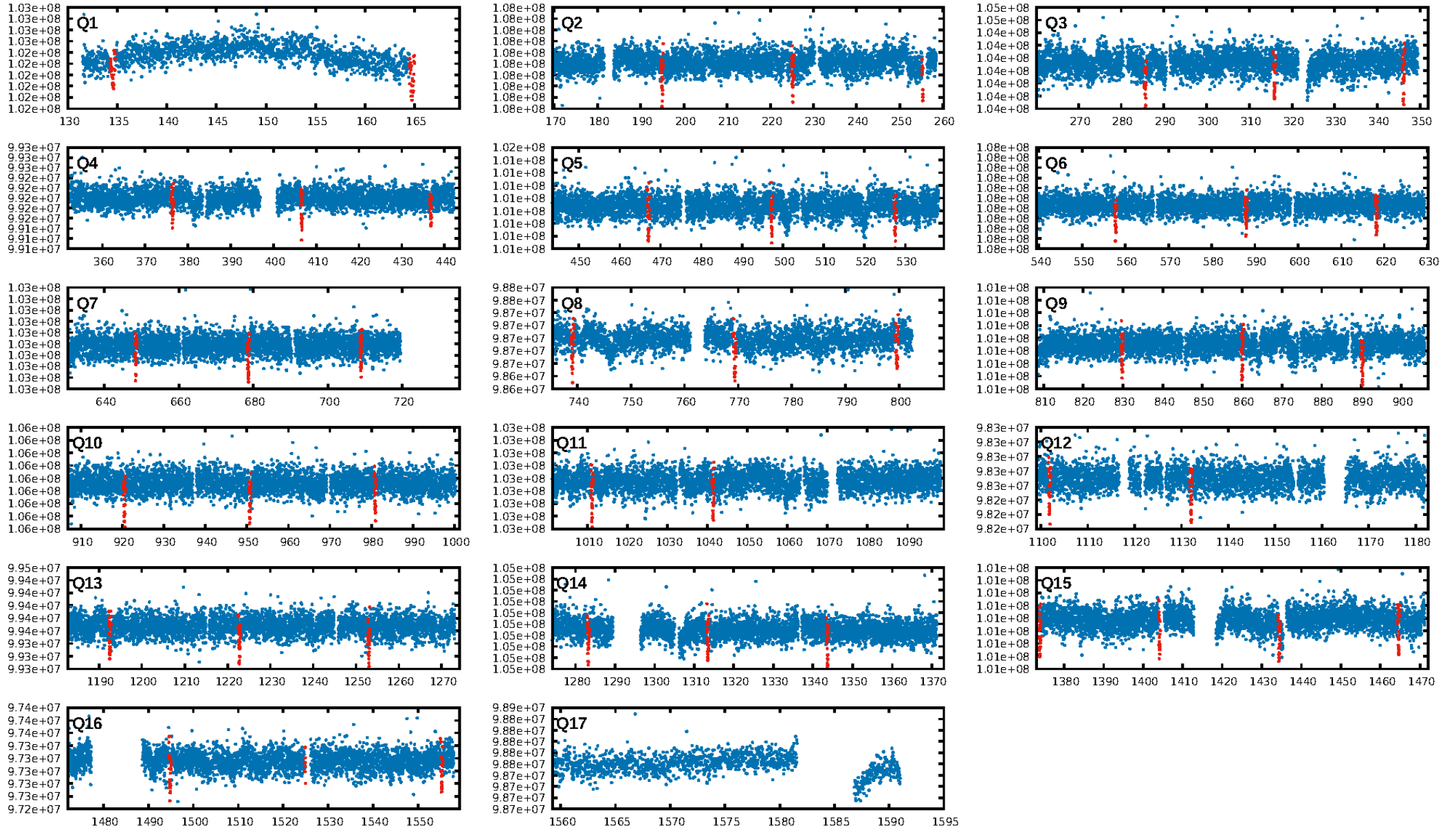
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [213.93σ]
ModelChiSquare2-sig: 76.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [44/44]
GhostDiagnostic-chr: 7.091
Centroid-sig: 26.7%
Centroid-so: 0.400 arcsec [1.96σ]
OotOffset-rm: 0.163 arcsec [0.99σ]
KicOffset-rm: 0.236 arcsec [1.17σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [16/16]

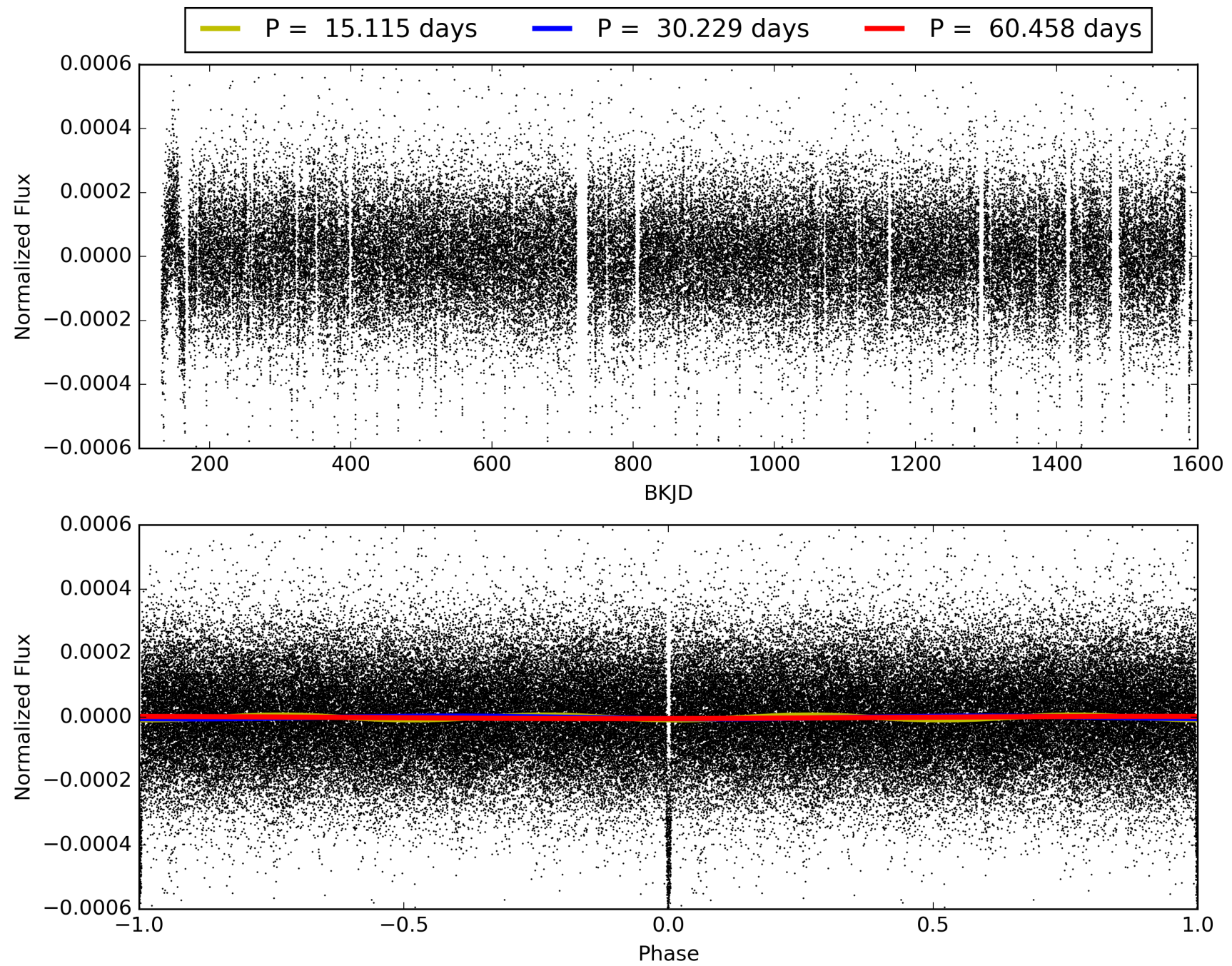
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:56:40 Z

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

TCE 006442377-01, PDC Light Curves

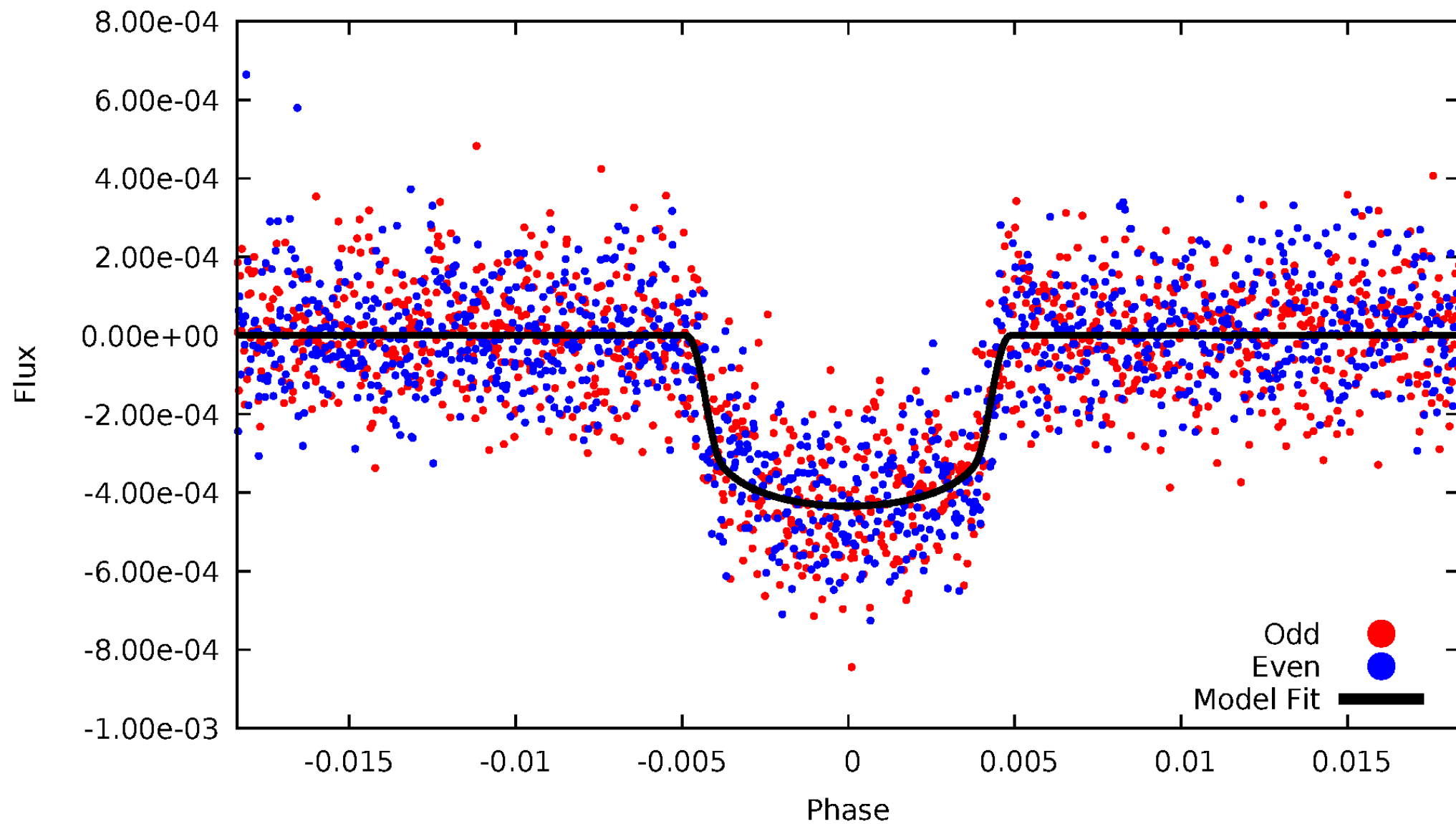


TCE 006442377-01



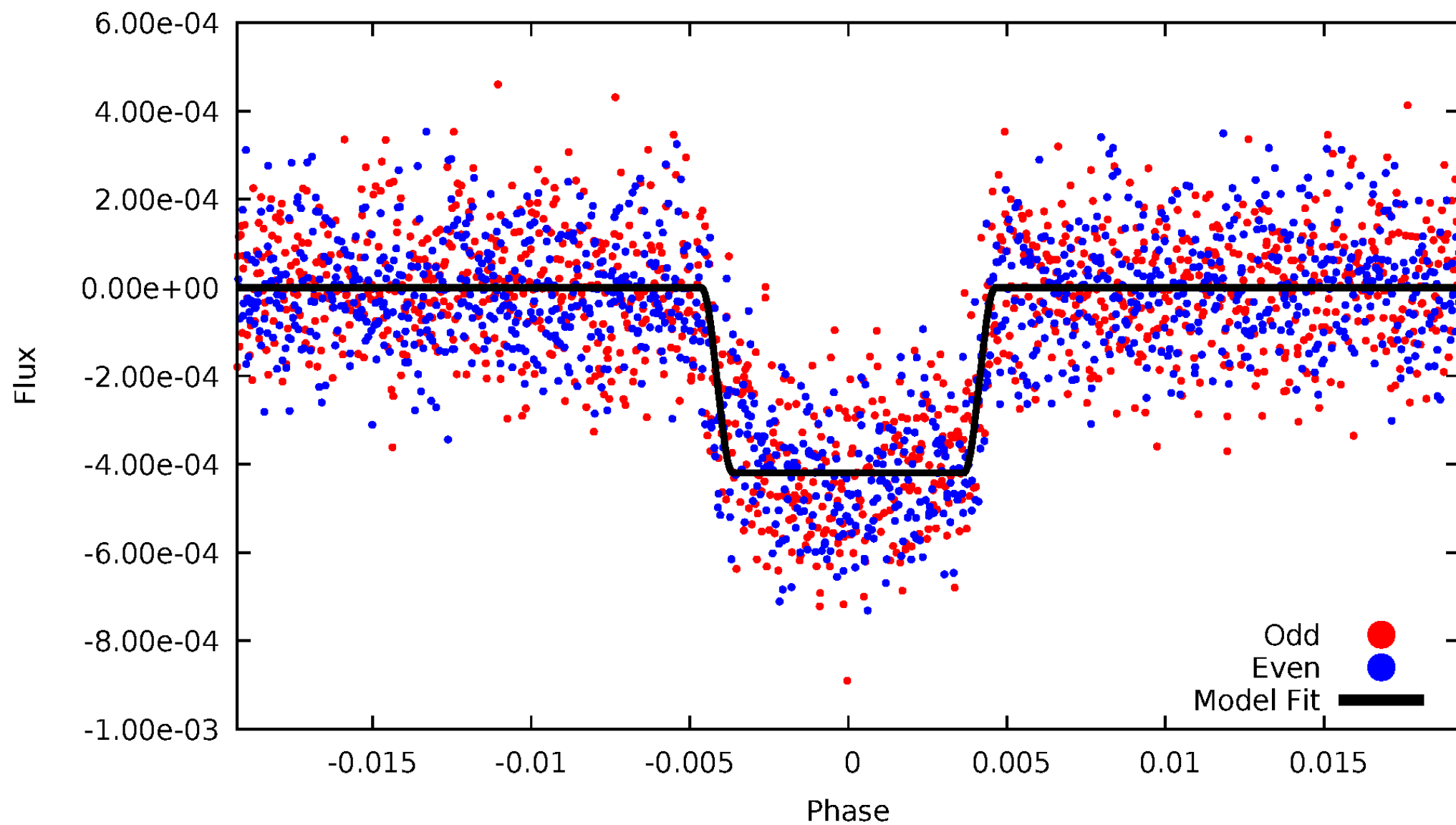
DV Odd/Even

TCE 006442377-01



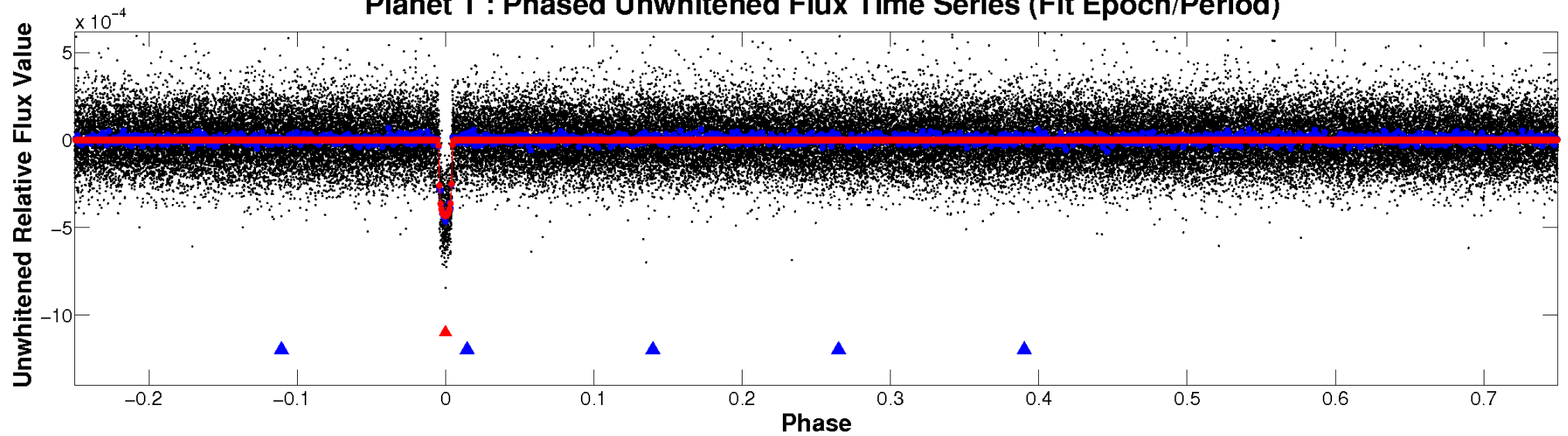
ALT Odd/Even

TCE 006442377-01

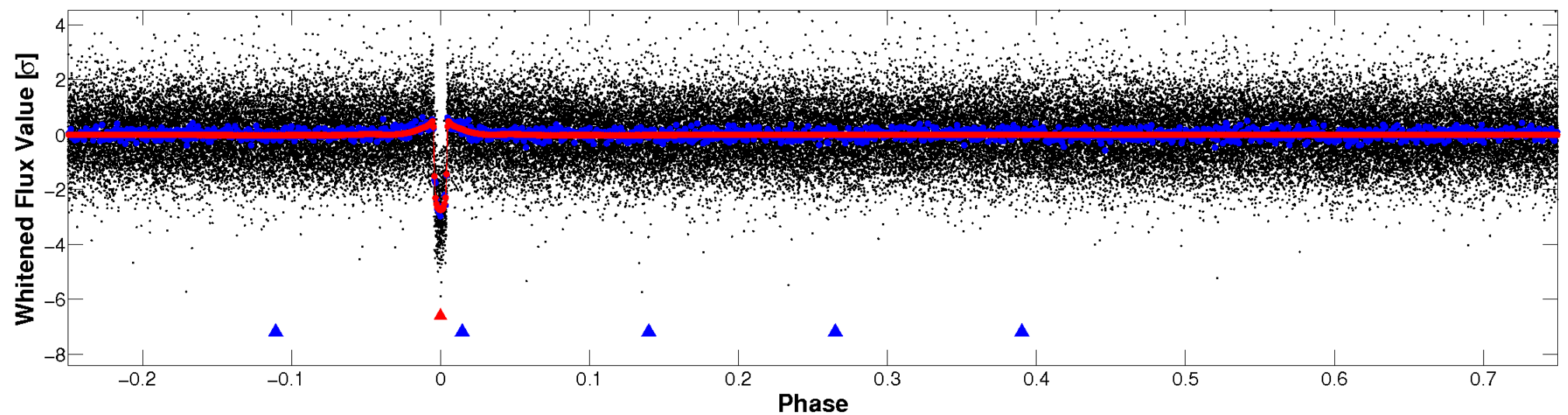


Non-Whitened Vs. Whitened Light Curve

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

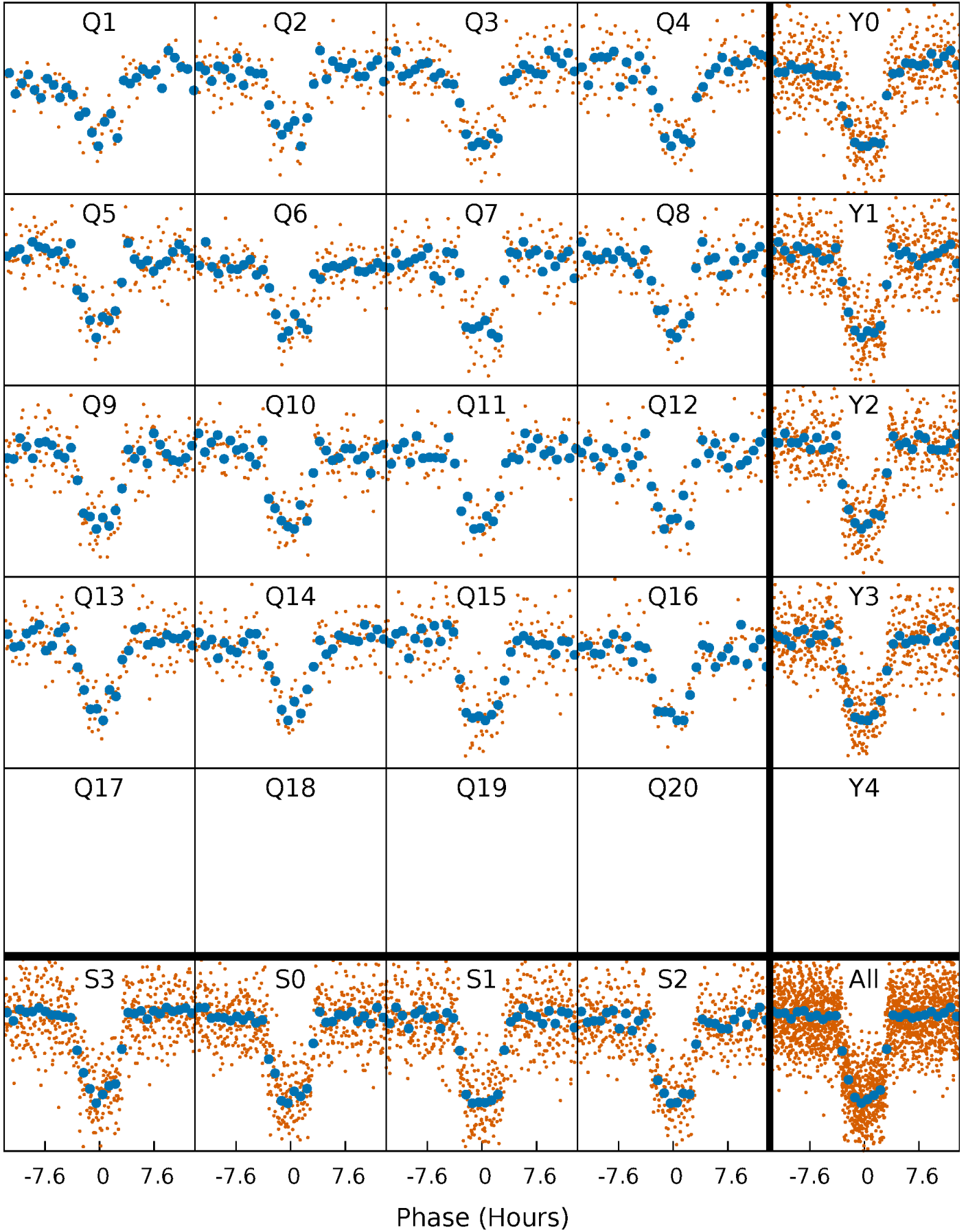


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



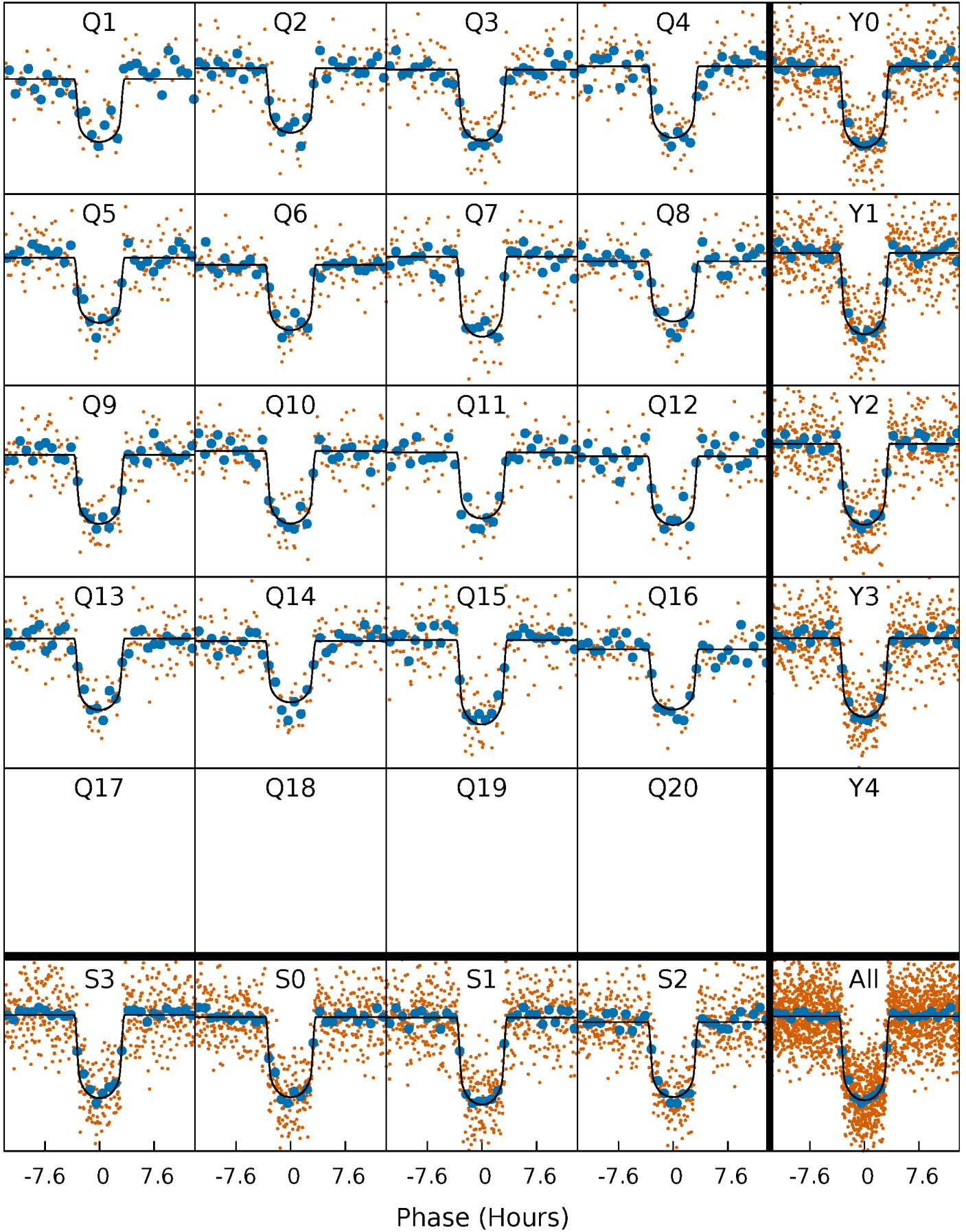
PDC Quarter-Phased Transit Curves

TCE 006442377-01 P= 30.229060 Days $T_0=134.521680$ (BKJD)



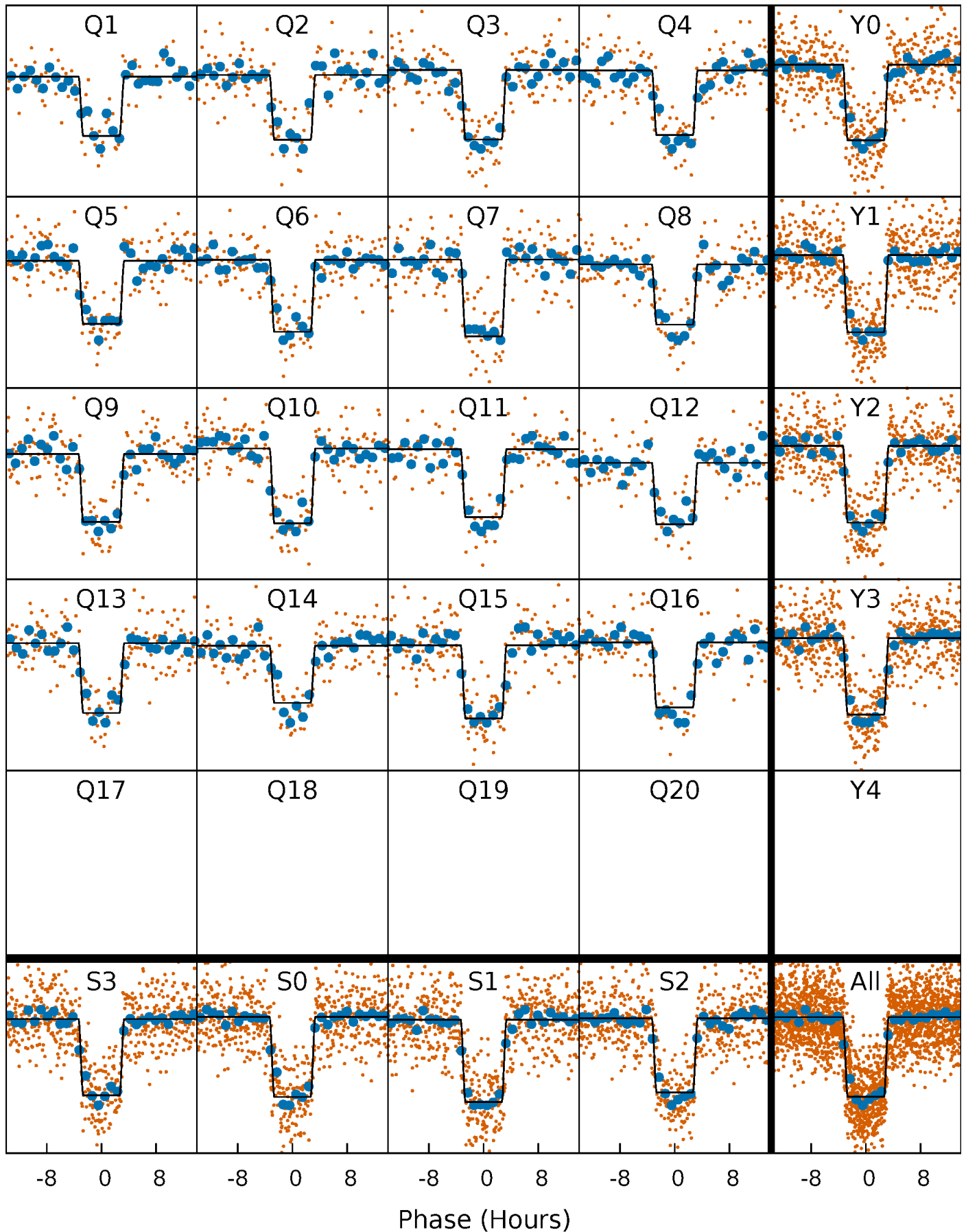
DV Quarter-Phased Transit Curves

TCE 006442377-01 P= 30.229060 Days $T_0=134.521680$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

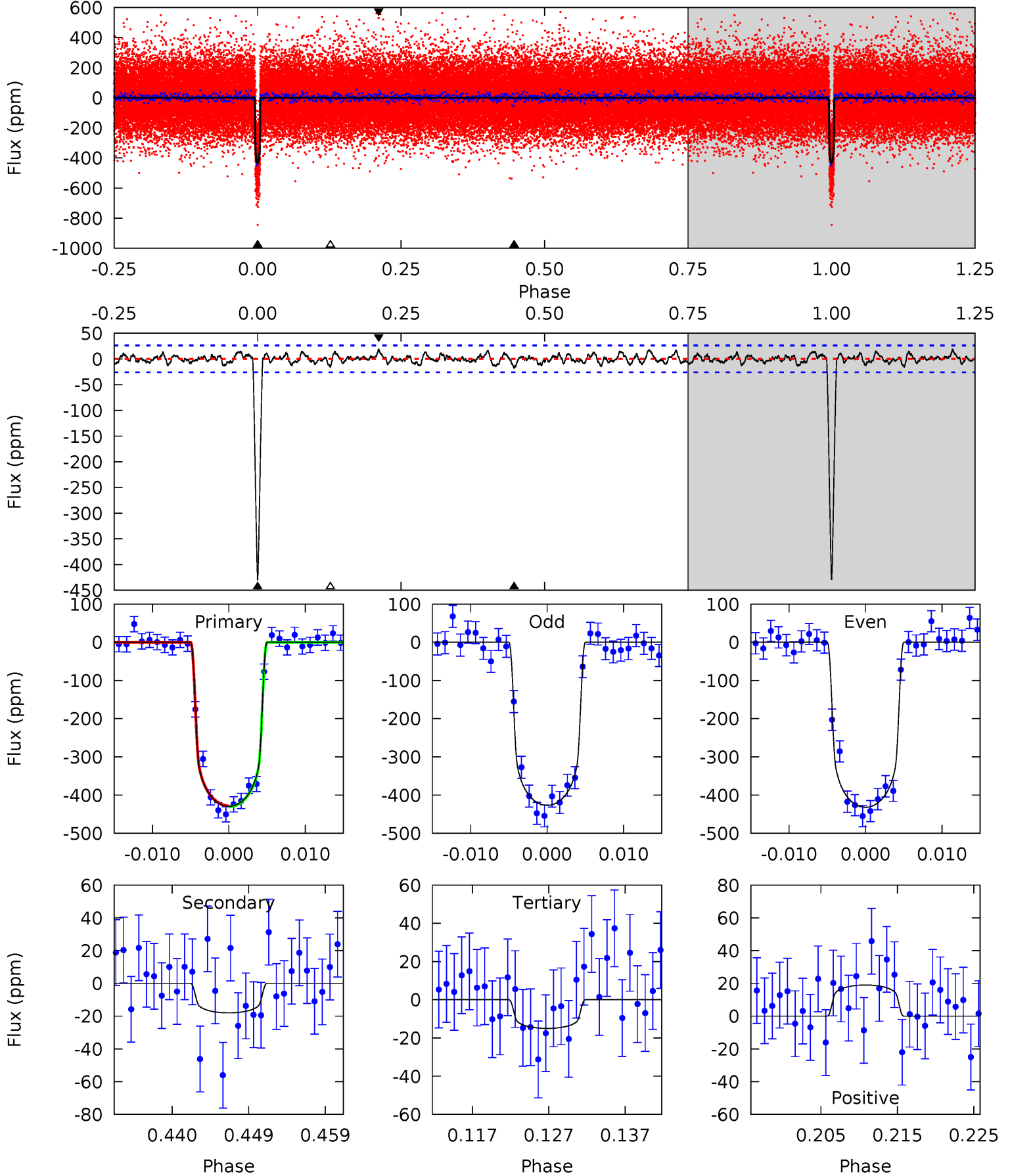
TCE 006442377-01 P= 30.228836 Days $T_0=134.527712$ (BKJD)



DV Model-Shift Uniqueness Test

006442377-01, P = 30.229060 Days, E = 104.292620 Days

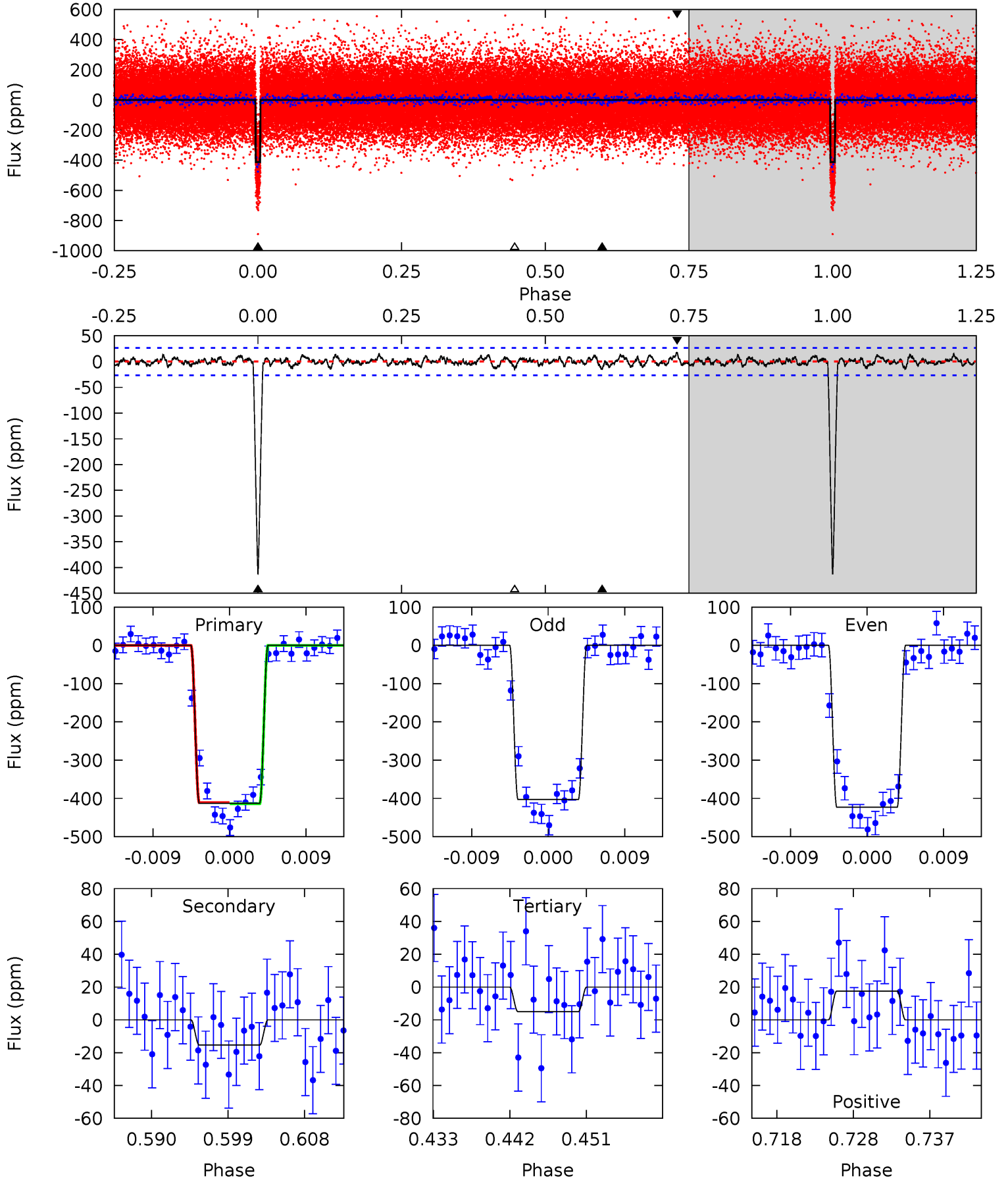
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
82.9	3.48	2.89	3.67	5.03	2.58	1.24	80.0	79.2	0.58	-0.19	0.49	1.01	0.04	0.25



Alt Model-Shift Uniqueness Test

006442377-01, P = 30.228836 Days, E = 104.298876 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
78.1	2.91	2.85	3.33	5.04	2.60	1.03	75.3	74.8	0.07	-0.41	1.93	1.00	0.04	0.28



Stellar Parameters For KIC 006442377

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6325^{+113}_{-138}	$4.188^{+0.125}_{-0.125}$	$0.160^{+0.150}_{-0.150}$	$1.518^{+0.271}_{-0.271}$	$1.296^{+0.094}_{-0.129}$	$0.522^{+0.303}_{-0.191}$
	+2%/-2%	+3%/-3%	+94%/-94%	+18%/-18%	+7%/-10%	+58%/-37%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 006442377-01 / KOI 0176.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-18 ± 5	$3.52^{+0.39}_{-0.37}$	1058^{+51}_{-52}	3363^{+154}_{-183}	34^{+14}_{-11}
Alt.	-15 ± 5	$3.37^{+0.43}_{-0.38}$	1056^{+53}_{-53}	3327^{+178}_{-235}	32^{+14}_{-13}

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 $A_{obs} \gg 1.0$

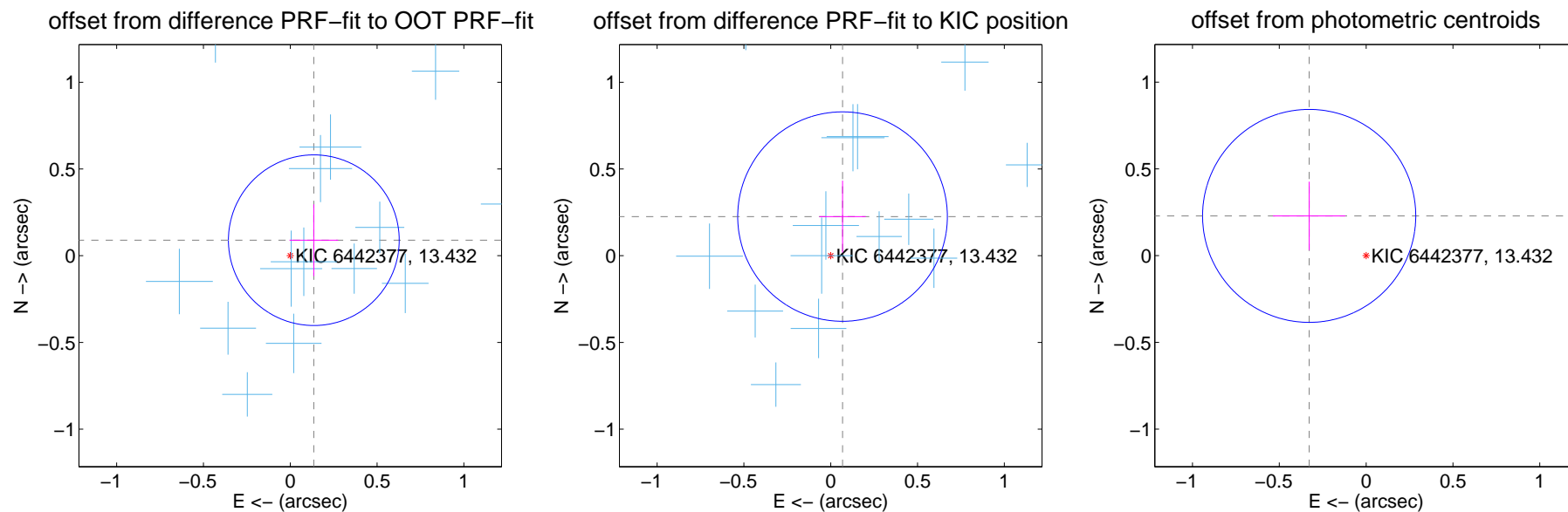
DV Centroid Data

Supplemental centroid analysis for 006442377-01. Kepler magnitude: 13.43. Transit SNR 57.62

There are 16 quarters with good PRF difference image offsets

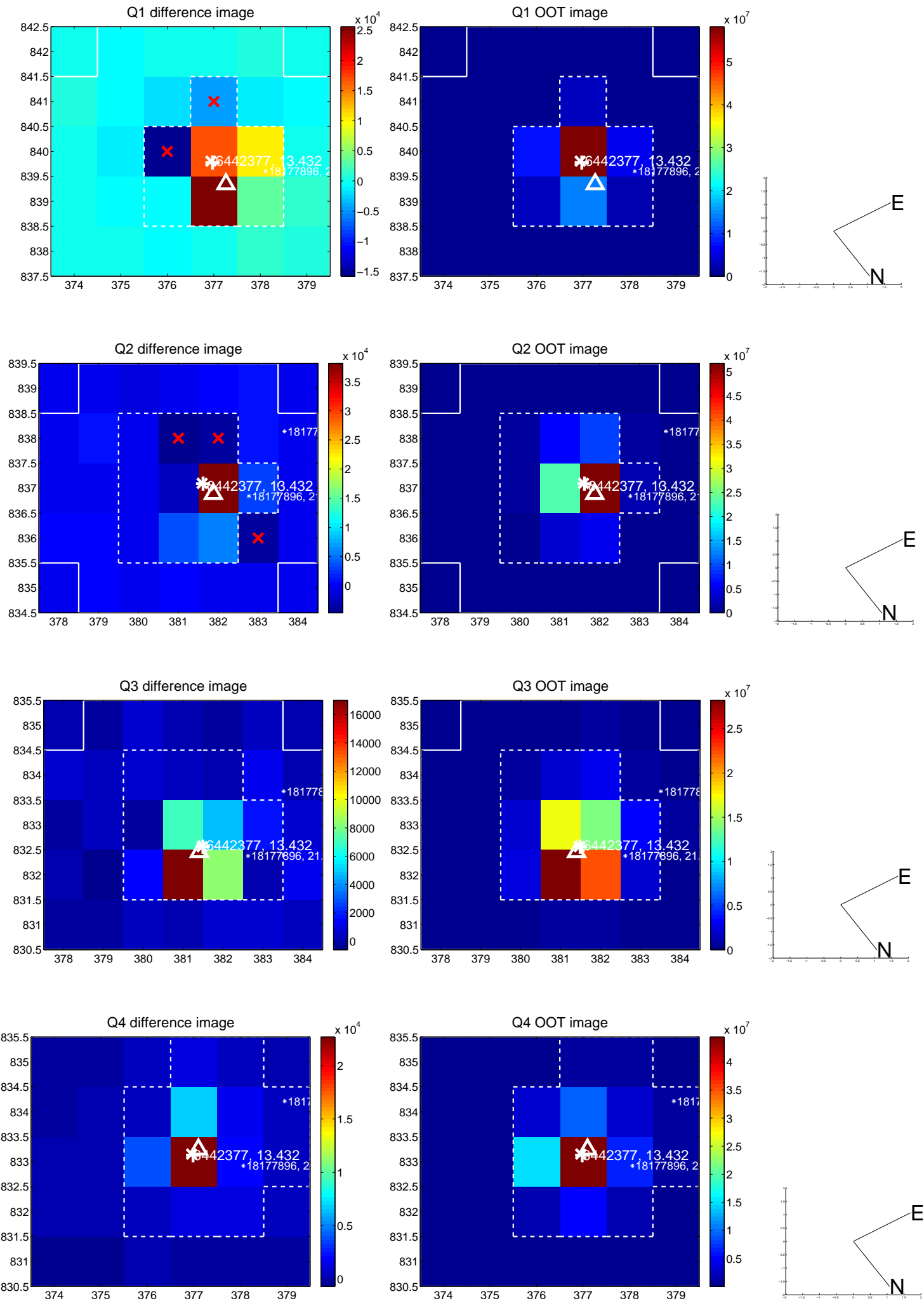
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.163 ± 0.164	0.99	-0.136 ± 0.140	0.089 ± 0.207
PRF-fit source offset from KIC position	0.236 ± 0.201	1.17	-0.068 ± 0.134	0.226 ± 0.207
photometric centroid source offset	0.40 ± 0.20	1.96	0.33 ± 0.21	0.23 ± 0.20

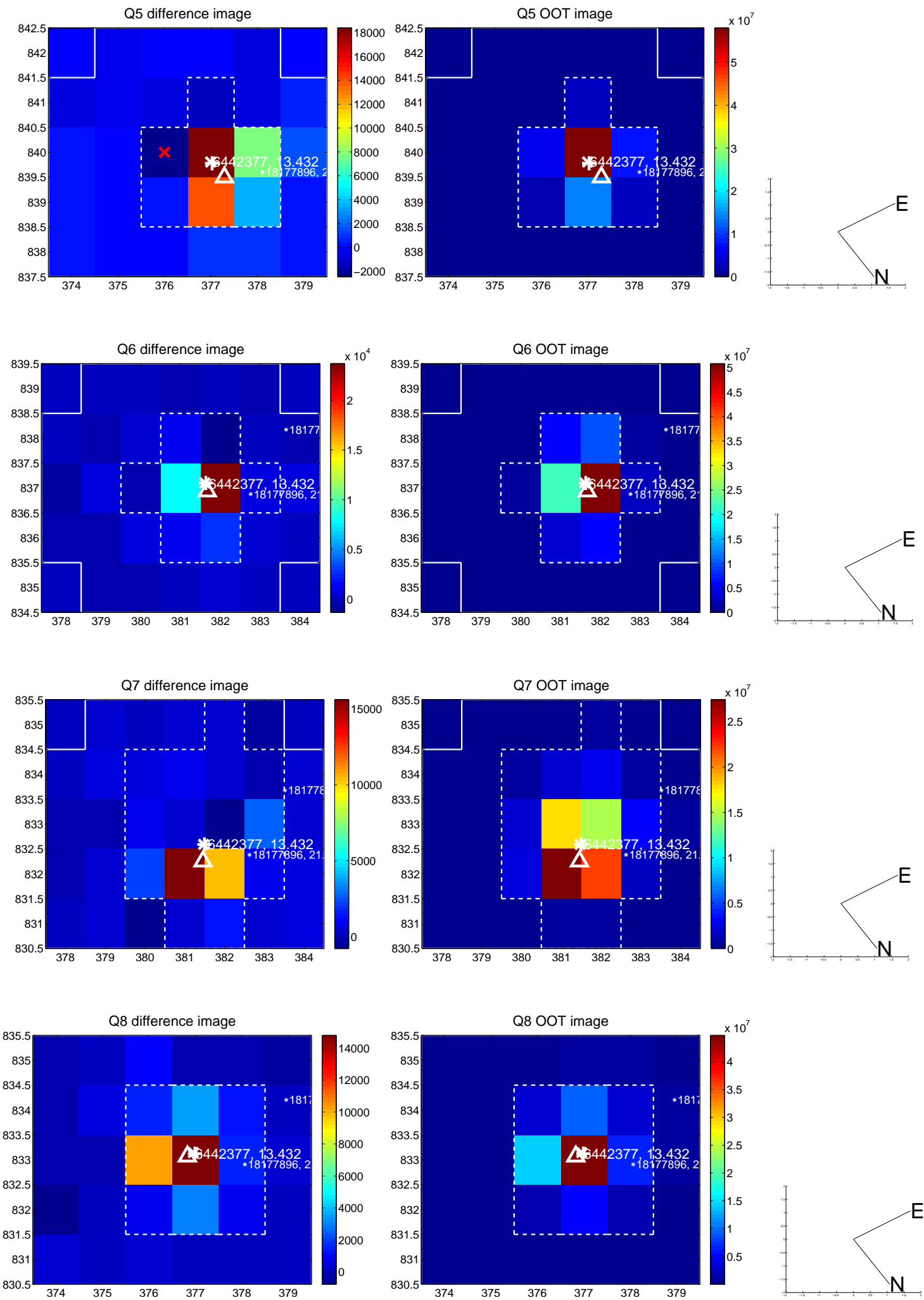


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

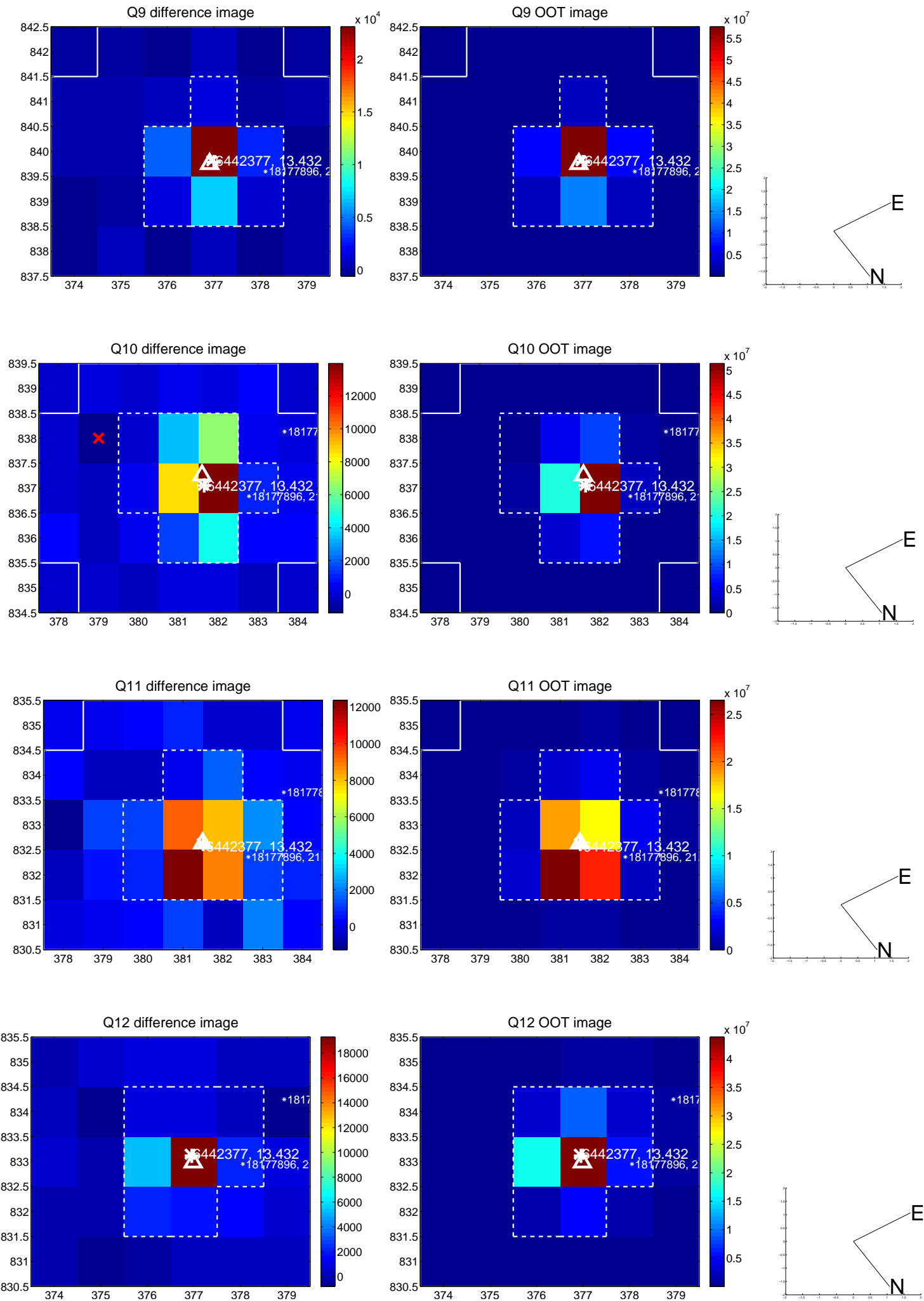
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



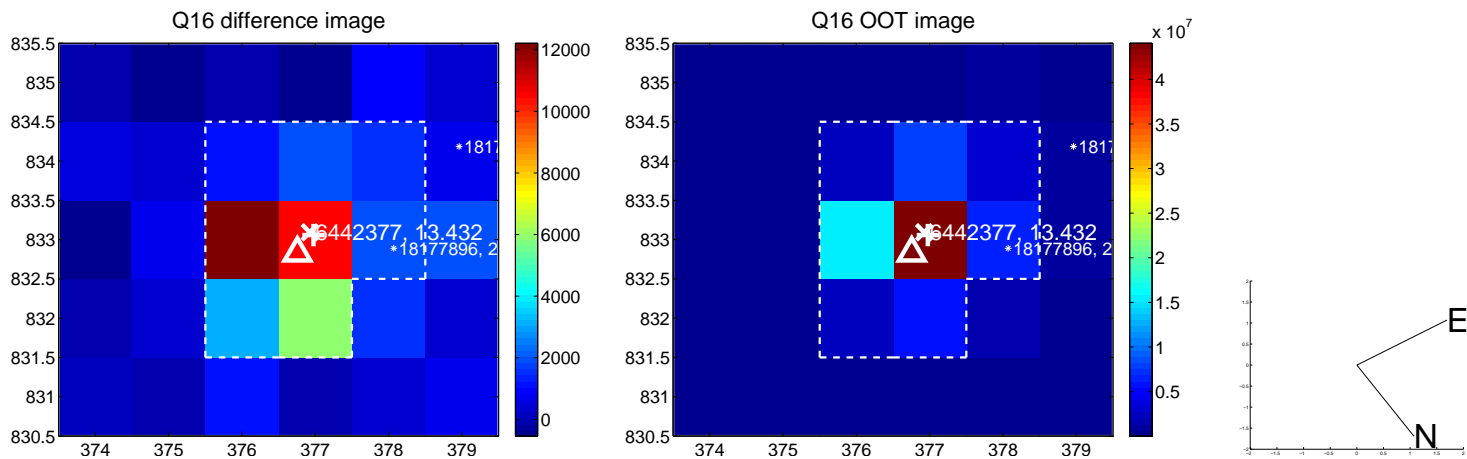
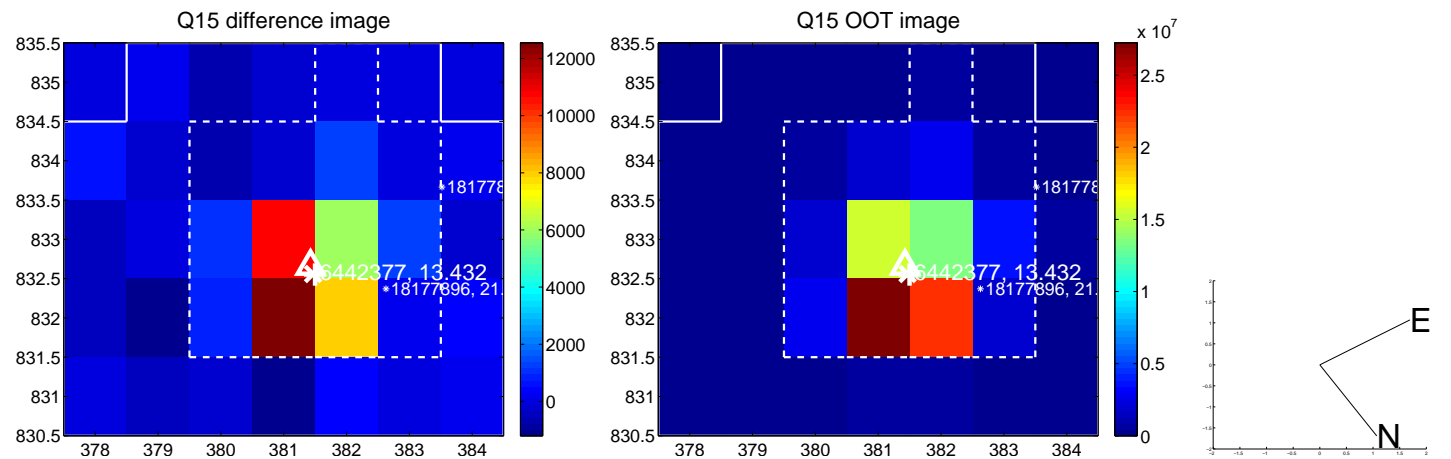
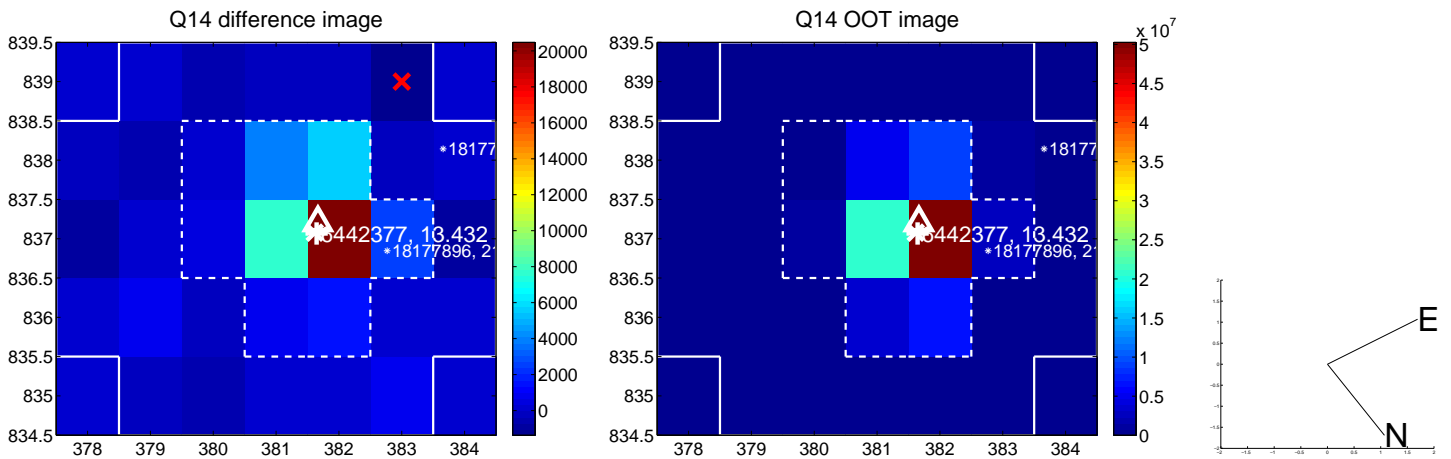
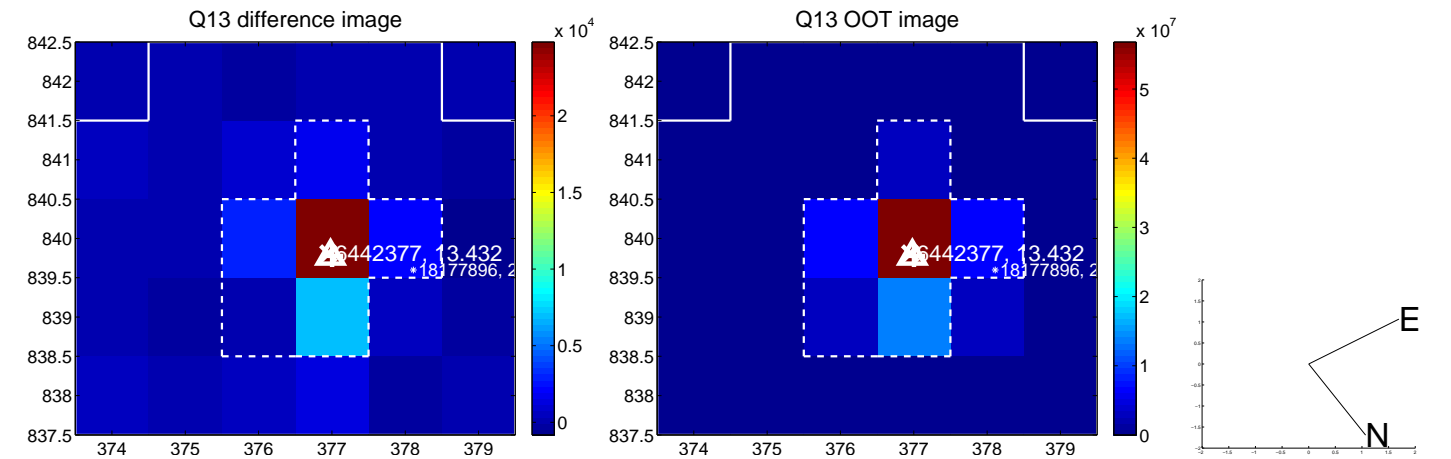
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



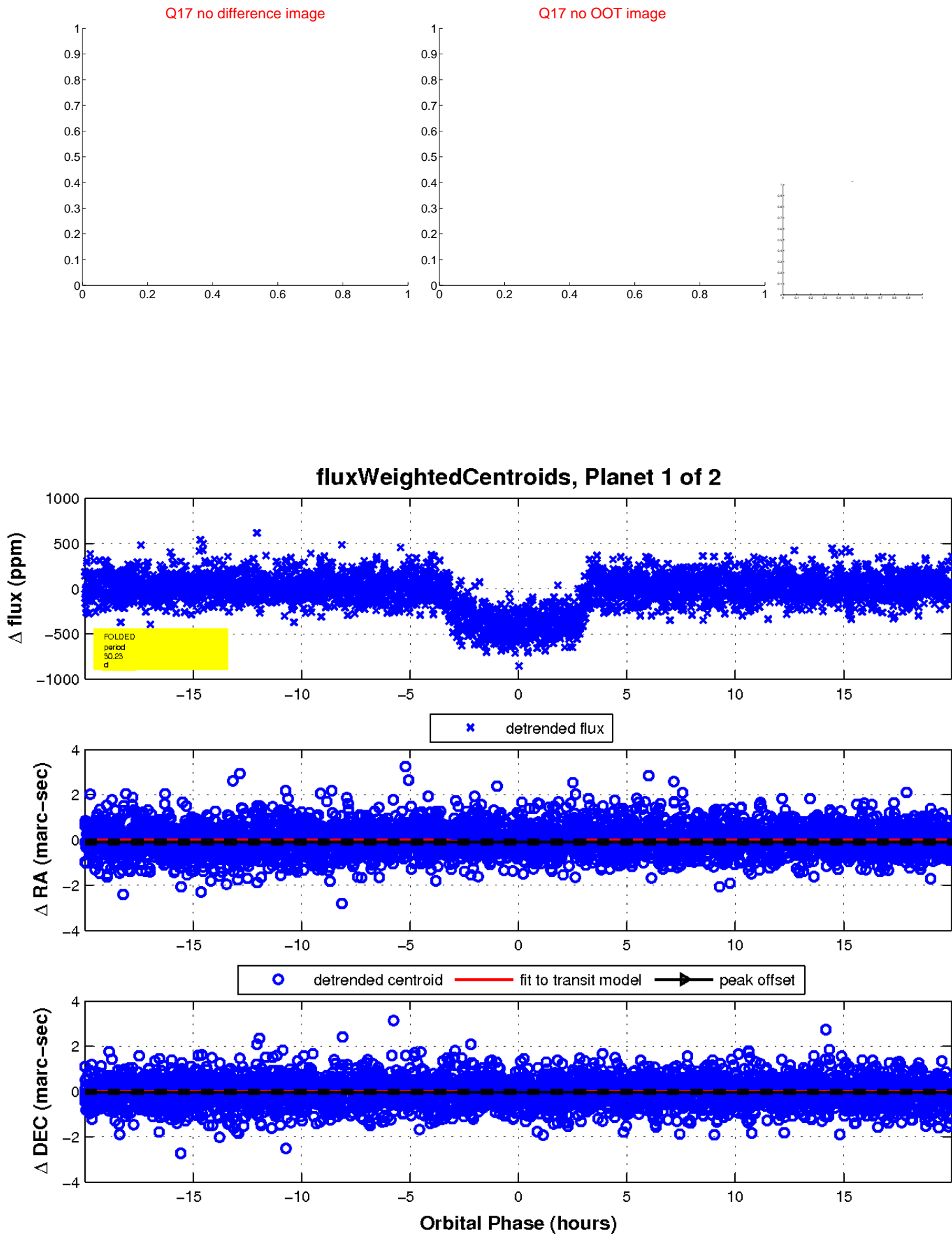
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

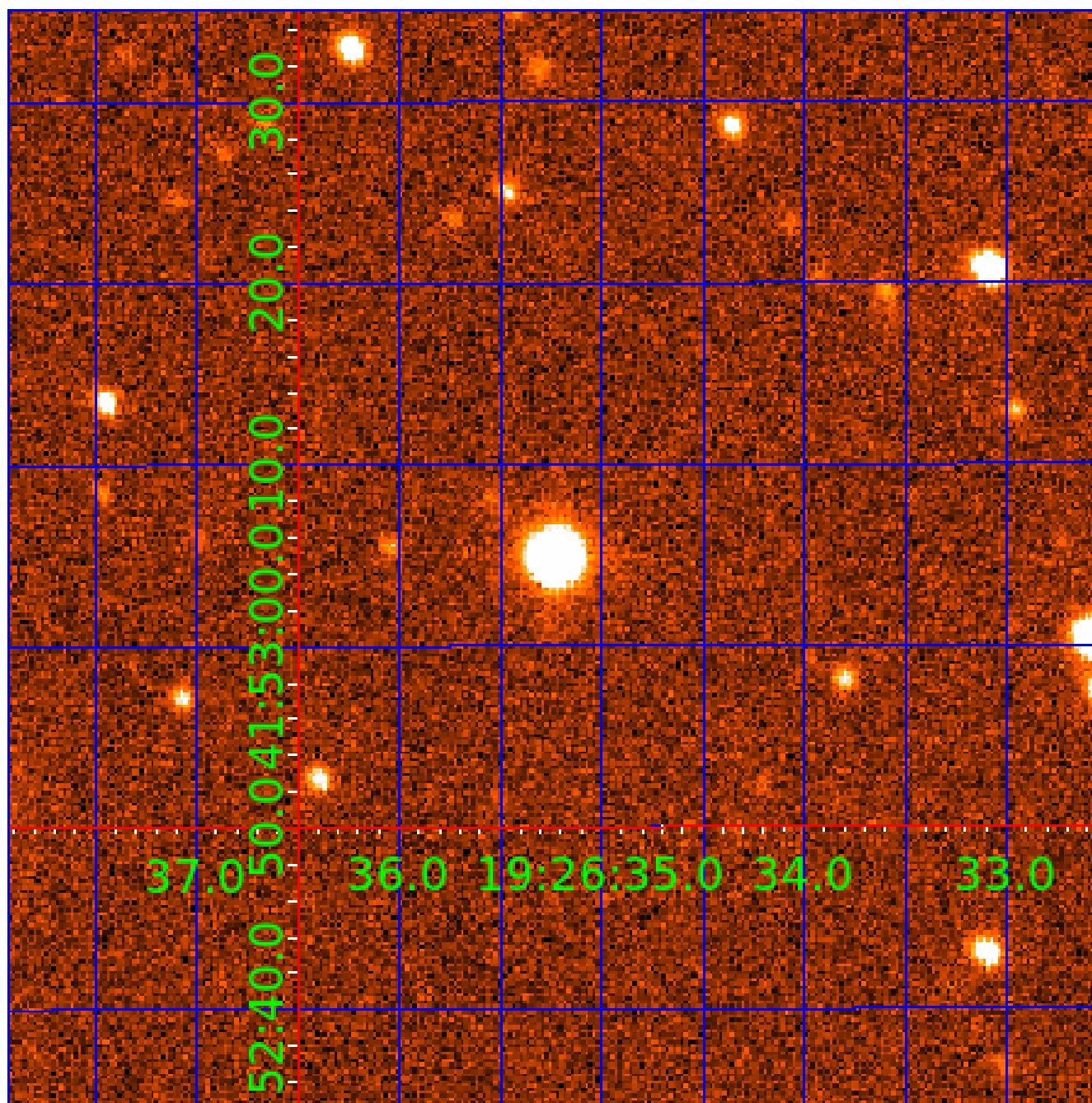


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006442377

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})
006442377-01	OBS	0176.01	30.229060	134.521679	434.6	6.665	53.2	57.6	1.52	6325	3.50	77.05
006442377-02	OBS	No	306.075812	252.094683	116.2	30.220	7.2	7.4	1.52	6325	1.90	3.52

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006442377-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006442377-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—CENT_FEW_DIFFS

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.

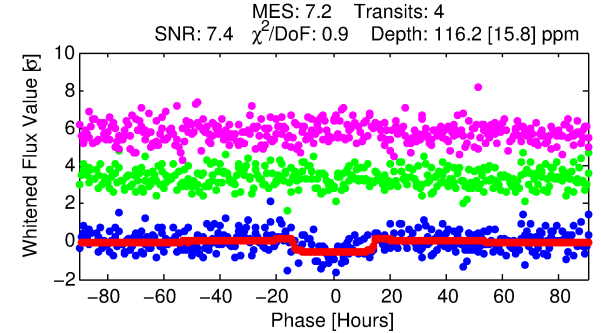
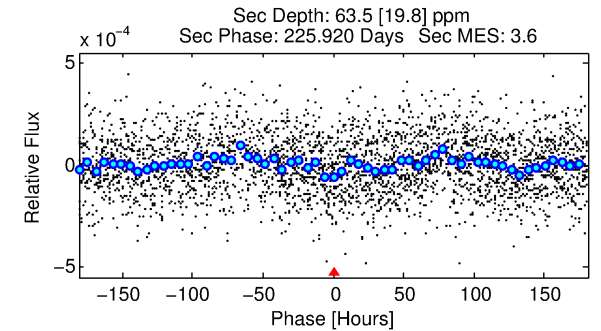
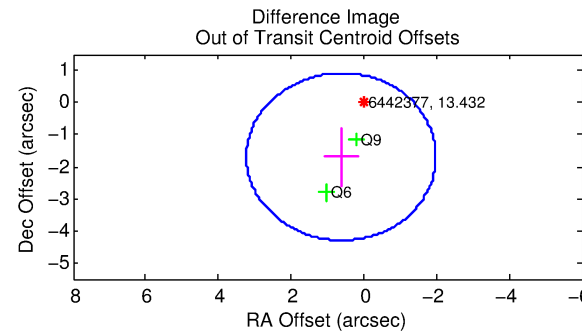
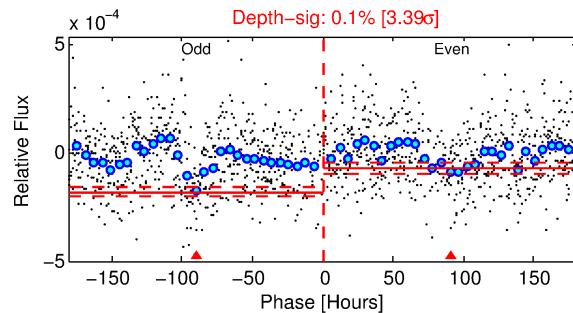
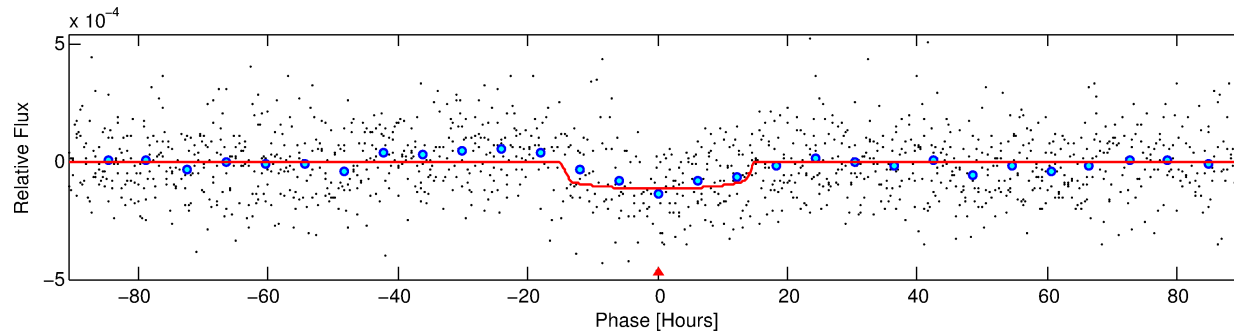
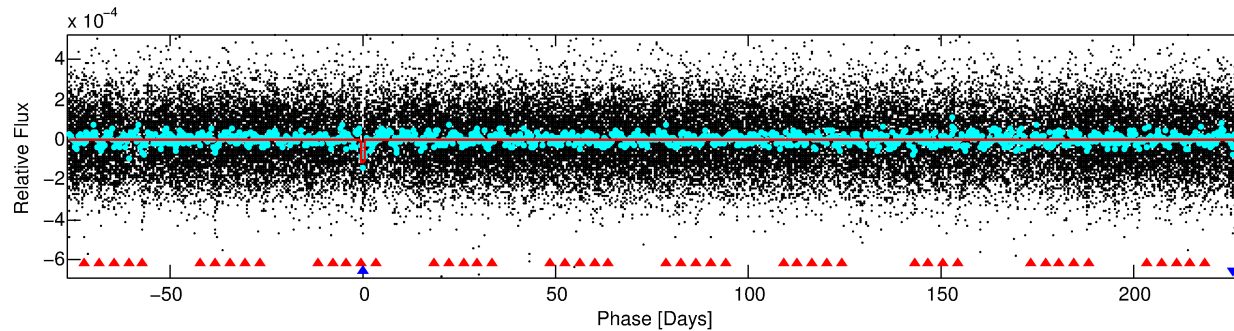
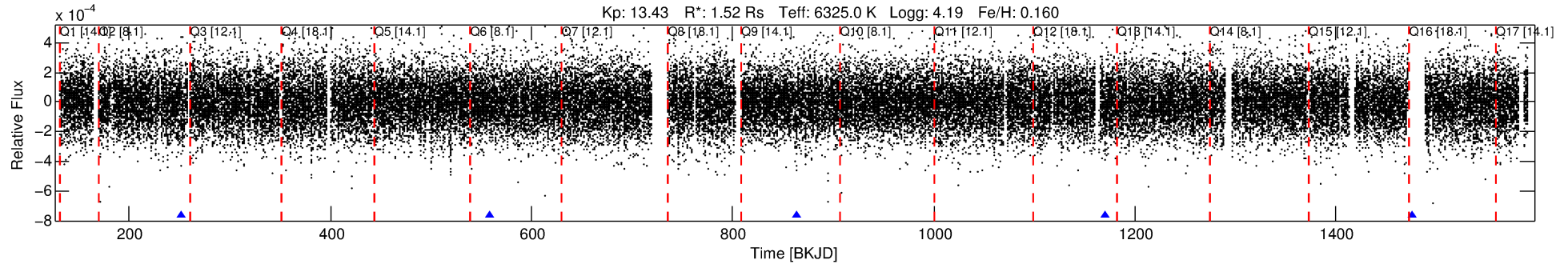
Ephemeris Match Information For 006442377-02

No Significant Match Found

DV One-Page Summary

KIC: 6442377 Candidate: 2 of 2 Period: 306.076 d

KOI: K00176 Corr: No Ephemeris Match



DV Fit Results:

Period = 306.07581 [0.02012] d
Epoch = 252.0947 [0.0395] BKJD
Rp/R* = 0.0114 [0.0016]
a/R* = 38.08 [24.14]
b = 0.88 [0.16]
Seff = 3.52 [0.85]
Teq = 349 [21] K
Rp = 1.90 [0.43] Re
a = 0.9692 [0.1482] AU
Ag = 9130.71 [4334.02] [2.11 σ]
Teffp = 5278 [563] K [8.75 σ]

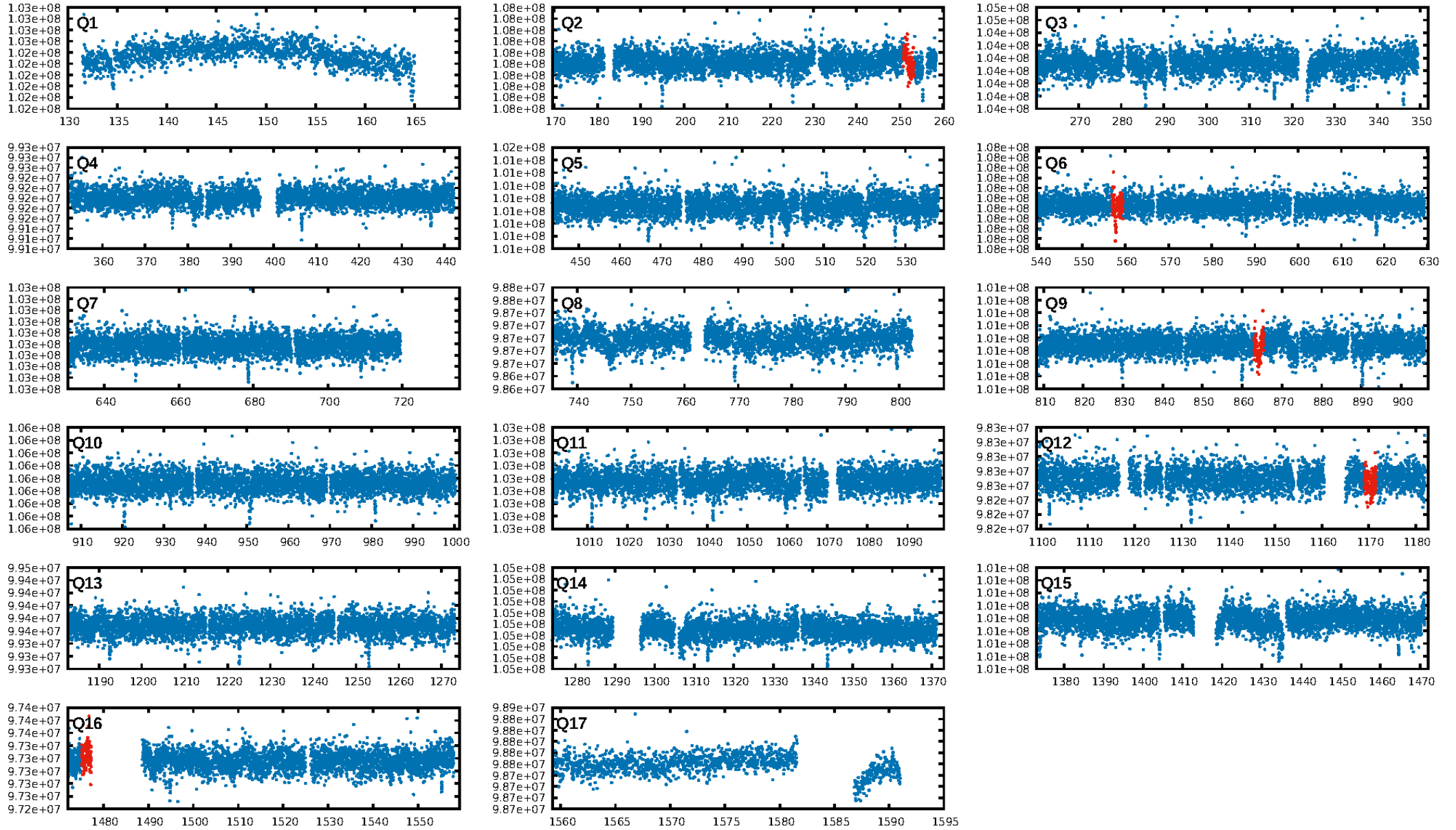
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [213.93 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 1.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.18e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.593
Centroid-sig: 1.4%
Centroid-so: 2.498 arcsec [1.75 σ]
OotOffset-rm: 1.803 arcsec [2.08 σ]
KicOffset-rm: 1.683 arcsec [1.90 σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
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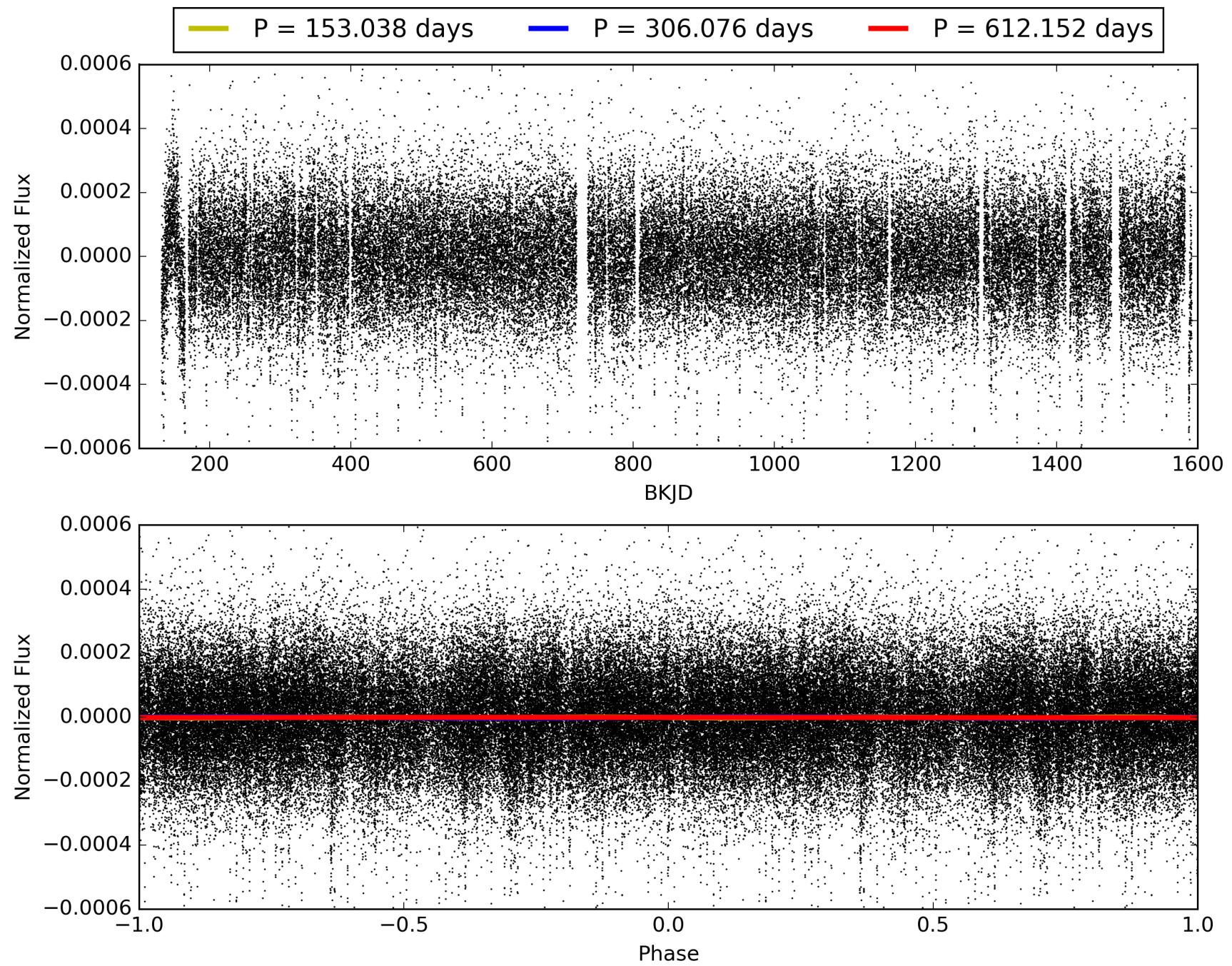
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:56:48 Z

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

TCE 006442377-02, PDC Light Curves

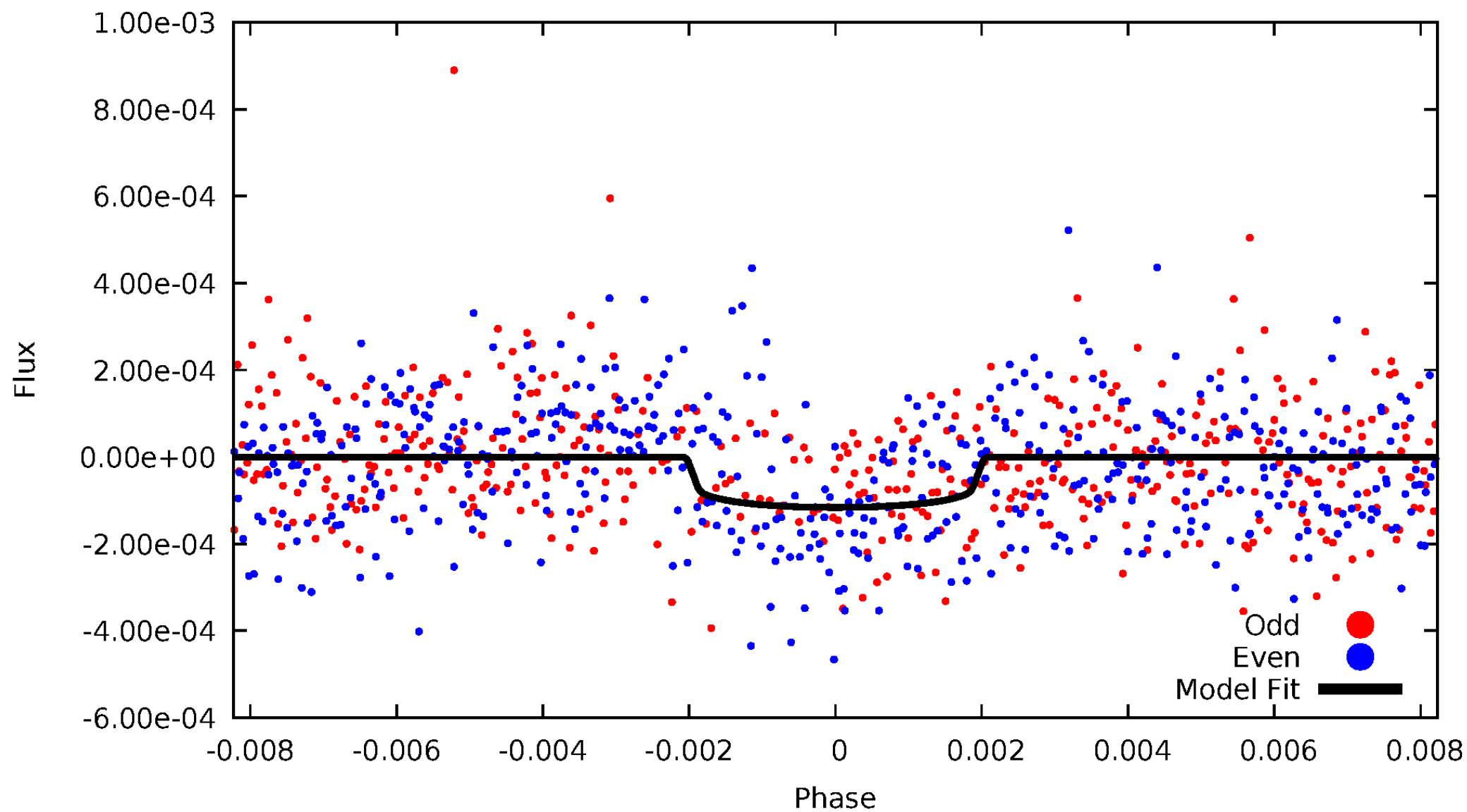


TCE 006442377-02



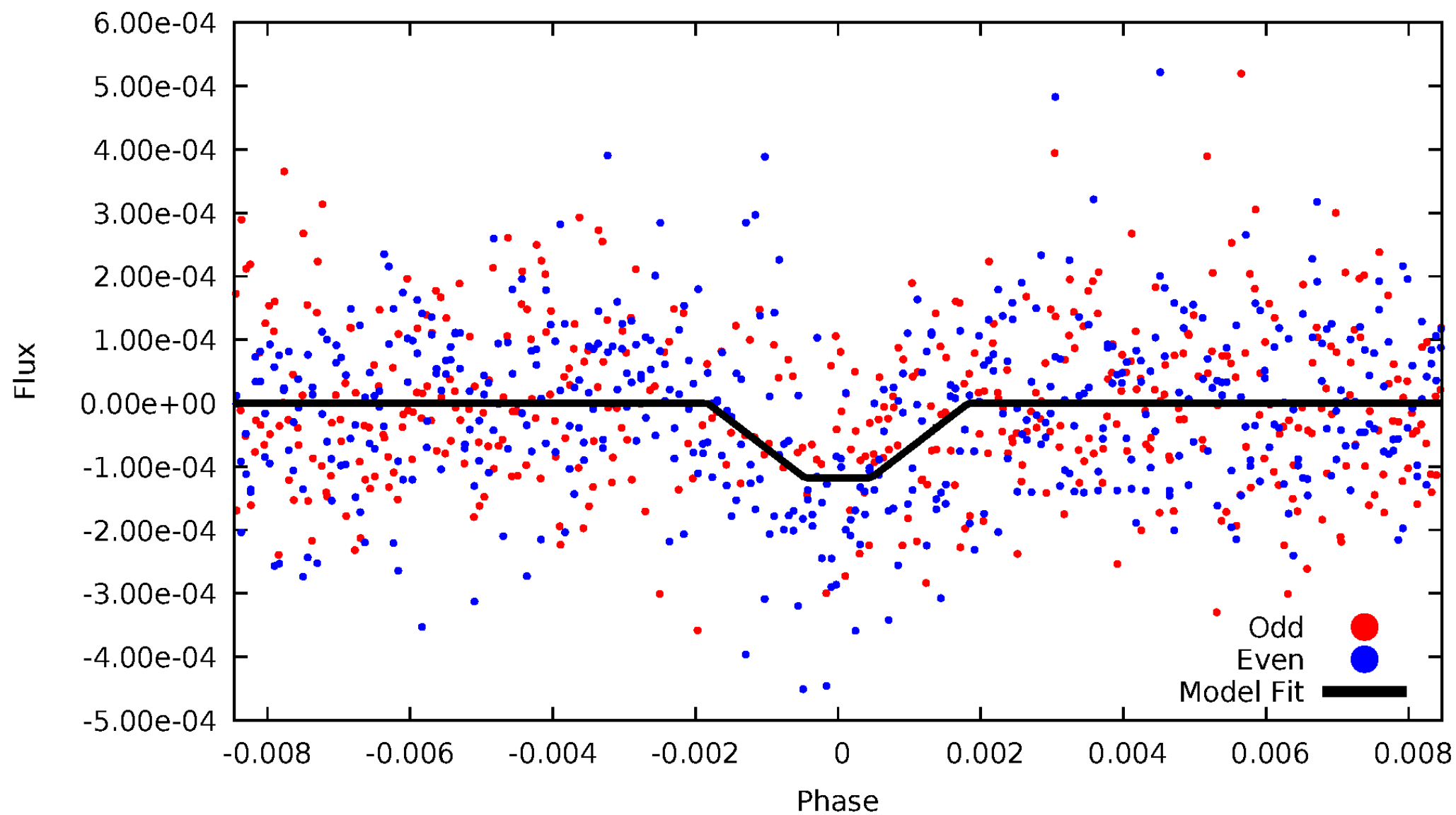
DV Odd/Even

TCE 006442377-02



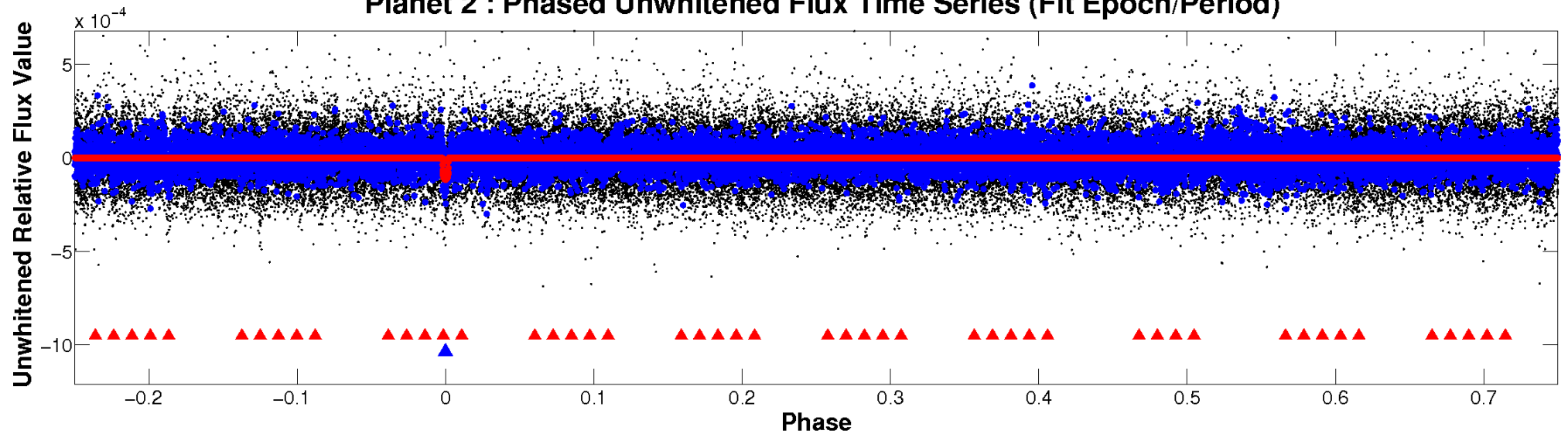
ALT Odd/Even

TCE 006442377-02

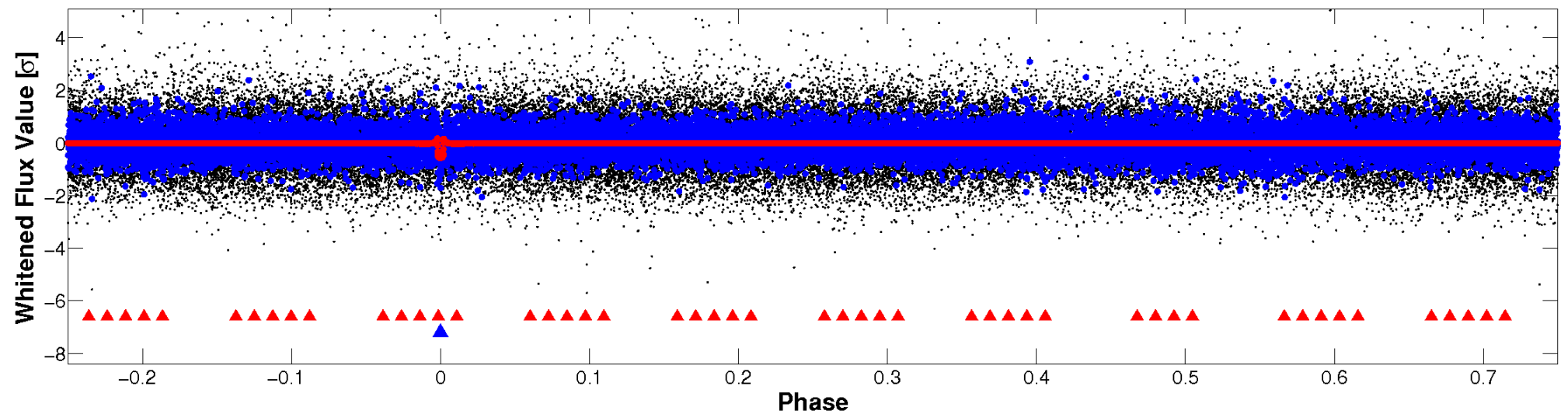


Non-Whitened Vs. Whitened Light Curve

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 006442377-02 P=306.075812 Days $T_0=252.094683$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 006442377-02 P=306.075812 Days $T_0=252.094683$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

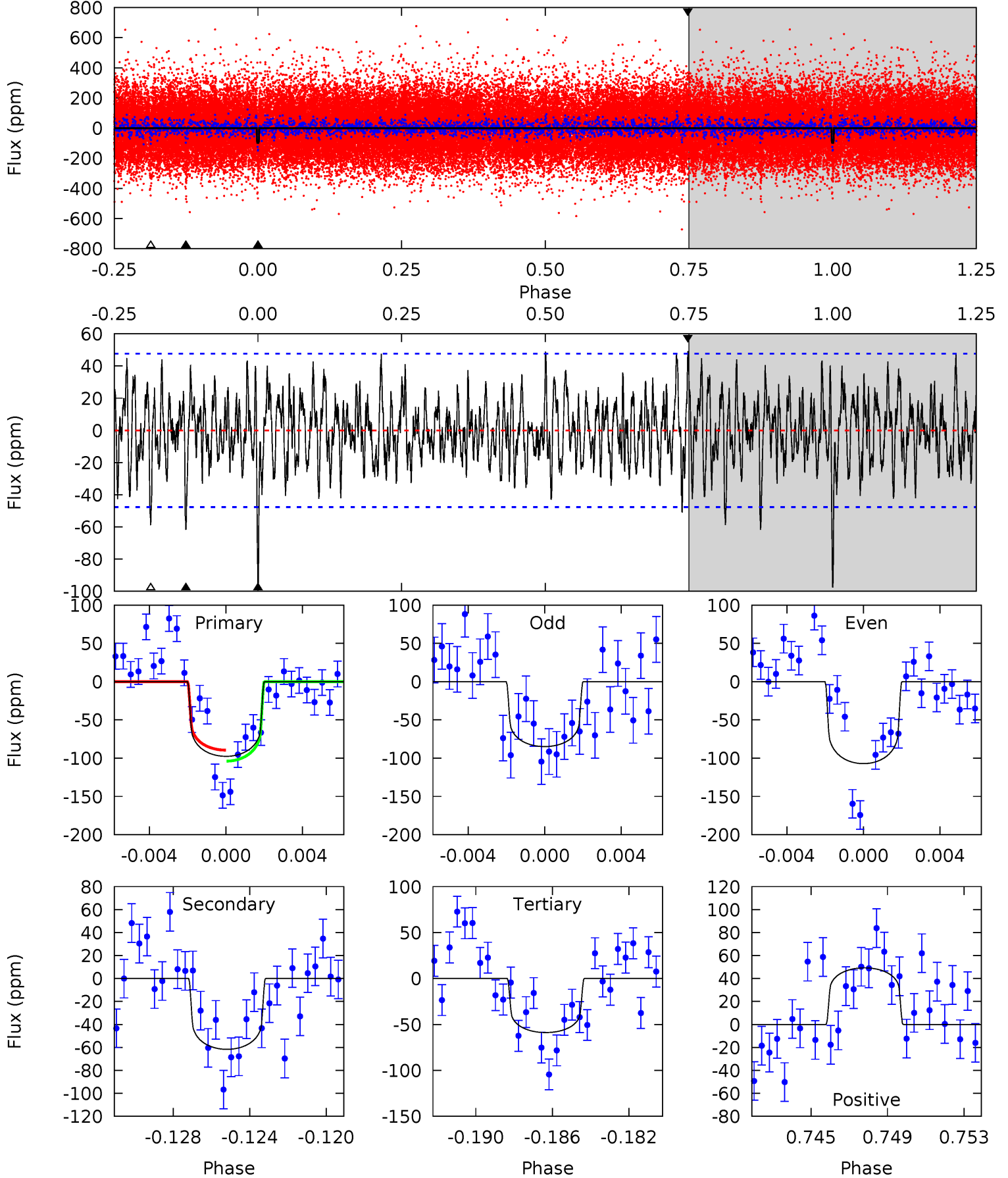
TCE 006442377-02 P=306.115162 Days $T_0=252.058839$ (BKJD)



DV Model-Shift Uniqueness Test

006442377-02, P = 306.075812 Days, E = 252.094683 Days

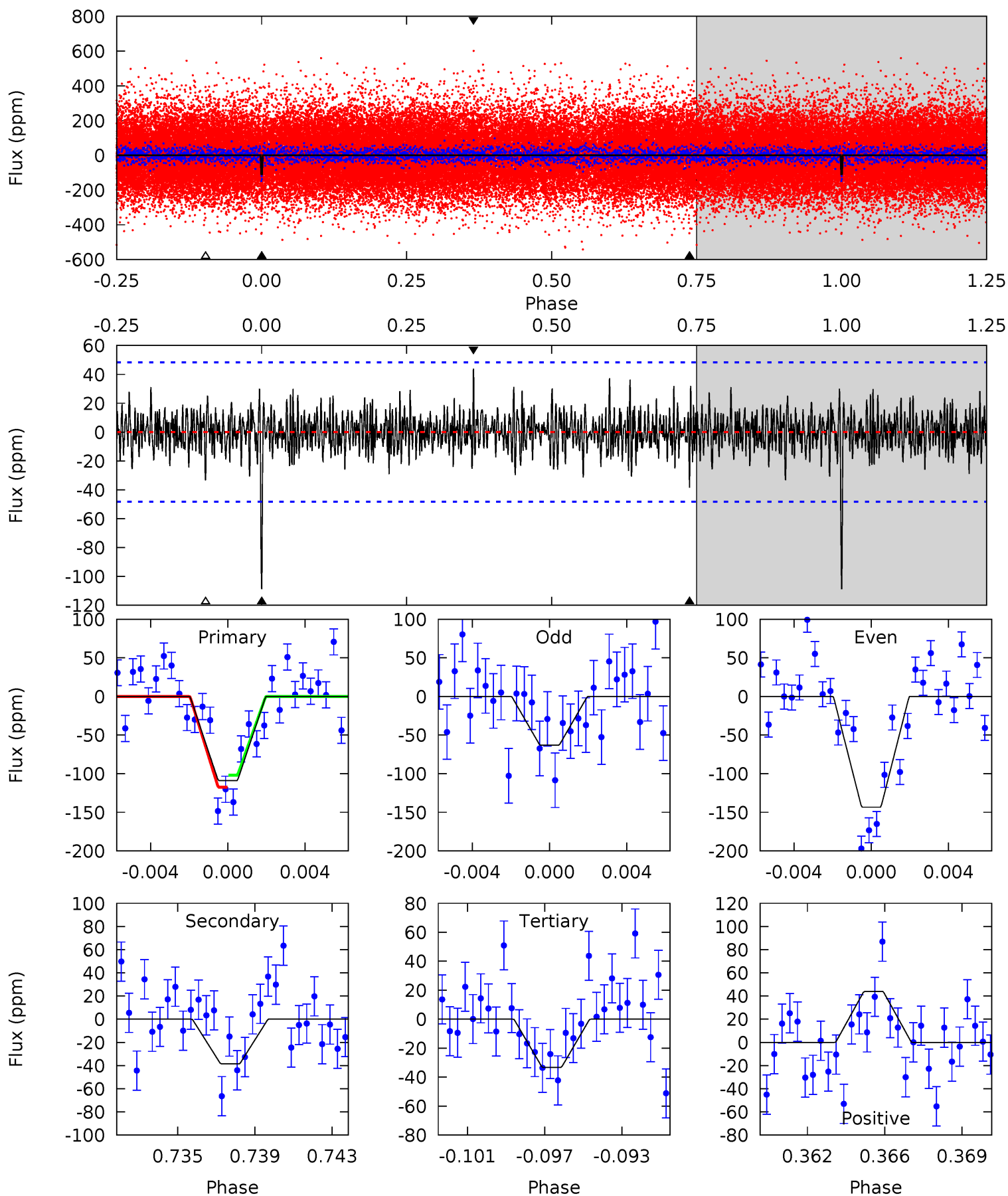
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	6.72	6.41	5.36	5.19	2.87	1.88	4.22	5.27	0.31	1.36	1.20	1.19	0.34	0.78



Alt Model-Shift Uniqueness Test

006442377-02, P = 306.115162 Days, E = 252.058839 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	4.15	3.59	4.74	5.21	2.90	1.14	8.16	7.00	0.56	-0.59	4.28	1.21	0.29	0.84



Stellar Parameters For KIC 006442377

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6325^{+113}_{-138}	$4.188^{+0.125}_{-0.125}$	$0.160^{+0.150}_{-0.150}$	$1.518^{+0.271}_{-0.271}$	$1.296^{+0.094}_{-0.129}$	$0.522^{+0.303}_{-0.191}$
	+2%/-2%	+3%/-3%	+94%/-94%	+18%/-18%	+7%/-10%	+58%/-37%
Source	SPE59	SPE59	SPE59	DSEP		

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

Secondary Eclipse Parameters for KIC 006442377-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-62 ± 9	$1.89^{+0.32}_{-0.31}$	488^{+25}_{-24}	5284^{+414}_{-360}	8987^{+3705}_{-2785}
Alt.	-38 ± 9	$1.79^{+0.33}_{-0.30}$	488^{+24}_{-23}	4844^{+466}_{-348}	6086^{+3210}_{-2205}

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

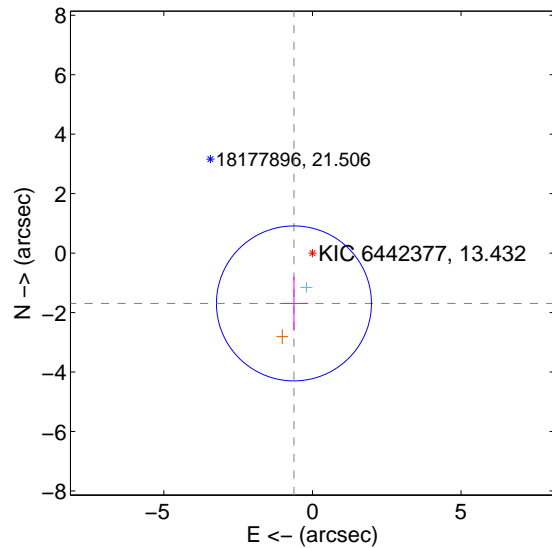
Supplemental centroid analysis for 006442377-02. Kepler magnitude: 13.43. Transit SNR 7.43

There are 1 quarters with good PRF difference image offsets

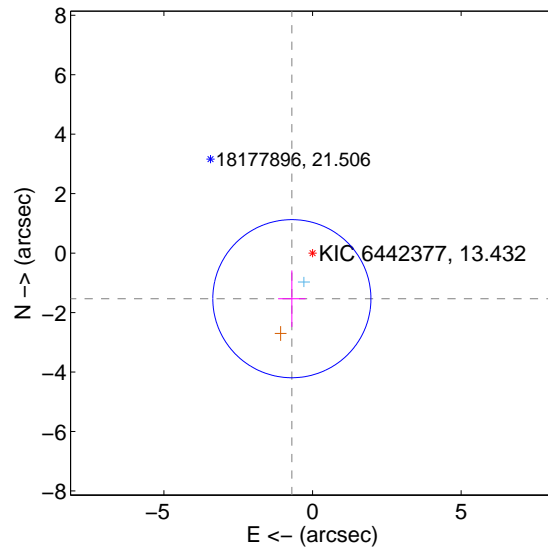
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.803 ± 0.869	2.08	0.622 ± 0.479	-1.692 ± 0.909
PRF-fit source offset from KIC position	1.683 ± 0.886	1.90	0.695 ± 0.462	-1.533 ± 0.950
photometric centroid source offset	2.50 ± 1.43	1.75	2.18 ± 1.45	-1.22 ± 1.34

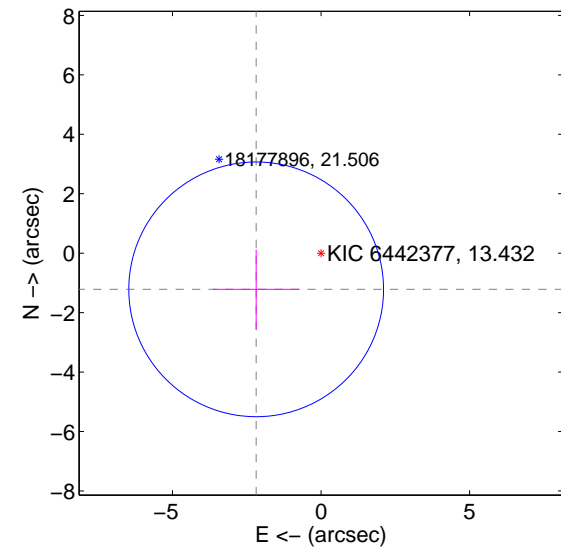
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



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.

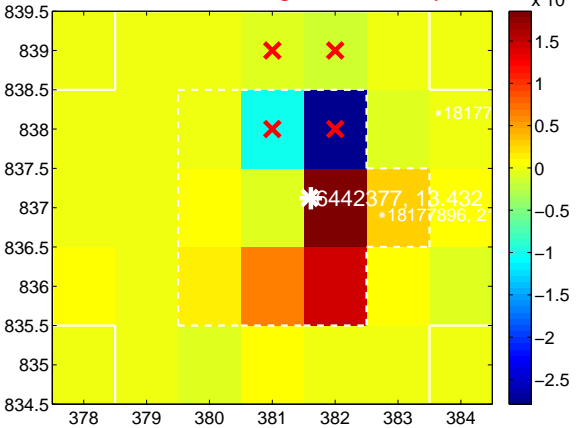
Q1 no difference image



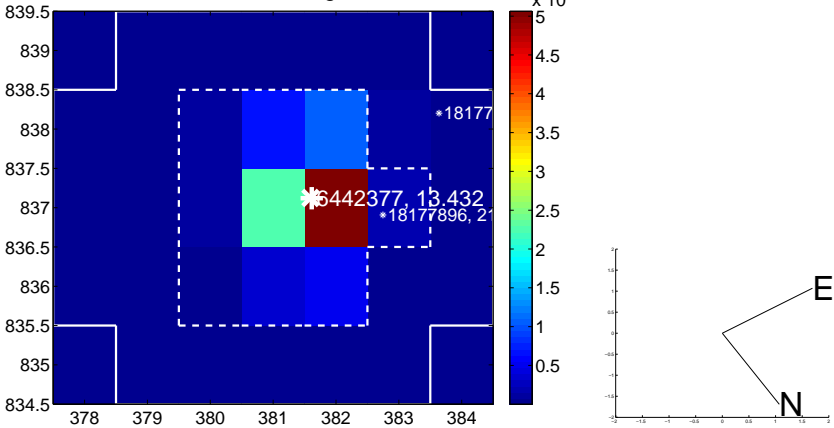
Q1 no OOT image



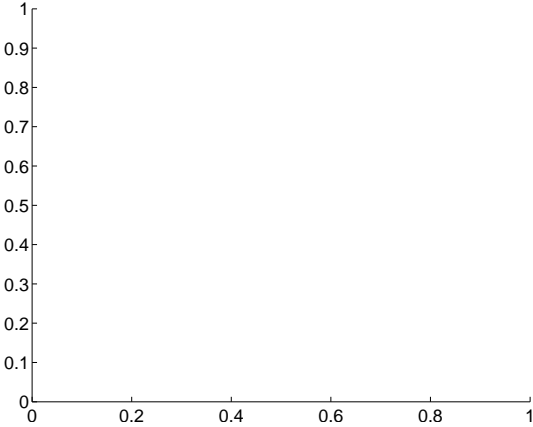
Q2 difference image. Poor Quality



Q2 OOT image



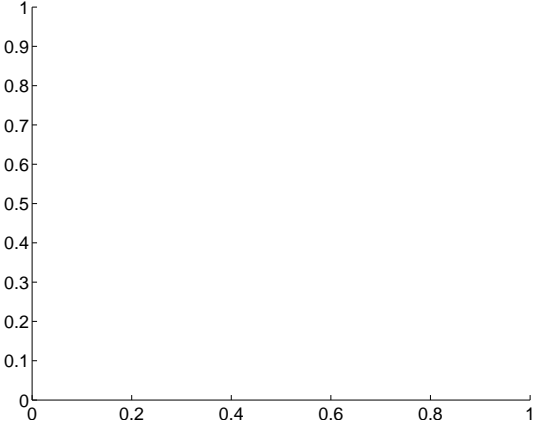
Q3 no difference image



Q3 no OOT image



Q4 no difference image



Q4 no OOT image



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

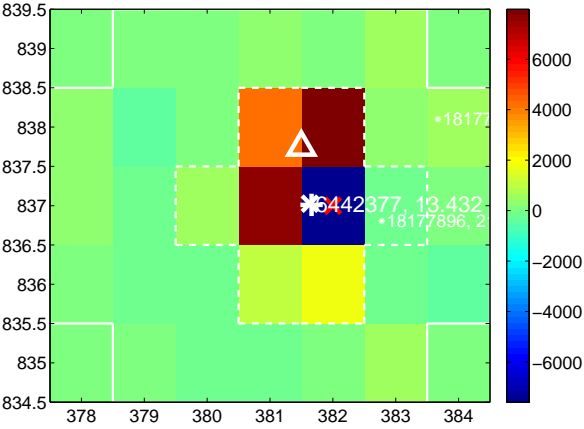
Q5 no difference image



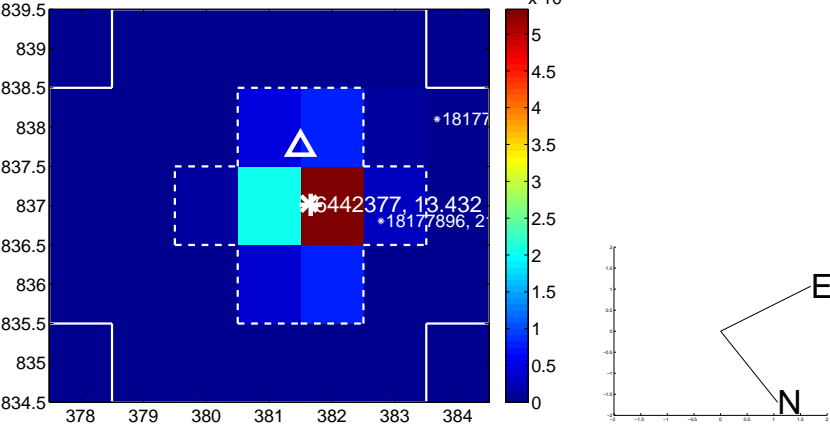
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



Q7 no difference image



Q7 no OOT image



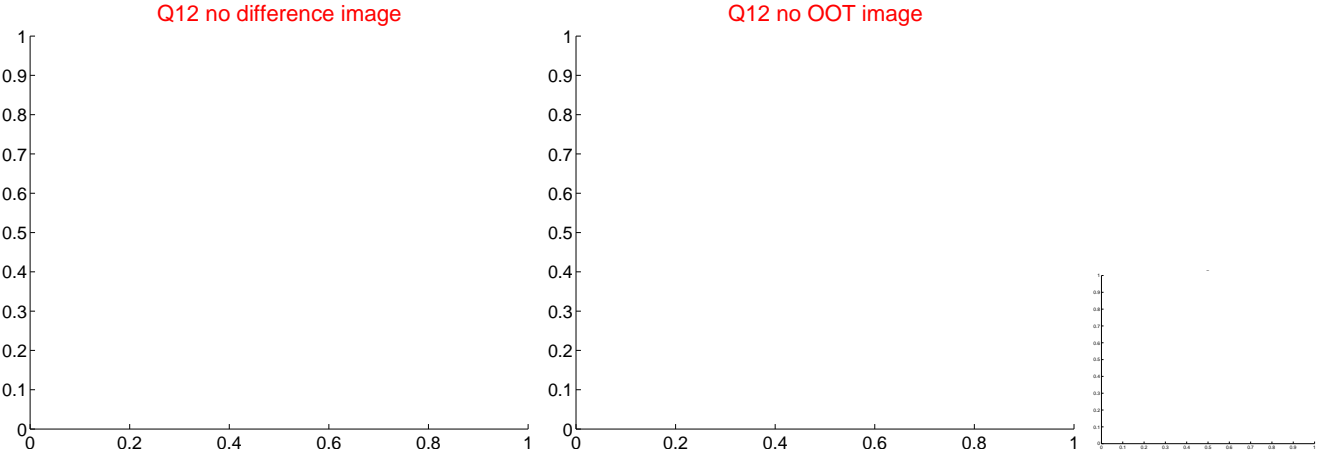
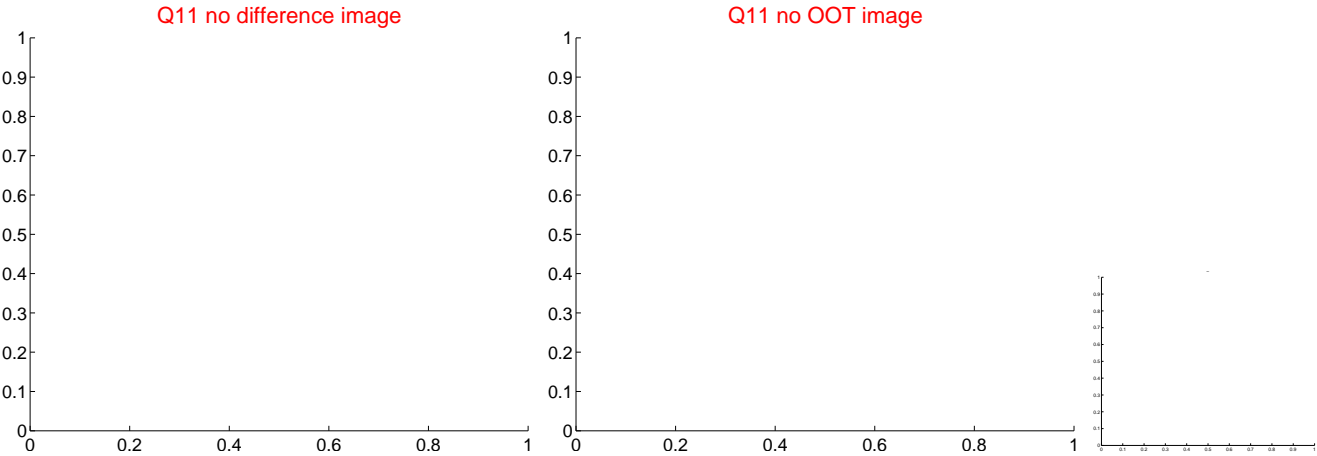
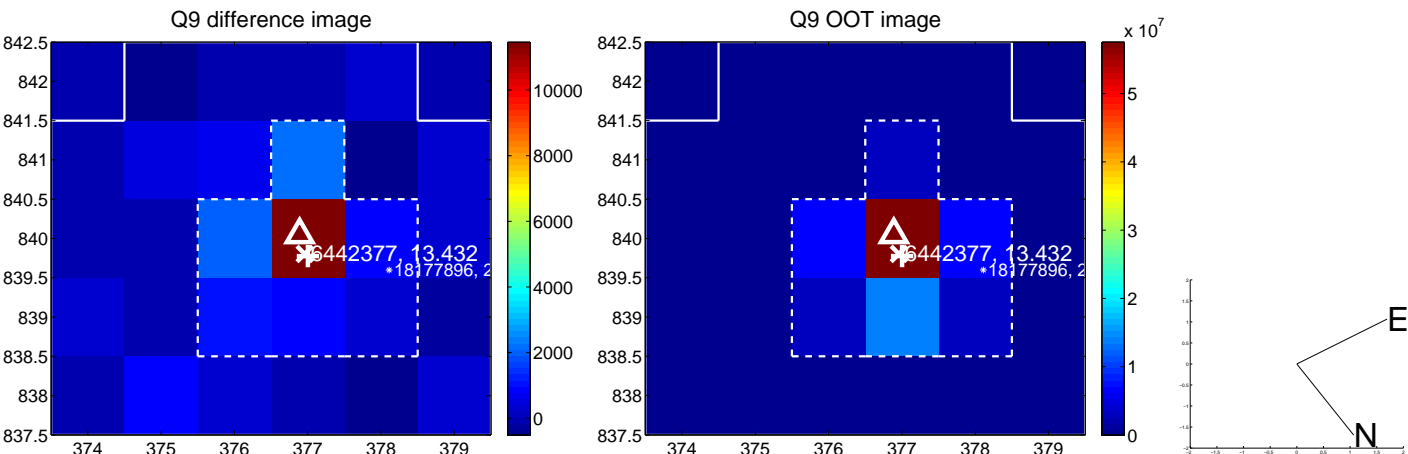
Q8 no difference image



Q8 no OOT image



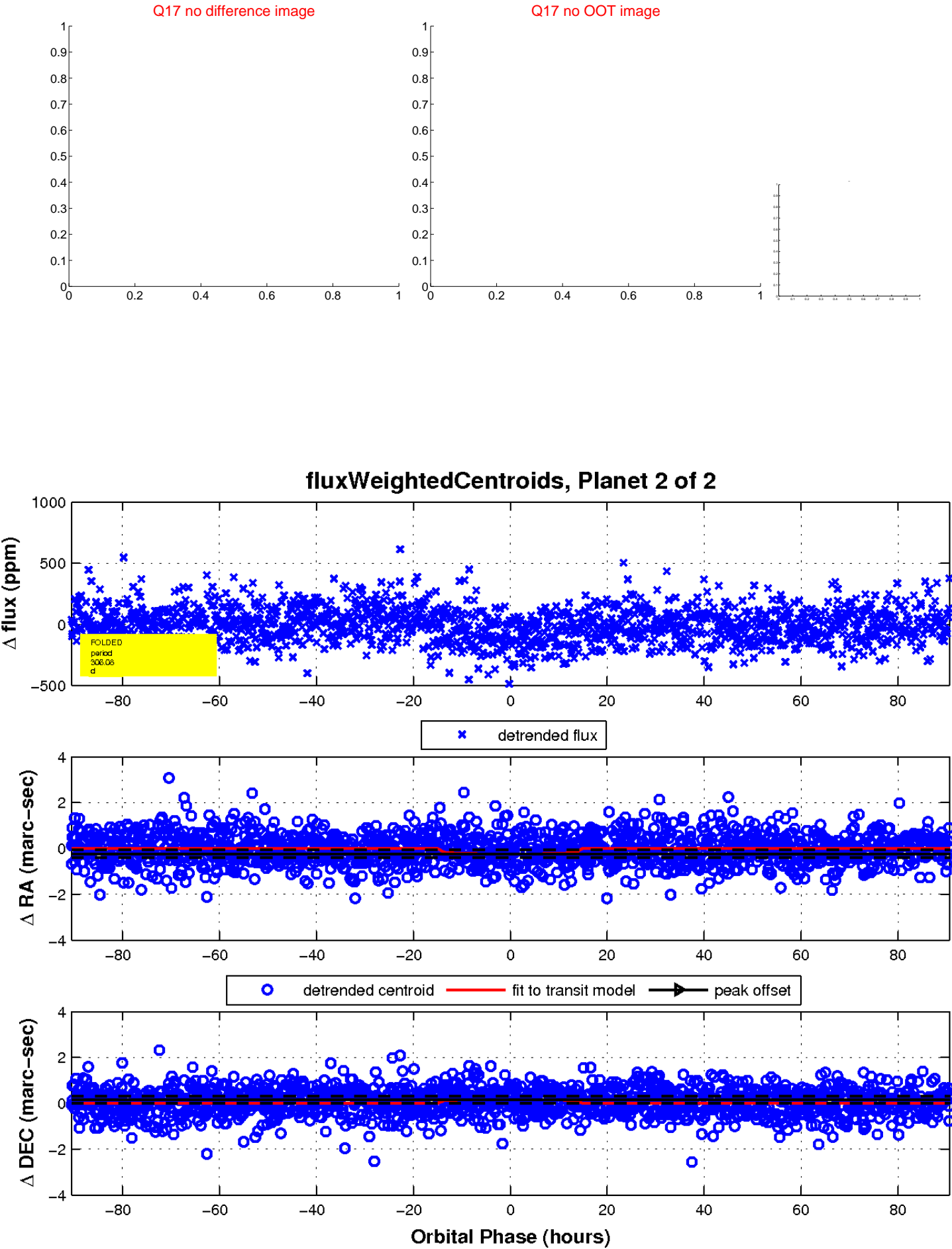
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

