

KIC 010989274

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})
010989274-01	OBS	6233.01	16.177984	132.333602	321.9	5.476	18.3	21.1	1.07	5929	2.11	76.72
010989274-02	OBS	No	390.642671	174.283467	422.3	6.820	13.9	6.0	1.07	5929	2.52	1.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010989274-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010989274-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT— MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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.

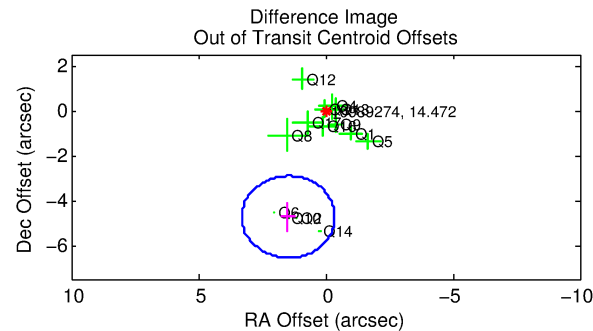
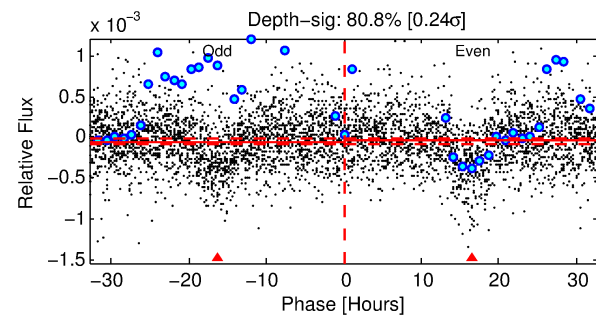
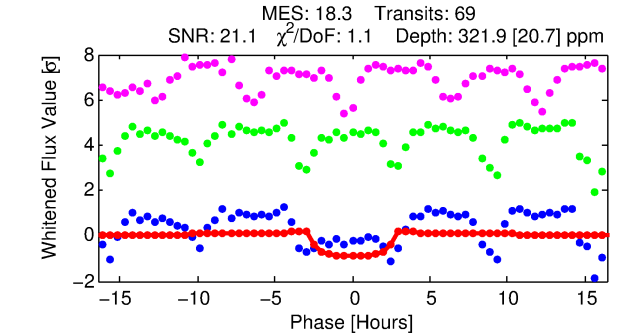
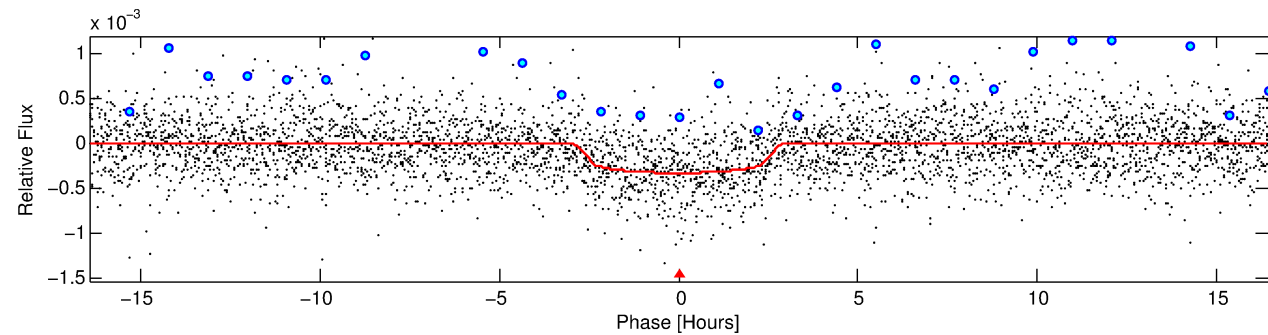
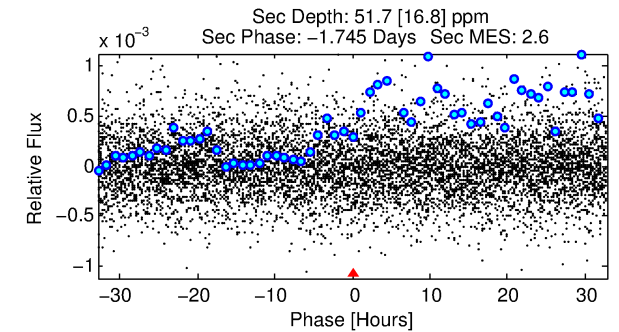
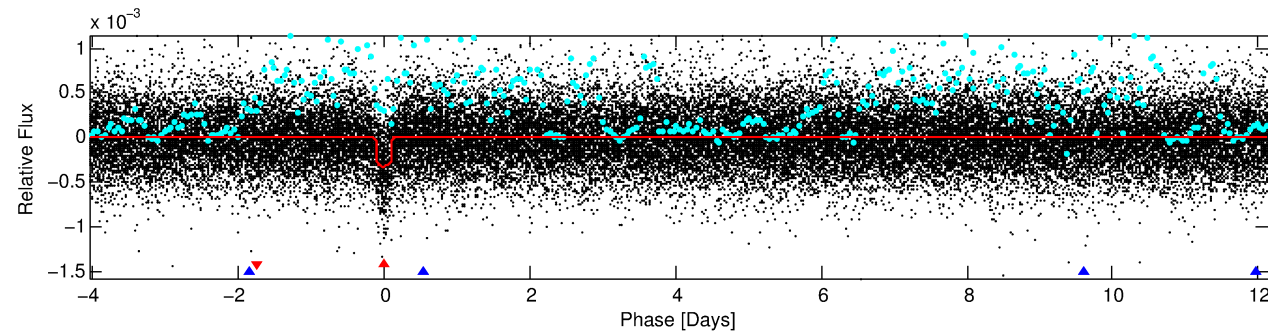
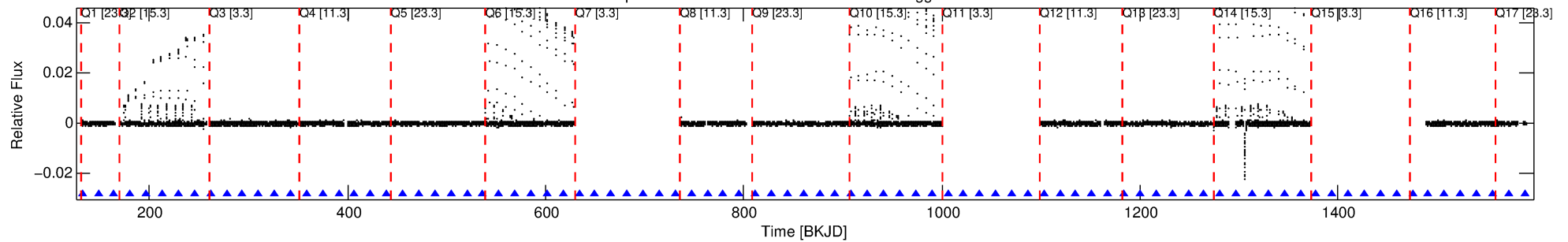
Ephemeris Match Information For 010989274-01

No Significant Match Found

DV One-Page Summary

KIC: 10989274 Candidate: 1 of 2 Period: 16.178 d
KOI: K06233.01 Corr: 0.981

Kp: 14.47 R*: 1.07 Rs Teff: 5929.0 K Logg: 4.41 Fe/H: 0.140



DV Fit Results:

Period = 16.17798 [0.00012] d
Epoch = 132.3336 [0.0058] BKJD
Rp/R* = 0.0181 [0.0075]
a/R* = 14.79 [28.19]
b = 0.78 [0.97]
Seff = 76.72 [31.05]
Teq = 755 [76] K
Rp = 2.11 [1.09] Re
a = 0.1284 [0.0336] AU
Ag = 105.50 [102.76] [1.02σ]
Teffp = 3739 [847] K [3.51σ]

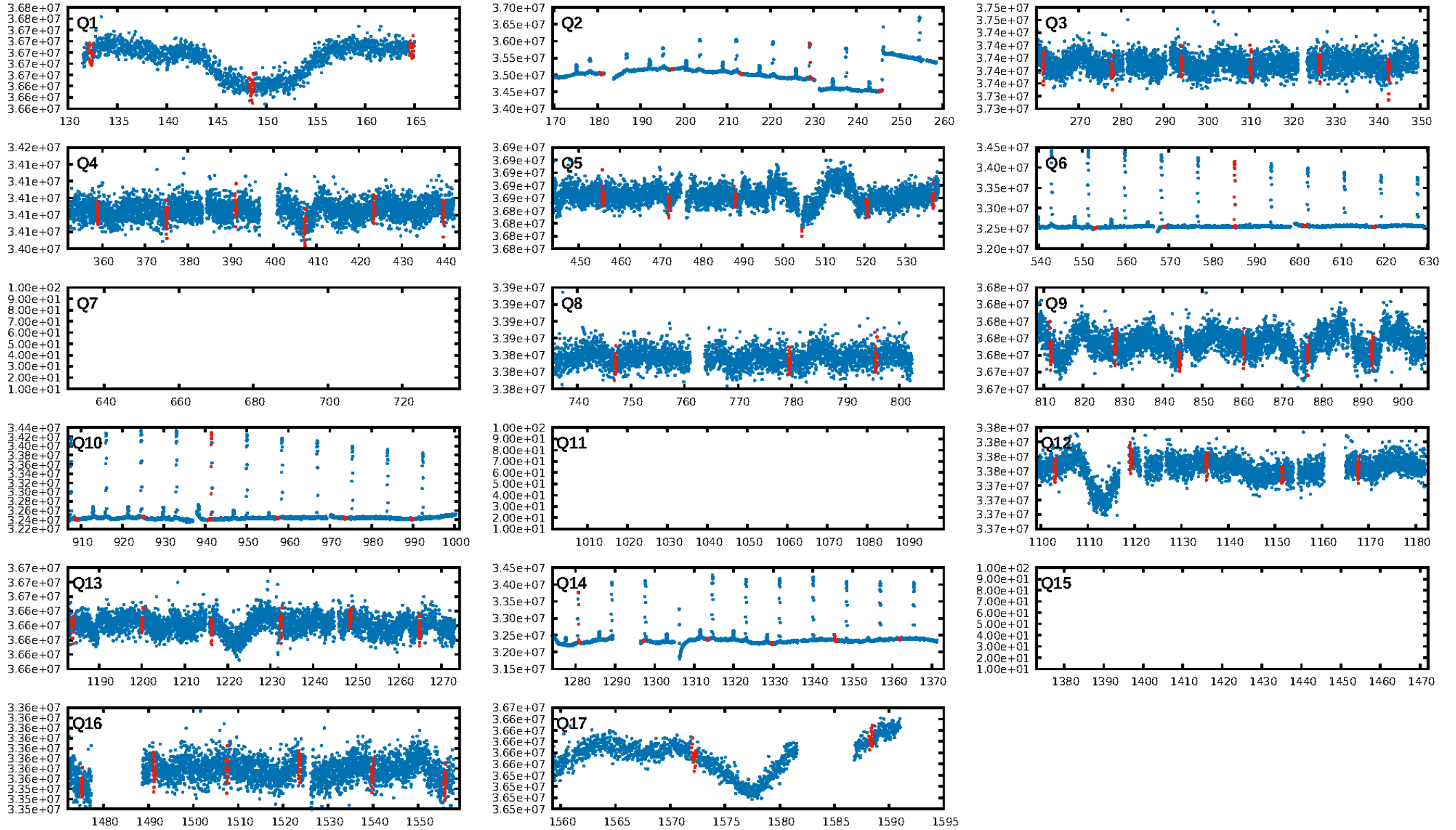
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1027.54σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.34e-63
RollingBand-fgt: 1.00 [64/64]
GhostDiagnostic-chr: 2.855
Centroid-sig: N/A
Centroid-so: 0.931 arcsec [1.31σ]
OotOffset-rm: 4.962 arcsec [8.15σ]
KicOffset-rm: 4.609 arcsec [8.51σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.93 [13/14]
DiffImageOverlap-fno: 1.00 [14/14]

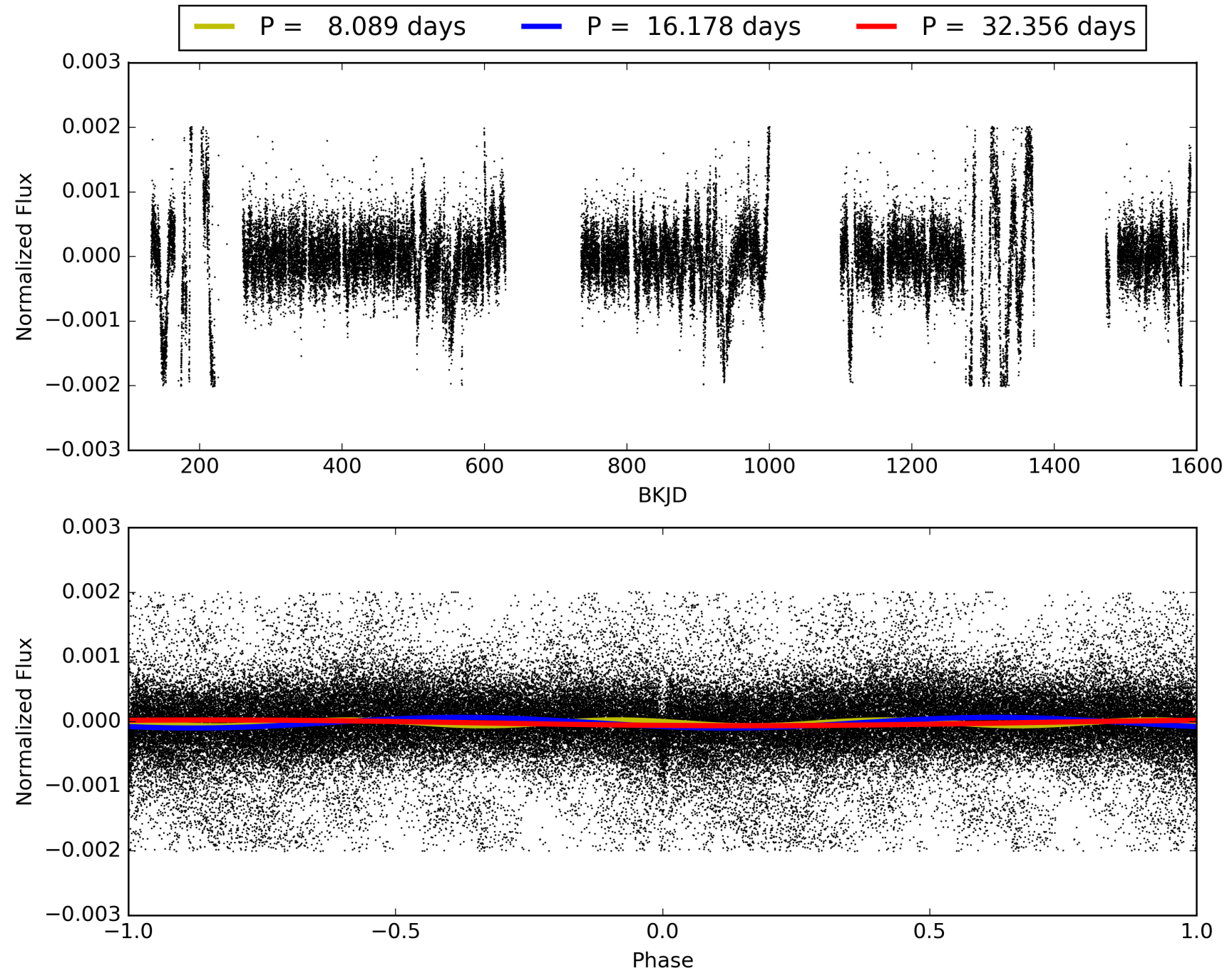
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:59:55 Z

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

TCE 010989274-01, PDC Light Curves

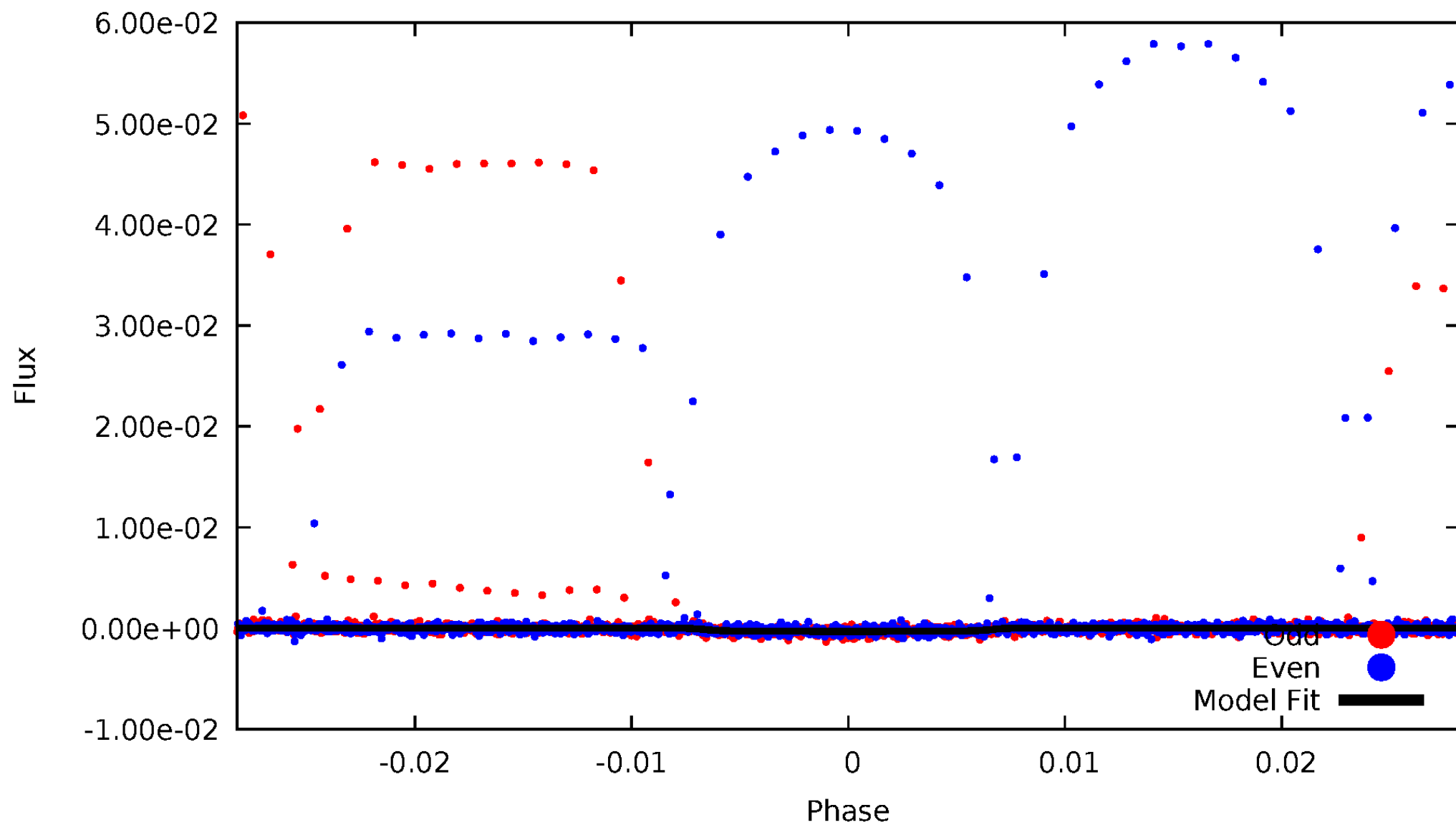


TCE 010989274-01



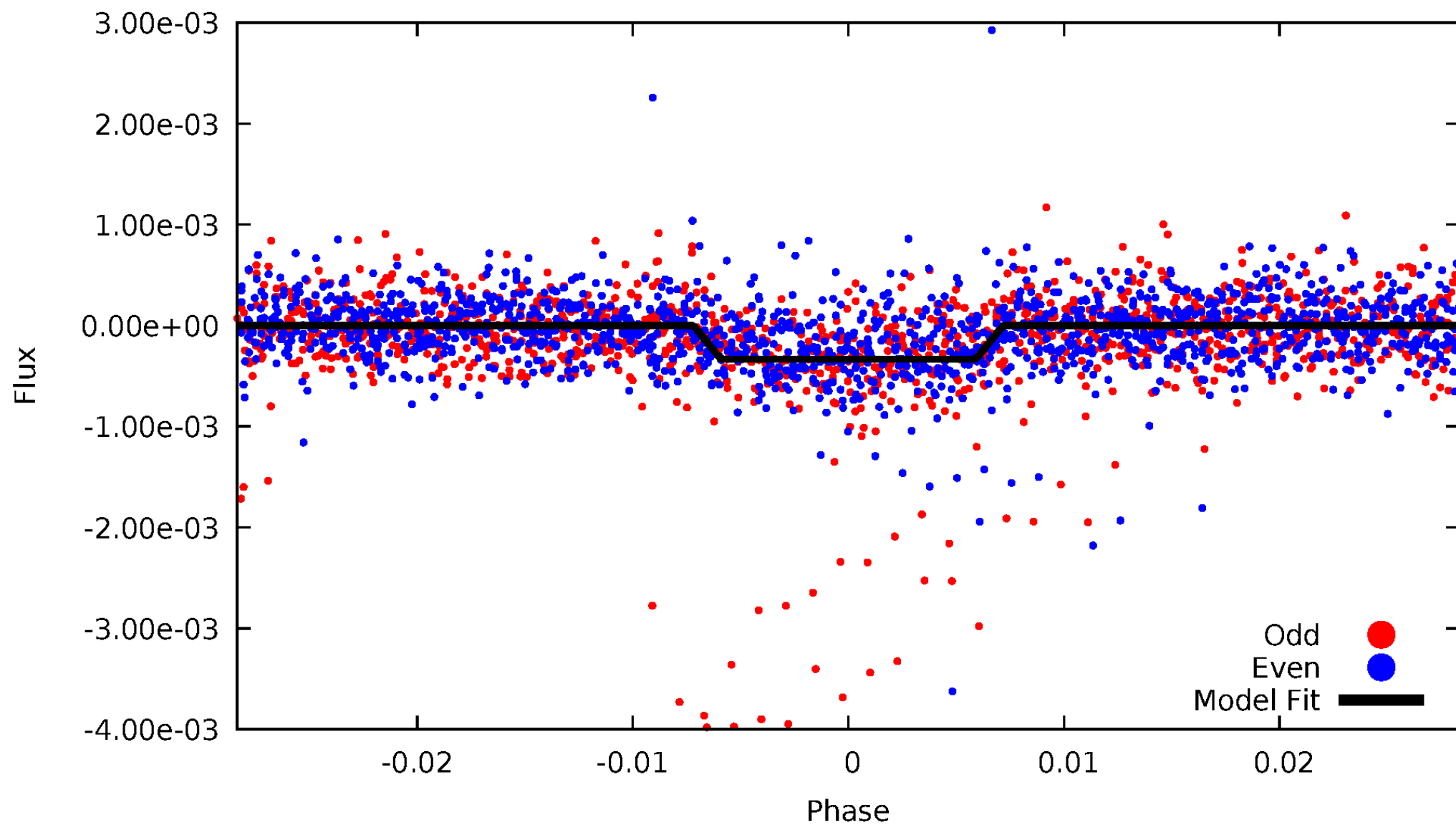
DV Odd/Even

TCE 010989274-01



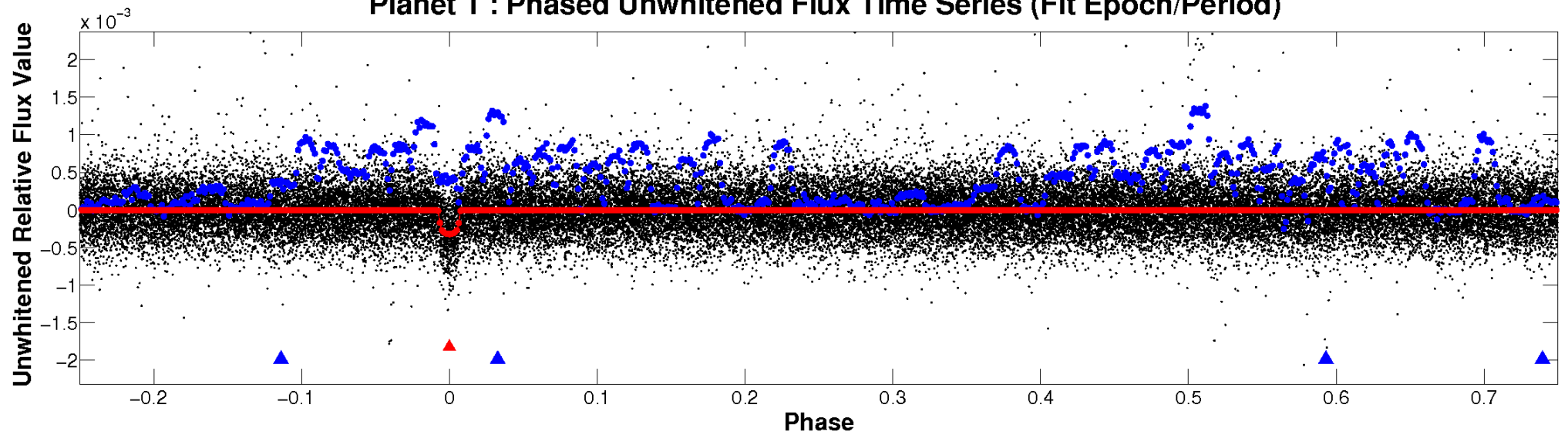
ALT Odd/Even

TCE 010989274-01

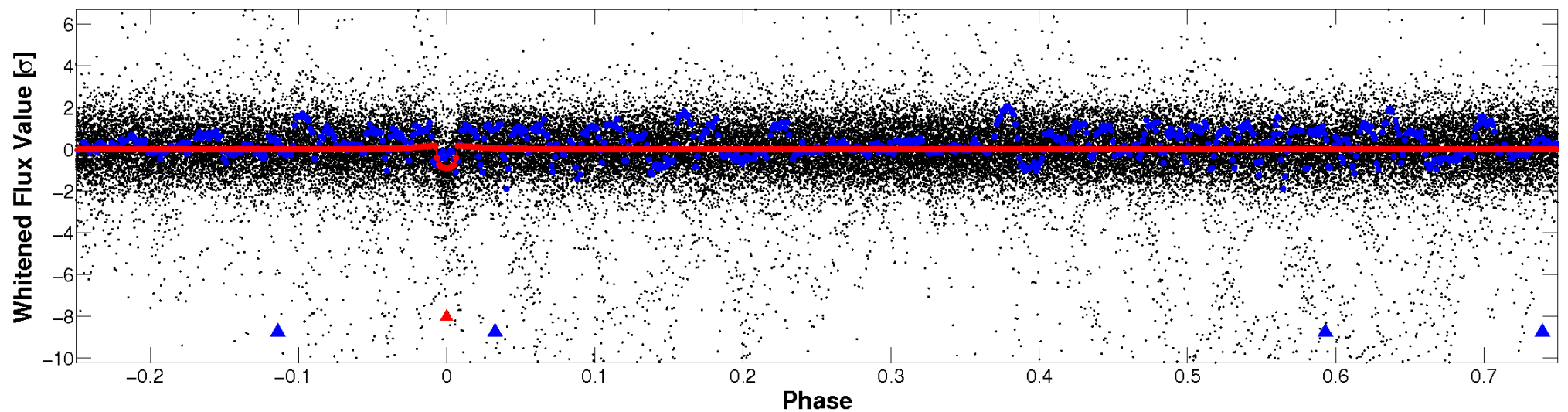


Non-Whitened Vs. Whitened Light Curve

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



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



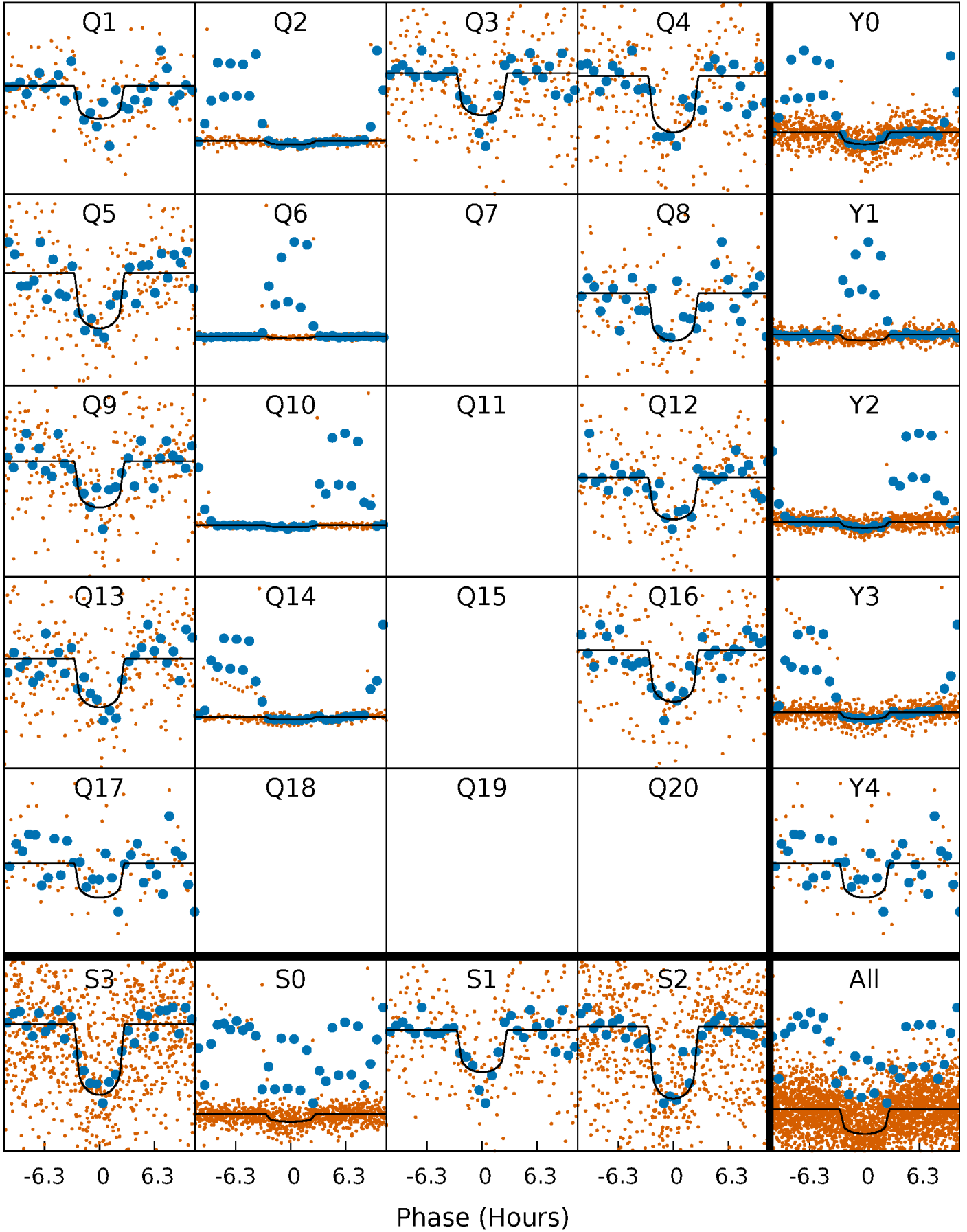
PDC Quarter-Phased Transit Curves

TCE 010989274-01 P= 16.177984 Days $T_0=132.333602$ (BKJD)



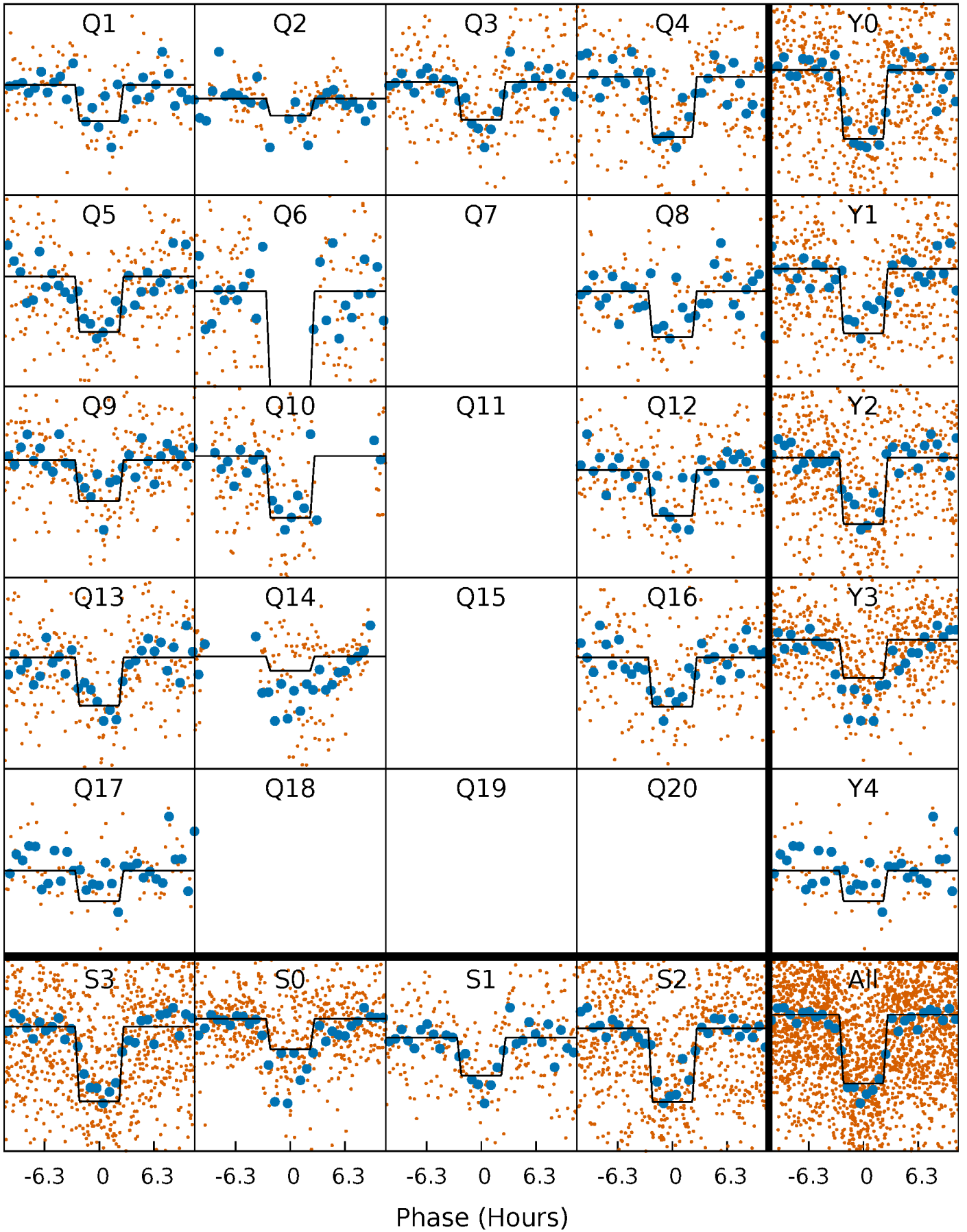
DV Quarter-Phased Transit Curves

TCE 010989274-01 P= 16.177984 Days $T_0=132.333602$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

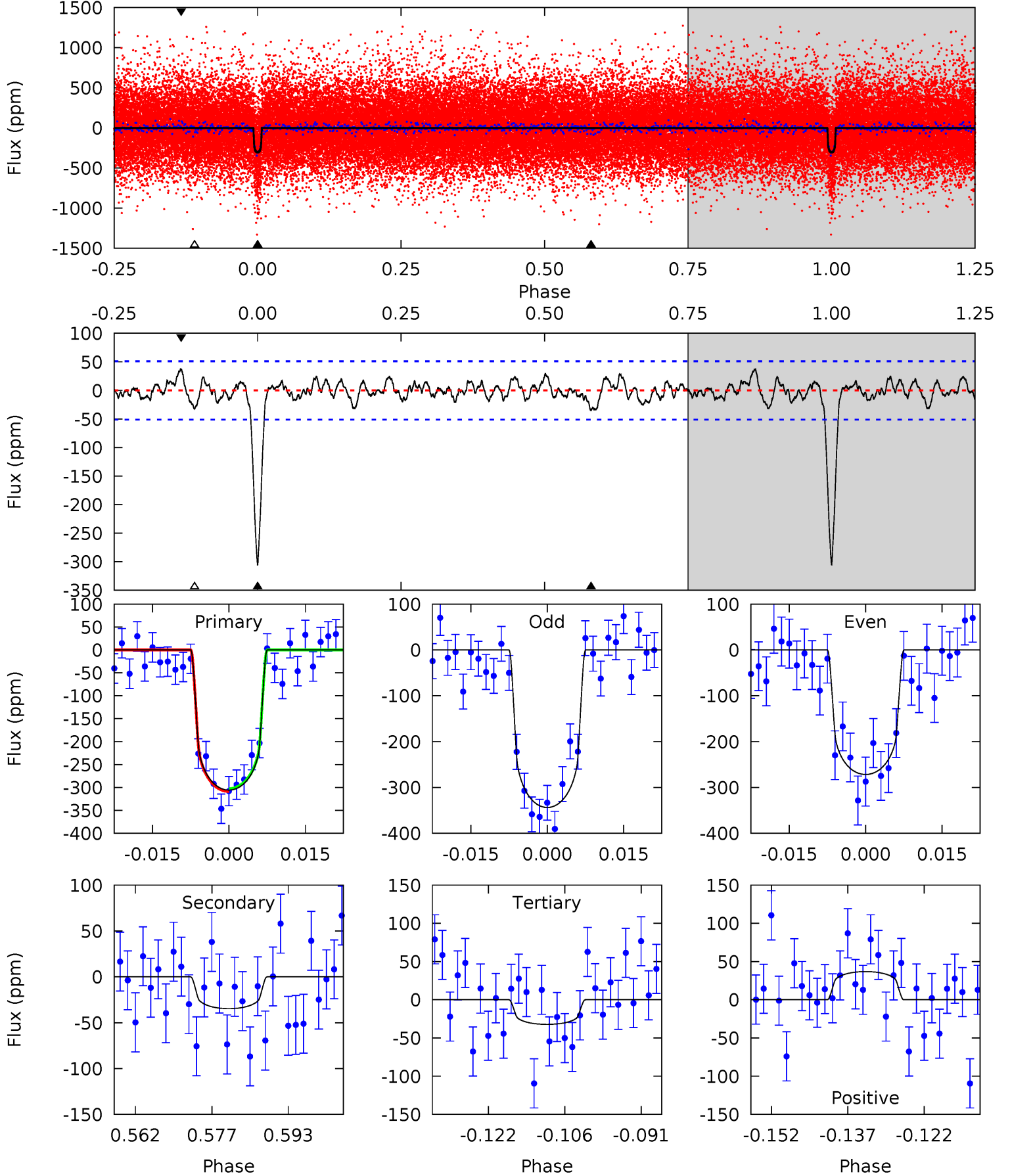
TCE 010989274-01 P= 16.178086 Days $T_0=132.326091$ (BKJD)



DV Model-Shift Uniqueness Test

010989274-01, P = 16.177984 Days, E = 116.155618 Days

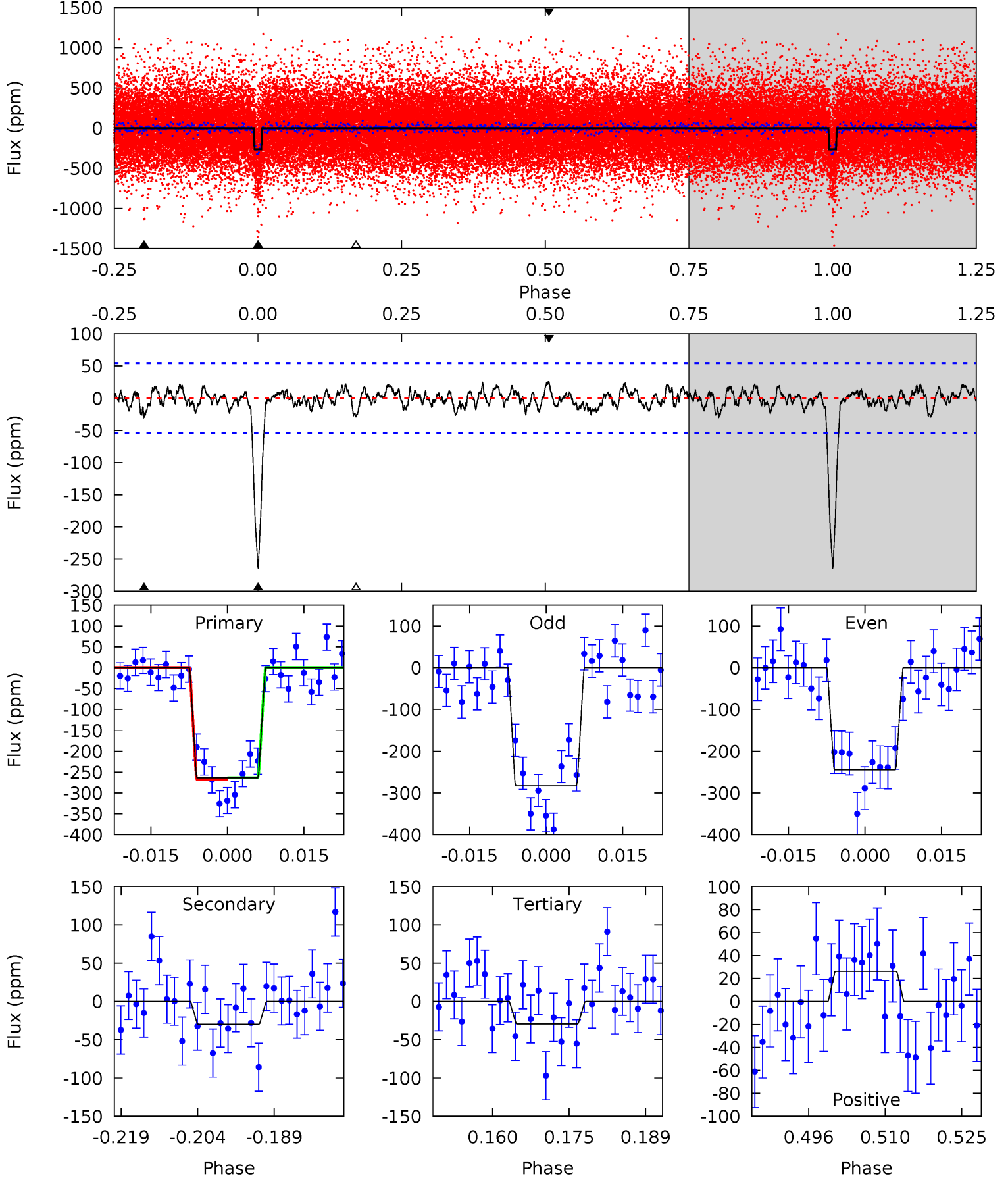
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.5	3.35	3.11	3.56	4.95	2.43	1.17	26.4	26.0	0.24	-0.21	3.48	-1.48	0.11	0.29



Alt Model-Shift Uniqueness Test

010989274-01, P = 16.178086 Days, E = 116.148005 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.0	2.70	2.66	2.39	4.95	2.44	0.95	21.3	21.6	0.04	0.31	1.74	1.42	0.09	0.23



Stellar Parameters For KIC 010989274

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5929^{+160}_{-196}	$4.413^{+0.070}_{-0.210}$	$0.140^{+0.200}_{-0.300}$	$1.069^{+0.330}_{-0.141}$	$1.079^{+0.136}_{-0.136}$	$1.245^{+0.468}_{-0.655}$
	+3%/-3%	+2%/-5%	+143%/-214%	+31%/-13%	+13%/-13%	+38%/-53%
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 010989274-01 / KOI 6233.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-35 ± 10	$2.21^{+0.99}_{-0.86}$	1071^{+82}_{-53}	3735^{+797}_{-440}	61^{+109}_{-34}
Alt.	-30 ± 11	$2.22^{+0.95}_{-0.95}$	1076^{+78}_{-55}	3662^{+760}_{-460}	53^{+104}_{-33}

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 $A_{obs} \gg 1.0$

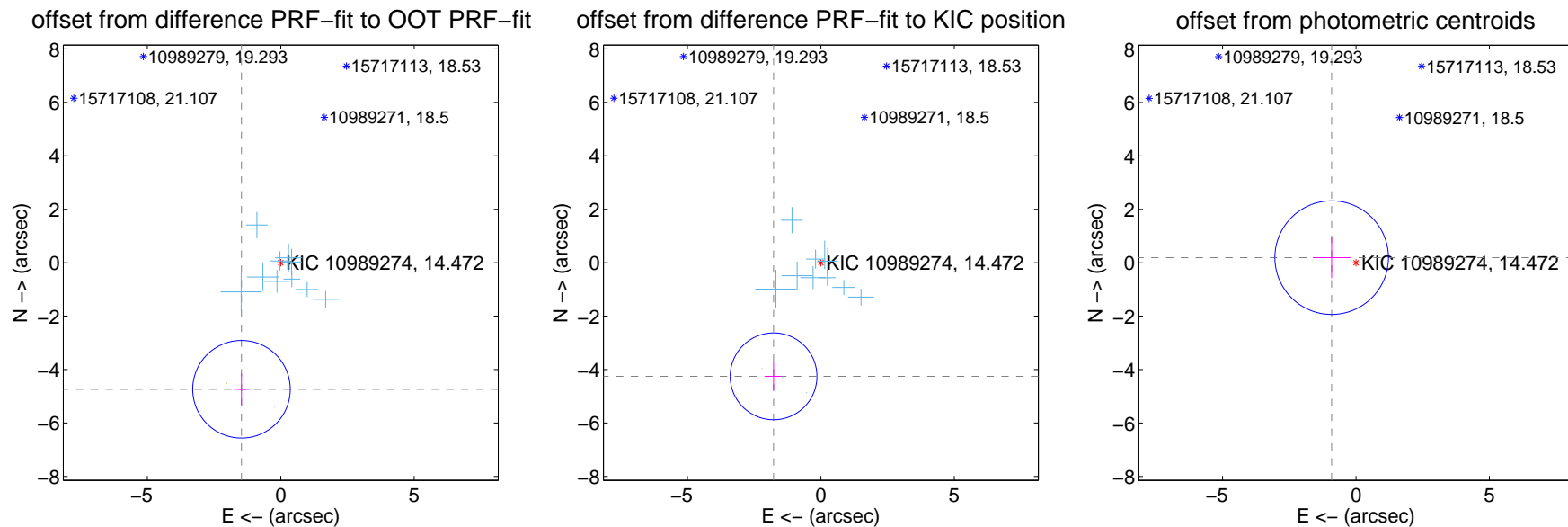
DV Centroid Data

Supplemental centroid analysis for 010989274-01. Kepler magnitude: 14.47. Transit SNR 21.07

There are 13 quarters with good PRF difference image offsets

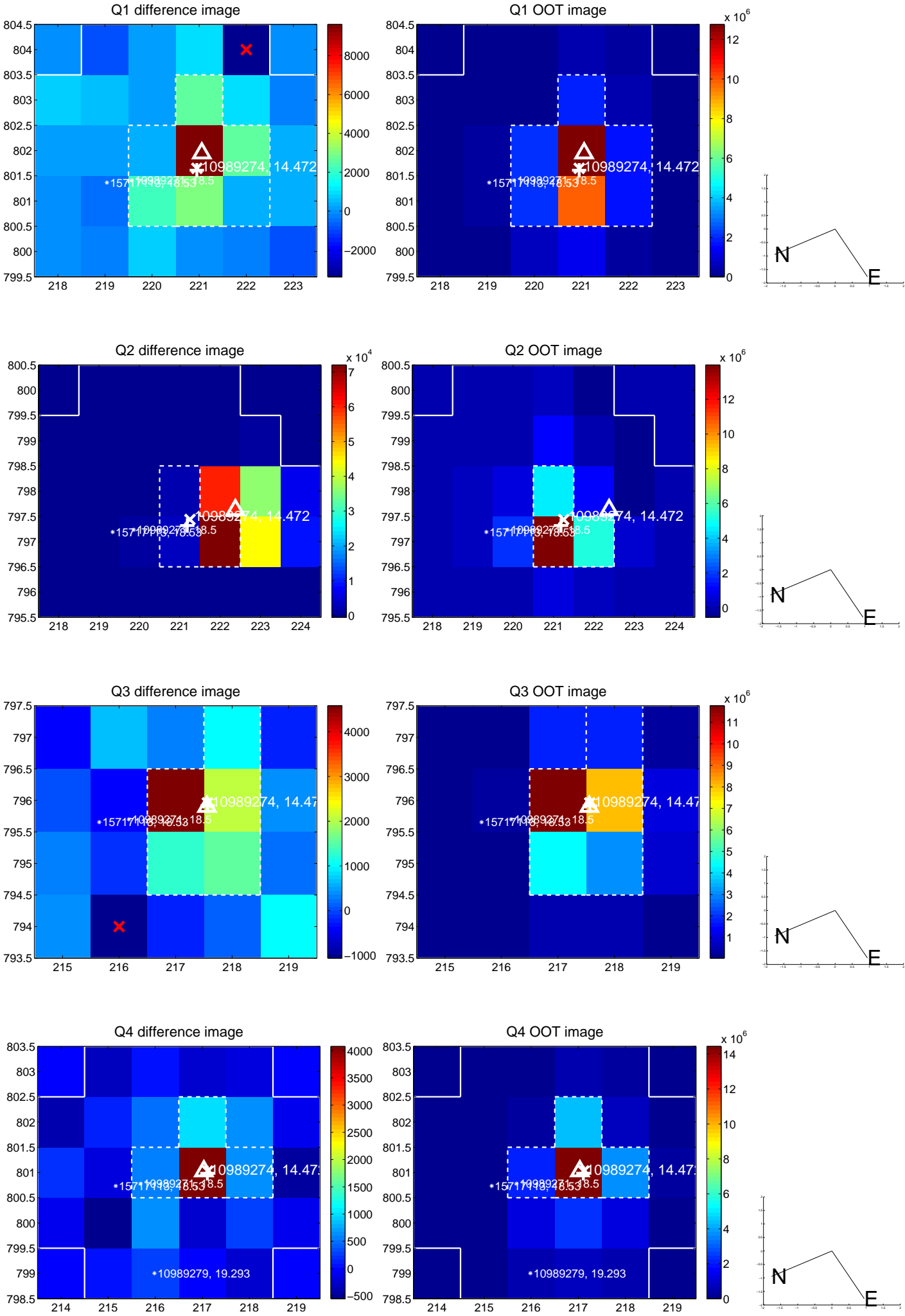
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.962 ± 0.609	8.15	1.471 ± 0.281	-4.739 ± 0.595
PRF-fit source offset from KIC position	4.609 ± 0.542	8.51	1.772 ± 0.286	-4.254 ± 0.524
photometric centroid source offset	0.93 ± 0.71	1.31	0.91 ± 0.71	0.19 ± 0.77

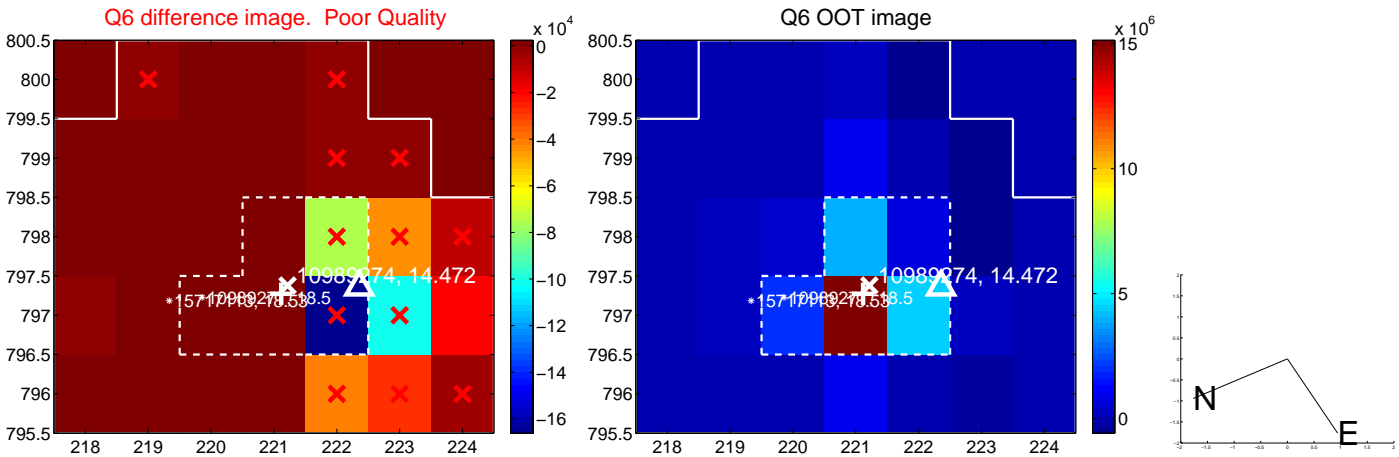
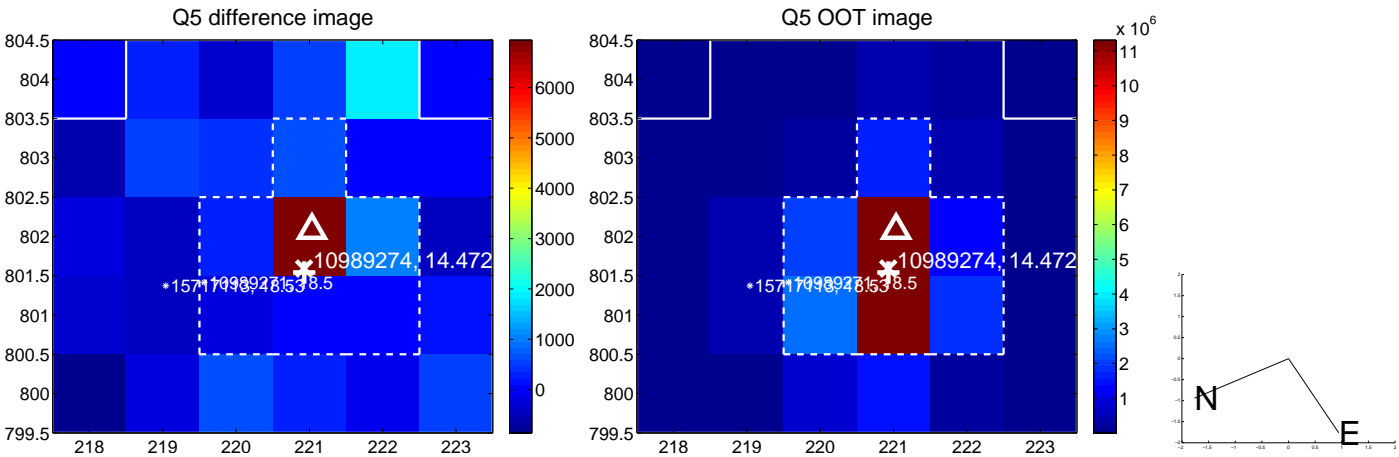


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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

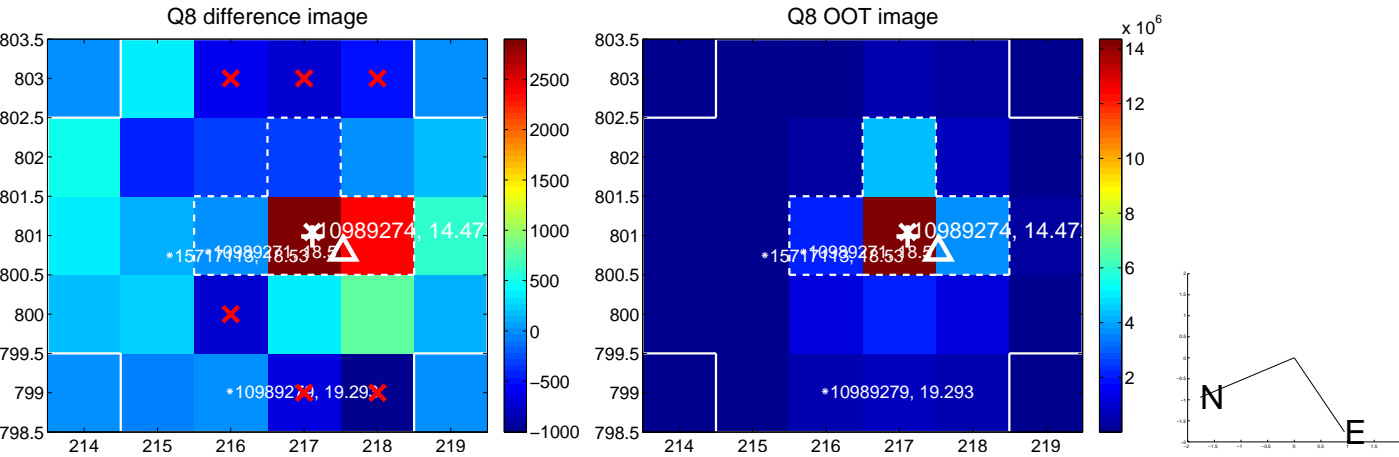


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

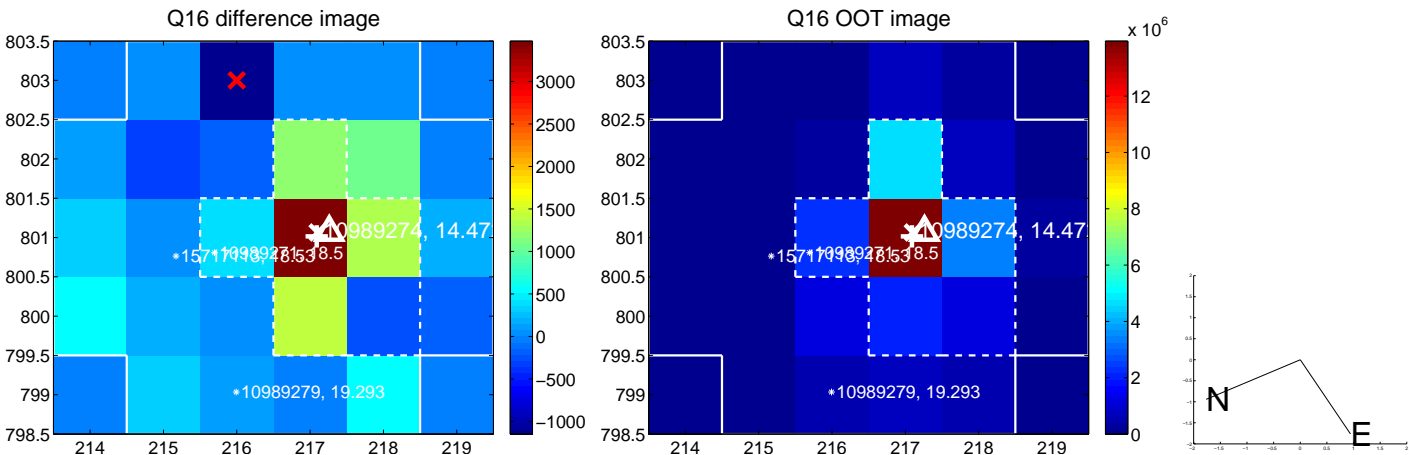
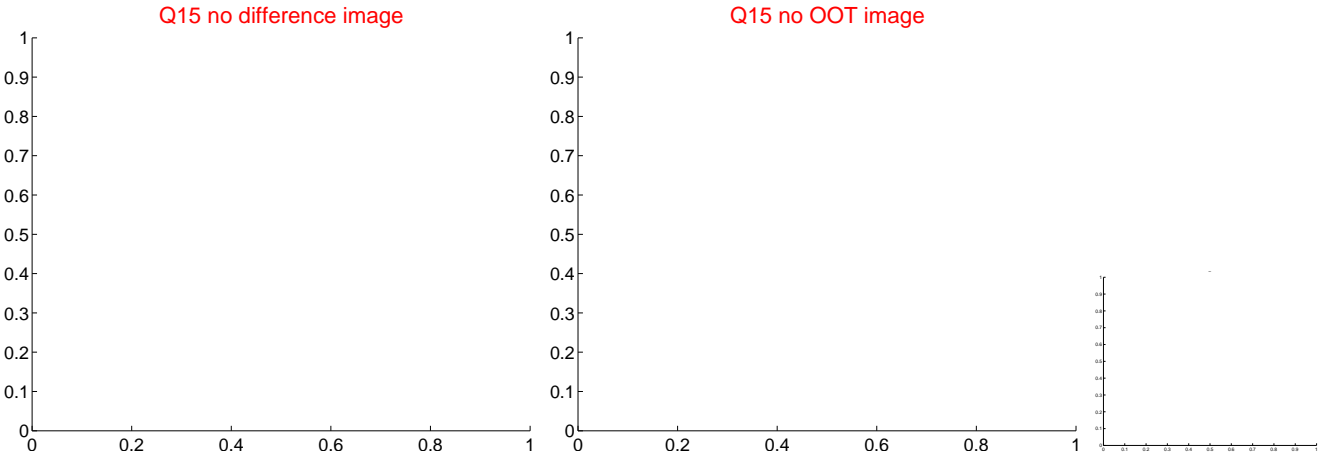
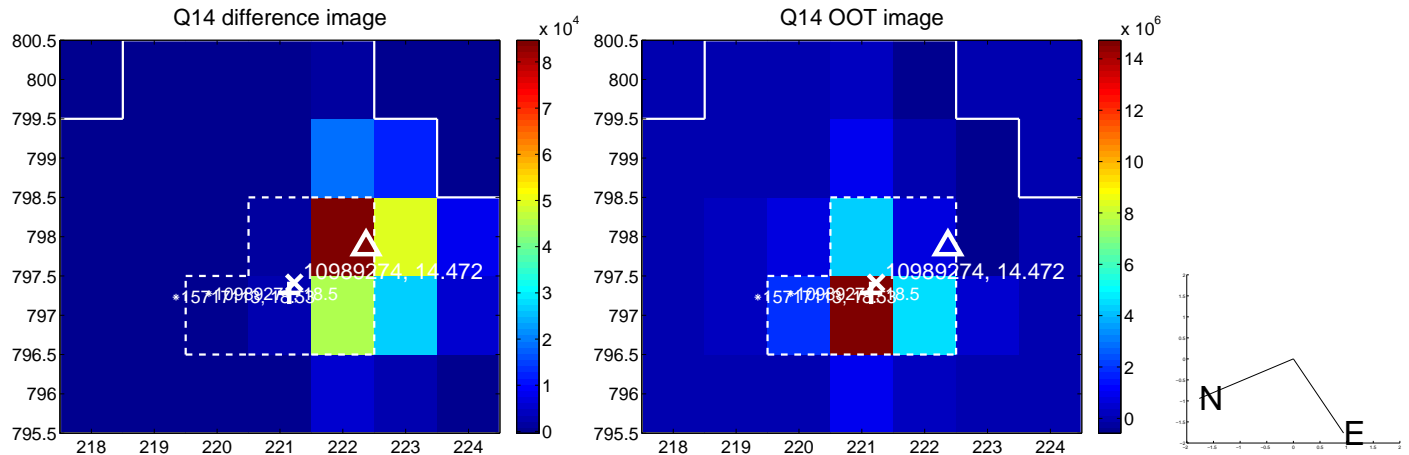
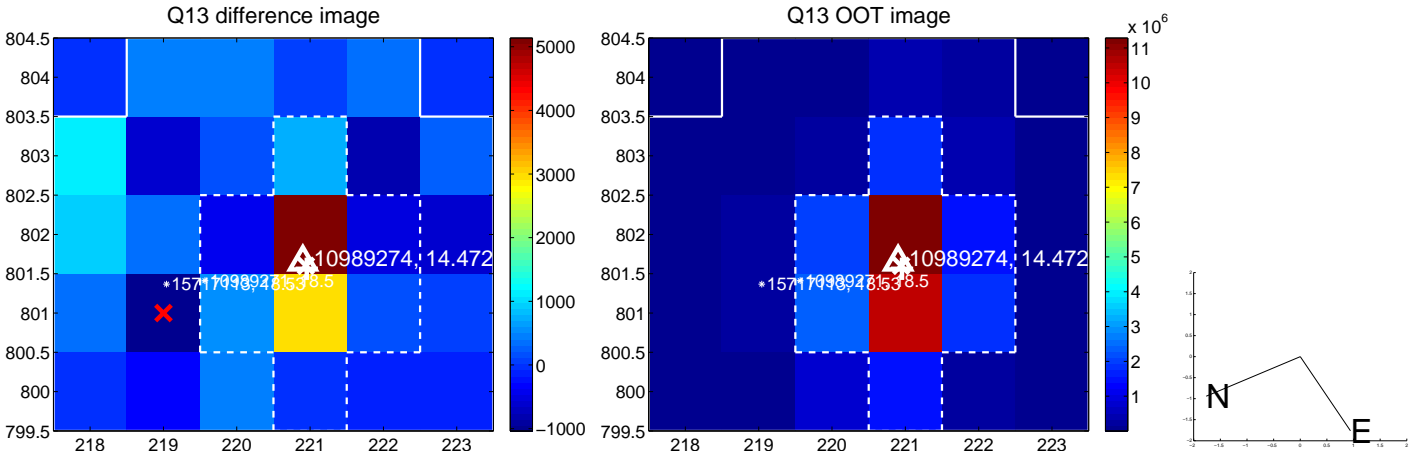


N

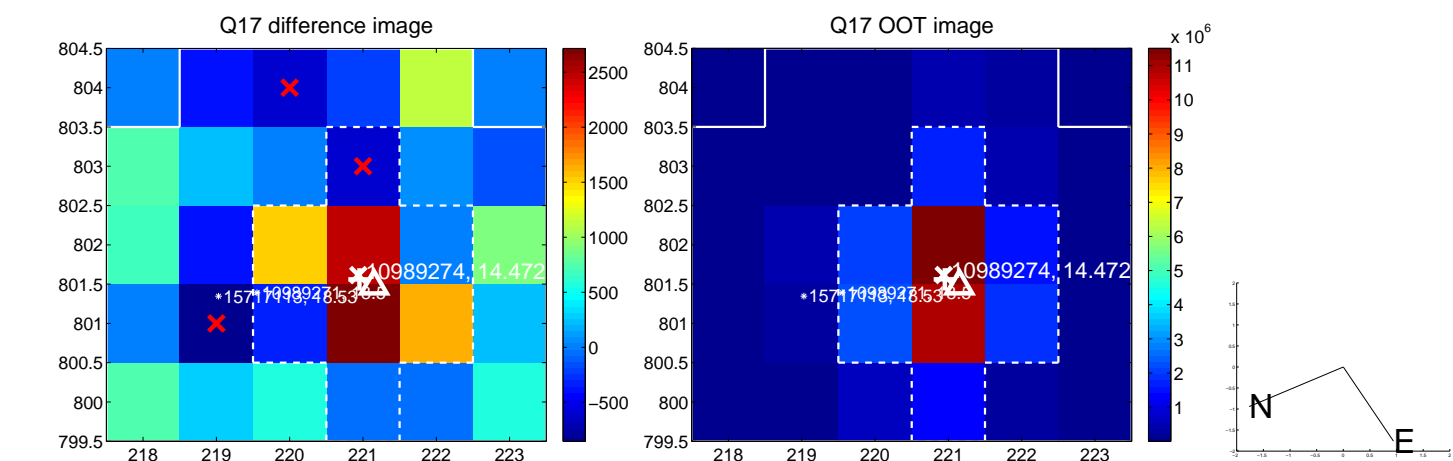
E



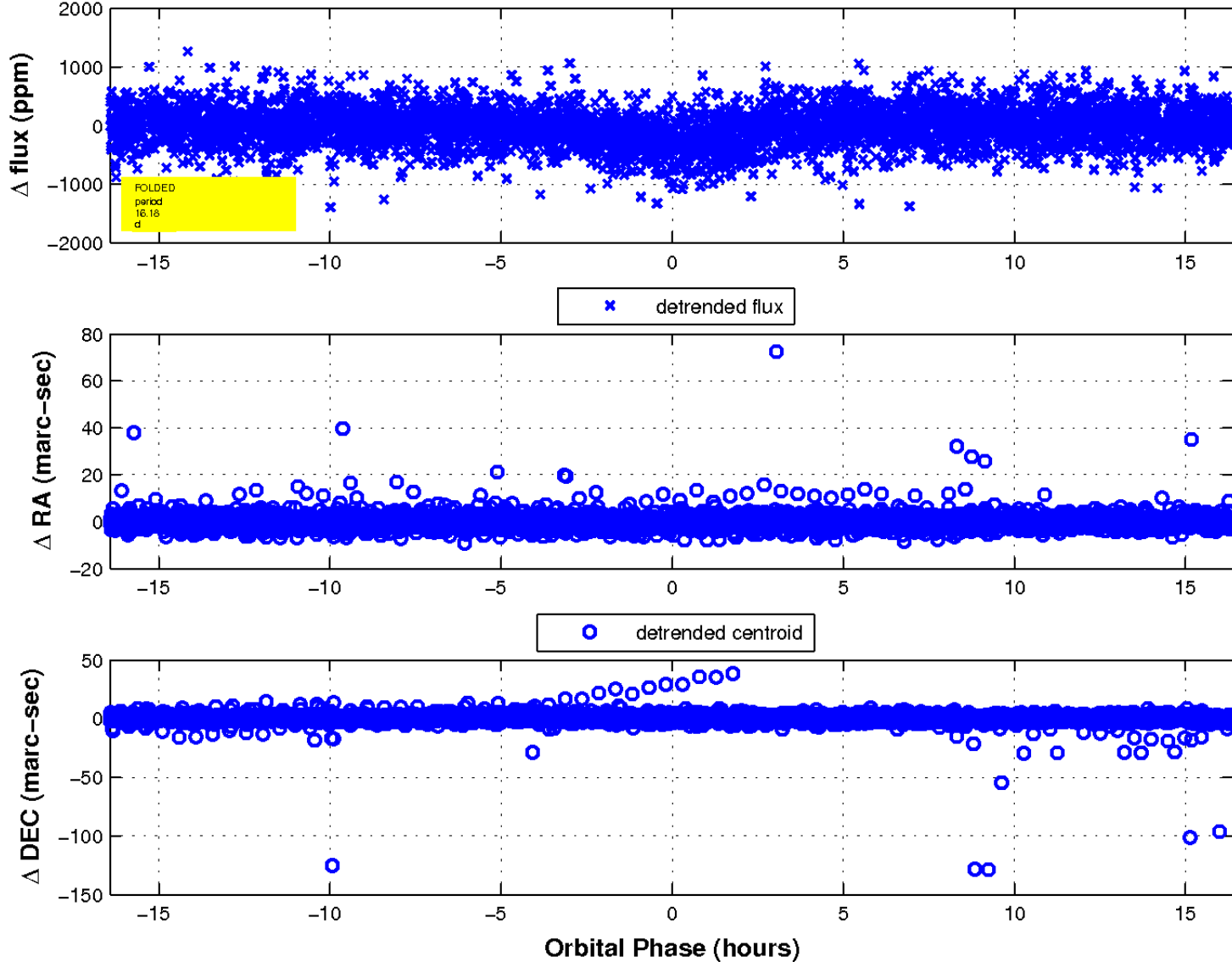
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

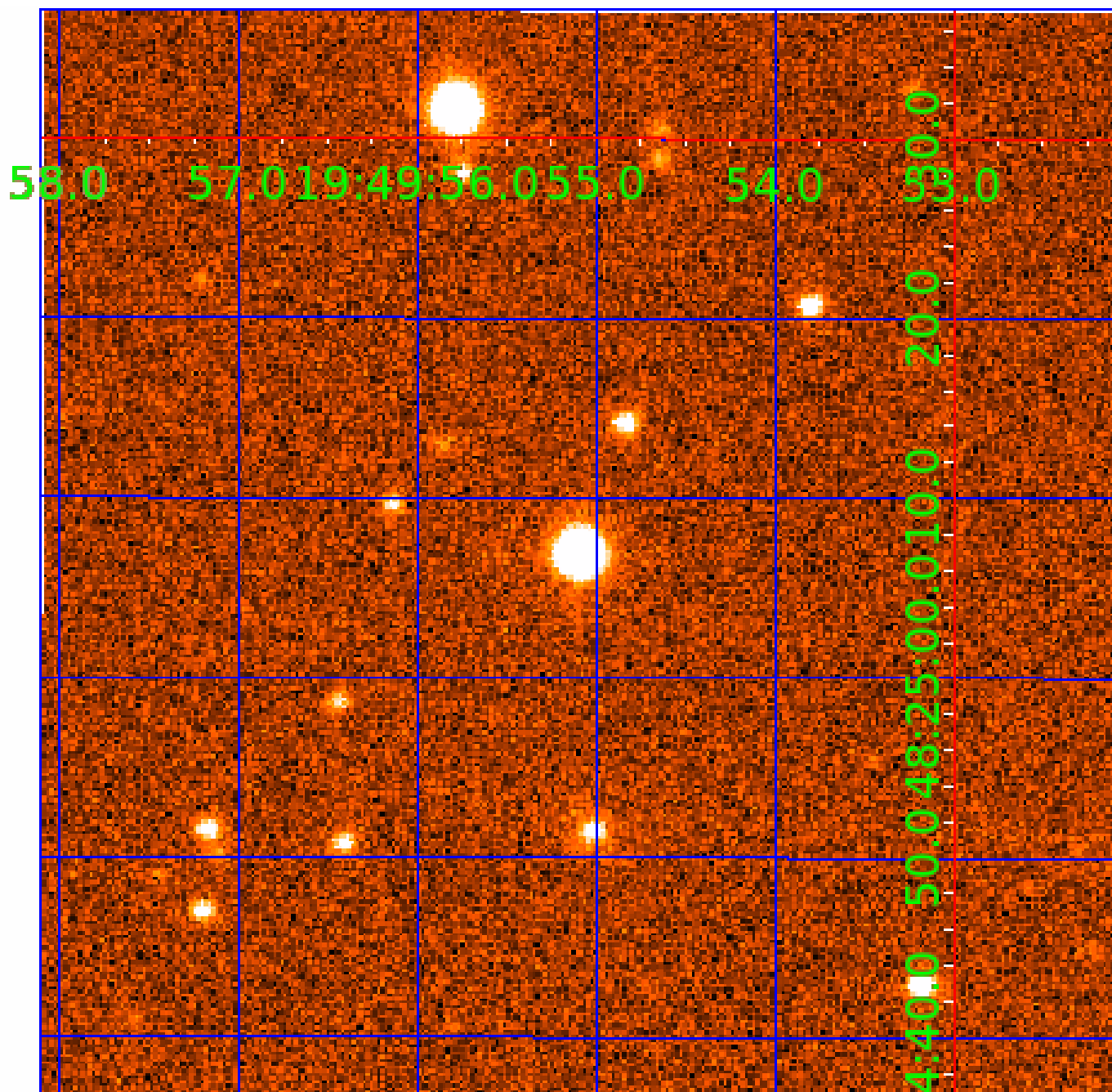


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 010989274

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})
010989274-01	OBS	6233.01	16.177984	132.333602	321.9	5.476	18.3	21.1	1.07	5929	2.11	76.72
010989274-02	OBS	No	390.642671	174.283467	422.3	6.820	13.9	6.0	1.07	5929	2.52	1.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010989274-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010989274-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT— MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST

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.

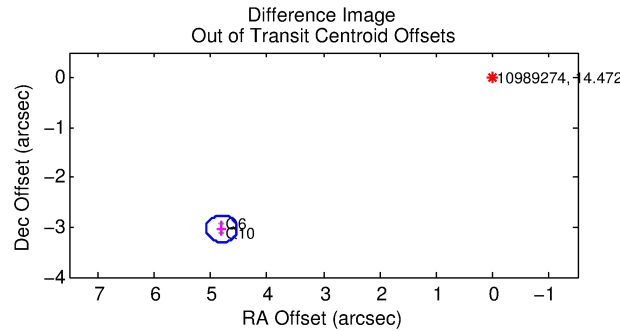
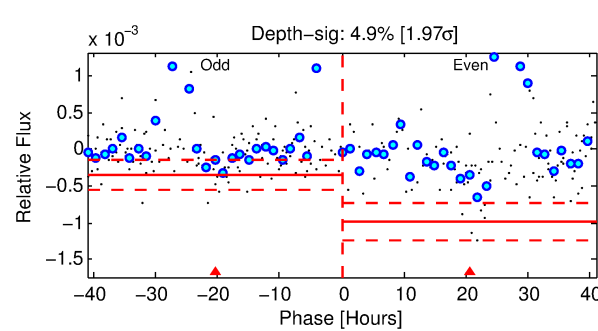
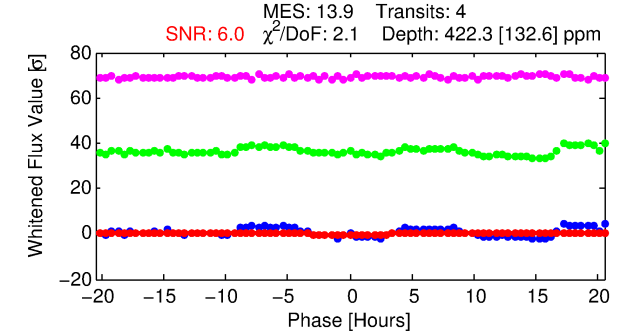
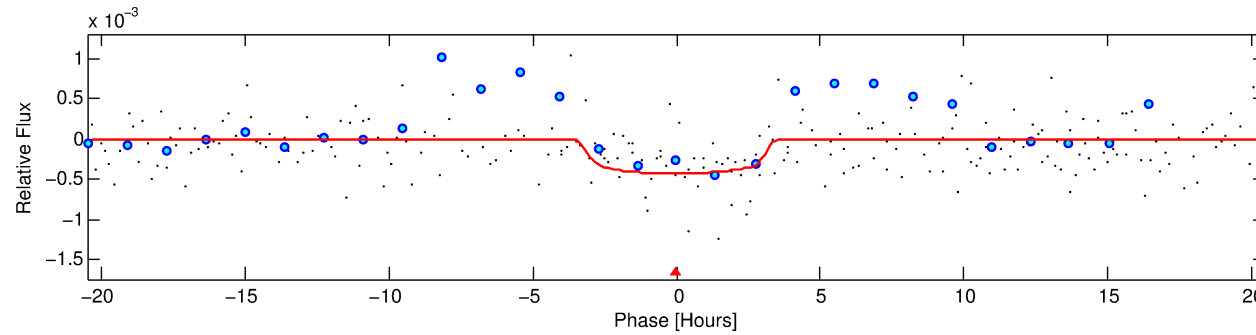
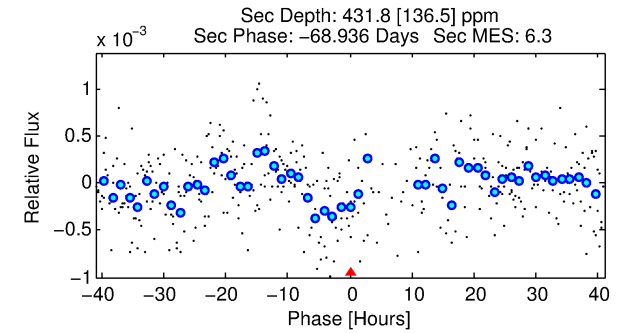
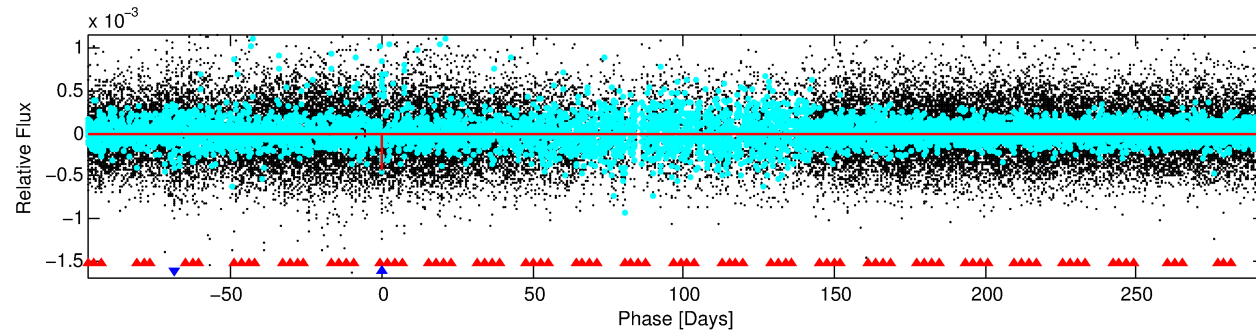
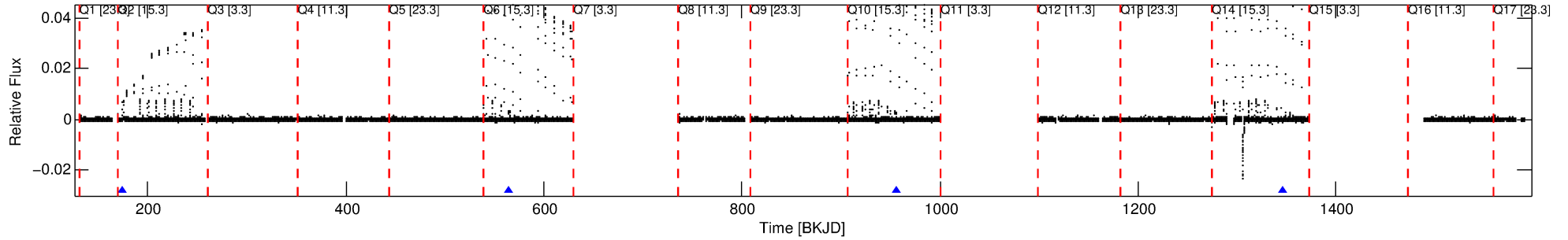
Ephemeris Match Information For 010989274-02

No Significant Match Found

DV One-Page Summary

KIC: 10989274 Candidate: 2 of 2 Period: 390.643 d
KOI: K06233 Corr: No Ephemeris Match

Kp: 14.47 R*: 1.07 Rs Teff: 5929.0 K Logg: 4.41 Fe/H: 0.140



DV Fit Results:

Period = 390.64267 [0.01402] d
Epoch = 174.2835 [0.0230] BKJD
Rp/R* = 0.0216 [0.0121]
a/R* = 240.12 [592.57]
b = 0.86 [0.74]
Seff = 1.10 [0.44]
Teq = 261 [26] K
Rp = 2.53 [1.61] Re
a = 1.0728 [0.2804] AU
Ag = 42879.62 [52332.94] [0.82σ]
Teffp = 5809 [1694] K [3.27σ]

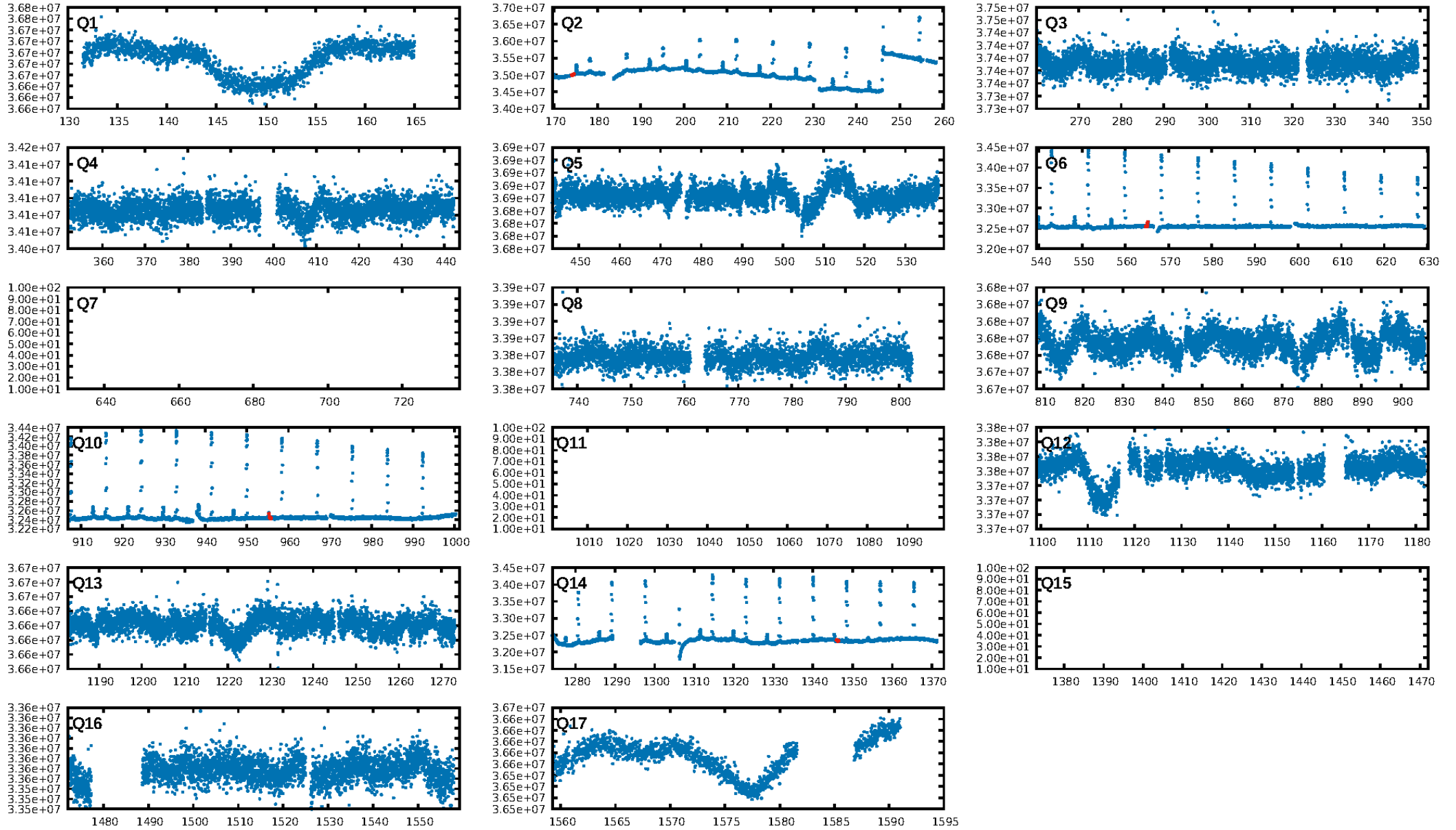
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1027.54σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 10.2%
Bootstrap-pfa: 1.21e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.08909
Centroid-sig: N/A
Centroid-so: 6.420 arcsec [1.89σ]
OotOffset-rm: 5.683 arcsec [62.20σ]
KicOffset-rm: 5.672 arcsec [66.09σ]
OotOffset-st: 2/0/0/0 [2]
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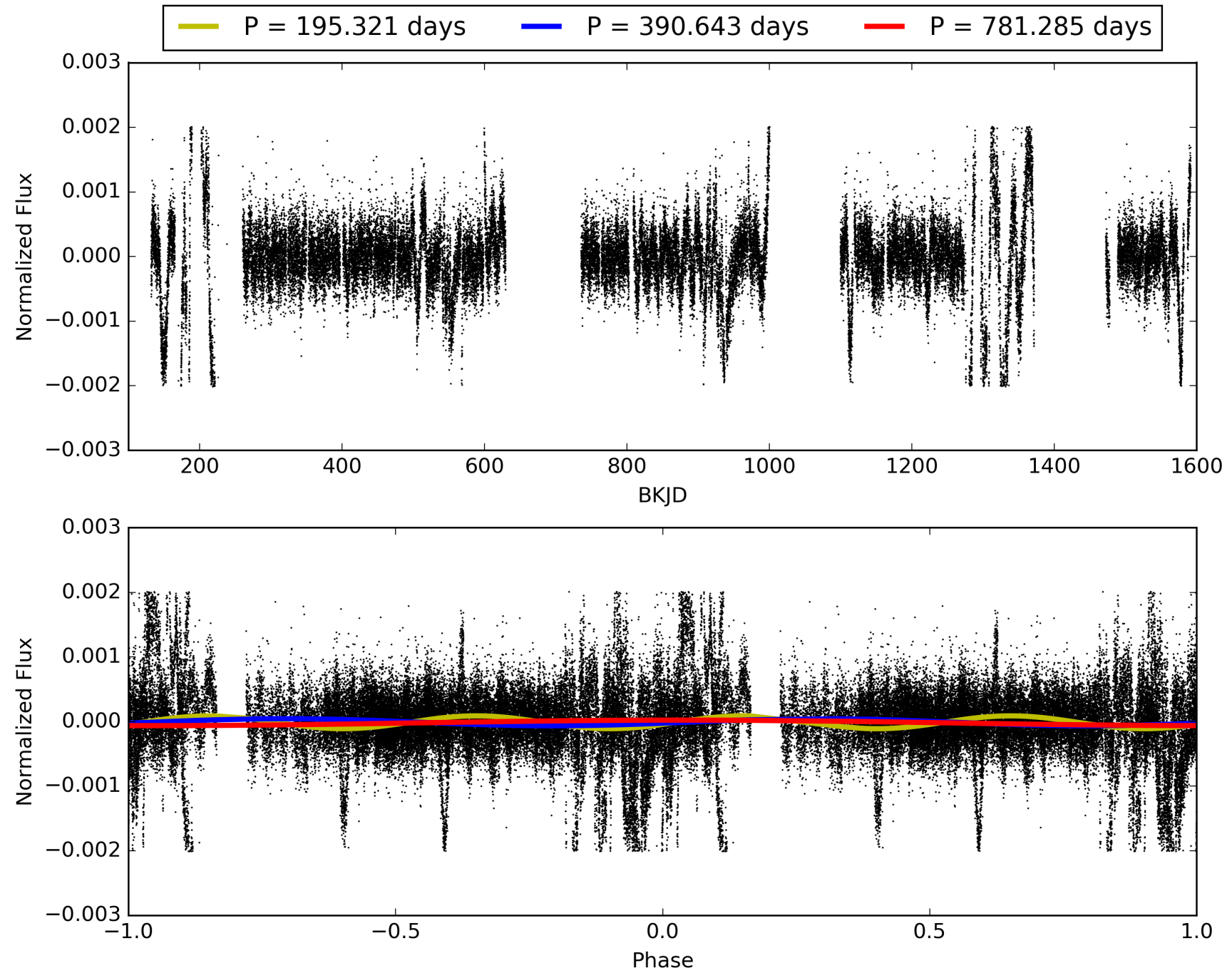
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010989274-02, PDC Light Curves

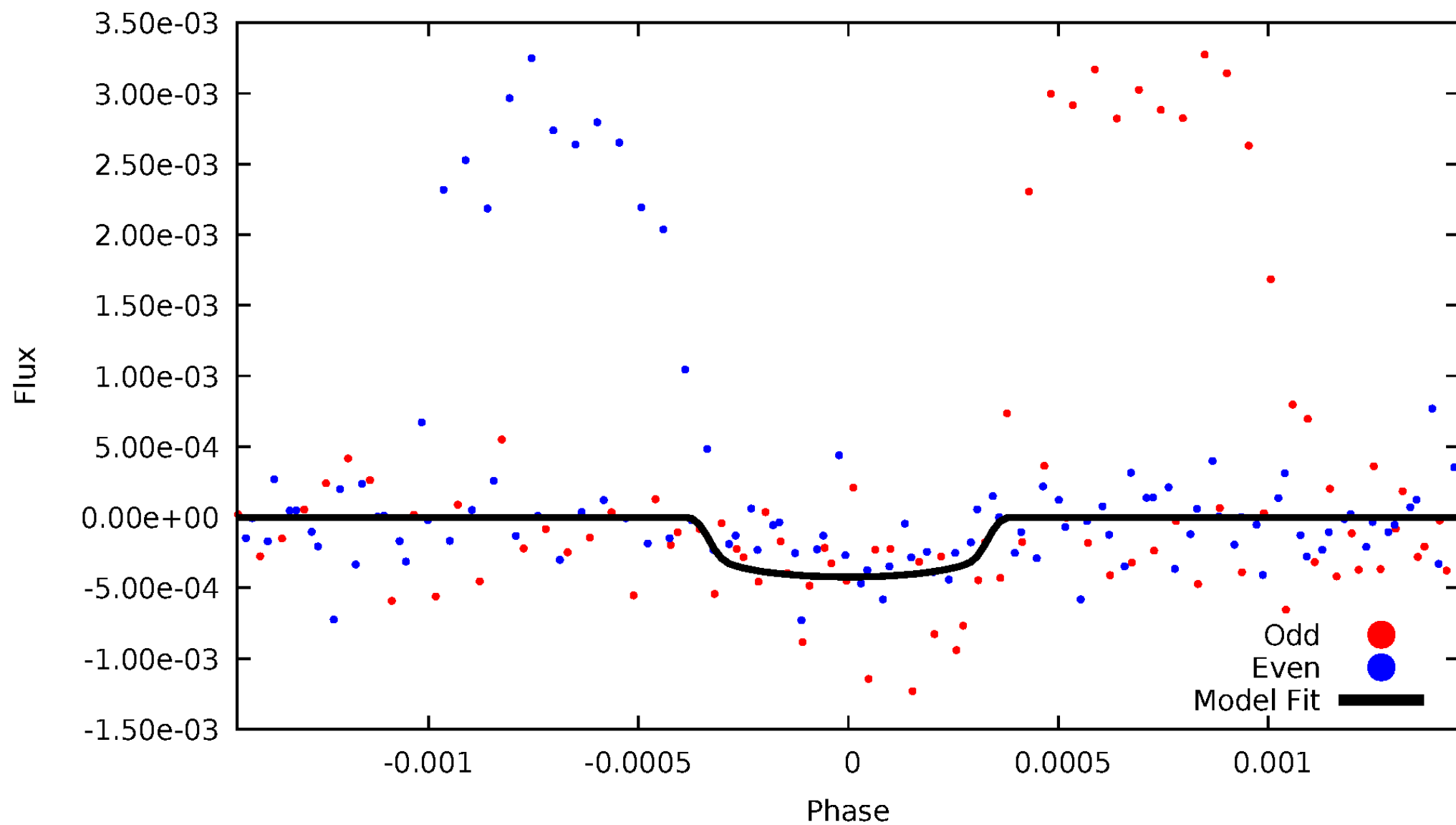


TCE 010989274-02



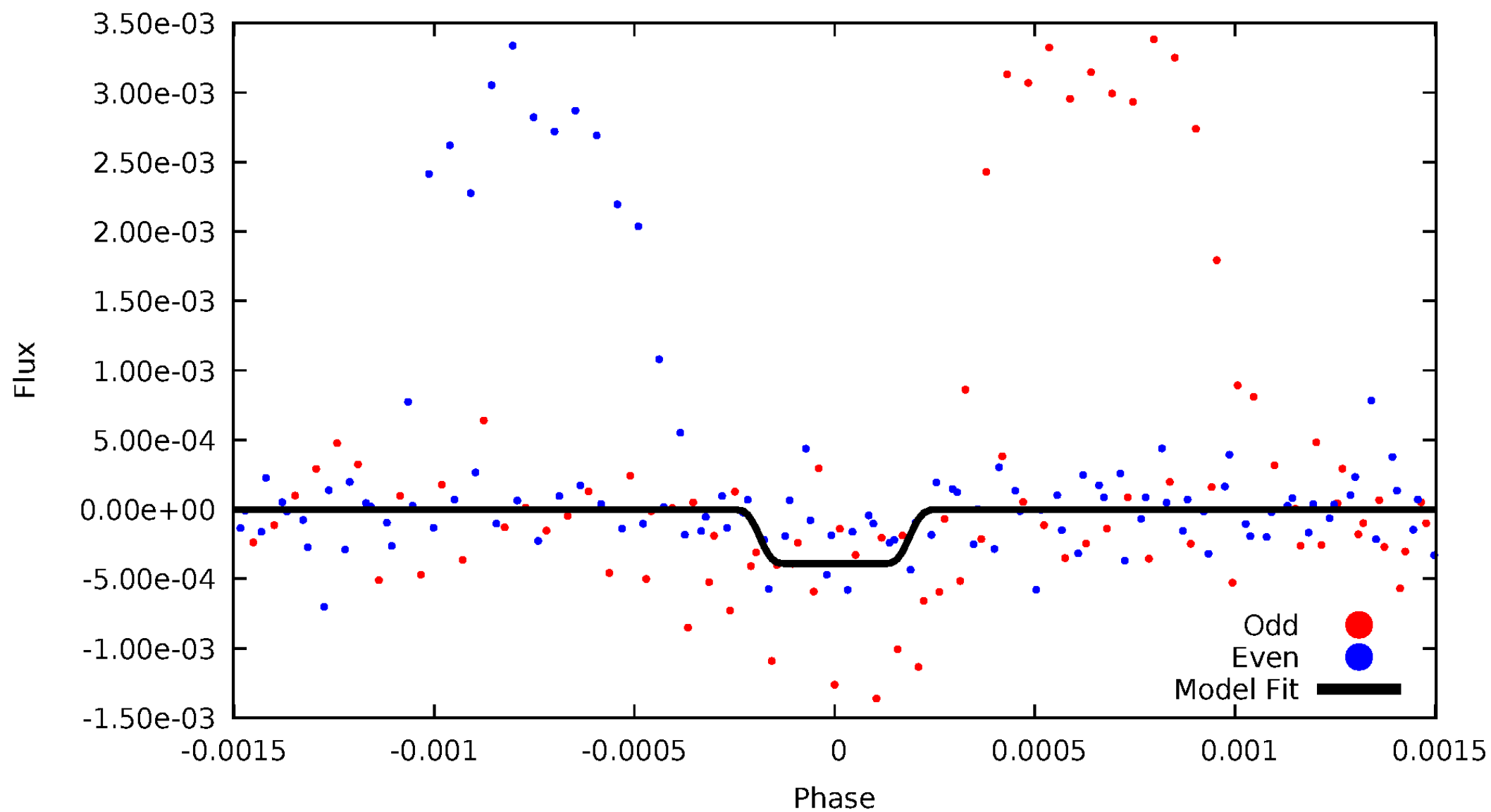
DV Odd/Even

TCE 010989274-02



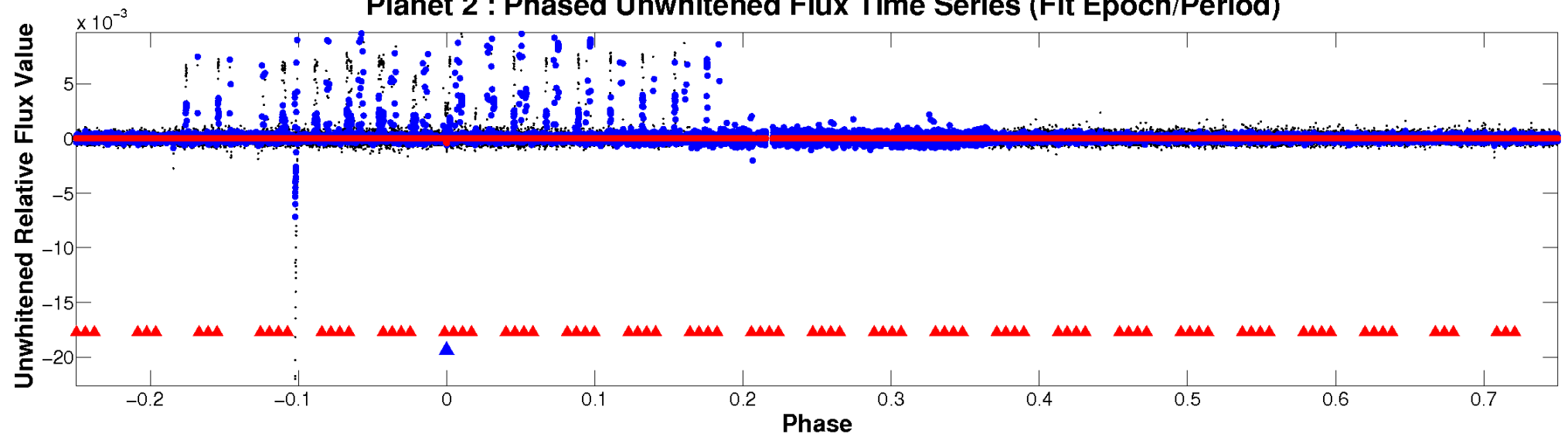
ALT Odd/Even

TCE 010989274-02

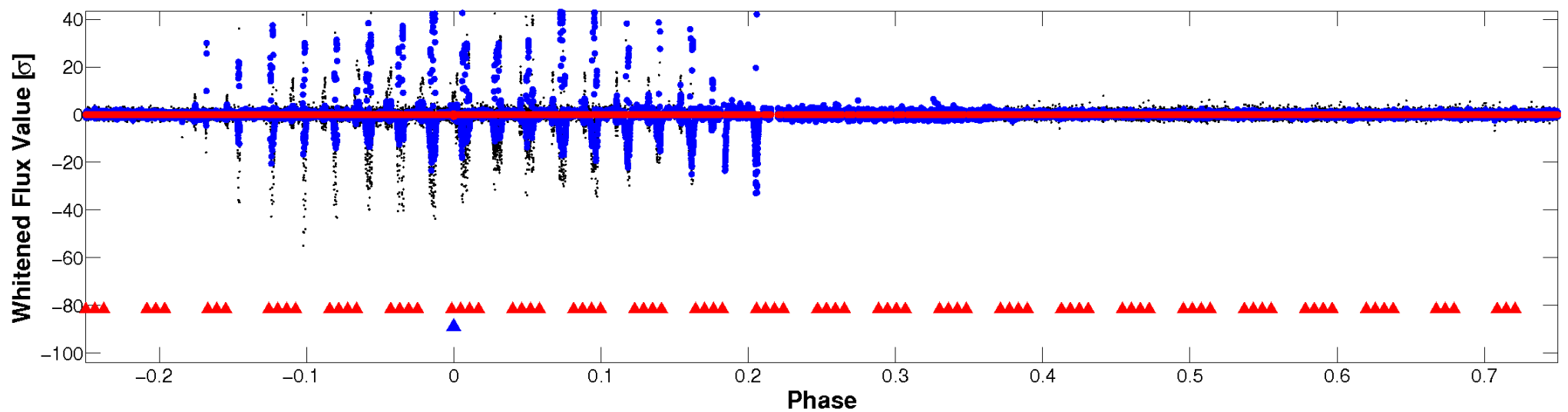


Non-Whitened Vs. Whitened Light Curve

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

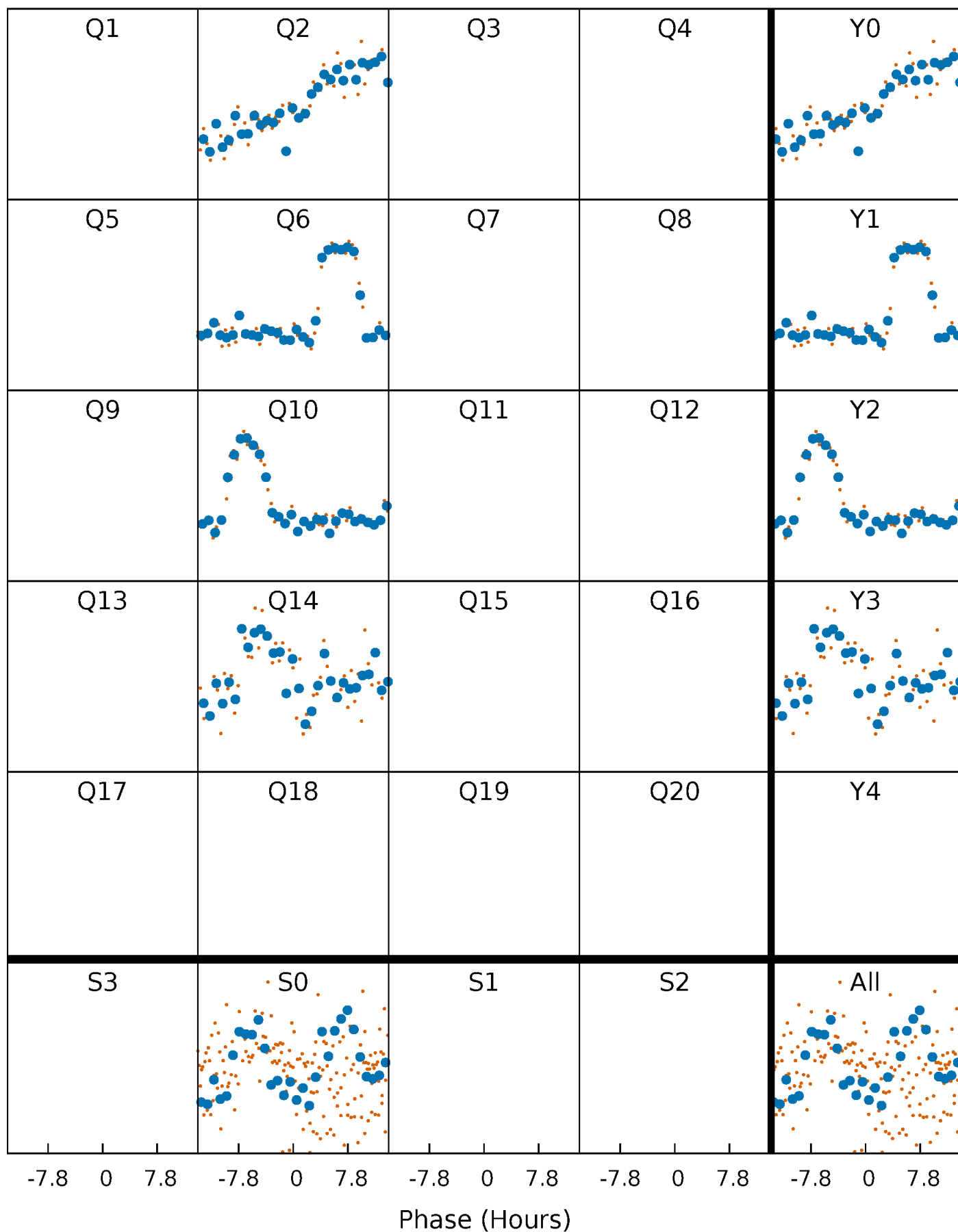


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



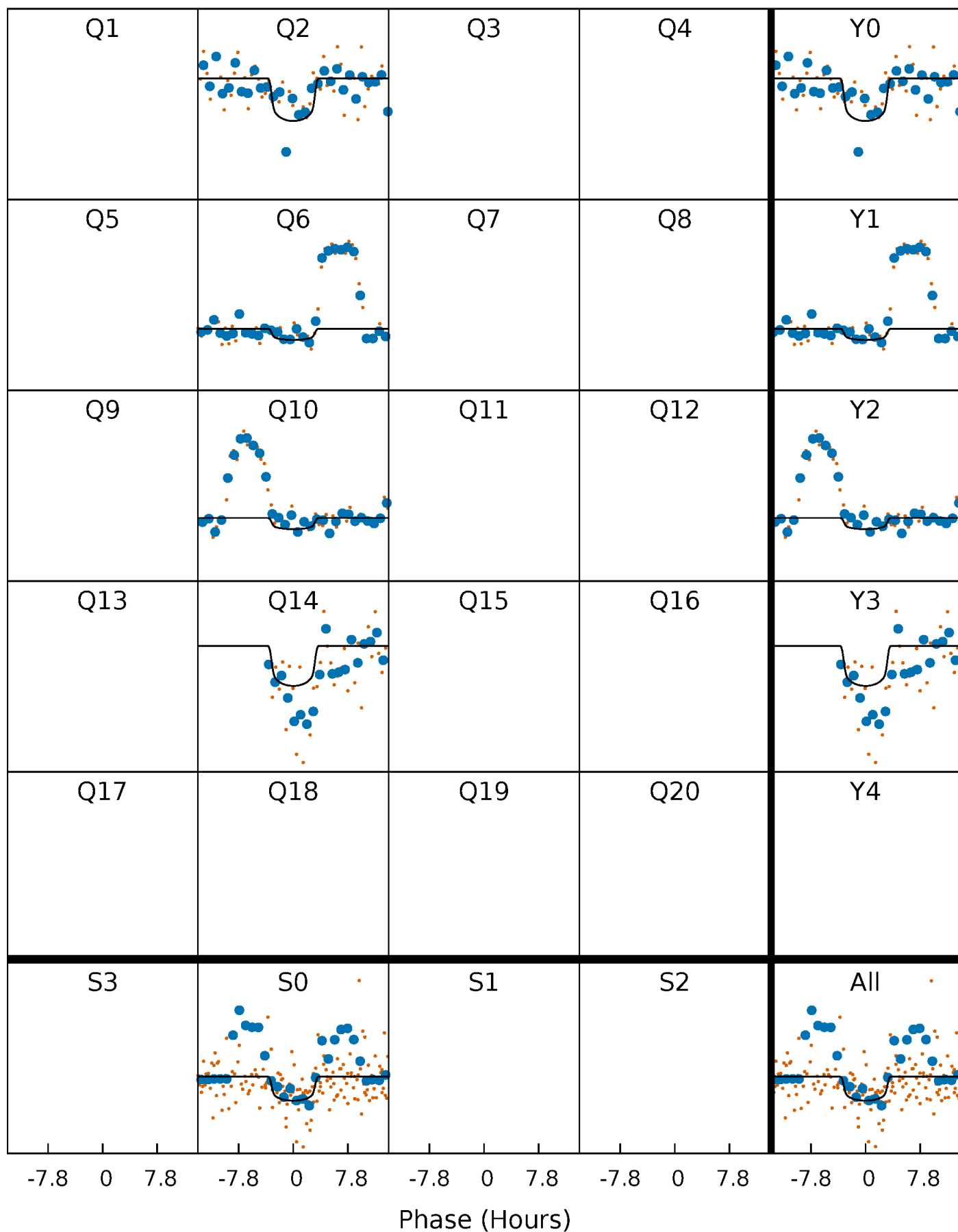
PDC Quarter-Phased Transit Curves

TCE 010989274-02 P=390.642671 Days $T_0=174.283467$ (BKJD)



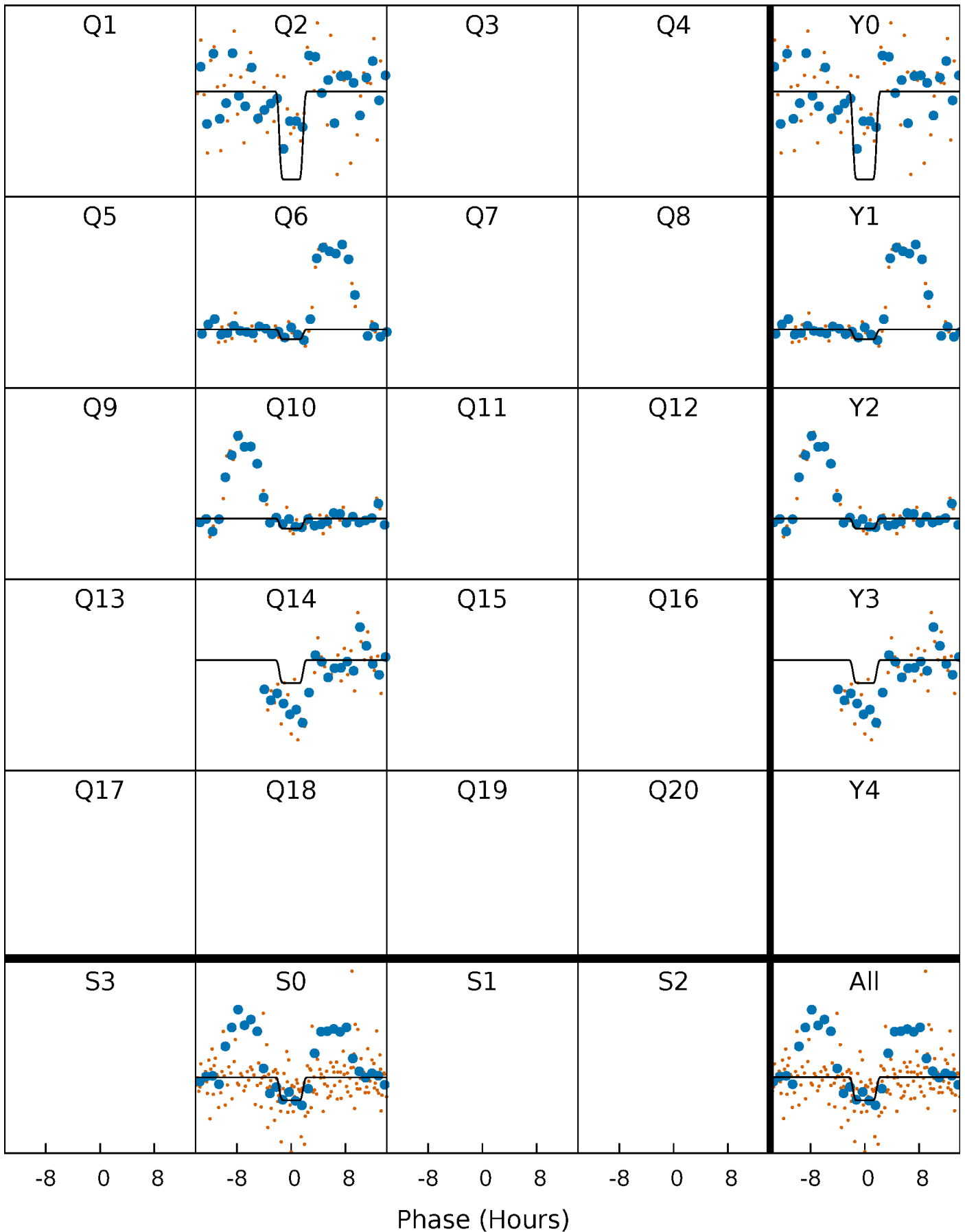
DV Quarter-Phased Transit Curves

TCE 010989274-02 $P=390.642671$ Days $T_0=174.283467$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

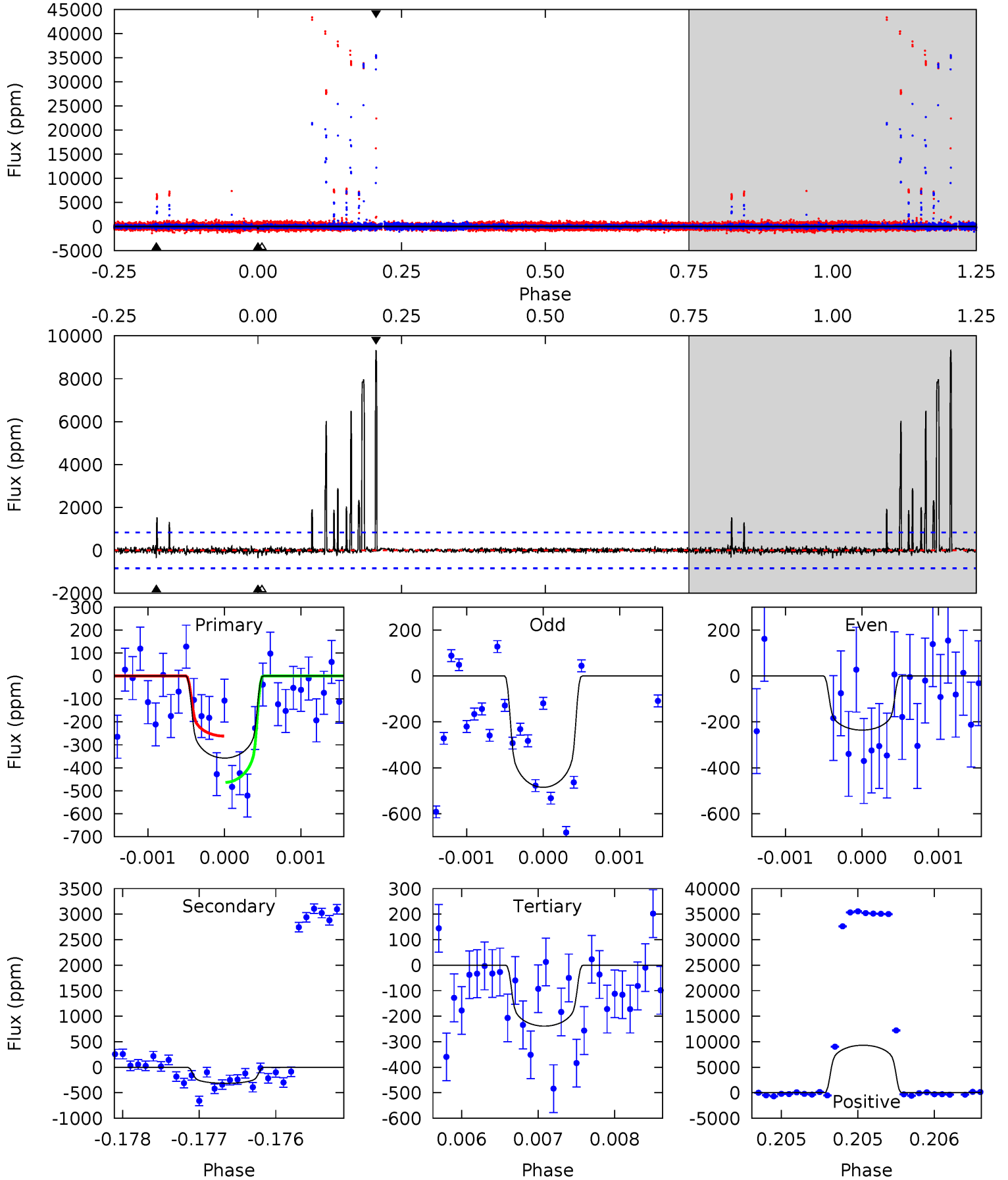
TCE 010989274-02 $P=390.641989$ Days $T_0=174.304230$ (BKJD)



DV Model-Shift Uniqueness Test

010989274-02, P = 390.642671 Days, E = 174.283467 Days

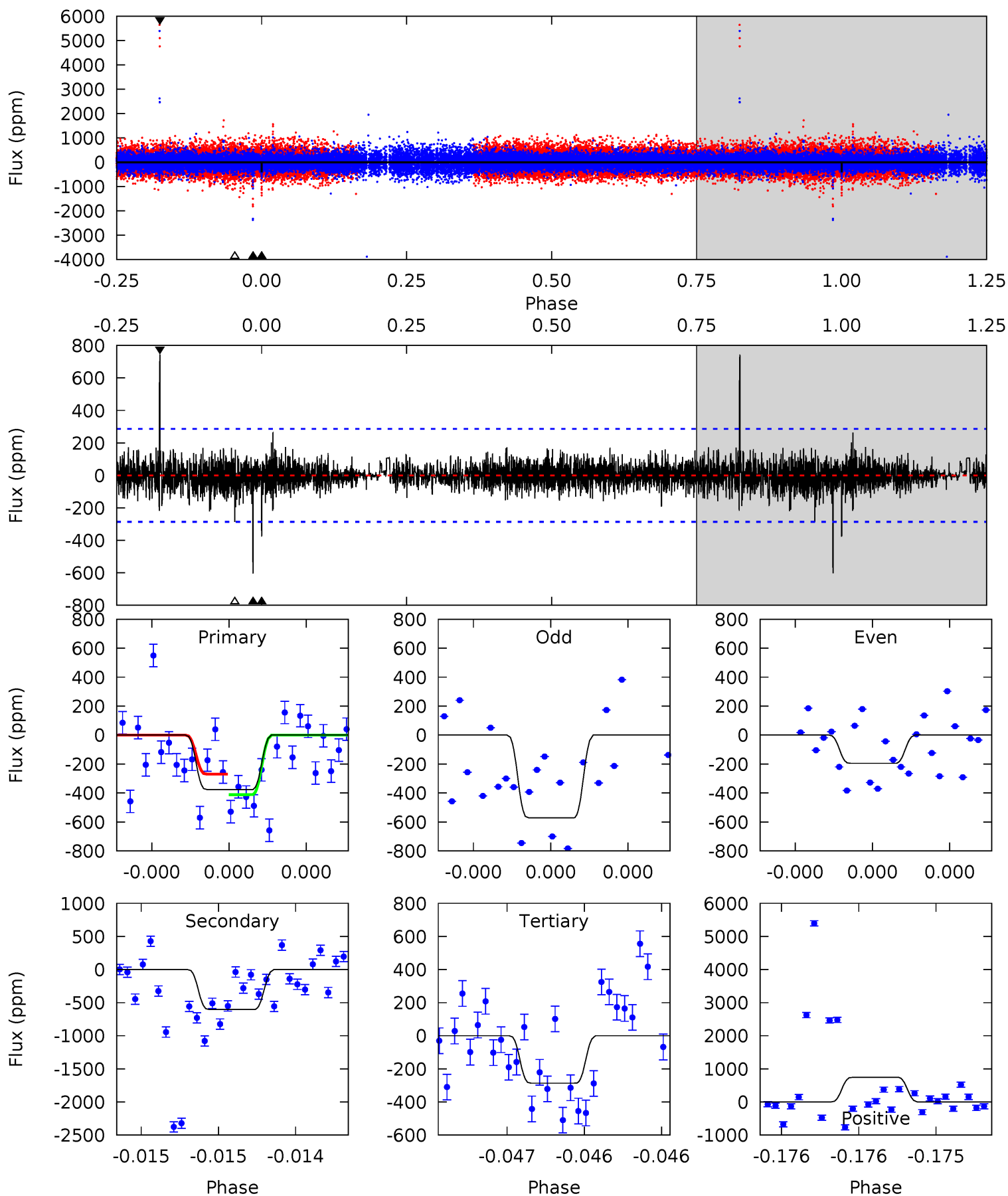
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.35	2.07	1.57	61.3	5.50	3.36	3.11	0.78	-59.0	0.50	-59.3	0.34	1.23	0.96	0.61



Alt Model-Shift Uniqueness Test

010989274-02, P = 390.641989 Days, E = 174.304230 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.36	11.8	5.61	14.6	5.60	3.52	1.10	1.75	-7.20	6.19	-2.76	3.13	1.89	0.55	1.36



Stellar Parameters For KIC 010989274

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5929^{+160}_{-196}	$4.413^{+0.070}_{-0.210}$	$0.140^{+0.200}_{-0.300}$	$1.069^{+0.330}_{-0.141}$	$1.079^{+0.136}_{-0.136}$	$1.245^{+0.468}_{-0.655}$
	+3%/-3%	+2%/-5%	+143%/-214%	+31%/-13%	+13%/-13%	+38%/-53%
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 010989274-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-315 ± 152	$2.62^{+1.63}_{-1.33}$	372^{+25}_{-18}	5291^{+2565}_{-1021}	25844^{+91435}_{-17529}
Alt.	-603 ± 51	$2.51^{+1.48}_{-1.34}$	372^{+27}_{-19}	6407^{+3843}_{-1222}	$58606^{+201311}_{-35823}$

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 $A_{obs} \gg 1.0$

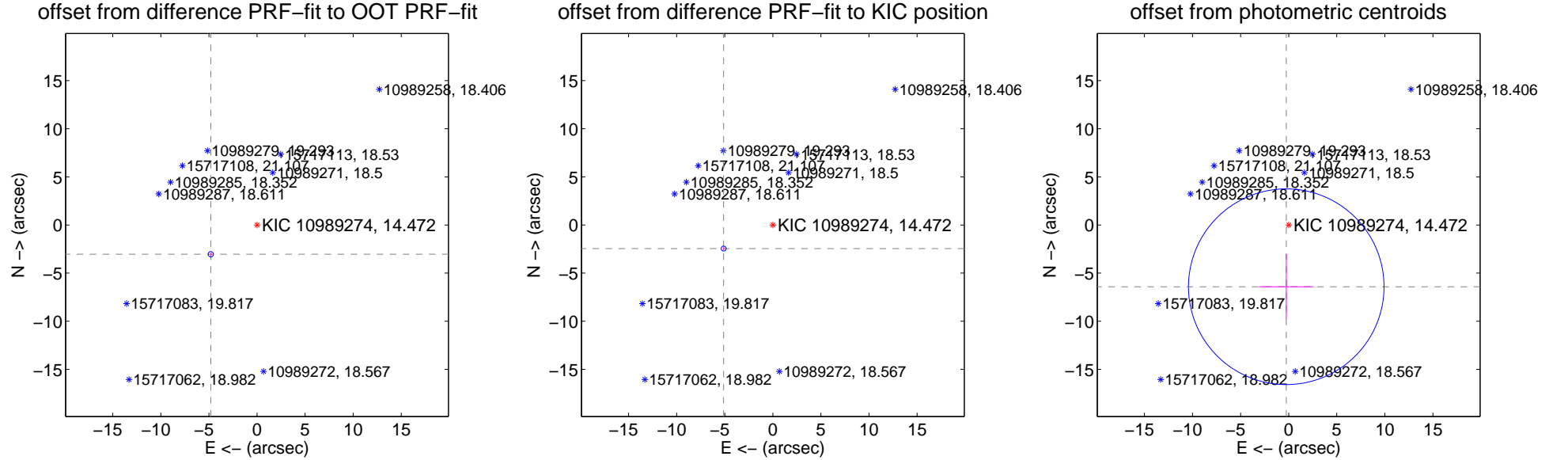
DV Centroid Data

Supplemental centroid analysis for 010989274-02. Kepler magnitude: 14.47. Transit SNR 5.97

There are 2 quarters with good PRF difference image offsets

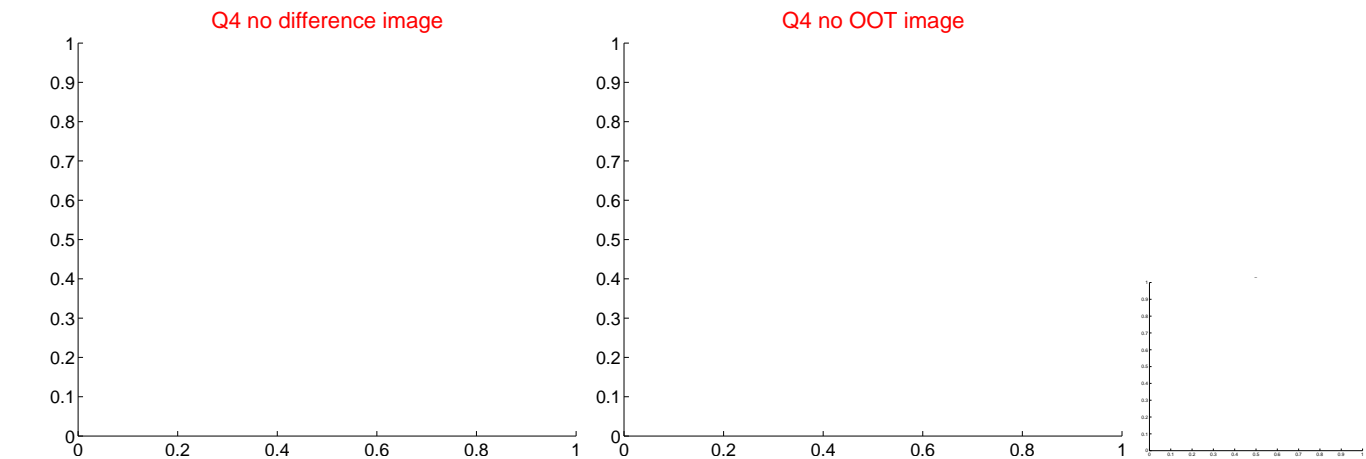
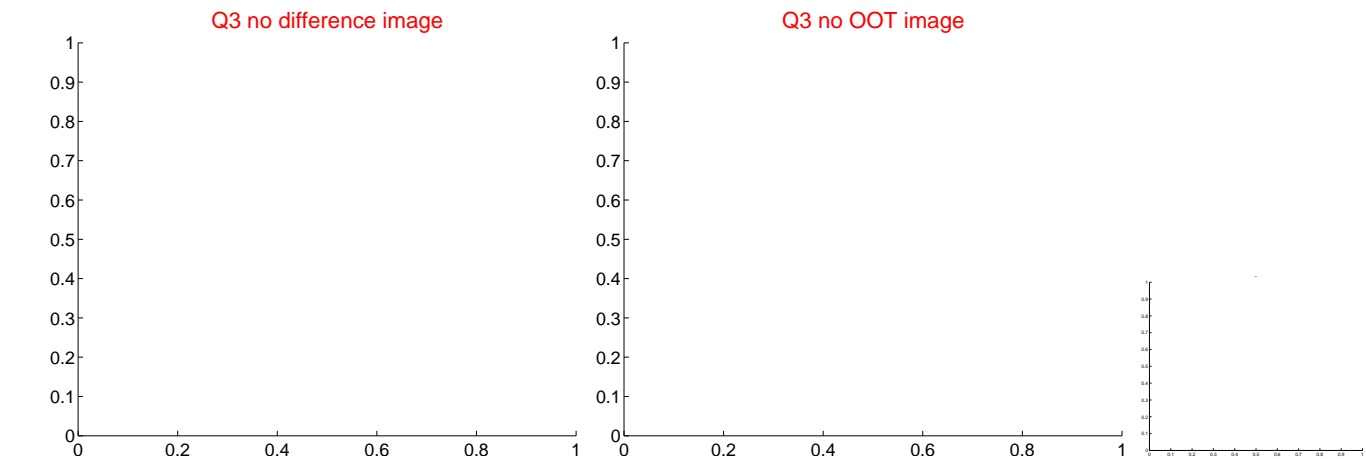
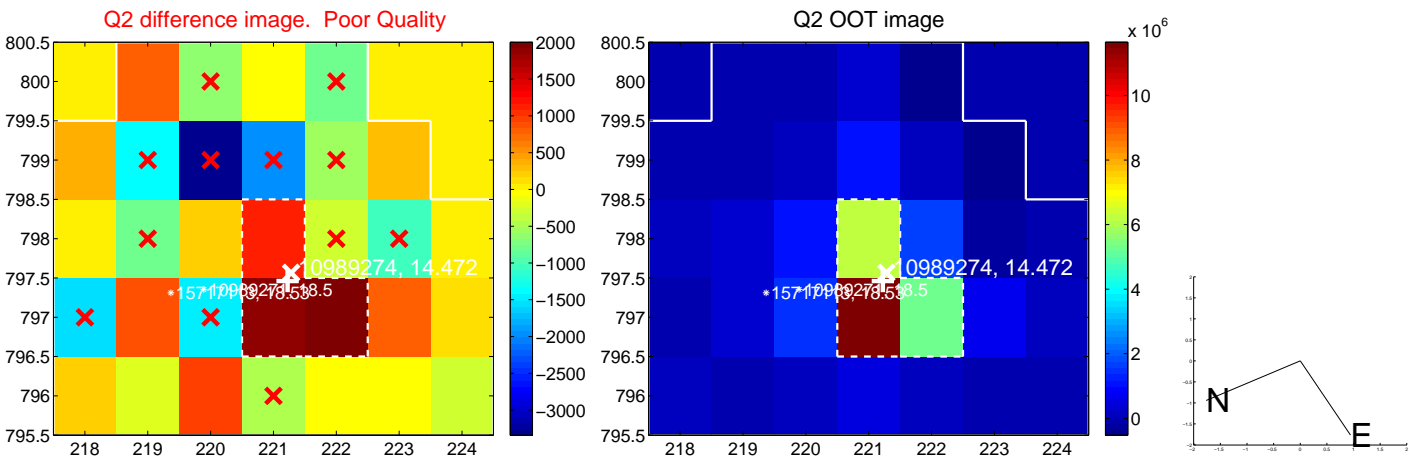
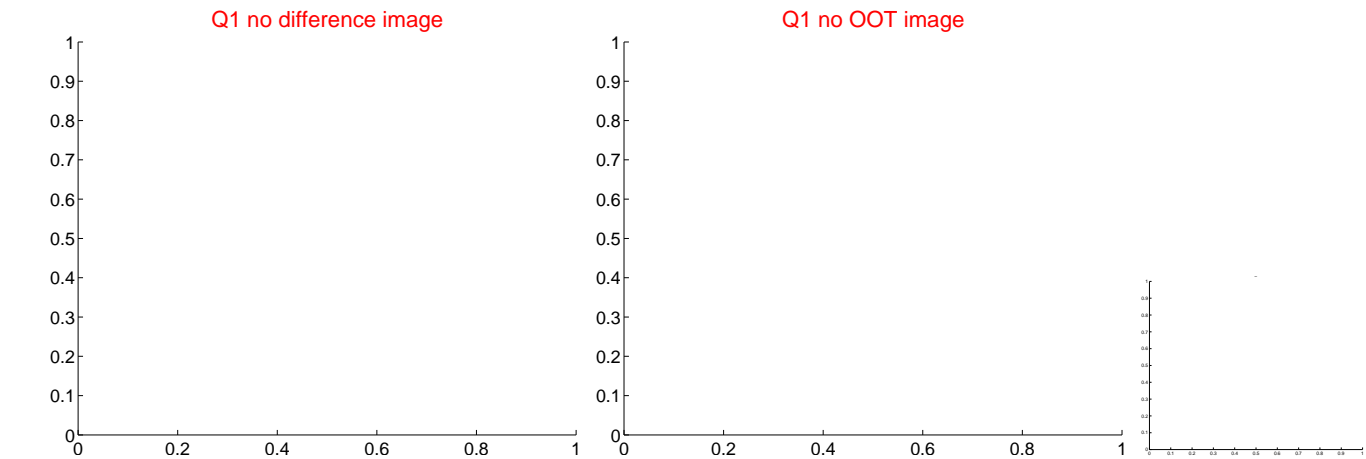
The direct PRF centroid is offset from the target star catalog position by about 0.67 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.683 ± 0.091	62.20	4.803 ± 0.068	-3.038 ± 0.133
PRF-fit source offset from KIC position	5.672 ± 0.086	66.09	5.115 ± 0.070	-2.452 ± 0.134
photometric centroid source offset	6.42 ± 3.39	1.89	0.25 ± 2.85	-6.41 ± 3.39



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

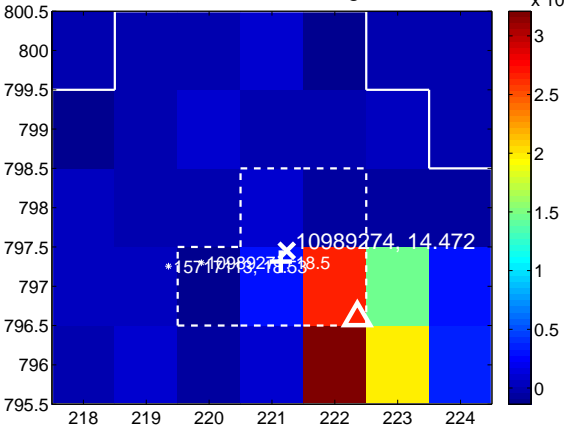
Q5 no difference image



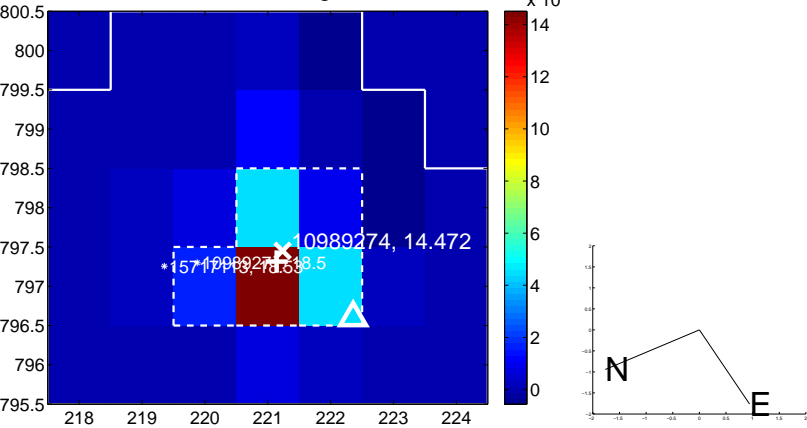
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



Q7 no OOT image



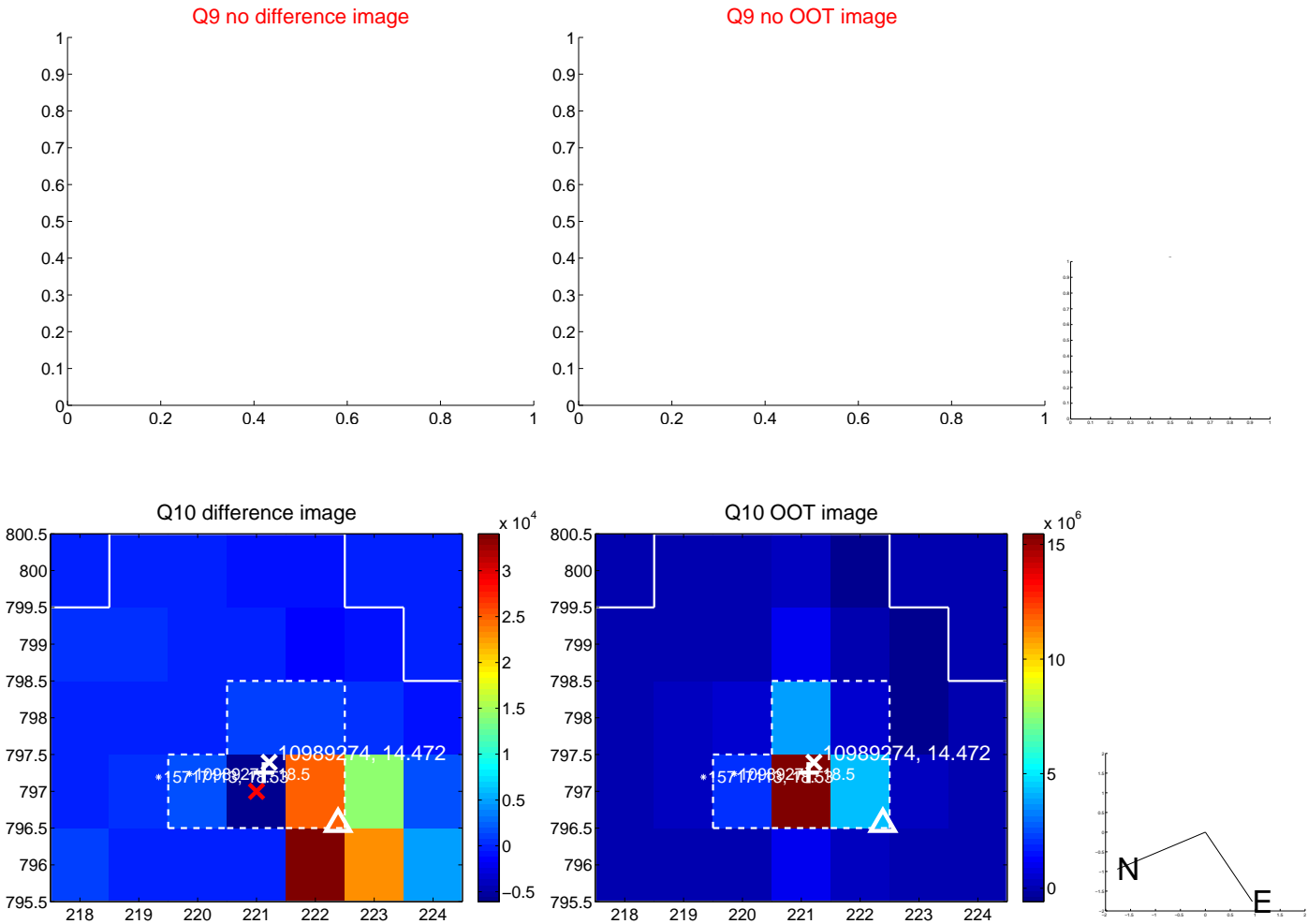
Q8 no difference image



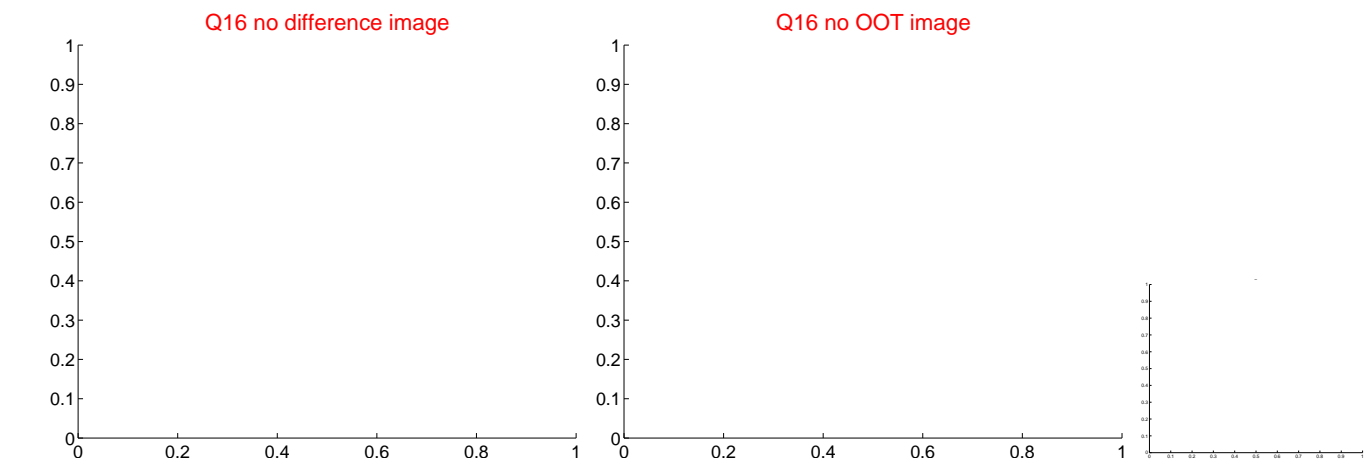
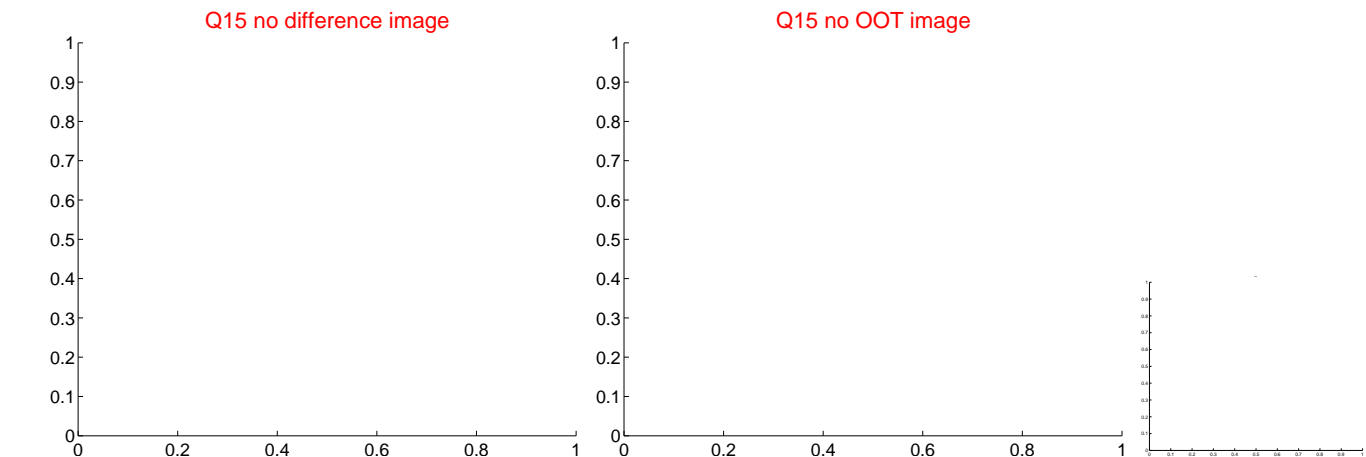
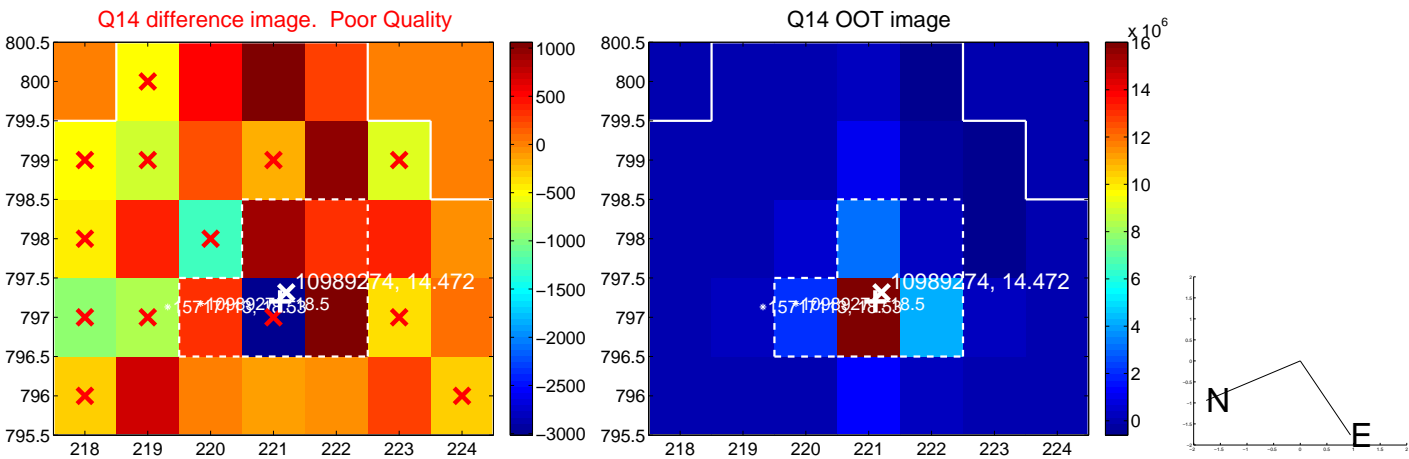
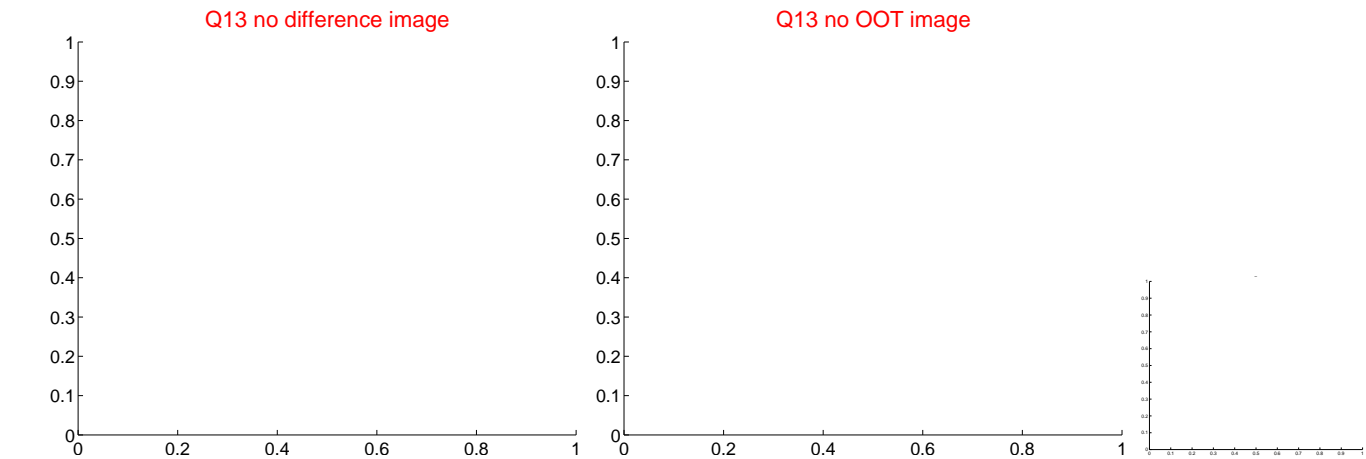
Q8 no OOT image



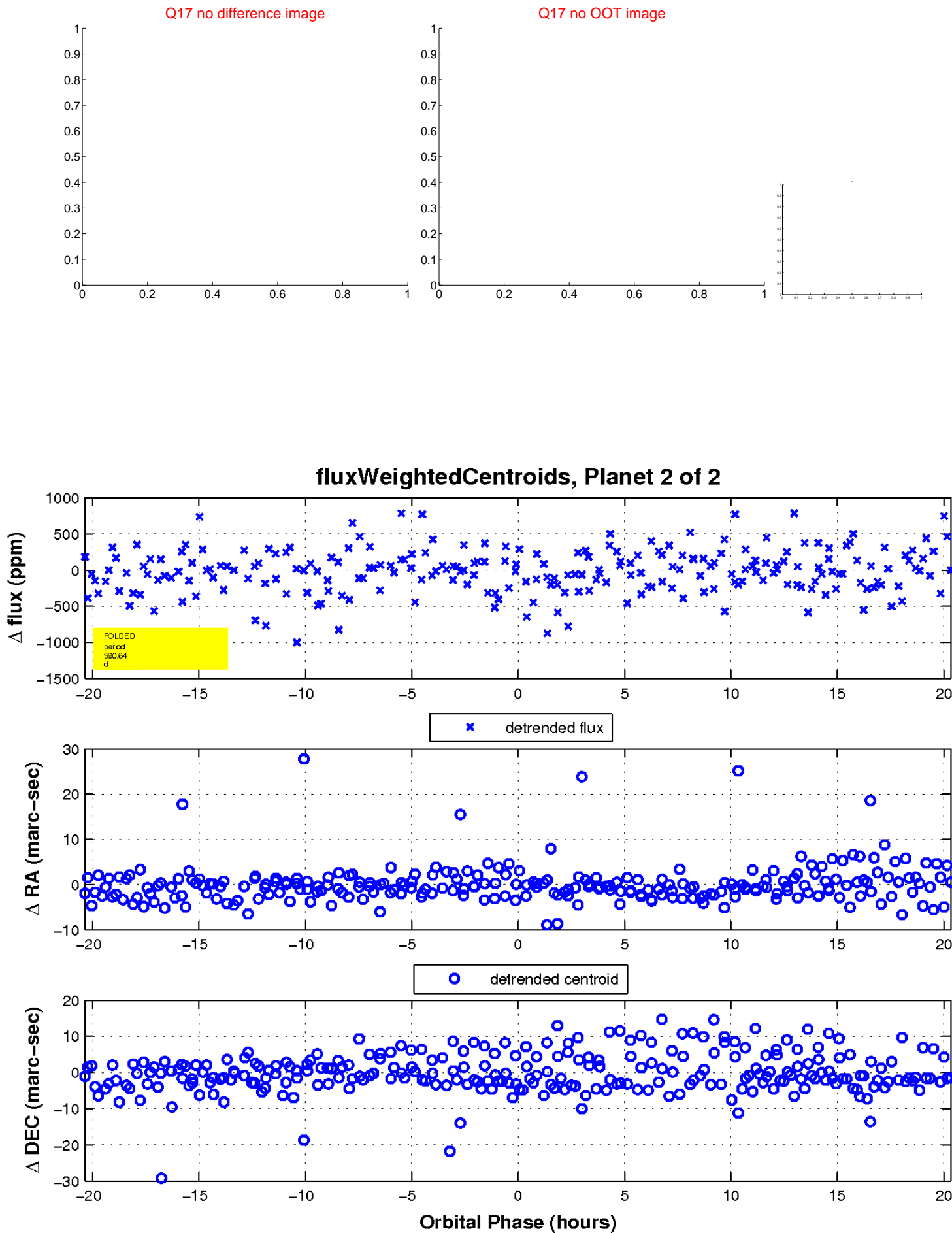
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



white ×: 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

