

KIC 008509346

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})
008509346-01	OBS	7049.01	6.099033	135.522435	55368.7	4.814	6259.6	4706.6	1.14	6356	38.07	464.31
008509346-02	OBS	No	6.099032	132.503786	5605.2	4.673	668.9	655.6	1.14	6356	15.34	464.31

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008509346-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
008509346-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

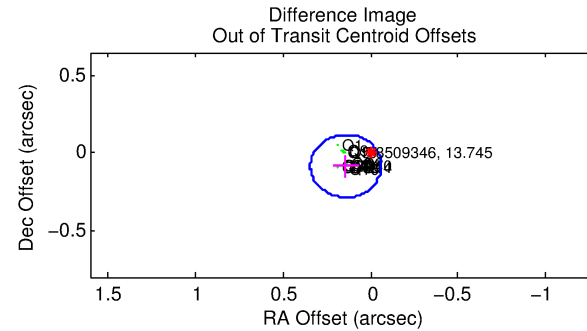
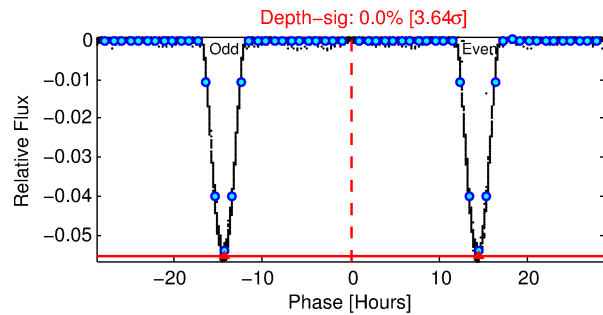
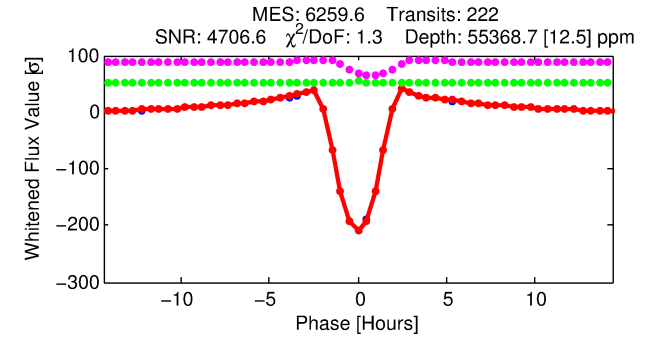
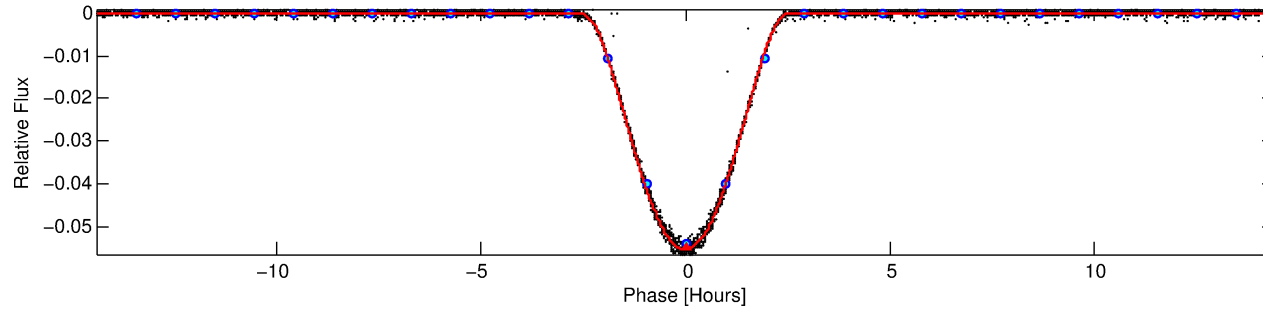
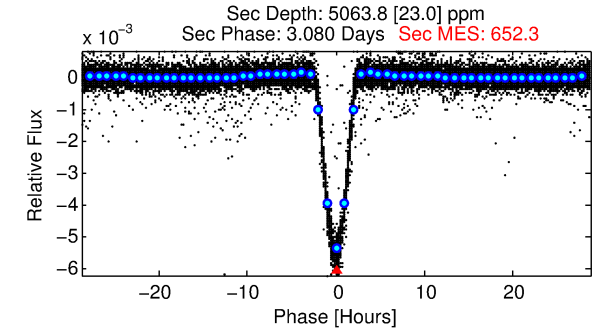
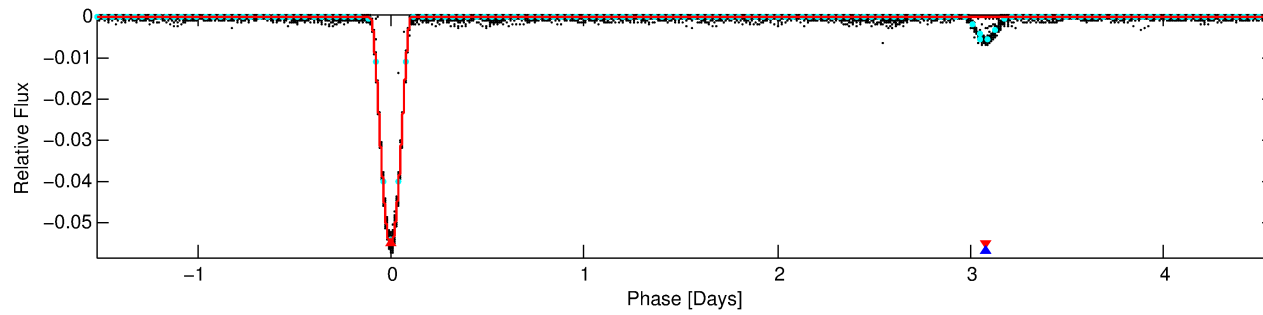
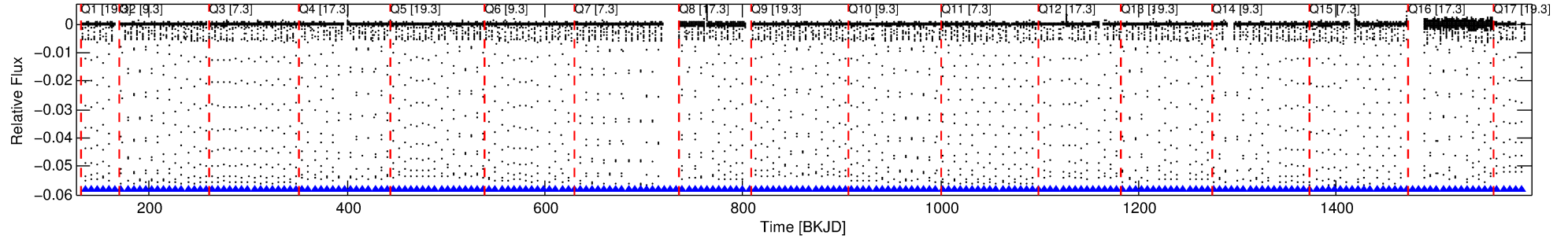
Ephemeris Match Information For 008509346-01

No Significant Match Found

DV One-Page Summary

KIC: 8509346 Candidate: 1 of 2 Period: 6.099 d
KOI: K07049.01 Corr: 1.000

Kp: 13.74 R*: 1.14 Rs Teff: 6356.0 K Logg: 4.30 Fe/H: -0.580



DV Fit Results:

Period = 6.09903 [0.00000] d
Epoch = 135.5224 [0.0000] BKJD
Rp/R* = 0.3058 [0.0019]
a/R* = 9.12 [0.00]
b = 0.91 [0.00]
Seff = 464.31 [162.64]
Teff = 1184 [104] K
Rp = 38.07 [10.41] Re
a = 0.0640 [0.0145] AU
Ag = 7.88 [2.56] [2.69σ]
Teffp = 3066 [101] K [12.99σ]

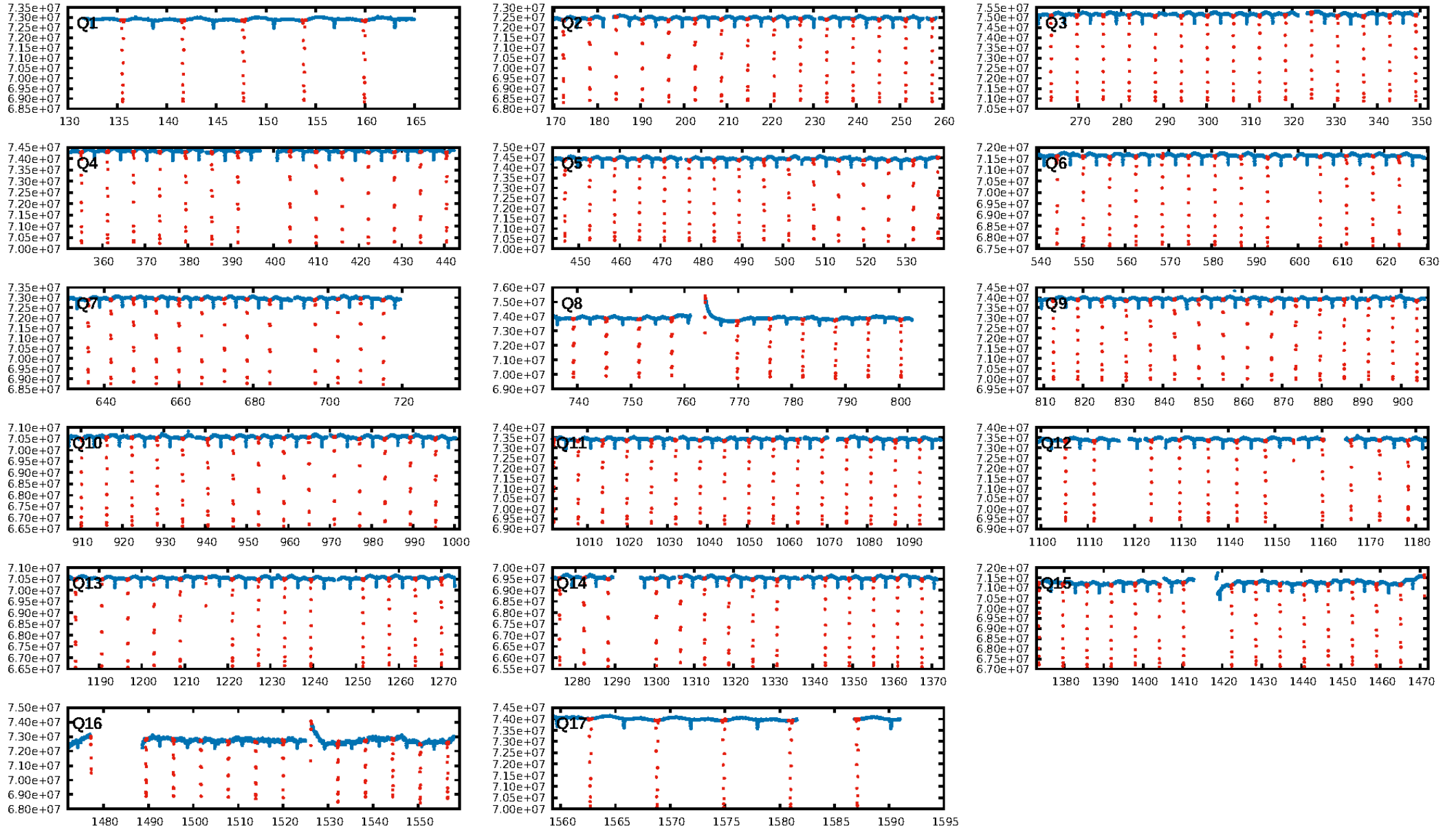
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [212/212]
GhostDiagnostic-chr: 9.056
Centroid-sig: 0.0%
Centroid-so: 0.387 arcsec [284.40σ]
OotOffset-rm: 0.164 arcsec [2.44σ]
KicOffset-rm: 0.058 arcsec [0.85σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

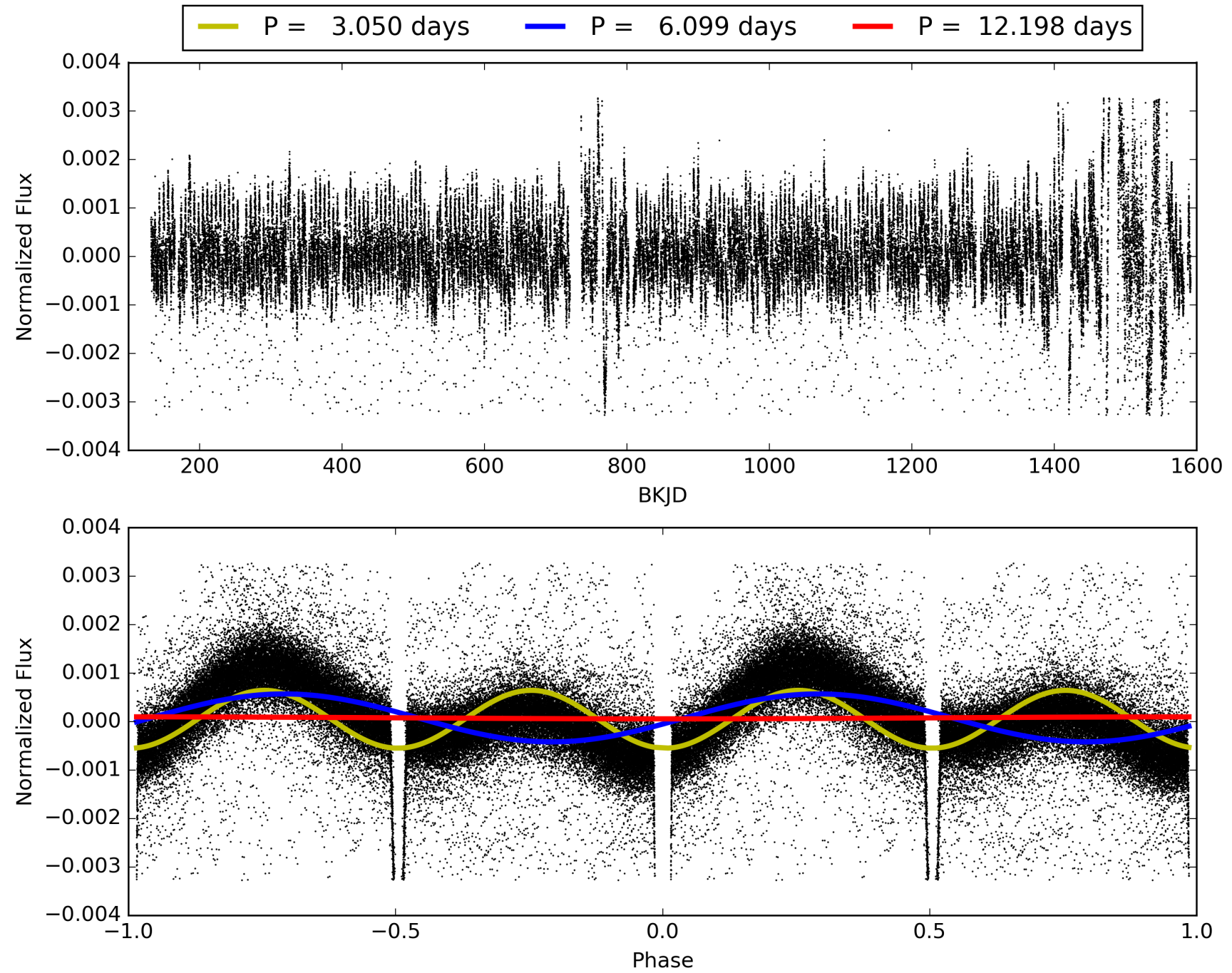
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:32:20 Z

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

TCE 008509346-01, PDC Light Curves

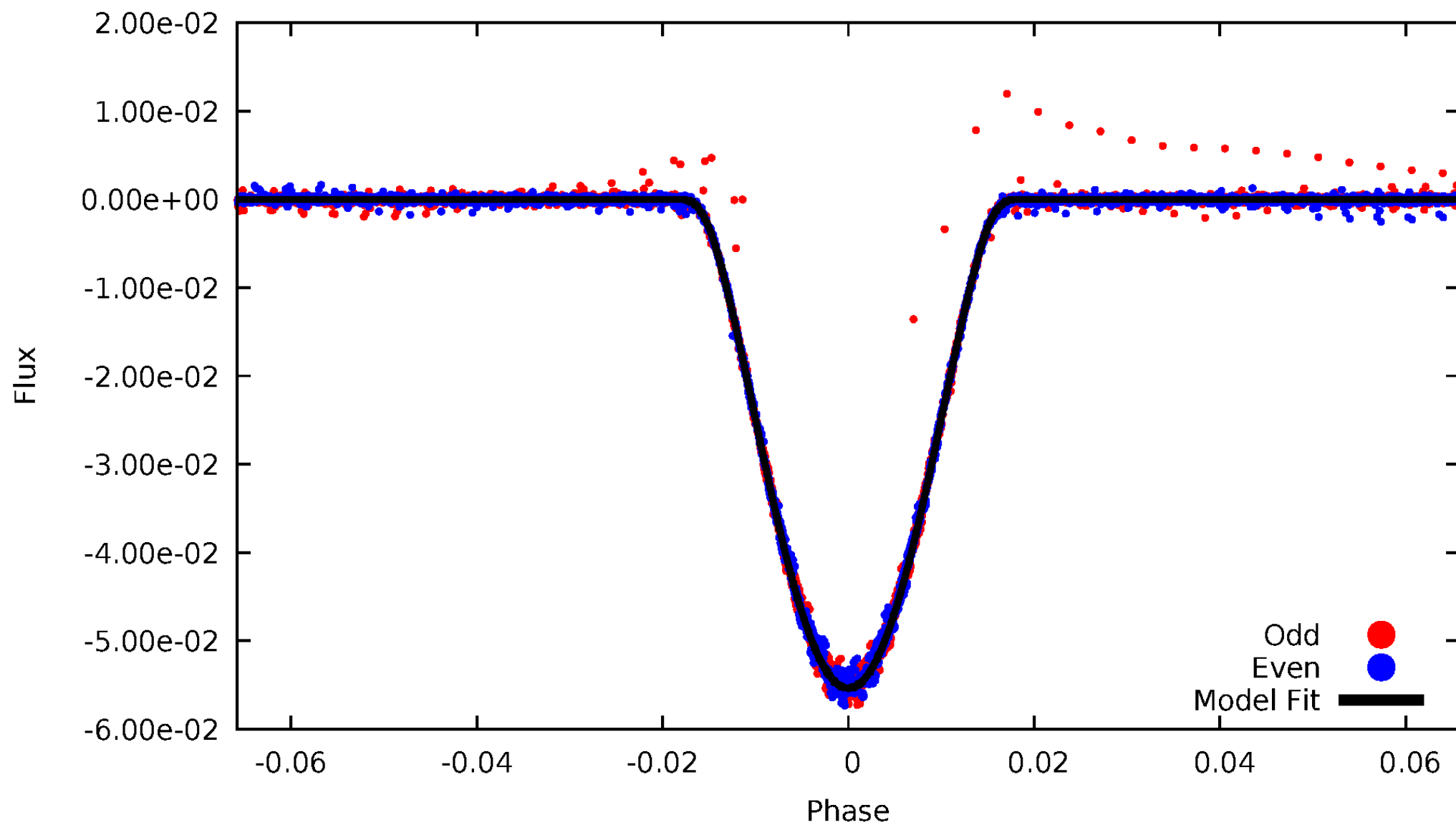


TCE 008509346-01



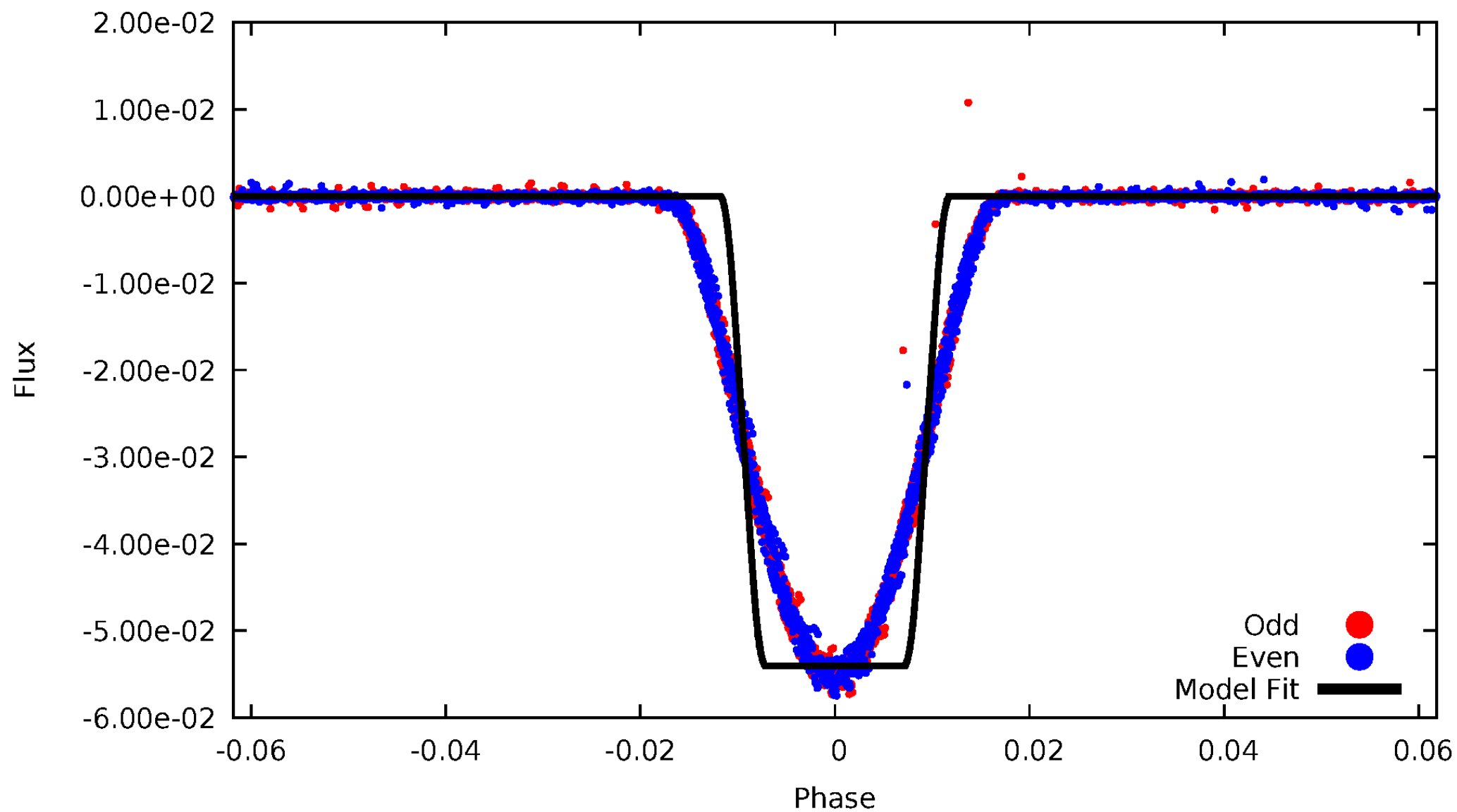
DV Odd/Even

TCE 008509346-01



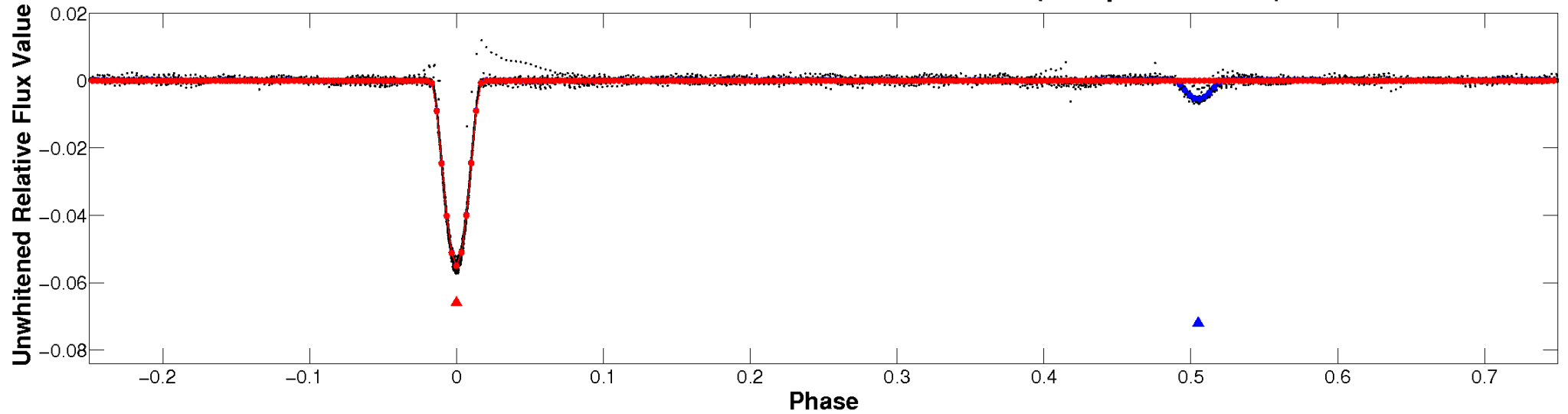
ALT Odd/Even

TCE 008509346-01

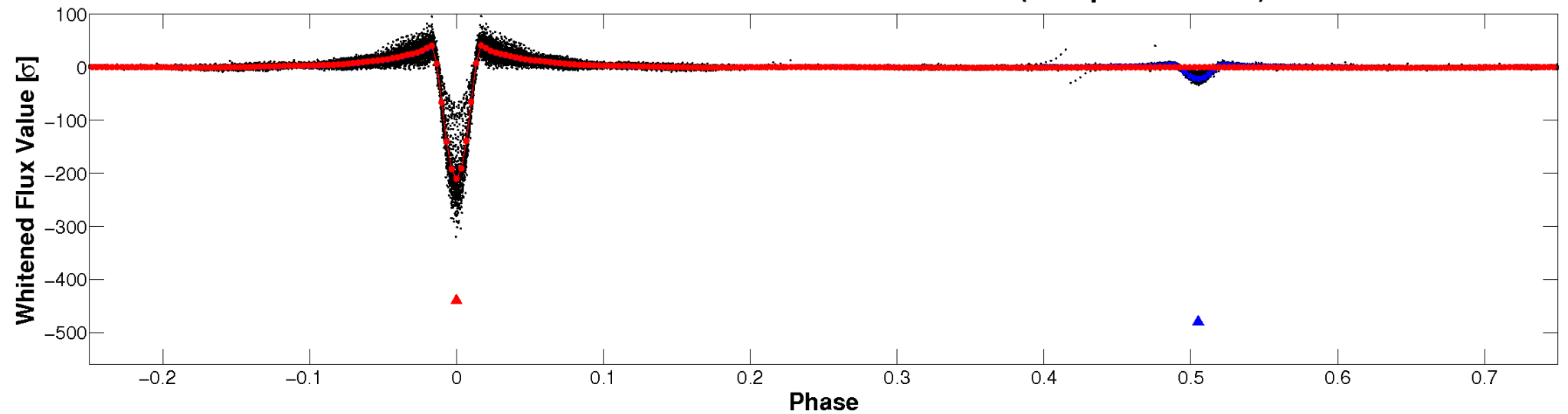


Non-Whitened Vs. Whitened Light Curve

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

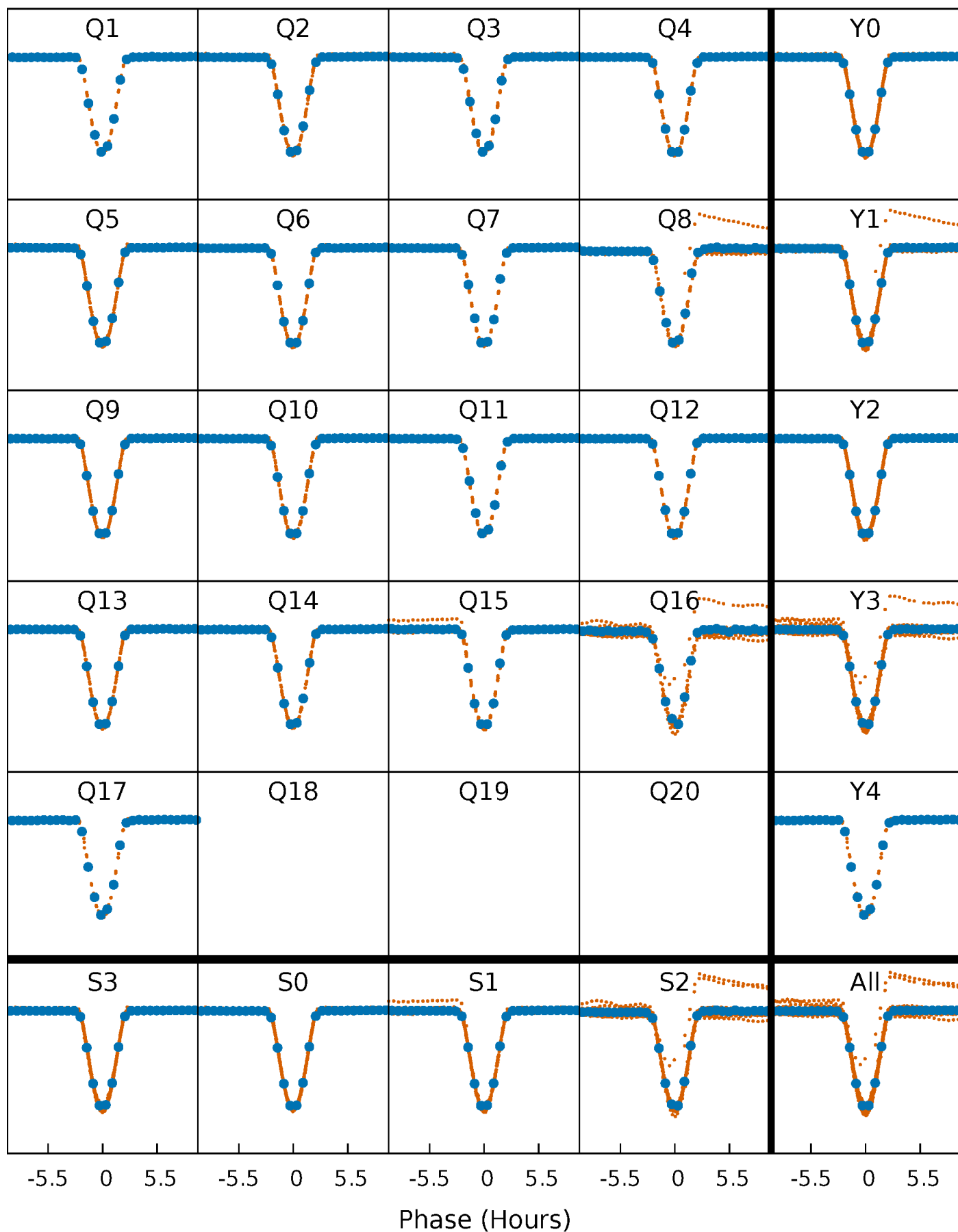


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



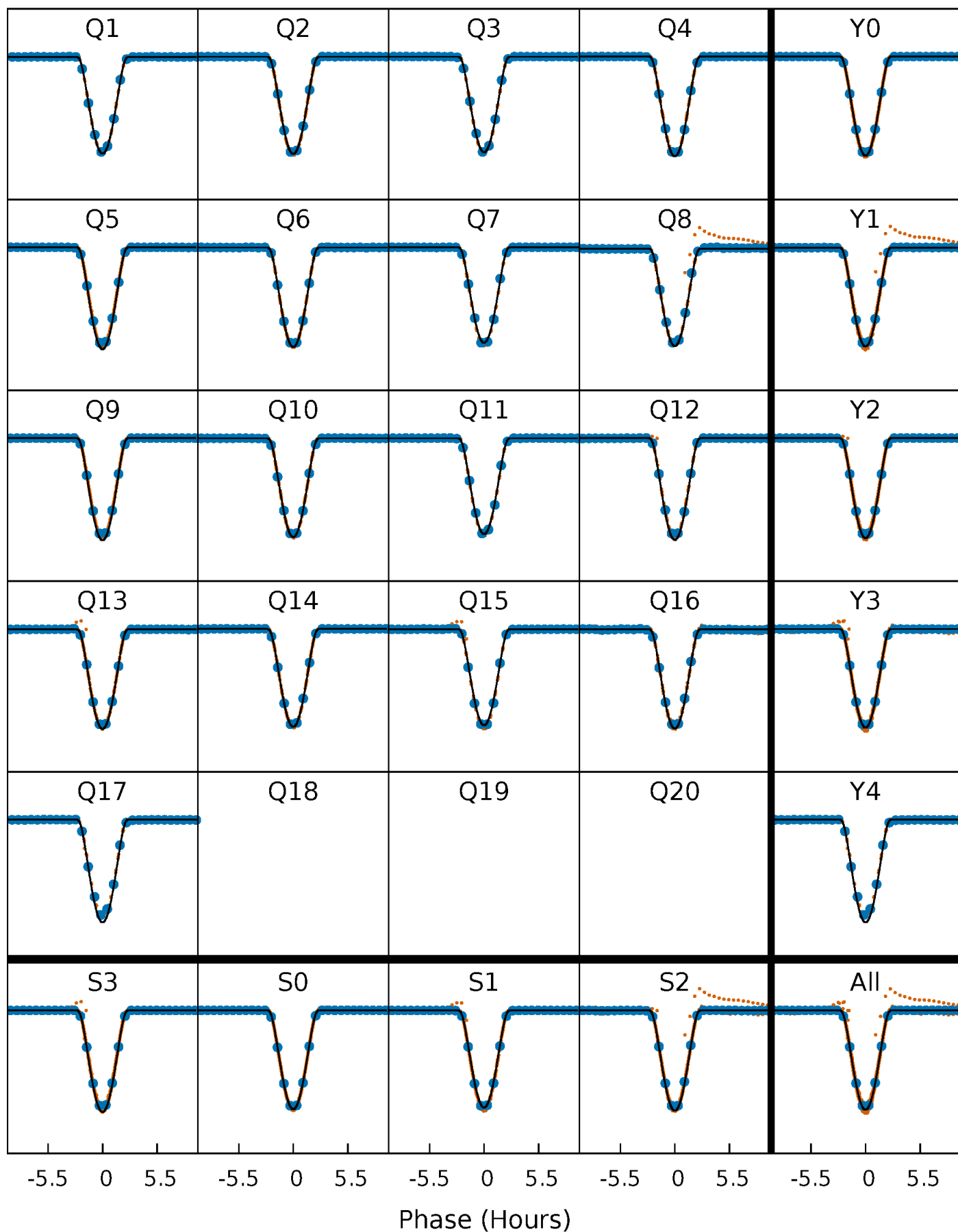
PDC Quarter-Phased Transit Curves

TCE 008509346-01 P= 6.099033 Days $T_0=135.522435$ (BKJD)



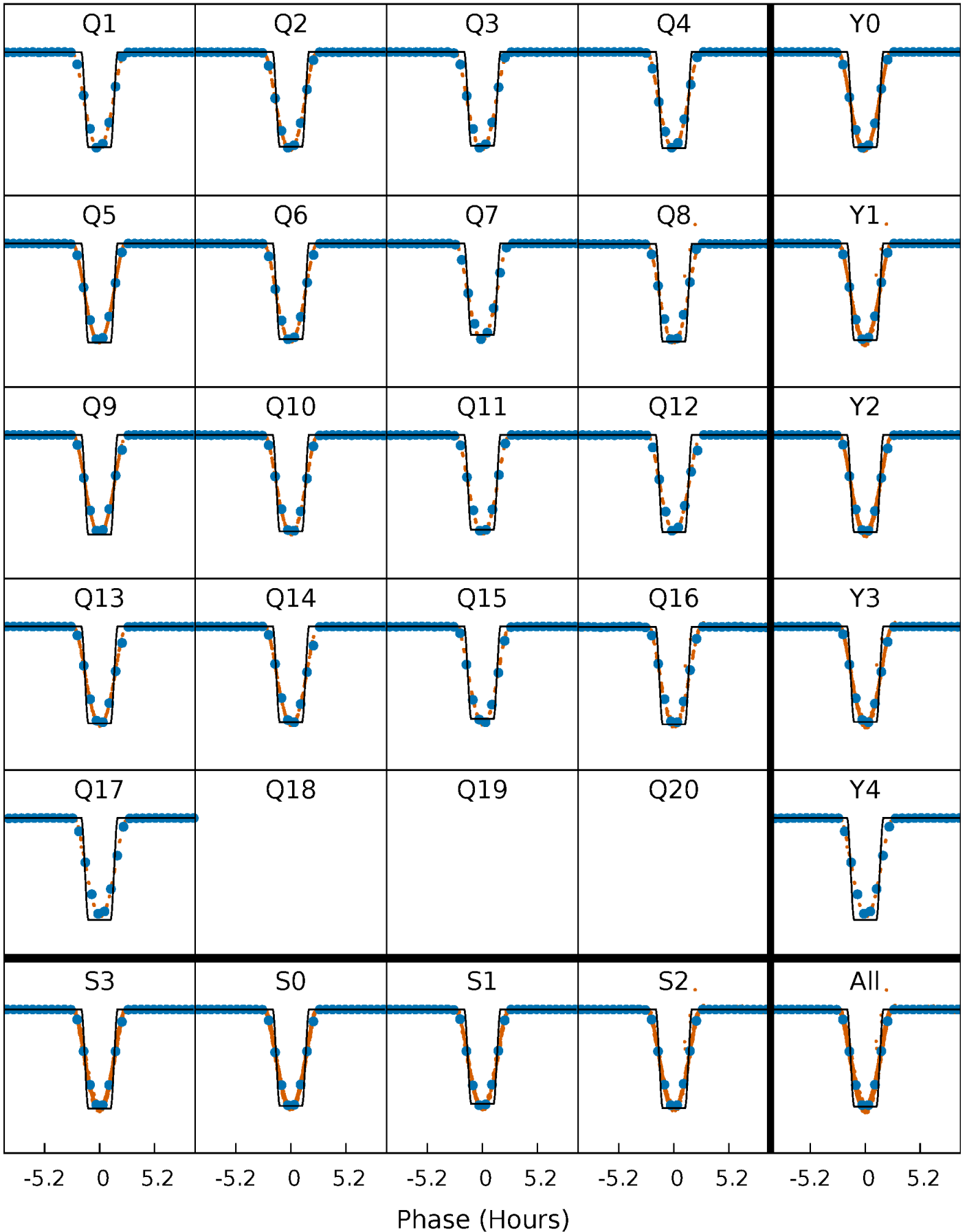
DV Quarter-Phased Transit Curves

TCE 008509346-01 P= 6.099033 Days $T_0=135.522435$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

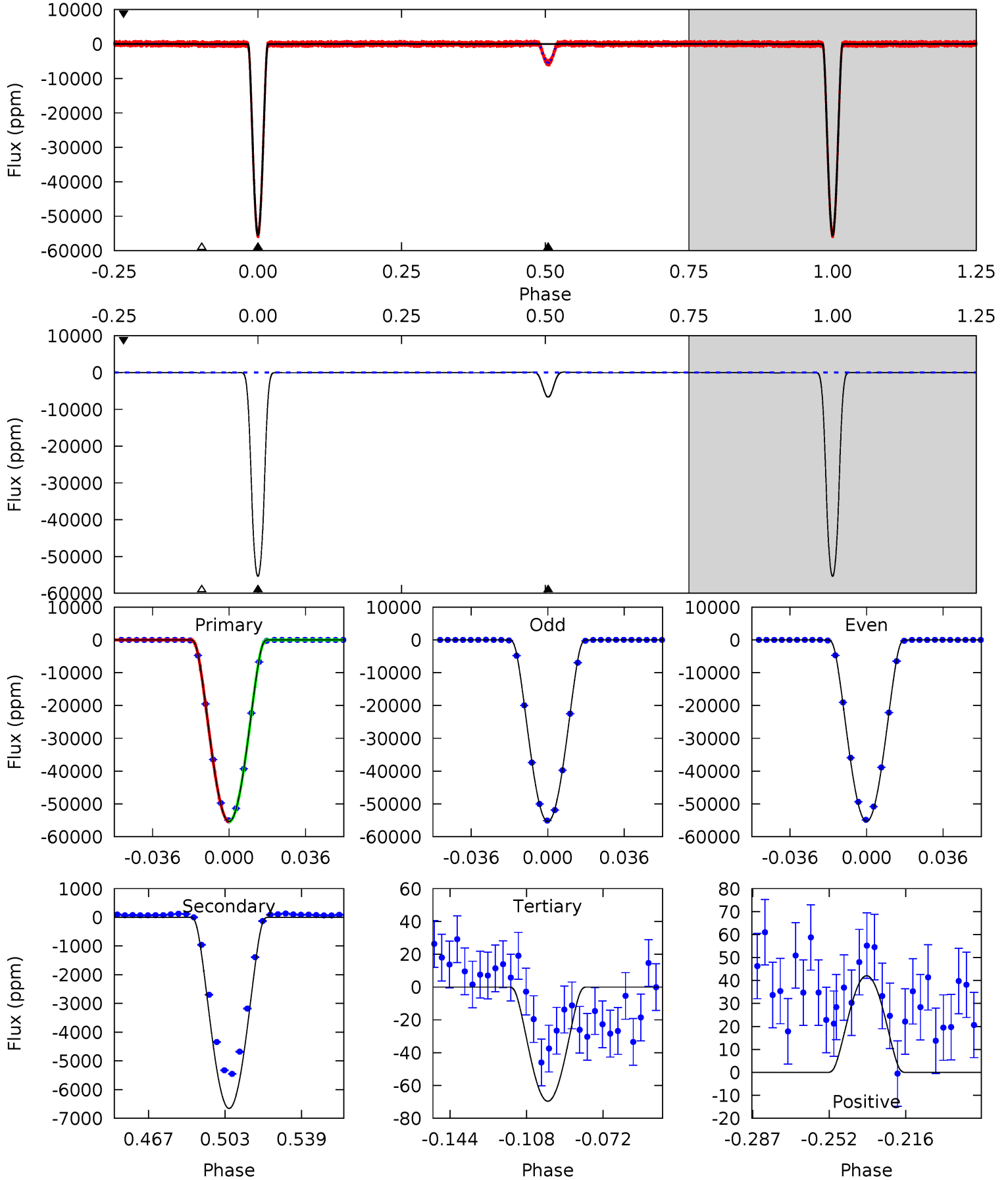
TCE 008509346-01 P= 6.099001 Days $T_0=135.525832$ (BKJD)



DV Model-Shift Uniqueness Test

008509346-01, P = 6.099033 Days, E = 129.423402 Days

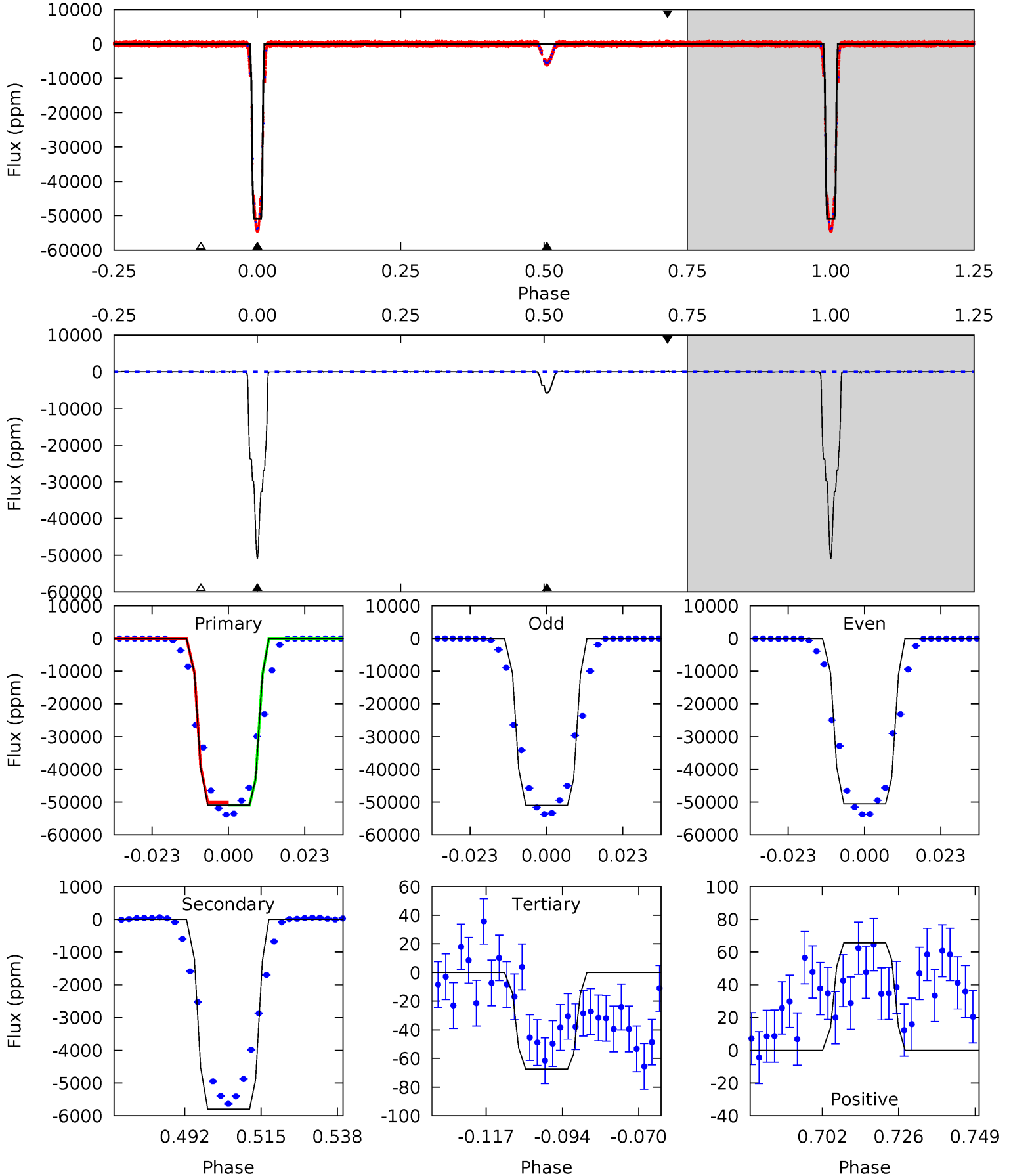
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11317	1360	14.2	8.60	4.78	2.10	7.10	11303	11308	1346	1351	3.01	0.98	0.00	0



Alt Model-Shift Uniqueness Test

008509346-01, P = 6.099001 Days, E = 129.426831 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4933	562.3	6.54	6.36	4.86	2.27	2.82	4927	4927	555.7	555.9	22.4	1.00	0.00	39.1



Stellar Parameters For KIC 008509346

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6356^{+171}_{-209}	$4.297^{+0.175}_{-0.175}$	$-0.580^{+0.300}_{-0.300}$	$1.141^{+0.312}_{-0.208}$	$0.941^{+0.130}_{-0.095}$	$0.892^{+0.686}_{-0.424}$
	+3%/-3%	+4%/-4%	+52%/-52%	+27%/-18%	+14%/-10%	+77%/-48%
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 008509346-01 / KOI 7049.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-6656 ± 5	$37.98^{+5.66}_{-4.17}$	1649^{+117}_{-105}	3682^{+64}_{-86}	10^{+3}_{-2}
Alt.	-5801 ± 10	$28.58^{+4.48}_{-2.88}$	1647^{+120}_{-104}	3959^{+74}_{-83}	16^{+4}_{-4}

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

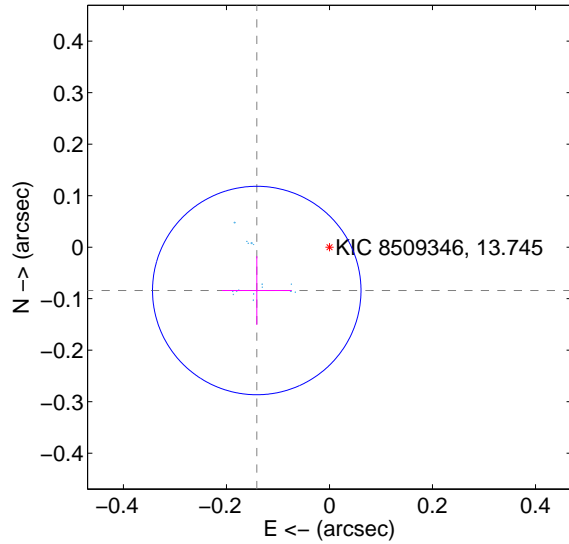
Supplemental centroid analysis for 008509346-01. Kepler magnitude: 13.74. Transit SNR 4706.61

There are 17 quarters with good PRF difference image offsets

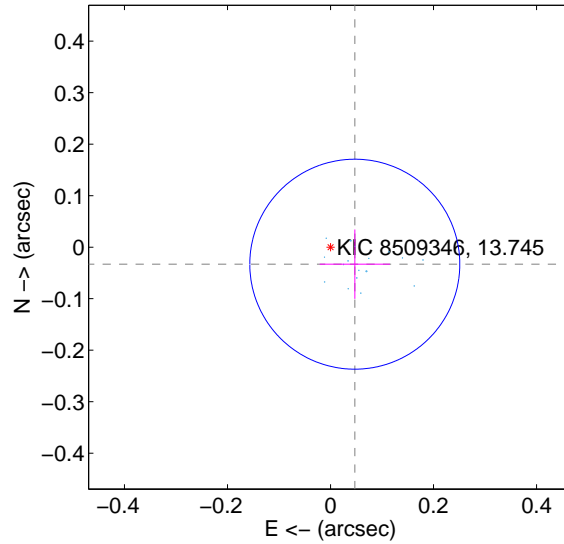
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.164 ± 0.067	2.44	0.141 ± 0.068	-0.084 ± 0.067
PRF-fit source offset from KIC position	0.058 ± 0.068	0.85	-0.047 ± 0.068	-0.033 ± 0.067
photometric centroid source offset	0.39 ± 0.00	284.40	-0.05 ± 0.00	0.38 ± 0.00

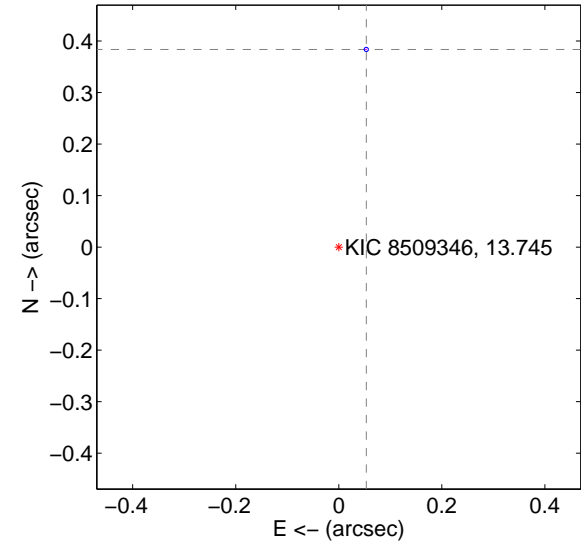
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

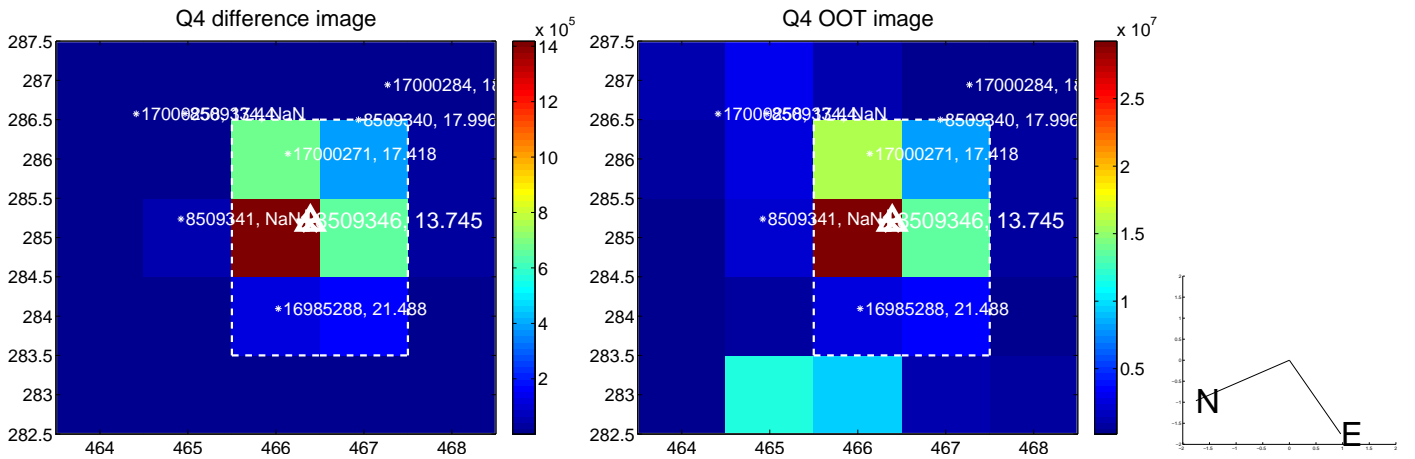
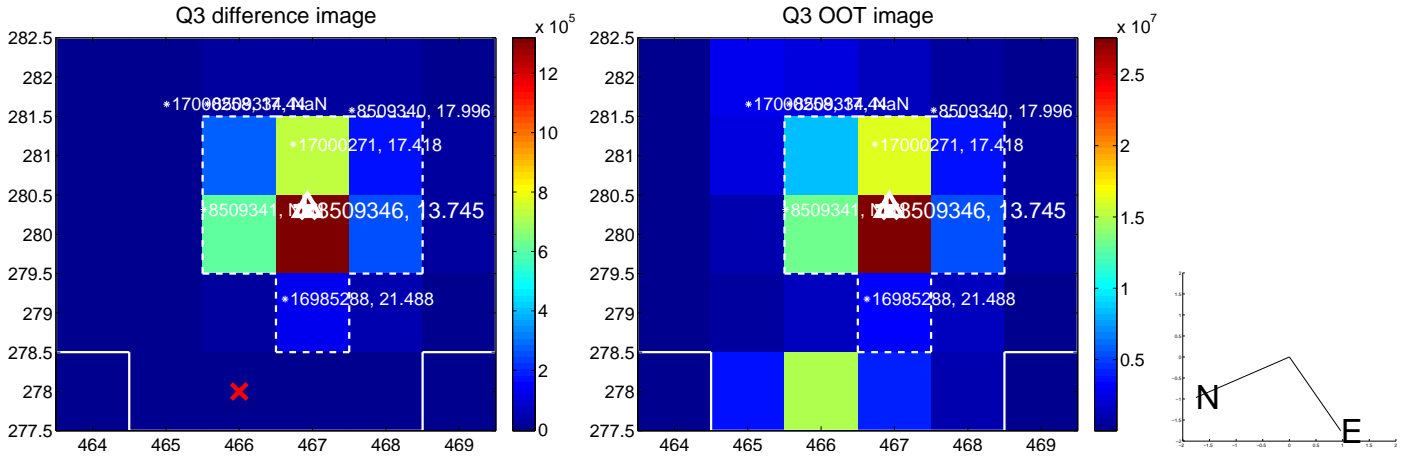
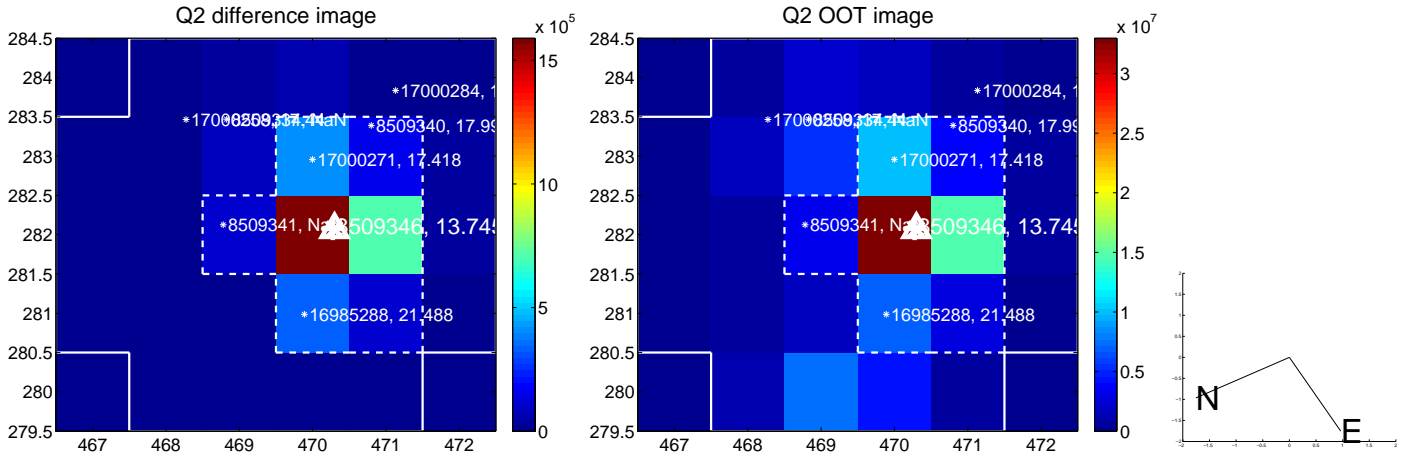
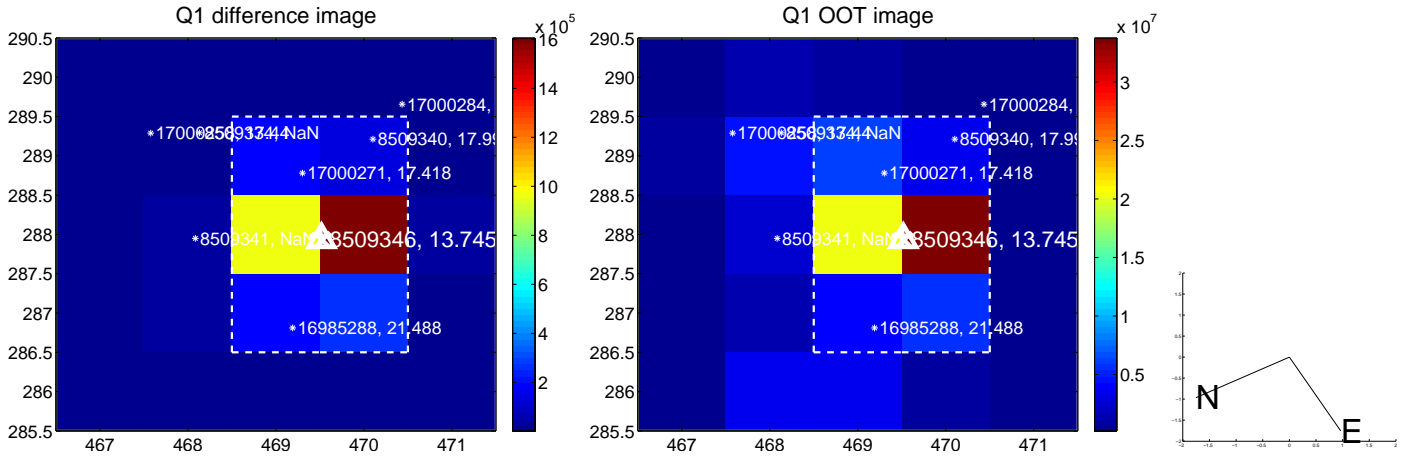


offset from photometric centroids

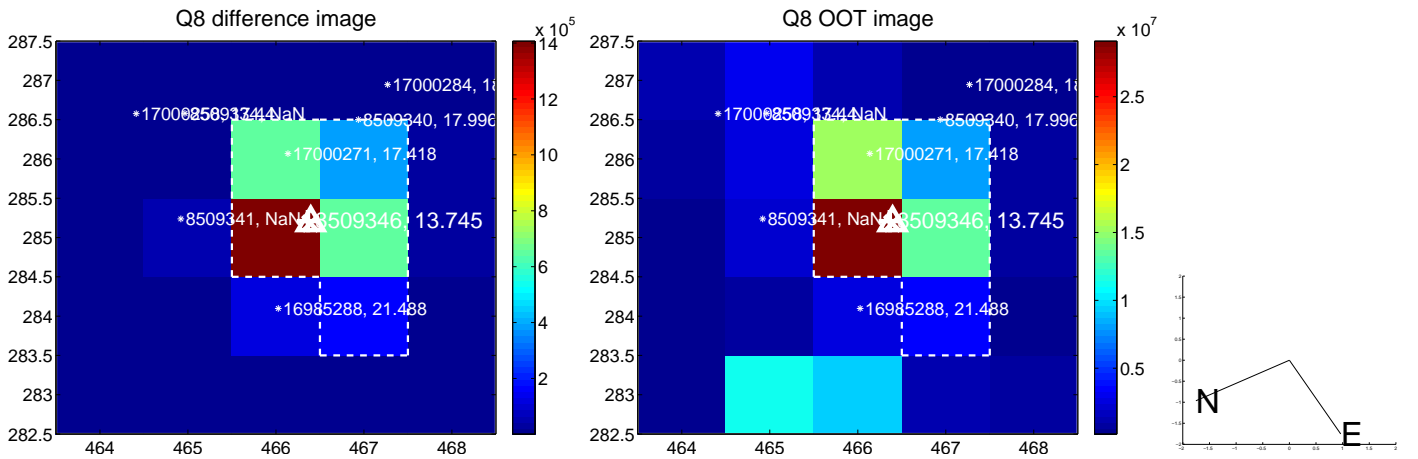
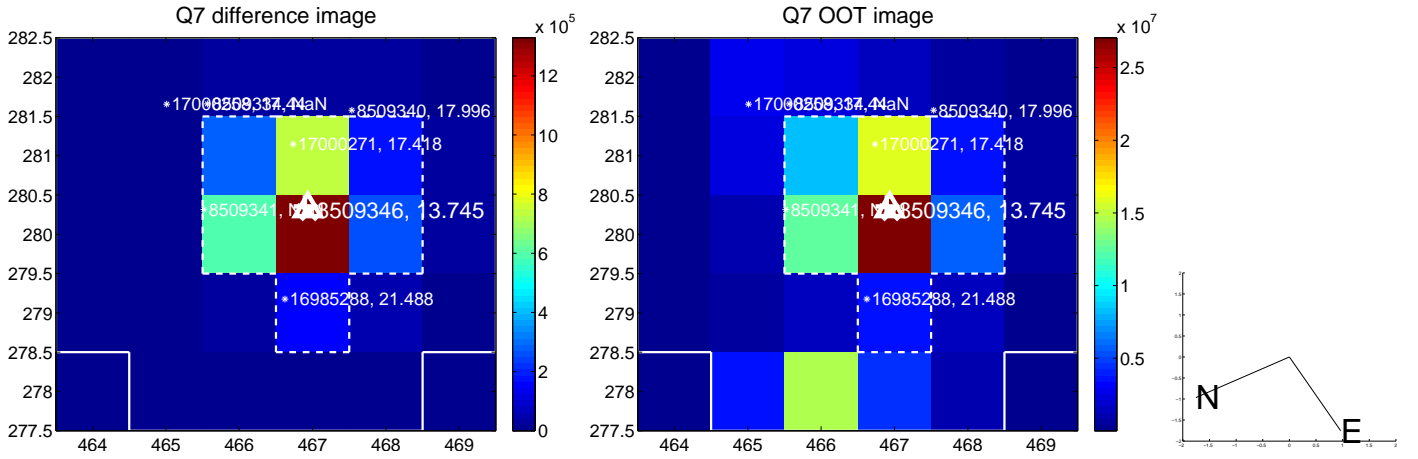
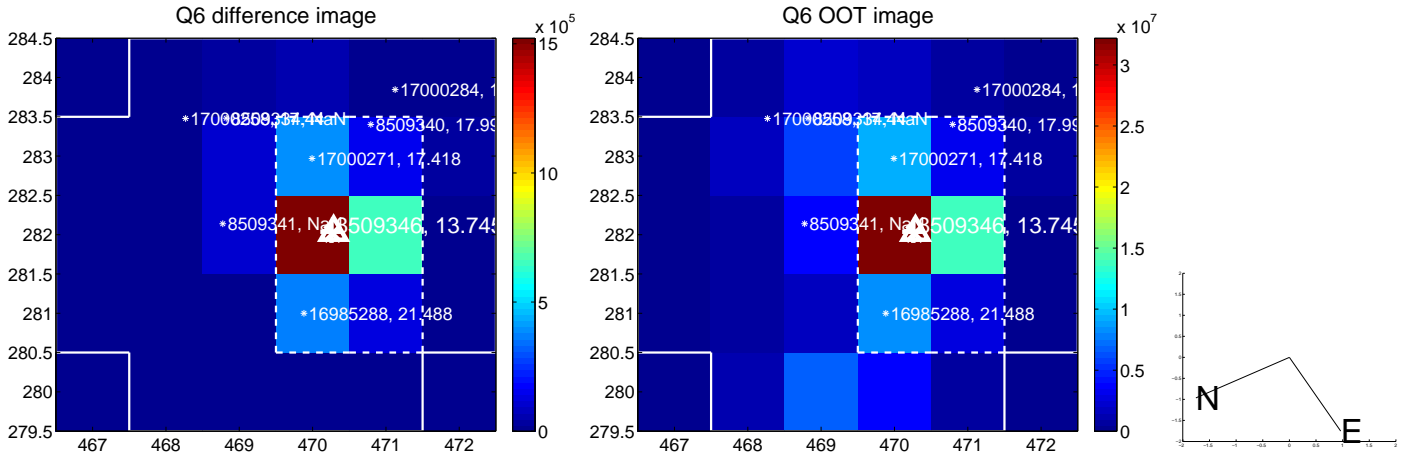
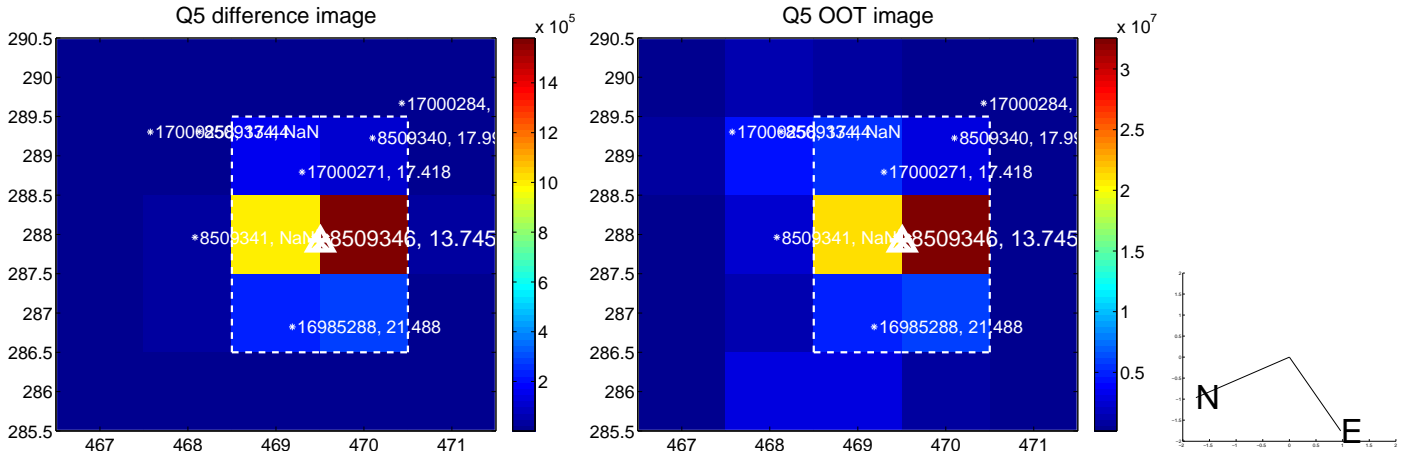


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

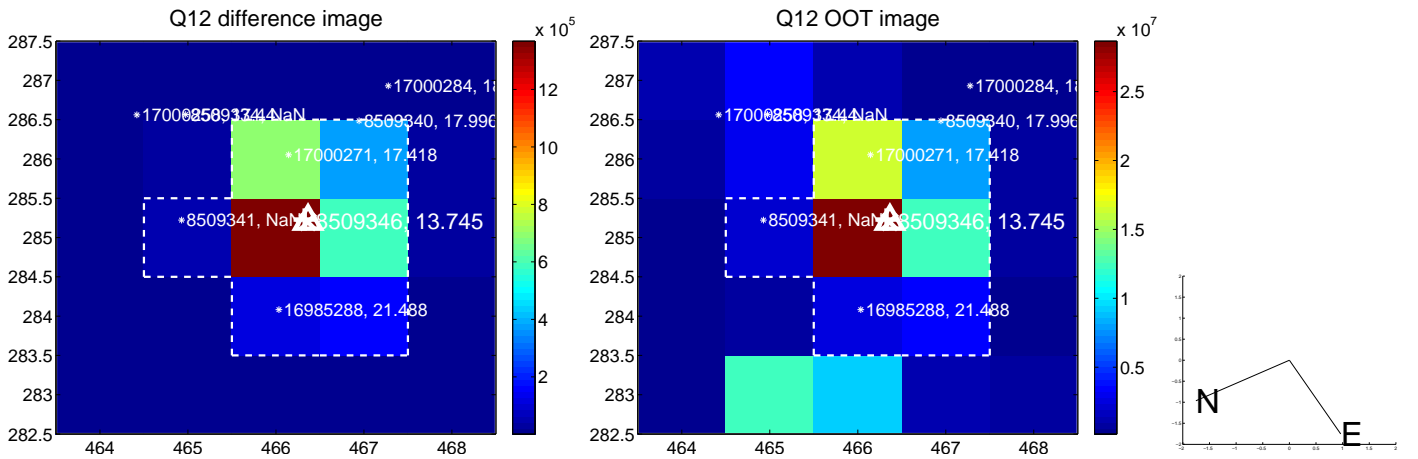
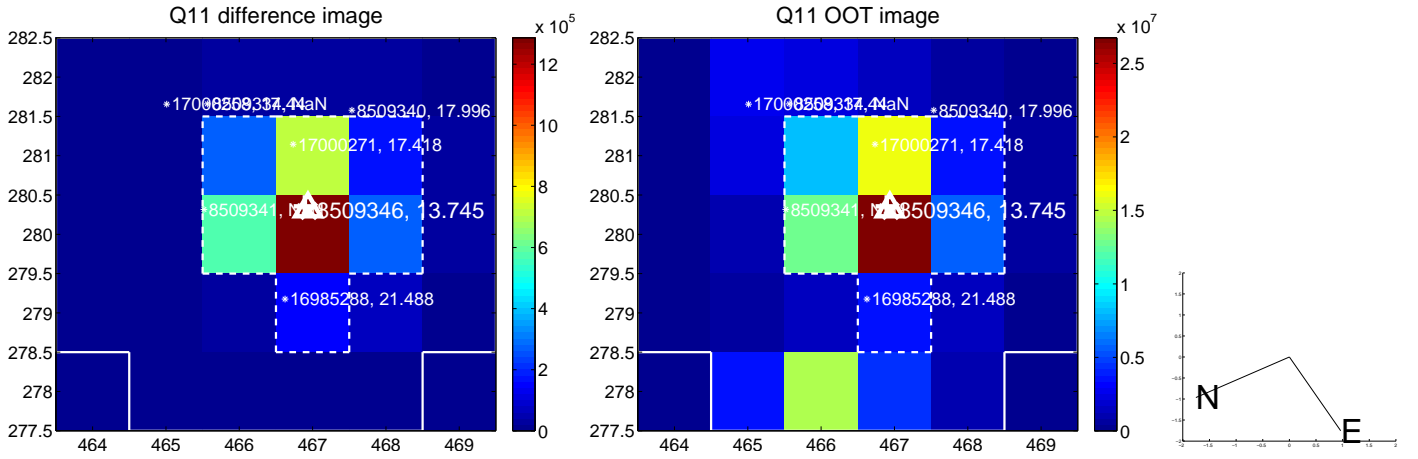
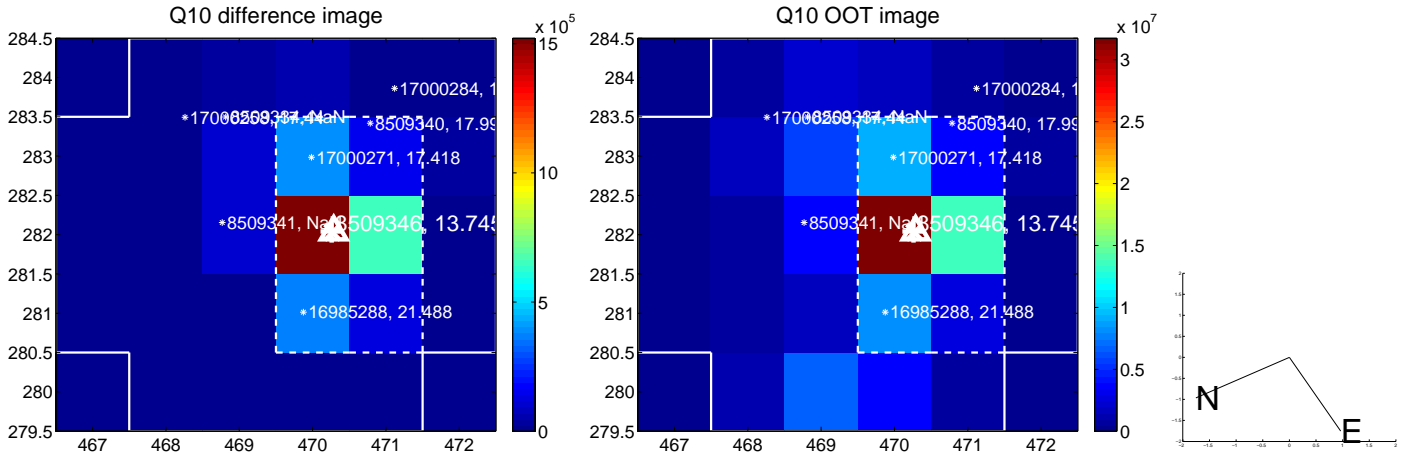
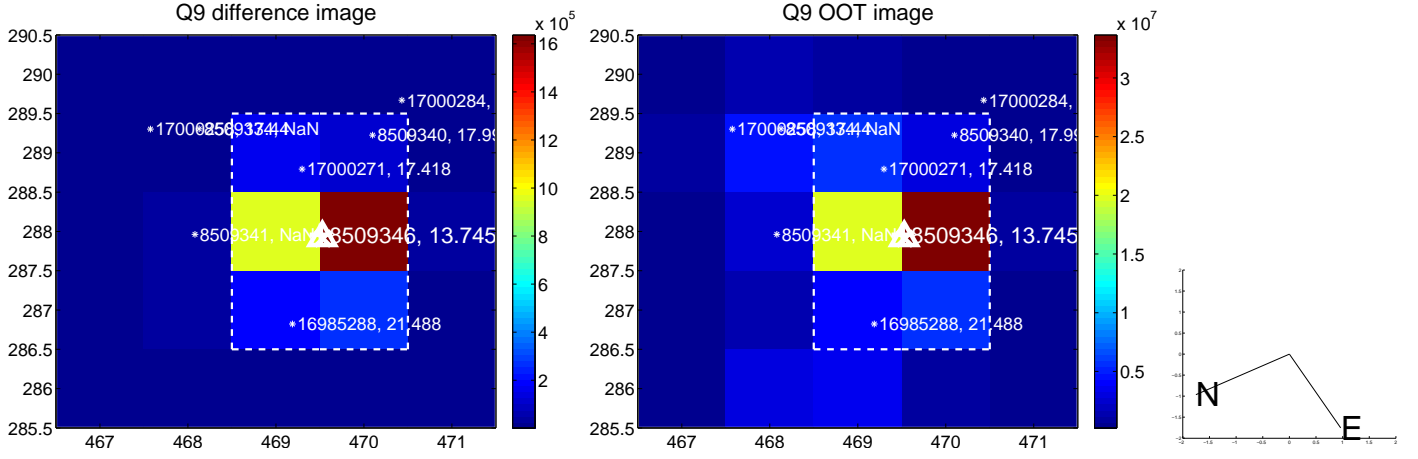
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



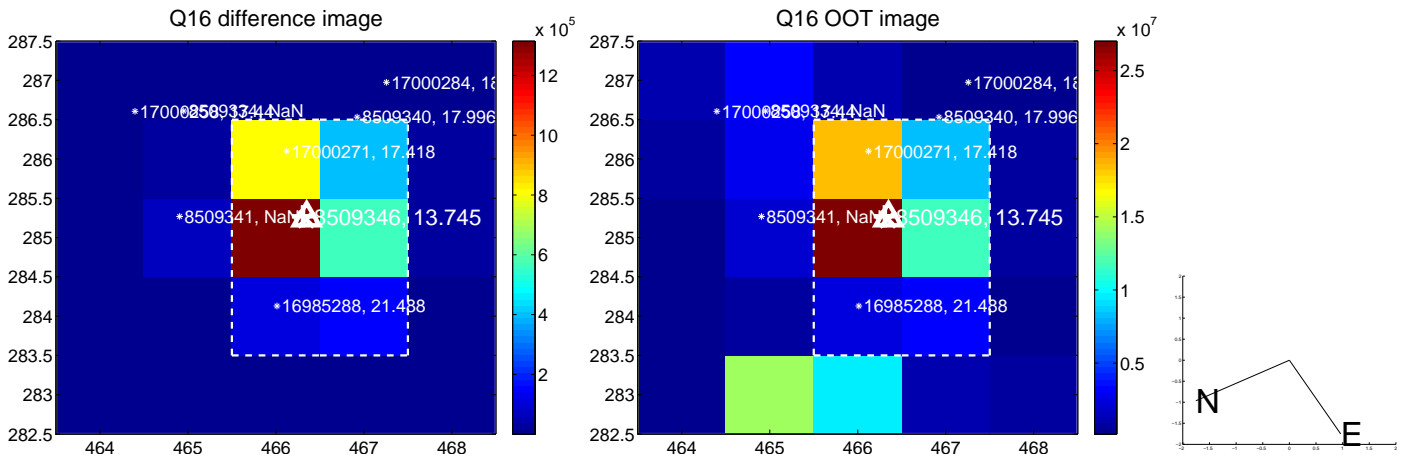
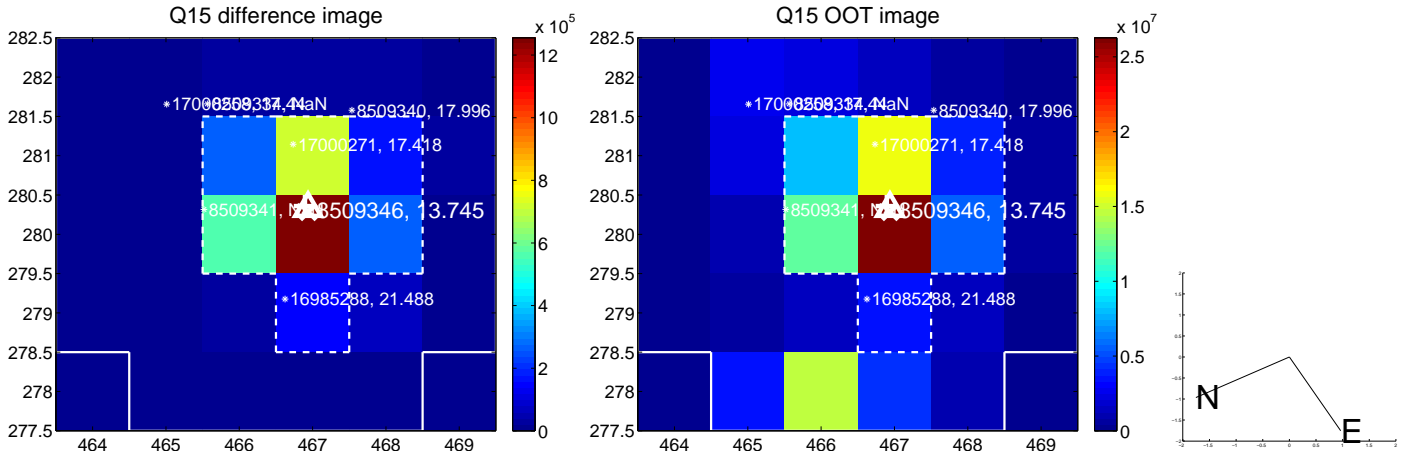
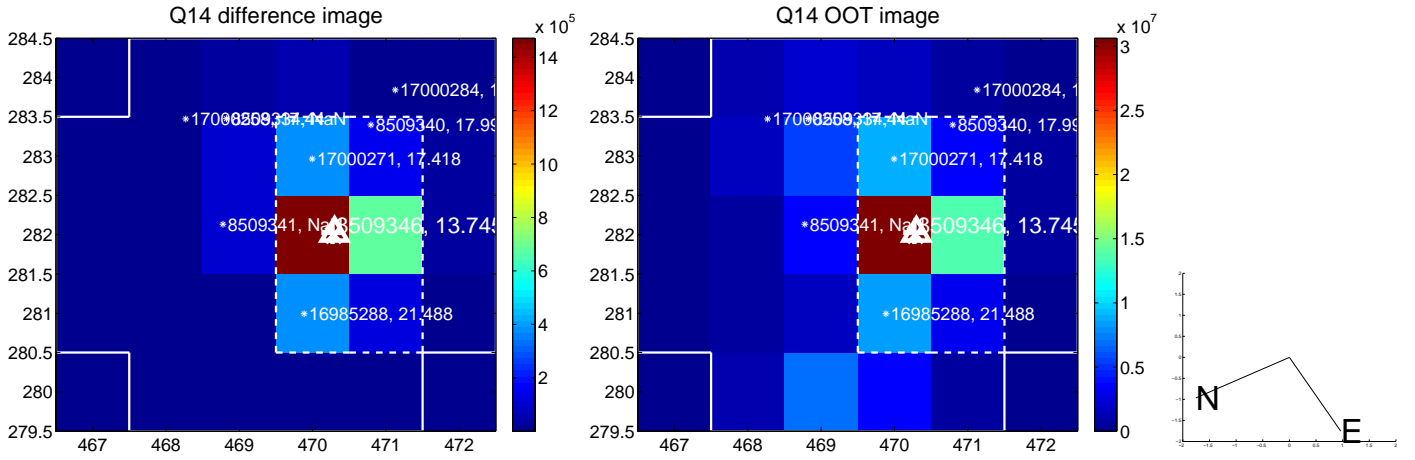
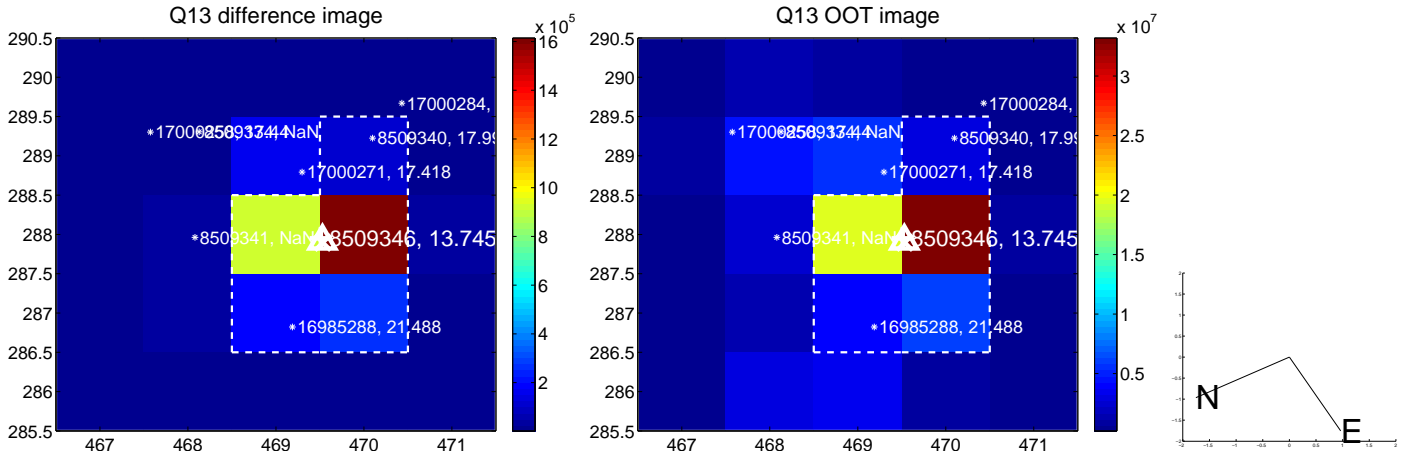
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



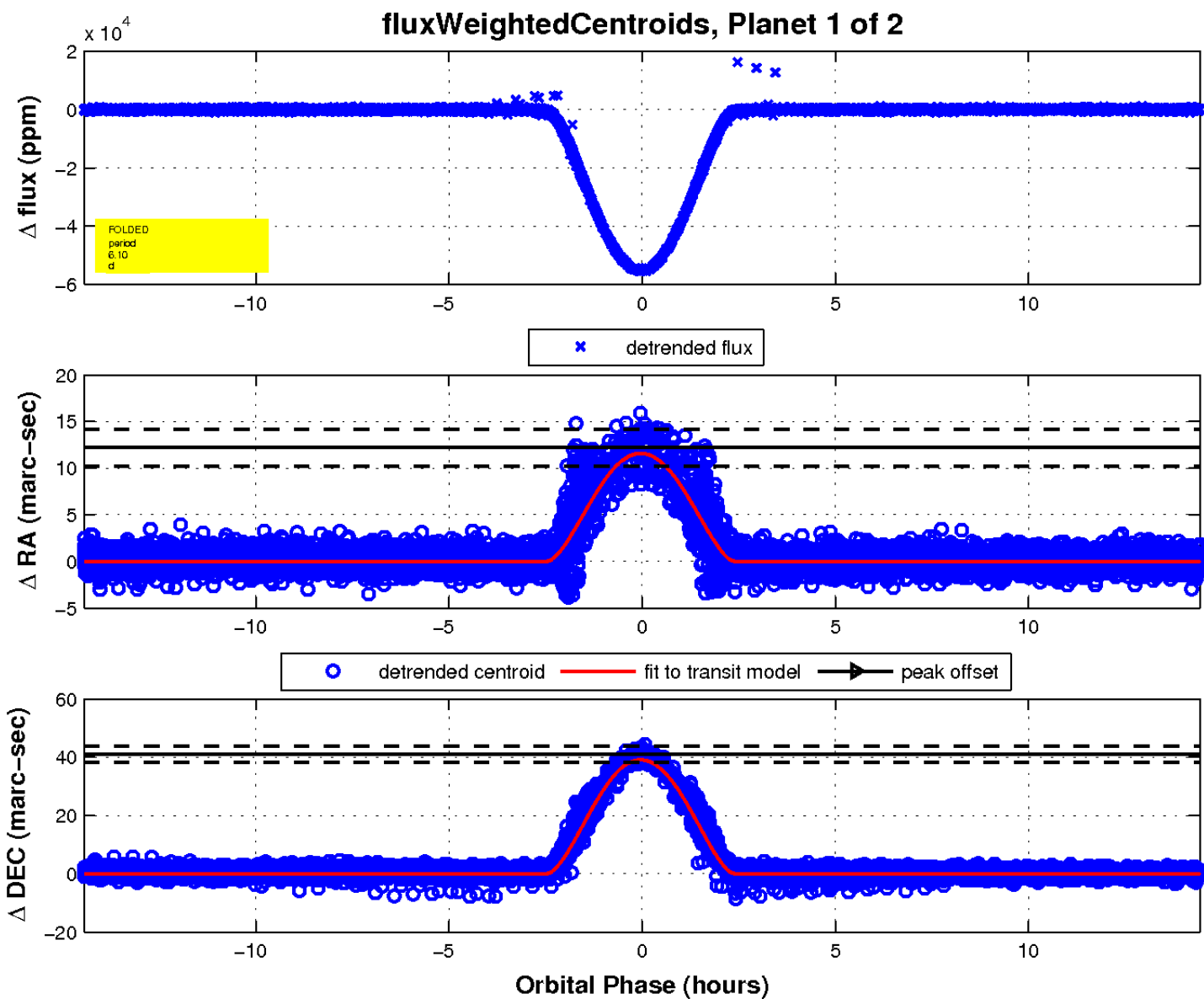
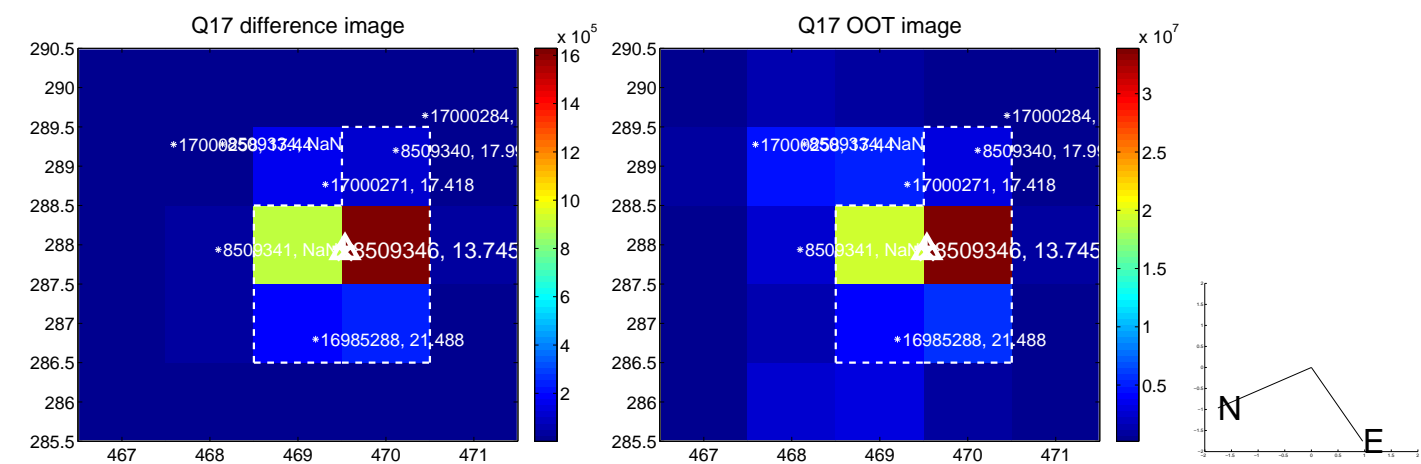
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

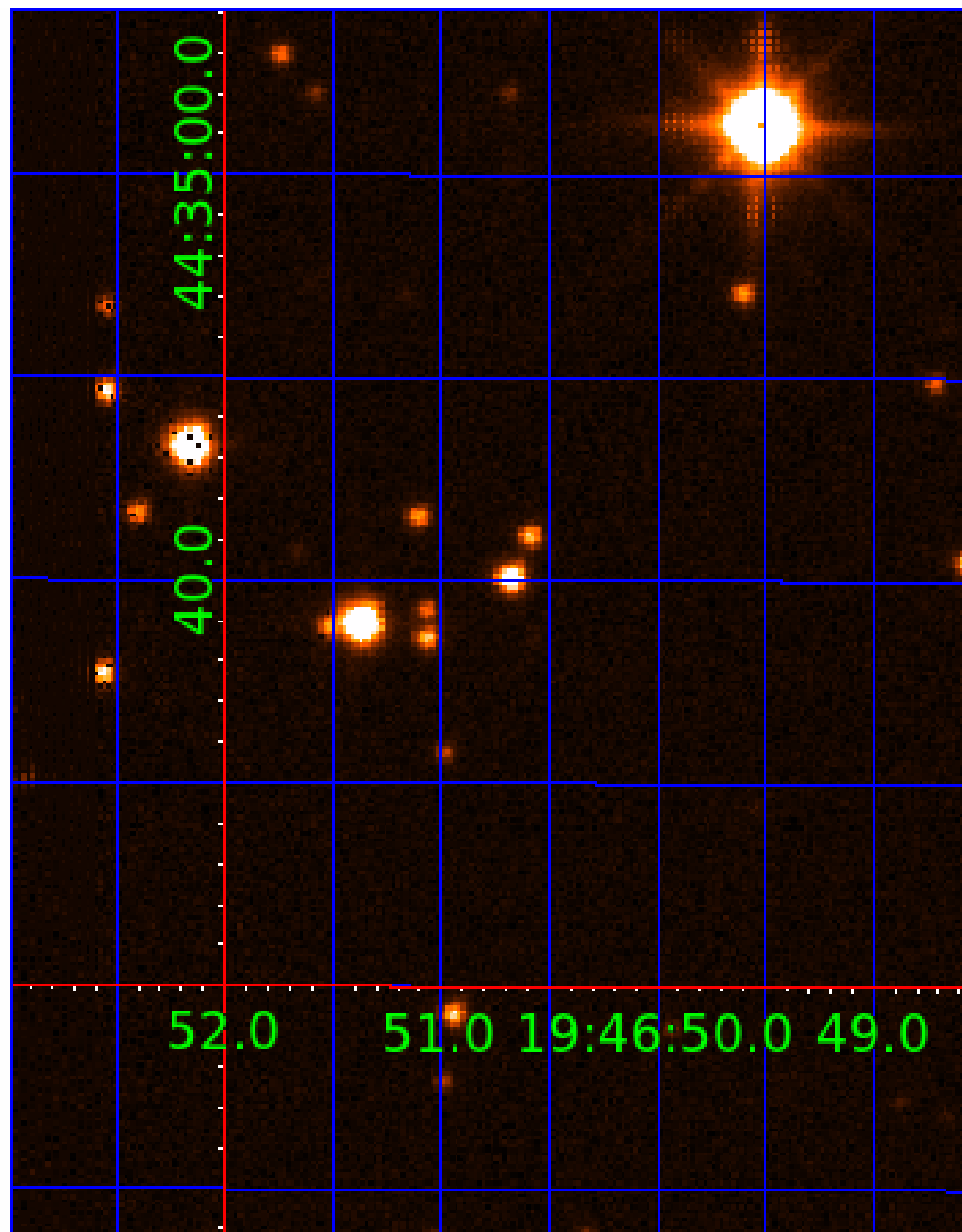


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008509346

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})
008509346-01	OBS	7049.01	6.099033	135.522435	55368.7	4.814	6259.6	4706.6	1.14	6356	38.07	464.31
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008509346-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
008509346-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

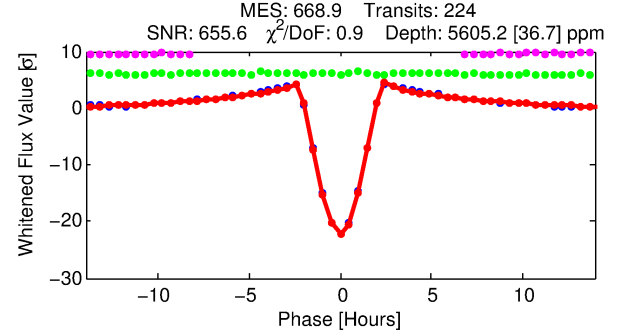
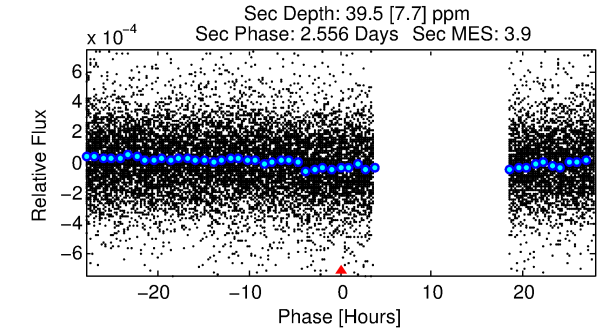
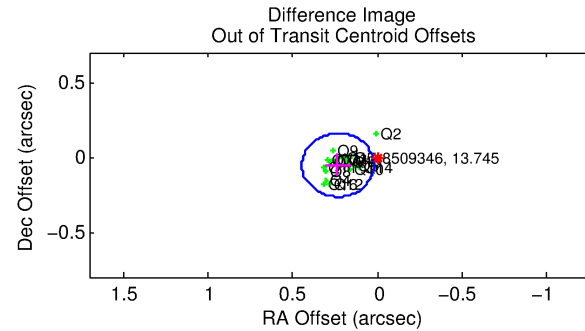
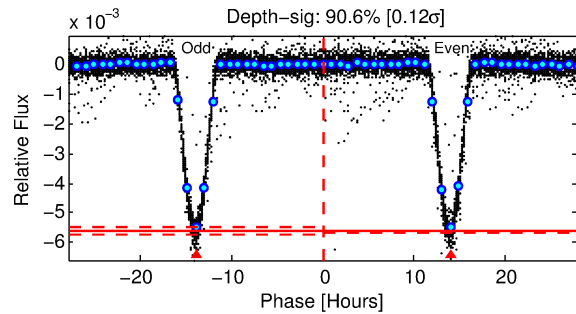
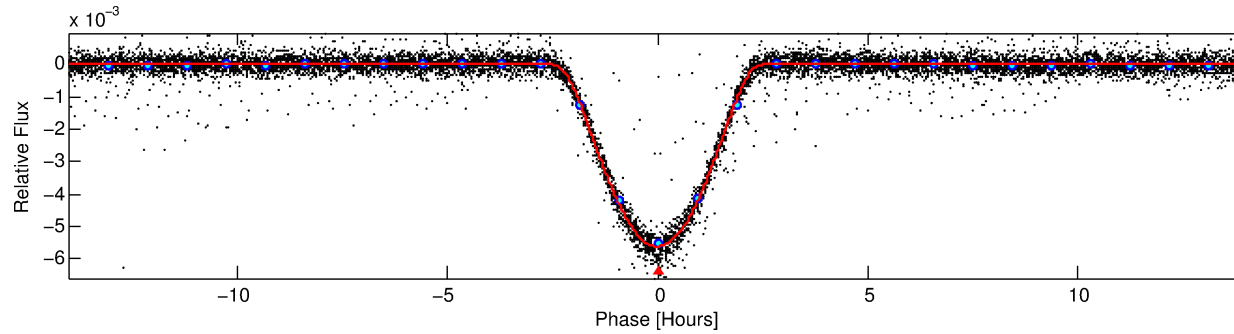
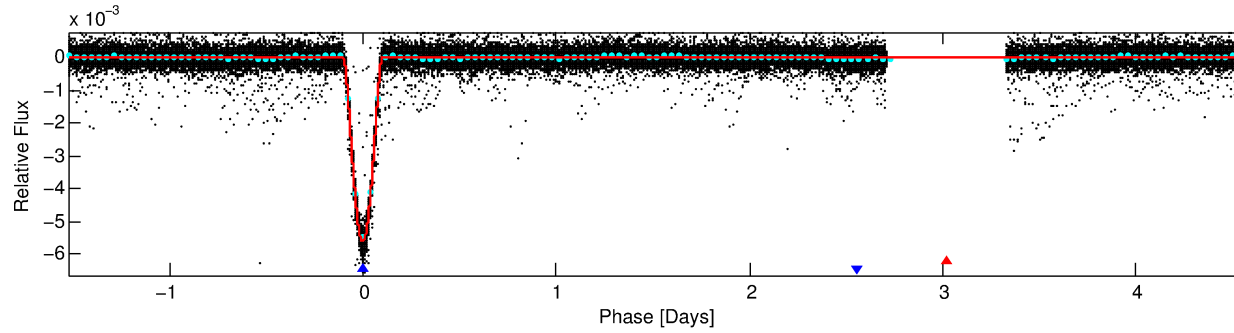
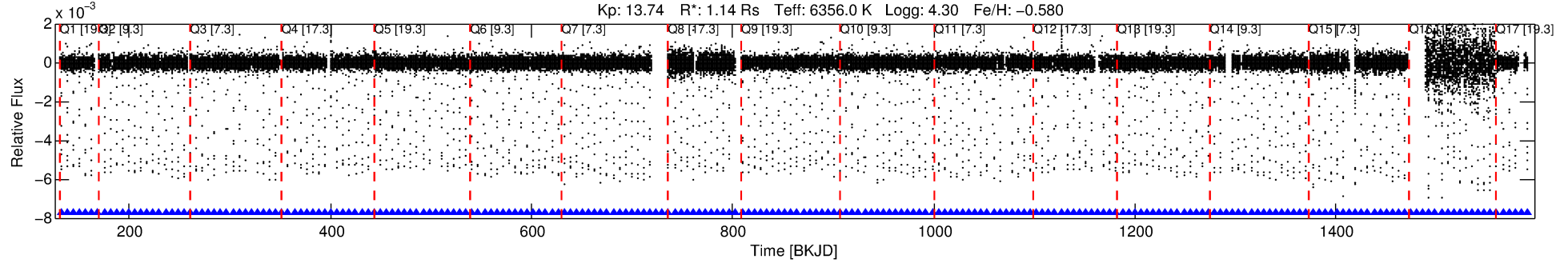
Ephemeris Match Information For 008509346-02

No Significant Match Found

DV One-Page Summary

KIC: 8509346 Candidate: 2 of 2 Period: 6.099 d
KOI: K07049 Corr: No Ephemeris Match

Kp: 13.74 R*: 1.14 Rs Teff: 6356.0 K Logg: 4.30 Fe/H: -0.580



DV Fit Results:

Period = 6.09903 [0.00000] d
Epoch = 132.5038 [0.0001] BKJD
Rp/R* = 0.1232 [0.0071]
a/R* = 5.21 [0.05]
b = 1.00 [0.01]
Seff = 464.31 [162.64]
Teff = 1184 [104] K
Rp = 15.34 [4.29] Re
a = 0.0640 [0.0145] AU
Ag = 0.38 [0.15] [-4.13σ]
Teffp = 1436 [94] K [1.80σ]

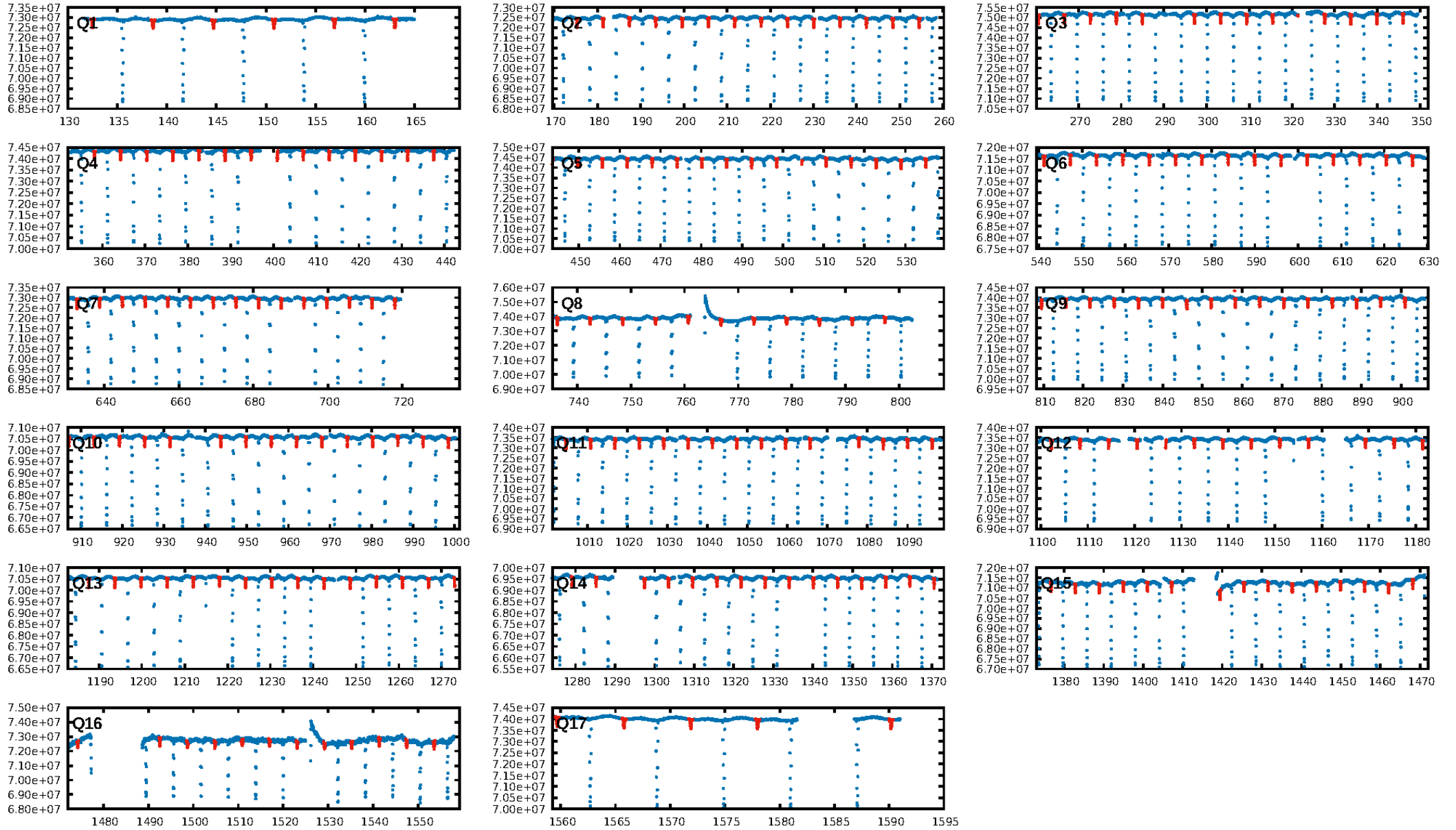
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [213/213]
GhostDiagnostic-chr: 7.627
Centroid-sig: 0.0%
Centroid-so: 0.382 arcsec [29.15σ]
OotOffset-rm: 0.240 arcsec [3.39σ]
KicOffset-rm: 0.045 arcsec [0.65σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

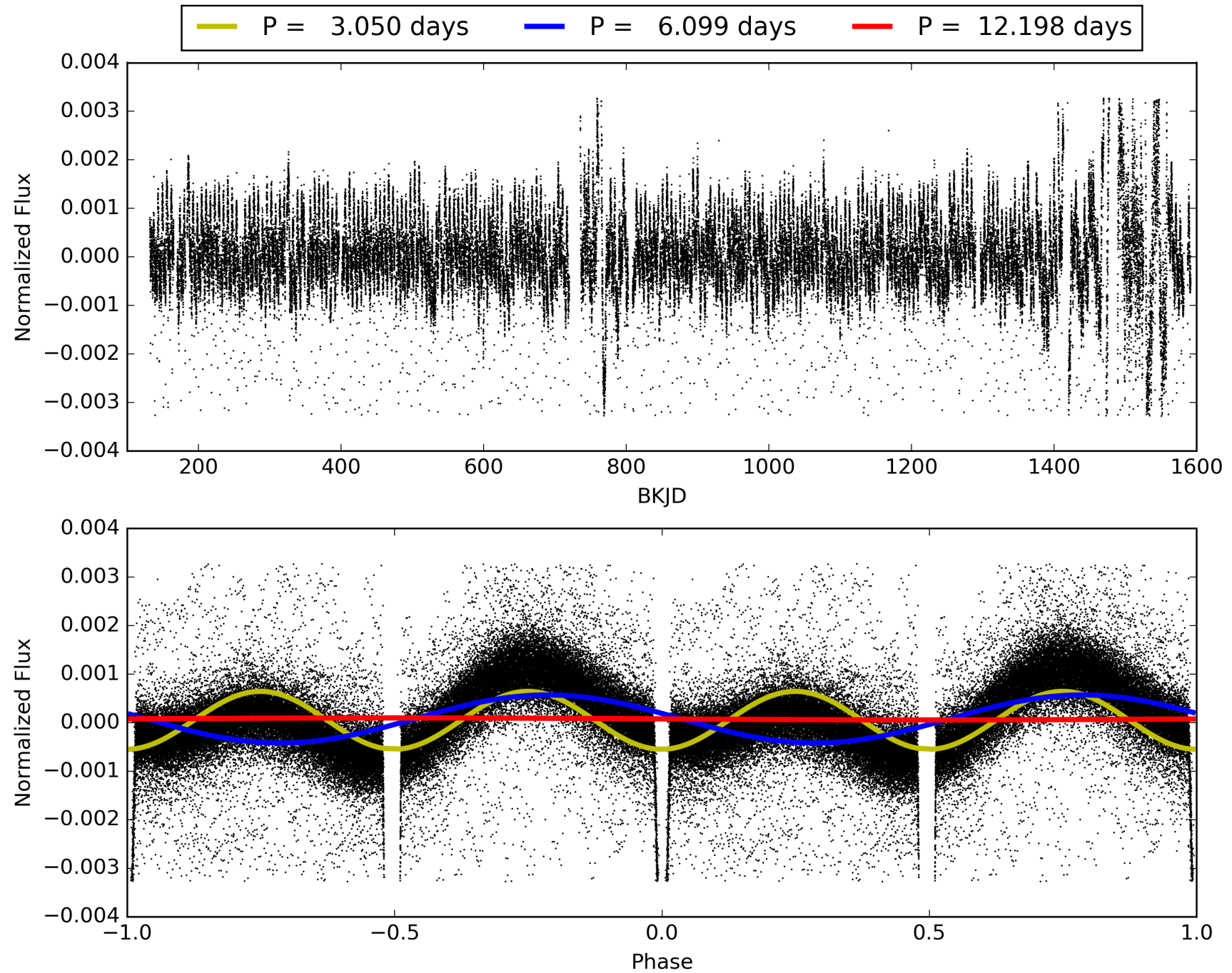
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:32:26 Z

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

TCE 008509346-02, PDC Light Curves

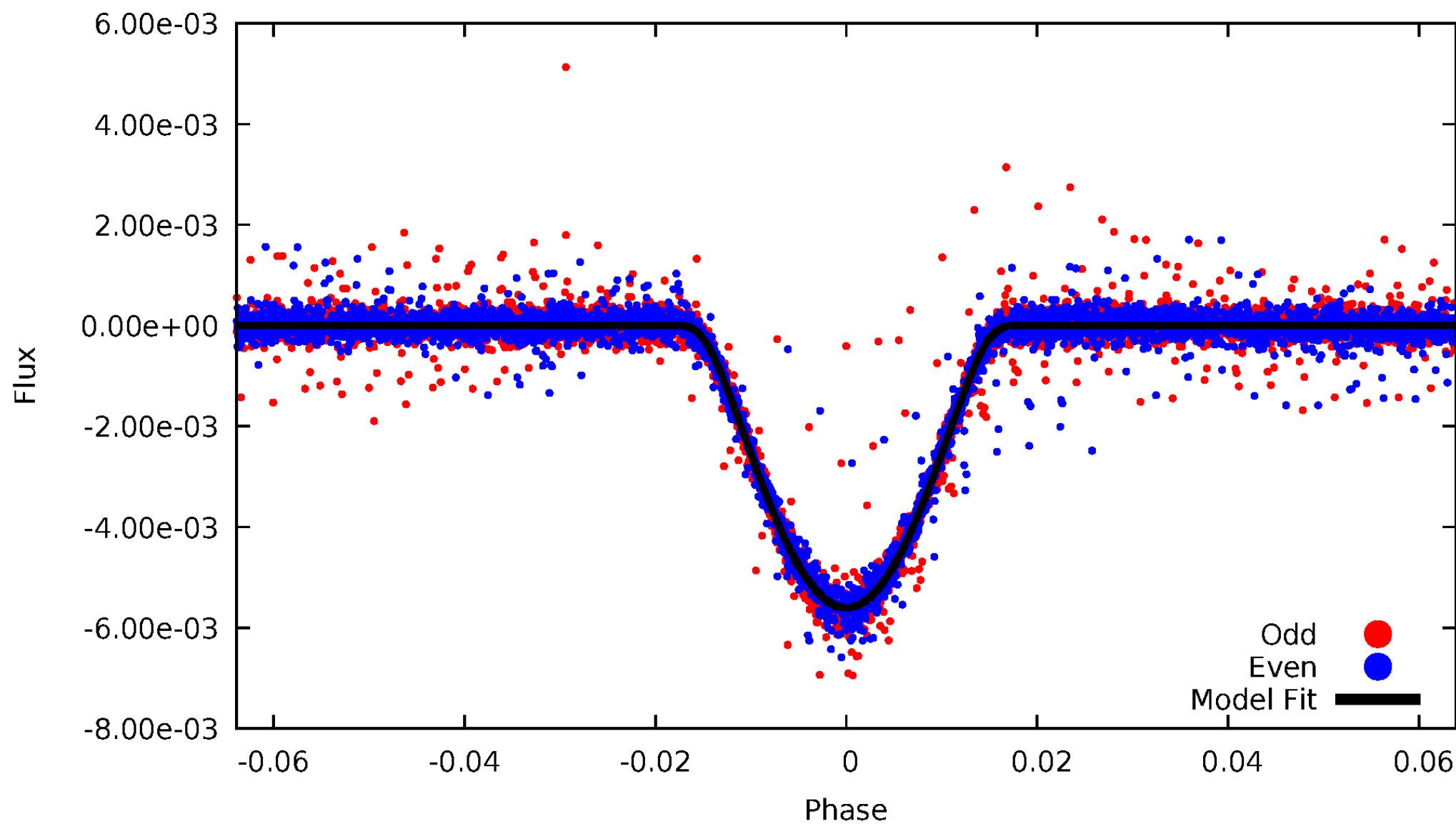


TCE 008509346-02



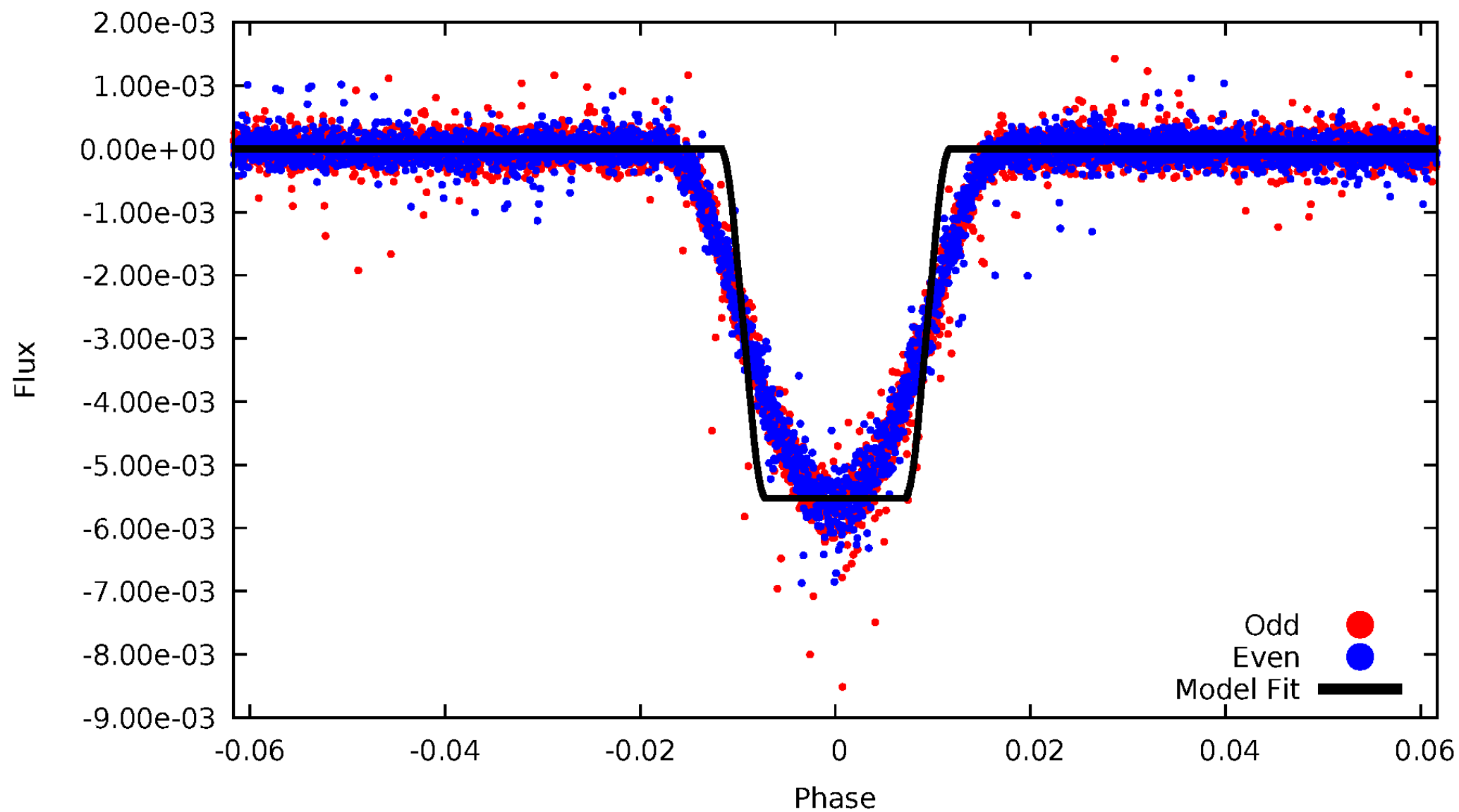
DV Odd/Even

TCE 008509346-02



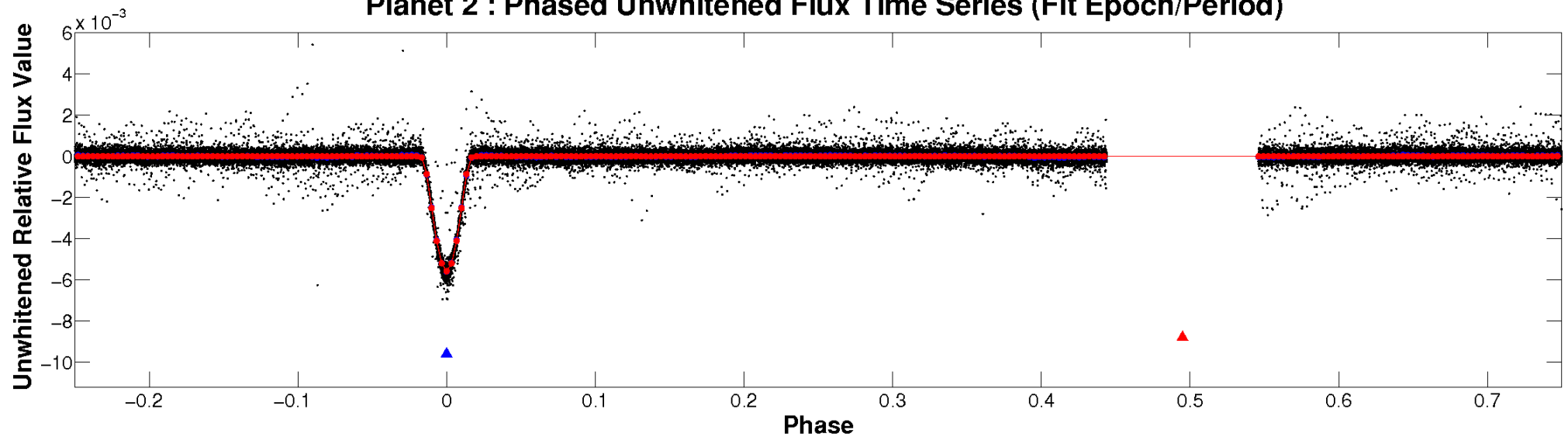
ALT Odd/Even

TCE 008509346-02

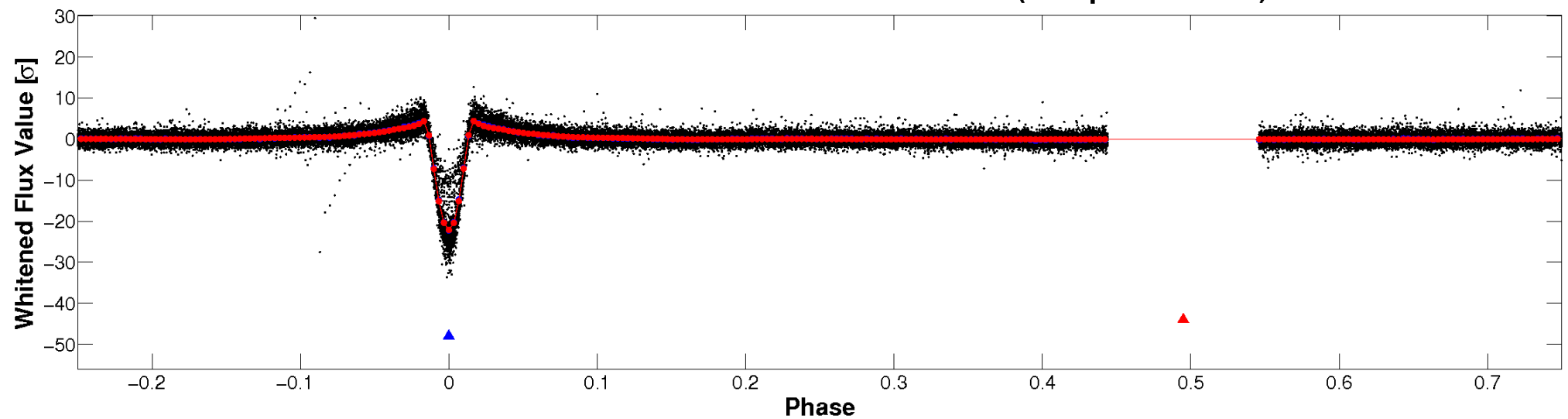


Non-Whitened Vs. Whitened Light Curve

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

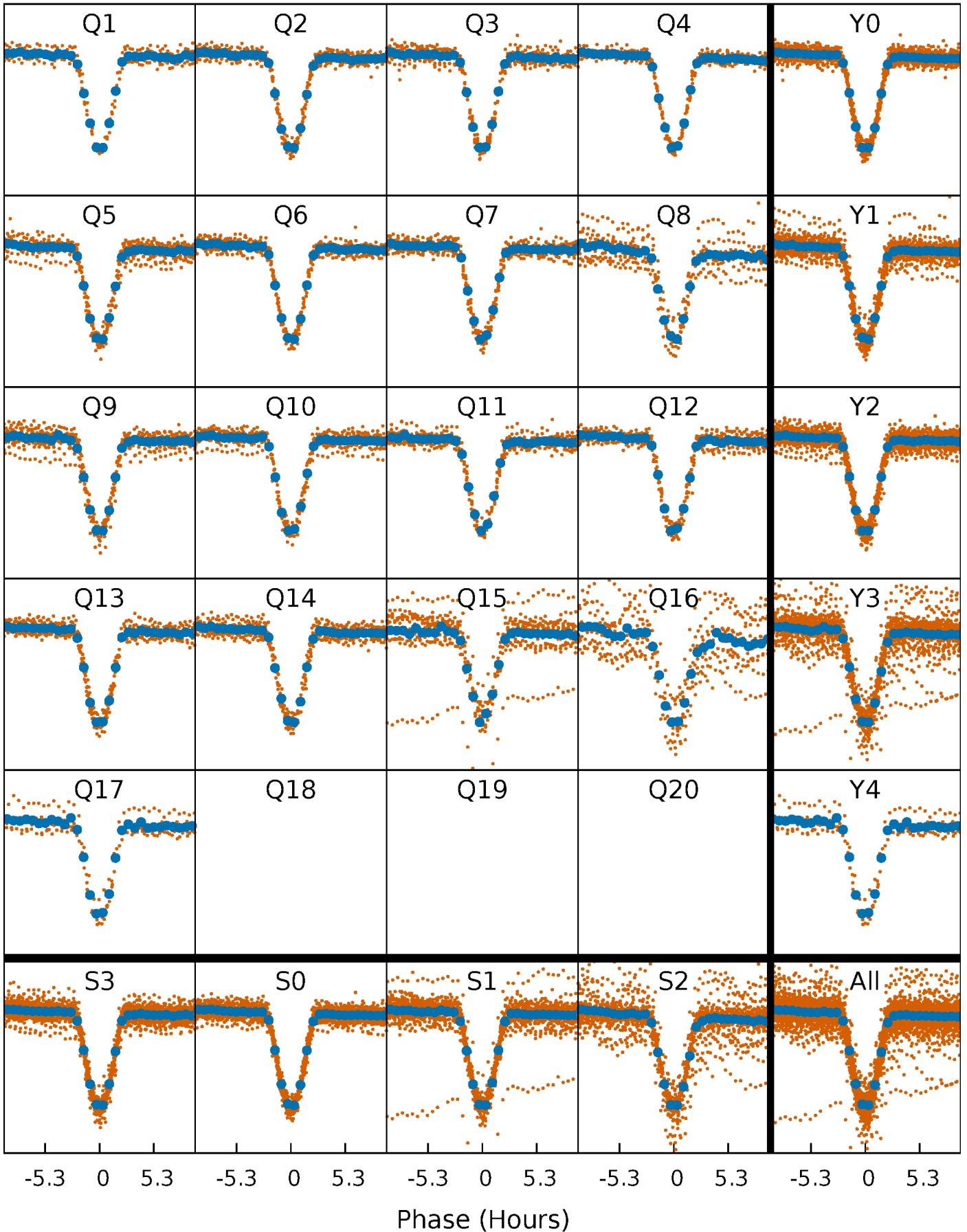


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



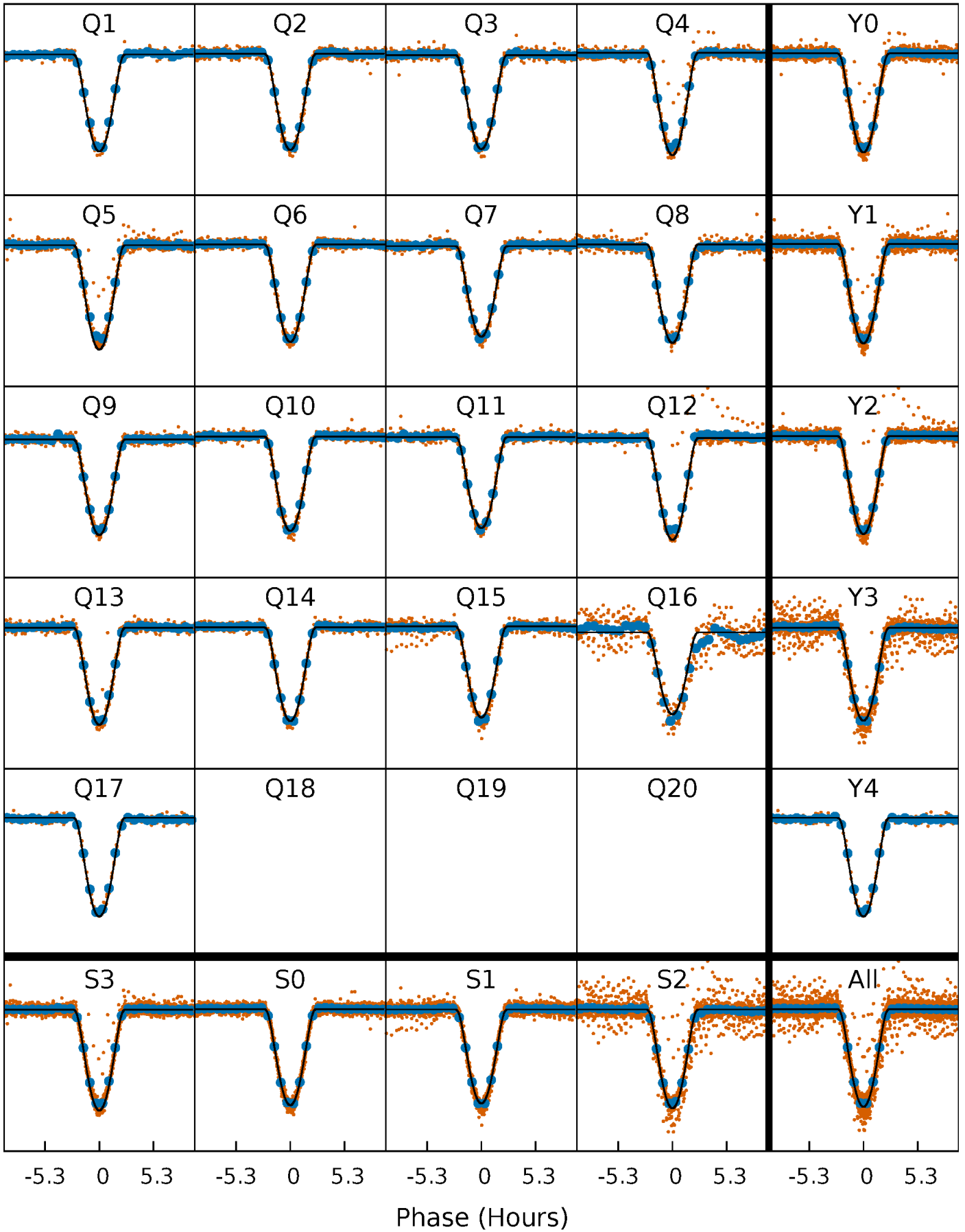
PDC Quarter-Phased Transit Curves

TCE 008509346-02 P= 6.099032 Days $T_0=132.503786$ (BKJD)



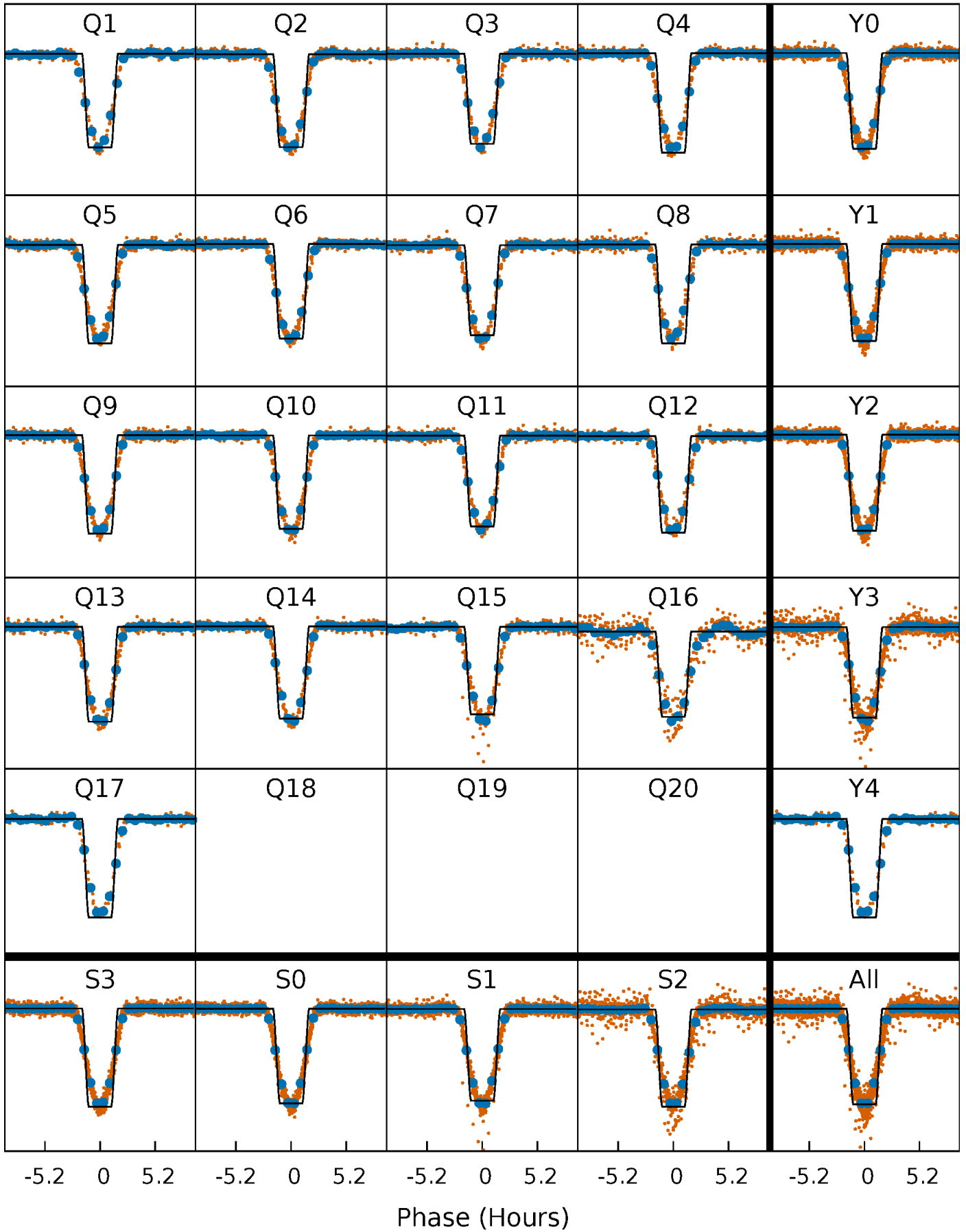
DV Quarter-Phased Transit Curves

TCE 008509346-02 P= 6.099032 Days $T_0=132.503786$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

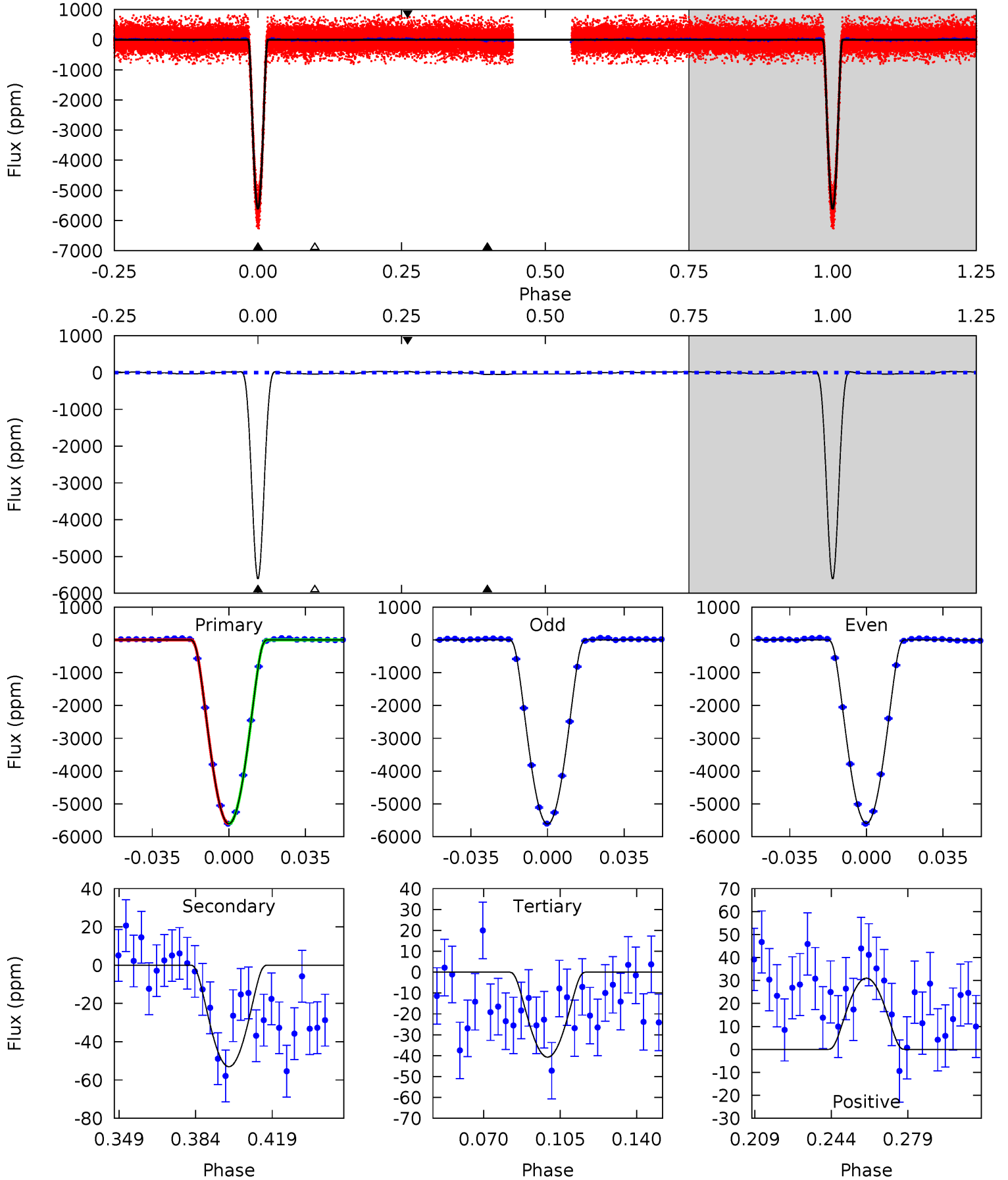
TCE 008509346-02 P= 6.099001 Days $T_0=132.507270$ (BKJD)



DV Model-Shift Uniqueness Test

008509346-02, P = 6.099032 Days, E = 126.404754 Days

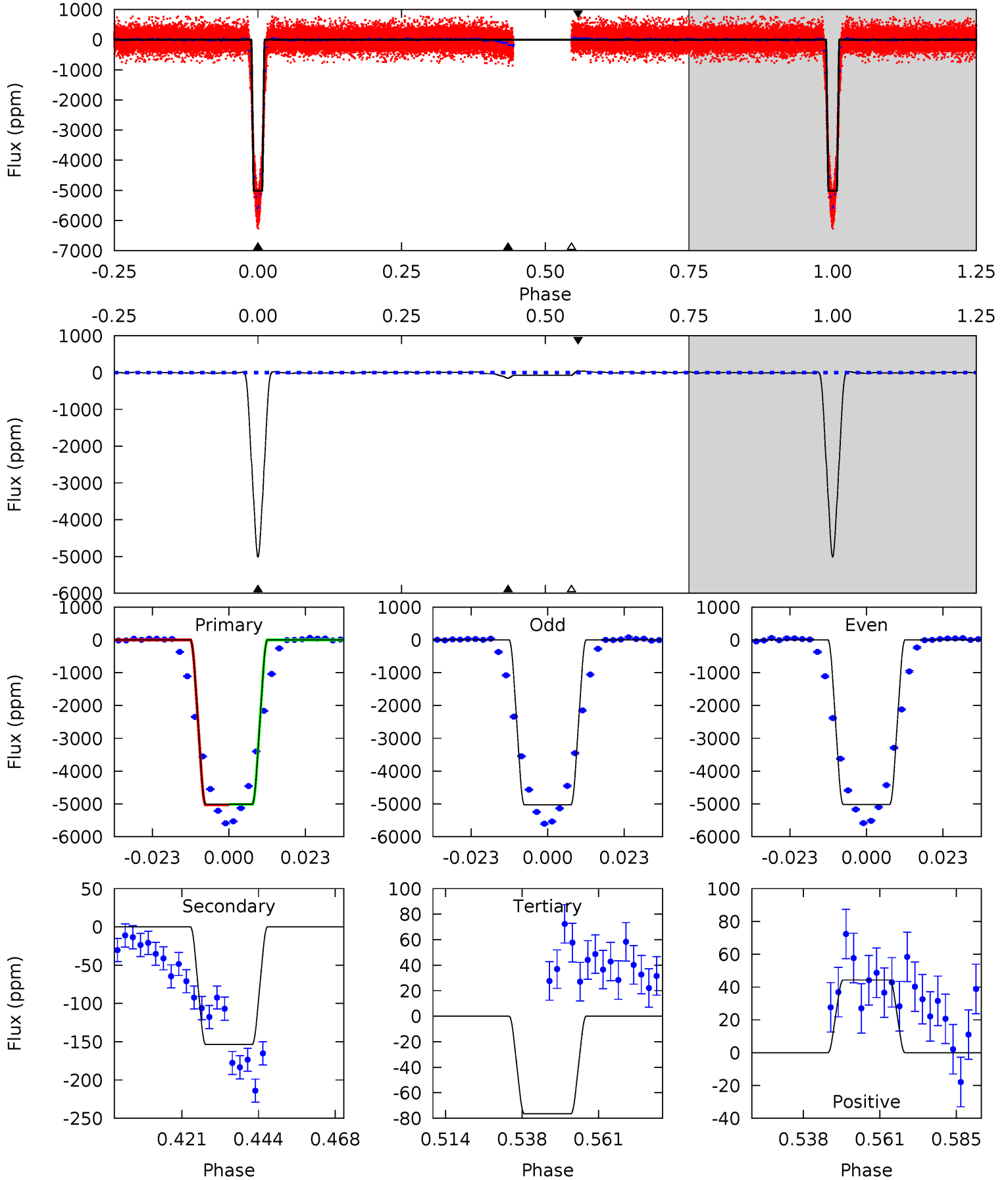
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1303	12.3	9.46	7.21	4.78	2.11	4.70	1293	1296	2.87	5.12	2.63	1.00	0.01	0.62



Alt Model-Shift Uniqueness Test

008509346-02, P = 6.099001 Days, E = 126.408269 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
968.2	29.7	14.8	8.56	4.86	2.27	2.38	953.5	959.7	14.9	21.1	1.16	1.00	0.01	1.81



Stellar Parameters For KIC 008509346

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6356^{+171}_{-209}	$4.297^{+0.175}_{-0.175}$	$-0.580^{+0.300}_{-0.300}$	$1.141^{+0.312}_{-0.208}$	$0.941^{+0.130}_{-0.095}$	$0.892^{+0.686}_{-0.424}$
	+3%/-3%	+4%/-4%	+52%/-52%	+27%/-18%	+14%/-10%	+77%/-48%
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 008509346-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-53 ± 4	$15.23^{+2.53}_{-1.88}$	1643^{+120}_{-104}	2194^{+101}_{-160}	$0.523^{+0.157}_{-0.133}$
Alt.	-154 ± 5	$9.26^{+1.81}_{-1.42}$	1645^{+128}_{-110}	3147^{+126}_{-108}	$4.054^{+1.573}_{-1.151}$

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

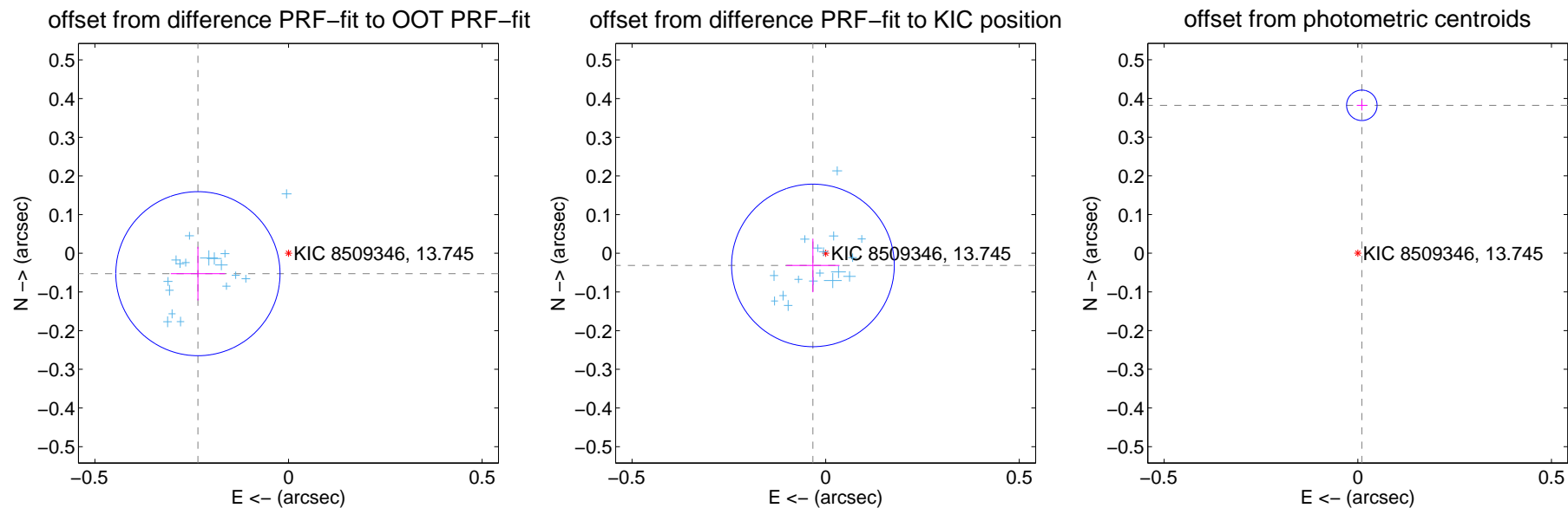
DV Centroid Data

Supplemental centroid analysis for 008509346-02. Kepler magnitude: 13.74. Transit SNR 655.59

There are 17 quarters with good PRF difference image offsets

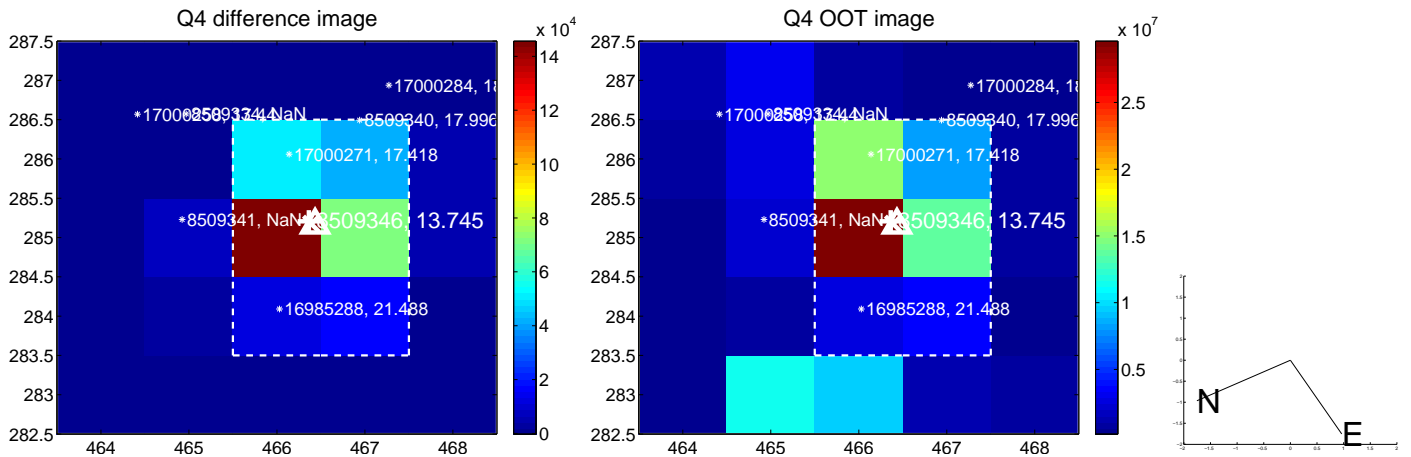
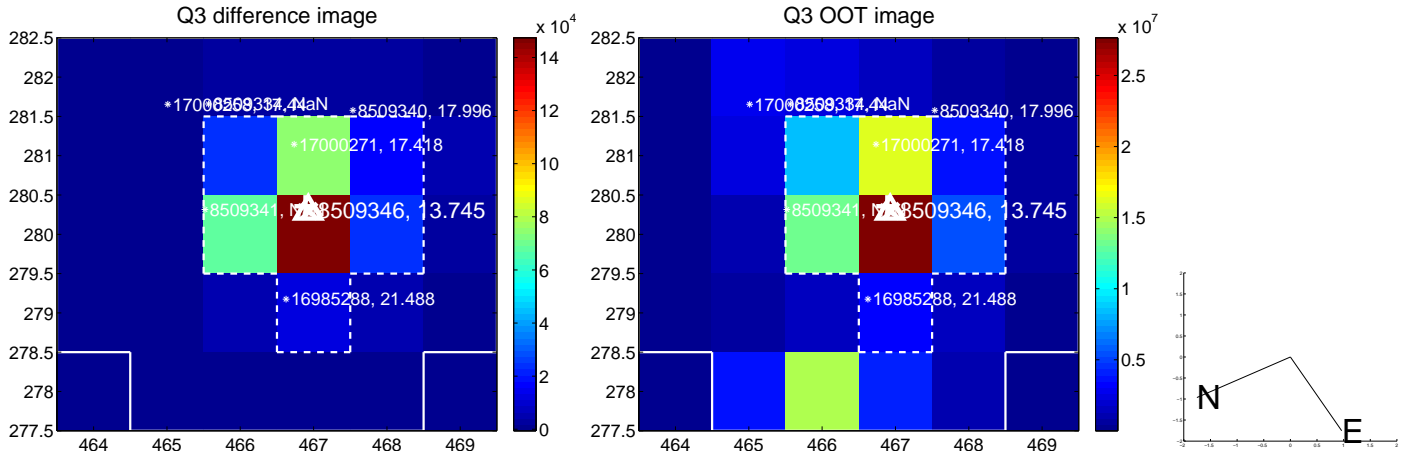
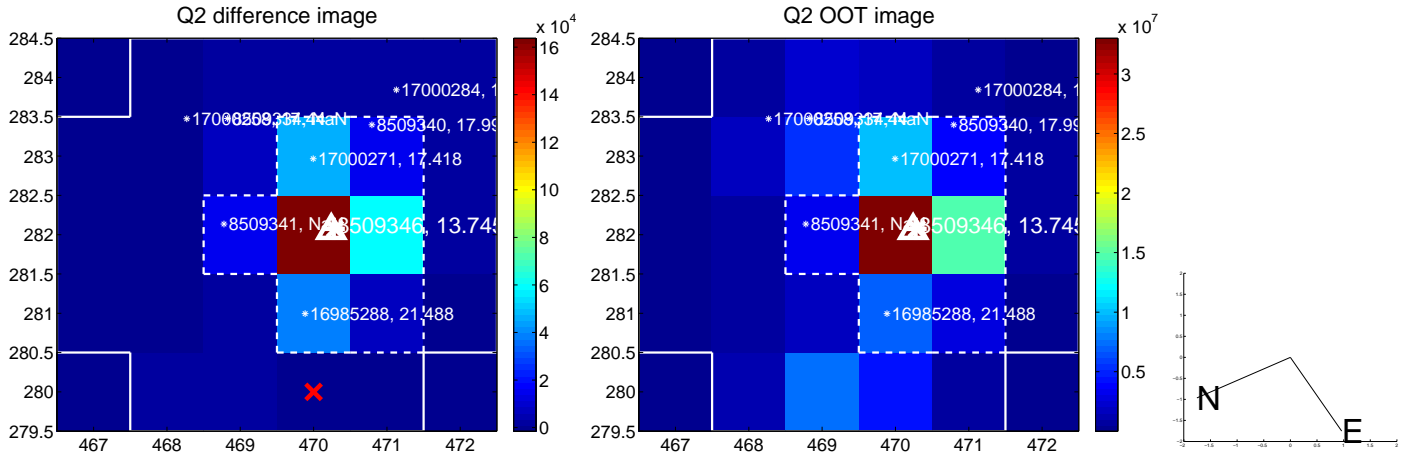
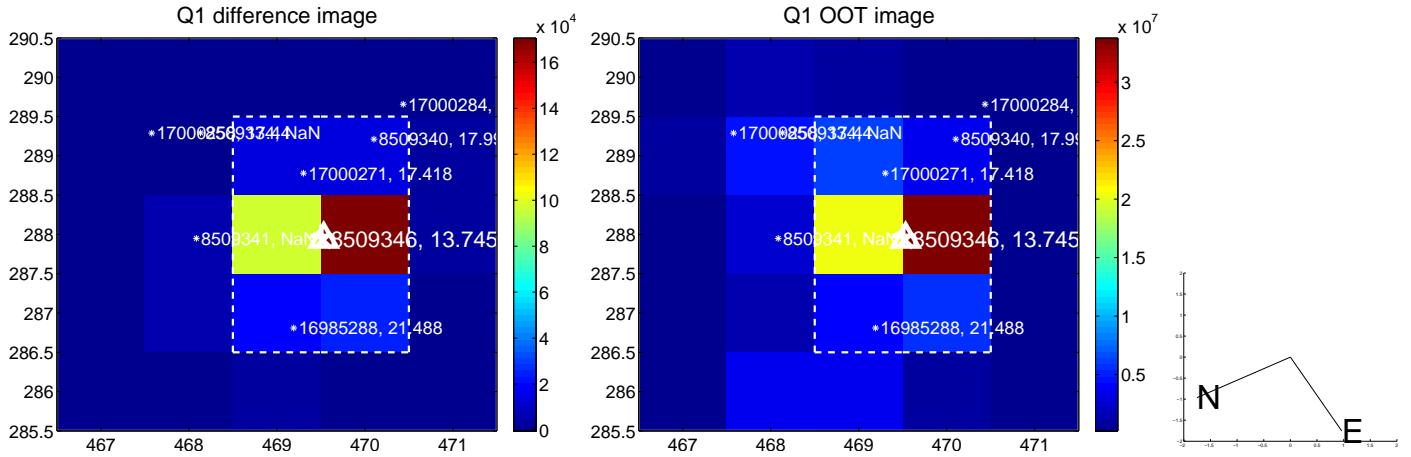
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.240 ± 0.071	3.39	0.234 ± 0.070	-0.053 ± 0.069
PRF-fit source offset from KIC position	0.045 ± 0.070	0.65	0.033 ± 0.069	-0.031 ± 0.069
photometric centroid source offset	0.38 ± 0.01	29.15	-0.01 ± 0.01	0.38 ± 0.01

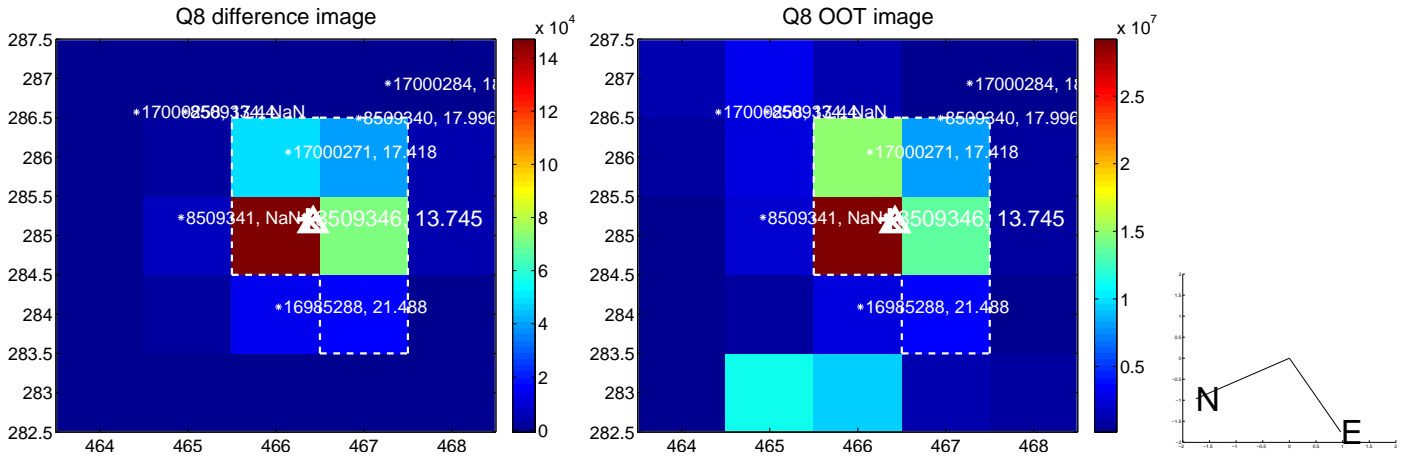
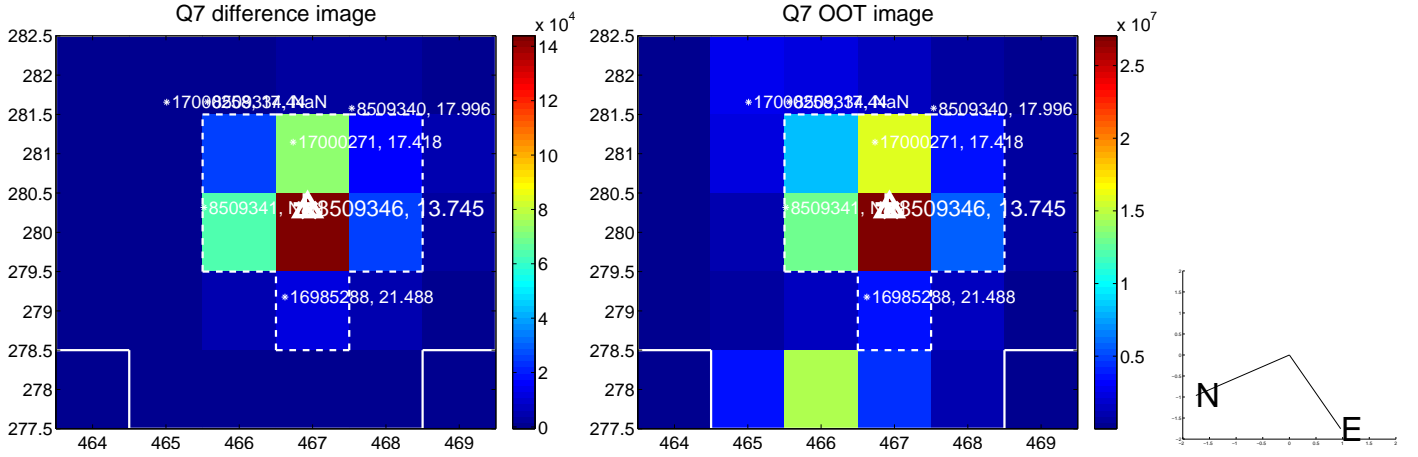
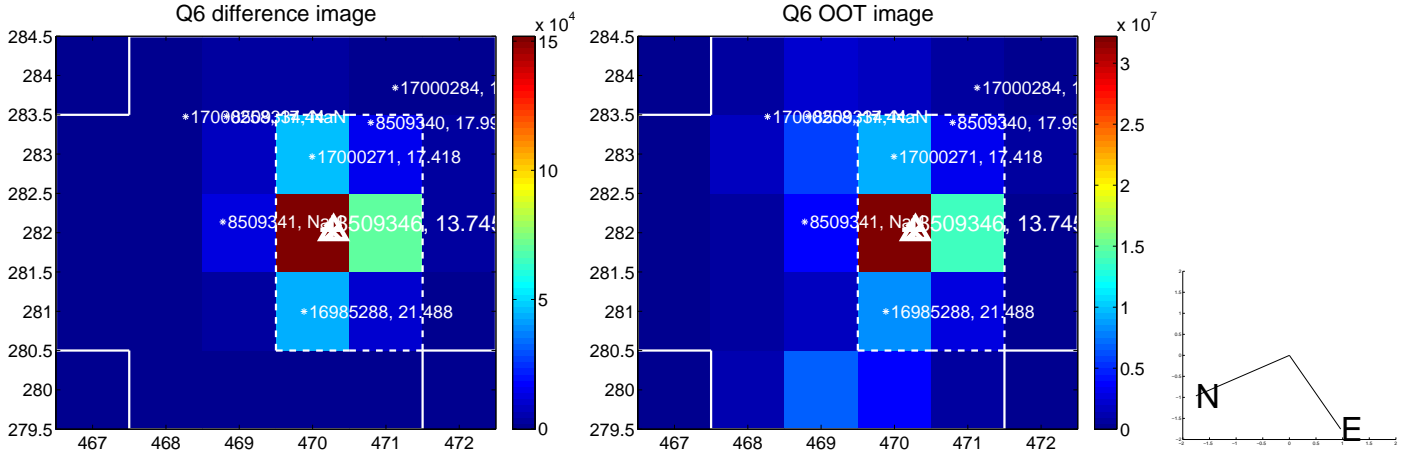
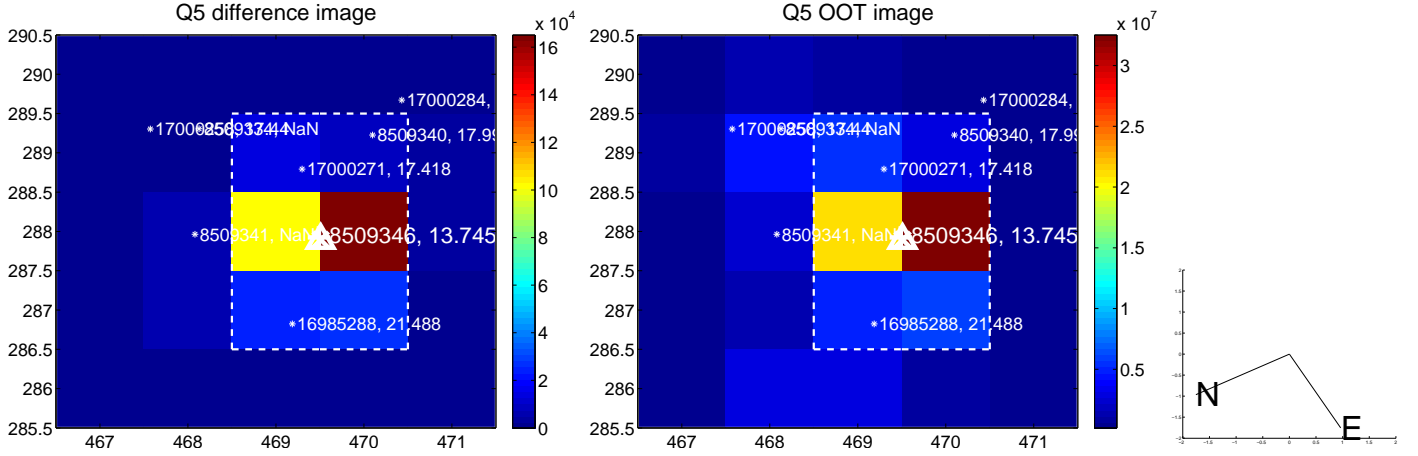


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

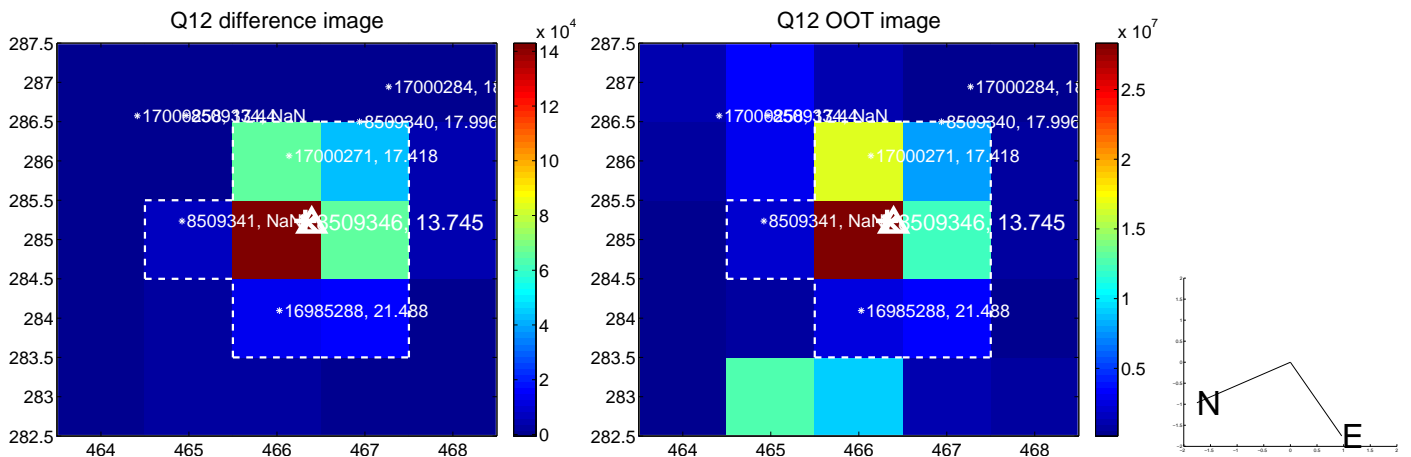
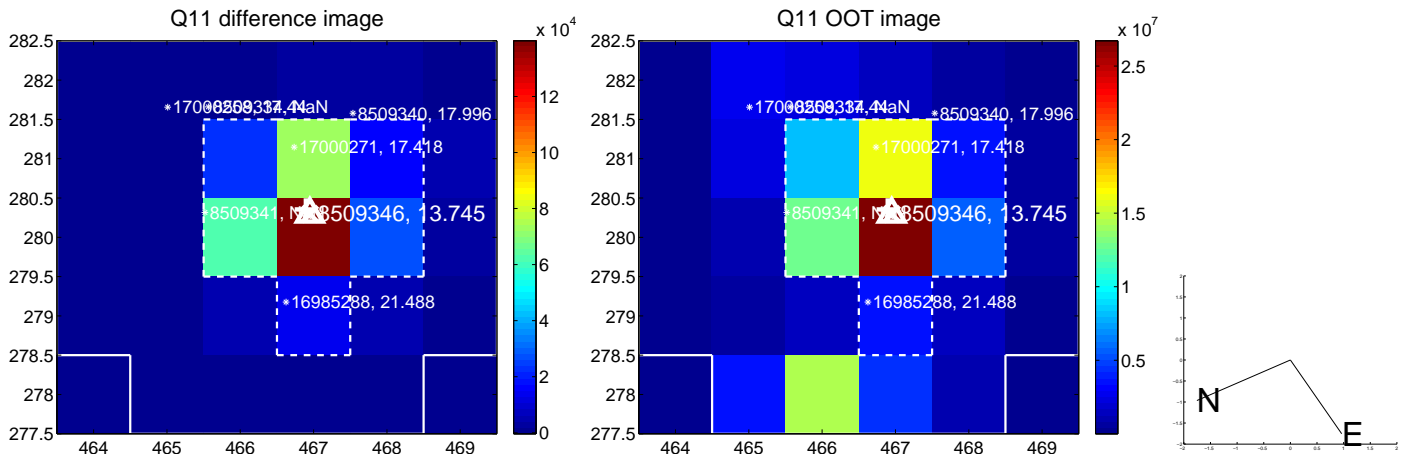
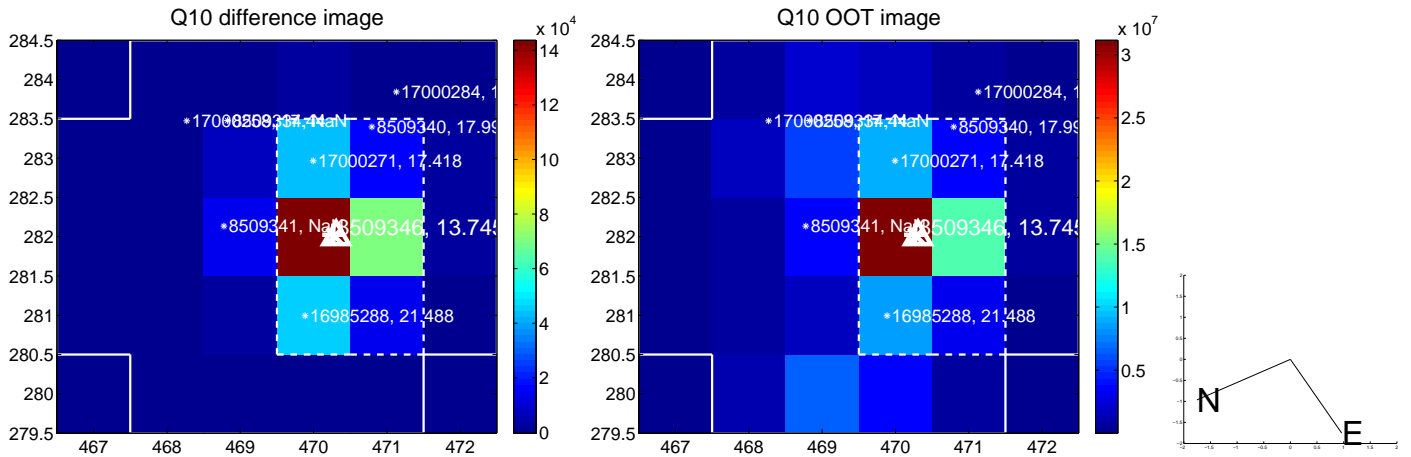
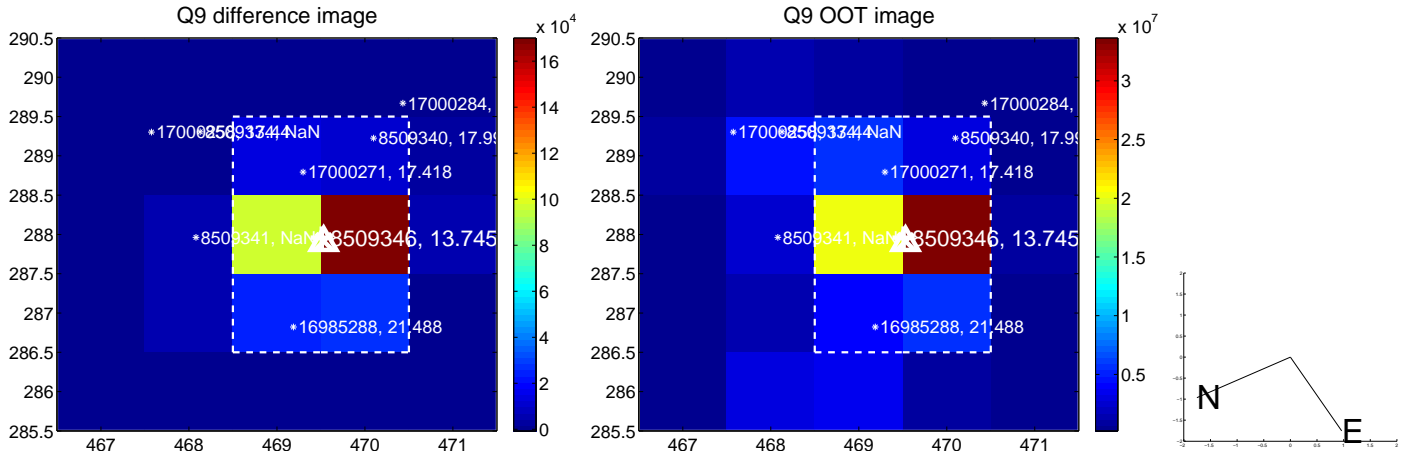
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



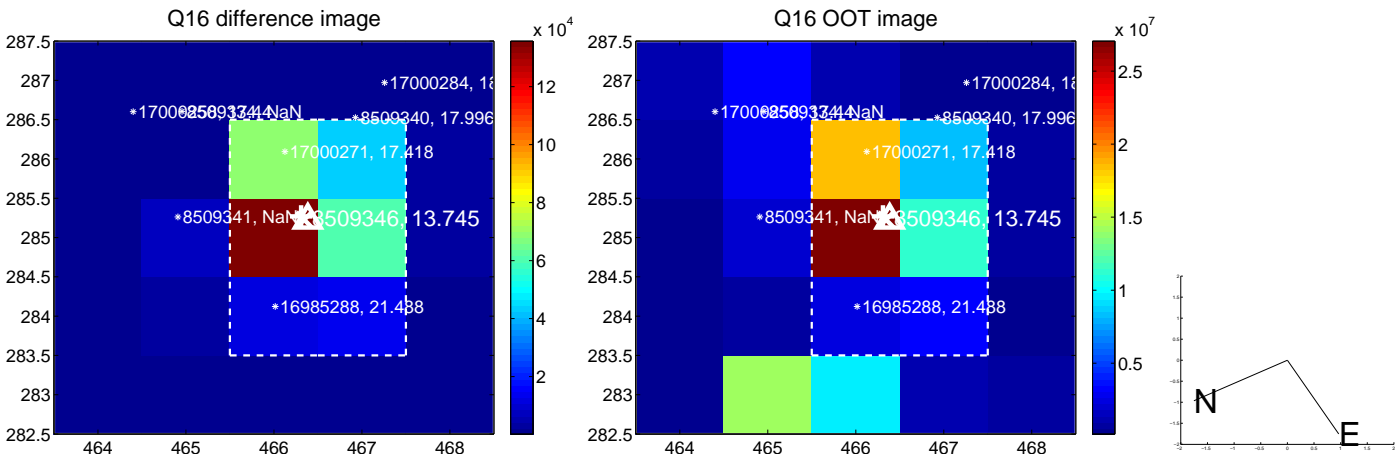
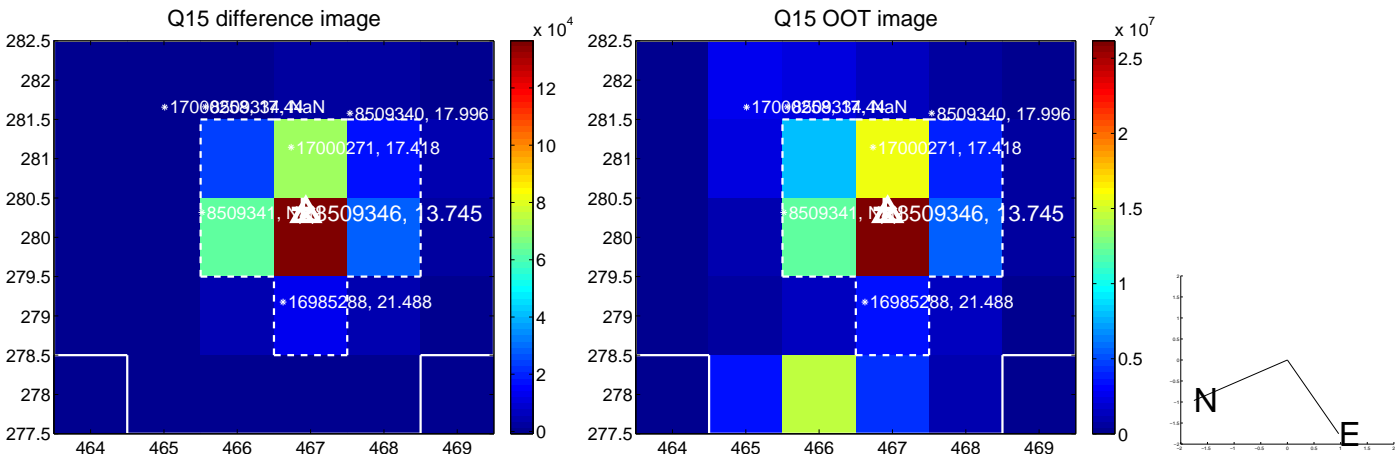
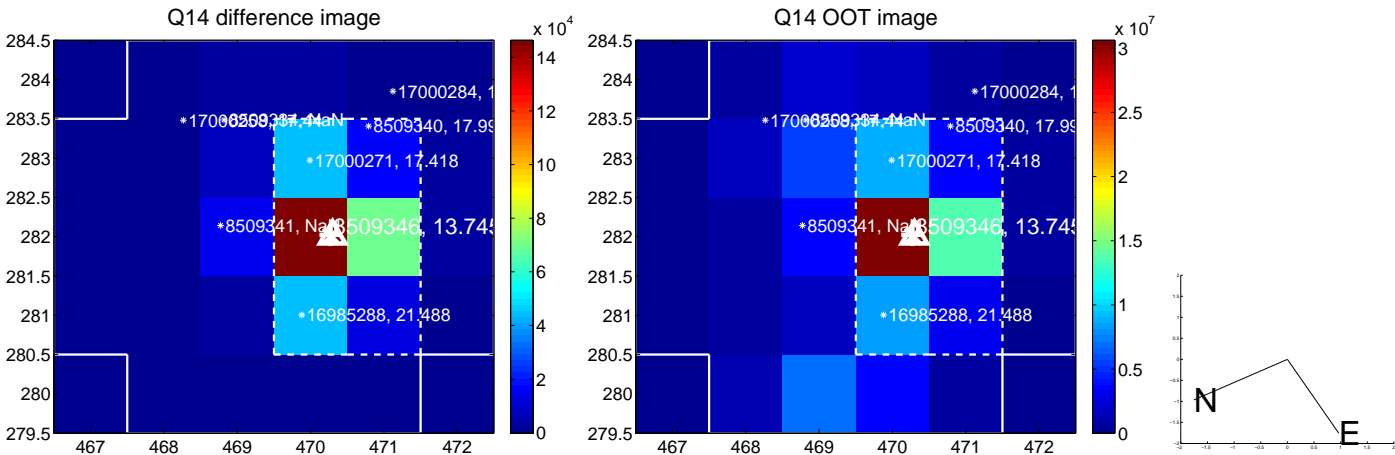
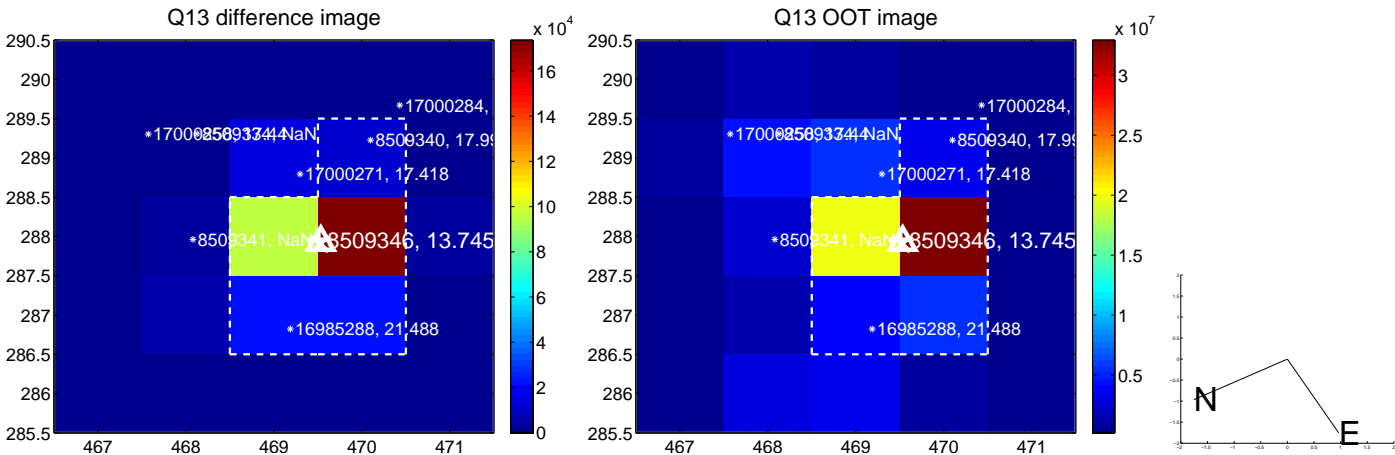
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



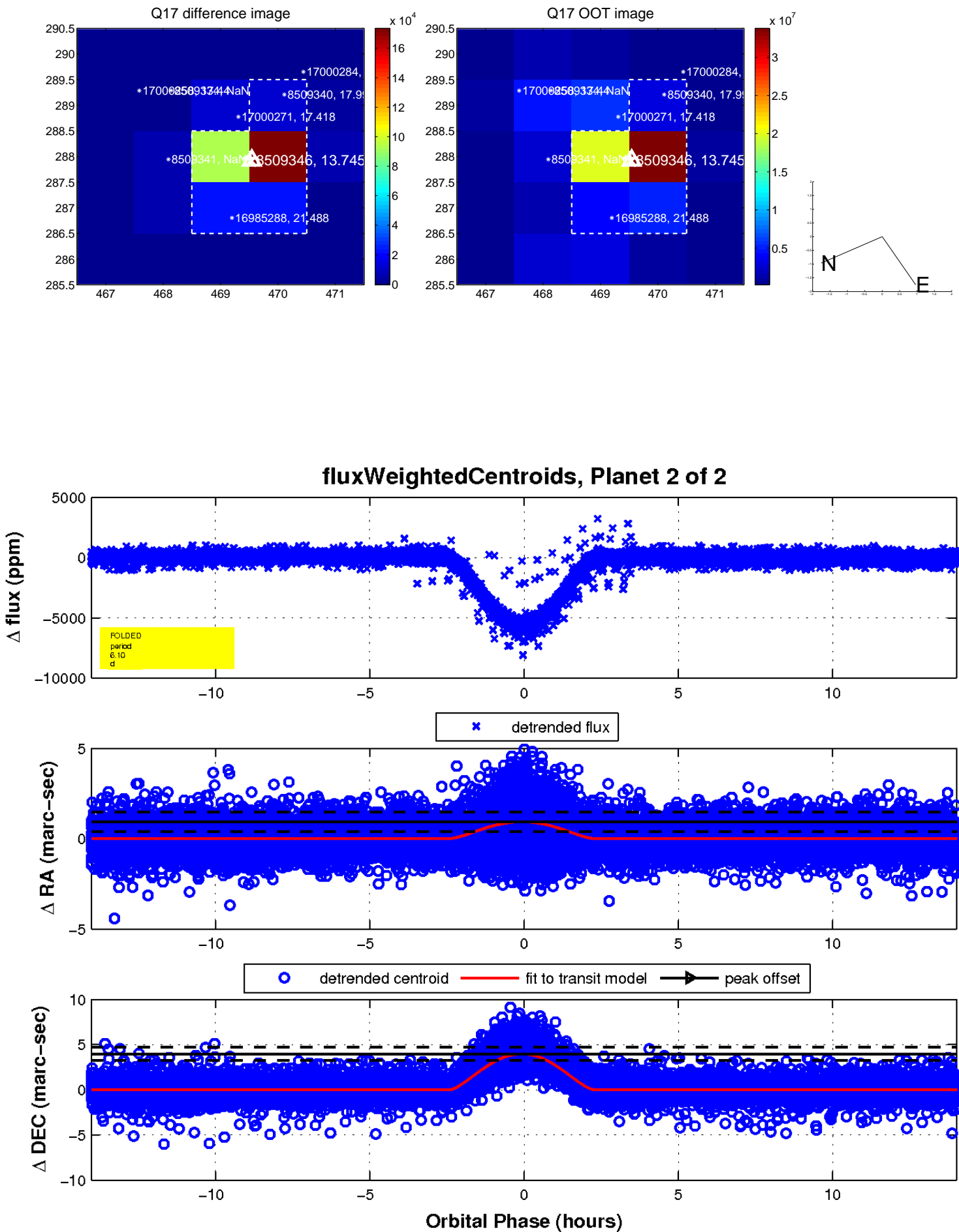
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

