

KIC 010186945

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})
010186945-01	OBS	4070.01	0.793660	131.796951	194.2	0.668	11.3	23.0	0.82	5077	1.19	1607.36
010186945-02	OBS	No	0.793659	132.191132	146.2	0.926	15.9	21.1	0.82	5077	1.19	1607.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010186945-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
010186945-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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

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

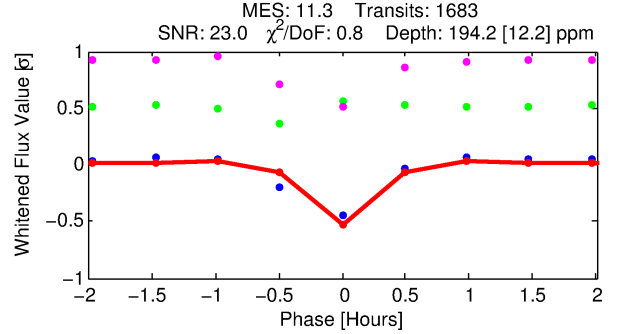
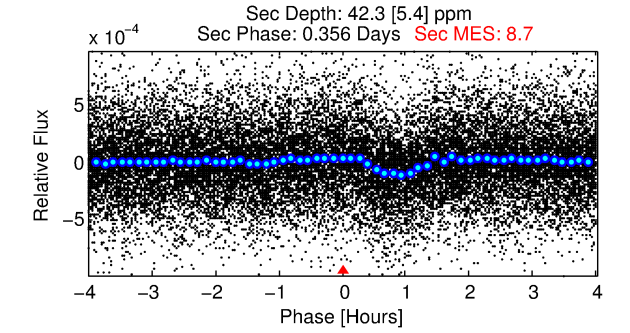
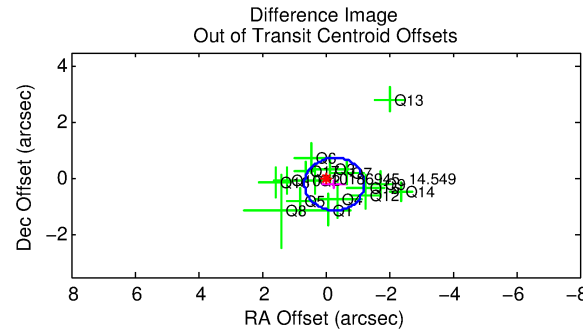
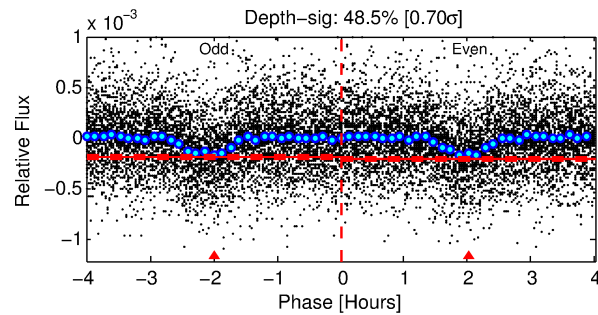
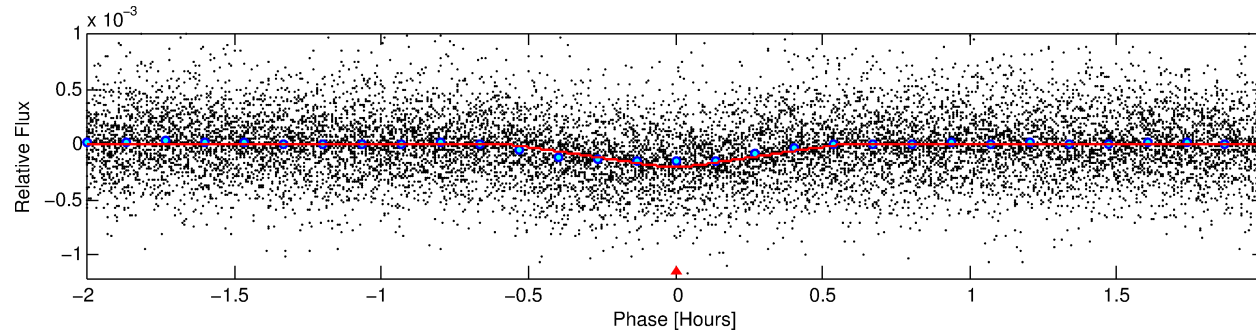
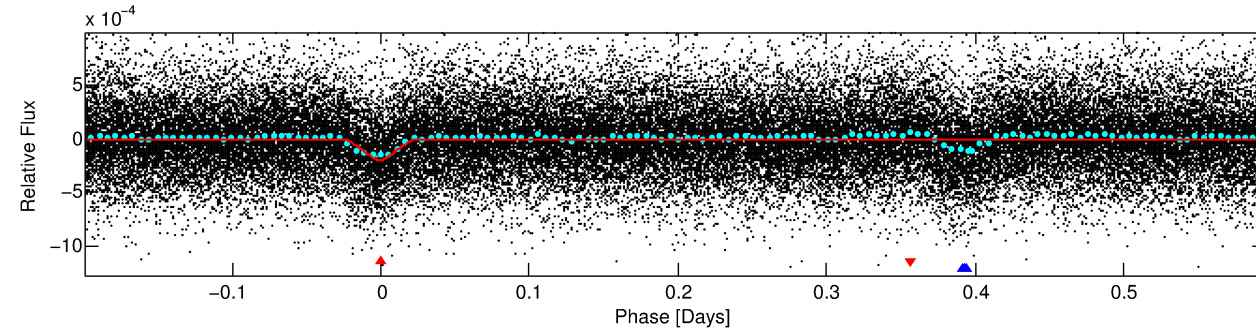
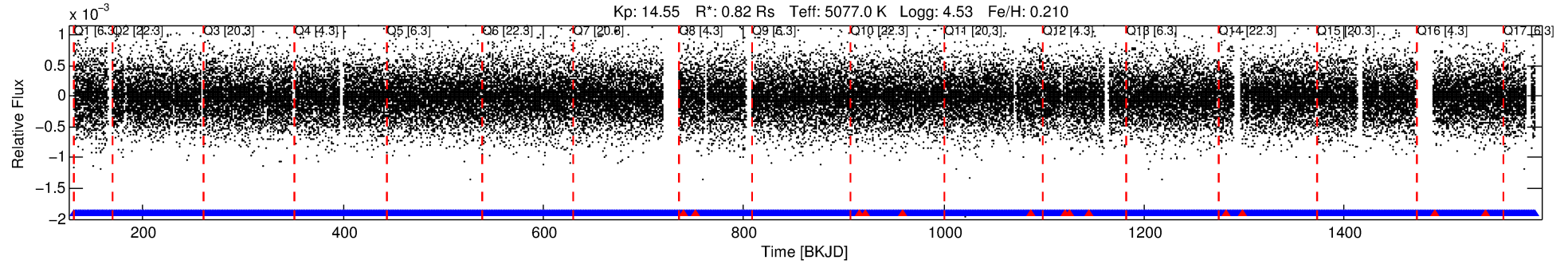
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010186945-01

No Significant Match Found

DV One-Page Summary

KIC: 10186945 Candidate: 1 of 2 Period: 0.794 d
KOI: K04070.01 Corr: 0.870



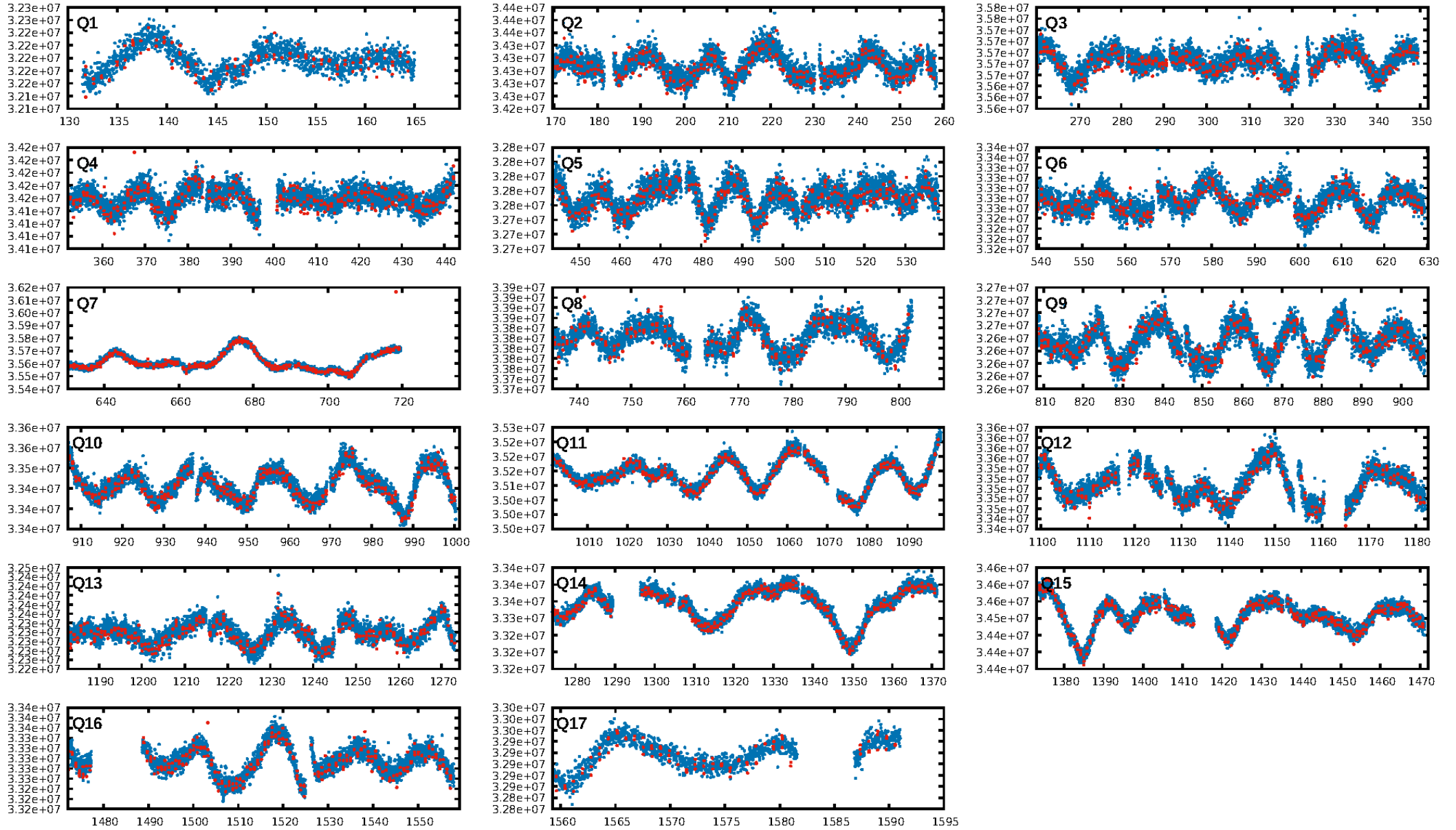
DV Fit Results:

Period = 0.79366 [0.00000] d
Epoch = 131.7970 [0.0005] BKJD
Rp/R* = 0.0132 [0.0065]
a/R* = 8.19 [13.73]
b = 0.47 [2.89]
Seff = 1607.36 [296.49]
Teff = 1615 [74] K
Rp = 1.19 [0.60] Re
a = 0.0159 [0.0014] AU
Ag = 4.15 [4.16] [0.76 σ]
Teffp = 3562 [894] K [2.17 σ]

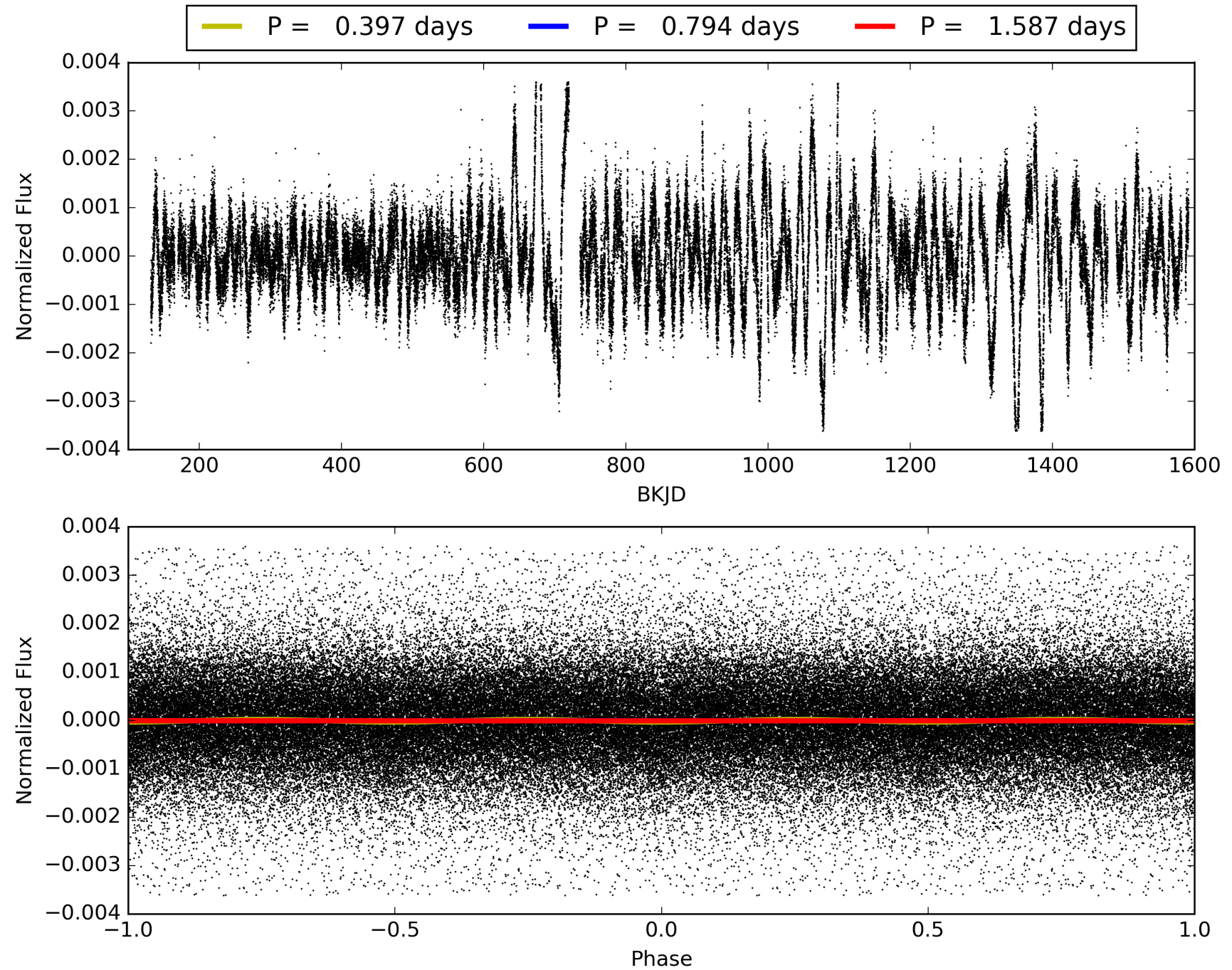
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.14e-30
RollingBand-fgt: 0.99 [1595/1608]
GhostDiagnostic-chr: 3.148
Centroid-sig: 13.2%
Centroid-so: 0.969 arcsec [1.87 σ]
OotOffset-rm: 0.337 arcsec [1.08 σ]
KicOffset-rm: 0.517 arcsec [1.73 σ]
OotOffset-st: 4/3/4/5 [16]
KicOffset-st: 4/3/4/5 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 010186945-01, PDC Light Curves

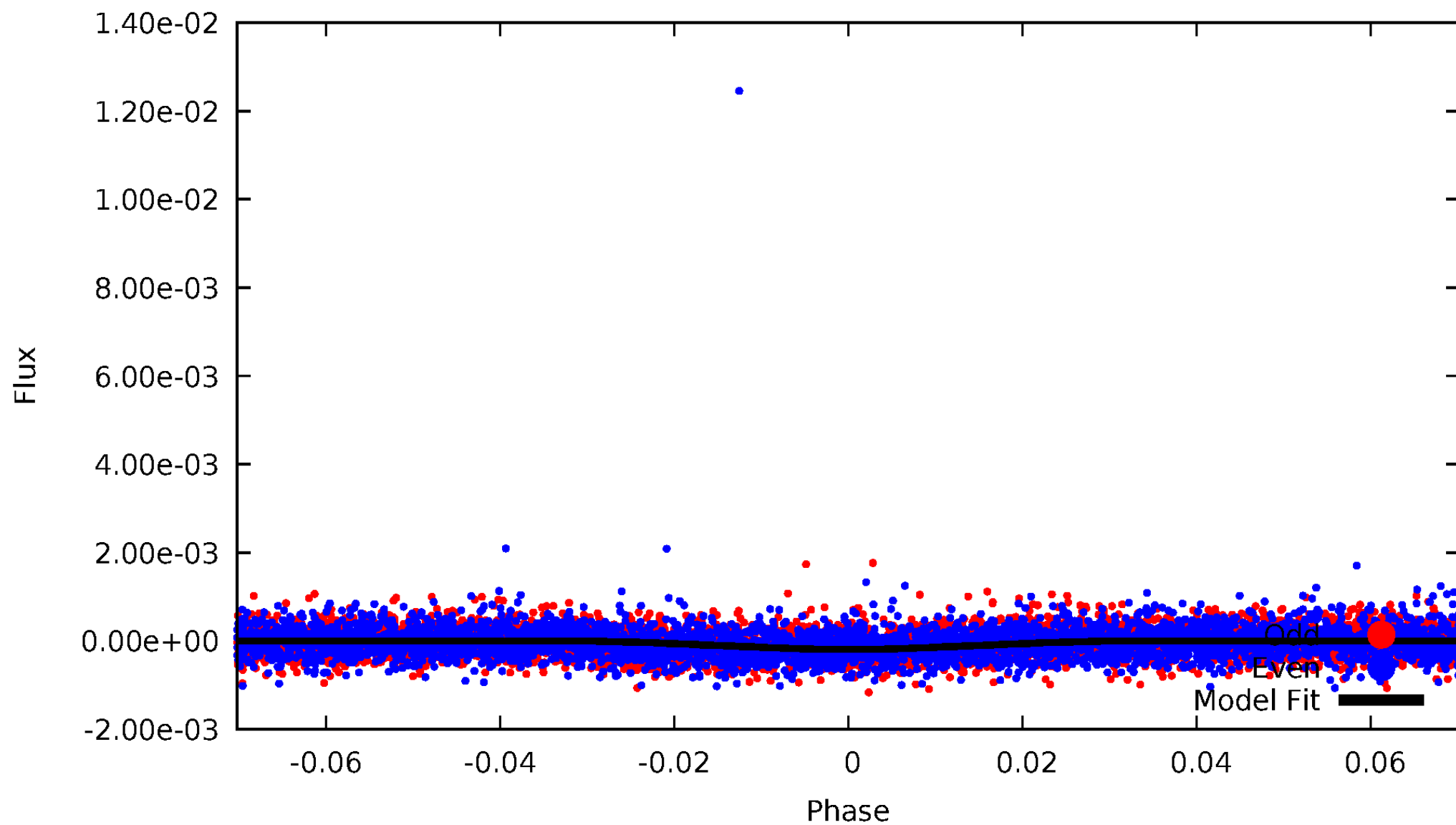


TCE 010186945-01



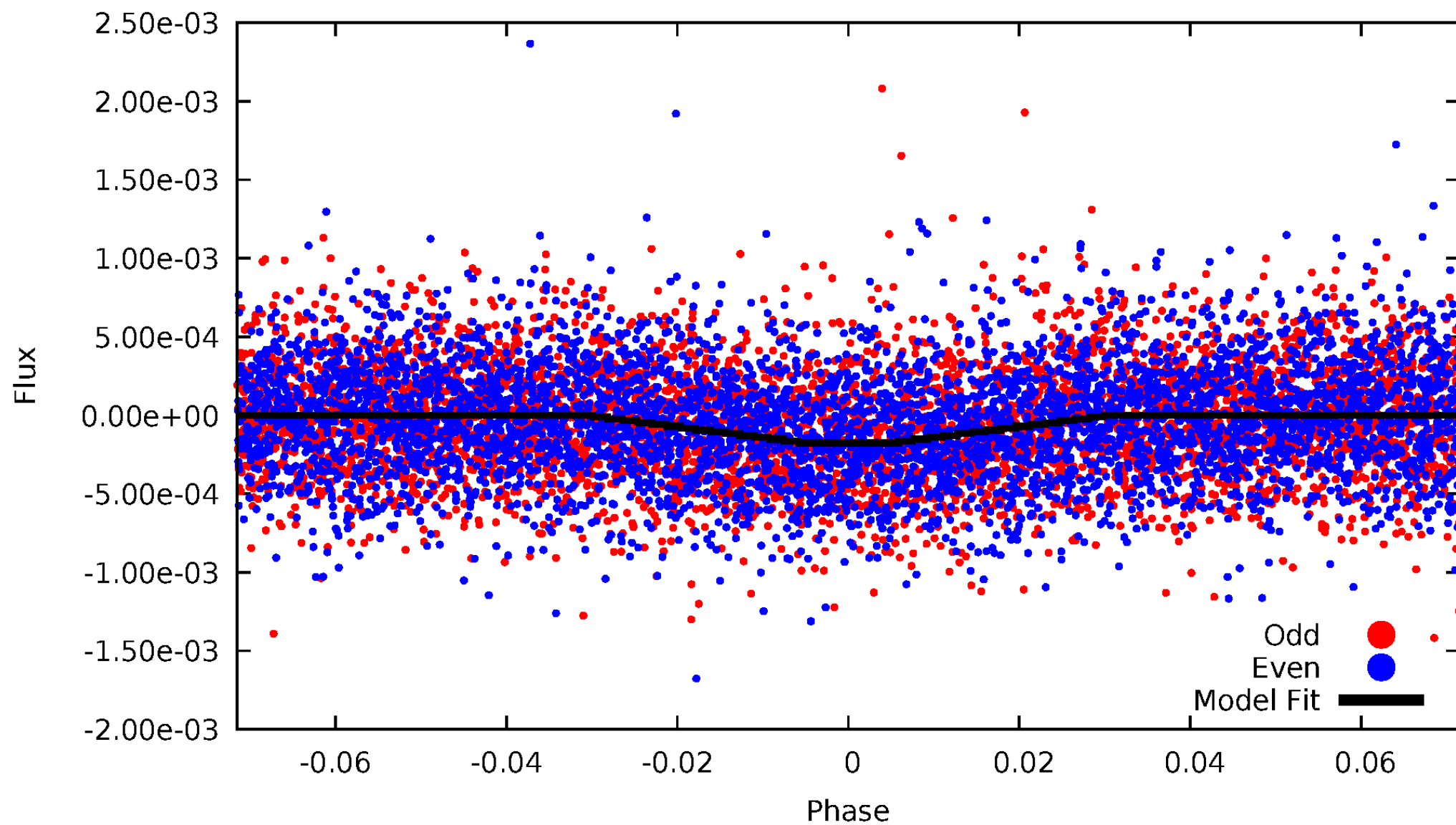
DV Odd/Even

TCE 010186945-01



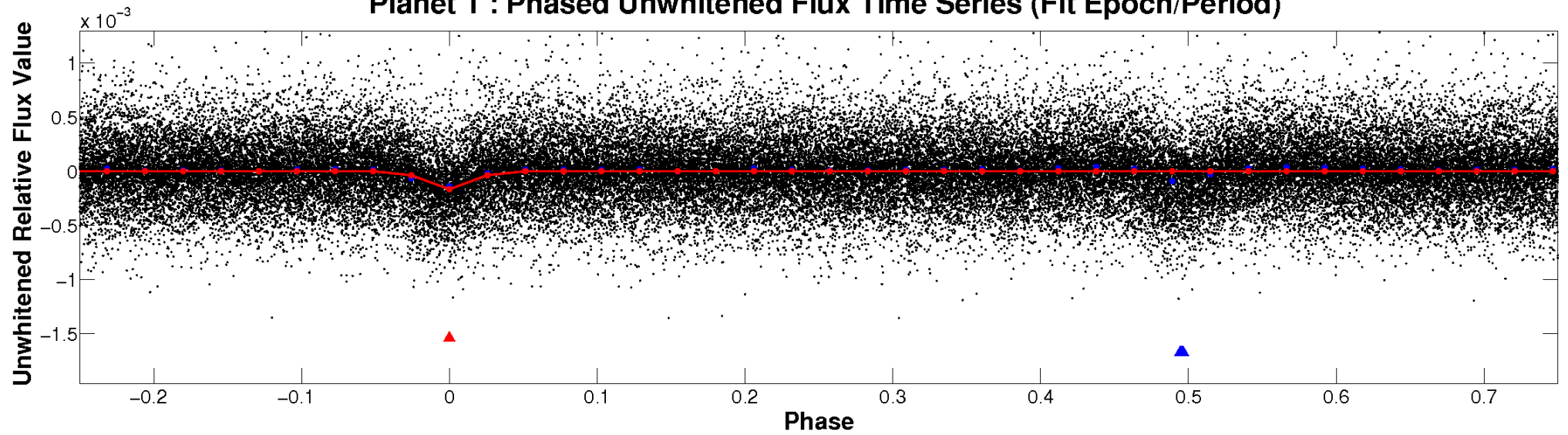
ALT Odd/Even

TCE 010186945-01

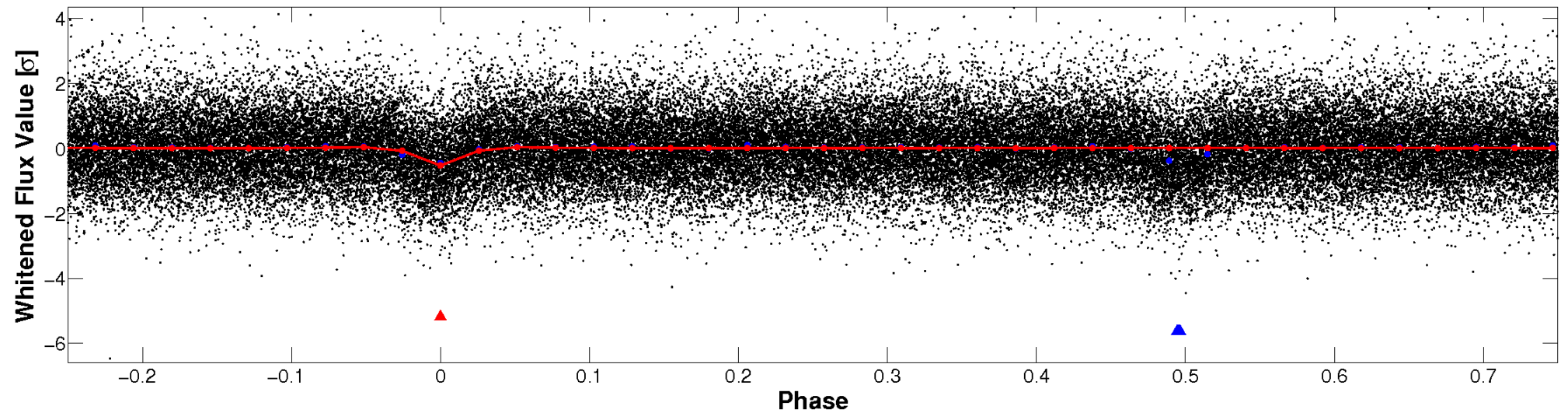


Non-Whitened Vs. Whitened Light Curve

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

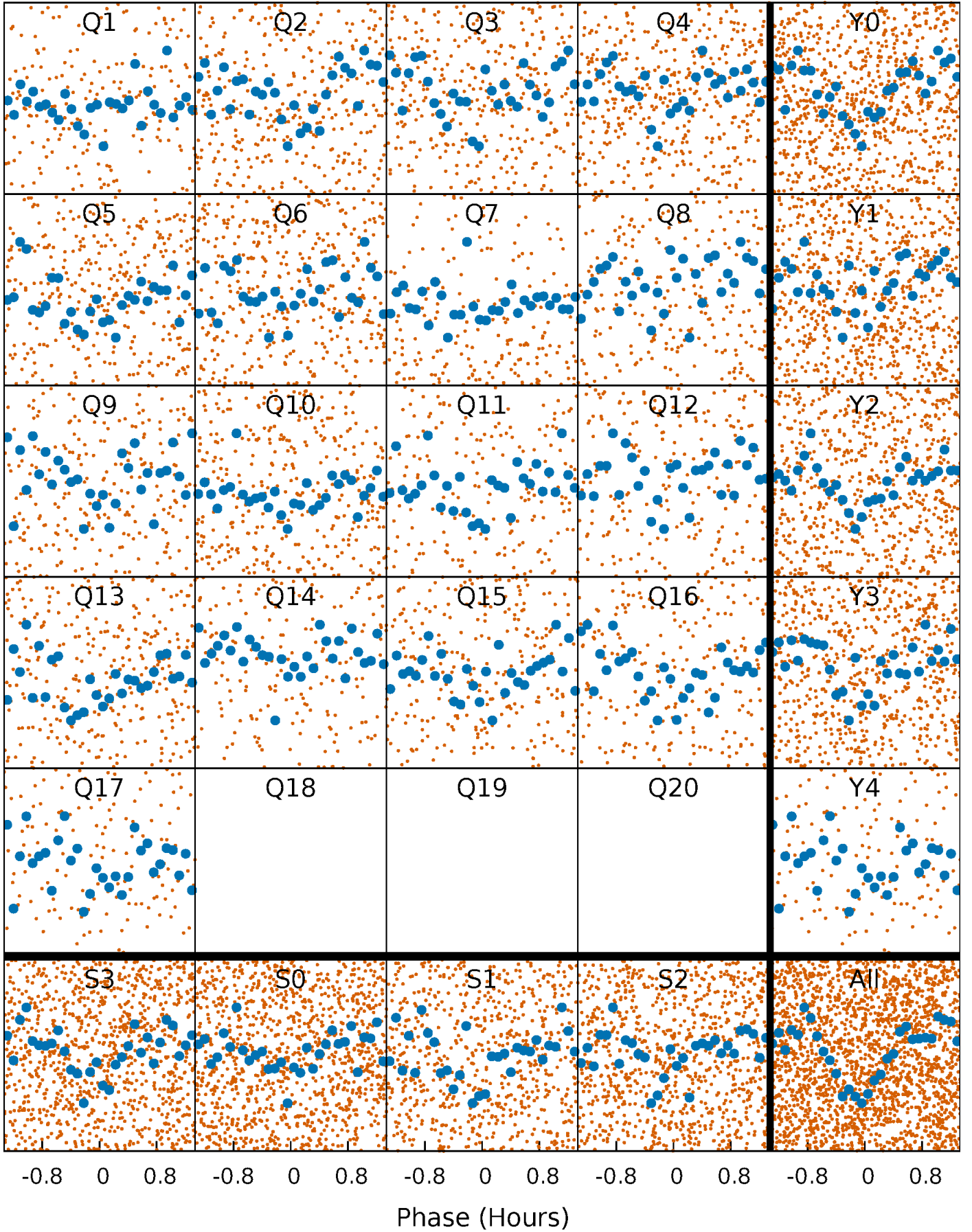


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



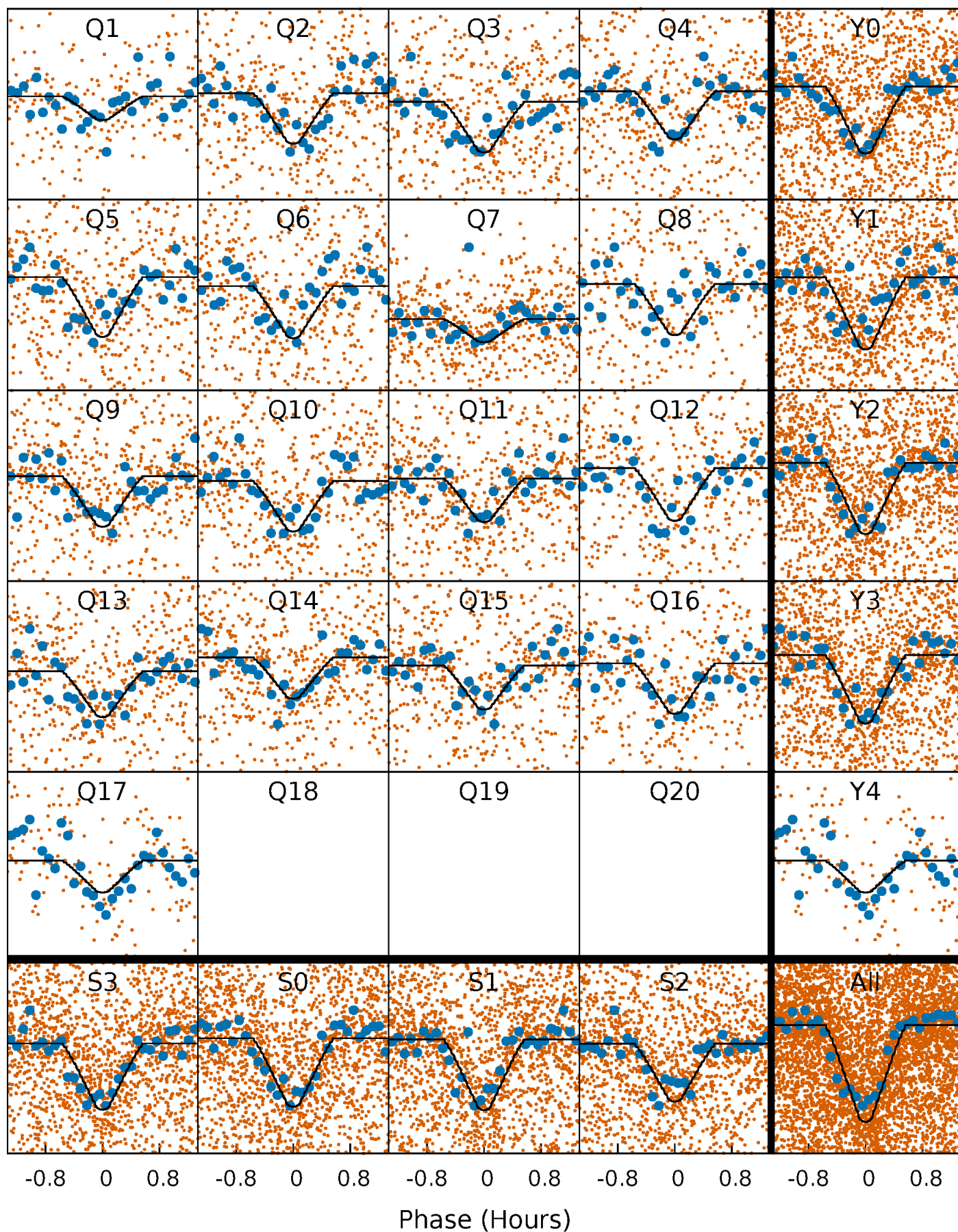
PDC Quarter-Phased Transit Curves

TCE 010186945-01 P= 0.793660 Days $T_0=131.796951$ (BKJD)



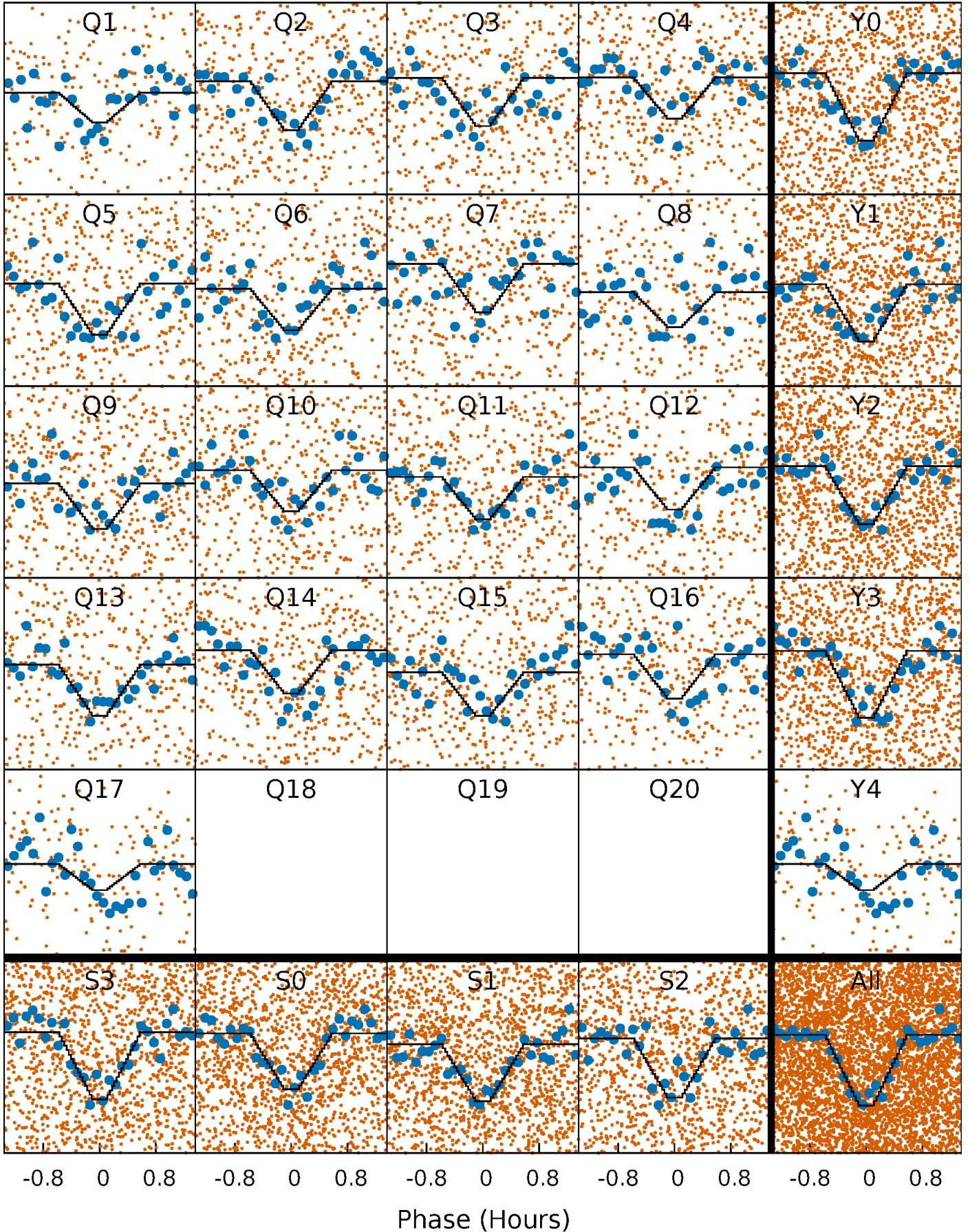
DV Quarter-Phased Transit Curves

TCE 010186945-01 P= 0.793660 Days $T_0=131.796951$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

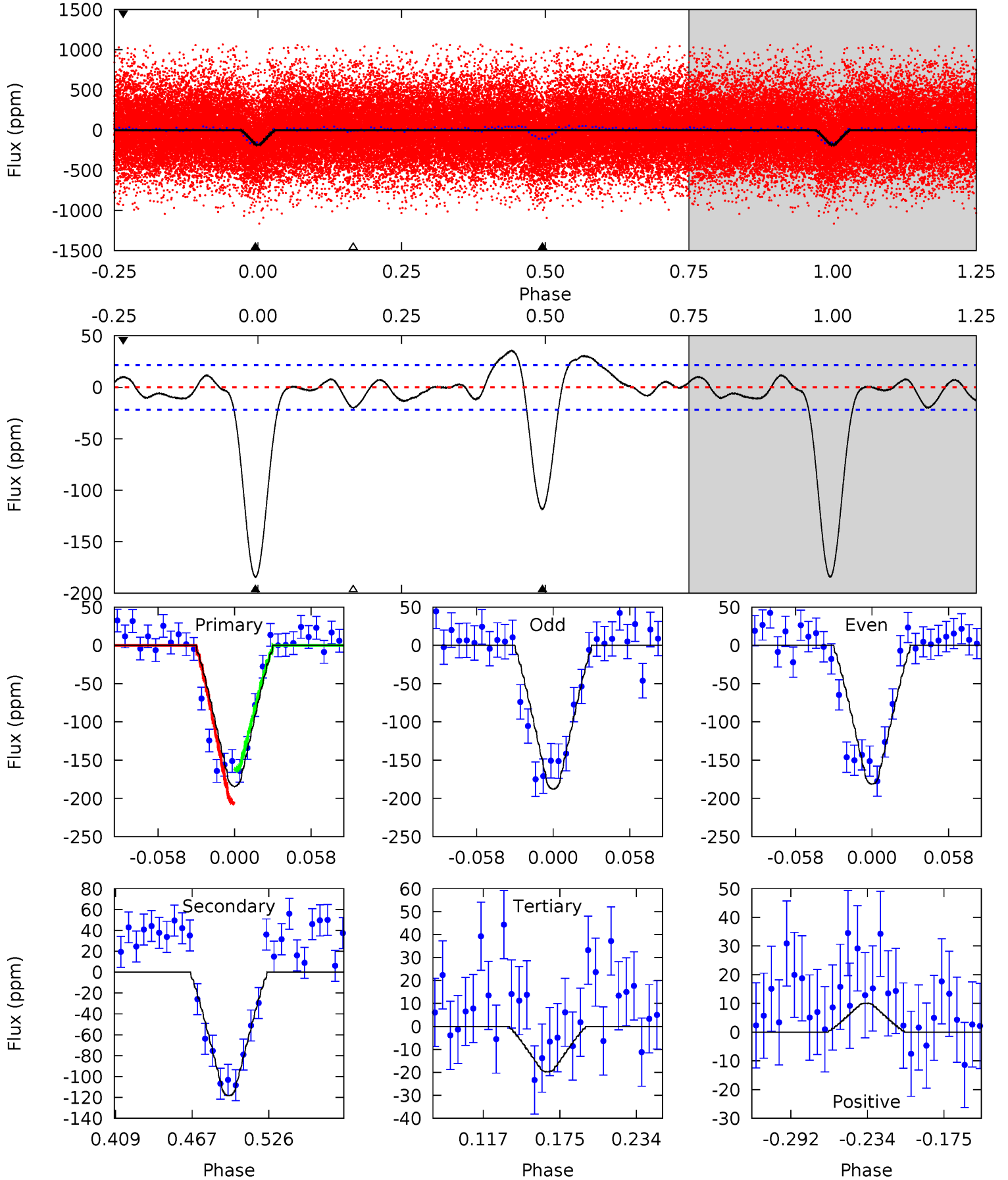
TCE 010186945-01 P= 0.793656 Days $T_0=131.797724$ (BKJD)



DV Model-Shift Uniqueness Test

010186945-01, P = 0.793660 Days, E = 131.003291 Days

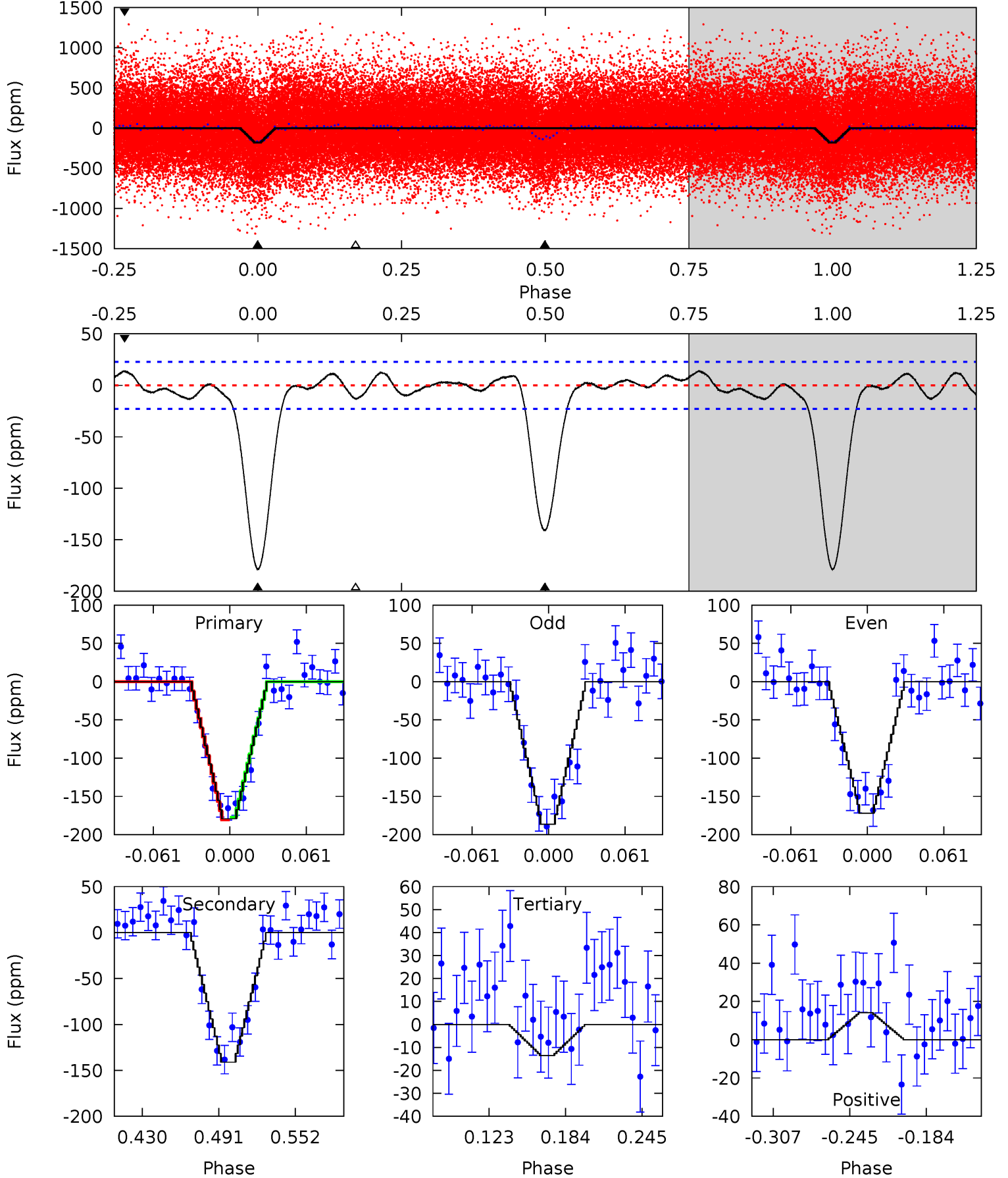
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.8	25.6	4.27	2.17	4.68	1.89	2.41	35.5	37.6	21.3	23.4	0.71	0.93	0.16	4.72



Alt Model-Shift Uniqueness Test

010186945-01, P = 0.793656 Days, E = 131.004068 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.6	28.8	2.77	2.89	4.67	1.87	1.28	33.8	33.7	26.0	25.9	1.48	0.94	0.07	0.36



Stellar Parameters For KIC 010186945

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5077^{+167}_{-137}	$4.533^{+0.054}_{-0.072}$	$0.210^{+0.200}_{-0.300}$	$0.825^{+0.083}_{-0.074}$	$0.849^{+0.058}_{-0.071}$	$2.126^{+0.485}_{-0.471}$
	+3%/-3%	+1%/-2%	+95%/-143%	+10%/-9%	+7%/-8%	+23%/-22%
Source	PHO1	KIC0	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 010186945-01 / KOI 4070.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-118 ± 5	$1.22^{+0.55}_{-0.57}$	2265^{+98}_{-81}	4635^{+1489}_{-631}	11^{+27}_{-6}
Alt.	-141 ± 5	$1.25^{+0.58}_{-0.59}$	2267^{+95}_{-82}	4773^{+1647}_{-705}	13^{+33}_{-7}

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 $A_{obs} \gg 1.0$

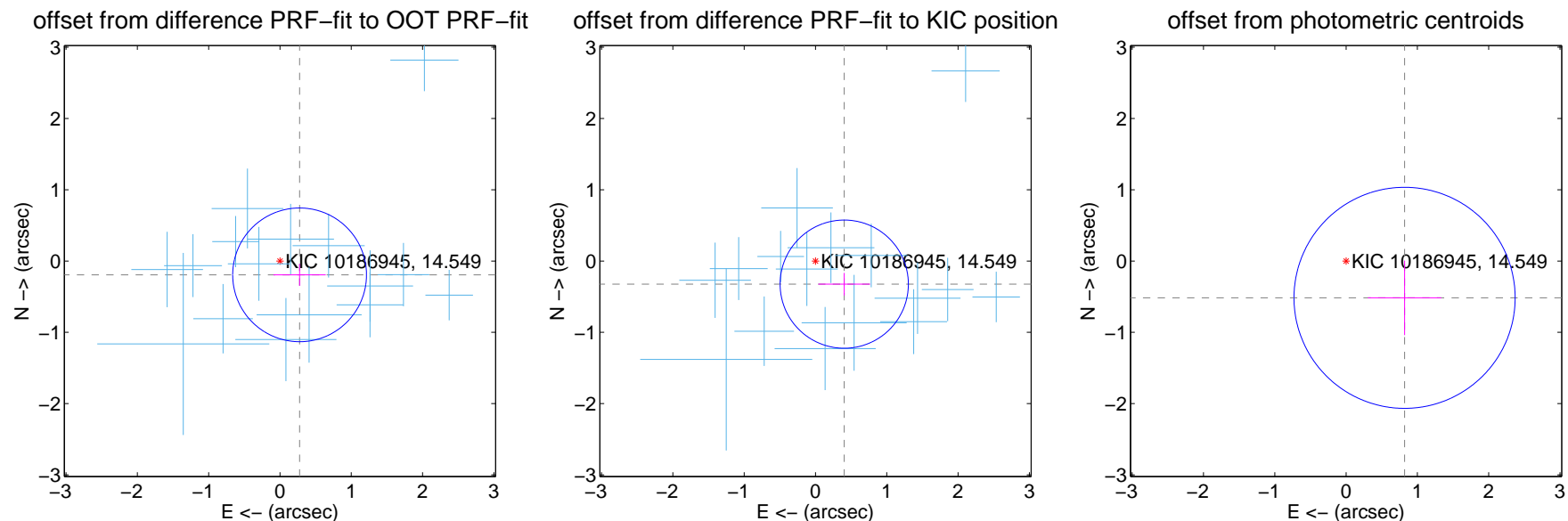
DV Centroid Data

Supplemental centroid analysis for 010186945-01. Kepler magnitude: 14.55. Transit SNR 23.01

There are 16 quarters with good PRF difference image offsets

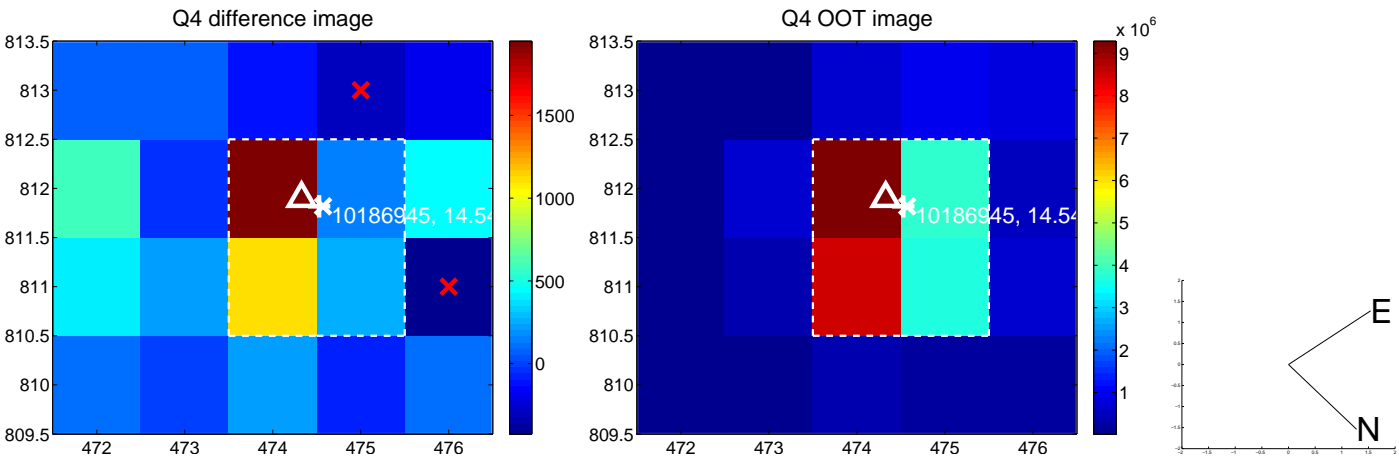
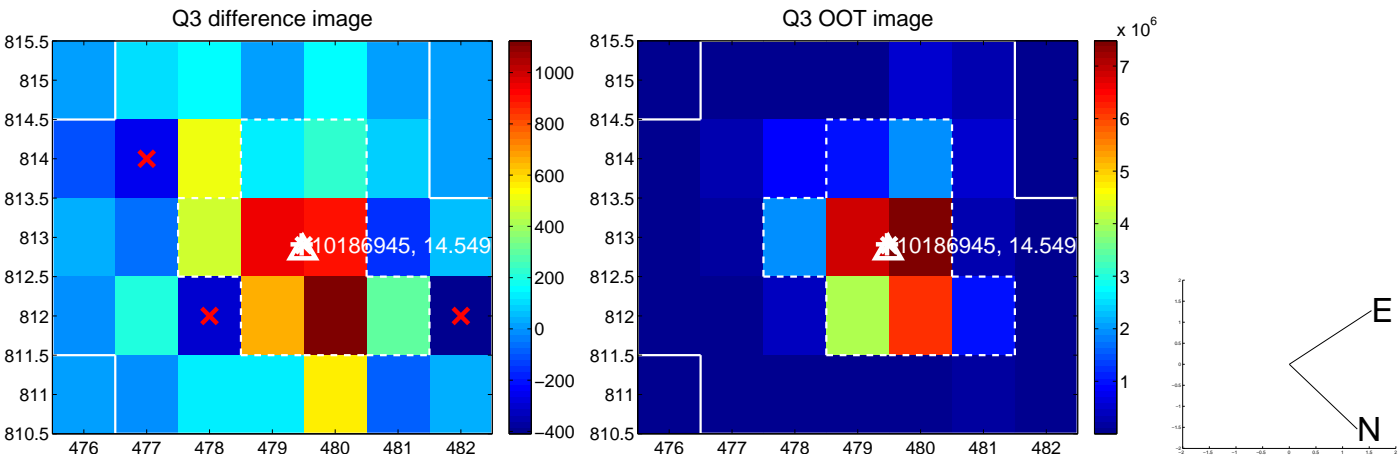
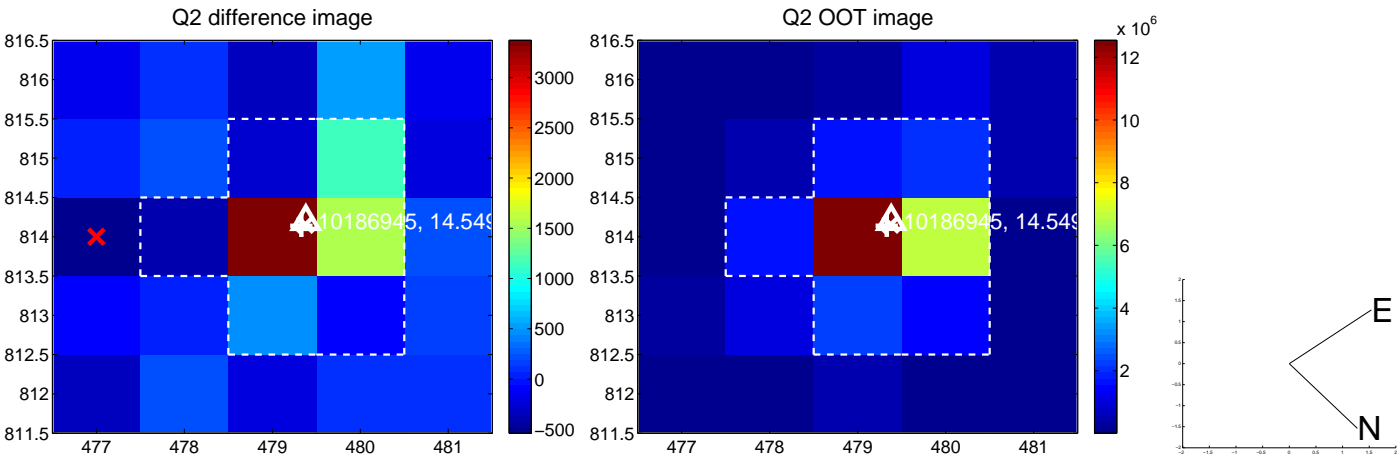
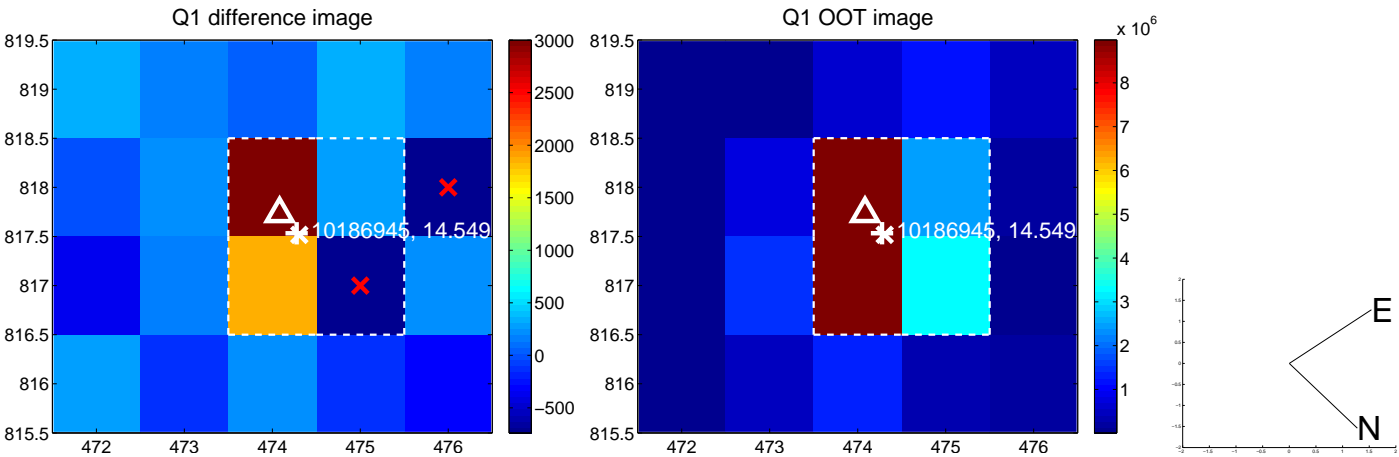
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.337 ± 0.313	1.08	-0.275 ± 0.367	-0.194 ± 0.154
PRF-fit source offset from KIC position	0.517 ± 0.300	1.73	-0.403 ± 0.363	-0.324 ± 0.158
photometric centroid source offset	0.97 ± 0.52	1.87	-0.82 ± 0.51	-0.52 ± 0.52

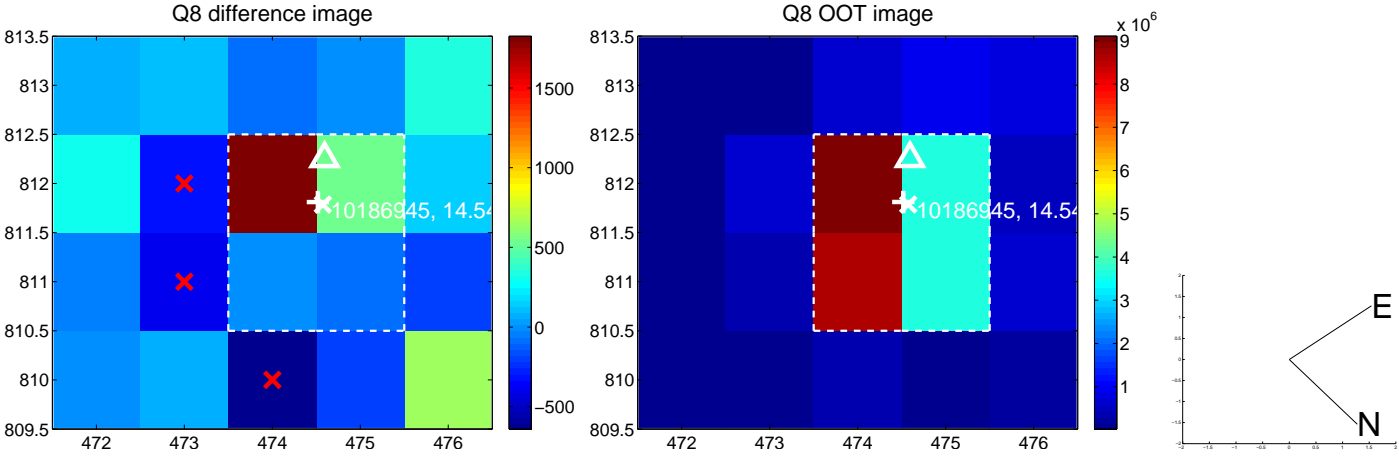
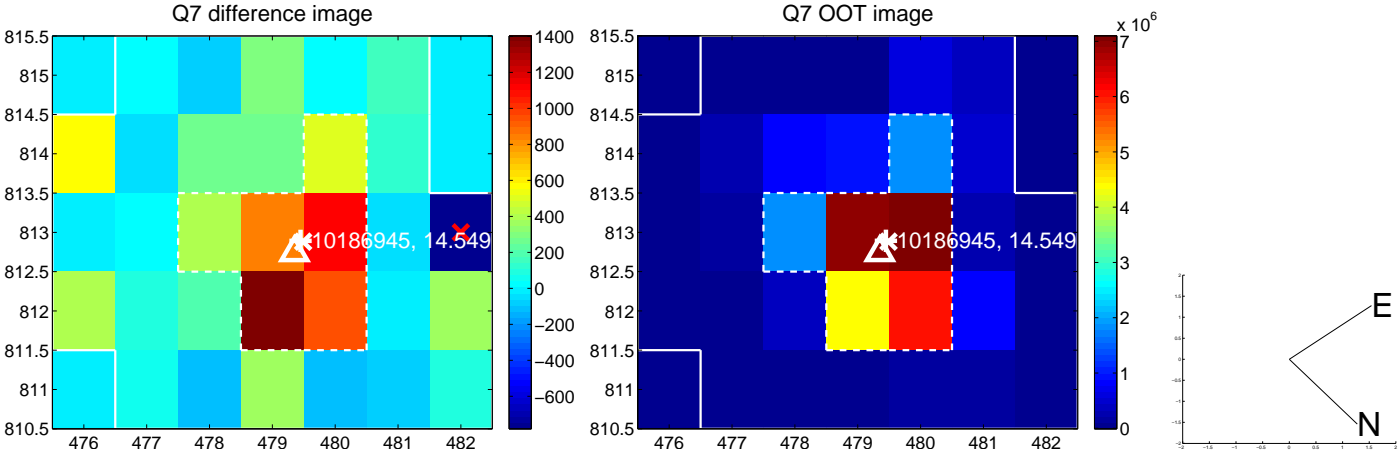
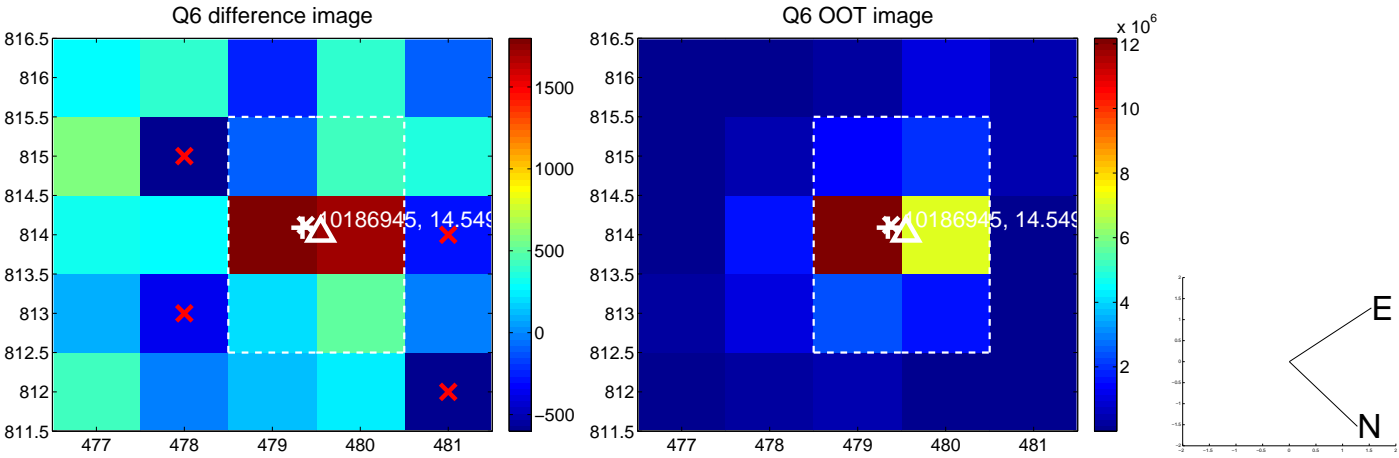
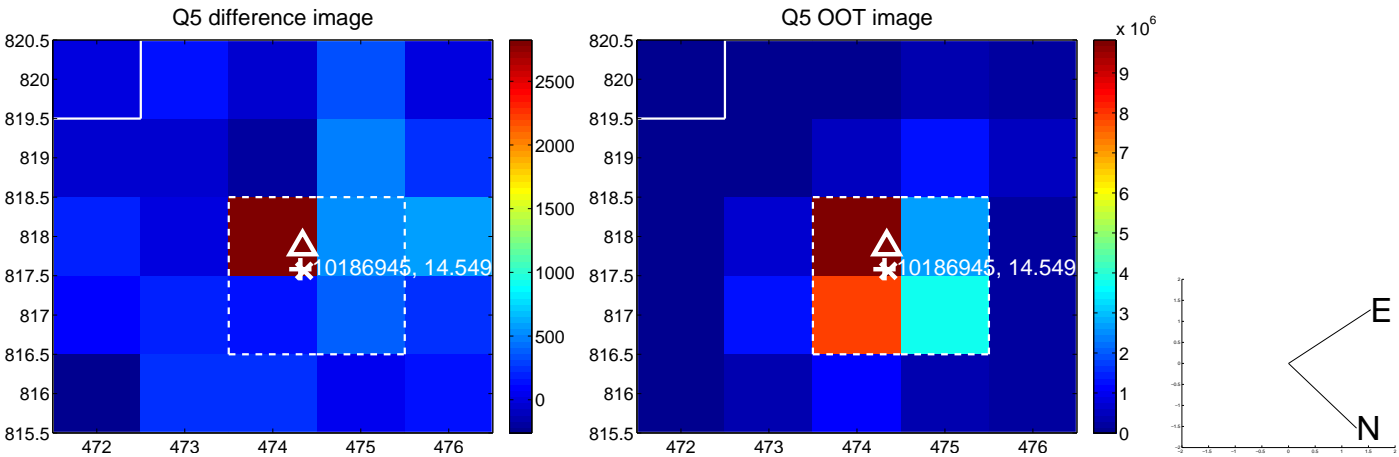


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

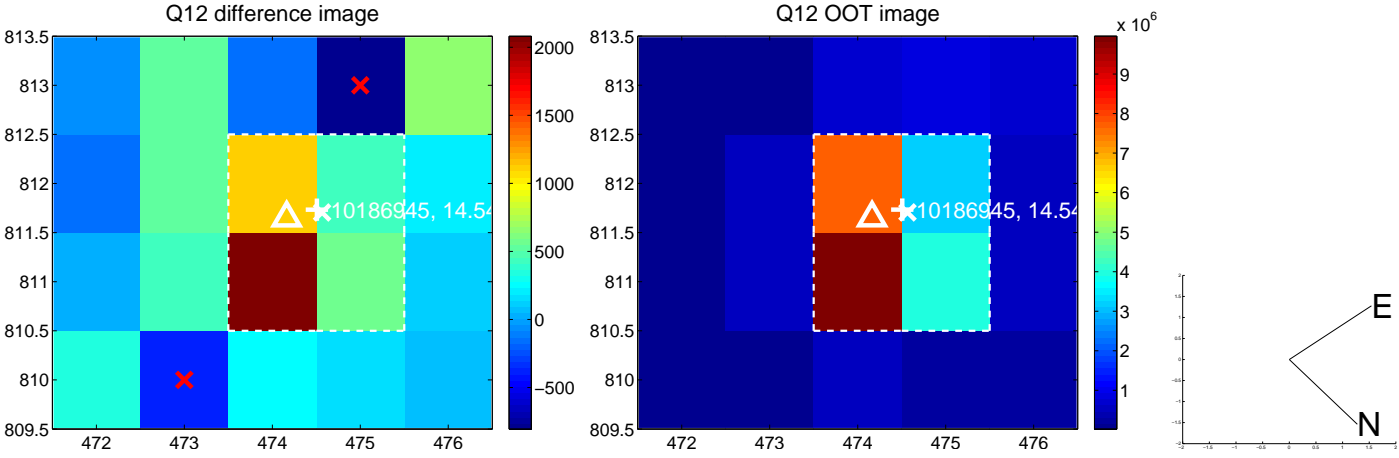
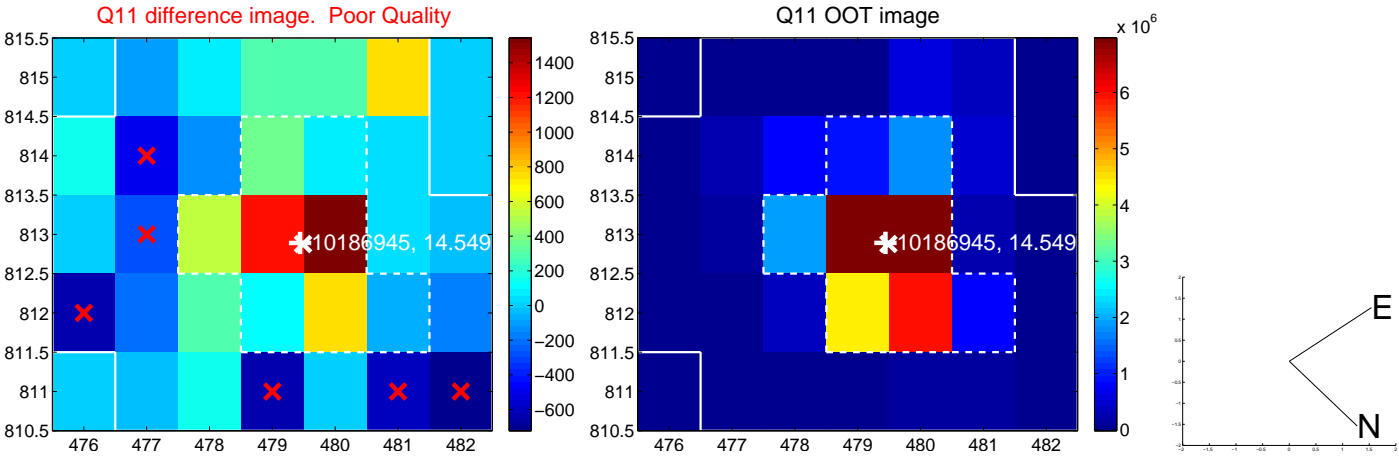
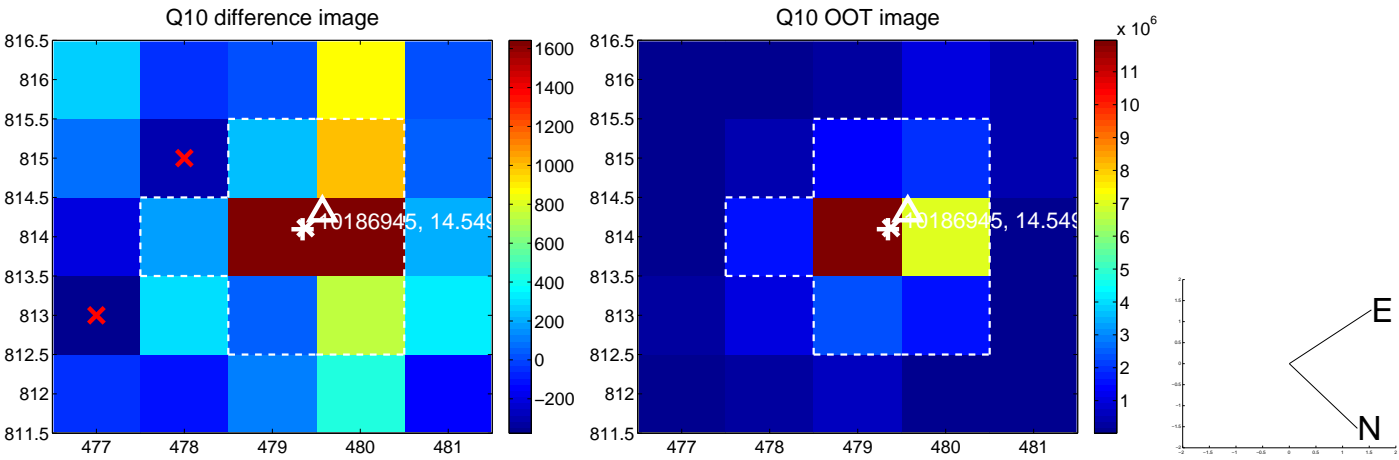
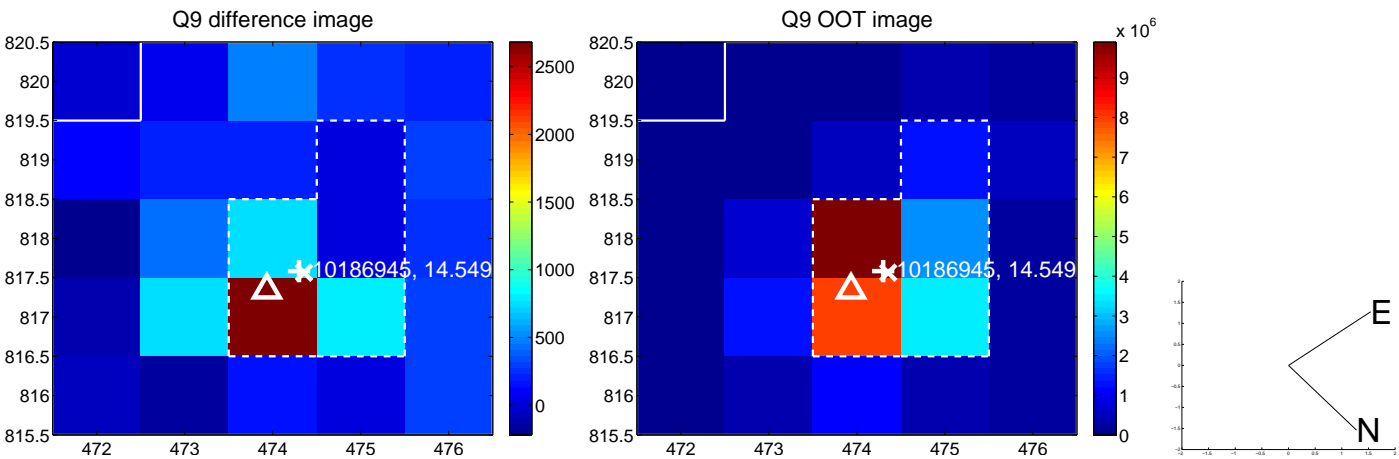
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



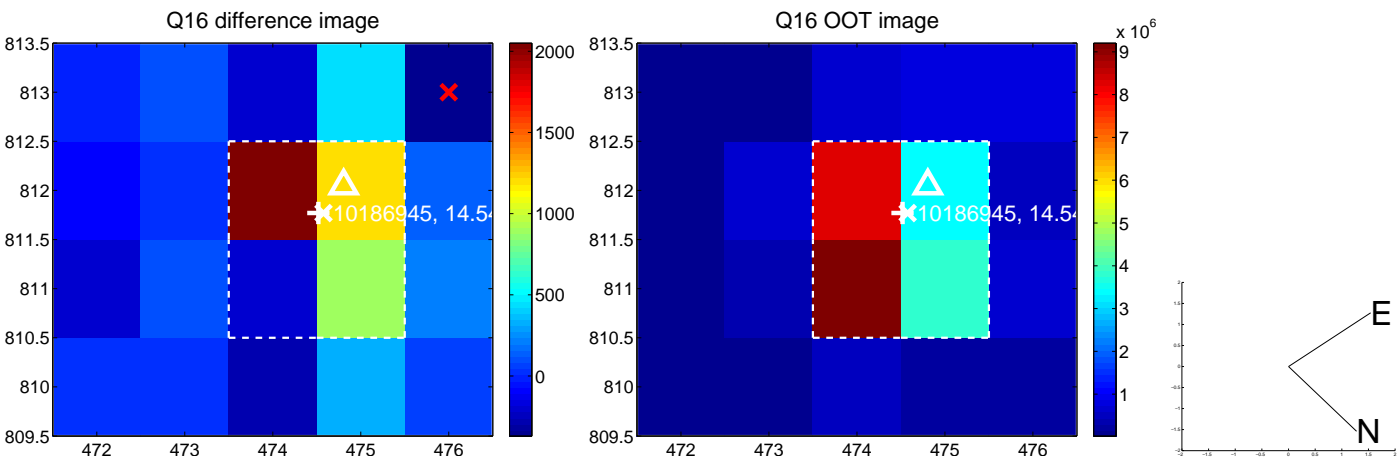
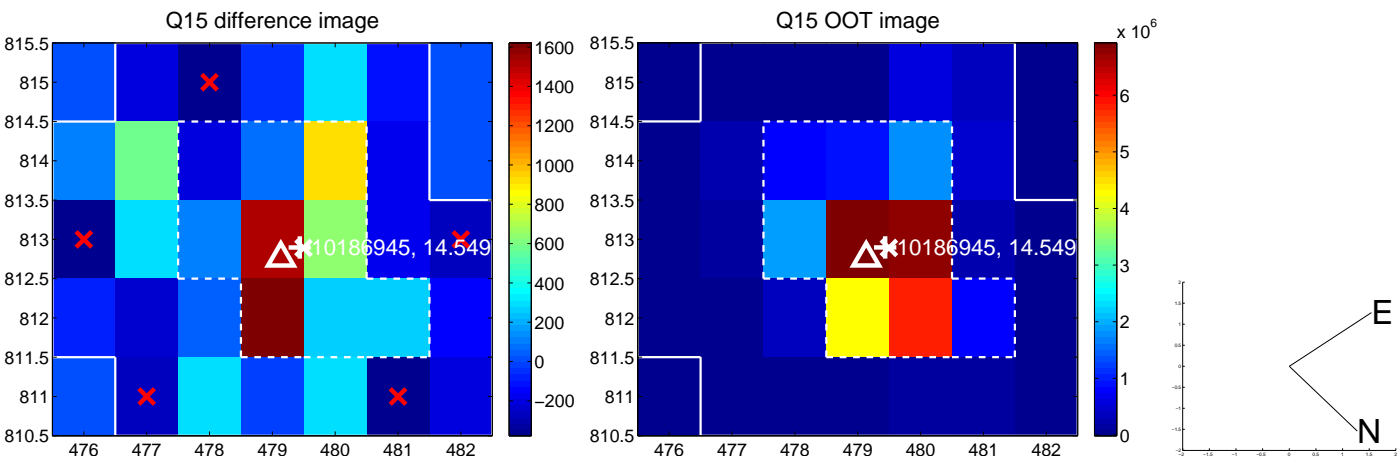
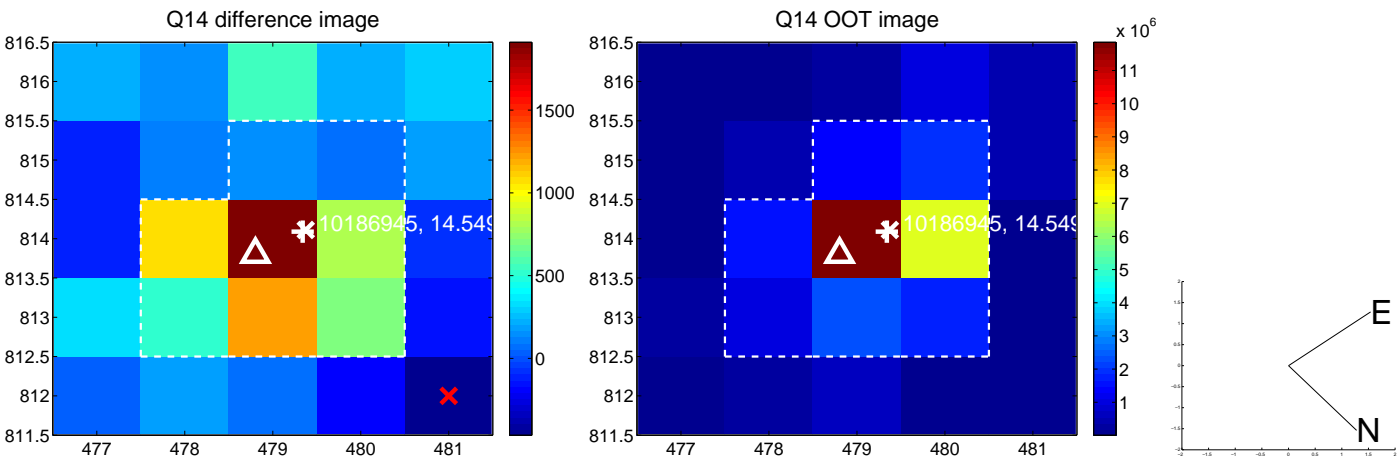
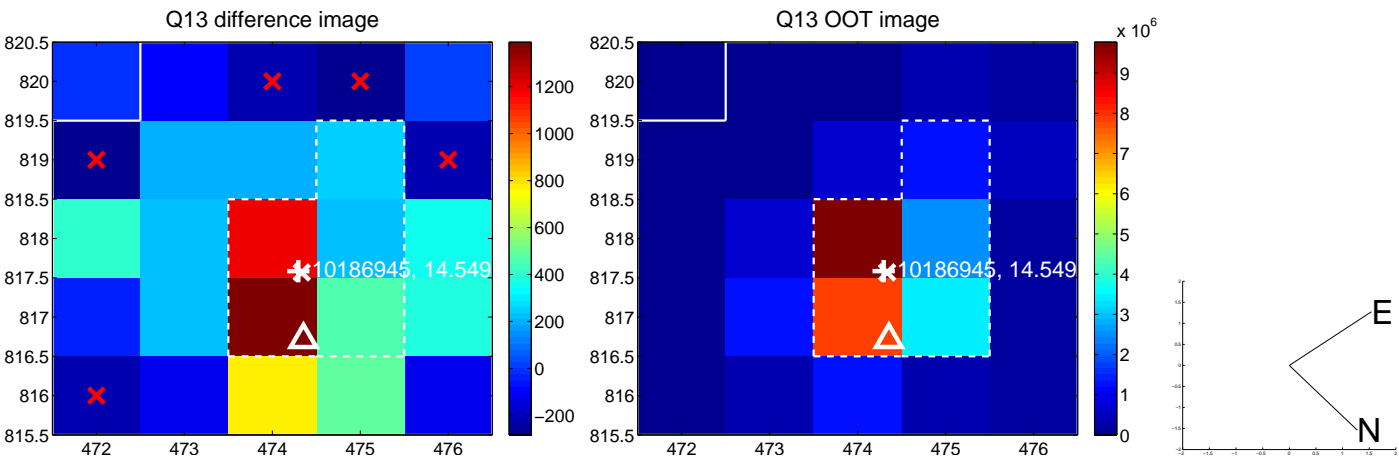
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



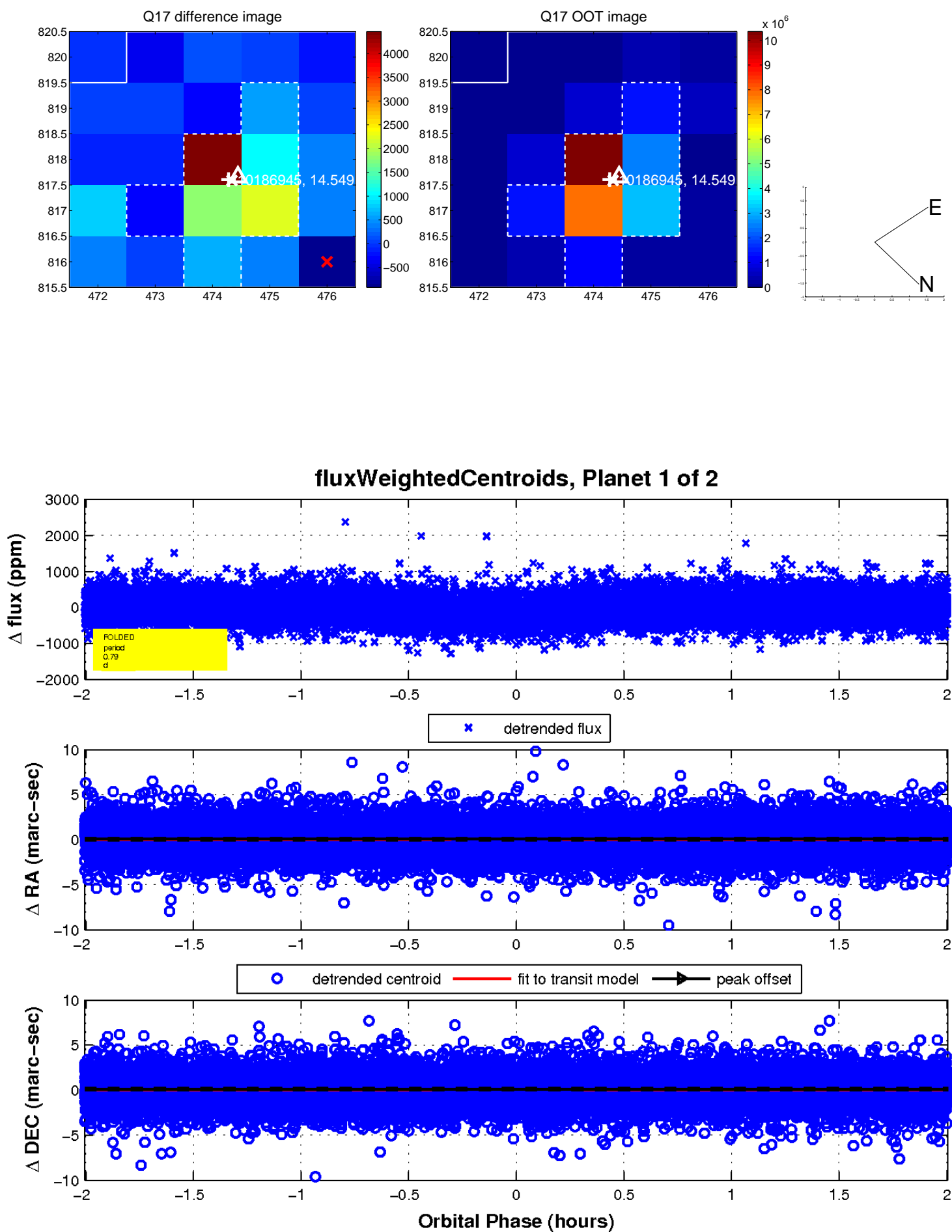
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

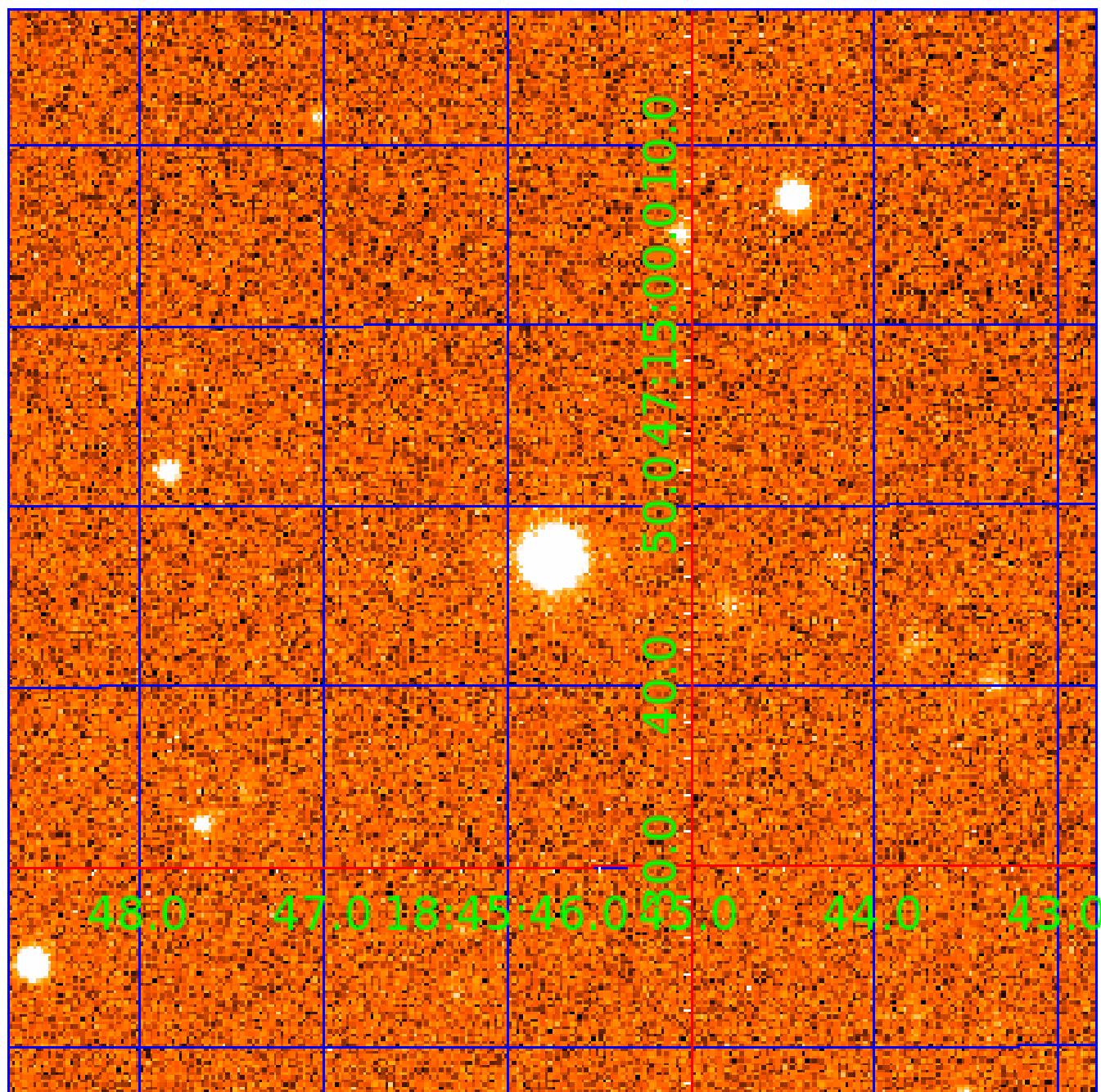


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010186945

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})
010186945-01	OBS	4070.01	0.793660	131.796951	194.2	0.668	11.3	23.0	0.82	5077	1.19	1607.36
010186945-02	OBS	No	0.793659	132.191132	146.2	0.926	15.9	21.1	0.82	5077	1.19	1607.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010186945-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
010186945-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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 010186945-02

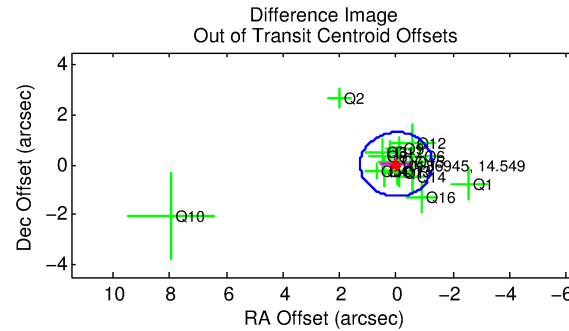
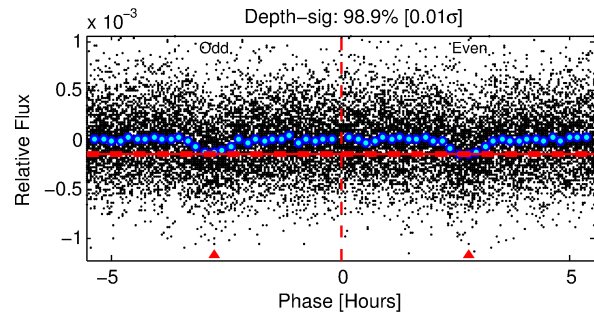
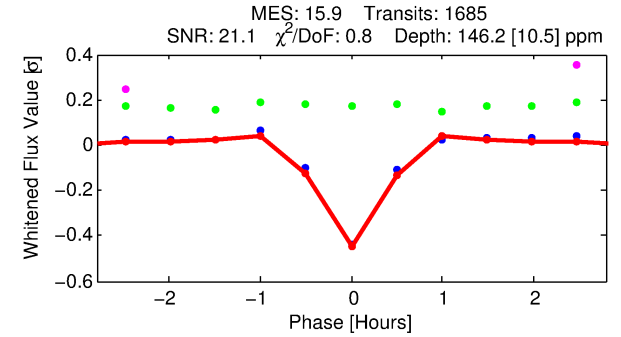
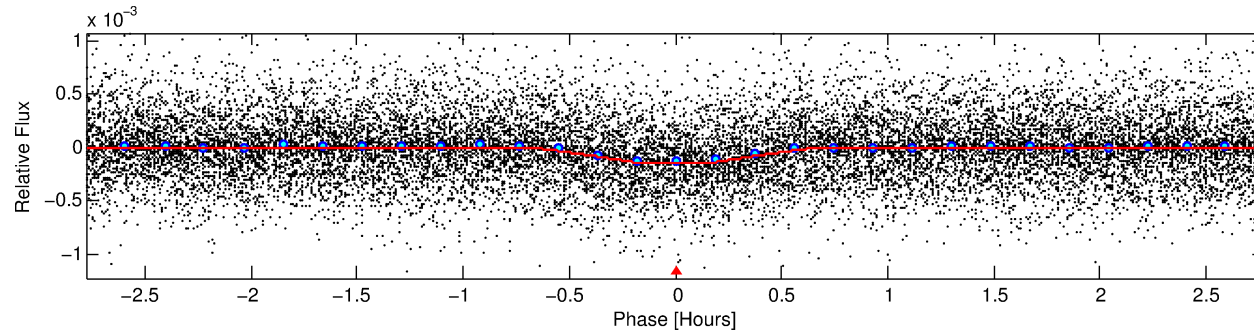
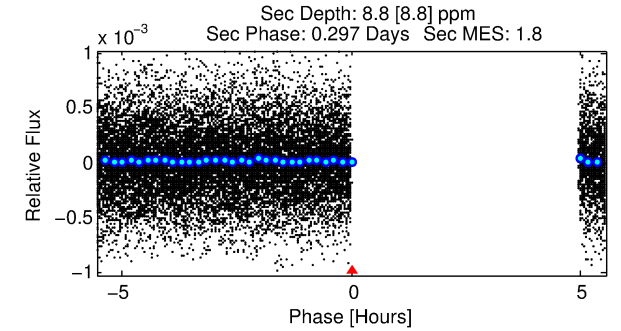
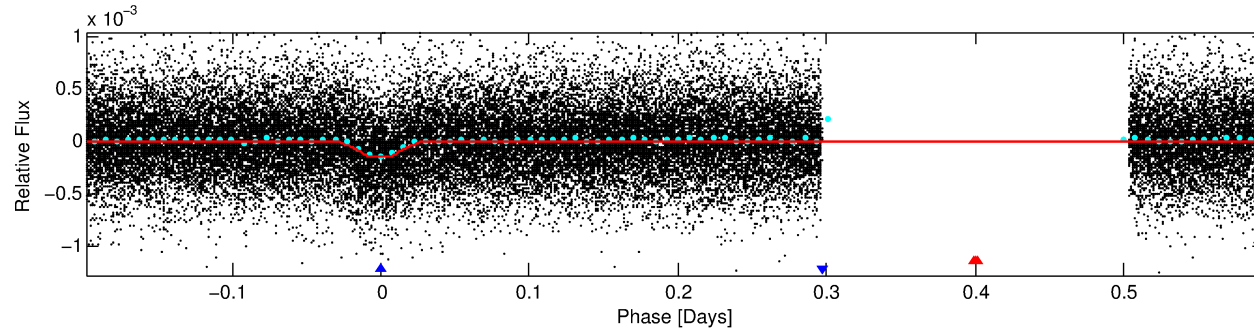
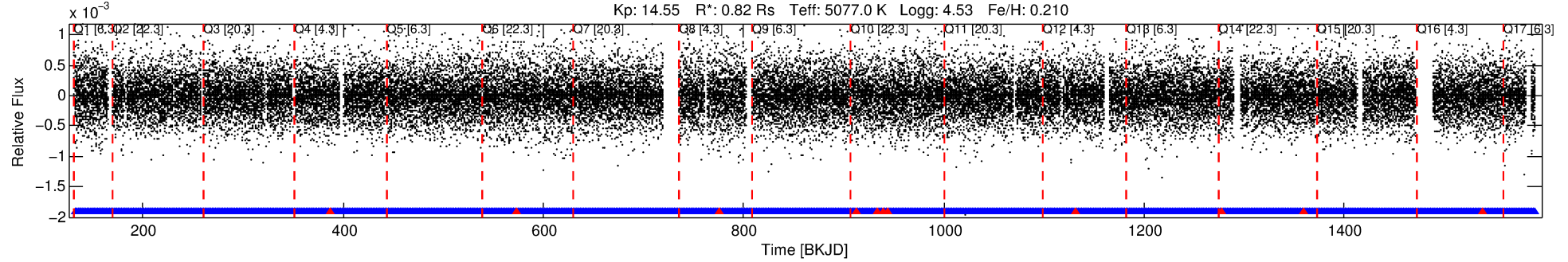
No Significant Match Found

DV One-Page Summary

KIC: 10186945 Candidate: 2 of 2 Period: 0.794 d

KOI: K04070 Corr: No Ephemeris Match

Kp: 14.55 R*: 0.82 Rs Teff: 5077.0 K Logg: 4.53 Fe/H: 0.210



DV Fit Results:

Period = 0.79366 [0.00001] d
Epoch = 132.1911 [0.0007] BKJD
Rp/R* = 0.0132 [0.0039]
a/R* = 3.58 [3.71]
b = 0.87 [0.34]
Seff = 1607.36 [296.49]
Teq = 1615 [74] K
Rp = 1.19 [0.37] Re
a = 0.0159 [0.0014] AU
Ag = 0.86 [1.01] [-0.14σ]
Teffp = 2404 [705] K [1.11σ]

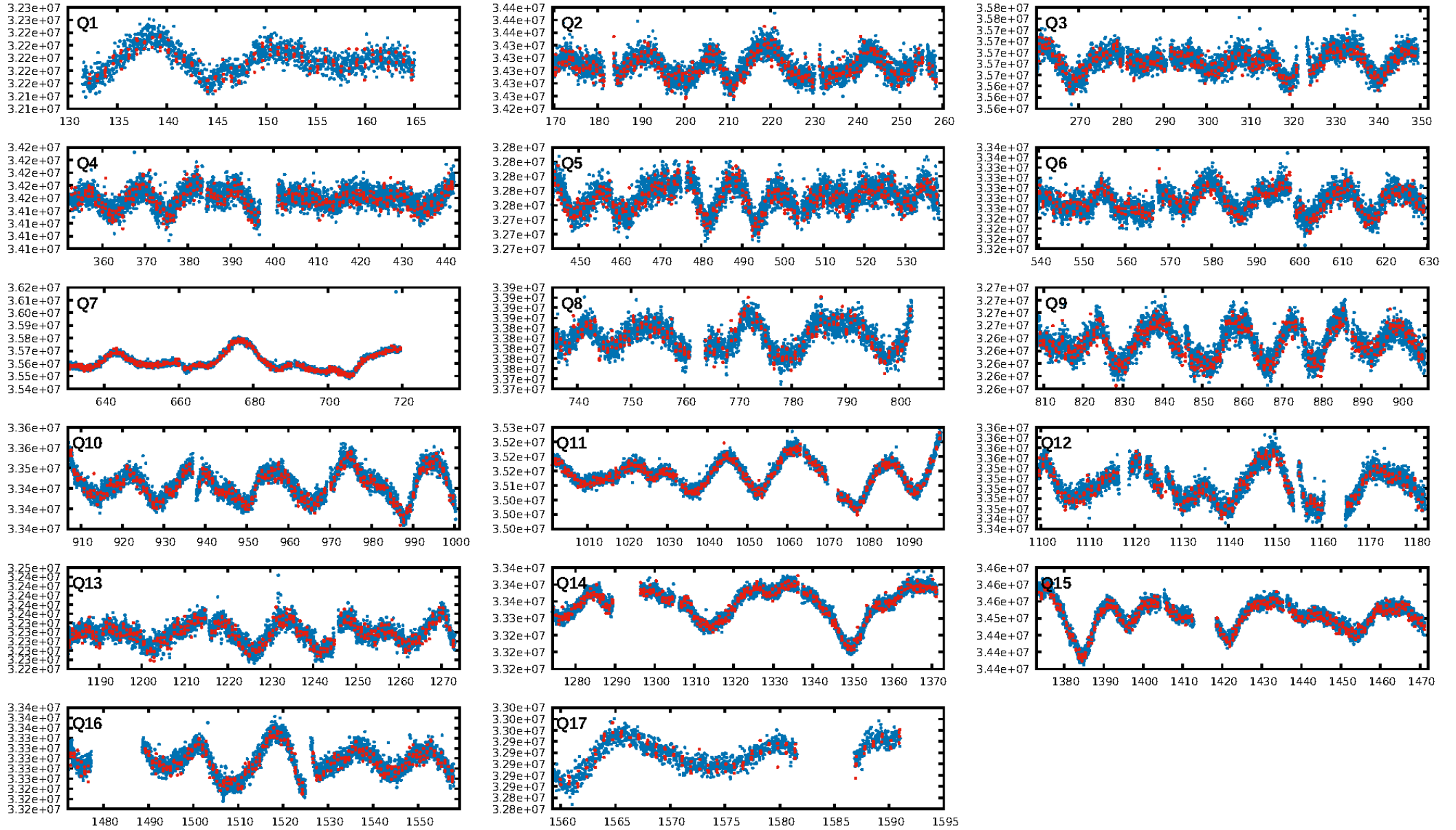
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.35e-55
RollingBand-fgt: 0.99 [1598/1609]
GhostDiagnostic-chr: 2.465
Centroid-sig: 18.5%
Centroid-so: 1.254 arcsec [2.13σ]
OotOffset-rm: 0.011 arcsec [0.03σ]
KicOffset-rm: 0.178 arcsec [0.61σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 1.00 [17/17]

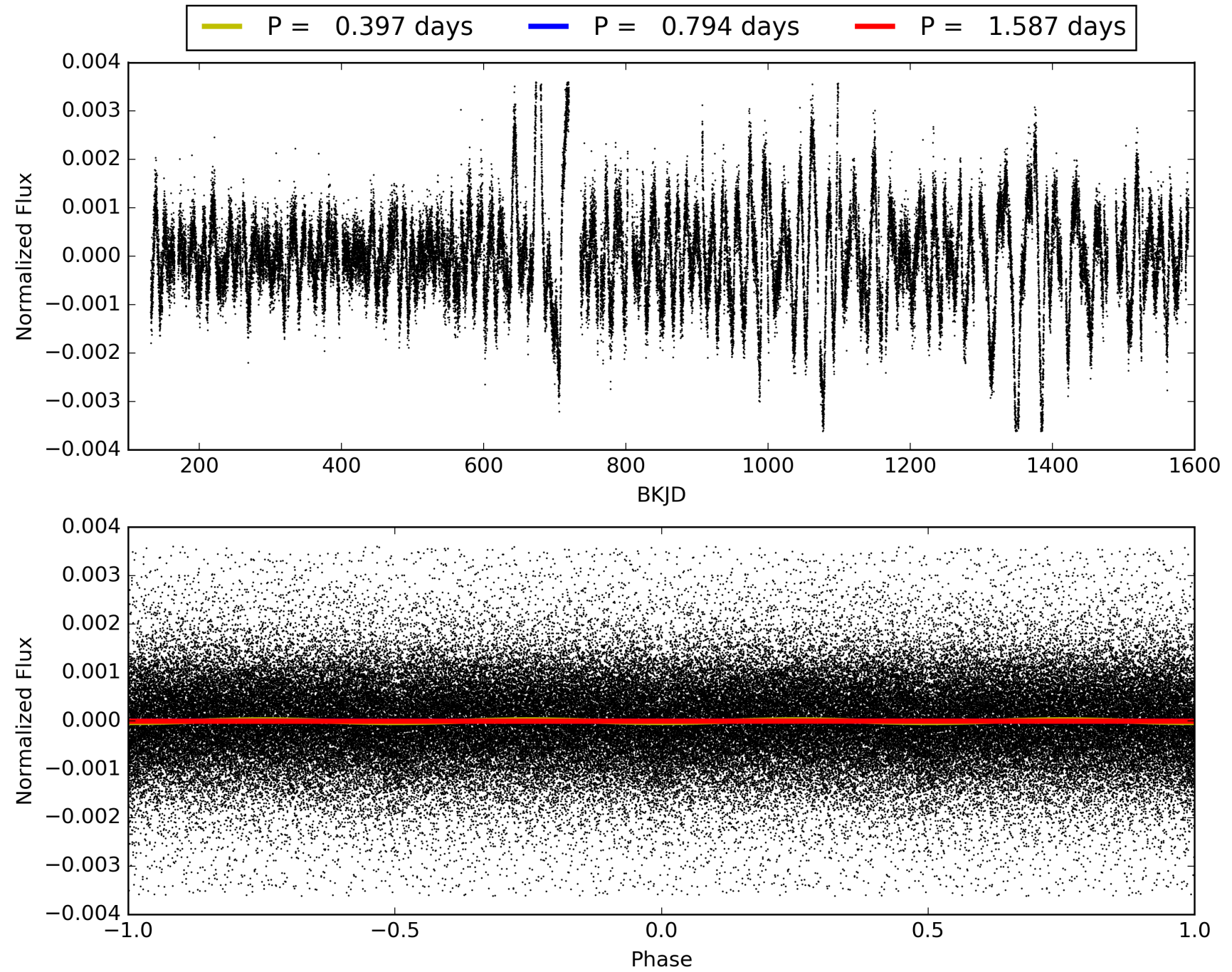
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:10:01 Z

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

TCE 010186945-02, PDC Light Curves

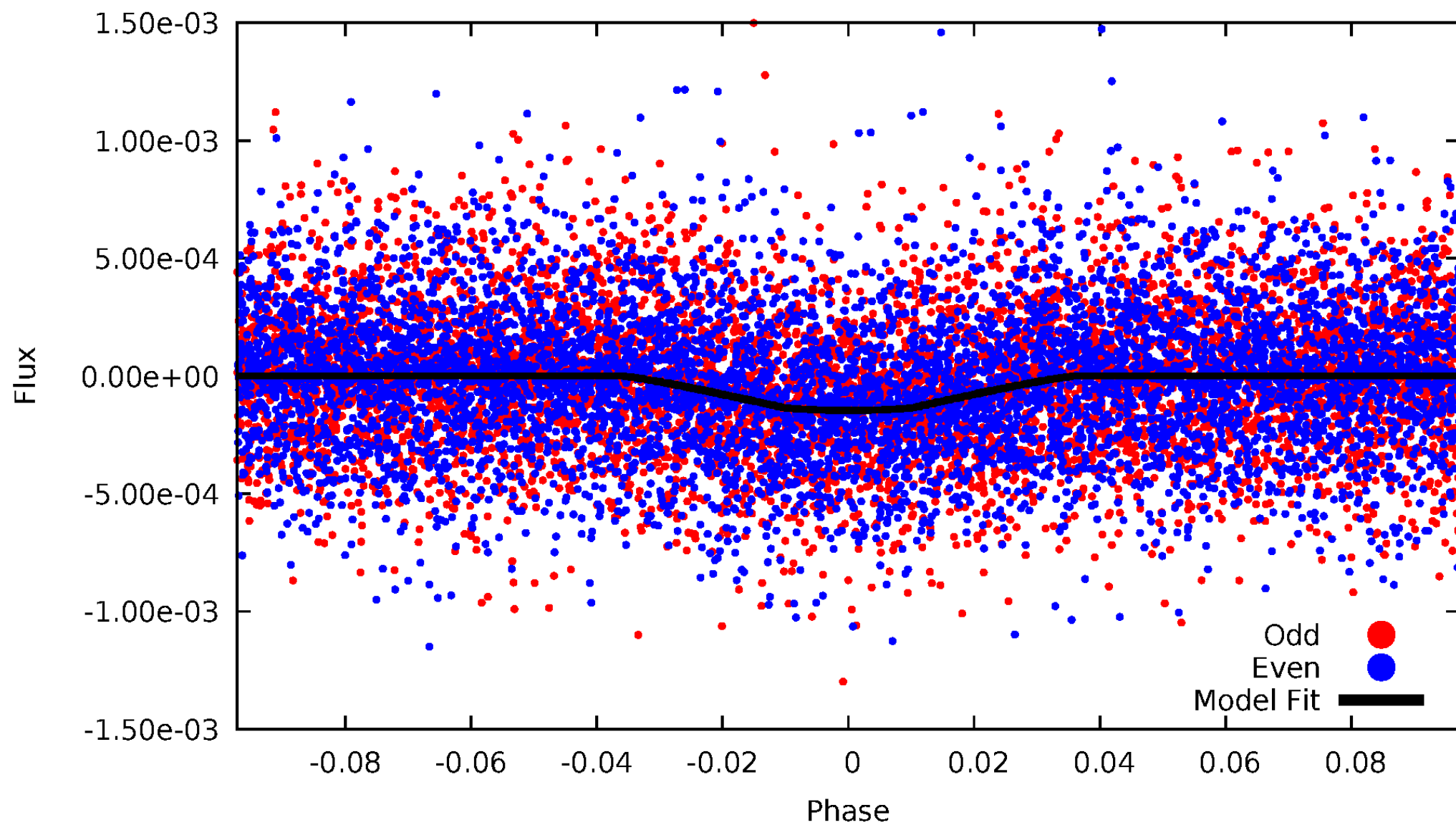


TCE 010186945-02



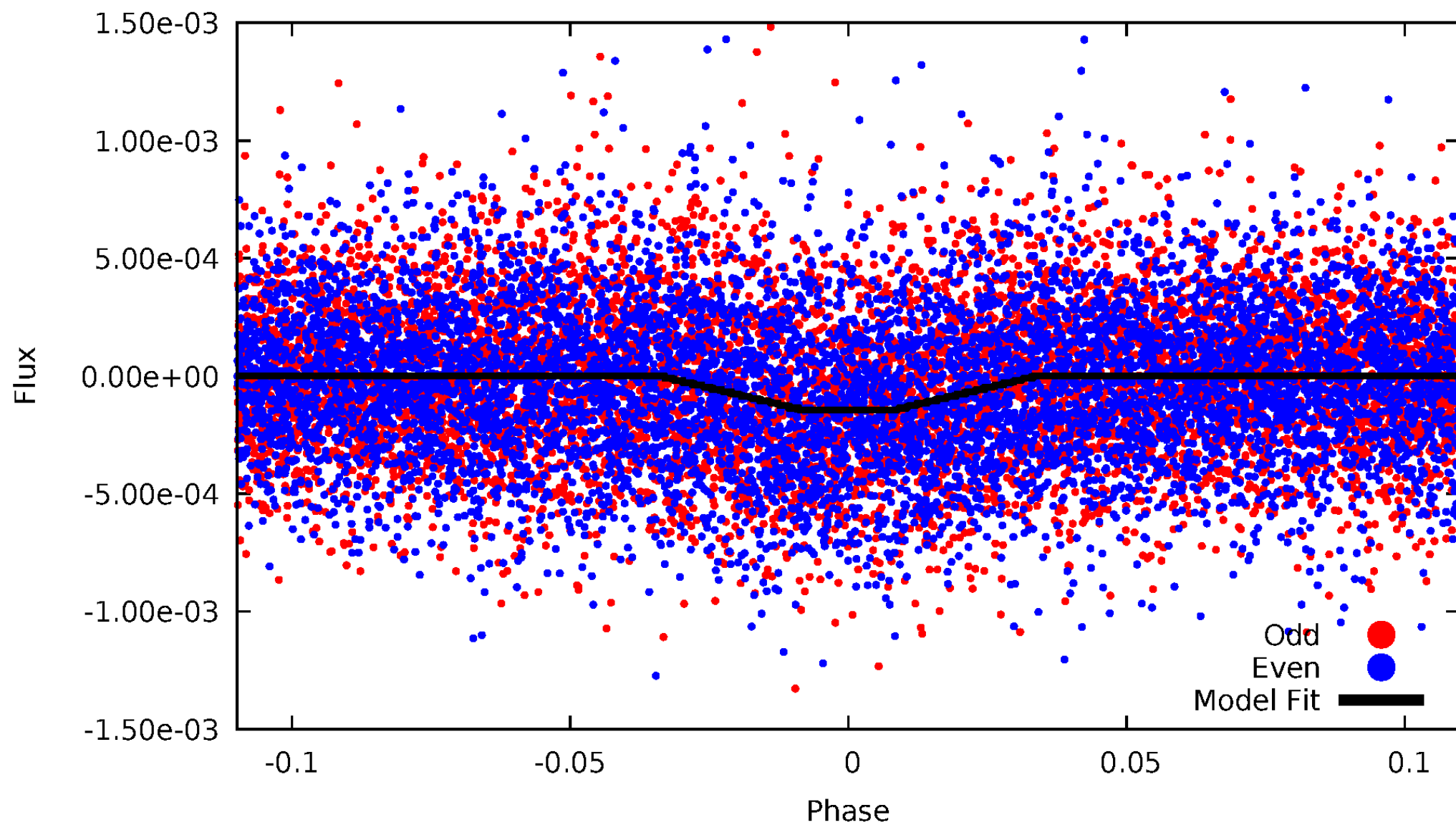
DV Odd/Even

TCE 010186945-02



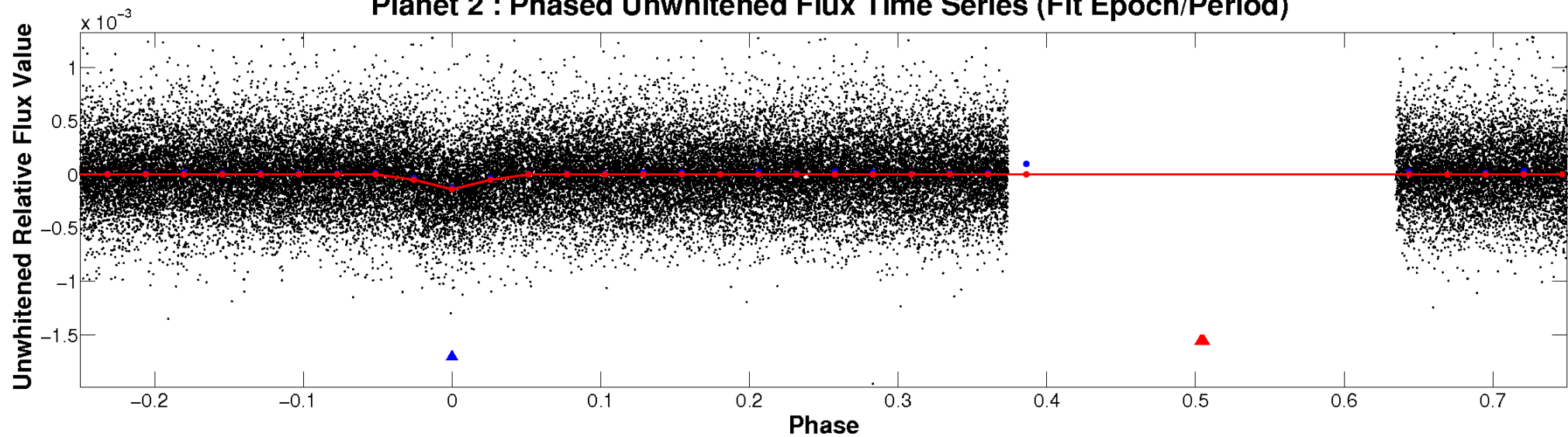
ALT Odd/Even

TCE 010186945-02

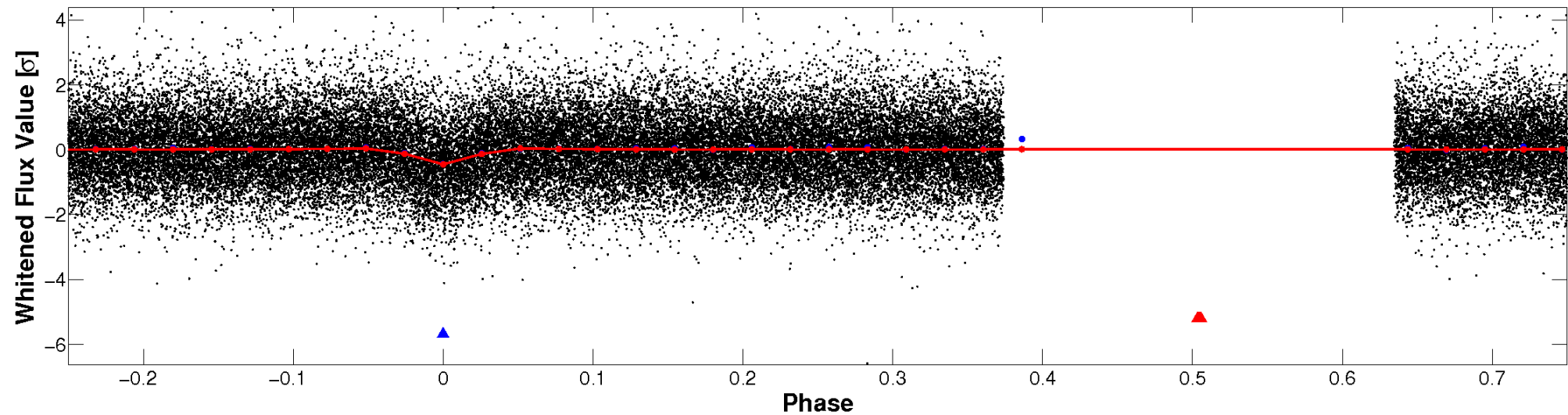


Non-Whitened Vs. Whitened Light Curve

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

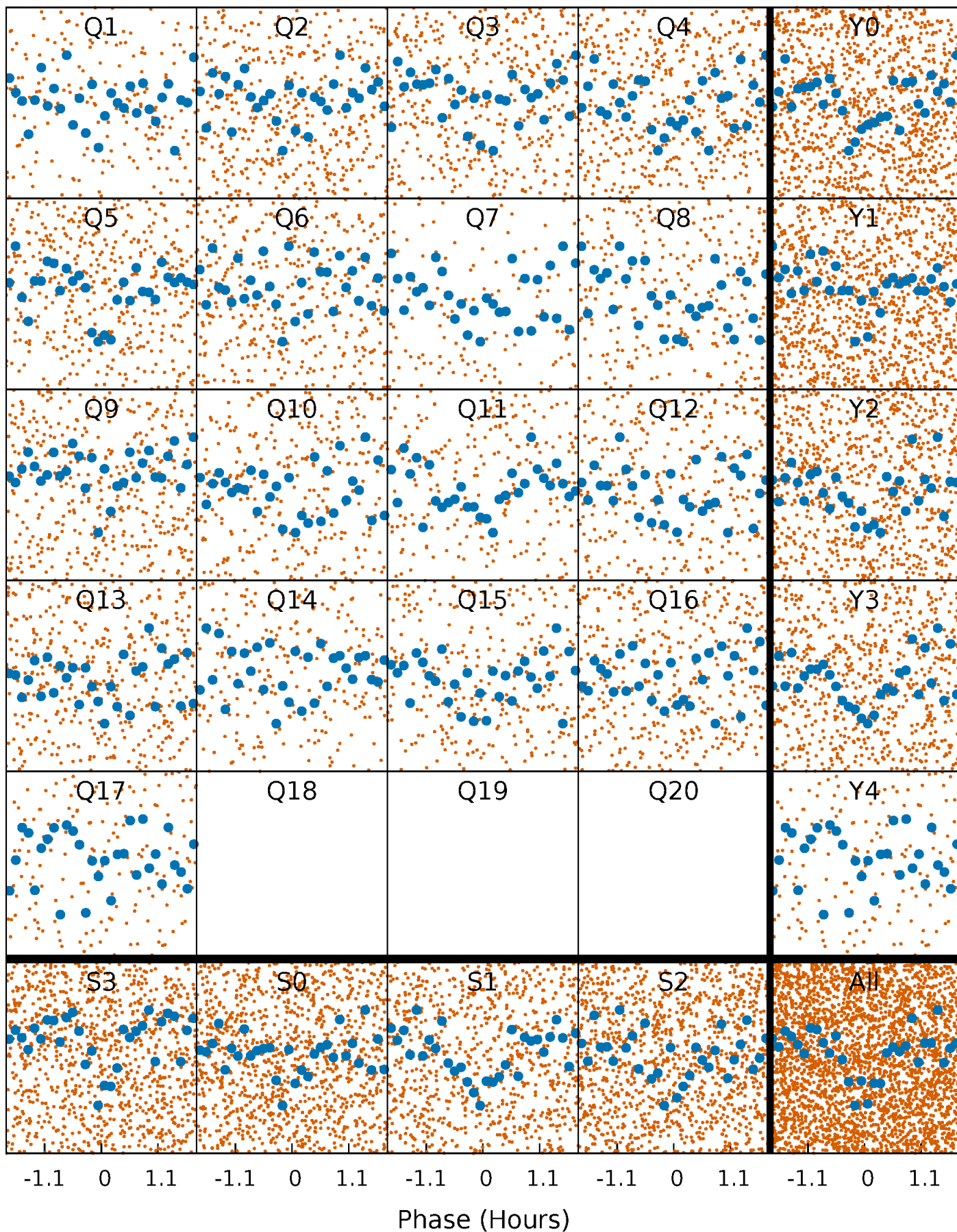


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



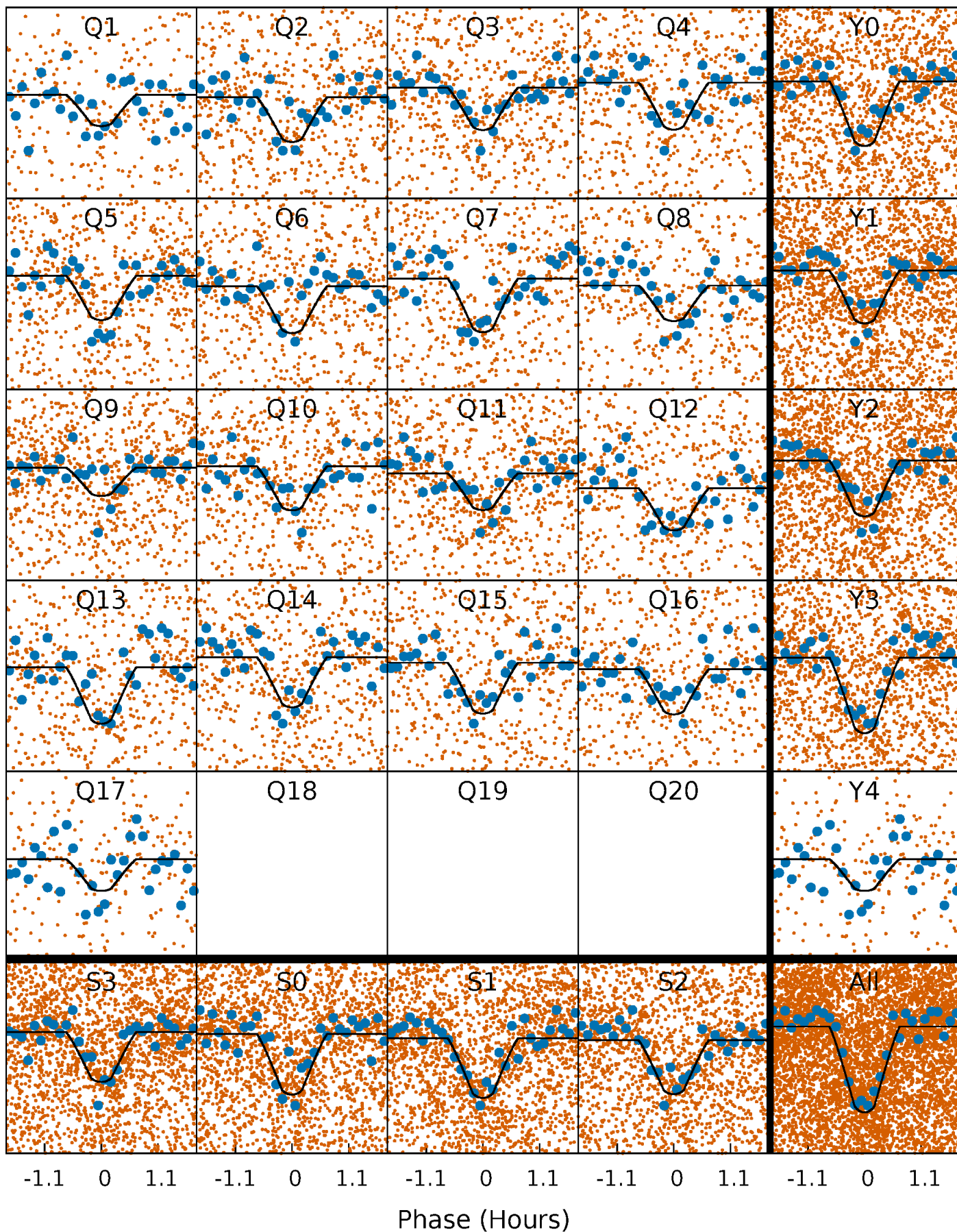
PDC Quarter-Phased Transit Curves

TCE 010186945-02 P= 0.793659 Days $T_0=132.191132$ (BKJD)



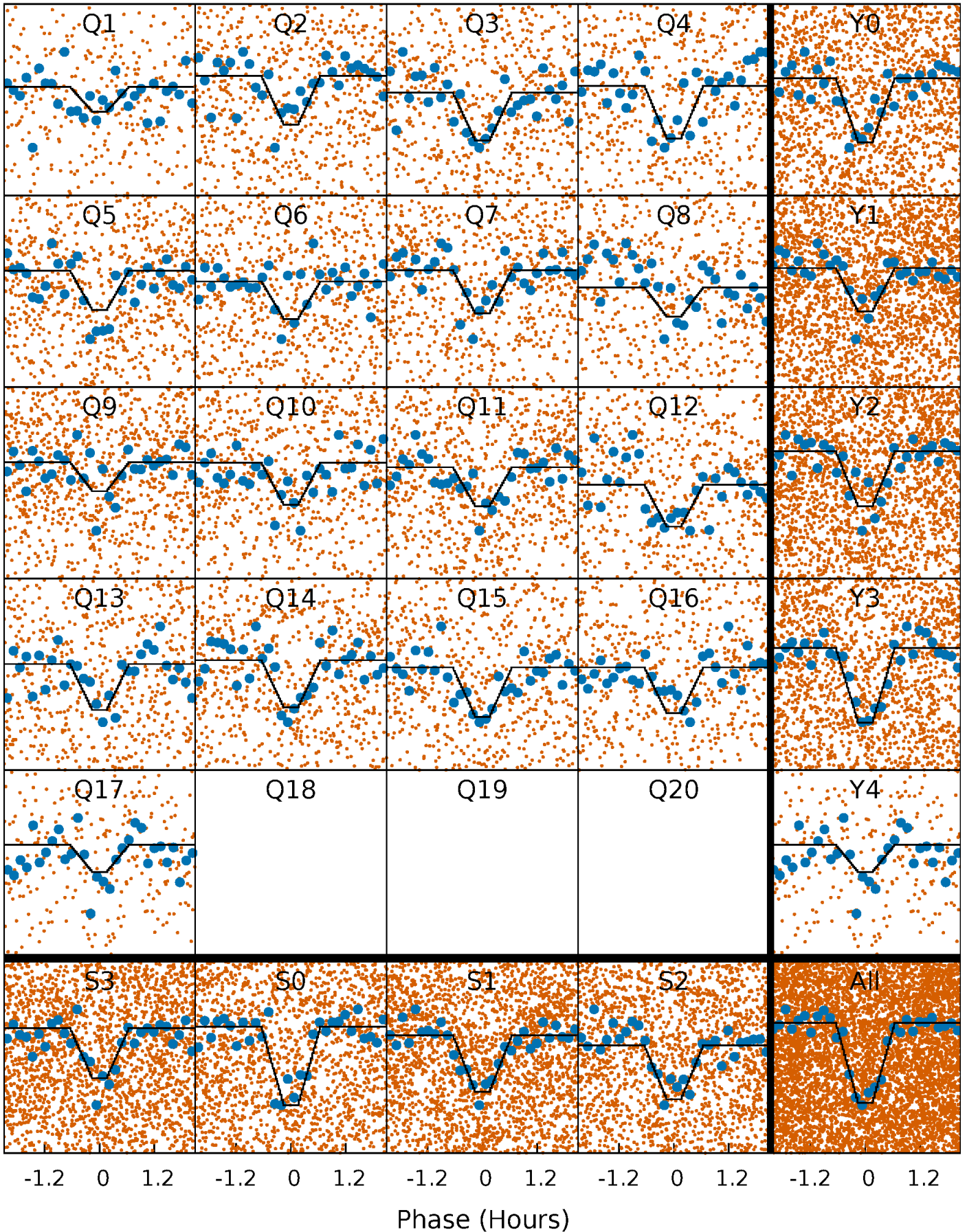
DV Quarter-Phased Transit Curves

TCE 010186945-02 P= 0.793659 Days $T_0=132.191132$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

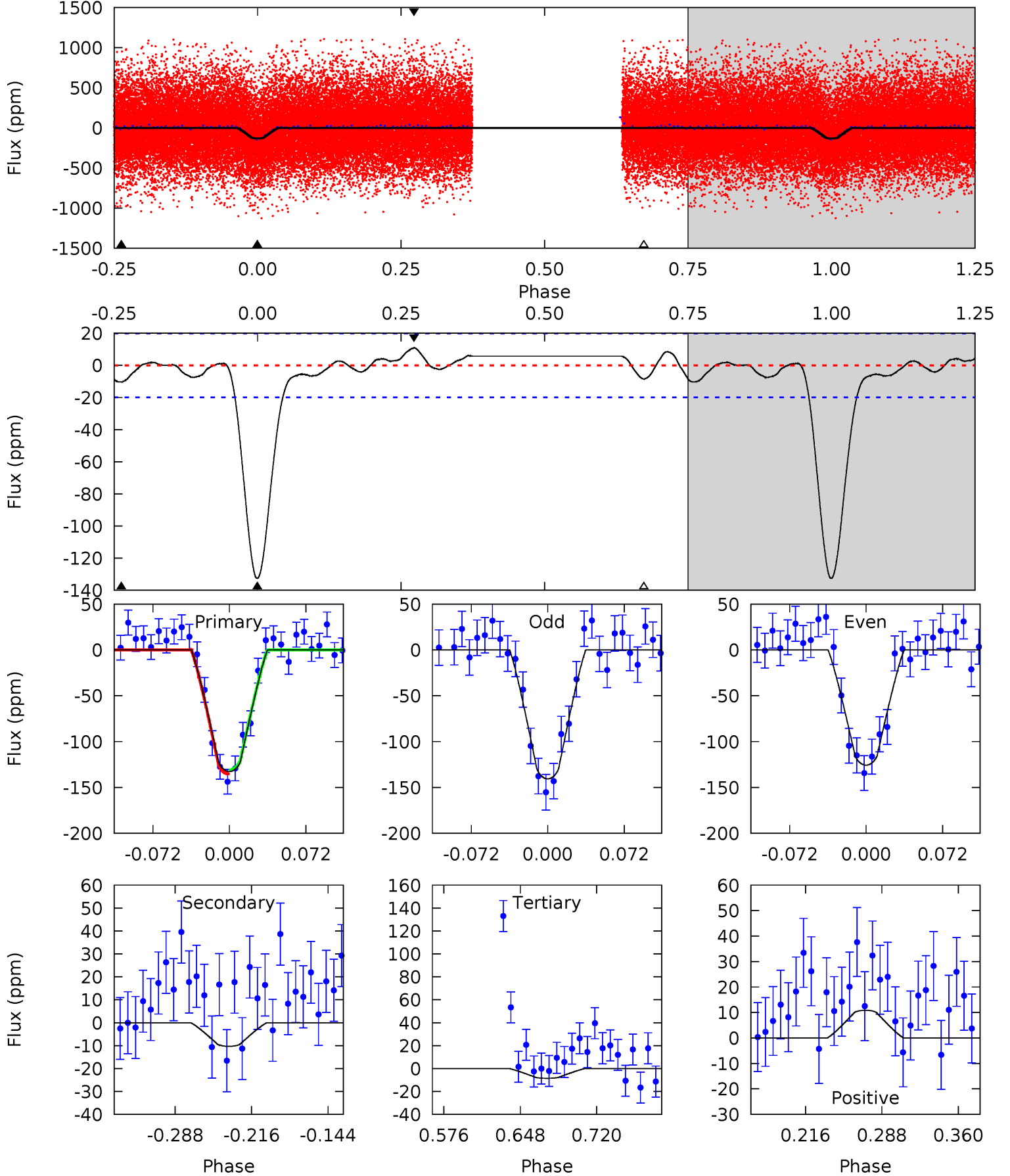
TCE 010186945-02 $P = 0.793654$ Days $T_0 = 132.195066$ (BKJD)



DV Model-Shift Uniqueness Test

010186945-02, P = 0.793659 Days, E = 131.397473 Days

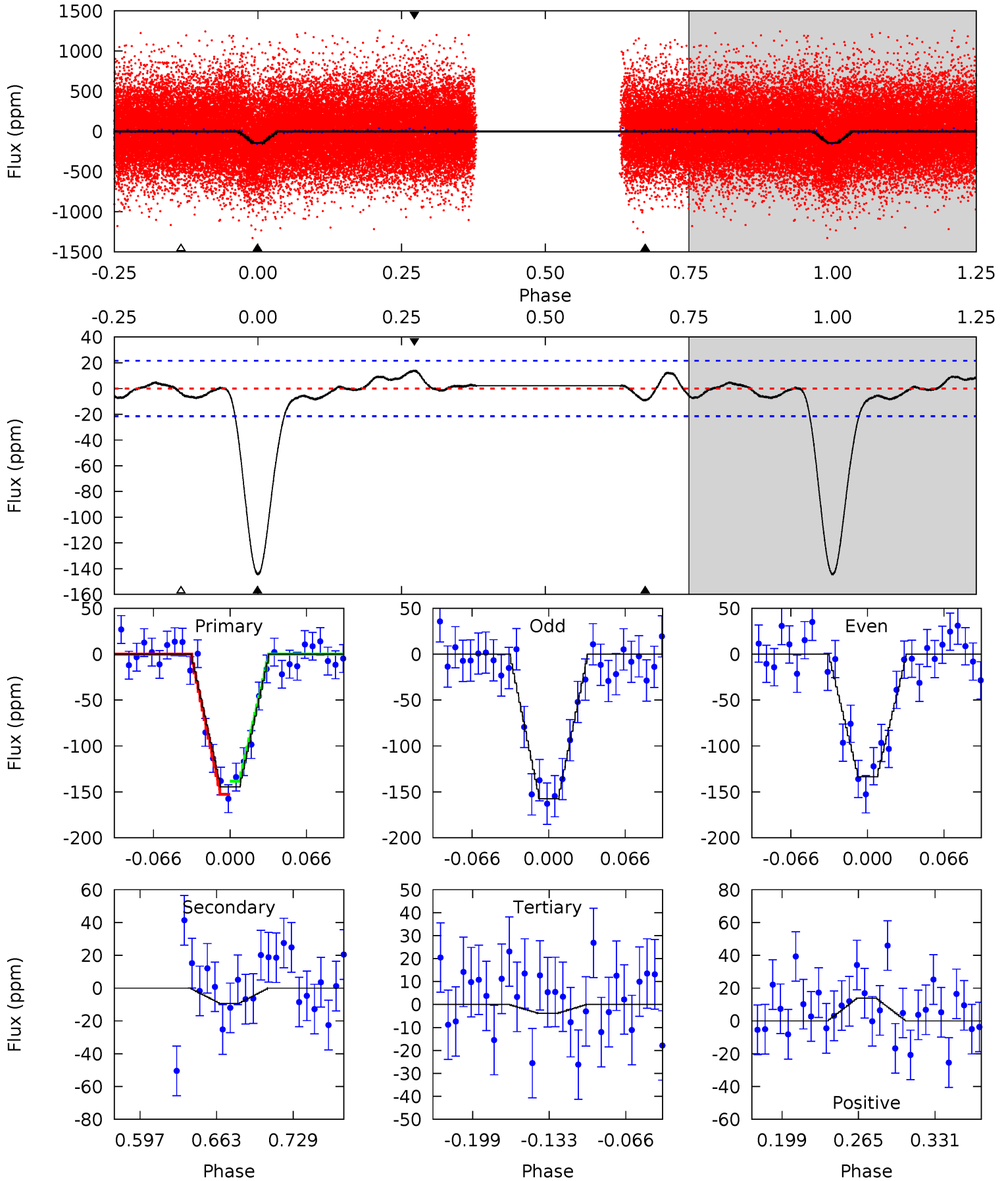
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.9	2.40	1.99	2.54	4.63	1.80	1.11	28.9	28.4	0.42	-0.13	1.75	0.91	0.08	0.49



Alt Model-Shift Uniqueness Test

010186945-02, P = 0.793654 Days, E = 131.401412 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.1	2.02	0.83	2.98	4.65	1.84	1.18	30.3	28.1	1.19	-0.97	2.58	0.94	0.09	1.55



Stellar Parameters For KIC 010186945

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5077^{+167}_{-137}	$4.533^{+0.054}_{-0.072}$	$0.210^{+0.200}_{-0.300}$	$0.825^{+0.083}_{-0.074}$	$0.849^{+0.058}_{-0.071}$	$2.126^{+0.485}_{-0.471}$
	+3%/-3%	+1%/-2%	+95%/-143%	+10%/-9%	+7%/-8%	+23%/-22%
Source	PHO1	KIC0	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 010186945-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-10 ± 4	$1.20^{+0.36}_{-0.37}$	2265^{+88}_{-76}	2917^{+498}_{-533}	$0.953^{+1.261}_{-0.516}$
Alt.	-9 ± 5	$1.07^{+0.36}_{-0.37}$	2264^{+92}_{-85}	2989^{+557}_{-668}	$1.063^{+1.580}_{-0.653}$

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 $A_{\text{obs}} \gg 1.0$

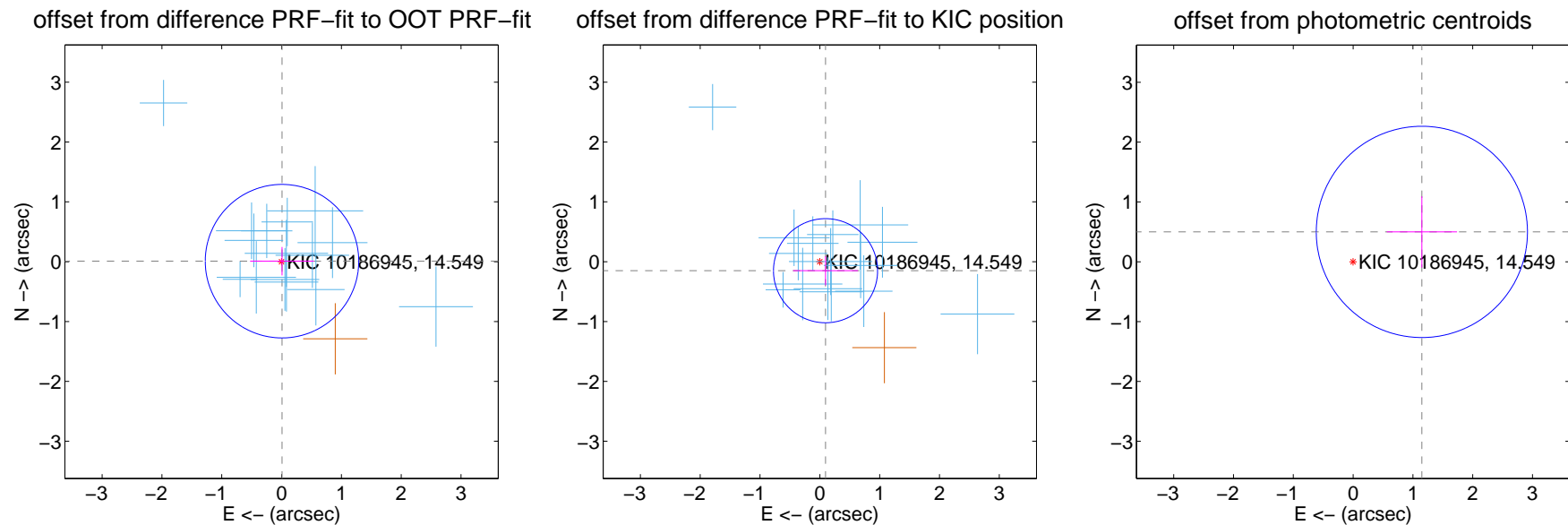
DV Centroid Data

Supplemental centroid analysis for 010186945-02. Kepler magnitude: 14.55. Transit SNR 21.08

There are 15 quarters with good PRF difference image offsets

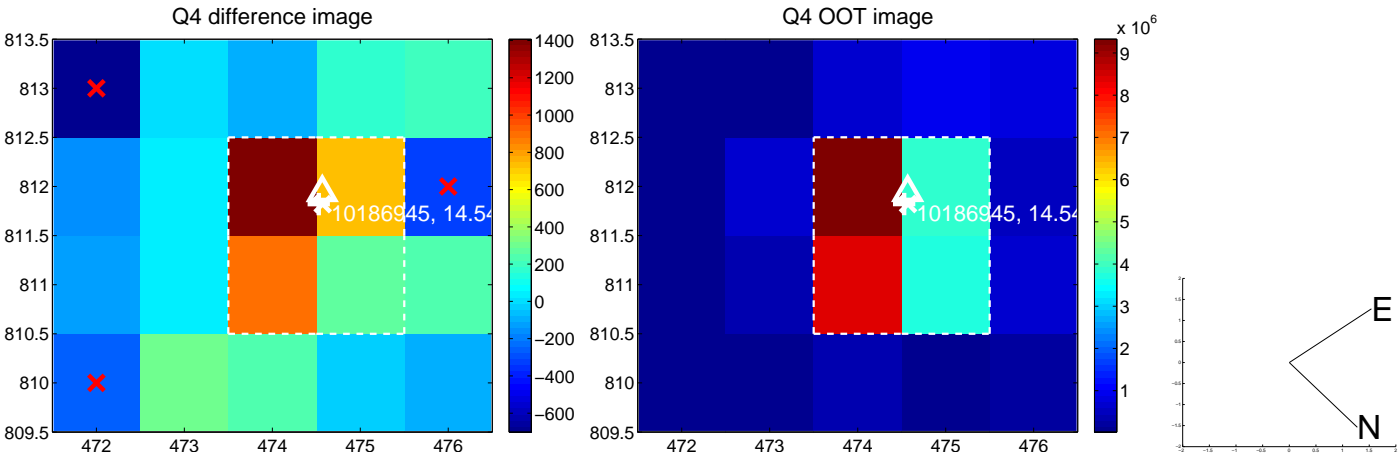
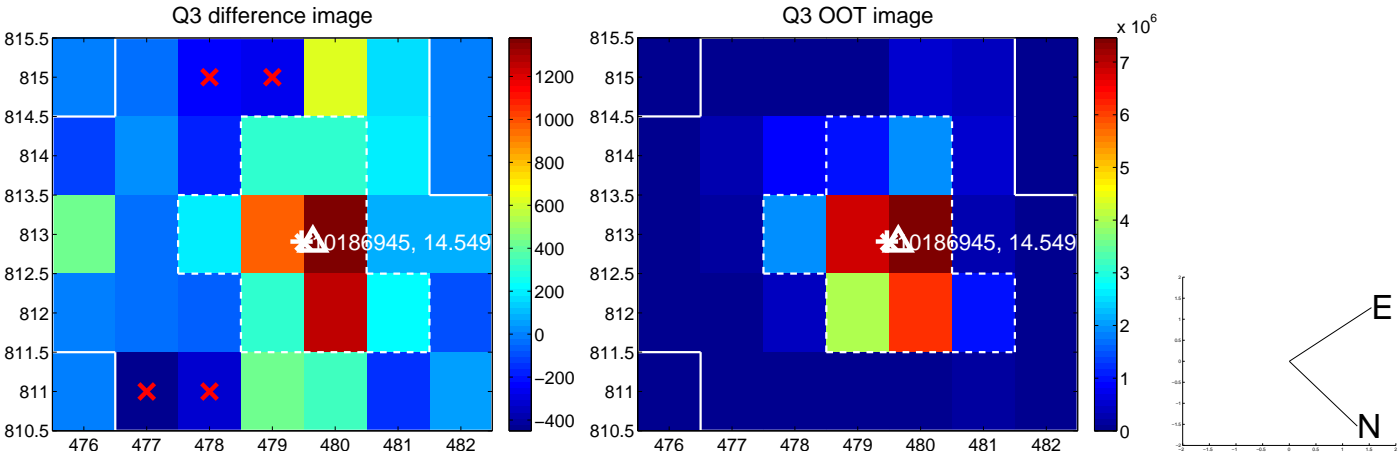
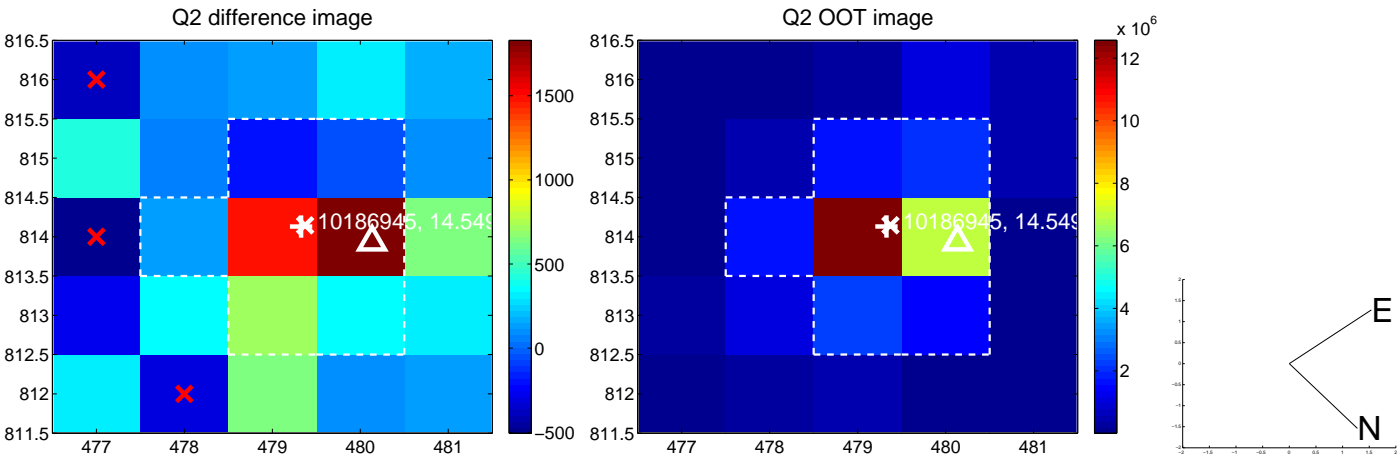
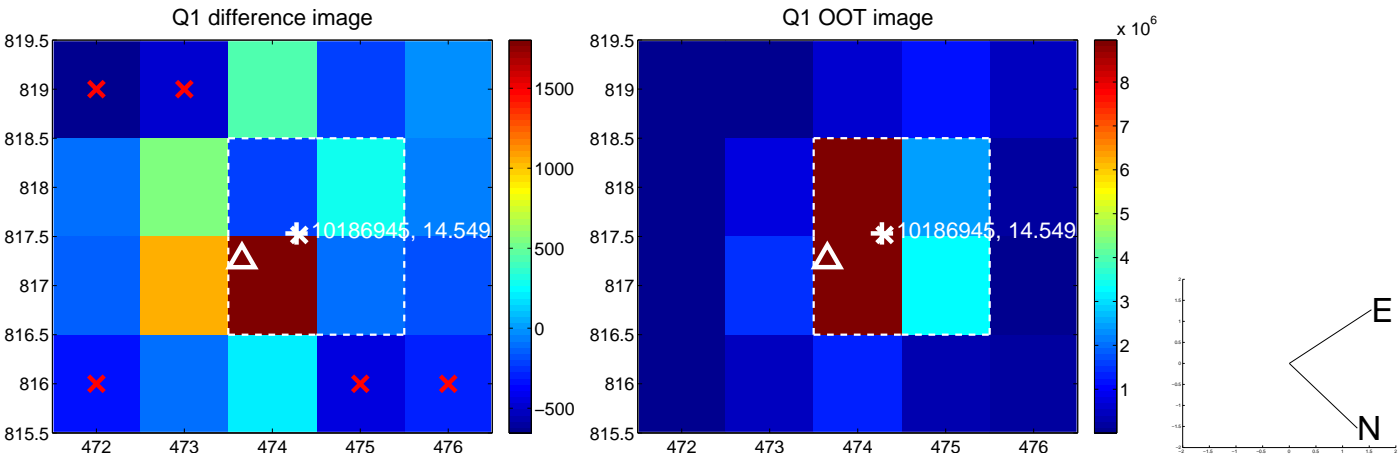
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.011 ± 0.428	0.03	-0.007 ± 0.533	0.009 ± 0.237
PRF-fit source offset from KIC position	0.178 ± 0.290	0.61	-0.095 ± 0.542	-0.151 ± 0.243
photometric centroid source offset	1.25 ± 0.59	2.13	-1.15 ± 0.59	0.50 ± 0.60

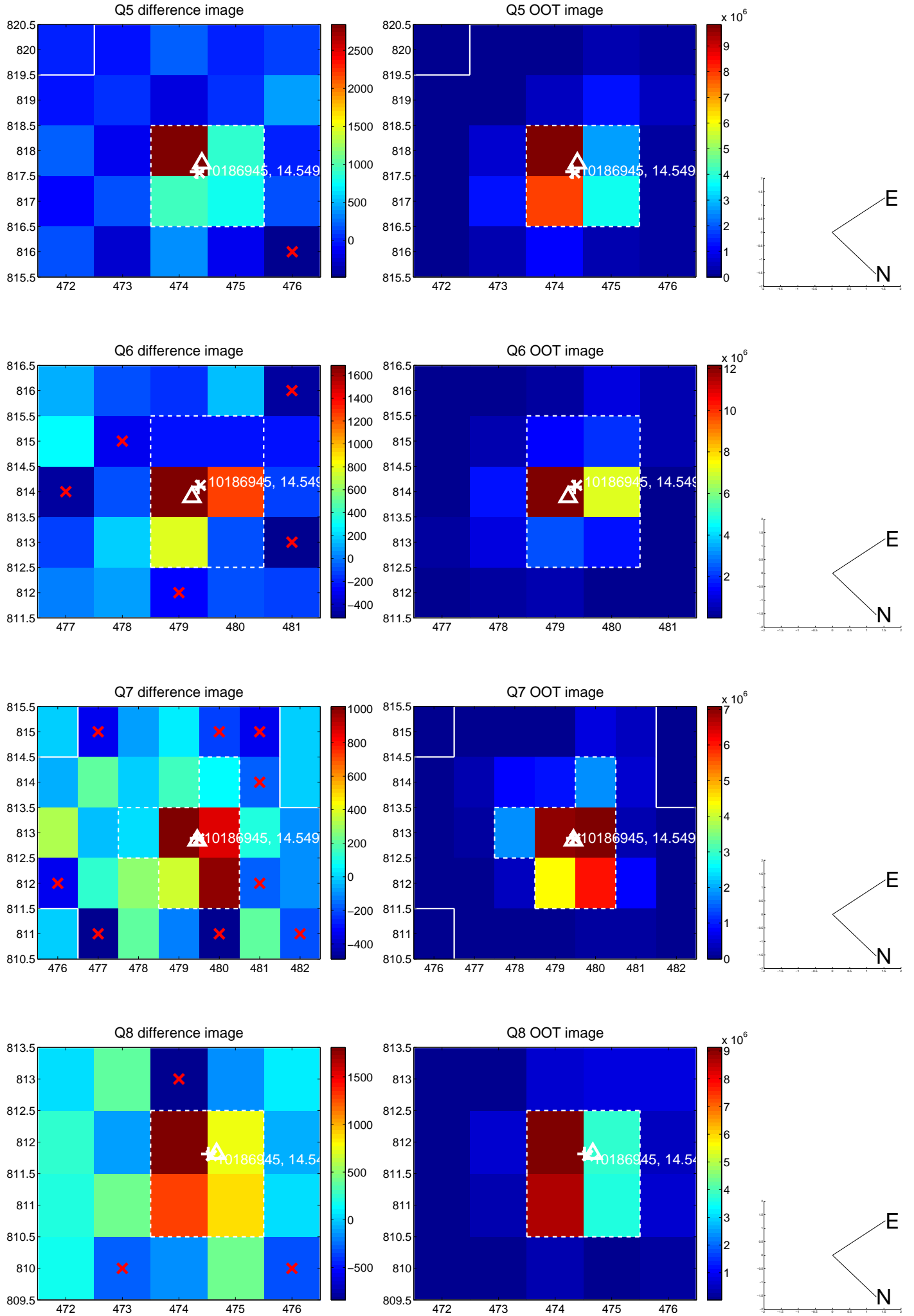


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

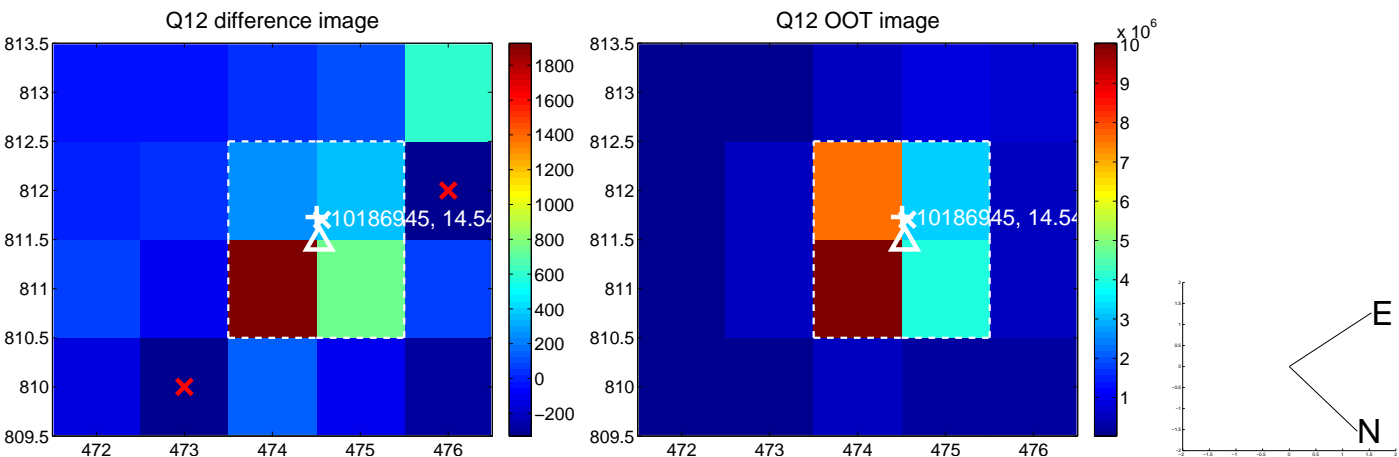
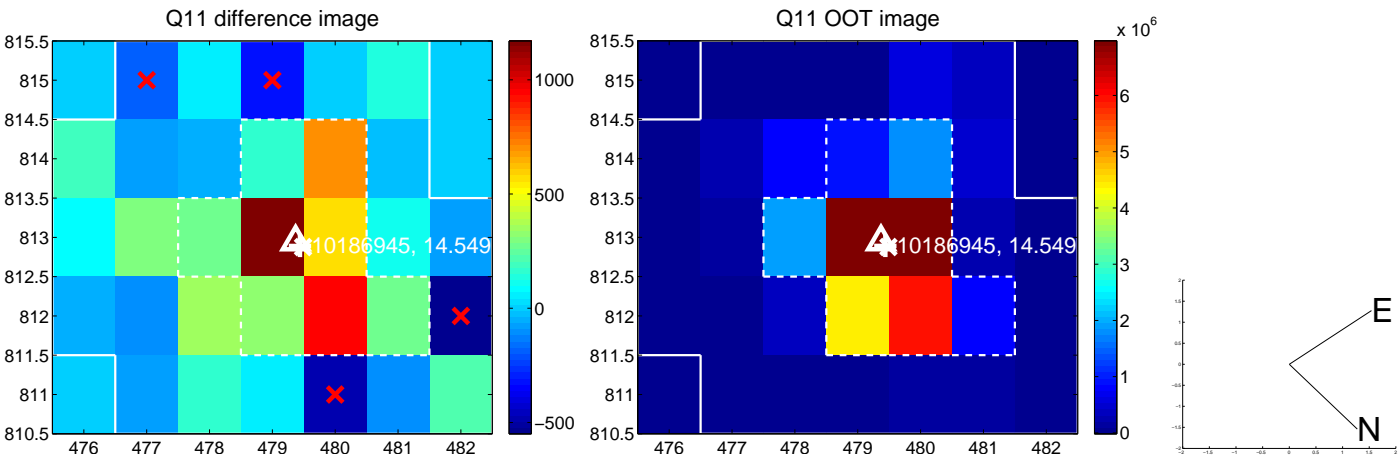
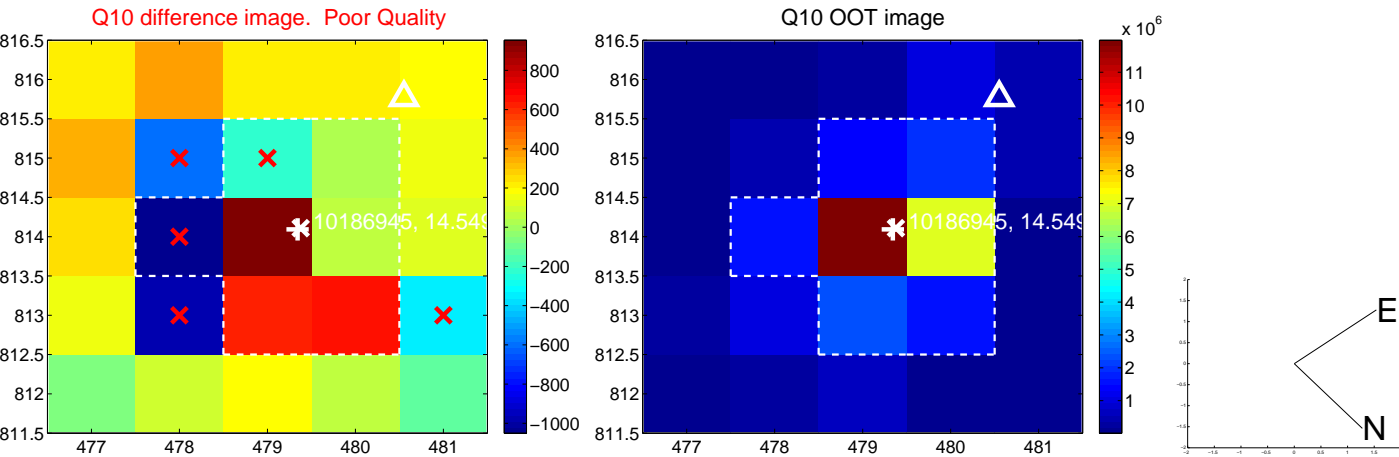
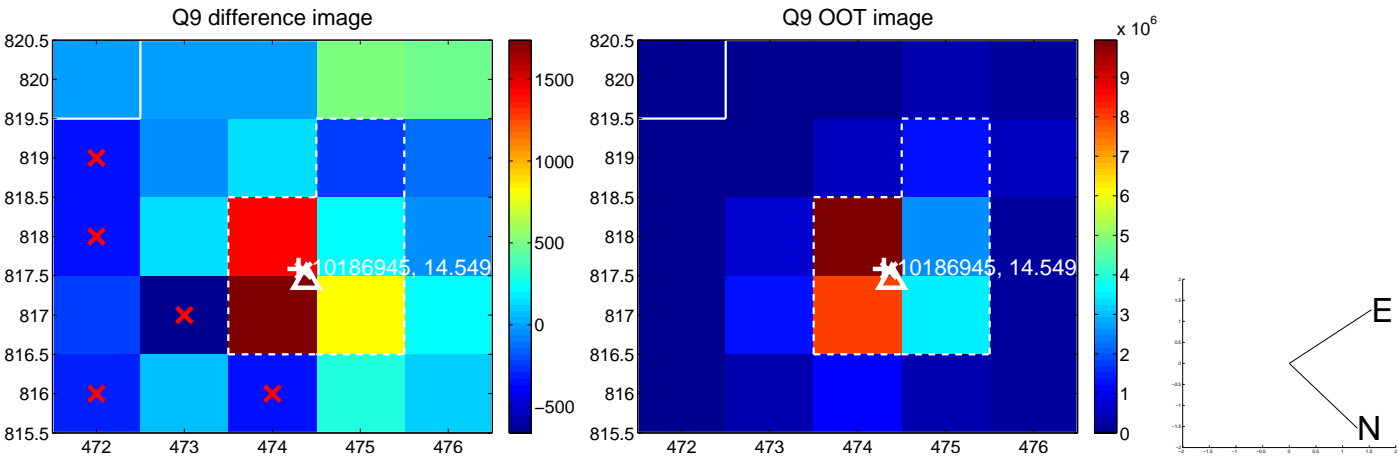
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



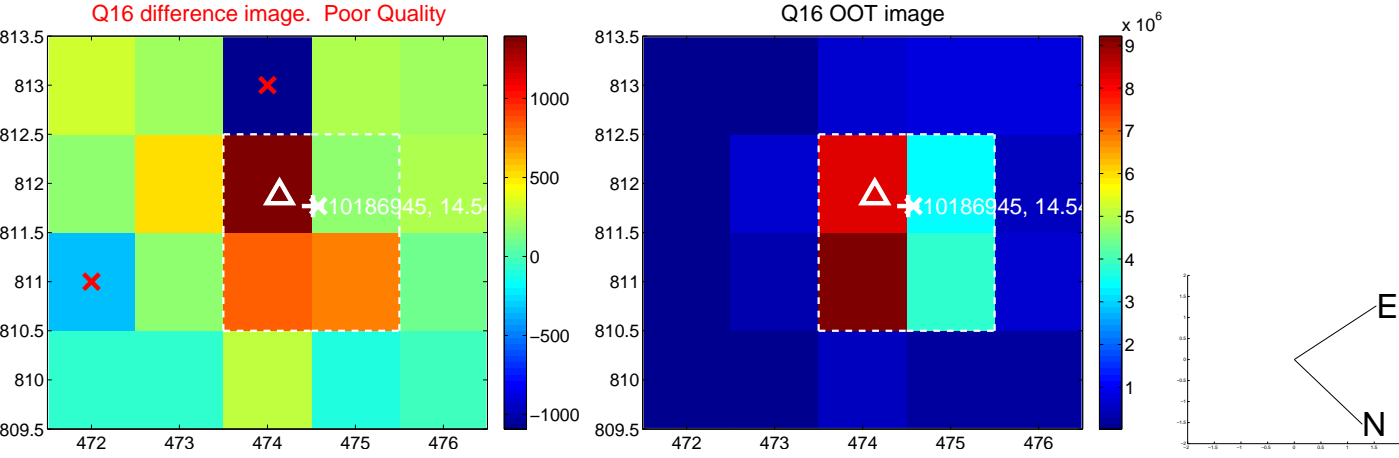
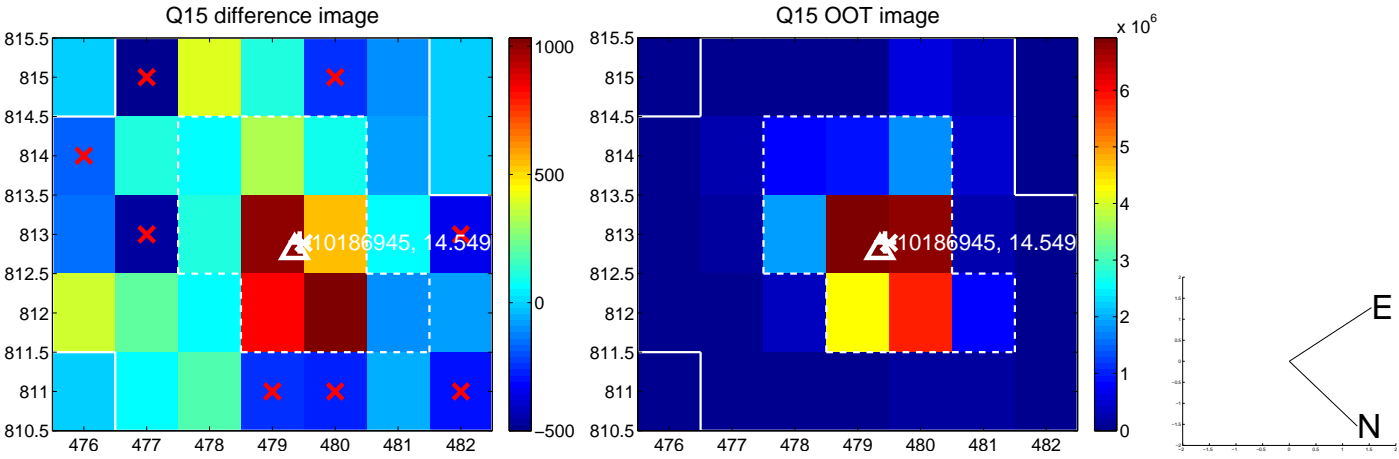
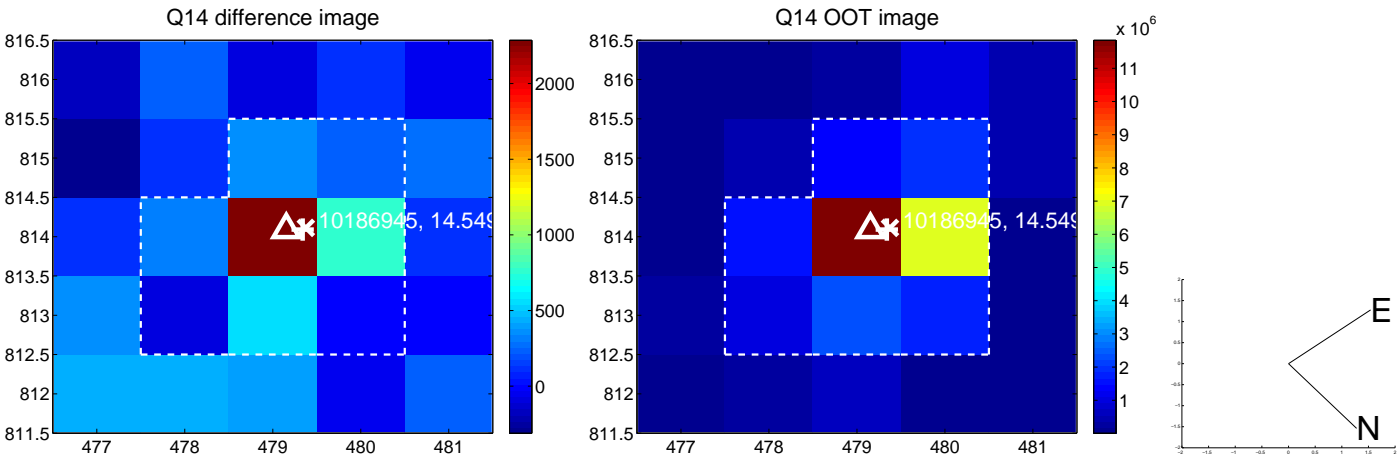
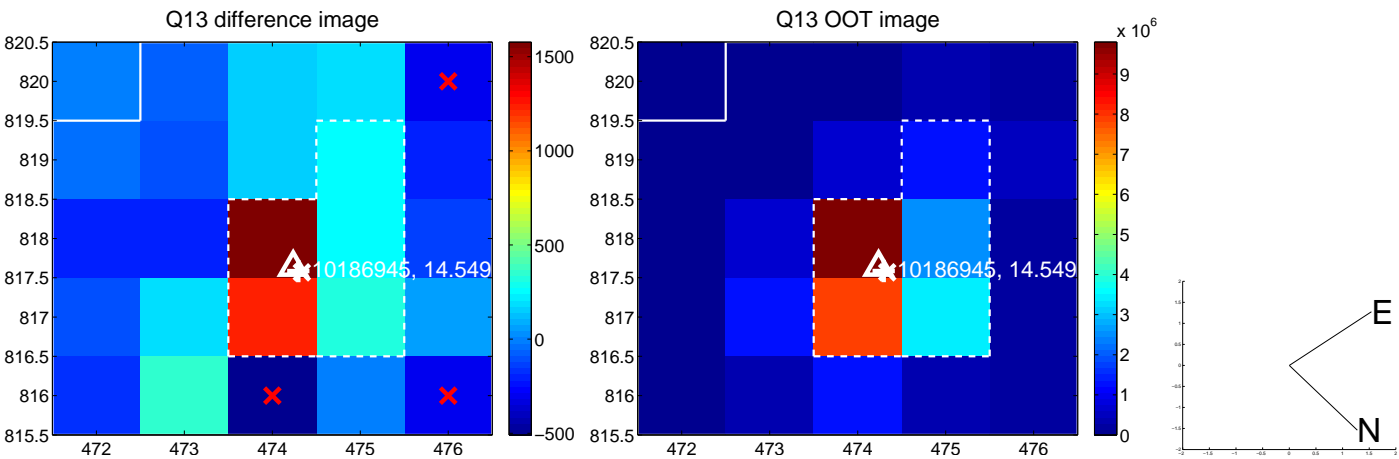
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



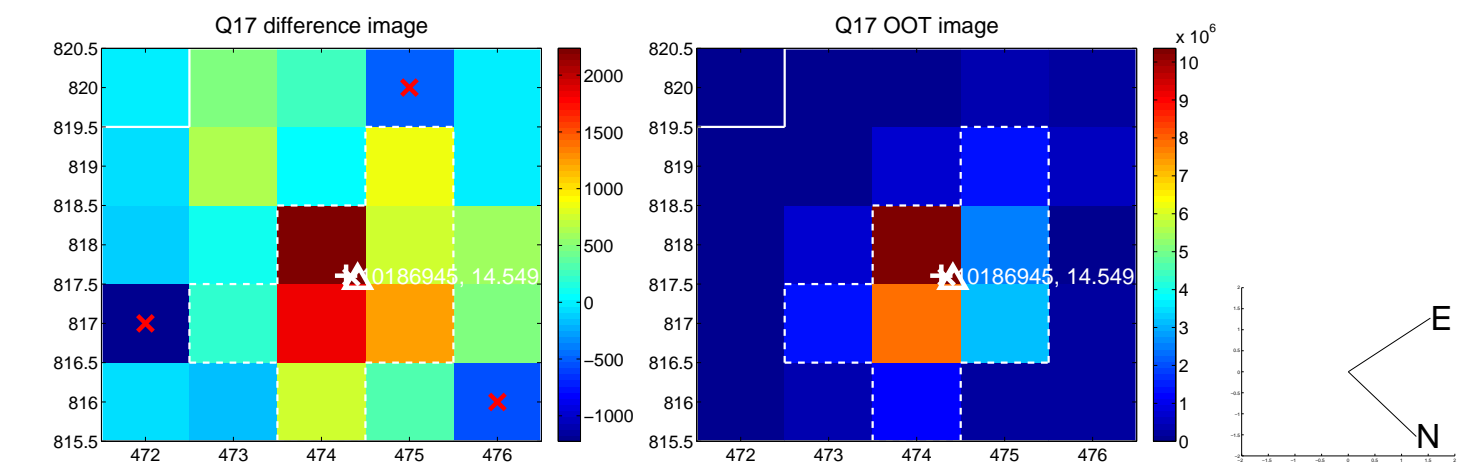
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



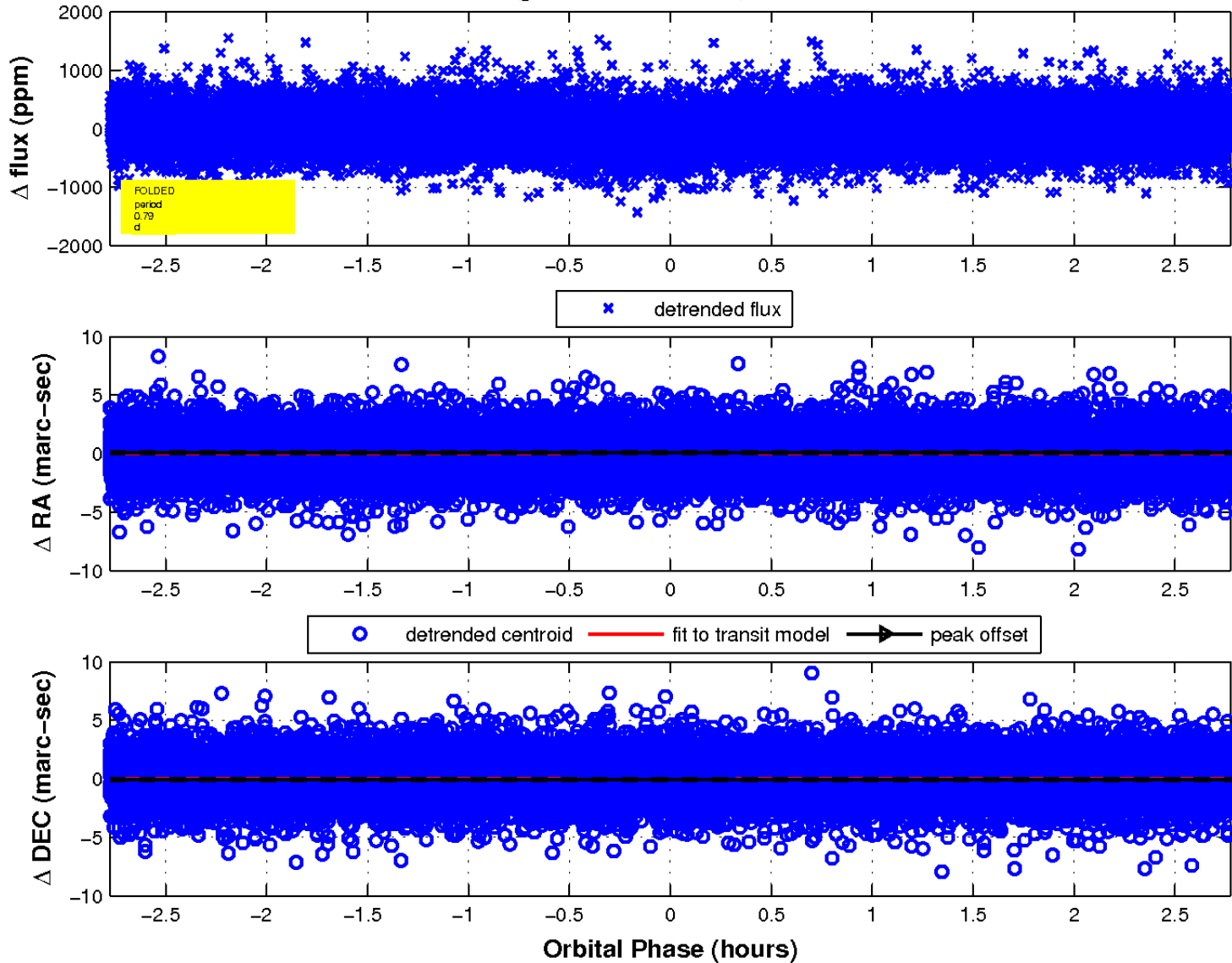
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

