

KIC 008560927

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})
008560927-01	OBS	7897.01	31.971420	133.913952	37.9	10.514	7.7	7.7	1.32	5846	0.85	49.02
008560927-02	OBS	No	523.600292	492.515315	118.0	14.366	9.0	6.4	1.32	5846	1.68	1.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008560927-01	OBS	FP	0.00	0	0	0	1	CENT_FEW_MEAS—EPHEM_MATCH
008560927-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—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.

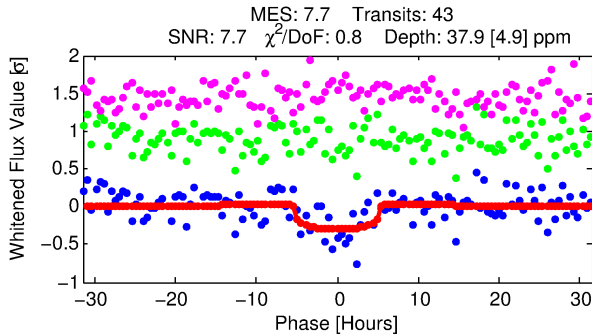
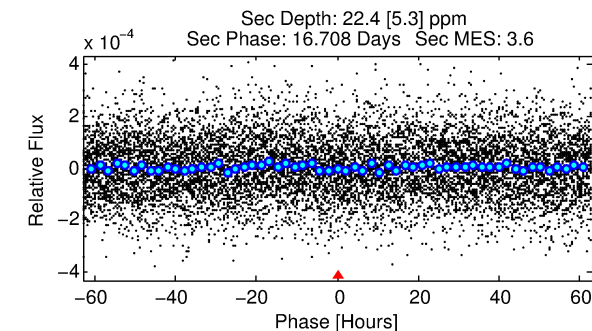
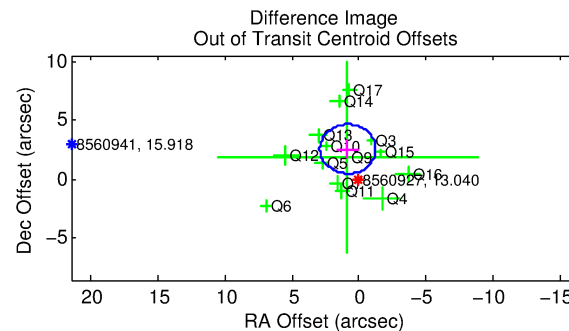
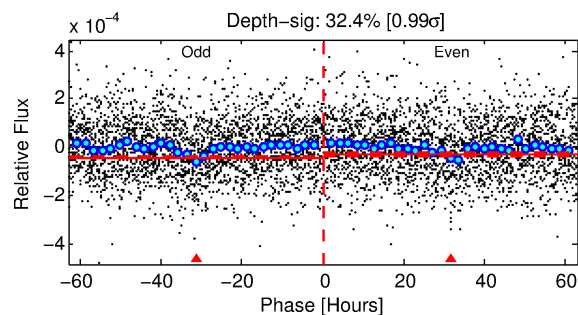
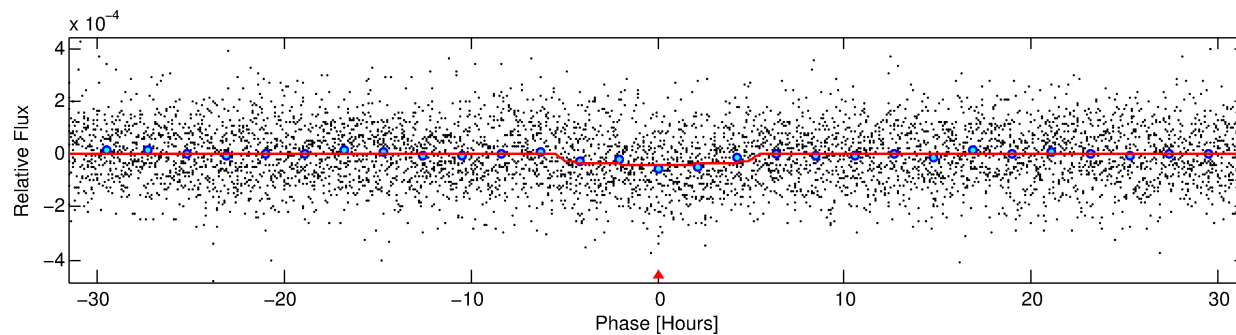
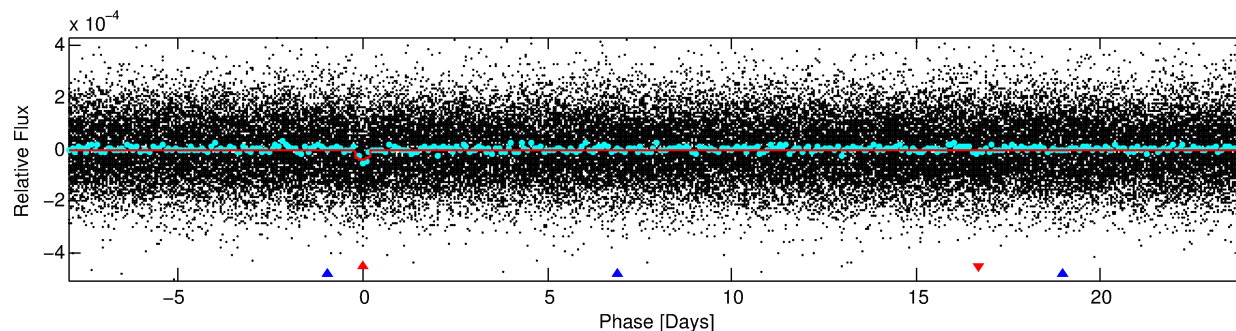
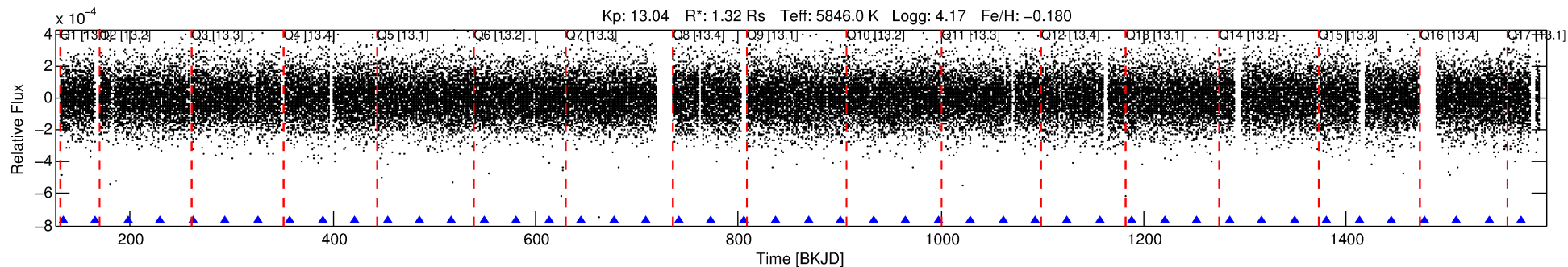
Ephemeris Match Information For 008560927-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (")	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
008560927-01	8560927	008560861-01	8560861	1:1	133.5	1	-34	8.50	13.04	1988.30	Direct-PRF	0	1.46	0.96

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 8560927 Candidate: 1 of 2 Period: 31.971 d



DV Fit Results:

Period = 31.97142 [0.00082] d
Epoch = 133.9140 [0.0207] BKJD
Rp/R* = 0.0059 [0.0035]
a/R* = 18.40 [50.75]
b = 0.62 [2.76]
Seff = 49.02 [20.40]
Teq = 675 [70] K
Rp = 0.85 [0.55] Re
a = 0.1933 [0.0479] AU
Ag = 634.10 [814.29] [0.78 σ]
Teffp = 5235 [1600] K [2.85 σ]

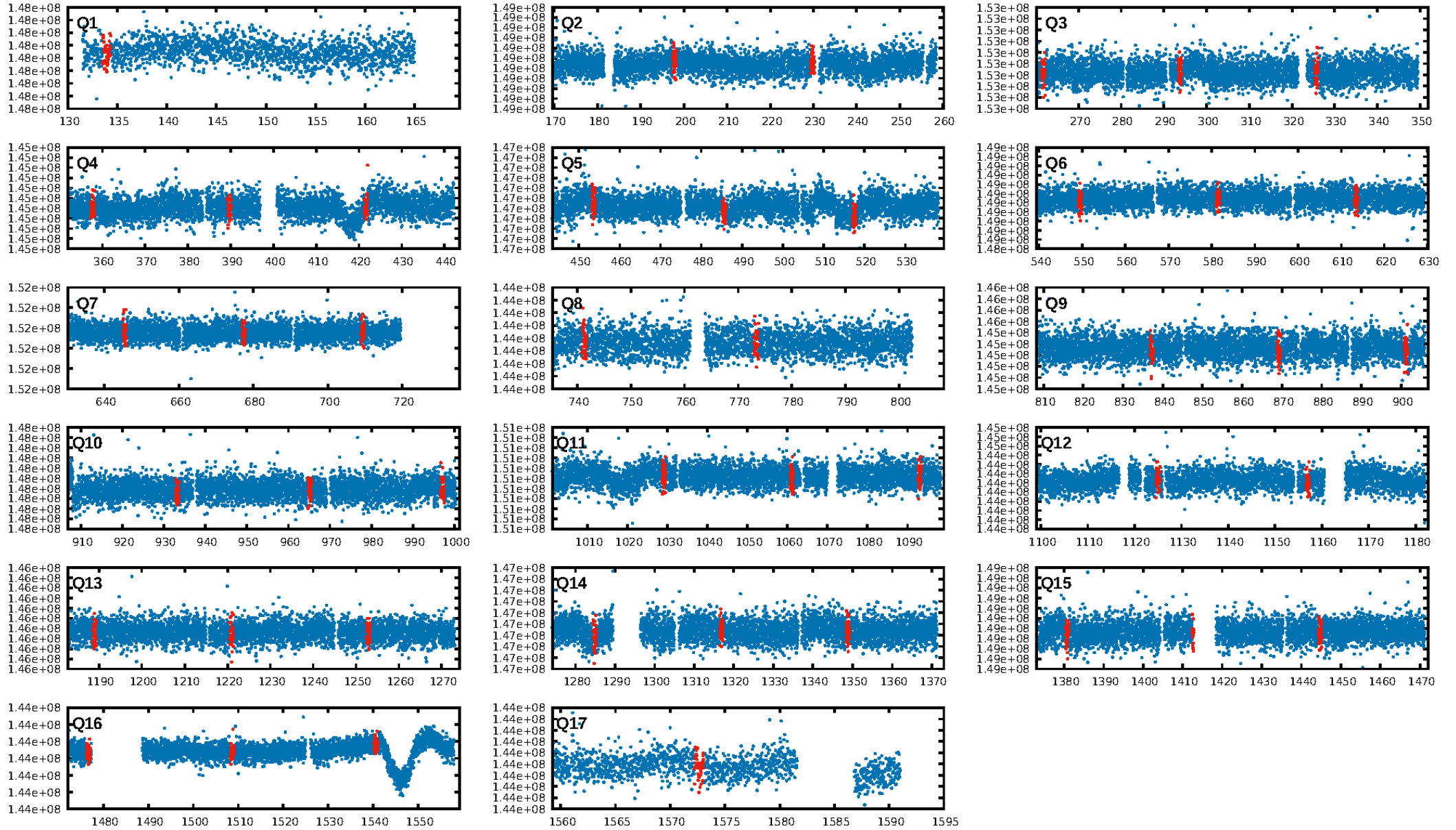
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [662.77 σ]
ModelChiSquare2-sig: 97.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.72e-14
RollingBand-fgt: 1.00 [41/41]
GhostDiagnostic-chr: 0.3805
Centroid-sig: 0.0%
Centroid-so: 5.782 arcsec [3.39 σ]
OotOffset-rm: 2.712 arcsec [3.90 σ]
KicOffset-rm: 2.475 arcsec [3.20 σ]
OotOffset-st: 3/4/3/4 [14]
KicOffset-st: 3/4/3/4 [14]
DiffImageQuality-fgm: 0.14 [2/14]
DiffImageOverlap-fno: 1.00 [17/17]

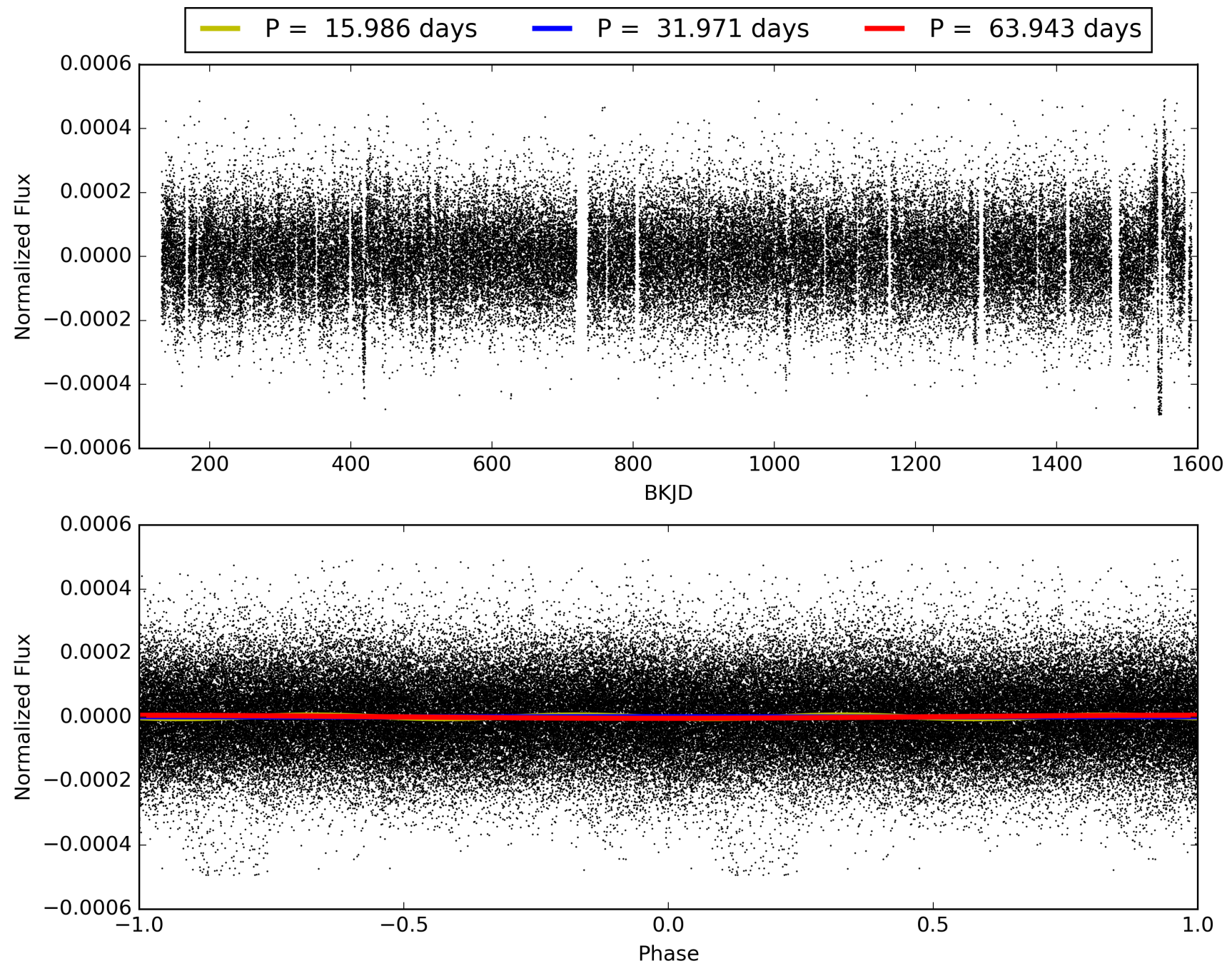
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:30:28 Z

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

TCE 008560927-01, PDC Light Curves

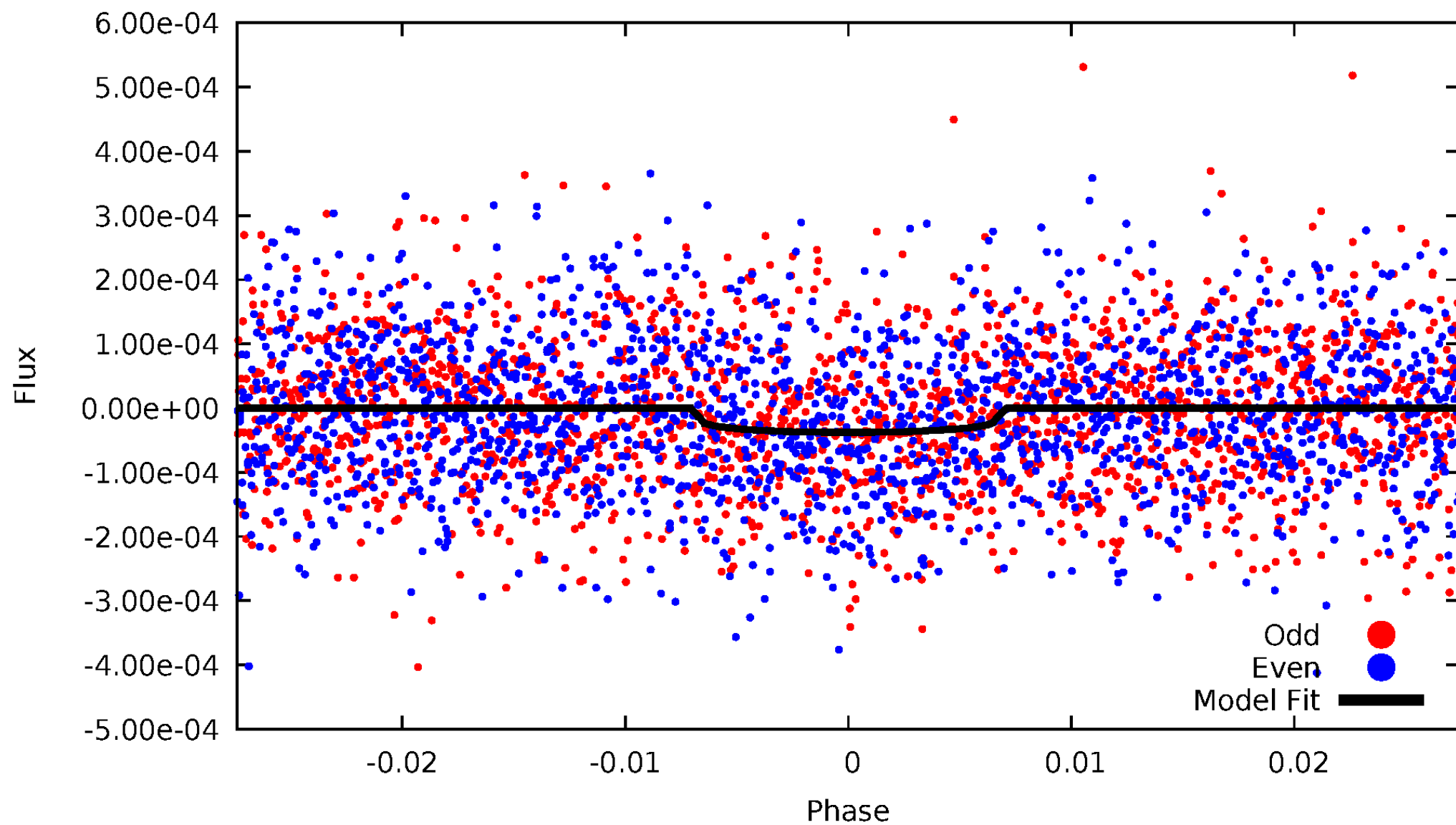


TCE 008560927-01



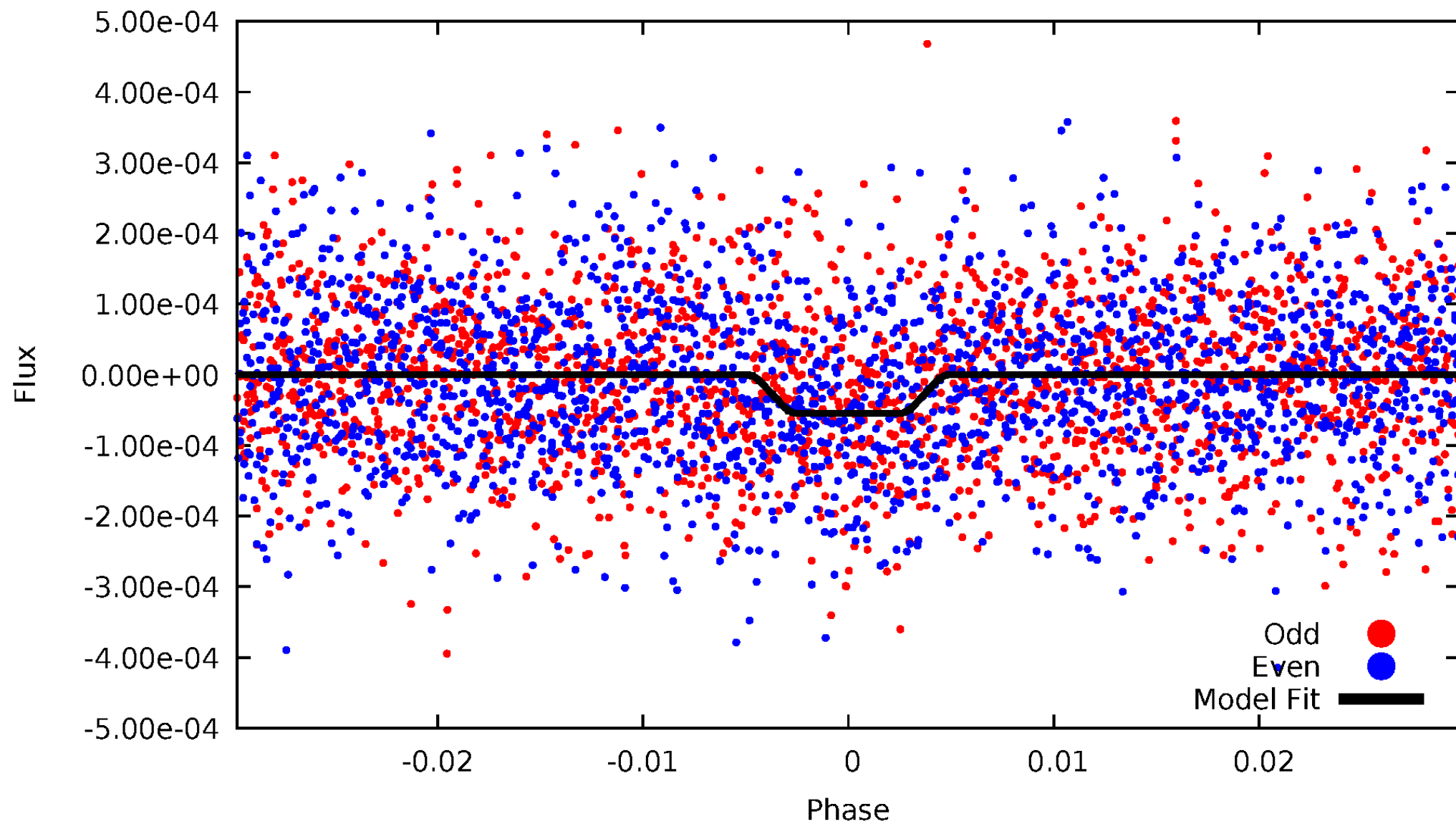
DV Odd/Even

TCE 008560927-01



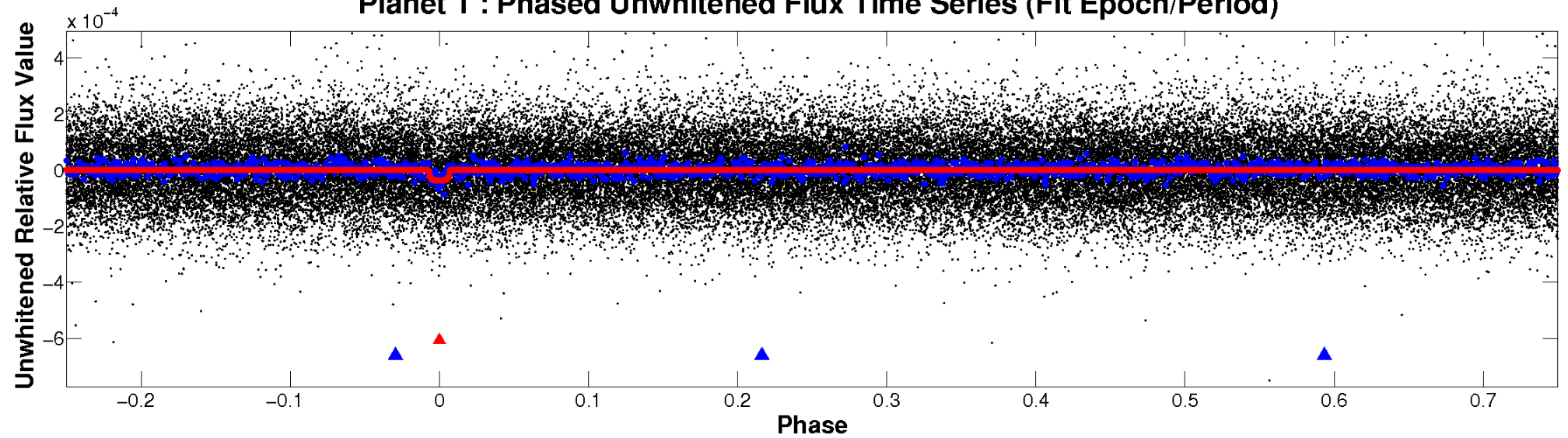
ALT Odd/Even

TCE 008560927-01

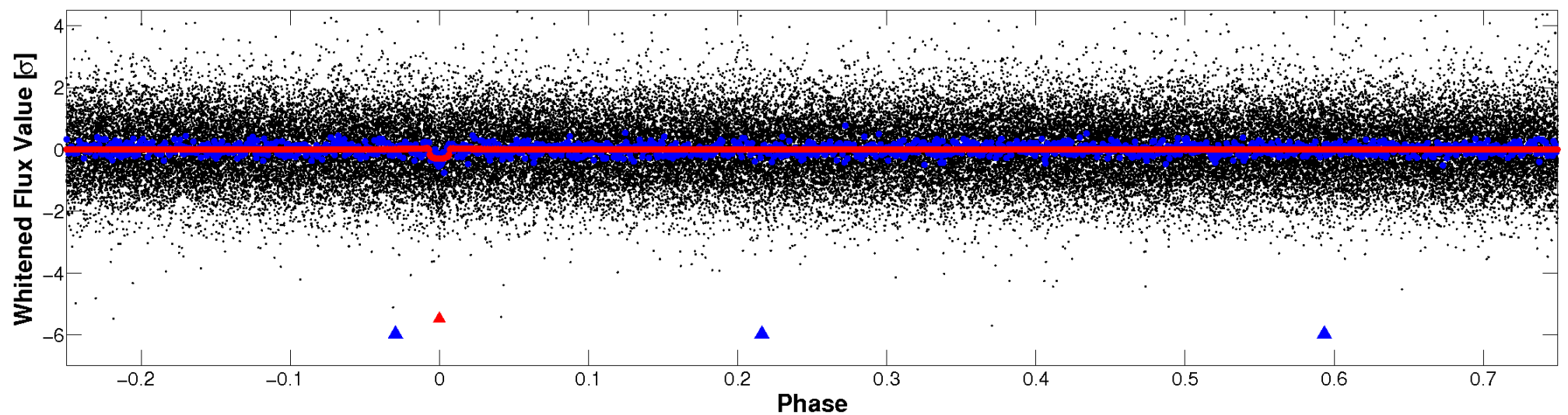


Non-Whitened Vs. Whitened Light Curve

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

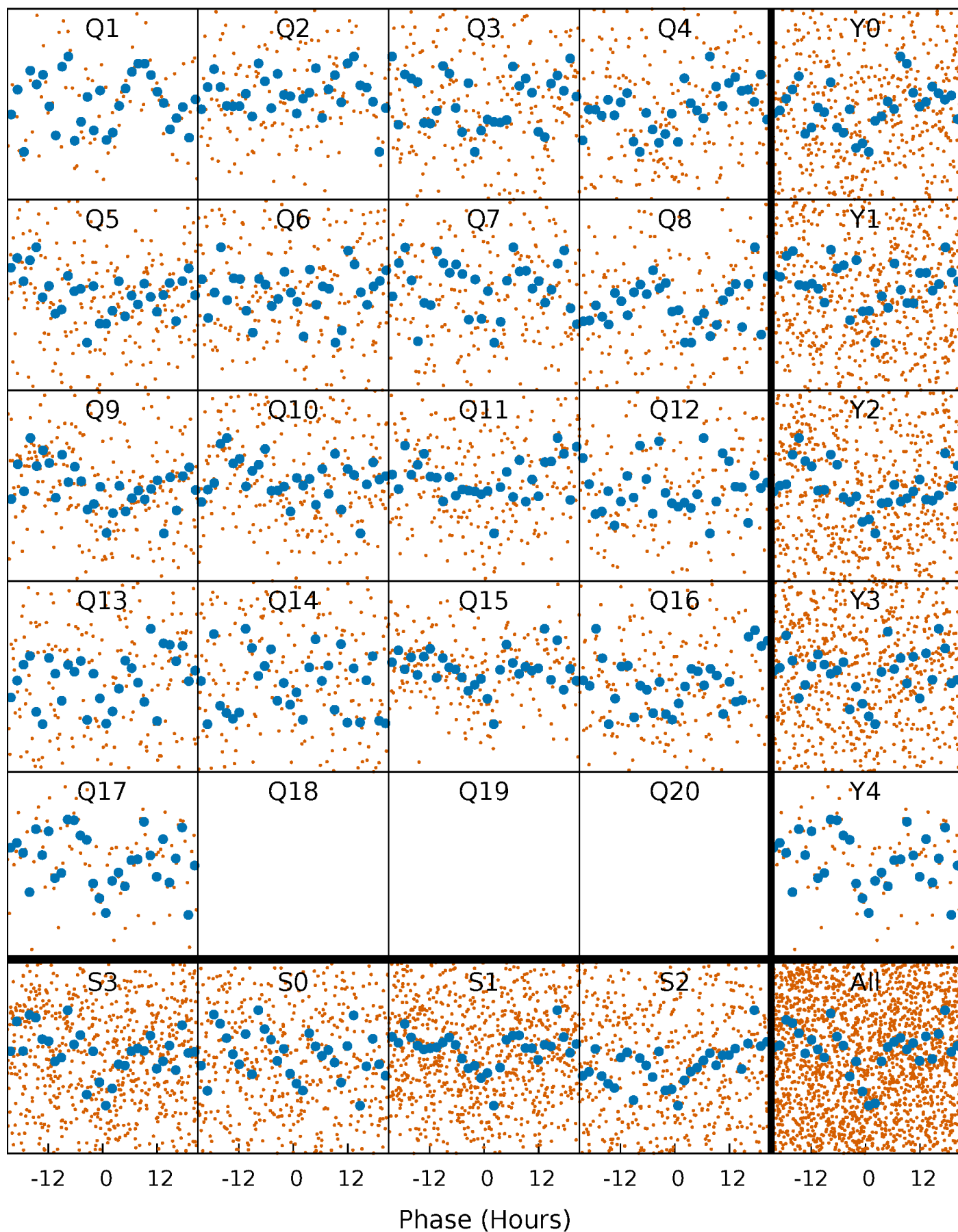


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



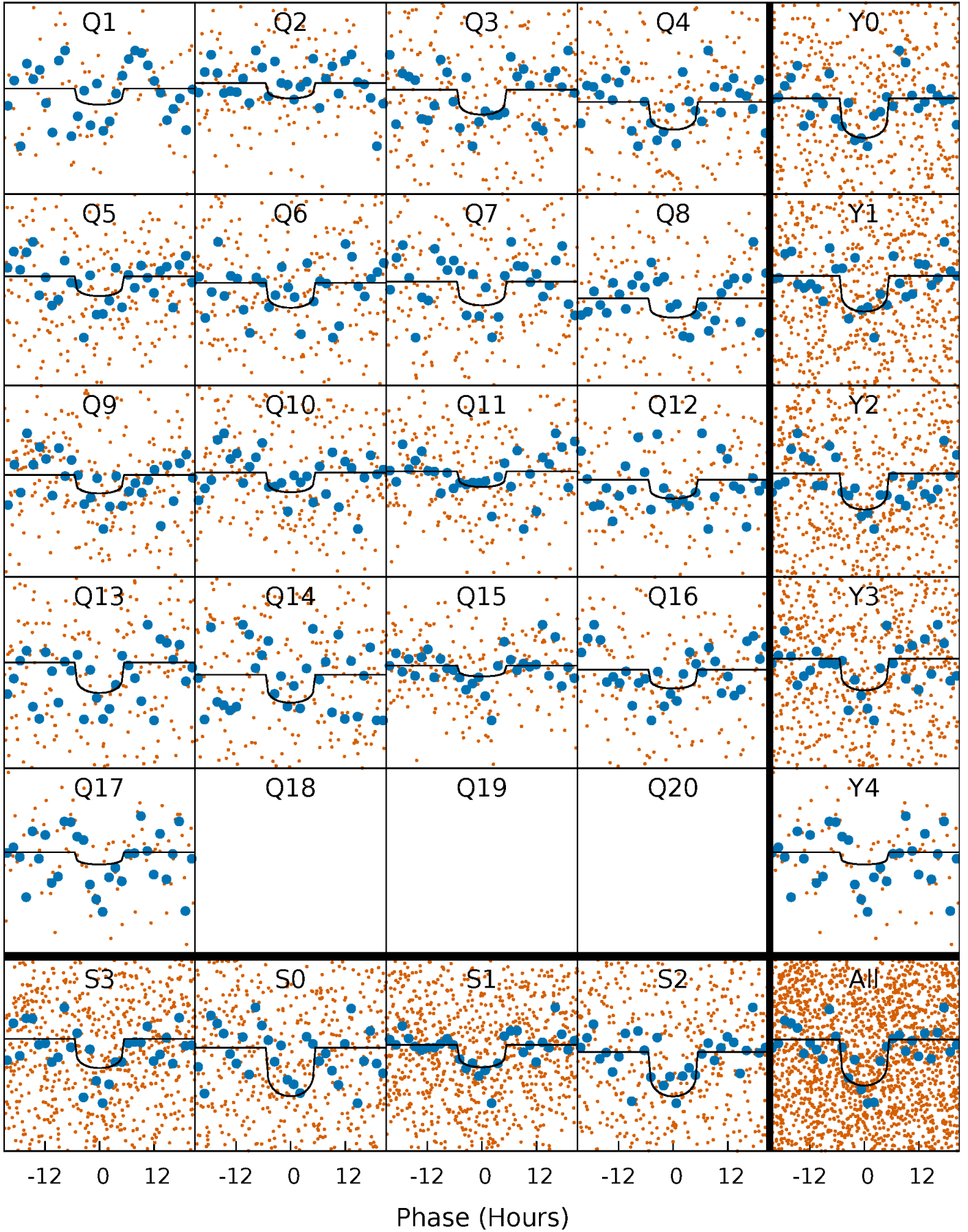
PDC Quarter-Phased Transit Curves

TCE 008560927-01 P= 31.971420 Days $T_0=133.913952$ (BKJD)



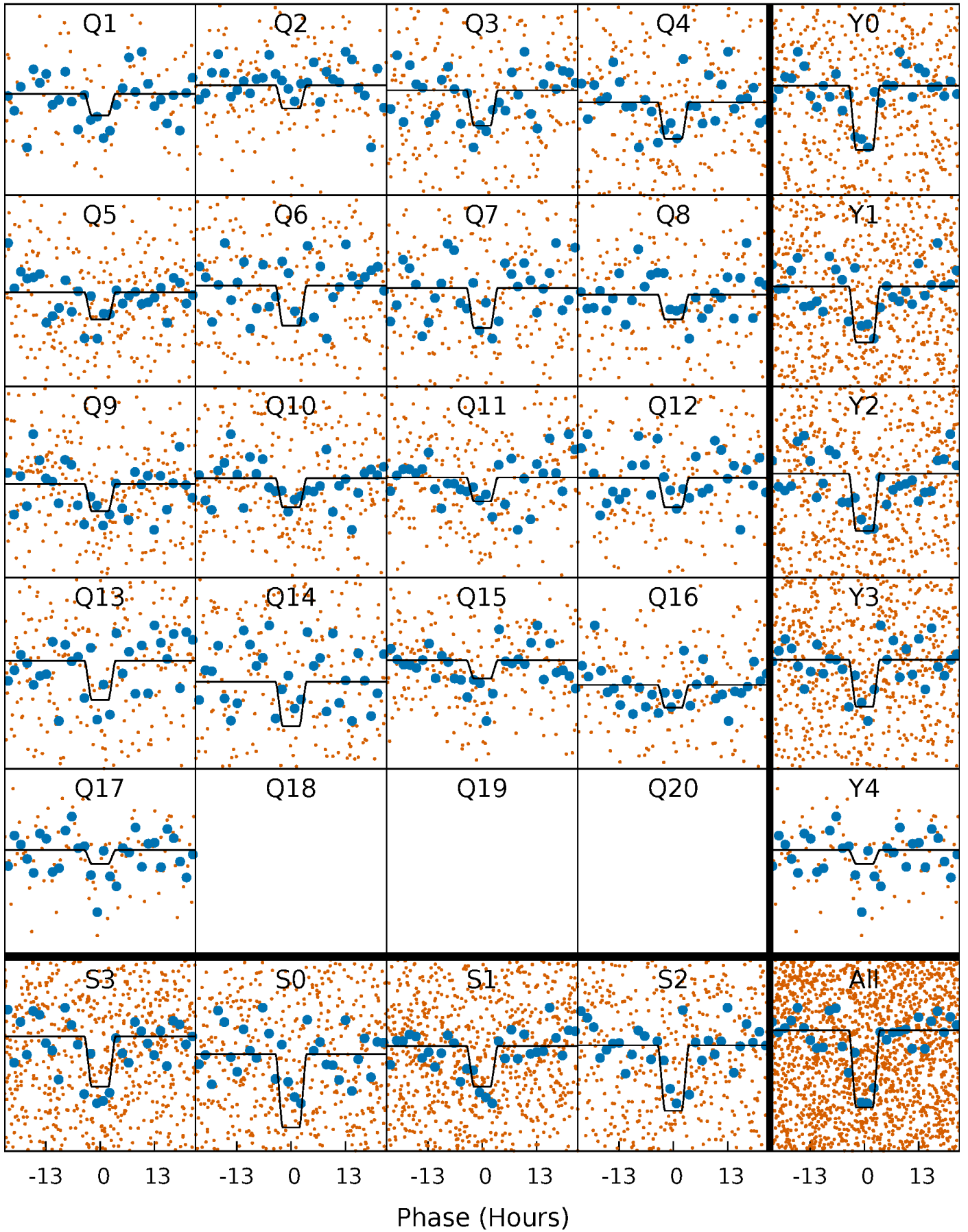
DV Quarter-Phased Transit Curves

TCE 008560927-01 P= 31.971420 Days $T_0=133.913952$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

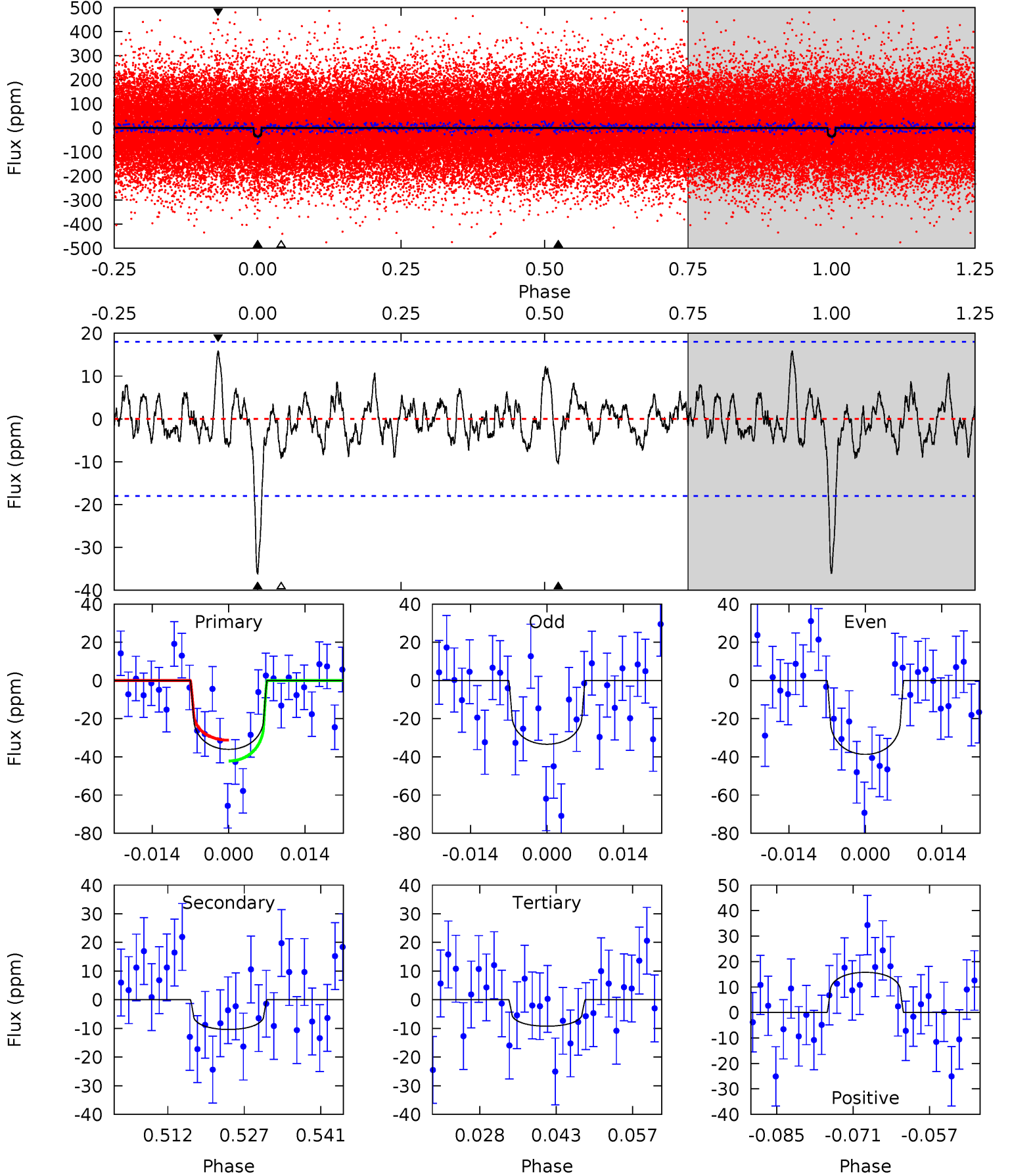
TCE 008560927-01 P= 31.972148 Days $T_0=133.910860$ (BKJD)



DV Model-Shift Uniqueness Test

008560927-01, $P = 31.971420$ Days, $E = 101.942532$ Days

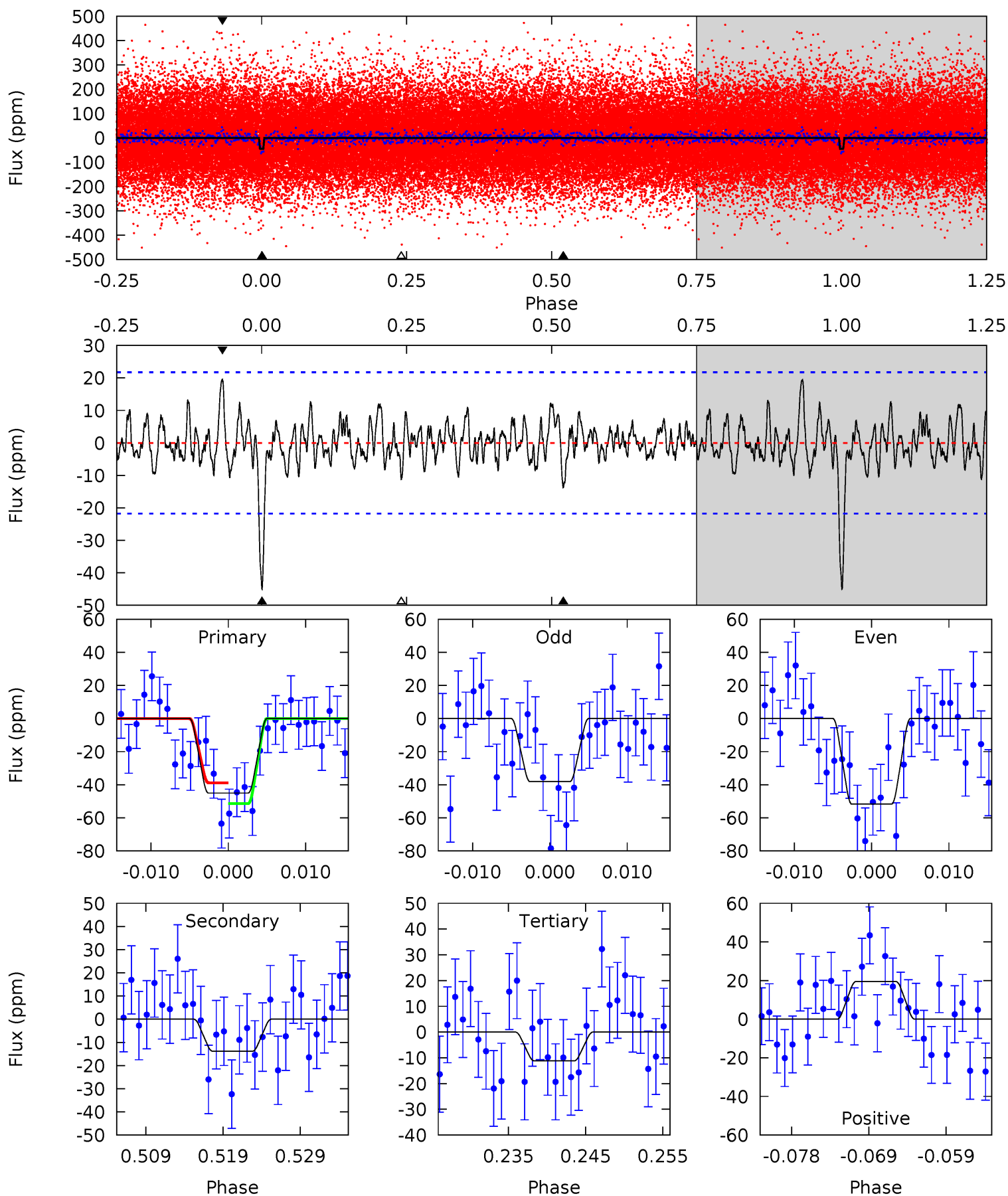
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.94	2.86	2.54	4.35	4.96	2.45	1.11	7.40	5.60	0.32	-1.49	0.73	0.95	0.30	1.50



Alt Model-Shift Uniqueness Test

008560927-01, P = 31.972148 Days, E = 101.938712 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	3.20	2.59	4.51	5.03	2.58	1.13	7.82	5.90	0.61	-1.31	1.57	0.92	0.30	1.46



Stellar Parameters For KIC 008560927

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5846^{+140}_{-140}	$4.169^{+0.241}_{-0.130}$	$-0.180^{+0.300}_{-0.250}$	$1.323^{+0.268}_{-0.327}$	$0.942^{+0.145}_{-0.089}$	$0.573^{+0.759}_{-0.208}$
	+2%/-2%	+6%/-3%	+167%/-139%	+20%/-25%	+15%/-9%	+133%/-36%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008560927-01 / KOI 7897.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-10 ± 4	$0.86^{+0.50}_{-0.45}$	937^{+56}_{-75}	4431^{+1587}_{-729}	277^{+965}_{-175}
Alt.	-14 ± 4	$1.02^{+0.51}_{-0.49}$	935^{+57}_{-71}	4371^{+1385}_{-637}	272^{+715}_{-162}

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

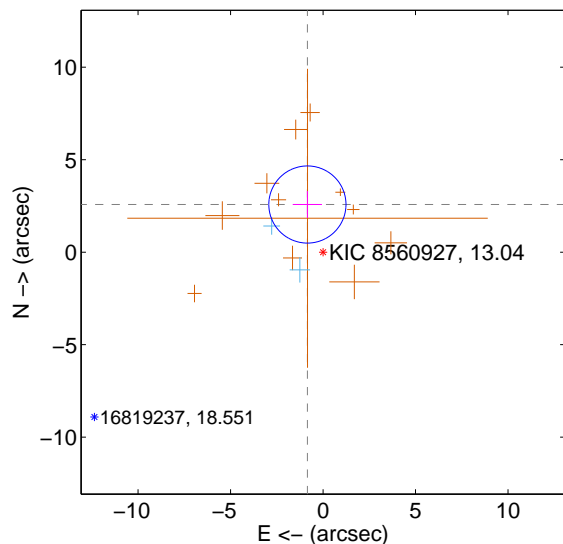
Supplemental centroid analysis for 008560927-01. Kepler magnitude: 13.04. Transit SNR 7.72

There are 2 quarters with good PRF difference image offsets

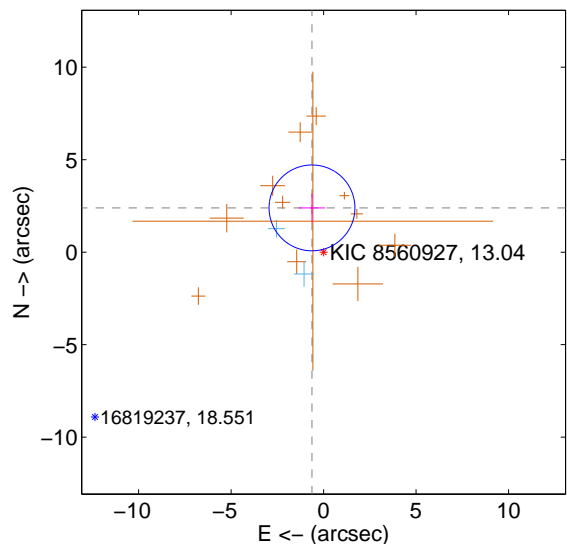
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.712 ± 0.695	3.90	0.845 ± 0.789	2.576 ± 0.728
PRF-fit source offset from KIC position	2.475 ± 0.773	3.20	0.627 ± 0.715	2.394 ± 0.771
photometric centroid source offset	5.78 ± 1.71	3.39	2.27 ± 1.66	5.32 ± 1.71

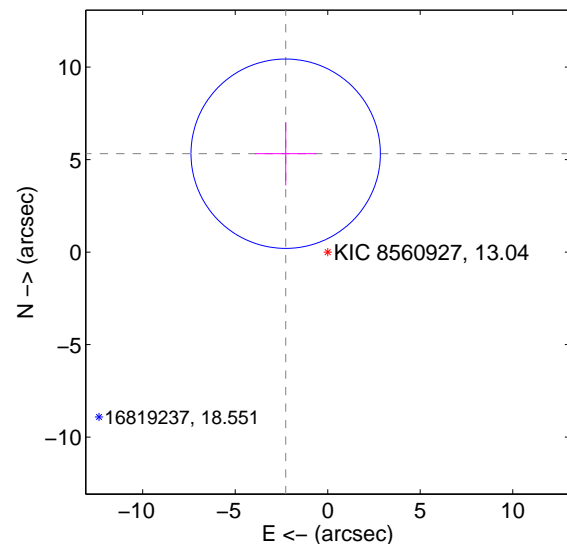
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

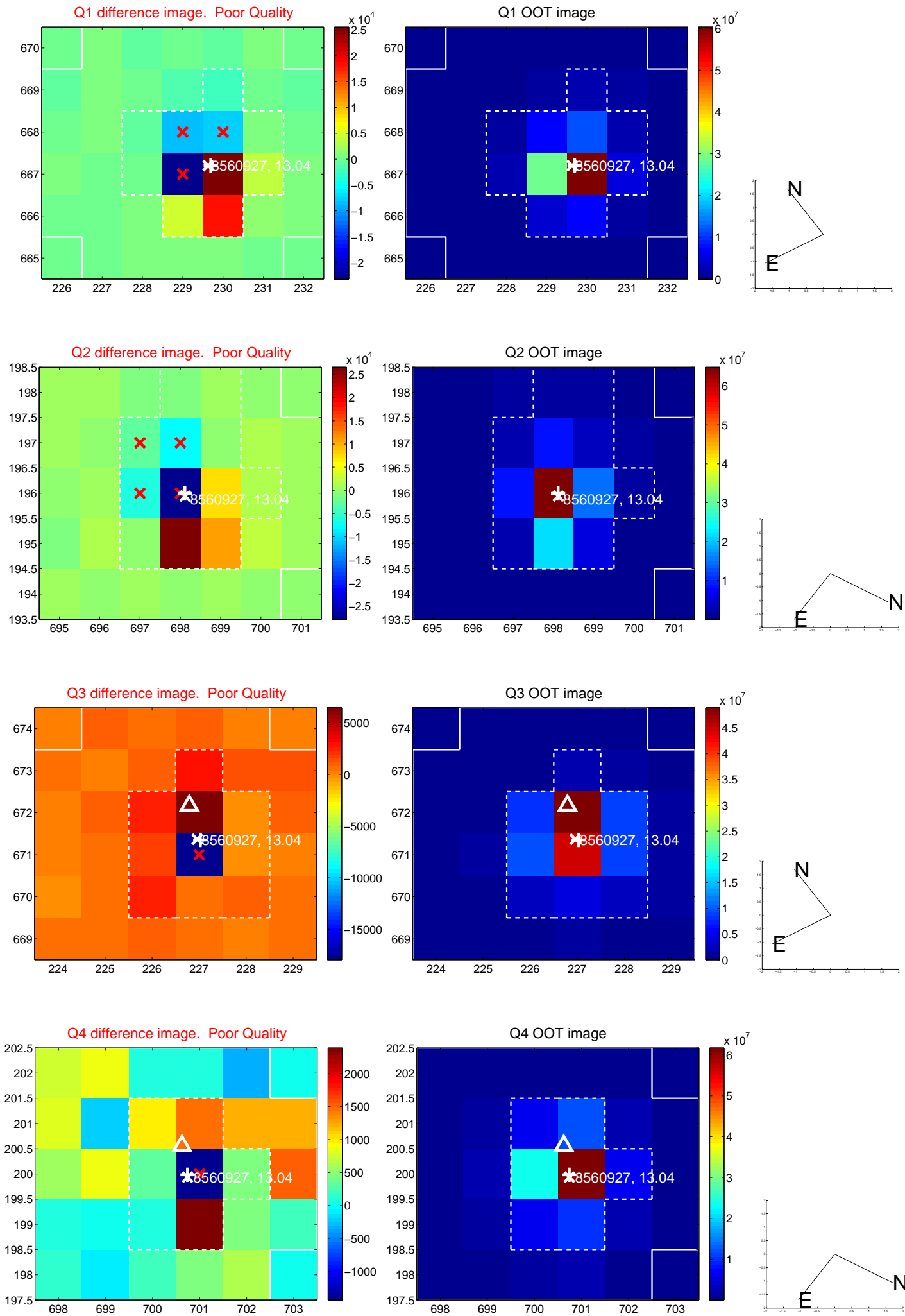


offset from photometric centroids

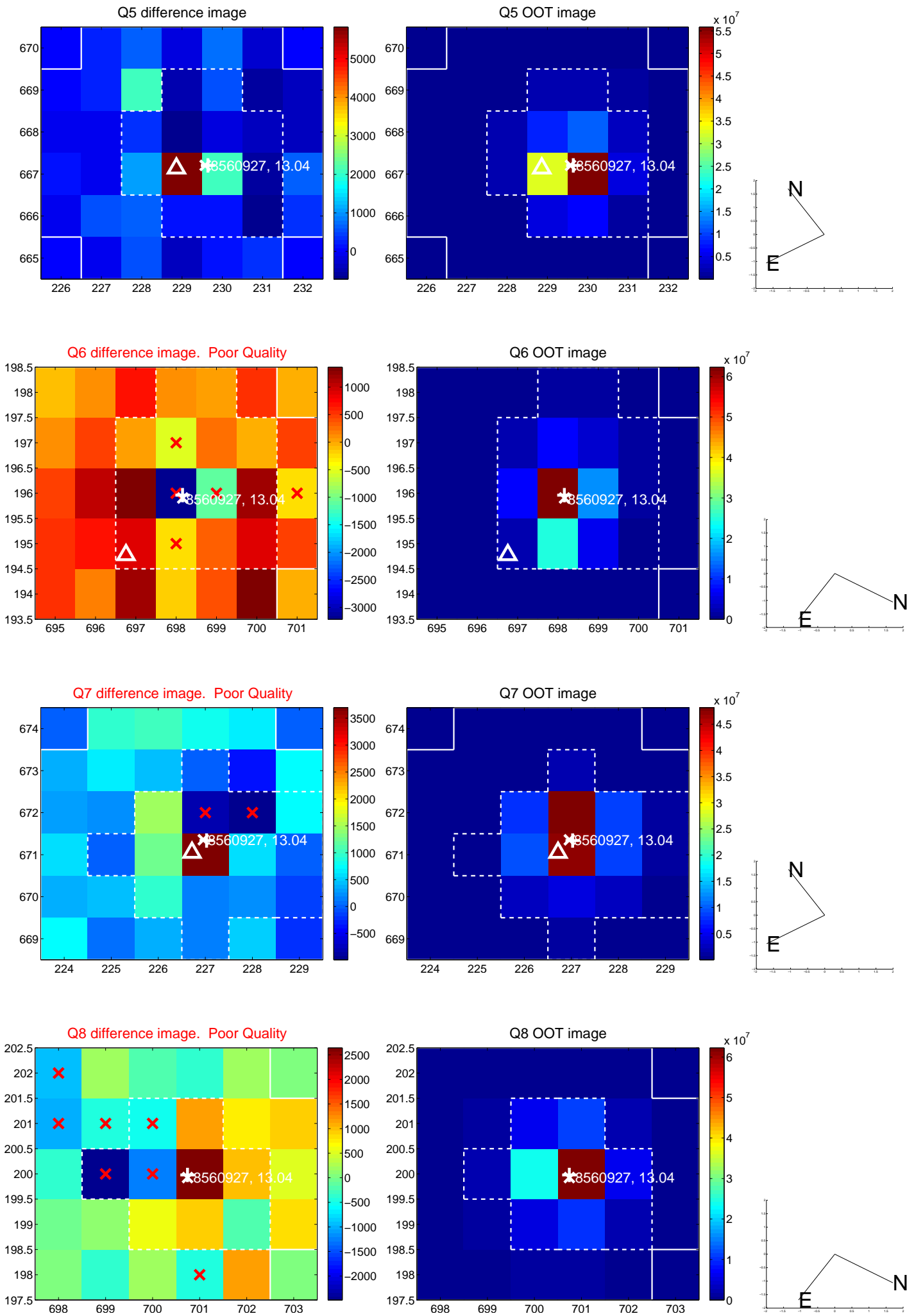


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

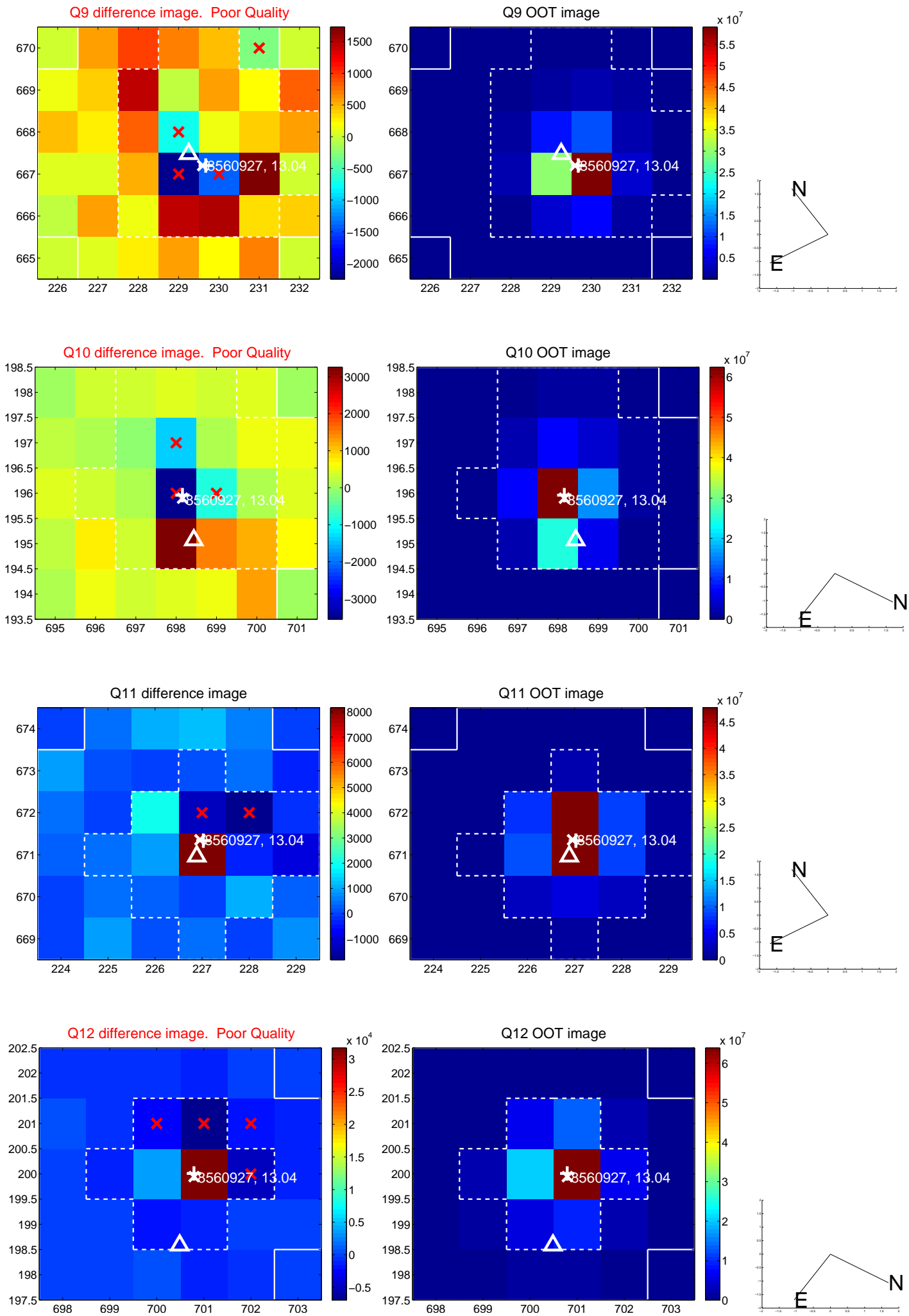
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



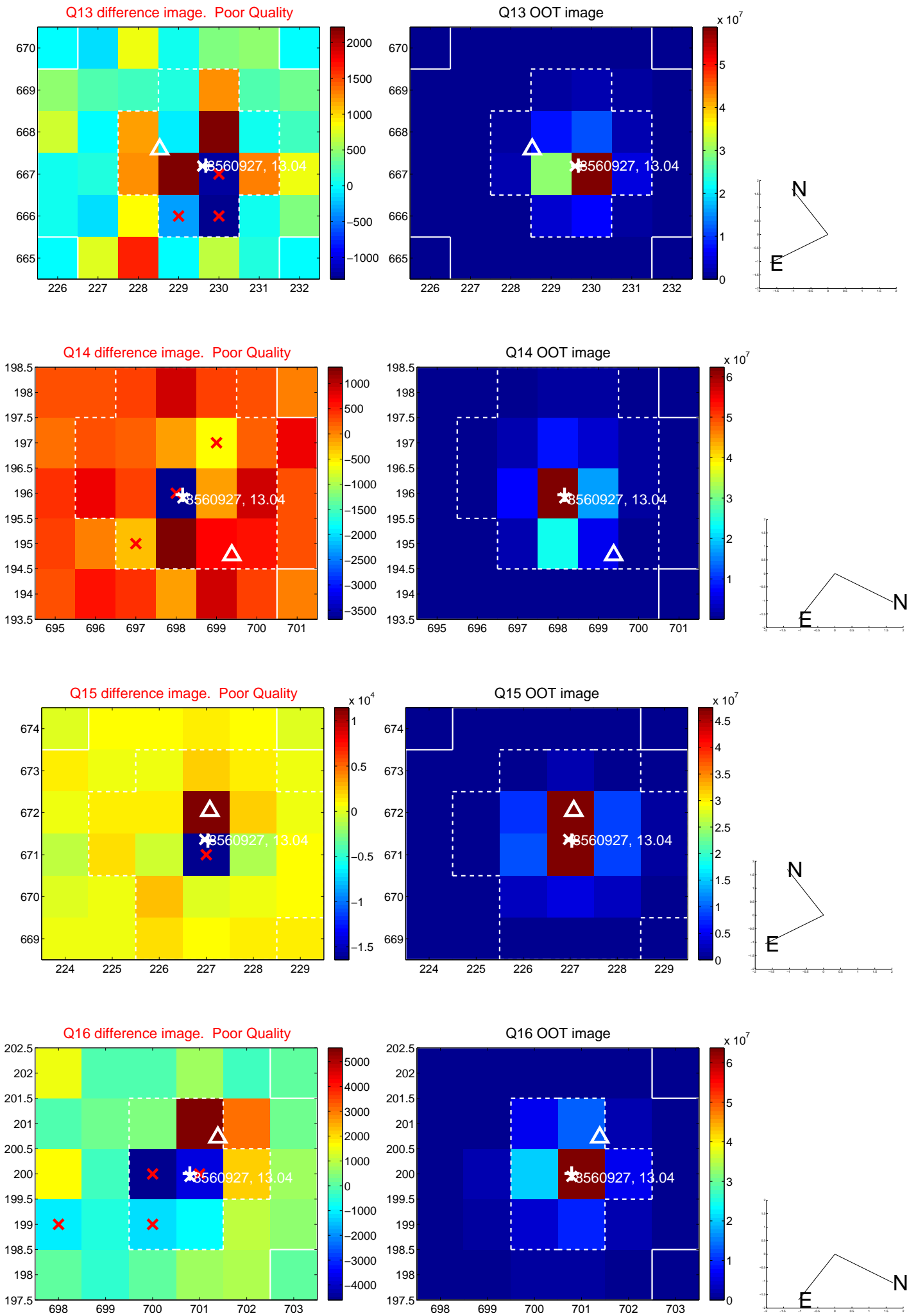
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



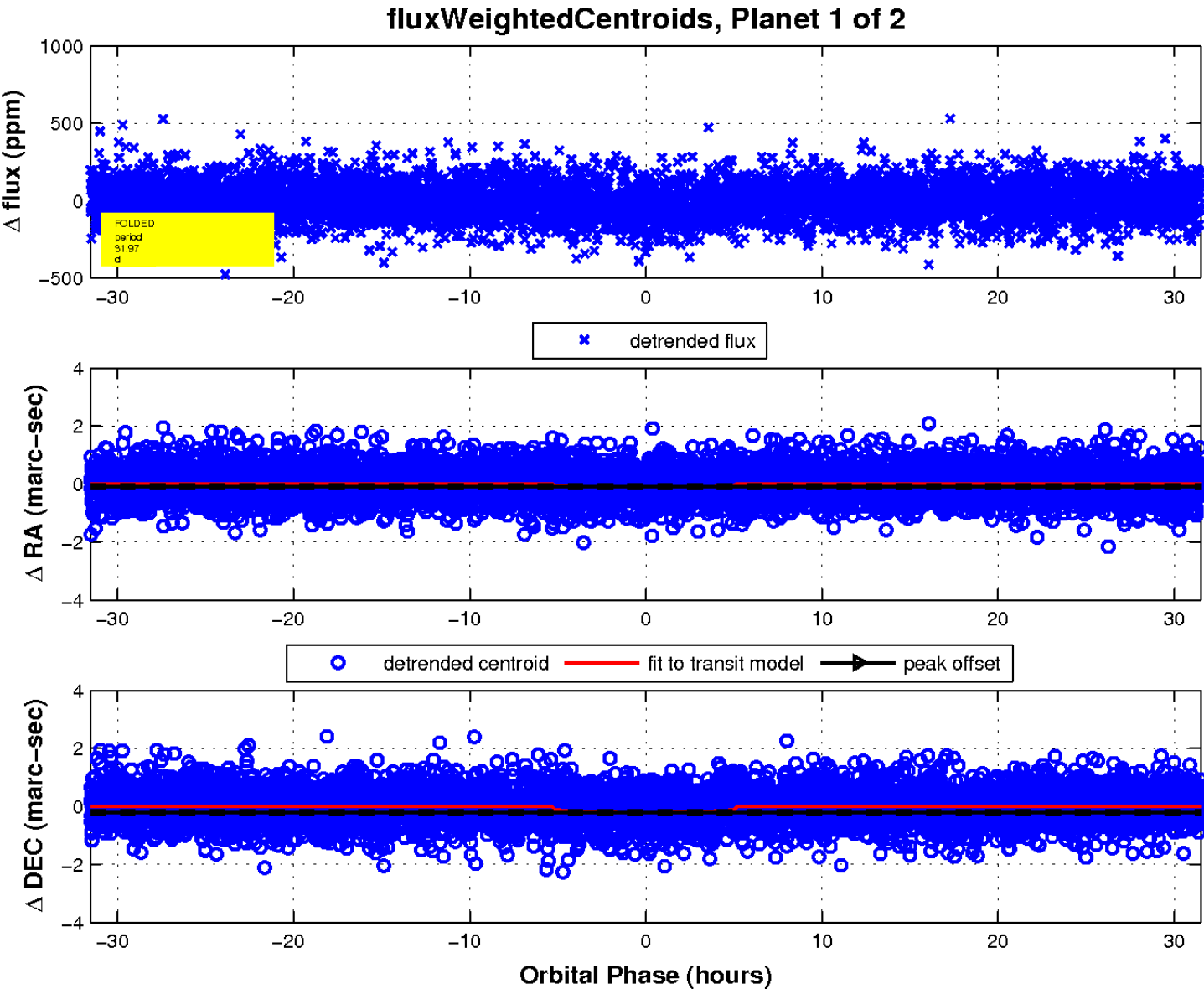
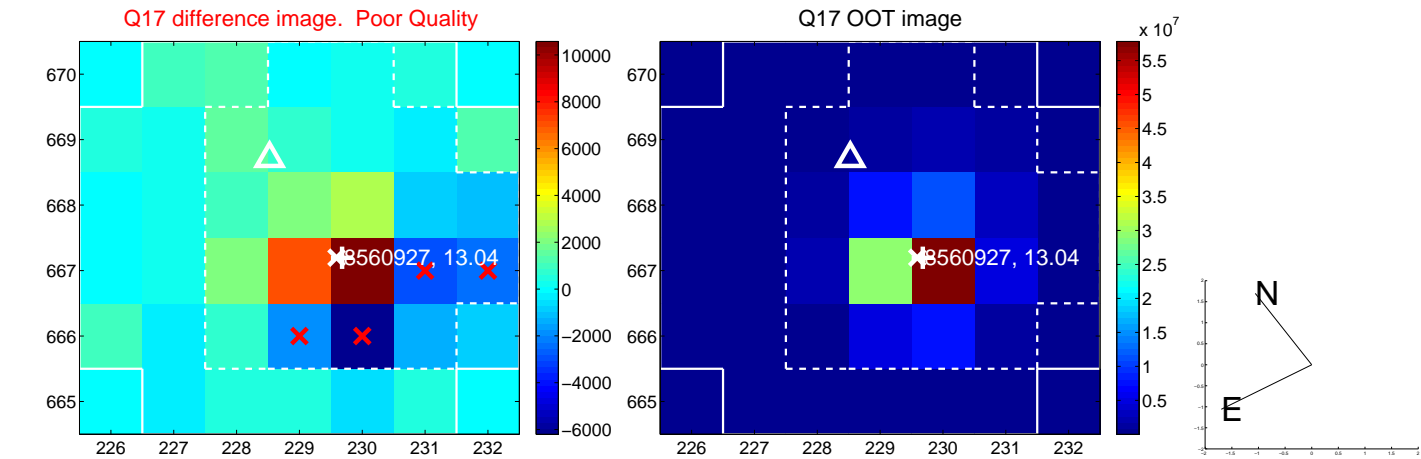
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

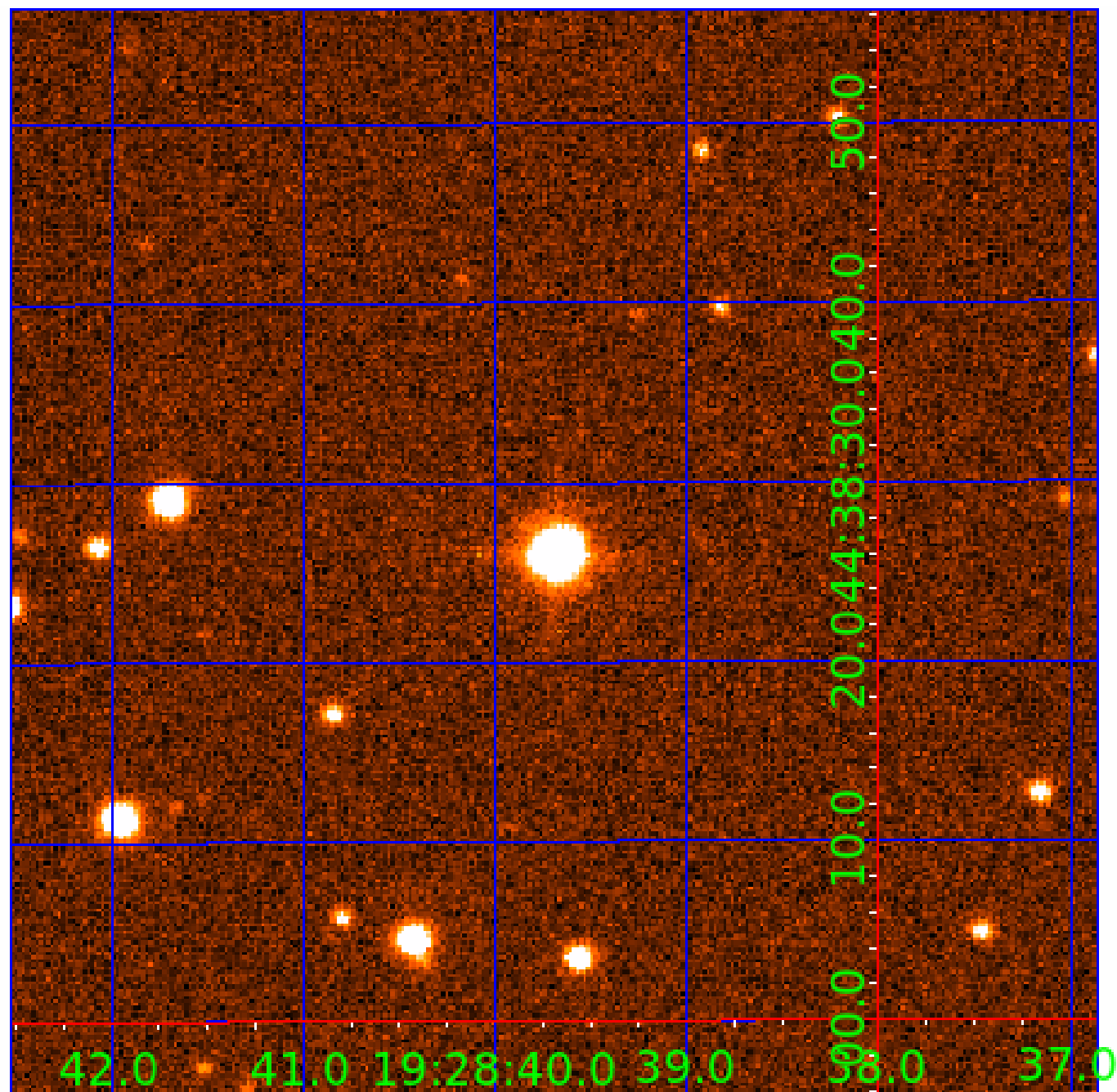


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008560927

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})
008560927-01	OBS	7897.01	31.971420	133.913952	37.9	10.514	7.7	7.7	1.32	5846	0.85	49.02
008560927-02	OBS	No	523.600292	492.515315	118.0	14.366	9.0	6.4	1.32	5846	1.68	1.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008560927-01	OBS	FP	0.00	0	0	0	1	CENT_FEW_MEAS—EPHEM_MATCH
008560927-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—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.

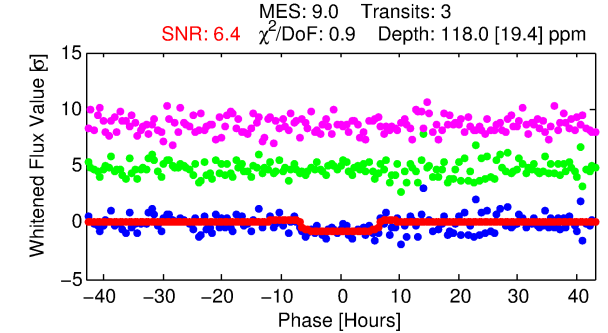
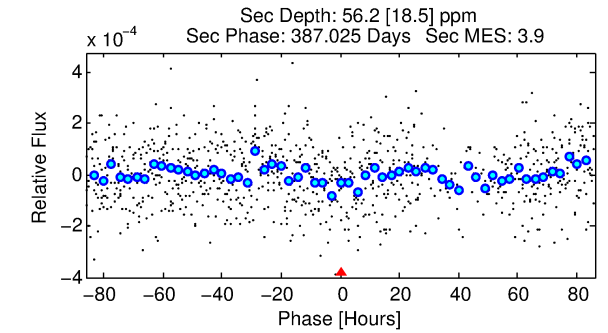
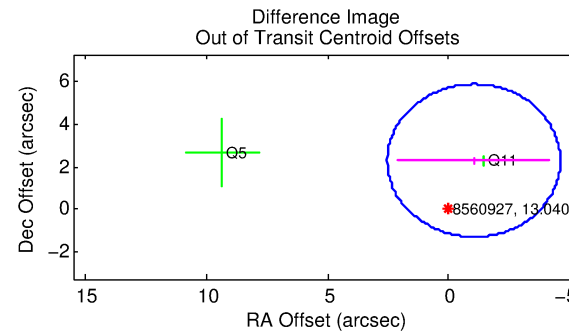
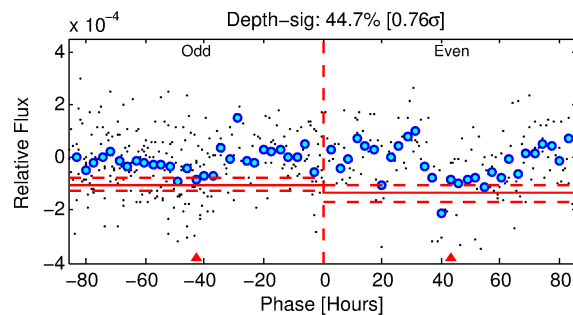
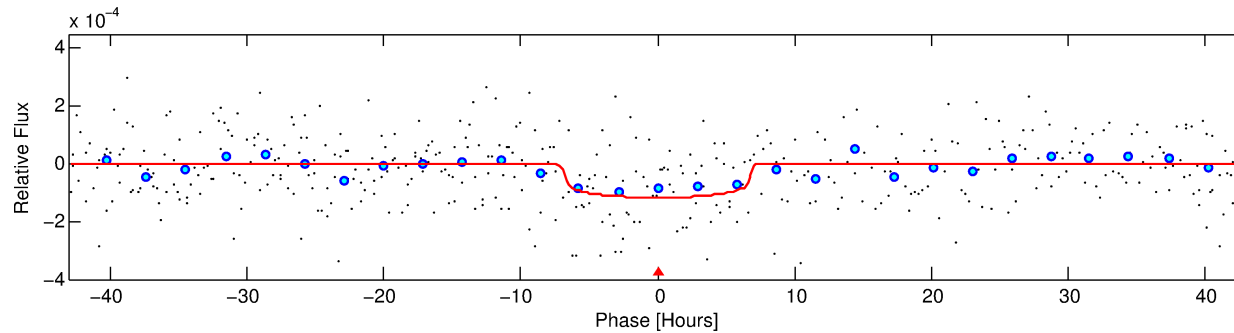
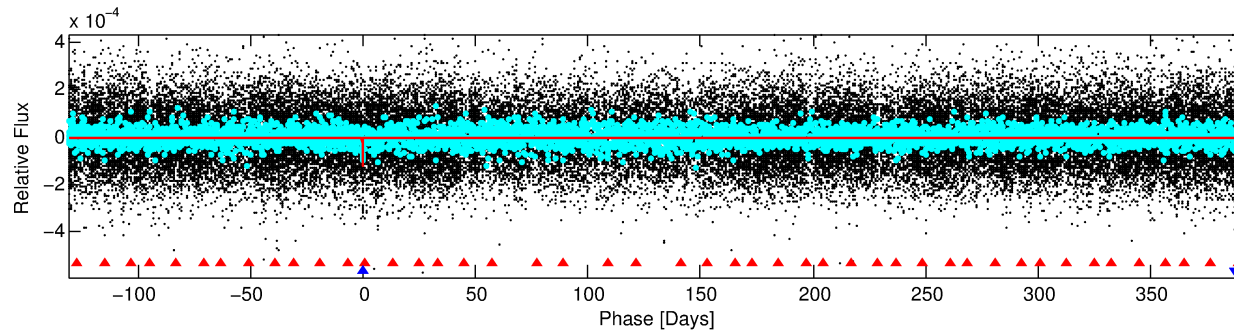
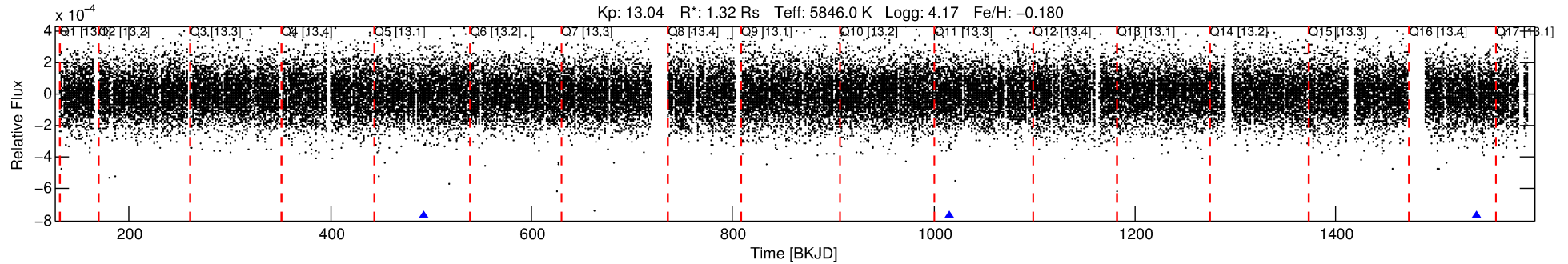
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008560927-02

No Significant Match Found

DV One-Page Summary

KIC: 8560927 Candidate: 2 of 2 Period: 523.600 d



DV Fit Results:

Period = 523.60029 [0.02525] d
Epoch = 492.5153 [0.0284] BKJD
Rp/R* = 0.0116 [0.0033]
a/R* = 136.86 [184.12]
b = 0.88 [0.34]
Seff = 1.18 [0.49]
Teq = 266 [28] K
Rp = 1.68 [0.63] Re
a = 1.2466 [0.3088] AU
Ag = 17114.86 [13264.05] [1.29 σ]
Teffp = 4698 [784] K [5.65 σ]

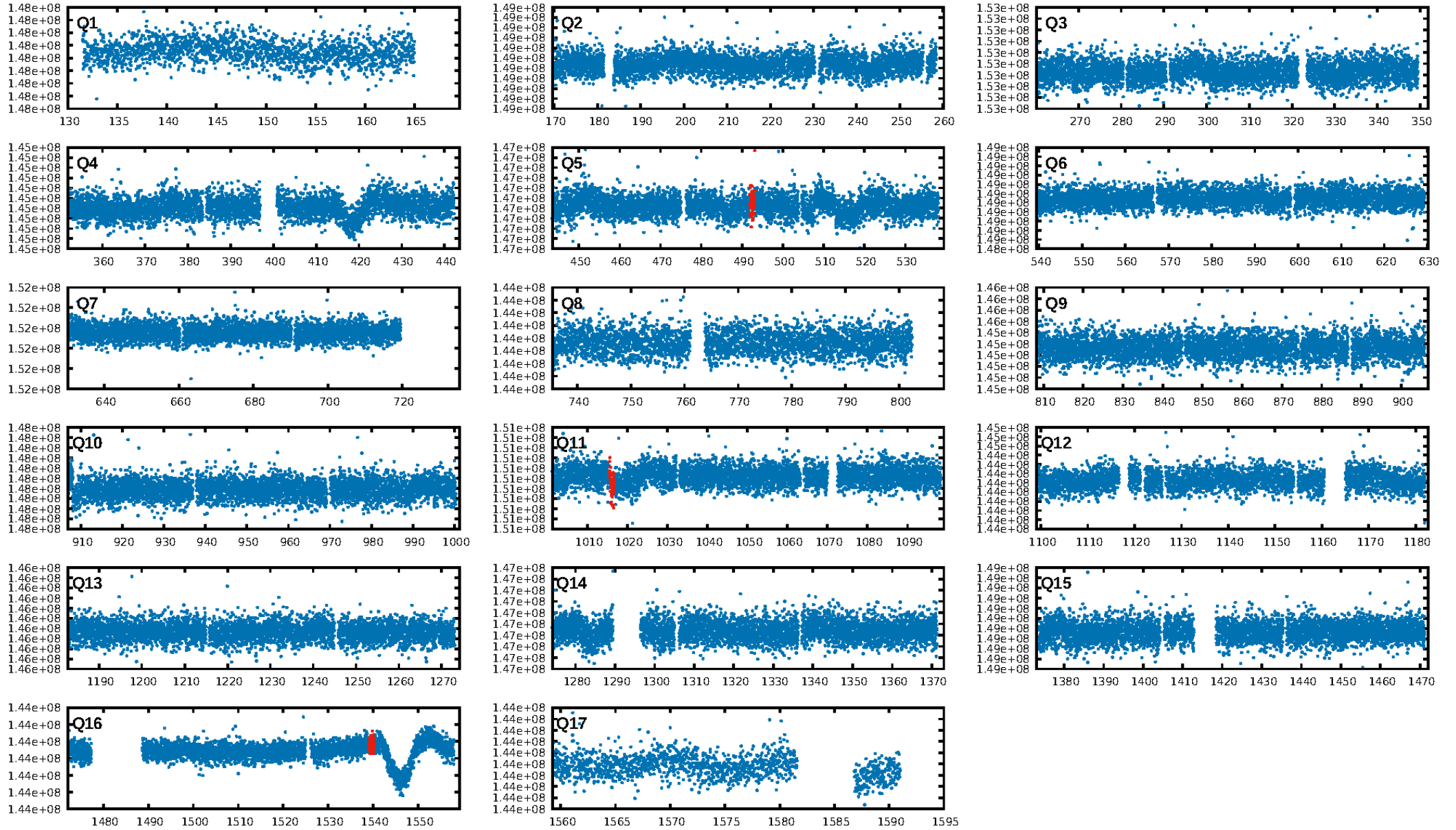
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [662.77 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 8.0%
ModelChiSquareGof-sig: 99.0%
Bootstrap-pfa: 8.29e-13
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -2.628
Centroid-sig: 89.7%
Centroid-so: 0.557 arcsec [0.32 σ]
OotOffset-rm: 2.507 arcsec [2.11 σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-rm: 2.389 arcsec [0.98 σ]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 0.67 [2/3]

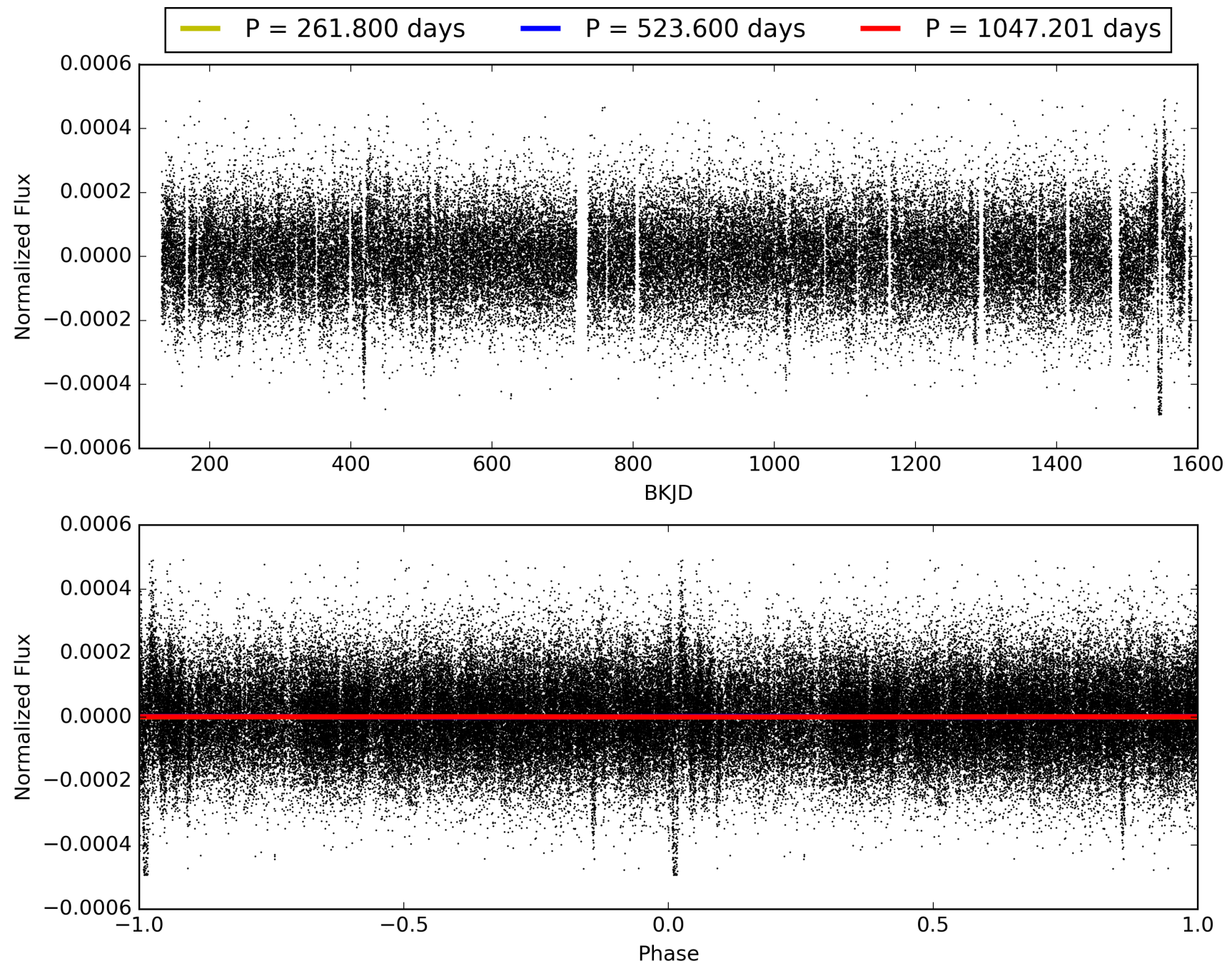
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:30:39 Z

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

TCE 008560927-02, PDC Light Curves

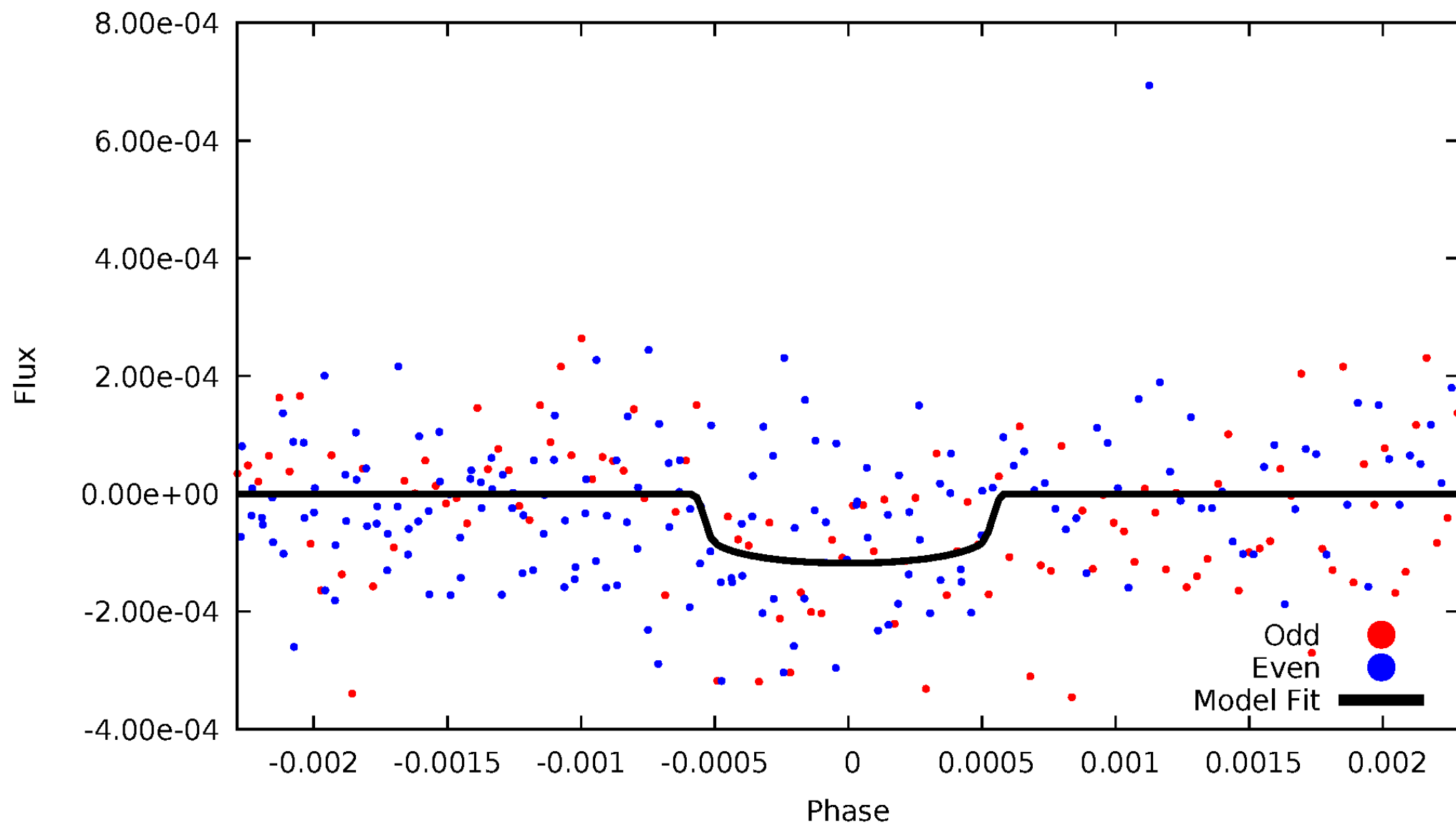


TCE 008560927-02



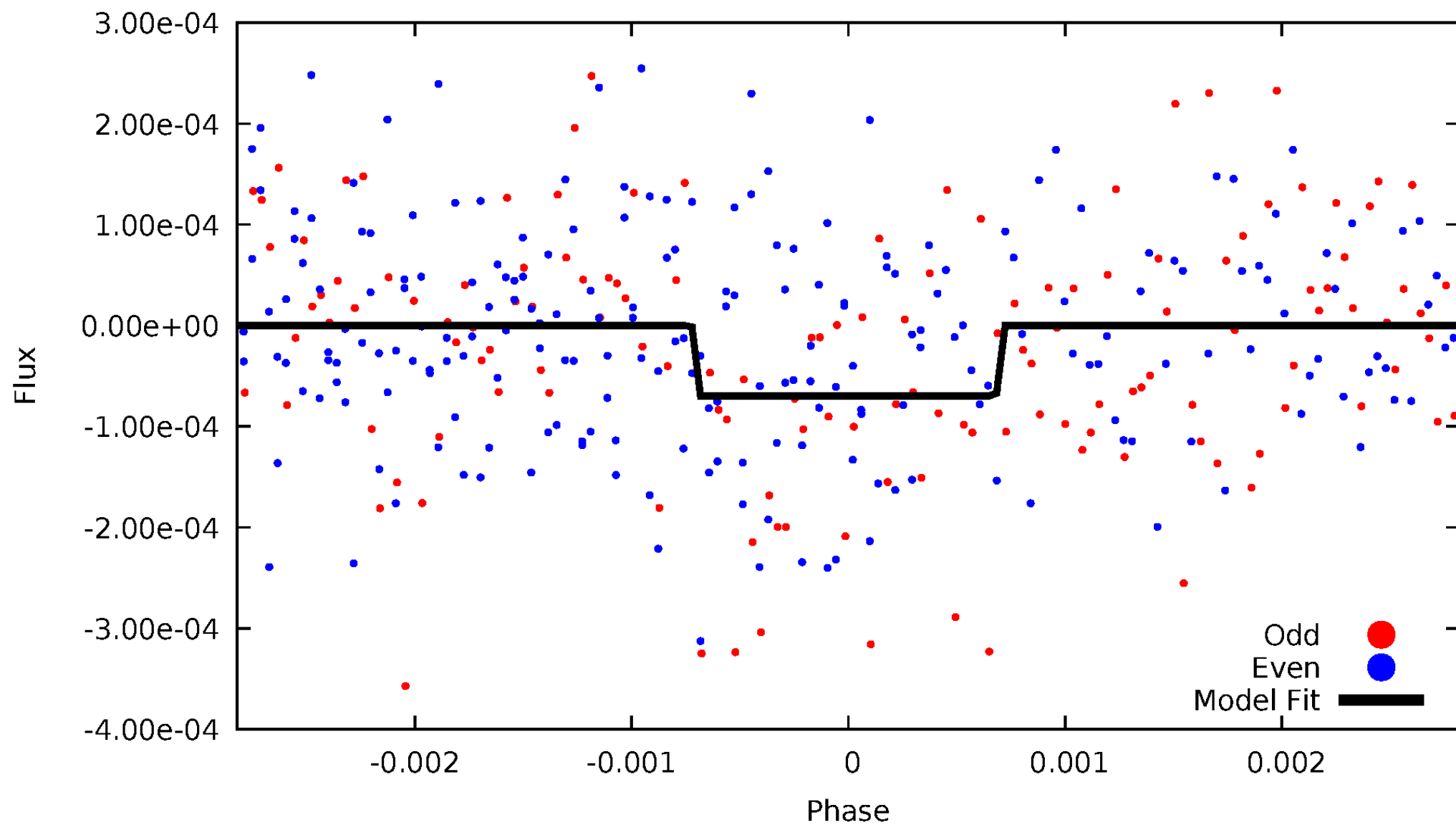
DV Odd/Even

TCE 008560927-02



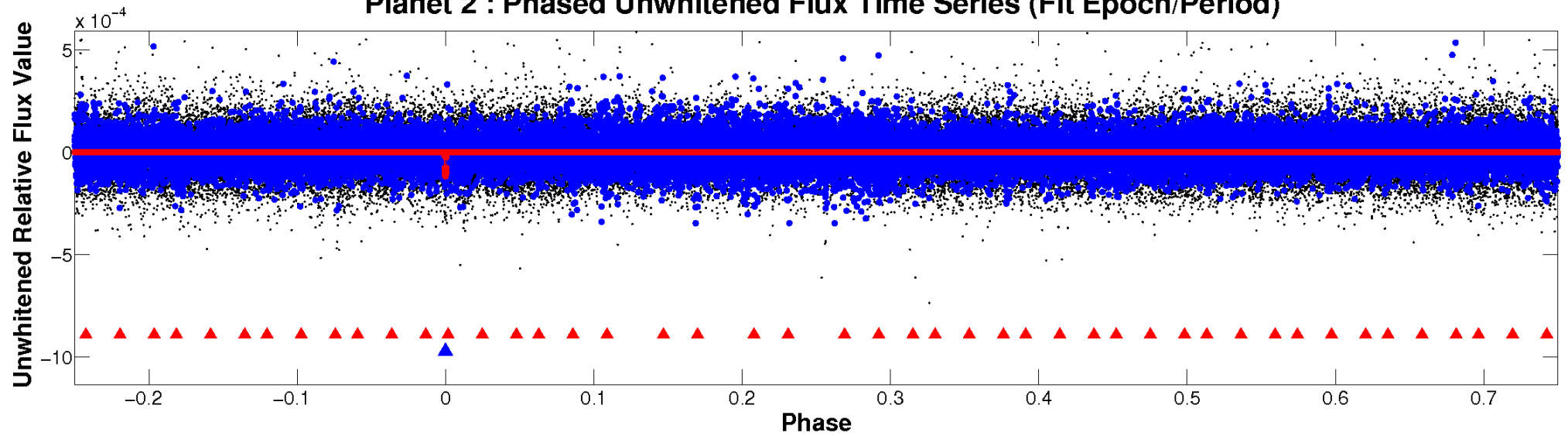
ALT Odd/Even

TCE 008560927-02

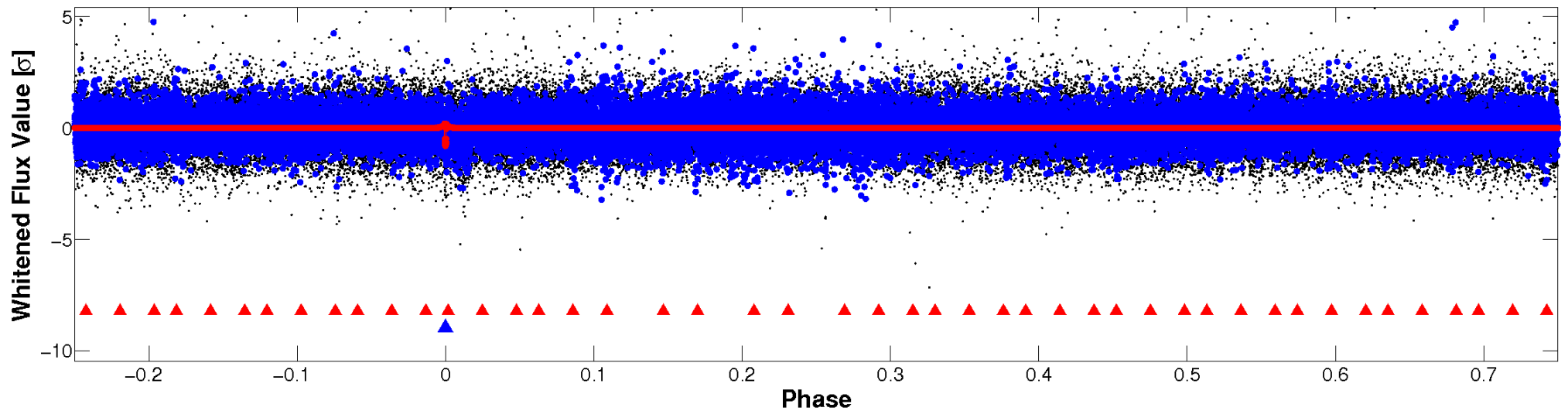


Non-Whitened Vs. Whitened Light Curve

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

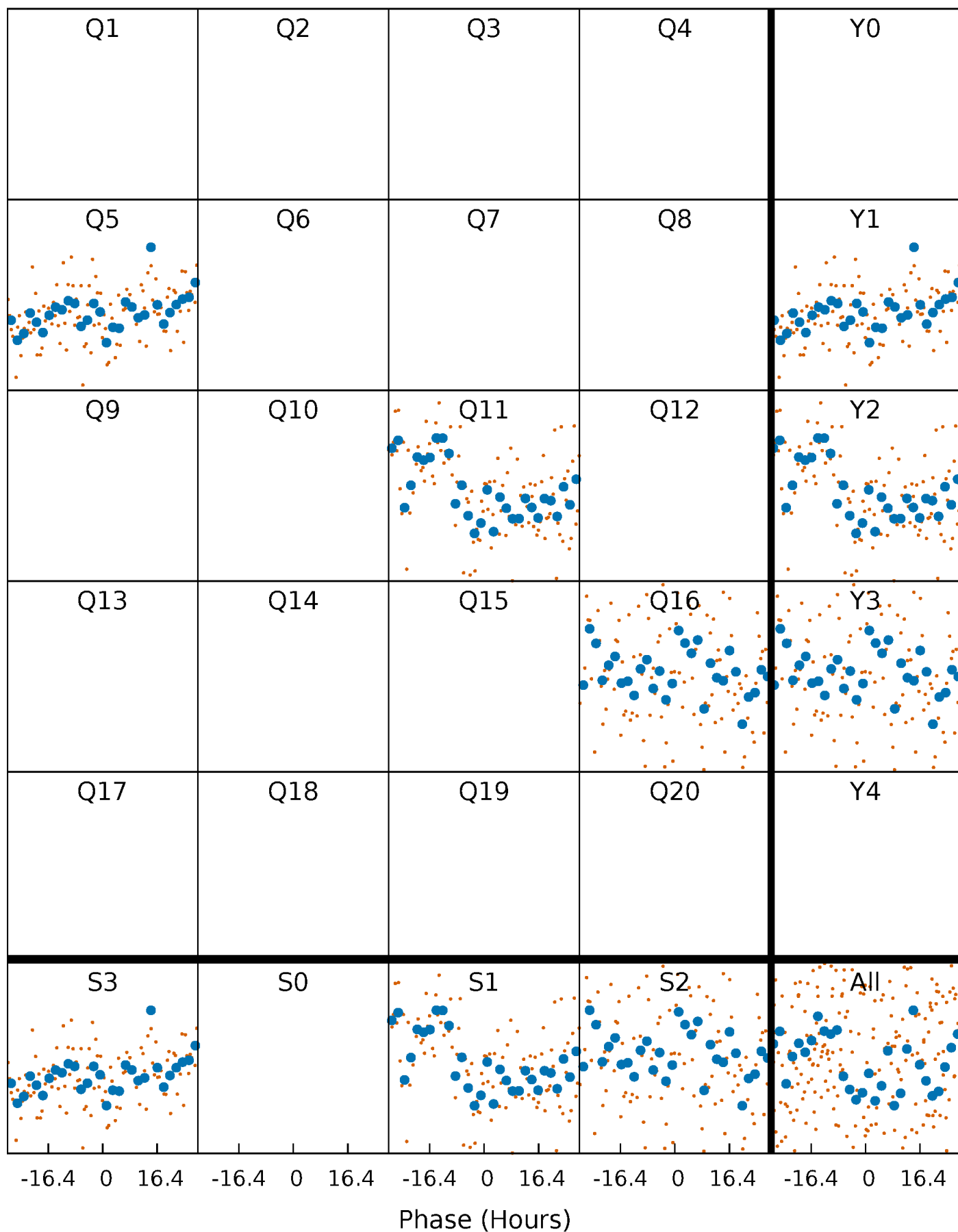


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



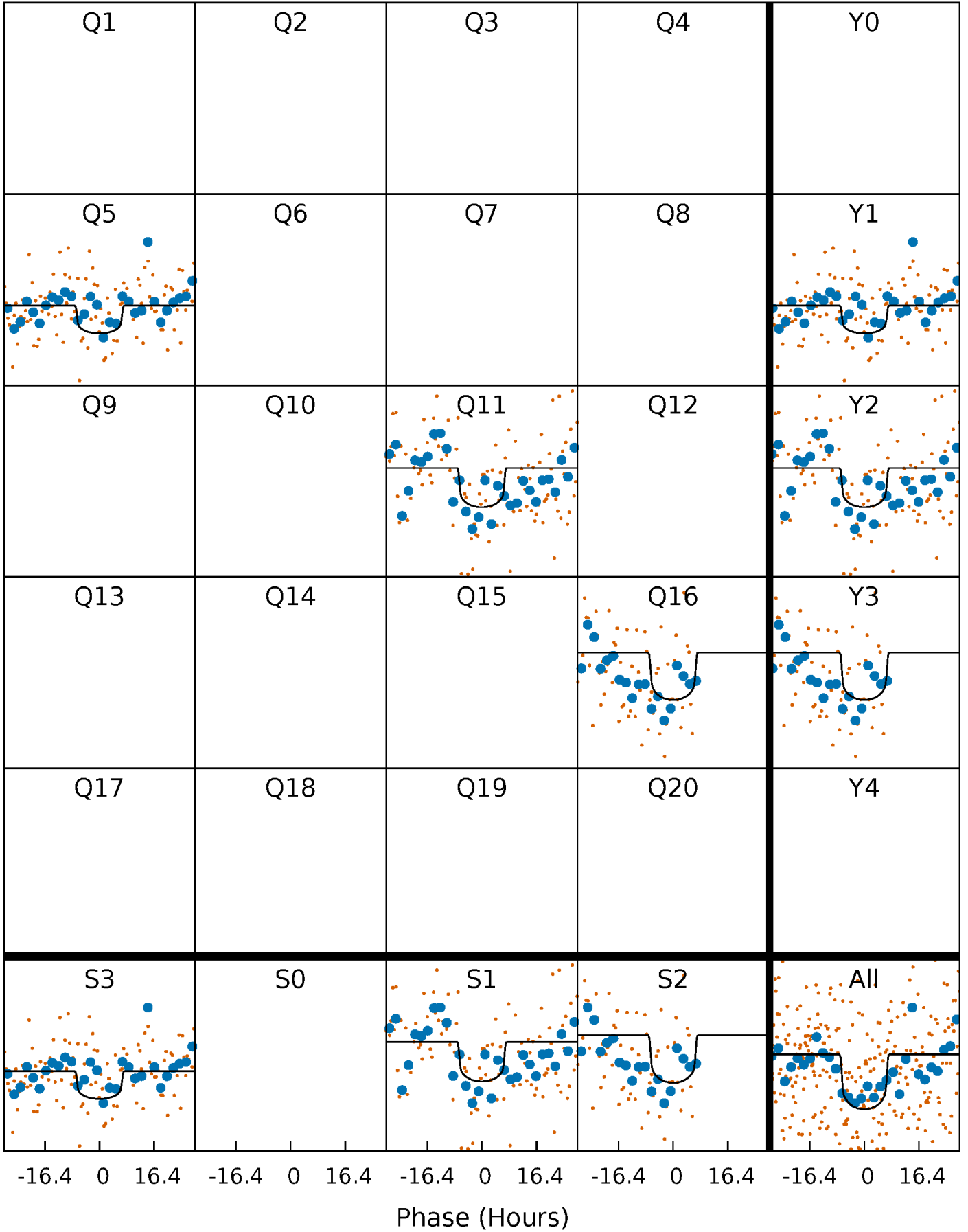
PDC Quarter-Phased Transit Curves

TCE 008560927-02 $P=523.600292$ Days $T_0=492.515315$ (BKJD)



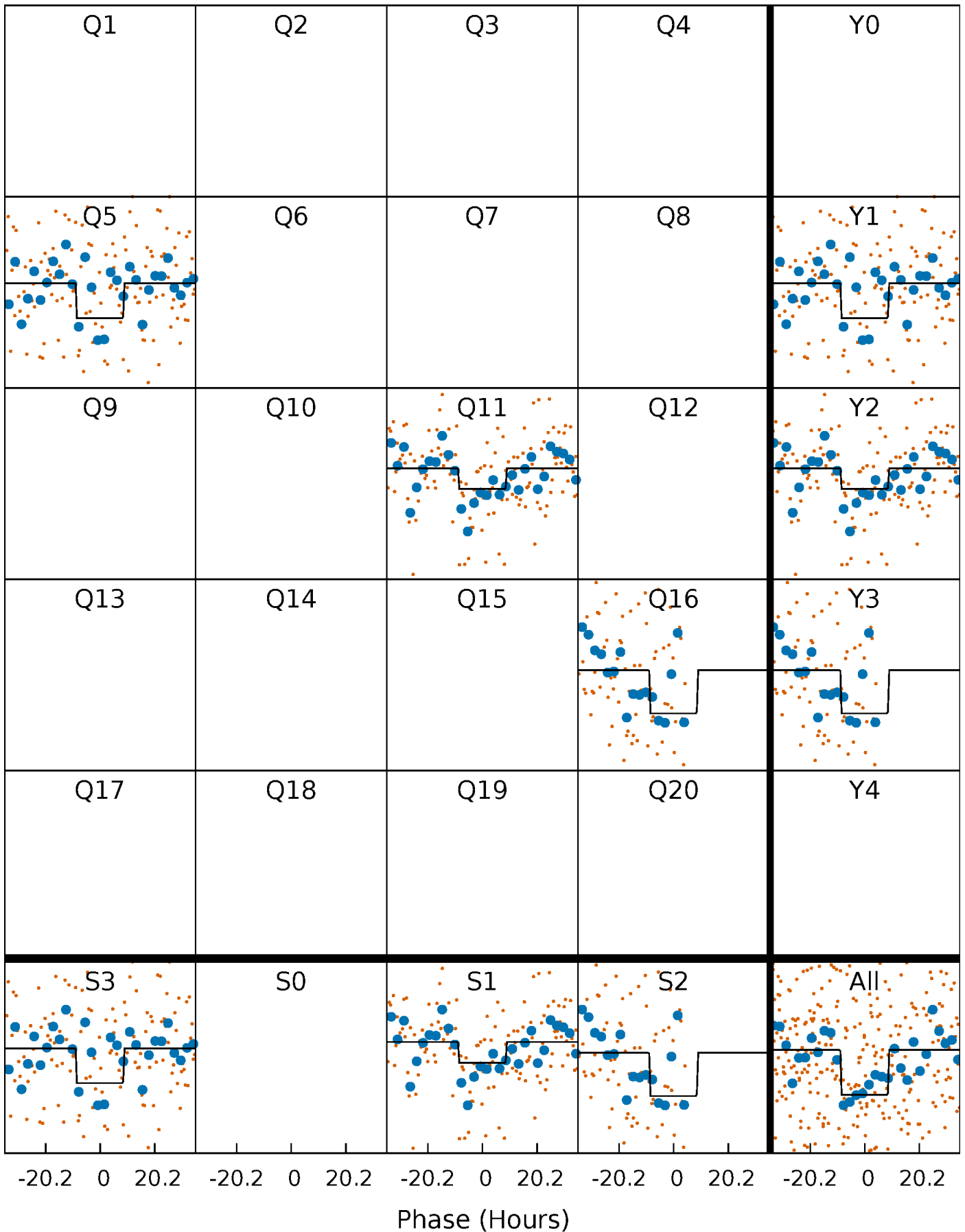
DV Quarter-Phased Transit Curves

TCE 008560927-02 P=523.600292 Days $T_0=492.515315$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

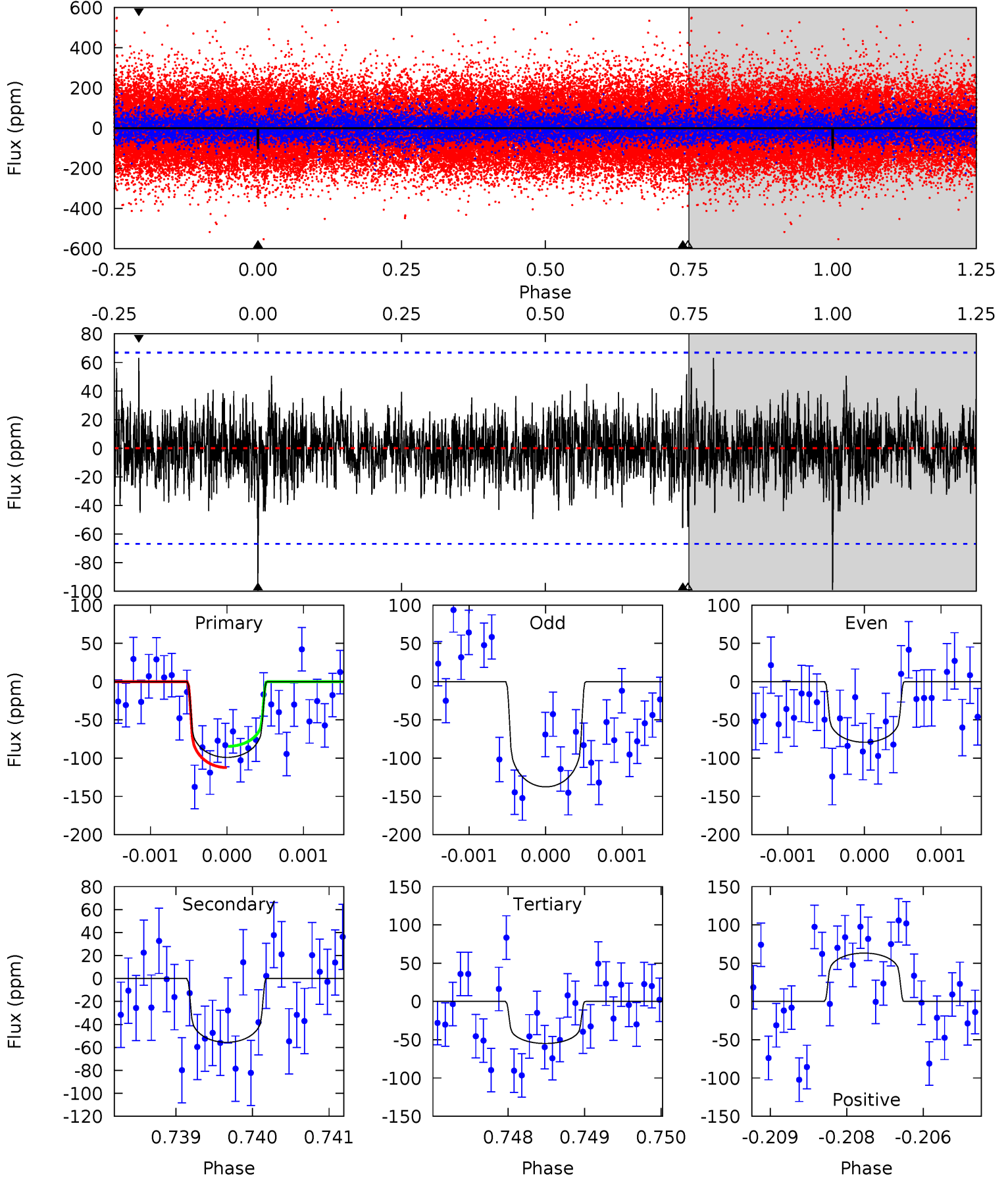
TCE 008560927-02 $P=523.589541$ Days $T_0=492.623822$ (BKJD)



DV Model-Shift Uniqueness Test

008560927-02, P = 523.600292 Days, E = 492.515315 Days

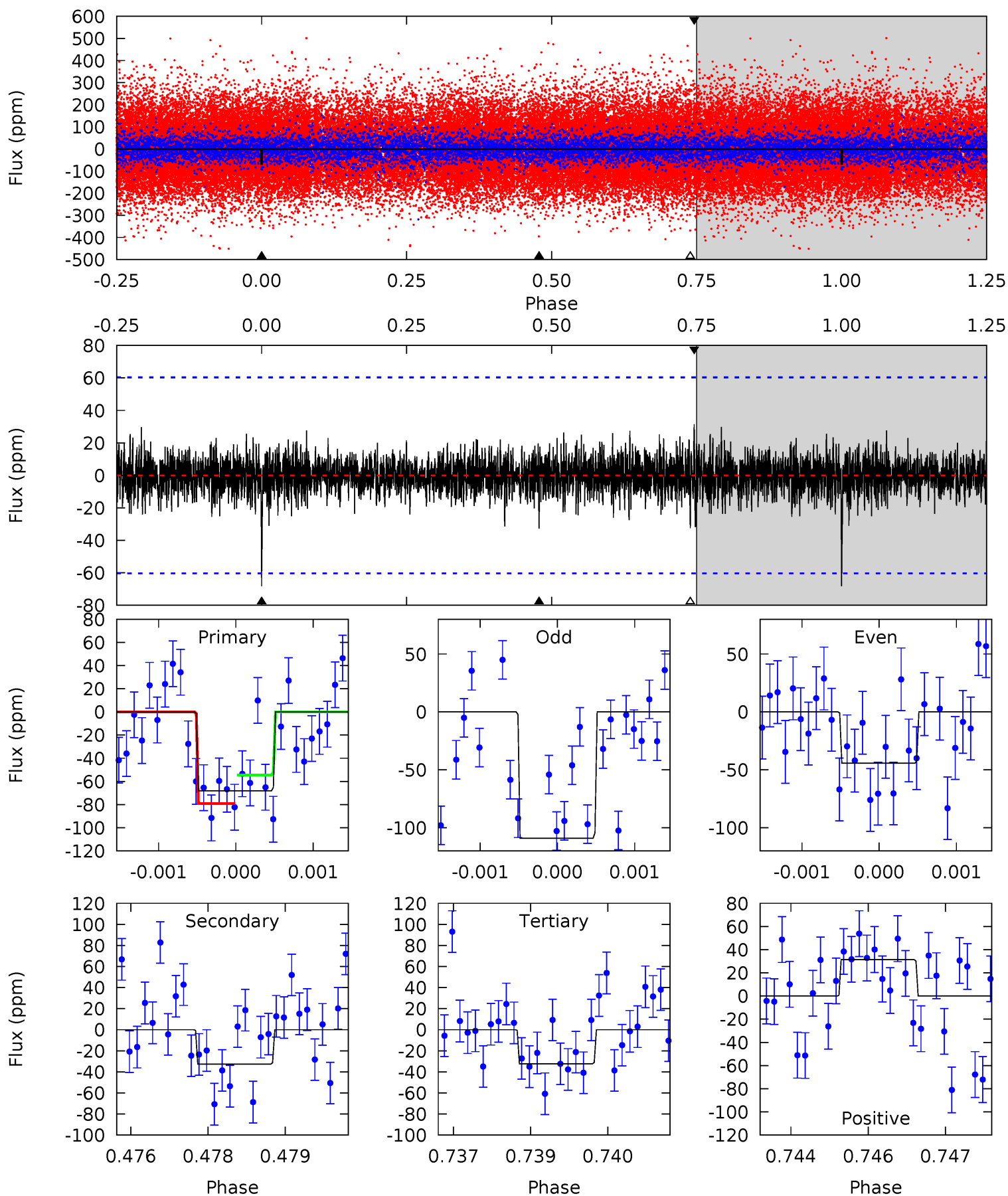
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.05	4.52	4.46	5.14	5.43	3.25	1.19	3.59	2.91	0.06	-0.62	2.24	0.91	0.39	1.13



Alt Model-Shift Uniqueness Test

008560927-02, P = 523.589541 Days, E = 492.623822 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.10	2.92	2.90	2.81	5.39	3.19	0.72	3.20	3.28	0.03	0.11	2.78	1.38	0.32	1.10



Stellar Parameters For KIC 008560927

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5846^{+140}_{-140}	$4.169^{+0.241}_{-0.130}$	$-0.180^{+0.300}_{-0.250}$	$1.323^{+0.268}_{-0.327}$	$0.942^{+0.145}_{-0.089}$	$0.573^{+0.759}_{-0.208}$
	+2%/-2%	+6%/-3%	+167%/-139%	+20%/-25%	+15%/-9%	+133%/-36%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 008560927-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-56 ± 12	$1.60^{+0.55}_{-0.49}$	369^{+21}_{-27}	4860^{+765}_{-537}	18700^{+20177}_{-8716}
Alt.	-33 ± 11	$1.17^{+0.54}_{-0.49}$	368^{+23}_{-27}	4892^{+1473}_{-680}	19994^{+45295}_{-11525}

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 $A_{obs} \gg 1.0$

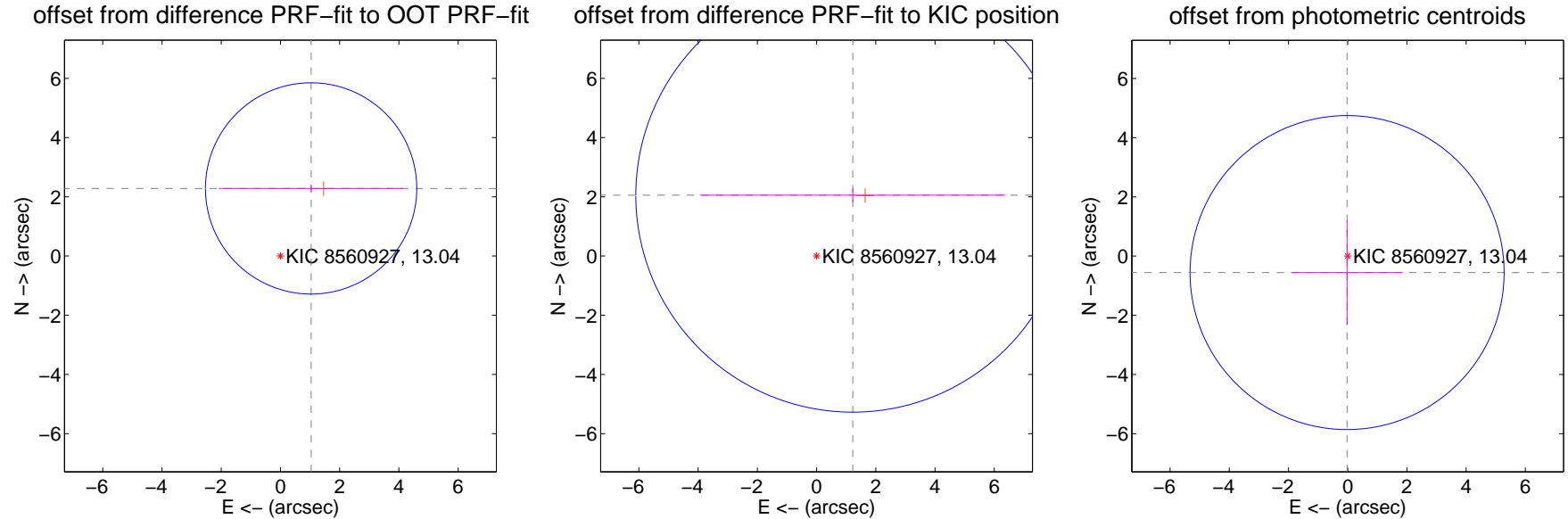
DV Centroid Data

Supplemental centroid analysis for 008560927-02. Kepler magnitude: 13.04. Transit SNR 6.40

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.507 ± 1.189	2.11	-1.035 ± 3.118	2.283 ± 0.128
PRF-fit source offset from KIC position	2.389 ± 2.442	0.98	-1.222 ± 5.149	2.053 ± 0.233
photometric centroid source offset	0.56 ± 1.77	0.32	0.02 ± 1.87	-0.56 ± 1.77

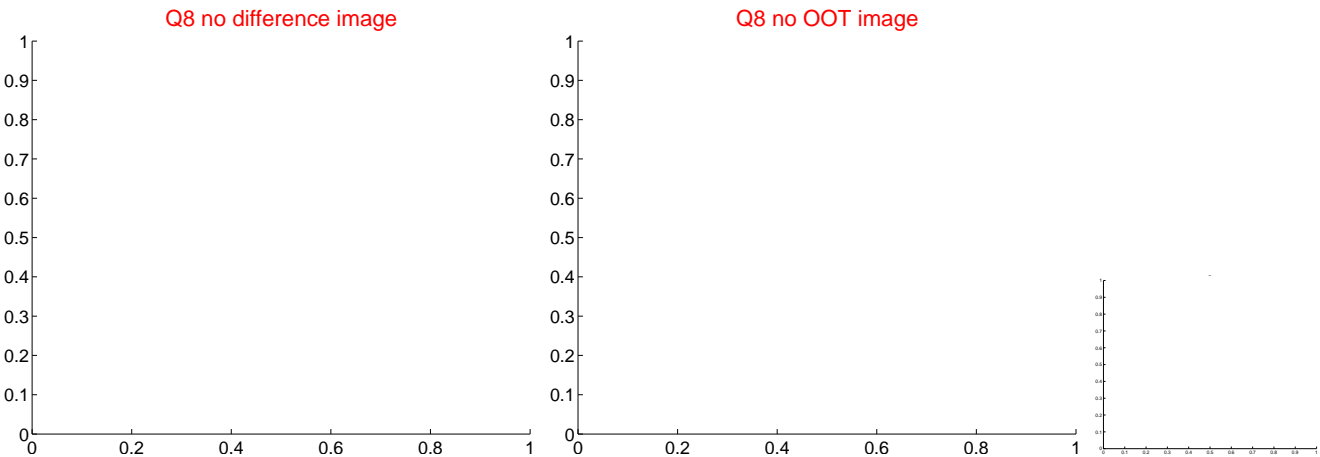
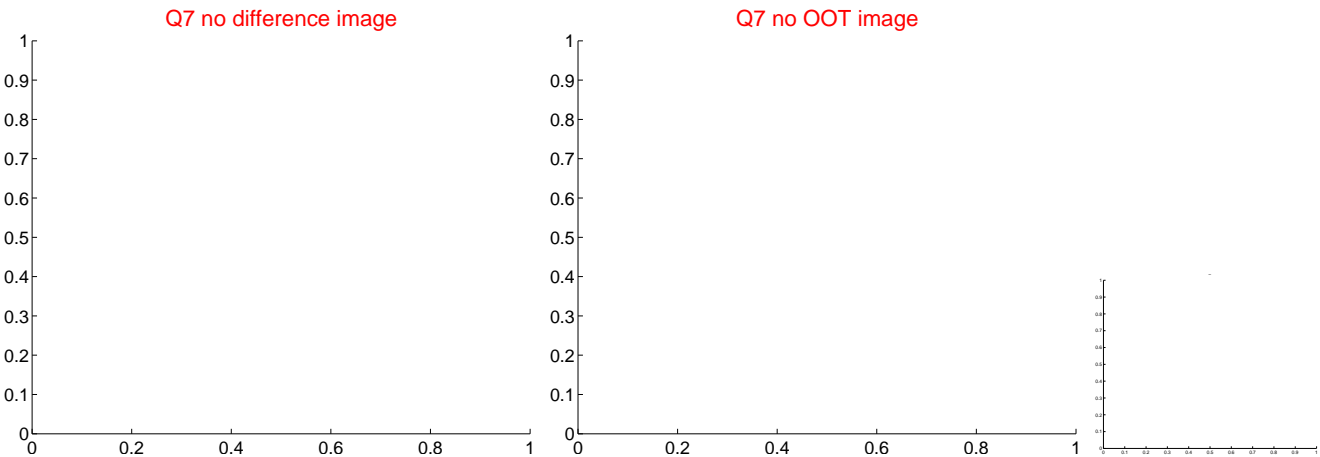
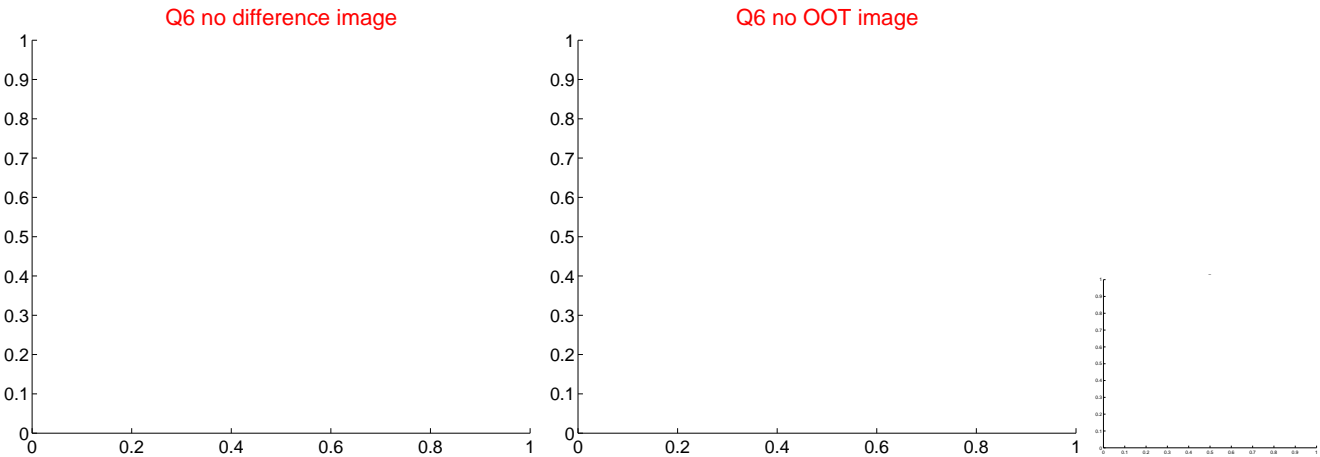
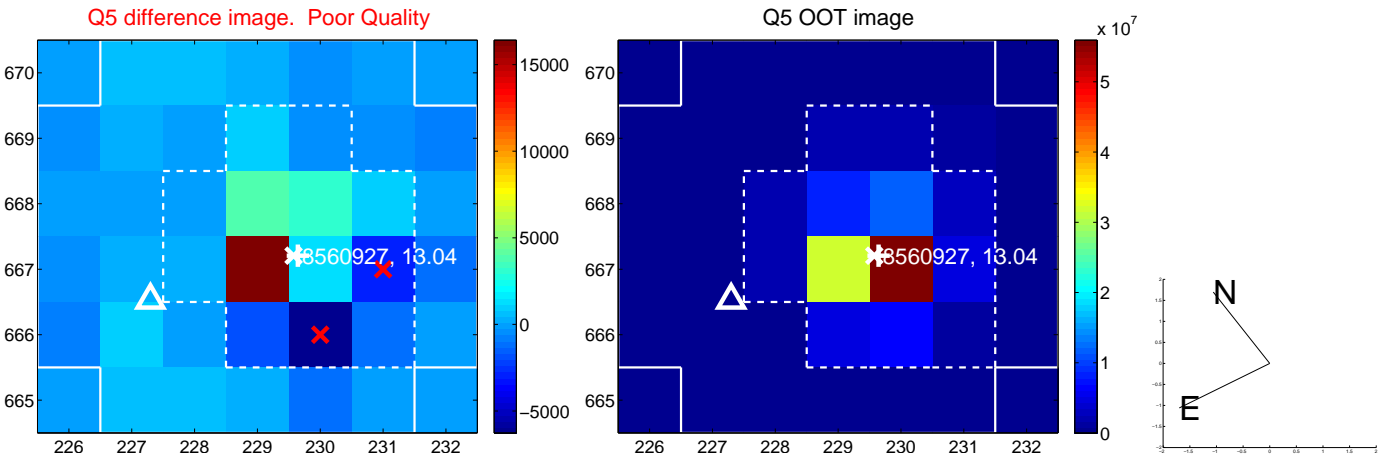


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

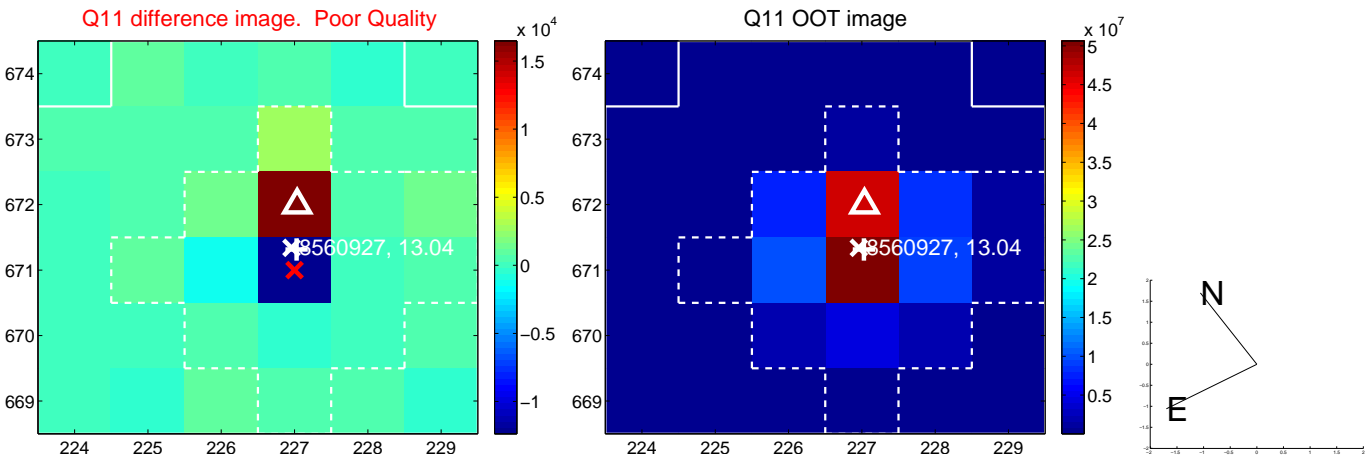
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



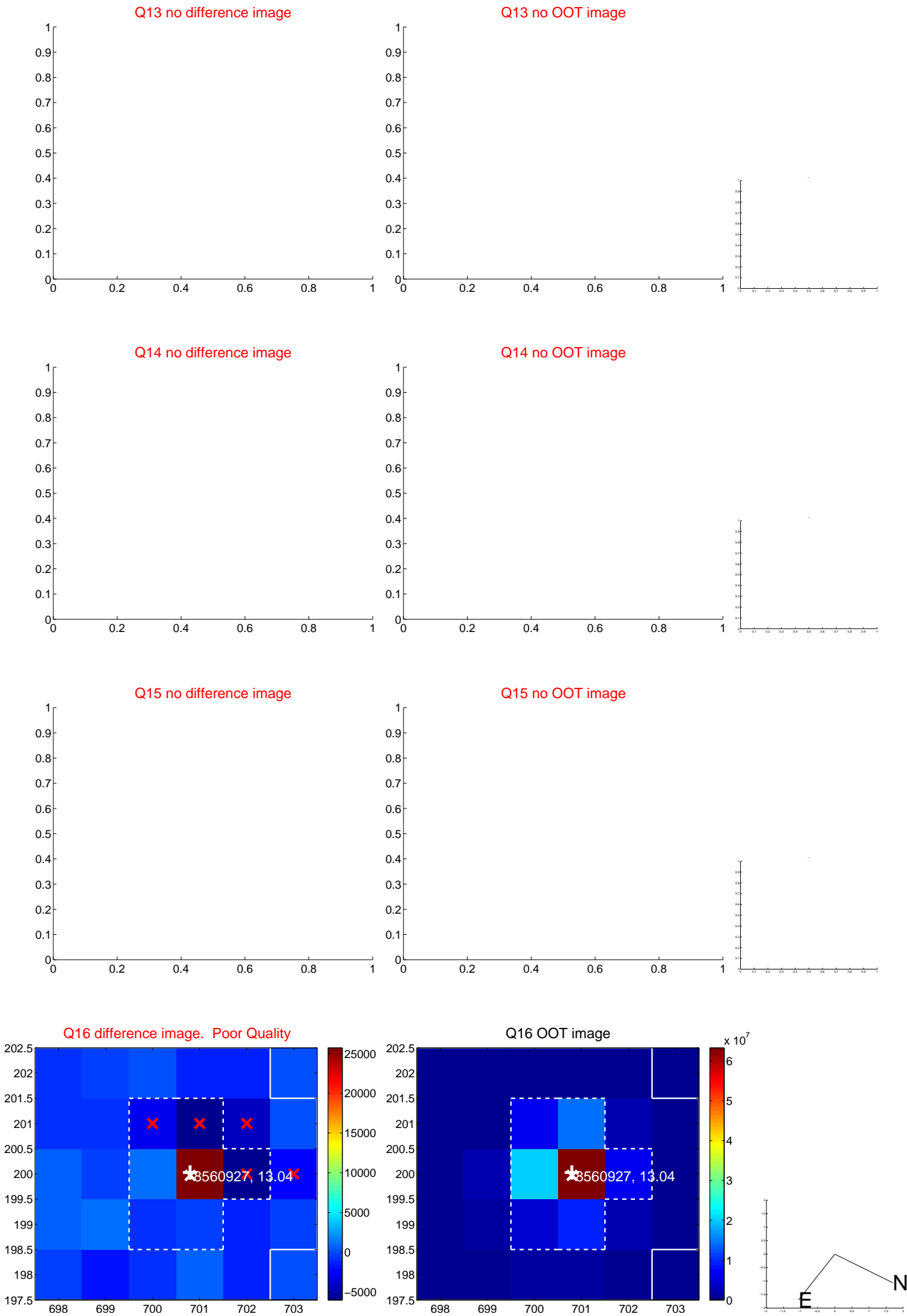
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



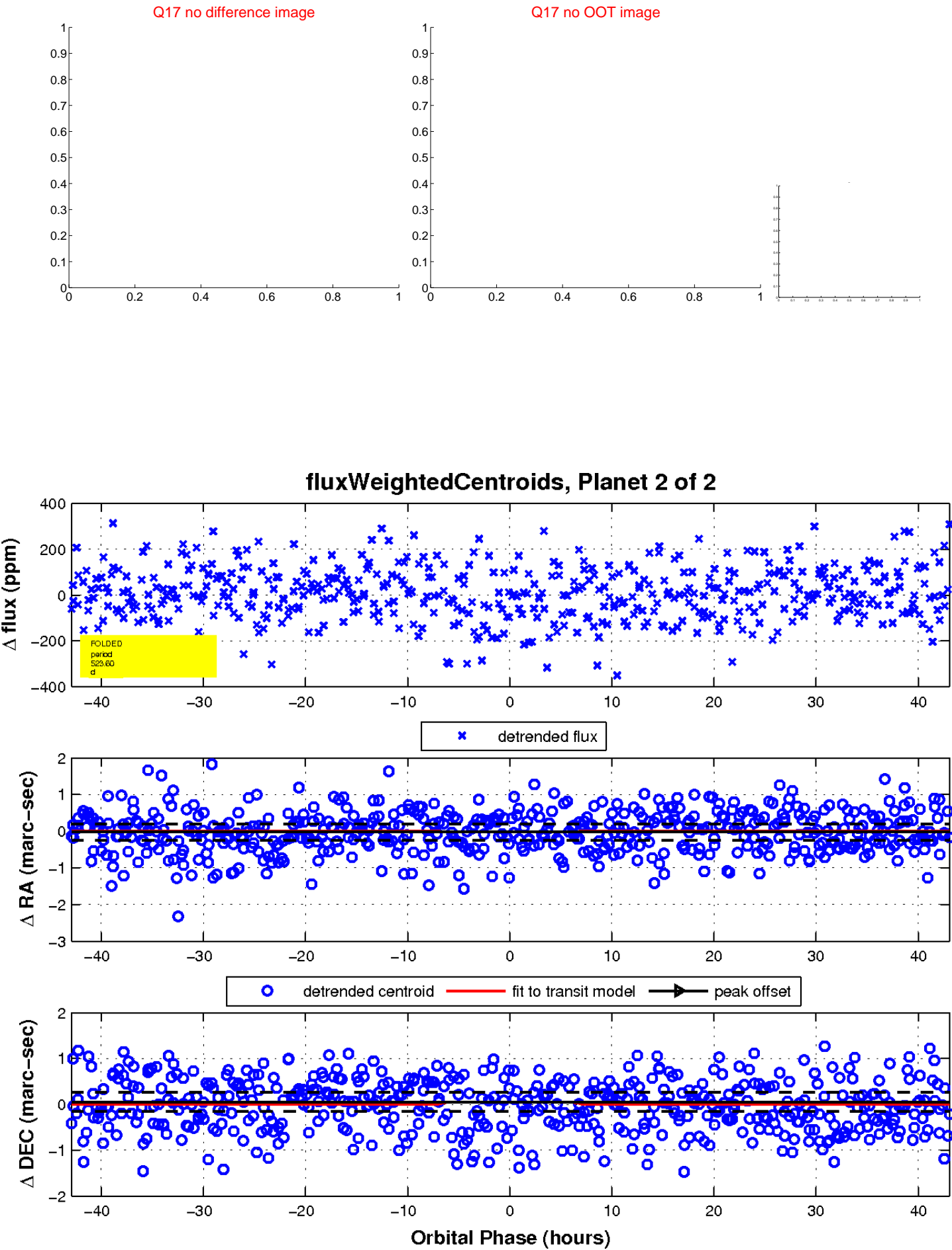
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

