

KIC 009549472

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})
009549472-01	OBS	6206.01	15.713789	132.098131	60550.1	11.296	3140.0	2959.6	1.01	5843	27.74	73.81
009549472-02	OBS	No	15.713800	137.330093	6299.6	6.150	367.3	362.0	1.01	5843	8.82	73.81
009549472-03	OBS	No	31.421901	137.918452	135.8	8.007	12.6	5.0	1.01	5843	1.38	29.30
009549472-04	OBS	No	15.713336	137.057954	766.4	28.575	11.6	21.9	1.01	5843	5.44	73.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009549472-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE
009549472-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
009549472-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
009549472-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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 009549472-01

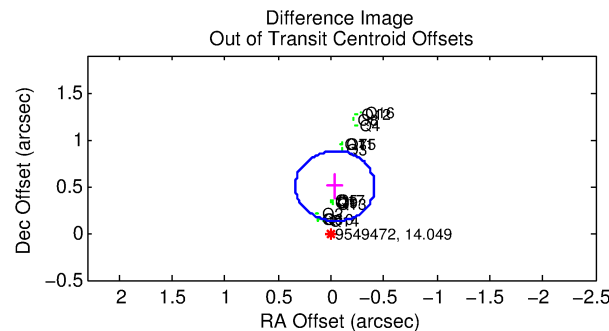
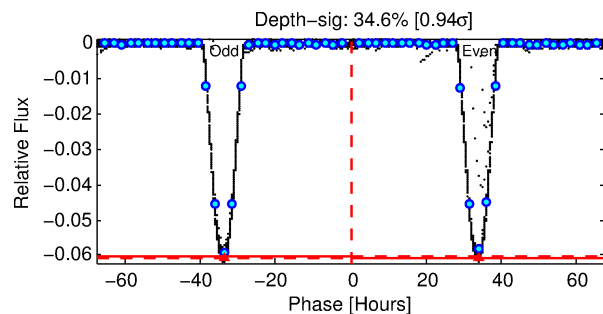
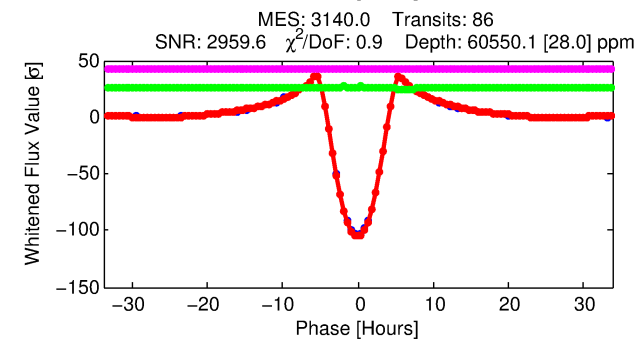
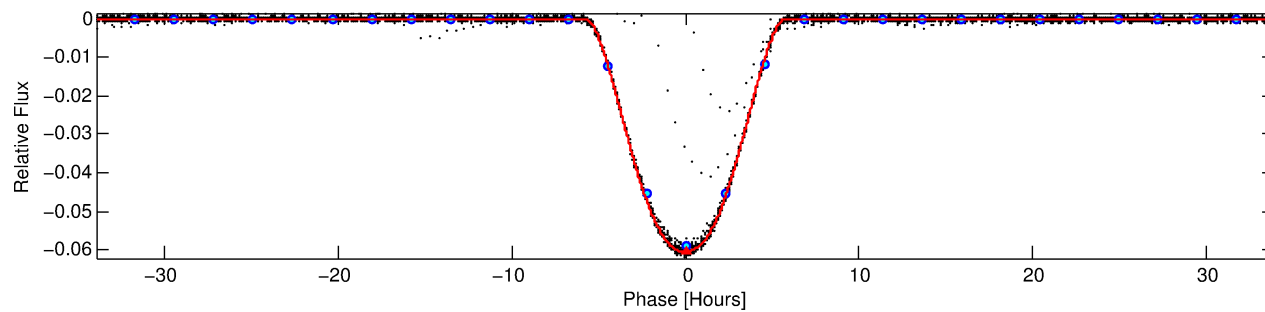
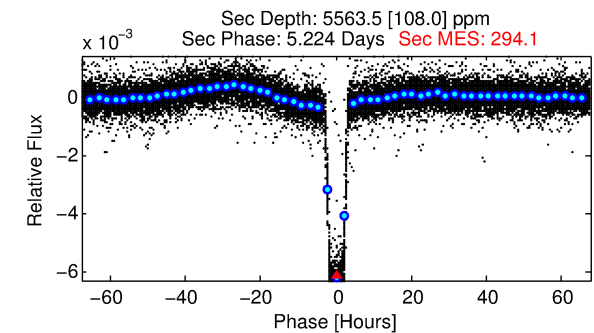
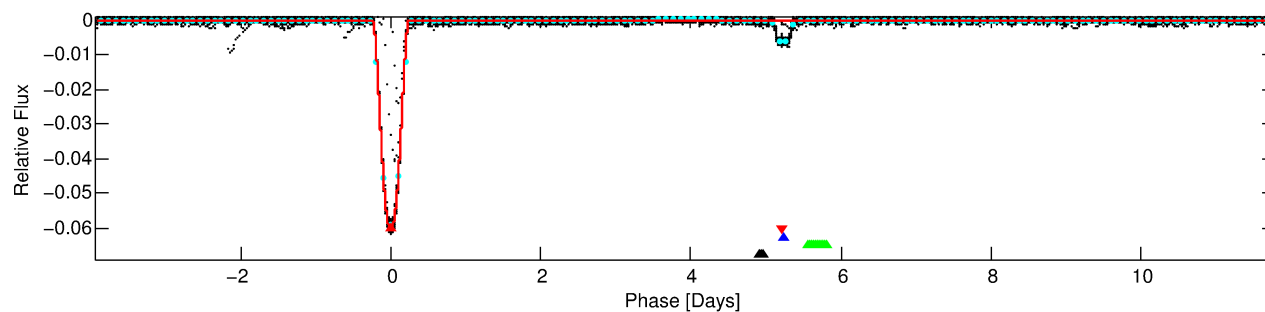
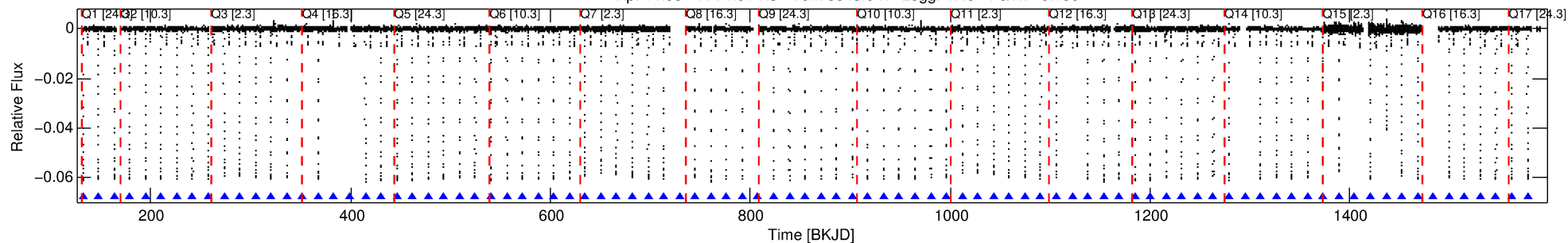
No Significant Match Found

DV One-Page Summary

KIC: 9549472 Candidate: 1 of 4 Period: 15.714 d

KOI: K06206.01 Corr: 0.999

Kp: 14.05 R*: 1.01 Rs Teff: 5843.0 K Logg: 4.40 Fe/H: -0.180



DV Fit Results:

Period = 15.71379 [0.00000] d
Epoch = 132.0981 [0.0001] BKJD
Rp/R* = 0.2527 [0.0002]
a/R* = 10.59 [0.01]
b = 0.76 [0.00]
Seff = 73.81 [26.81]
Teq = 747 [68] K
Rp = 27.74 [7.89] Re
a = 0.1197 [0.0284] AU
Ag = 56.94 [19.54] [2.86σ]
Teffp = 3174 [97] K [20.52σ]

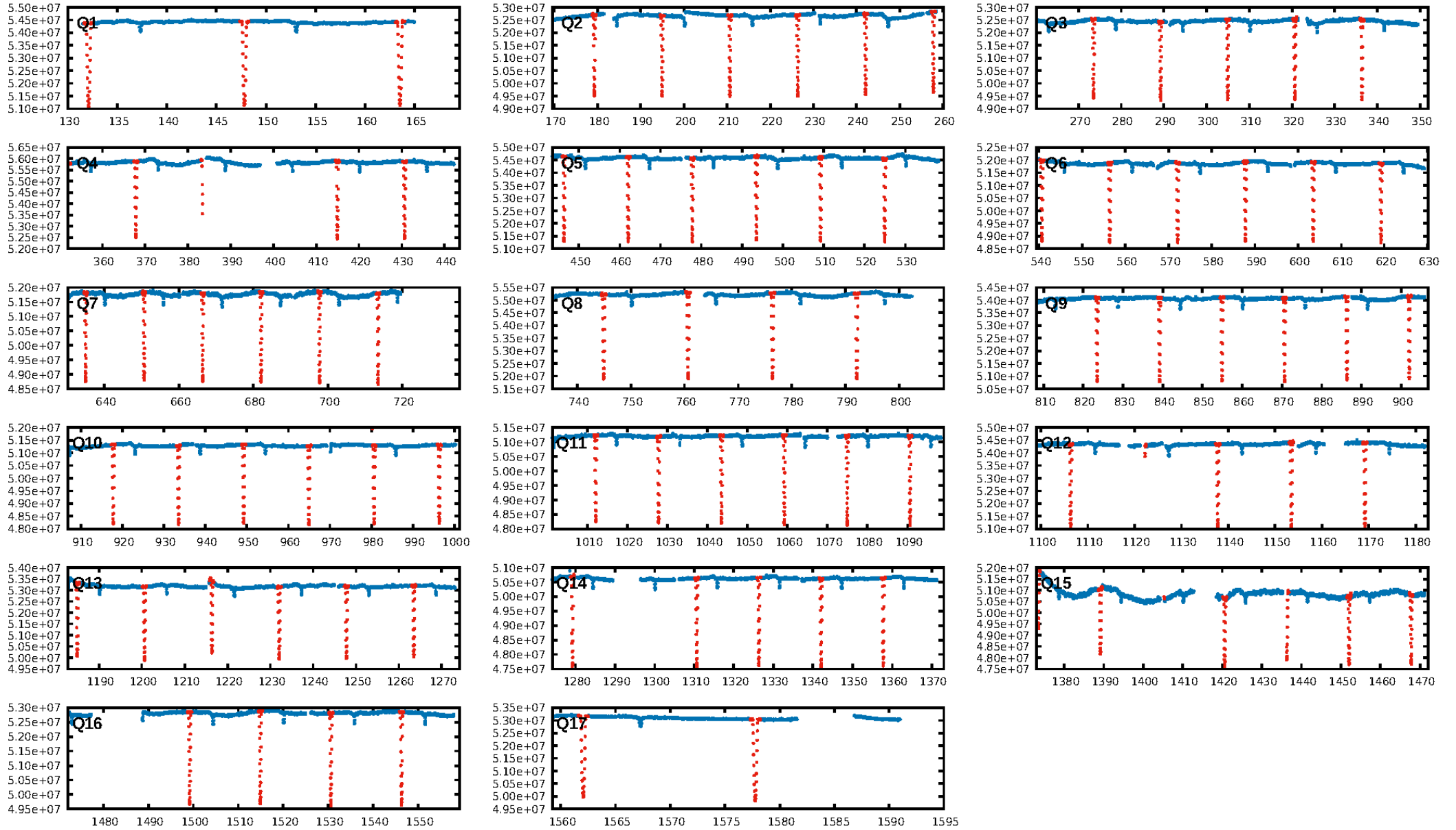
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [81/81]
GhostDiagnostic-chr: 9.444
Centroid-sig: 0.0%
Centroid-so: 0.724 arcsec [331.15σ]
OotOffset-rm: 0.505 arcsec [4.04σ]
KicOffset-rm: 0.076 arcsec [1.11σ]
OotOffset-st: 4/4/4/5 [17]
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DiffImageQuality-fgm: 1.00 [17/17]
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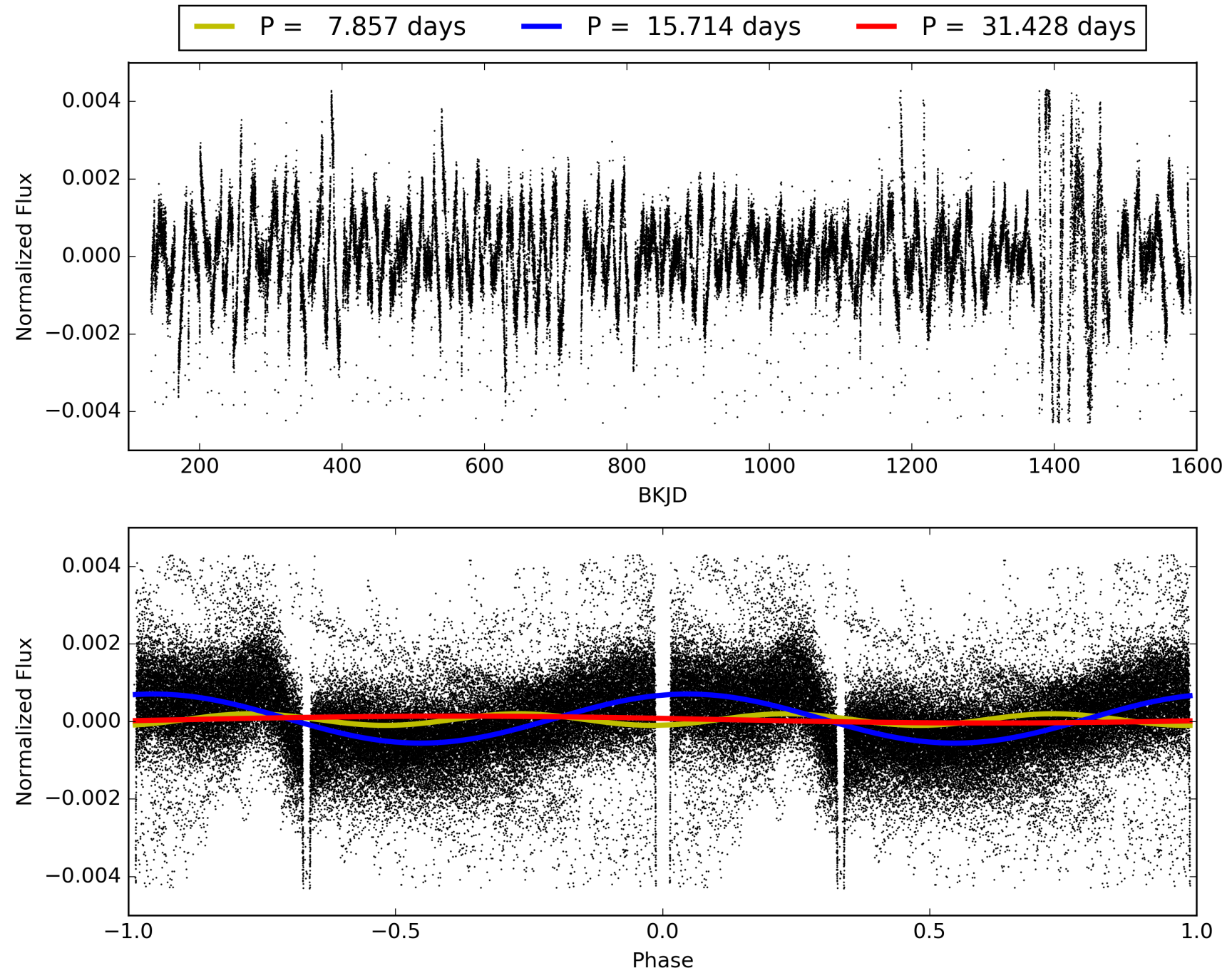
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:13:30 Z

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

TCE 009549472-01, PDC Light Curves

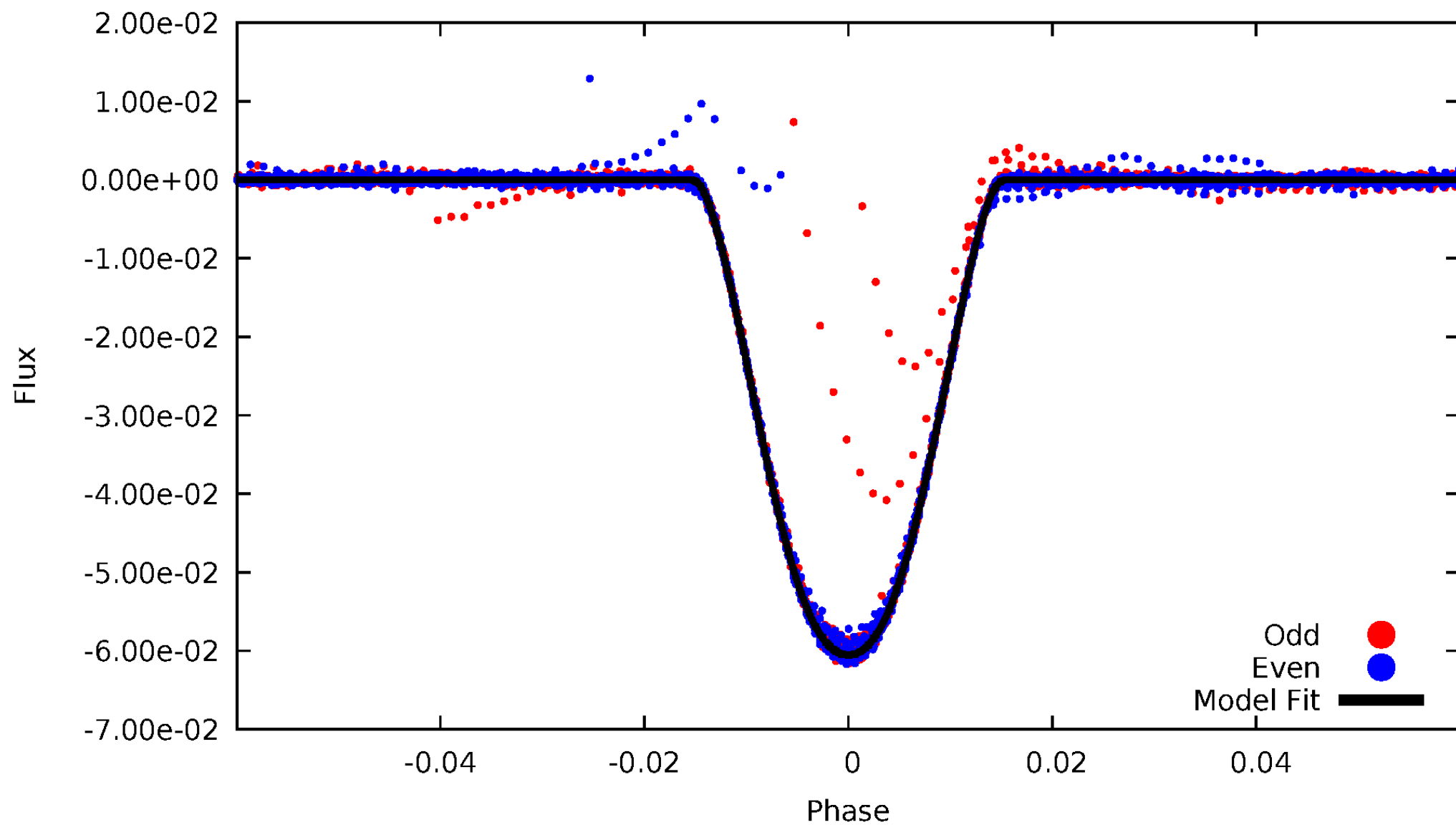


TCE 009549472-01



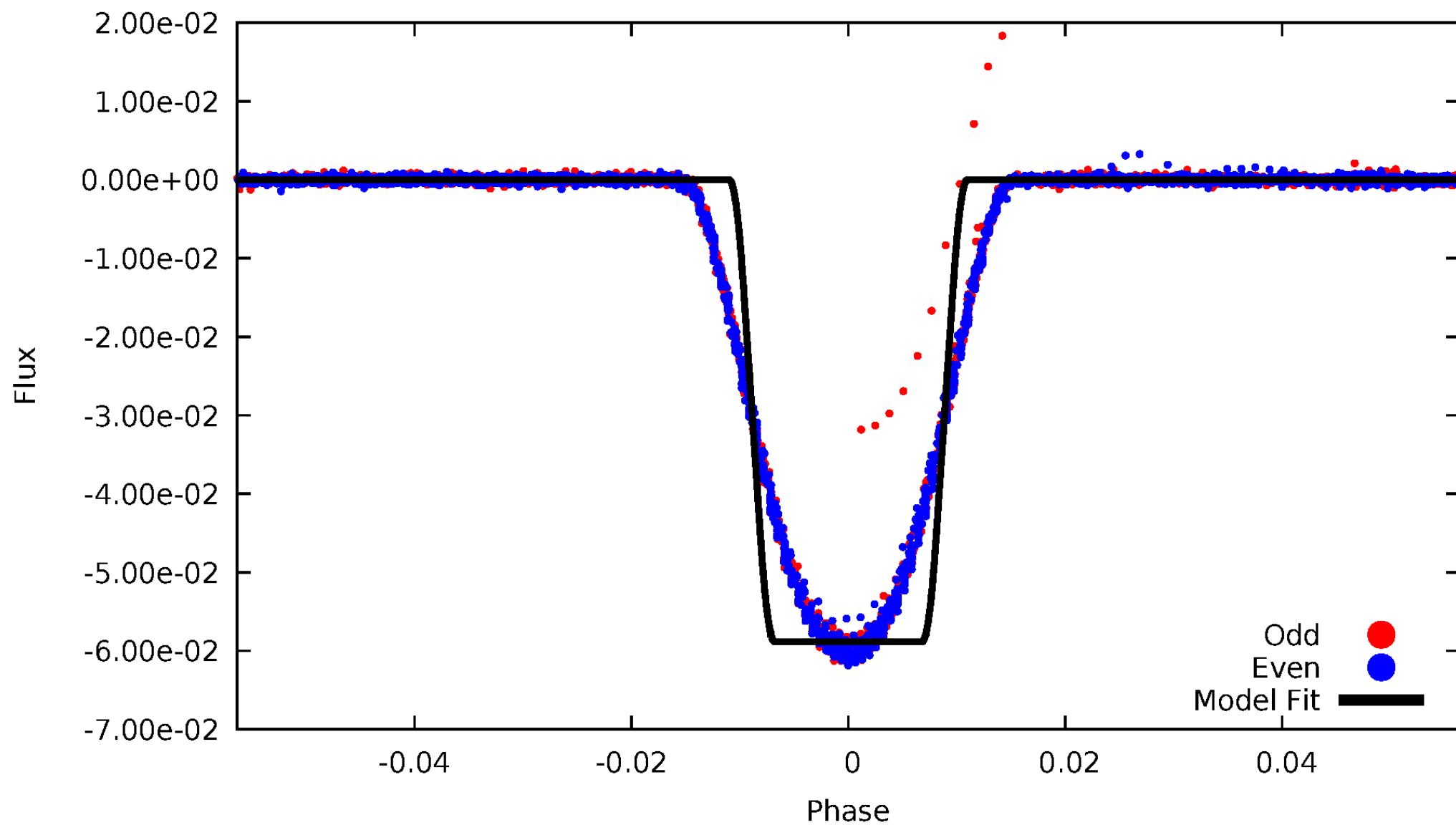
DV Odd/Even

TCE 009549472-01



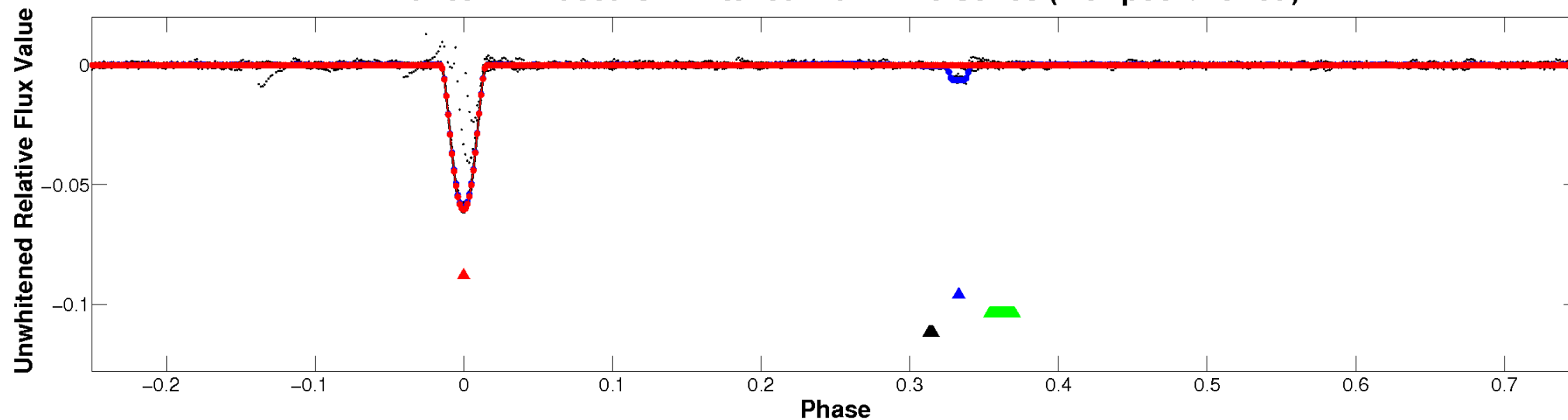
ALT Odd/Even

TCE 009549472-01

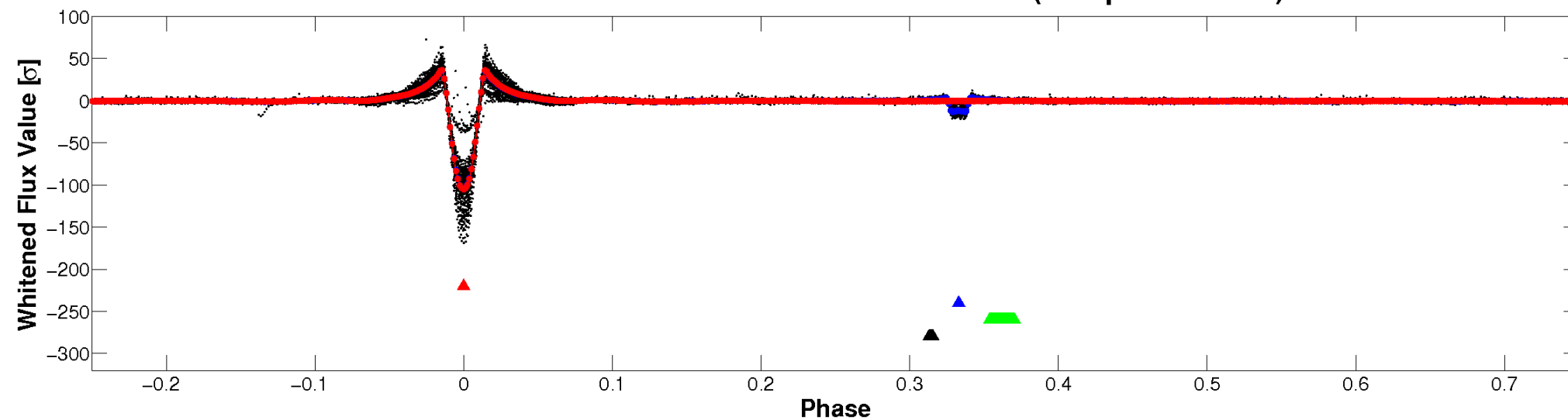


Non-Whitened Vs. Whitened Light Curve

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

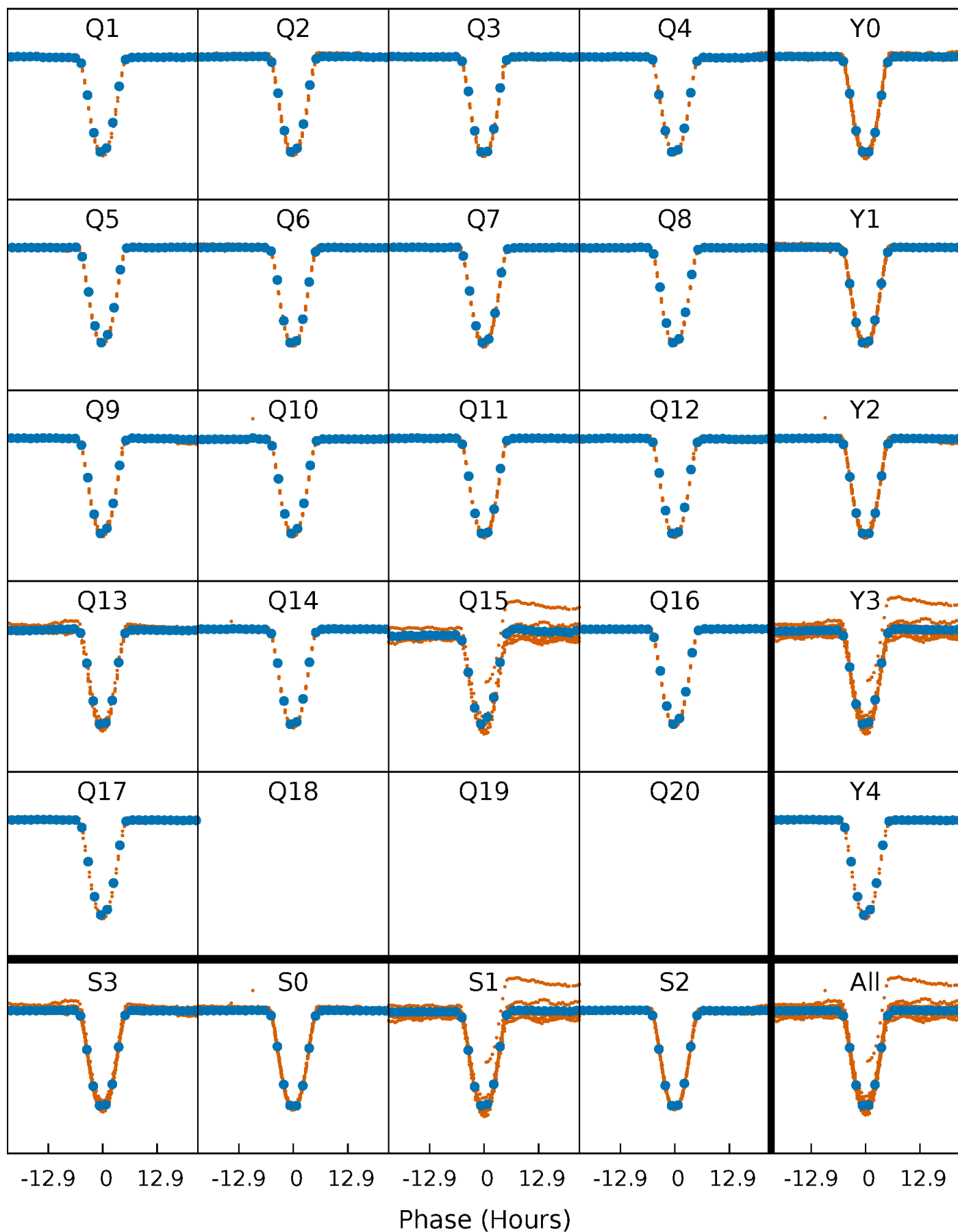


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



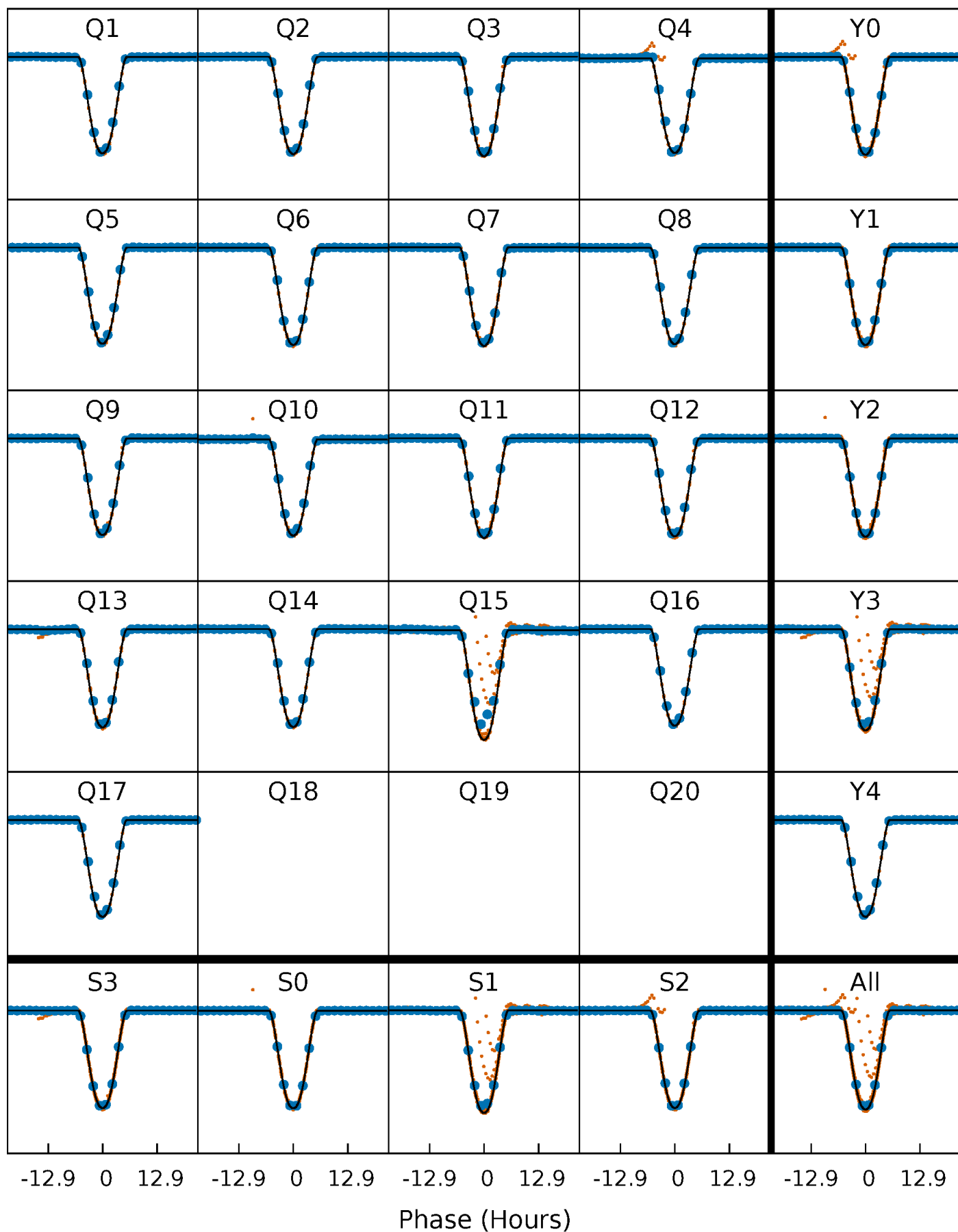
PDC Quarter-Phased Transit Curves

TCE 009549472-01 P= 15.713789 Days $T_0=132.098131$ (BKJD)



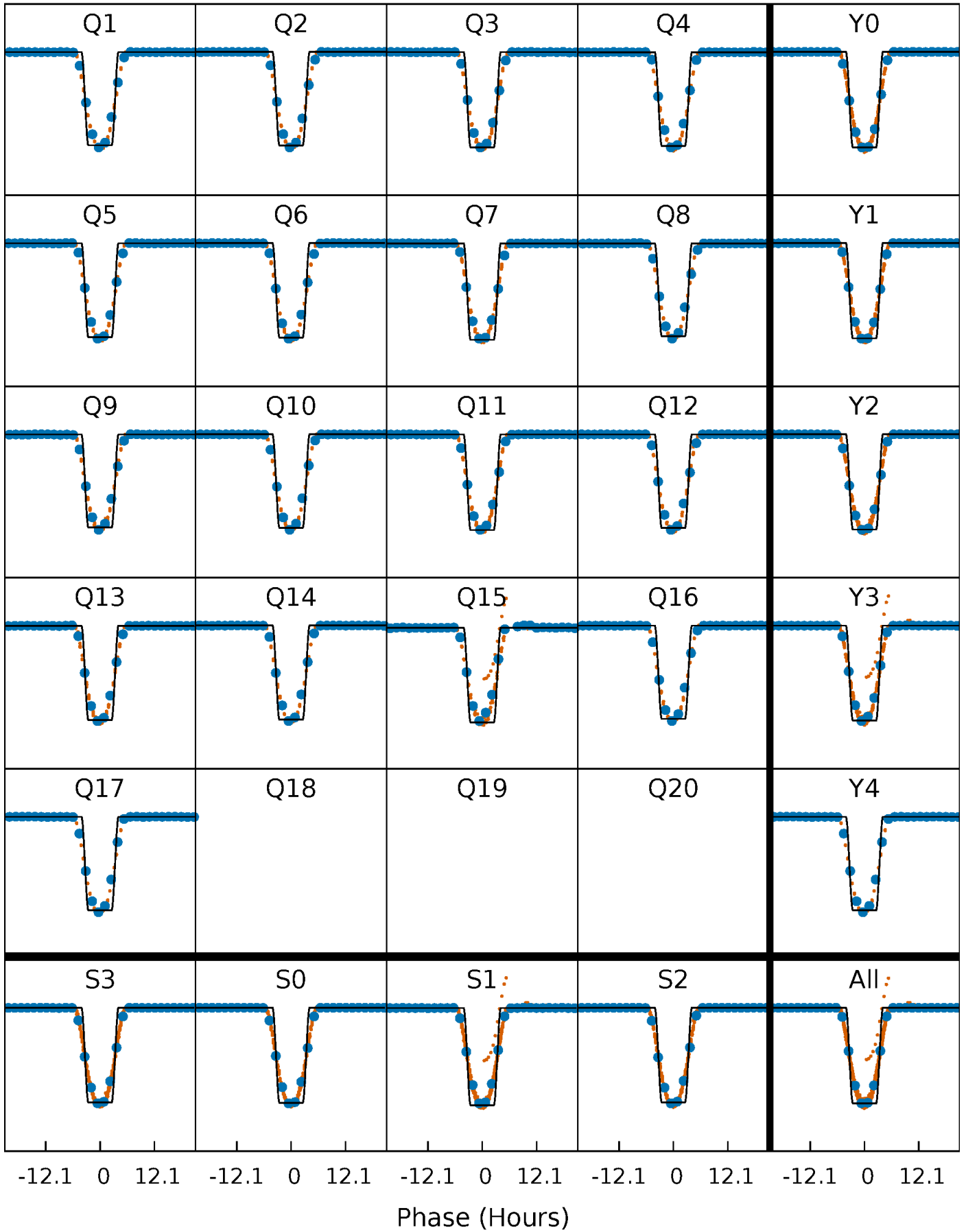
DV Quarter-Phased Transit Curves

TCE 009549472-01 P= 15.713789 Days $T_0=132.098131$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

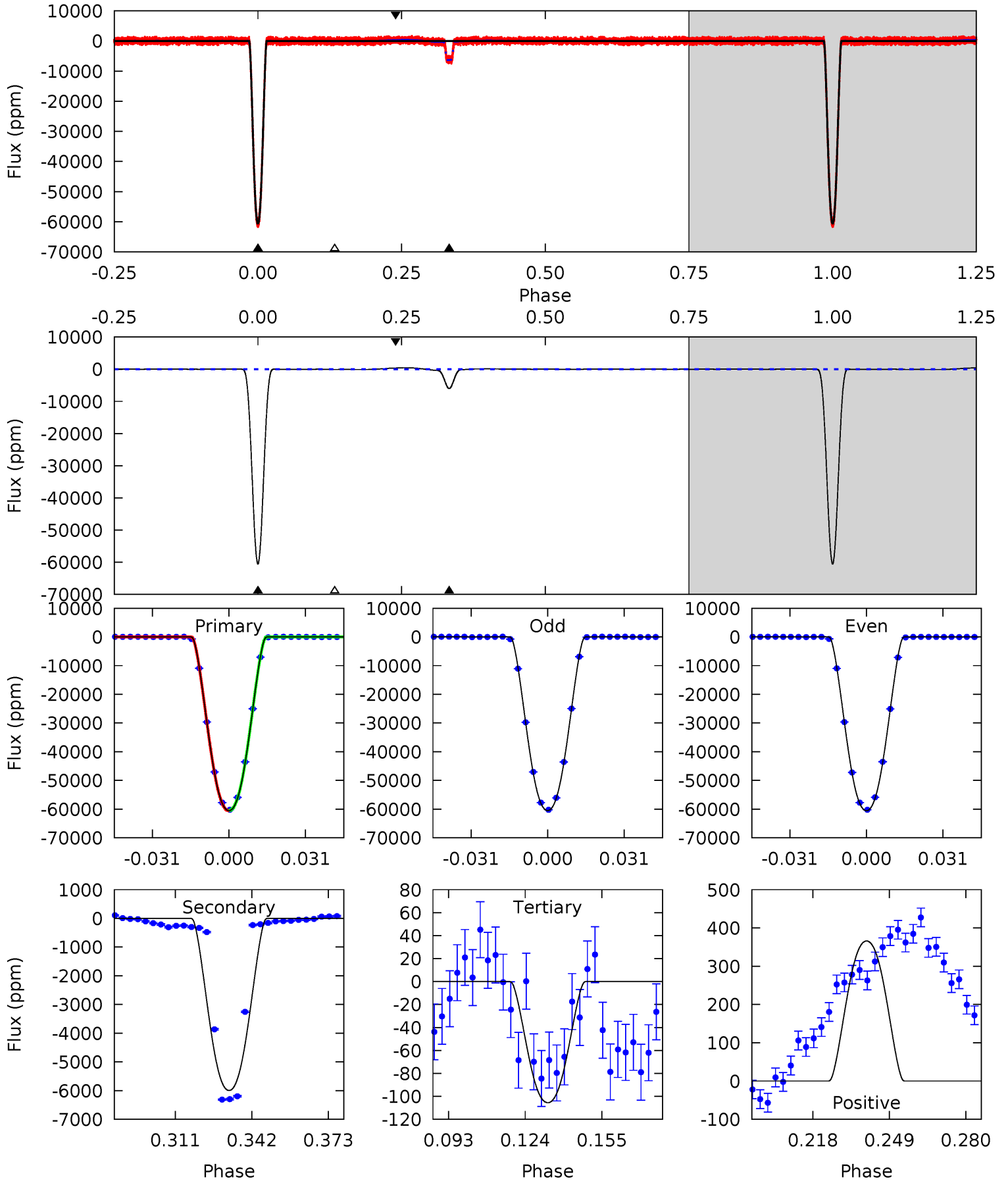
TCE 009549472-01 P= 15.713879 Days $T_0=132.093988$ (BKJD)



DV Model-Shift Uniqueness Test

009549472-01, P = 15.713789 Days, E = 116.384342 Days

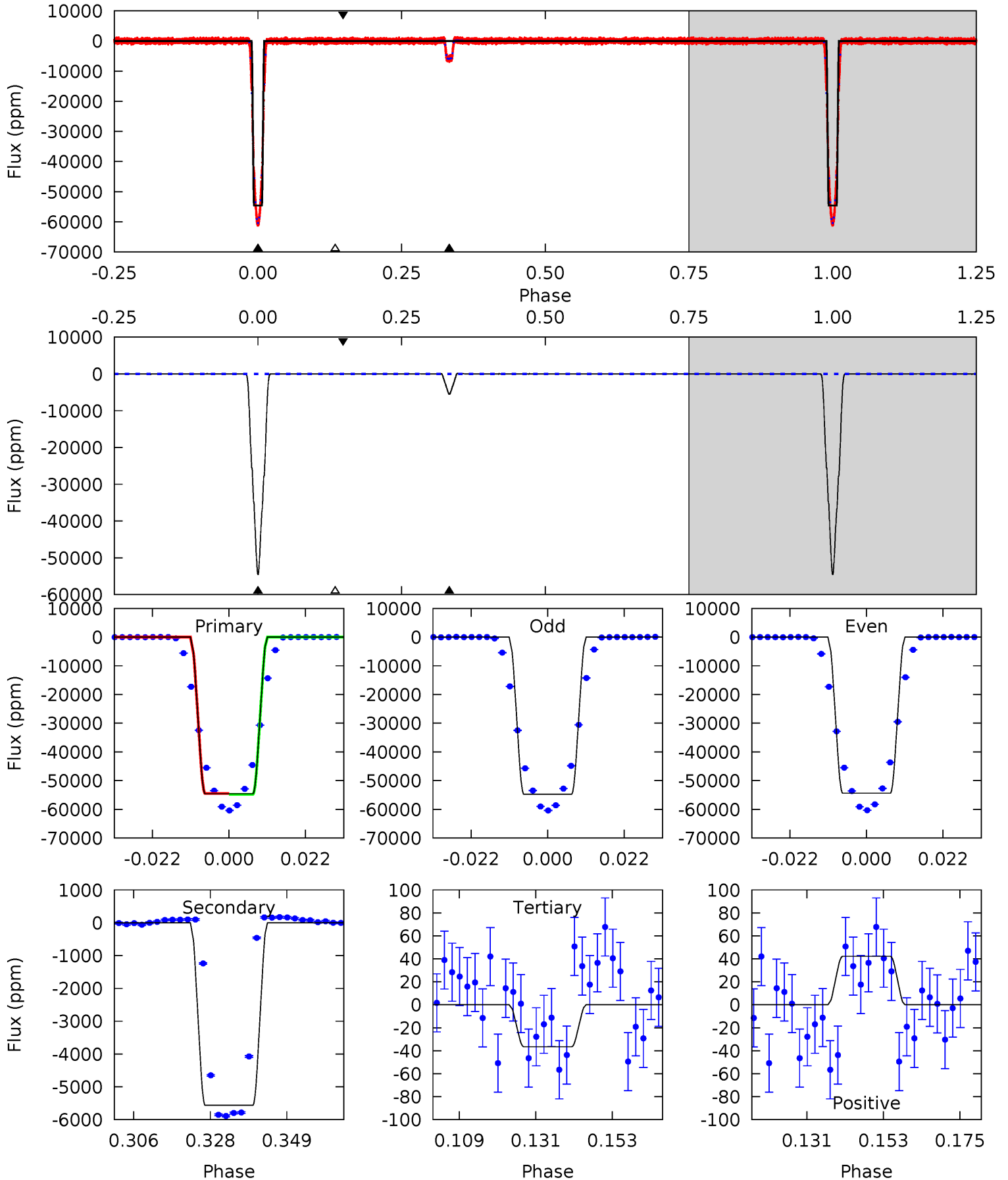
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7645	757.3	13.3	46.2	4.80	2.16	13.2	7632	7599	743.9	711.1	1.75	0.97	0.01	2.09



Alt Model-Shift Uniqueness Test

009549472-01, P = 15.713879 Days, E = 116.380109 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5848	596.2	3.92	4.52	4.87	2.29	1.47	5844	5843	592.2	591.6	19.9	0.99	0.00	5.89



Stellar Parameters For KIC 009549472

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5843^{+158}_{-176}	$4.399^{+0.124}_{-0.186}$	$-0.180^{+0.300}_{-0.300}$	$1.006^{+0.286}_{-0.154}$	$0.924^{+0.132}_{-0.088}$	$1.279^{+0.716}_{-0.618}$
	+3%/-3%	+3%/-4%	+167%/-167%	+28%/-15%	+14%/-10%	+56%/-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 009549472-01 / KOI 6206.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-5996 ± 8	$27.73^{+4.43}_{-2.26}$	1049^{+78}_{-58}	3664^{+74}_{-77}	61^{+11}_{-15}
Alt.	-5565 ± 9	$26.66^{+4.45}_{-2.31}$	1051^{+81}_{-60}	3669^{+71}_{-77}	61^{+13}_{-15}

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

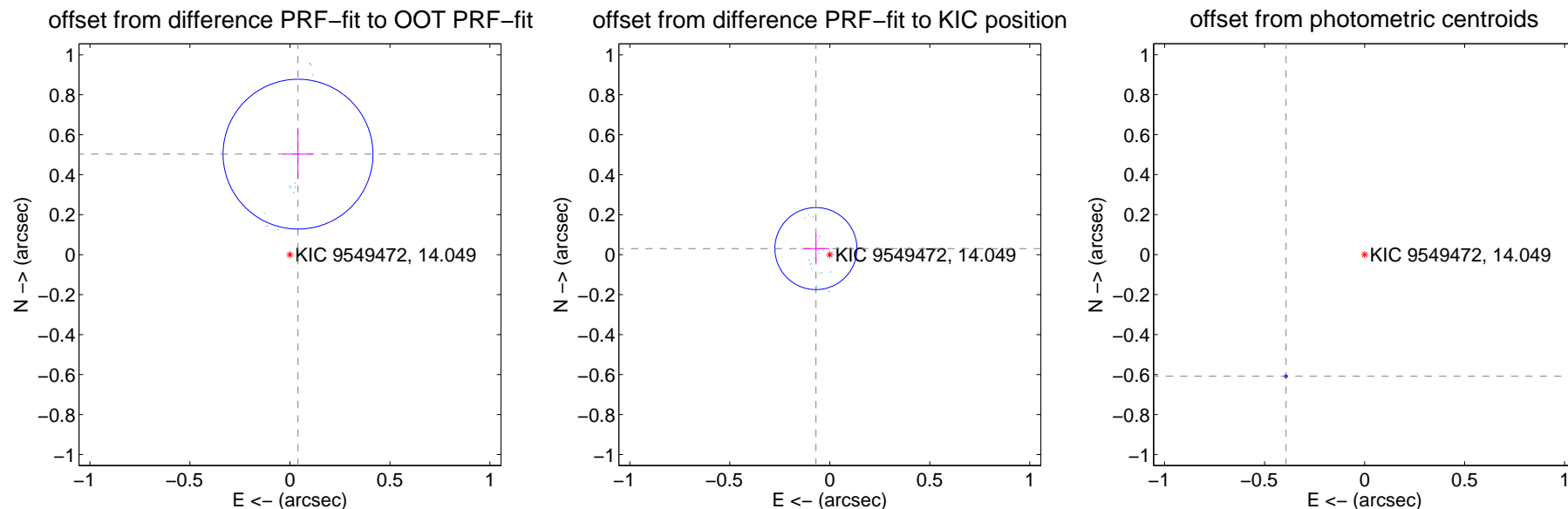
DV Centroid Data

Supplemental centroid analysis for 009549472-01. Kepler magnitude: 14.05. Transit SNR 2959.60

There are 17 quarters with good PRF difference image offsets

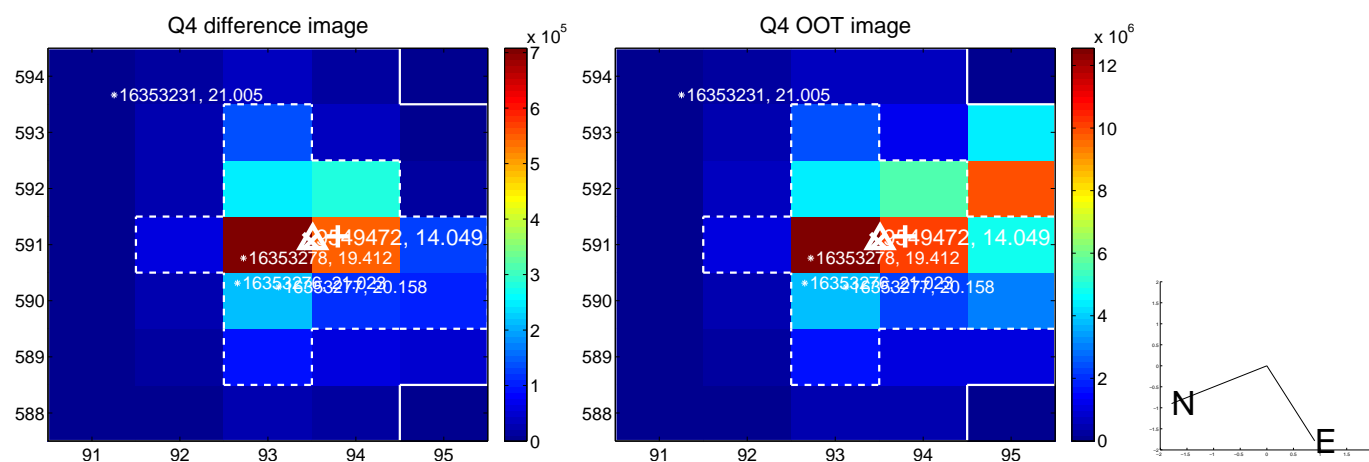
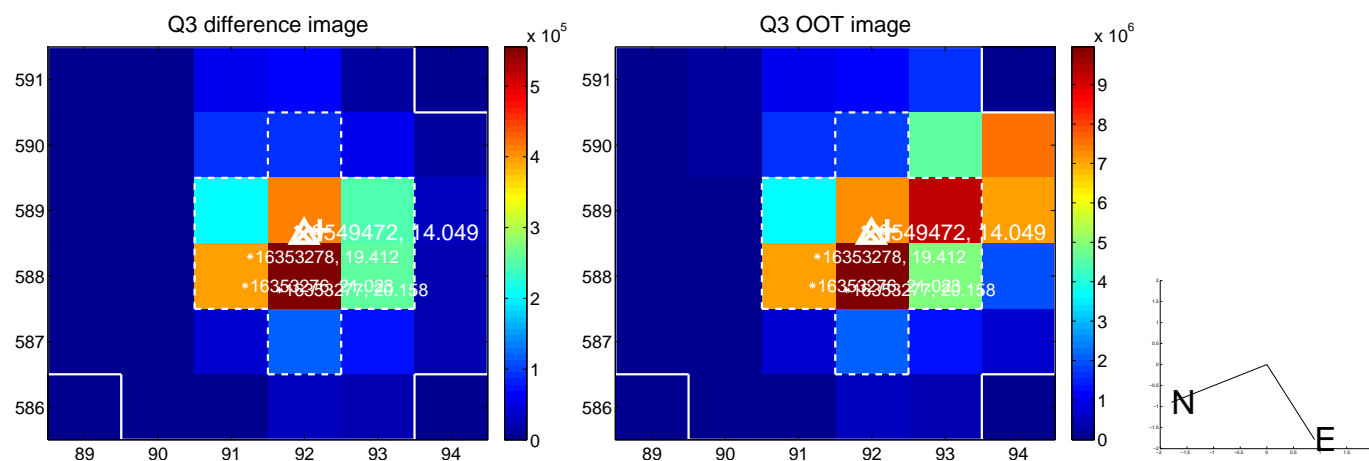
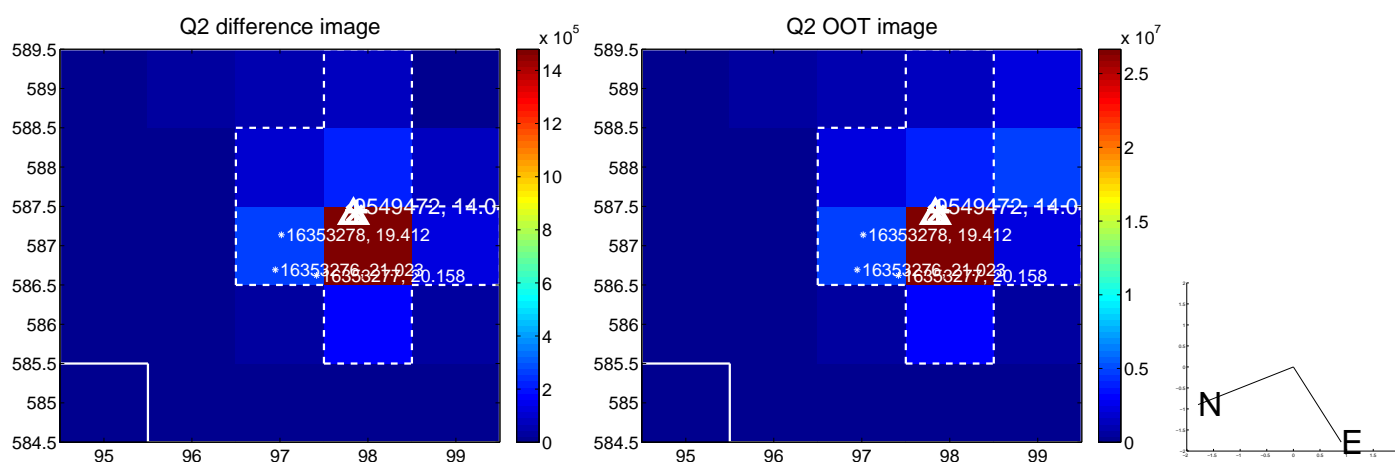
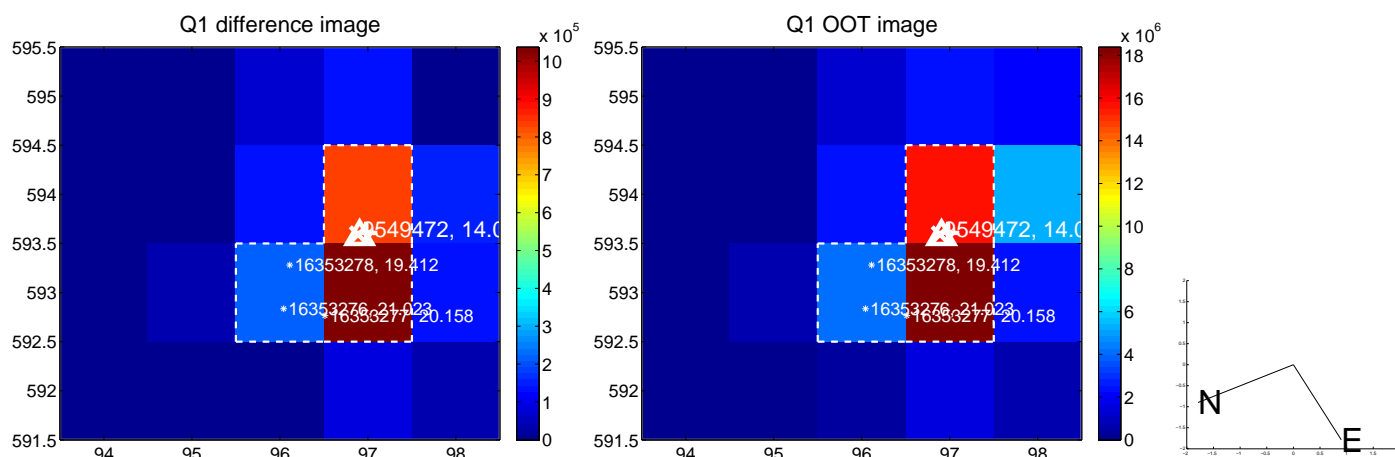
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.505 ± 0.125	4.04	-0.040 ± 0.074	0.503 ± 0.125
PRF-fit source offset from KIC position	0.076 ± 0.068	1.11	0.069 ± 0.067	0.030 ± 0.072
photometric centroid source offset	0.72 ± 0.00	331.15	0.39 ± 0.00	-0.61 ± 0.00

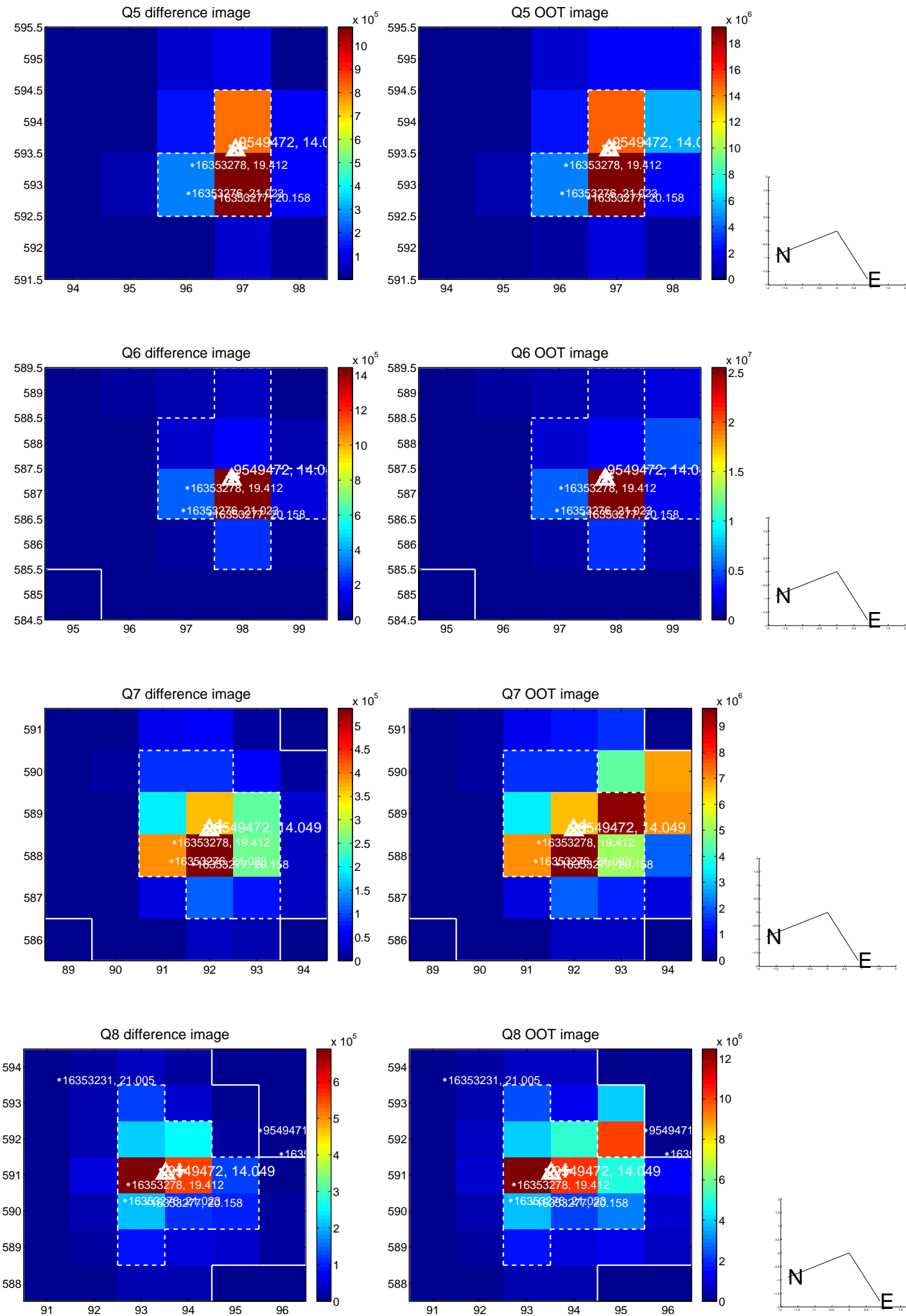


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

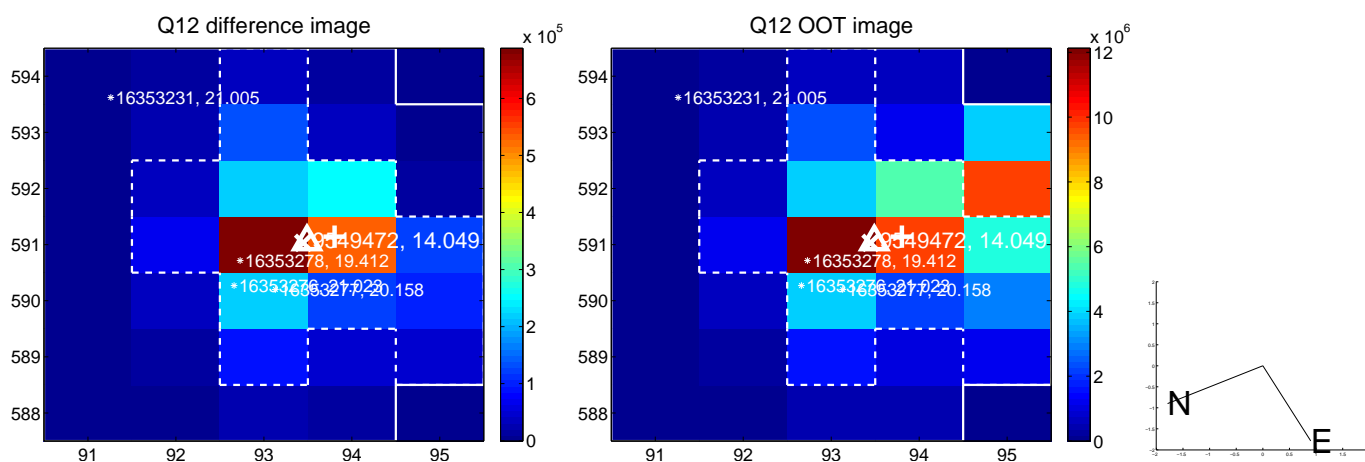
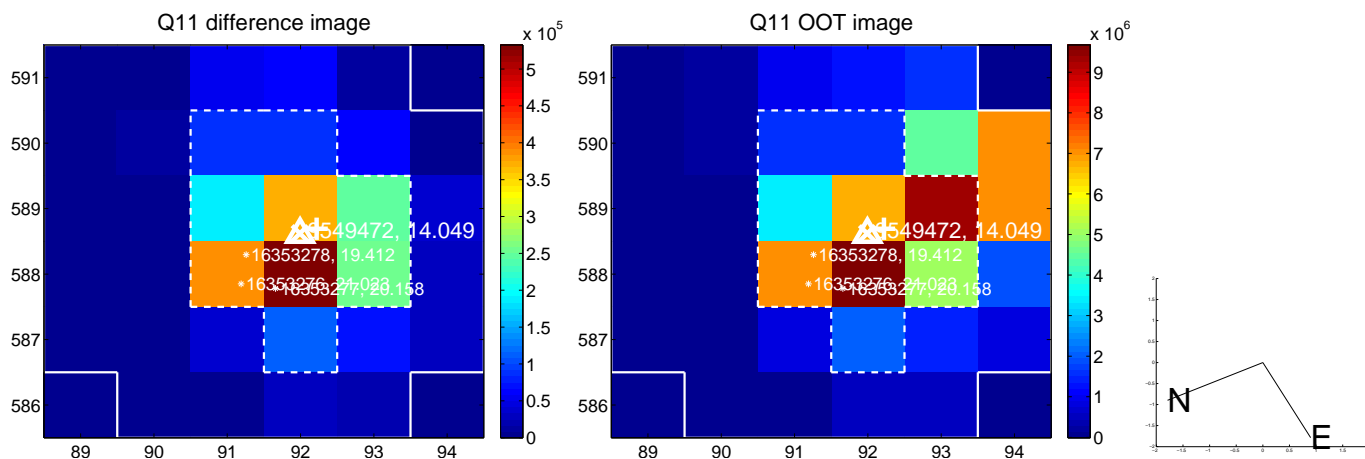
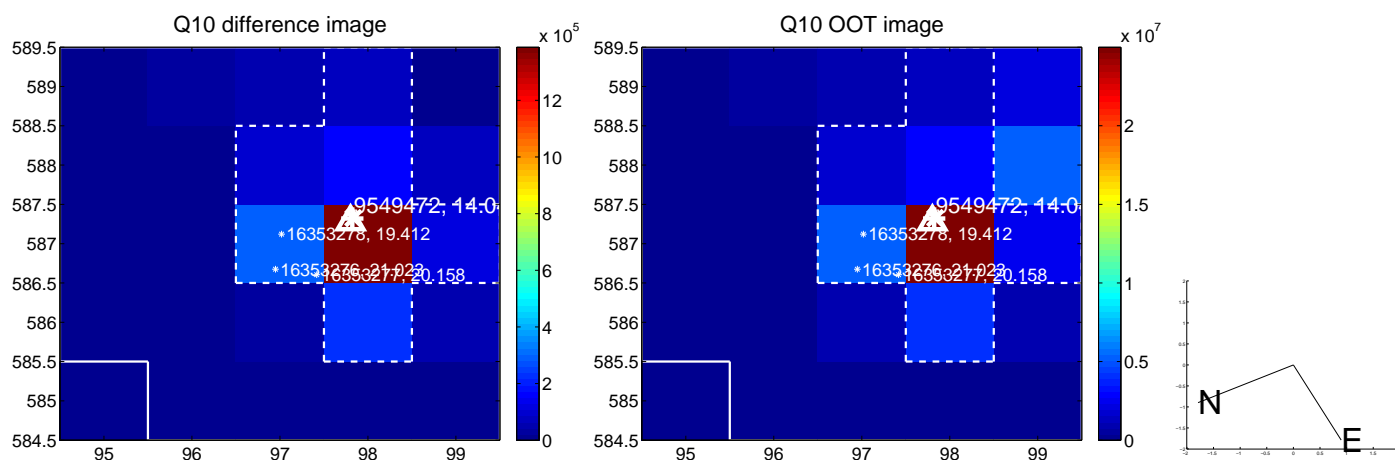
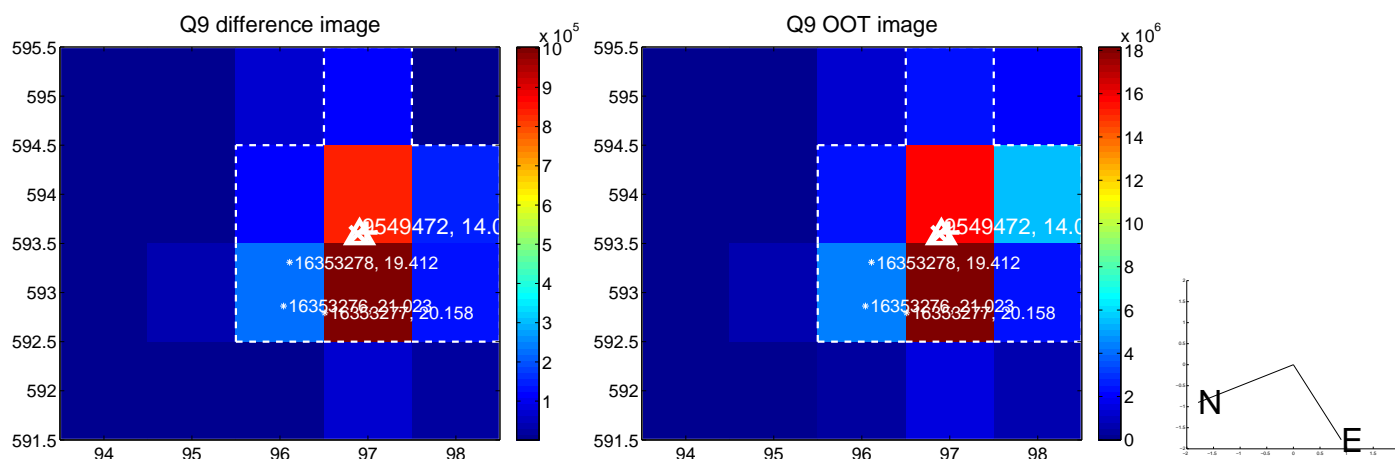
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



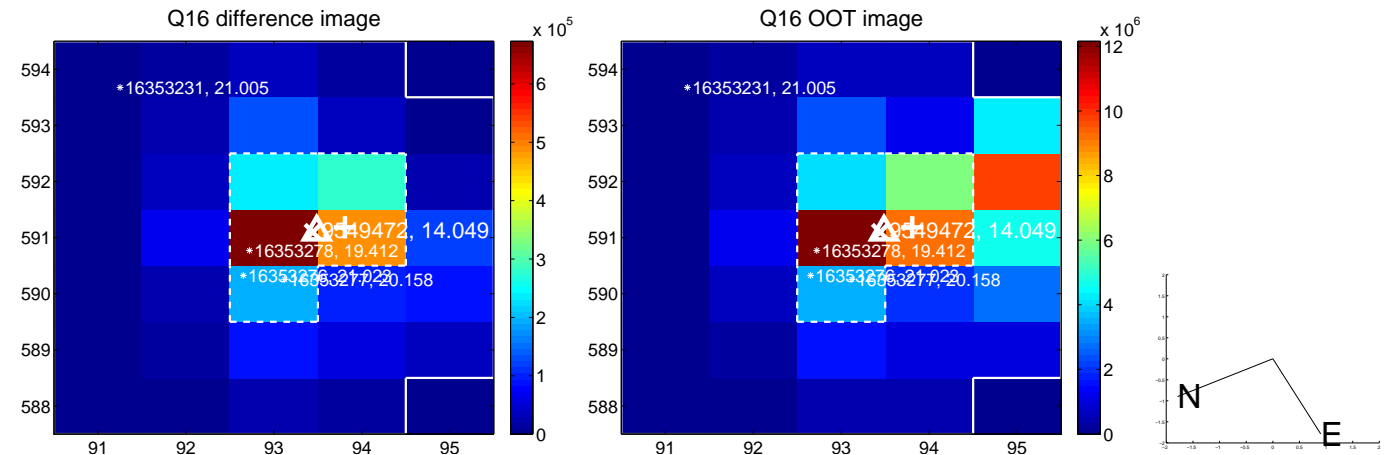
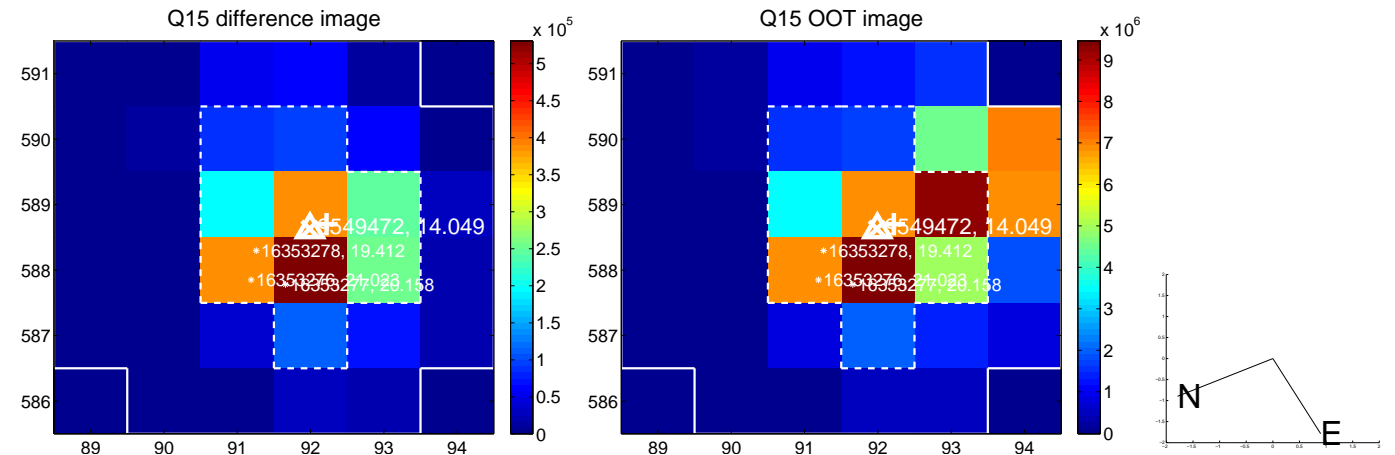
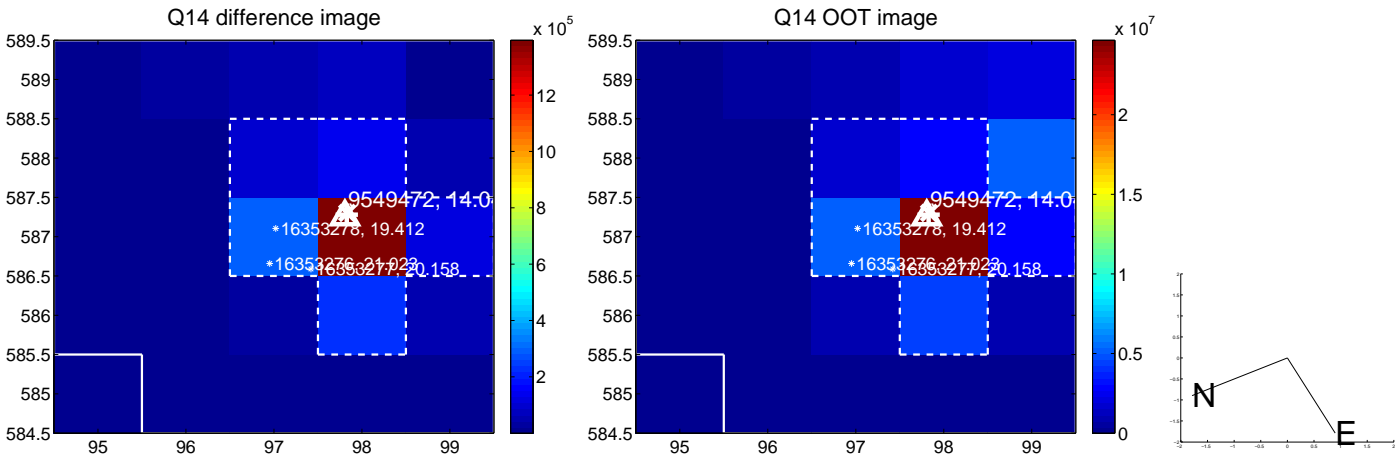
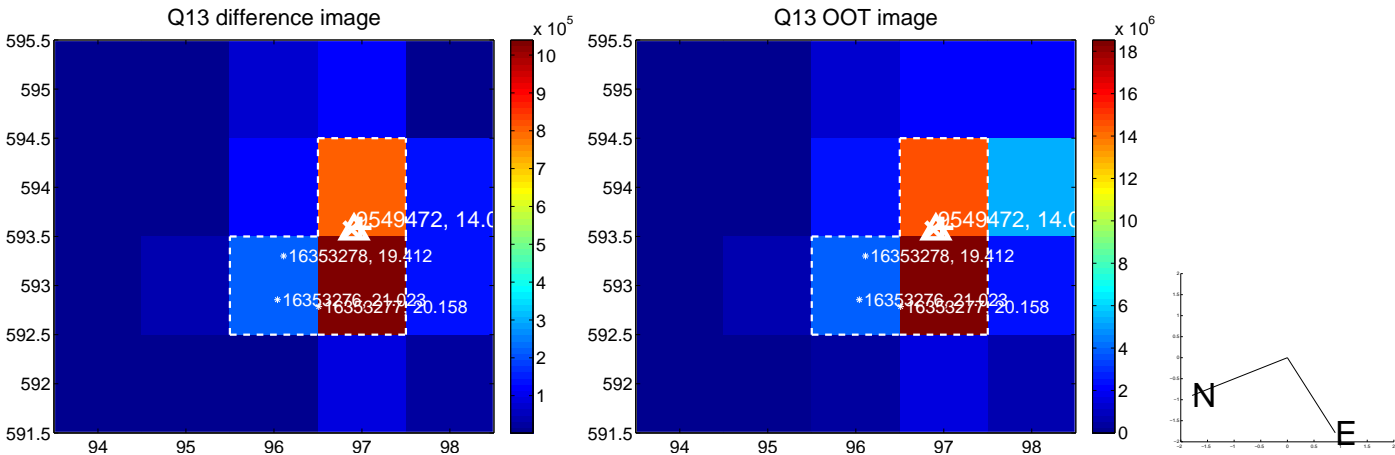
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



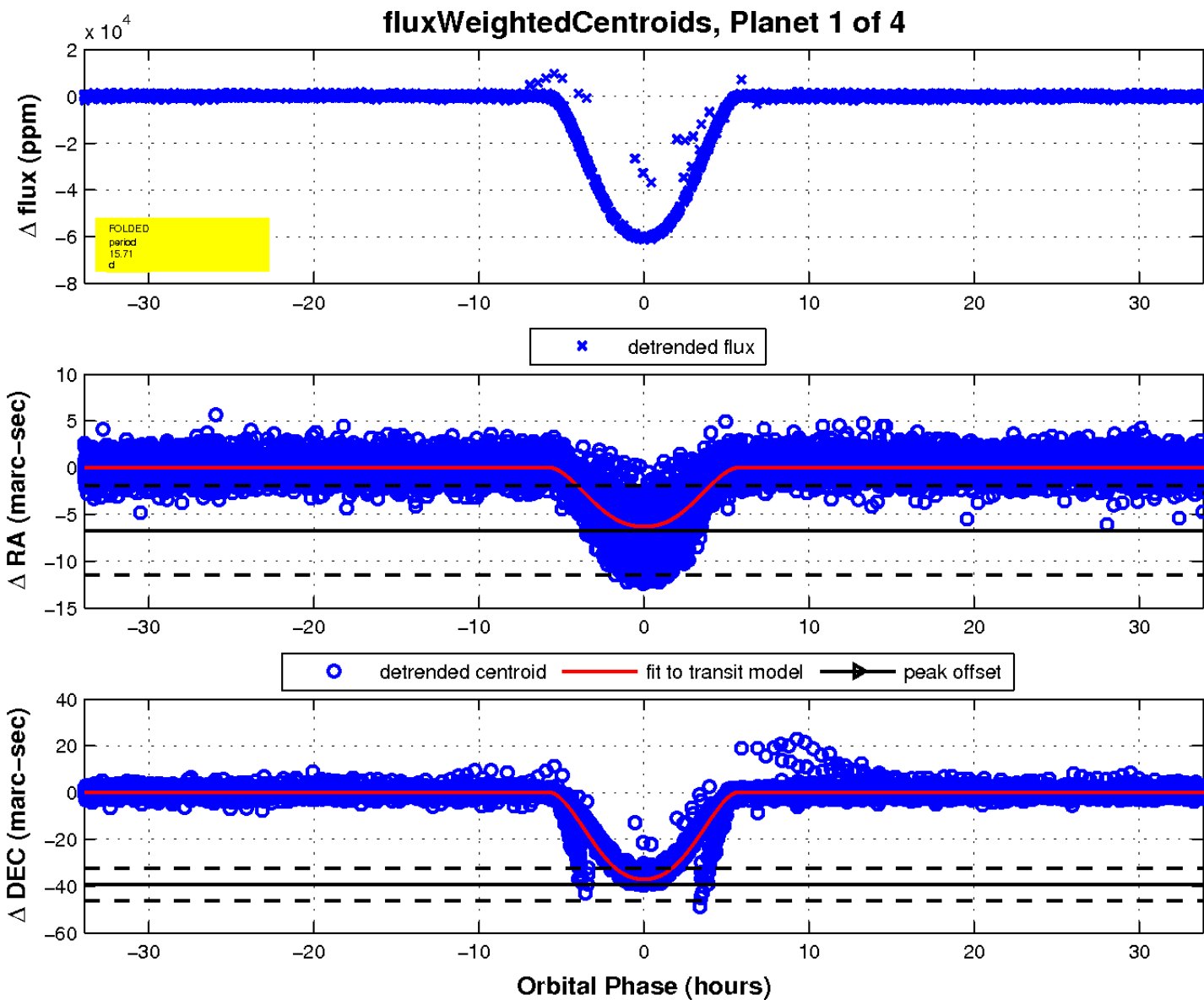
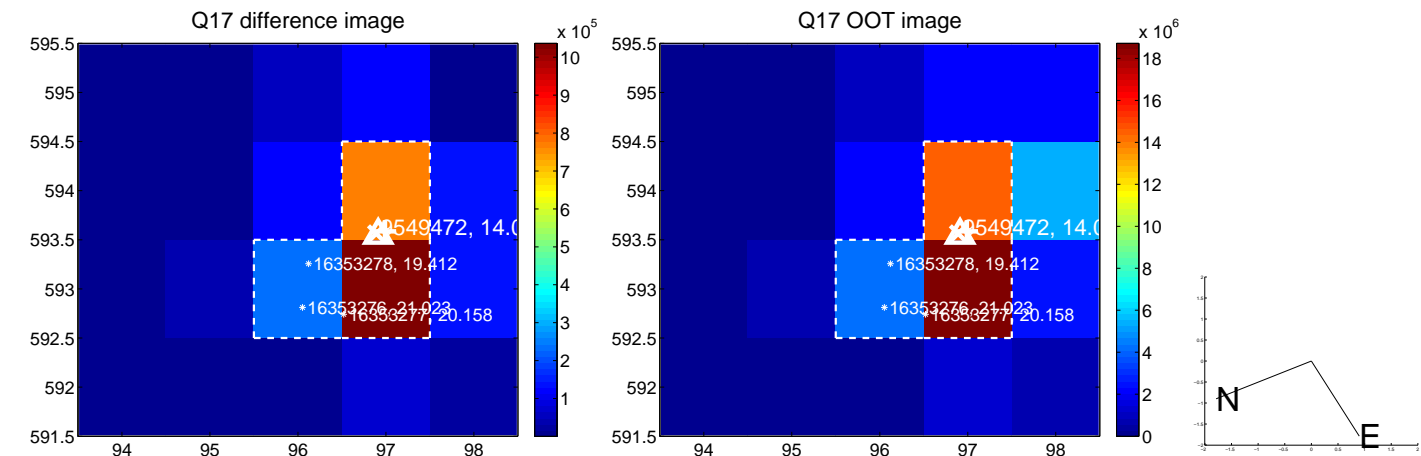
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white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

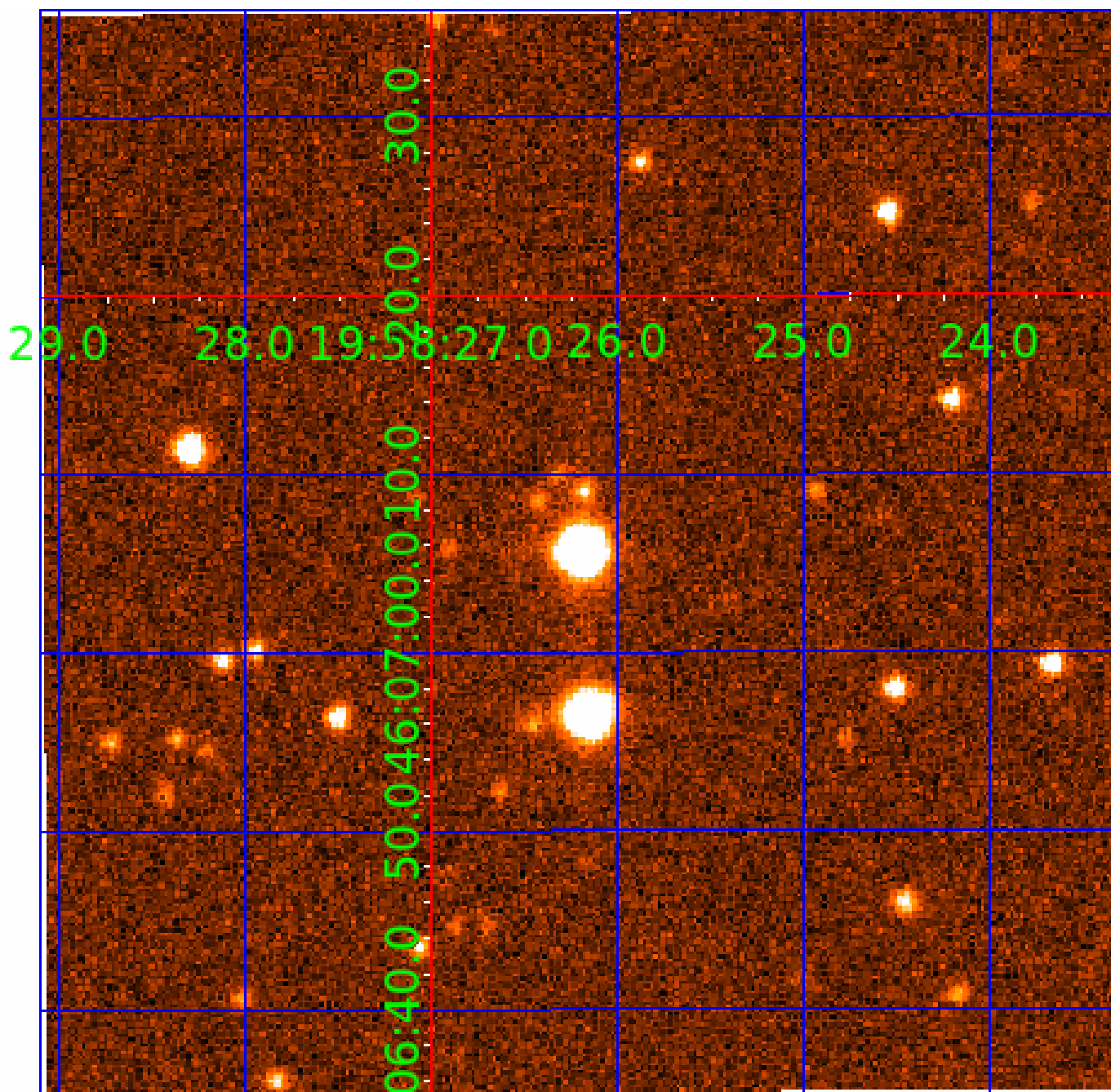


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009549472

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})
009549472-01	OBS	6206.01	15.713789	132.098131	60550.1	11.296	3140.0	2959.6	1.01	5843	27.74	73.81
009549472-02	OBS	No	15.713800	137.330093	6299.6	6.150	367.3	362.0	1.01	5843	8.82	73.81
009549472-03	OBS	No	31.421901	137.918452	135.8	8.007	12.6	5.0	1.01	5843	1.38	29.30
009549472-04	OBS	No	15.713336	137.057954	766.4	28.575	11.6	21.9	1.01	5843	5.44	73.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009549472-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE
009549472-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
009549472-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
009549472-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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.

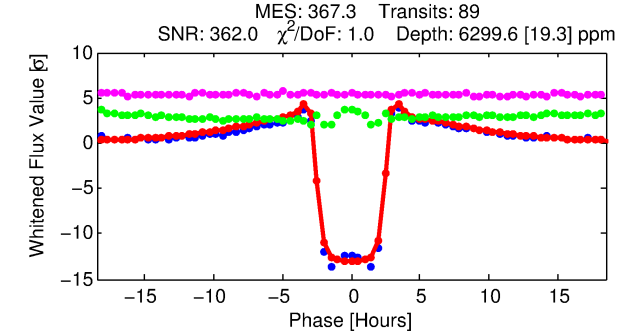
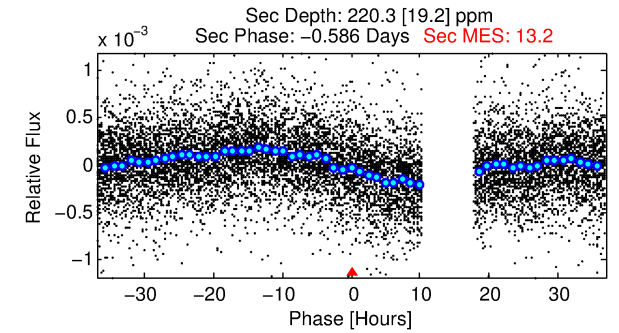
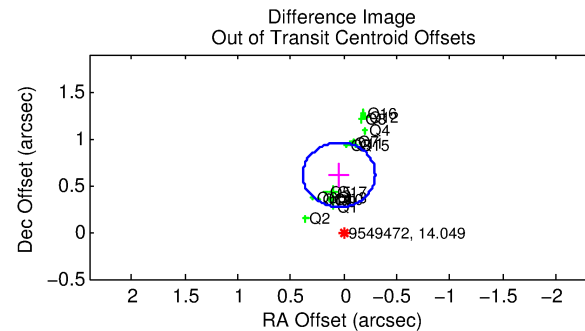
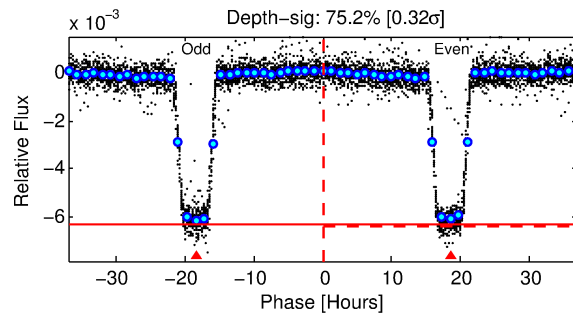
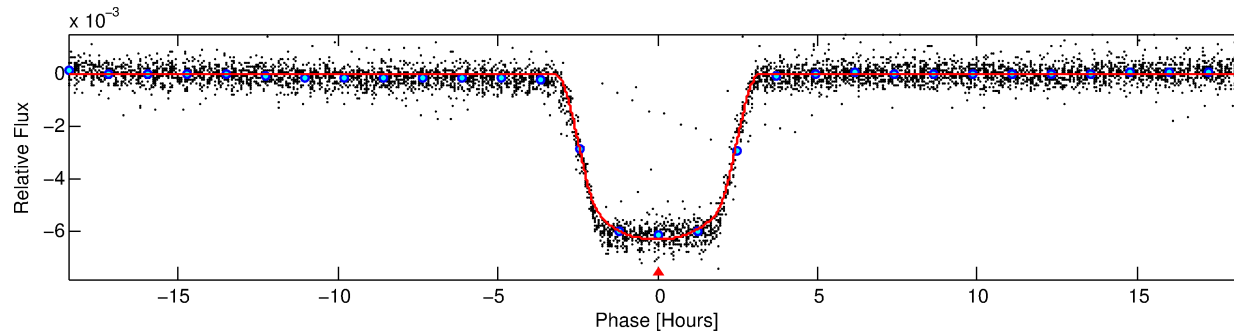
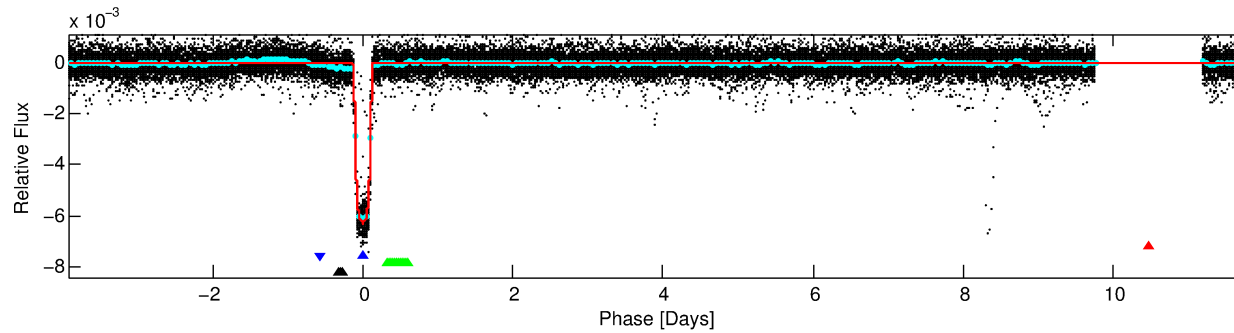
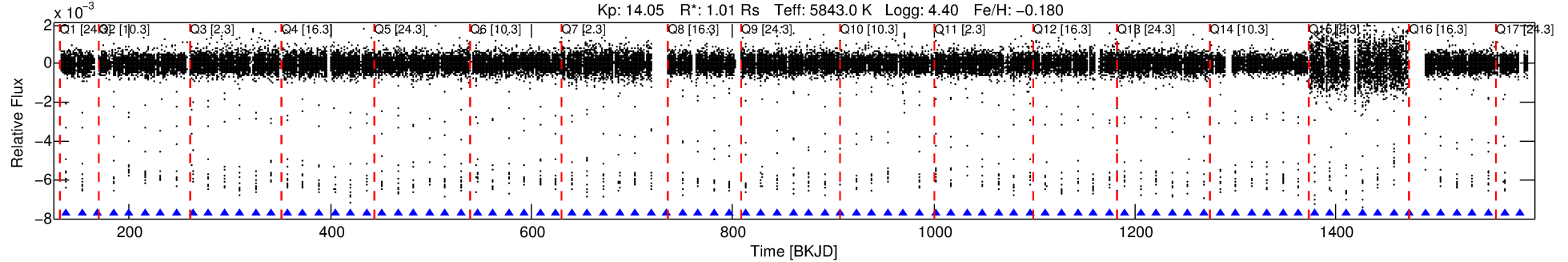
Ephemeris Match Information For 009549472-02

No Significant Match Found

DV One-Page Summary

KIC: 9549472 Candidate: 2 of 4 Period: 15.714 d
KOI: K06206 Corr: No Ephemeris Match

Kp: 14.05 R*: 1.01 Rs Teff: 5843.0 K Logg: 4.40 Fe/H: -0.180



DV Fit Results:

Period = 15.71380 [0.00001] d
Epoch = 137.3301 [0.0003] BKJD
Rp/R* = 0.0804 [0.0002]
a/R* = 14.43 [0.13]
b = 0.79 [0.00]
Seff = 73.81 [26.81]
Teq = 747 [68] K
Rp = 8.83 [2.51] Re
a = 0.1197 [0.0284] AU
Ag = 22.28 [7.88] [2.70σ]
Teffp = 2510 [93] K [15.27σ]

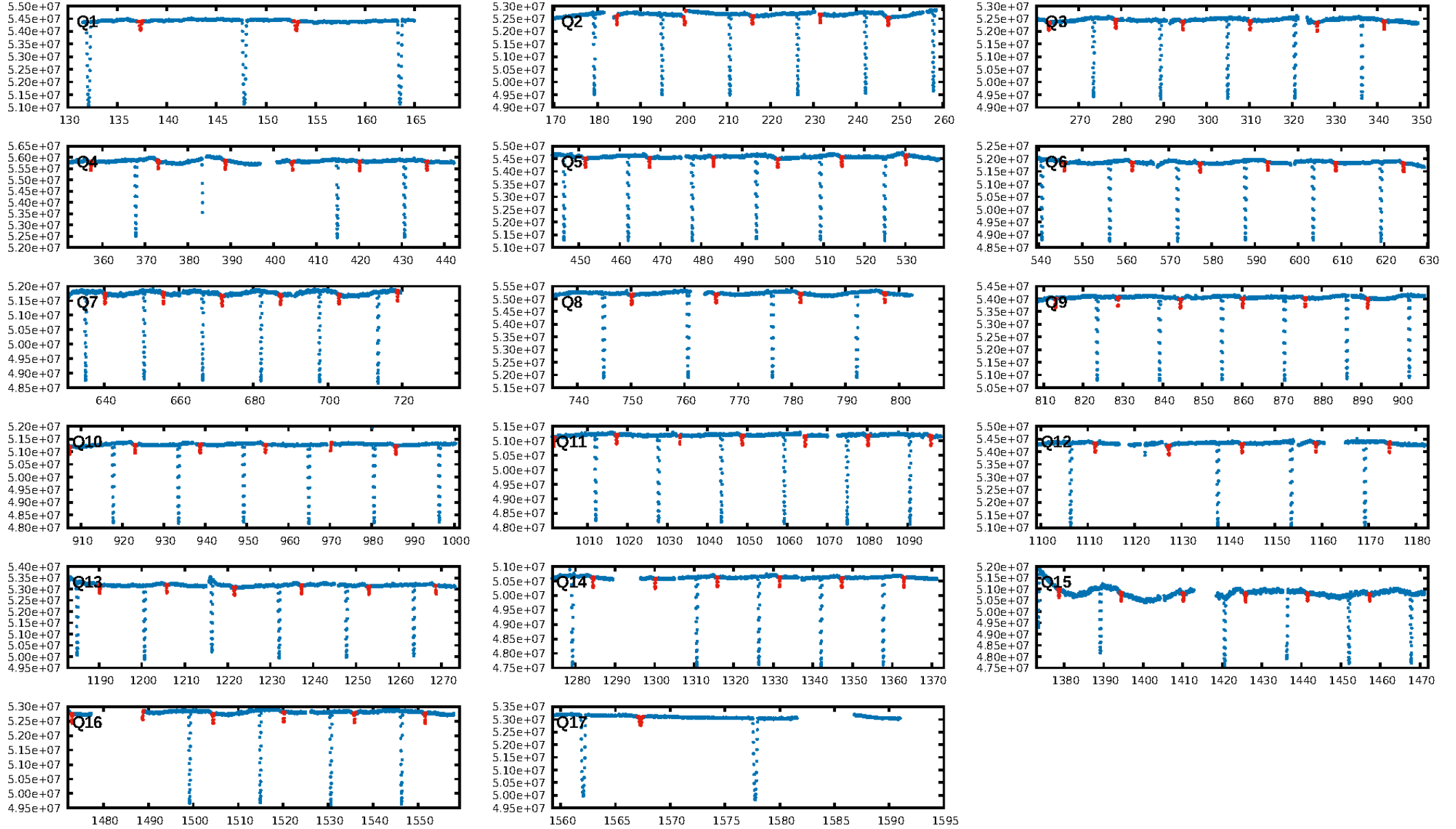
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: 100.0% [37.34σ]
ModelChiSquare2-sig: 8.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [86/86]
GhostDiagnostic-chr: 4.35
Centroid-sig: 0.0%
Centroid-so: 0.773 arcsec [34.03σ]
OotOffset-rm: 0.614 arcsec [5.36σ]
KicOffset-rm: 0.169 arcsec [2.39σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

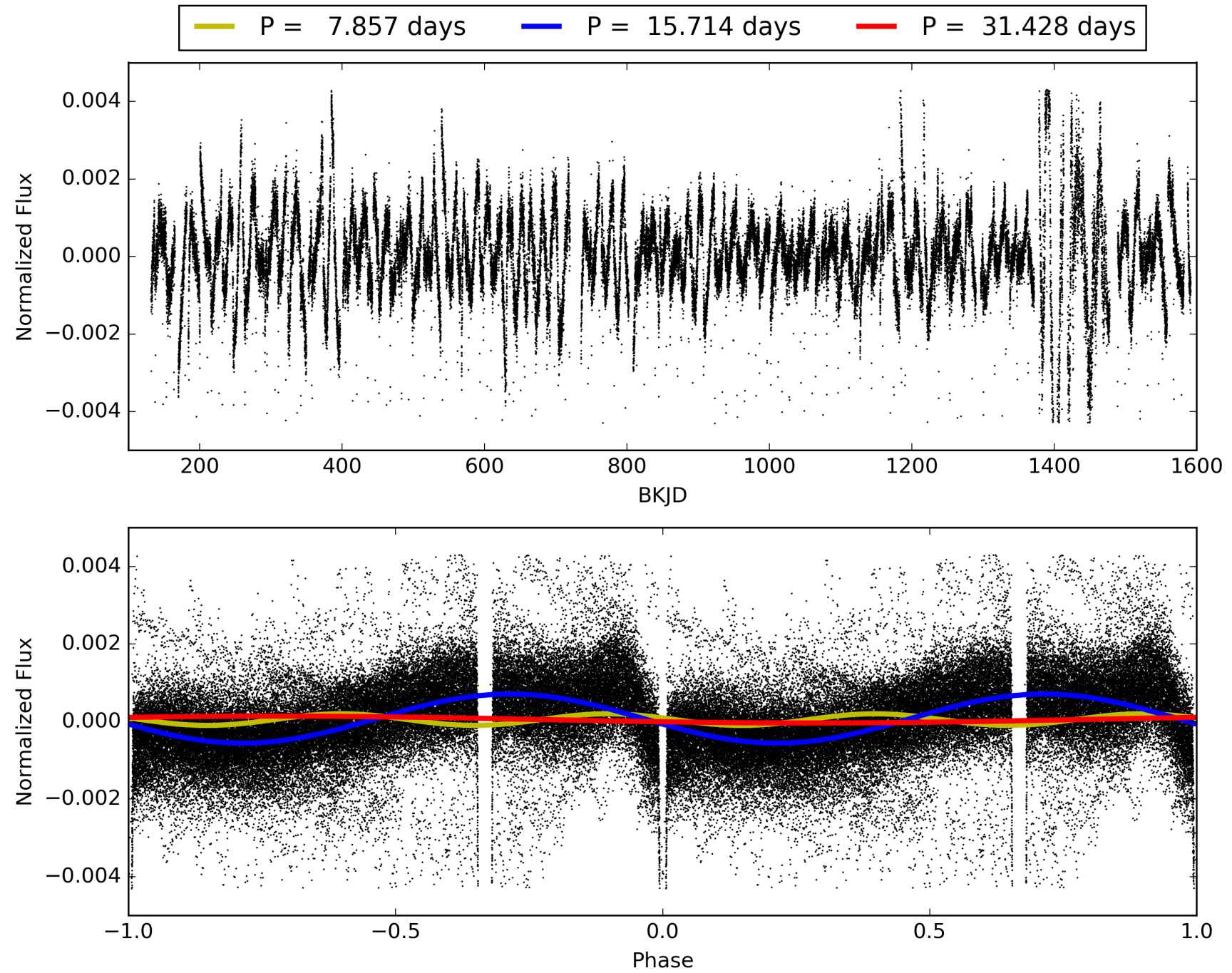
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 06:13:35 Z

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

TCE 009549472-02, PDC Light Curves

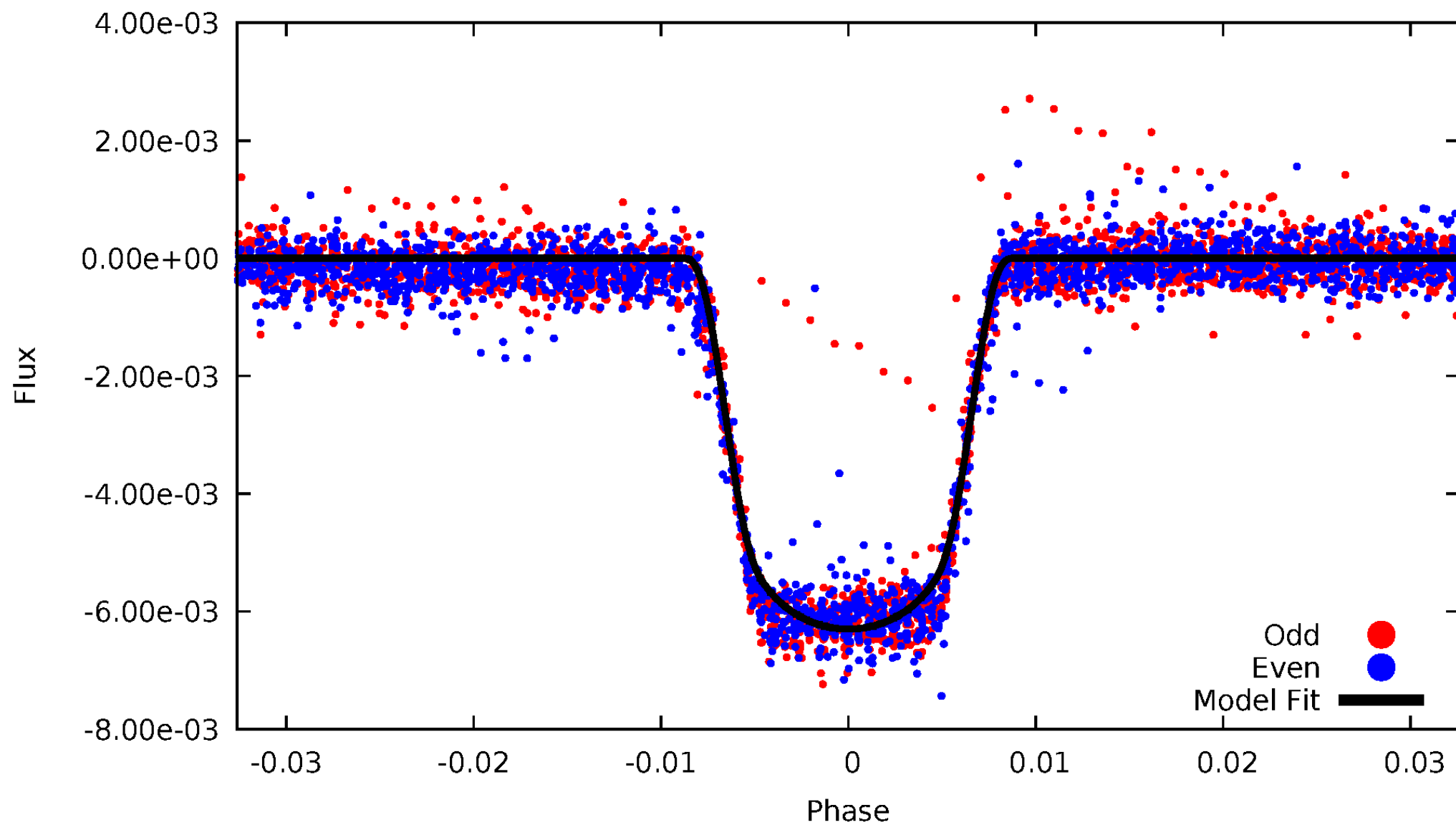


TCE 009549472-02



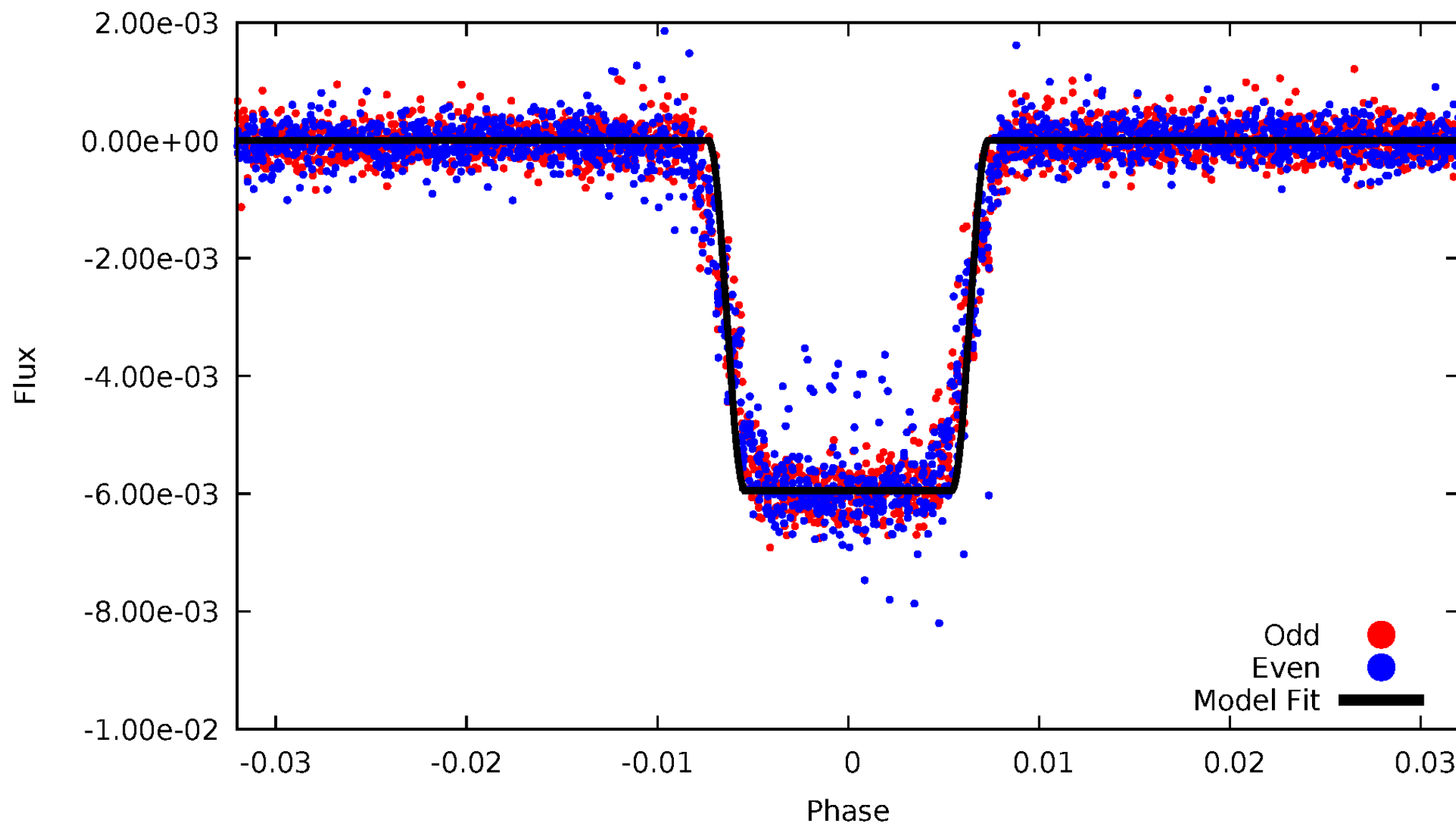
DV Odd/Even

TCE 009549472-02



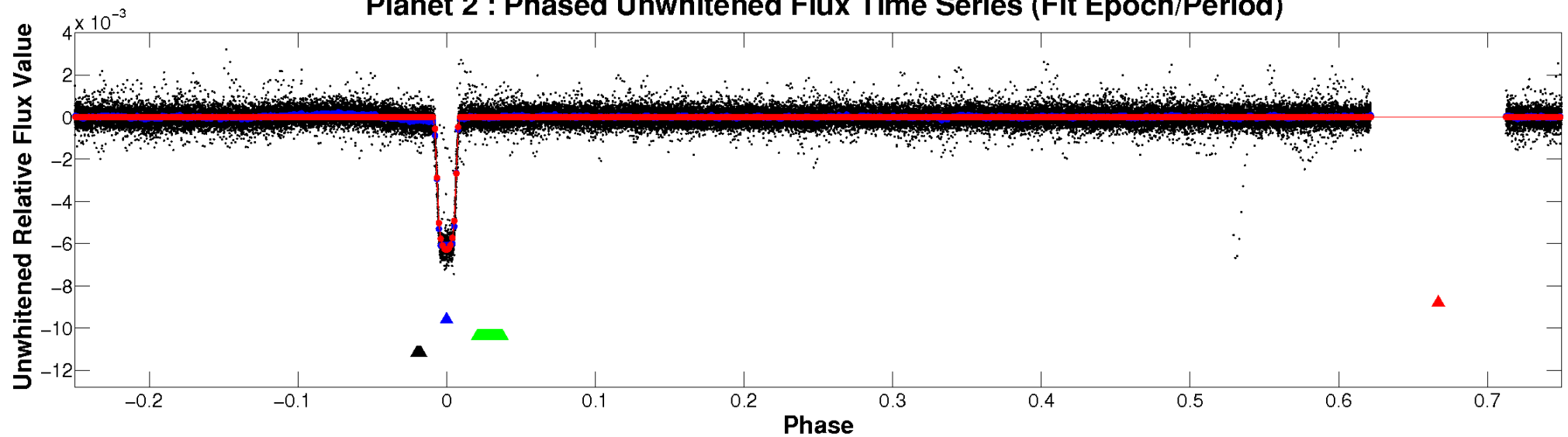
ALT Odd/Even

TCE 009549472-02

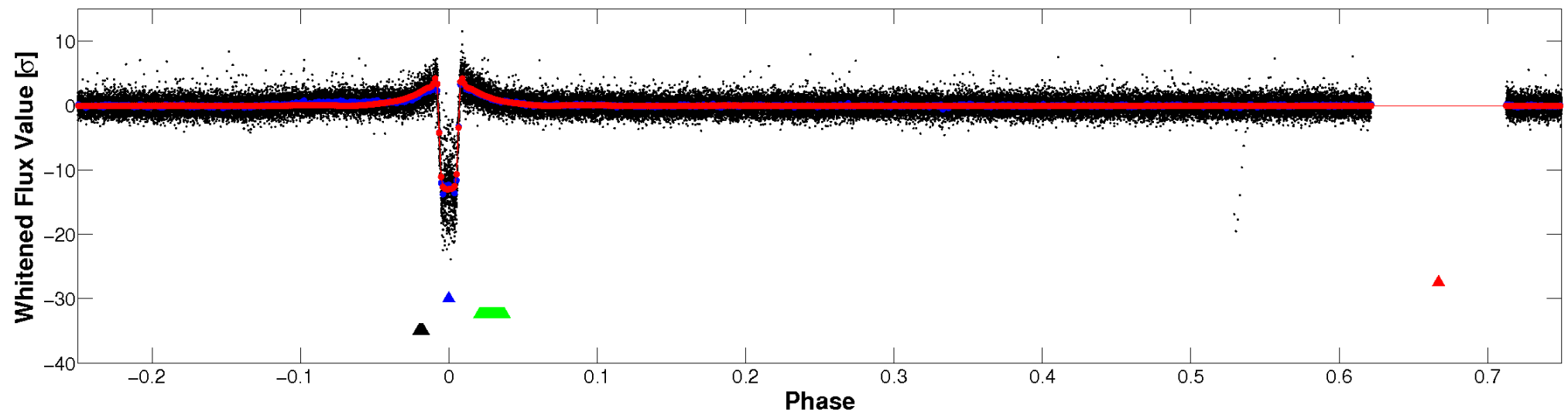


Non-Whitened Vs. Whitened Light Curve

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

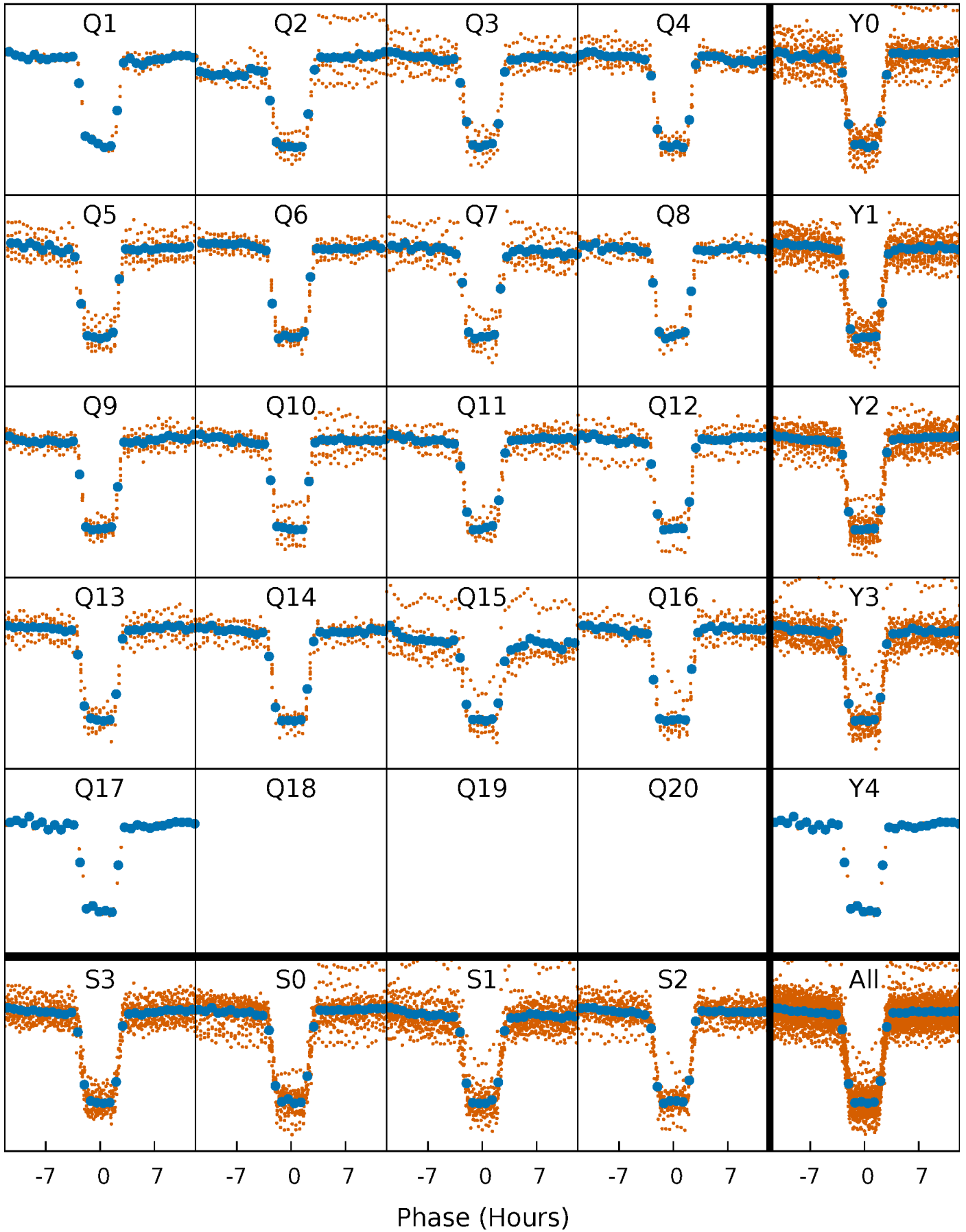


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



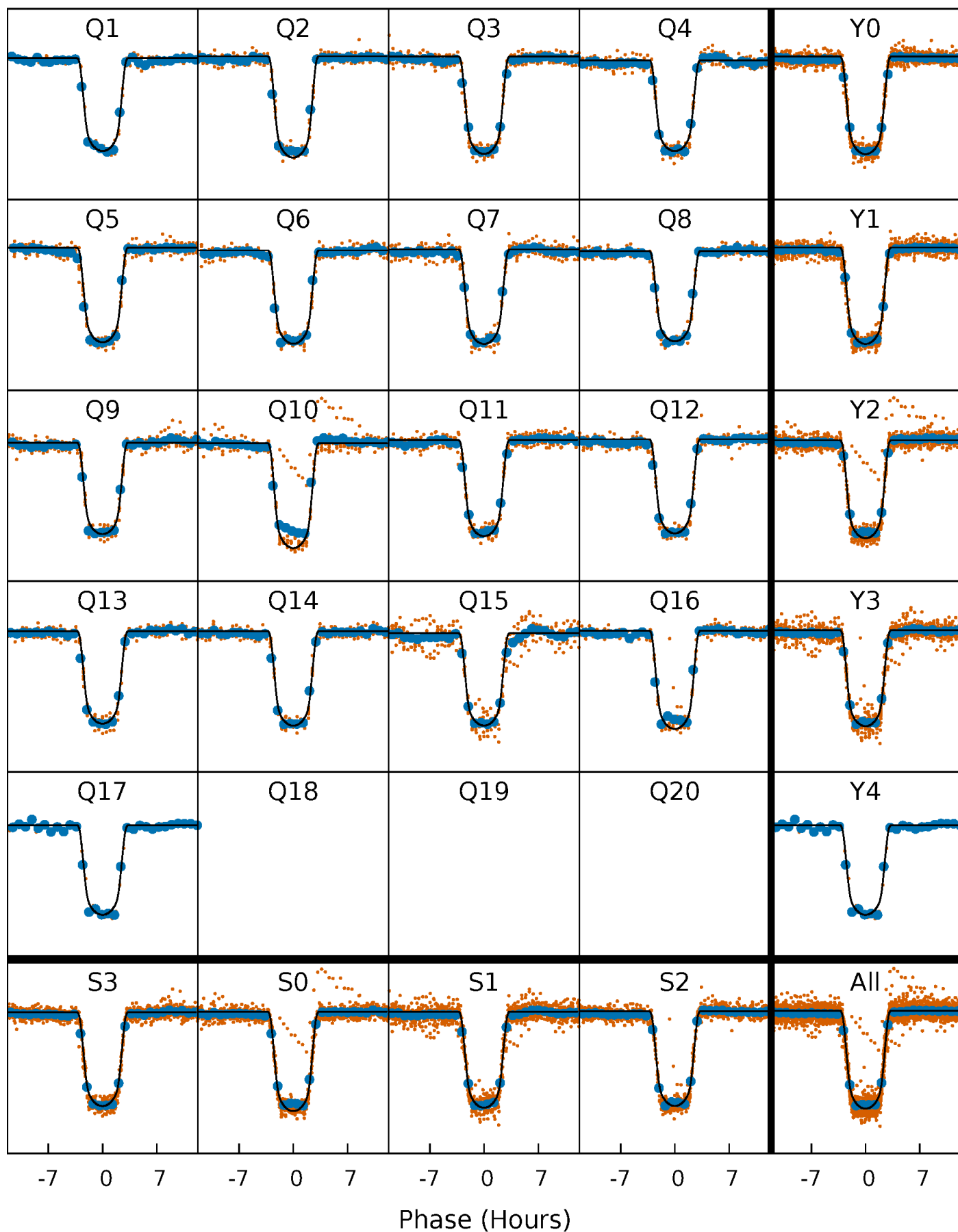
PDC Quarter-Phased Transit Curves

TCE 009549472-02 P= 15.713800 Days $T_0=137.330093$ (BKJD)



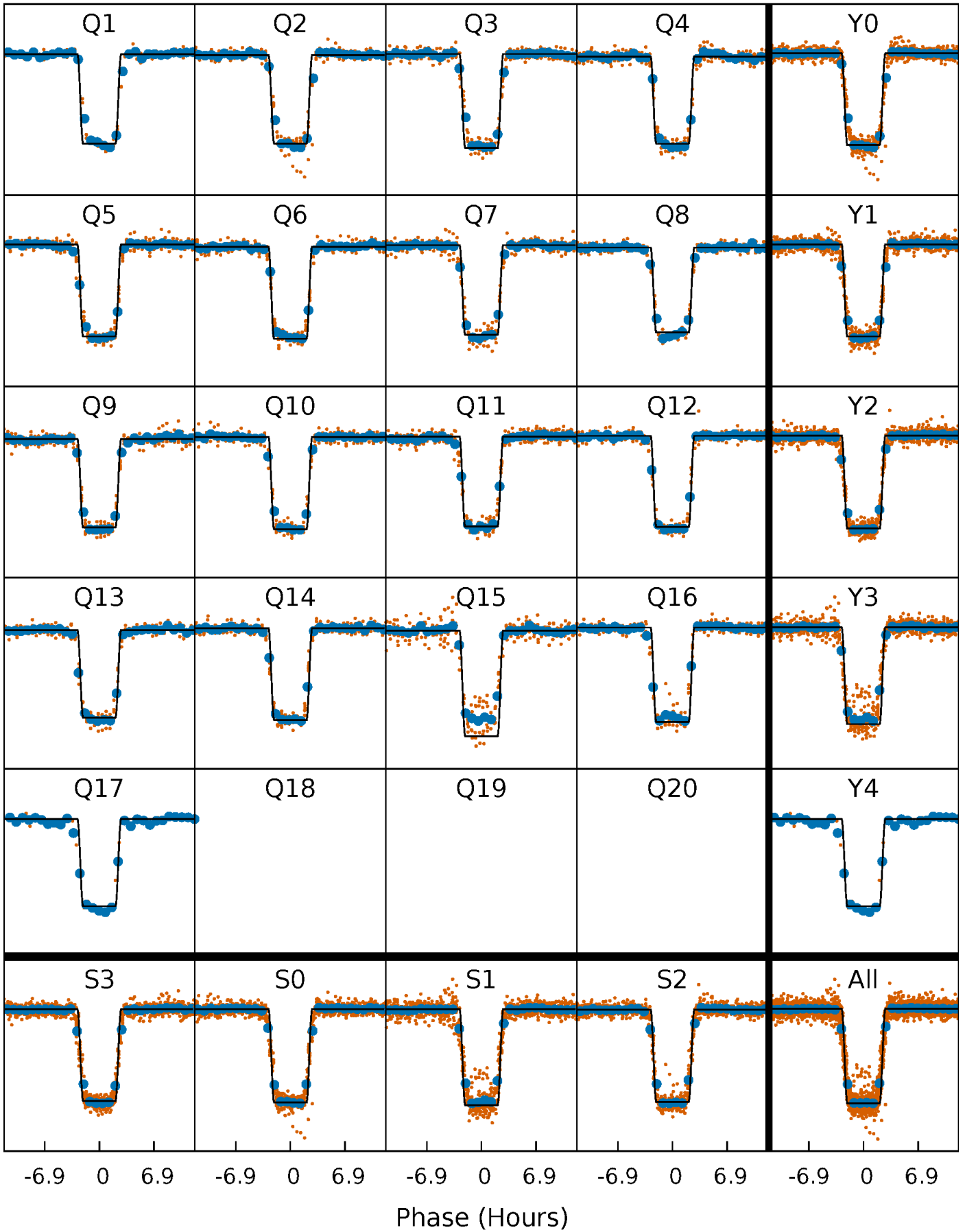
DV Quarter-Phased Transit Curves

TCE 009549472-02 P= 15.713800 Days $T_0=137.330093$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

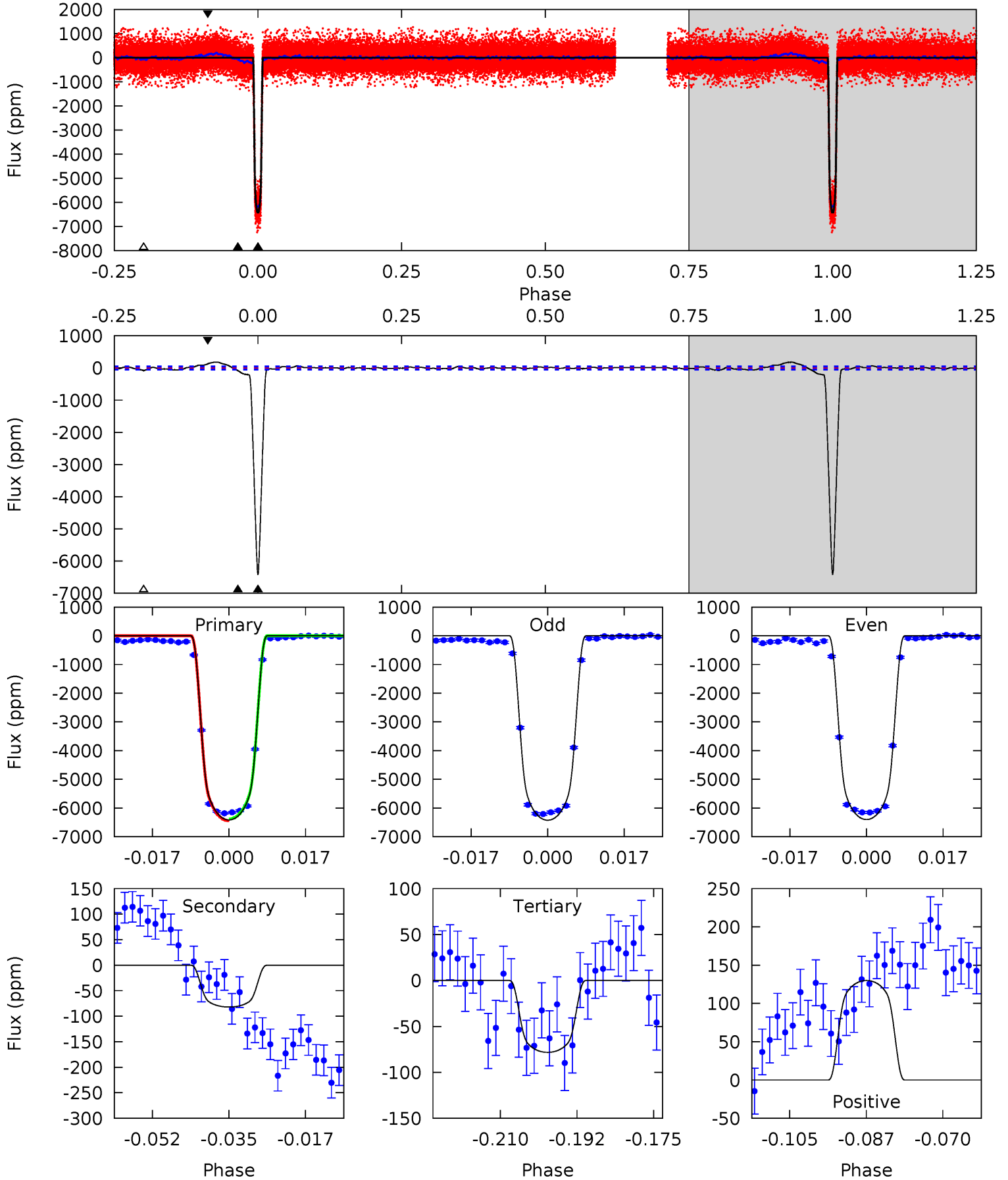
TCE 009549472-02 P= 15.713988 Days $T_0=137.321818$ (BKJD)



DV Model-Shift Uniqueness Test

009549472-02, P = 15.713800 Days, E = 121.616293 Days

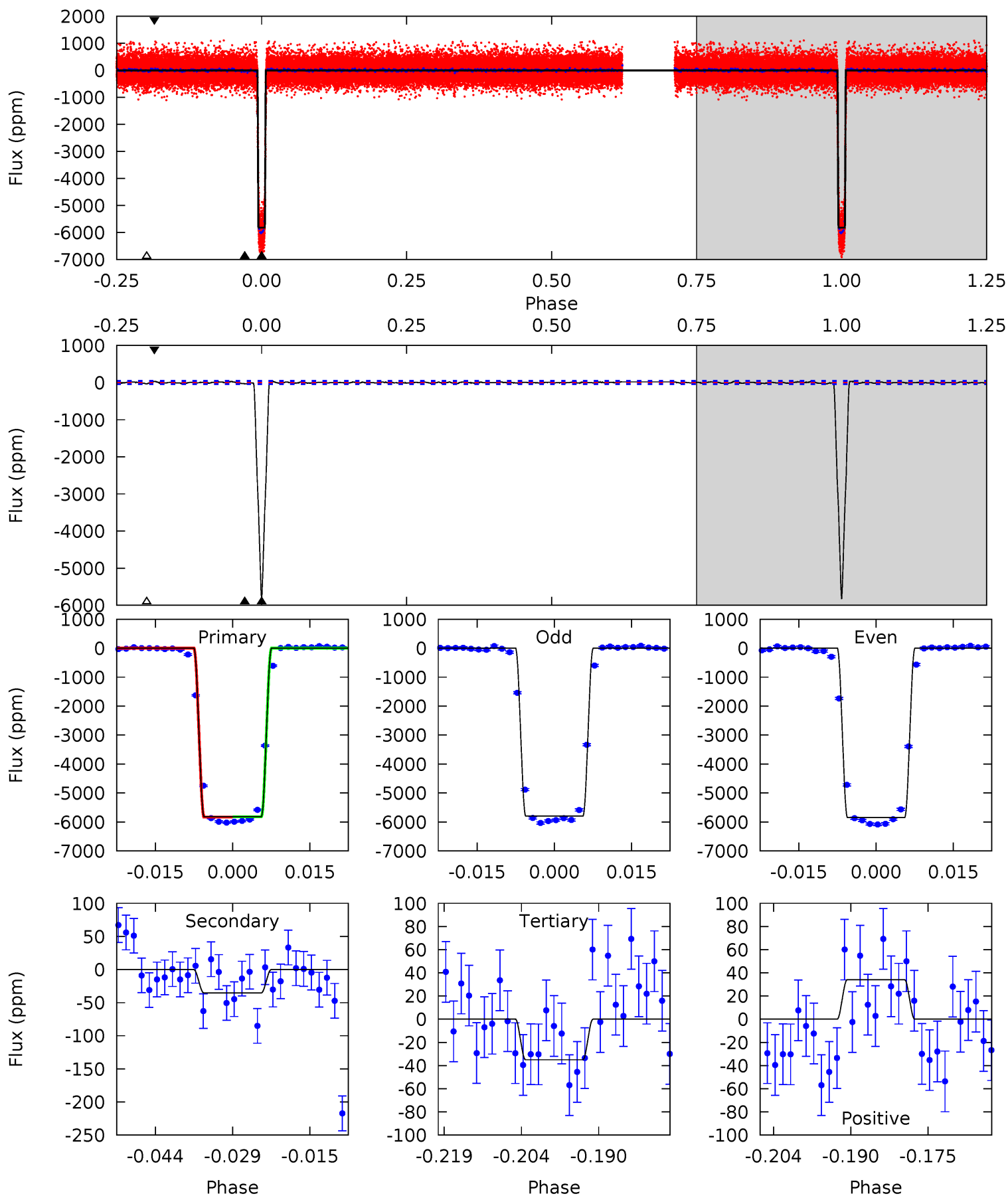
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
696.0	8.90	8.49	14.1	4.92	2.38	4.33	687.5	681.9	0.41	-5.20	1.27	0.99	0.03	3.25



Alt Model-Shift Uniqueness Test

009549472-02, P = 15.713988 Days, E = 121.607830 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
652.8	3.97	3.93	3.83	4.95	2.44	1.13	648.9	649.0	0.04	0.14	2.95	1.00	0.01	0.84



Stellar Parameters For KIC 009549472

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5843^{+158}_{-176}	$4.399^{+0.124}_{-0.186}$	$-0.180^{+0.300}_{-0.300}$	$1.006^{+0.286}_{-0.154}$	$0.924^{+0.132}_{-0.088}$	$1.279^{+0.716}_{-0.618}$
	+3%/-3%	+3%/-4%	+167%/-167%	+28%/-15%	+14%/-10%	+56%/-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 009549472-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-82 ± 9	$8.82^{+1.31}_{-0.80}$	1049^{+71}_{-60}	2719^{+54}_{-63}	$8.189^{+1.935}_{-1.985}$
Alt.	-35 ± 9	$8.55^{+1.47}_{-0.81}$	1051^{+81}_{-61}	2457^{+81}_{-93}	$3.711^{+1.351}_{-1.151}$

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

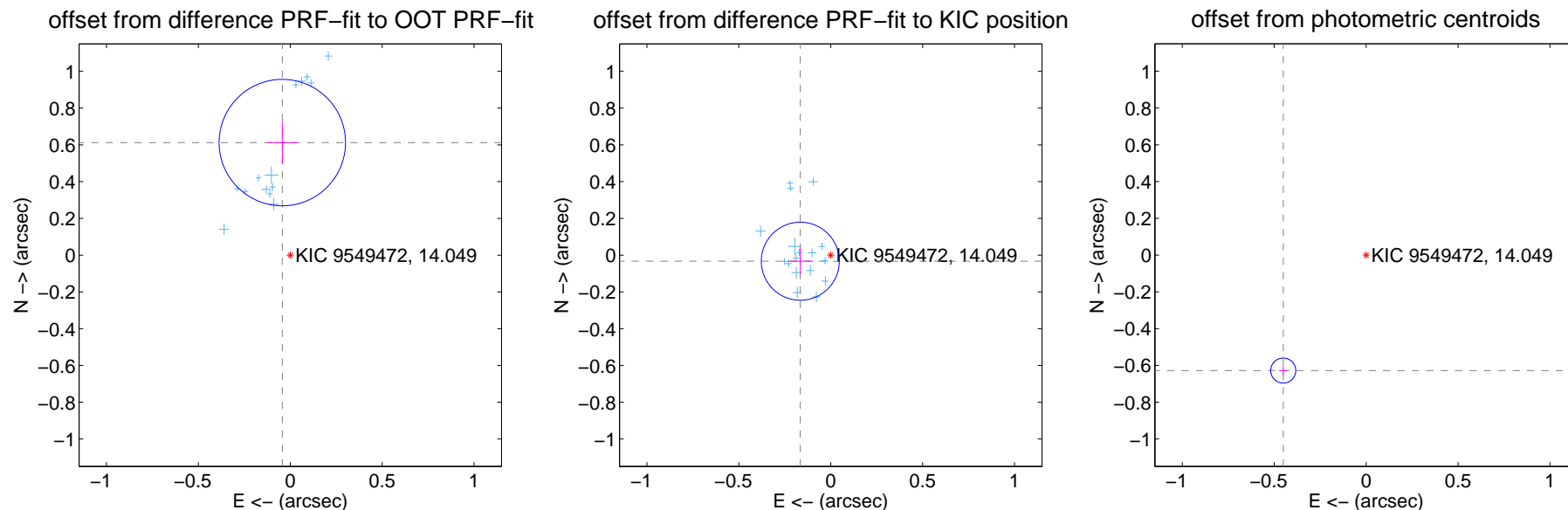
DV Centroid Data

Supplemental centroid analysis for 009549472-02. Kepler magnitude: 14.05. Transit SNR 361.97

There are 17 quarters with good PRF difference image offsets

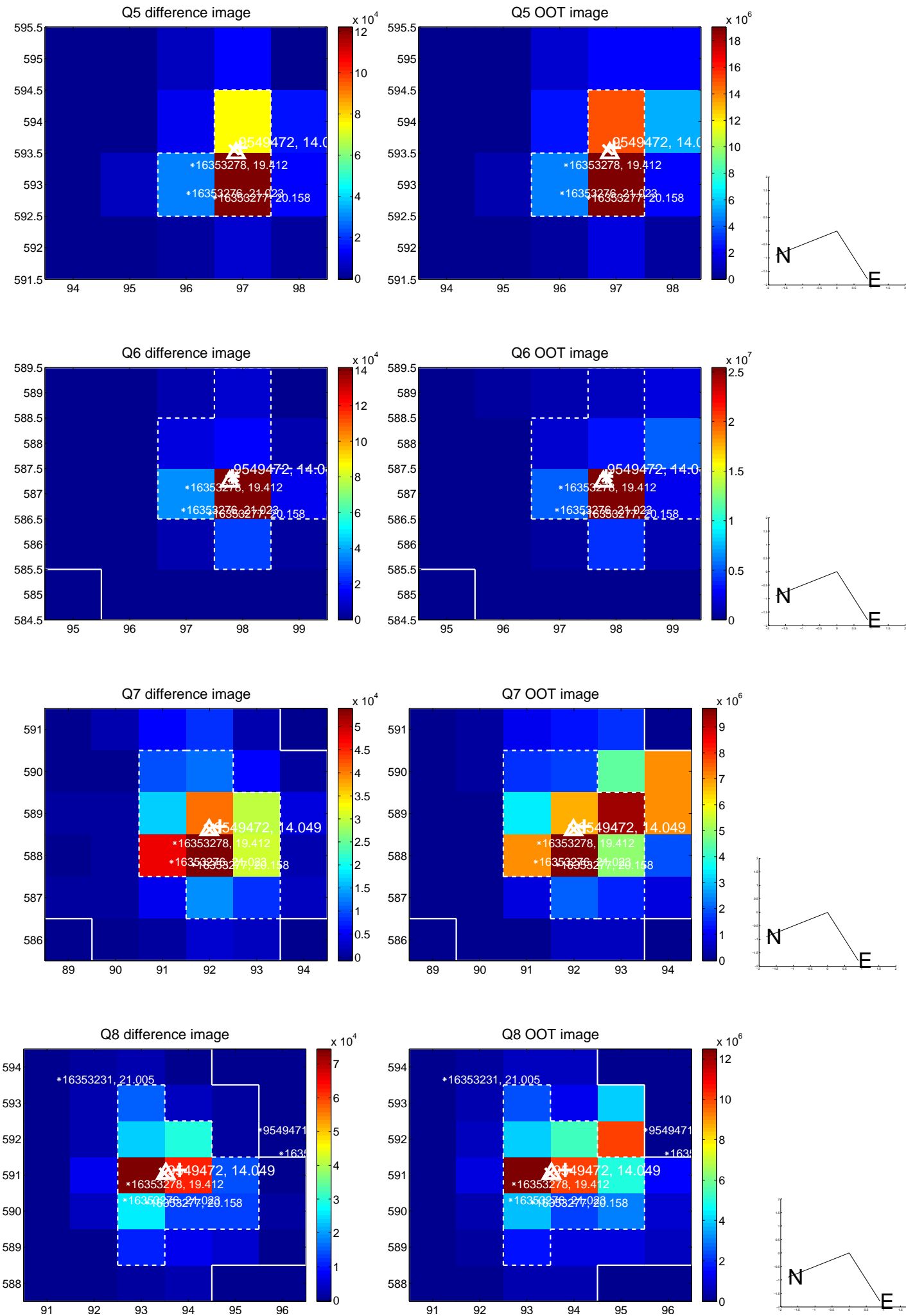
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.614 ± 0.115	5.36	0.043 ± 0.080	0.612 ± 0.117
PRF-fit source offset from KIC position	0.169 ± 0.071	2.39	0.166 ± 0.071	-0.033 ± 0.071
photometric centroid source offset	0.77 ± 0.02	34.03	0.45 ± 0.02	-0.63 ± 0.02

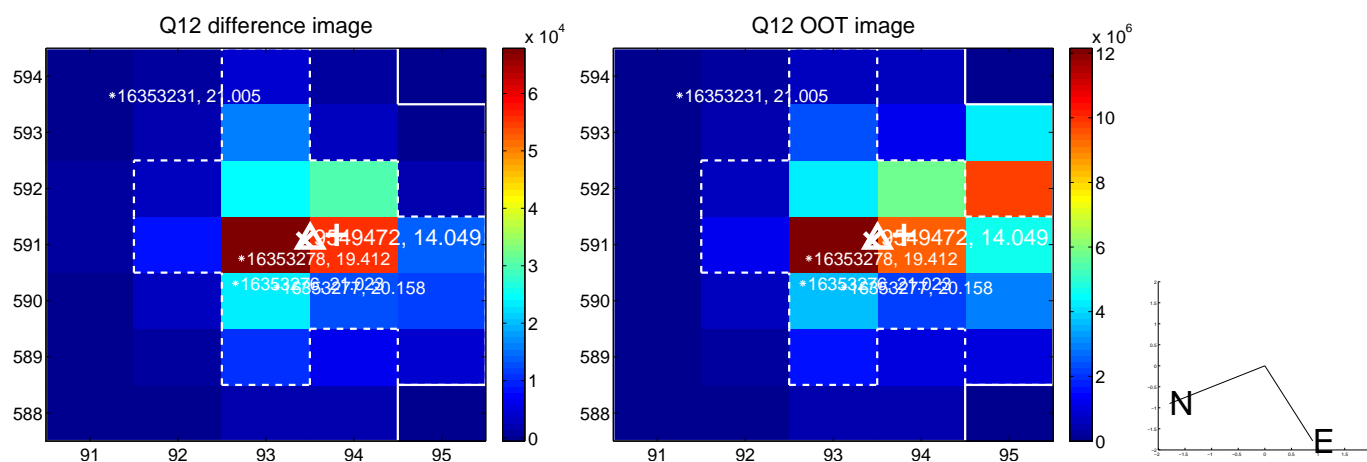
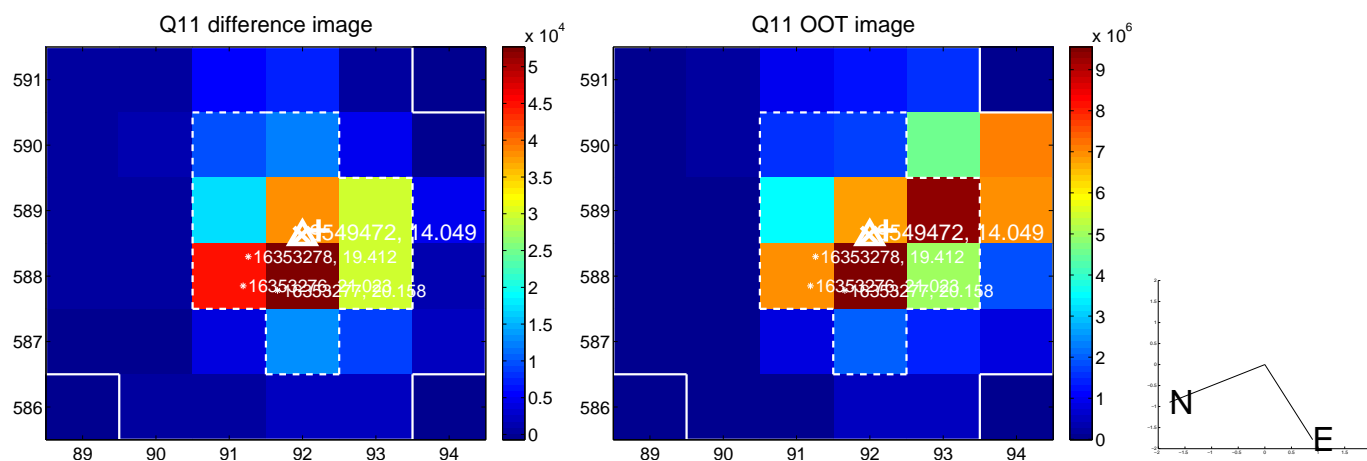
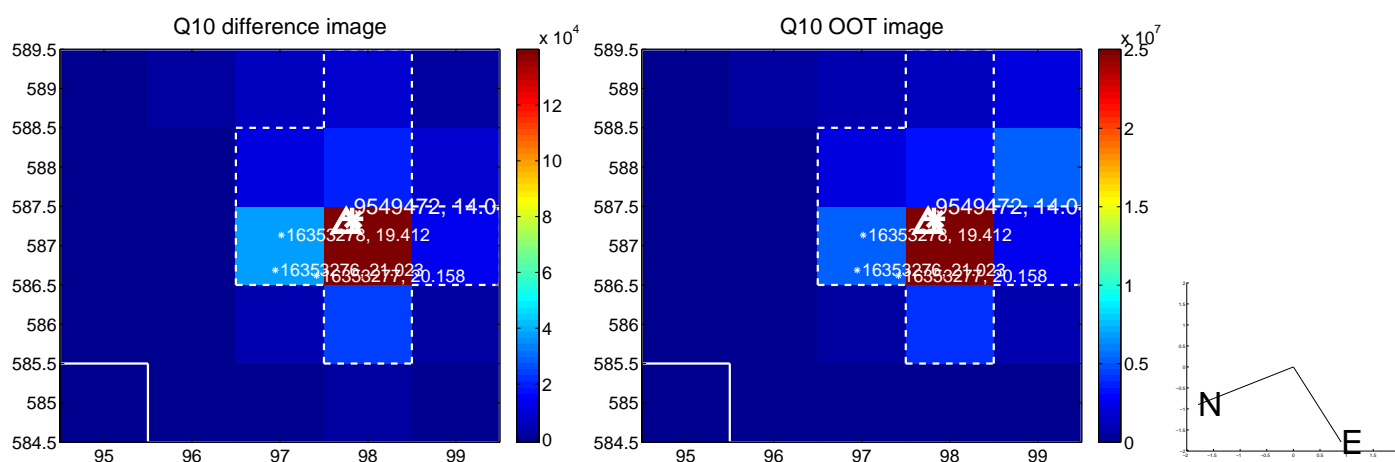
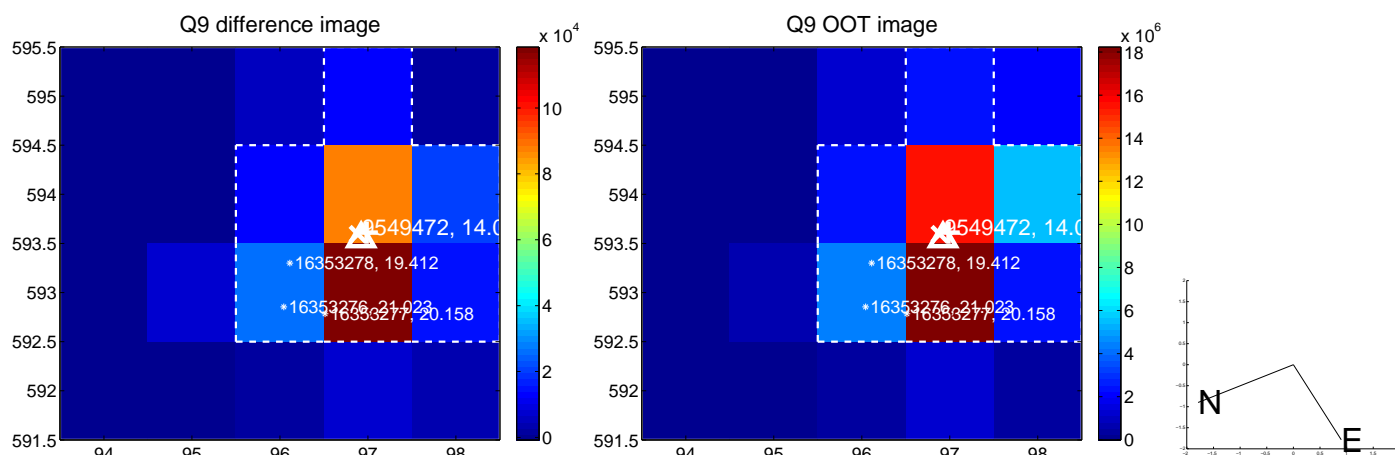


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

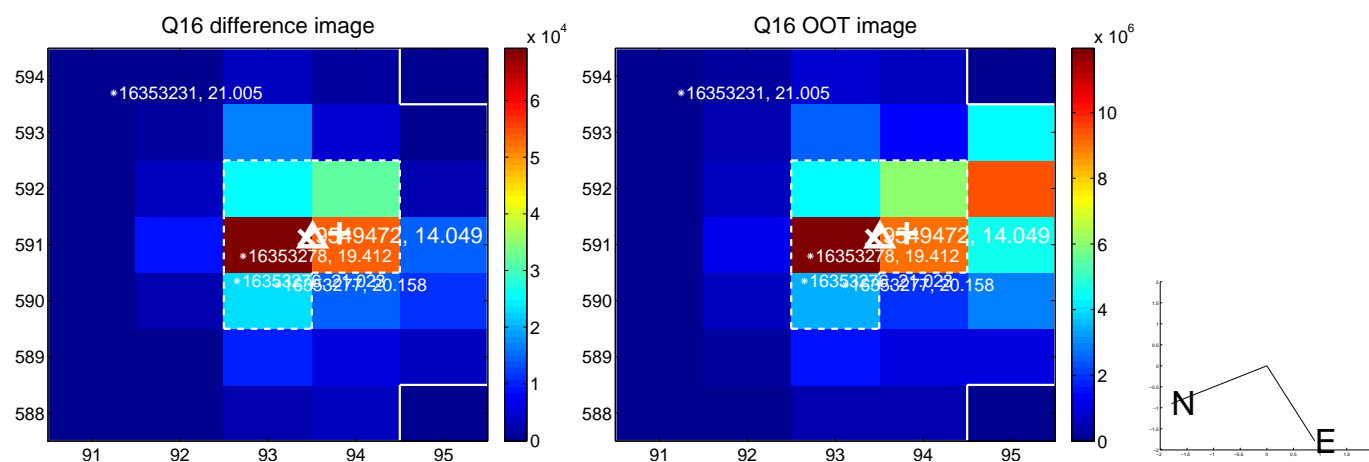
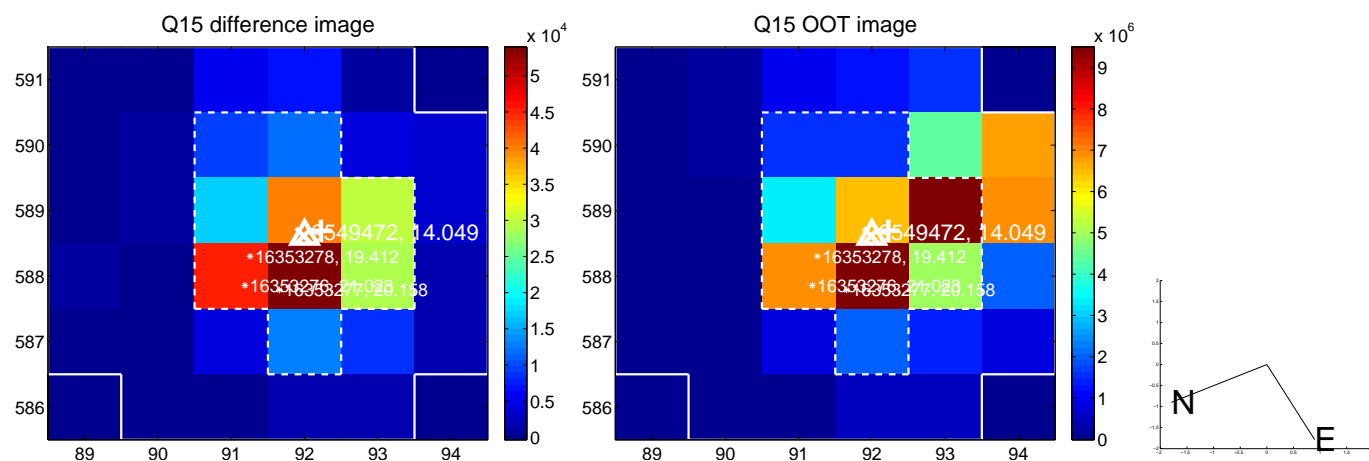
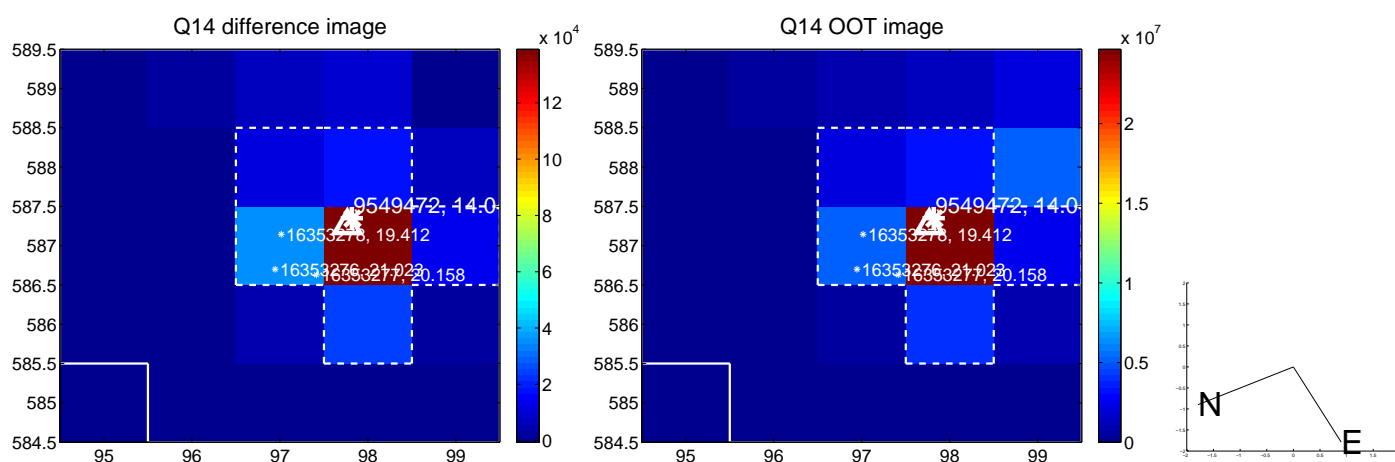
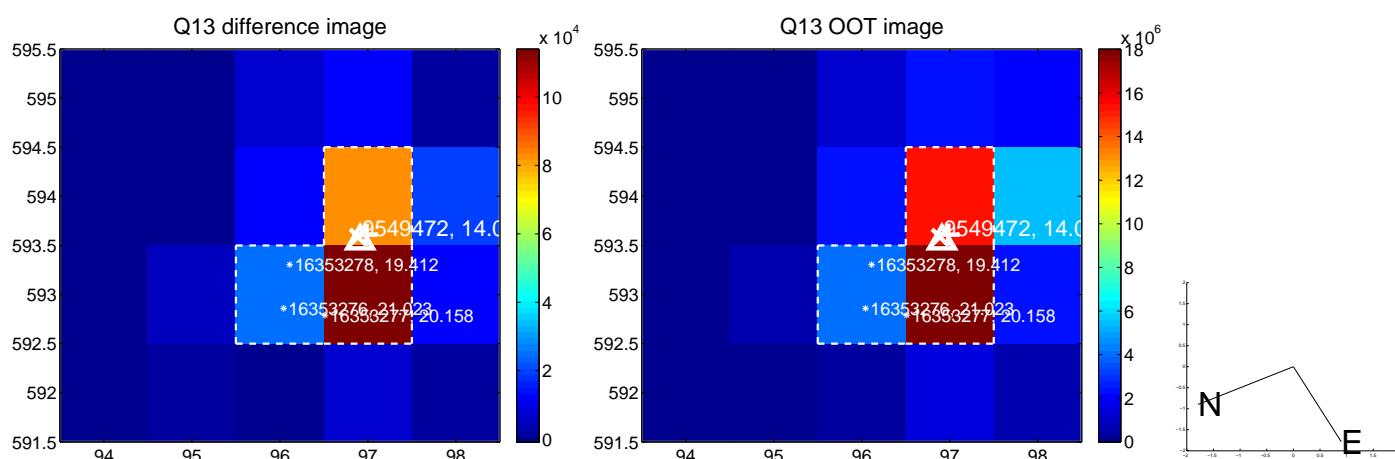
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



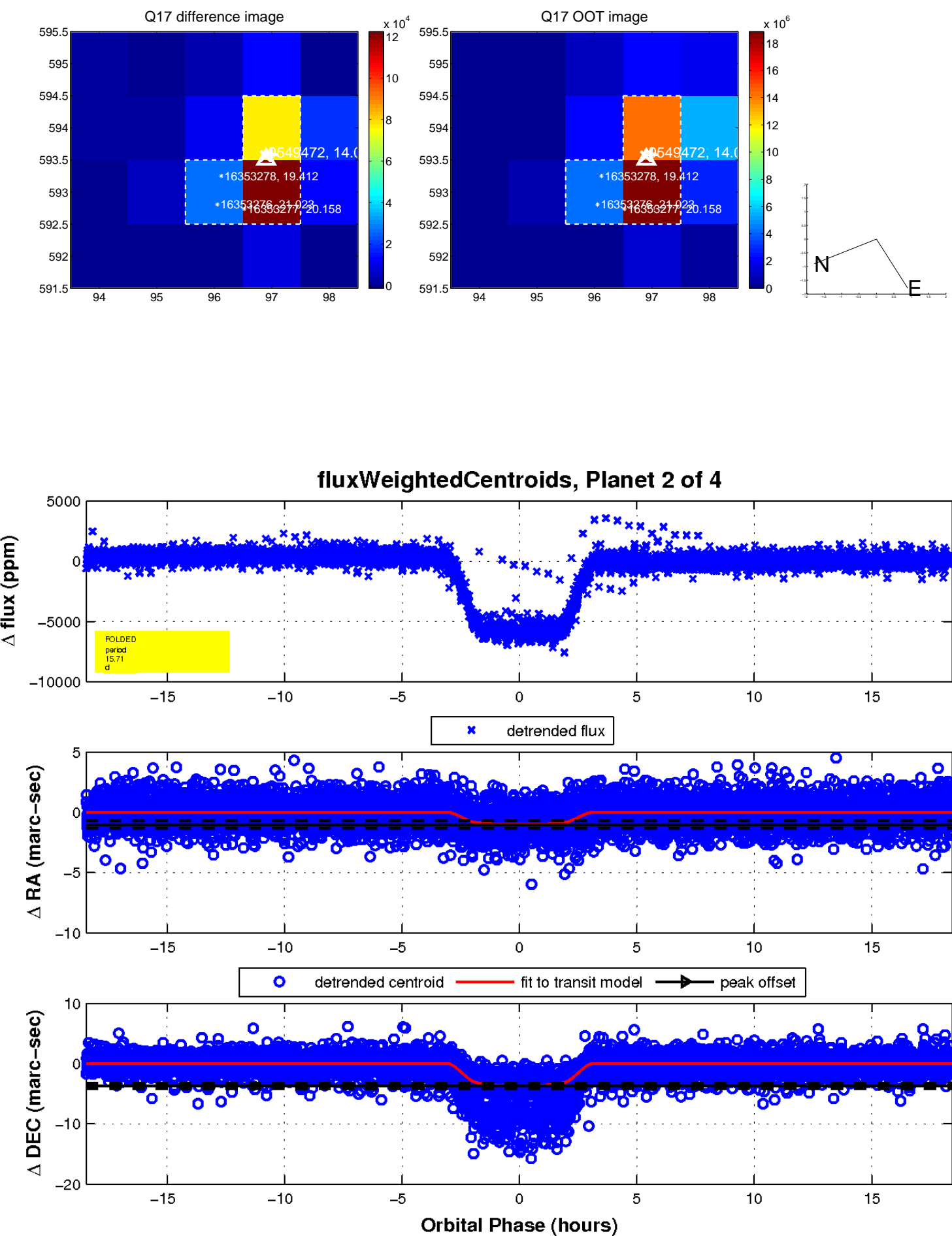
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

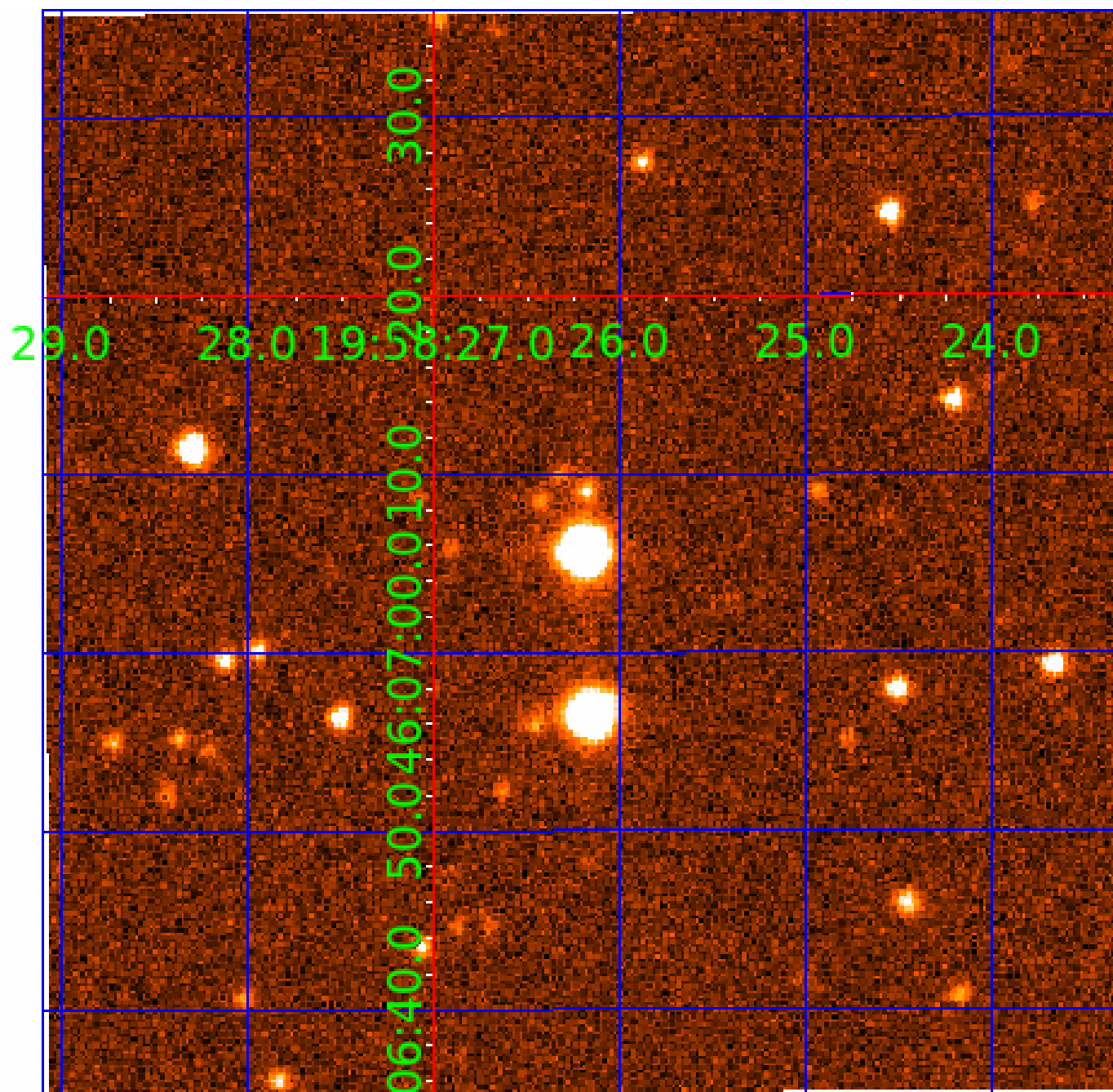


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009549472

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})
009549472-01	OBS	6206.01	15.713789	132.098131	60550.1	11.296	3140.0	2959.6	1.01	5843	27.74	73.81
009549472-02	OBS	No	15.713800	137.330093	6299.6	6.150	367.3	362.0	1.01	5843	8.82	73.81
009549472-03	OBS	No	31.421901	137.918452	135.8	8.007	12.6	5.0	1.01	5843	1.38	29.30
009549472-04	OBS	No	15.713336	137.057954	766.4	28.575	11.6	21.9	1.01	5843	5.44	73.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009549472-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE
009549472-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
009549472-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
009549472-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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 009549472-03

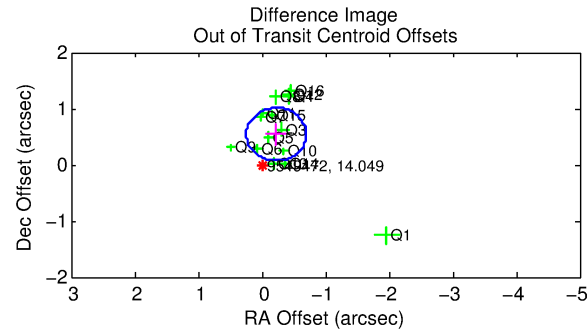
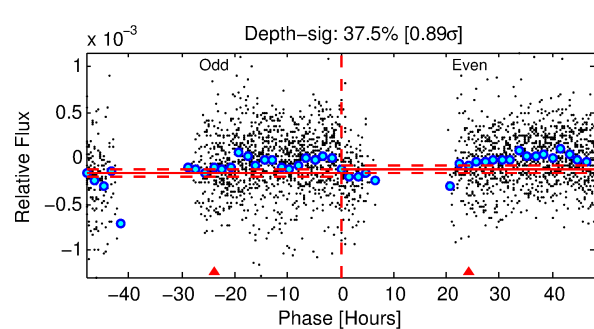
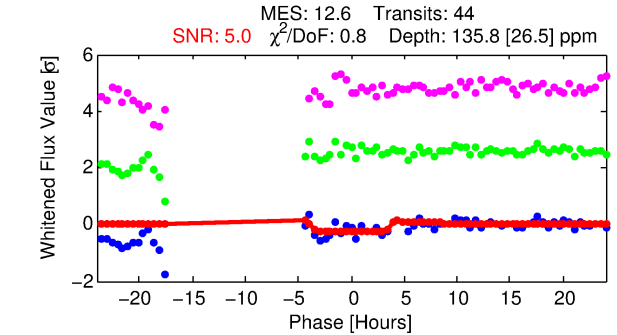
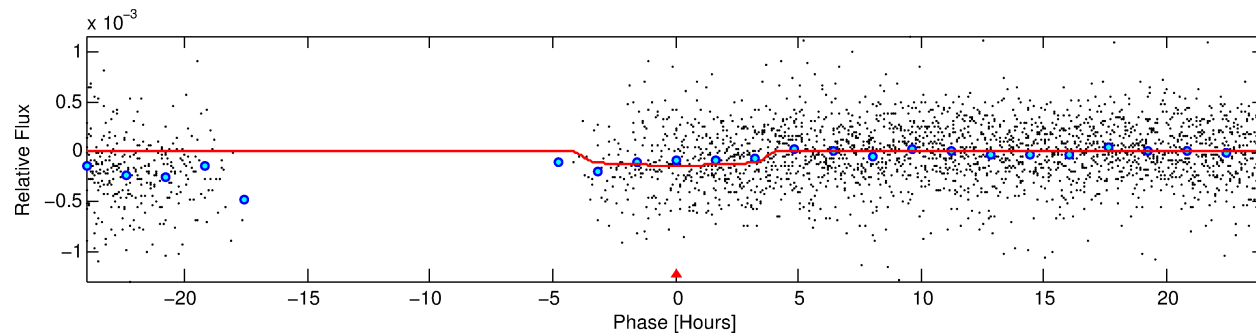
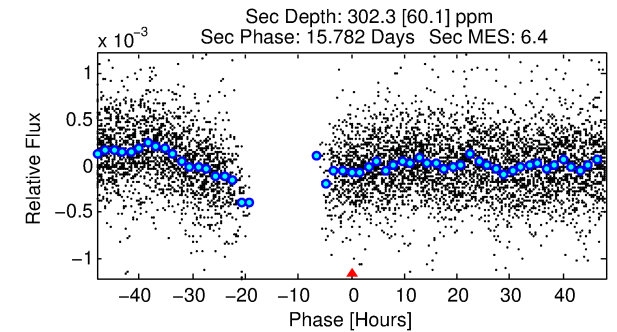
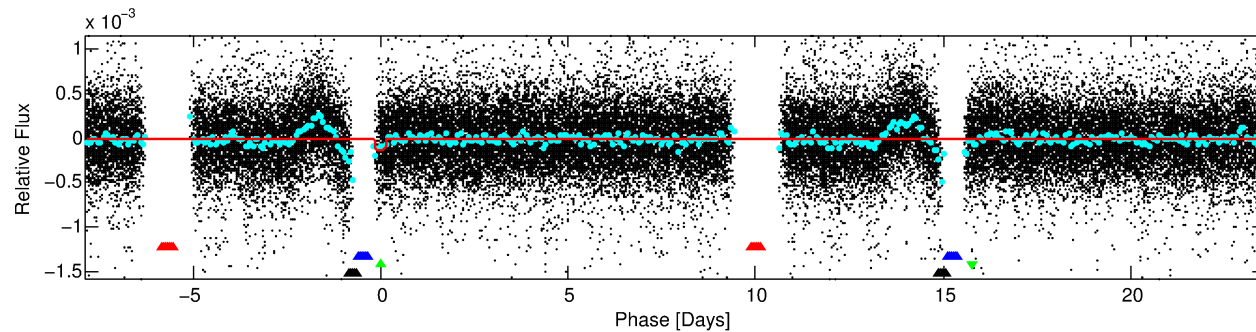
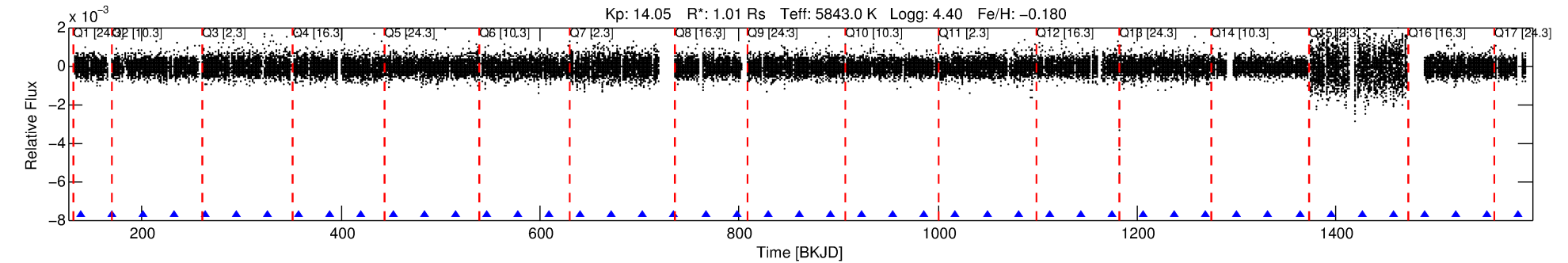
No Significant Match Found

DV One-Page Summary

KIC: 9549472 Candidate: 3 of 4 Period: 31.422 d

KOI: K06206 Corr: No Ephemeris Match

Kp: 14.05 R*: 1.01 Rs Teff: 5843.0 K Logg: 4.40 Fe/H: -0.180



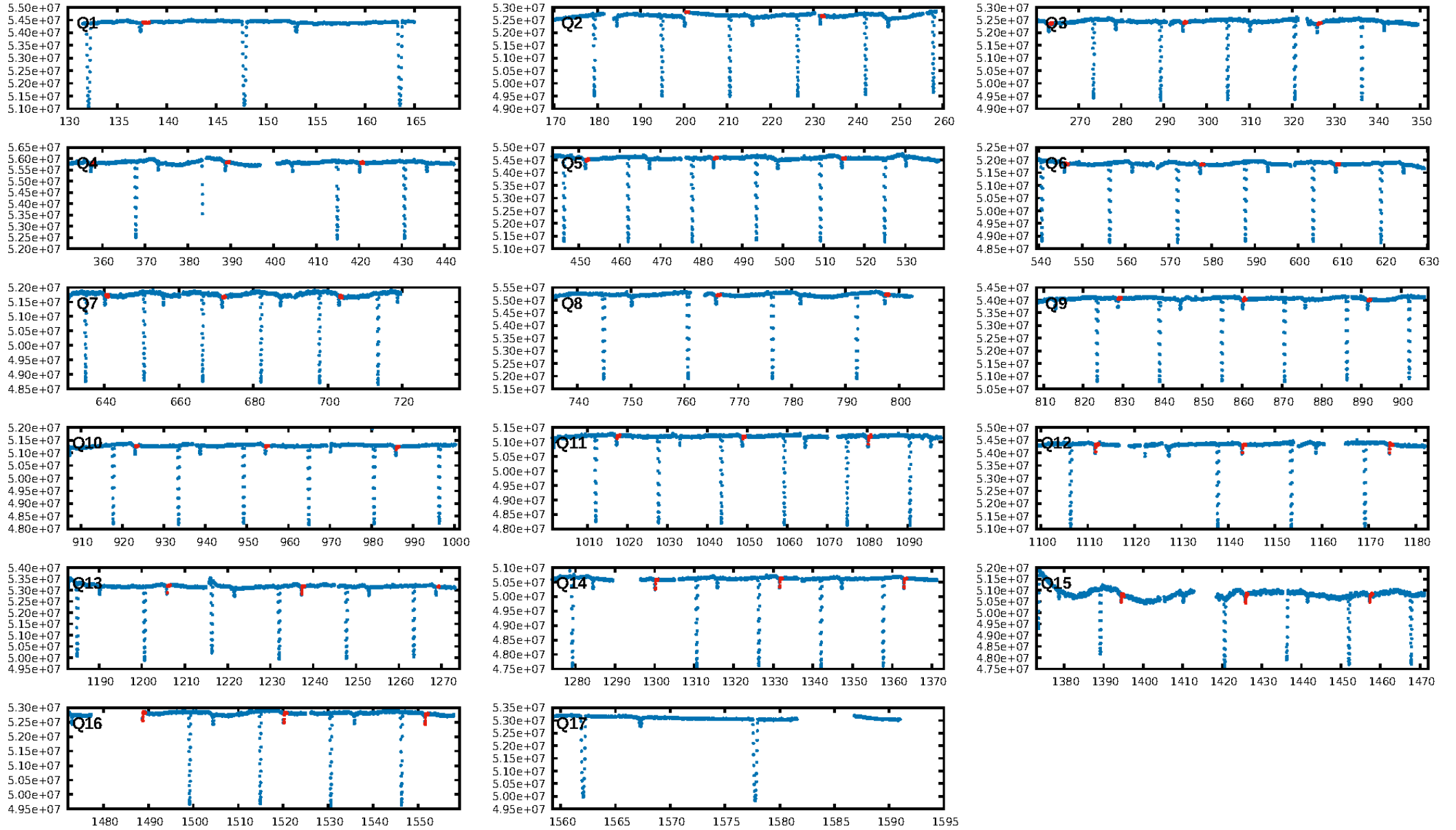
DV Fit Results:

Period = 31.42190 [0.00078] d
Epoch = 137.9185 [0.0180] BKJD
Rp/R* = 0.0126 [0.0044]
a/R* = 14.31 [23.13]
b = 0.89 [0.36]
Seff = 29.30 [10.64]
Teff = 593 [54] K
Rp = 1.38 [0.62] Re
a = 0.1899 [0.0451] AU
Ag = 3154.71 [2519.81] [1.25σ]
Teffp = 6874 [1257] K [4.99σ]

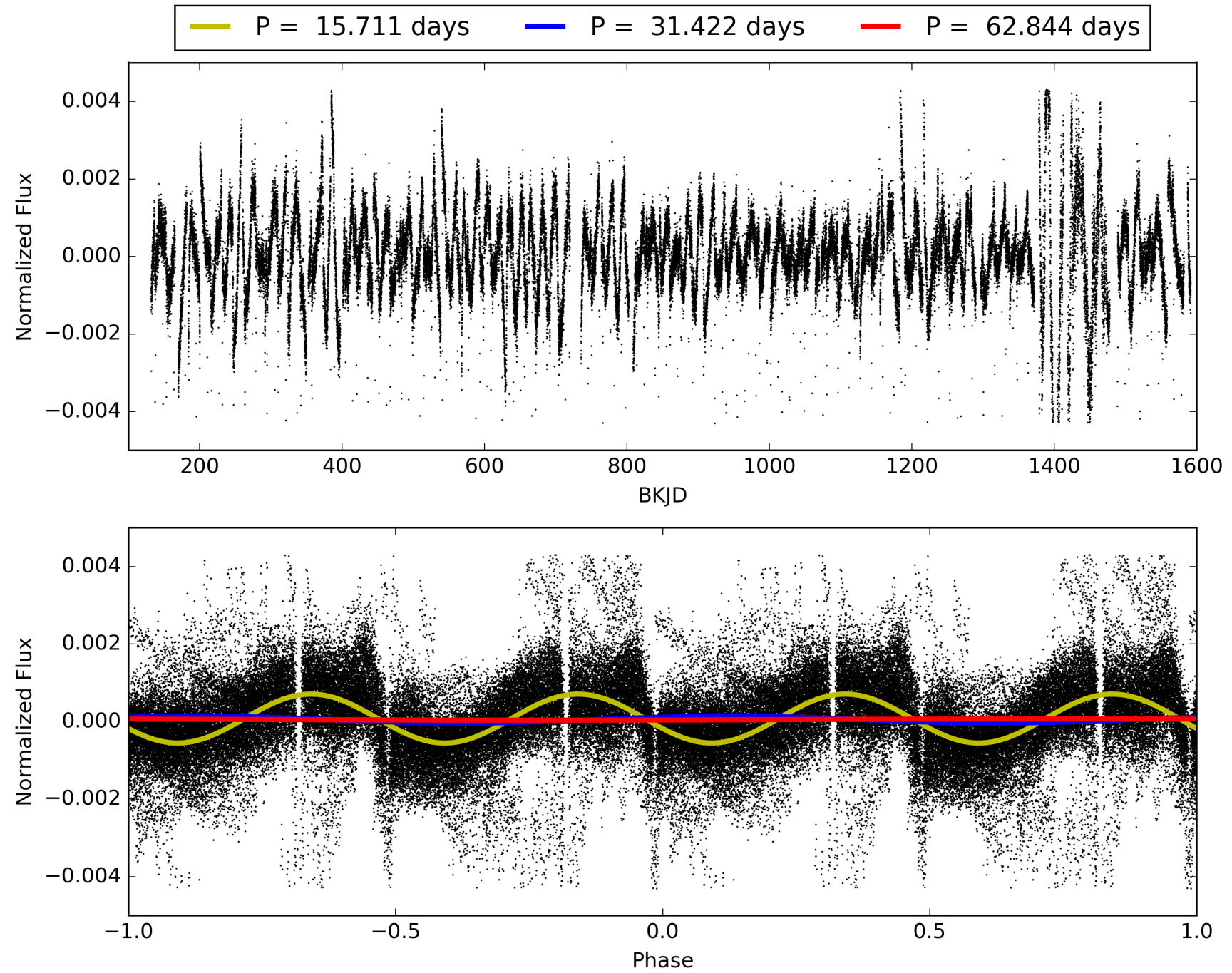
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [37.34σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 90.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.09e-37
RollingBand-fgt: 1.00 [43/43]
GhostDiagnostic-chr: -0.1051
Centroid-sig: 5.1%
Centroid-so: 2.453 arcsec [2.04σ]
OotOffset-rm: 0.585 arcsec [3.72σ]
KicOffset-rm: 0.075 arcsec [0.49σ]
OotOffset-st: 3/4/4/4 [15]
KicOffset-st: 3/4/4/4 [15]
DiffImageQuality-fgm: 0.00 [0/15]
DiffImageOverlap-fno: 0.00 [0/15]

TCE 009549472-03, PDC Light Curves

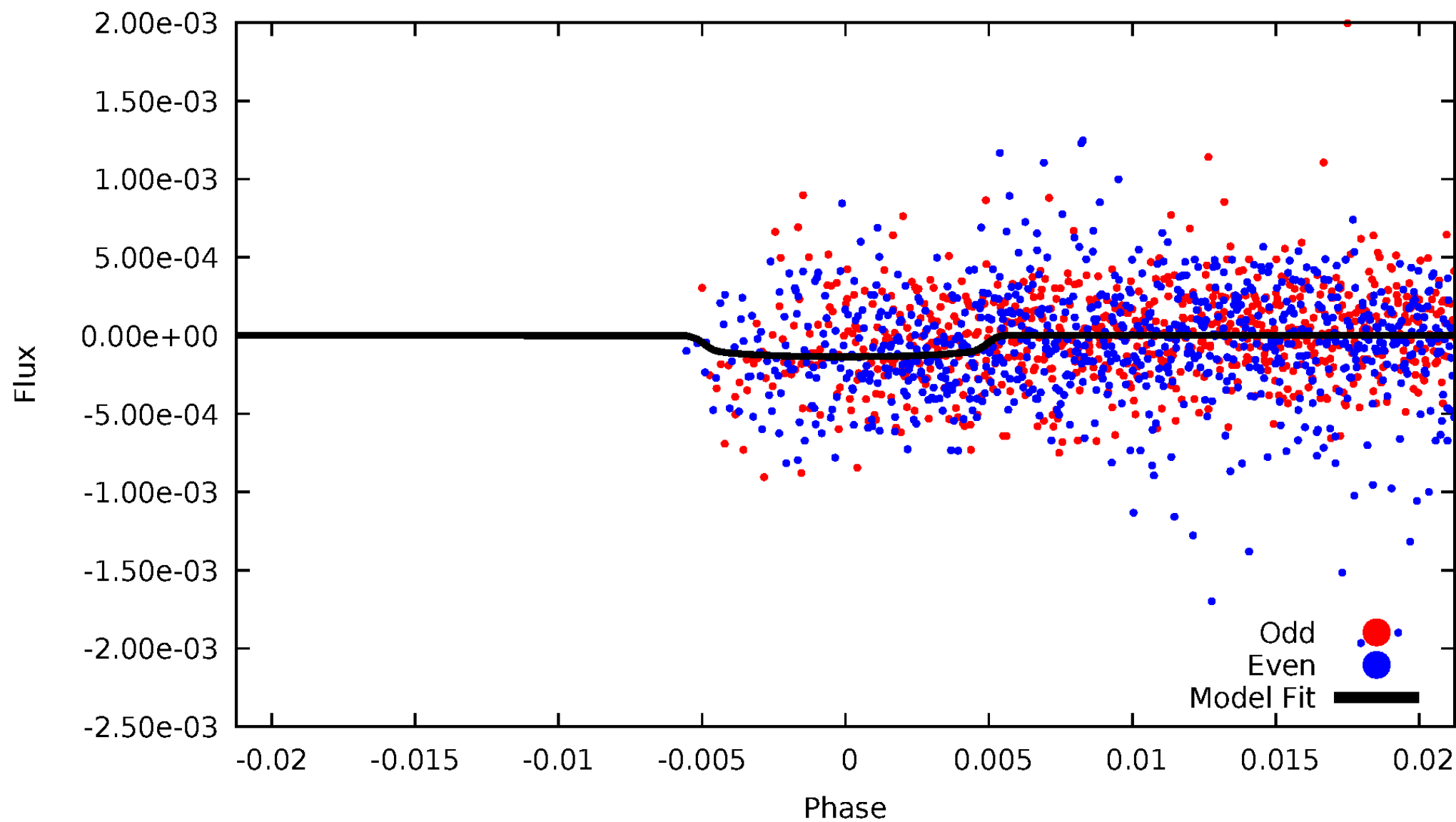


TCE 009549472-03



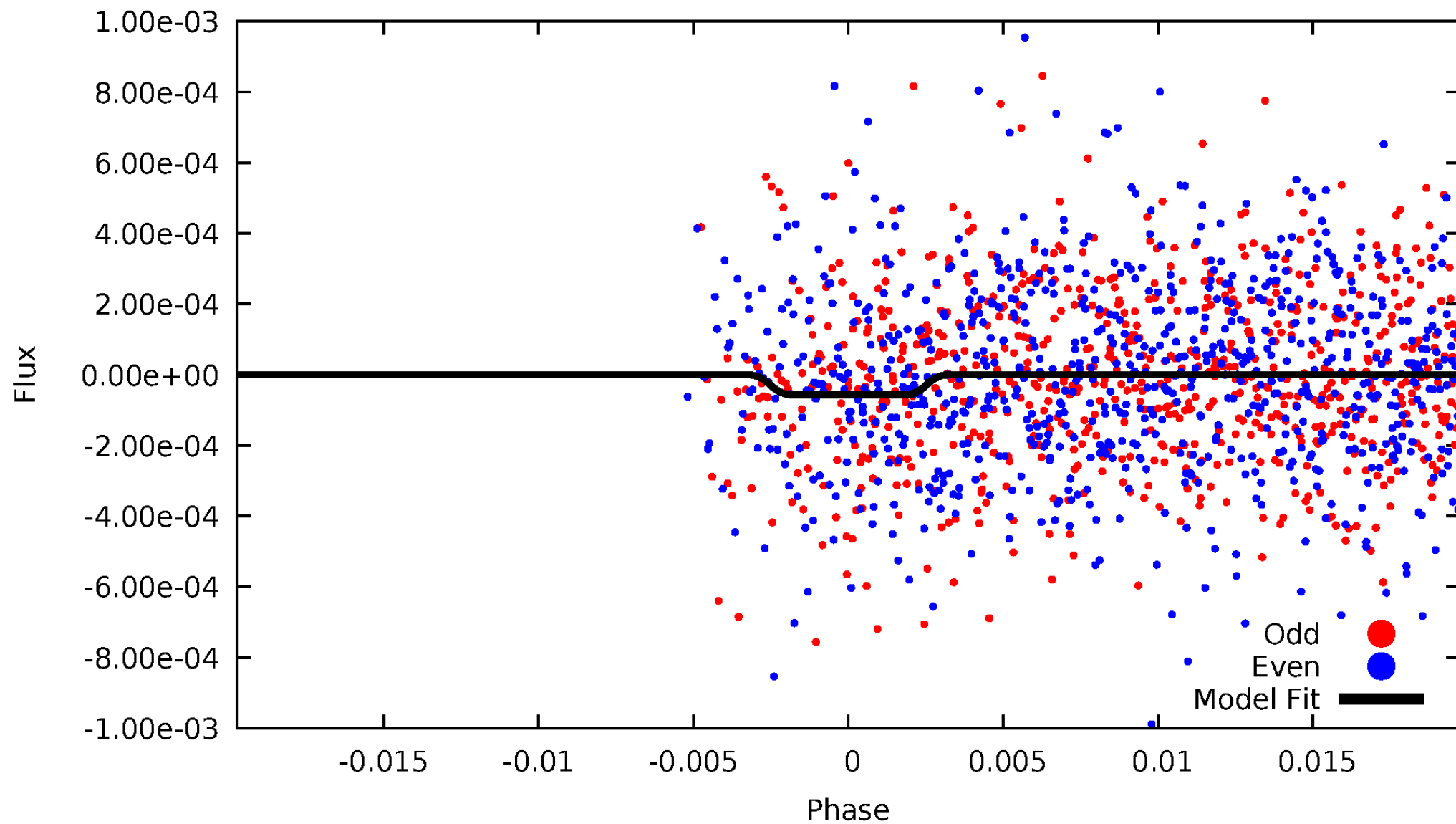
DV Odd/Even

TCE 009549472-03



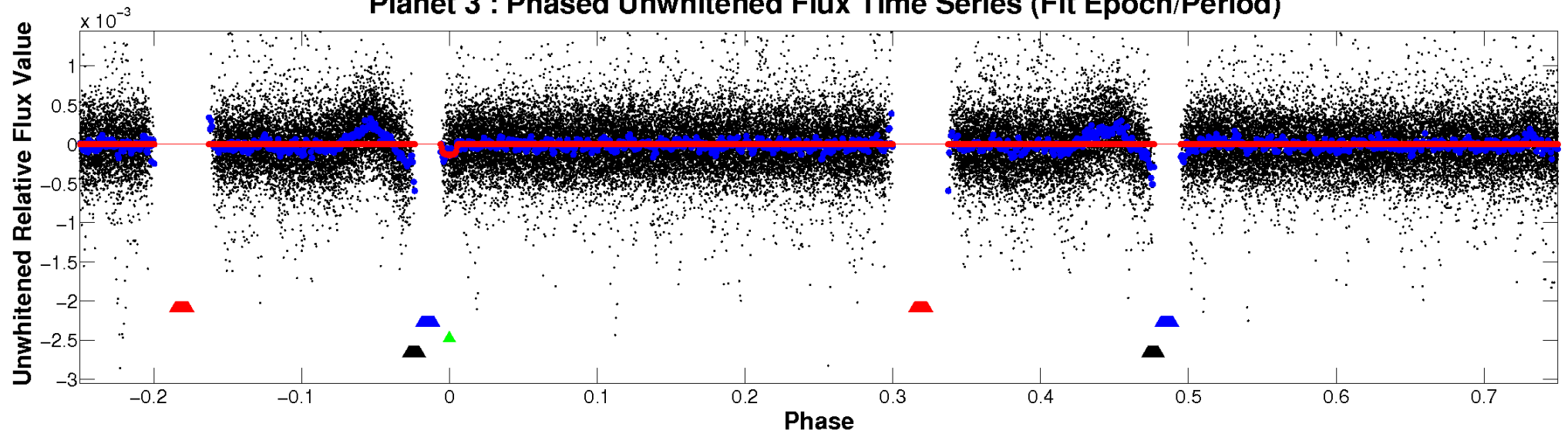
ALT Odd/Even

TCE 009549472-03

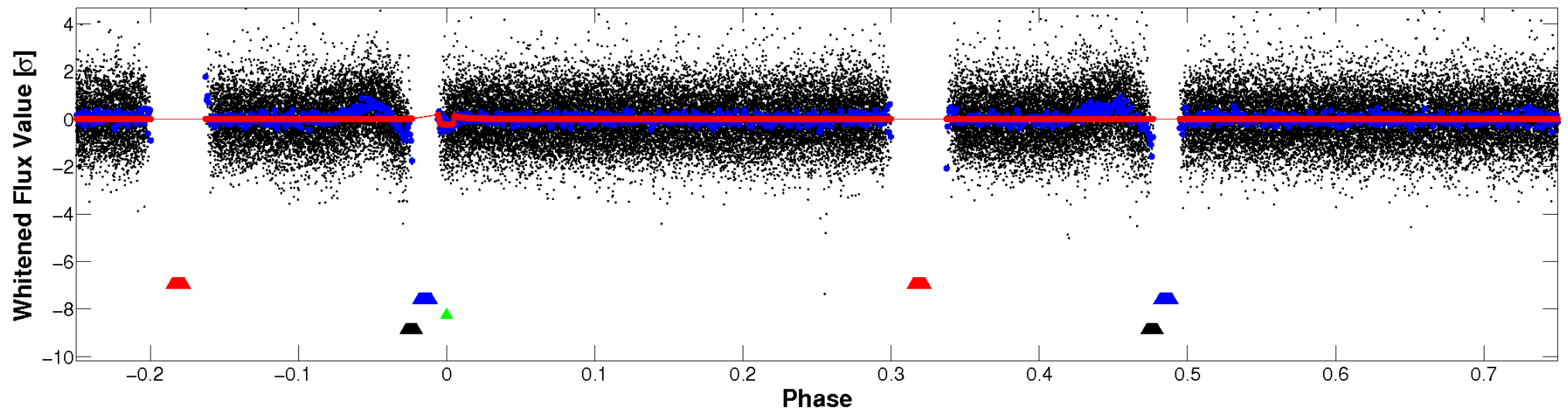


Non-Whitened Vs. Whitened Light Curve

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

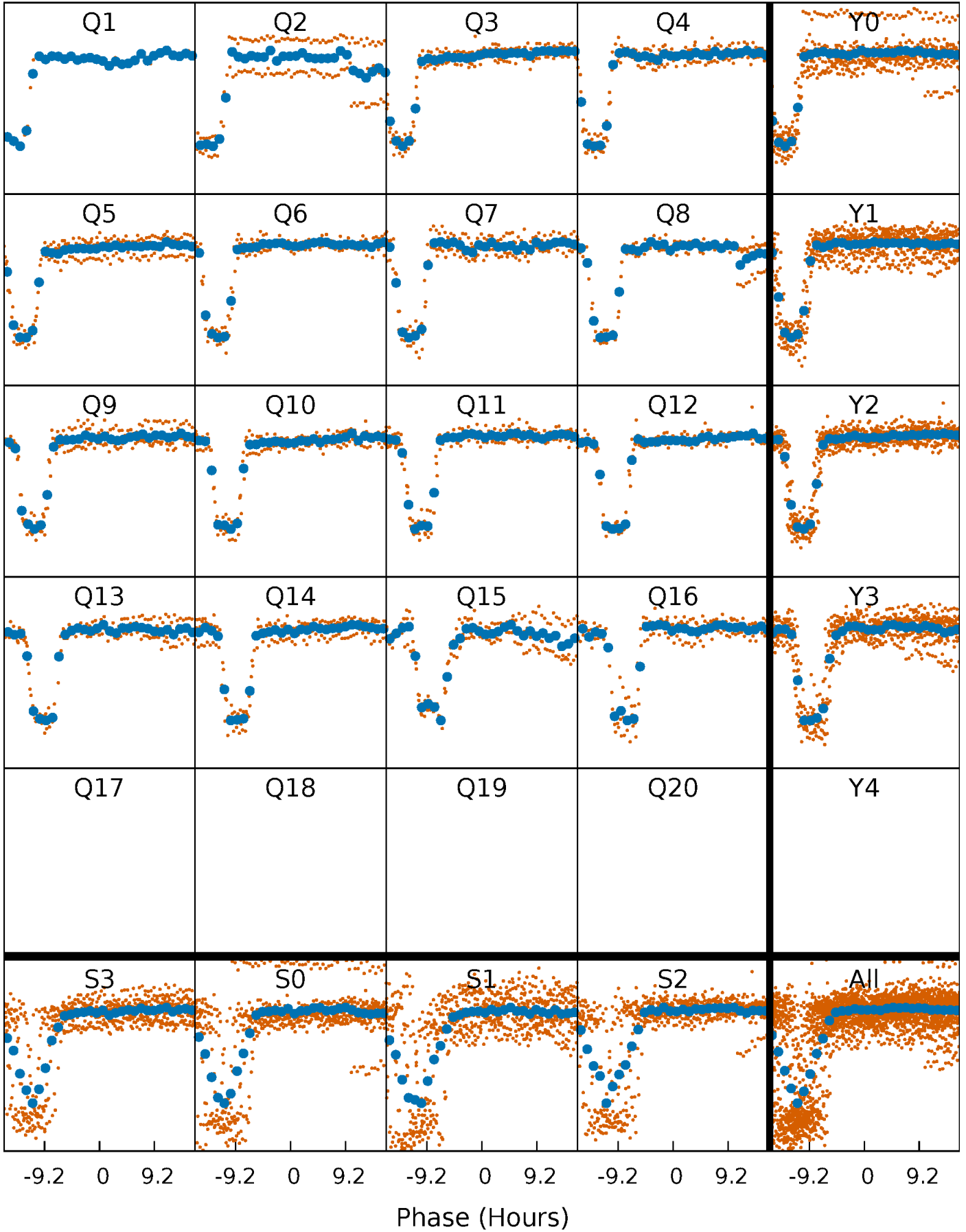


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 009549472-03 P= 31.421901 Days $T_0=137.918452$ (BKJD)



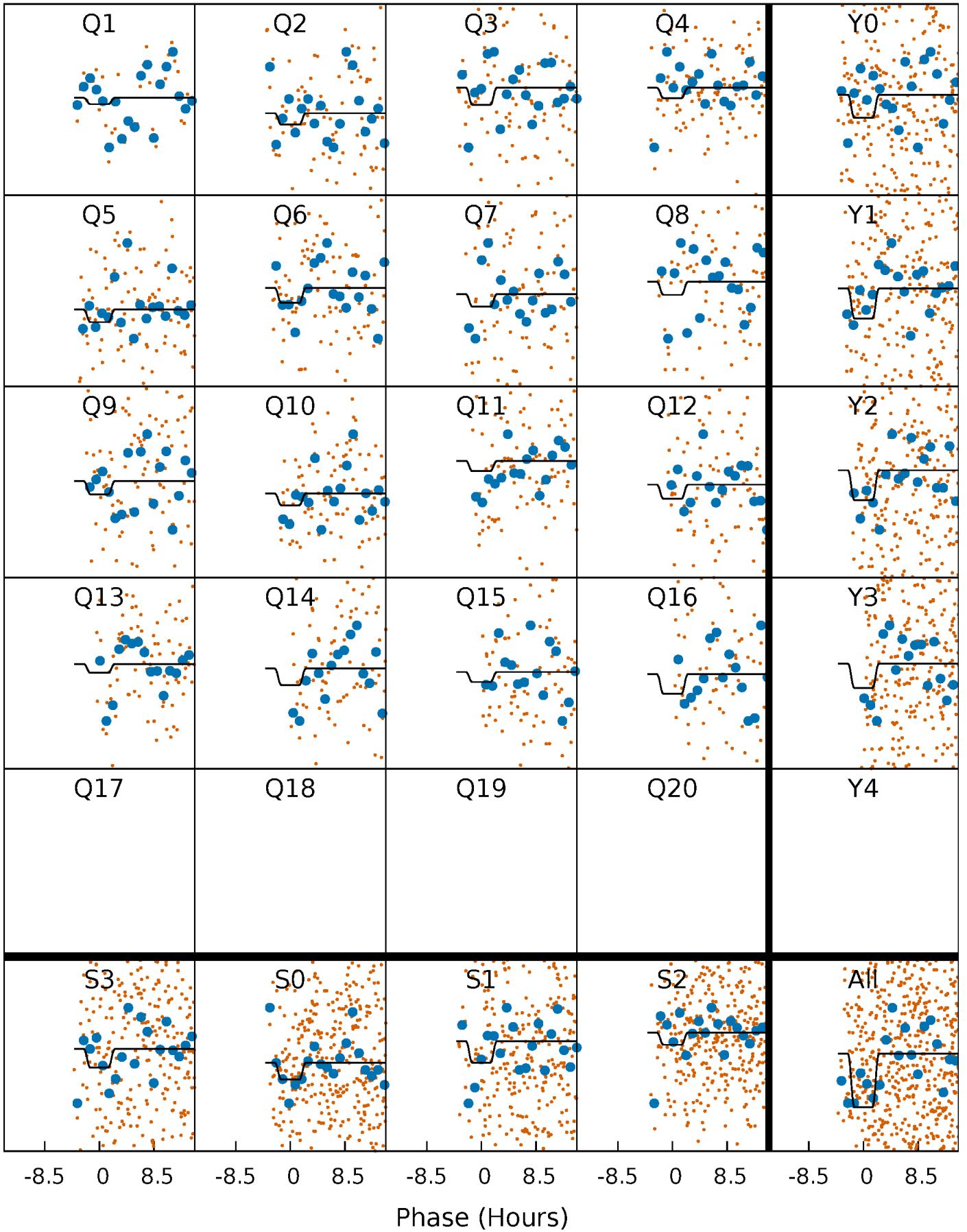
DV Quarter-Phased Transit Curves

TCE 009549472-03 P= 31.421901 Days $T_0=137.918452$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

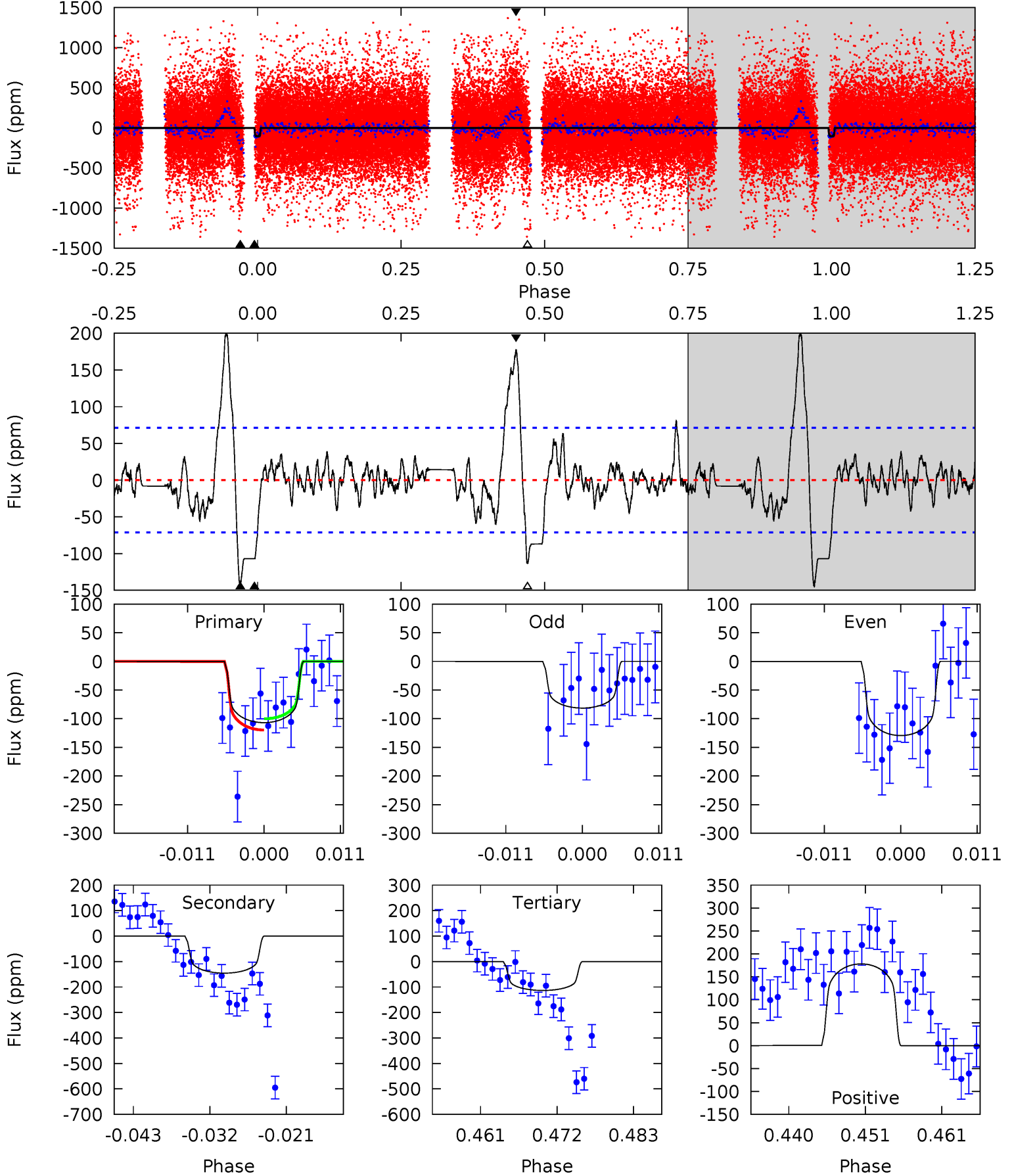
TCE 009549472-03 P= 31.423109 Days $T_0=137.907115$ (BKJD)



DV Model-Shift Uniqueness Test

009549472-03, P = 31.421901 Days, E = 106.496551 Days

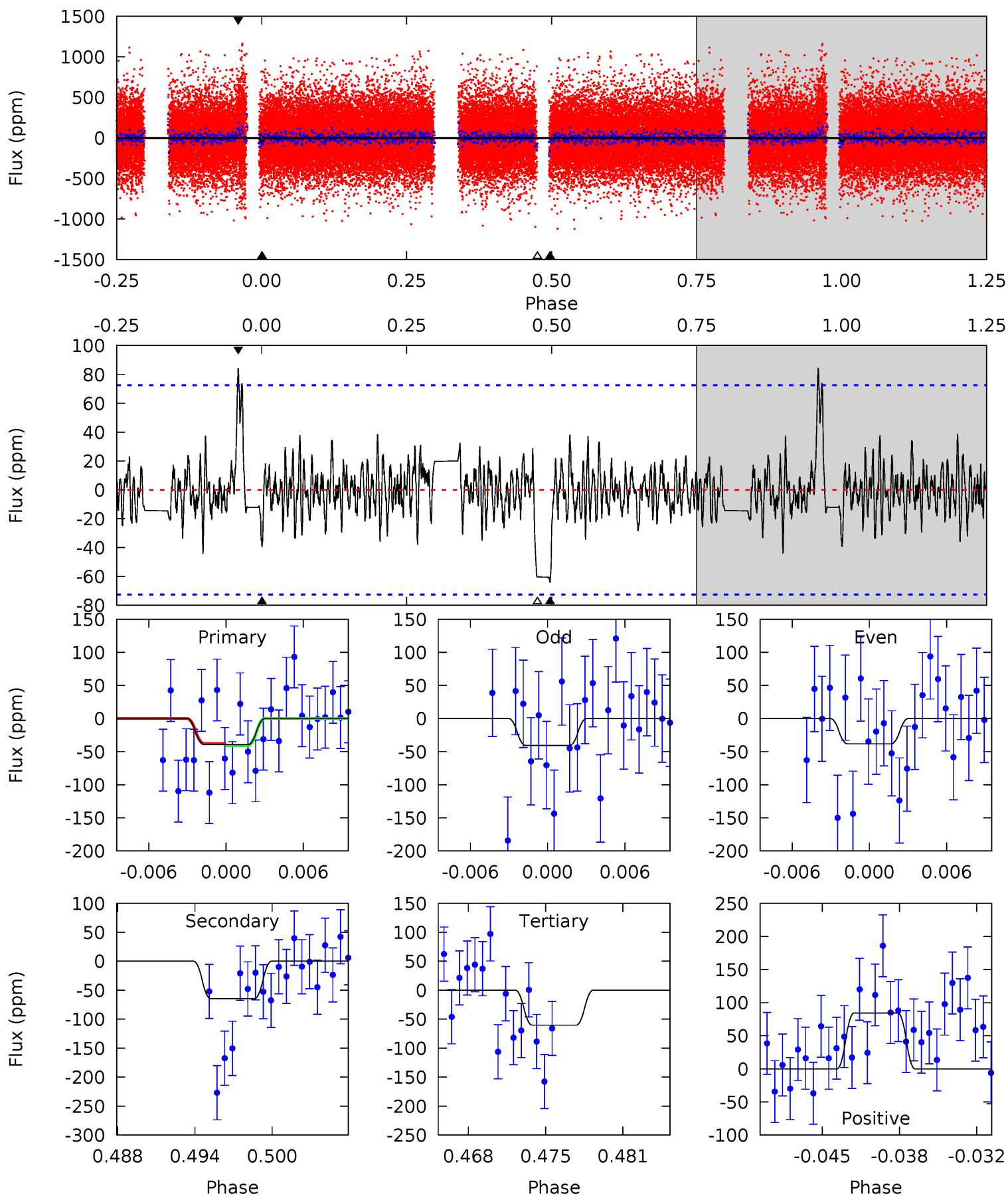
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.52	10.2	7.98	12.5	5.01	2.55	2.94	-0.46	-5.01	2.26	-2.30	1.70	1.13	0.58	0.64



Alt Model-Shift Uniqueness Test

009549472-03, P = 31.423109 Days, E = 106.484006 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.78	4.54	4.26	5.94	5.11	2.73	1.06	-1.48	-3.16	0.28	-1.40	0.09	1.35	0.57	0.10



Stellar Parameters For KIC 009549472

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5843^{+158}_{-176}	$4.399^{+0.124}_{-0.186}$	$-0.180^{+0.300}_{-0.300}$	$1.006^{+0.286}_{-0.154}$	$0.924^{+0.132}_{-0.088}$	$1.279^{+0.716}_{-0.618}$
	+3%/-3%	+3%/-4%	+167%/-167%	+28%/-15%	+14%/-10%	+56%/-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 009549472-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-145 ± 14	$1.36^{+0.55}_{-0.46}$	833^{+56}_{-51}	5784^{+1468}_{-775}	1555^{+2028}_{-742}
Alt.	-64 ± 14	$0.87^{+0.49}_{-0.46}$	832^{+65}_{-48}	5954^{+3304}_{-1154}	1699^{+5930}_{-1046}

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

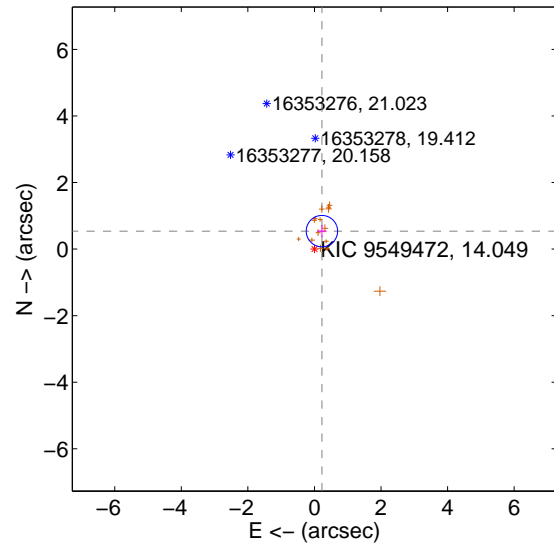
Supplemental centroid analysis for 009549472-03. Kepler magnitude: 14.05. Transit SNR 5.04

There are 0 quarters with good PRF difference image offsets

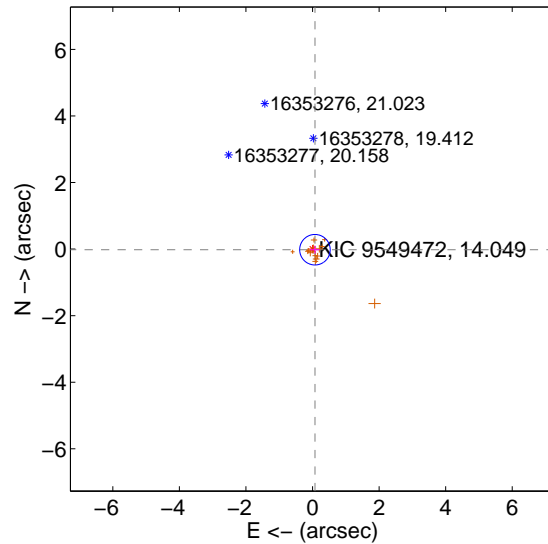
The direct PRF centroid is offset from the target star catalog position by about 1.56 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.585 ± 0.157	3.72	-0.225 ± 0.142	0.540 ± 0.188
PRF-fit source offset from KIC position	0.075 ± 0.153	0.49	-0.073 ± 0.138	-0.019 ± 0.121
photometric centroid source offset	2.45 ± 1.20	2.04	-1.80 ± 1.15	-1.67 ± 1.26

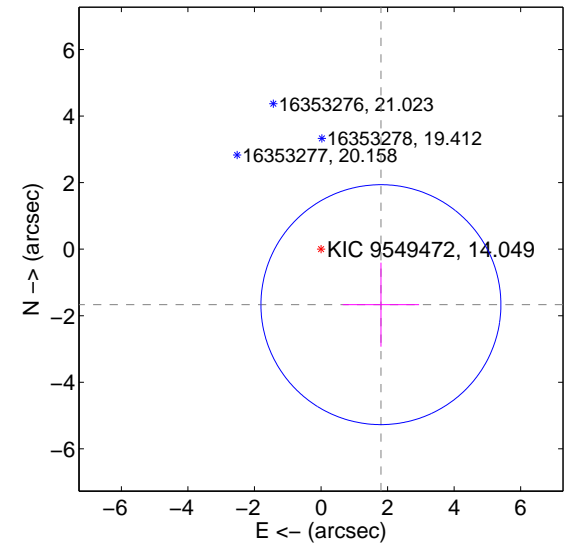
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

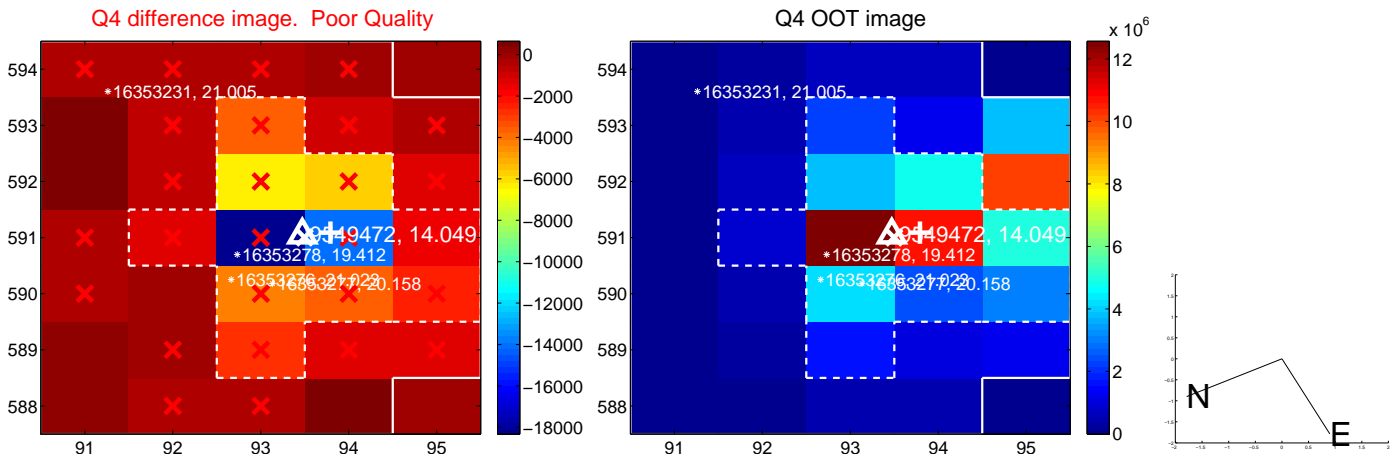
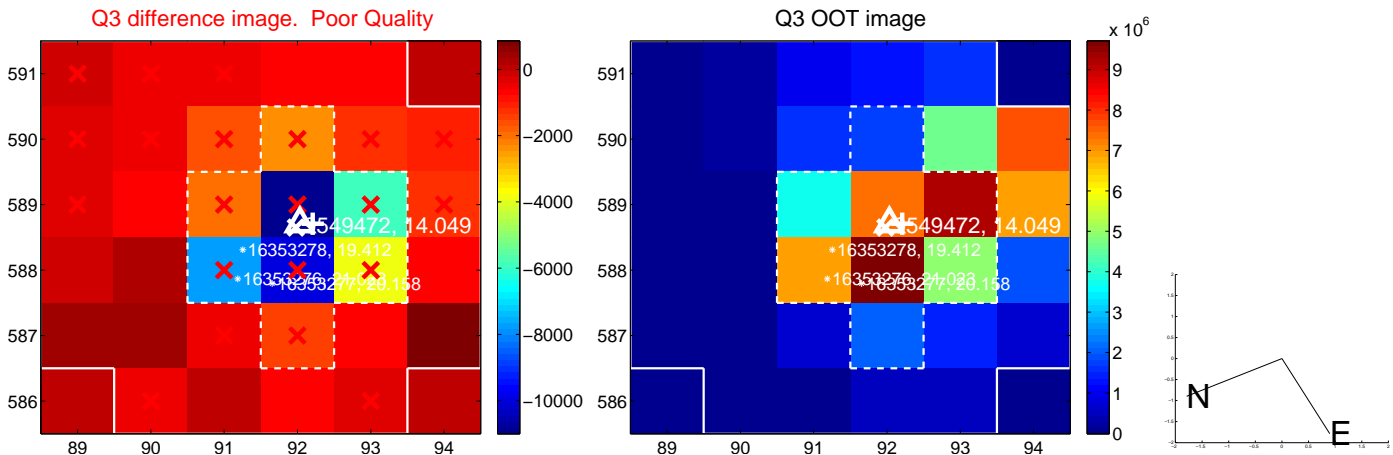
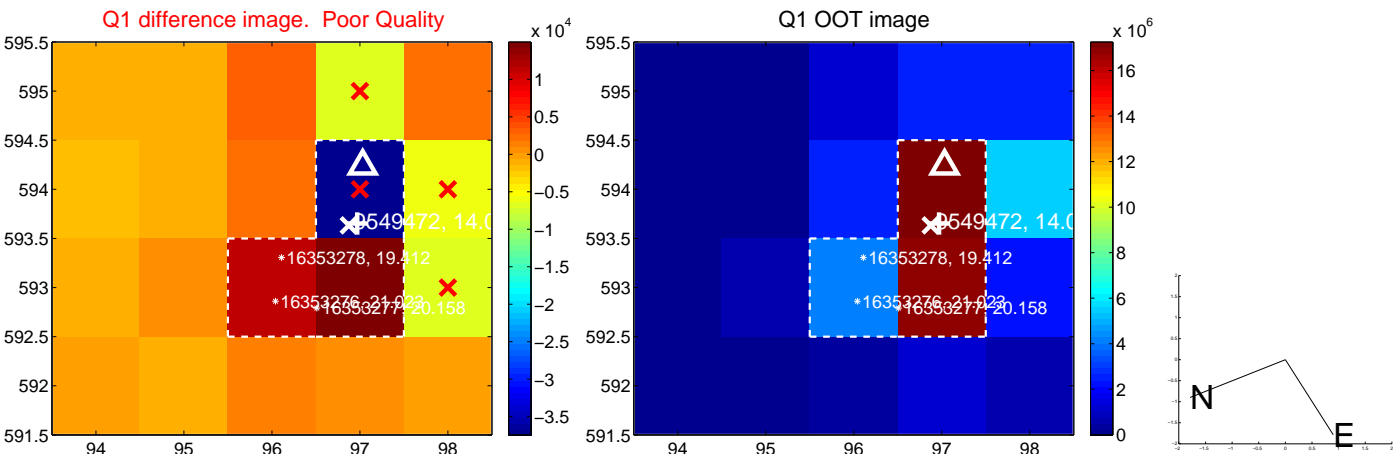


offset from photometric centroids

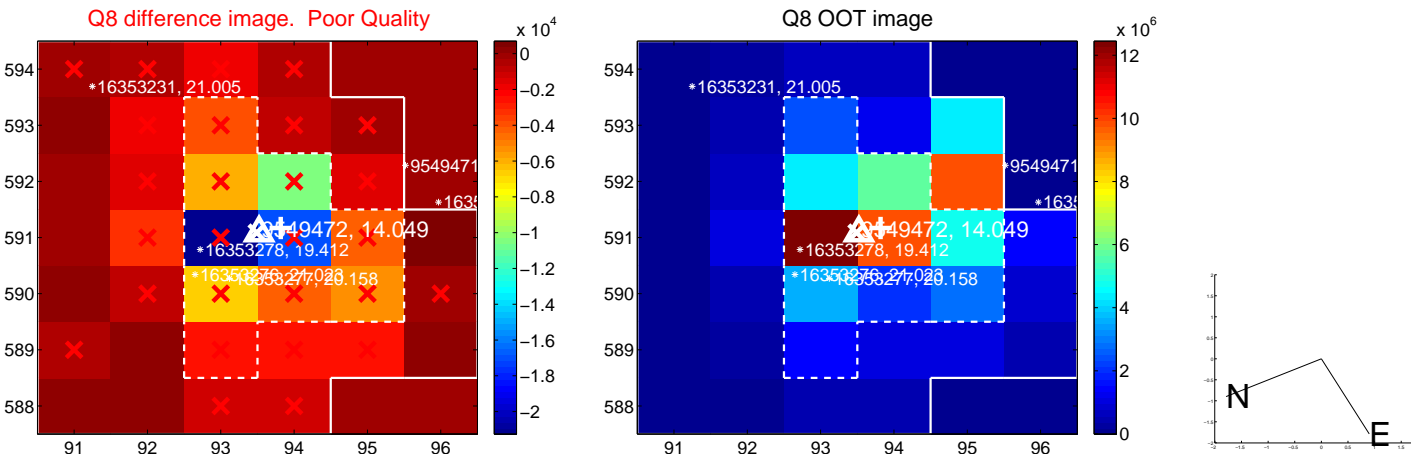
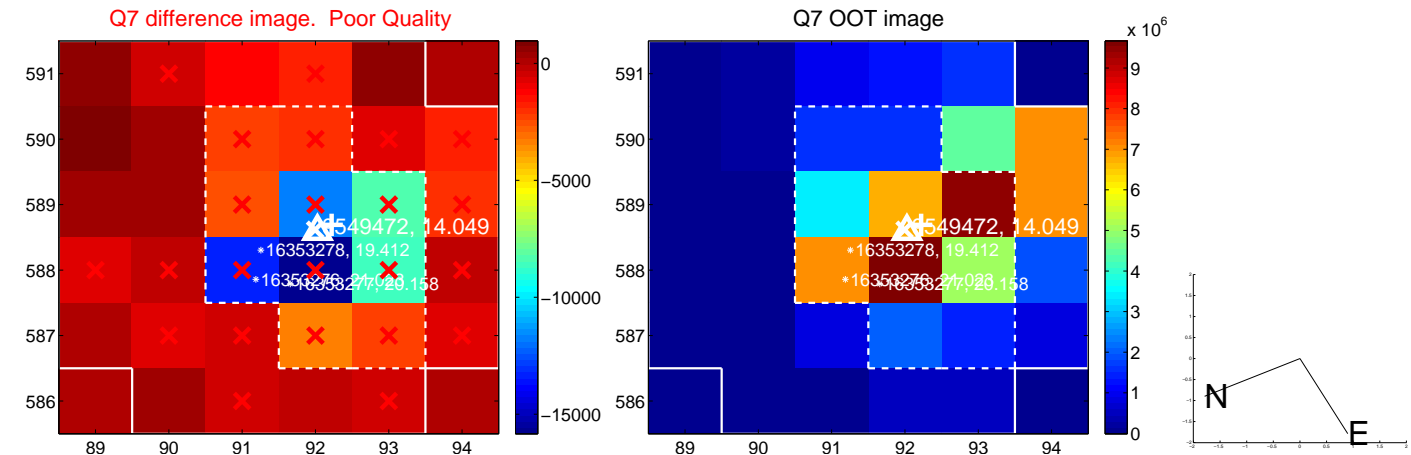
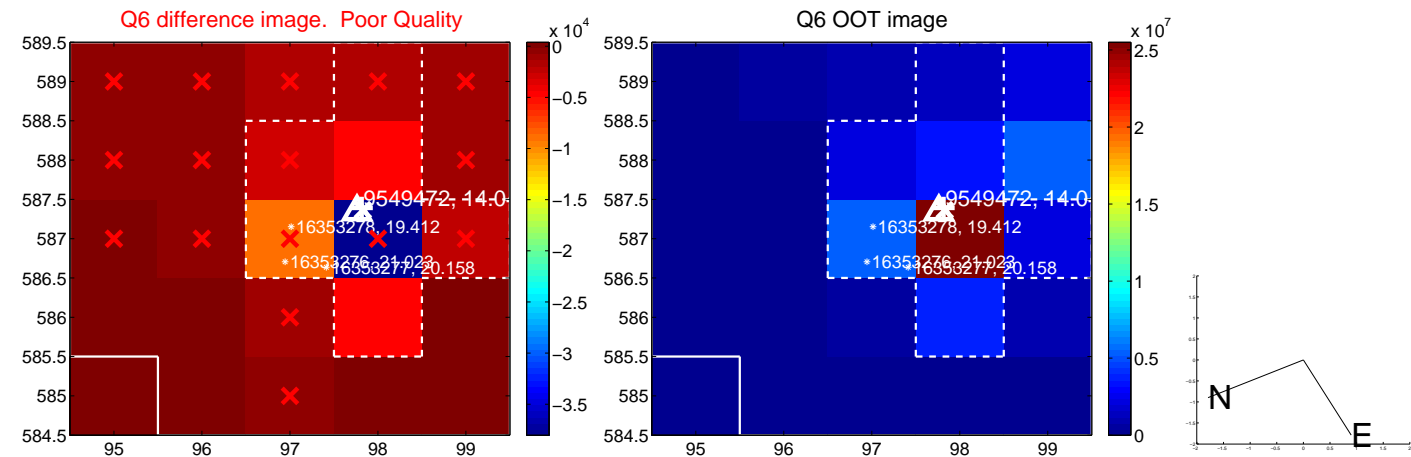
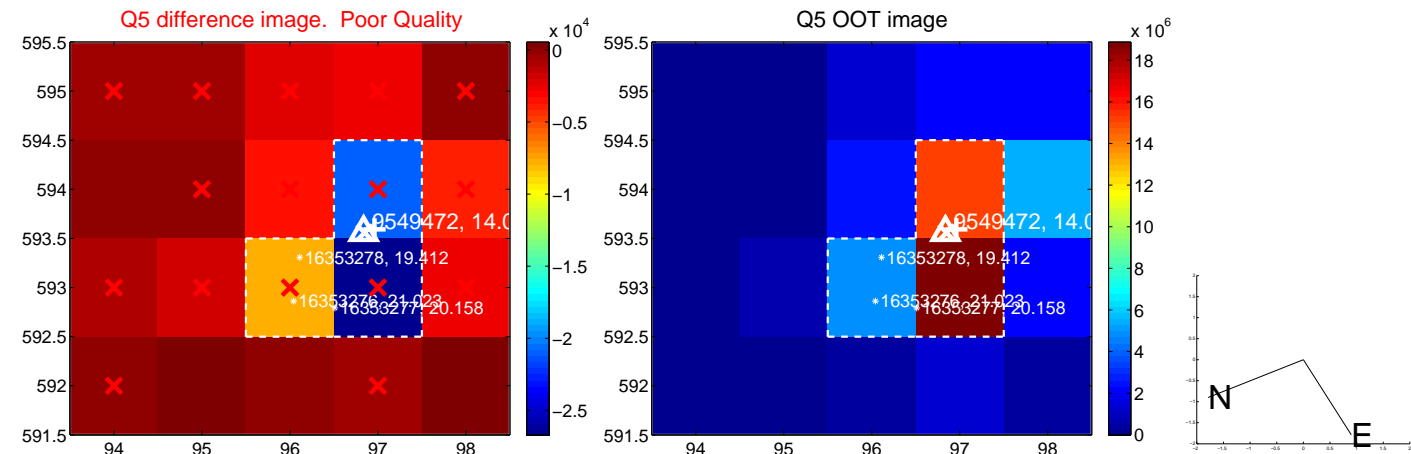


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

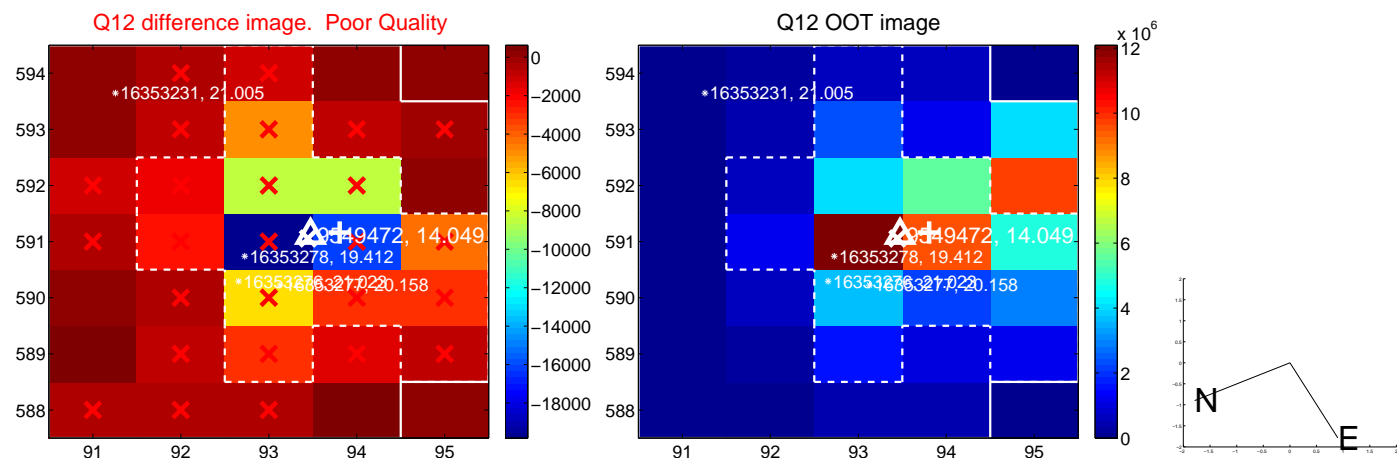
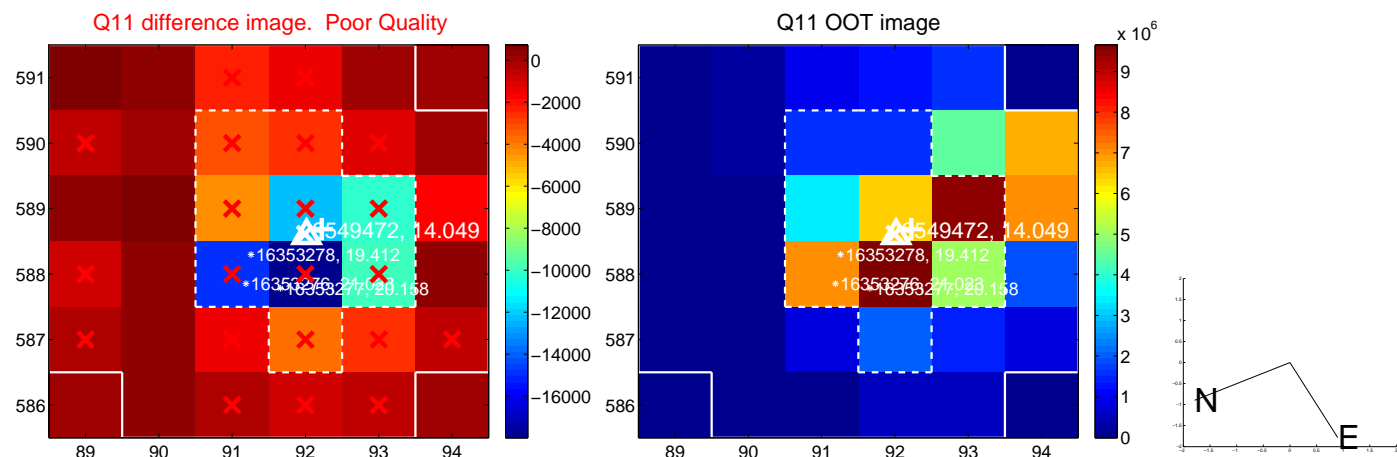
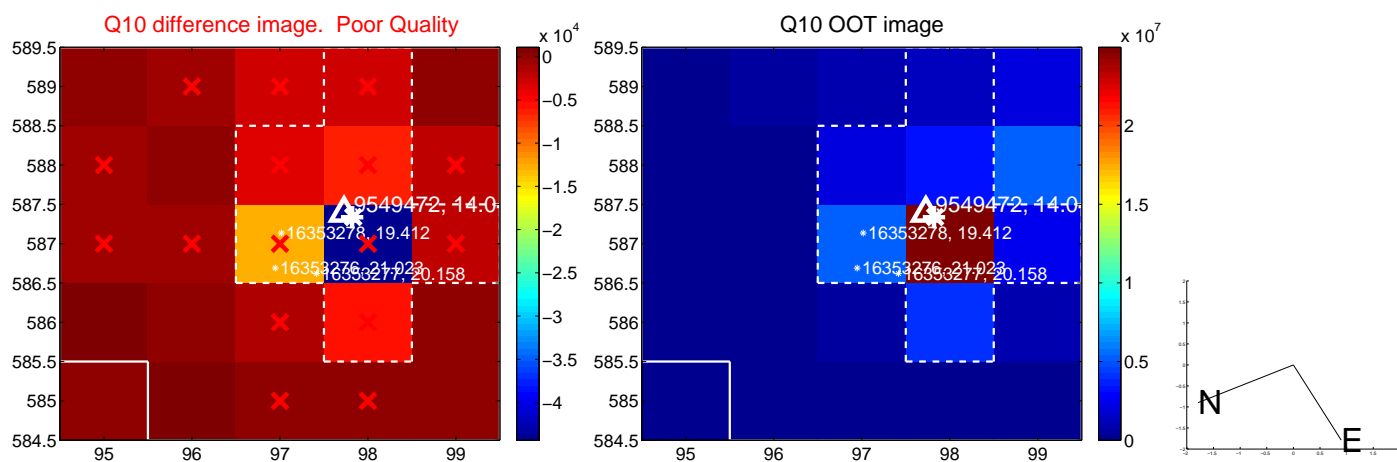
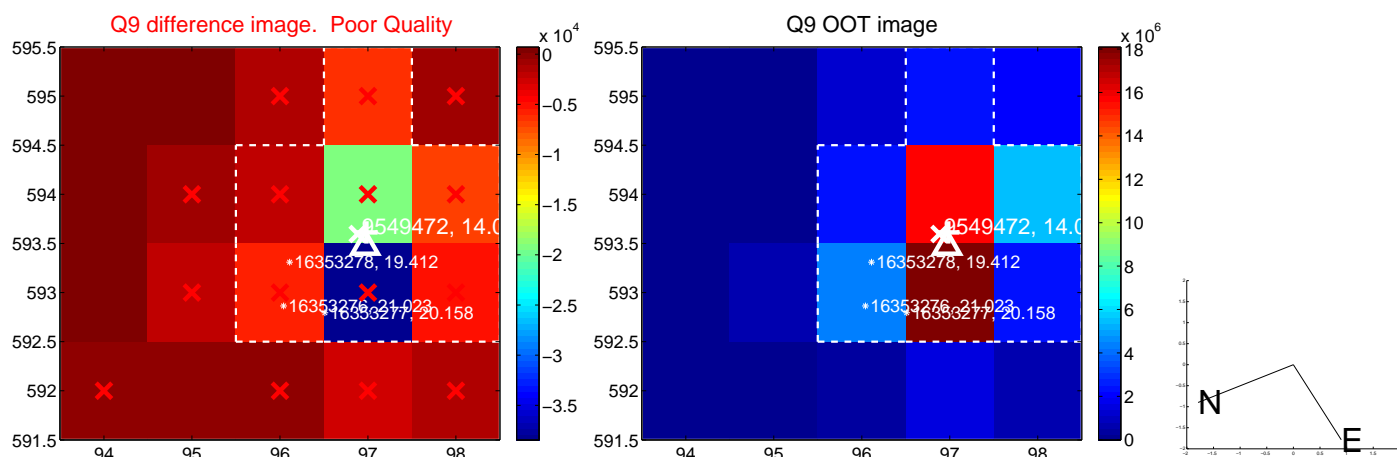
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



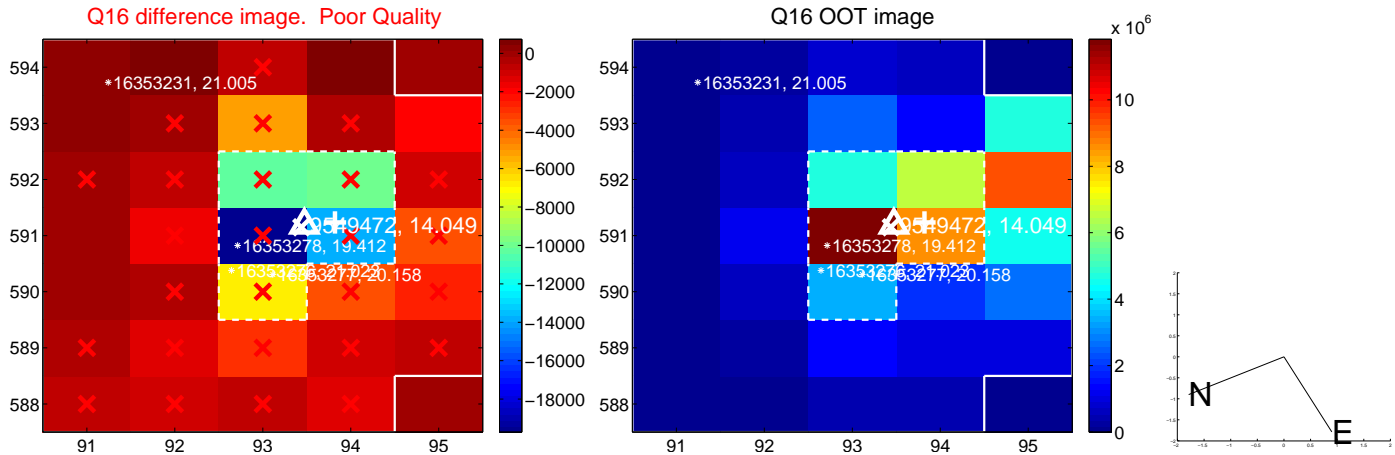
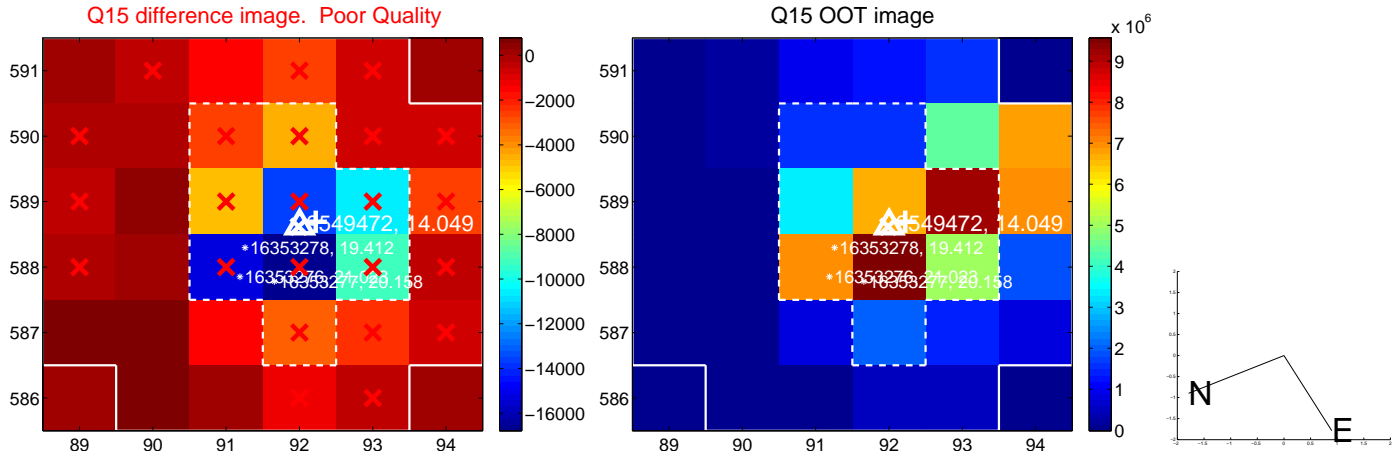
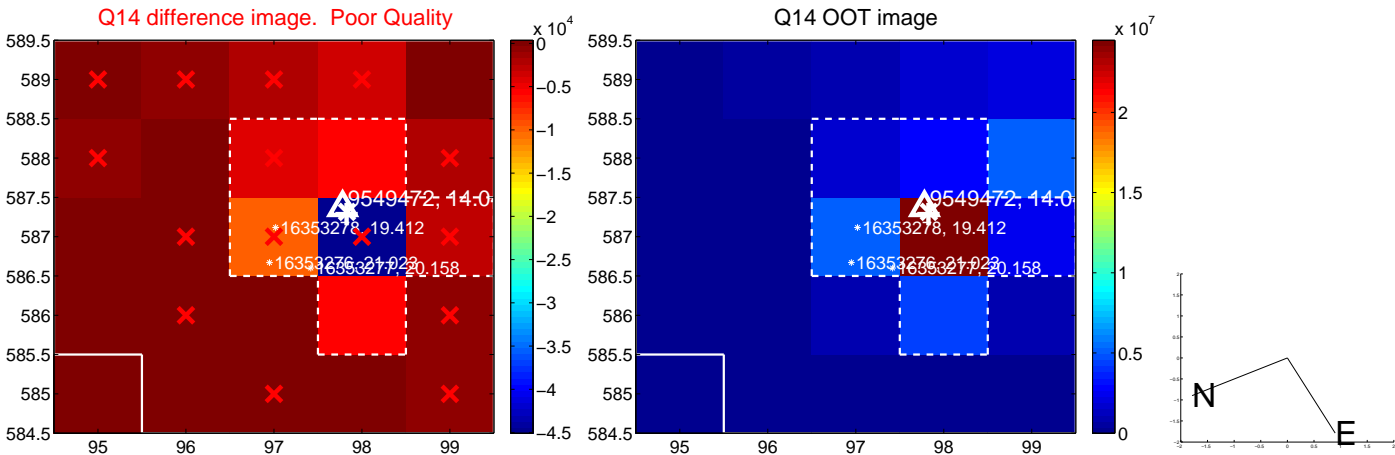
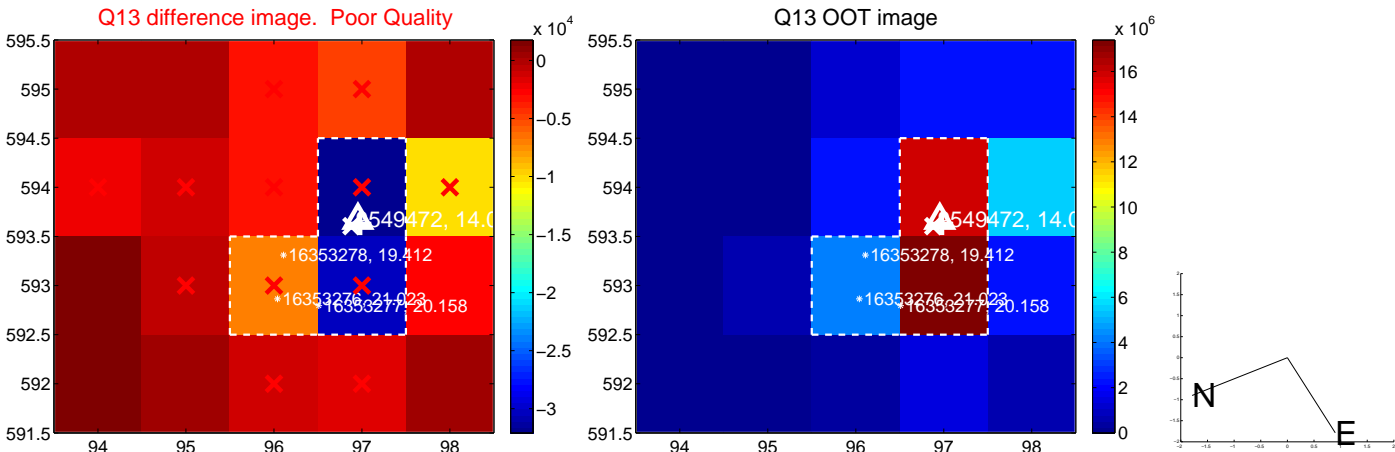
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



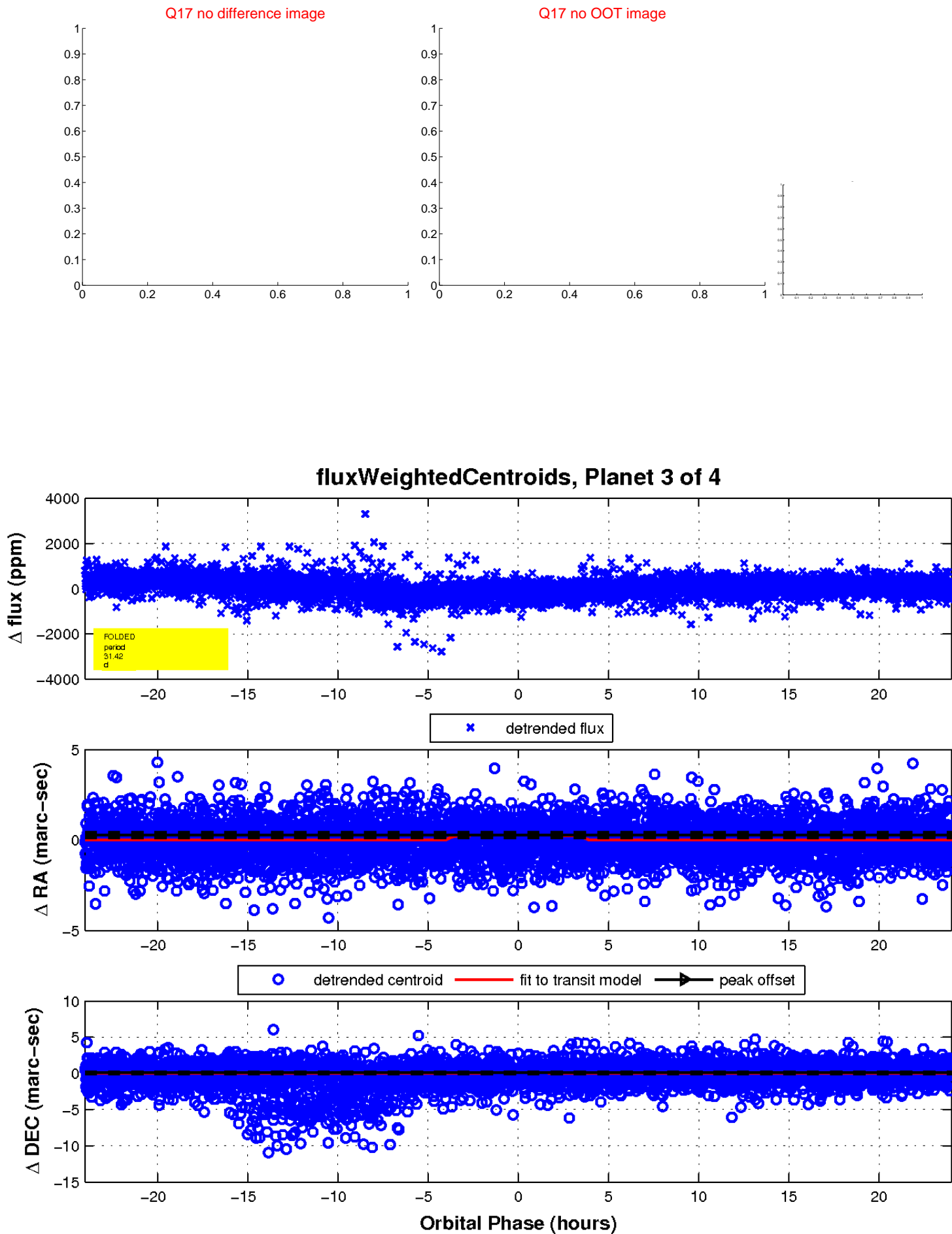
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

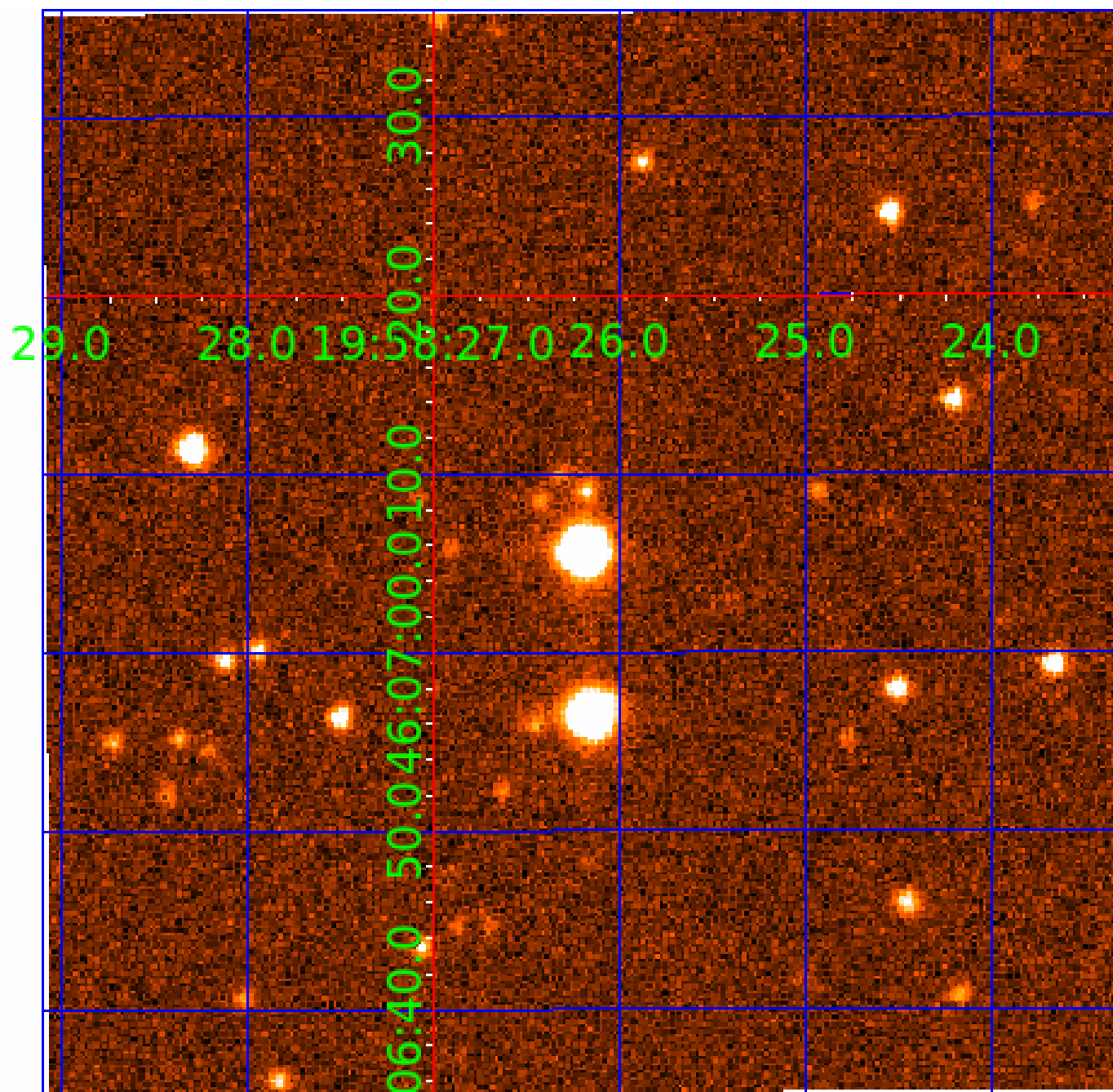


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009549472

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})
009549472-01	OBS	6206.01	15.713789	132.098131	60550.1	11.296	3140.0	2959.6	1.01	5843	27.74	73.81
009549472-02	OBS	No	15.713800	137.330093	6299.6	6.150	367.3	362.0	1.01	5843	8.82	73.81
009549472-03	OBS	No	31.421901	137.918452	135.8	8.007	12.6	5.0	1.01	5843	1.38	29.30
009549472-04	OBS	No	15.713336	137.057954	766.4	28.575	11.6	21.9	1.01	5843	5.44	73.81

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009549472-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE
009549472-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
009549472-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
009549472-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD

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

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

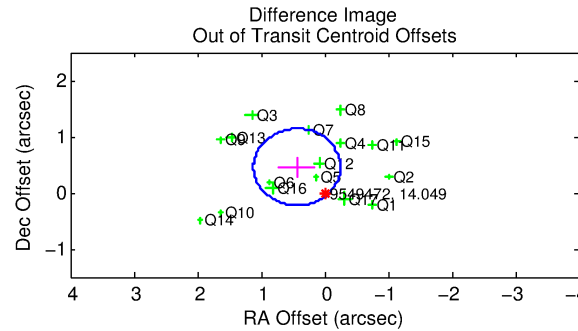
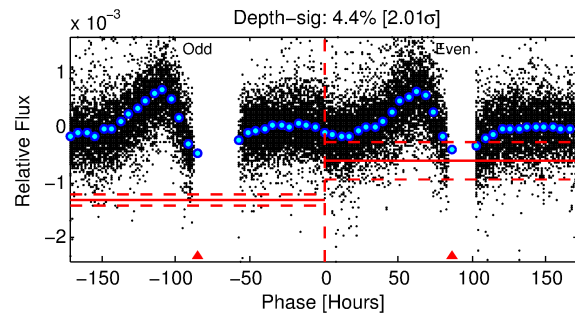
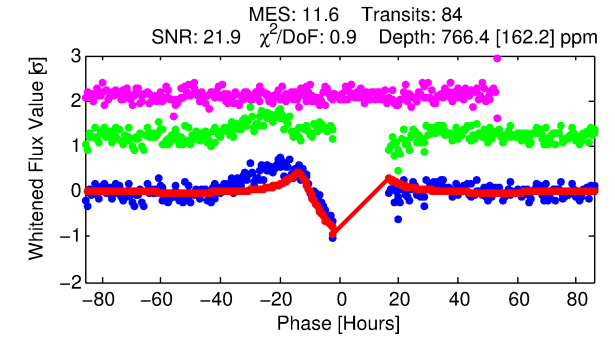
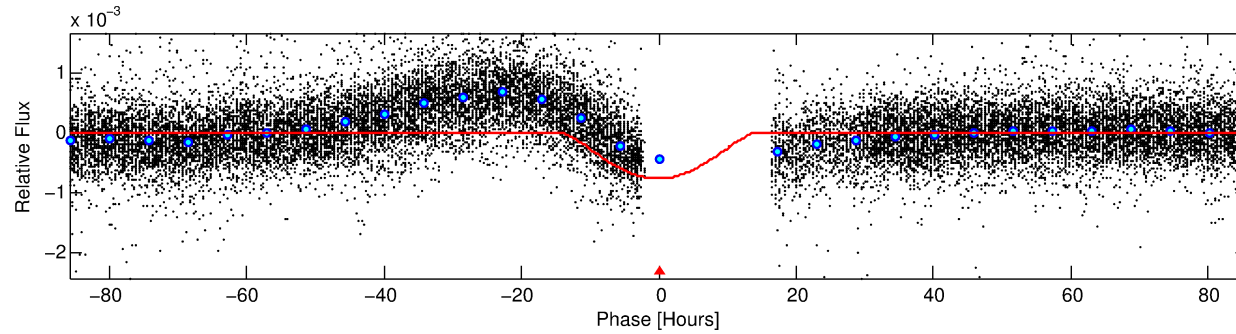
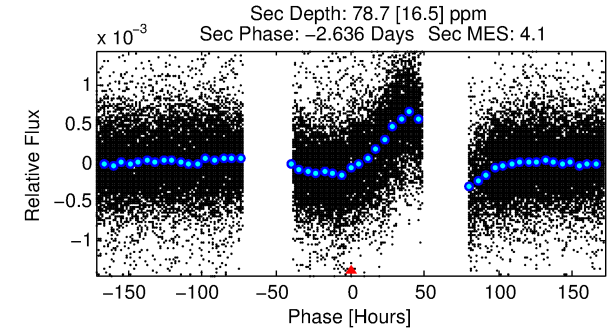
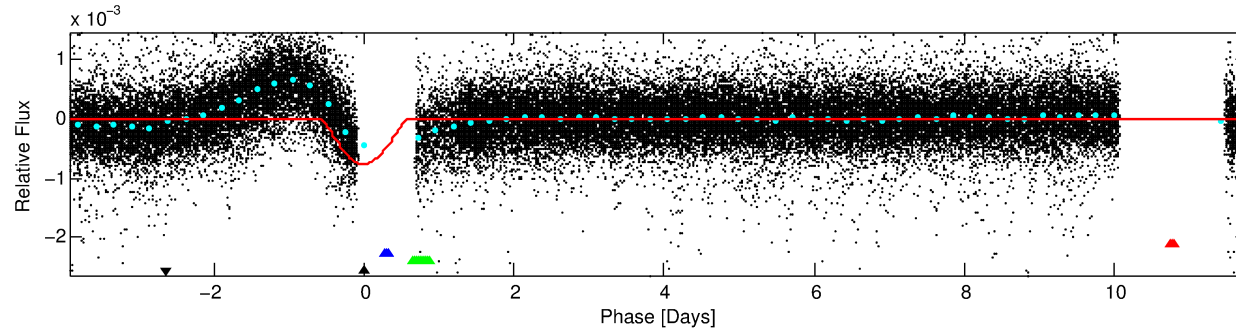
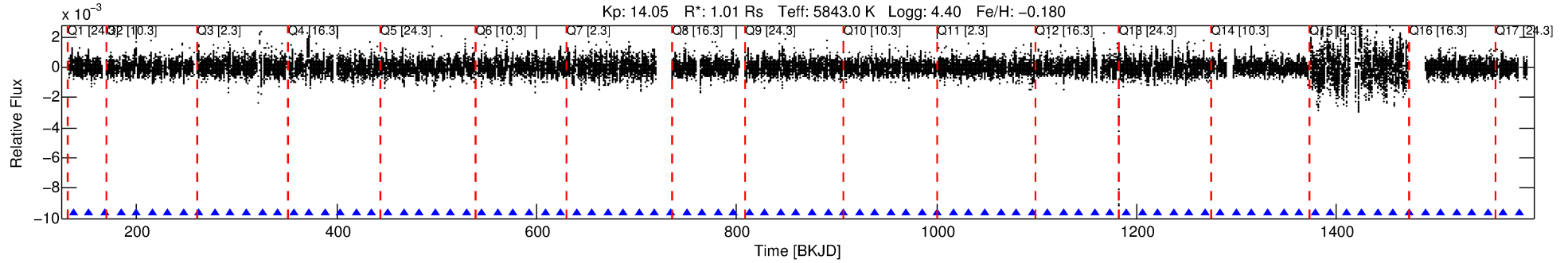
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009549472-04

No Significant Match Found

DV One-Page Summary

KIC: 9549472 Candidate: 4 of 4 Period: 15.713 d
KOI: K06206 Corr: No Ephemeris Match



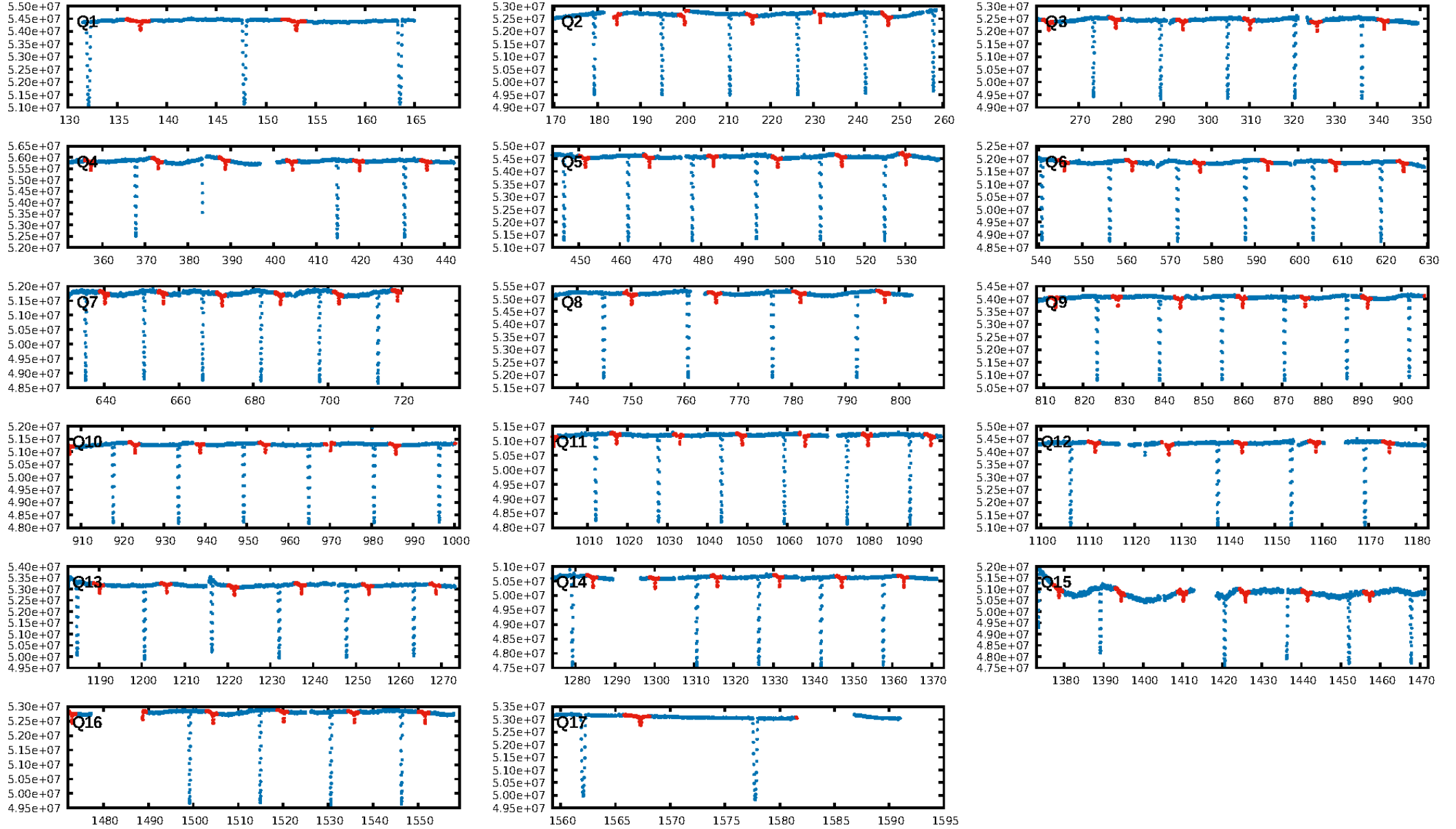
DV Fit Results:

Period = 15.71334 [0.00033] d
Epoch = 137.0580 [0.0235] BKJD
Rp/R* = 0.0495 [0.0425]
a/R* = 1.68 [0.17]
b = 1.00 [0.05]
Seff = 73.82 [26.81]
Teq = 747 [68] K
Rp = 5.44 [4.92] Re
a = 0.1197 [0.0284] AU
Ag = 20.96 [36.94] [0.54σ]
Teffp = 2473 [1071] K [1.61σ]

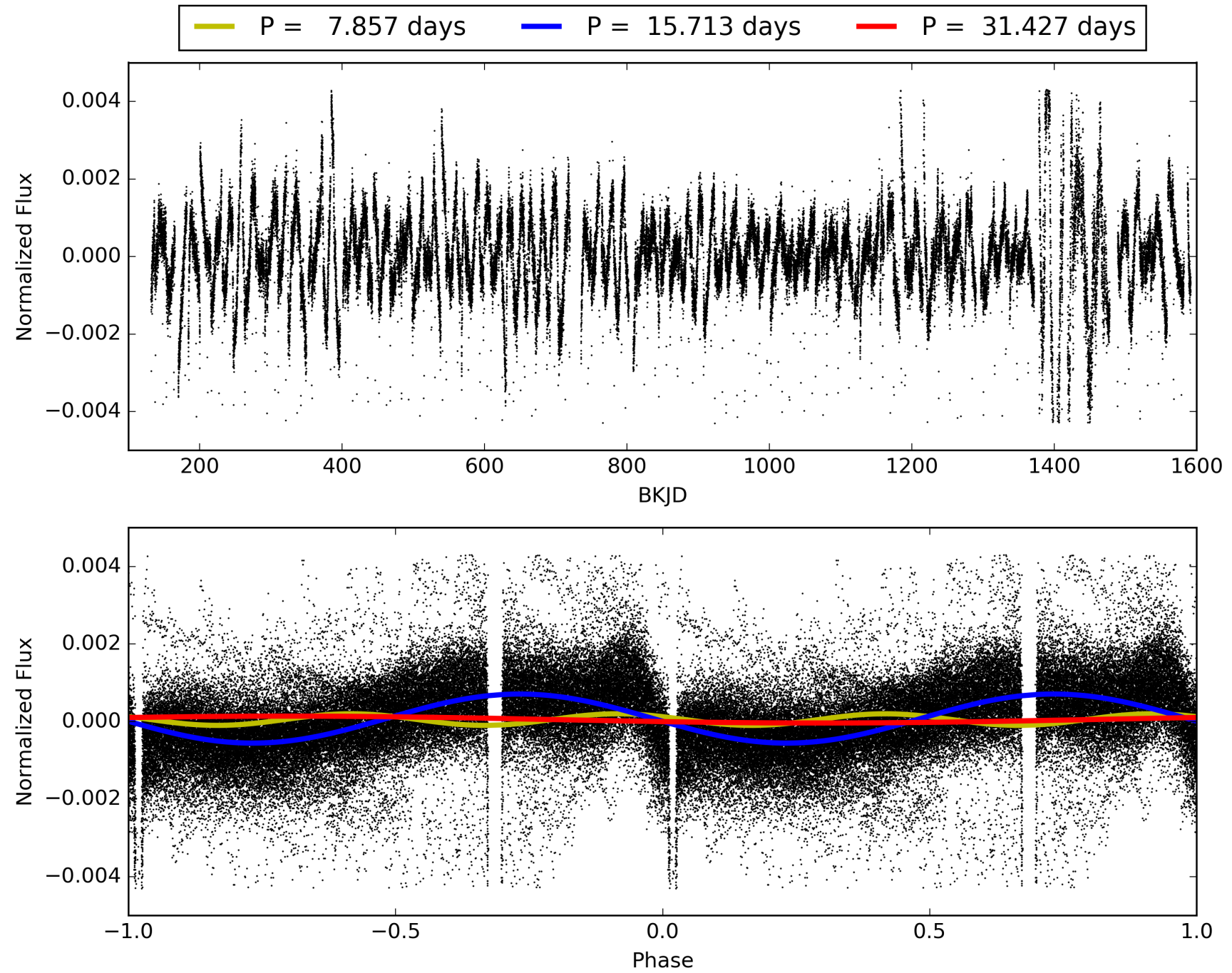
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 34.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.13e-30
RollingBand-fgt: 1.00 [81/81]
GhostDiagnostic-chr: 2.38
Centroid-sig: 0.0%
Centroid-so: 0.914 arcsec [6.33σ]
OotOffset-rm: 0.632 arcsec [2.77σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.460 arcsec [1.66σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 009549472-04, PDC Light Curves

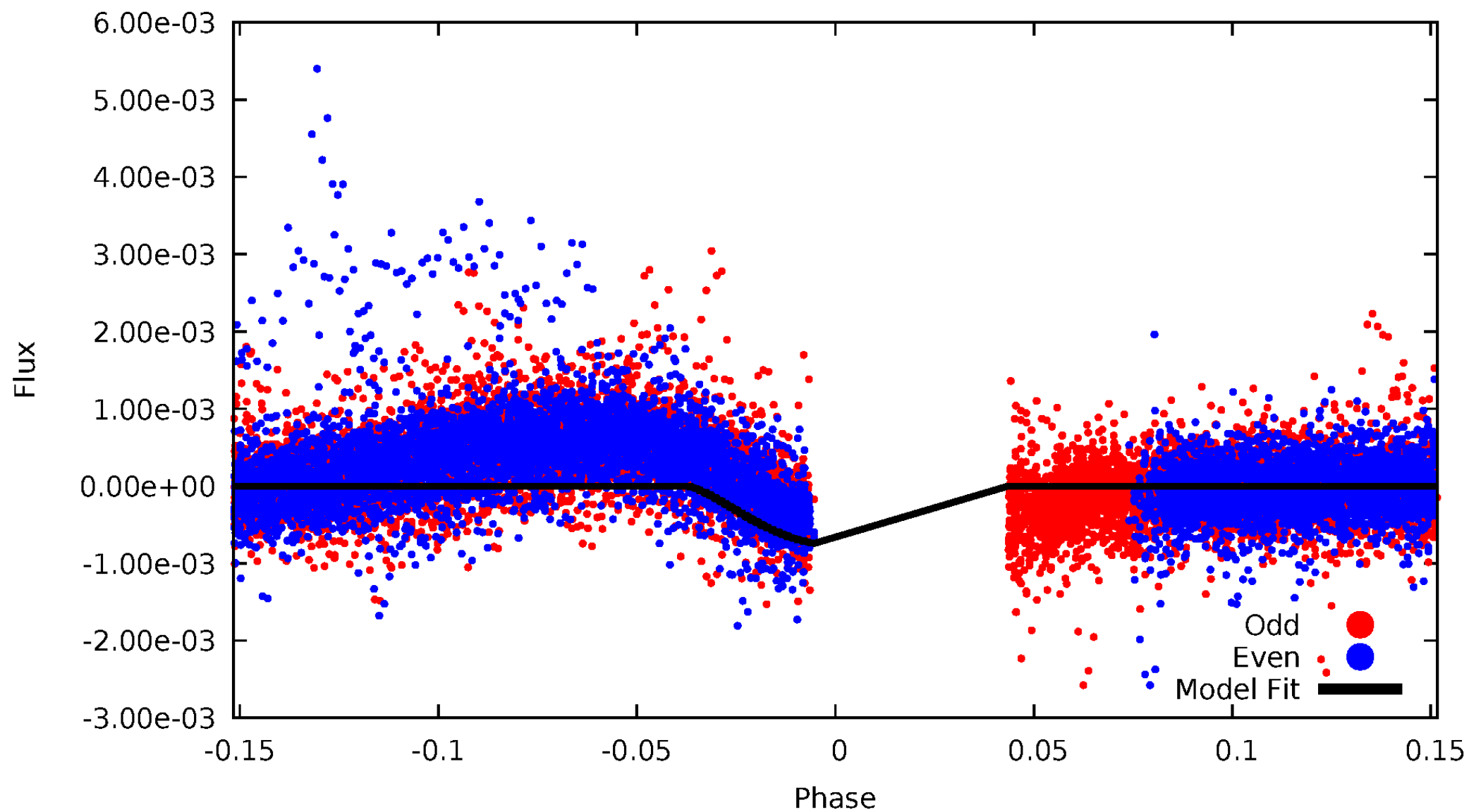


TCE 009549472-04



DV Odd/Even

TCE 009549472-04

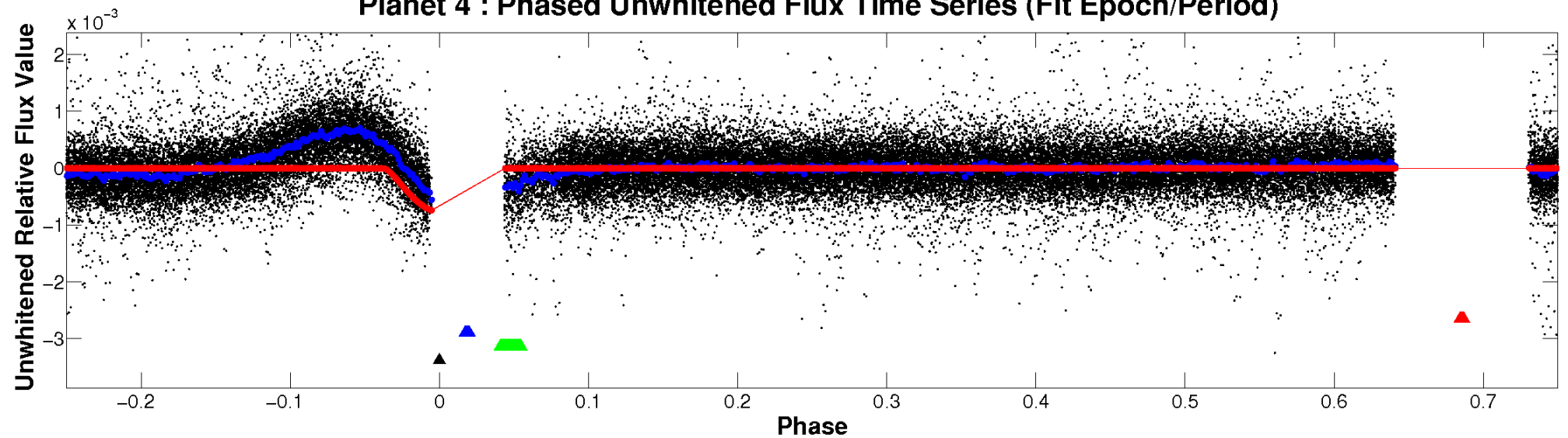


ALT Odd/Even

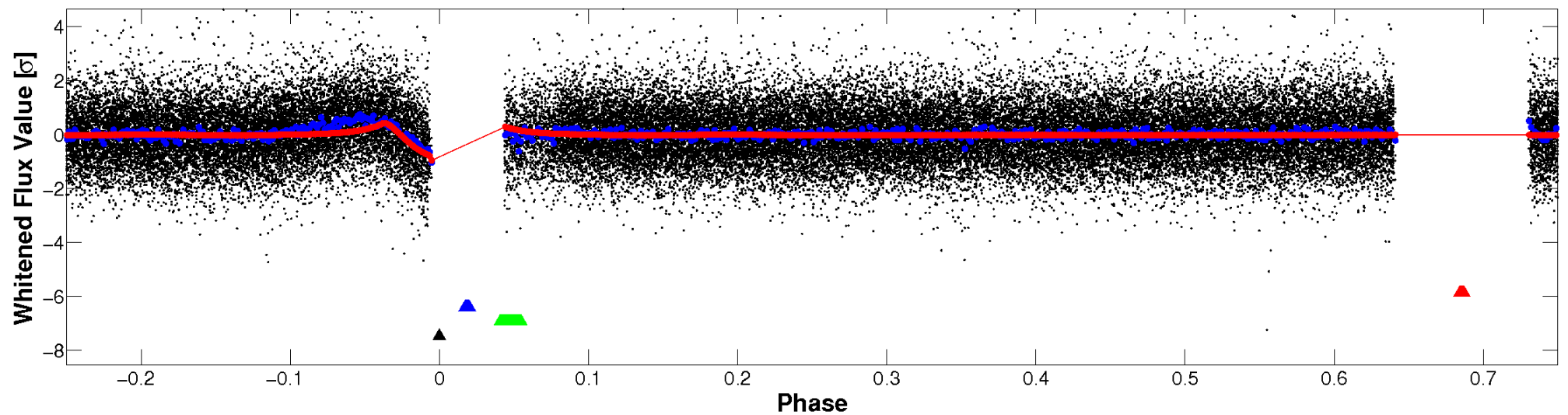
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

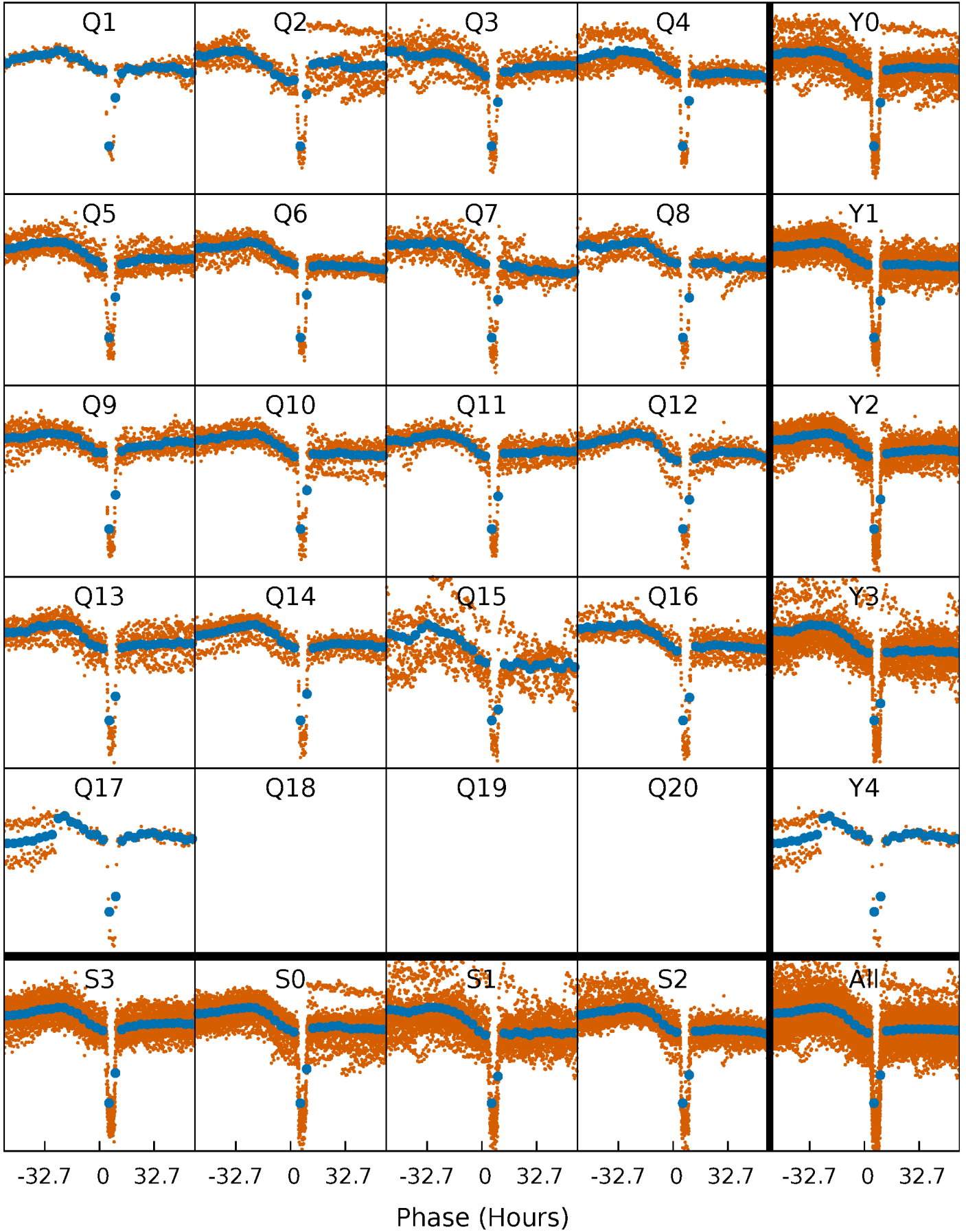


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



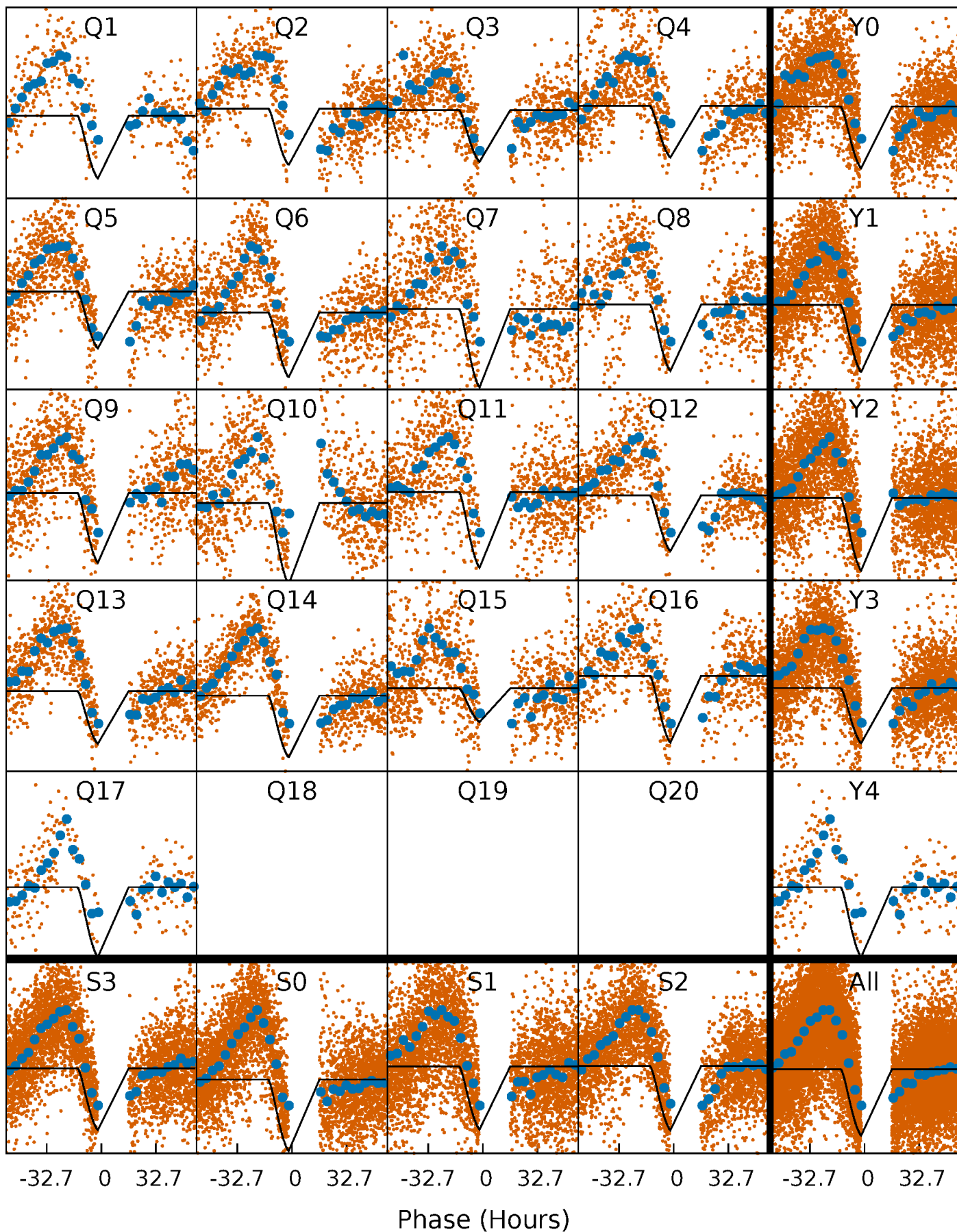
PDC Quarter-Phased Transit Curves

TCE 009549472-04 P= 15.713336 Days $T_0=137.057954$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 009549472-04 P= 15.713336 Days $T_0=137.057954$ (BKJD)

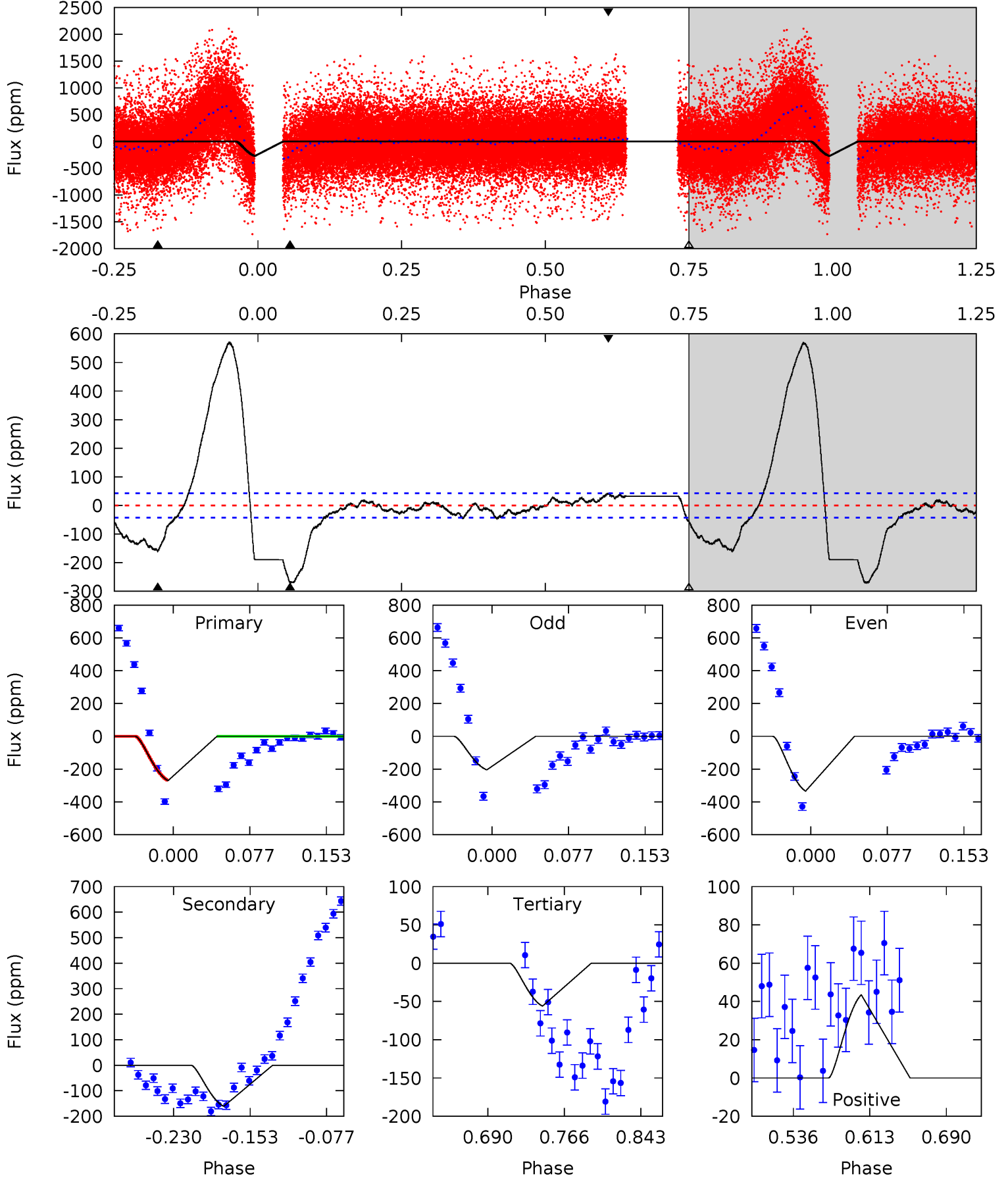


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

009549472-04, P = 15.713336 Days, E = 121.344618 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.3	17.5	6.08	4.72	4.62	1.77	16.3	23.2	24.6	11.4	12.7	7.04	0	0.68	0



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 009549472

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5843^{+158}_{-176}	$4.399^{+0.124}_{-0.186}$	$-0.180^{+0.300}_{-0.300}$	$1.006^{+0.286}_{-0.154}$	$0.924^{+0.132}_{-0.088}$	$1.279^{+0.716}_{-0.618}$
	+3%/-3%	+3%/-4%	+167%/-167%	+28%/-15%	+14%/-10%	+56%/-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 009549472-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-161 ± 9	$6.14^{+4.45}_{-3.71}$	1051^{+76}_{-60}	3330^{+1228}_{-485}	34^{+184}_{-23}
Alt.	N/A	N/A	N/A	N/A	N/A

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

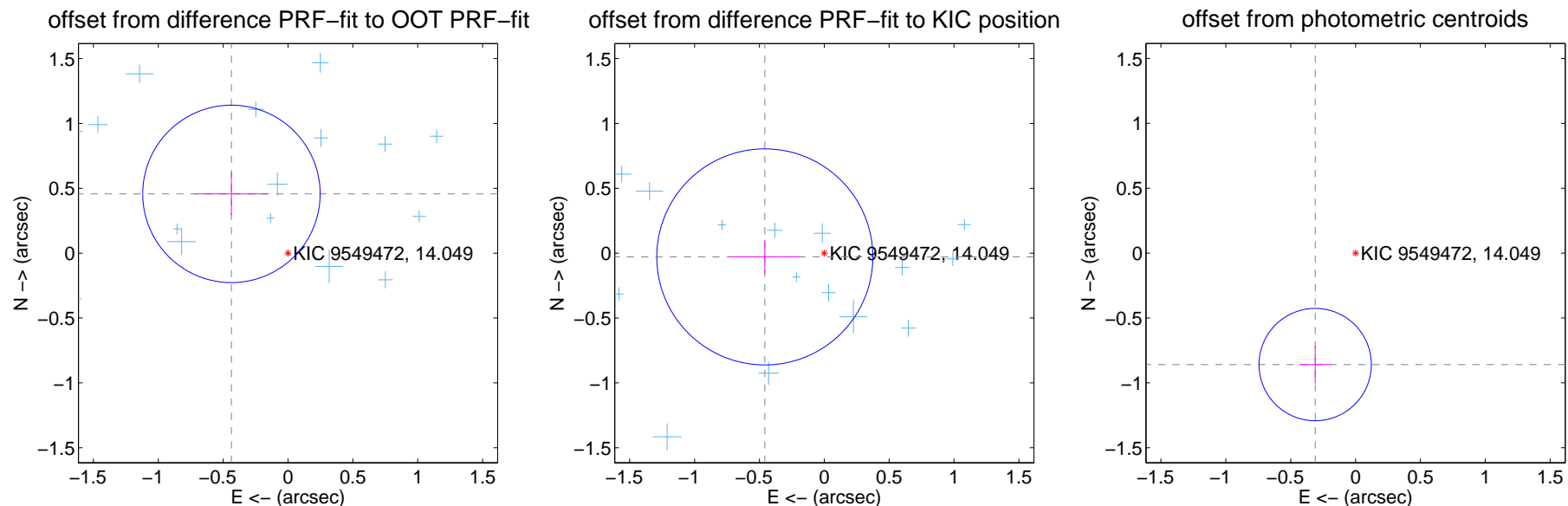
DV Centroid Data

Supplemental centroid analysis for 009549472-04. Kepler magnitude: 14.05. Transit SNR 21.94

There are 17 quarters with good PRF difference image offsets

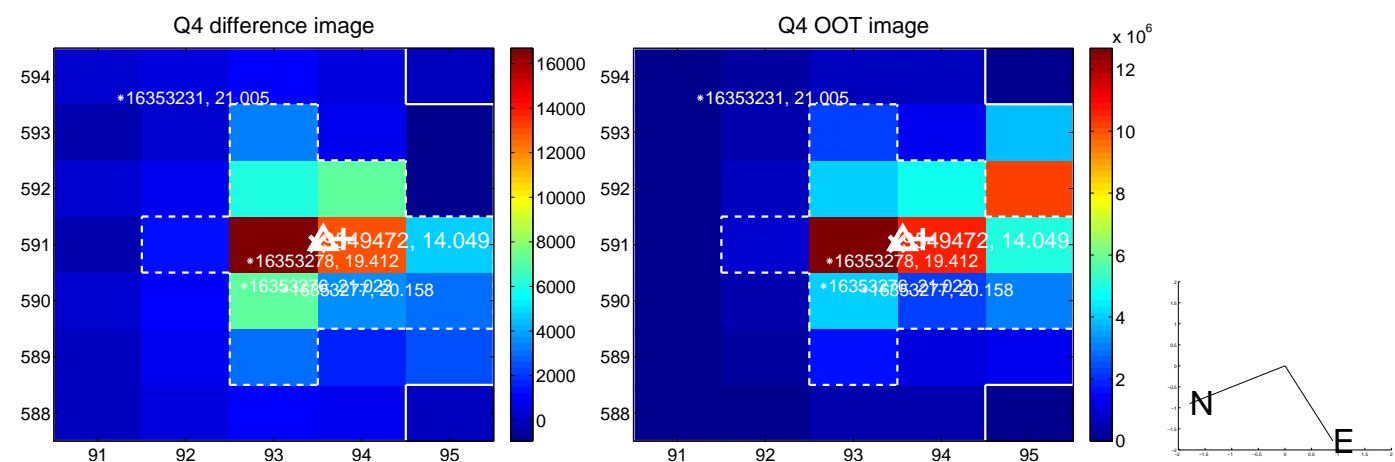
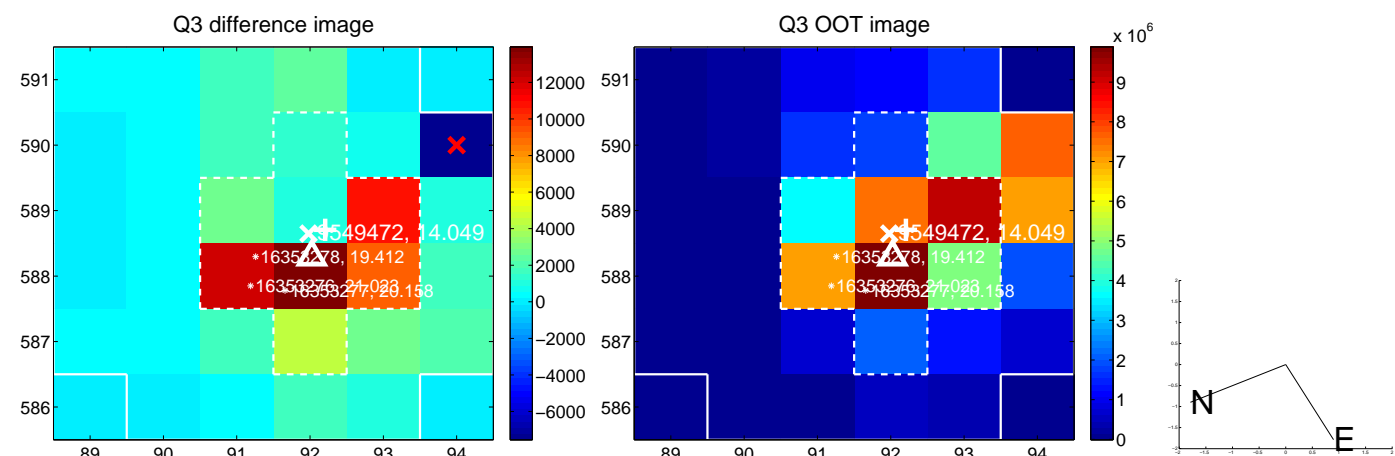
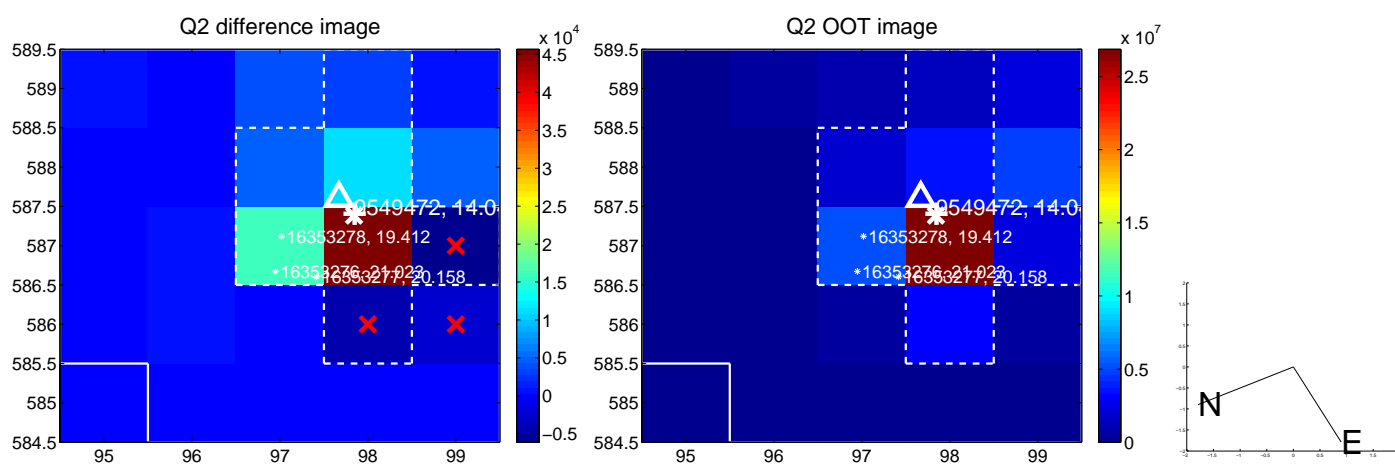
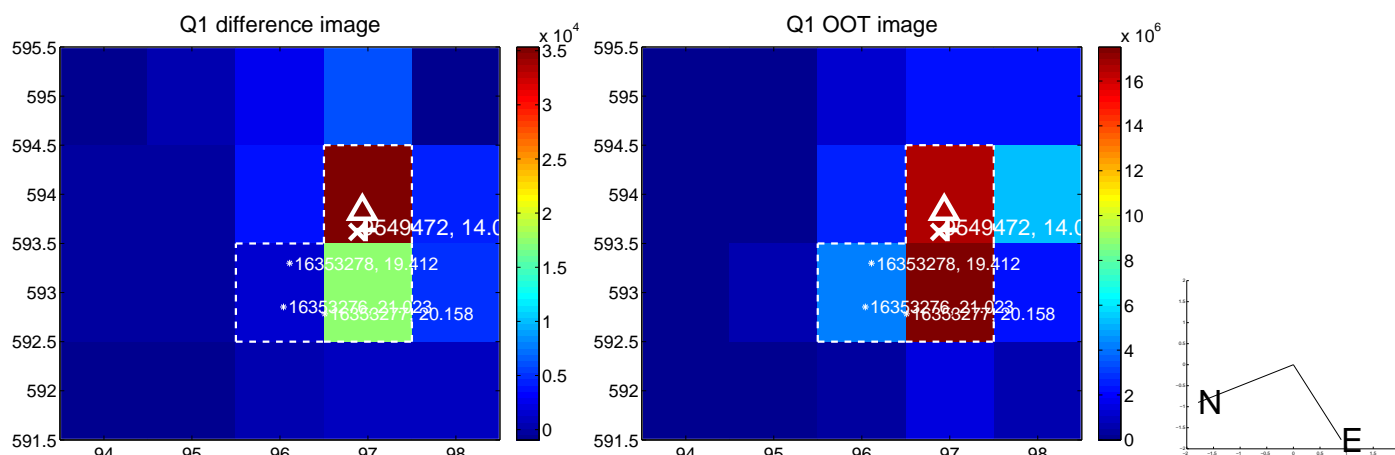
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.632 ± 0.228	2.77	0.436 ± 0.281	0.457 ± 0.165
PRF-fit source offset from KIC position	0.460 ± 0.278	1.66	0.459 ± 0.278	-0.029 ± 0.130
photometric centroid source offset	0.91 ± 0.14	6.33	0.31 ± 0.12	-0.86 ± 0.15

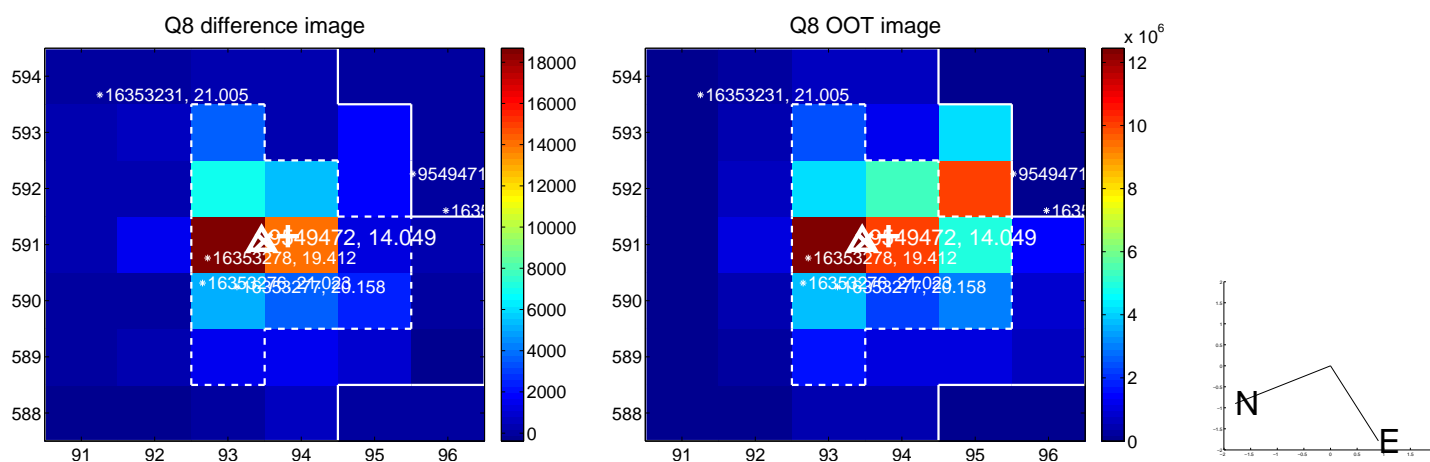
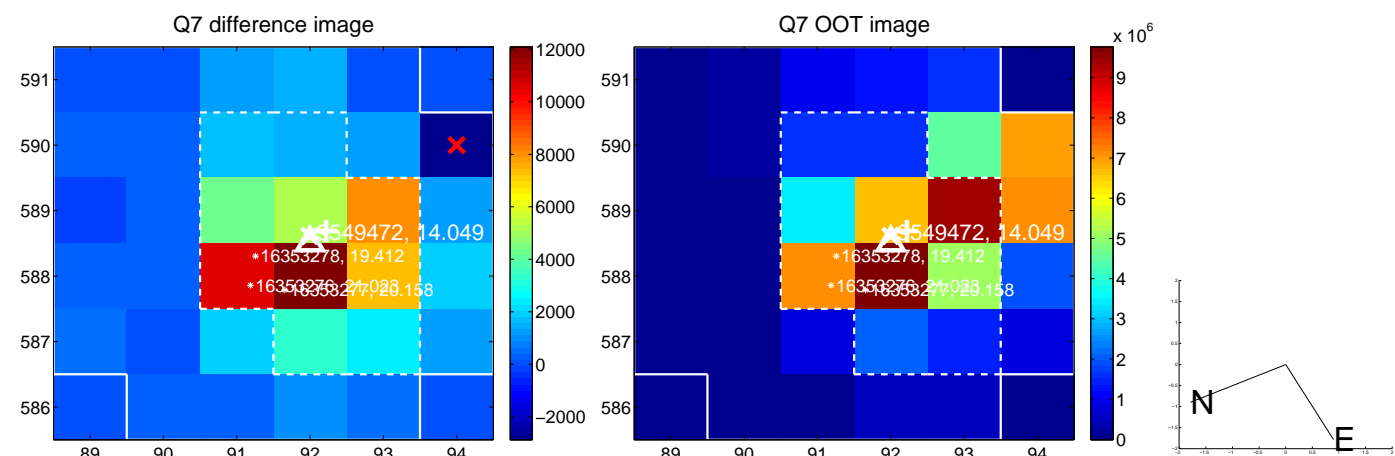
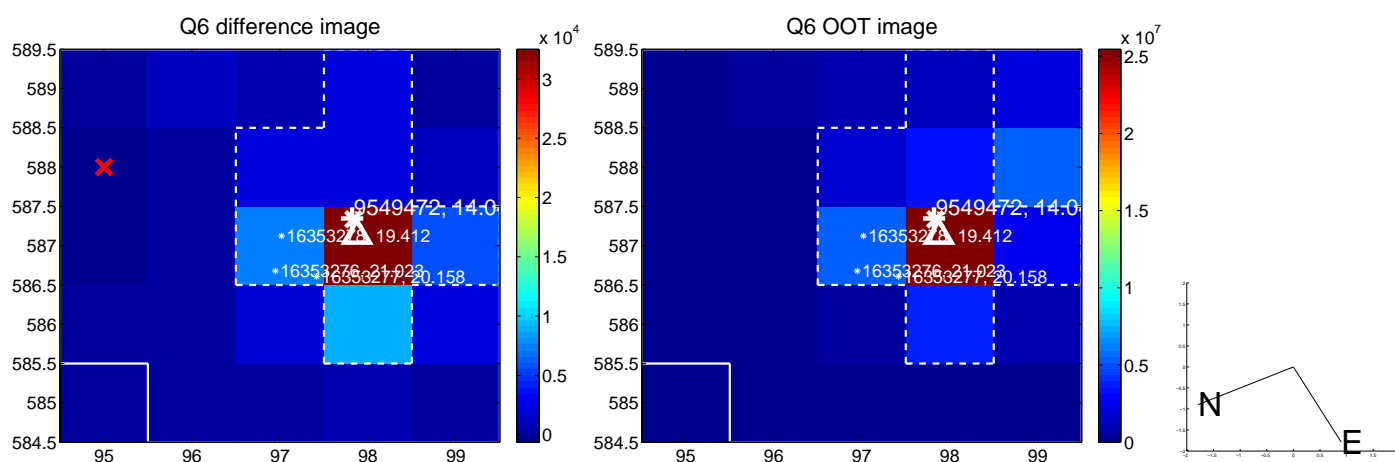
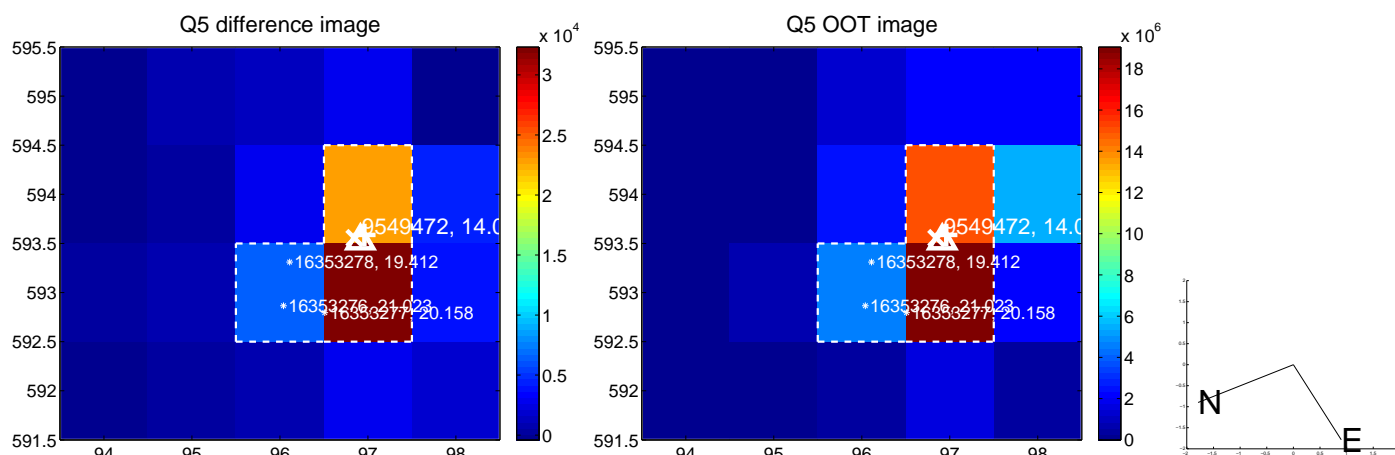


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

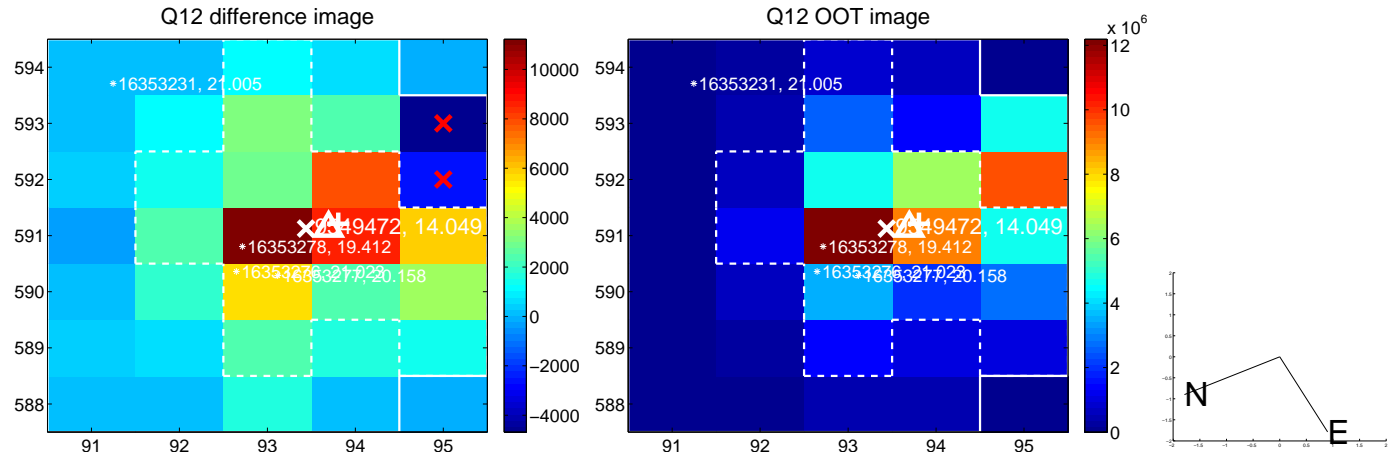
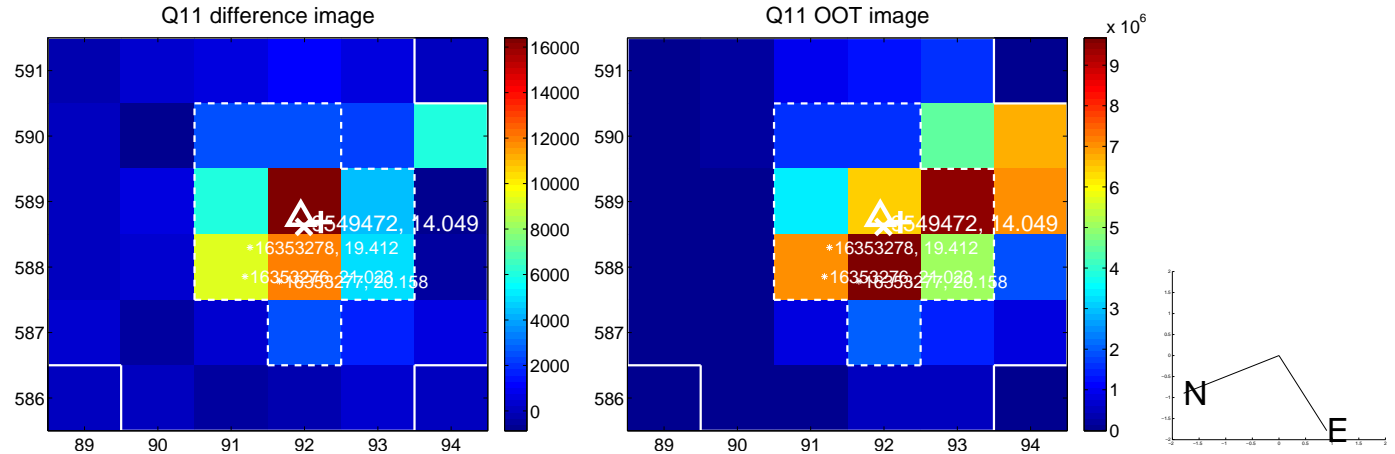
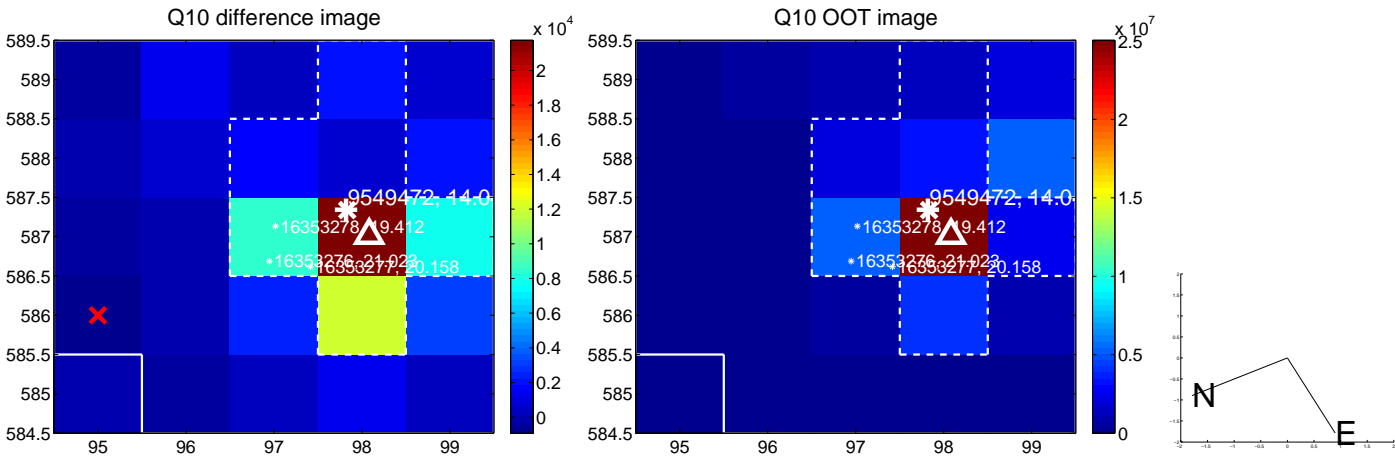
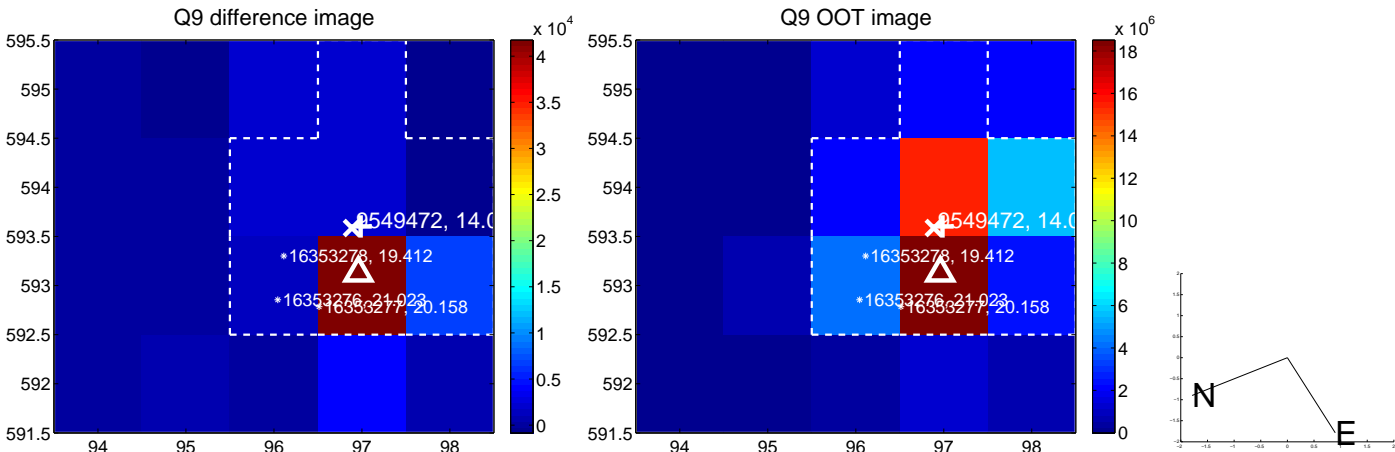
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



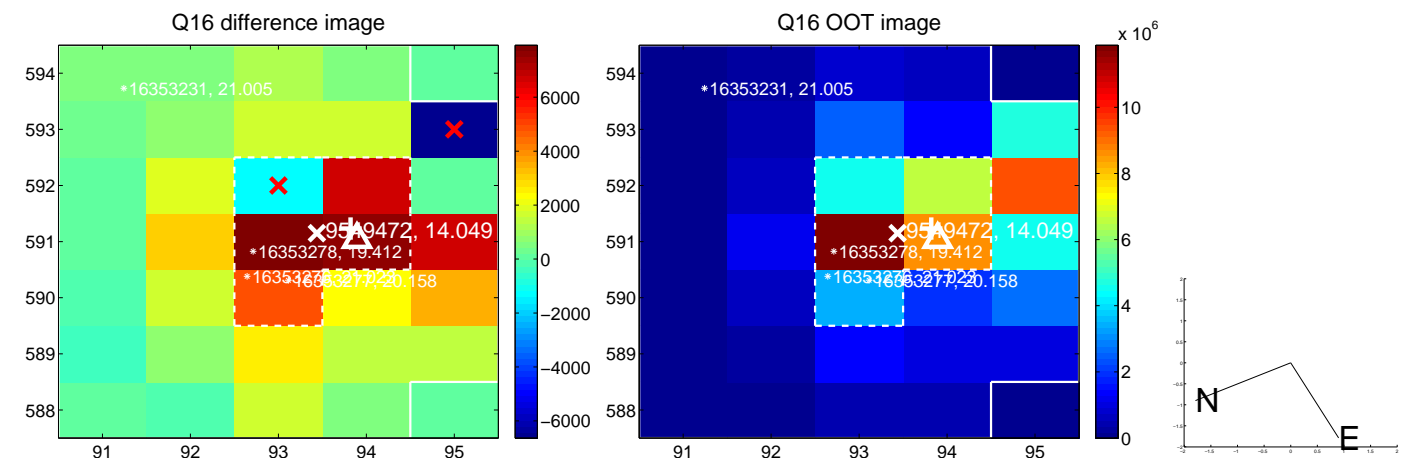
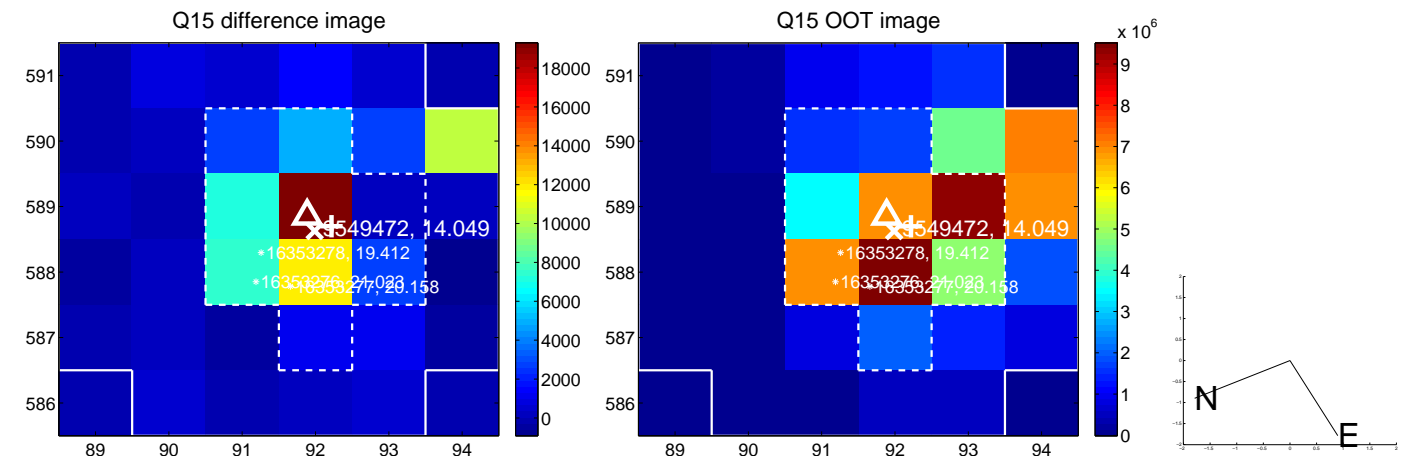
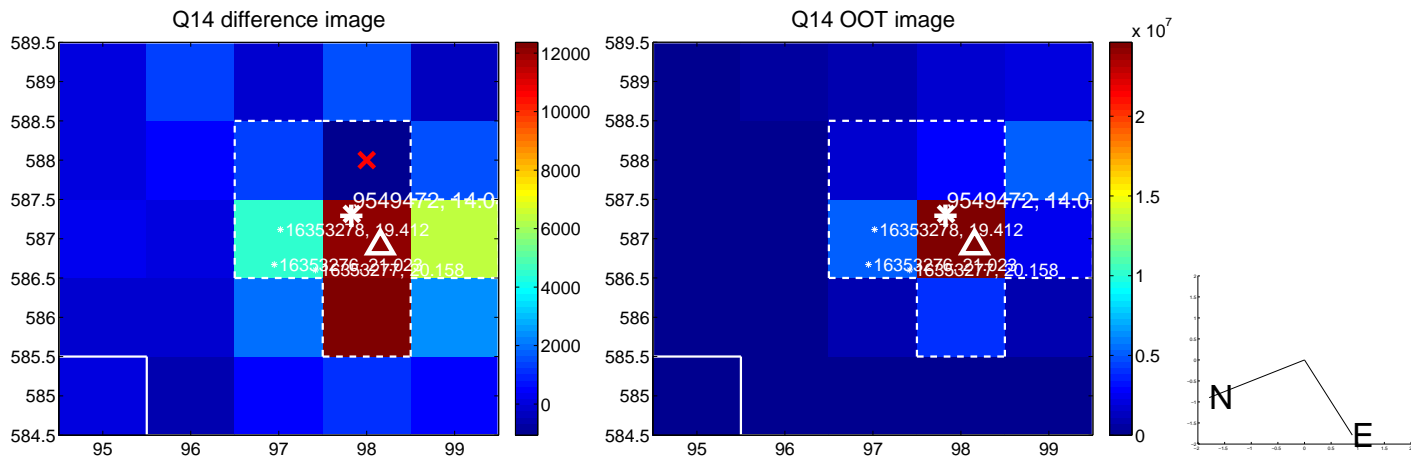
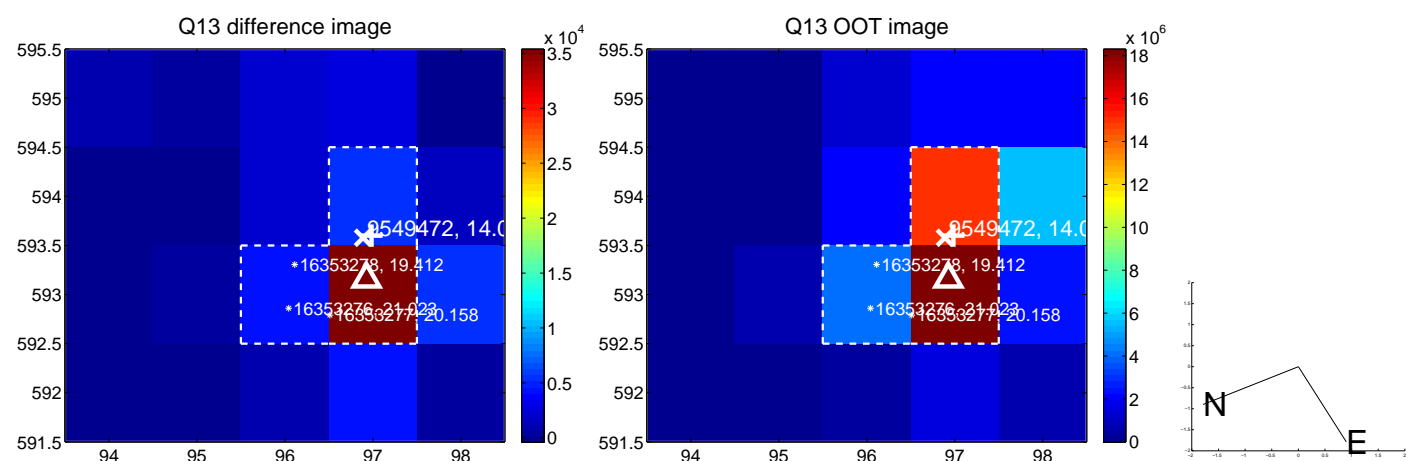
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



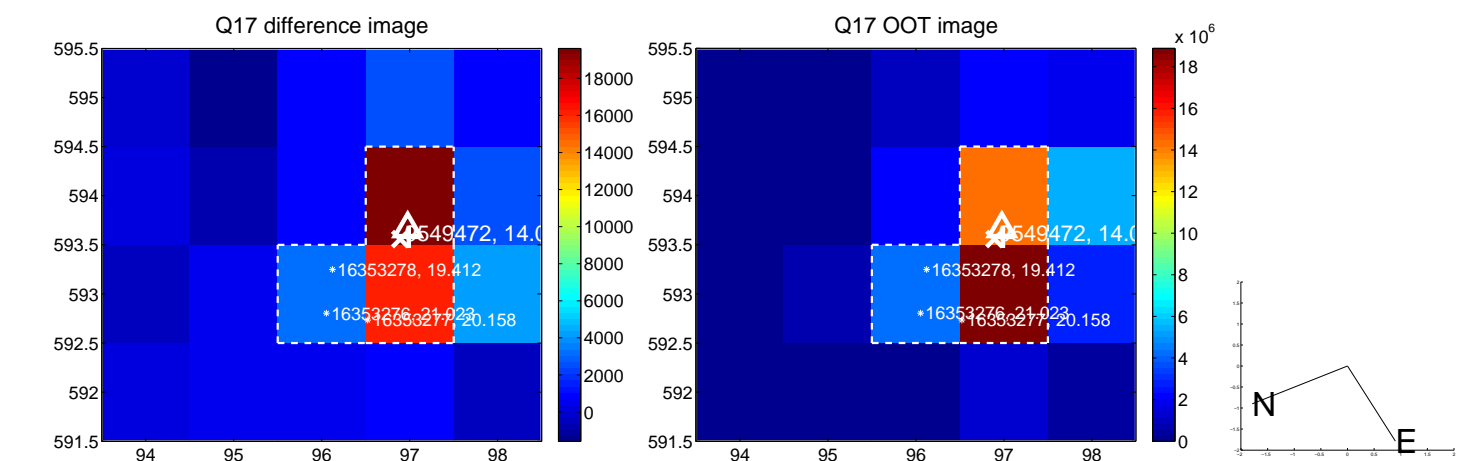
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



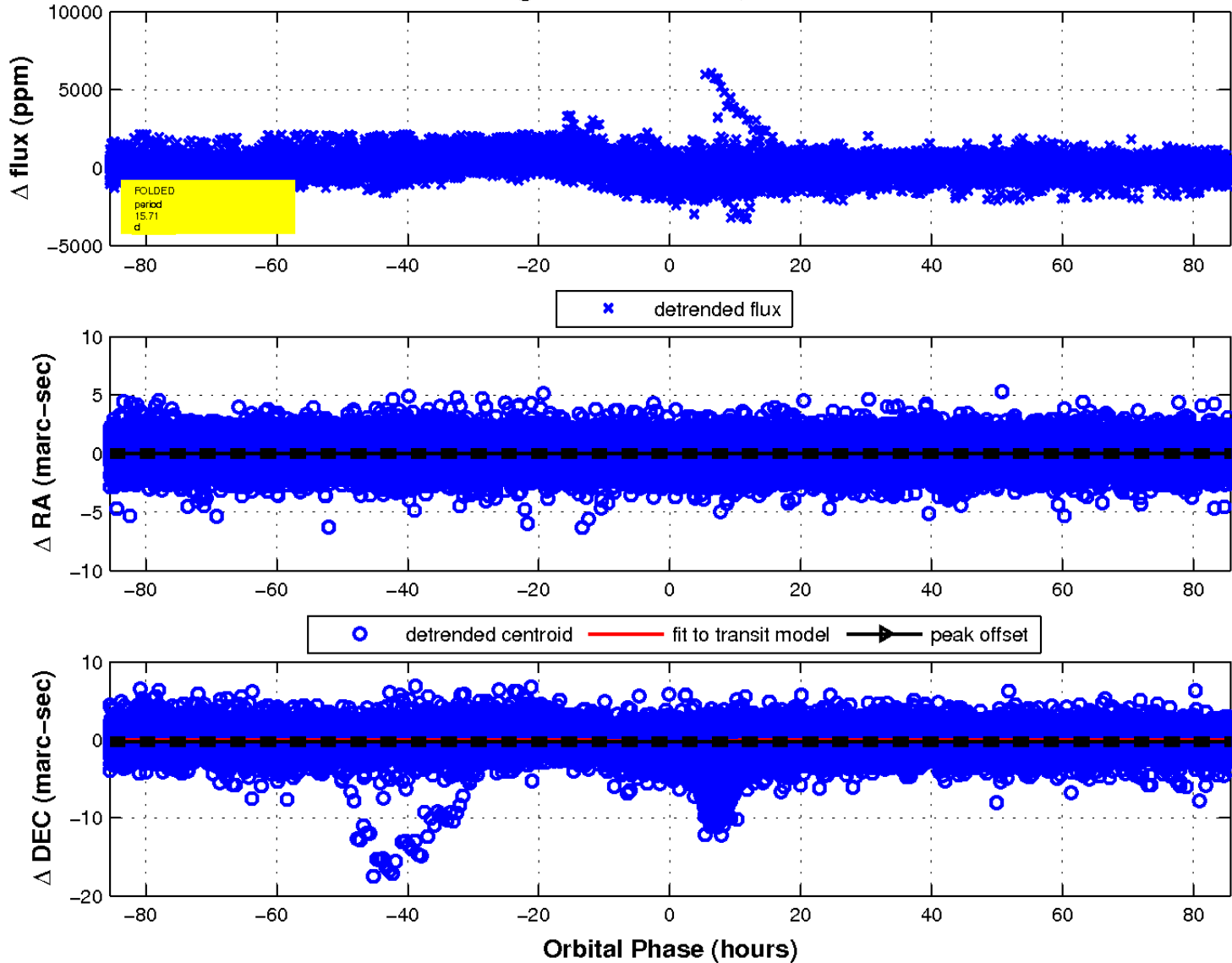
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

