

KIC 008121310

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})
008121310-01	OBS	0317.01	22.208134	139.734368	455.6	7.527	53.3	57.2	1.40	6336	3.24	98.52
008121310-02	OBS	0317.02	11.505950	136.233948	52.3	7.564	7.5	8.5	1.40	6336	1.43	236.75

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008121310-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008121310-02	OBS	PC	0.81	0	0	0	0	NO_COMMENT

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

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

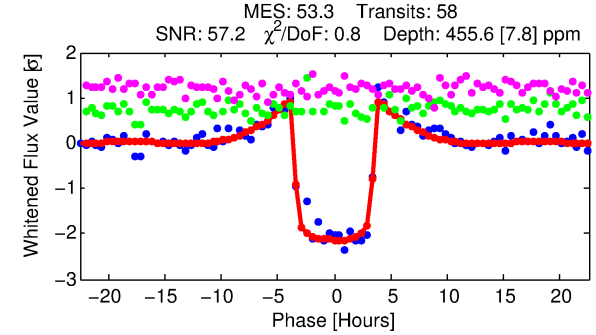
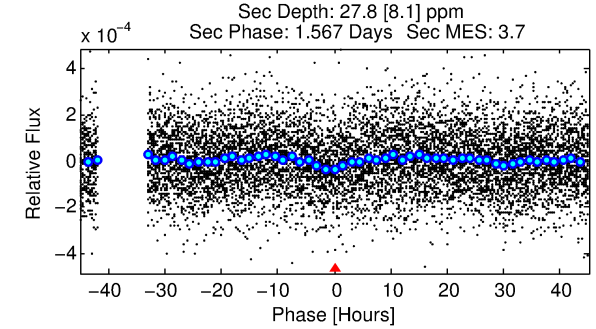
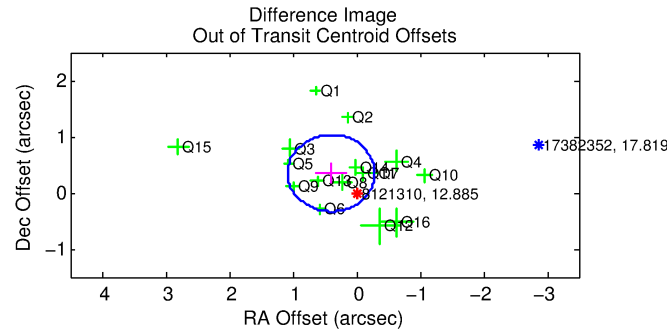
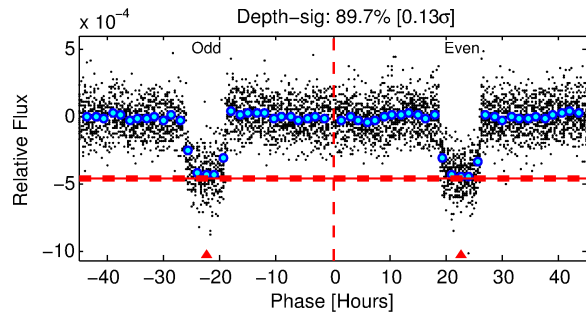
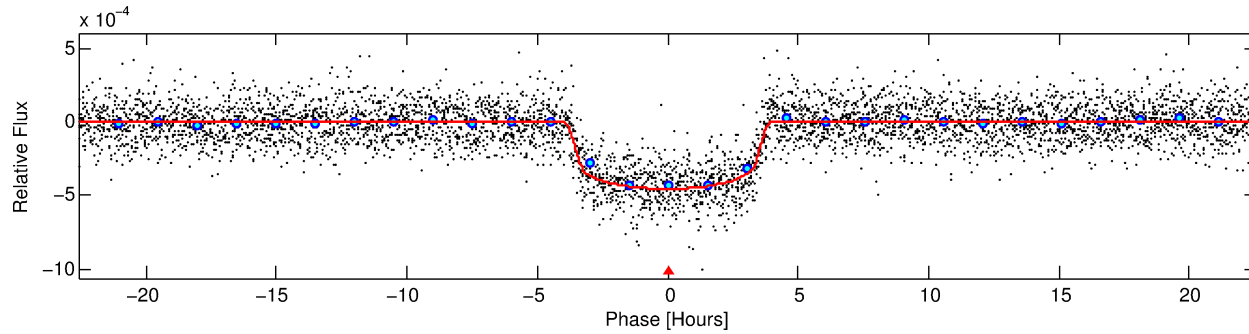
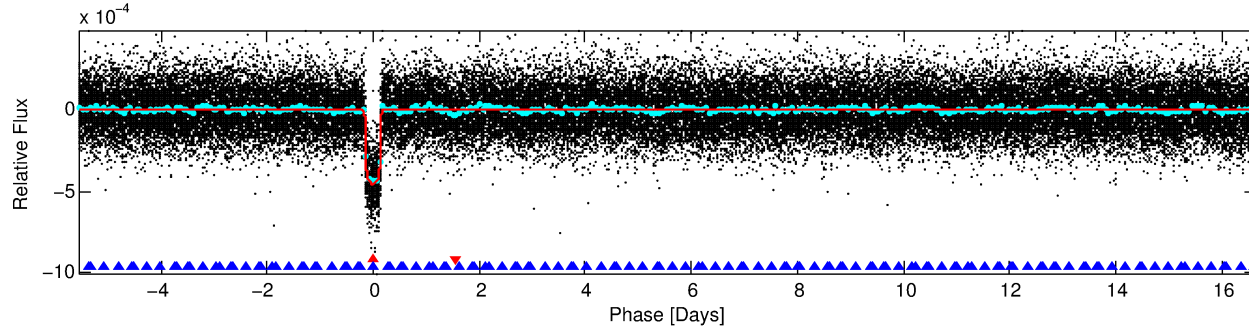
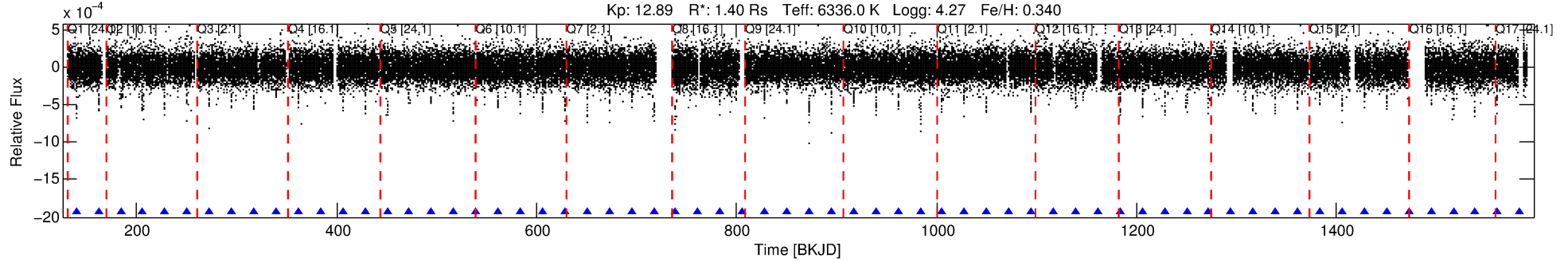
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008121310-01

No Significant Match Found

DV One-Page Summary

KIC: 8121310 Candidate: 1 of 2 Period: 22.208 d
KOI: K00317.01 Corr: 0.986



DV Fit Results:

Period = 22.20813 [0.00004] d
Epoch = 139.7344 [0.0015] BKJD
Rp/R* = 0.0212 [0.0011]
a/R* = 15.79 [3.98]
b = 0.74 [0.15]
Seff = 98.52 [22.79]
Teq = 803 [46] K
Rp = 3.24 [0.59] Re
a = 0.1699 [0.0250] AU
Ag = 41.90 [15.81] [2.59σ]
Teffp = 3160 [255] K [9.09σ]

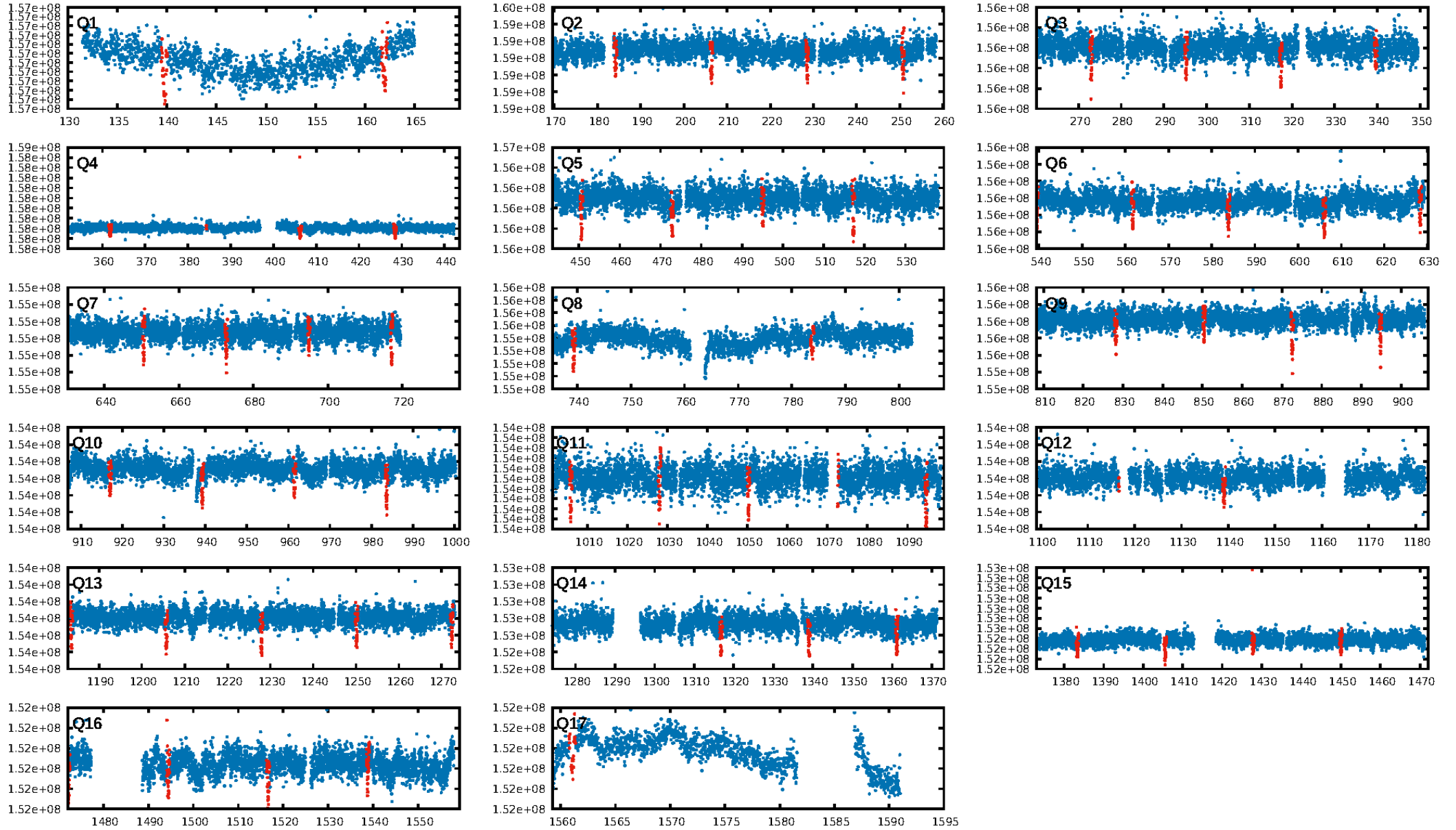
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [24.07σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 10.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [55/55]
GhostDiagnostic-chr: 3.213
Centroid-sig: 3.2%
Centroid-so: 0.138 arcsec [0.87σ]
OotOffset-rm: 0.529 arcsec [2.32σ]
KicOffset-rm: 0.583 arcsec [2.32σ]
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]

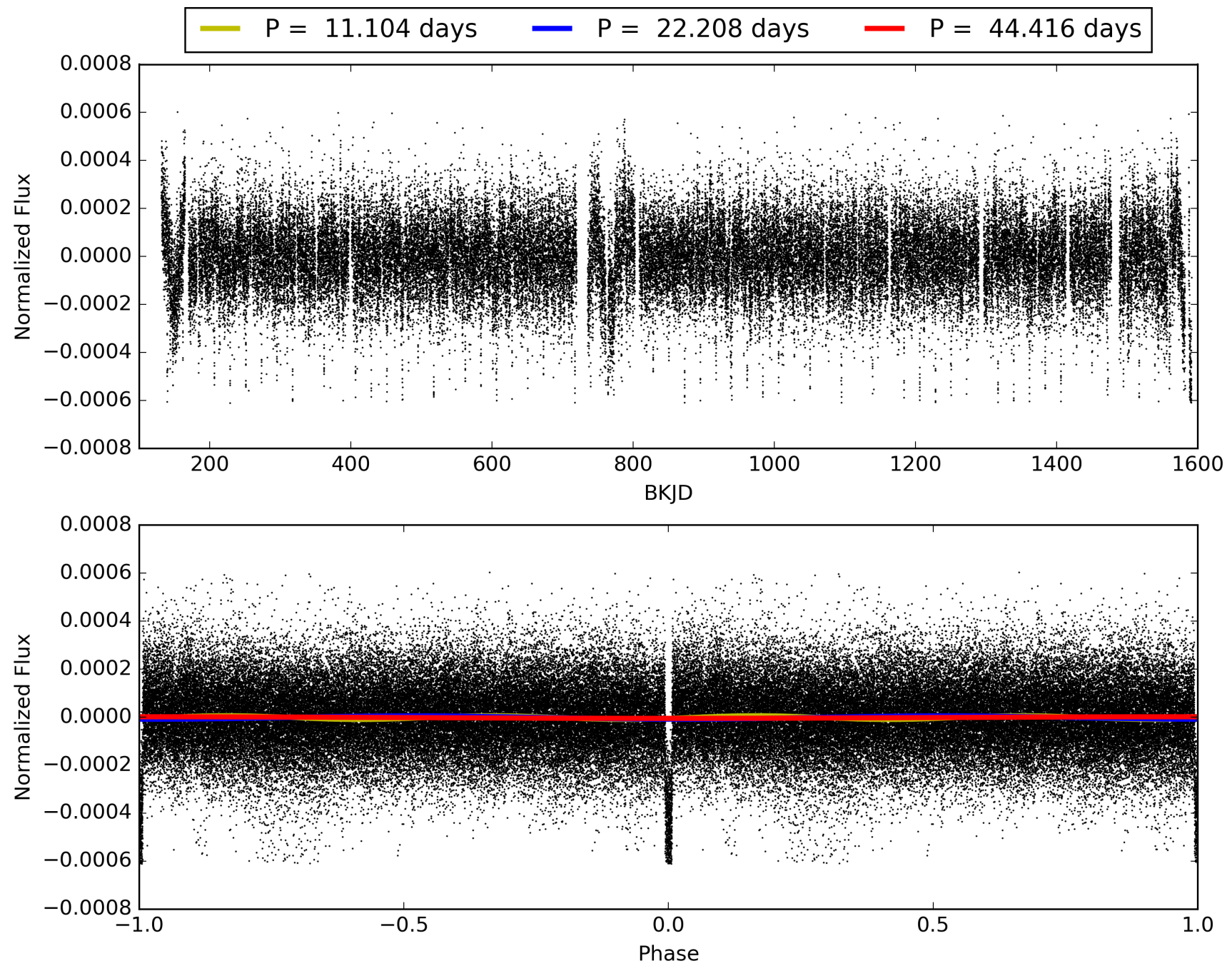
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:24:38 Z

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

TCE 008121310-01, PDC Light Curves

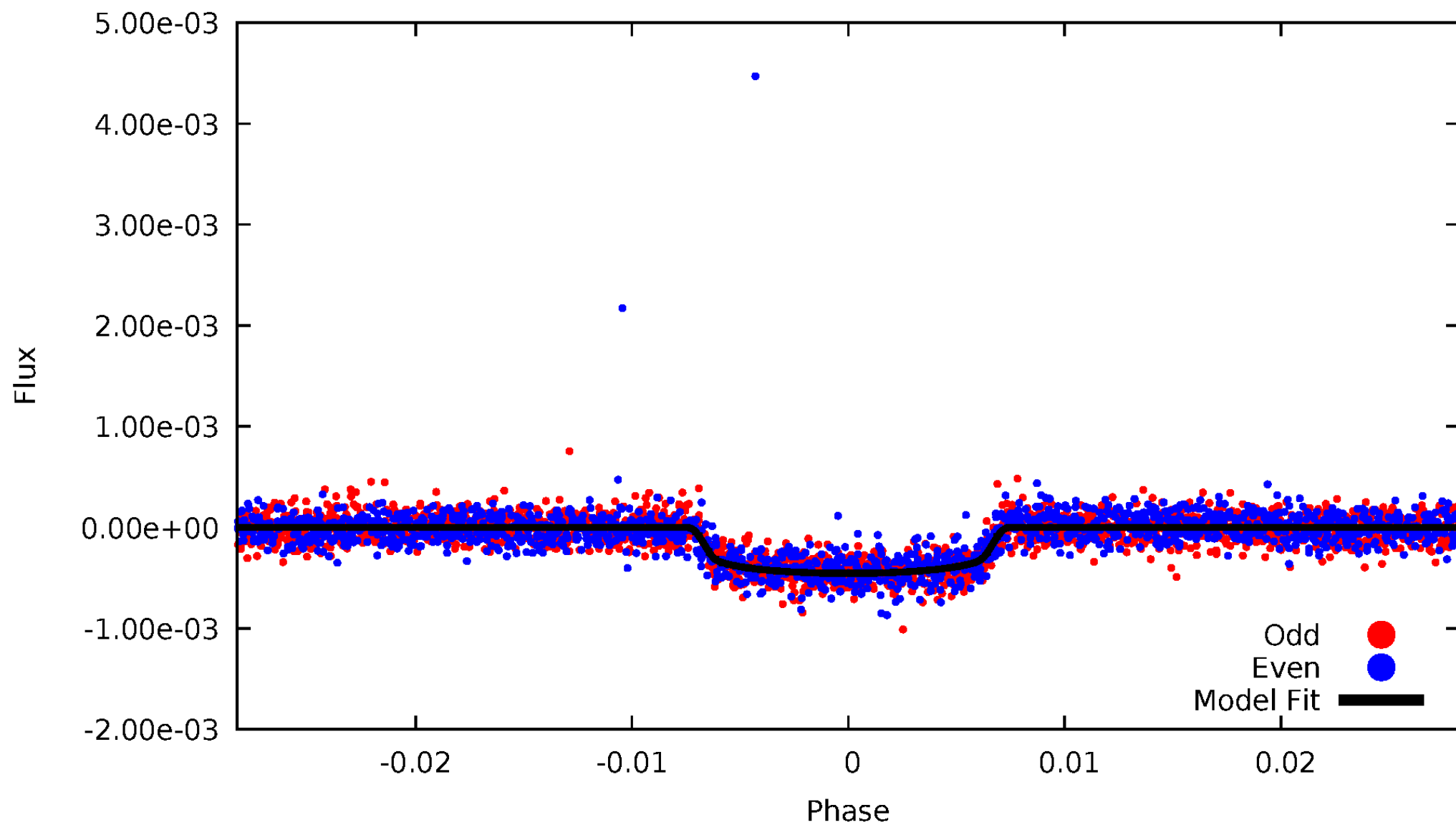


TCE 008121310-01



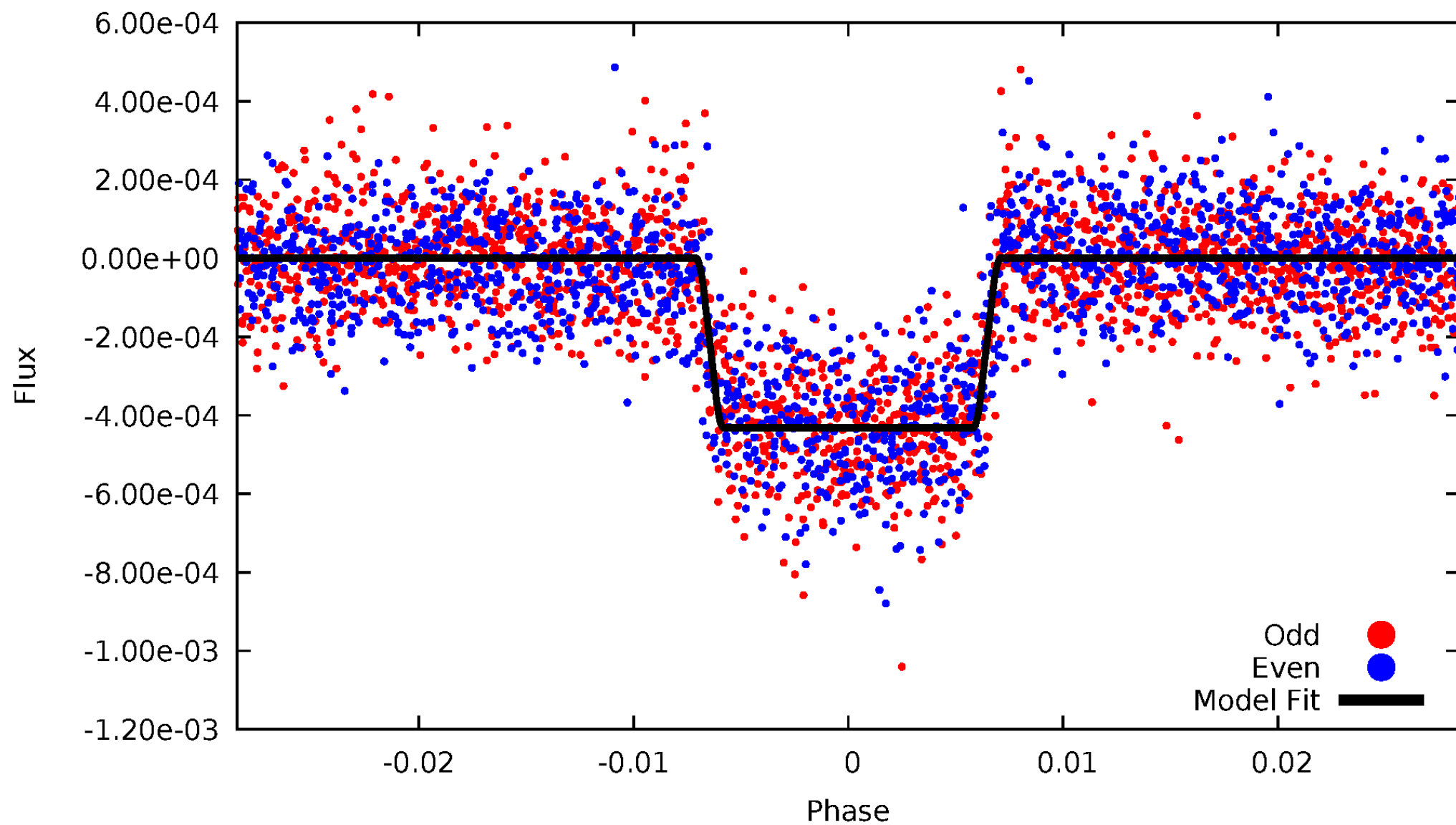
DV Odd/Even

TCE 008121310-01



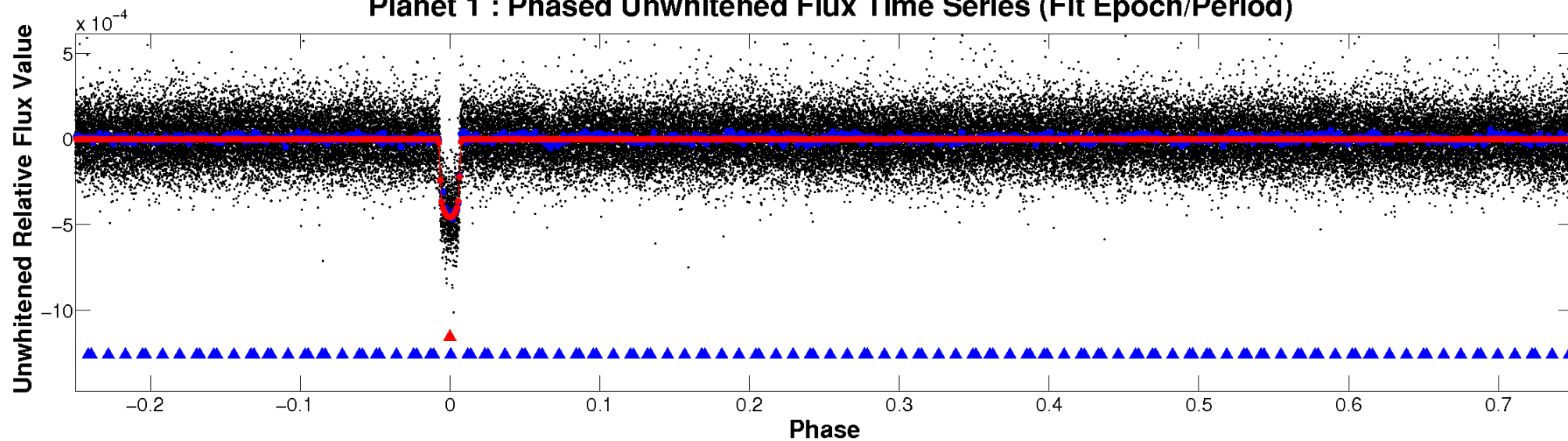
ALT Odd/Even

TCE 008121310-01

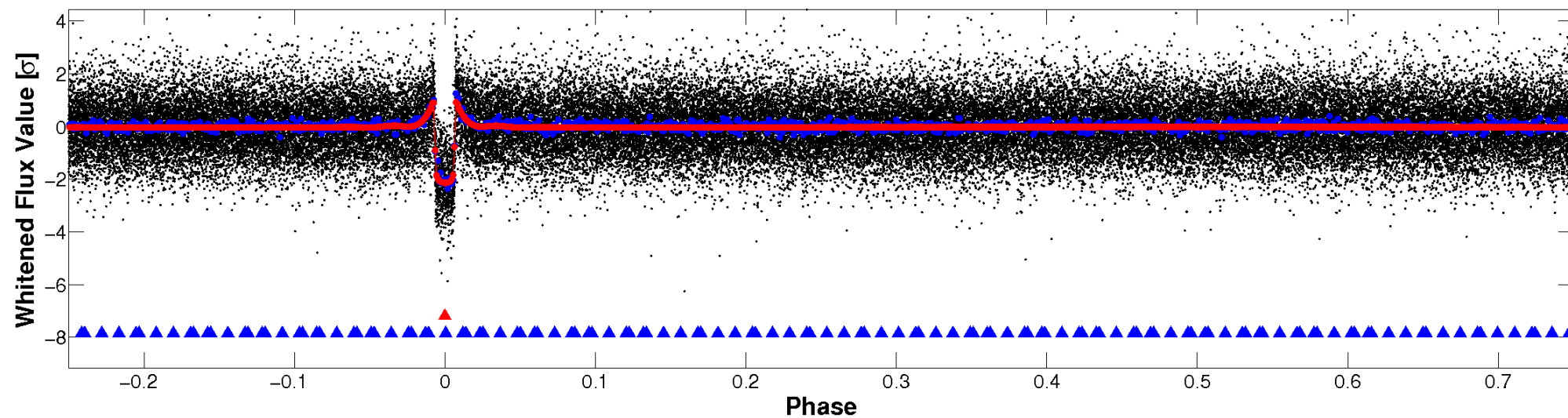


Non-Whitened Vs. Whitened Light Curve

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

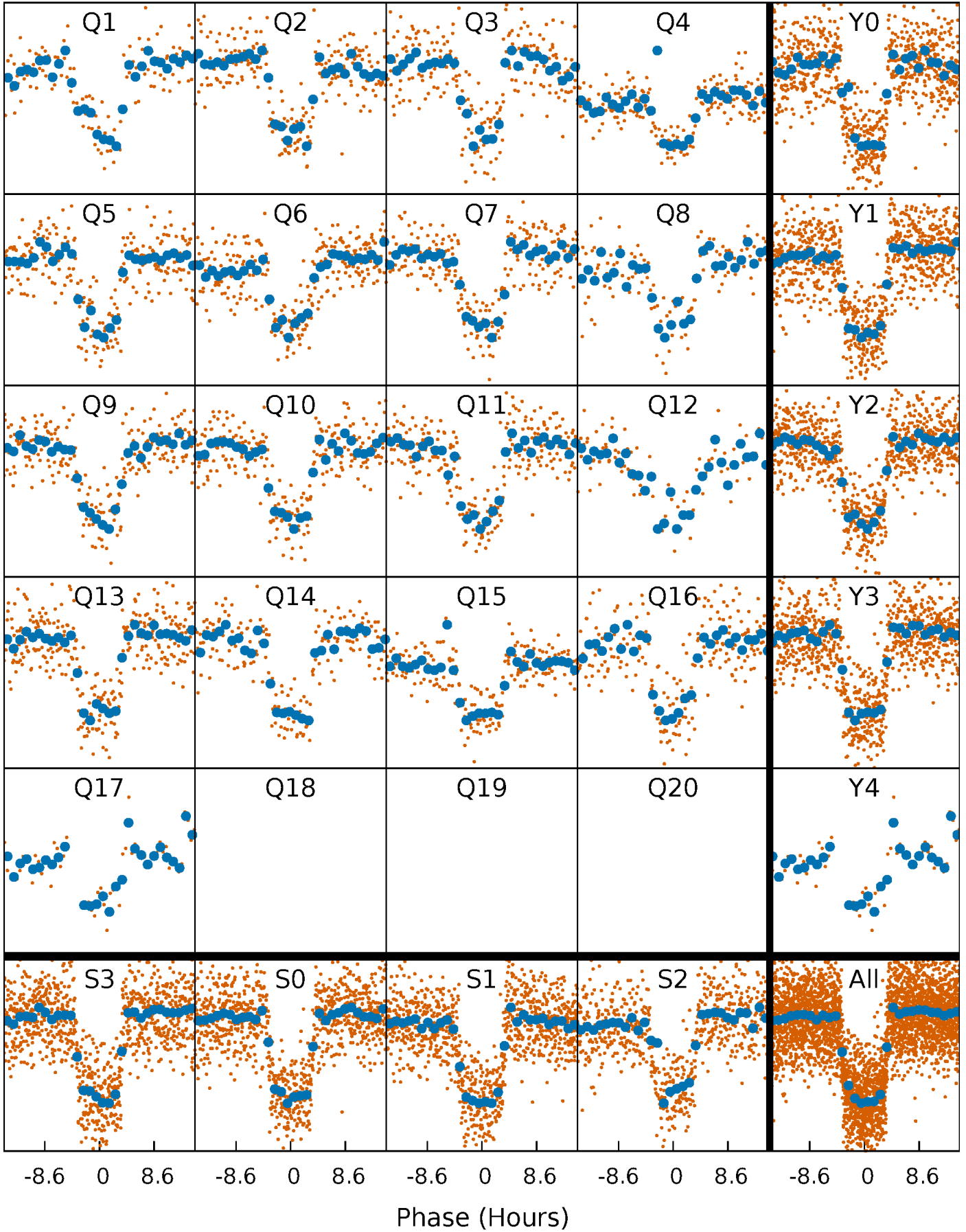


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



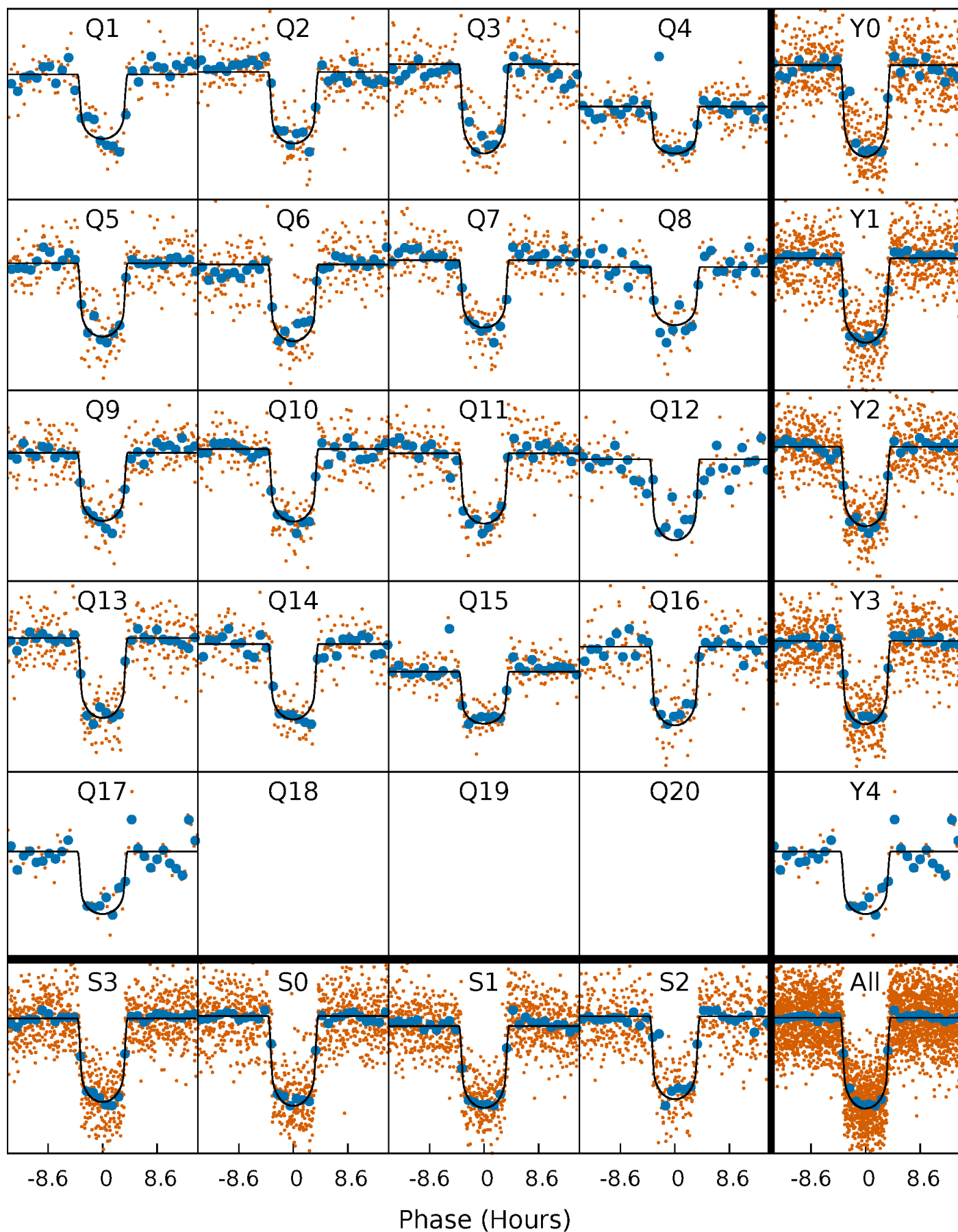
PDC Quarter-Phased Transit Curves

TCE 008121310-01 P= 22.208134 Days $T_0=139.734368$ (BKJD)



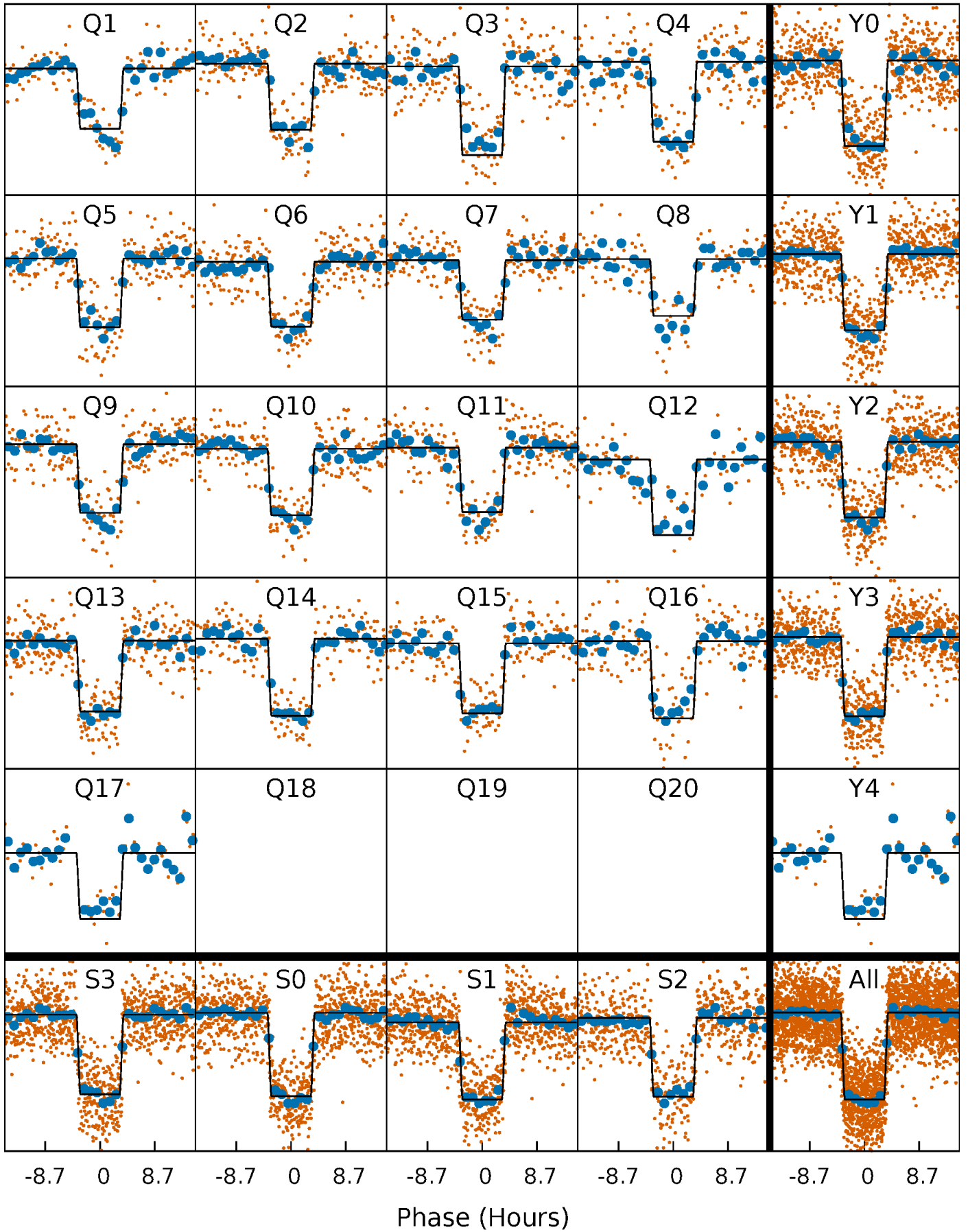
DV Quarter-Phased Transit Curves

TCE 008121310-01 P= 22.208134 Days $T_0=139.734368$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

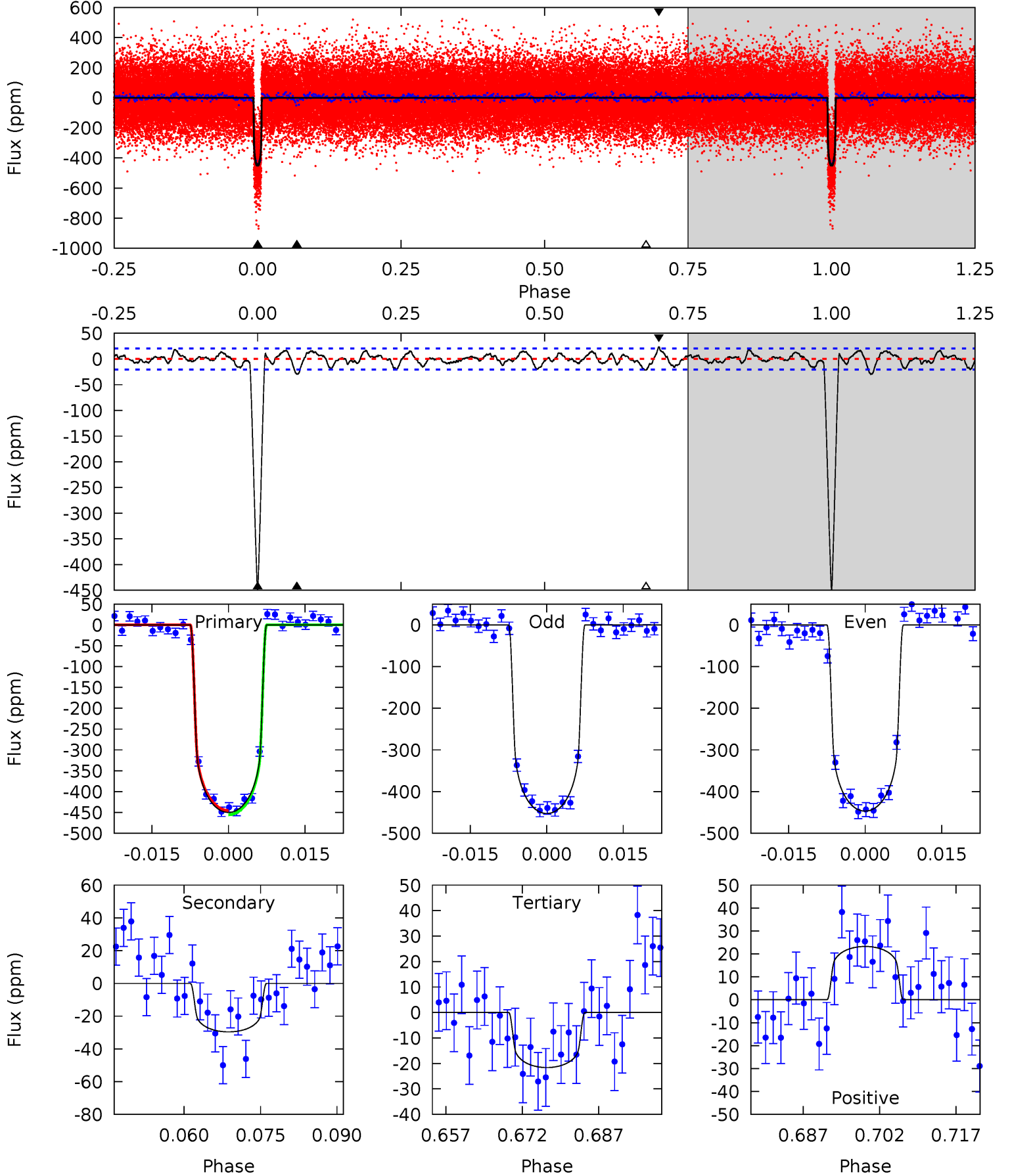
TCE 008121310-01 P= 22.208329 Days $T_0=139.728479$ (BKJD)



DV Model-Shift Uniqueness Test

008121310-01, P = 22.208134 Days, E = 117.526234 Days

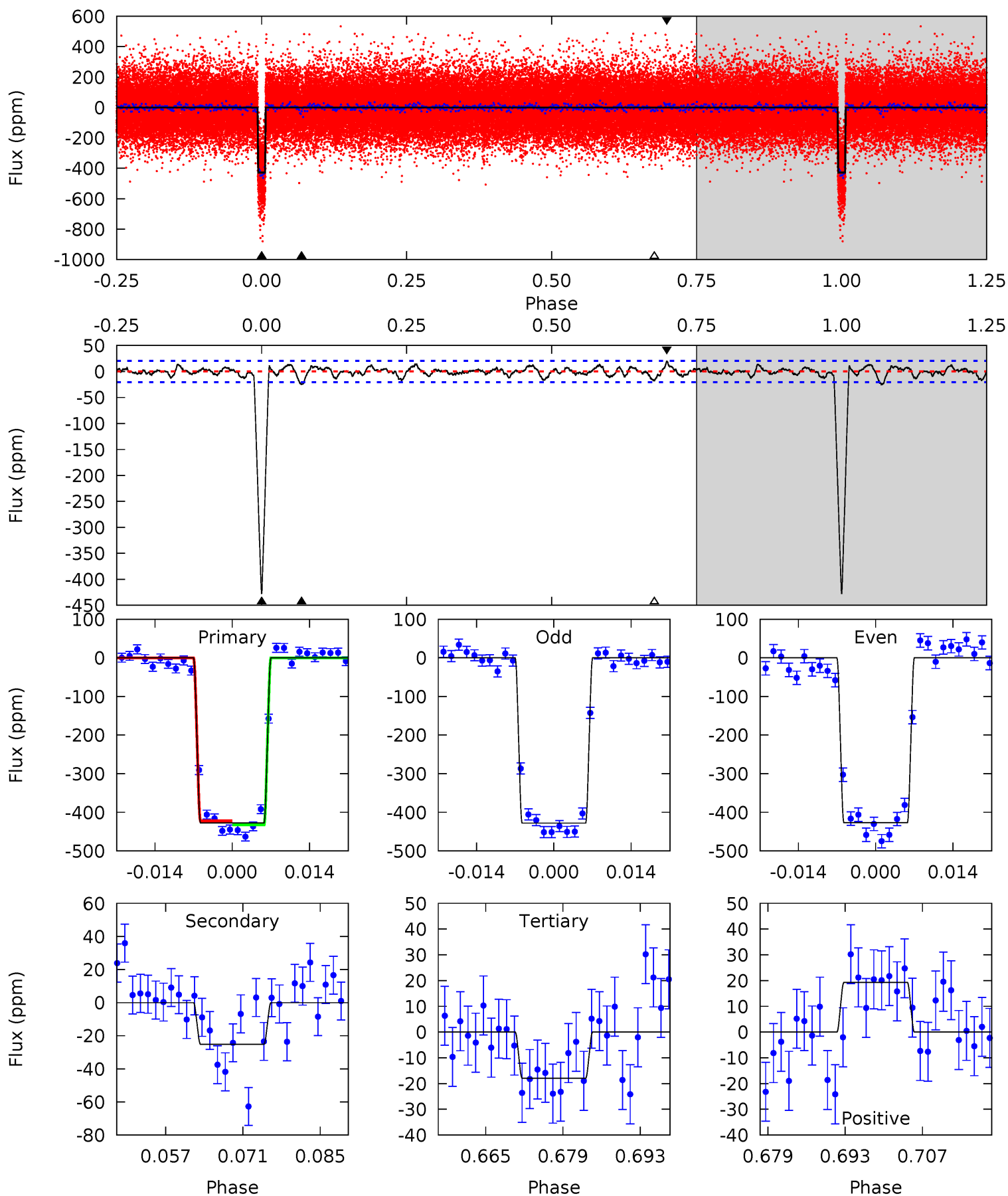
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
108.6	7.14	5.21	5.61	4.95	2.43	1.98	103.3	102.9	1.93	1.54	0.69	0.99	0.05	1.22



Alt Model-Shift Uniqueness Test

008121310-01, P = 22.208329 Days, E = 117.520150 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
103.7	6.10	4.35	4.67	4.96	2.45	1.51	99.4	99.1	1.75	1.43	0.16	0.99	0.04	1.28



Stellar Parameters For KIC 008121310

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6336^{+113}_{-139}	$4.266^{+0.063}_{-0.117}$	$0.340^{+0.100}_{-0.150}$	$1.403^{+0.245}_{-0.132}$	$1.324^{+0.092}_{-0.084}$	$0.675^{+0.182}_{-0.225}$
	+2%/-2%	+1%/-3%	+29%/-44%	+17%/-9%	+7%/-6%	+27%/-33%
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 008121310-01 / KOI 0317.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-30 ± 4	$3.28^{+0.33}_{-0.26}$	1126^{+52}_{-39}	3631^{+119}_{-113}	42^{+11}_{-8}
Alt.	-25 ± 4	$3.21^{+0.32}_{-0.27}$	1126^{+45}_{-34}	3567^{+125}_{-120}	39^{+9}_{-9}

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 $T_{\text{obs}} \gg T_{\text{max}}$ AND $A_{\text{obs}} \gg 1.0$

DV Centroid Data

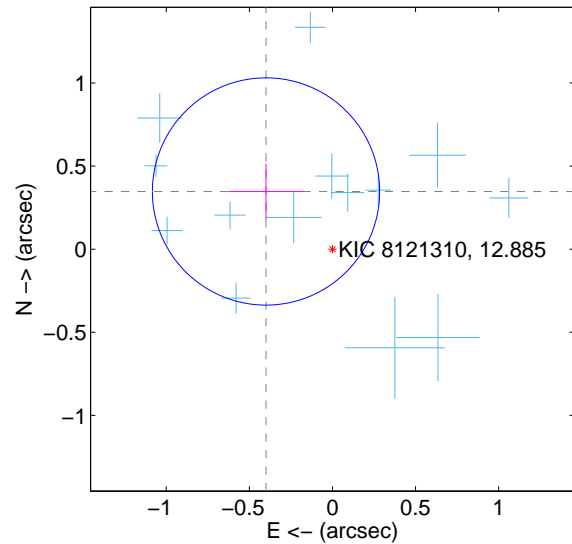
Supplemental centroid analysis for 008121310-01. Kepler magnitude: 12.88. Transit SNR 57.22

There are 16 quarters with good PRF difference image offsets

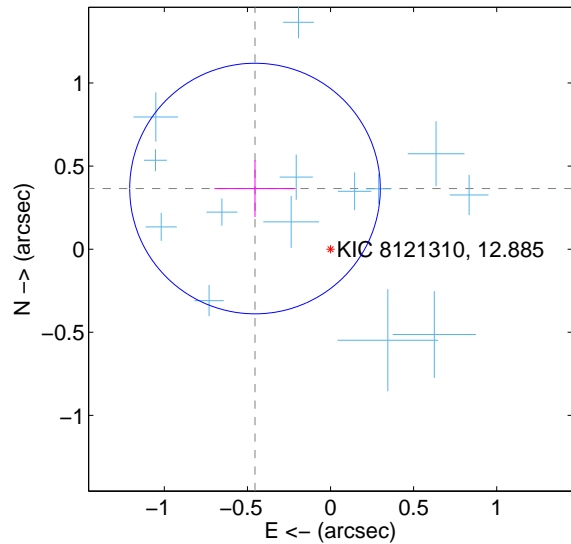
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.529 ± 0.228	2.32	0.400 ± 0.225	0.347 ± 0.167
PRF-fit source offset from KIC position	0.583 ± 0.251	2.32	0.454 ± 0.244	0.365 ± 0.171
photometric centroid source offset	0.14 ± 0.16	0.87	0.07 ± 0.17	-0.12 ± 0.15

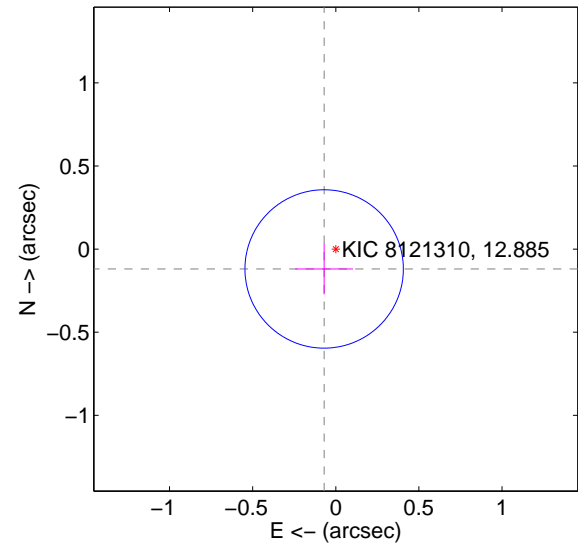
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

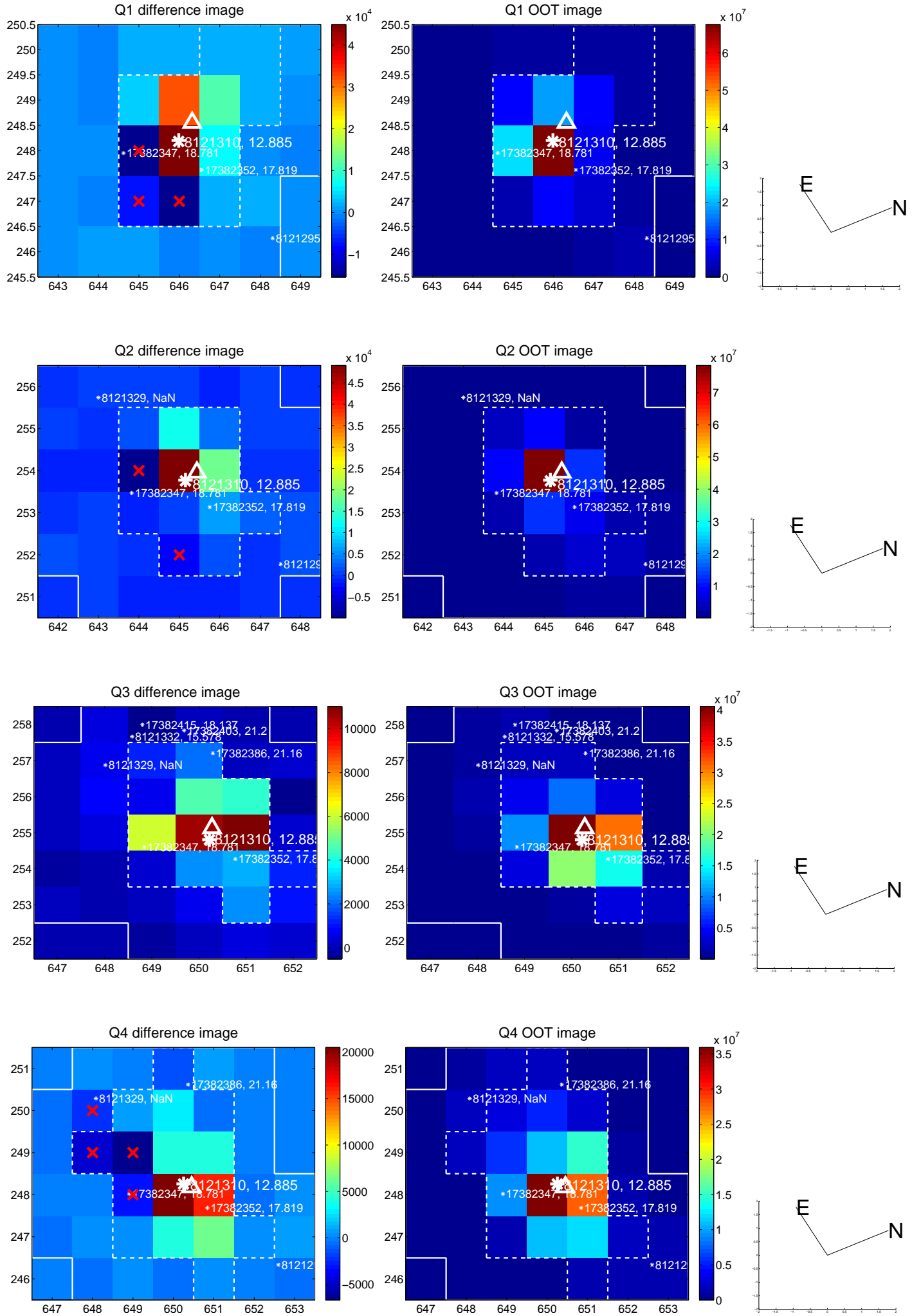


offset from photometric centroids

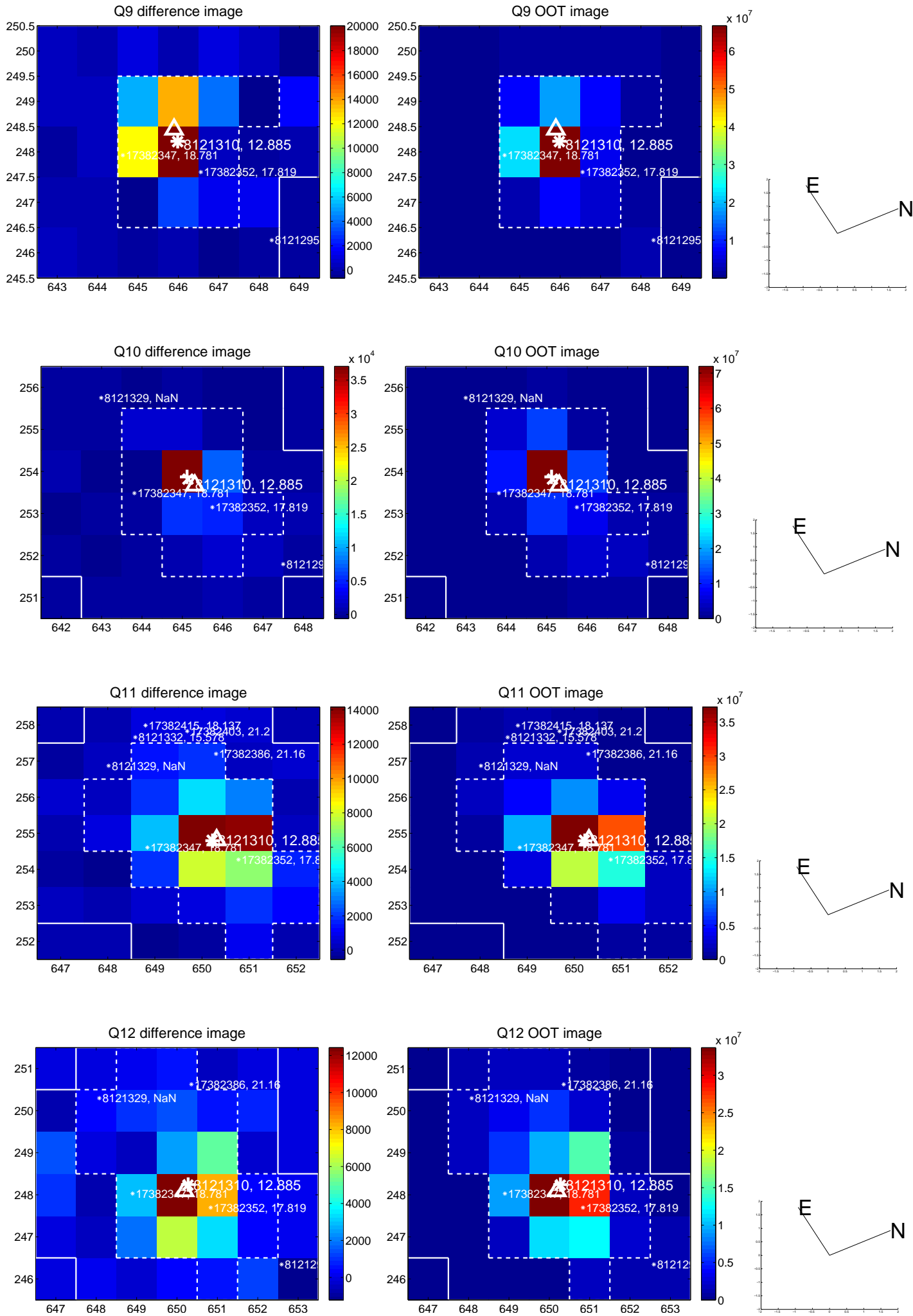


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

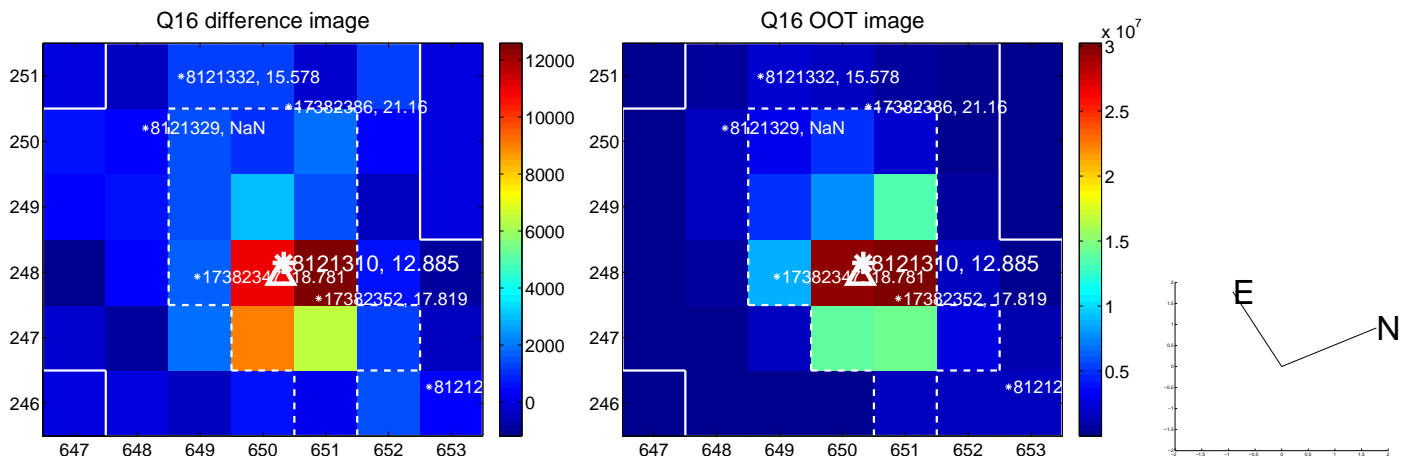
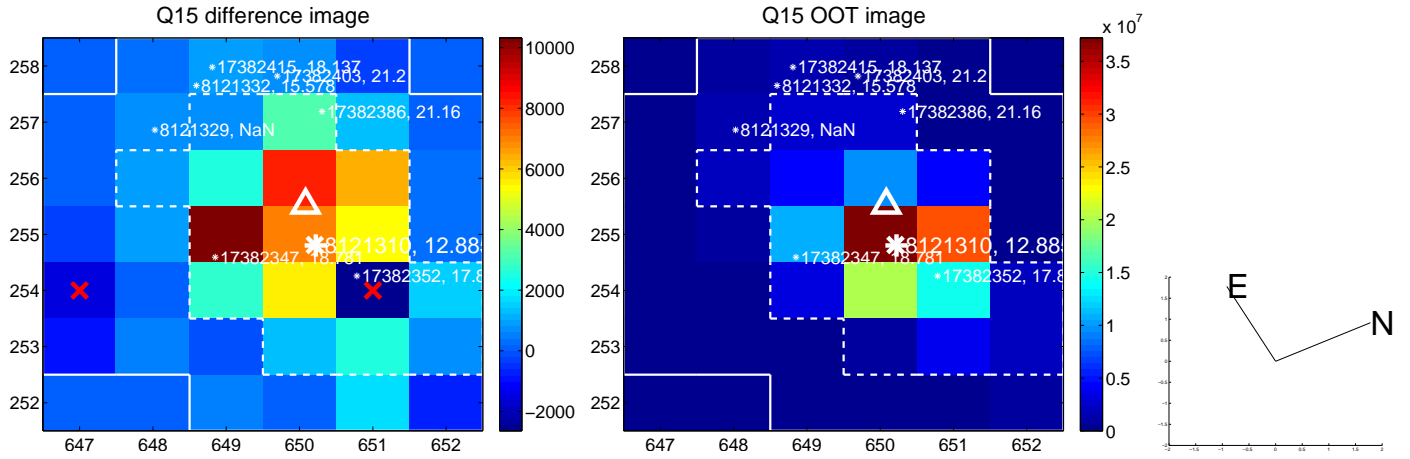
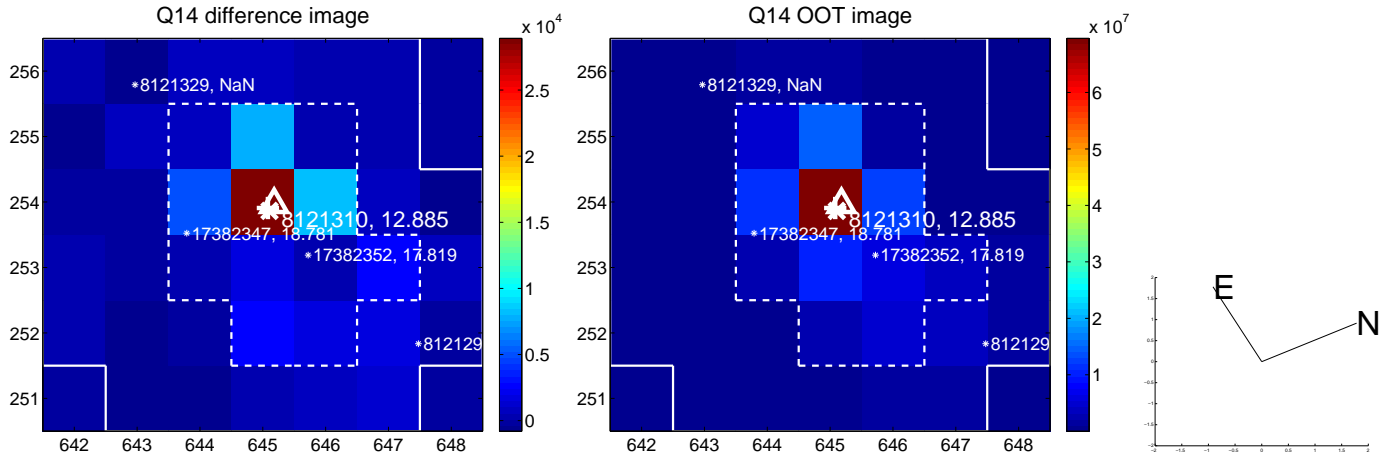
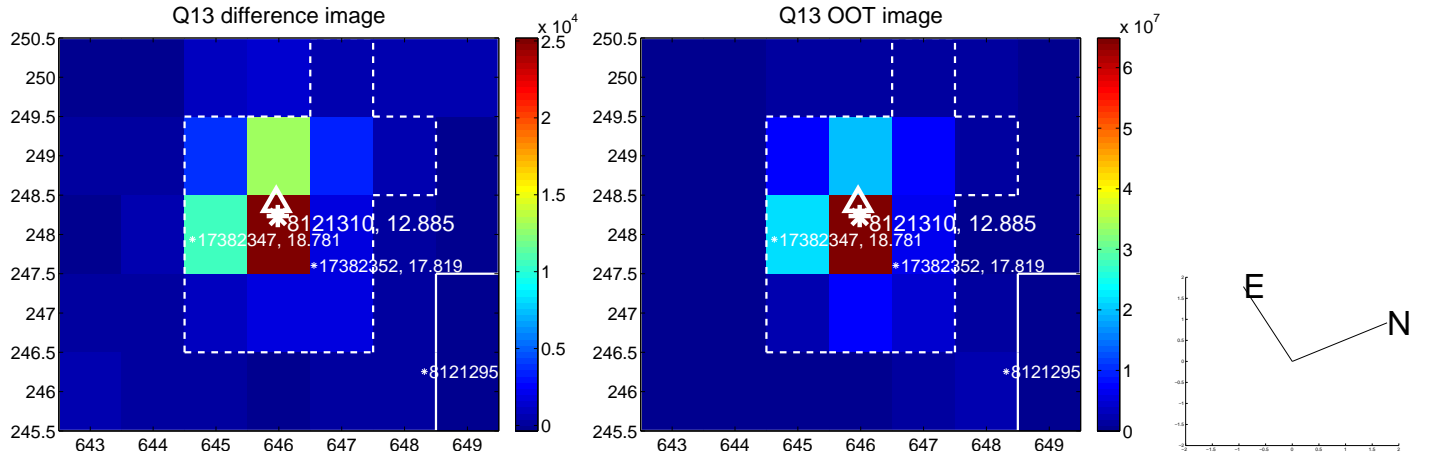
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



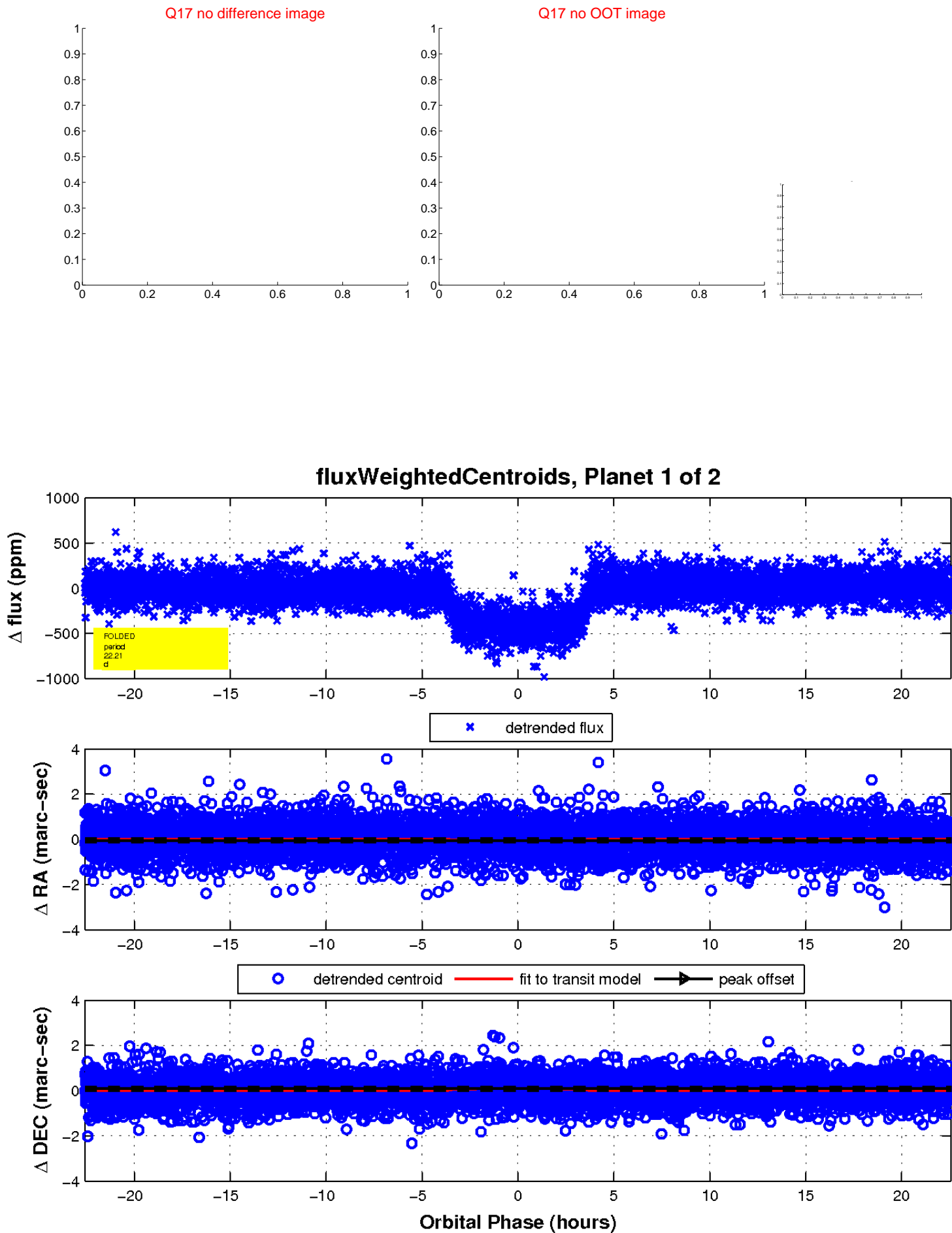
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

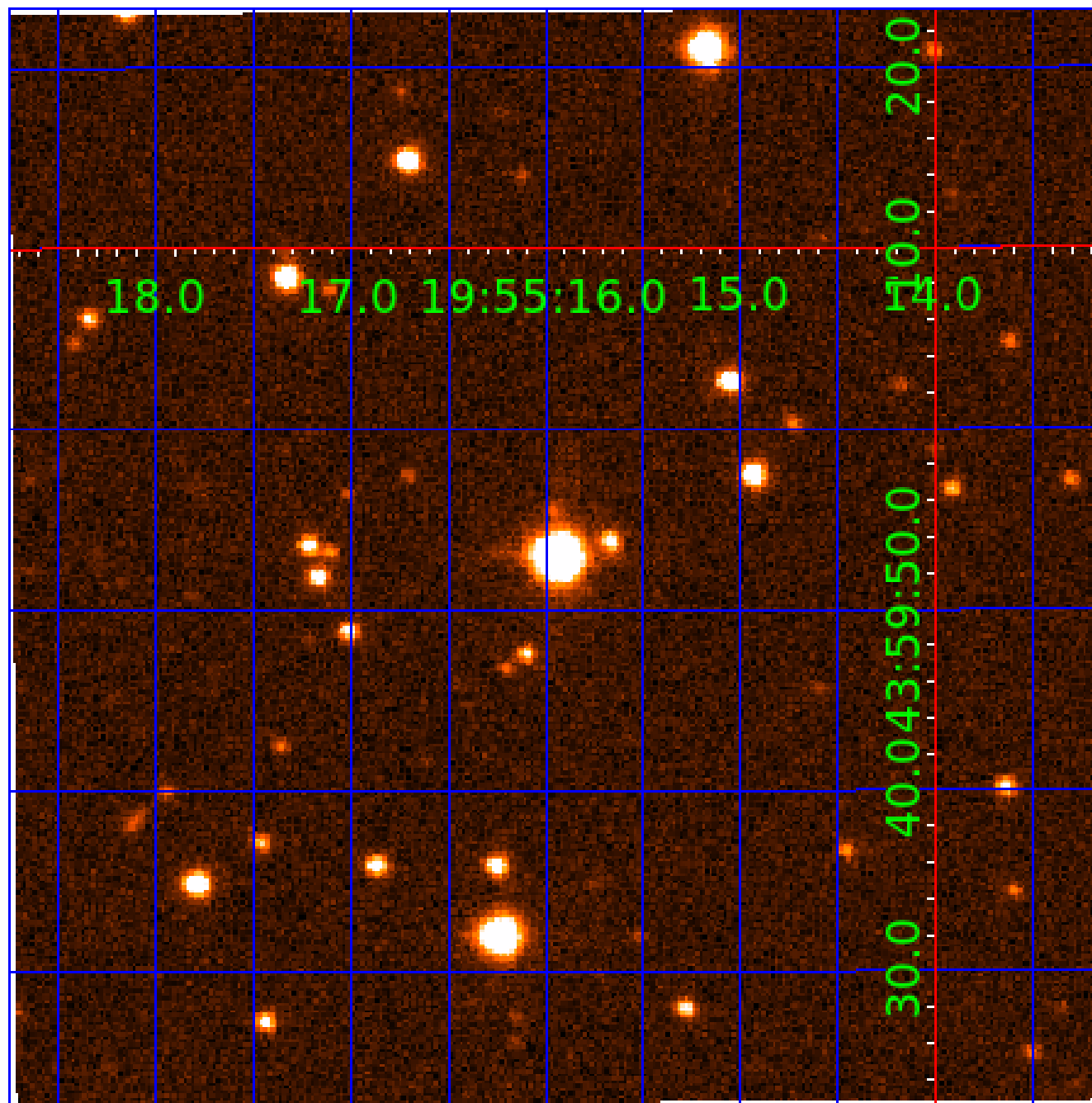


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008121310

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})
008121310-01	OBS	0317.01	22.208134	139.734368	455.6	7.527	53.3	57.2	1.40	6336	3.24	98.52
008121310-02	OBS	0317.02	11.505950	136.233948	52.3	7.564	7.5	8.5	1.40	6336	1.43	236.75

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008121310-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
008121310-02	OBS	PC	0.81	0	0	0	0	NO_COMMENT

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 008121310-02

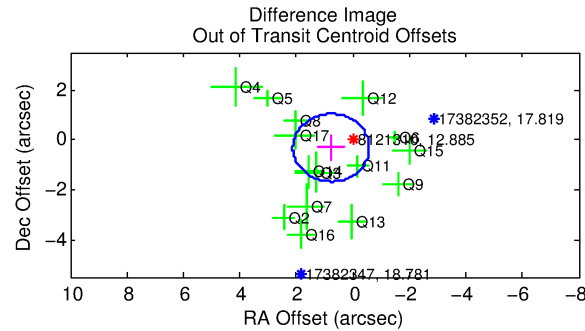
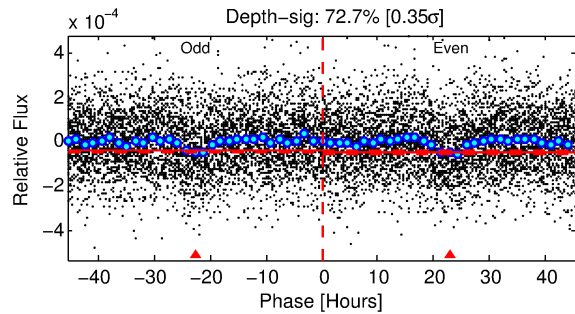
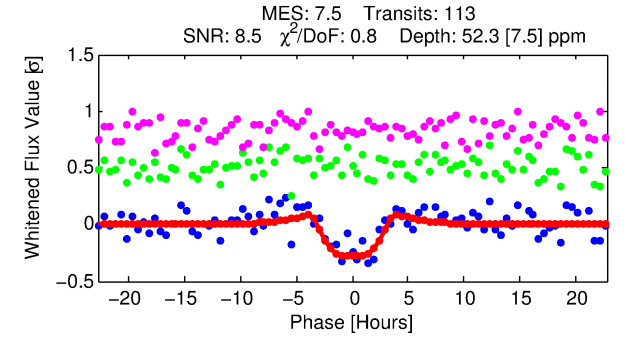
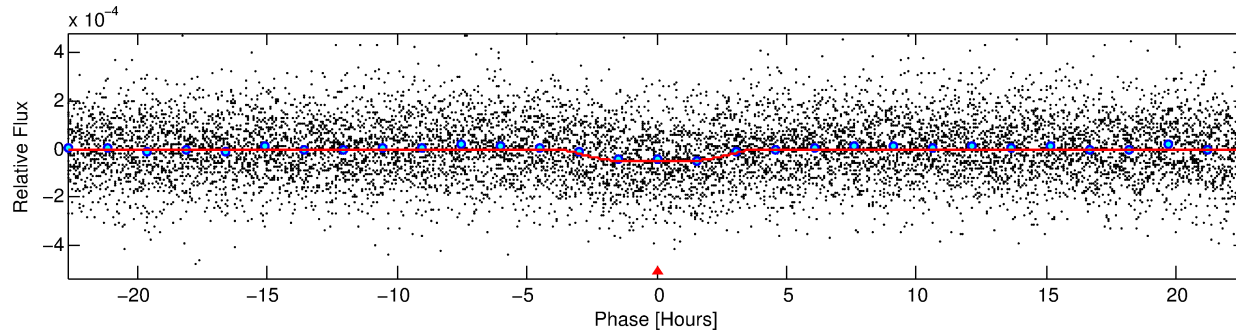
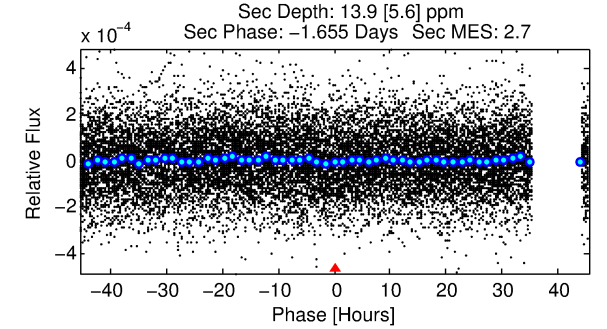
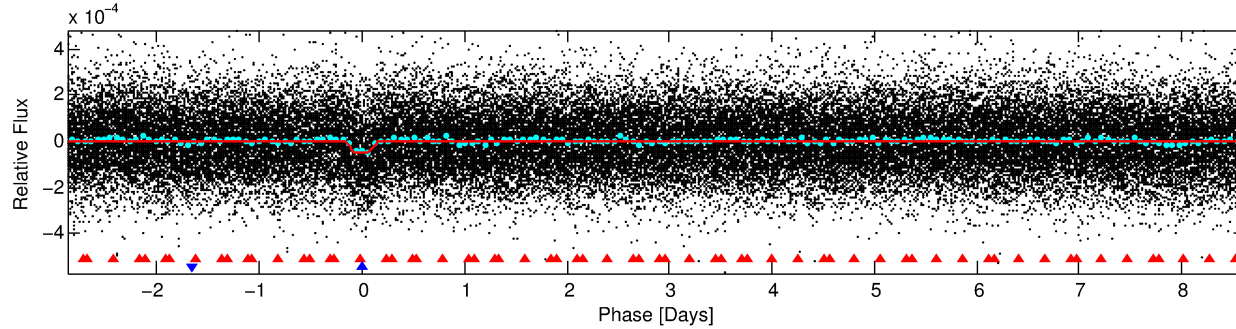
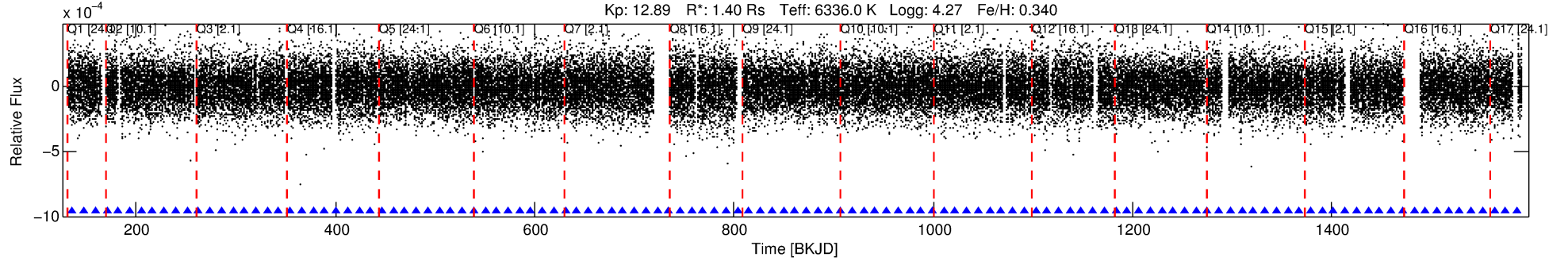
No Significant Match Found

DV One-Page Summary

KIC: 8121310 Candidate: 2 of 2 Period: 11.506 d

KOI: K00317 Corr: No Ephemeris Match

Kp: 12.89 R*: 1.40 Rs Teff: 6336.0 K Logg: 4.27 Fe/H: 0.340



DV Fit Results:

Period = 11.50595 [0.00022] d
Epoch = 136.2339 [0.0159] BKJD
Rp/R* = 0.0093 [0.0009]
a/R* = 2.56 [0.41]
b = 0.99 [0.01]
Seff = 236.75 [54.77]
Teq = 1000 [58] K
Rp = 1.43 [0.28] Re
a = 0.1096 [0.0161] AU
Ag = 44.90 [22.00] [2.00 sigma]
Teff = 4003 [450] K [6.62 sigma]

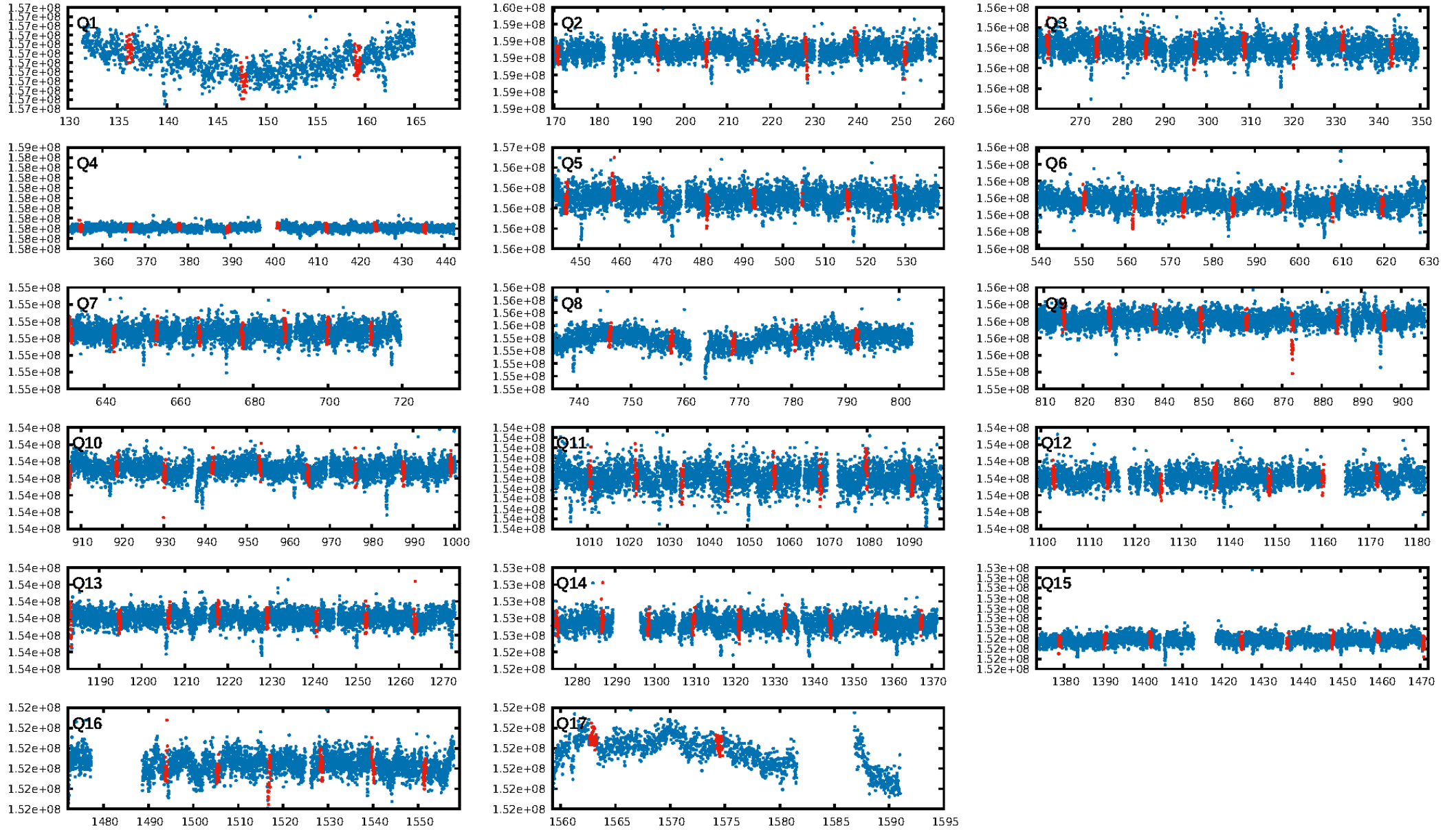
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [24.07 sigma]
ModelChiSquare2-sig: 95.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.01e-13
RollingBand-fgt: 1.00 [108/108]
GhostDiagnostic-chr: 23.03
Centroid-sig: 60.8%
Centroid-so: 0.645 arcsec [0.59 sigma]
OotOffset-rm: 0.841 arcsec [1.86 sigma]
KicOffset-rm: 0.798 arcsec [1.71 sigma]
OotOffset-st: 3/4/4/4 [15]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.60 [9/15]
DiffImageOverlap-fno: 1.00 [17/17]

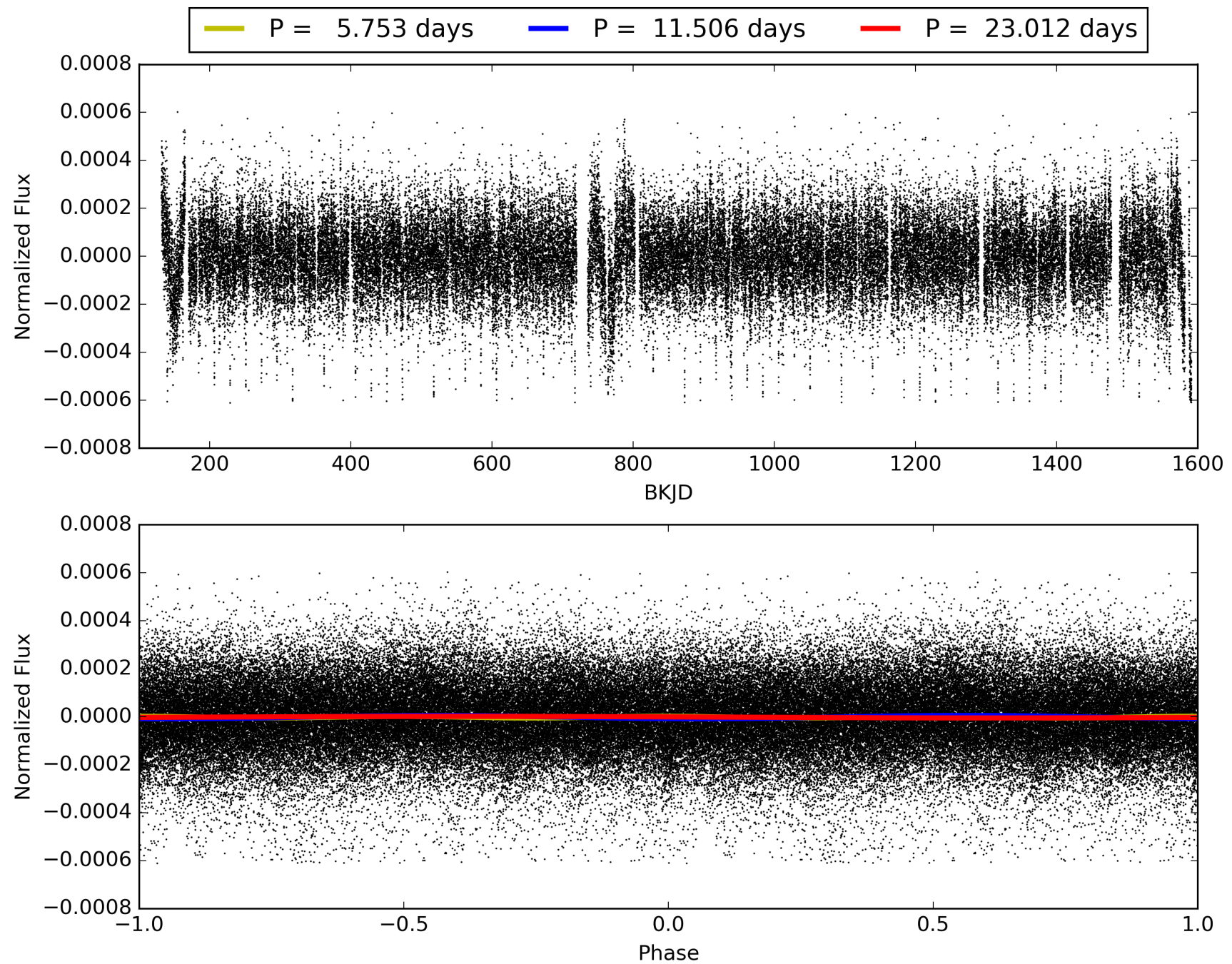
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:24:45 Z

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

TCE 008121310-02, PDC Light Curves

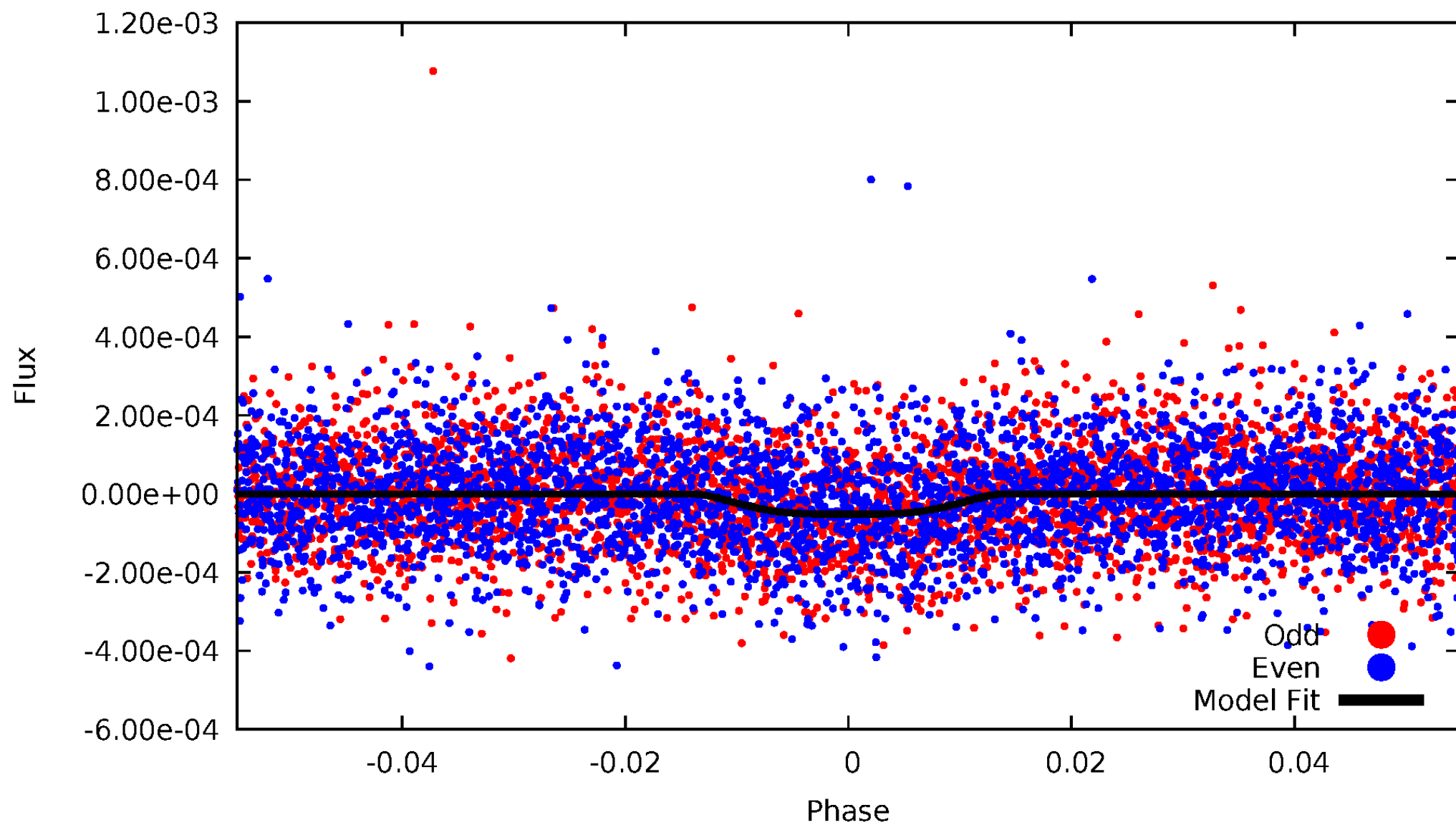


TCE 008121310-02



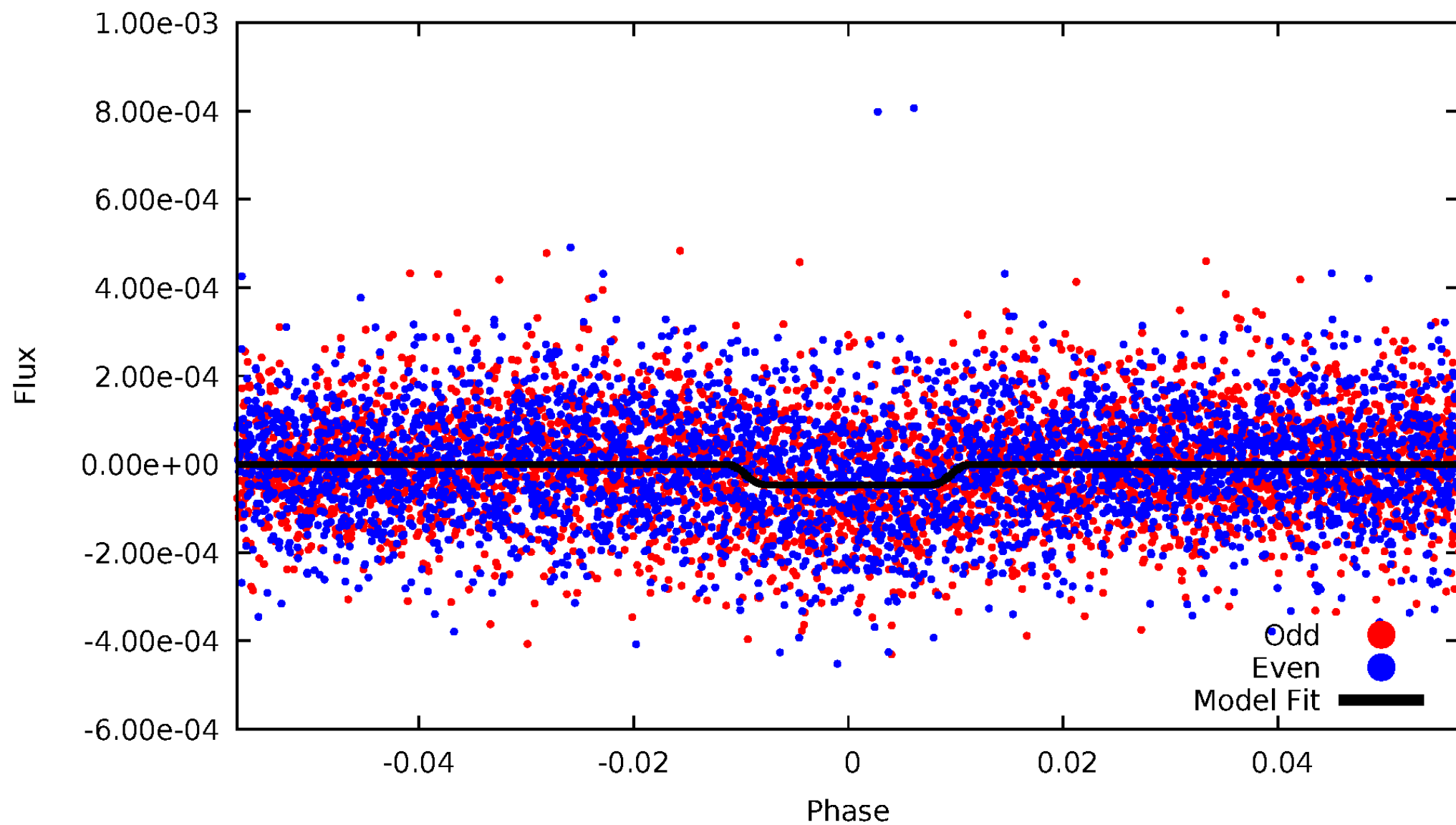
DV Odd/Even

TCE 008121310-02



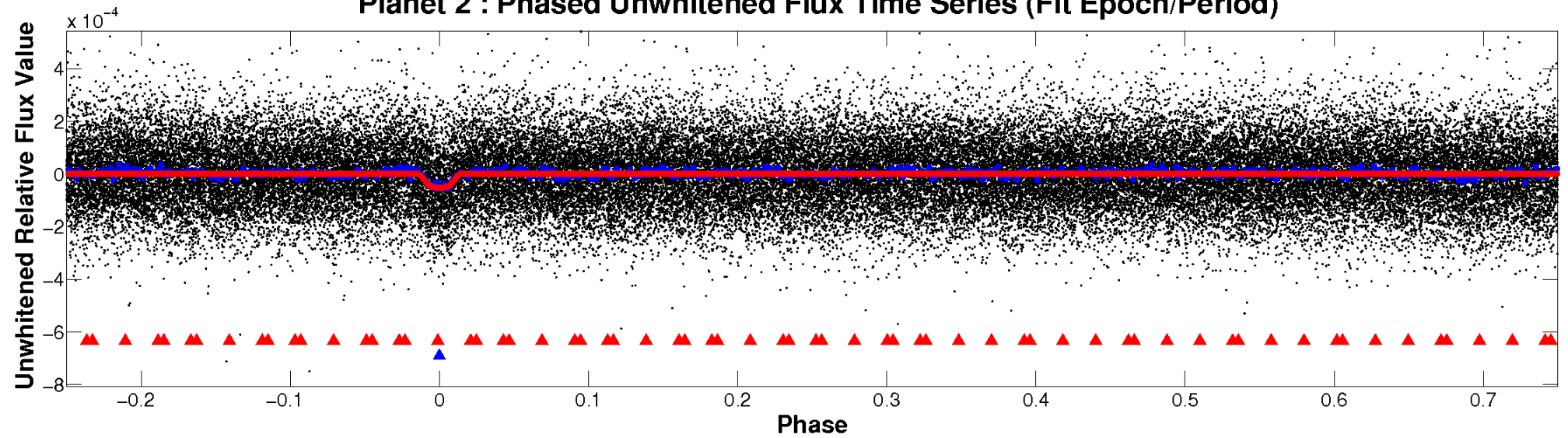
ALT Odd/Even

TCE 008121310-02

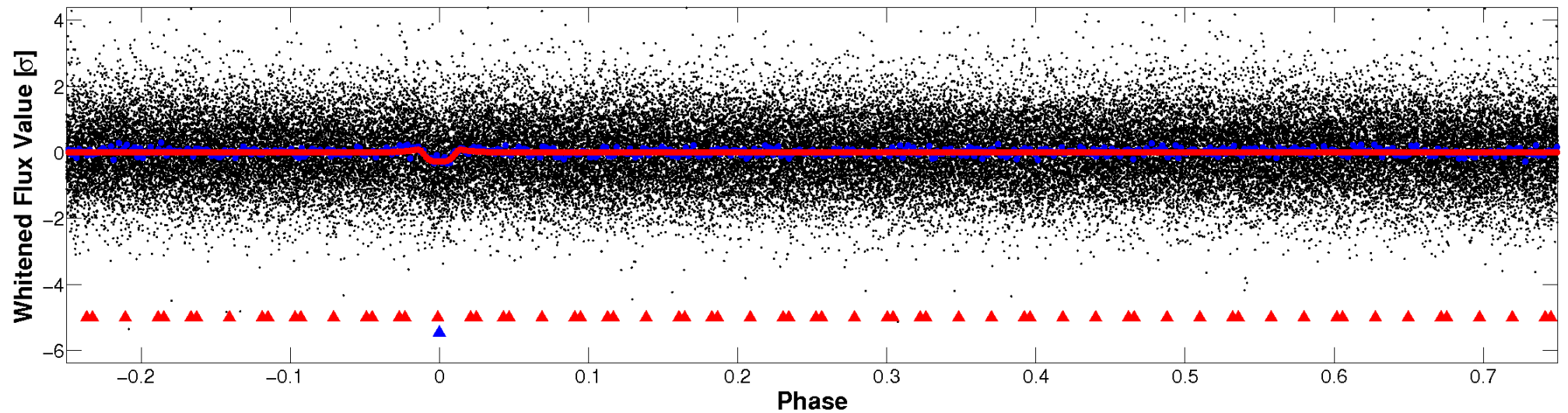


Non-Whitened Vs. Whitened Light Curve

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

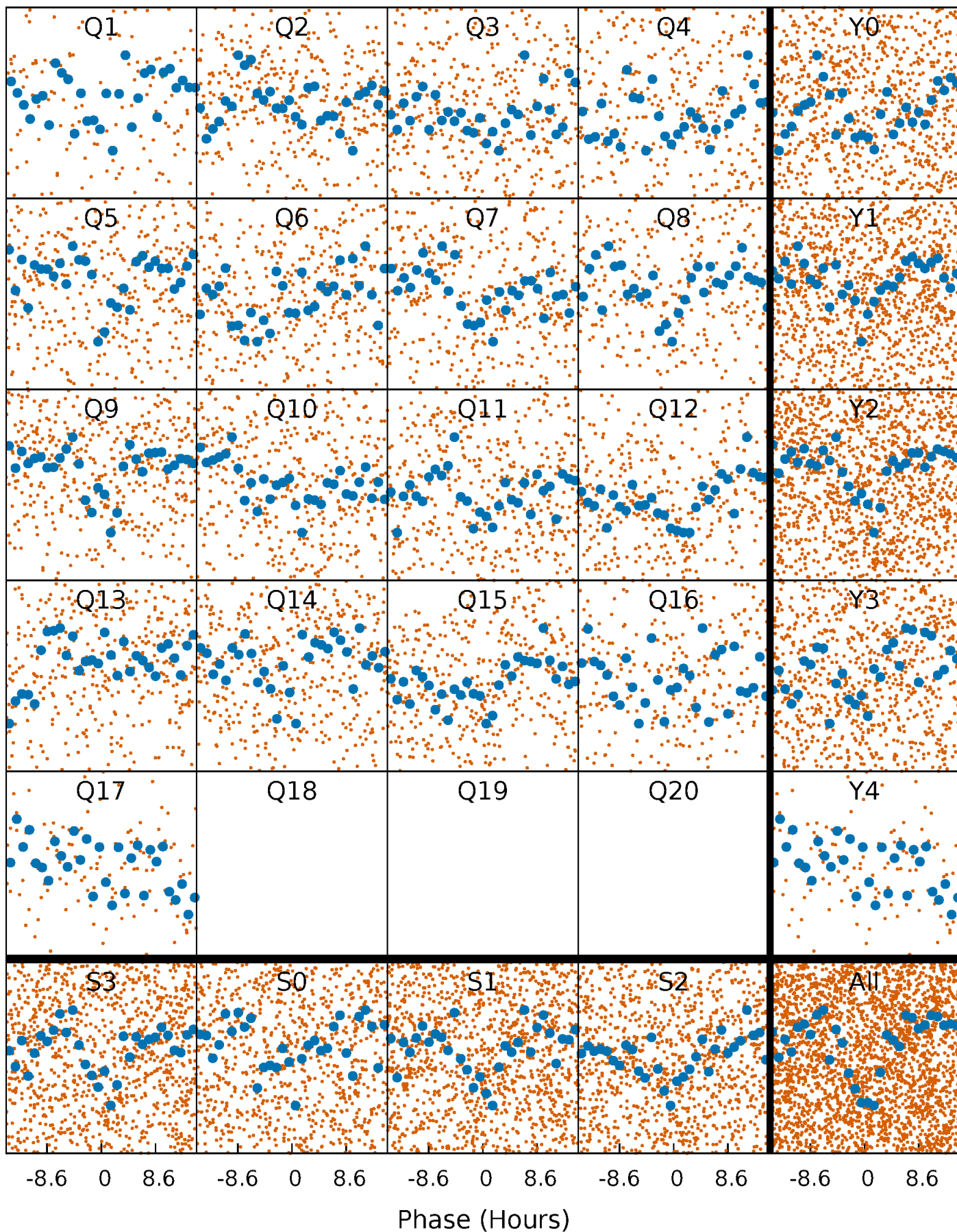


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



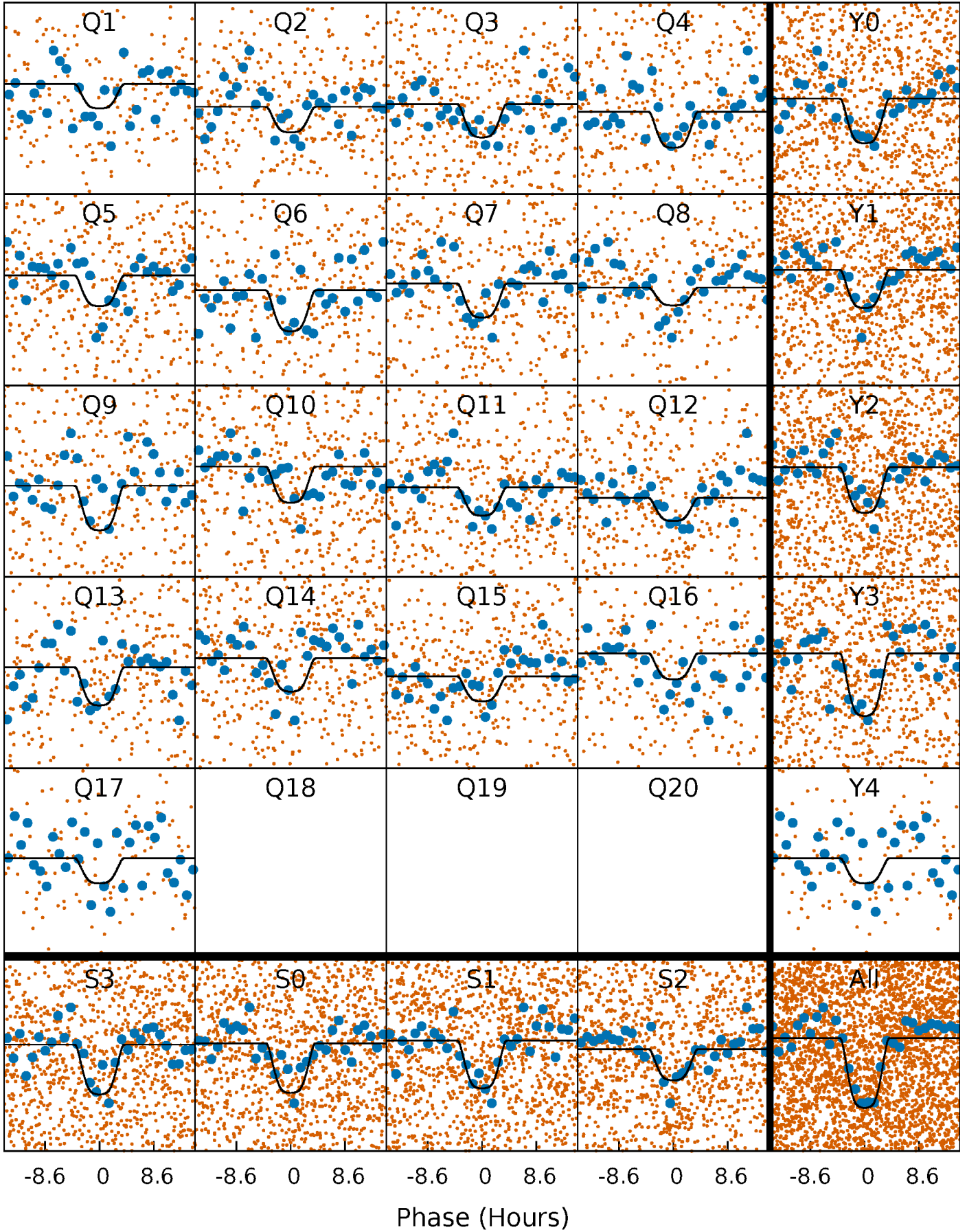
PDC Quarter-Phased Transit Curves

TCE 008121310-02 P= 11.505950 Days $T_0=136.233948$ (BKJD)



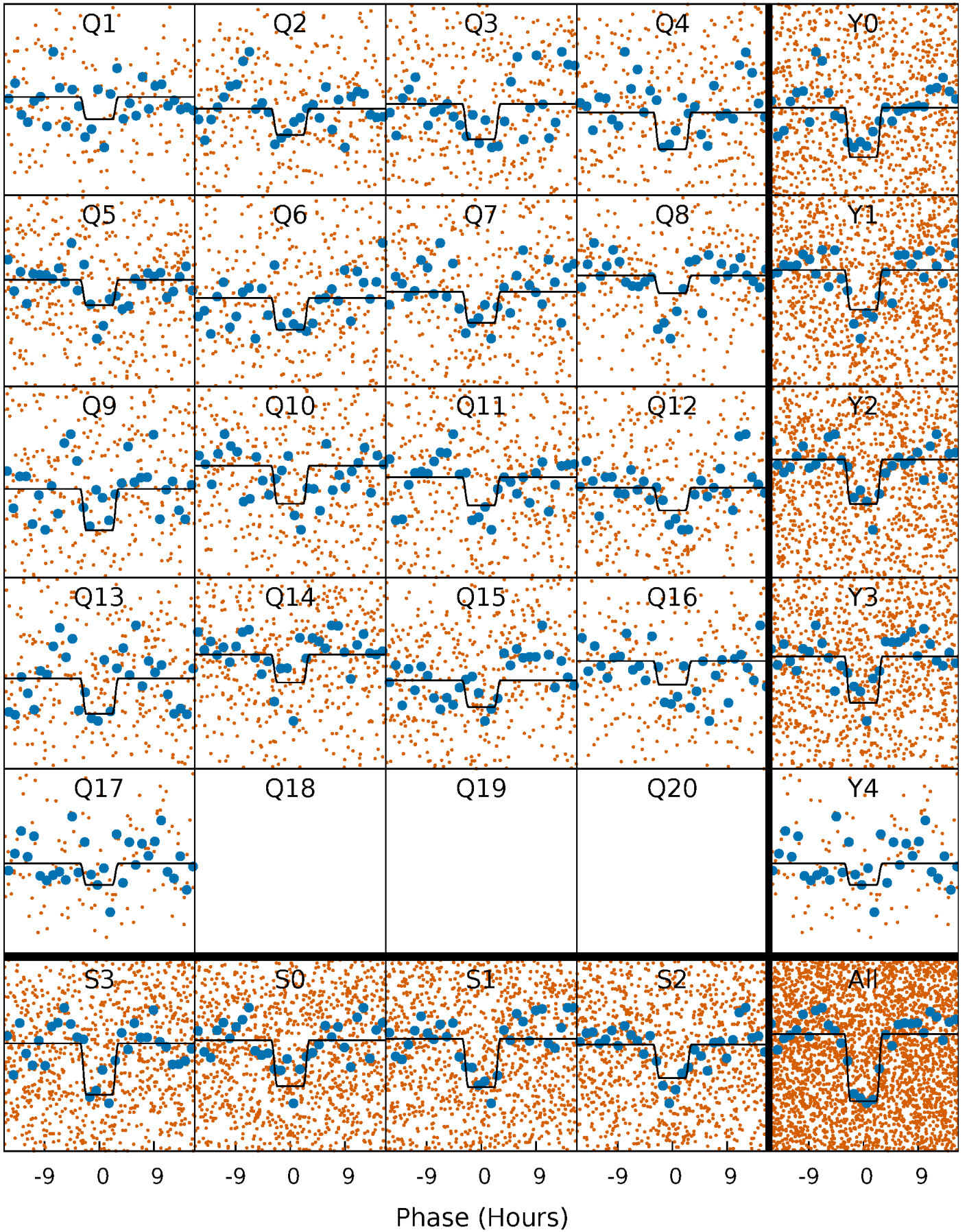
DV Quarter-Phased Transit Curves

TCE 008121310-02 P= 11.505950 Days $T_0=136.233948$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

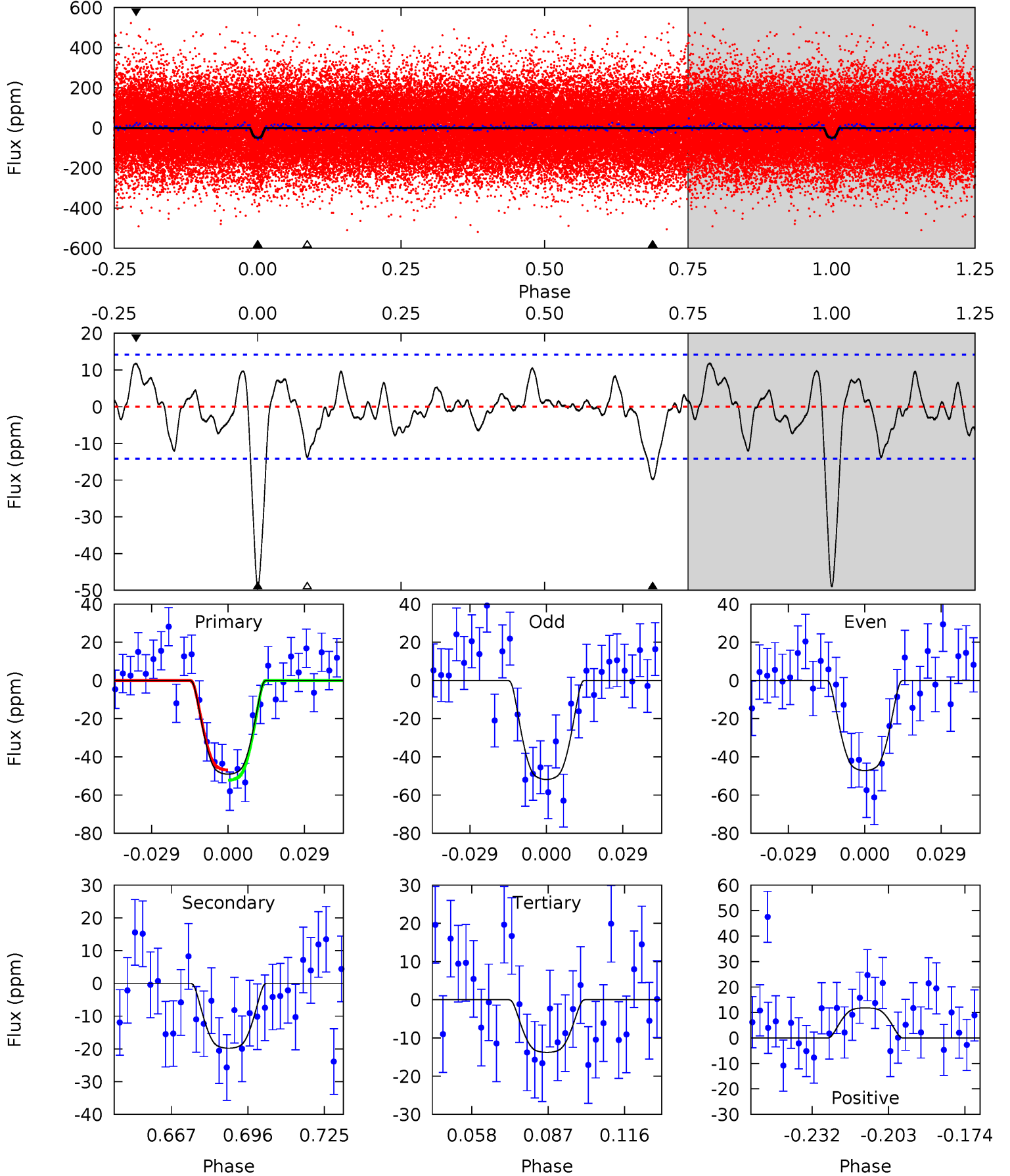
TCE 008121310-02 P= 11.505606 Days $T_0=136.259604$ (BKJD)



DV Model-Shift Uniqueness Test

008121310-02, P = 11.505950 Days, E = 124.727998 Days

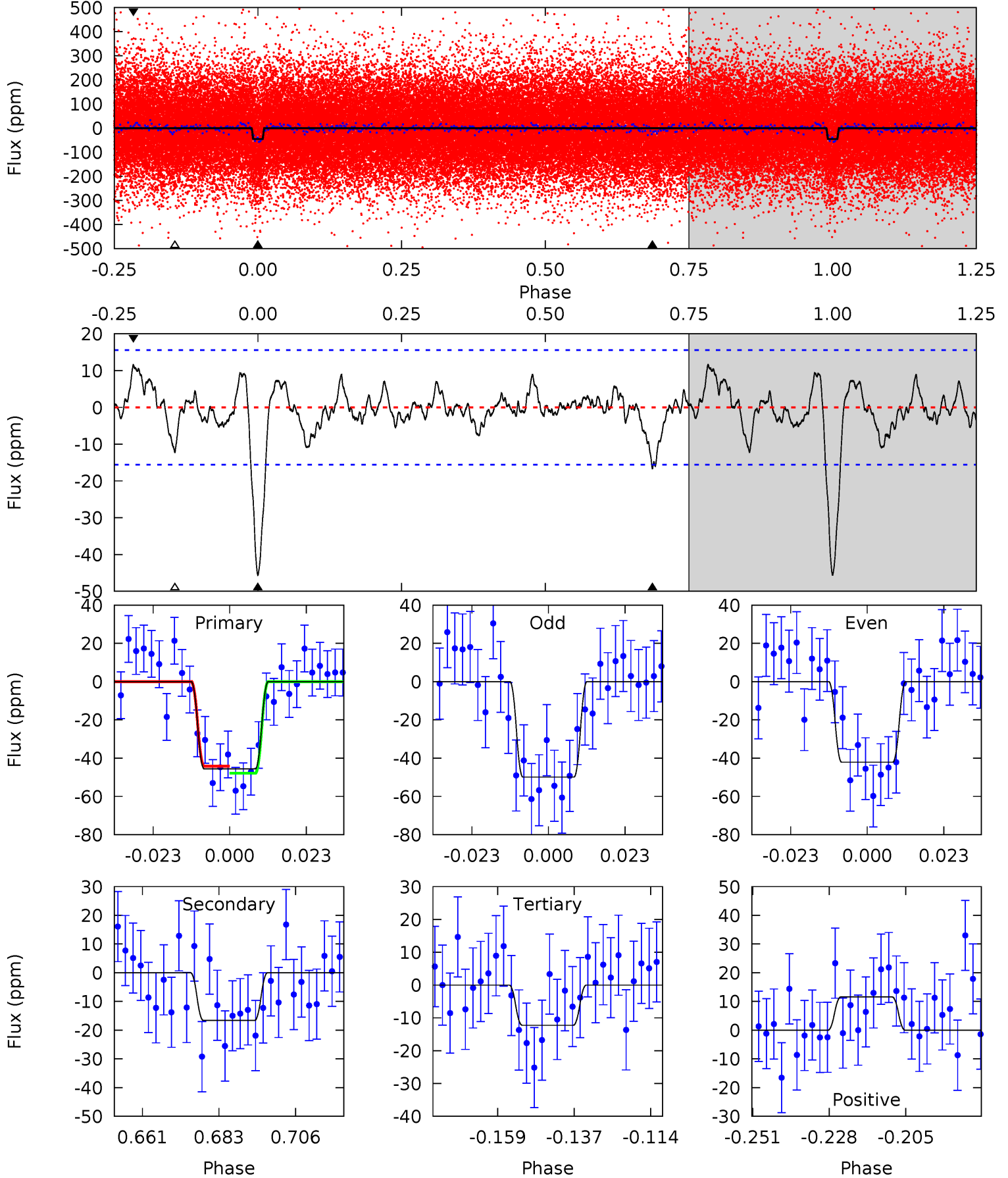
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.7	6.74	4.69	4.02	4.82	2.18	1.54	12.0	12.7	2.05	2.72	0.79	1.07	0.19	0.91



Alt Model-Shift Uniqueness Test

008121310-02, $P = 11.505606$ Days, $E = 124.753998$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	5.19	3.82	3.61	4.87	2.28	1.23	10.4	10.6	1.37	1.58	1.21	1.10	0.20	0.57



Stellar Parameters For KIC 008121310

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6336^{+113}_{-139}	$4.266^{+0.063}_{-0.117}$	$0.340^{+0.100}_{-0.150}$	$1.403^{+0.245}_{-0.132}$	$1.324^{+0.092}_{-0.084}$	$0.675^{+0.182}_{-0.225}$
	+2%/-2%	+1%/-3%	+29%/-44%	+17%/-9%	+7%/-6%	+27%/-33%
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 008121310-02 / KOI 0317.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-20 ± 3	$1.45^{+0.18}_{-0.17}$	1407^{+63}_{-51}	4550^{+226}_{-208}	62^{+19}_{-15}
Alt.	-17 ± 3	$1.05^{+0.16}_{-0.15}$	1406^{+63}_{-51}	5006^{+354}_{-340}	100^{+40}_{-32}

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 $A_{obs} \gg 1.0$

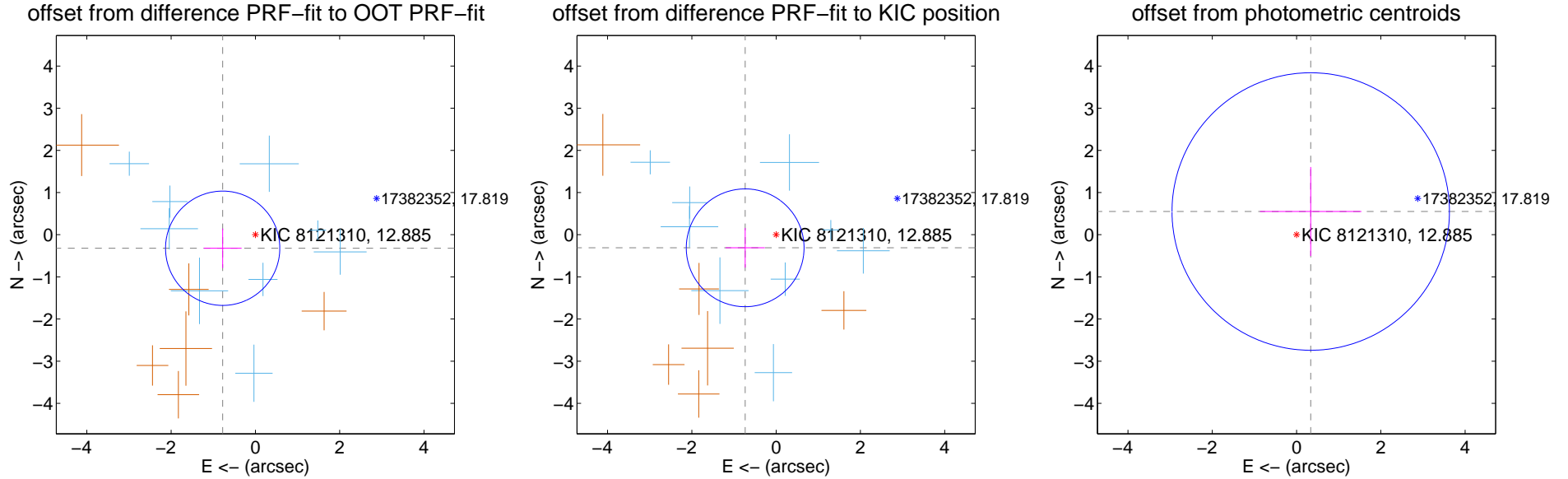
DV Centroid Data

Supplemental centroid analysis for 008121310-02. Kepler magnitude: 12.88. Transit SNR 8.47

There are 9 quarters with good PRF difference image offsets

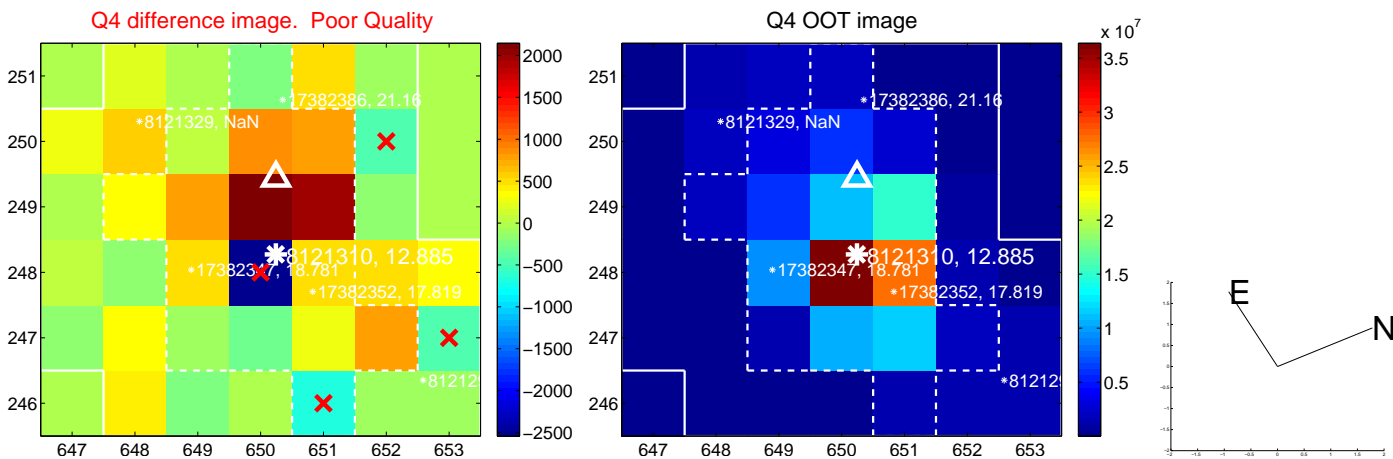
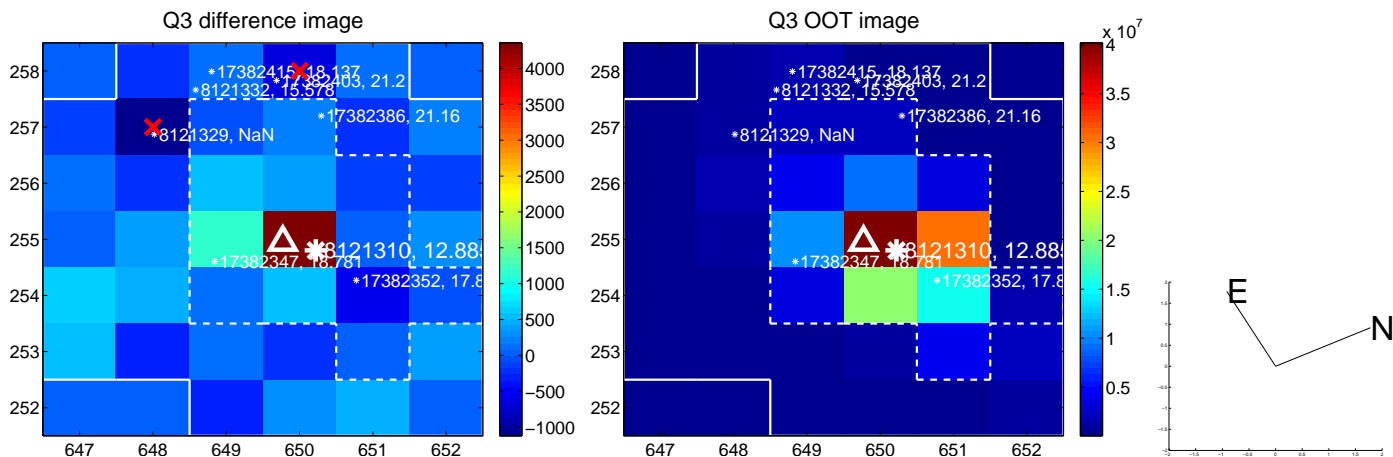
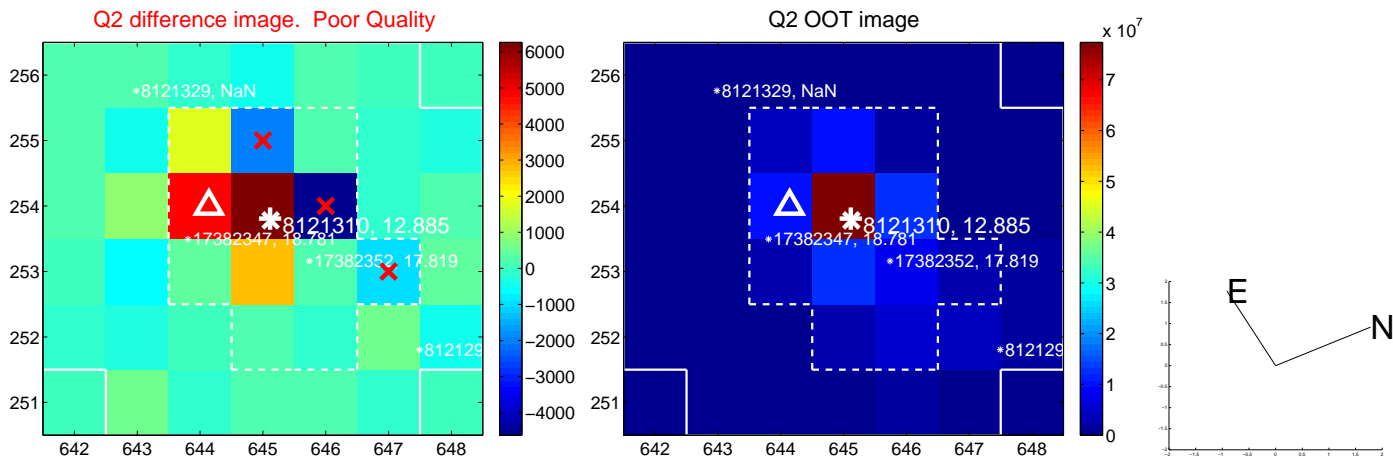
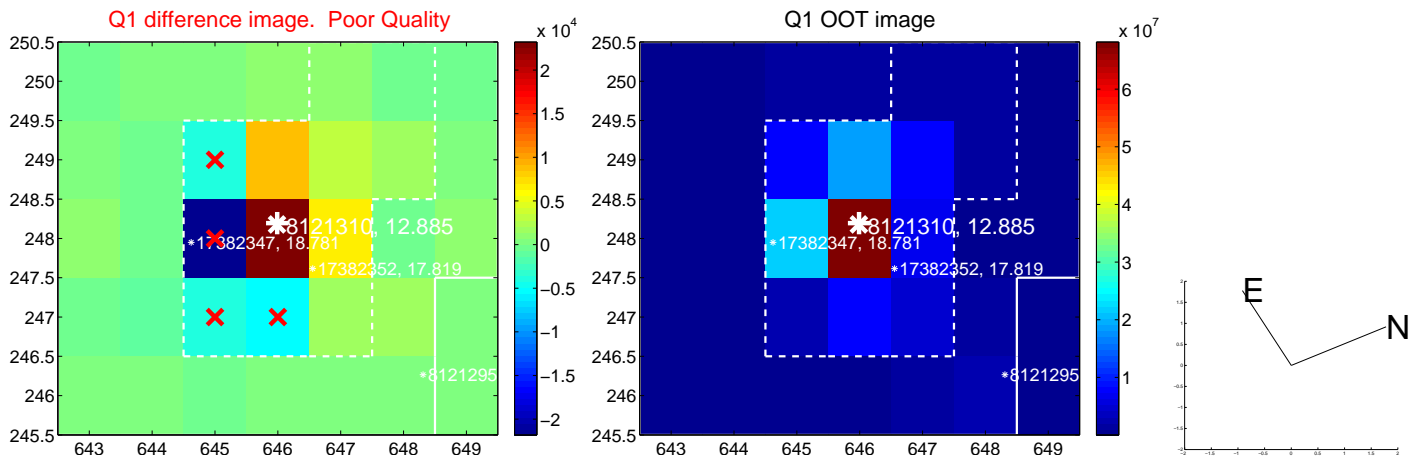
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.841 ± 0.452	1.86	0.777 ± 0.449	-0.321 ± 0.469
PRF-fit source offset from KIC position	0.798 ± 0.466	1.71	0.735 ± 0.465	-0.311 ± 0.471
photometric centroid source offset	0.64 ± 1.10	0.59	-0.34 ± 1.20	0.55 ± 1.05

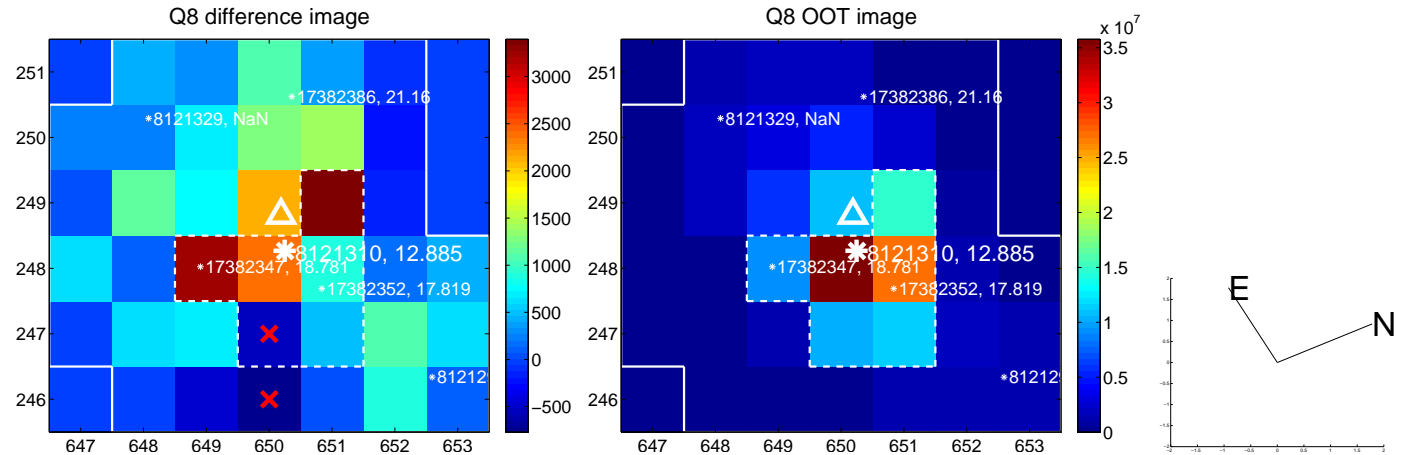
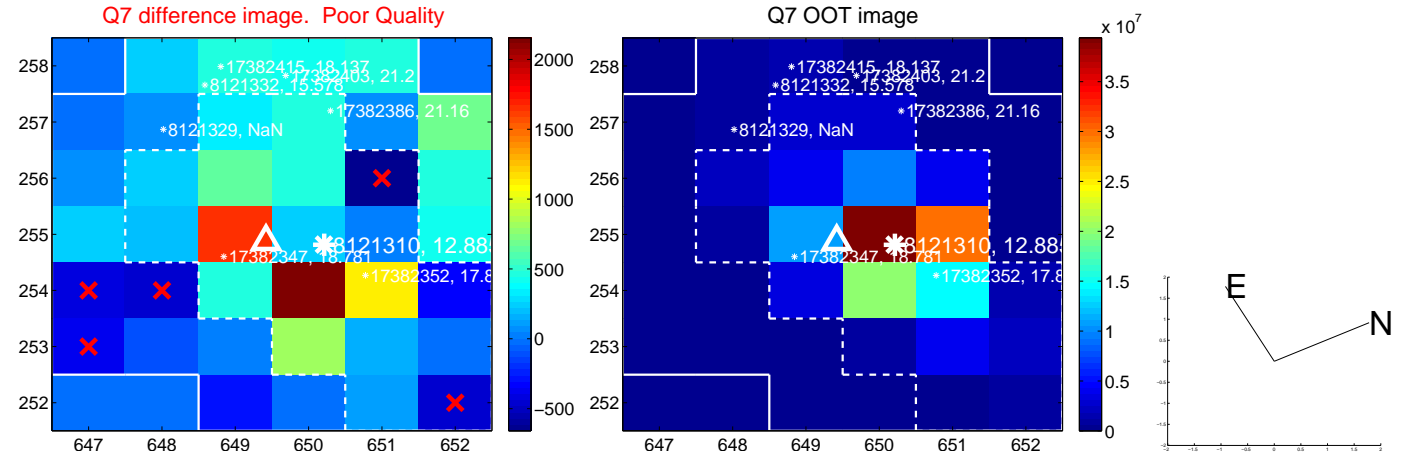
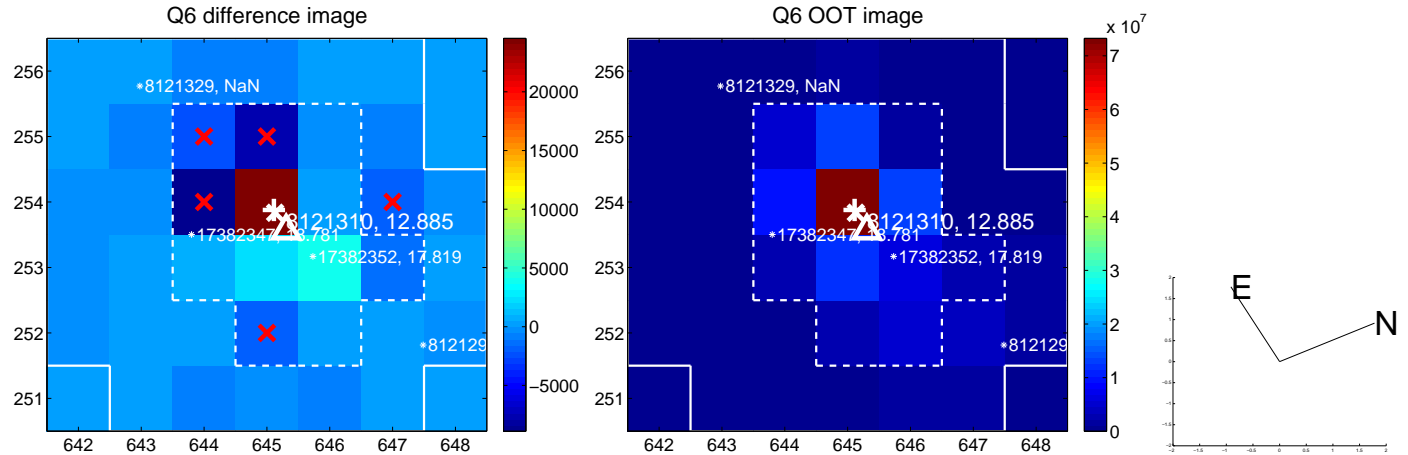
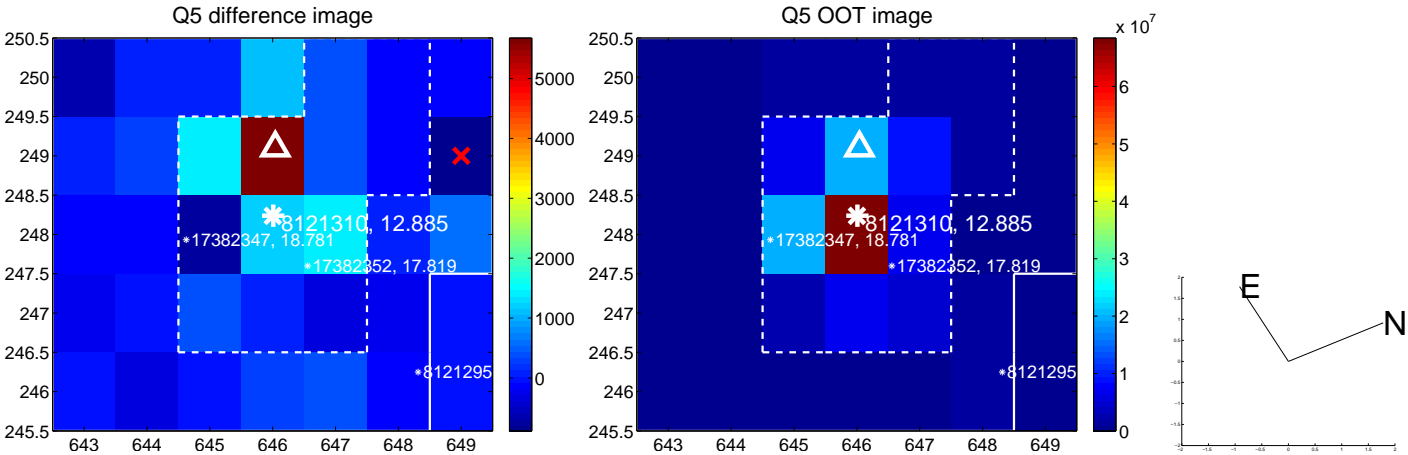


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

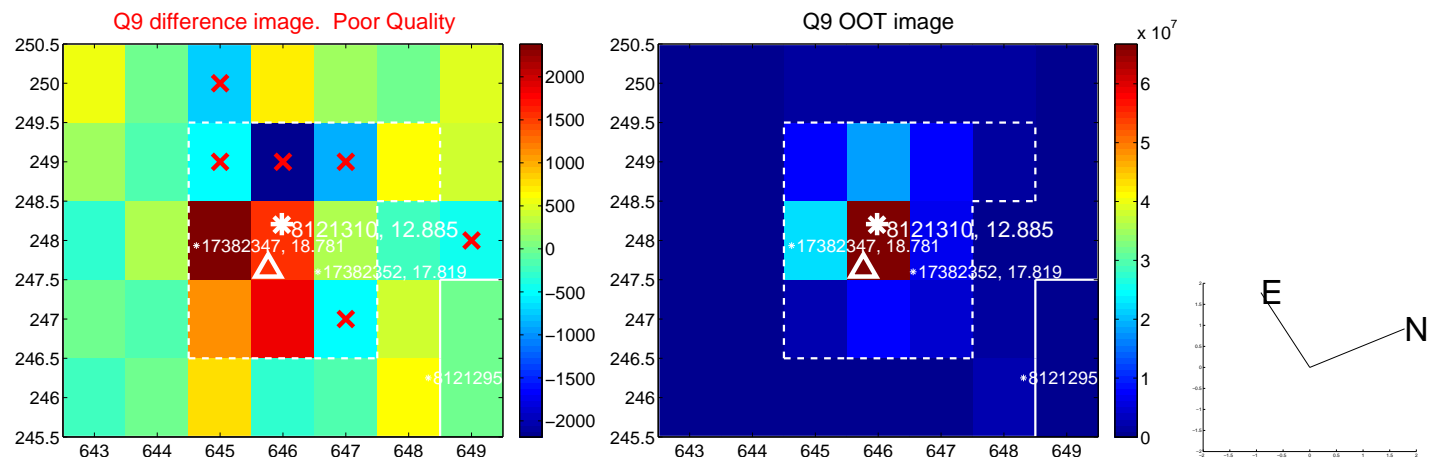
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



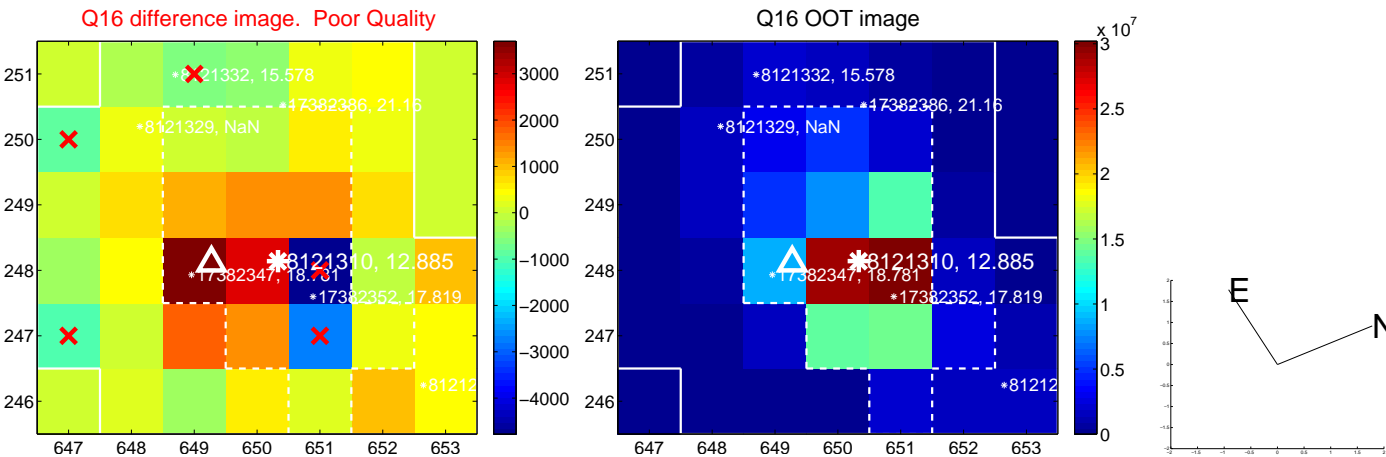
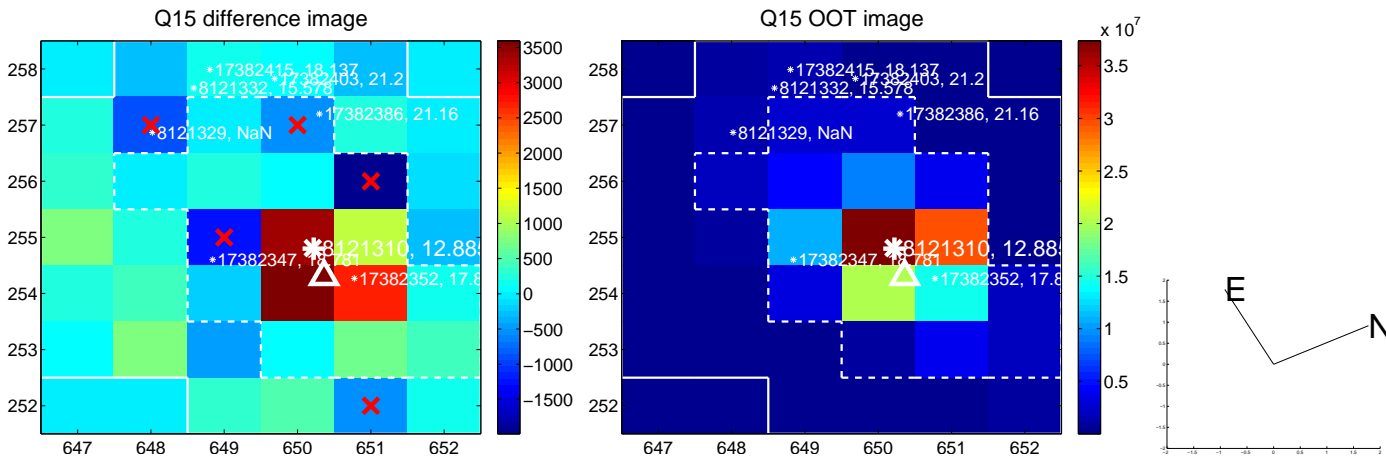
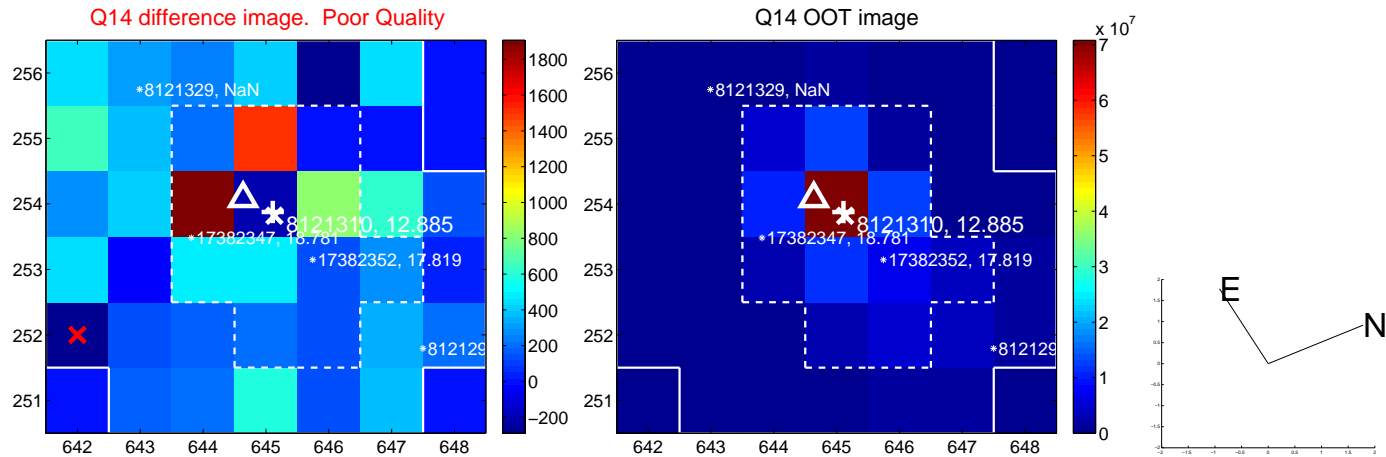
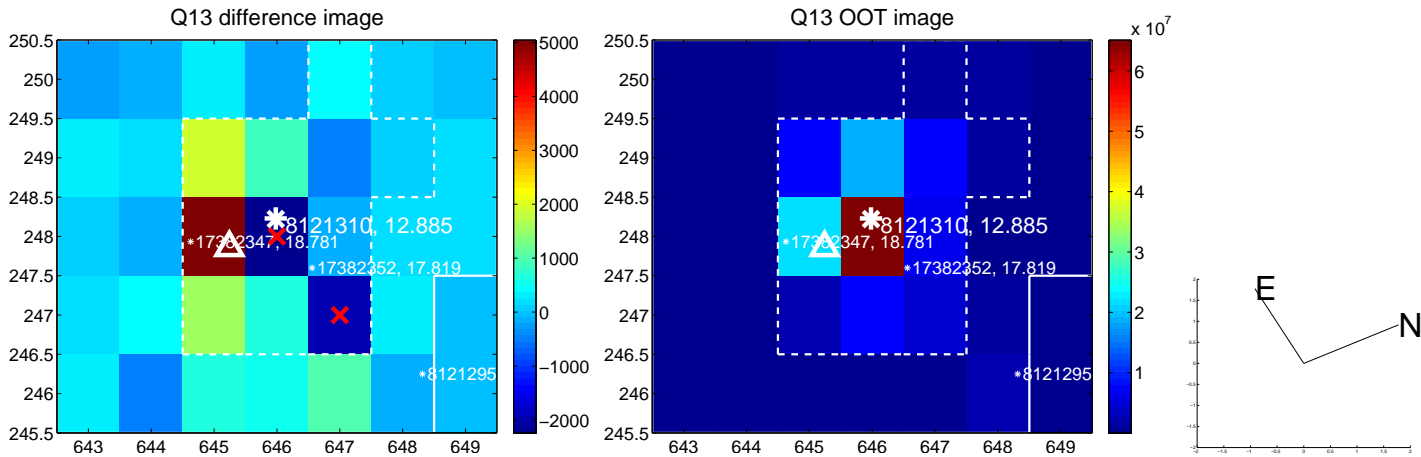
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



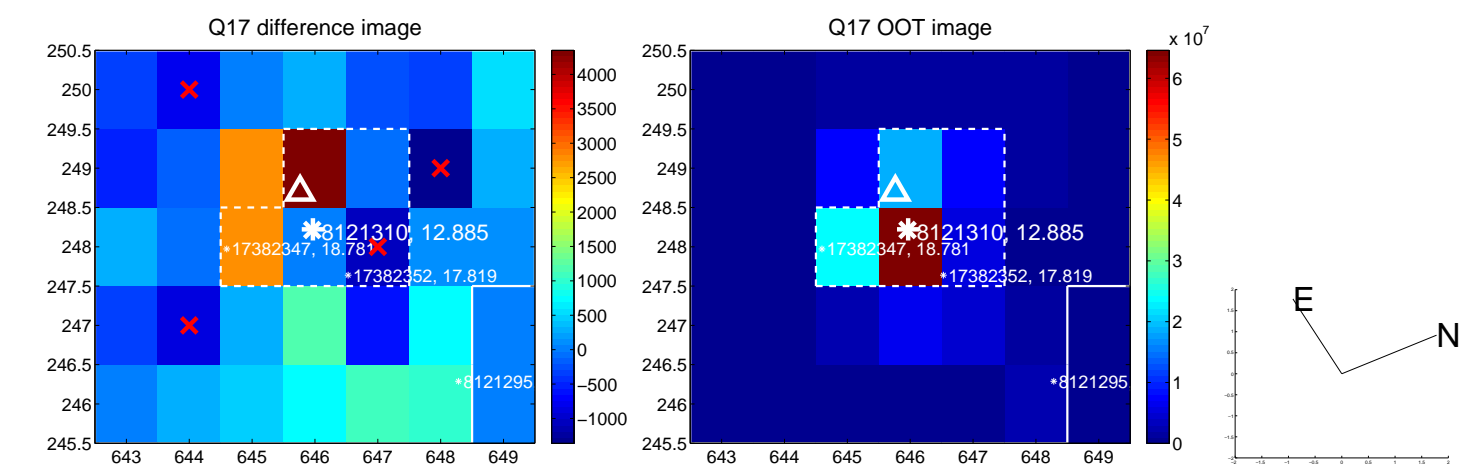
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



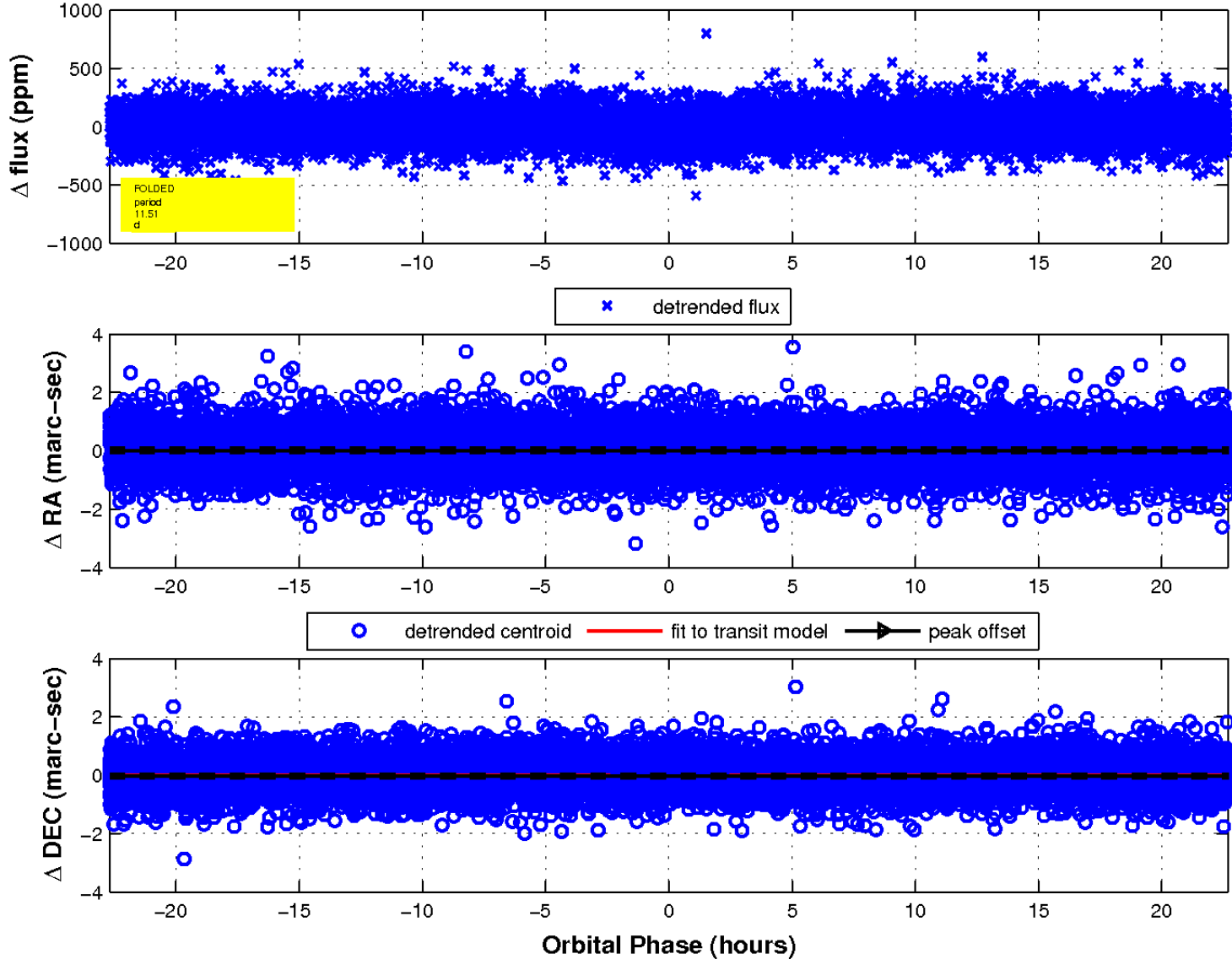
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

