

KIC 005630362

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})
005630362-01	OBS	No	0.642929	131.538296	15.4	1.182	10.7	1.9	2.63	7821	1.11	70816.80
005630362-02	OBS	No	377.823333	324.100899	1446.3	5.509	10.6	5.4	2.63	7821	12.57	14.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005630362-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
005630362-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

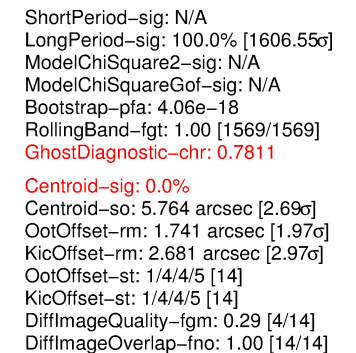
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

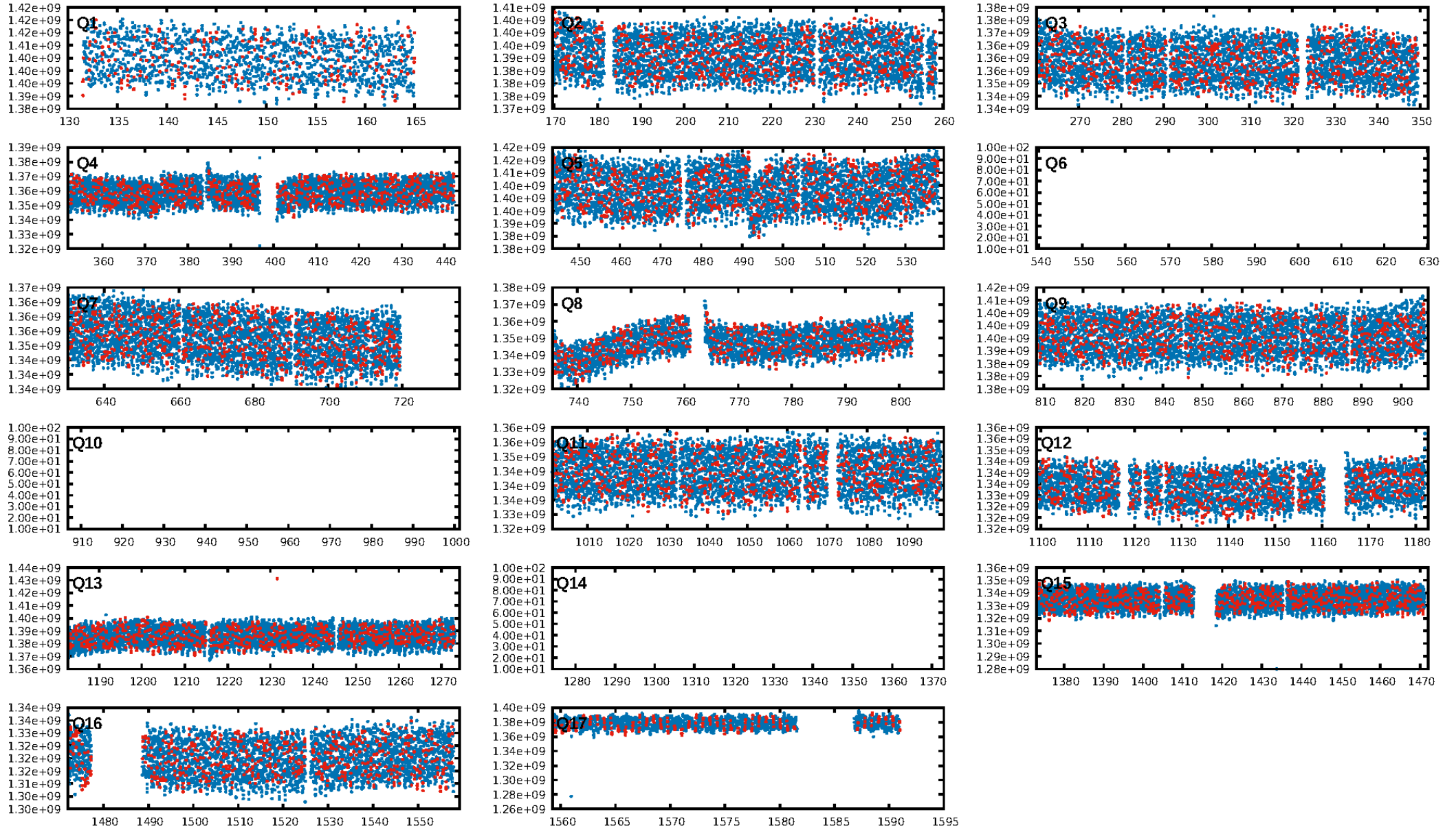
Ephemeris Match Information For 005630362-01

No Significant Match Found

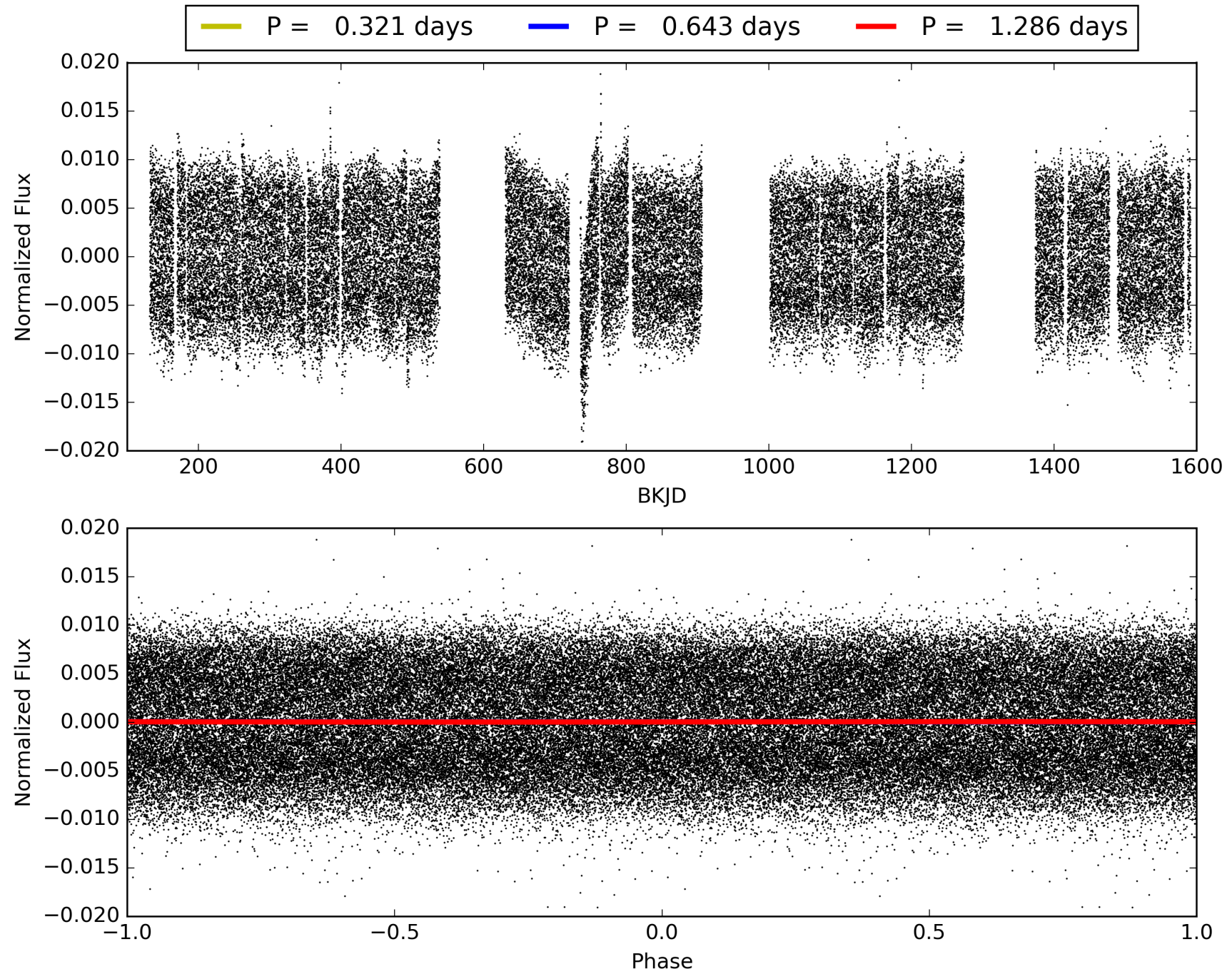
KIC: 5630362 Candidate: 1 of 2 Period: 0.643 d



TCE 005630362-01, PDC Light Curves

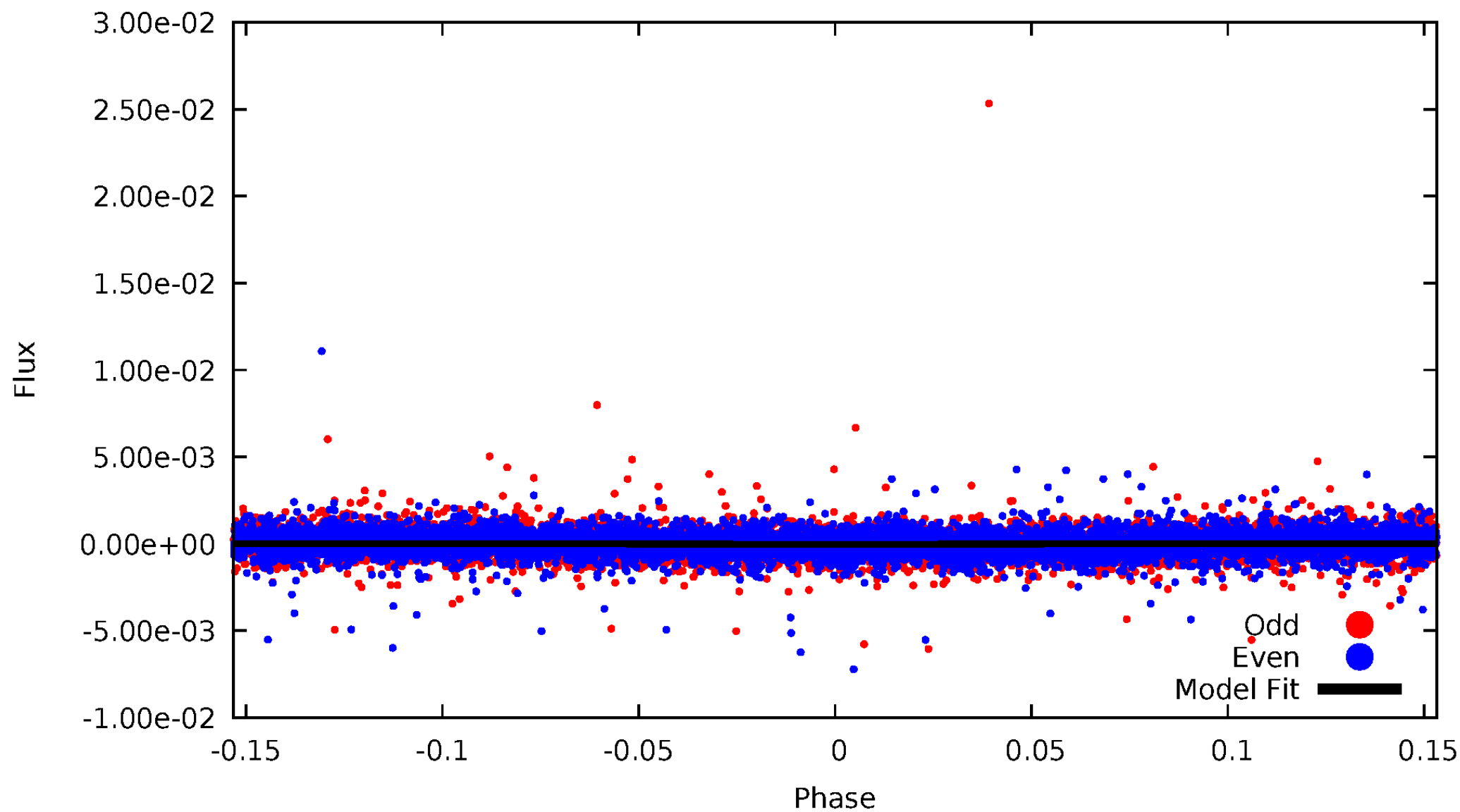


TCE 005630362-01



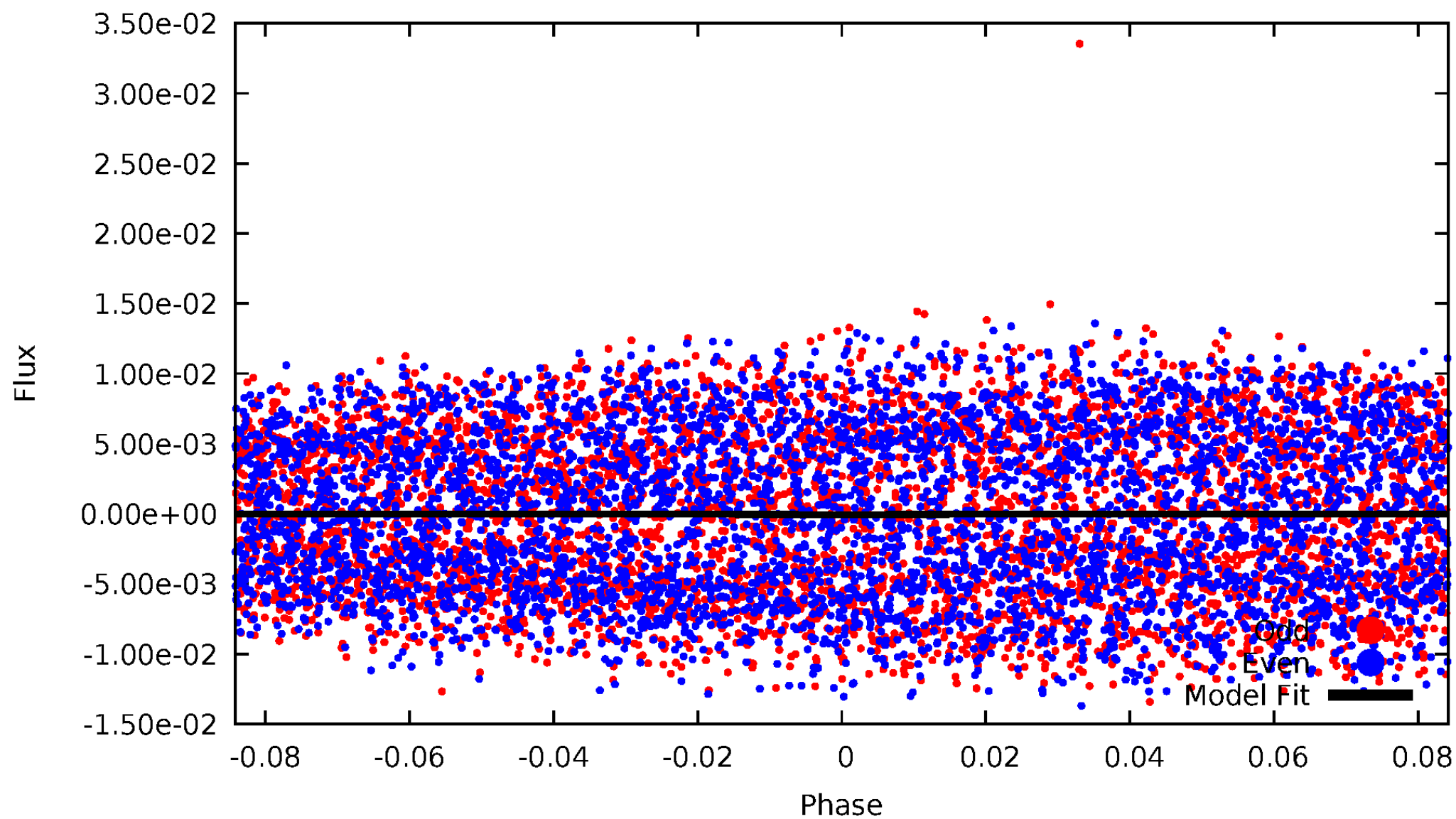
DV Odd/Even

TCE 005630362-01



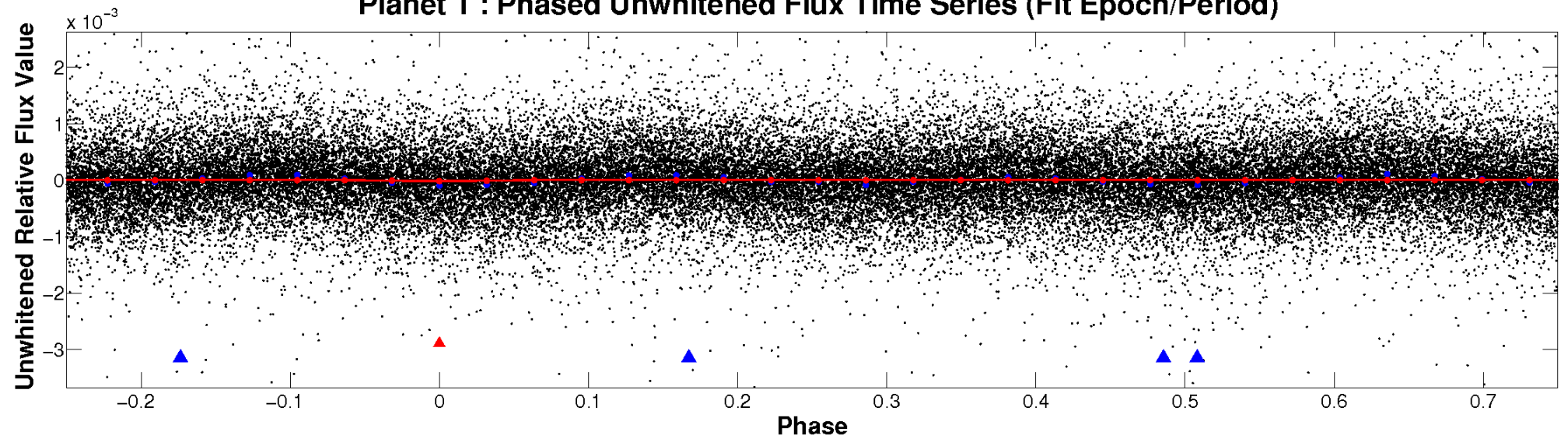
ALT Odd/Even

TCE 005630362-01

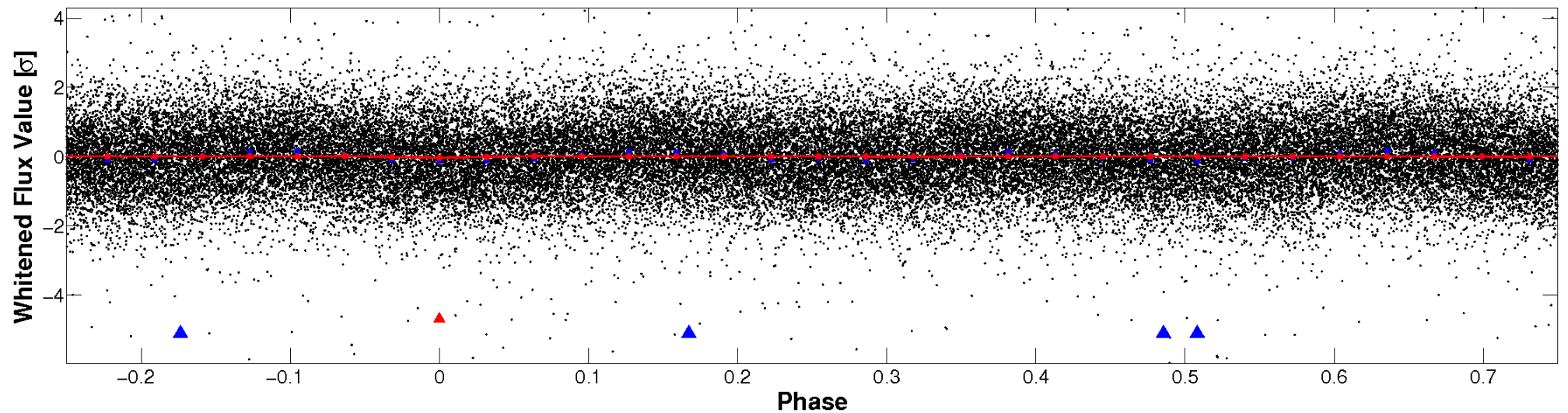


Non-Whitened Vs. Whitened Light Curve

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

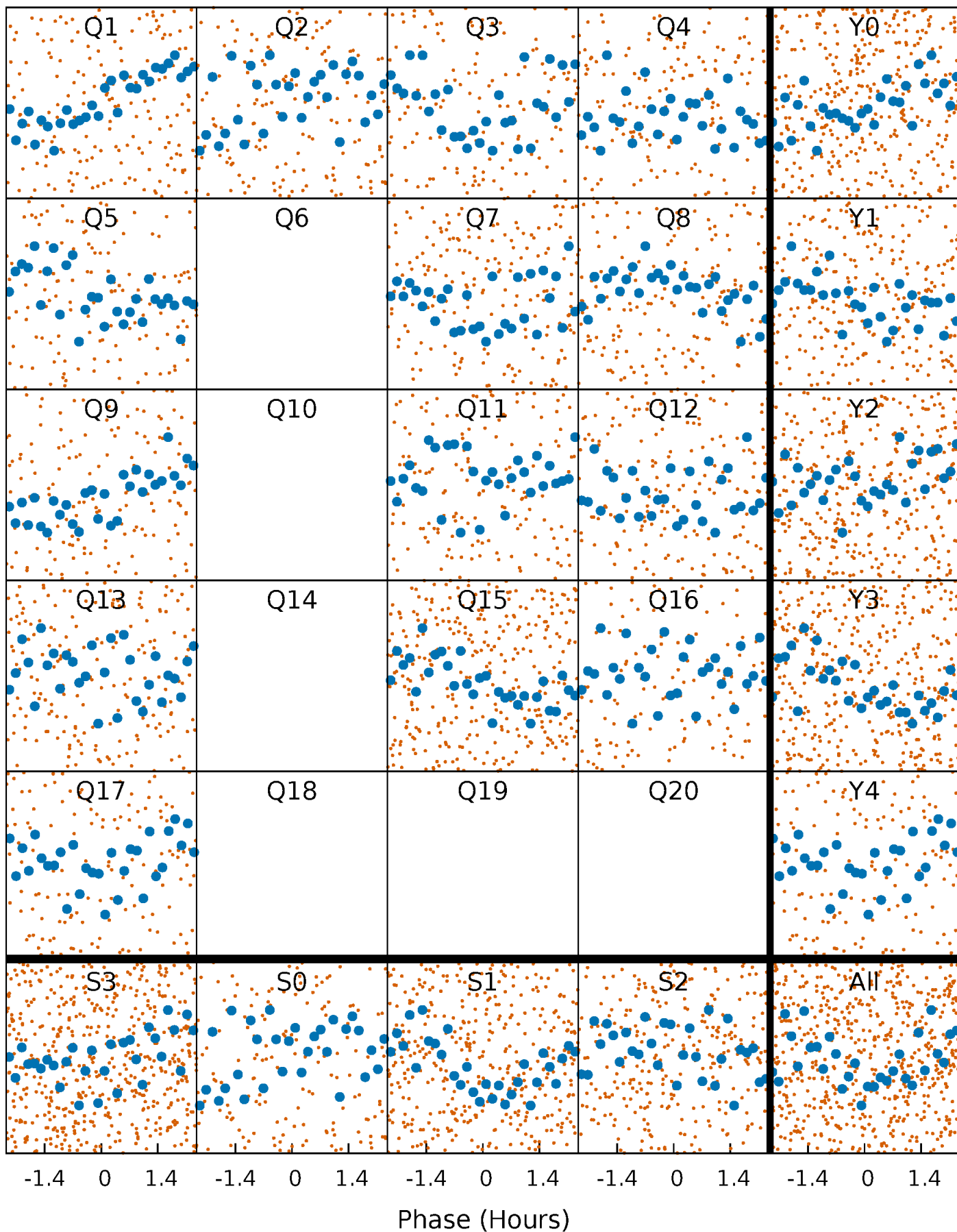


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



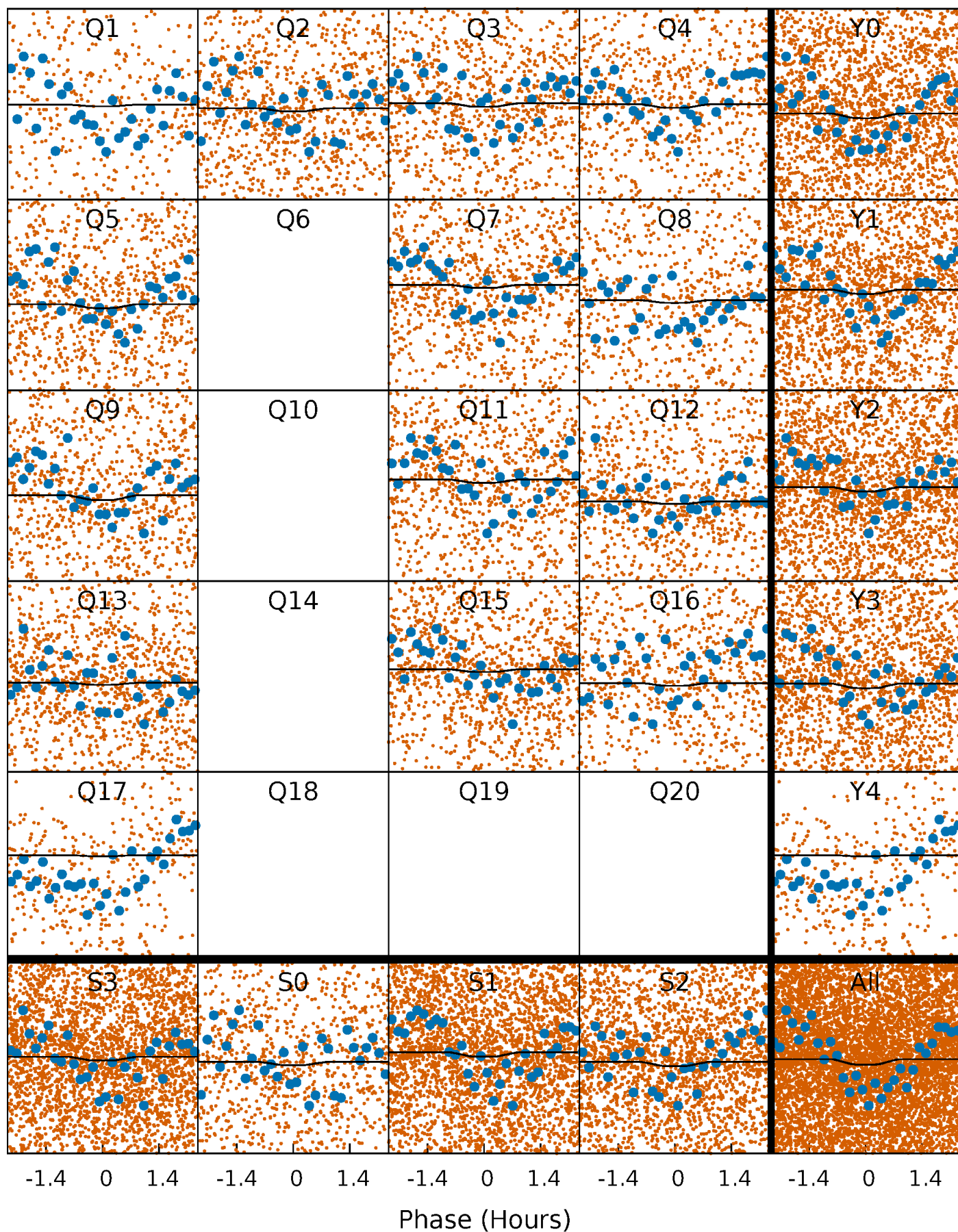
PDC Quarter-Phased Transit Curves

TCE 005630362-01 P= 0.642929 Days $T_0=131.538296$ (BKJD)



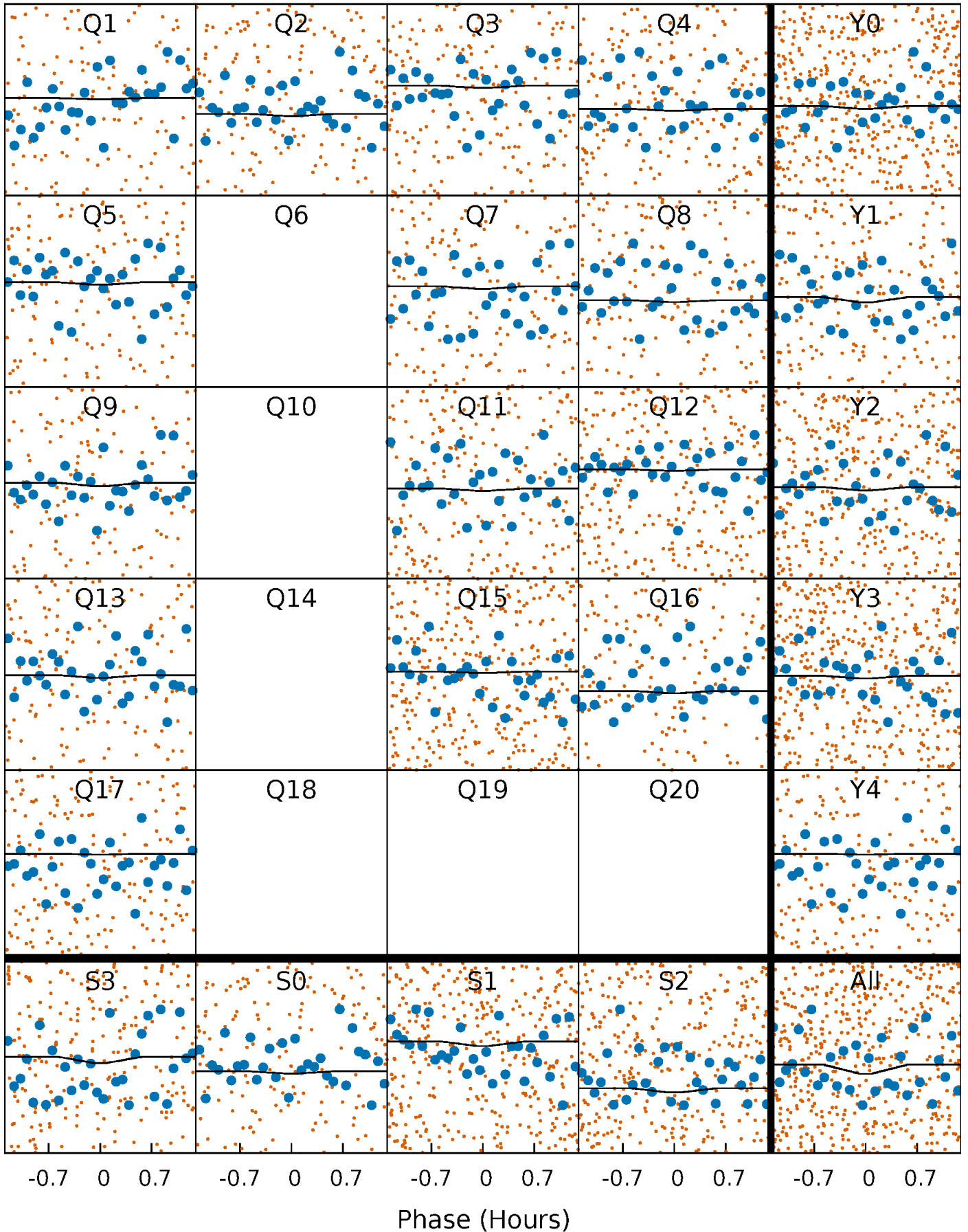
DV Quarter-Phased Transit Curves

TCE 005630362-01 P= 0.642929 Days $T_0=131.538296$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

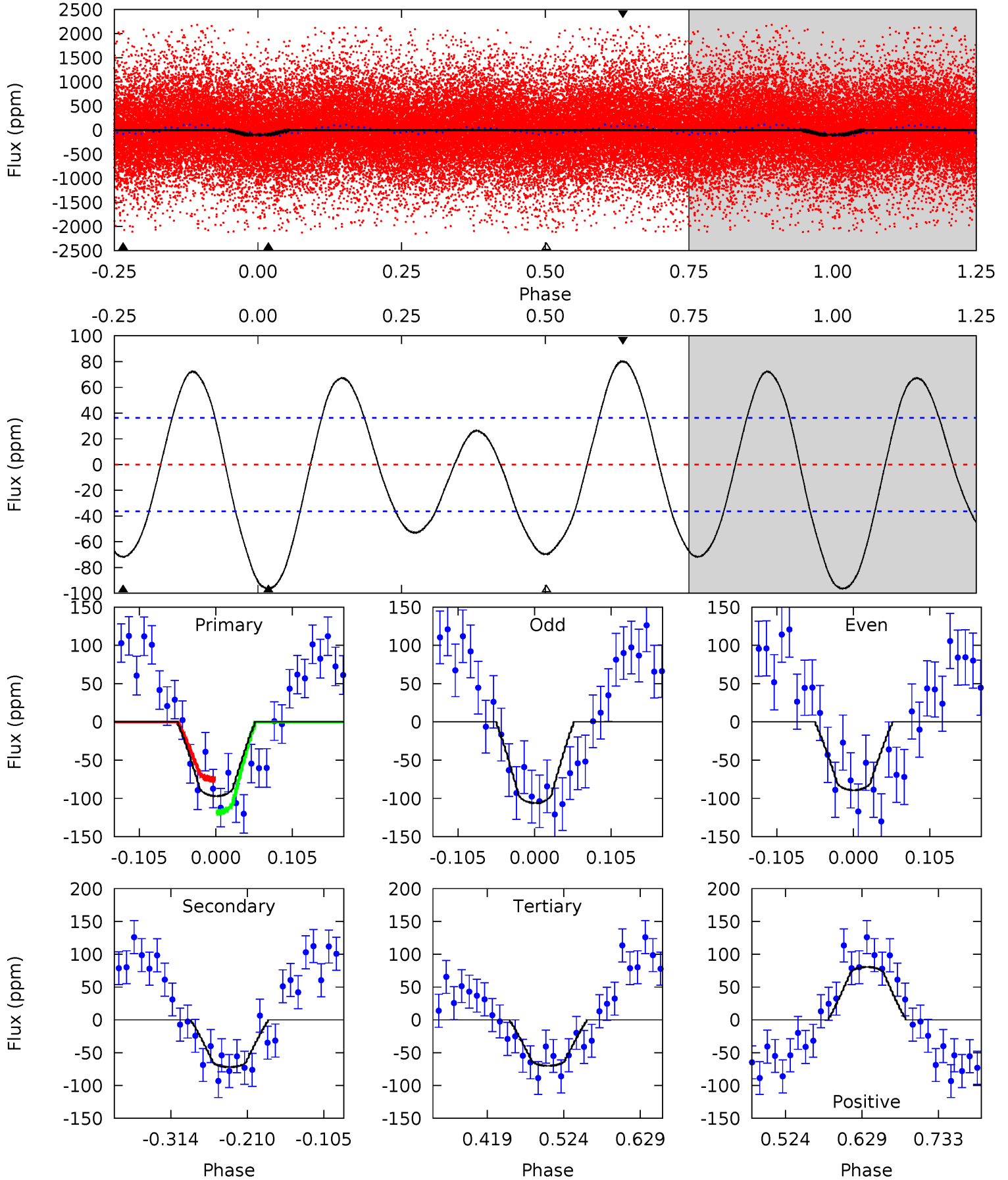
TCE 005630362-01 P= 0.642933 Days $T_0=131.536248$ (BKJD)



DV Model-Shift Uniqueness Test

005630362-01, P = 0.642929 Days, E = 130.895367 Days

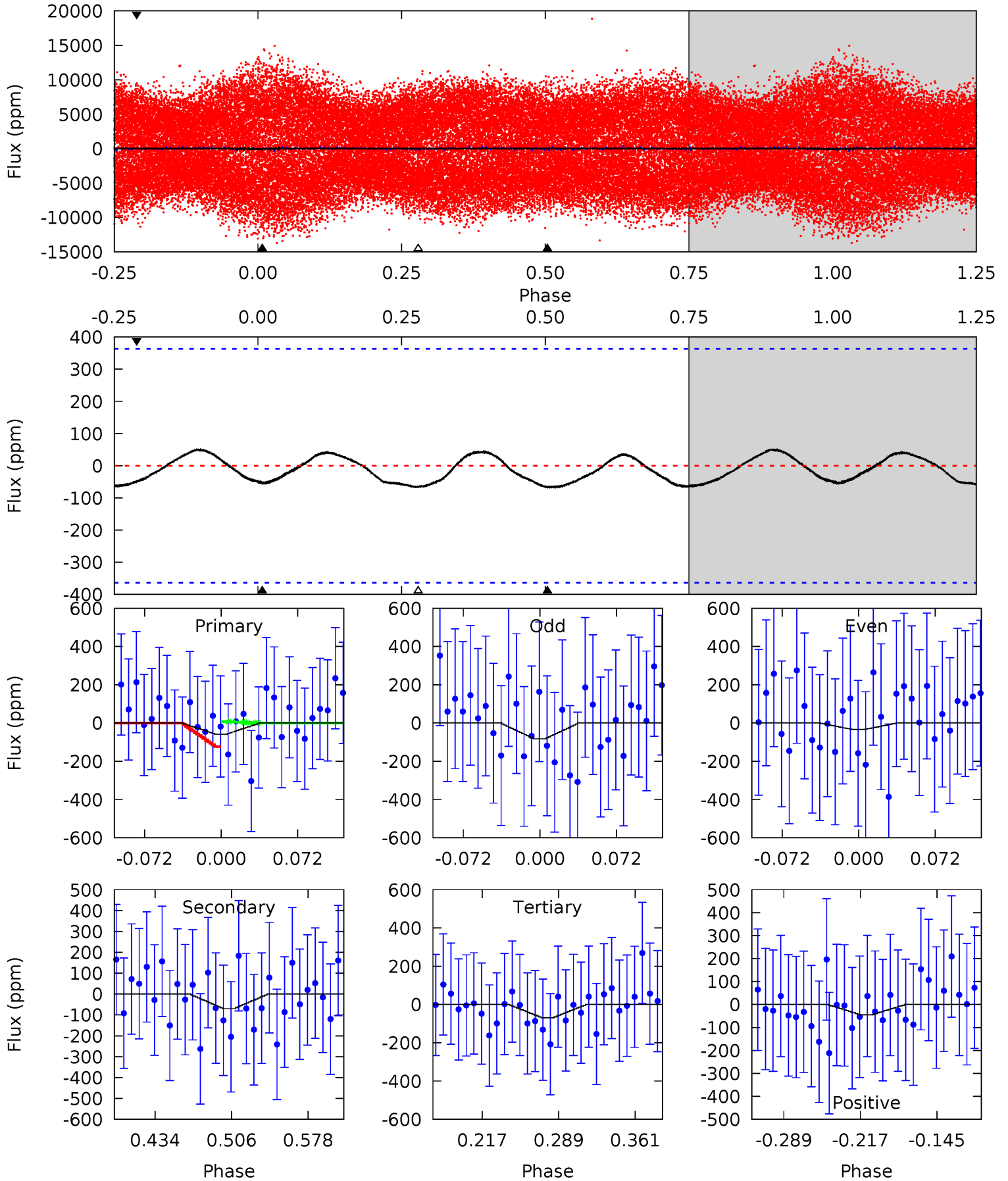
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	9.03	8.79	10.1	4.55	1.62	5.92	3.38	2.05	0.25	-1.08	1.06	1.15	0.45	2.74



Alt Model-Shift Uniqueness Test

005630362-01, P = 0.642933 Days, E = 130.893315 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.74	0.89	0.88	-0.57	4.63	1.80	0.49	-0.13	1.32	0.01	1.47	0.31	0.57	0.43	0.74



Stellar Parameters For KIC 005630362

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7821^{+78}_{-78}	$3.880^{+0.168}_{-0.072}$	$-0.080^{+0.100}_{-0.150}$	$2.634^{+0.257}_{-0.599}$	$1.920^{+0.027}_{-0.226}$	$0.148^{+0.131}_{-0.035}$
	+1%/-1%	+4%/-2%	+125%/-188%	+10%/-23%	+1%/-12%	+88%/-24%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 005630362-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-72 ± 8	$1.08^{+0.59}_{-0.55}$	5776^{+182}_{-309}	13622^{+15894}_{-3976}	11^{+34}_{-6}
Alt.	-70 ± 78	$2.14^{+0.67}_{-0.57}$	5799^{+193}_{-317}	7697^{+3234}_{-13302}	$2.453^{+4.239}_{-2.808}$

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

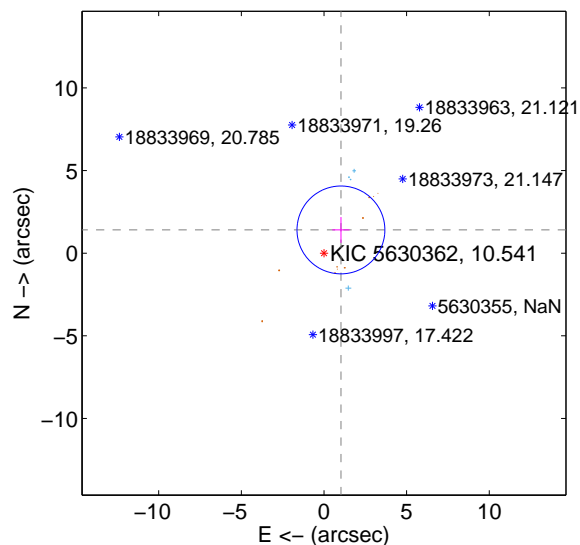
Supplemental centroid analysis for 005630362-01. **Kepler magnitude: 10.54.** Transit SNR 1.87

There are 4 quarters with good PRF difference image offsets

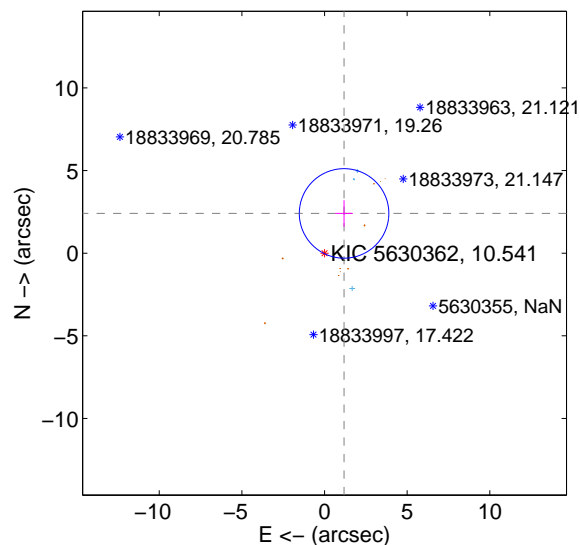
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.741 ± 0.886	1.97	-1.026 ± 0.524	1.407 ± 0.782
PRF-fit source offset from KIC position	2.681 ± 0.903	2.97	-1.183 ± 0.526	2.406 ± 0.801
photometric centroid source offset	5.76 ± 2.15	2.69	-2.52 ± 1.45	5.18 ± 2.28

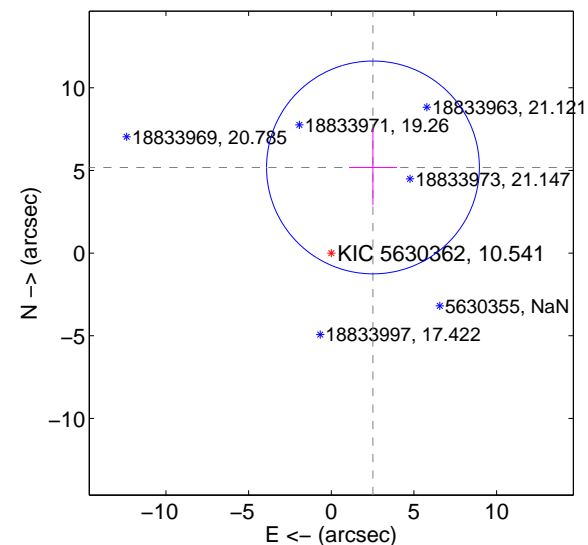
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

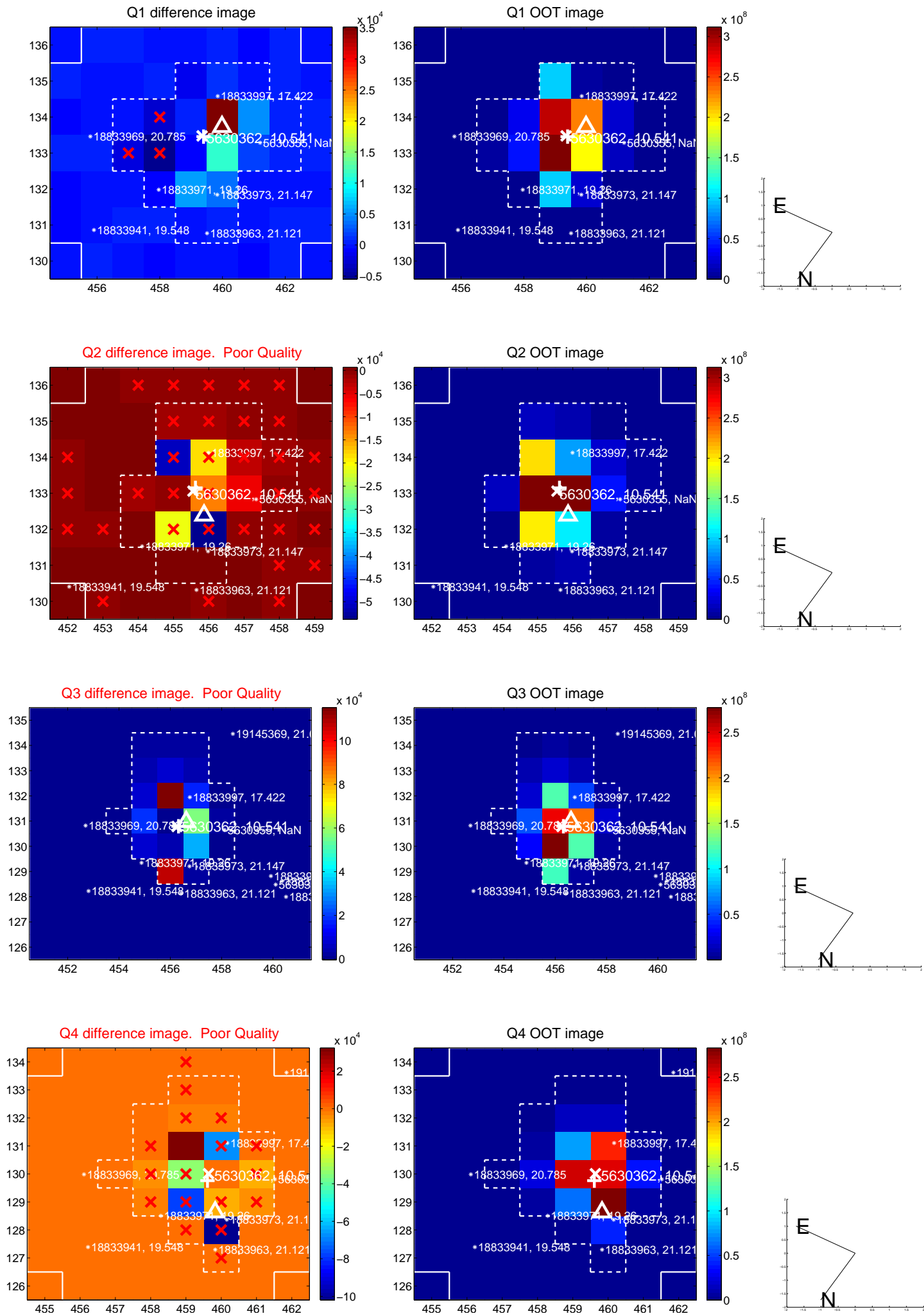


offset from photometric centroids

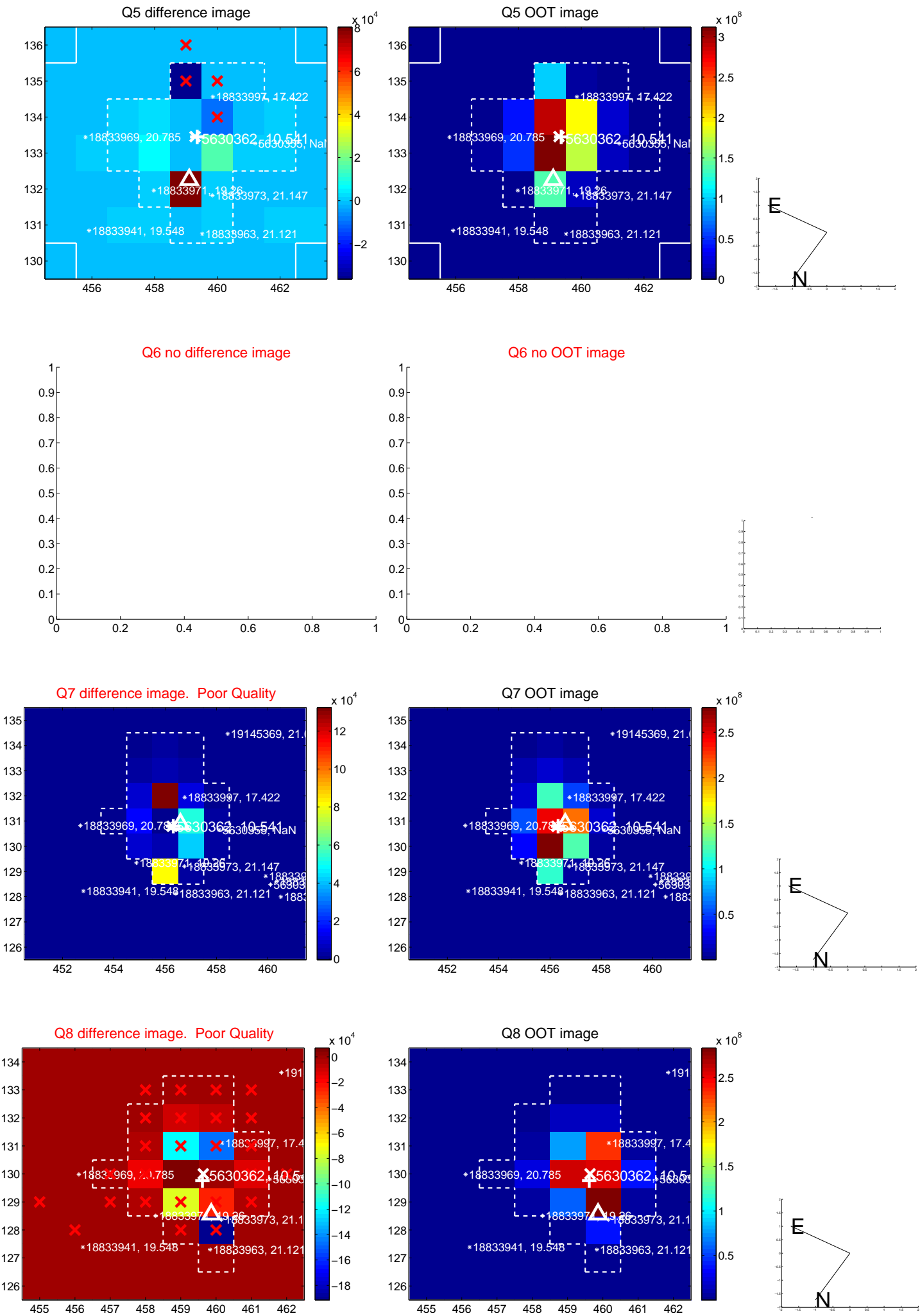


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

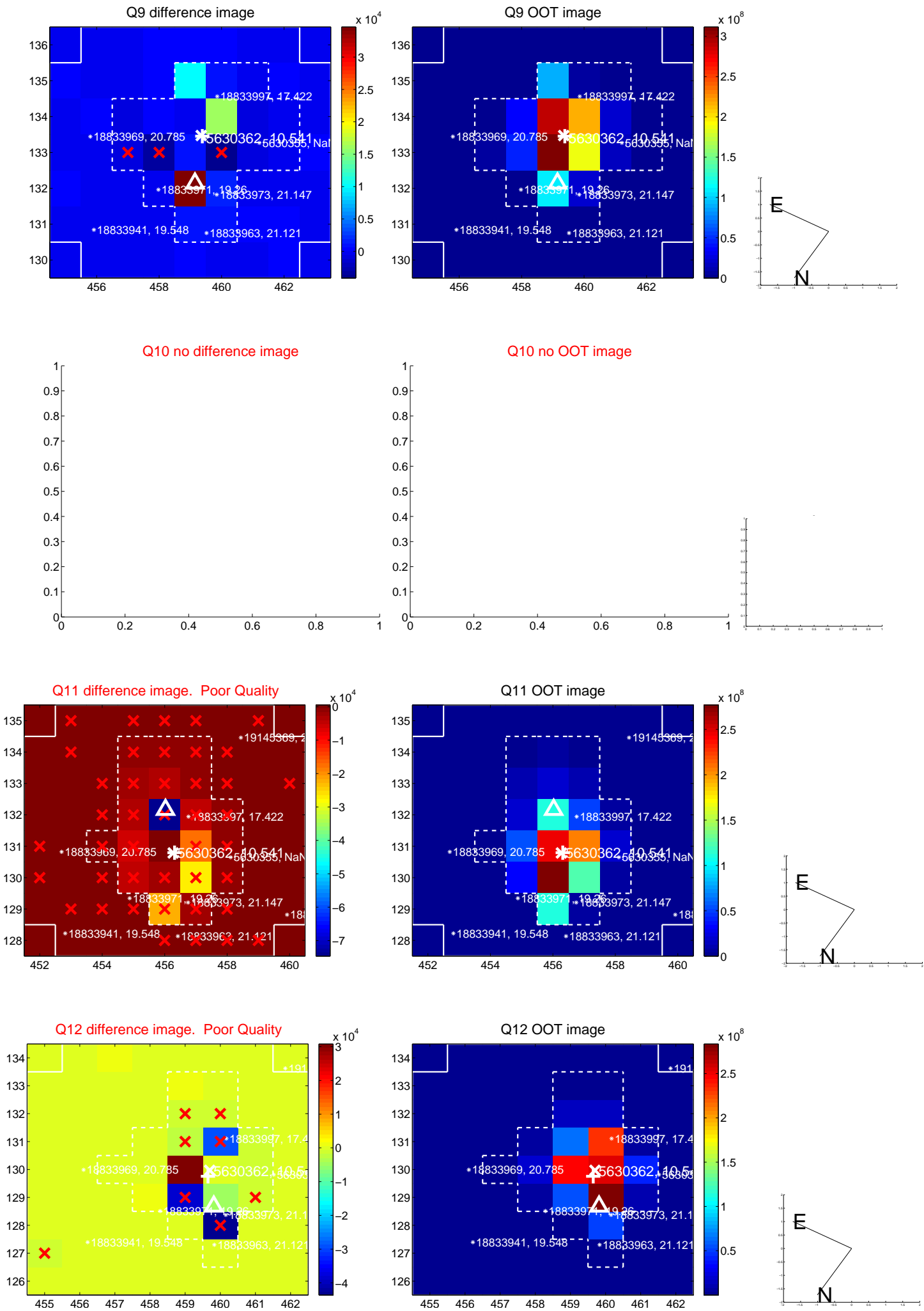
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



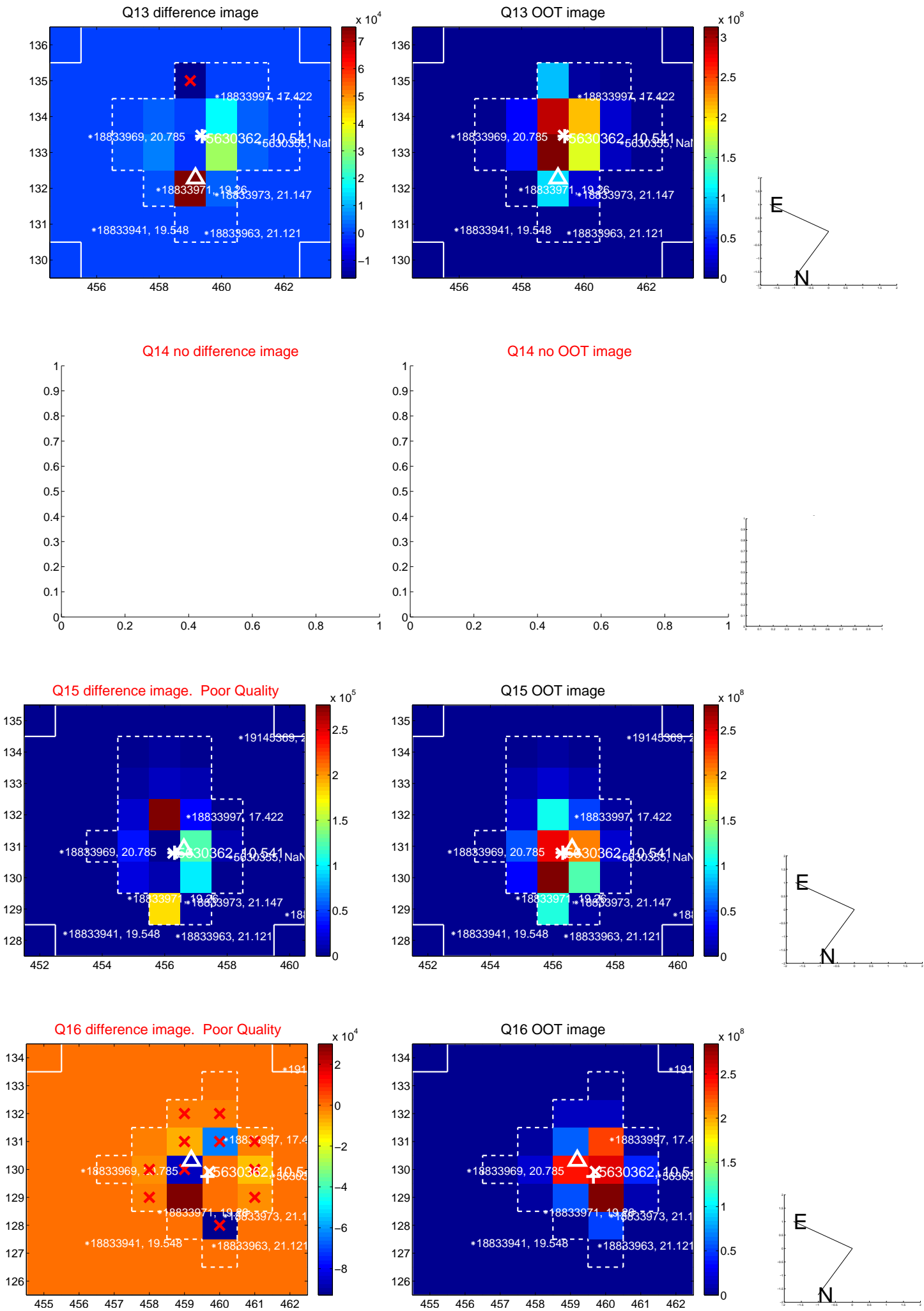
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



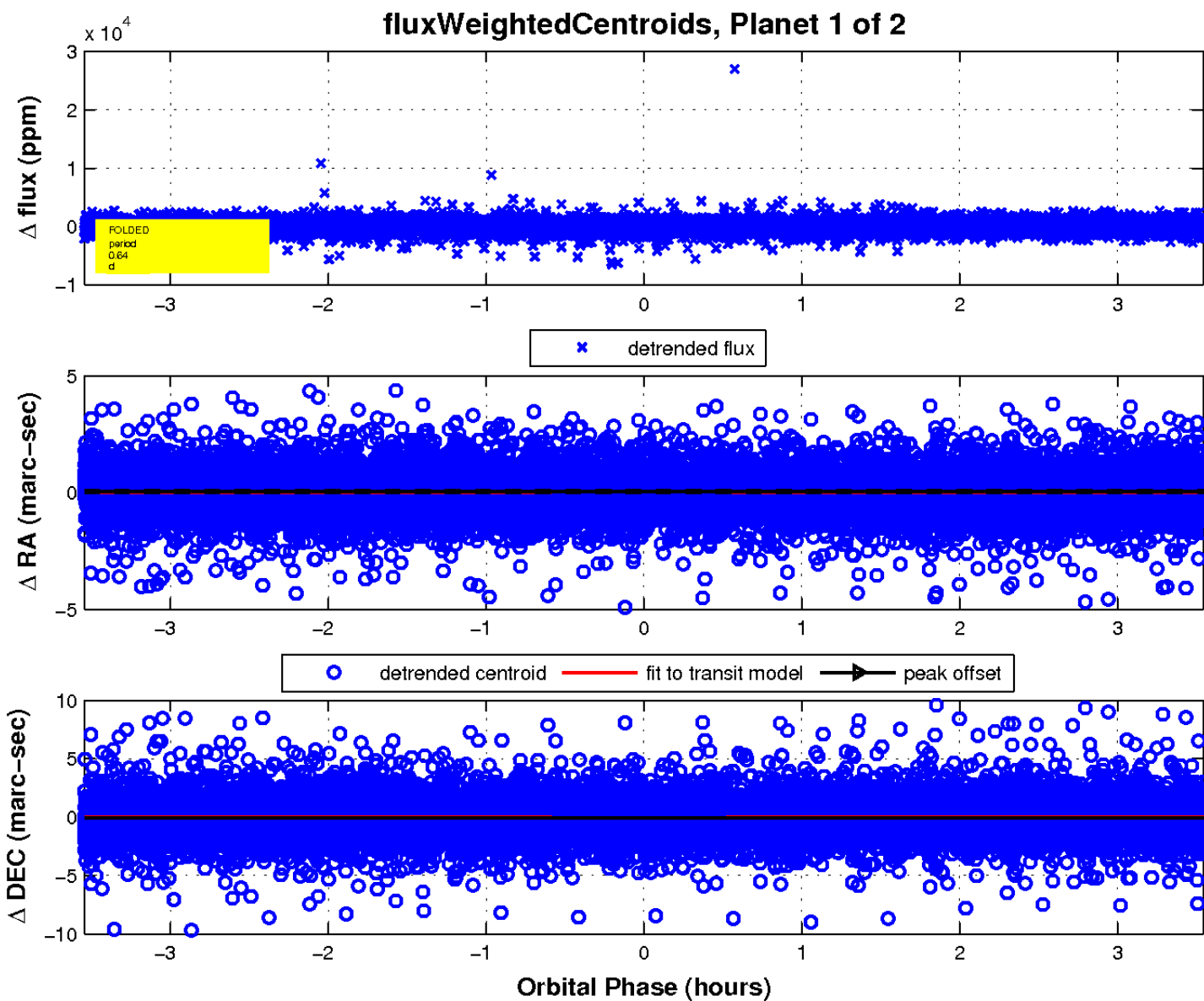
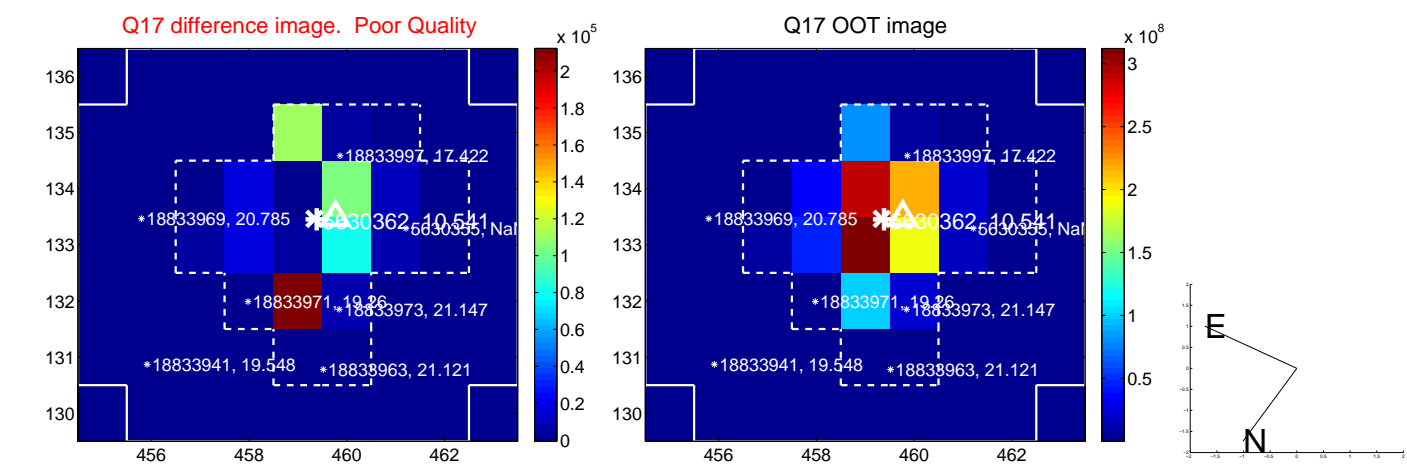
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

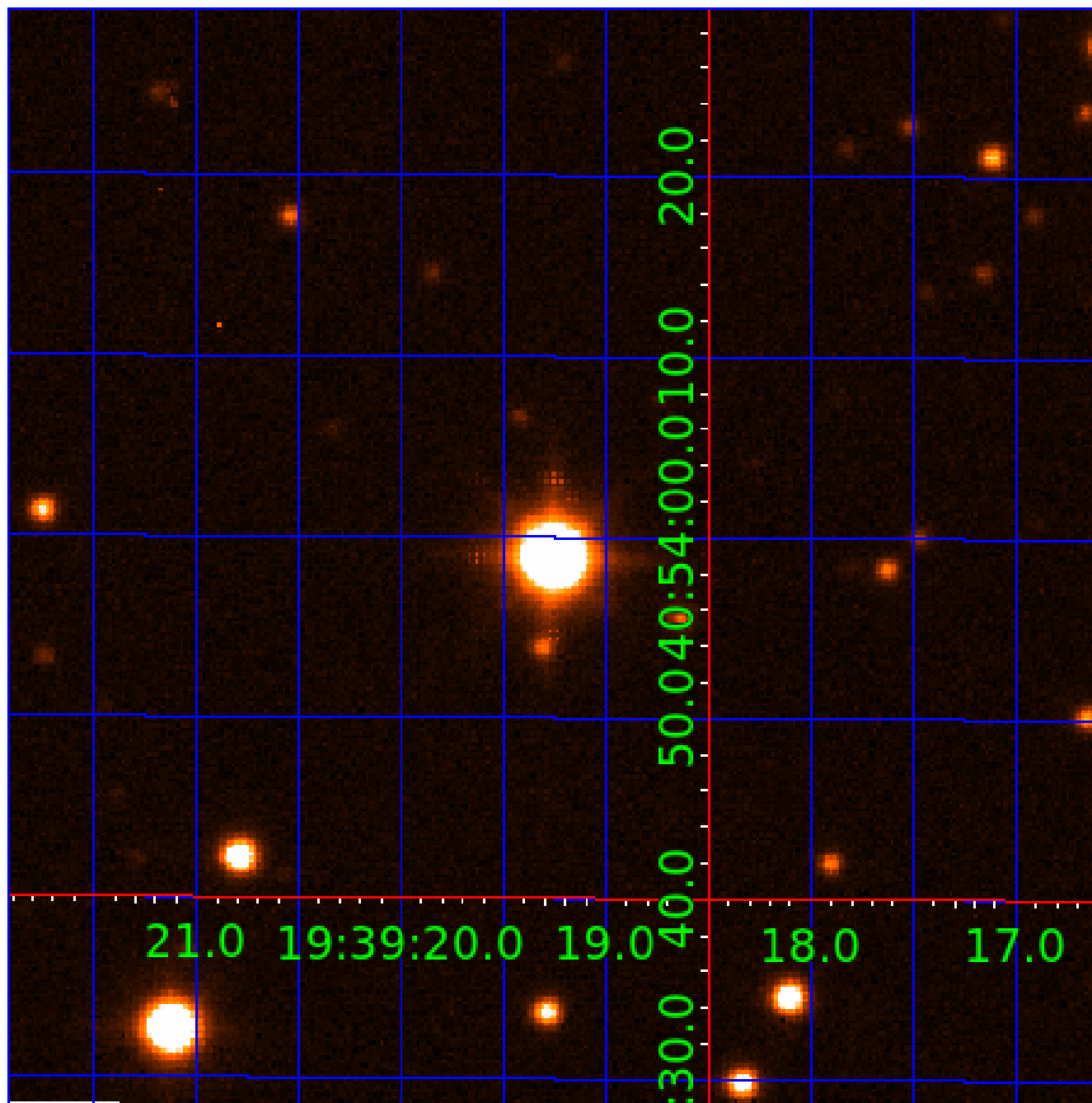


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005630362

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})
005630362-01	OBS	No	0.642929	131.538296	15.4	1.182	10.7	1.9	2.63	7821	1.11	70816.80
005630362-02	OBS	No	377.823333	324.100899	1446.3	5.509	10.6	5.4	2.63	7821	12.57	14.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005630362-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—CENT_SATURATED
005630362-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

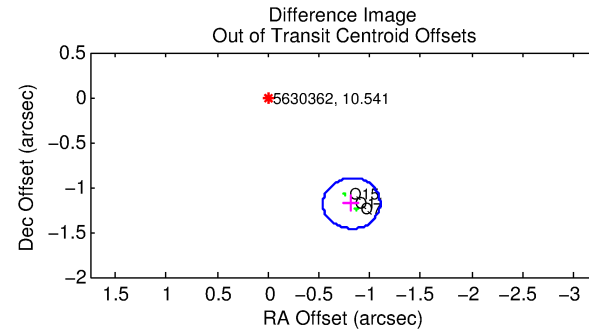
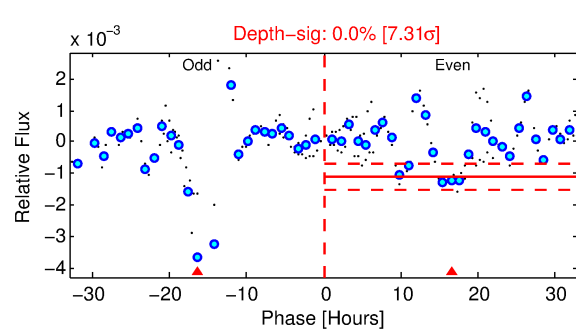
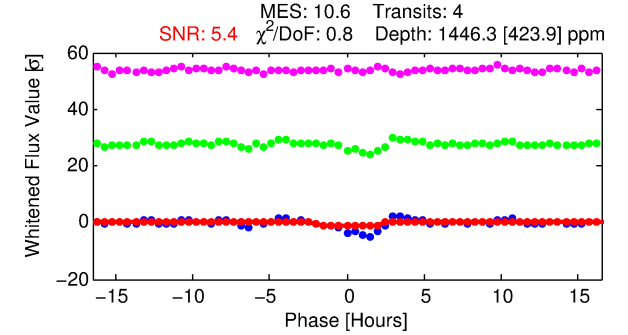
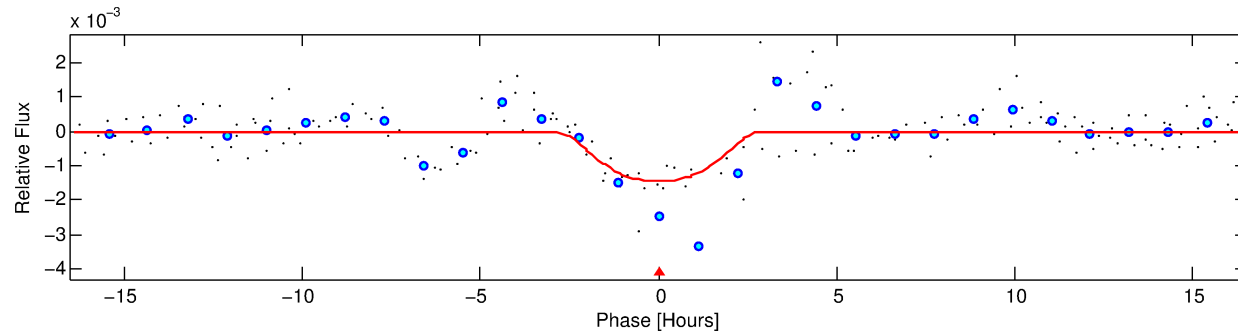
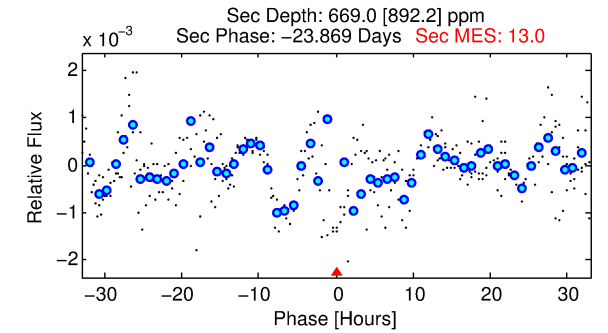
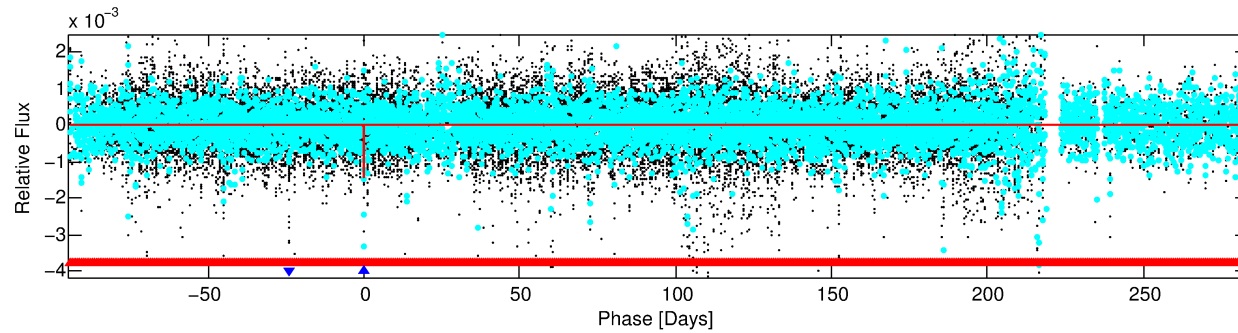
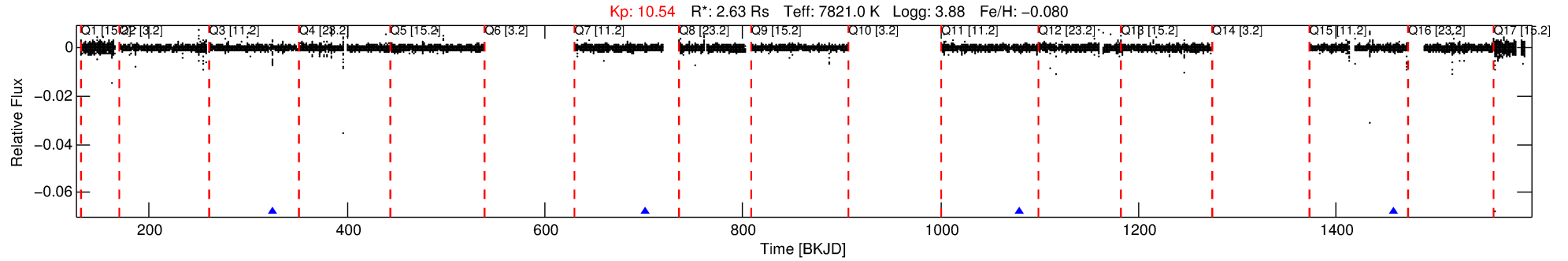
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005630362-02

No Significant Match Found

DV One-Page Summary

KIC: 5630362 Candidate: 2 of 2 Period: 377.823 d



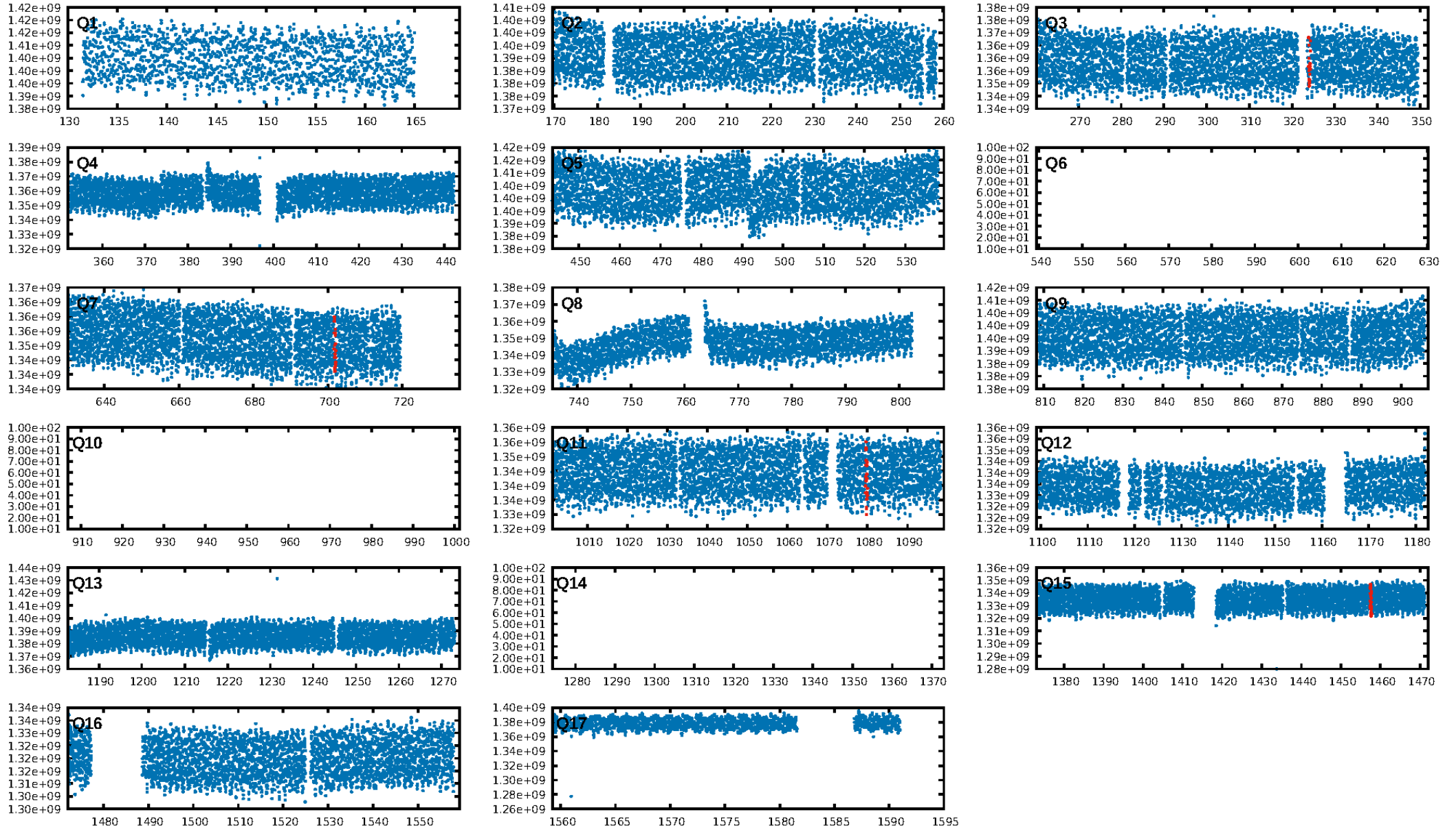
DV Fit Results:

Period = 377.82333 [0.00740] d
Epoch = 324.1009 [0.0147] BKJD
Rp/R* = 0.0437 [0.0103]
a/R* = 216.32 [46.81]
b = 0.96 [0.03]
Seff = 14.39 [4.34]
Teff = 497 [37] K
Rp = 12.57 [4.12] Re
a = 1.2715 [0.2531] AU
Ag = 3767.91 [5447.45] [0.69σ]
Teffp = 6016 [2128] K [2.59σ]

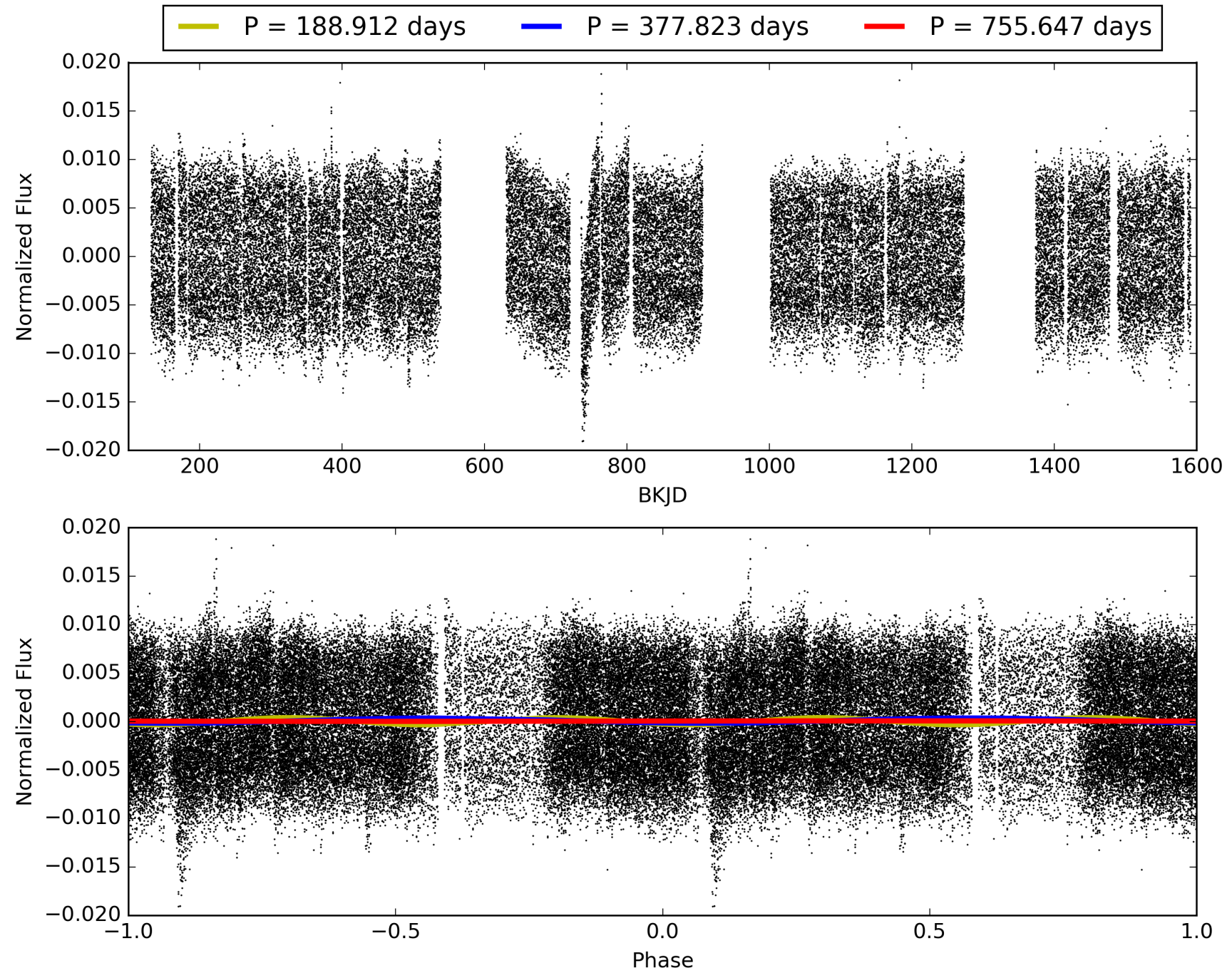
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1606.55σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 81.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.31e-06
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -4.014
Centroid-sig: 91.0%
Centroid-so: 0.038 arcsec [0.11σ]
OotOffset-rm: 1.437 arcsec [15.32σ]
KicOffset-rm: 1.639 arcsec [21.80σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 0.00 [0/3]

TCE 005630362-02, PDC Light Curves

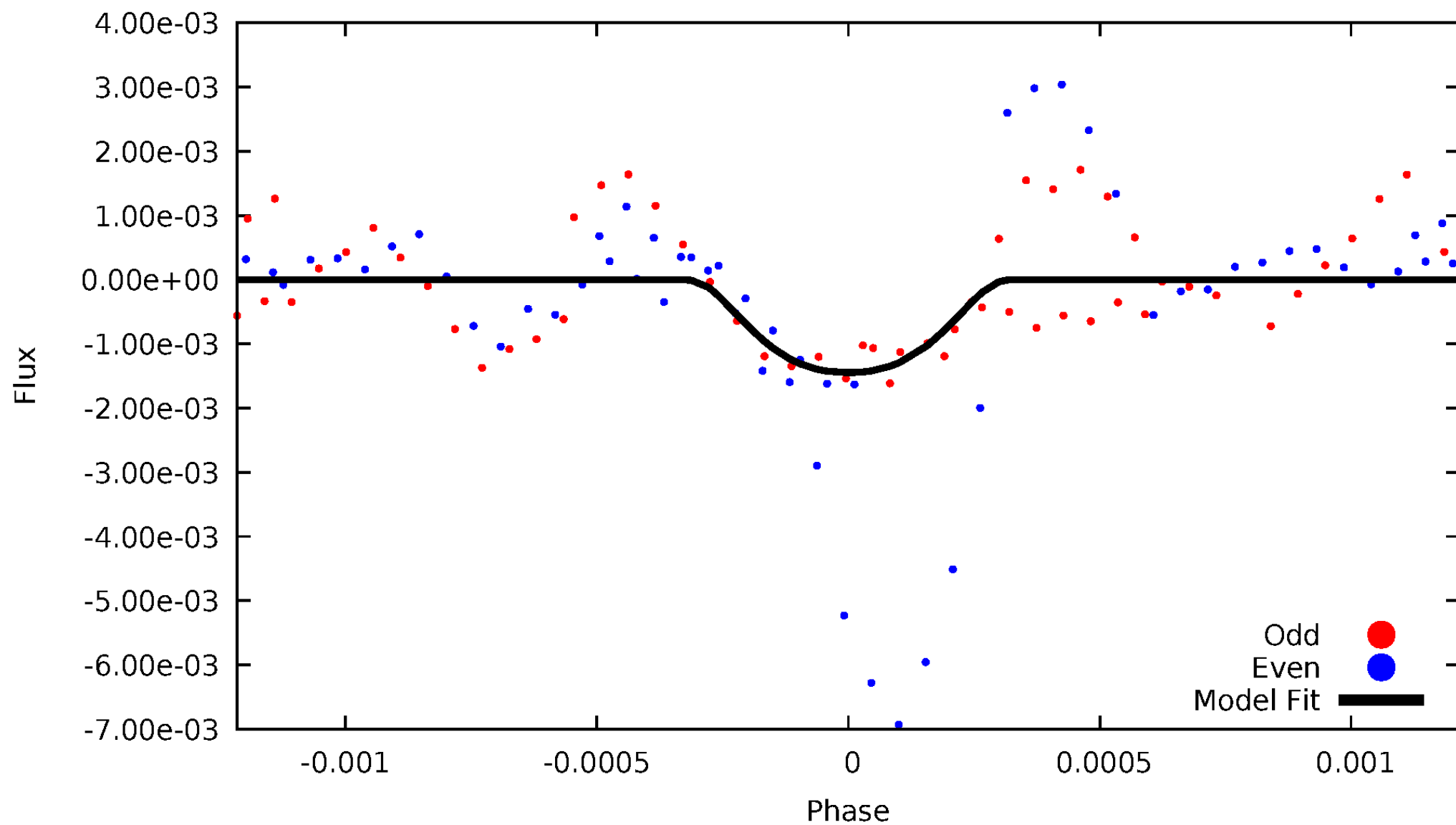


TCE 005630362-02



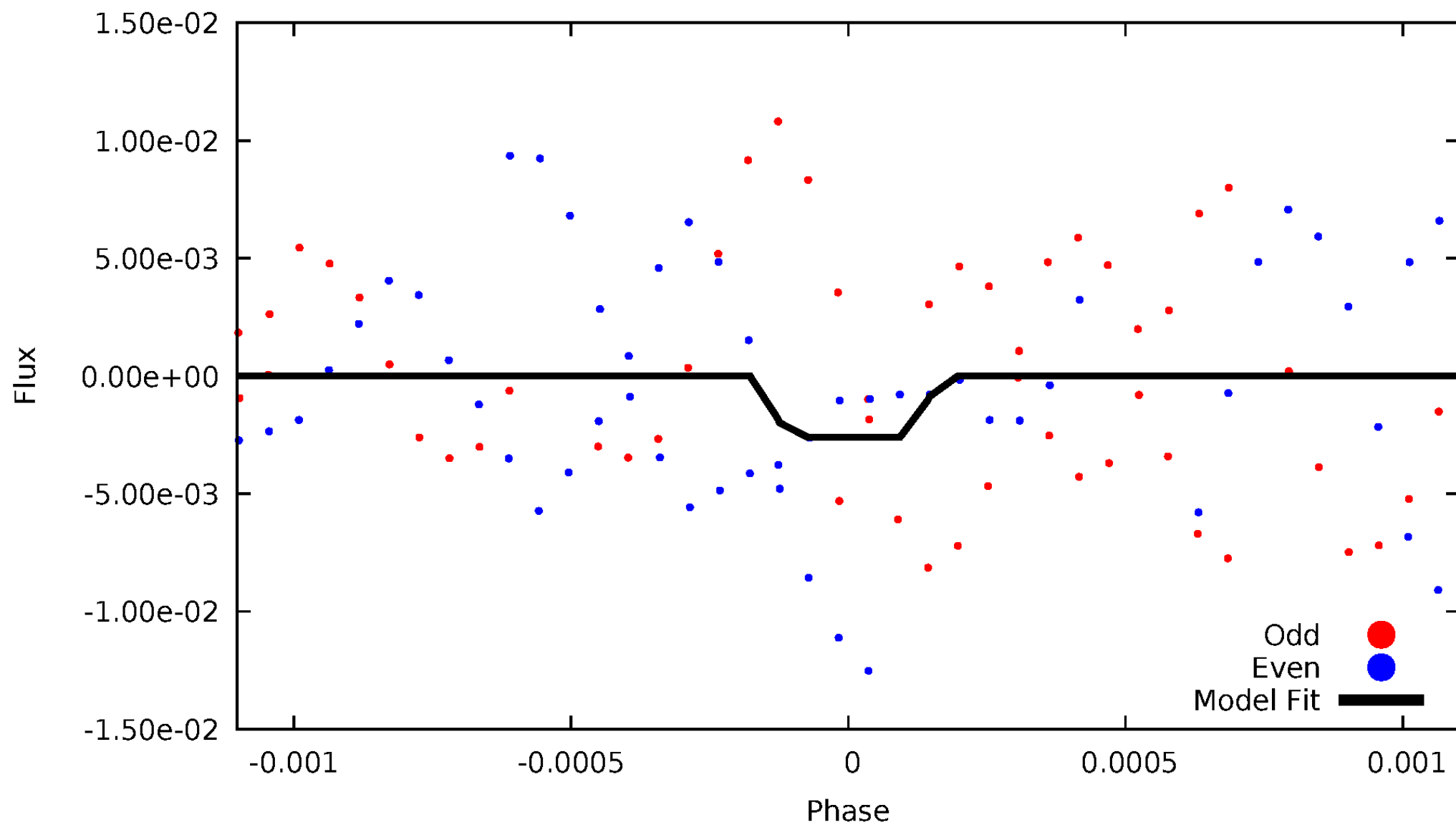
DV Odd/Even

TCE 005630362-02



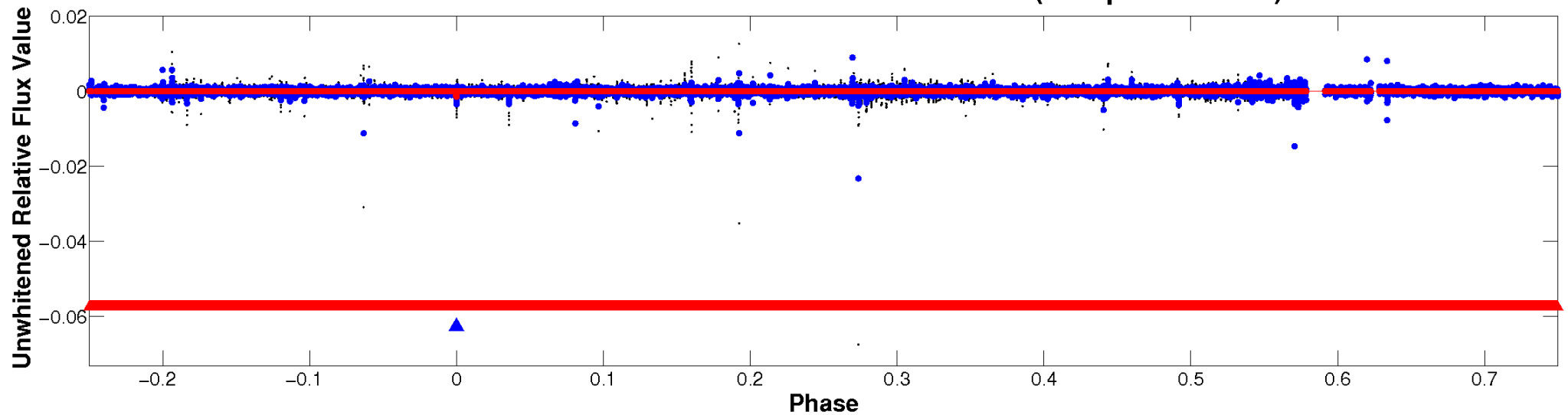
ALT Odd/Even

TCE 005630362-02

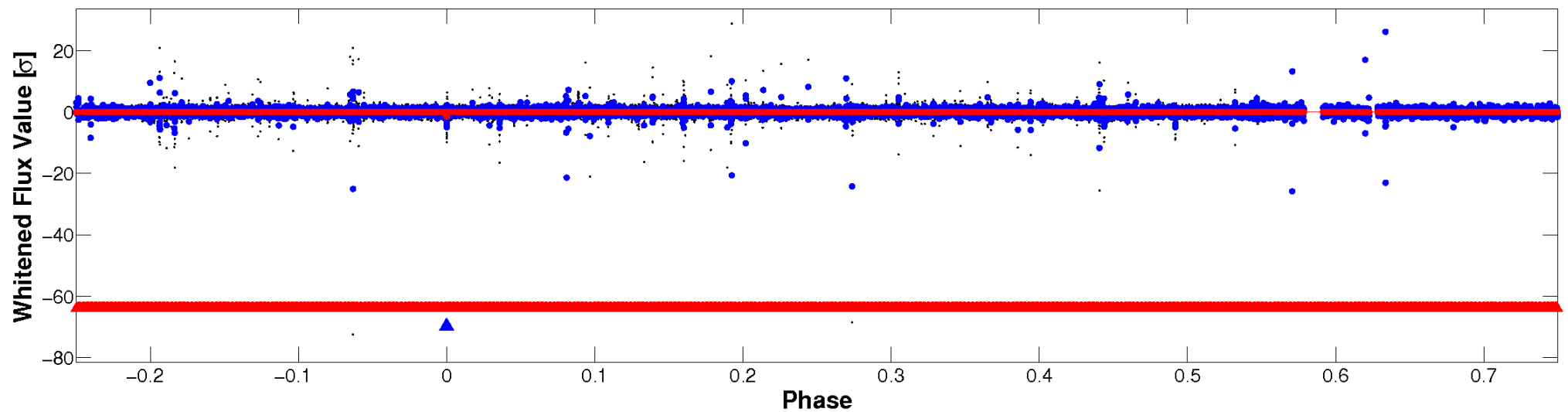


Non-Whitened Vs. Whitened Light Curve

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

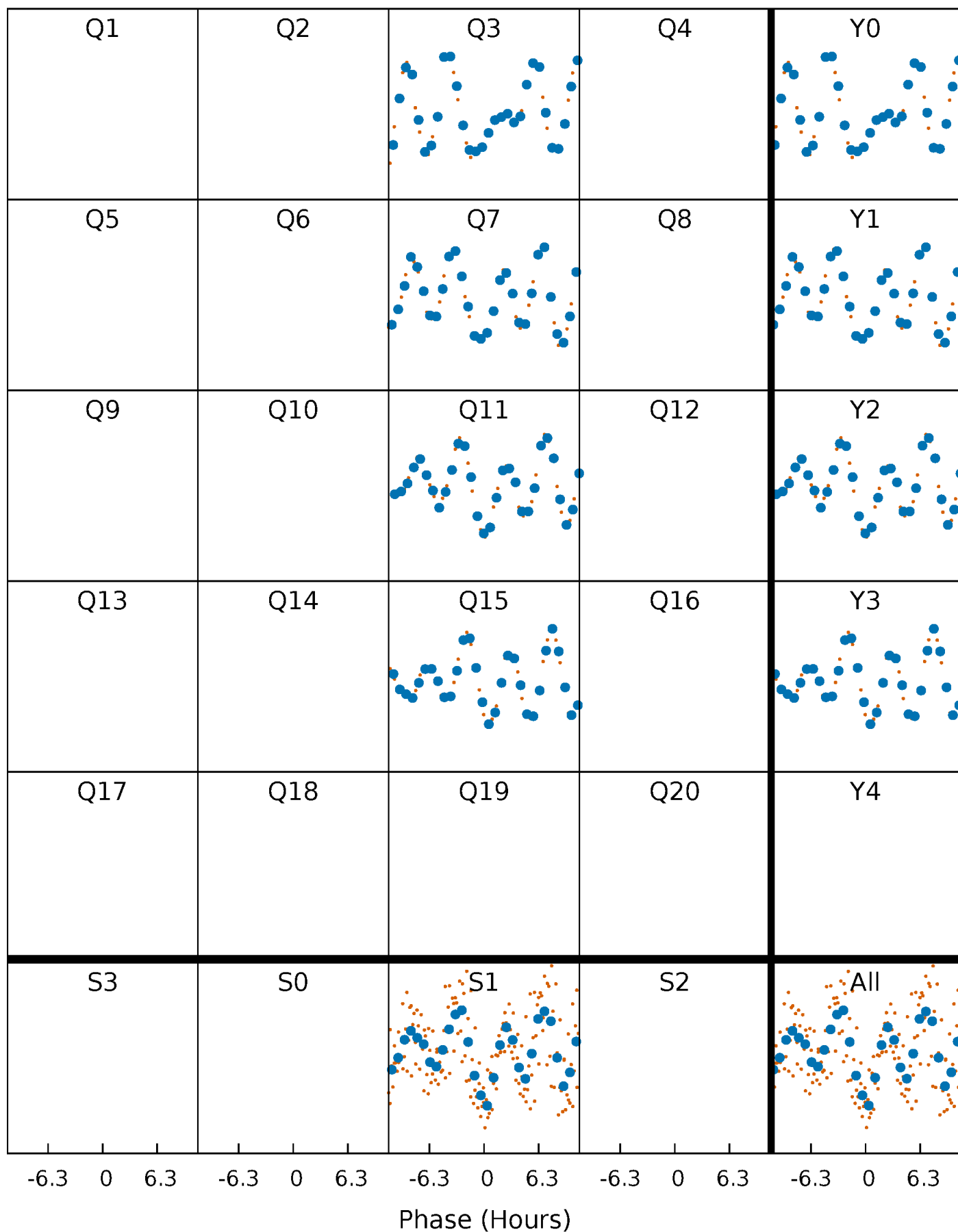


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



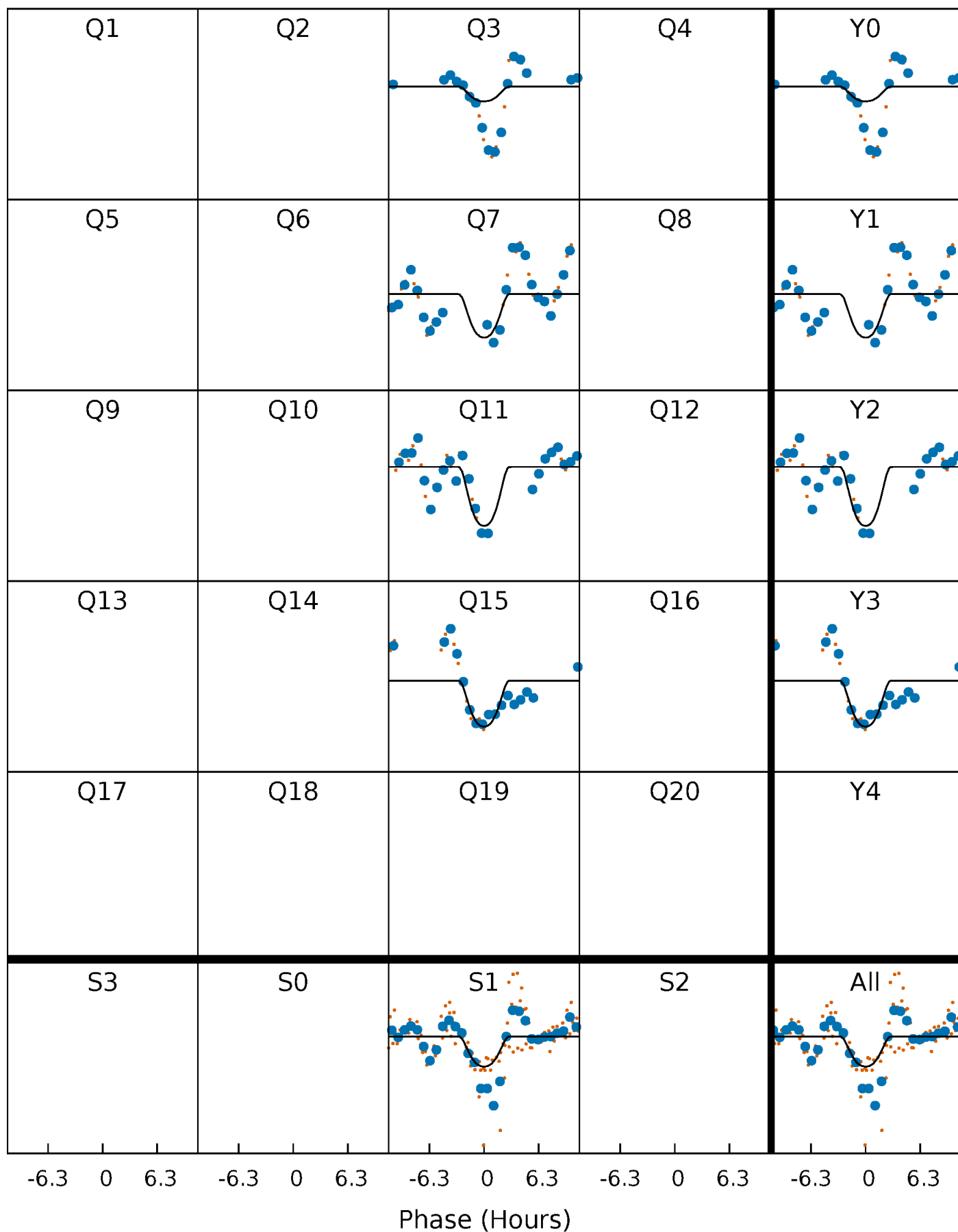
PDC Quarter-Phased Transit Curves

TCE 005630362-02 $P=377.823333$ Days $T_0=324.100899$ (BKJD)



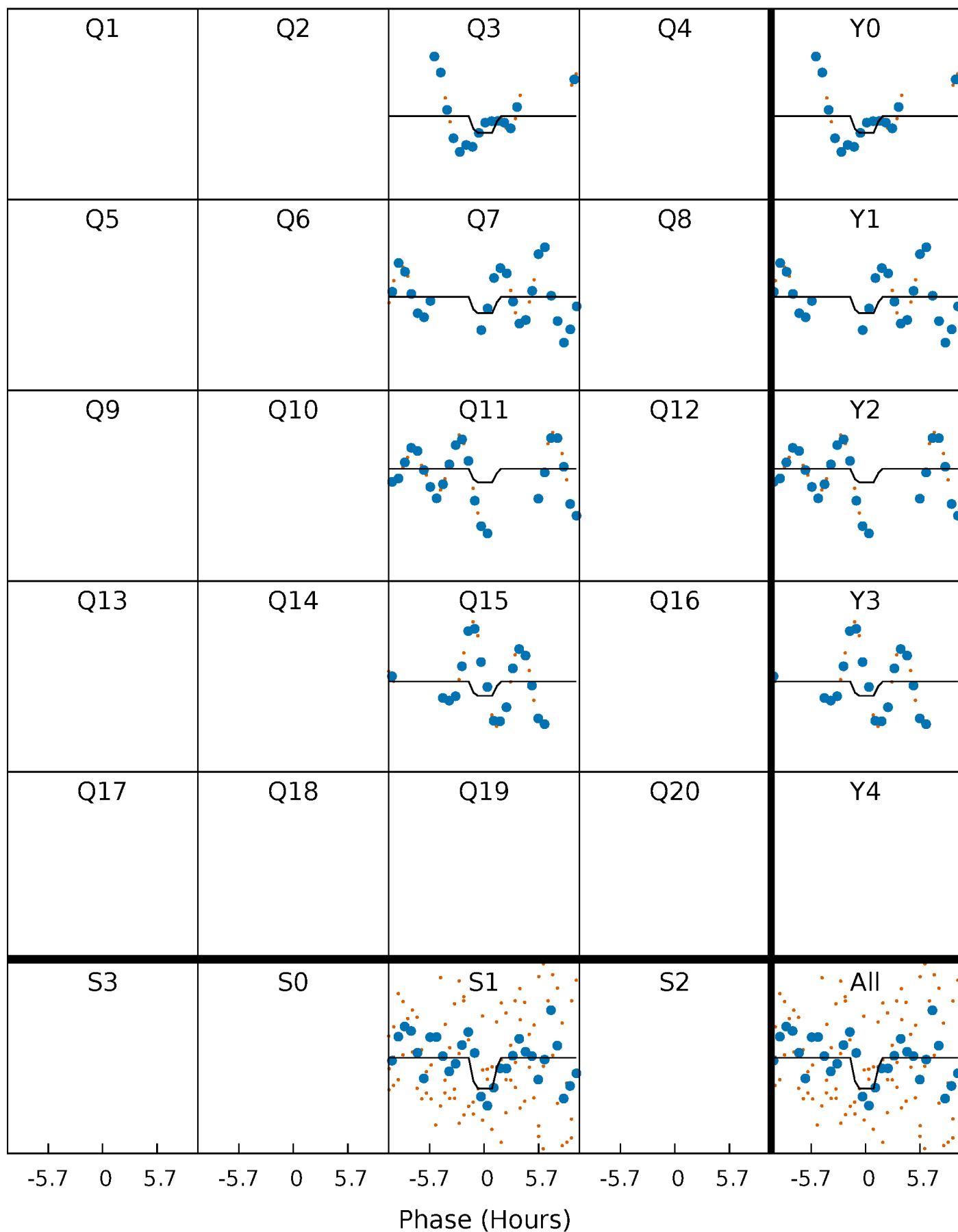
DV Quarter-Phased Transit Curves

TCE 005630362-02 $P=377.823333$ Days $T_0=324.100899$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

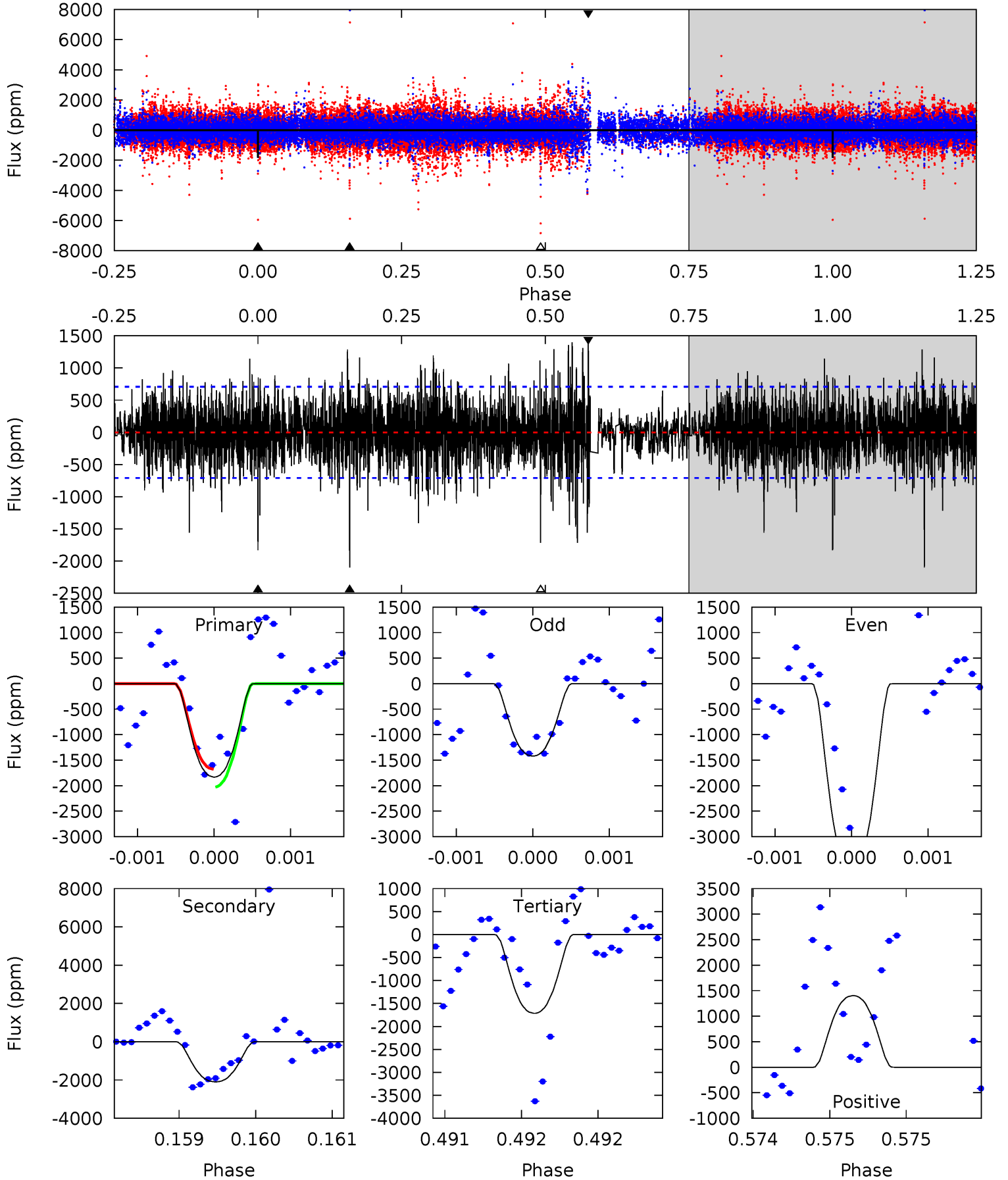
TCE 005630362-02 $P=377.796940$ Days $T_0=324.144426$ (BKJD)



DV Model-Shift Uniqueness Test

005630362-02, P = 377.823333 Days, E = 324.100899 Days

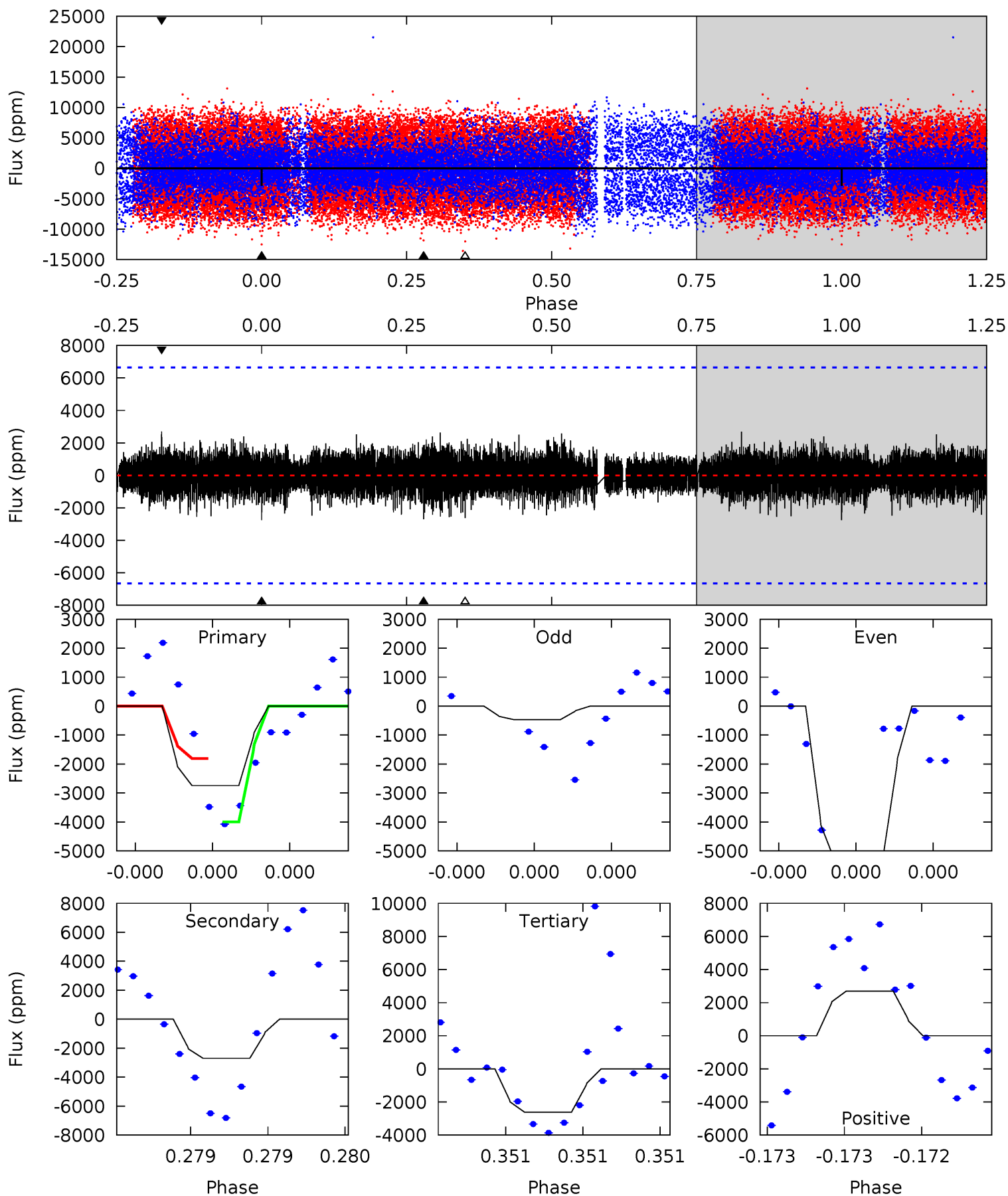
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.3	16.4	13.4	11.0	5.53	3.42	2.70	0.91	3.34	2.99	5.42	9.14	1.64	0.40	1.37



Alt Model-Shift Uniqueness Test

005630362-02, P = 377.796940 Days, E = 324.144426 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.34	2.30	2.24	2.30	5.68	3.64	0.67	0.11	0.04	0.06	-0.00	2.22	1.32	0.50	0.93



Stellar Parameters For KIC 005630362

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7821^{+78}_{-78}	$3.880^{+0.168}_{-0.072}$	$-0.080^{+0.100}_{-0.150}$	$2.634^{+0.257}_{-0.599}$	$1.920^{+0.027}_{-0.226}$	$0.148^{+0.131}_{-0.035}$
	+1%/-1%	+4%/-2%	+125%/-188%	+10%/-23%	+1%/-12%	+88%/-24%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 005630362-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2098 ± 128	$11.98^{+3.21}_{-3.07}$	693^{+24}_{-40}	8084^{+1657}_{-926}	12823^{+9945}_{-4952}
Alt.	-2694 ± 1171	$13.99^{+3.25}_{-3.11}$	690^{+24}_{-38}	7858^{+1765}_{-1347}	11615^{+10260}_{-5610}

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 $A_{obs} \gg 1.0$

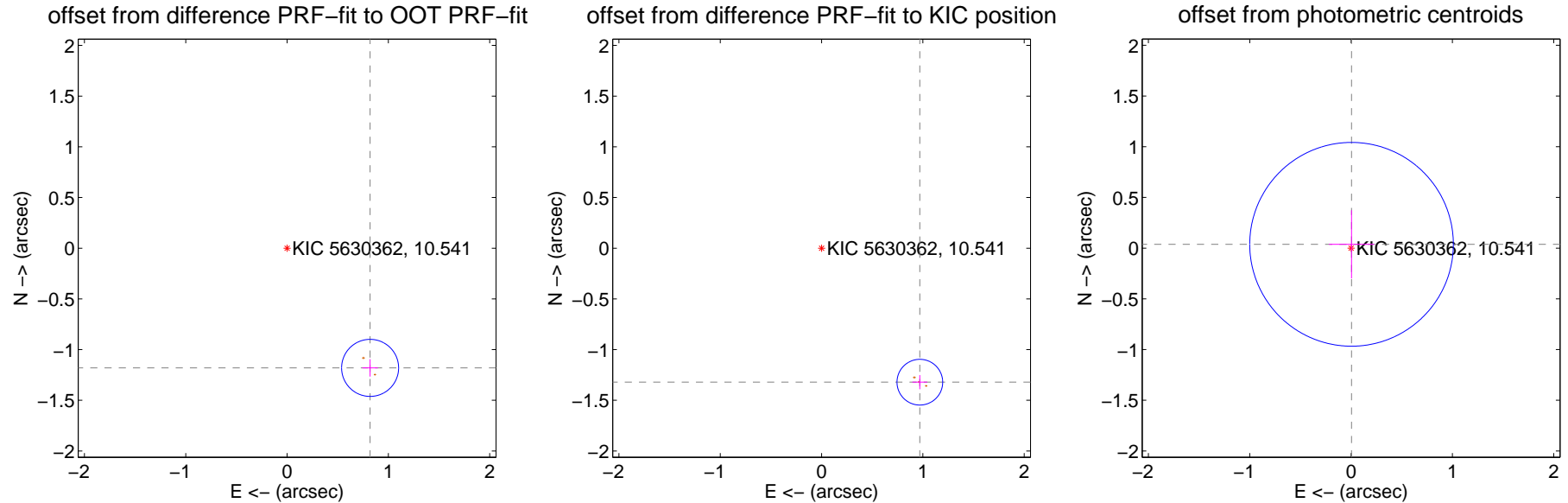
DV Centroid Data

Supplemental centroid analysis for 005630362-02. **Kepler magnitude: 10.54.** Transit SNR 5.44

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.437 ± 0.094	15.32	-0.820 ± 0.076	-1.181 ± 0.086
PRF-fit source offset from KIC position	1.639 ± 0.075	21.80	-0.970 ± 0.073	-1.322 ± 0.070
photometric centroid source offset	0.04 ± 0.33	0.11	-0.00 ± 0.22	0.04 ± 0.34



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.

Q5 no difference image



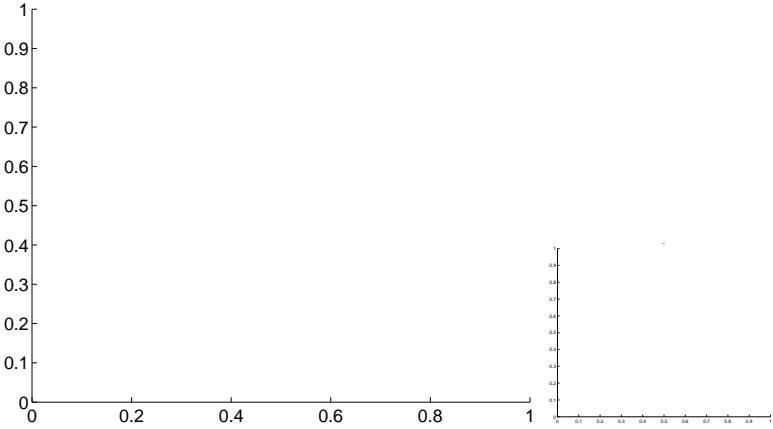
Q5 no OOT image



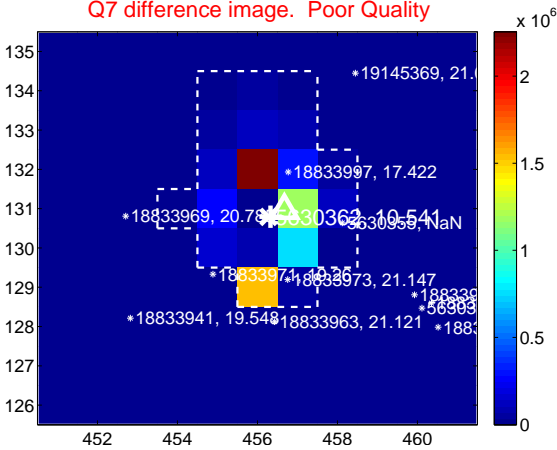
Q6 no difference image



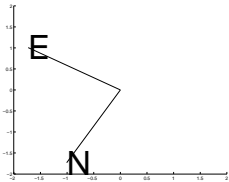
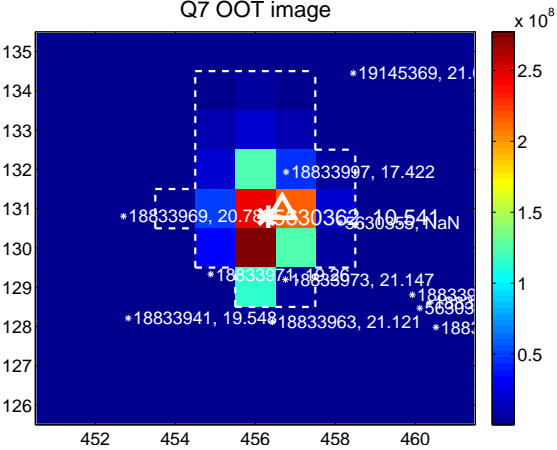
Q6 no OOT image



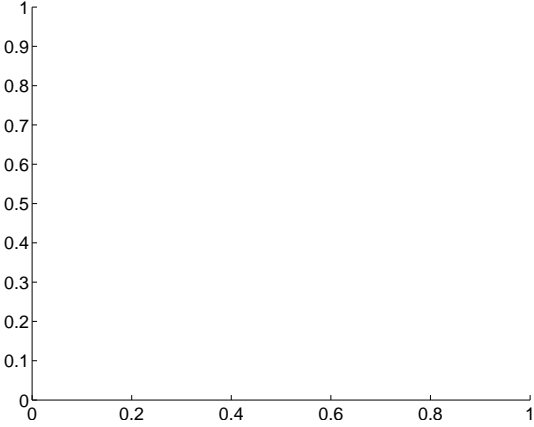
Q7 difference image. Poor Quality



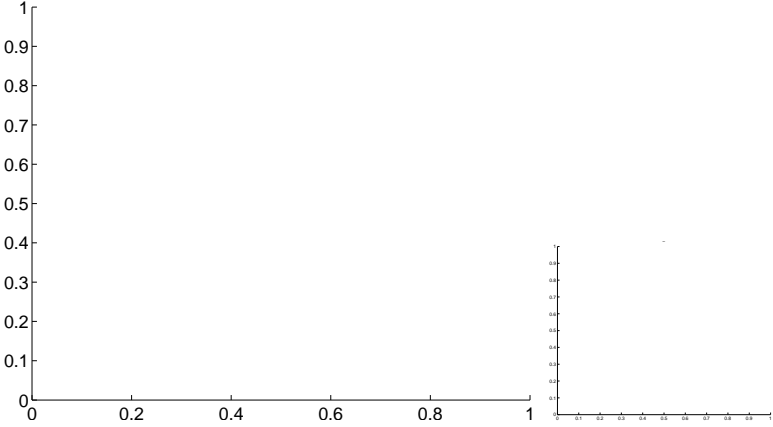
Q7 OOT image



Q8 no difference image



Q8 no OOT image



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

Q9 no difference image



Q9 no OOT image



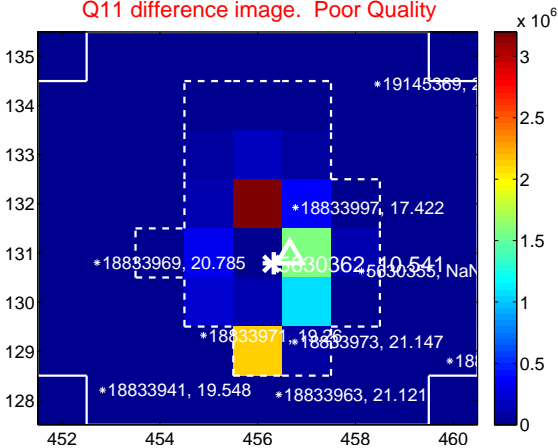
Q10 no difference image



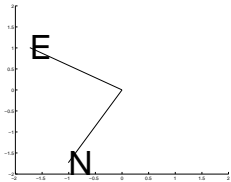
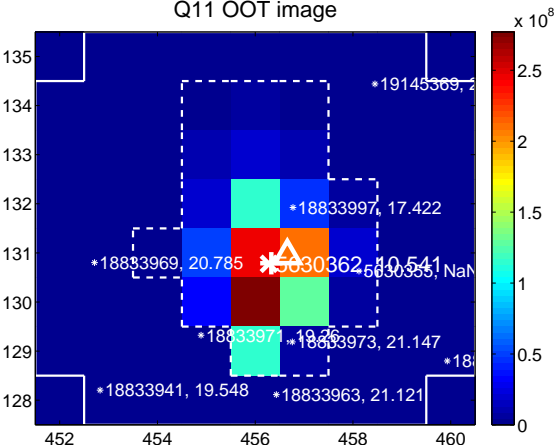
Q10 no OOT image



Q11 difference image. Poor Quality



Q11 OOT image



Q12 no difference image



Q12 no OOT image



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q13 no difference image



Q13 no OOT image



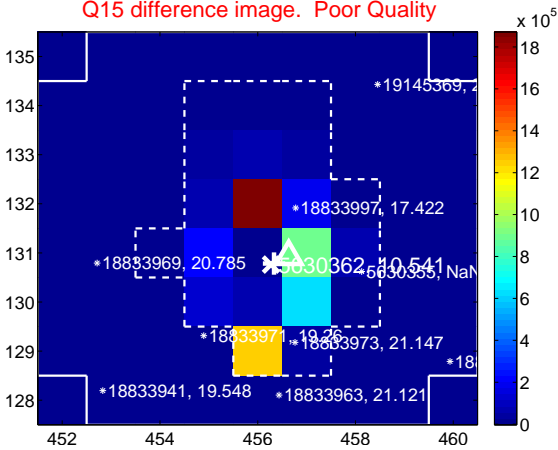
Q14 no difference image



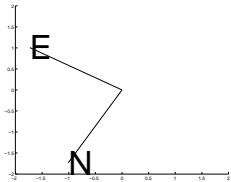
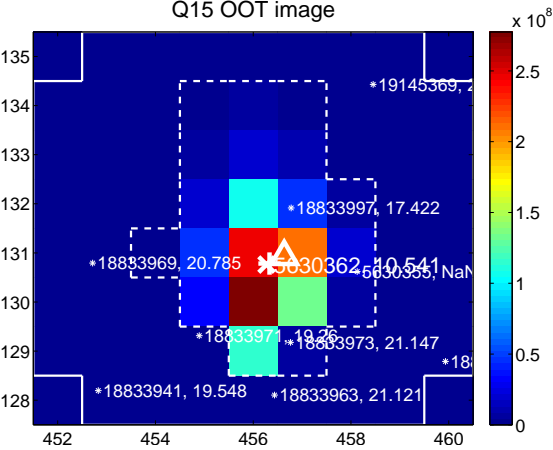
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



Q16 no difference image



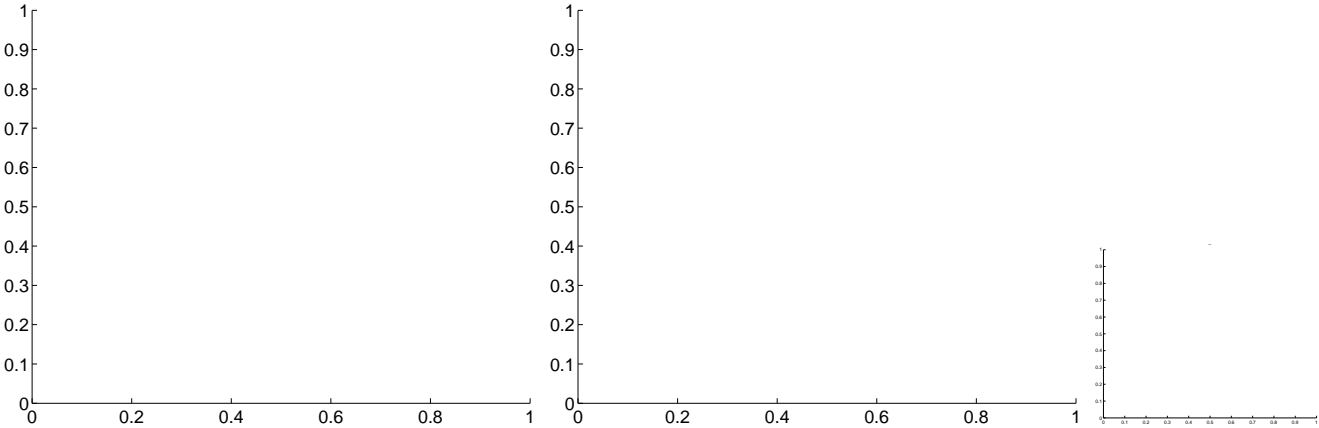
Q16 no OOT image



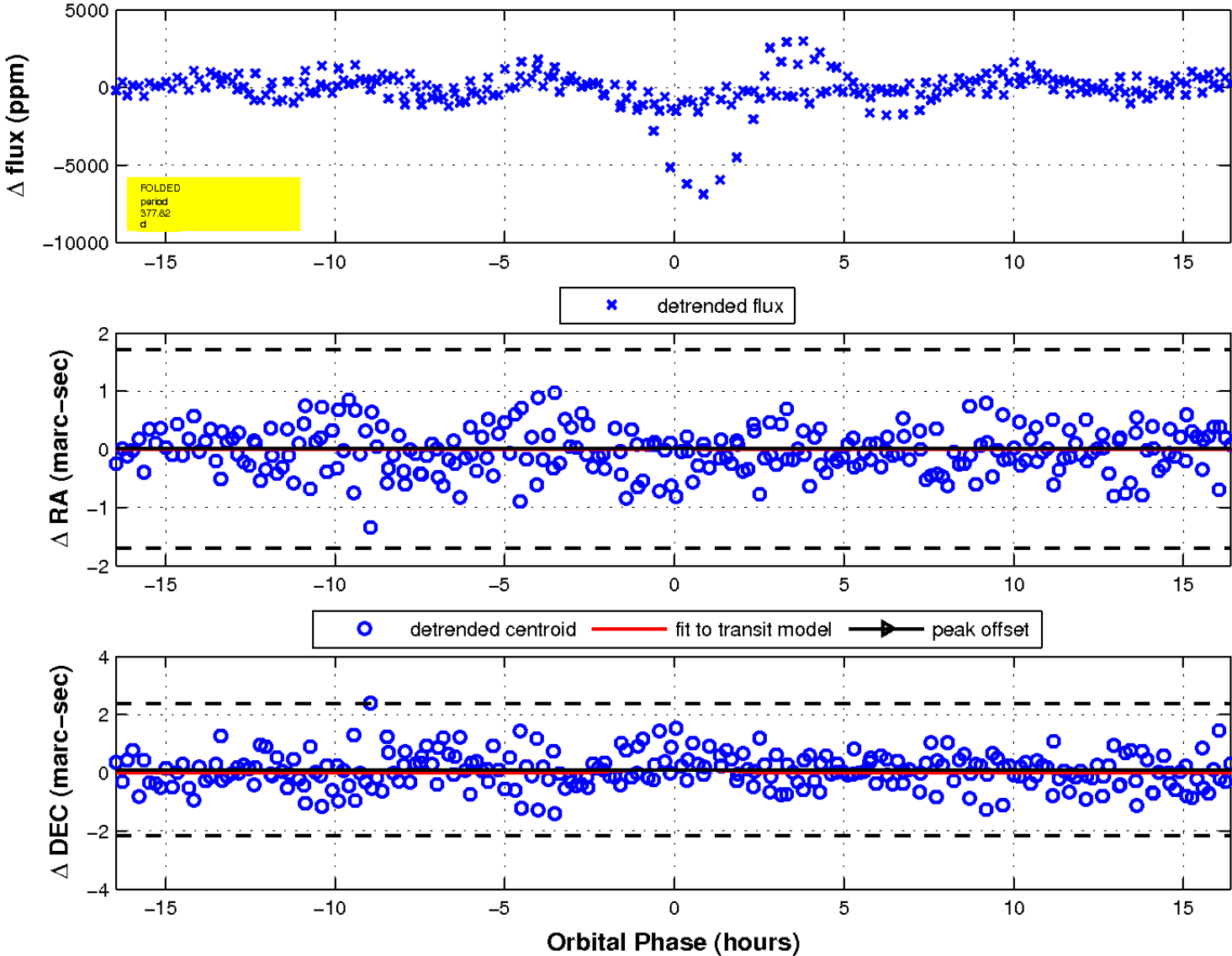
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q17 no difference image

Q17 no OOT image



fluxWeightedCentroids, Planet 2 of 2



Declination