

KIC 004665571

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})
004665571-01	OBS	2393.02	0.766692	132.197820	225.1	1.339	21.0	26.6	0.79	4821	1.46	1335.46
004665571-02	OBS	2393.01	4.603007	133.221096	290.6	2.724	15.0	17.6	0.79	4821	1.58	122.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004665571-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
004665571-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

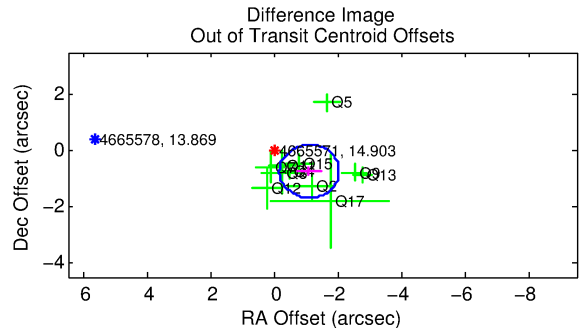
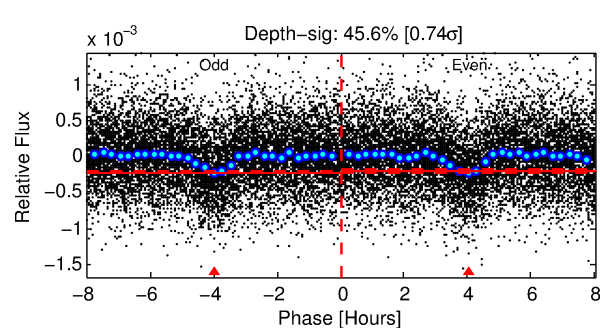
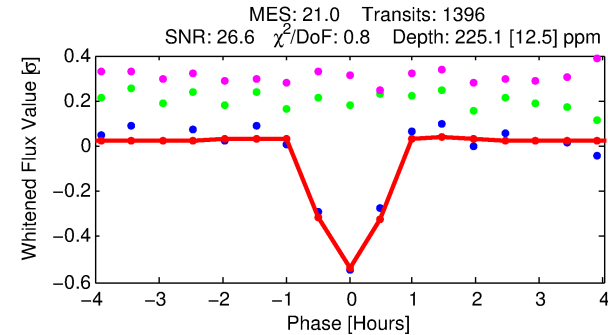
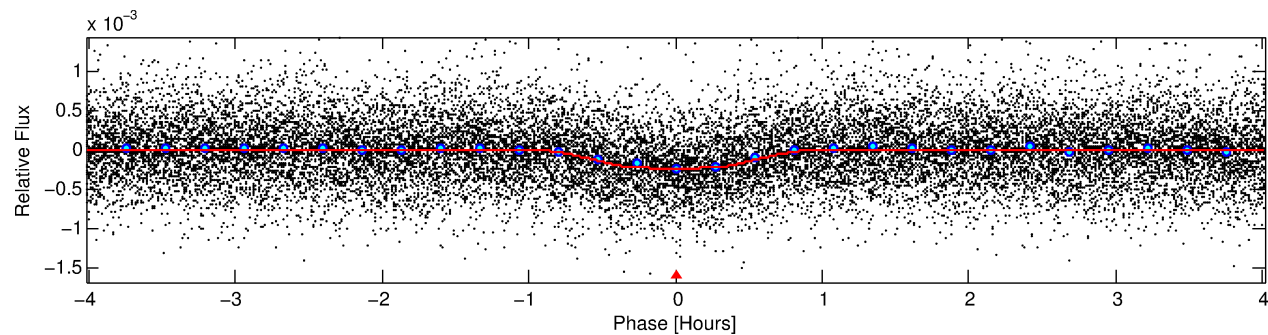
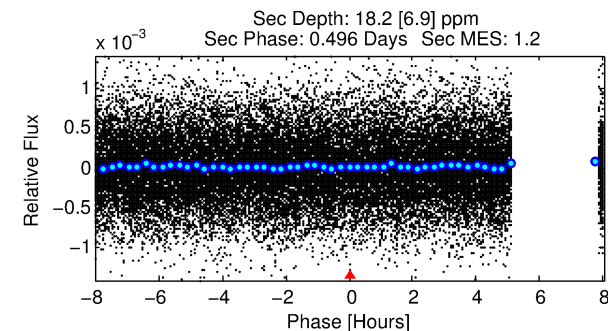
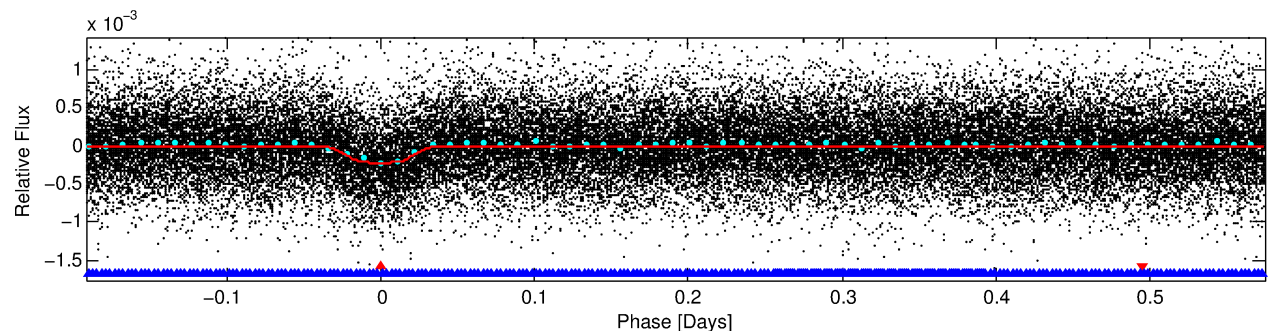
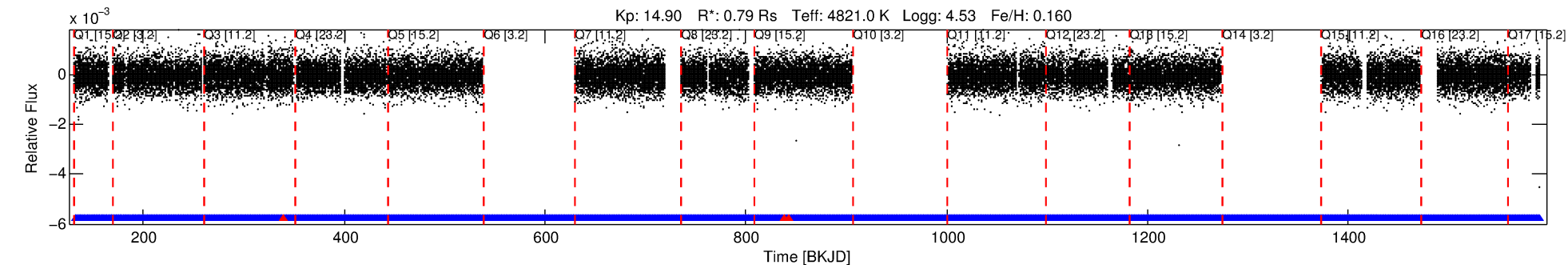
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004665571-01

No Significant Match Found

DV One-Page Summary

KIC: 4665571 Candidate: 1 of 2 Period: 0.767 d
KOI: K02393.02 Corr: 0.935



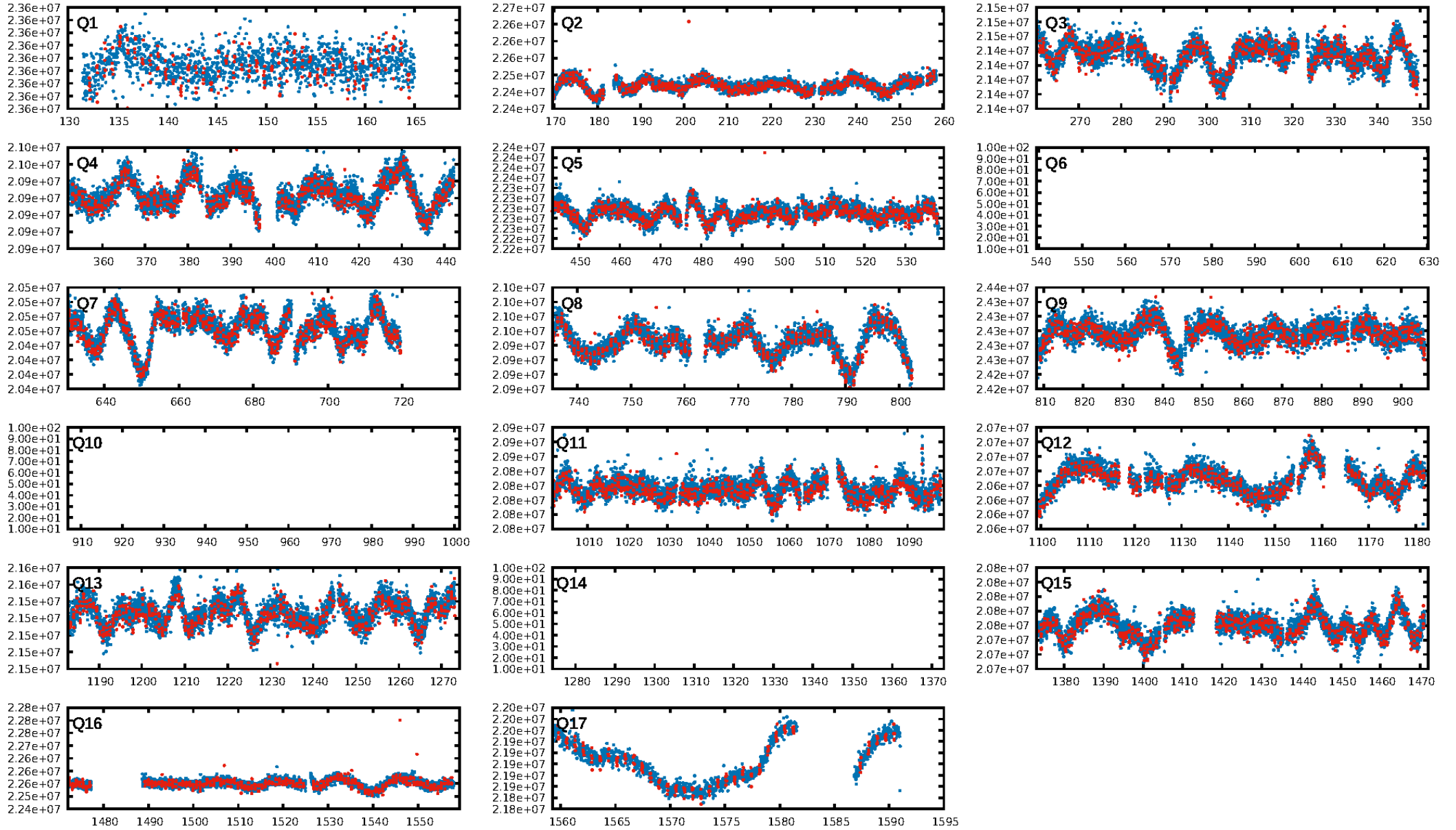
DV Fit Results:

Period = 0.76669 [0.00000] d
Epoch = 132.1978 [0.0007] BKJD
Rp/R* = 0.0169 [0.0075]
a/R* = 2.29 [3.09]
b = 0.90 [0.37]
Seff = 1335.47 [159.82]
Teff = 1541 [46] K
Rp = 1.46 [0.65] Re
a = 0.0150 [0.0009] AU
Ag = 1.06 [1.03] [0.06σ]
Teffp = 2420 [583] K [1.50σ]

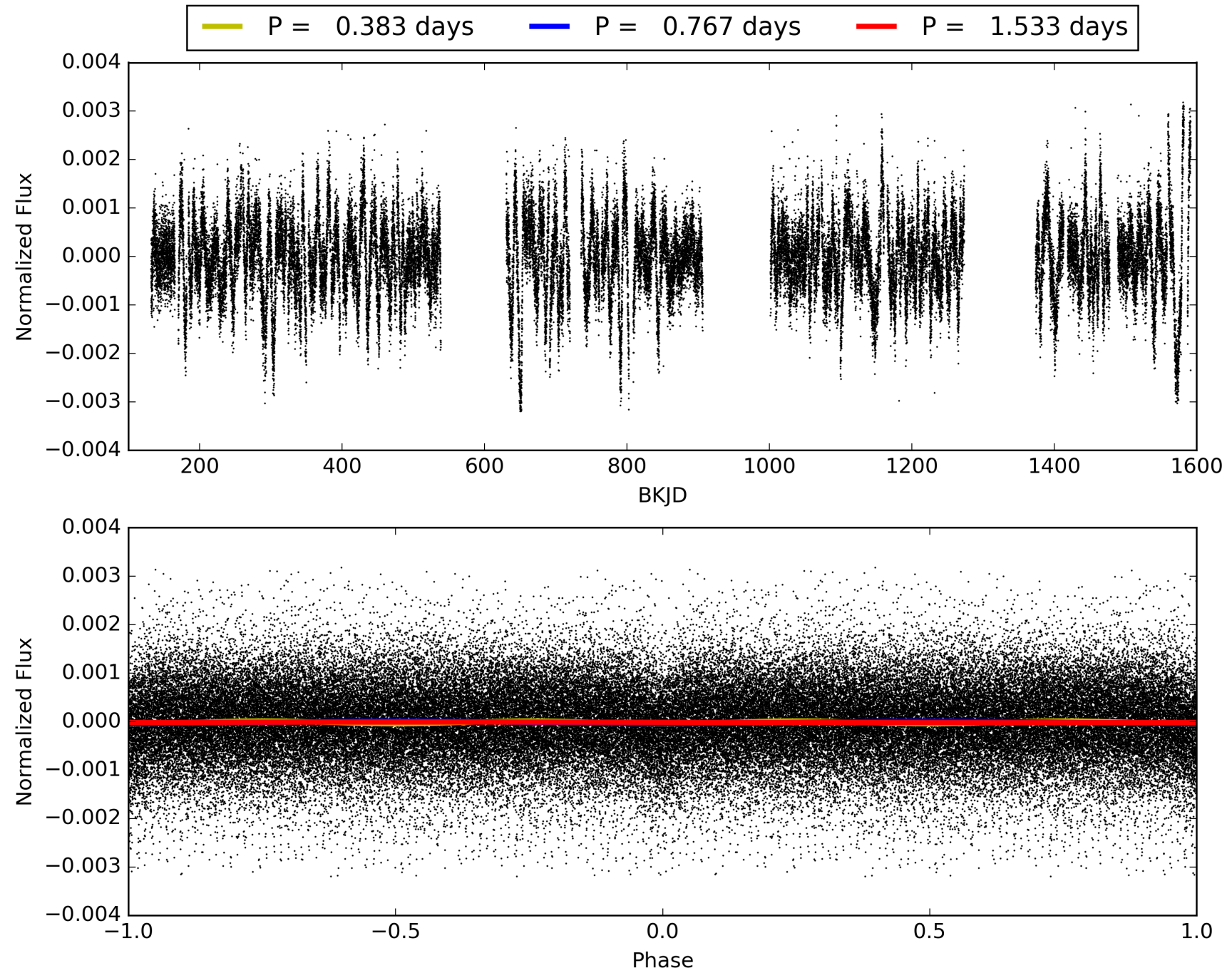
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [30.33σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.42e-91
RollingBand-fgt: 1.00 [1316/1319]
GhostDiagnostic-chr: -6.326
Centroid-sig: 0.0%
Centroid-so: 1.426 arcsec [3.83σ]
OotOffset-rm: 1.313 arcsec [4.18σ]
KicOffset-rm: 0.503 arcsec [1.82σ]
OotOffset-st: 1/3/3/4 [11]
KicOffset-st: 1/3/3/4 [11]
DiffImageQuality-fgm: 0.82 [9/11]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004665571-01, PDC Light Curves

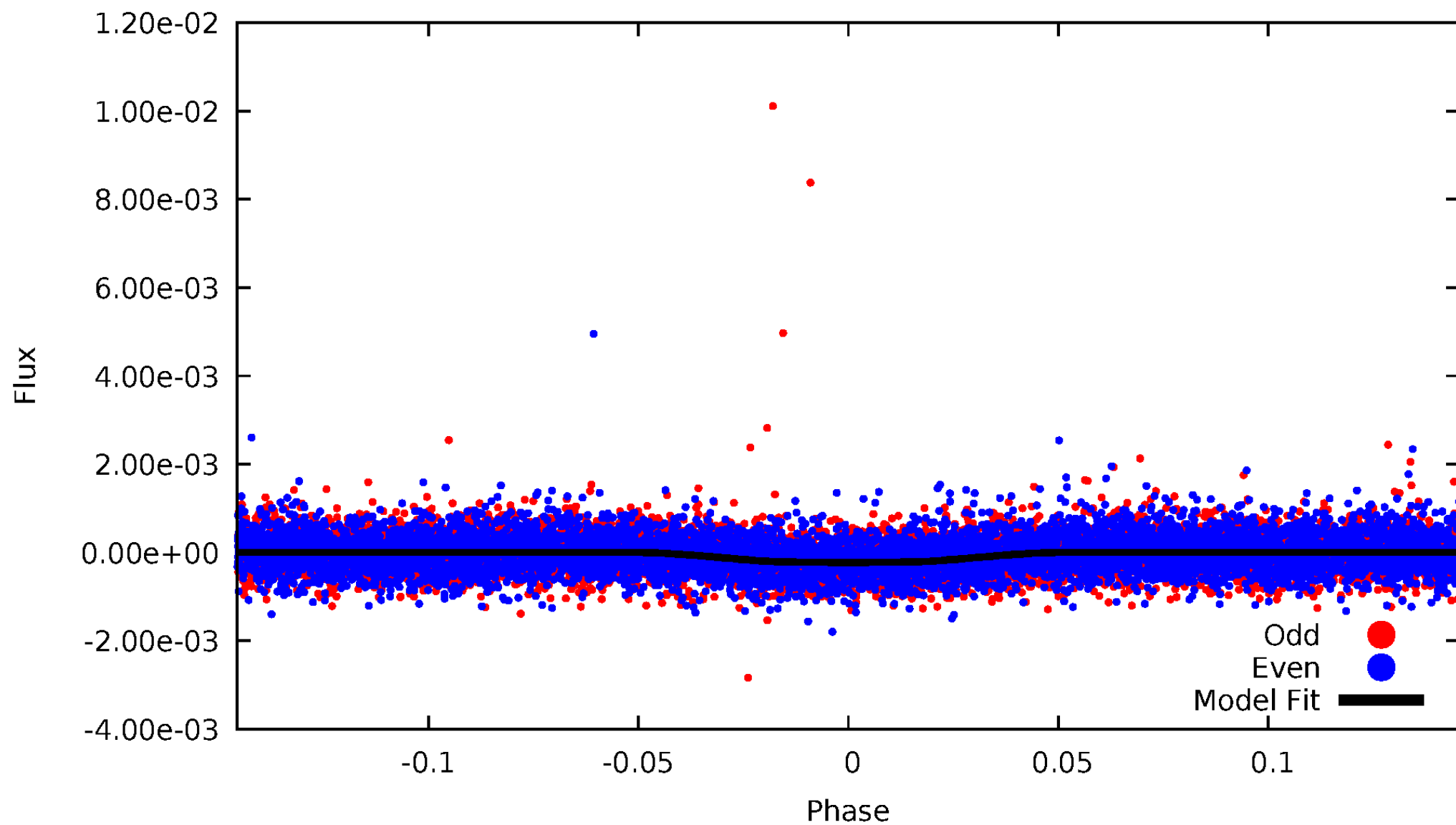


TCE 004665571-01



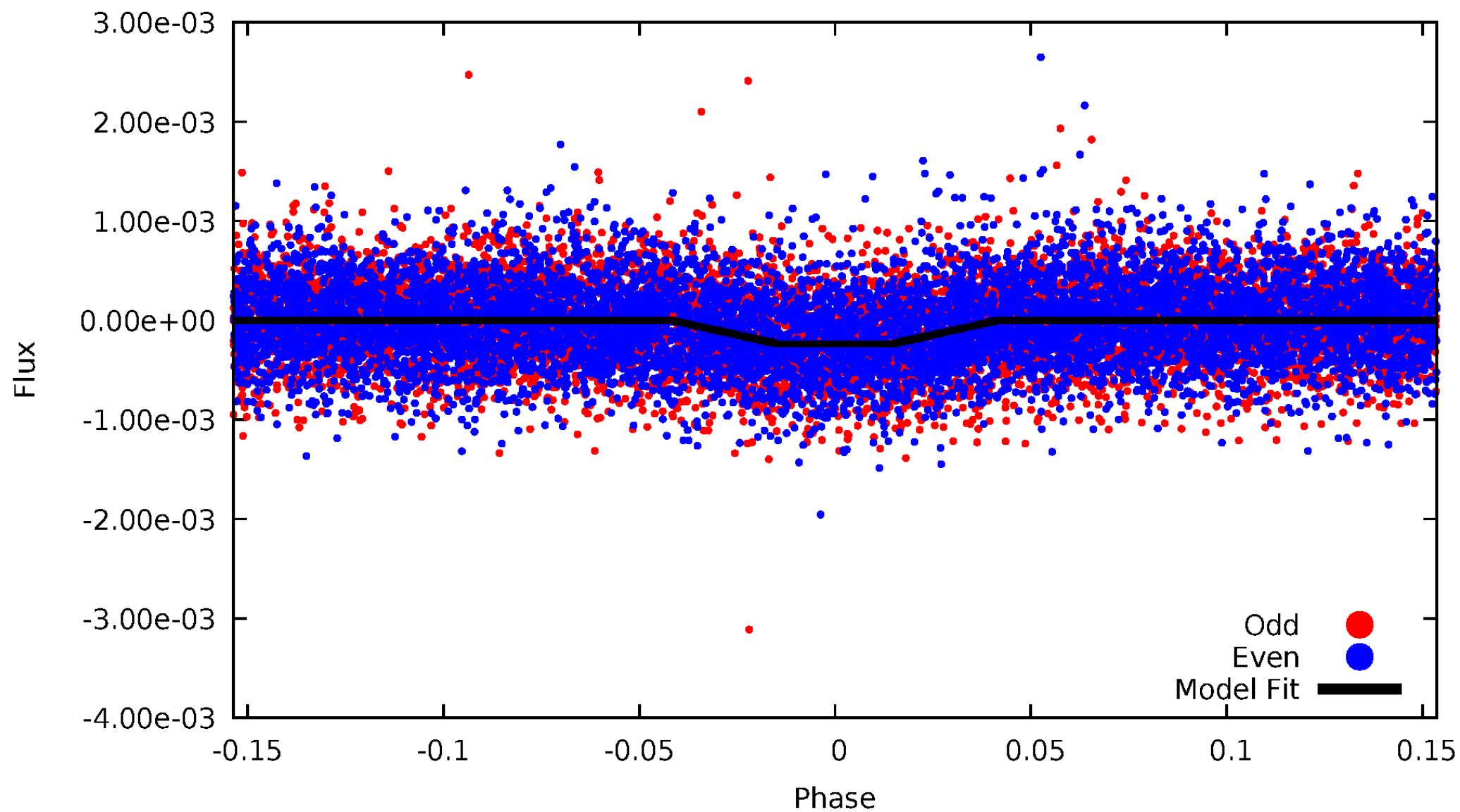
DV Odd/Even

TCE 004665571-01



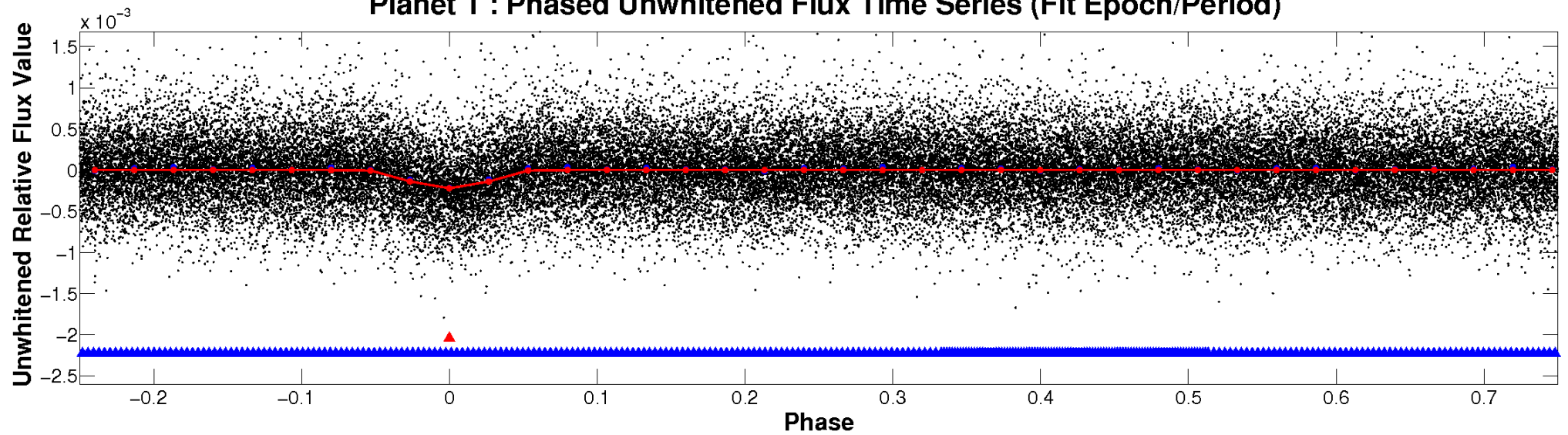
ALT Odd/Even

TCE 004665571-01

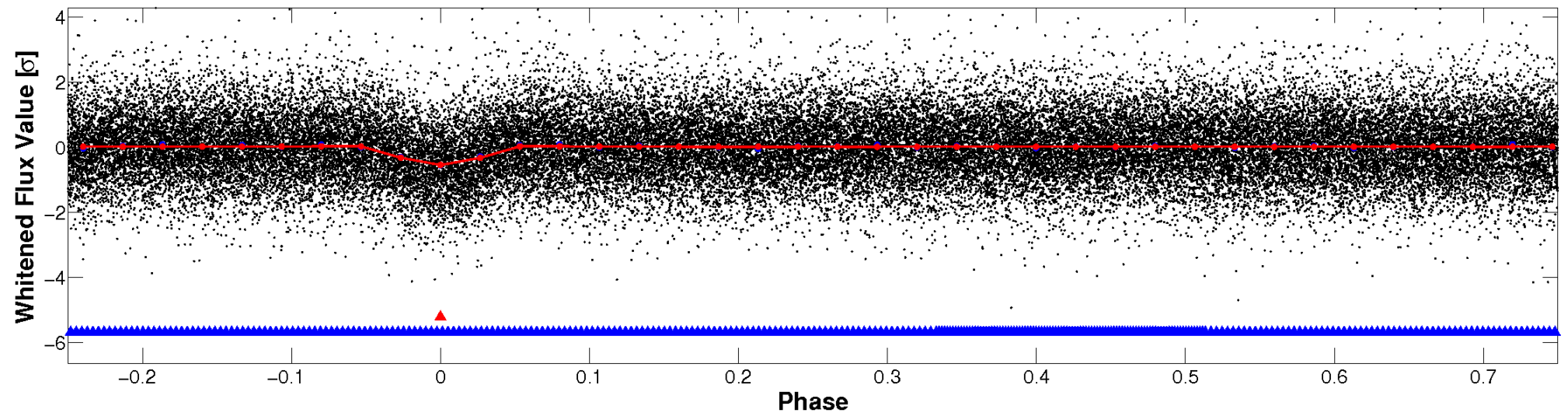


Non-Whitened Vs. Whitened Light Curve

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

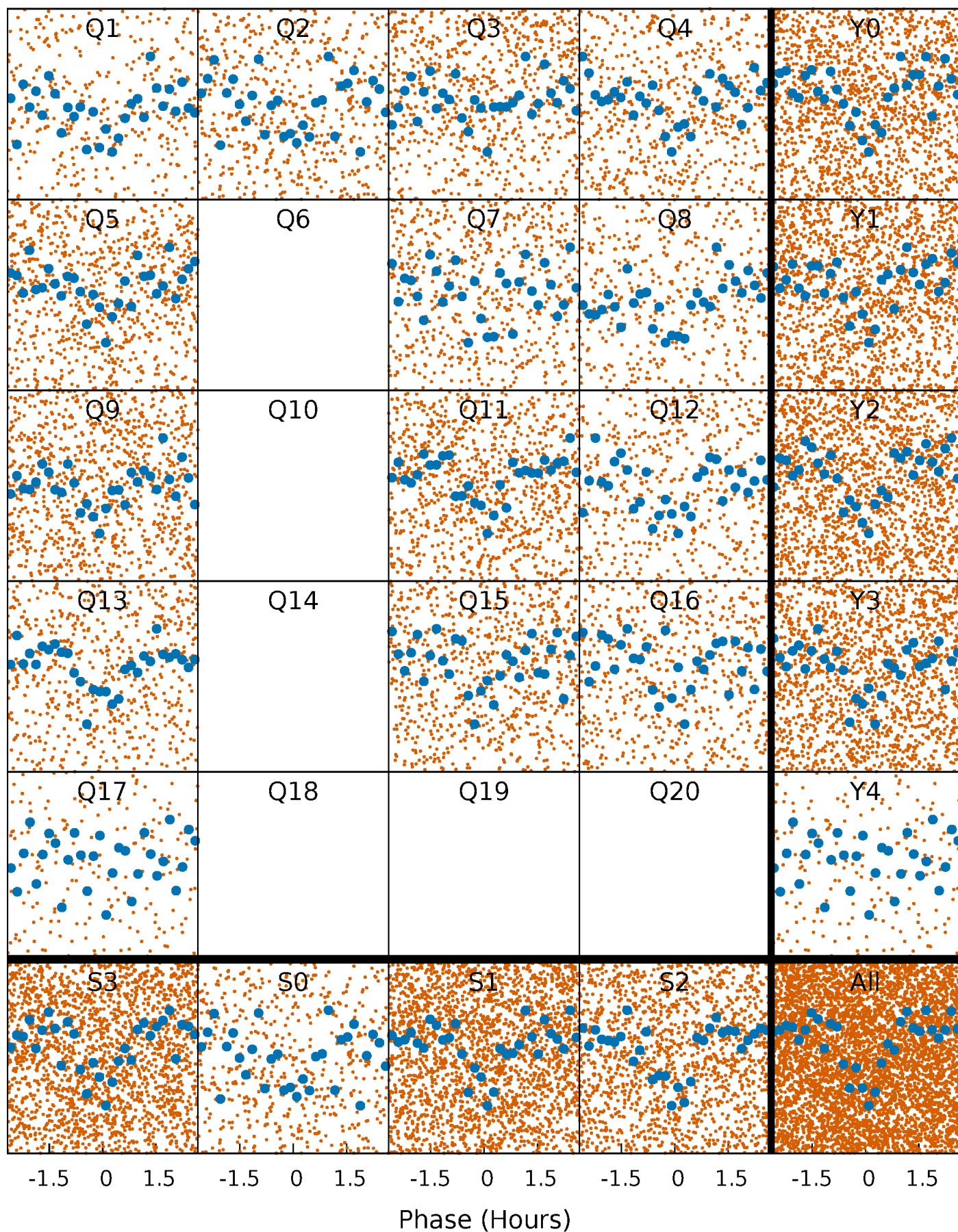


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



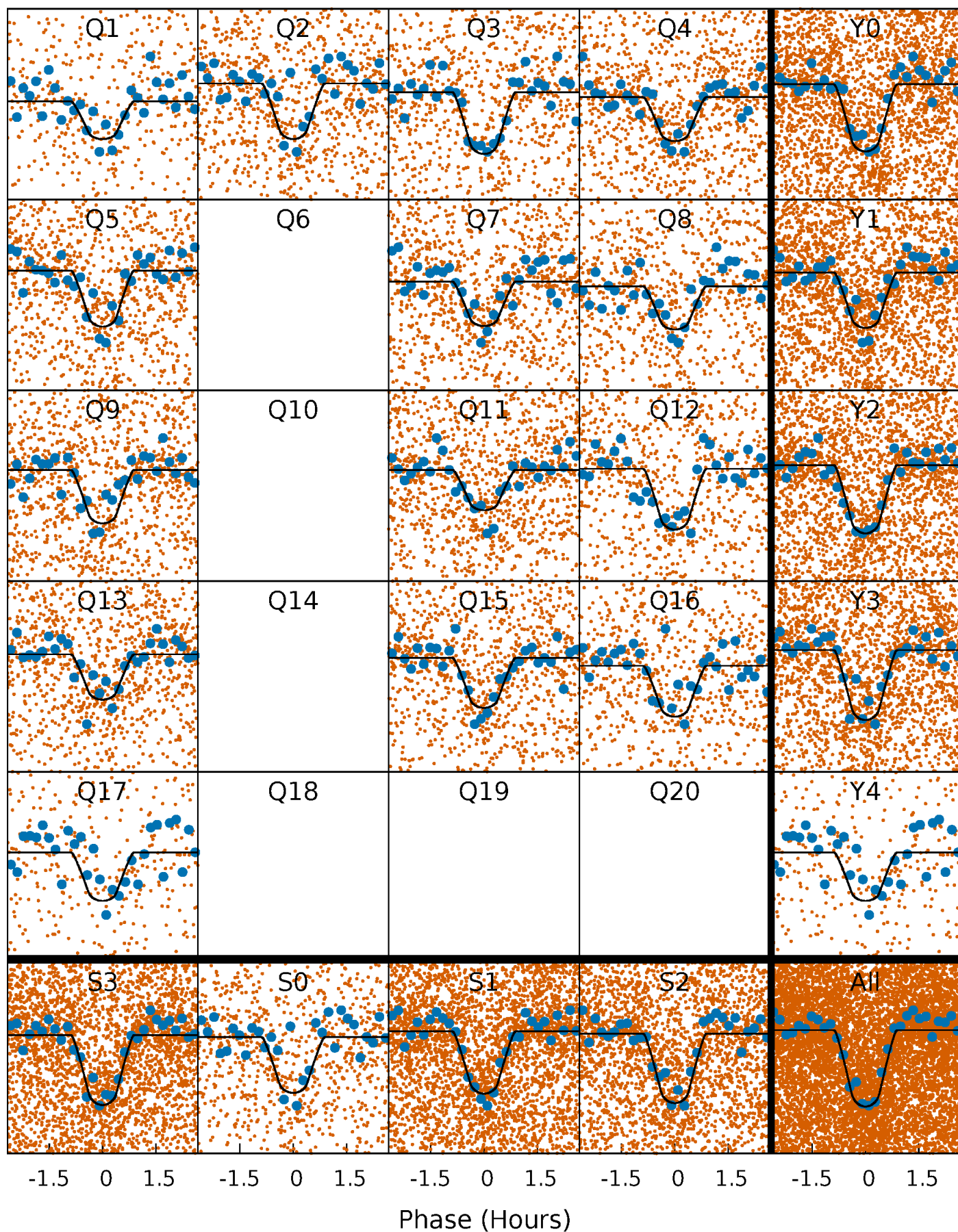
PDC Quarter-Phased Transit Curves

TCE 004665571-01 P= 0.766692 Days $T_0=132.197820$ (BKJD)



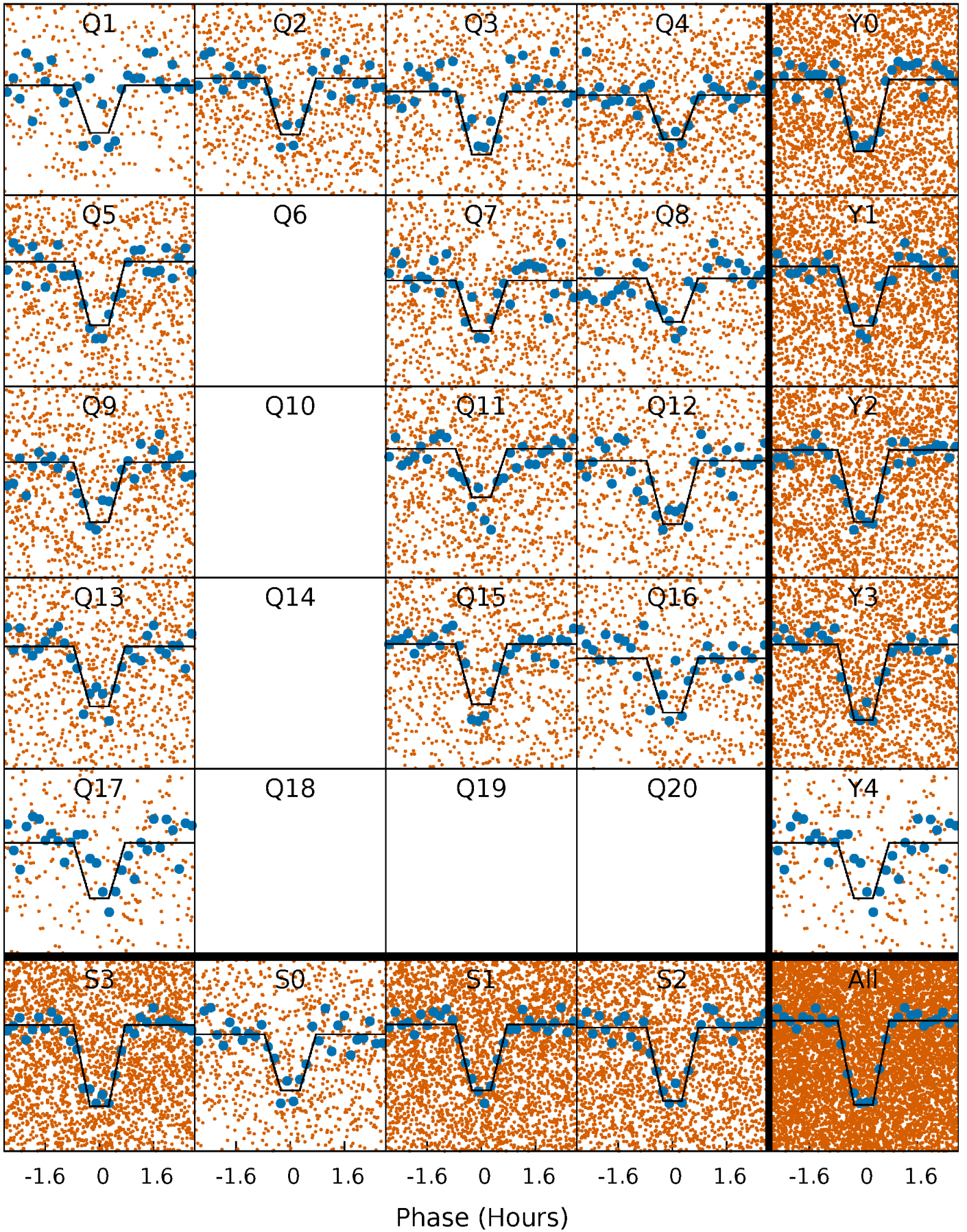
DV Quarter-Phased Transit Curves

TCE 004665571-01 P= 0.766692 Days $T_0=132.197820$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

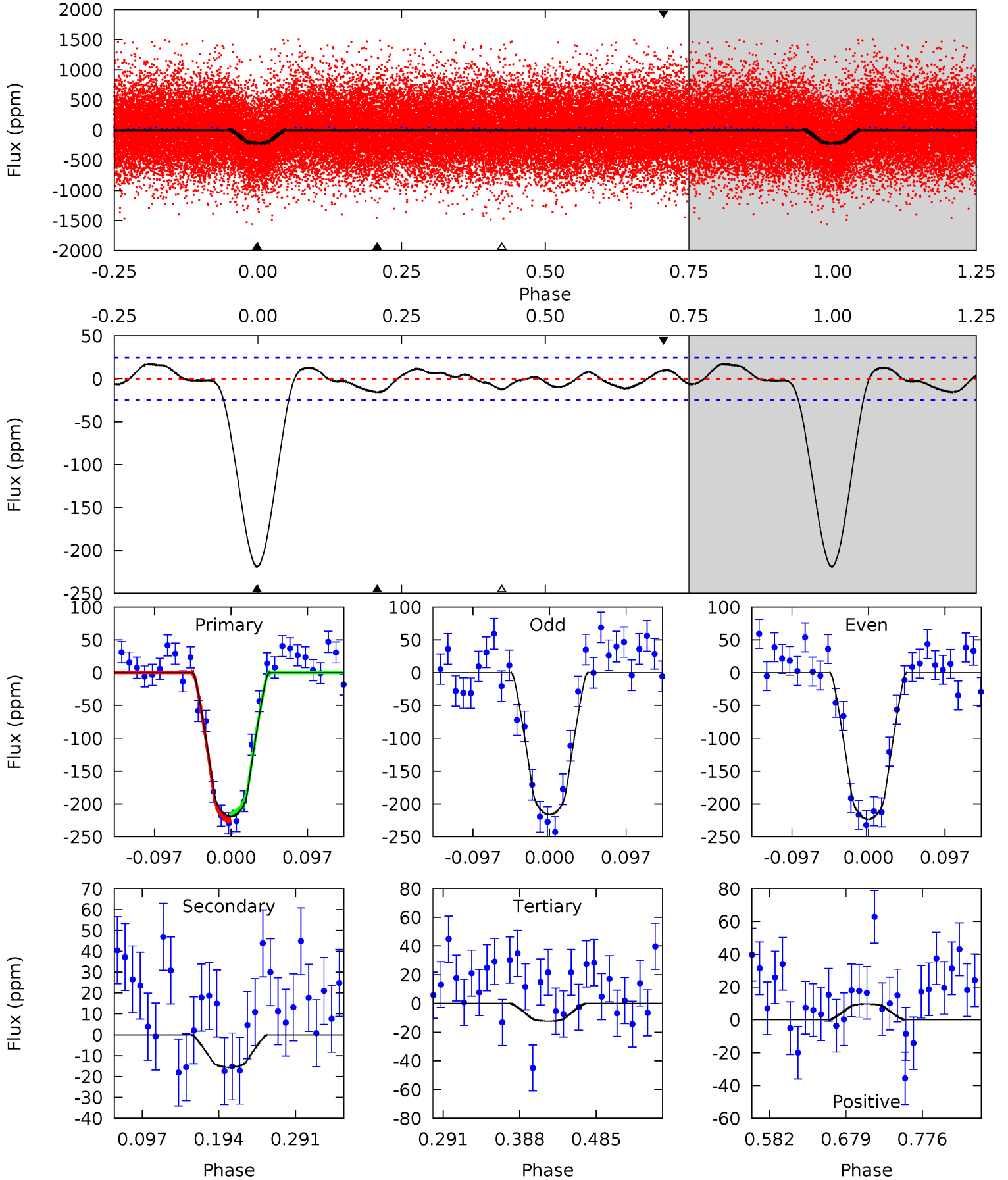
TCE 004665571-01 P= 0.766691 Days $T_0=132.197731$ (BKJD)



DV Model-Shift Uniqueness Test

004665571-01, P = 0.766692 Days, E = 131.431128 Days

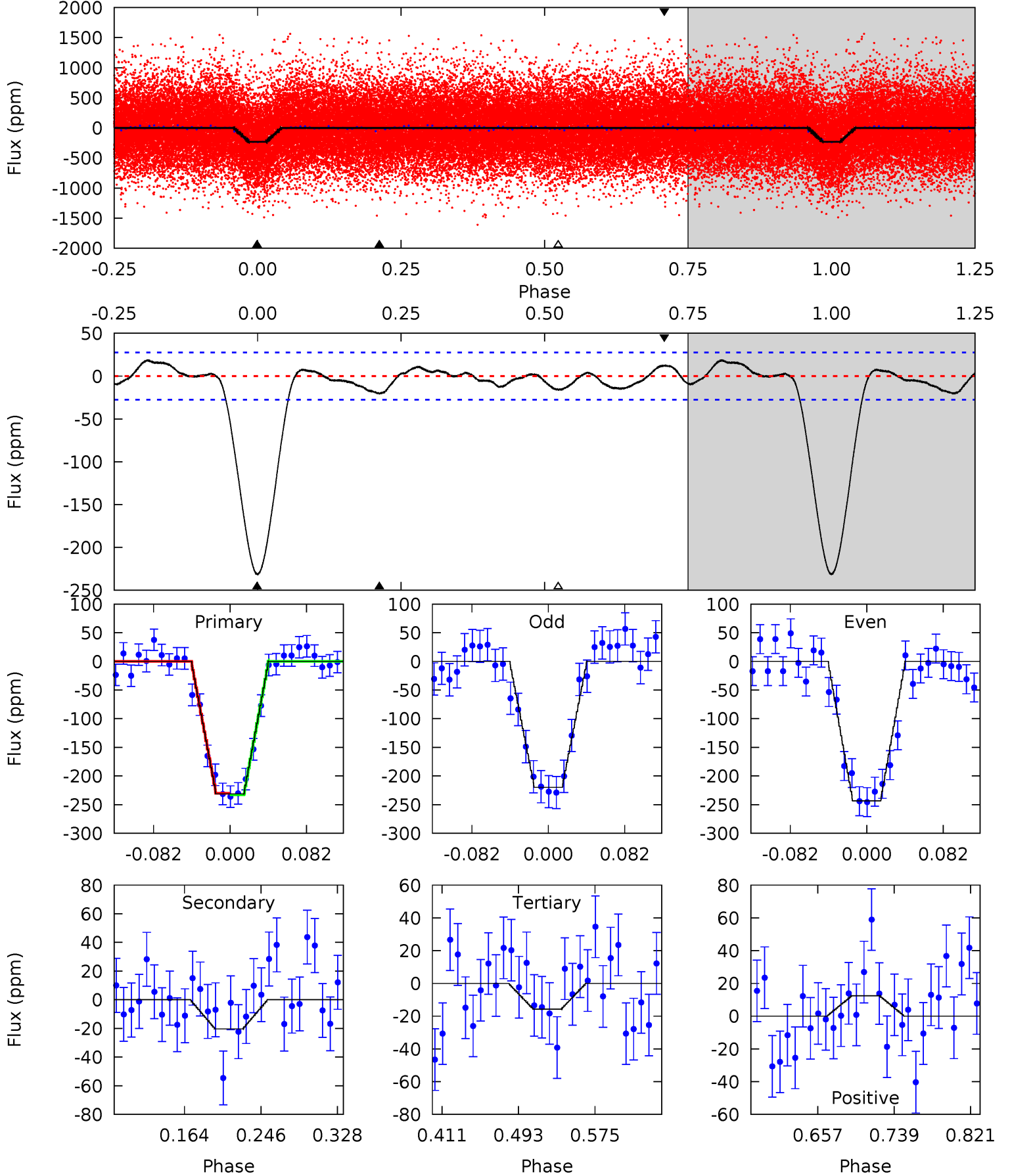
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.3	2.87	2.27	1.78	4.57	1.66	1.38	38.0	38.5	0.60	1.09	0.64	0.94	0.07	0.92



Alt Model-Shift Uniqueness Test

004665571-01, P = 0.766691 Days, E = 131.431040 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.6	3.40	2.64	2.08	4.61	1.74	1.39	36.0	36.6	0.76	1.32	1.96	0.99	0.07	0.21



Stellar Parameters For KIC 004665571

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4821^{+76}_{-76}	$4.529^{+0.060}_{-0.020}$	$0.160^{+0.150}_{-0.150}$	$0.788^{+0.028}_{-0.051}$	$0.765^{+0.051}_{-0.028}$	$2.204^{+0.510}_{-0.148}$
	+2%/-2%	+1%/-0%	+94%/-94%	+4%/-6%	+7%/-4%	+23%/-7%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 004665571-01 / KOI 2393.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-16 ± 5	$1.41^{+0.72}_{-0.64}$	2137^{+45}_{-47}	2799^{+697}_{-627}	$0.922^{+2.220}_{-0.541}$
Alt.	-20 ± 6	$1.32^{+0.66}_{-0.60}$	2144^{+42}_{-49}	3025^{+758}_{-489}	$1.387^{+3.508}_{-0.792}$

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

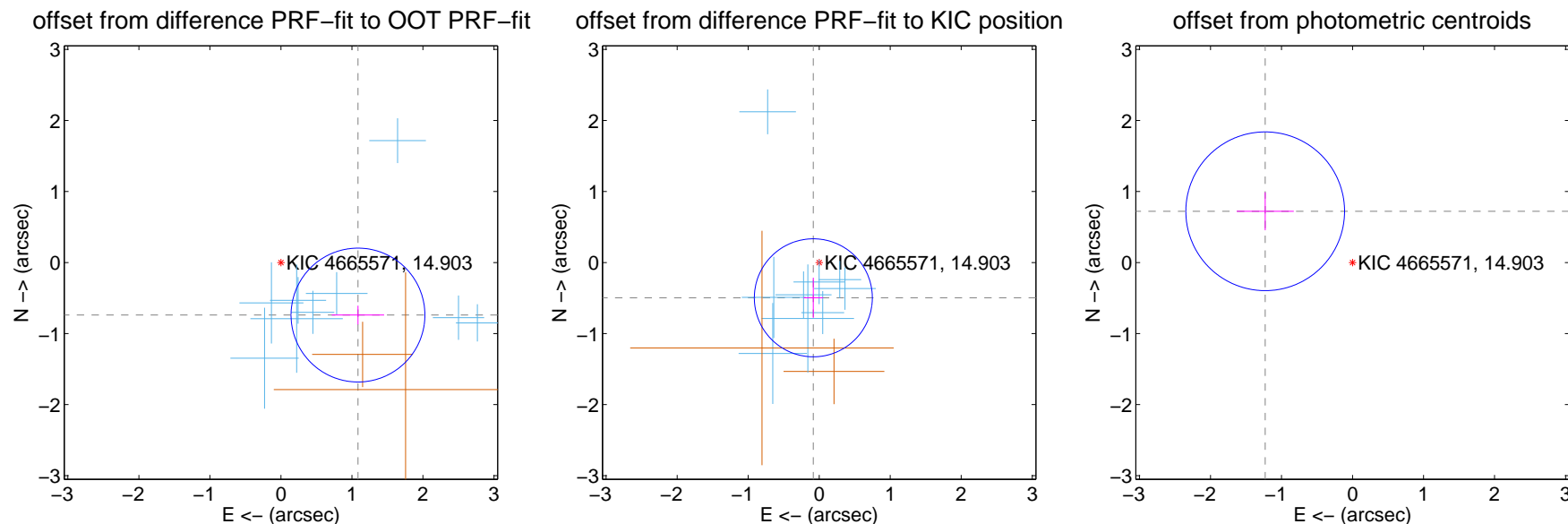
DV Centroid Data

Supplemental centroid analysis for 004665571-01. Kepler magnitude: 14.90. Transit SNR 26.57

There are 9 quarters with good PRF difference image offsets

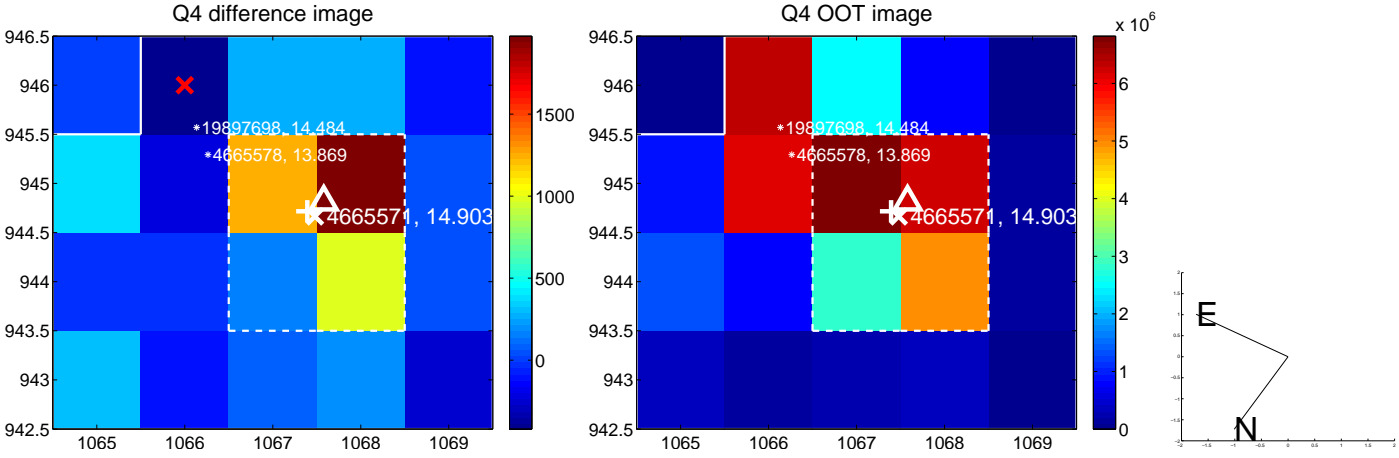
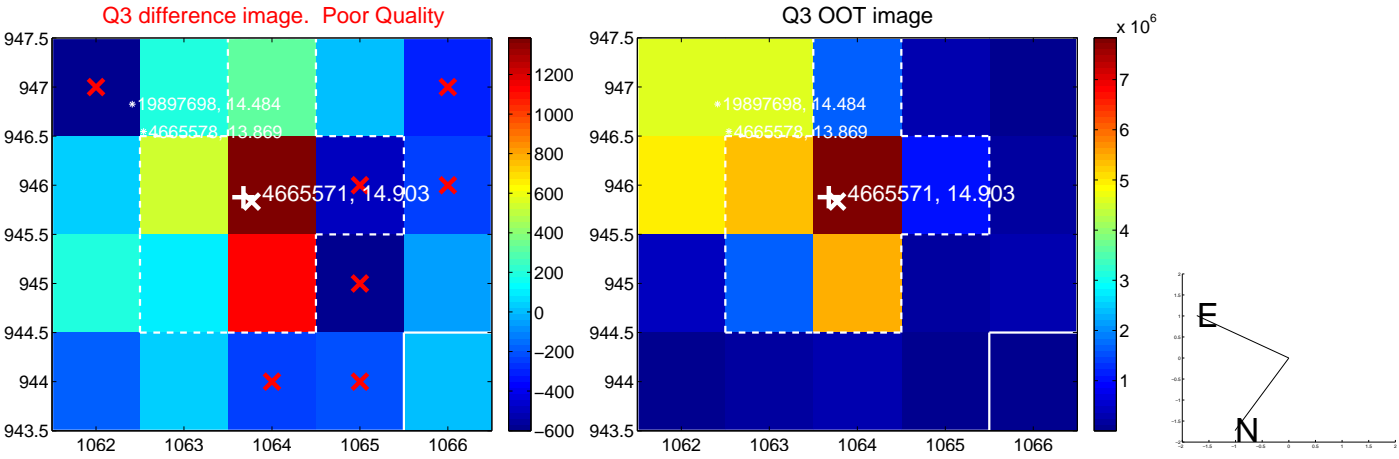
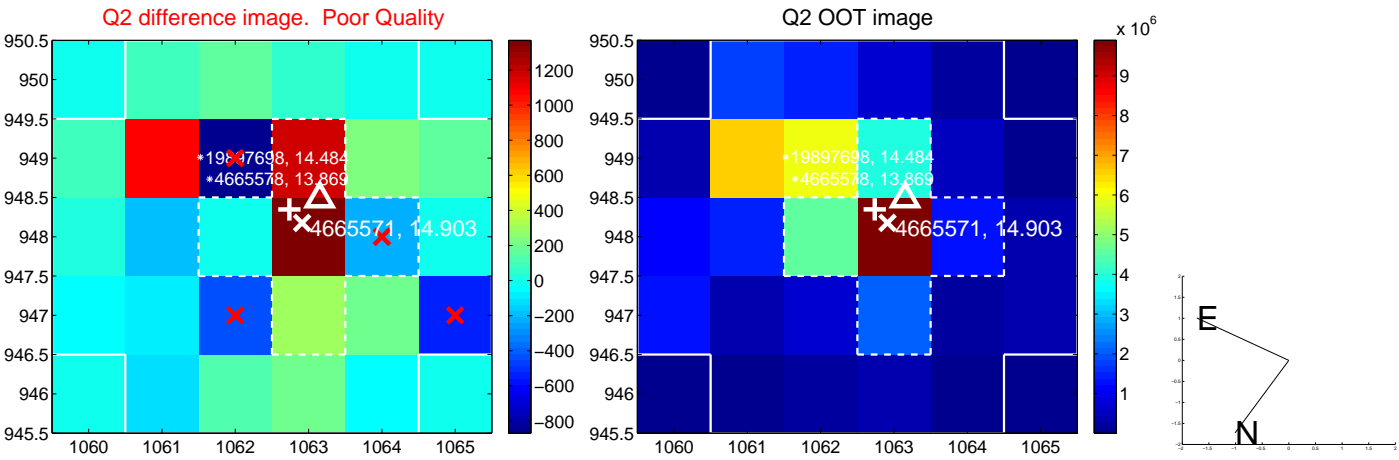
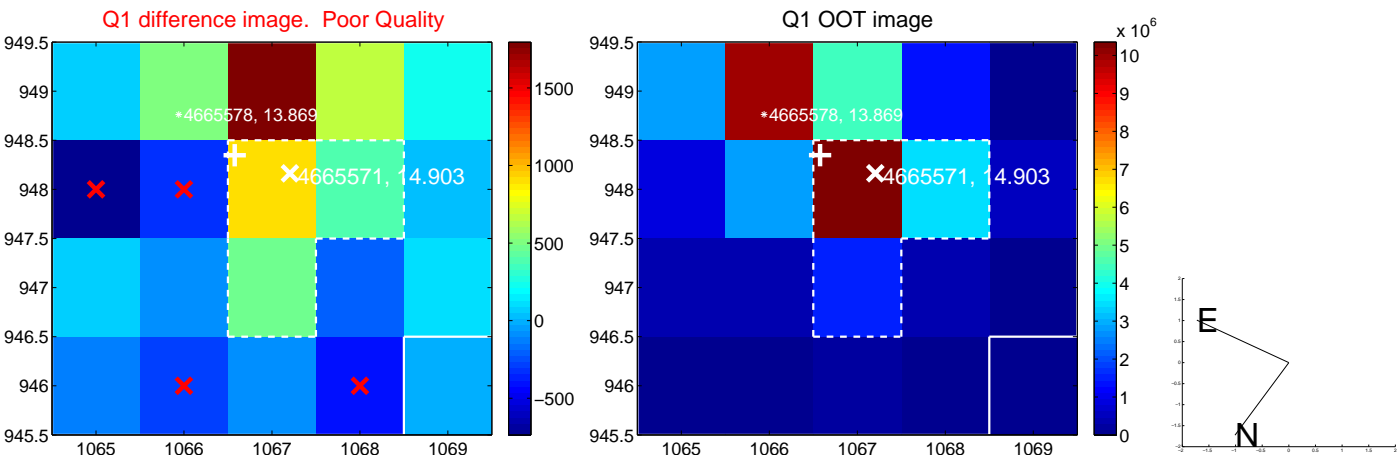
The OOT PRF centroid is offset from the target star catalog position by about 2.63 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.313 ± 0.314	4.18	-1.085 ± 0.369	-0.739 ± 0.132
PRF-fit source offset from KIC position	0.503 ± 0.277	1.82	0.082 ± 0.138	-0.497 ± 0.283
photometric centroid source offset	1.43 ± 0.37	3.83	1.23 ± 0.40	0.72 ± 0.27

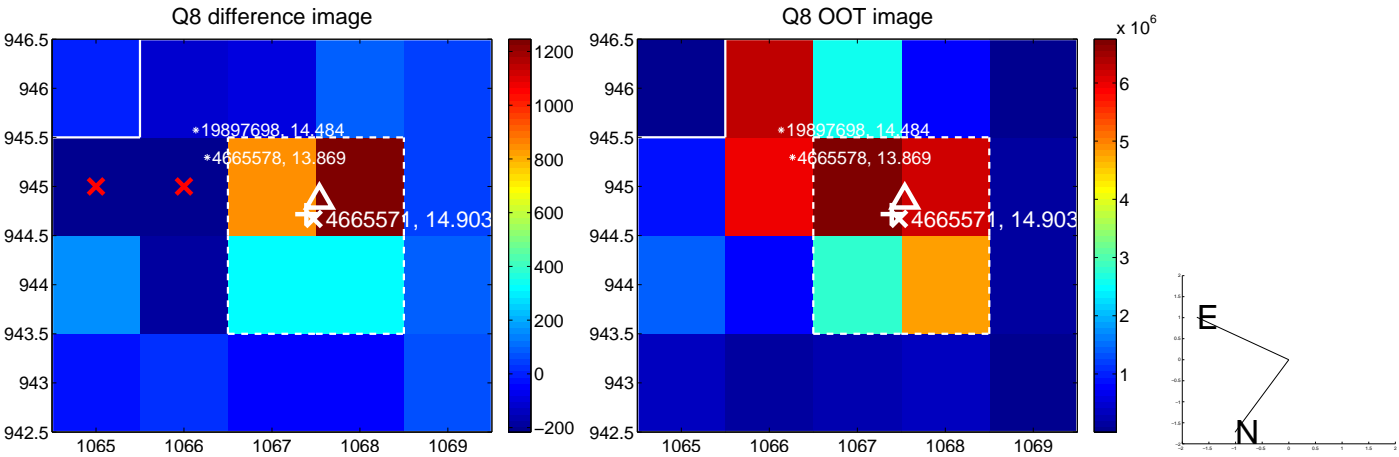
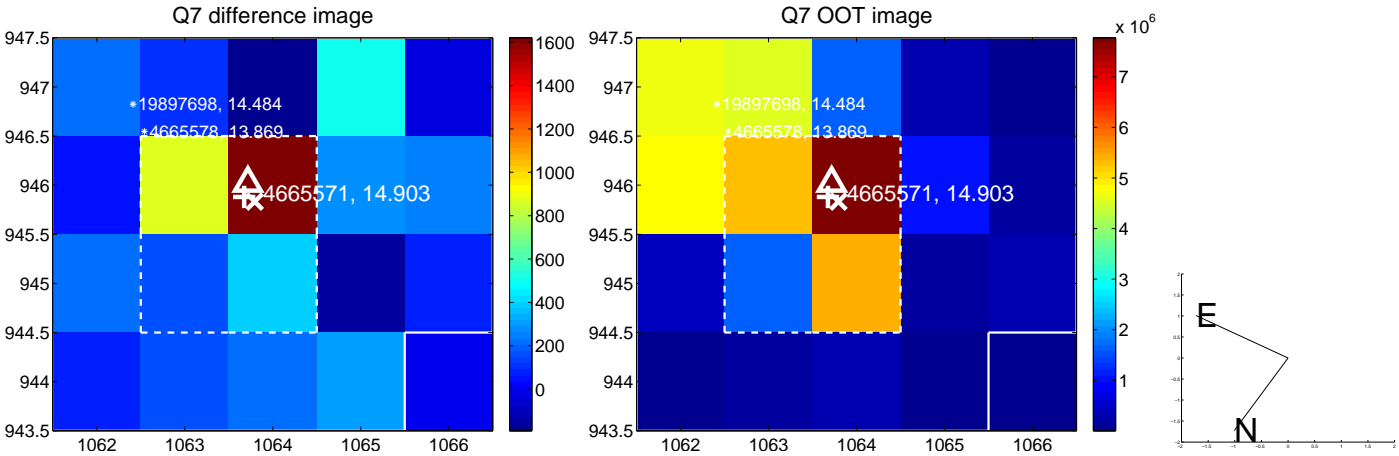
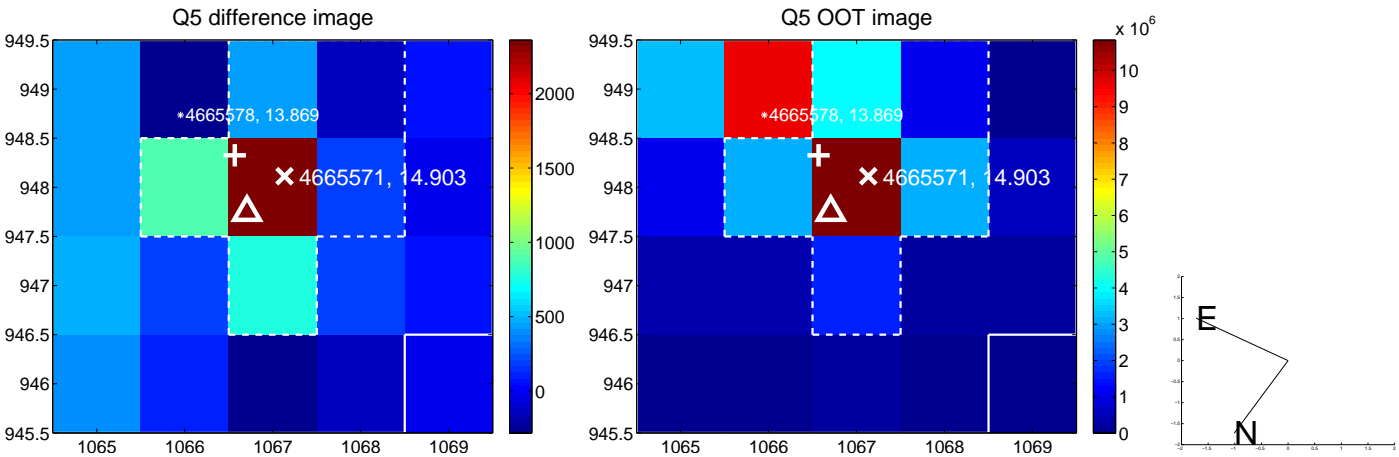


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

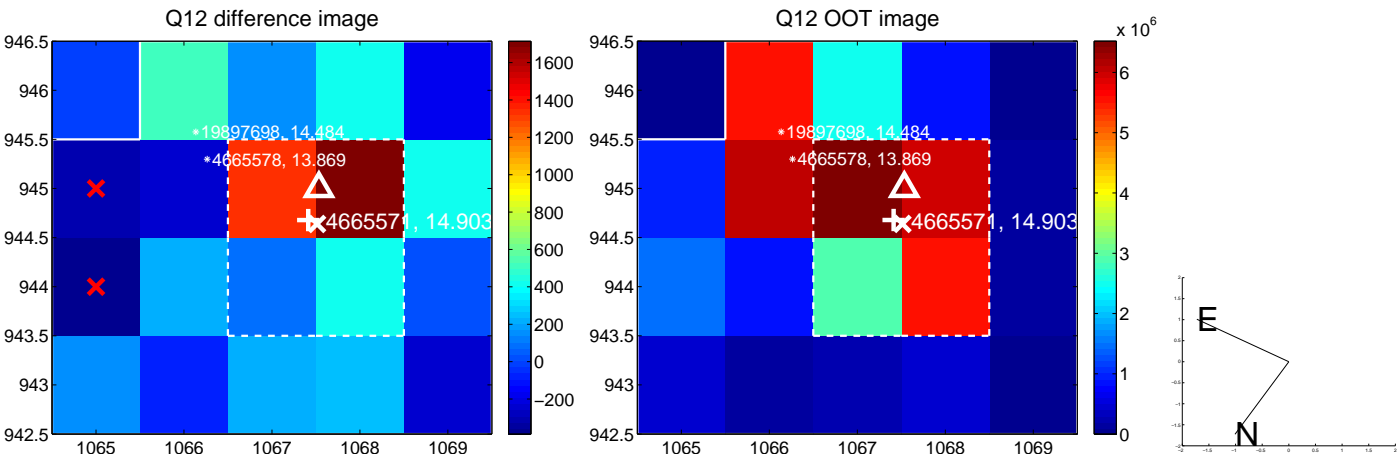
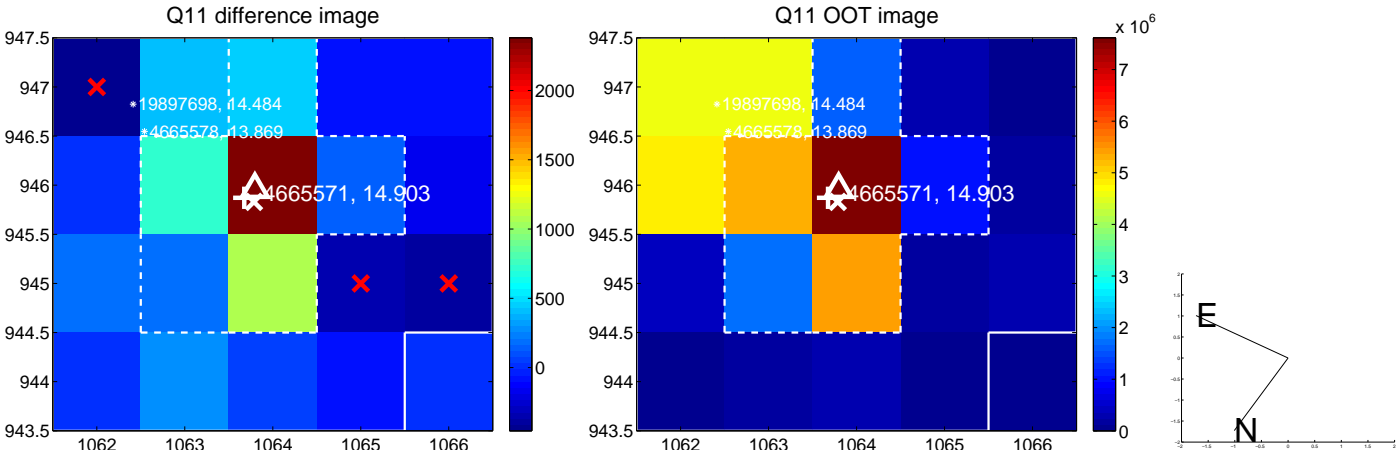
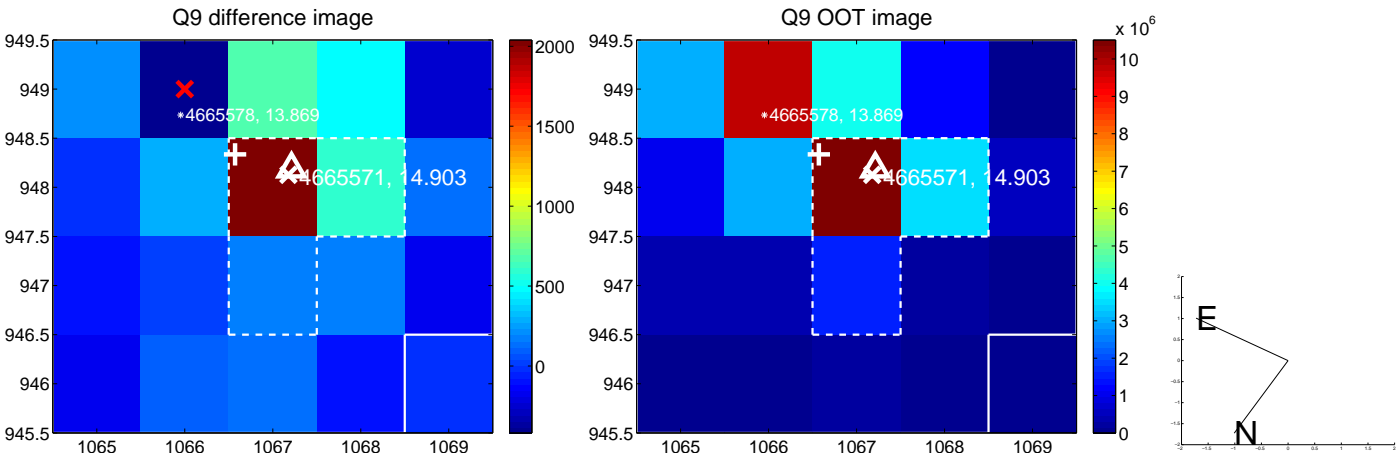
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



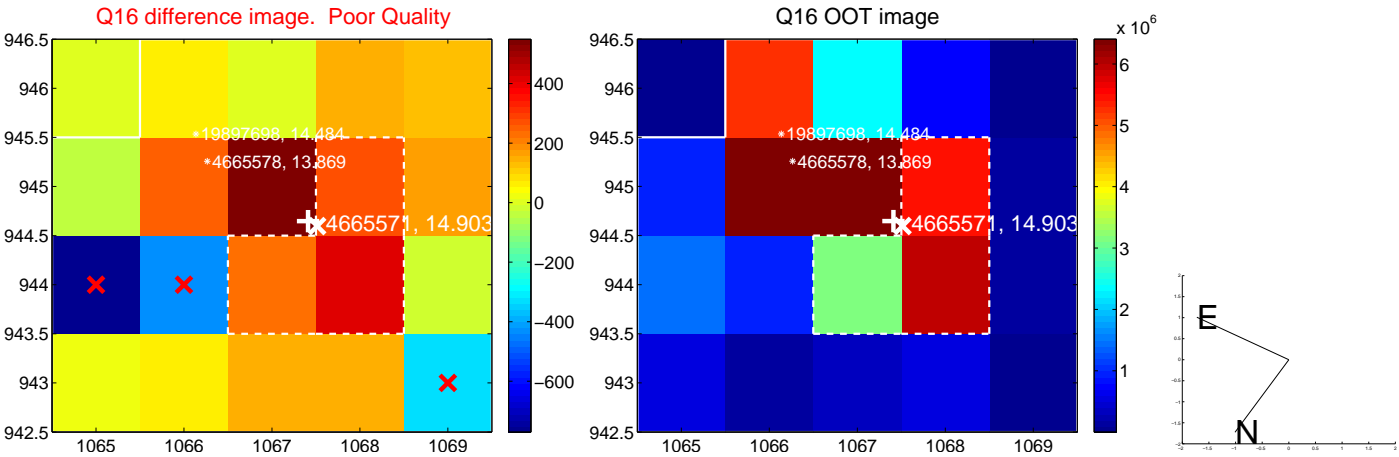
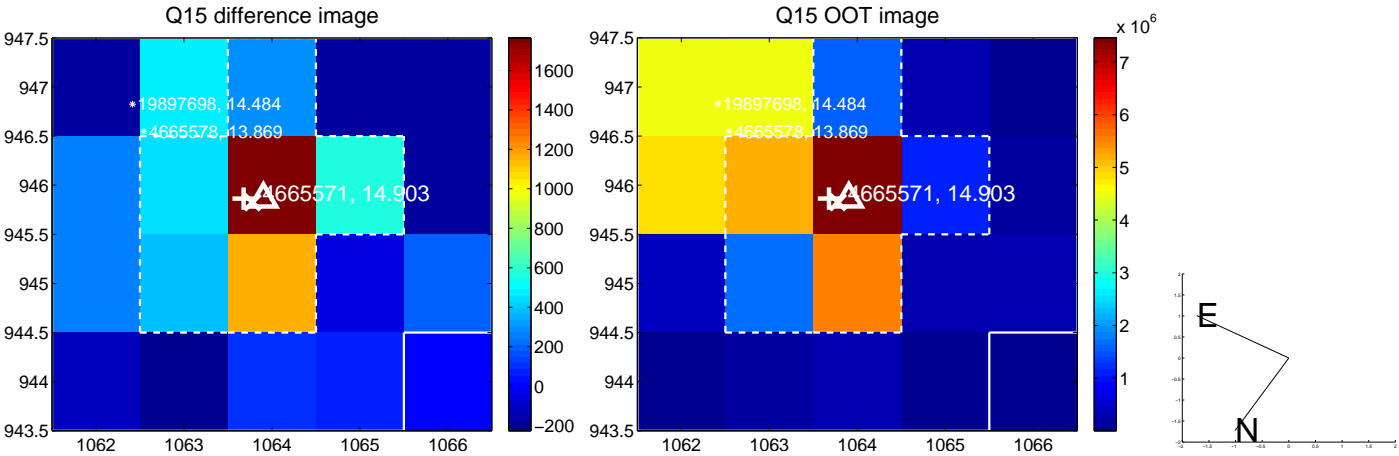
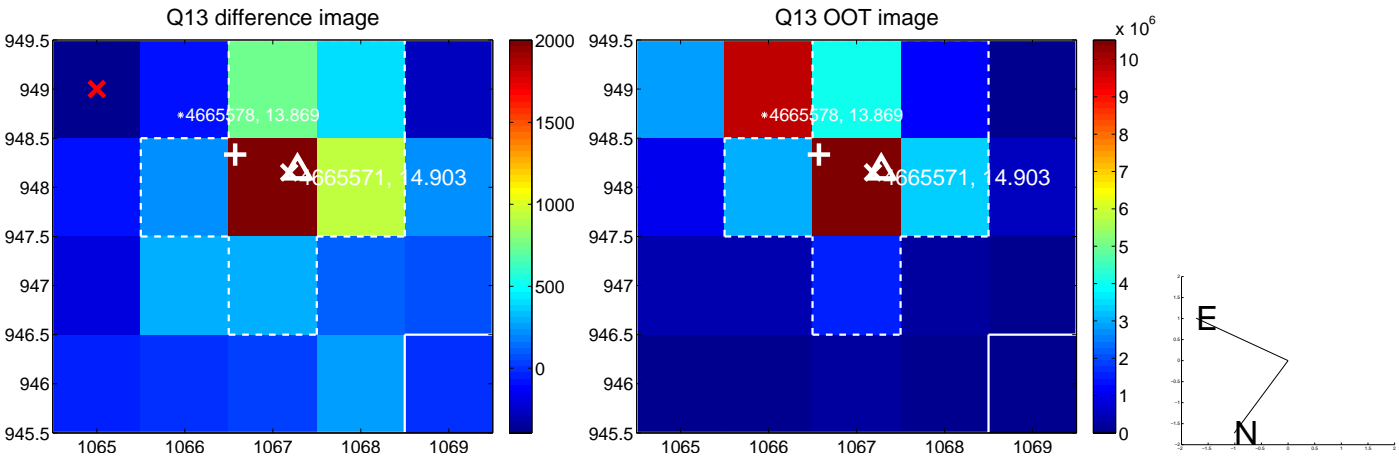
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



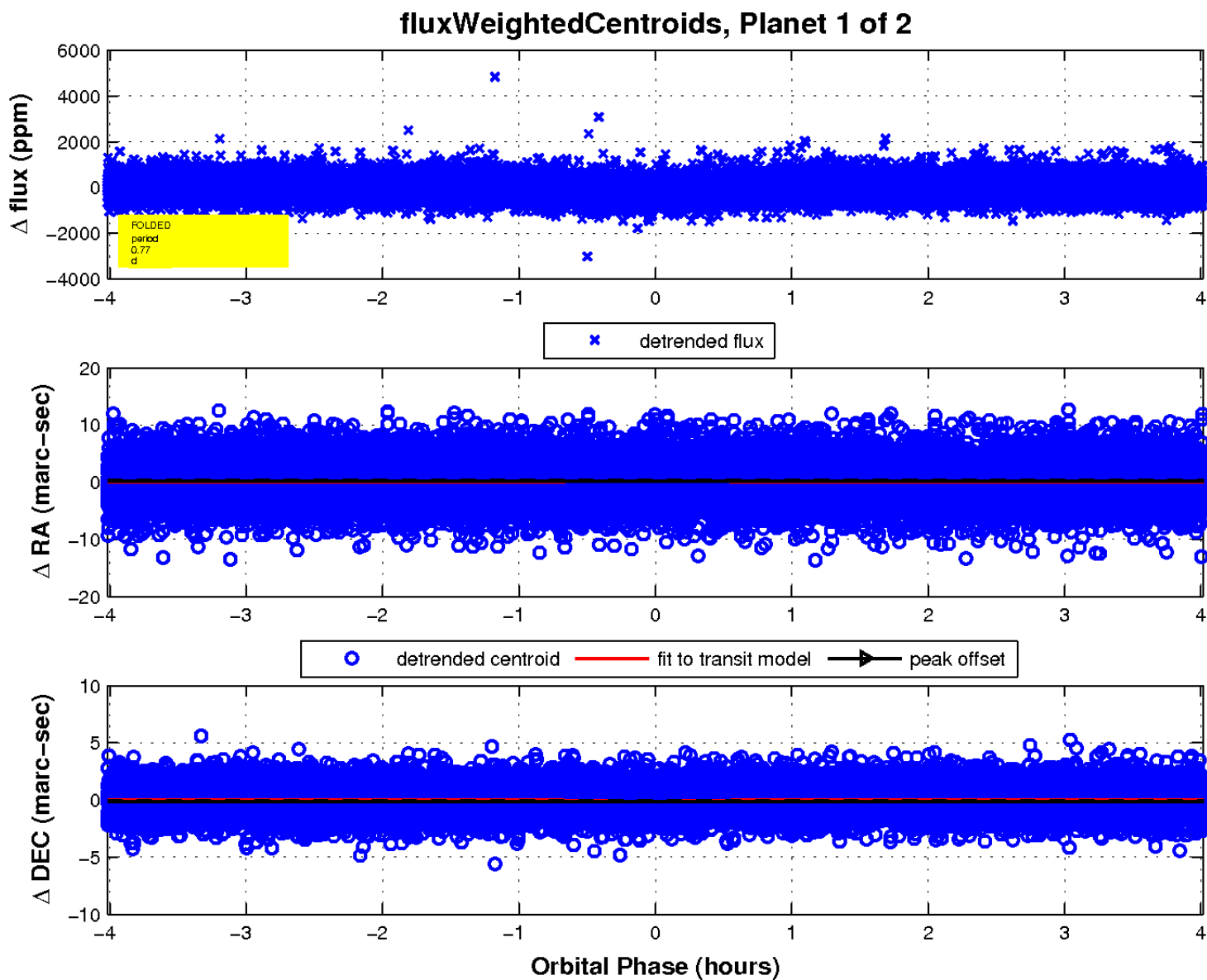
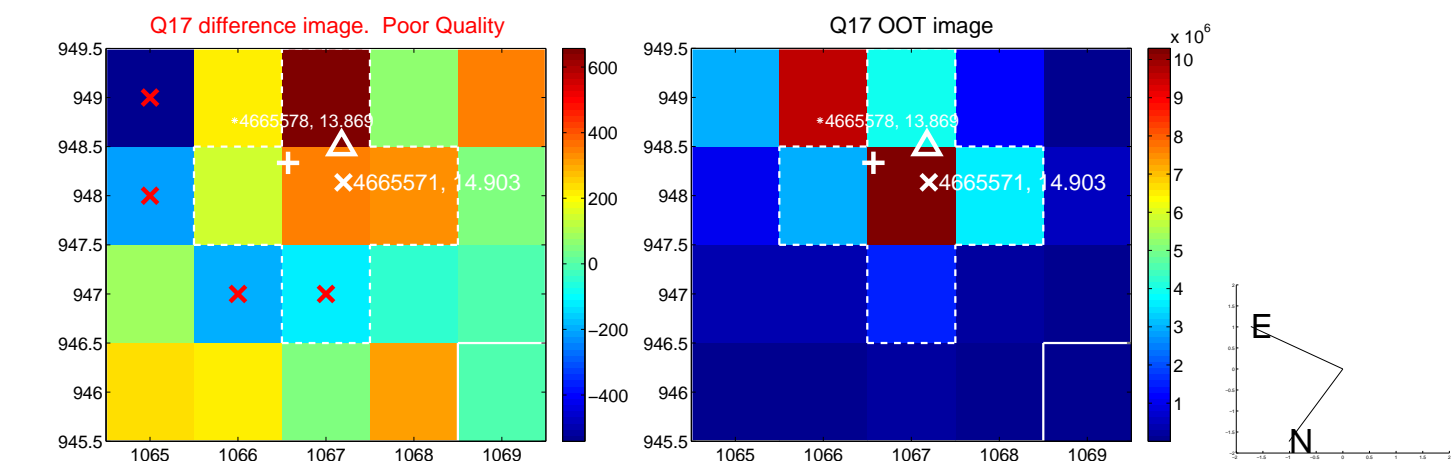
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

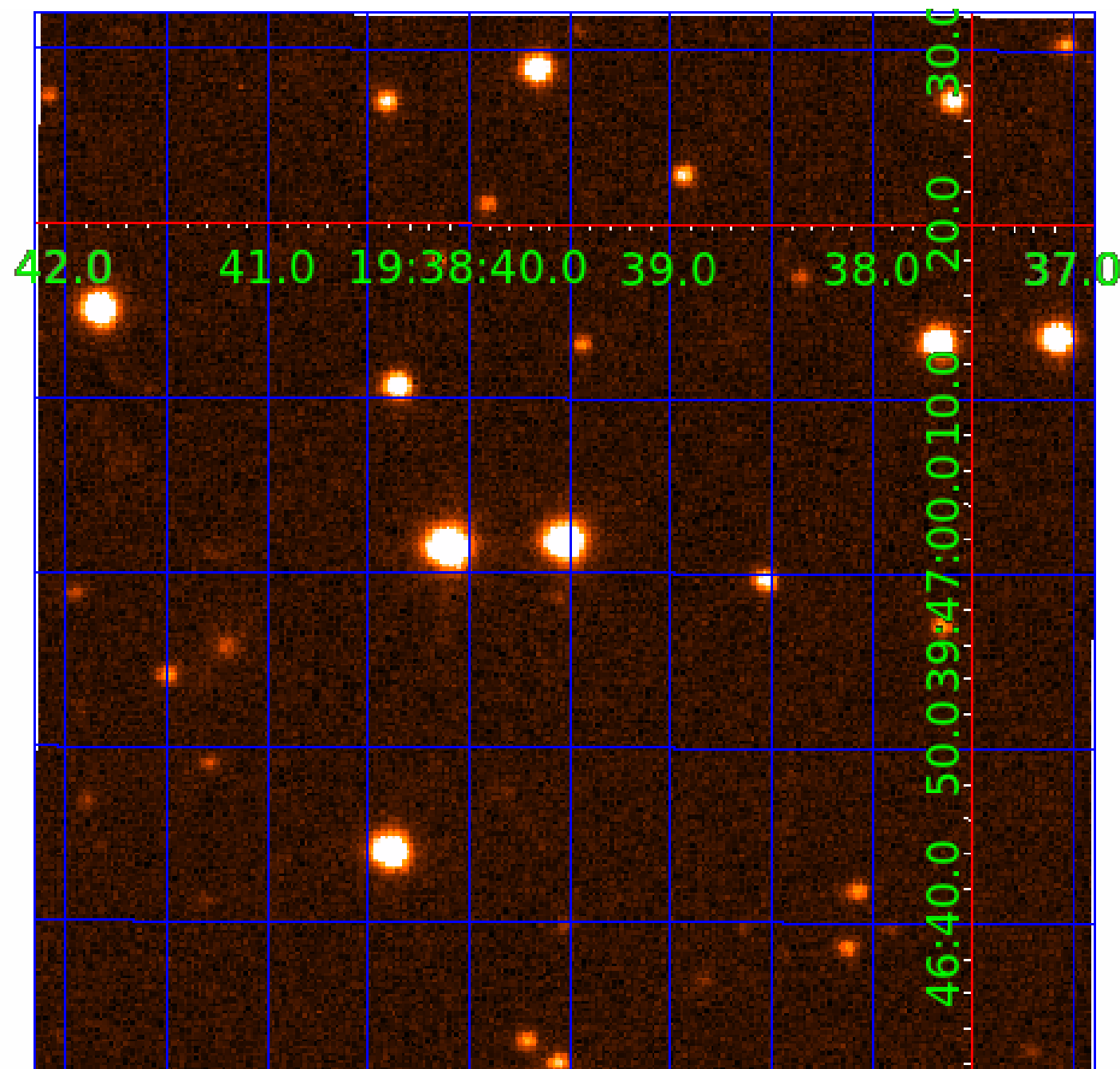


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004665571

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})
004665571-01	OBS	2393.02	0.766692	132.197820	225.1	1.339	21.0	26.6	0.79	4821	1.46	1335.46
004665571-02	OBS	2393.01	4.603007	133.221096	290.6	2.724	15.0	17.6	0.79	4821	1.58	122.39

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004665571-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
004665571-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

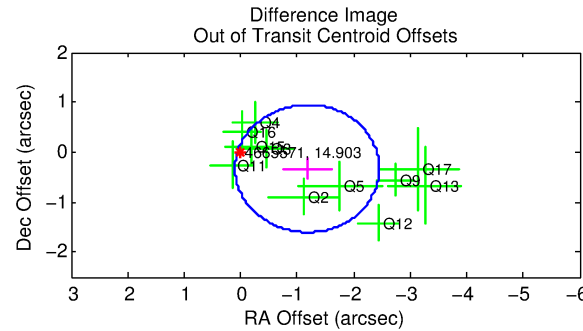
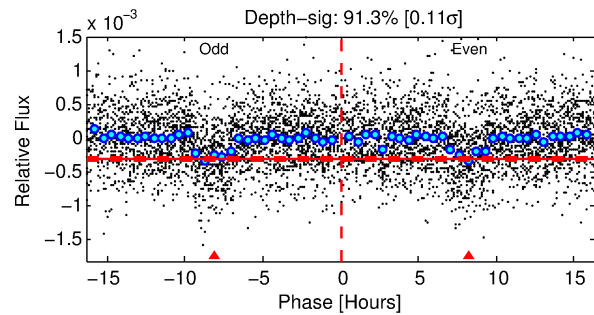
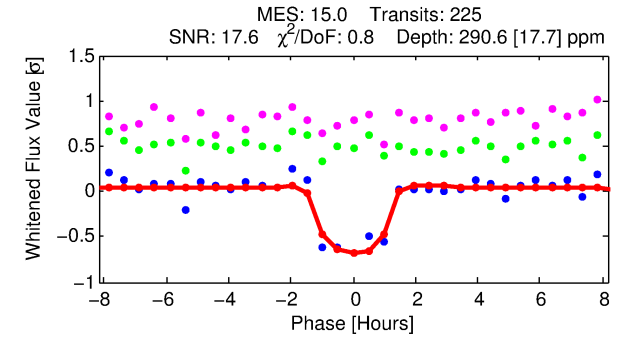
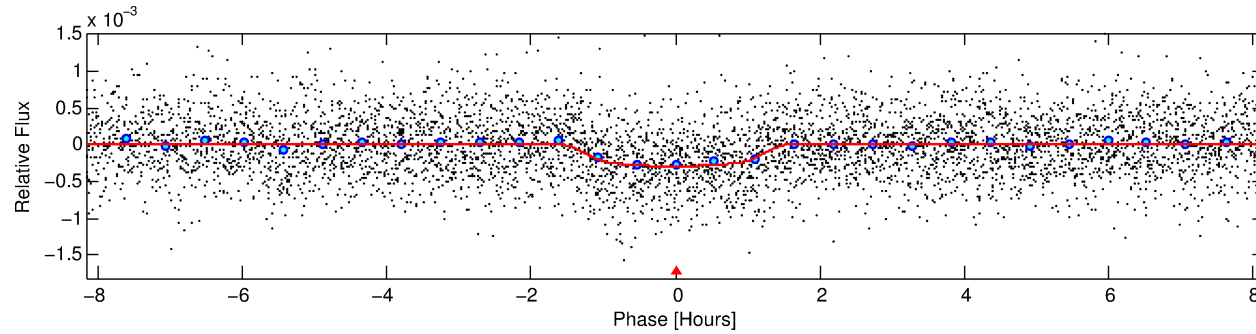
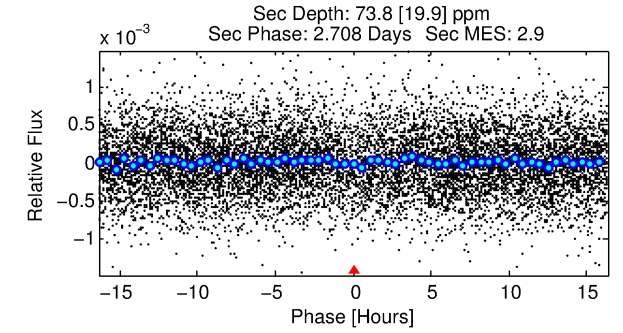
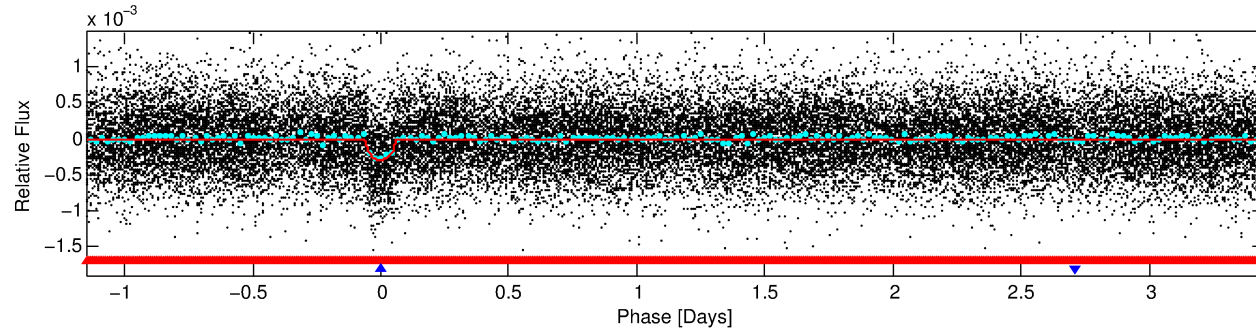
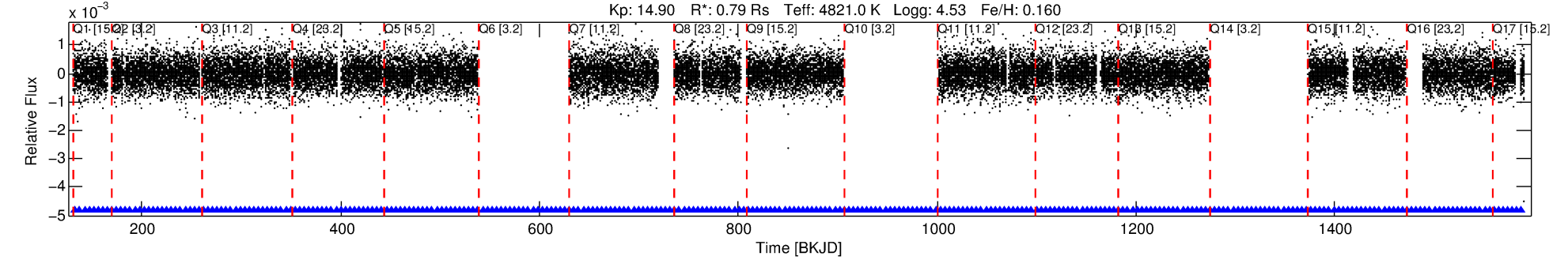
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004665571-02

No Significant Match Found

DV One-Page Summary

KIC: 4665571 Candidate: 2 of 2 Period: 4.603 d
KOI: K02393.01 Corr: 0.971



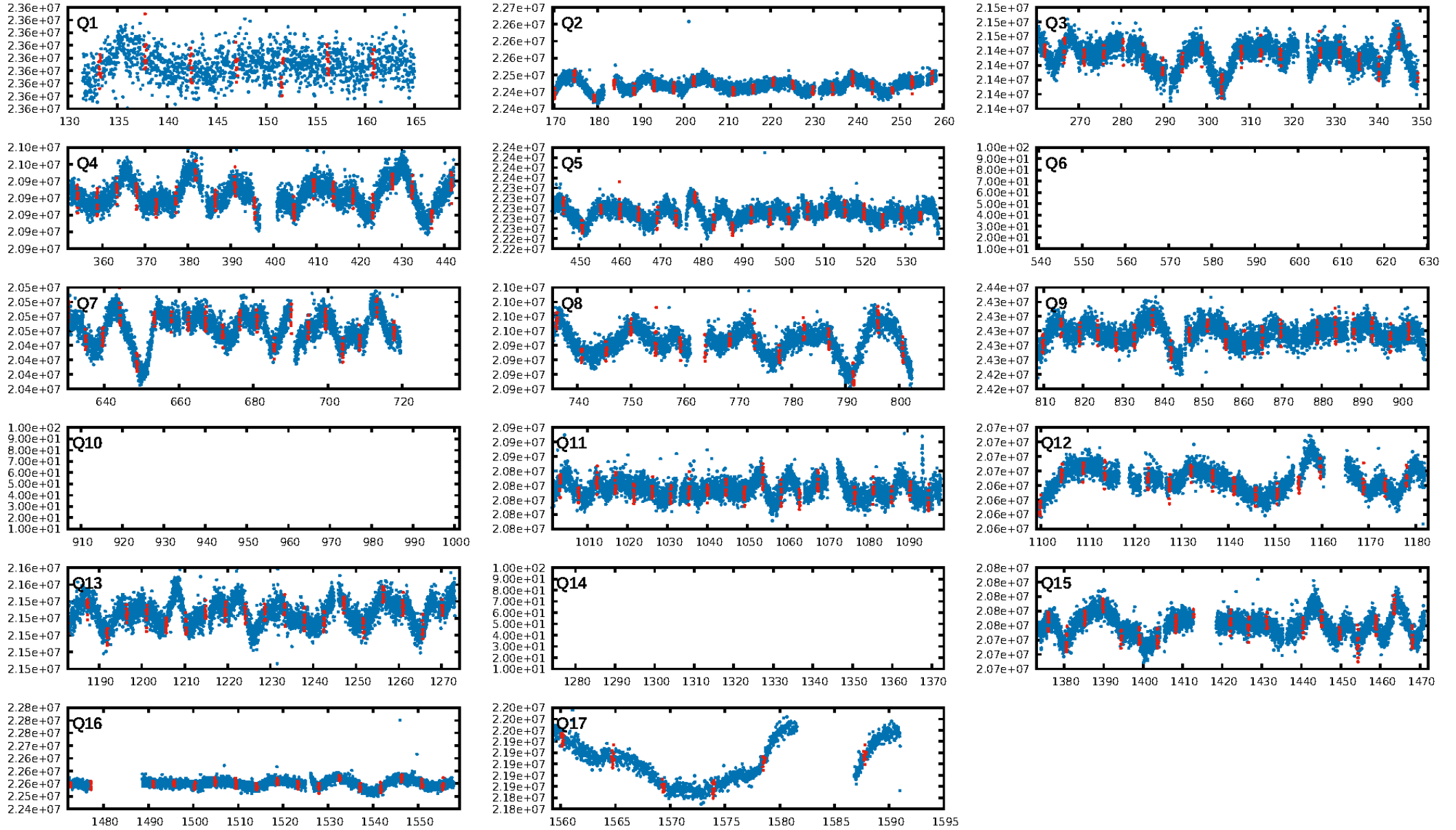
DV Fit Results:

Period = 4.60301 [0.00002] d
Epoch = 133.2211 [0.0025] BKJD
Rp/R* = 0.0184 [0.0097]
a/R* = 7.10 [13.33]
b = 0.86 [0.60]
Seff = 122.39 [14.65]
Teff = 848 [25] K
Rp = 1.58 [0.84] Re
a = 0.0496 [0.0031] AU
Ag = 39.89 [43.70] [0.89σ]
Teffp = 3295 [900] K [2.72σ]

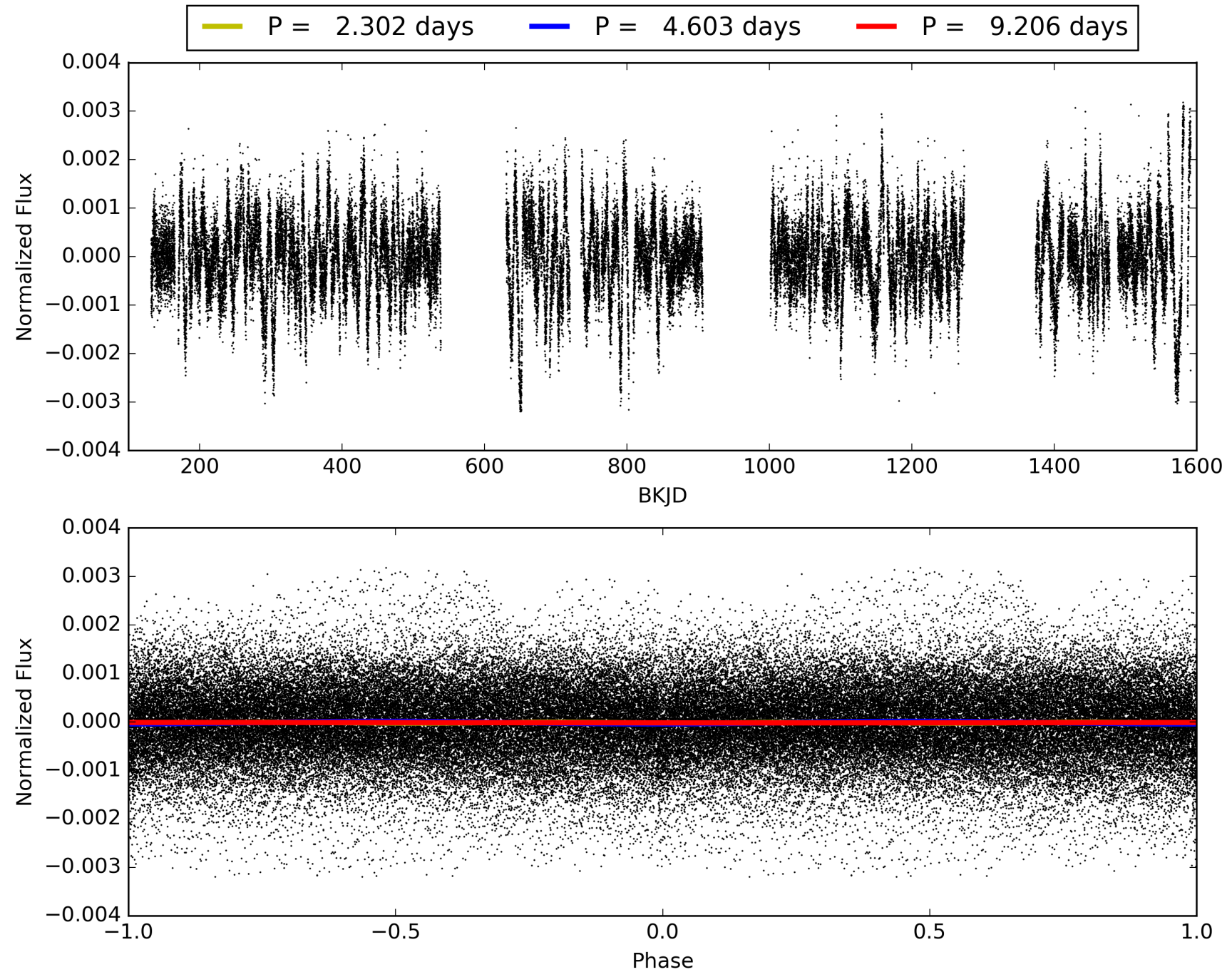
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [30.33σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.70e-47
RollingBand-fgt: 1.00 [212/212]
GhostDiagnostic-chr: -5.017
Centroid-sig: 0.1%
Centroid-so: 0.988 arcsec [1.74σ]
OotOffset-rm: 1.223 arcsec [2.87σ]
KicOffset-rm: 0.139 arcsec [0.56σ]
OotOffset-st: 1/3/3/4 [11]
KicOffset-st: 1/3/3/4 [11]
DiffImageQuality-fgm: 0.91 [10/11]
DiffImageOverlap-fno: 0.29 [4/14]

TCE 004665571-02, PDC Light Curves

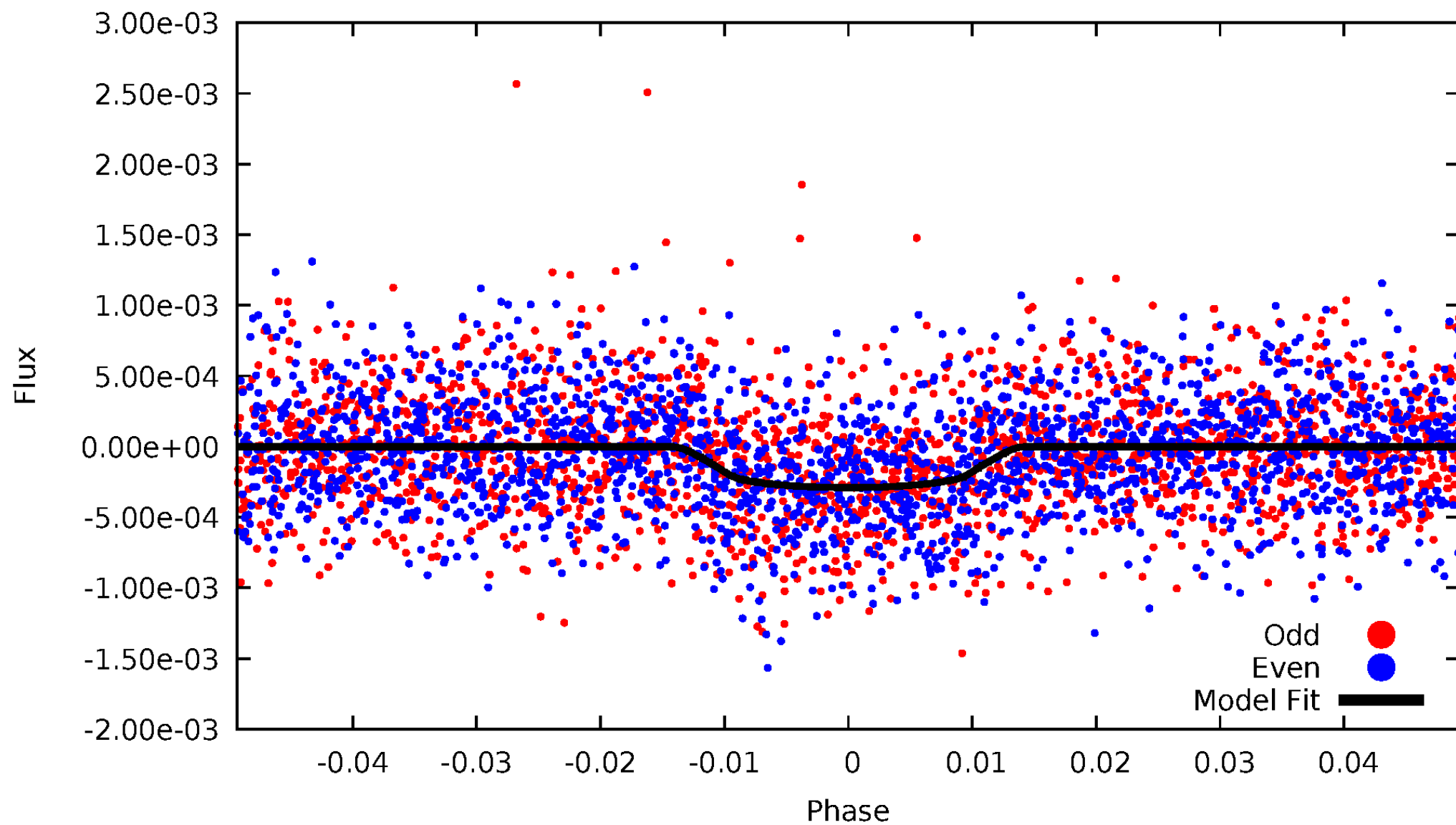


TCE 004665571-02



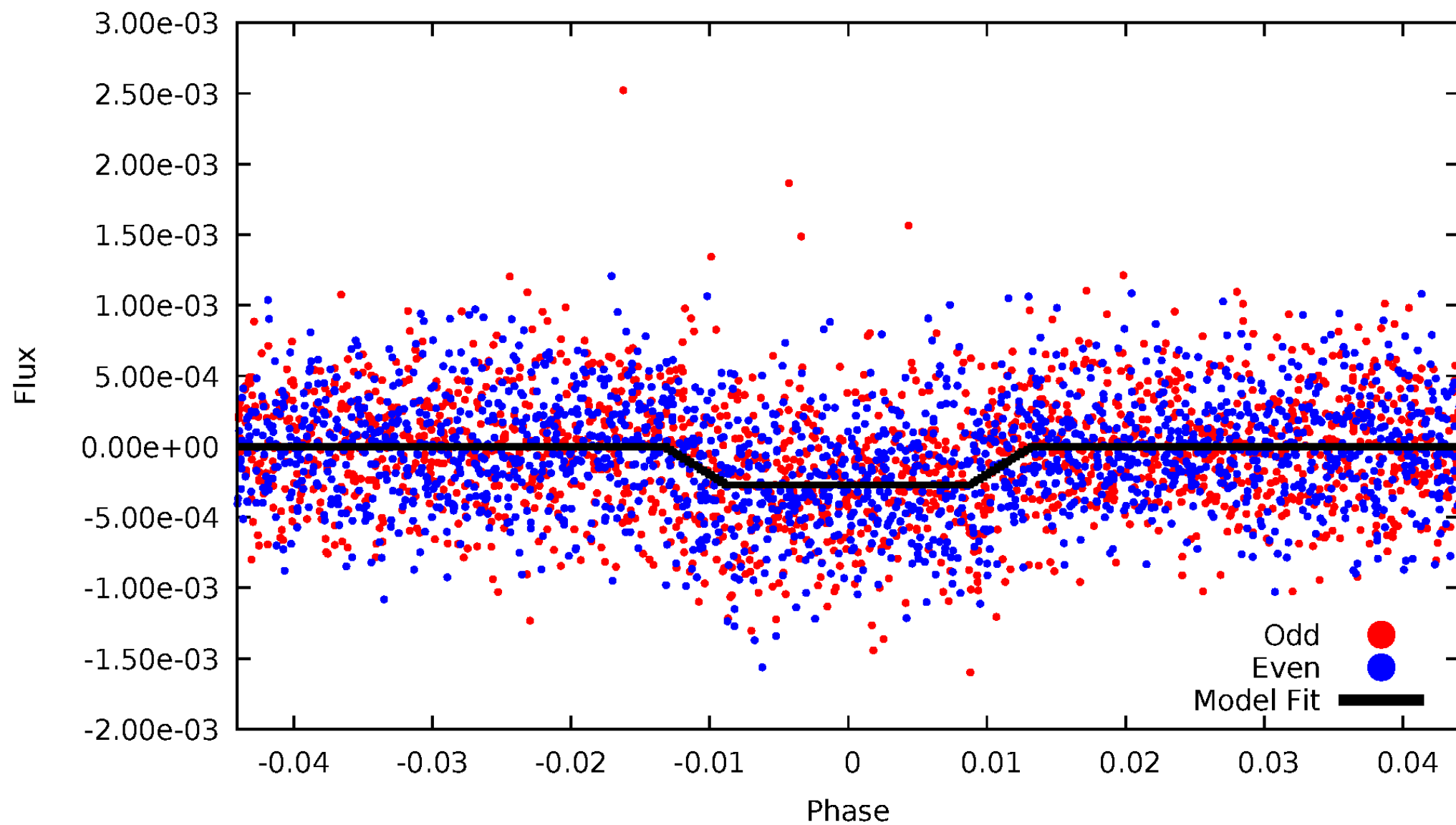
DV Odd/Even

TCE 004665571-02



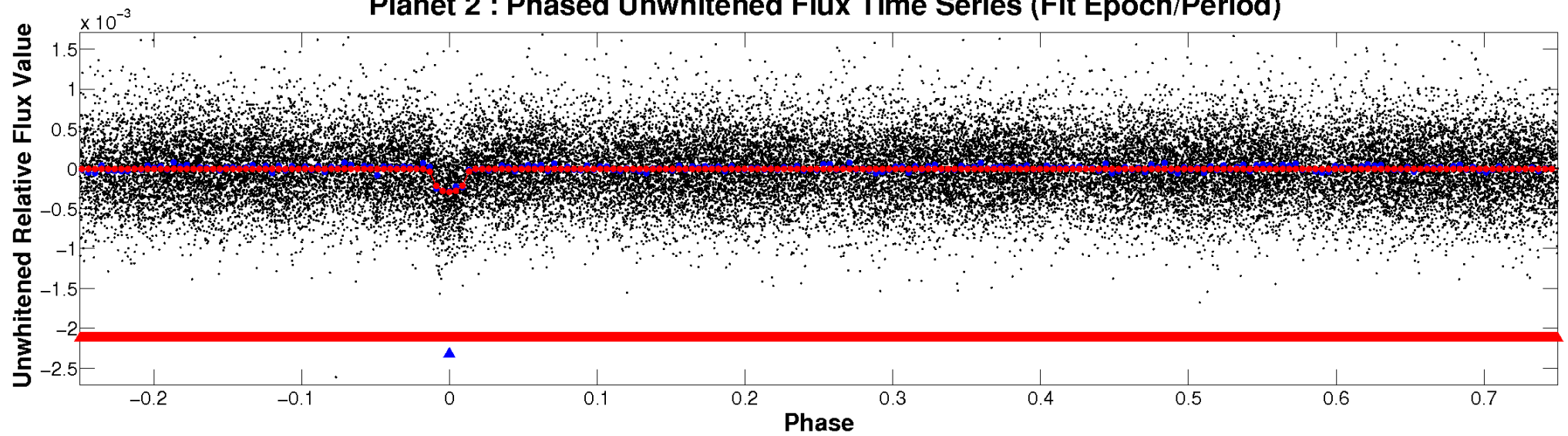
ALT Odd/Even

TCE 004665571-02

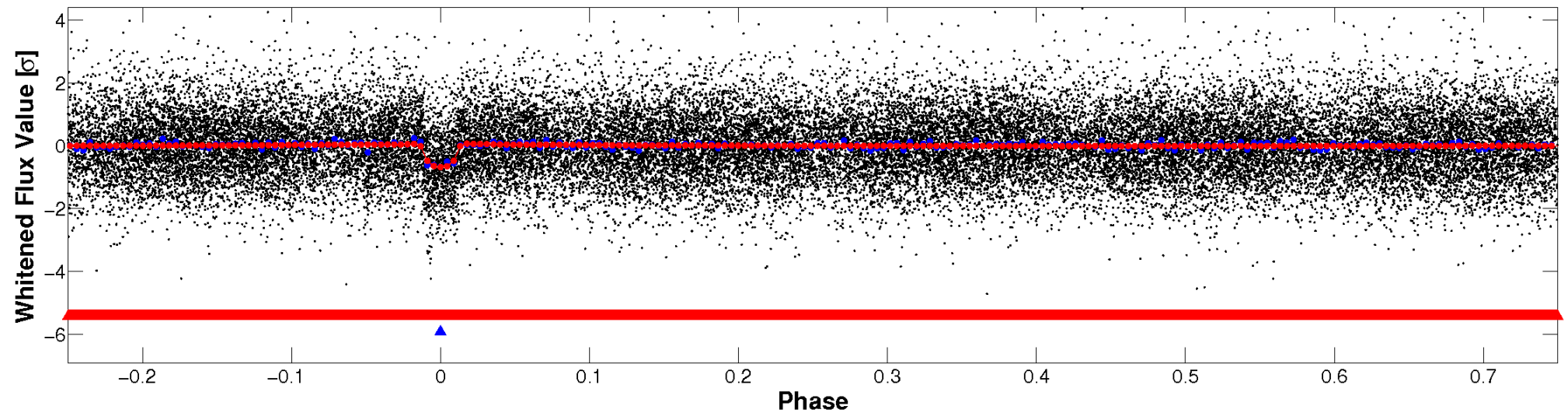


Non-Whitened Vs. Whitened Light Curve

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

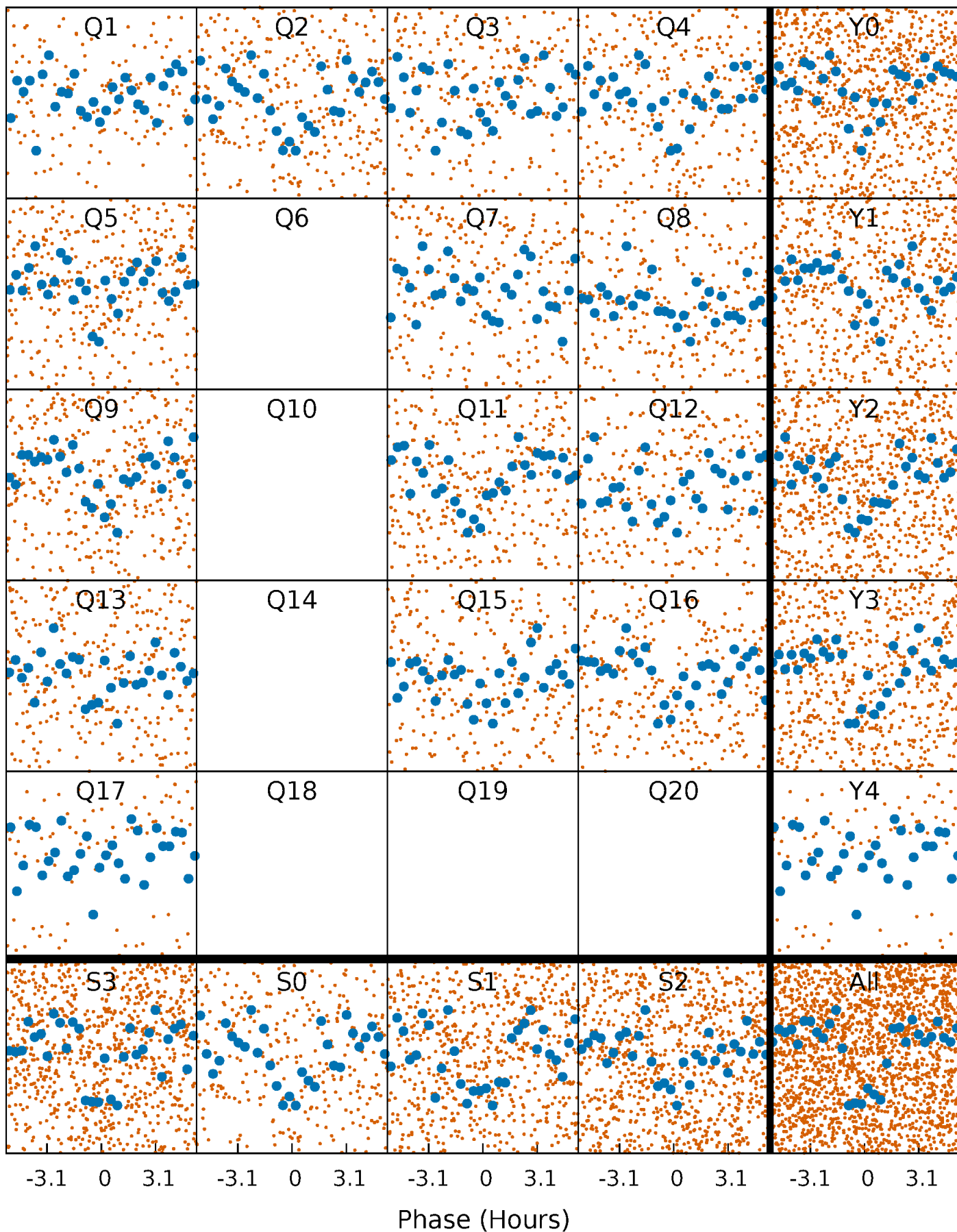


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



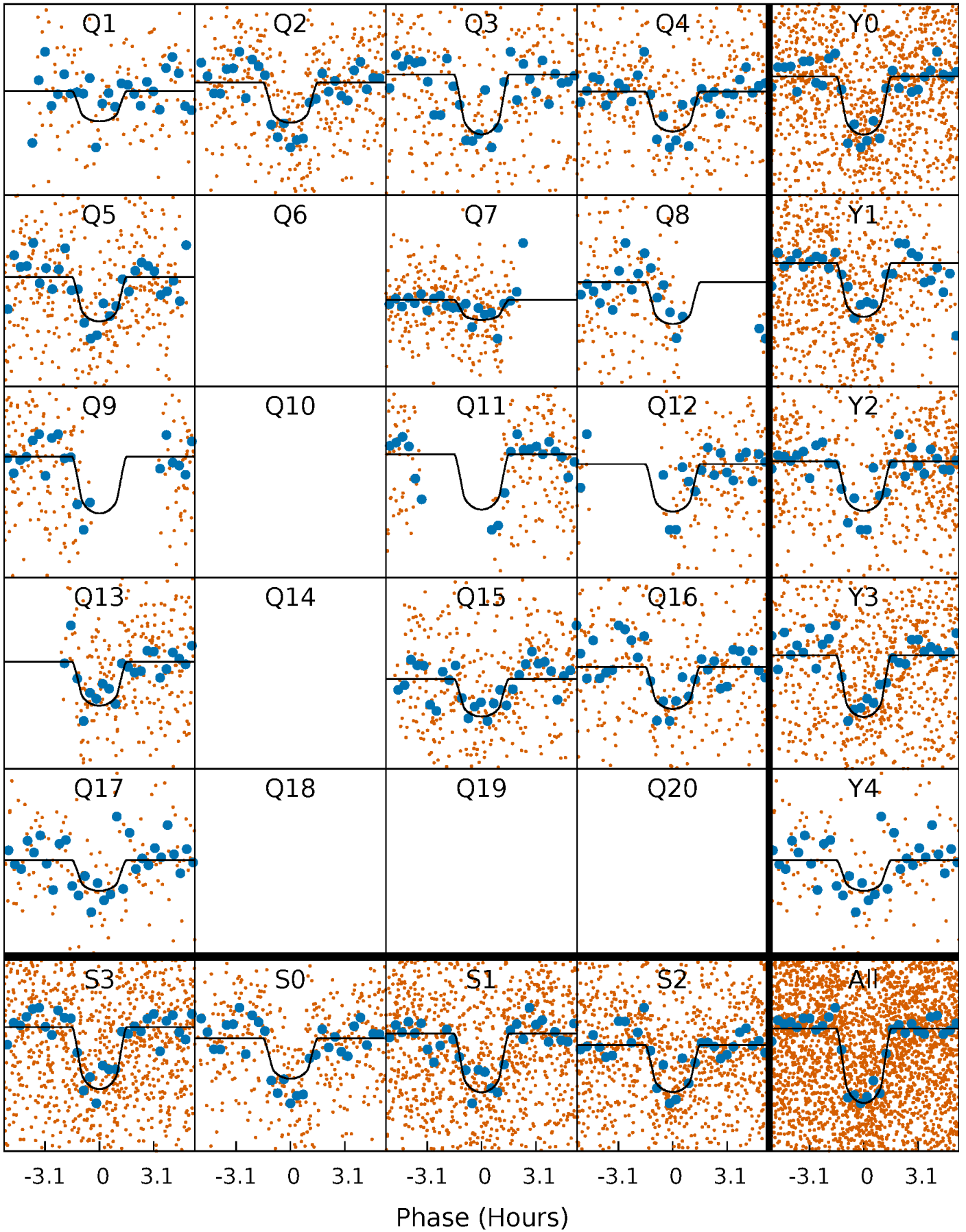
PDC Quarter-Phased Transit Curves

TCE 004665571-02 P= 4.603007 Days $T_0=133.221096$ (BKJD)



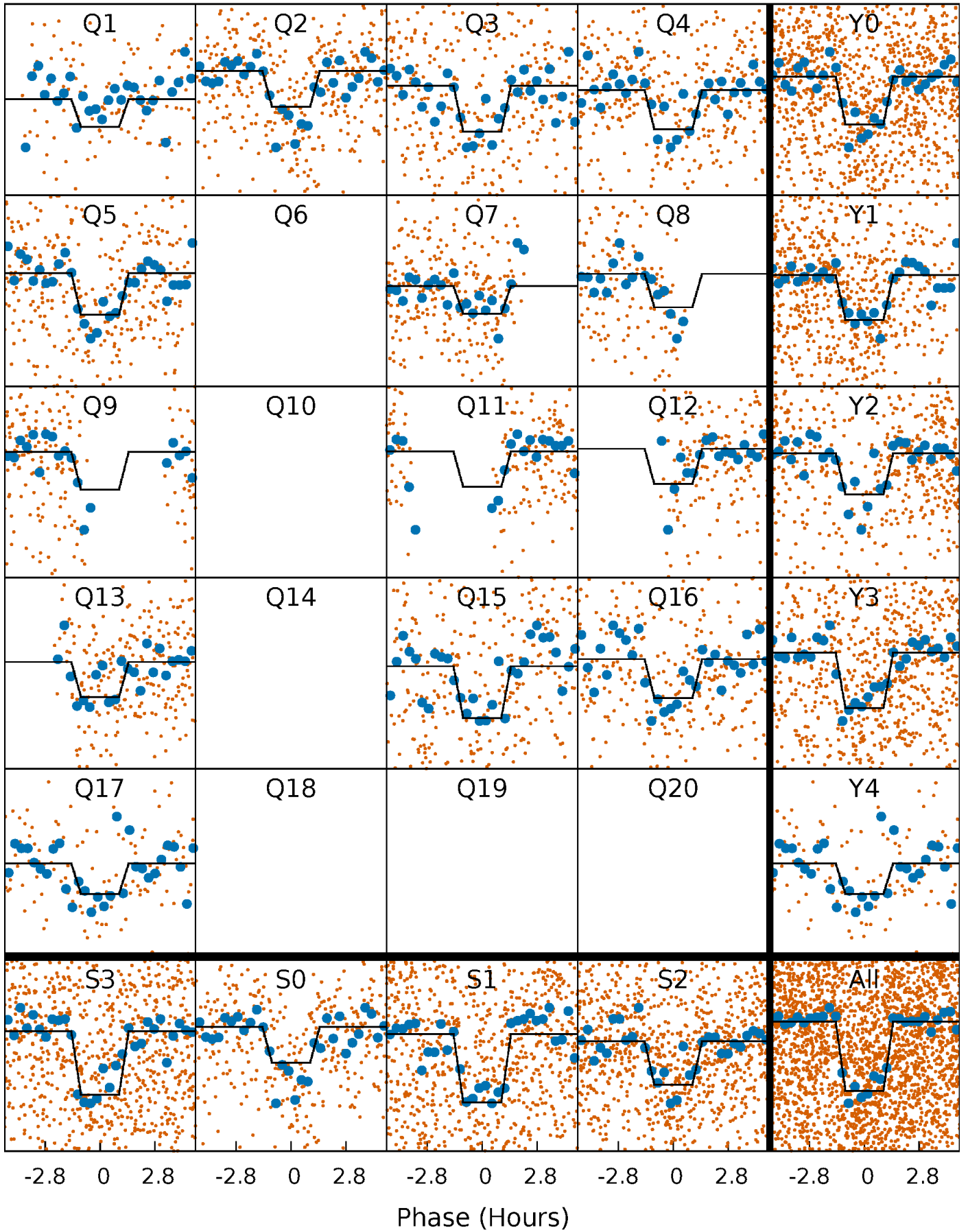
DV Quarter-Phased Transit Curves

TCE 004665571-02 P= 4.603007 Days $T_0=133.221096$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

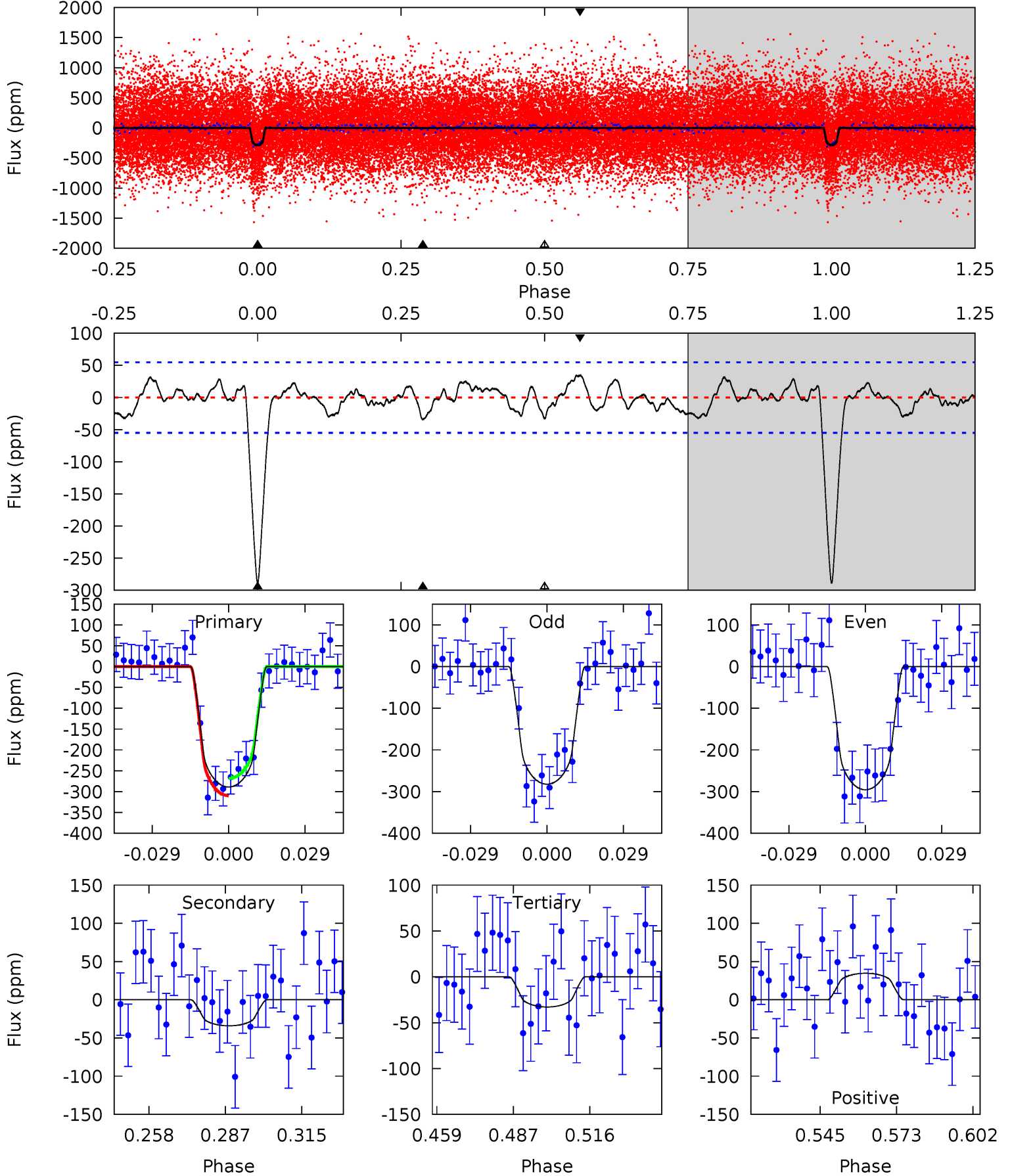
TCE 004665571-02 P= 4.603041 Days $T_0=133.218782$ (BKJD)



DV Model-Shift Uniqueness Test

004665571-02, P = 4.603007 Days, E = 128.618089 Days

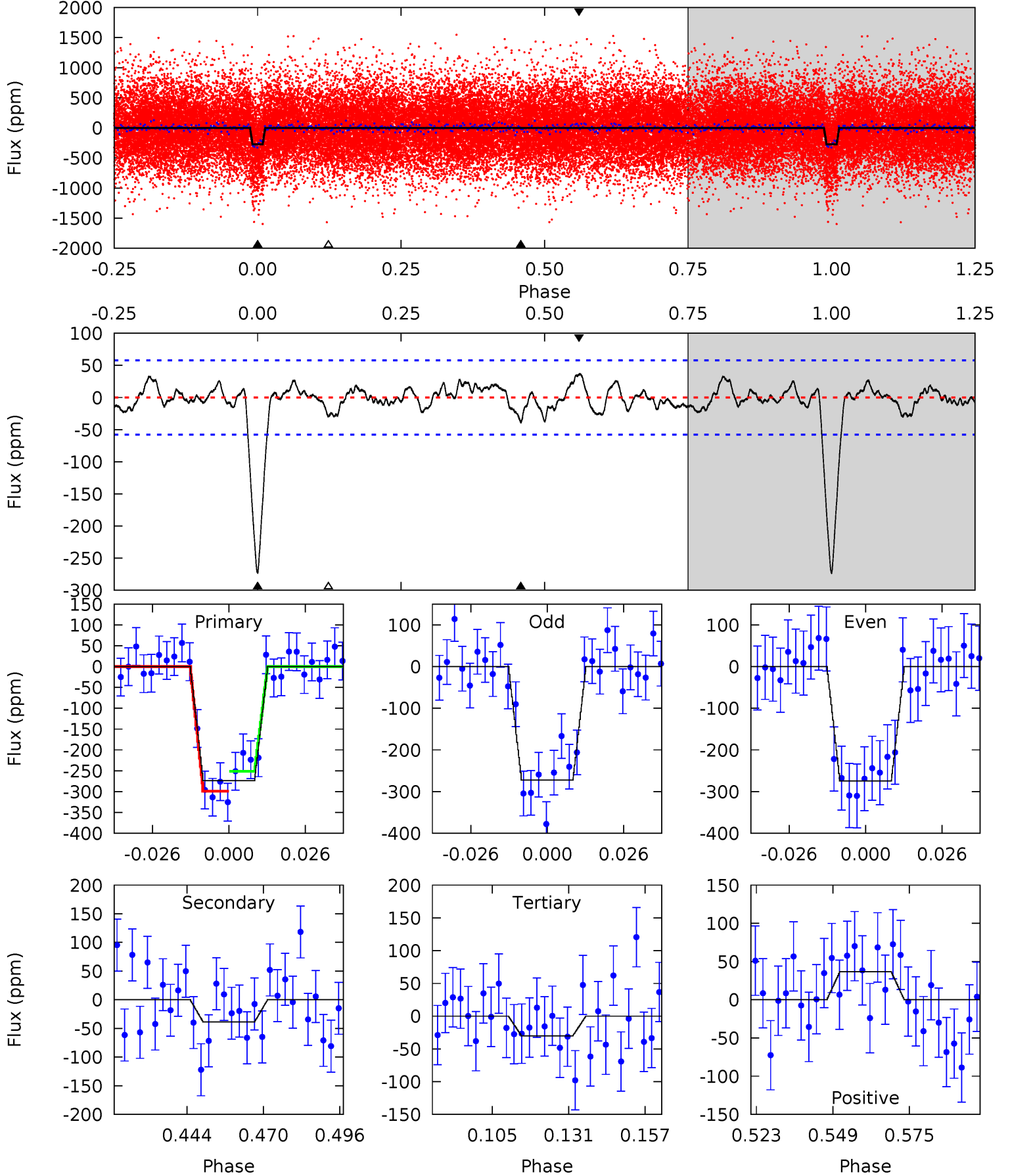
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.3	2.99	2.89	3.04	4.82	2.19	1.31	22.5	22.3	0.10	-0.05	0.58	0.98	0.11	1.83



Alt Model-Shift Uniqueness Test

004665571-02, P = 4.603041 Days, E = 128.615741 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.9	3.25	2.51	3.07	4.84	2.22	1.21	20.4	19.9	0.74	0.18	0.09	1.02	0.12	2.00



Stellar Parameters For KIC 004665571

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4821^{+76}_{-76}	$4.529^{+0.060}_{-0.020}$	$0.160^{+0.150}_{-0.150}$	$0.788^{+0.028}_{-0.051}$	$0.765^{+0.051}_{-0.028}$	$2.204^{+0.510}_{-0.148}$
	+2%/-2%	+1%/-0%	+94%/-94%	+4%/-6%	+7%/-4%	+23%/-7%
Source	SPE90	SPE90	SPE90	DSEP		

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

Secondary Eclipse Parameters for KIC 004665571-02 / KOI 2393.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-34 ± 11	$1.60^{+0.81}_{-0.79}$	1178^{+24}_{-27}	3210^{+791}_{-417}	19^{+53}_{-12}
Alt.	-39 ± 12	$1.45^{+0.83}_{-0.76}$	1178^{+24}_{-28}	3358^{+968}_{-468}	25^{+86}_{-16}

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

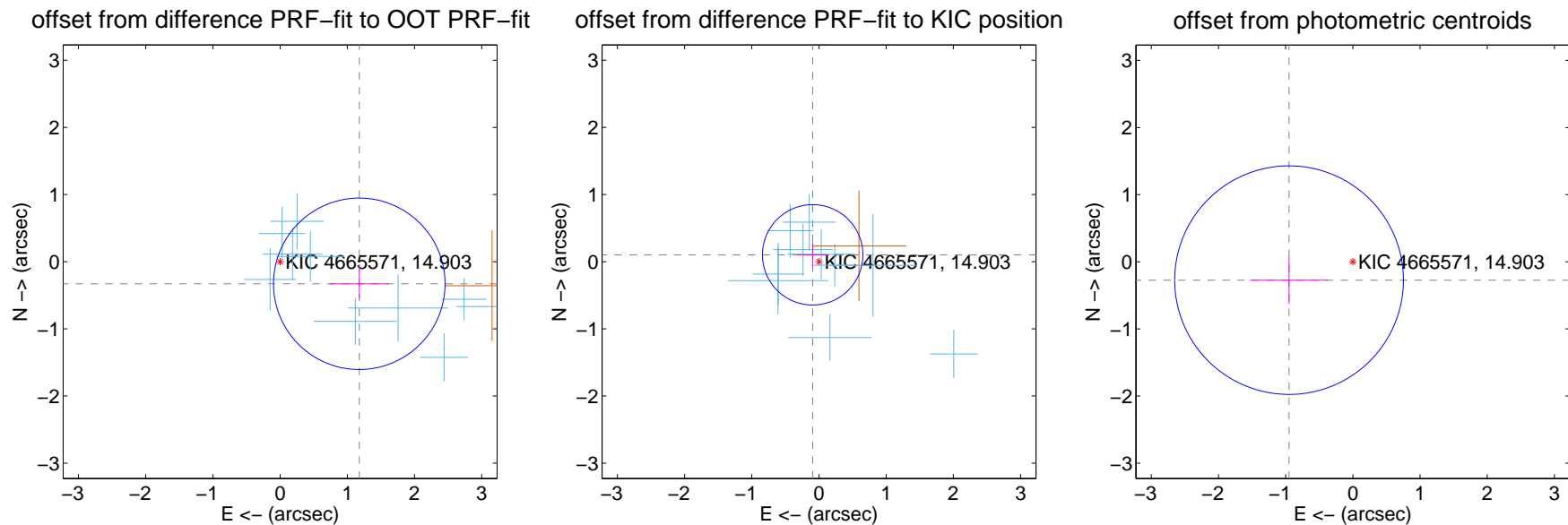
DV Centroid Data

Supplemental centroid analysis for 004665571-02. Kepler magnitude: 14.90. Transit SNR 17.56

There are 10 quarters with good PRF difference image offsets

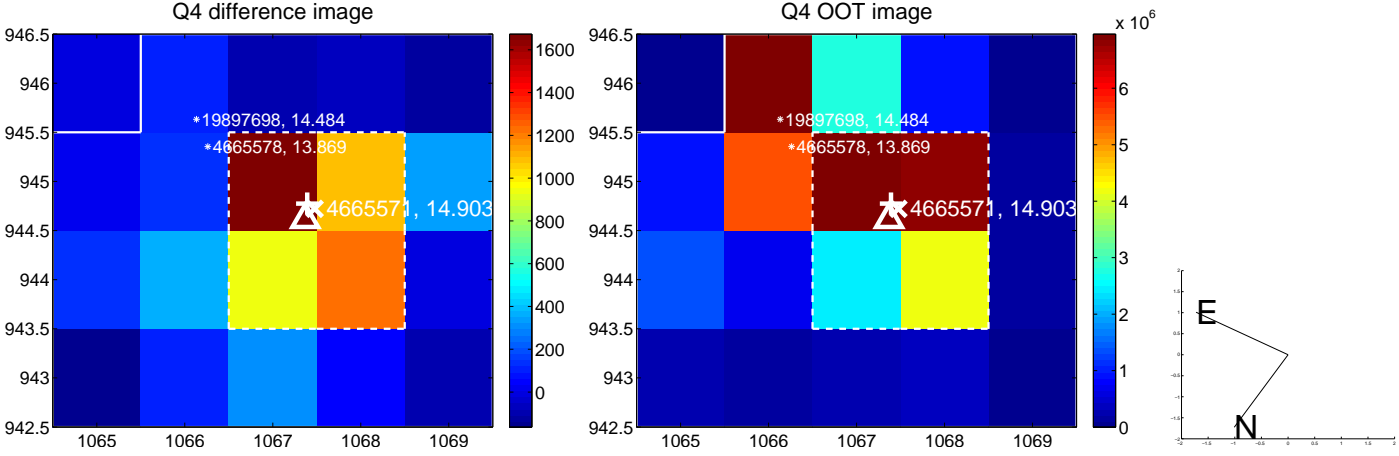
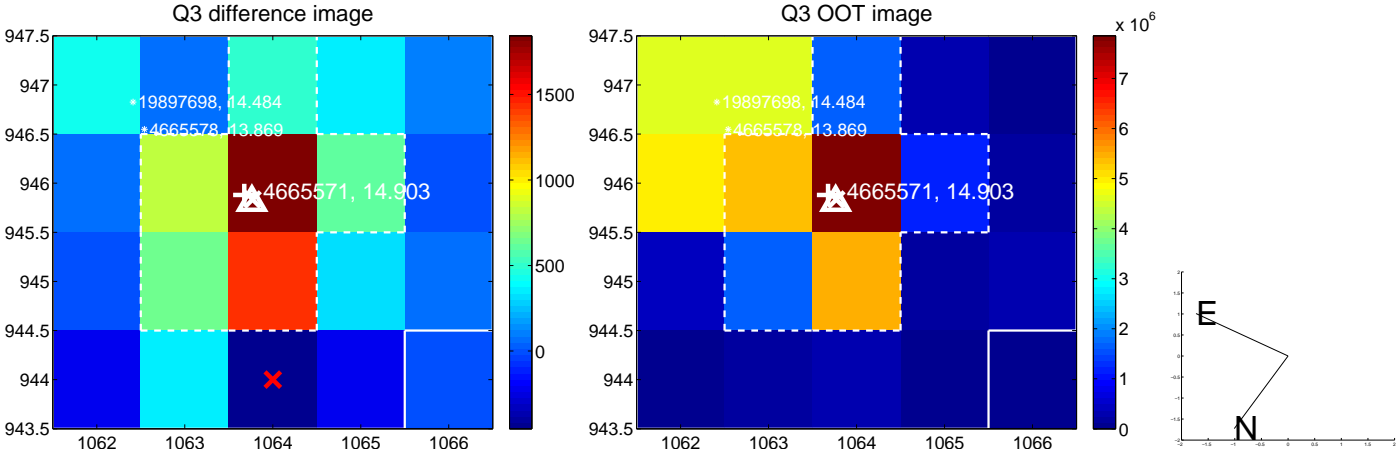
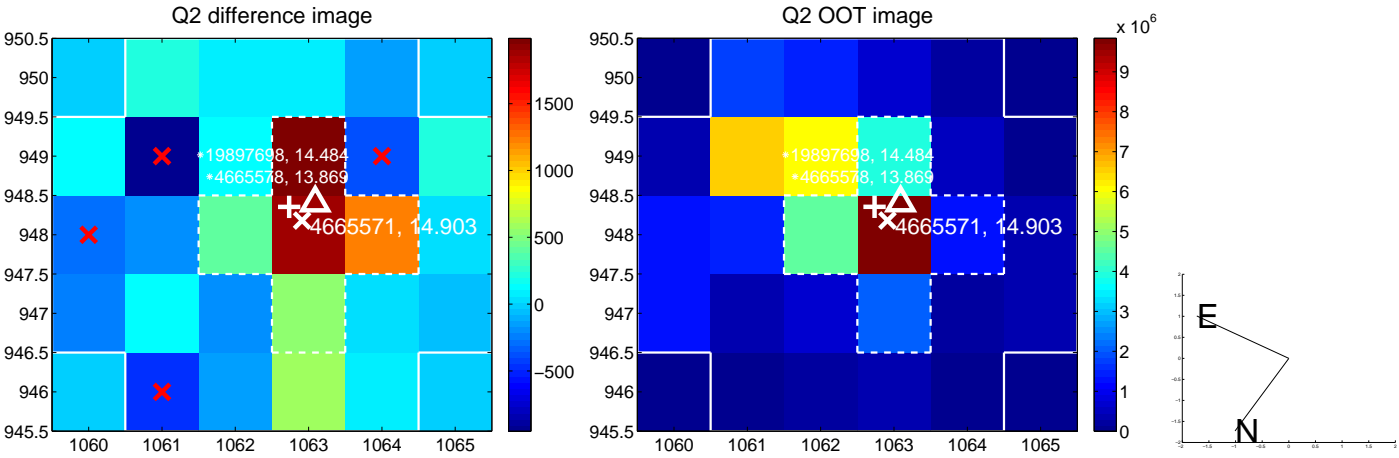
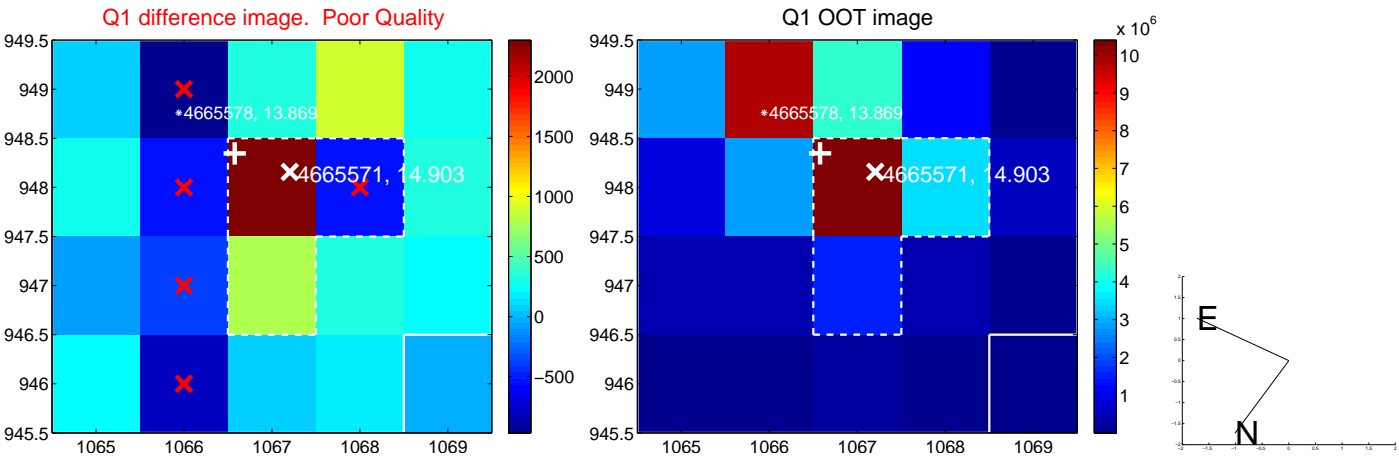
The OOT PRF centroid is offset from the target star catalog position by about 2.63 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.223 ± 0.425	2.87	-1.178 ± 0.438	-0.329 ± 0.219
PRF-fit source offset from KIC position	0.139 ± 0.249	0.56	0.094 ± 0.235	0.102 ± 0.186
photometric centroid source offset	0.99 ± 0.57	1.74	0.95 ± 0.58	-0.27 ± 0.35

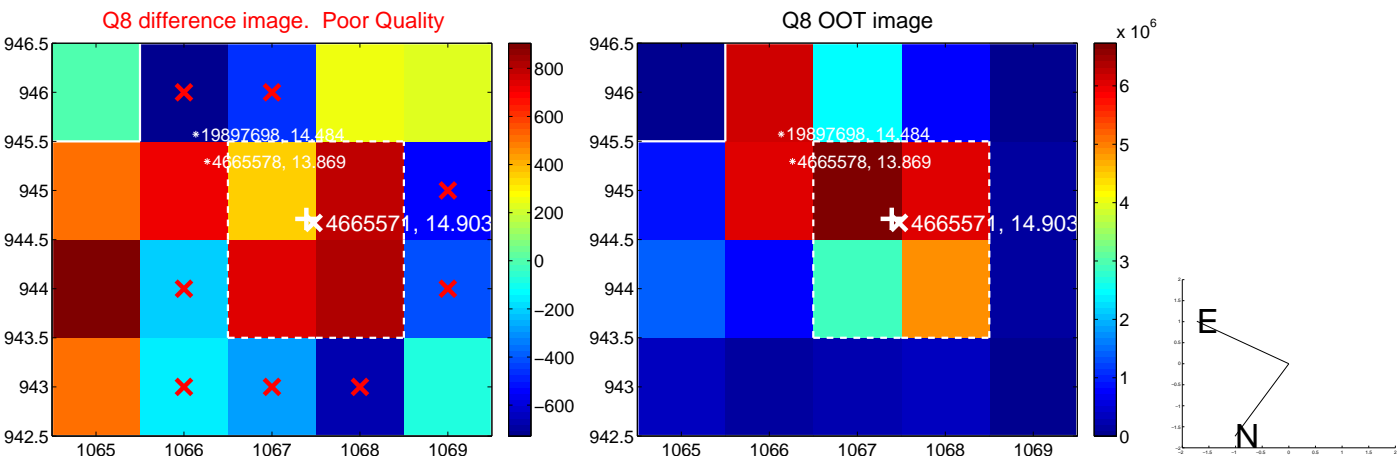
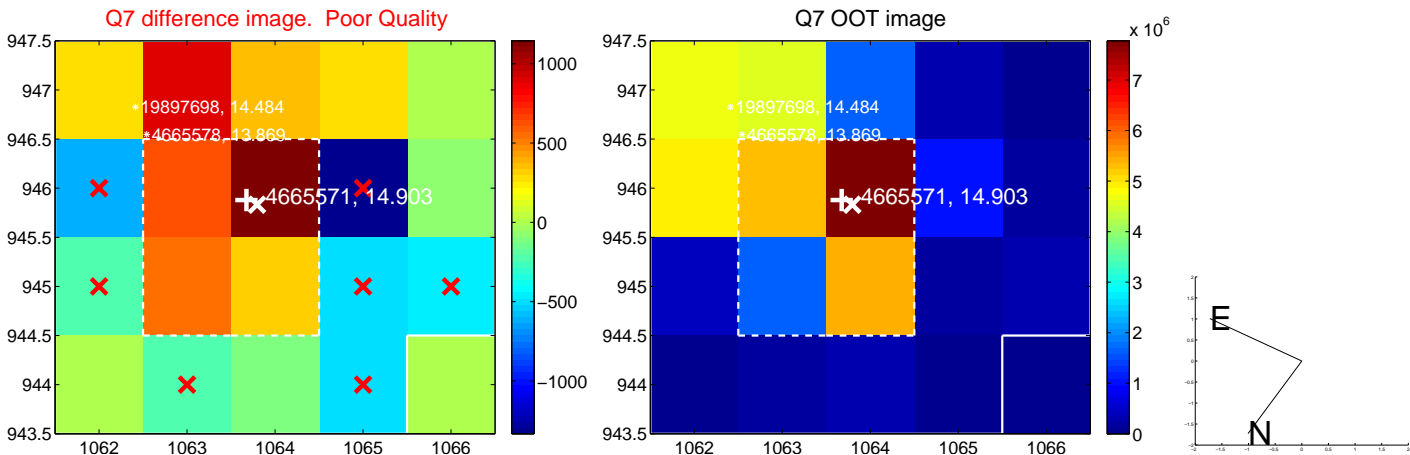
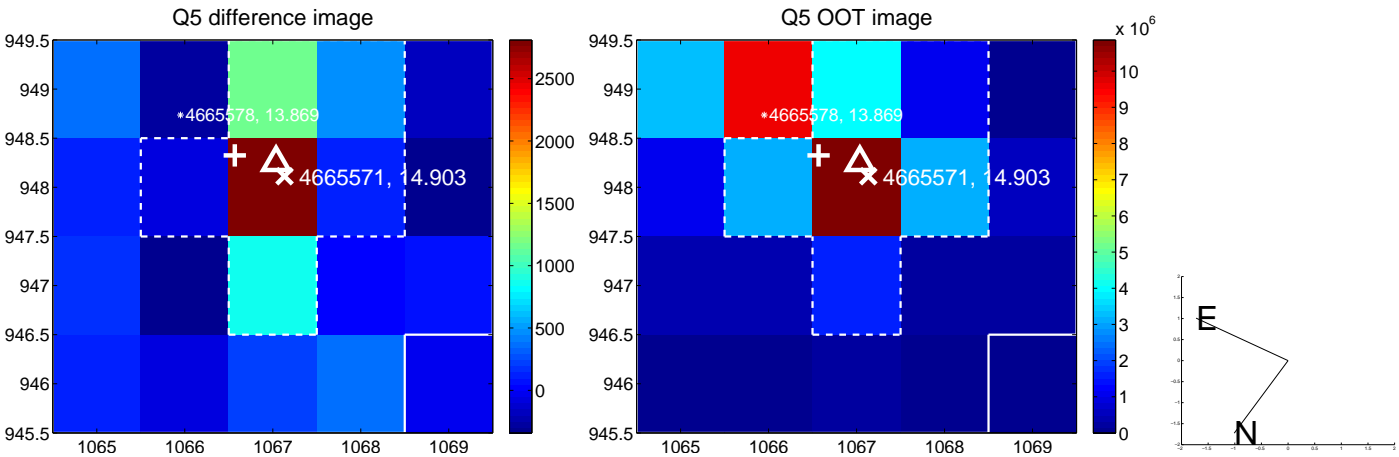


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

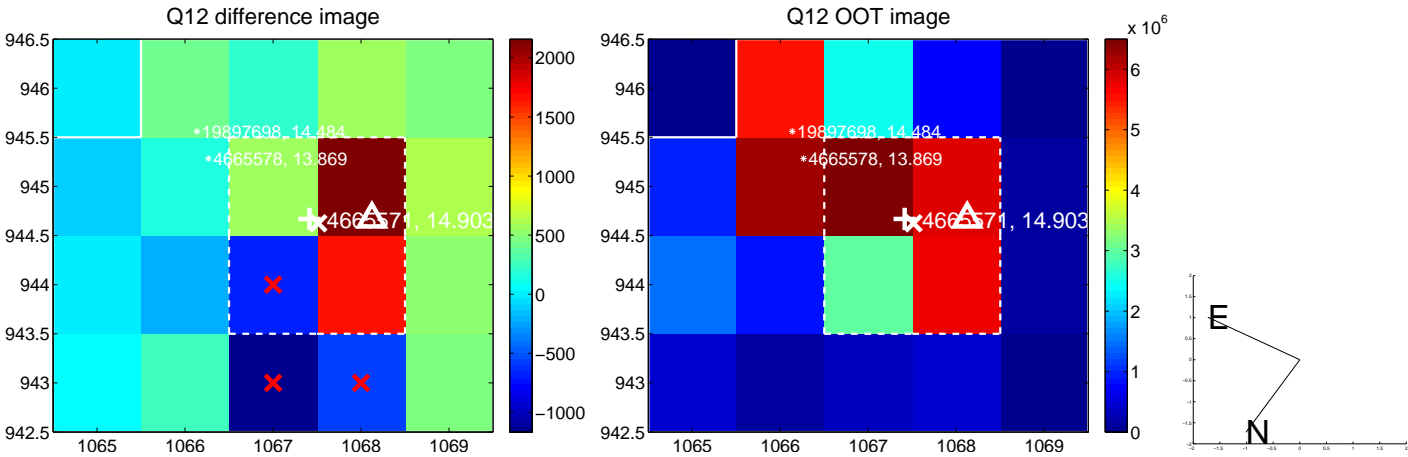
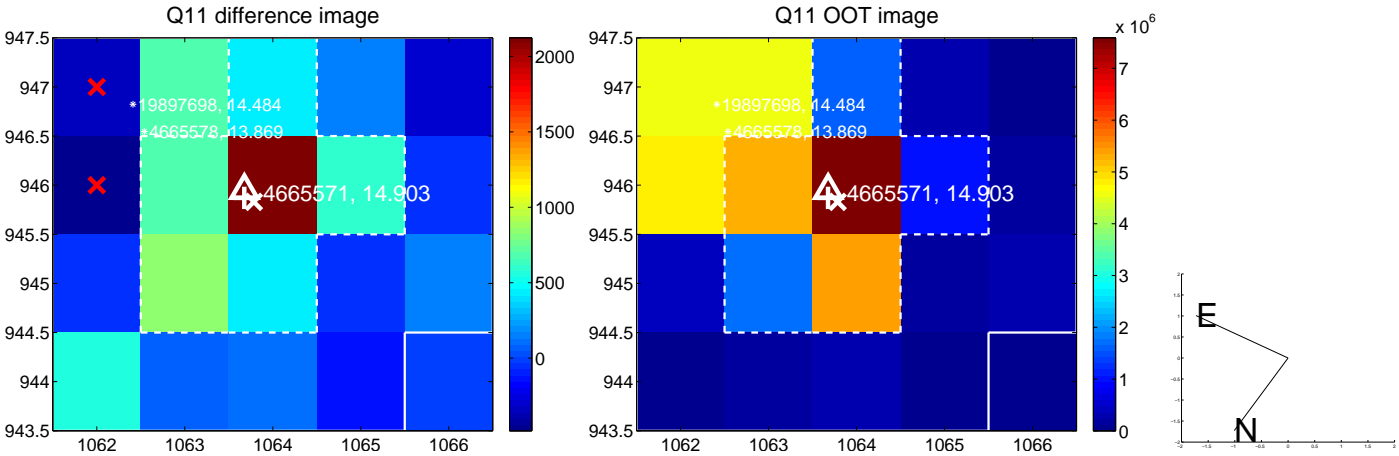
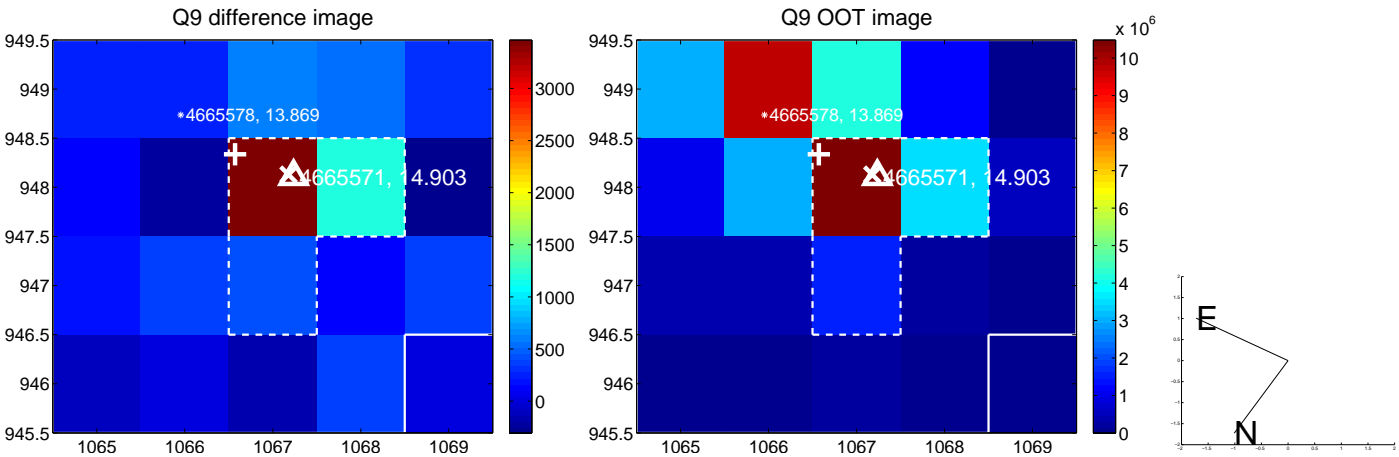
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



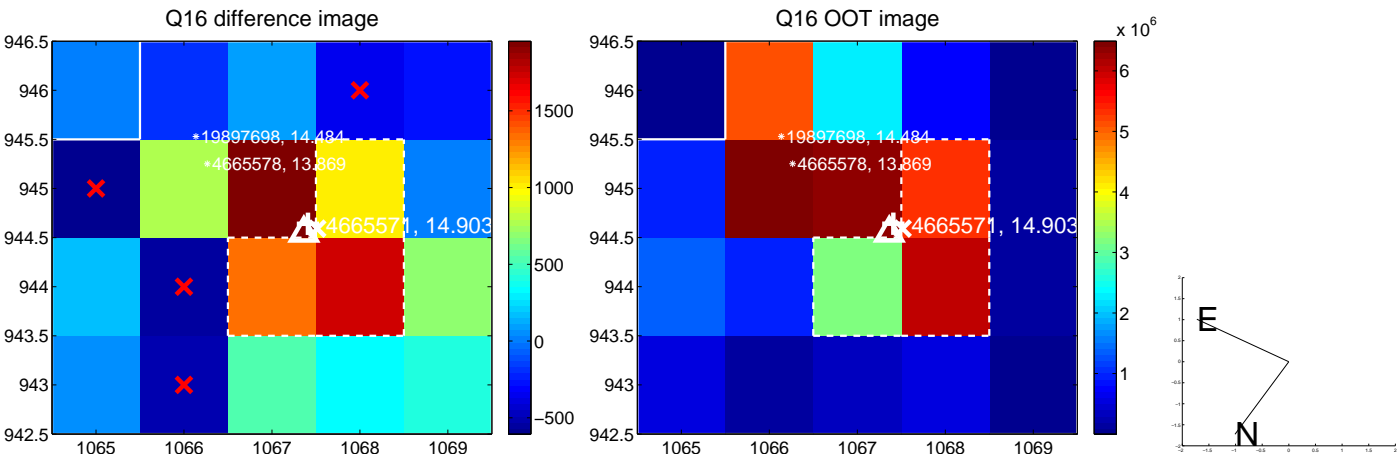
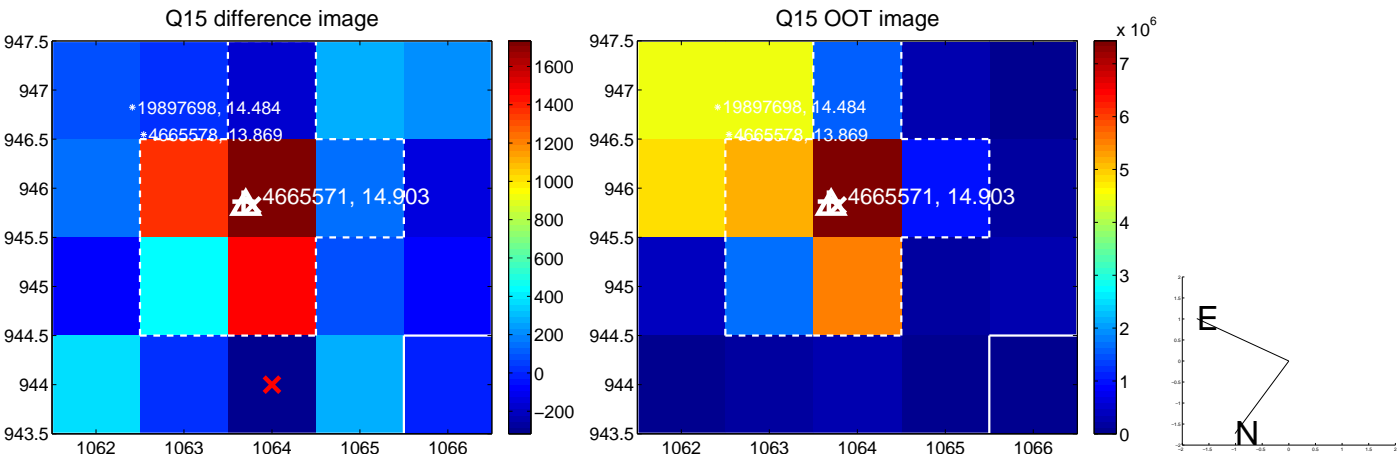
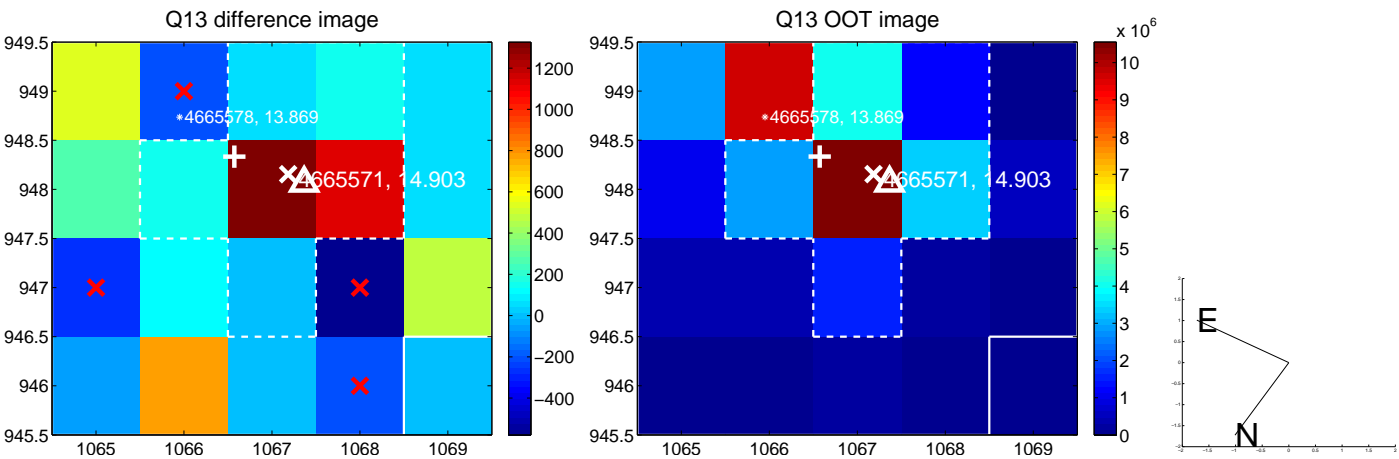
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



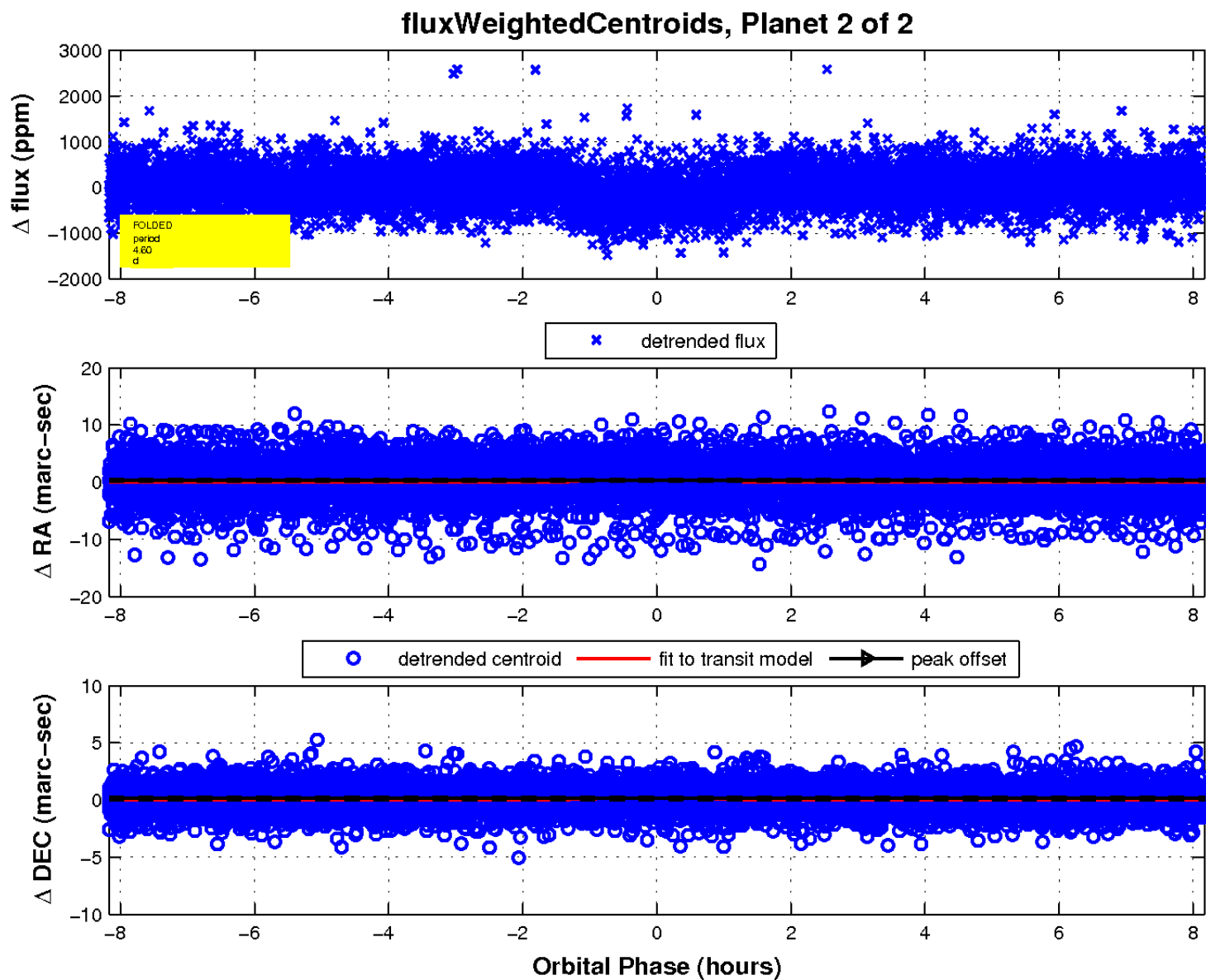
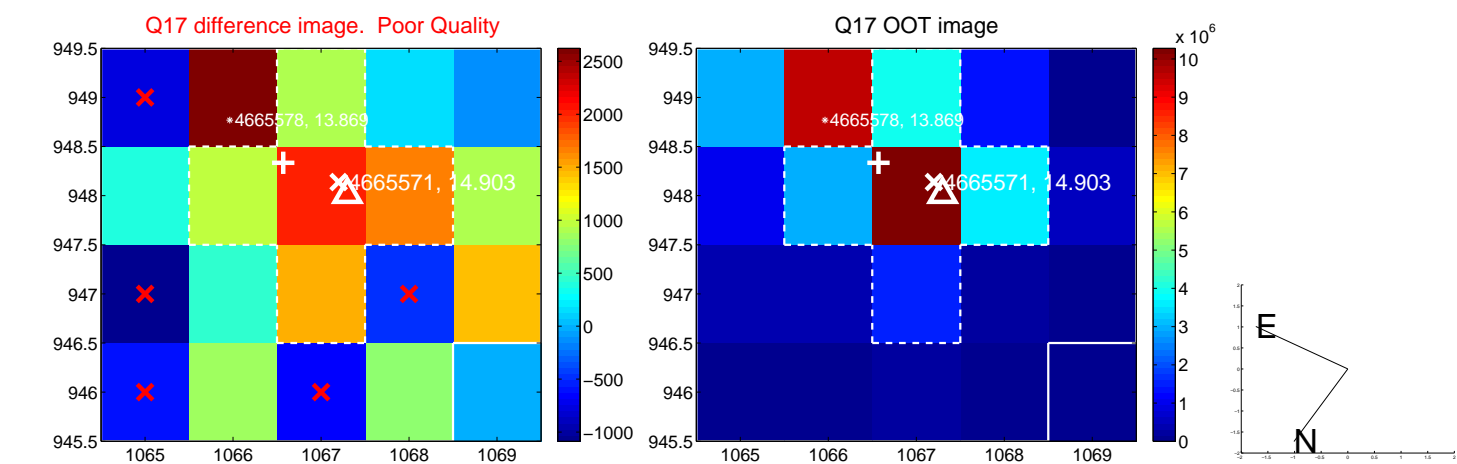
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

