

KIC 004066898

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})
004066898-01	OBS	No	1.346718	133.074626	21.8	2.794	7.8	5.7	1.67	6515	0.91	6594.08
004066898-02	OBS	No	1.347013	132.617015	37.5	3.000	8.4	9.7	1.67	6515	1.16	6592.15
004066898-03	OBS	No	450.874462	200.838223	377.1	17.189	8.1	7.6	1.67	6515	3.41	2.84
004066898-04	OBS	No	283.667150	137.533488	321.7	7.668	7.6	6.7	1.67	6515	3.30	5.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004066898-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—HALO_GHOST
004066898-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
004066898-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004066898-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT

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

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

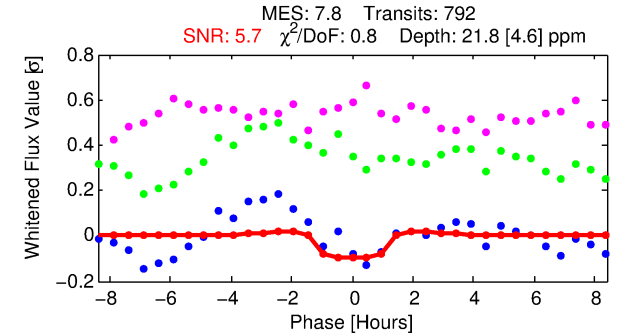
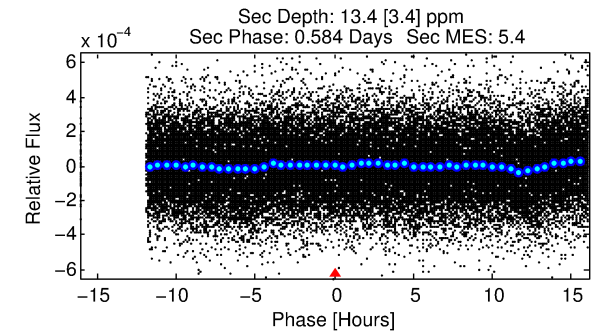
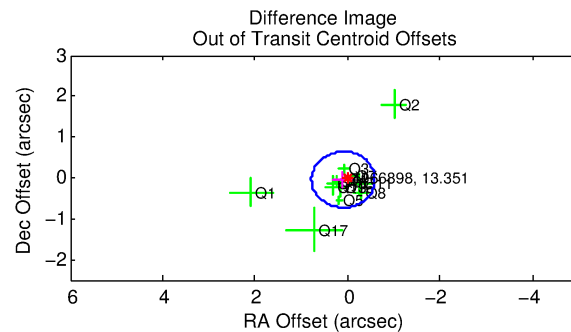
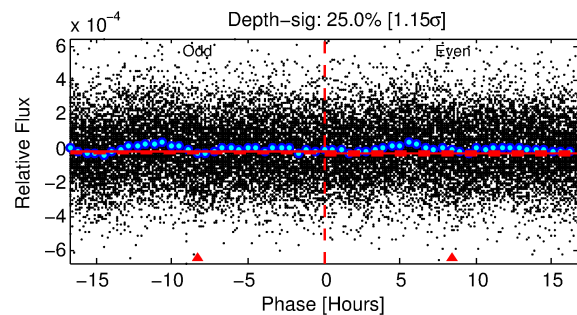
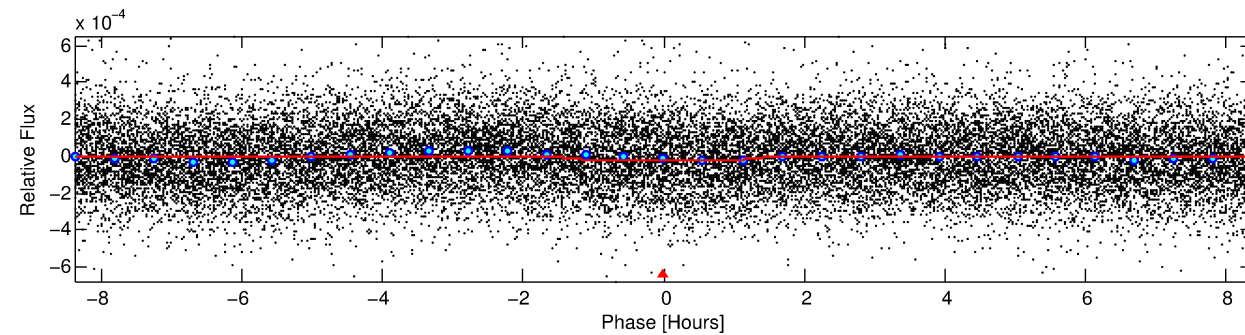
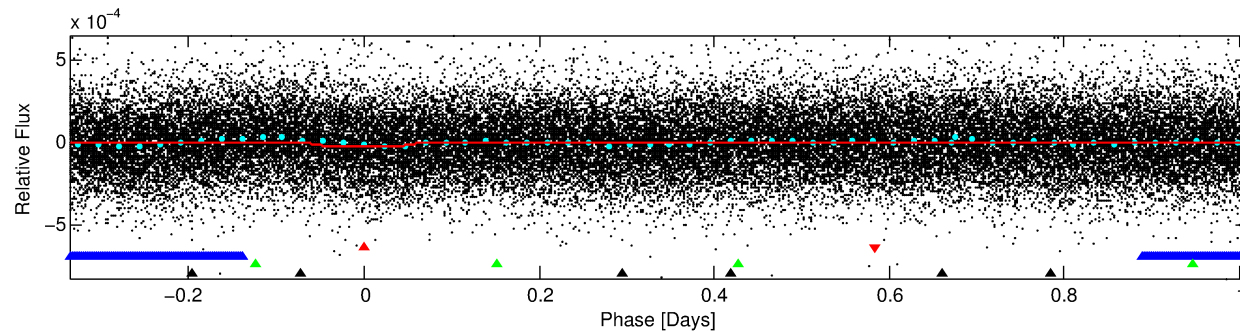
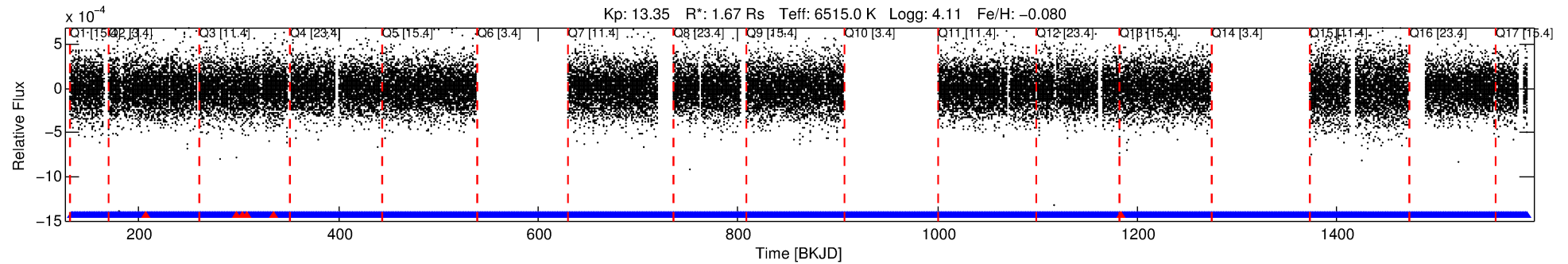
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004066898-01

No Significant Match Found

DV One-Page Summary

KIC: 4066898 Candidate: 1 of 4 Period: 1.347 d



DV Fit Results:

Period = 1.34672 [0.00002] d
Epoch = 133.0746 [0.0052] BKJD
Rp/R* = 0.0050 [0.0024]
a/R* = 1.91 [3.77]
b = 0.90 [0.60]
Seff = 6594.08 [1896.74]
Teq = 2298 [165] K
Rp = 0.91 [0.47] Re
a = 0.0261 [0.0048] AU
Ag = 6.10 [6.26] [0.81 σ]
Teffp = 5582 [1380] K [2.36 σ]

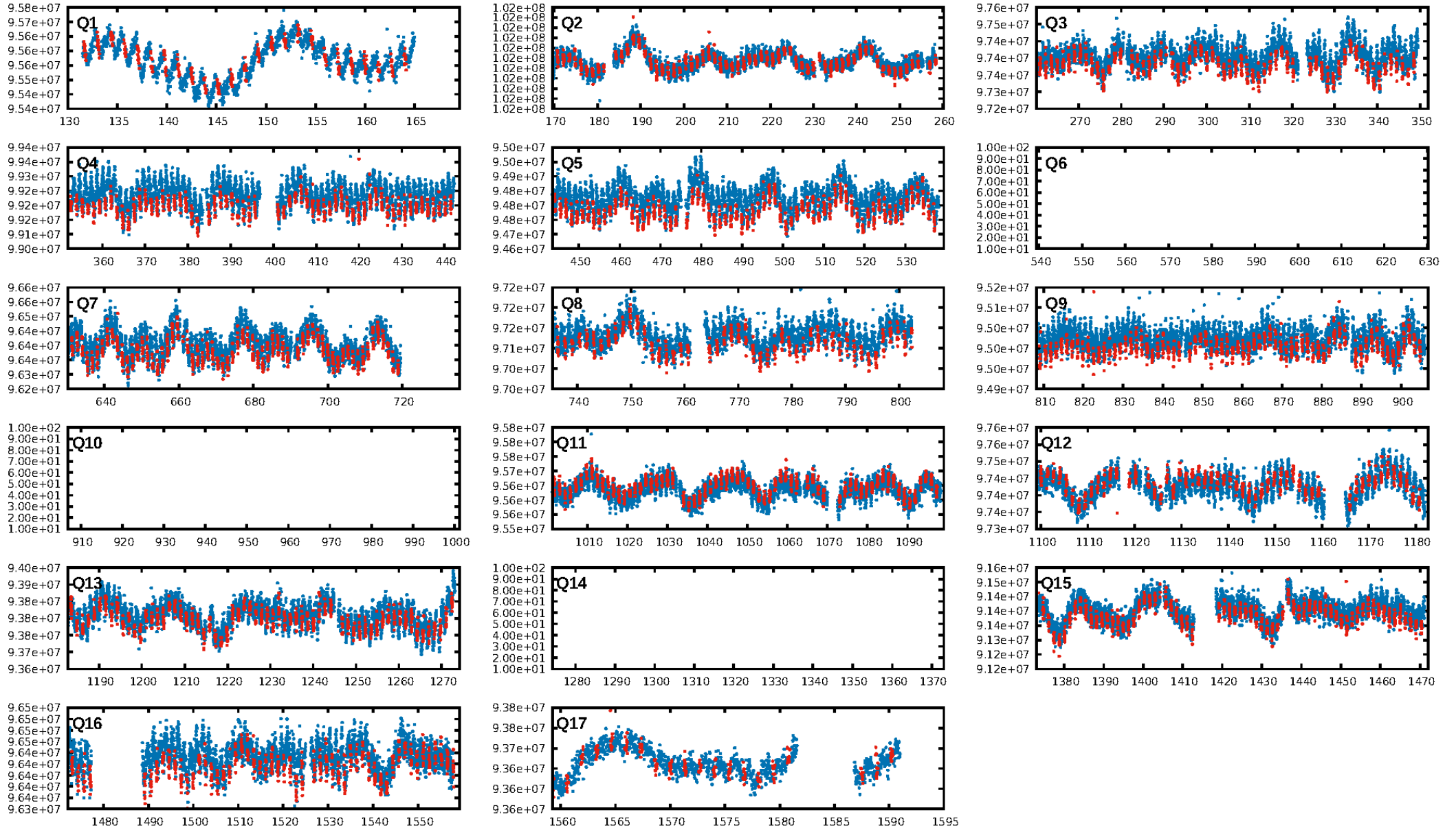
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.93e-13
RollingBand-fgt: 0.99 [741/747]
GhostDiagnostic-chr: 0.1679
Centroid-sig: 0.4%
Centroid-so: 3.137 arcsec [1.87 σ]
OotOffset-rm: 0.108 arcsec [0.47 σ]
KicOffset-rm: 0.139 arcsec [0.62 σ]
OotOffset-st: 1/4/3/5 [13]
KicOffset-st: 1/4/3/5 [13]
DiffImageQuality-fgm: 0.92 [12/13]
DiffImageOverlap-fno: 0.36 [5/14]

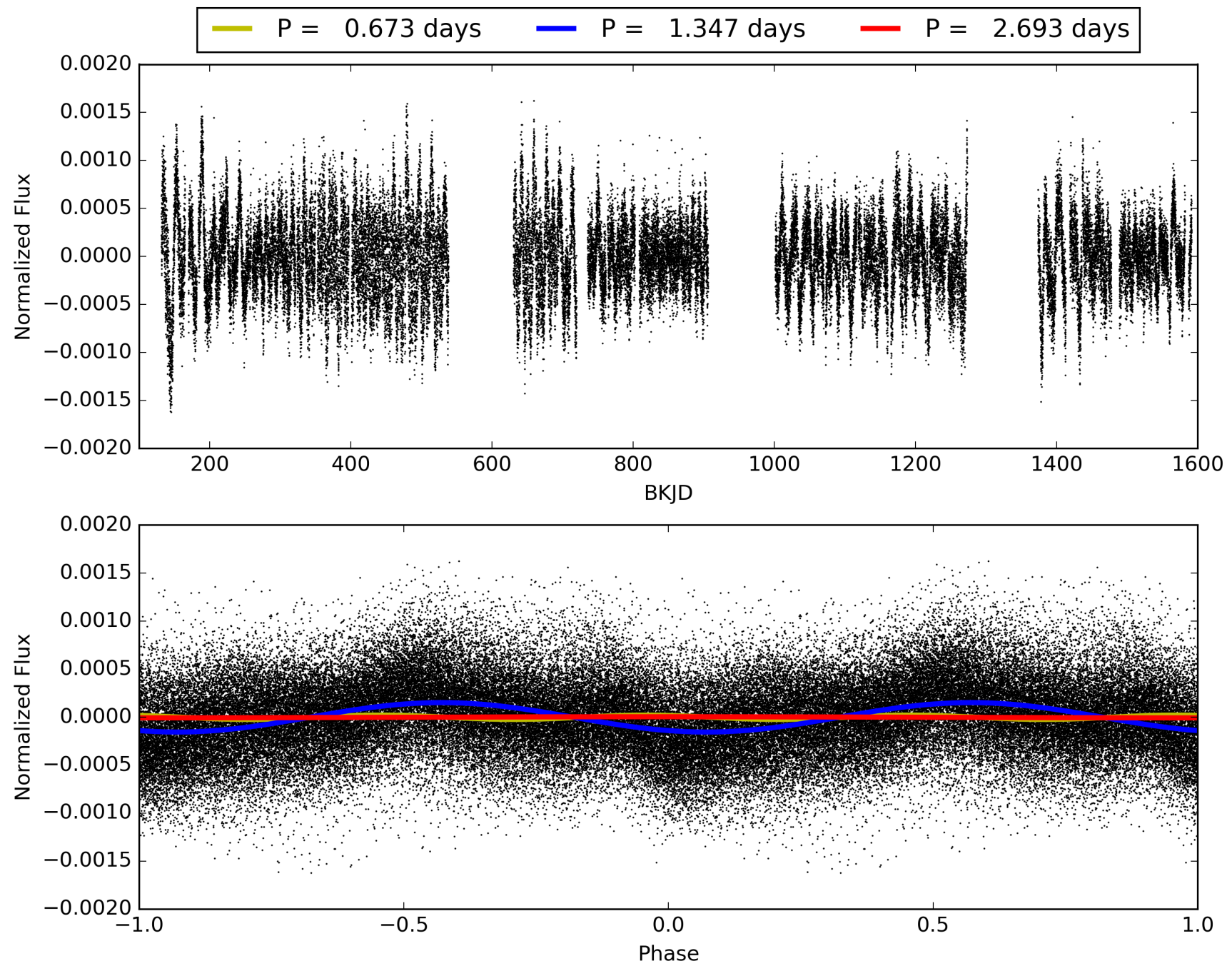
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 004066898-01, PDC Light Curves

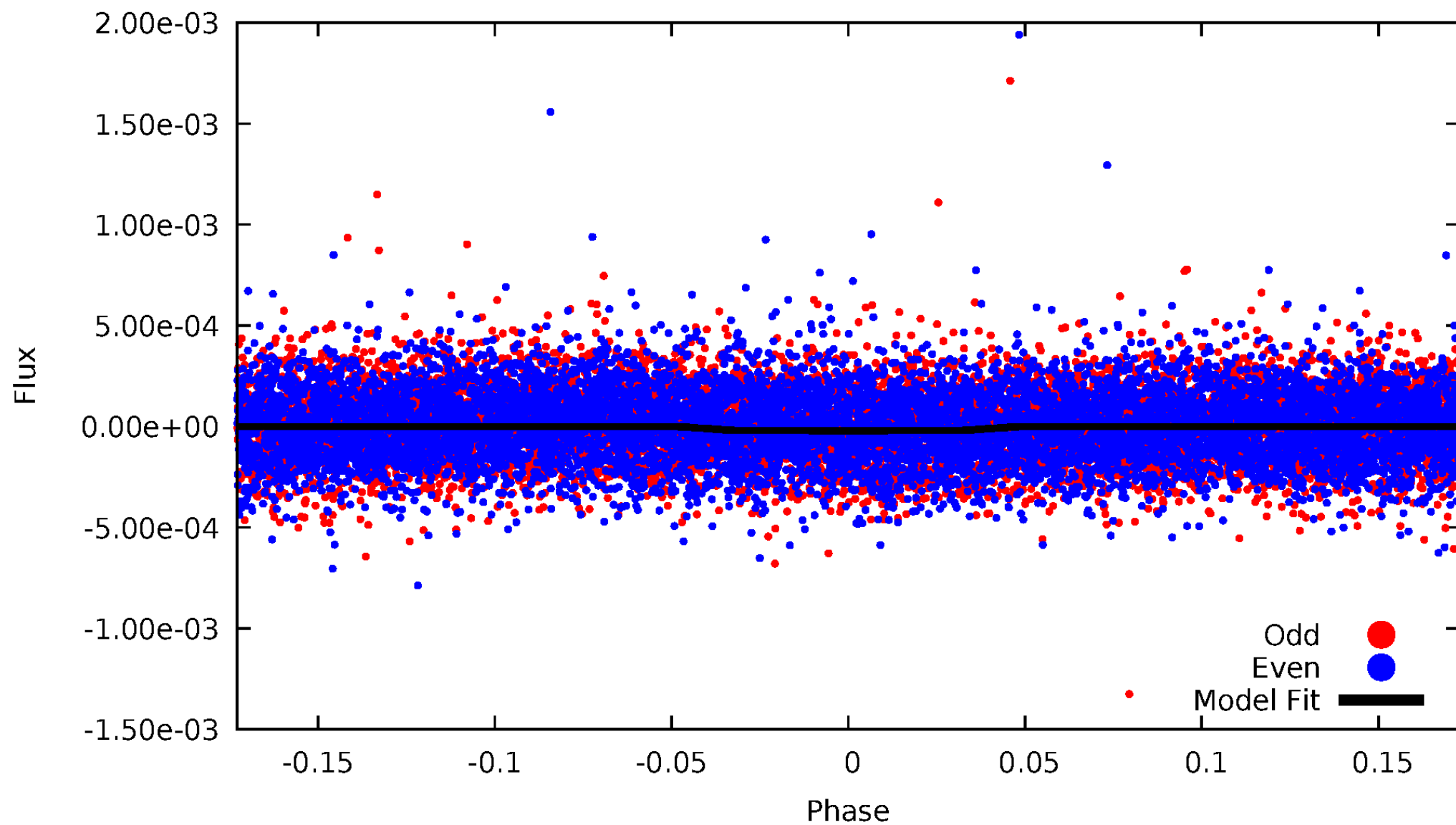


TCE 004066898-01



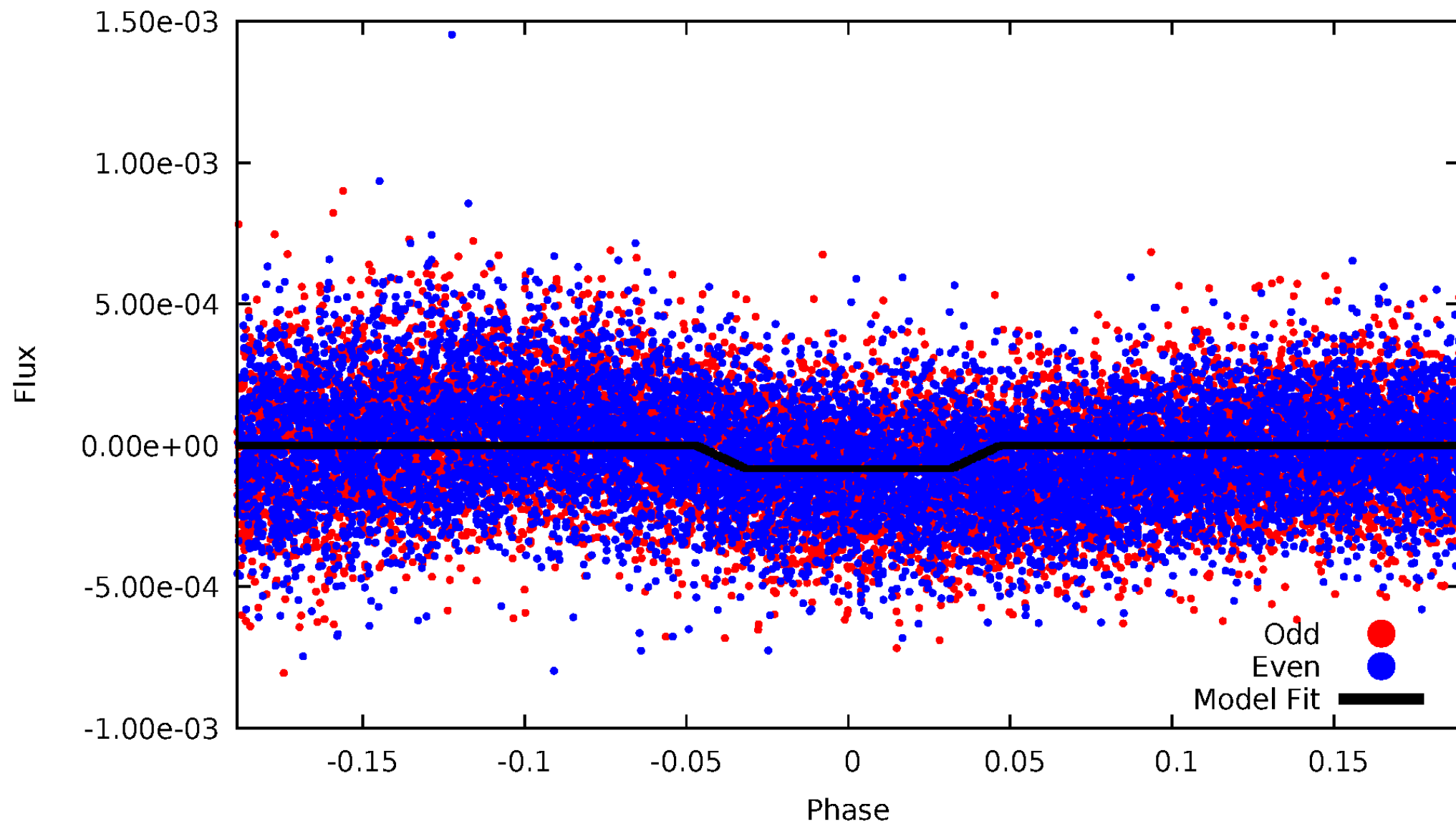
DV Odd/Even

TCE 004066898-01

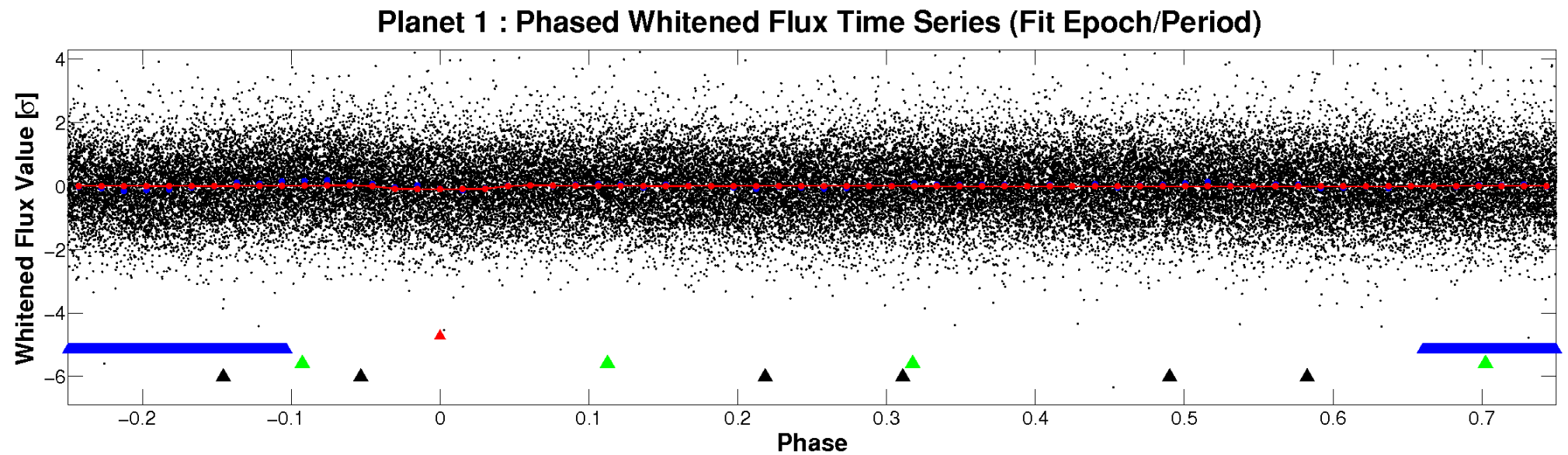
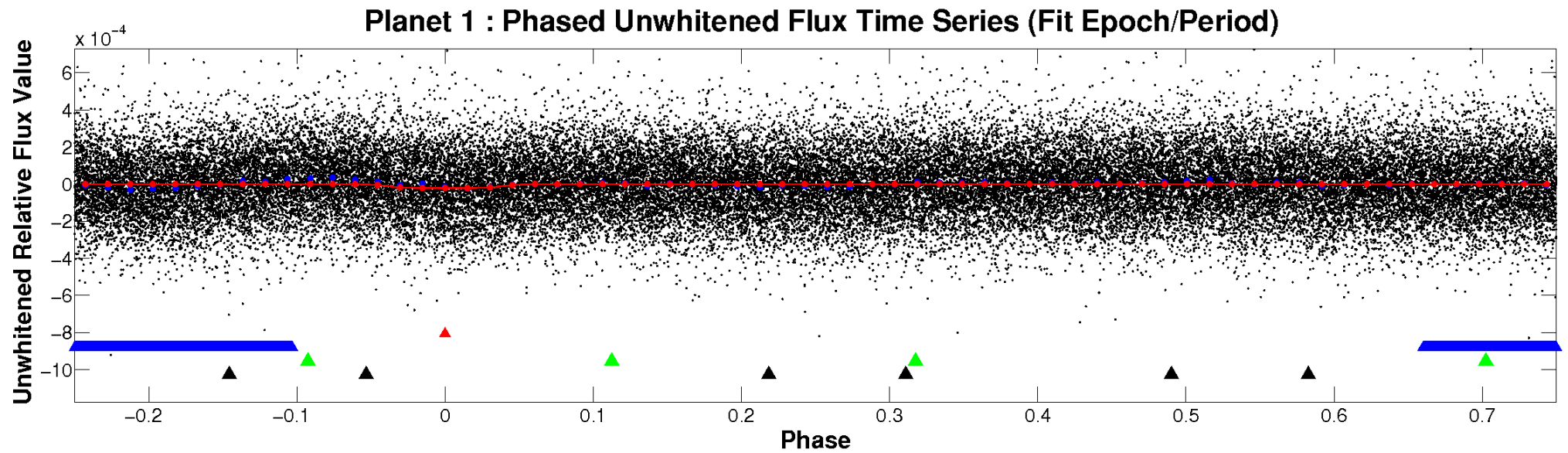


ALT Odd/Even

TCE 004066898-01

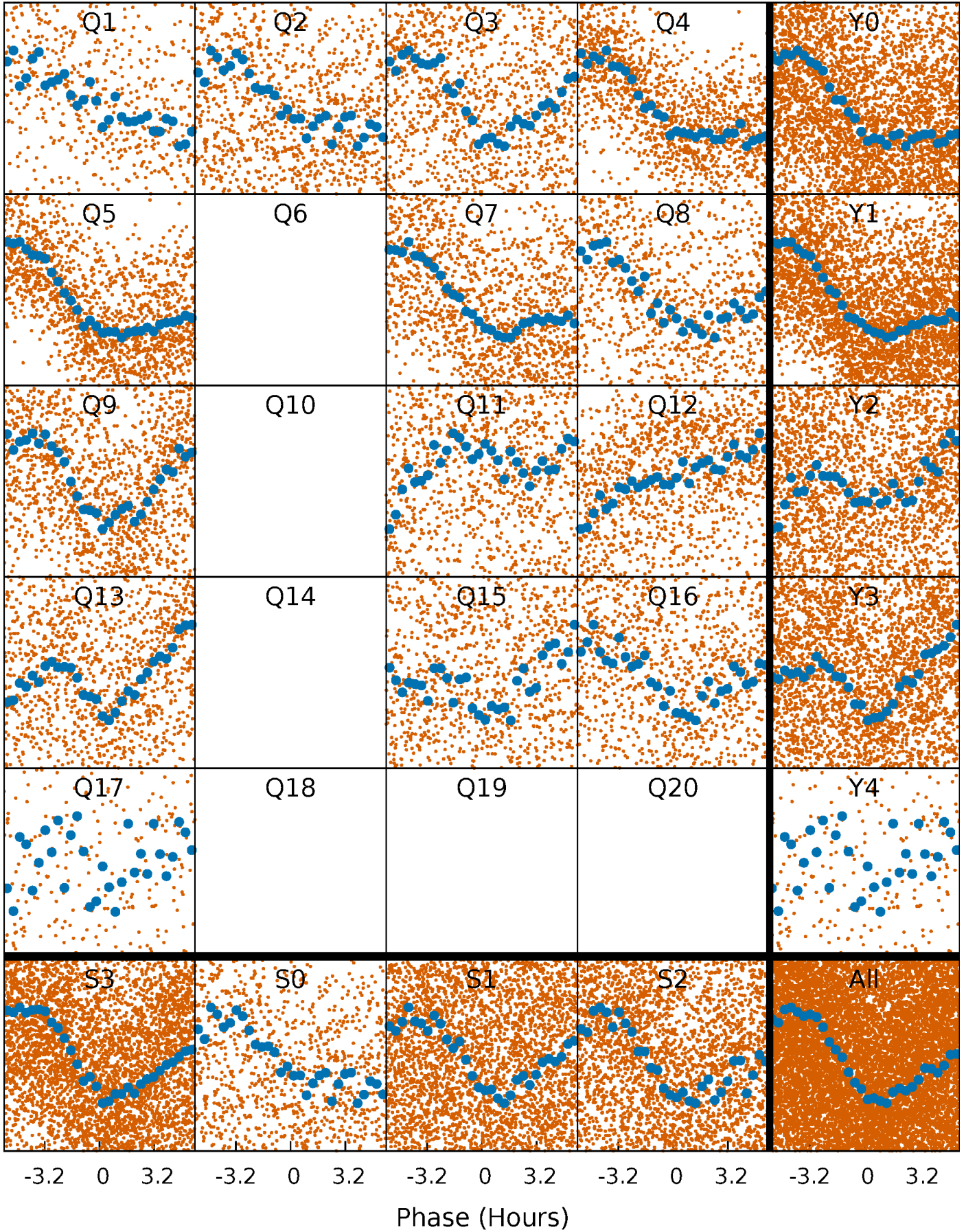


Non-Whitened Vs. Whitened Light Curve



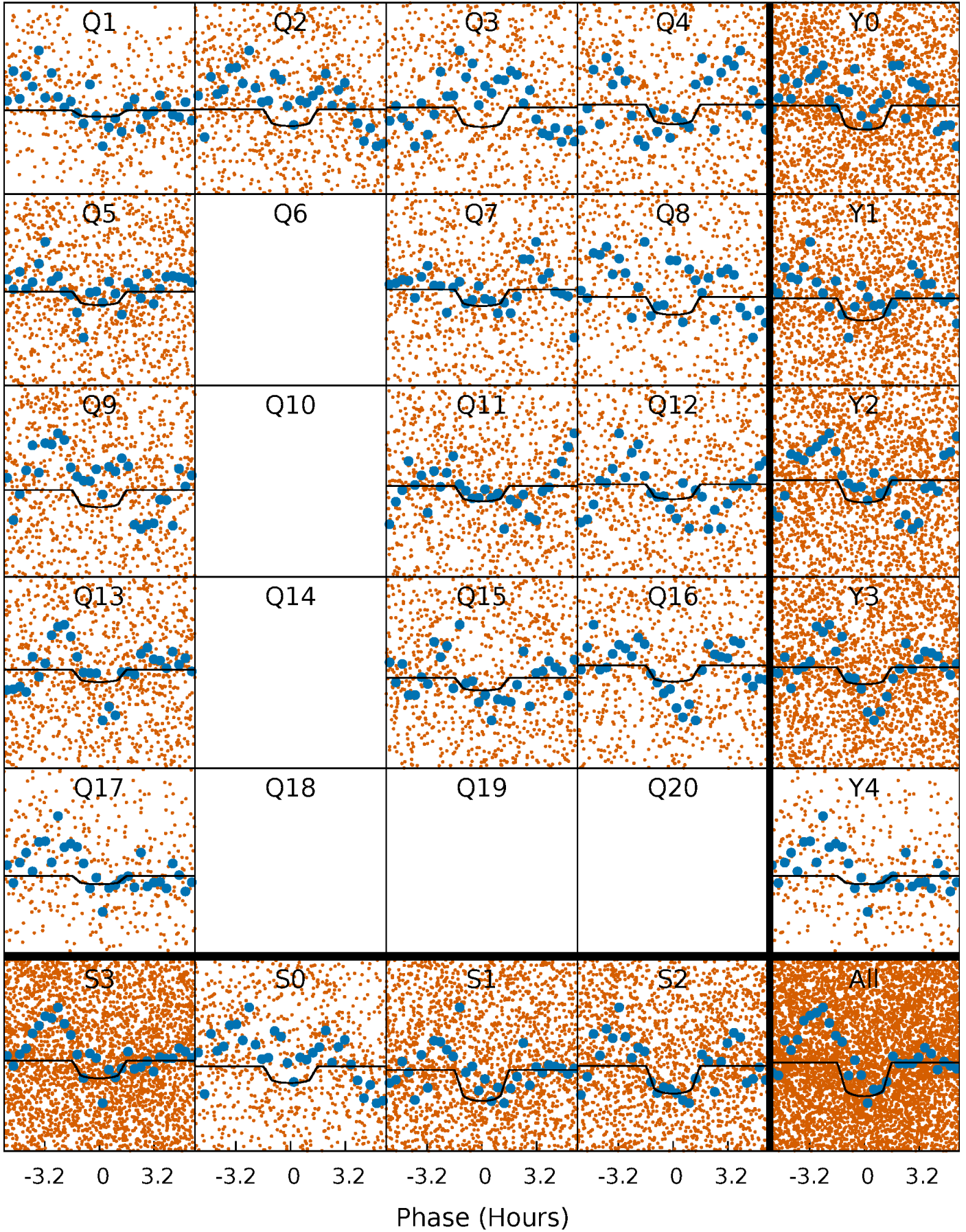
PDC Quarter-Phased Transit Curves

TCE 004066898-01 P= 1.346718 Days $T_0=133.074626$ (BKJD)



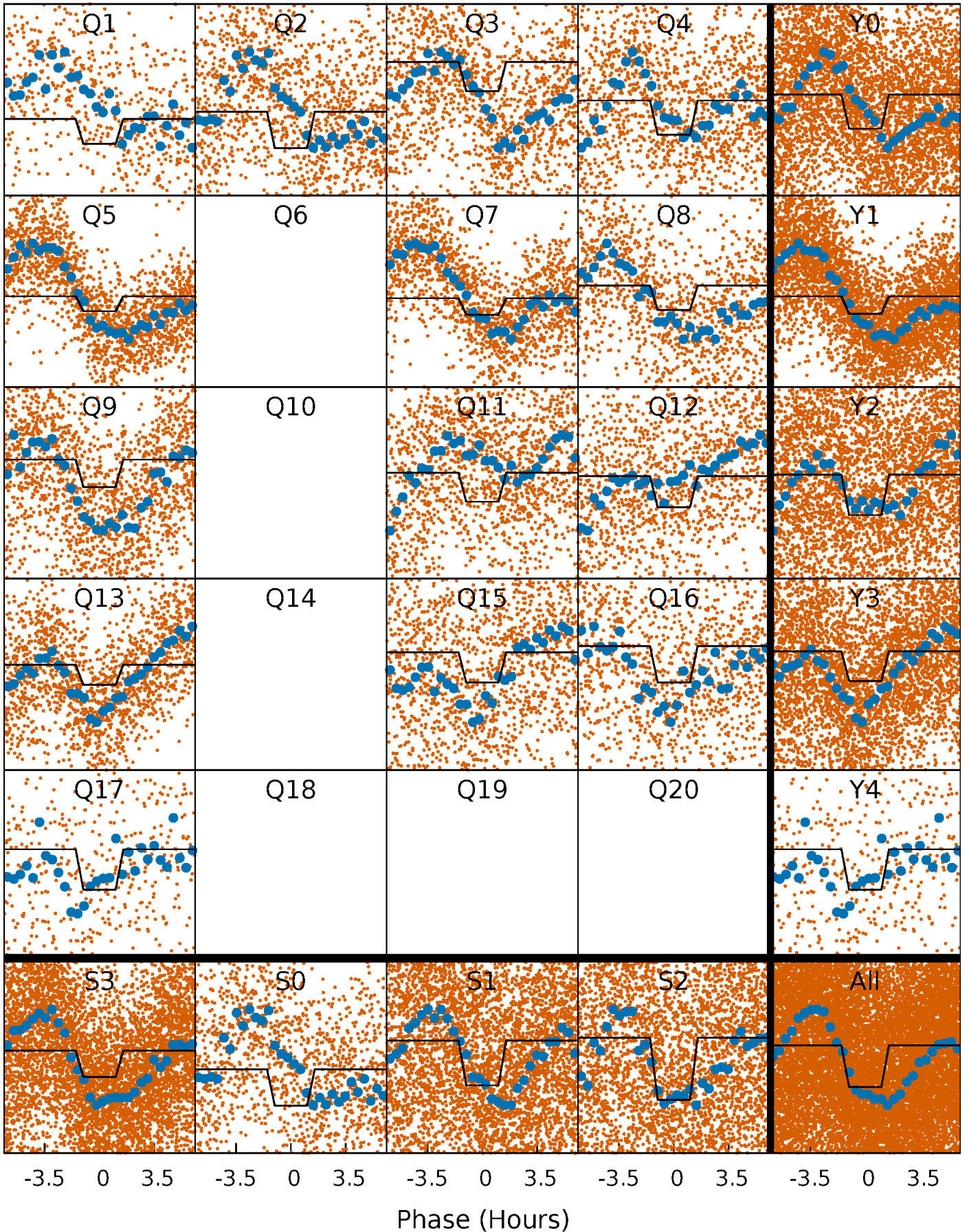
DV Quarter-Phased Transit Curves

TCE 004066898-01 P= 1.346718 Days $T_0=133.074626$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

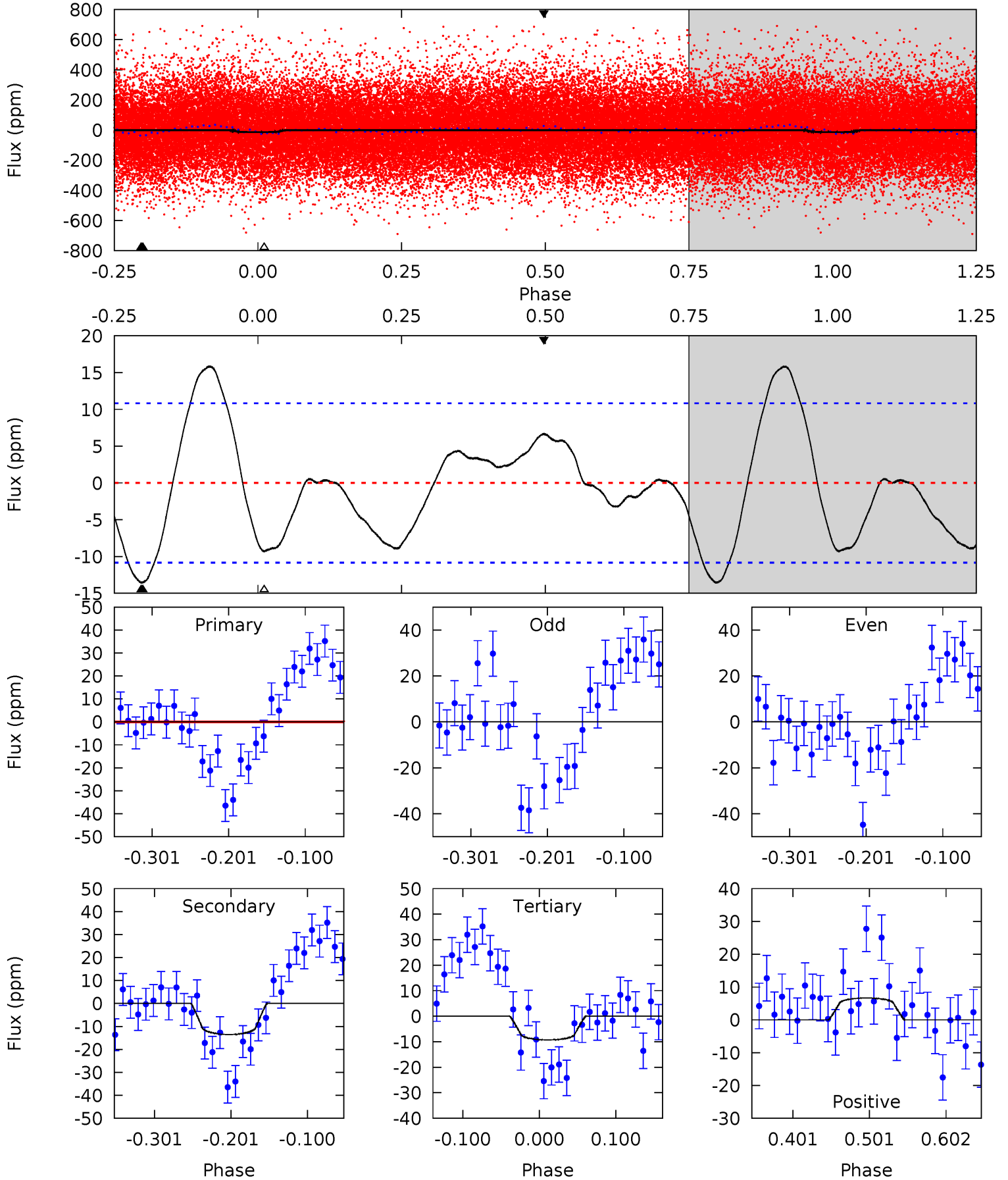
TCE 004066898-01 P= 1.346827 Days $T_0=133.019709$ (BKJD)



DV Model-Shift Uniqueness Test

004066898-01, P = 1.346718 Days, E = 130.381190 Days

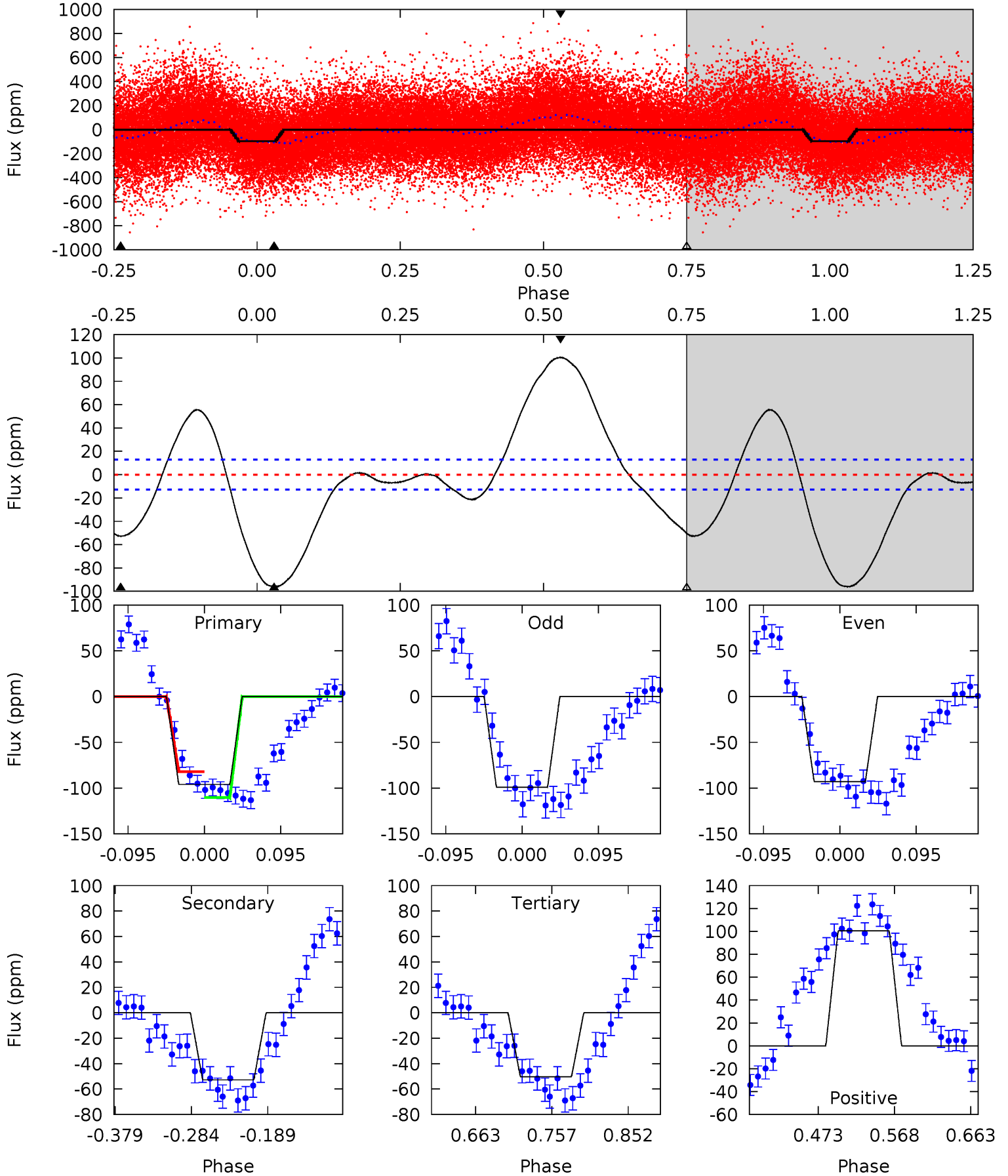
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.69	5.71	3.92	2.81	4.56	1.64	2.40	1.78	2.89	1.79	2.90	1.12	1.06	0.54	4.17



Alt Model-Shift Uniqueness Test

004066898-01, P = 1.346827 Days, E = 130.326055 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.3	18.9	18.0	35.9	4.58	1.67	14.2	16.3	-1.59	0.90	-17.0	1.08	1.04	0.51	5.05



Stellar Parameters For KIC 004066898

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6515^{+77}_{-77}	$4.110^{+0.162}_{-0.108}$	$-0.080^{+0.150}_{-0.150}$	$1.669^{+0.311}_{-0.342}$	$1.314^{+0.109}_{-0.145}$	$0.398^{+0.309}_{-0.137}$
	+1%/-1%	+4%/-3%	+188%/-188%	+19%/-20%	+8%/-11%	+78%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004066898-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-14 ± 2	$0.90^{+0.42}_{-0.43}$	3198^{+157}_{-171}	5568^{+2124}_{-948}	$6.285^{+15.052}_{-3.488}$
Alt.	-53 ± 3	$1.63^{+0.47}_{-0.44}$	3199^{+145}_{-154}	5781^{+1047}_{-629}	$7.368^{+6.368}_{-2.839}$

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

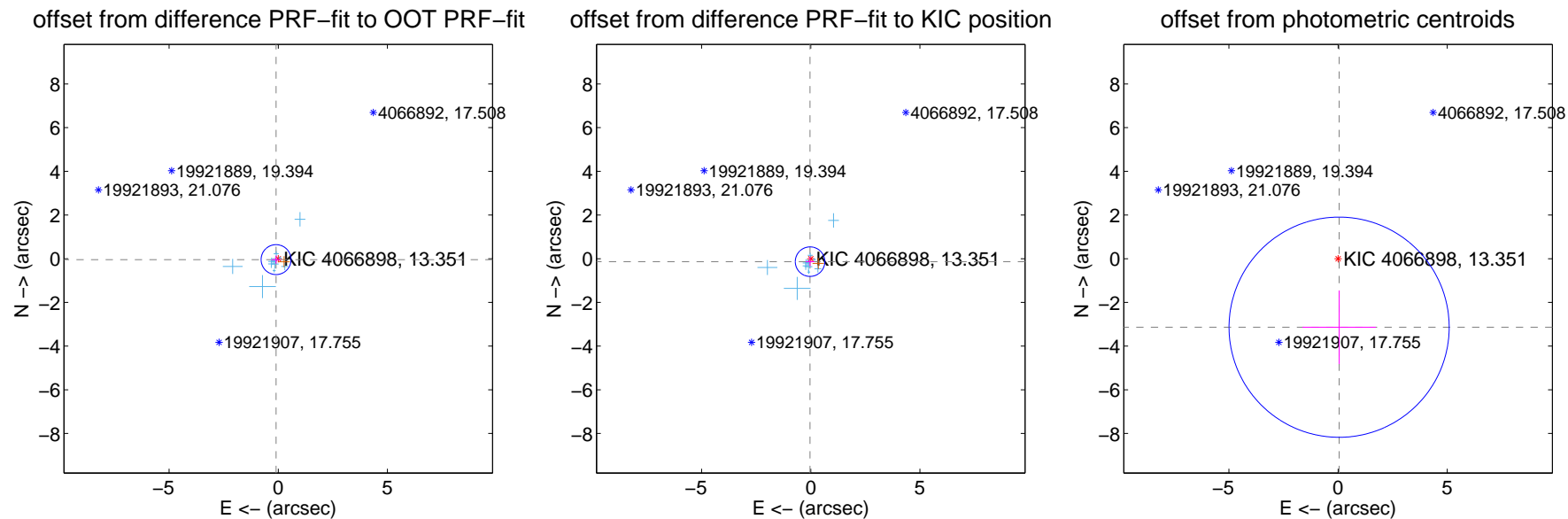
DV Centroid Data

Supplemental centroid analysis for 004066898-01. Kepler magnitude: 13.35. Transit SNR 5.66

There are 12 quarters with good PRF difference image offsets

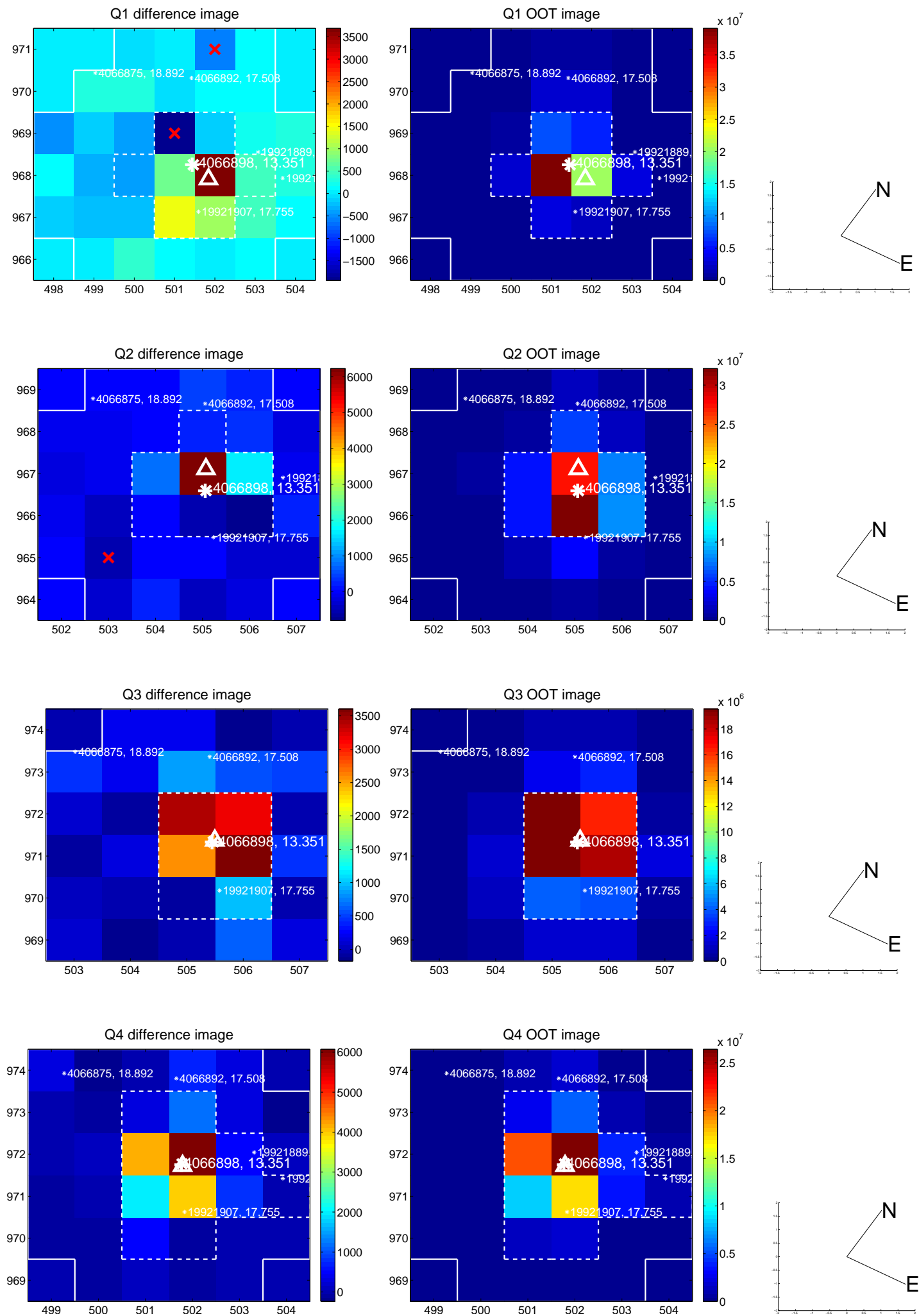
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.108 ± 0.228	0.47	0.100 ± 0.200	-0.042 ± 0.190
PRF-fit source offset from KIC position	0.139 ± 0.225	0.62	0.033 ± 0.202	-0.135 ± 0.201
photometric centroid source offset	3.14 ± 1.68	1.87	-0.05 ± 1.68	-3.14 ± 1.68

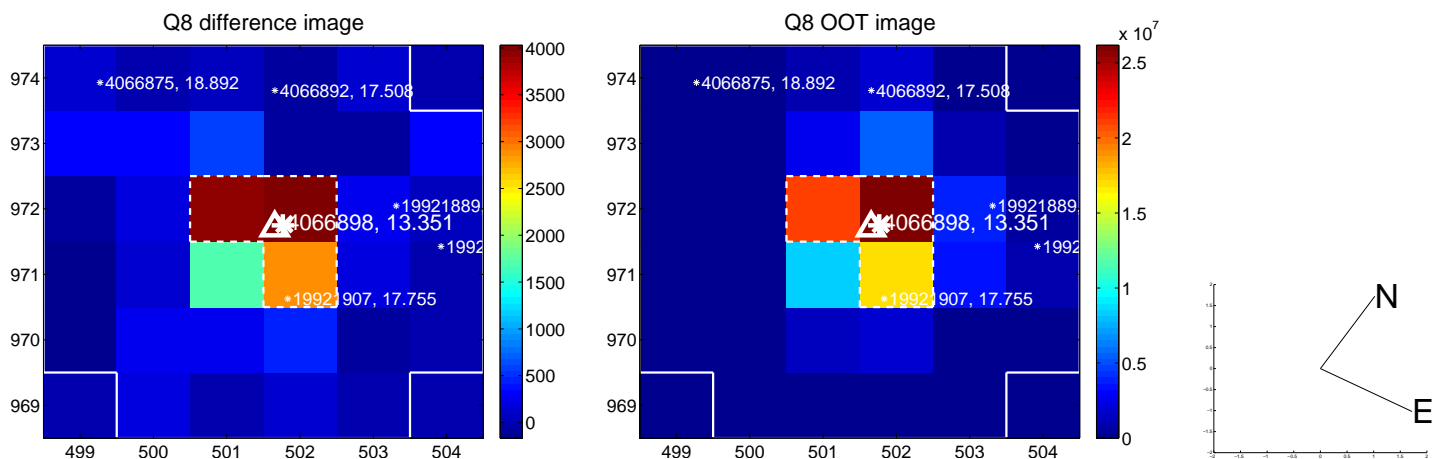
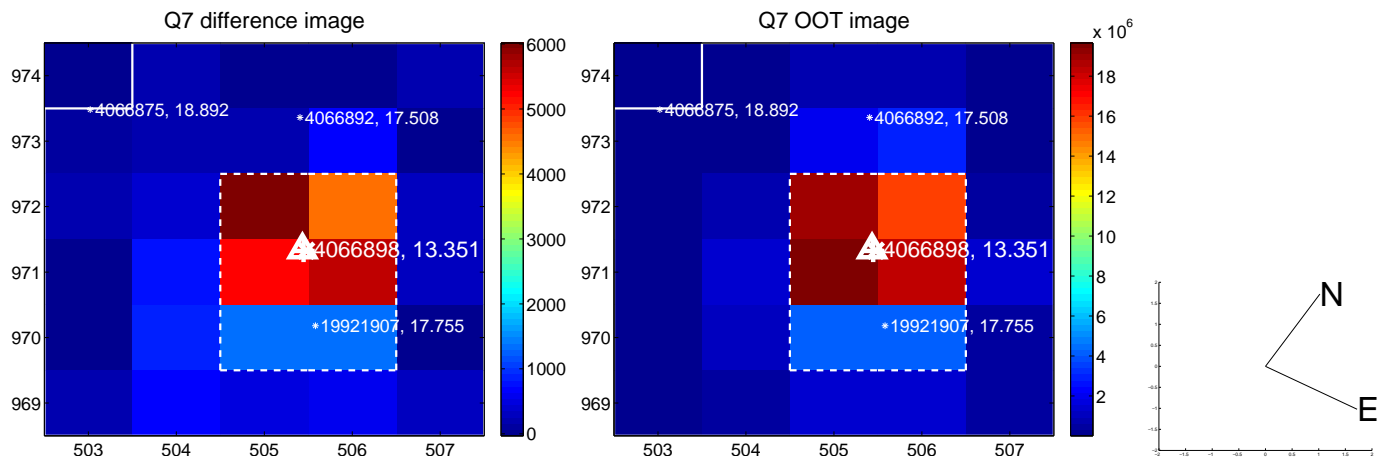
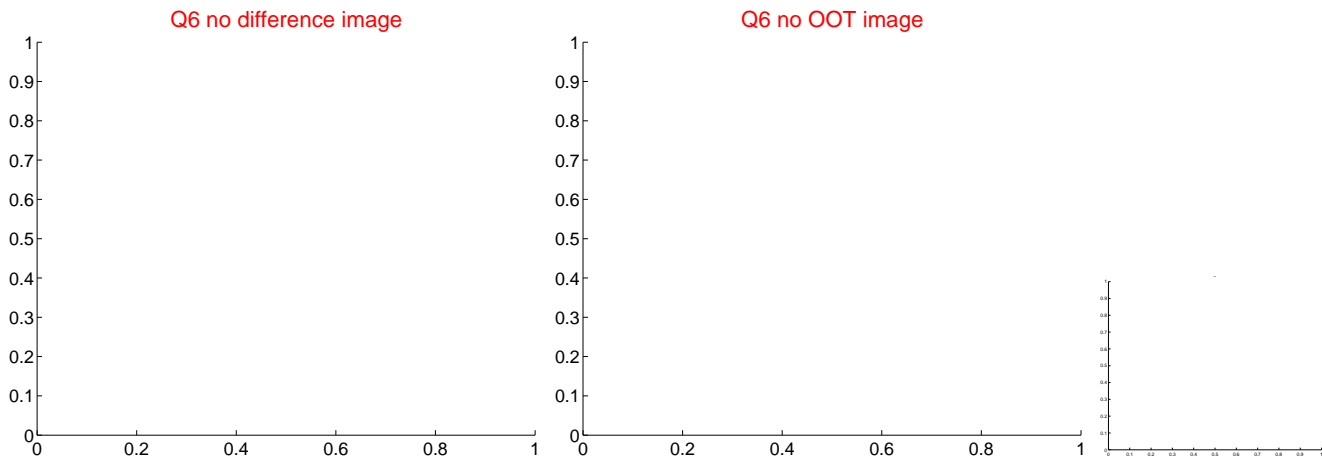
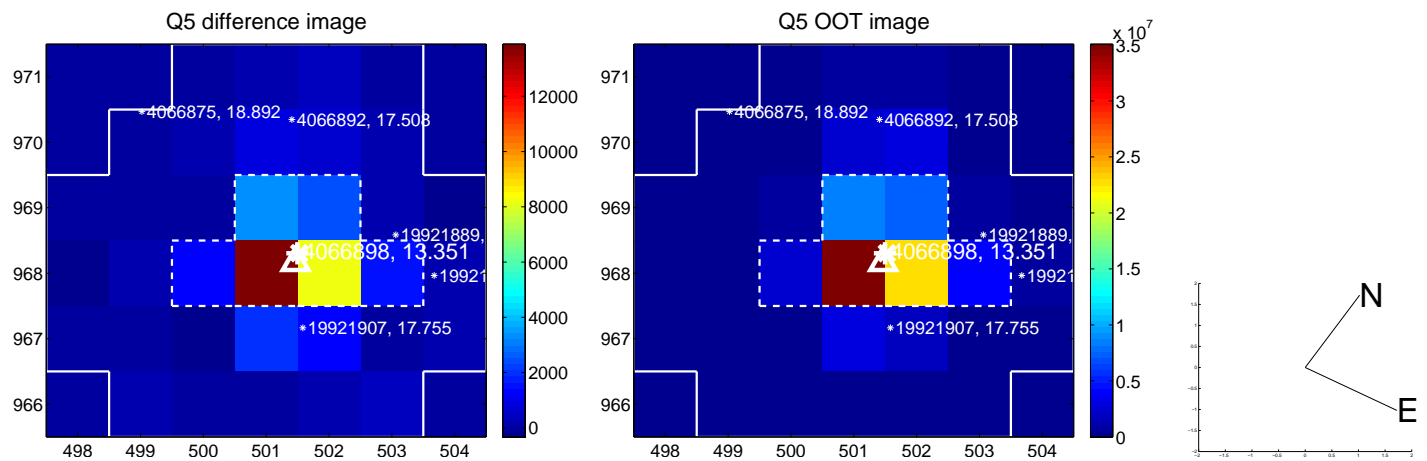


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

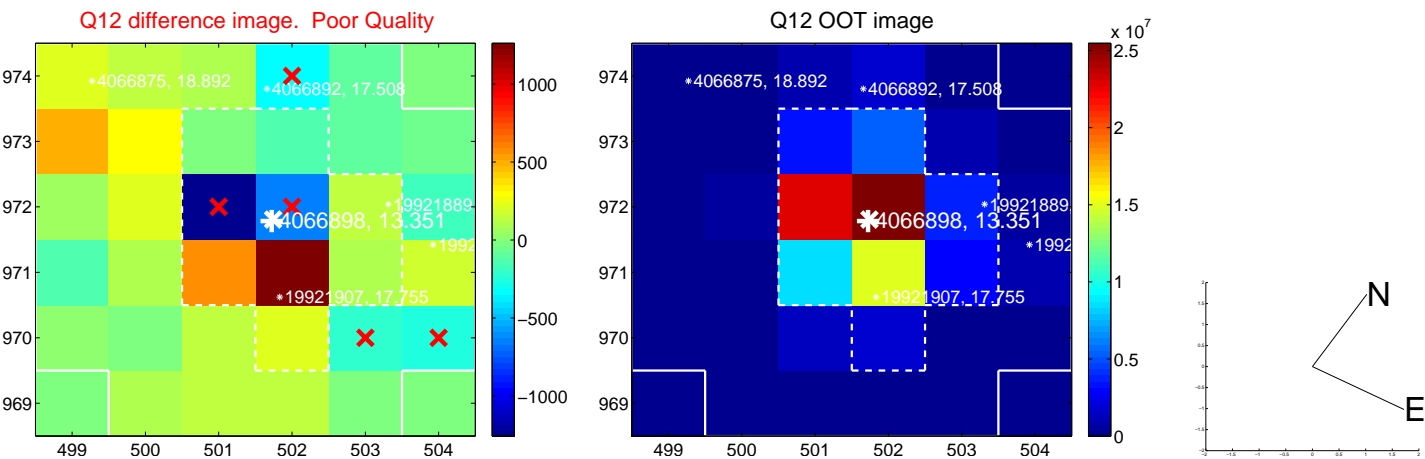
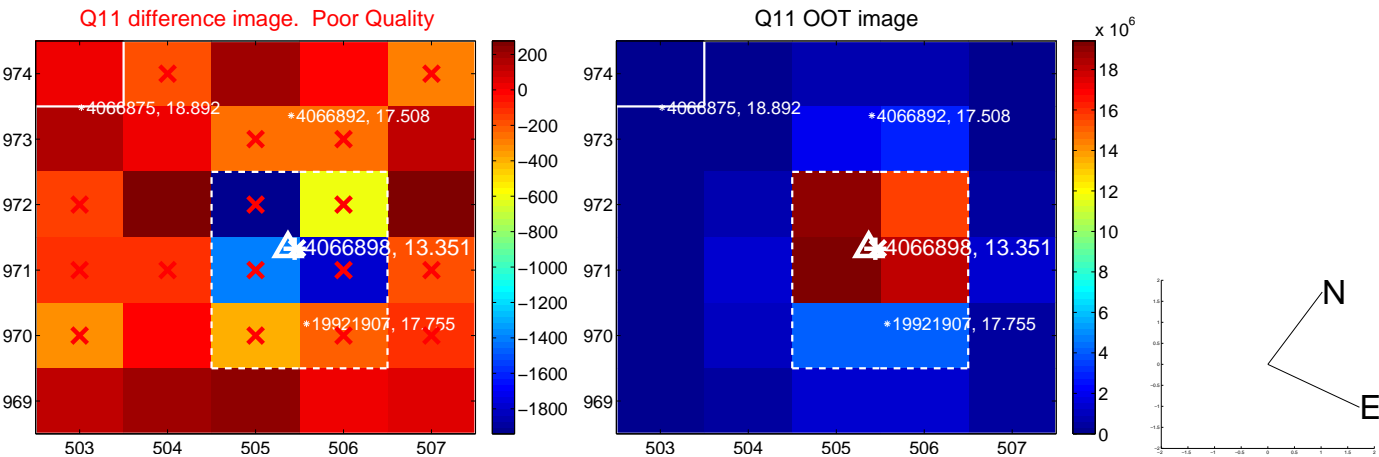
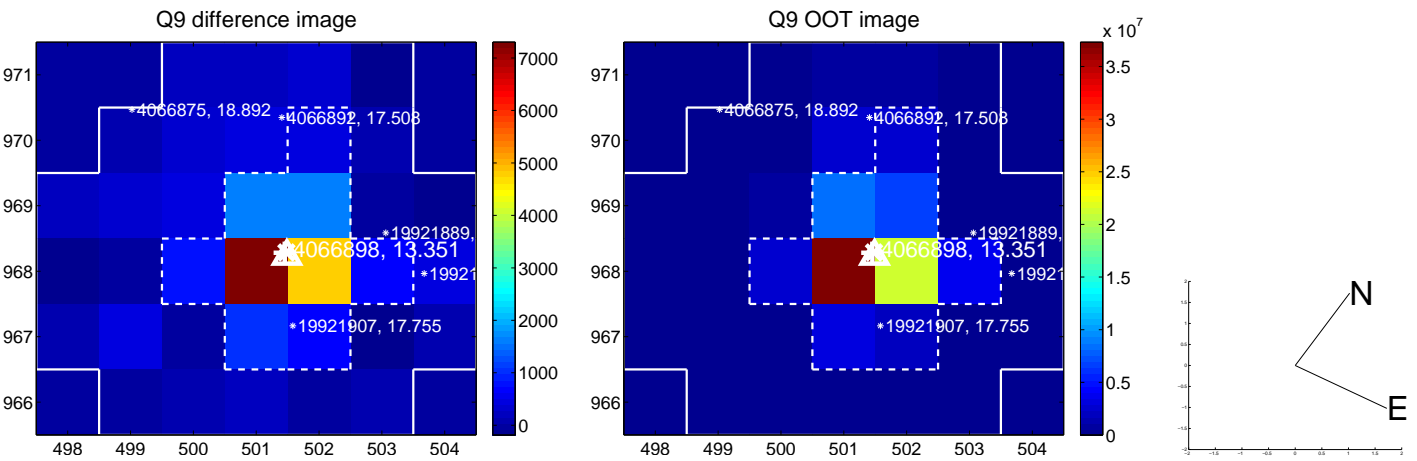
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



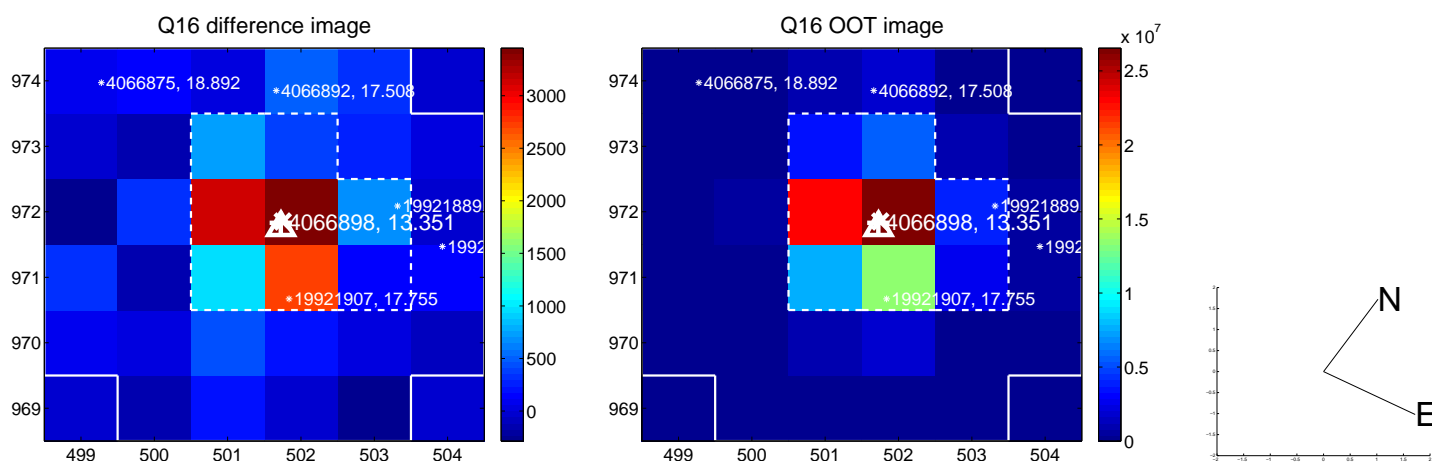
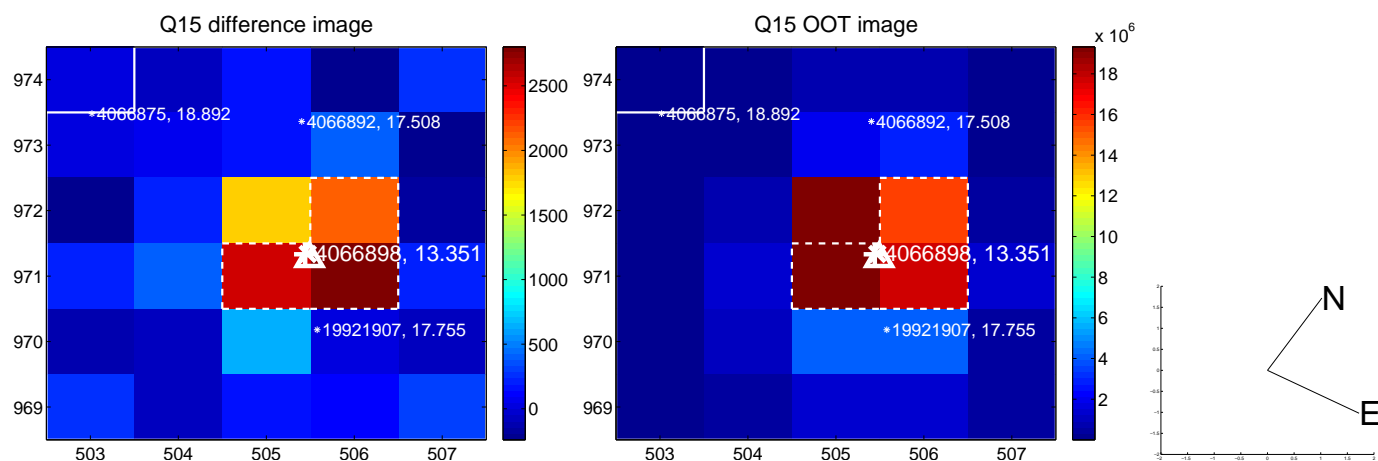
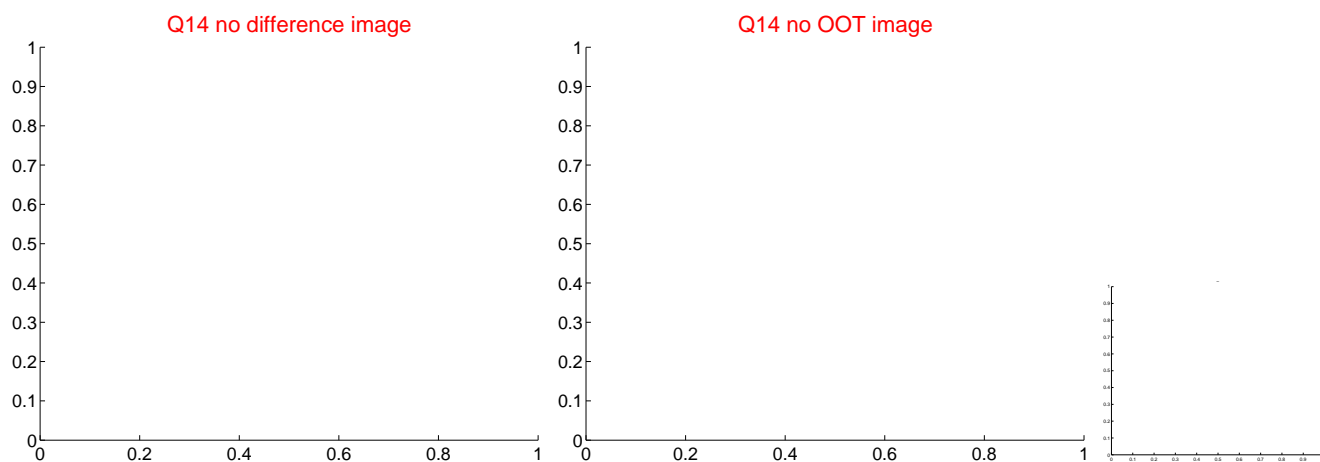
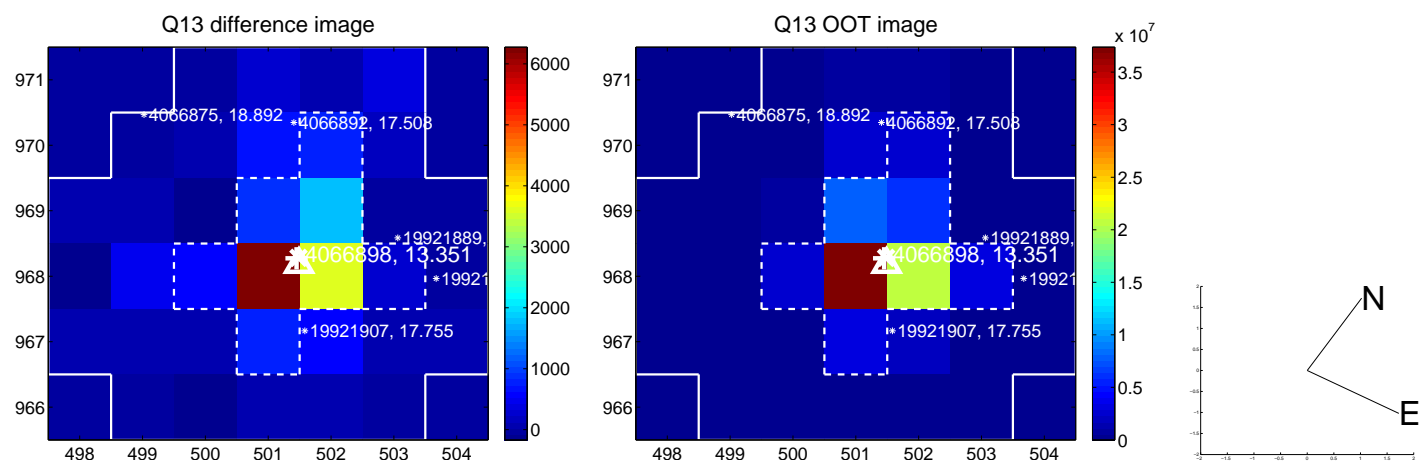
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



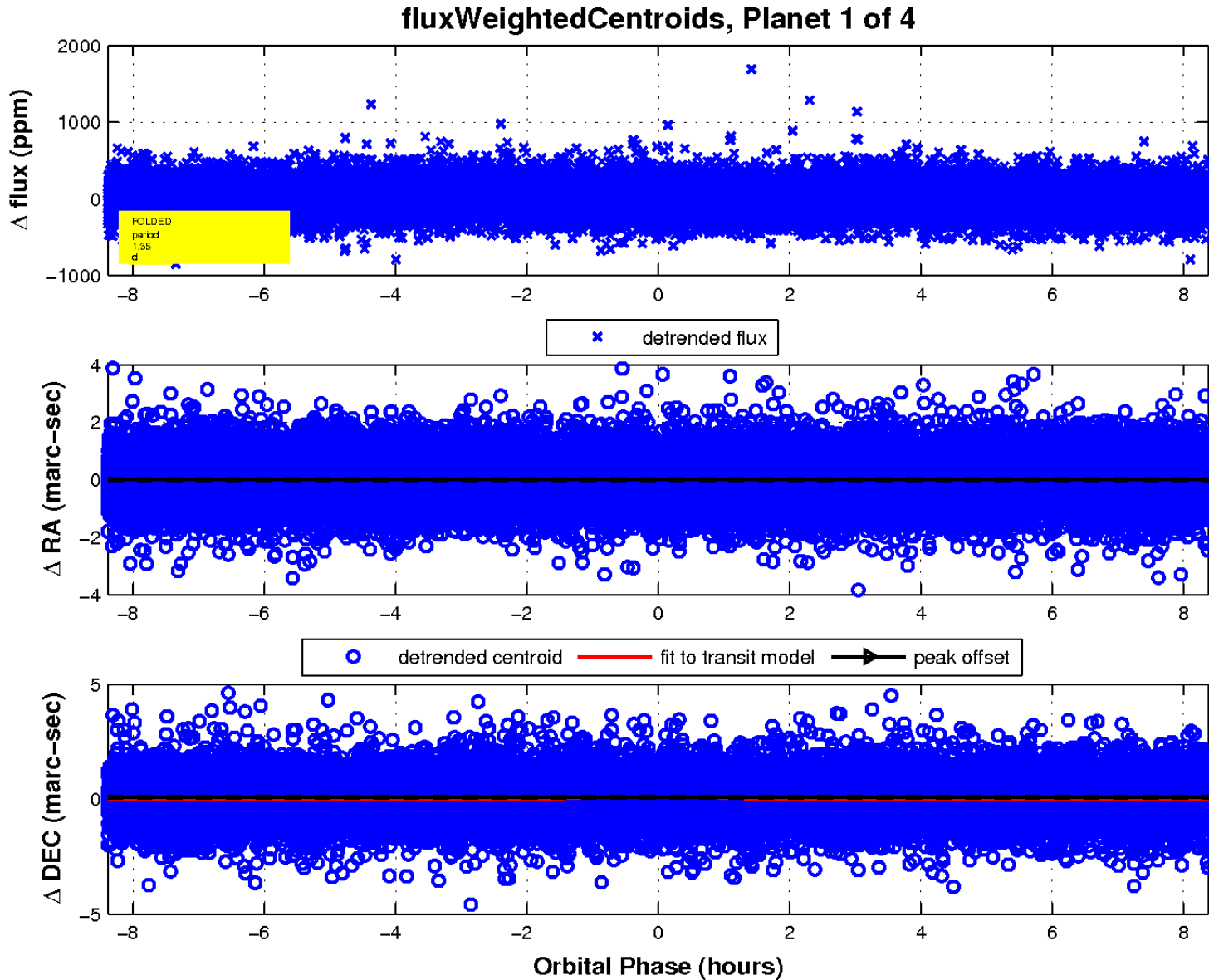
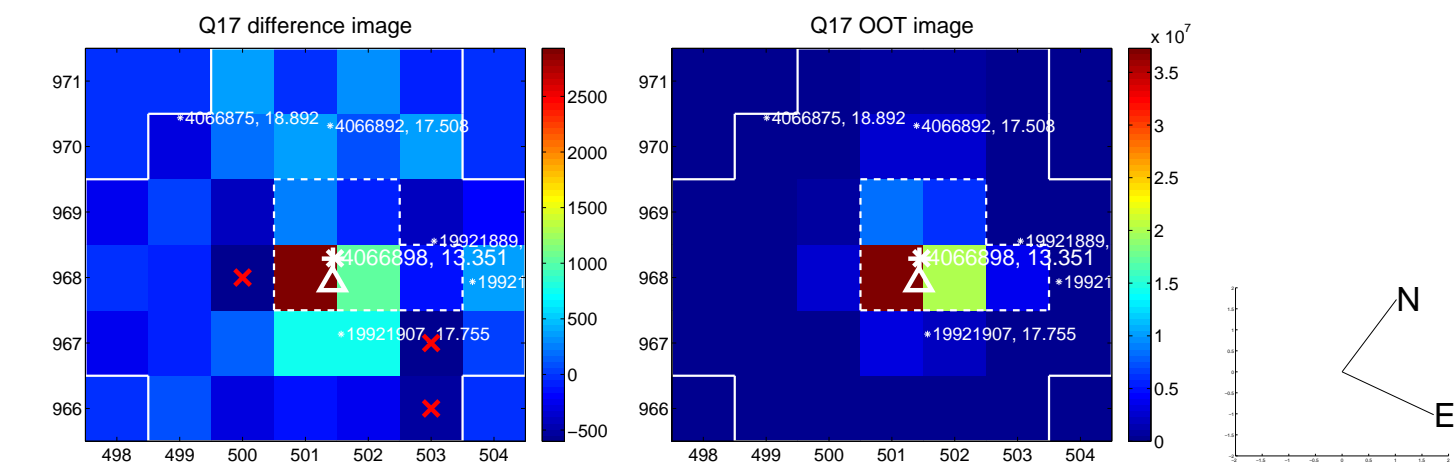
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

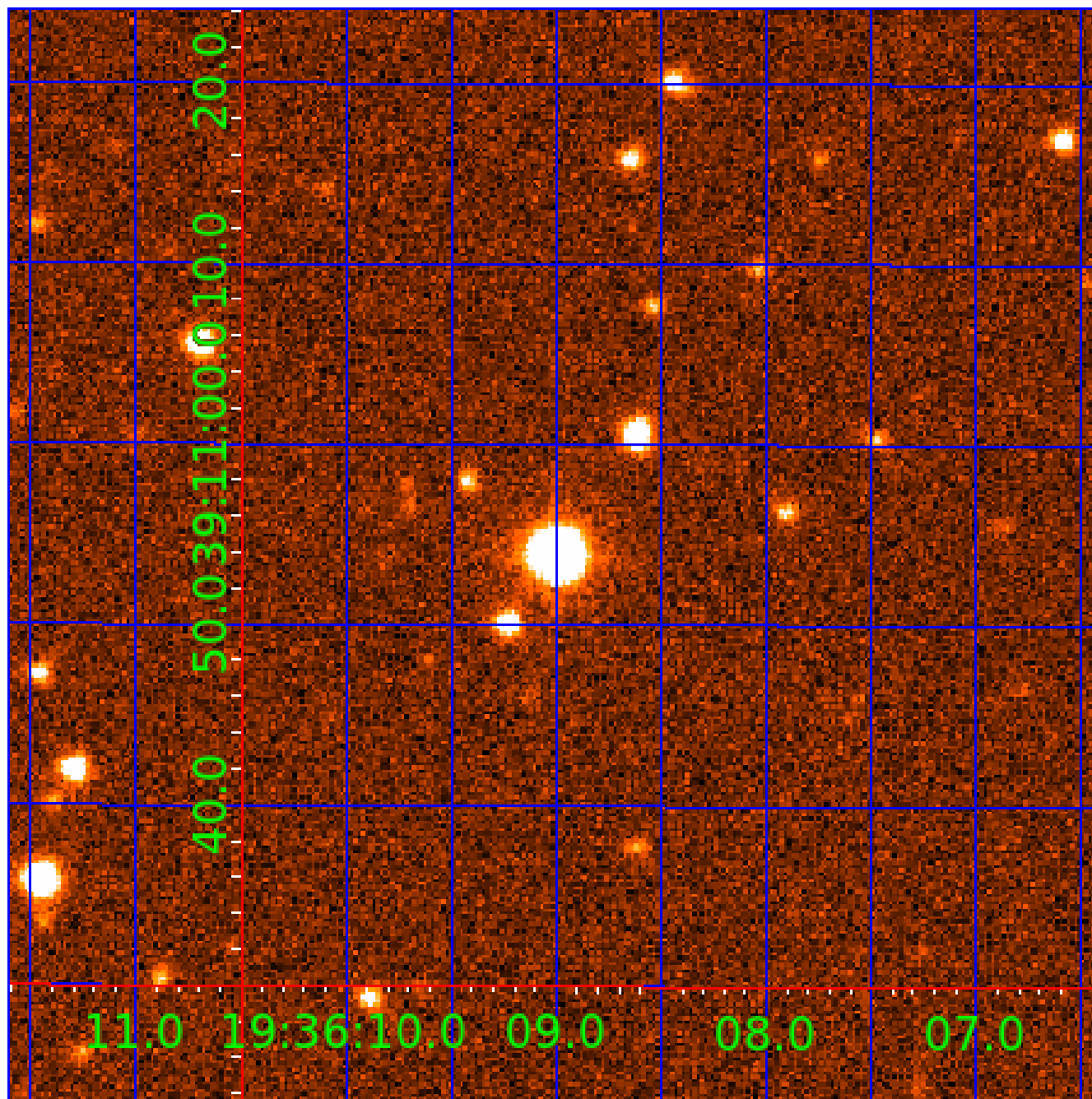


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004066898

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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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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004066898-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
004066898-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004066898-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT

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

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

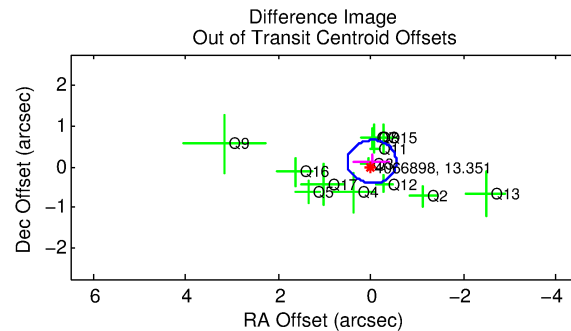
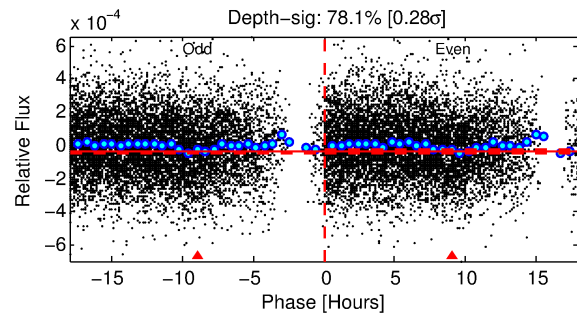
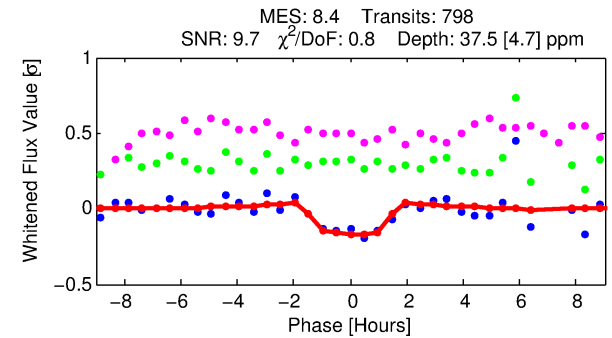
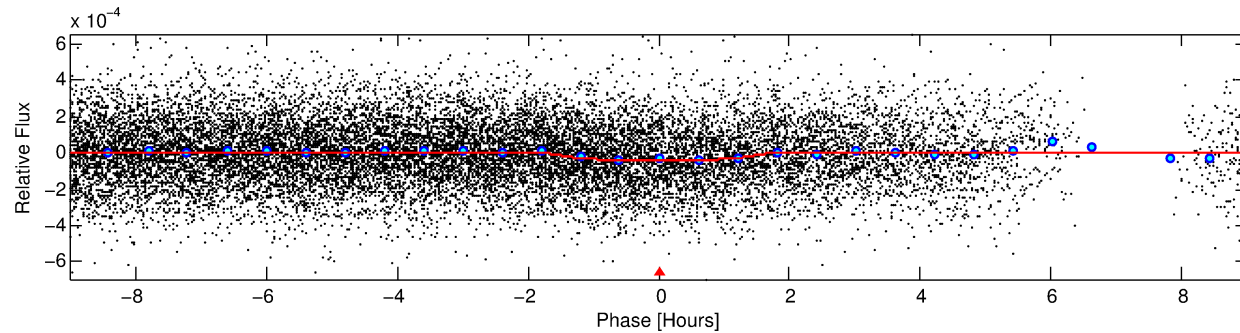
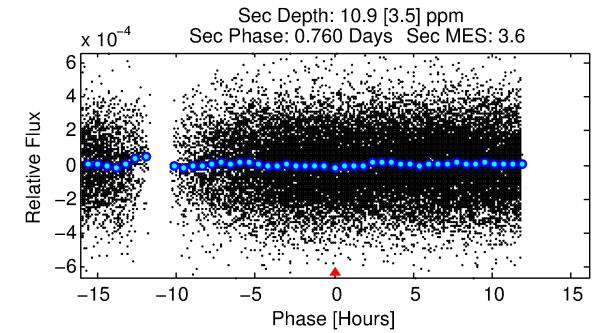
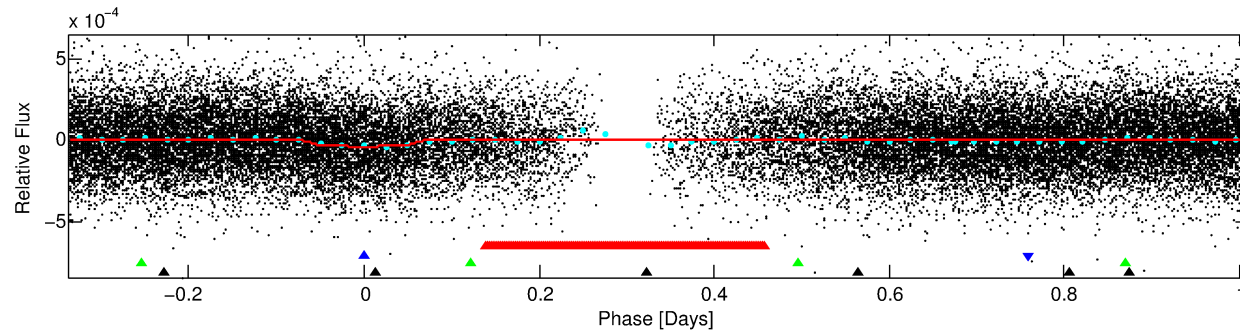
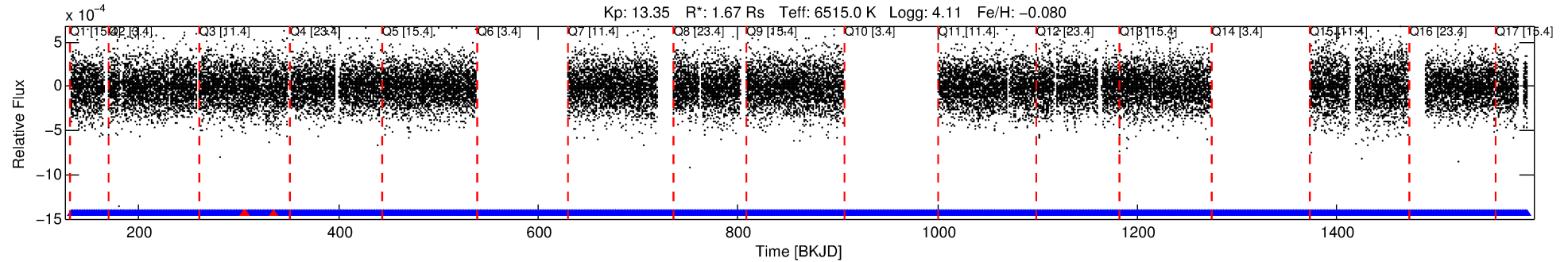
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004066898-02

No Significant Match Found

DV One-Page Summary

KIC: 4066898 Candidate: 2 of 4 Period: 1.347 d



DV Fit Results:

Period = 1.34701 [0.00002] d
Epoch = 132.6170 [0.0036] BKJD
Rp/R* = 0.0064 [0.0022]
a/R* = 2.00 [2.94]
b = 0.86 [0.59]
Seff = 6592.15 [1896.18]
Teq = 2298 [165] K
Rp = 1.16 [0.47] Re
a = 0.0261 [0.0048] AU
Ag = 3.03 [2.49] [0.81σ]
Teffp = 4686 [907] K [2.59σ]

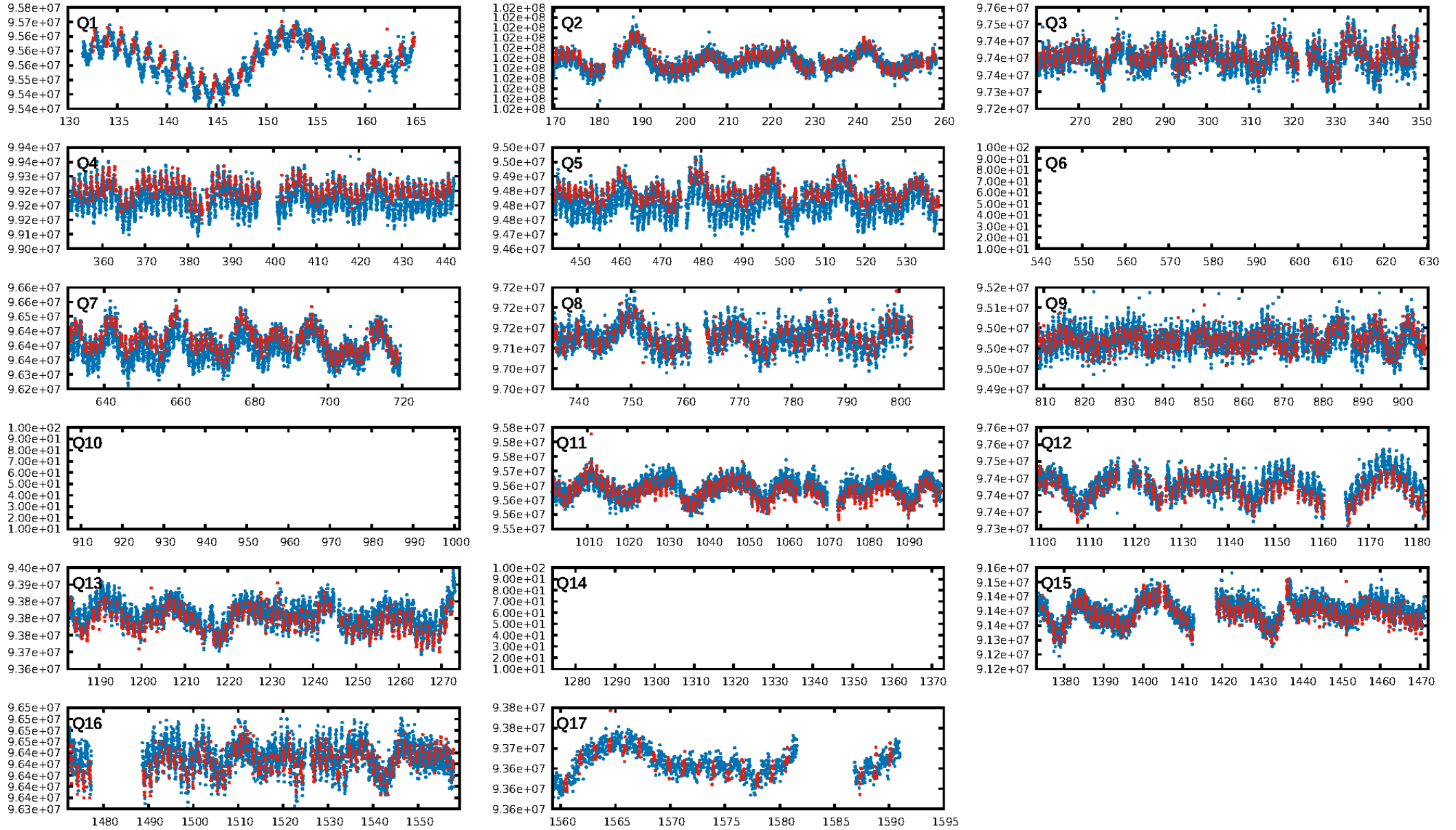
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: 100.0% [822.88σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.23e-15
RollingBand-fgt: 1.00 [751/754]
GhostDiagnostic-chr: 1.382
Centroid-sig: 84.8%
Centroid-so: 0.478 arcsec [0.51σ]
OotOffset-rm: 0.121 arcsec [0.69σ]
KicOffset-rm: 0.100 arcsec [0.30σ]
OotOffset-st: 1/4/4/4 [13]
KicOffset-st: 1/4/4/4 [13]
DiffImageQuality-fgm: 0.77 [10/13]
DiffImageOverlap-fno: 0.36 [5/14]

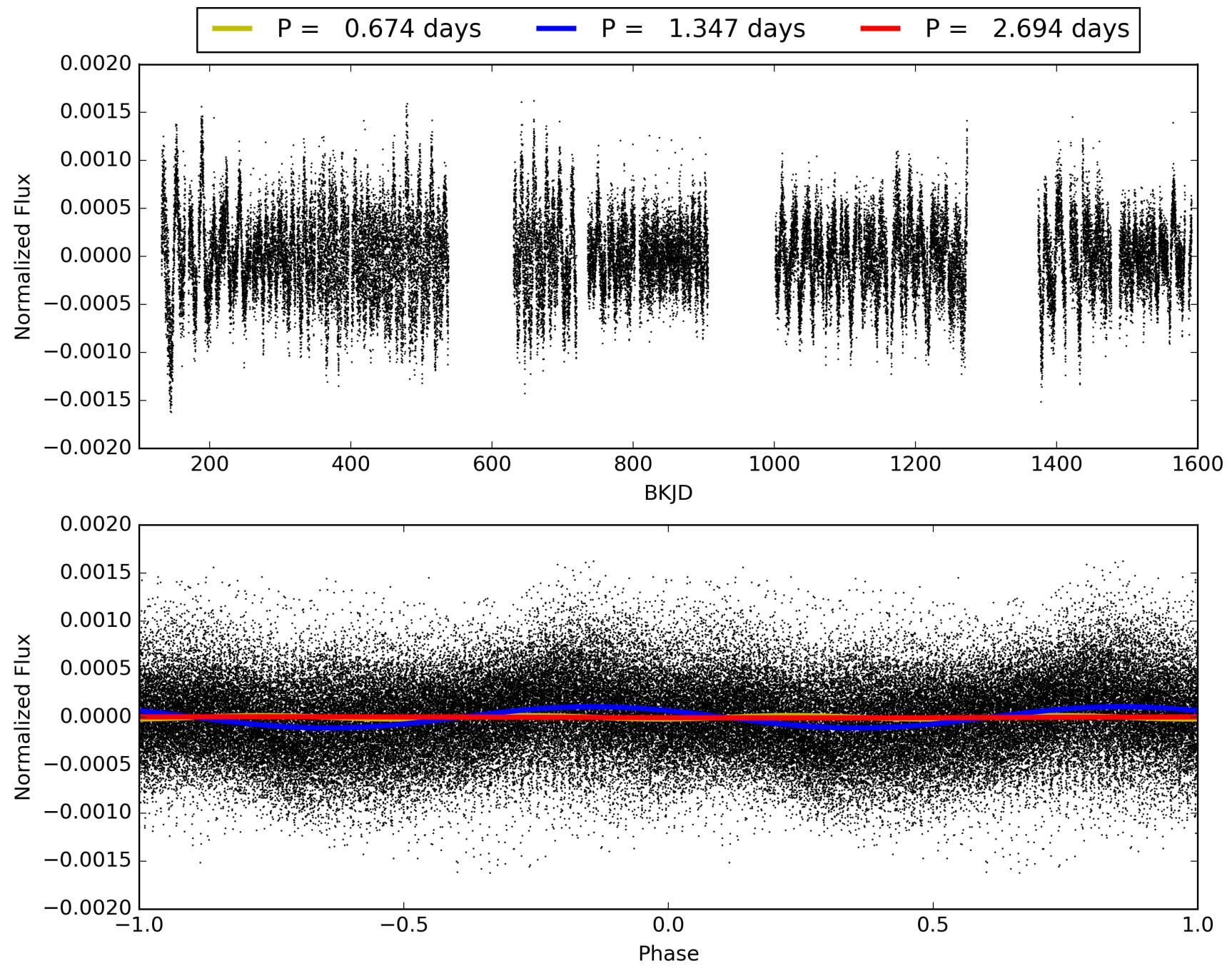
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:58:11 Z

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

TCE 004066898-02, PDC Light Curves

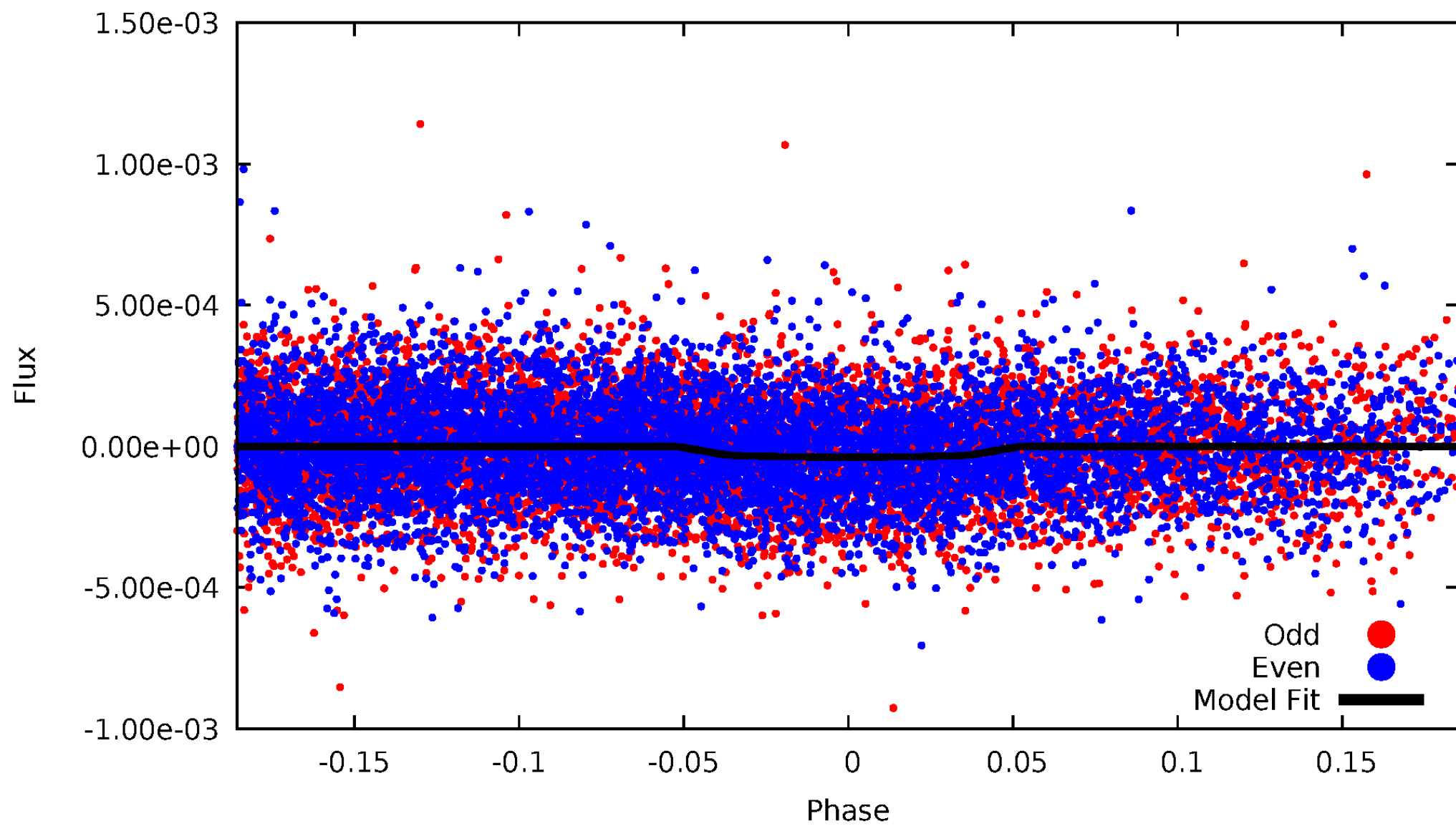


TCE 004066898-02



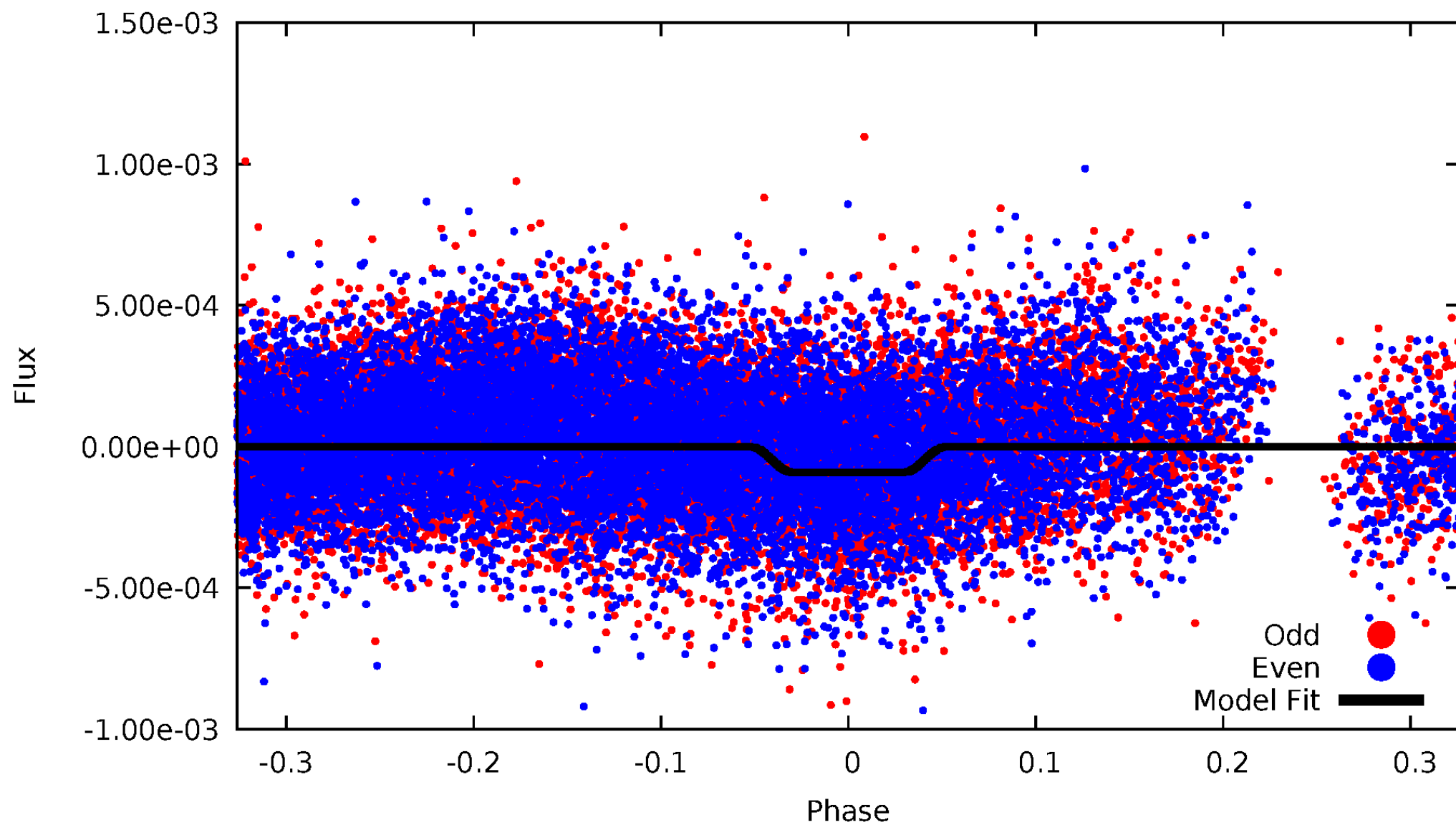
DV Odd/Even

TCE 004066898-02



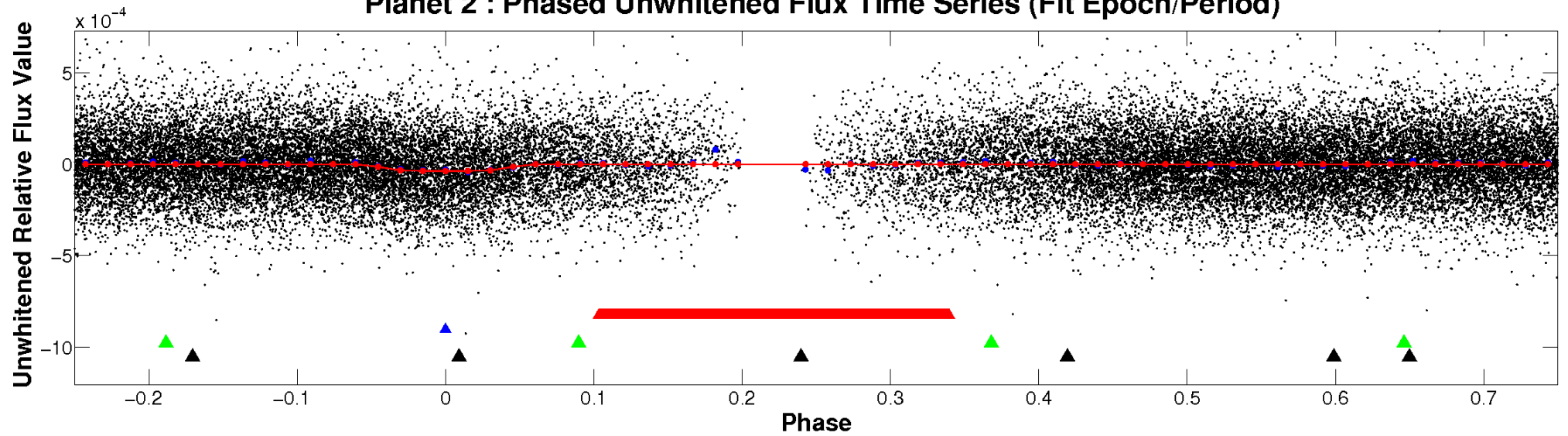
ALT Odd/Even

TCE 004066898-02

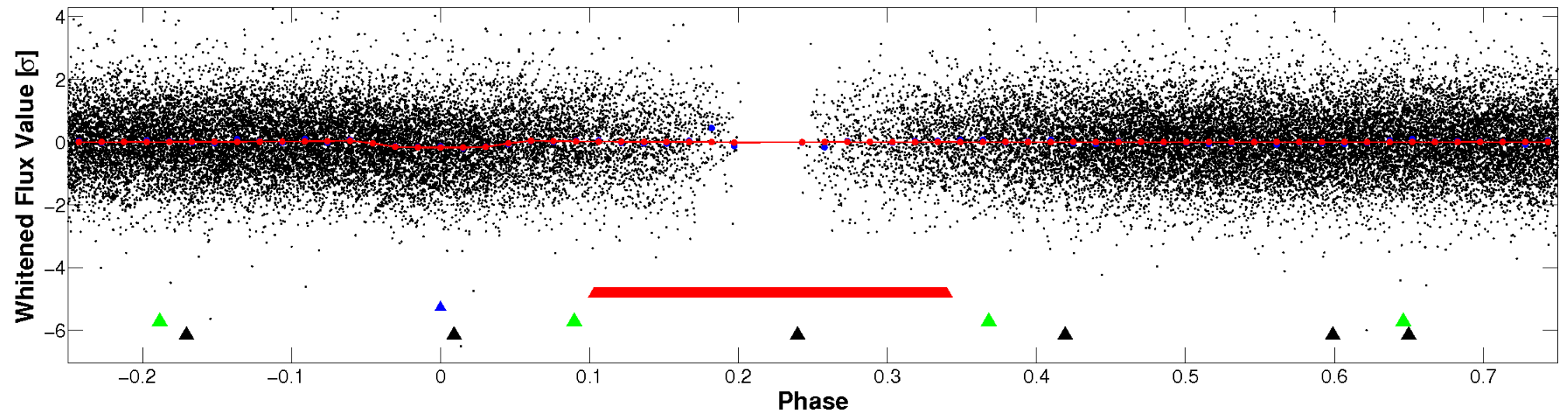


Non-Whitened Vs. Whitened Light Curve

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

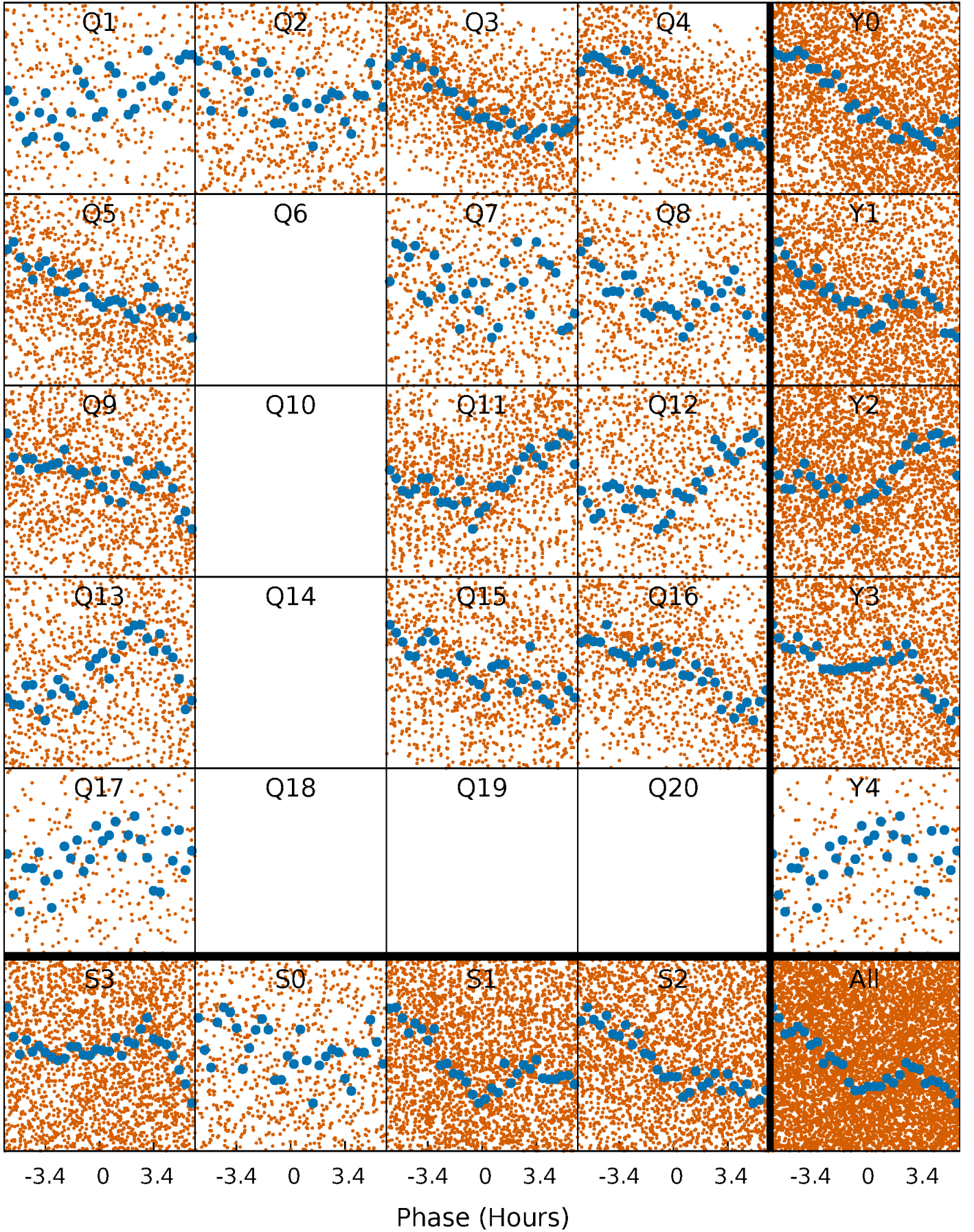


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



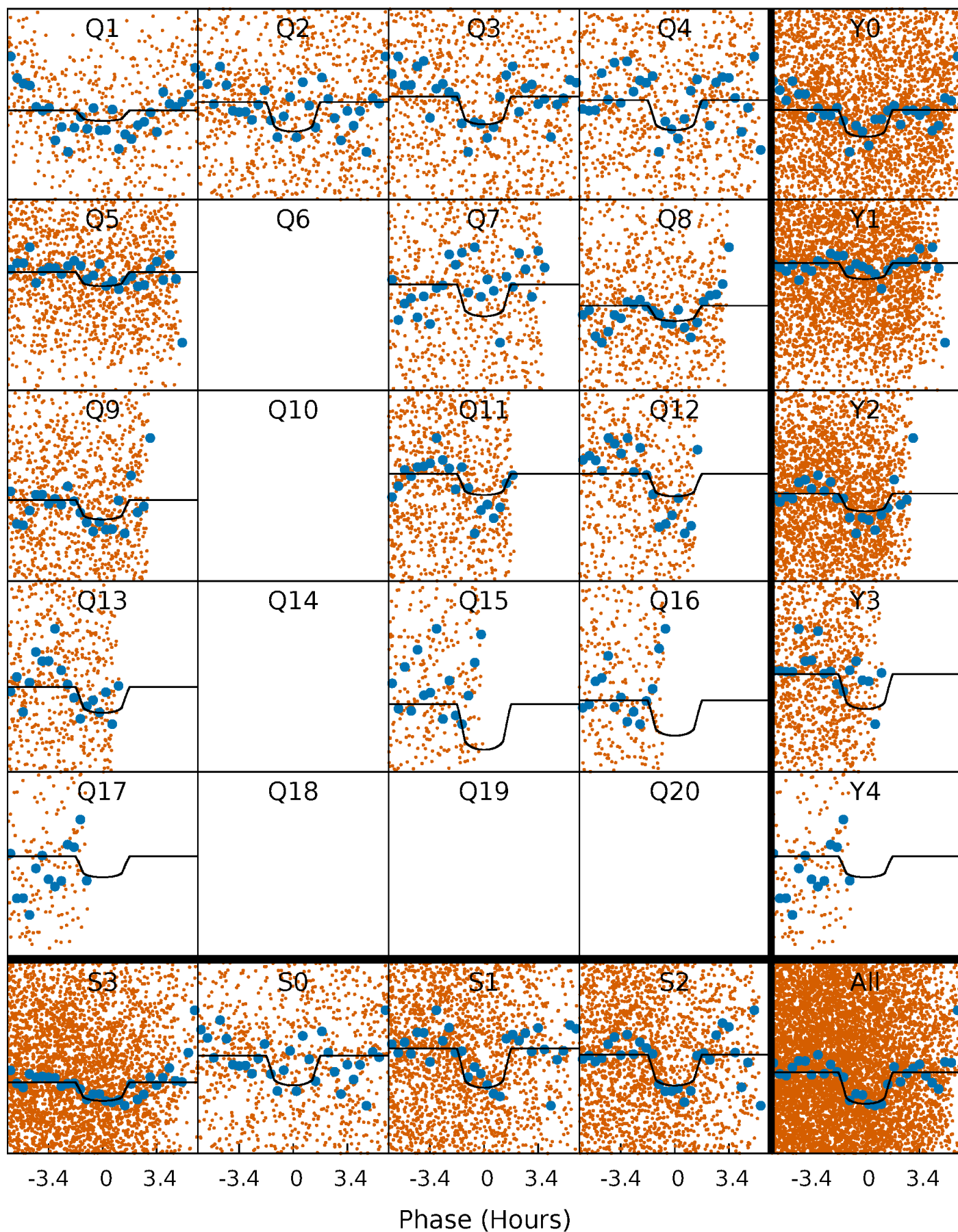
PDC Quarter-Phased Transit Curves

TCE 004066898-02 P= 1.347013 Days $T_0=132.617015$ (BKJD)



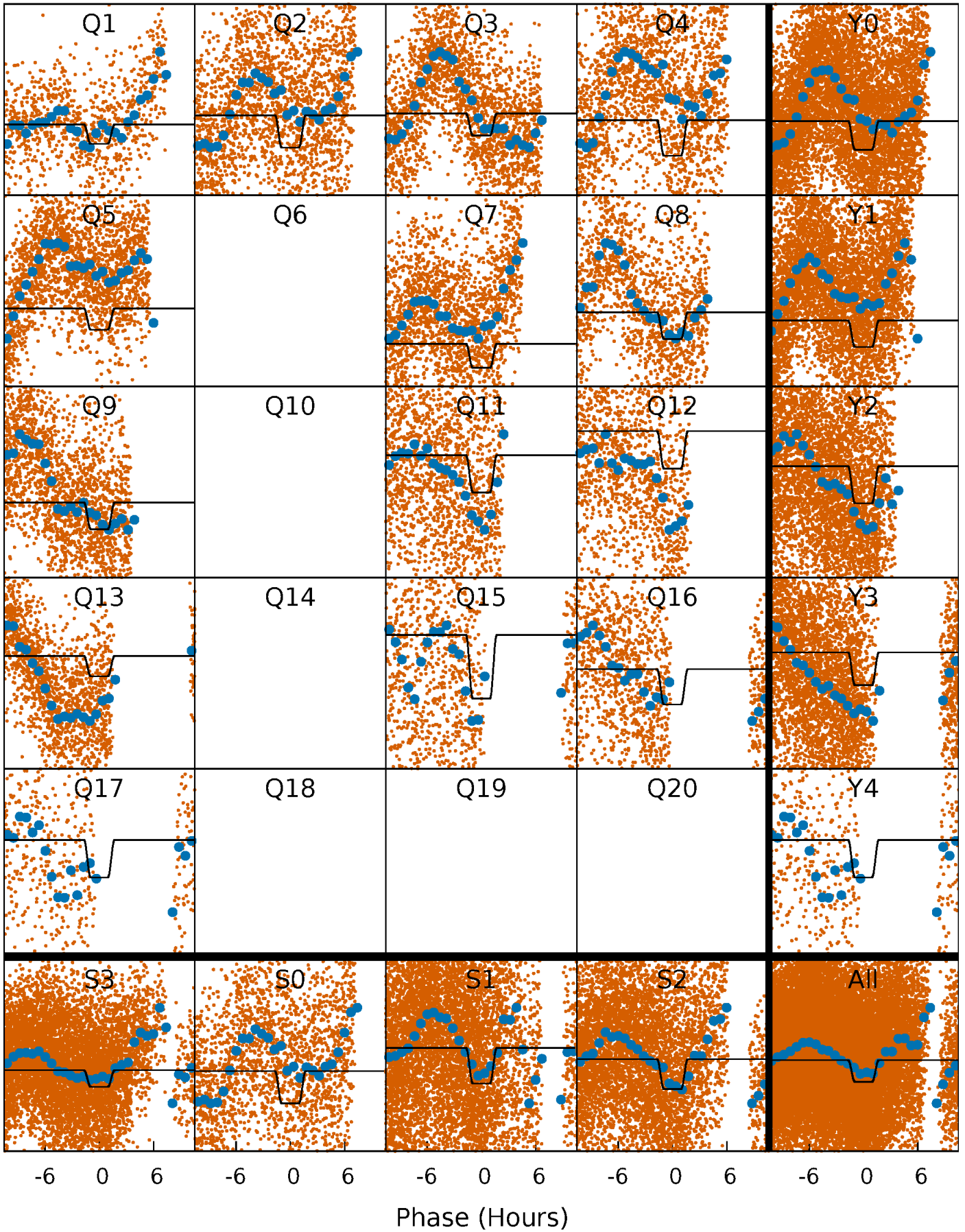
DV Quarter-Phased Transit Curves

TCE 004066898-02 P= 1.347013 Days $T_0=132.617015$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

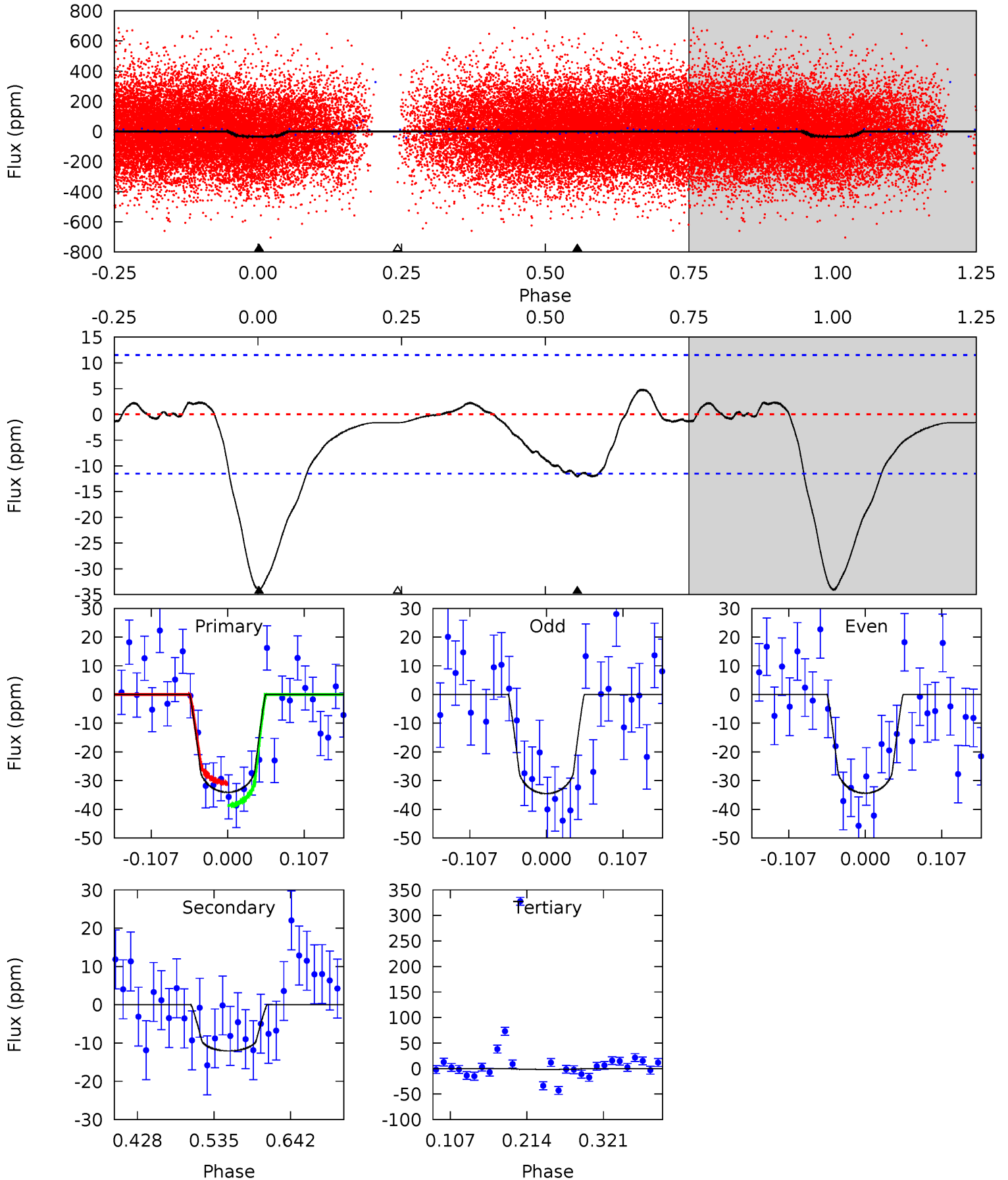
TCE 004066898-02 P= 1.347031 Days $T_0=132.579207$ (BKJD)



DV Model-Shift Uniqueness Test

004066898-02, P = 1.347013 Days, E = 131.270002 Days

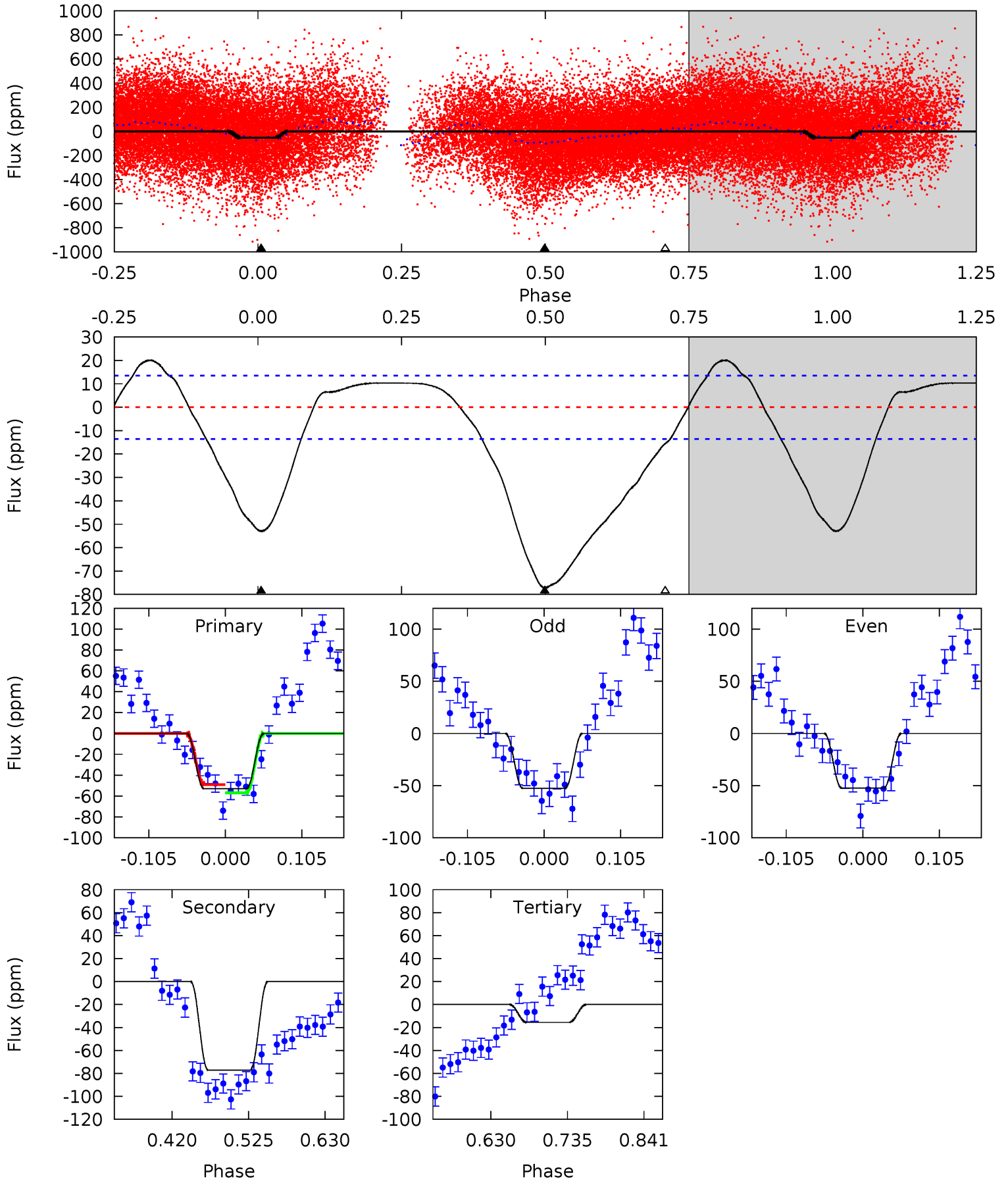
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	4.76	0.65	0	4.55	1.61	0.82	12.8	13.5	4.12	4.76	0.03	0.94	0.12	1.54



Alt Model-Shift Uniqueness Test

004066898-02, P = 1.347031 Days, E = 131.232176 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.8	26.0	5.23	0	4.55	1.62	6.66	12.6	17.8	20.7	26.0	0.04	1.11	0.21	1.24



Stellar Parameters For KIC 004066898

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	6515^{+77}_{-77}	$4.110^{+0.162}_{-0.108}$	$-0.080^{+0.150}_{-0.150}$	$1.669^{+0.311}_{-0.342}$	$1.314^{+0.109}_{-0.145}$	$0.398^{+0.309}_{-0.137}$
	+1%/-1%	+4%/-3%	+188%/-188%	+19%/-20%	+8%/-11%	+78%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004066898-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-12 ± 3	$1.17^{+0.41}_{-0.43}$	3200^{+140}_{-180}	4737^{+1232}_{-571}	$3.270^{+5.414}_{-1.566}$
Alt.	-77 ± 3	$1.73^{+0.44}_{-0.42}$	3195^{+163}_{-164}	6139^{+943}_{-571}	$9.649^{+7.274}_{-3.435}$

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 $A_{obs} \gg 1.0$

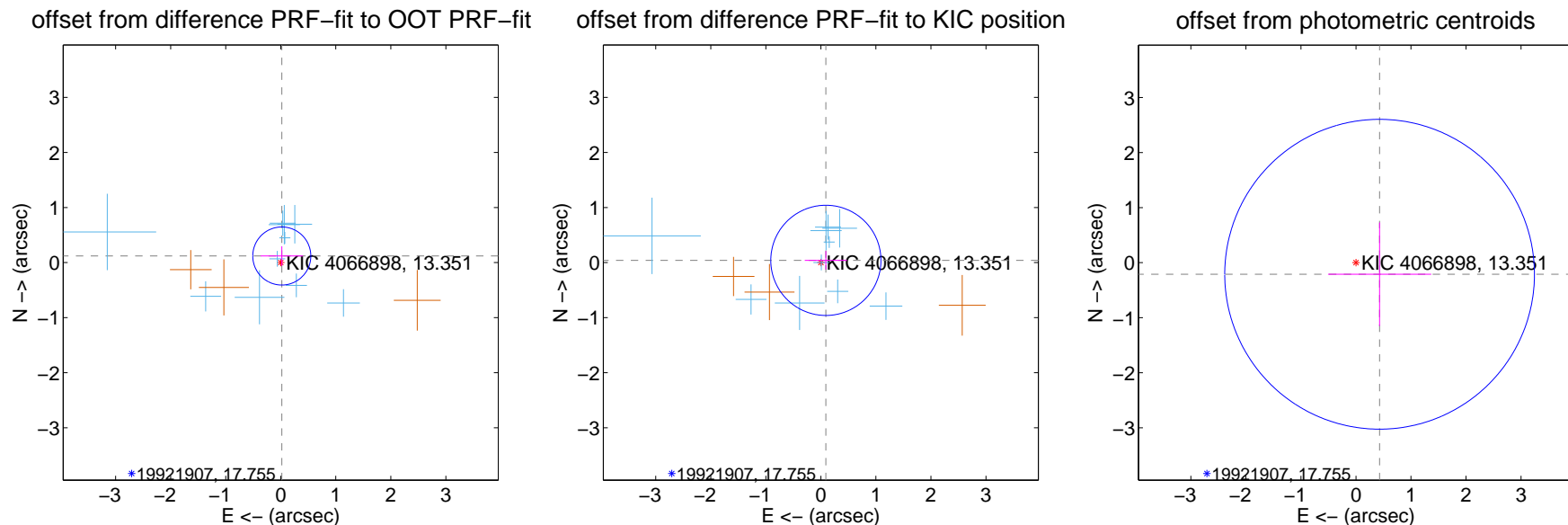
DV Centroid Data

Supplemental centroid analysis for 004066898-02. Kepler magnitude: 13.35. Transit SNR 9.65

There are 10 quarters with good PRF difference image offsets

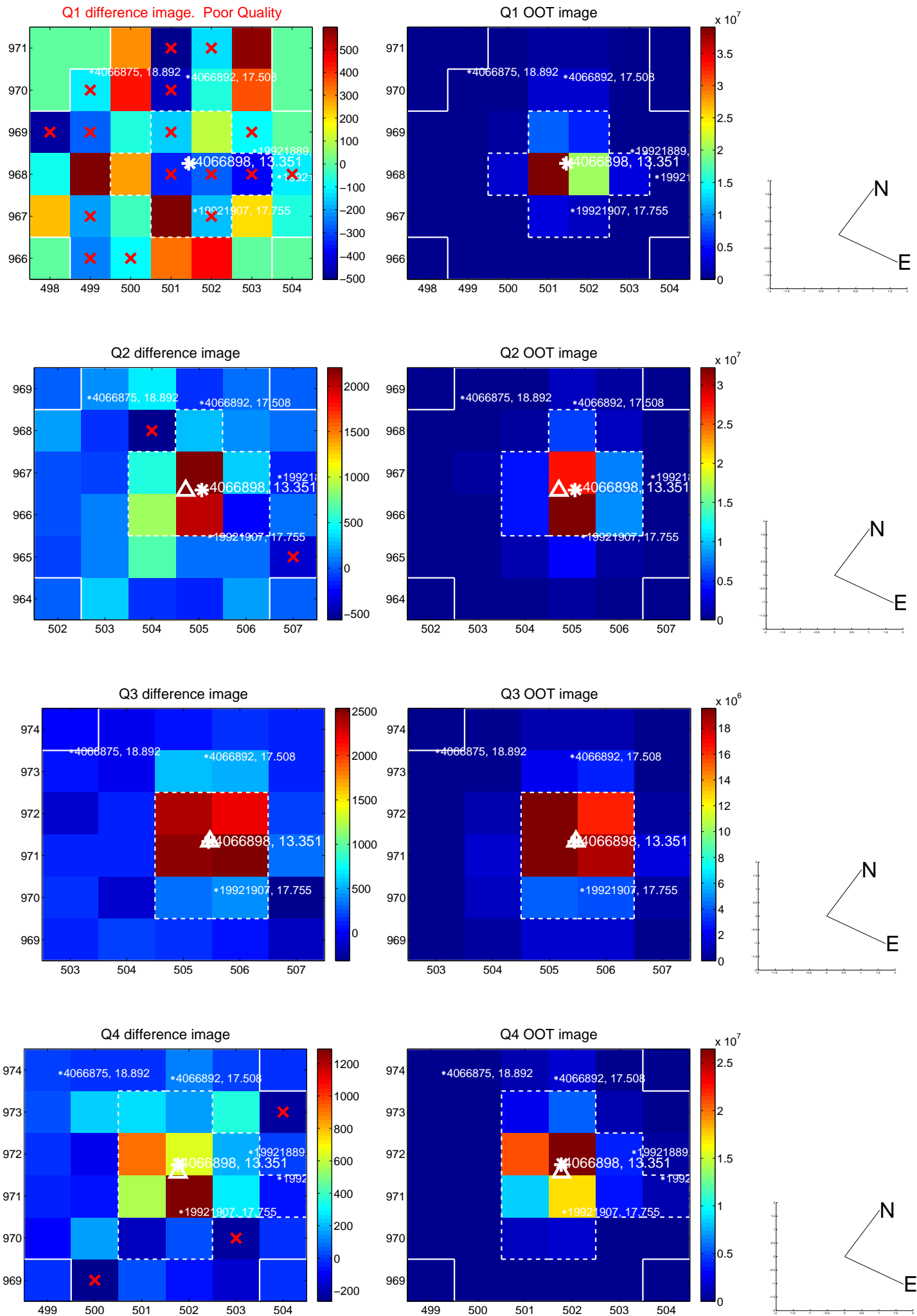
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.121 ± 0.176	0.69	-0.019 ± 0.384	0.120 ± 0.176
PRF-fit source offset from KIC position	0.100 ± 0.334	0.30	-0.091 ± 0.383	0.041 ± 0.169
photometric centroid source offset	0.48 ± 0.94	0.51	-0.43 ± 0.94	-0.21 ± 0.94

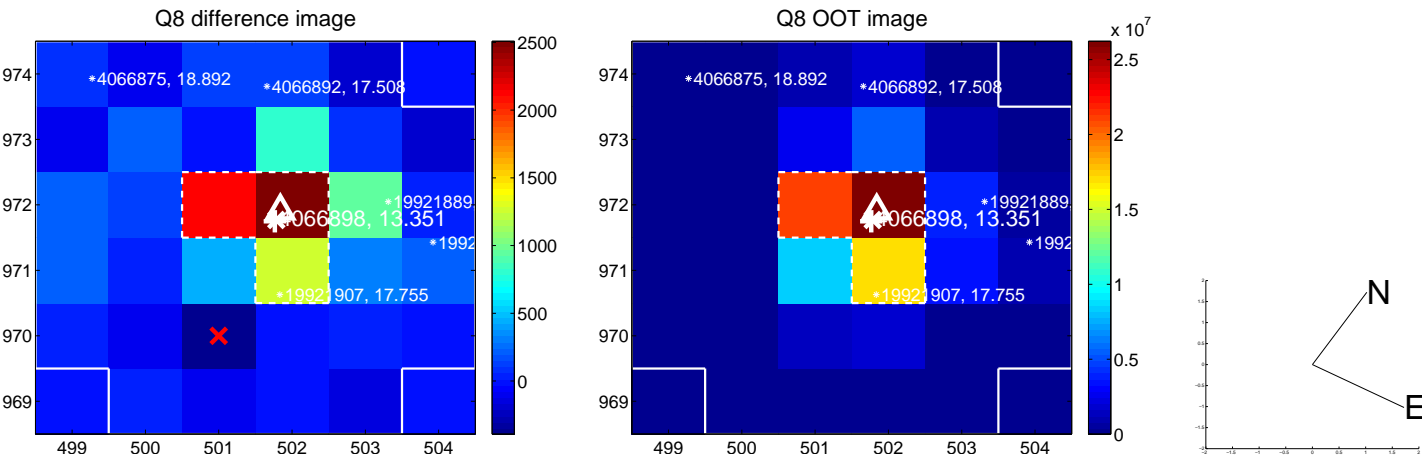
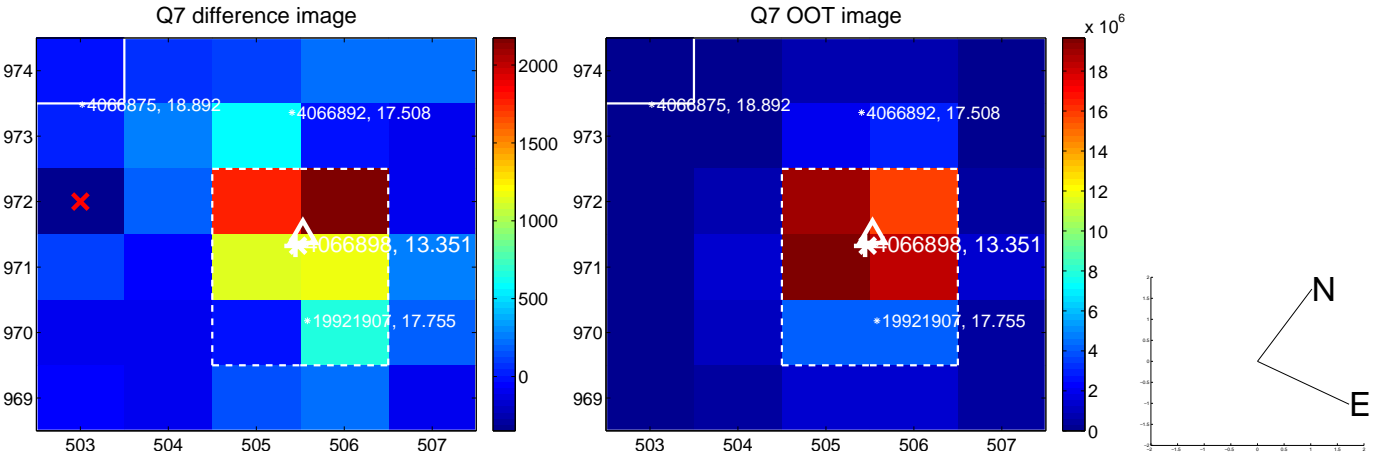
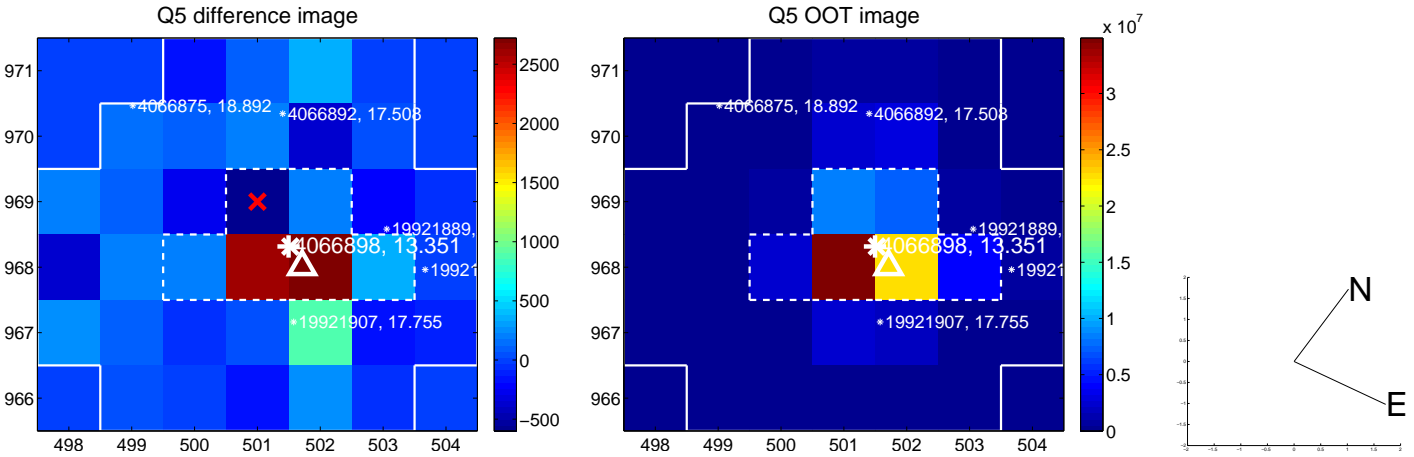


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

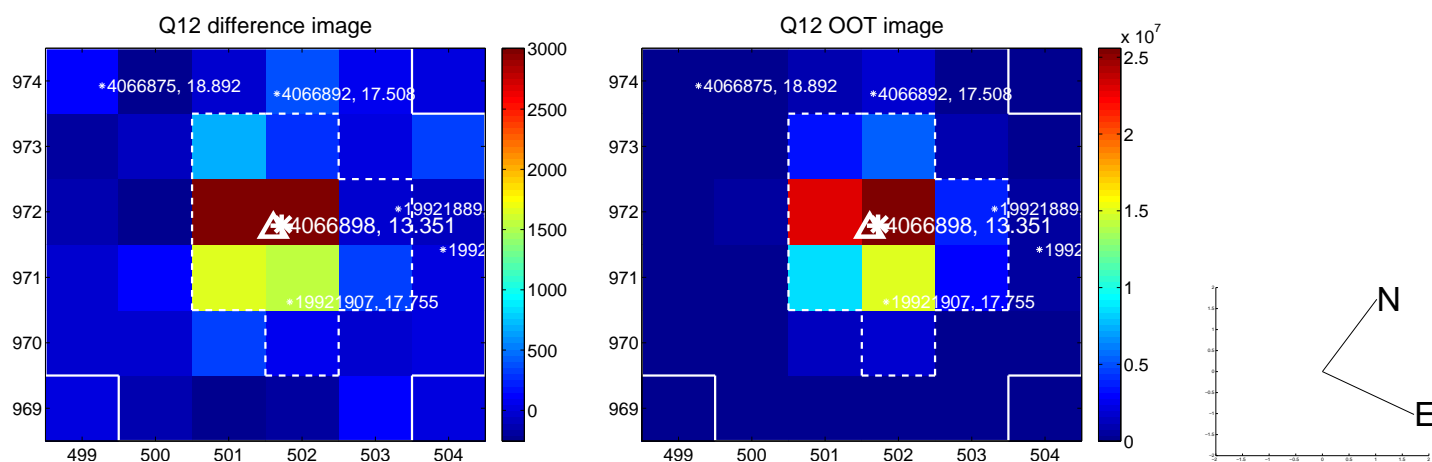
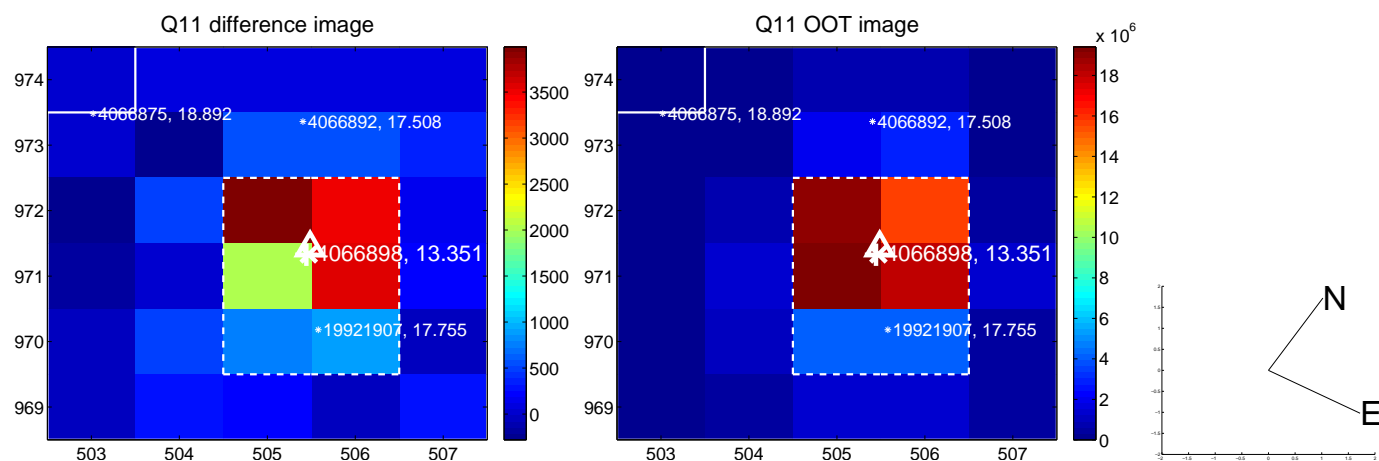
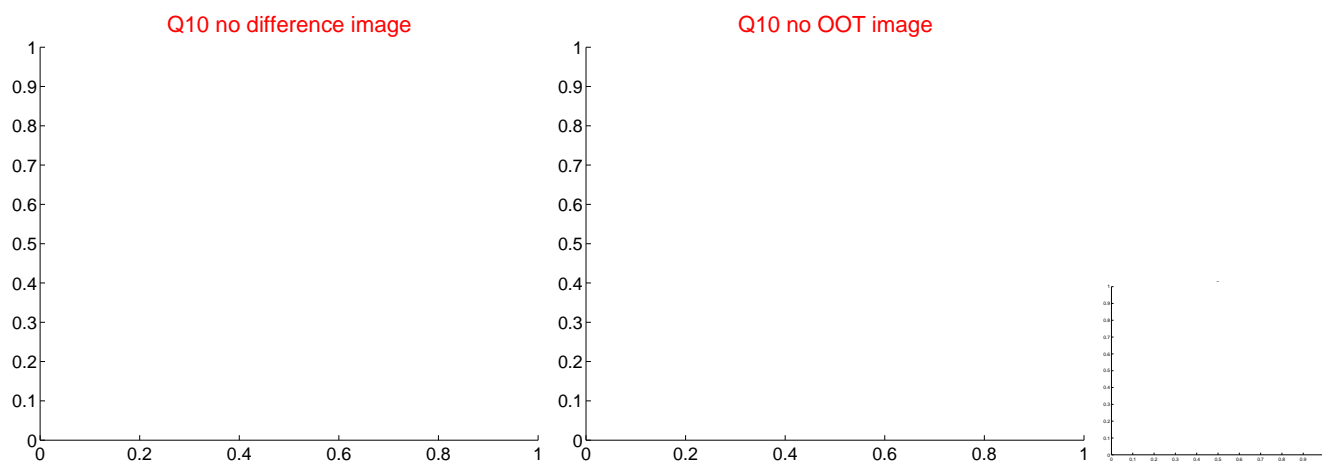
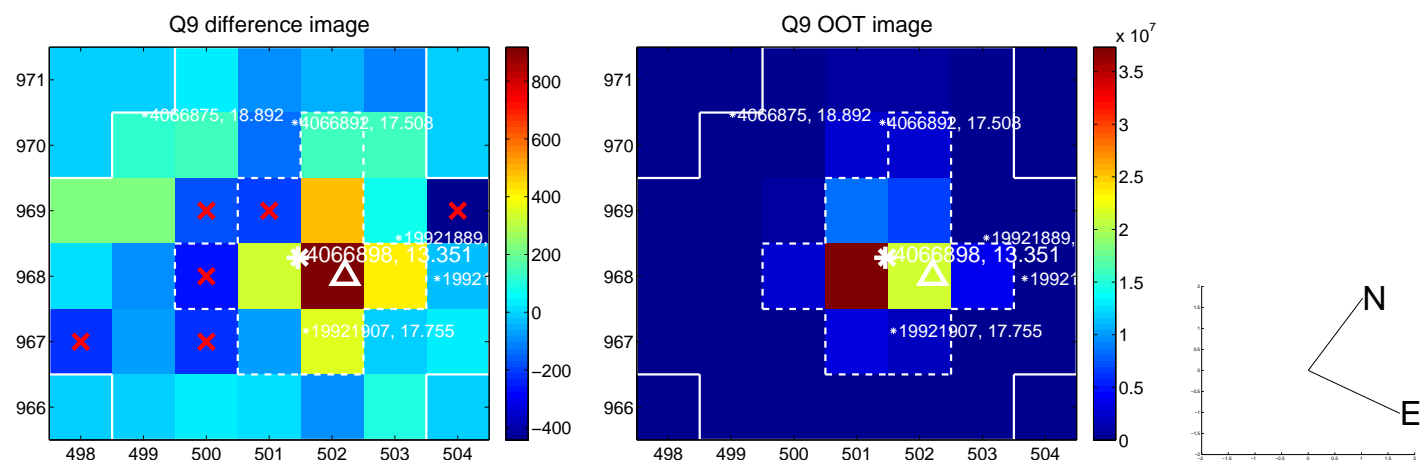
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



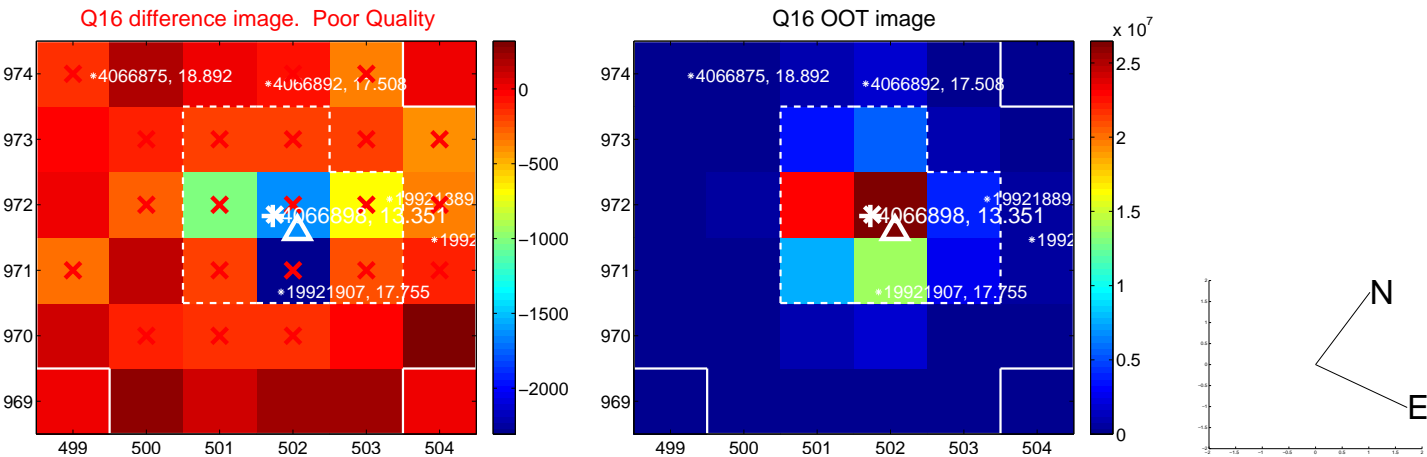
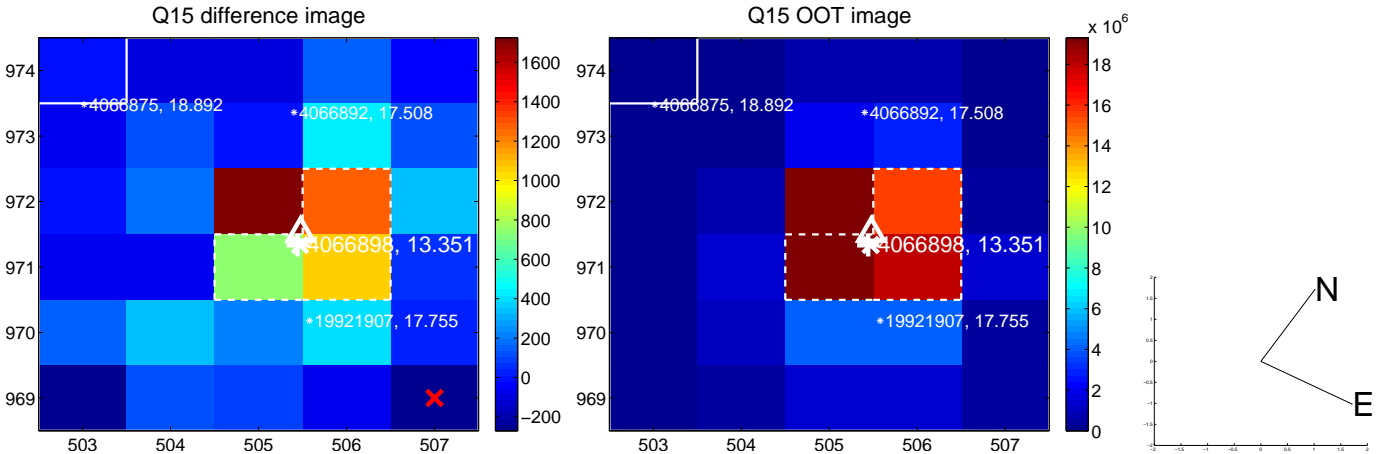
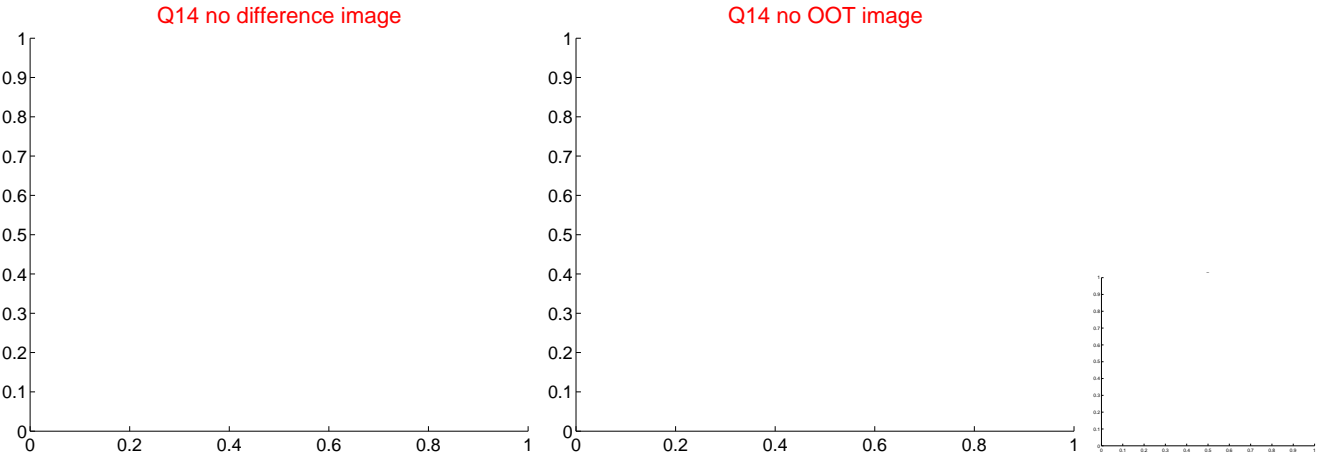
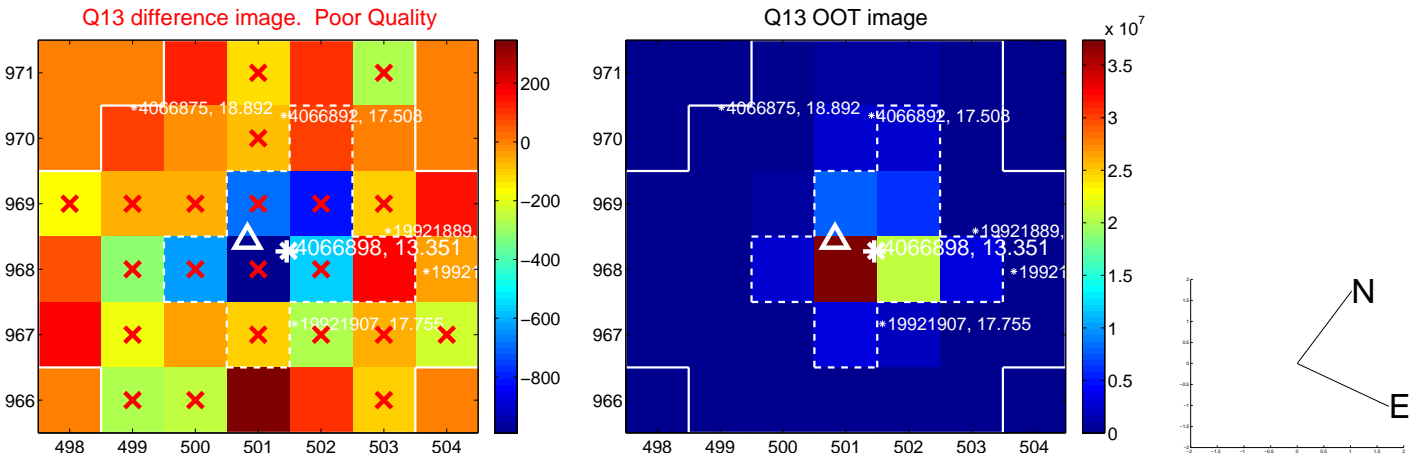
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



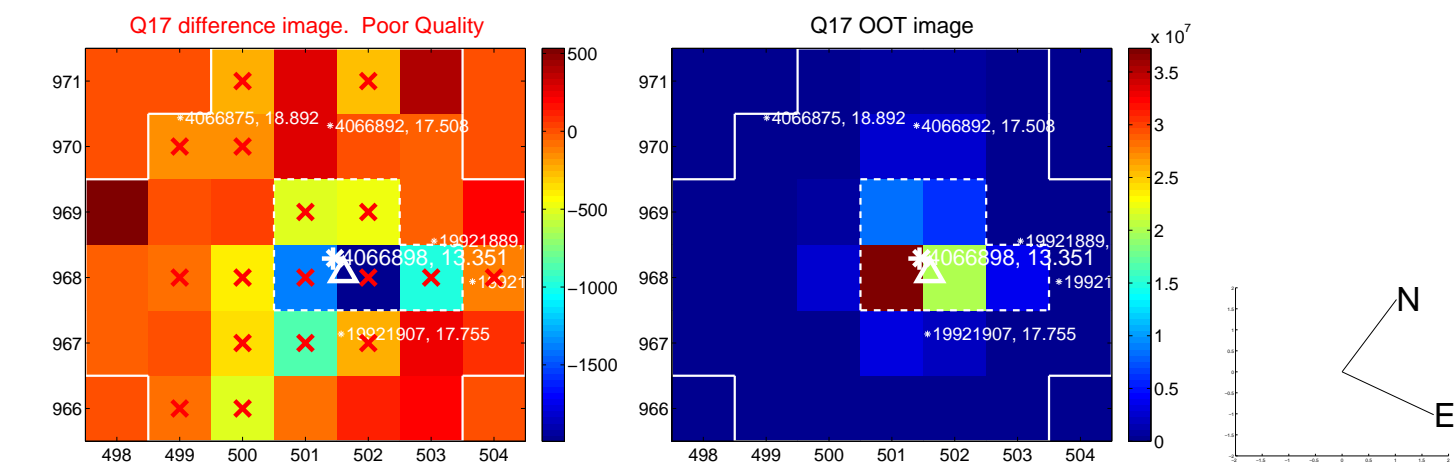
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



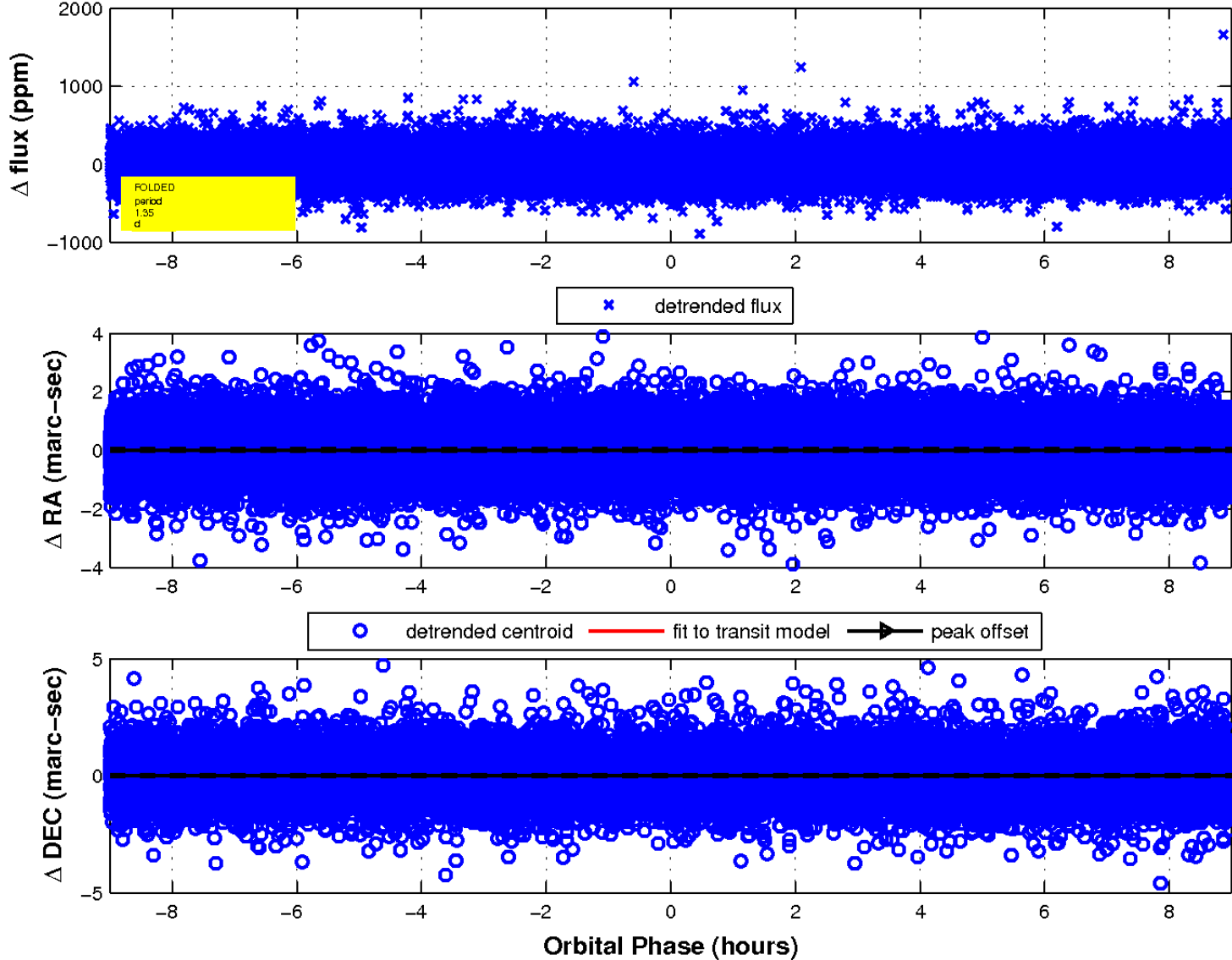
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

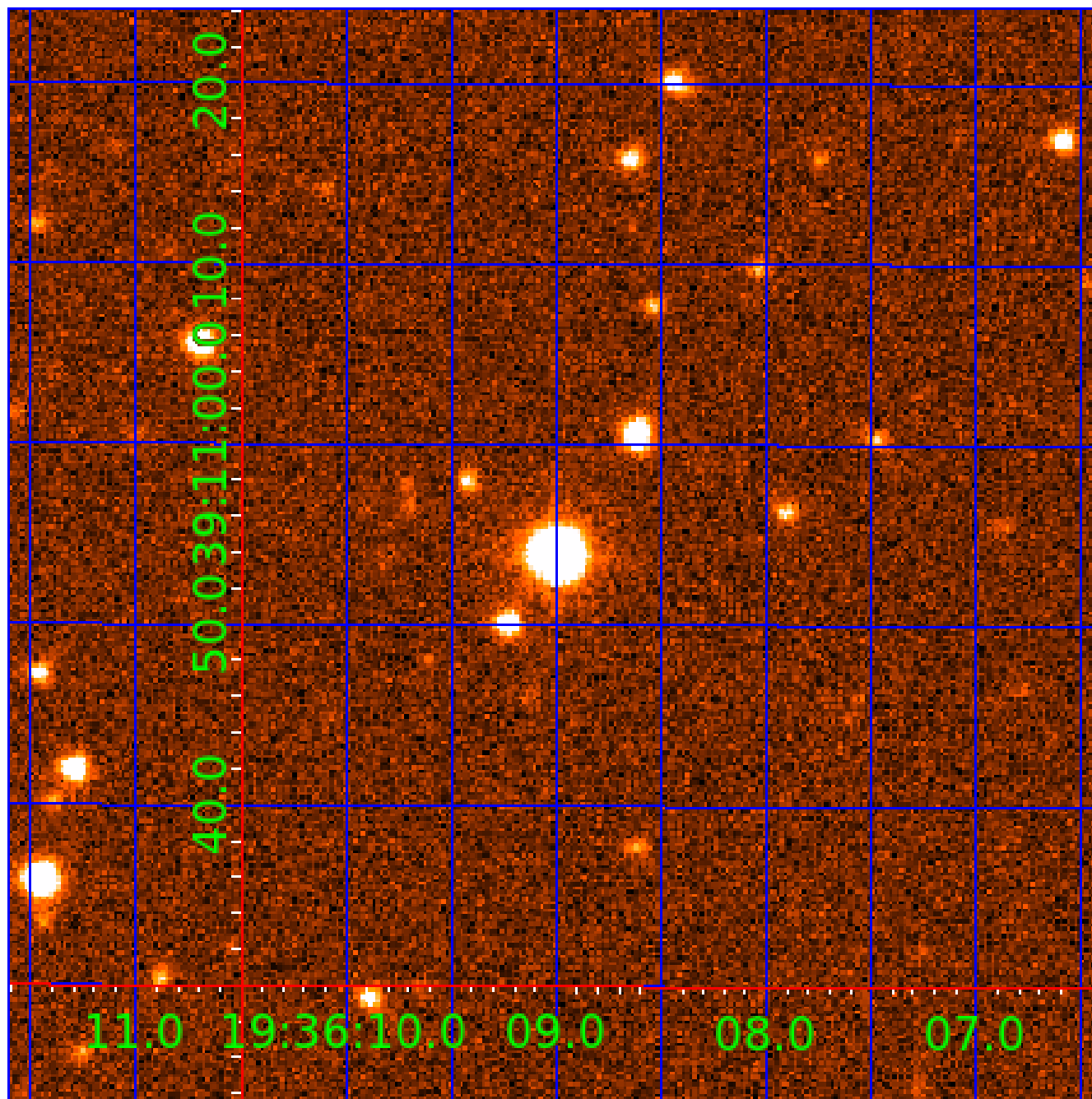


fluxWeightedCentroids, Planet 2 of 4



UKIRT Image

Declination



KIC 004066898

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})
004066898-01	OBS	No	1.346718	133.074626	21.8	2.794	7.8	5.7	1.67	6515	0.91	6594.08
004066898-02	OBS	No	1.347013	132.617015	37.5	3.000	8.4	9.7	1.67	6515	1.16	6592.15
004066898-03	OBS	No	450.874462	200.838223	377.1	17.189	8.1	7.6	1.67	6515	3.41	2.84
004066898-04	OBS	No	283.667150	137.533488	321.7	7.668	7.6	6.7	1.67	6515	3.30	5.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004066898-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—HALO_GHOST
004066898-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
004066898-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004066898-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT

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

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

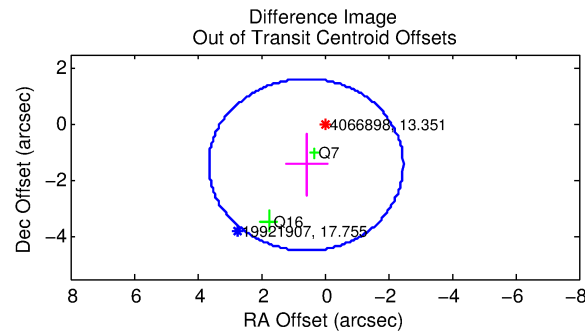
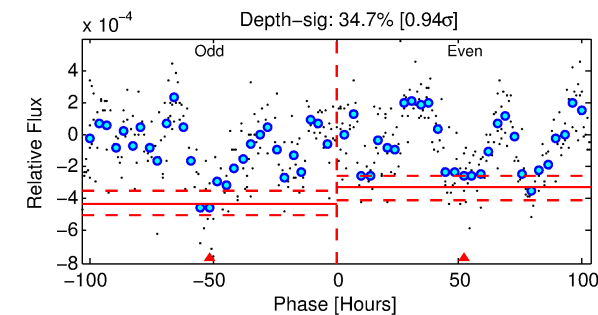
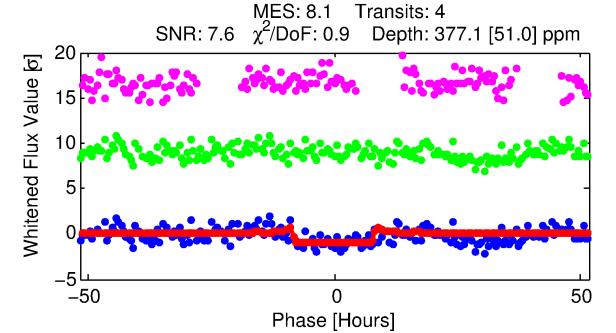
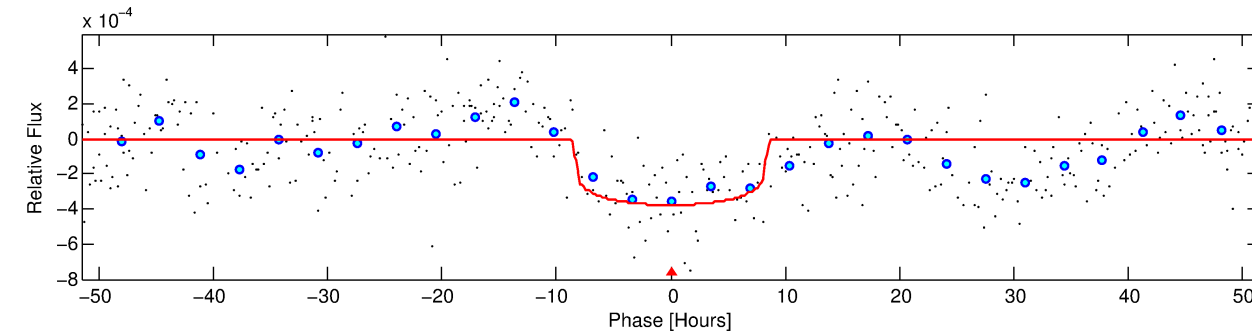
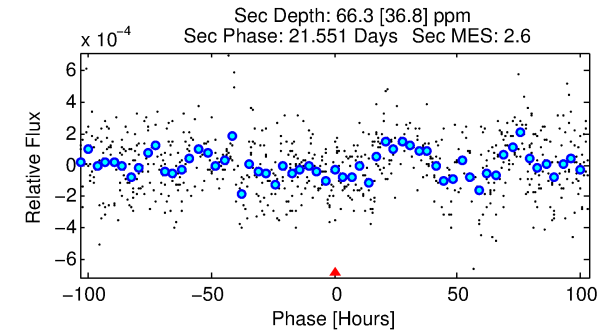
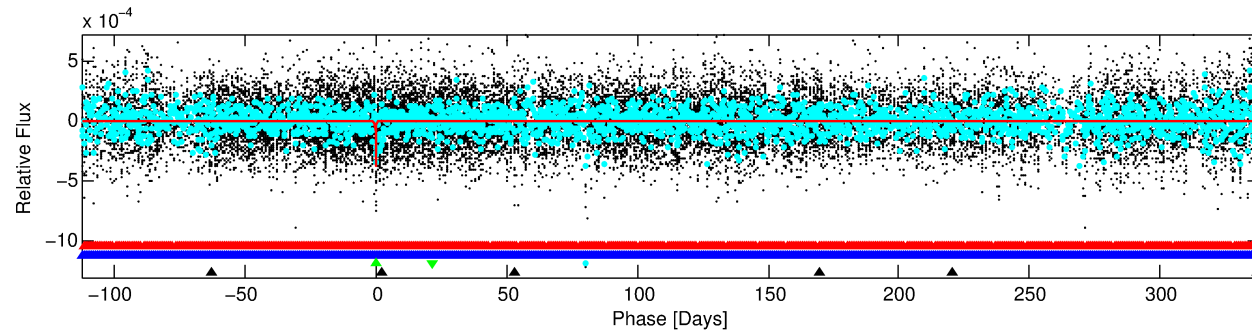
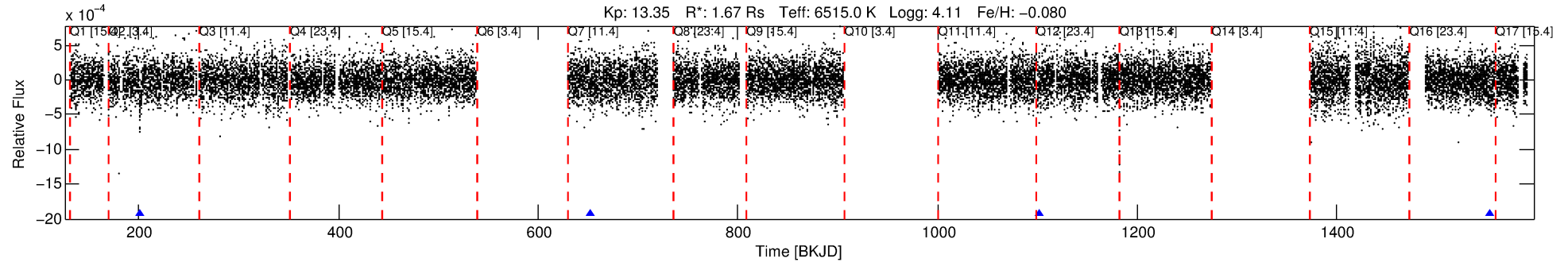
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004066898-03

No Significant Match Found

DV One-Page Summary

KIC: 4066898 Candidate: 3 of 4 Period: 450.874 d



DV Fit Results:

Period = 450.87446 [0.01631] d
Epoch = 200.8382 [0.0353] BKJD
Rp/R* = 0.0187 [0.0052]
a/R* = 160.47 [230.12]
b = 0.63 [1.36]
Seff = 2.84 [0.82]
Teq = 331 [24] K
Rp = 3.41 [1.17] Re
a = 1.2590 [0.2326] AU
Ag = 4959.39 [4129.85] [1.20σ]
Teffp = 4294 [842] K [4.70σ]

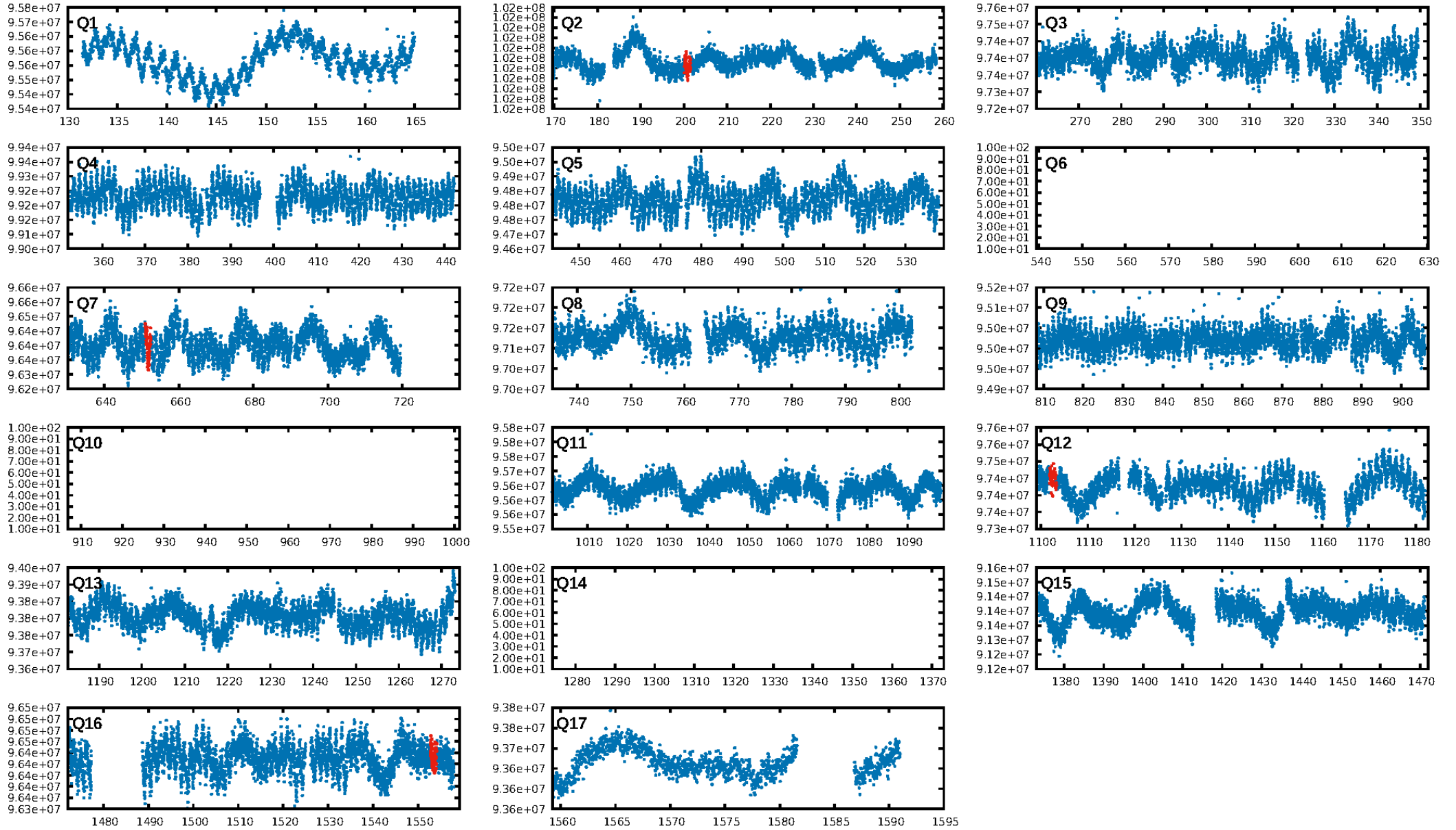
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [213.21σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 55.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.63e-14
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -75.85
Centroid-sig: 5.4%
Centroid-so: 0.760 arcsec [1.16σ]
OotOffset-rm: 1.547 arcsec [1.52σ]
KicOffset-rm: 1.597 arcsec [1.53σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/3]

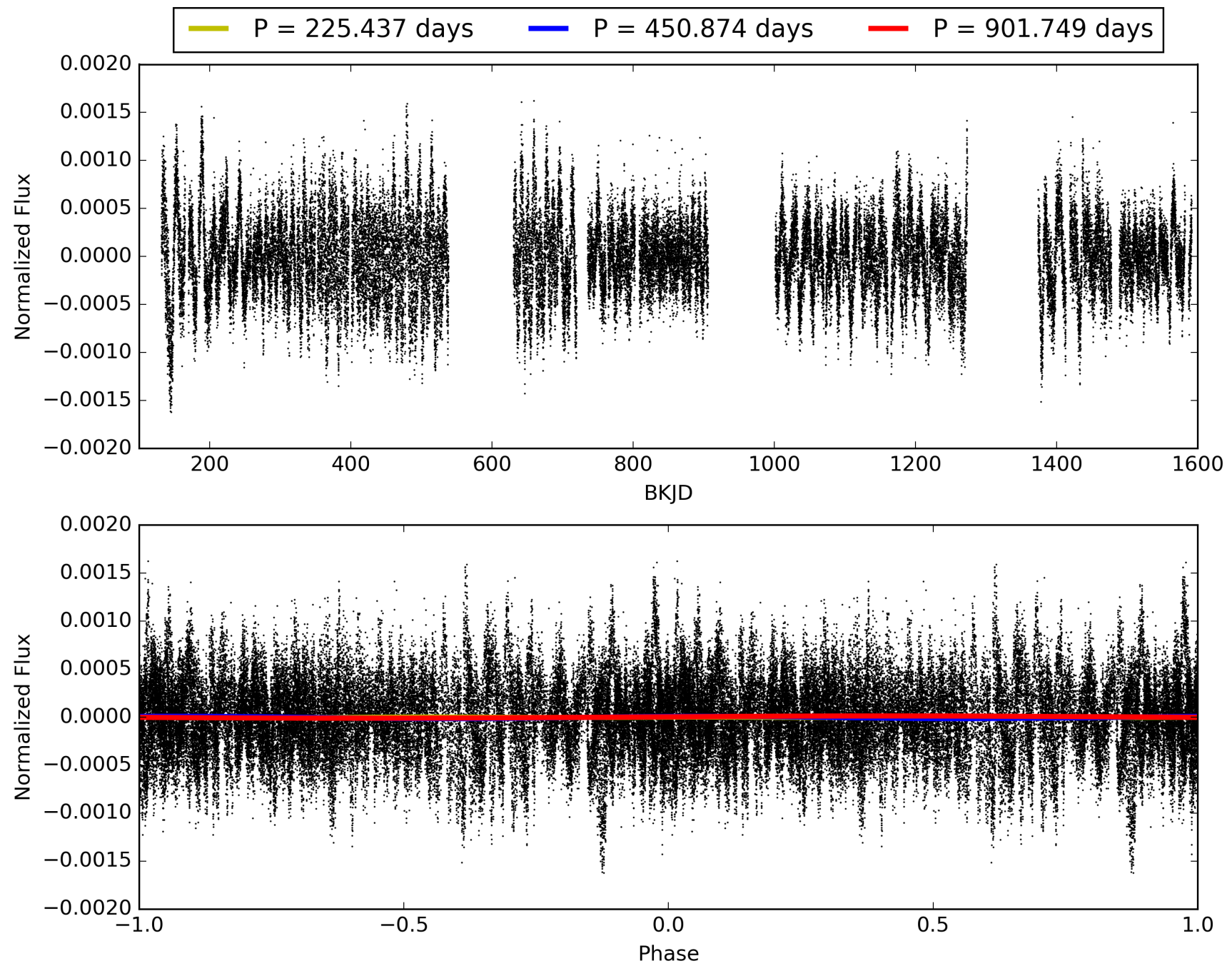
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:58:19 Z

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

TCE 004066898-03, PDC Light Curves

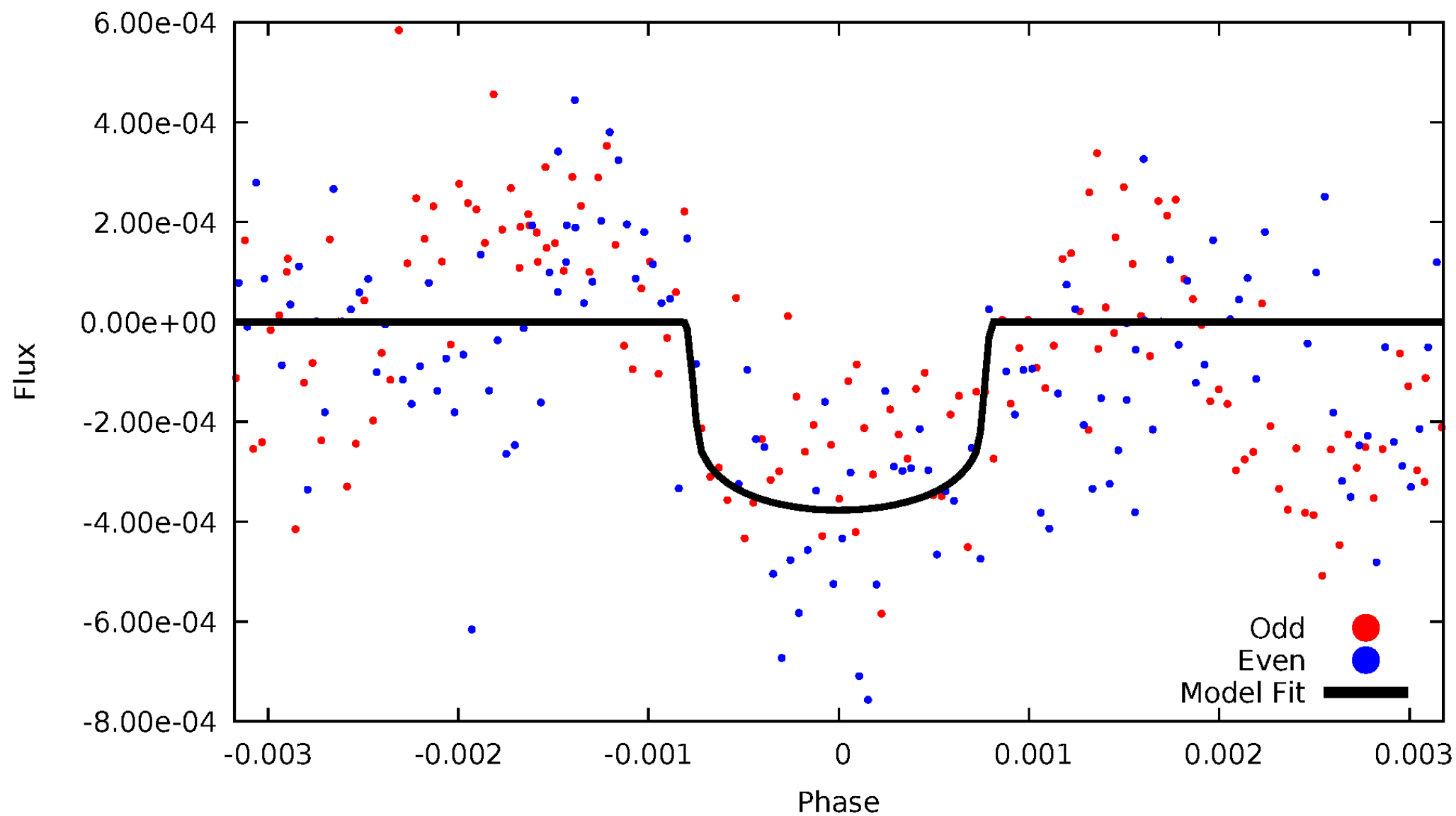


TCE 004066898-03



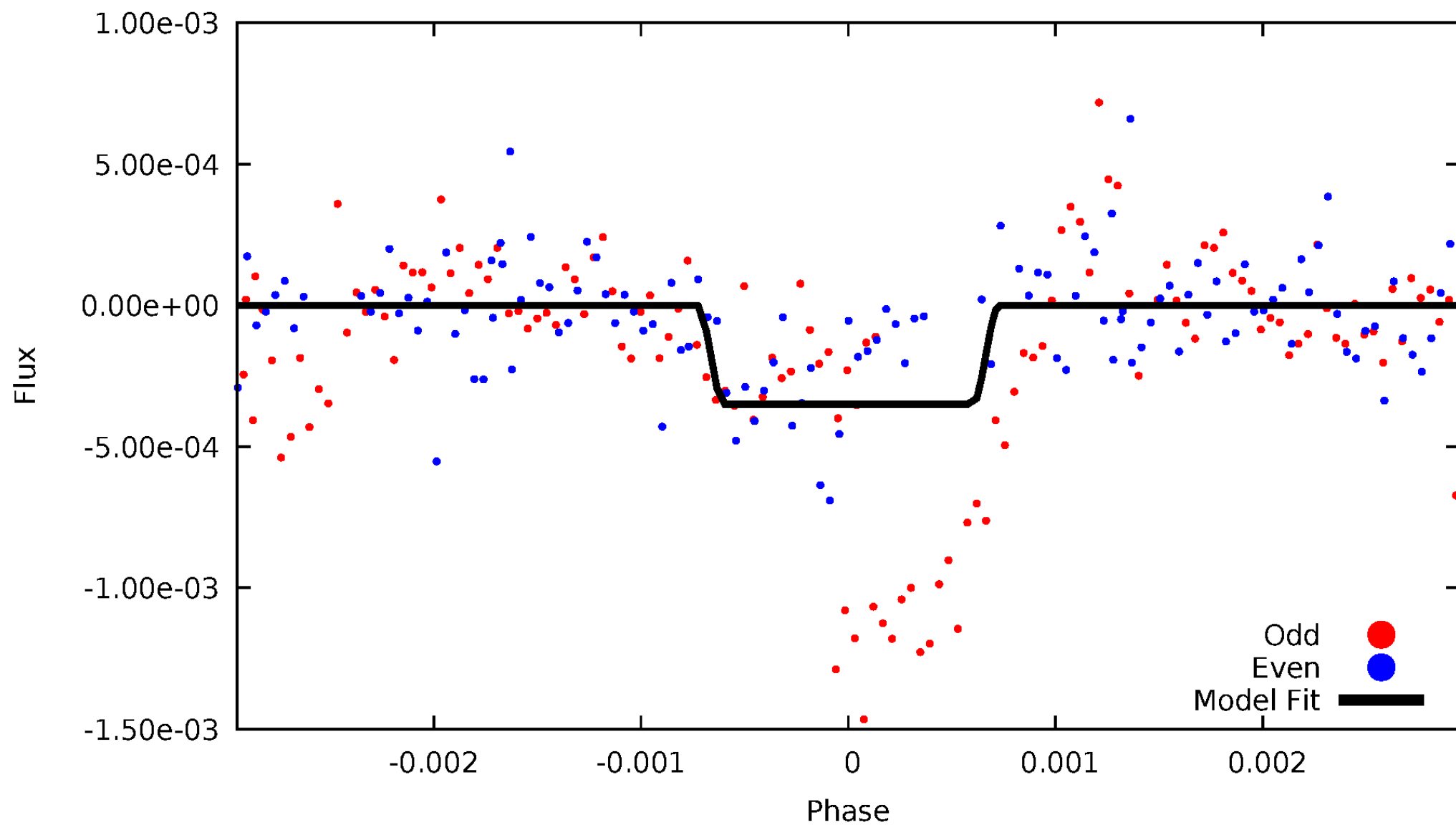
DV Odd/Even

TCE 004066898-03



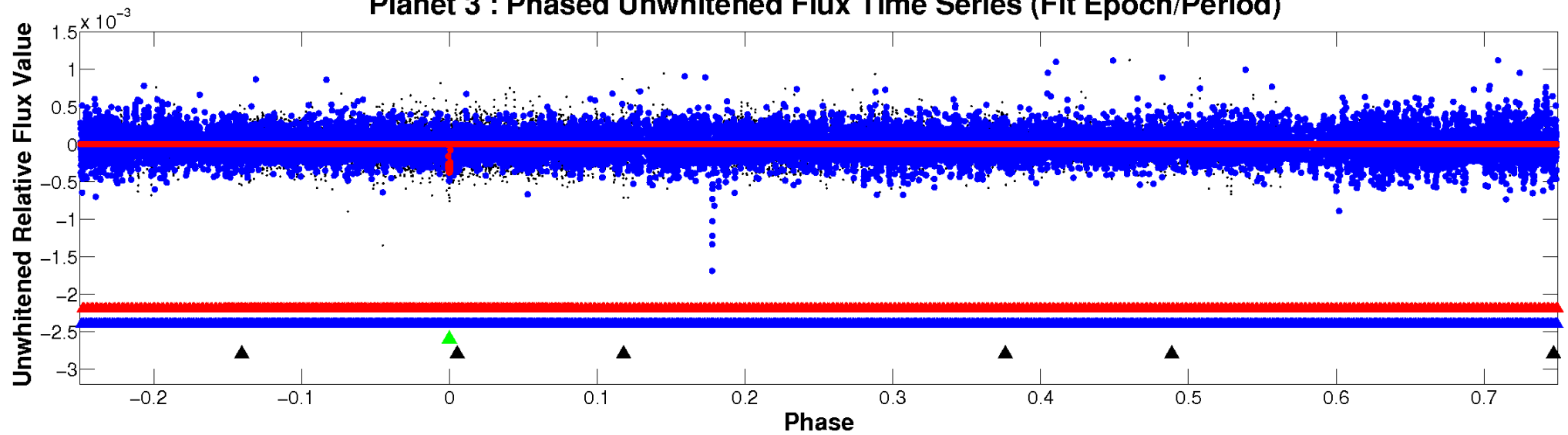
ALT Odd/Even

TCE 004066898-03

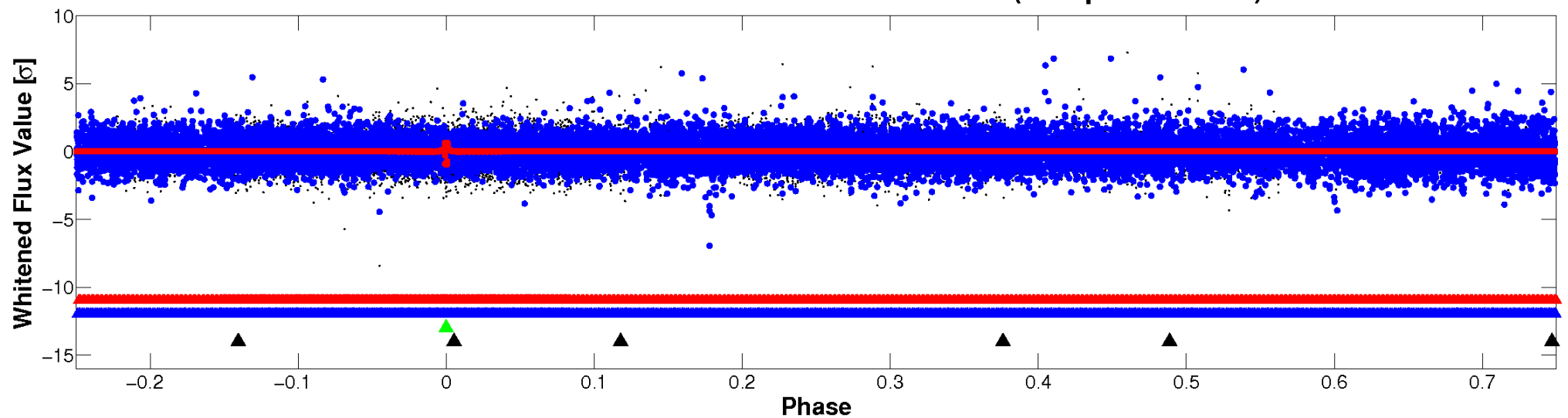


Non-Whitened Vs. Whitened Light Curve

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

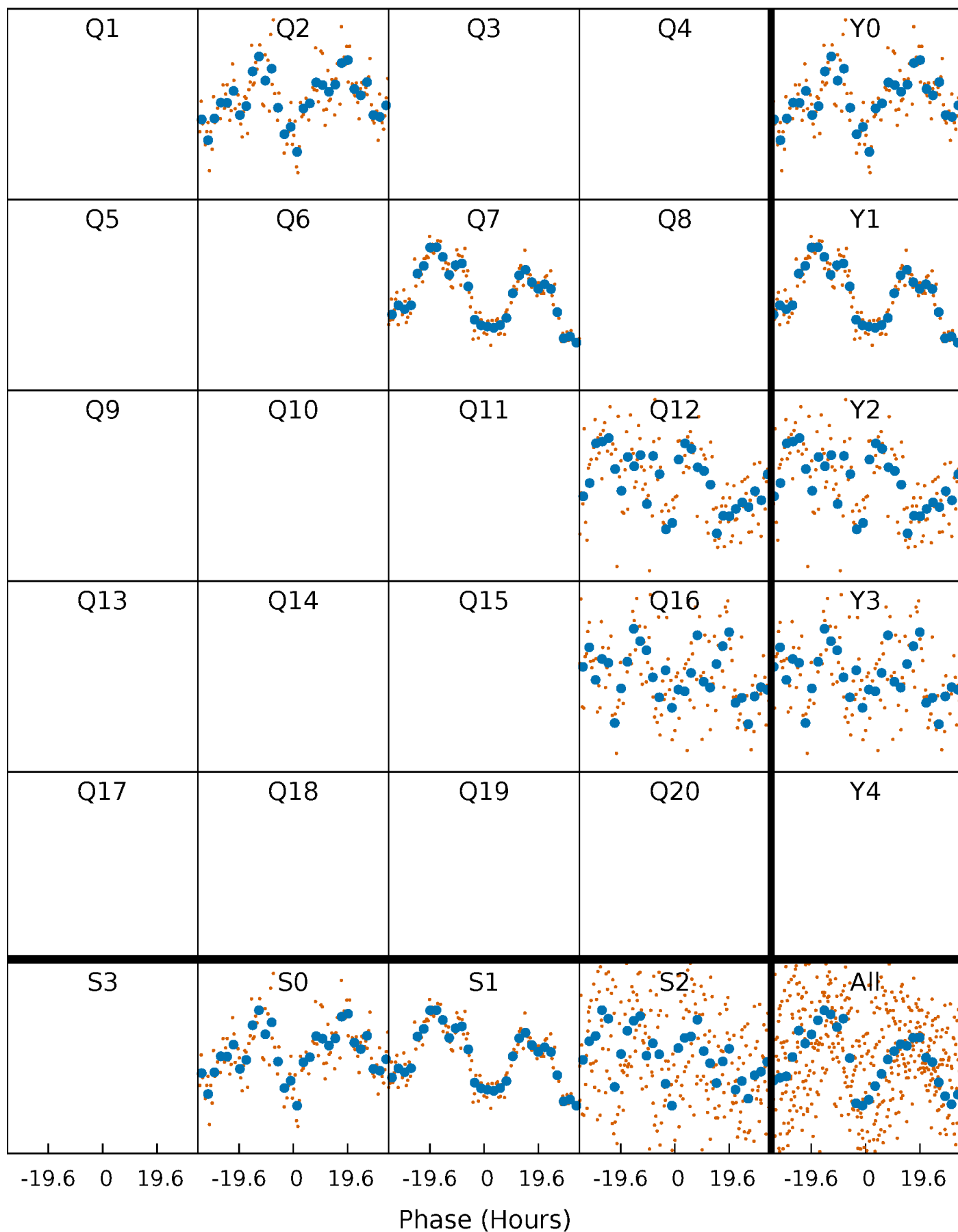


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



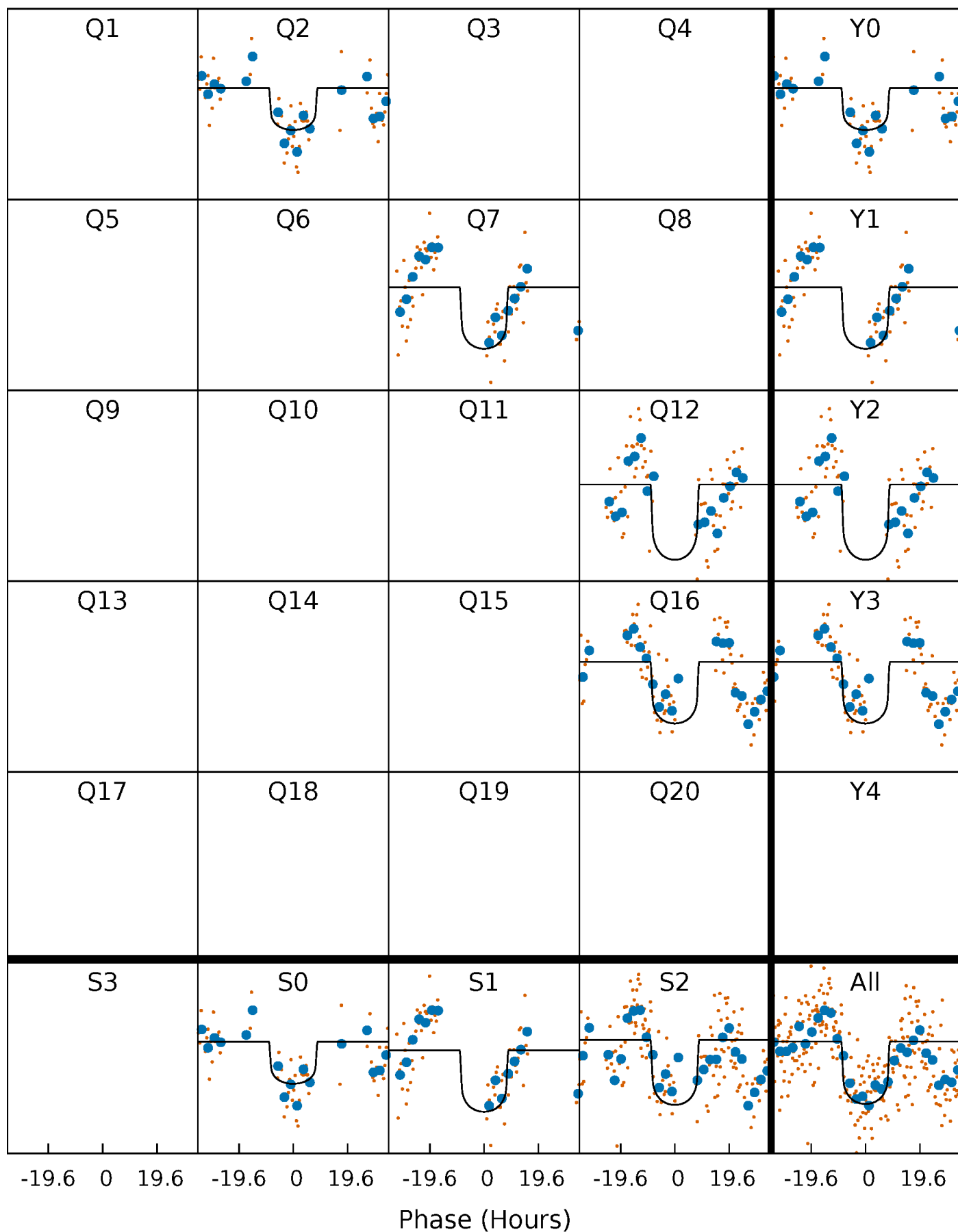
PDC Quarter-Phased Transit Curves

TCE 004066898-03 $P=450.874462$ Days $T_0=200.838223$ (BKJD)



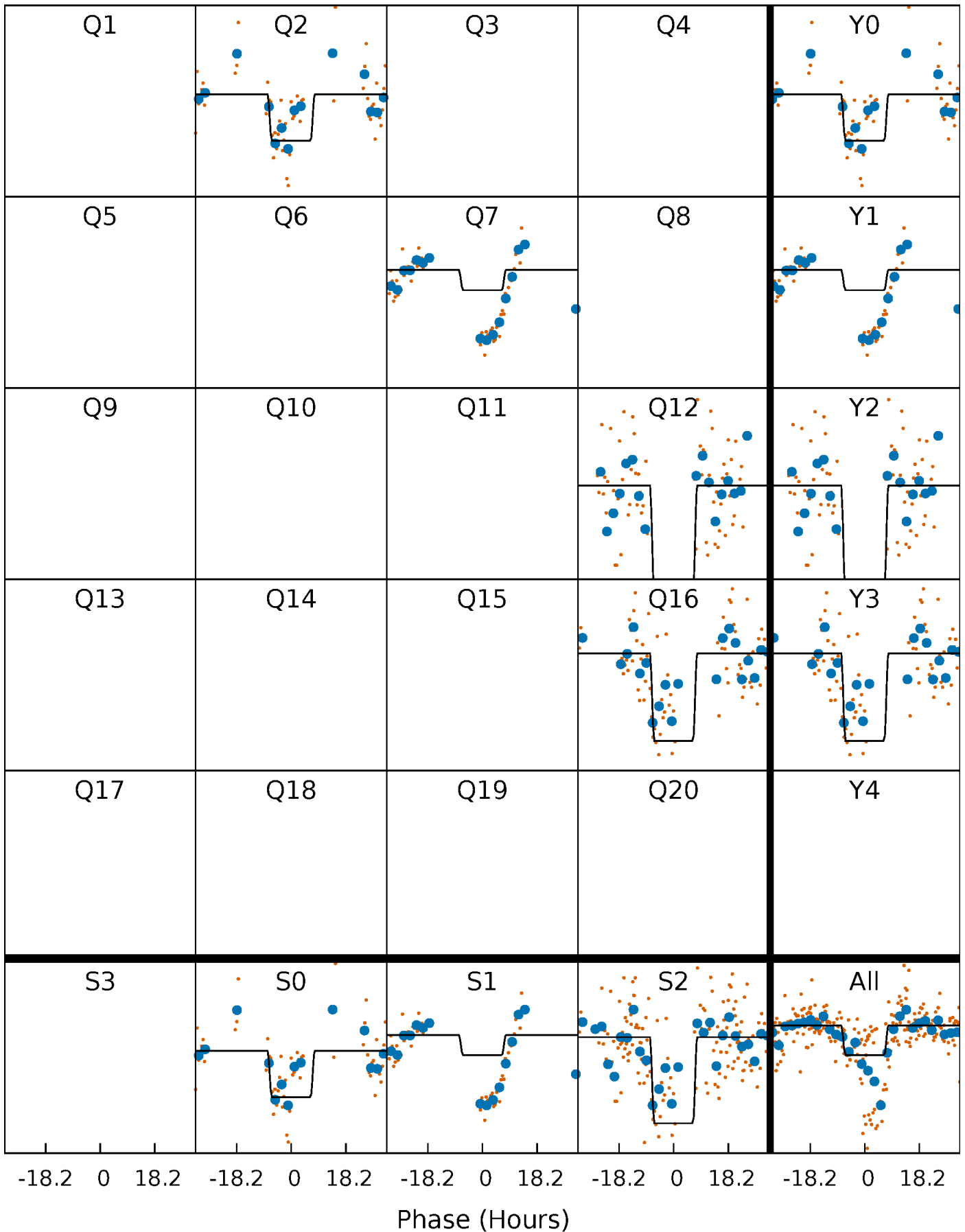
DV Quarter-Phased Transit Curves

TCE 004066898-03 $P=450.874462$ Days $T_0=200.838223$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

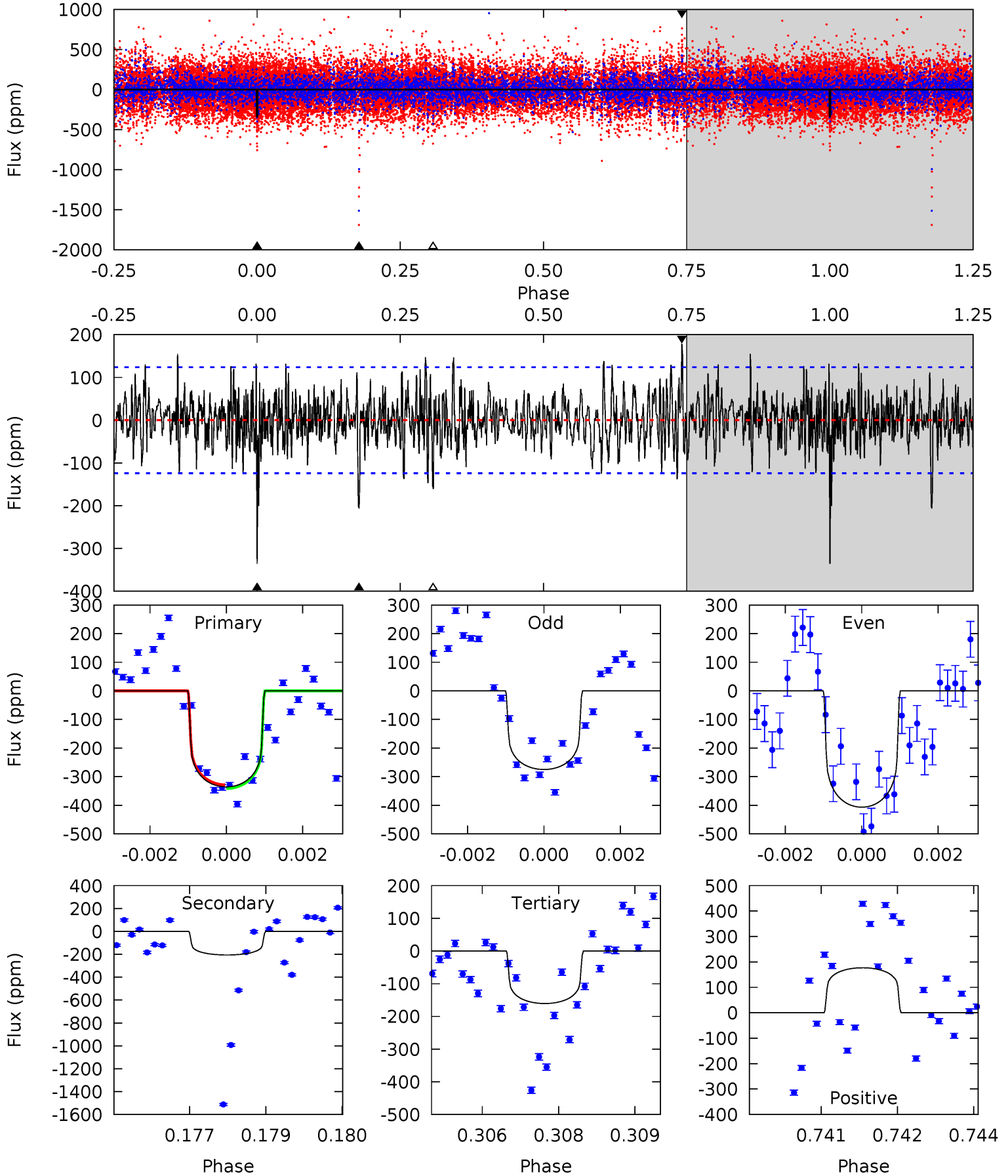
TCE 004066898-03 $P=450.832445$ Days $T_0=200.947496$ (BKJD)



DV Model-Shift Uniqueness Test

004066898-03, P = 450.874462 Days, E = 200.838223 Days

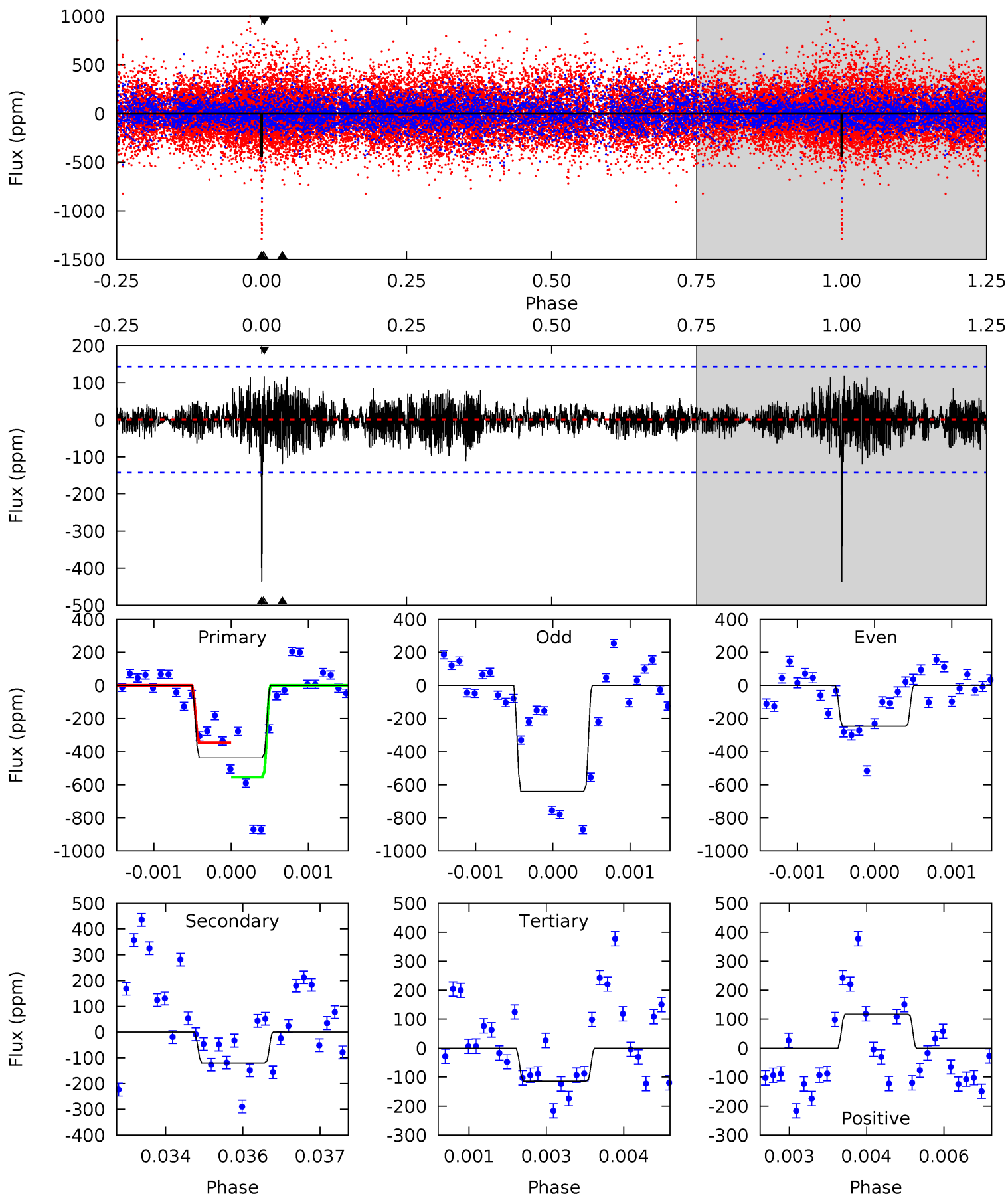
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	8.93	6.95	7.66	5.37	3.15	2.05	7.58	6.88	1.97	1.27	2.85	0.99	0.35	0.27



Alt Model-Shift Uniqueness Test

004066898-03, P = 450.832445 Days, E = 200.947496 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.5	4.51	4.30	4.44	5.39	3.19	1.21	12.2	12.1	0.21	0.07	7.57	1.71	0.21	3.89



Stellar Parameters For KIC 004066898

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6515^{+77}_{-77}	$4.110^{+0.162}_{-0.108}$	$-0.080^{+0.150}_{-0.150}$	$1.669^{+0.311}_{-0.342}$	$1.314^{+0.109}_{-0.145}$	$0.398^{+0.309}_{-0.137}$
	+1%/-1%	+4%/-3%	+188%/-188%	+19%/-20%	+8%/-11%	+78%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004066898-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-206 ± 23	$3.33^{+1.13}_{-0.97}$	460^{+22}_{-24}	5702^{+1090}_{-628}	16092^{+16341}_{-7002}
Alt.	-119 ± 27	$3.39^{+1.06}_{-0.94}$	461^{+23}_{-26}	4992^{+762}_{-498}	8965^{+8218}_{-4085}

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 $A_{obs} \gg 1.0$

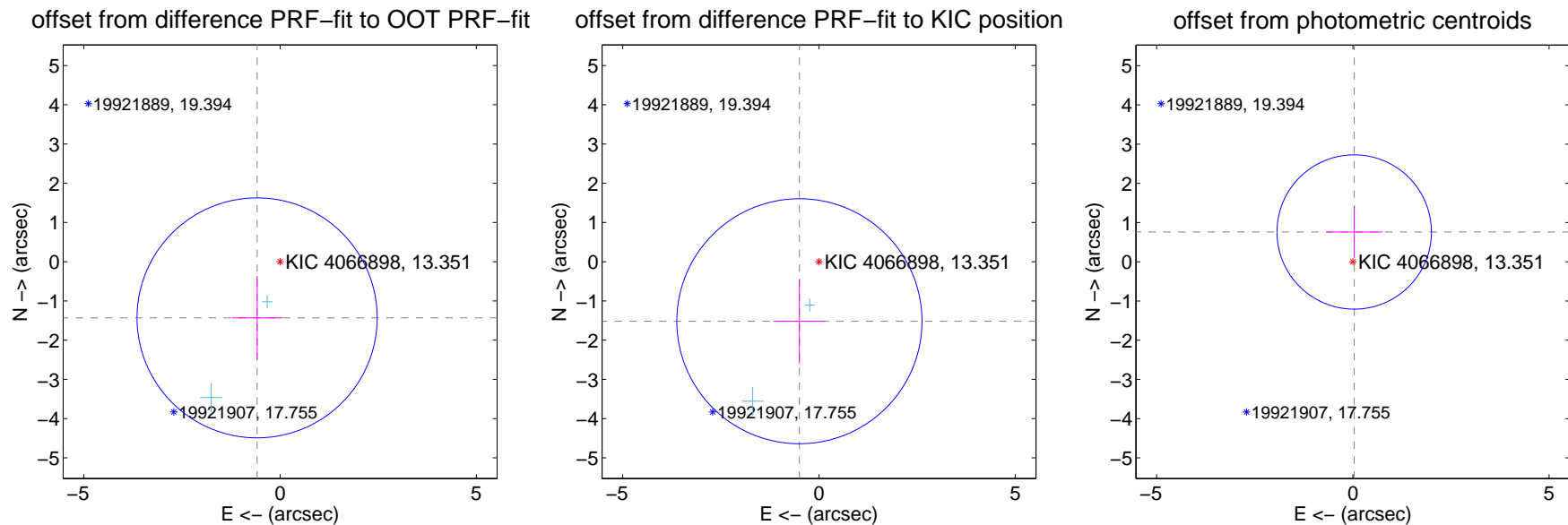
DV Centroid Data

Supplemental centroid analysis for 004066898-03. Kepler magnitude: 13.35. Transit SNR 7.55

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.547 ± 1.020	1.52	0.586 ± 0.645	-1.432 ± 1.069
PRF-fit source offset from KIC position	1.597 ± 1.041	1.53	0.498 ± 0.657	-1.518 ± 1.074
photometric centroid source offset	0.76 ± 0.66	1.16	-0.03 ± 0.71	0.76 ± 0.66

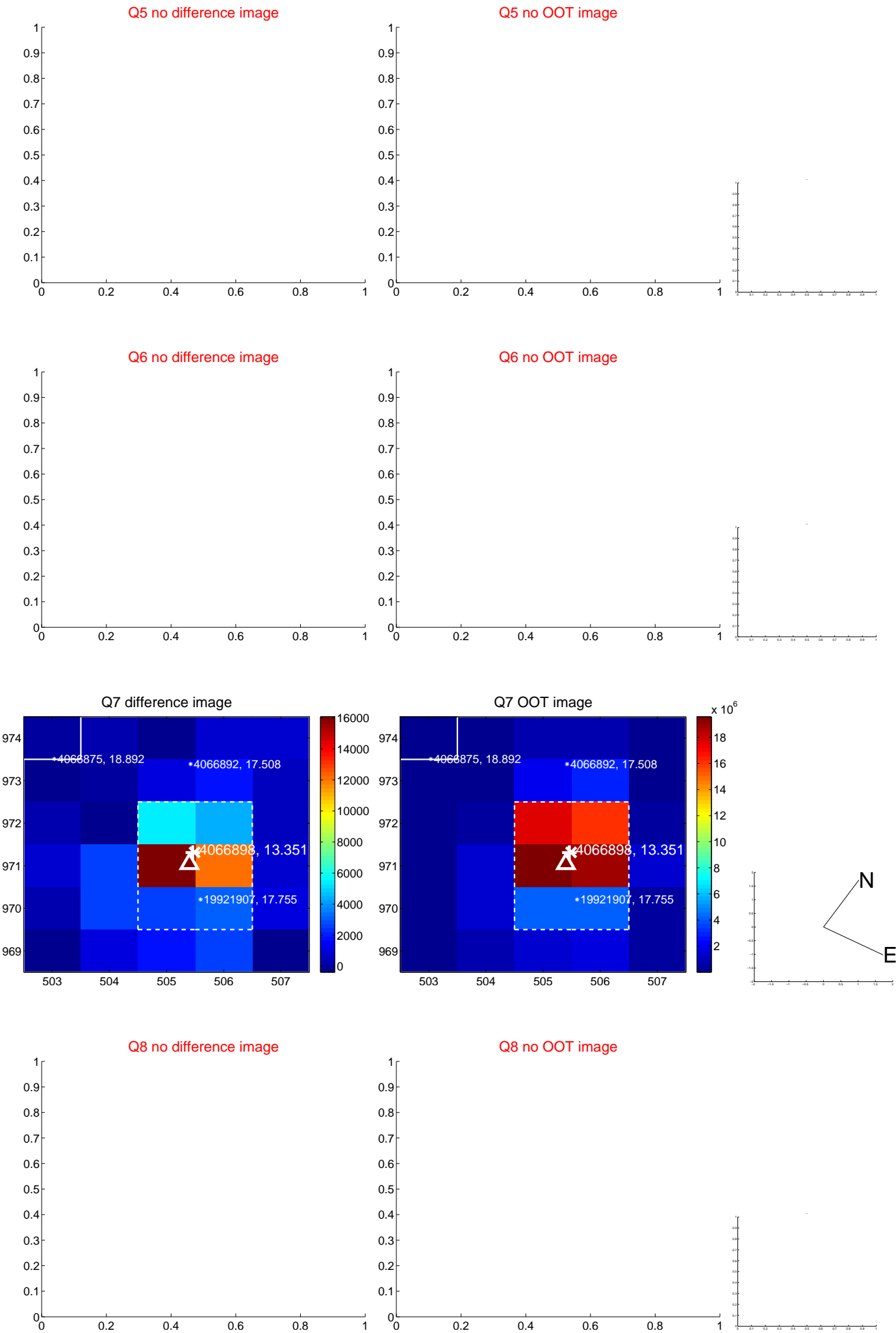


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

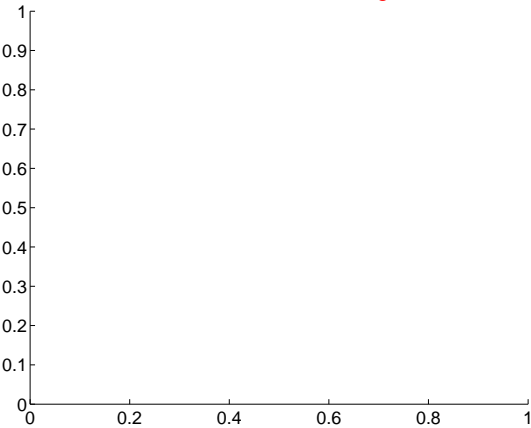
Q9 no difference image



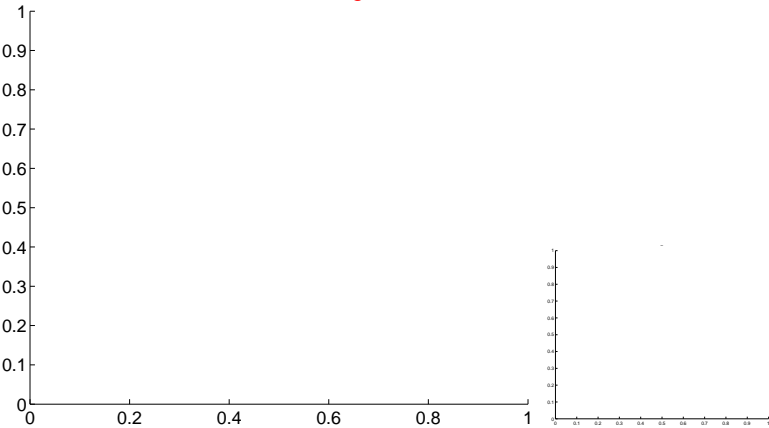
Q9 no OOT image



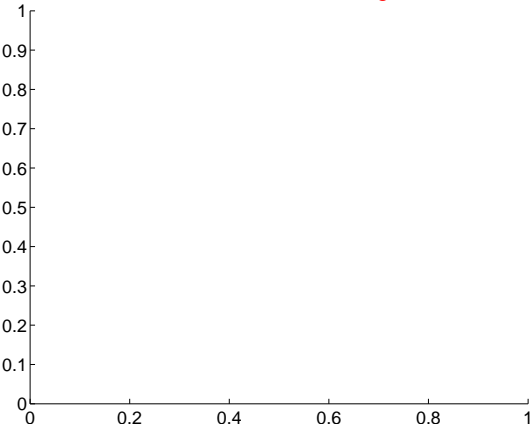
Q10 no difference image



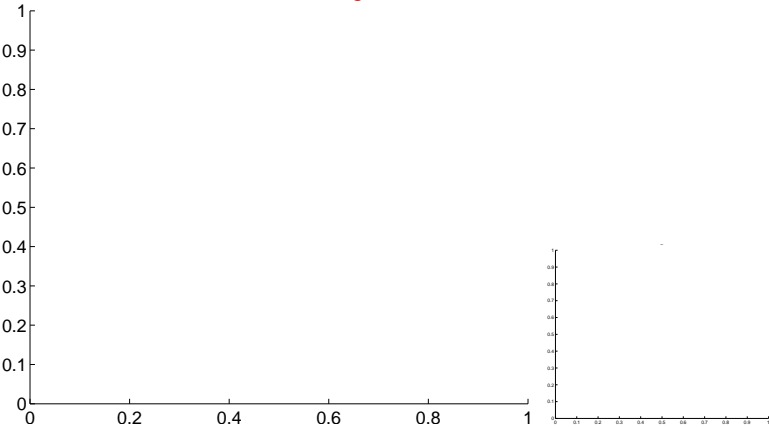
Q10 no OOT image



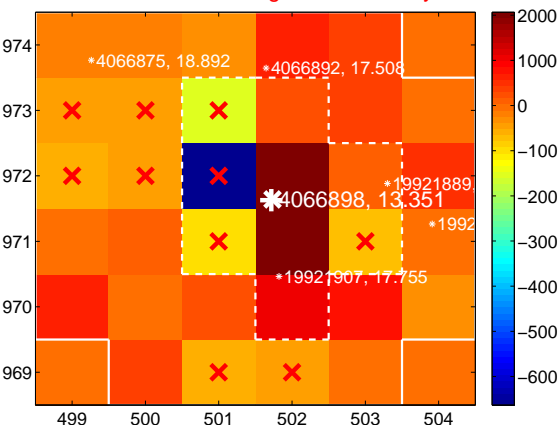
Q11 no difference image



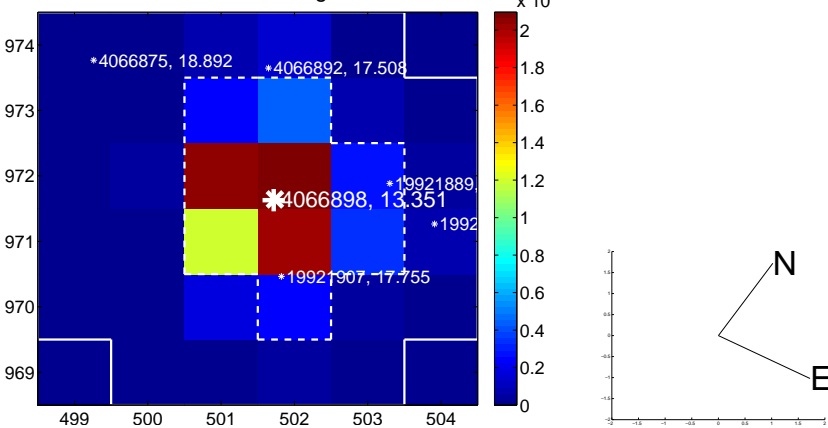
Q11 no OOT image



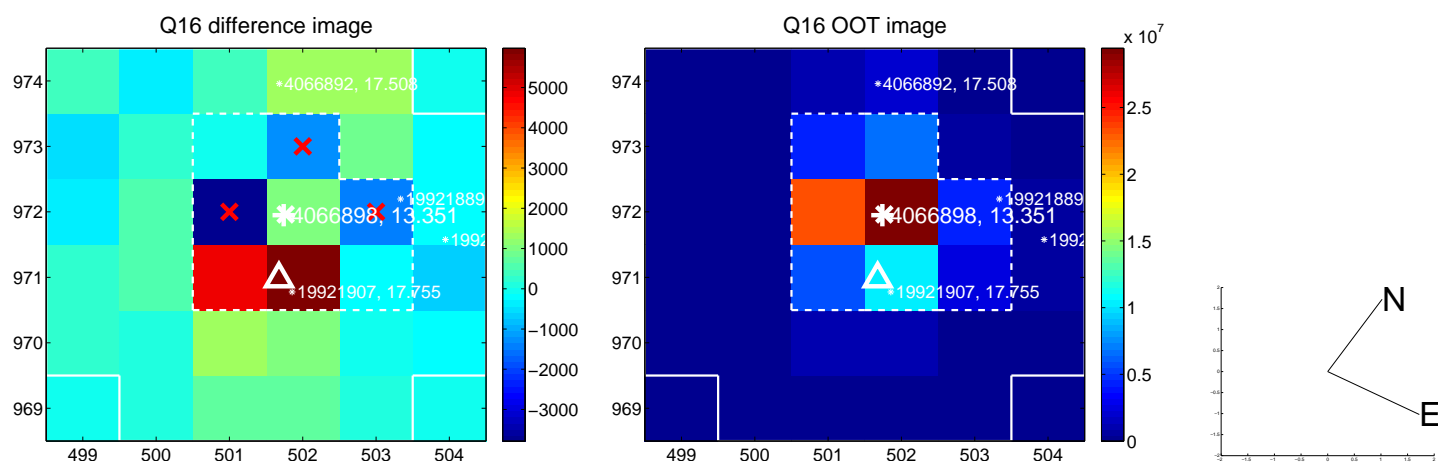
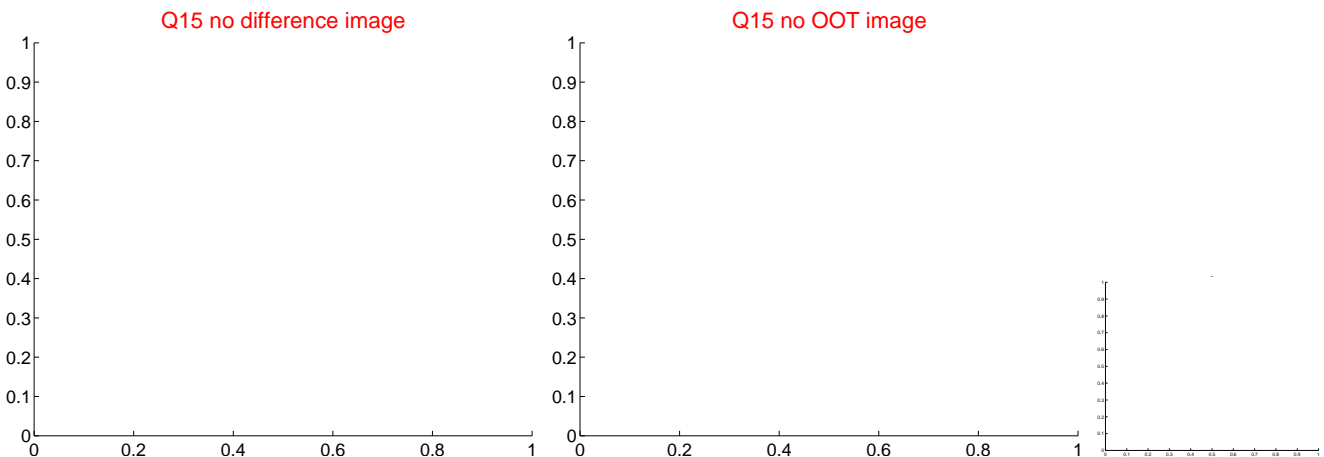
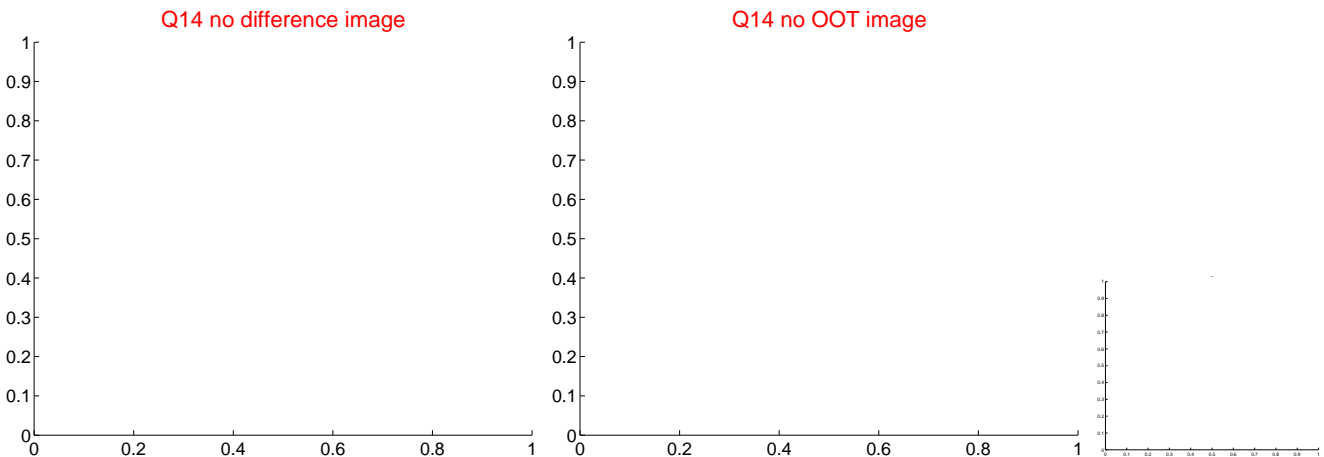
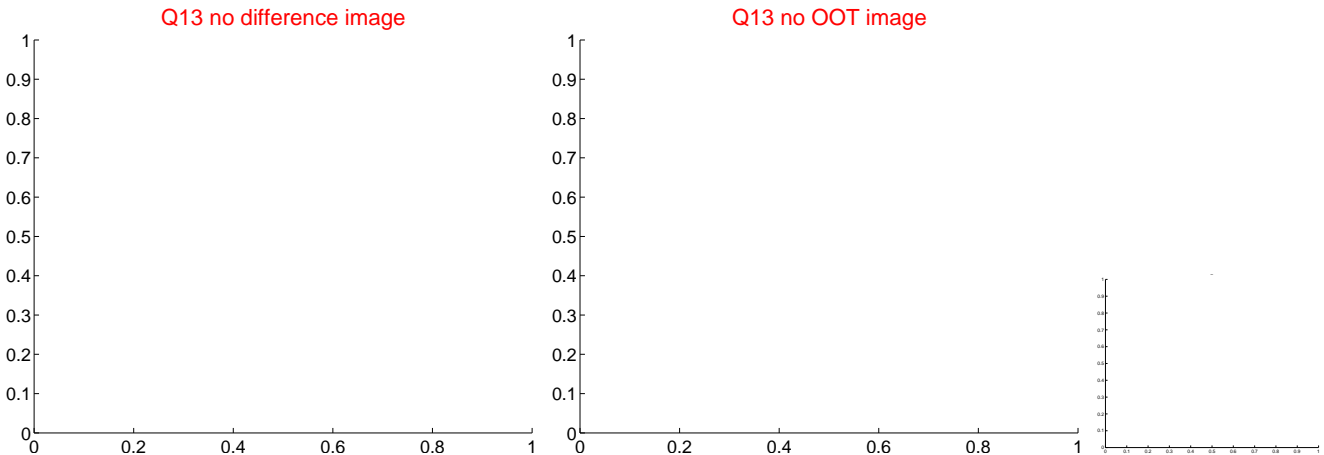
Q12 difference image. Poor Quality



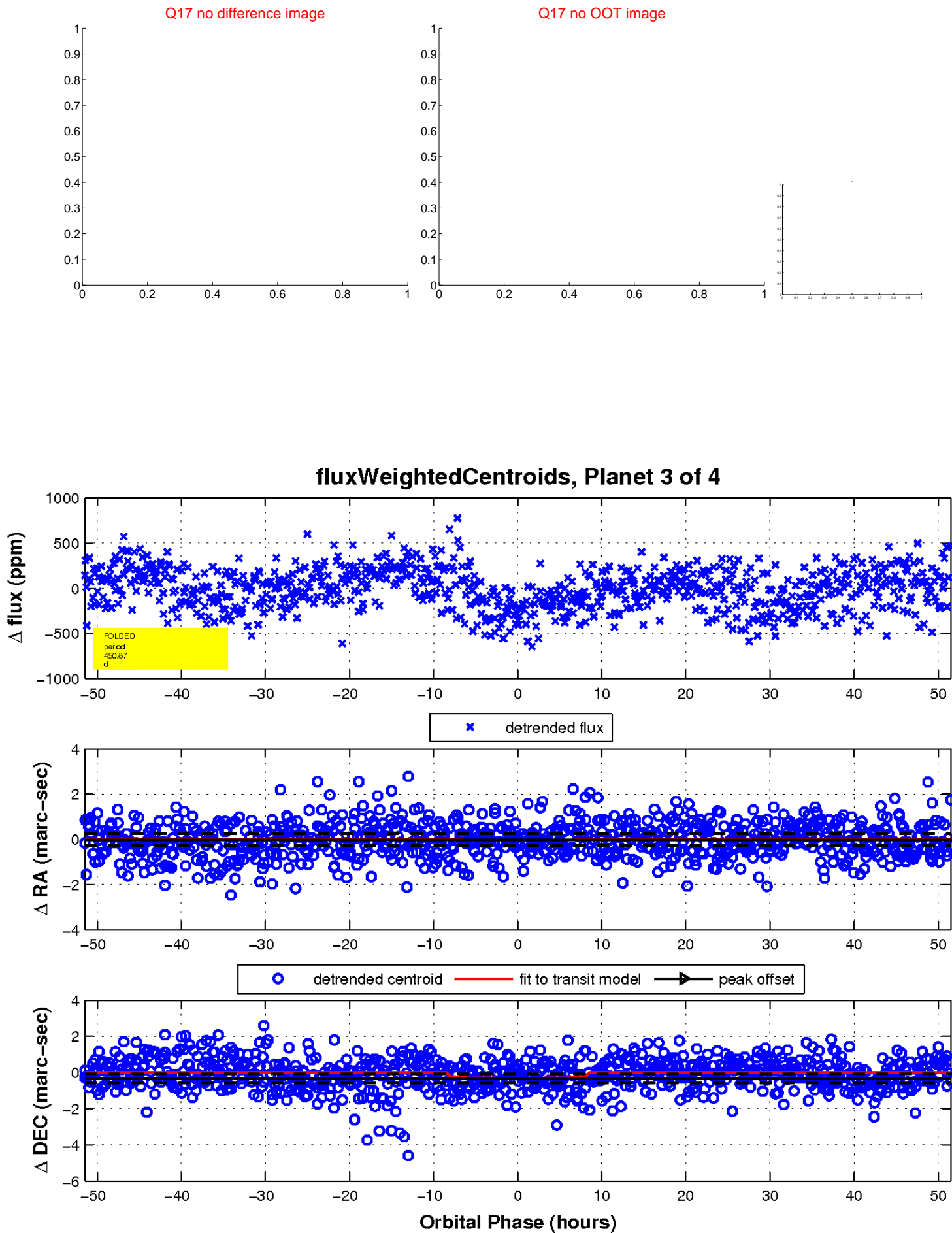
Q12 OOT image



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

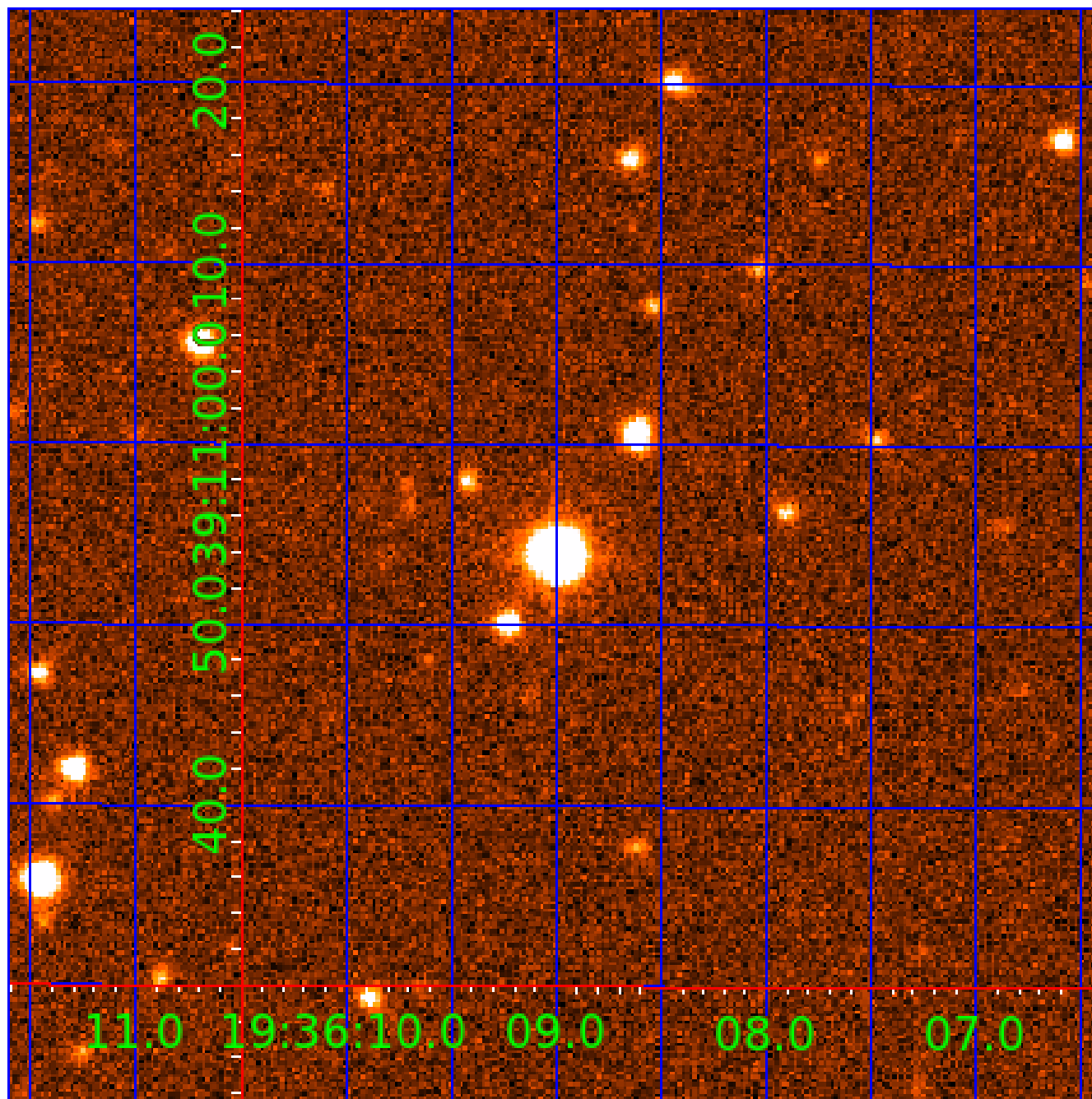


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004066898

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})
004066898-01	OBS	No	1.346718	133.074626	21.8	2.794	7.8	5.7	1.67	6515	0.91	6594.08
004066898-02	OBS	No	1.347013	132.617015	37.5	3.000	8.4	9.7	1.67	6515	1.16	6592.15
004066898-03	OBS	No	450.874462	200.838223	377.1	17.189	8.1	7.6	1.67	6515	3.41	2.84
004066898-04	OBS	No	283.667150	137.533488	321.7	7.668	7.6	6.7	1.67	6515	3.30	5.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004066898-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—HALO_GHOST
004066898-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
004066898-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004066898-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT

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

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

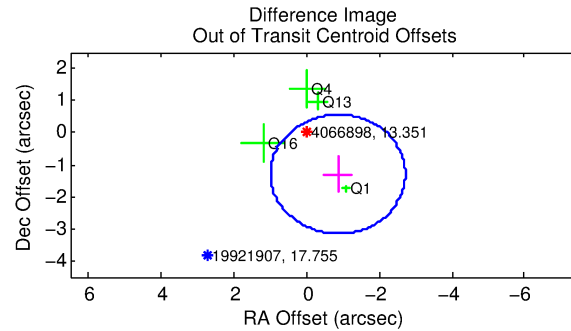
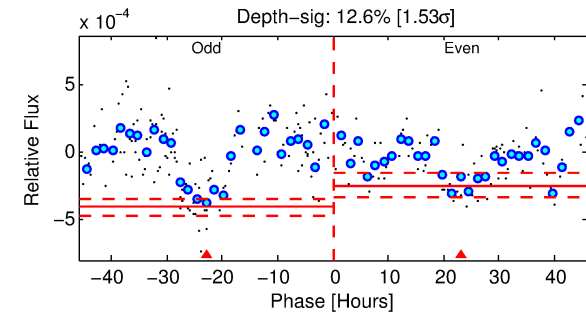
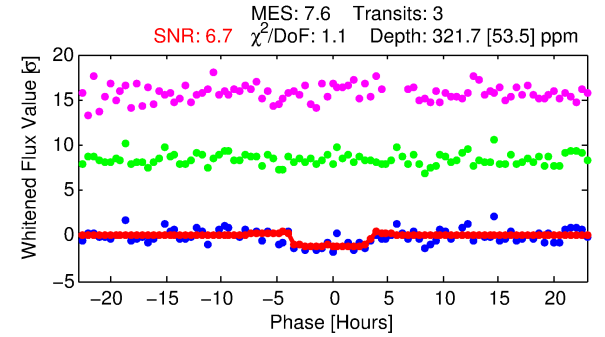
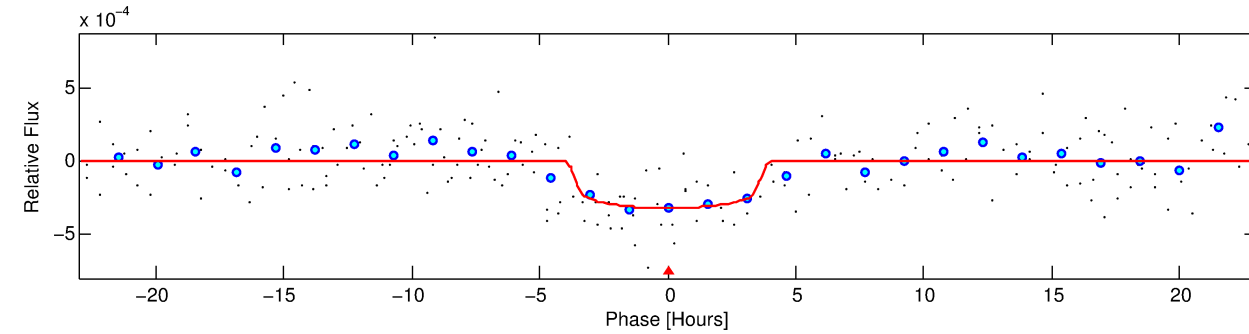
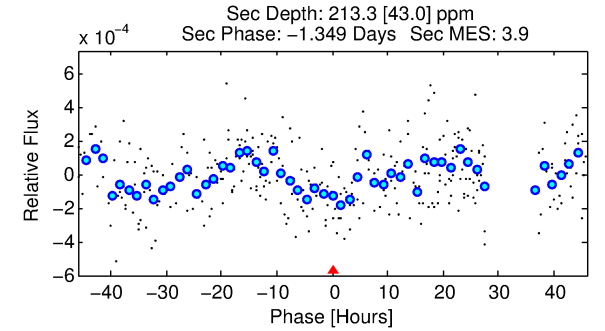
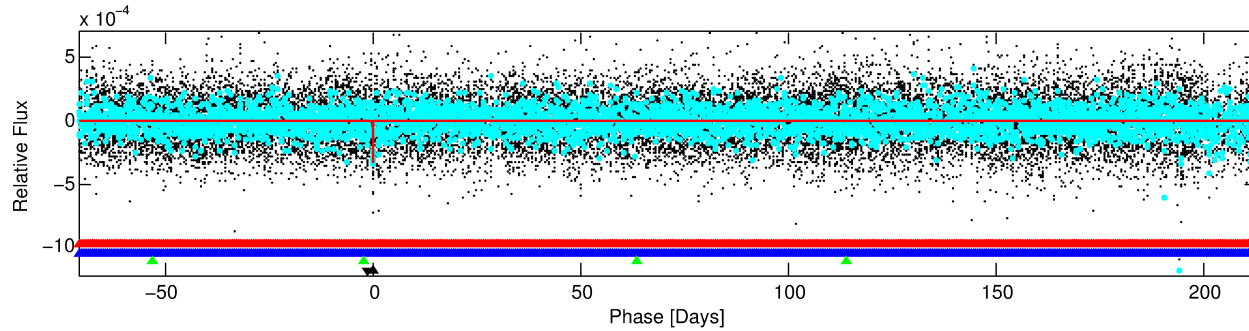
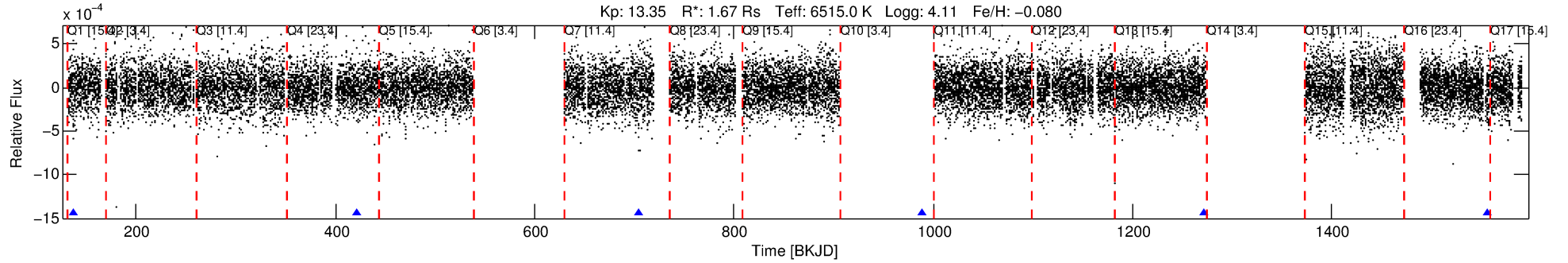
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004066898-04

No Significant Match Found

DV One-Page Summary

KIC: 4066898 Candidate: 4 of 4 Period: 283.667 d



DV Fit Results:

Period = 283.66715 [0.00425] d
Epoch = 137.5335 [0.0164] BKJD
Rp/R* = 0.0181 [0.0134]
a/R* = 179.47 [726.21]
b = 0.80 [1.88]
Seff = 5.26 [1.51]
Teq = 386 [28] K
Rp = 3.30 [2.53] Re
a = 0.9244 [0.1708] AU
Ag = 9201.11 [13971.22] [0.66σ]
Teffp = 5848 [2182] K [2.50σ]

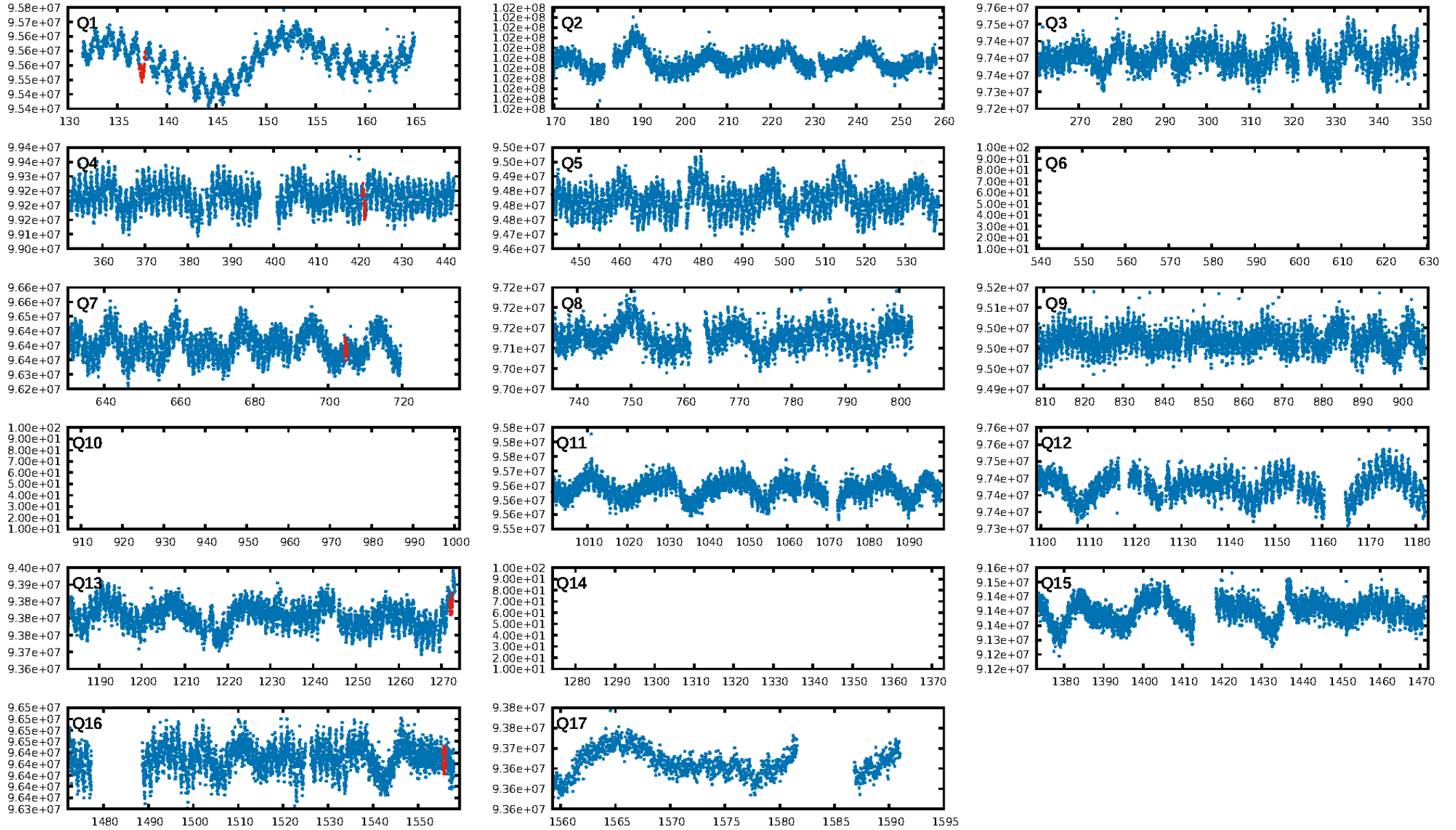
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [822.88σ]
LongPeriod-sig: 100.0% [213.21σ]
ModelChiSquare2-sig: 84.5%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 1.21e-12
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 3.068
Centroid-sig: 7.4%
Centroid-so: 1.003 arcsec [1.03σ]
OotOffset-rm: 1.559 arcsec [2.52σ]
KicOffset-rm: 1.670 arcsec [2.96σ]
OotOffset-st: 0/0/2 [4]
KicOffset-st: 0/0/2 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 0.00 [0/5]

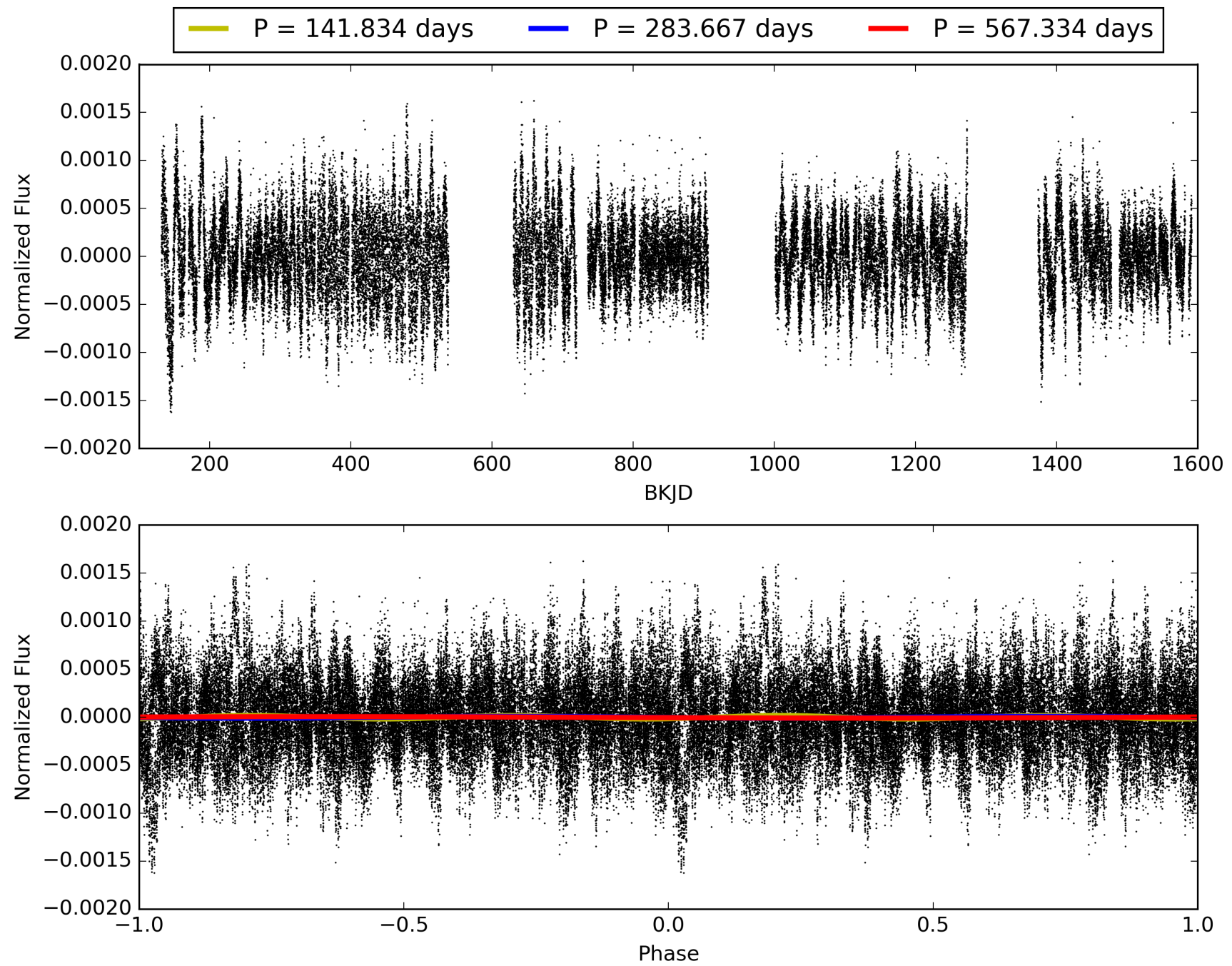
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:58:24 Z

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

TCE 004066898-04, PDC Light Curves

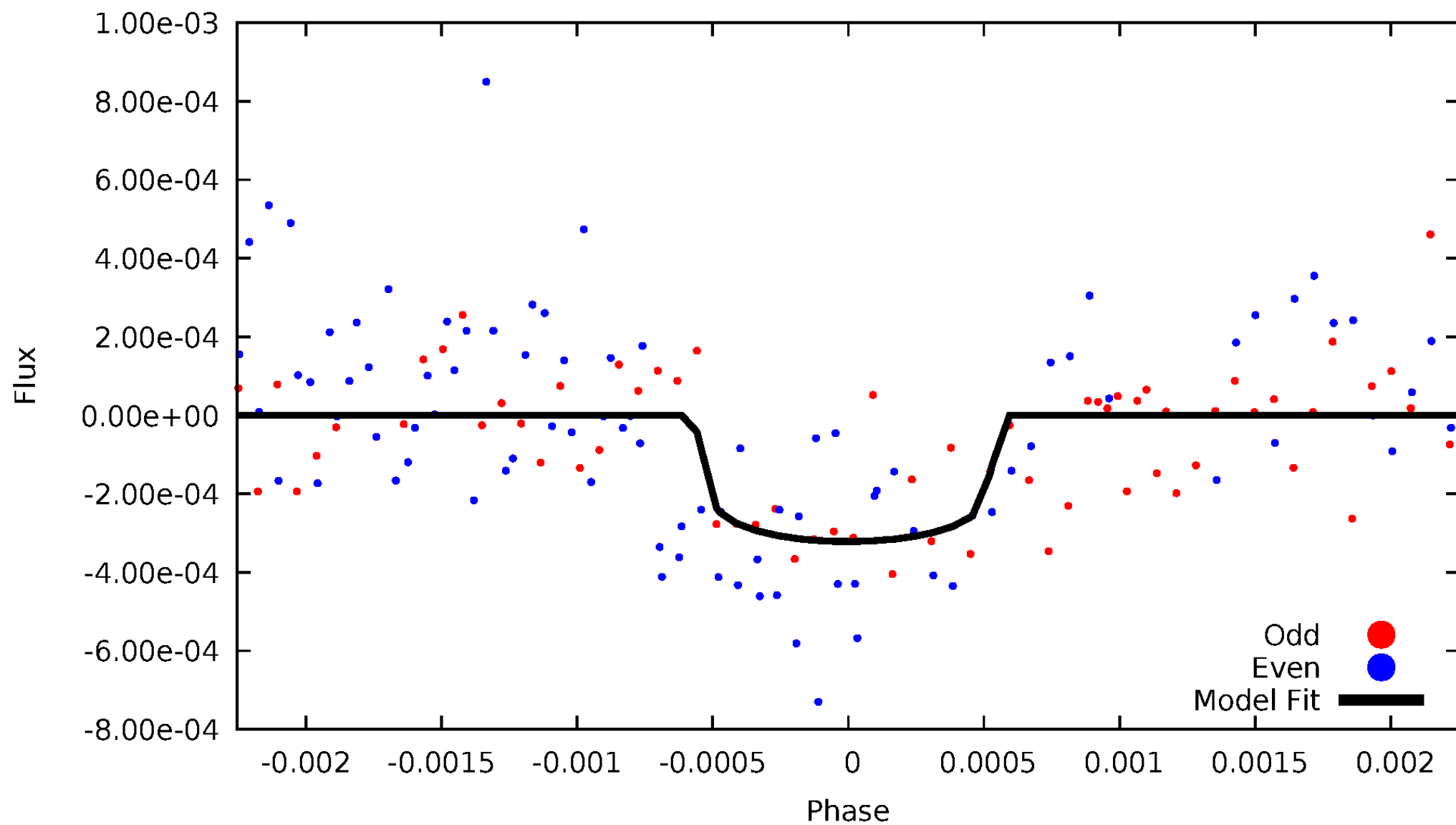


TCE 004066898-04



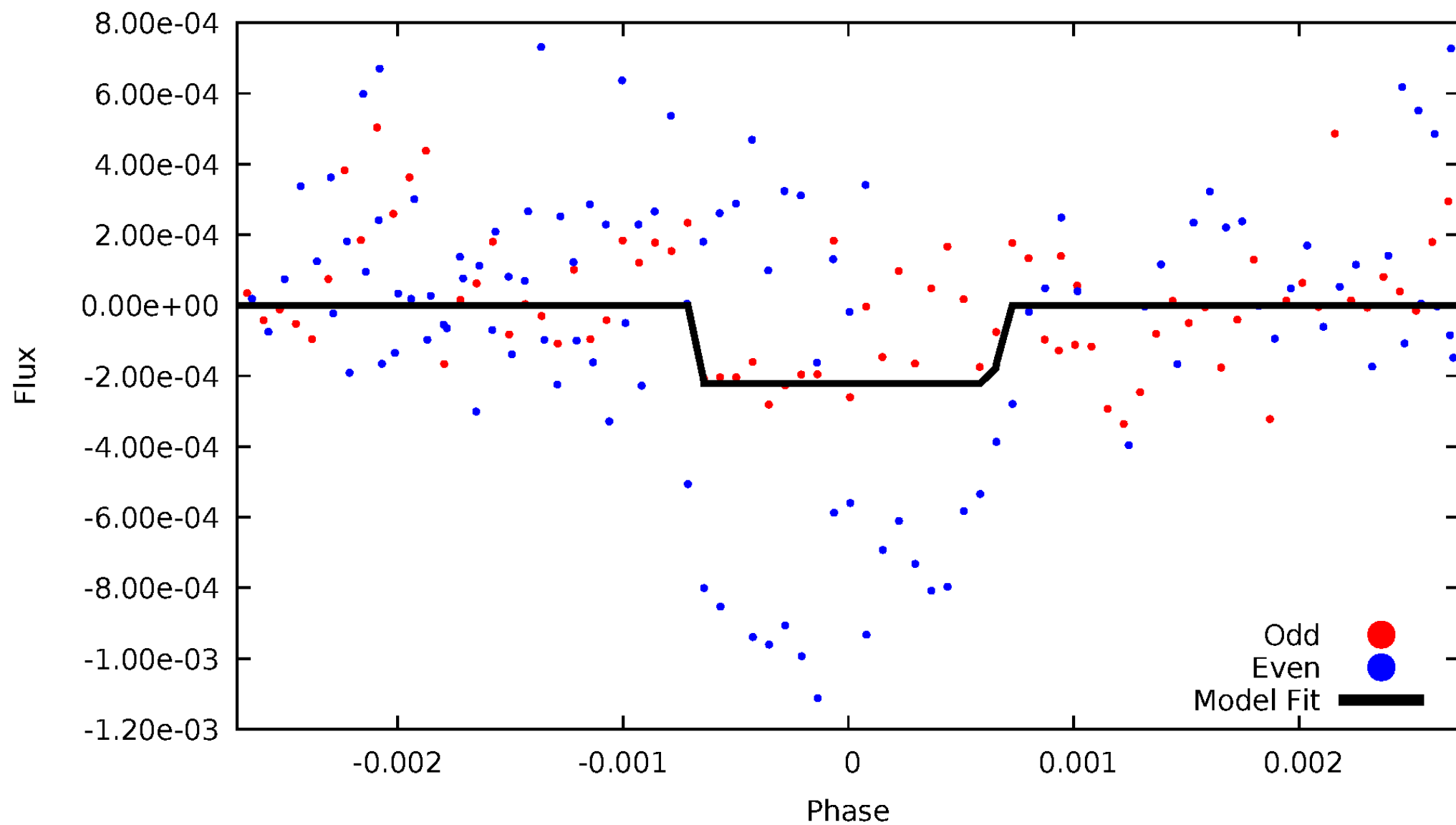
DV Odd/Even

TCE 004066898-04



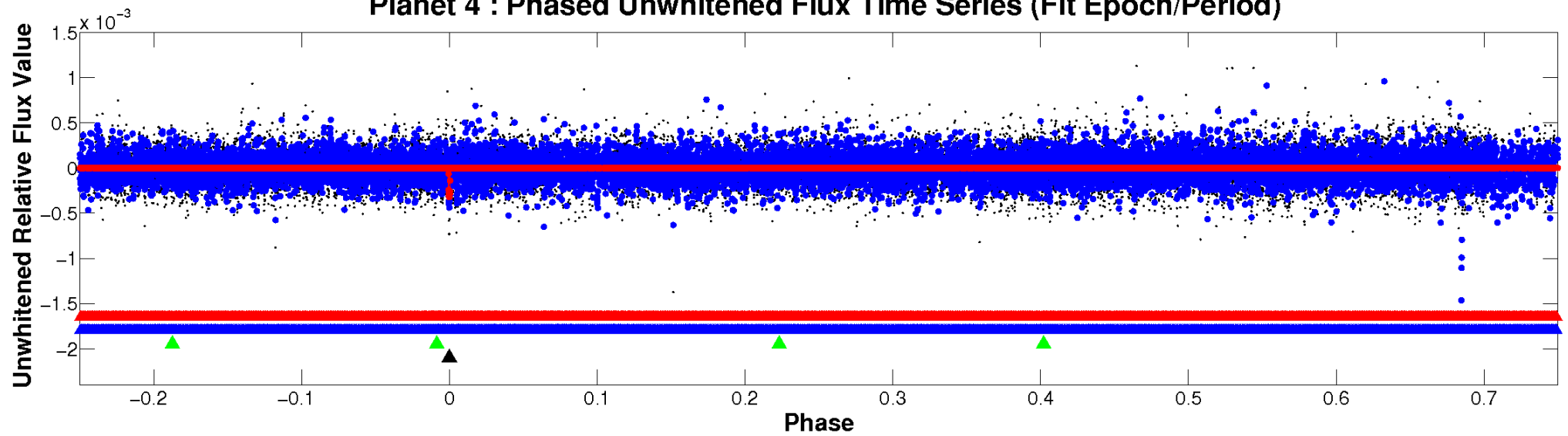
ALT Odd/Even

TCE 004066898-04

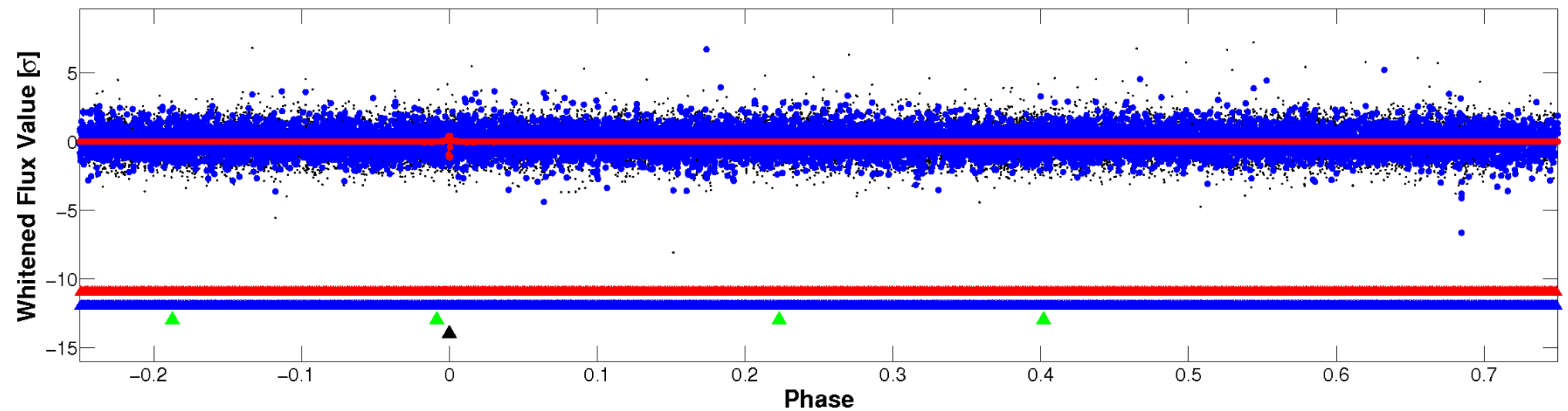


Non-Whitened Vs. Whitened Light Curve

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

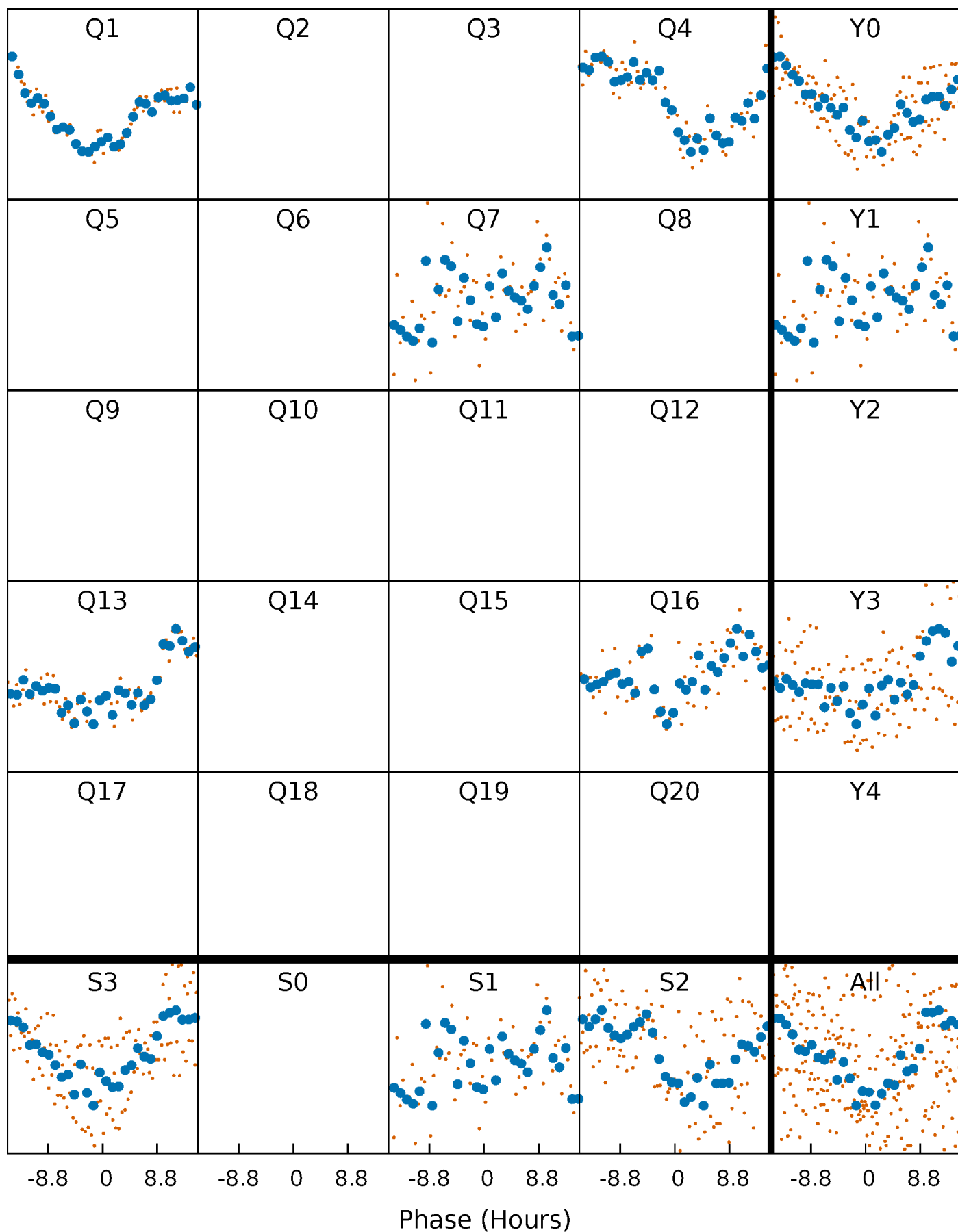


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



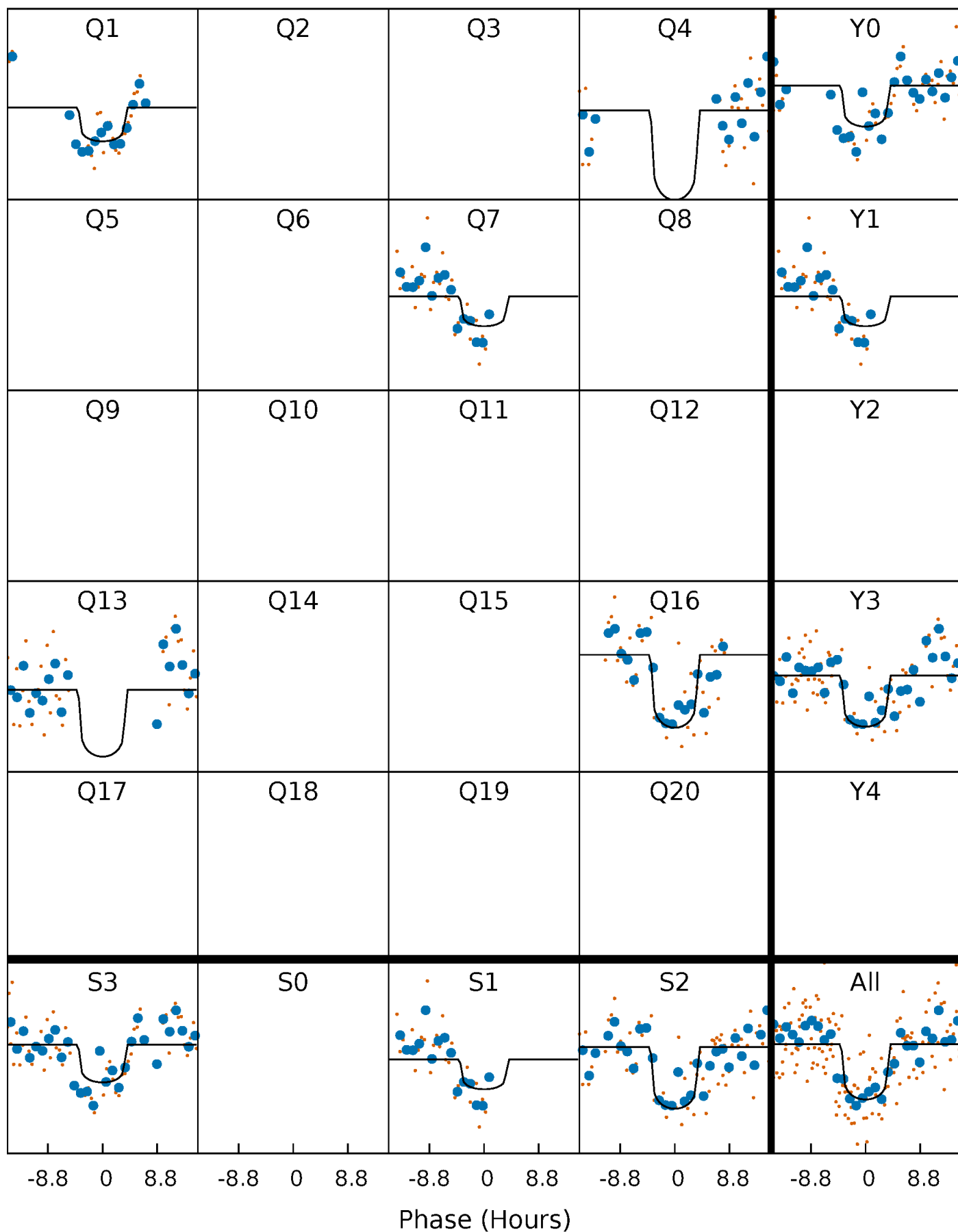
PDC Quarter-Phased Transit Curves

TCE 004066898-04 $P=283.667150$ Days $T_0=137.533488$ (BKJD)



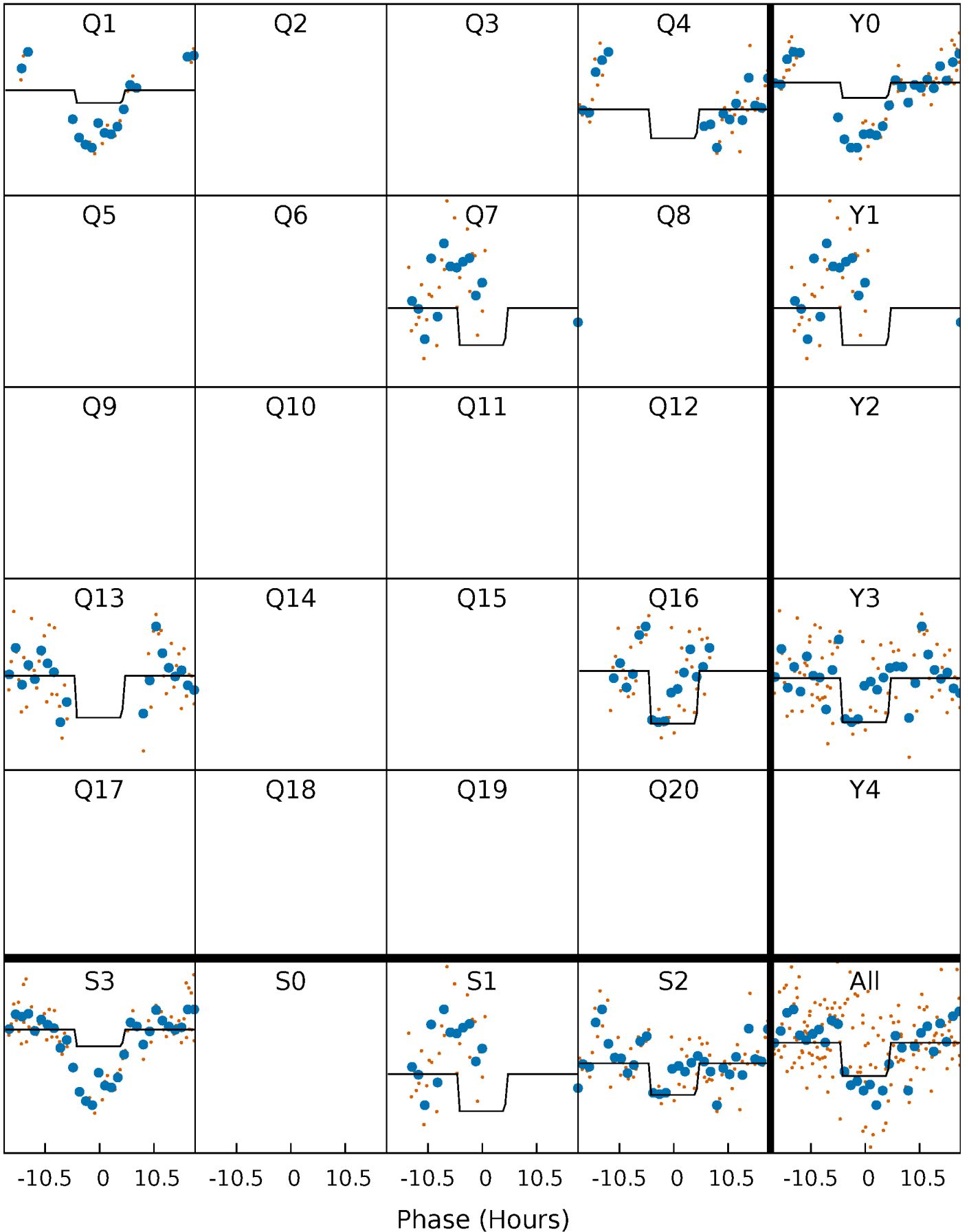
DV Quarter-Phased Transit Curves

TCE 004066898-04 $P=283.667150$ Days $T_0=137.533488$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

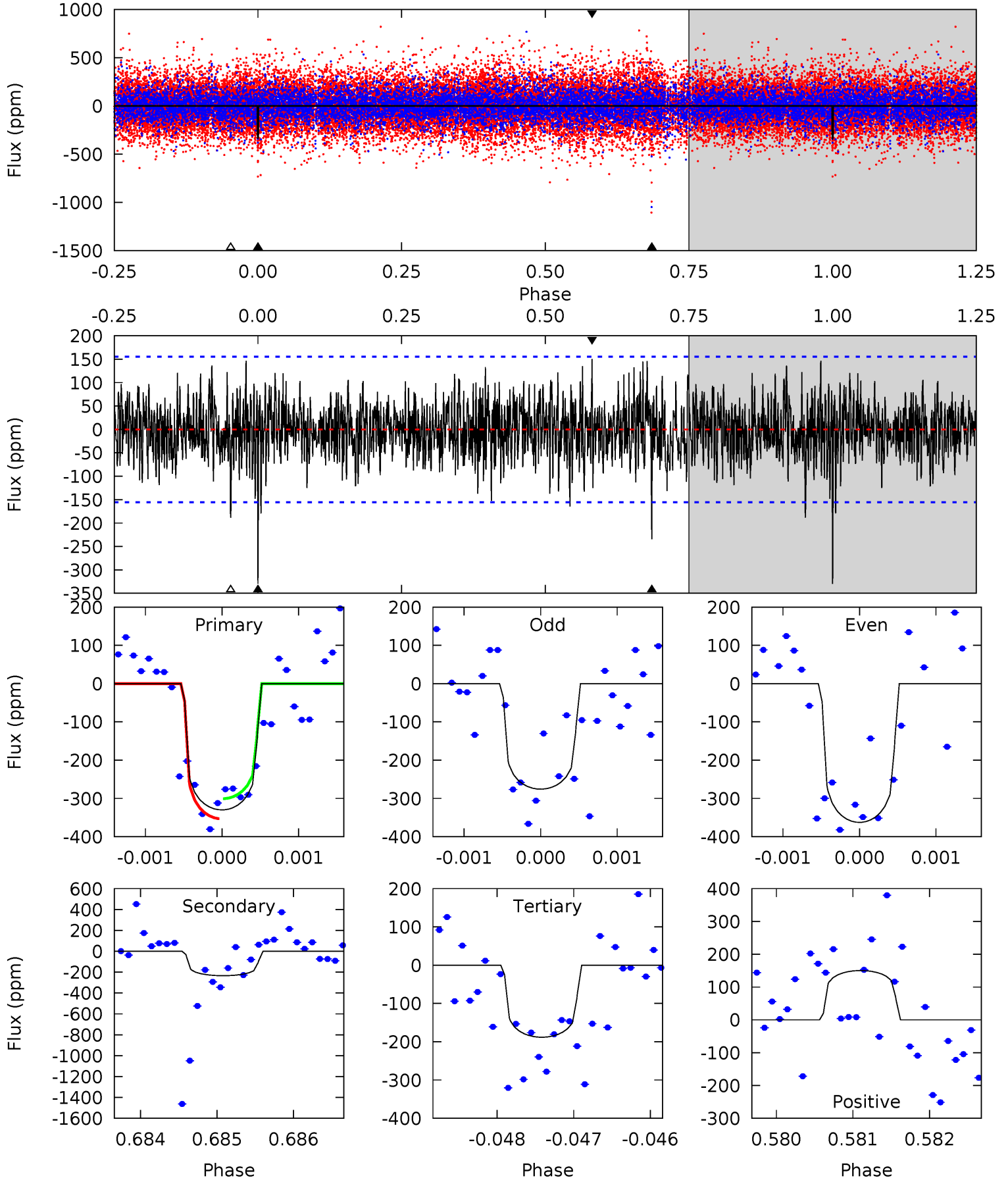
TCE 004066898-04 $P=283.679114$ Days $T_0=137.517701$ (BKJD)



DV Model-Shift Uniqueness Test

004066898-04, P = 283.667150 Days, E = 137.533488 Days

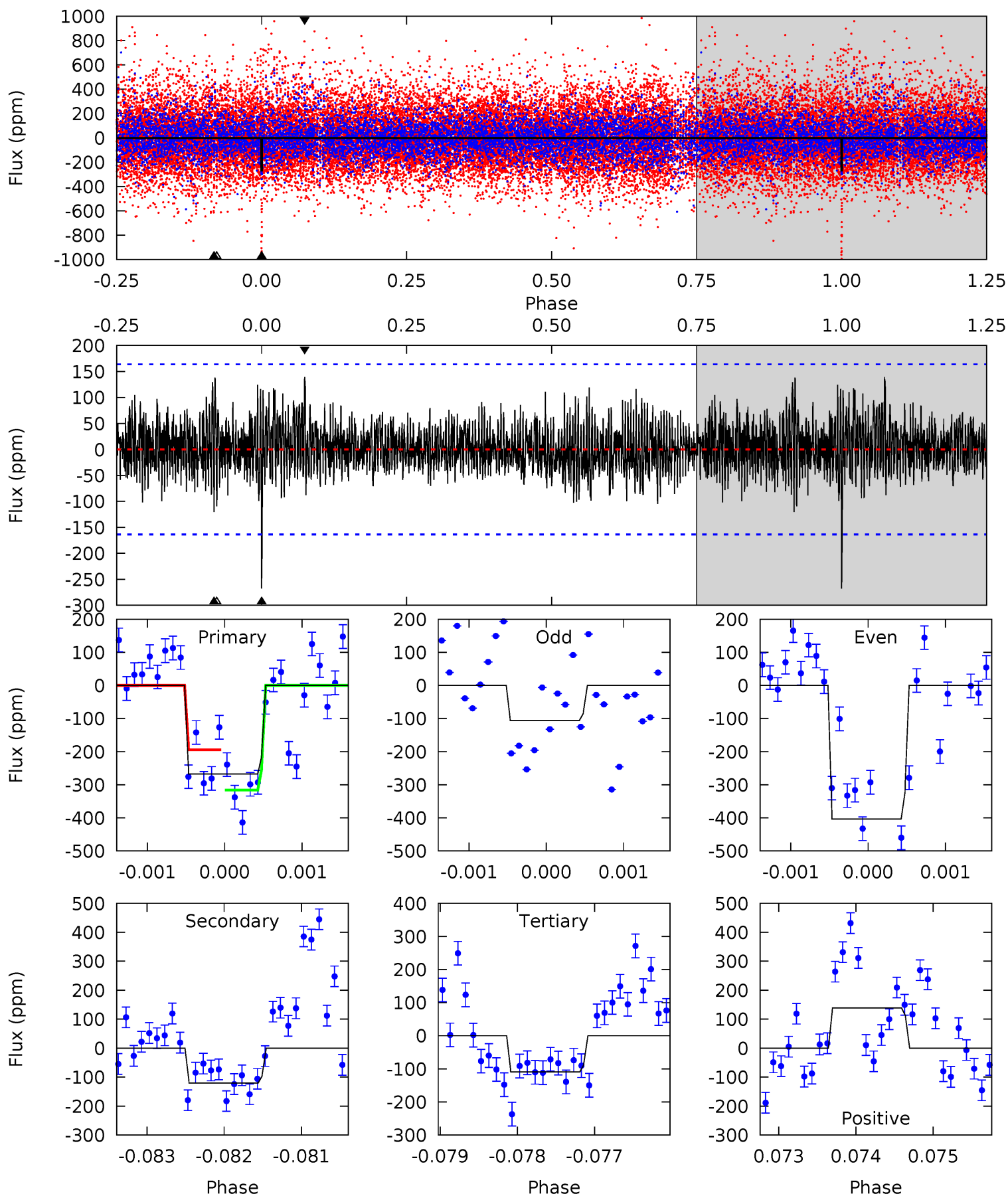
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	8.18	6.58	5.25	5.43	3.25	1.65	4.95	6.27	1.60	2.93	1.51	0.97	0.31	0.92



Alt Model-Shift Uniqueness Test

004066898-04, P = 283.679114 Days, E = 137.517701 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.83	3.97	3.60	4.58	5.40	3.20	1.22	5.23	4.25	0.37	-0.61	4.86	2.15	0.34	1.97



Stellar Parameters For KIC 004066898

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6515^{+77}_{-77}	$4.110^{+0.162}_{-0.108}$	$-0.080^{+0.150}_{-0.150}$	$1.669^{+0.311}_{-0.342}$	$1.314^{+0.109}_{-0.145}$	$0.398^{+0.309}_{-0.137}$
	+1%/-1%	+4%/-3%	+188%/-188%	+19%/-20%	+8%/-11%	+78%/-34%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004066898-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-234 ± 29	$3.56^{+2.20}_{-2.00}$	538^{+29}_{-29}	5746^{+3253}_{-1106}	8724^{+36764}_{-5393}
Alt.	-120 ± 30	$3.13^{+2.05}_{-1.91}$	536^{+25}_{-28}	5229^{+3264}_{-1047}	5737^{+31093}_{-3737}

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 $A_{obs} \gg 1.0$

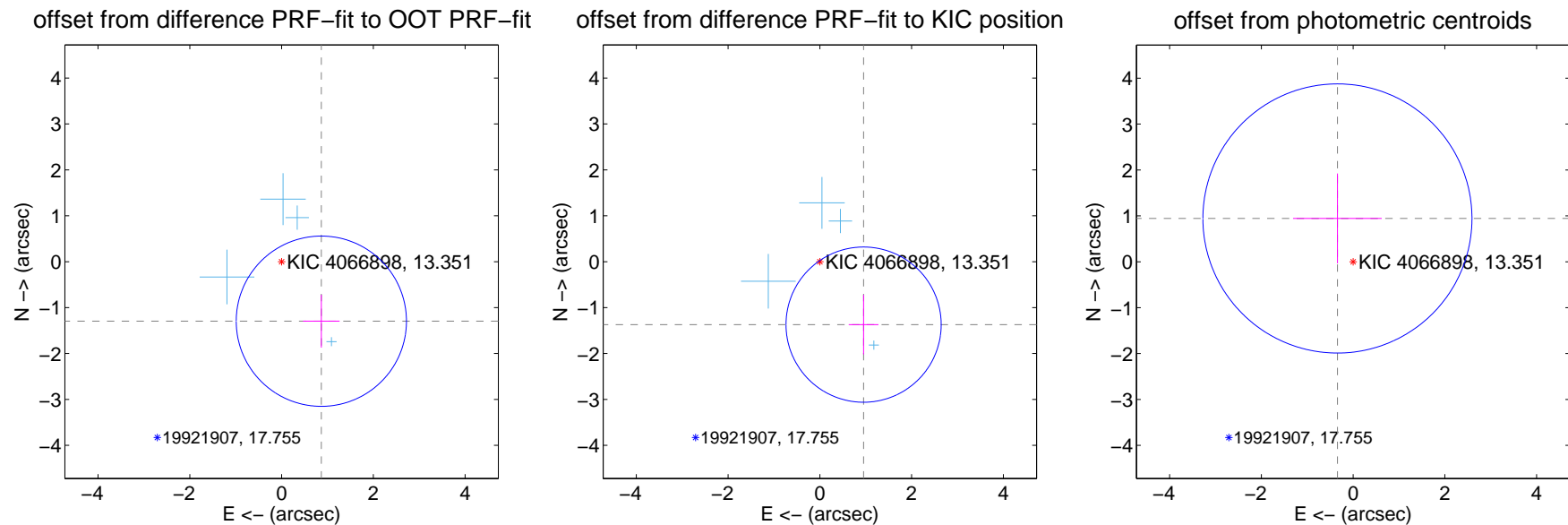
DV Centroid Data

Supplemental centroid analysis for 004066898-04. Kepler magnitude: 13.35. Transit SNR 6.67

There are 4 quarters with good PRF difference image offsets

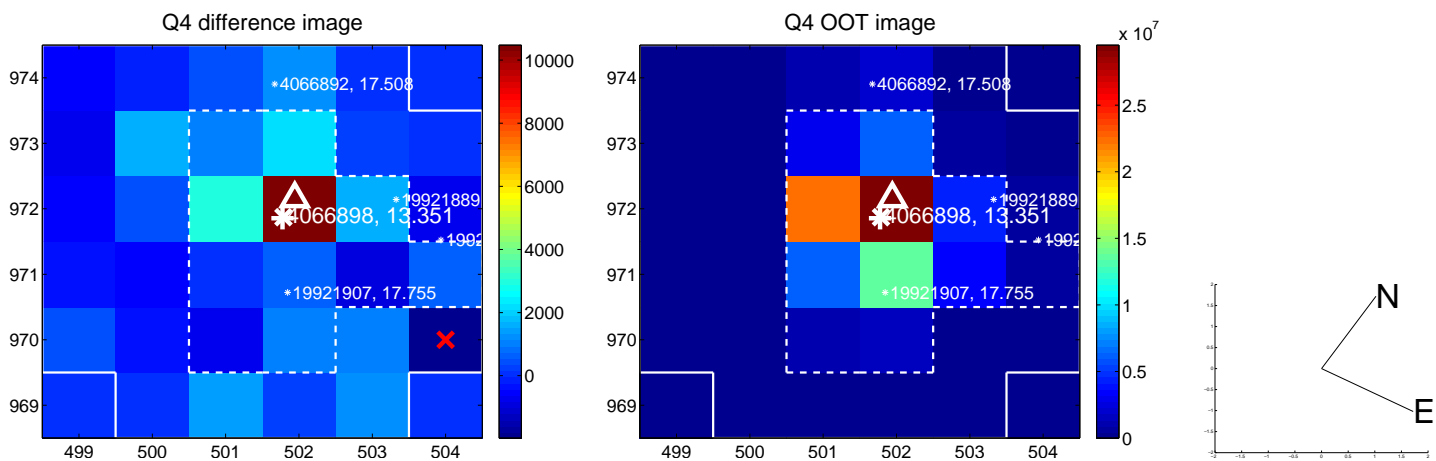
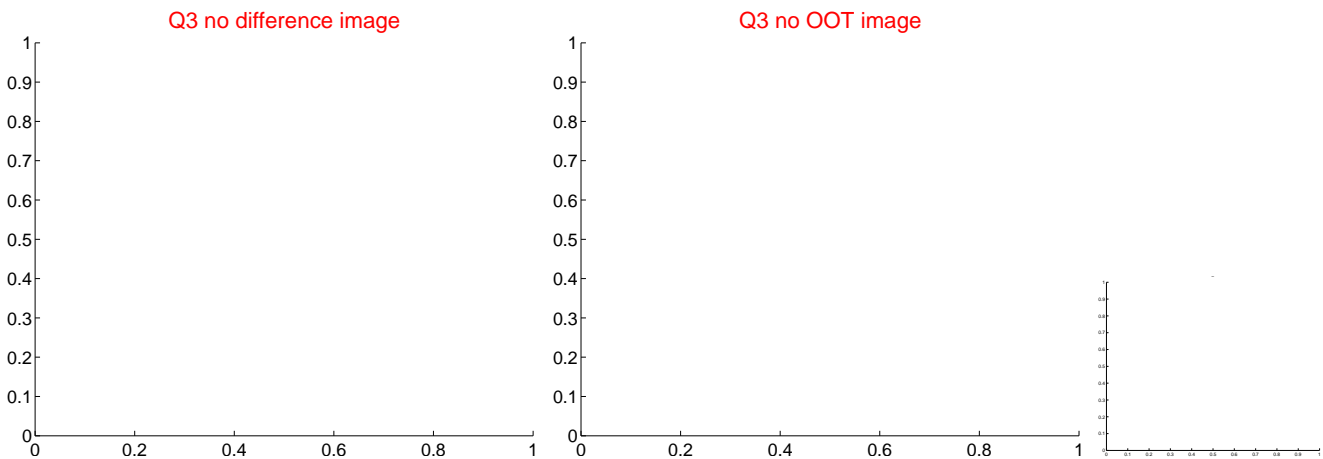
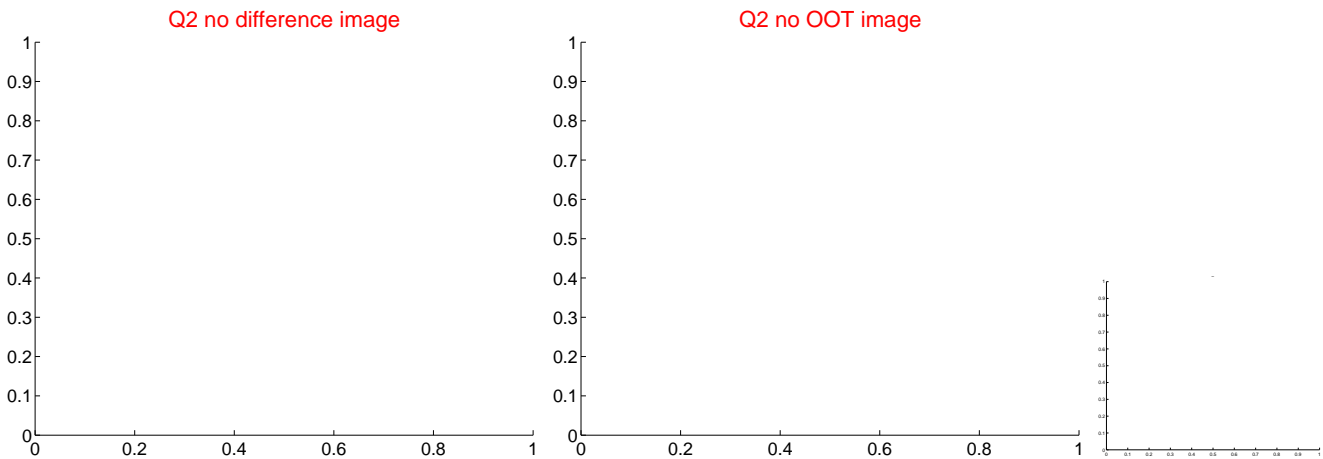
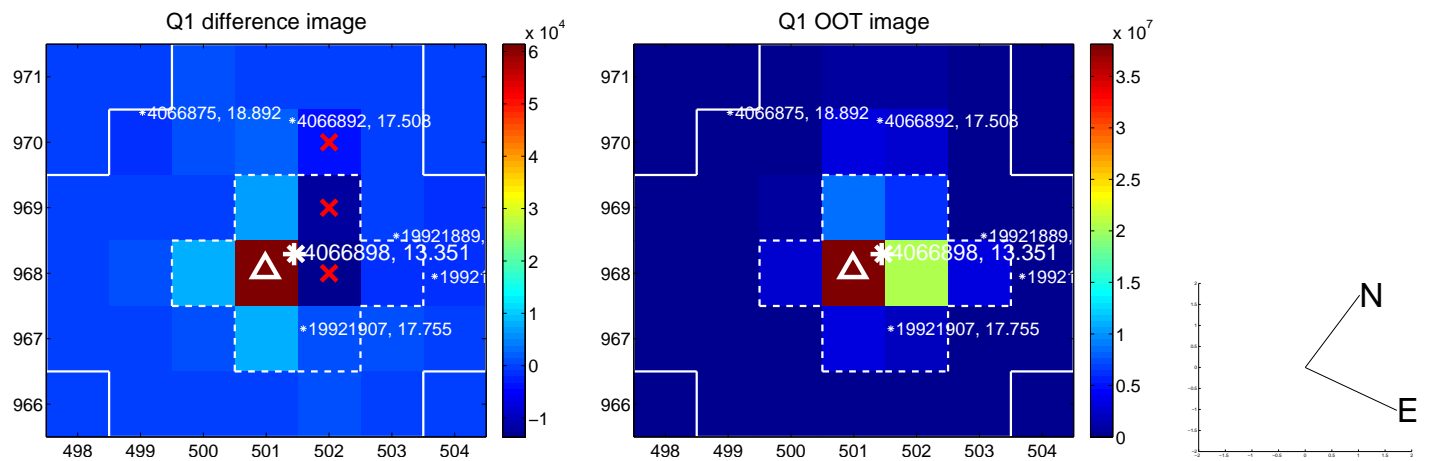
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.559 ± 0.618	2.52	-0.867 ± 0.398	-1.296 ± 0.576
PRF-fit source offset from KIC position	1.670 ± 0.564	2.96	-0.954 ± 0.324	-1.371 ± 0.649
photometric centroid source offset	1.00 ± 0.98	1.03	0.34 ± 0.97	0.94 ± 0.98



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.

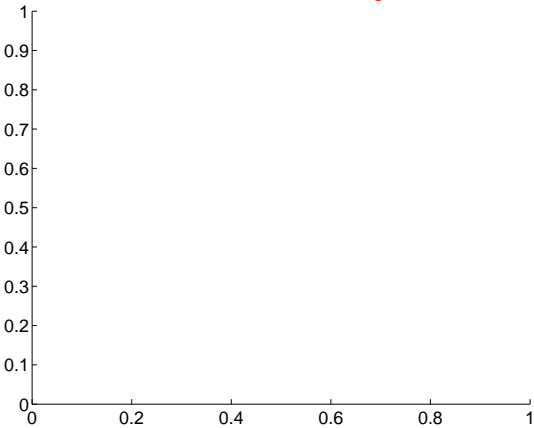
Q5 no difference image



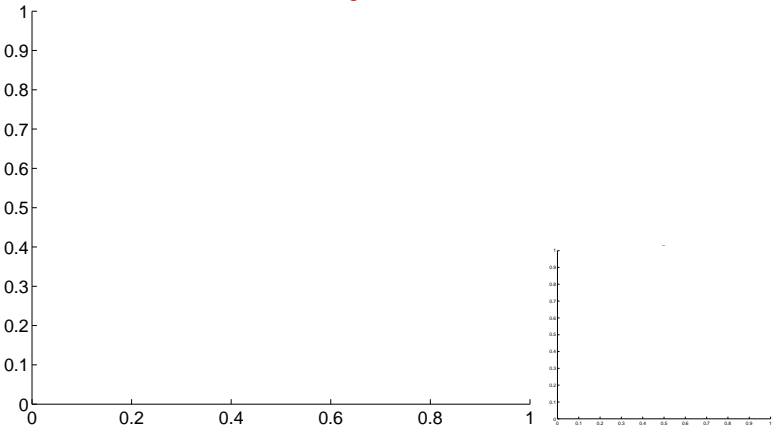
Q5 no OOT image



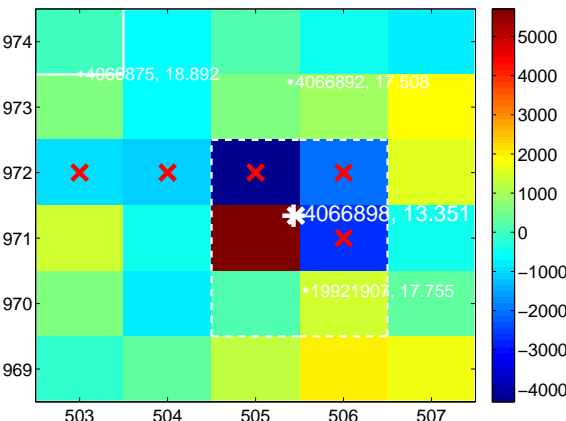
Q6 no difference image



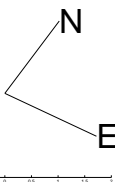
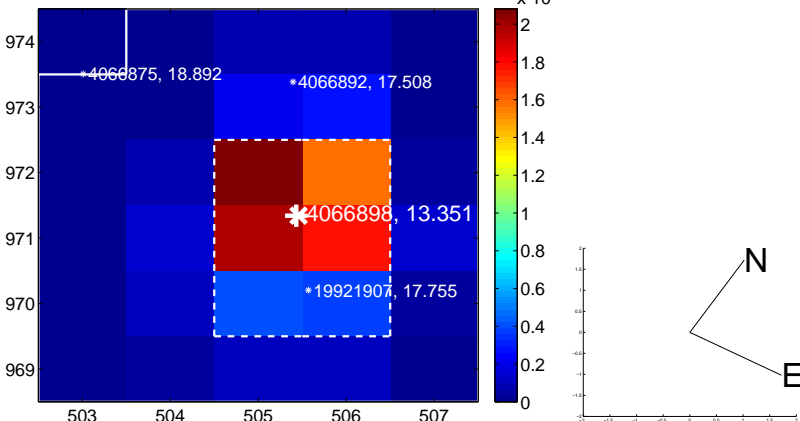
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



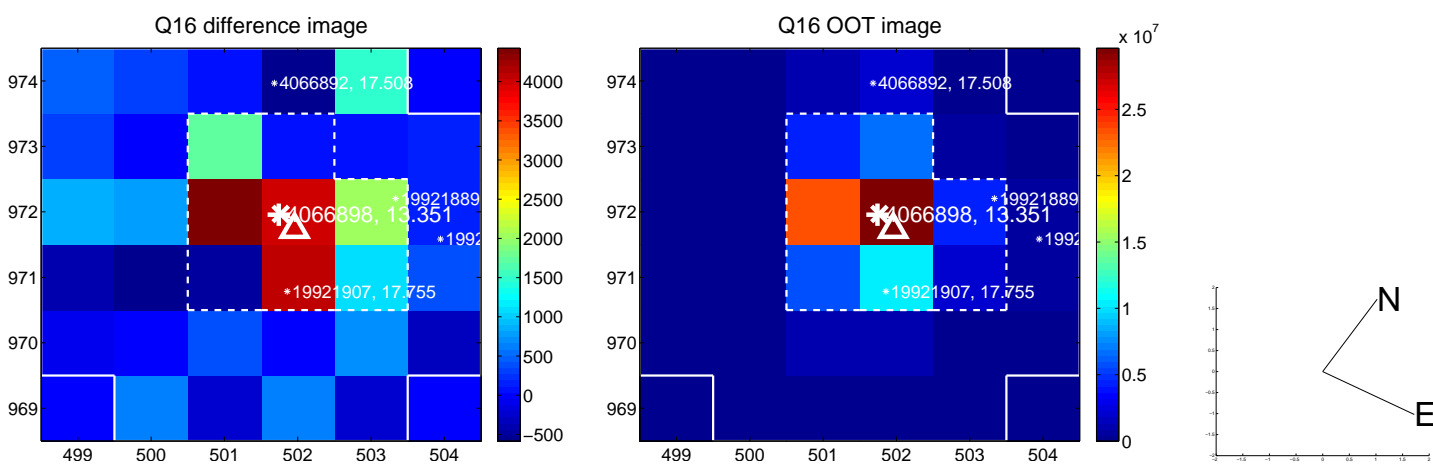
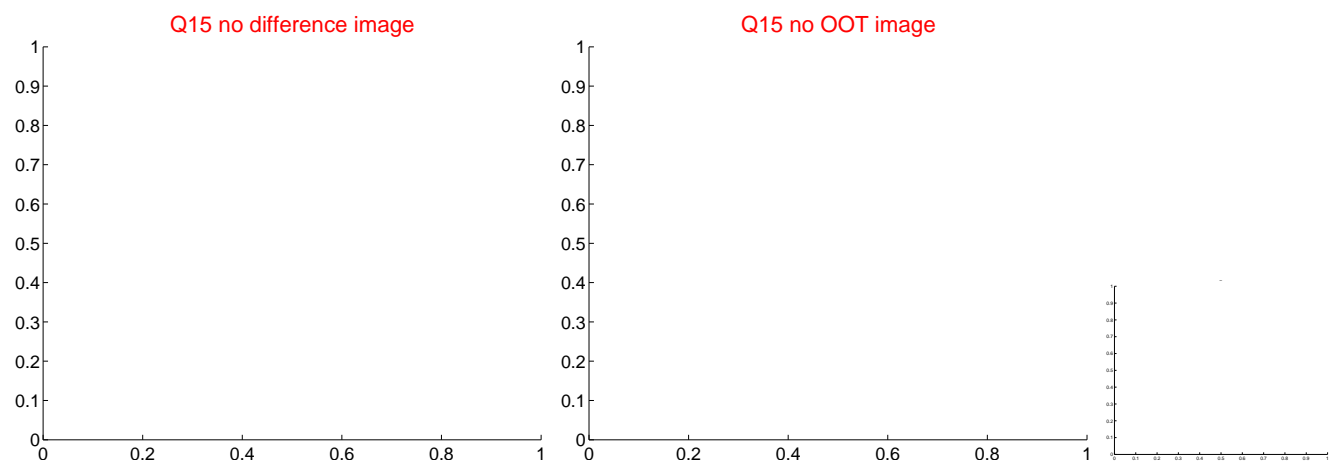
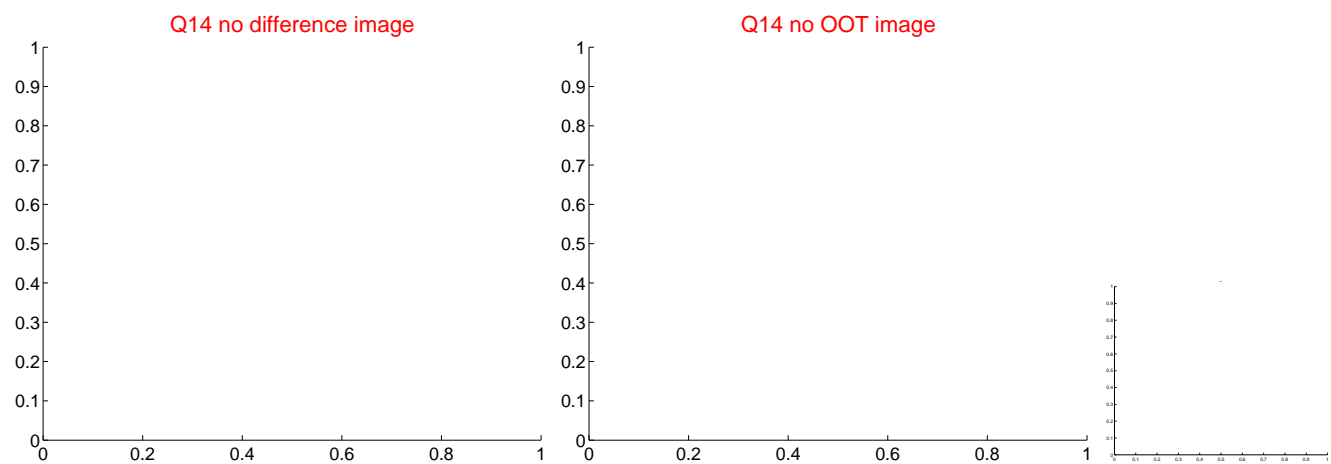
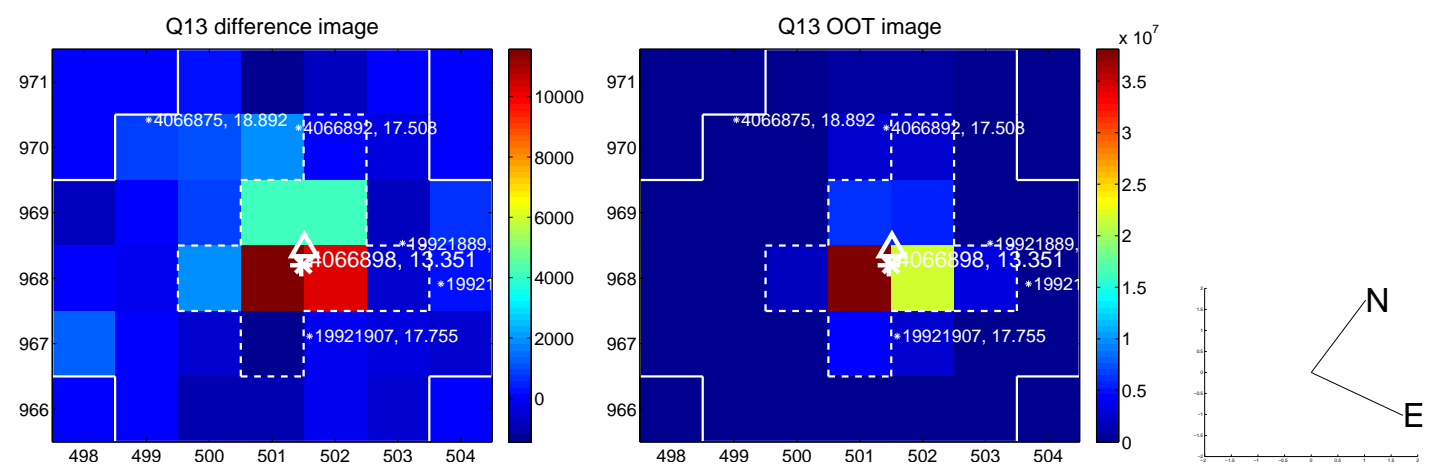
Q8 no OOT image



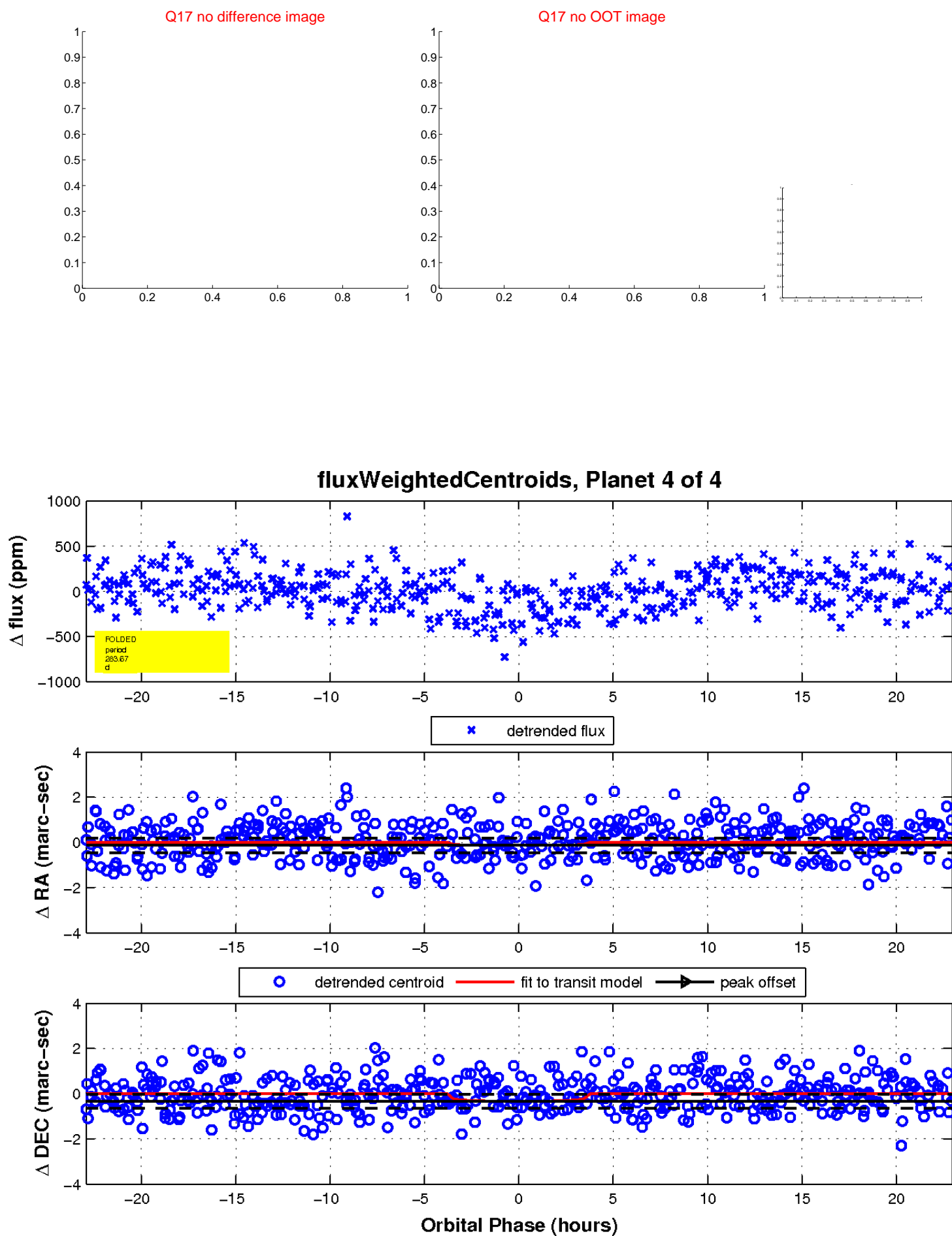
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Declination

