

KIC 008883329

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})
008883329-01	OBS	2595.01	9.182483	134.040321	83.1	4.272	14.5	15.6	1.31	6194	1.41	290.11
008883329-02	OBS	2595.02	14.613585	140.407799	76.5	5.533	11.8	12.3	1.31	6194	1.35	156.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008883329-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
008883329-02	OBS	PC	0.93	0	0	0	0	NO_COMMENT

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

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

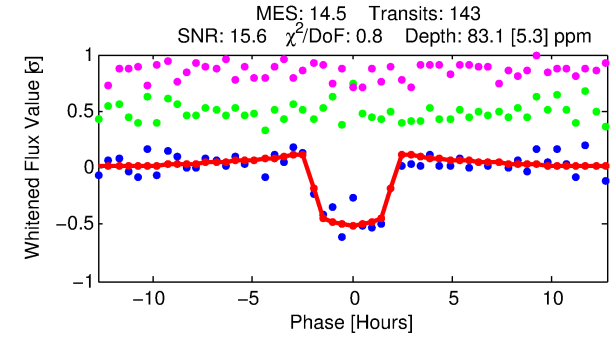
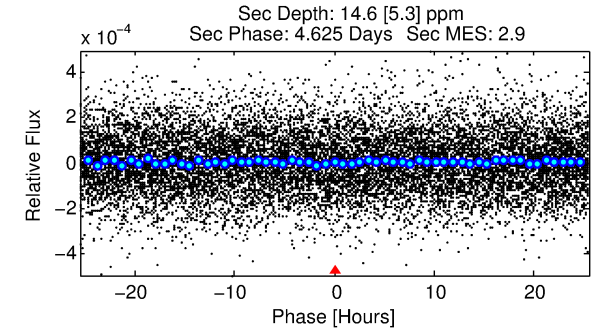
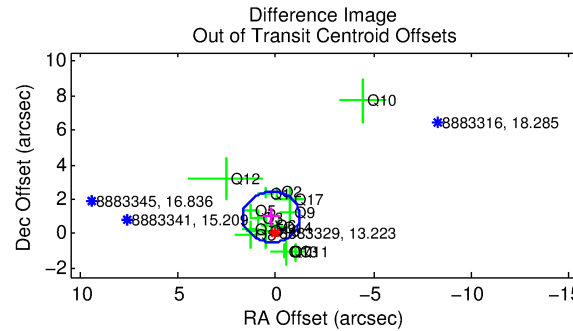
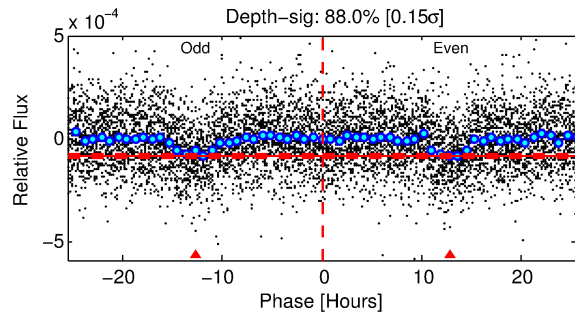
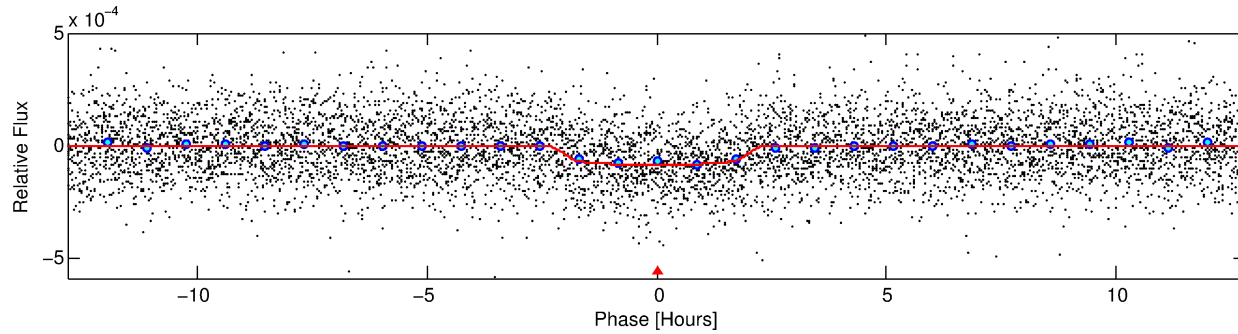
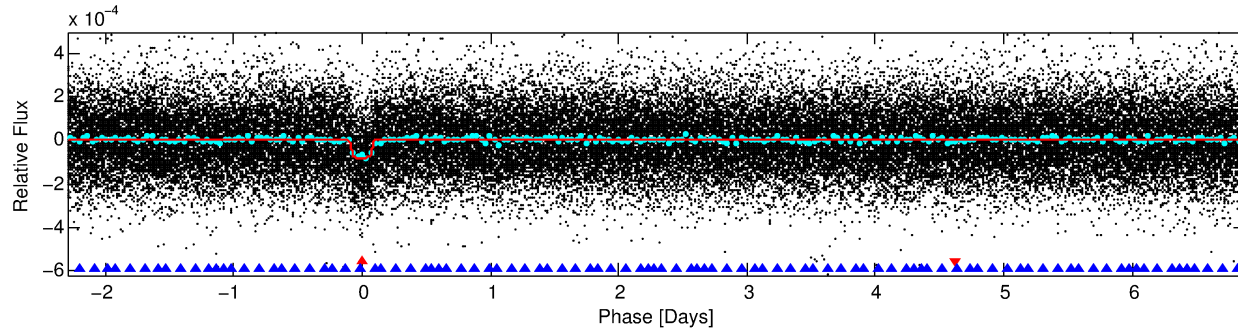
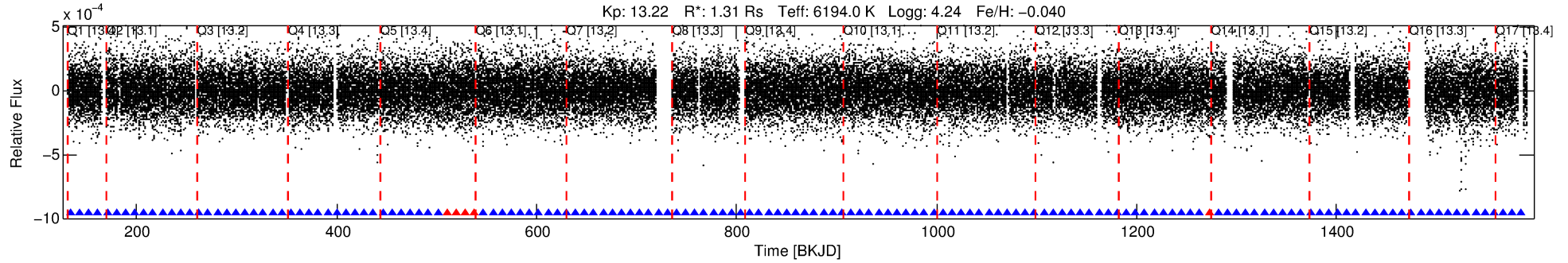
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008883329-01

No Significant Match Found

DV One-Page Summary

KIC: 8883329 Candidate: 1 of 2 Period: 9.182 d
KOI: K02595.01 Name: Kepler-393b Corr: 0.978



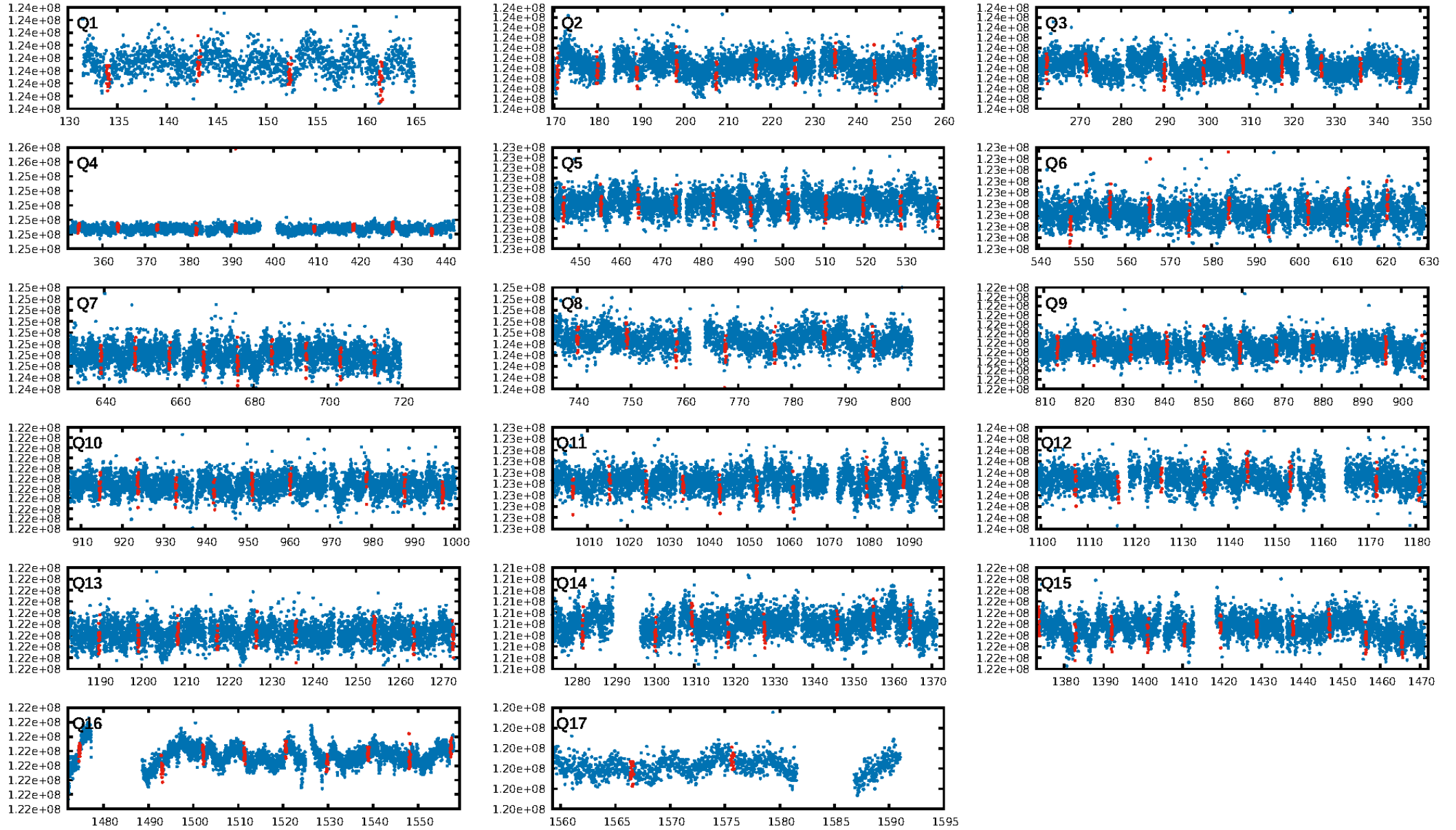
DV Fit Results:

Period = 9.18248 [0.00005] d
Epoch = 134.0403 [0.0044] BKJD
Rp/R* = 0.0098 [0.0025]
a/R* = 7.64 [10.06]
b = 0.90 [0.29]
Seff = 290.11 [70.98]
Teq = 1052 [64] K
Rp = 1.41 [0.44] Re
a = 0.0886 [0.0139] AU
Ag = 31.88 [21.15] [1.46 σ]
Teffp = 3866 [608] K [4.60 σ]

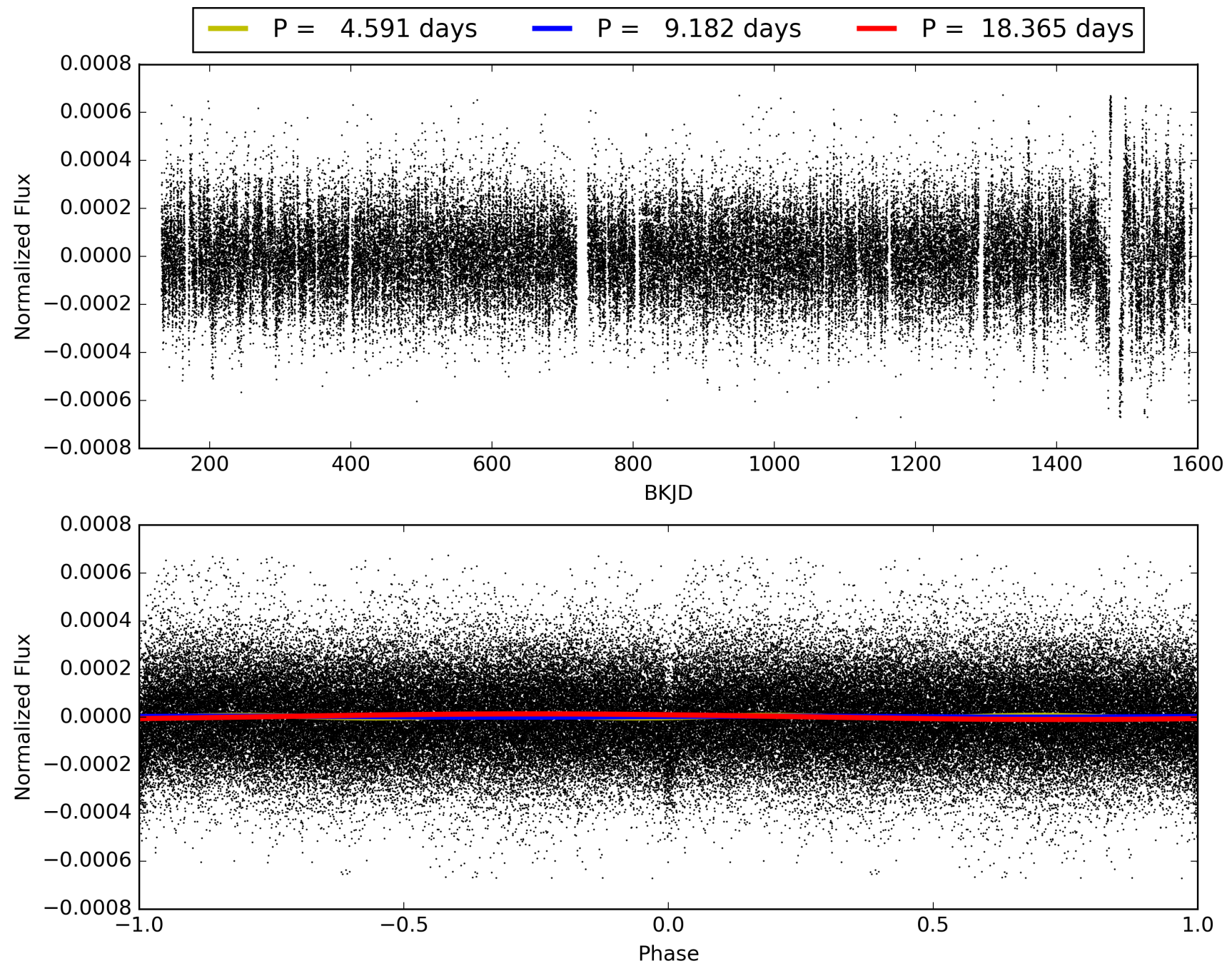
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [18.65 σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.54e-46
RollingBand-fgt: 0.96 [132/137]
GhostDiagnostic-chr: 14.63
Centroid-sig: 2.6%
Centroid-so: 1.142 arcsec [1.12 σ]
OotOffset-rm: 0.995 arcsec [2.04 σ]
KicOffset-rm: 0.899 arcsec [1.88 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.75 [12/16]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008883329-01, PDC Light Curves

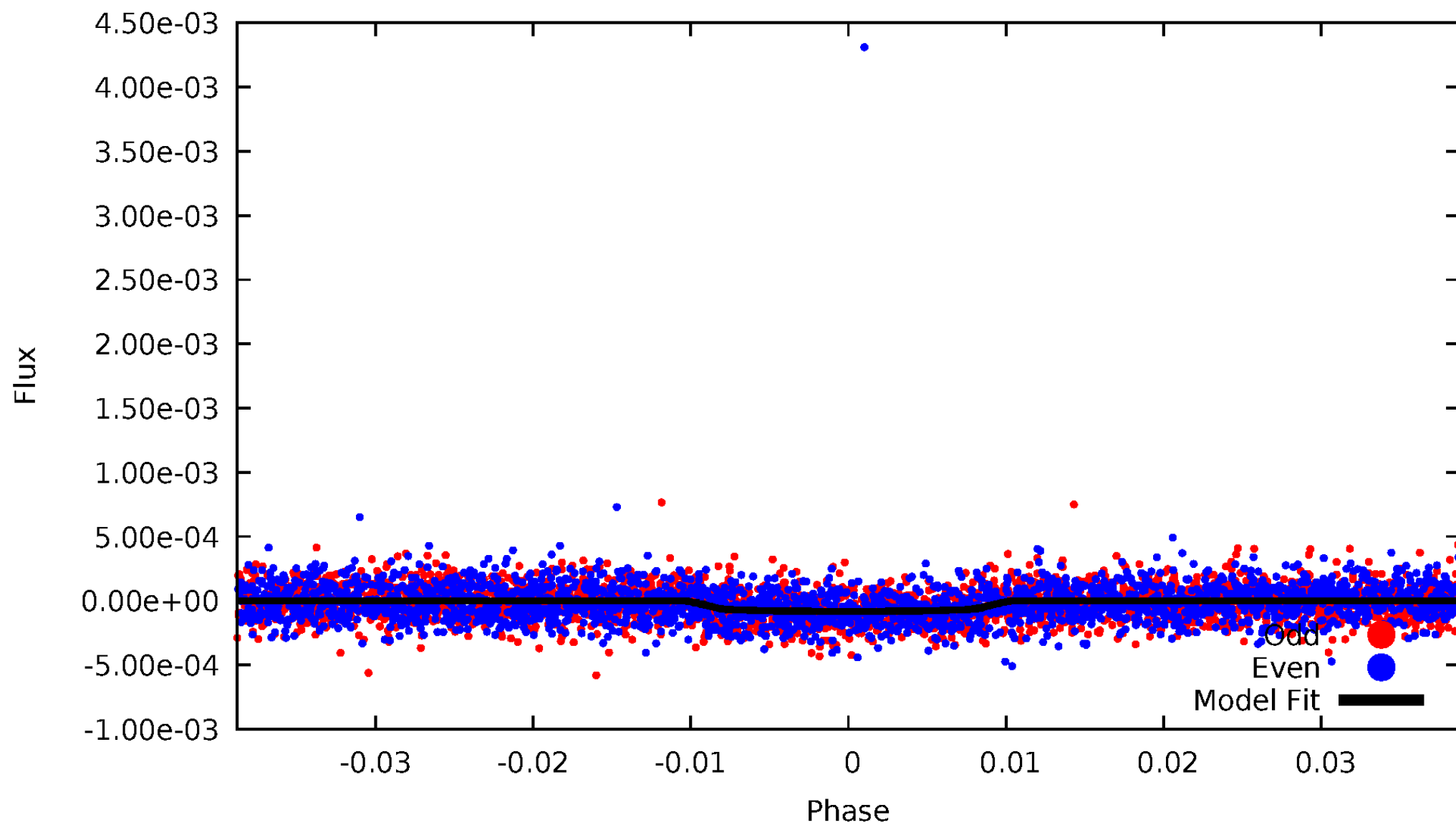


TCE 008883329-01



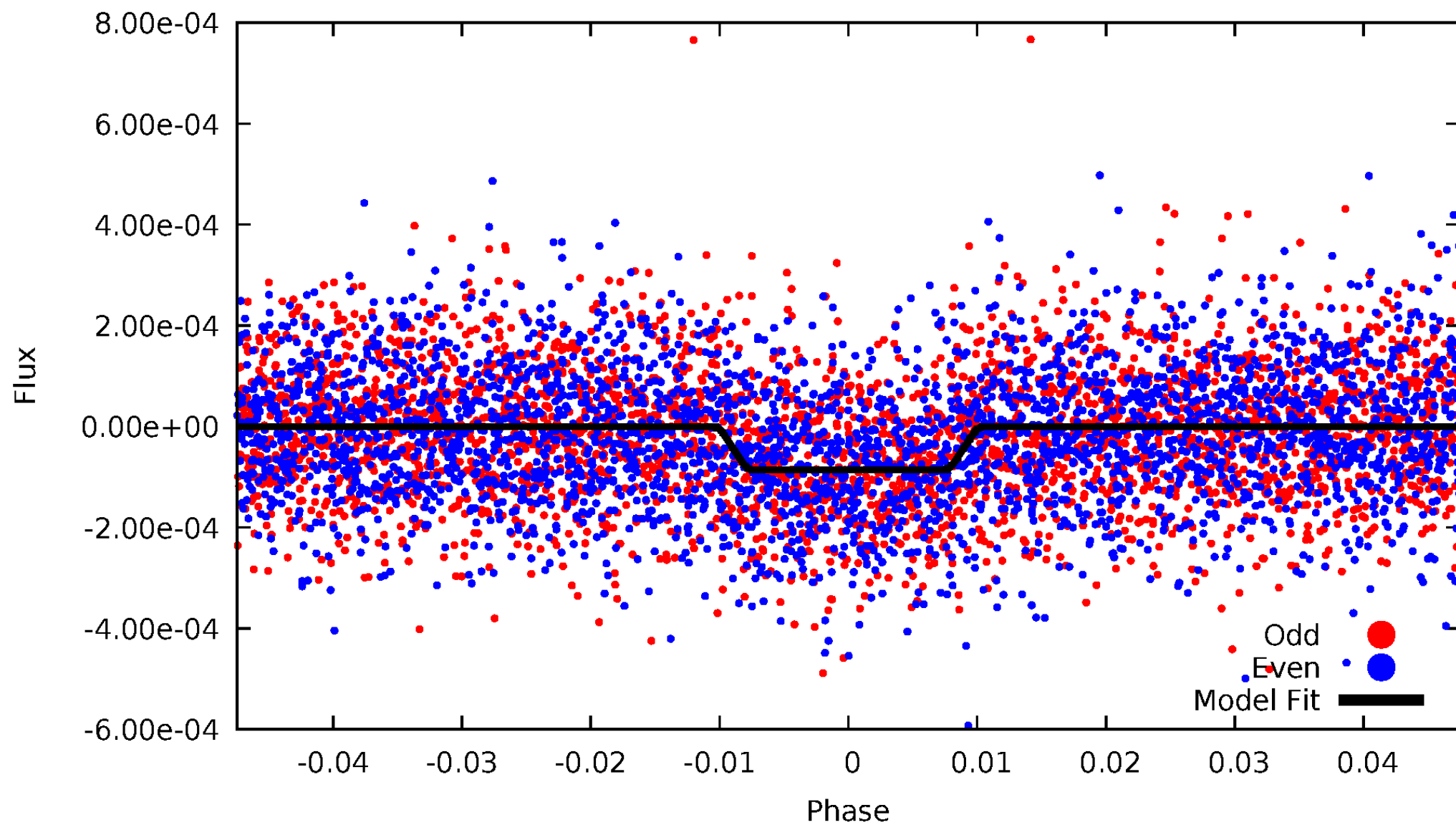
DV Odd/Even

TCE 008883329-01



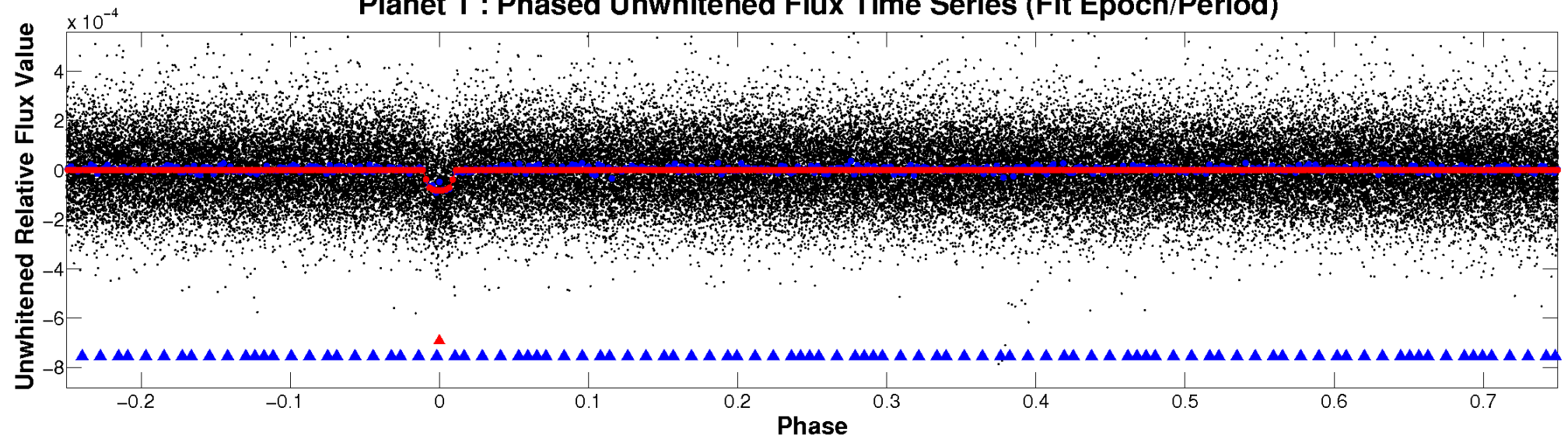
ALT Odd/Even

TCE 008883329-01

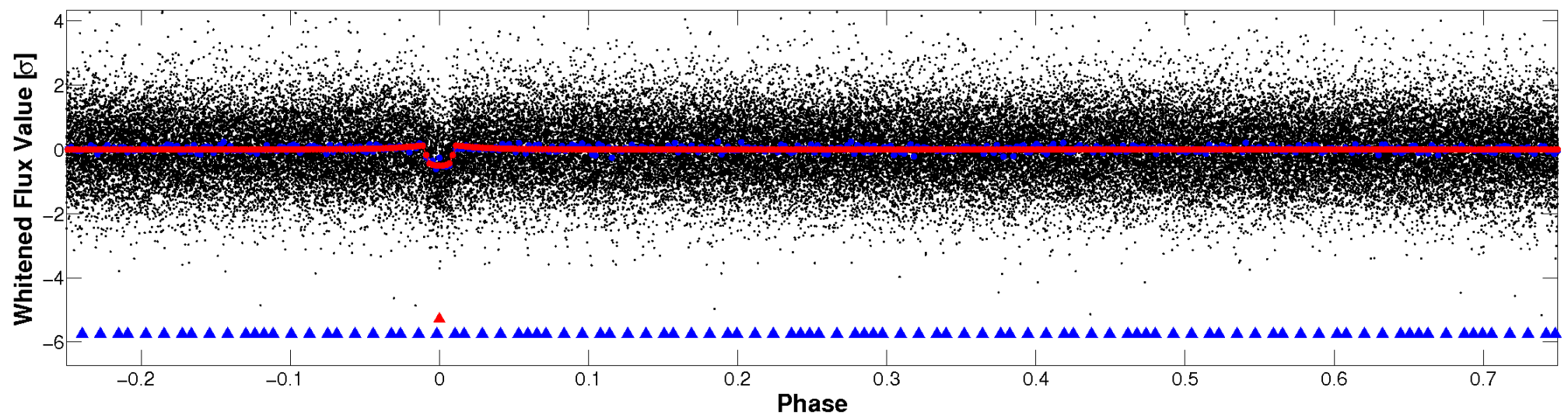


Non-Whitened Vs. Whitened Light Curve

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

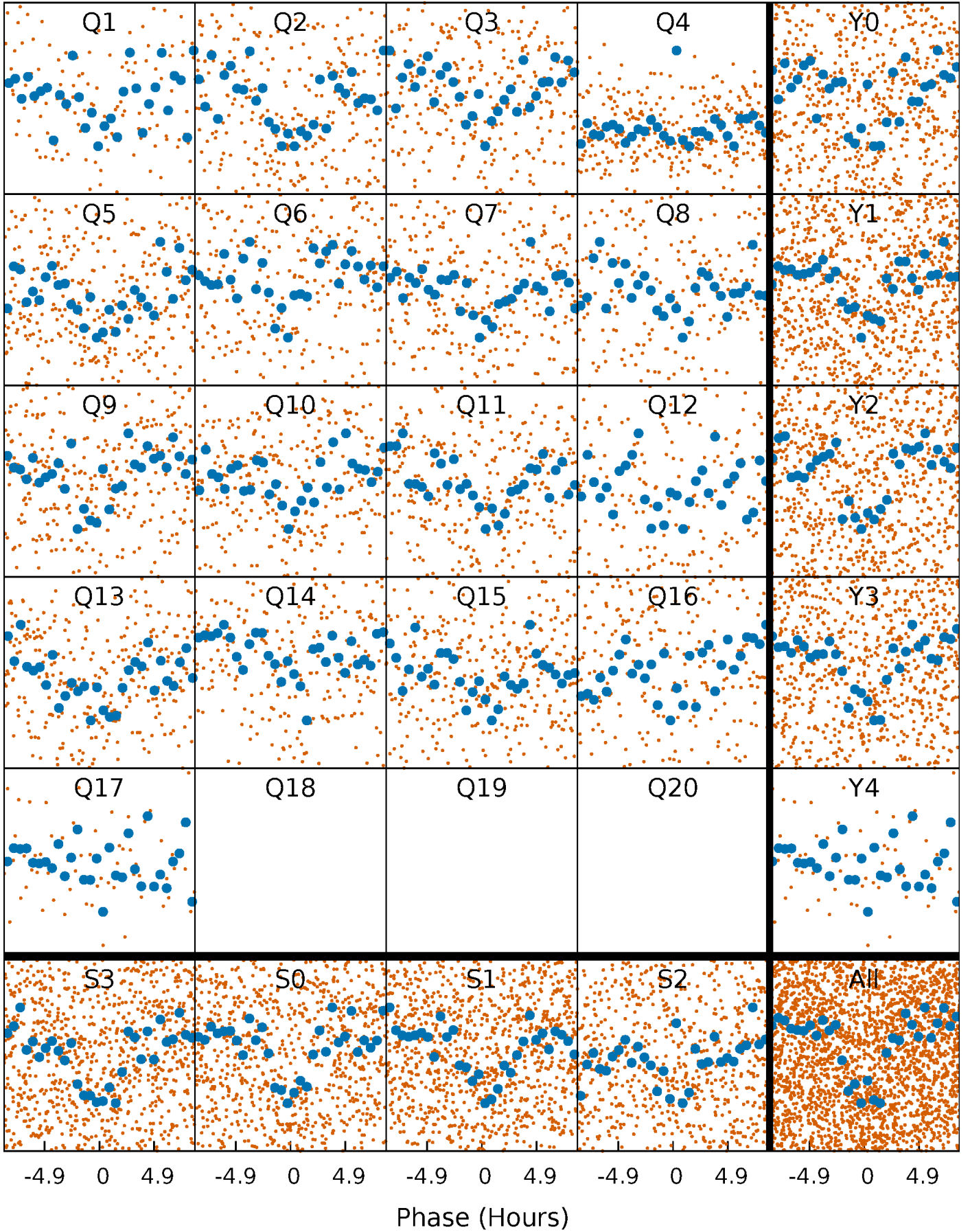


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



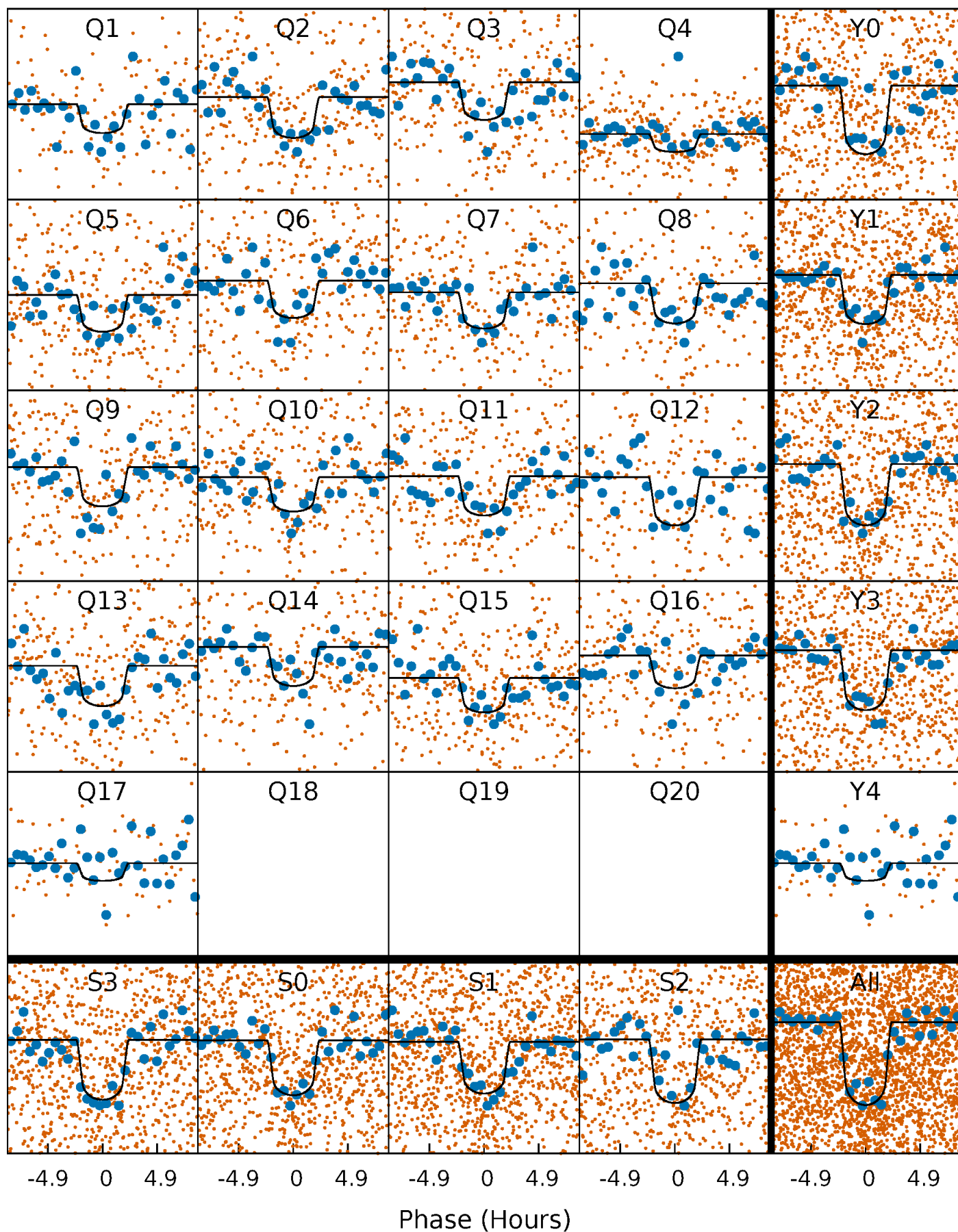
PDC Quarter-Phased Transit Curves

TCE 008883329-01 P= 9.182483 Days $T_0=134.040321$ (BKJD)



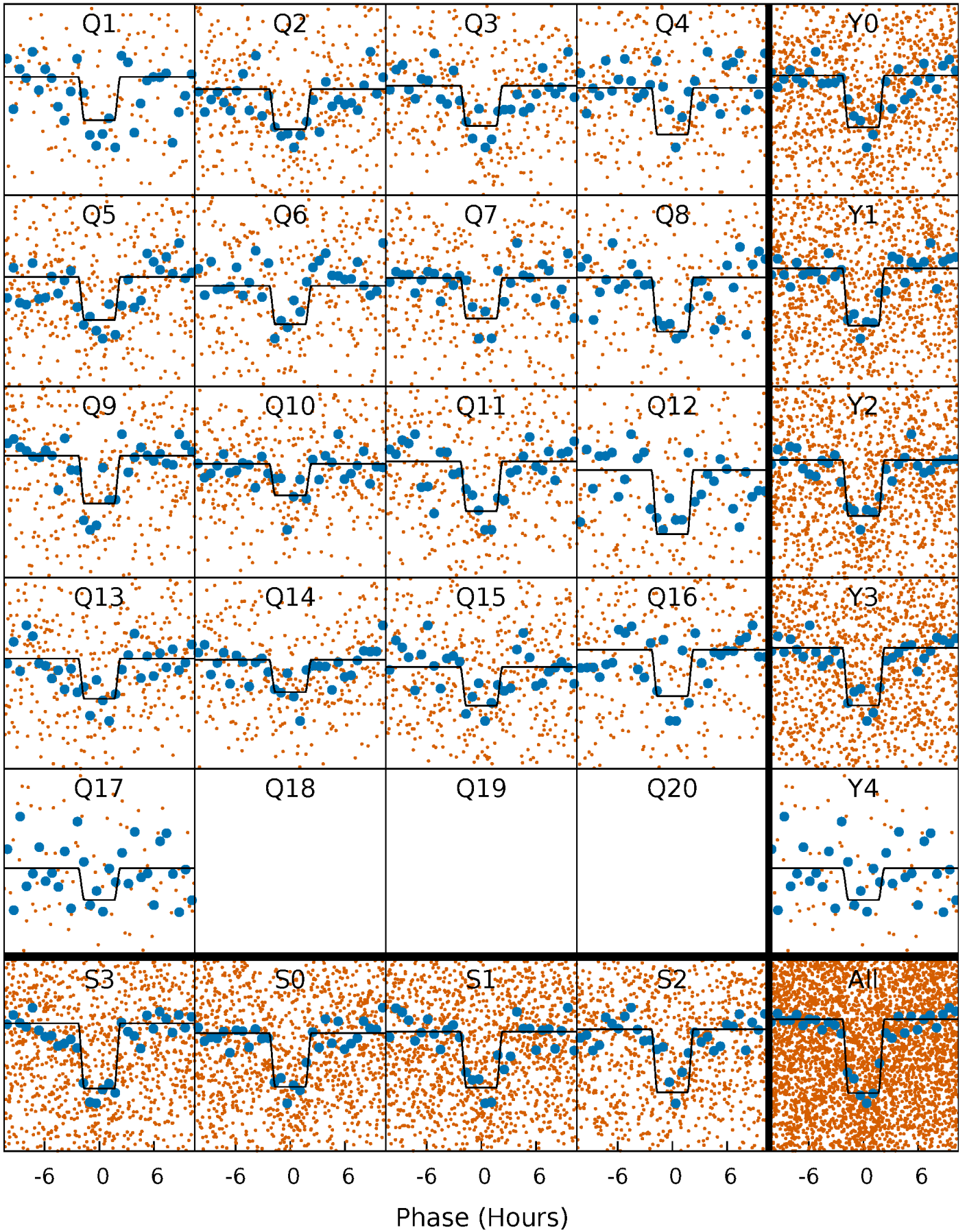
DV Quarter-Phased Transit Curves

TCE 008883329-01 P= 9.182483 Days $T_0=134.040321$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

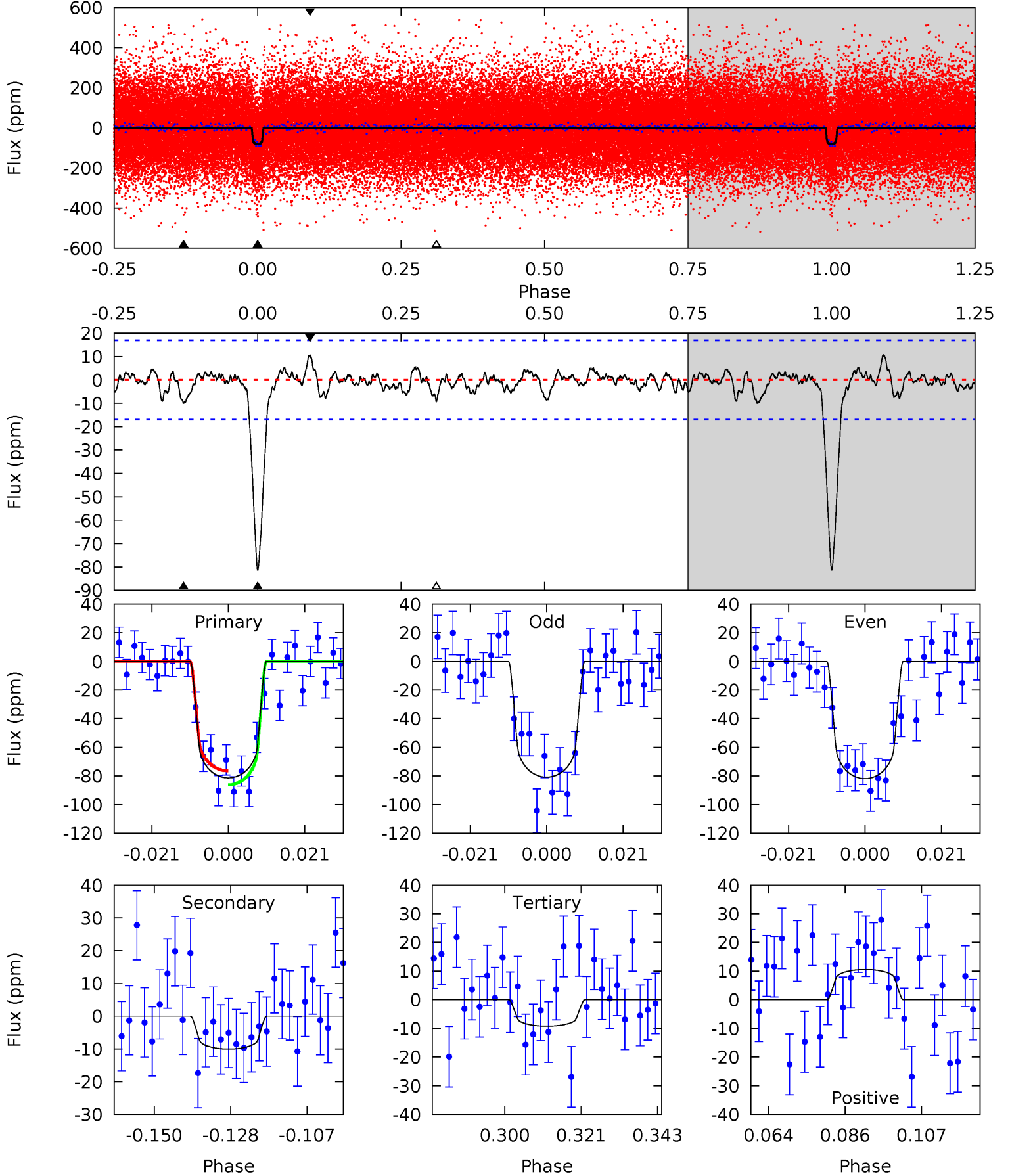
TCE 008883329-01 P= 9.182567 Days $T_0=134.037723$ (BKJD)



DV Model-Shift Uniqueness Test

008883329-01, P = 9.182483 Days, E = 124.857838 Days

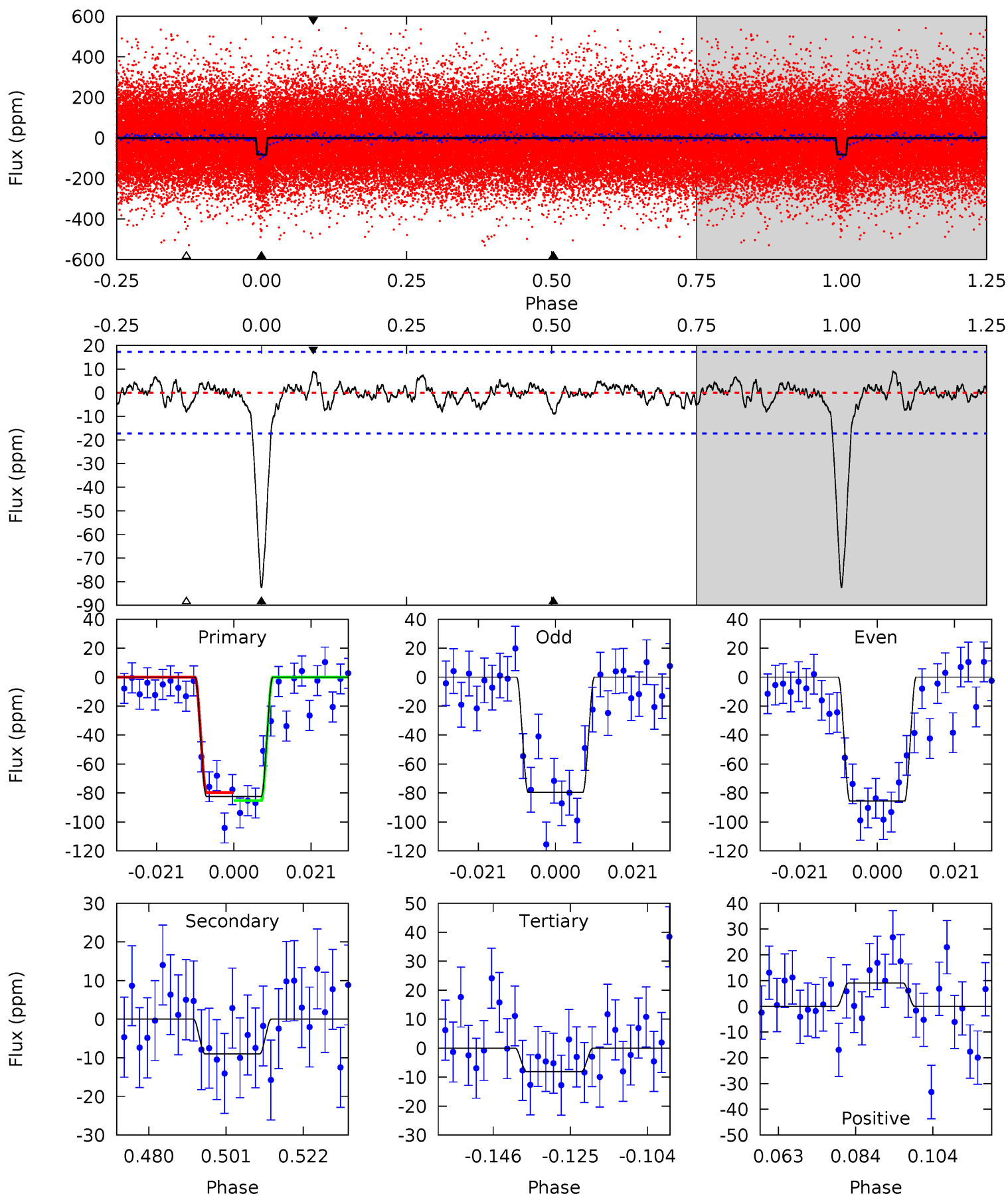
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.4	2.89	2.65	3.03	4.88	2.30	0.89	20.7	20.3	0.24	-0.15	0.14	0.97	0.11	1.40



Alt Model-Shift Uniqueness Test

008883329-01, P = 9.182567 Days, E = 124.855156 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.3	2.53	2.30	2.55	4.88	2.31	0.88	21.0	20.7	0.24	-0.02	0.87	1.00	0.10	0.79



Stellar Parameters For KIC 008883329

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6194^{+124}_{-136}	$4.242^{+0.125}_{-0.125}$	$-0.040^{+0.150}_{-0.150}$	$1.314^{+0.244}_{-0.200}$	$1.098^{+0.113}_{-0.075}$	$0.681^{+0.391}_{-0.250}$
	+2%/-2%	+3%/-3%	+375%/-375%	+19%/-15%	+10%/-7%	+57%/-37%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 008883329-01 / KOI 2595.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-10 ± 3	$1.40^{+0.40}_{-0.38}$	1468^{+76}_{-70}	3852^{+510}_{-395}	21^{+22}_{-10}
Alt.	-9 ± 4	$1.34^{+0.35}_{-0.38}$	1472^{+71}_{-74}	3843^{+520}_{-391}	21^{+22}_{-11}

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

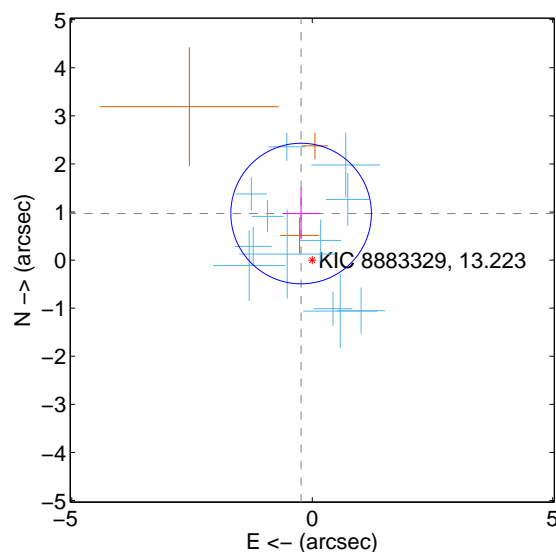
Supplemental centroid analysis for 008883329-01. Kepler magnitude: 13.22. Transit SNR 15.64

There are 12 quarters with good PRF difference image offsets

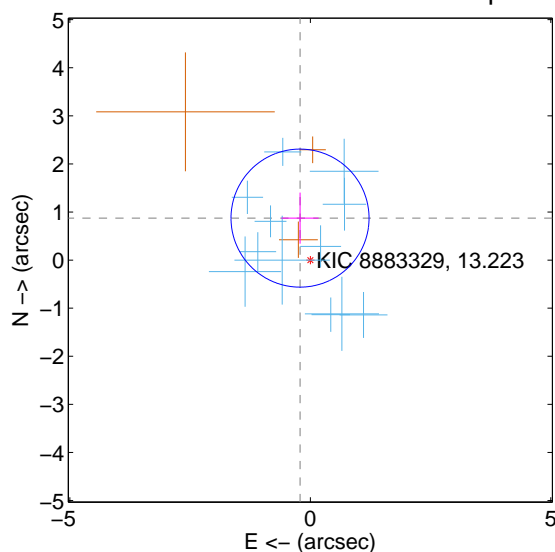
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.995 ± 0.487	2.04	0.231 ± 0.375	0.968 ± 0.533
PRF-fit source offset from KIC position	0.899 ± 0.478	1.88	0.214 ± 0.386	0.873 ± 0.531
photometric centroid source offset	1.14 ± 1.02	1.12	1.01 ± 1.04	0.54 ± 0.92

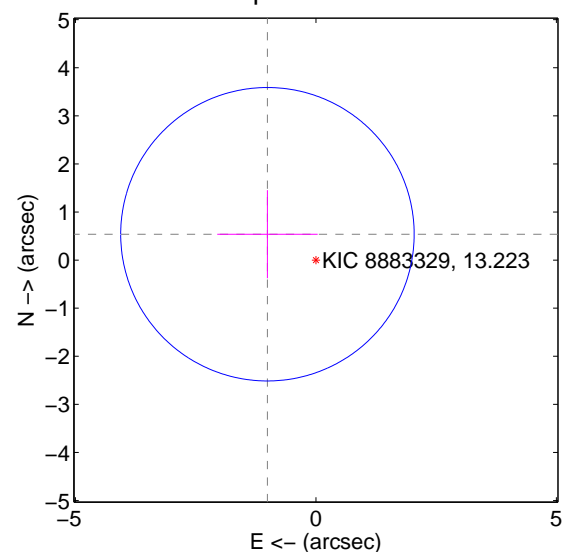
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

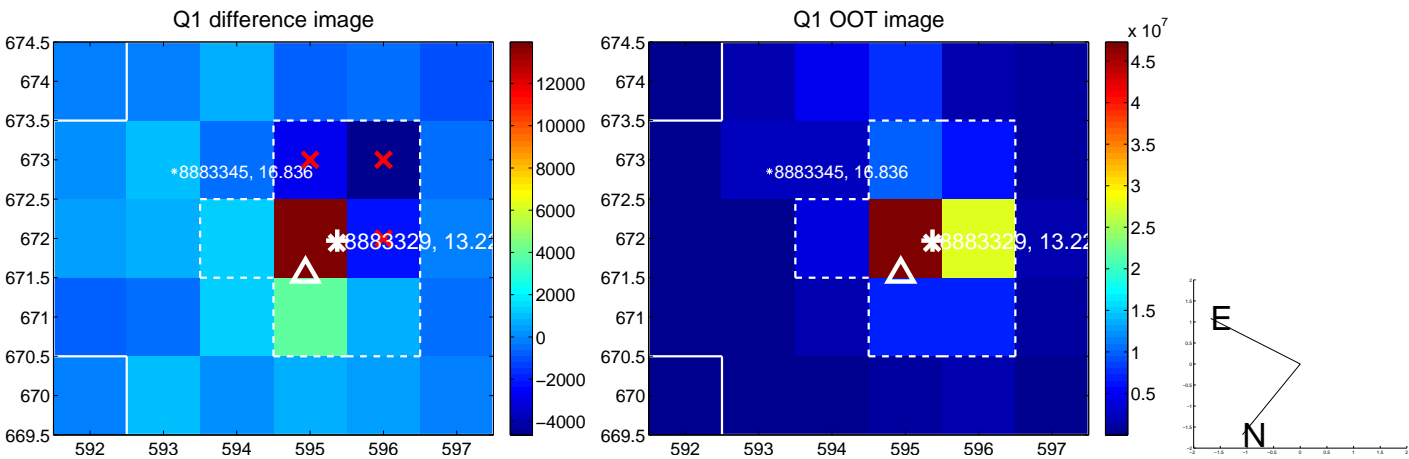


offset from photometric centroids

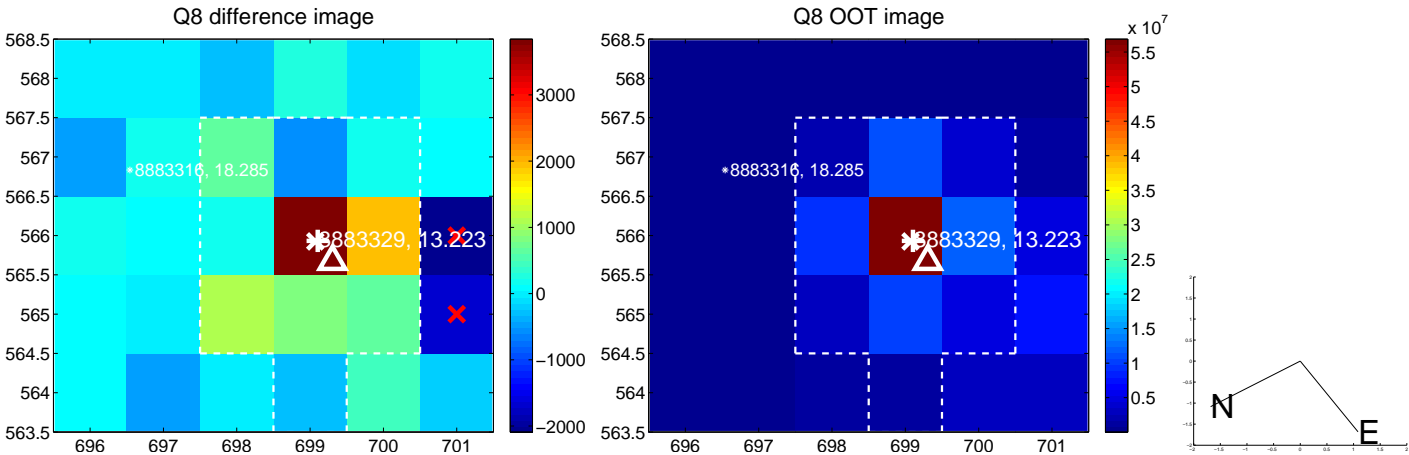
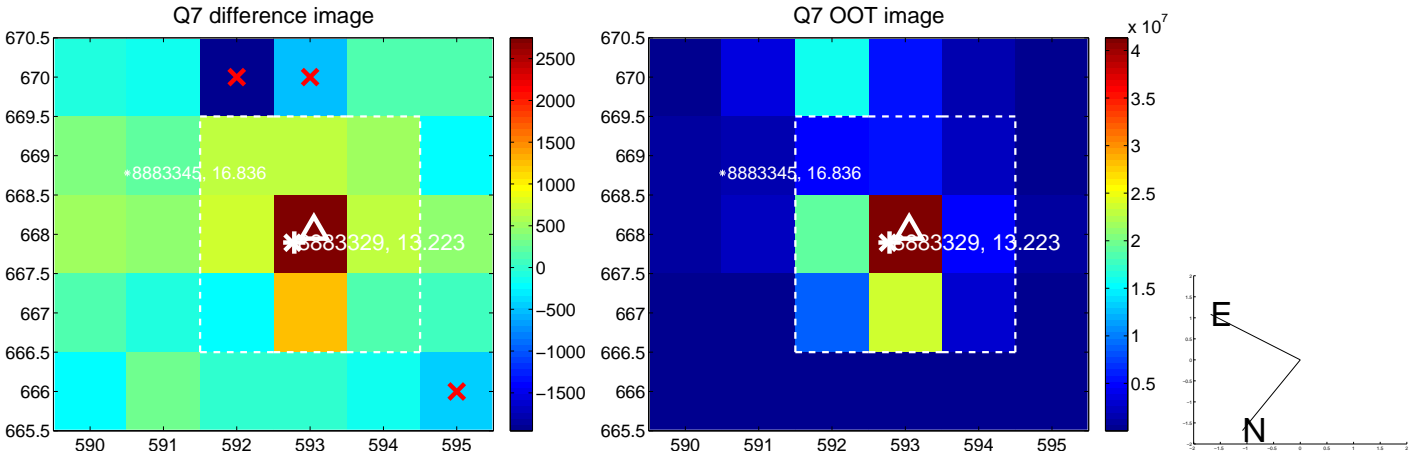
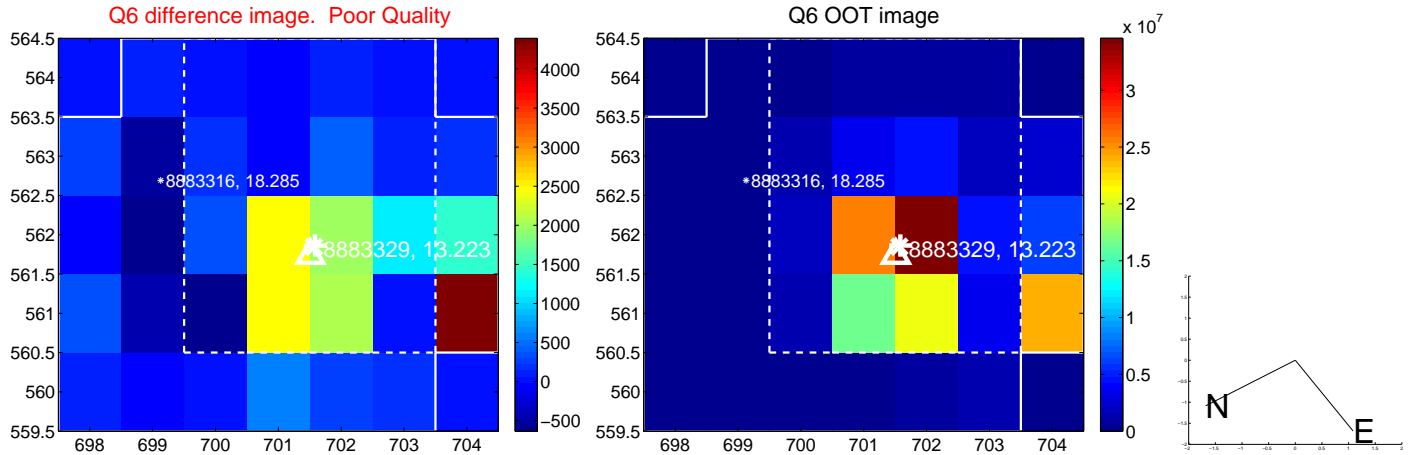
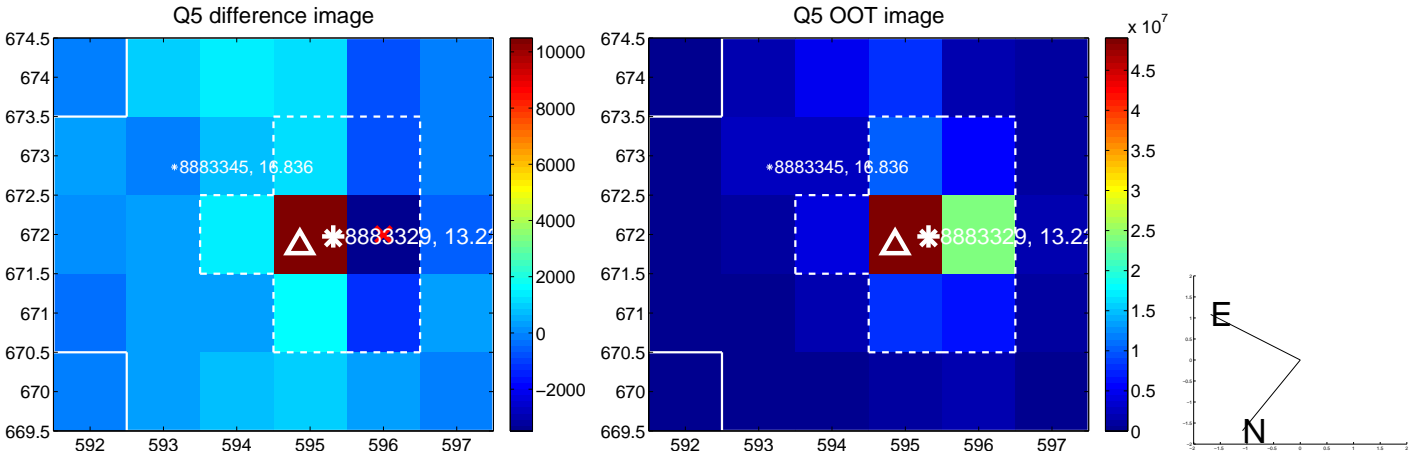


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

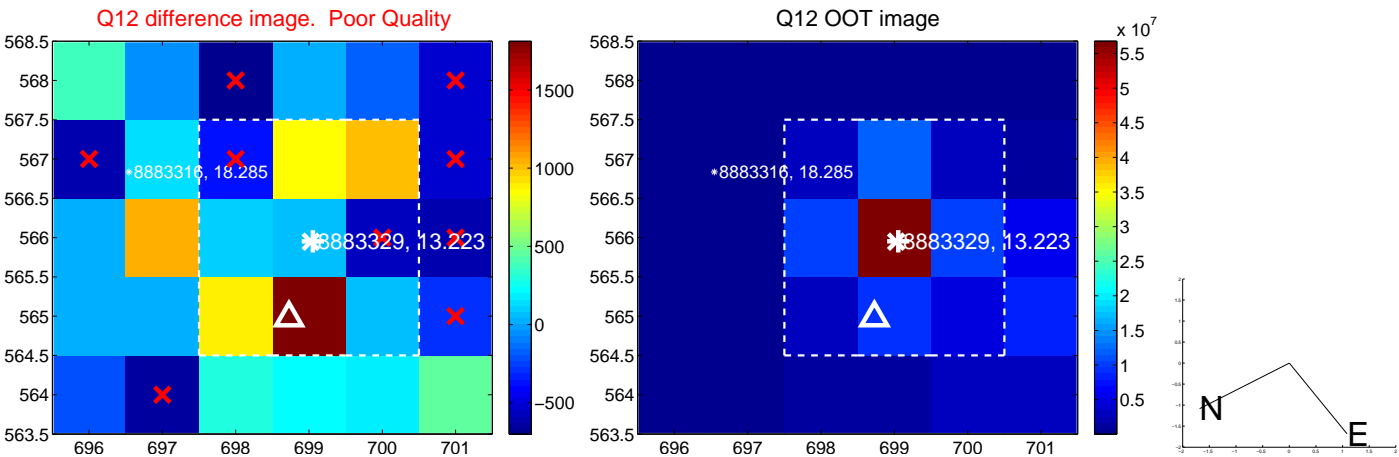
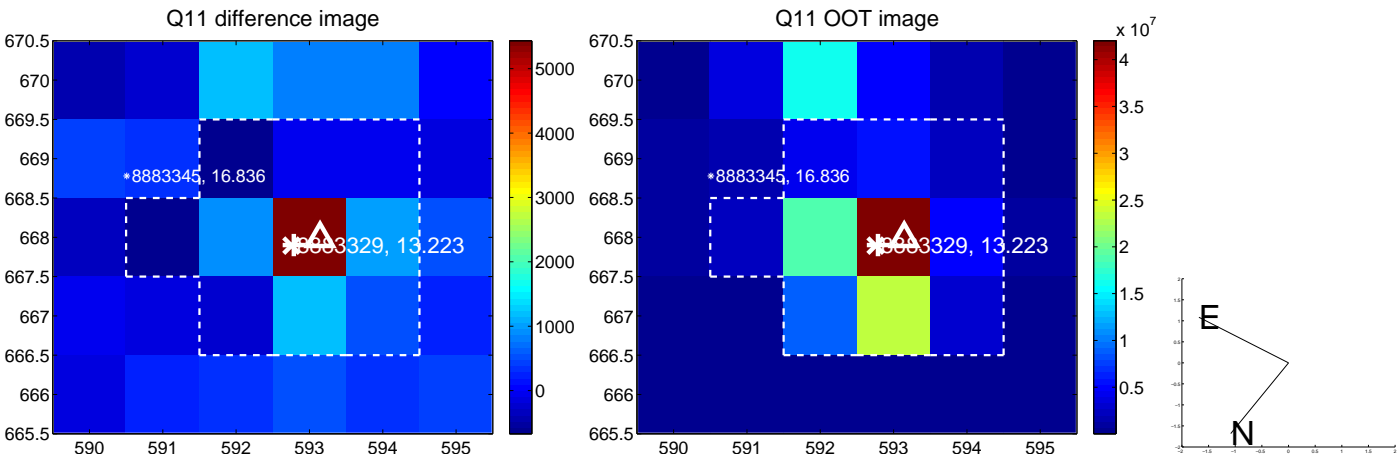
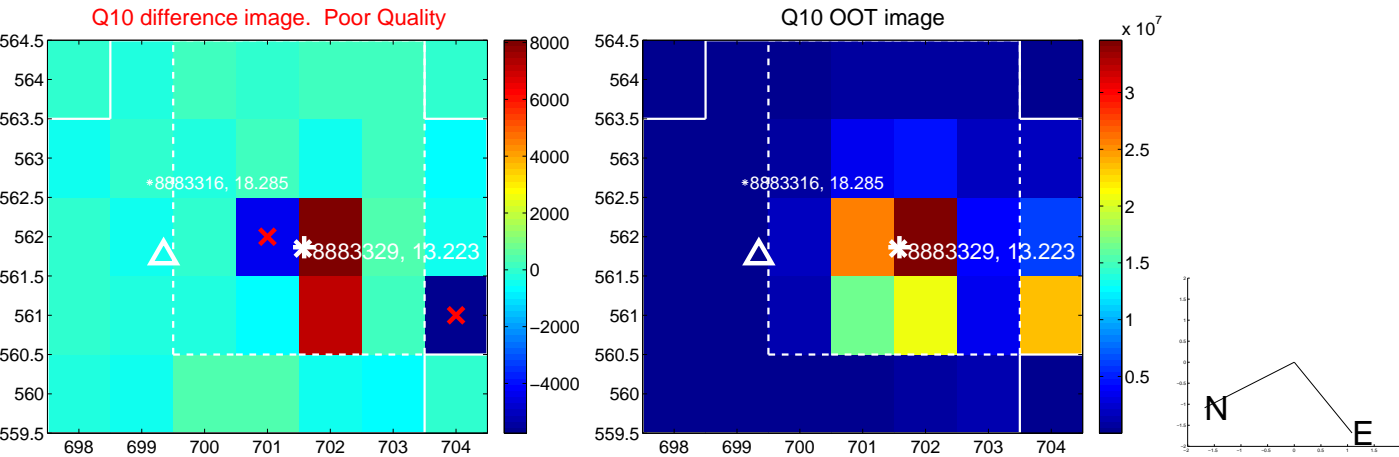
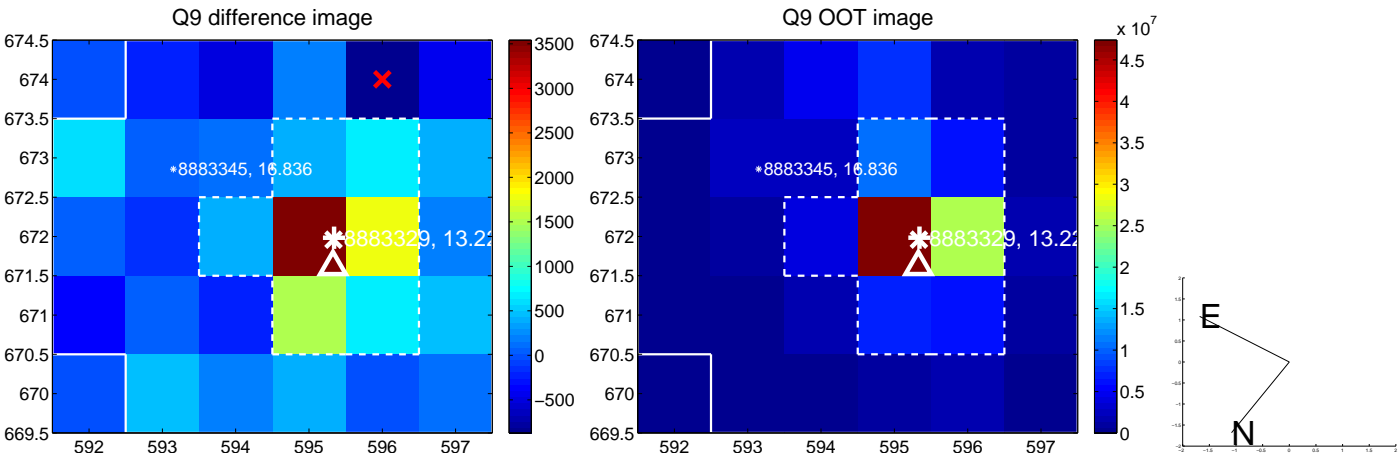
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



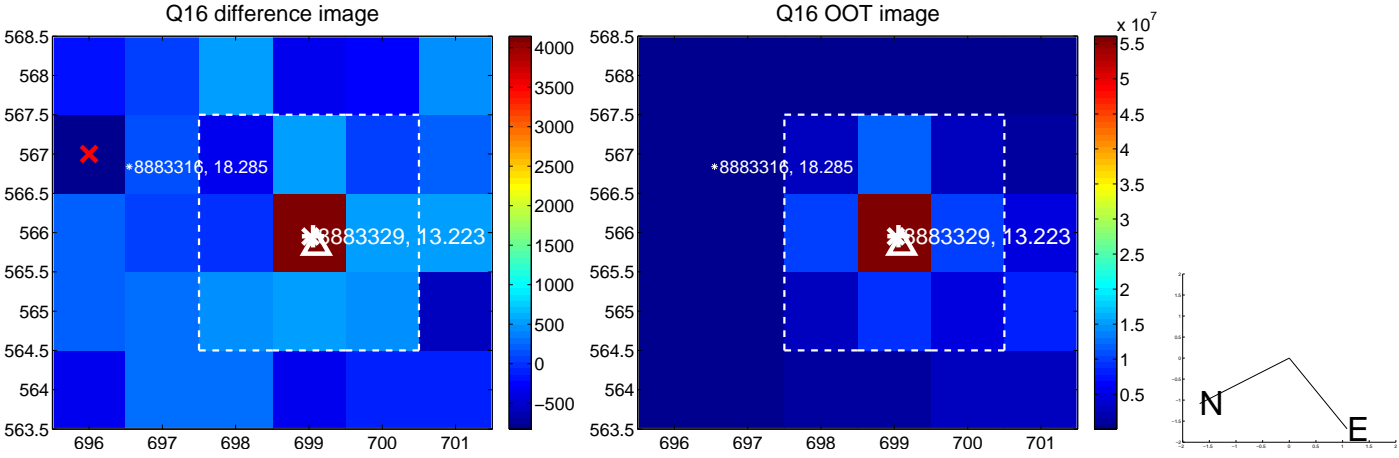
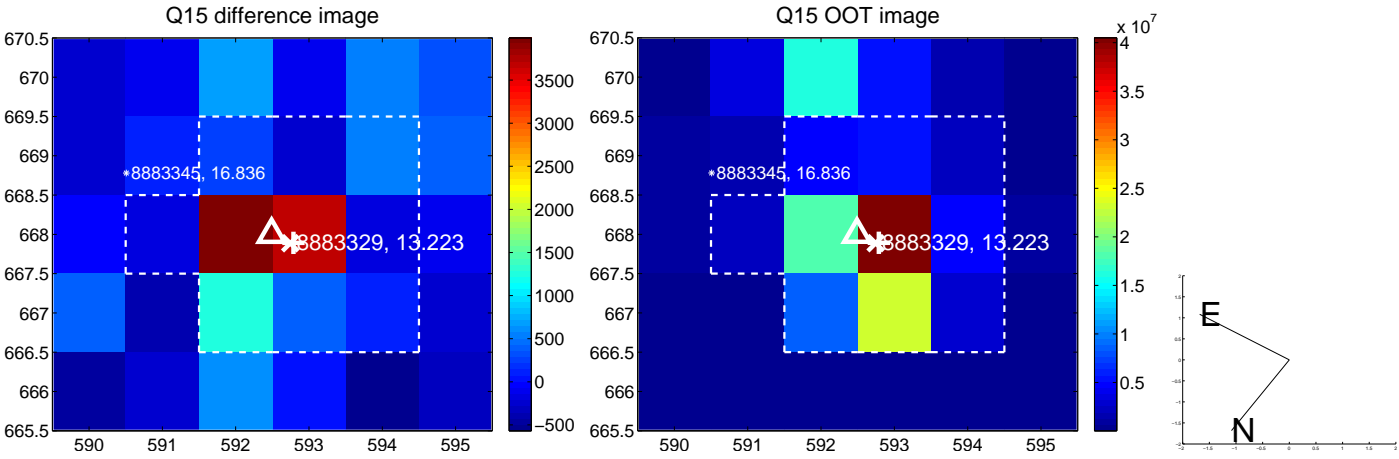
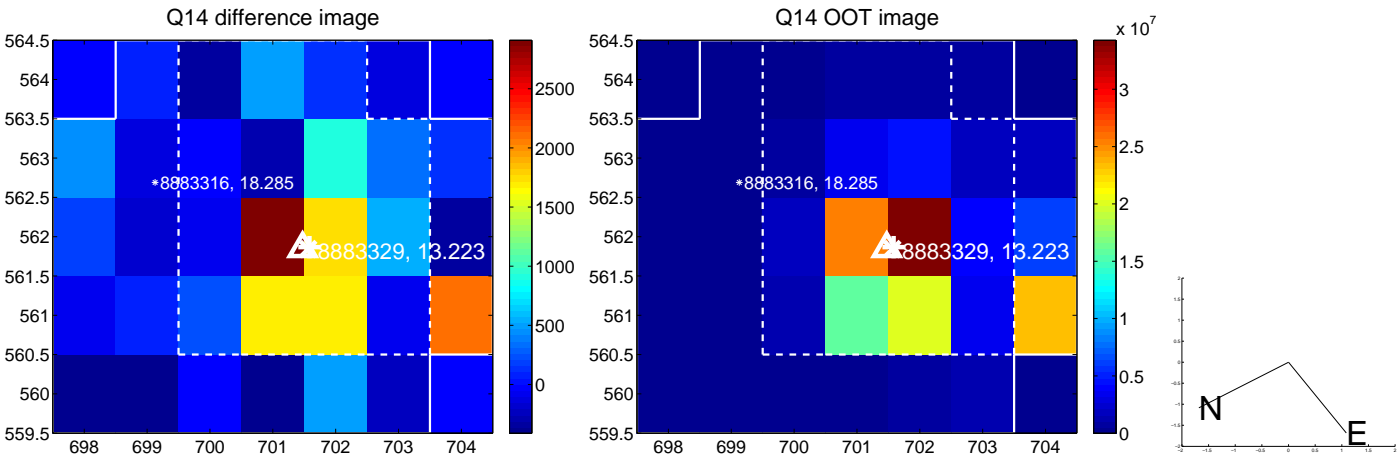
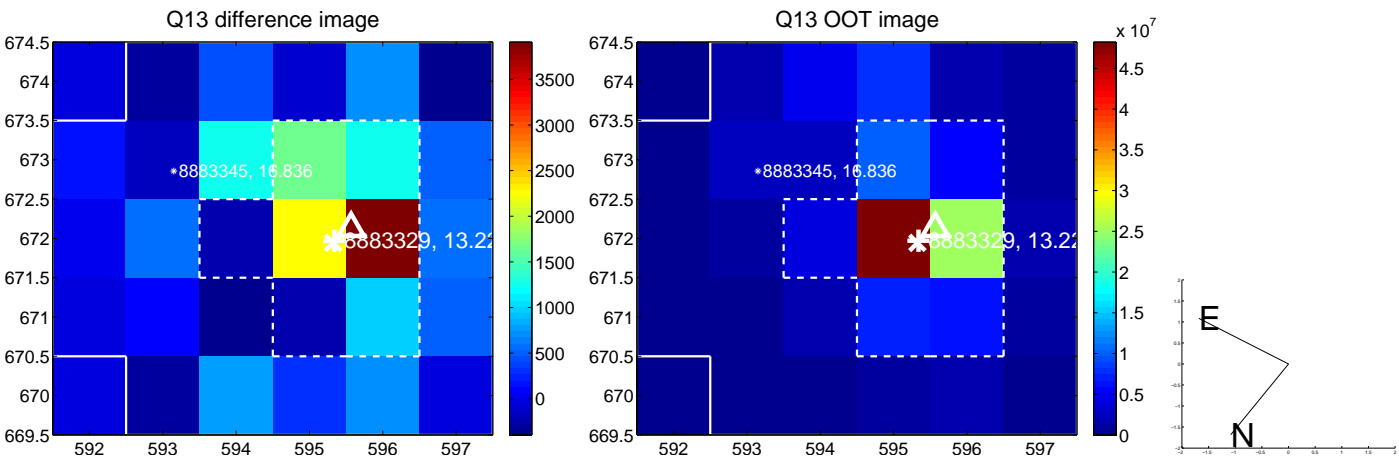
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



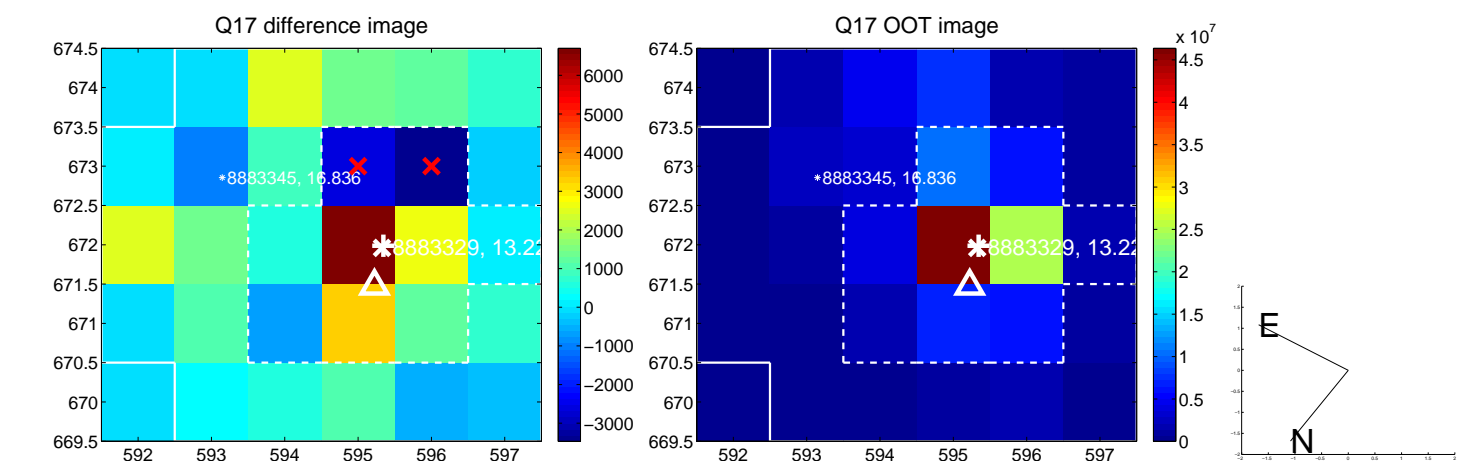
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



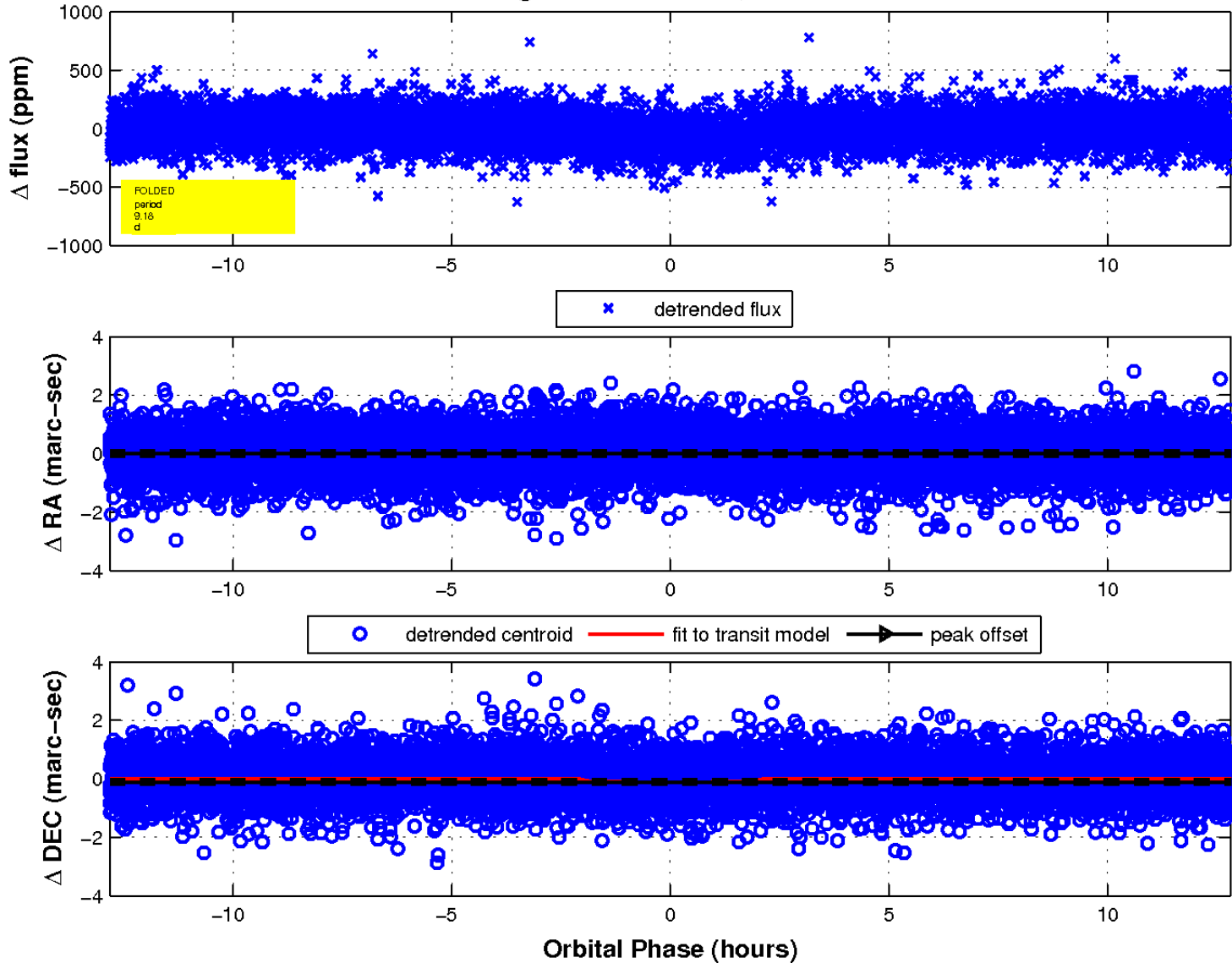
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

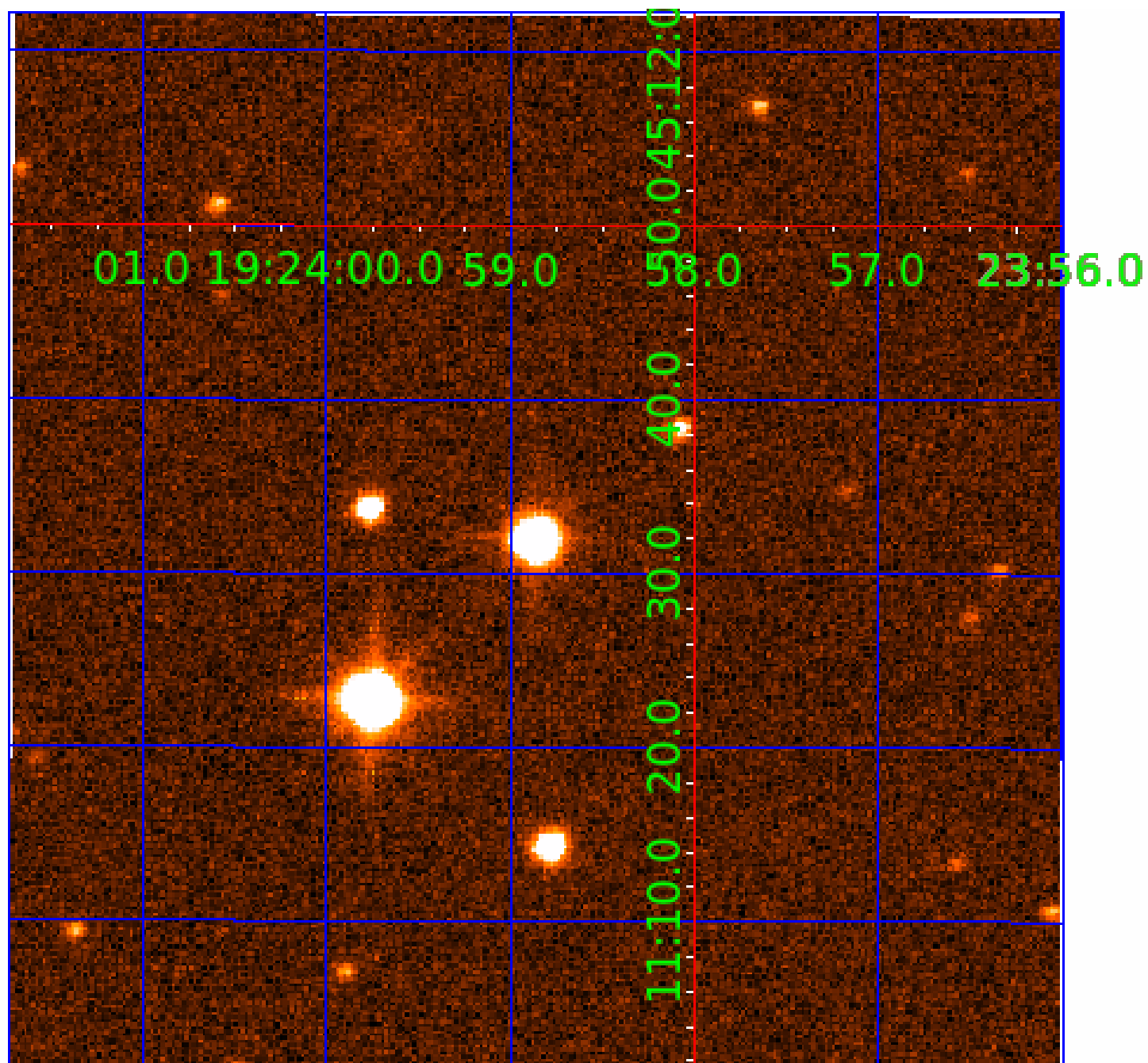


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 008883329

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})
008883329-01	OBS	2595.01	9.182483	134.040321	83.1	4.272	14.5	15.6	1.31	6194	1.41	290.11
008883329-02	OBS	2595.02	14.613585	140.407799	76.5	5.533	11.8	12.3	1.31	6194	1.35	156.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008883329-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
008883329-02	OBS	PC	0.93	0	0	0	0	NO_COMMENT

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

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

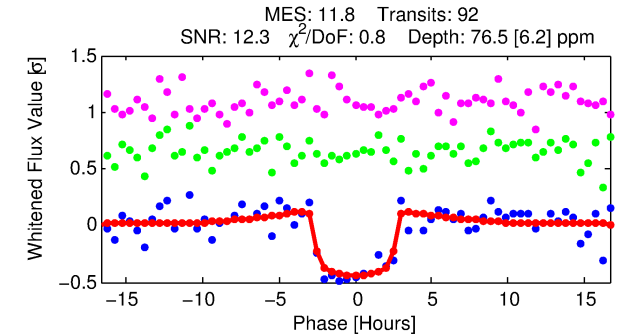
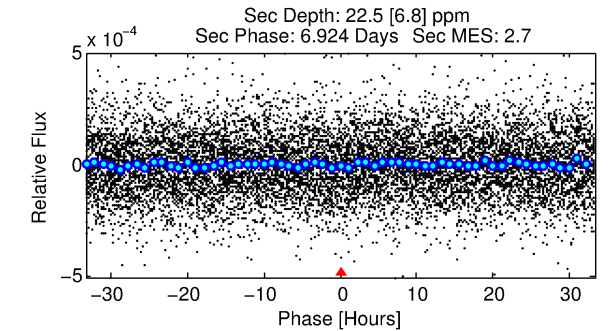
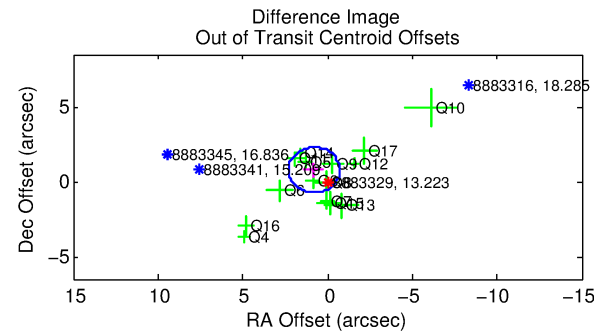
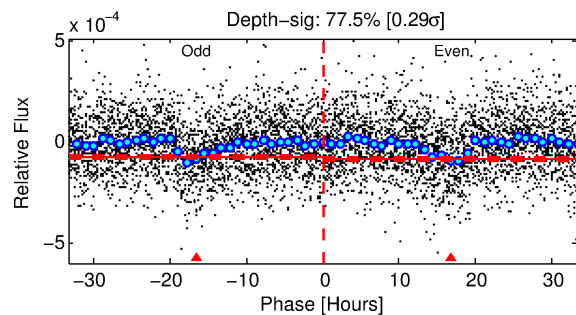
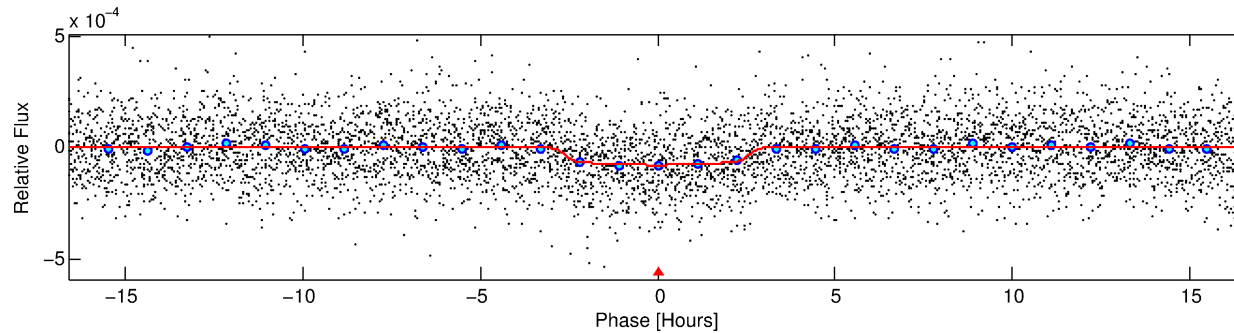
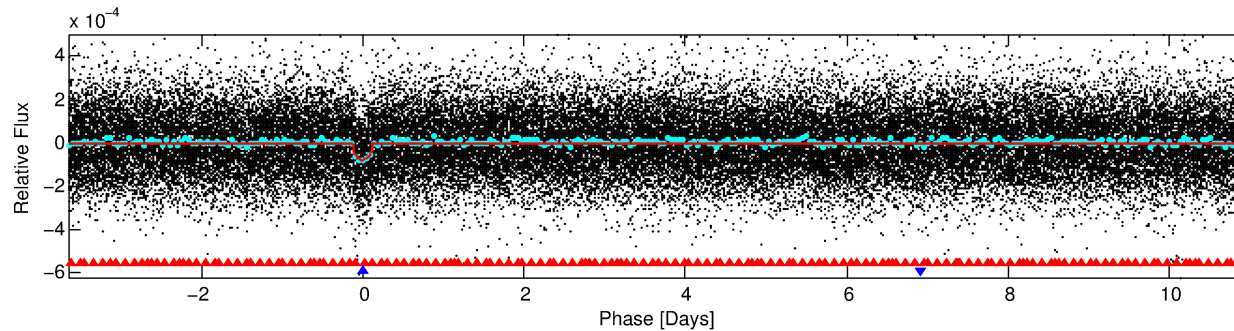
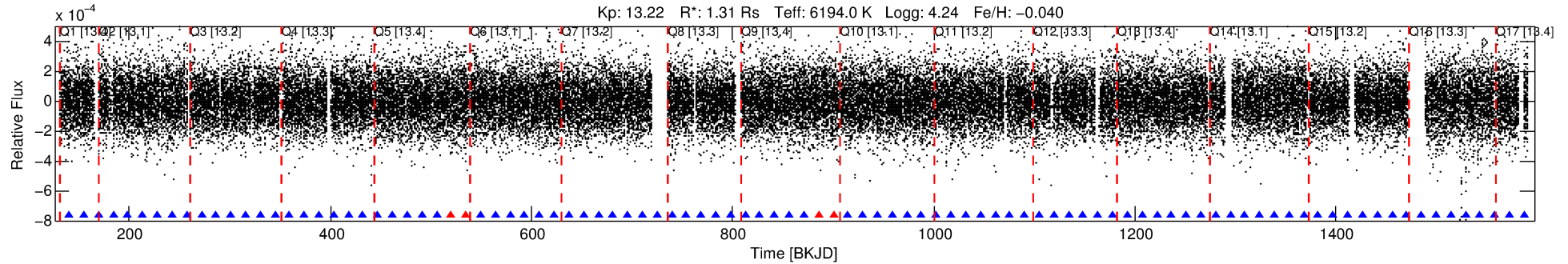
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008883329-02

No Significant Match Found

DV One-Page Summary

KIC: 8883329 Candidate: 2 of 2 Period: 14.614 d
KOI: K02595.02 Name: Kepler-393c Corr: 0.972



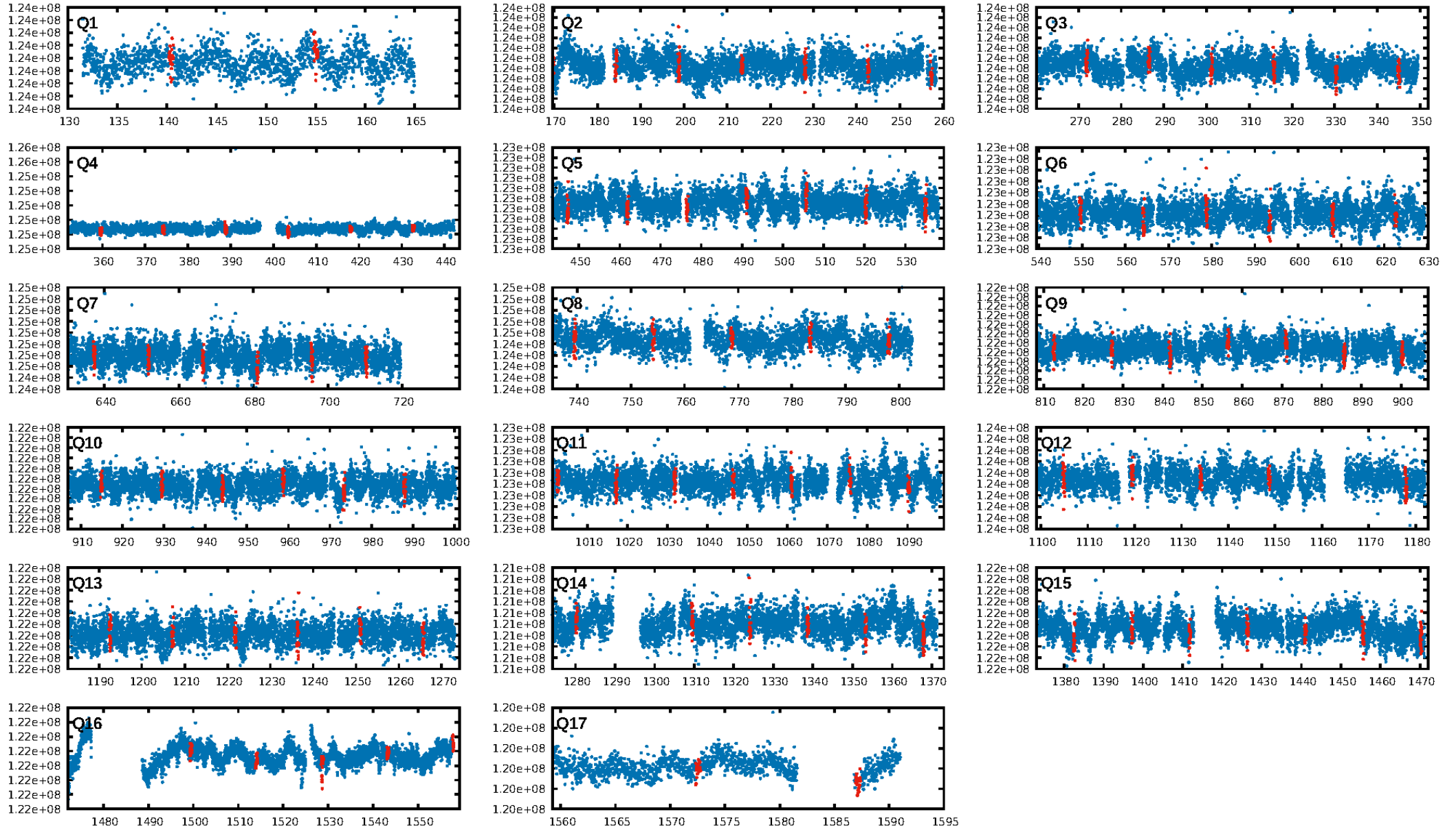
DV Fit Results:

Period = 14.61359 [0.00013] d
Epoch = 140.4078 [0.0071] BKJD
Rp/R* = 0.0094 [0.0024]
a/R* = 9.29 [12.19]
b = 0.90 [0.29]
Seff = 156.14 [38.20]
Teq = 901 [55] K
Rp = 1.35 [0.42] Re
a = 0.1208 [0.0189] AU
Ag = 98.95 [62.31] [1.57 σ]
Teffp = 4395 [652] K [5.34 σ]

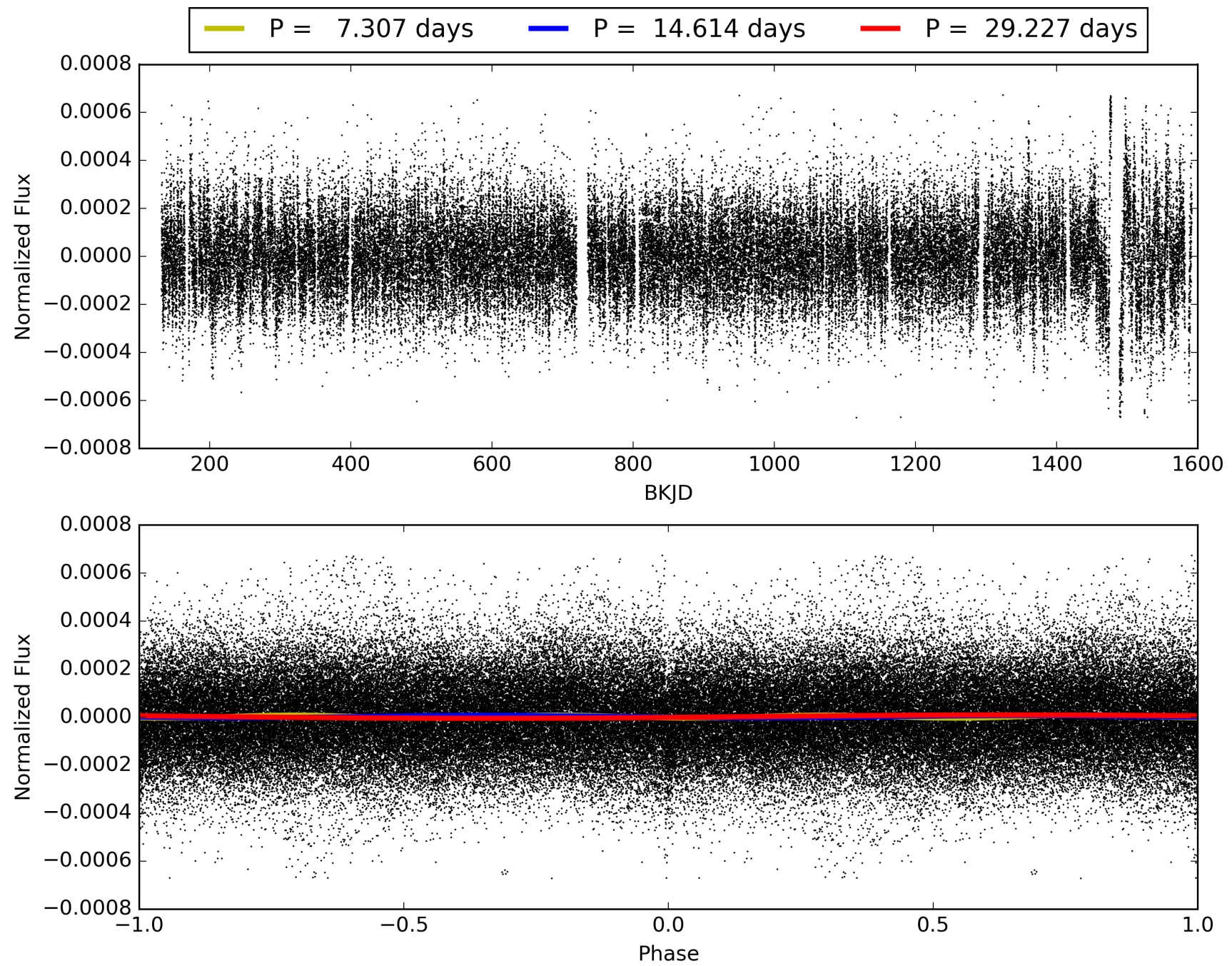
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [18.65 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.72e-31
RollingBand-fgt: 0.95 [84/88]
GhostDiagnostic-chr: 13.13
Centroid-sig: 0.0%
Centroid-so: 3.134 arcsec [2.58 σ]
OotOffset-rm: 1.106 arcsec [2.19 σ]
KicOffset-rm: 0.979 arcsec [1.96 σ]
OotOffset-st: 3/4/4/4 [15]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.60 [9/15]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 008883329-02, PDC Light Curves

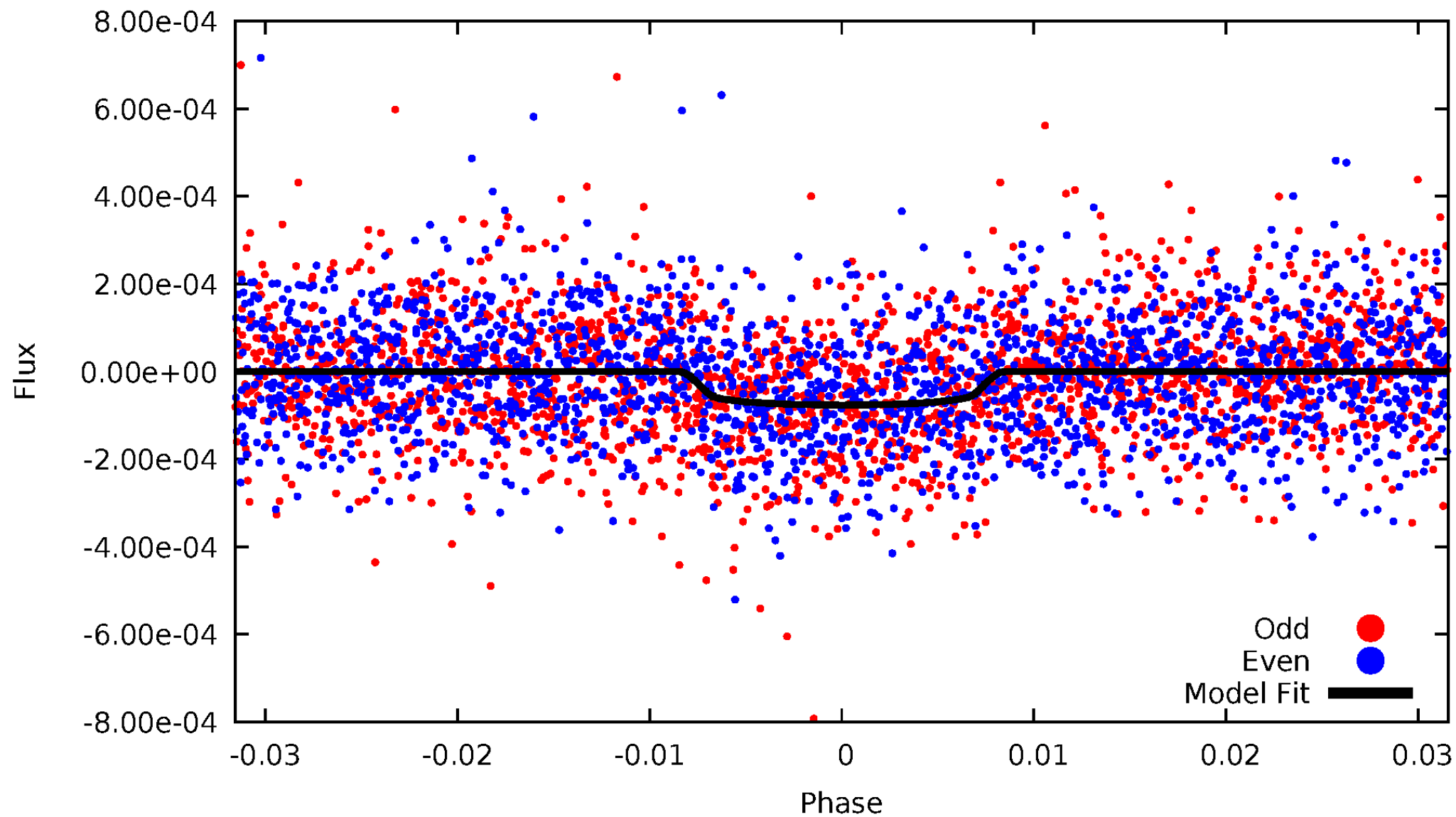


TCE 008883329-02



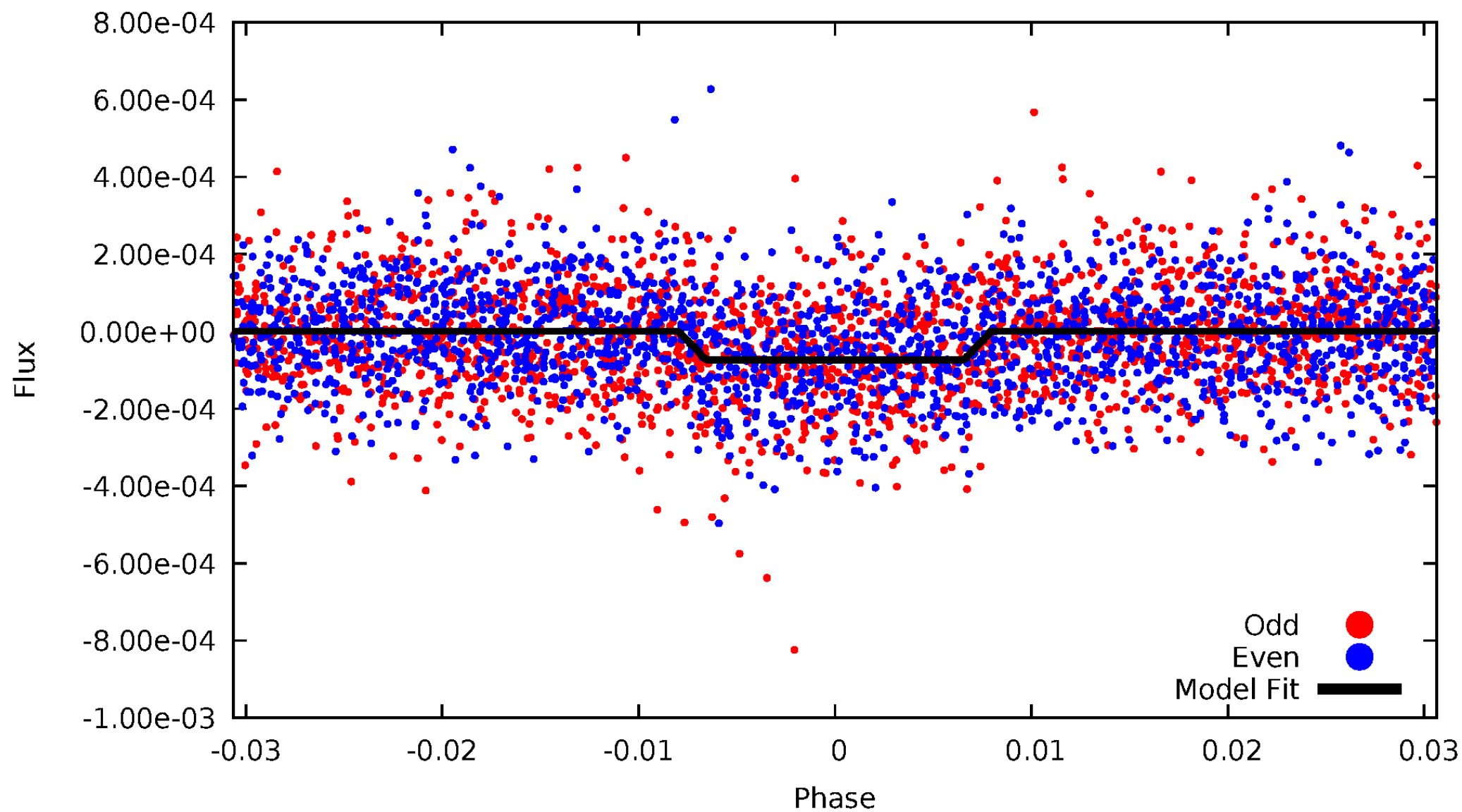
DV Odd/Even

TCE 00888329-02



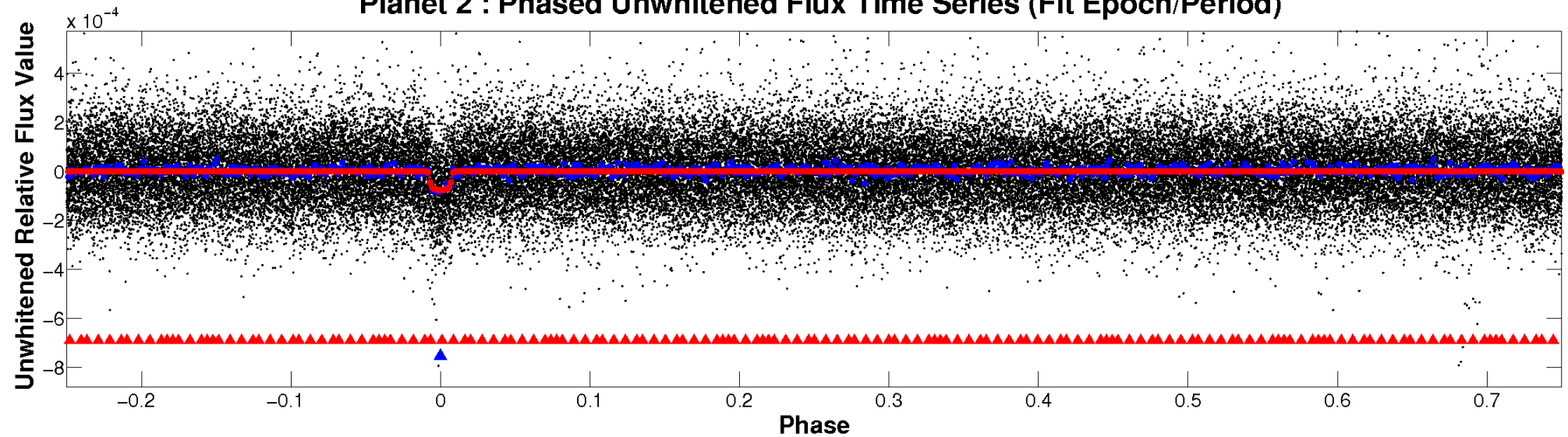
ALT Odd/Even

TCE 008883329-02

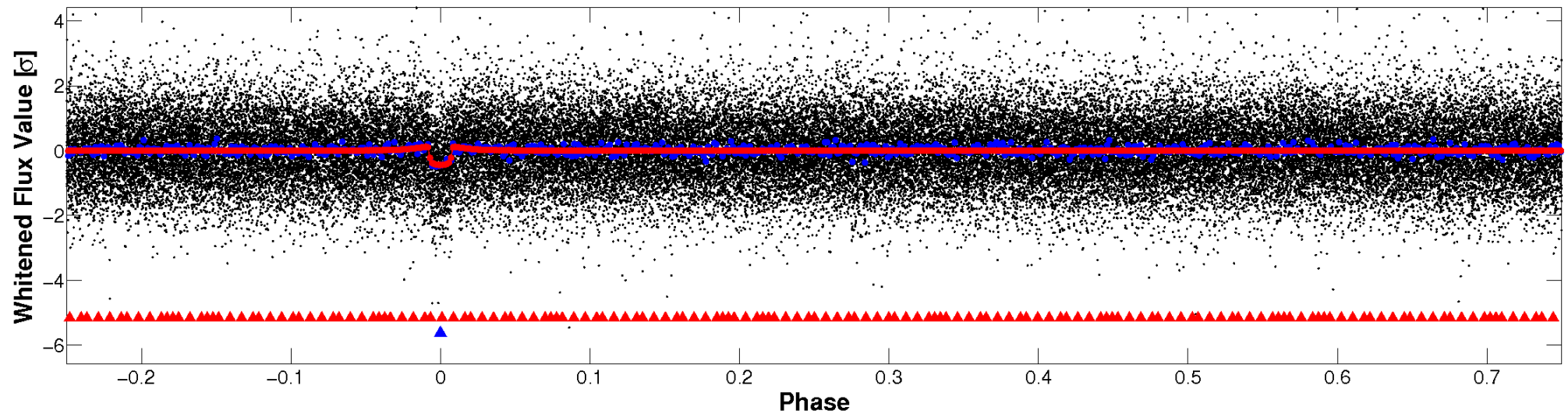


Non-Whitened Vs. Whitened Light Curve

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

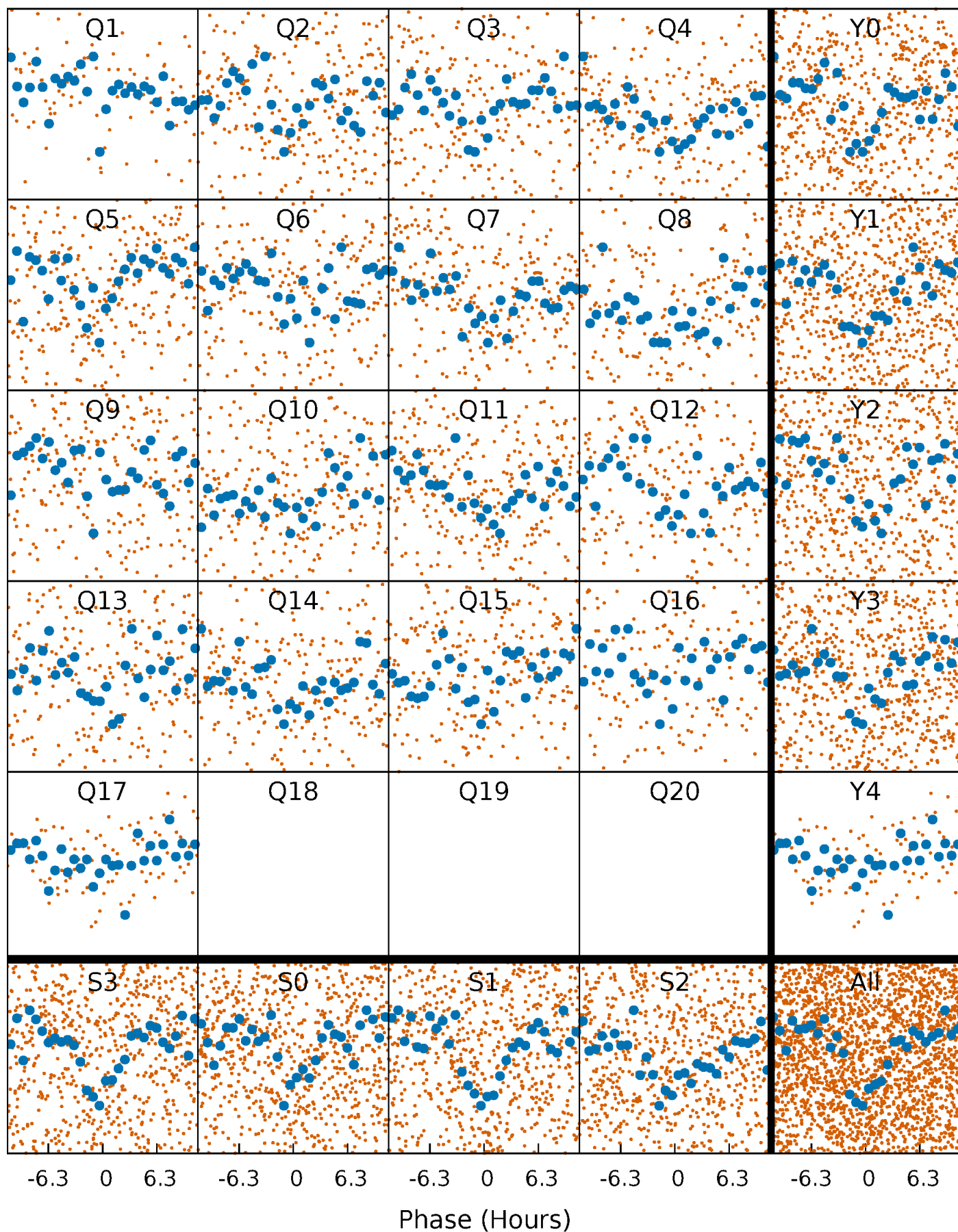


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



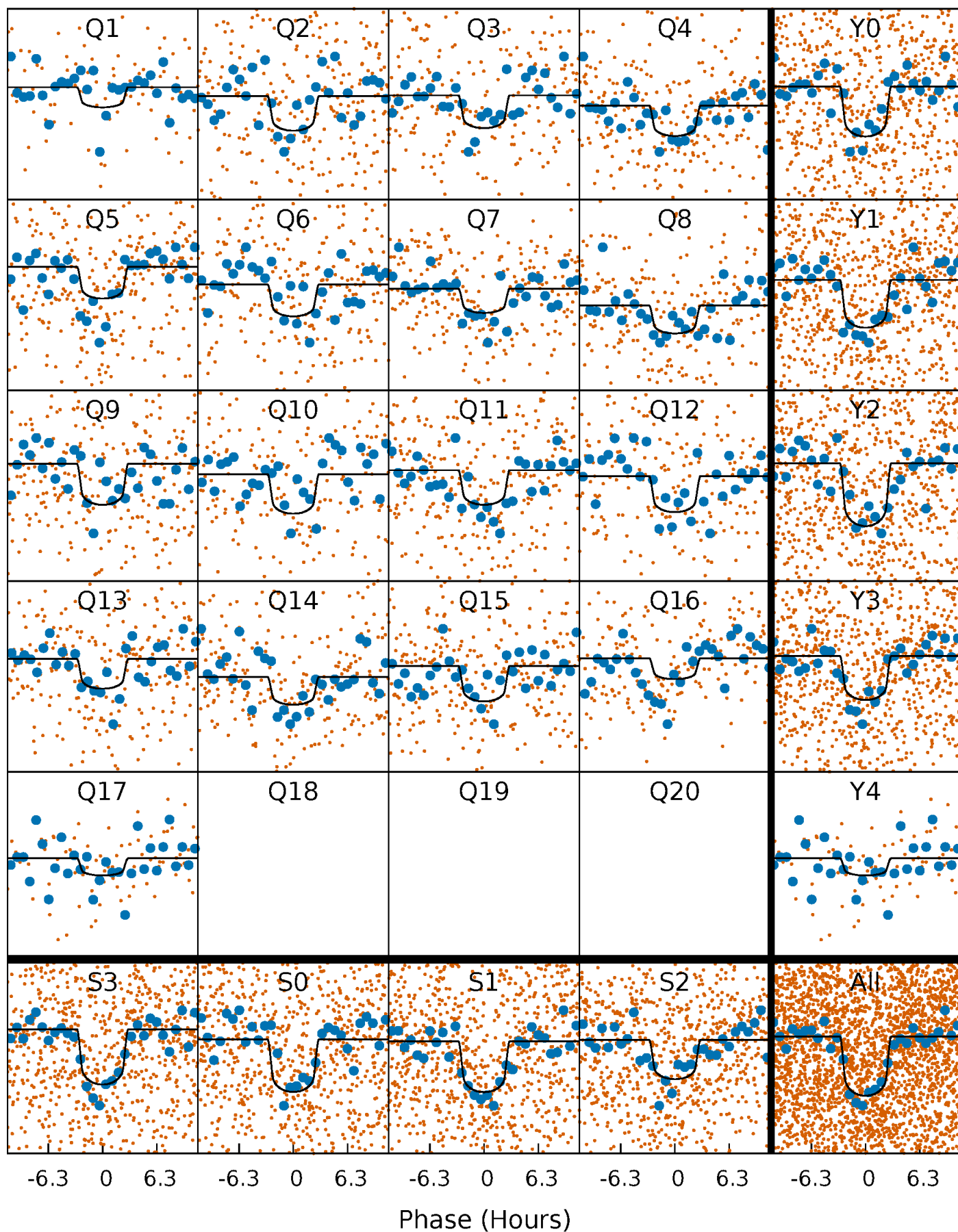
PDC Quarter-Phased Transit Curves

TCE 008883329-02 P= 14.613585 Days $T_0=140.407799$ (BKJD)



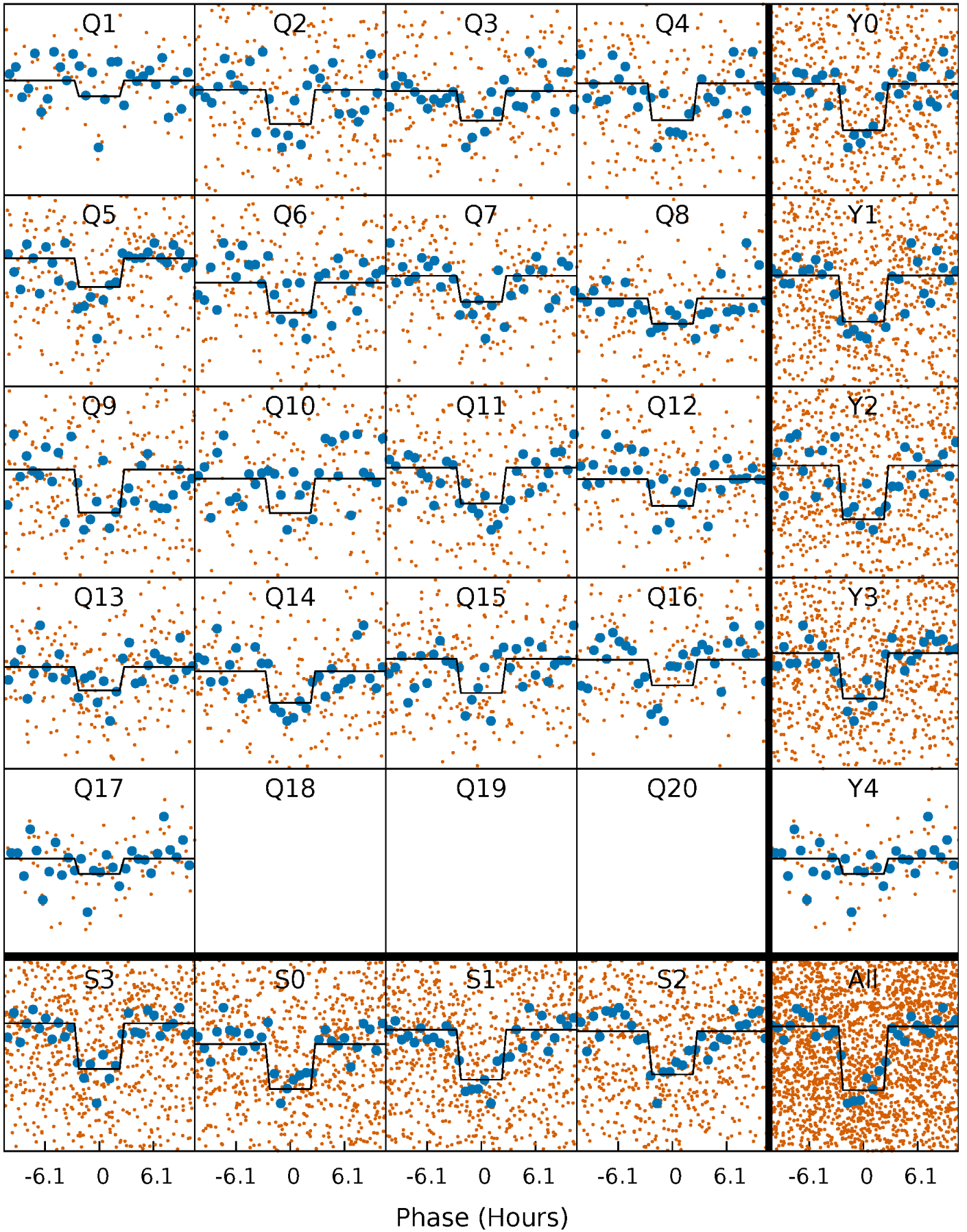
DV Quarter-Phased Transit Curves

TCE 008883329-02 P= 14.613585 Days $T_0=140.407799$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

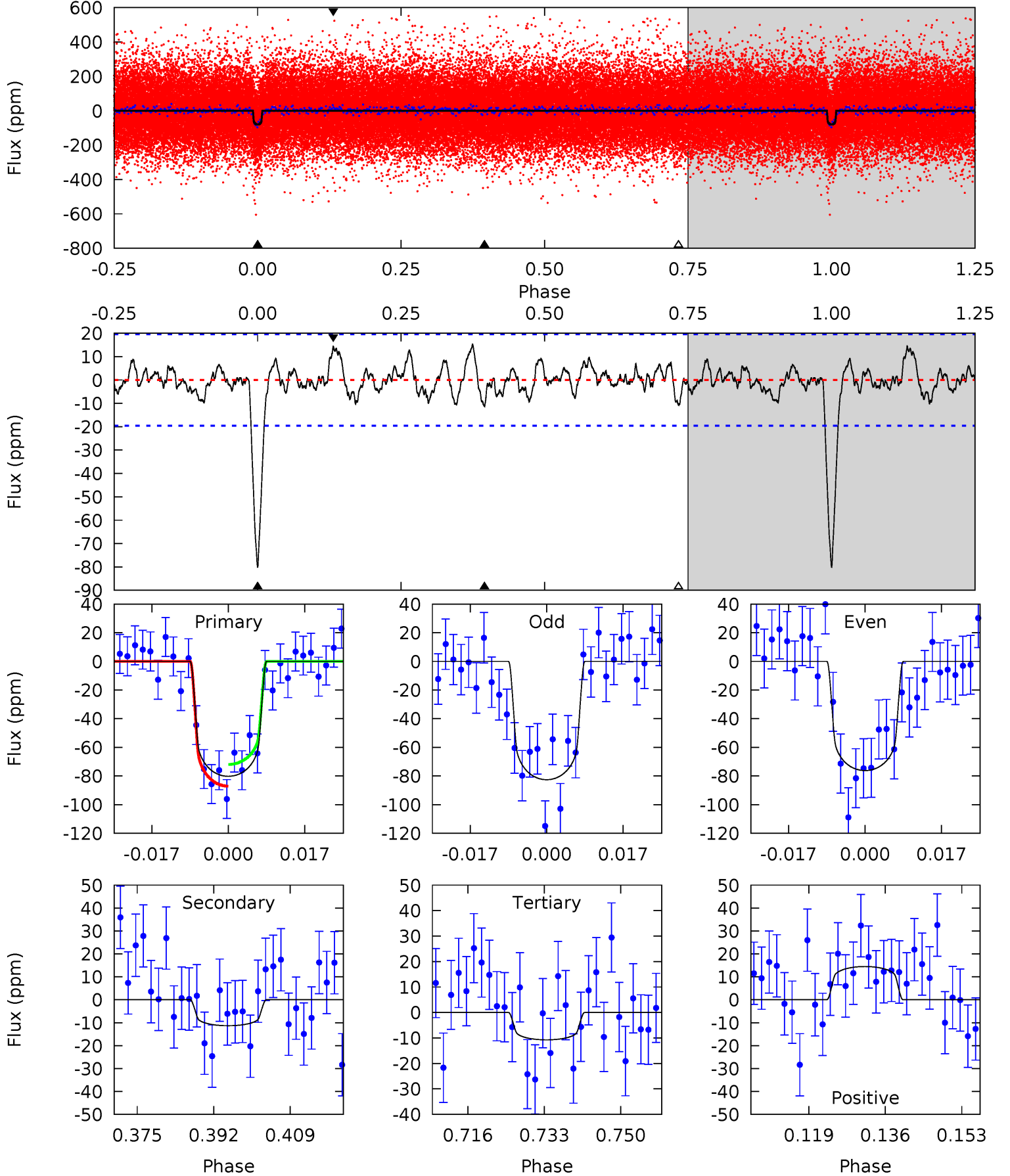
TCE 008883329-02 P= 14.613710 Days $T_0=140.404951$ (BKJD)



DV Model-Shift Uniqueness Test

008883329-02, $P = 14.613585$ Days, $E = 125.794214$ Days

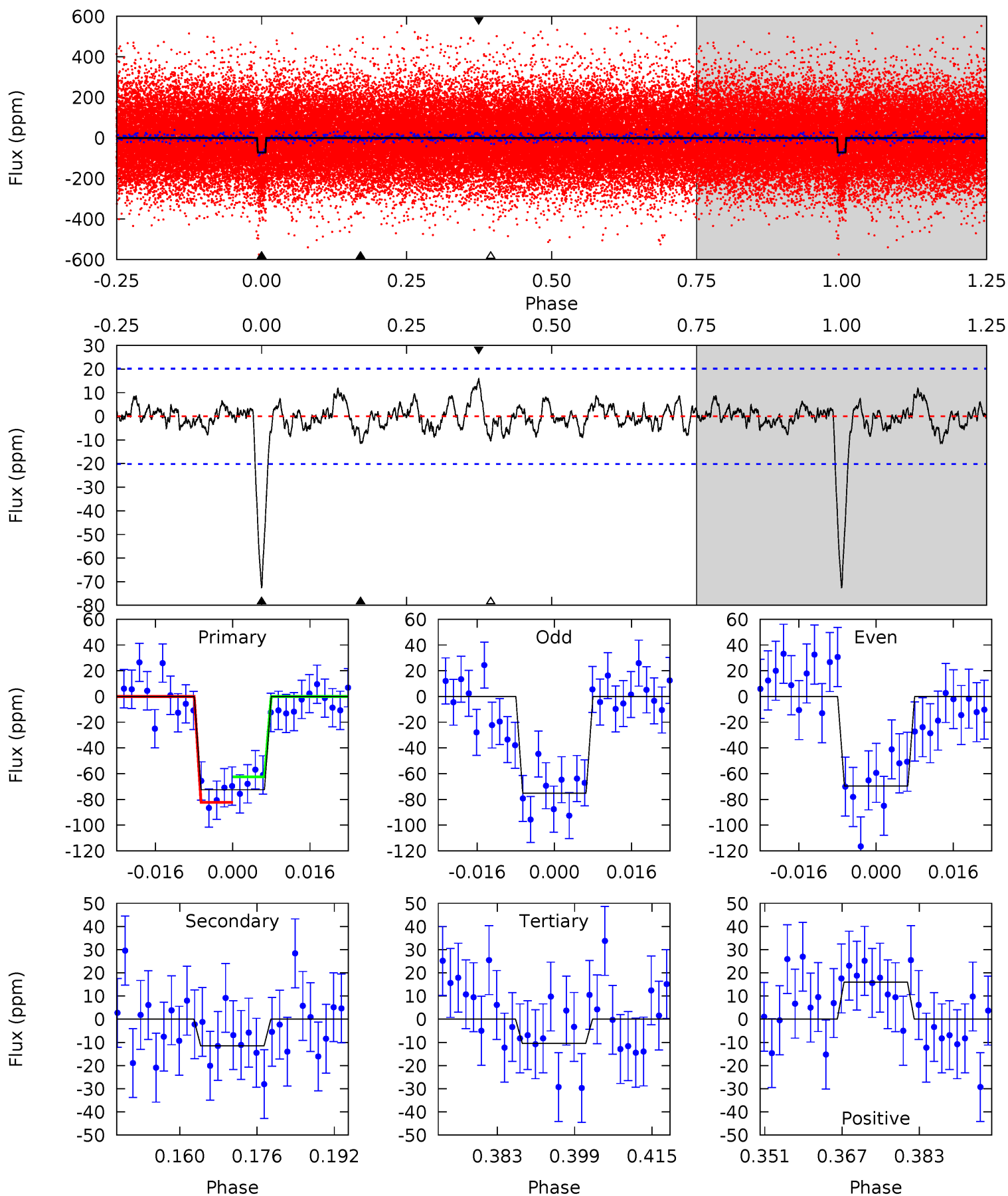
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.1	2.84	2.70	3.64	4.92	2.39	1.22	17.5	16.5	0.15	-0.79	0.80	1.04	0.16	1.91



Alt Model-Shift Uniqueness Test

008883329-02, $P = 14.613710$ Days, $E = 125.791241$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.7	2.81	2.56	3.92	4.94	2.41	1.05	15.2	13.8	0.24	-1.11	0.68	0.97	0.18	2.43



Stellar Parameters For KIC 008883329

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6194^{+124}_{-136}	$4.242^{+0.125}_{-0.125}$	$-0.040^{+0.150}_{-0.150}$	$1.314^{+0.244}_{-0.200}$	$1.098^{+0.113}_{-0.075}$	$0.681^{+0.391}_{-0.250}$
	+2%/-2%	+3%/-3%	+375%/-375%	+19%/-15%	+10%/-7%	+57%/-37%
Source	SPE58	SPE58	SPE58	DSEP		

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

Secondary Eclipse Parameters for KIC 008883329-02 / KOI 2595.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-11±4	$1.35^{+0.37}_{-0.35}$	1264^{+57}_{-68}	3996^{+490}_{-386}	49^{+46}_{-22}
Alt.	-11±4	$1.25^{+0.40}_{-0.37}$	1258^{+61}_{-59}	4142^{+598}_{-472}	58^{+65}_{-30}

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 $A_{obs} \gg 1.0$

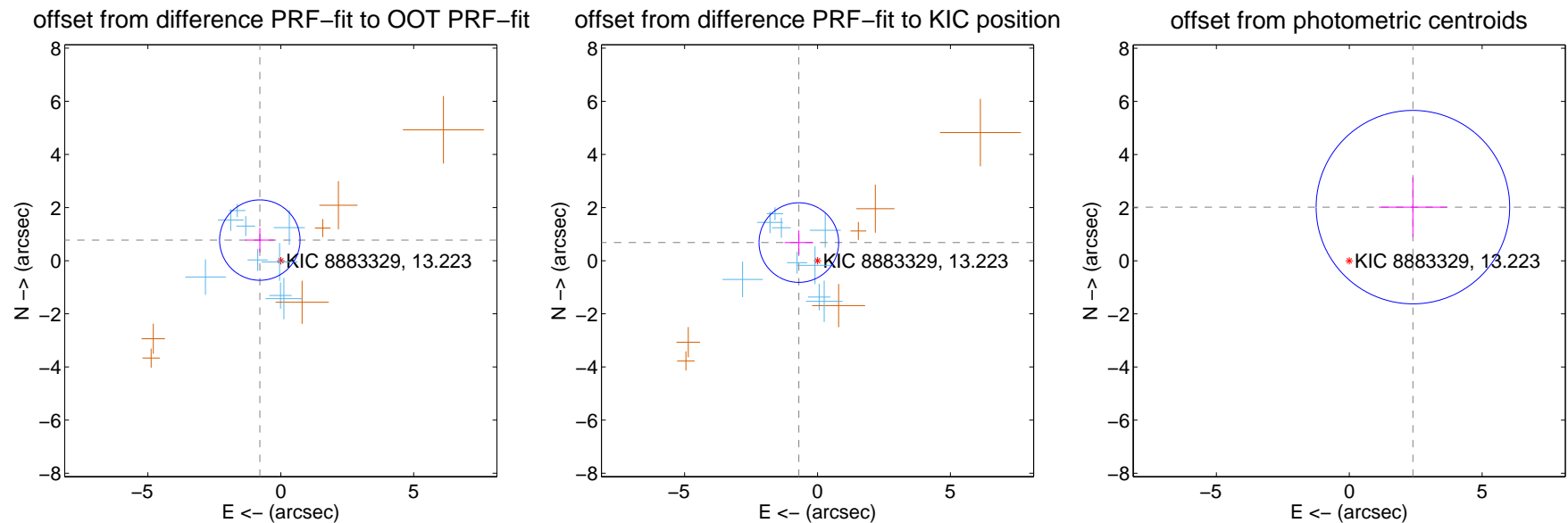
DV Centroid Data

Supplemental centroid analysis for 008883329-02. Kepler magnitude: 13.22. Transit SNR 12.32

There are 9 quarters with good PRF difference image offsets

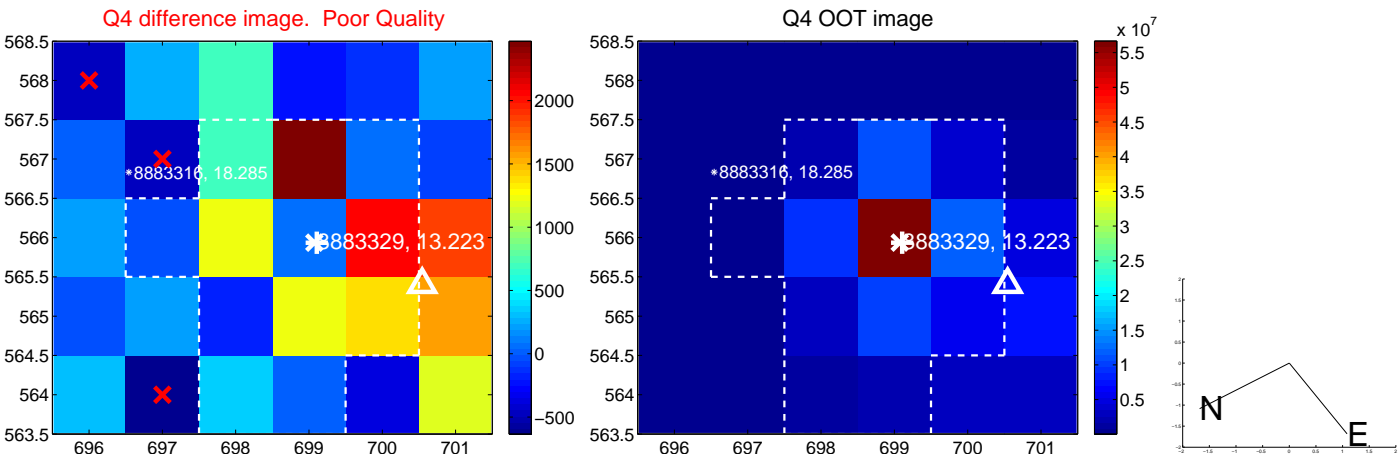
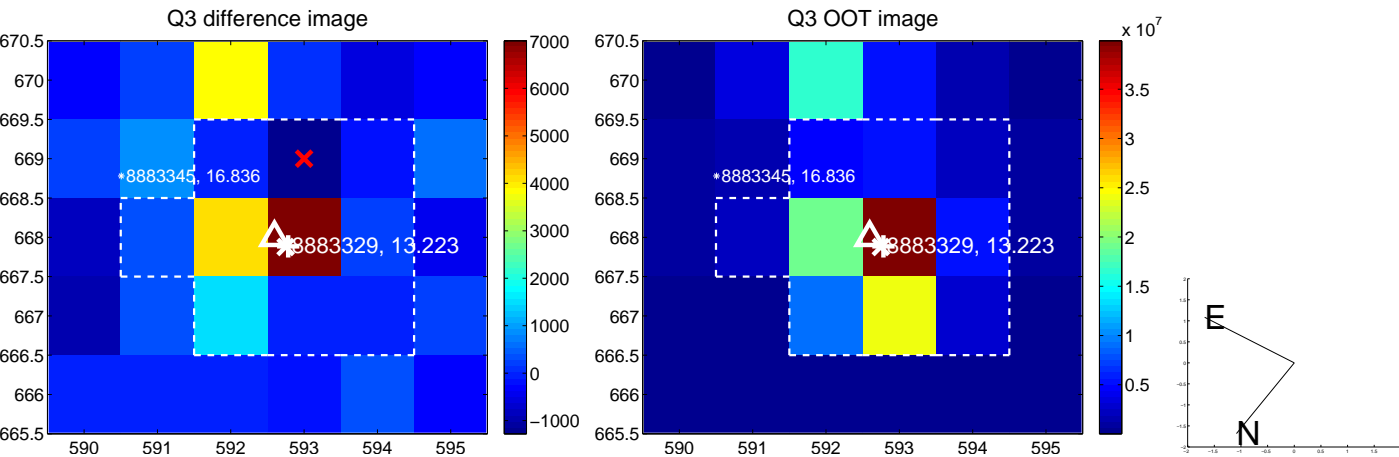
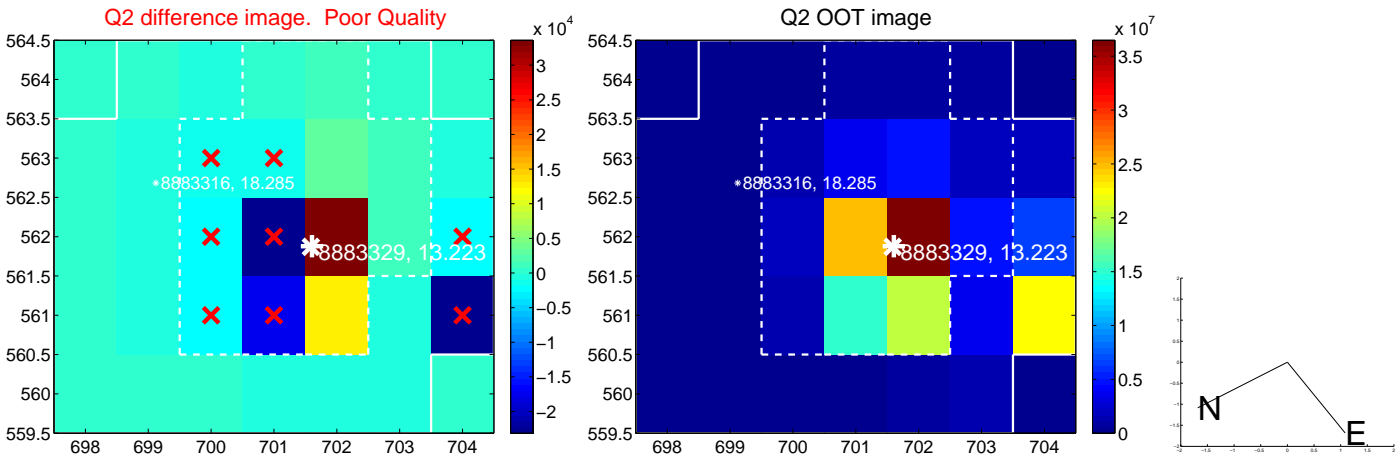
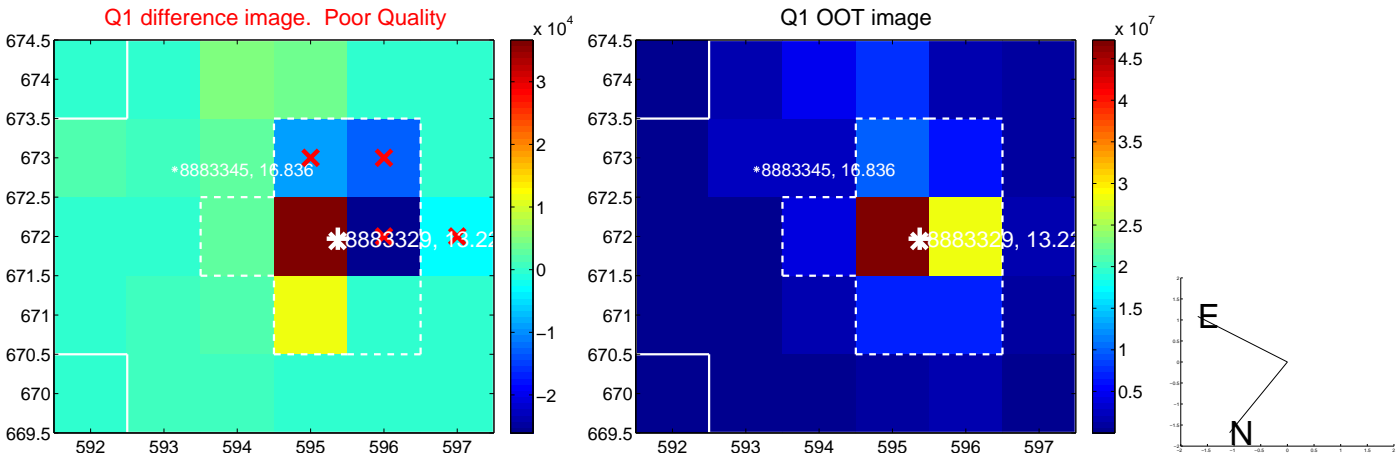
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.106 ± 0.504	2.19	0.788 ± 0.545	0.776 ± 0.459
PRF-fit source offset from KIC position	0.979 ± 0.499	1.96	0.702 ± 0.536	0.682 ± 0.457
photometric centroid source offset	3.13 ± 1.21	2.58	-2.40 ± 1.28	2.02 ± 1.11

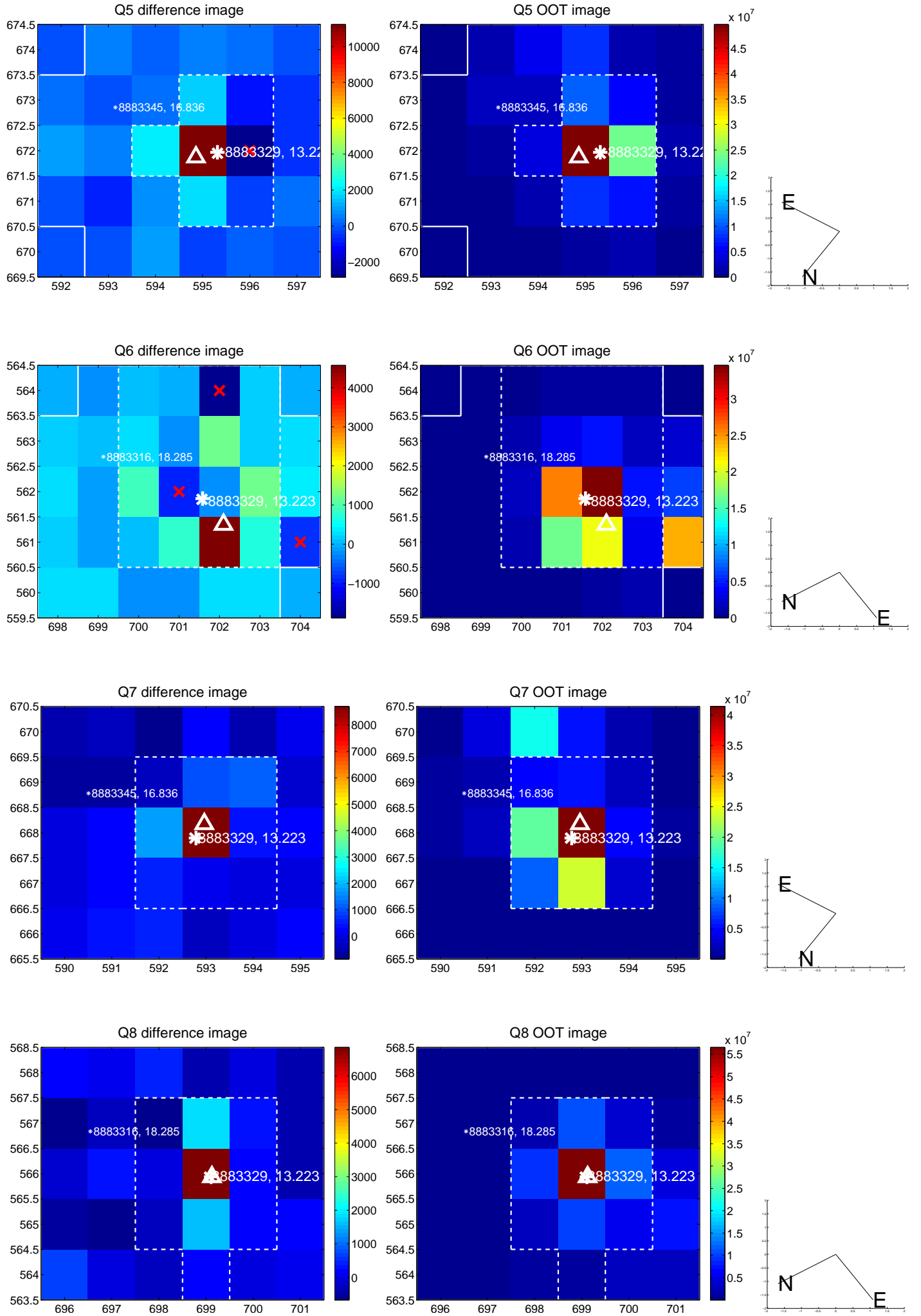


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

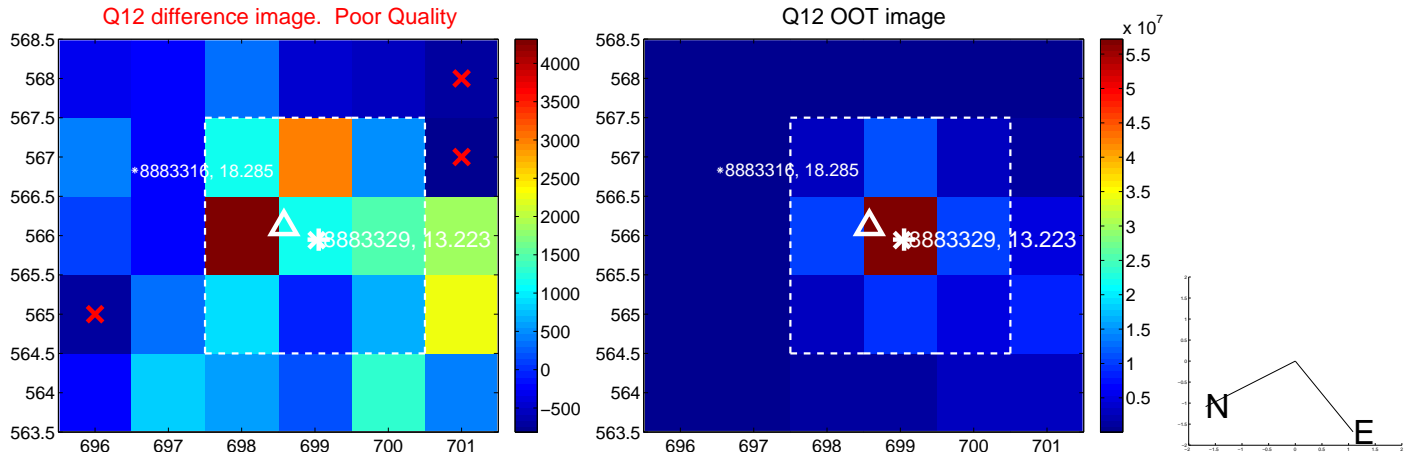
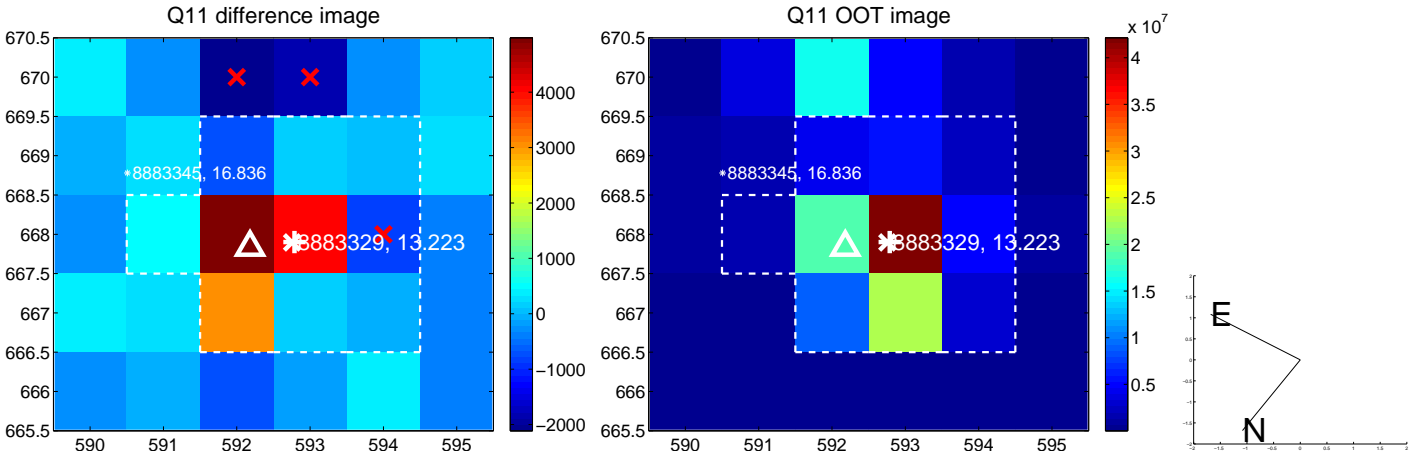
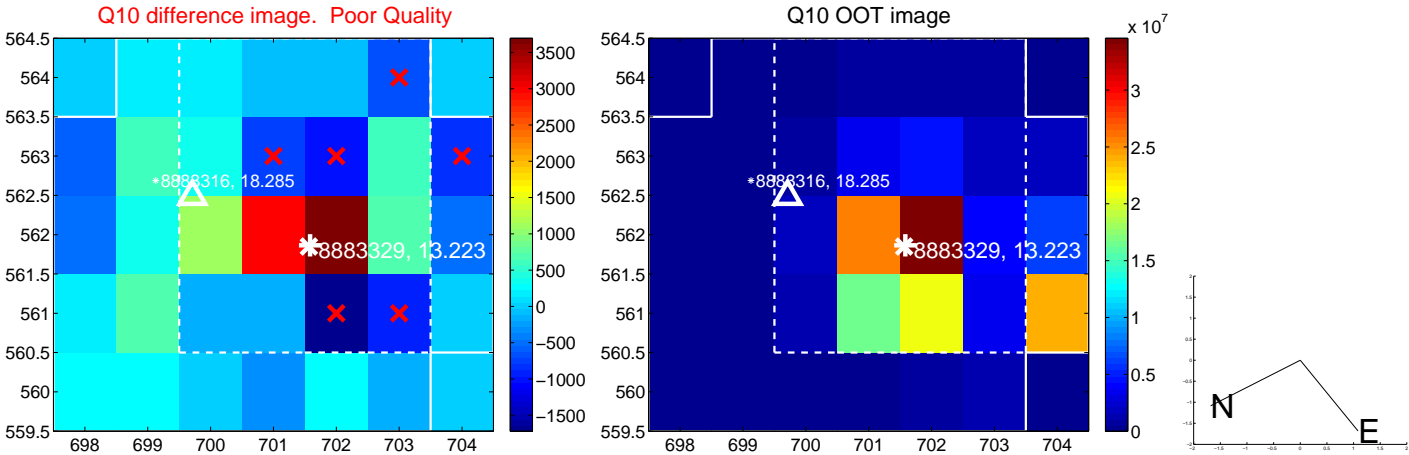
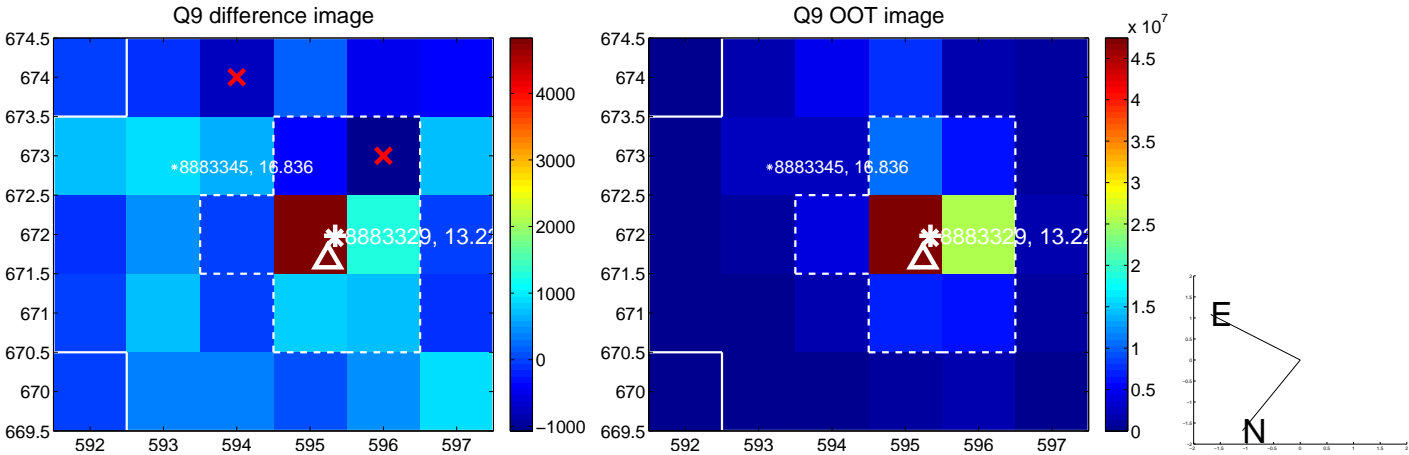
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



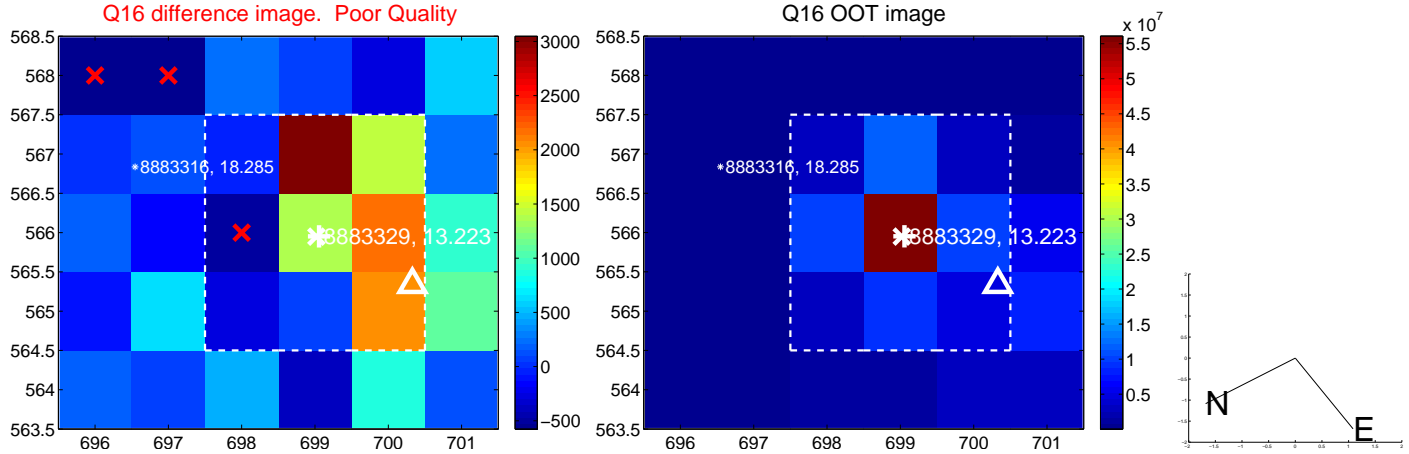
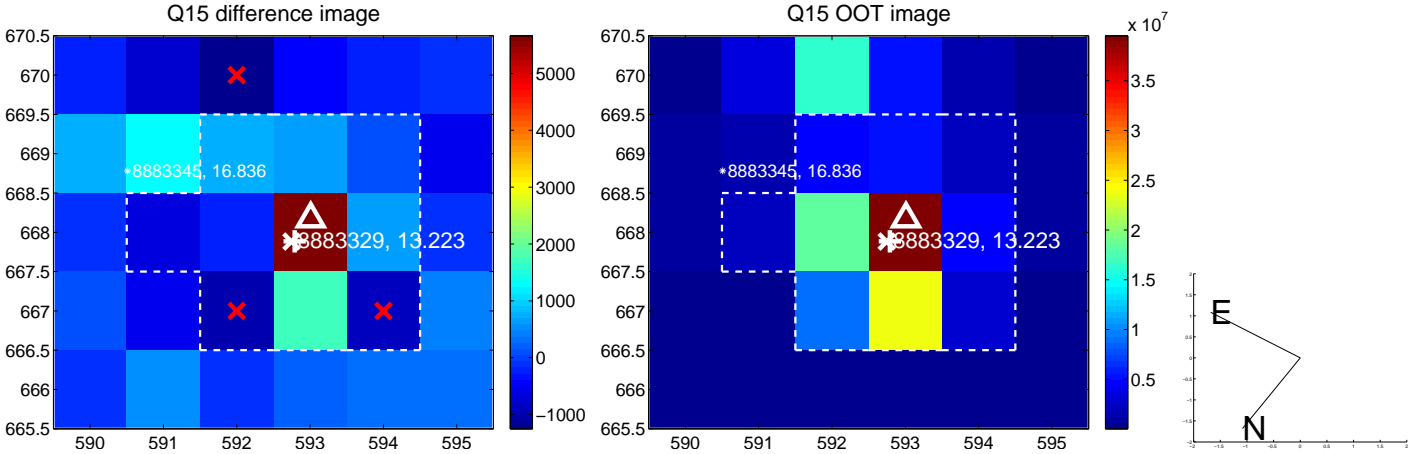
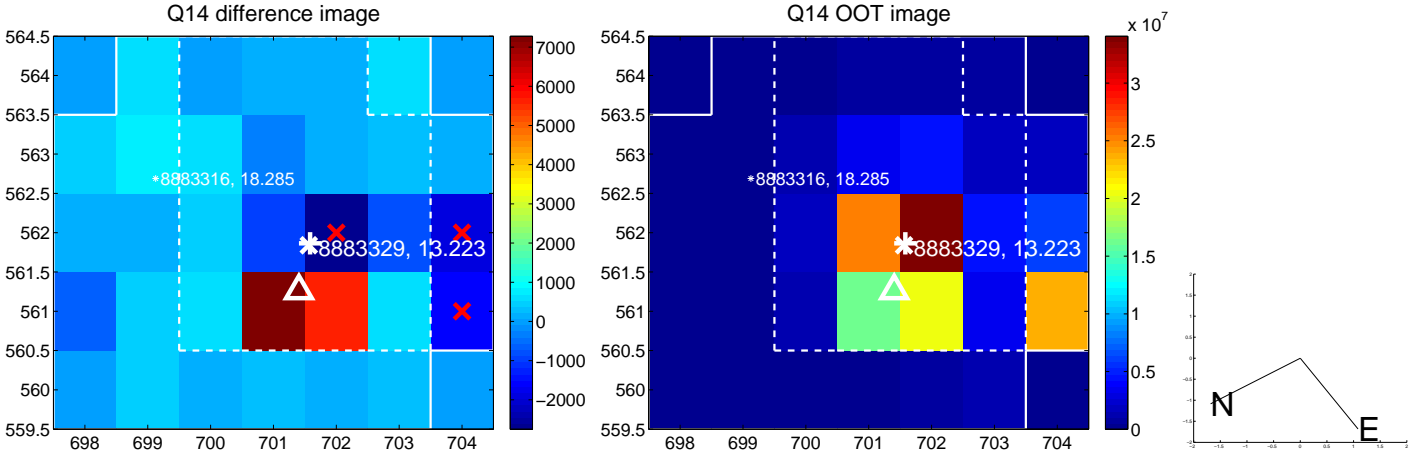
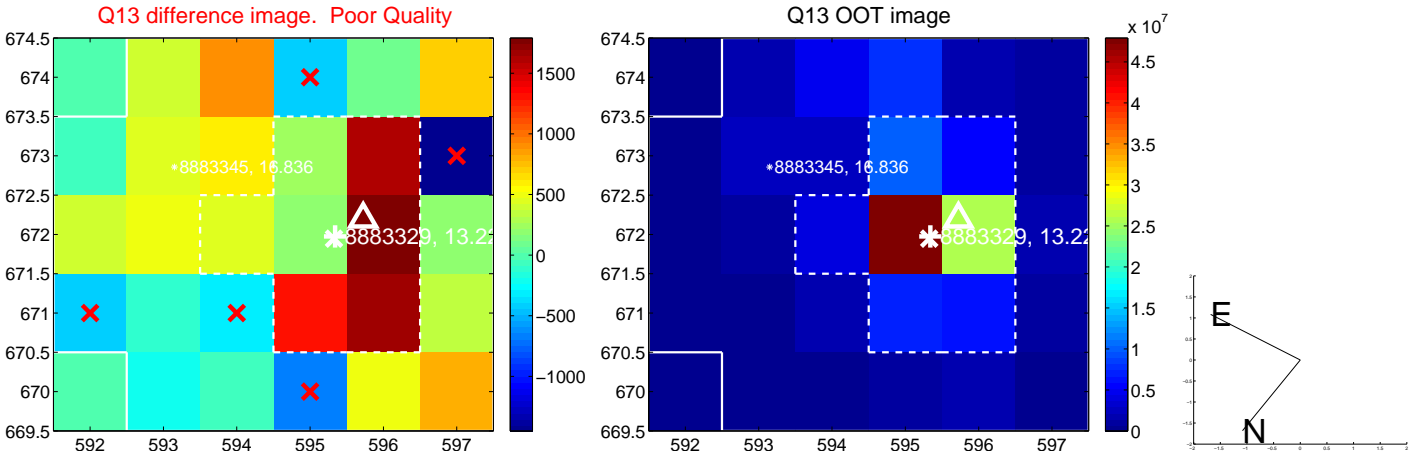
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



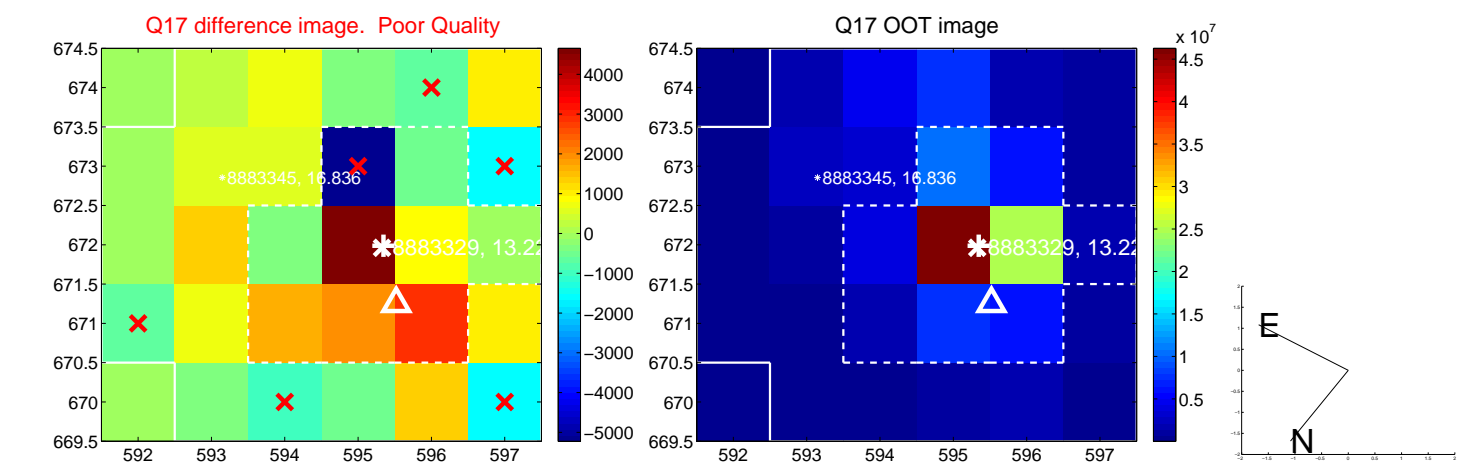
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



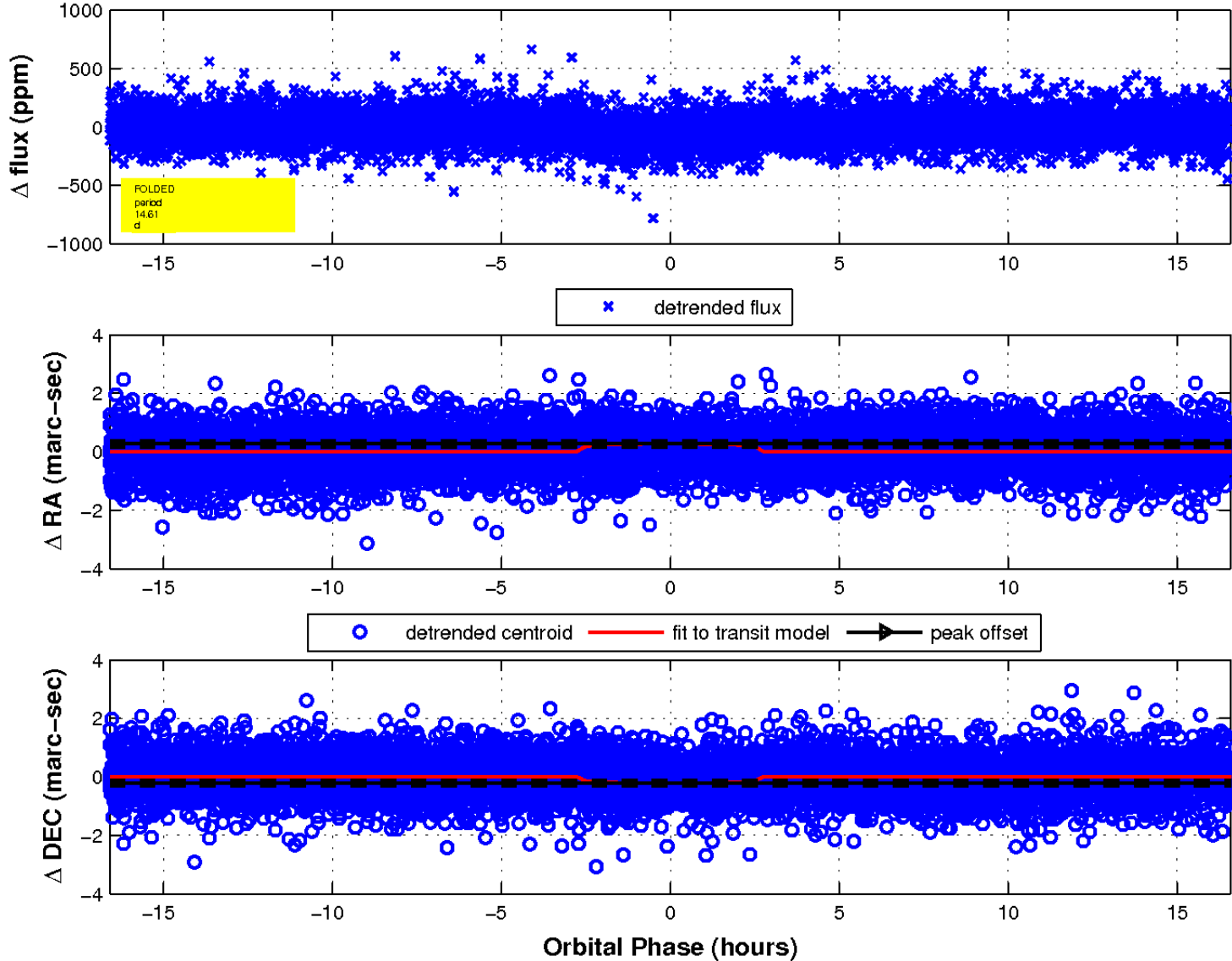
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

