

KIC 008773445

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})
008773445-01	OBS	No	3.660702	133.483533	107.2	8.416	16.7	17.4	3.19	8359	4.37	12757.67
008773445-02	OBS	No	3.660809	132.827876	101.6	5.233	11.3	15.0	3.19	8359	6.28	12757.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008773445-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
008773445-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD

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

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

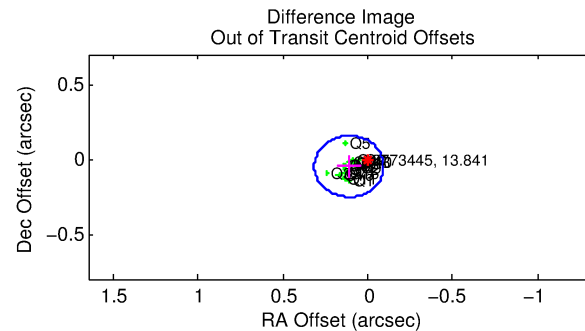
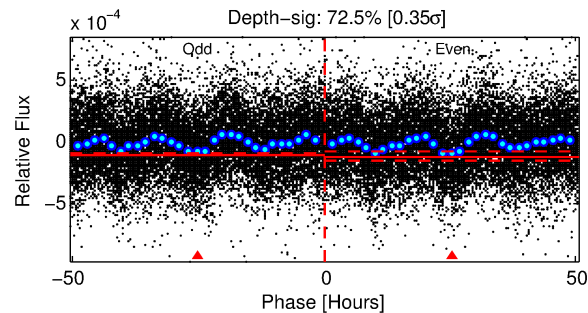
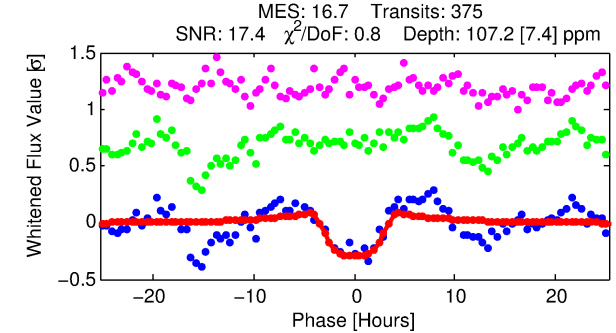
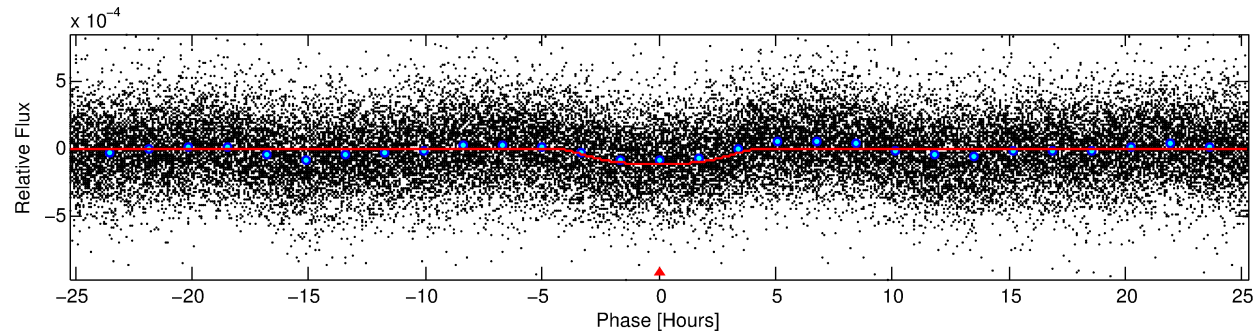
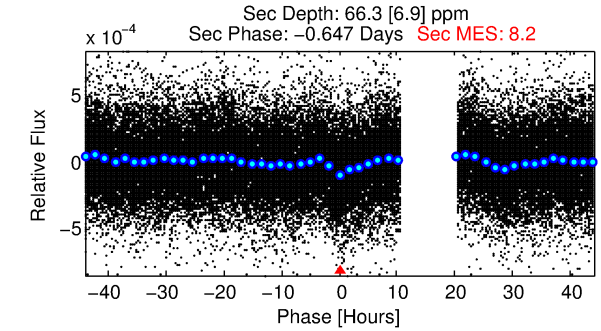
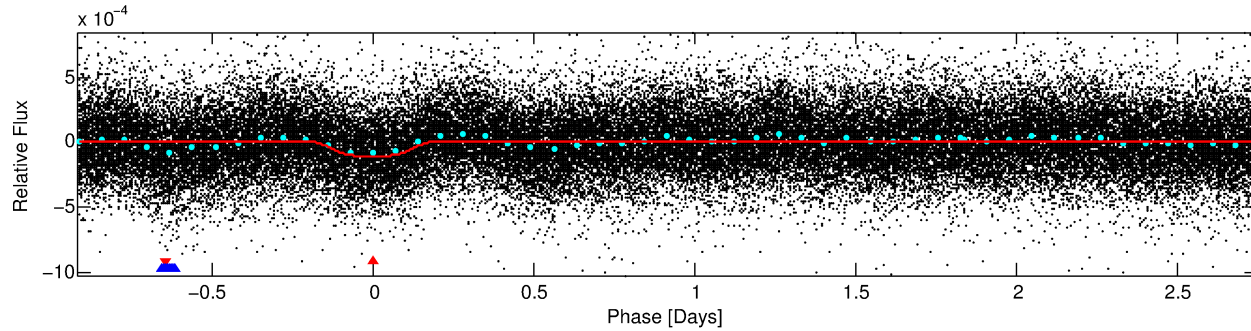
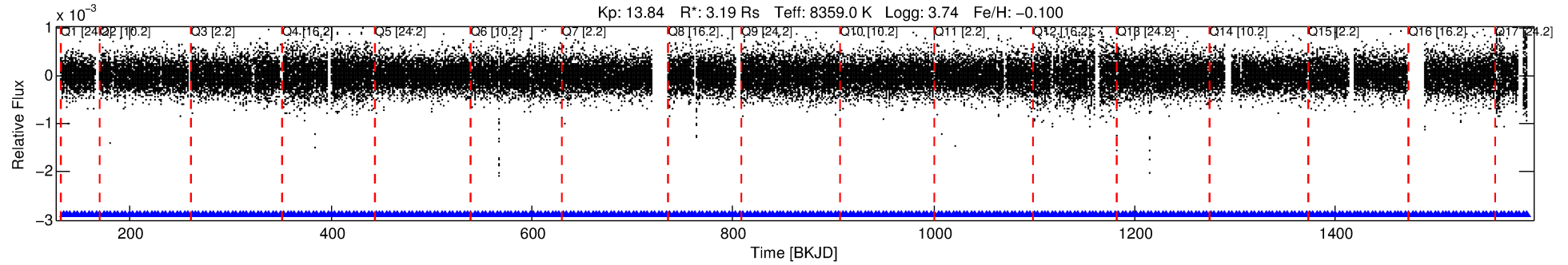
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008773445-01

No Significant Match Found

DV One-Page Summary

KIC: 8773445 Candidate: 1 of 2 Period: 3.661 d



DV Fit Results:

Period = 3.66070 [0.00004] d
Epoch = 133.4835 [0.0078] BKJD
Rp/R* = 0.0126 [0.0005]
a/R* = 1.26 [0.04]
b = 0.99 [0.00]
Seff = 12757.67 [9471.03]
Teq = 2710 [503] K
Rp = 4.37 [1.97] Re
a = 0.0590 [0.0262] AU
Ag = 6.65 [4.88] [1.16σ]
Teffp = 6729 [367] K [6.46σ]

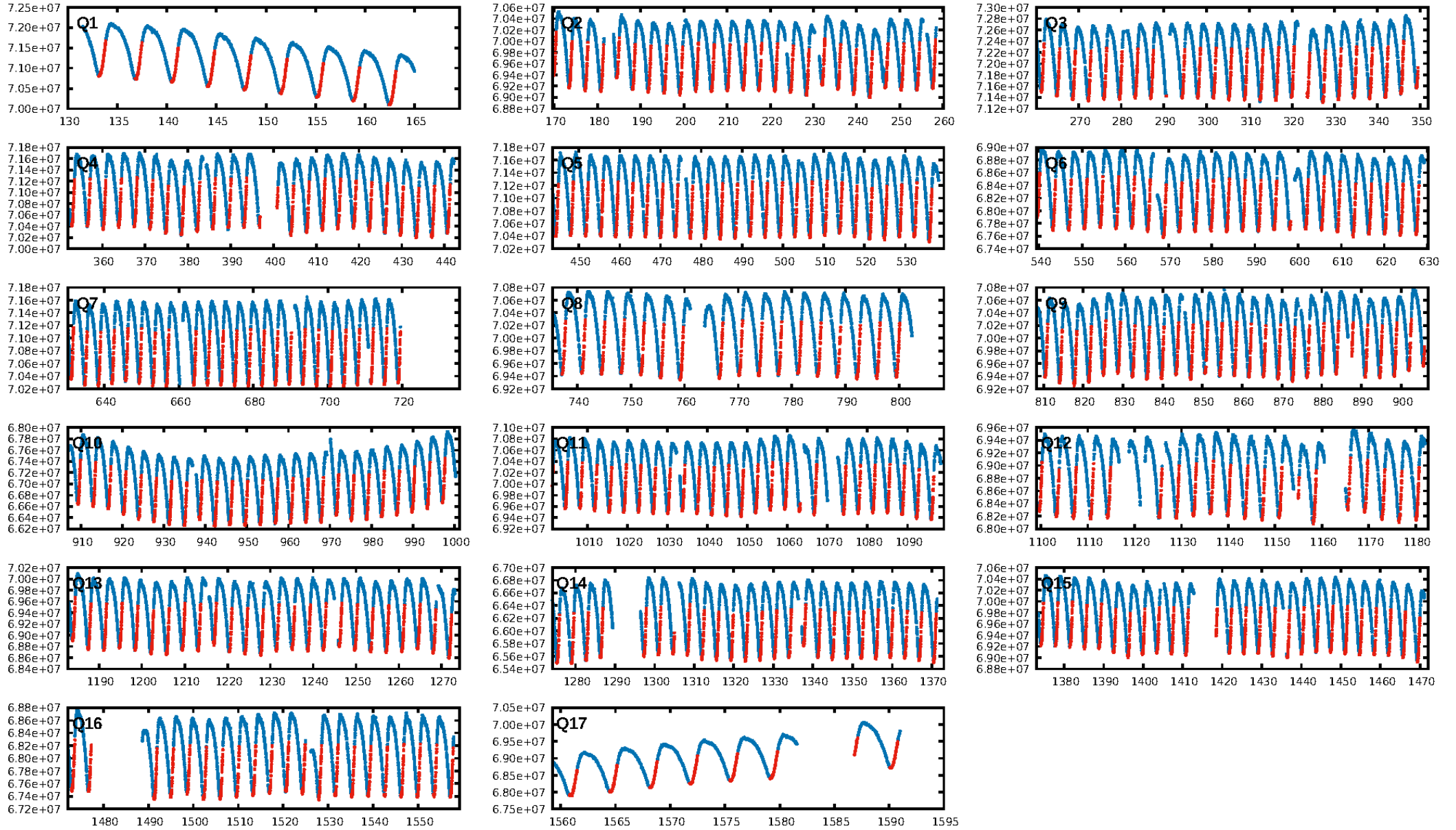
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.56e-47
RollingBand-fgt: 1.00 [358/358]
GhostDiagnostic-chr: 1.389
Centroid-sig: 0.1%
Centroid-so: 0.980 arcsec [1.38σ]
OotOffset-rm: 0.123 arcsec [1.81σ]
KicOffset-rm: 0.075 arcsec [1.01σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

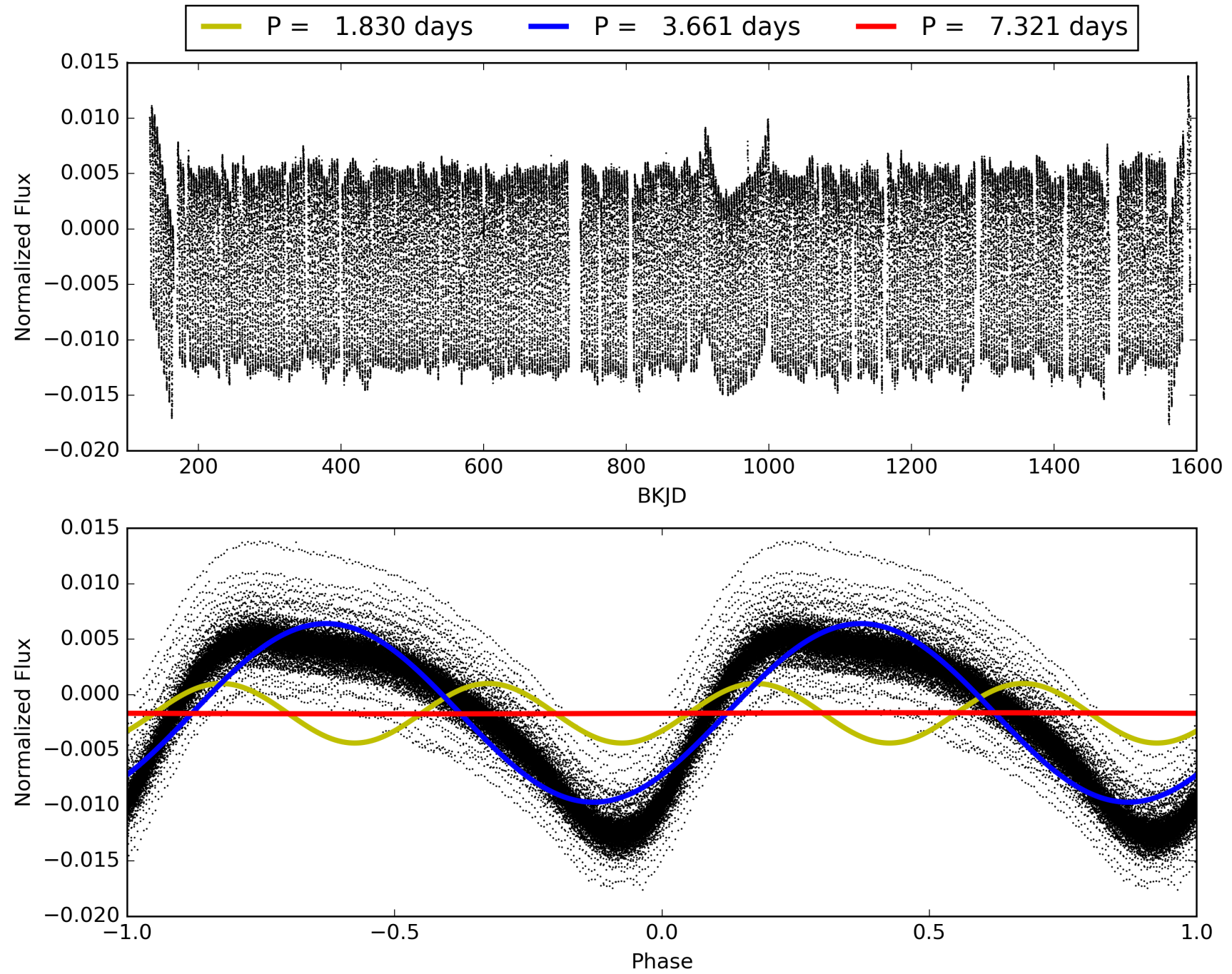
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 07:24:57 Z

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

TCE 008773445-01, PDC Light Curves

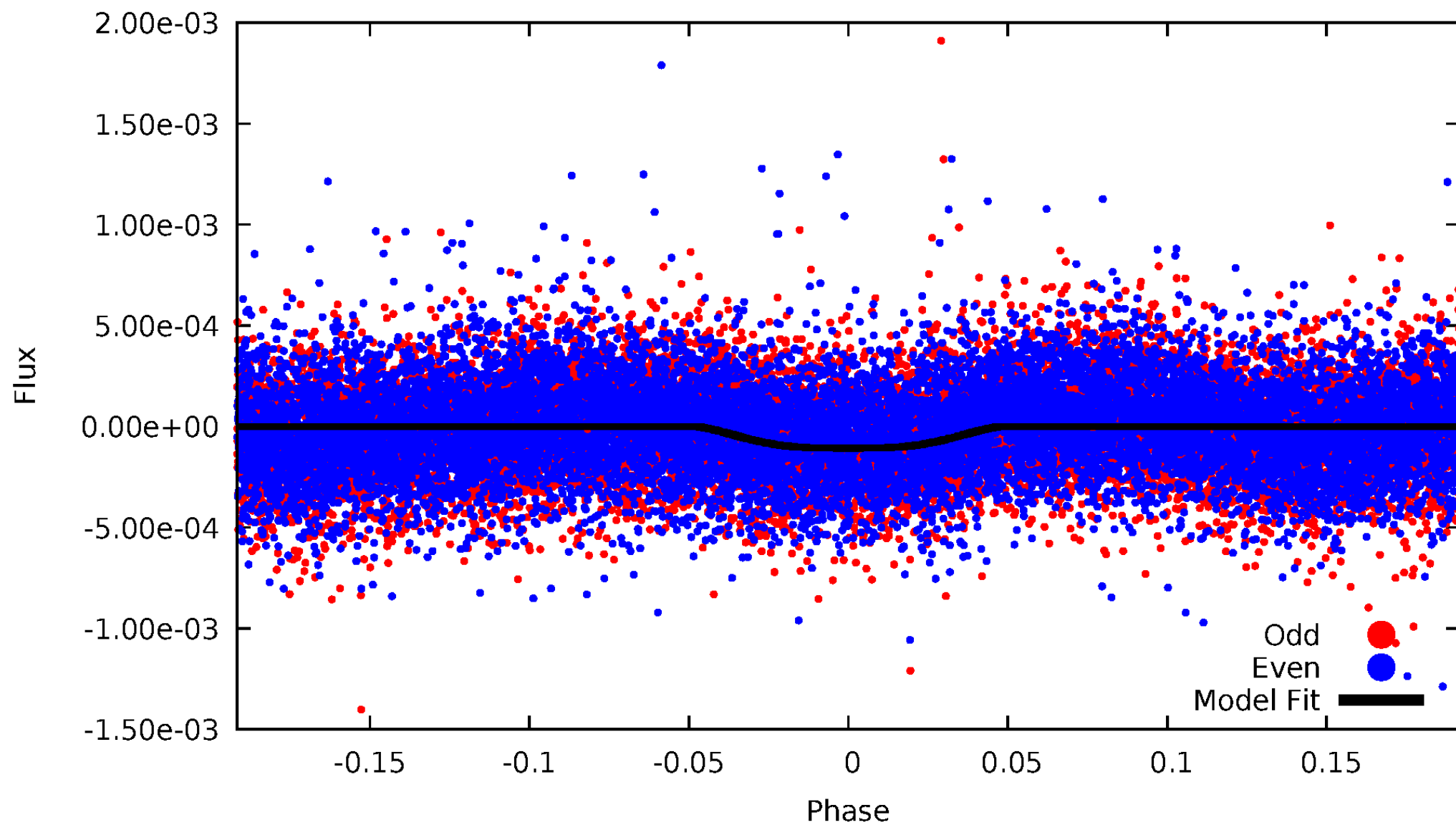


TCE 008773445-01



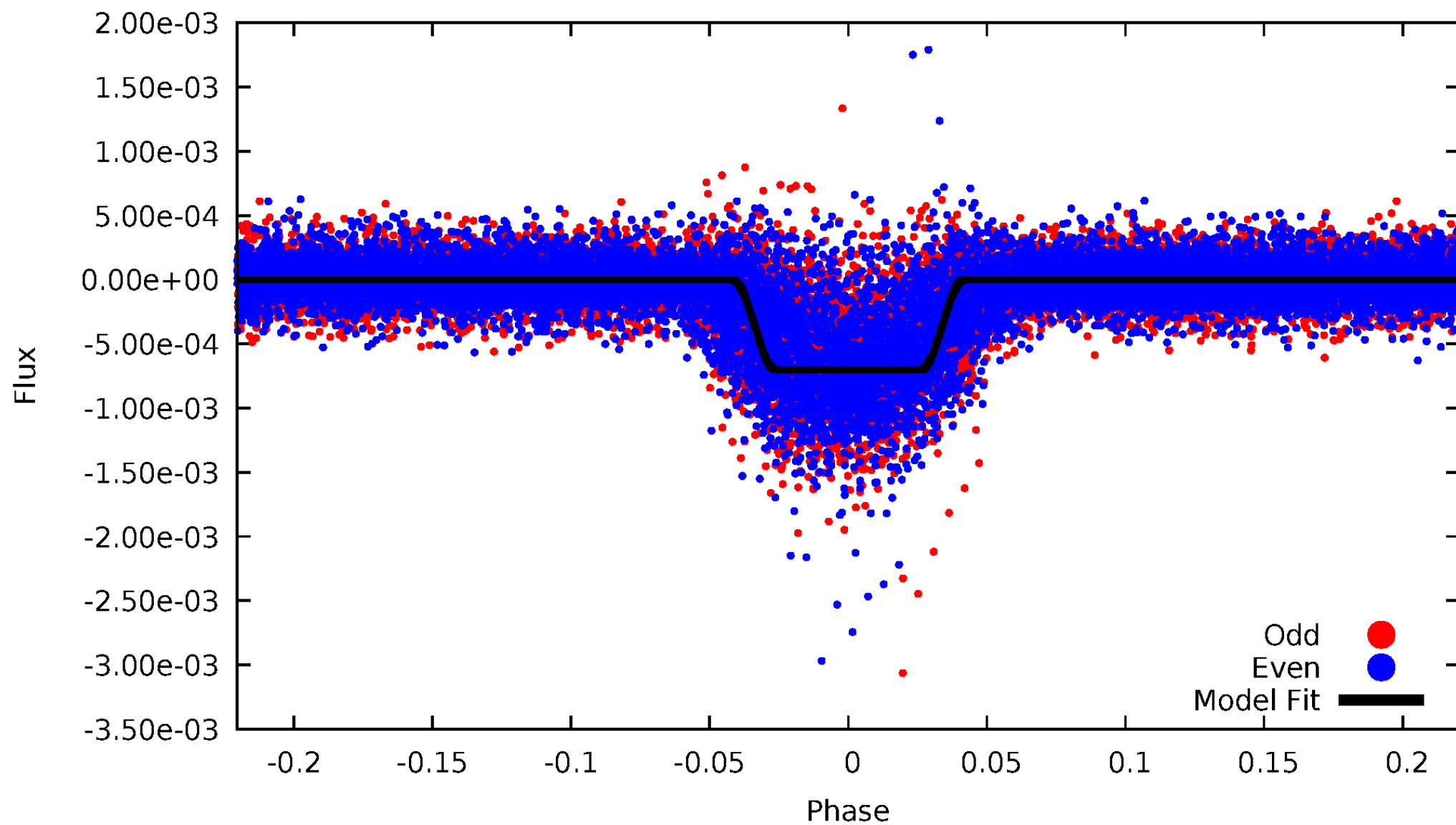
DV Odd/Even

TCE 008773445-01



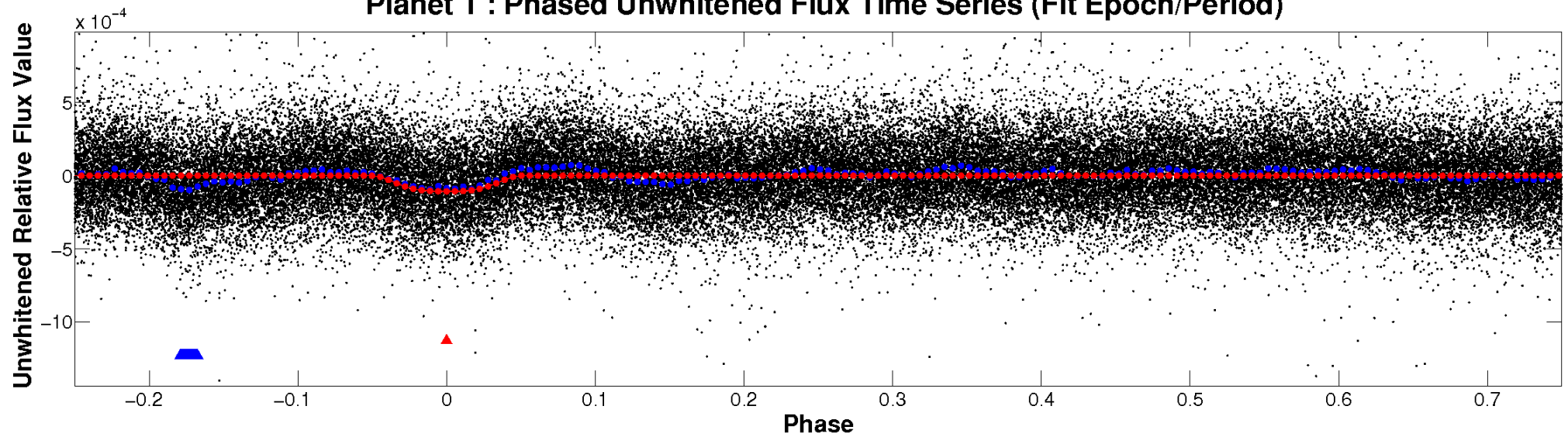
ALT Odd/Even

TCE 008773445-01

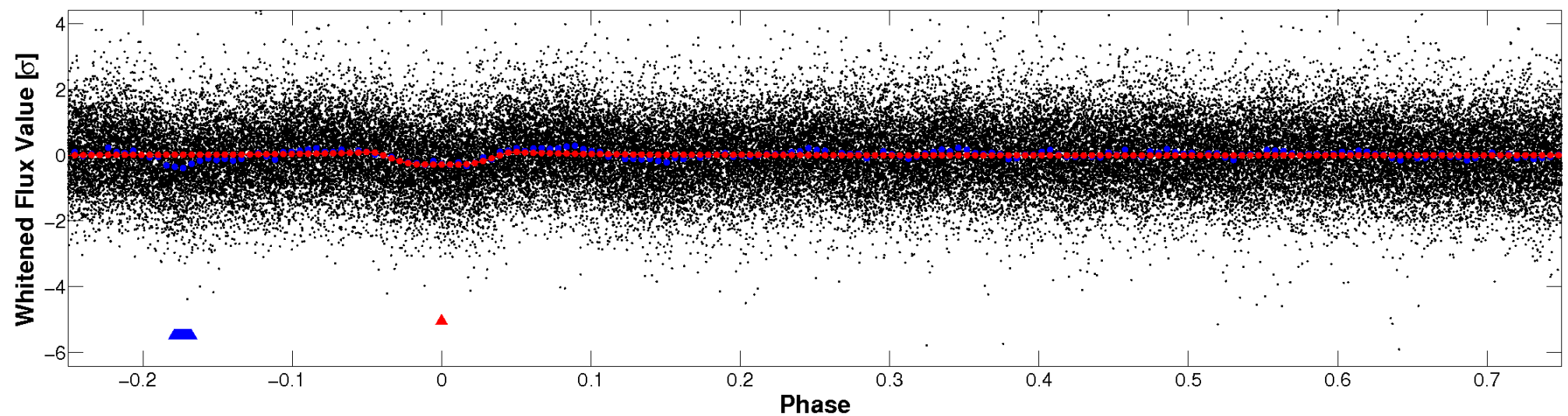


Non-Whitened Vs. Whitened Light Curve

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

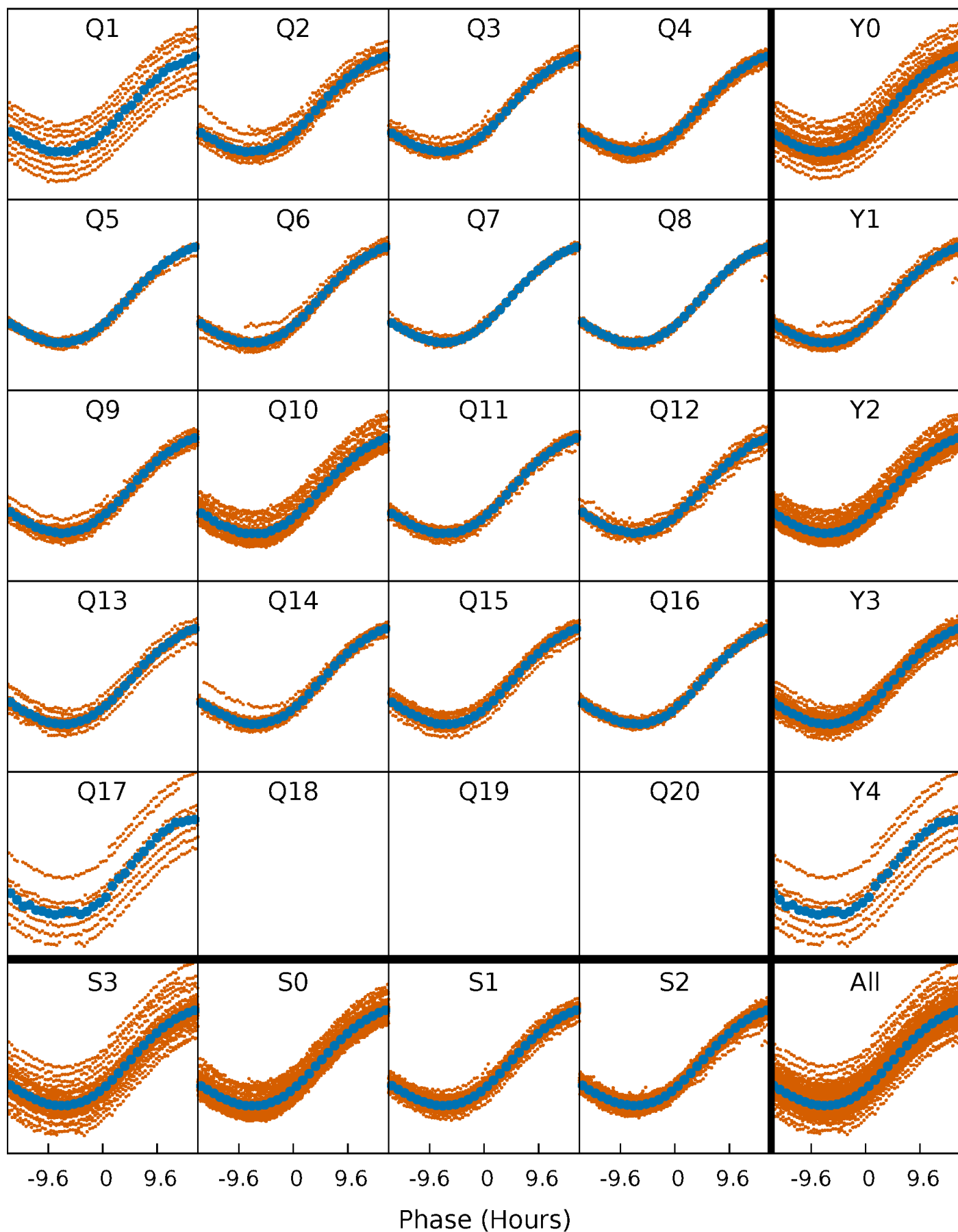


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



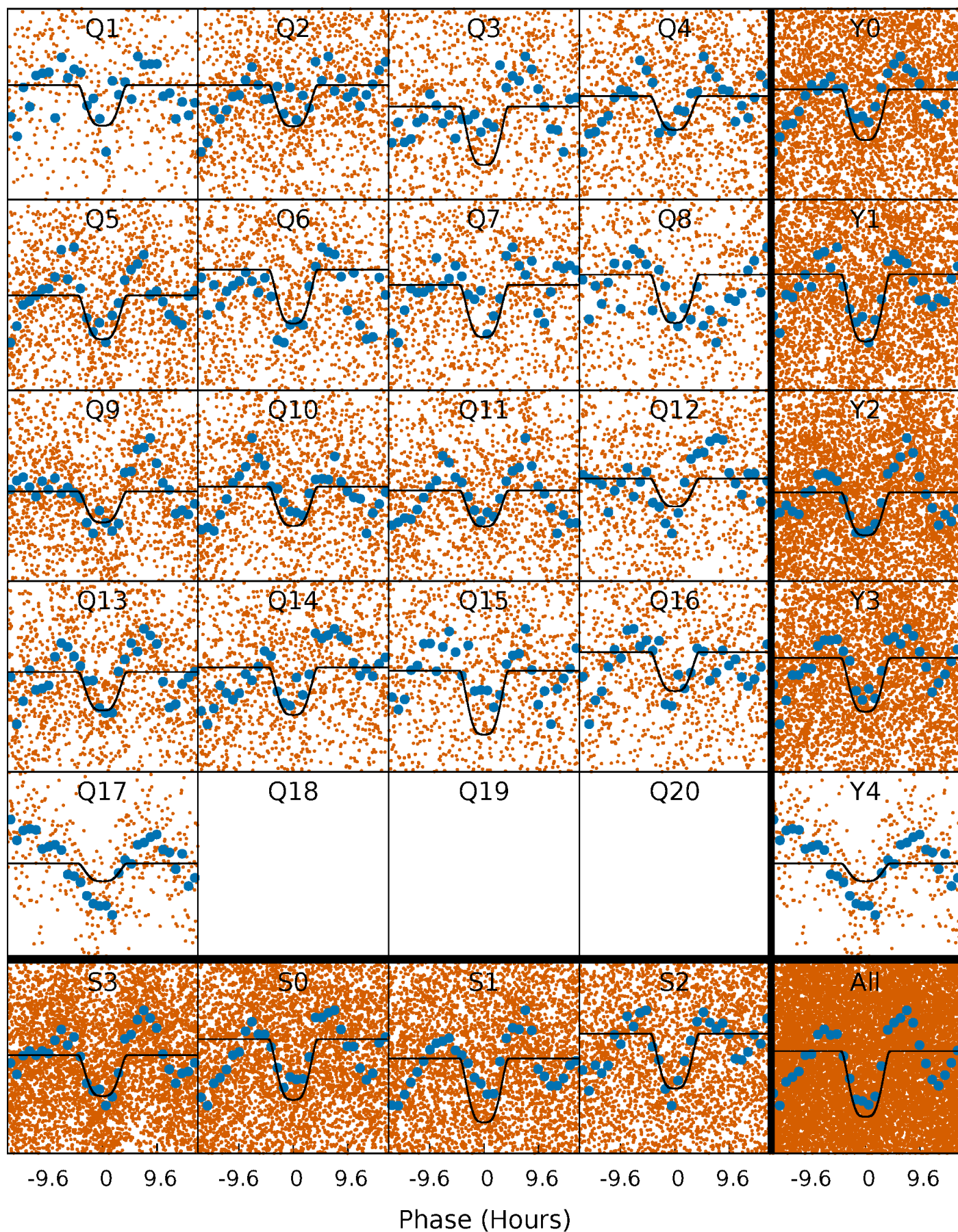
PDC Quarter-Phased Transit Curves

TCE 008773445-01 P= 3.660702 Days $T_0=133.483533$ (BKJD)



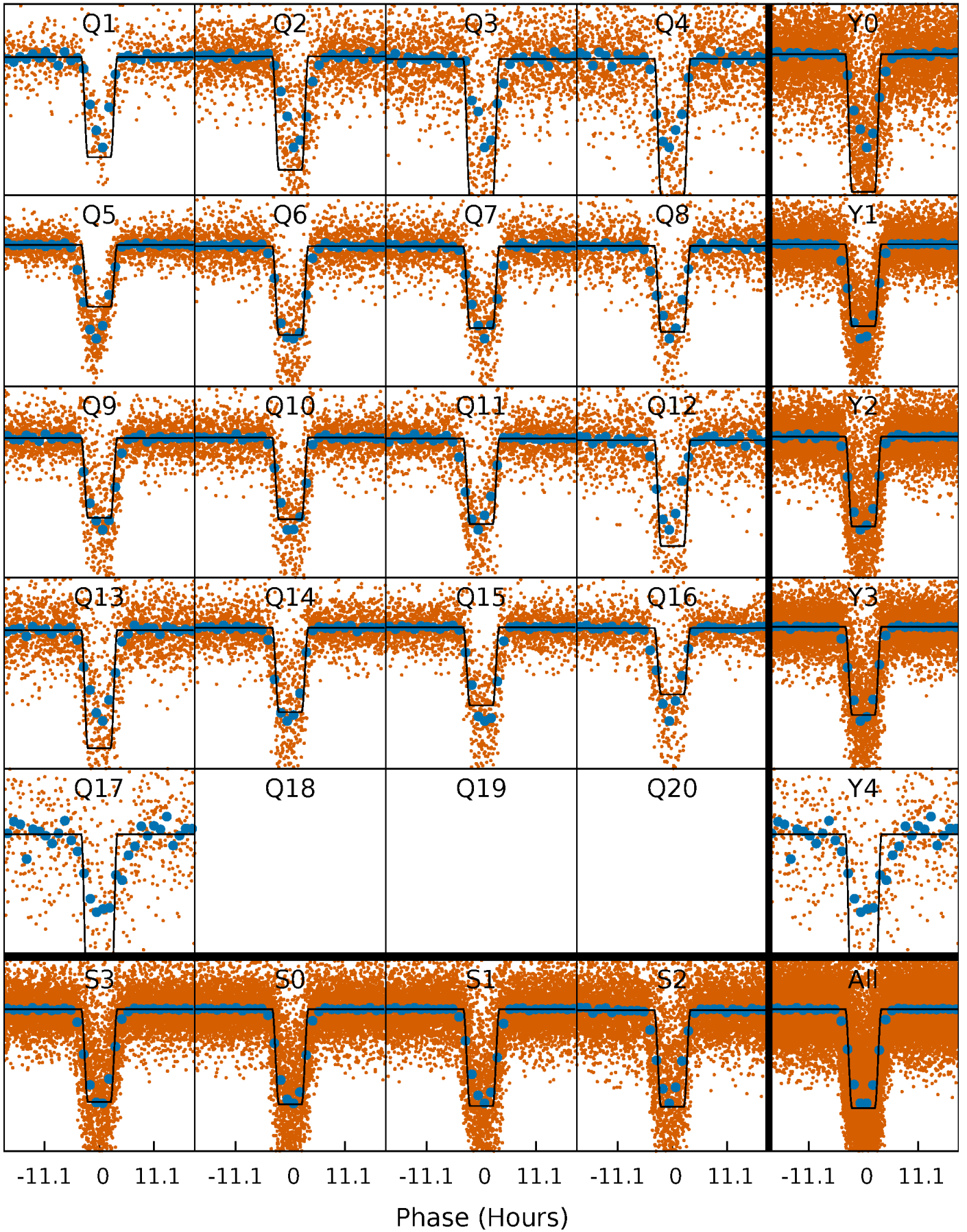
DV Quarter-Phased Transit Curves

TCE 008773445-01 P= 3.660702 Days $T_0=133.483533$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

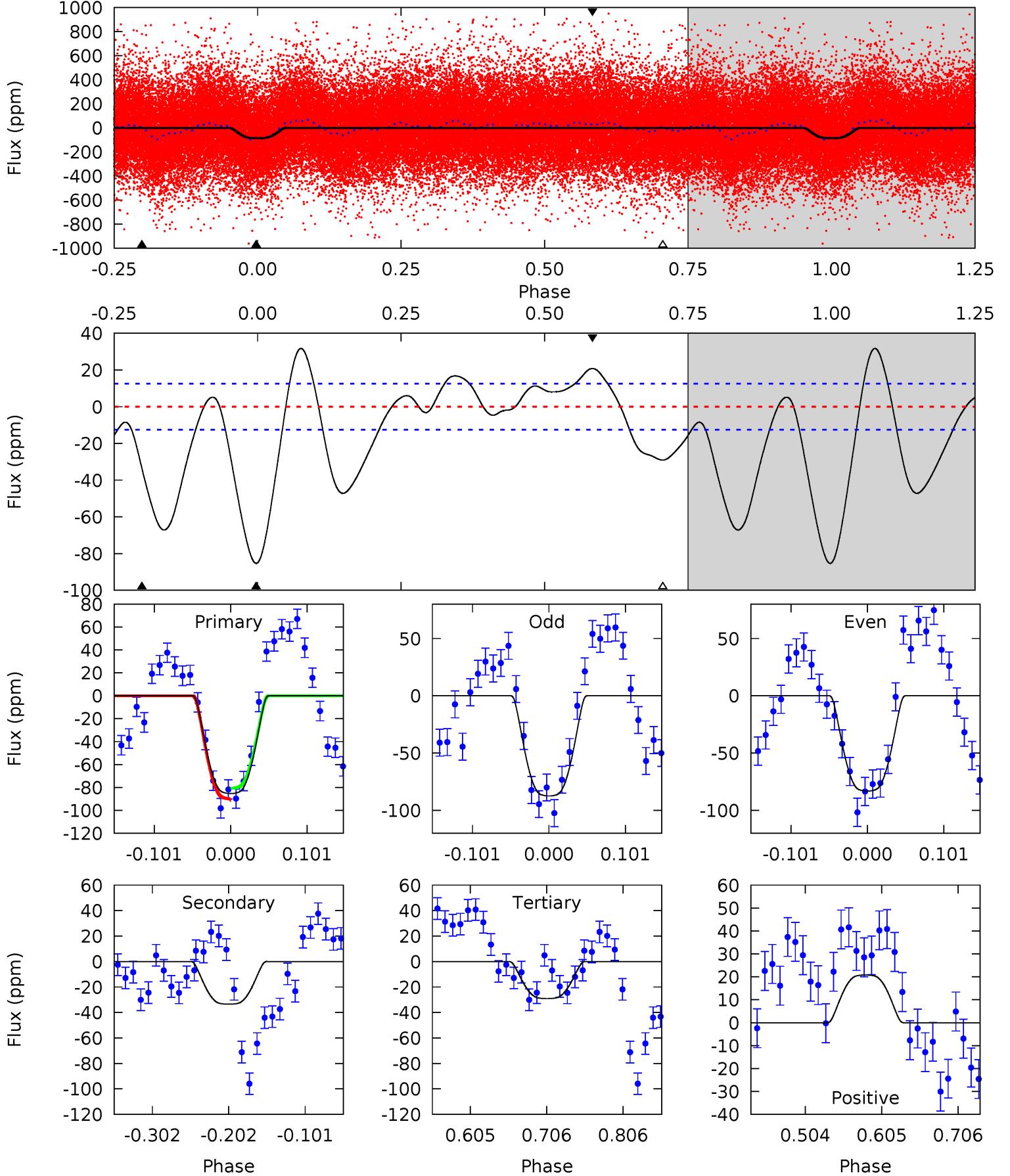
TCE 008773445-01 P= 3.660707 Days $T_0=133.481344$ (BKJD)



DV Model-Shift Uniqueness Test

008773445-01, P = 3.660702 Days, E = 129.822831 Days

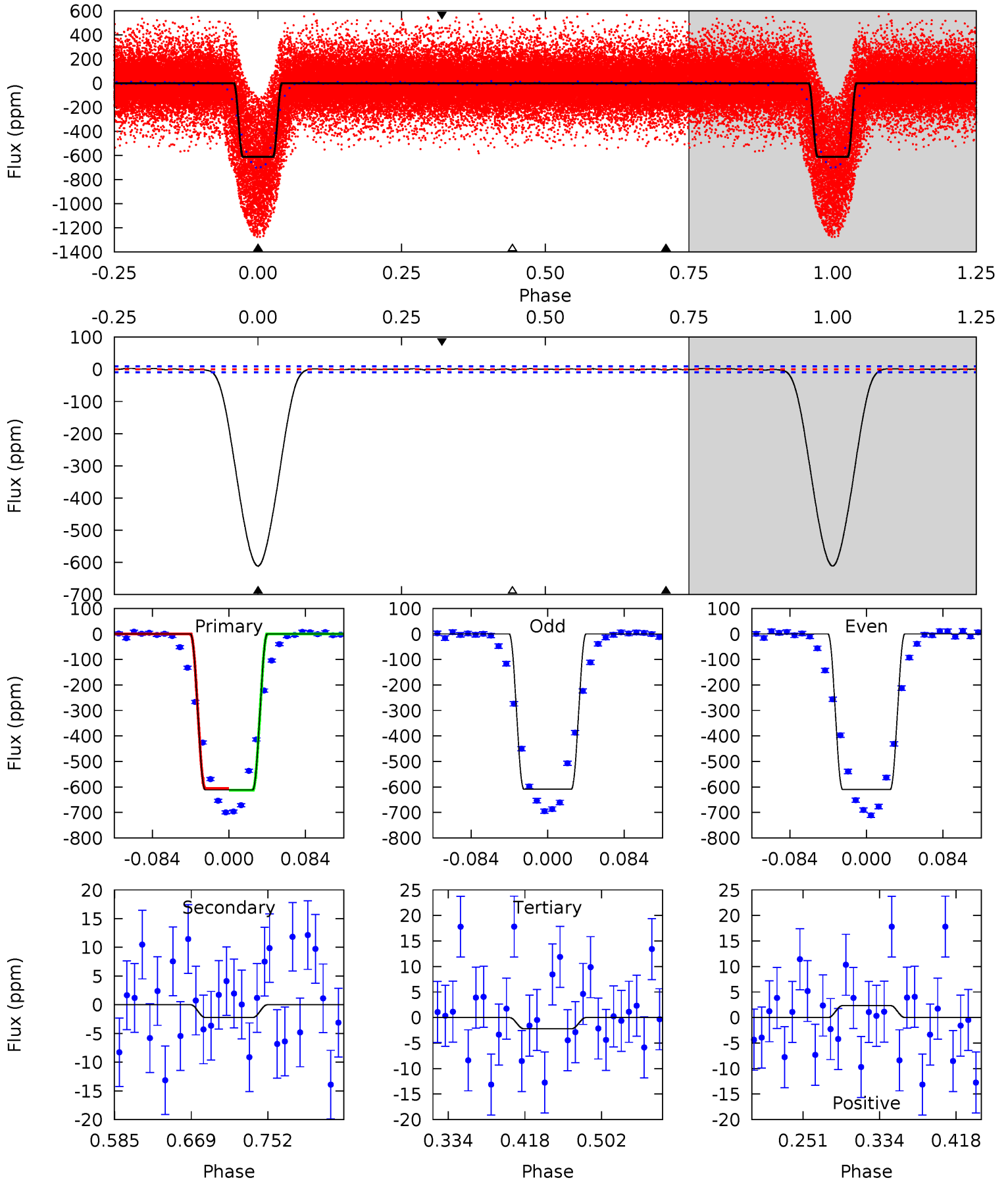
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.1	12.2	10.6	7.59	4.56	1.64	6.61	20.5	23.5	1.61	4.63	0.78	0.70	0.27	1.68



Alt Model-Shift Uniqueness Test

008773445-01, P = 3.660707 Days, E = 129.820637 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
299.4	1.09	1.08	1.15	4.60	1.73	0.52	298.3	298.2	0.01	-0.07	0.44	1.00	0.00	1.75



Stellar Parameters For KIC 008773445

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8359^{+231}_{-363}	$3.742^{+0.428}_{-0.143}$	$-0.100^{+0.300}_{-0.400}$	$3.188^{+0.952}_{-1.429}$	$2.046^{+0.385}_{-0.471}$	$0.089^{+0.349}_{-0.041}$
	+3%/-4%	+11%/-4%	+300%/-400%	+30%/-45%	+19%/-23%	+392%/-46%
Source	KIC0	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 008773445-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-33 ± 3	$4.26^{+0.74}_{-1.03}$	3692^{+336}_{-484}	5386^{+208}_{-213}	$3.665^{+2.583}_{-1.005}$
Alt.	-2 ± 2	$8.82^{+1.63}_{-2.21}$	3653^{+342}_{-456}	-3306^{+360}_{-237}	$0.054^{+0.074}_{-0.050}$

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 $A_{obs} \gg 1.0$

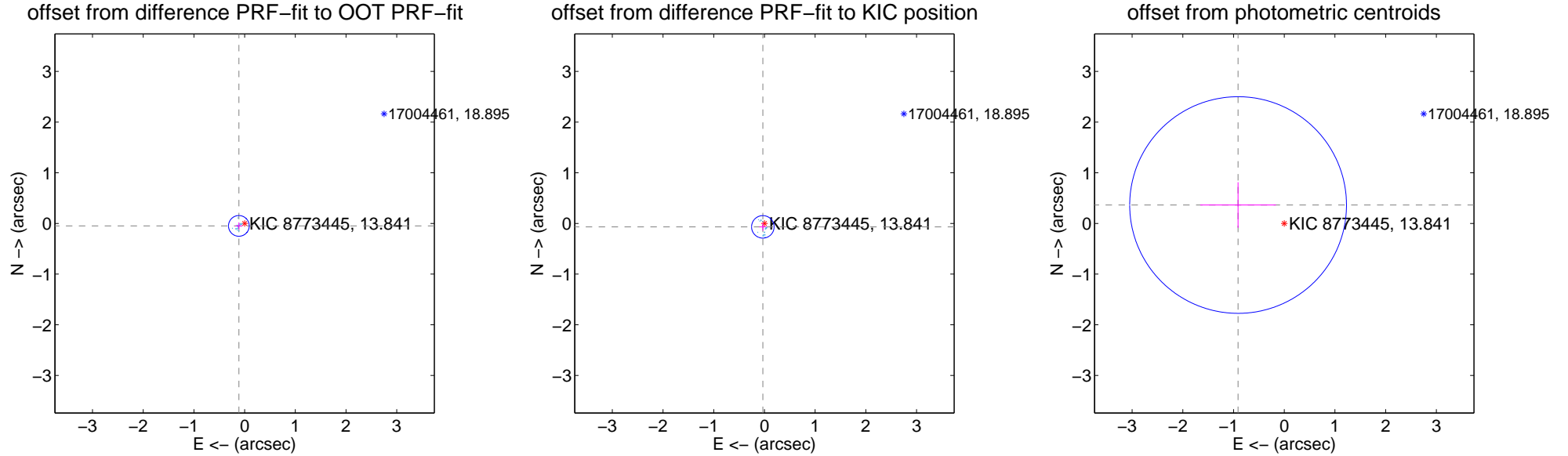
DV Centroid Data

Supplemental centroid analysis for 008773445-01. Kepler magnitude: 13.84. Transit SNR 17.35

There are 17 quarters with good PRF difference image offsets

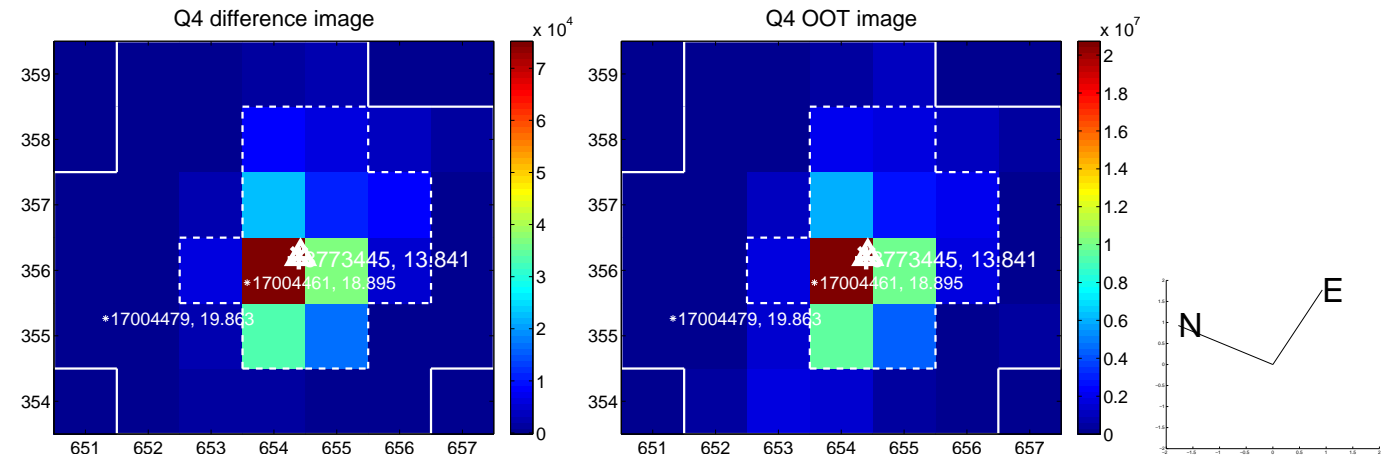
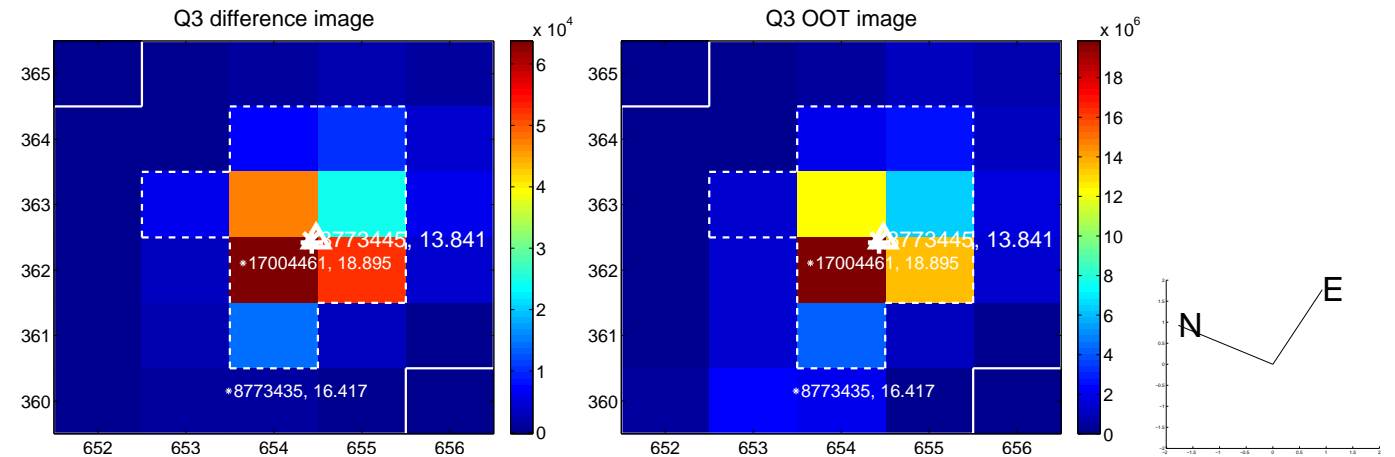
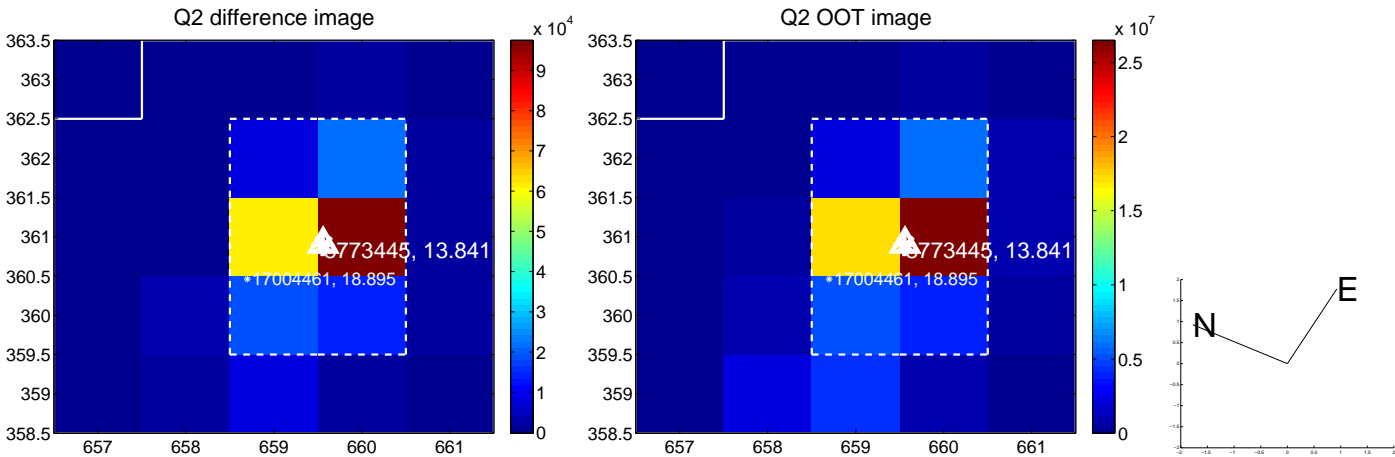
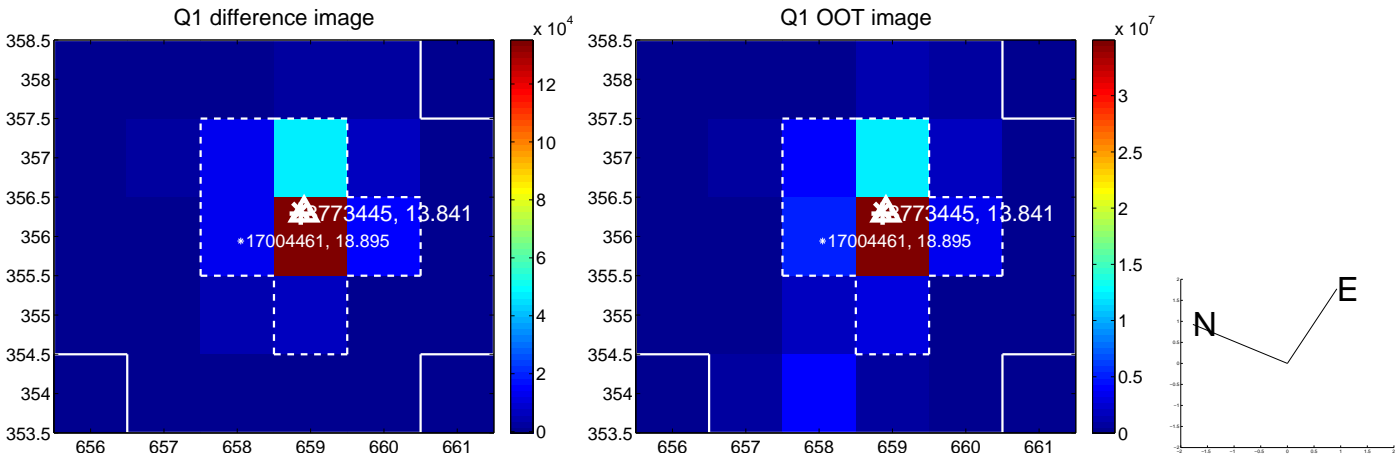
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.123 ± 0.068	1.81	0.113 ± 0.068	-0.049 ± 0.068
PRF-fit source offset from KIC position	0.075 ± 0.074	1.01	0.031 ± 0.068	-0.068 ± 0.075
photometric centroid source offset	0.98 ± 0.71	1.38	0.91 ± 0.75	0.36 ± 0.45

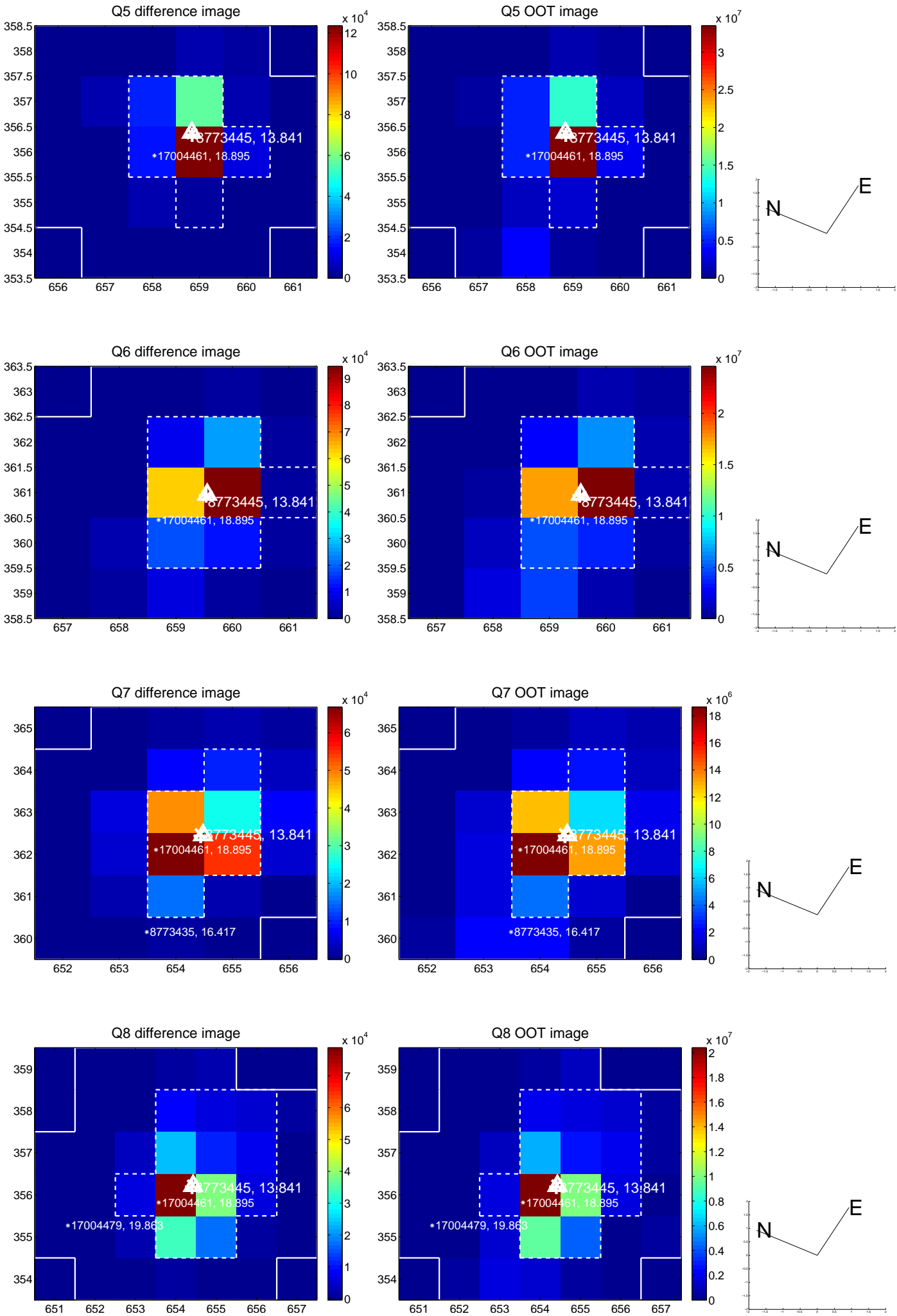


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

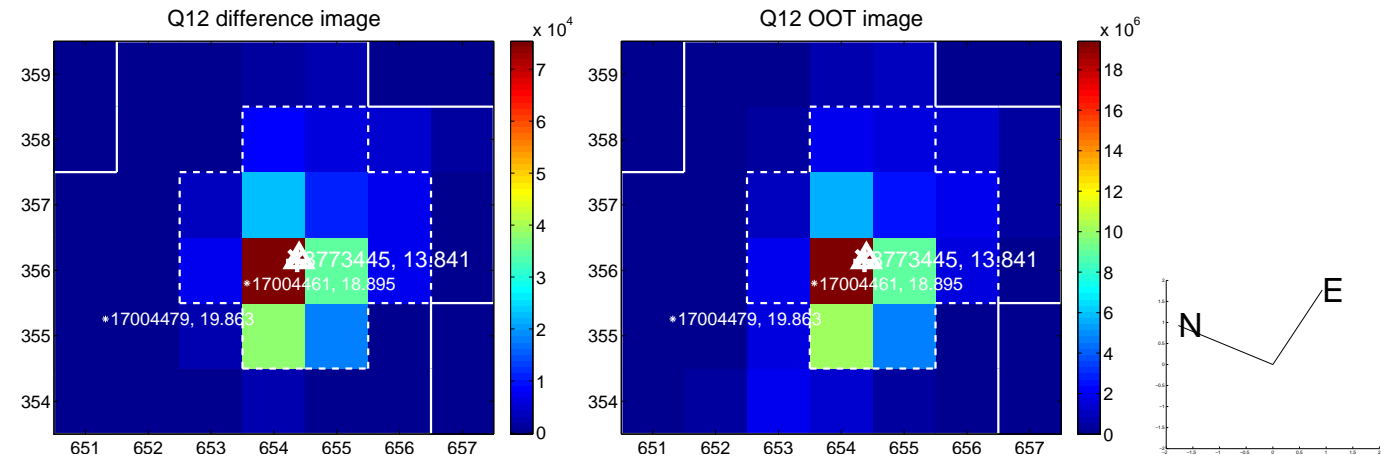
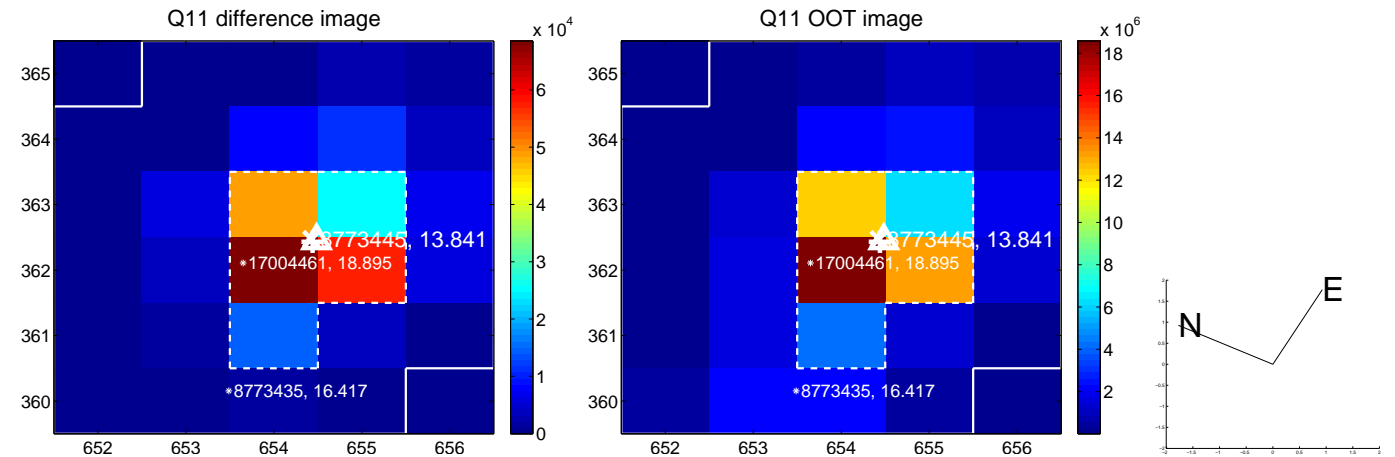
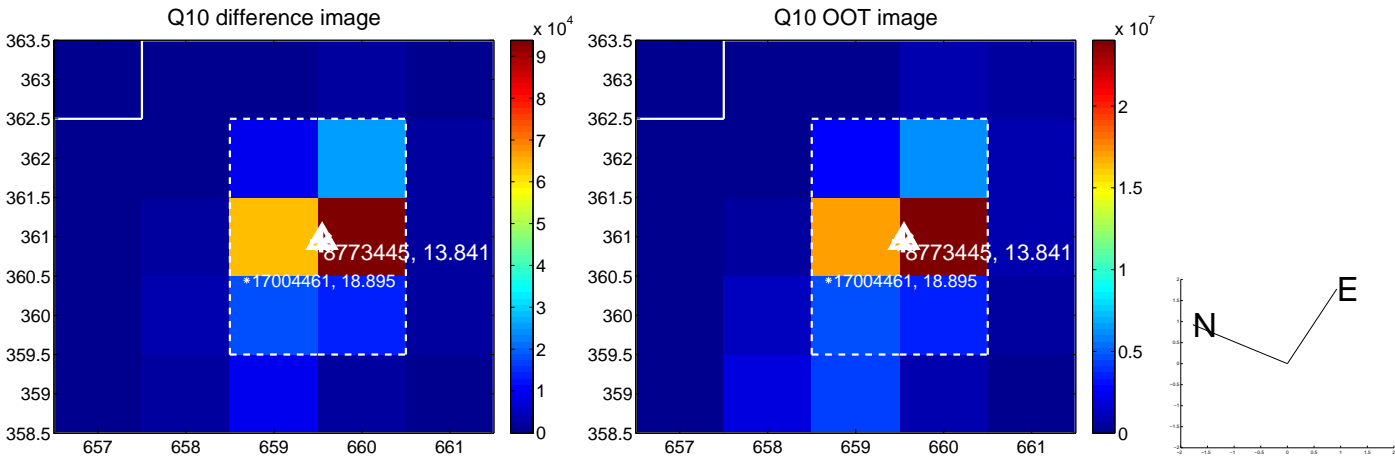
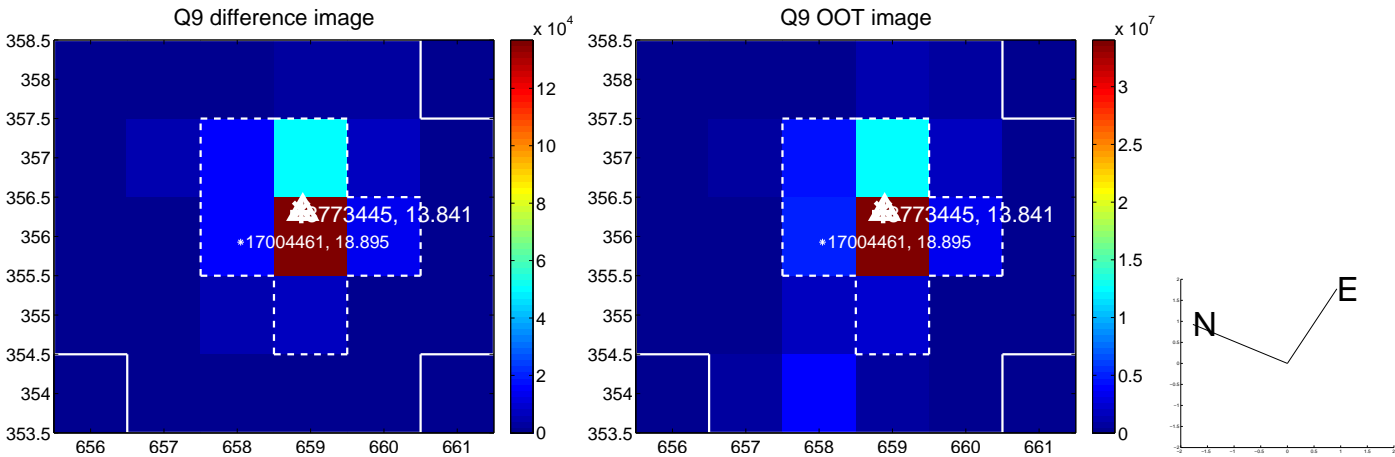
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



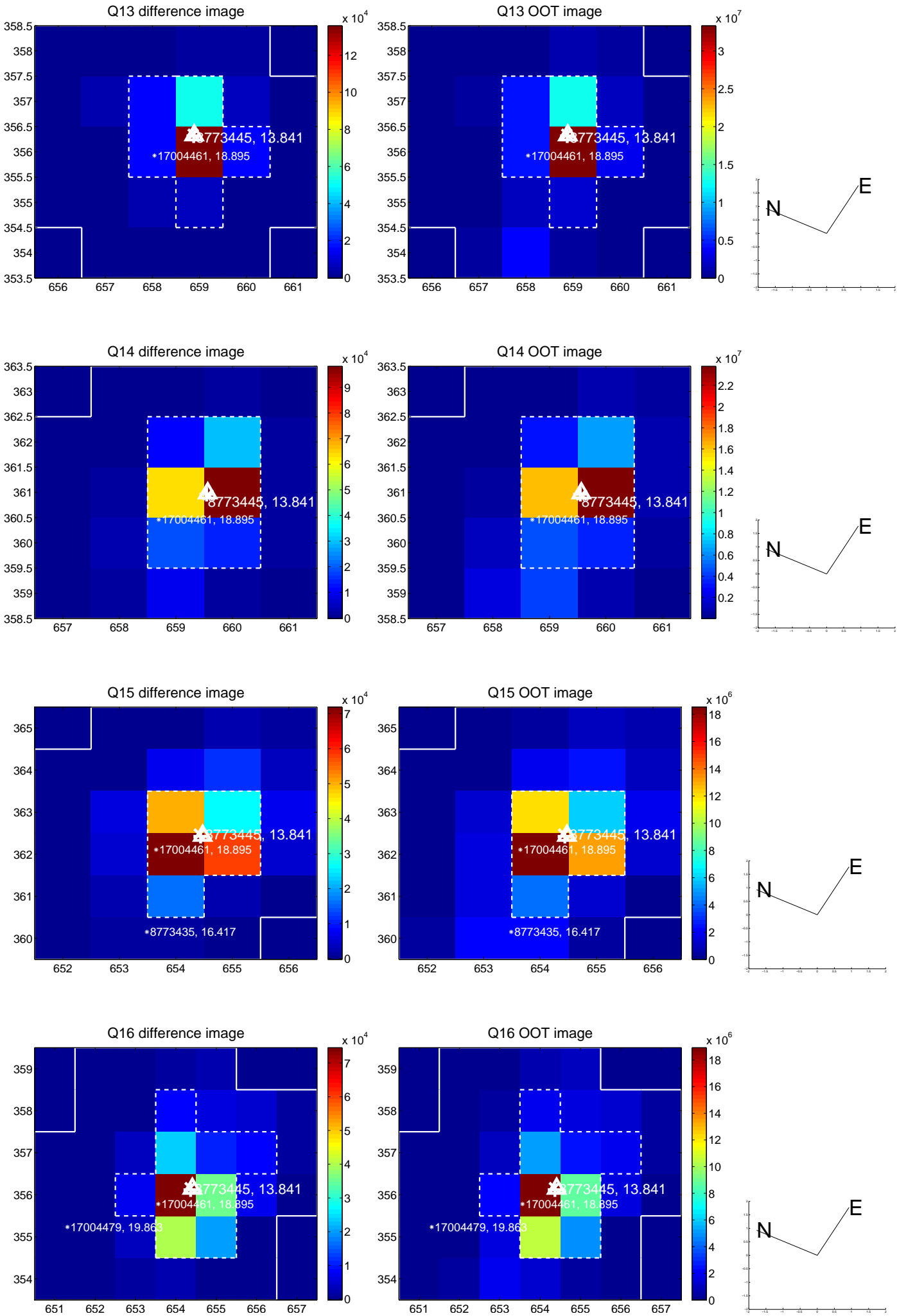
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



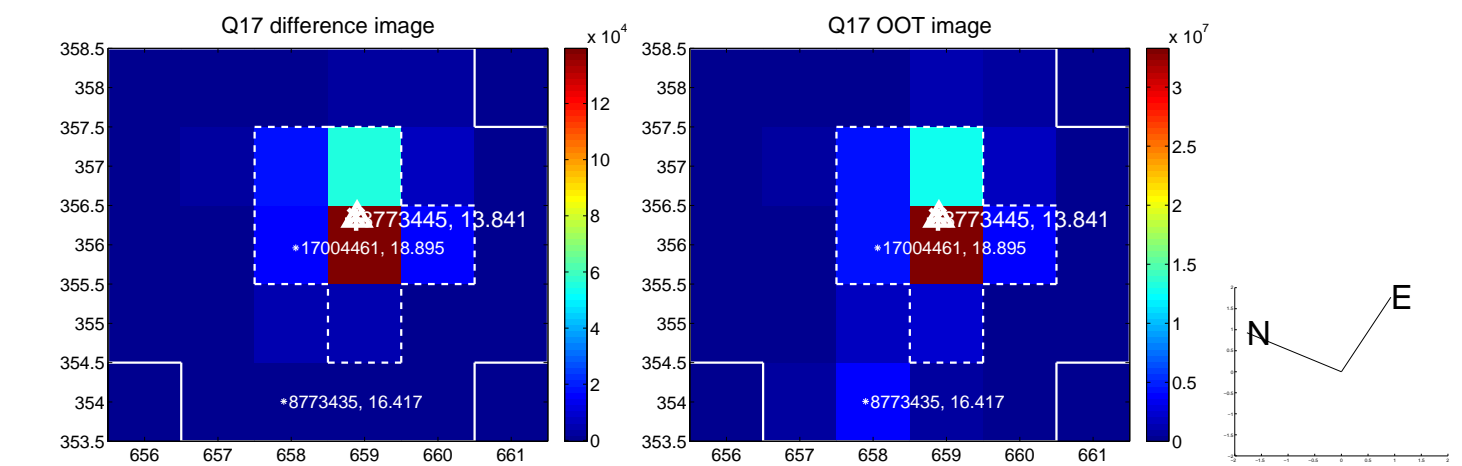
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



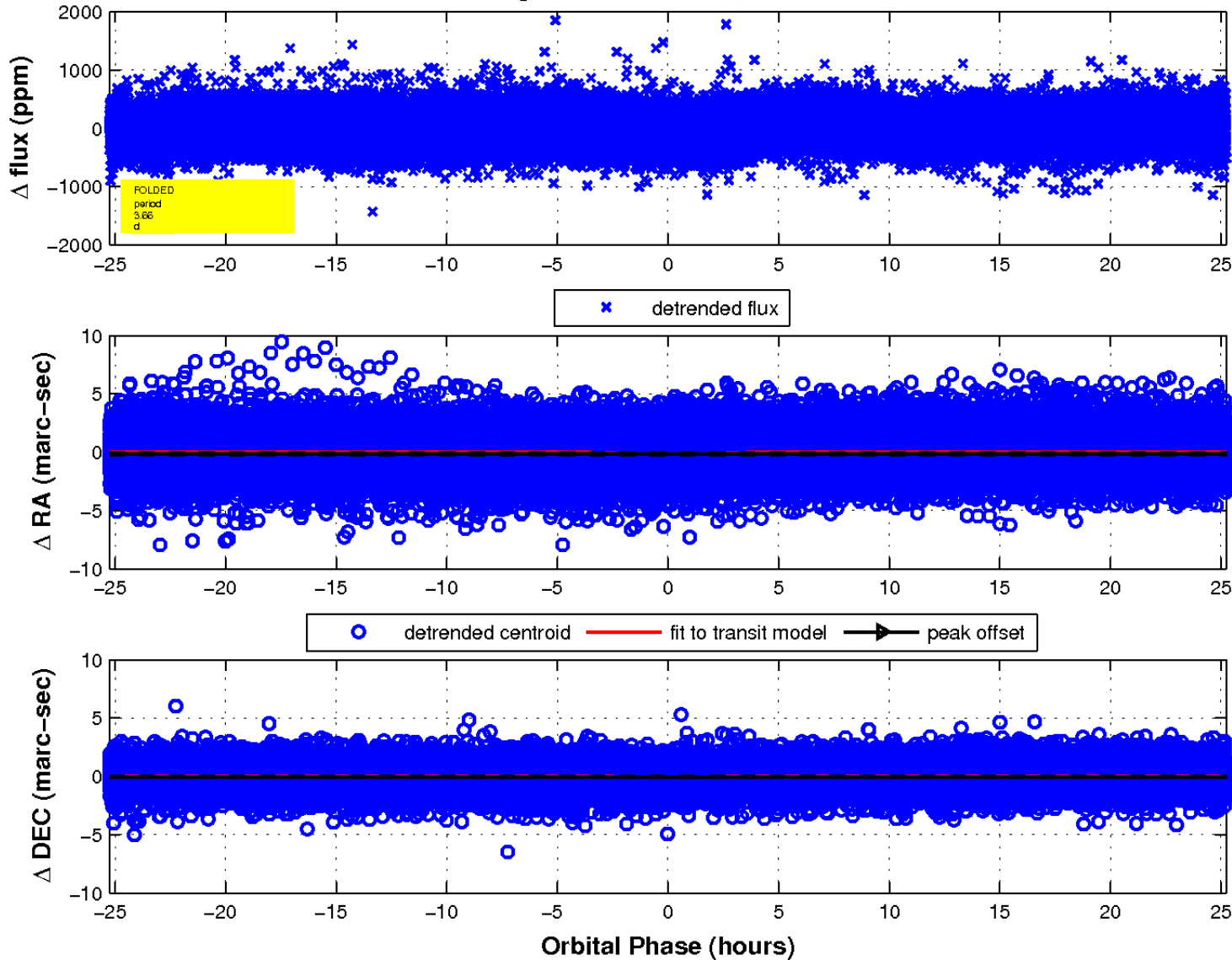
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

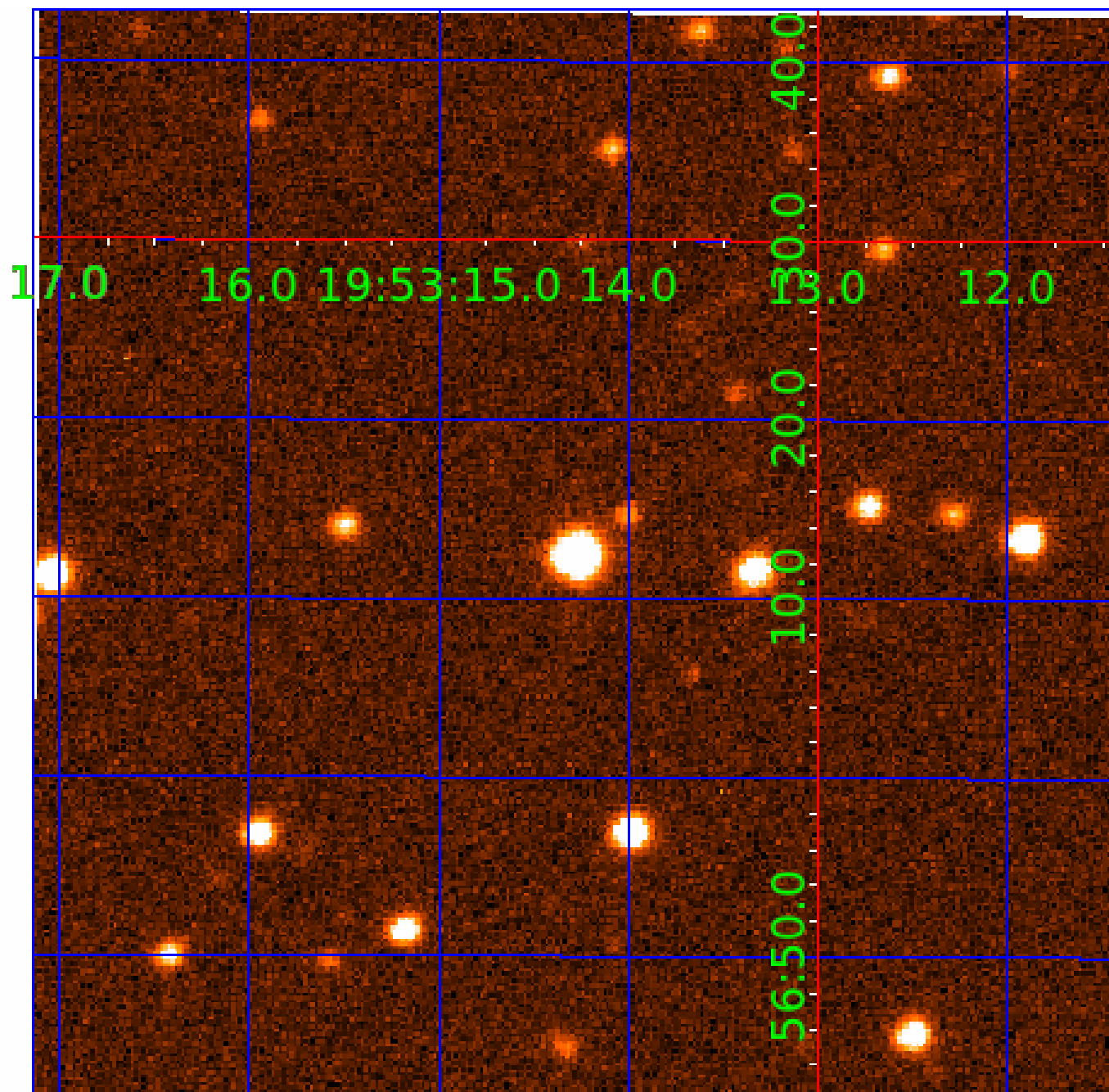


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 008773445

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})
008773445-01	OBS	No	3.660702	133.483533	107.2	8.416	16.7	17.4	3.19	8359	4.37	12757.67
008773445-02	OBS	No	3.660809	132.827876	101.6	5.233	11.3	15.0	3.19	8359	6.28	12757.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008773445-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
008773445-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD

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

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

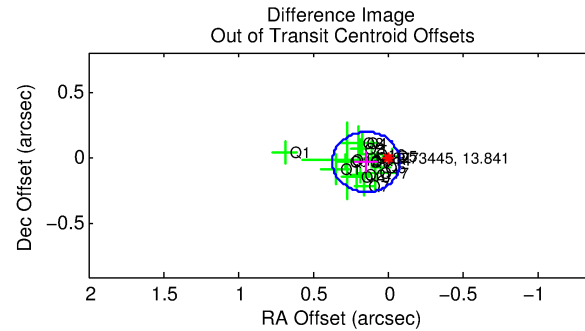
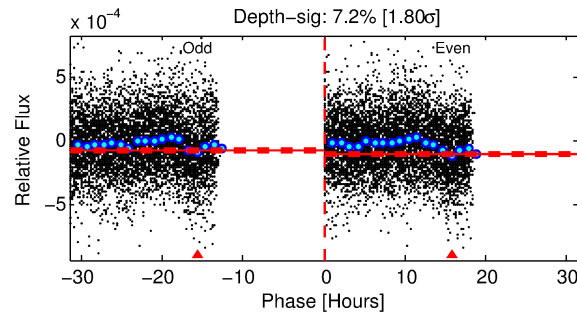
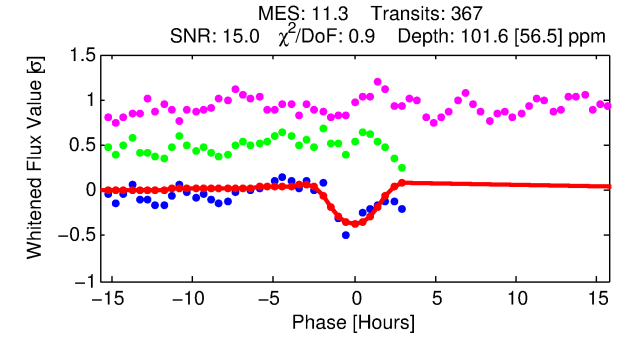
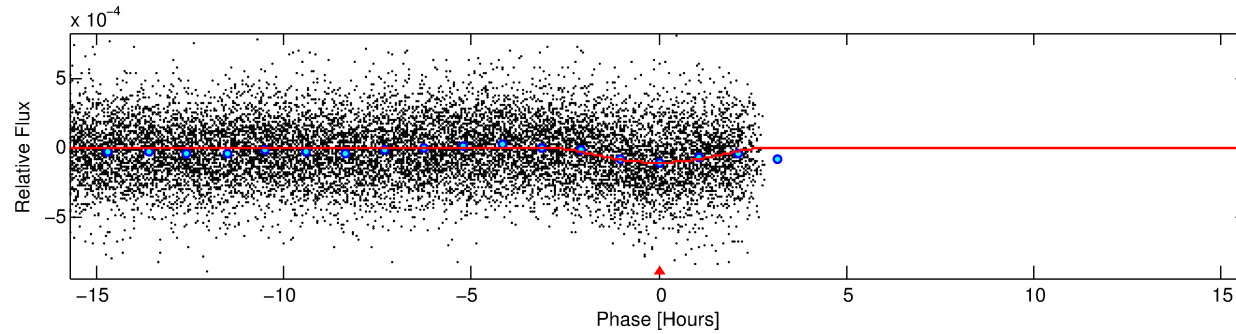
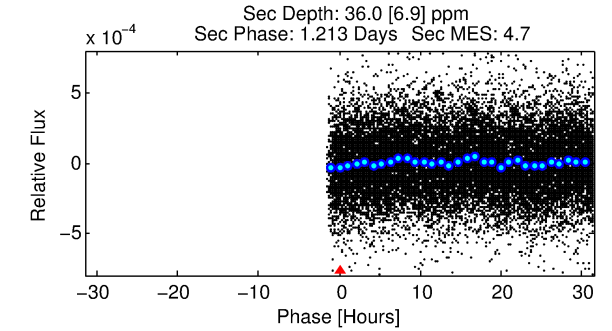
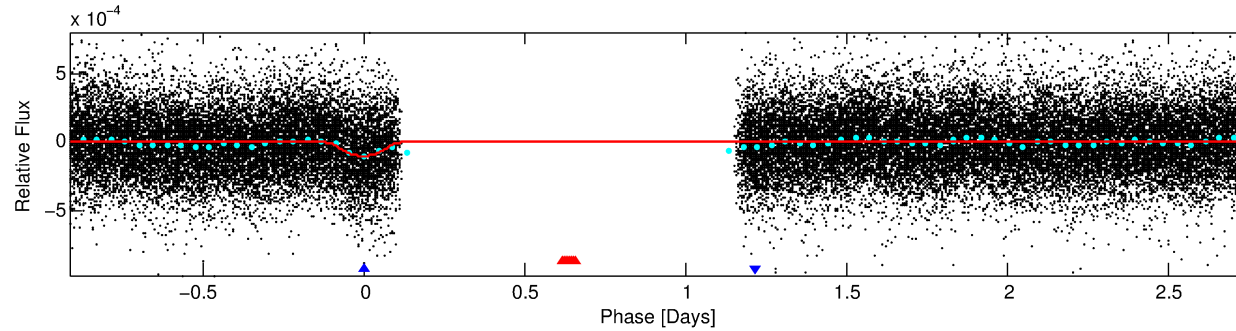
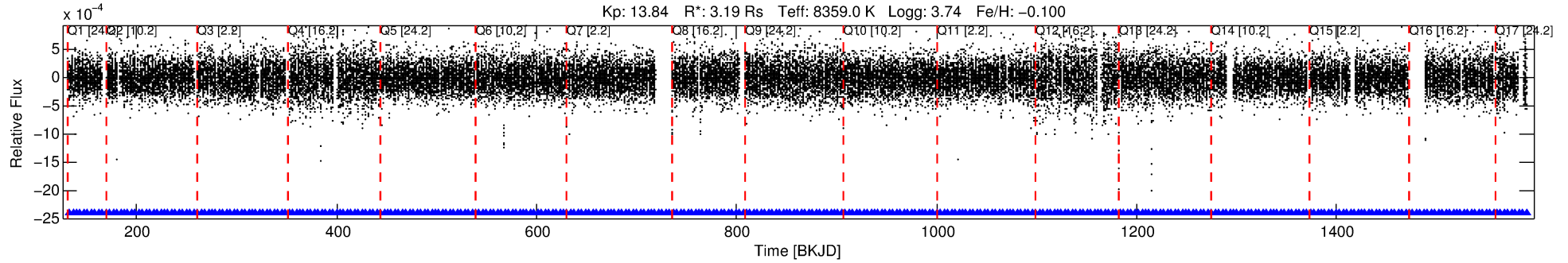
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008773445-02

No Significant Match Found

DV One-Page Summary

KIC: 8773445 Candidate: 2 of 2 Period: 3.661 d



DV Fit Results:

Period = 3.66081 [0.00003] d
Epoch = 132.8279 [0.0068] BKJD
Rp/R* = 0.0180 [0.0334]
a/R* = 1.43 [0.36]
b = 1.00 [0.04]
Seff = 12757.17 [9470.66]
Teff = 2710 [503] K
Rp = 6.28 [11.97] Re
a = 0.0590 [0.0262] AU
Ag = 1.75 [6.62] [0.11σ]
Teffp = 4821 [4475] K [0.47σ]

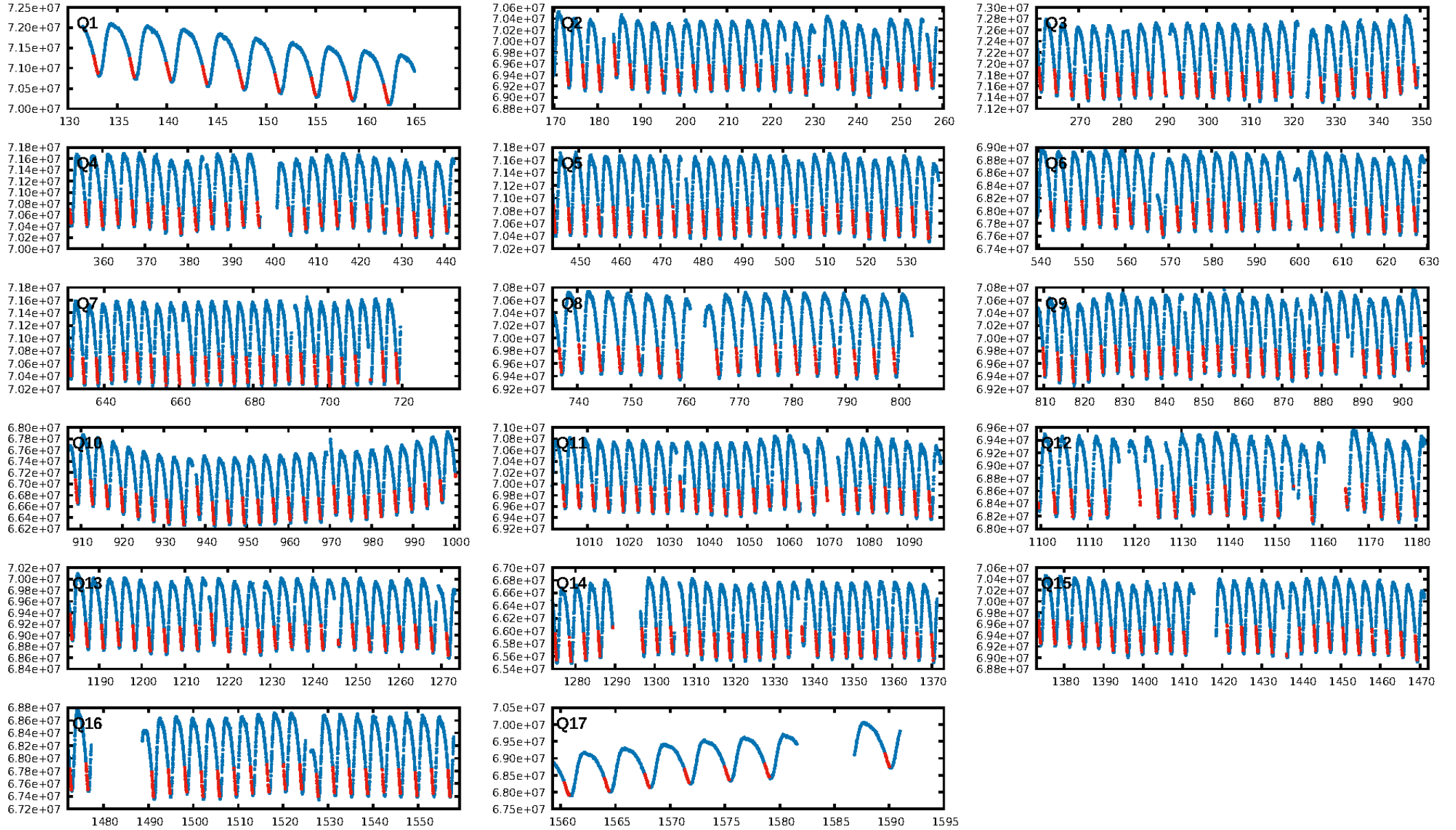
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.61e-23
RollingBand-fgt: 1.00 [351/351]
GhostDiagnostic-chr: 0.2801
Centroid-sig: 5.8%
Centroid-so: 1.573 arcsec [1.79σ]
OotOffset-rm: 0.147 arcsec [1.95σ]
KicOffset-rm: 0.076 arcsec [1.03σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.71 [12/17]

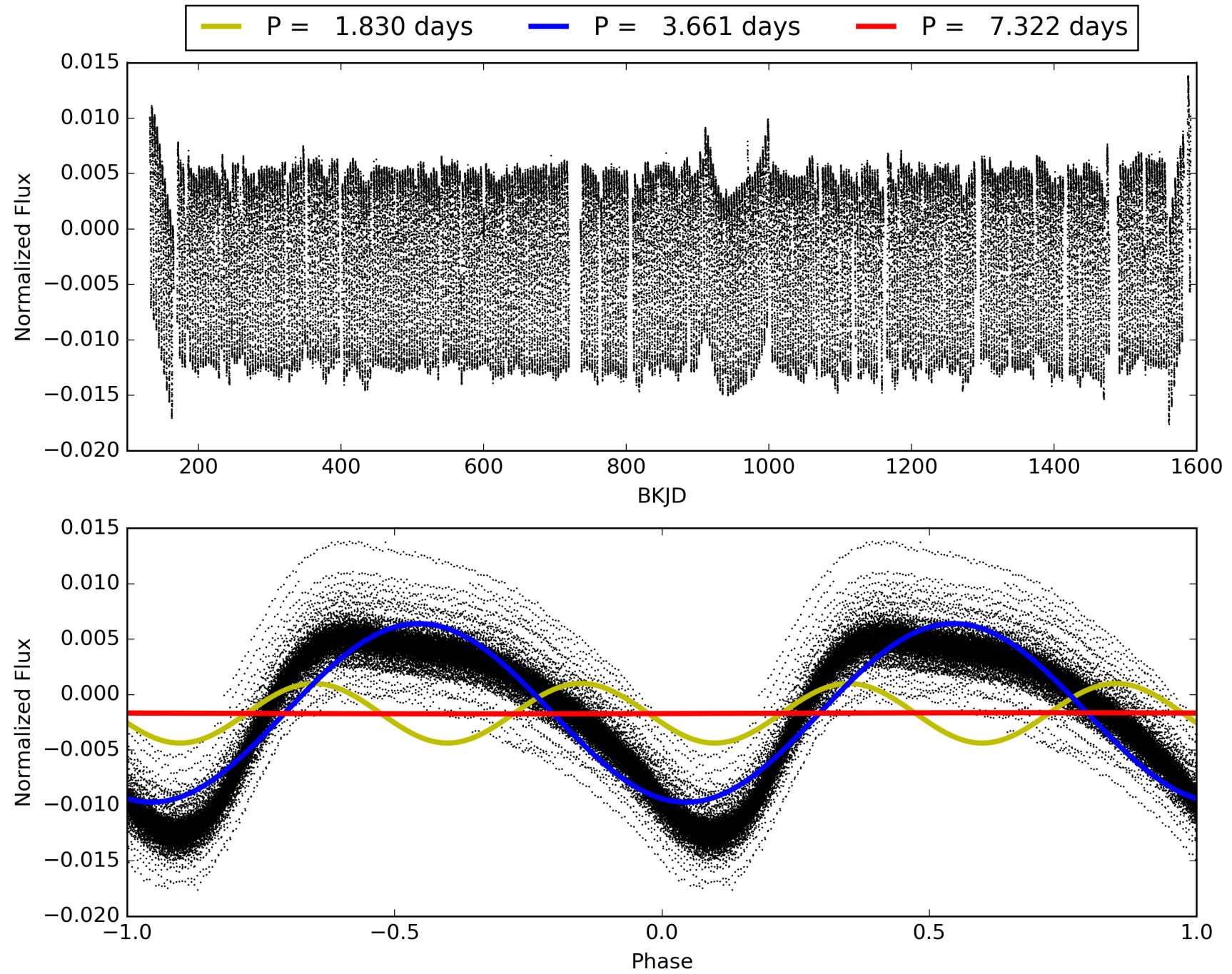
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008773445-02, PDC Light Curves

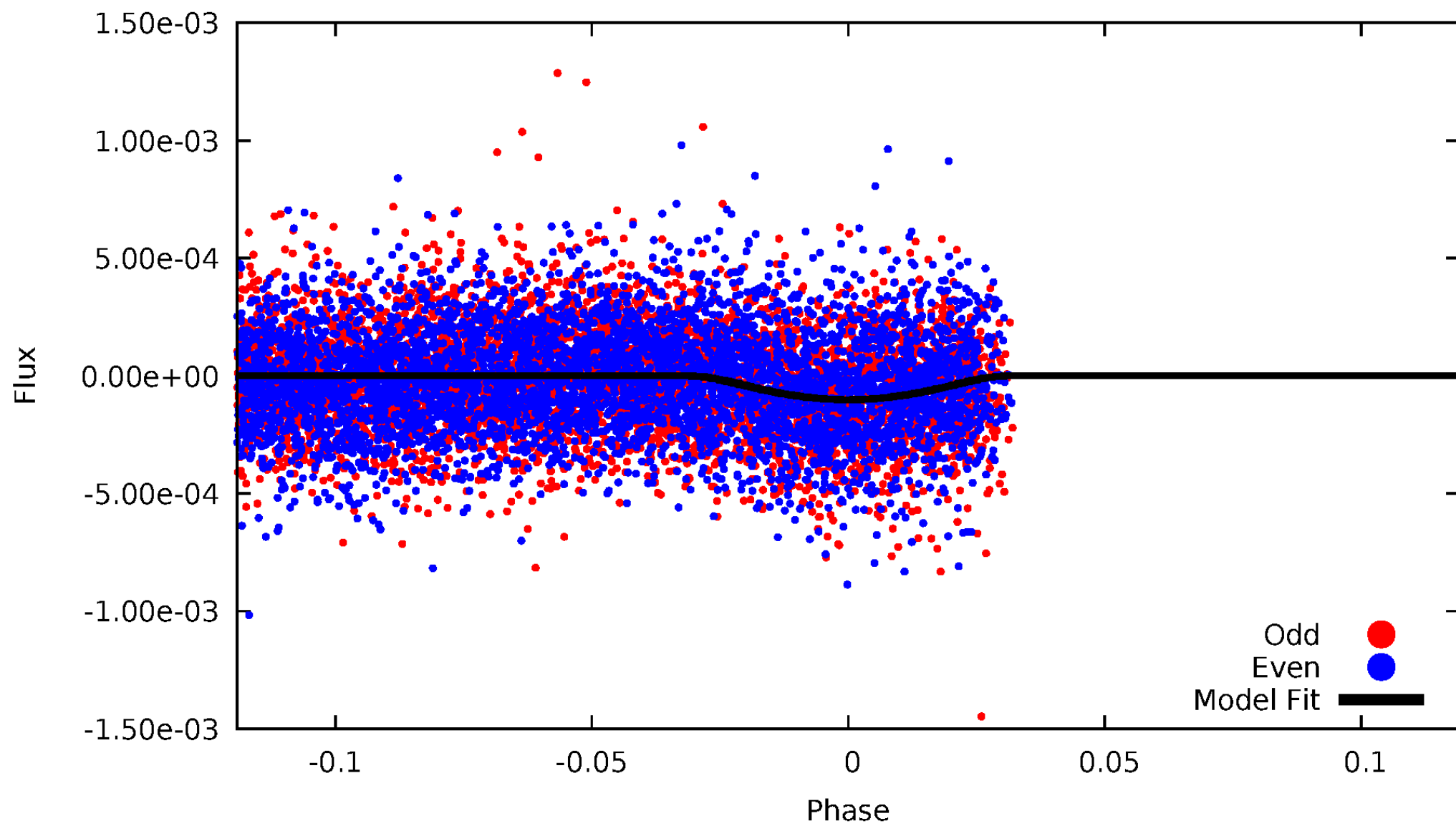


TCE 008773445-02



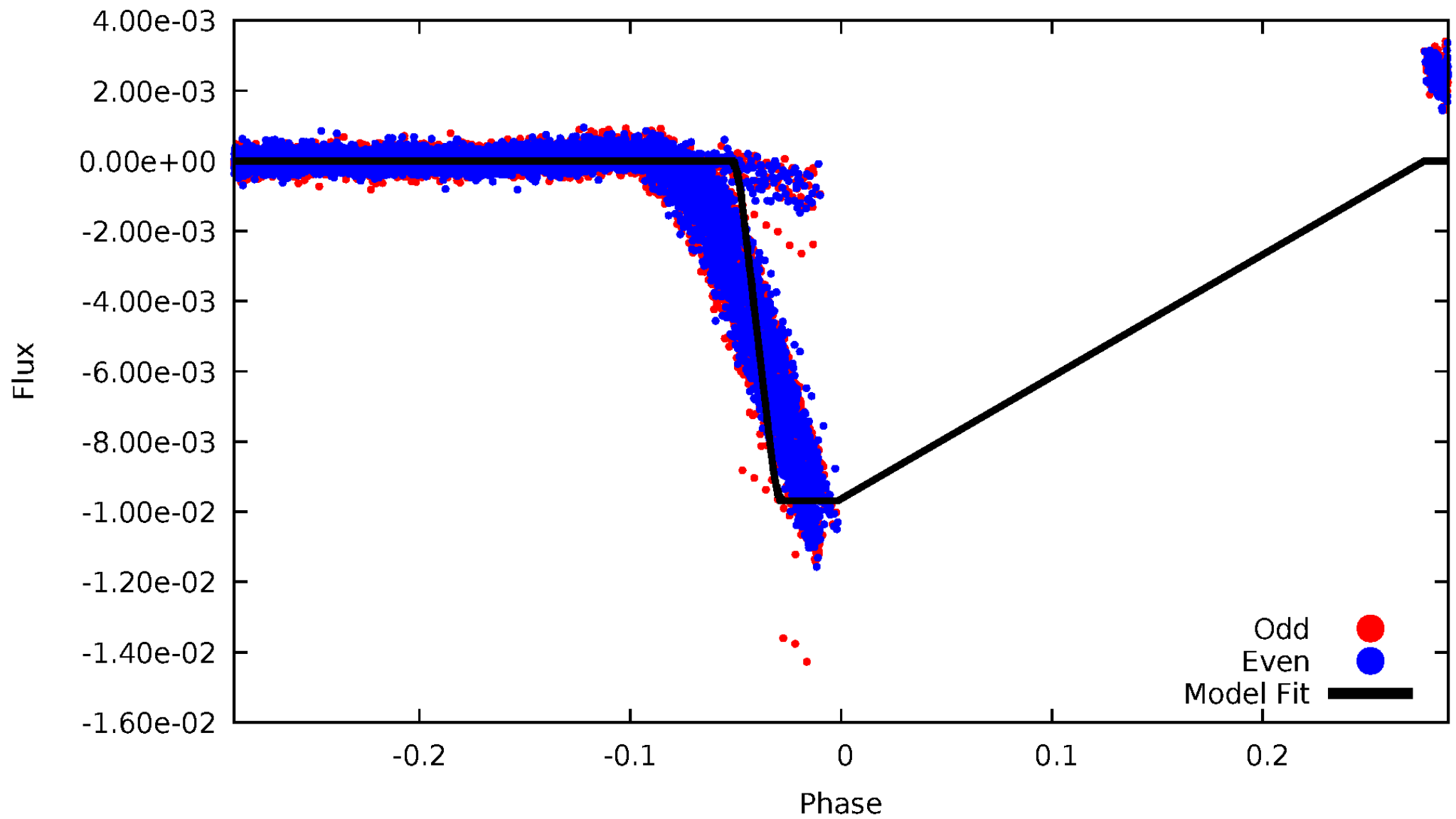
DV Odd/Even

TCE 008773445-02



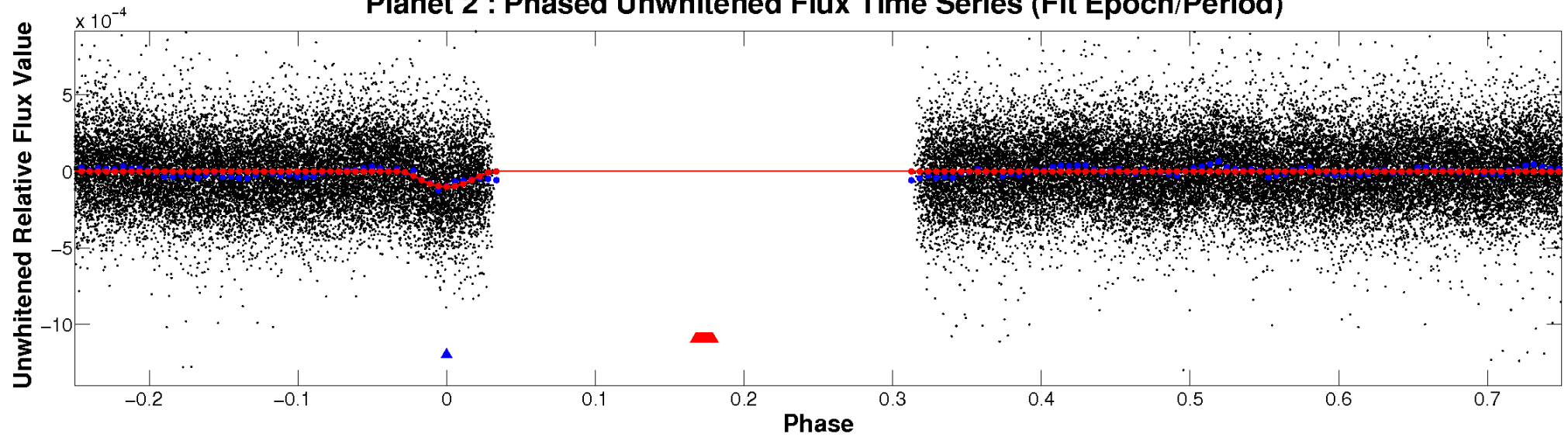
ALT Odd/Even

TCE 008773445-02

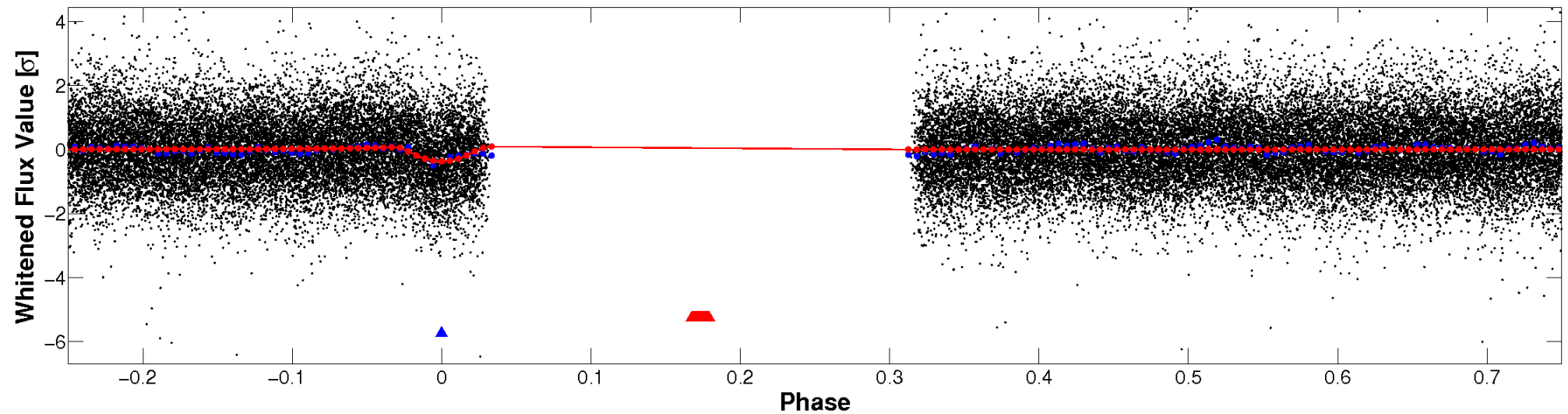


Non-Whitened Vs. Whitened Light Curve

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

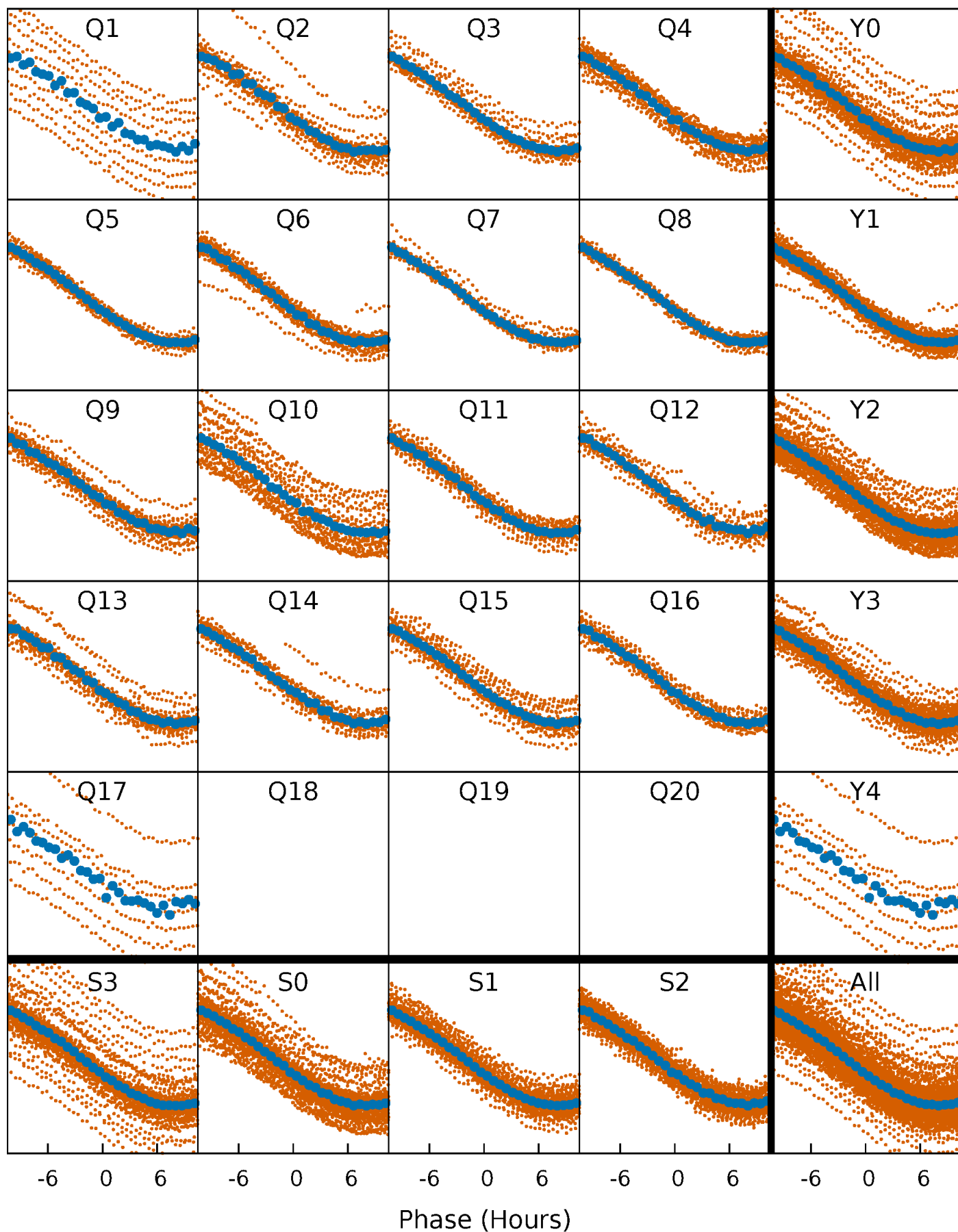


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



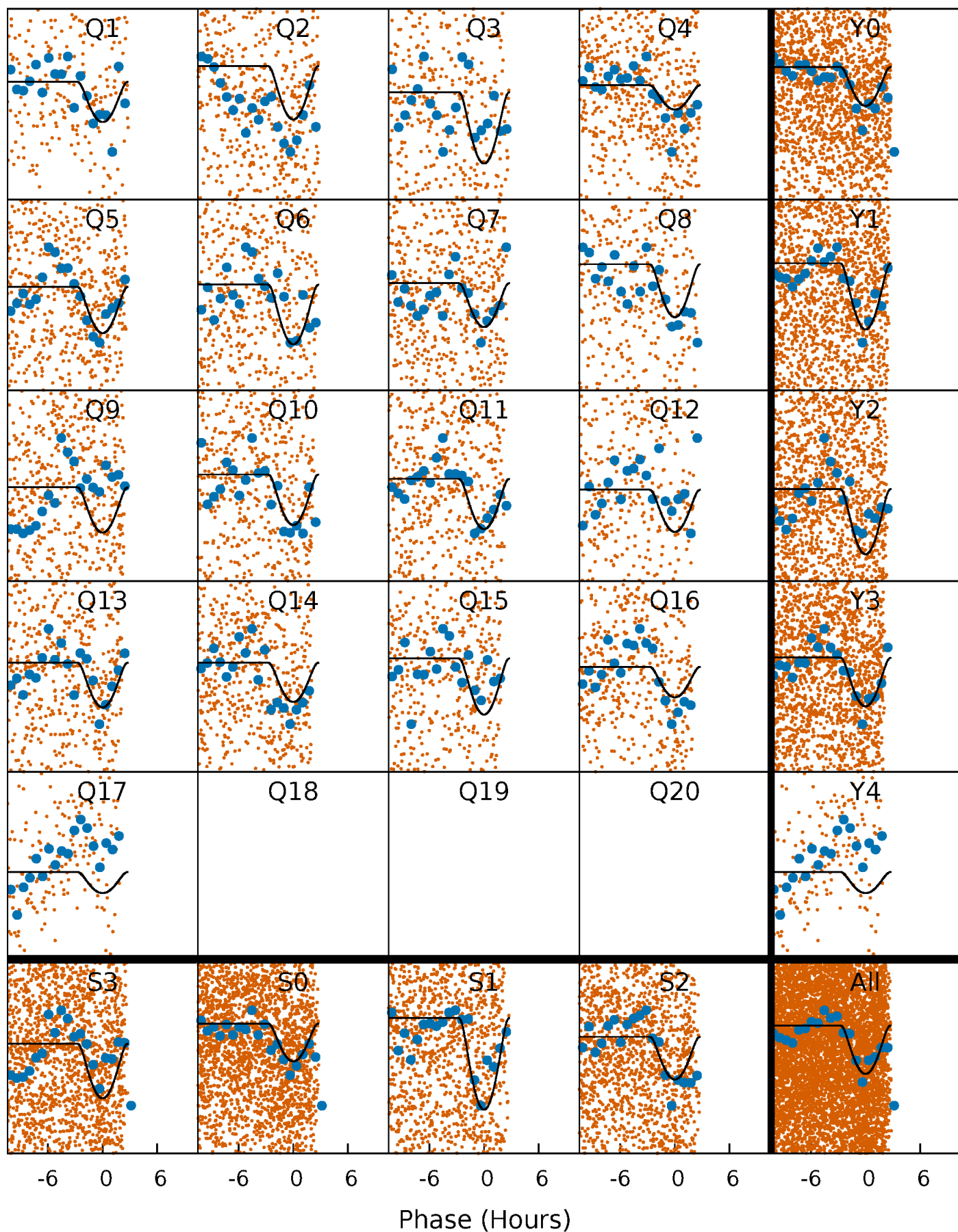
PDC Quarter-Phased Transit Curves

TCE 008773445-02 P= 3.660809 Days $T_0=132.827877$ (BKJD)



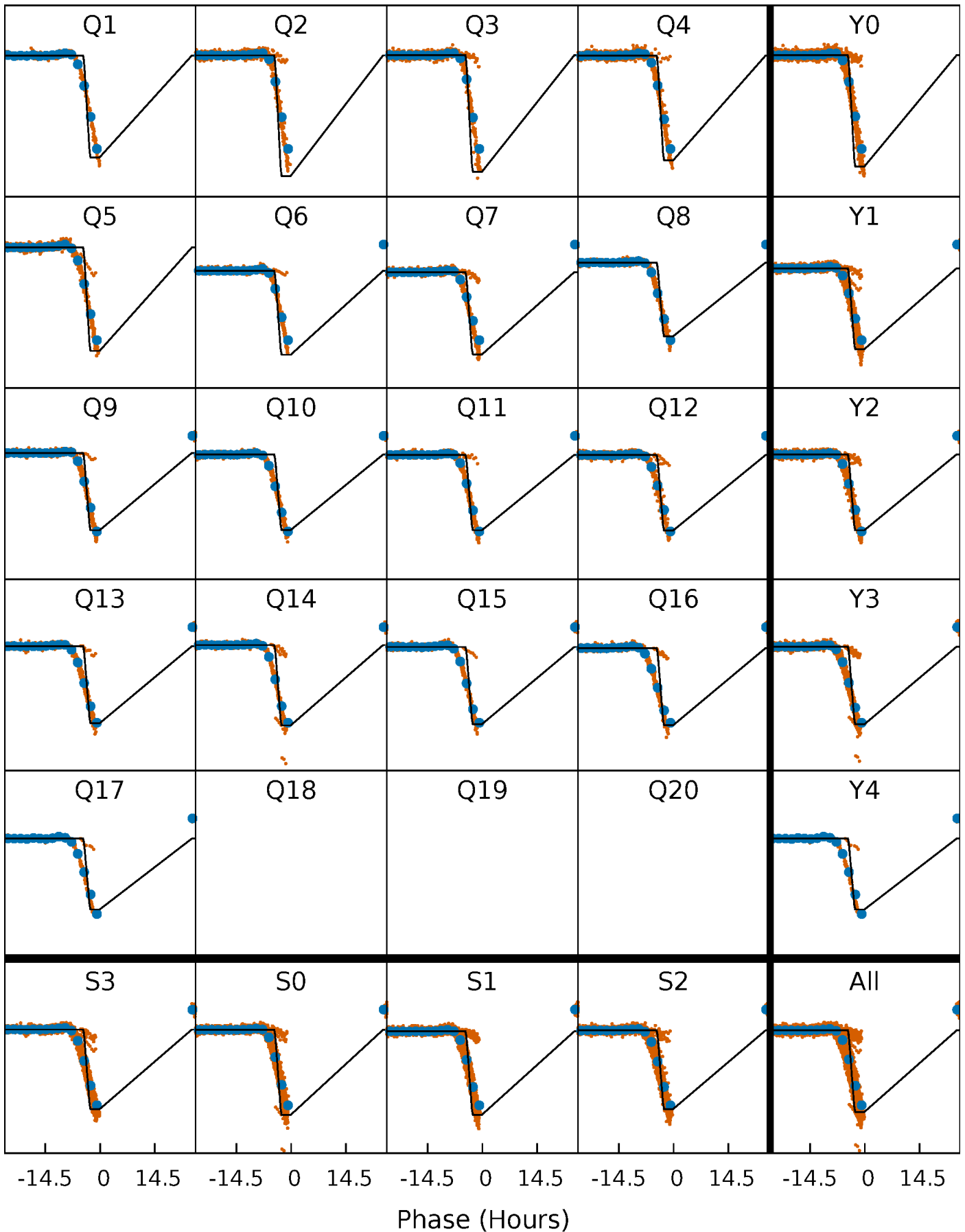
DV Quarter-Phased Transit Curves

TCE 008773445-02 $P = 3.660809$ Days $T_0 = 132.827877$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

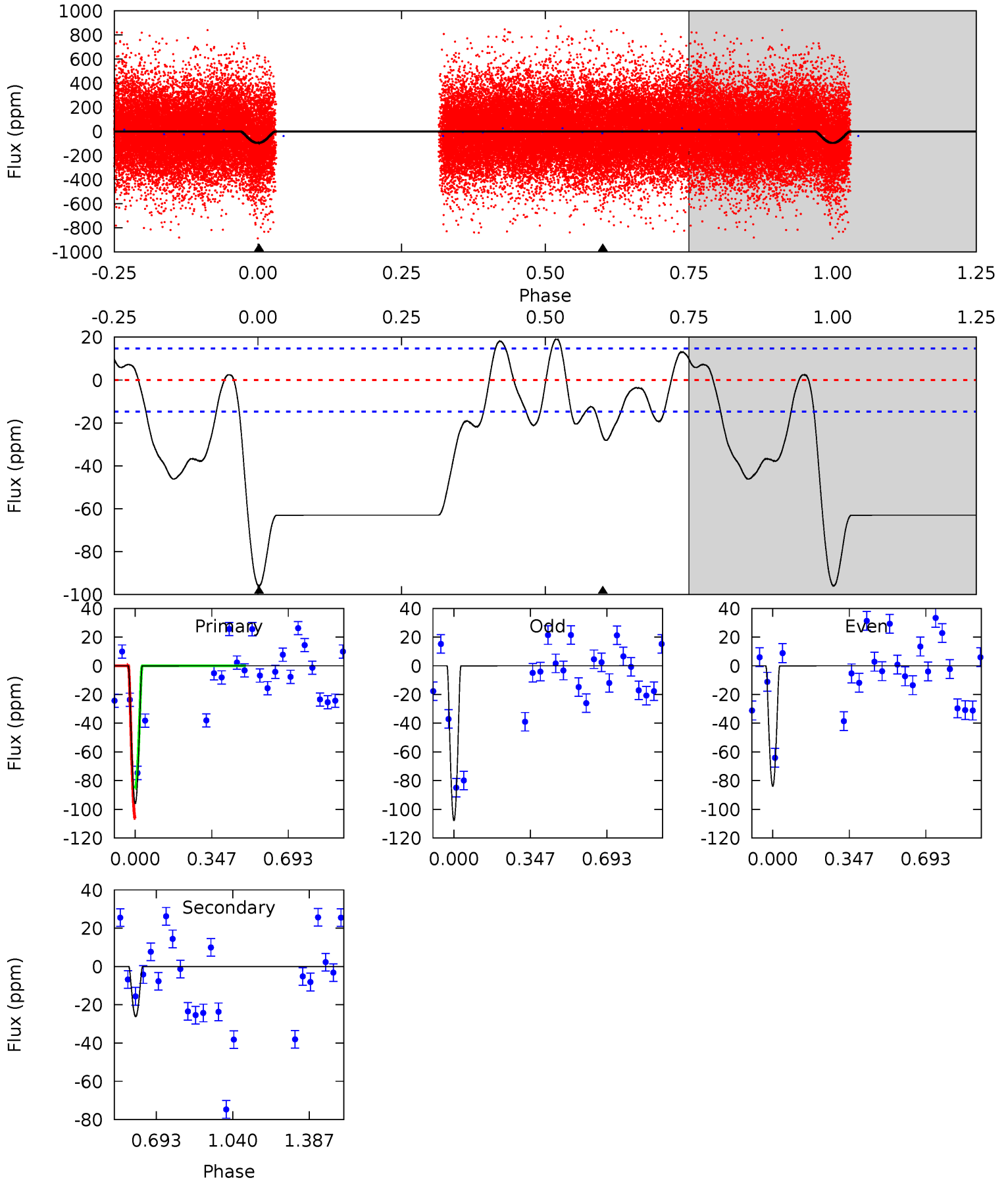
TCE 008773445-02 P= 3.660852 Days $T_0=132.949766$ (BKJD)



DV Model-Shift Uniqueness Test

008773445-02, P = 3.660809 Days, E = 129.167068 Days

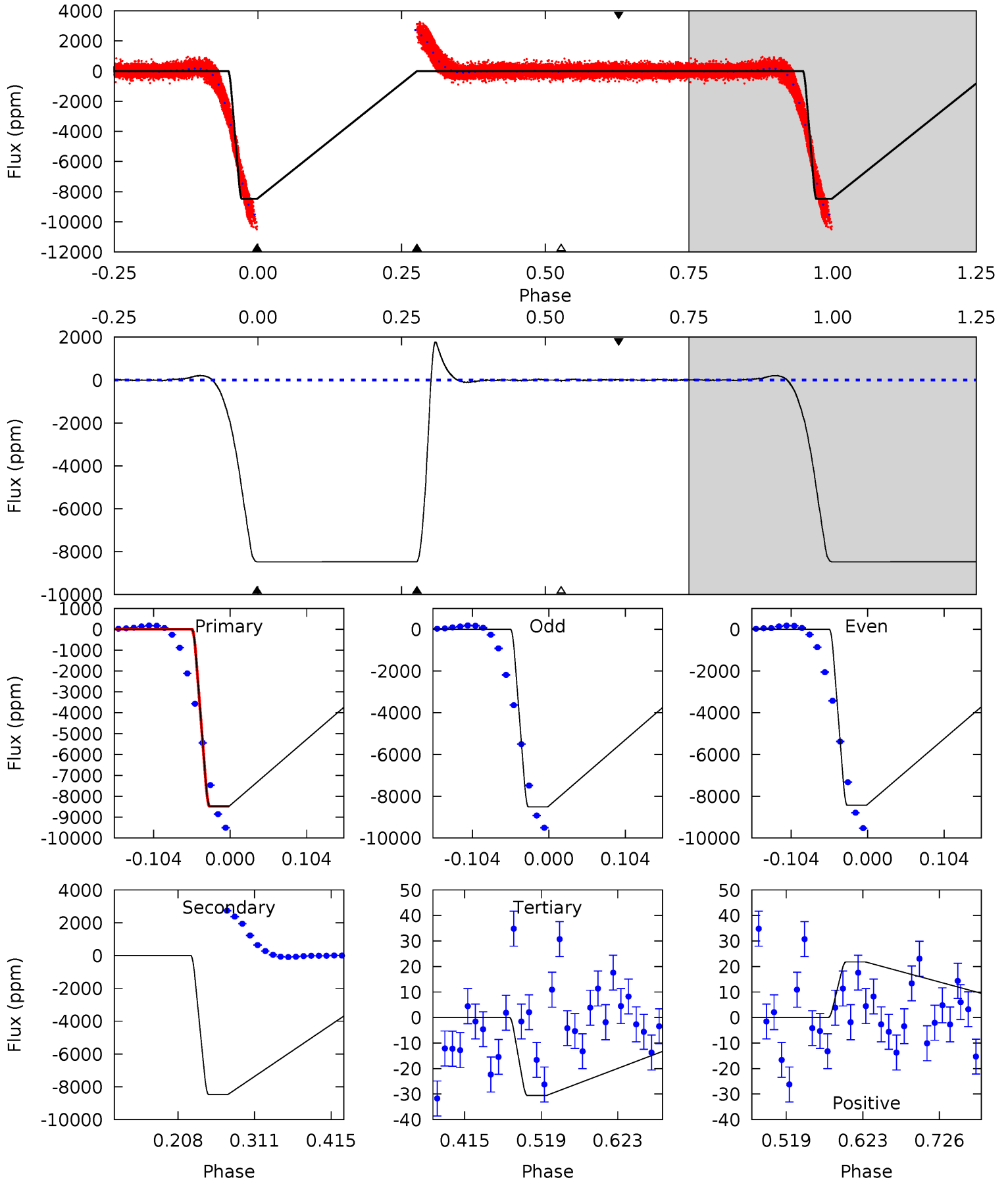
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.0	7.63	0	0	4.30	0.94	4.12	28.0	28.0	7.63	7.63	3.54	0.86	0.17	3.05



Alt Model-Shift Uniqueness Test

008773445-02, P = 3.660852 Days, E = 129.288914 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1692	1690	6.08	4.35	4.56	1.63	6.40	1686	1687	1684	1685	7.66	0	0.17	0



Stellar Parameters For KIC 008773445

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8359^{+231}_{-363}	$3.742^{+0.428}_{-0.143}$	$-0.100^{+0.300}_{-0.400}$	$3.188^{+0.952}_{-1.429}$	$2.046^{+0.385}_{-0.471}$	$0.089^{+0.349}_{-0.041}$
	+3%/-4%	+11%/-4%	+300%/-400%	+30%/-45%	+19%/-23%	+392%/-46%
Source	KIC0	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 008773445-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-26 ± 3	$9.55^{+10.42}_{-6.31}$	3671^{+335}_{-445}	3273^{+2323}_{-6446}	$0.575^{+4.600}_{-0.447}$
Alt.	-8469 ± 5	$31.53^{+14.49}_{-12.28}$	3694^{+323}_{-456}	7988^{+2561}_{-1349}	17^{+26}_{-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 $A_{\text{obs}} \gg 1.0$

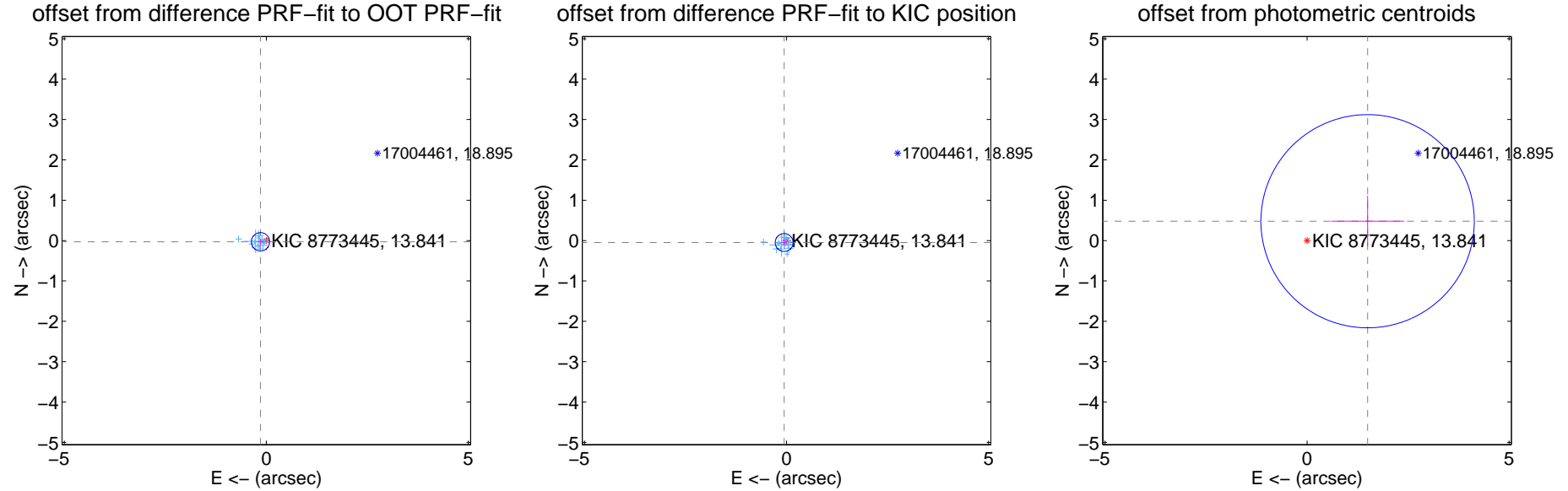
DV Centroid Data

Supplemental centroid analysis for 008773445-02. Kepler magnitude: 13.84. Transit SNR 15.04

There are 17 quarters with good PRF difference image offsets

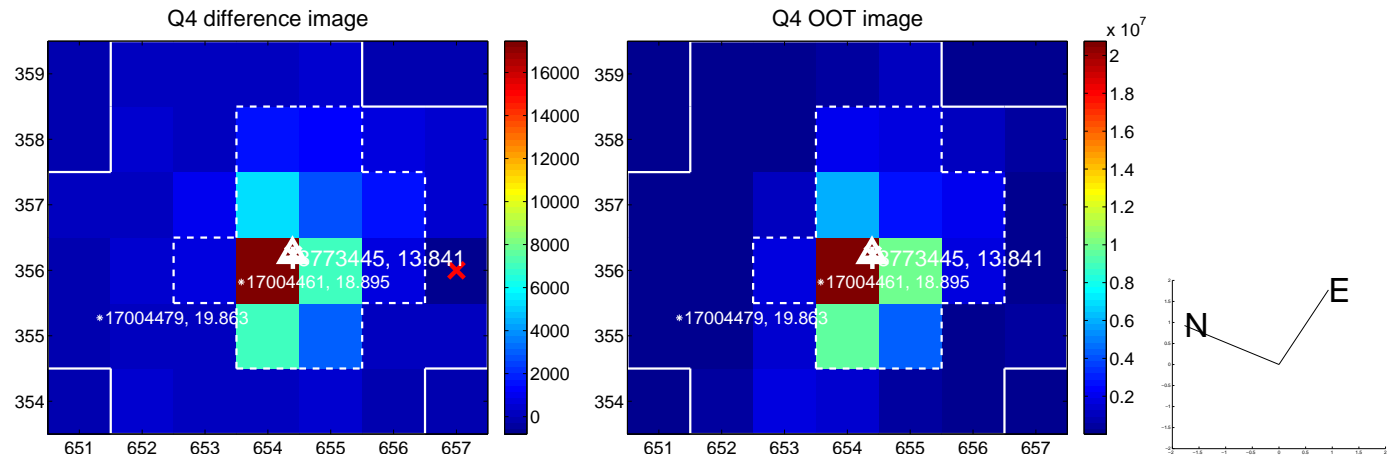
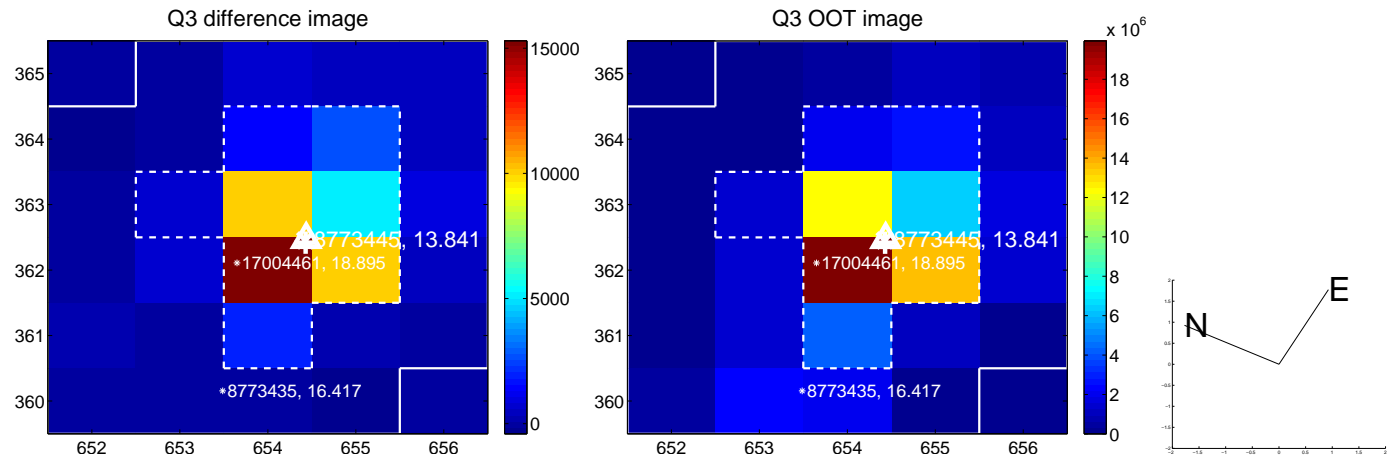
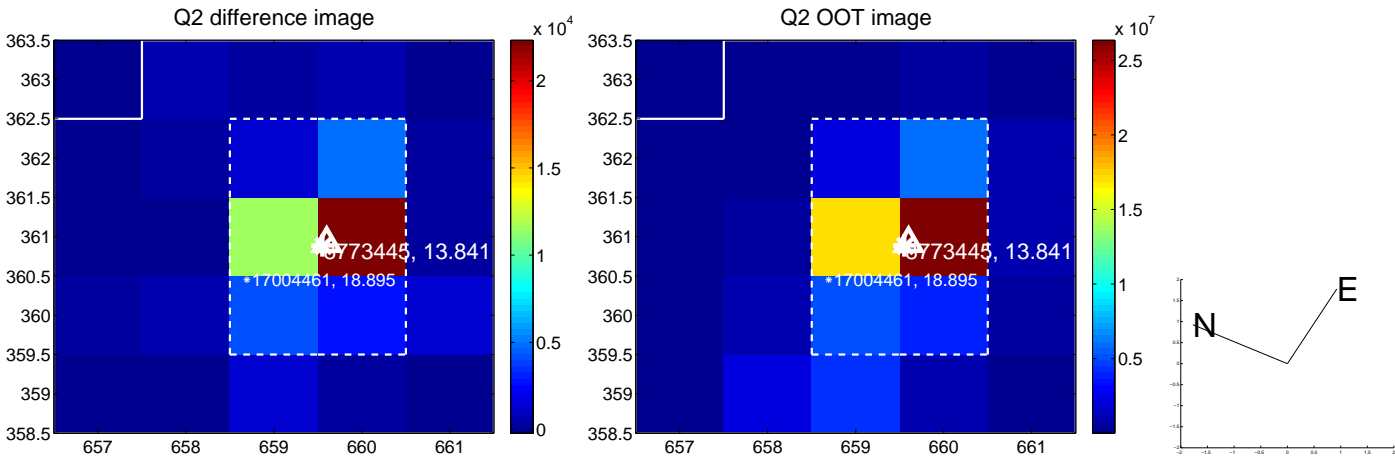
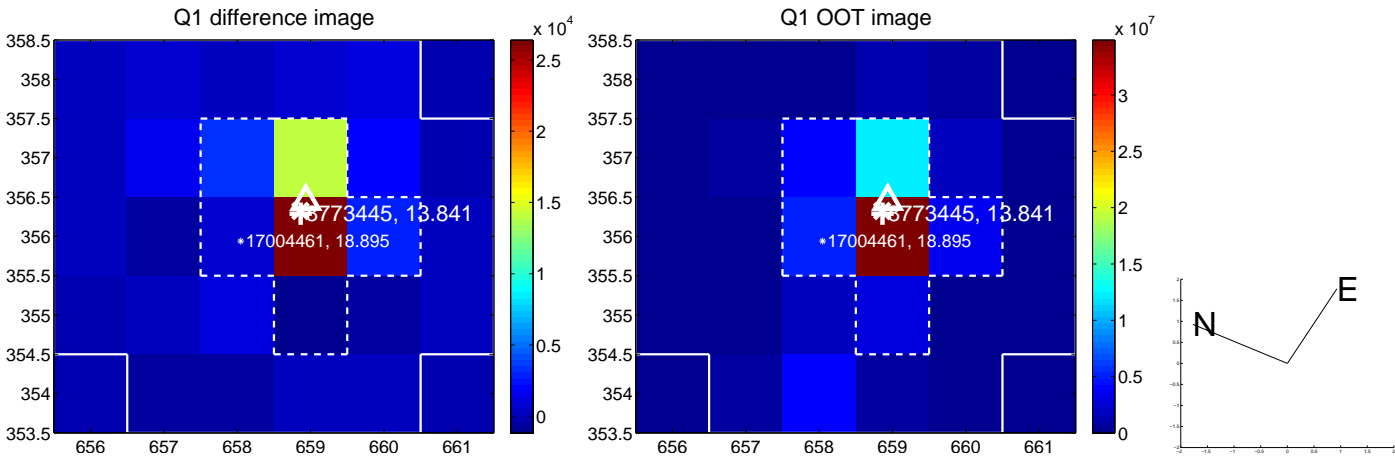
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.147 ± 0.075	1.95	0.144 ± 0.076	-0.030 ± 0.070
PRF-fit source offset from KIC position	0.076 ± 0.074	1.03	0.059 ± 0.076	-0.048 ± 0.072
photometric centroid source offset	1.57 ± 0.88	1.79	-1.50 ± 0.90	0.48 ± 0.63

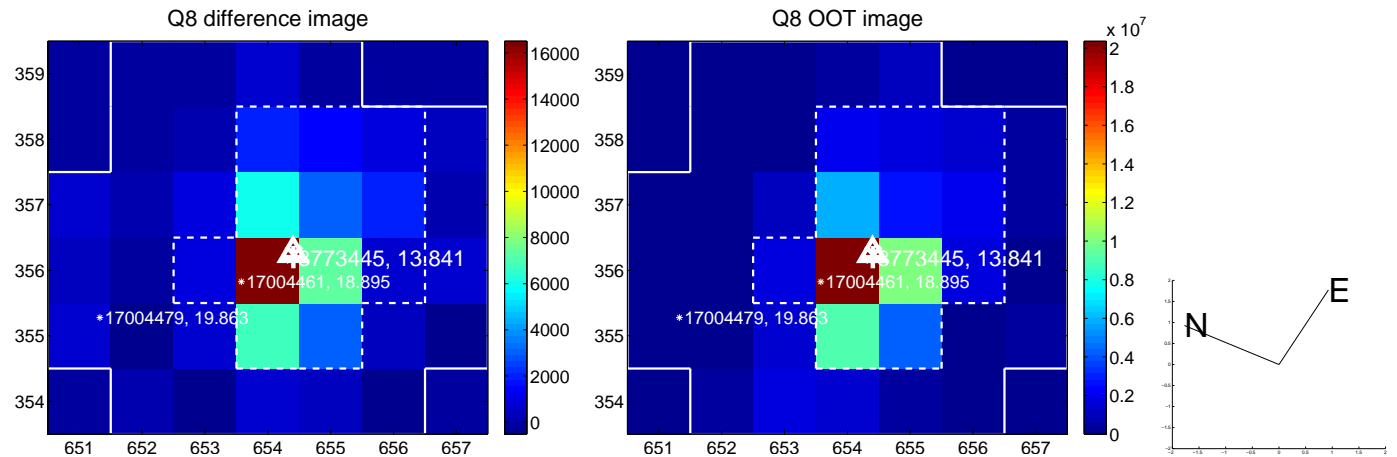
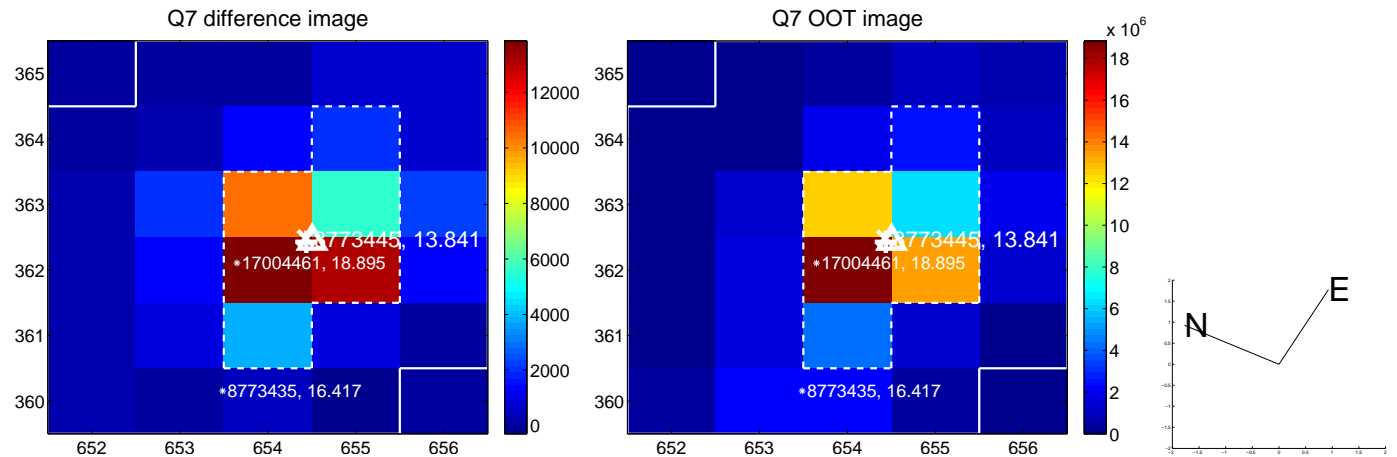
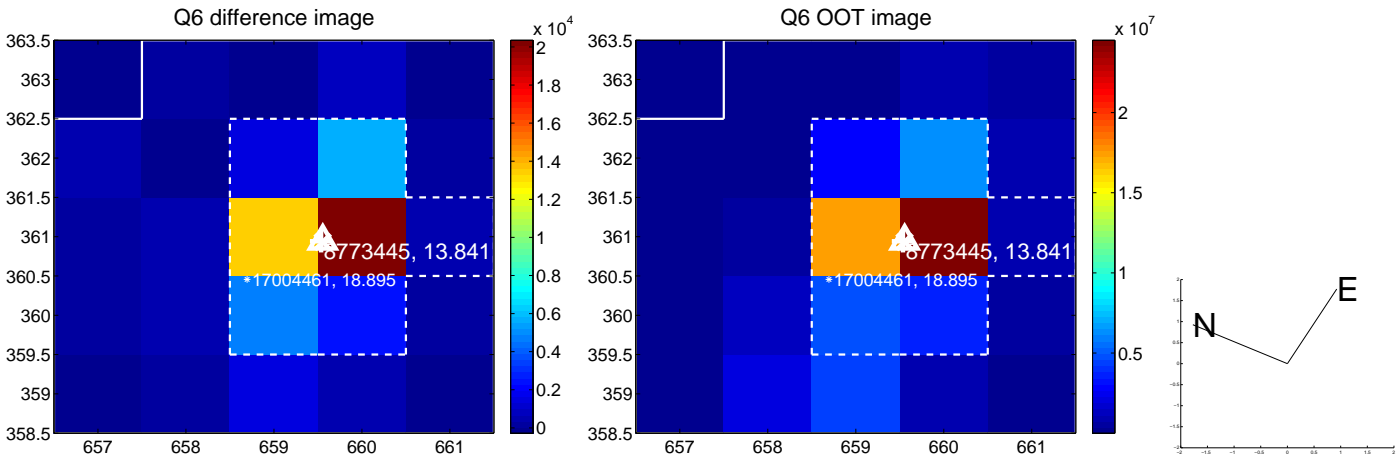
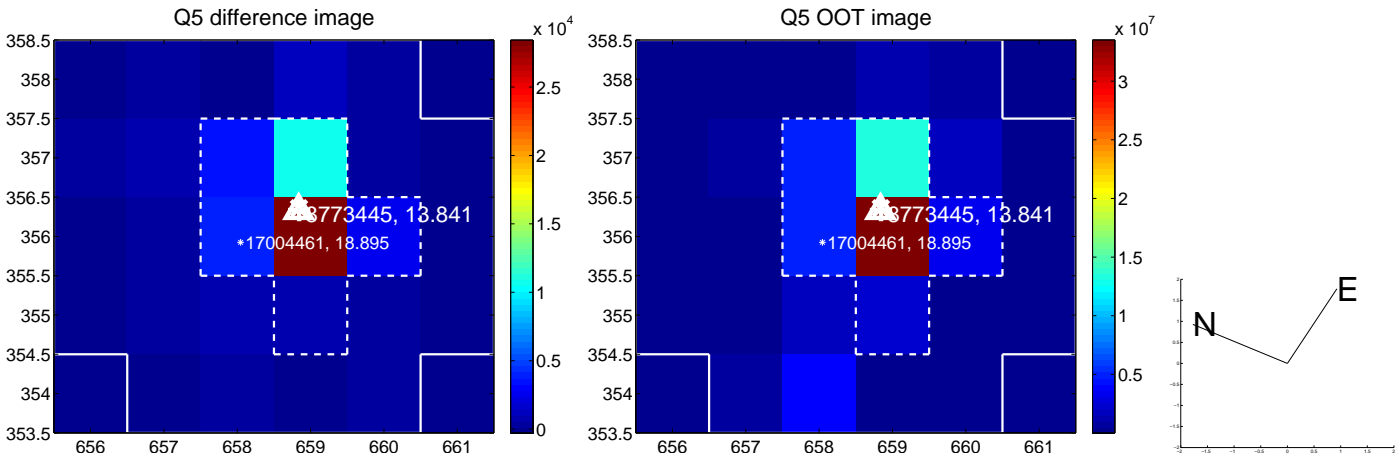


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

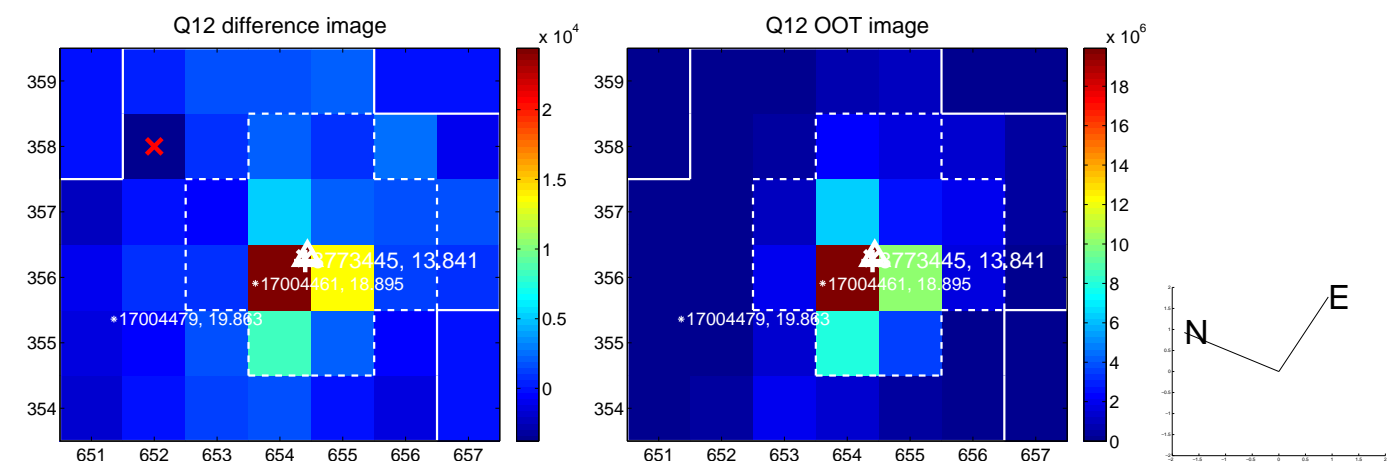
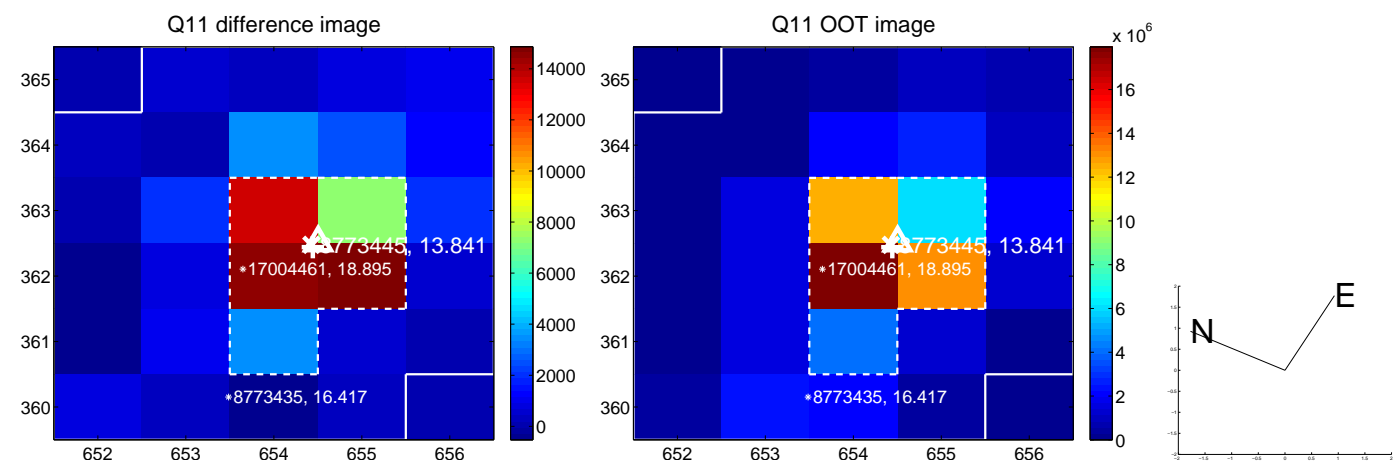
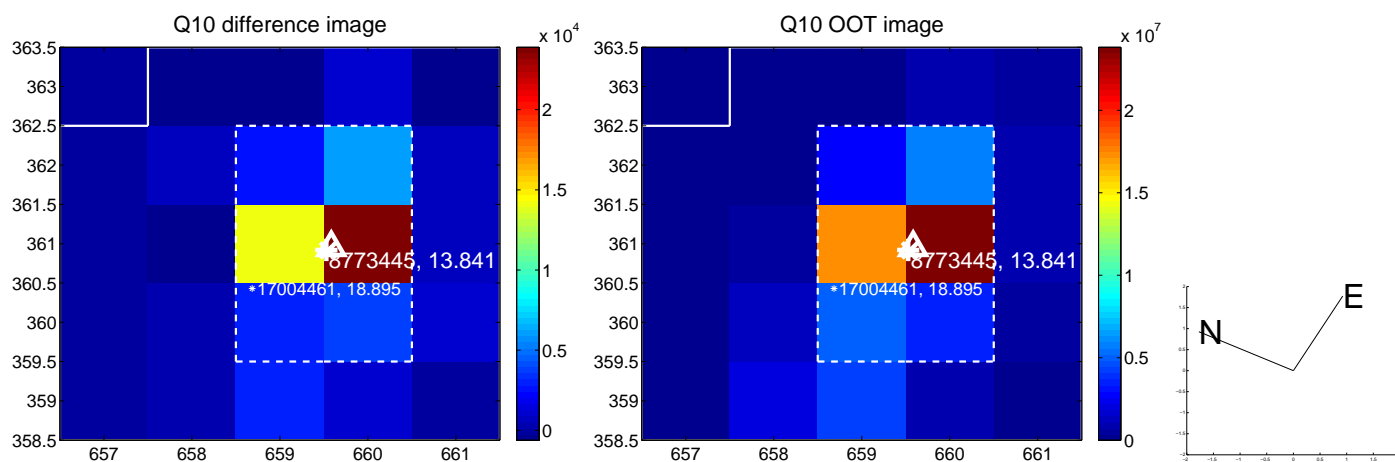
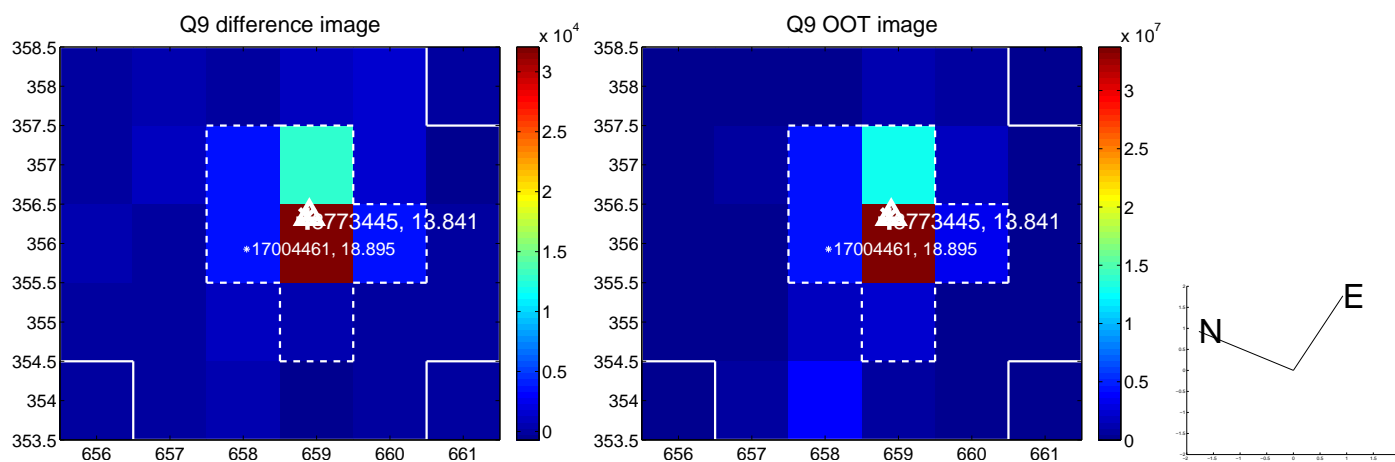
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



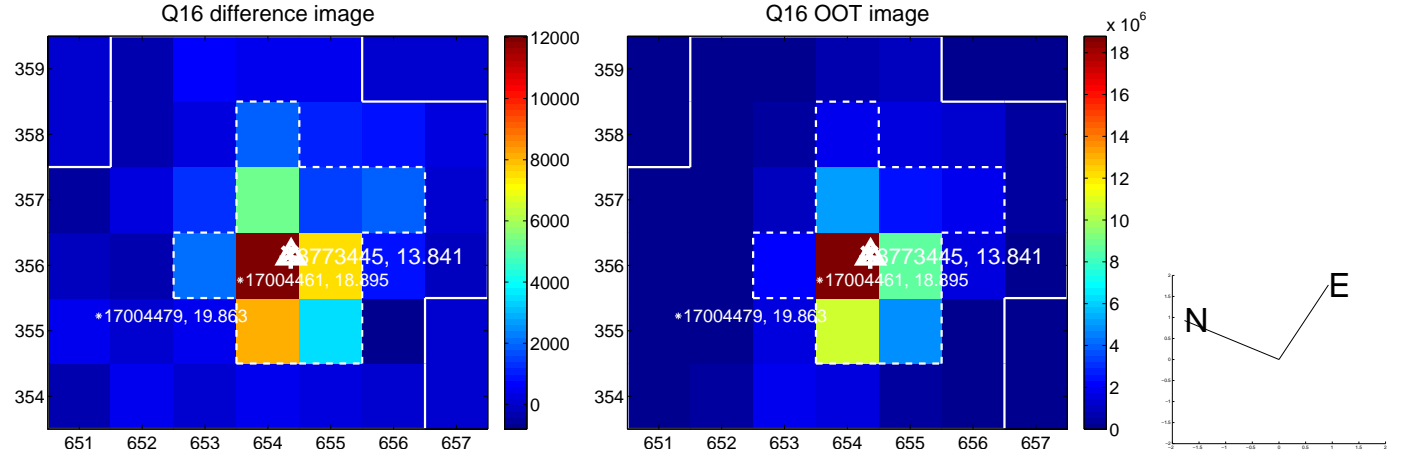
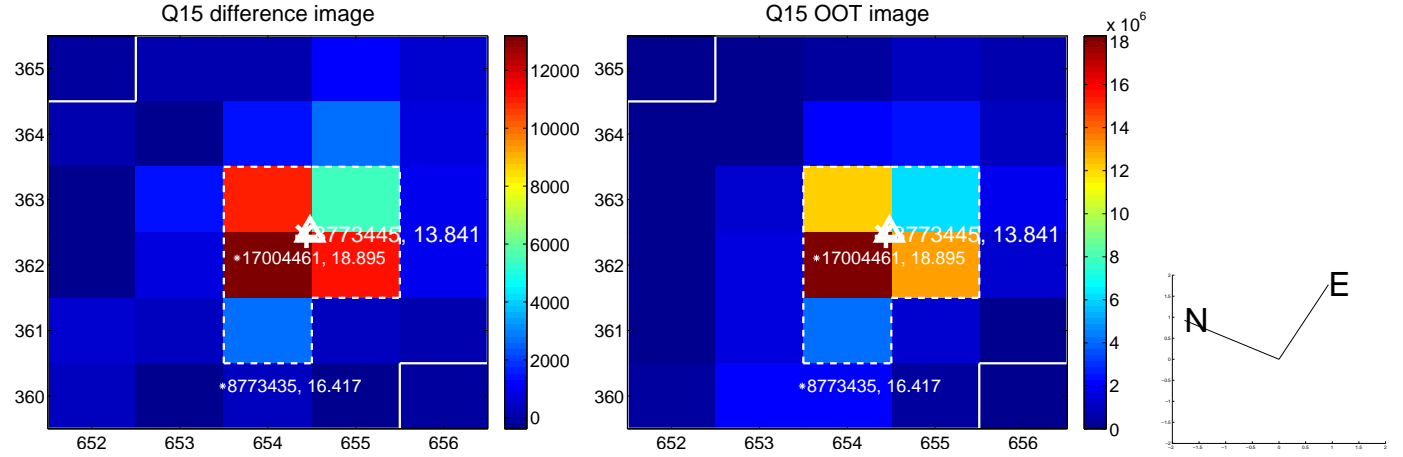
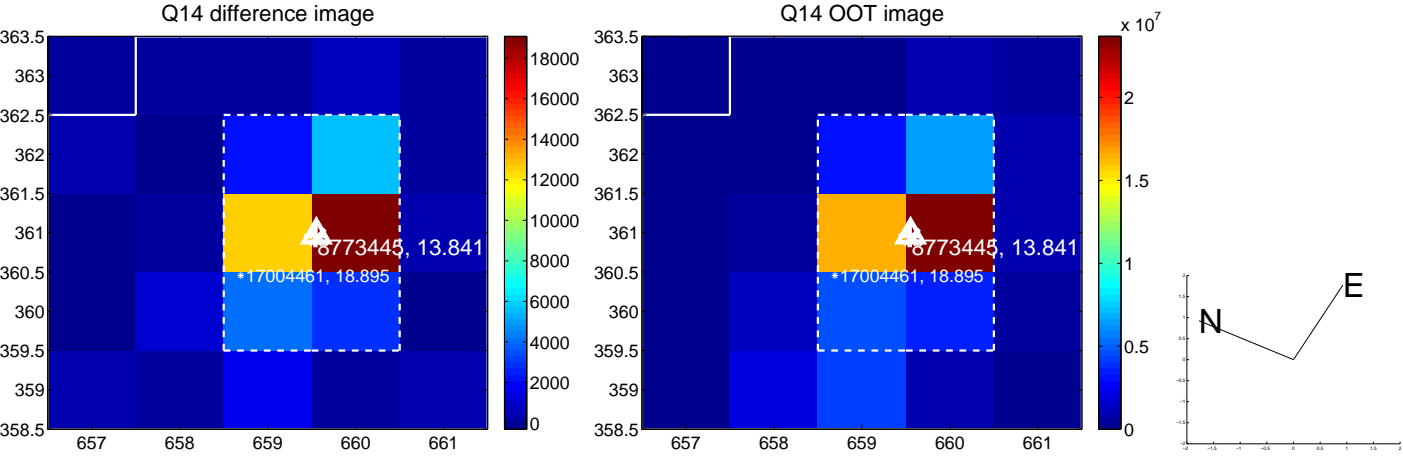
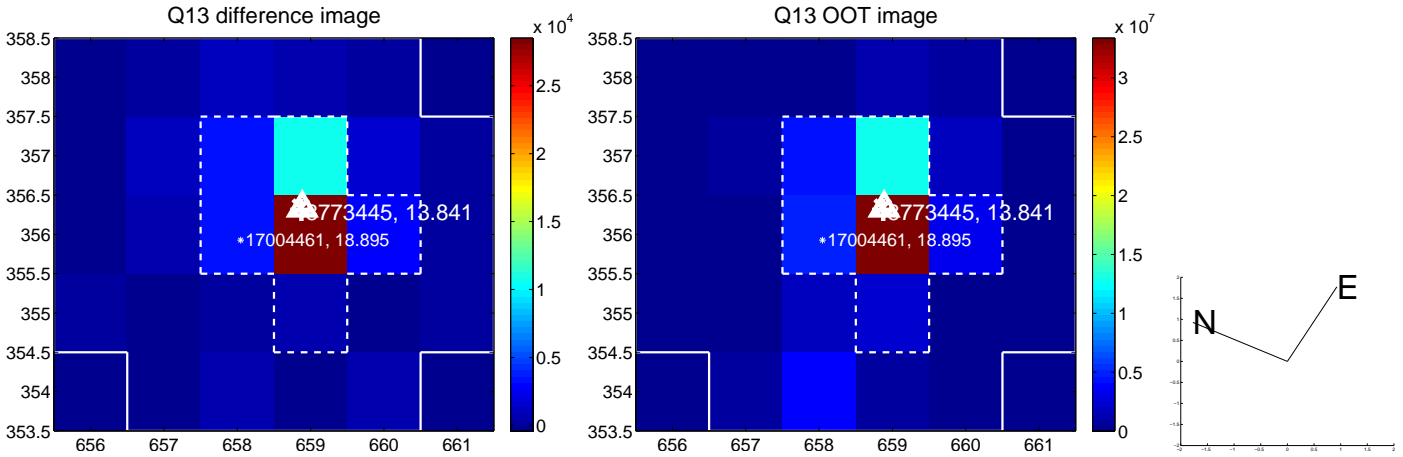
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



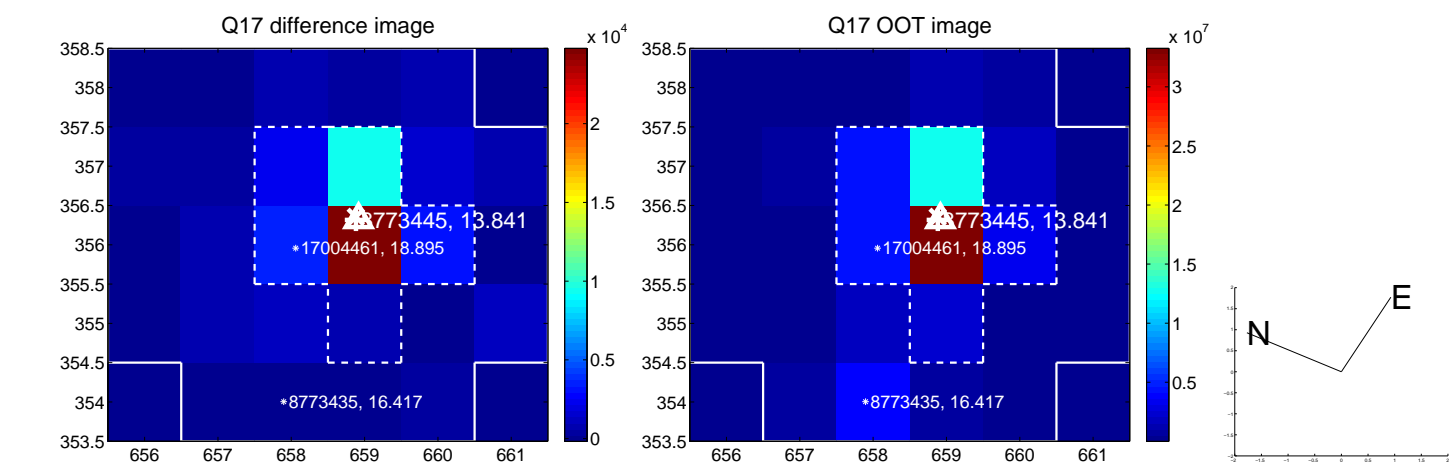
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



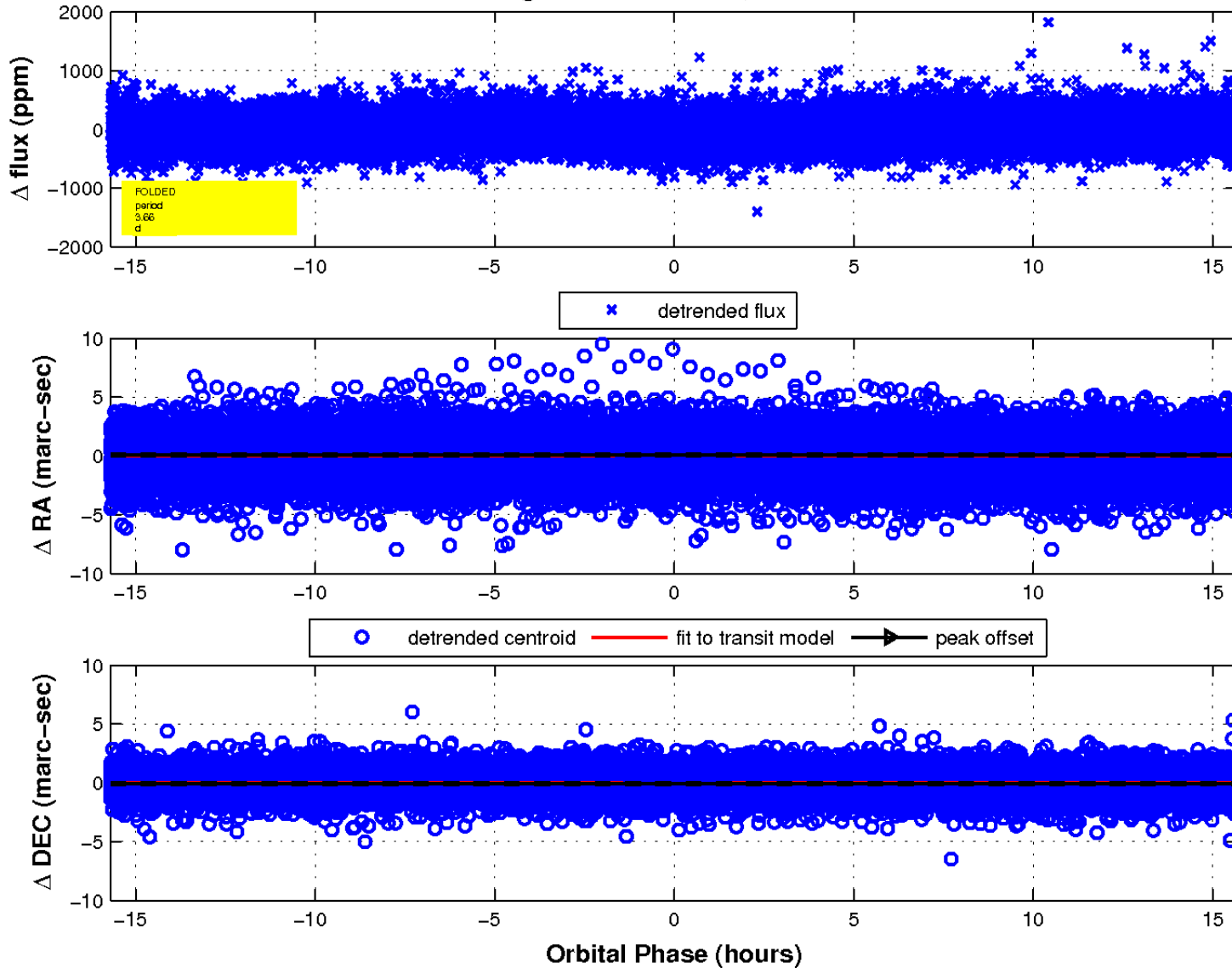
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

