

KIC 003330688

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})
003330688-01	OBS	No	403.118654	373.532587	669.2	16.018	12.4	9.2	4.02	6378	10.64	14.38
003330688-02	OBS	No	1.972058	132.115322	13.0	14.009	8.6	6.3	4.02	6378	1.50	17317.49
003330688-03	OBS	No	60.967300	169.249170	528.4	4.849	17.7	9.6	4.02	6378	9.93	178.48
003330688-04	OBS	No	41.494574	152.899803	877.2	1.009	20.8	9.5	4.02	6378	13.09	298.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003330688-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED
003330688-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
003330688-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003330688-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

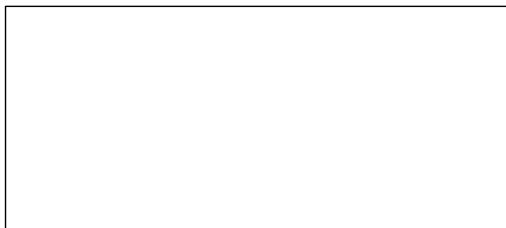
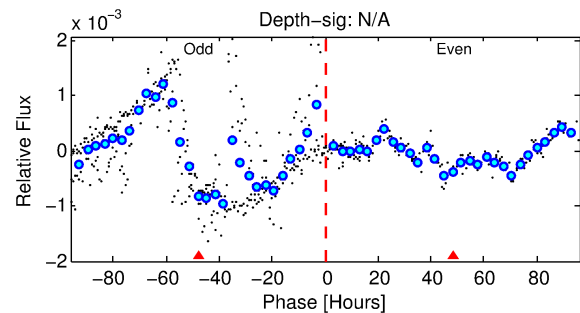
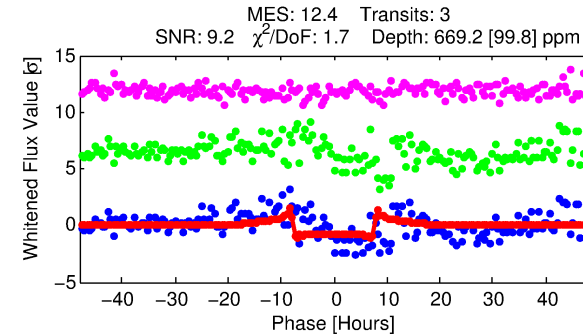
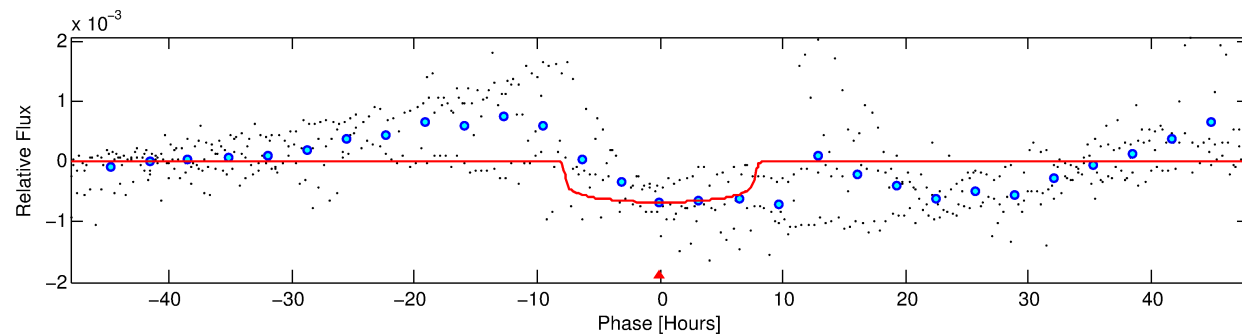
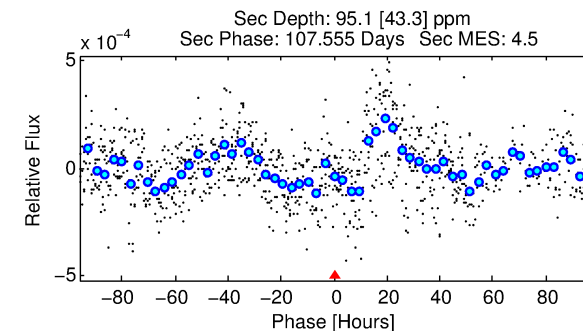
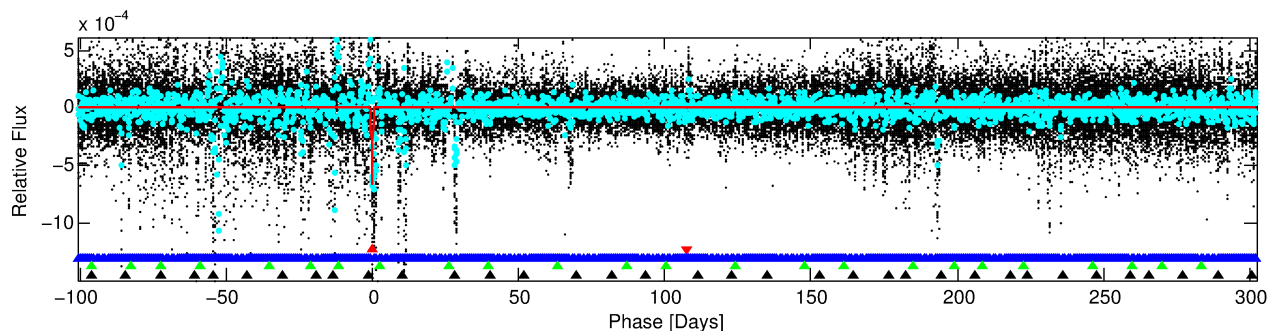
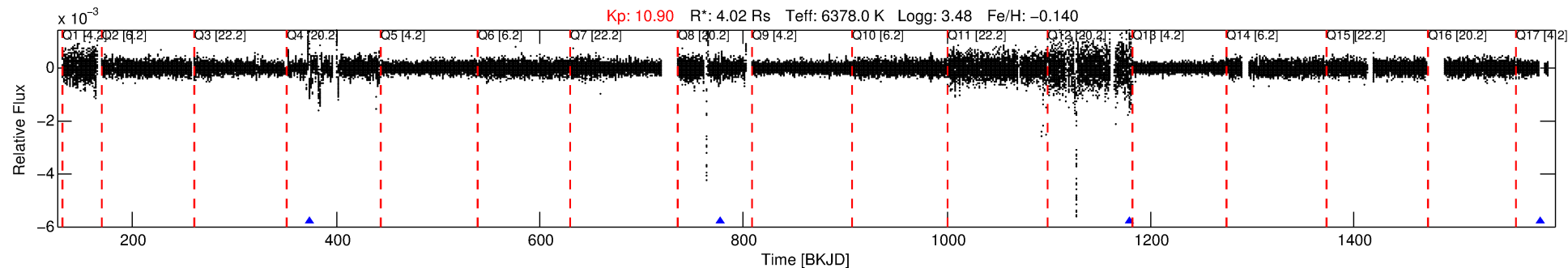
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003330688-01

No Significant Match Found

DV One-Page Summary

KIC: 3330688 Candidate: 1 of 4 Period: 403.119 d



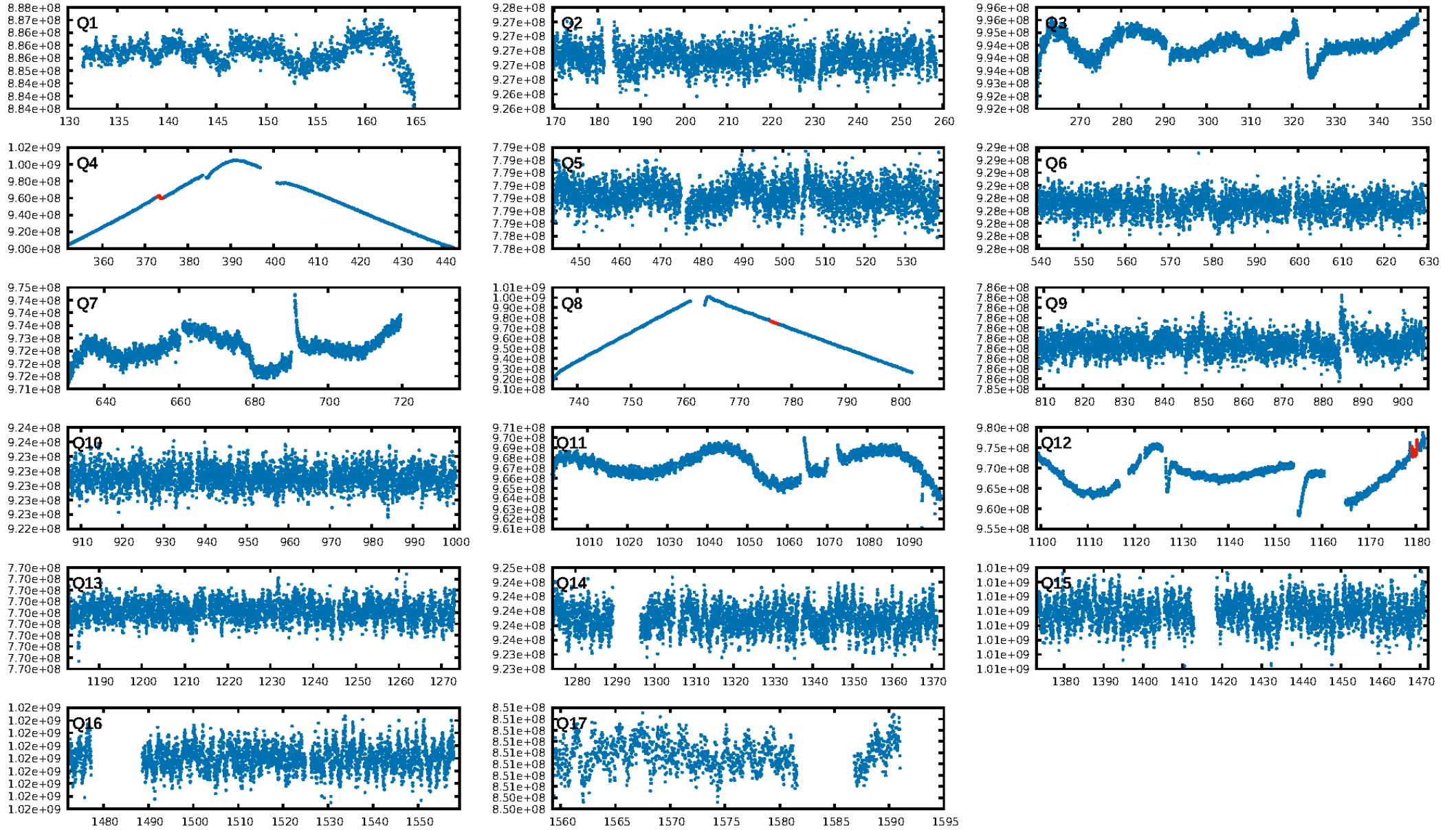
DV Fit Results:

Period = 403.11865 [0.00785] d
Epoch = 373.5326 [0.0074] BKJD
Rp/R* = 0.0243 [0.0052]
a/R* = 178.41 [173.55]
b = 0.43 [1.82]
Seff = 14.38 [9.80]
Teq = 497 [85] K
Rp = 10.64 [5.00] Re
a = 1.2904 [0.5342] AU
Ag = 769.46 [706.53] [1.09σ]
Teffp = 4044 [641] K [5.49σ]

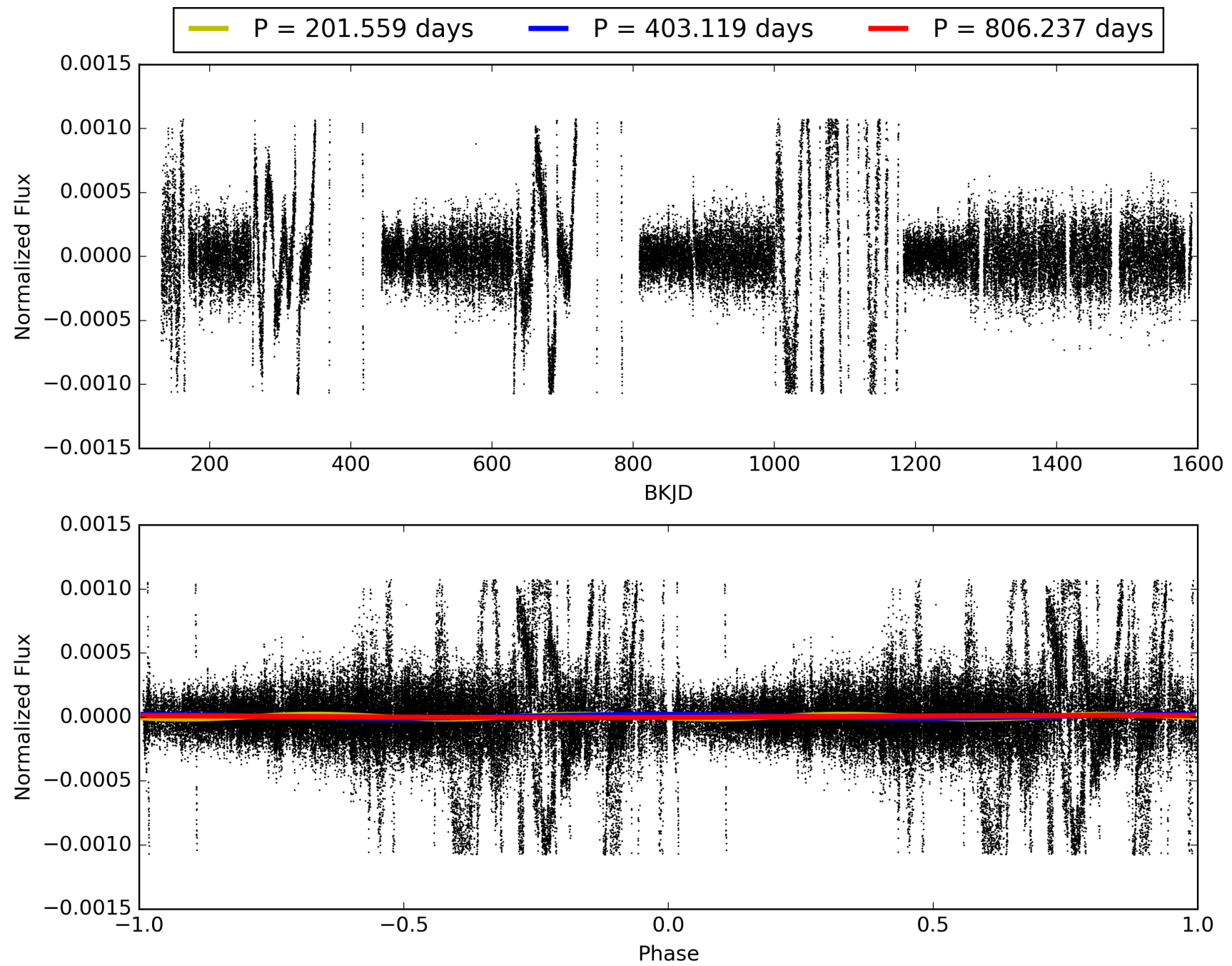
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [490.66σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.3055
Centroid-sig: 6.6%
Centroid-so: 1.419 arcsec [1.46σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 0.00 [0/1]

TCE 003330688-01, PDC Light Curves

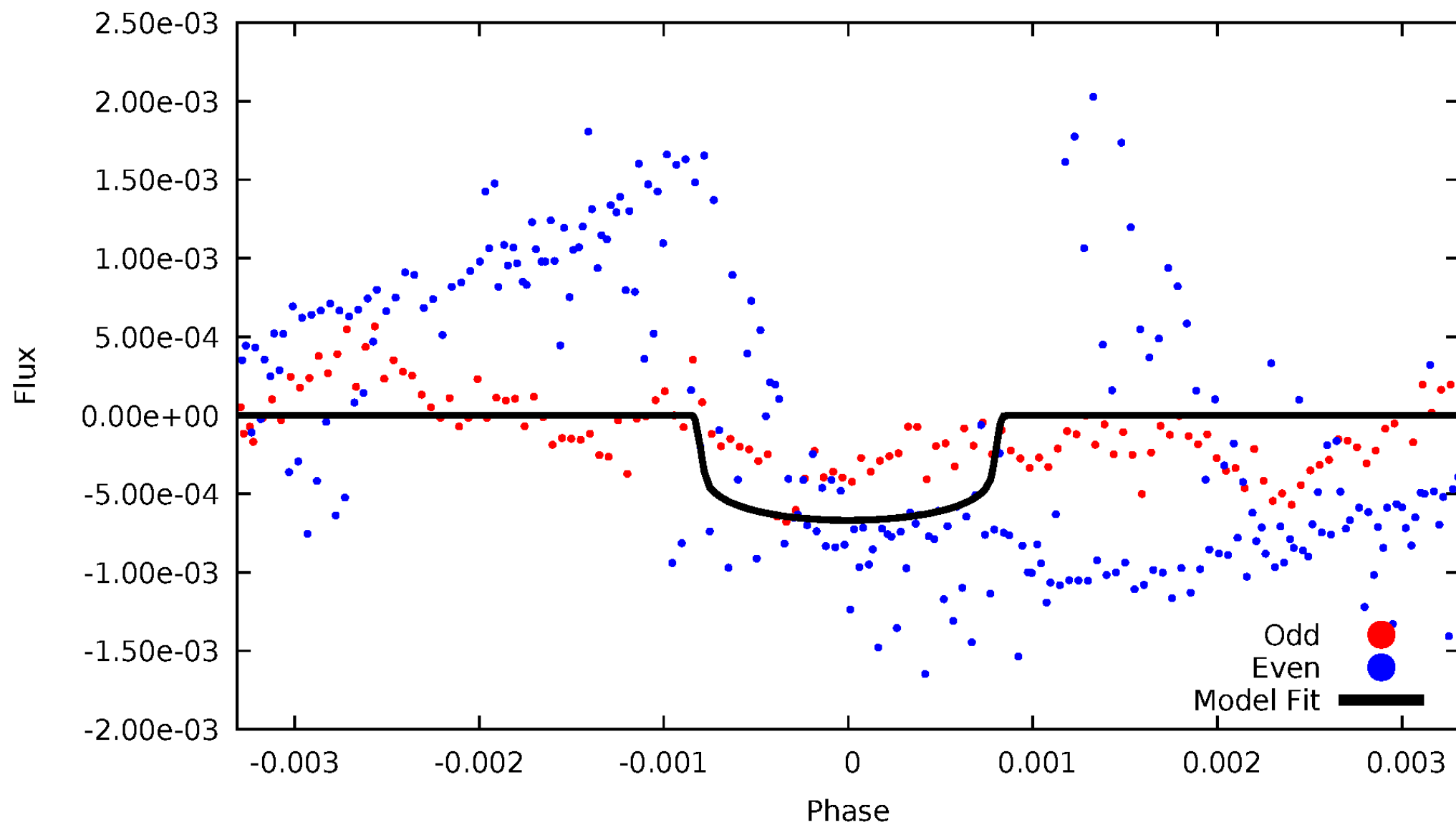


TCE 003330688-01



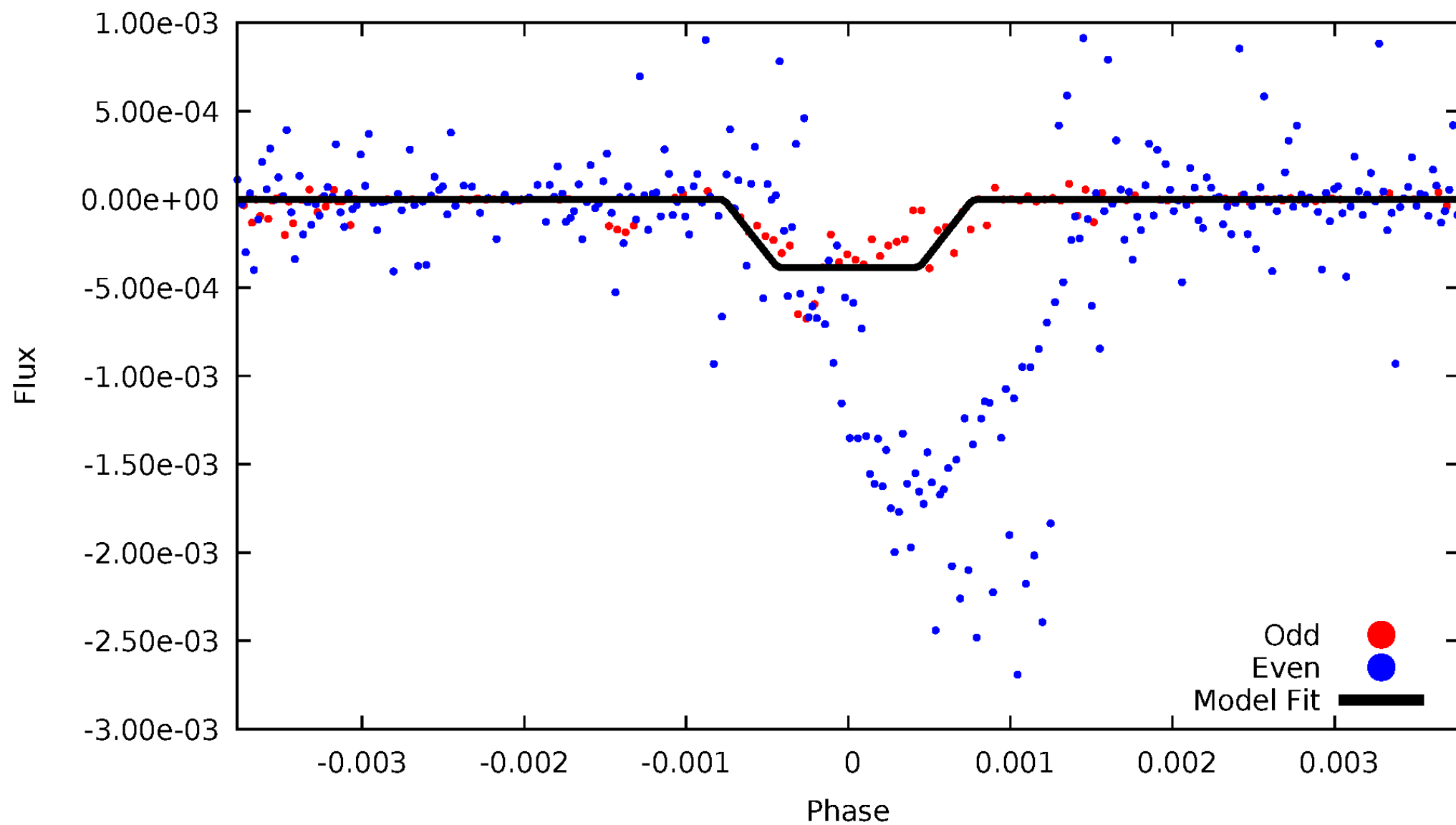
DV Odd/Even

TCE 003330688-01



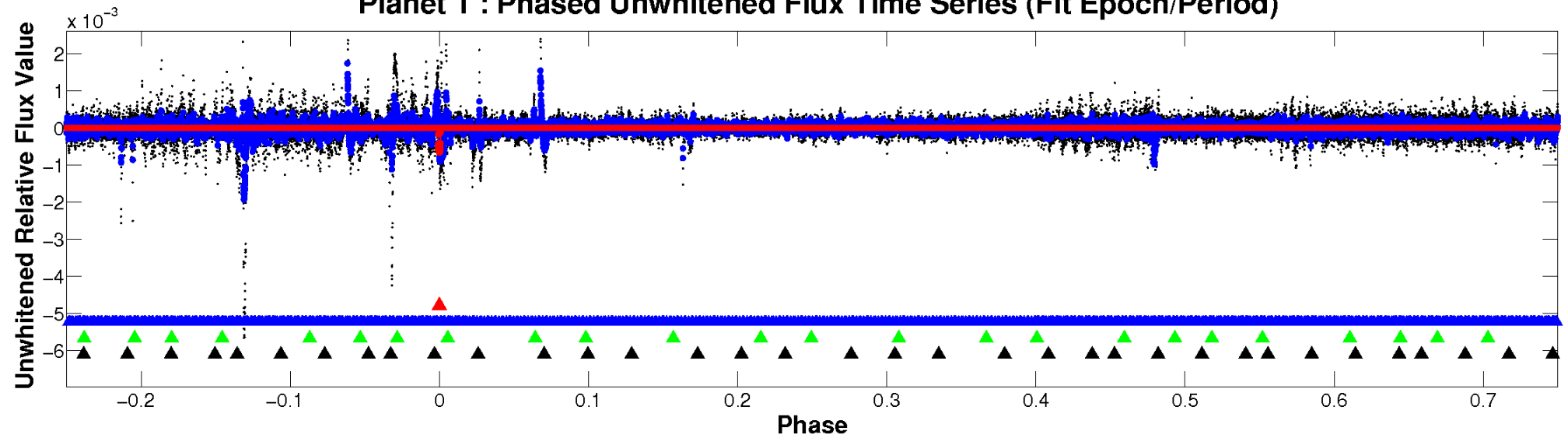
ALT Odd/Even

TCE 003330688-01

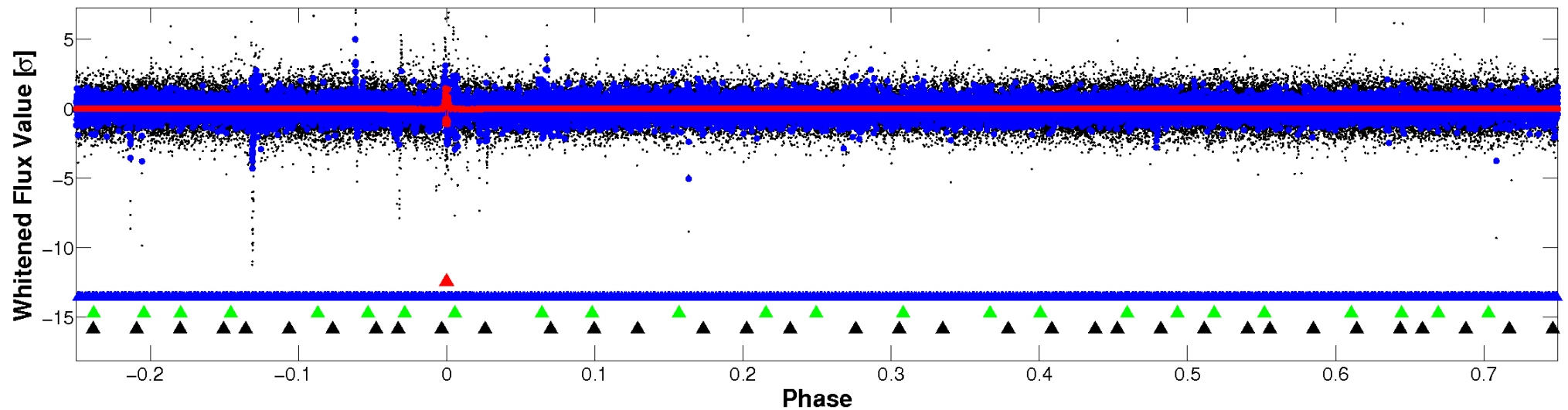


Non-Whitened Vs. Whitened Light Curve

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

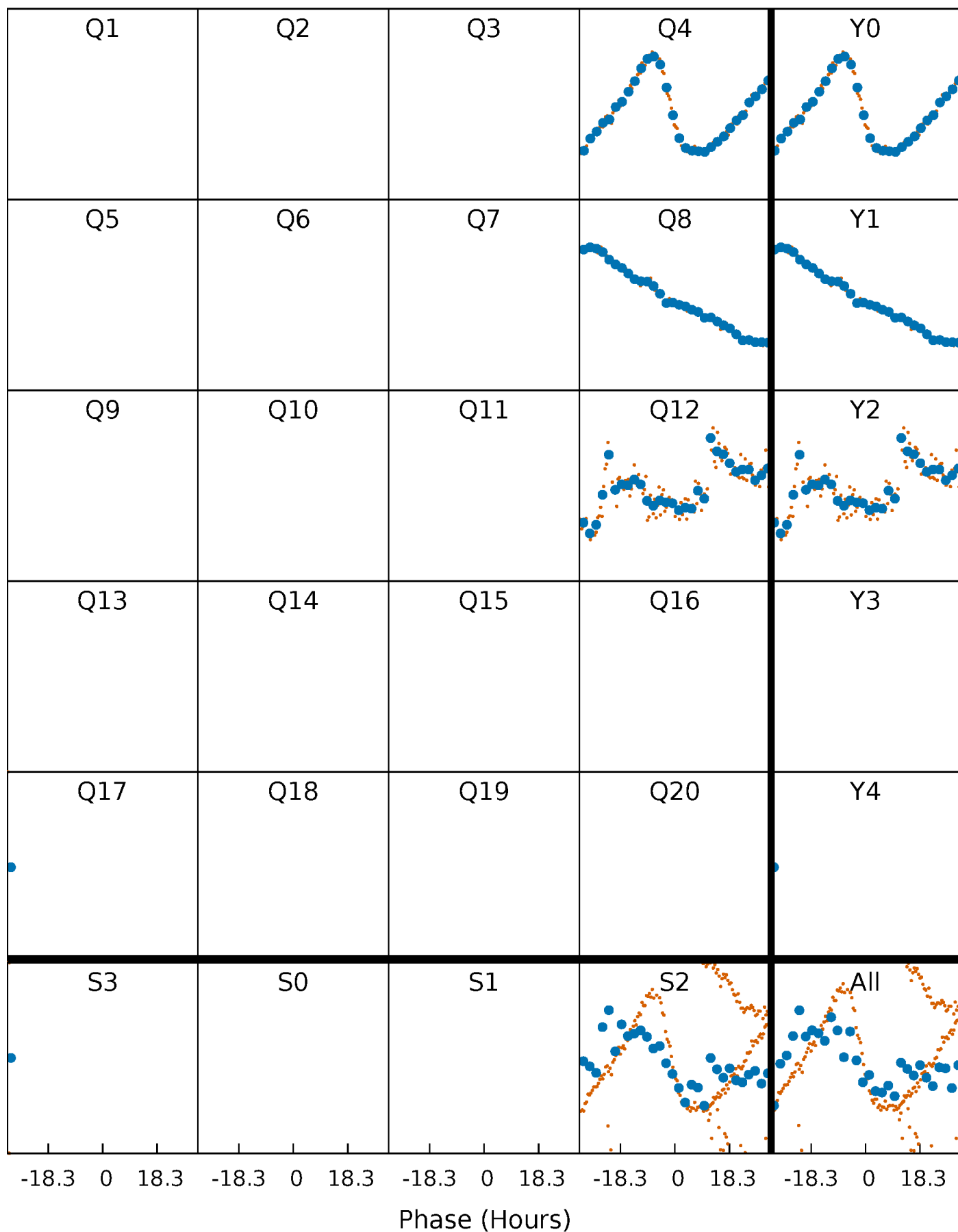


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



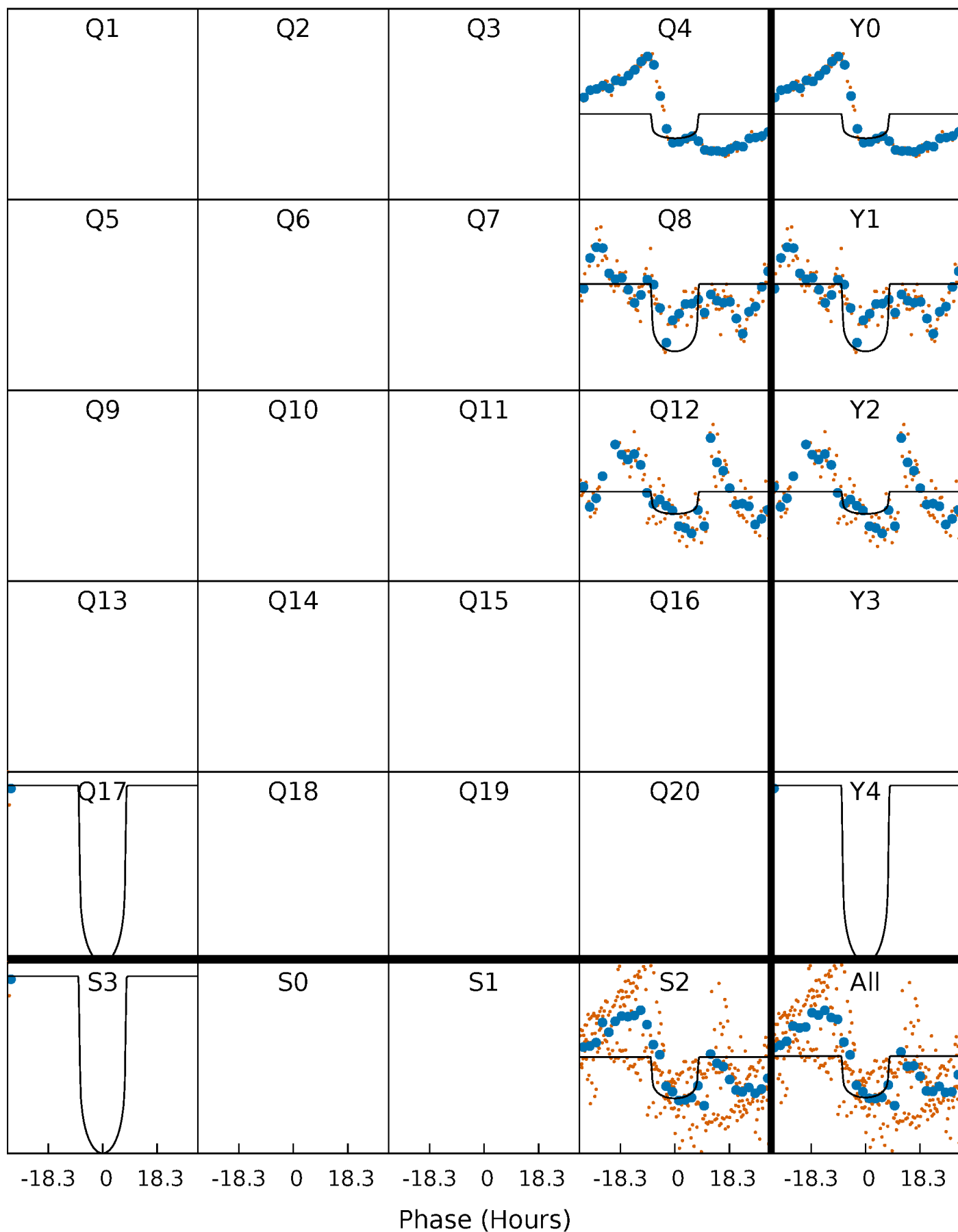
PDC Quarter-Phased Transit Curves

TCE 003330688-01 P=403.118654 Days $T_0=373.532587$ (BKJD)



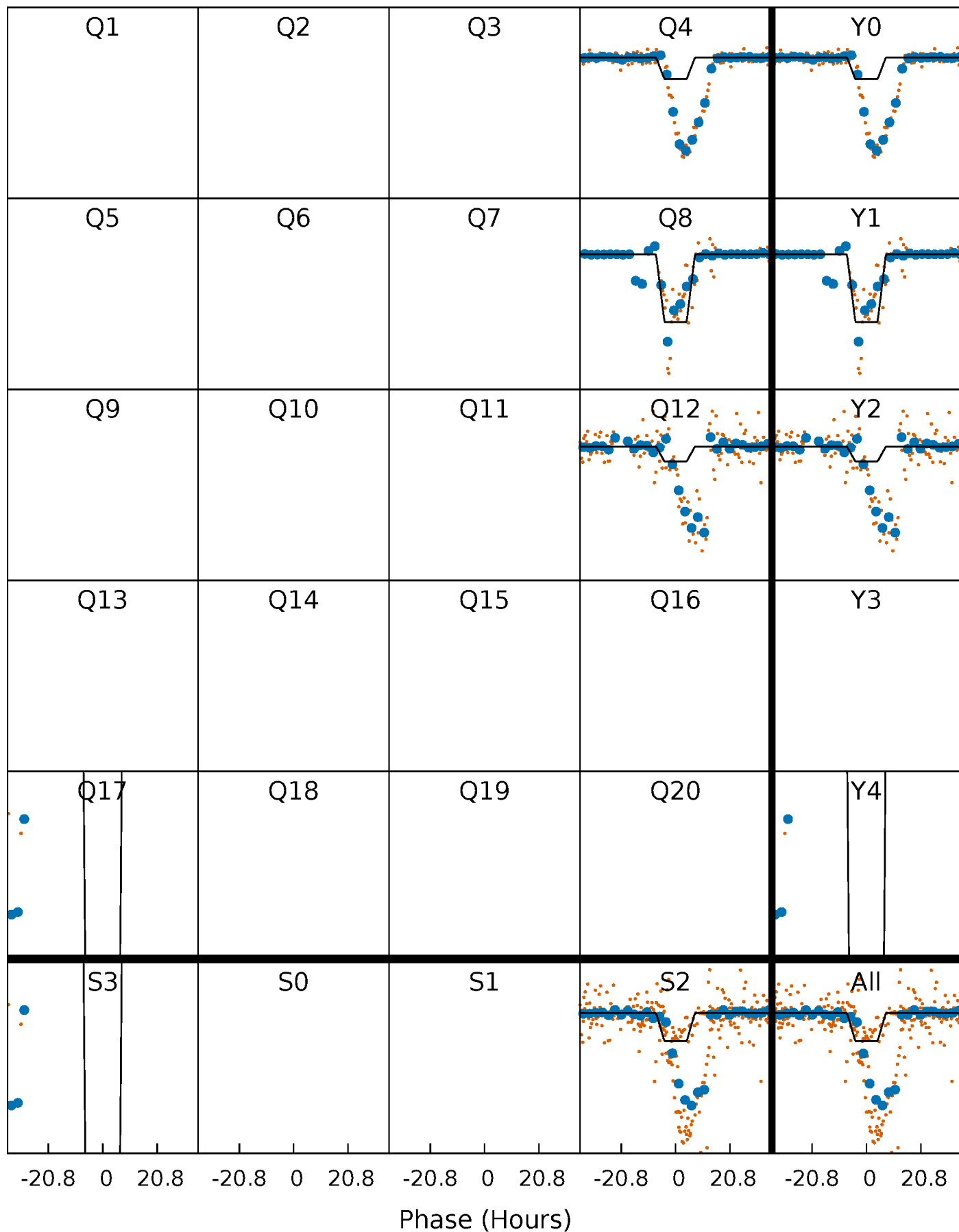
DV Quarter-Phased Transit Curves

TCE 003330688-01 $P=403.118654$ Days $T_0=373.532587$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

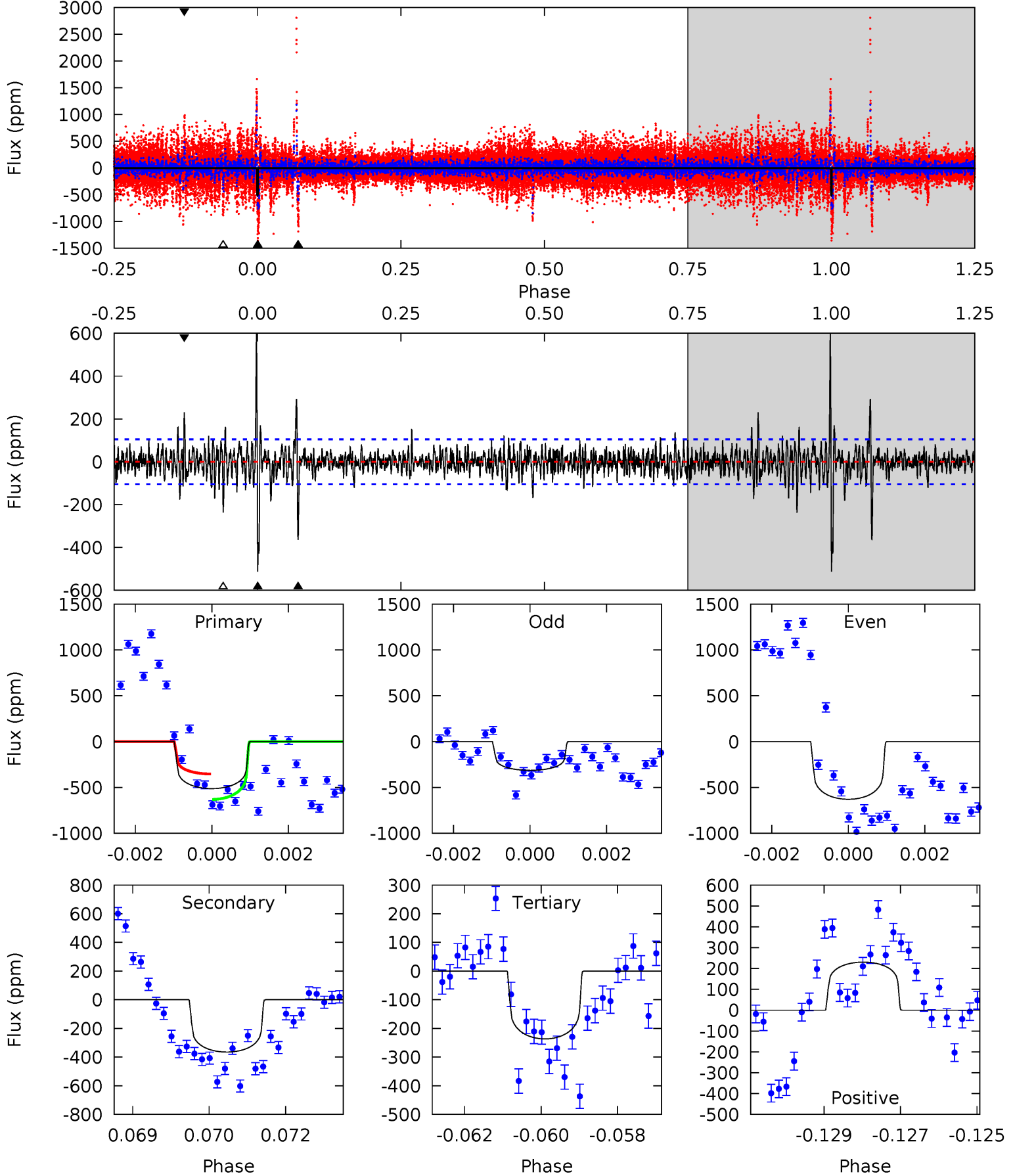
TCE 003330688-01 P=403.099649 Days $T_0=373.521022$ (BKJD)



DV Model-Shift Uniqueness Test

003330688-01, P = 403.118654 Days, E = 373.532587 Days

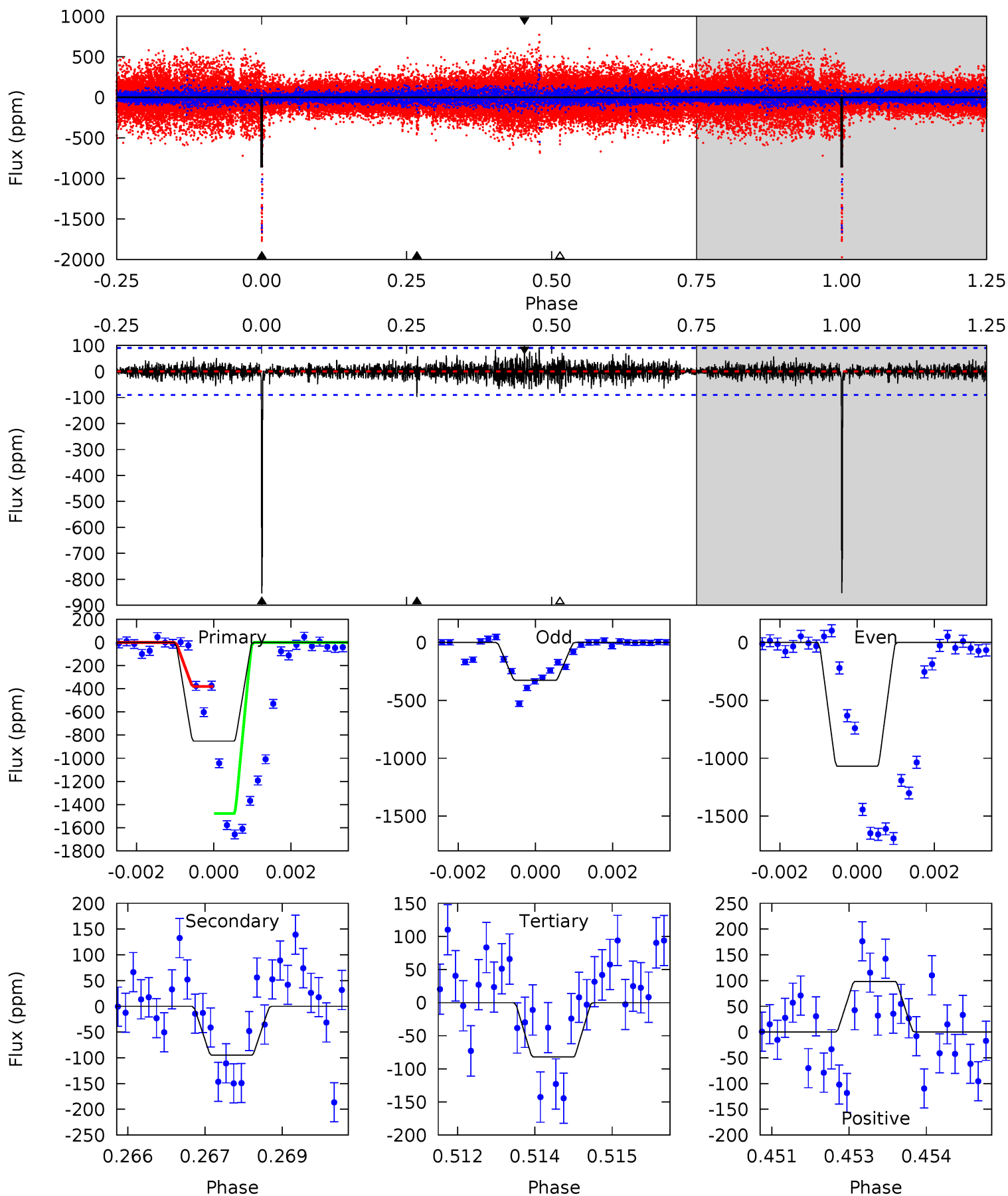
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.3	18.7	12.1	11.8	5.35	3.14	2.55	14.1	14.5	6.57	6.88	7.60	1.20	0.54	7.08



Alt Model-Shift Uniqueness Test

003330688-01, P = 403.099649 Days, E = 373.521022 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
50.6	5.63	4.87	5.83	5.37	3.16	1.10	45.7	44.8	0.76	-0.20	24.4	0.88	0.10	33.4



Stellar Parameters For KIC 003330688

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6378^{+173}_{-154}	$3.476^{+0.399}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.019^{+0.560}_{-1.679}$	$1.764^{+0.173}_{-0.433}$	$0.038^{+0.127}_{-0.011}$
	+3%/-2%	+11%/-3%	+250%/-214%	+14%/-42%	+10%/-25%	+332%/-29%
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 003330688-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-365 ± 20	$9.87^{+2.92}_{-2.84}$	684^{+40}_{-77}	5684^{+741}_{-483}	3451^{+3061}_{-1349}
Alt.	-95 ± 17	$8.01^{+2.80}_{-2.48}$	684^{+40}_{-64}	4603^{+644}_{-415}	1289^{+1382}_{-587}

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 $A_{obs} \gg 1.0$

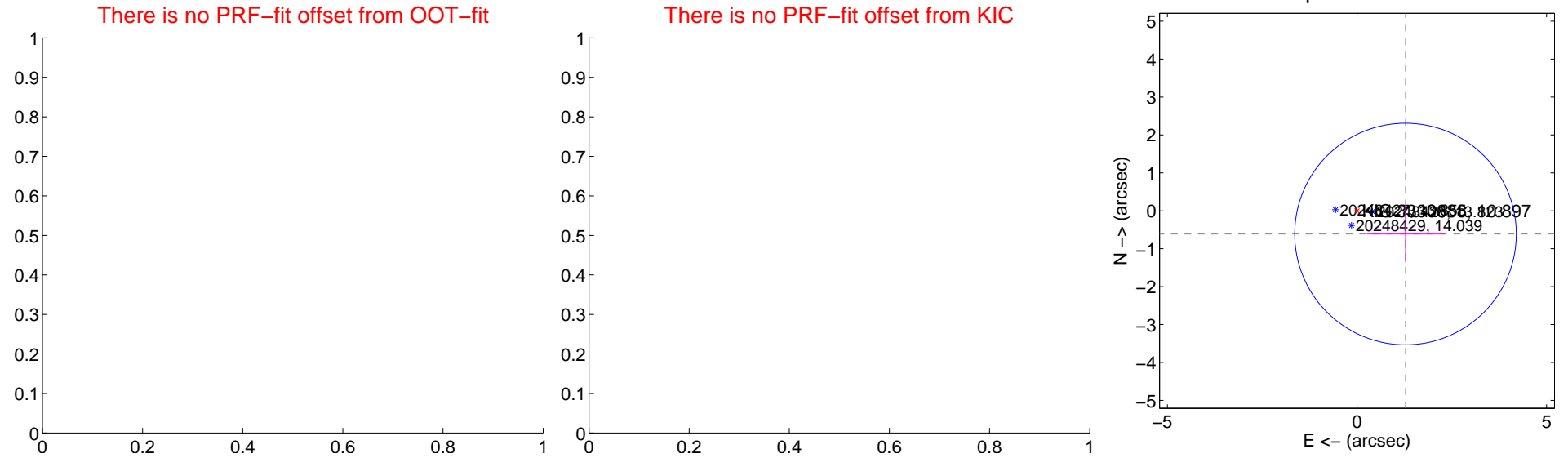
DV Centroid Data

Supplemental centroid analysis for 003330688-01. **Kepler magnitude: 10.90.** Transit SNR 9.17

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	1.42 ± 0.97	1.46	-1.28 ± 1.02	-0.61 ± 0.75



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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



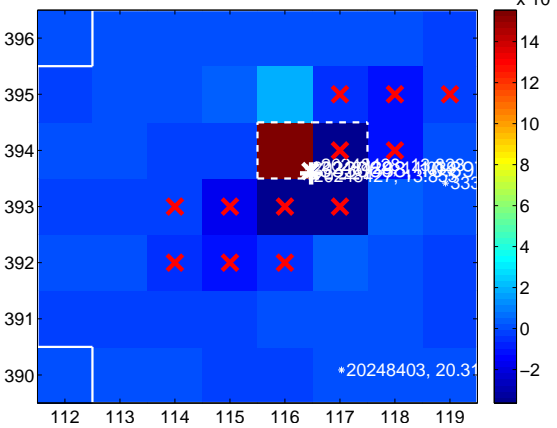
Q7 no difference image



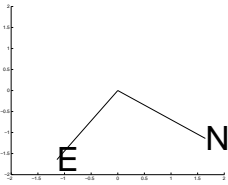
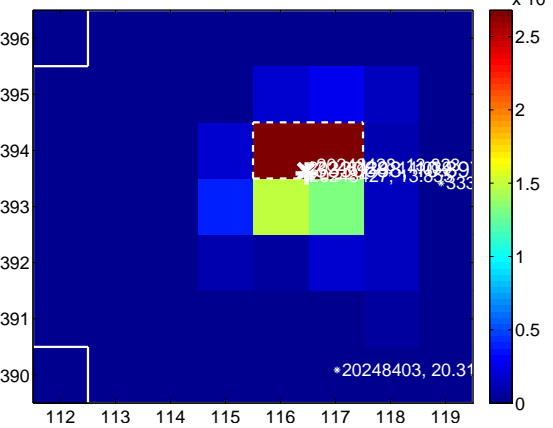
Q7 no OOT image



Q8 difference image. Poor Quality



Q8 OOT image



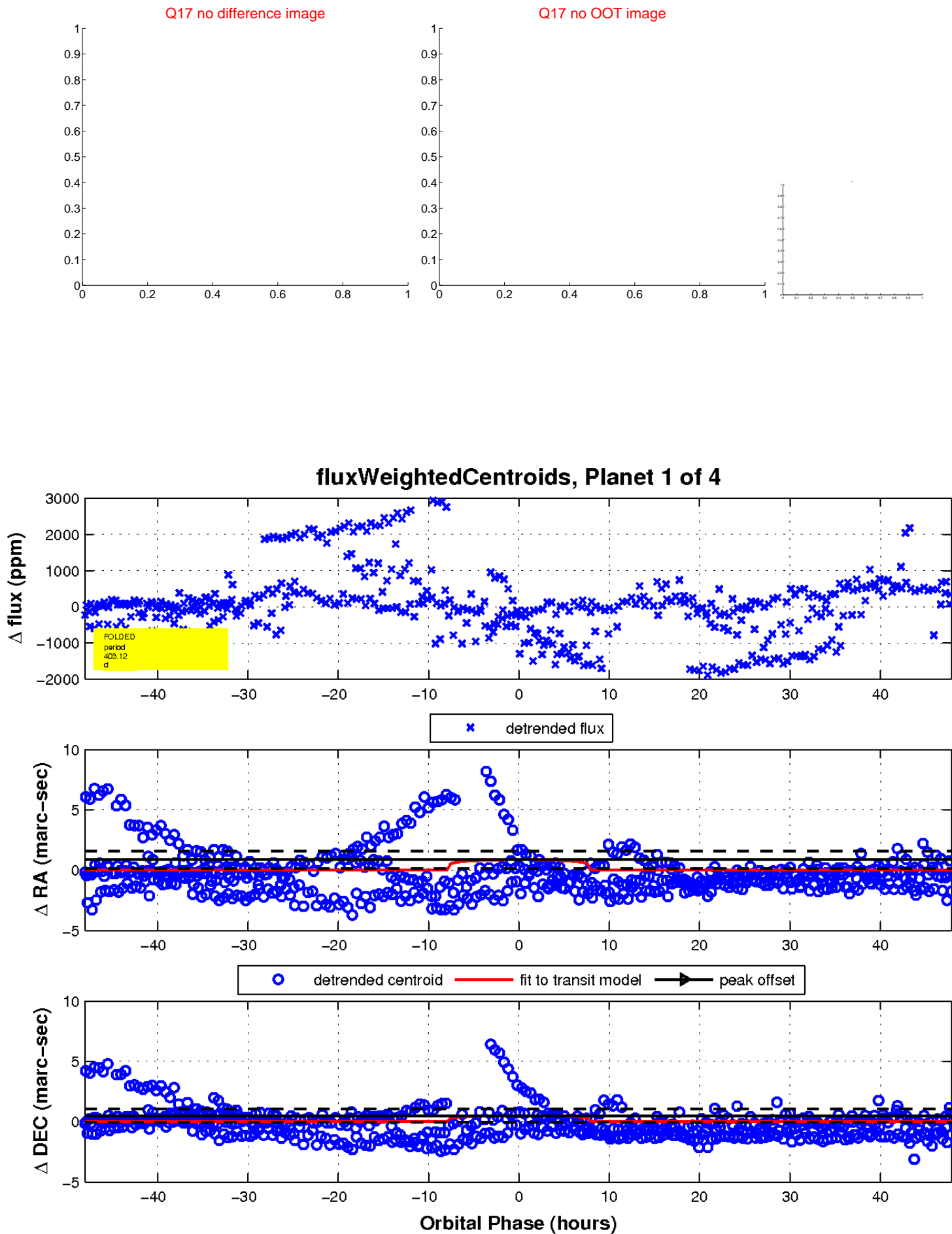
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



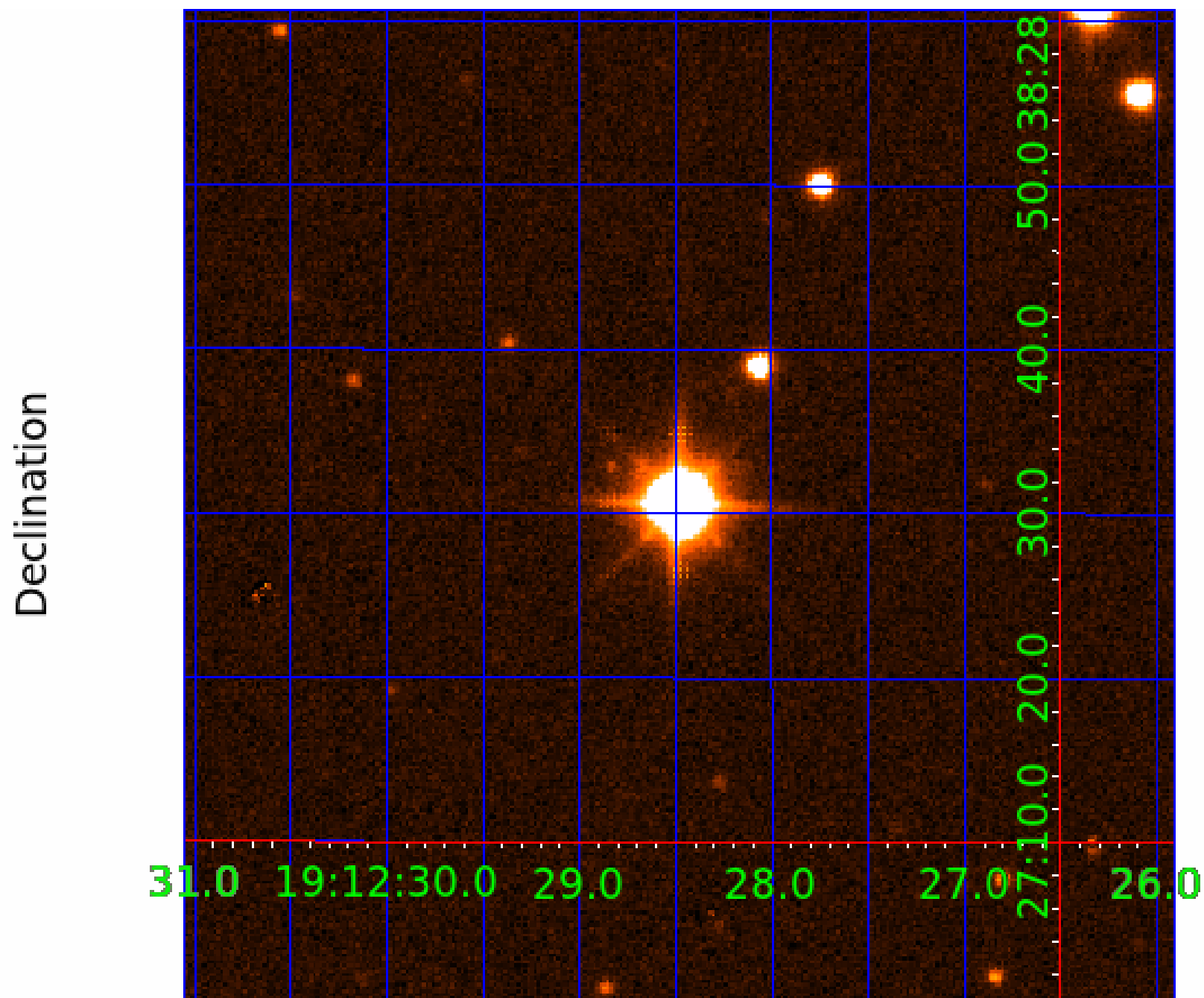
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 003330688

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})
003330688-01	OBS	No	403.118654	373.532587	669.2	16.018	12.4	9.2	4.02	6378	10.64	14.38
003330688-02	OBS	No	1.972058	132.115322	13.0	14.009	8.6	6.3	4.02	6378	1.50	17317.49
003330688-03	OBS	No	60.967300	169.249170	528.4	4.849	17.7	9.6	4.02	6378	9.93	178.48
003330688-04	OBS	No	41.494574	152.899803	877.2	1.009	20.8	9.5	4.02	6378	13.09	298.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003330688-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED
003330688-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
003330688-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003330688-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

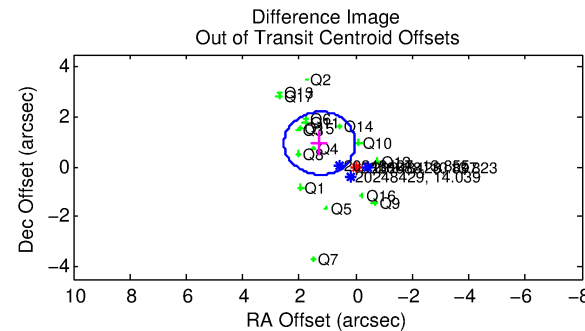
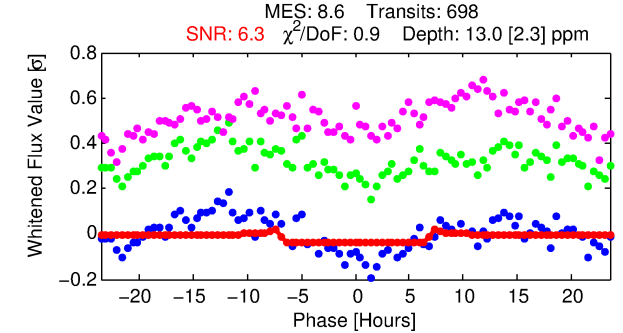
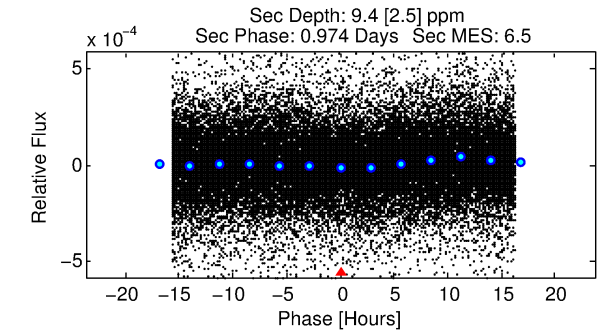
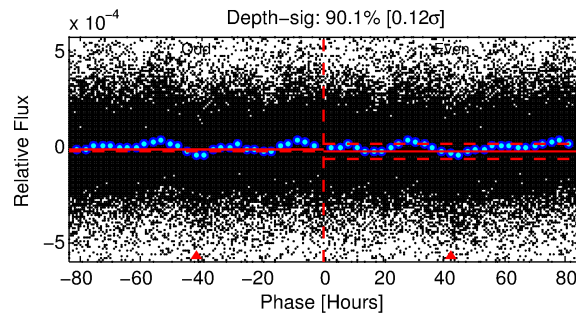
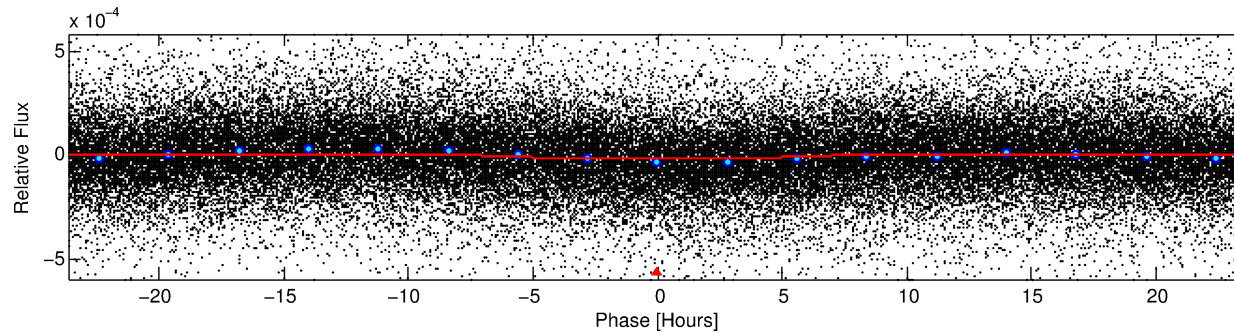
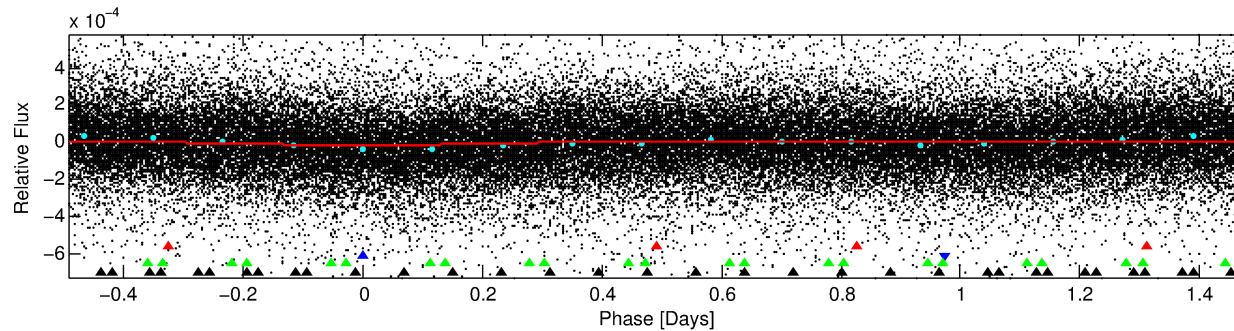
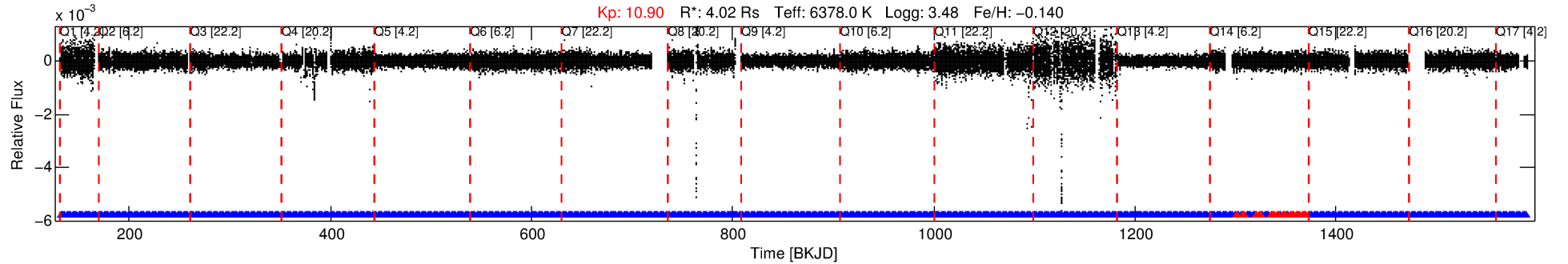
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003330688-02

No Significant Match Found

DV One-Page Summary

KIC: 3330688 Candidate: 2 of 4 Period: 1.972 d



DV Fit Results:

Period = 1.97206 [0.00004] d
Epoch = 132.1153 [0.0093] BKJD
Rp/R* = 0.0034 [0.0027]
a/R* = 1.19 [1.48]
b = 0.51 [6.11]
Seff = 17317.49 [11802.36]
Teq = 2925 [498] K
Rp = 1.50 [1.33] Re
a = 0.0372 [0.0154] AU
Ag = 3.19 [5.49] [0.40 σ]
Teffp = 6043 [2401] K [1.27 σ]

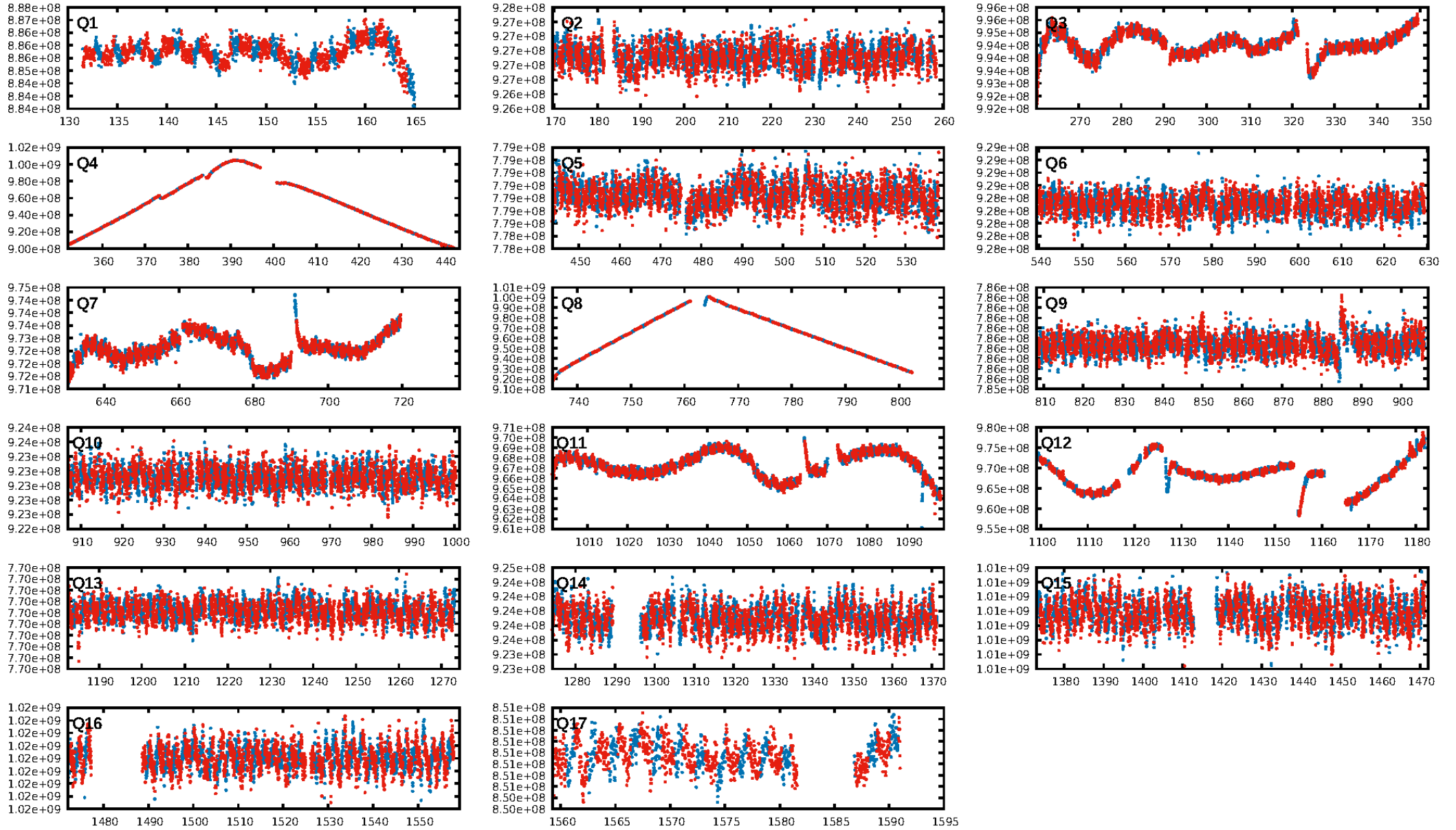
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [67.54 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.97 [644/667]
GhostDiagnostic-chr: 1.805
Centroid-sig: 65.3%
Centroid-so: 0.803 arcsec [0.61 σ]
OotOffset-rm: 1.583 arcsec [3.77 σ]
KicOffset-rm: 1.814 arcsec [4.01 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.71 [12/17]
DiffImageOverlap-fno: 1.00 [17/17]

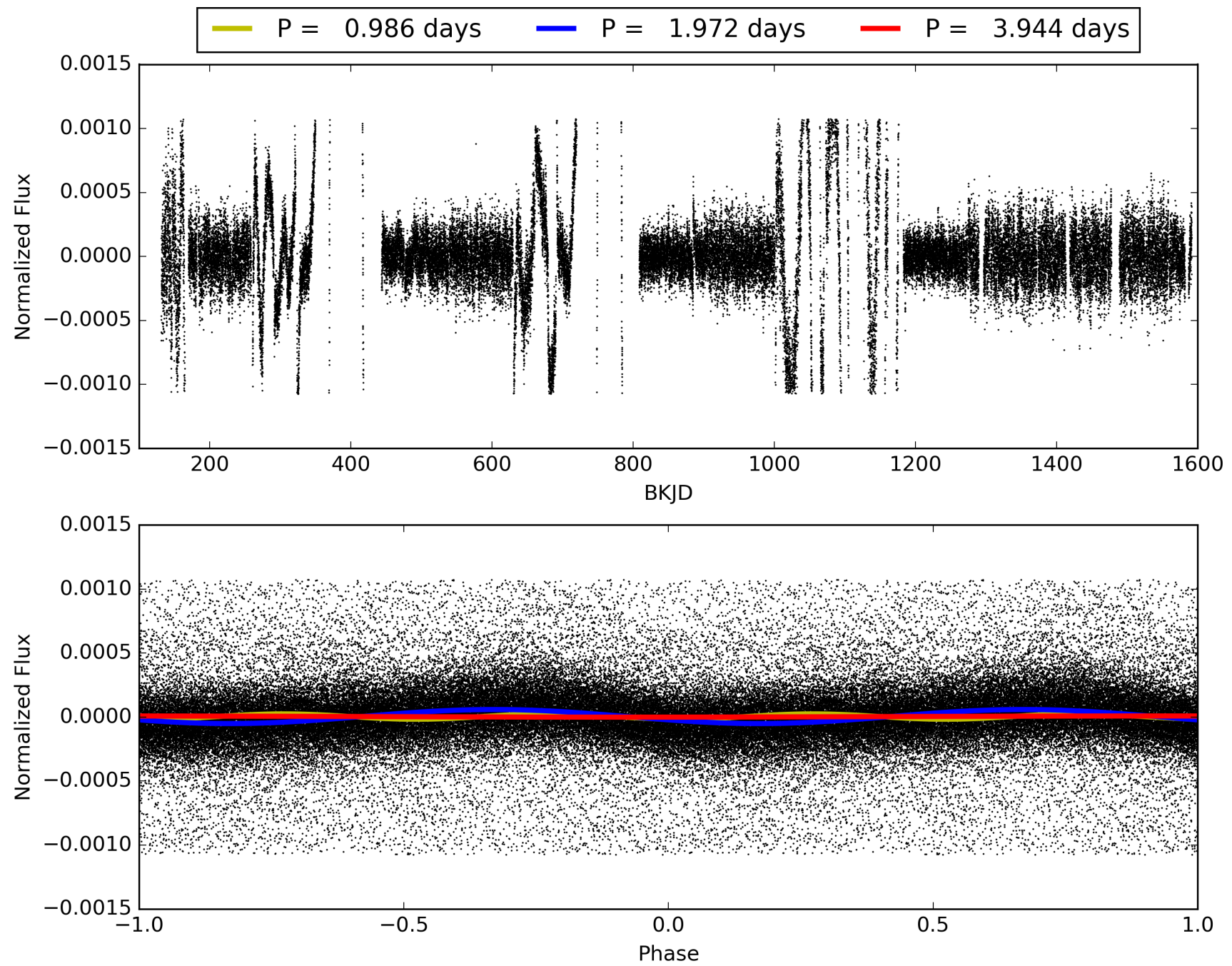
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:04:34 Z

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

TCE 003330688-02, PDC Light Curves

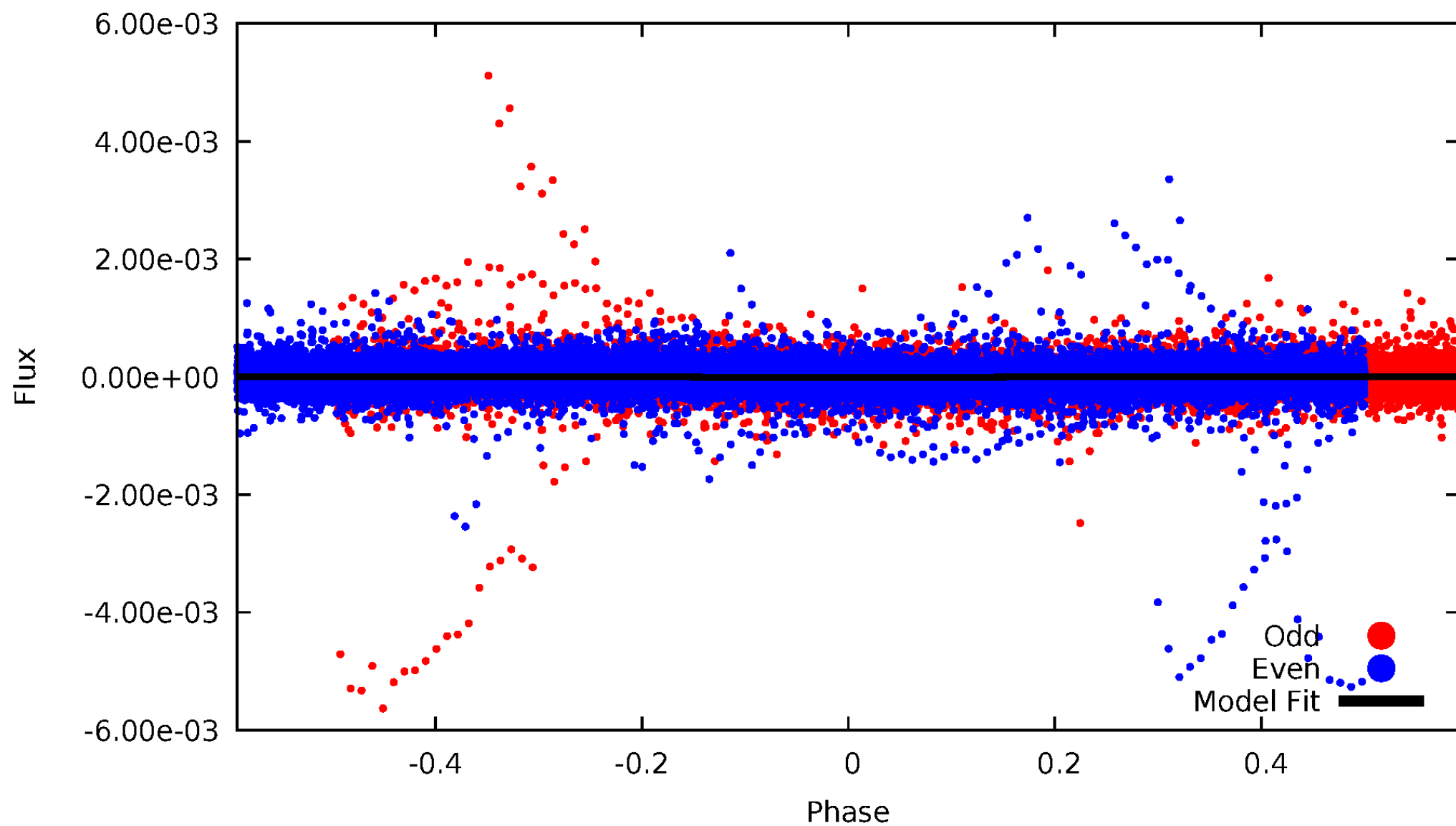


TCE 003330688-02



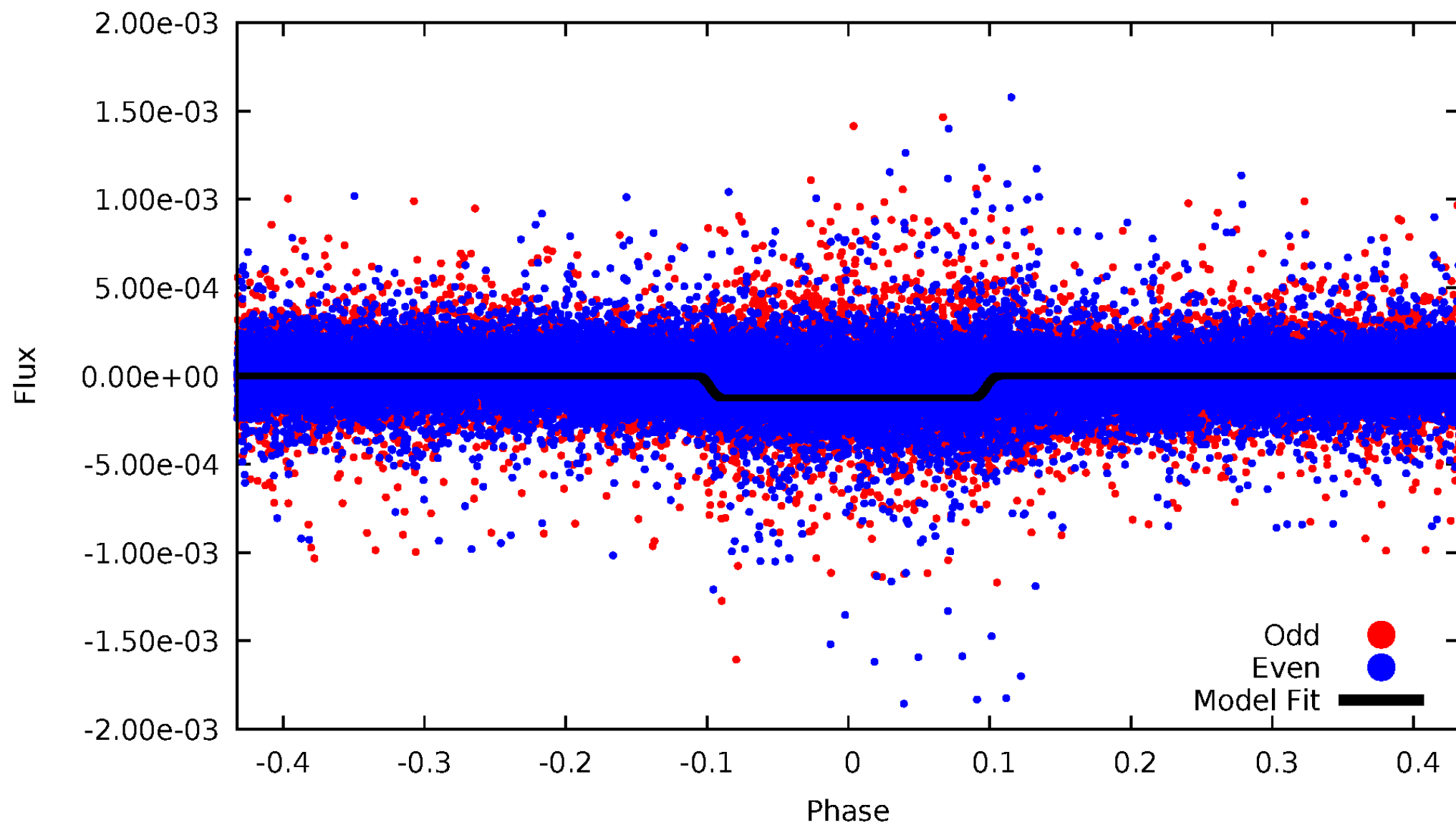
DV Odd/Even

TCE 003330688-02



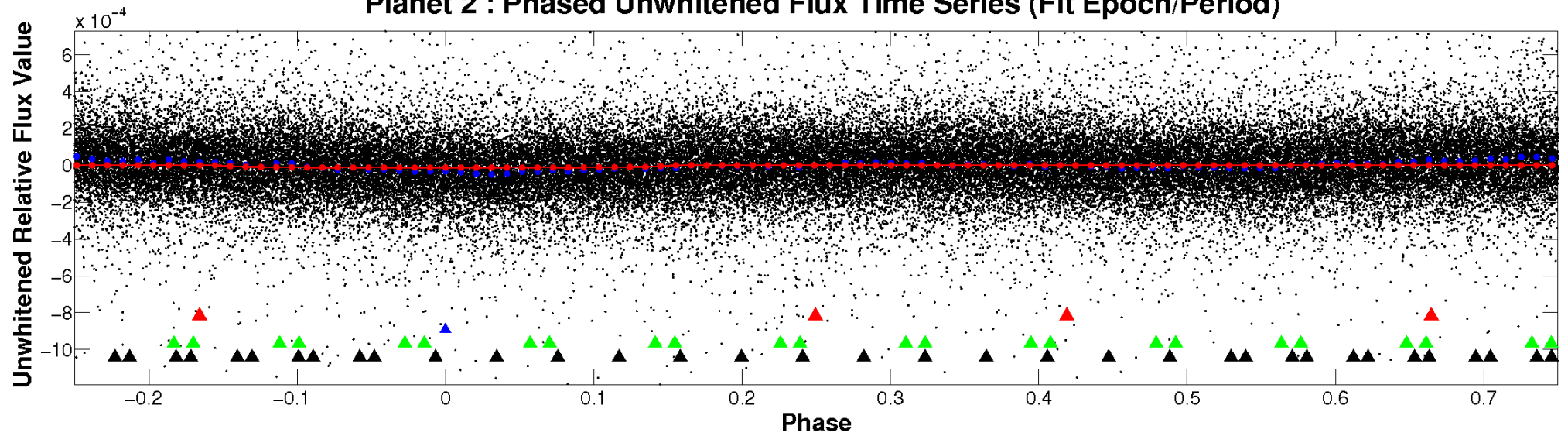
ALT Odd/Even

TCE 003330688-02

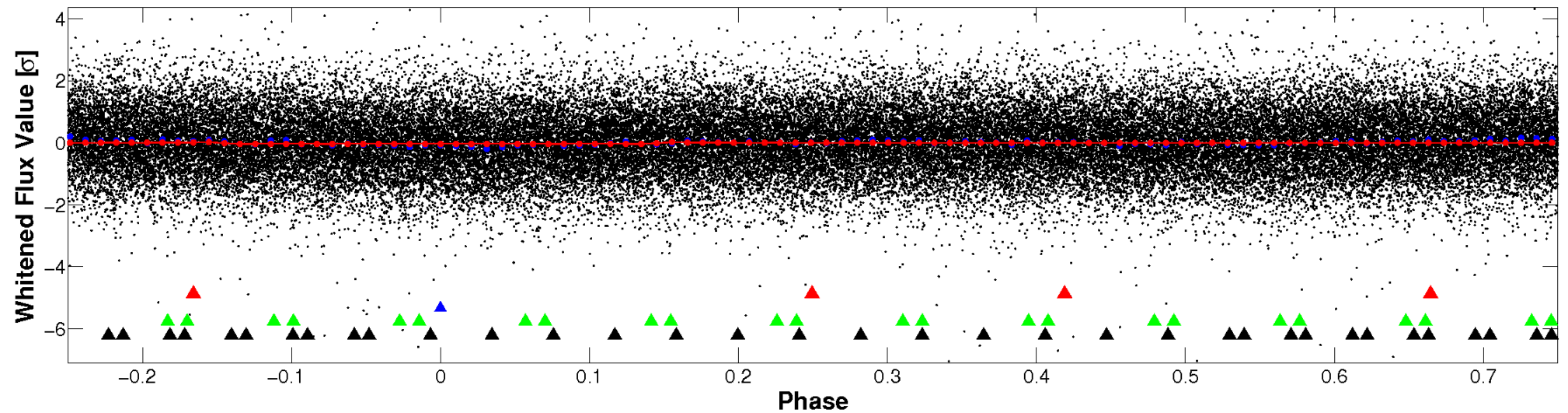


Non-Whitened Vs. Whitened Light Curve

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

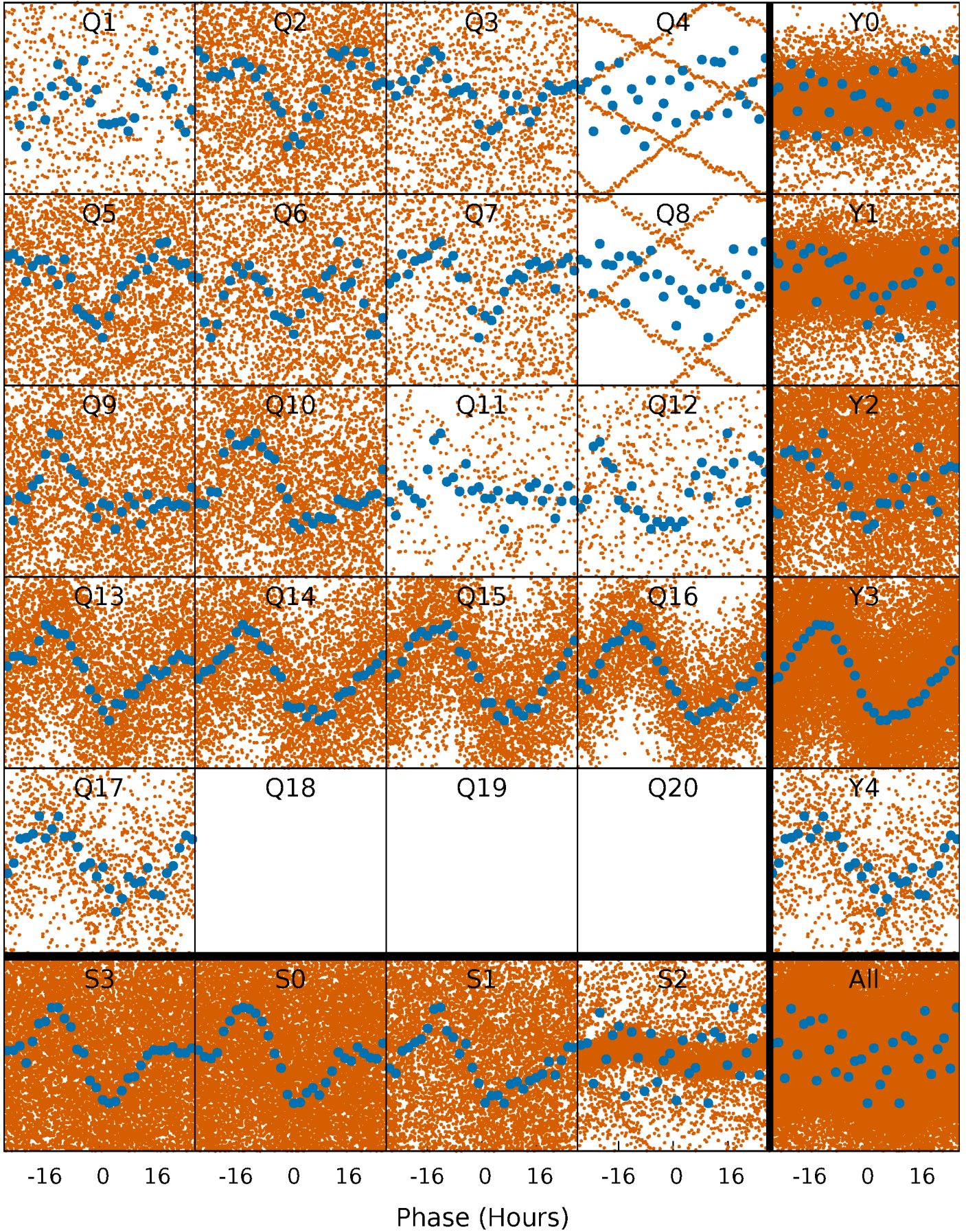


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



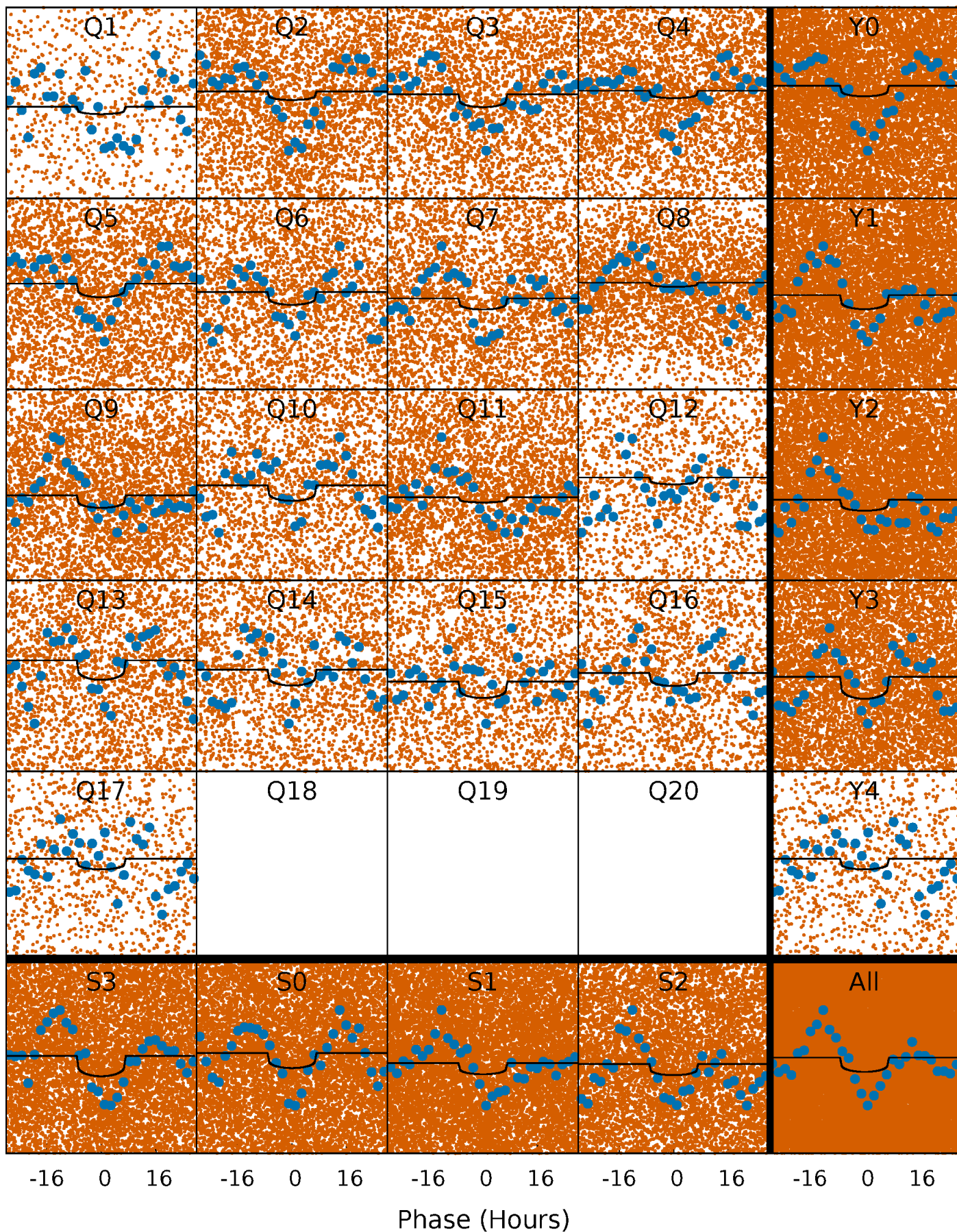
PDC Quarter-Phased Transit Curves

TCE 003330688-02 P= 1.972058 Days $T_0=132.115322$ (BKJD)



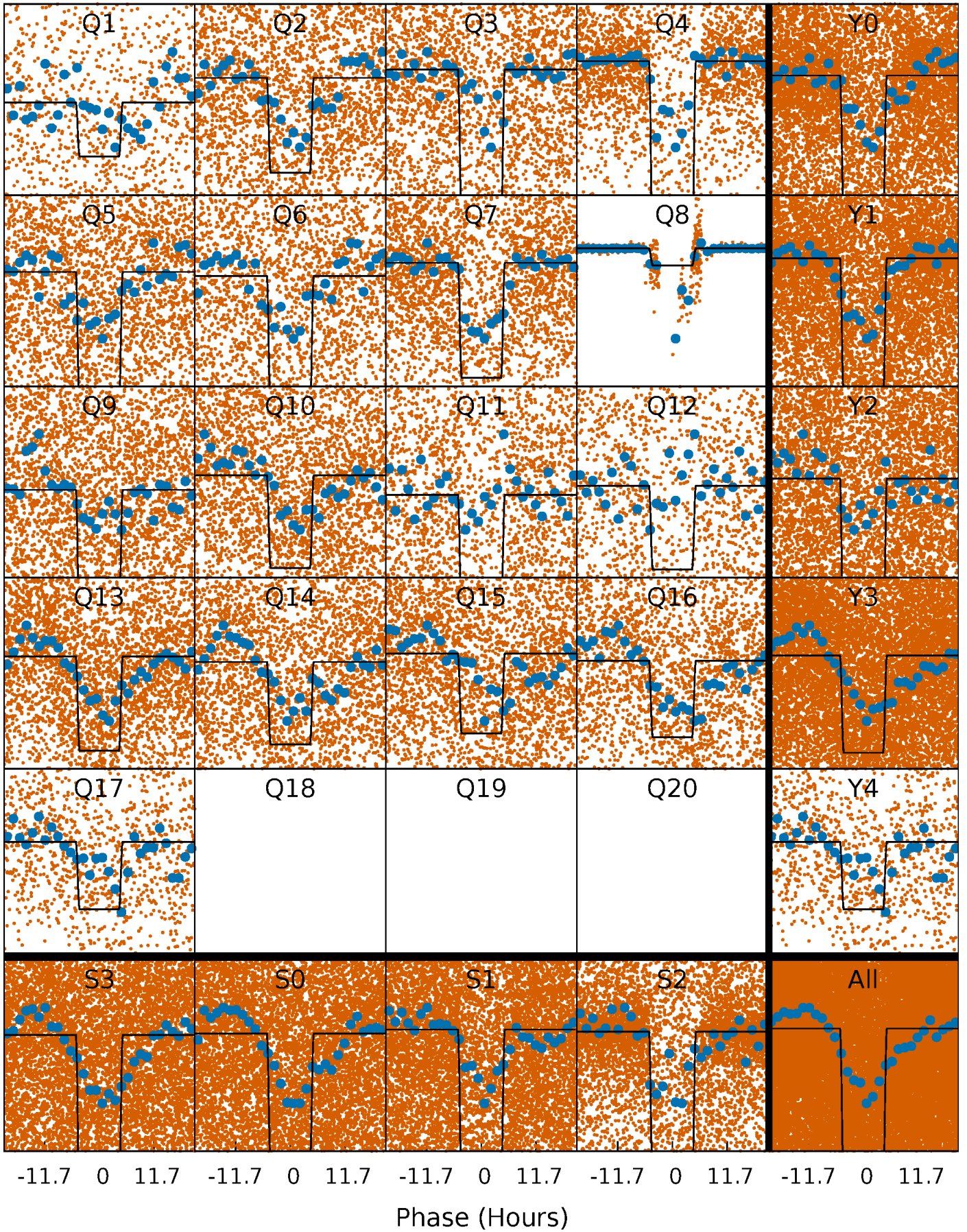
DV Quarter-Phased Transit Curves

TCE 003330688-02 P= 1.972058 Days $T_0=132.115322$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

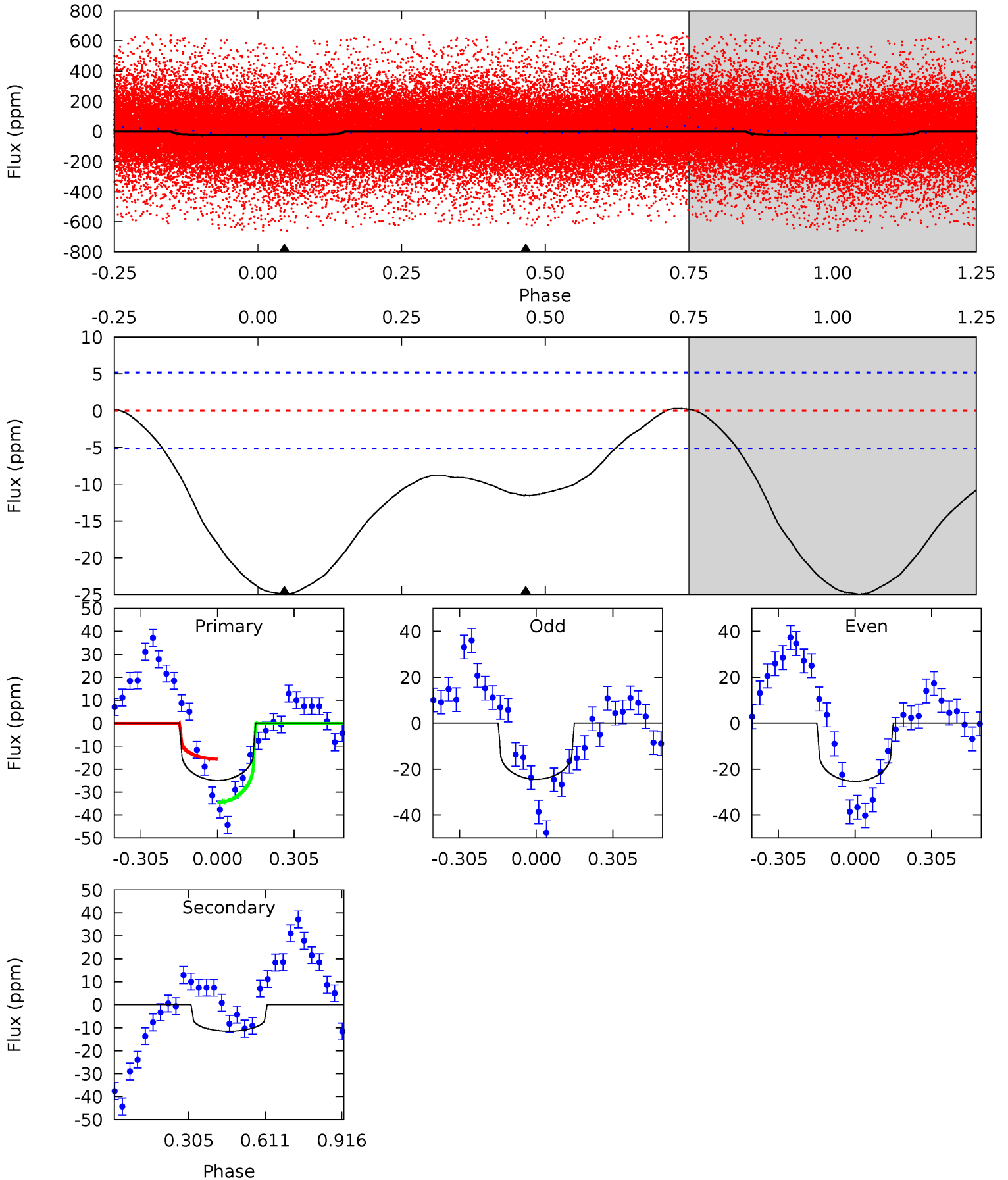
TCE 003330688-02 P= 1.972106 Days $T_0=132.109809$ (BKJD)



DV Model-Shift Uniqueness Test

003330688-02, P = 1.972058 Days, E = 130.143264 Days

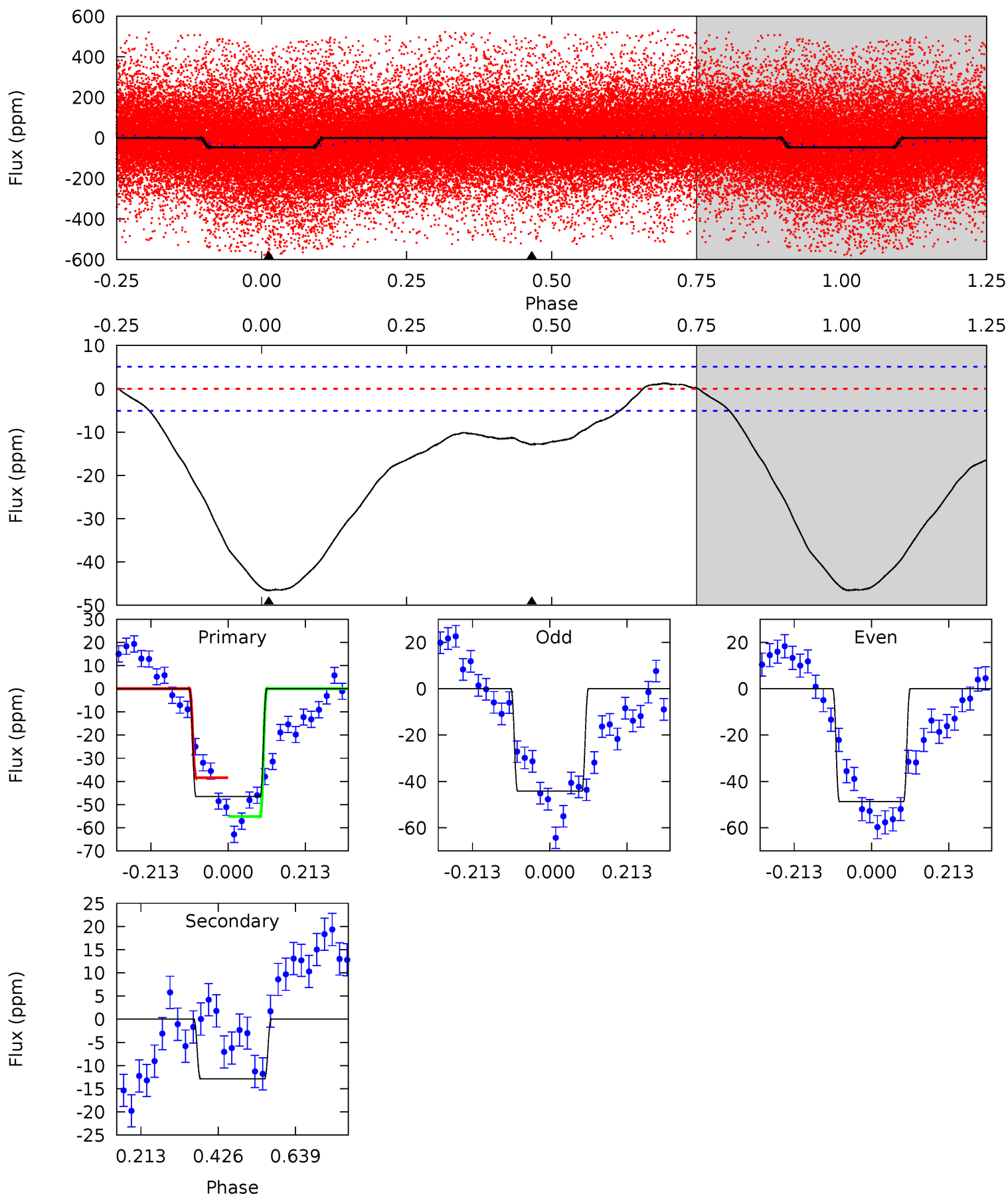
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.9	9.65	0	0	4.32	1.03	0.70	20.9	20.9	9.65	9.65	0.39	1.05	0.01	8.16



Alt Model-Shift Uniqueness Test

003330688-02, P = 1.972106 Days, E = 130.137703 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
40.4	11.2	0	0	4.40	1.25	5.78	40.4	40.4	11.2	11.2	1.99	1.03	0.03	7.28



Stellar Parameters For KIC 003330688

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6378^{+173}_{-154}	$3.476^{+0.399}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.019^{+0.560}_{-1.679}$	$1.764^{+0.173}_{-0.433}$	$0.038^{+0.127}_{-0.011}$
	+3%/-2%	+11%/-3%	+250%/-214%	+14%/-42%	+10%/-25%	+332%/-29%
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 003330688-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-12 ± 1	$1.47^{+0.97}_{-0.92}$	3998^{+243}_{-420}	5989^{+5046}_{-1322}	$4.059^{+24.830}_{-2.685}$
Alt.	-13 ± 1	$4.50^{+1.36}_{-1.37}$	3990^{+257}_{-439}	3365^{+682}_{-5782}	$0.480^{+0.484}_{-0.195}$

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

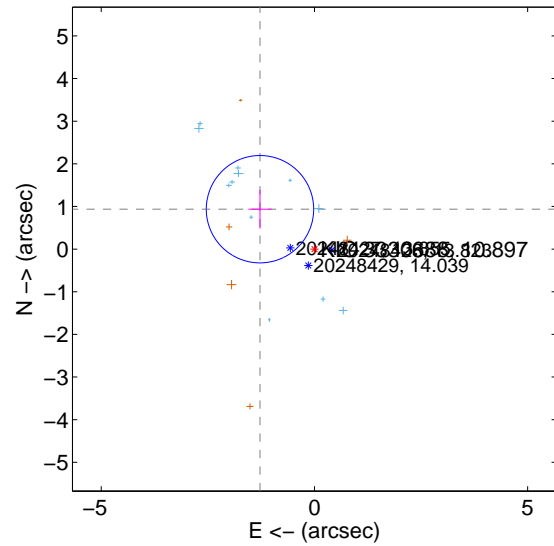
Supplemental centroid analysis for 003330688-02. **Kepler magnitude: 10.90.** Transit SNR 6.28

There are 12 quarters with good PRF difference image offsets

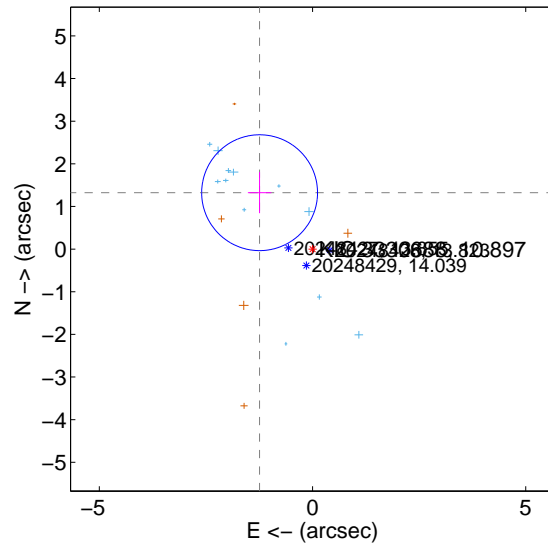
The direct PRF centroid is offset from the target star catalog position by about 0.72 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.583 ± 0.420	3.77	1.277 ± 0.275	0.936 ± 0.455
PRF-fit source offset from KIC position	1.814 ± 0.453	4.01	1.242 ± 0.275	1.323 ± 0.481
photometric centroid source offset	0.80 ± 1.31	0.61	0.59 ± 1.41	0.54 ± 1.17

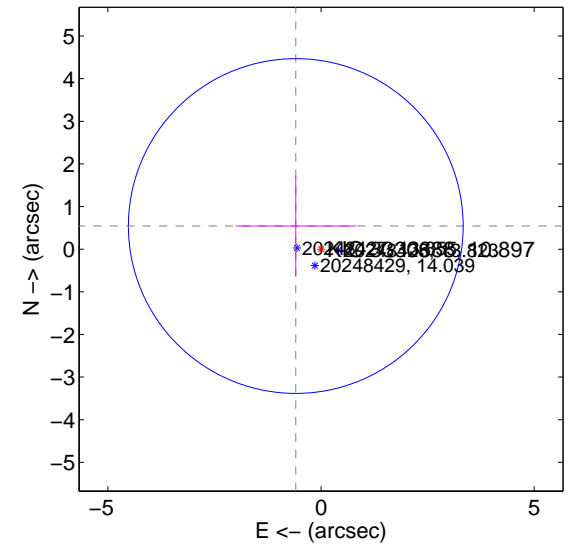
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

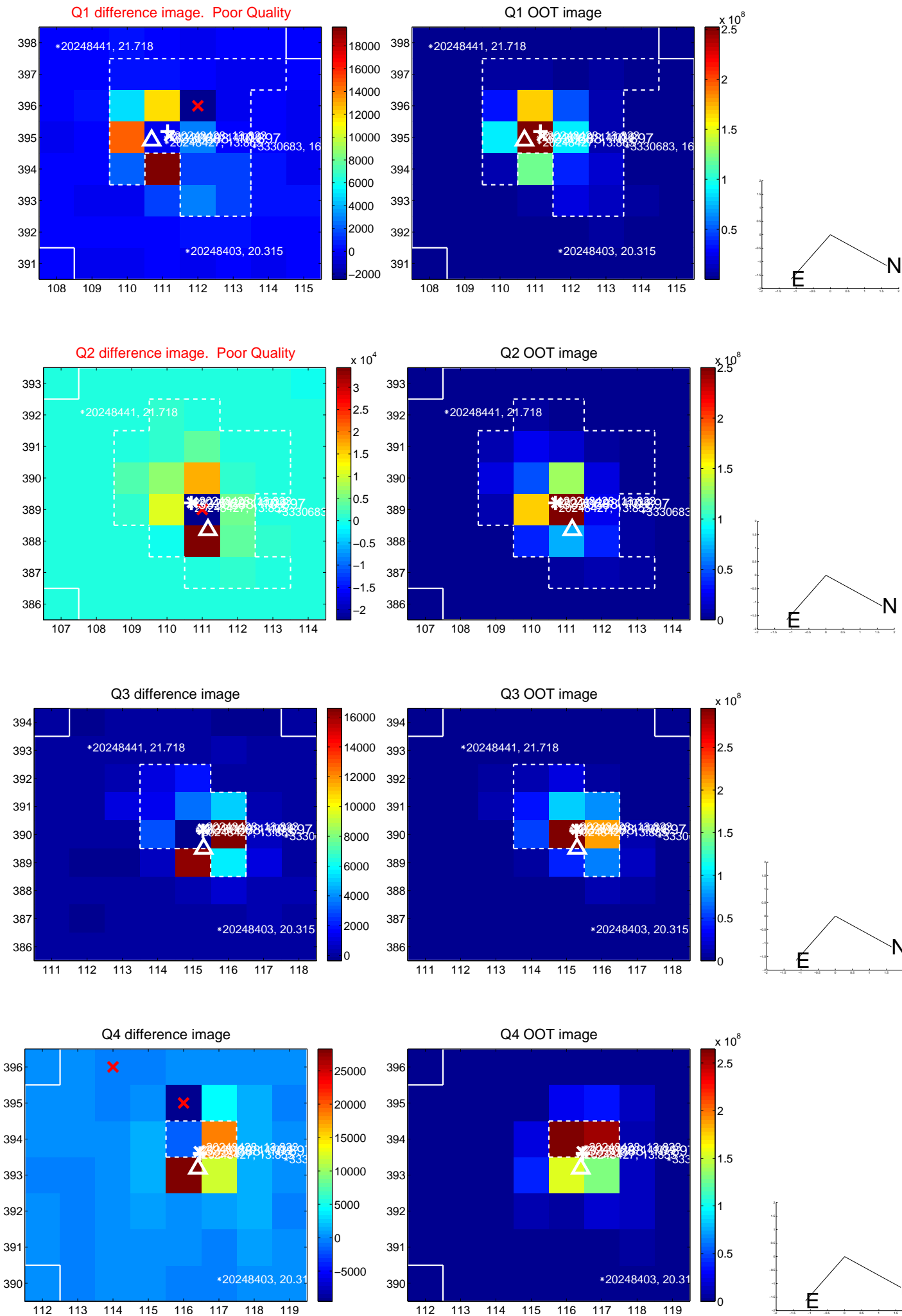


offset from photometric centroids

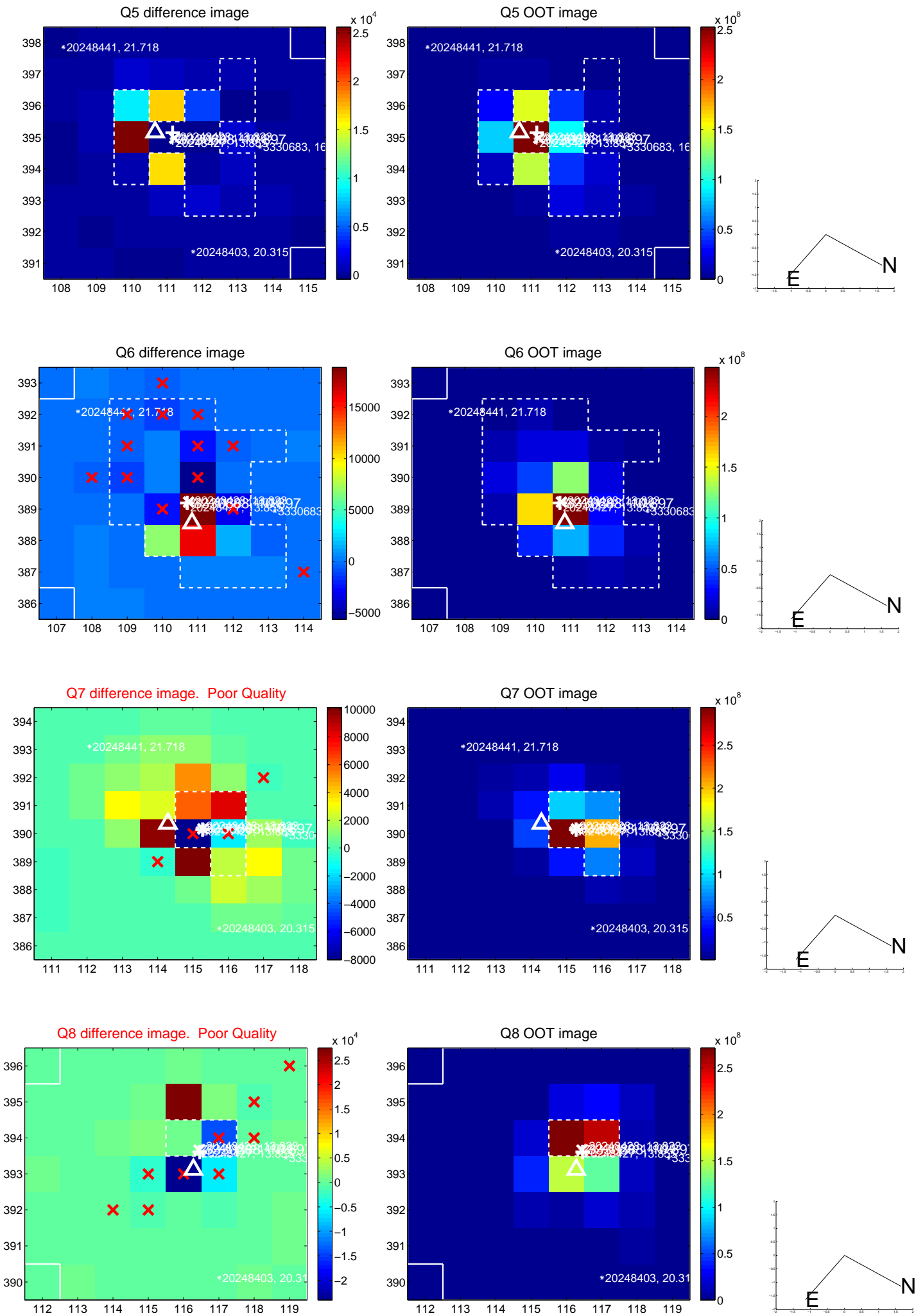


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

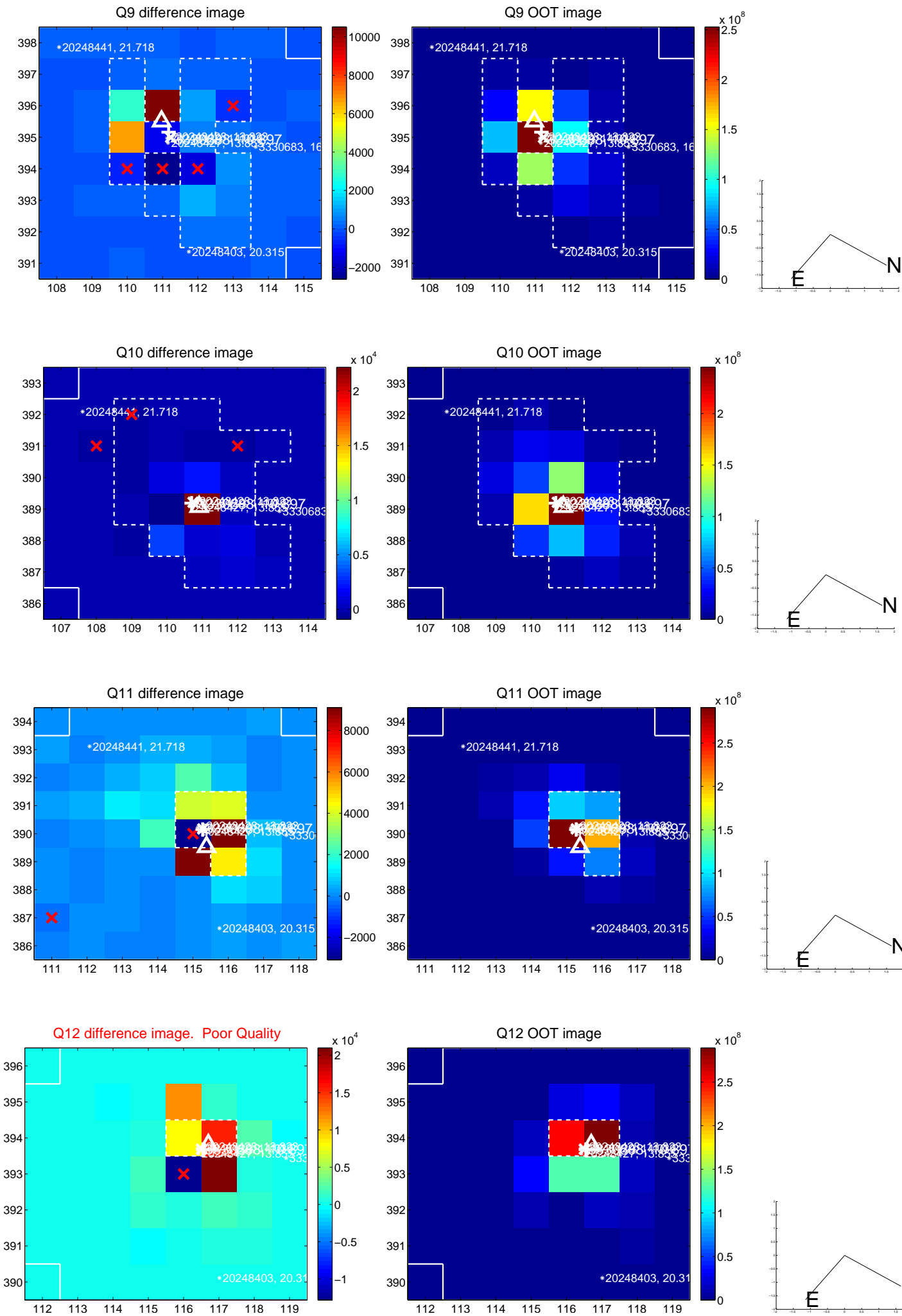
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



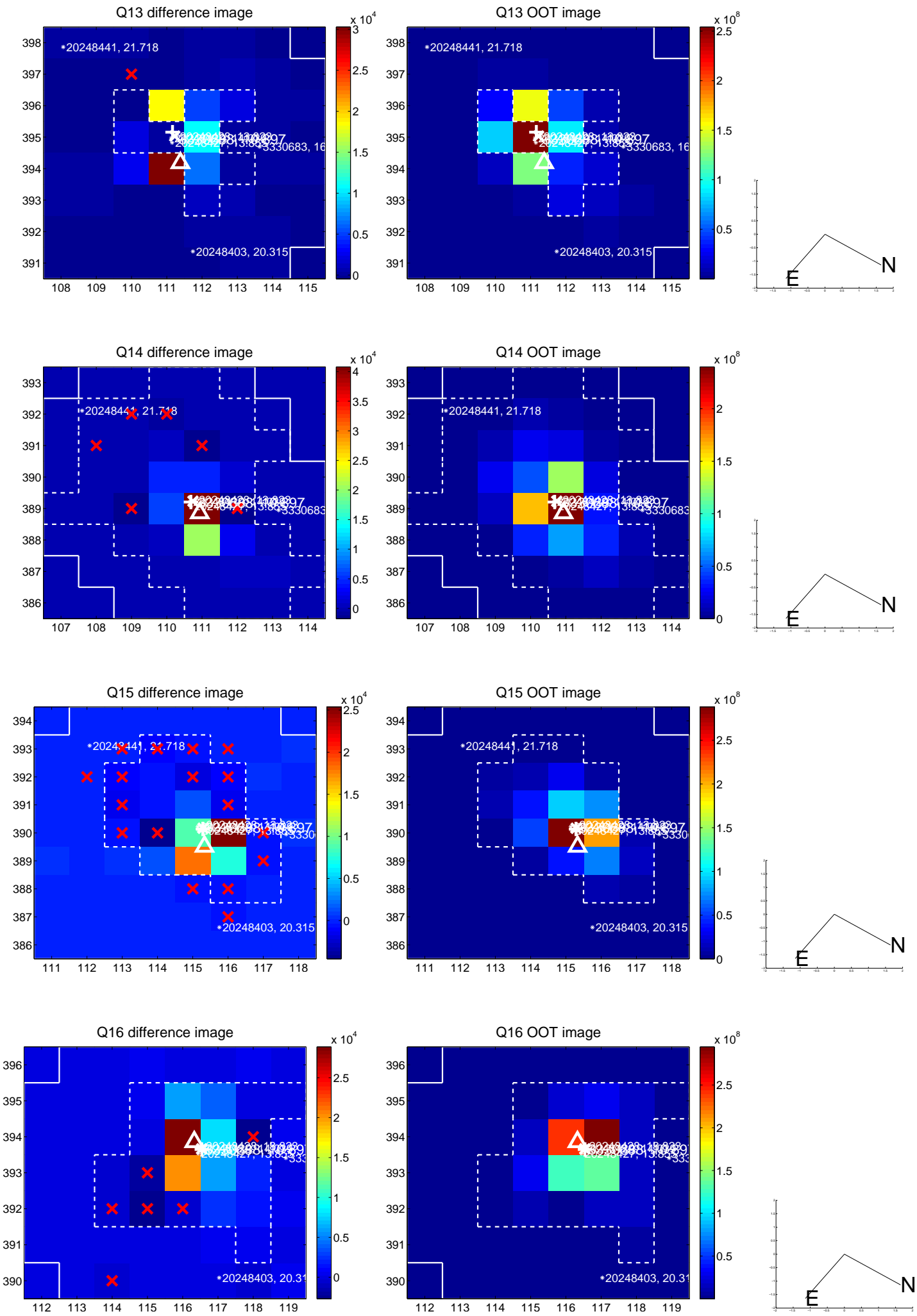
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



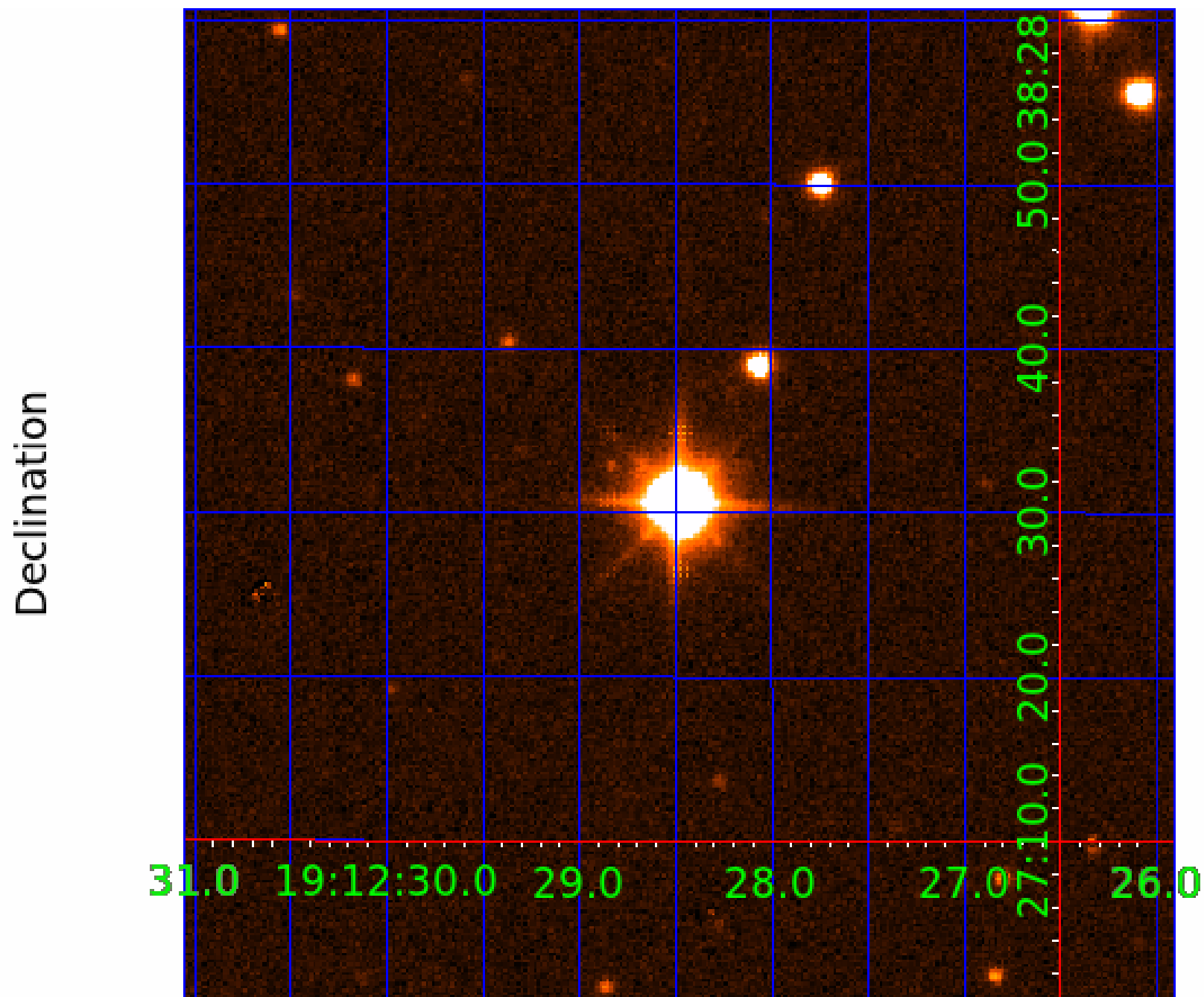
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 003330688

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})
003330688-01	OBS	No	403.118654	373.532587	669.2	16.018	12.4	9.2	4.02	6378	10.64	14.38
003330688-02	OBS	No	1.972058	132.115322	13.0	14.009	8.6	6.3	4.02	6378	1.50	17317.49
003330688-03	OBS	No	60.967300	169.249170	528.4	4.849	17.7	9.6	4.02	6378	9.93	178.48
003330688-04	OBS	No	41.494574	152.899803	877.2	1.009	20.8	9.5	4.02	6378	13.09	298.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003330688-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED
003330688-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
003330688-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003330688-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

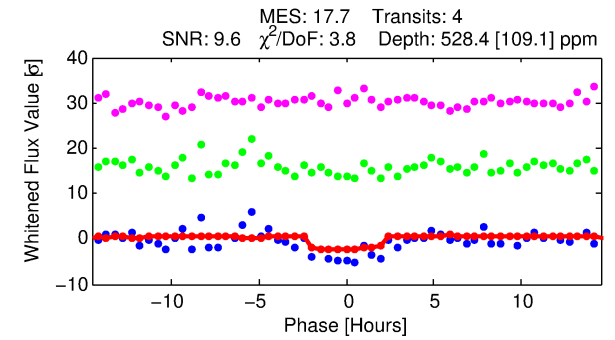
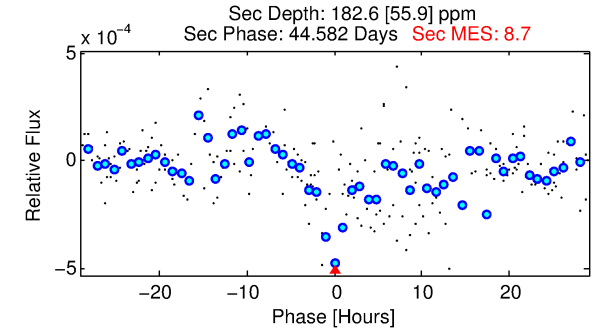
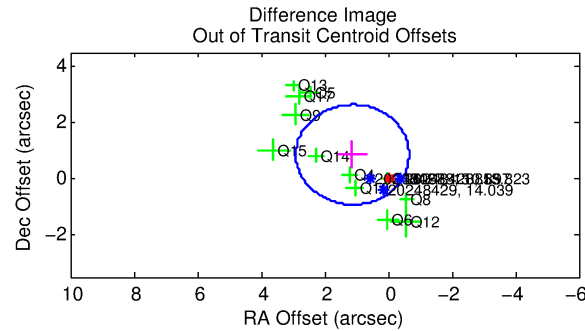
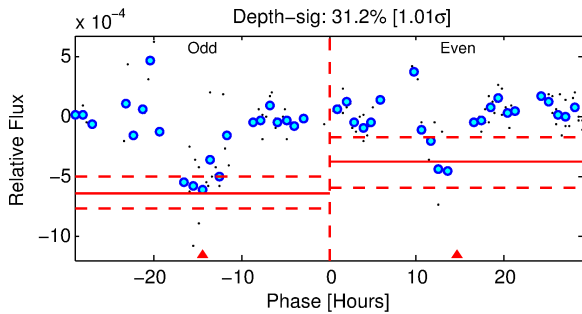
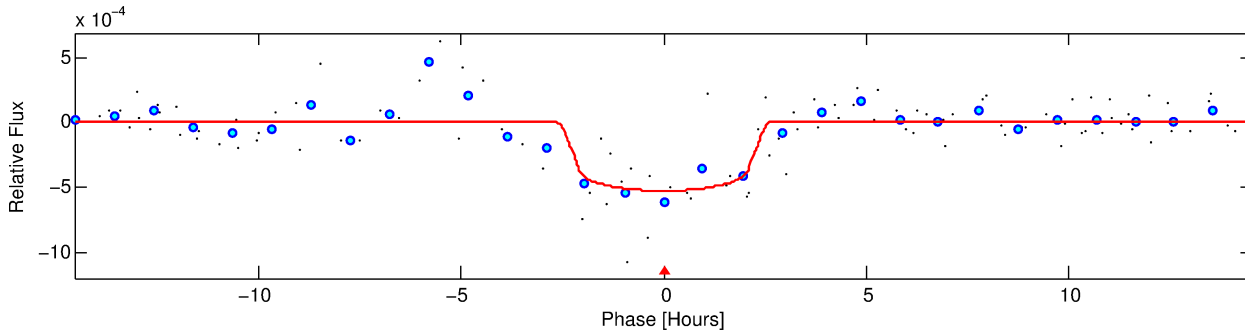
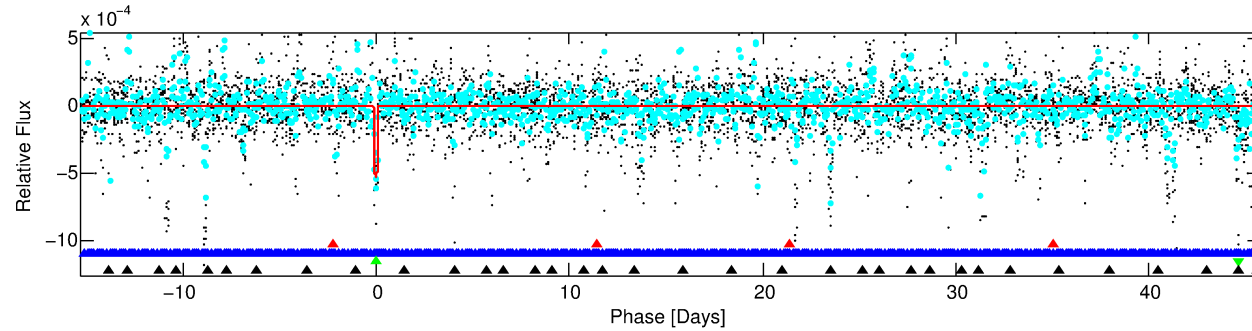
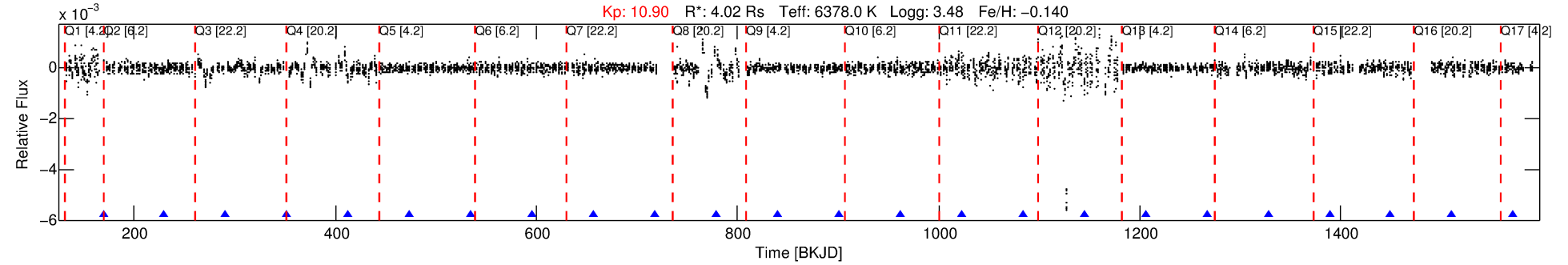
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003330688-03

No Significant Match Found

DV One-Page Summary

KIC: 3330688 Candidate: 3 of 4 Period: 60.967 d



DV Fit Results:

Period = 60.96730 [0.00212] d
Epoch = 169.2492 [0.0233] BKJD
Rp/R* = 0.0226 [0.0163]
a/R* = 70.18 [269.72]
b = 0.72 [2.60]
Seff = 178.48 [121.64]
Teff = 932 [159] K
Rp = 9.93 [8.27] Re
a = 0.3663 [0.1516] AU
Ag = 136.67 [221.43] [0.61 σ]
Teffp = 4927 [1820] K [2.19 σ]

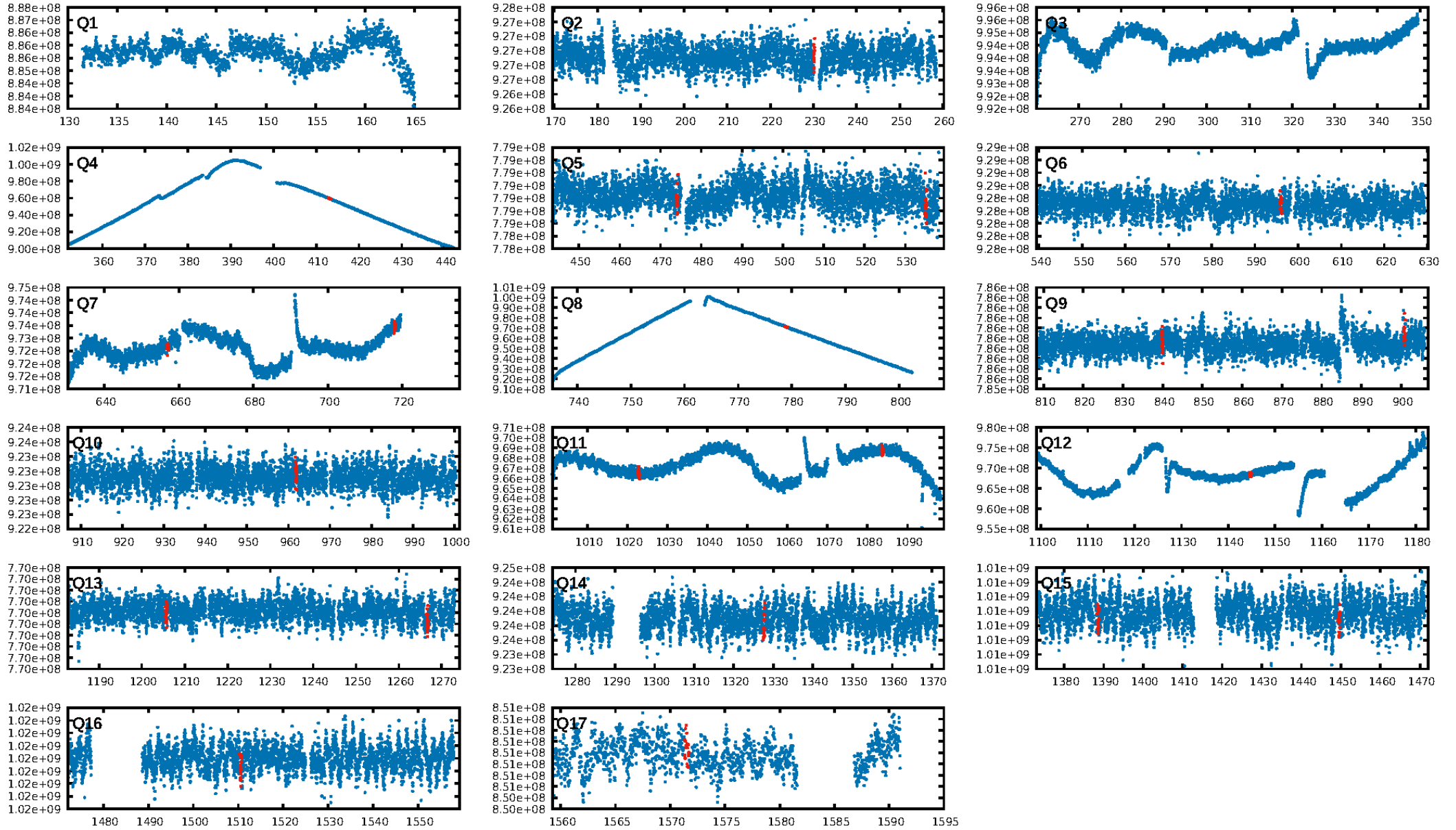
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [94.36 σ]
LongPeriod-sig: 100.0% [490.66 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 2.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.8337
Centroid-sig: 1.2%
Centroid-so: 0.391 arcsec [2.31 σ]
OotOffset-rm: 1.414 arcsec [2.38 σ]
KicOffset-rm: 1.359 arcsec [2.37 σ]
OotOffset-st: 3/1/4/4 [12]
KicOffset-st: 3/1/4/4 [12]
DiffImageQuality-fgm: 0.50 [6/12]
DiffImageOverlap-fno: 0.29 [4/14]

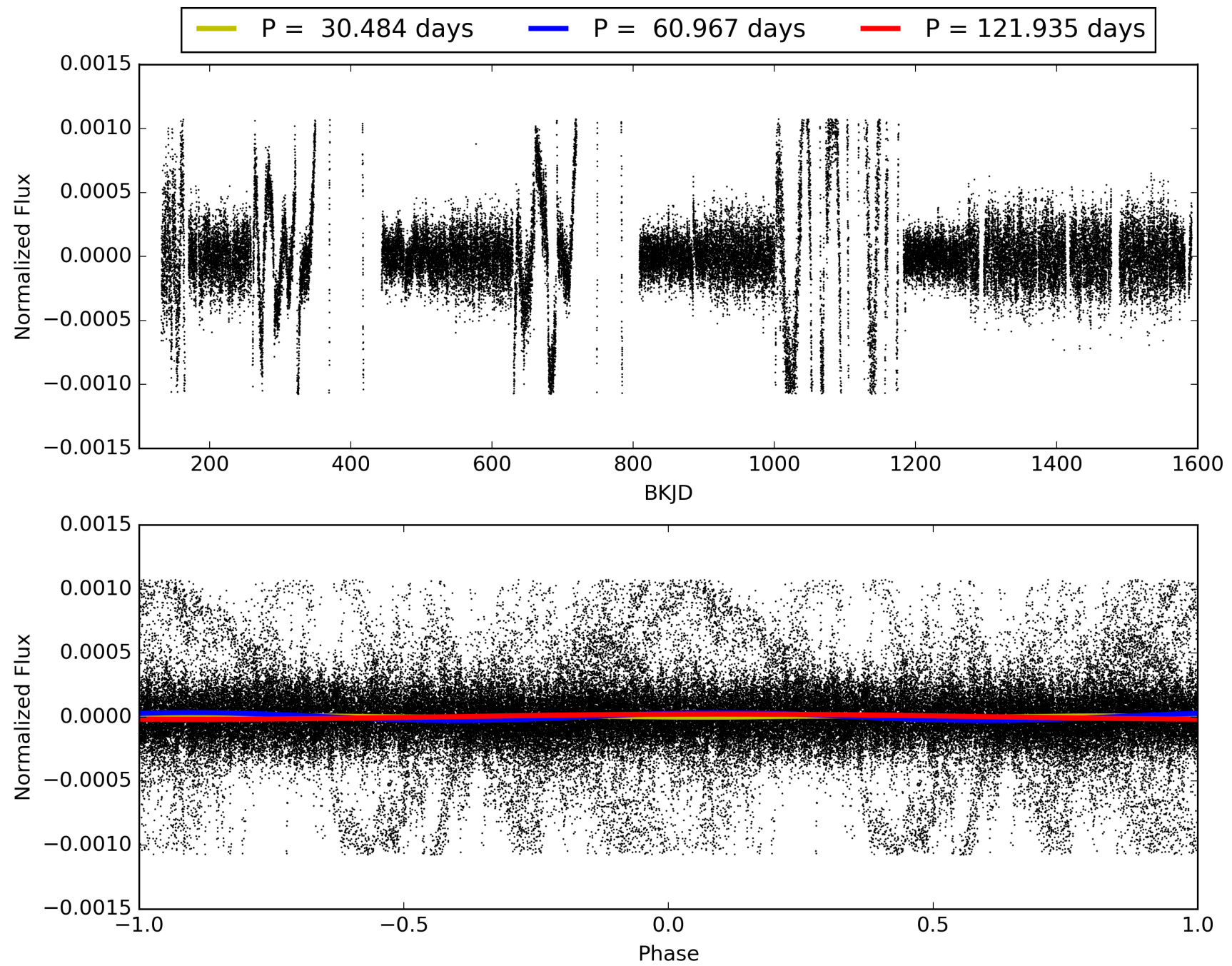
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:04:45 Z

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

TCE 003330688-03, PDC Light Curves

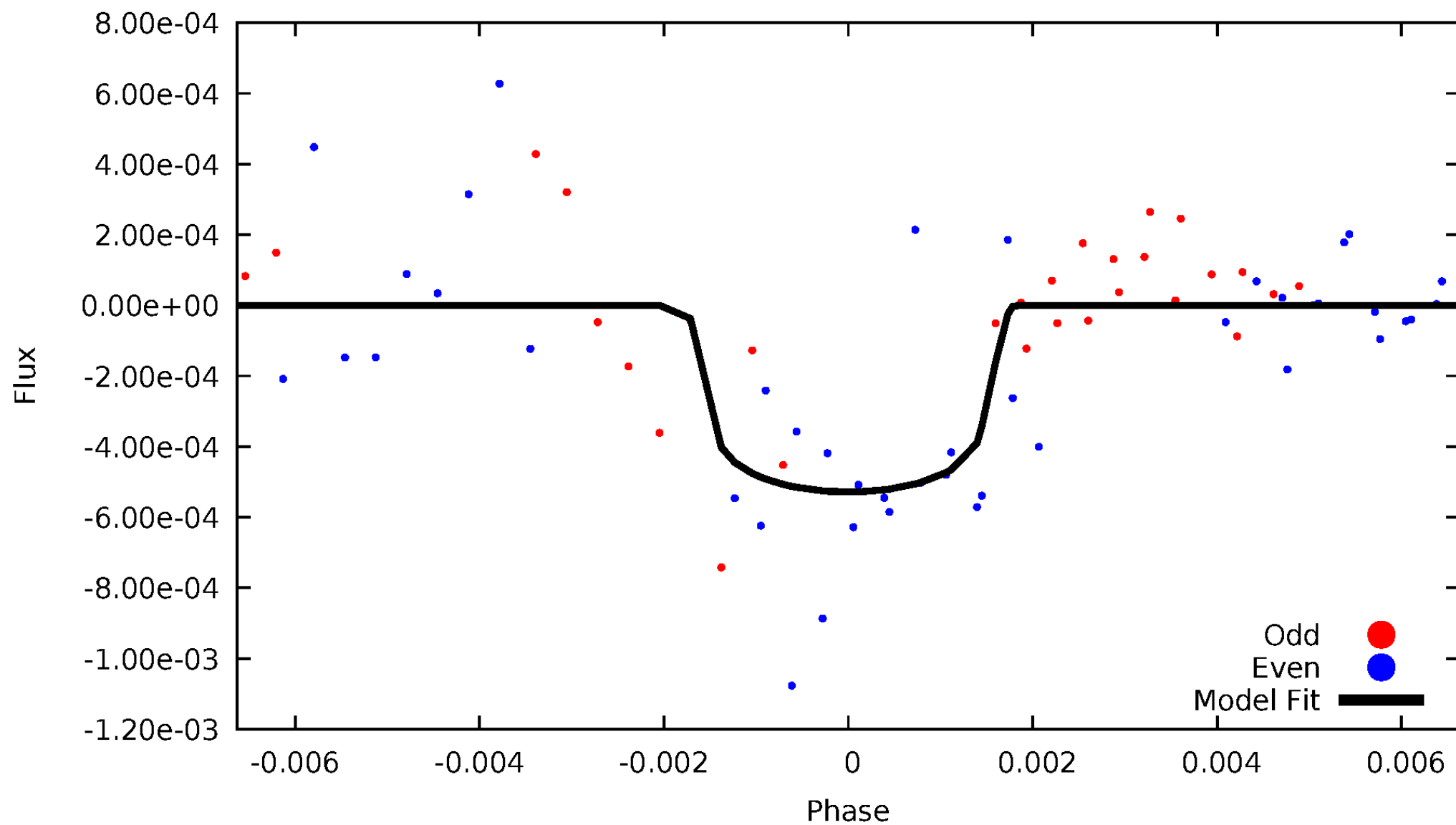


TCE 003330688-03



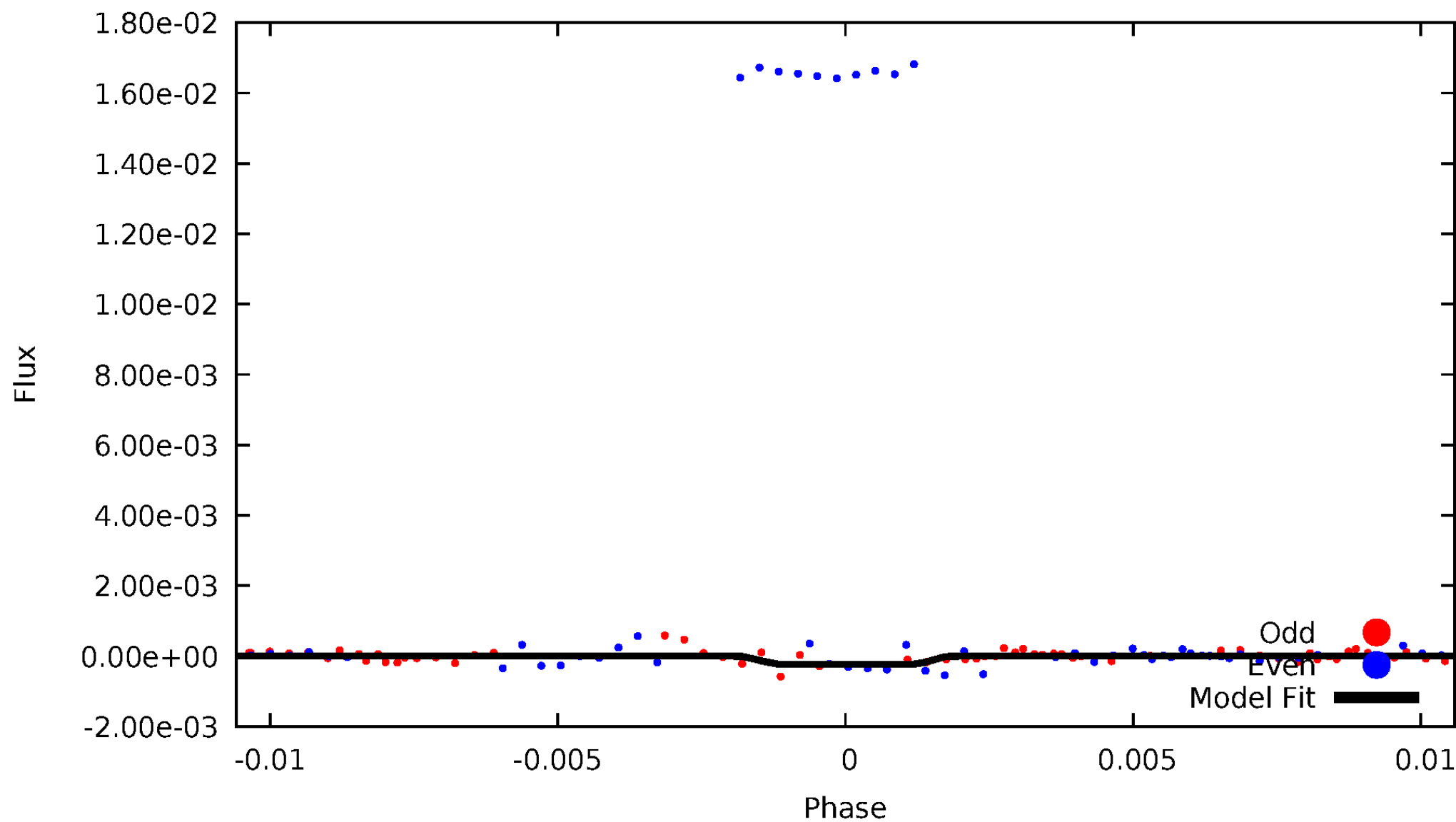
DV Odd/Even

TCE 003330688-03



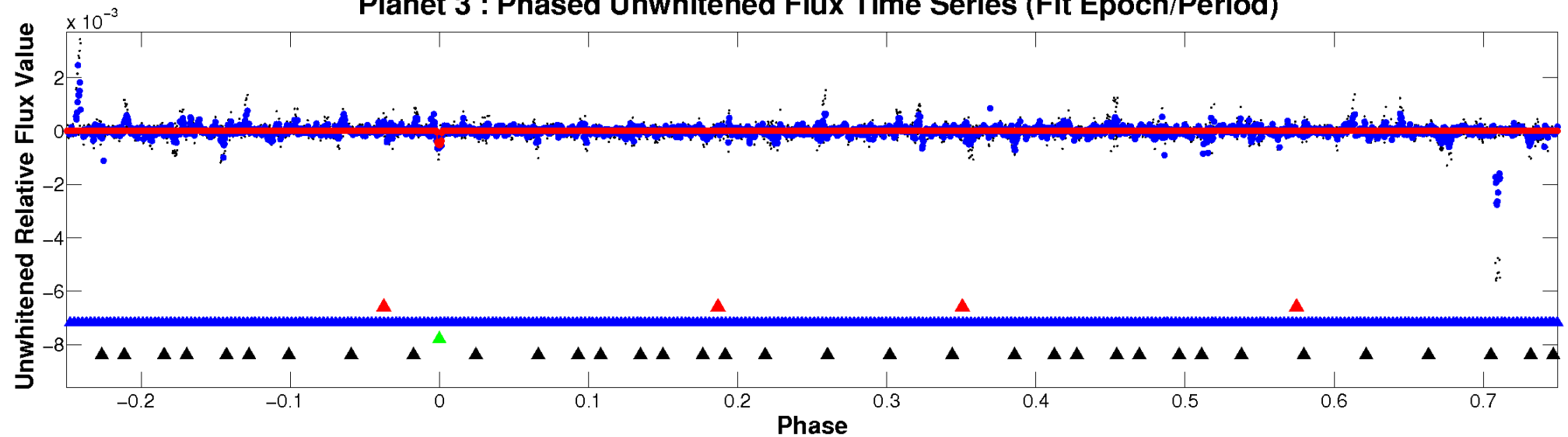
ALT Odd/Even

TCE 003330688-03

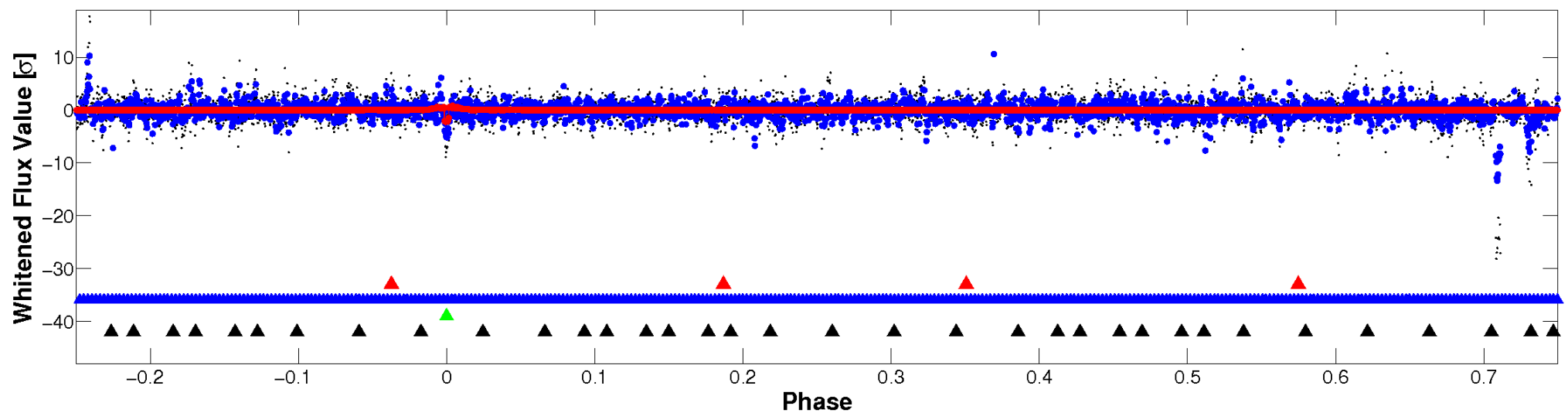


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

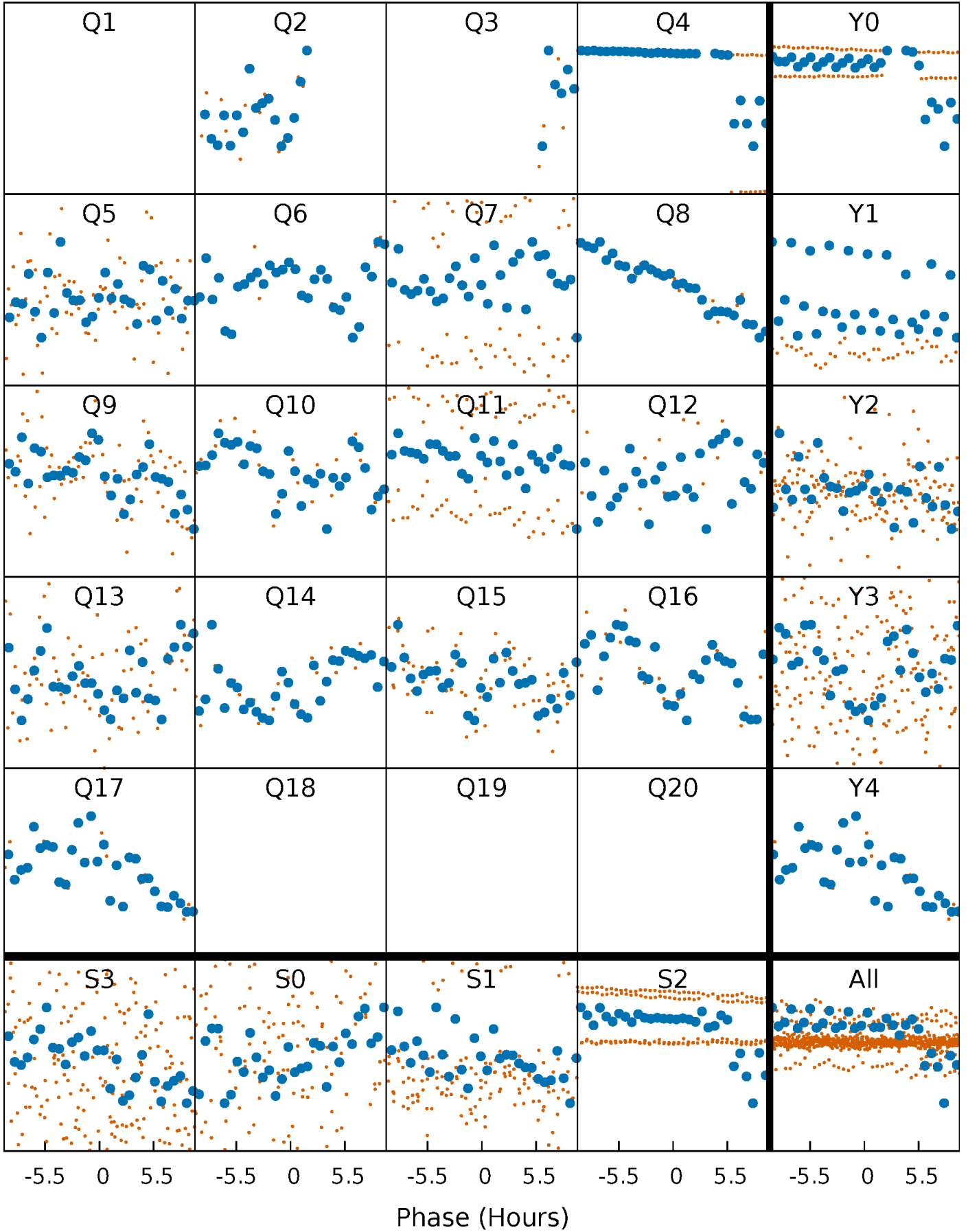


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



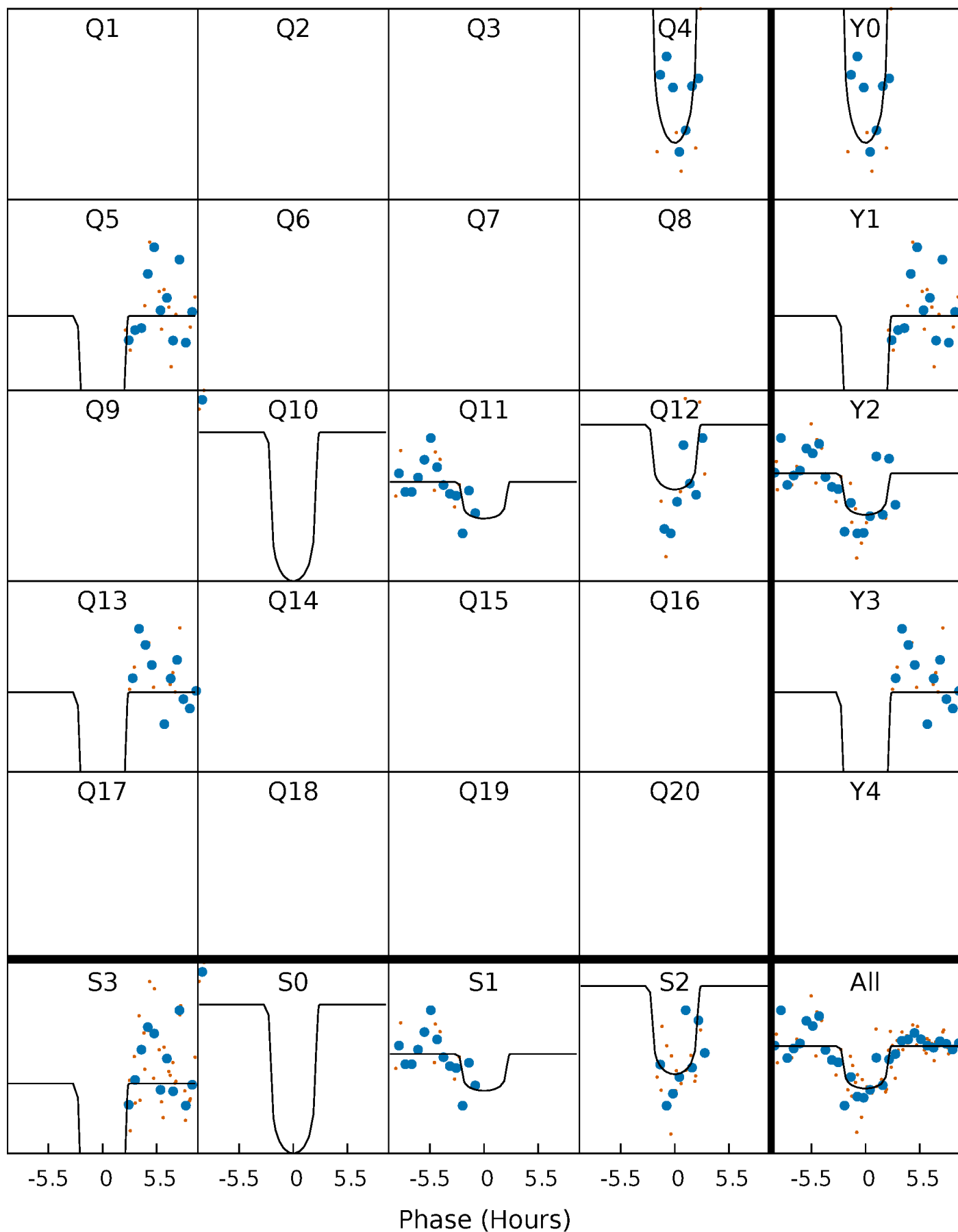
PDC Quarter-Phased Transit Curves

TCE 003330688-03 P= 60.967300 Days $T_0=169.249170$ (BKJD)



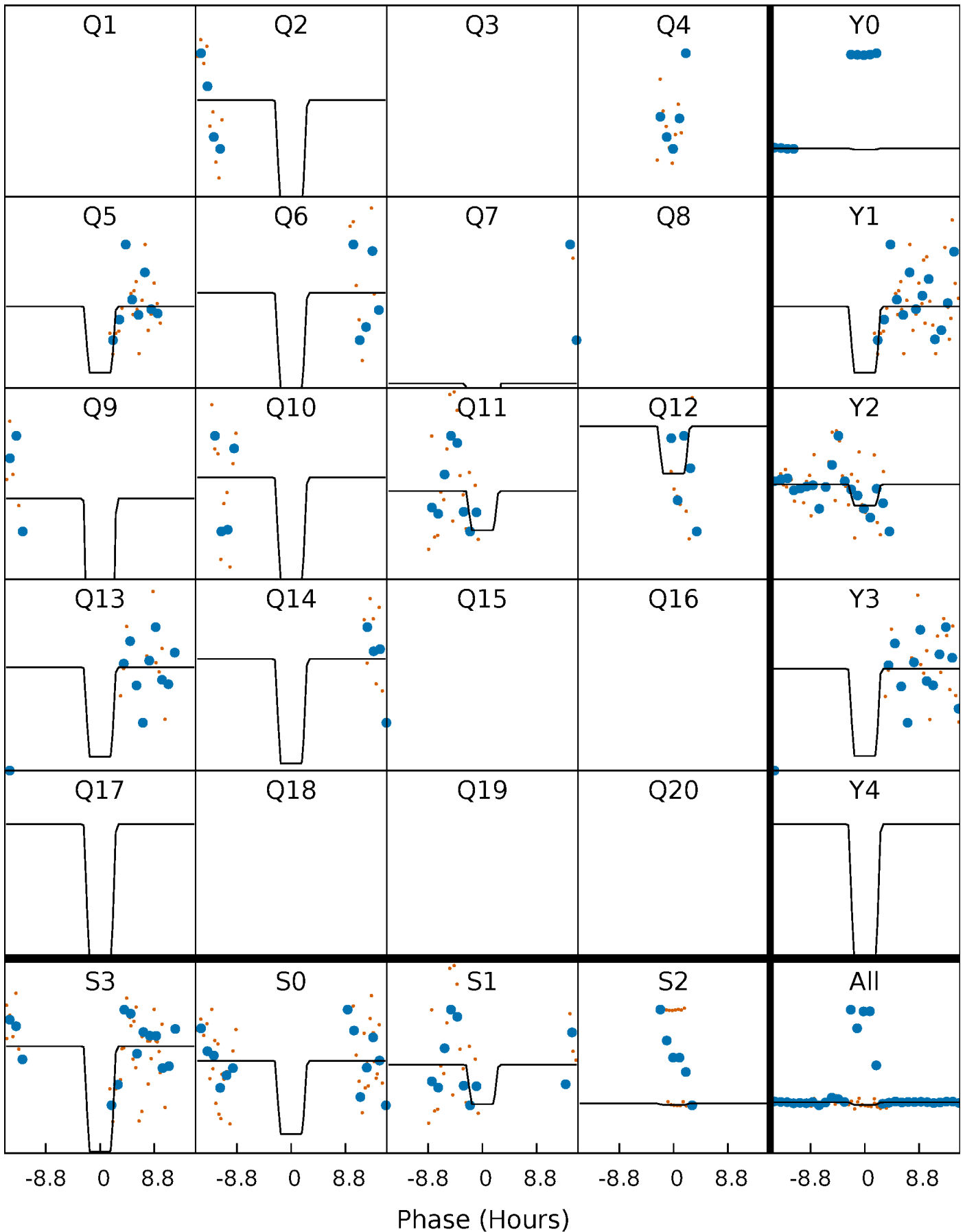
DV Quarter-Phased Transit Curves

TCE 003330688-03 $P = 60.967300$ Days $T_0 = 169.249170$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

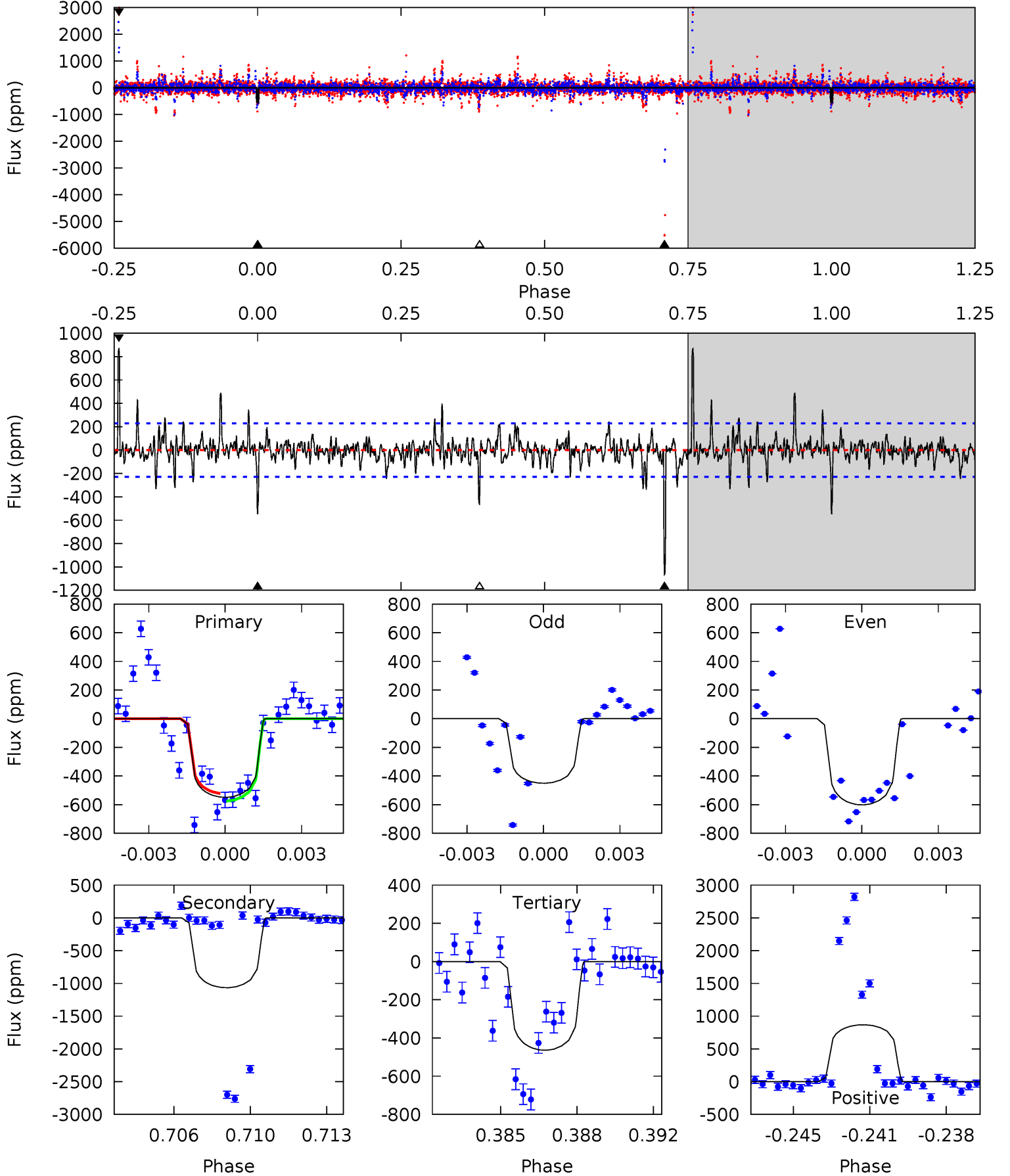
TCE 003330688-03 P= 60.962607 Days $T_0=169.304208$ (BKJD)



DV Model-Shift Uniqueness Test

003330688-03, P = 60.967300 Days, E = 108.281870 Days

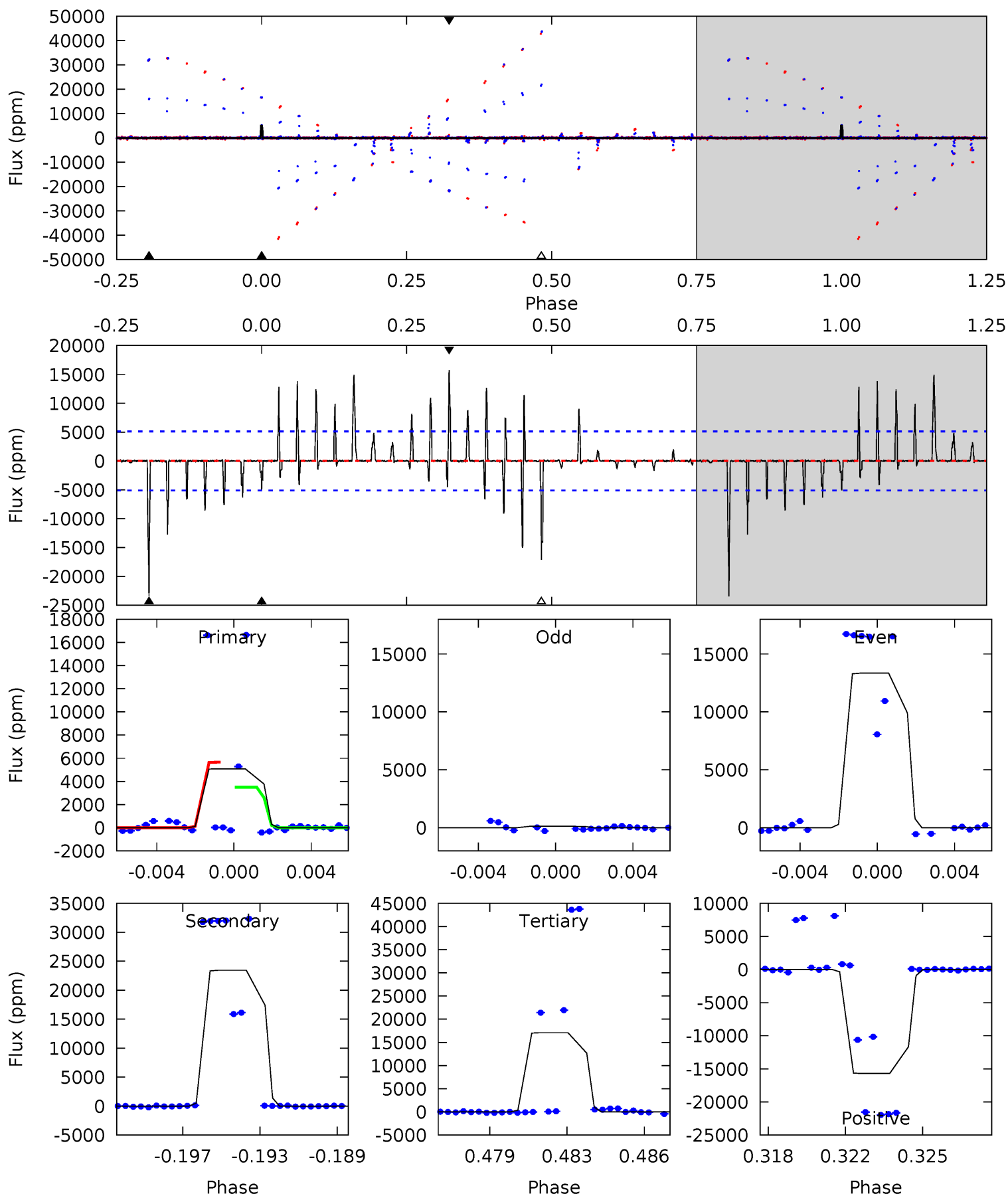
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	24.3	10.6	19.8	5.22	2.92	2.21	1.94	-7.28	13.7	4.52	1.53	1.08	0.45	0.60



Alt Model-Shift Uniqueness Test

003330688-03, P = 60.962607 Days, E = 108.341601 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.19	23.9	17.4	16.0	5.22	2.91	1.81	-12.2	-10.8	6.50	7.89	5.01	-29.1	0.40	0



Stellar Parameters For KIC 003330688

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6378^{+173}_{-154}	$3.476^{+0.399}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.019^{+0.560}_{-1.679}$	$1.764^{+0.173}_{-0.433}$	$0.038^{+0.127}_{-0.011}$
	+3%/-2%	+11%/-3%	+250%/-214%	+14%/-42%	+10%/-25%	+332%/-29%
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 003330688-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1066 ± 44	$9.80^{+7.68}_{-5.57}$	1280^{+71}_{-144}	7479^{+5833}_{-1853}	805^{+3575}_{-550}
Alt.	-23440 ± 980	$7.51^{+6.92}_{-4.90}$	1282^{+72}_{-142}	$44360^{+219378}_{-24434}$	$30848^{+227732}_{-22427}$

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

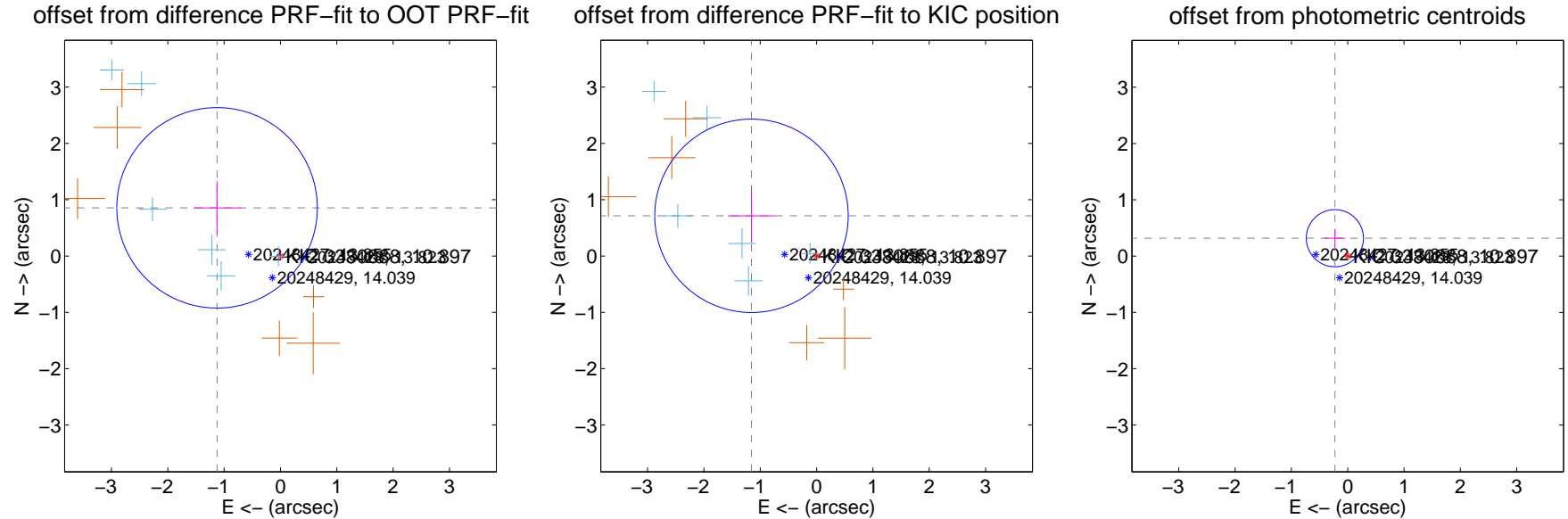
DV Centroid Data

Supplemental centroid analysis for 003330688-03. **Kepler magnitude: 10.90.** Transit SNR 9.57

There are 6 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.71 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.414 ± 0.593	2.38	1.125 ± 0.420	0.856 ± 0.473
PRF-fit source offset from KIC position	1.359 ± 0.572	2.37	1.156 ± 0.417	0.714 ± 0.475
photometric centroid source offset	0.39 ± 0.17	2.31	0.23 ± 0.19	0.32 ± 0.16



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.

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



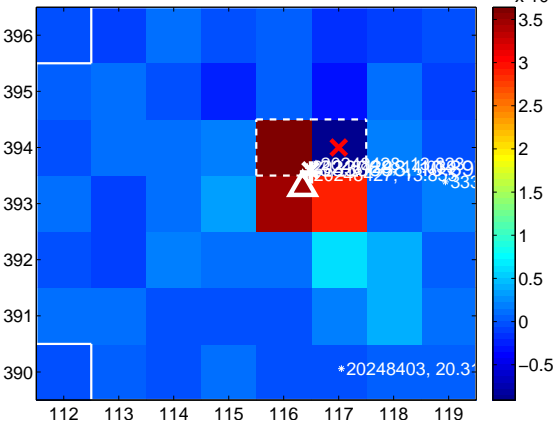
Q3 no difference image



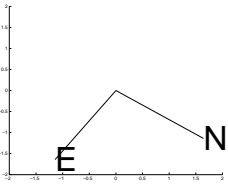
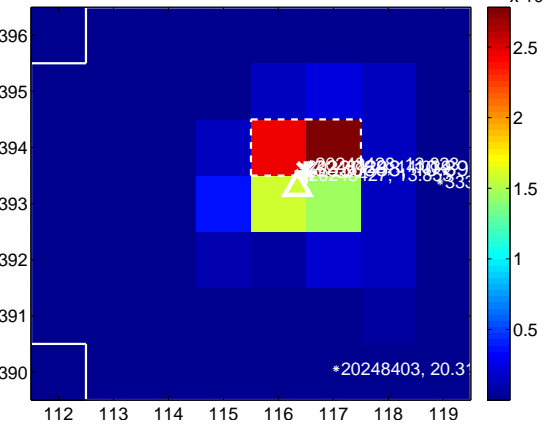
Q3 no OOT image



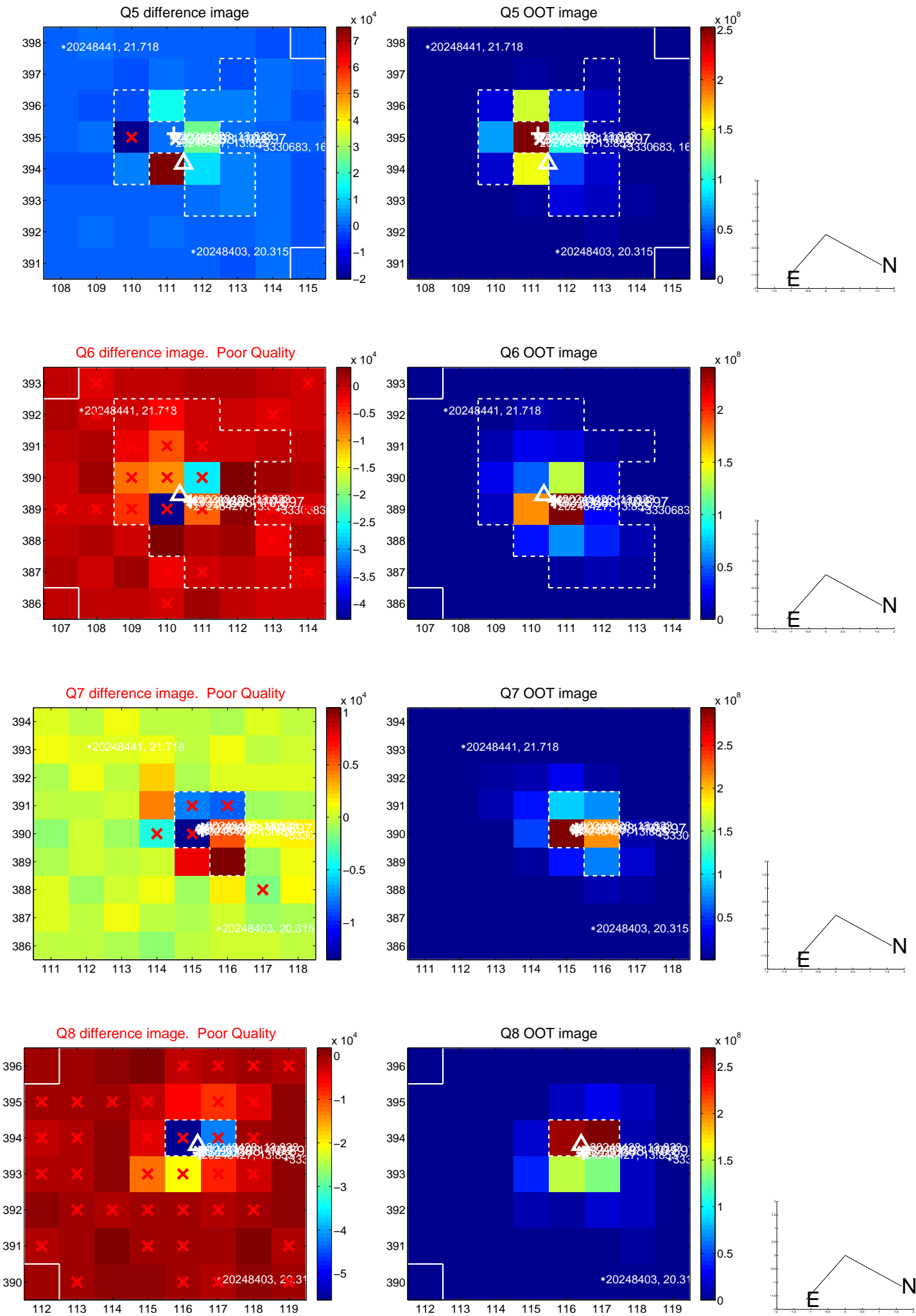
Q4 difference image



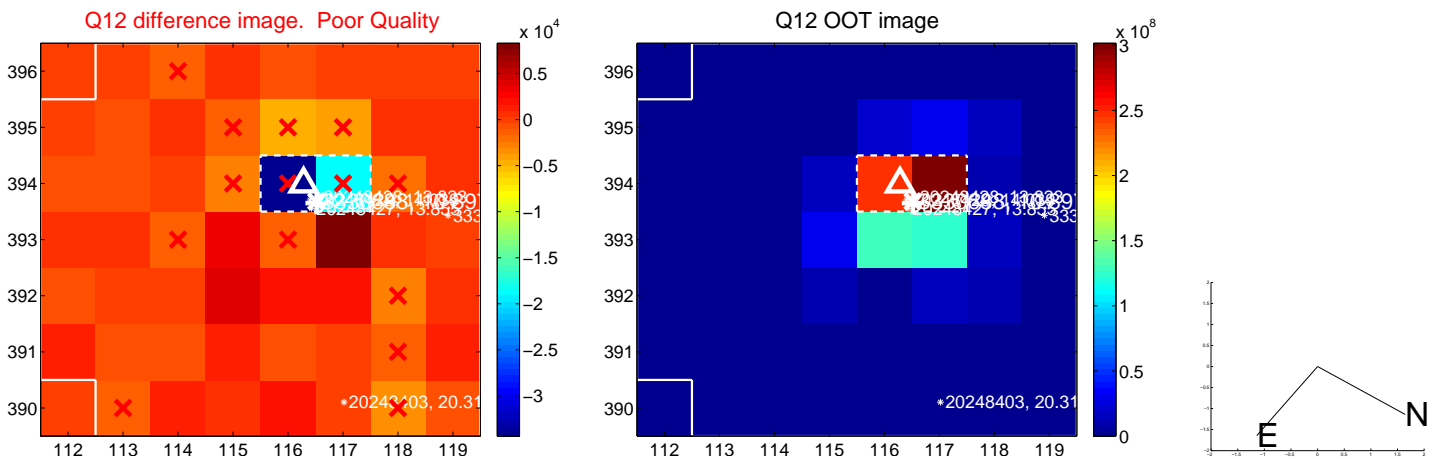
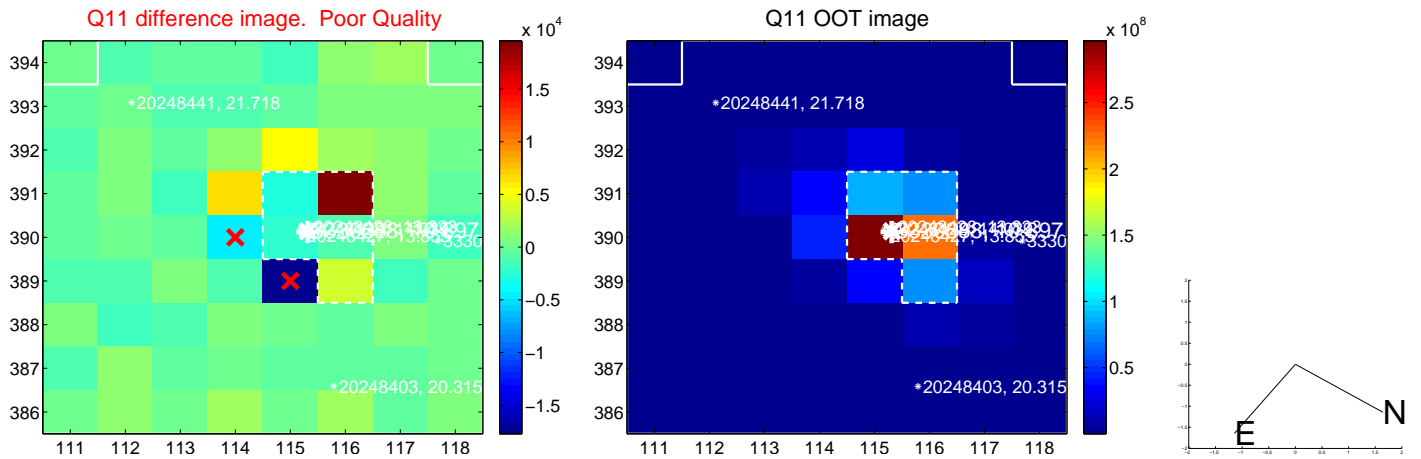
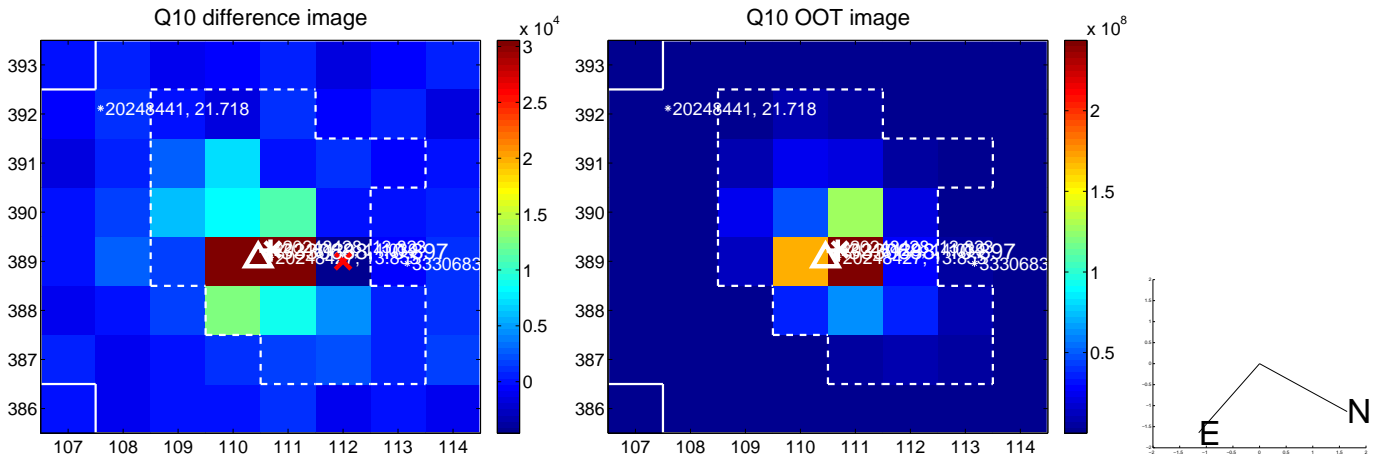
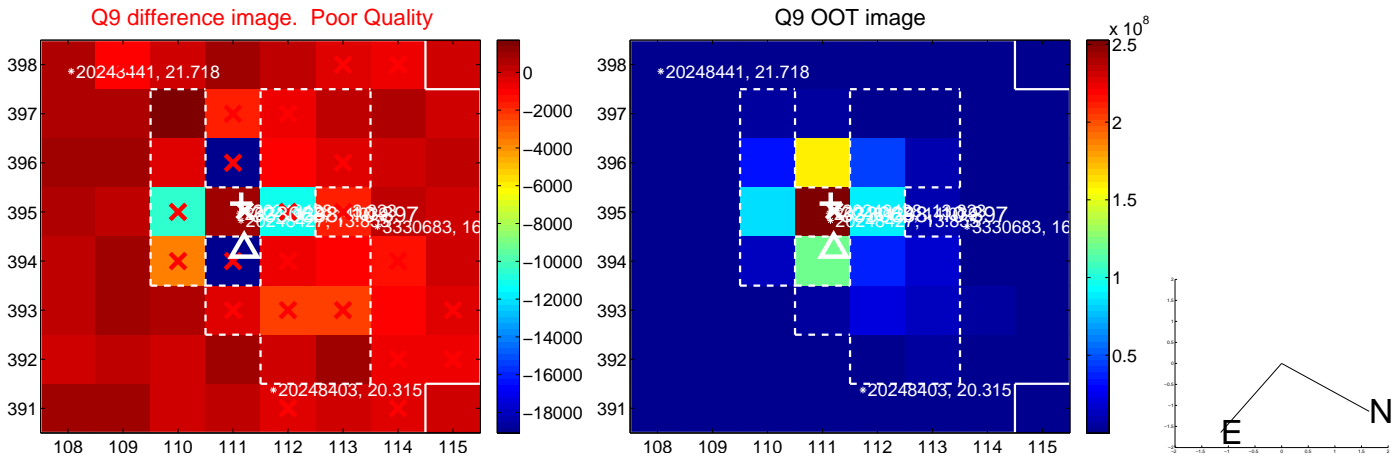
Q4 OOT image



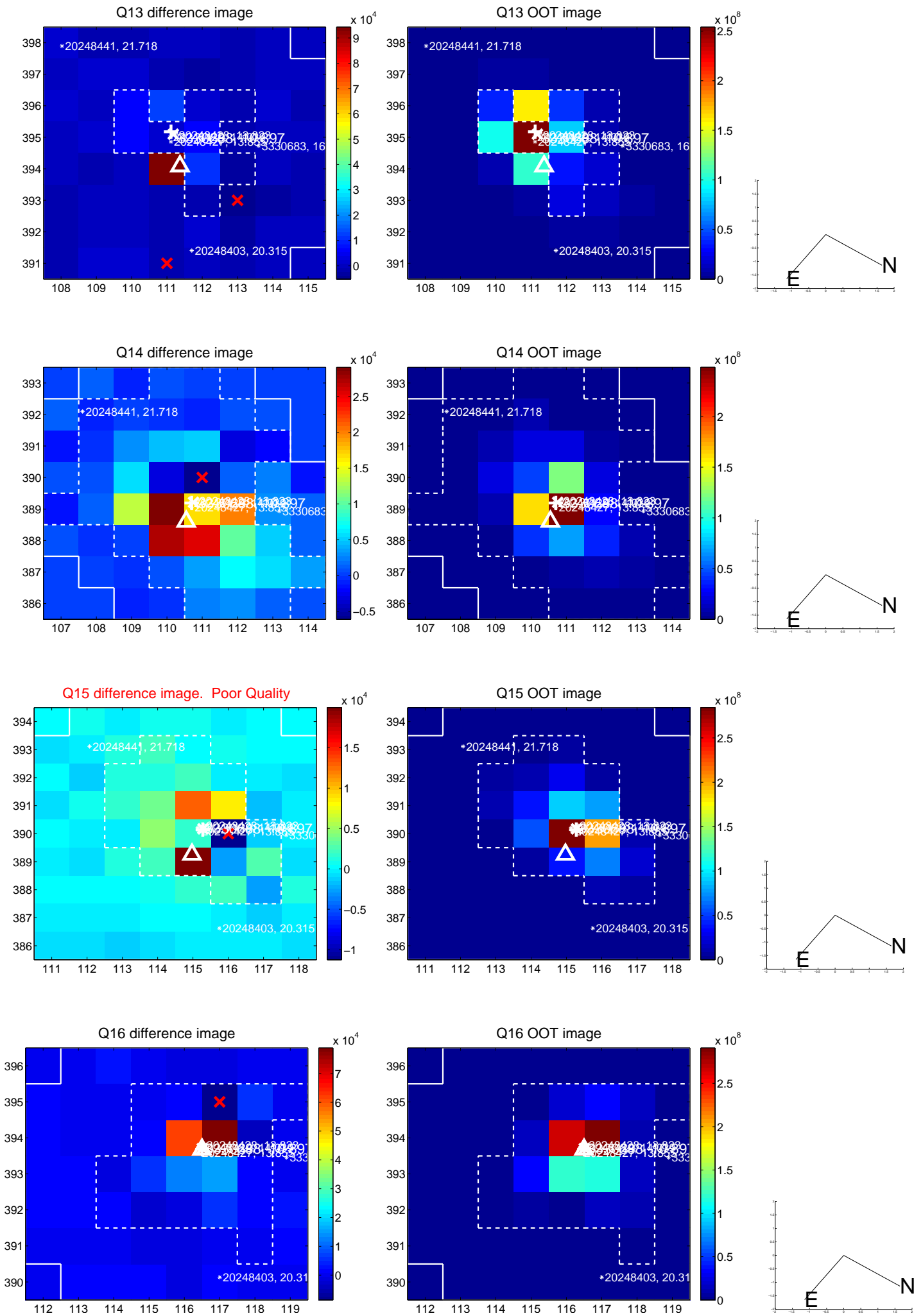
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



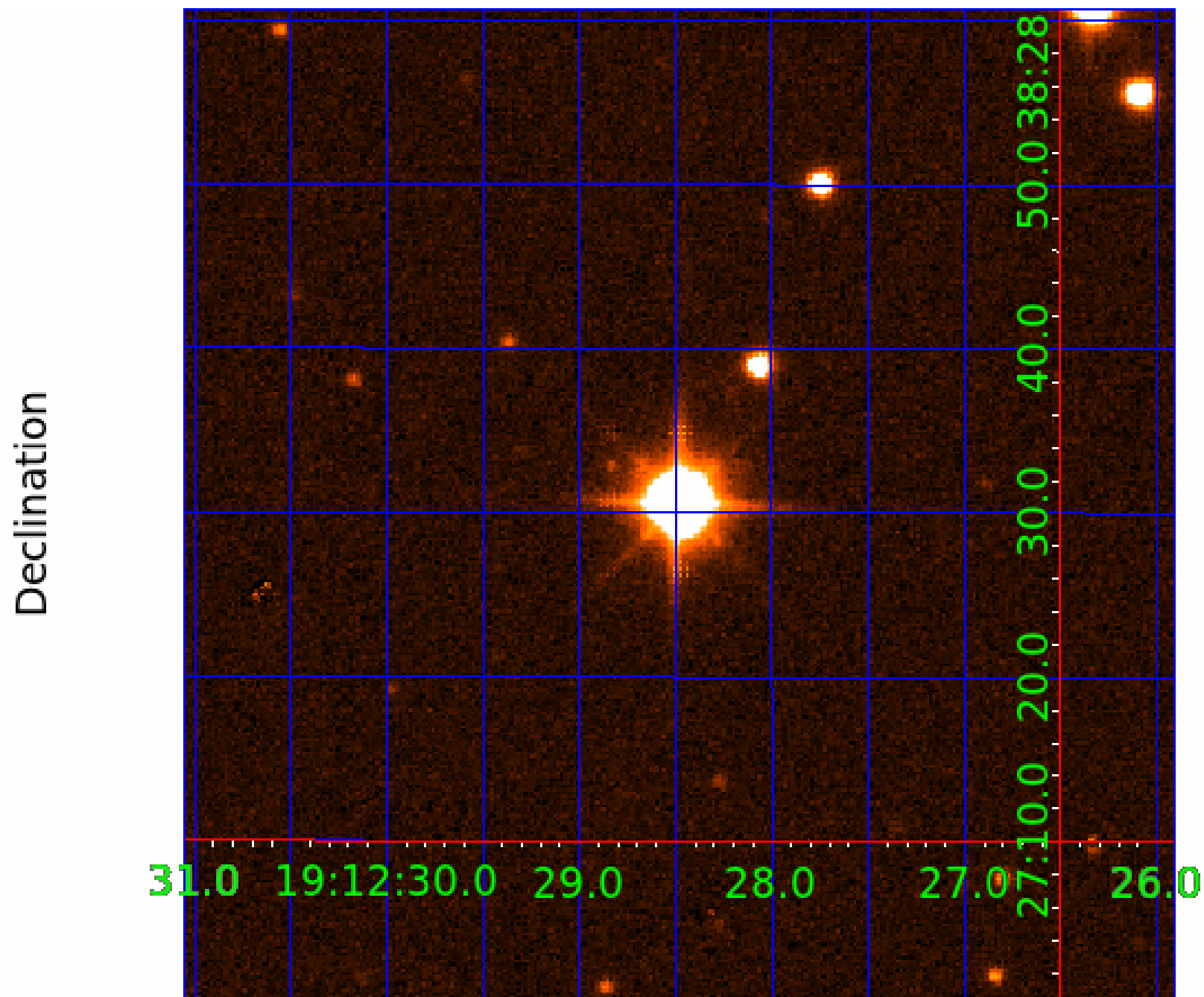
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 003330688

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})
003330688-01	OBS	No	403.118654	373.532587	669.2	16.018	12.4	9.2	4.02	6378	10.64	14.38
003330688-02	OBS	No	1.972058	132.115322	13.0	14.009	8.6	6.3	4.02	6378	1.50	17317.49
003330688-03	OBS	No	60.967300	169.249170	528.4	4.849	17.7	9.6	4.02	6378	9.93	178.48
003330688-04	OBS	No	41.494574	152.899803	877.2	1.009	20.8	9.5	4.02	6378	13.09	298.12

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003330688-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED
003330688-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
003330688-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003330688-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

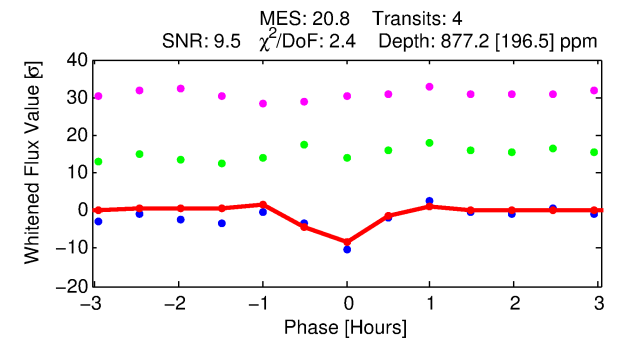
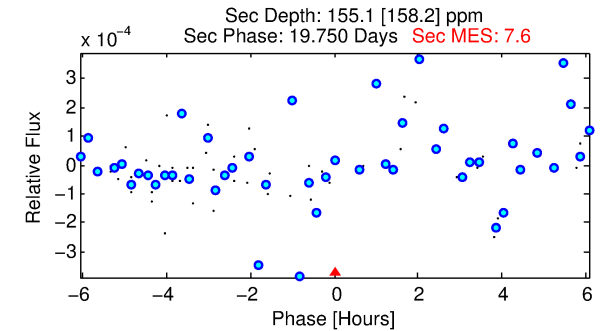
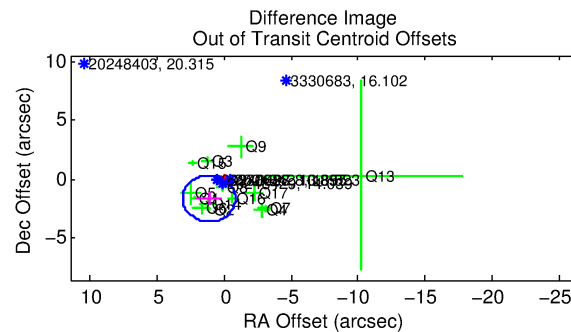
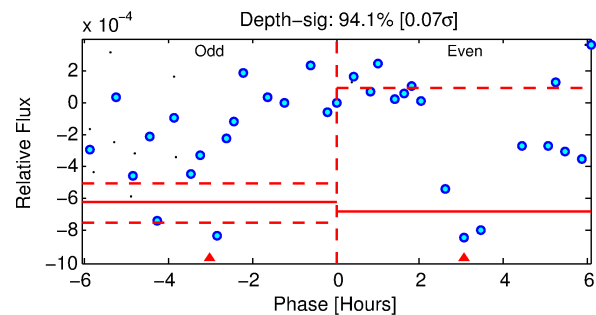
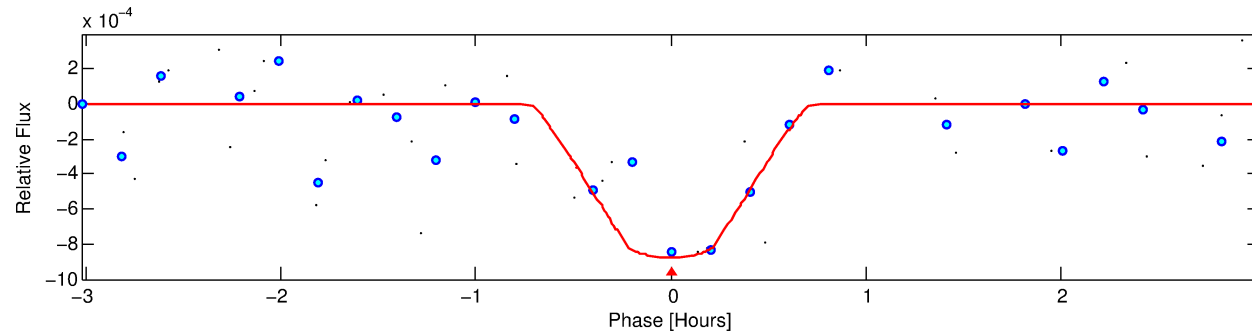
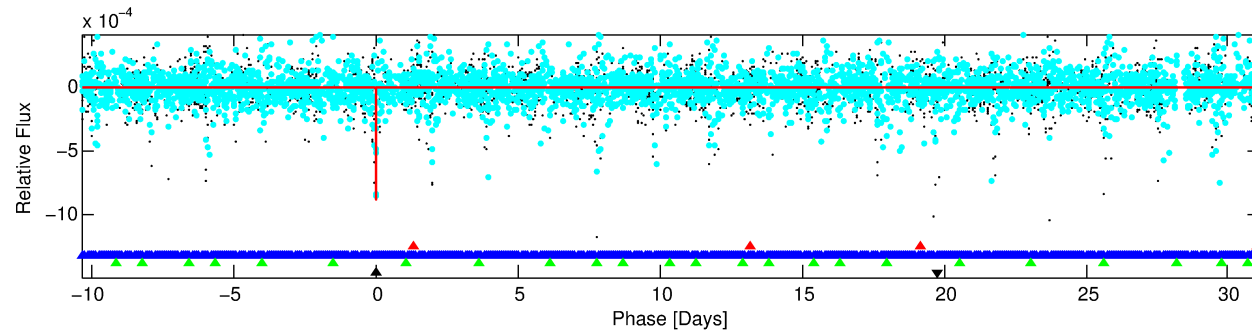
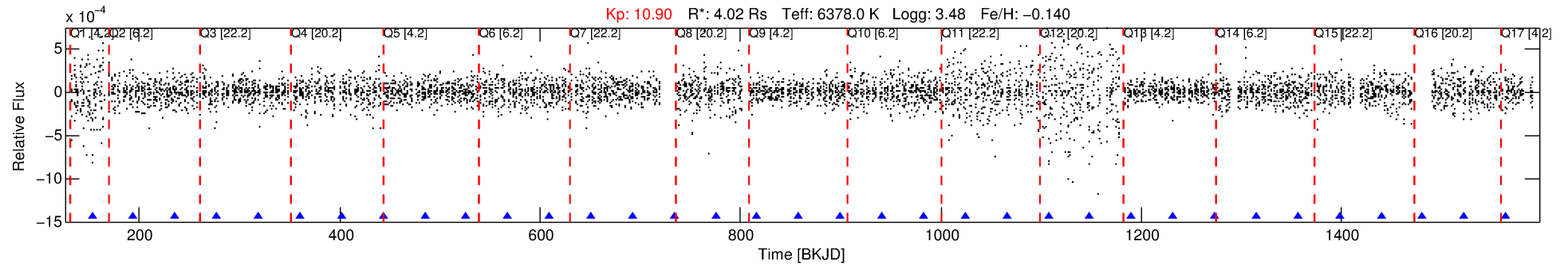
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003330688-04

No Significant Match Found

DV One-Page Summary

KIC: 3330688 Candidate: 4 of 4 Period: 41.495 d



DV Fit Results:

Period = 41.49457 [0.00051] d
Epoch = 152.8998 [0.0130] BKJD
Rp/R* = 0.0298 [0.1709]
a/R* = 217.52 [6732.19]
b = 0.76 [17.12]
Seff = 298.12 [203.18]
Teq = 1060 [181] K
Rp = 13.09 [75.16] Re
a = 0.2834 [0.1173] AU
Ag = 40.00 [460.74] [0.08 σ]
Teffp = 4120 [11844] K [0.26 σ]

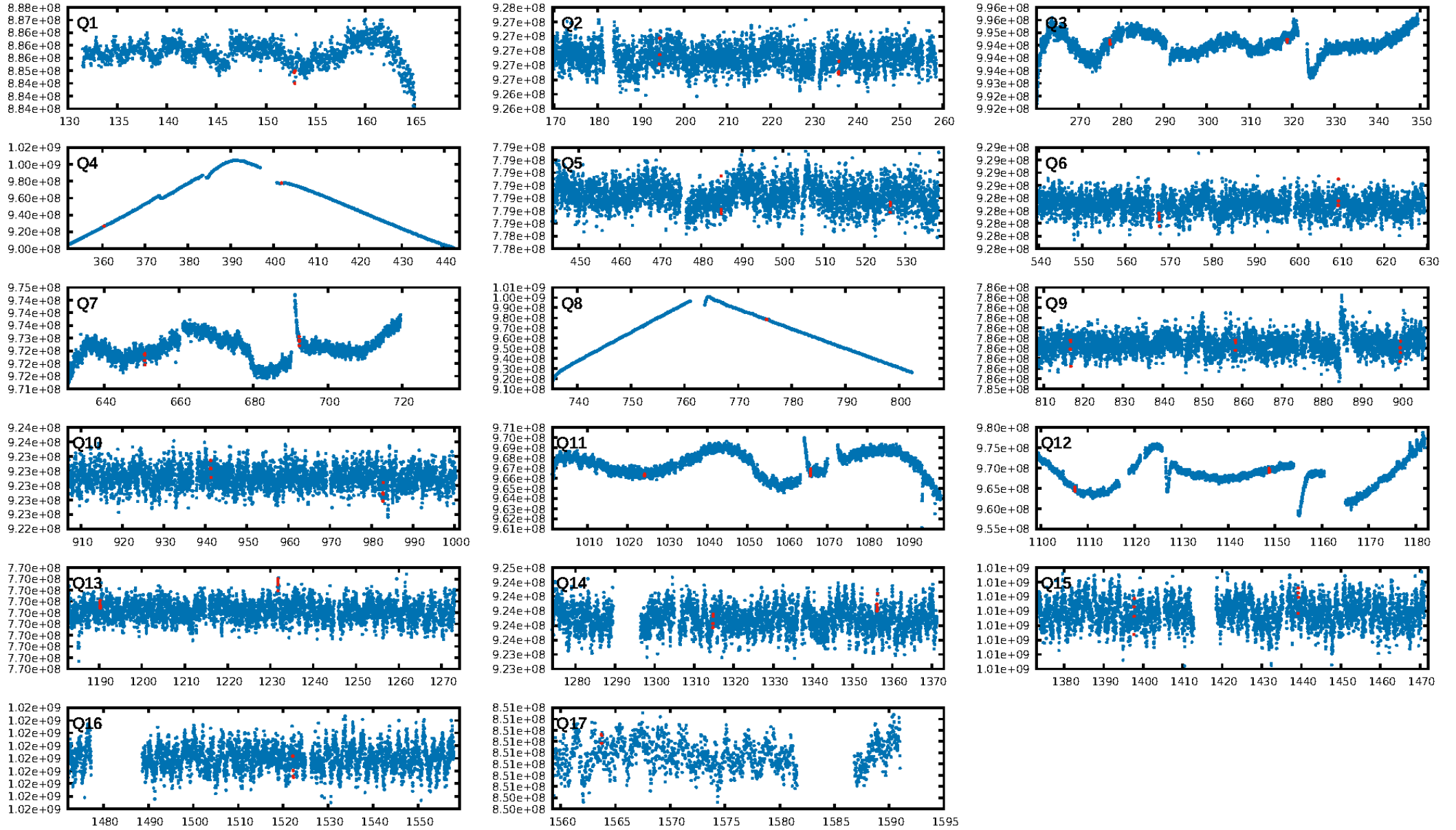
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [67.54 σ]
LongPeriod-sig: 100.0% [94.36 σ]
ModelChiSquare2-sig: 39.4%
ModelChiSquareGof-sig: 73.1%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.018
Centroid-sig: 2.0%
Centroid-so: 0.097 arcsec [0.67 σ]
OotOffset-rm: 1.969 arcsec [3.00 σ]
KicOffset-rm: 2.301 arcsec [3.93 σ]
OotOffset-st: 3/3/3/5 [14]
KicOffset-st: 3/3/3/5 [14]
DiffImageQuality-fgm: 0.43 [6/14]
DiffImageOverlap-fno: 0.53 [9/17]

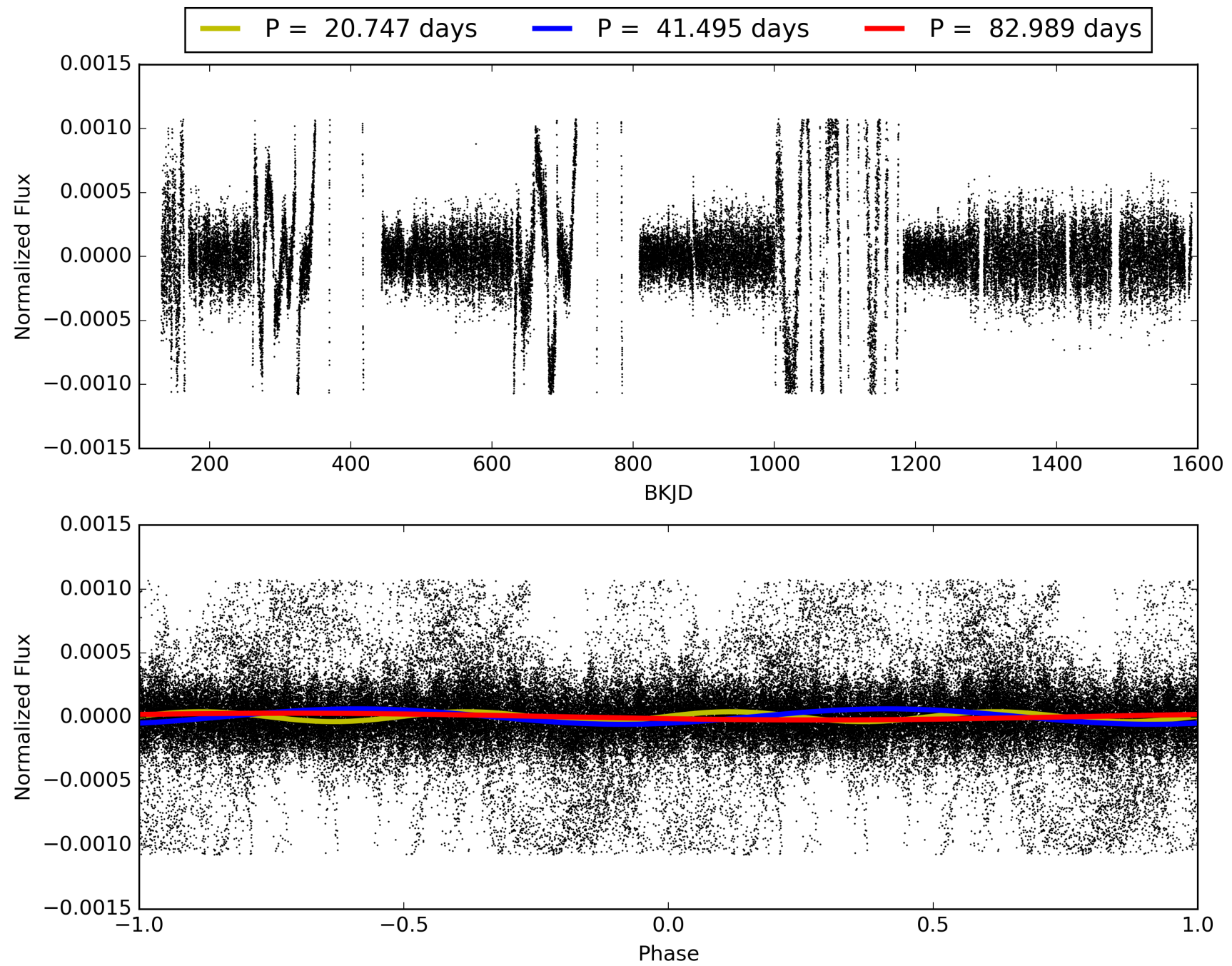
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 01:04:49 Z

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

TCE 003330688-04, PDC Light Curves

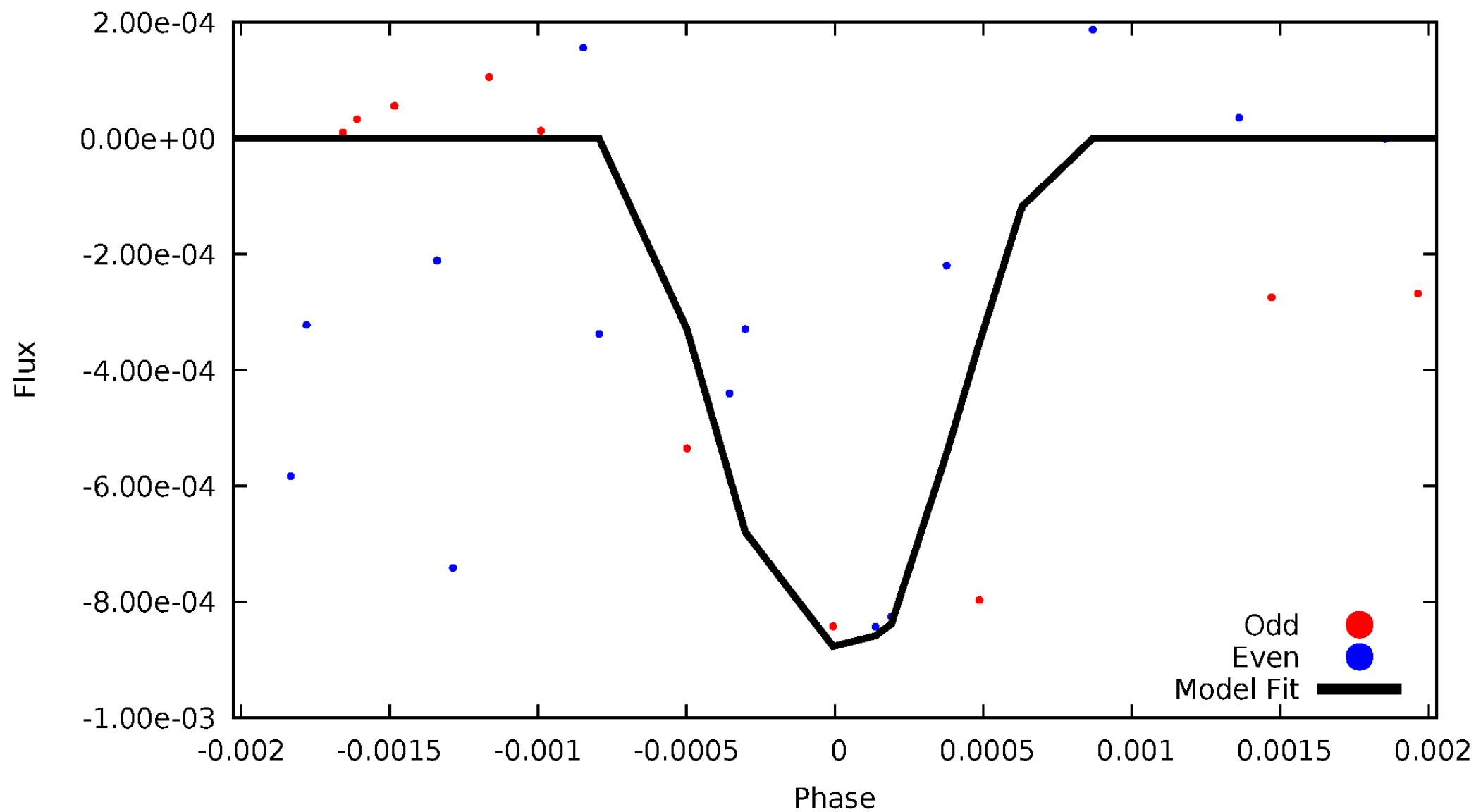


TCE 003330688-04



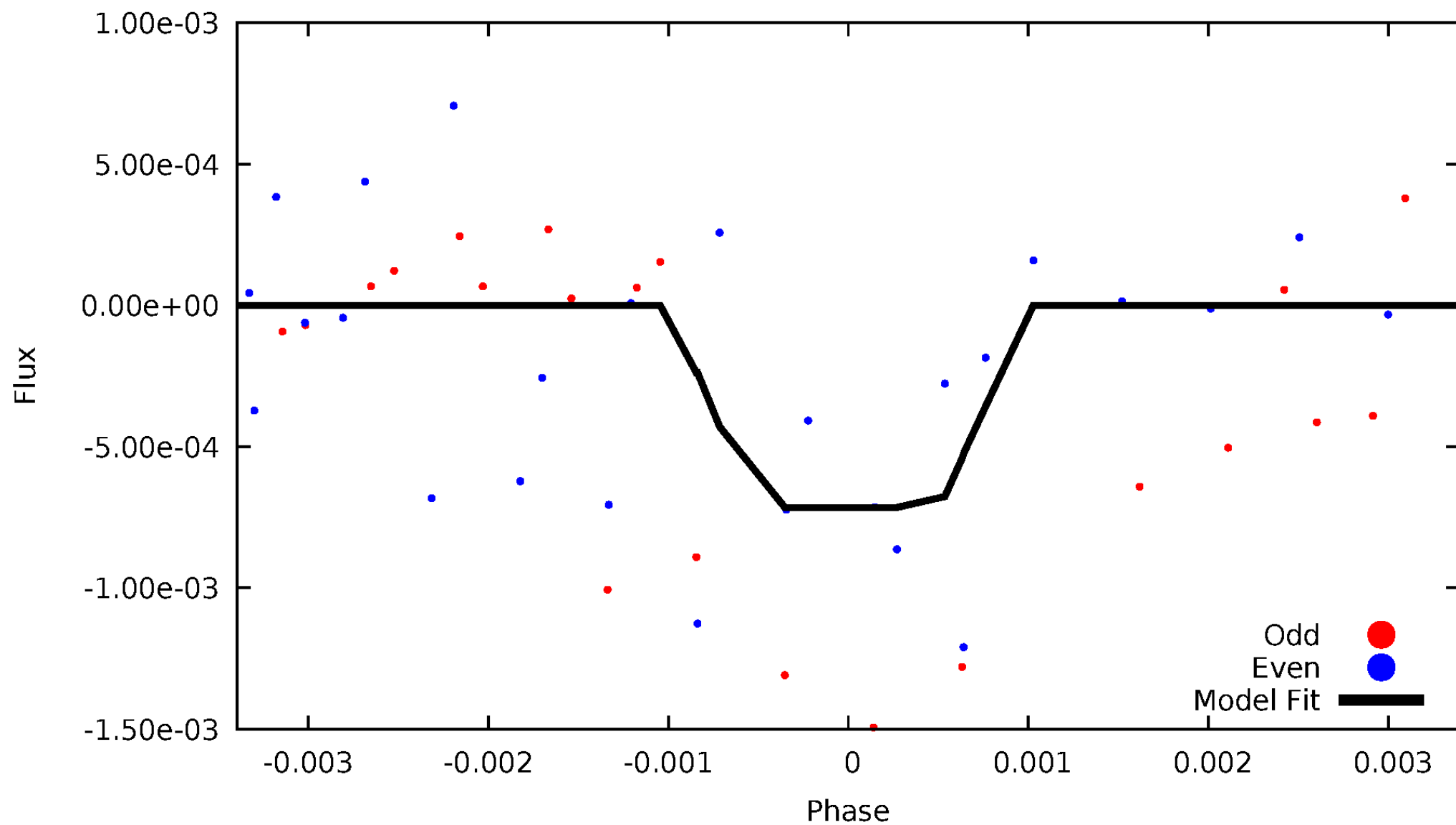
DV Odd/Even

TCE 003330688-04



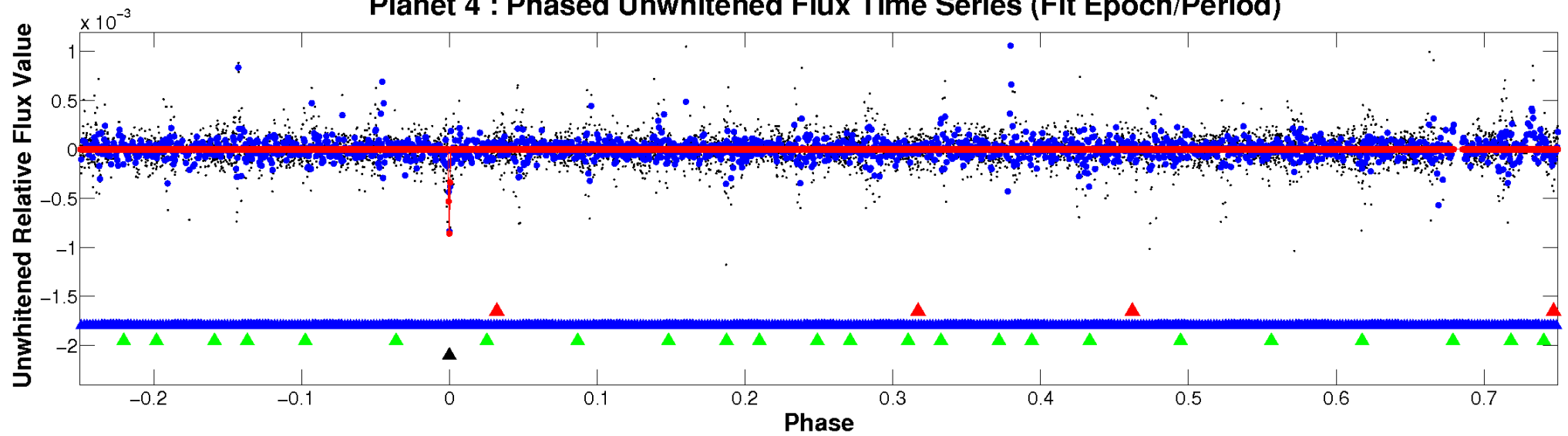
ALT Odd/Even

TCE 003330688-04

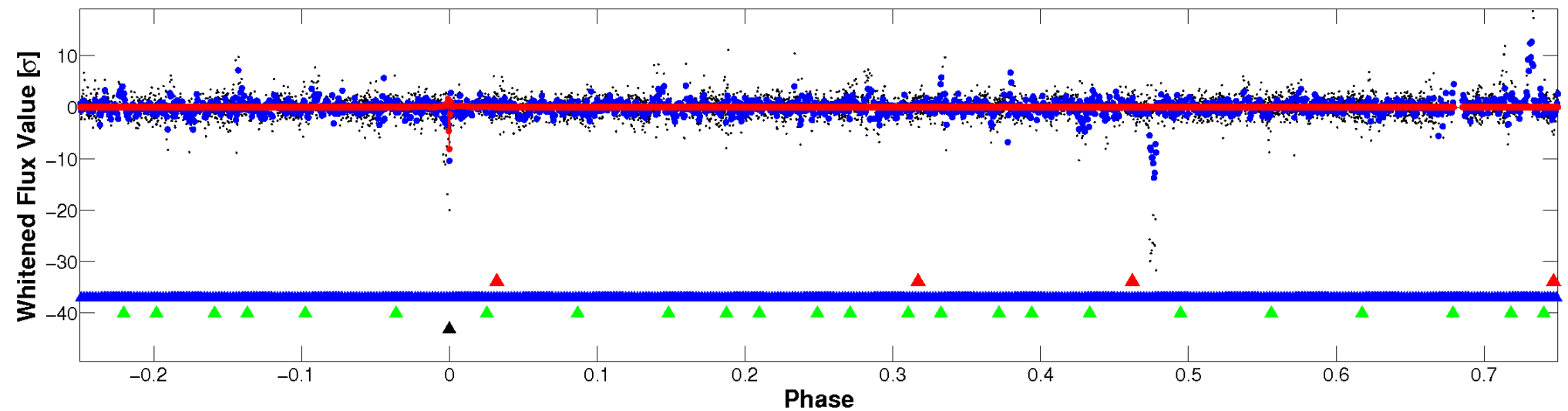


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

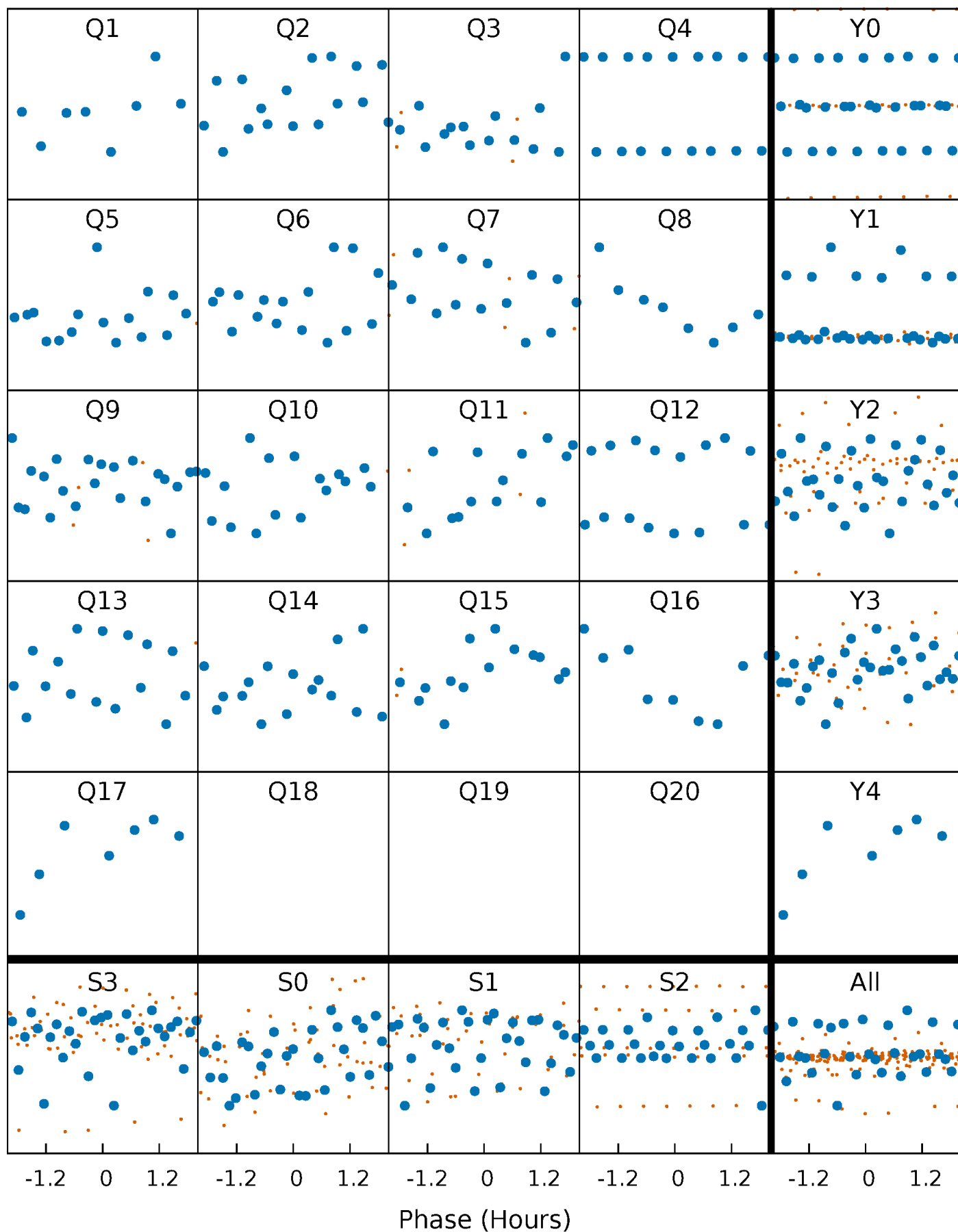


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



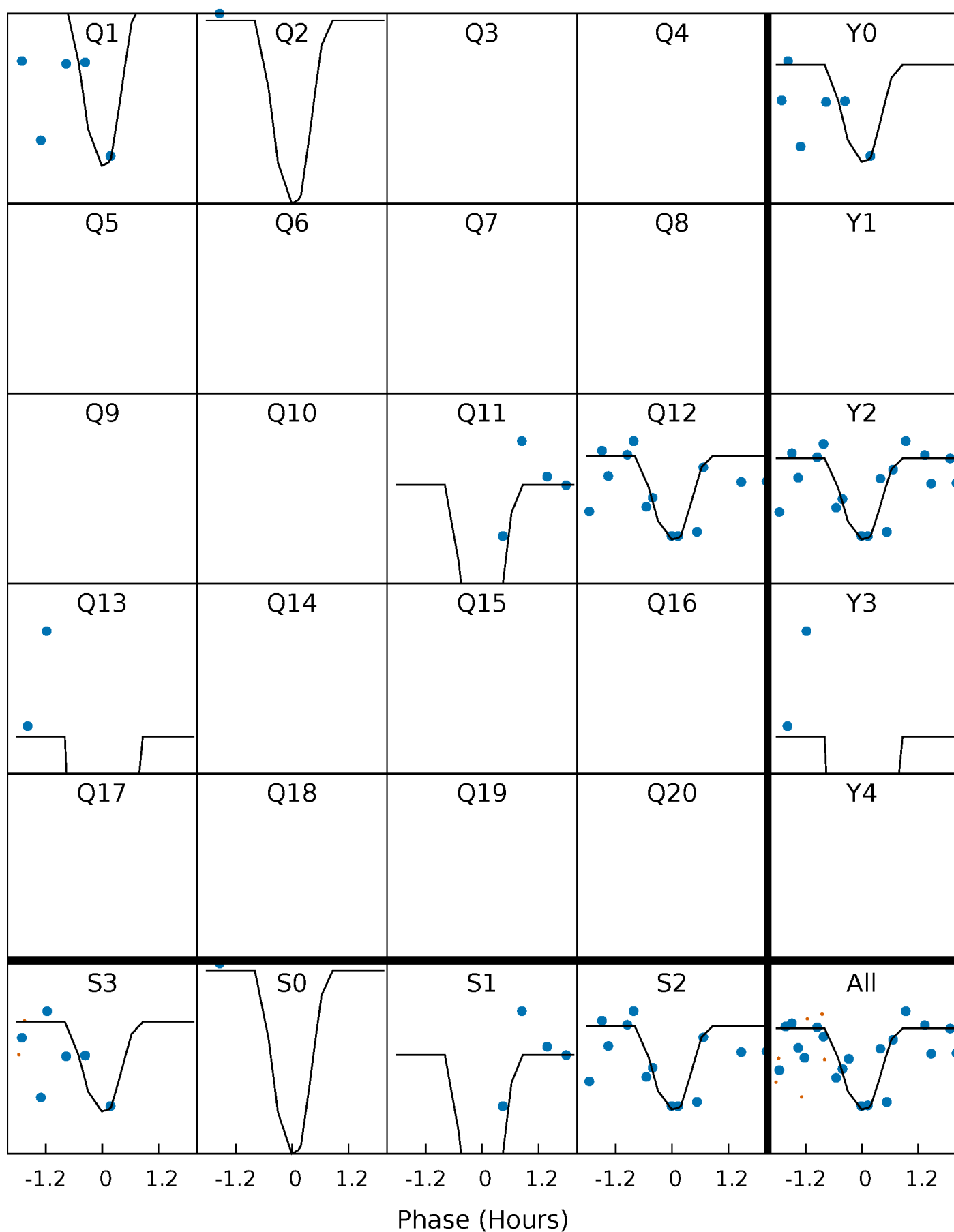
PDC Quarter-Phased Transit Curves

TCE 003330688-04 P= 41.494574 Days $T_0=152.899803$ (BKJD)



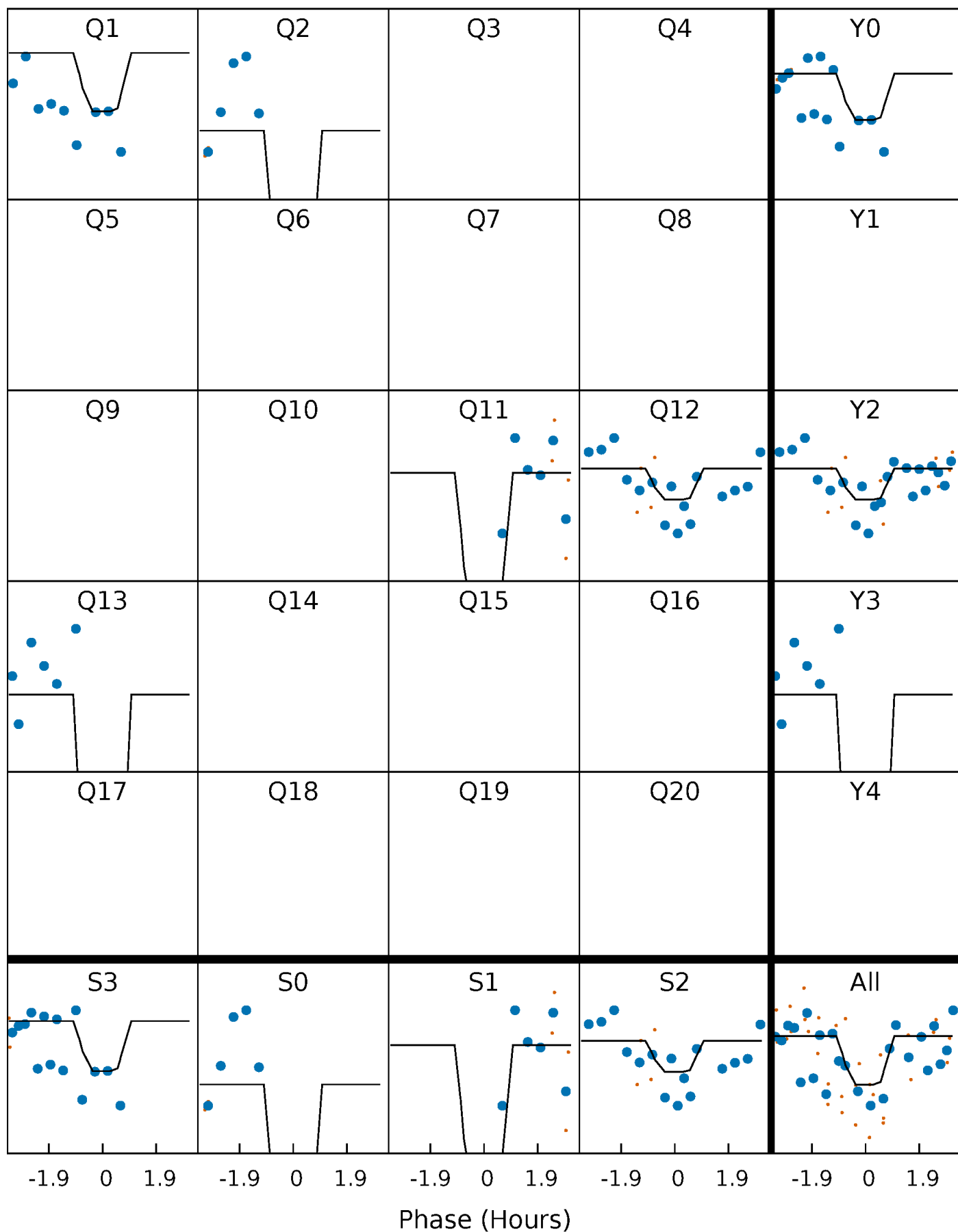
DV Quarter-Phased Transit Curves

TCE 003330688-04 $P = 41.494574$ Days $T_0 = 152.899803$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

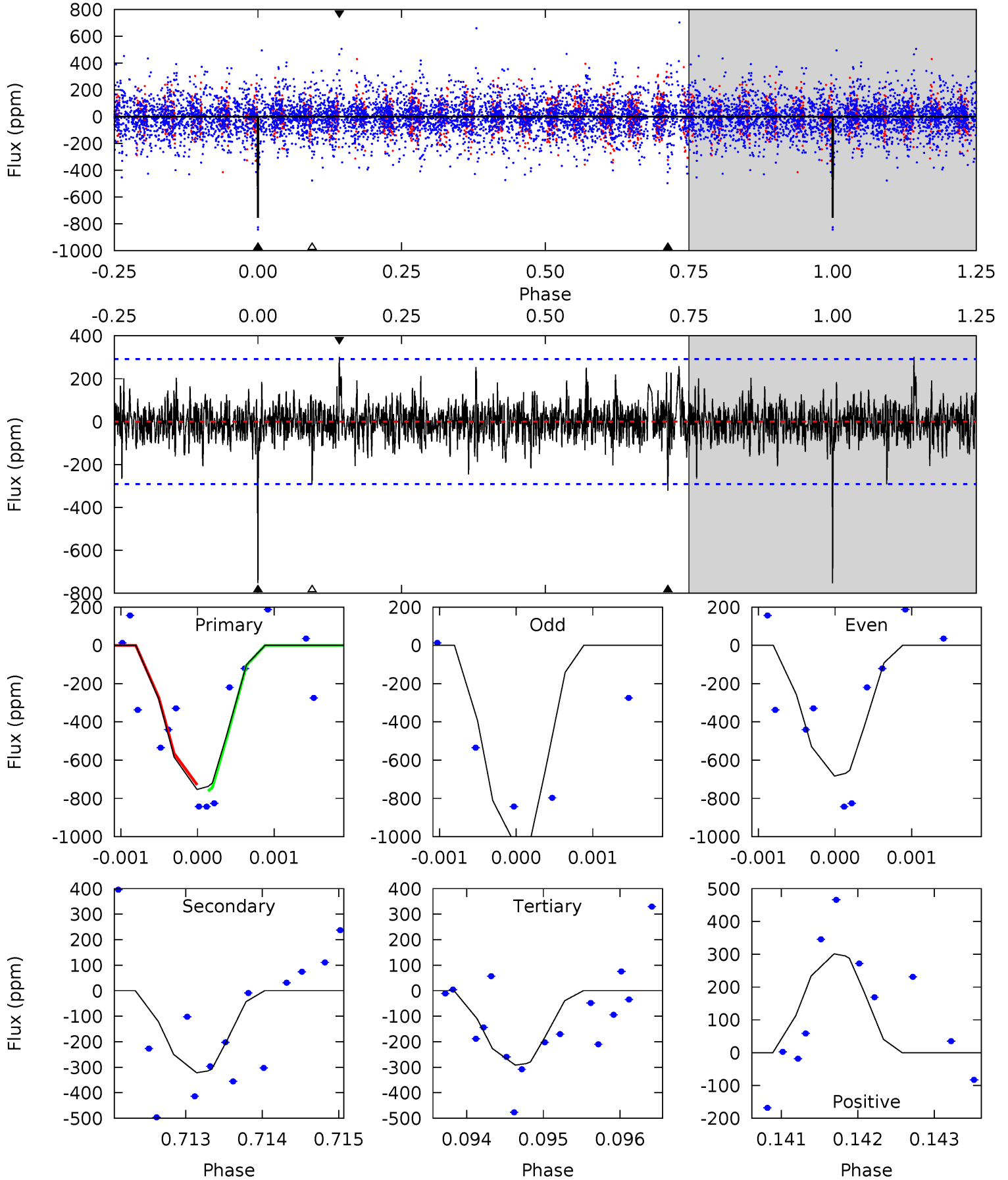
TCE 003330688-04 P= 41.495123 Days $T_0=152.881140$ (BKJD)



DV Model-Shift Uniqueness Test

003330688-04, $P = 41.494574$ Days, $E = 111.405229$ Days

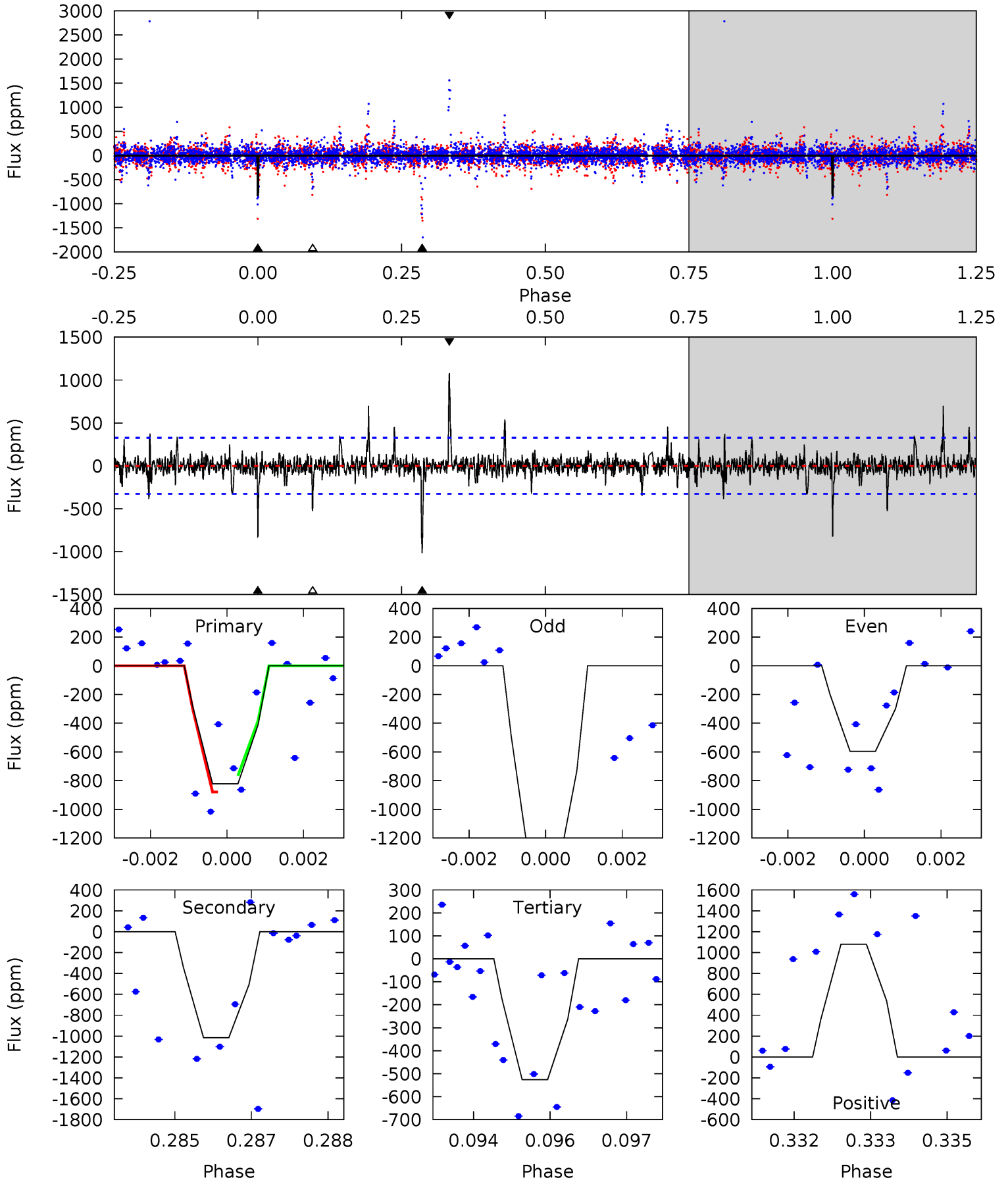
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.1	6.02	5.46	5.64	5.45	3.29	1.19	8.64	8.46	0.56	0.38	3.43	1.06	0.29	0.29



Alt Model-Shift Uniqueness Test

003330688-04, P = 41.495123 Days, E = 111.386017 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	16.6	8.60	17.7	5.34	3.11	1.34	4.84	-4.22	7.97	-1.08	6.60	0.98	0.52	0.84



Stellar Parameters For KIC 003330688

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6378^{+173}_{-154}	$3.476^{+0.399}_{-0.094}$	$-0.140^{+0.350}_{-0.300}$	$4.019^{+0.560}_{-1.679}$	$1.764^{+0.173}_{-0.433}$	$0.038^{+0.127}_{-0.011}$
	+3%/-2%	+11%/-3%	+250%/-214%	+14%/-42%	+10%/-25%	+332%/-29%
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 003330688-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-322 ± 53	$50.49^{+56.02}_{-36.02}$	1443^{+94}_{-161}	3015^{+1562}_{-581}	$5.302^{+61.339}_{-4.116}$
Alt.	-1014 ± 61	$48.47^{+56.87}_{-33.27}$	1446^{+94}_{-152}	3672^{+2030}_{-759}	19^{+170}_{-15}

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

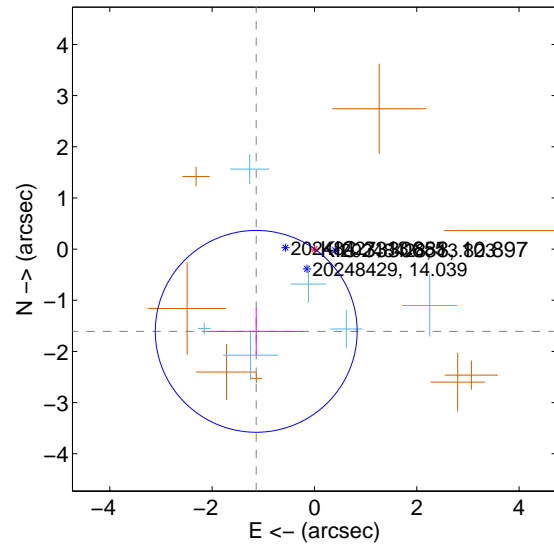
Supplemental centroid analysis for 003330688-04. **Kepler magnitude: 10.90.** Transit SNR 9.51

There are 6 quarters with good PRF difference image offsets

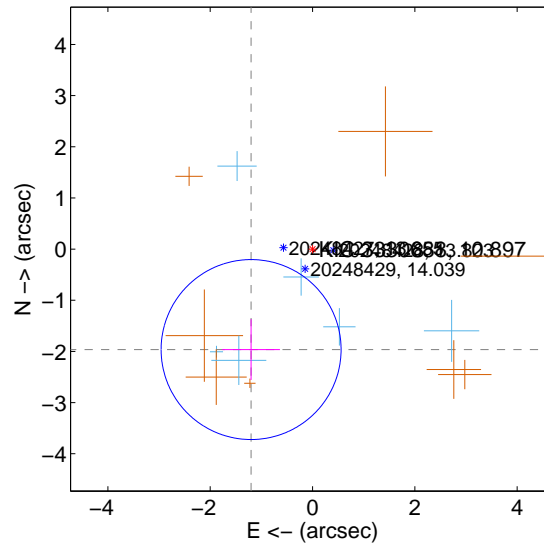
The direct PRF centroid is offset from the target star catalog position by about 0.68 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.969 ± 0.657	3.00	1.138 ± 0.914	-1.608 ± 0.456
PRF-fit source offset from KIC position	2.301 ± 0.586	3.93	1.201 ± 0.564	-1.963 ± 0.594
photometric centroid source offset	0.10 ± 0.15	0.67	-0.07 ± 0.15	-0.07 ± 0.14

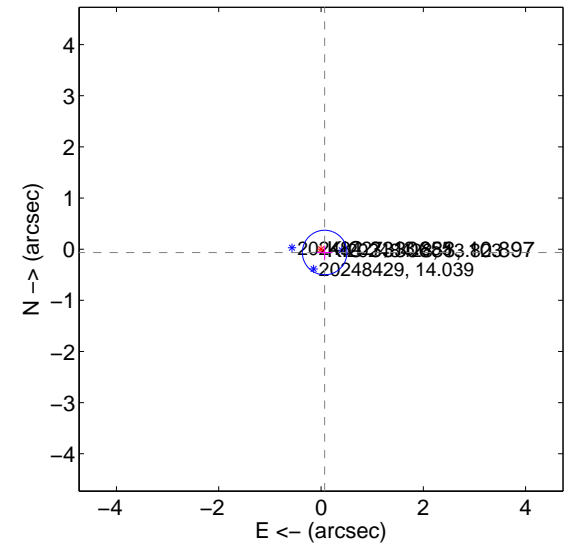
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

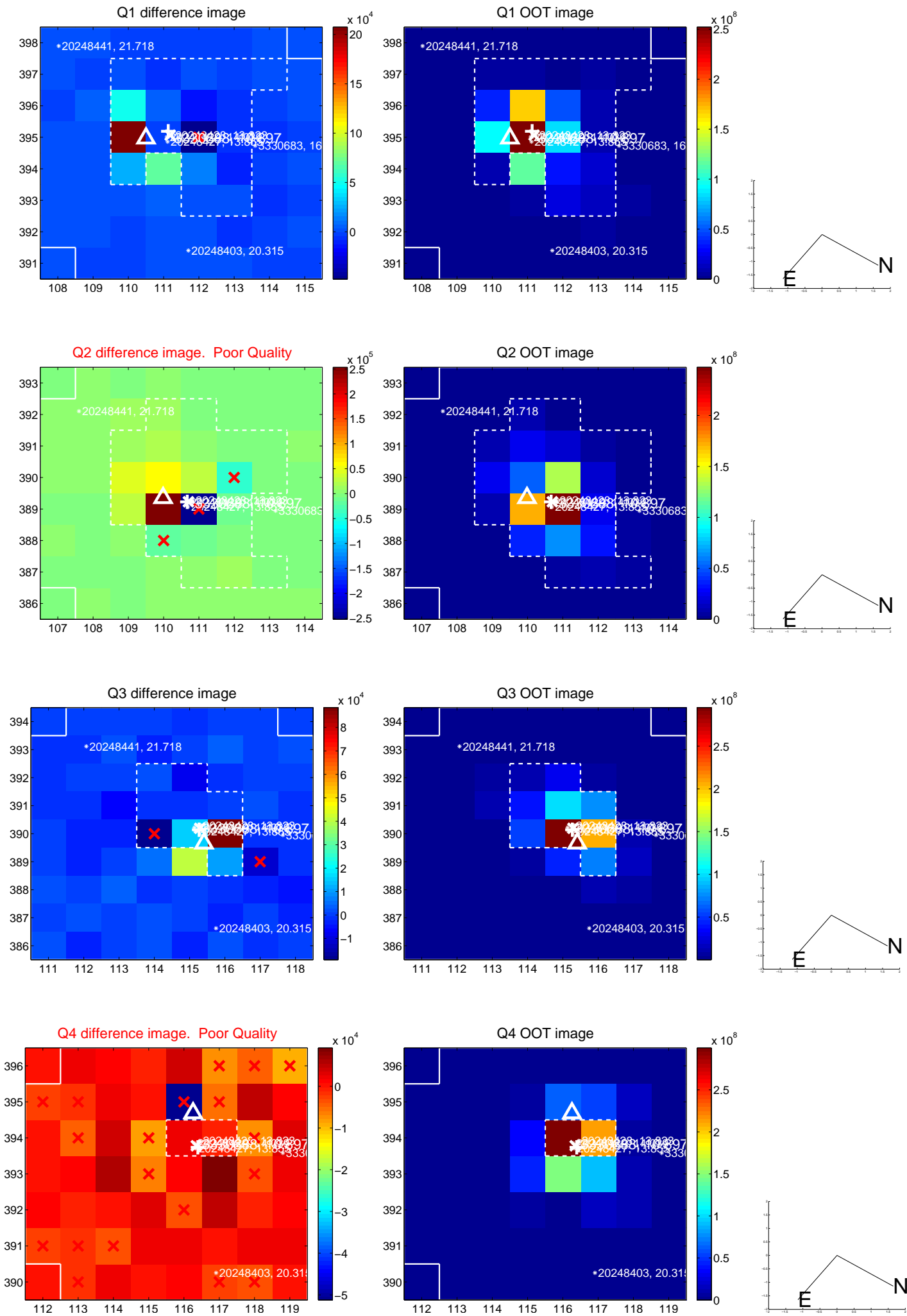


offset from photometric centroids

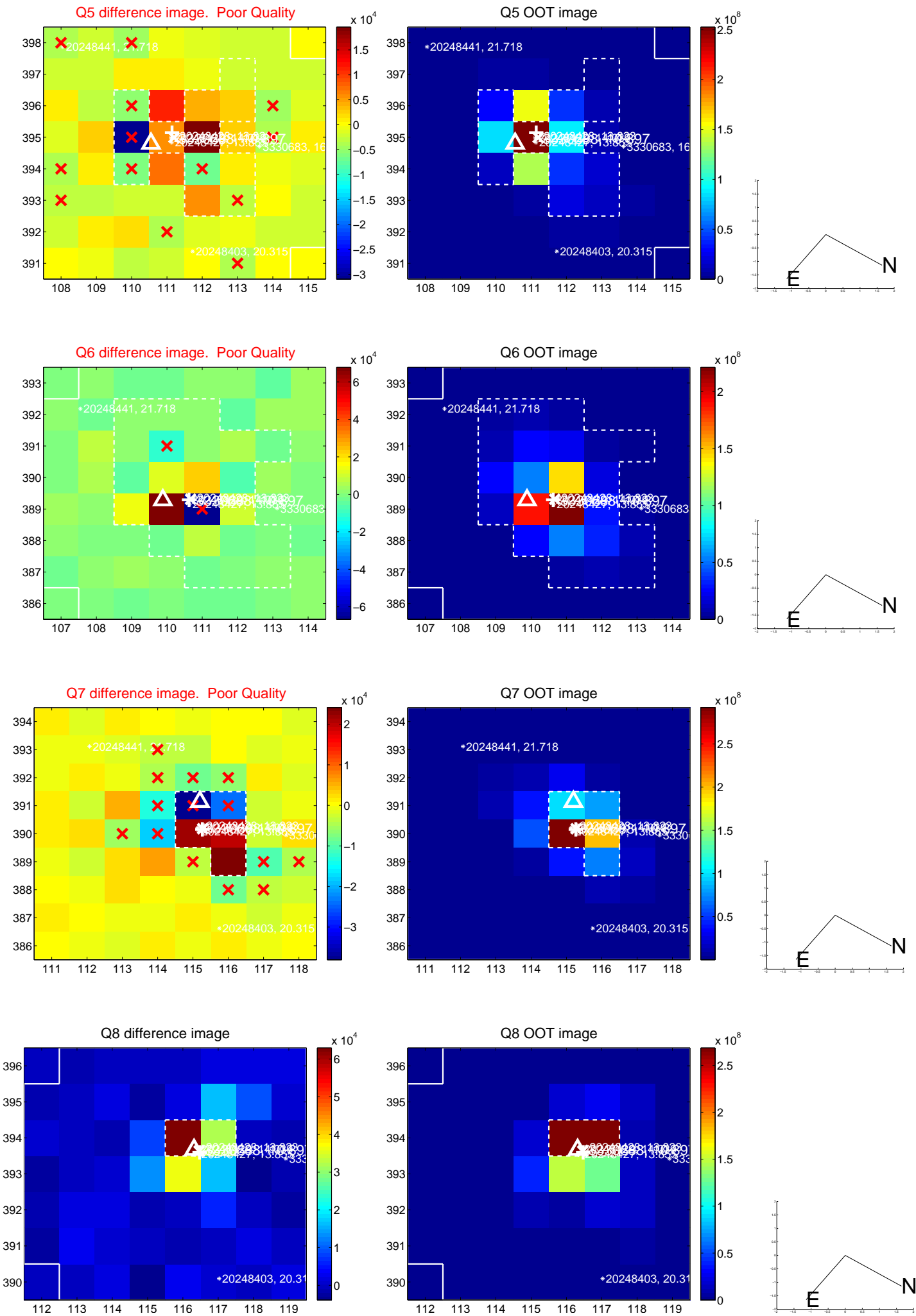


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

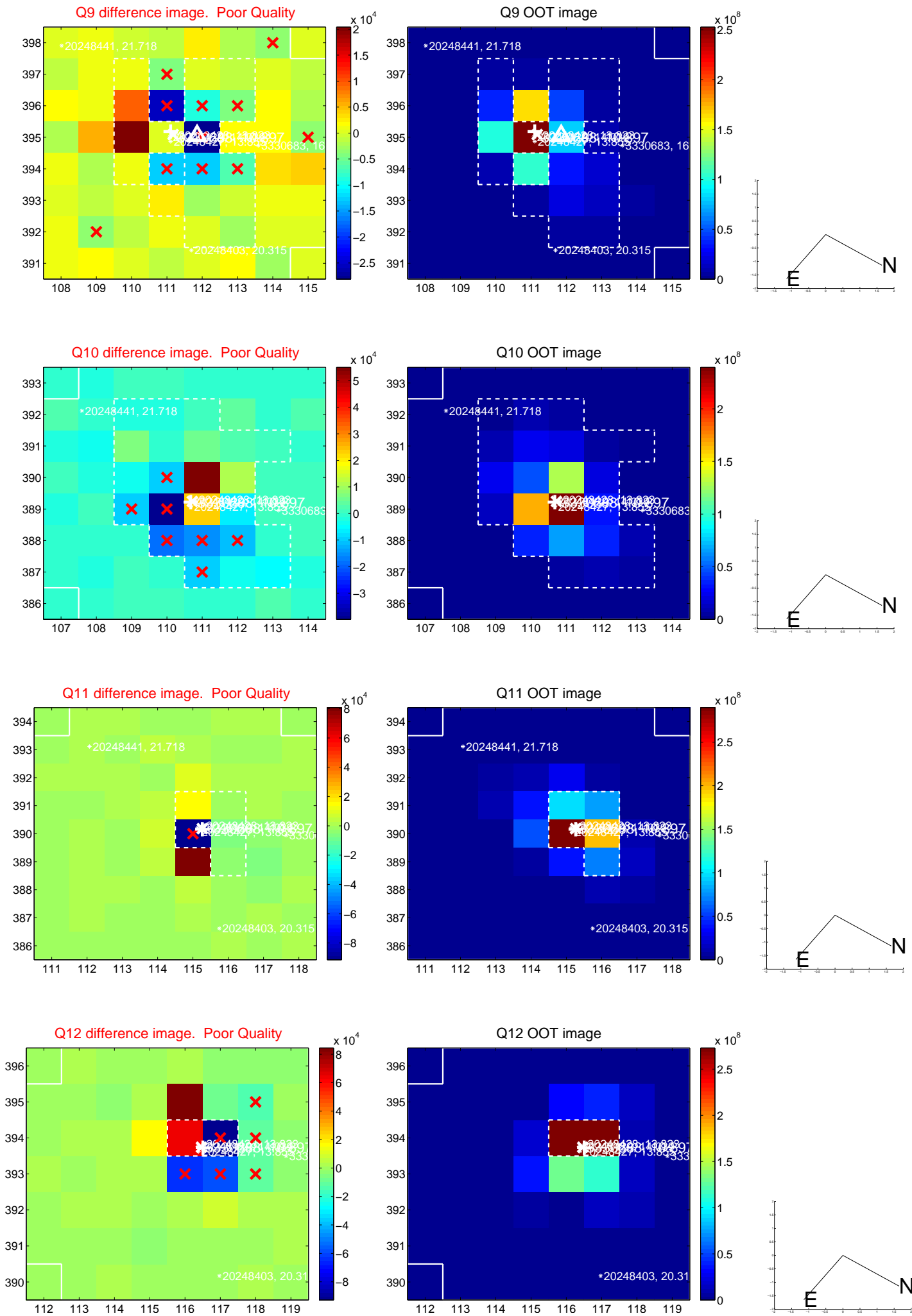
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



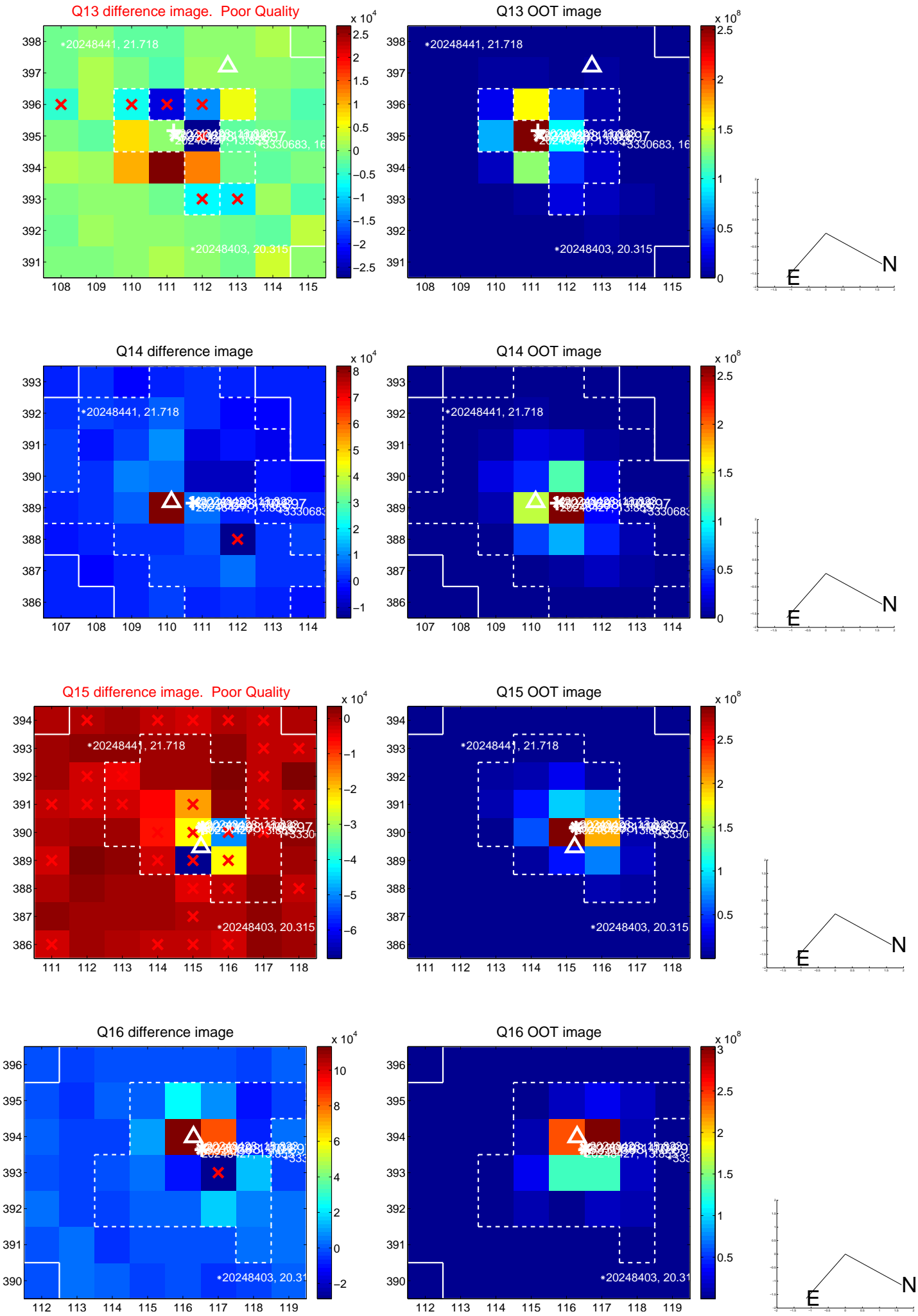
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



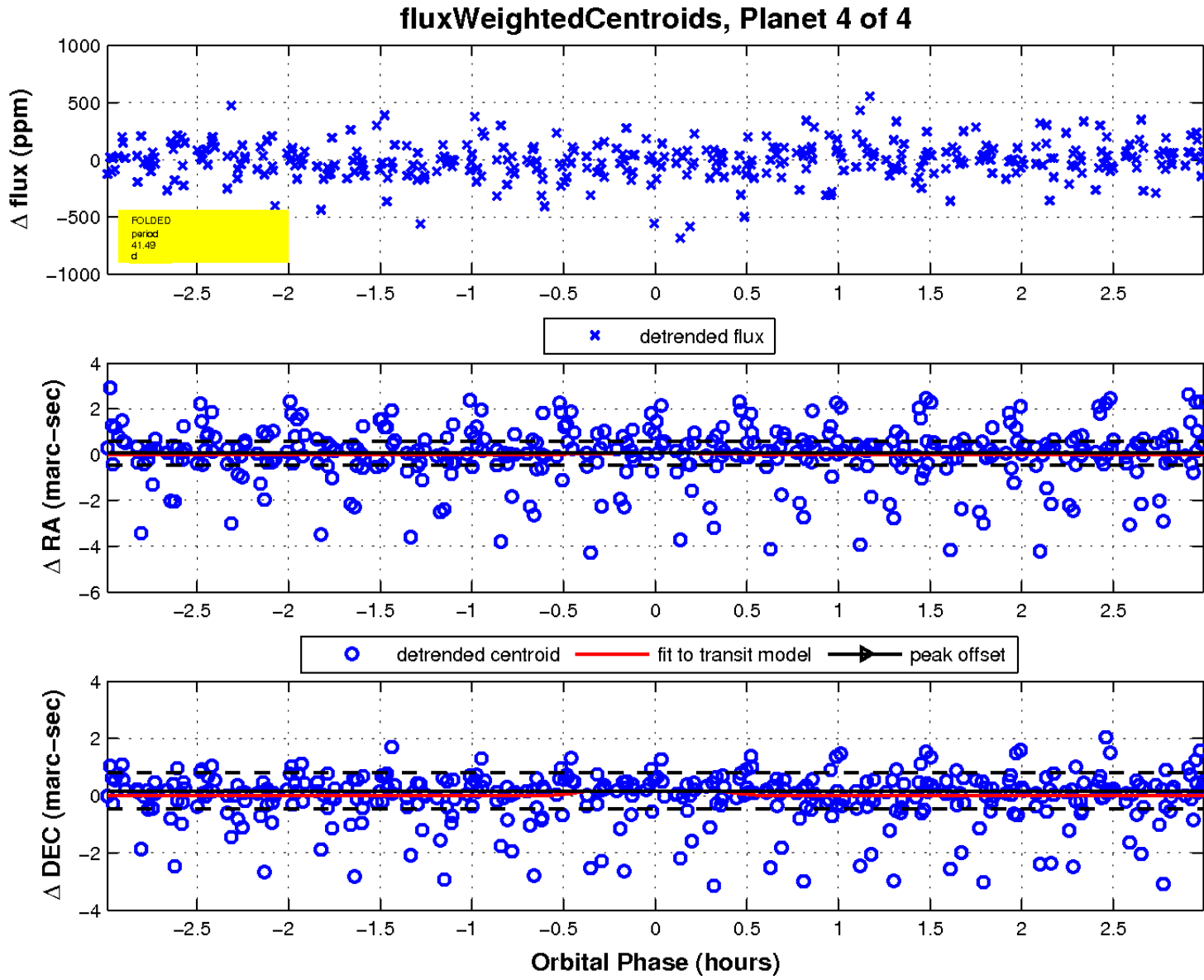
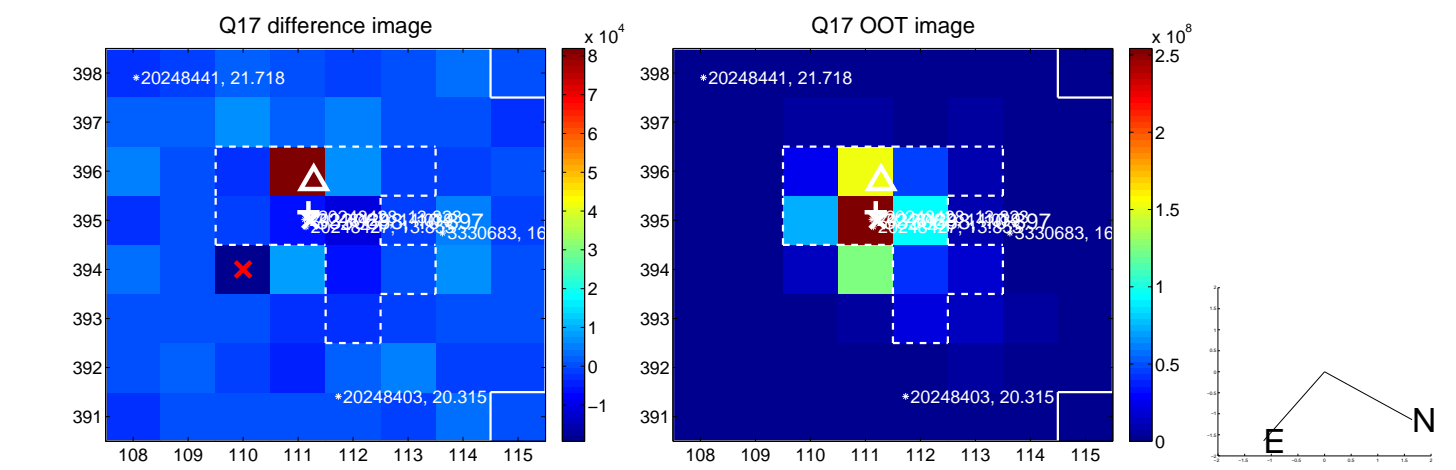
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

