

KIC 002437505

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})
002437505-01	OBS	2671.01	21.476346	149.260946	483169.6	3.500	221.2	-1.0	1.00	5780	54.56	43.72
002437505-02	OBS	No	21.476643	139.951199	15006.7	8.226	10.5	11.2	1.00	5780	13.45	43.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002437505-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_NOFITS
002437505-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

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 002437505-01

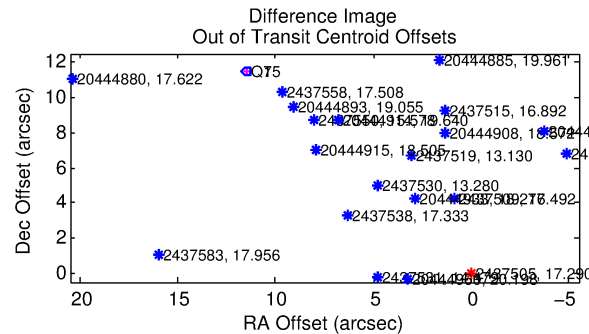
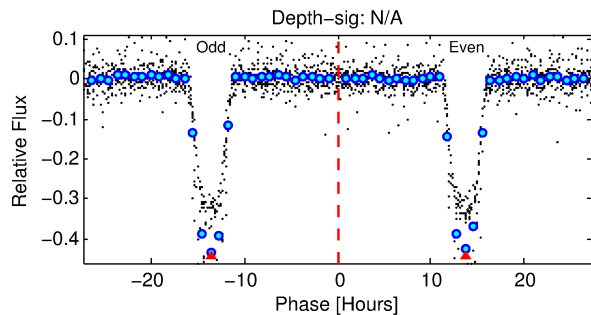
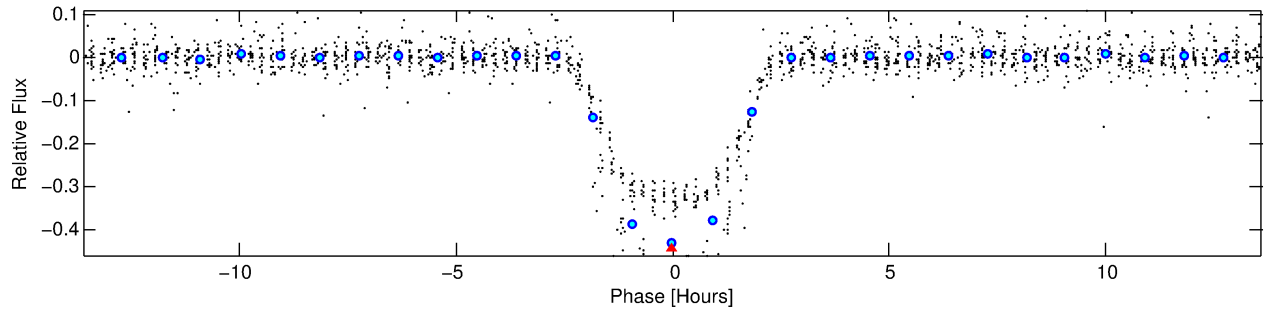
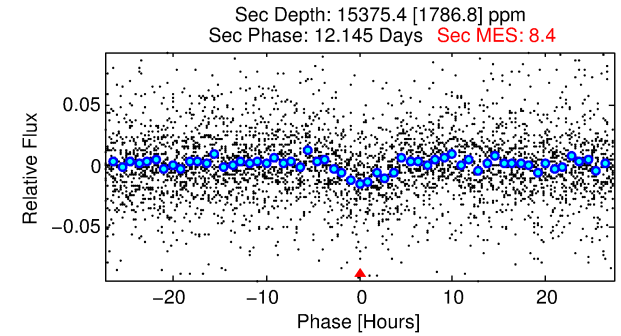
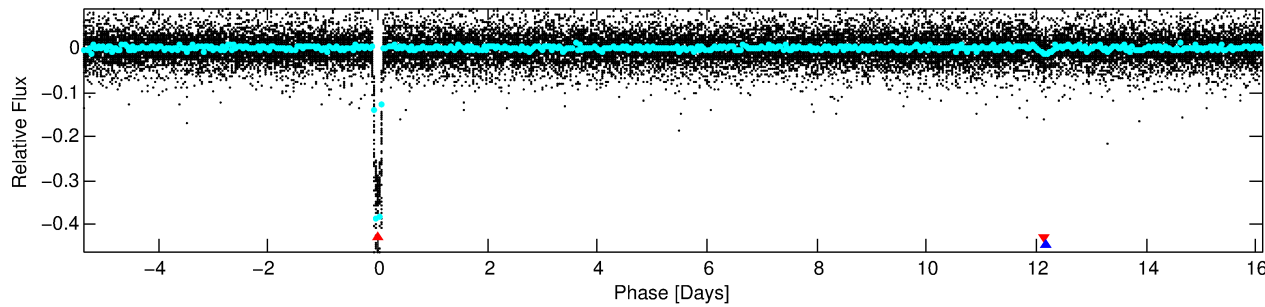
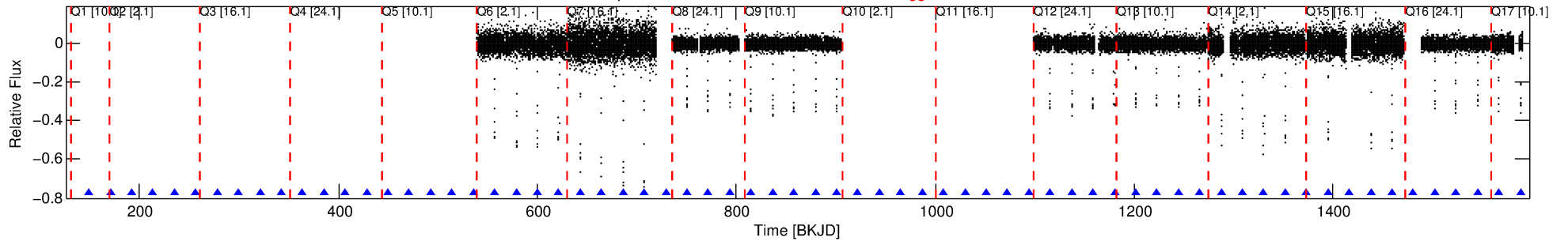
No Significant Match Found

DV One-Page Summary

KIC: 2437505 Candidate: 1 of 2 Period: 21.476 d

KOI: K02671.01 Corr: 0.851

Kp: 17.29 R*: 1.00 Rs Teff: 5780.0 K Logg: 4.44 Fe/H: 0.000



TPS TCE Results:

Period = 21.47635 d
Epoch = 149.2609 BKJD

DV fit results are unavailable

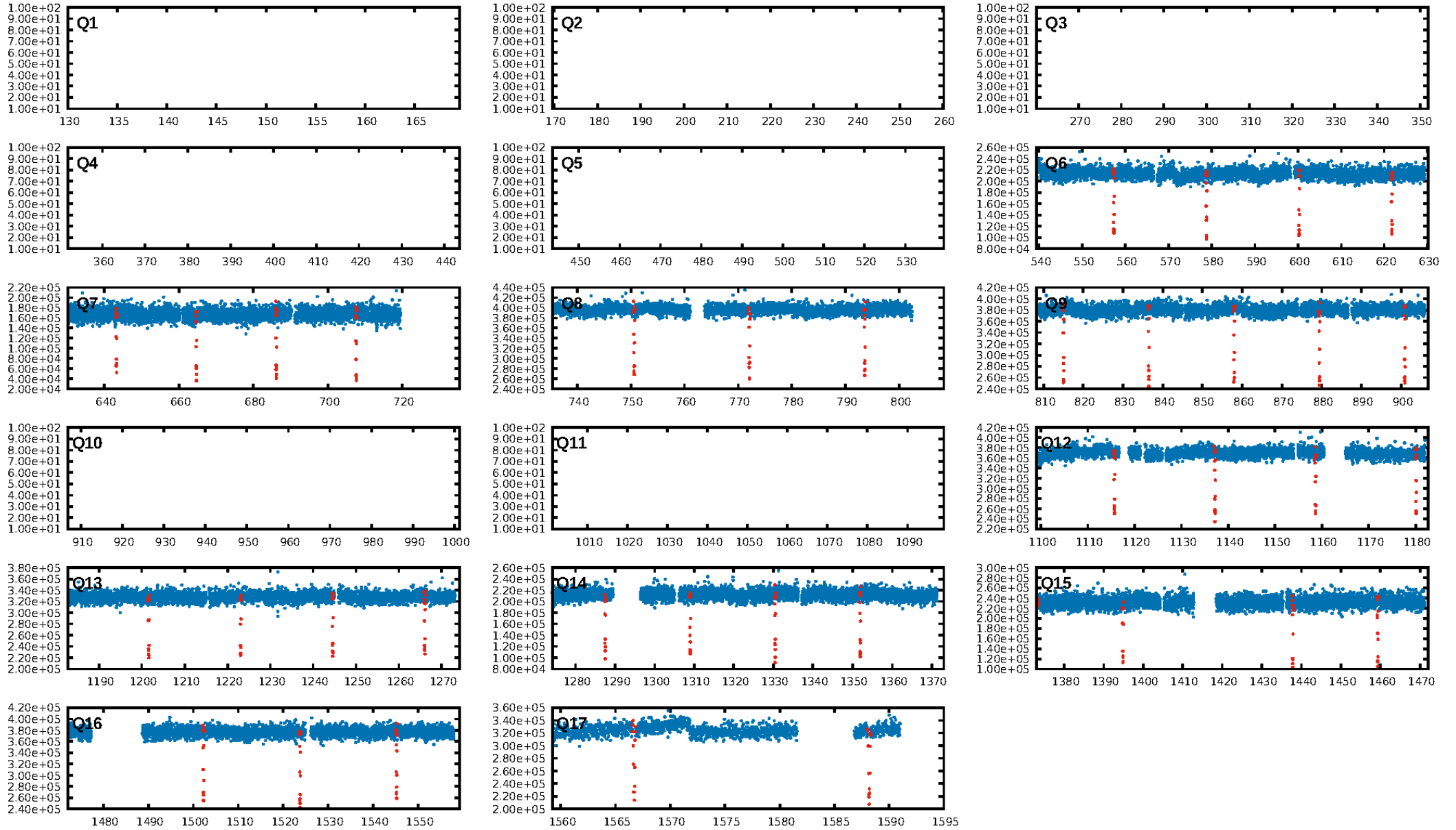
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [35/35]
GhostDiagnostic-chr: 2.705
Centroid-sig: 0.0%
Centroid-so: 0.694 arcsec [270.57σ]
OotOffset-rm: 16.230 arcsec [208.59σ]
KicOffset-rm: 0.971 arcsec [13.55σ]
OotOffset-st: 0/2/0/0 [2]
KicOffset-st: 2/2/3/3 [10]
DiffImageQuality-fgm: 1.00 [10/10]
DiffImageOverlap-fno: 1.00 [10/10]

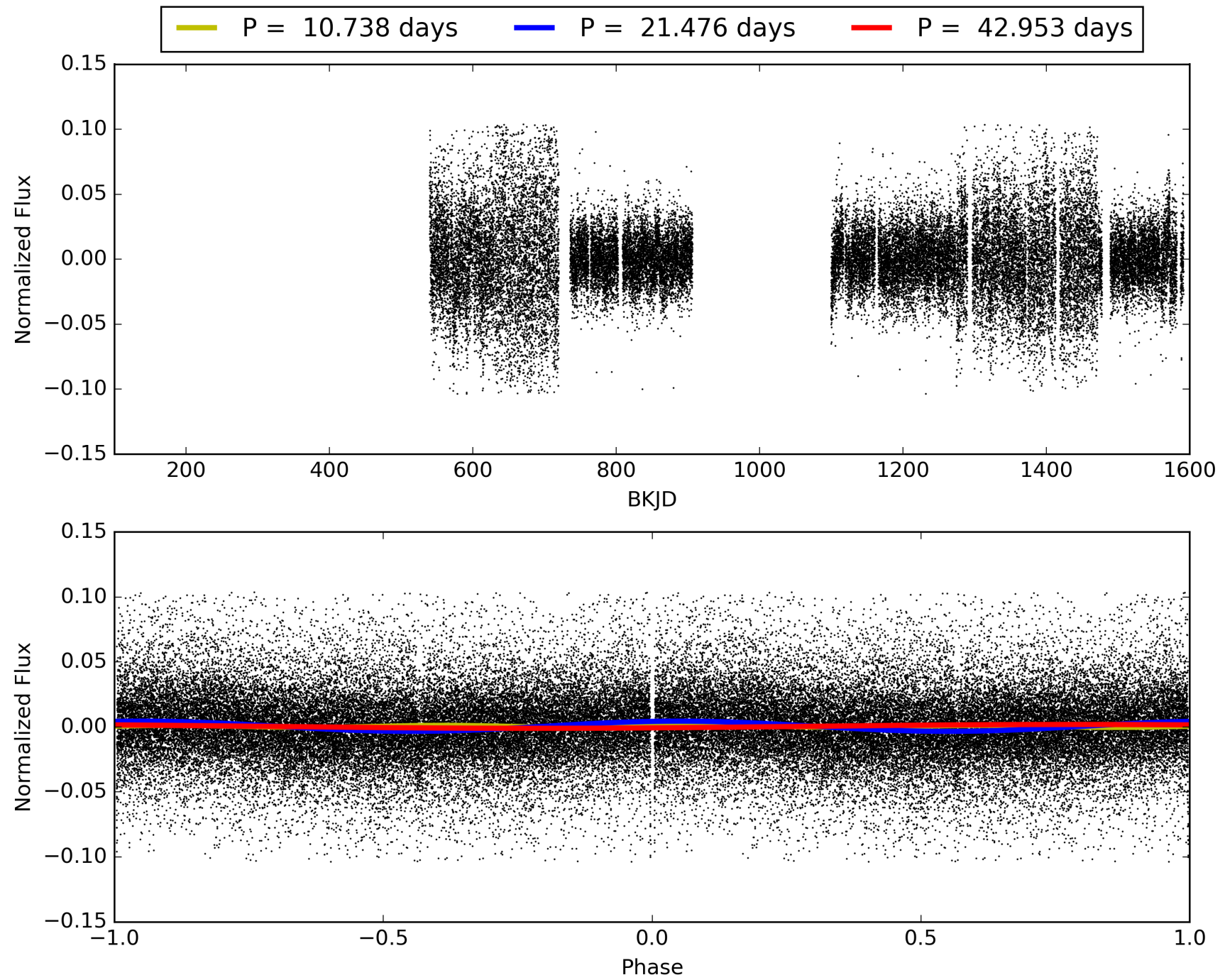
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:40:53 Z

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

TCE 002437505-01, PDC Light Curves

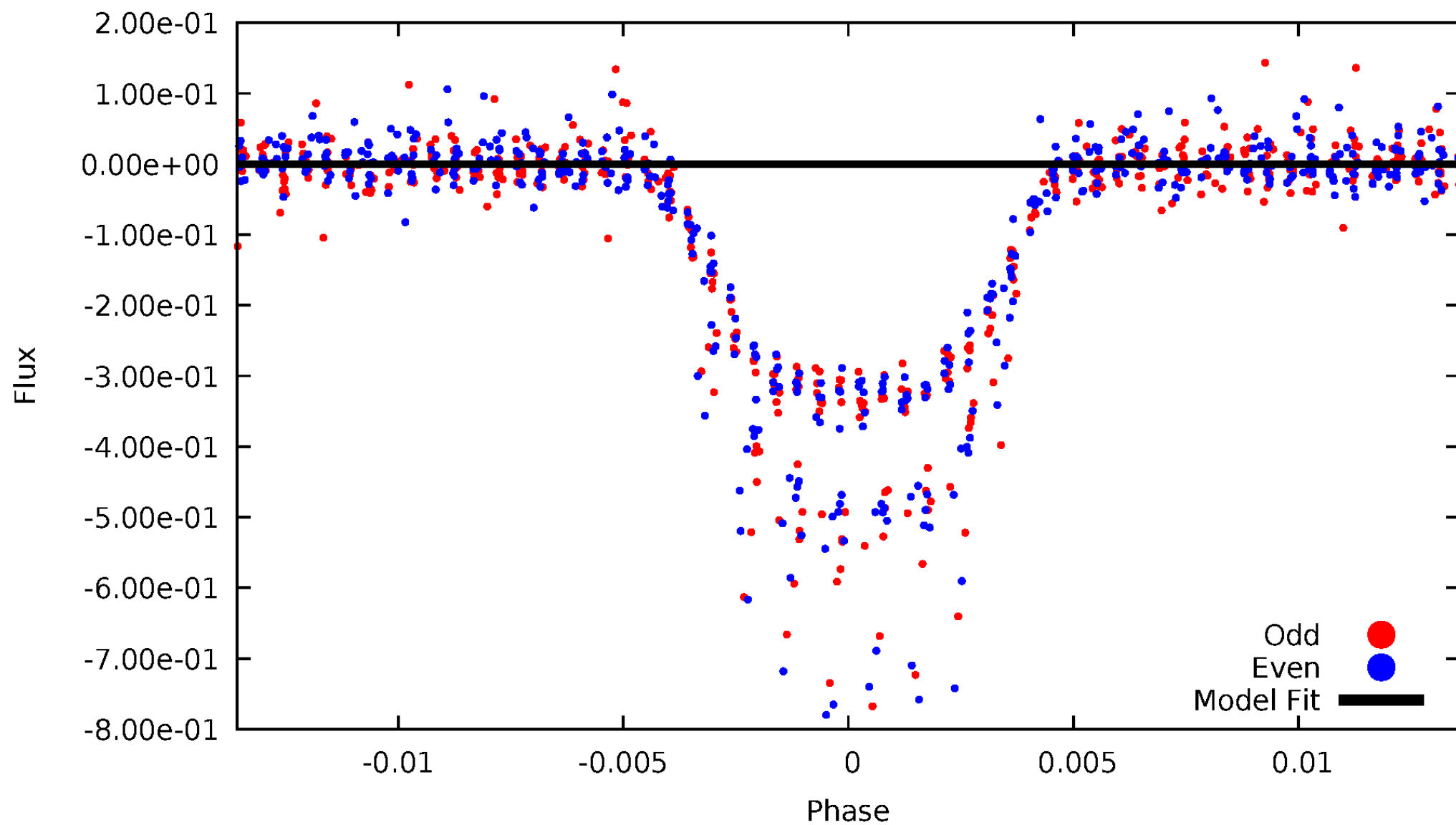


TCE 002437505-01



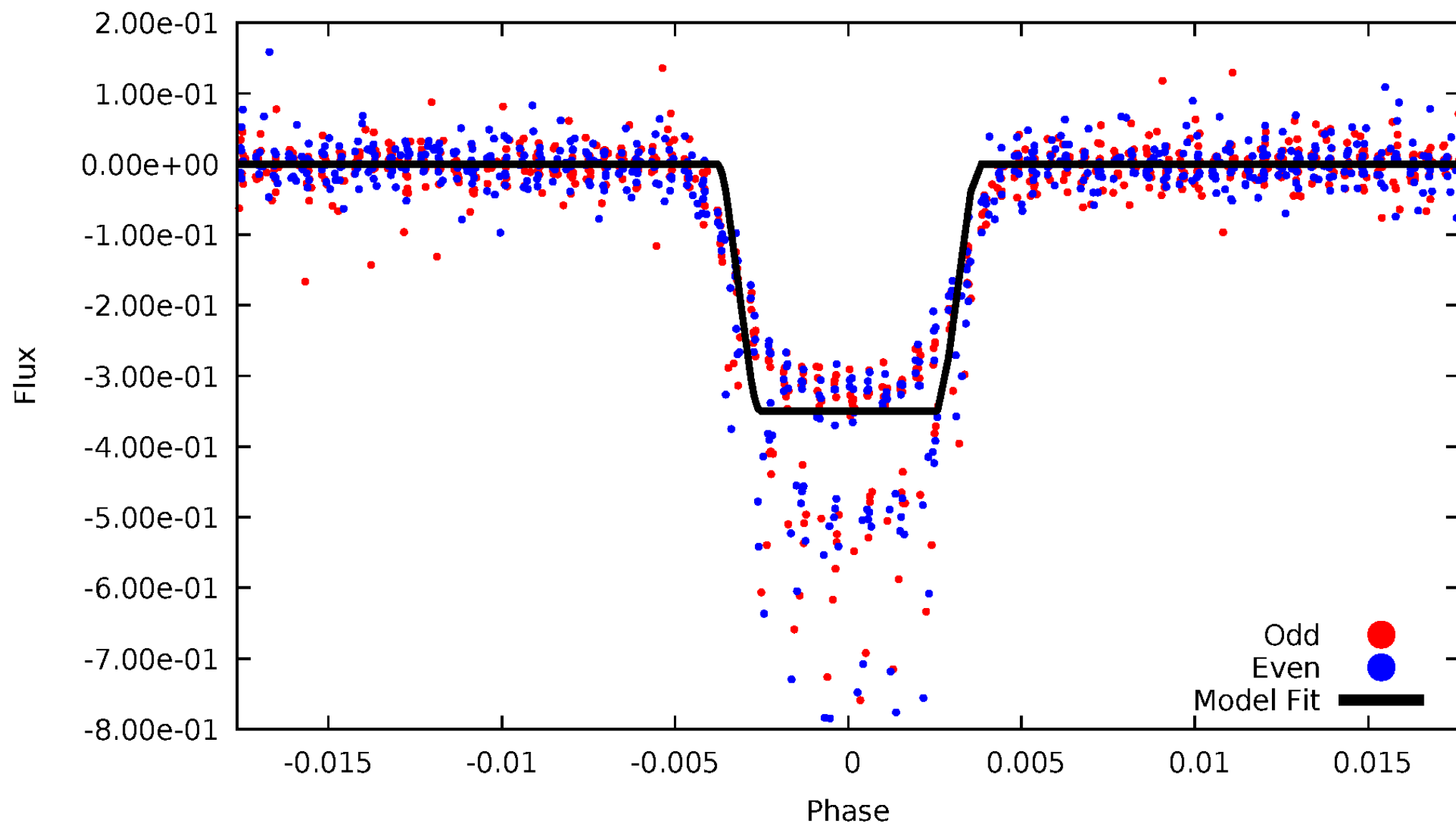
DV Odd/Even

TCE 002437505-01



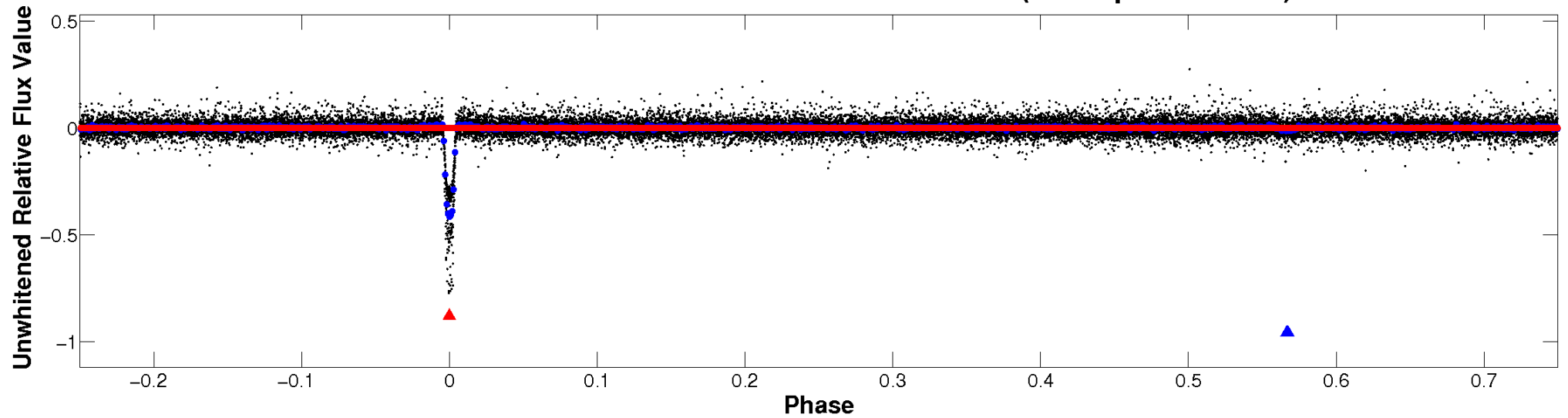
ALT Odd/Even

TCE 002437505-01



Non-Whitened Vs. Whitened Light Curve

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

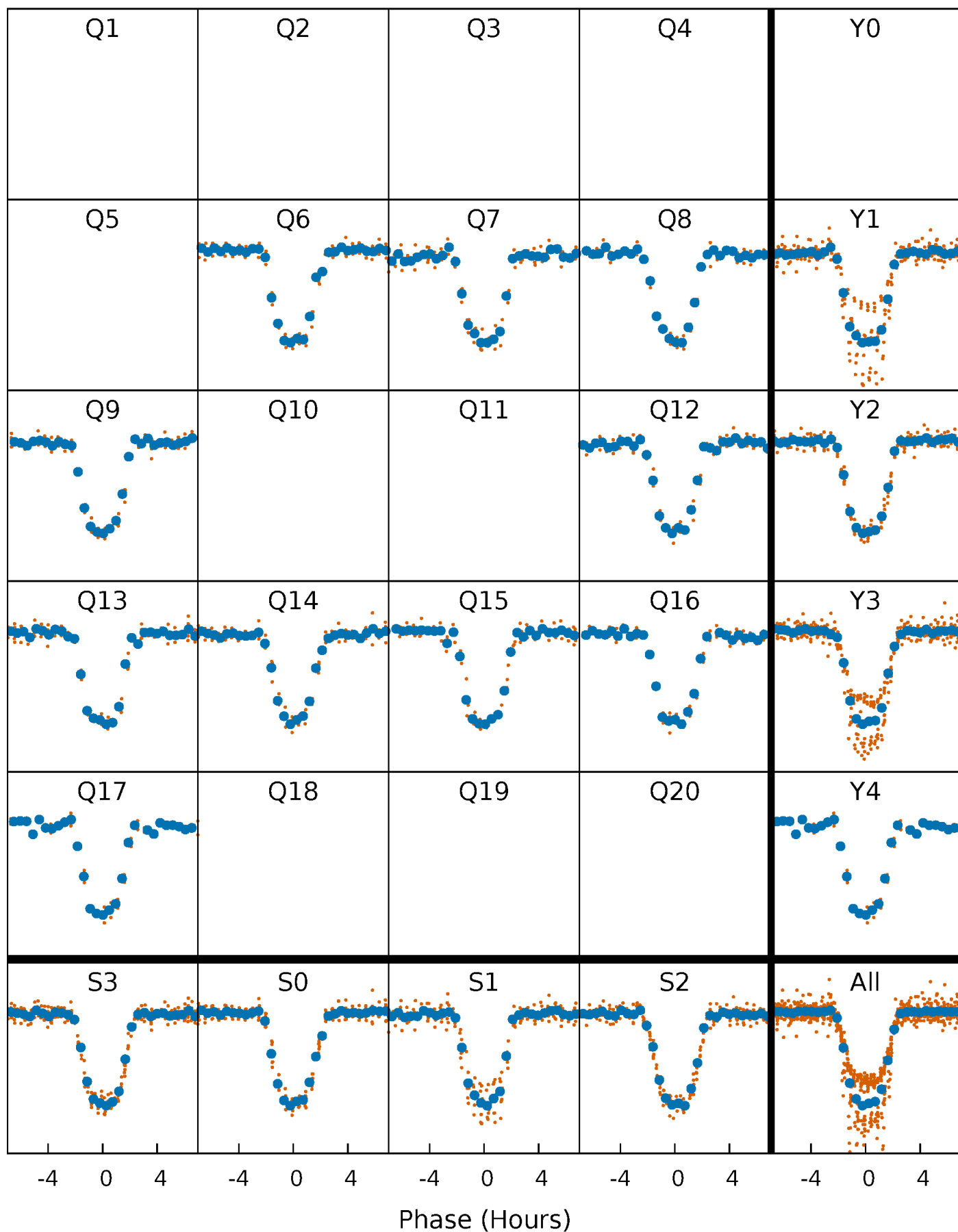


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



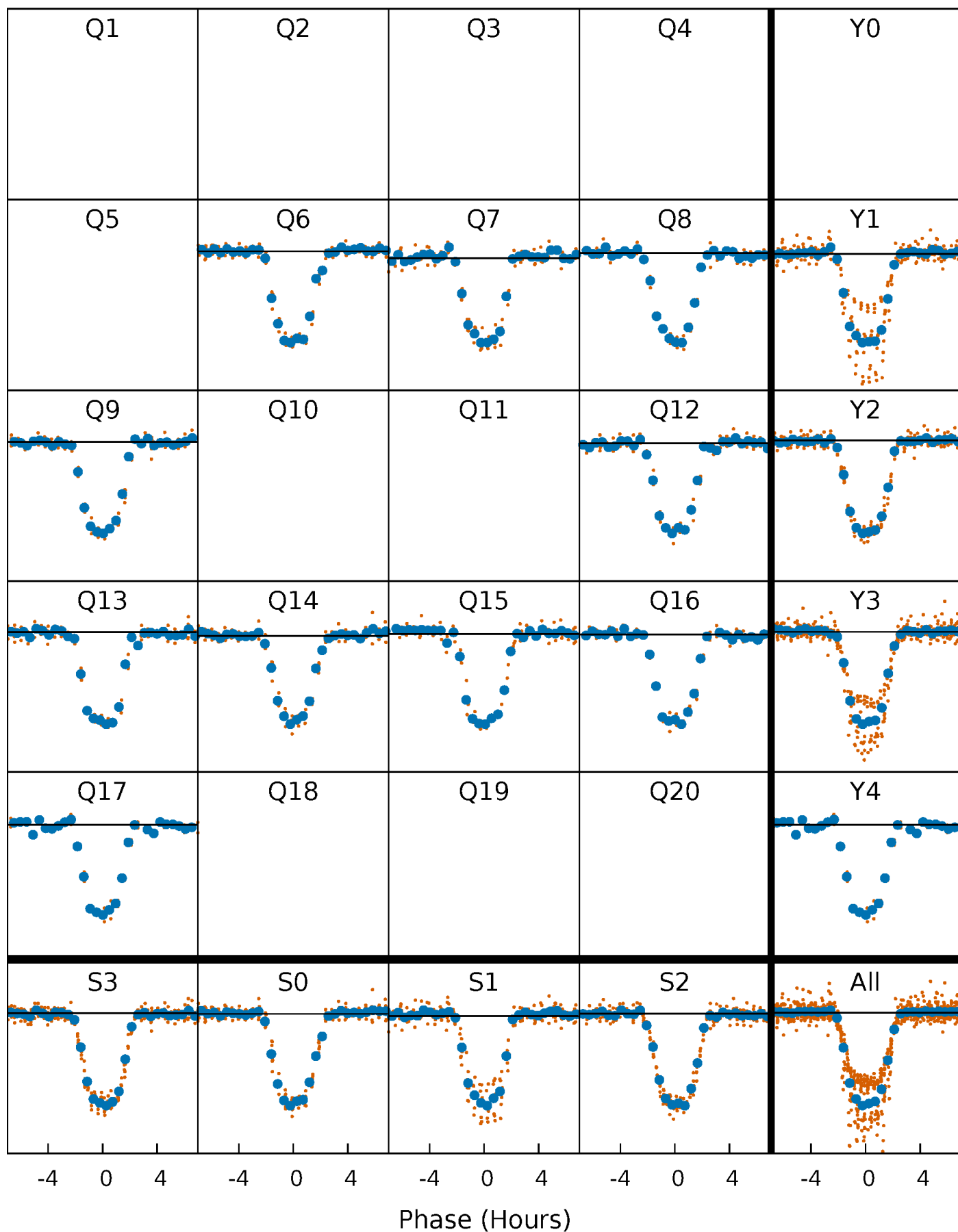
PDC Quarter-Phased Transit Curves

TCE 002437505-01 P= 21.476346 Days $T_0=149.260946$ (BKJD)



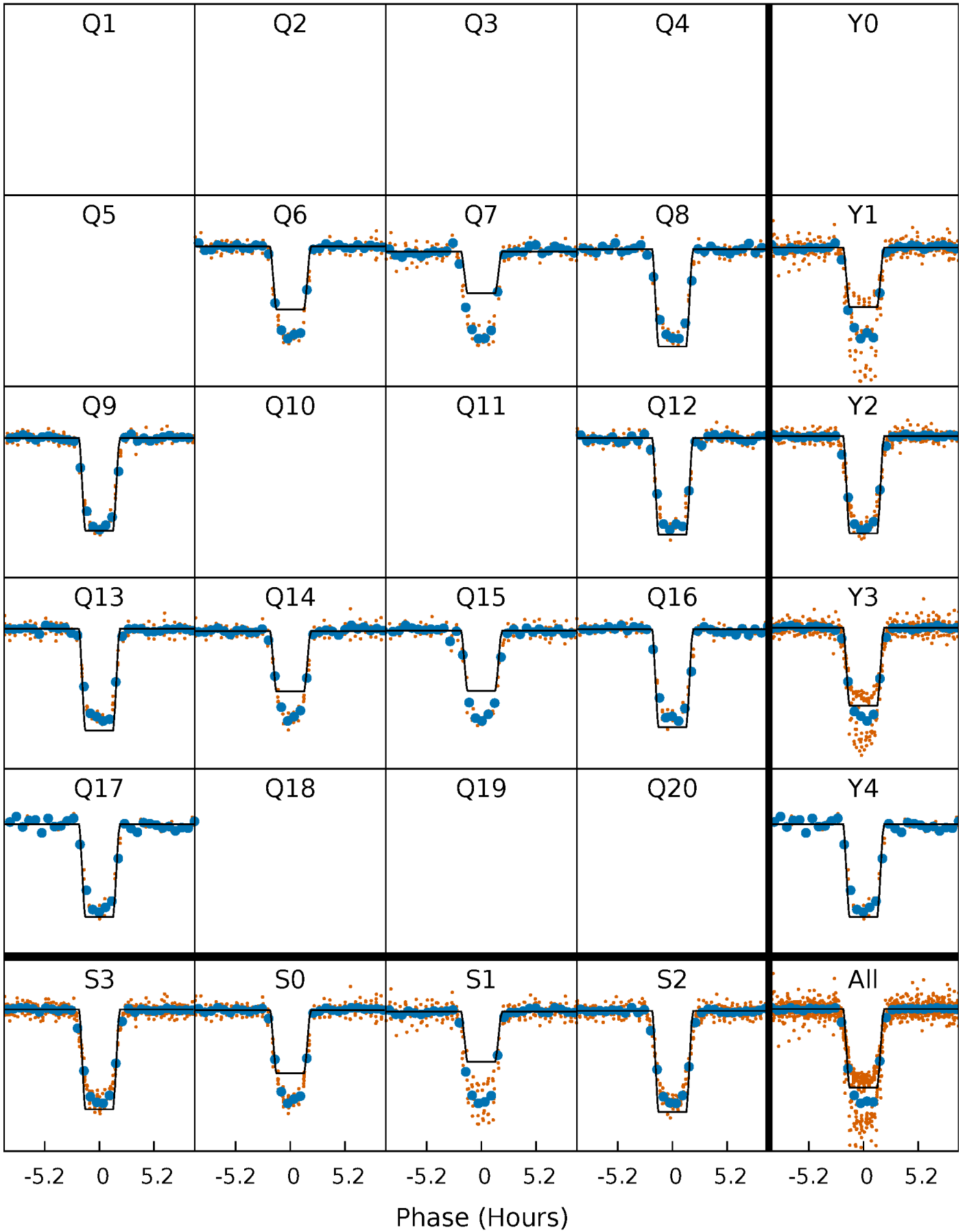
DV Quarter-Phased Transit Curves

TCE 002437505-01 P= 21.476346 Days $T_0=149.260946$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

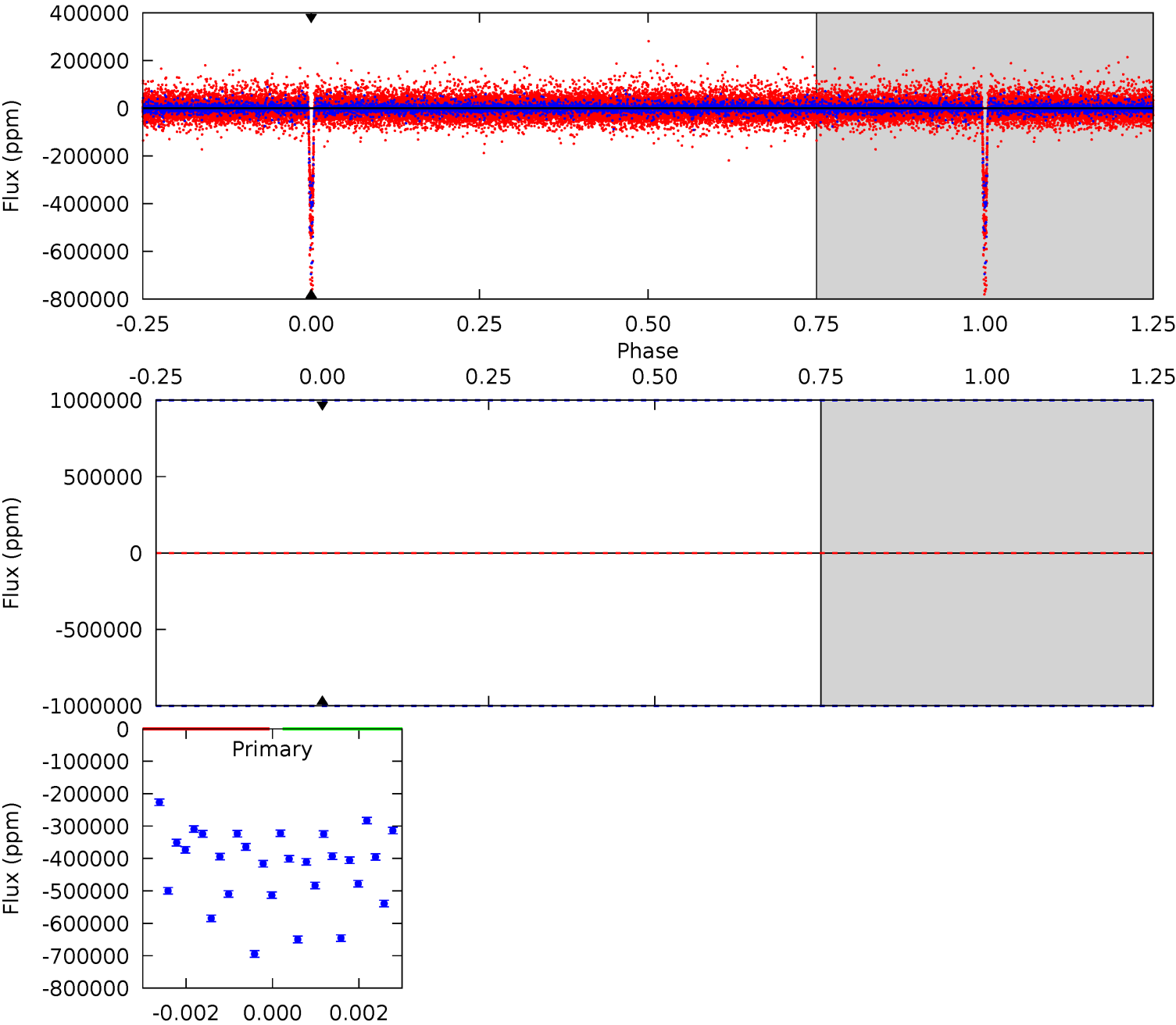
TCE 002437505-01 P= 21.476346 Days $T_0=149.265135$ (BKJD)



DV Model-Shift Uniqueness Test

002437505-01, P = 21.476346 Days, E = 149.260946 Days

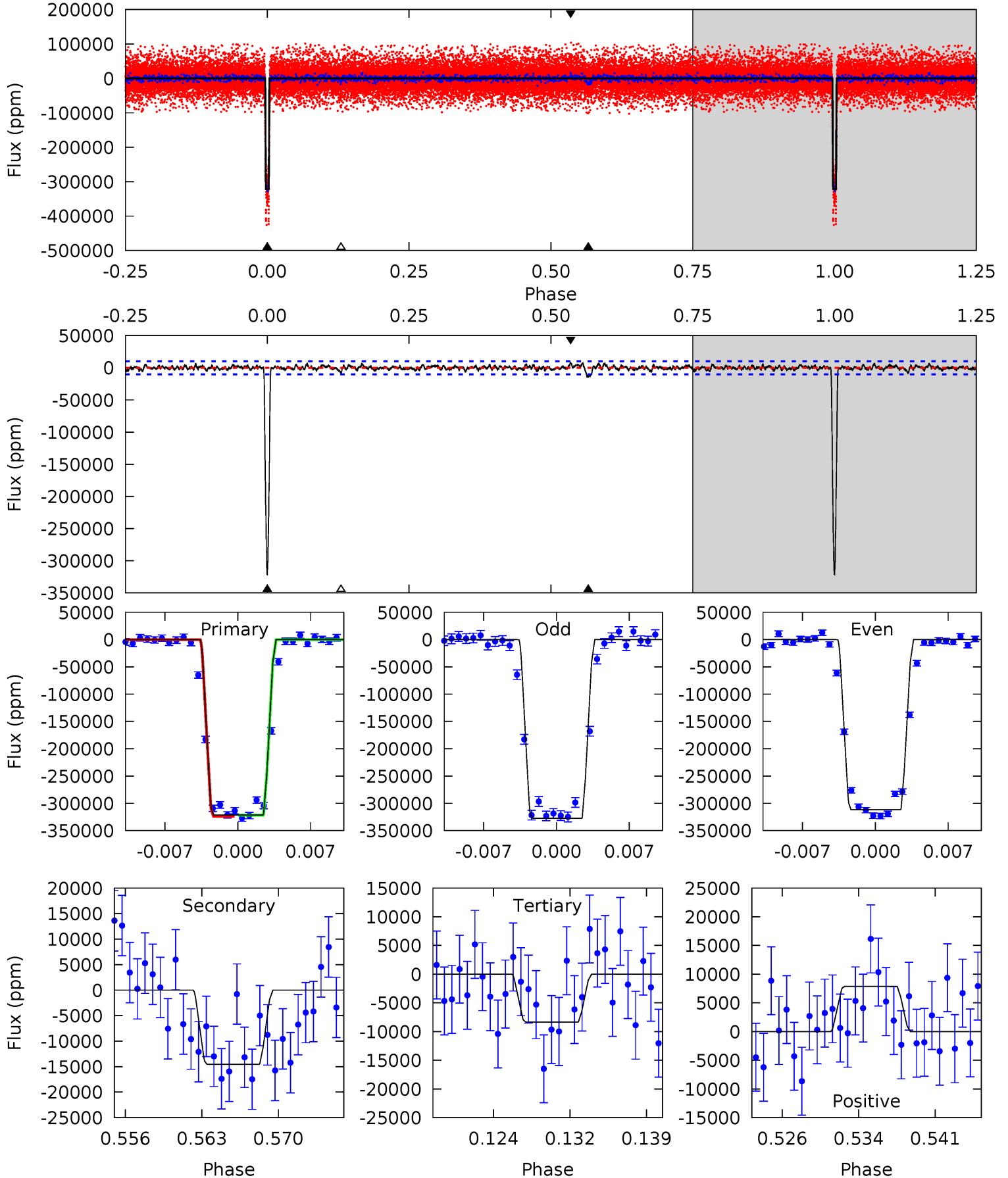
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

002437505-01, P = 21.476346 Days, E = 149.265135 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
162.5	7.35	4.22	3.98	5.09	2.68	1.16	158.3	158.5	3.13	3.36	4.00	1.24	0.02	0



Stellar Parameters For KIC 002437505

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

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

Secondary Eclipse Parameters for KIC 002437505-01 / KOI 2671.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$54.43^{+11.53}_{-12.24}$	916^{+47}_{-42}	2058^{+2809}_{-6753}	$1.454^{+494.138}_{-422.191}$
Alt.	-14529 ± 1978	$64.17^{+11.74}_{-11.14}$	917^{+41}_{-41}	3216^{+203}_{-178}	46^{+22}_{-15}

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 $A_{obs} \gg 1.0$

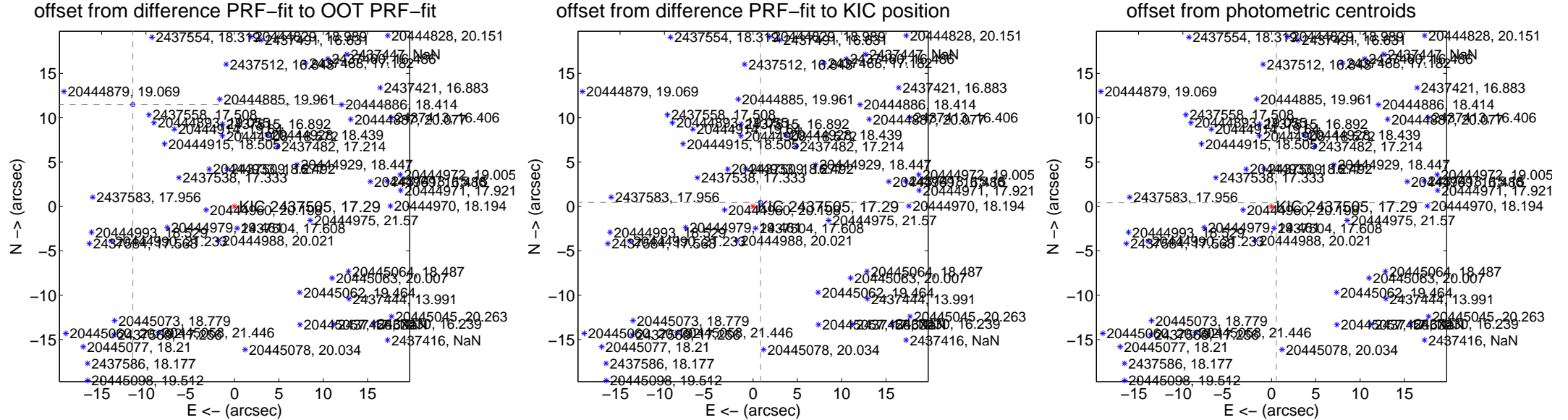
DV Centroid Data

Supplemental centroid analysis for 002437505-01. Kepler magnitude: 17.29. Transit SNR -1.00

There are 10 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 16.41 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	16.230 \pm 0.078	208.59	11.479 \pm 0.075	11.474 \pm 0.081
PRF-fit source offset from KIC position	0.971 \pm 0.072	13.55	-0.847 \pm 0.070	0.476 \pm 0.072
photometric centroid source offset	0.69 \pm 0.00	270.57	-0.54 \pm 0.00	0.43 \pm 0.00

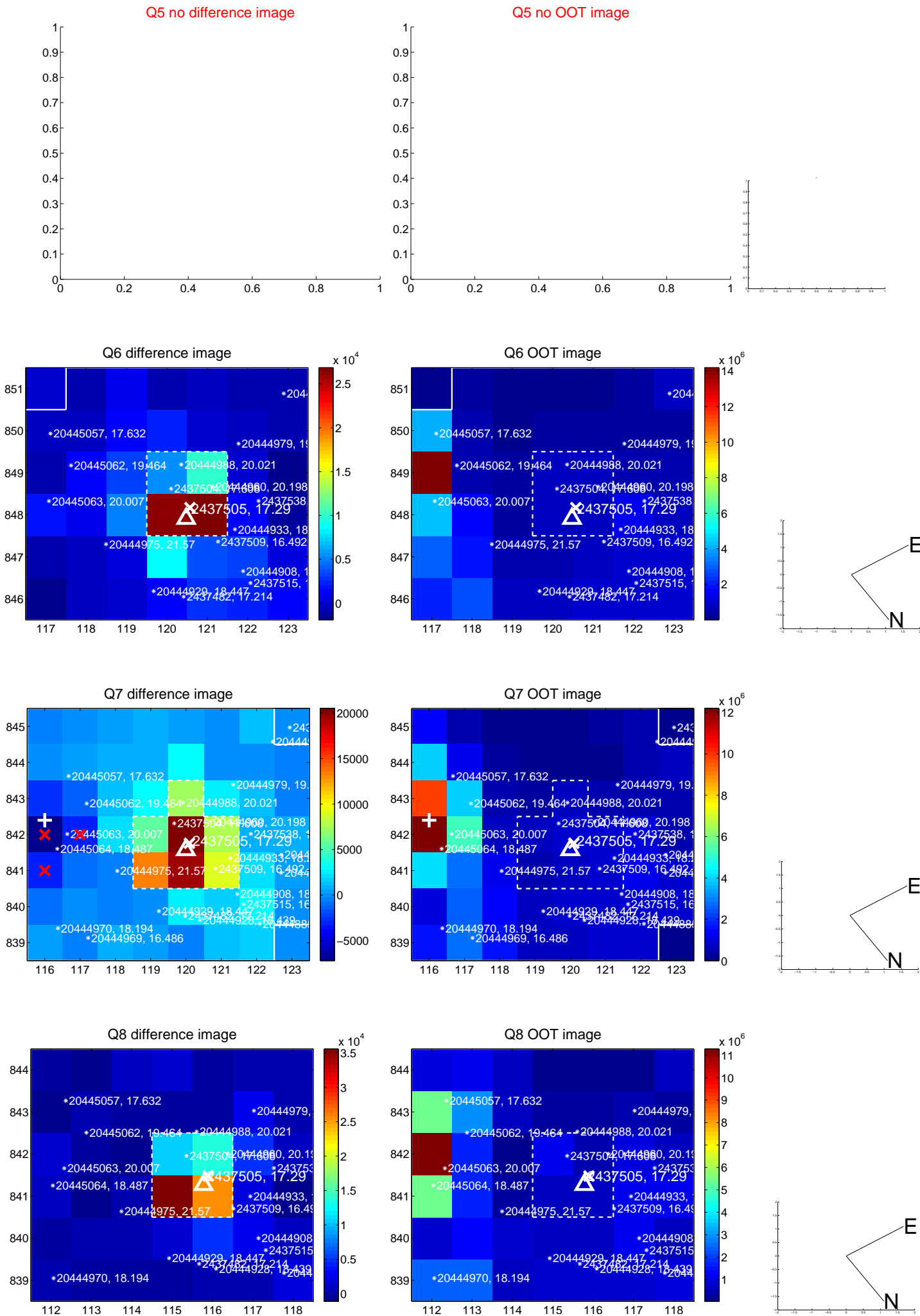


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

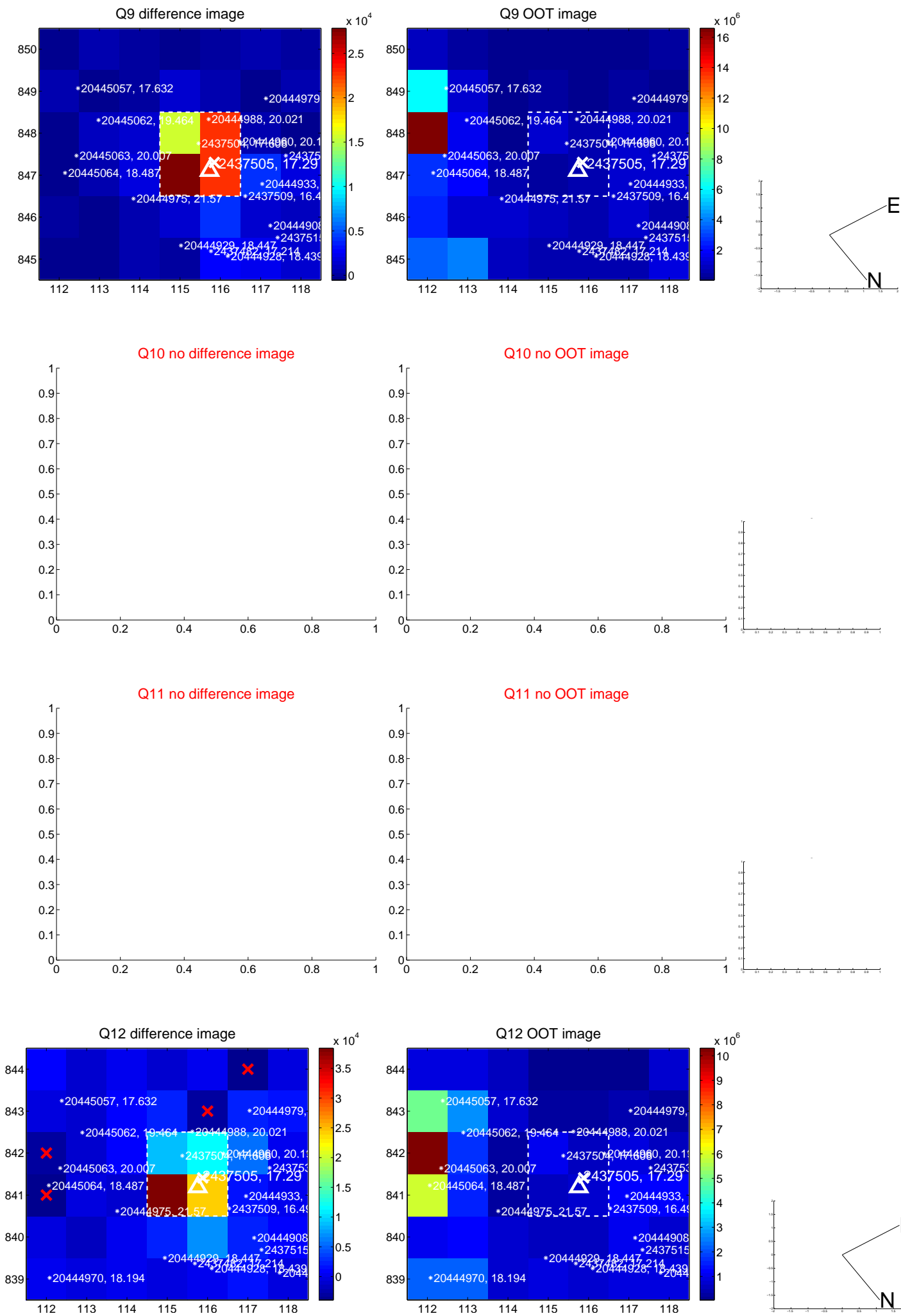
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



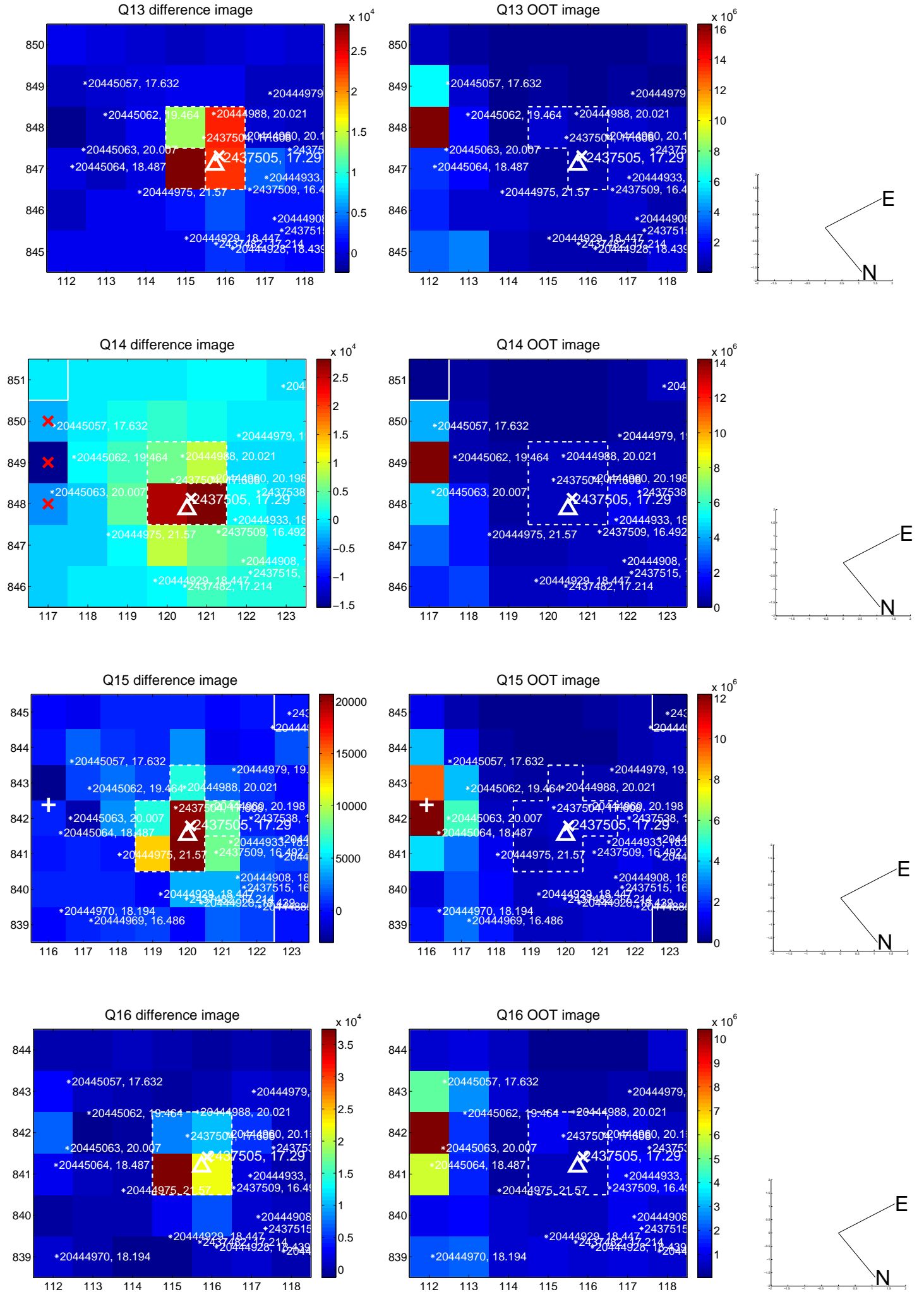
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



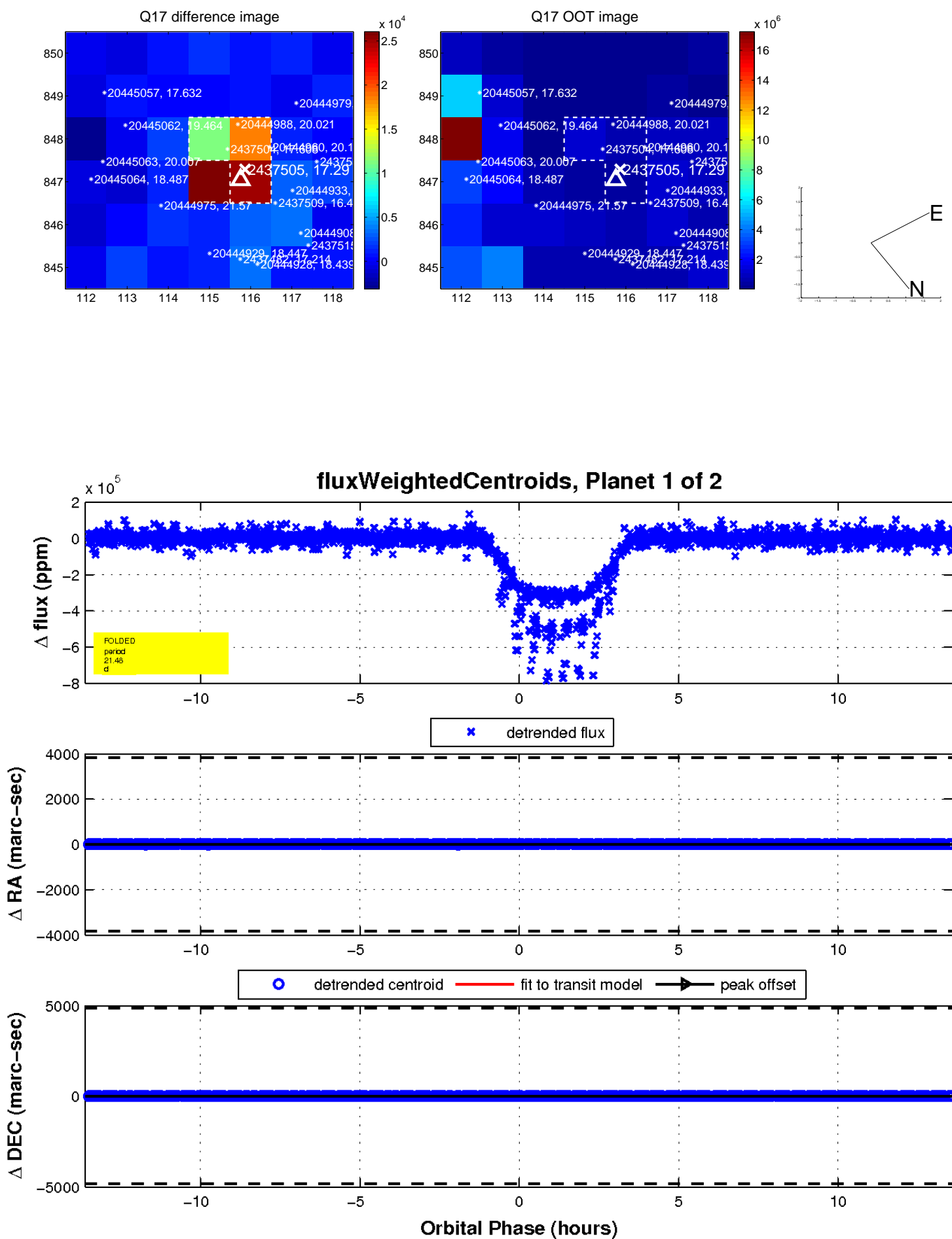
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

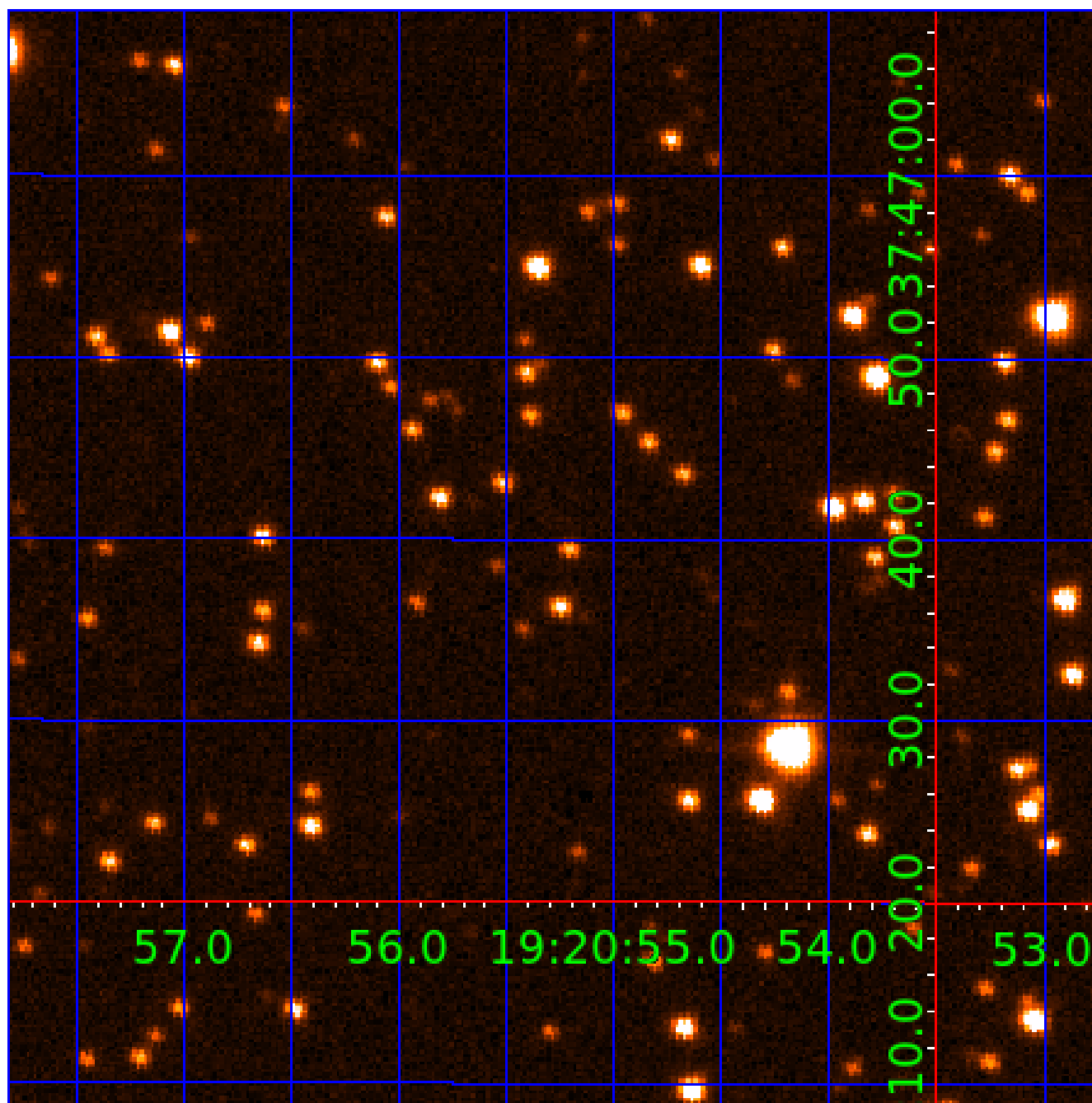


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002437505

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})
002437505-01	OBS	2671.01	21.476346	149.260946	483169.6	3.500	221.2	-1.0	1.00	5780	54.56	43.72
002437505-02	OBS	No	21.476643	139.951199	15006.7	8.226	10.5	11.2	1.00	5780	13.45	43.72

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002437505-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—SEASONAL_DEPTH_ALT—CENT_NOFITS
002437505-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

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.

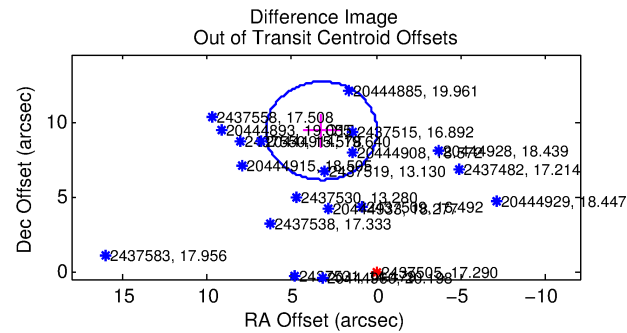
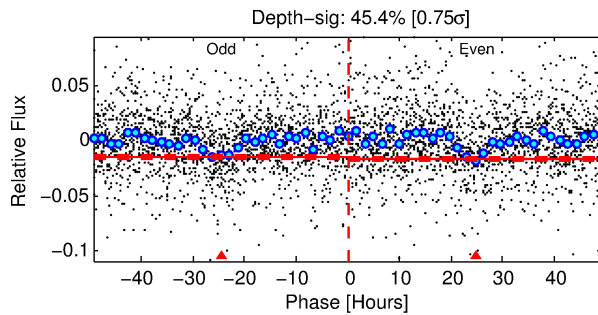
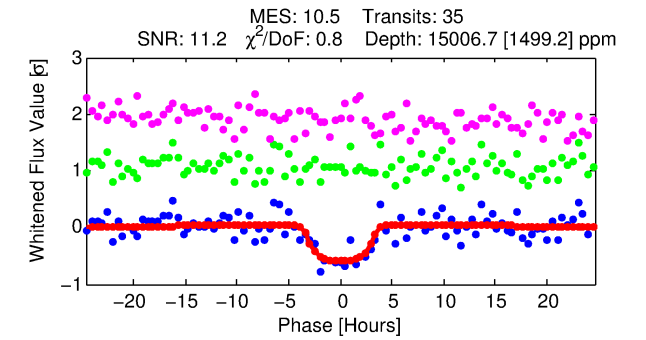
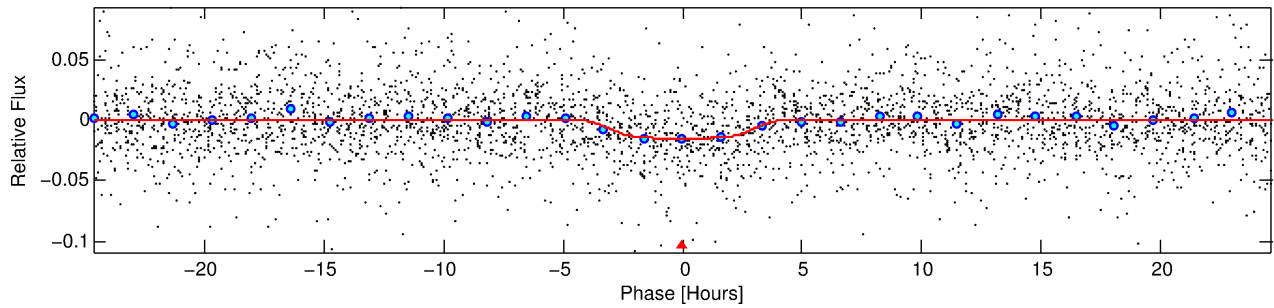
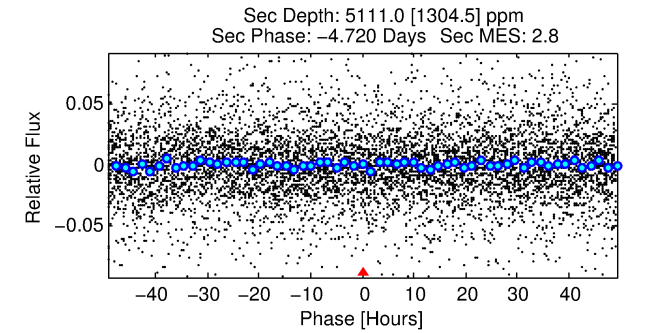
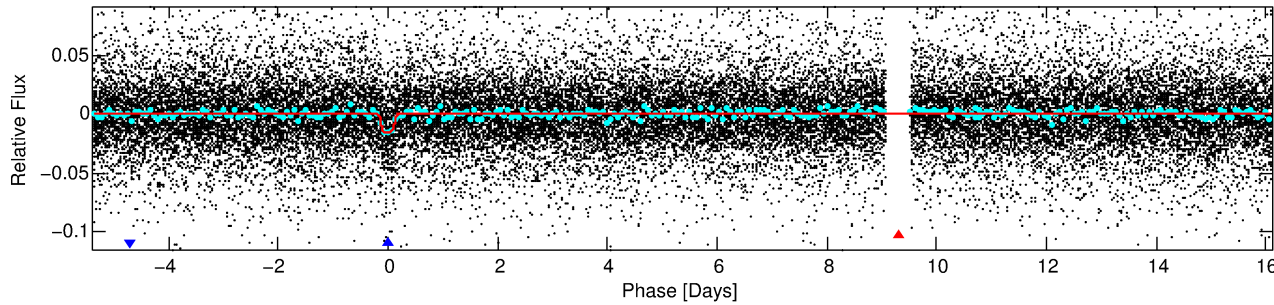
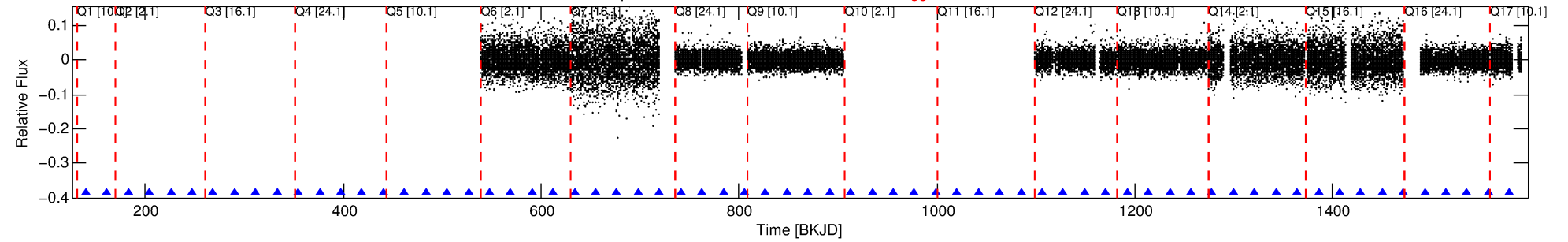
Ephemeris Match Information For 002437505-02

No Significant Match Found

DV One-Page Summary

KIC: 2437505 Candidate: 2 of 2 Period: 21.477 d
KOI: K02671 Corr: No Ephemeris Match

Kp: 17.29 R*: 1.00 Rs Teff: 5780.0 K Logg: 4.44 Fe/H: 0.000



DV Fit Results:

Period = 21.47664 [0.00058] d
Epoch = 139.9512 [0.0280] BKJD
Rp/R* = 0.1232 [0.0118]
a/R* = 16.41 [4.41]
b = 0.77 [0.15]
Seff = 43.72 [0.00]
Teq = 656 [0] K
Rp = 13.45 [1.29] Re
a = 0.1512 [0.0000] AU
Ag = 355.71 [113.52] [3.12σ]
Teffp = 4403 [351] K [10.67σ]

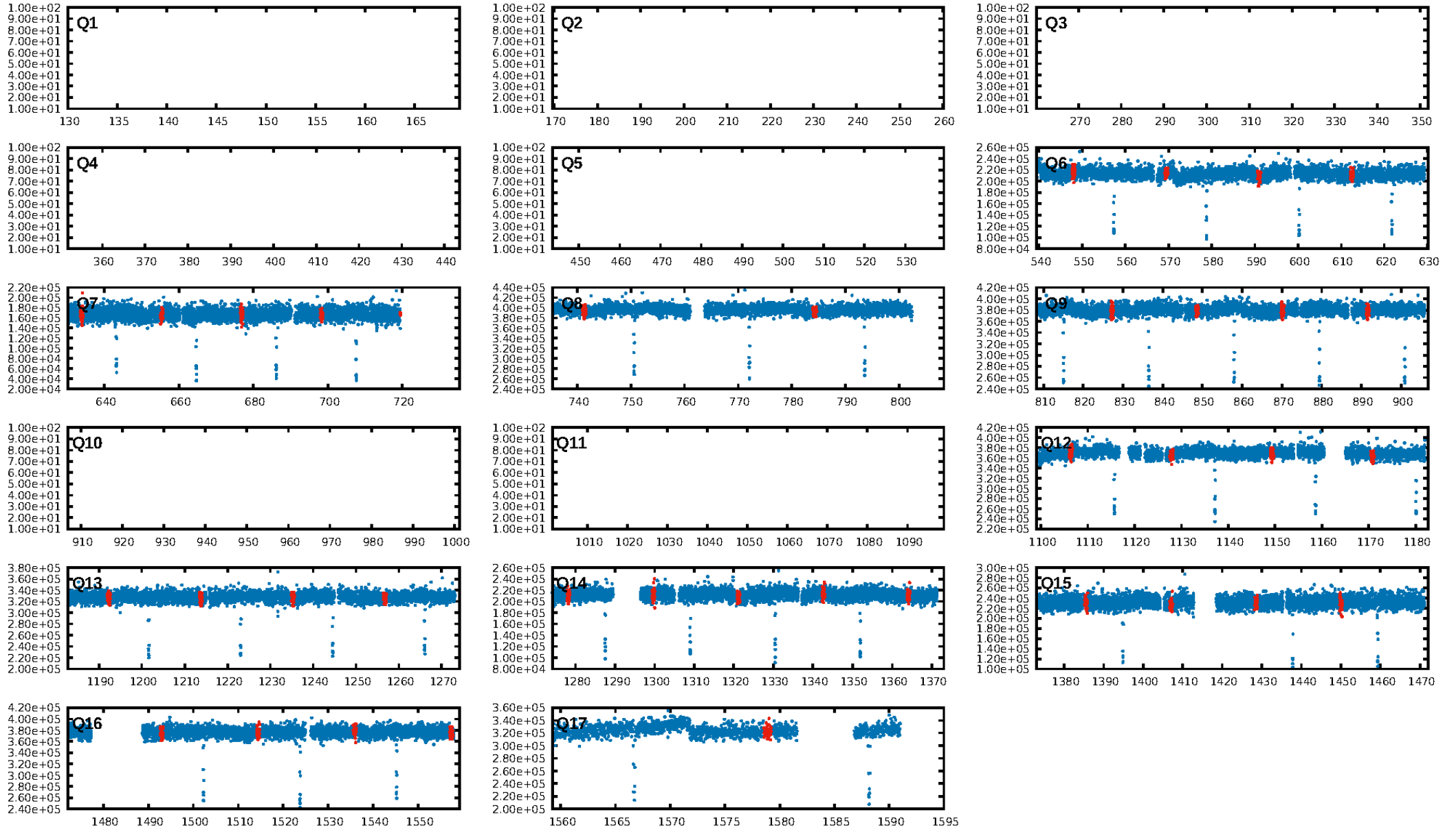
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 96.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.67e-27
RollingBand-fgt: 1.00 [34/34]
GhostDiagnostic-chr: 2.017
Centroid-sig: 0.4%
Centroid-so: 0.765 arcsec [15.61σ]
OotOffset-rm: 9.942 arcsec [9.10σ]
KicOffset-rm: 6.774 arcsec [1.81σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [10/10]

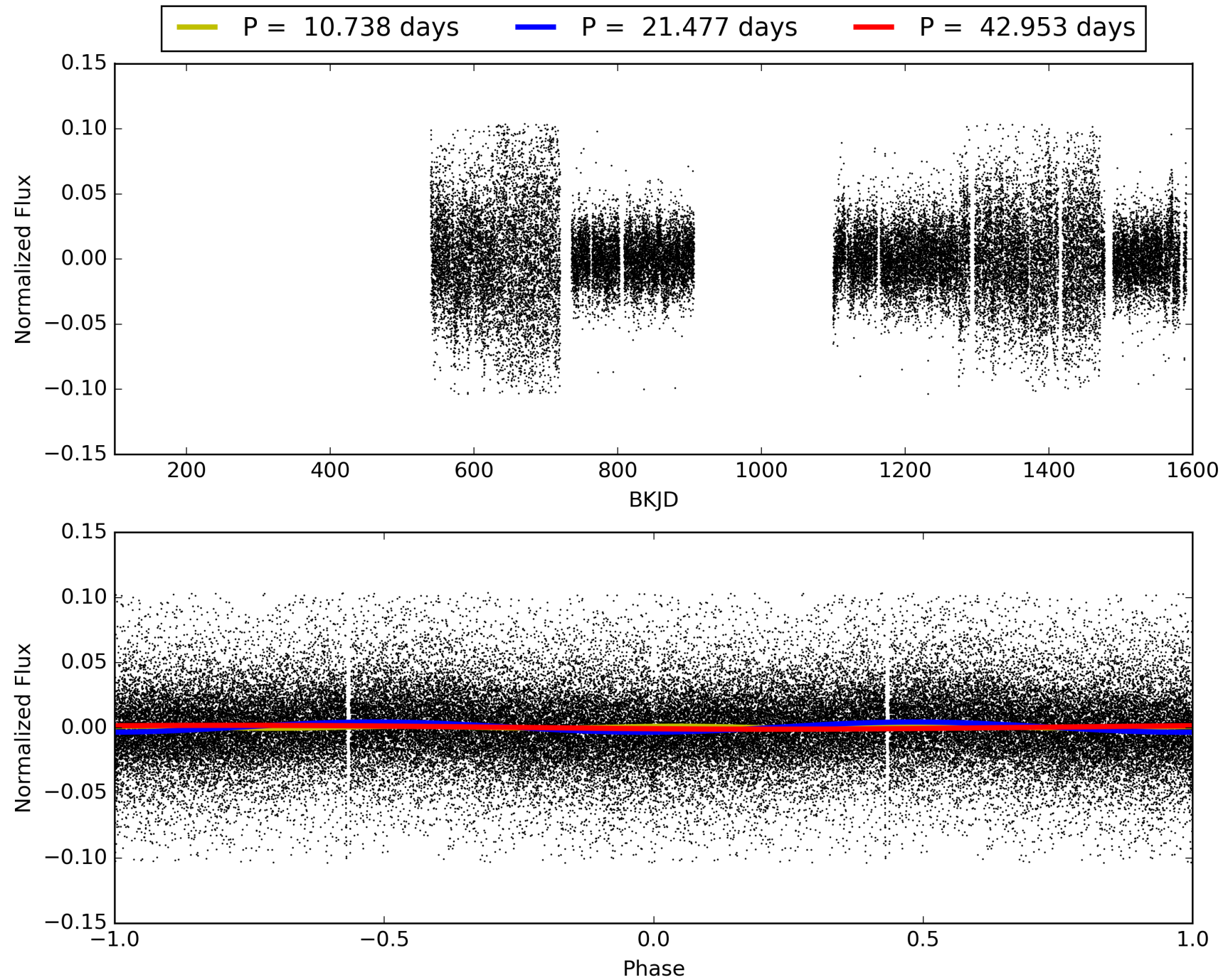
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:40:58 Z

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

TCE 002437505-02, PDC Light Curves

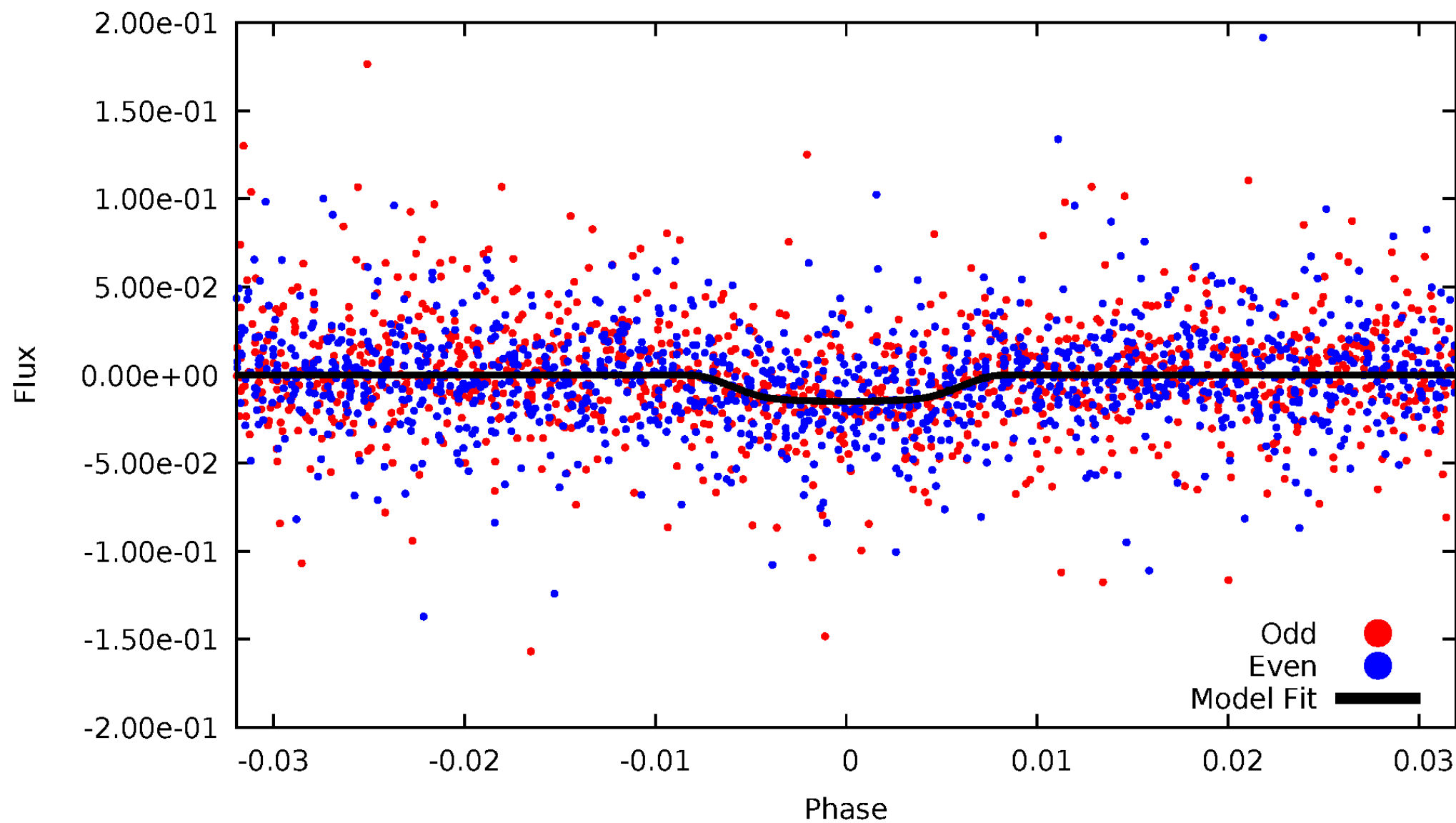


TCE 002437505-02



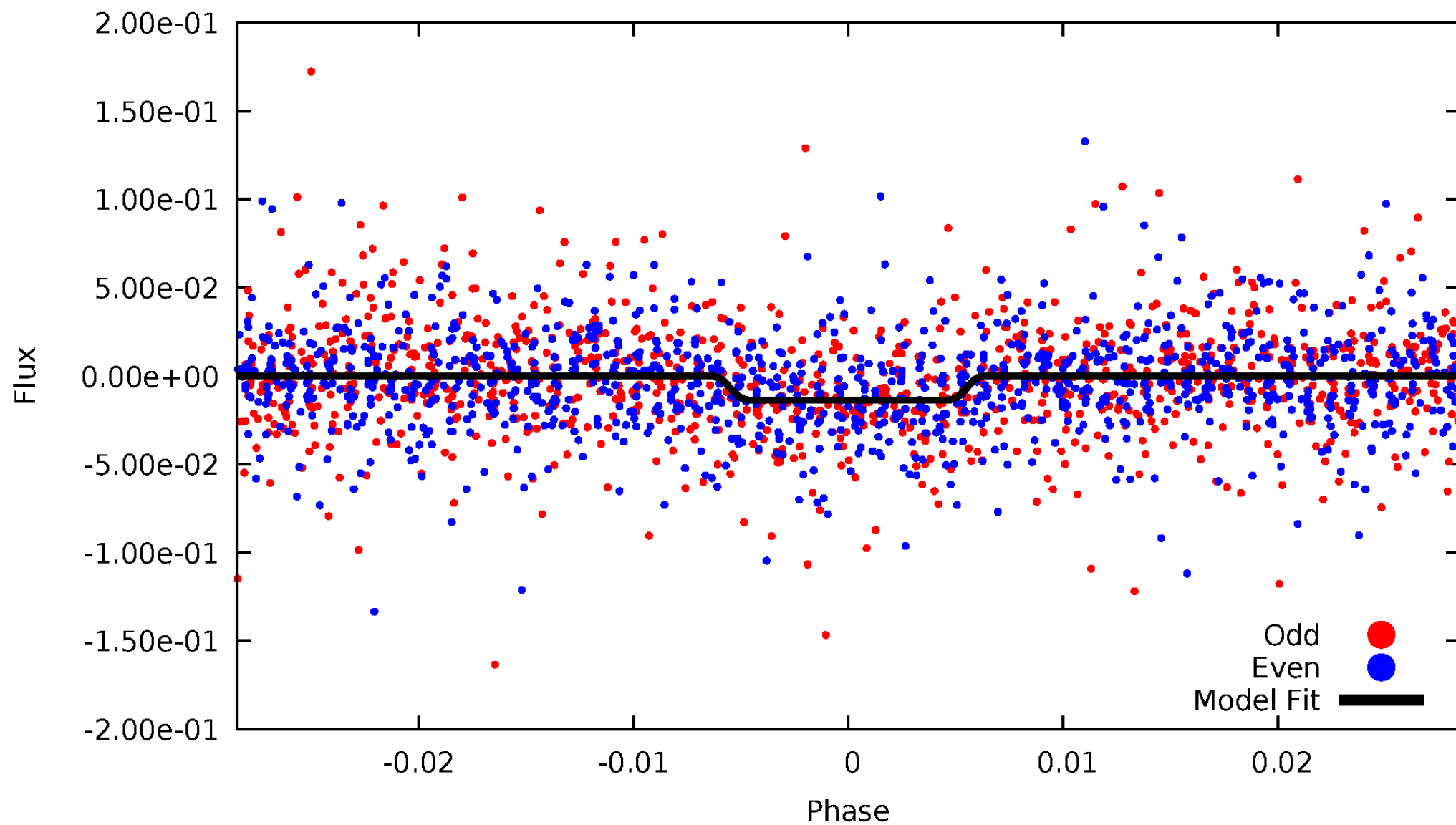
DV Odd/Even

TCE 002437505-02



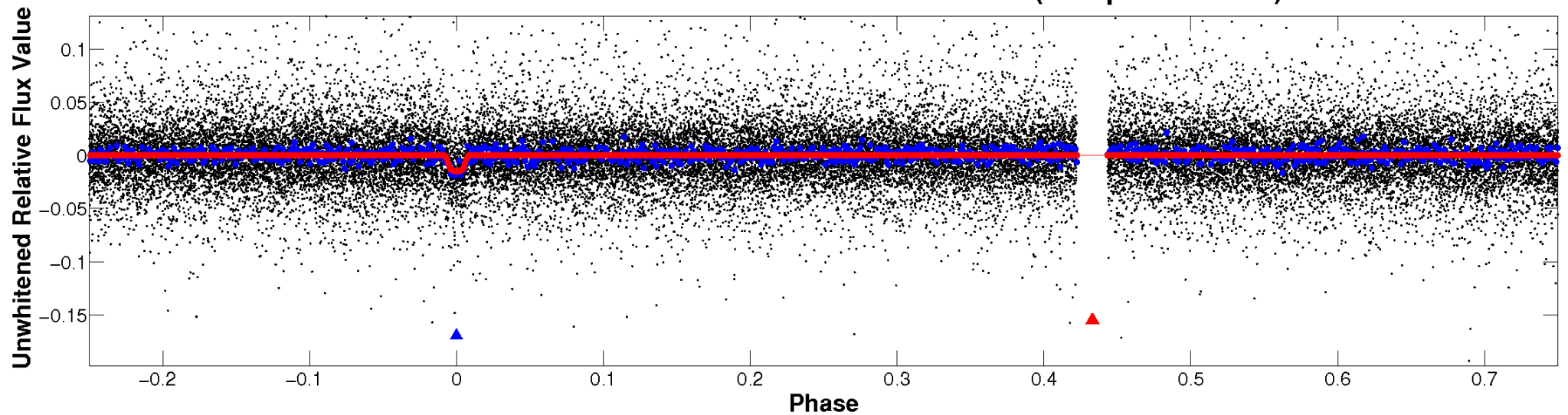
ALT Odd/Even

TCE 002437505-02

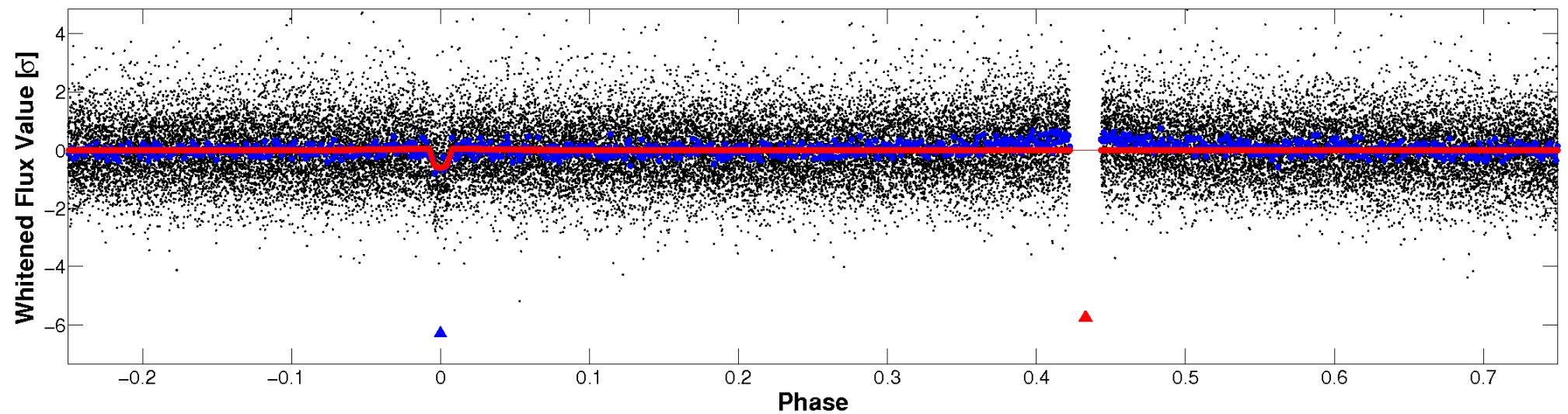


Non-Whitened Vs. Whitened Light Curve

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

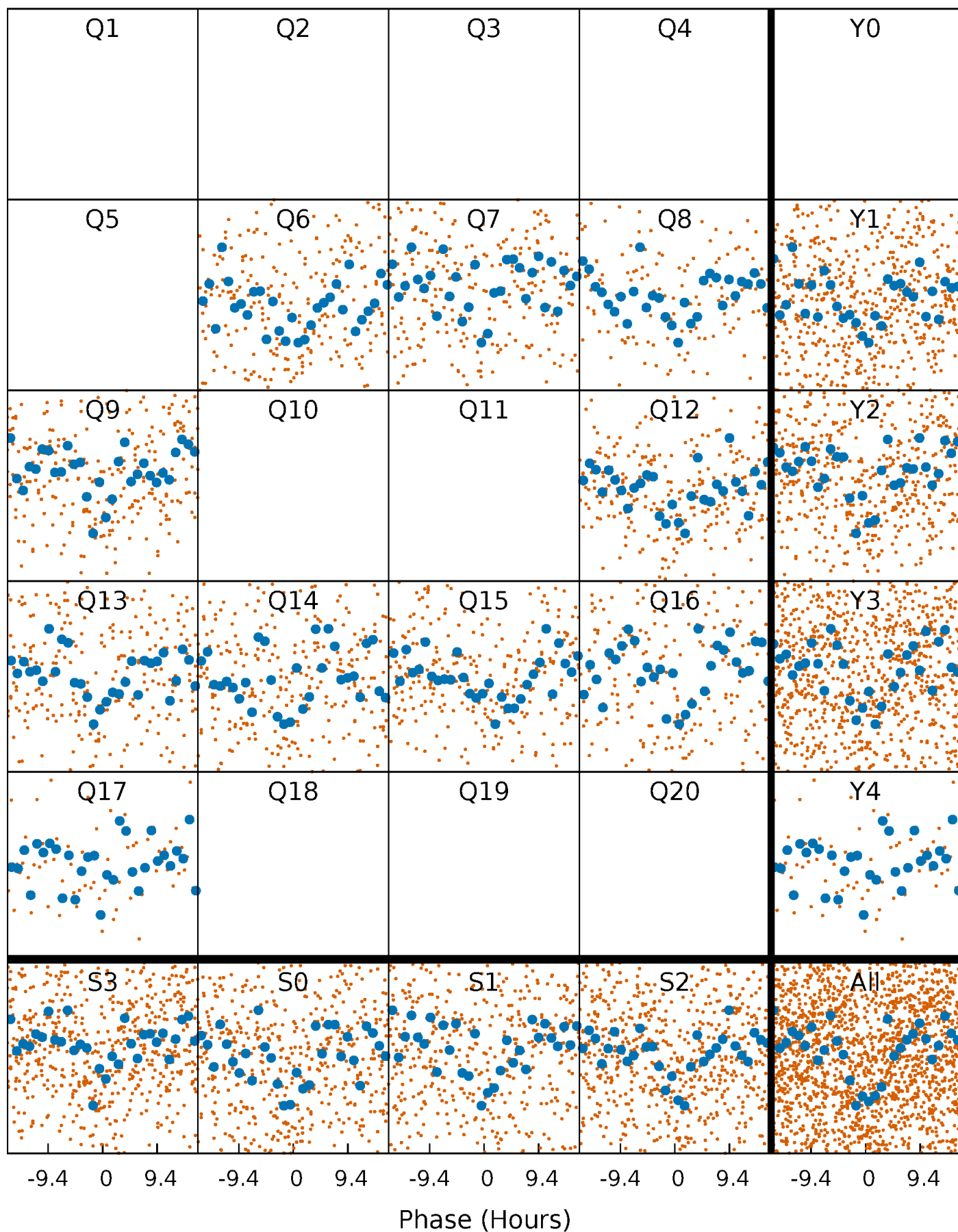


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



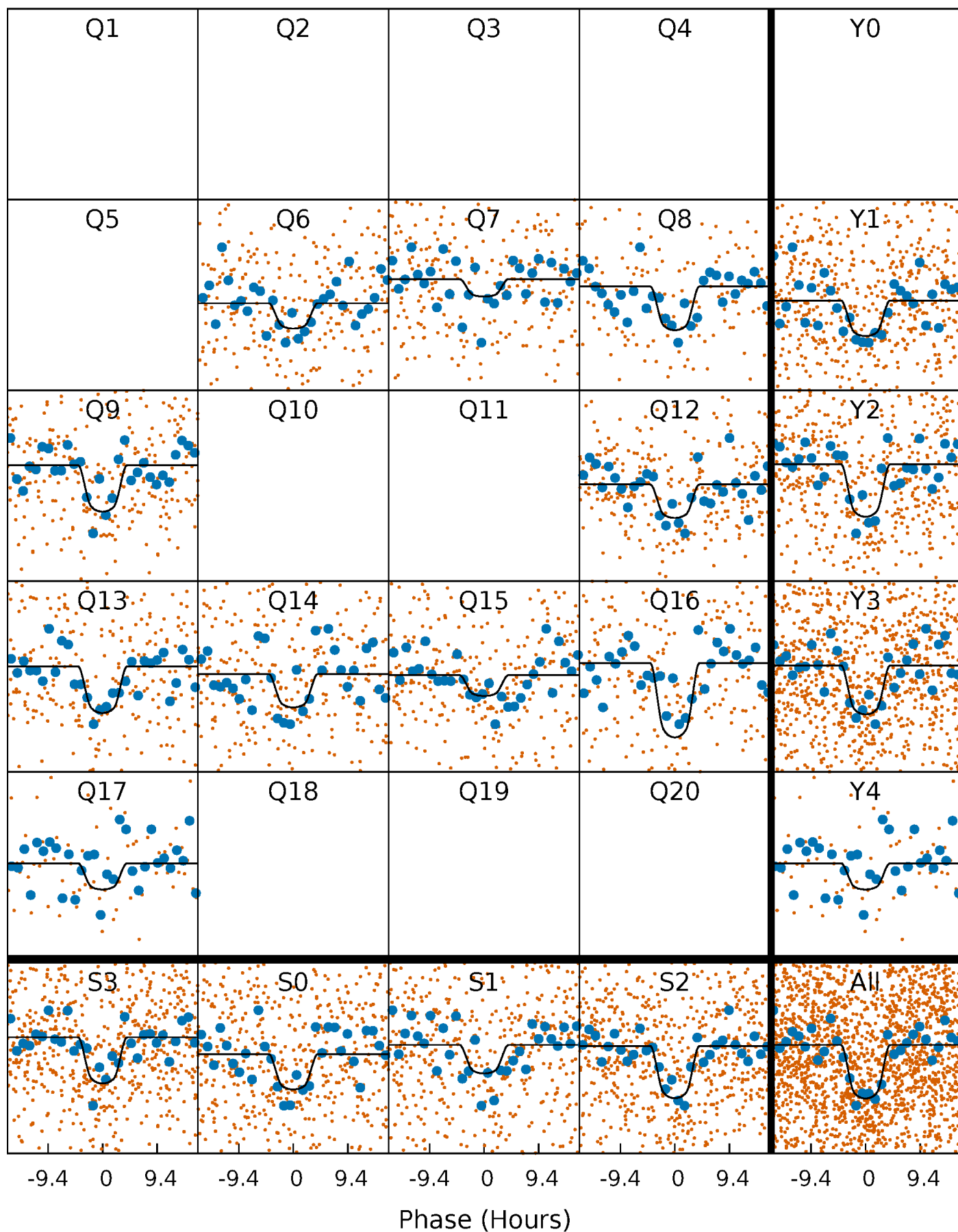
PDC Quarter-Phased Transit Curves

TCE 002437505-02 P= 21.476643 Days $T_0=139.951199$ (BKJD)



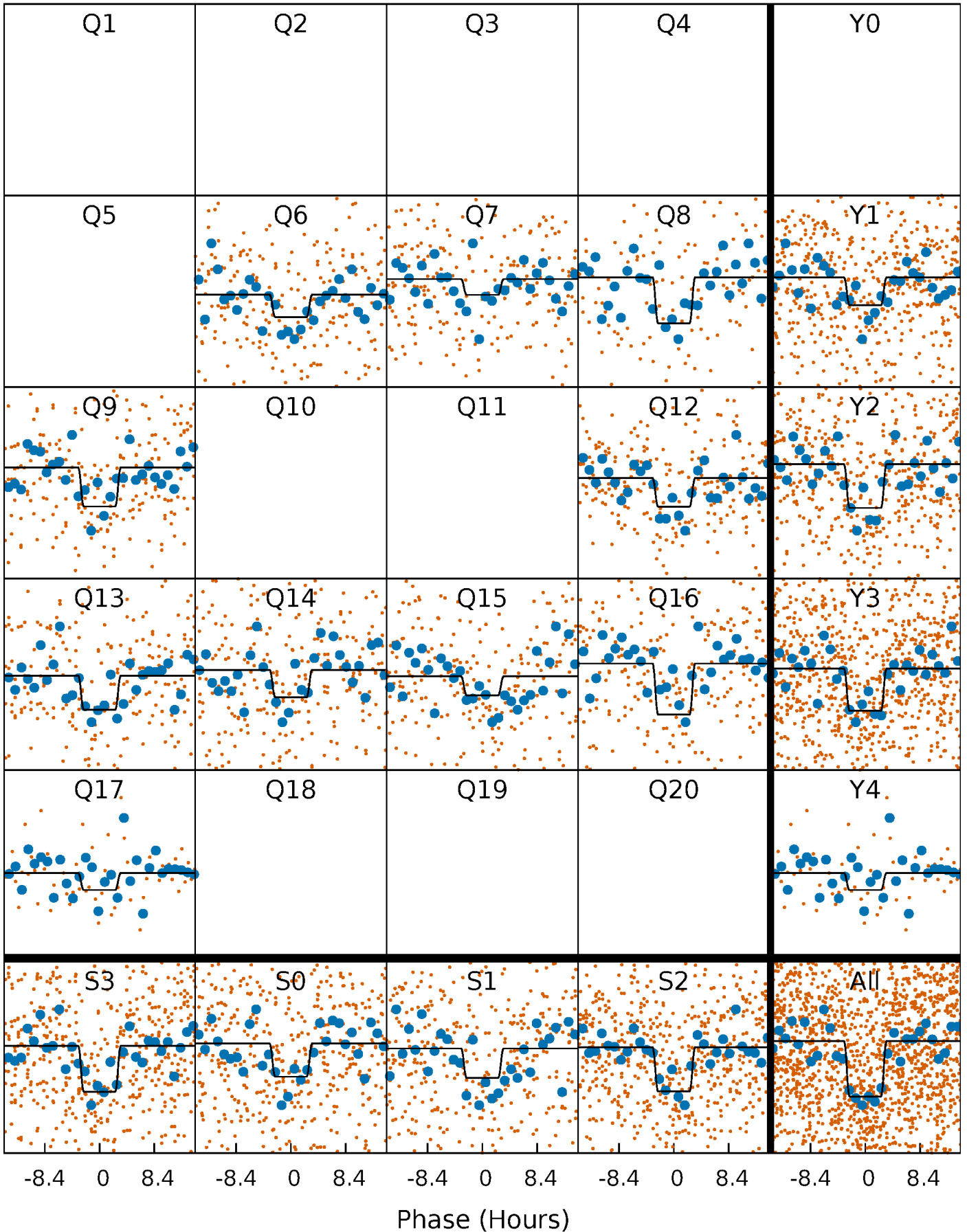
DV Quarter-Phased Transit Curves

TCE 002437505-02 $P = 21.476643$ Days $T_0 = 139.951199$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

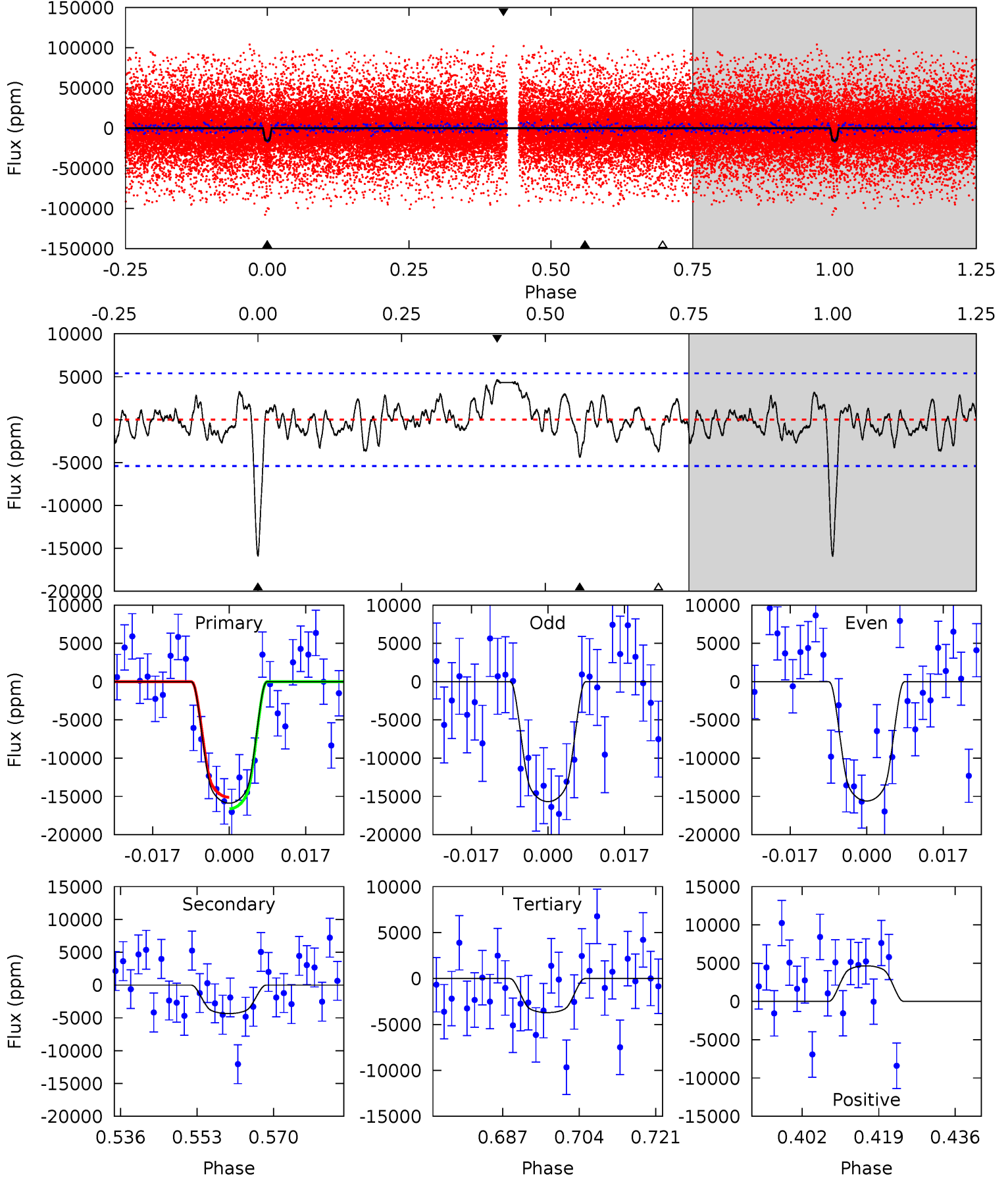
TCE 002437505-02 $P = 21.476739$ Days $T_0 = 139.947567$ (BKJD)



DV Model-Shift Uniqueness Test

002437505-02, P = 21.476643 Days, E = 139.951199 Days

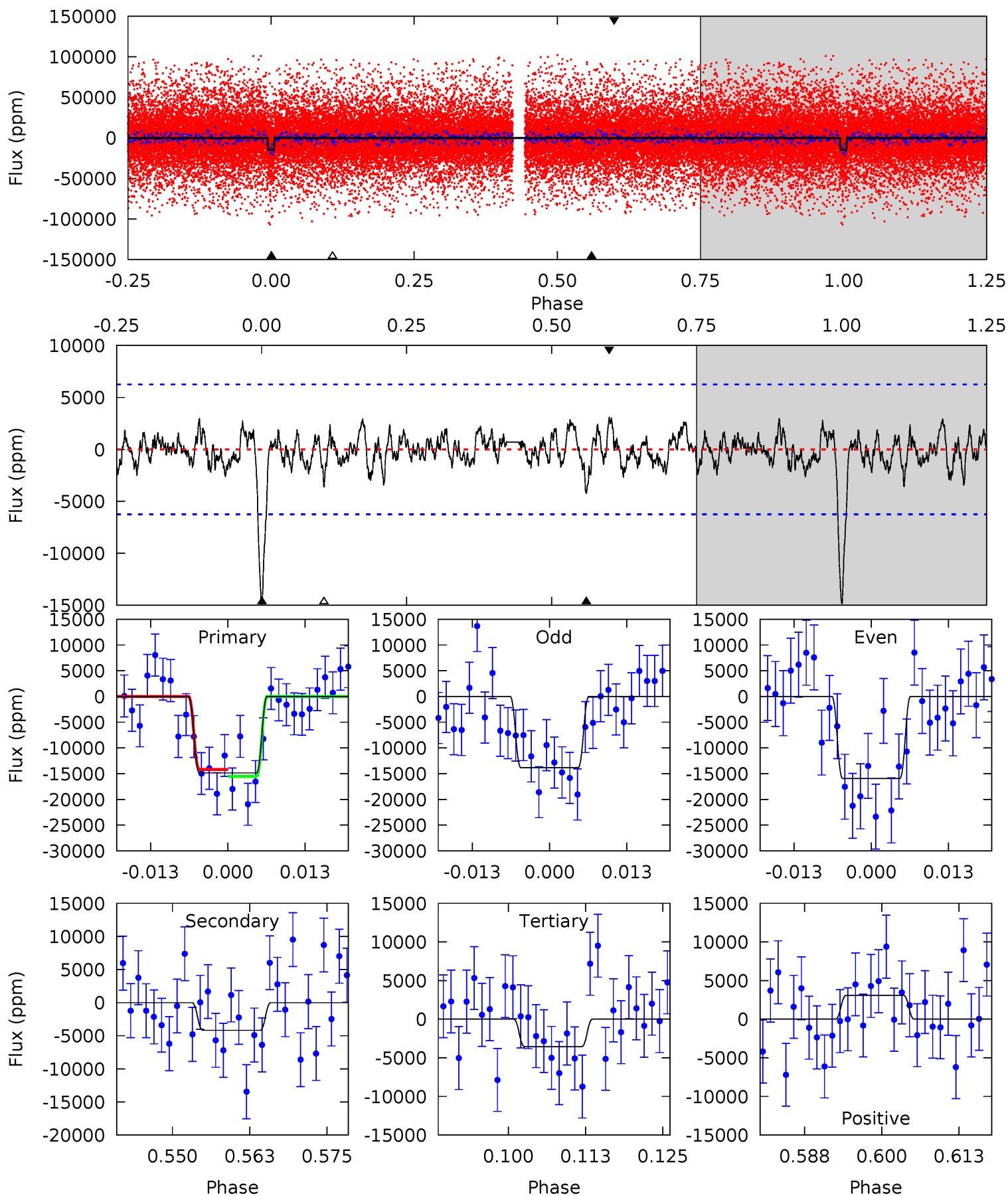
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	3.97	3.39	4.24	4.93	2.39	1.46	11.1	10.2	0.58	-0.28	0.04	0.98	0.23	0.69



Alt Model-Shift Uniqueness Test

002437505-02, P = 21.476739 Days, E = 139.947567 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	3.34	2.83	2.46	4.98	2.50	0.94	9.00	9.37	0.51	0.87	0.84	1.02	0.17	0.54



Stellar Parameters For KIC 002437505

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5780^{+1}_{-1}	$4.438^{+1.000}_{-1.000}$	$0.000^{+1.000}_{-1.000}$	$1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$	$-1.000^{+1.000}_{-1.000}$
	+0%/-0%	+23%/-23%	+inf%/-inf%	+100%/-100%	+100%/-100%	+100%/-100%
Source	Solar	Solar	Solar	Solar		

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

Secondary Eclipse Parameters for KIC 002437505-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-4351 ± 1097	$13.44^{+1.54}_{-1.61}$	916^{+42}_{-43}	4403^{+316}_{-277}	302^{+118}_{-93}
Alt.	-4186 ± 1254	$12.67^{+1.67}_{-1.59}$	917^{+44}_{-42}	4484^{+345}_{-334}	328^{+146}_{-114}

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 $A_{obs} \gg 1.0$

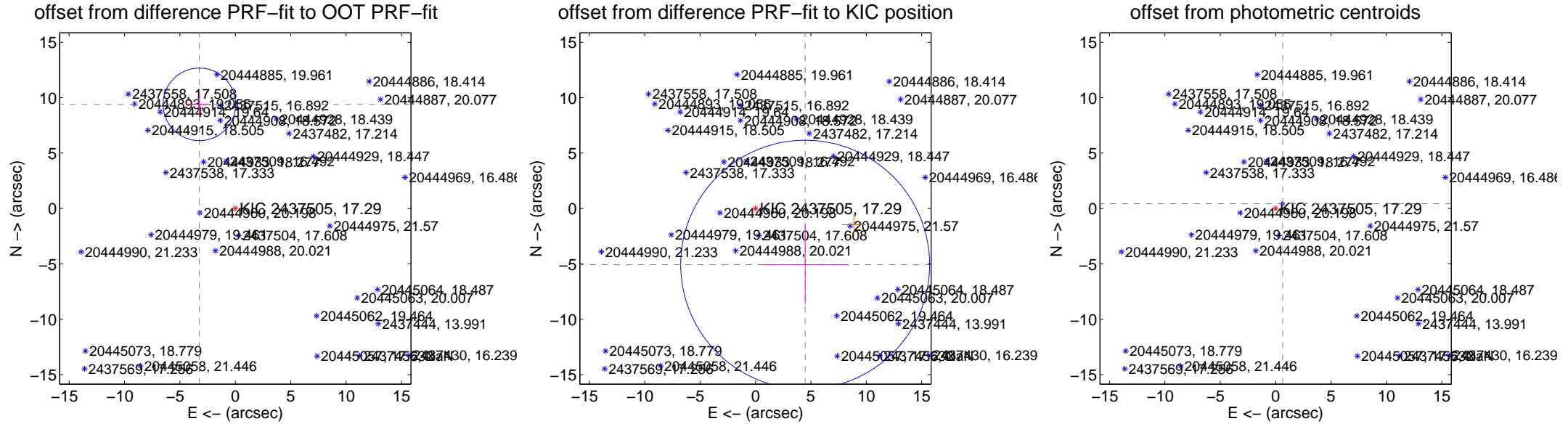
DV Centroid Data

Supplemental centroid analysis for 002437505-02. Kepler magnitude: 17.29. Transit SNR 11.21

There are 1 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 16.28 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	9.942 \pm 1.092	9.10	3.247 \pm 1.056	9.397 \pm 1.096
PRF-fit source offset from KIC position	6.774 \pm 3.745	1.81	-4.485 \pm 3.940	-5.076 \pm 3.586
photometric centroid source offset	0.77 \pm 0.05	15.61	-0.63 \pm 0.05	0.43 \pm 0.05

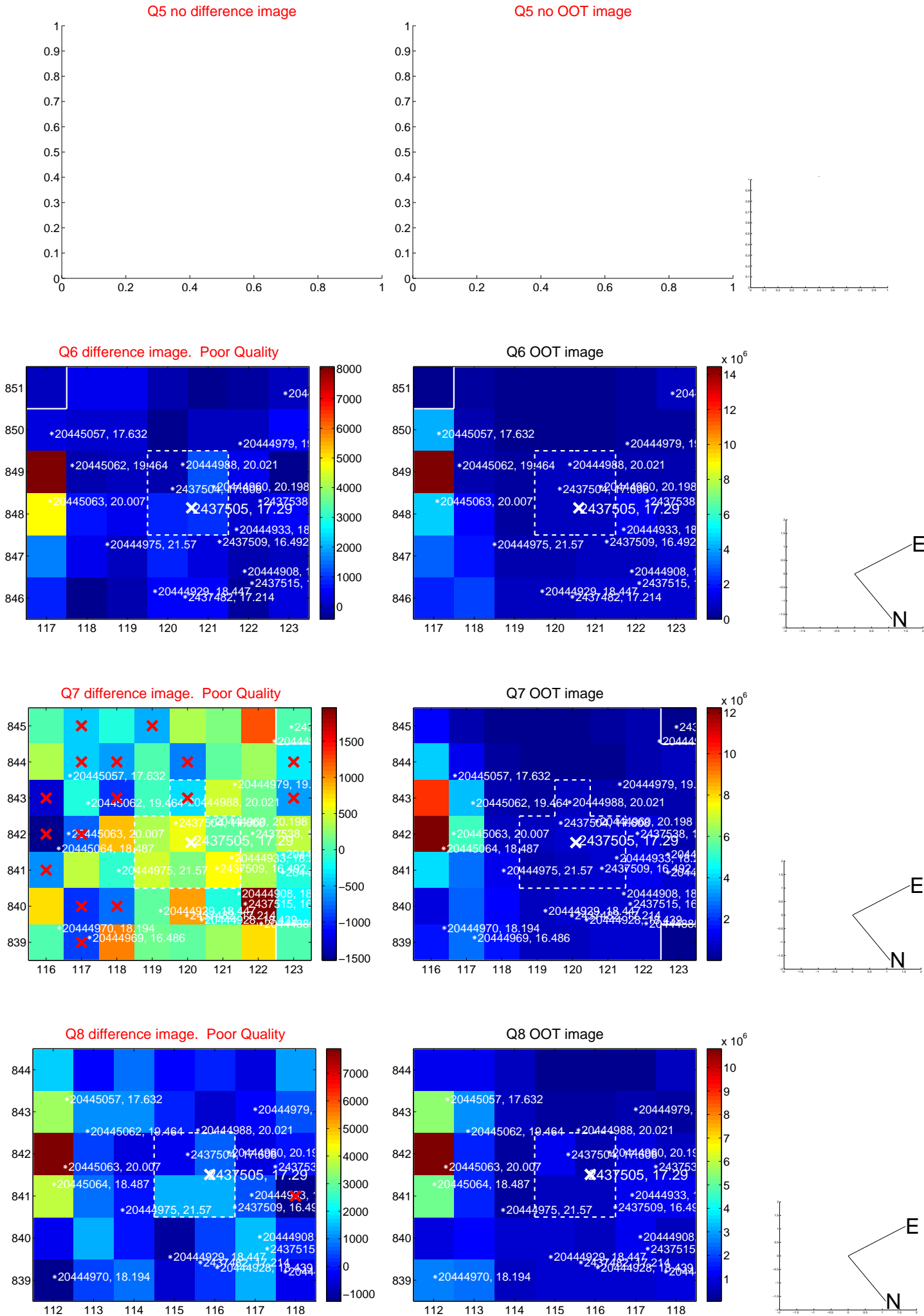


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

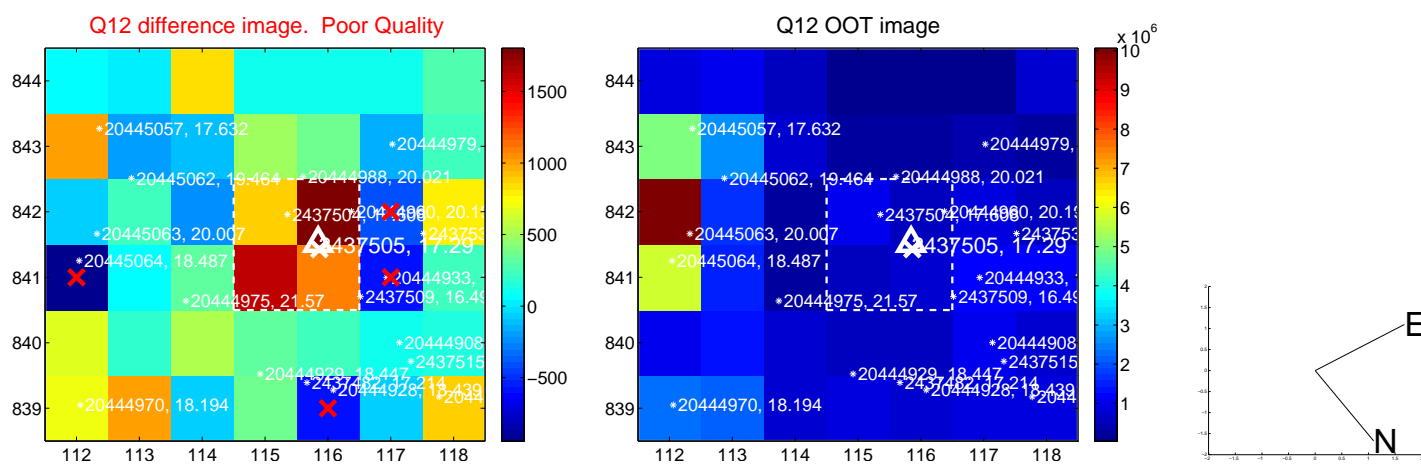
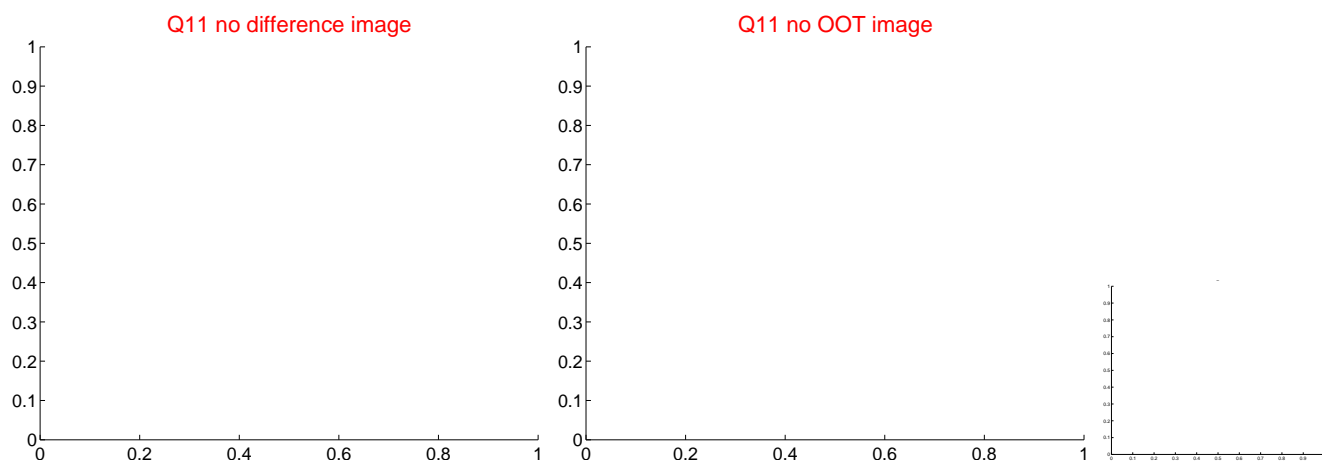
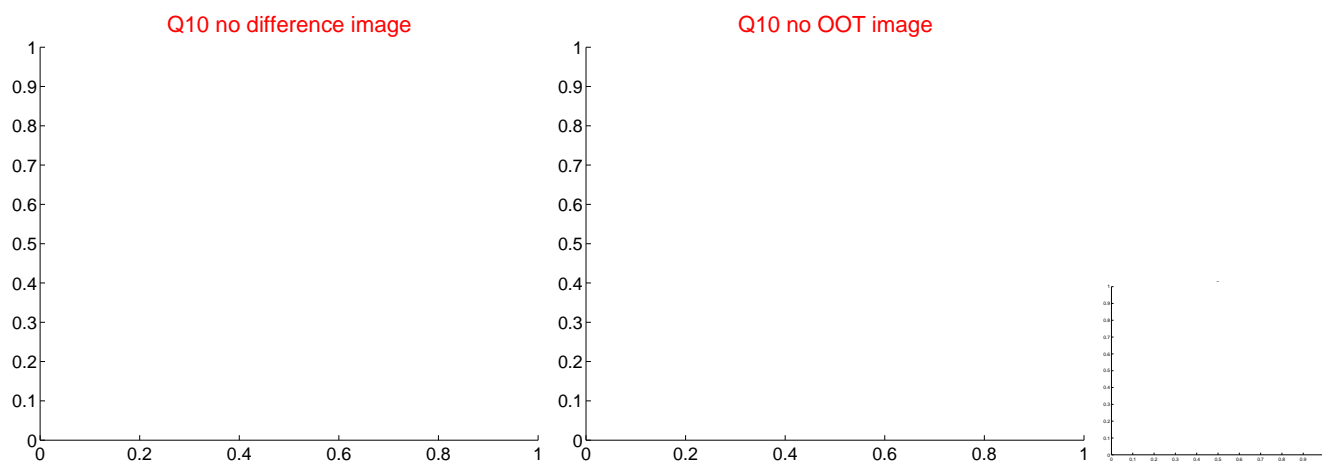
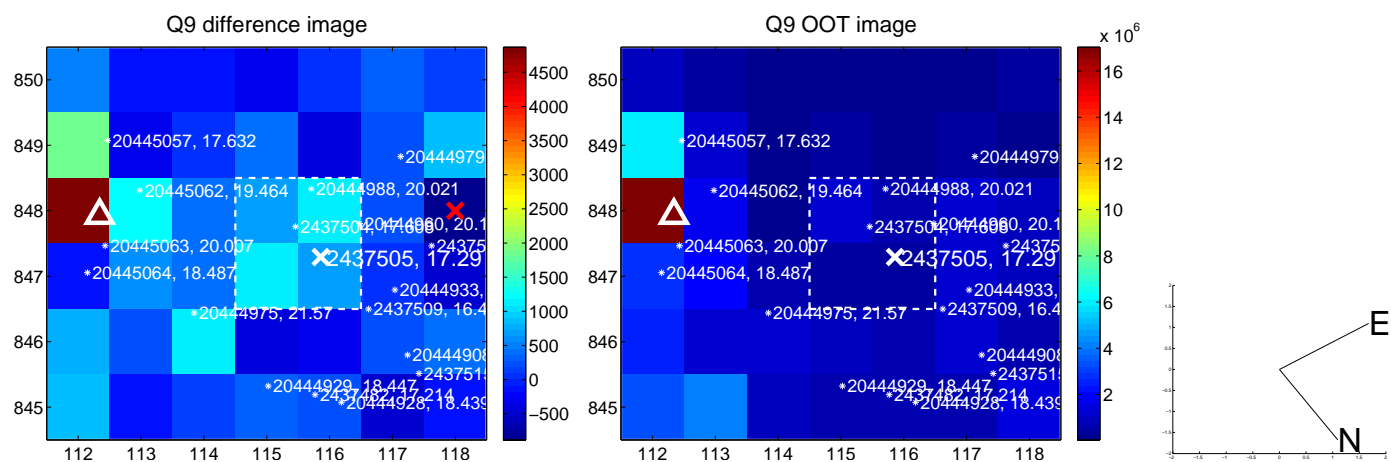
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



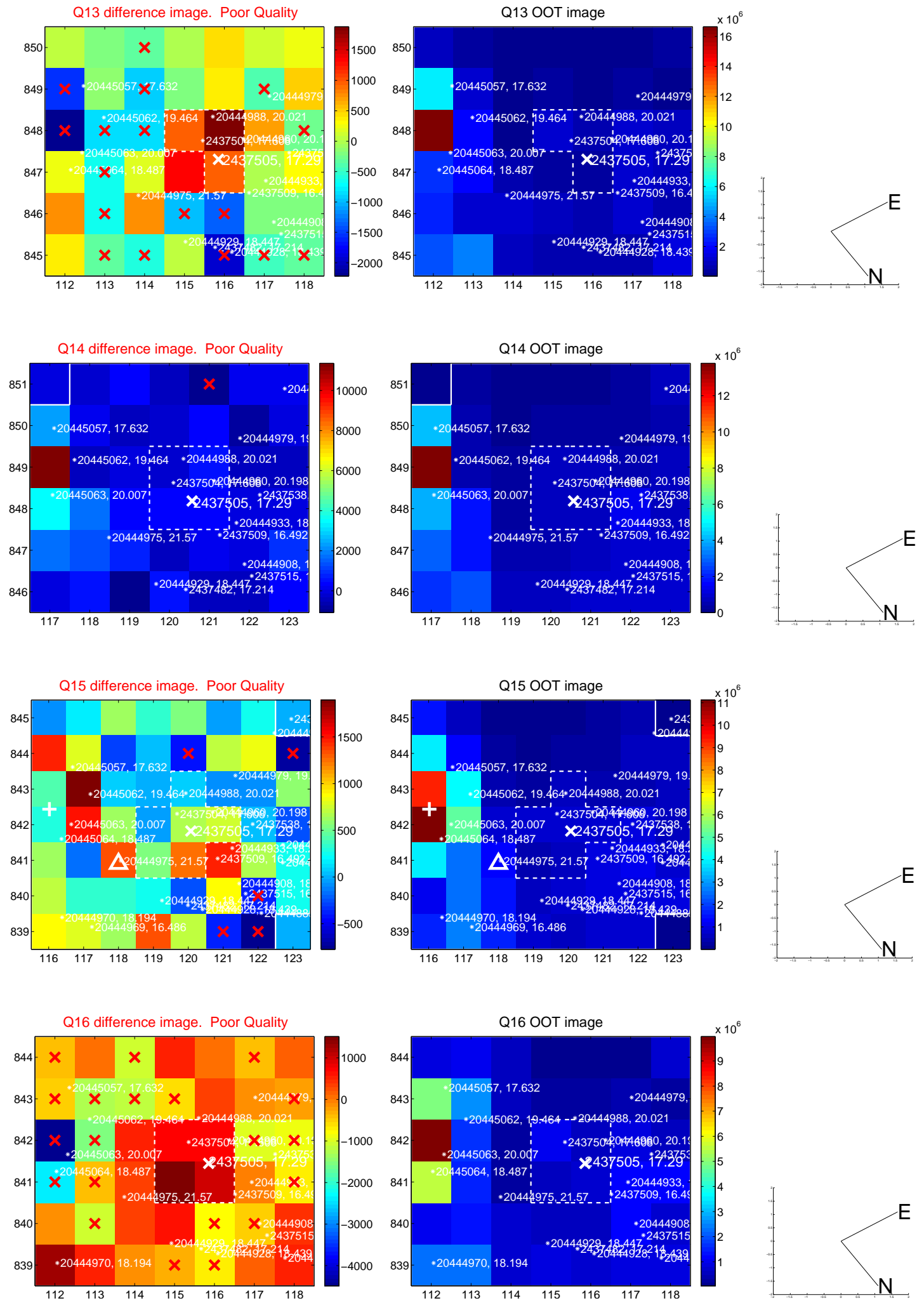
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



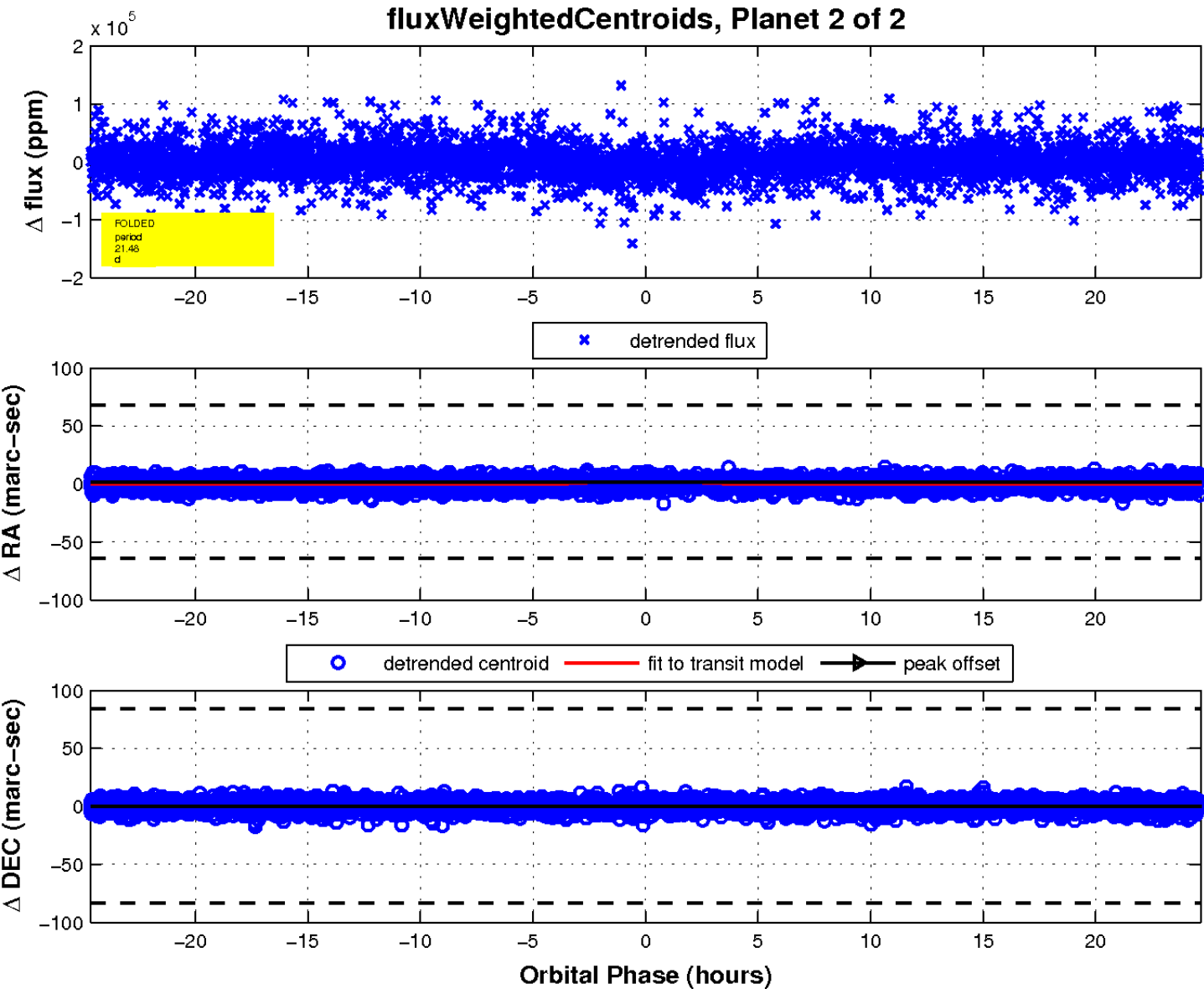
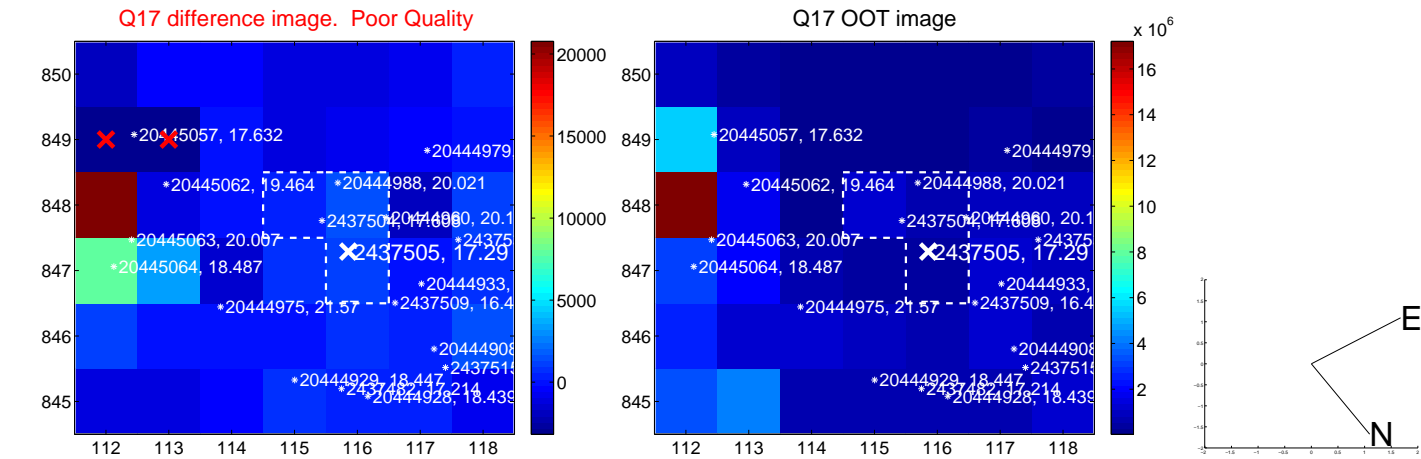
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

