

KIC 009110346

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})
009110346-01	OBS	3607.01	0.895276	131.620369	318332.4	1.500	9024.9	-1.0	2.55	5242	139.13	13181.55
009110346-02	OBS	No	4.476344	132.706357	16595.8	12.000	551.4	-1.0	2.55	5242	32.30	1541.74

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009110346-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
009110346-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS

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 009110346-01

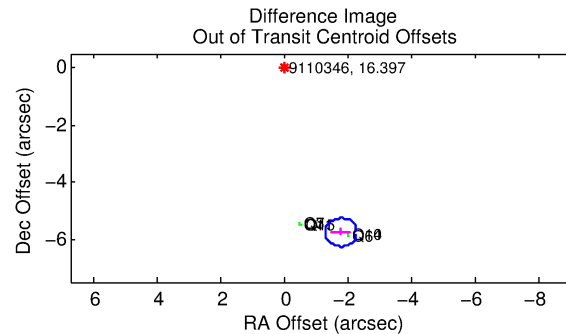
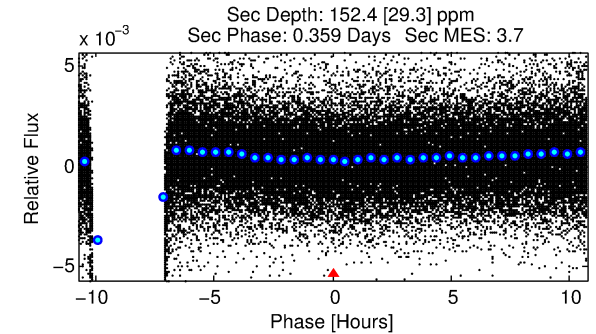
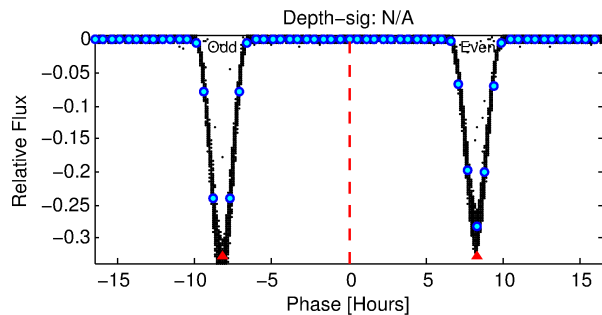
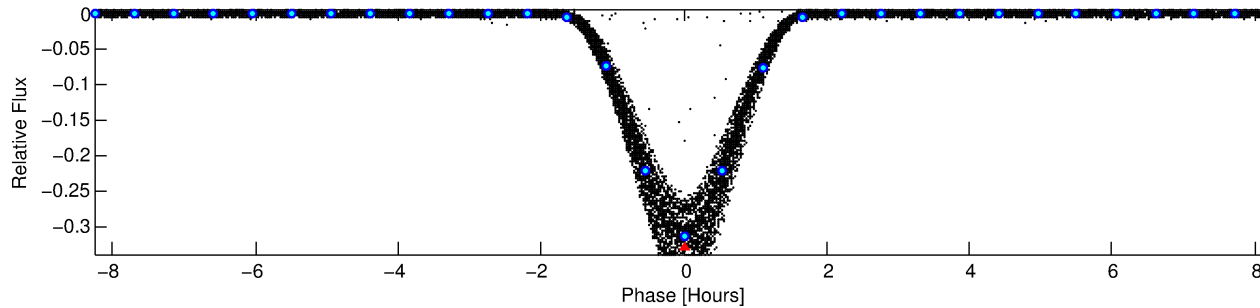
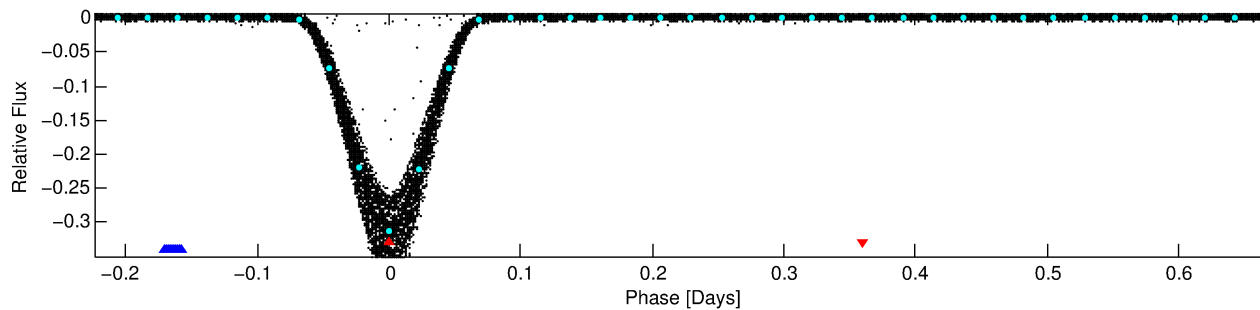
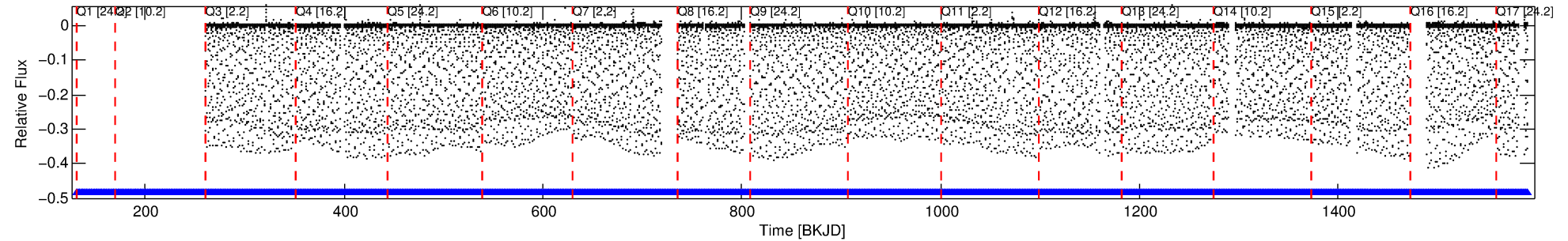
No Significant Match Found

DV One-Page Summary

KIC: 9110346 Candidate: 1 of 2 Period: 0.895 d

KOI: K03607 Corr: No Ephemeris Match

Kp: 16.40 R*: 2.55 Rs Teff: 5242.0 K Logg: 3.63 Fe/H: -0.460



TPS TCE Results:

Period = 0.89528 d
Epoch = 131.6204 BKJD

DV fit results are unavailable

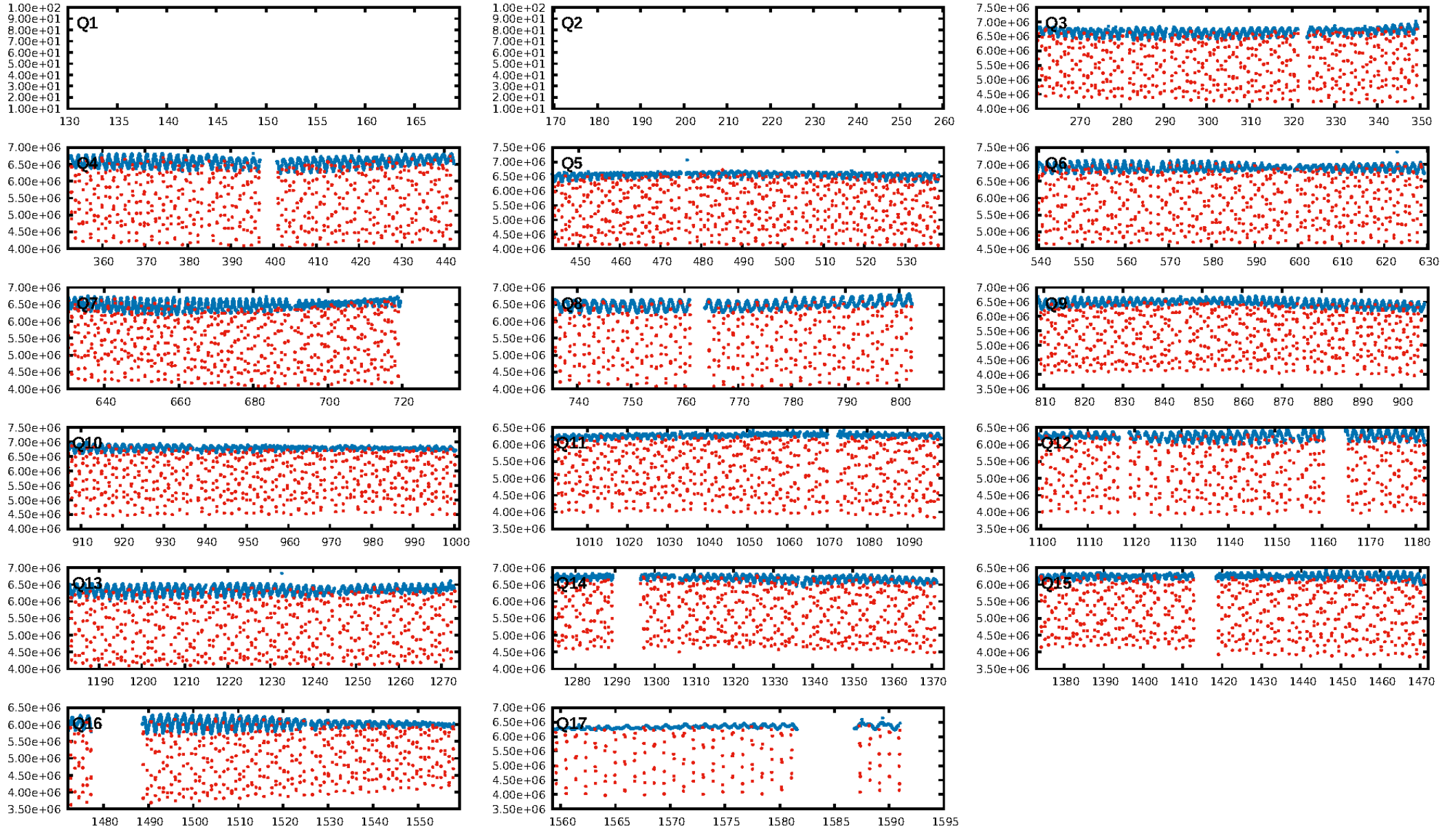
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [7.11 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1337/1337]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 3.821 arcsec [5776.22 σ]
OotOffset-rm: 6.024 arcsec [36.41 σ]
KicOffset-rm: 0.163 arcsec [2.22 σ]
OotOffset-st: 3/4/0/0 [7]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 1.00 [15/15]
DiffImageOverlap-fno: 1.00 [15/15]

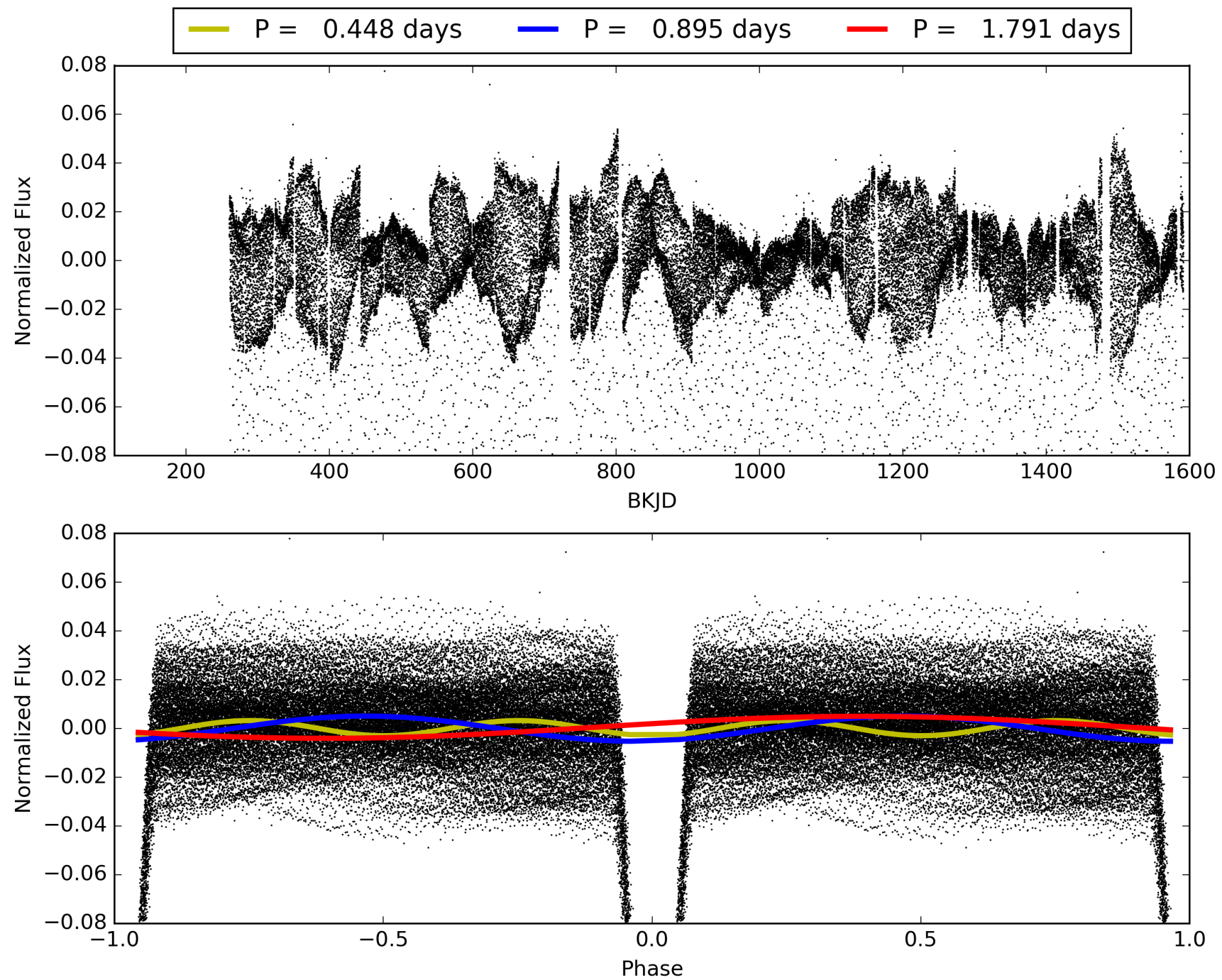
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 02:21:59 Z

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

TCE 009110346-01, PDC Light Curves

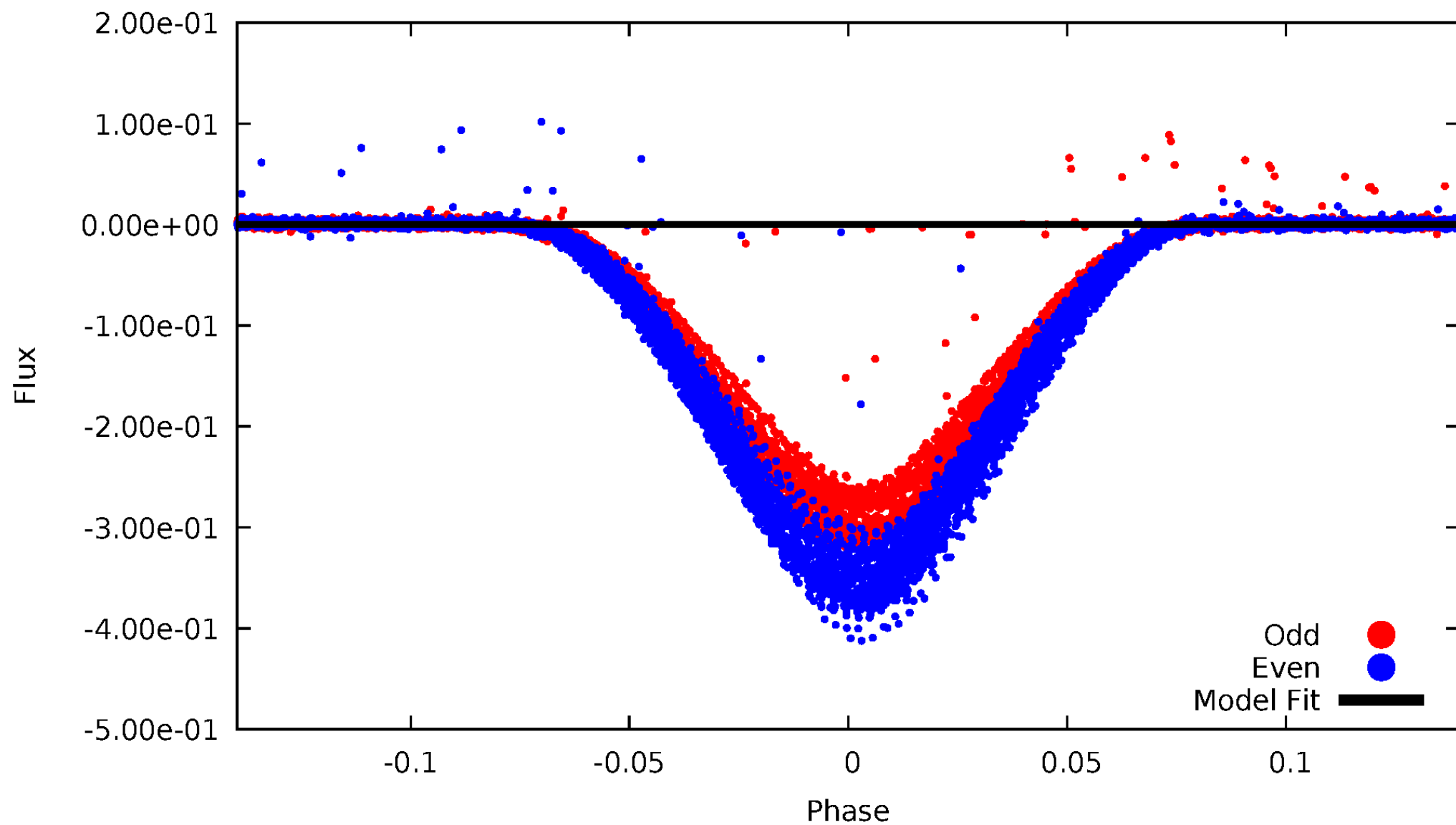


TCE 009110346-01



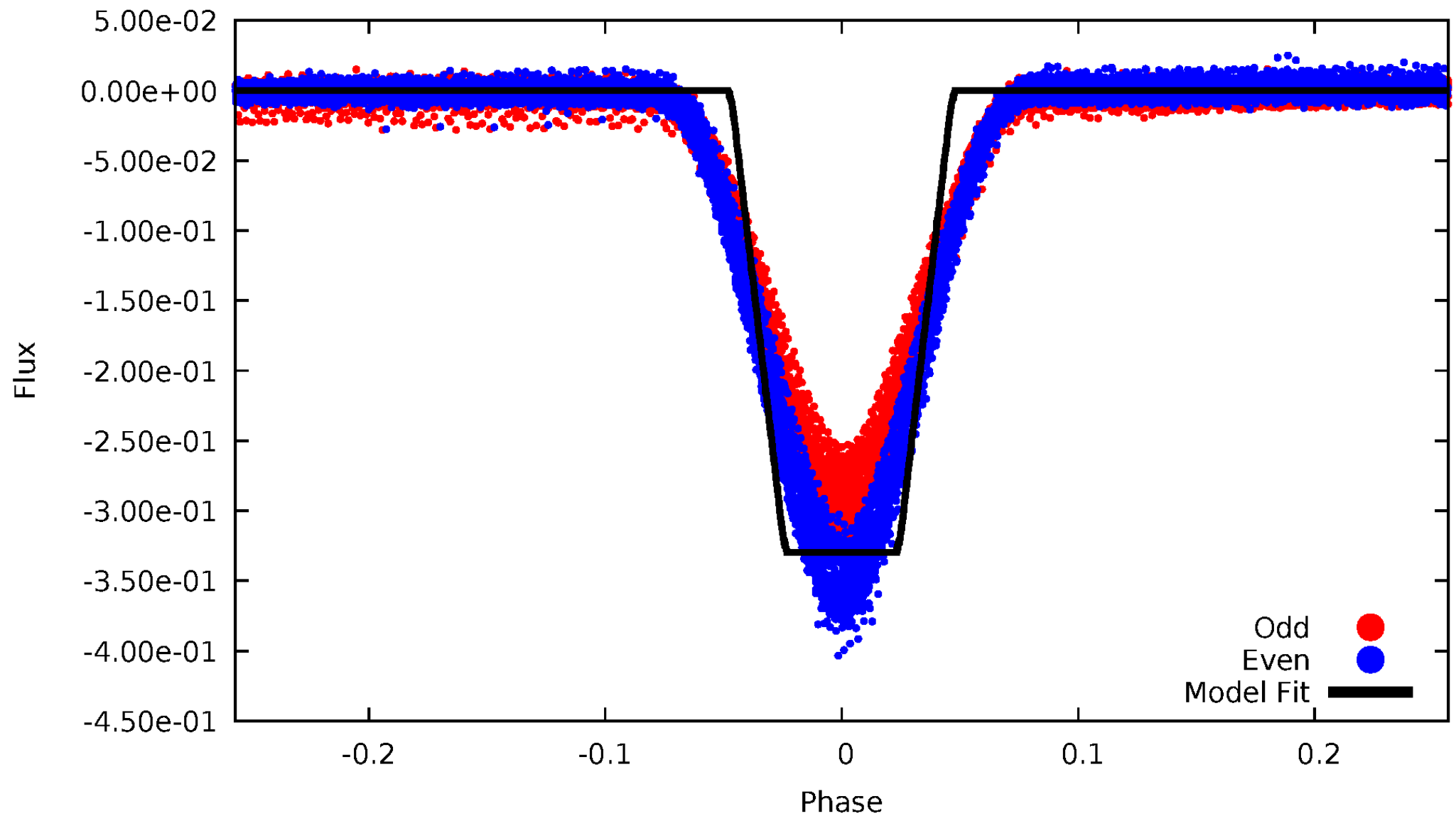
DV Odd/Even

TCE 009110346-01



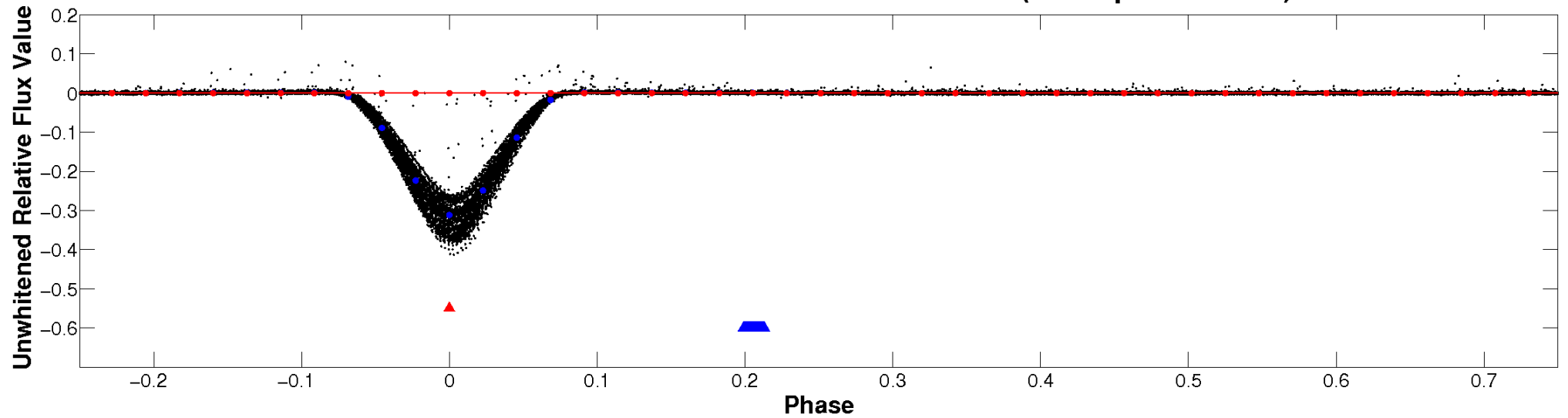
ALT Odd/Even

TCE 009110346-01

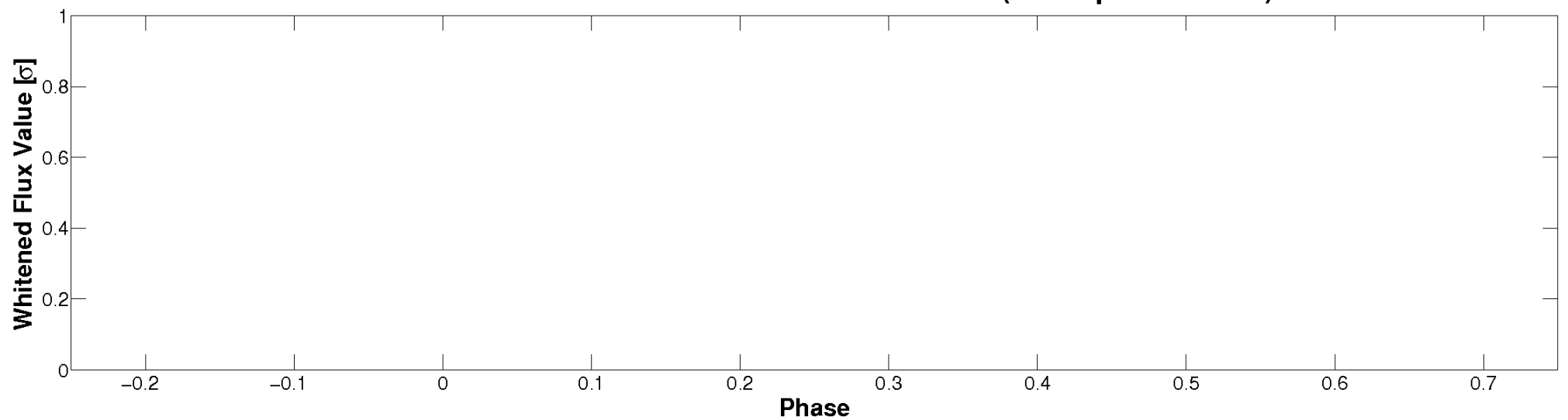


Non-Whitened Vs. Whitened Light Curve

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

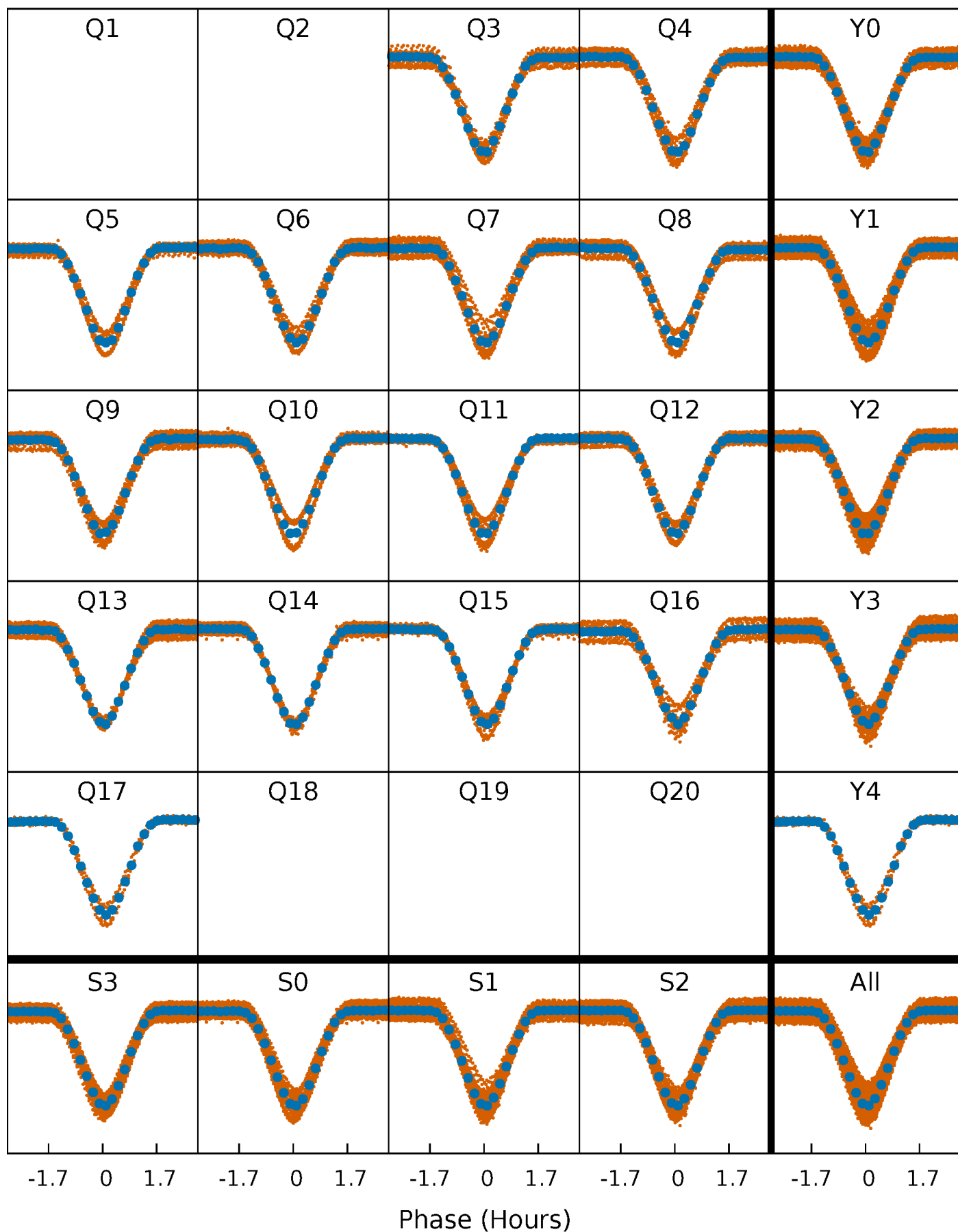


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



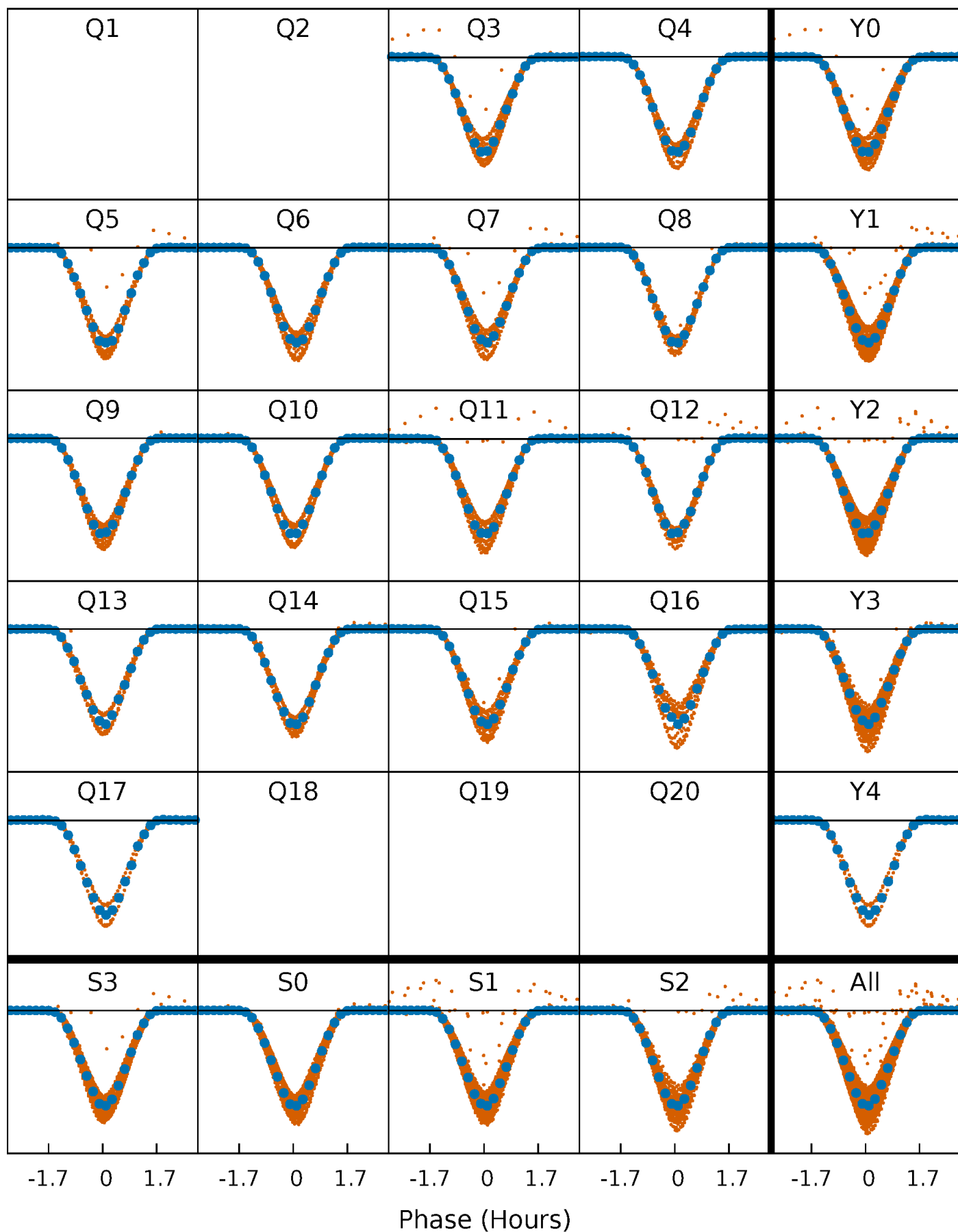
PDC Quarter-Phased Transit Curves

TCE 009110346-01 P= 0.895276 Days $T_0=131.620369$ (BKJD)



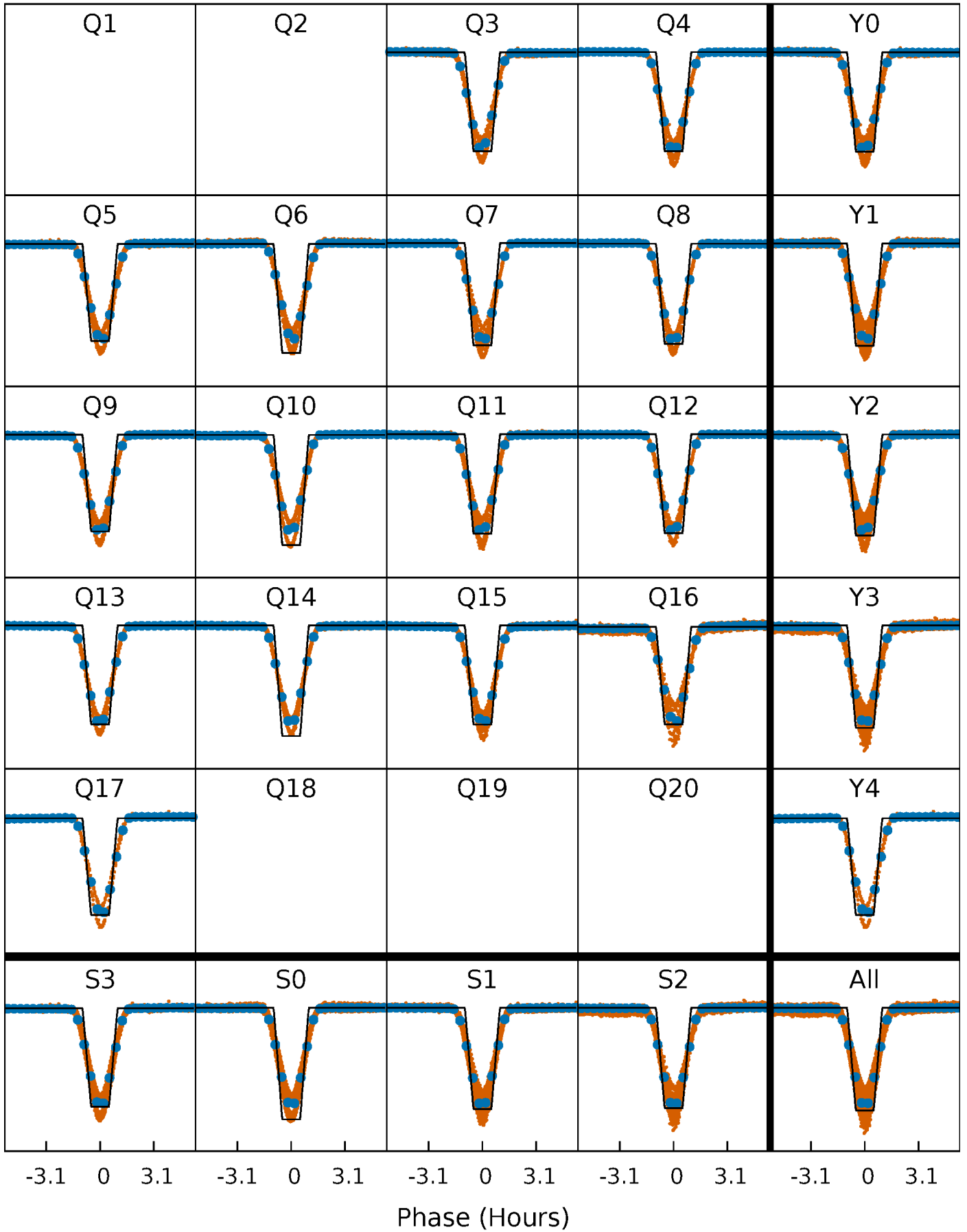
DV Quarter-Phased Transit Curves

TCE 009110346-01 P= 0.895276 Days $T_0=131.620369$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

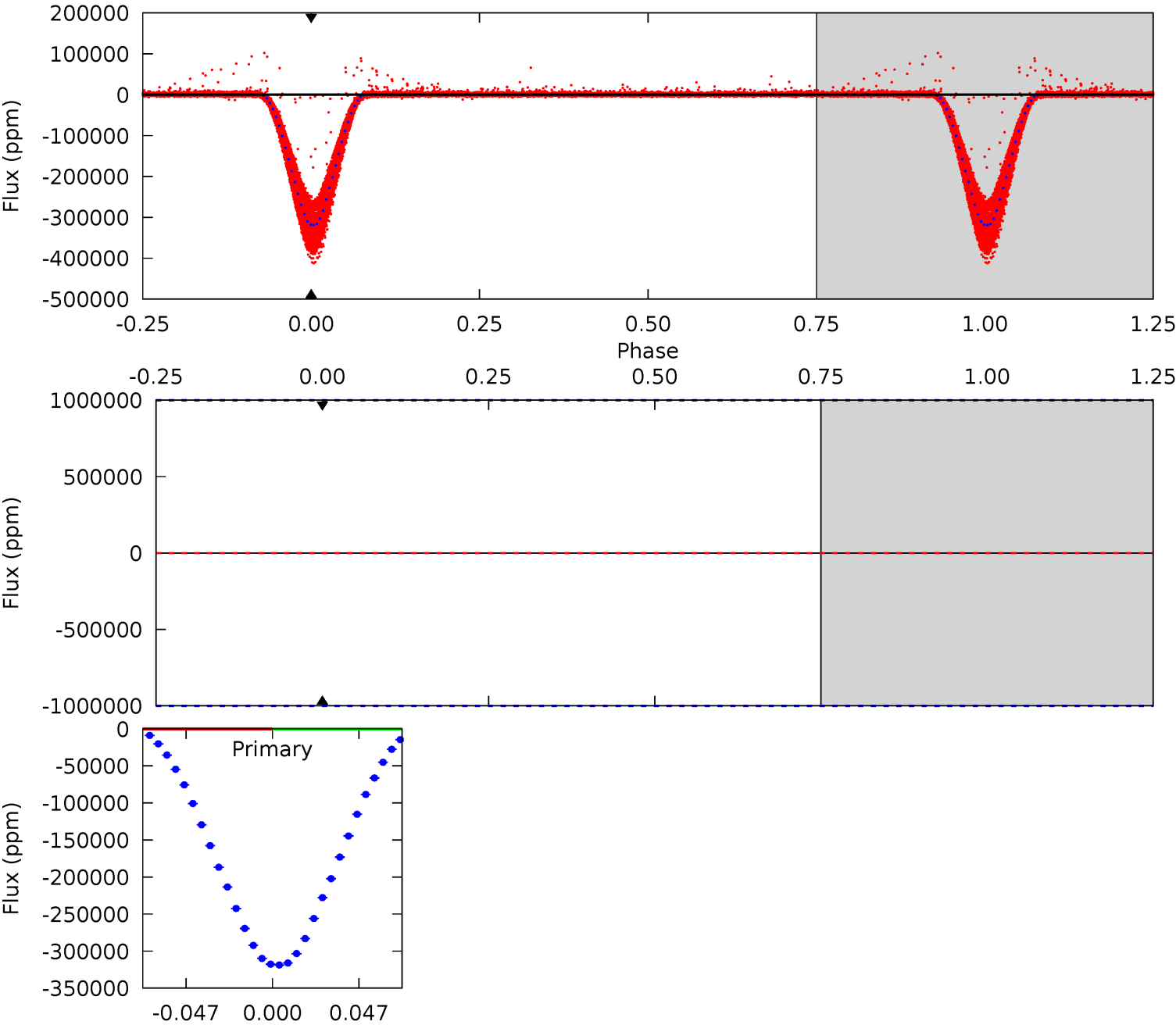
TCE 009110346-01 P= 0.895276 Days $T_0=131.622172$ (BKJD)



DV Model-Shift Uniqueness Test

009110346-01, P = 0.895276 Days, E = 131.620369 Days

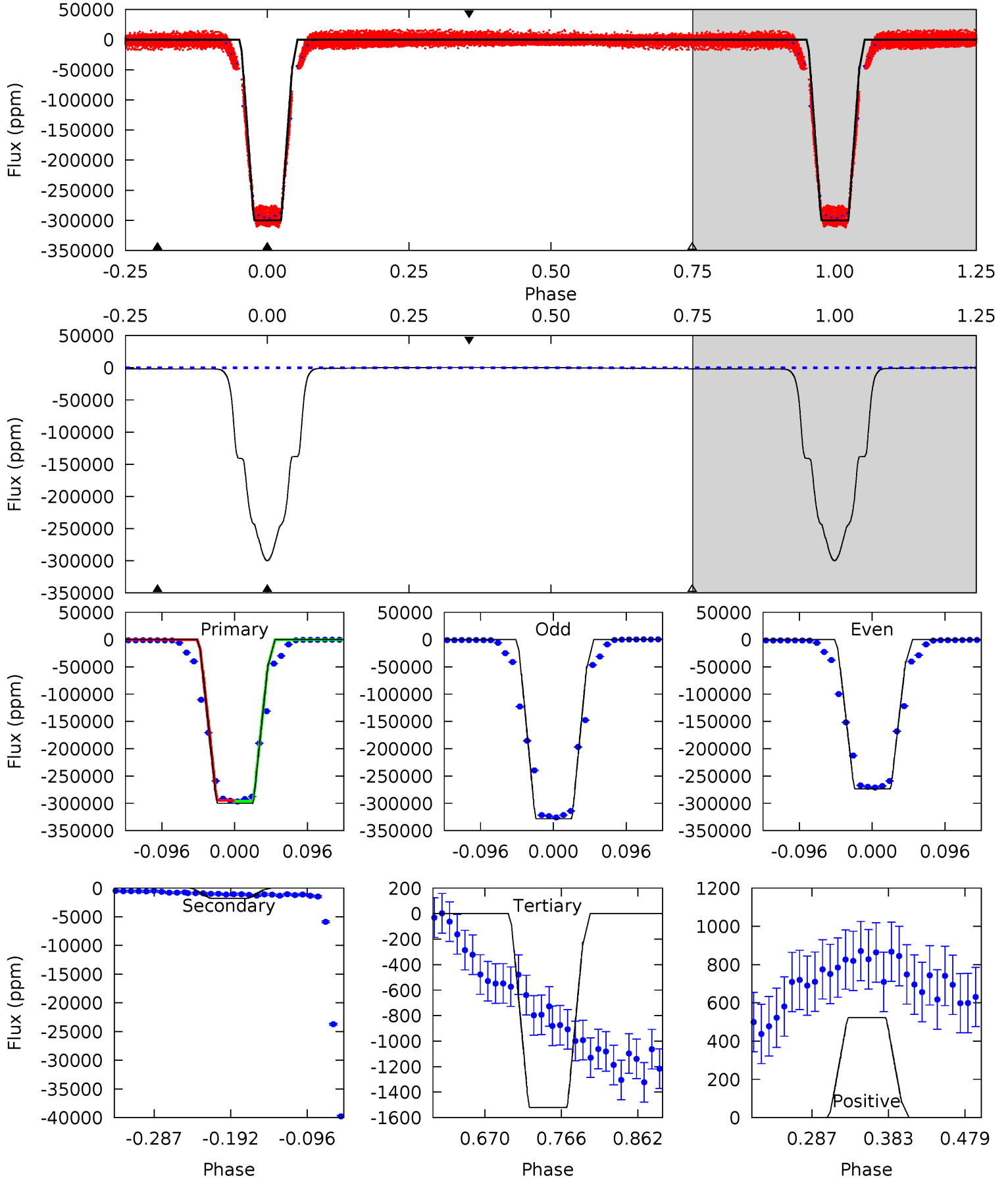
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009110346-01, P = 0.895276 Days, E = 131.622172 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3406	20.1	17.3	5.93	4.57	1.67	6.45	3389	3400	2.90	14.2	320.2	1.01	0.00	0



Stellar Parameters For KIC 009110346

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5242^{+191}_{-159}	$3.631^{+0.923}_{-0.308}$	$-0.460^{+0.300}_{-0.250}$	$2.550^{+1.206}_{-1.809}$	$1.015^{+0.226}_{-0.226}$	$0.086^{+2.469}_{-0.062}$
	+4%/-3%	+25%/-8%	+65%/-54%	+47%/-71%	+22%/-22%	+2865%/-72%
Source	KIC0	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 009110346-01 / KOI 3607.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$129.53^{+58.92}_{-51.47}$	3757^{+550}_{-848}	-3558^{+7762}_{-1024}	$0.023^{+1.567}_{-1.246}$
Alt.	-1775 ± 88	$148.92^{+59.10}_{-61.06}$	3761^{+525}_{-844}	-3491^{+532}_{-335}	$0.015^{+0.026}_{-0.007}$

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 $A_{obs} \gg 1.0$

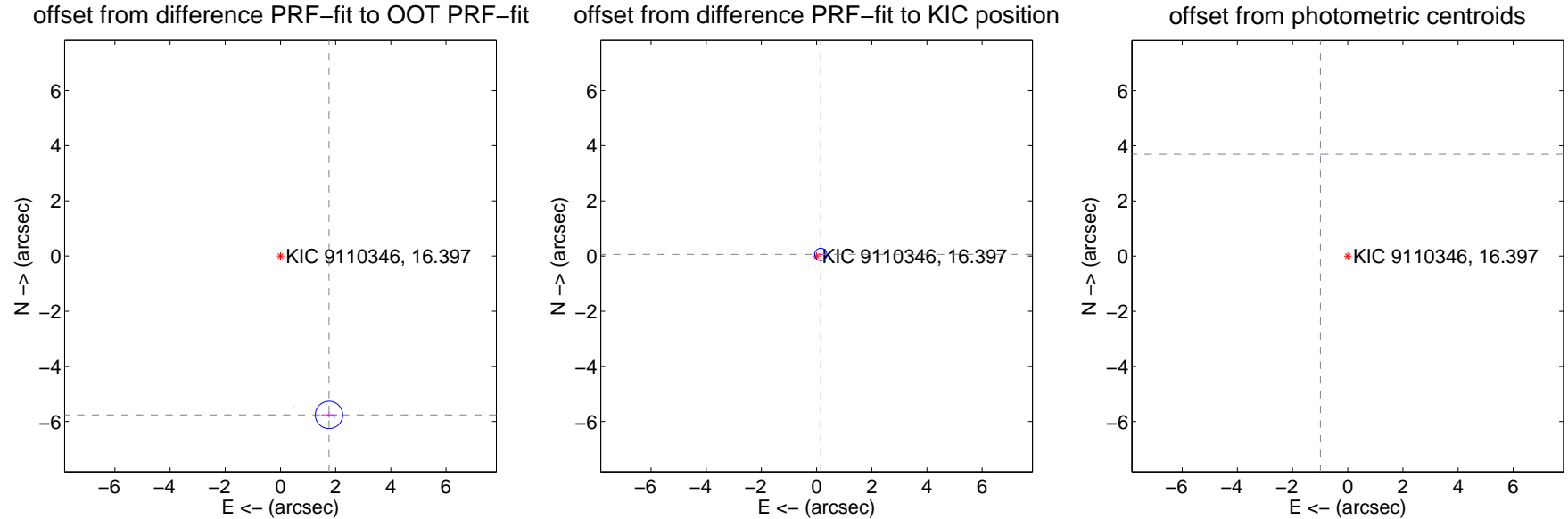
DV Centroid Data

Supplemental centroid analysis for 009110346-01. Kepler magnitude: 16.40. Transit SNR -1.00

There are 15 quarters with good PRF difference image offsets

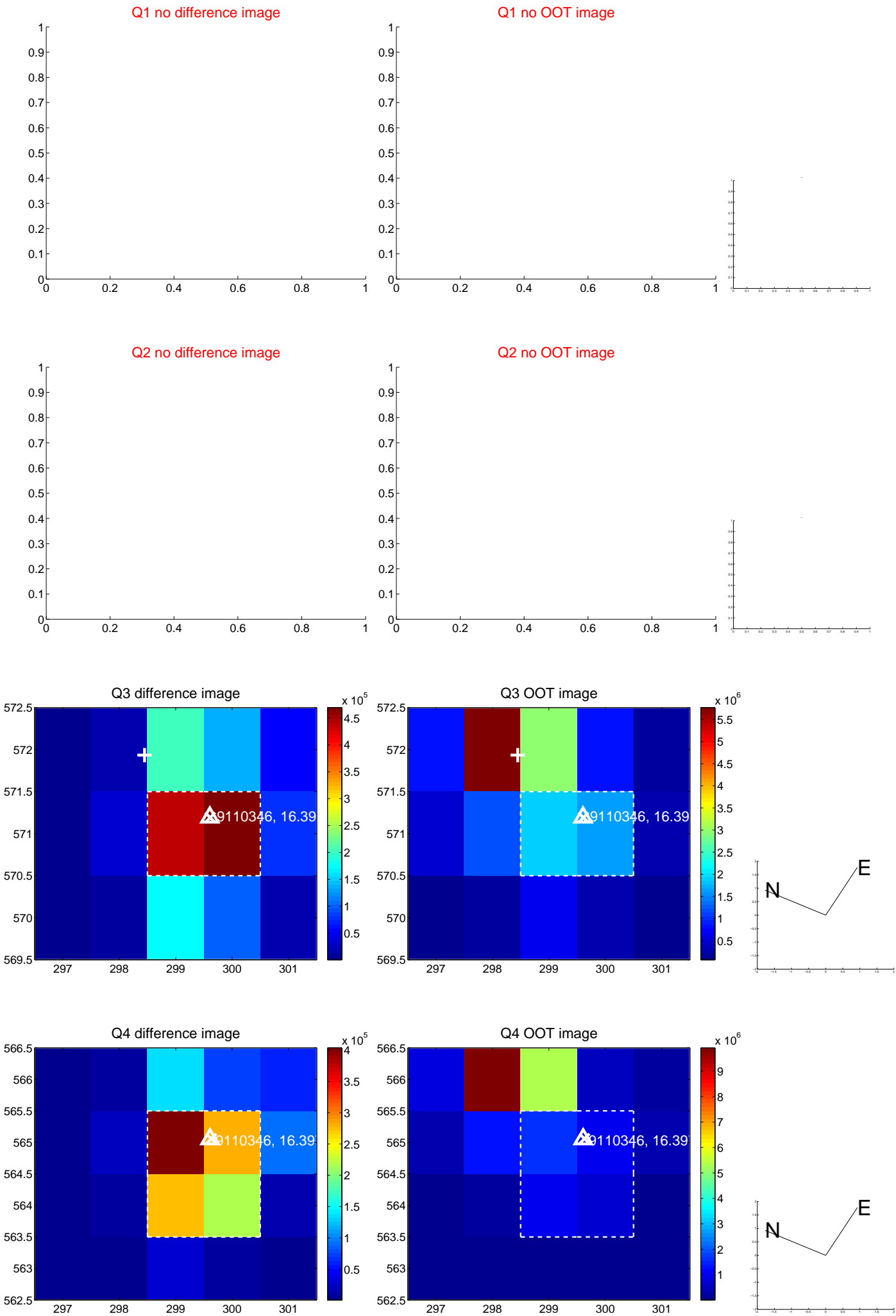
The OOT PRF centroid is offset from the target star catalog position by about 5.54 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.024 ± 0.165	36.41	-1.760 ± 0.292	-5.761 ± 0.098
PRF-fit source offset from KIC position	0.163 ± 0.074	2.22	-0.152 ± 0.074	0.058 ± 0.067
photometric centroid source offset	3.82 ± 0.00	5776.22	0.99 ± 0.00	3.69 ± 0.00

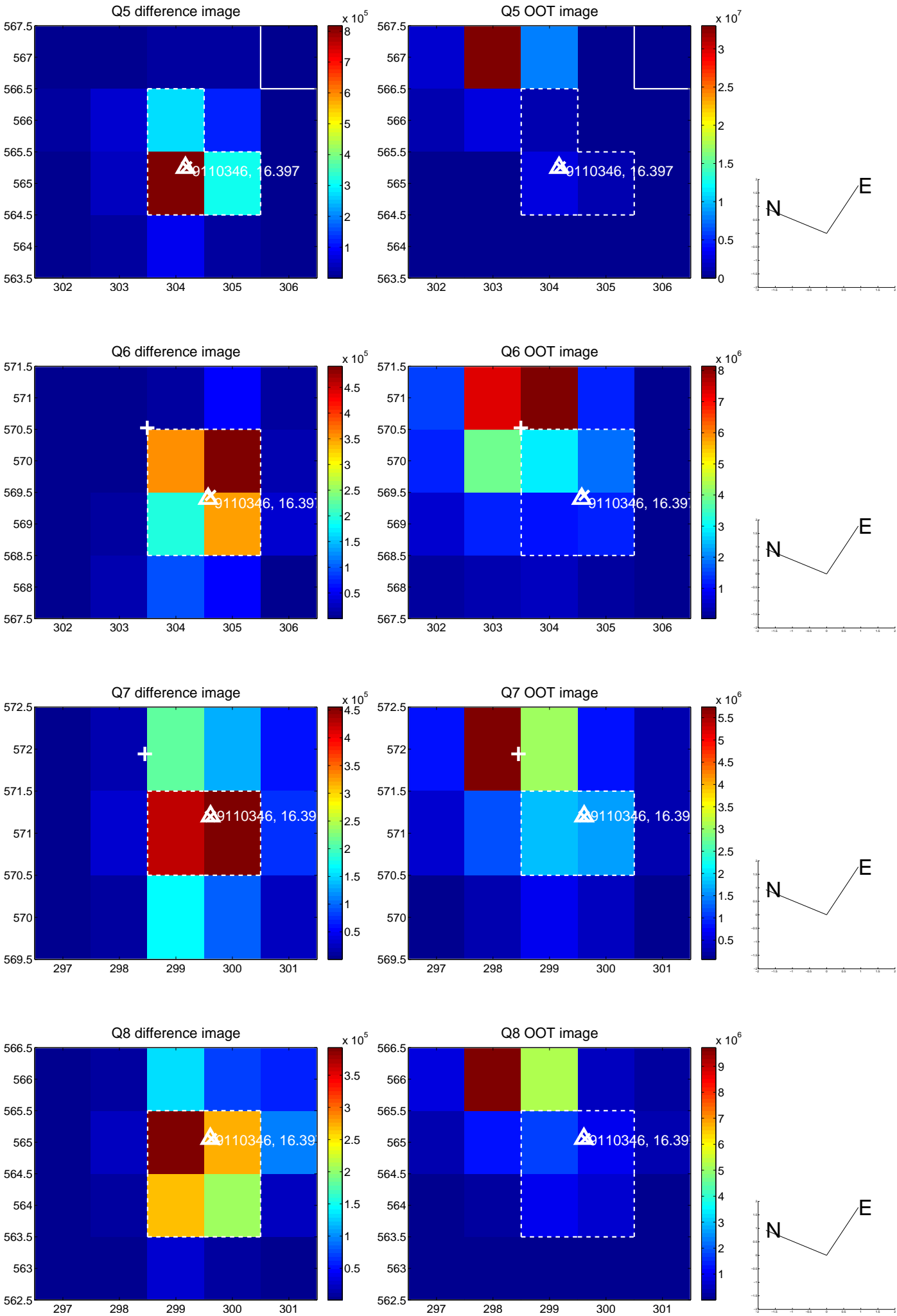


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

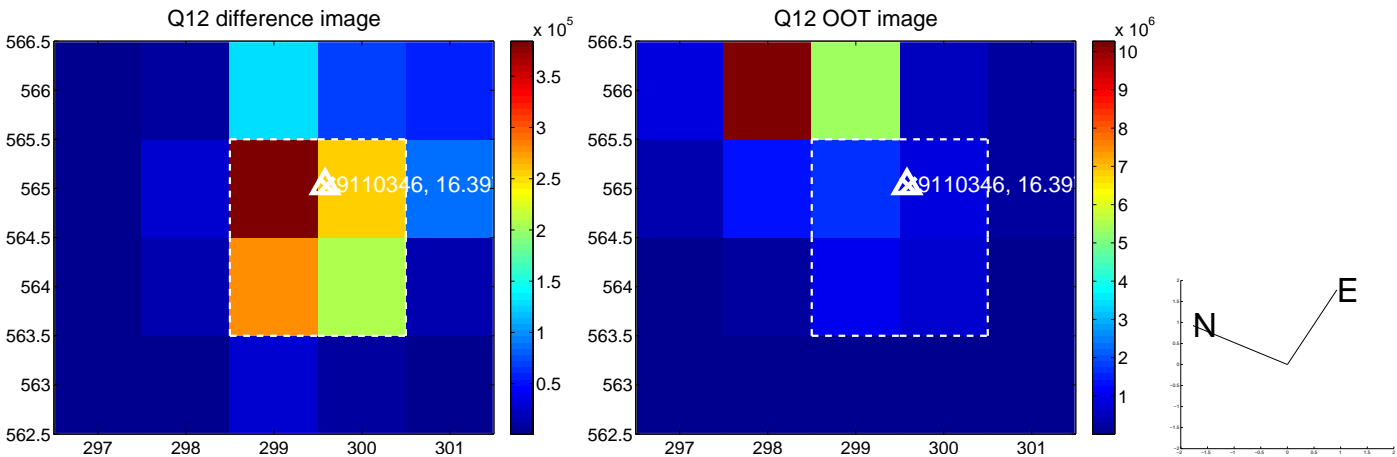
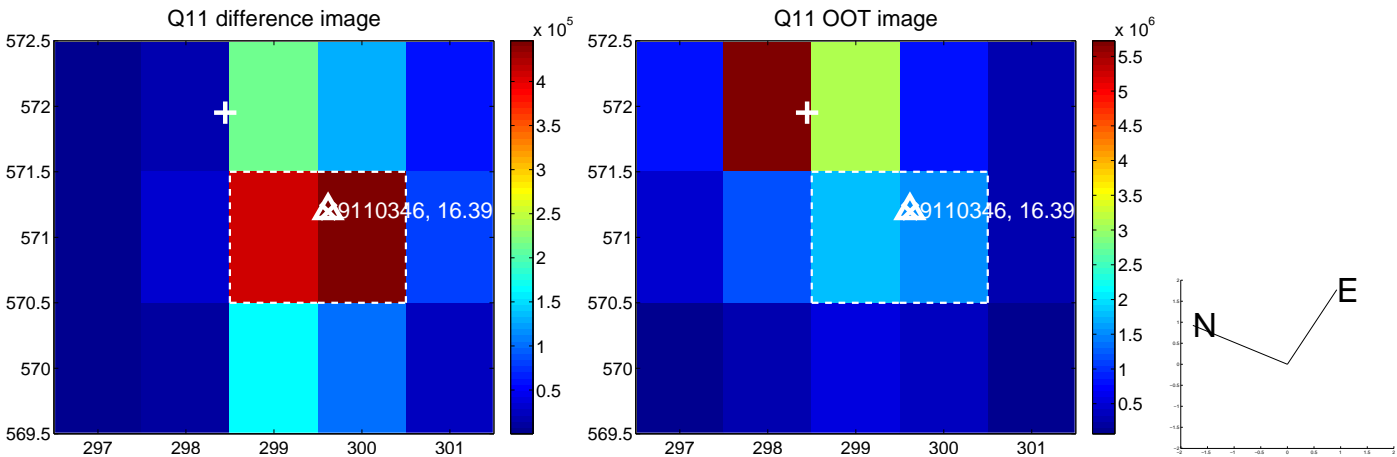
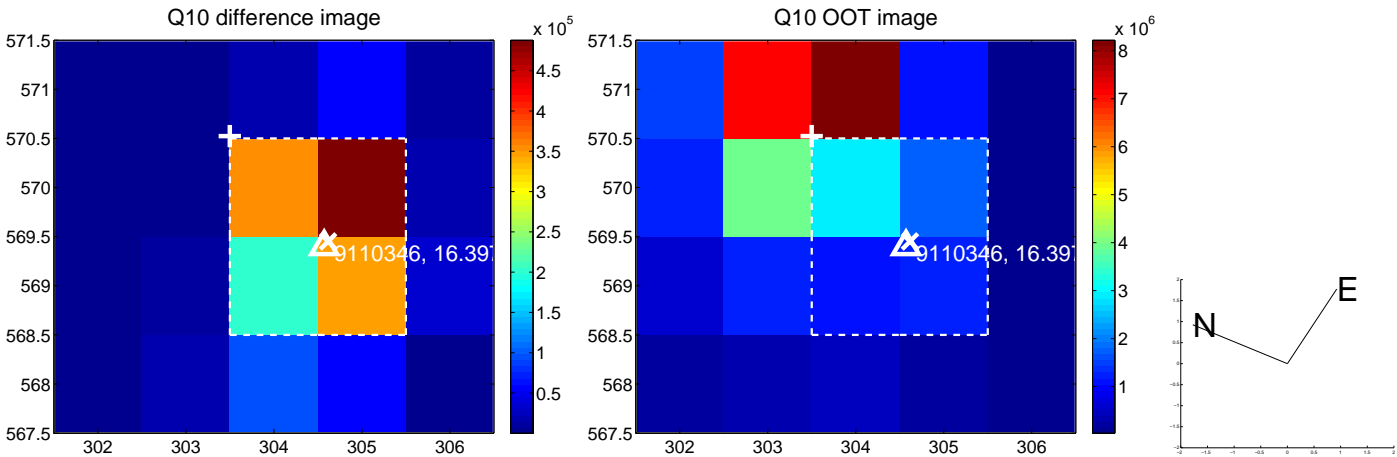
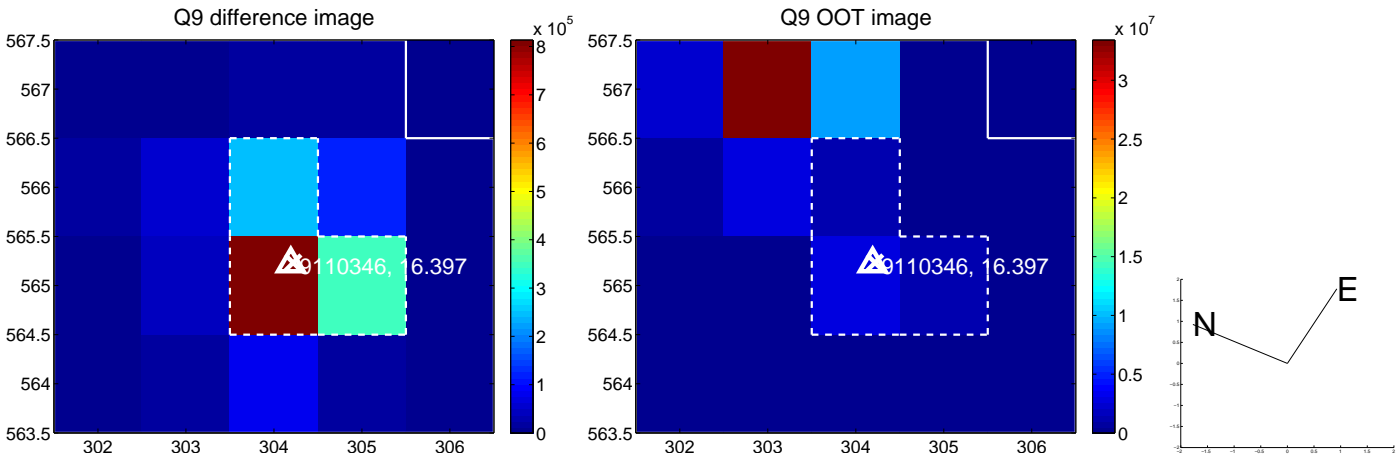
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



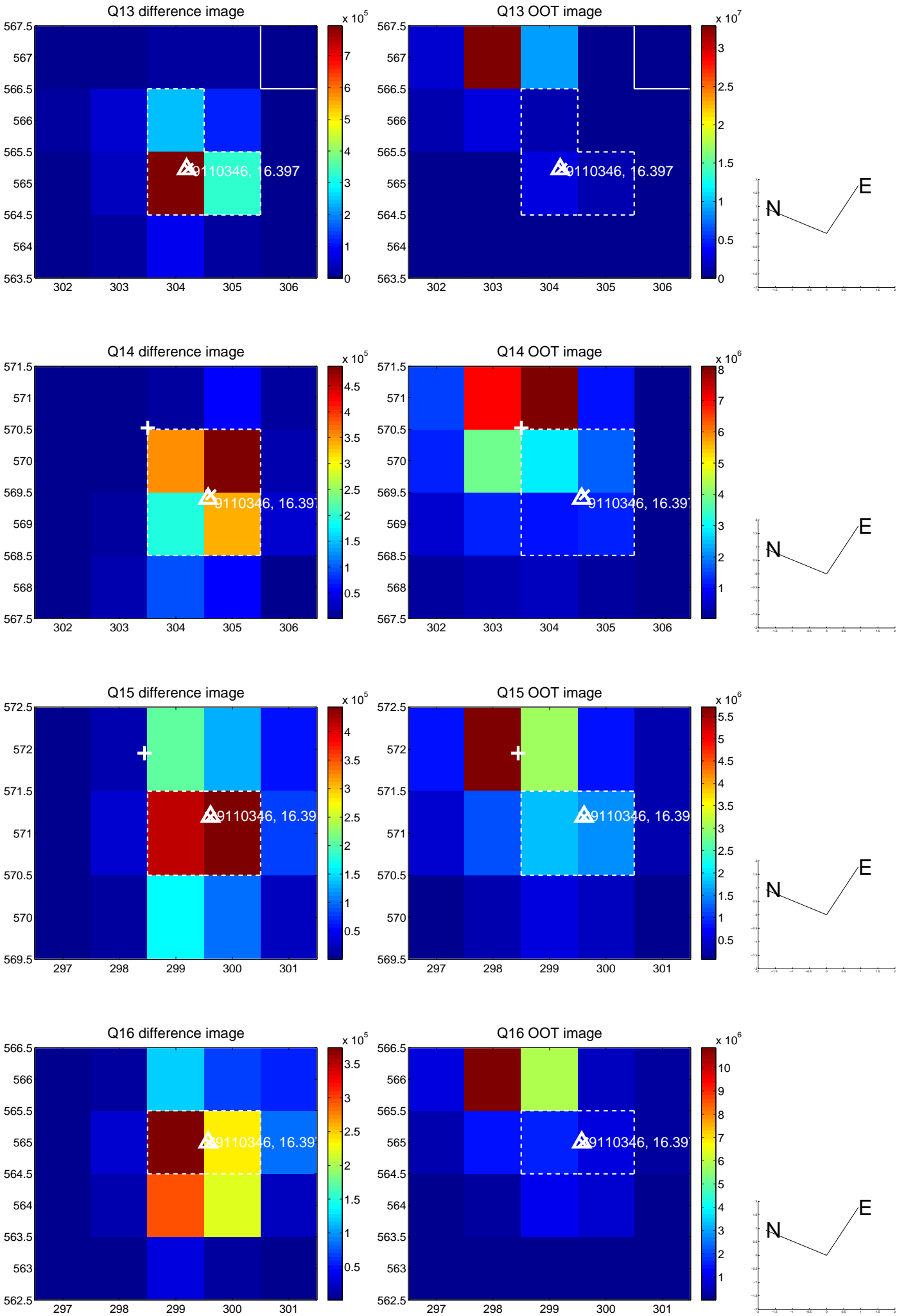
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



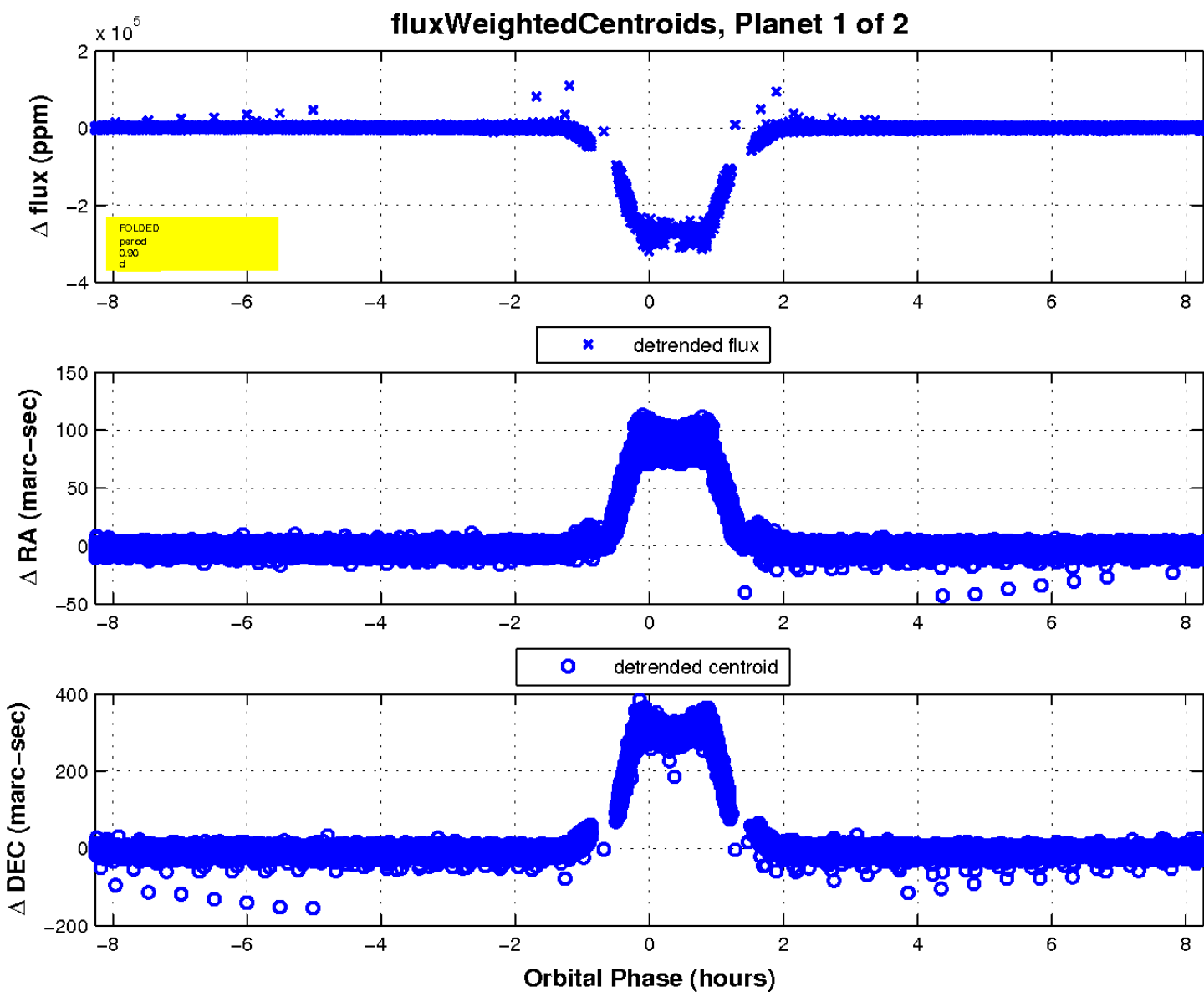
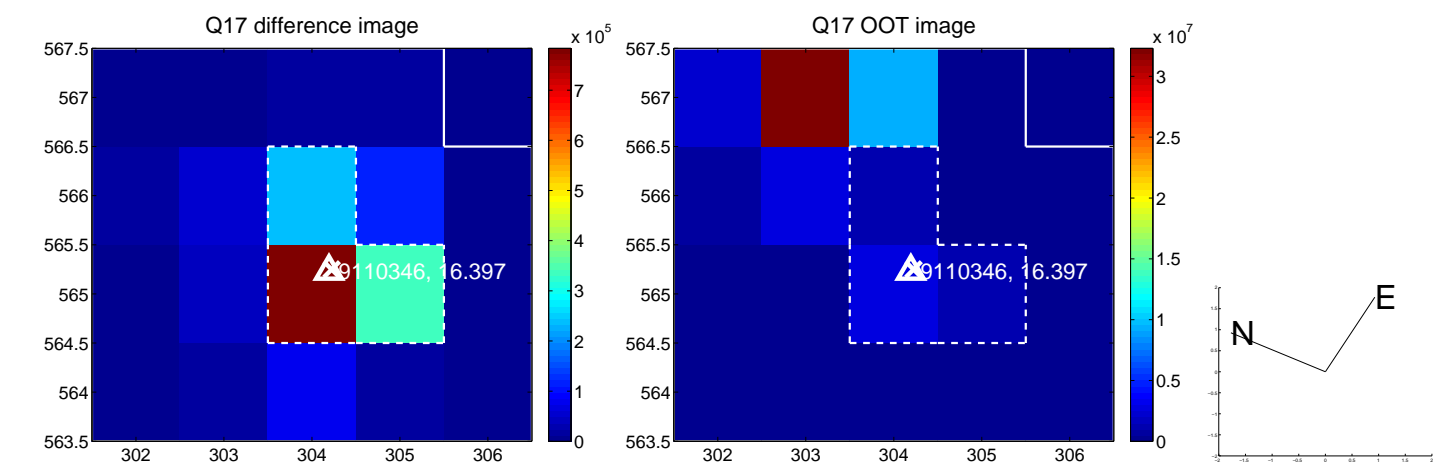
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

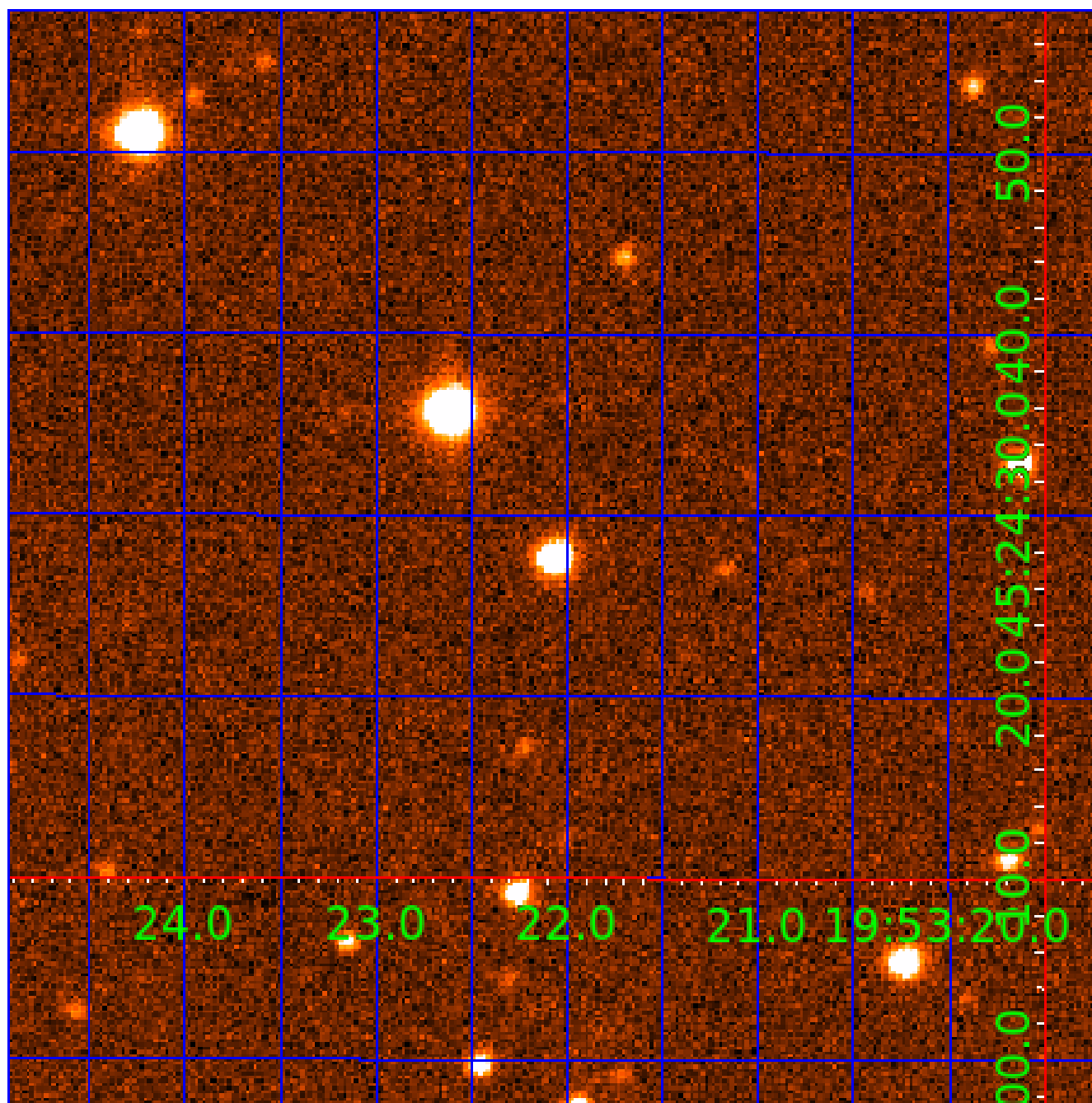


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009110346

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})
009110346-01	OBS	3607.01	0.895276	131.620369	318332.4	1.500	9024.9	-1.0	2.55	5242	139.13	13181.55
009110346-02	OBS	No	4.476344	132.706357	16595.8	12.000	551.4	-1.0	2.55	5242	32.30	1541.74

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009110346-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
009110346-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS

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 009110346-02

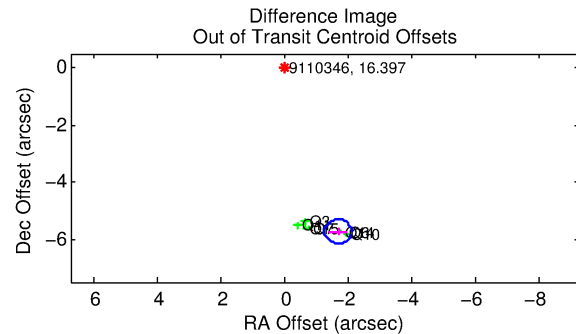
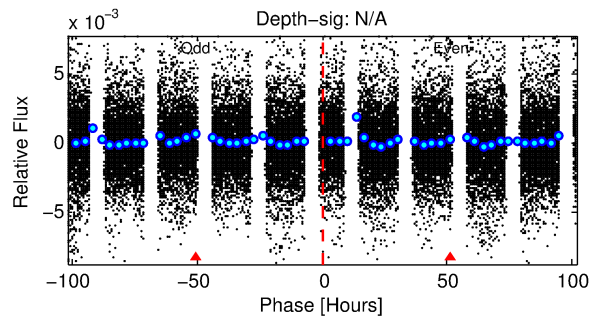
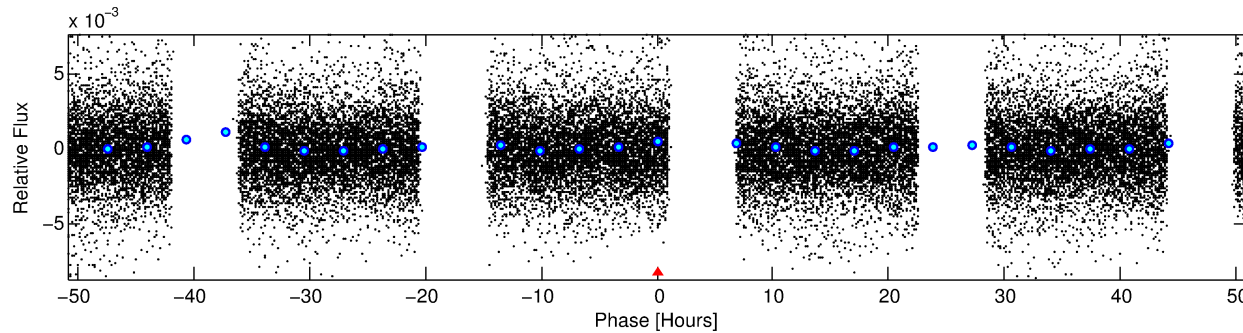
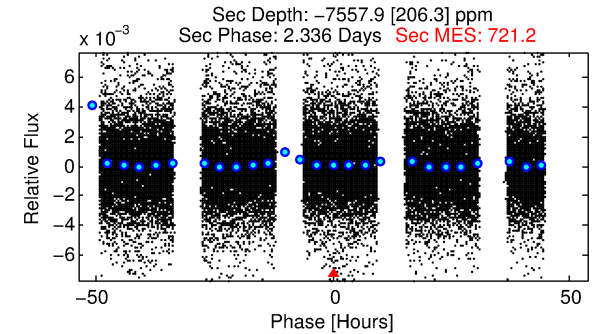
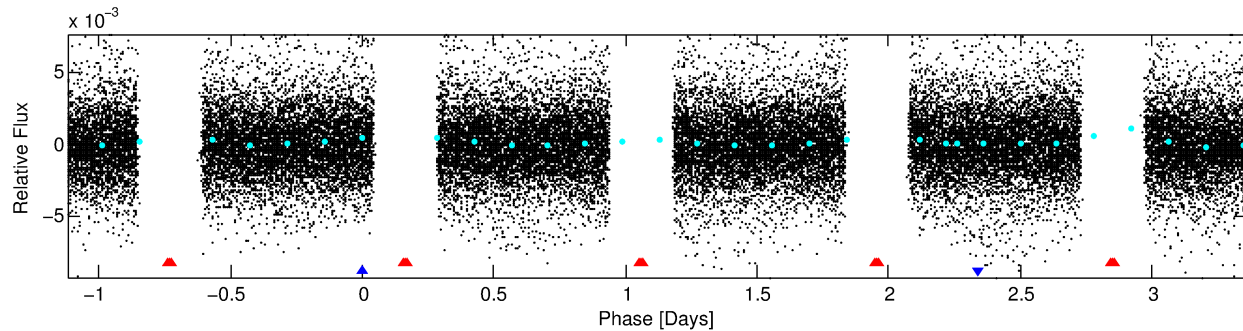
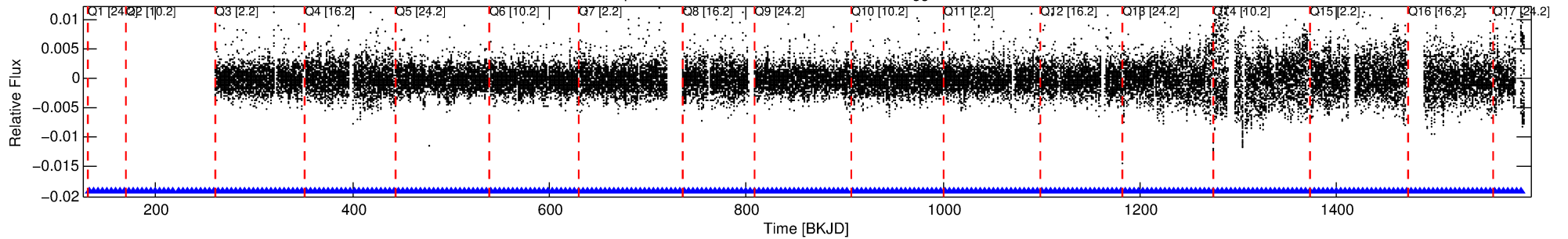
No Significant Match Found

DV One-Page Summary

KIC: 9110346 Candidate: 2 of 2 Period: 4.476 d

KOI: K03607 Corr: No Ephemeris Match

Kp: 16.40 R*: 2.55 Rs Teff: 5242.0 K Logg: 3.63 Fe/H: -0.460



TPS TCE Results:

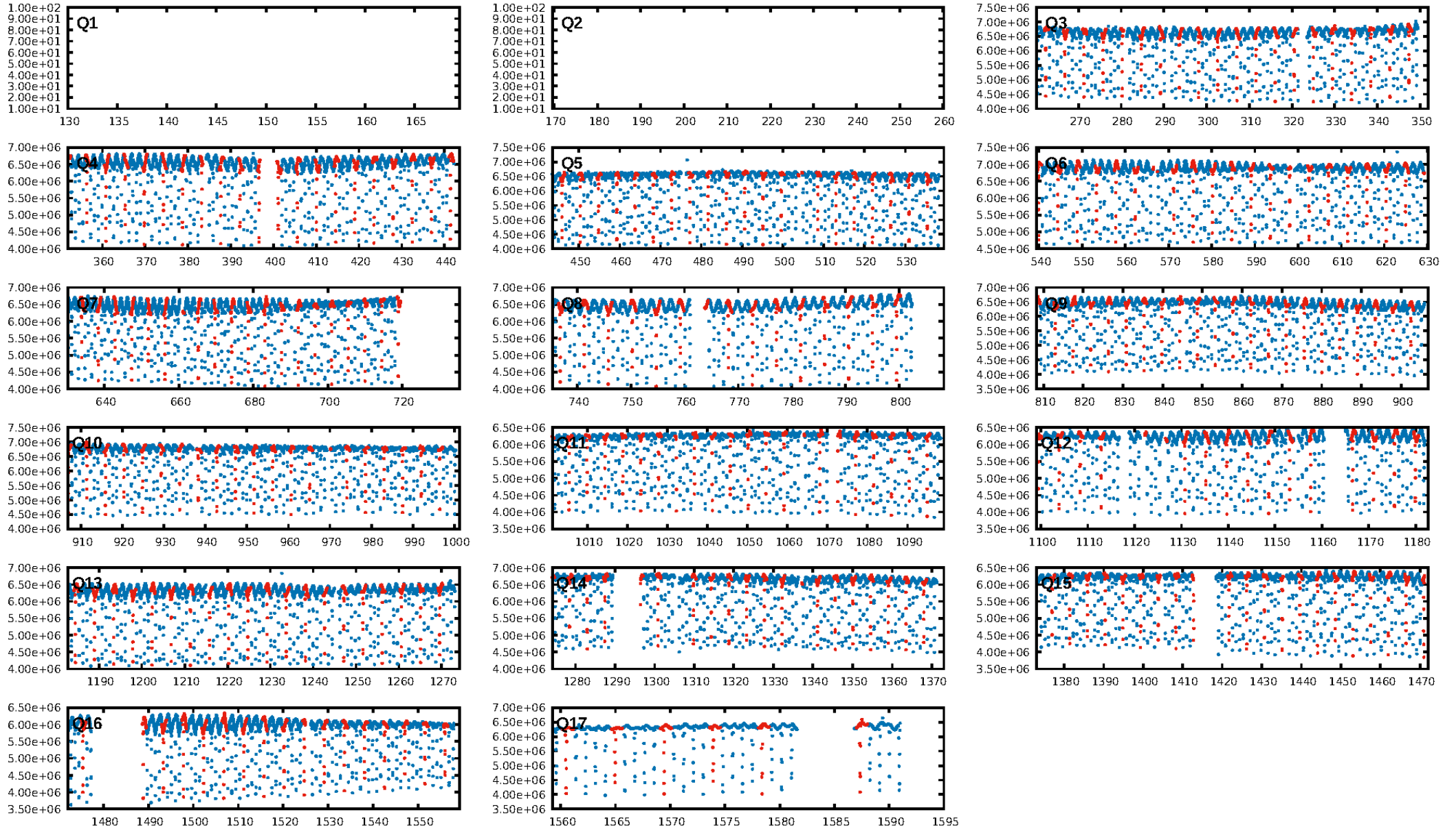
Period = 4.47634 d
Epoch = 132.7064 BKJD

DV fit results are unavailable

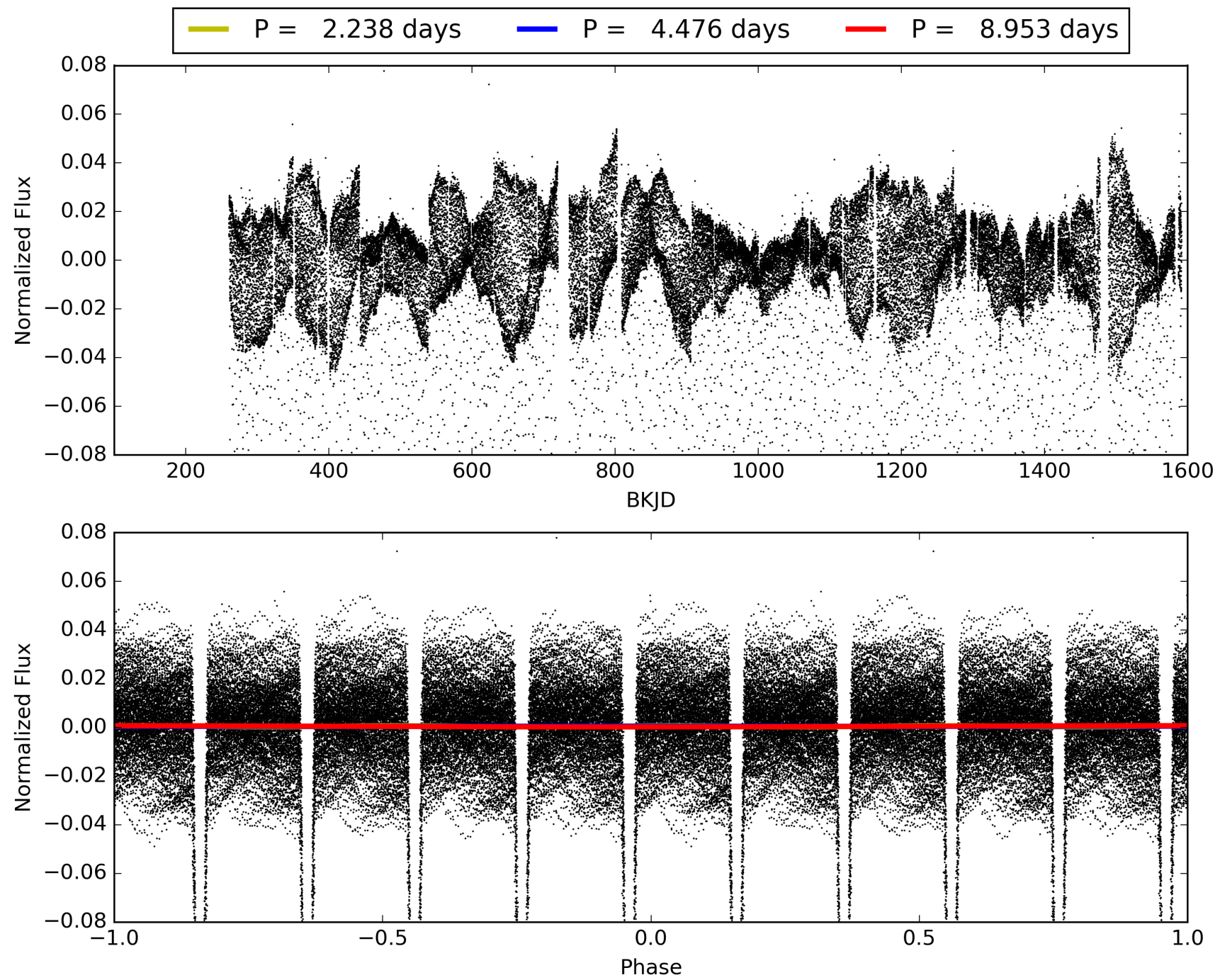
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.11 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [271/271]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: 3.916 arcsec [10.66 σ]
OotOffset-rm: 5.969 arcsec [42.53 σ]
KicOffset-rm: 0.202 arcsec [2.39 σ]
OotOffset-st: 3/4/0/0 [7]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.00 [0/15]
DiffImageOverlap-fno: 0.00 [0/15]

TCE 009110346-02, PDC Light Curves

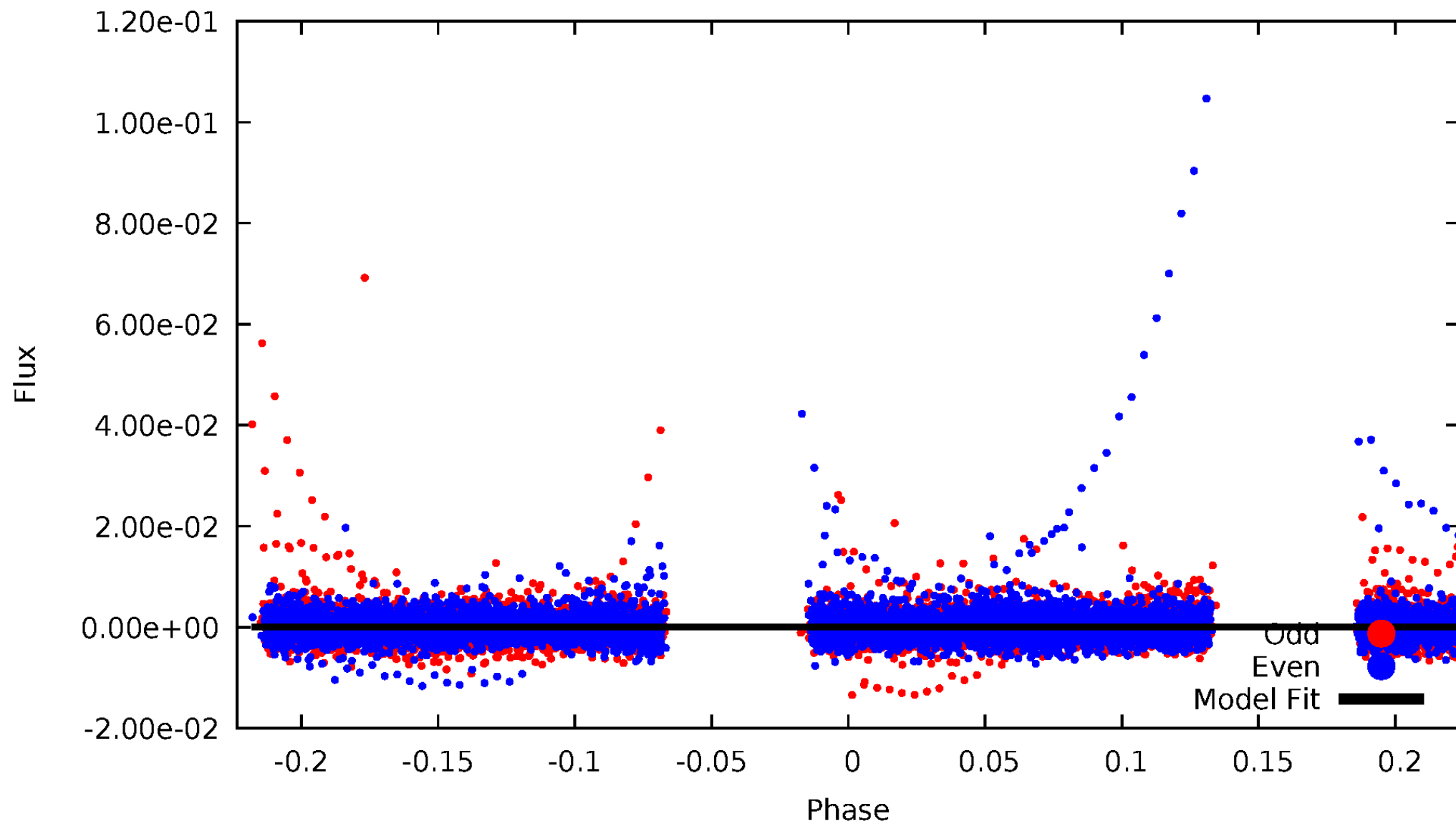


TCE 009110346-02



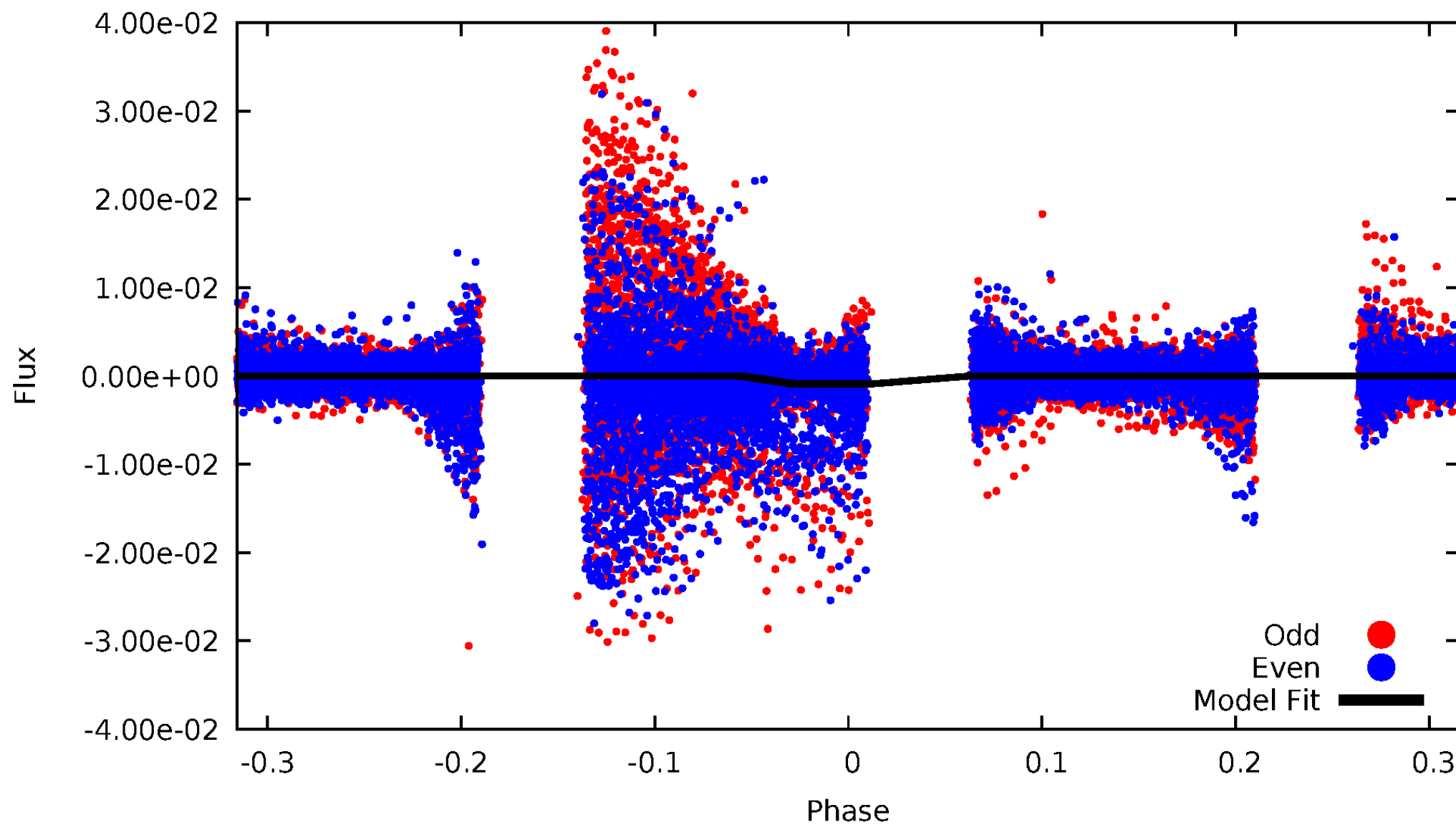
DV Odd/Even

TCE 009110346-02



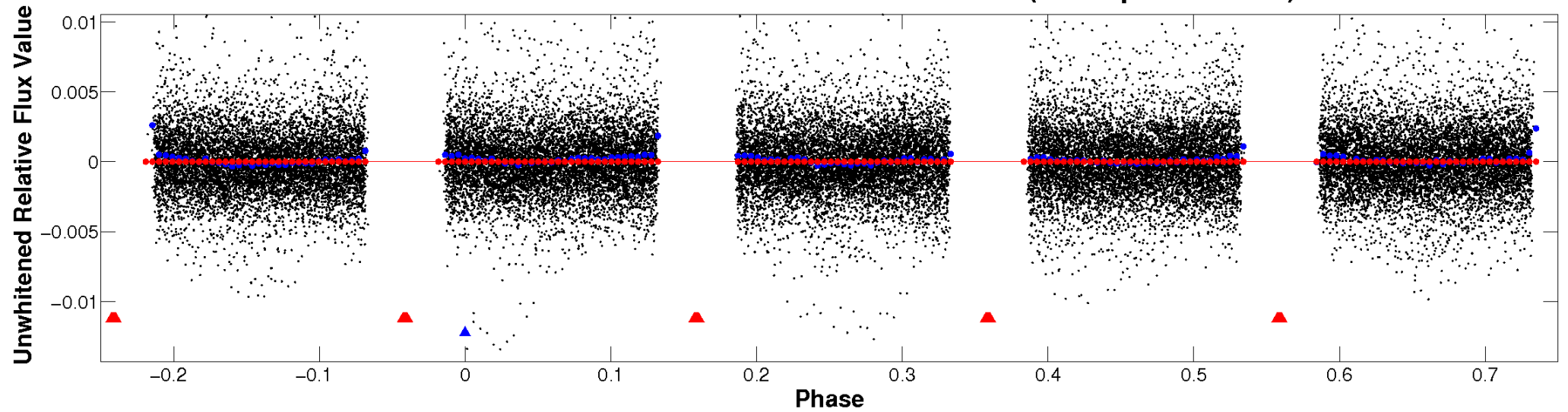
ALT Odd/Even

TCE 009110346-02



Non-Whitened Vs. Whitened Light Curve

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

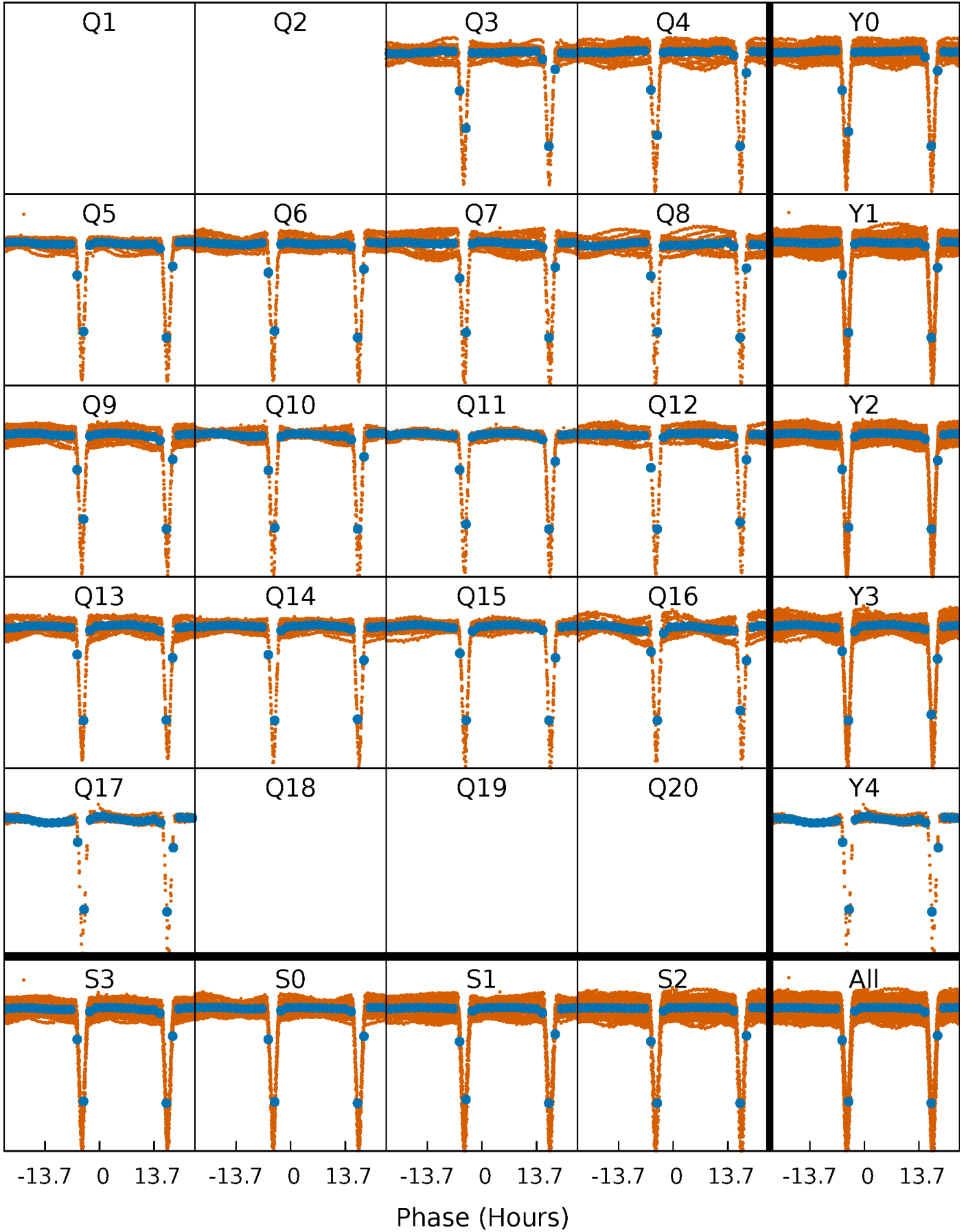


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



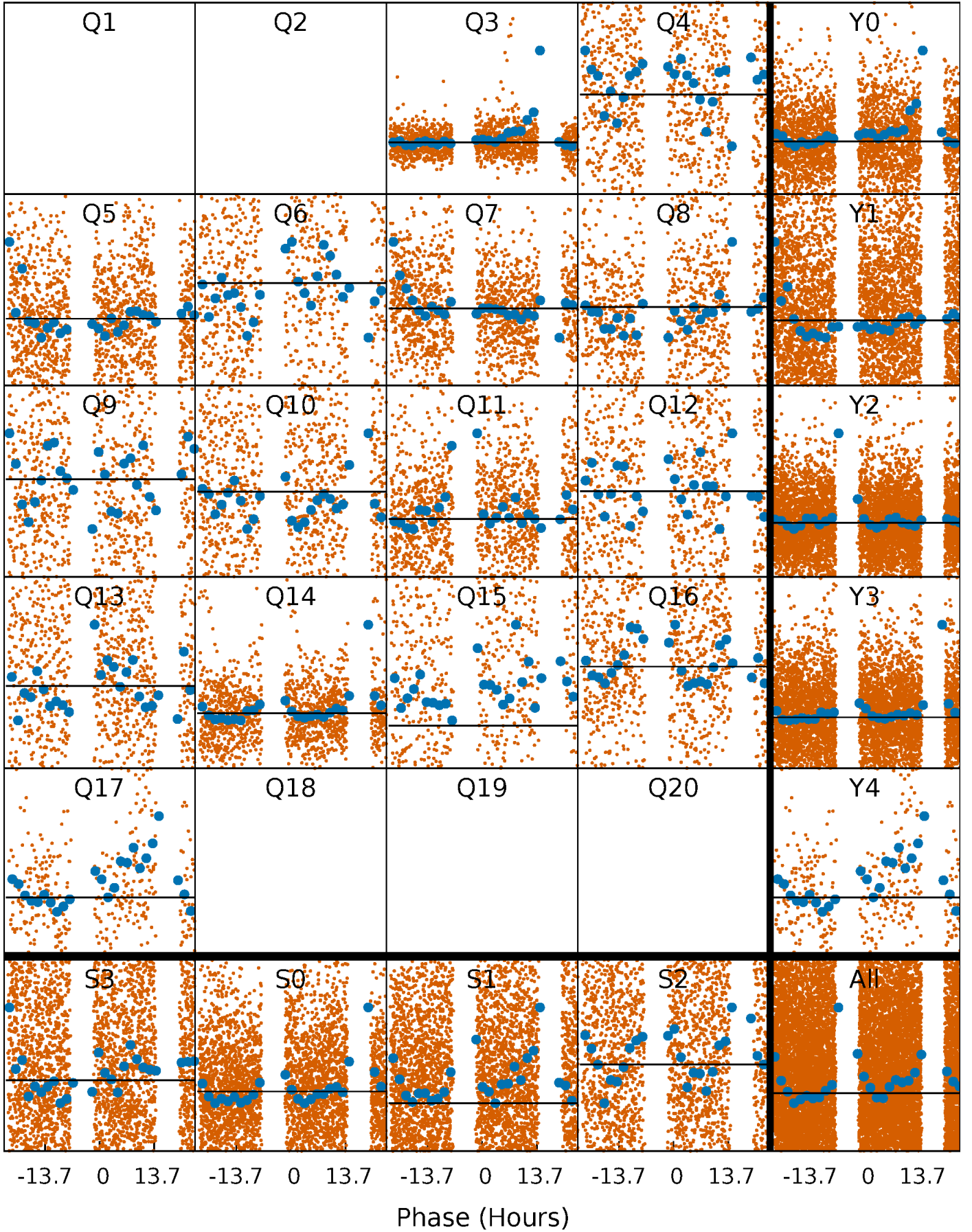
PDC Quarter-Phased Transit Curves

TCE 009110346-02 P= 4.476344 Days $T_0=132.706357$ (BKJD)



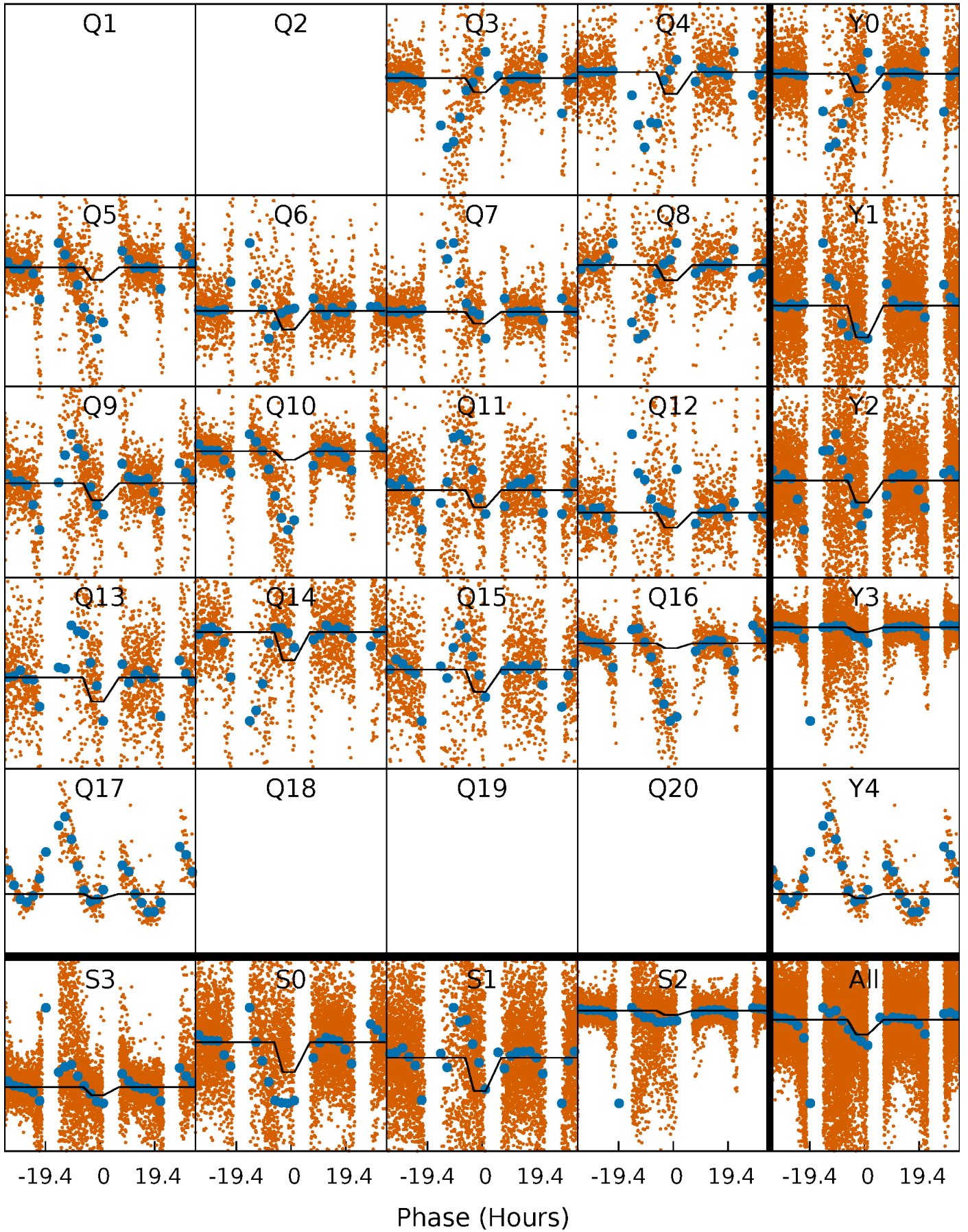
DV Quarter-Phased Transit Curves

TCE 009110346-02 P= 4.476344 Days $T_0=132.706357$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

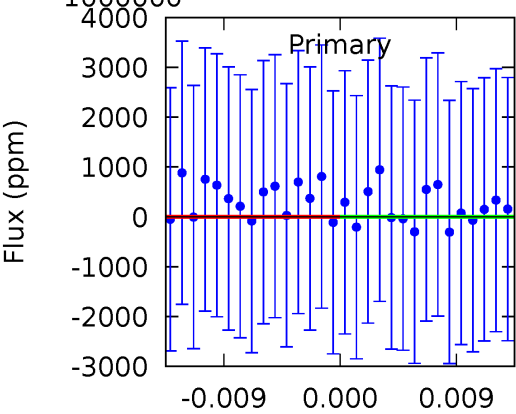
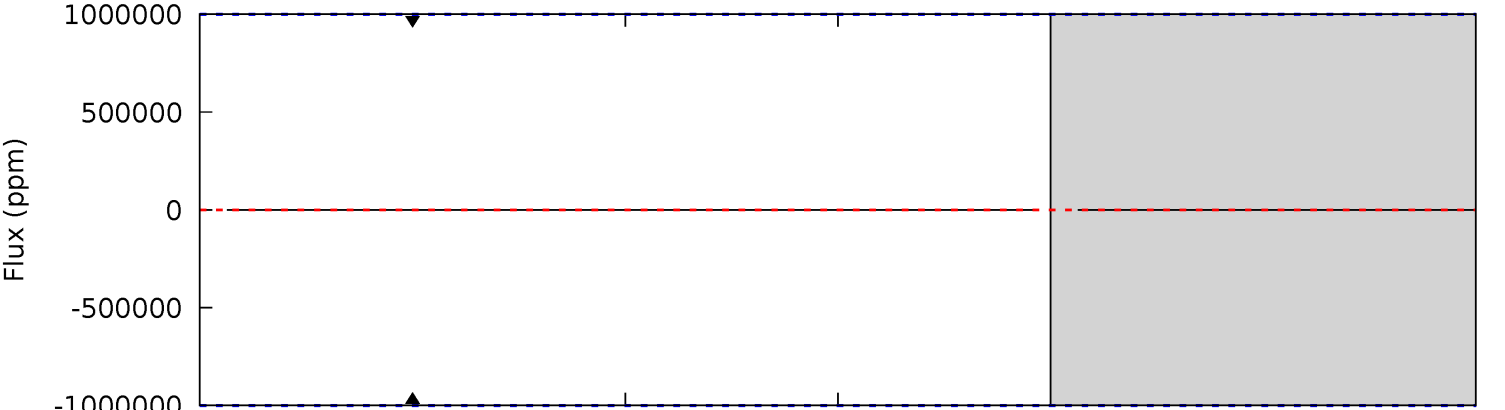
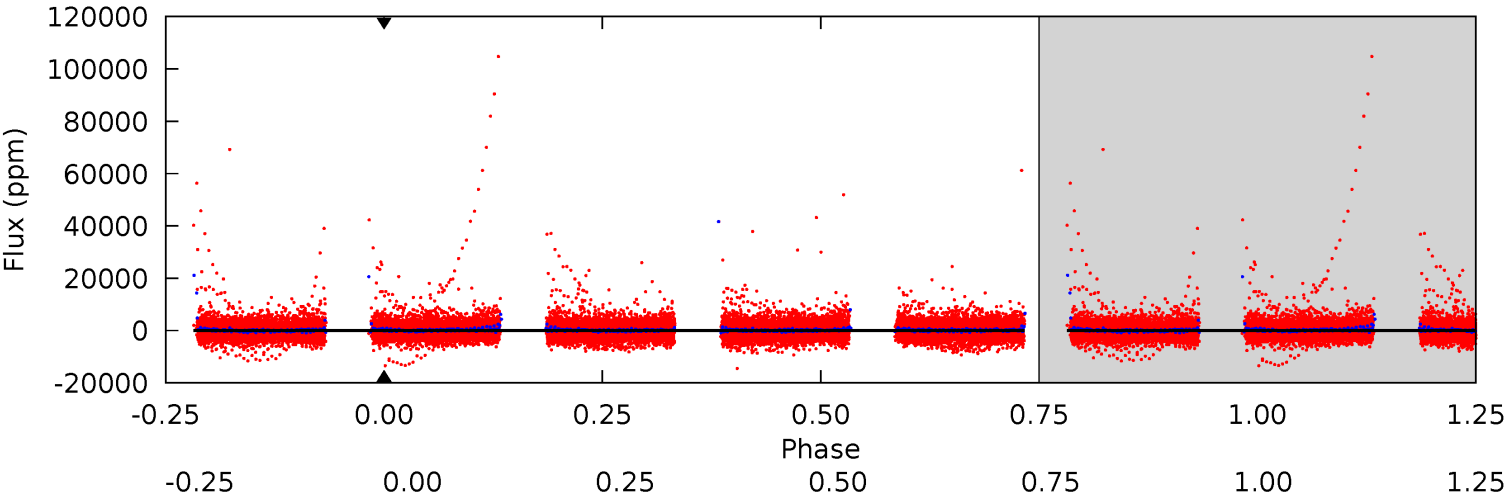
TCE 009110346-02 P= 4.476344 Days $T_0=133.254890$ (BKJD)



DV Model-Shift Uniqueness Test

009110346-02, P = 4.476344 Days, E = 132.706357 Days

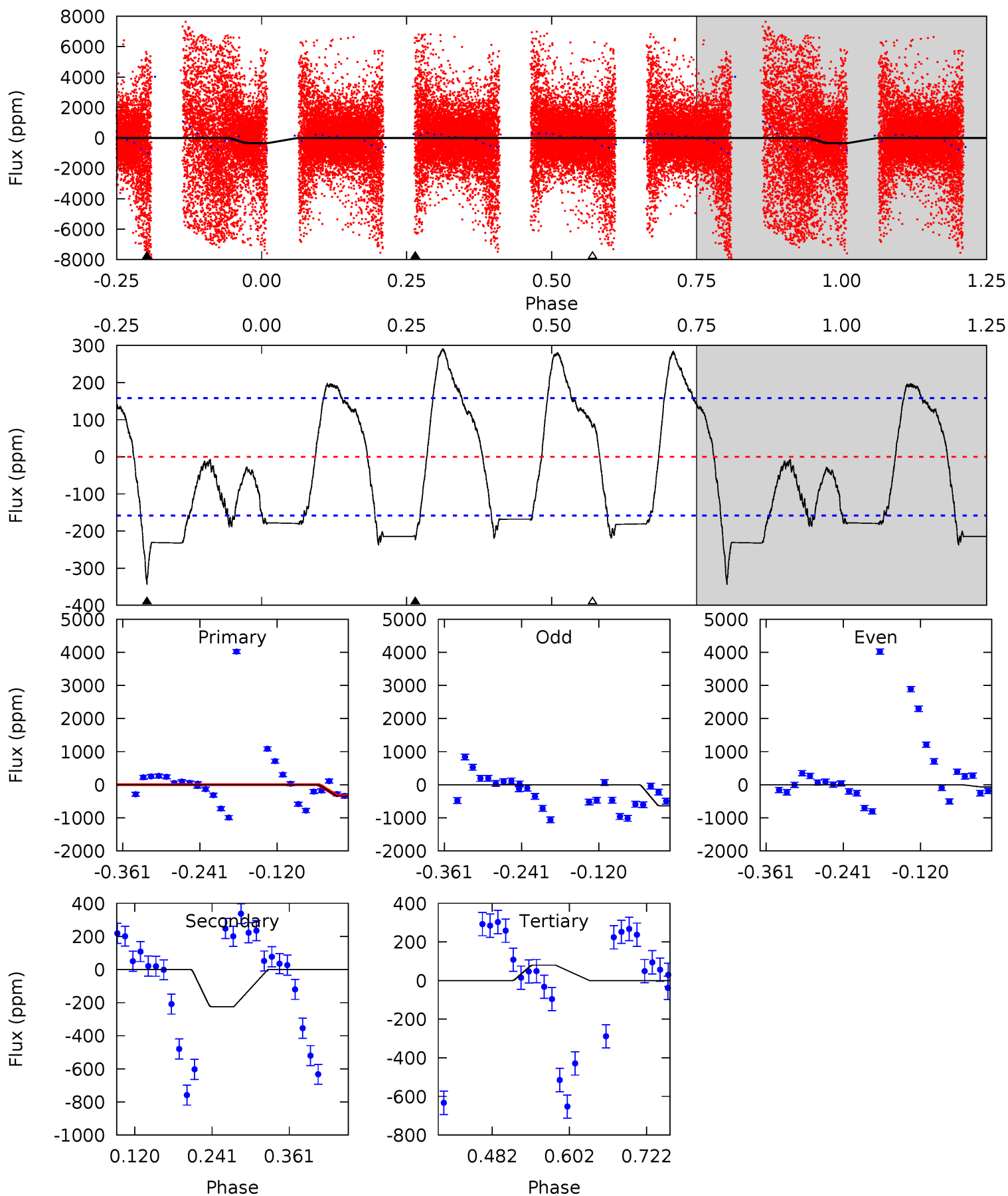
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009110346-02, P = 4.476344 Days, E = 133.254890 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.85	6.41	-2.29	0	4.53	1.55	4.23	12.1	9.85	8.70	6.41	8.47	10.5	0.46	2.80



Stellar Parameters For KIC 009110346

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5242^{+191}_{-159}	$3.631^{+0.923}_{-0.308}$	$-0.460^{+0.300}_{-0.250}$	$2.550^{+1.206}_{-1.809}$	$1.015^{+0.226}_{-0.226}$	$0.086^{+2.469}_{-0.062}$
	+4%/-3%	+25%/-8%	+65%/-54%	+47%/-71%	+22%/-22%	+2865%/-72%
Source	KIC0	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 009110346-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$33.18^{+30.95}_{-21.24}$	2213^{+312}_{-417}	-3268^{+12933}_{-5963}	$-1.183^{+236.826}_{-189.946}$
Alt.	-224 ± 35	$19.72^{+24.47}_{-14.36}$	2207^{+313}_{-471}	2719^{+1548}_{-5079}	$0.878^{+11.714}_{-0.702}$

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

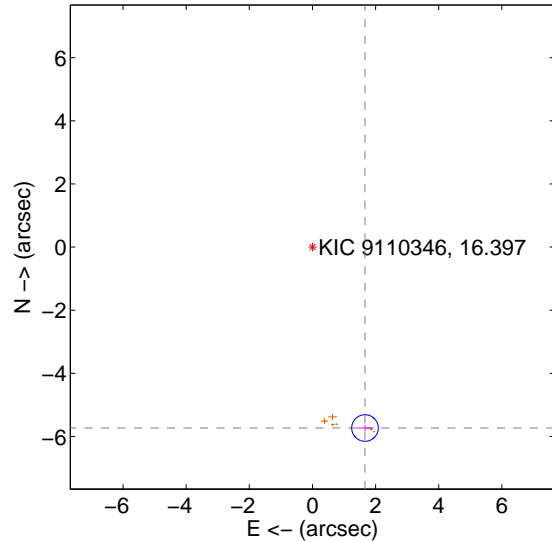
Supplemental centroid analysis for 009110346-02. Kepler magnitude: 16.40. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

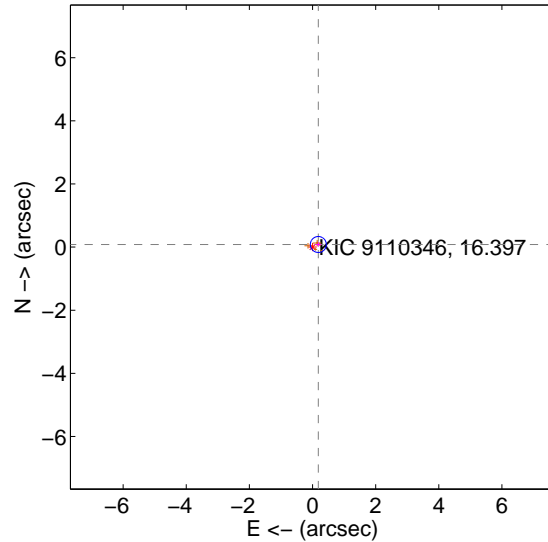
The OOT PRF centroid is offset from the target star catalog position by about 5.58 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.969 ± 0.140	42.53	-1.665 ± 0.257	-5.733 ± 0.091
PRF-fit source offset from KIC position	0.202 ± 0.084	2.39	-0.184 ± 0.091	0.082 ± 0.072
photometric centroid source offset	3.92 ± 0.37	10.66	0.63 ± 0.16	3.87 ± 0.37

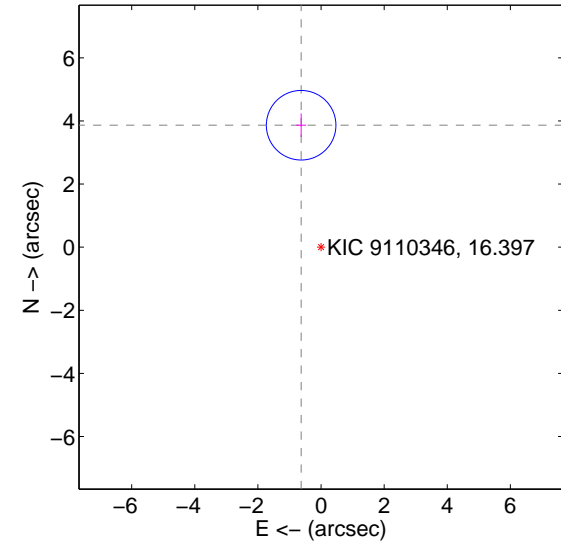
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

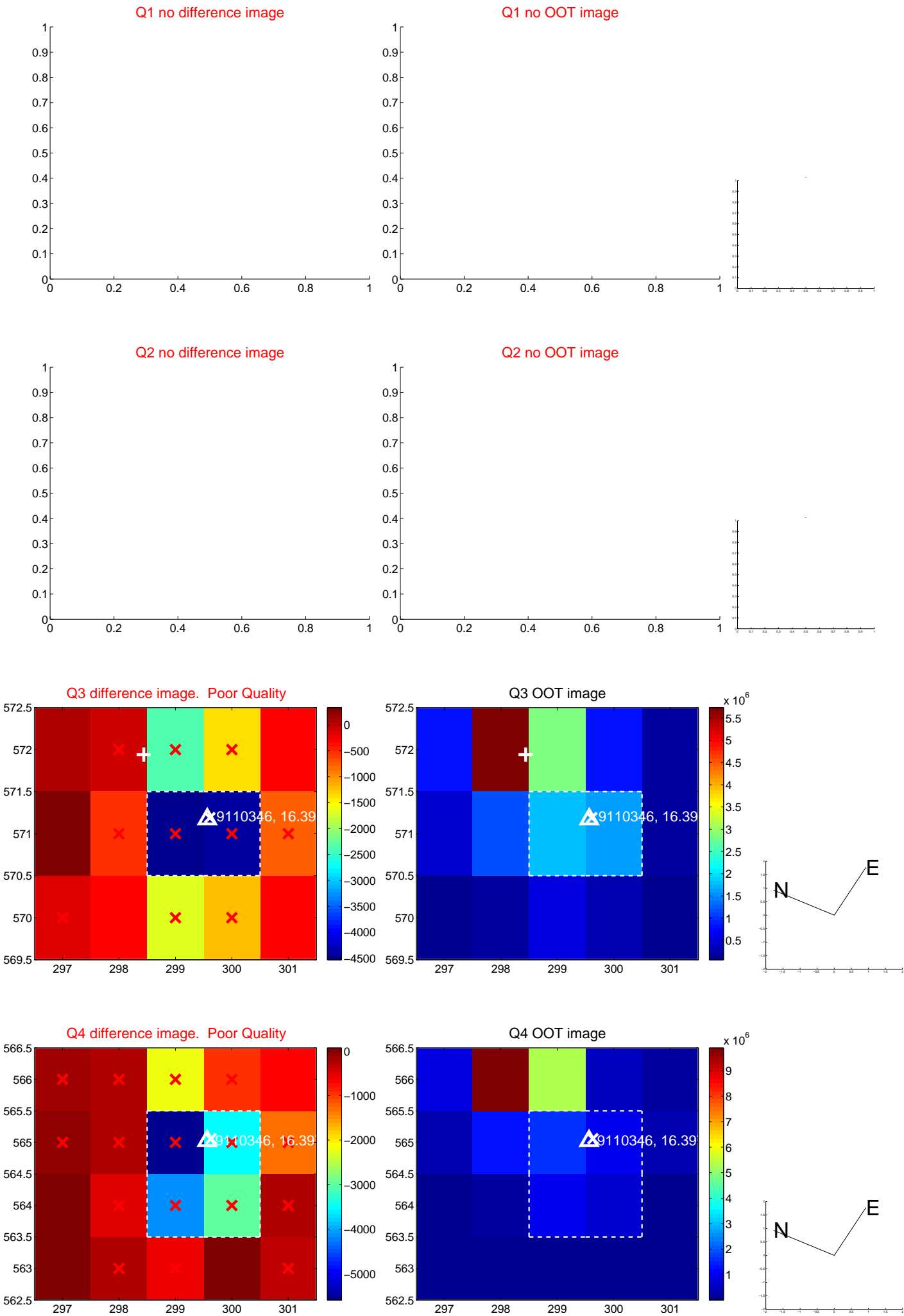


offset from photometric centroids

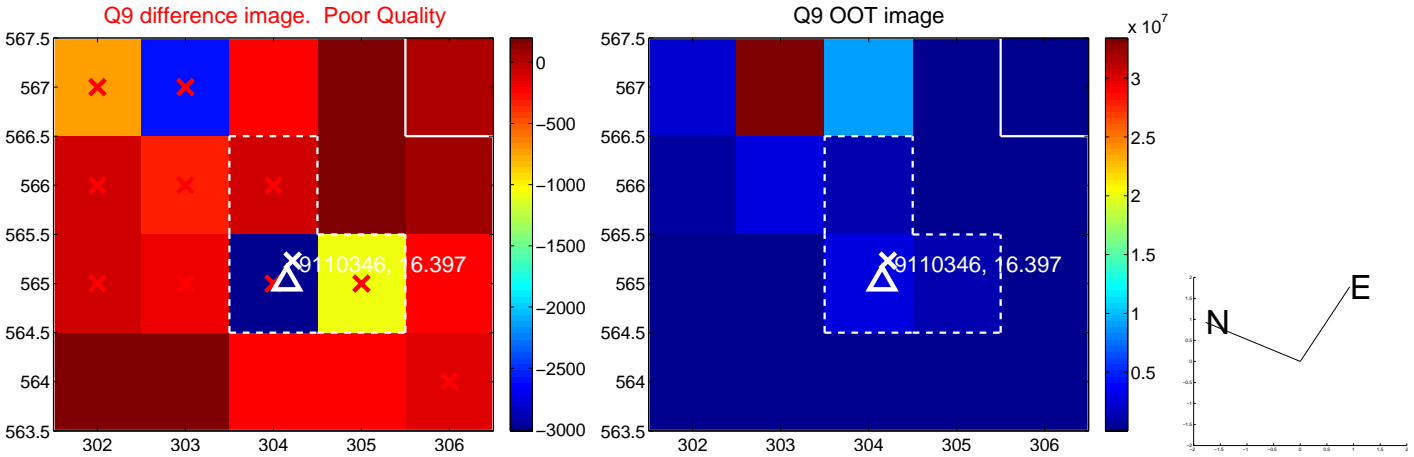


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

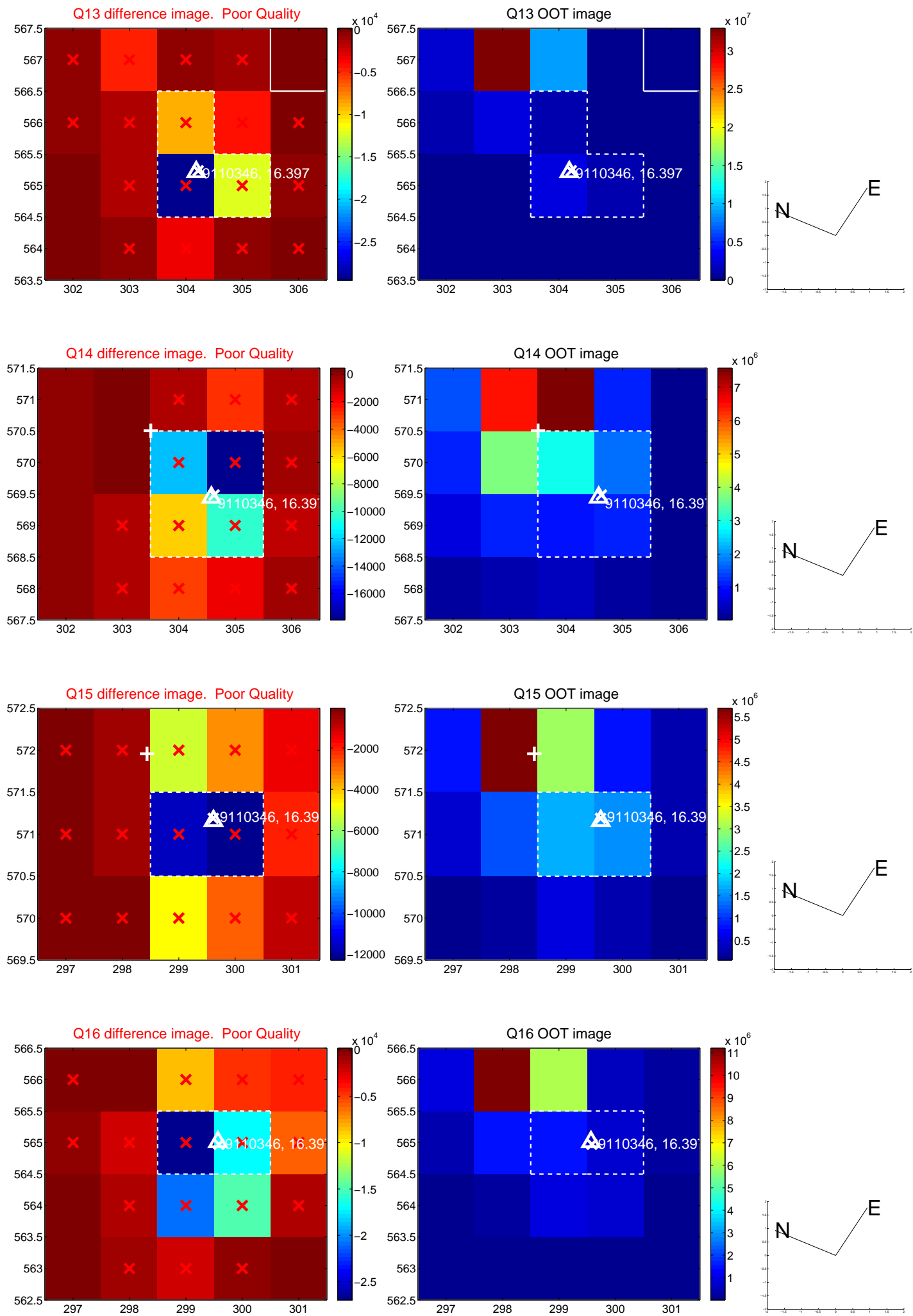
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



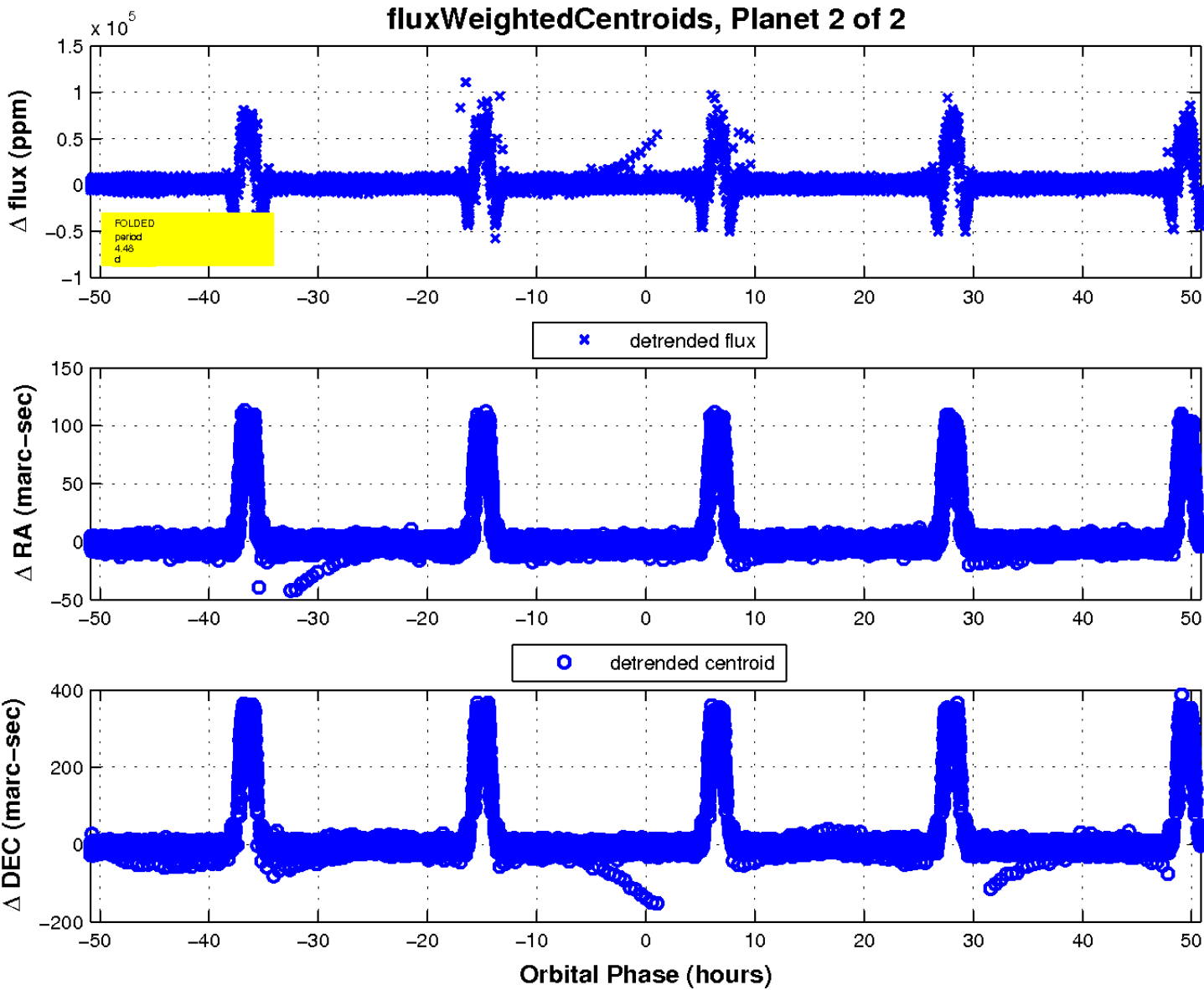
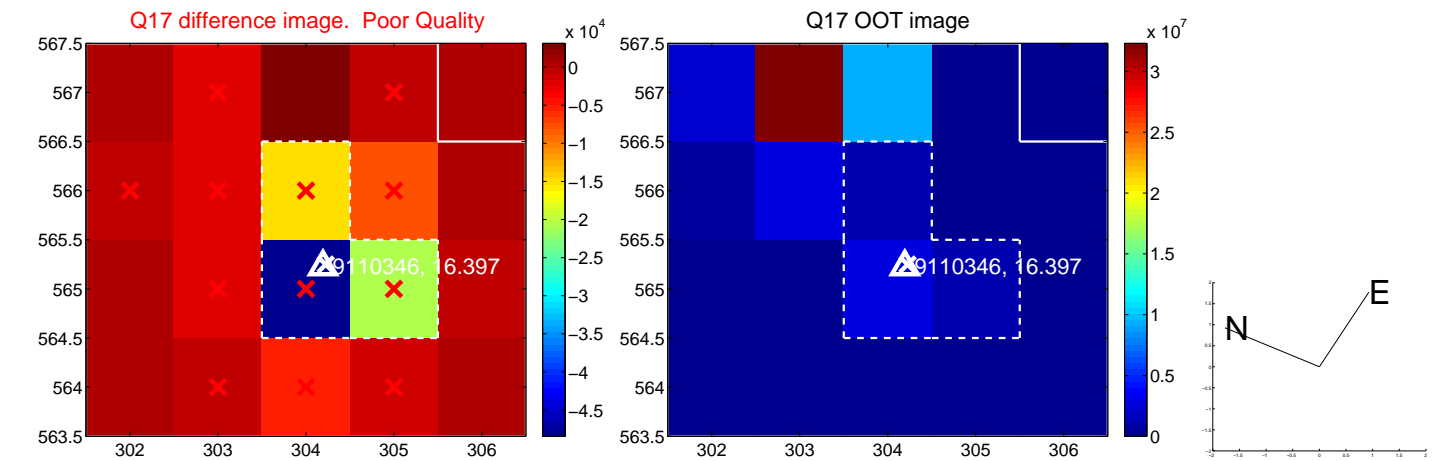
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

