

KIC 004645626

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})
004645626-01	OBS	No	3.075385	131.861813	29.6	6.509	9.4	7.2	3.28	6588	2.09	8154.18
004645626-02	OBS	No	3.074728	134.573316	6.4	27.499	8.3	2.0	3.28	6588	0.84	8156.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004645626-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
004645626-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—SWEET_NTL—LPP_DV—LPP_ALT—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.

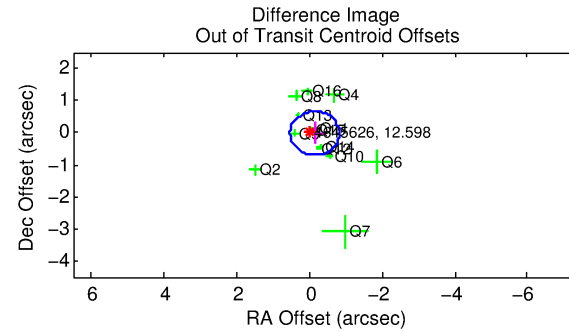
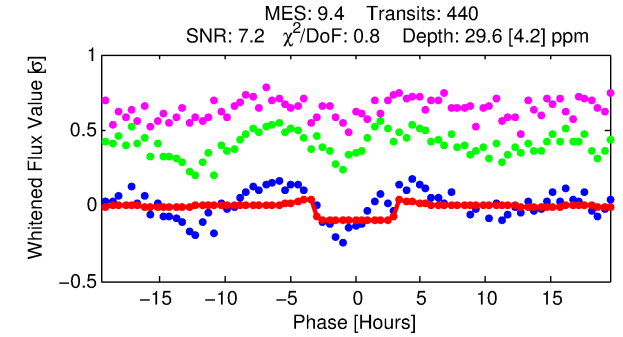
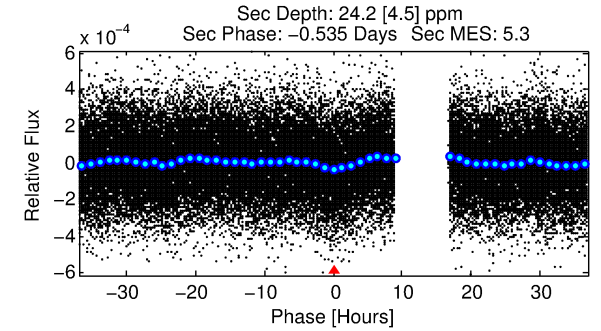
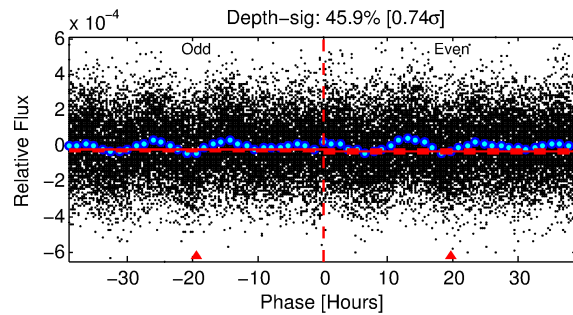
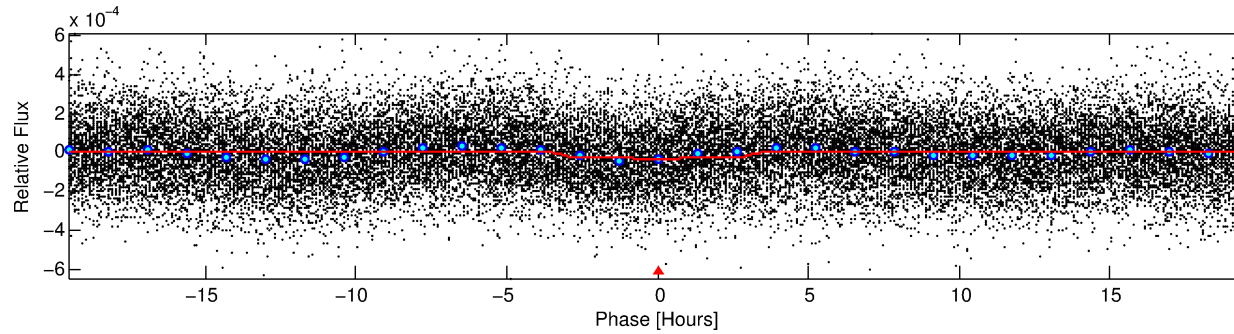
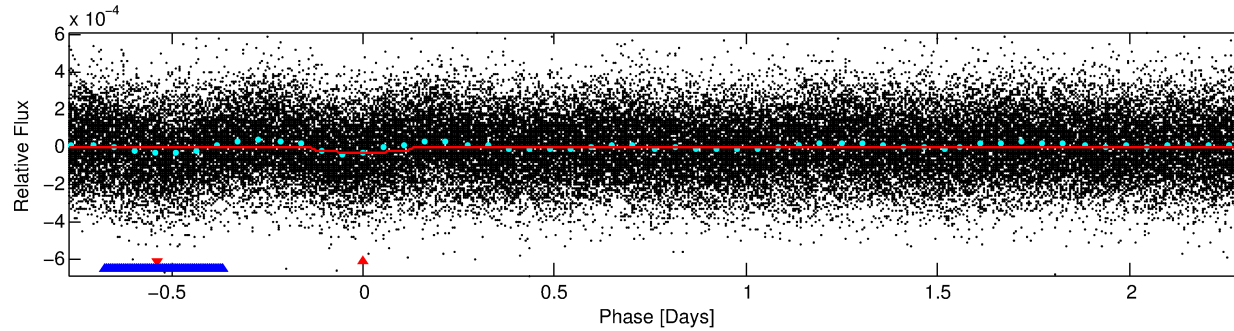
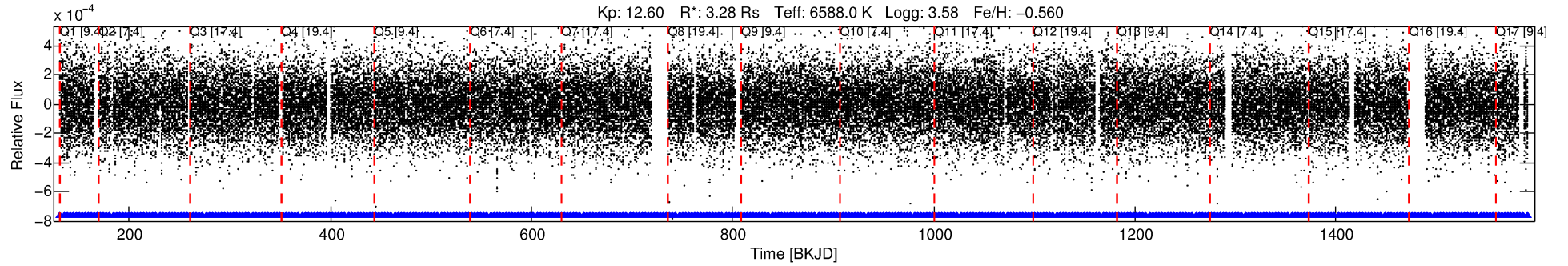
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004645626-01

No Significant Match Found

DV One-Page Summary

KIC: 4645626 Candidate: 1 of 2 Period: 3.075 d



DV Fit Results:

Period = 3.07539 [0.00003] d
Epoch = 131.8618 [0.0055] BKJD
Rp/R* = 0.0058 [0.0013]
a/R* = 1.82 [1.62]
b = 0.91 [0.25]
Seff = 8154.18 [5067.43]
Teq = 2423 [376] K
Rp = 2.09 [0.93] Re
a = 0.0472 [0.0178] AU
Ag = 6.75 [5.27] [1.09 σ]
Teffp = 6039 [757] K [4.28 σ]

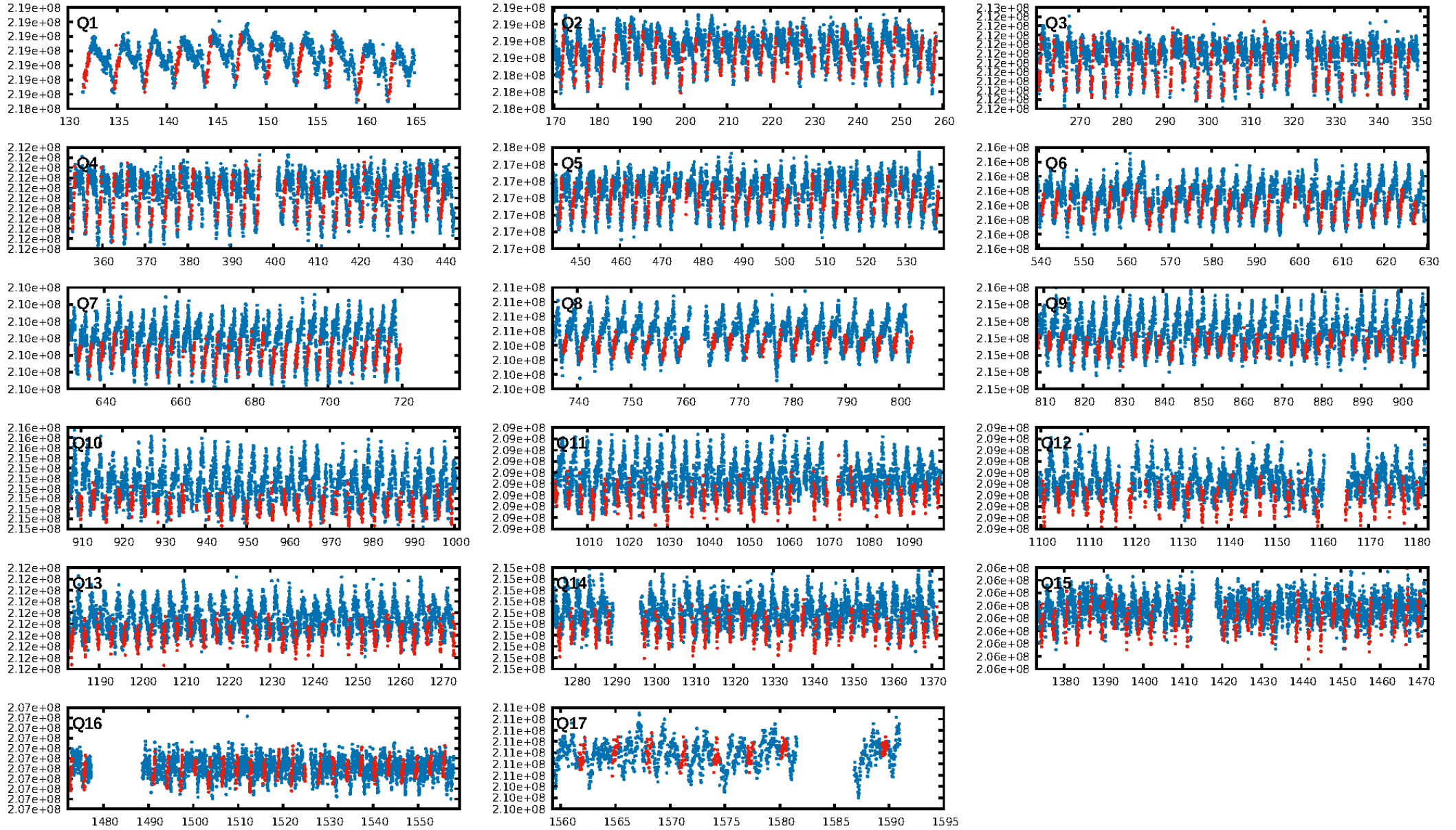
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [421/421]
GhostDiagnostic-chr: 1.405
Centroid-sig: 74.2%
Centroid-so: 0.275 arcsec [0.44 σ]
OotOffset-rm: 0.146 arcsec [0.65 σ]
KicOffset-rm: 0.111 arcsec [0.57 σ]
OotOffset-st: 4/3/4/2 [13]
KicOffset-st: 4/3/4/2 [13]
DiffImageQuality-fgm: 0.92 [12/13]
DiffImageOverlap-fno: 0.00 [0/17]

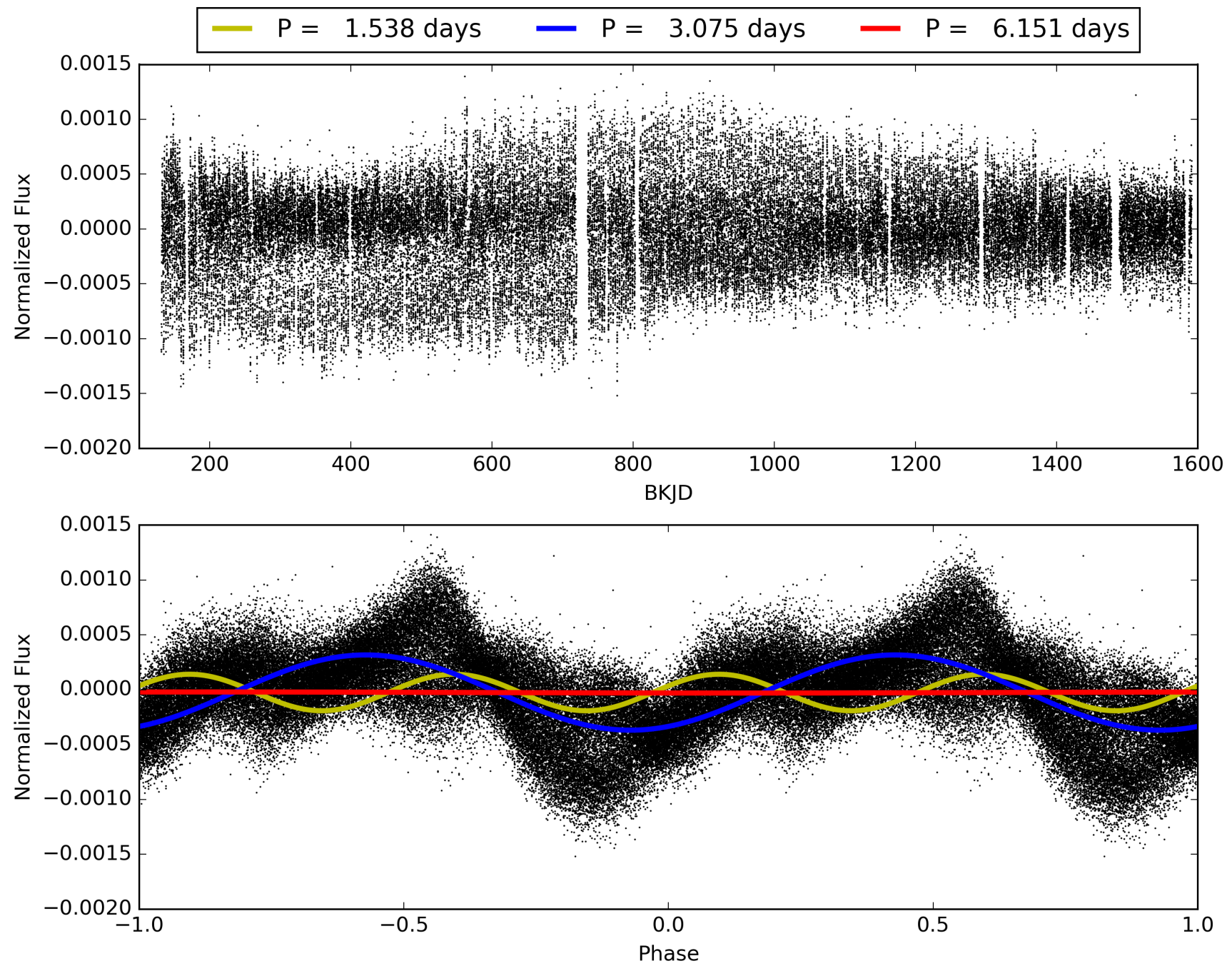
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:35:10 Z

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

TCE 004645626-01, PDC Light Curves

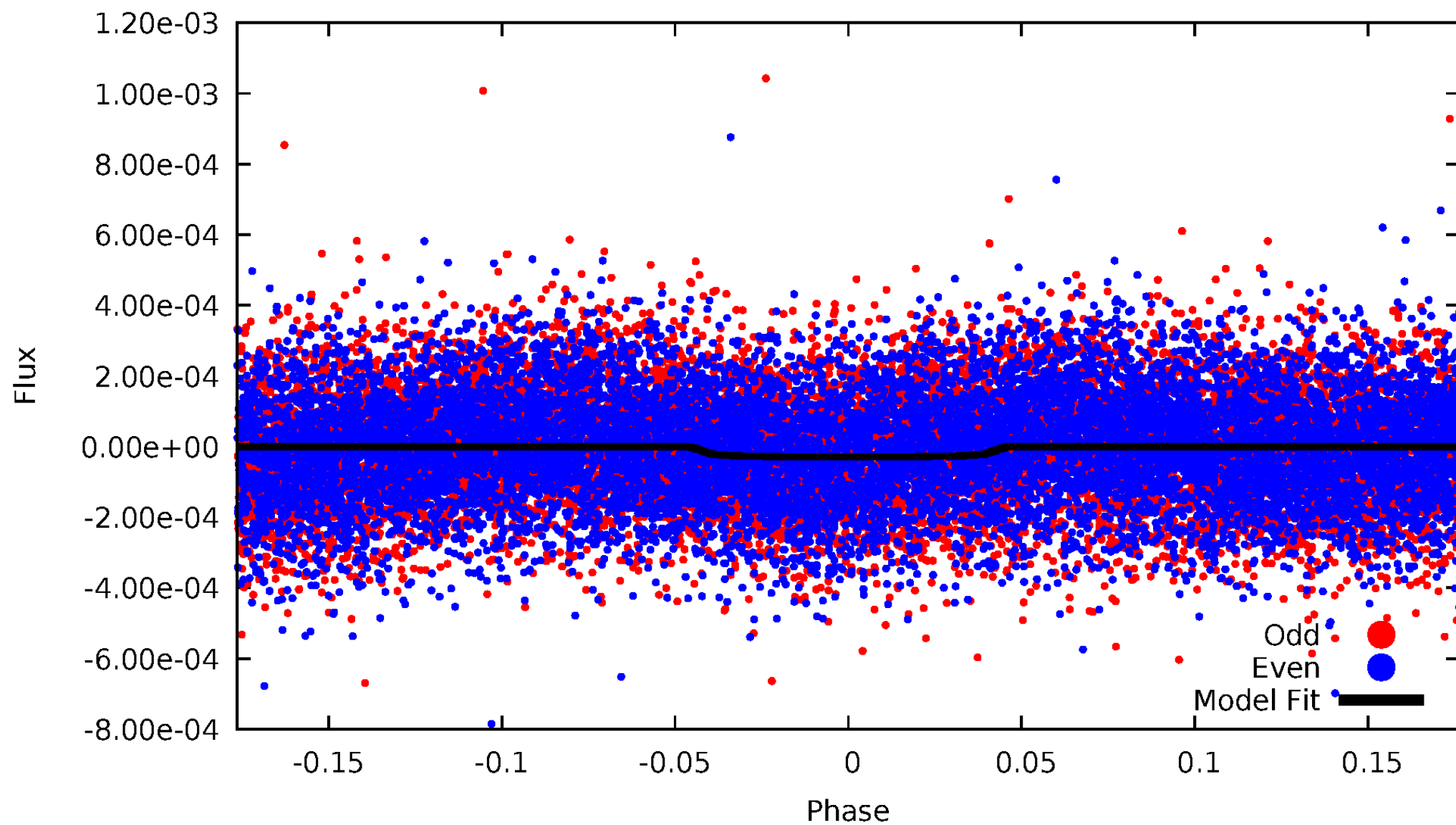


TCE 004645626-01



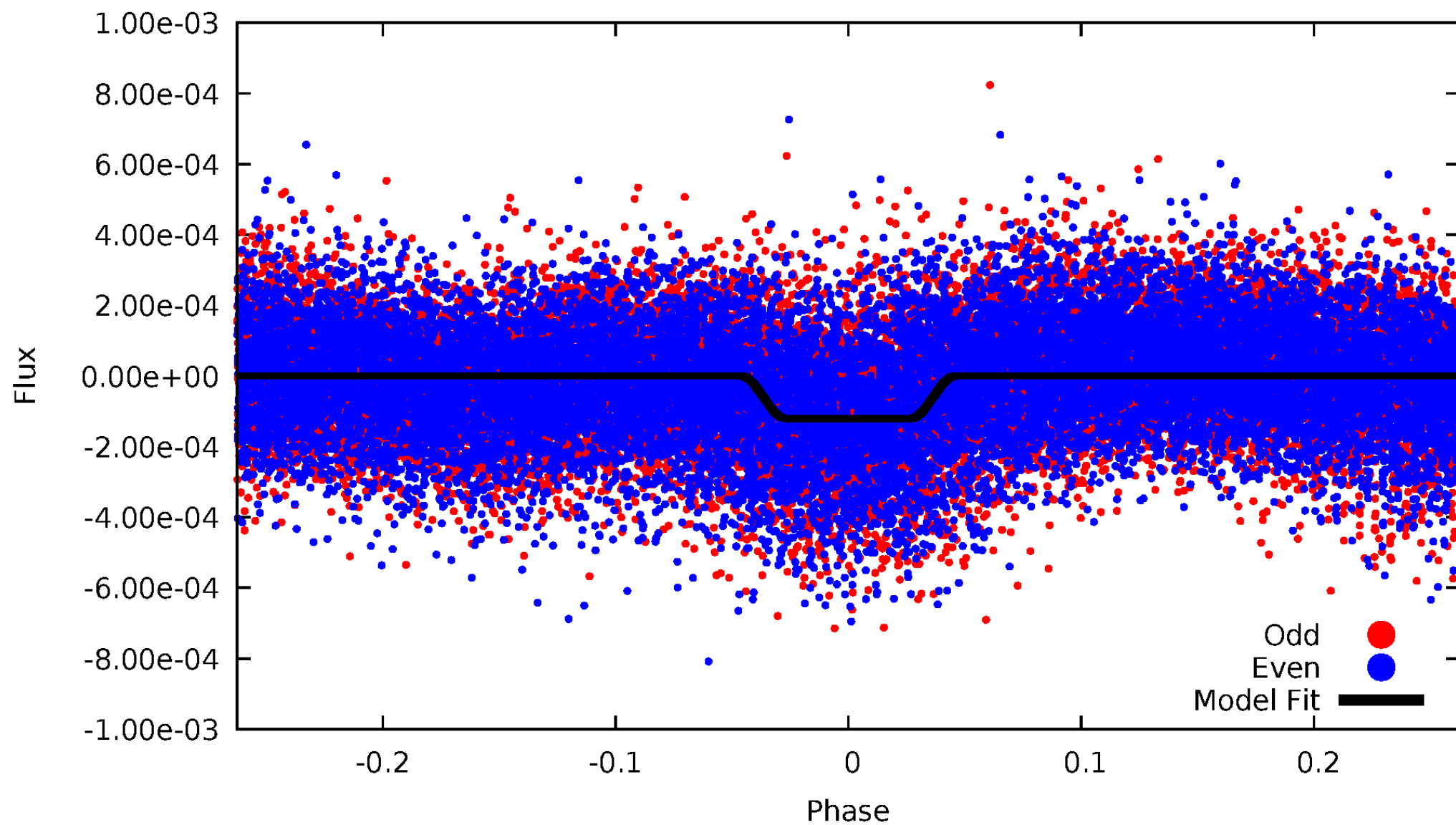
DV Odd/Even

TCE 004645626-01



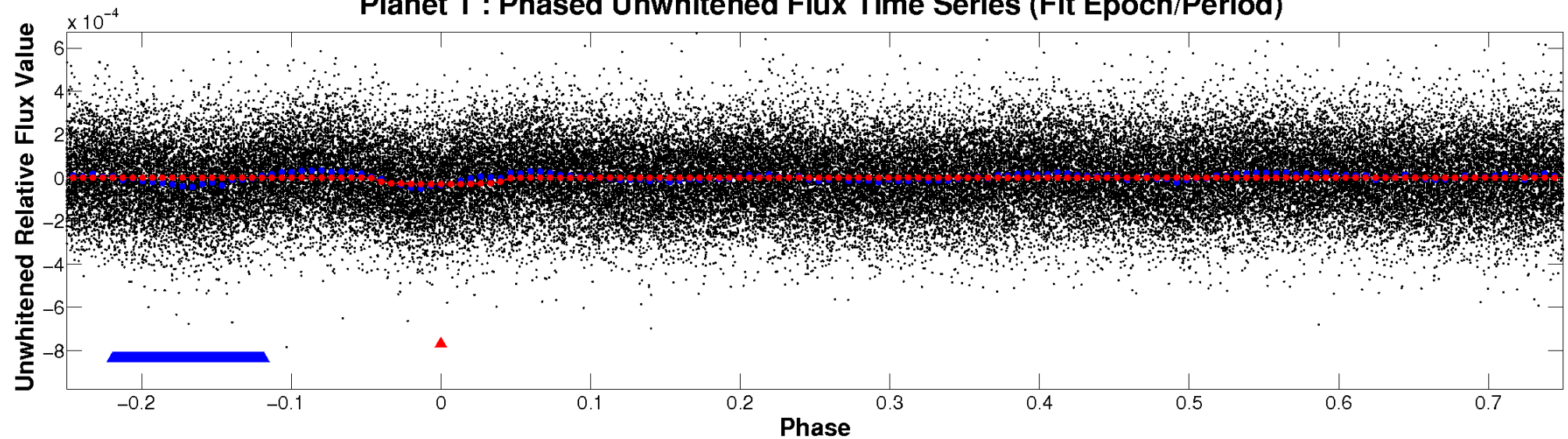
ALT Odd/Even

TCE 004645626-01

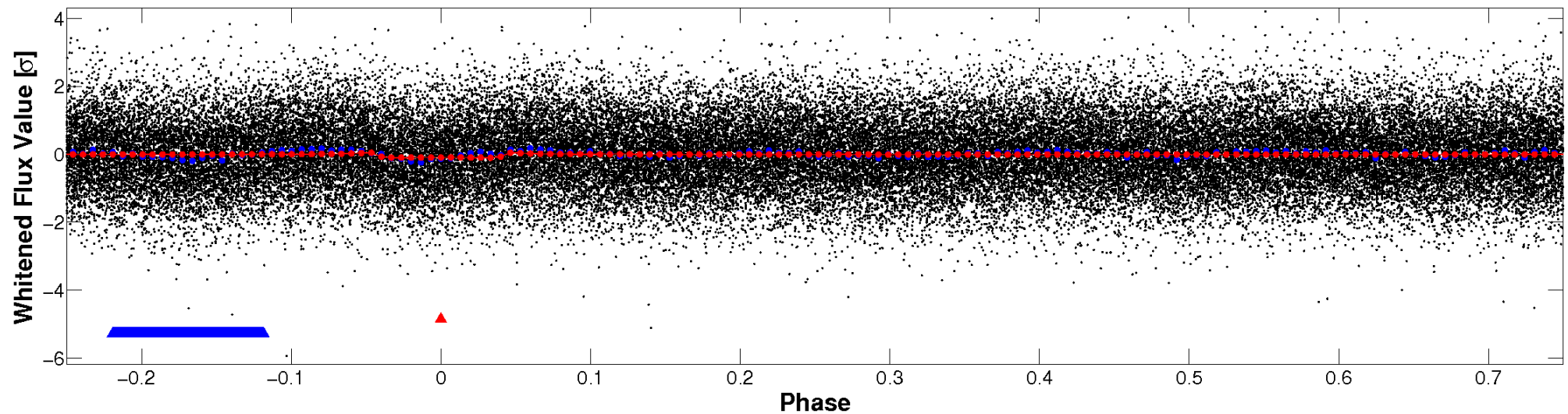


Non-Whitened Vs. Whitened Light Curve

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

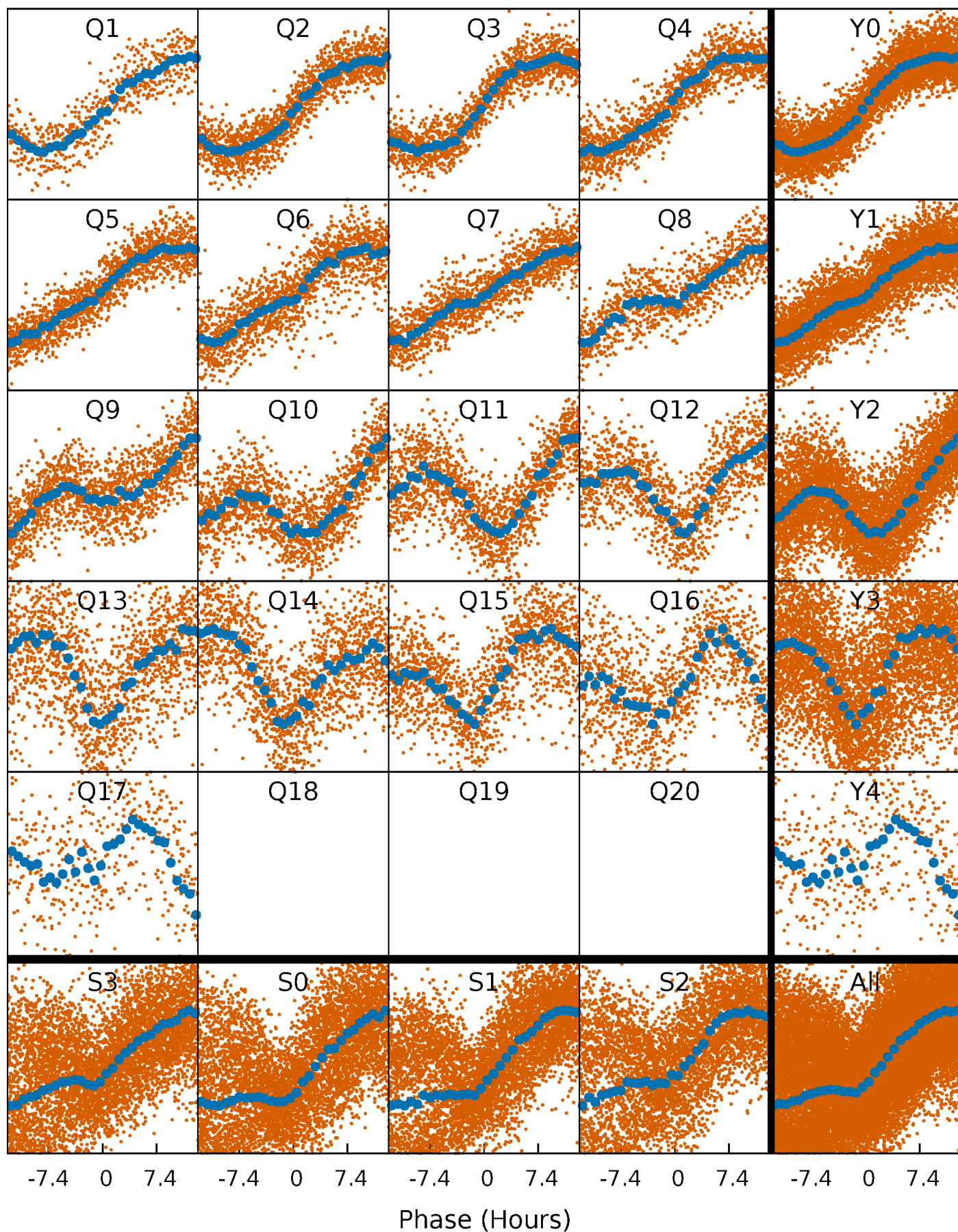


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



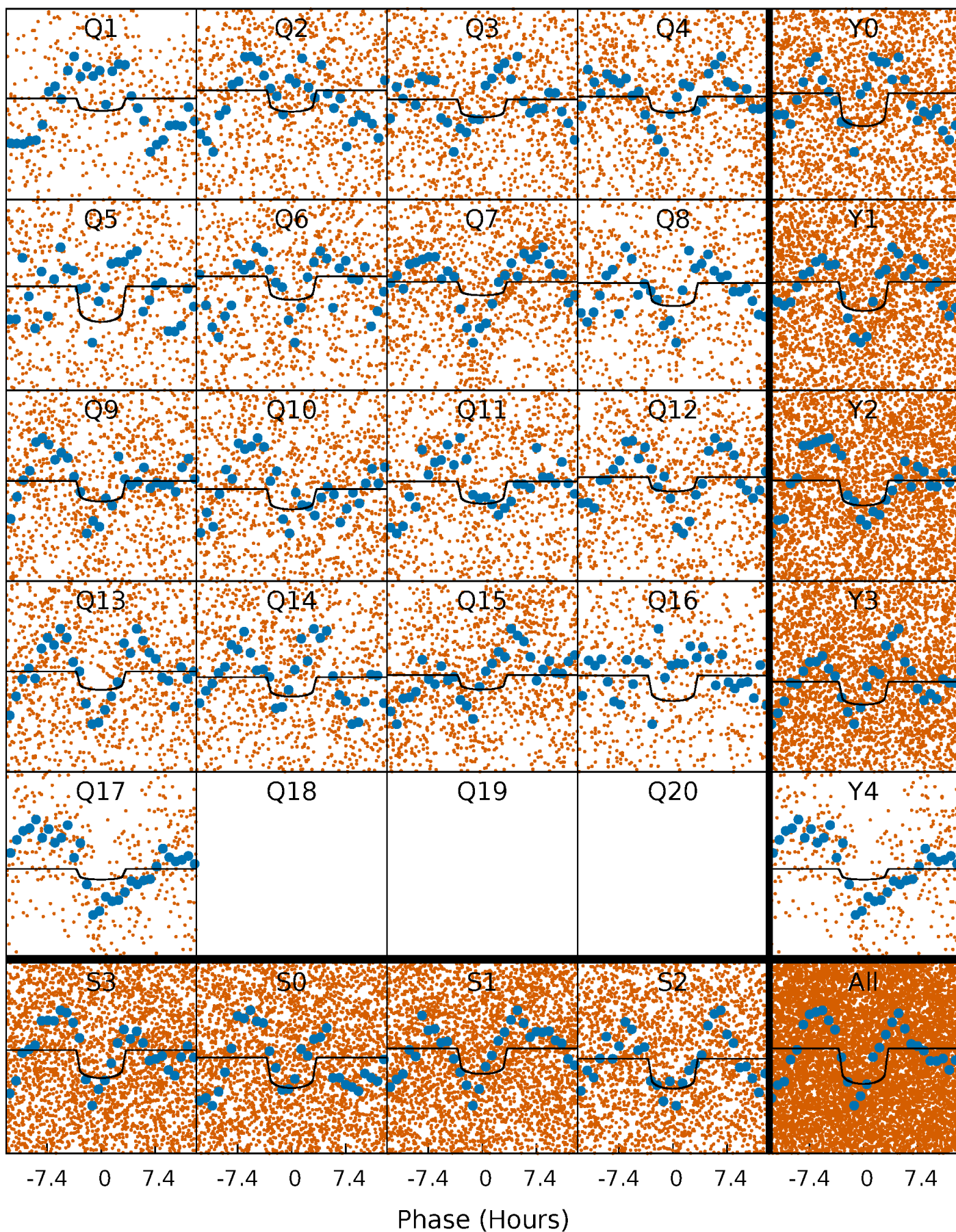
PDC Quarter-Phased Transit Curves

TCE 004645626-01 P= 3.075385 Days $T_0=131.861813$ (BKJD)



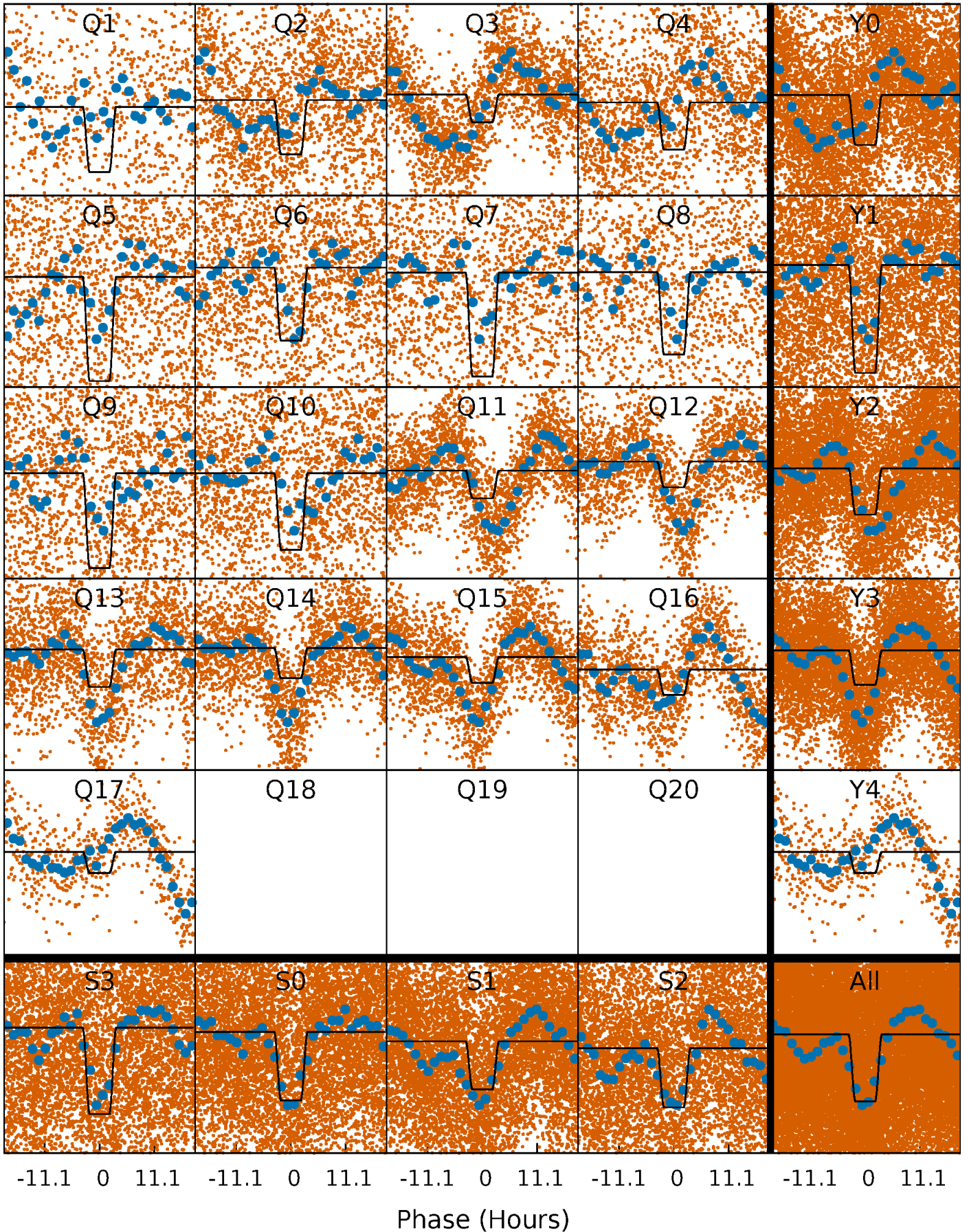
DV Quarter-Phased Transit Curves

TCE 004645626-01 P= 3.075385 Days $T_0=131.861813$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

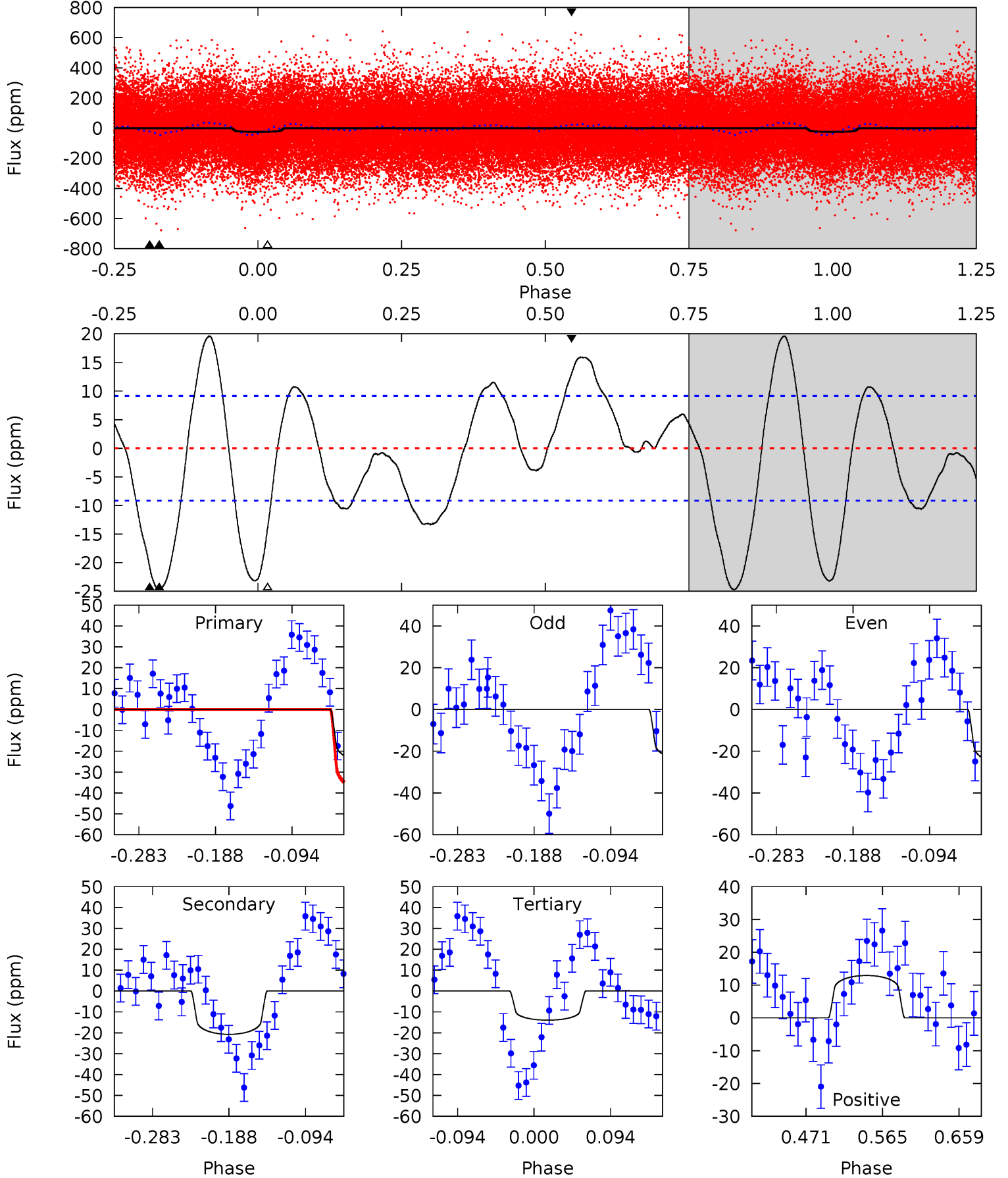
TCE 004645626-01 P= 3.075461 Days $T_0=131.812512$ (BKJD)



DV Model-Shift Uniqueness Test

004645626-01, P = 3.075385 Days, E = 128.786428 Days

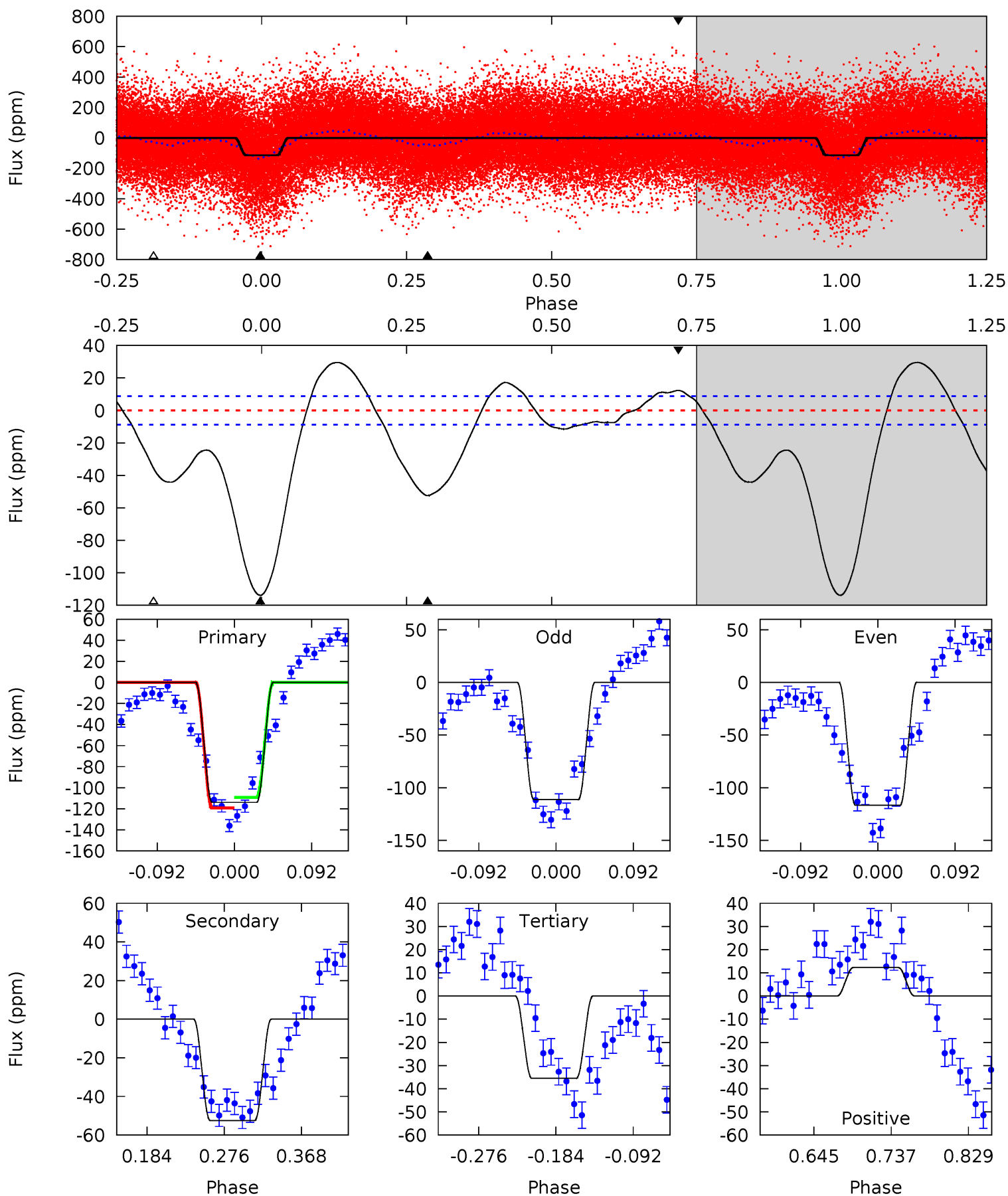
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	10.4	6.97	6.45	4.58	1.67	4.65	5.38	5.90	3.39	3.91	0.43	0.97	0.44	7.14



Alt Model-Shift Uniqueness Test

004645626-01, P = 3.075461 Days, E = 128.737051 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.1	27.2	18.4	6.40	4.58	1.68	9.94	40.7	52.7	8.82	20.8	1.44	1.16	0.21	2.61



Stellar Parameters For KIC 004645626

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6588^{+200}_{-200}	$3.577^{+0.360}_{-0.112}$	$-0.560^{+0.400}_{-0.300}$	$3.281^{+0.542}_{-1.265}$	$1.482^{+0.234}_{-0.351}$	$0.059^{+0.165}_{-0.016}$
	+3%/-3%	+10%/-3%	+71%/-54%	+17%/-39%	+16%/-24%	+279%/-28%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004645626-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-21 ± 2	$1.97^{+0.61}_{-0.56}$	3338^{+206}_{-305}	5774^{+857}_{-619}	$6.560^{+5.989}_{-2.669}$
Alt.	-53 ± 2	$3.71^{+0.80}_{-0.83}$	3326^{+213}_{-345}	5299^{+386}_{-296}	$4.654^{+2.681}_{-1.320}$

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

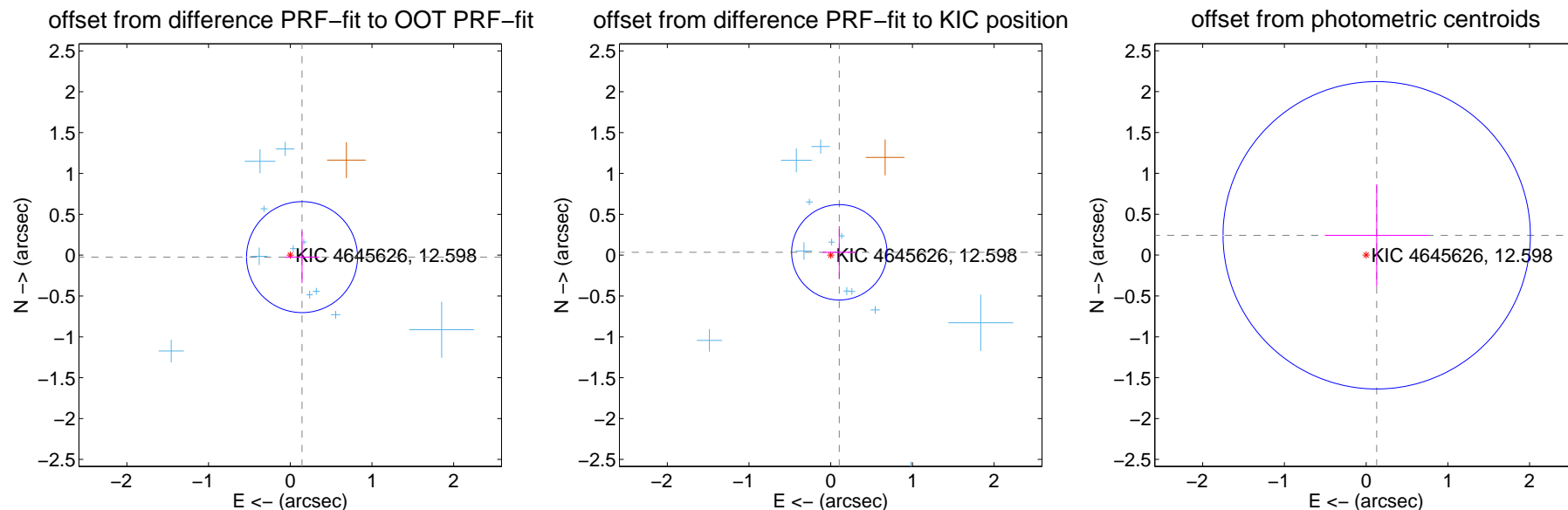
DV Centroid Data

Supplemental centroid analysis for 004645626-01. Kepler magnitude: 12.60. Transit SNR 7.18

There are 12 quarters with good PRF difference image offsets

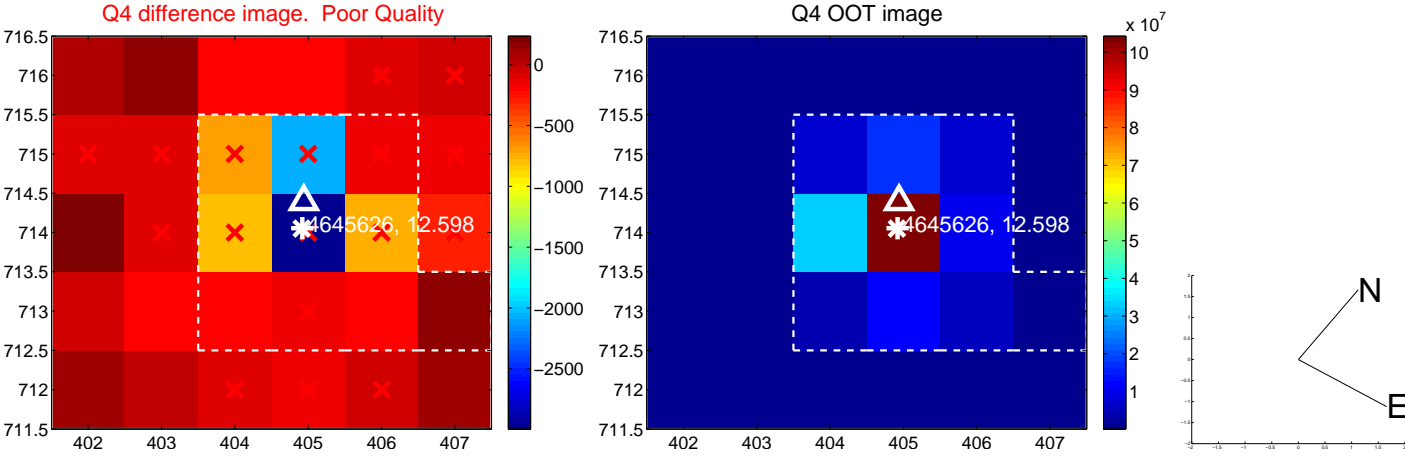
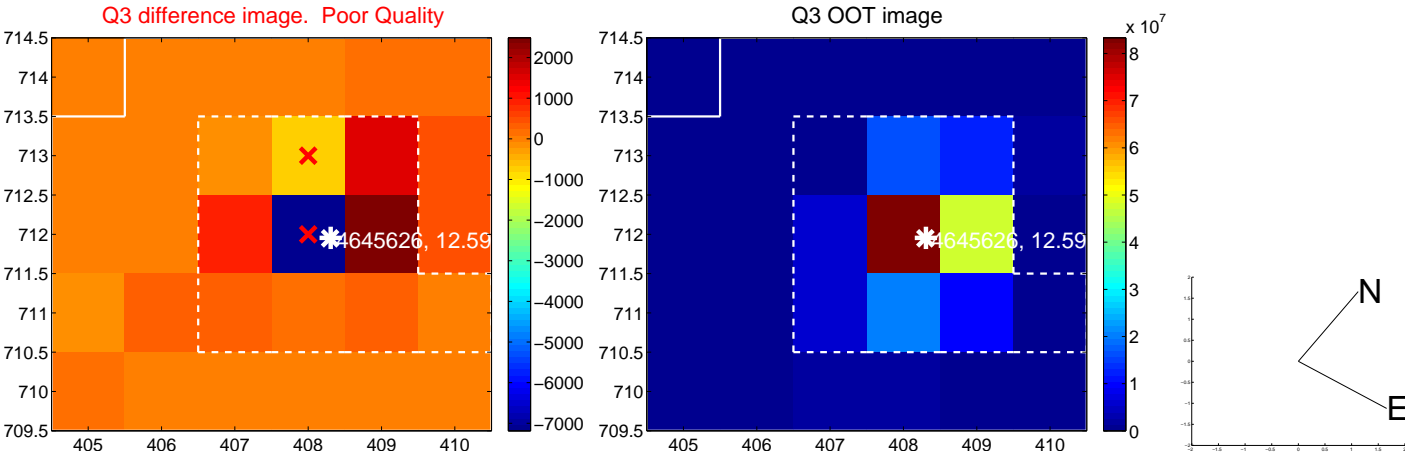
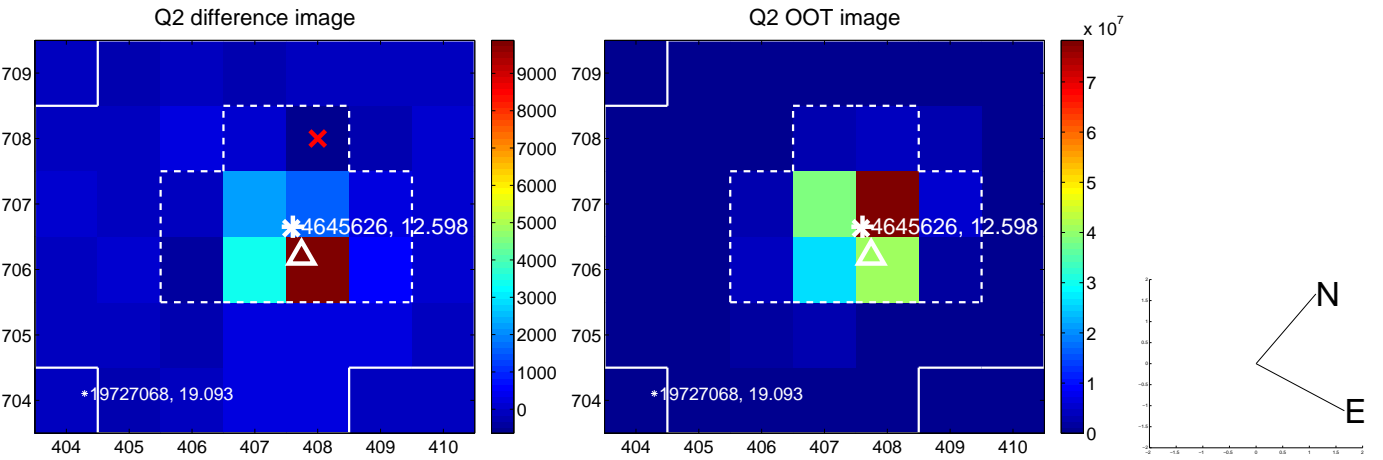
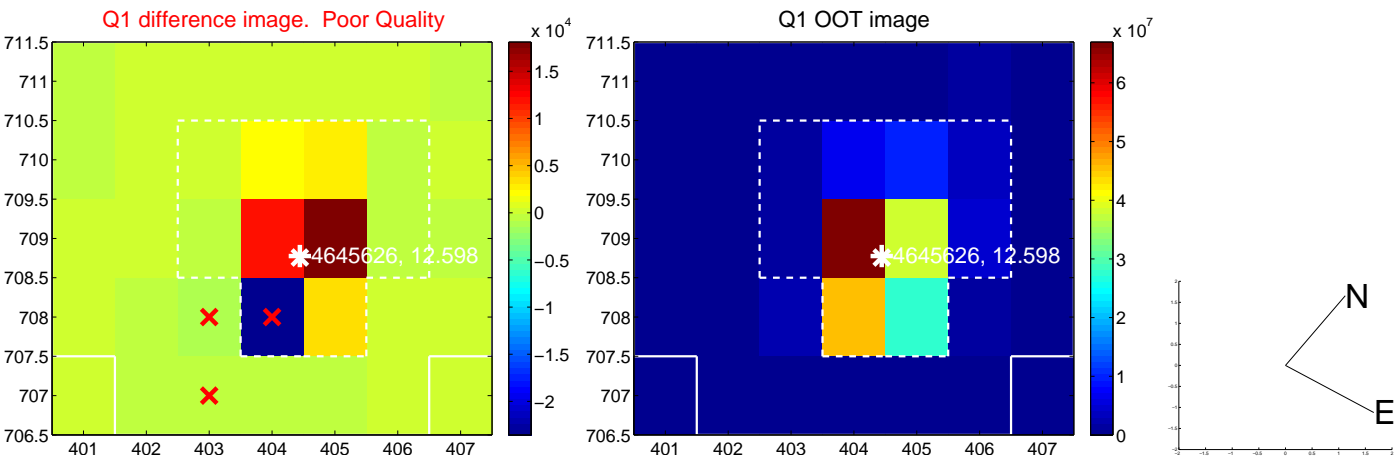
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.146 ± 0.226	0.65	-0.144 ± 0.209	-0.024 ± 0.318
PRF-fit source offset from KIC position	0.111 ± 0.195	0.57	-0.105 ± 0.206	0.035 ± 0.320
photometric centroid source offset	0.27 ± 0.63	0.44	-0.13 ± 0.63	0.24 ± 0.62

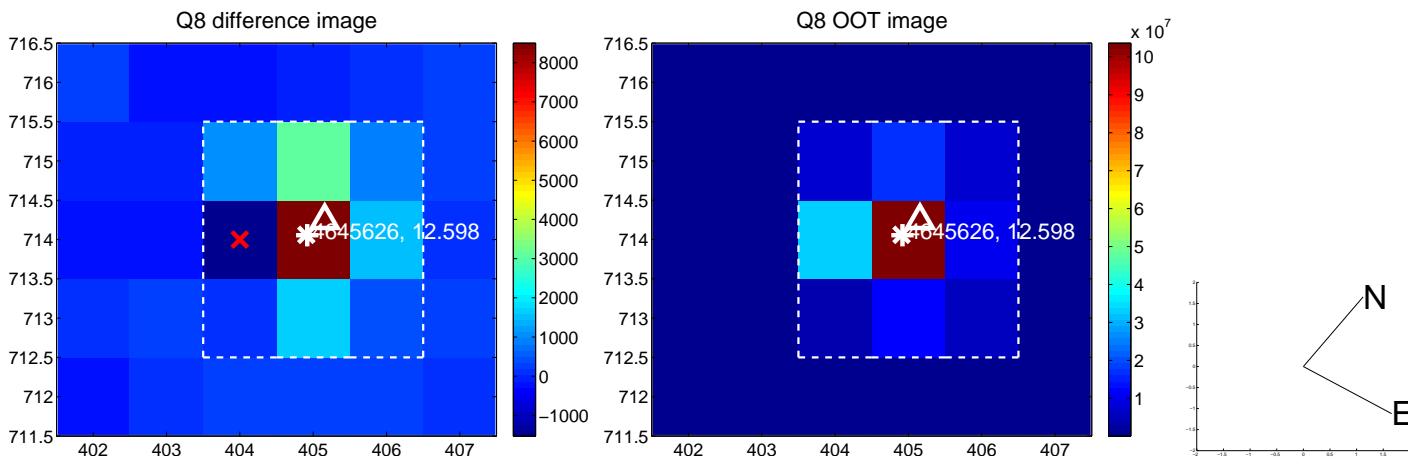
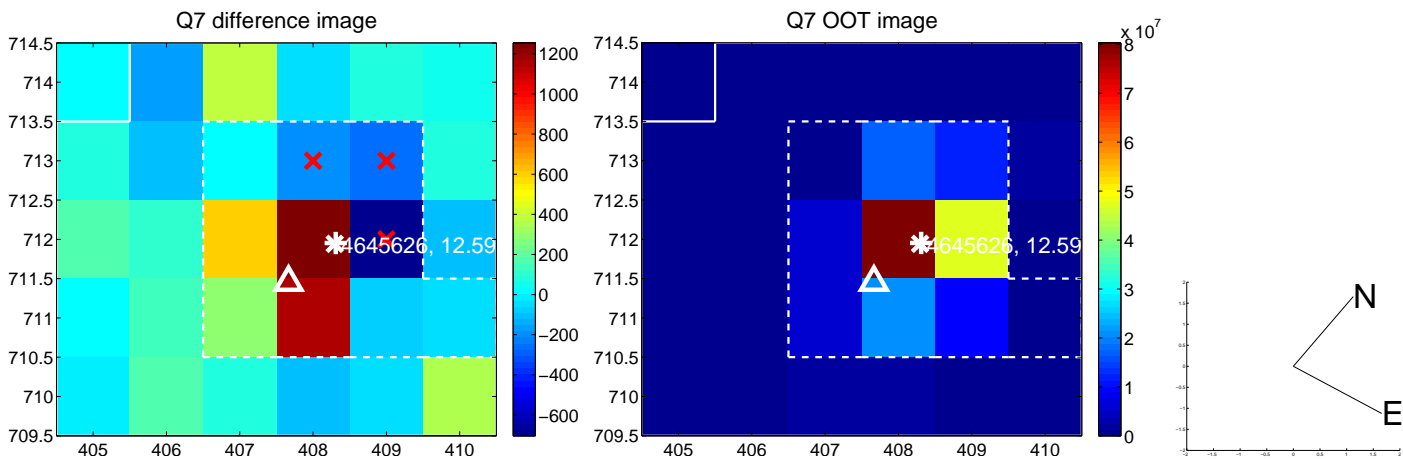
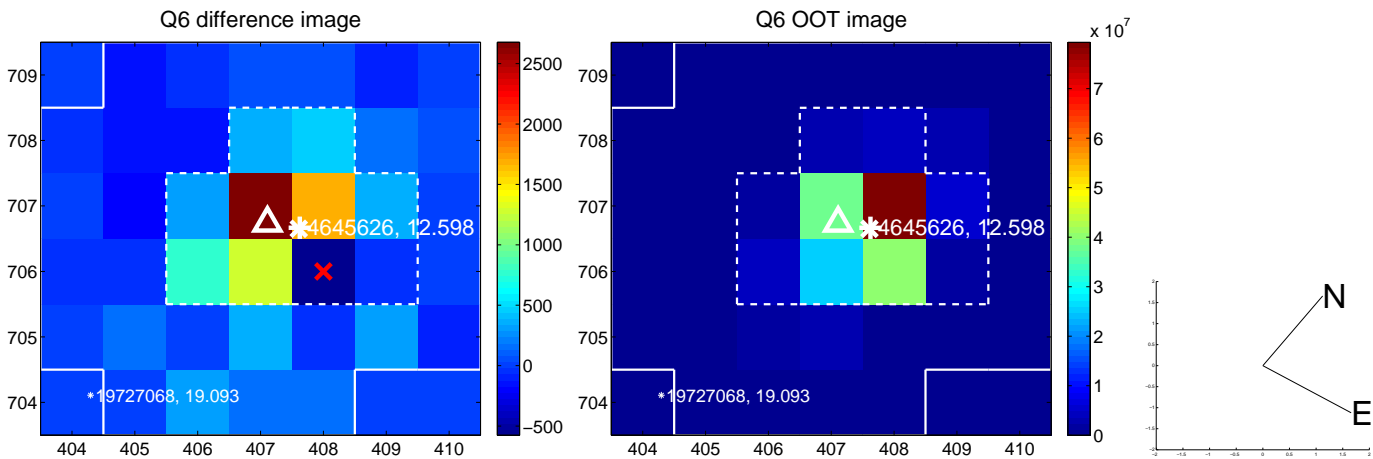
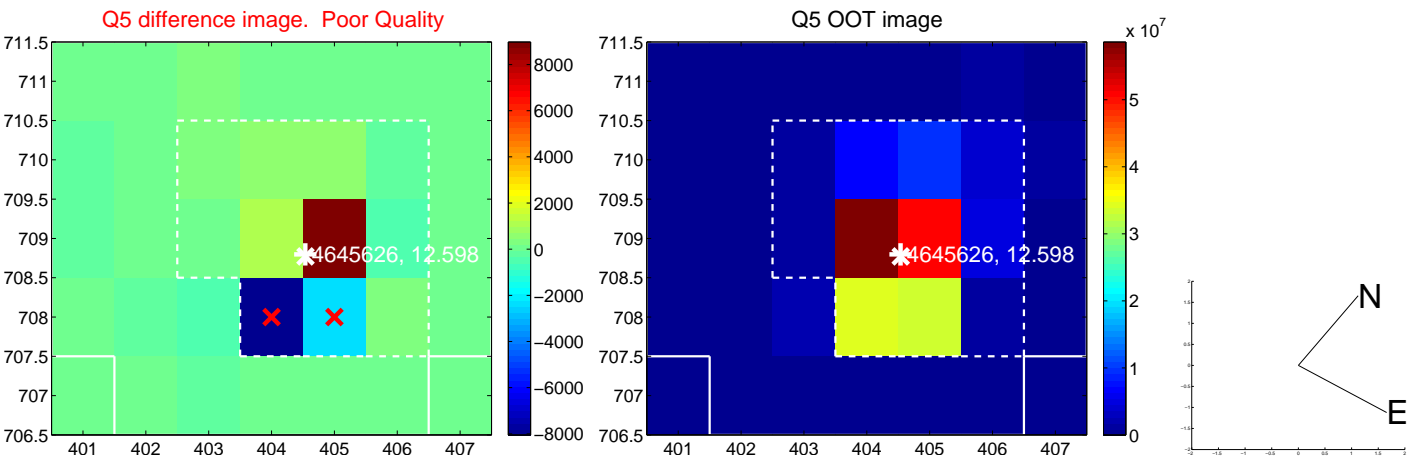


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

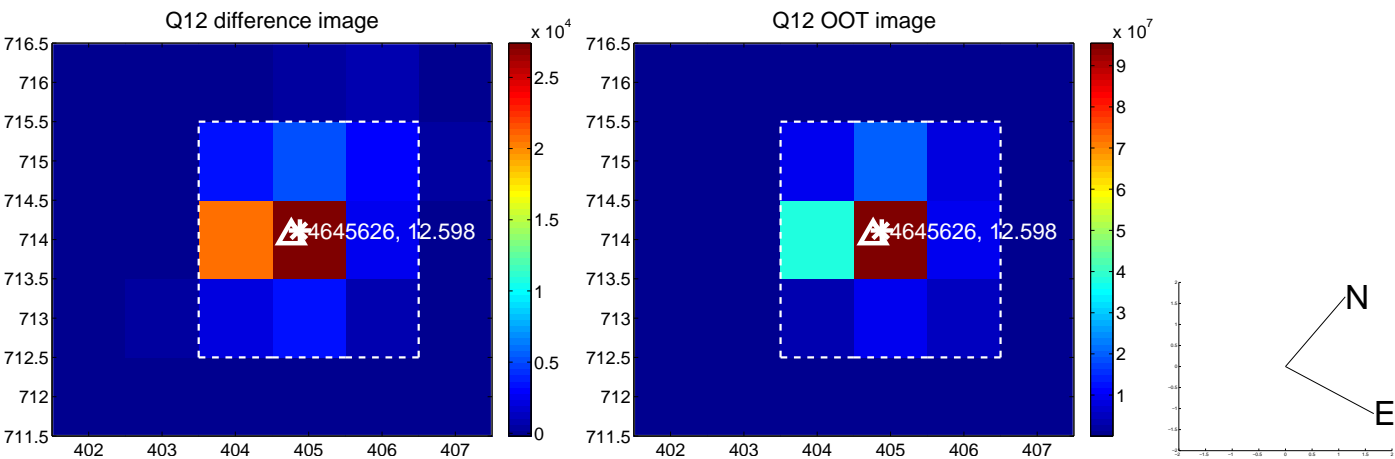
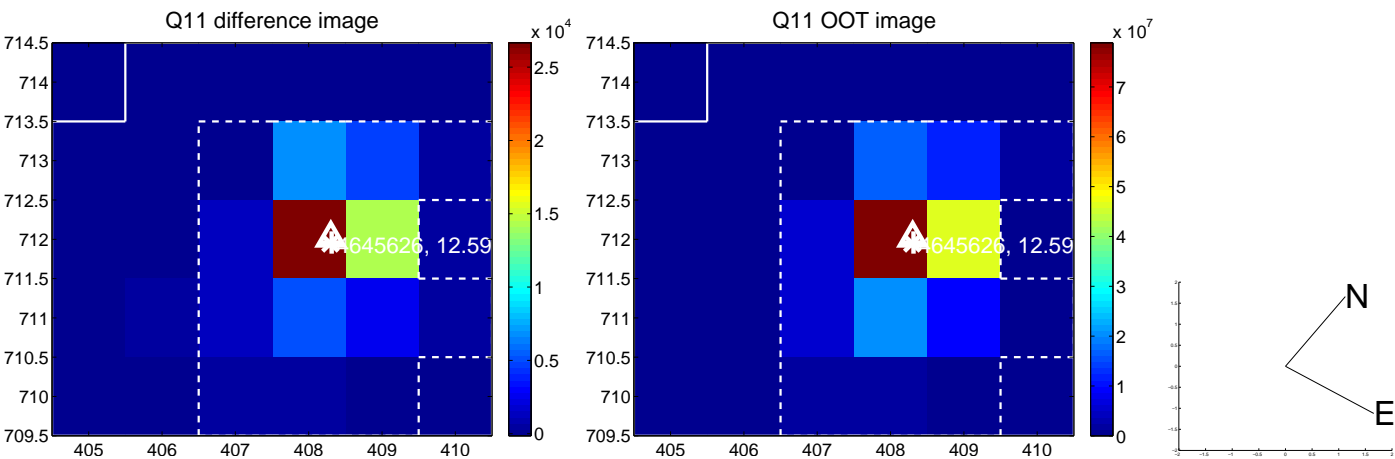
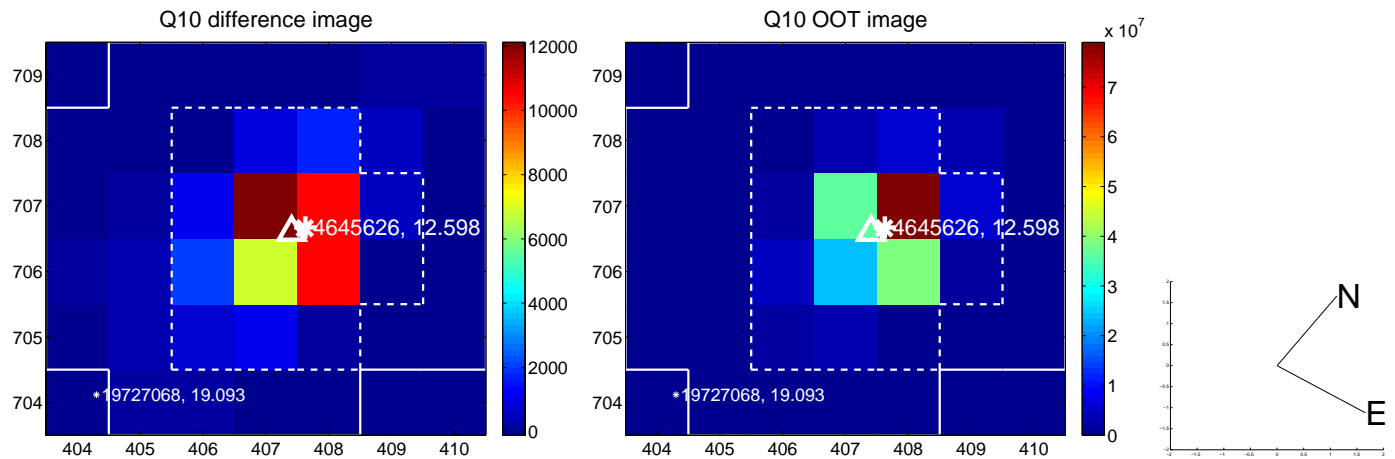
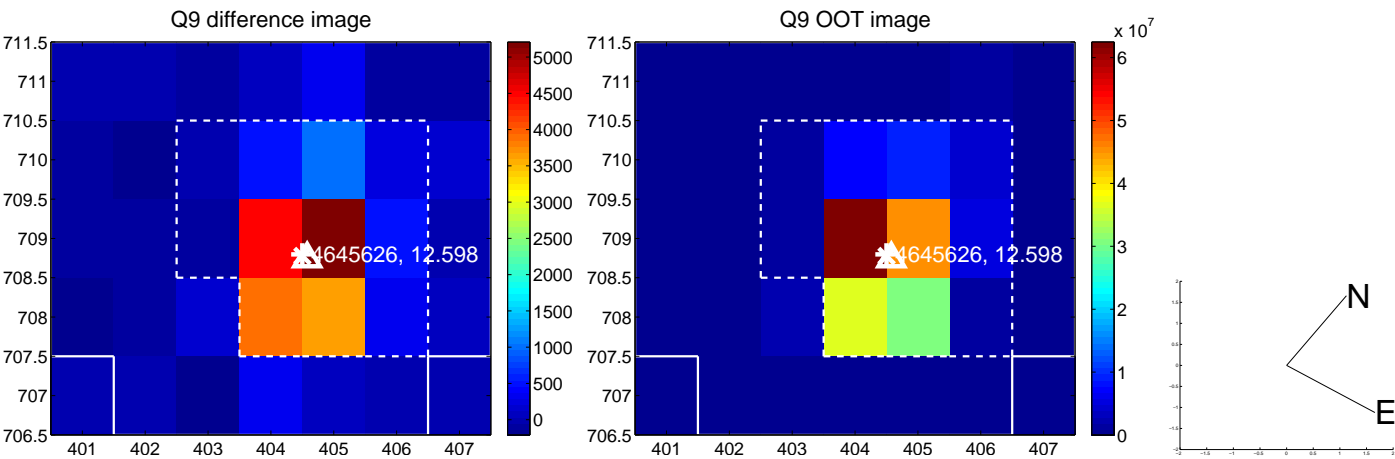
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



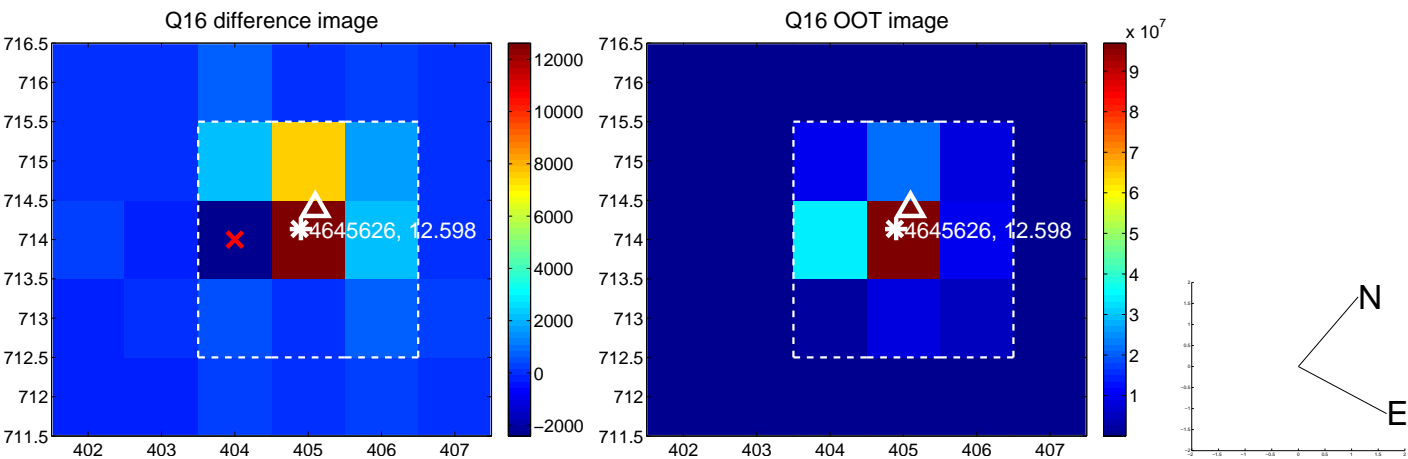
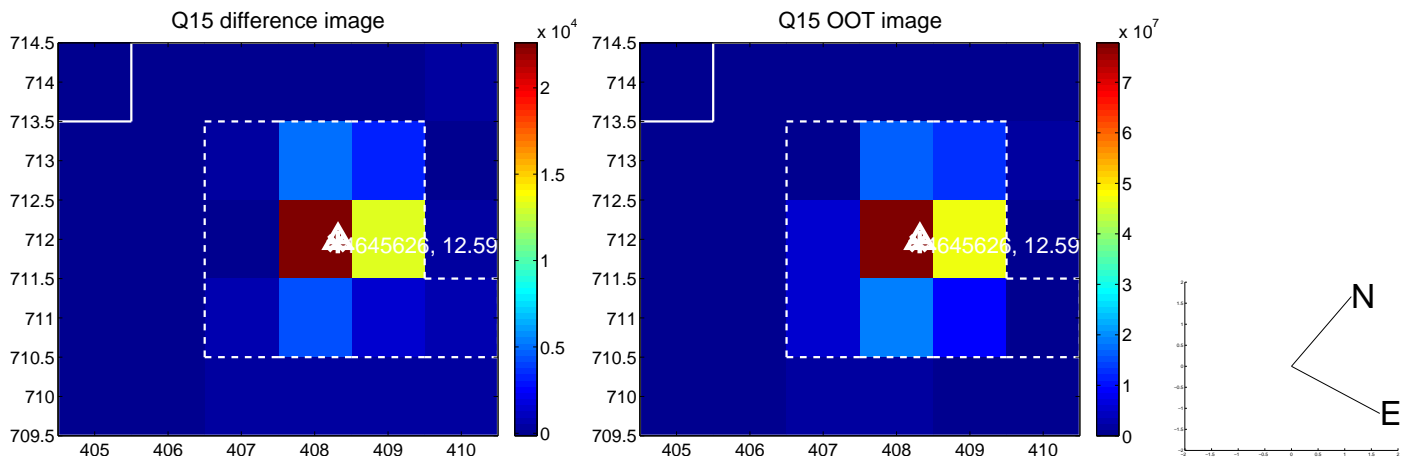
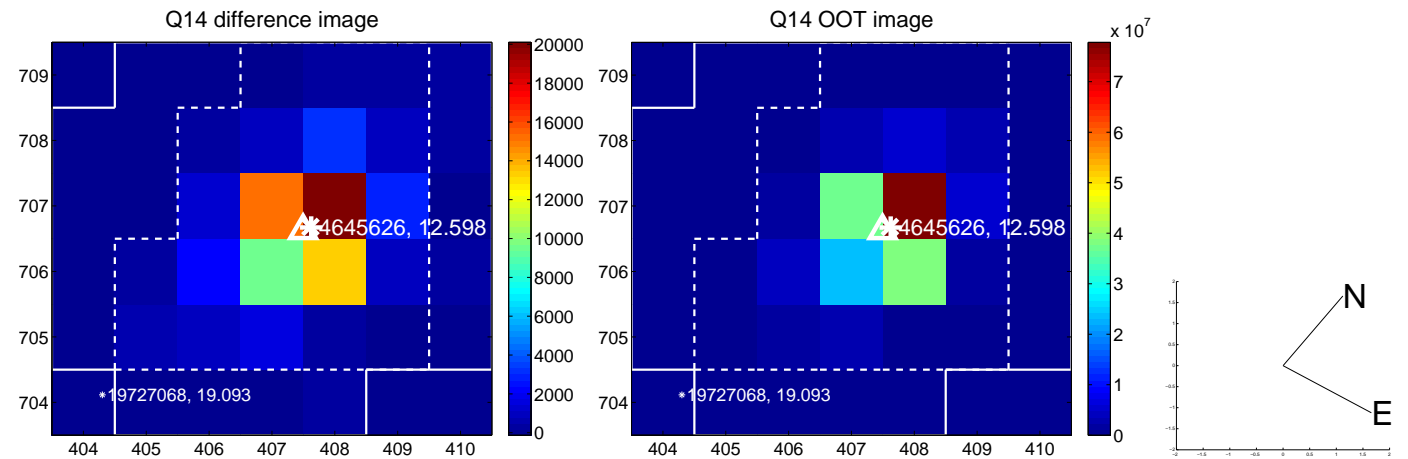
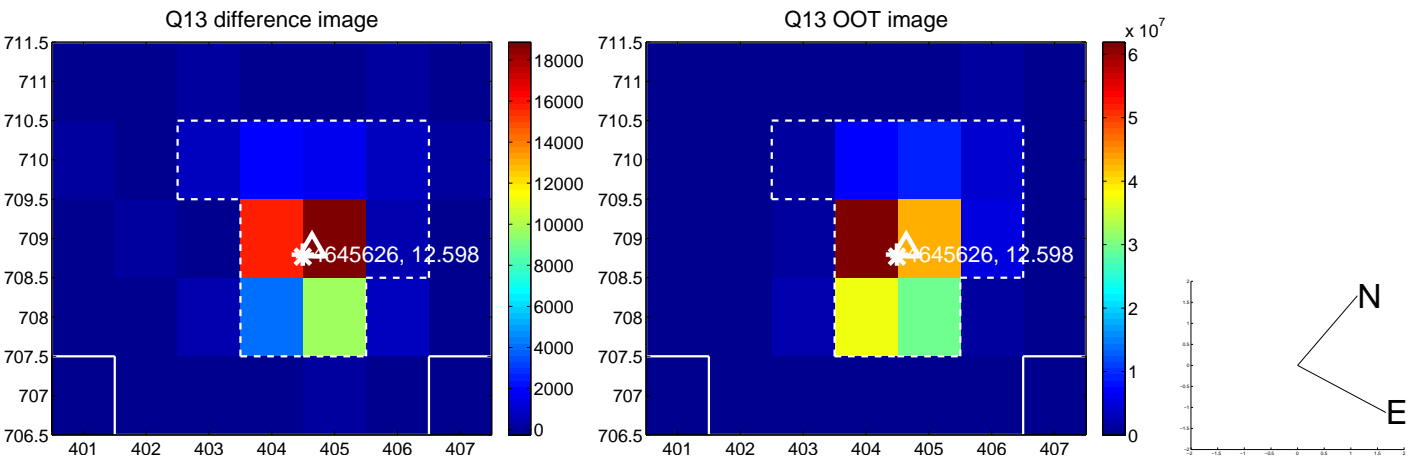
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



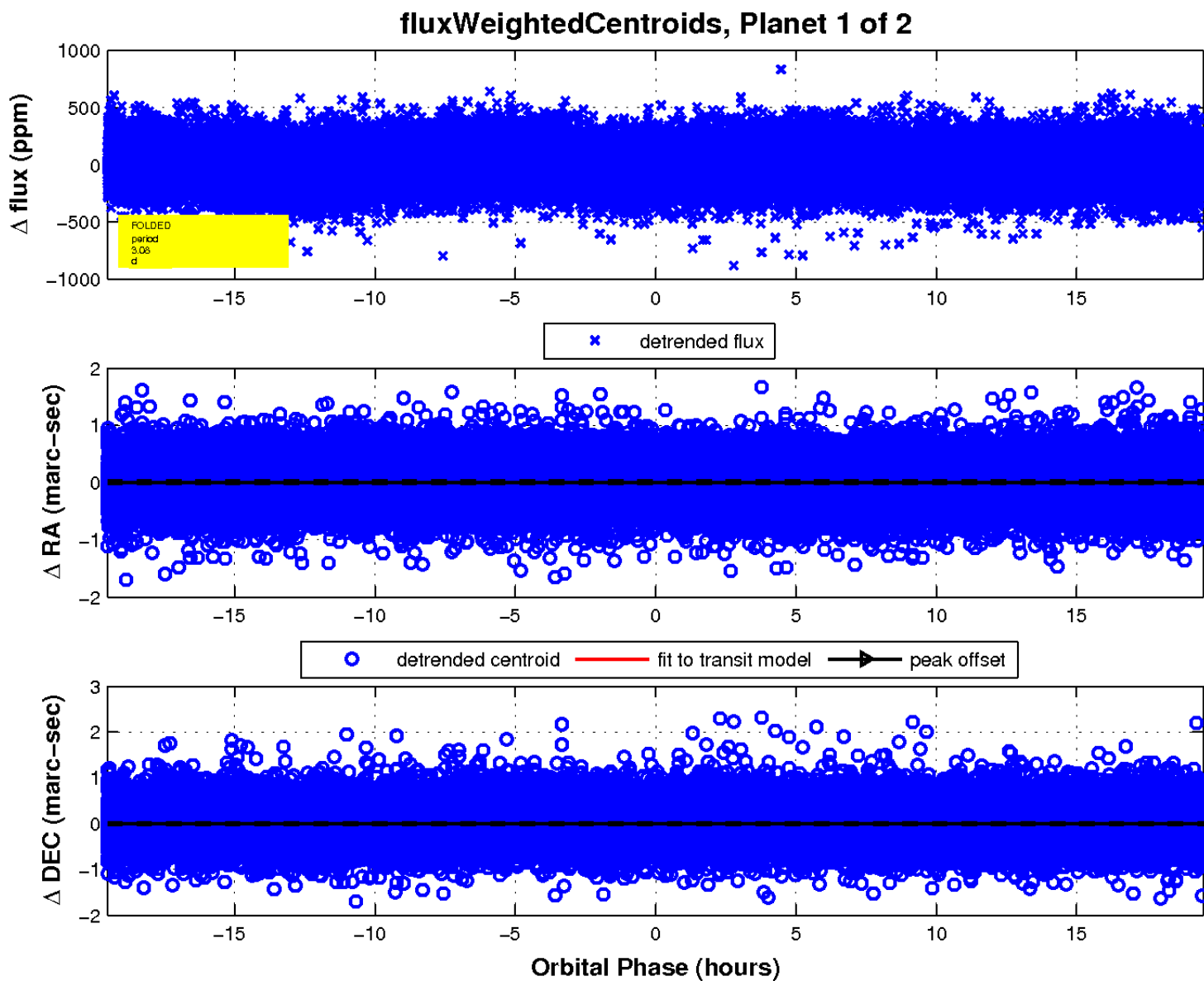
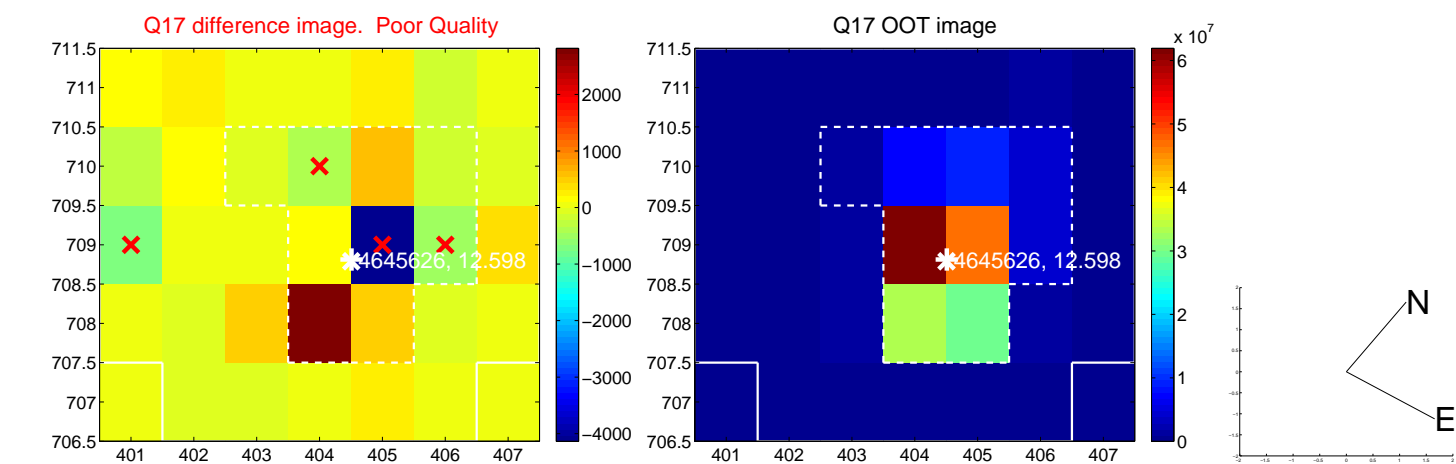
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



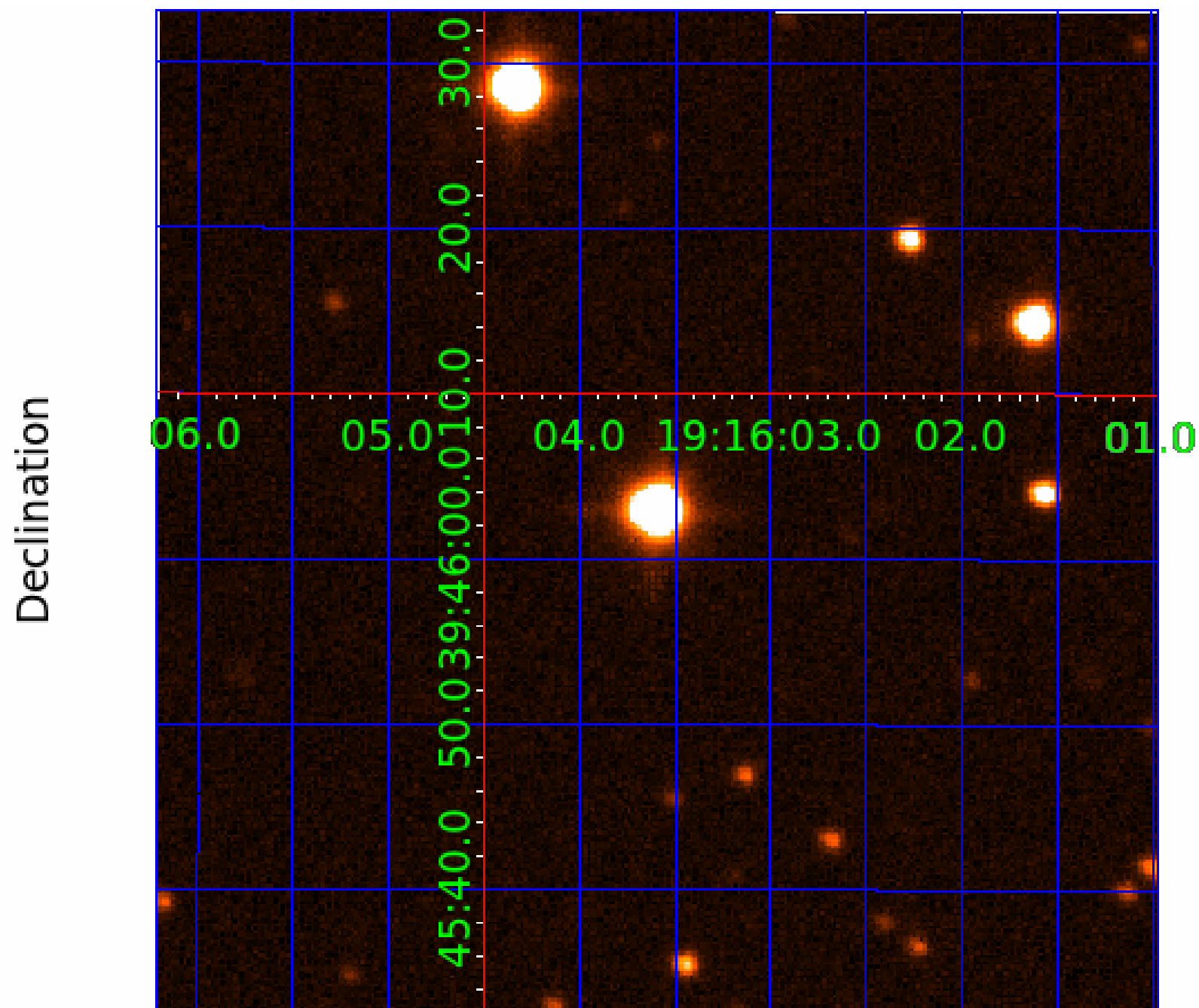
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 004645626

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})
004645626-01	OBS	No	3.075385	131.861813	29.6	6.509	9.4	7.2	3.28	6588	2.09	8154.18
004645626-02	OBS	No	3.074728	134.573316	6.4	27.499	8.3	2.0	3.28	6588	0.84	8156.50

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004645626-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
004645626-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—SWEET_NTL—LPP_DV—LPP_ALT—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.

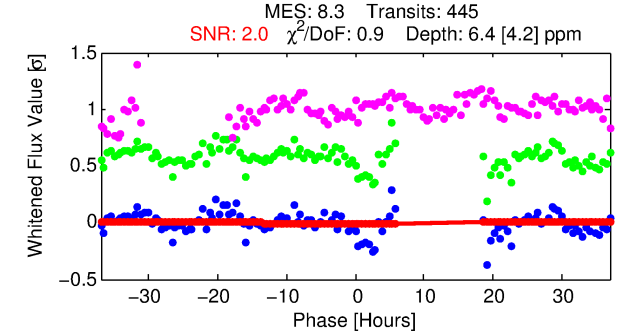
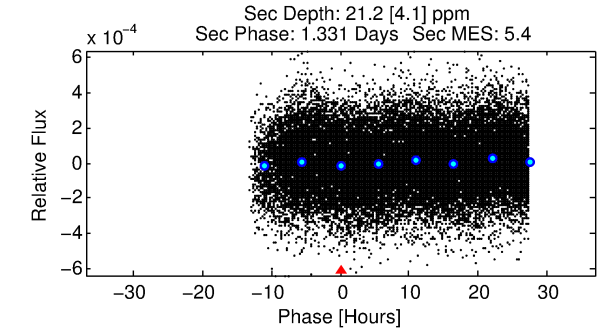
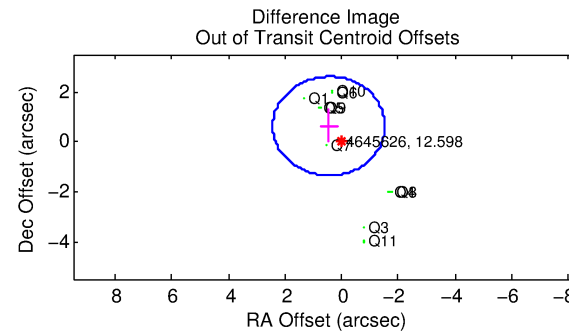
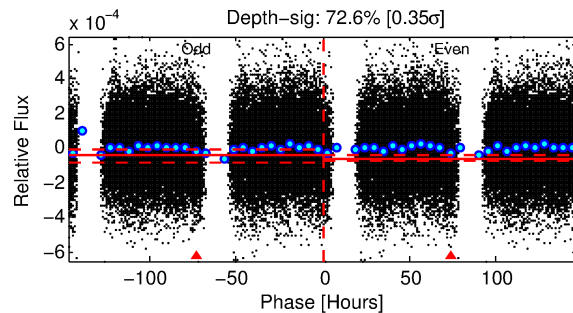
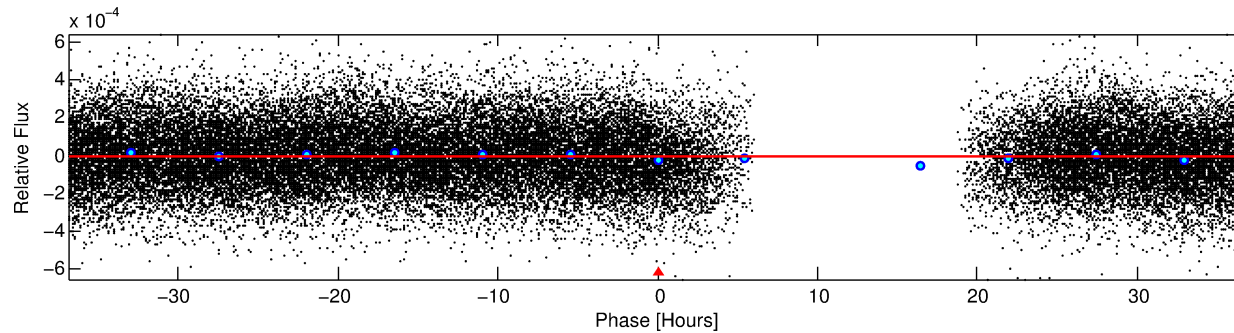
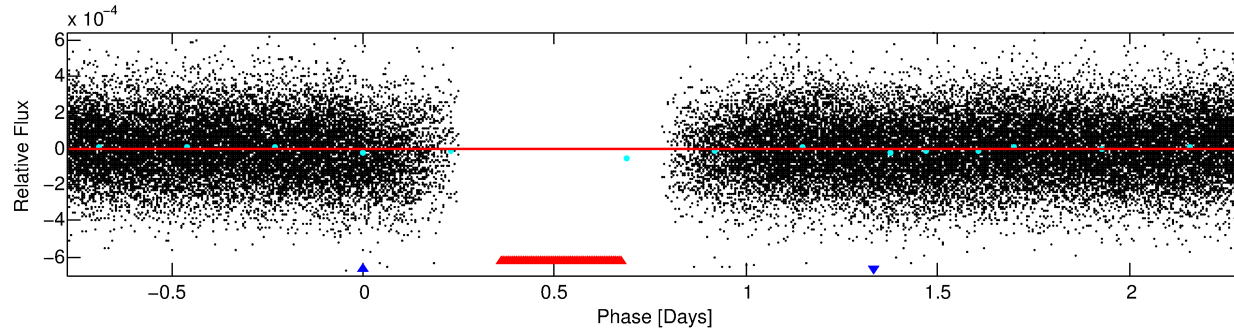
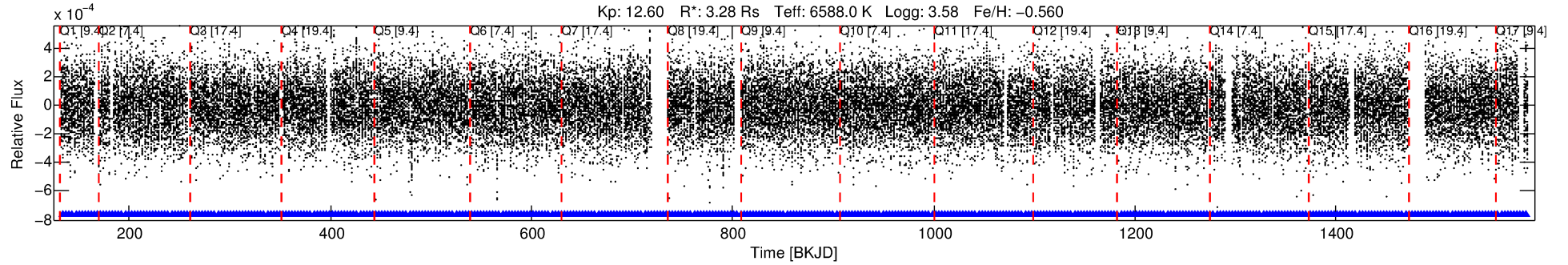
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004645626-02

No Significant Match Found

DV One-Page Summary

KIC: 4645626 Candidate: 2 of 2 Period: 3.075 d



DV Fit Results:

Period = 3.07473 [0.00032] d
Epoch = 134.5733 [0.1661] BKJD
Rp/R* = 0.0023 [0.0077]
a/R* = 1.09 [3.04]
b = 0.06 [278.98]
Seff = 8156.50 [5068.87]
Teq = 2423 [376] K
Rp = 0.84 [2.79] Re
a = 0.0472 [0.0178] AU
Ag = 37.09 [246.62] [0.15 σ]
Teffp = 9246 [15309] K [0.45 σ]

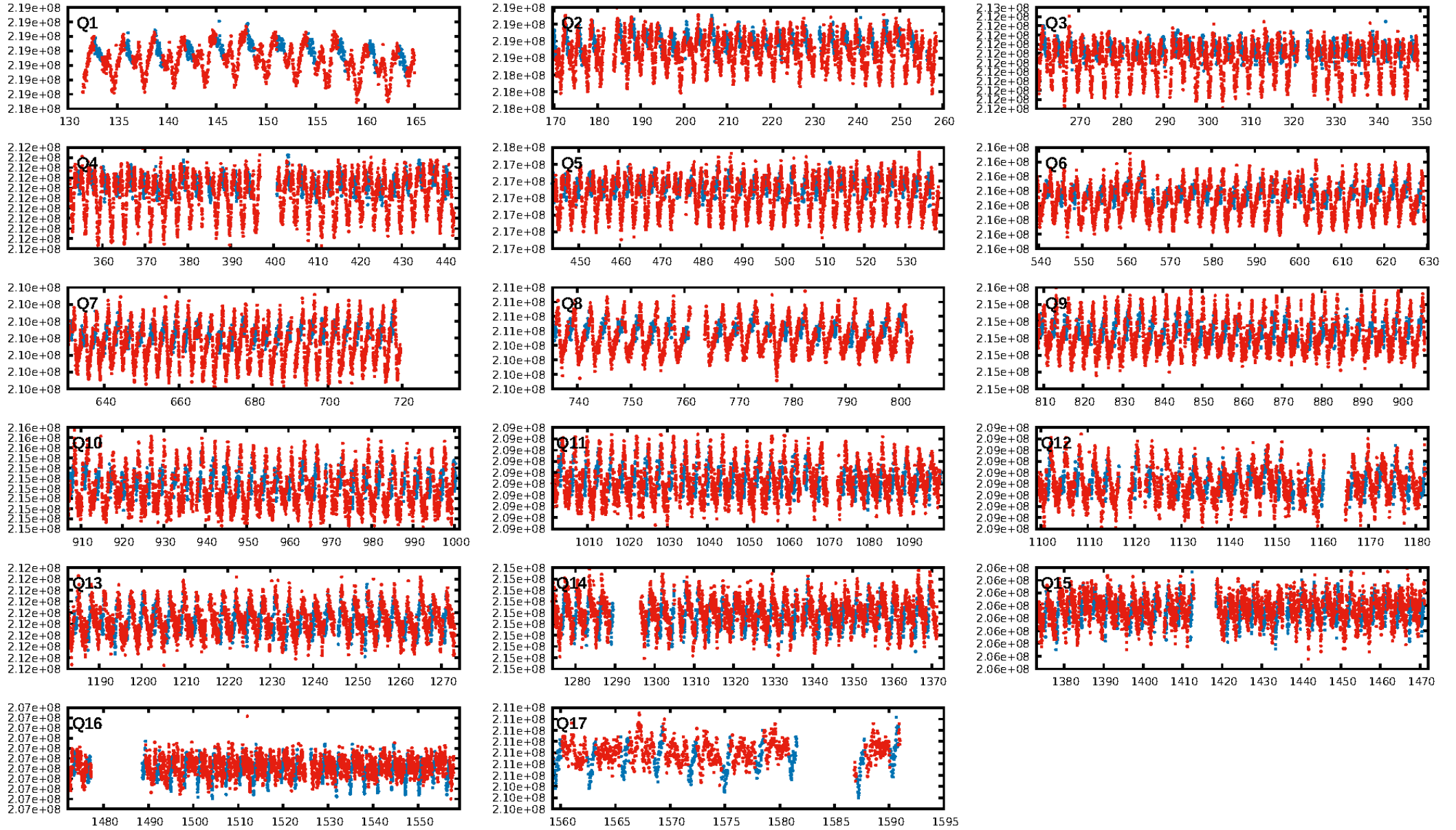
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [426/426]
GhostDiagnostic-chr: 0.8413
Centroid-sig: 0.7%
Centroid-so: 2.862 arcsec [1.69 σ]
OotOffset-rm: 0.774 arcsec [1.17 σ]
OotOffset-st: 2/3/2/3 [10]
KicOffset-rm: 0.822 arcsec [0.97 σ]
KicOffset-st: 2/3/2/3 [10]
DiffImageQuality-fgm: 0.90 [9/10]
DiffImageOverlap-fno: 0.00 [0/17]

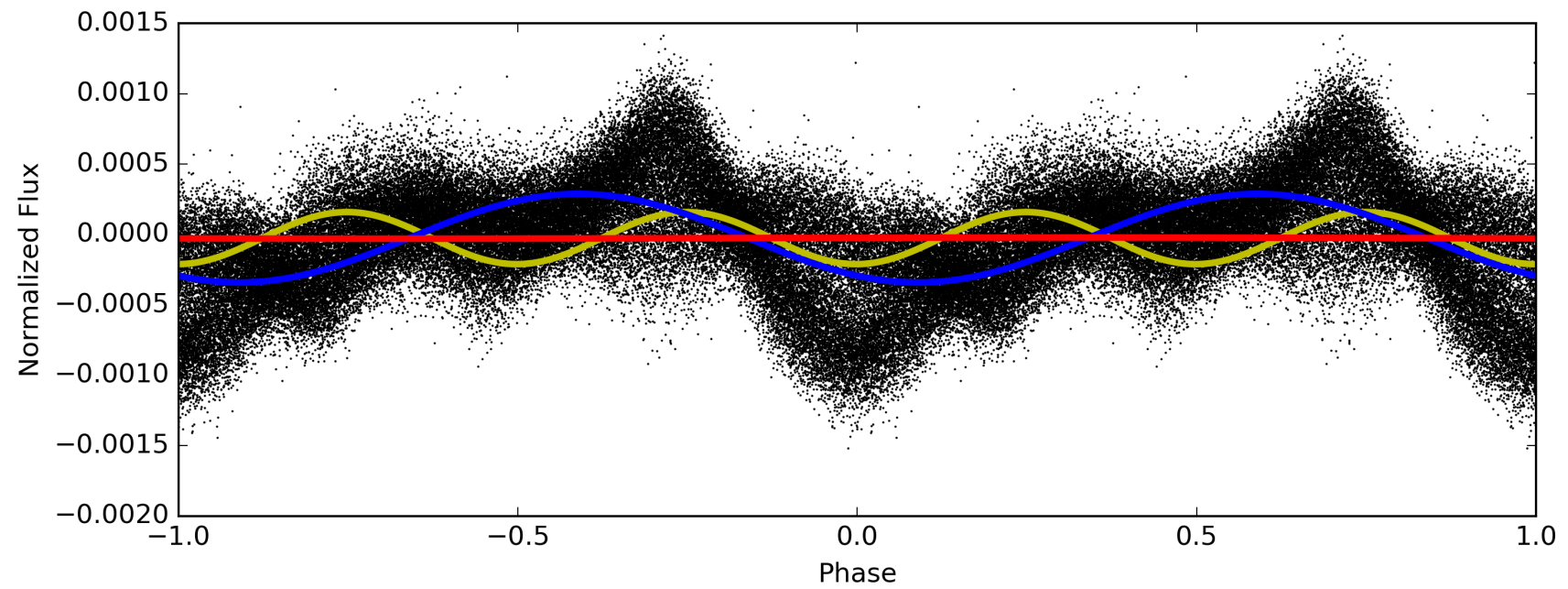
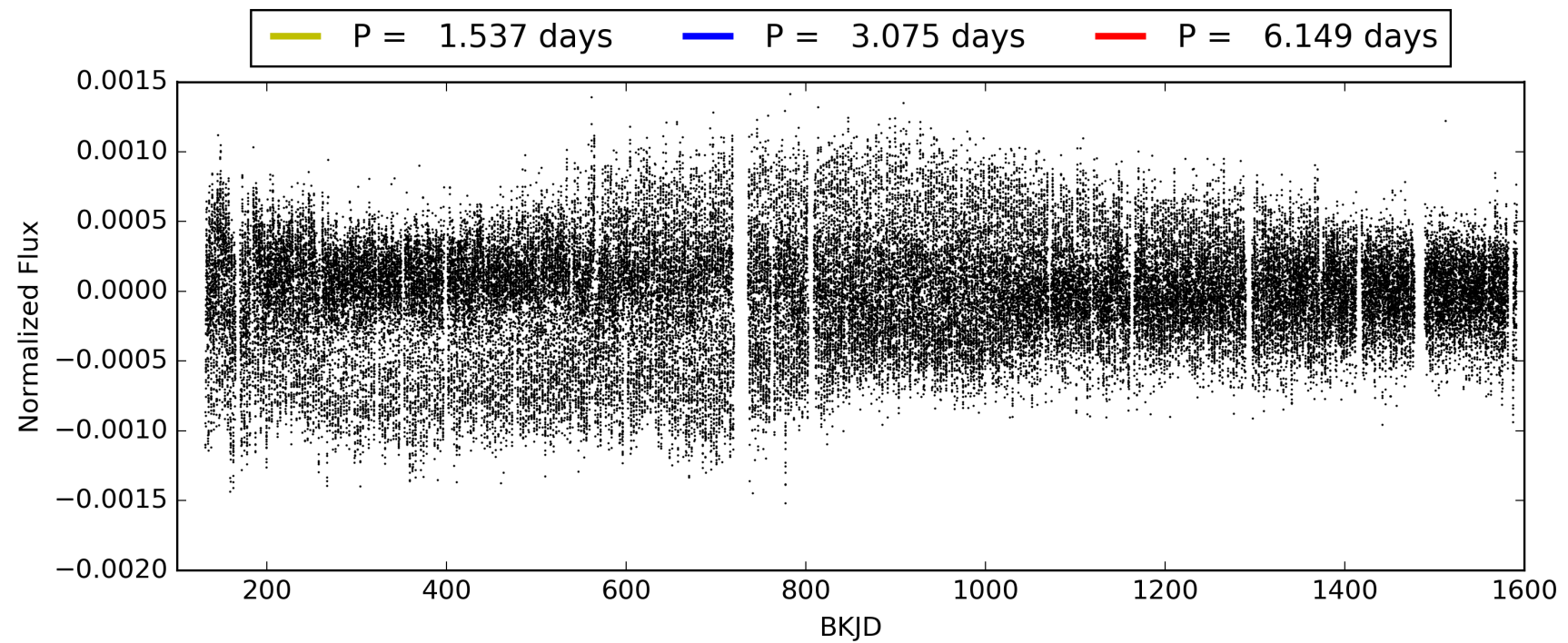
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:35:25 Z

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

TCE 004645626-02, PDC Light Curves

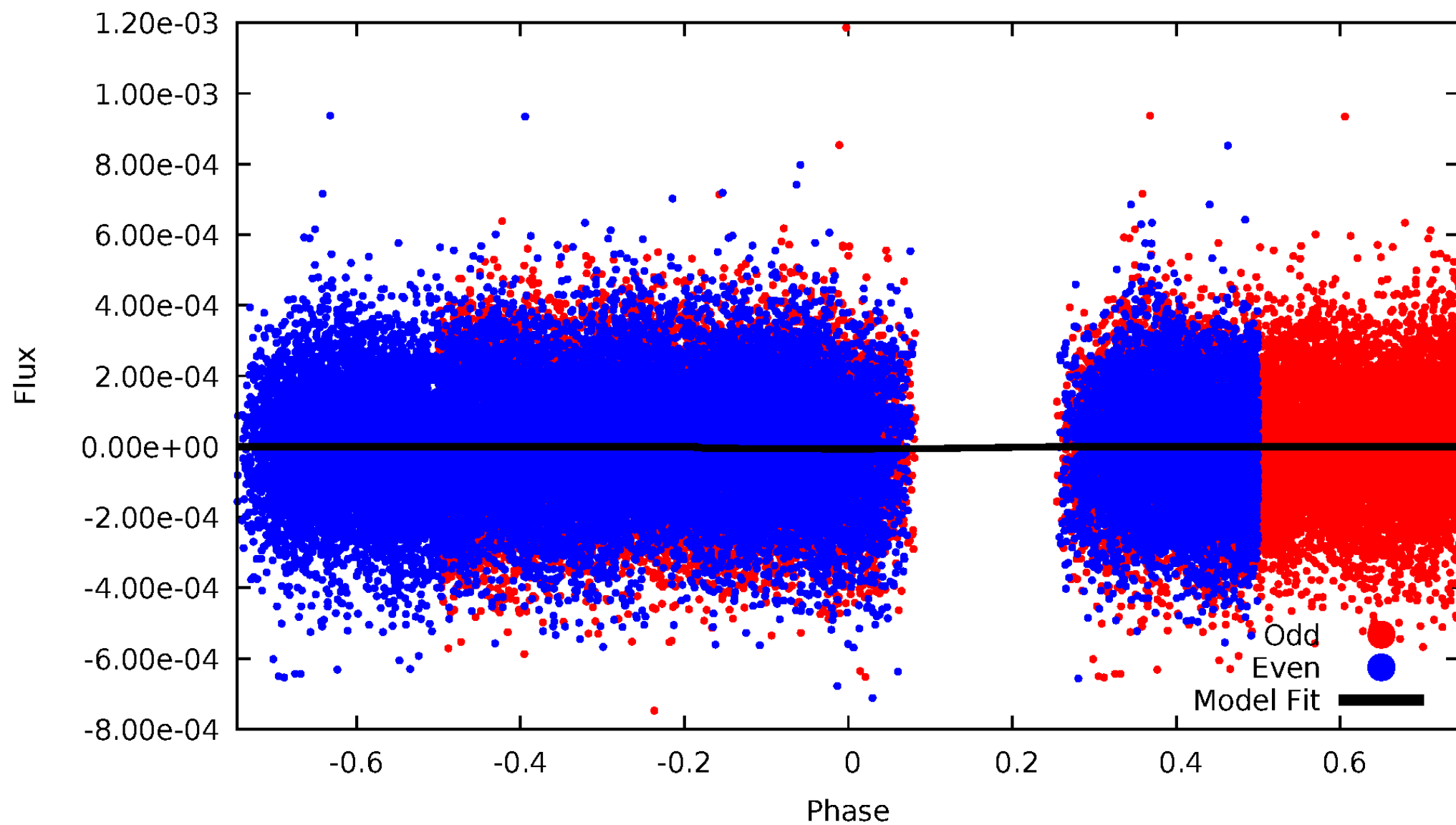


TCE 004645626-02



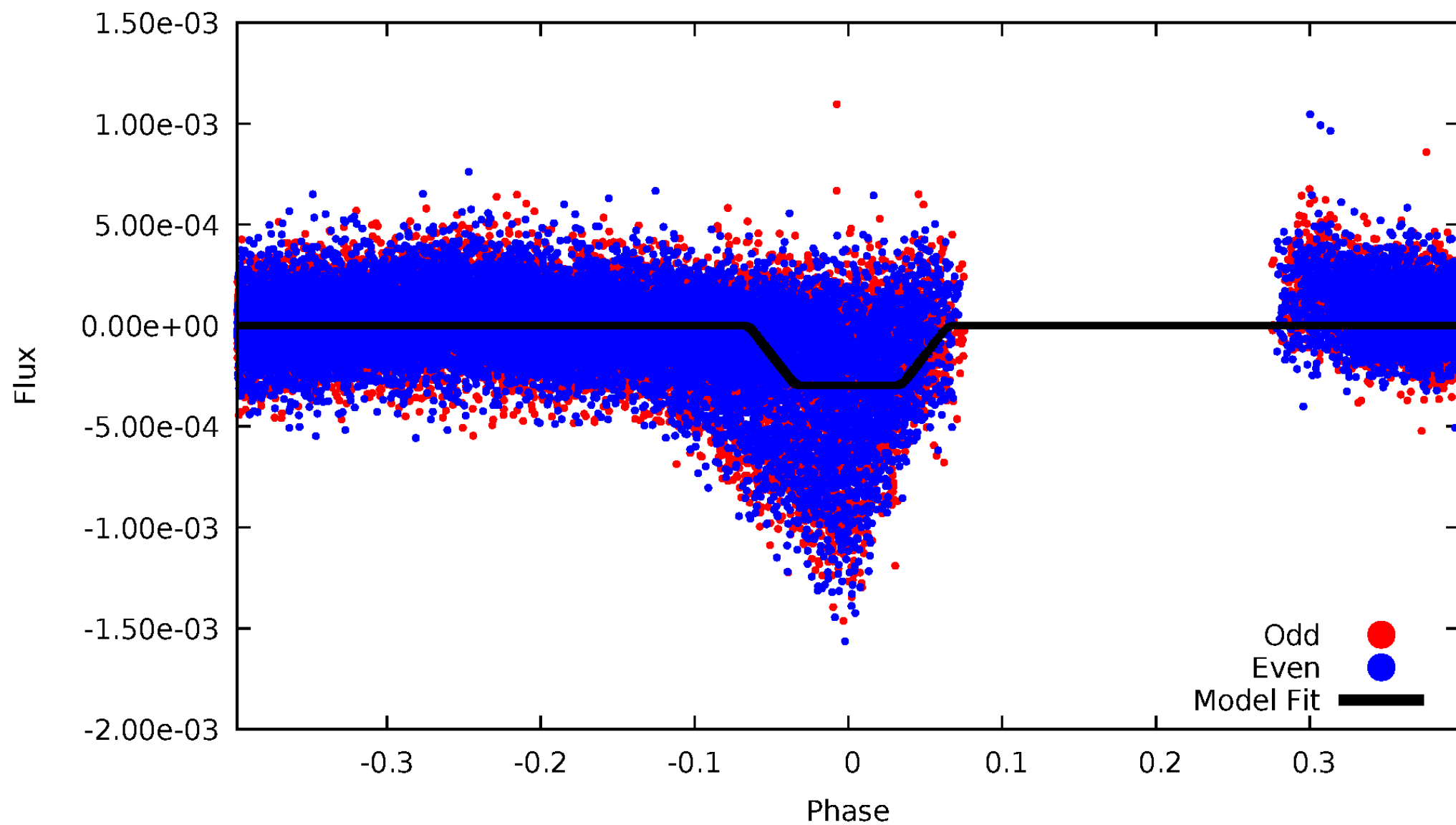
DV Odd/Even

TCE 004645626-02



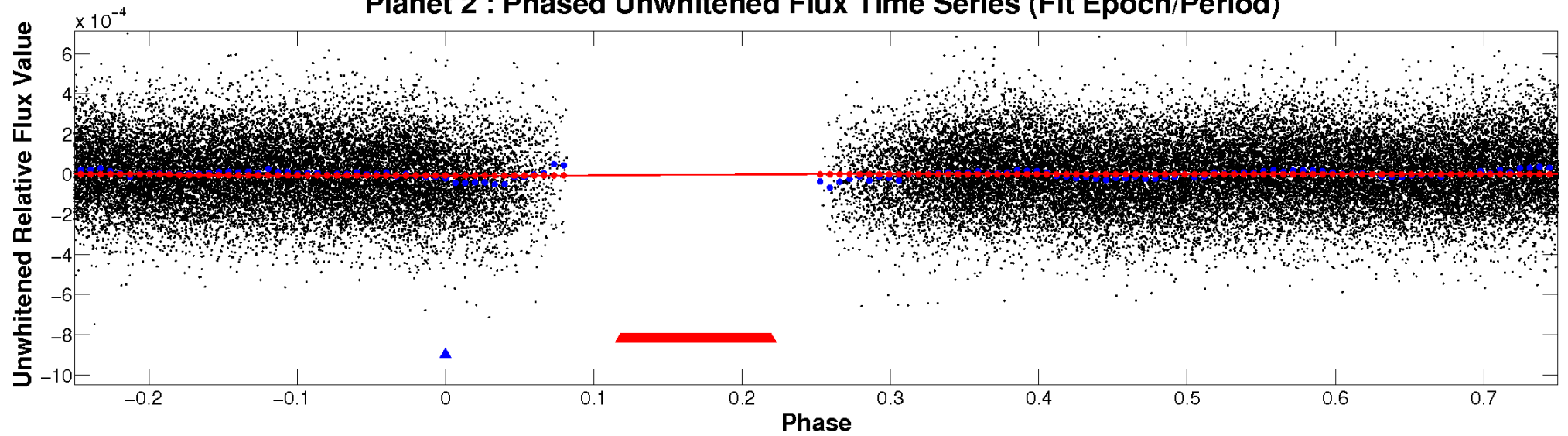
ALT Odd/Even

TCE 004645626-02

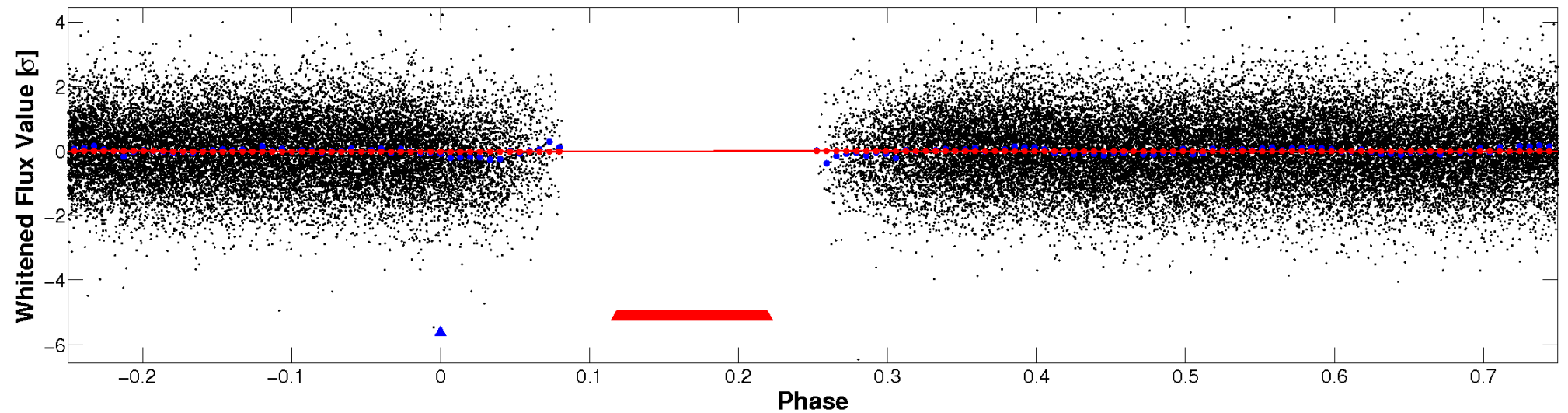


Non-Whitened Vs. Whitened Light Curve

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

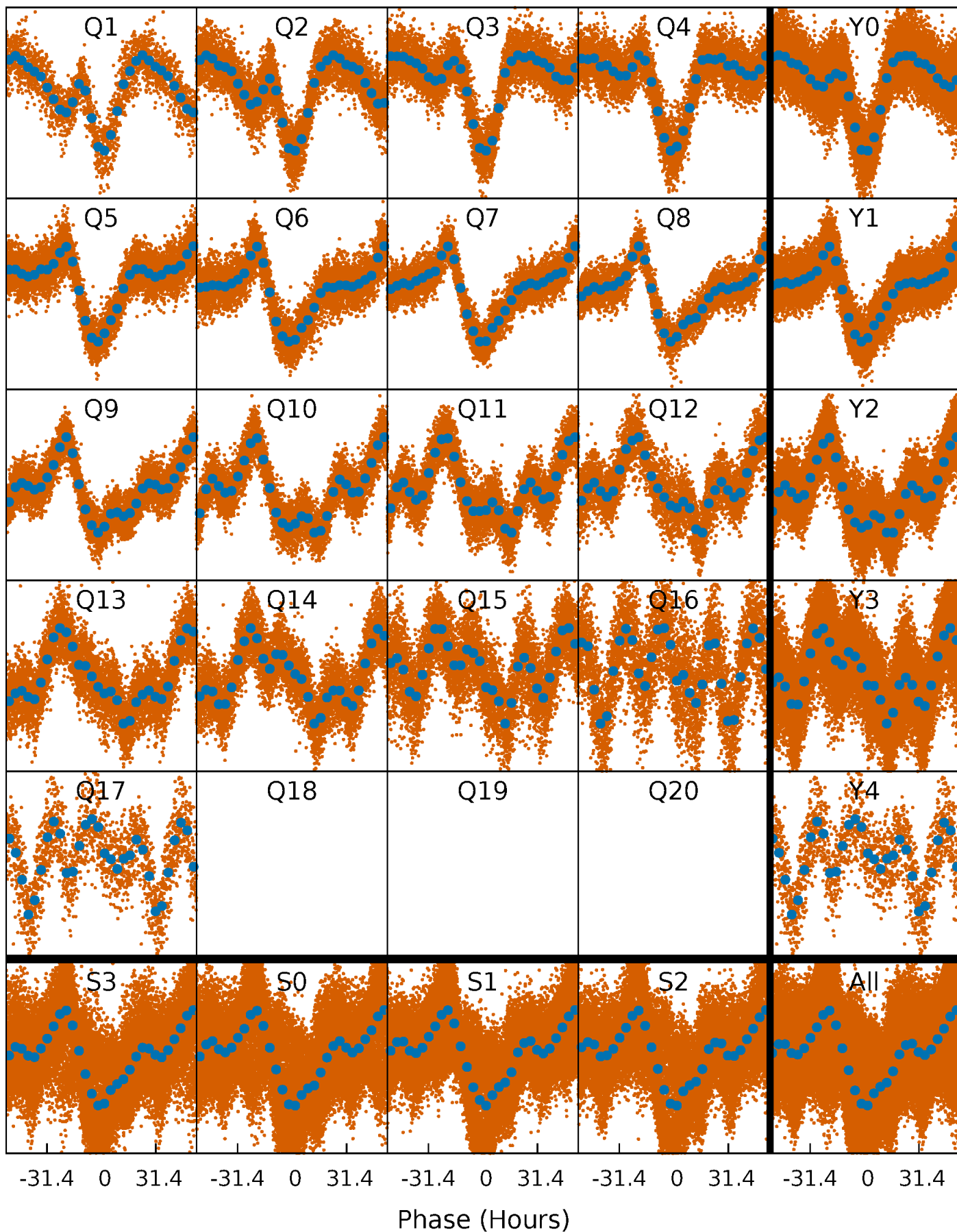


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



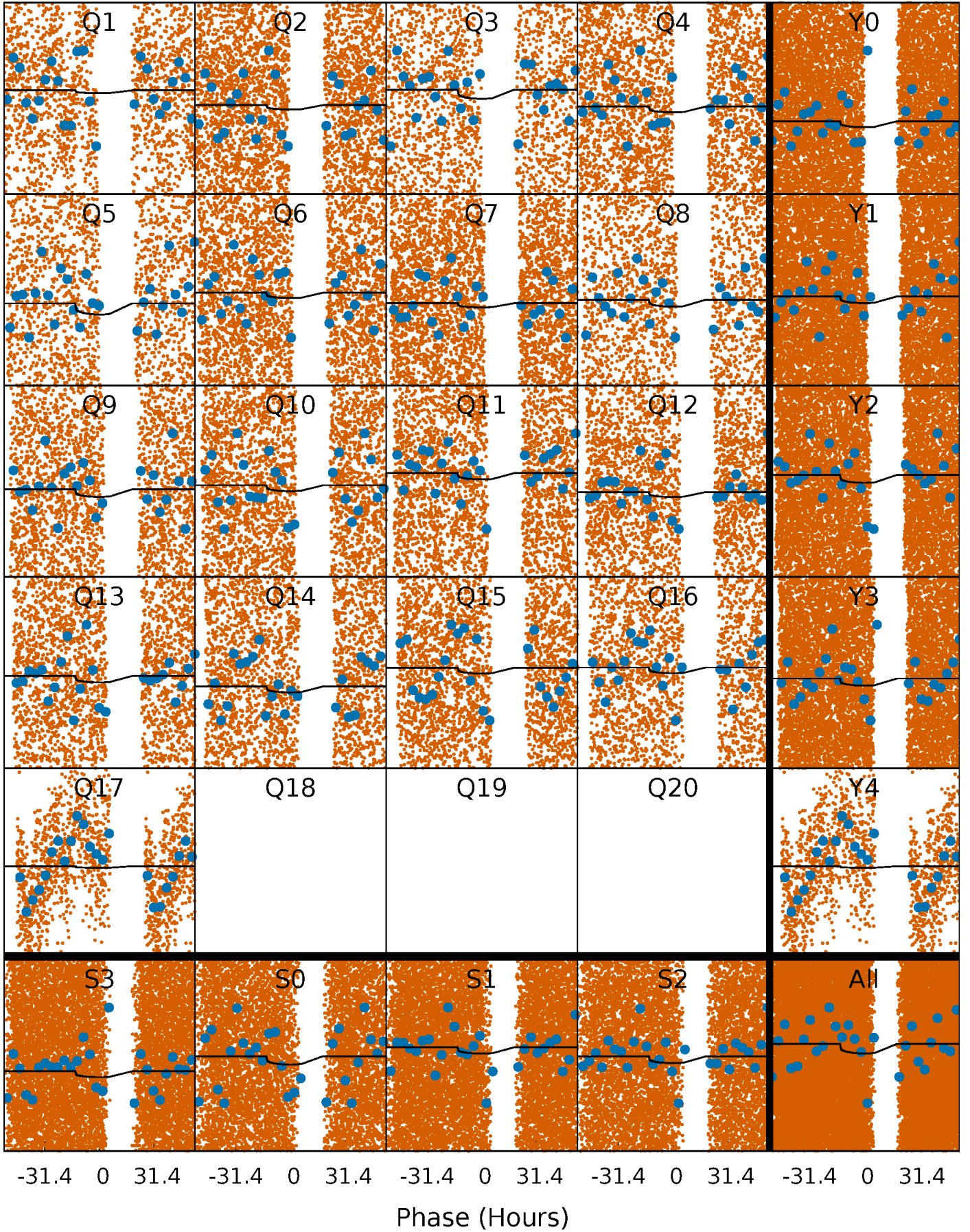
PDC Quarter-Phased Transit Curves

TCE 004645626-02 P= 3.074728 Days $T_0=134.573316$ (BKJD)



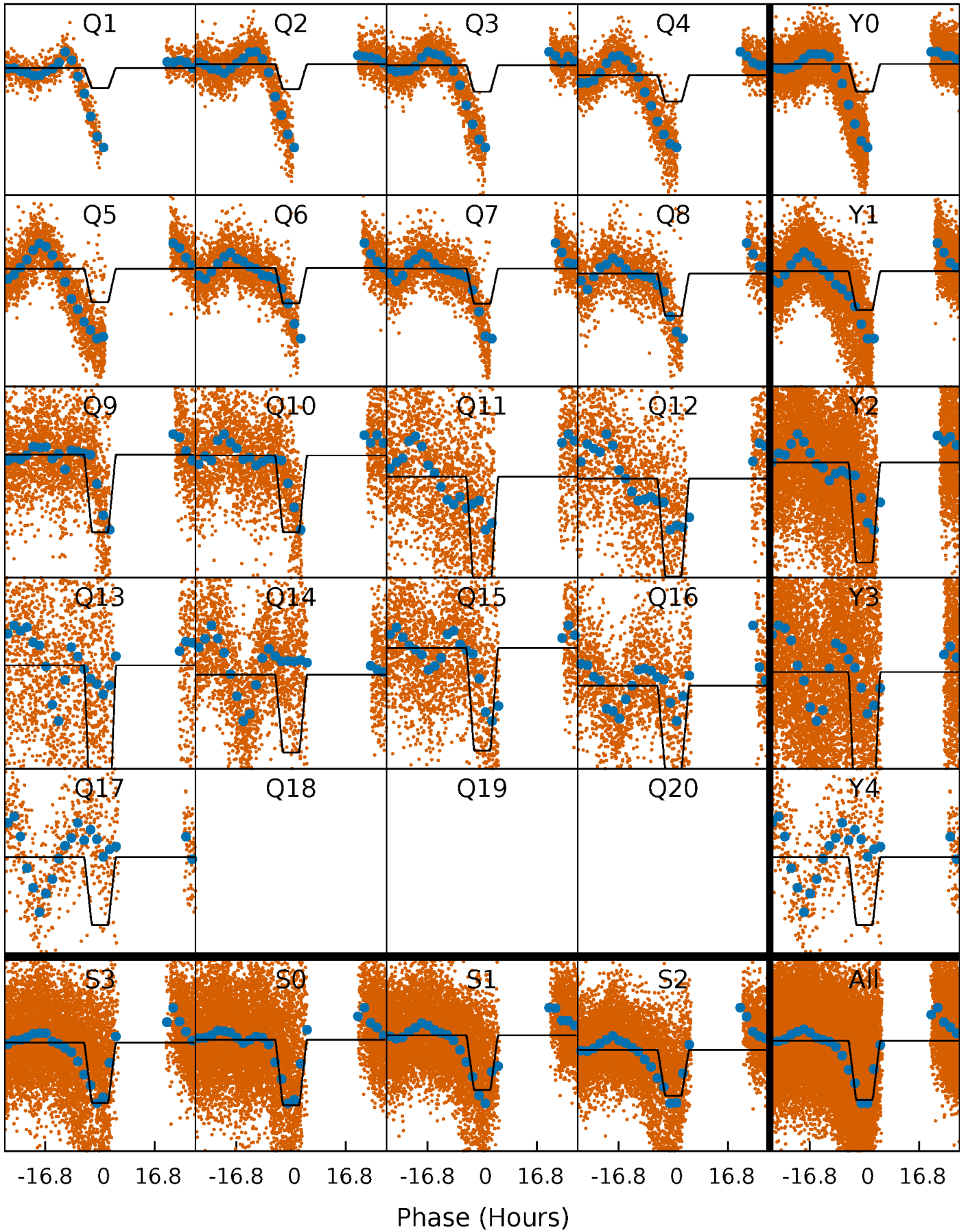
DV Quarter-Phased Transit Curves

TCE 004645626-02 P= 3.074728 Days $T_0=134.573316$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

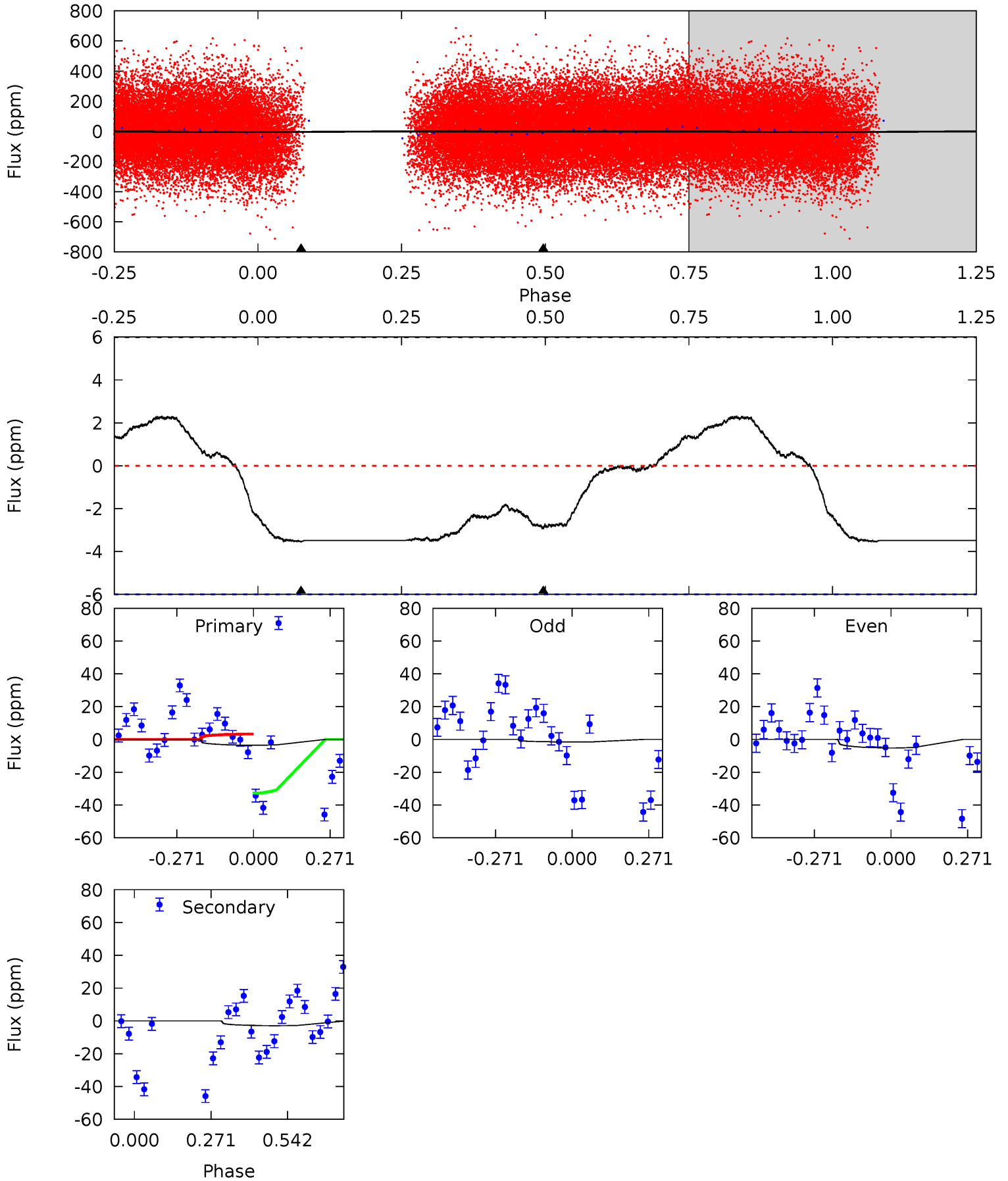
TCE 004645626-02 P= 3.074909 Days $T_0=134.507740$ (BKJD)



DV Model-Shift Uniqueness Test

004645626-02, P = 3.074728 Days, E = 131.498588 Days

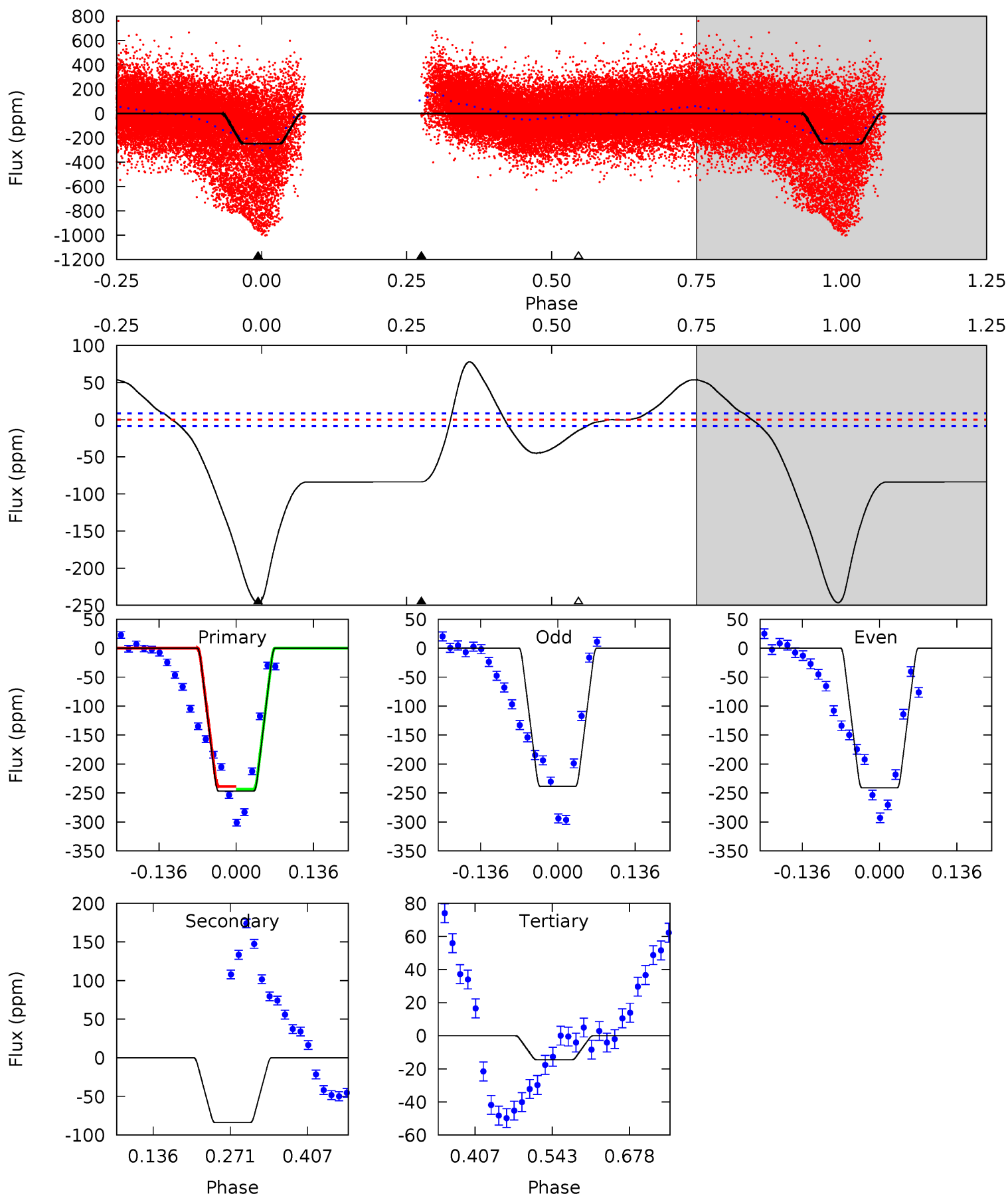
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.58	2.13	0	0	4.35	1.10	0.24	2.58	2.58	2.13	2.13	1.36	51.5	0.39	8.05



Alt Model-Shift Uniqueness Test

004645626-02, P = 3.074909 Days, E = 131.432831 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
130.4	44.3	7.67	0	4.50	1.49	15.2	122.7	130.4	36.6	44.3	0.66	1.51	0.24	1.07



Stellar Parameters For KIC 004645626

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6588^{+200}_{-200}	$3.577^{+0.360}_{-0.112}$	$-0.560^{+0.400}_{-0.300}$	$3.281^{+0.542}_{-1.265}$	$1.482^{+0.234}_{-0.351}$	$0.059^{+0.165}_{-0.016}$
	+3%/-3%	+10%/-3%	+71%/-54%	+17%/-39%	+16%/-24%	+279%/-28%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004645626-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3 ± 1	$2.02^{+2.39}_{-1.35}$	3306^{+232}_{-313}	3469^{+2402}_{-6414}	$0.769^{+6.850}_{-0.620}$
Alt.	-84 ± 2	$5.76^{+3.09}_{-2.71}$	3336^{+222}_{-297}	4776^{+1678}_{-778}	$3.058^{+7.459}_{-1.753}$

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 $A_{obs} \gg 1.0$

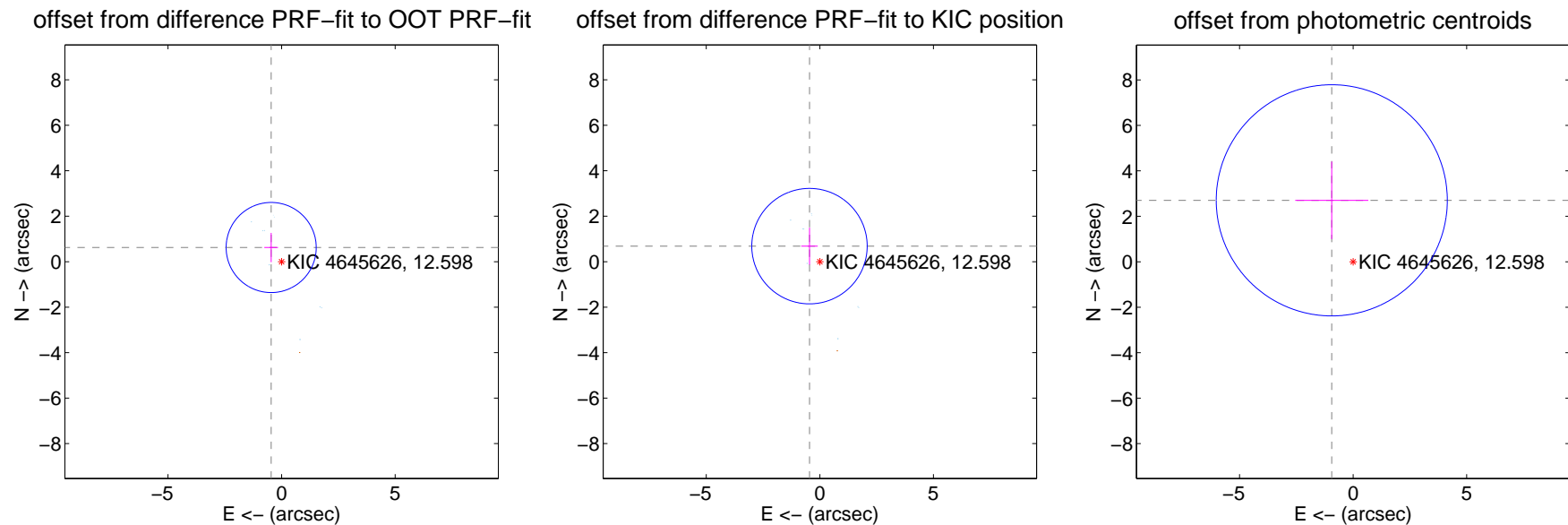
DV Centroid Data

Supplemental centroid analysis for 004645626-02. Kepler magnitude: 12.60. Transit SNR 2.00

There are 9 quarters with good PRF difference image offsets

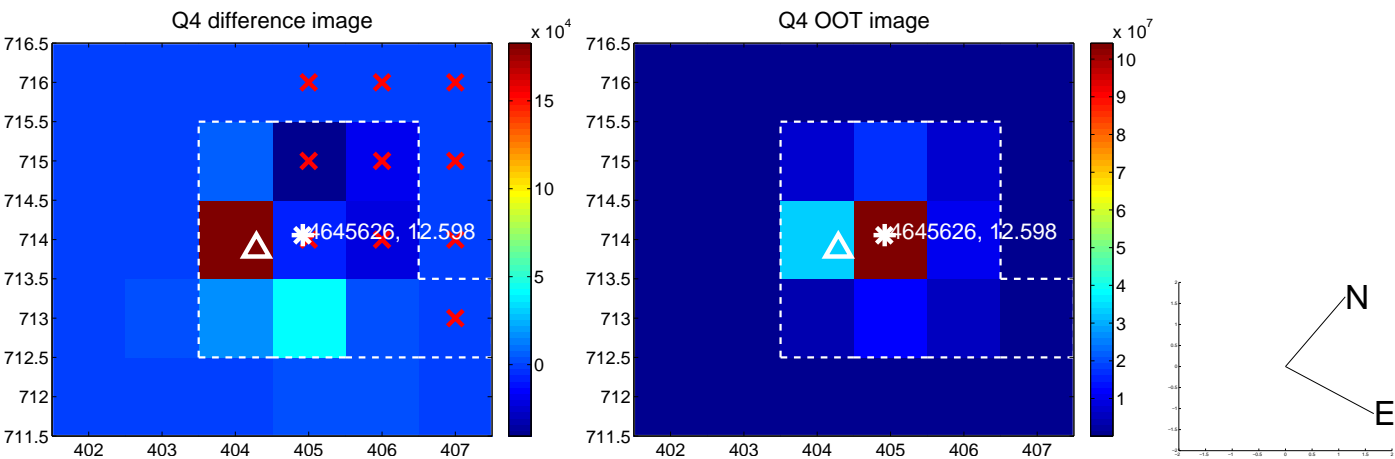
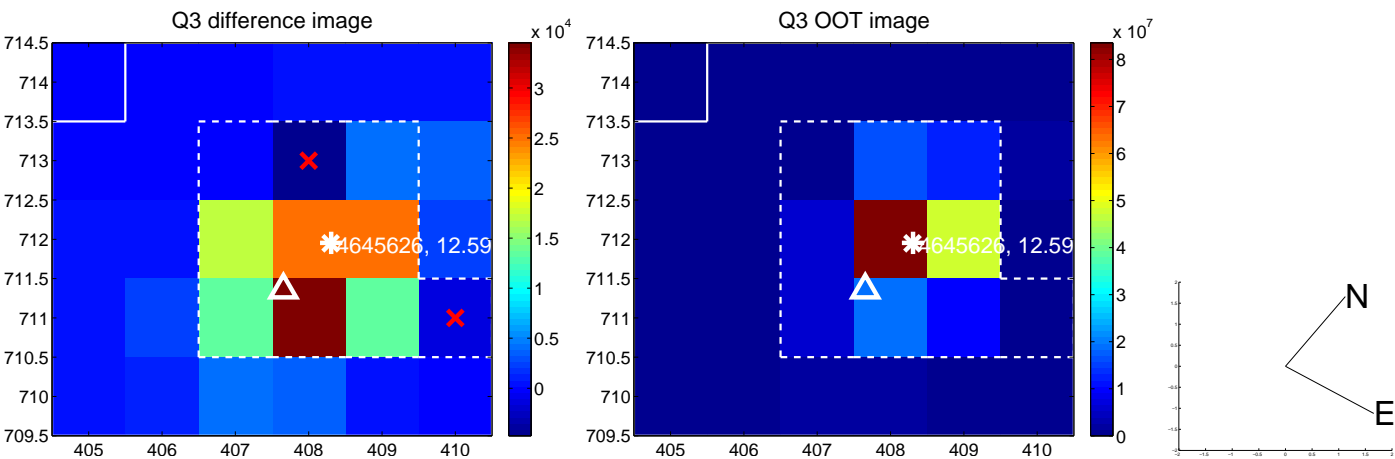
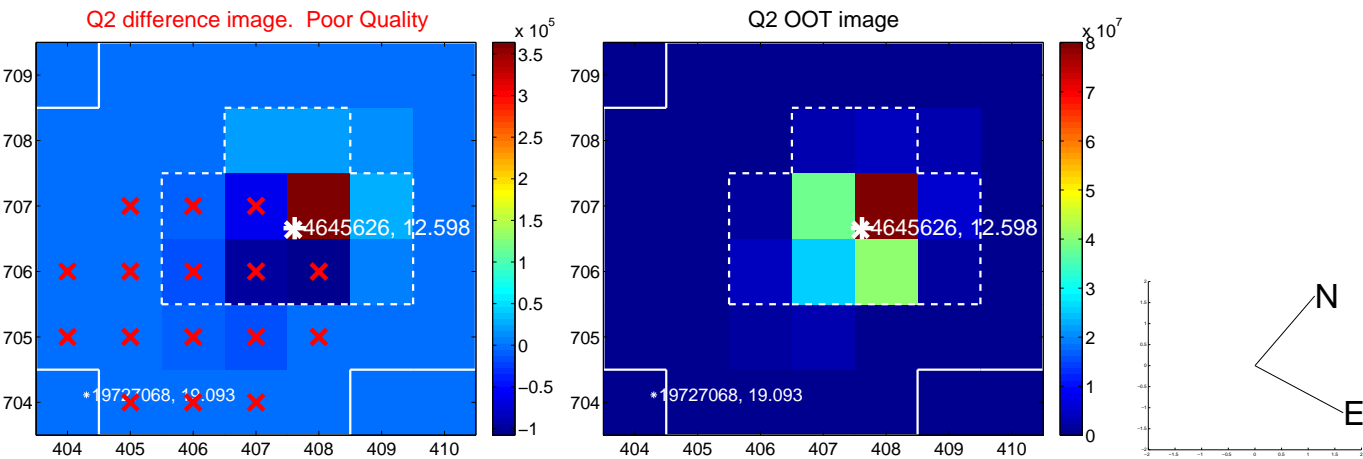
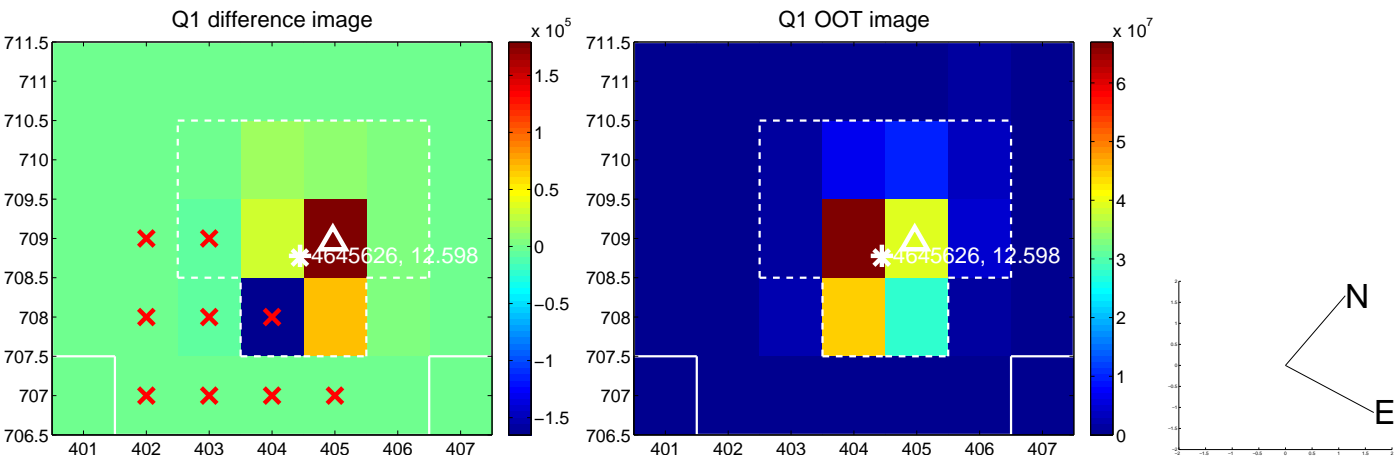
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.774 ± 0.661	1.17	0.458 ± 0.302	0.624 ± 0.644
PRF-fit source offset from KIC position	0.822 ± 0.847	0.97	0.456 ± 0.362	0.685 ± 0.811
photometric centroid source offset	2.86 ± 1.70	1.69	0.94 ± 1.61	2.70 ± 1.71

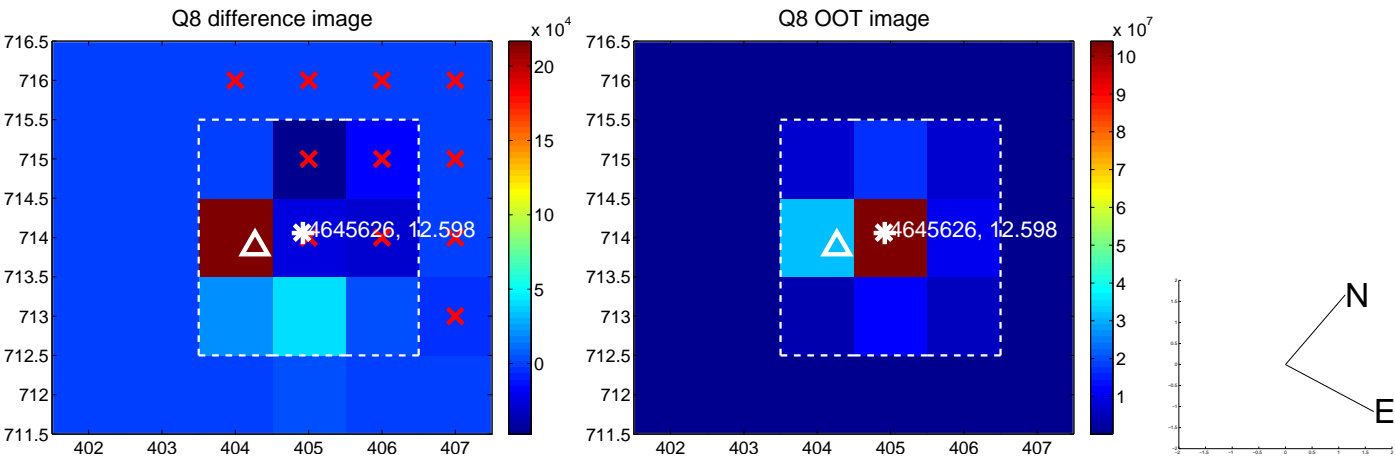
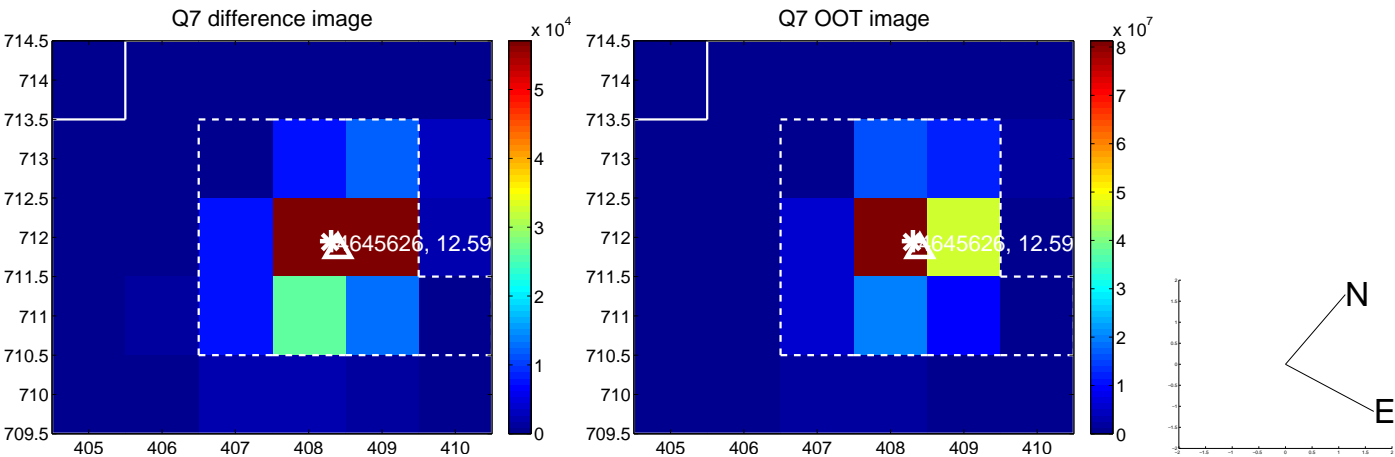
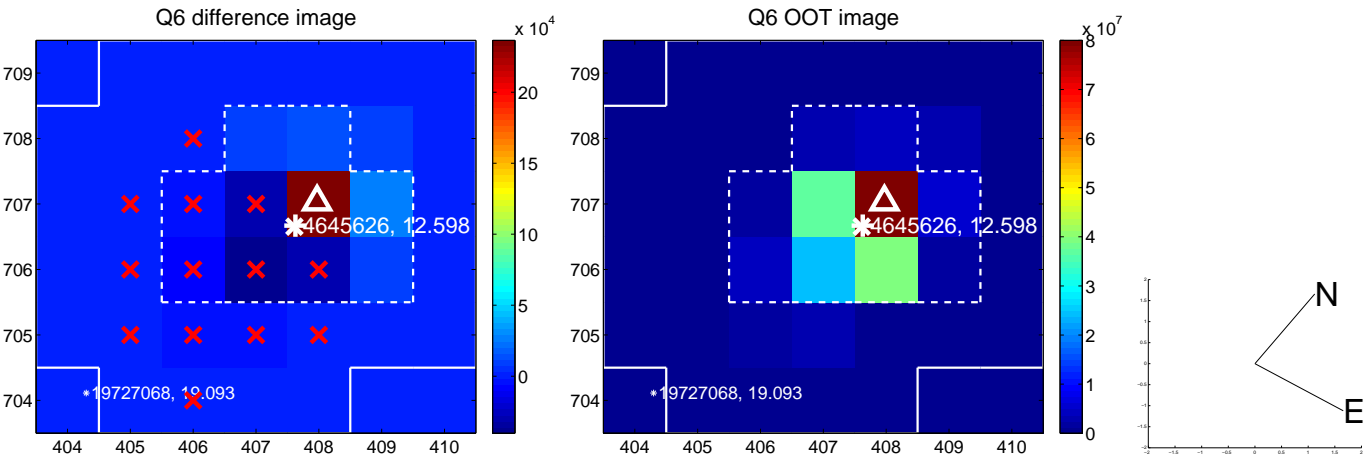
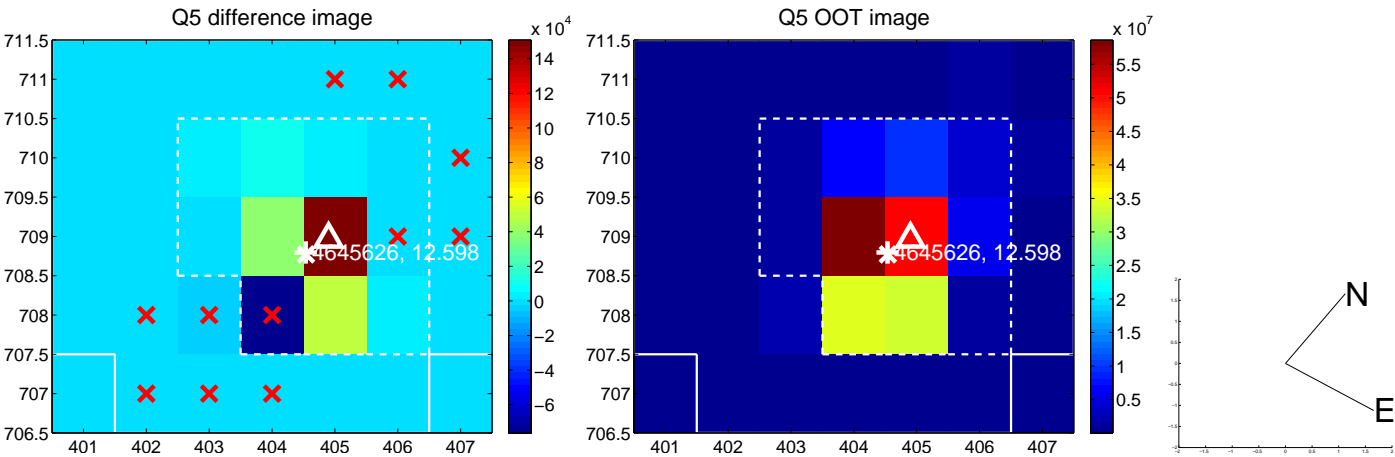


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

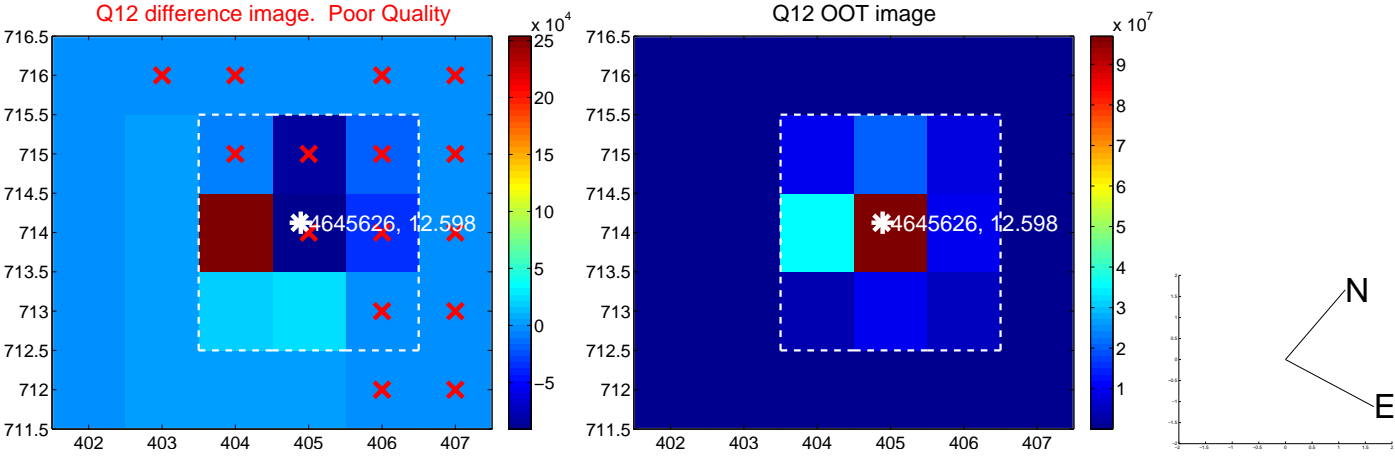
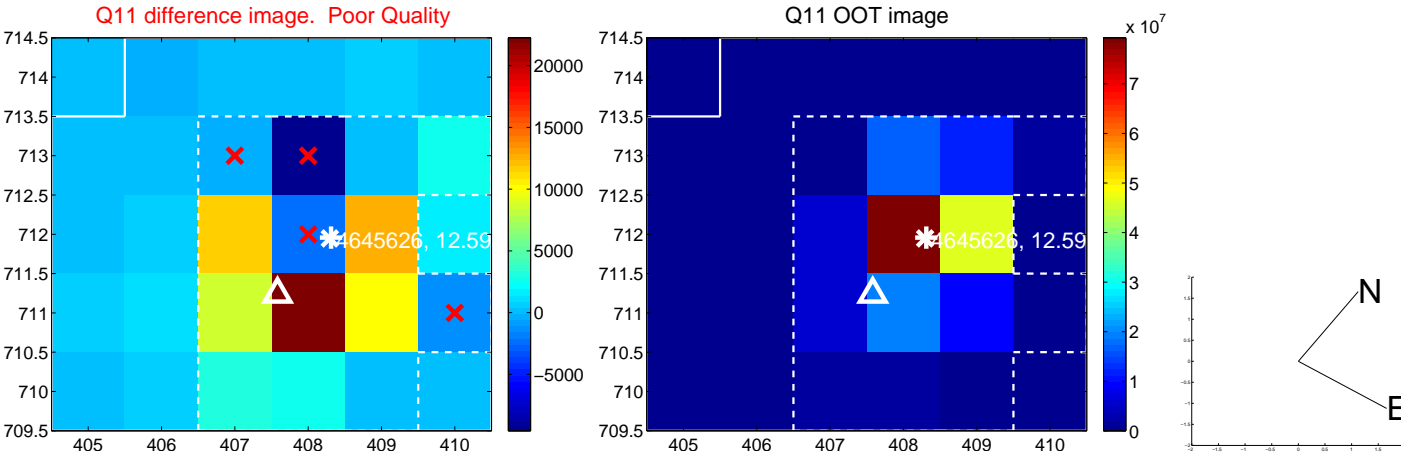
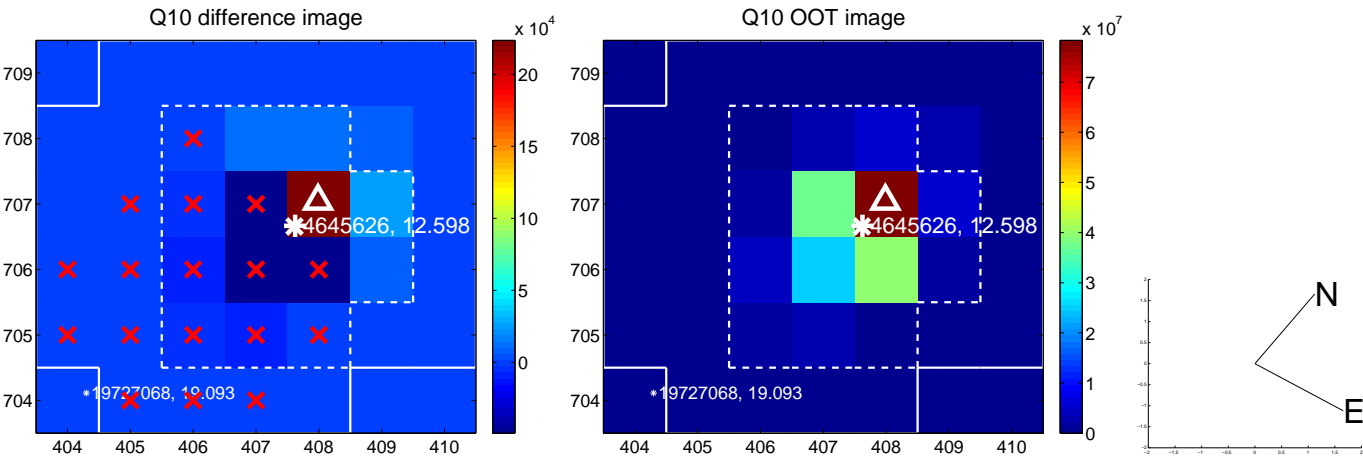
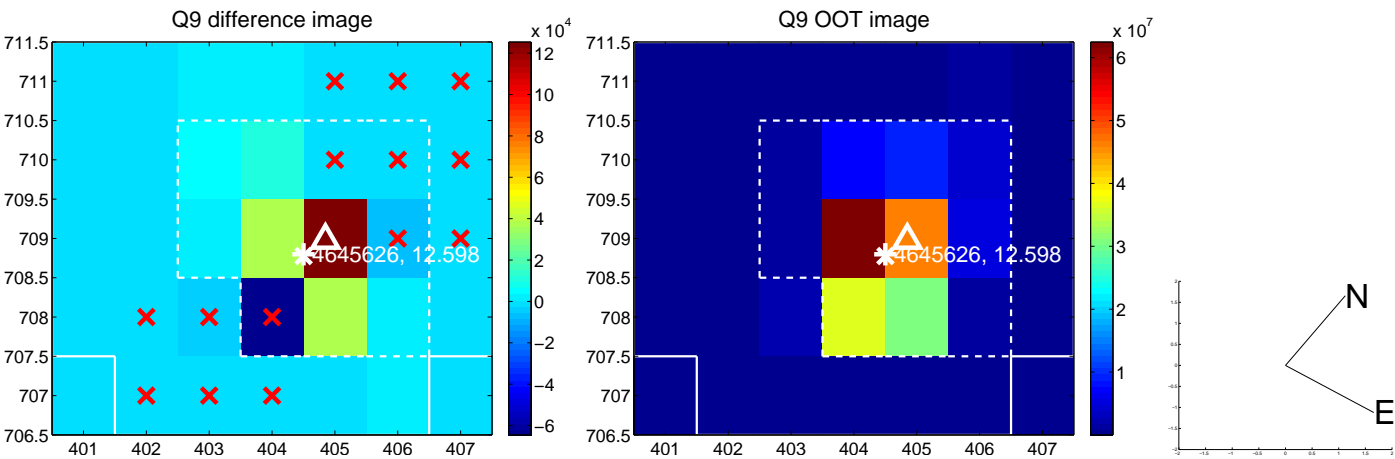
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



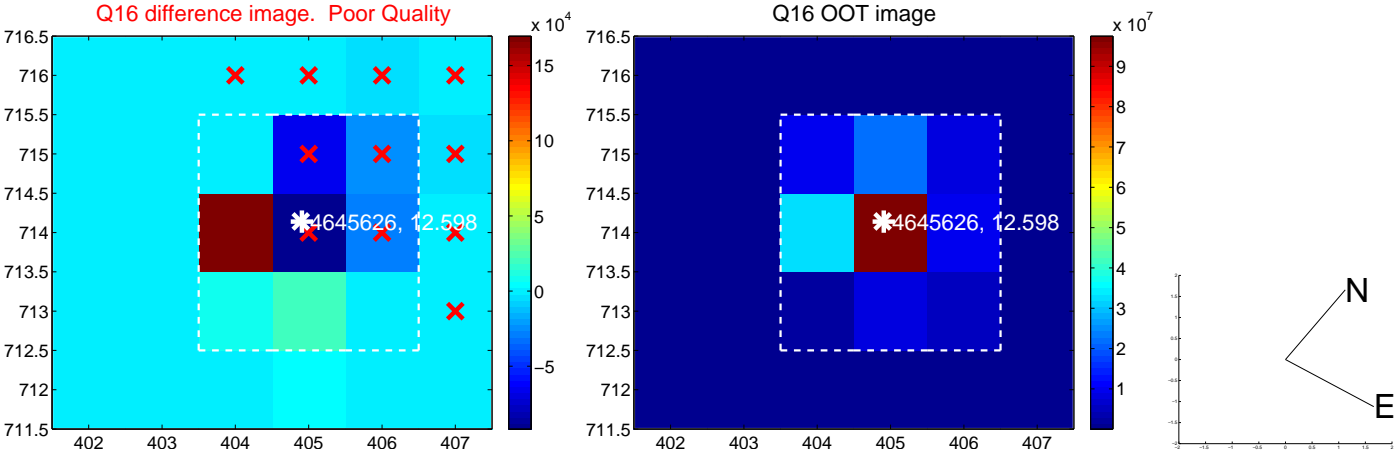
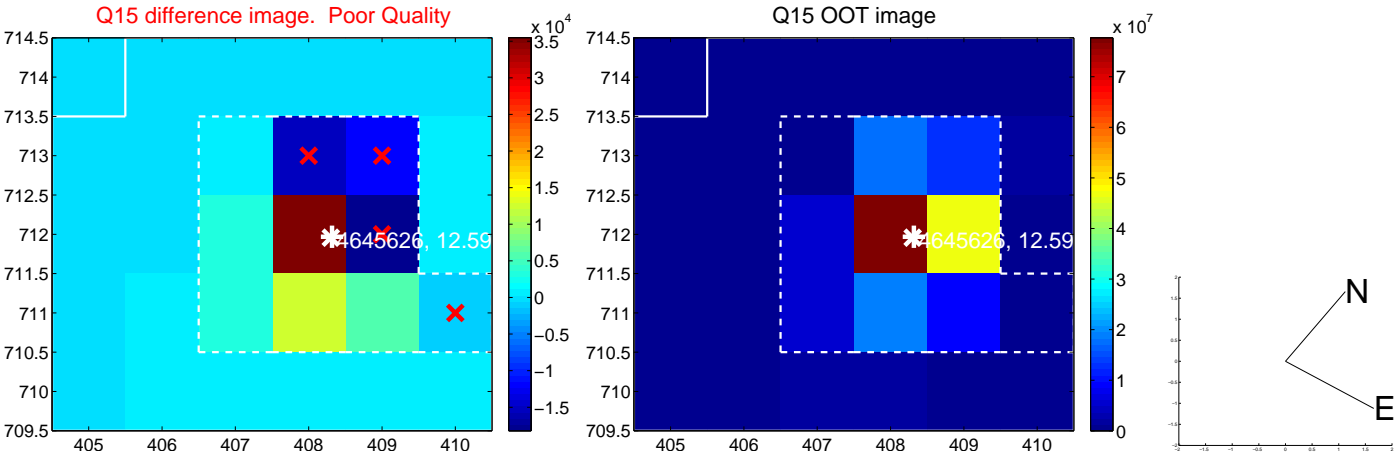
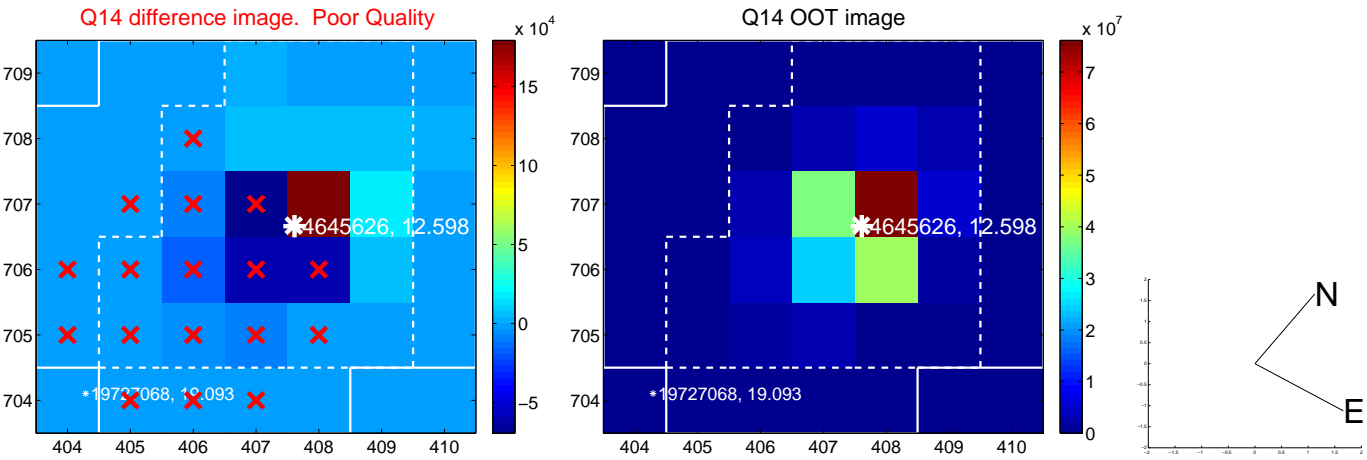
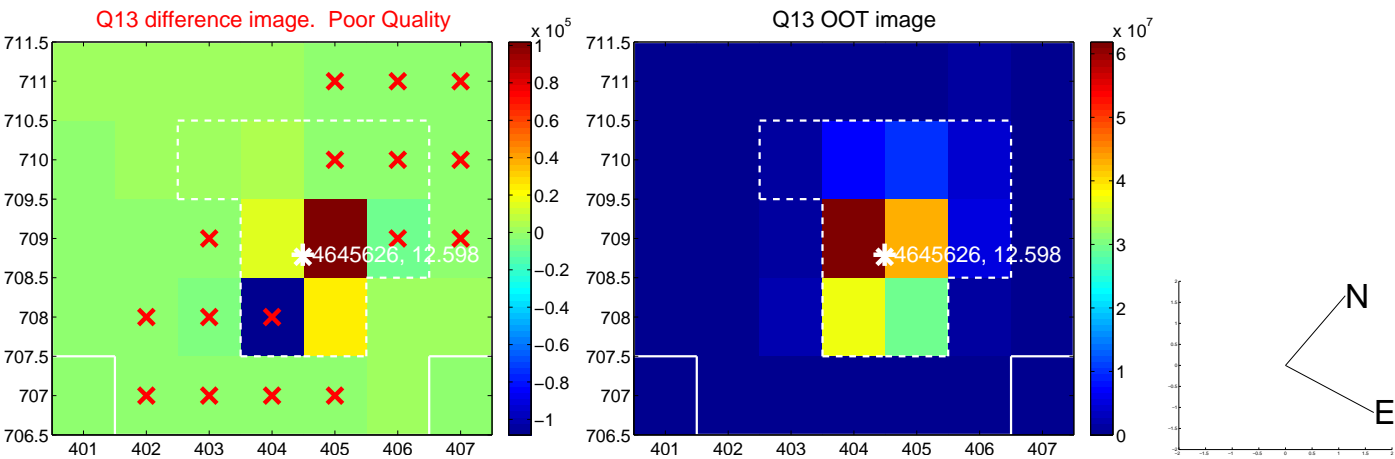
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



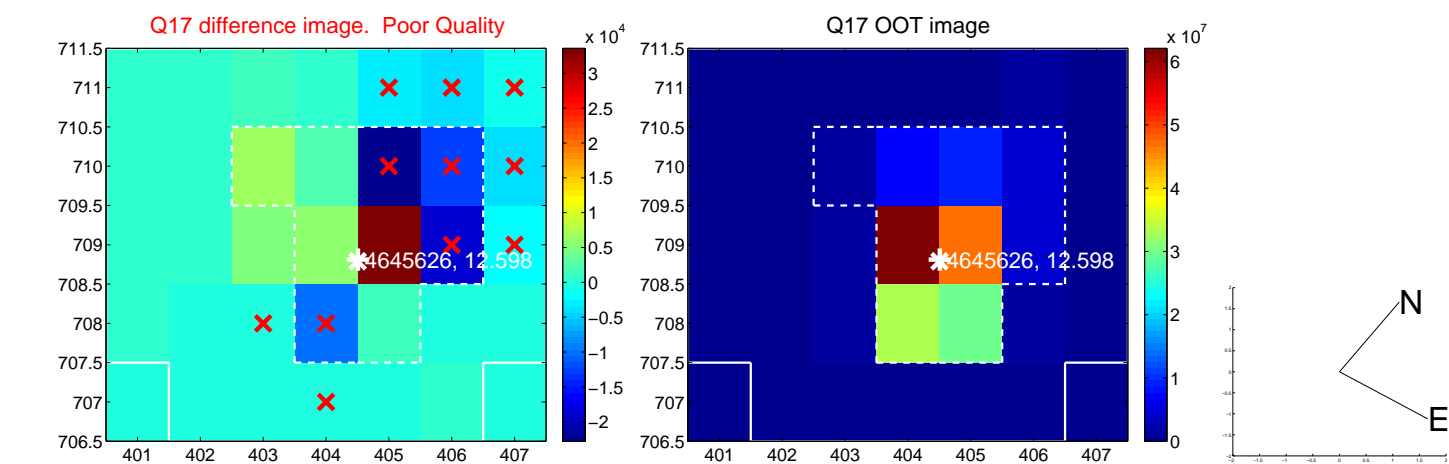
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



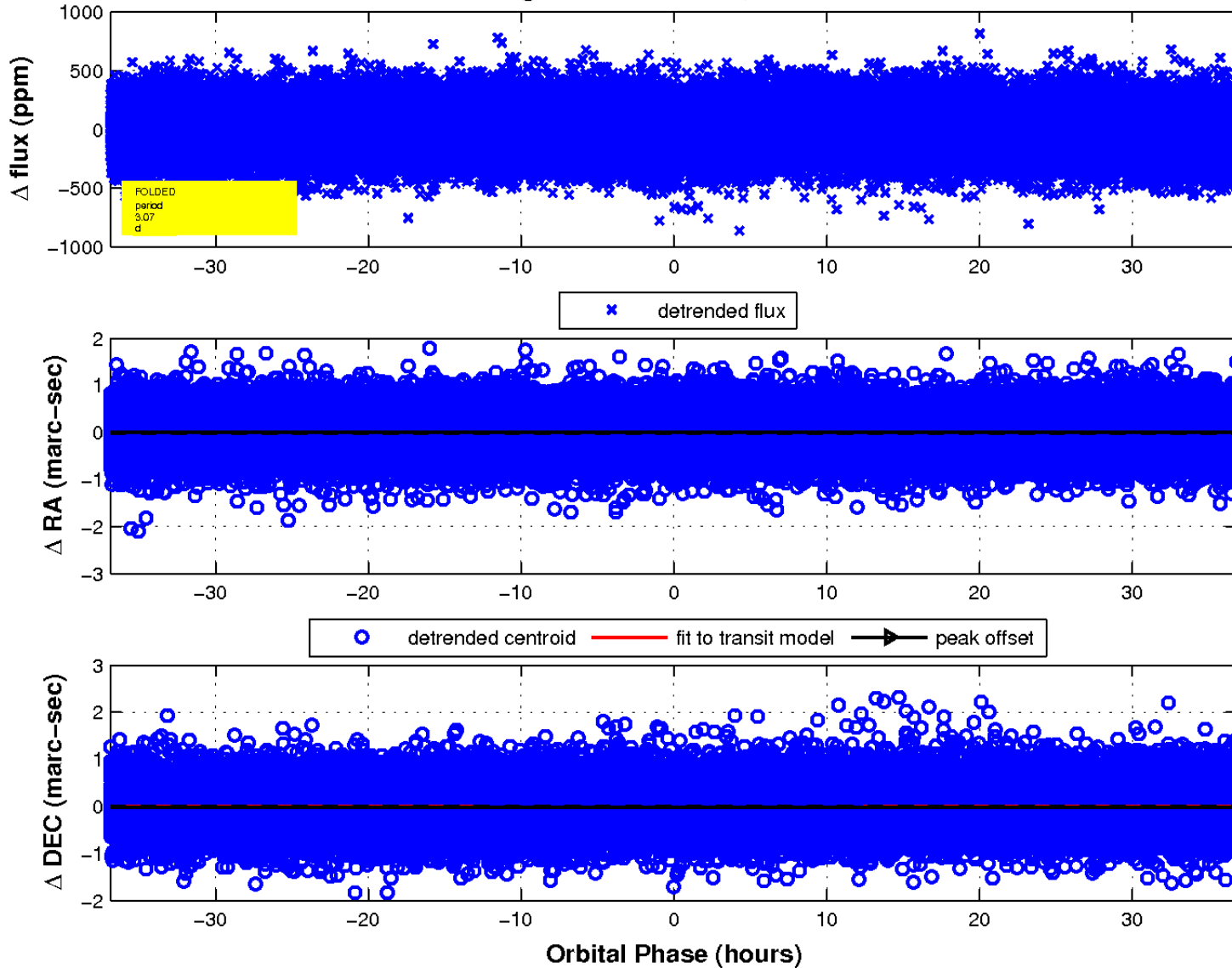
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

