

KIC 007663830

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})
007663830-01	OBS	No	1.610043	132.942315	75.5	9.721	8.7	8.8	0.63	4392	0.53	251.54
007663830-02	OBS	No	519.977865	409.069456	2595.2	9.660	24.8	15.9	0.63	4392	3.12	0.11
007663830-03	OBS	No	14.620361	143.615874	239.7	10.425	7.4	5.8	0.63	4392	1.03	13.28
007663830-04	OBS	No	109.322686	171.191420	605.0	33.815	7.7	3.4	0.63	4392	2.48	0.91

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007663830-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_UNRESOLVED_OFFSET
007663830-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007663830-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
007663830-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

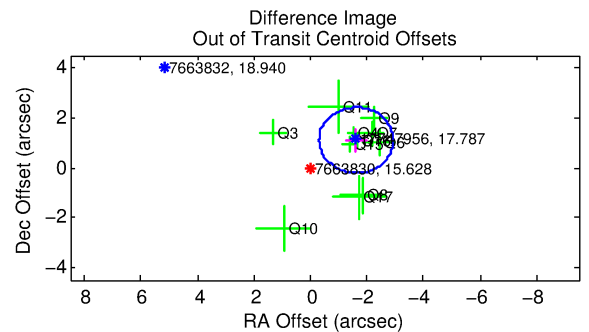
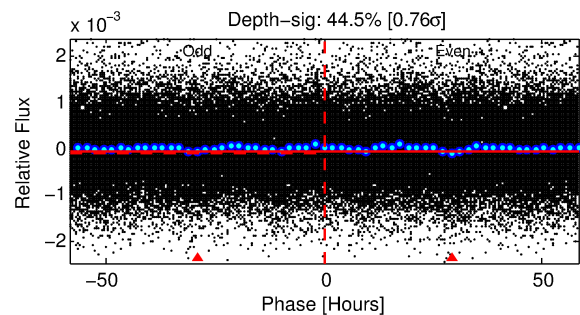
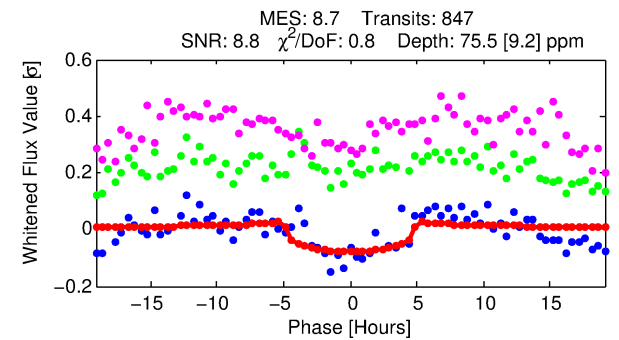
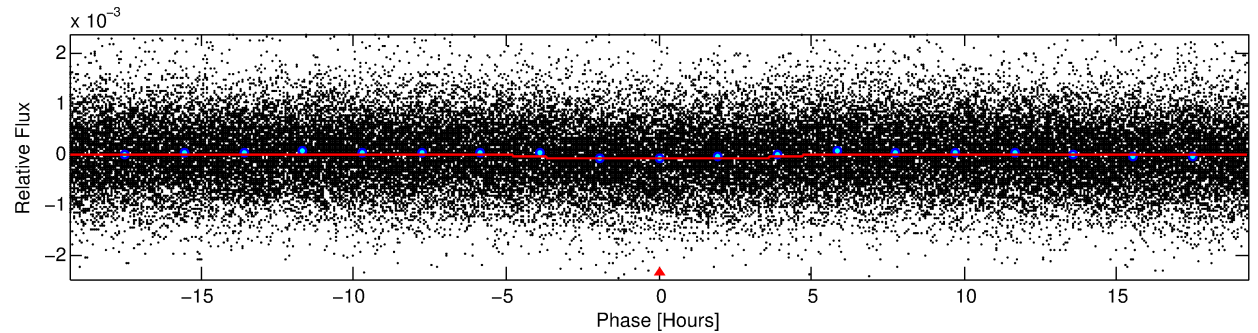
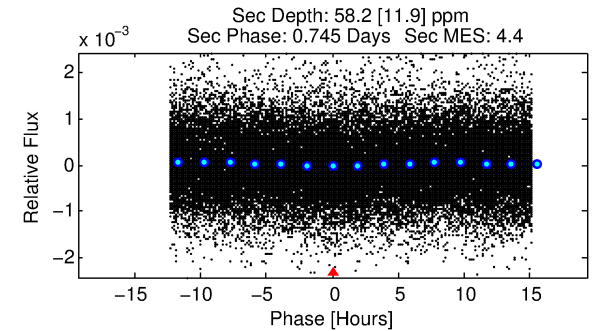
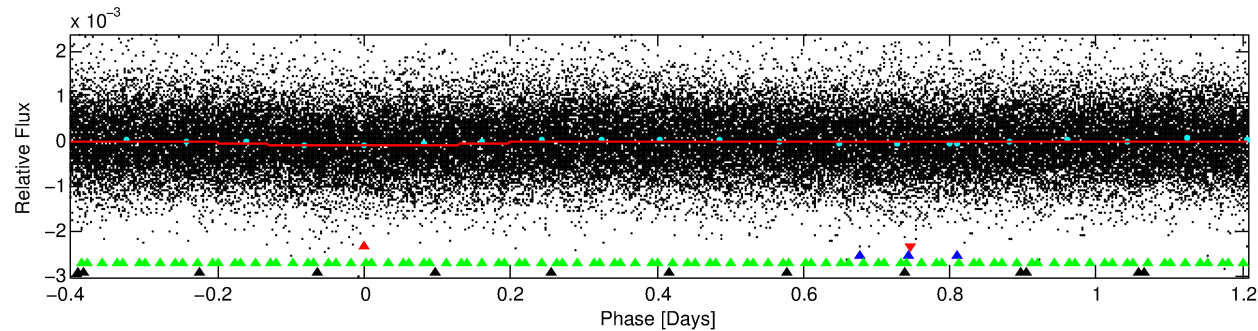
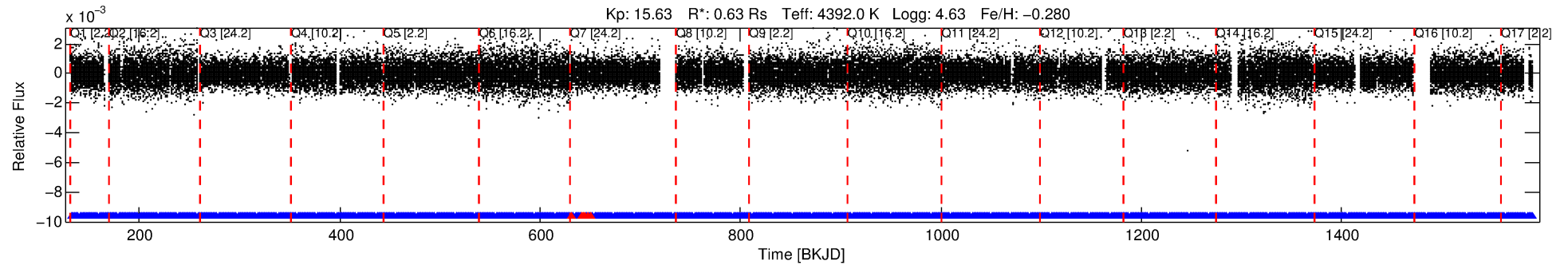
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007663830-01

No Significant Match Found

DV One-Page Summary

KIC: 7663830 Candidate: 1 of 4 Period: 1.610 d



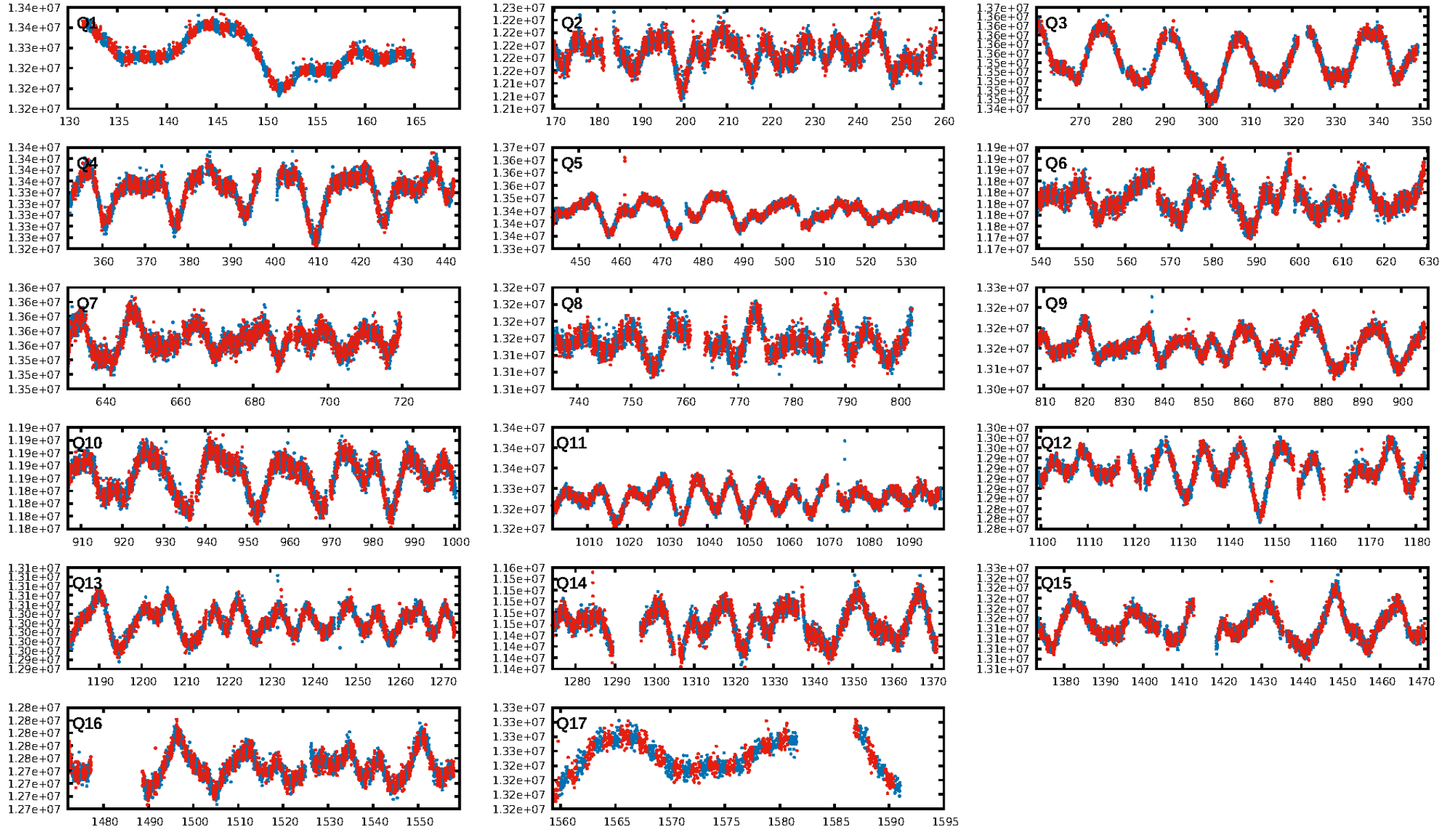
DV Fit Results:

Period = 1.61004 [0.00003] d
Epoch = 132.9423 [0.0091] BKJD
Rp/R* = 0.0077 [0.0058]
a/R* = 1.39 [1.63]
b = 0.26 [8.87]
Seff = 251.54 [40.43]
Teq = 1015 [41] K
Rp = 0.53 [0.40] Re
a = 0.0228 [0.0018] AU
Ag = 59.44 [90.64] [0.64σ]
Teffp = 4360 [1663] K [2.01σ]

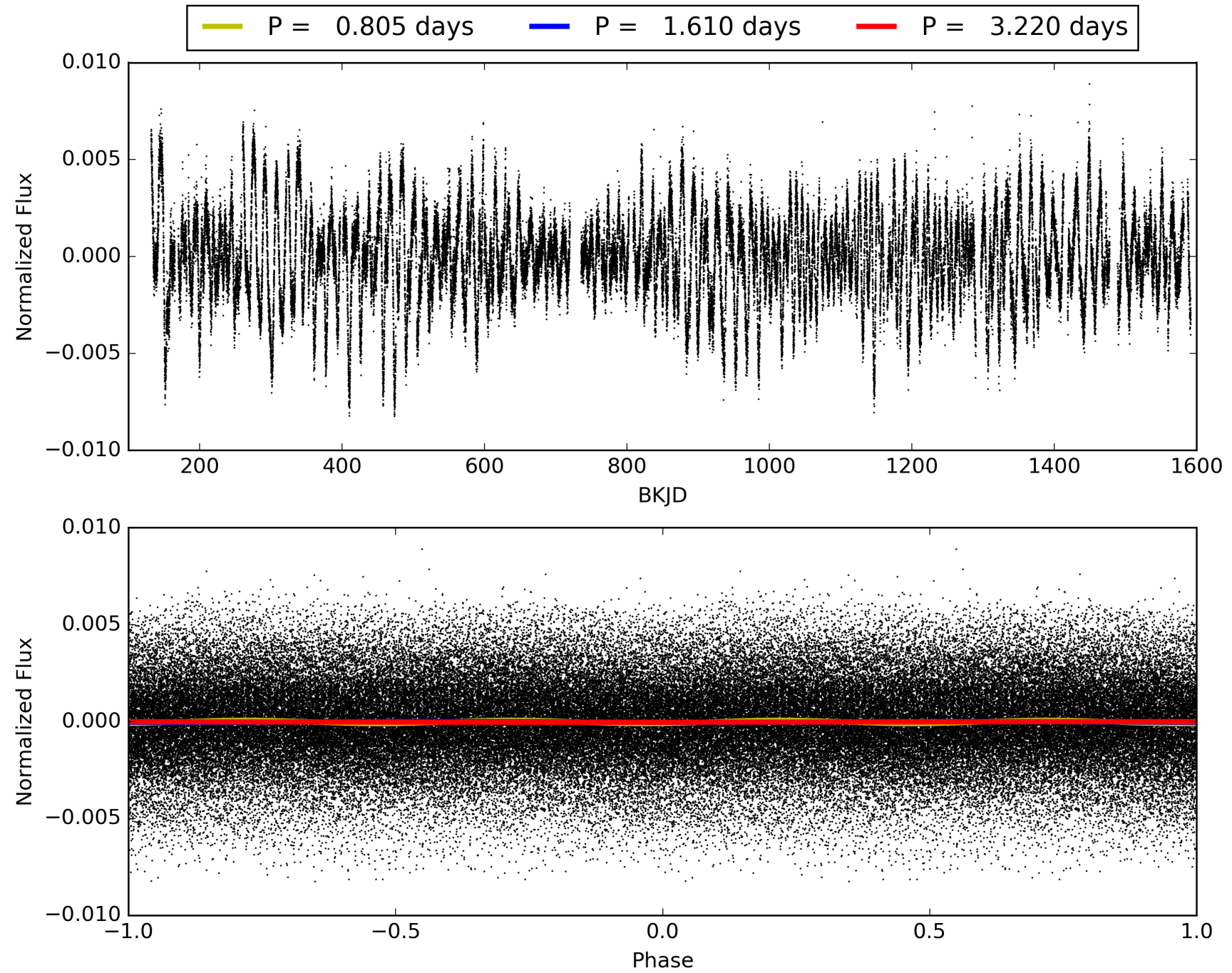
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [21.91σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.87e-10
RollingBand-fgt: 0.99 [802/808]
GhostDiagnostic-chr: 5.043
Centroid-sig: 0.0%
Centroid-so: 3.119 arcsec [2.64σ]
OotOffset-rm: 1.950 arcsec [4.45σ]
KicOffset-rm: 2.043 arcsec [5.00σ]
OotOffset-st: 2/4/3/2 [11]
KicOffset-st: 2/4/3/2 [11]
DiffImageQuality-fgm: 0.91 [10/11]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 007663830-01, PDC Light Curves

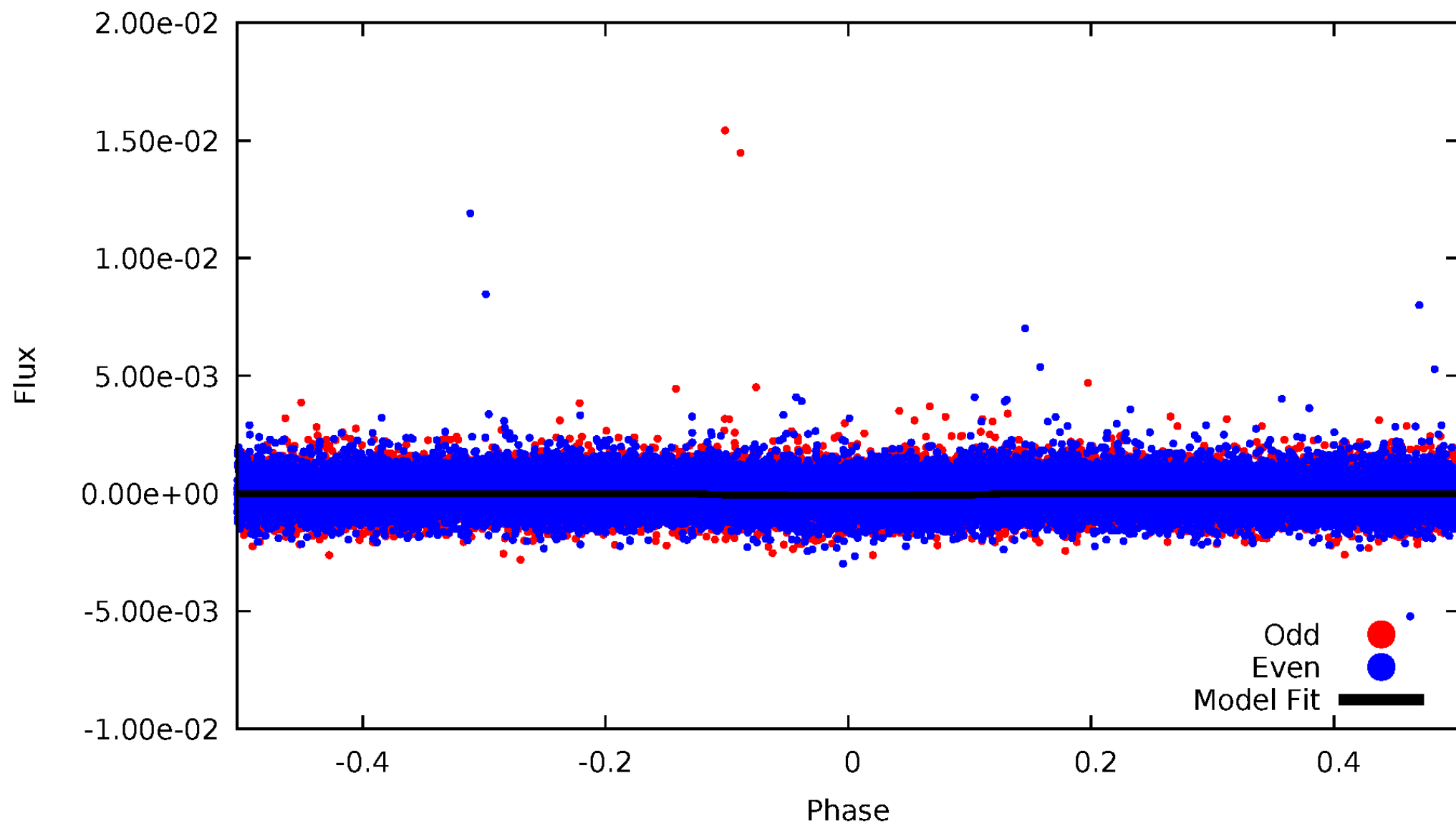


TCE 007663830-01



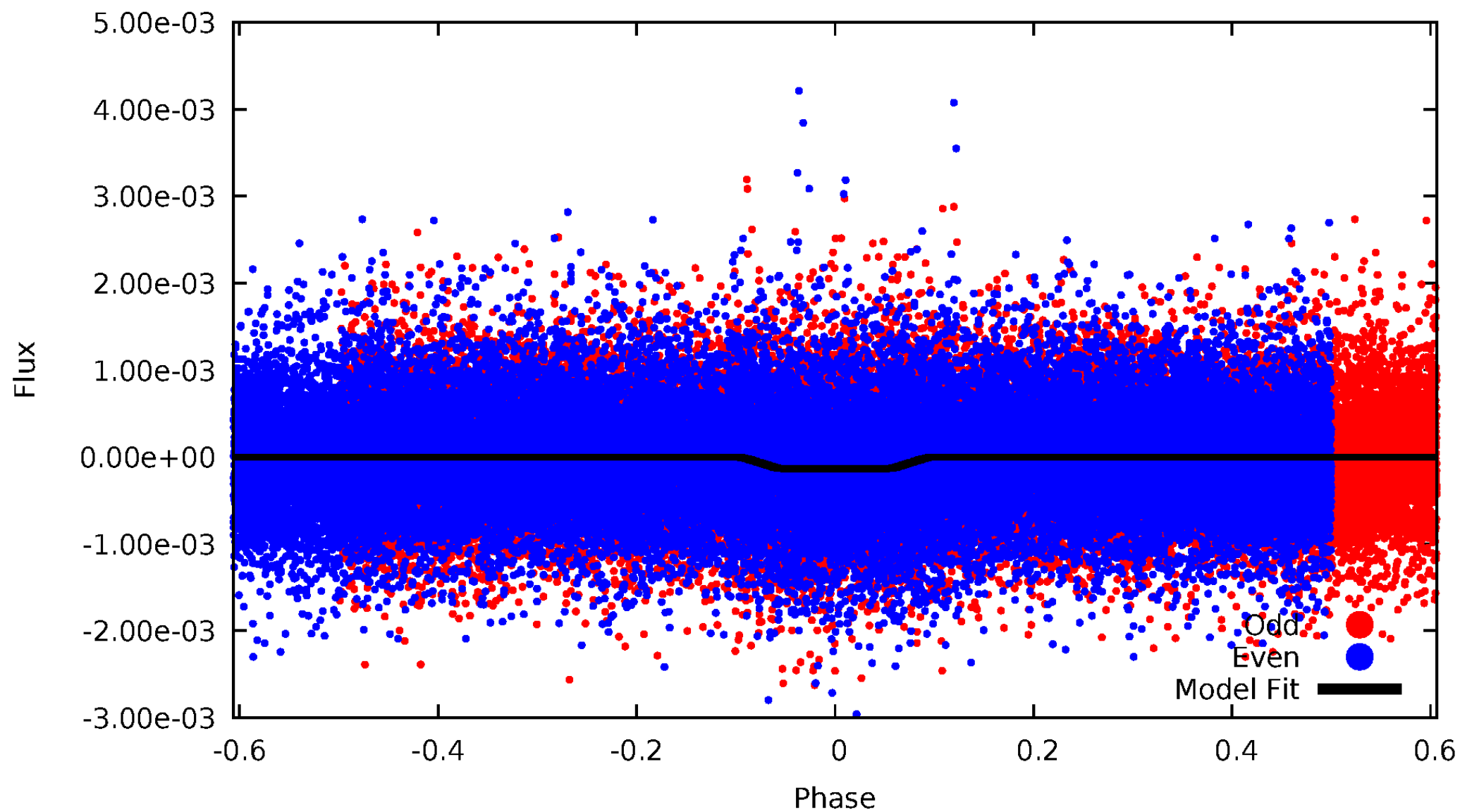
DV Odd/Even

TCE 007663830-01



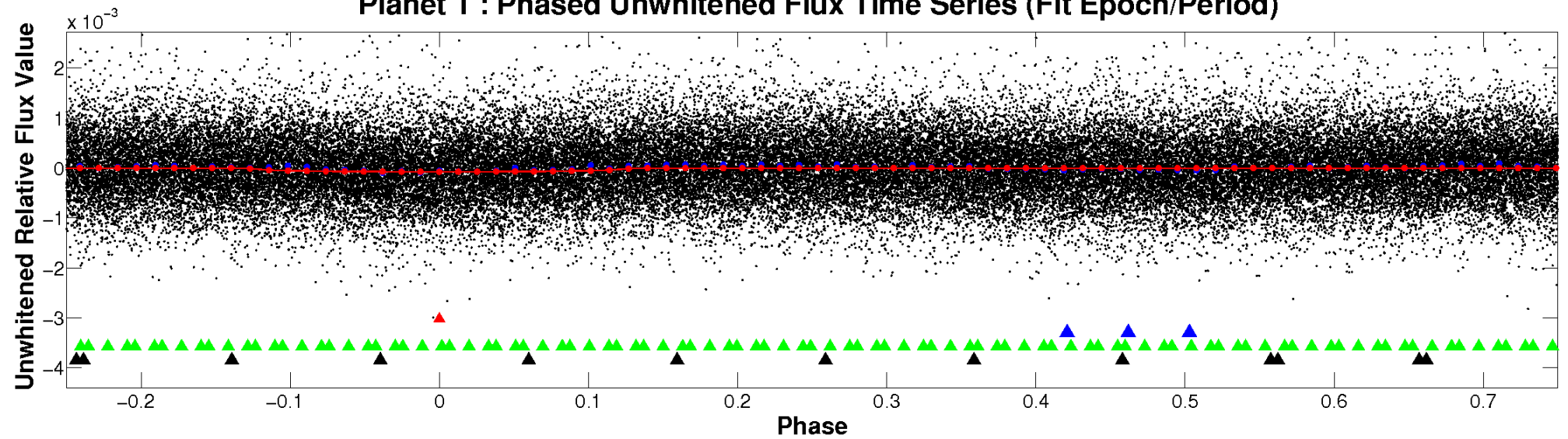
ALT Odd/Even

TCE 007663830-01

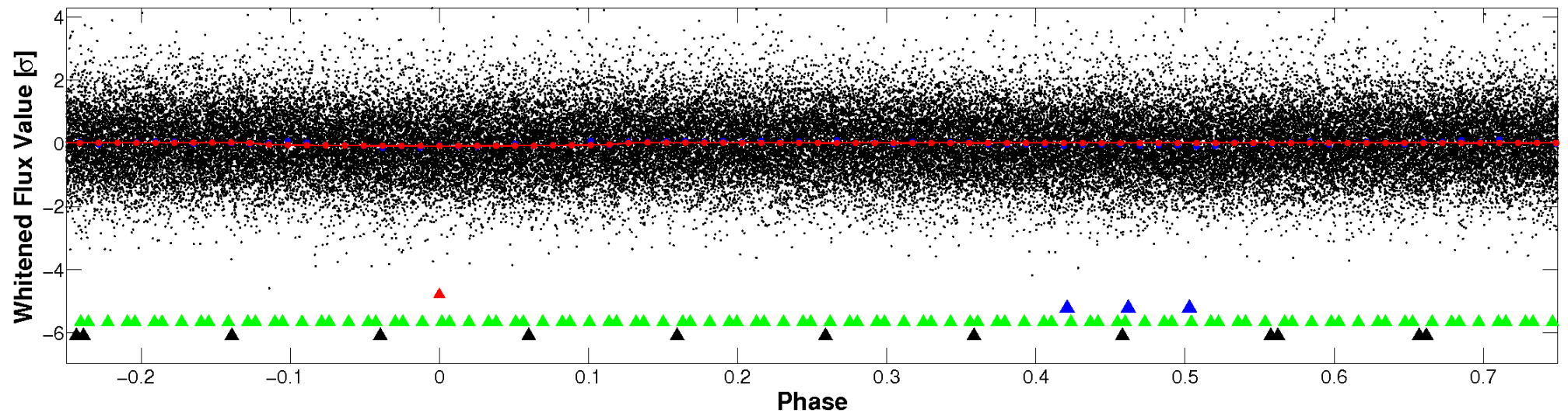


Non-Whitened Vs. Whitened Light Curve

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

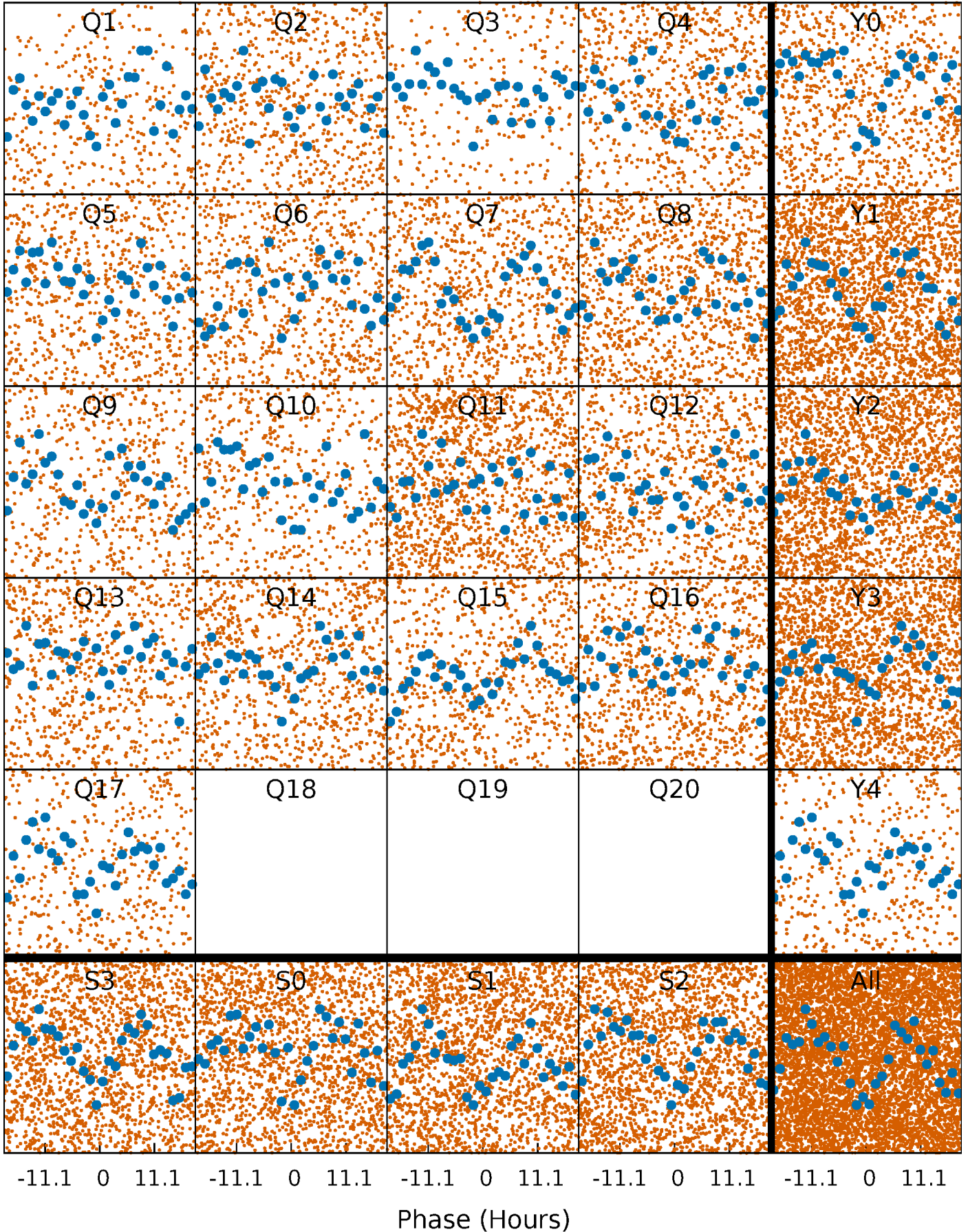


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



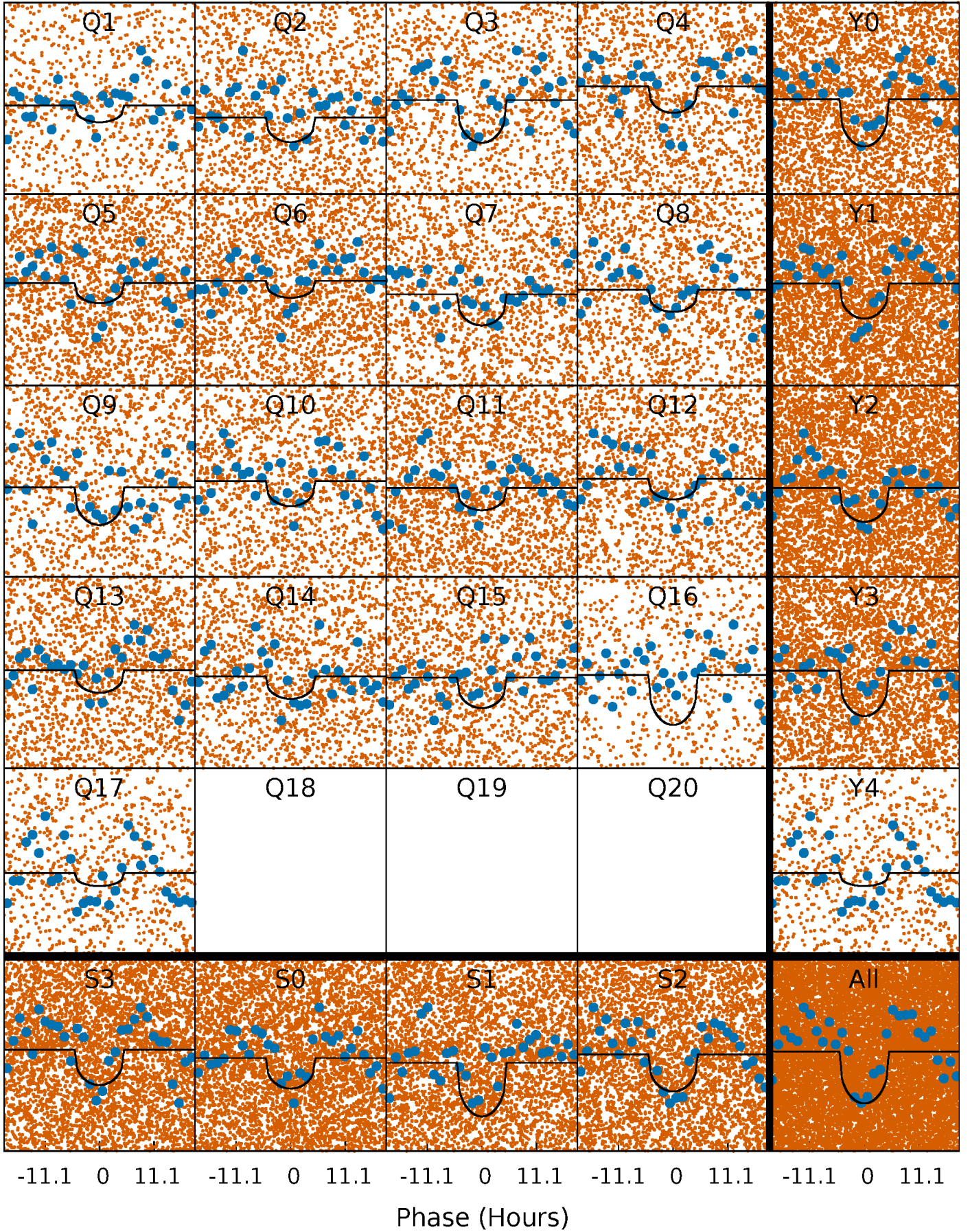
PDC Quarter-Phased Transit Curves

TCE 007663830-01 P= 1.610043 Days $T_0=132.942315$ (BKJD)



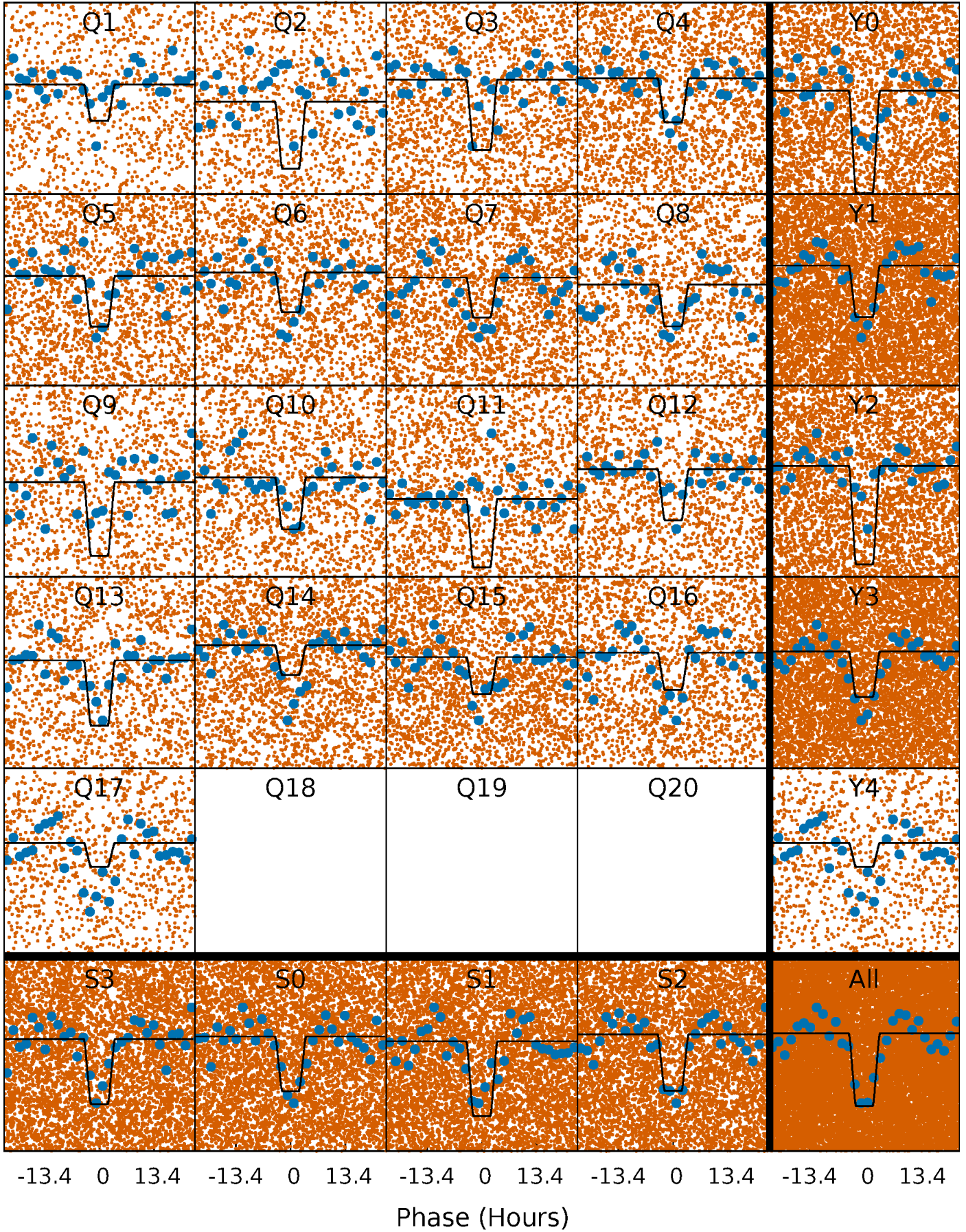
DV Quarter-Phased Transit Curves

TCE 007663830-01 P= 1.610043 Days $T_0=132.942315$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

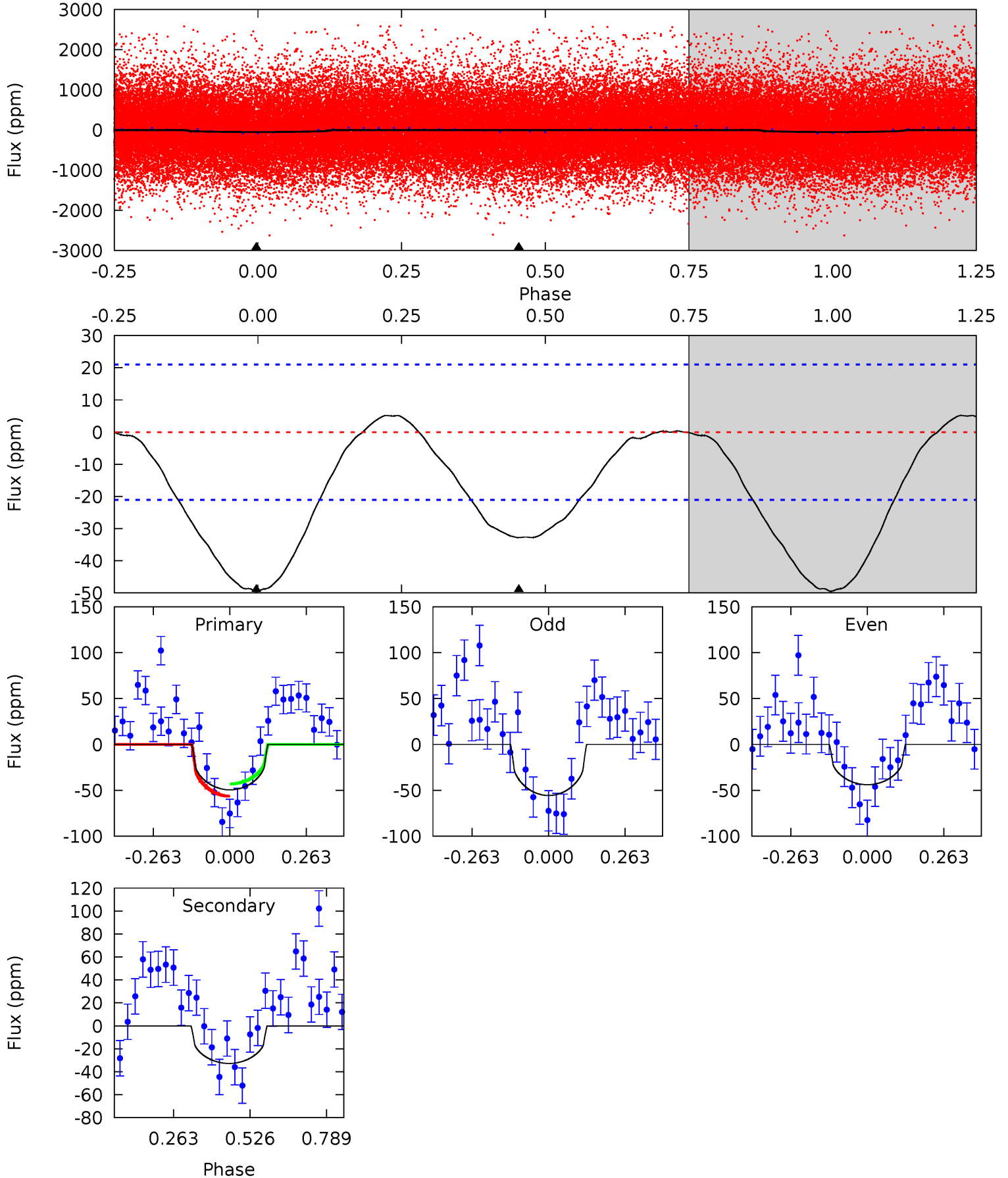
TCE 007663830-01 P= 1.610020 Days $T_0=132.933341$ (BKJD)



DV Model-Shift Uniqueness Test

007663830-01, P = 1.610043 Days, E = 131.332272 Days

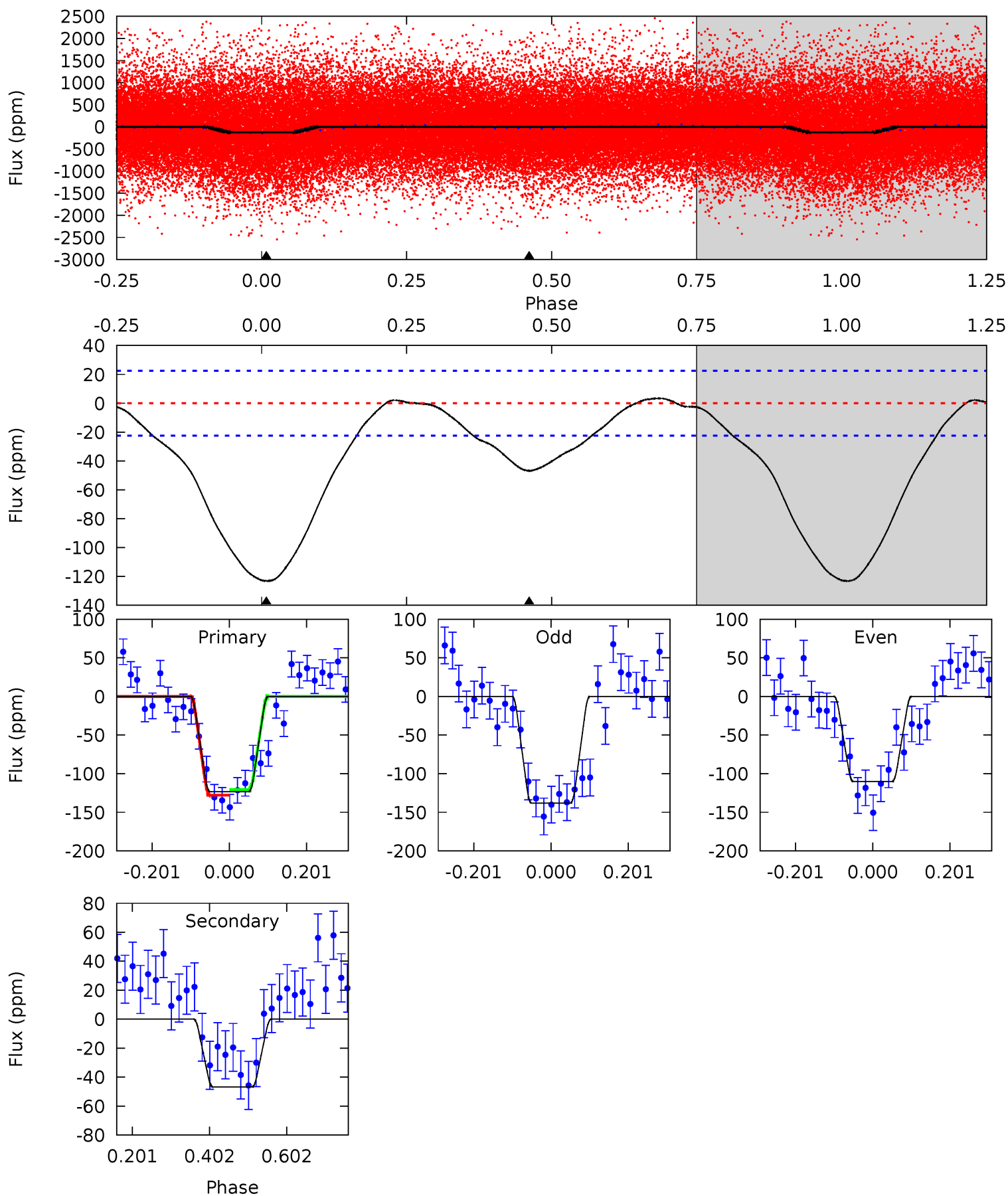
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	6.78	0	0	4.36	1.12	0.29	10.3	10.3	6.78	6.78	1.21	1.04	0.09	1.39



Alt Model-Shift Uniqueness Test

007663830-01, P = 1.610020 Days, E = 131.323321 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.2	9.19	0	0	4.42	1.28	1.20	24.2	24.2	9.19	9.19	2.72	0.82	0.03	0.72



Stellar Parameters For KIC 007663830

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4392^{+118}_{-131}	$4.630^{+0.056}_{-0.024}$	$-0.280^{+0.300}_{-0.300}$	$0.627^{+0.045}_{-0.061}$	$0.613^{+0.068}_{-0.049}$	$3.500^{+0.822}_{-0.427}$
	+3%/-3%	+1%/-1%	+107%/-107%	+7%/-10%	+11%/-8%	+23%/-12%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 007663830-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-33 ± 5	$0.56^{+0.41}_{-0.33}$	1411^{+45}_{-50}	3828^{+1630}_{-632}	30^{+147}_{-20}
Alt.	-47 ± 5	$0.81^{+0.39}_{-0.37}$	1405^{+43}_{-46}	3609^{+843}_{-451}	21^{+48}_{-12}

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

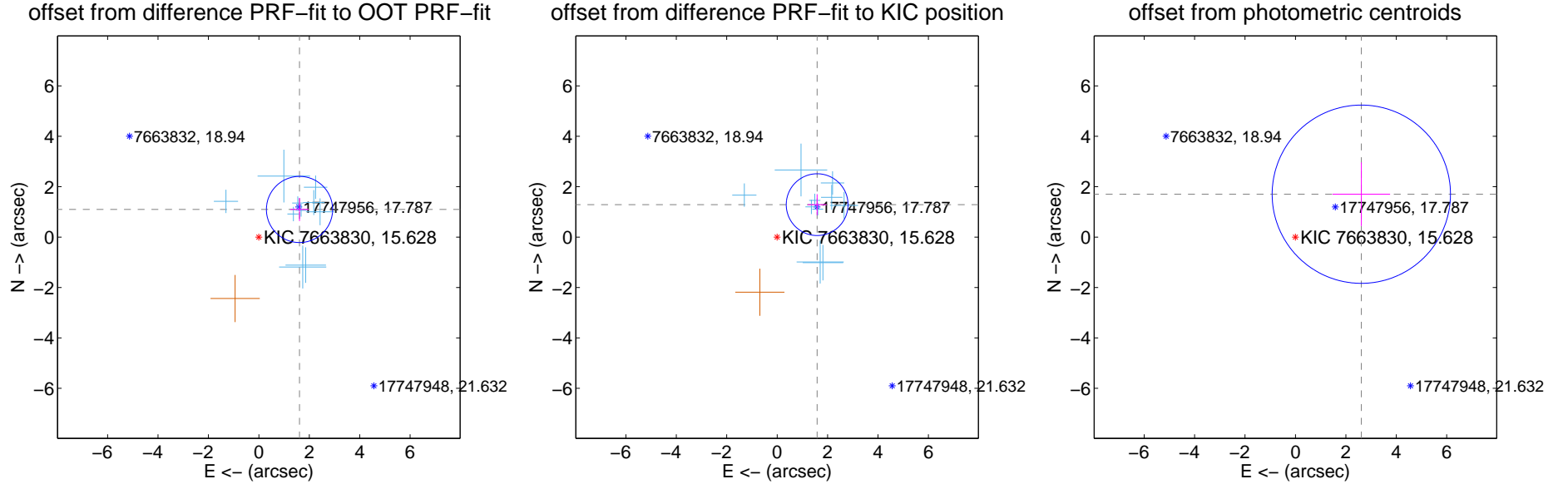
DV Centroid Data

Supplemental centroid analysis for 007663830-01. Kepler magnitude: 15.63. Transit SNR 8.78

There are 10 quarters with good PRF difference image offsets

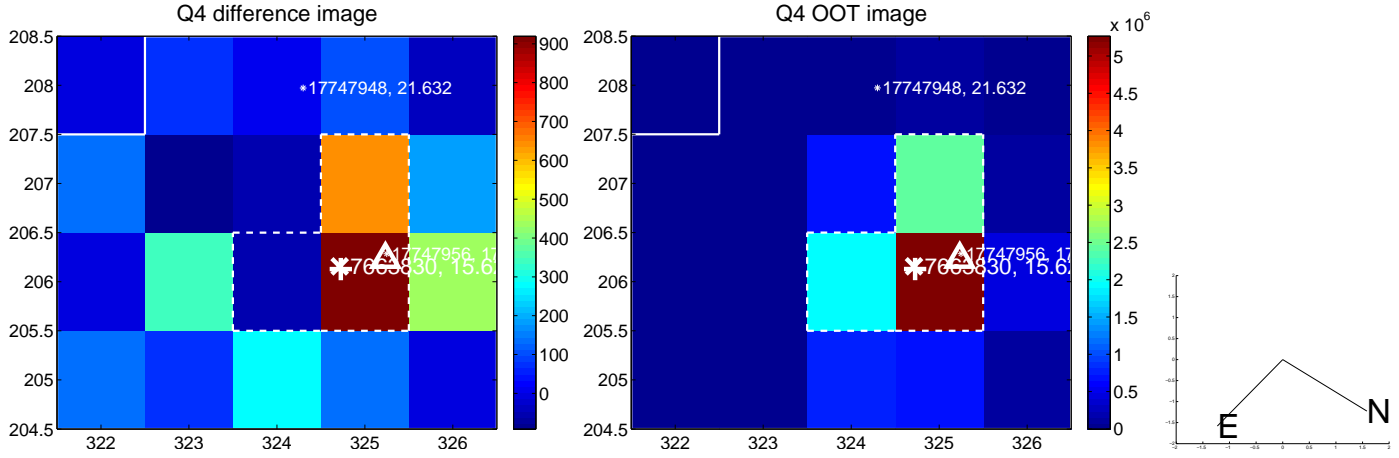
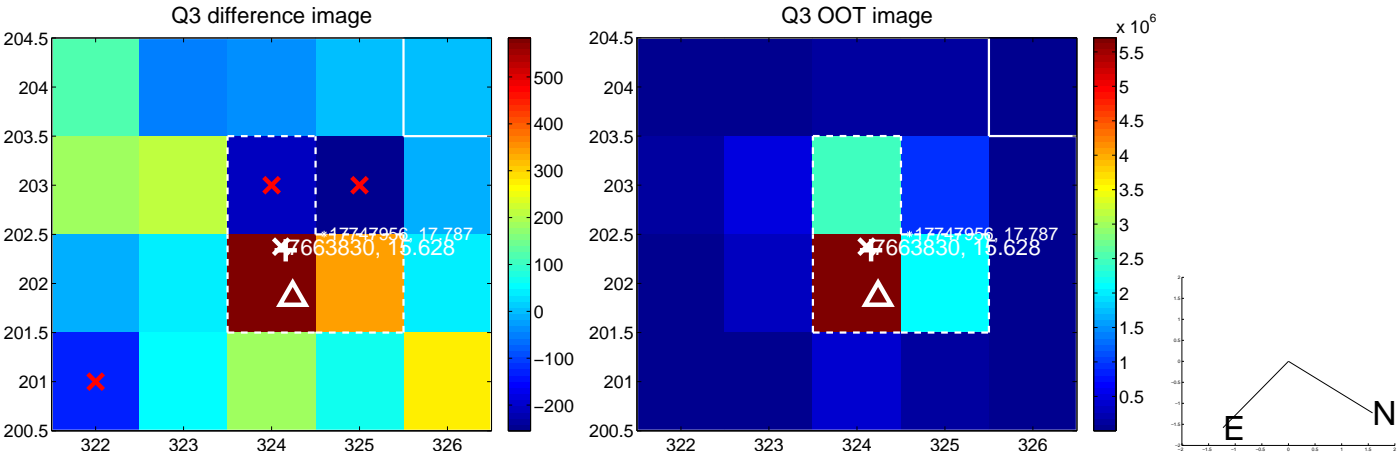
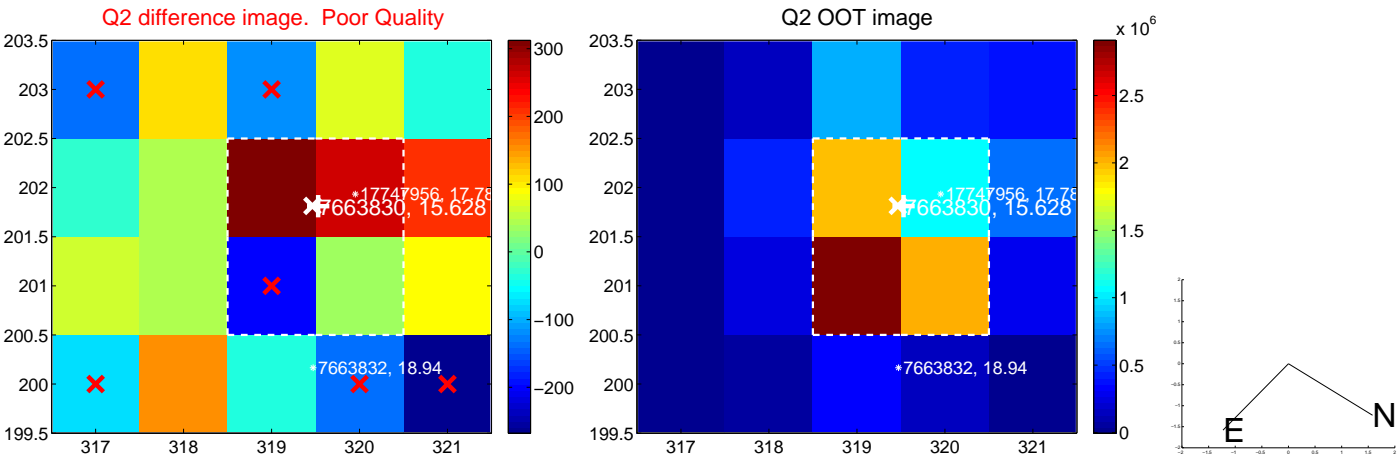
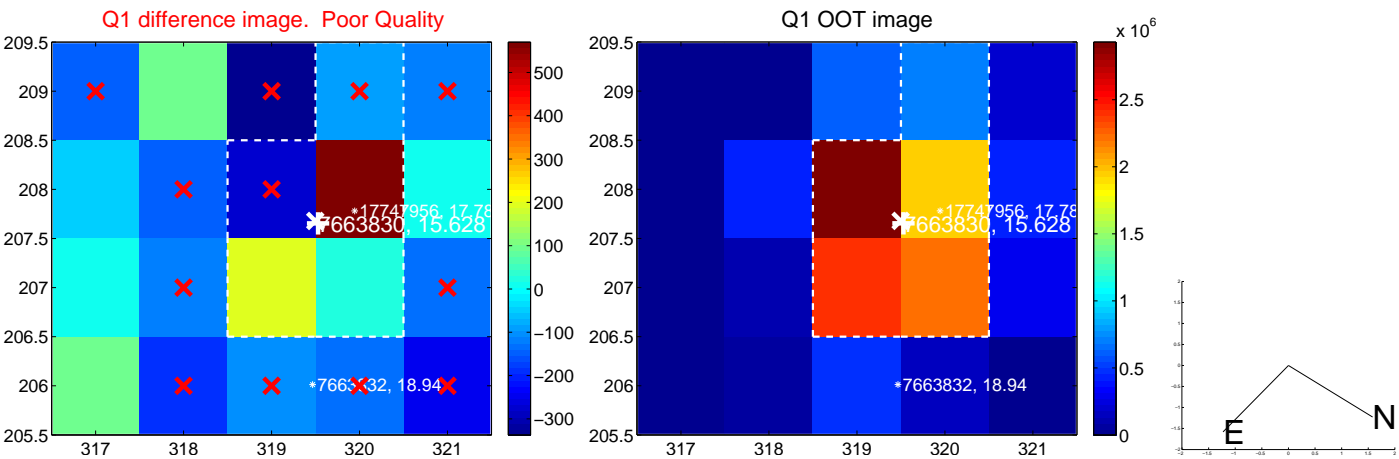
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.950 ± 0.438	4.45	-1.613 ± 0.363	1.096 ± 0.458
PRF-fit source offset from KIC position	2.043 ± 0.409	5.00	-1.587 ± 0.375	1.288 ± 0.417
photometric centroid source offset	3.12 ± 1.18	2.64	-2.61 ± 1.14	1.70 ± 1.26

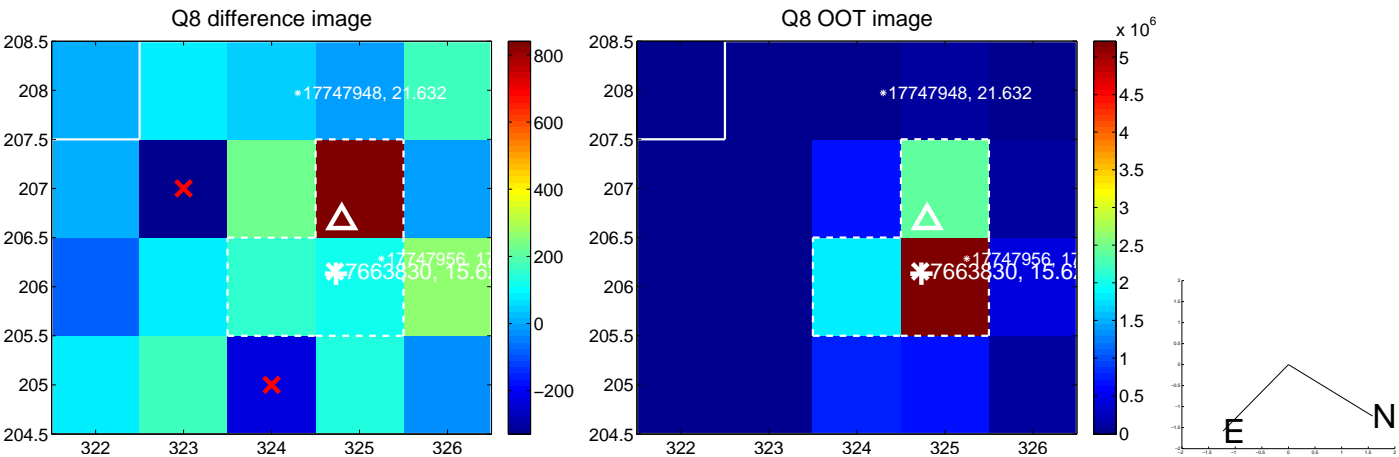
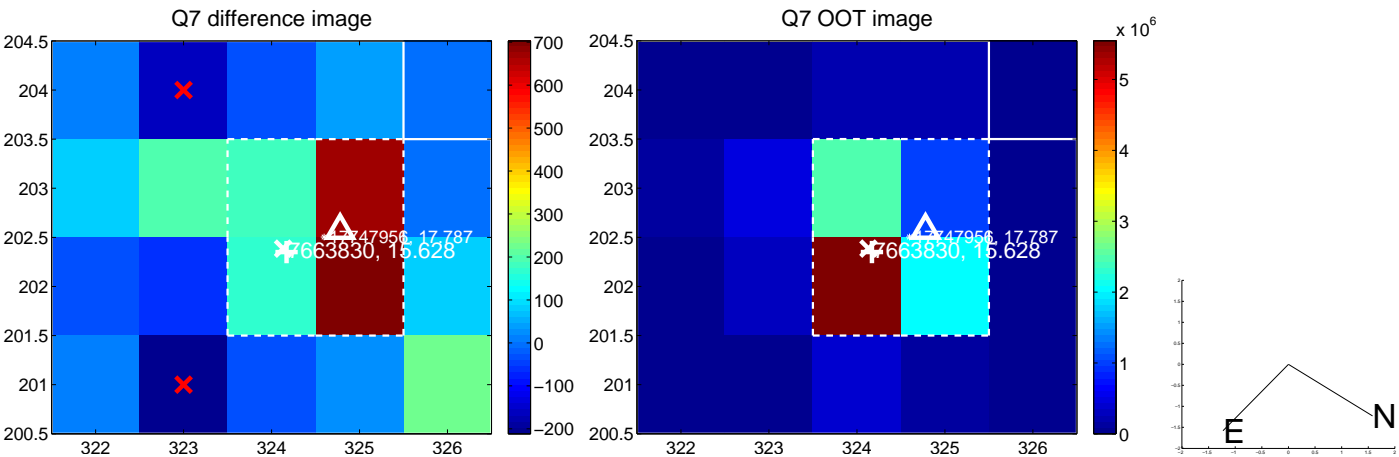
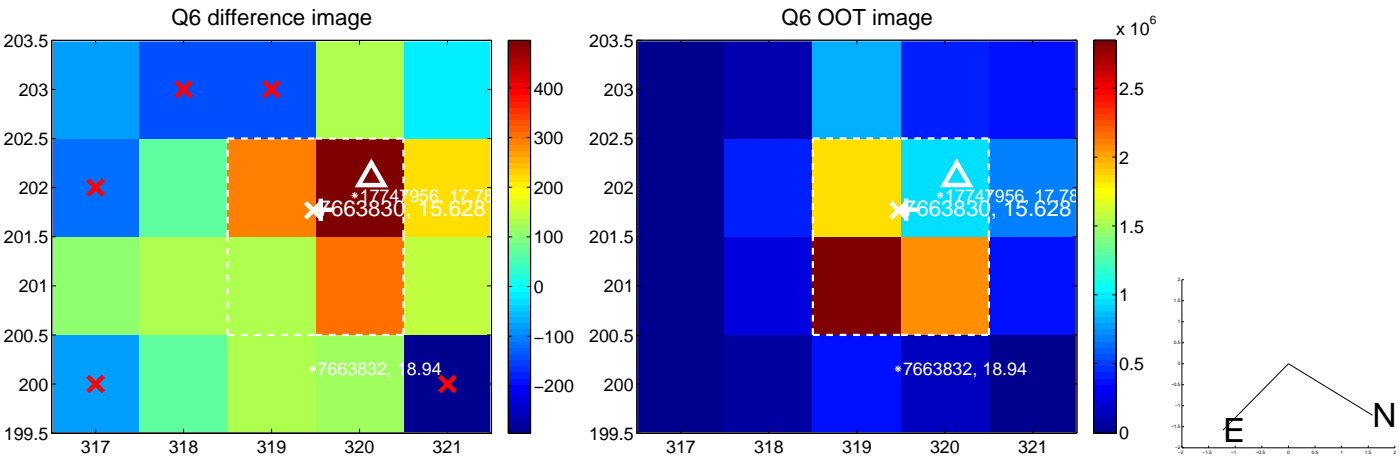
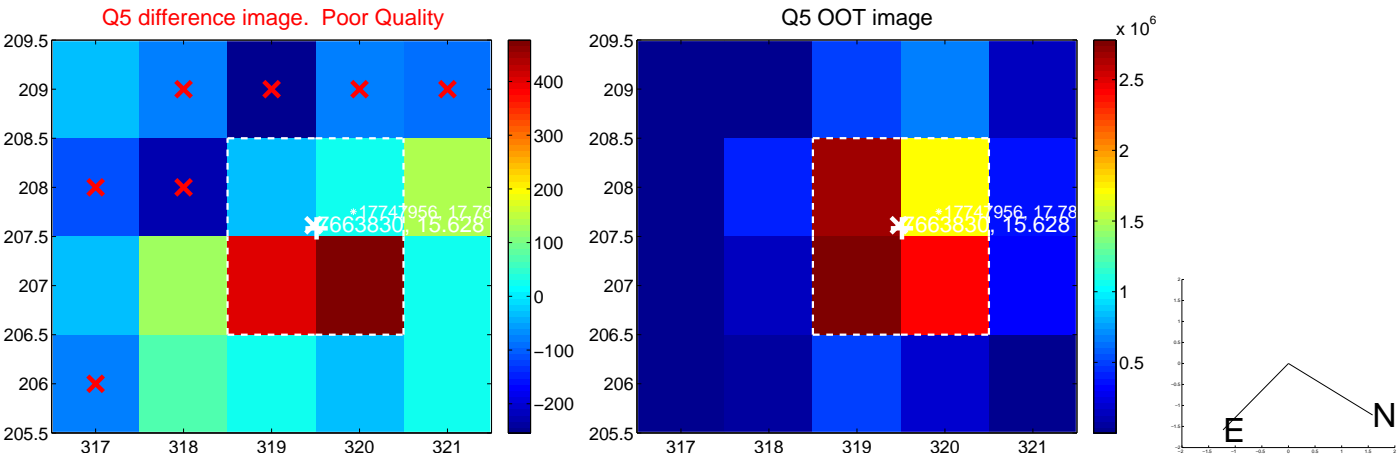


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

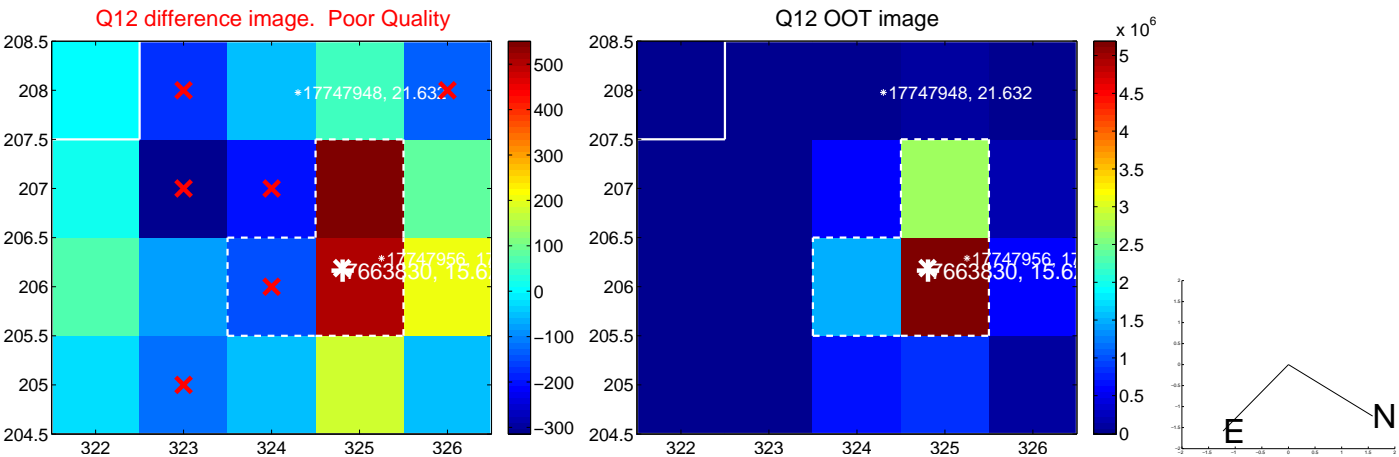
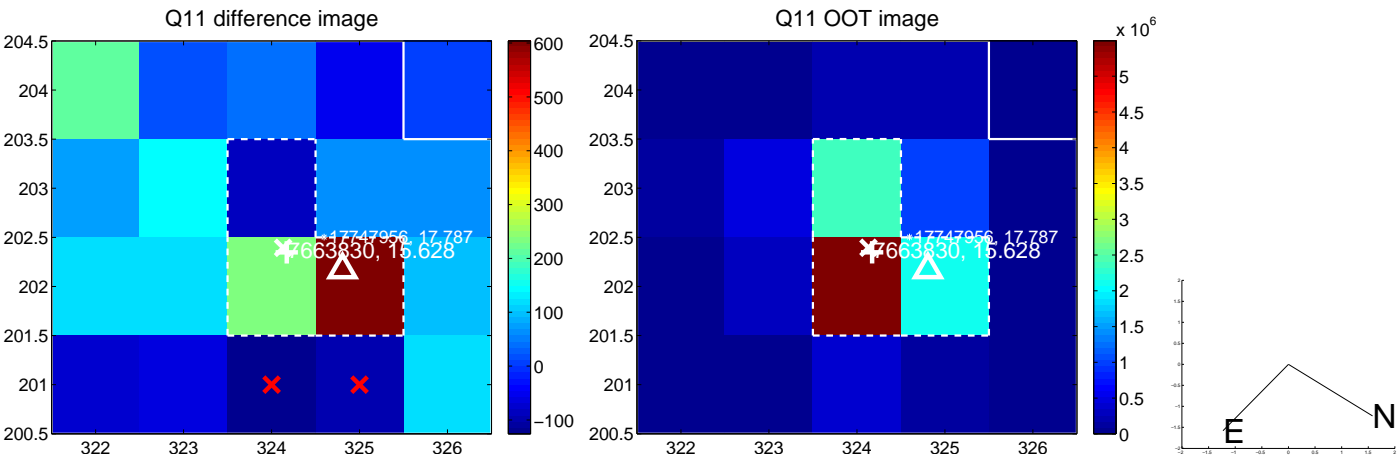
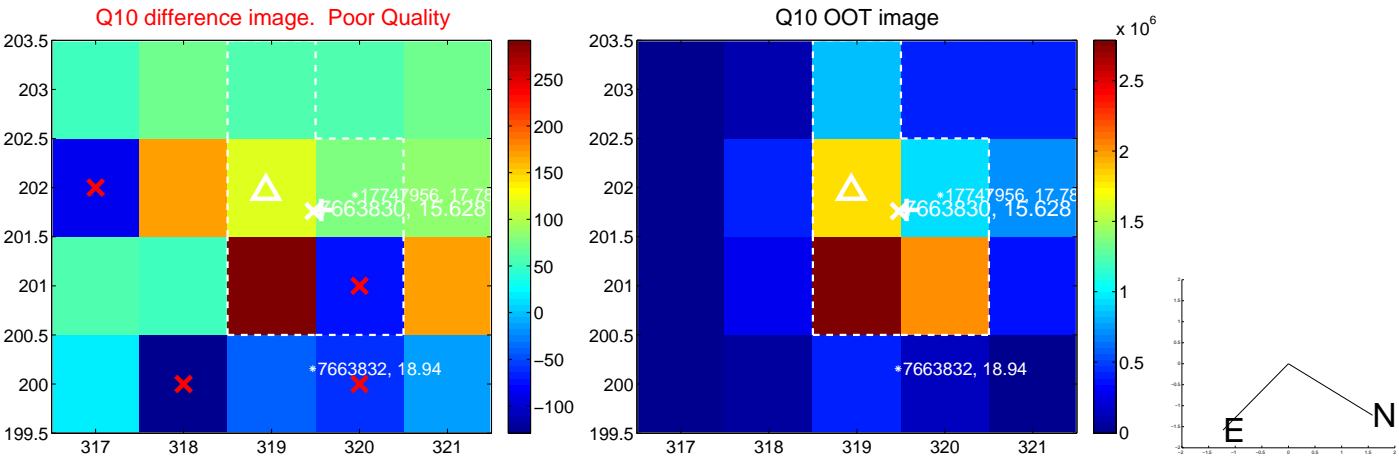
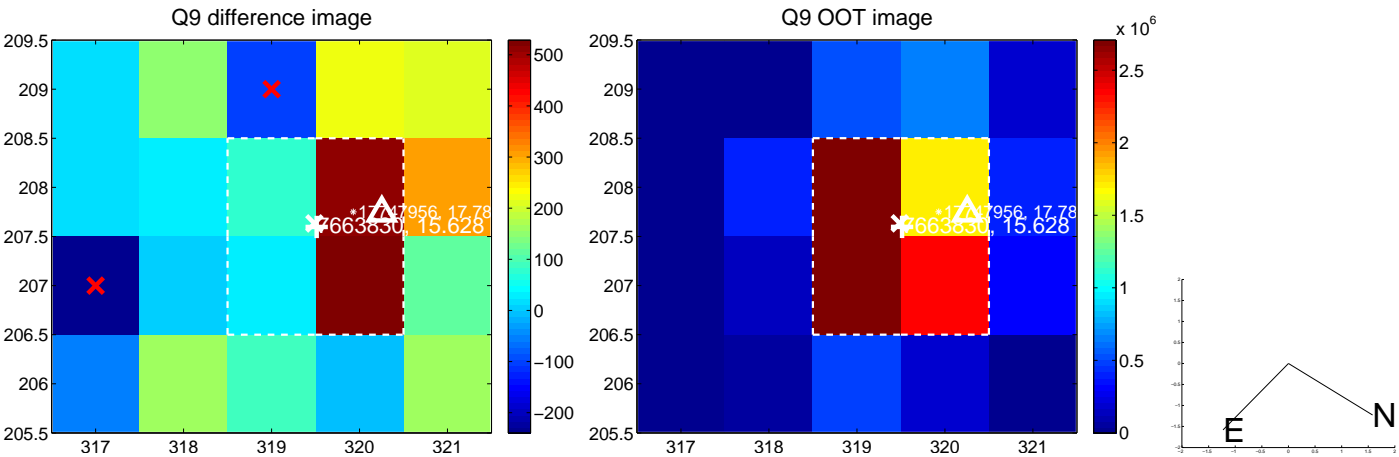
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



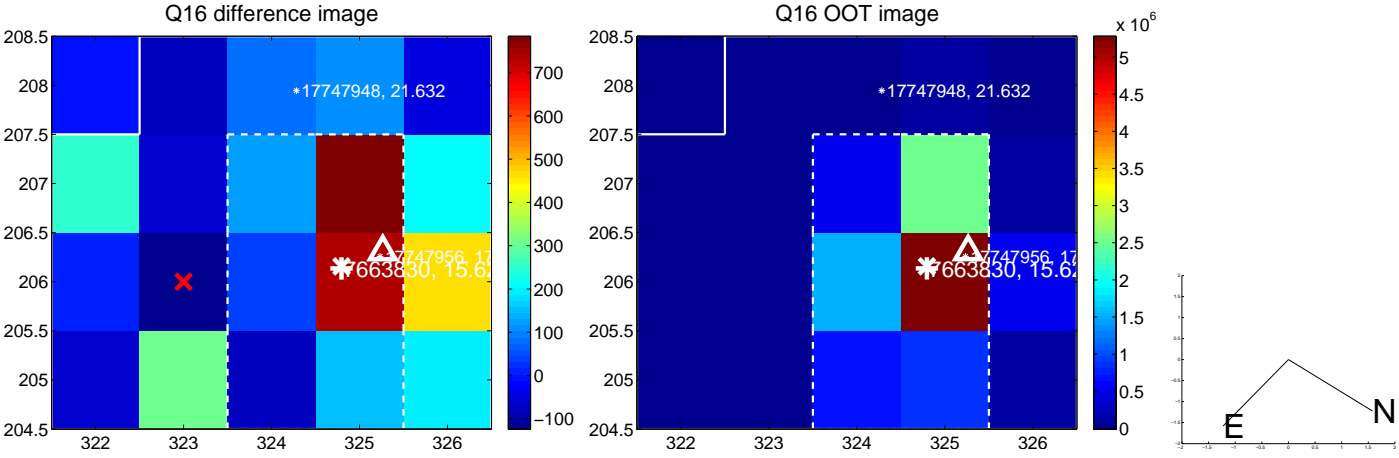
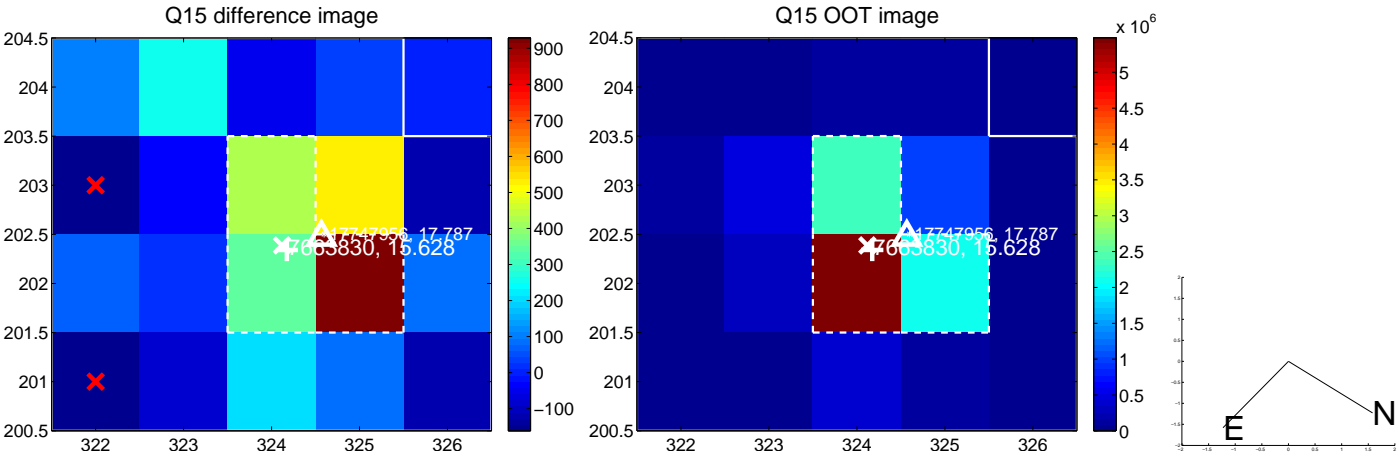
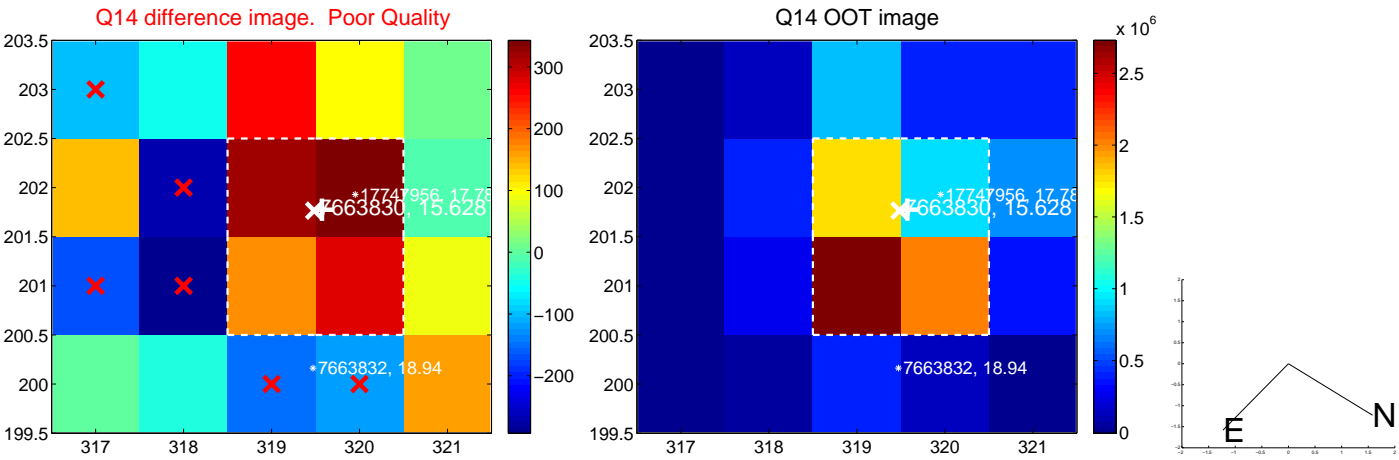
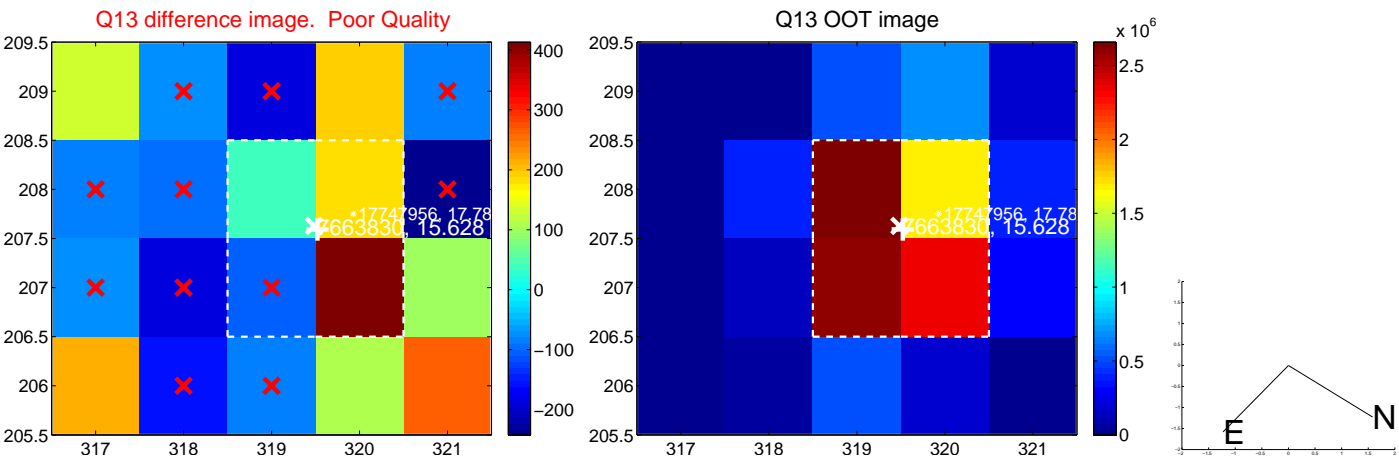
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



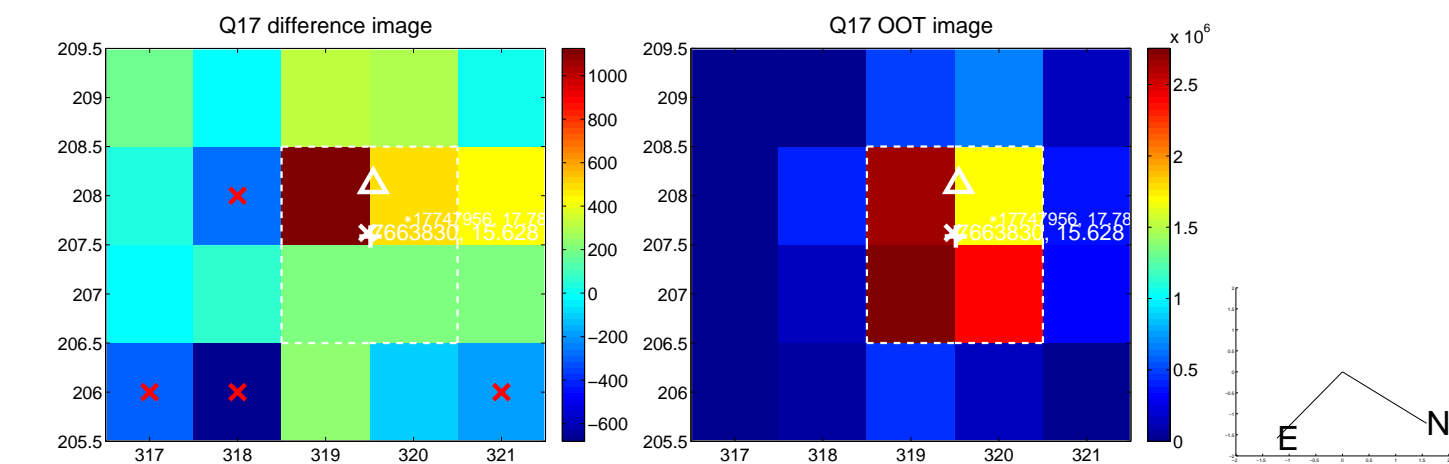
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



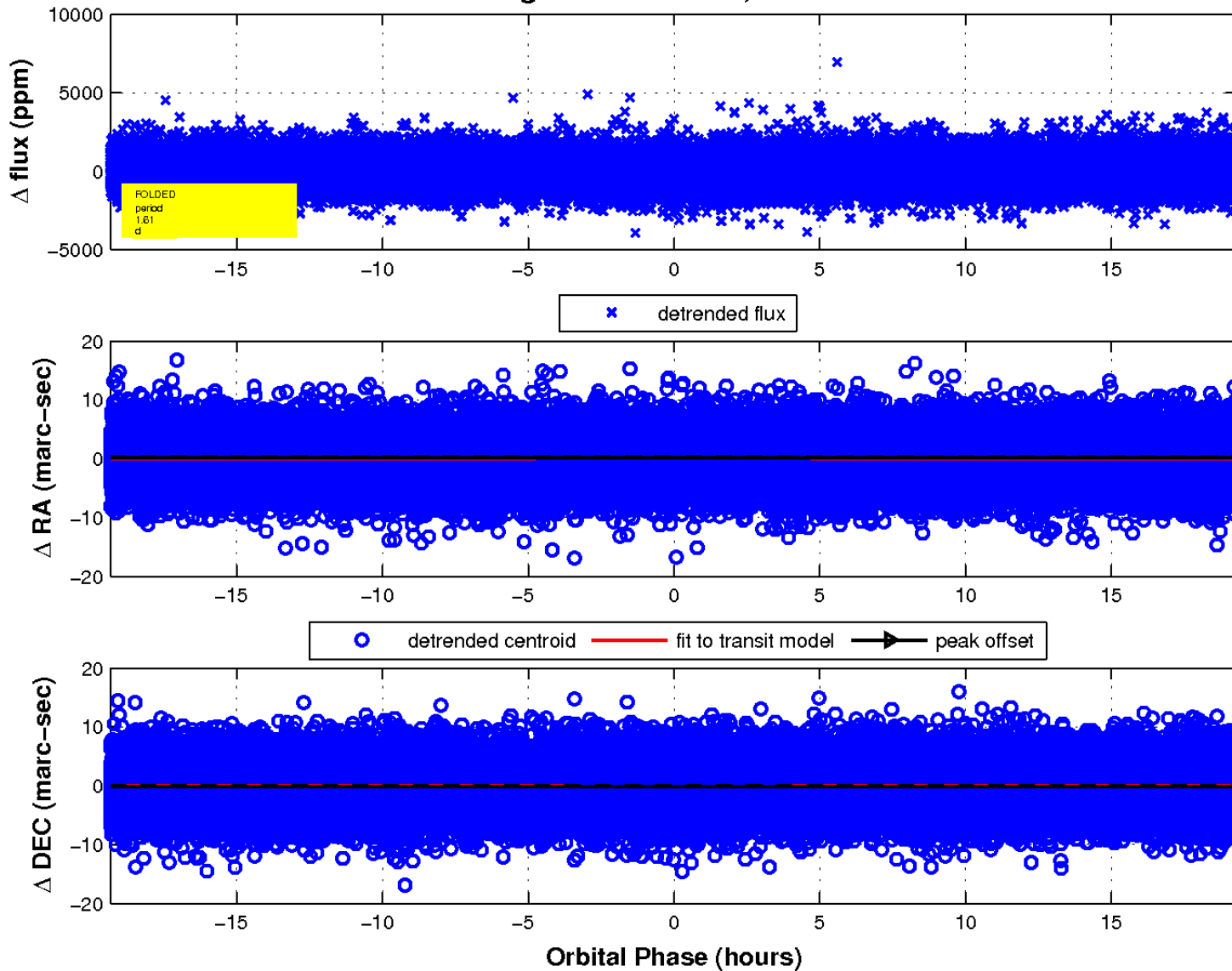
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

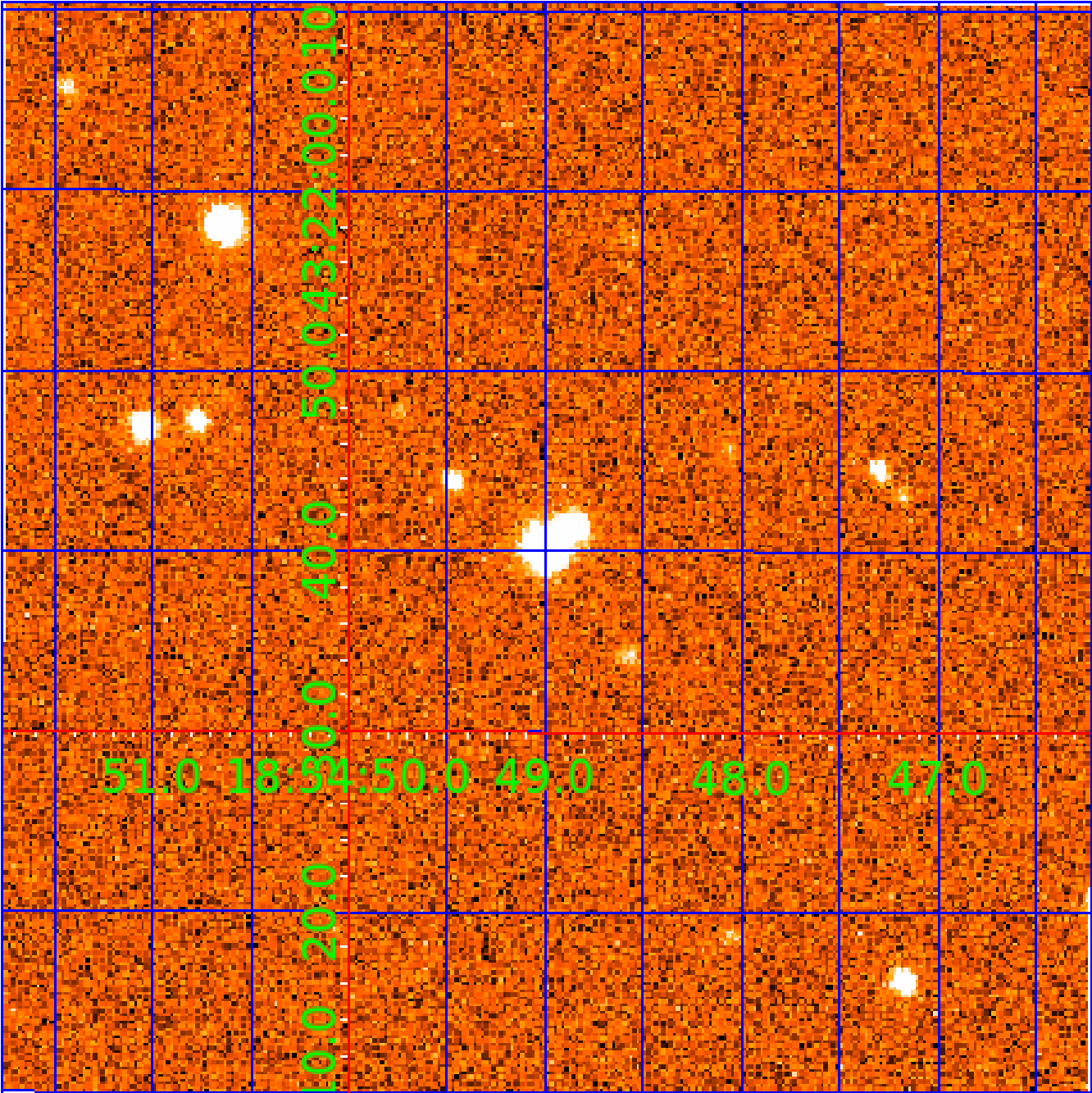


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 007663830

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})
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007663830-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
007663830-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—CENT_FEW_DIFFS

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

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

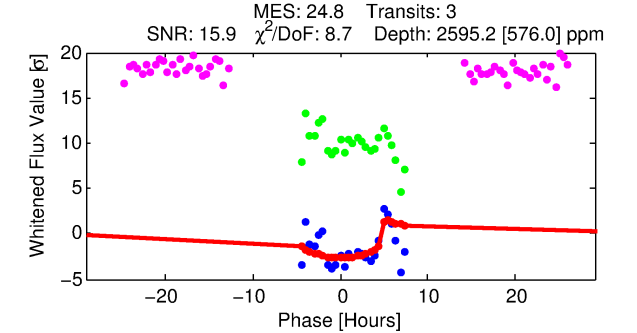
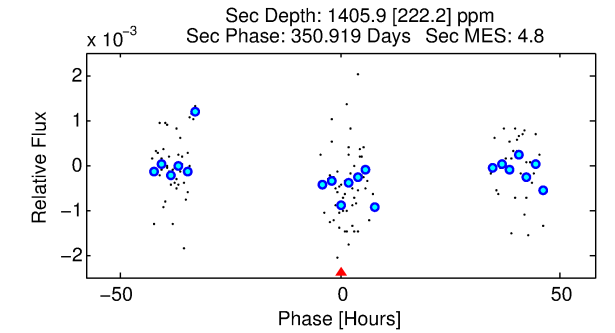
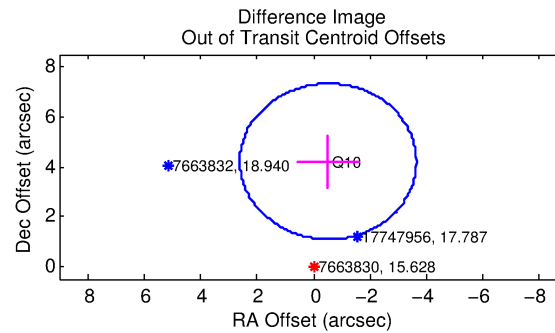
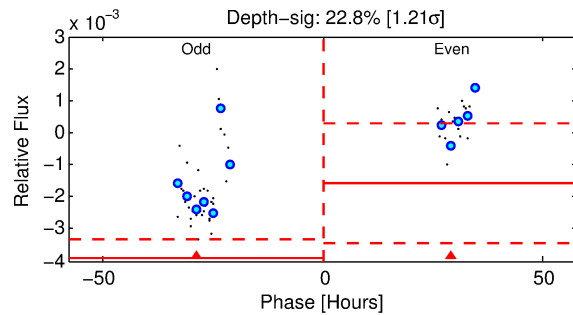
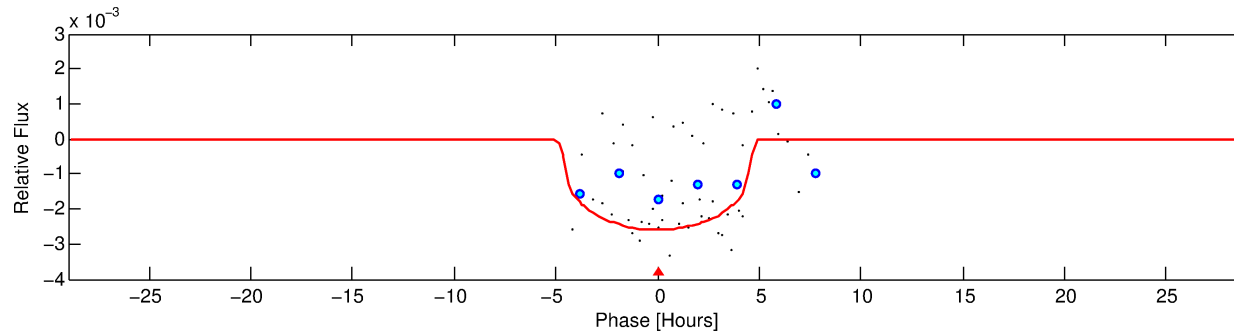
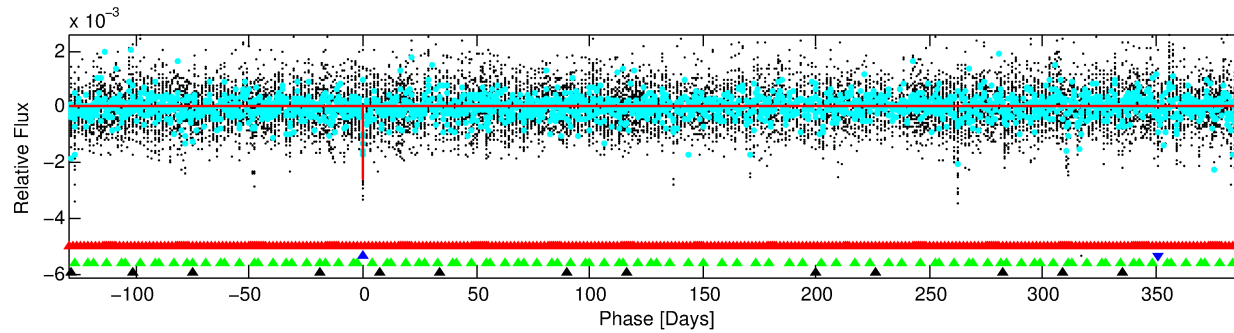
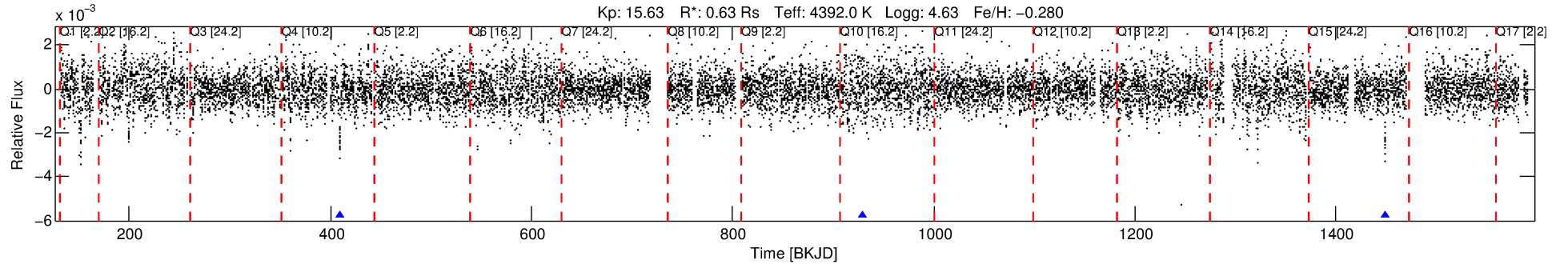
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007663830-02

No Significant Match Found

DV One-Page Summary

KIC: 7663830 Candidate: 2 of 4 Period: 519.978 d



DV Fit Results:

Period = 519.97786 [0.05771] d
Epoch = 409.0695 [0.0374] BKJD
Rp/R* = 0.0456 [0.0951]
a/R* = 411.36 [2689.08]
b = 0.30 [19.82]
Seff = 0.11 [0.02]
Teq = 148 [6] K
Rp = 3.12 [6.51] Re
a = 1.0745 [0.0836] AU
Ag = 91692.70 [382572.63] [0.24 σ]
Teffp = 3982 [4154] K [0.92 σ]

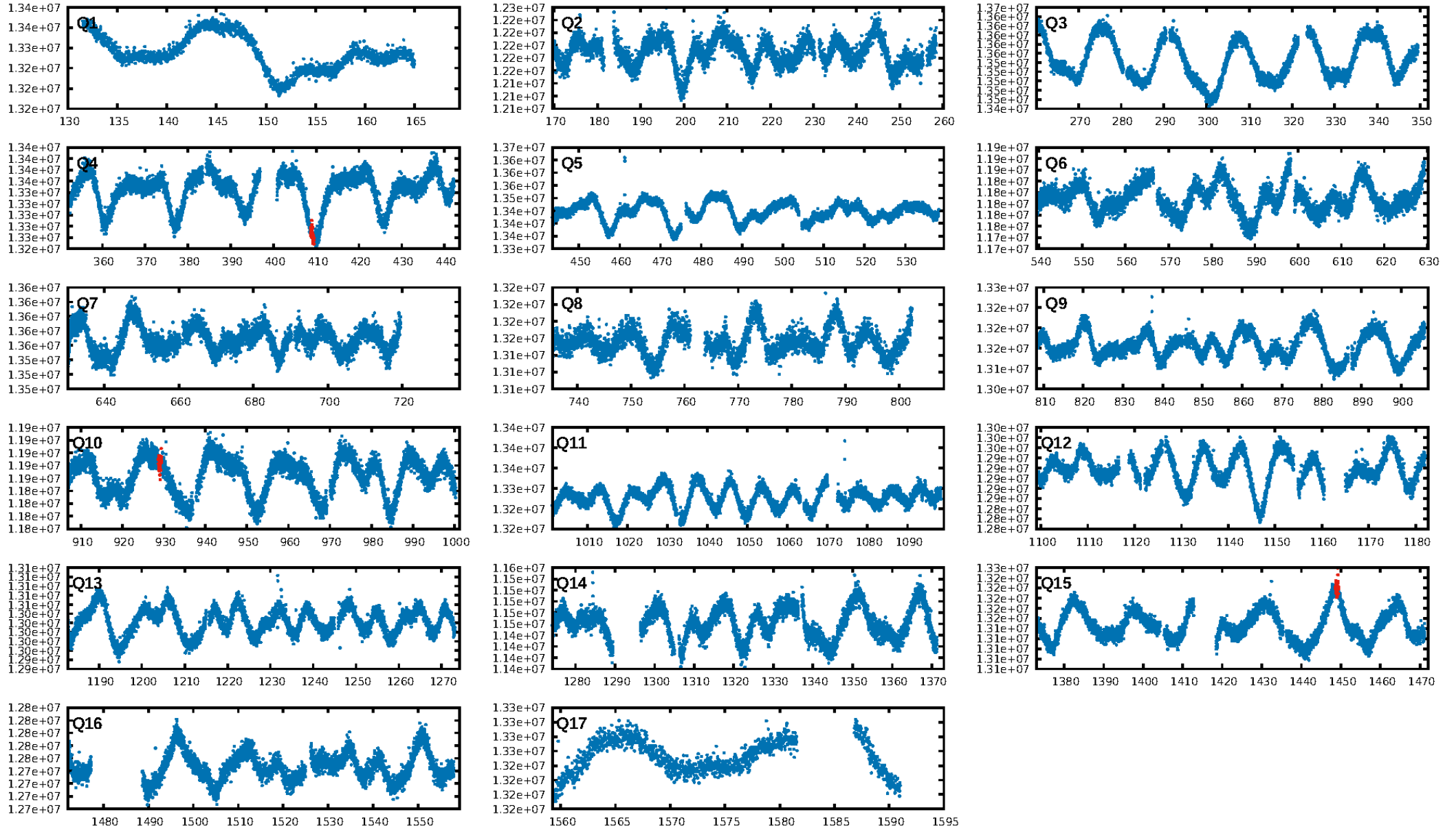
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [280.25 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 5.91e-47
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.189
Centroid-sig: 0.3%
Centroid-so: 1.644 arcsec [2.80 σ]
OotOffset-rm: 4.236 arcsec [4.07 σ]
KicOffset-rm: 4.548 arcsec [4.37 σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
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DiffImageOverlap-fno: 0.00 [0/3]

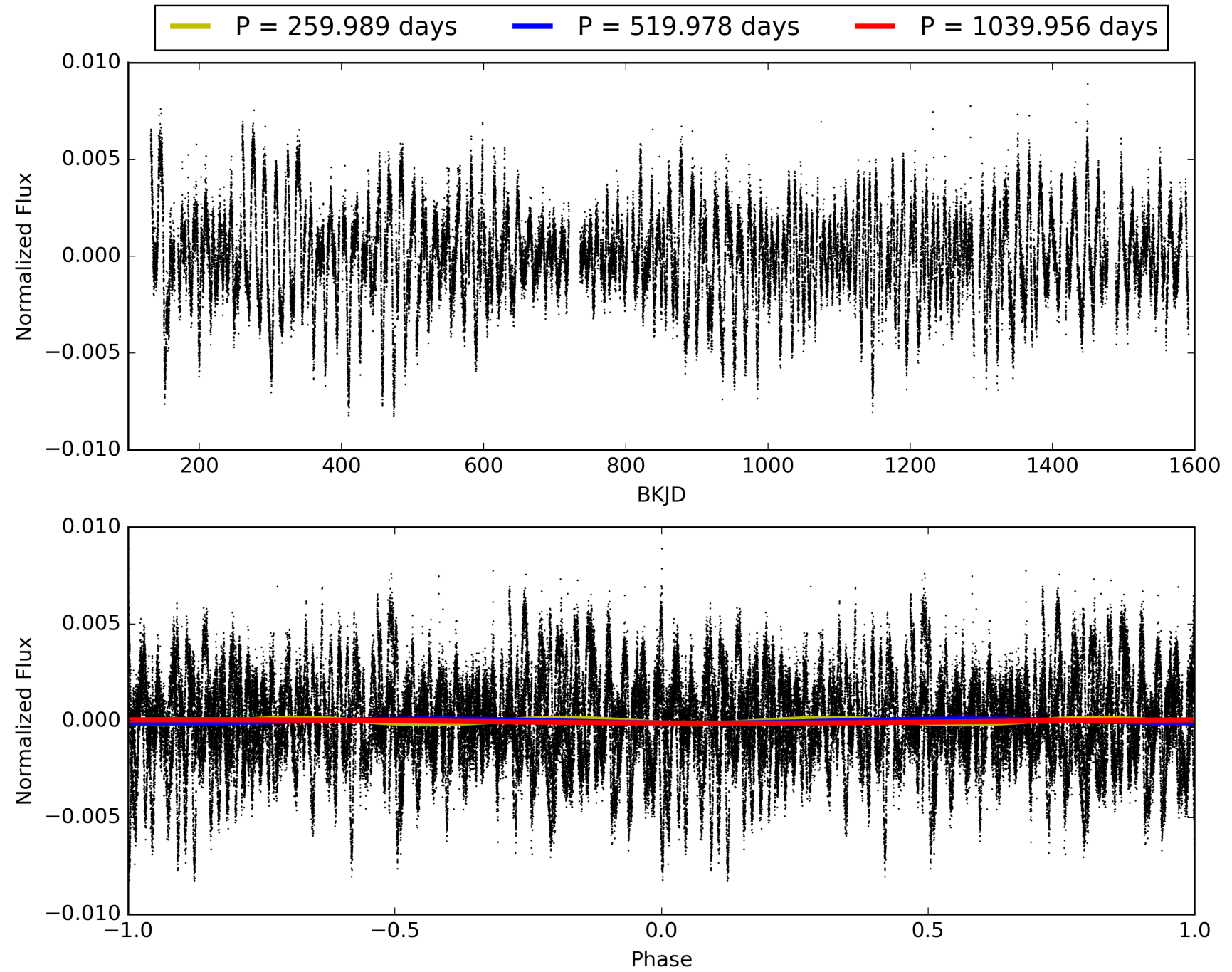
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 007663830-02, PDC Light Curves

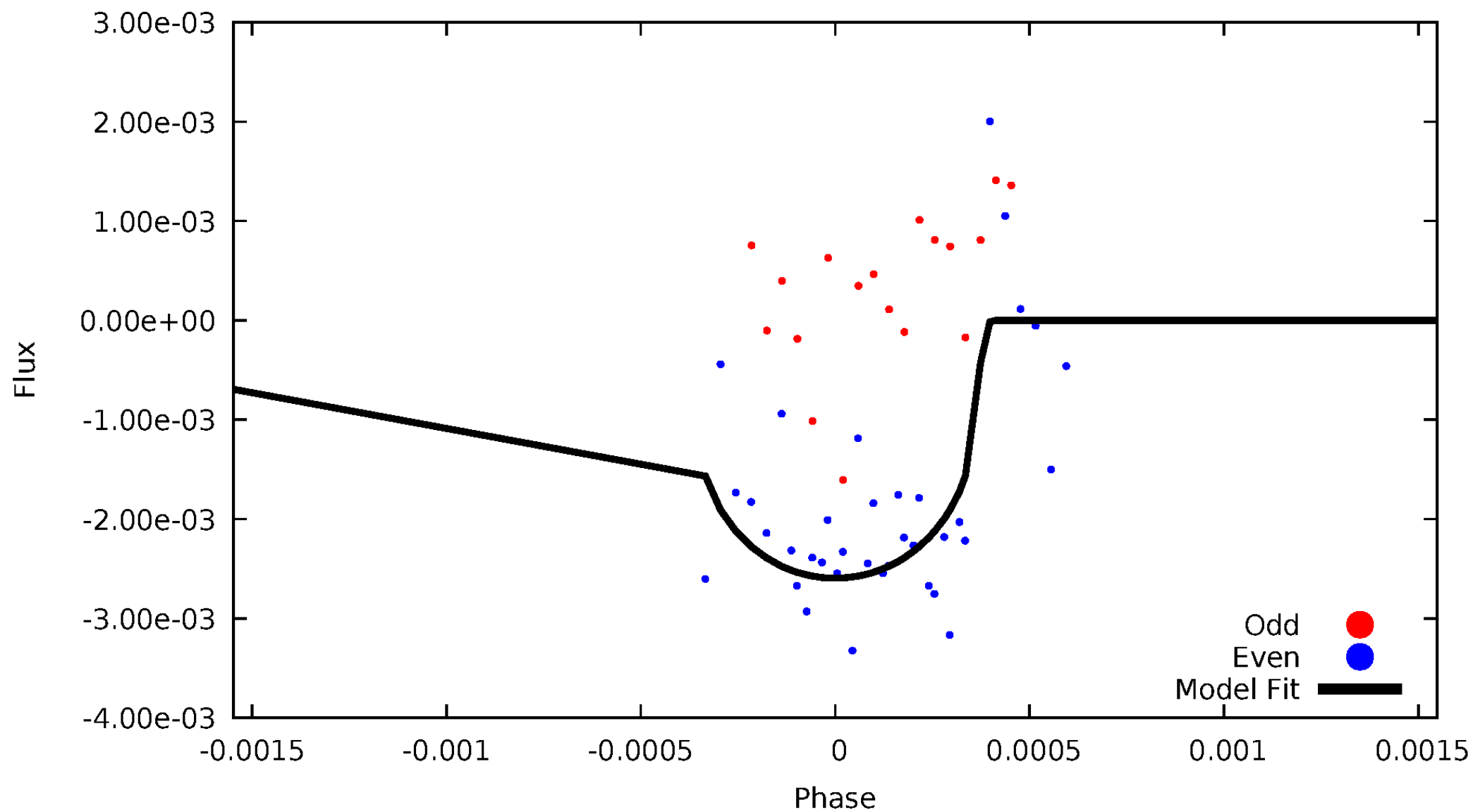


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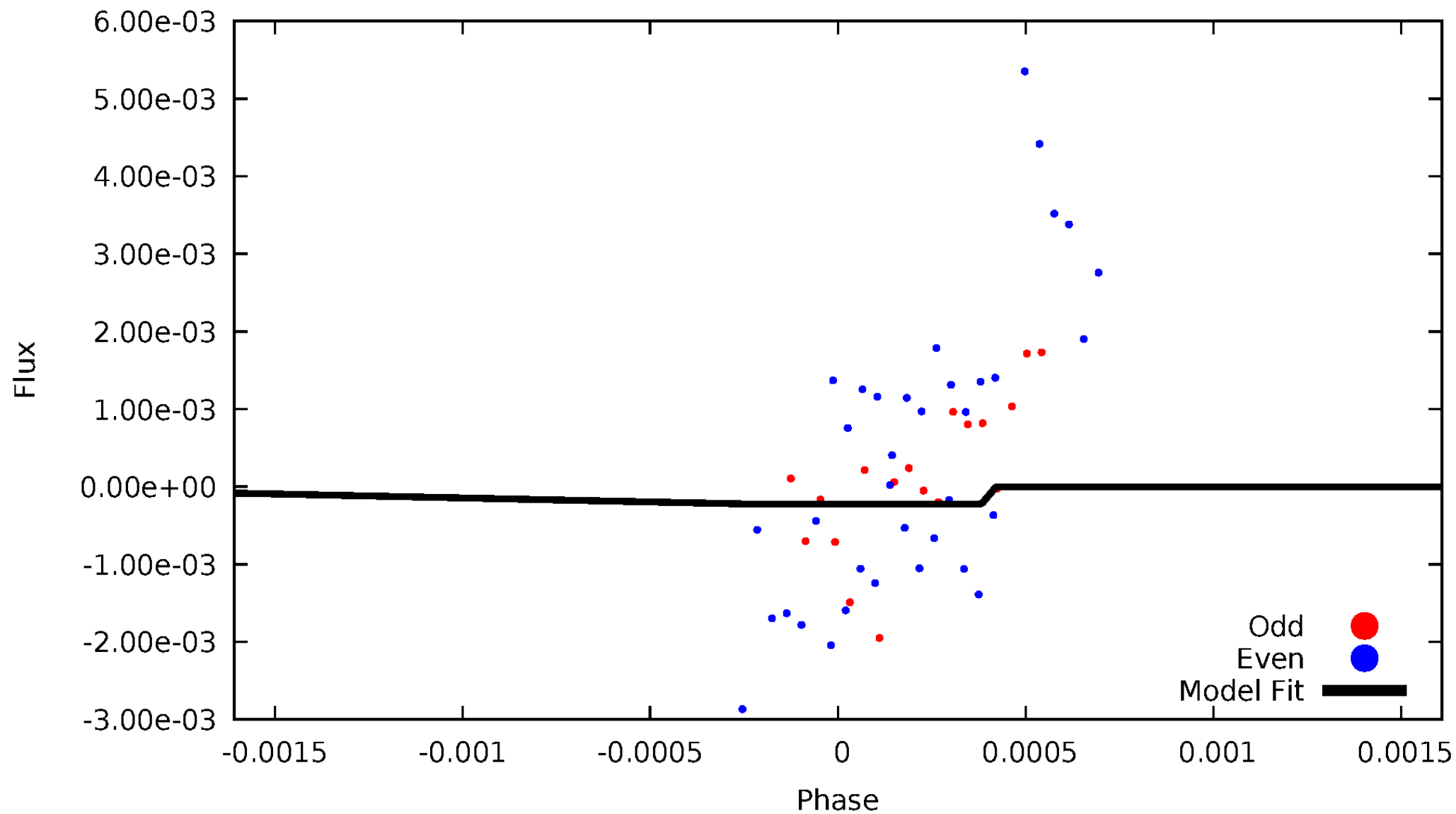
DV Odd/Even

TCE 007663830-02



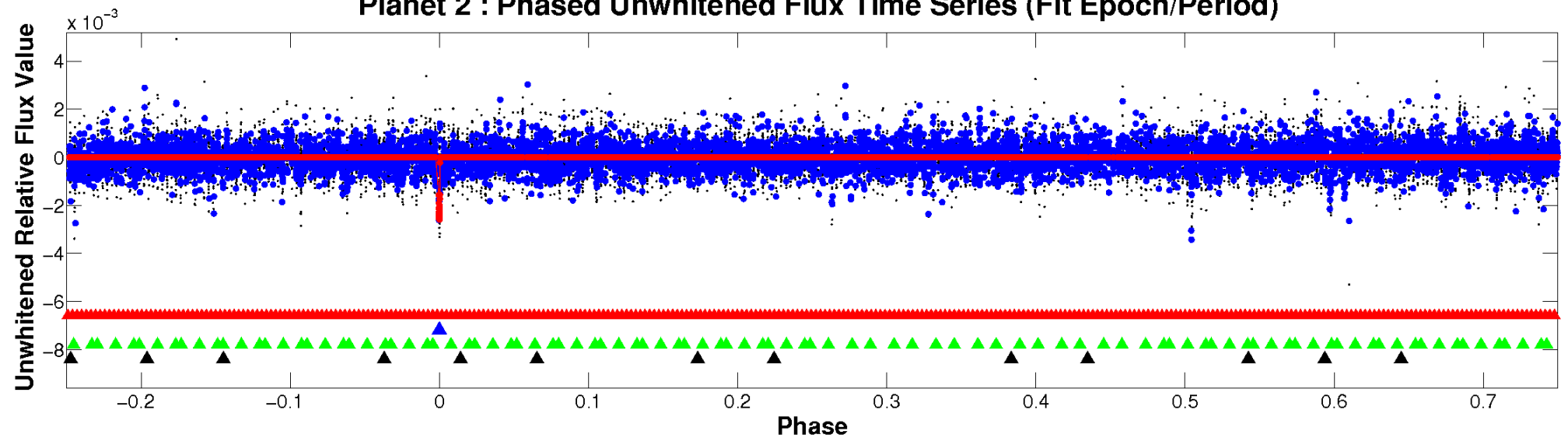
ALT Odd/Even

TCE 007663830-02

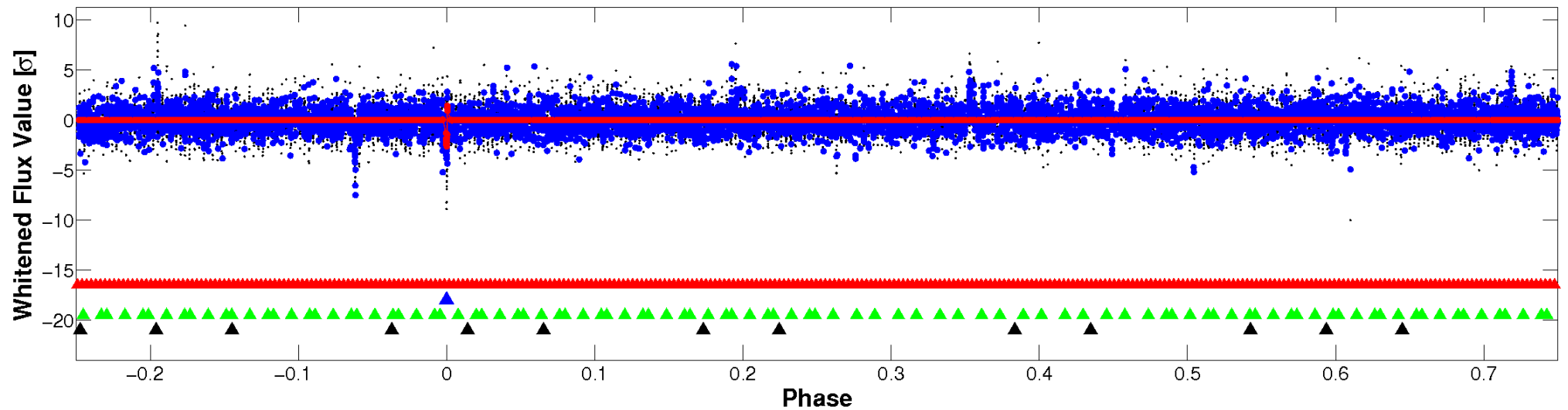


Non-Whitened Vs. Whitened Light Curve

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



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



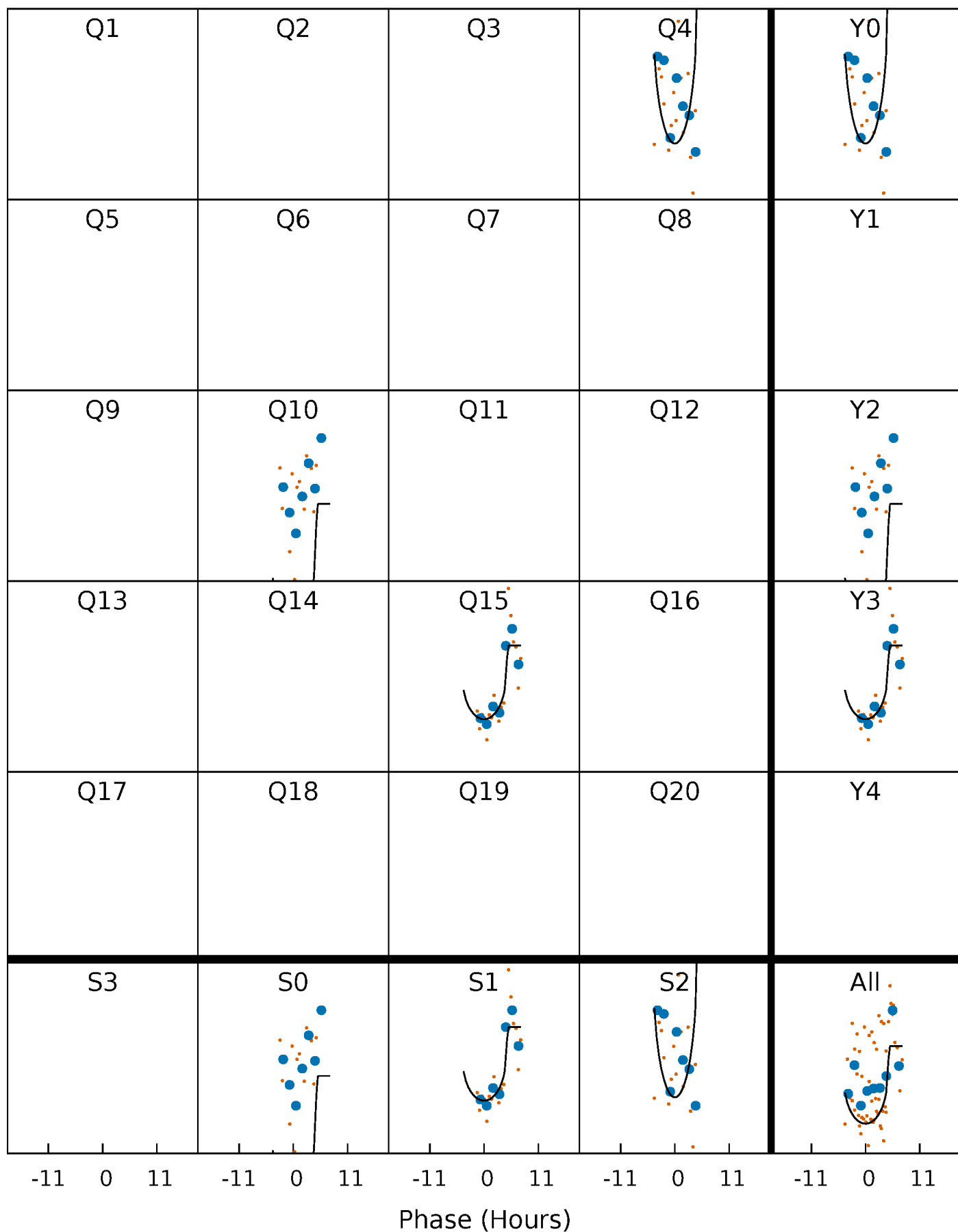
PDC Quarter-Phased Transit Curves

TCE 007663830-02 $P=519.977865$ Days $T_0=409.069456$ (BKJD)



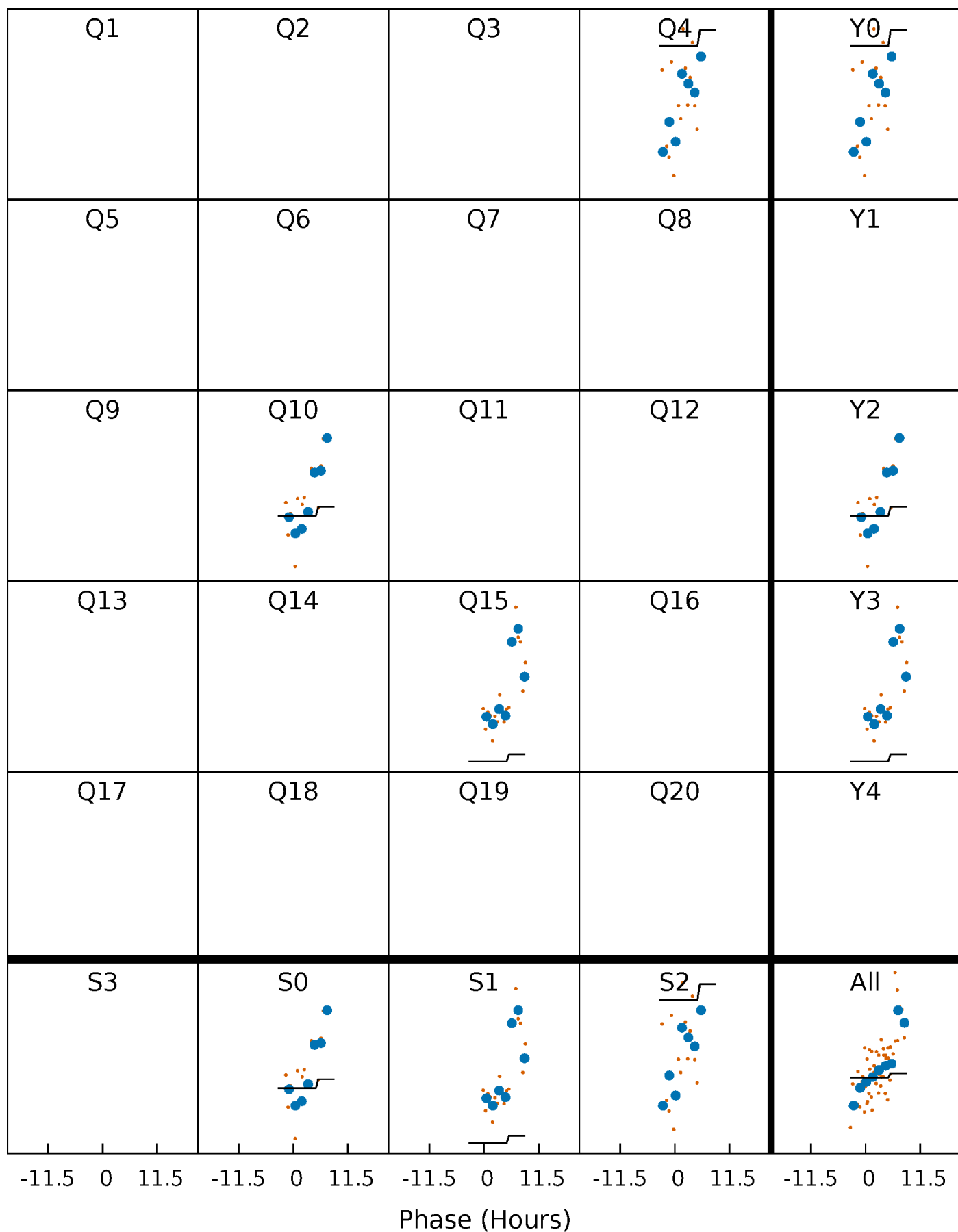
DV Quarter-Phased Transit Curves

TCE 007663830-02 P=519.977865 Days $T_0=409.069456$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

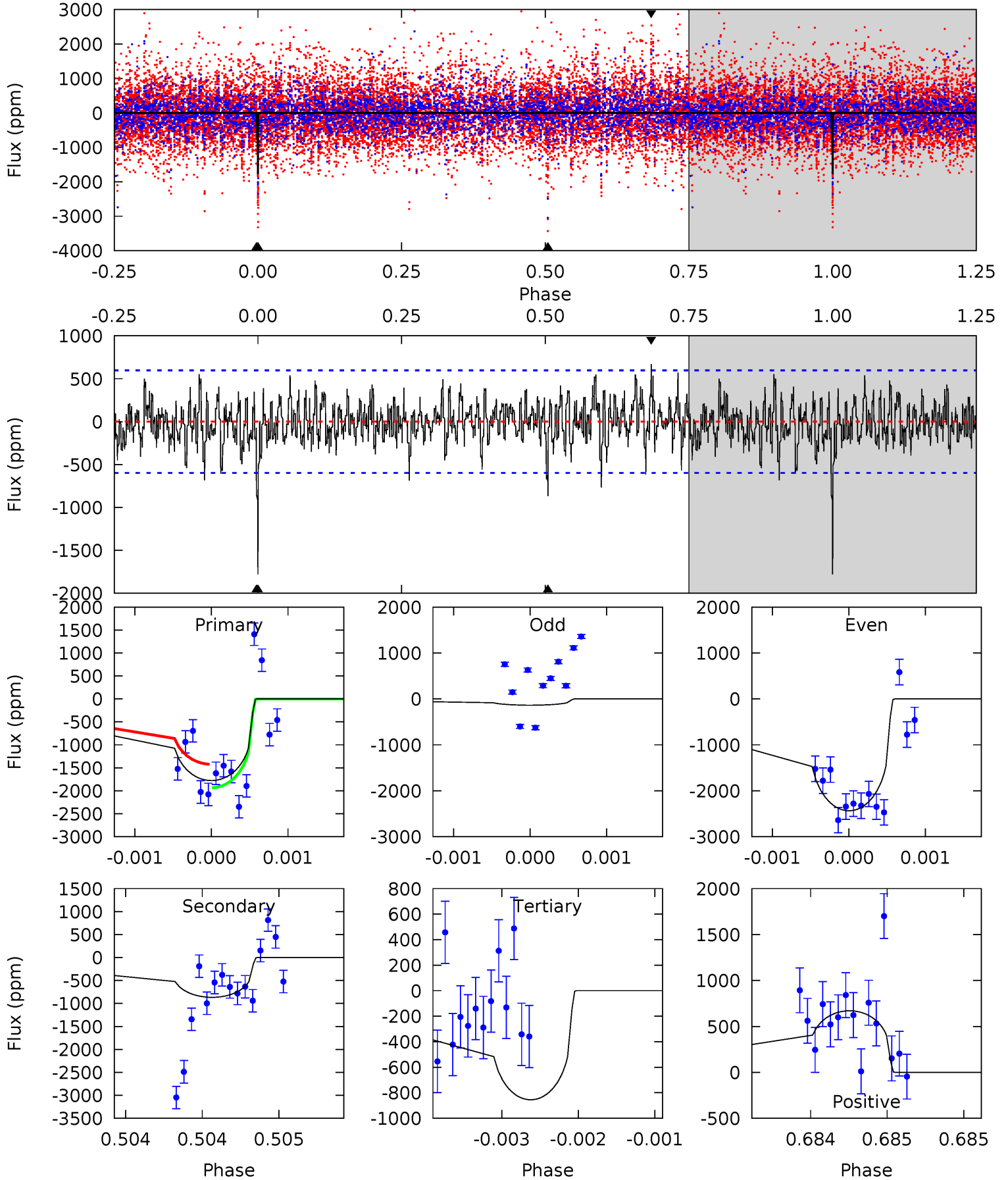
TCE 007663830-02 P=519.972801 Days $T_0=409.027951$ (BKJD)



DV Model-Shift Uniqueness Test

007663830-02, P = 519.977865 Days, E = 409.069456 Days

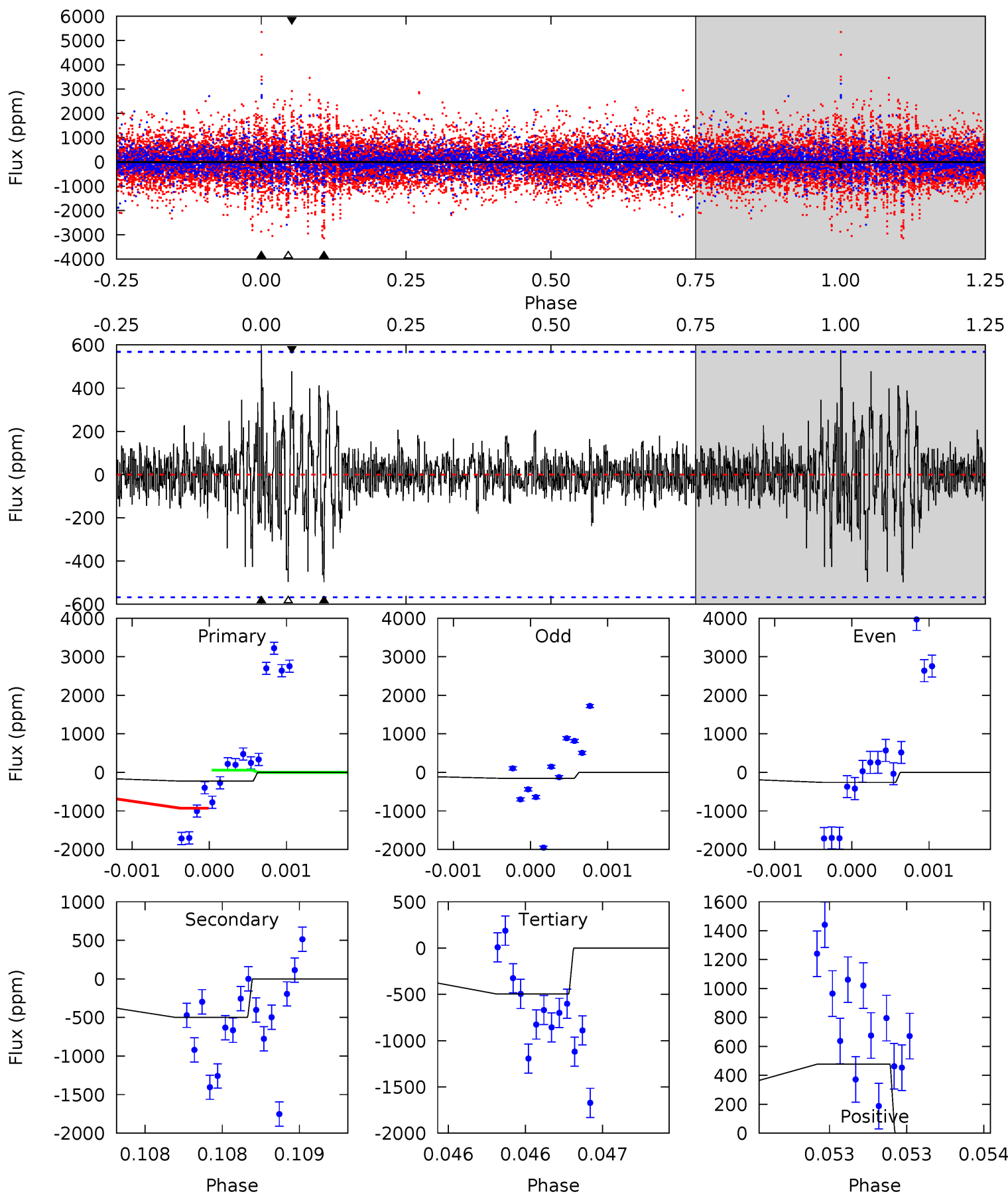
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.4	8.00	7.89	6.19	5.52	3.39	1.86	8.52	10.2	0.11	1.82	11.0	0.70	0.27	2.32



Alt Model-Shift Uniqueness Test

007663830-02, P = 519.972801 Days, E = 409.027951 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.19	4.84	4.82	4.64	5.52	3.40	0.95	-2.63	-2.45	0.02	0.20	0.48	0.39	0.54	3.81



Stellar Parameters For KIC 007663830

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4392^{+118}_{-131}	$4.630^{+0.056}_{-0.024}$	$-0.280^{+0.300}_{-0.300}$	$0.627^{+0.045}_{-0.061}$	$0.613^{+0.068}_{-0.049}$	$3.500^{+0.822}_{-0.427}$
	+3%/-3%	+1%/-1%	+107%/-107%	+7%/-10%	+11%/-8%	+23%/-12%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 007663830-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-867 ± 108	$6.09^{+5.38}_{-4.02}$	205^{+7}_{-7}	3030^{+1300}_{-466}	$15097^{+116806}_{-10842}$
Alt.	-498 ± 103	$4.95^{+5.08}_{-3.42}$	205^{+7}_{-7}	2972^{+1376}_{-491}	$12214^{+120575}_{-9011}$

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 $A_{obs} \gg 1.0$

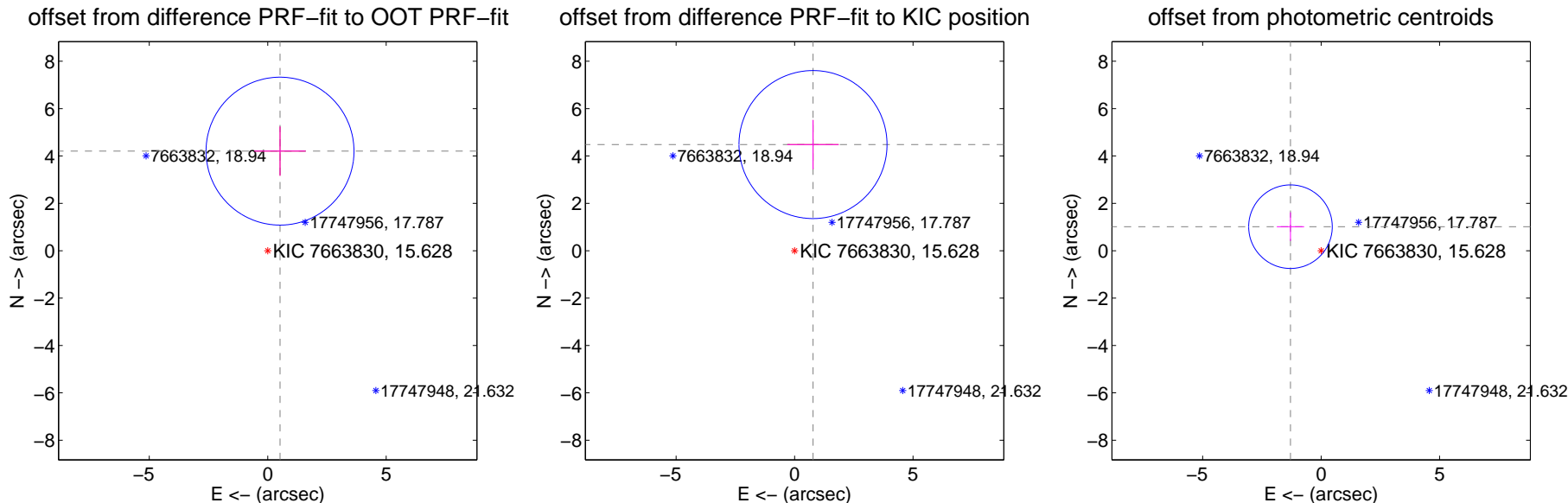
DV Centroid Data

Supplemental centroid analysis for 007663830-02. Kepler magnitude: 15.63. Transit SNR 15.93

There are 0 quarters with good PRF difference image offsets

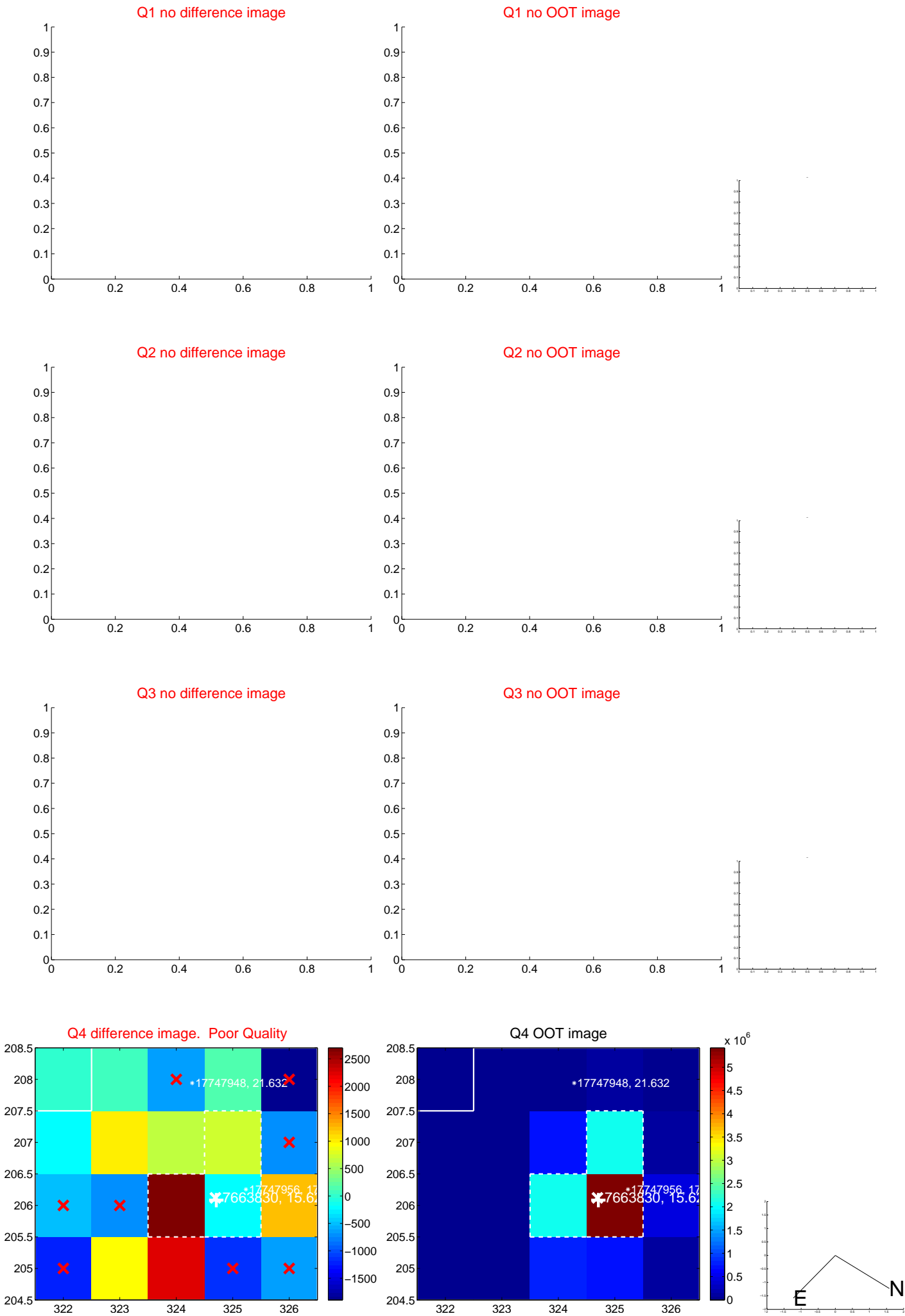
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.236 ± 1.041	4.07	-0.519 ± 1.085	4.204 ± 1.040
PRF-fit source offset from KIC position	4.548 ± 1.041	4.37	-0.778 ± 1.085	4.481 ± 1.040
photometric centroid source offset	1.64 ± 0.59	2.80	1.29 ± 0.58	1.01 ± 0.61



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.

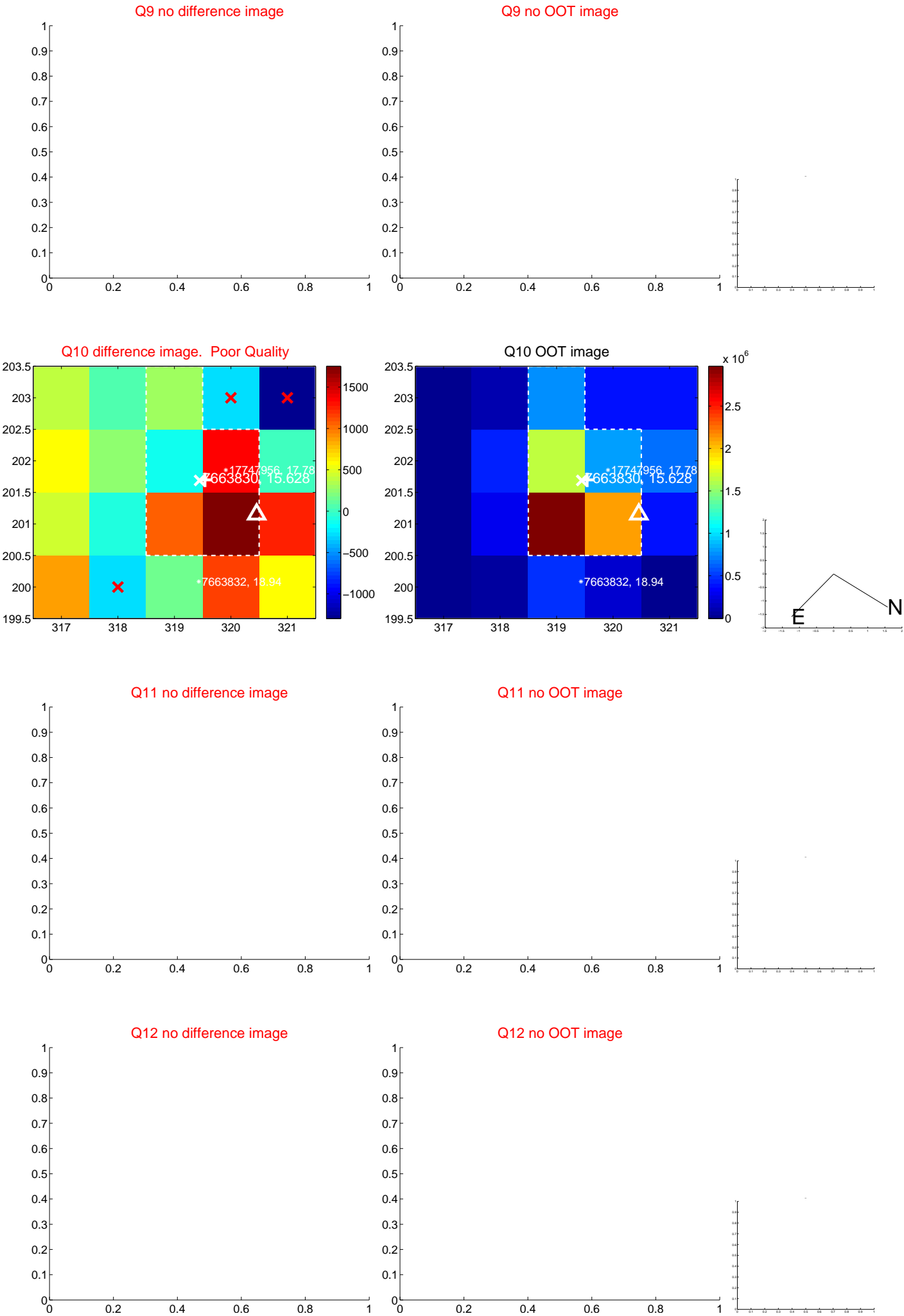
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



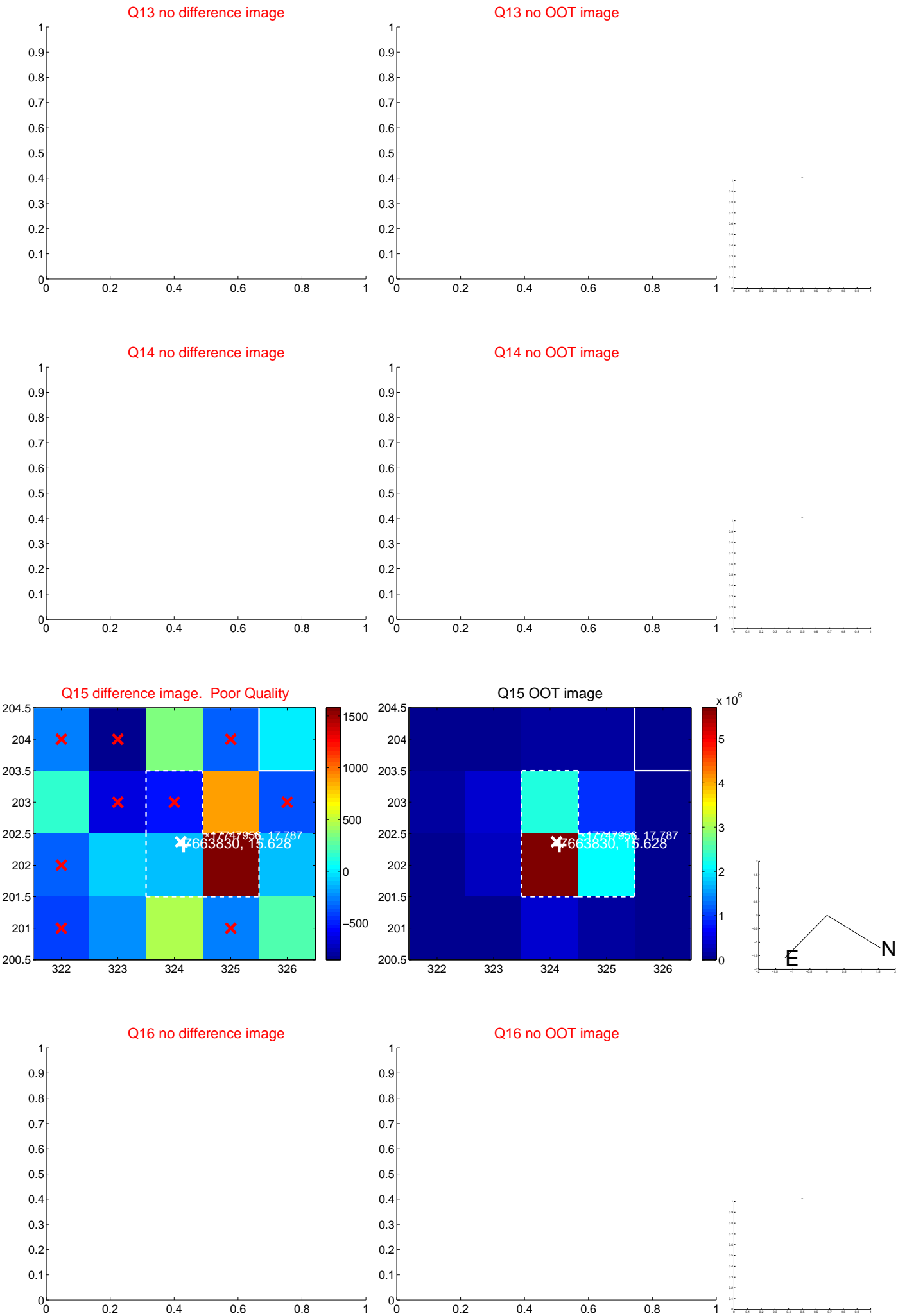
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



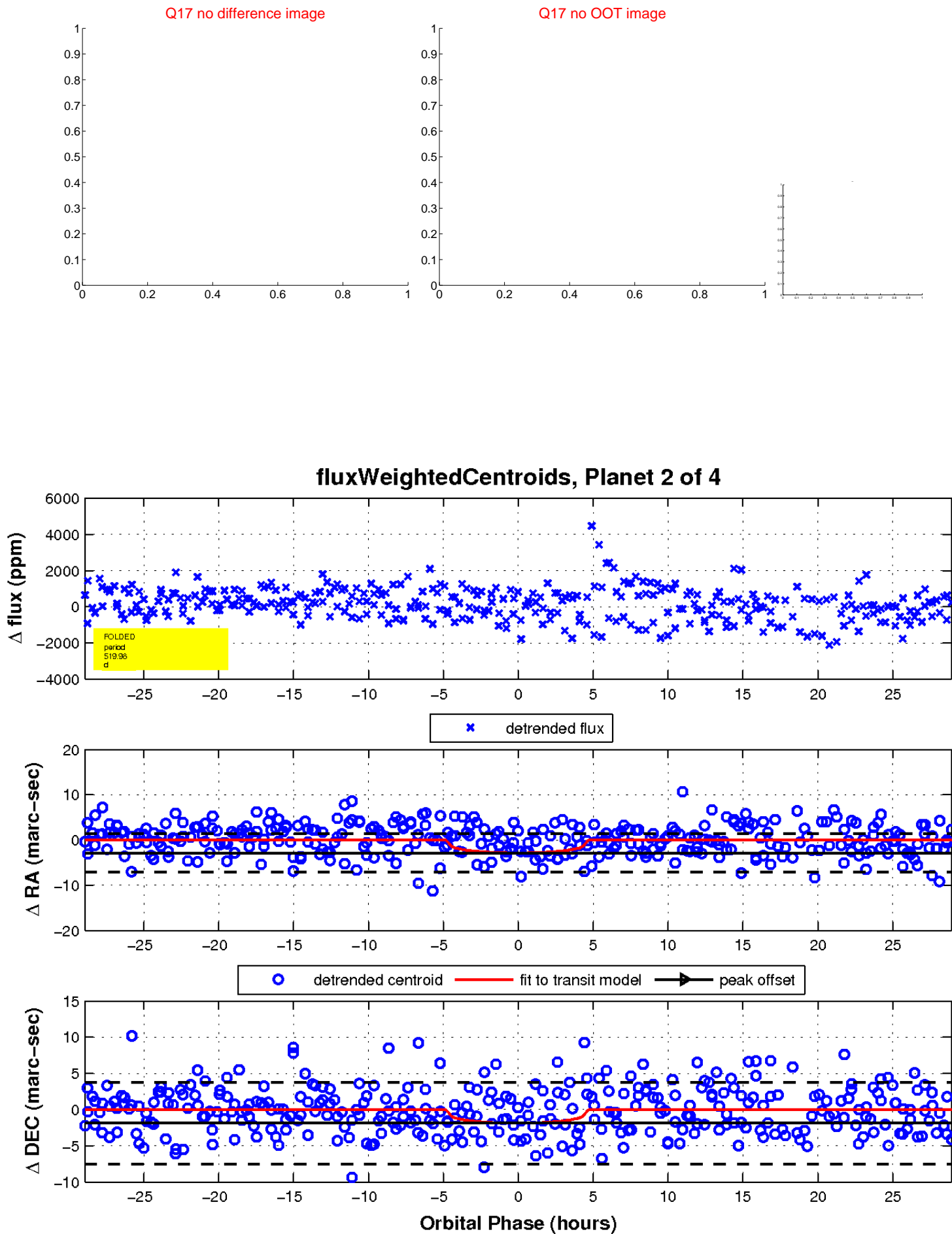
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

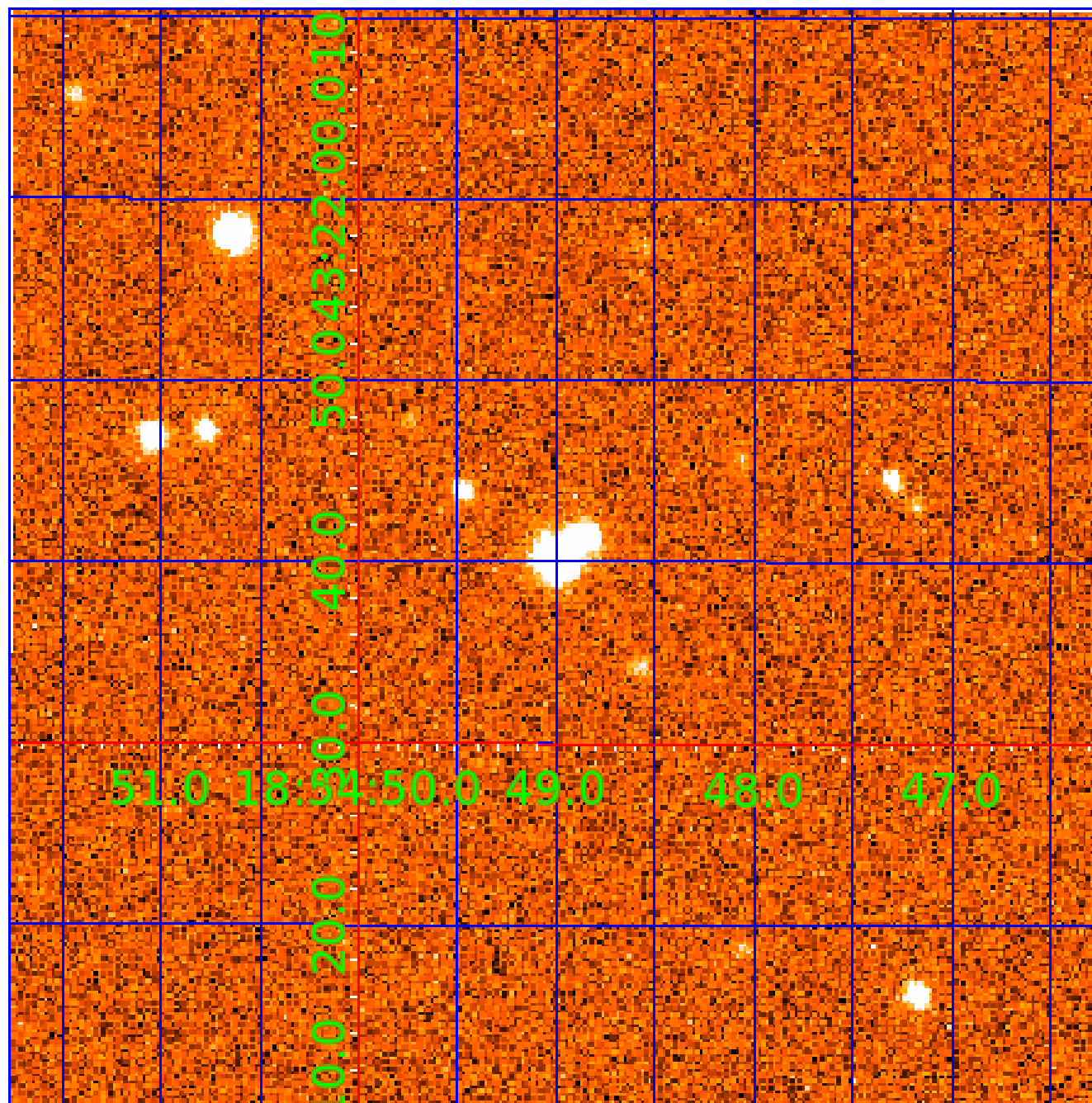


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007663830

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})
007663830-01	OBS	No	1.610043	132.942315	75.5	9.721	8.7	8.8	0.63	4392	0.53	251.54
007663830-02	OBS	No	519.977865	409.069456	2595.2	9.660	24.8	15.9	0.63	4392	3.12	0.11
007663830-03	OBS	No	14.620361	143.615874	239.7	10.425	7.4	5.8	0.63	4392	1.03	13.28
007663830-04	OBS	No	109.322686	171.191420	605.0	33.815	7.7	3.4	0.63	4392	2.48	0.91

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007663830-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_UNRESOLVED_OFFSET
007663830-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
007663830-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
007663830-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—CENT_FEW_DIFFS

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

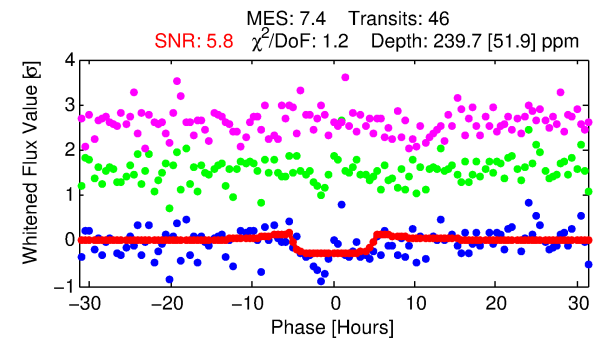
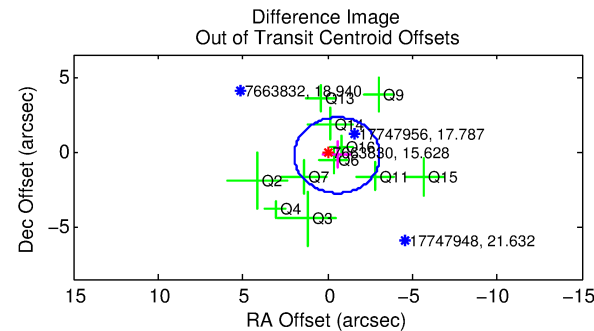
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 007663830-03

No Significant Match Found

KIC: 7663830 Candidate: 3 of 4 Period: 14.620 d

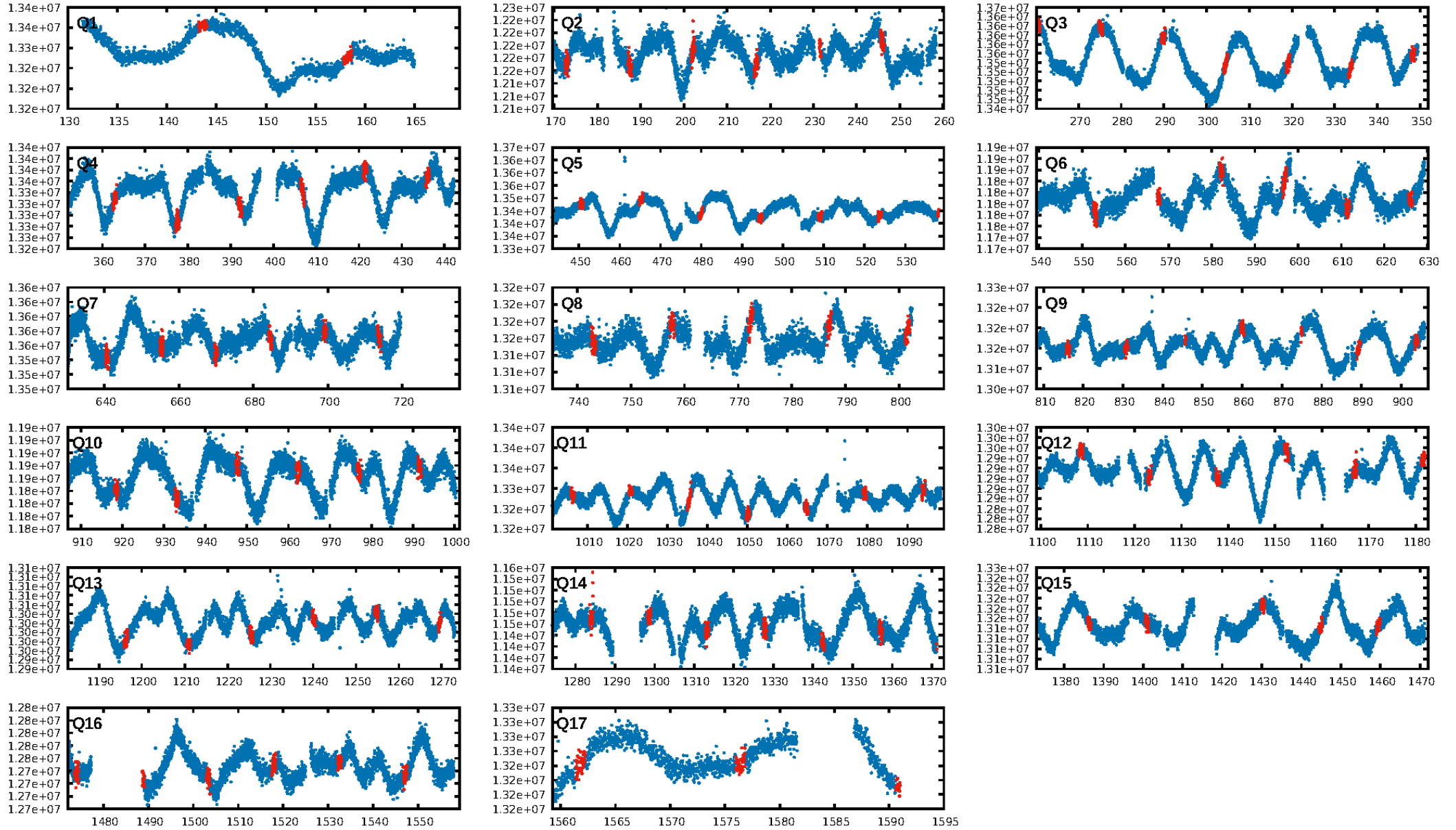


ShortPeriod-sig: 100.0% [21.91σ]
 LongPeriod-sig: 100.0% [64.23σ]
 ModelChiSquare2-sig: 63.6%
 ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.15e-09
 RollingBand-fgt: 0.98 [40/41]
GhostDiagnostic-chr: -0.5427

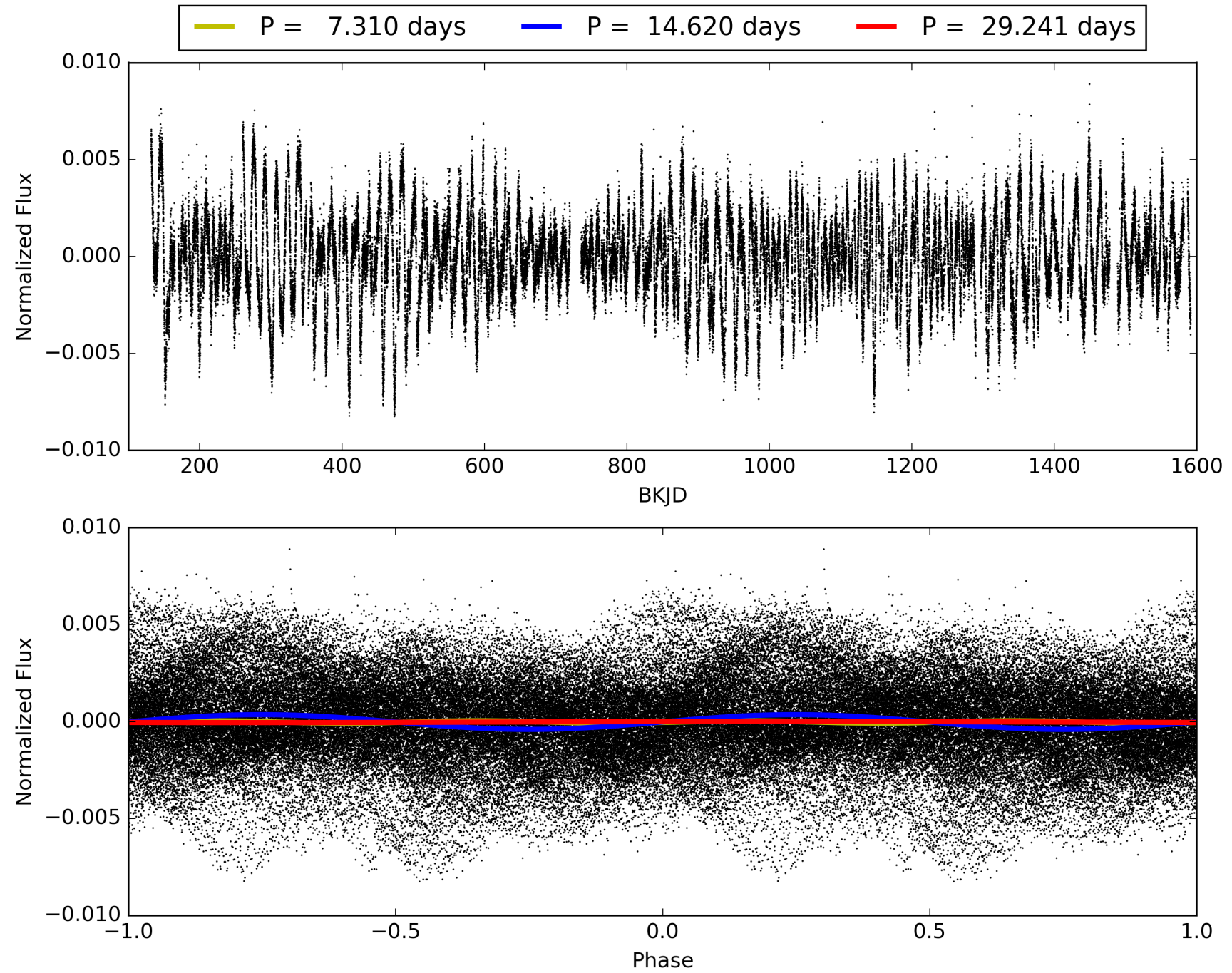
Centroid-sig: 87.5%
 Centroid-so: 0.219 arcsec [0.21σ]
 OotOffset-rm: 0.605 arcsec [0.72σ]
 KicOffset-rm: 0.586 arcsec [0.72σ]
 OotOffset-st: 3/4/2/2 [11]
 KicOffset-st: 3/4/2/2 [11]
 DiffImageQuality-fgm: 0.09 [1/11]
 DiffImageOverlap-fno: 0.00 [0/17]

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

TCE 007663830-03, PDC Light Curves

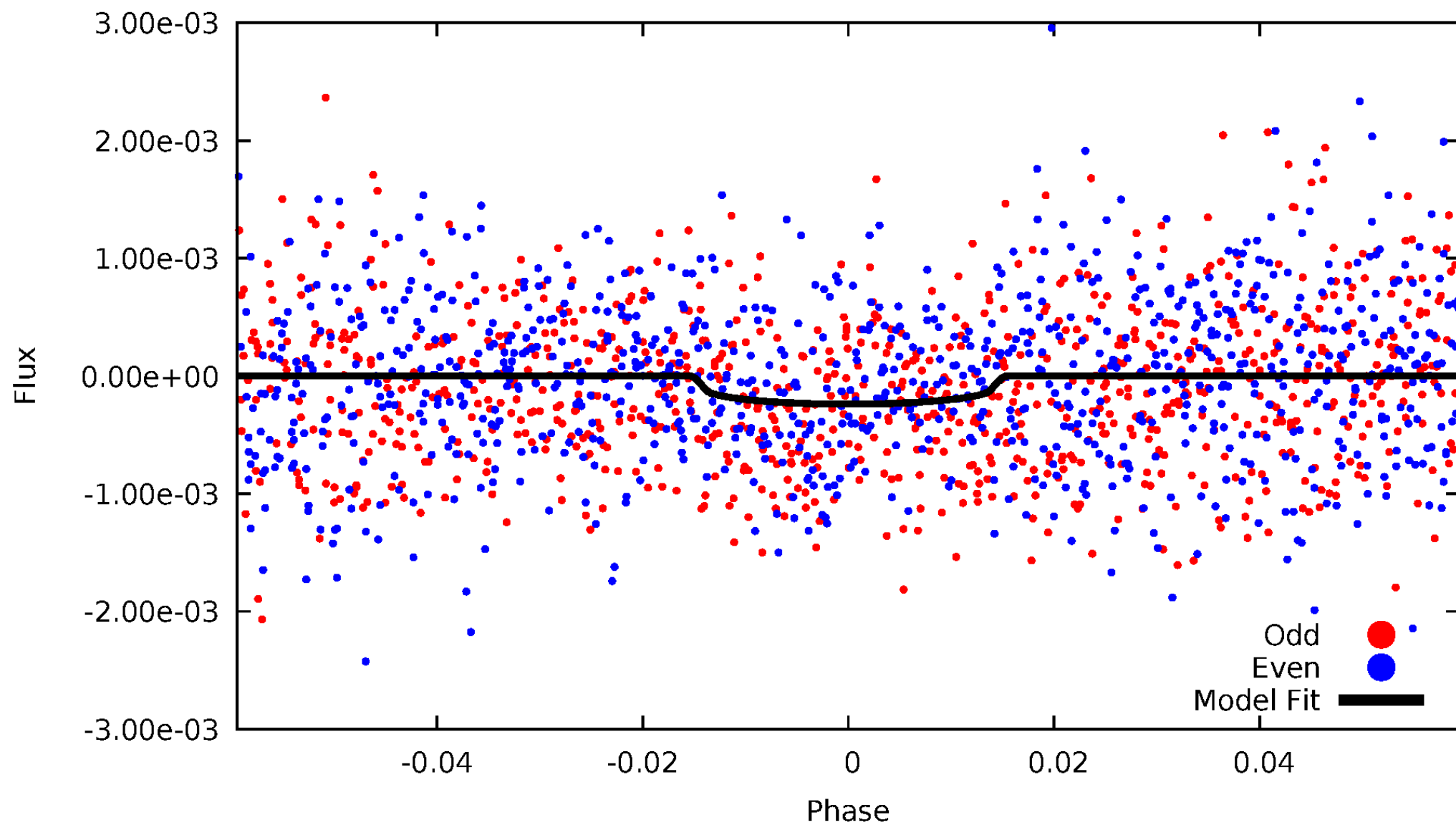


TCE 007663830-03



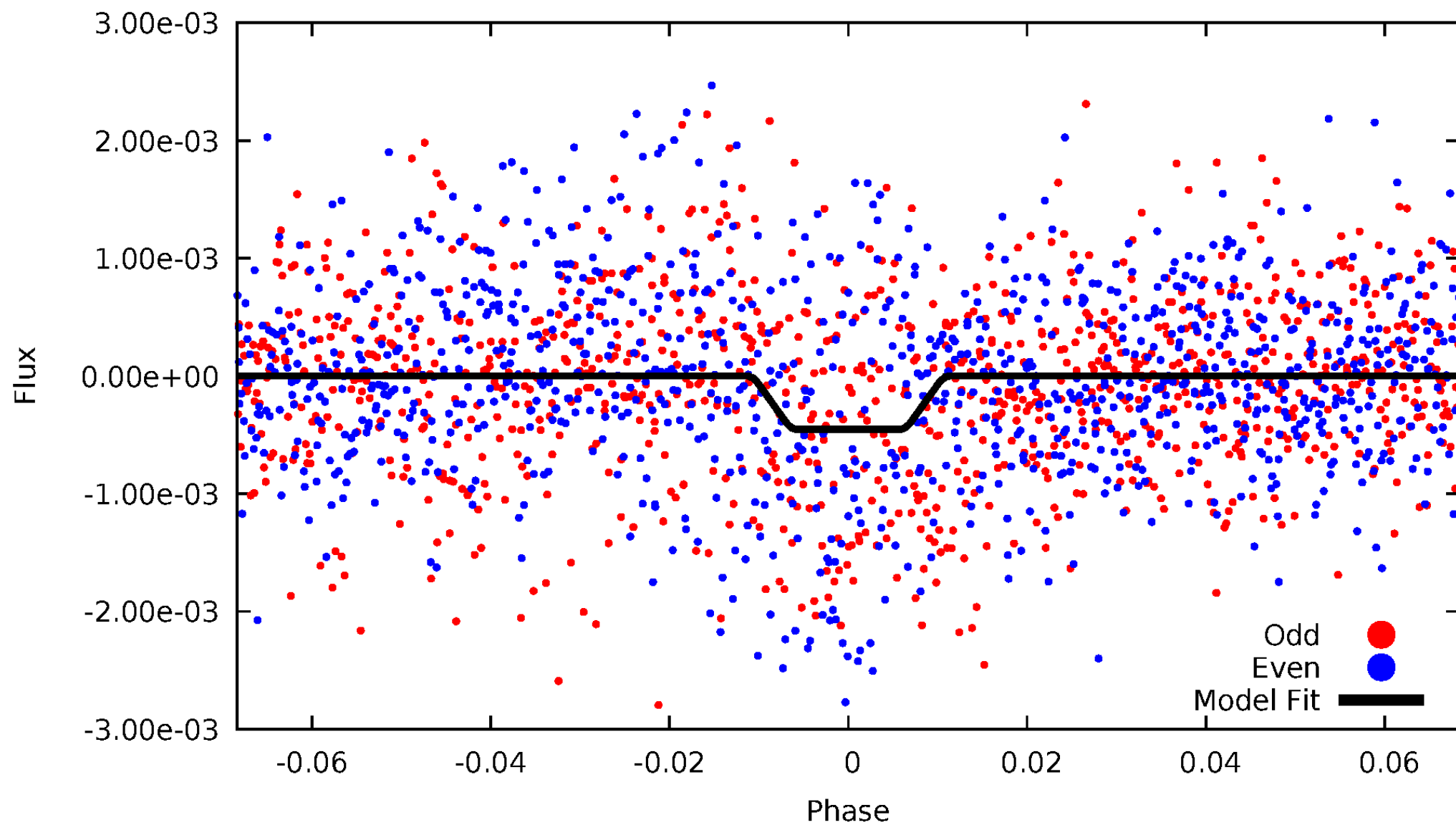
DV Odd/Even

TCE 007663830-03



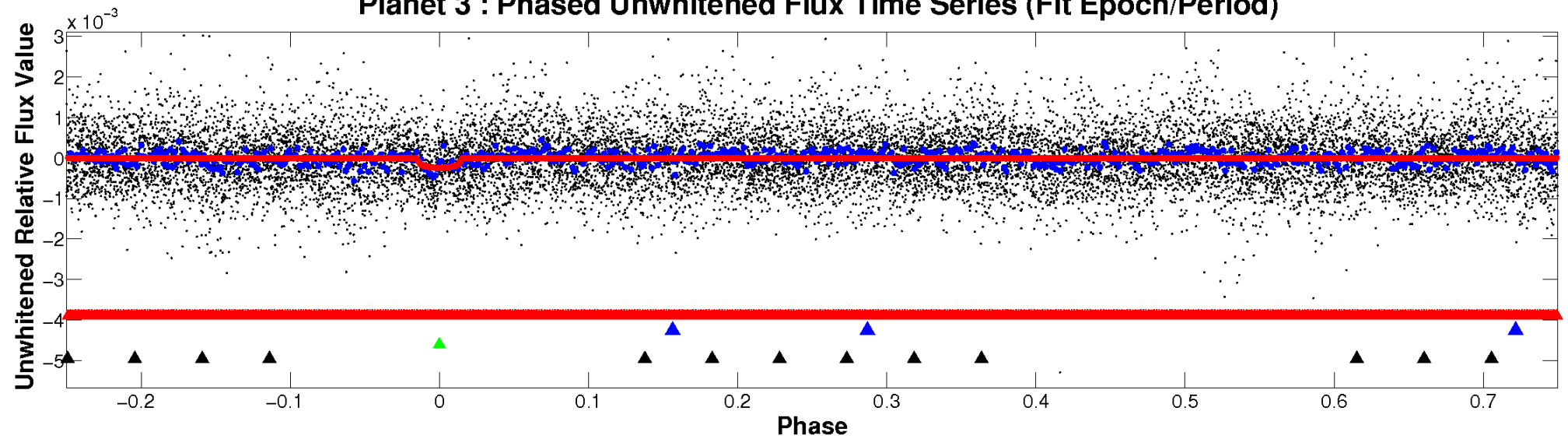
ALT Odd/Even

TCE 007663830-03

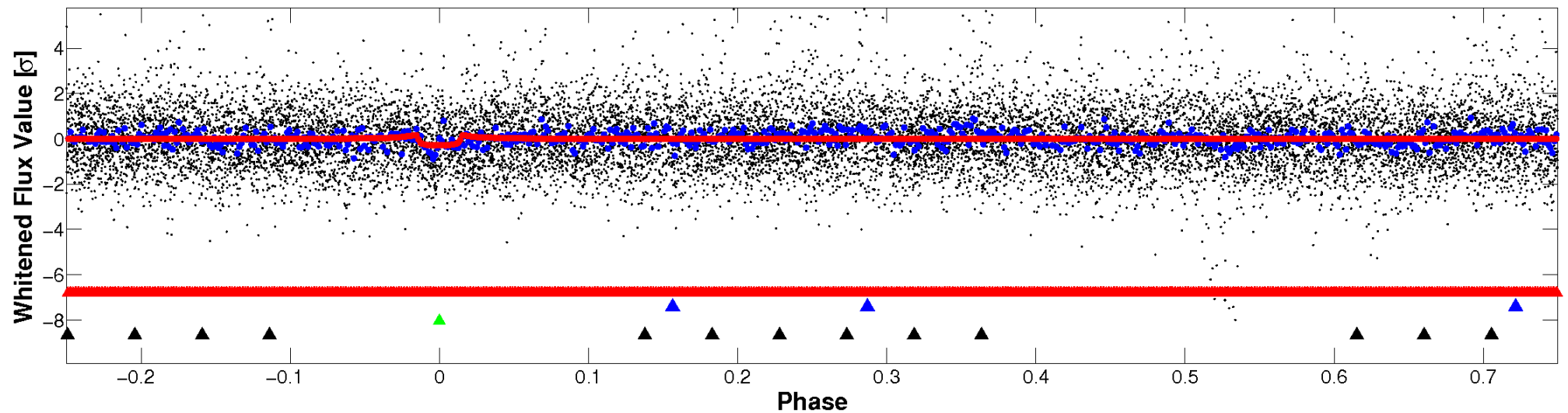


Non-Whitened Vs. Whitened Light Curve

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

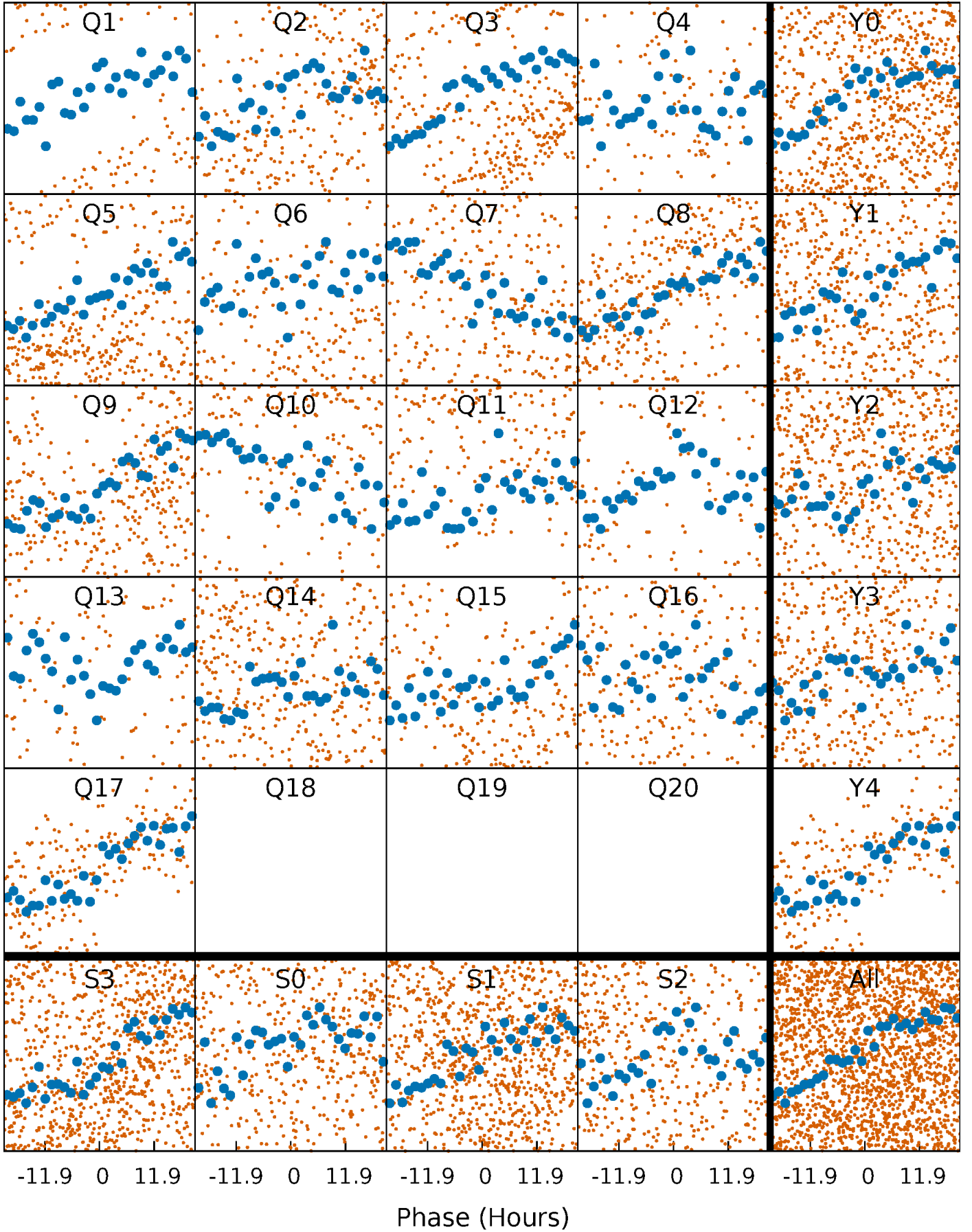


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



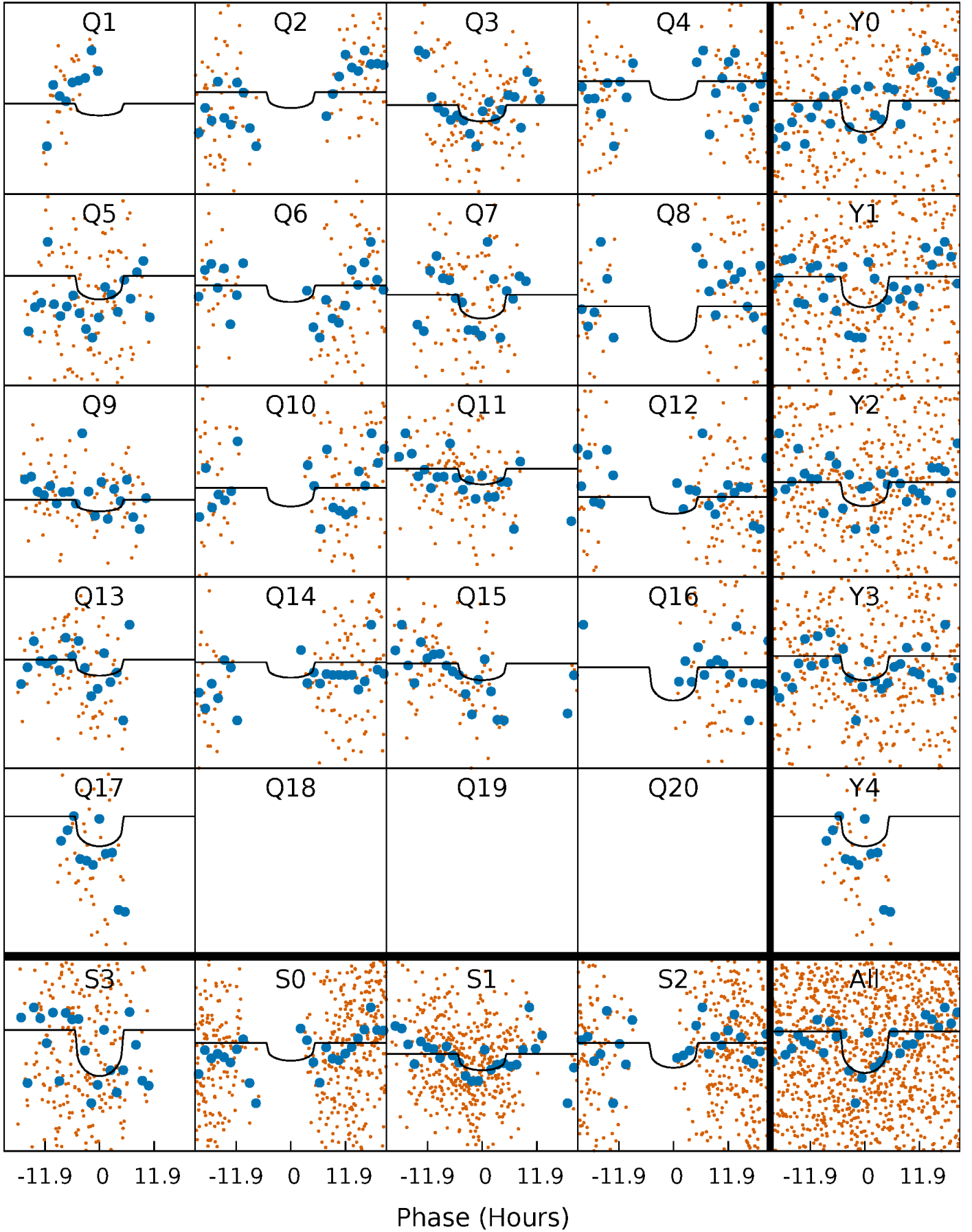
PDC Quarter-Phased Transit Curves

TCE 007663830-03 P= 14.620361 Days $T_0=143.615874$ (BKJD)



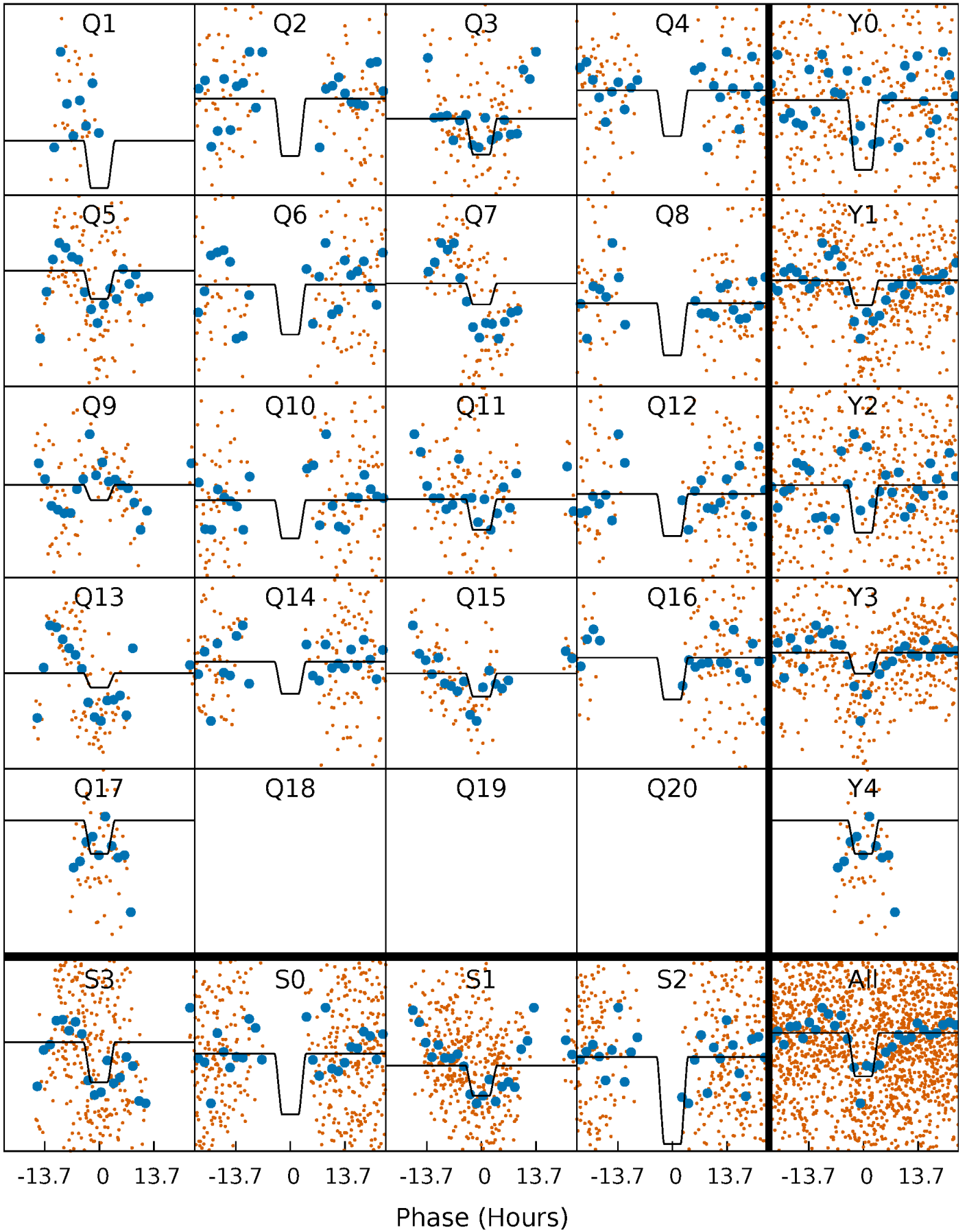
DV Quarter-Phased Transit Curves

TCE 007663830-03 P= 14.620361 Days $T_0=143.615874$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

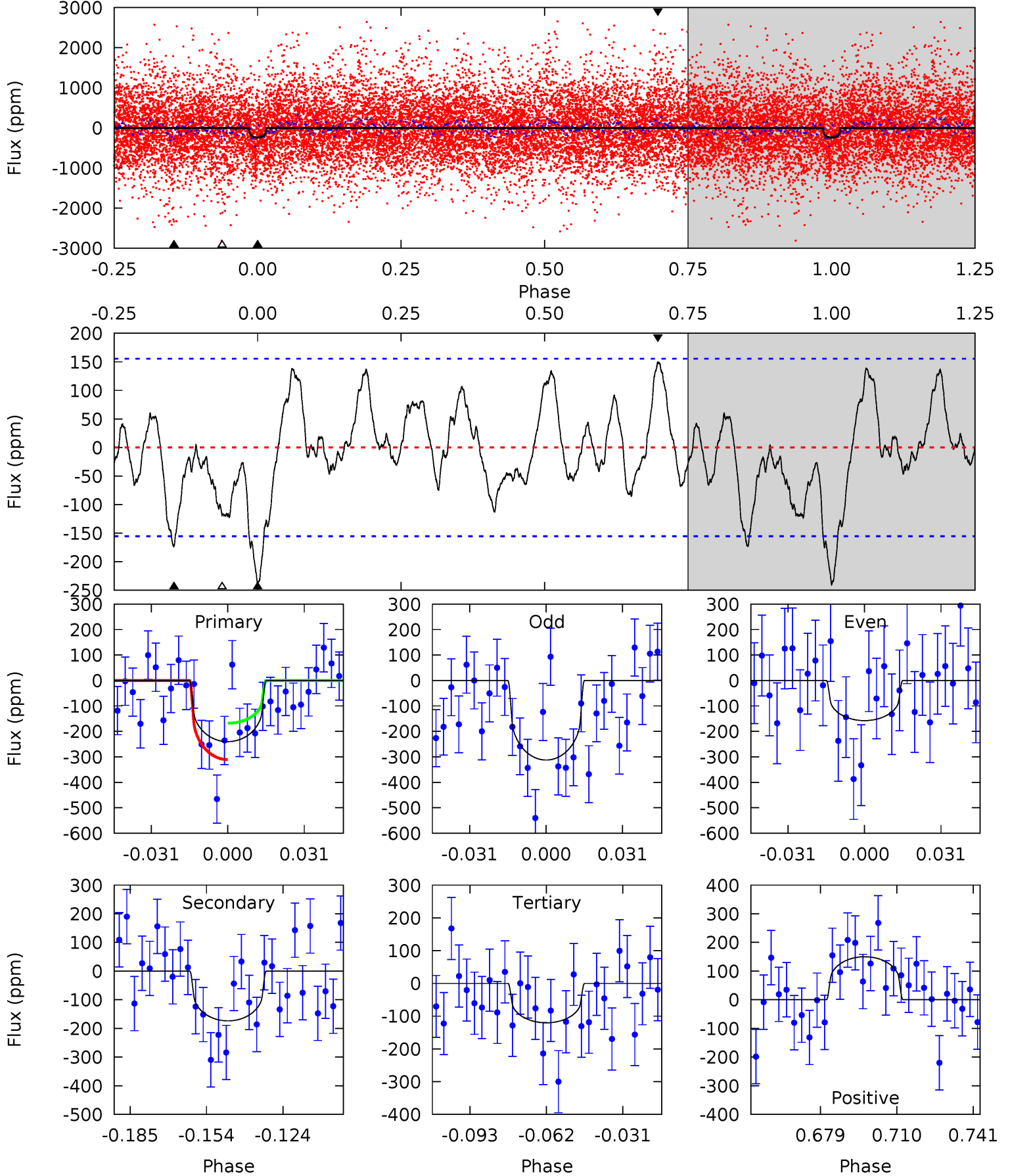
TCE 007663830-03 P= 14.619618 Days $T_0=143.614986$ (BKJD)



DV Model-Shift Uniqueness Test

007663830-03, P = 14.620361 Days, E = 128.995513 Days

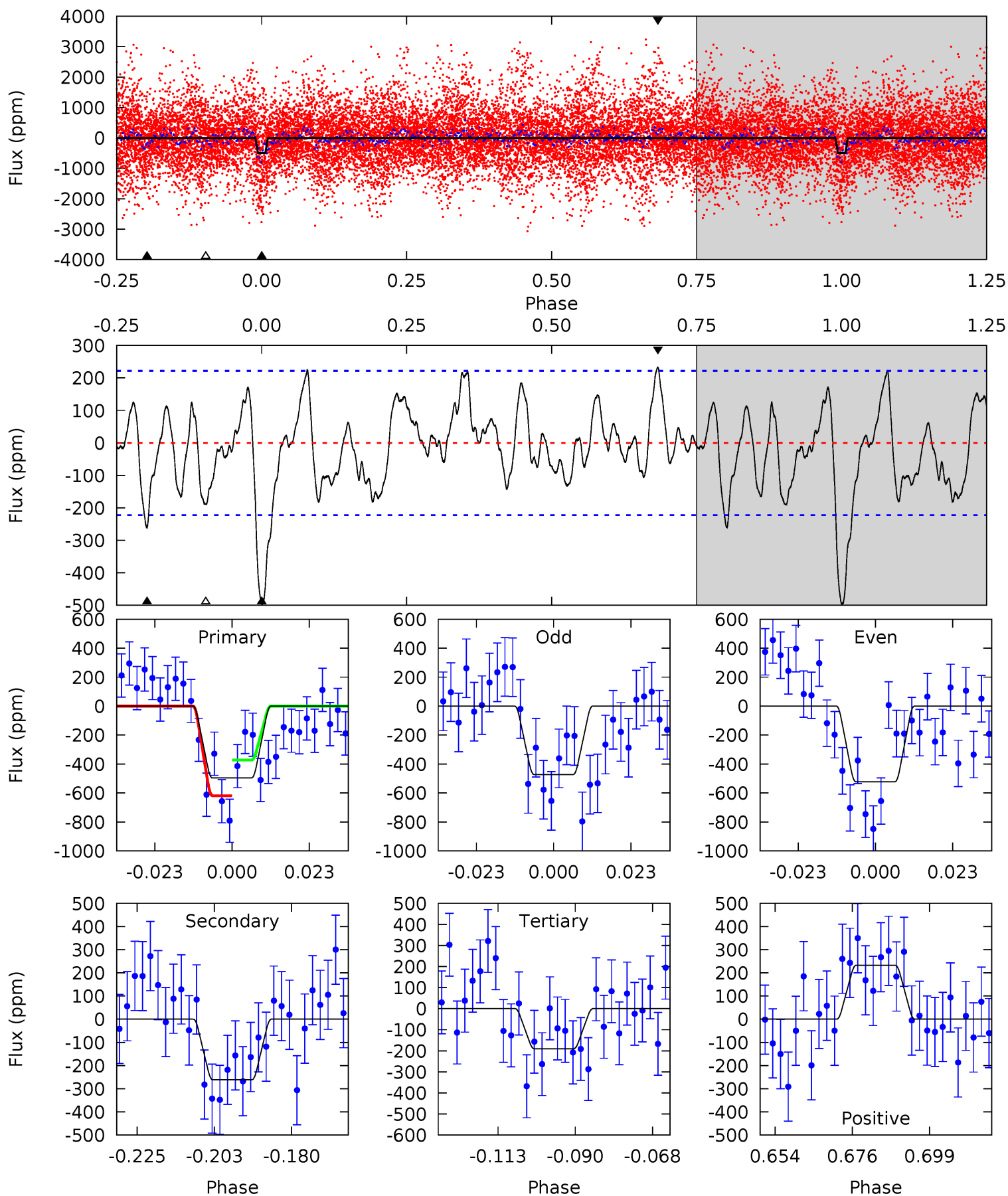
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.43	5.37	3.72	4.64	4.81	2.16	1.88	3.71	2.79	1.65	0.73	2.41	0.82	0.38	2.23



Alt Model-Shift Uniqueness Test

007663830-03, P = 14.619618 Days, E = 128.995368 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	5.73	4.18	5.10	4.87	2.28	2.06	6.71	5.79	1.55	0.63	0.55	1.25	0.32	2.70



Stellar Parameters For KIC 007663830

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4392^{+118}_{-131}	$4.630^{+0.056}_{-0.024}$	$-0.280^{+0.300}_{-0.300}$	$0.627^{+0.045}_{-0.061}$	$0.613^{+0.068}_{-0.049}$	$3.500^{+0.822}_{-0.427}$
	+3%/-3%	+1%/-1%	+107%/-107%	+7%/-10%	+11%/-8%	+23%/-12%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 007663830-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-174 ± 32	$1.27^{+0.93}_{-0.76}$	675^{+22}_{-21}	3854^{+1626}_{-639}	566^{+3036}_{-380}
Alt.	-261 ± 46	$1.55^{+1.07}_{-0.94}$	678^{+23}_{-24}	3854^{+1660}_{-589}	570^{+2827}_{-364}

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

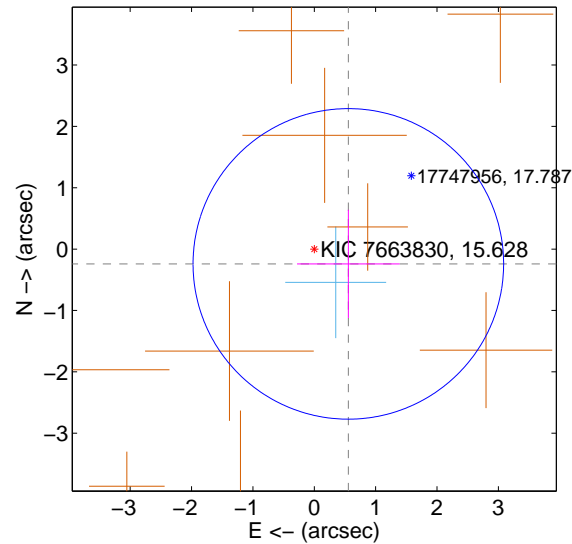
Supplemental centroid analysis for 007663830-03. Kepler magnitude: 15.63. Transit SNR 5.80

There are 1 quarters with good PRF difference image offsets

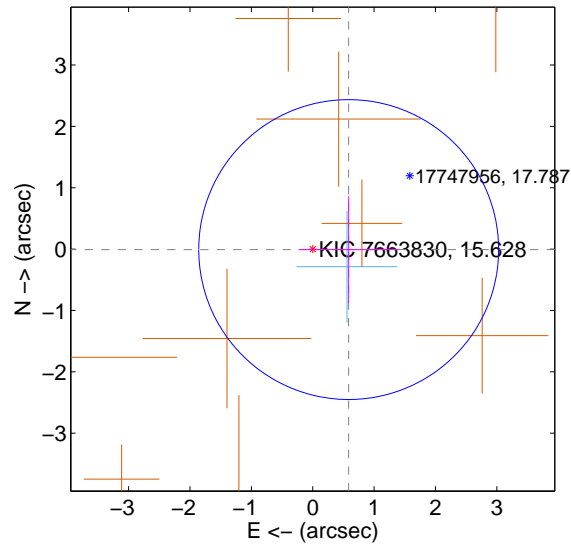
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.605 ± 0.843	0.72	-0.555 ± 0.836	-0.241 ± 0.882
PRF-fit source offset from KIC position	0.586 ± 0.814	0.72	-0.586 ± 0.814	-0.008 ± 0.867
photometric centroid source offset	0.22 ± 1.02	0.21	0.22 ± 1.02	-0.01 ± 1.14

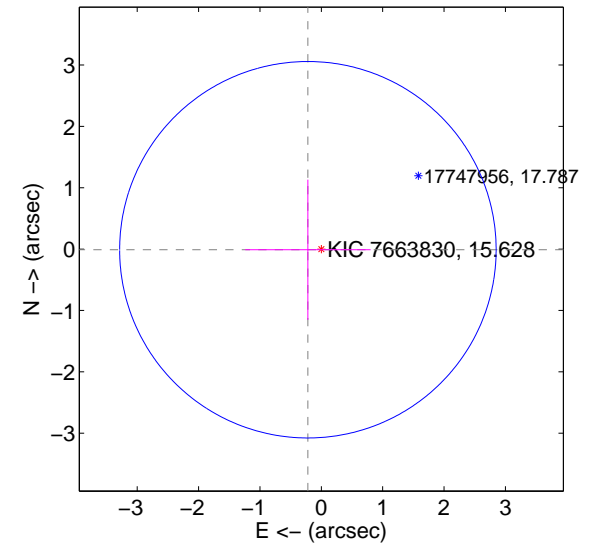
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

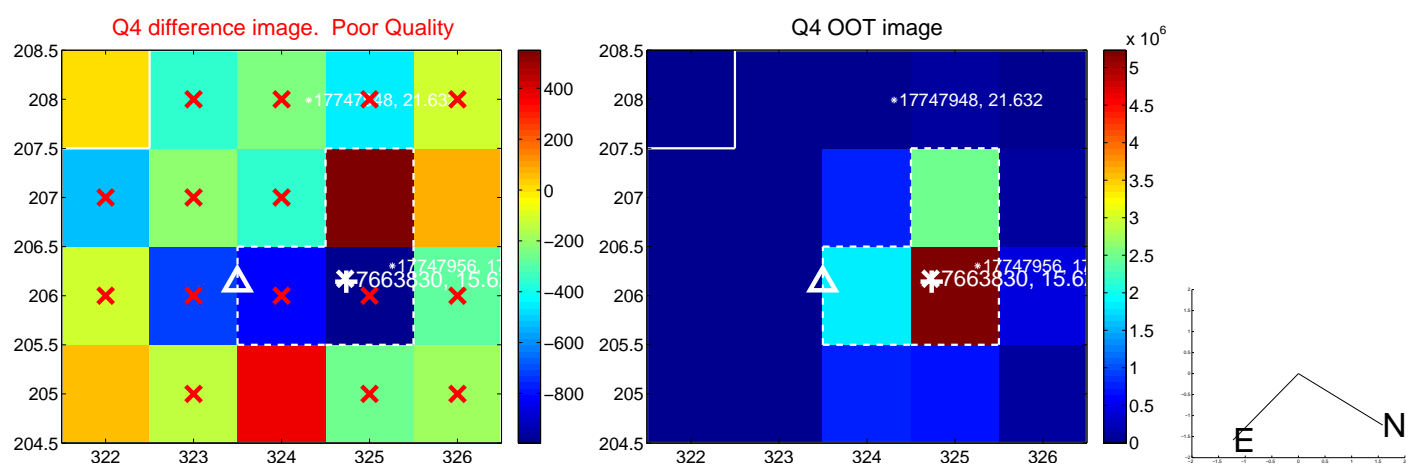
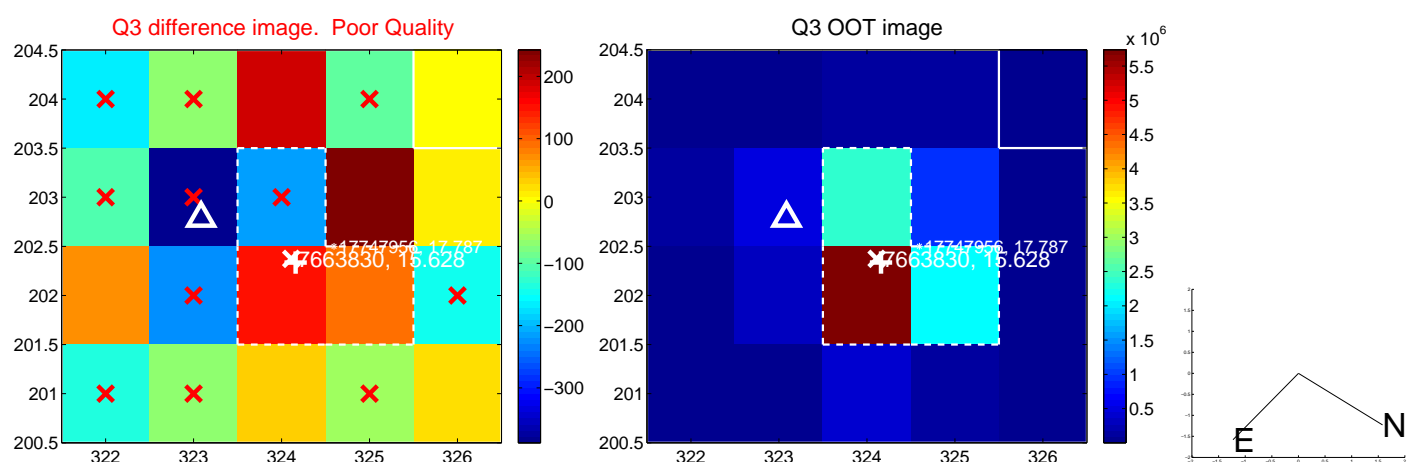
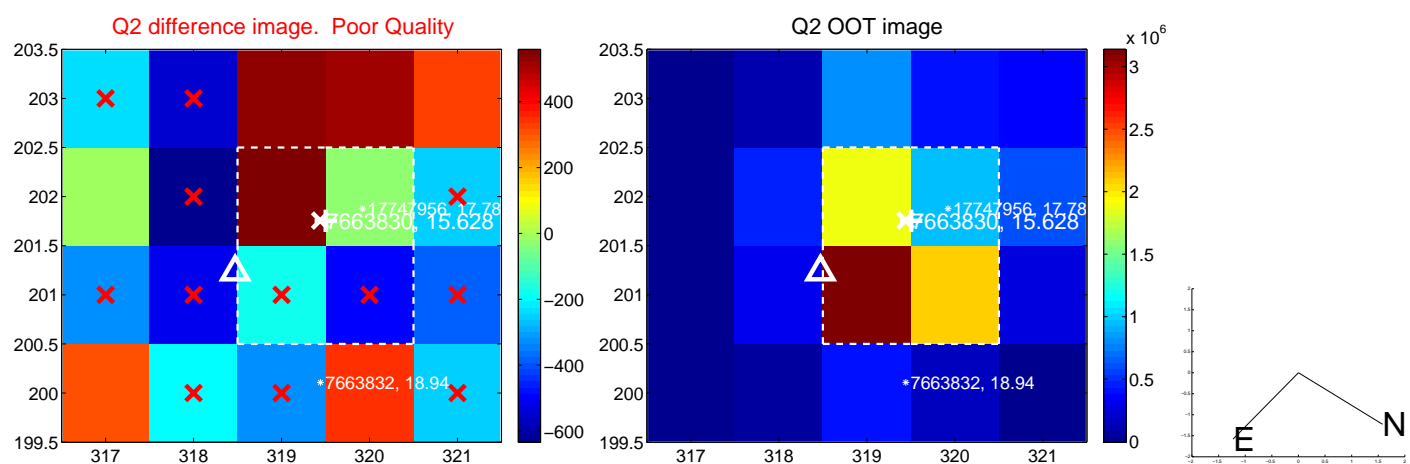
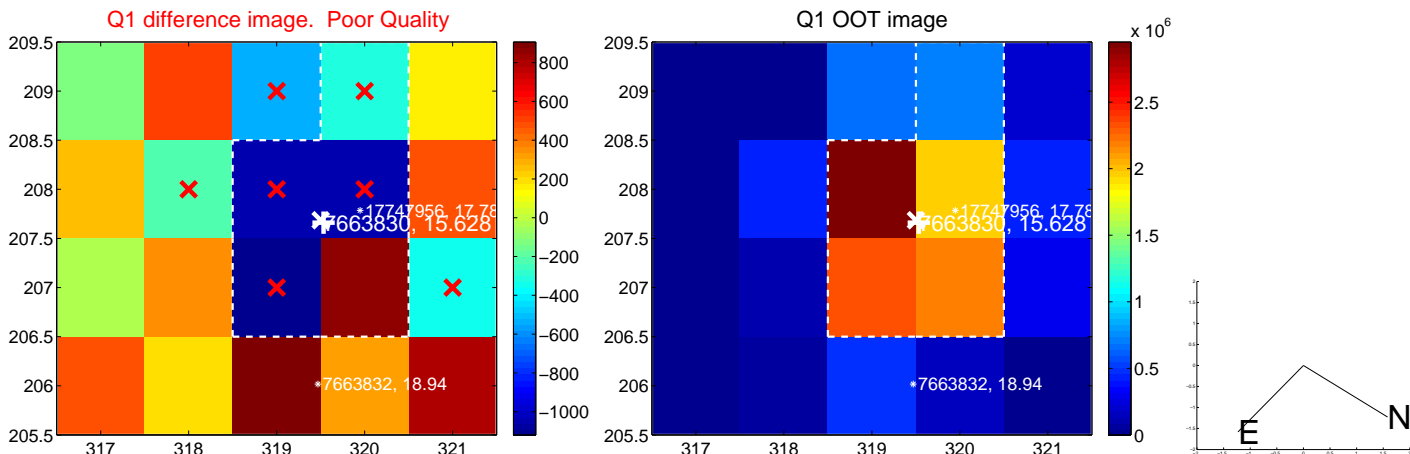


offset from photometric centroids

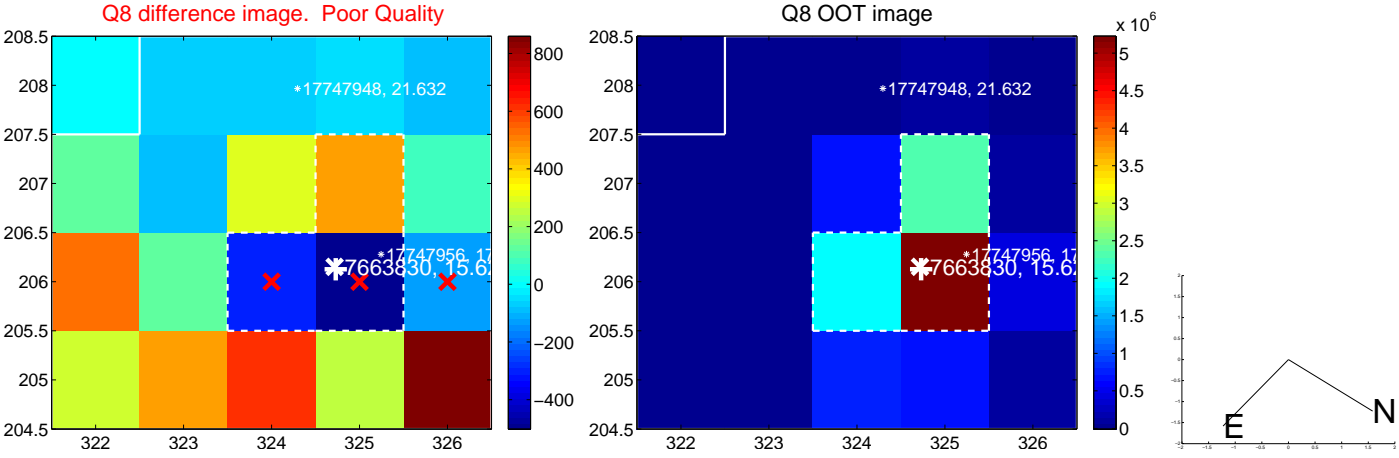
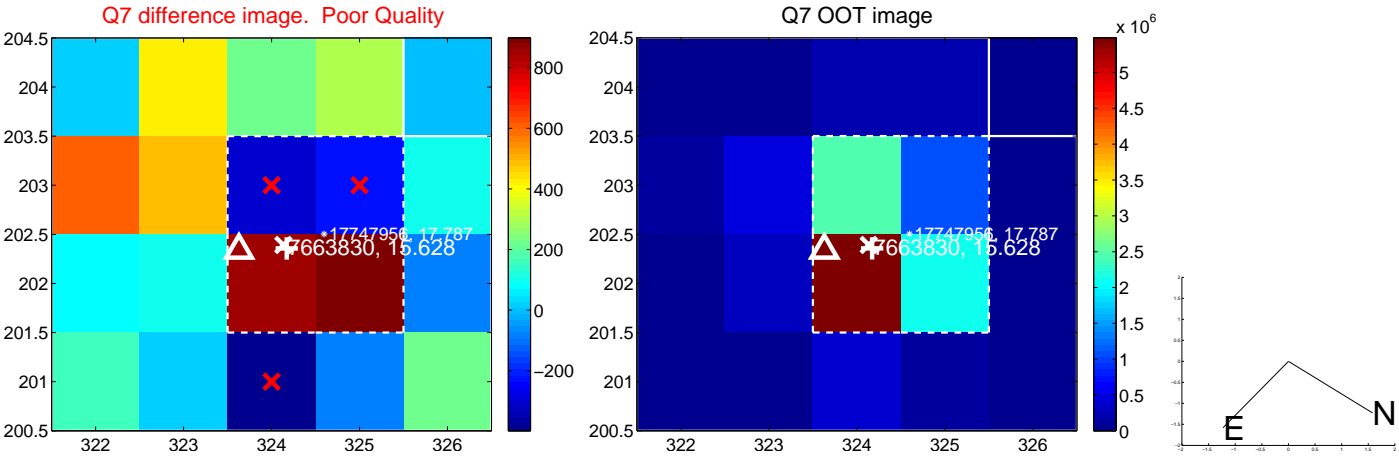
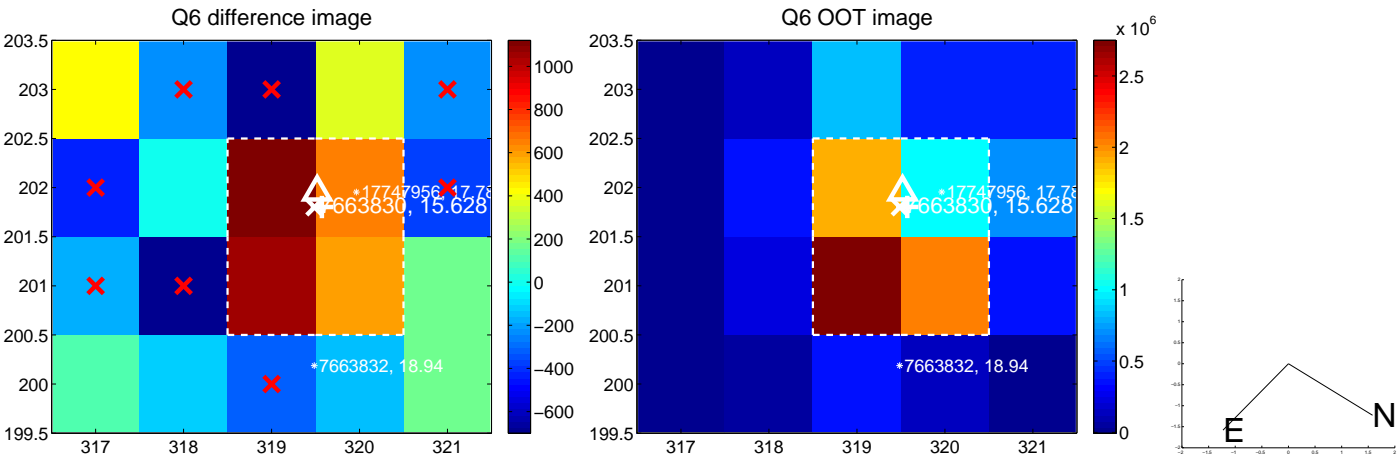
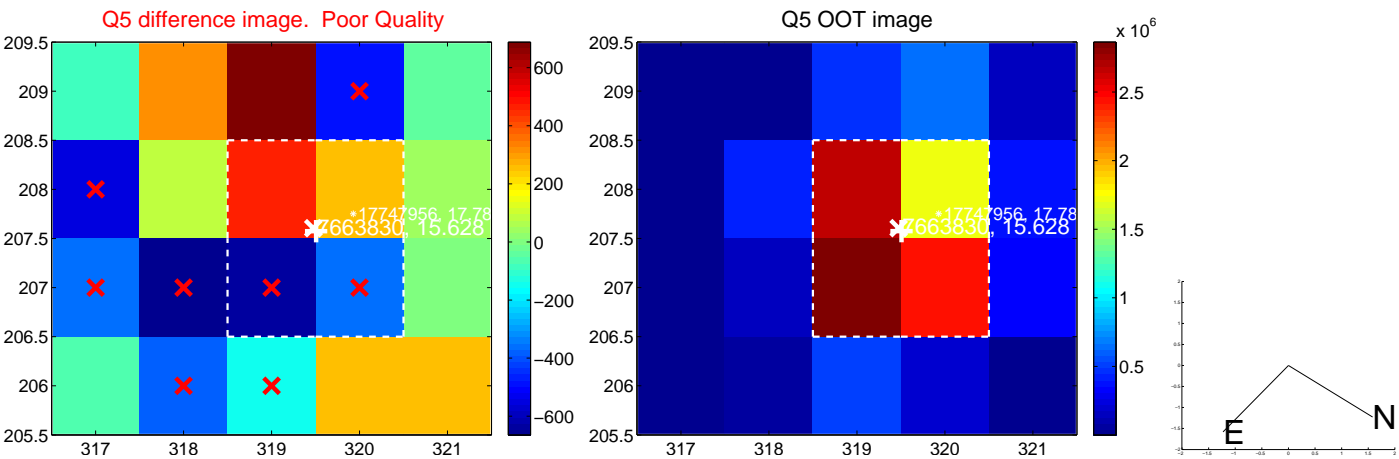


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

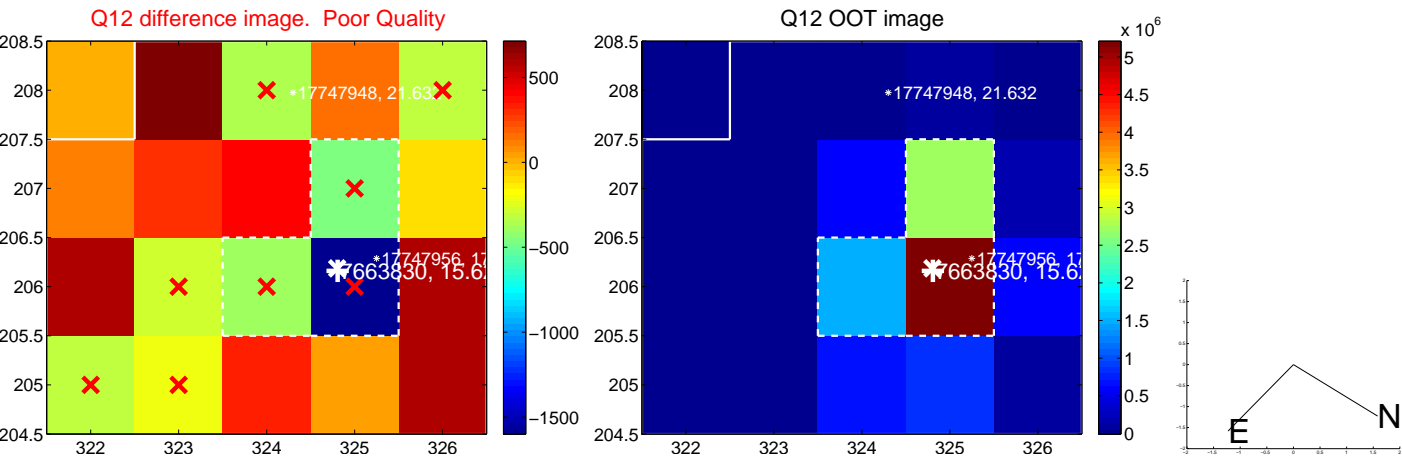
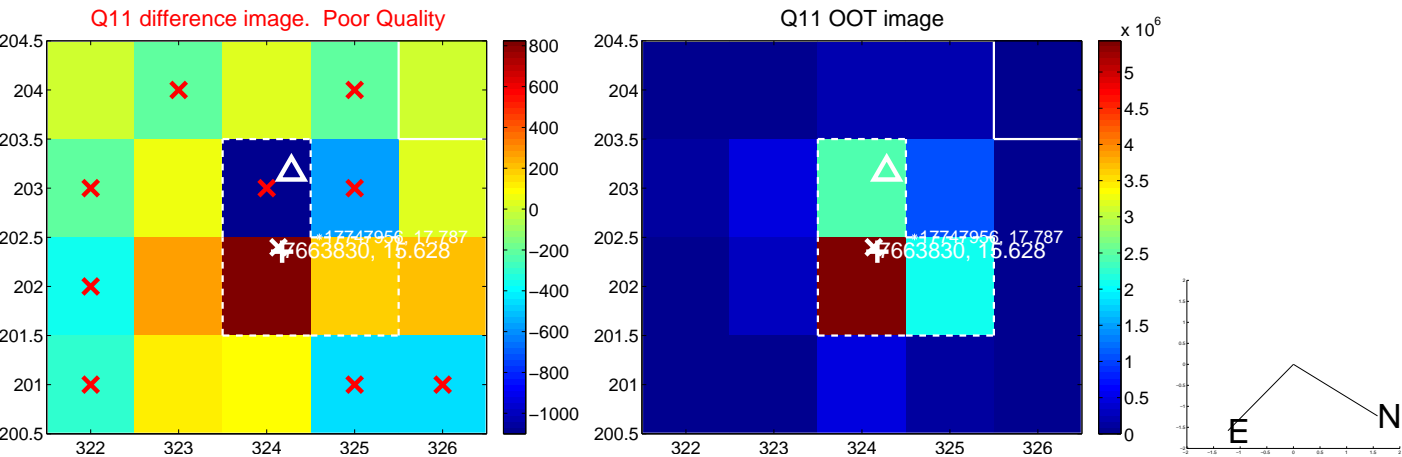
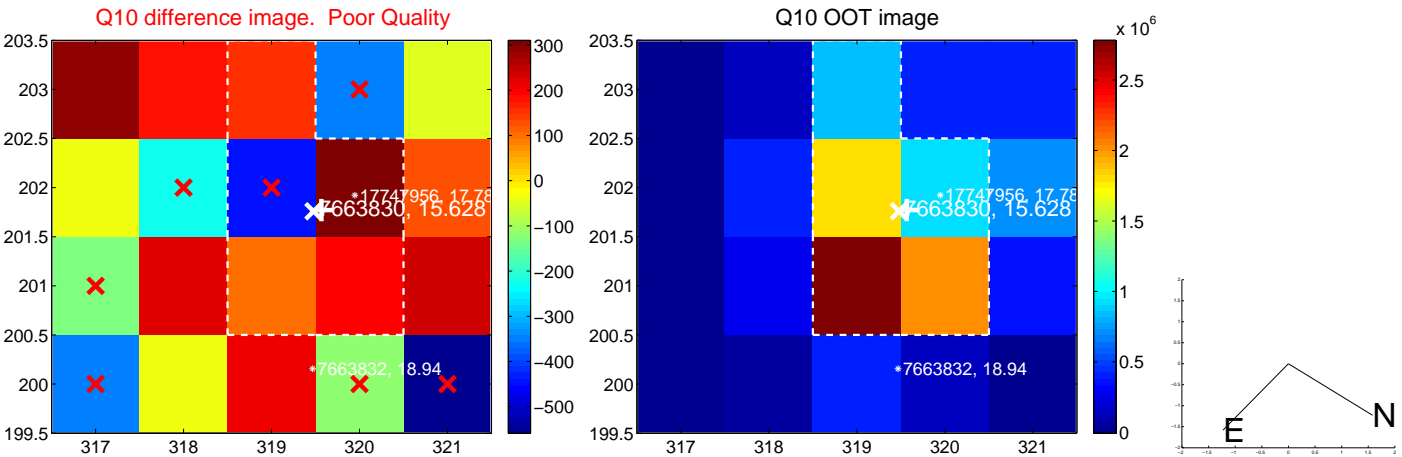
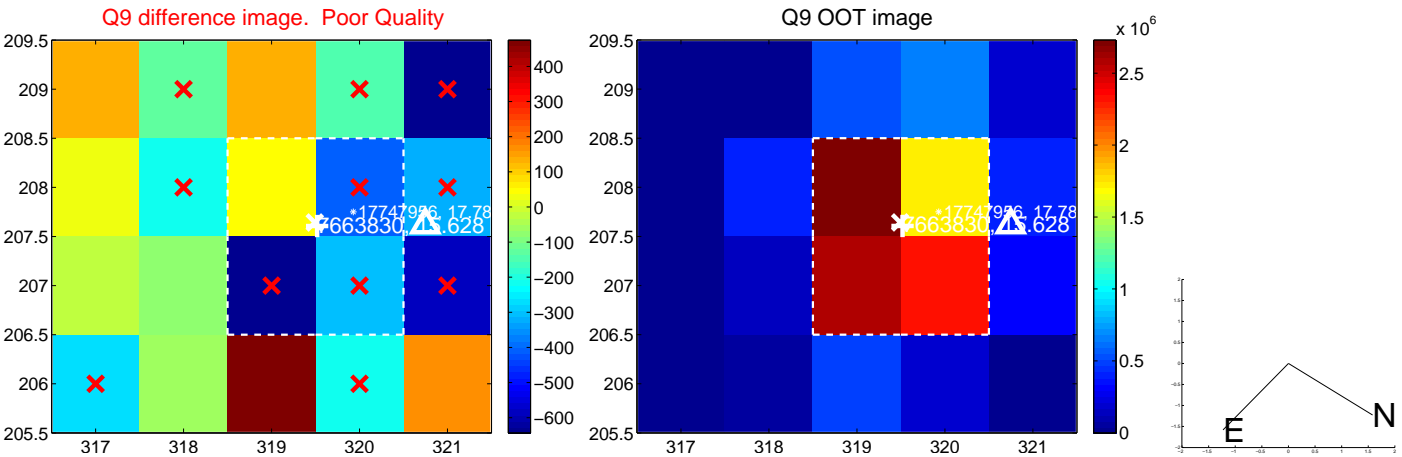
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



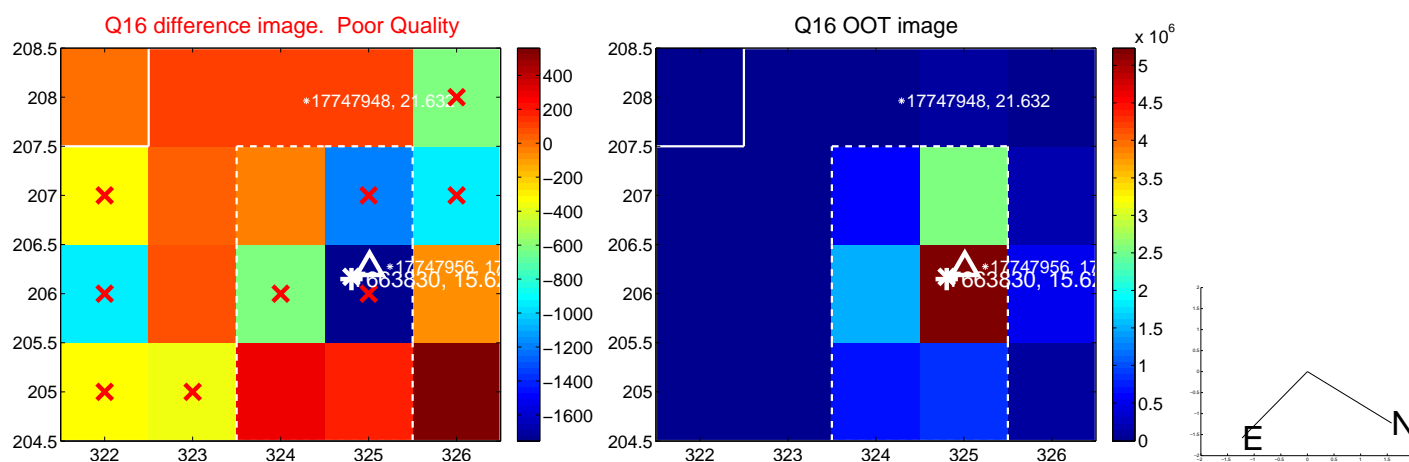
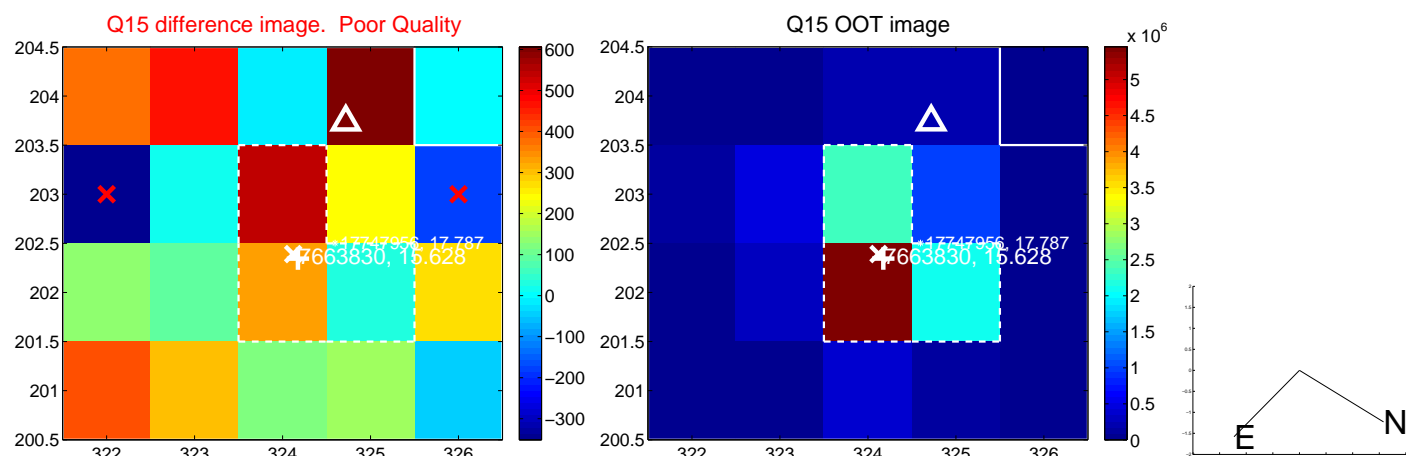
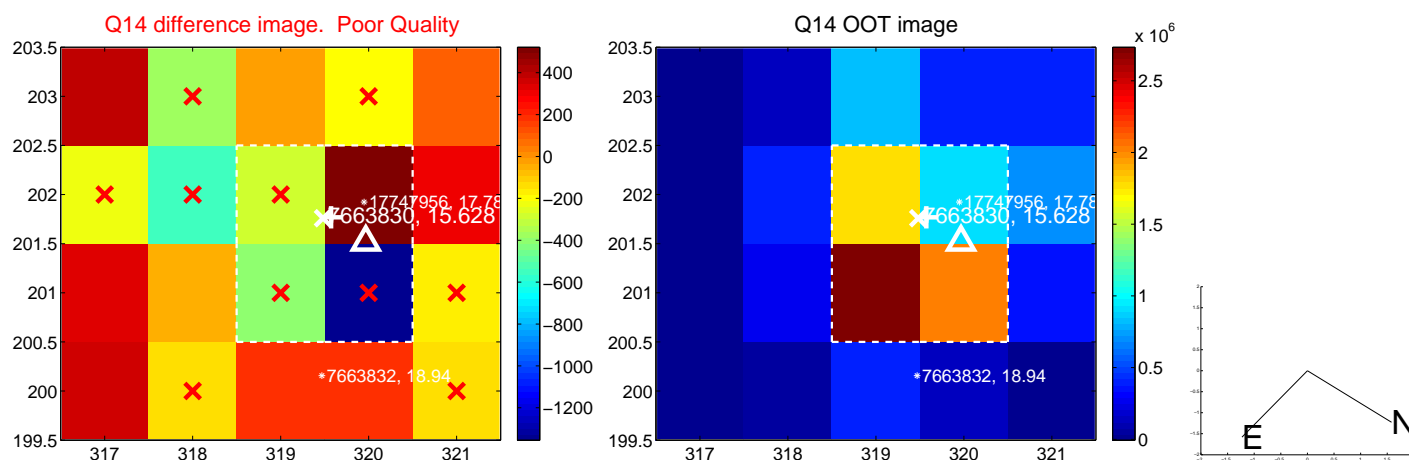
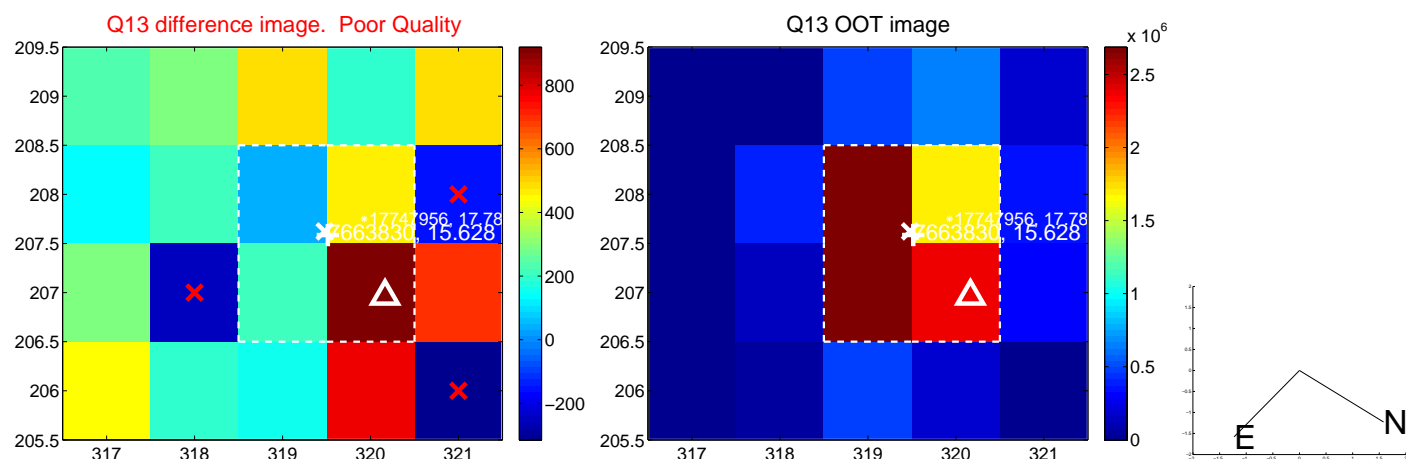
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



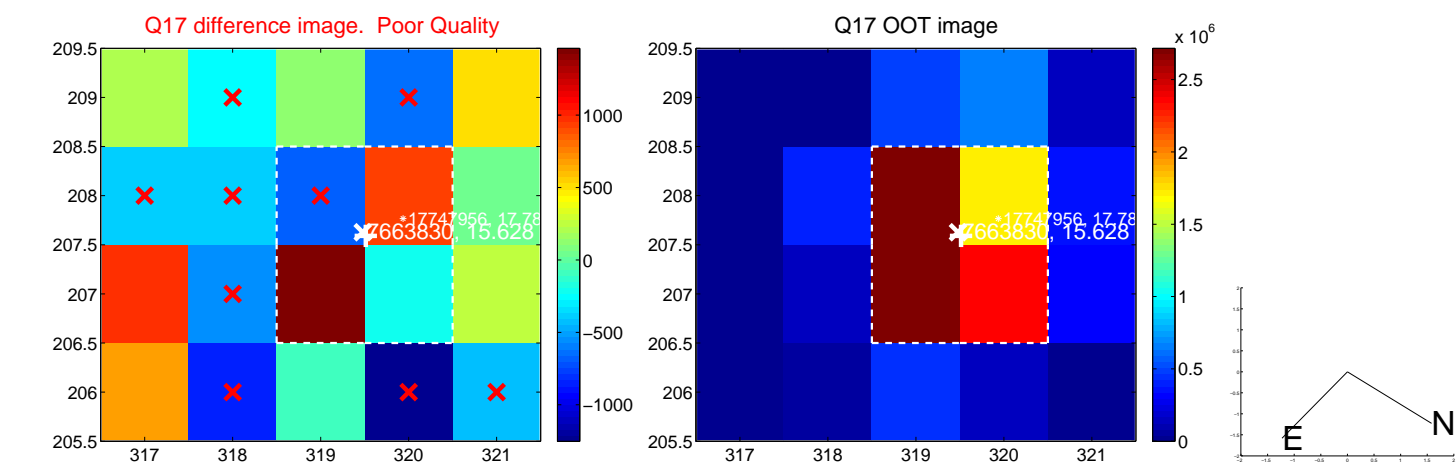
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



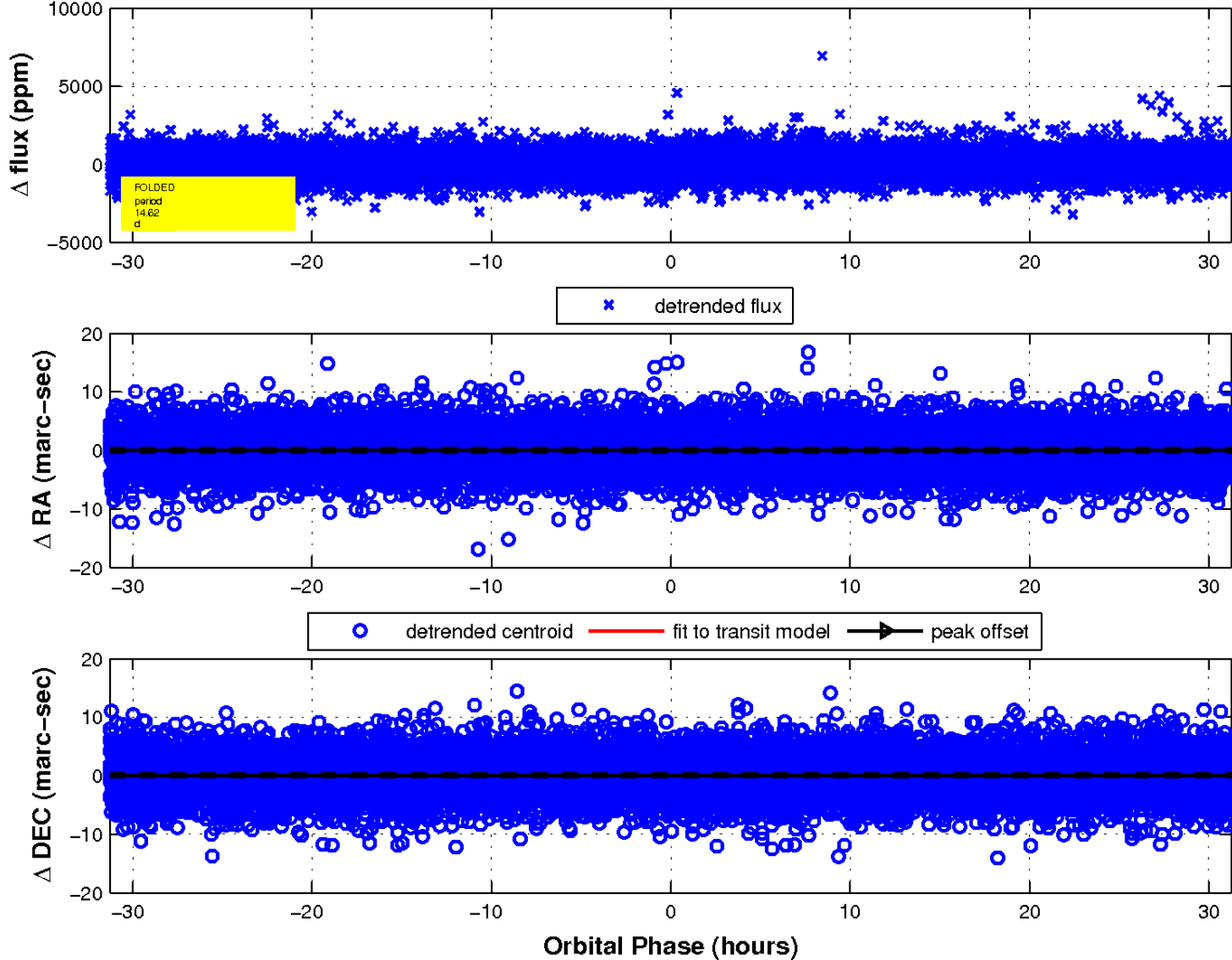
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

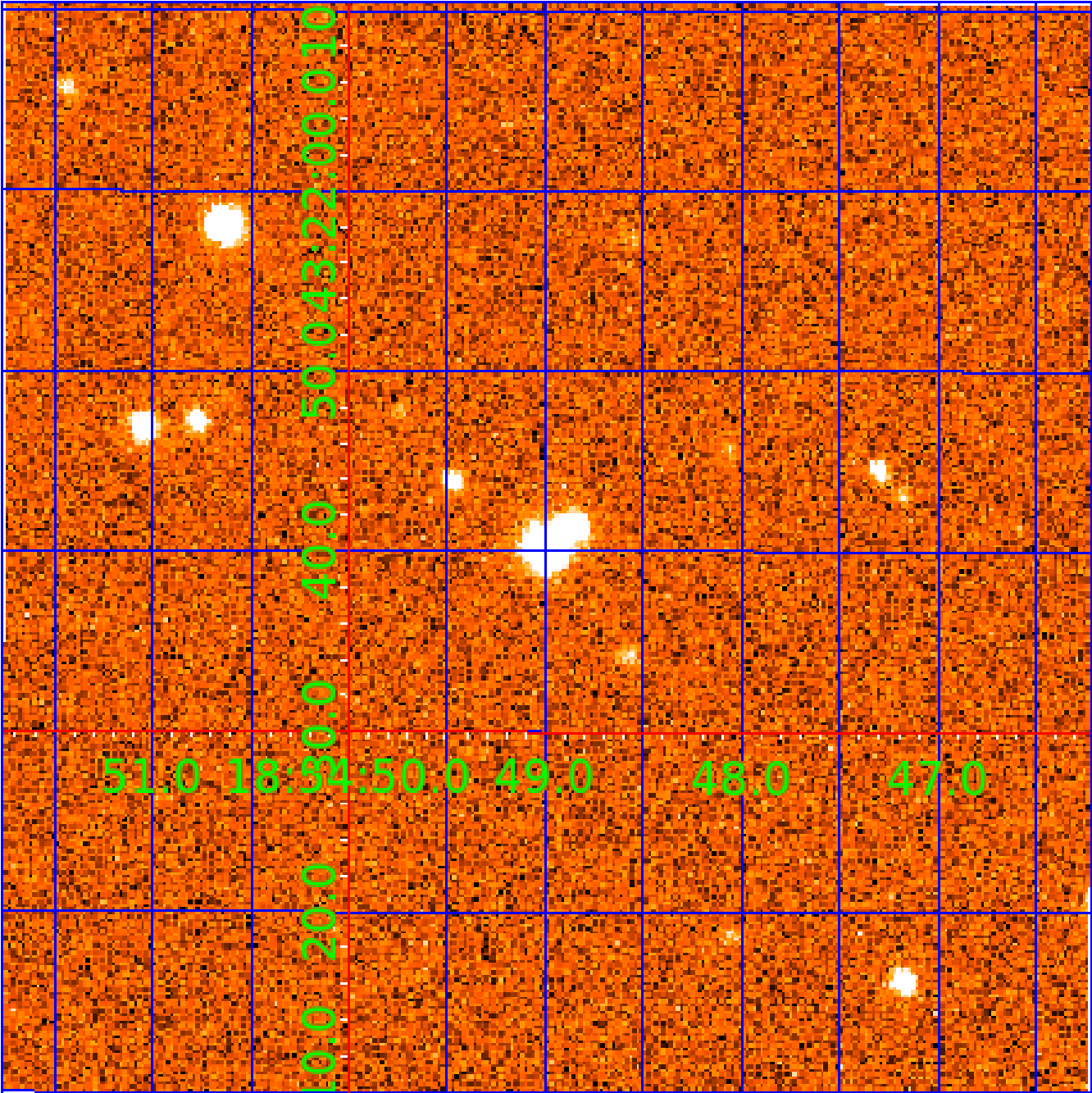


fluxWeightedCentroids, Planet 3 of 4



UKIRT Image

Declination



KIC 007663830

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})
007663830-01	OBS	No	1.610043	132.942315	75.5	9.721	8.7	8.8	0.63	4392	0.53	251.54
007663830-02	OBS	No	519.977865	409.069456	2595.2	9.660	24.8	15.9	0.63	4392	3.12	0.11
007663830-03	OBS	No	14.620361	143.615874	239.7	10.425	7.4	5.8	0.63	4392	1.03	13.28
007663830-04	OBS	No	109.322686	171.191420	605.0	33.815	7.7	3.4	0.63	4392	2.48	0.91

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007663830-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_UNRESOLVED_OFFSET
007663830-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
007663830-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
007663830-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—CENT_FEW_DIFFS

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

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

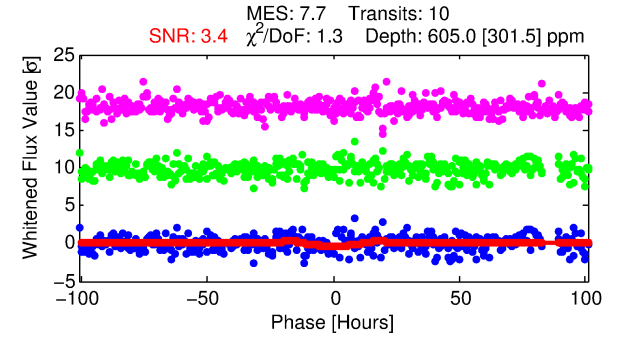
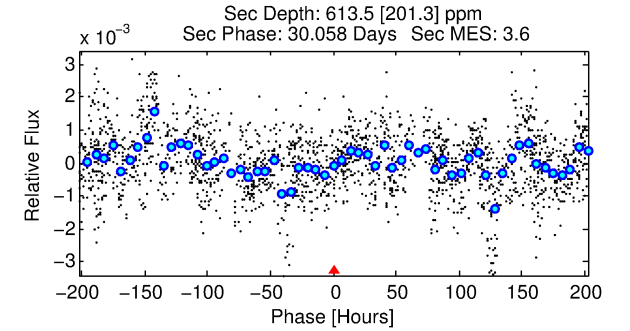
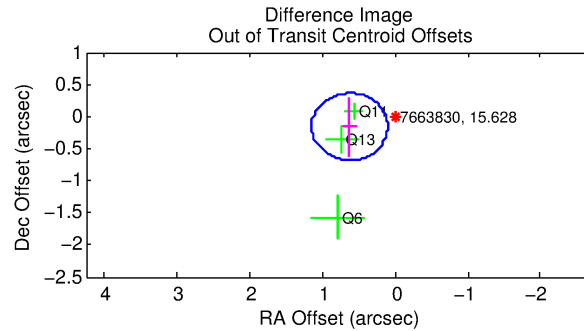
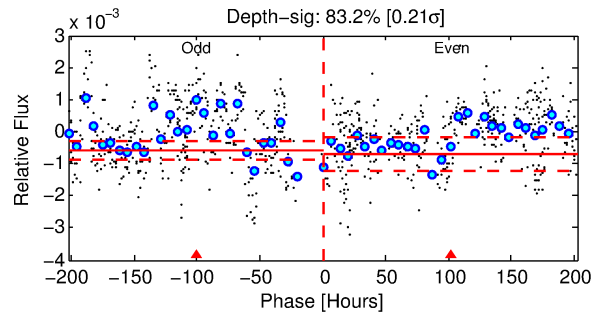
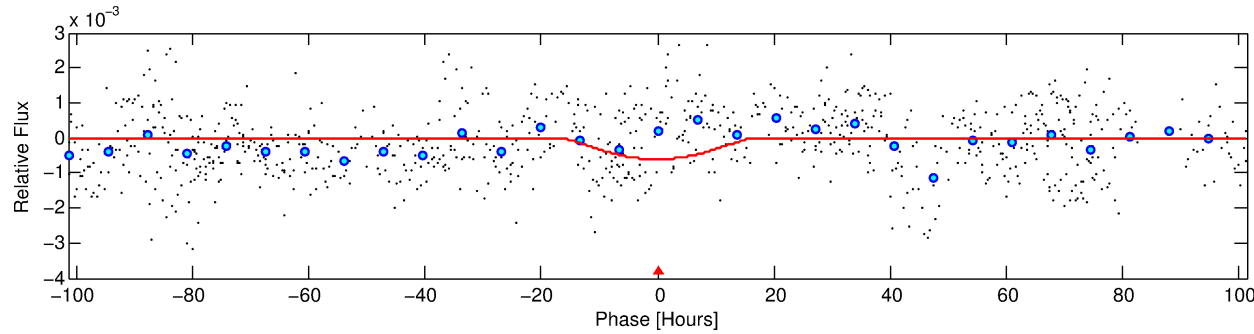
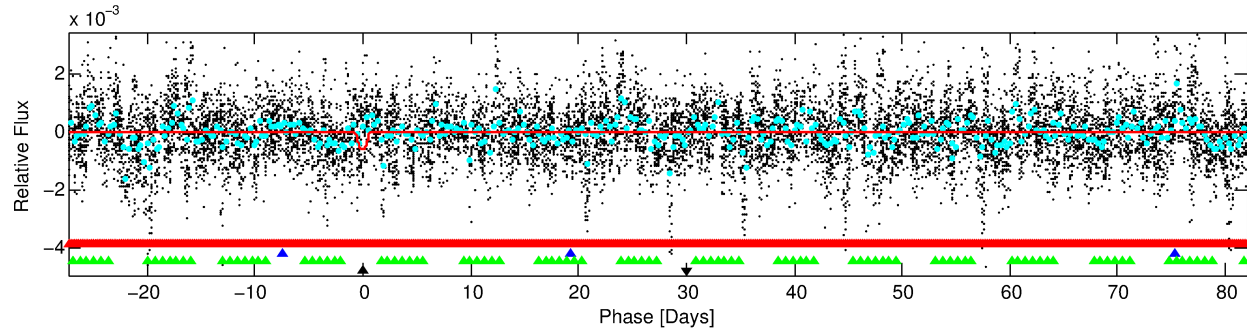
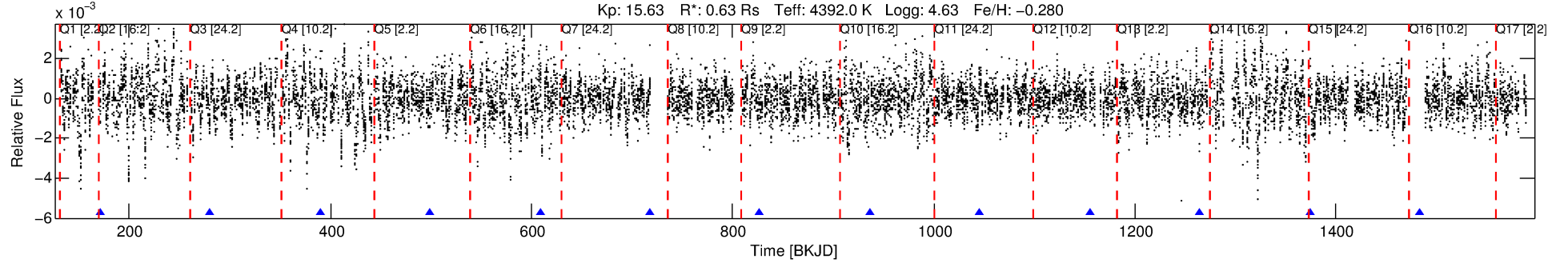
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007663830-04

No Significant Match Found

DV One-Page Summary

KIC: 7663830 Candidate: 4 of 4 Period: 109.323 d



DV Fit Results:

Period = 109.32269 [0.02990] d
Epoch = 171.1914 [0.1992] BKJD
Rp/R* = 0.0363 [0.0708]
a/R* = 8.23 [6.25]
b = 0.98 [0.14]
Seff = 0.91 [0.15]
Teq = 249 [10] K
Rp = 2.48 [4.85] Re
a = 0.3799 [0.0296] AU
Ag = 7890.93 [30887.29] [0.26 σ]
Teffp = 3627 [3550] K [0.95 σ]

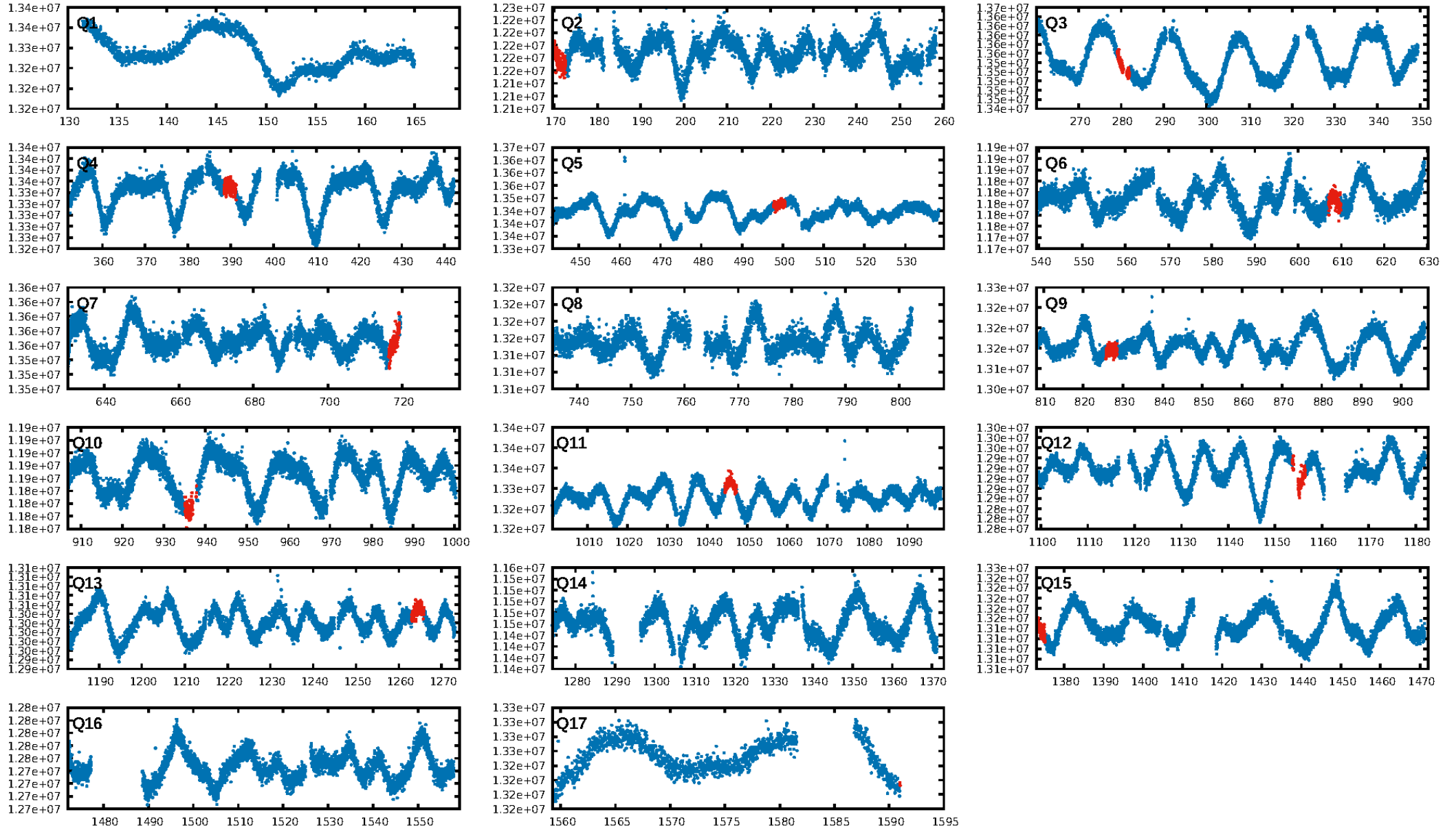
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [64.23 σ]
LongPeriod-sig: 100.0% [280.25 σ]
ModelChiSquare2-sig: 11.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.39e-09
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 5.679
Centroid-sig: 12.9%
Centroid-so: 0.698 arcsec [0.75 σ]
OotOffset-rm: 0.645 arcsec [3.71 σ]
KicOffset-rm: 0.644 arcsec [4.06 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 0.00 [0/6]

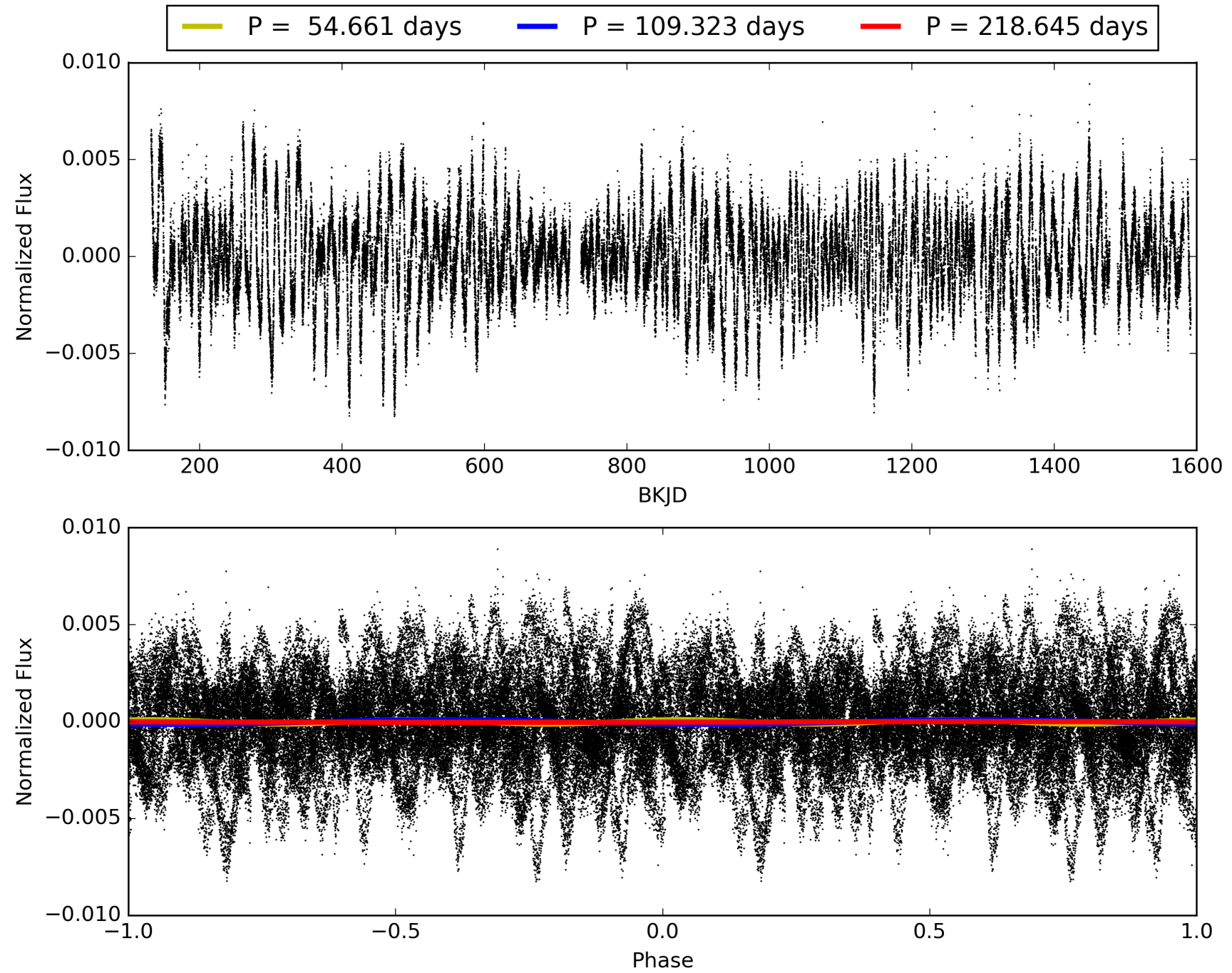
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 11:49:07 Z

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

TCE 007663830-04, PDC Light Curves

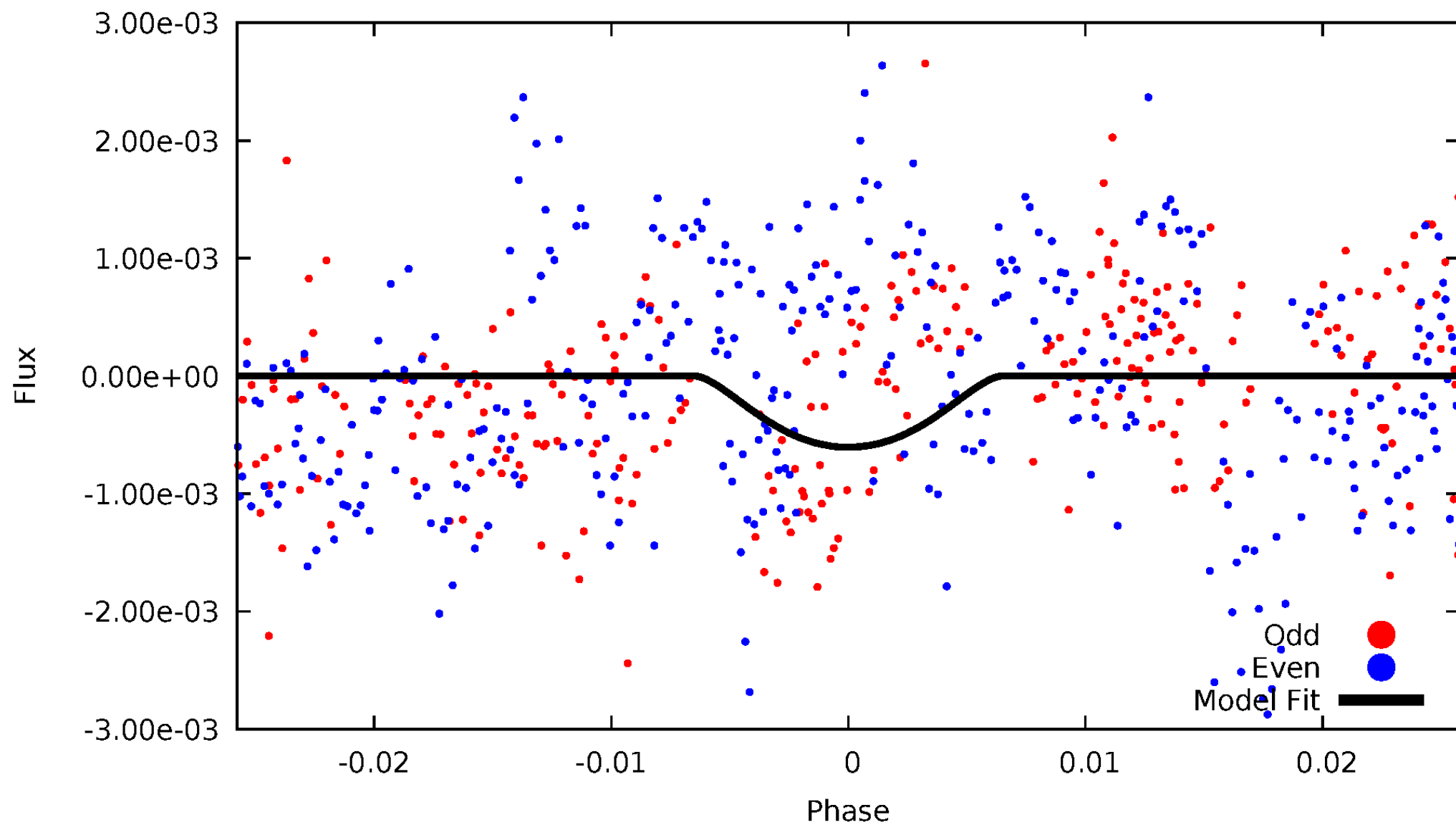


TCE 007663830-04



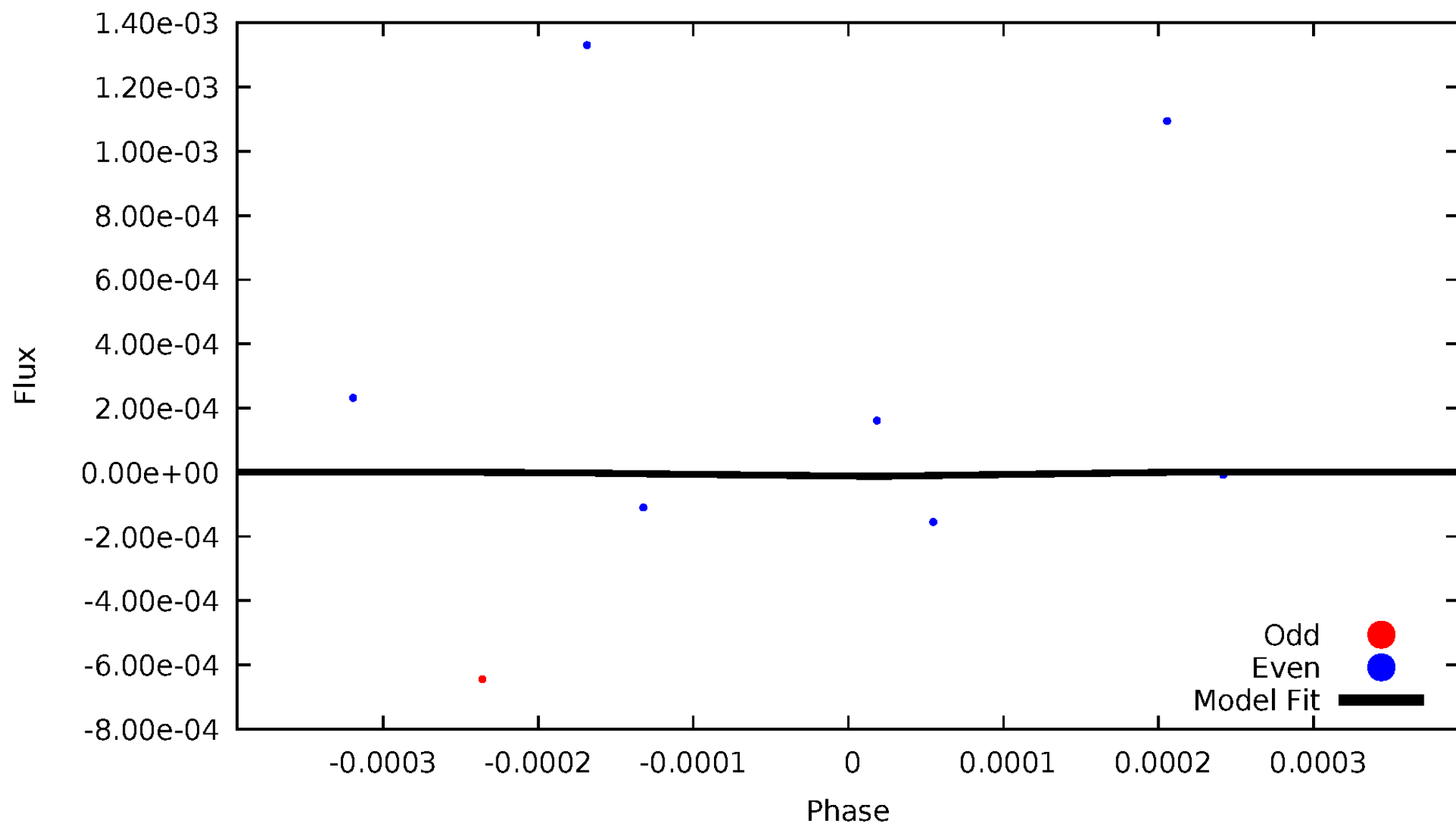
DV Odd/Even

TCE 007663830-04



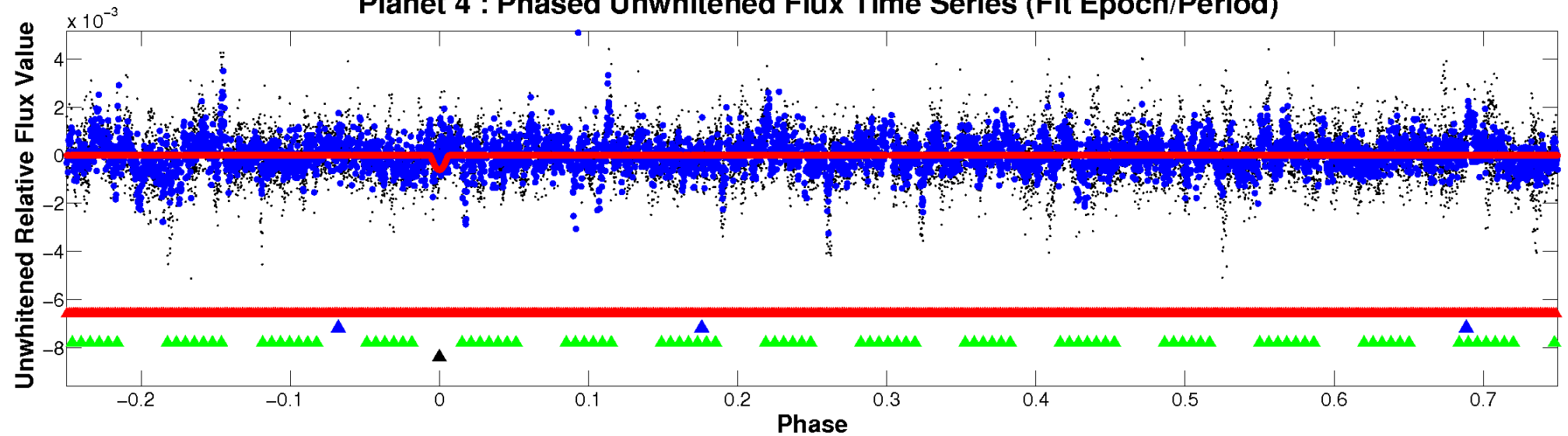
ALT Odd/Even

TCE 007663830-04

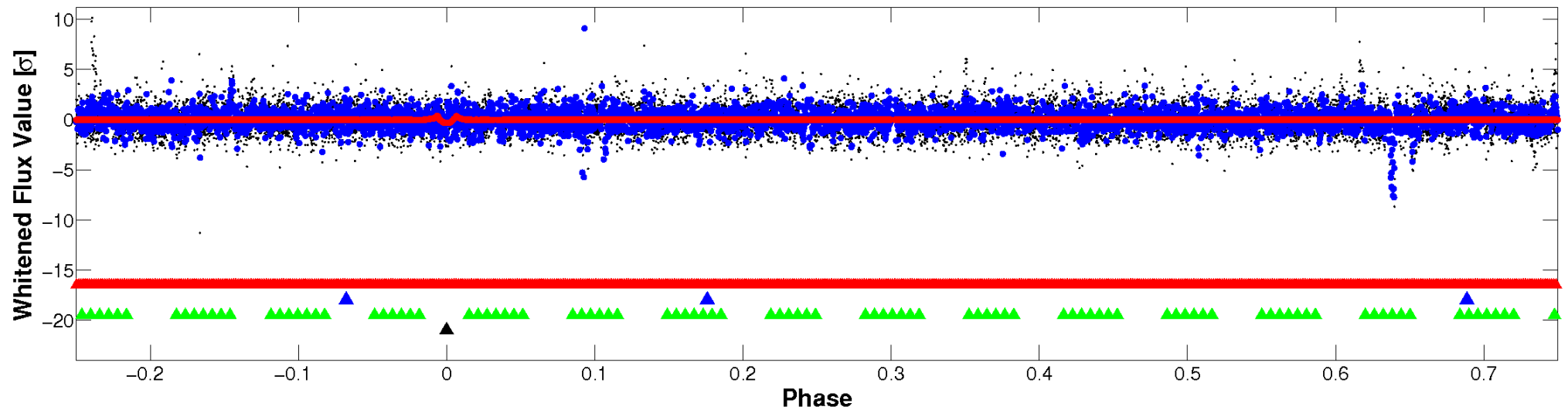


Non-Whitened Vs. Whitened Light Curve

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

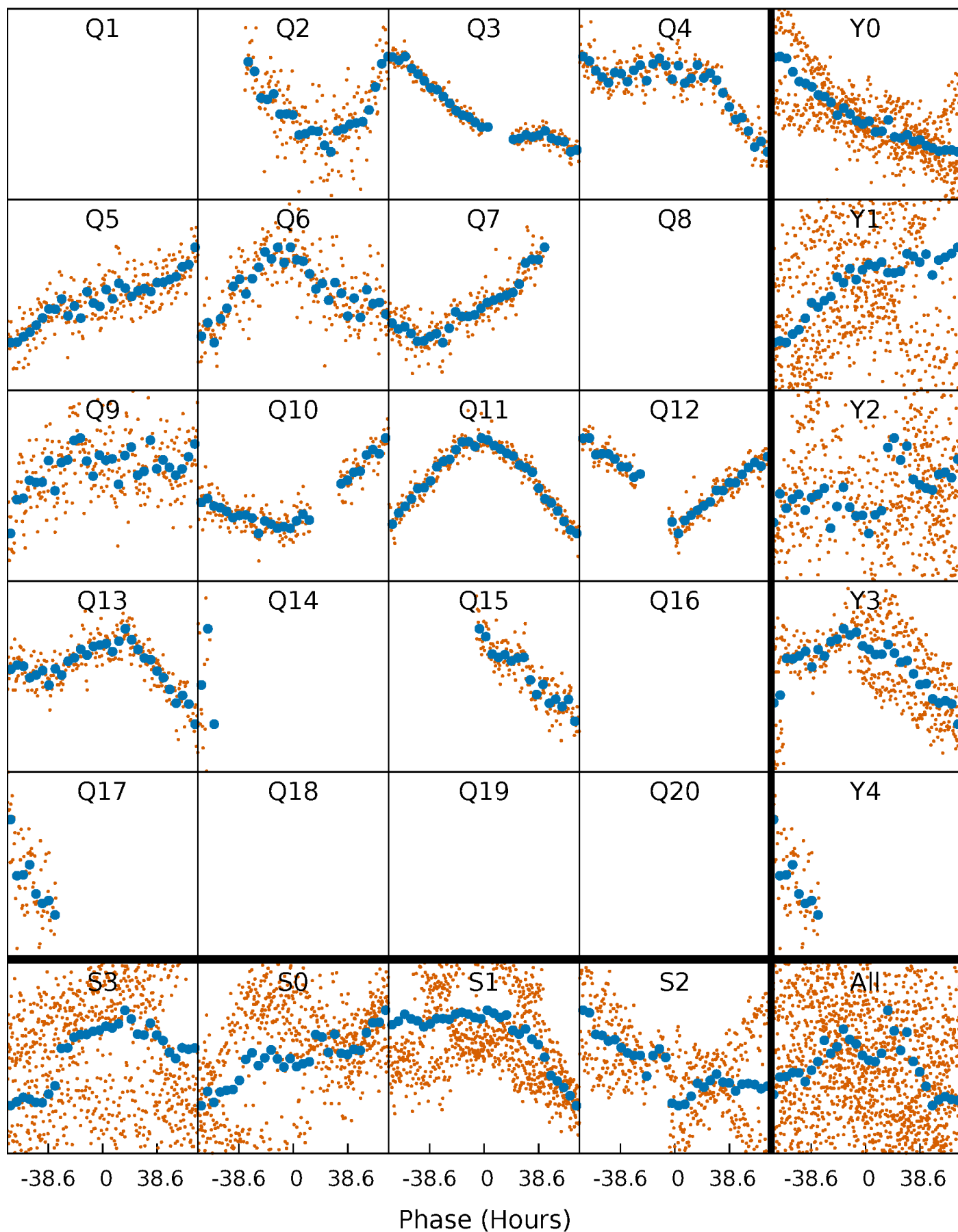


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



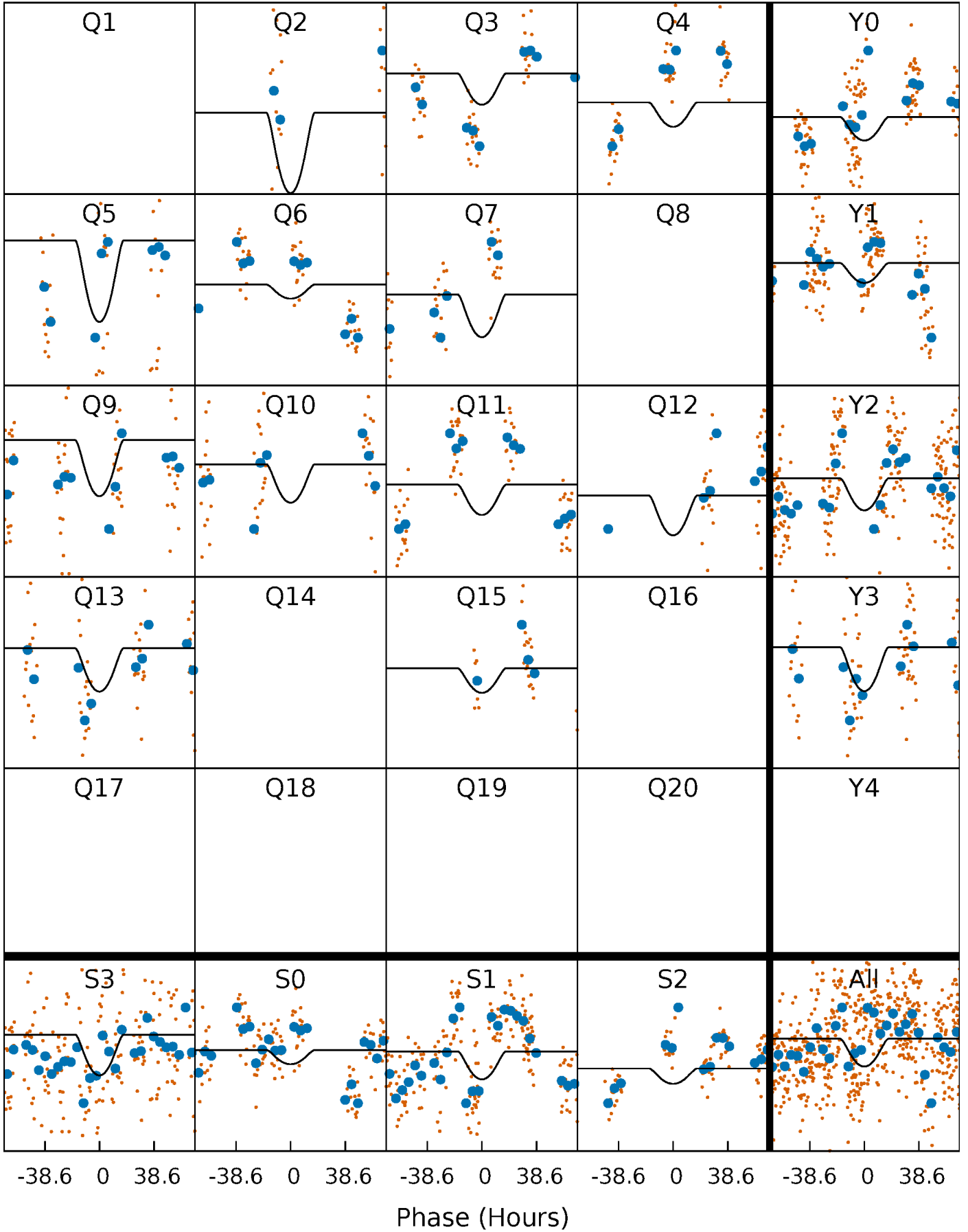
PDC Quarter-Phased Transit Curves

TCE 007663830-04 P=109.322686 Days $T_0=171.191420$ (BKJD)



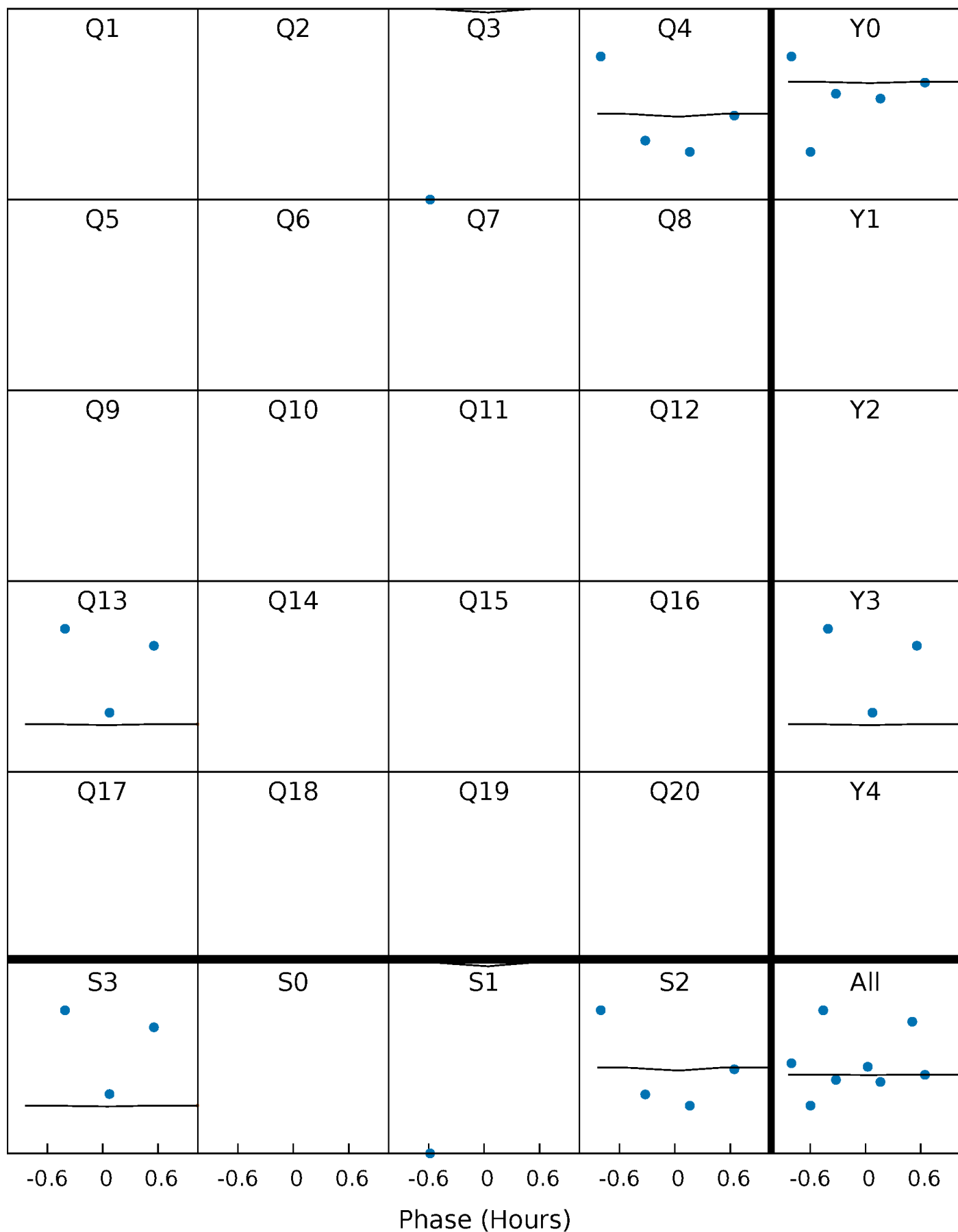
DV Quarter-Phased Transit Curves

TCE 007663830-04 $P=109.322686$ Days $T_0=171.191420$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

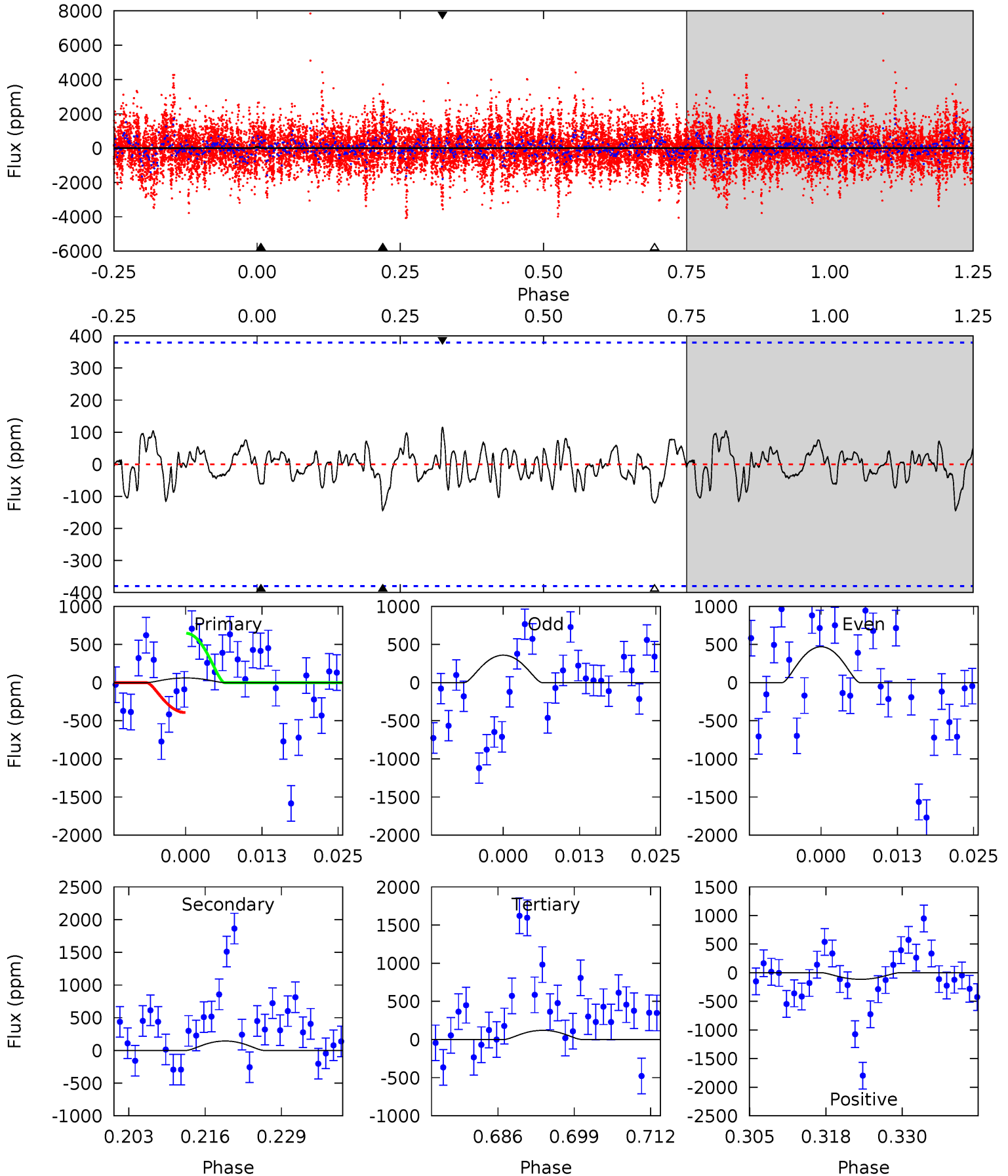
TCE 007663830-04 P=109.264568 Days $T_0=171.193617$ (BKJD)



DV Model-Shift Uniqueness Test

007663830-04, P = 109.322686 Days, E = 61.868734 Days

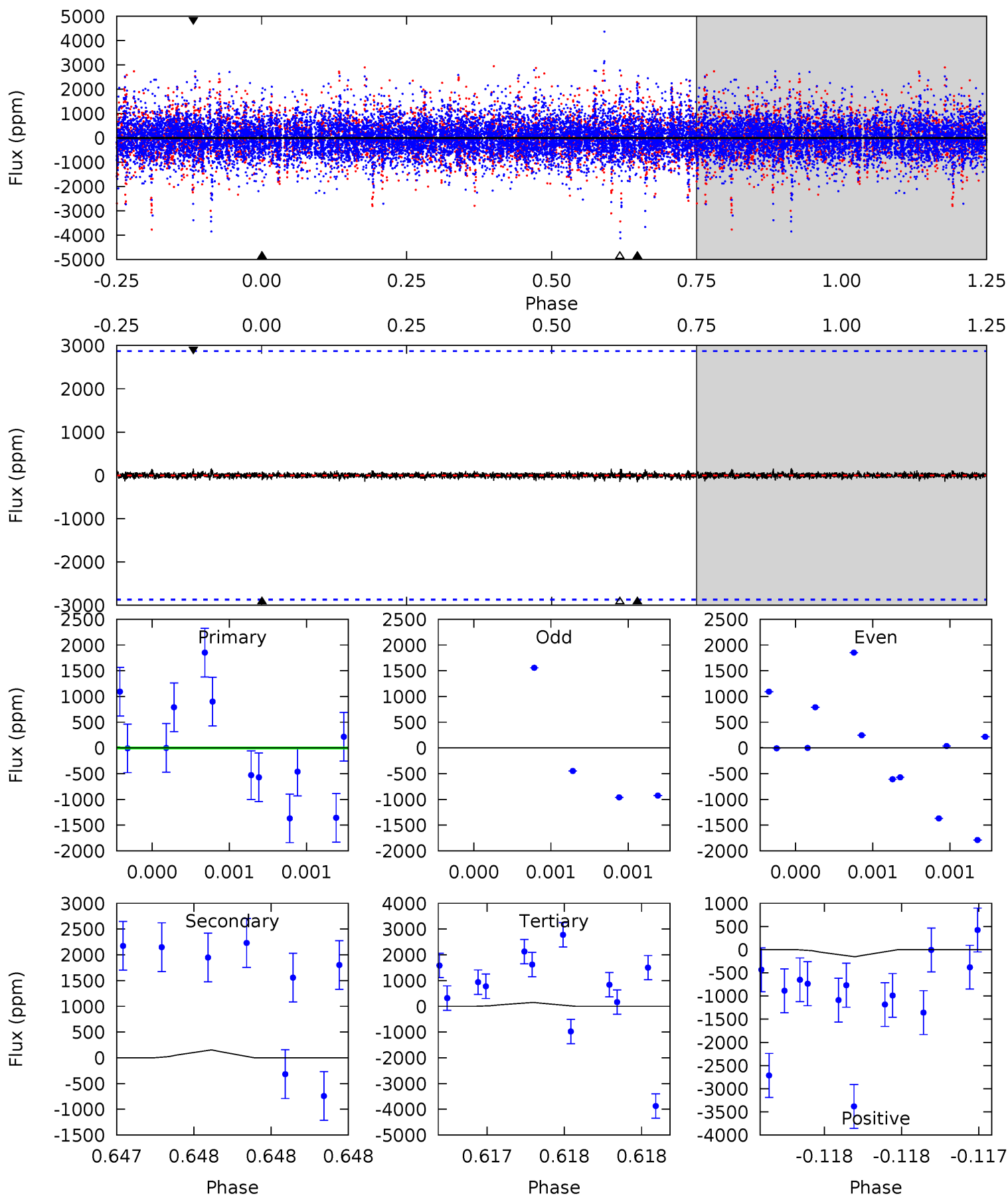
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.80	1.88	1.58	1.51	4.98	2.49	0.57	-0.77	-0.71	0.31	0.37	0.71	-4.20	0.44	1.68



Alt Model-Shift Uniqueness Test

007663830-04, P = 109.264568 Days, E = 61.929049 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.21	0.30	0.30	0.30	5.64	3.58	0.06	-0.08	-0.09	0.01	0.00	0.13	1.00	0.50	0.00



Stellar Parameters For KIC 007663830

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4392^{+118}_{-131}	$4.630^{+0.056}_{-0.024}$	$-0.280^{+0.300}_{-0.300}$	$0.627^{+0.045}_{-0.061}$	$0.613^{+0.068}_{-0.049}$	$3.500^{+0.822}_{-0.427}$
	+3%/-3%	+1%/-1%	+107%/-107%	+7%/-10%	+11%/-8%	+23%/-12%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 007663830-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-144 ± 76	$4.30^{+3.97}_{-2.82}$	345^{+10}_{-12}	2584^{+952}_{-413}	556^{+4480}_{-430}
Alt.	-154 ± 509	$3.12^{+3.60}_{-2.15}$	345^{+11}_{-11}	2603^{+1496}_{-5873}	551^{+11809}_{-3676}

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

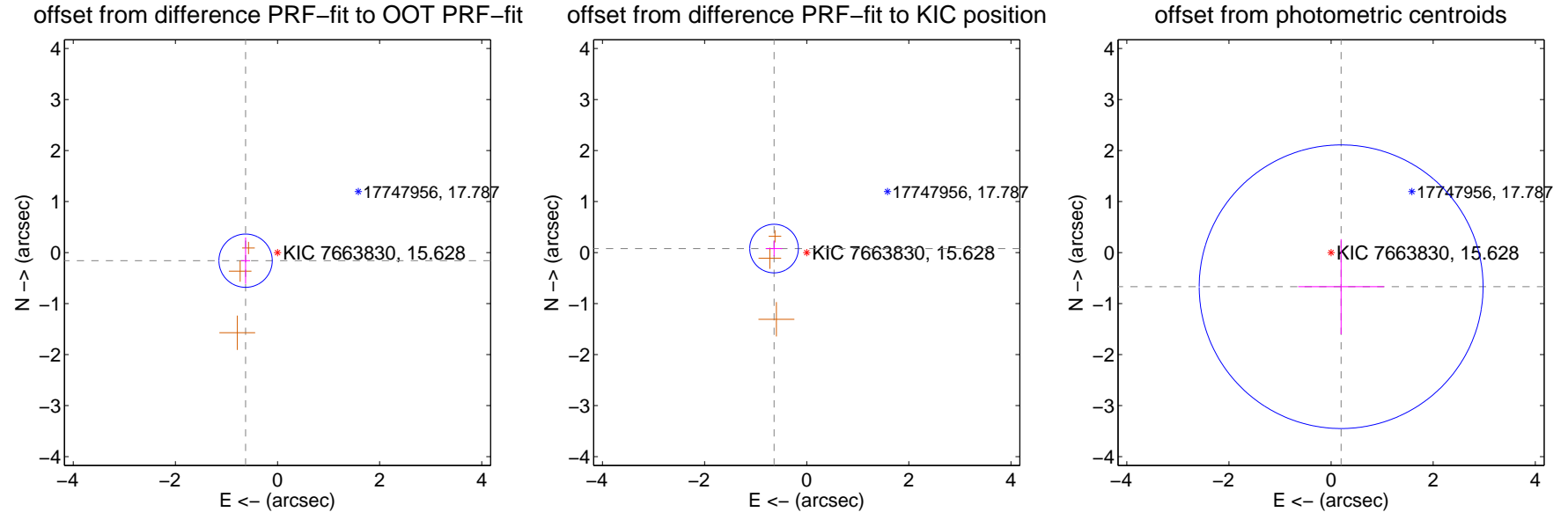
DV Centroid Data

Supplemental centroid analysis for 007663830-04. Kepler magnitude: 15.63. Transit SNR 3.45

There are 0 quarters with good PRF difference image offsets

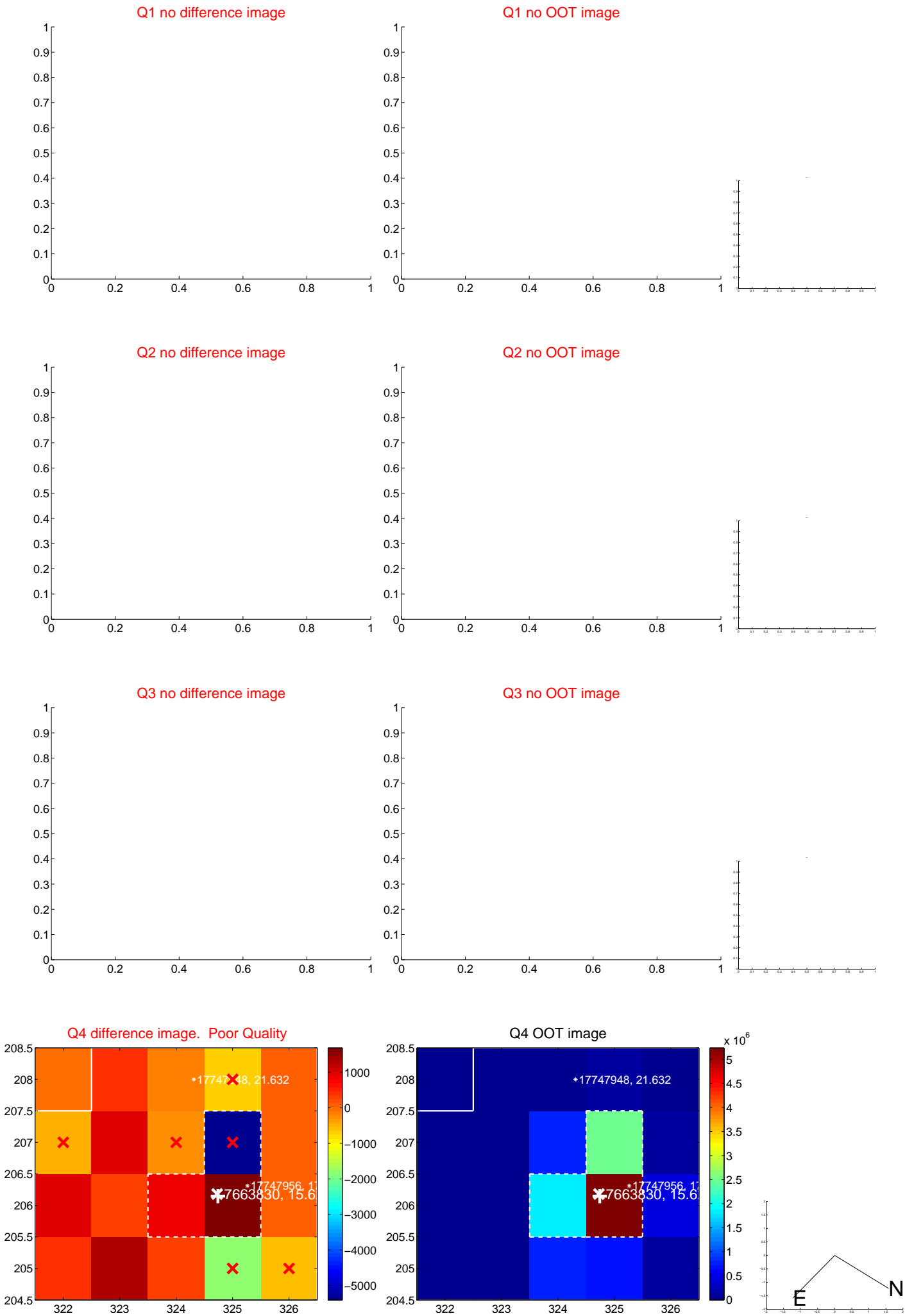
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.645 ± 0.174	3.71	0.625 ± 0.088	-0.159 ± 0.455
PRF-fit source offset from KIC position	0.644 ± 0.159	4.06	0.640 ± 0.159	0.079 ± 0.153
photometric centroid source offset	0.70 ± 0.93	0.75	-0.20 ± 0.84	-0.67 ± 0.93

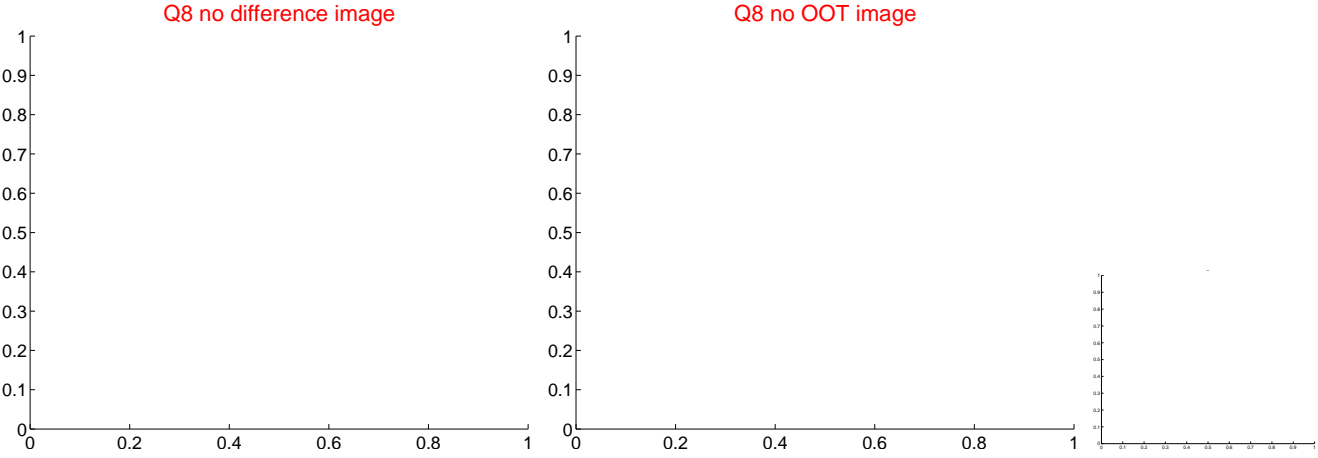
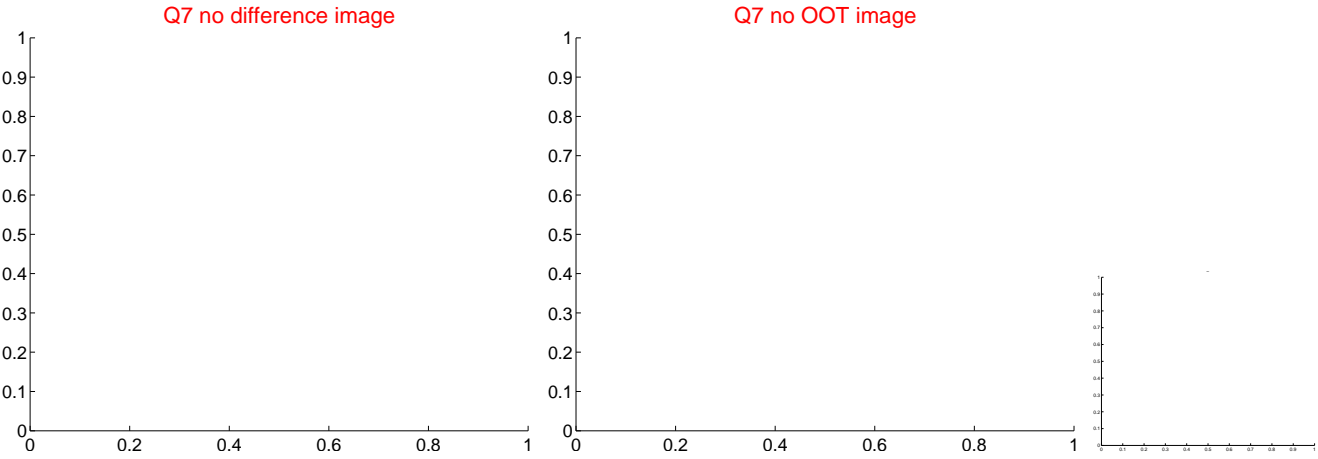
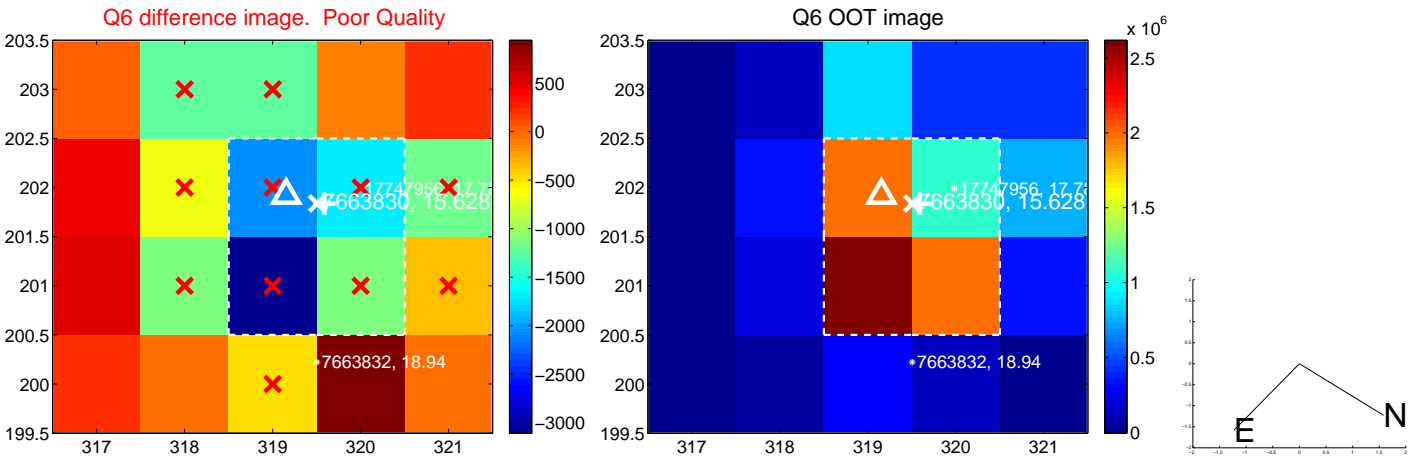
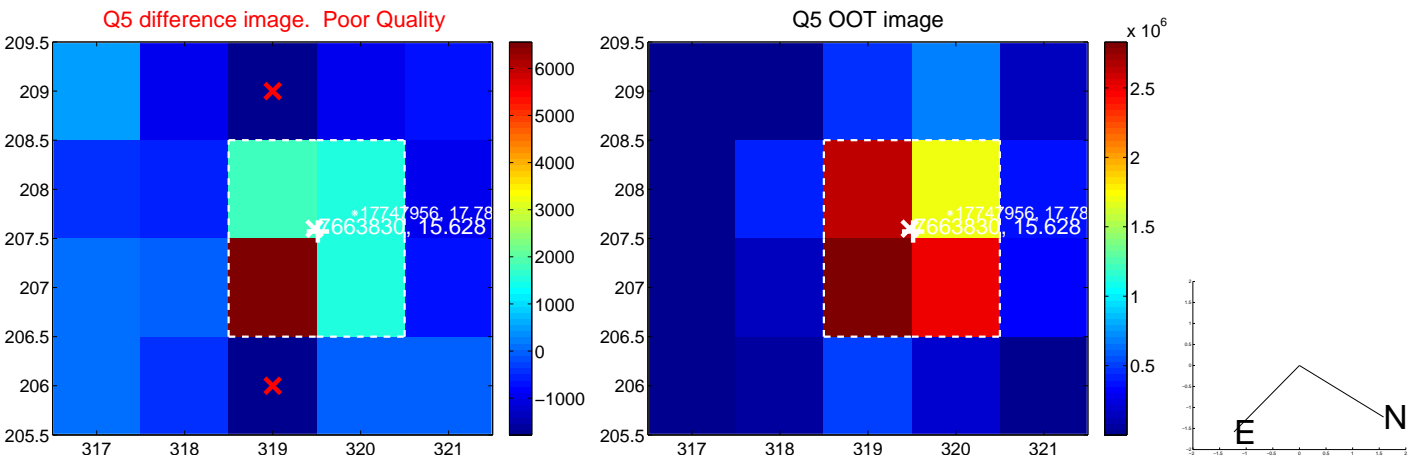


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

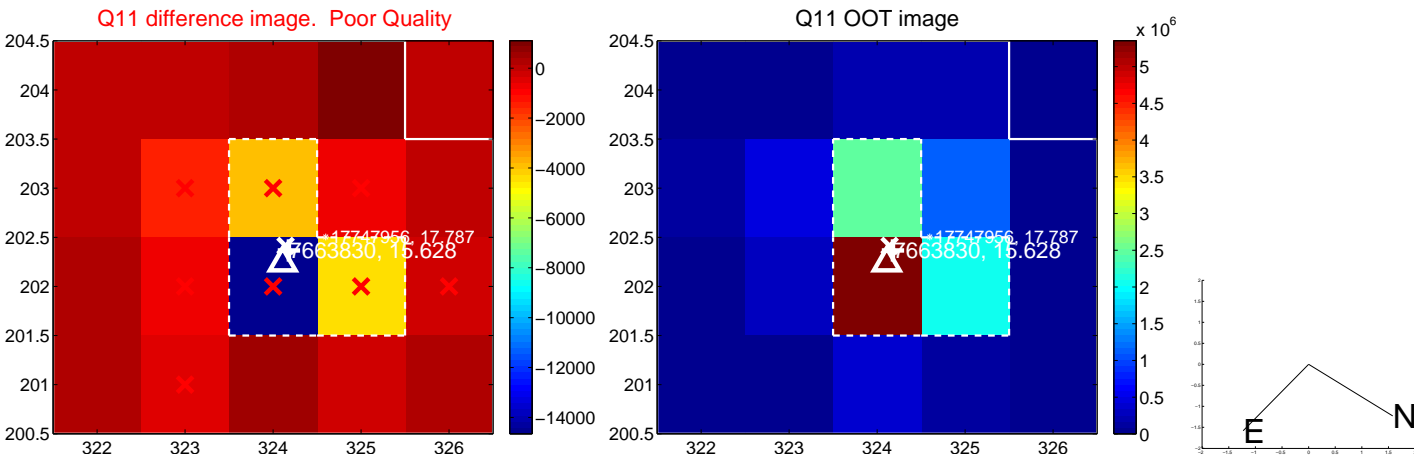
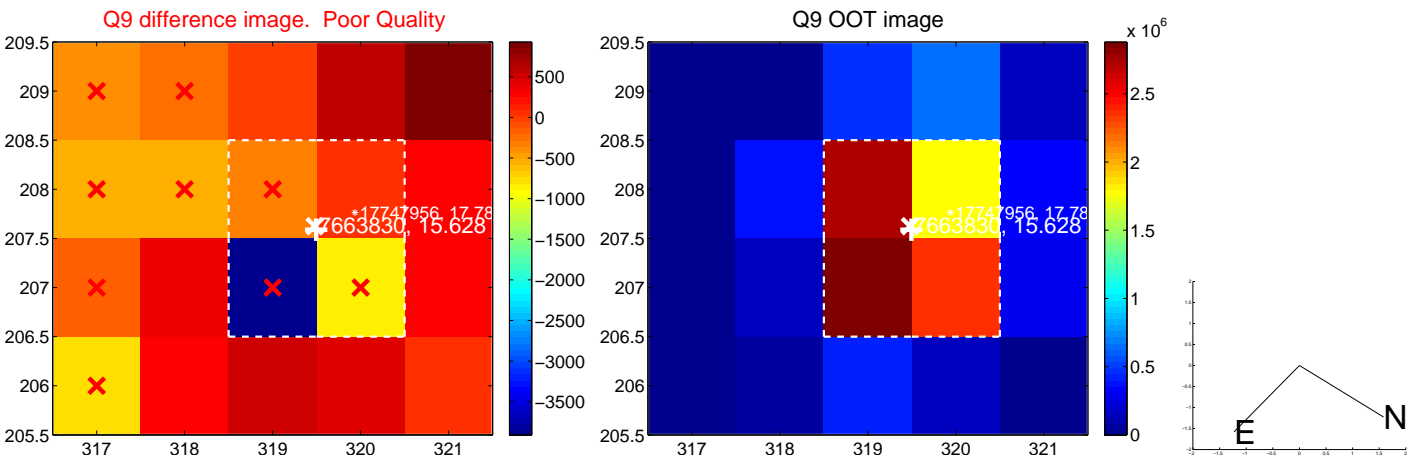
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



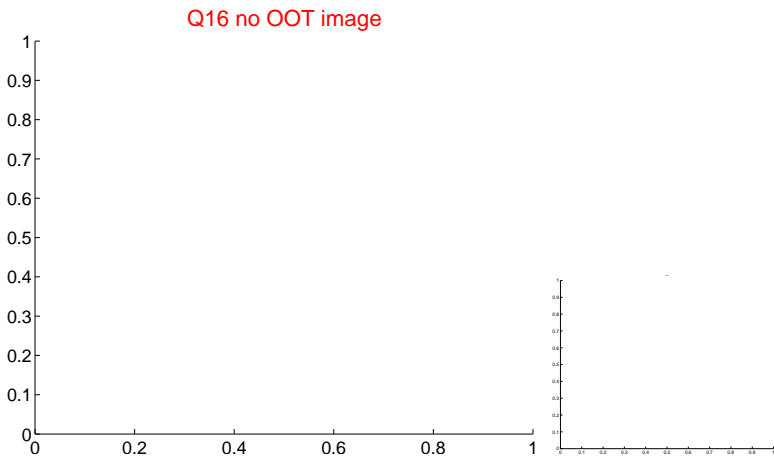
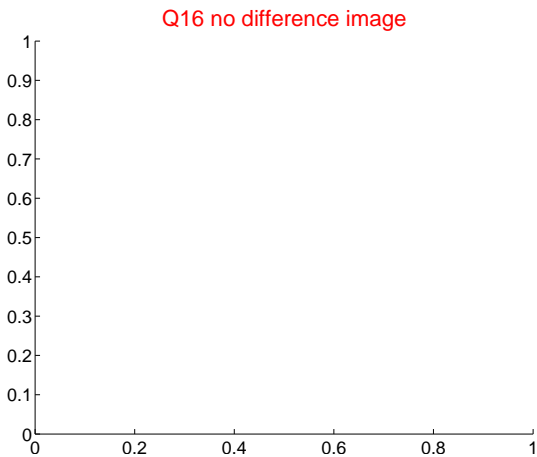
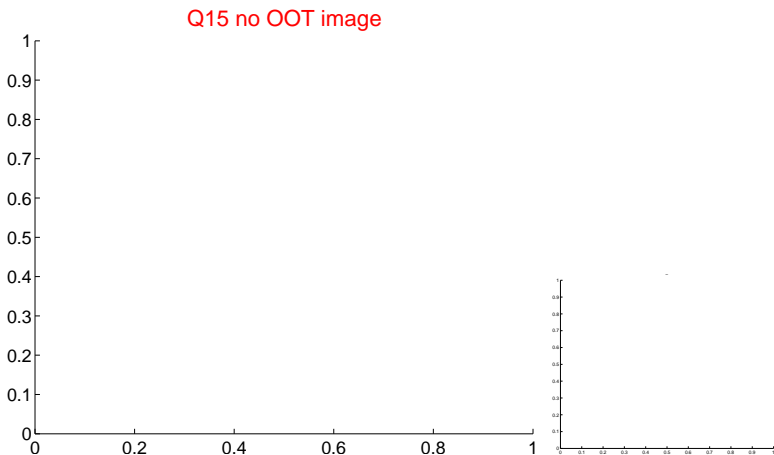
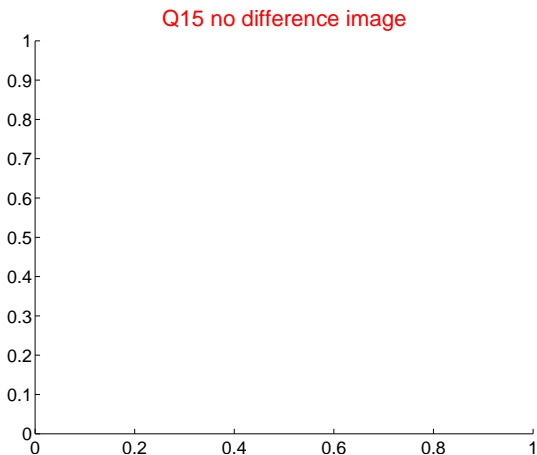
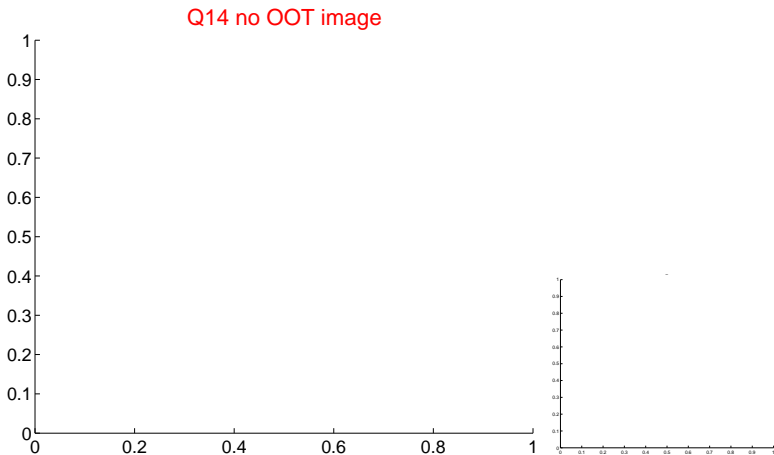
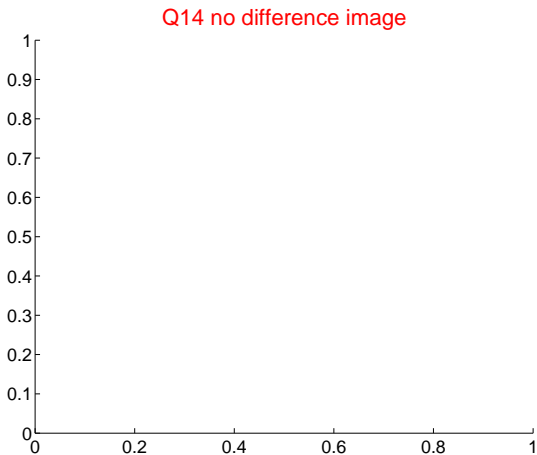
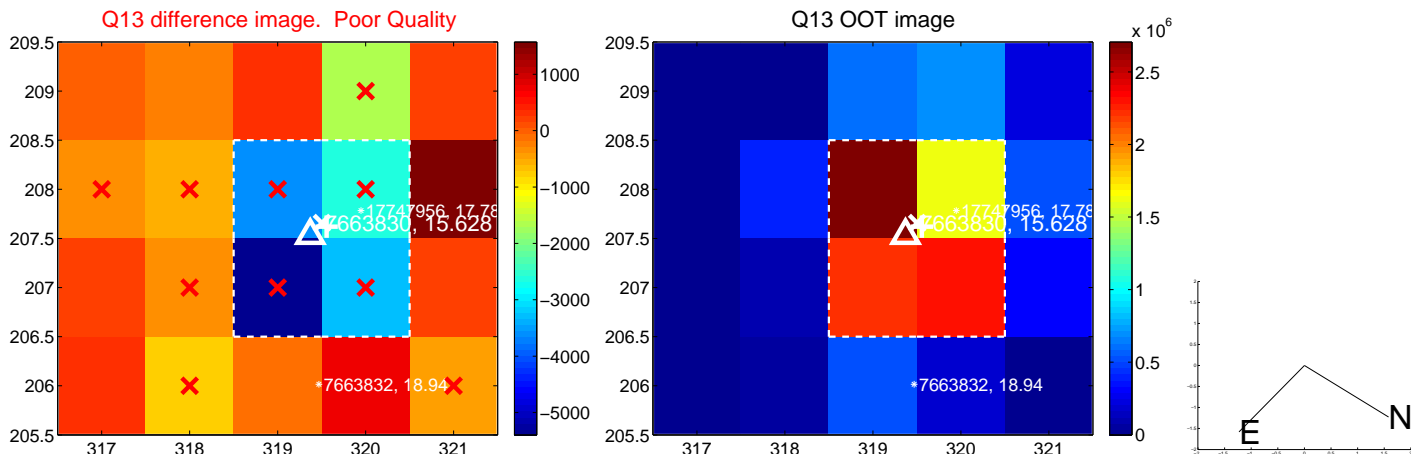
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



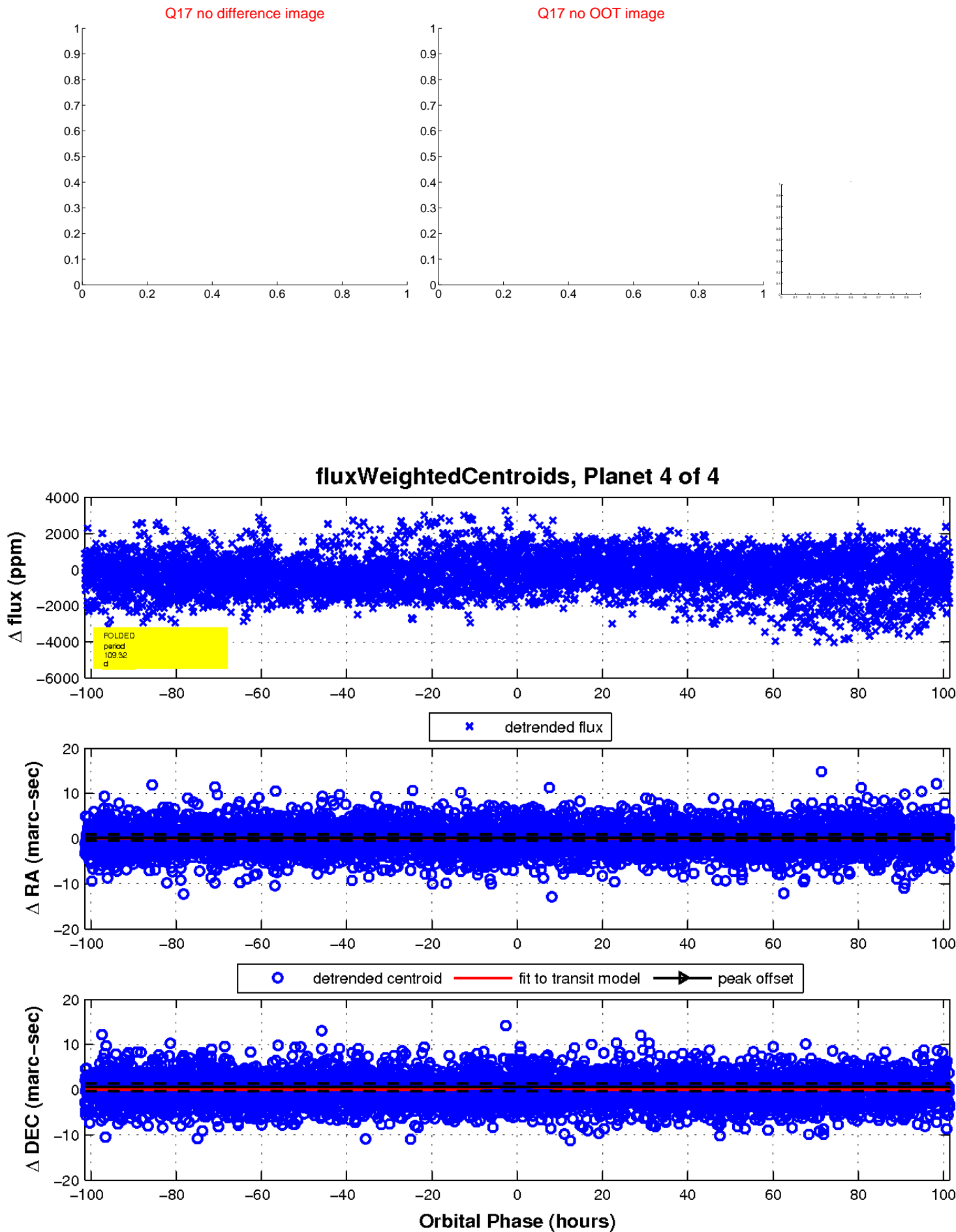
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

