

KIC 009941387

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})
009941387-01	OBS	5738.01	27.659562	141.245371	315791.7	2.500	8744.3	-1.0	0.77	5310	41.90	14.69
009941387-02	OBS	No	4.609720	132.084141	245.2	41.364	446.9	18.9	0.77	5310	1.58	160.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009941387-01	OBS	FP	0.00	0	1	0	0	MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
009941387-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_FEW_DIFFS

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

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

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

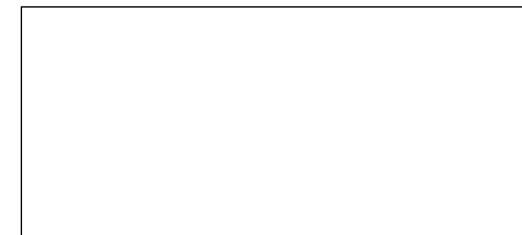
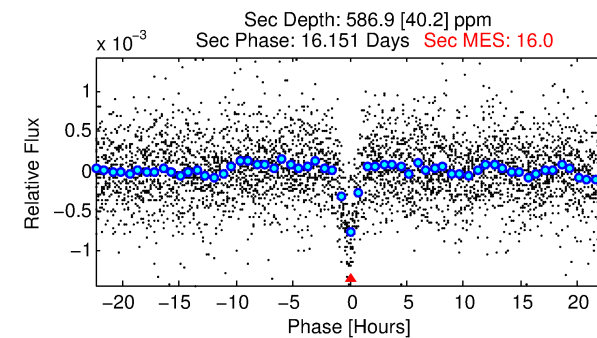
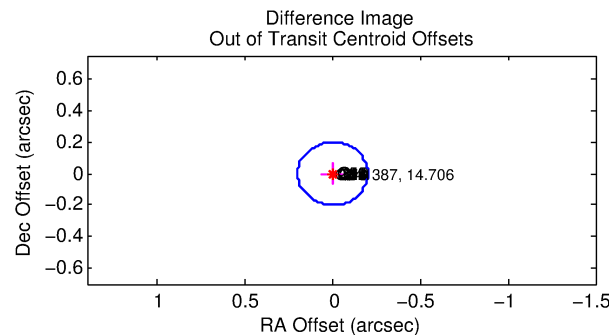
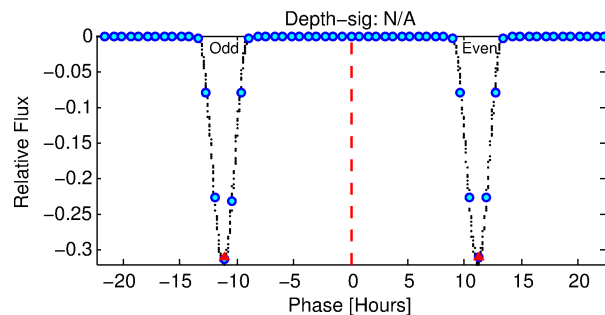
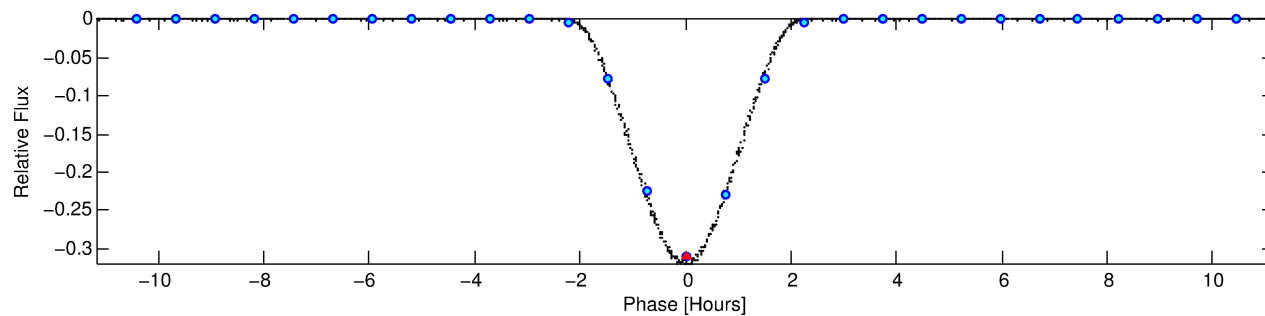
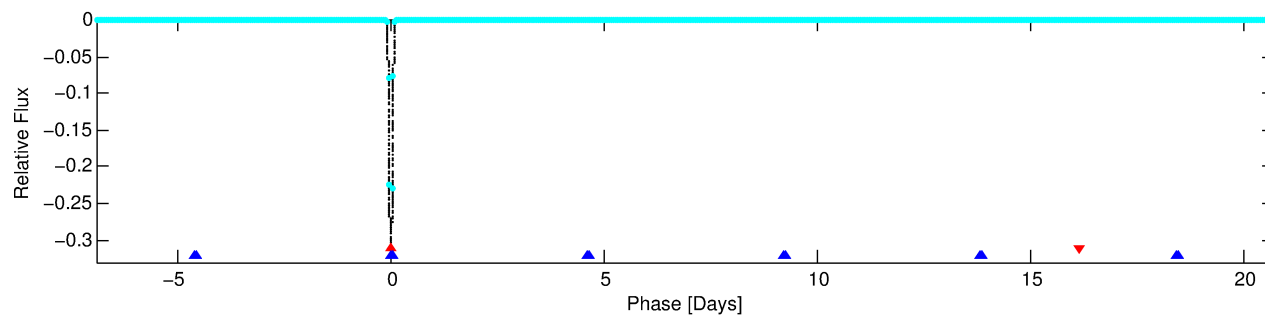
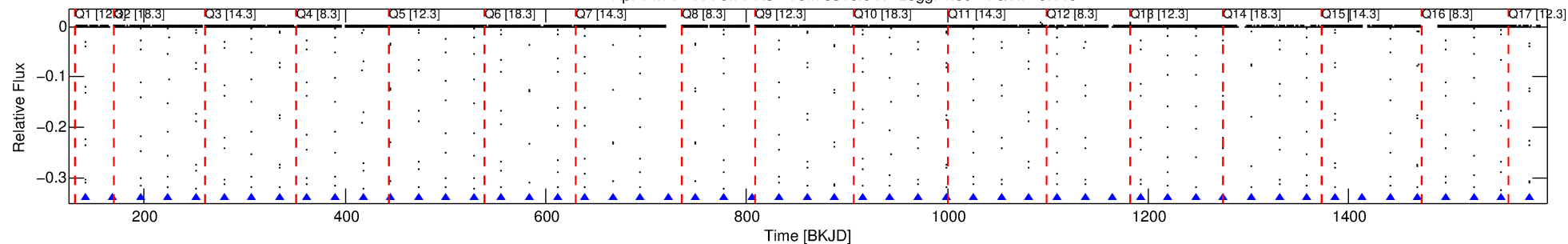
Ephemeris Match Information For 009941387-01

No Significant Match Found

DV One-Page Summary

KIC: 9941387 Candidate: 1 of 2 Period: 27.660 d
KOI: K05738.01 Corr: 0.775

Kp: 14.71 R*: 0.77 Rs Teff: 5310.0 K Logg: 4.59 Fe/H: -0.140



TPS TCE Results:

Period = 27.65956 d
Epoch = 141.2454 BKJD

DV fit results are unavailable

DV Diagnostic Results:

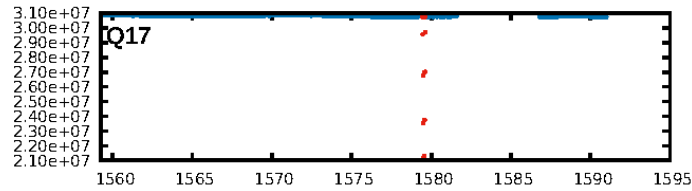
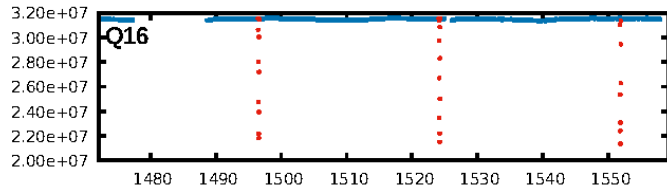
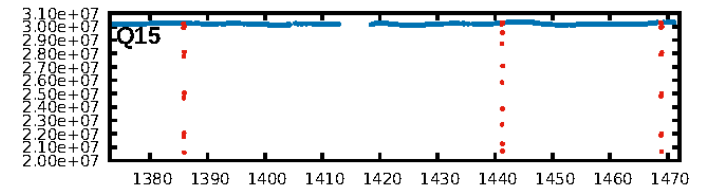
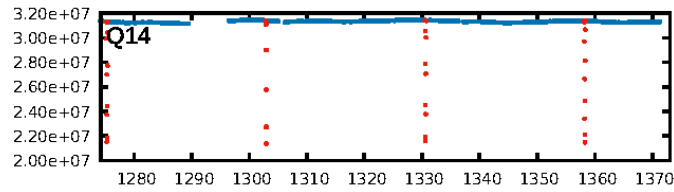
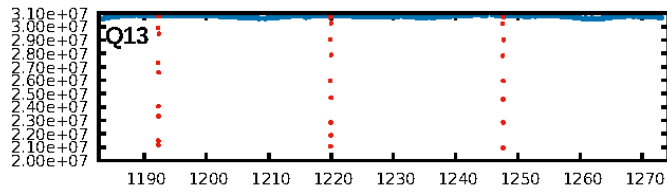
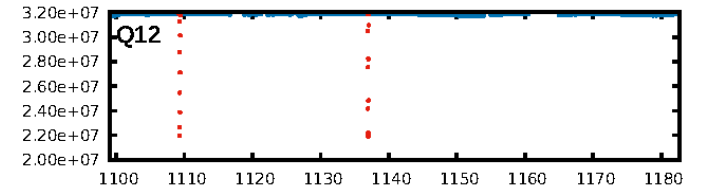
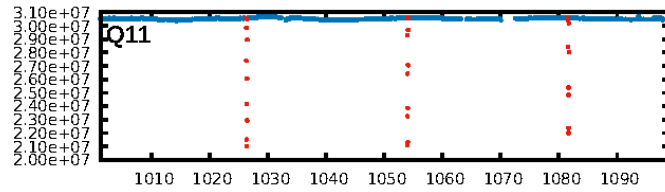
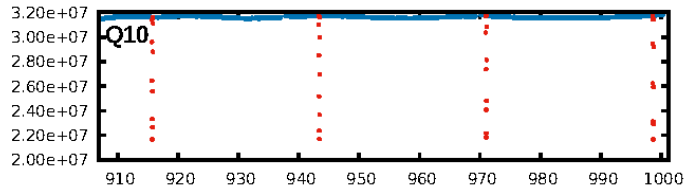
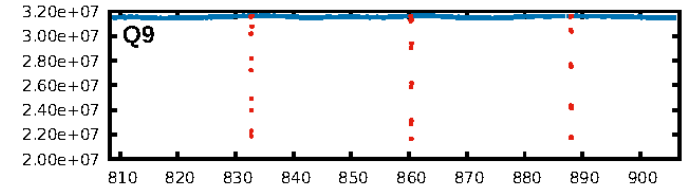
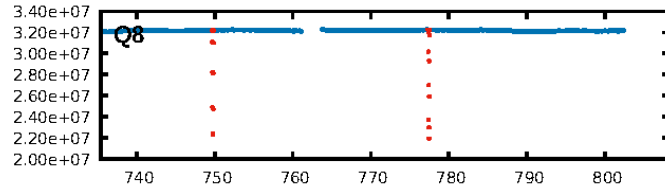
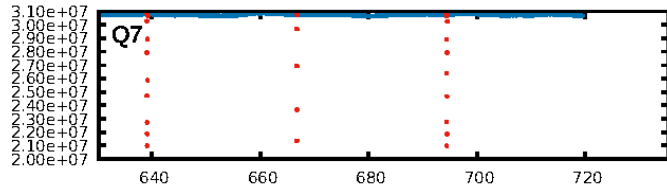
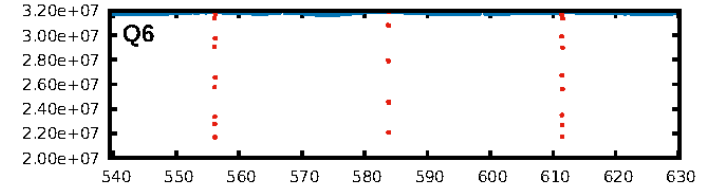
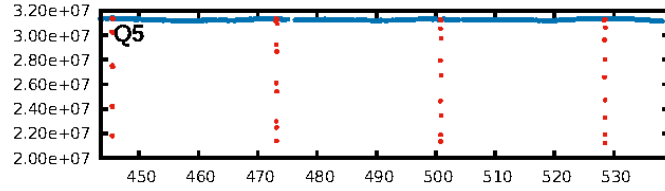
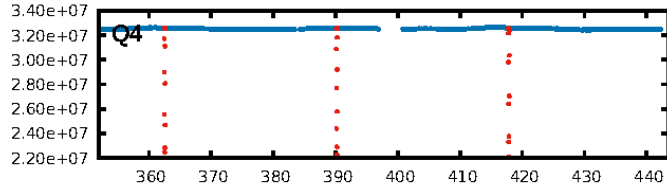
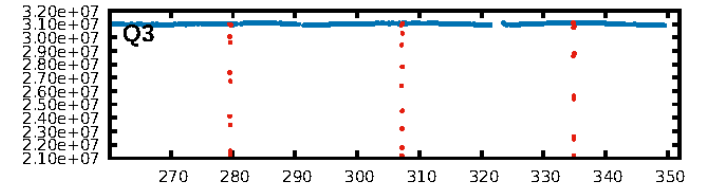
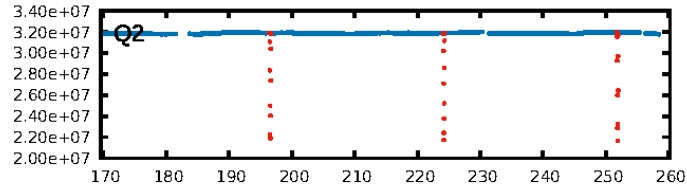
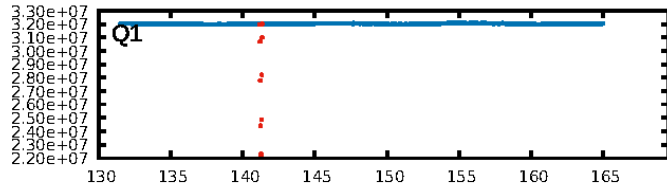
ShortPeriod-sig: 100.0% [13.35σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [46/46]
GhostDiagnostic-chr: 4.409

Centroid-sig: 0.0%
Centroid-so: 0.185 arcsec [199.56σ]
OotOffset-rm: 0.001 arcsec [0.02σ]
KicOffset-rm: 0.142 arcsec [2.12σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
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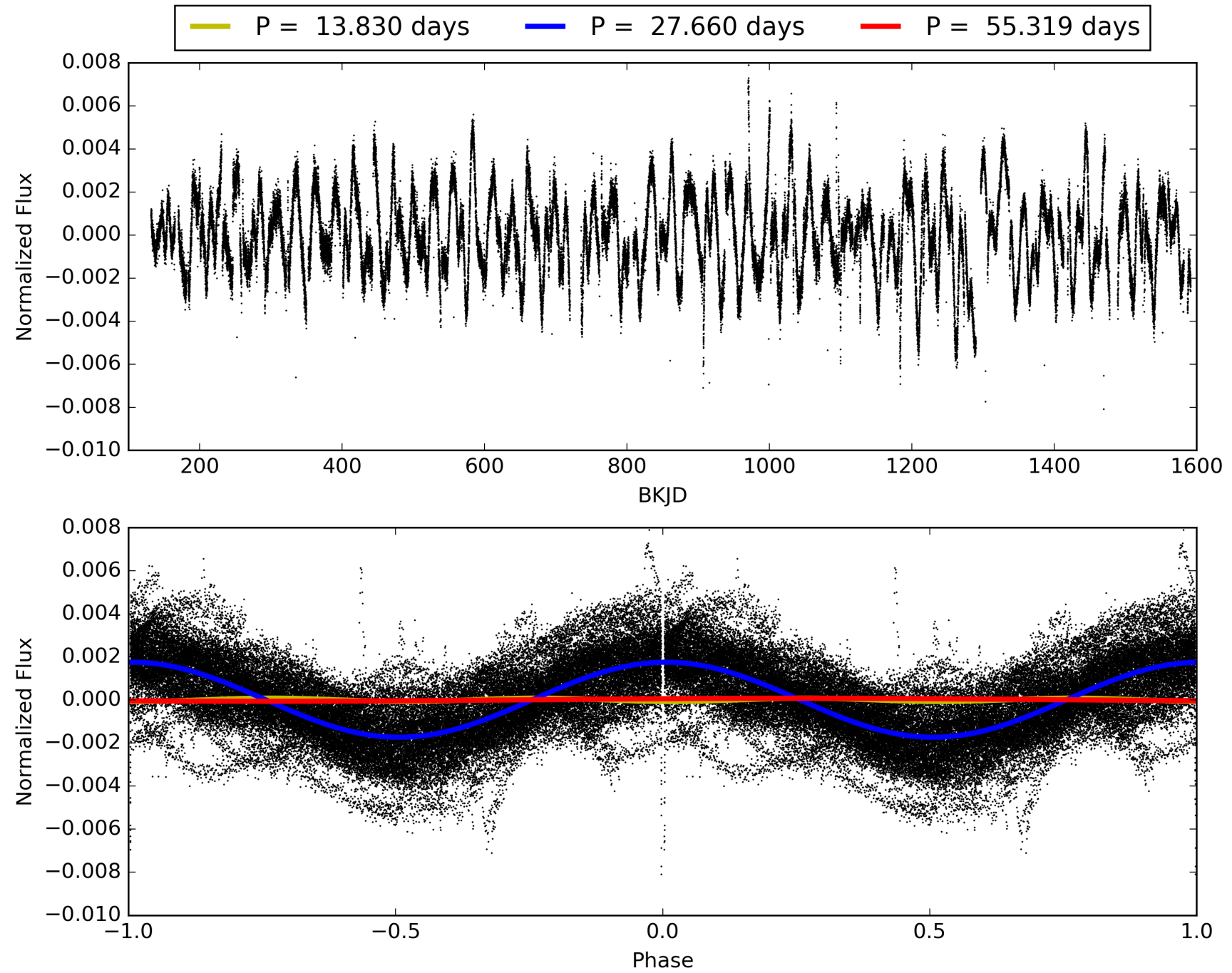
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 16:35:14 Z

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

TCE 009941387-01, PDC Light Curves

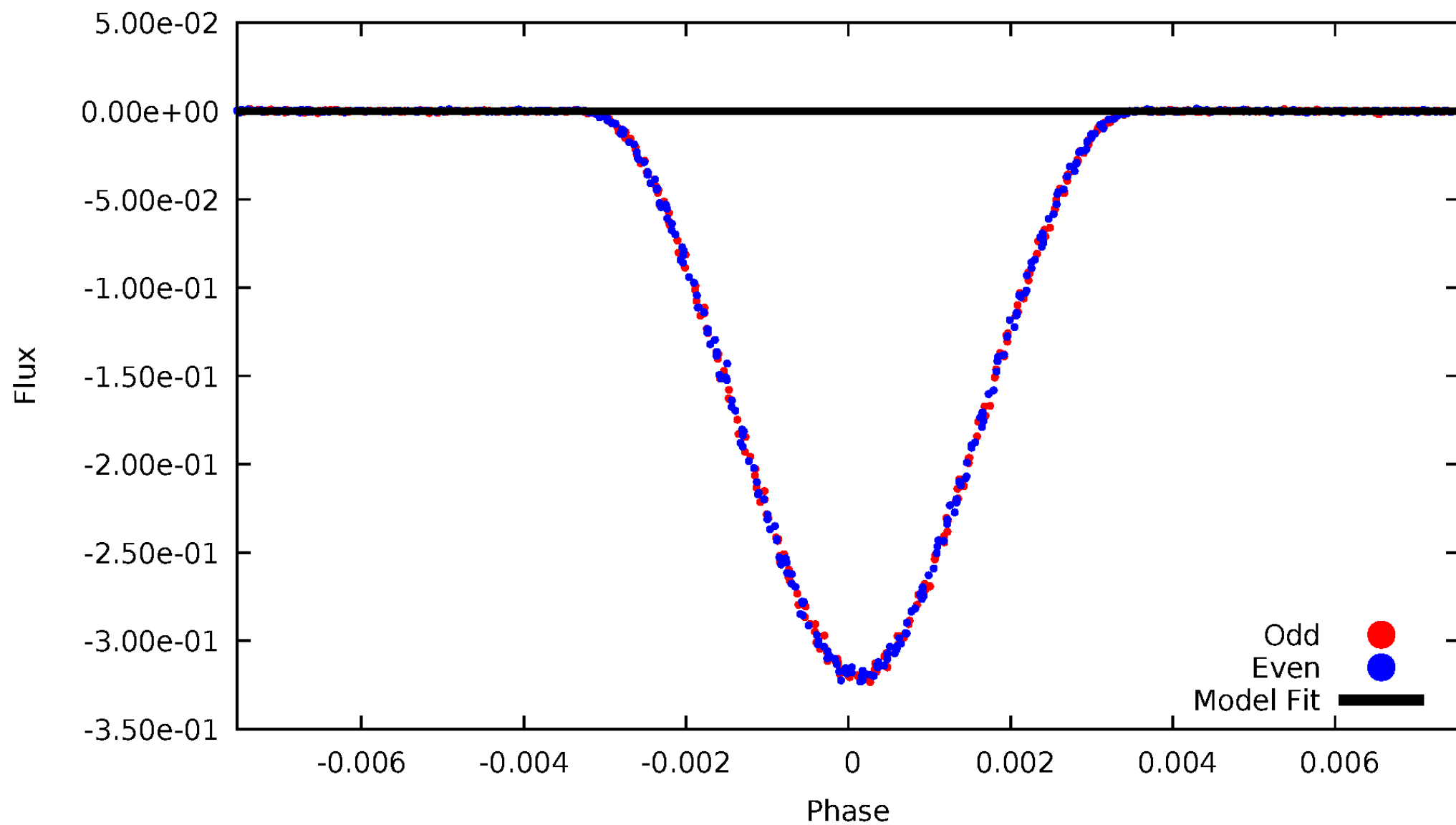


TCE 009941387-01



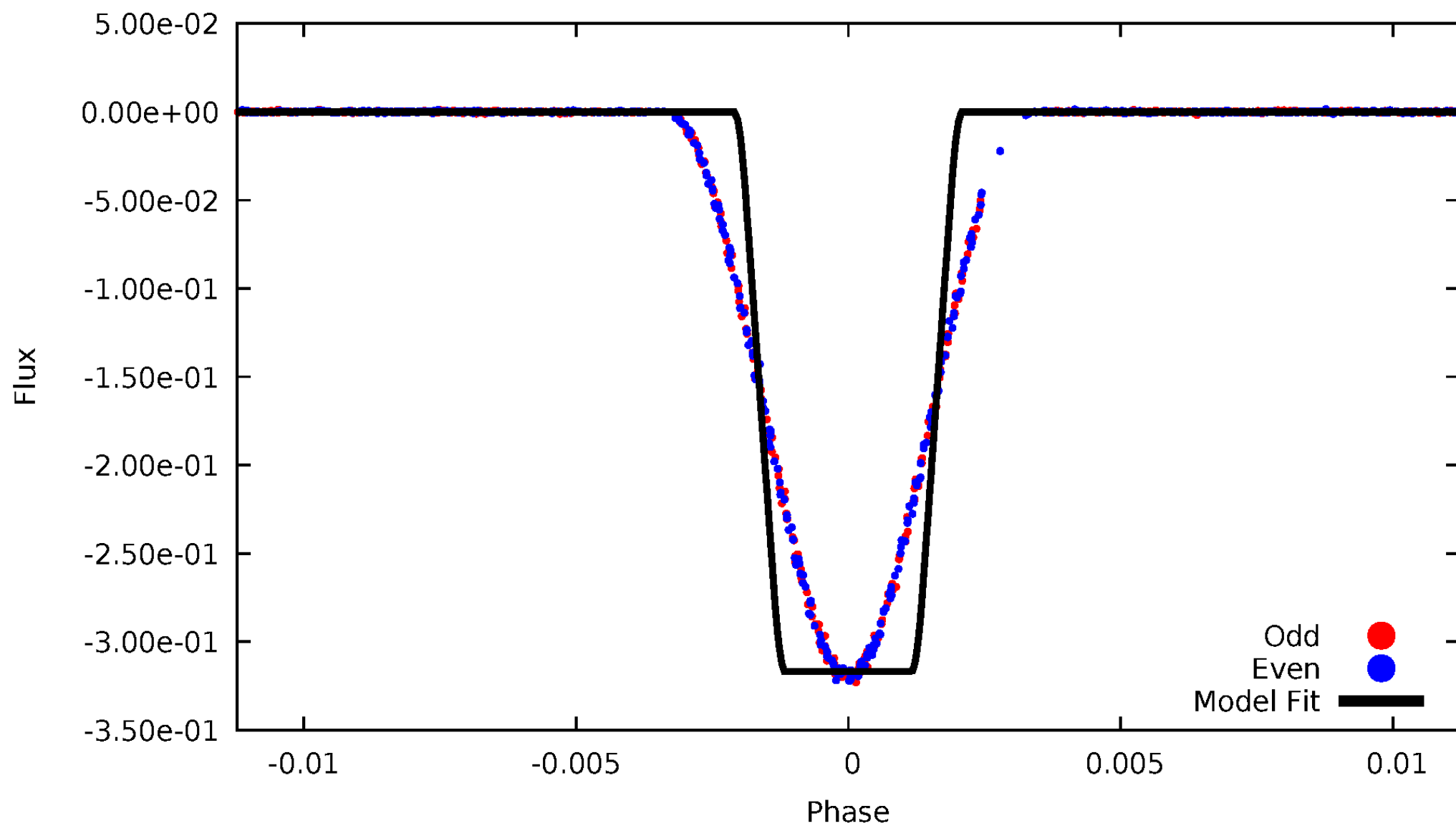
DV Odd/Even

TCE 009941387-01



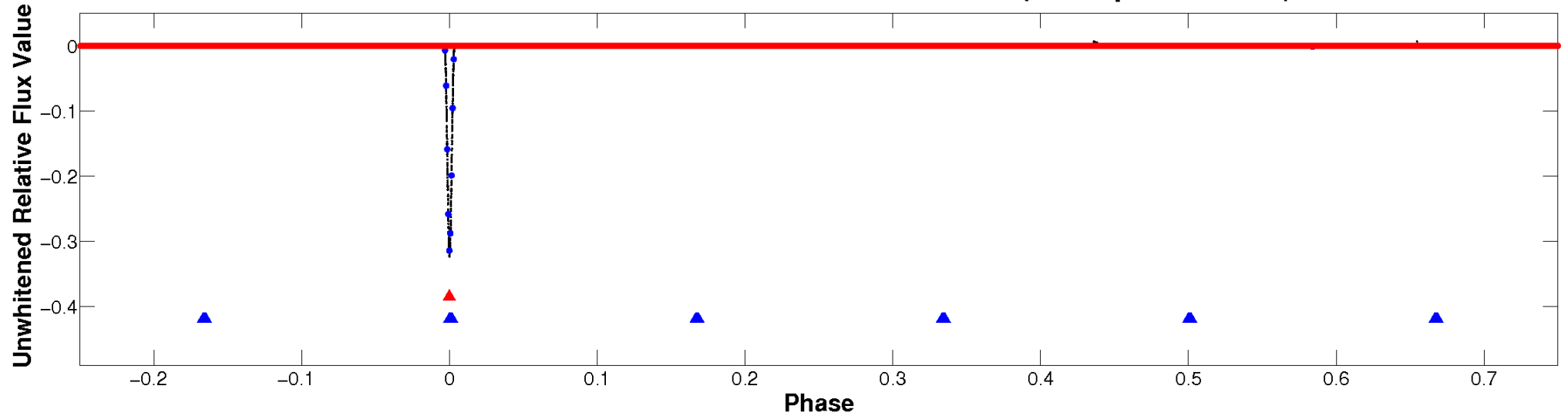
ALT Odd/Even

TCE 009941387-01



Non-Whitened Vs. Whitened Light Curve

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

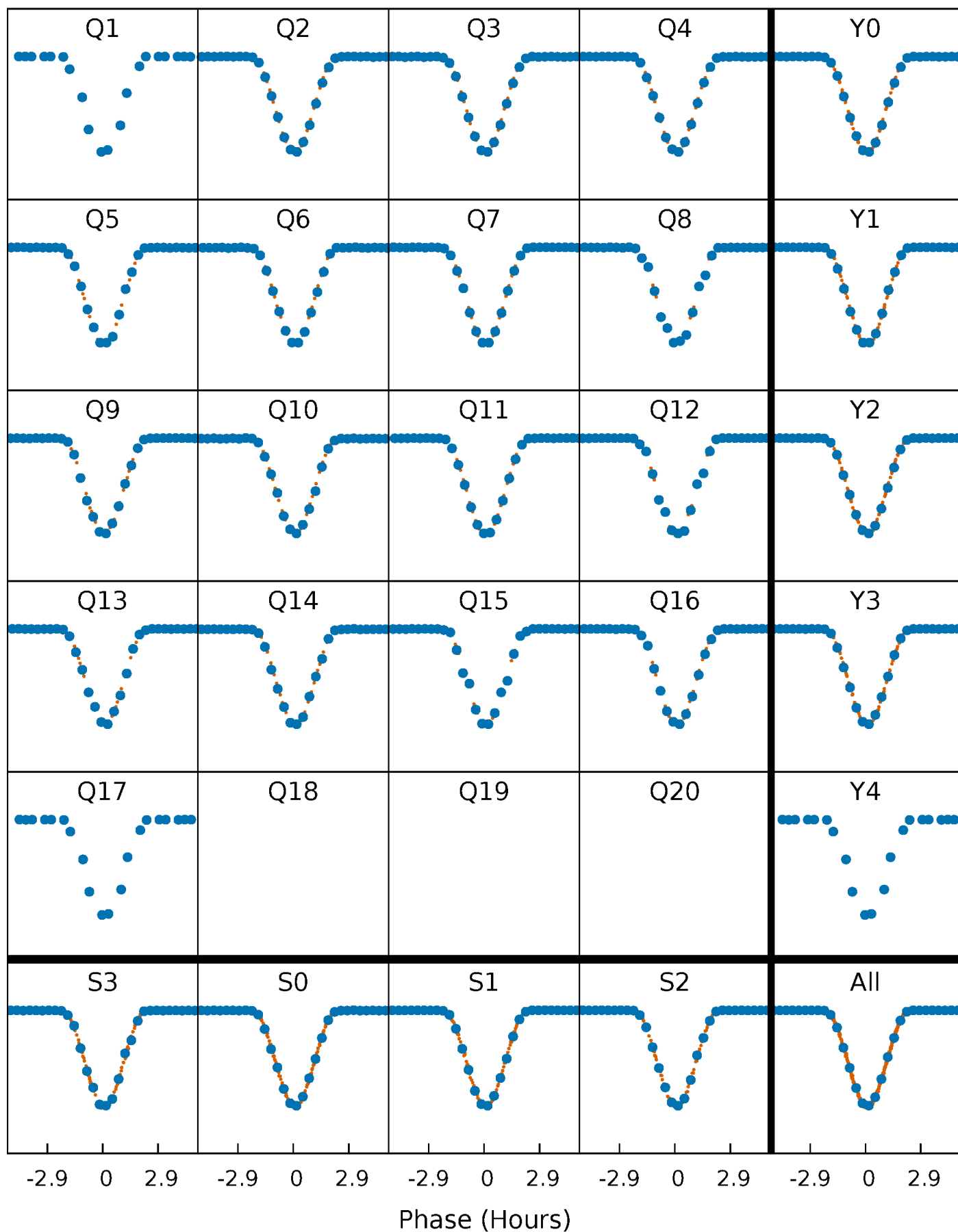


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



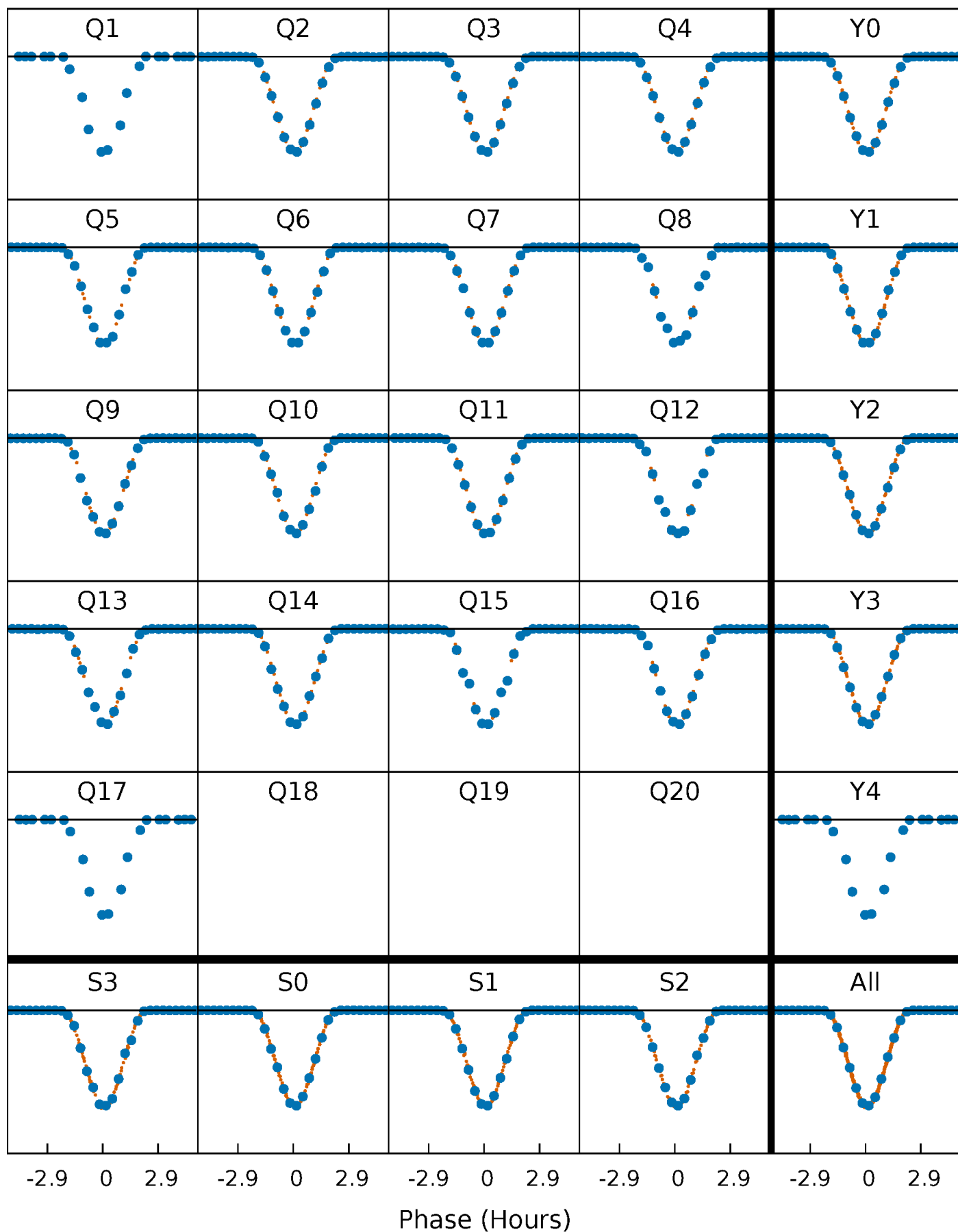
PDC Quarter-Phased Transit Curves

TCE 009941387-01 P= 27.659562 Days $T_0=141.245371$ (BKJD)



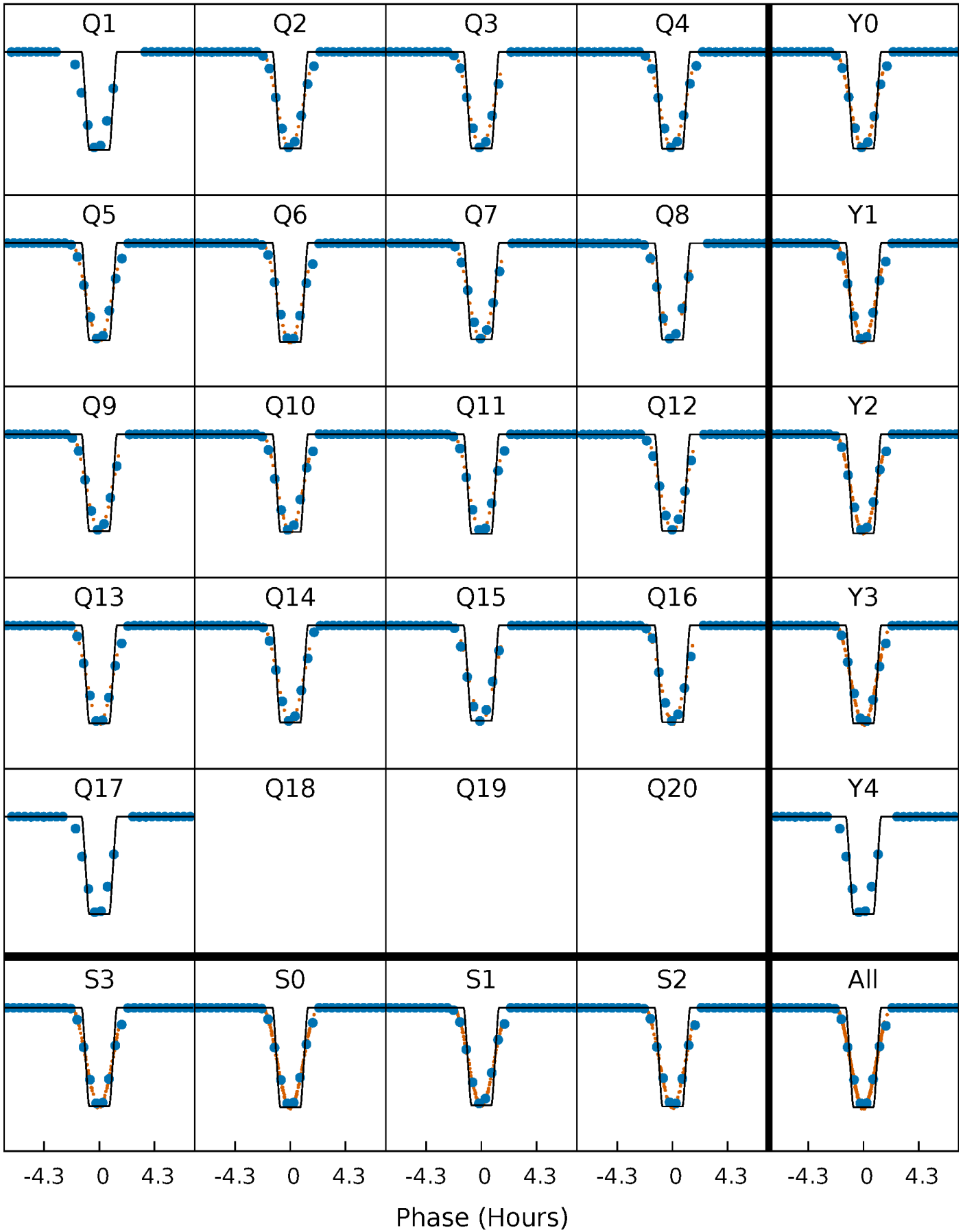
DV Quarter-Phased Transit Curves

TCE 009941387-01 P= 27.659562 Days $T_0=141.245371$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

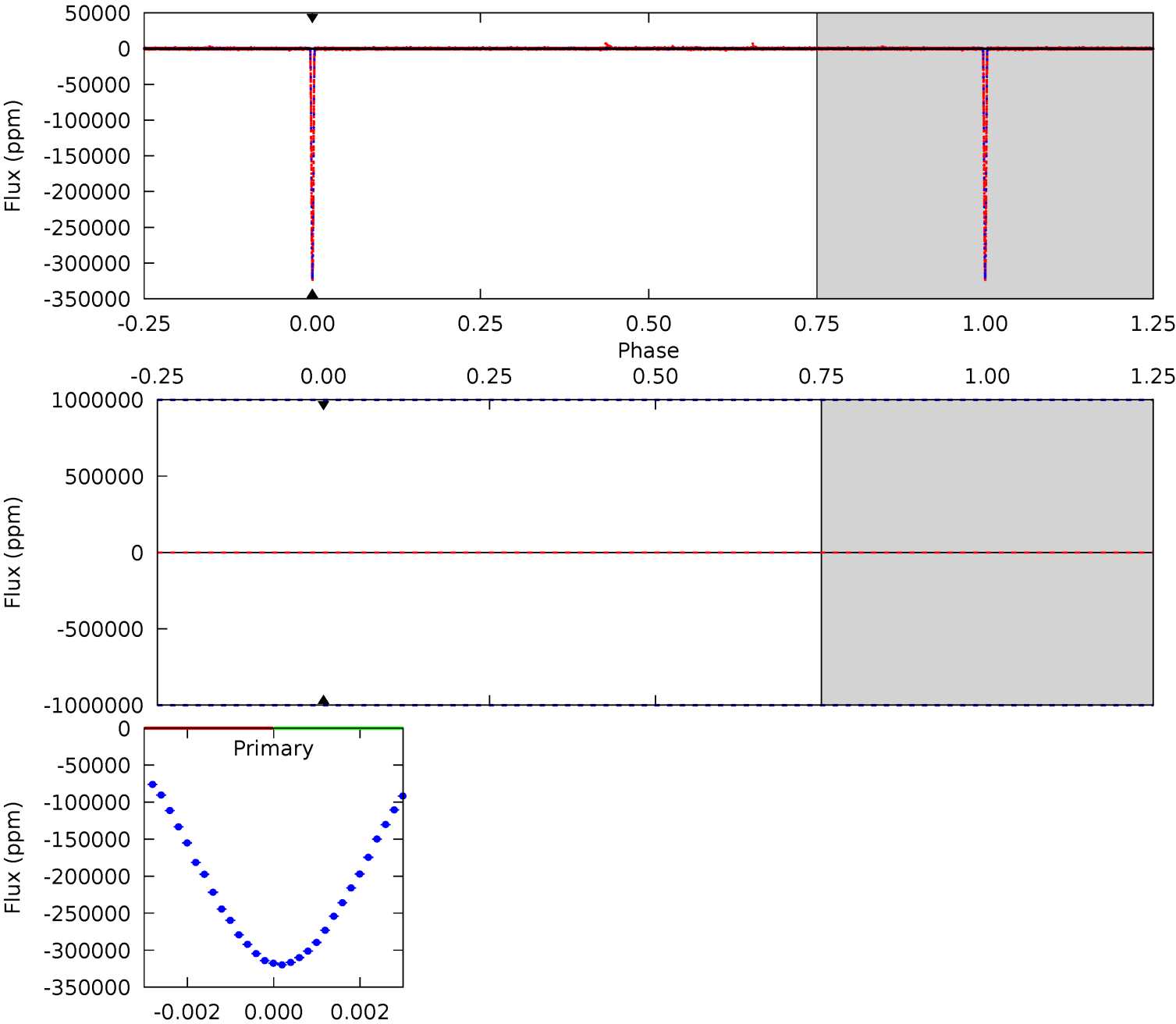
TCE 009941387-01 P= 27.659562 Days $T_0=141.249039$ (BKJD)



DV Model-Shift Uniqueness Test

009941387-01, P = 27.659562 Days, E = 113.585809 Days

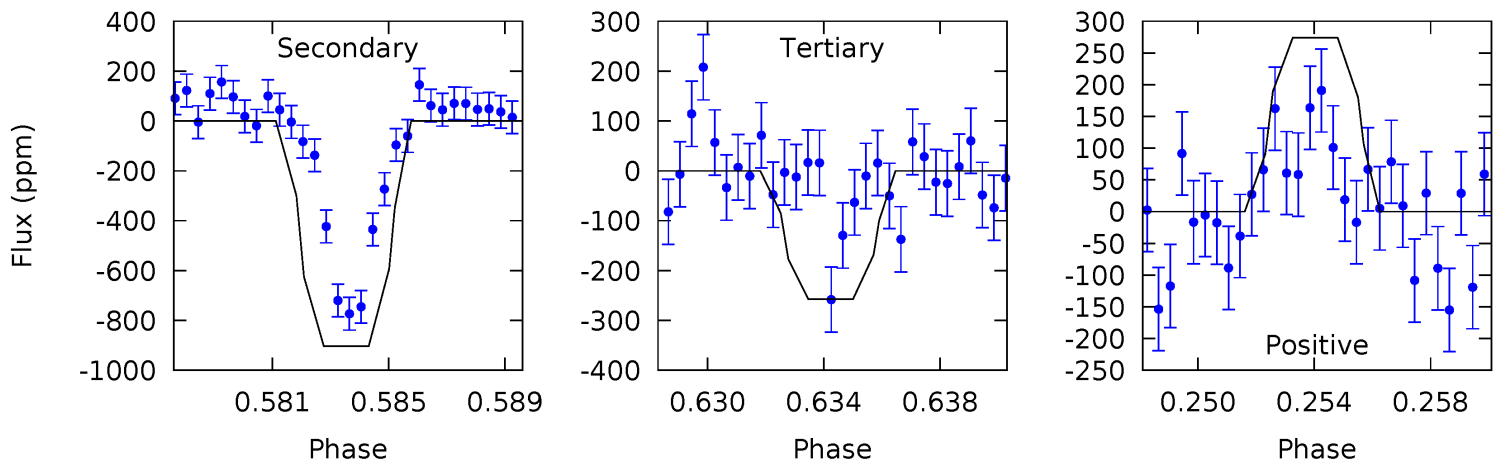
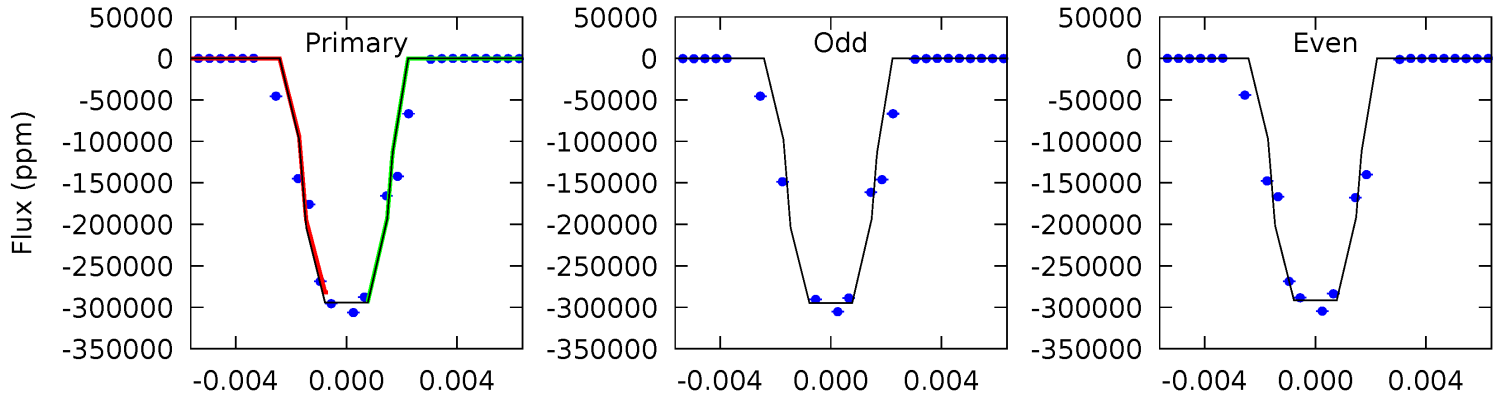
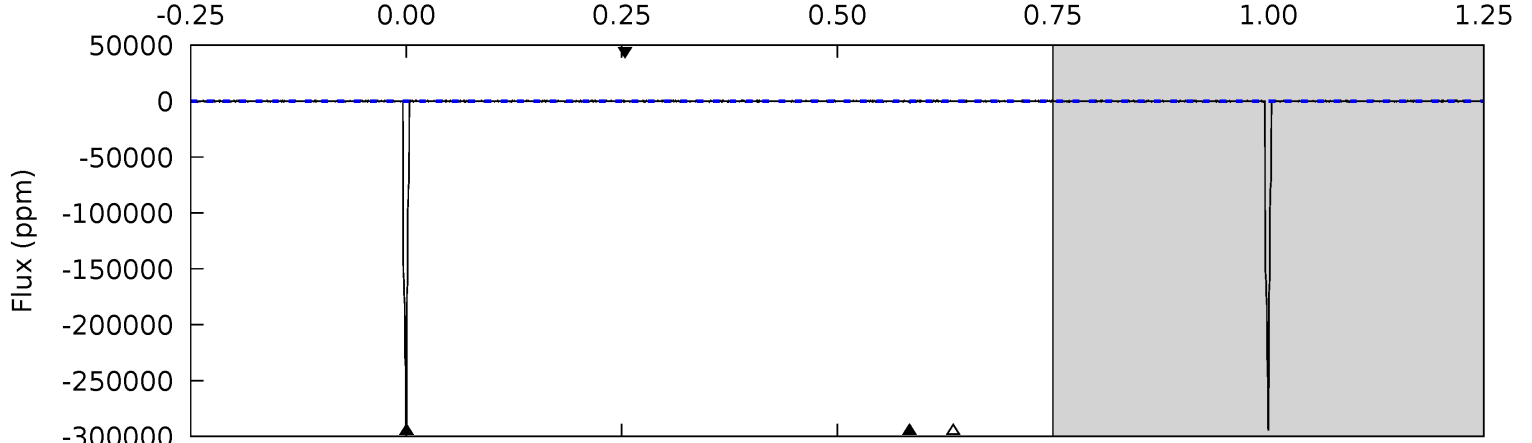
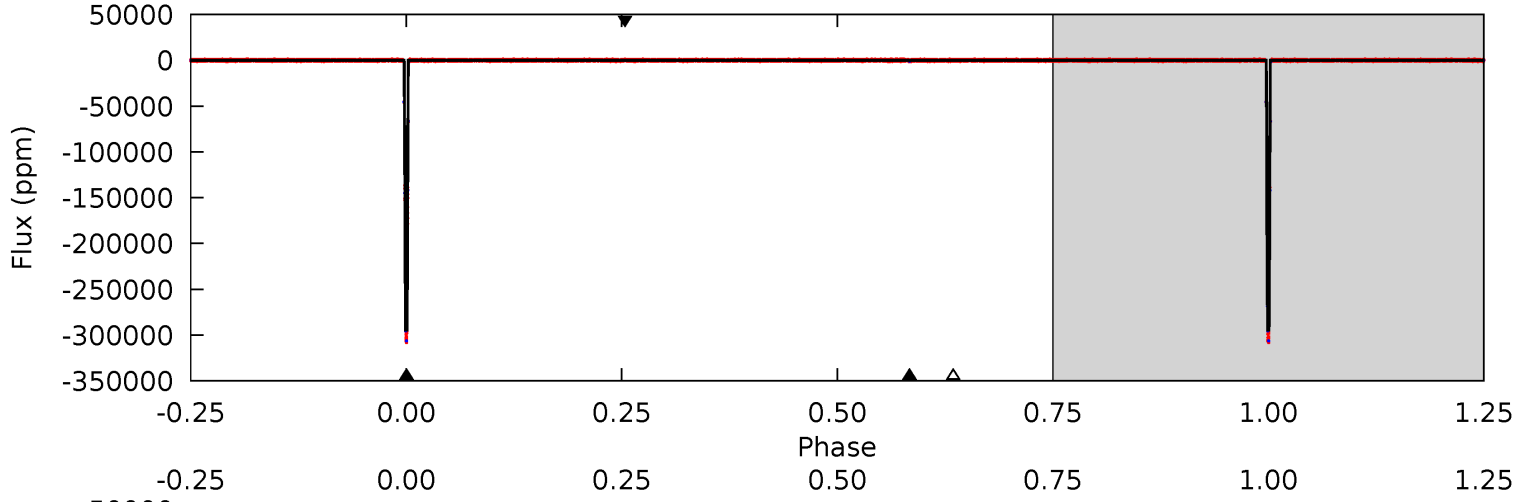
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009941387-01, P = 27.659562 Days, E = 113.589477 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5440	16.7	4.75	5.06	5.20	2.87	11.2	5435	5435	11.9	11.6	32.1	1.00	0.00	0



Stellar Parameters For KIC 009941387

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5310^{+159}_{-143}	$4.593^{+0.035}_{-0.105}$	$-0.140^{+0.300}_{-0.300}$	$0.768^{+0.132}_{-0.066}$	$0.849^{+0.071}_{-0.094}$	$2.634^{+0.470}_{-0.837}$
	+3%/-3%	+1%/-2%	+214%/-214%	+17%/-9%	+8%/-11%	+18%/-32%
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 009941387-01 / KOI 5738.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$42.55^{+9.61}_{-8.90}$	708^{+31}_{-25}	2479^{+2089}_{-6826}	22^{+1005}_{-819}
Alt.	-904 ± 54	$48.50^{+9.29}_{-9.42}$	706^{+30}_{-27}	2162^{+105}_{-88}	$5.971^{+2.994}_{-1.759}$

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

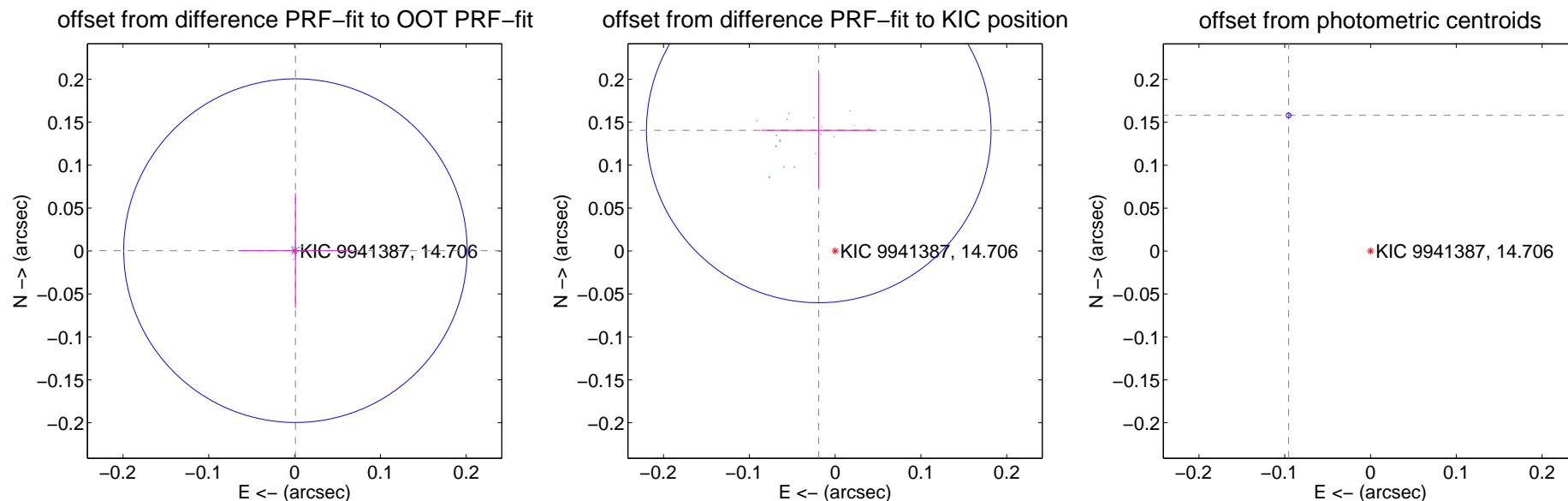
DV Centroid Data

Supplemental centroid analysis for 009941387-01. Kepler magnitude: 14.71. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

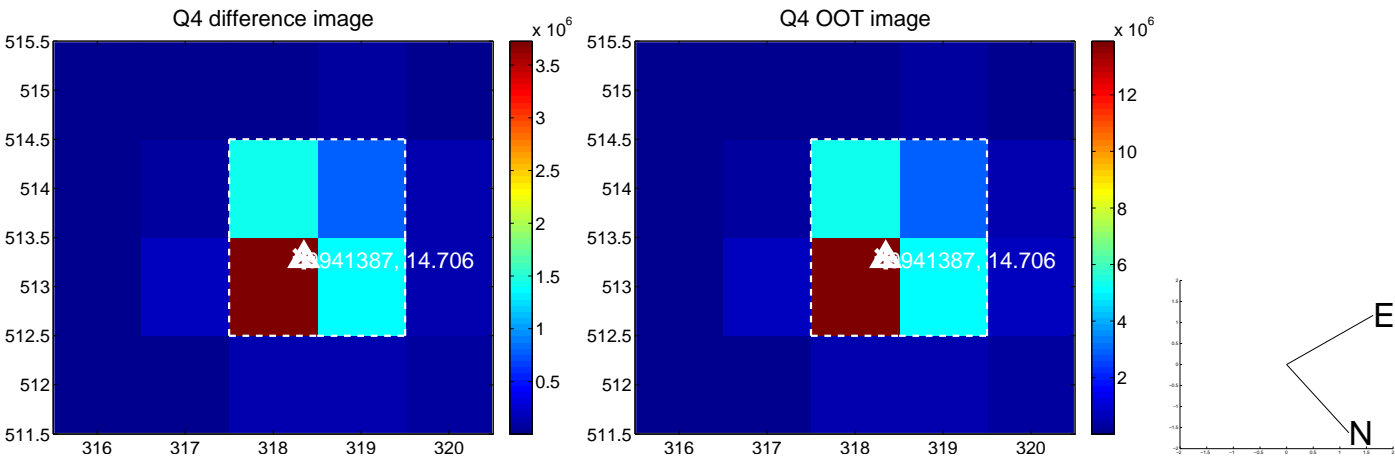
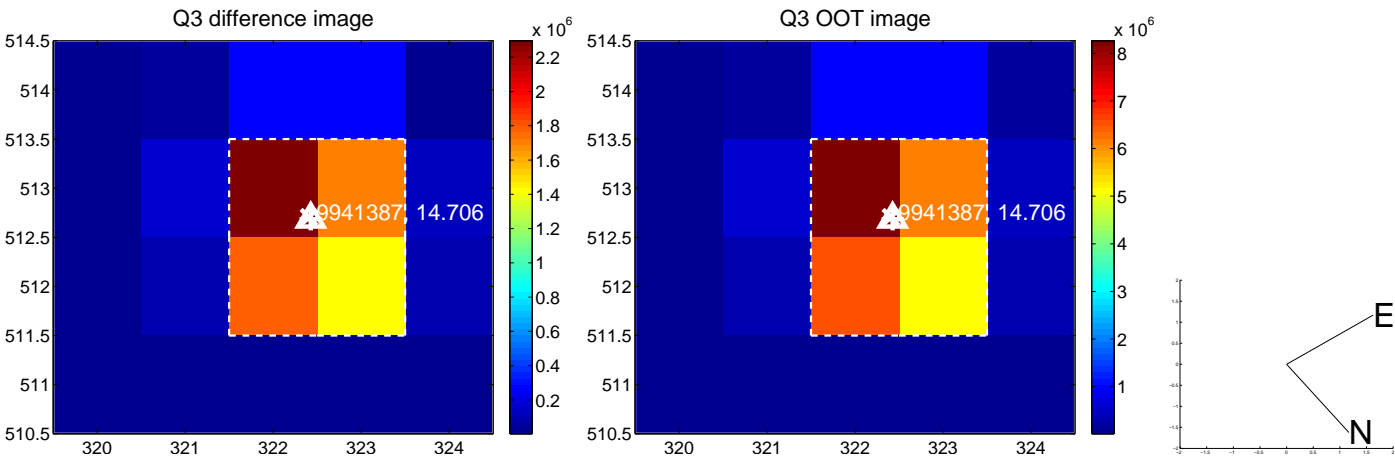
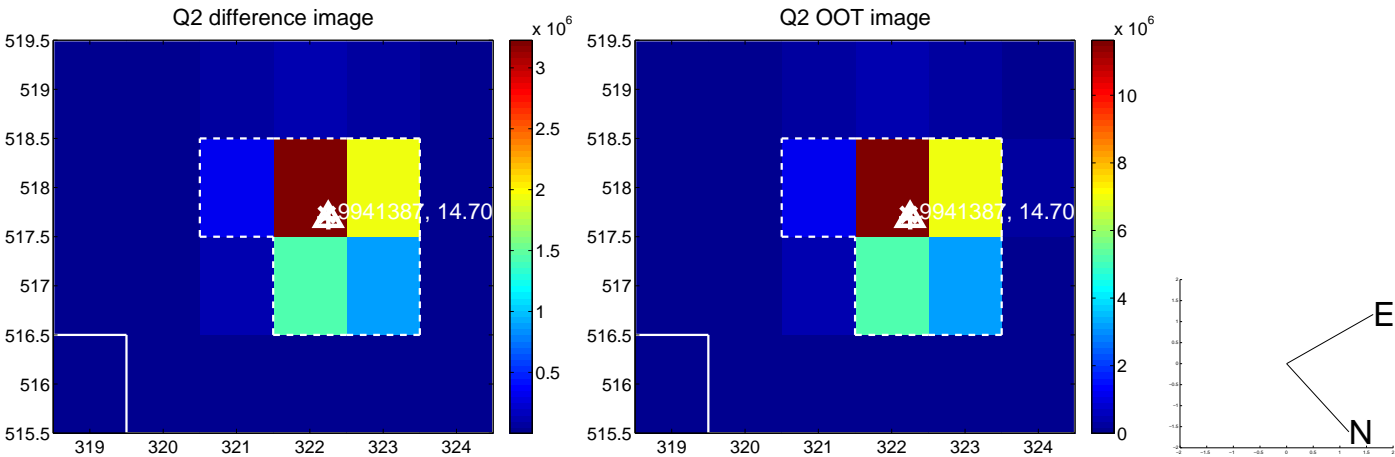
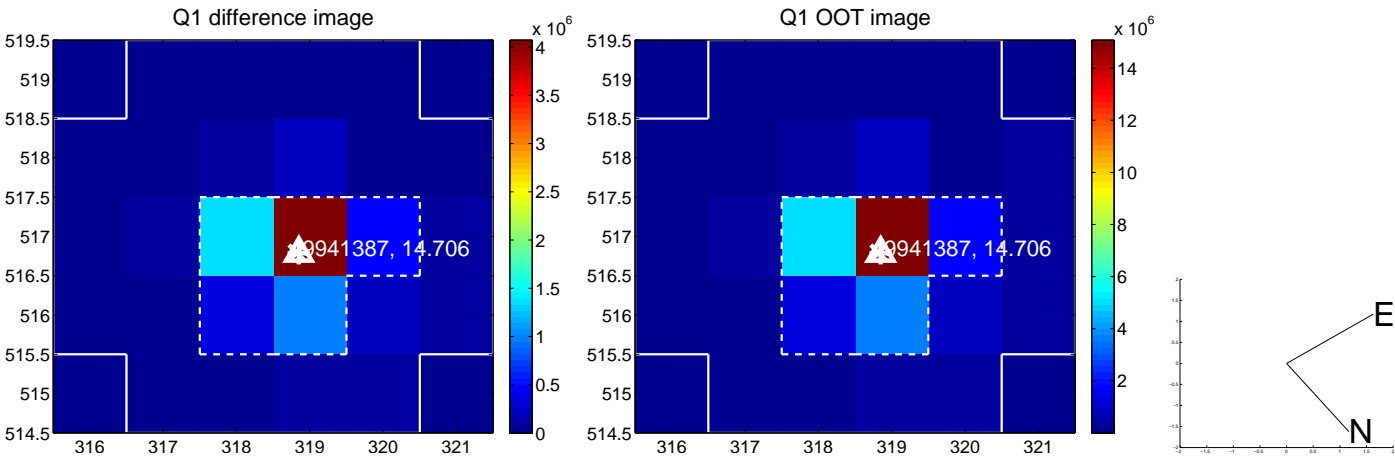
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.001 ± 0.067	0.02	-0.001 ± 0.067	0.000 ± 0.067
PRF-fit source offset from KIC position	0.142 ± 0.067	2.12	0.019 ± 0.067	0.141 ± 0.067
photometric centroid source offset	0.18 ± 0.00	199.56	0.10 ± 0.00	0.16 ± 0.00

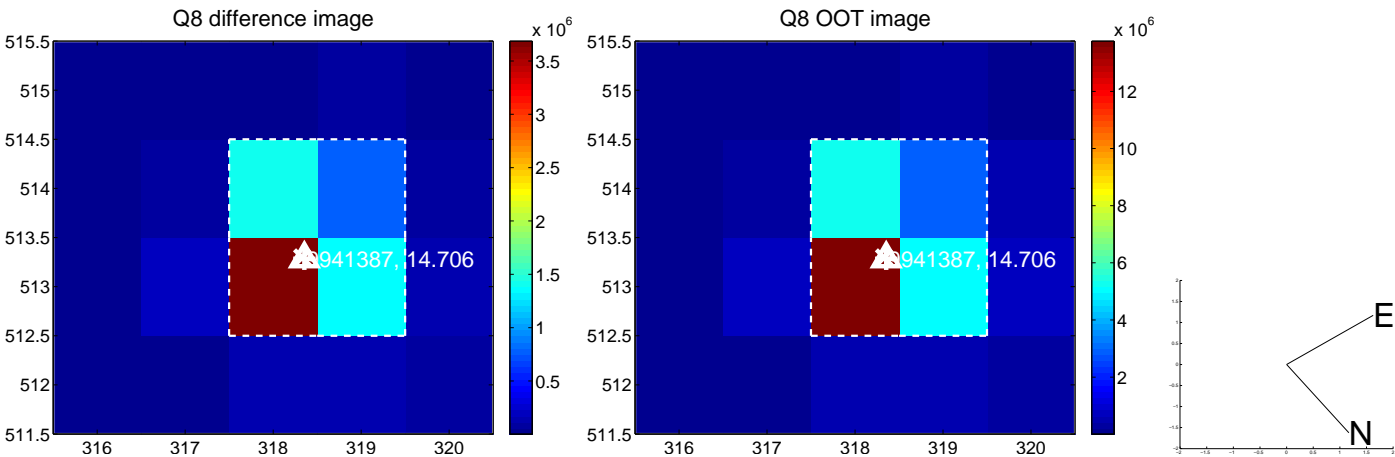
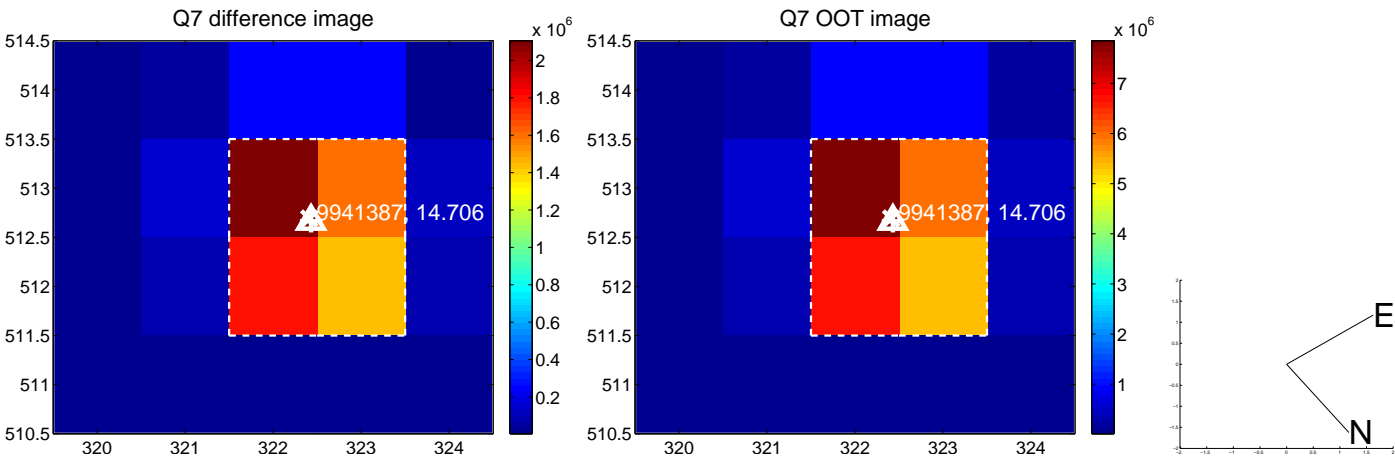
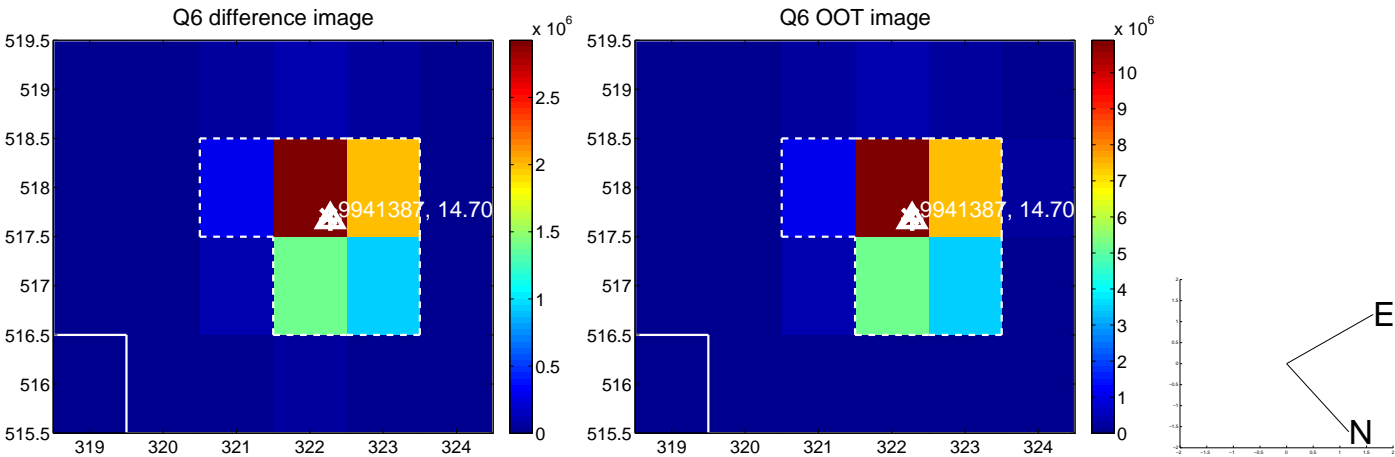
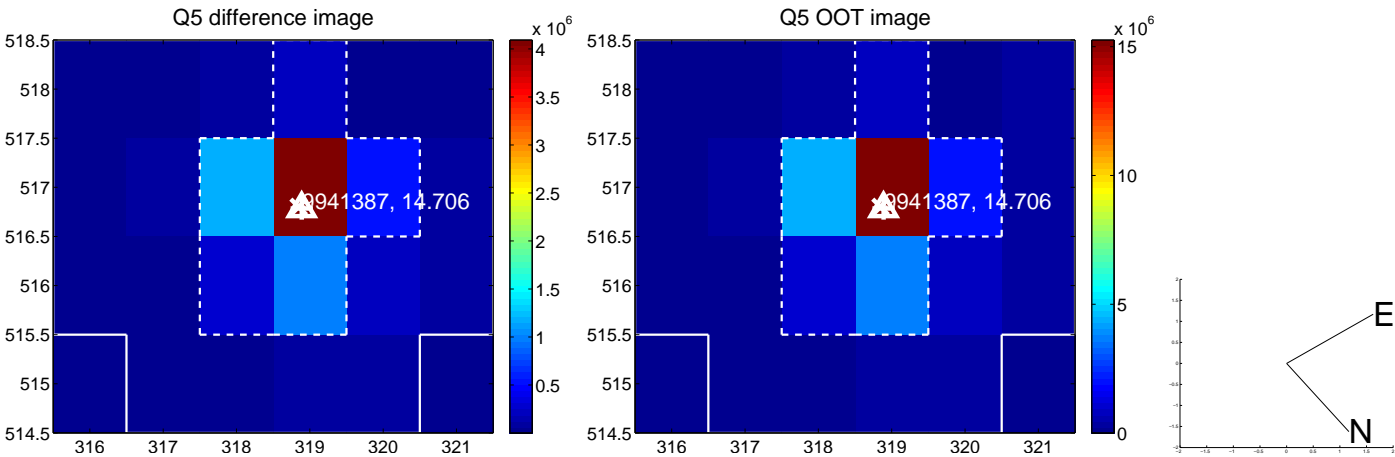


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

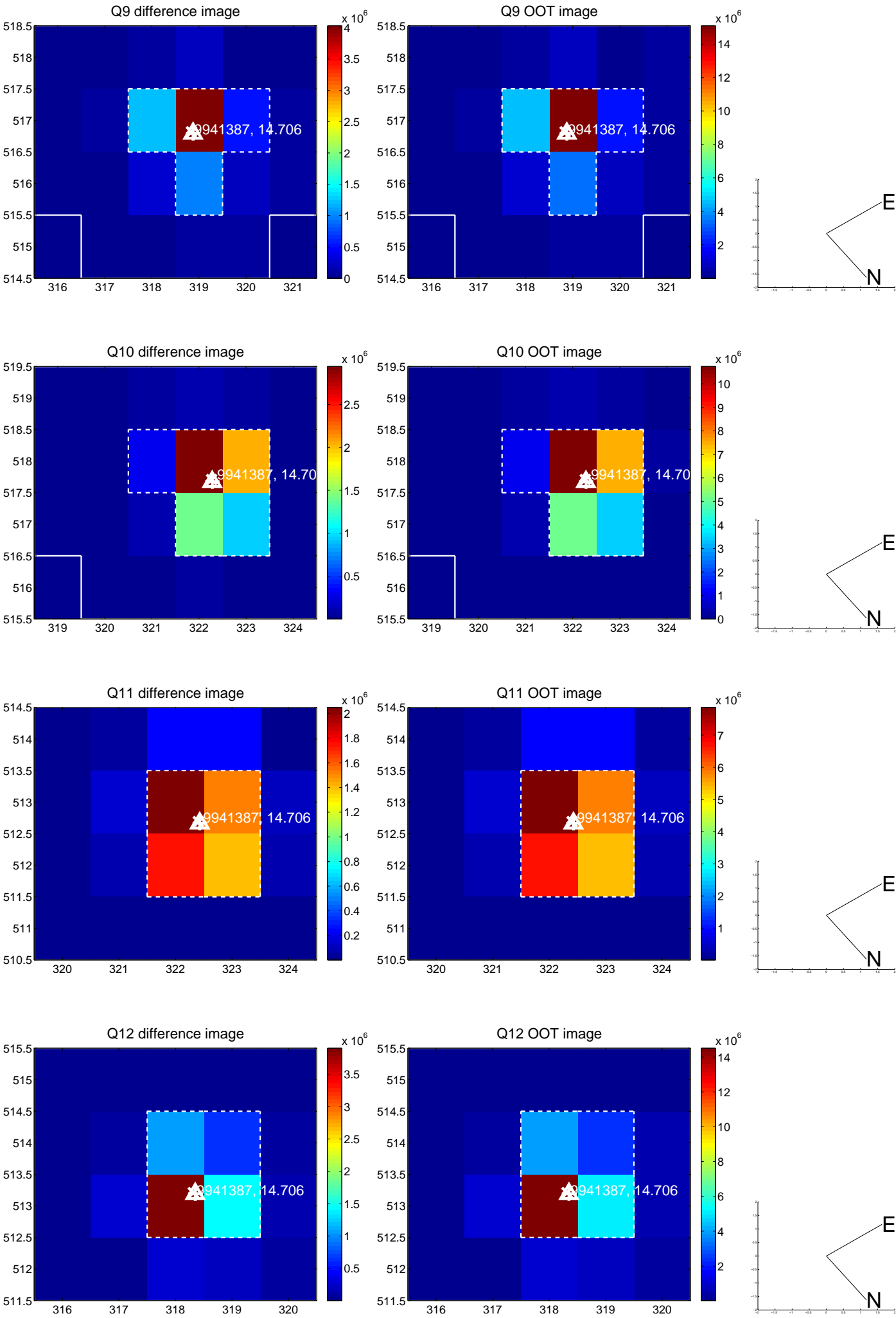
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



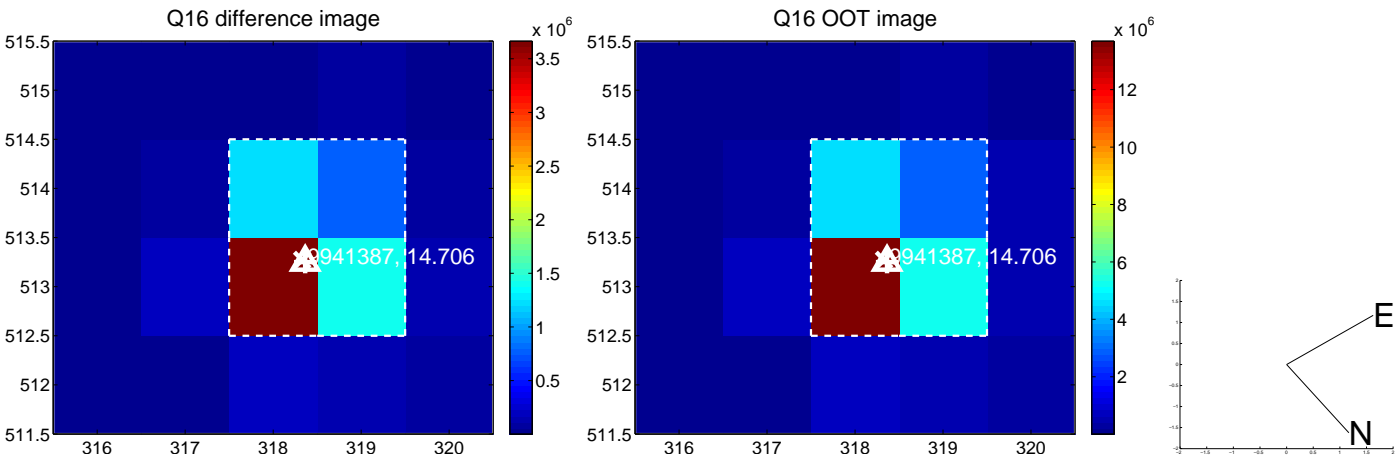
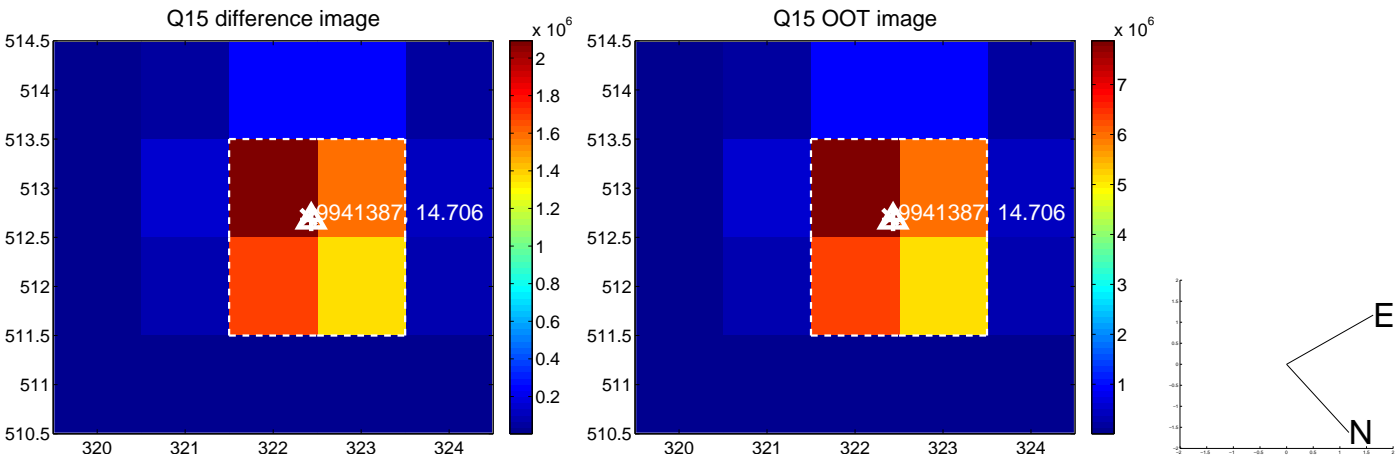
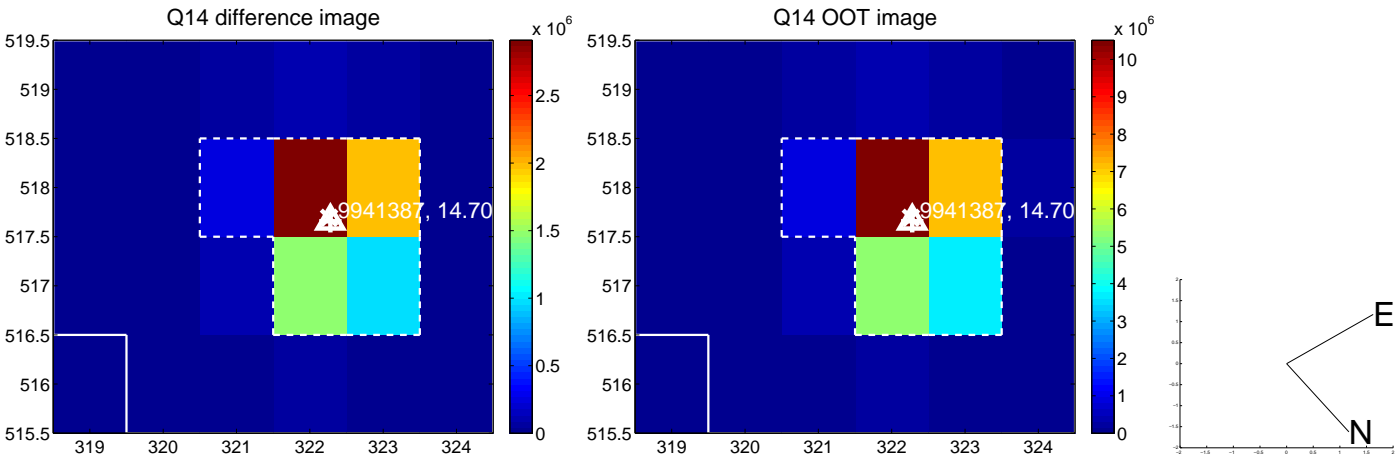
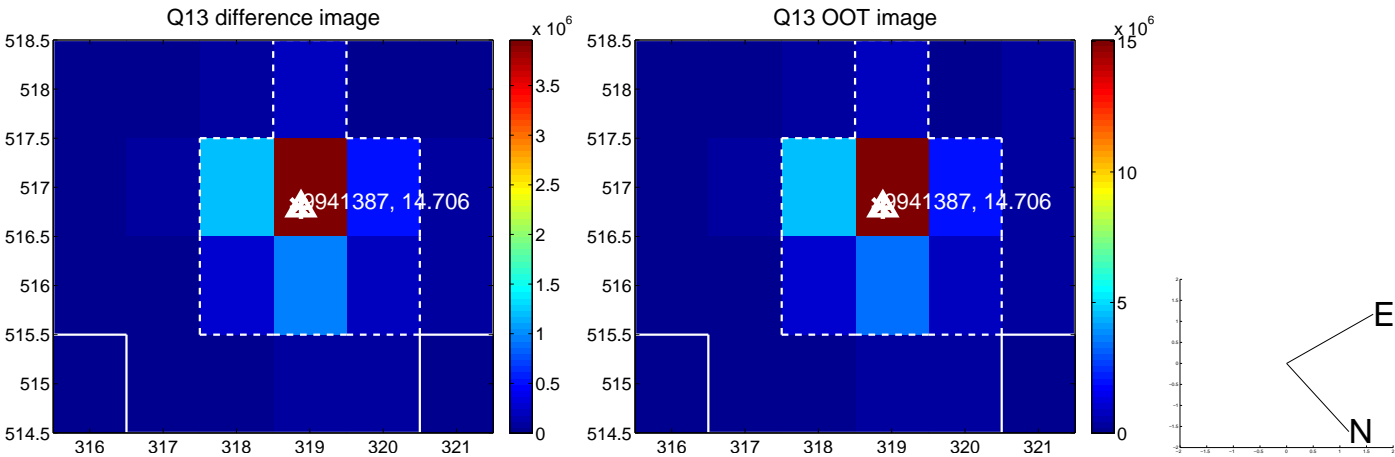
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



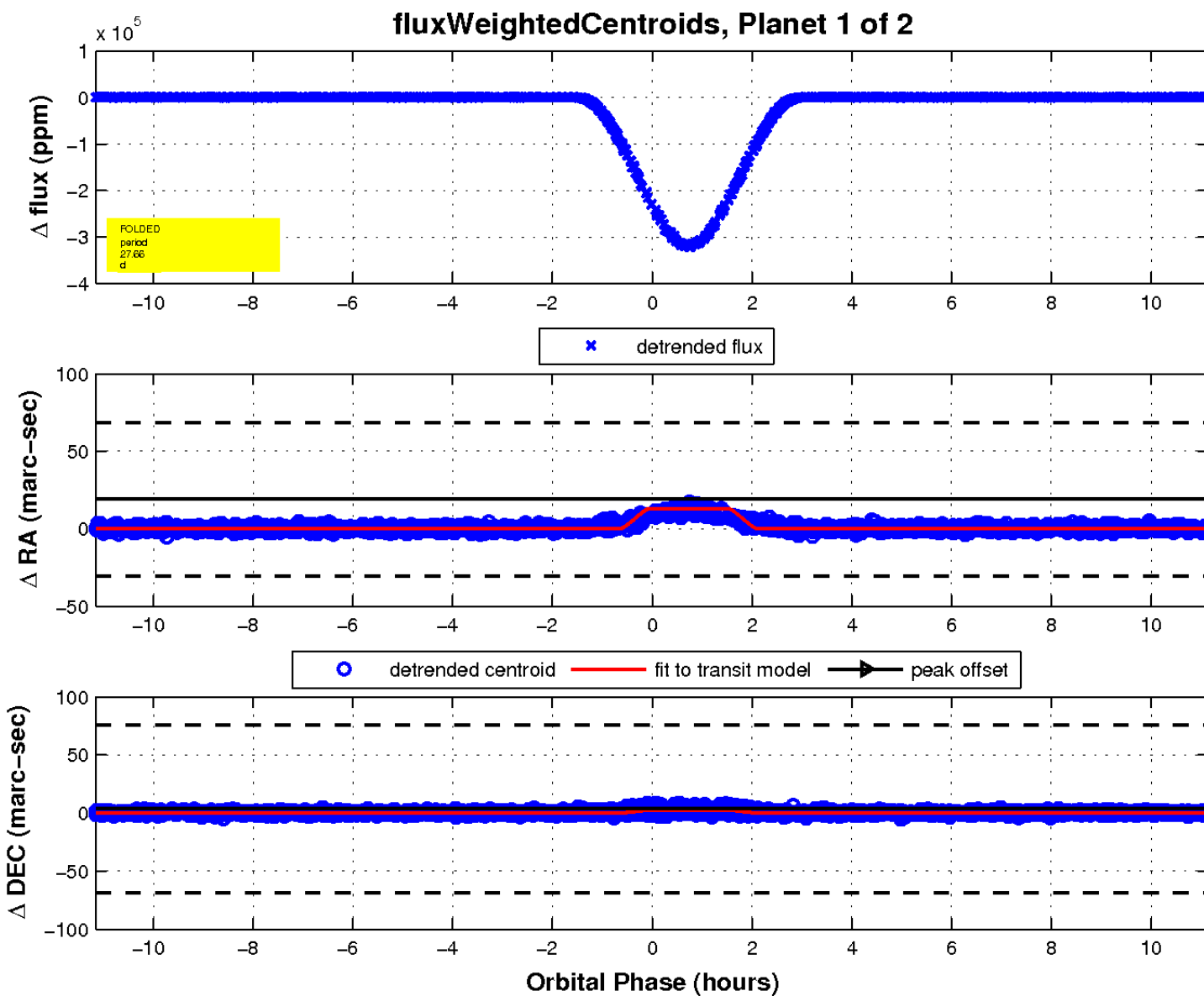
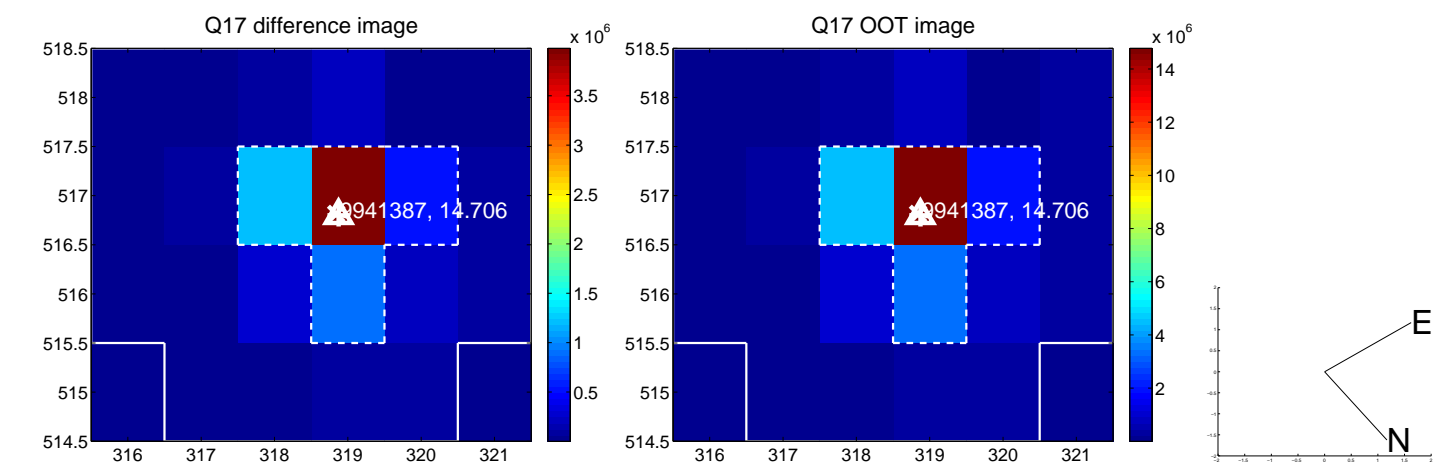
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

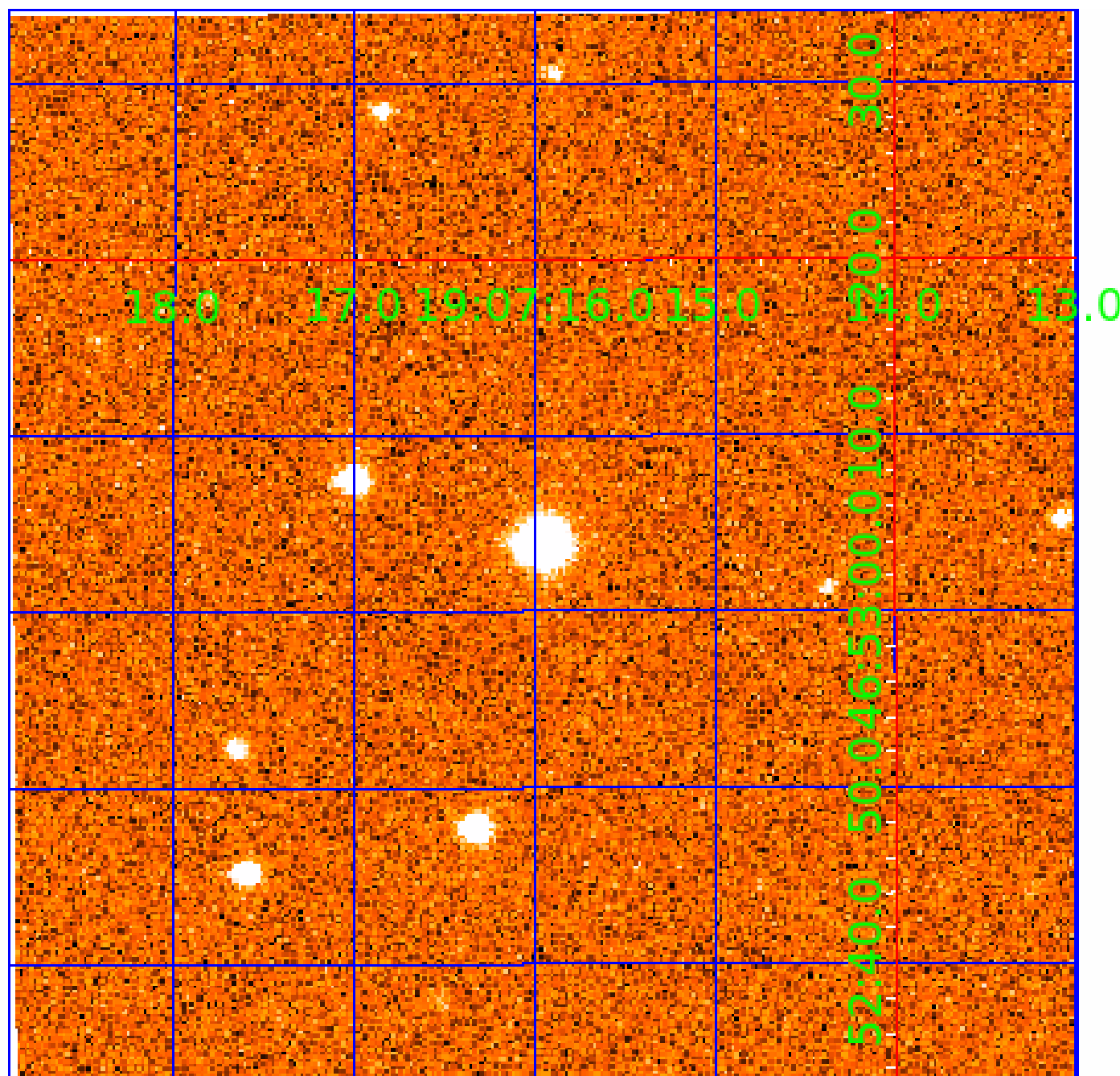


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009941387

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})
009941387-01	OBS	5738.01	27.659562	141.245371	315791.7	2.500	8744.3	-1.0	0.77	5310	41.90	14.69
009941387-02	OBS	No	4.609720	132.084141	245.2	41.364	446.9	18.9	0.77	5310	1.58	160.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009941387-01	OBS	FP	0.00	0	1	0	0	MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
009941387-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_FEW_DIFFS

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

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

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

Ephemeris Match Information For 009941387-02

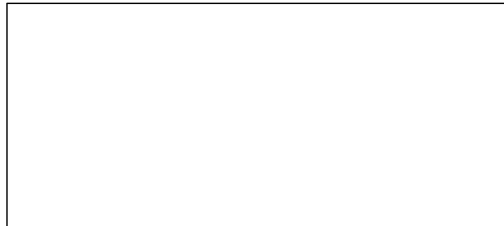
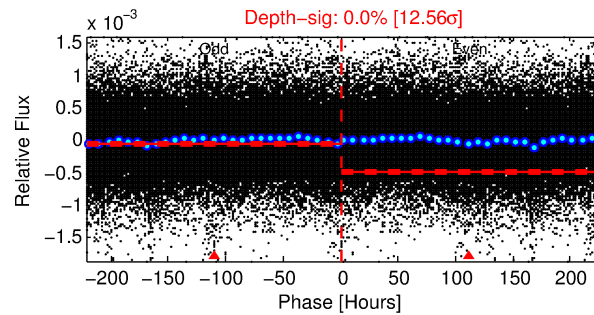
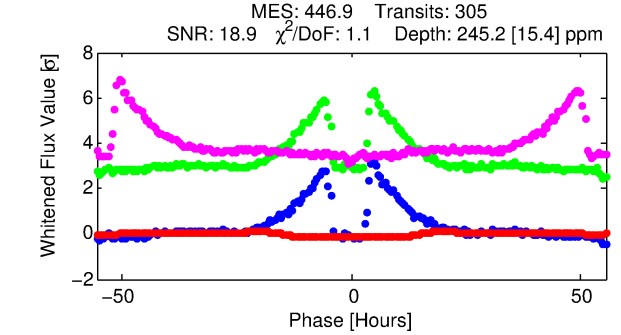
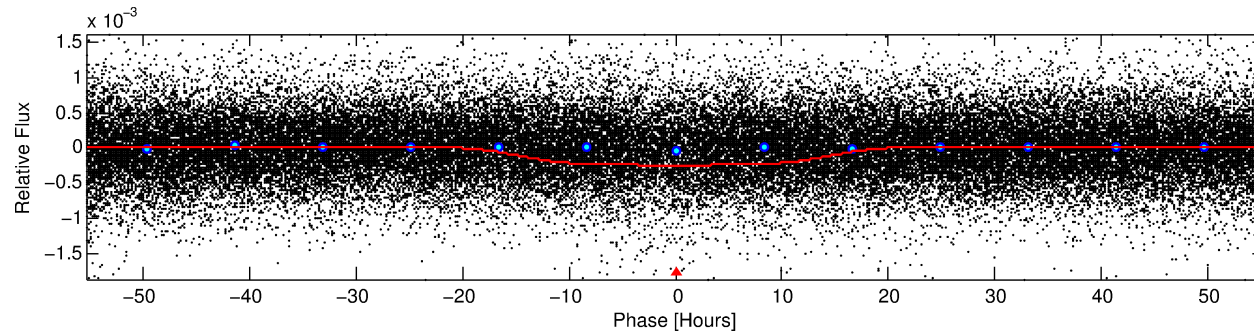
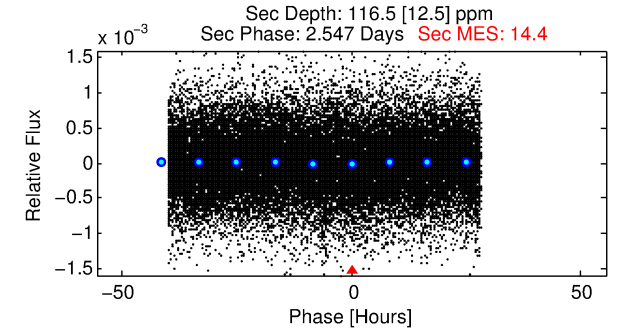
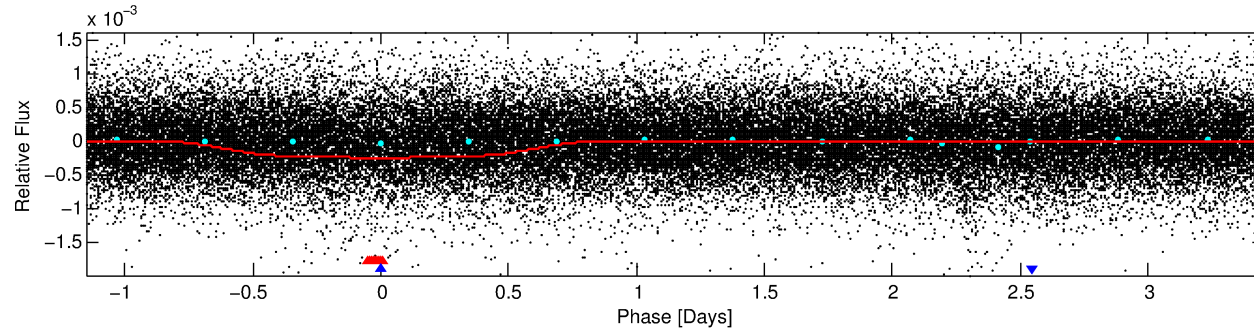
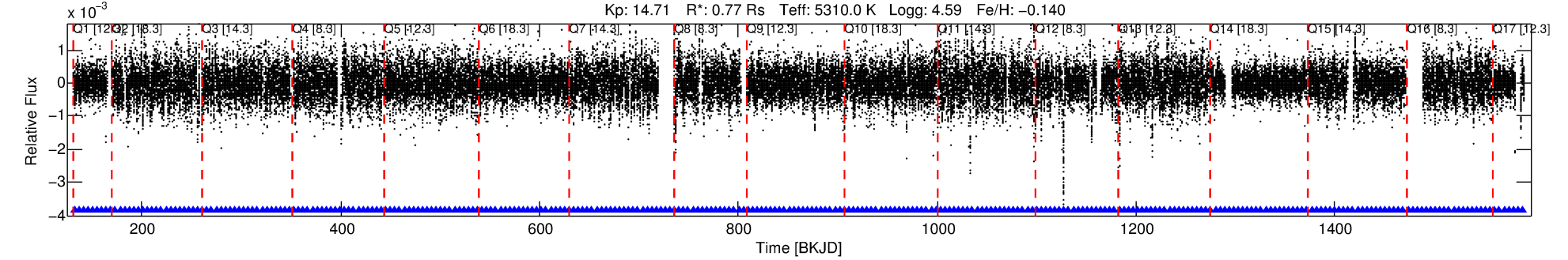
No Significant Match Found

DV One-Page Summary

KIC: 9941387 Candidate: 2 of 2 Period: 4.610 d

KOI: K05738 Corr: No Ephemeris Match

Kp: 14.71 R*: 0.77 Rs Teff: 5310.0 K Logg: 4.59 Fe/H: -0.140



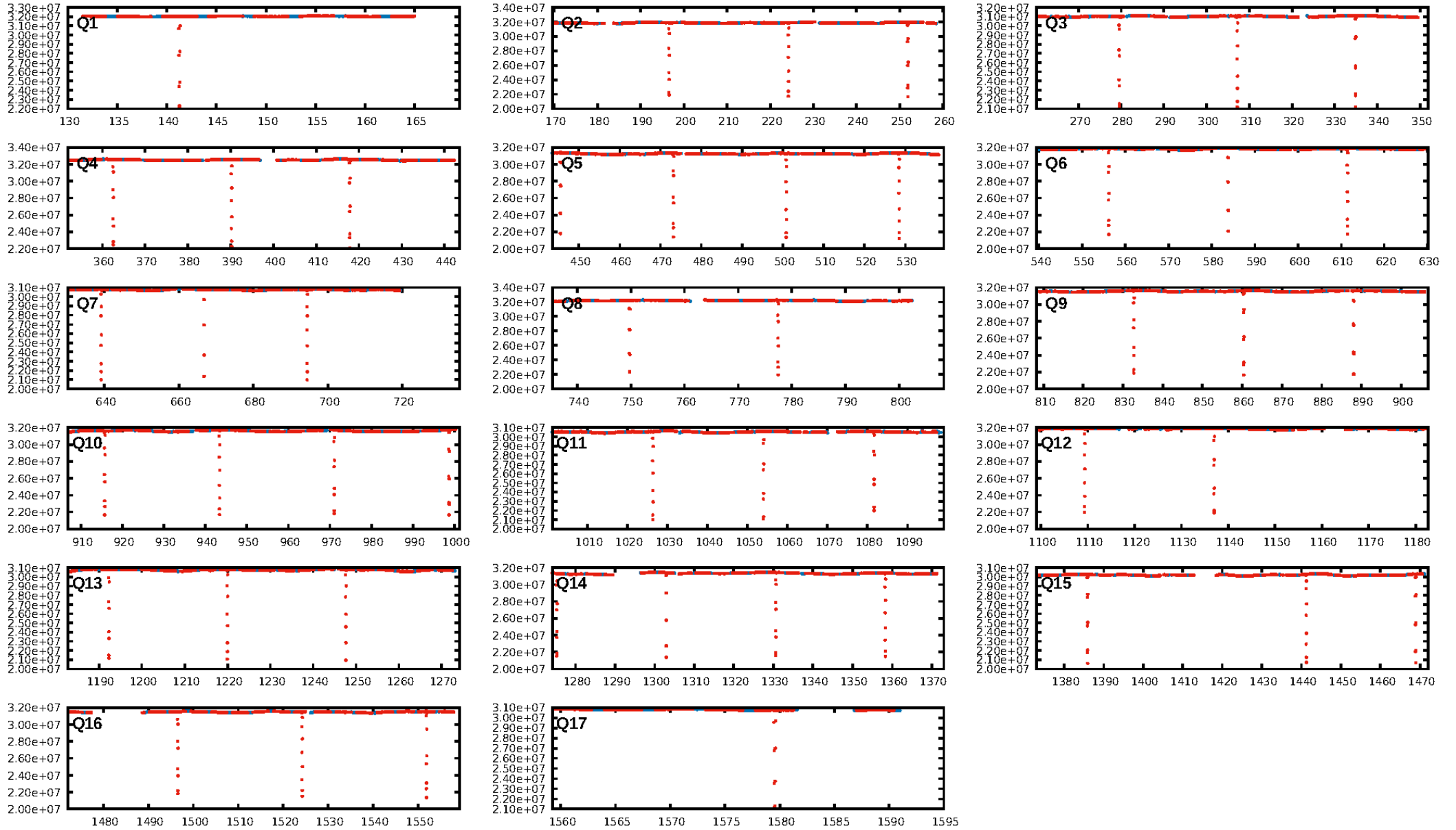
DV Fit Results:

Period = 4.60972 [0.00016] d
Epoch = 132.0841 [0.0306] BKJD
Rp/R* = 0.0188 [0.0007]
a/R* = 1.03 [0.00]
b = 0.96 [0.01]
Seff = 160.18 [37.03]
Teff = 907 [52] K
Rp = 1.58 [0.28] Re
a = 0.0512 [0.0072] AU
Ag = 67.38 [15.92] [4.17 sigma]
Teffp = 4018 [177] K [16.85 sigma]

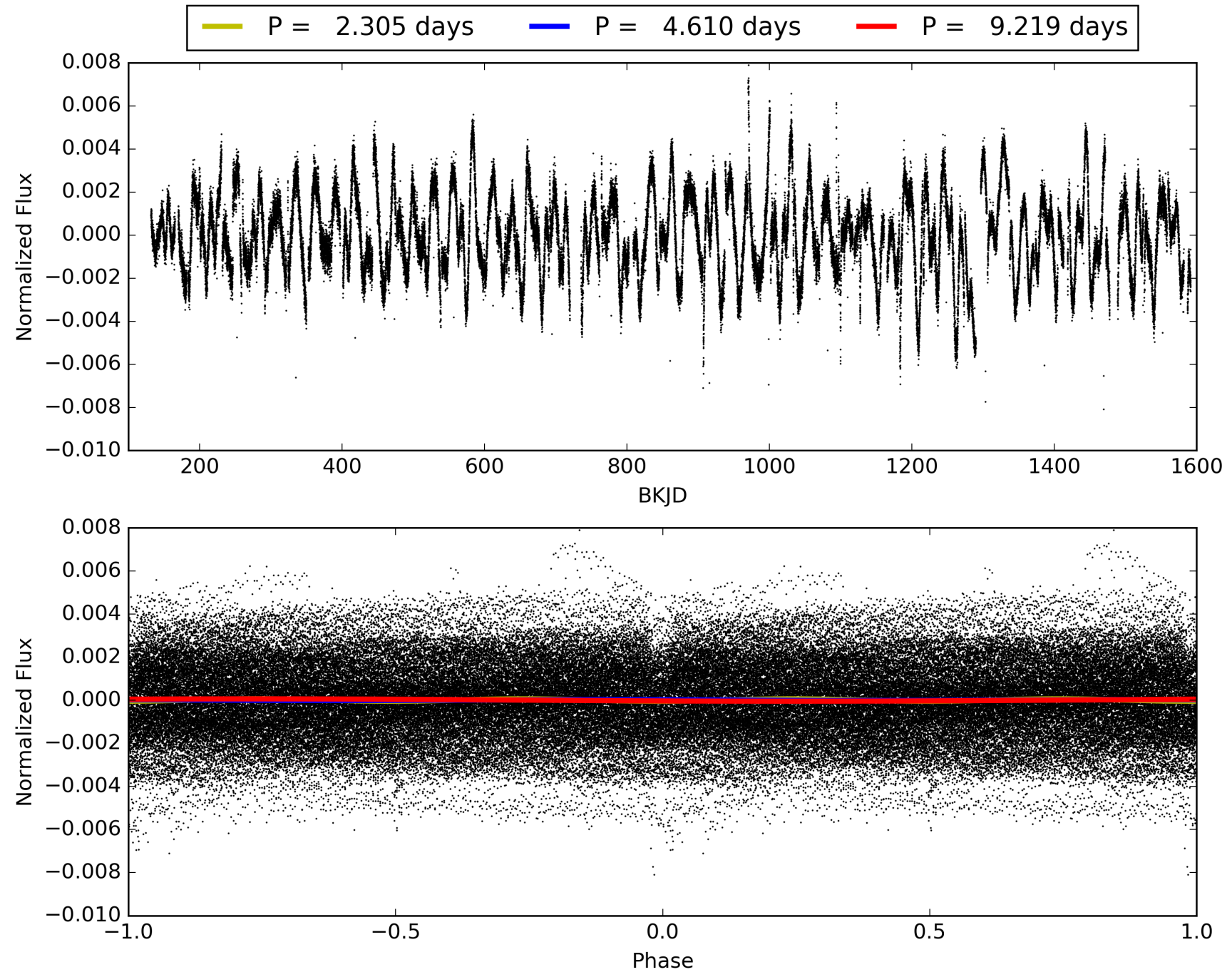
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [13.35 sigma]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [291/291]
GhostDiagnostic-chr: 0.8016
Centroid-sig: 8.6%
Centroid-so: 0.279 arcsec [2.12 sigma]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009941387-02, PDC Light Curves

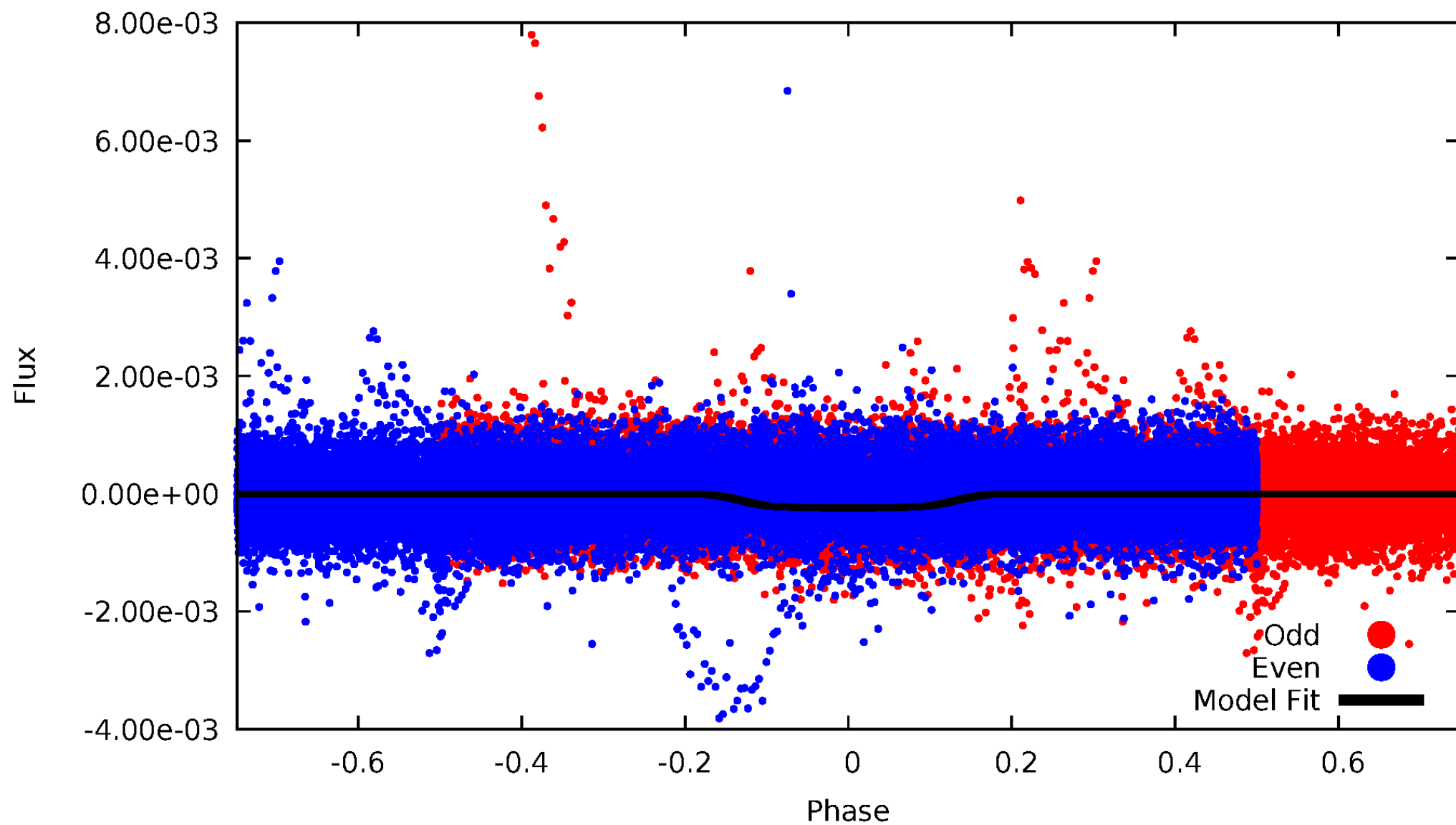


TCE 009941387-02



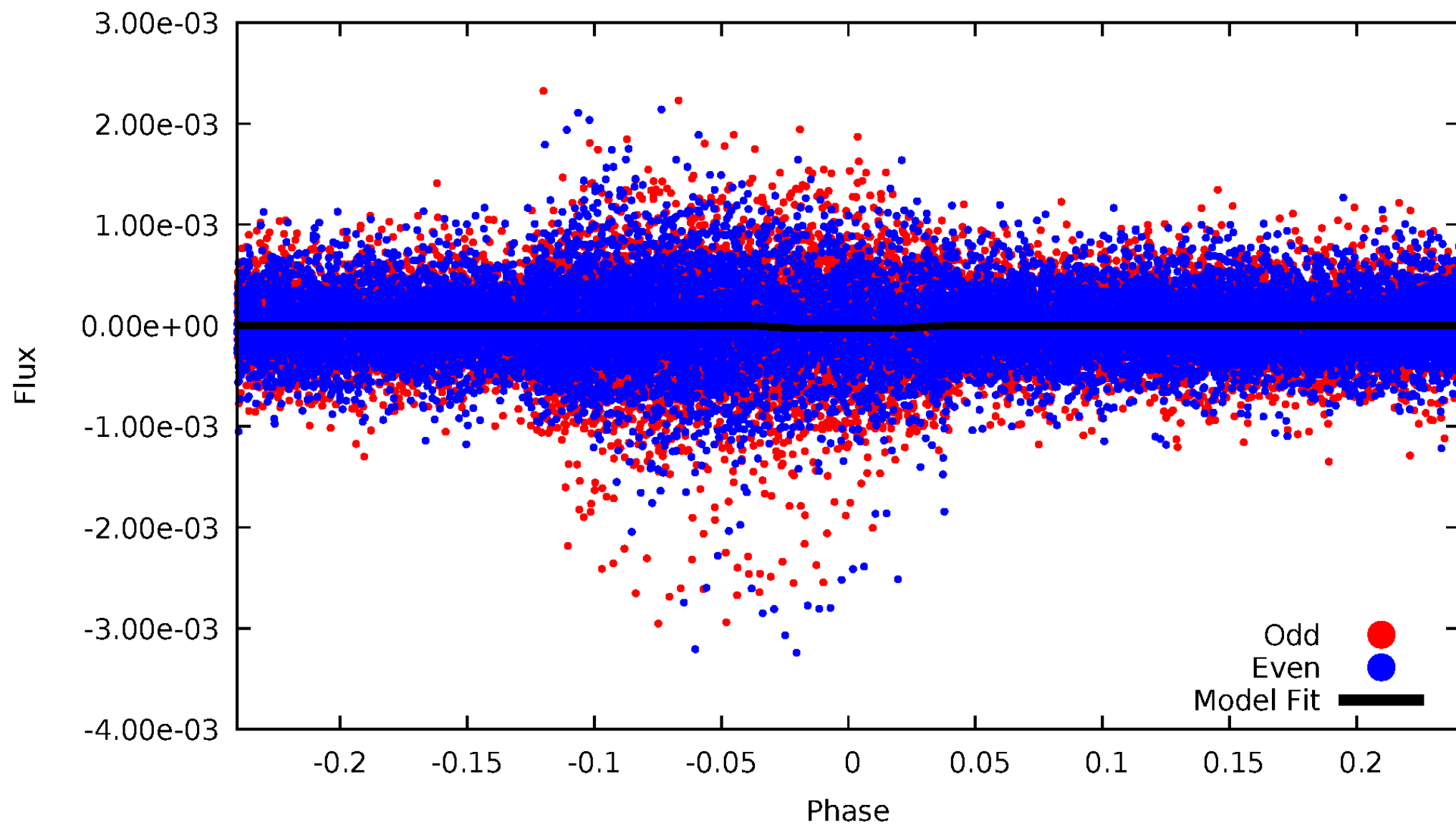
DV Odd/Even

TCE 009941387-02



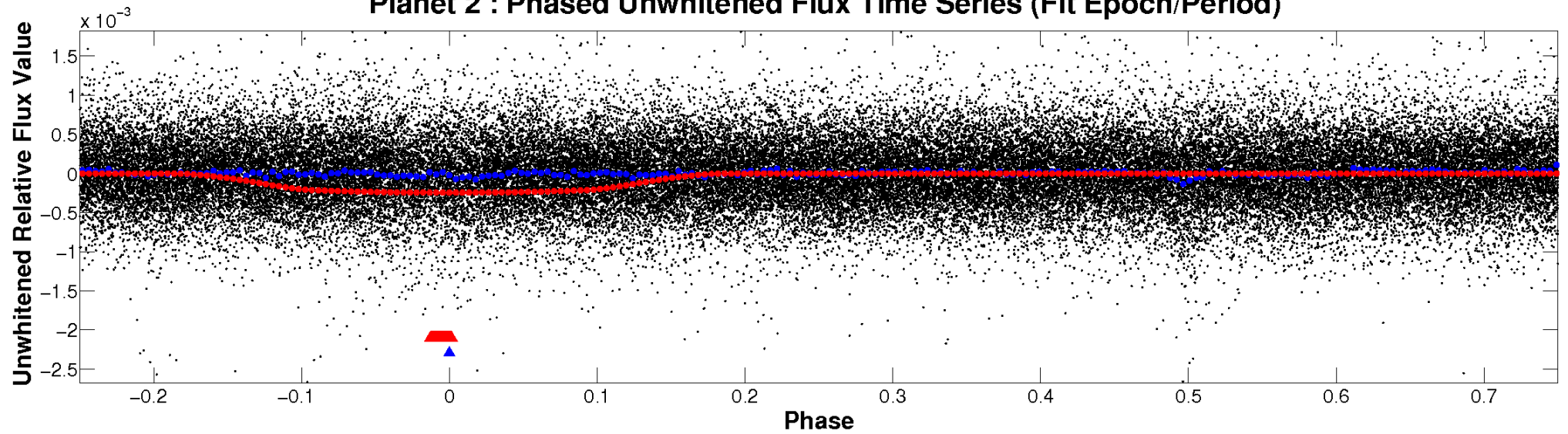
ALT Odd/Even

TCE 009941387-02

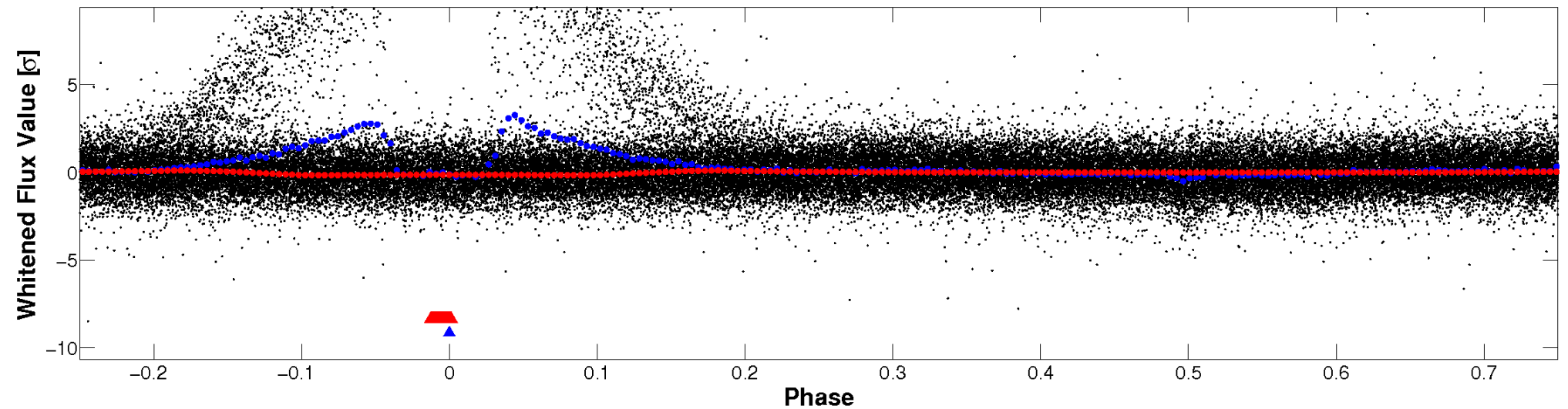


Non-Whitened Vs. Whitened Light Curve

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

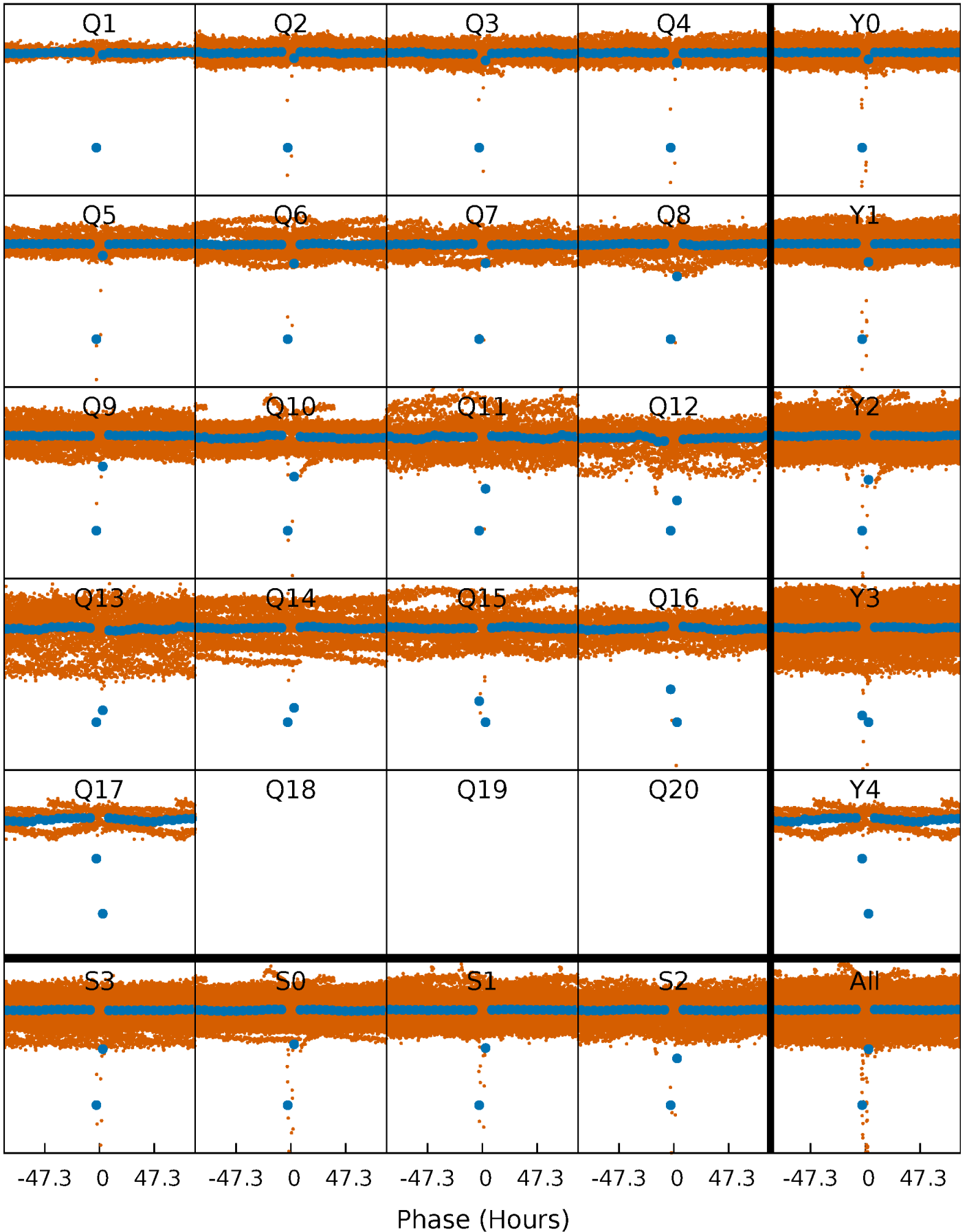


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



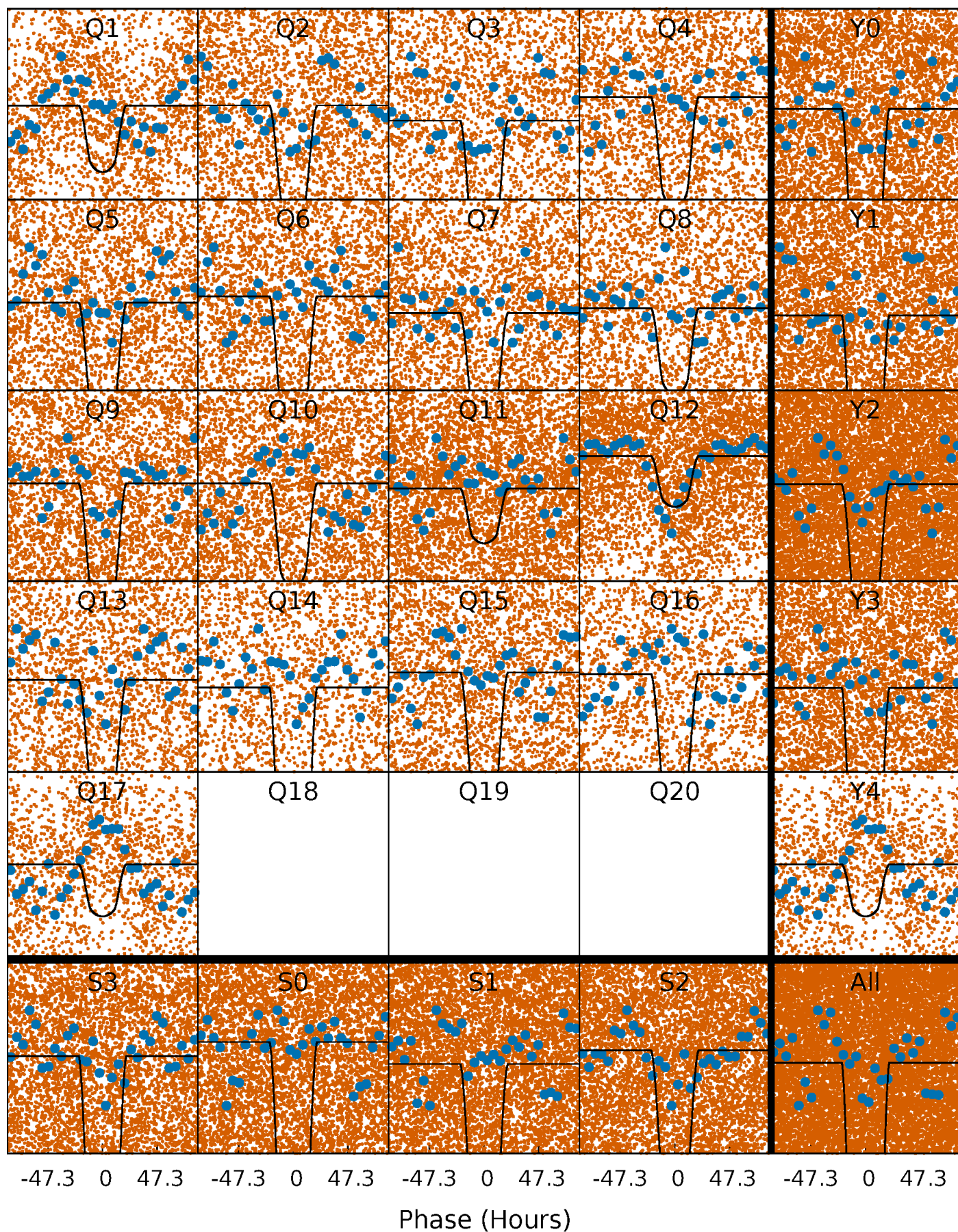
PDC Quarter-Phased Transit Curves

TCE 009941387-02 $P = 4.609720$ Days $T_0 = 132.084141$ (BKJD)



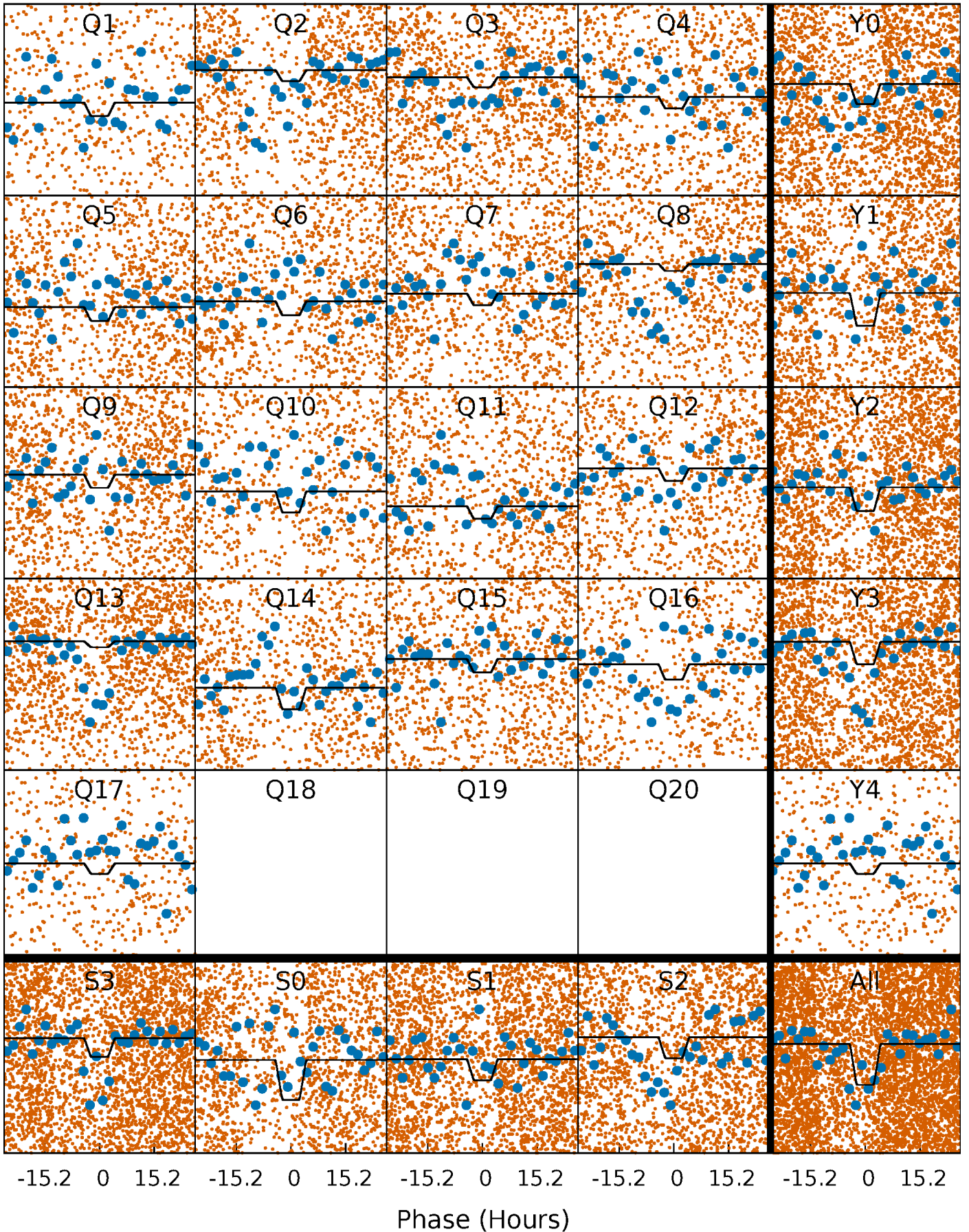
DV Quarter-Phased Transit Curves

TCE 009941387-02 P= 4.609720 Days $T_0=132.084141$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

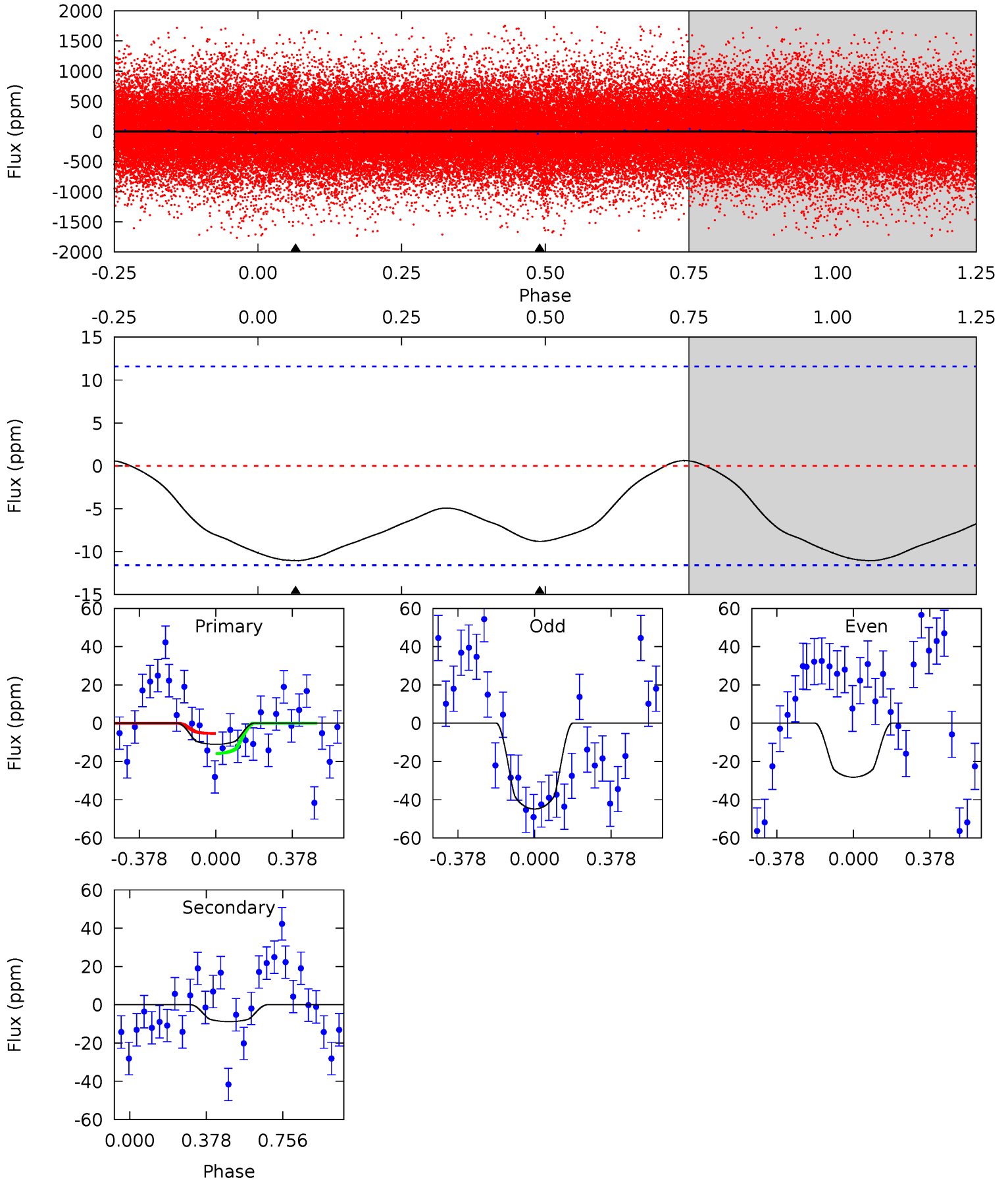
TCE 009941387-02 P= 4.609933 Days $T_0=132.031979$ (BKJD)



DV Model-Shift Uniqueness Test

009941387-02, P = 4.609720 Days, E = 127.474421 Days

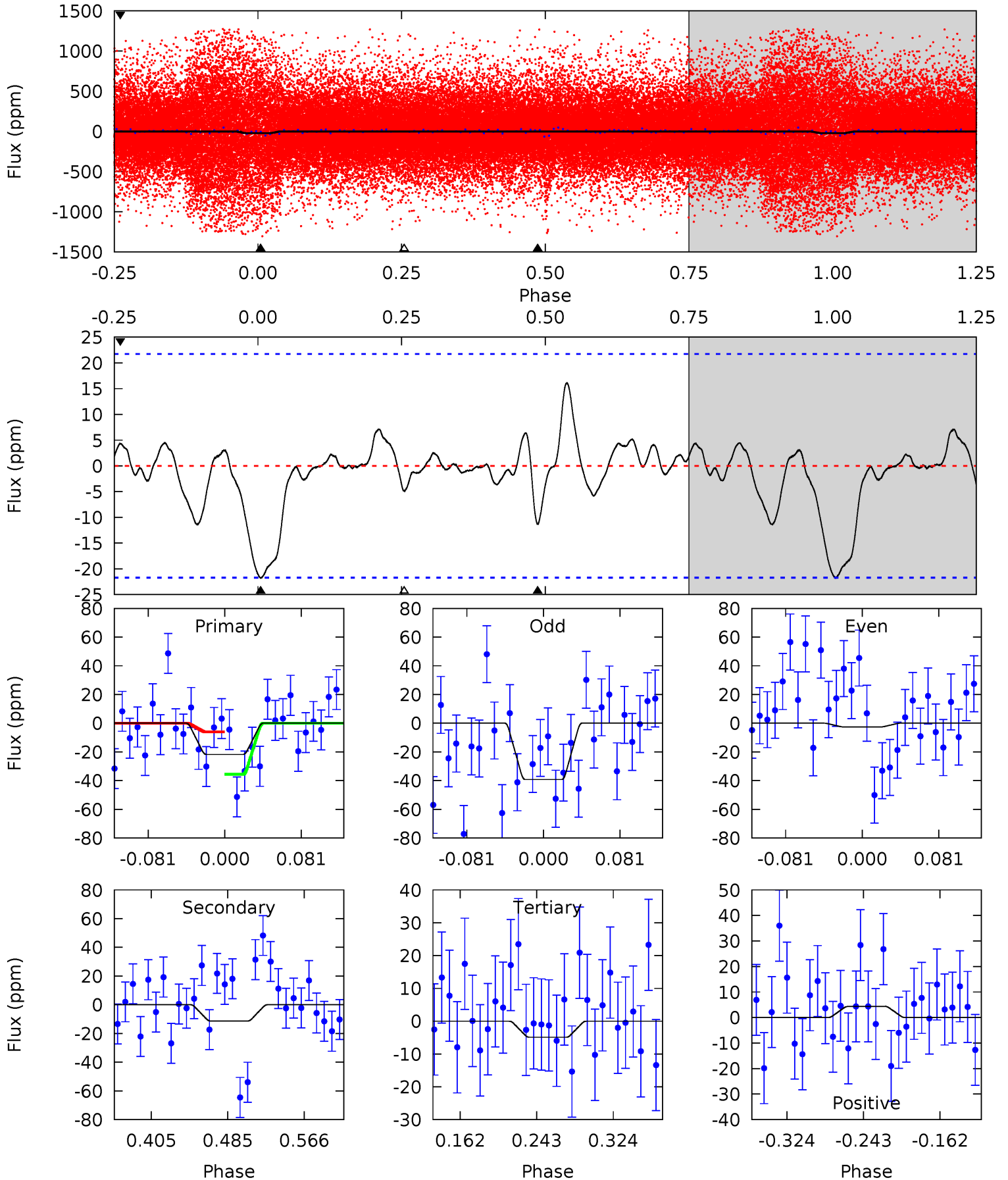
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.08	3.25	0	0	4.28	0.88	0.30	4.08	4.08	3.25	3.25	2.98	-5.38	0.05	1.79



Alt Model-Shift Uniqueness Test

009941387-02, P = 4.609933 Days, E = 127.422046 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.62	2.41	1.04	0.92	4.61	1.75	0.71	3.58	3.70	1.37	1.49	3.90	4.46	0.42	3.18



Stellar Parameters For KIC 009941387

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5310^{+159}_{-143}	$4.593^{+0.035}_{-0.105}$	$-0.140^{+0.300}_{-0.300}$	$0.768^{+0.132}_{-0.066}$	$0.849^{+0.071}_{-0.094}$	$2.634^{+0.470}_{-0.837}$
	+3%/-3%	+1%/-2%	+214%/-214%	+17%/-9%	+8%/-11%	+18%/-32%
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 009941387-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-9 ± 3	$1.61^{+0.16}_{-0.11}$	1288^{+60}_{-47}	2801^{+122}_{-144}	$4.803^{+1.610}_{-1.570}$
Alt.	-11 ± 5	$0.45^{+0.07}_{-0.06}$	1286^{+54}_{-47}	4396^{+412}_{-473}	78^{+47}_{-35}

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

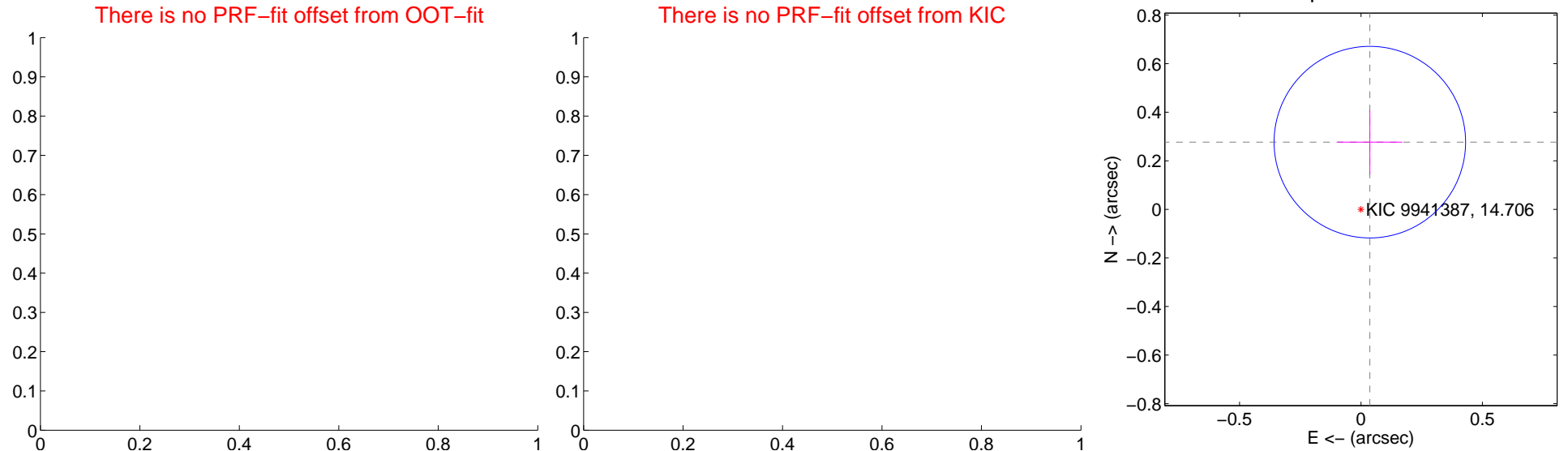
DV Centroid Data

Supplemental centroid analysis for 009941387-02. Kepler magnitude: 14.71. Transit SNR 18.92

There are 0 quarters with good PRF difference image offsets

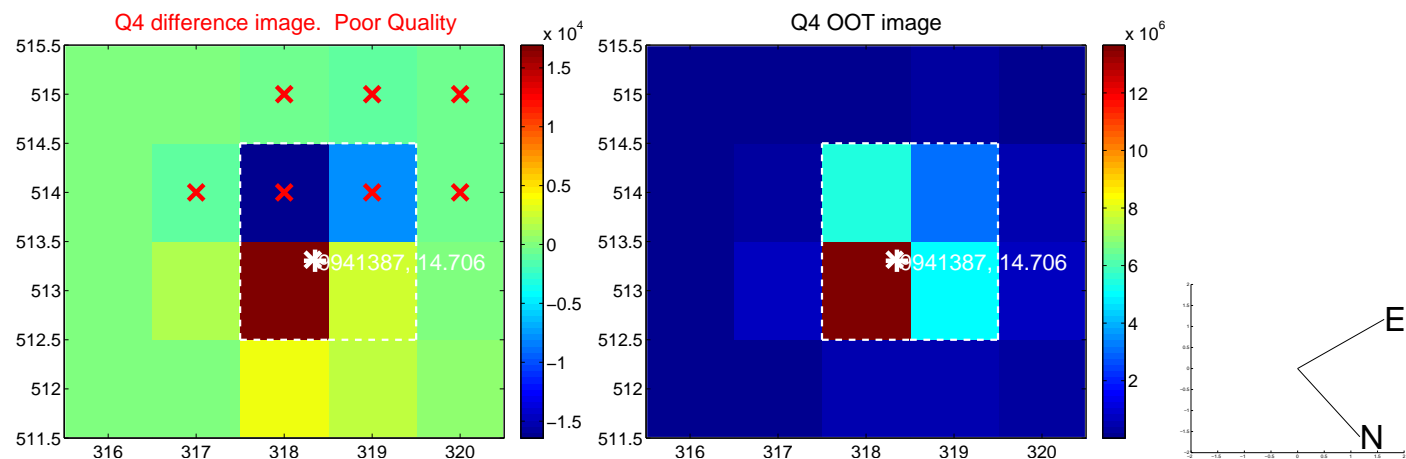
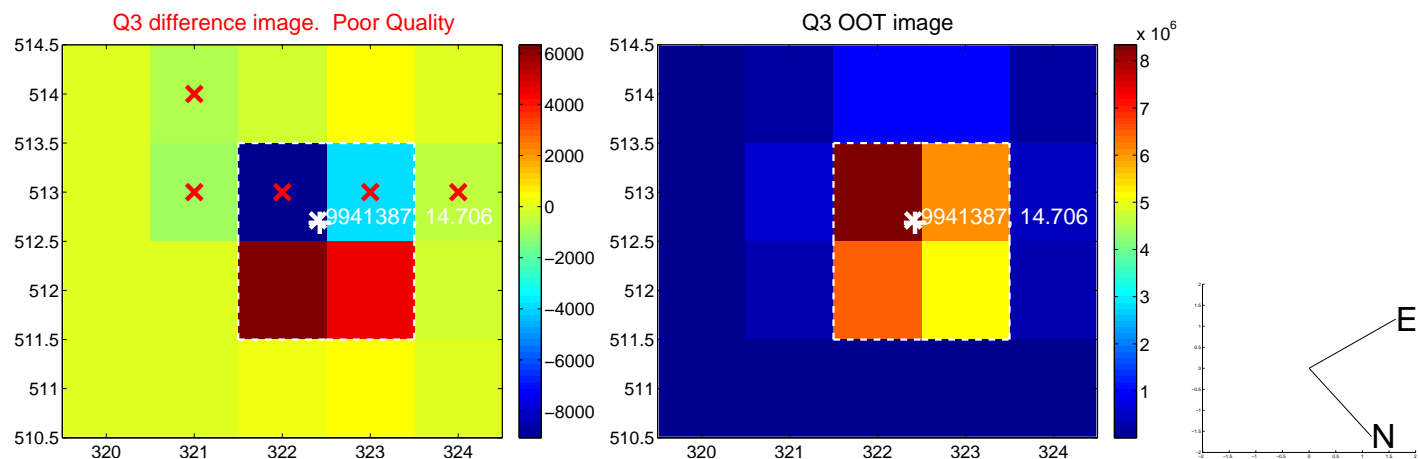
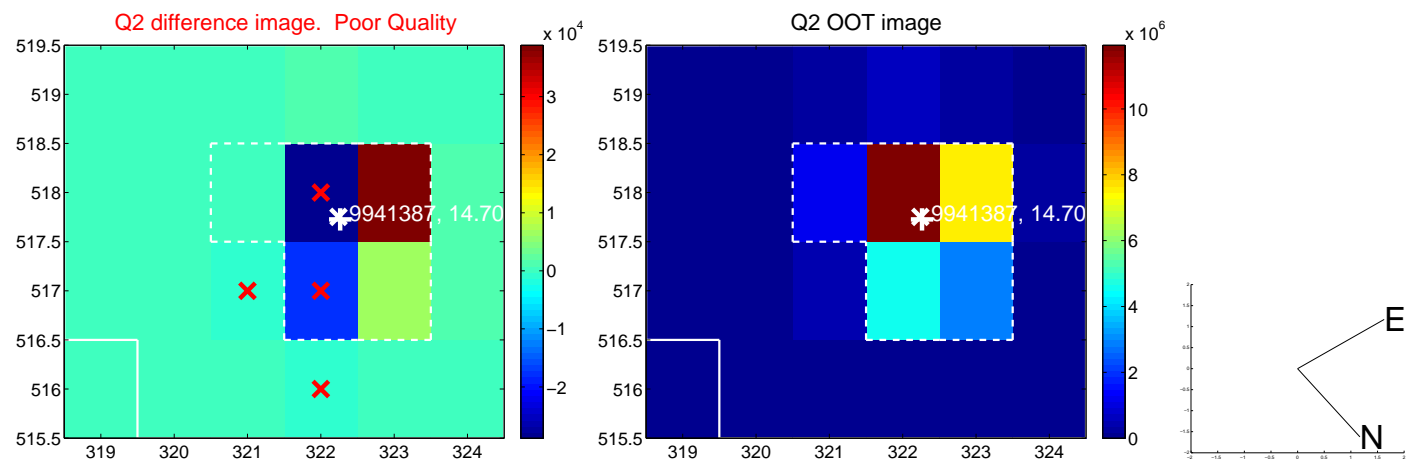
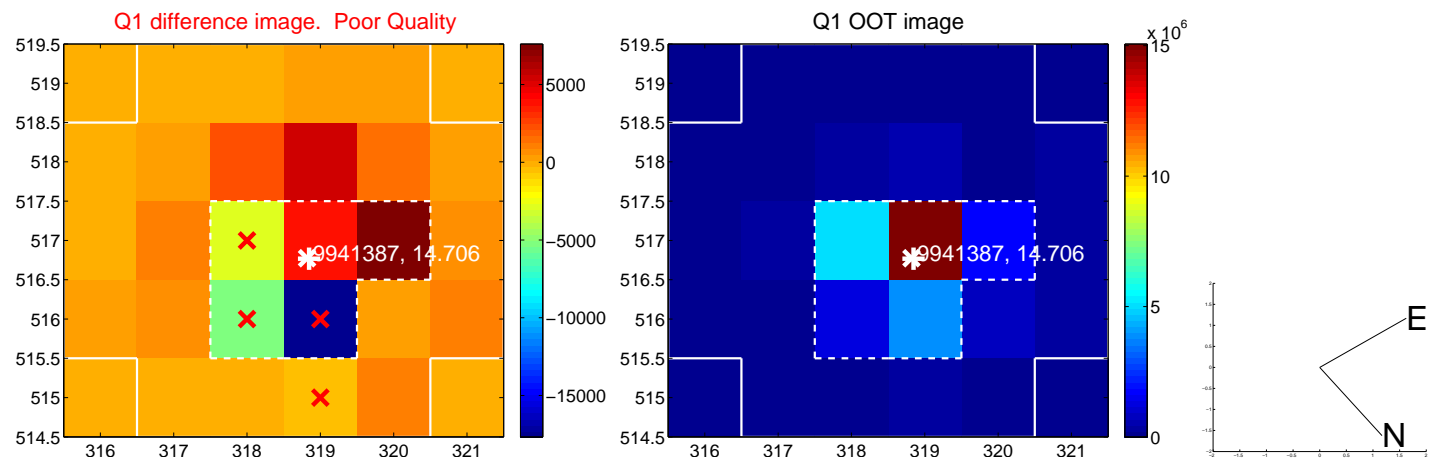
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	0.28 ± 0.13	2.12	-0.04 ± 0.13	0.28 ± 0.13

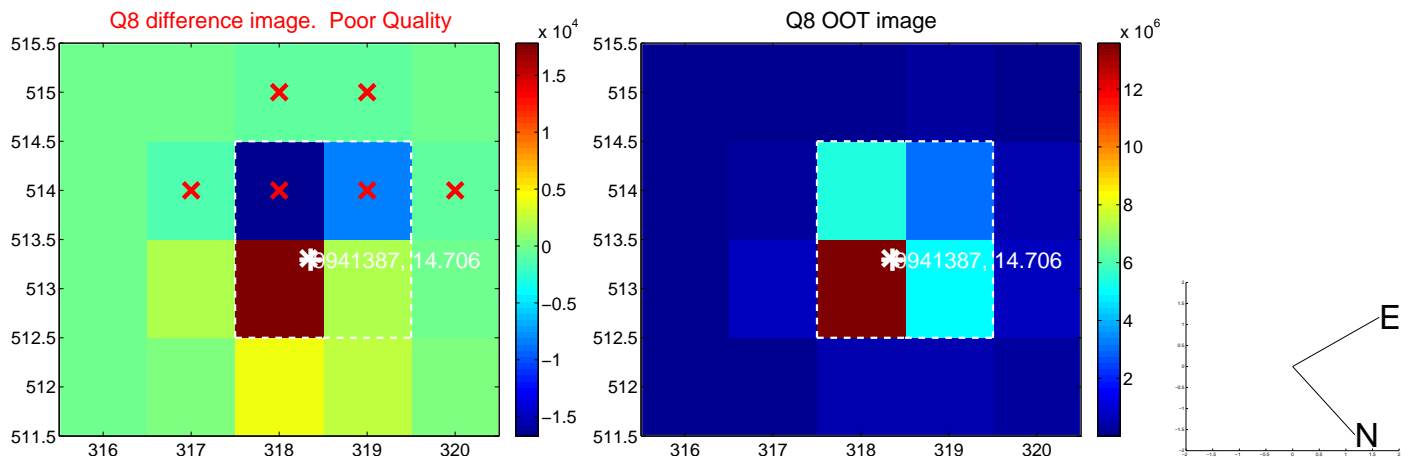
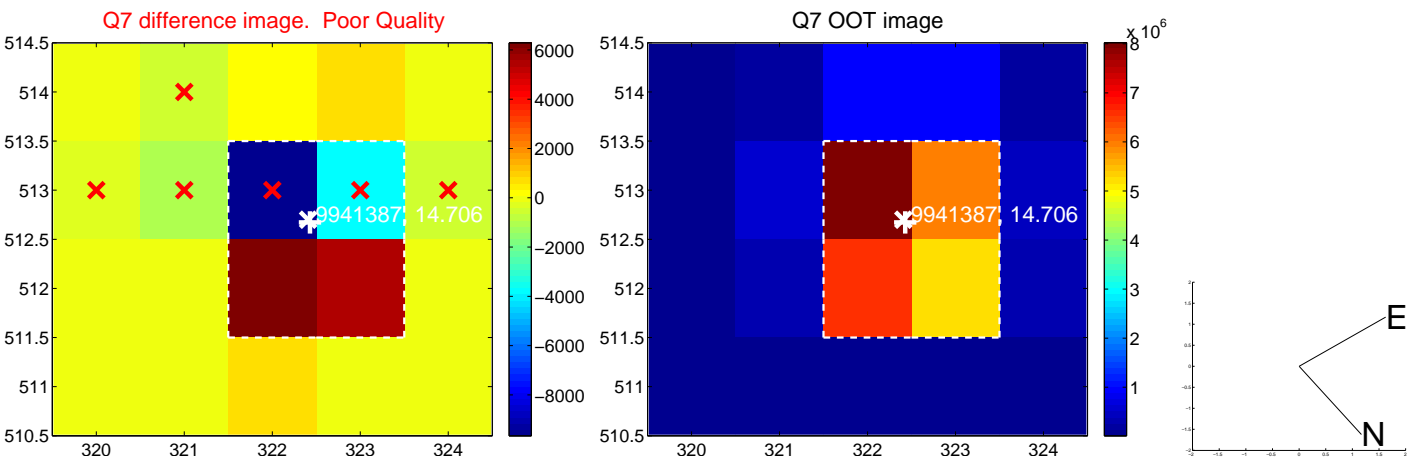
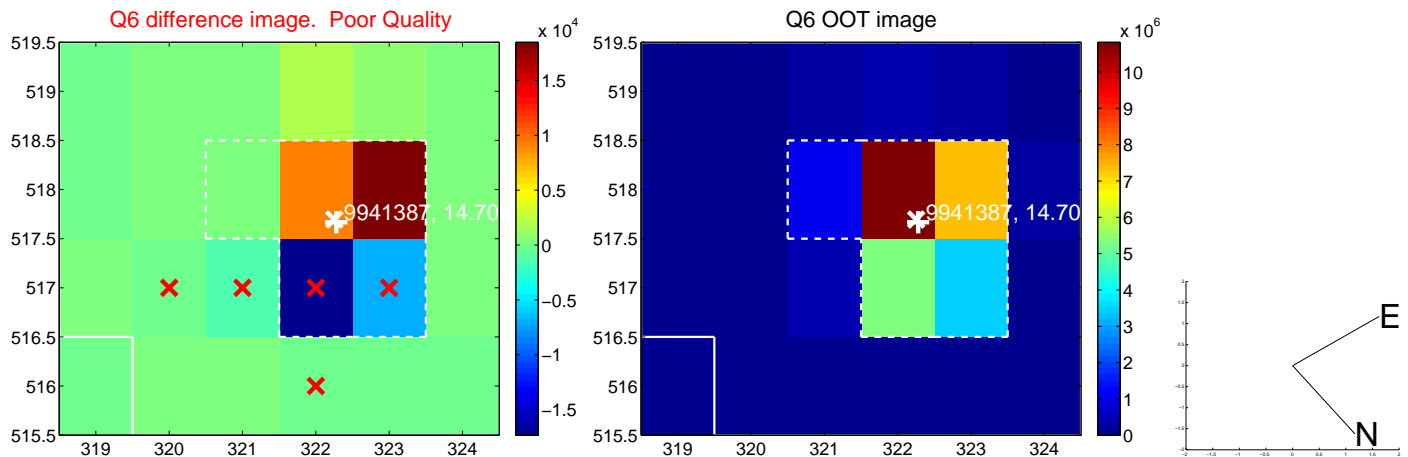
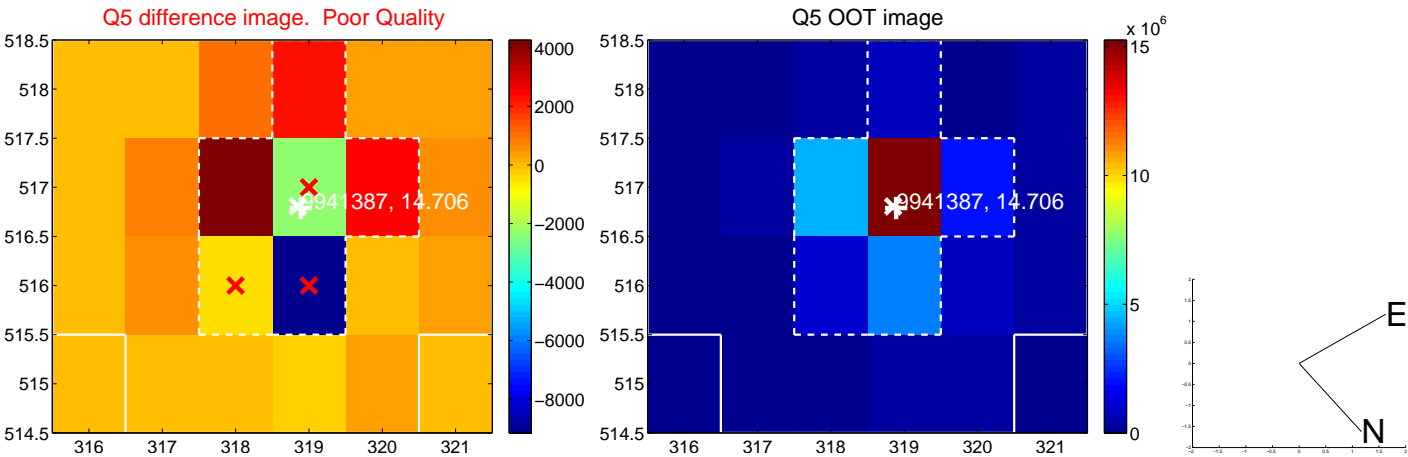


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

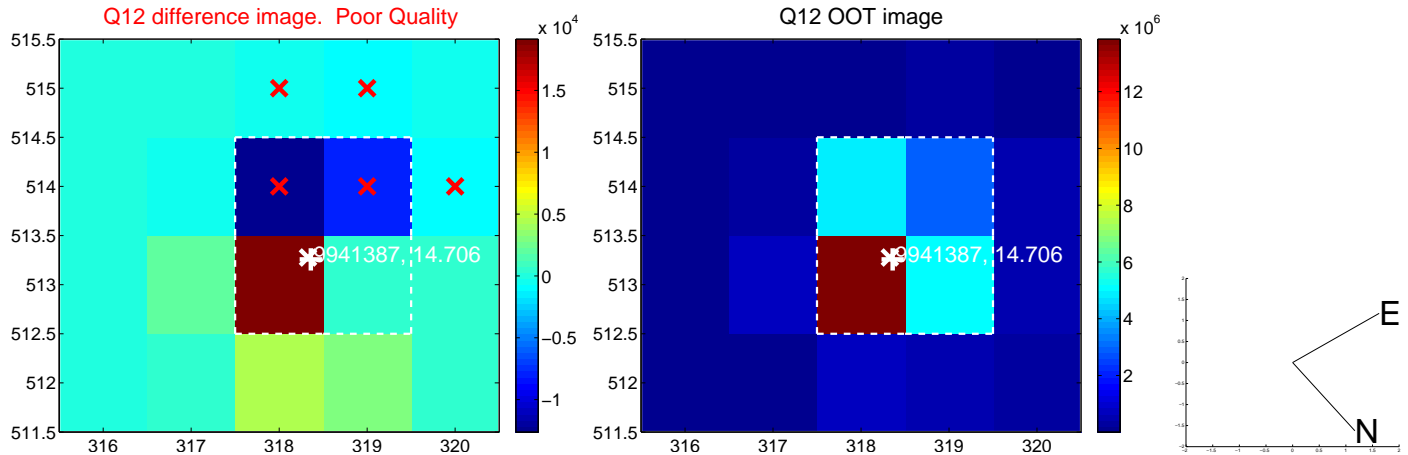
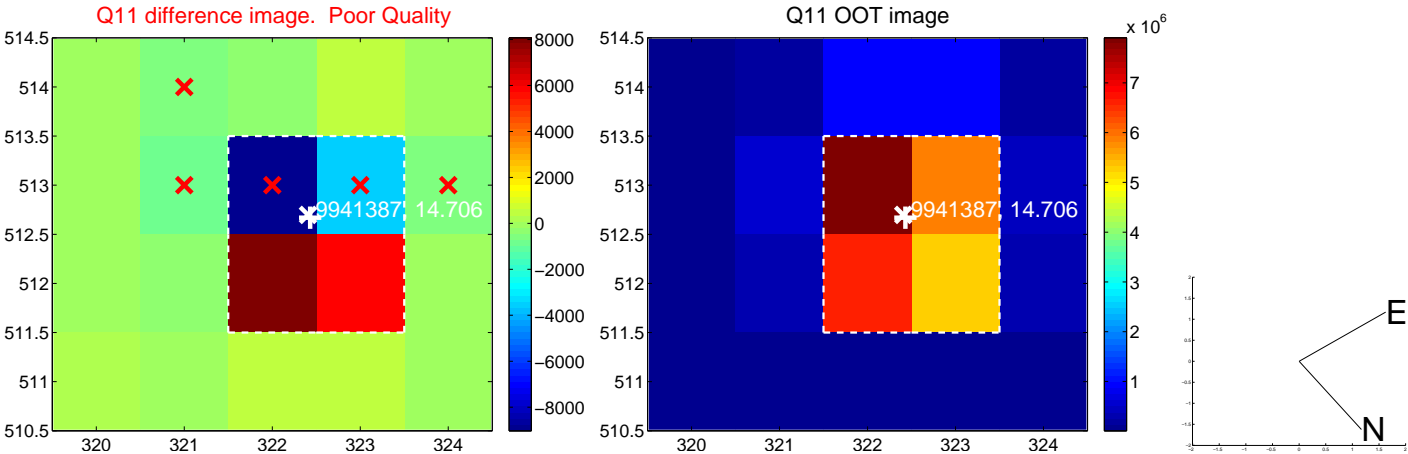
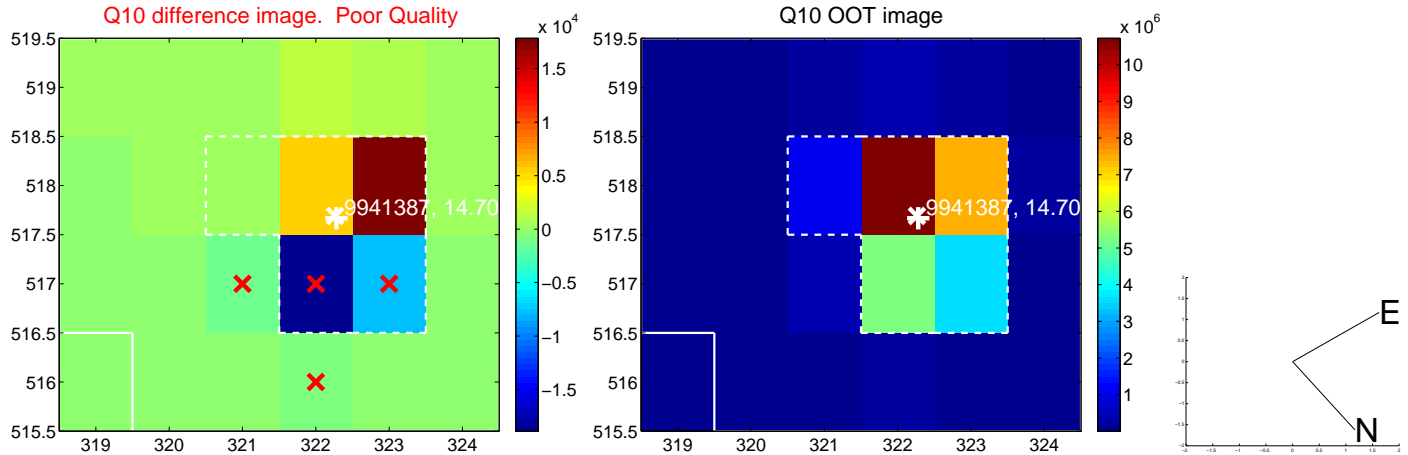
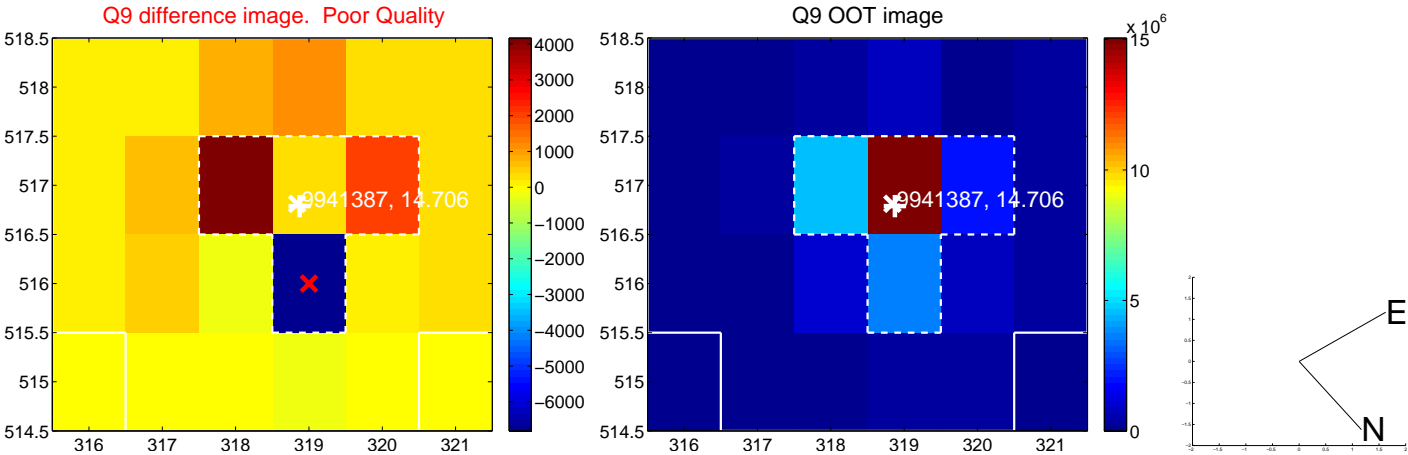
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



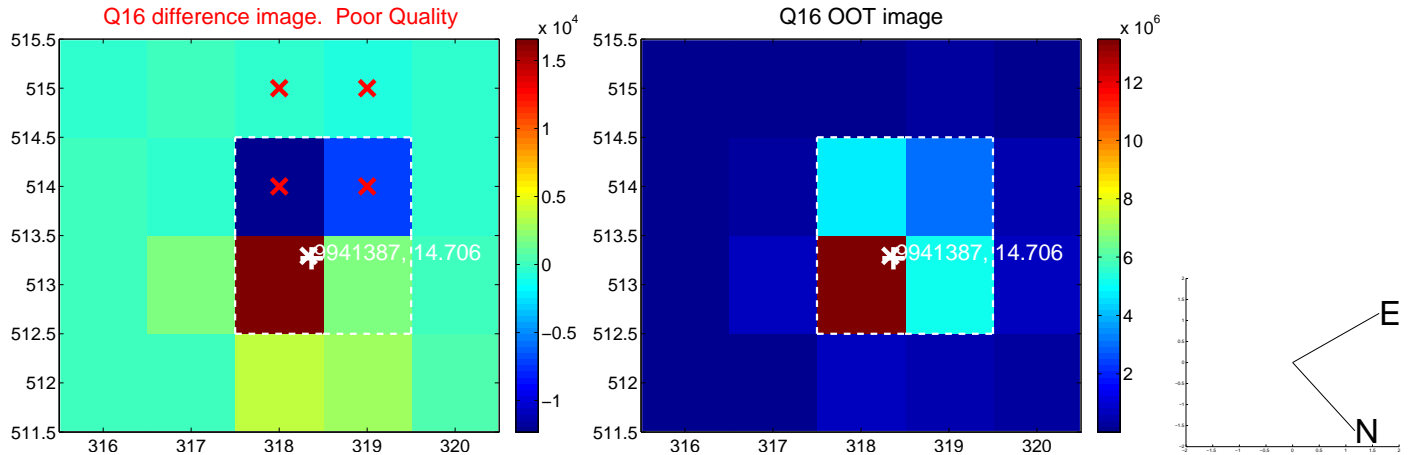
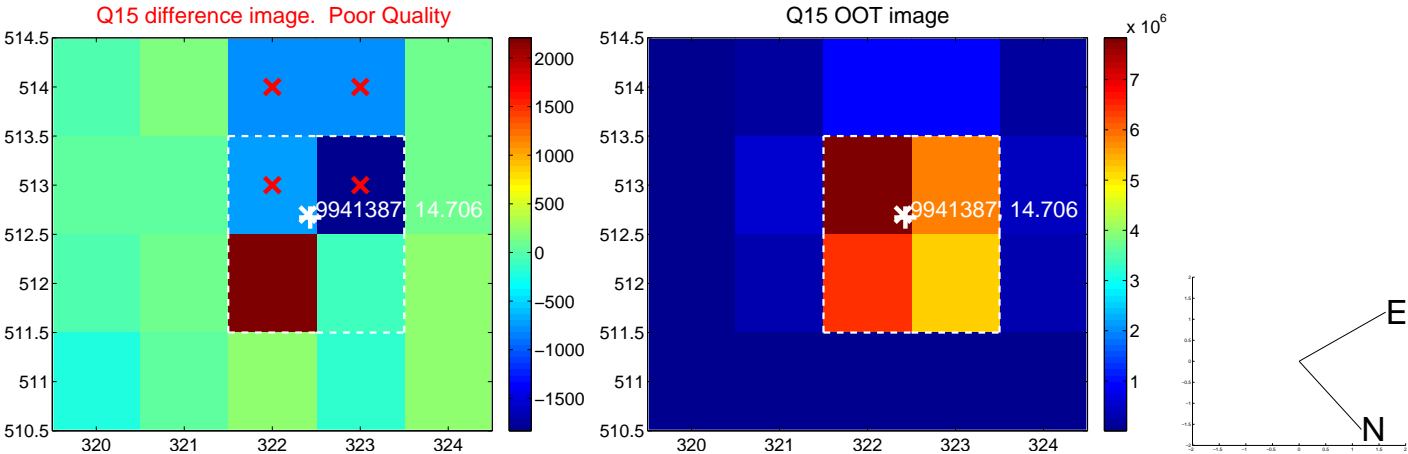
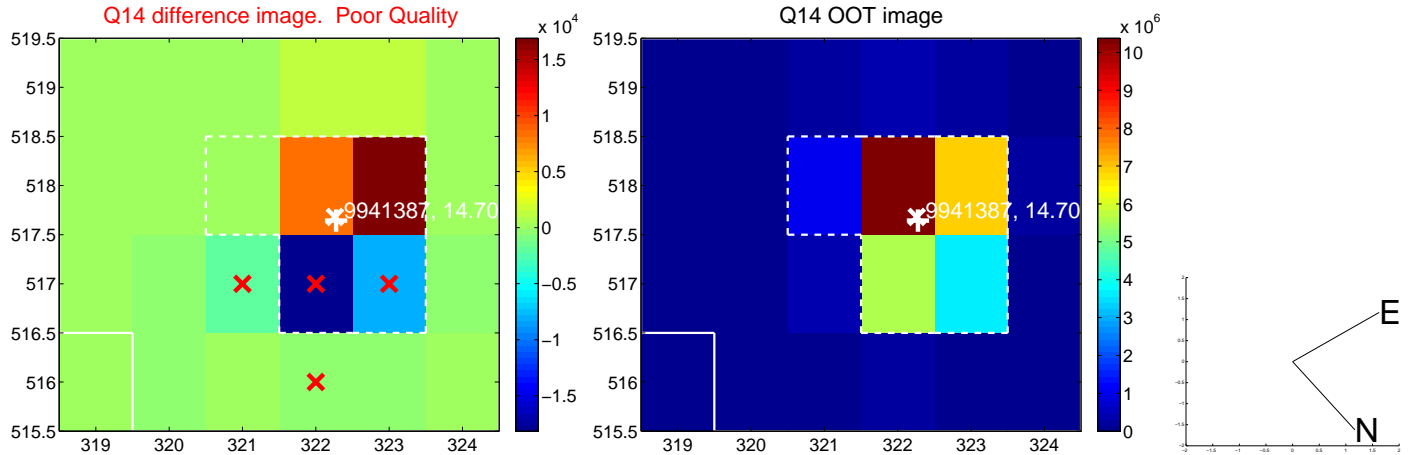
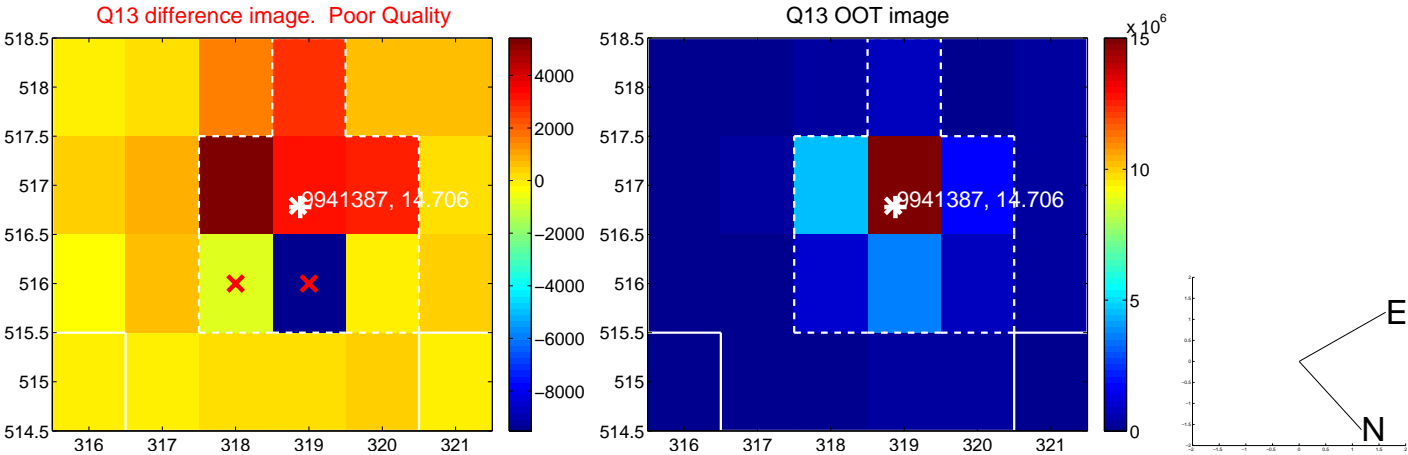
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



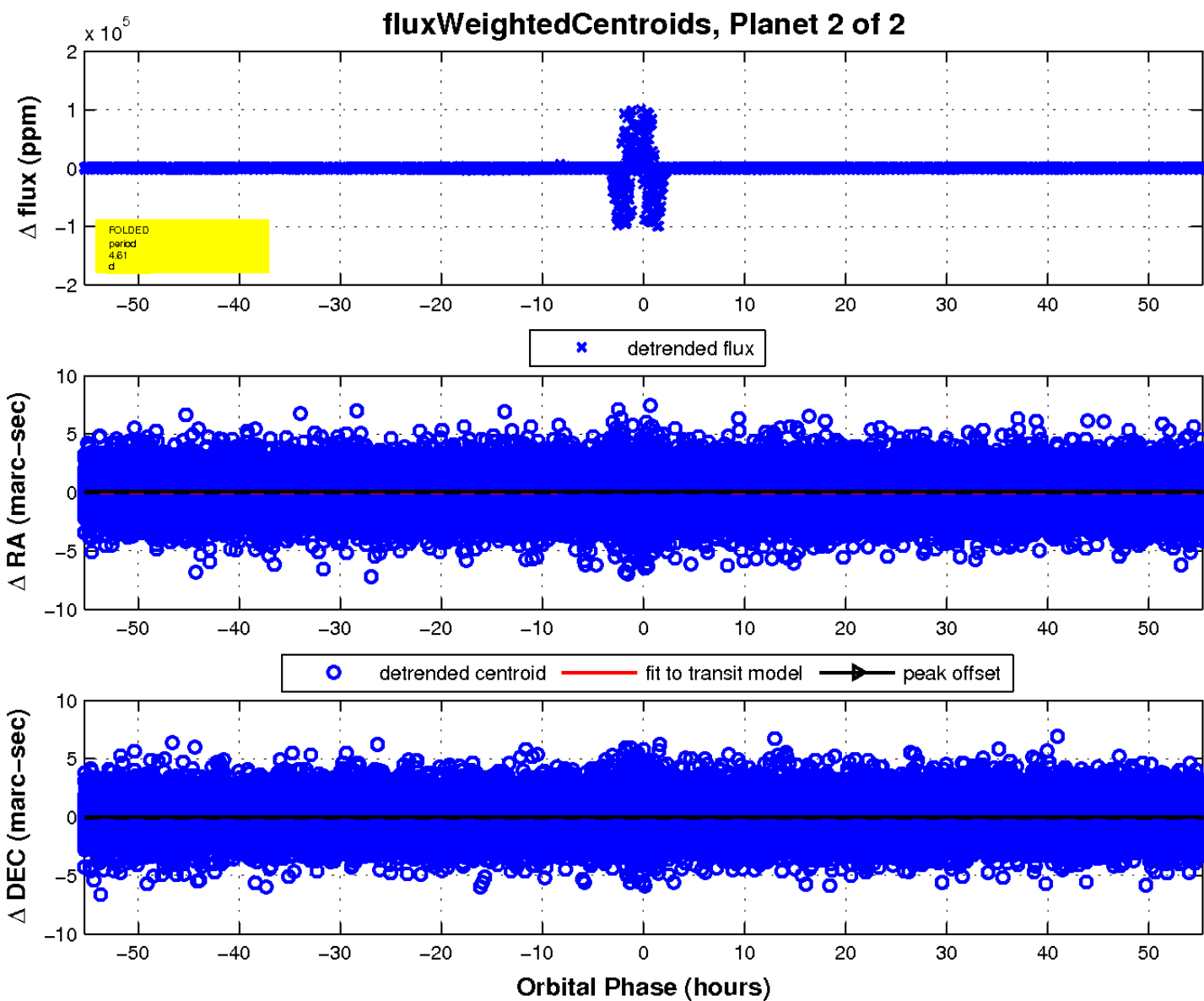
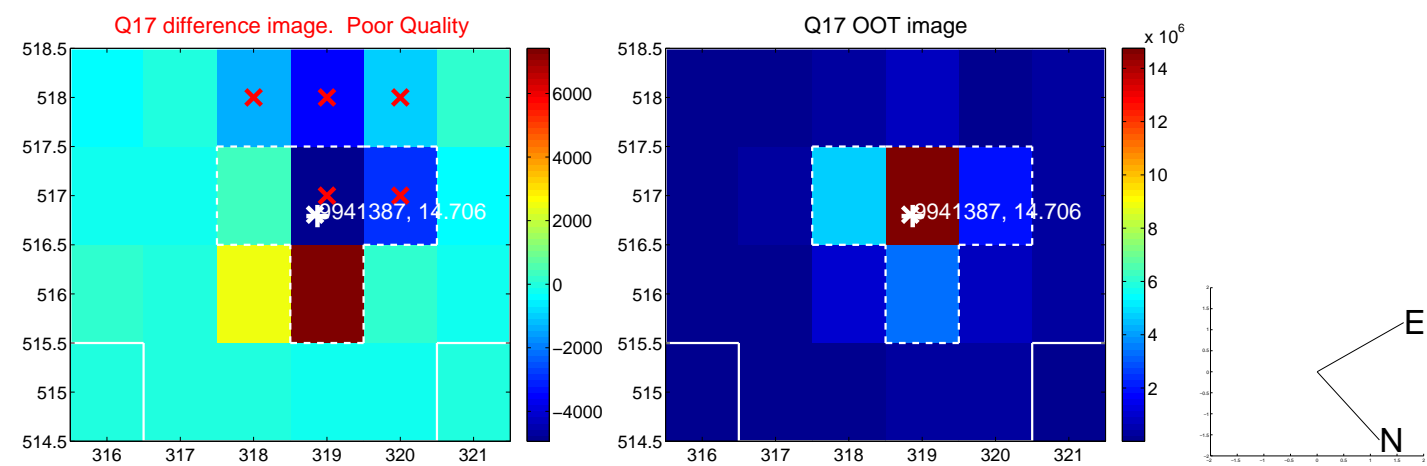
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

