

KIC 009540450

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})
009540450-01	OBS	7187.01	1.077352	131.604744	274619.4	2.500	19133.0	-1.0	1.06	6100	45.12	3253.60
009540450-02	OBS	No	4.309584	131.831120	17947.6	15.000	4086.5	-1.0	1.06	6100	14.24	512.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009540450-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
009540450-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—RESIDUAL_TCE—CENT_NOFITS

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

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

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

Ephemeris Match Information For 009540450-01

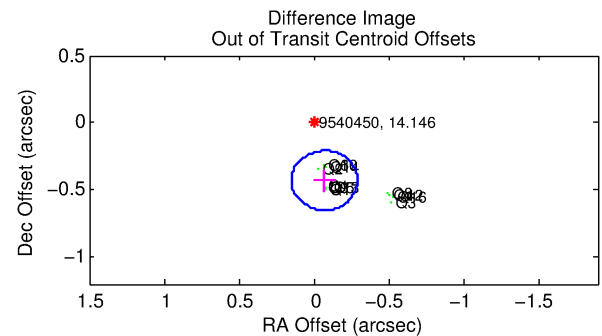
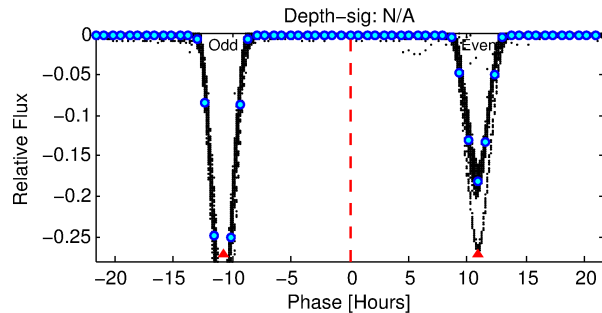
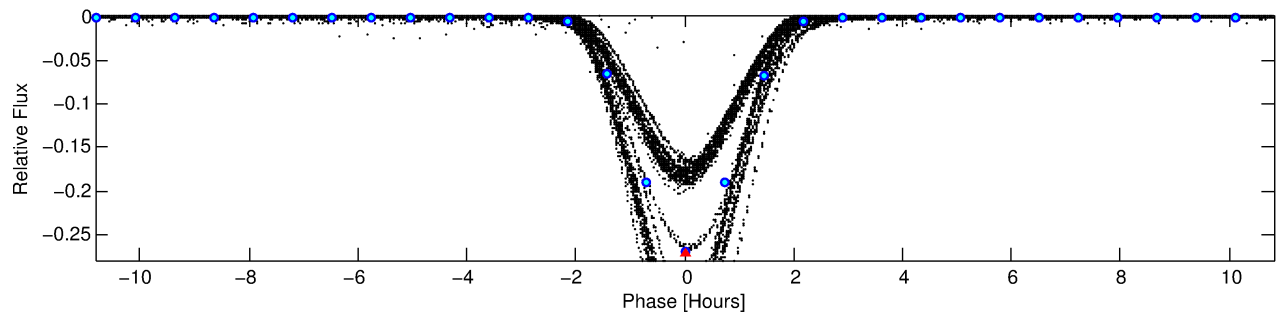
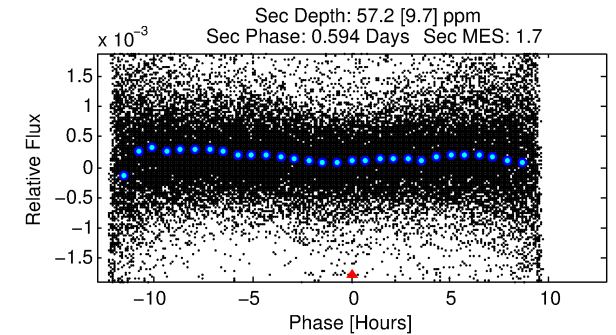
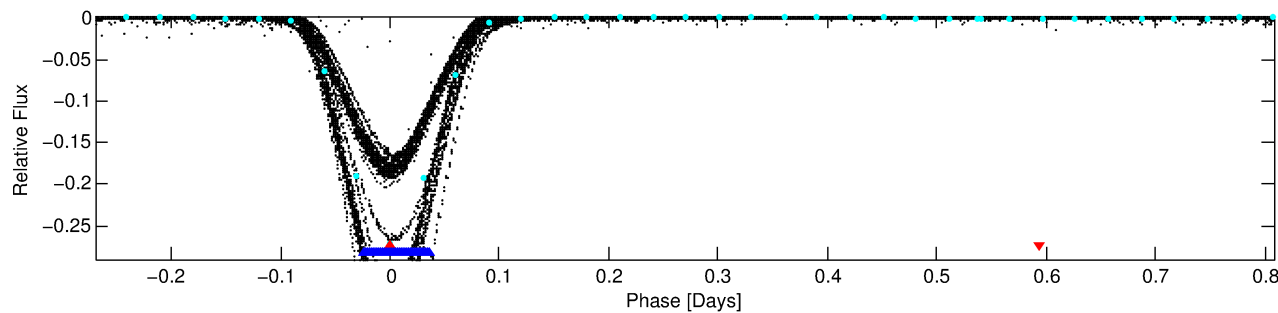
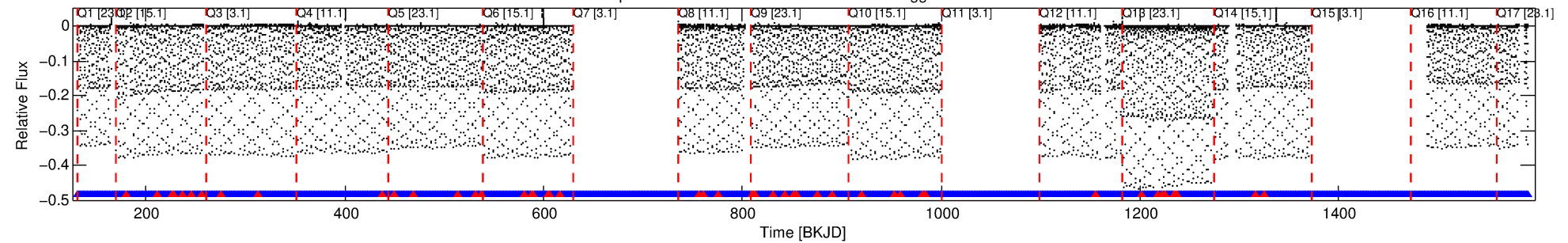
No Significant Match Found

DV One-Page Summary

KIC: 9540450 Candidate: 1 of 2 Period: 1.077 d

KOI: K07187.01 Corr: 0.795

Kp: 14.15 R*: 1.06 Rs Teff: 6100.0 K Logg: 4.40 Fe/H: -0.100



TPS TCE Results:

Period = 1.07735 d
Epoch = 131.6047 BKJD

DV fit results are unavailable

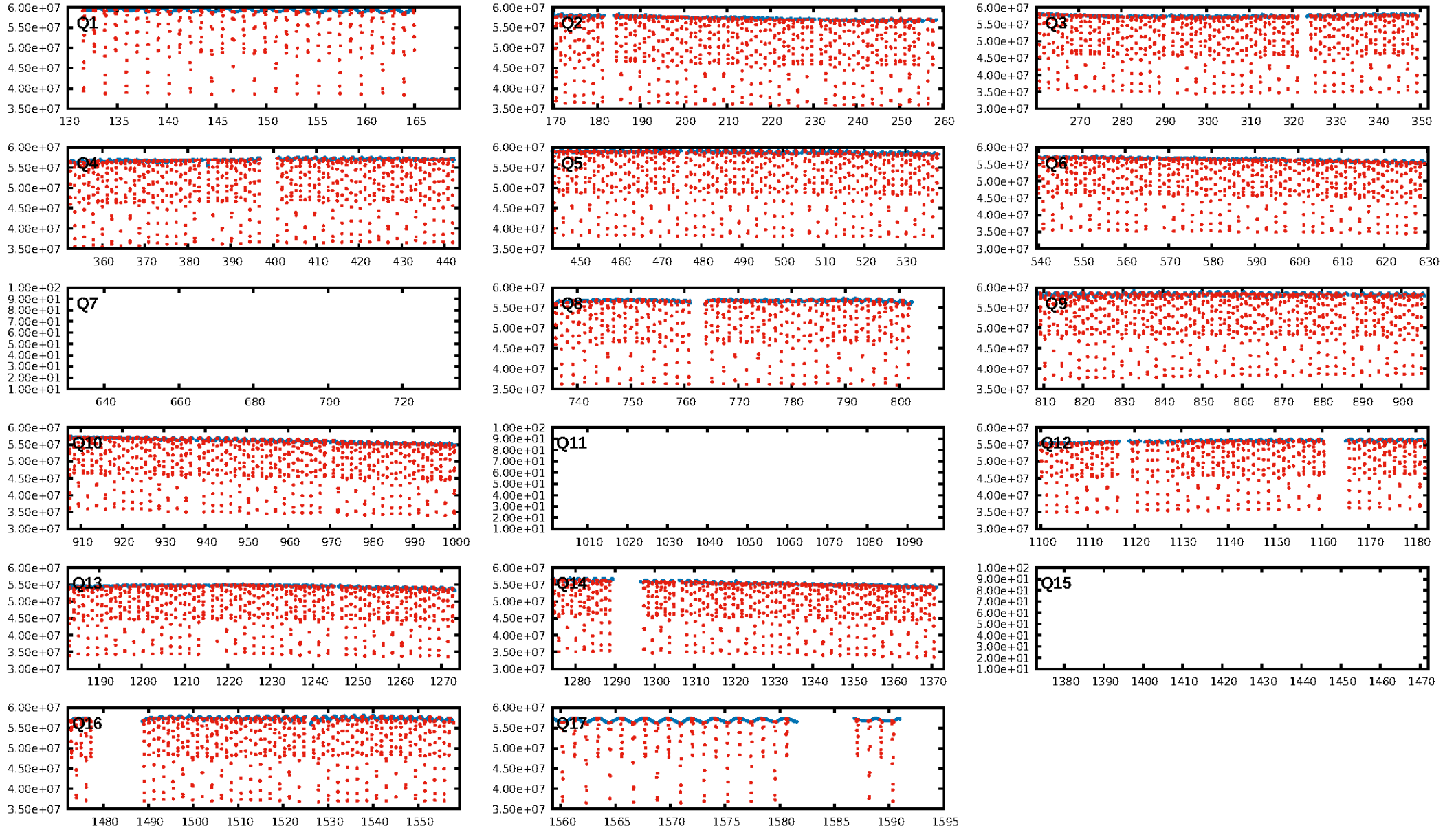
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [5.10 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.95 [890/938]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.435 arcsec [5.91 σ]
KicOffset-rm: 0.109 arcsec [1.62 σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

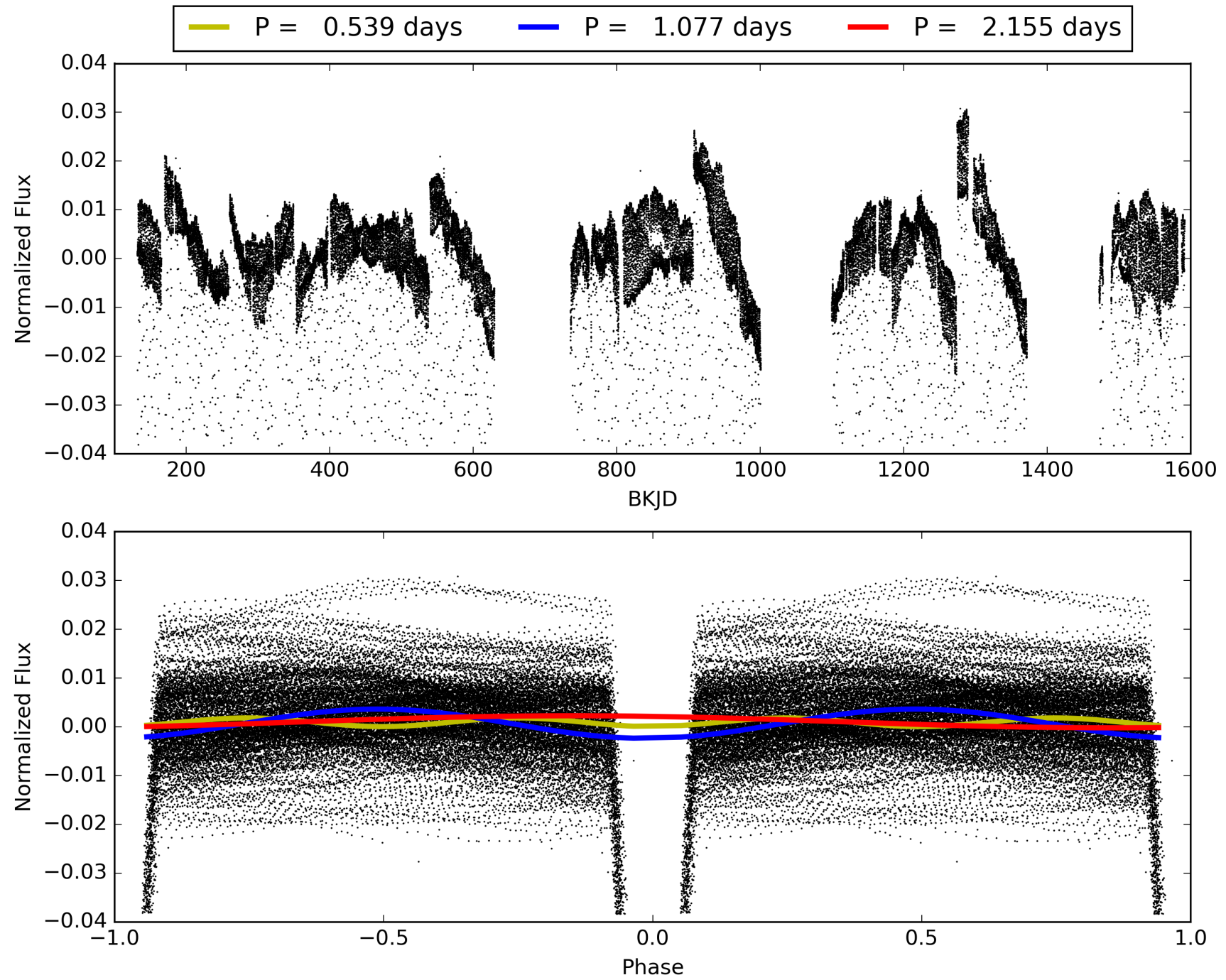
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 21:01:05 Z

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

TCE 009540450-01, PDC Light Curves

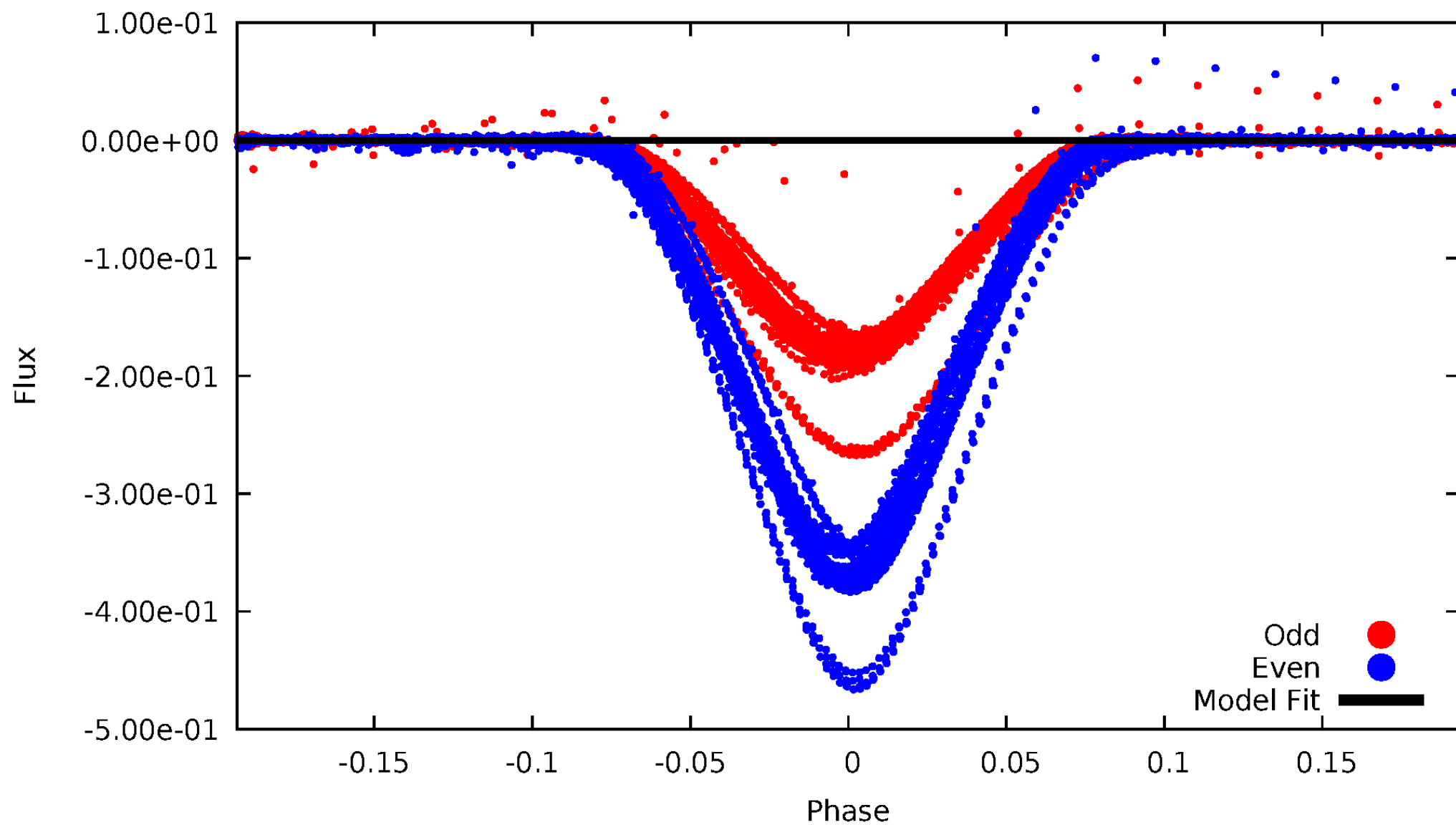


TCE 009540450-01



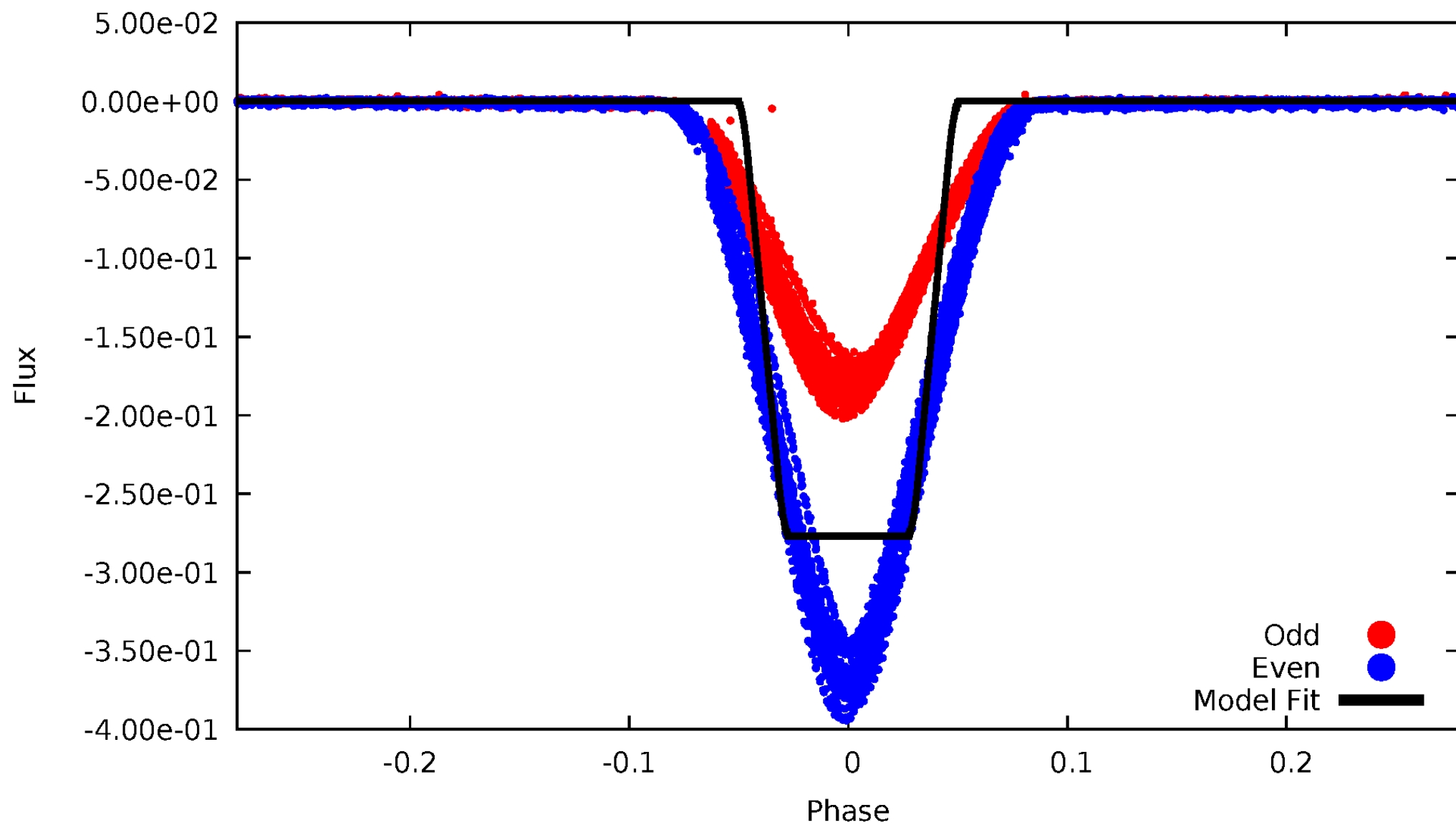
DV Odd/Even

TCE 009540450-01



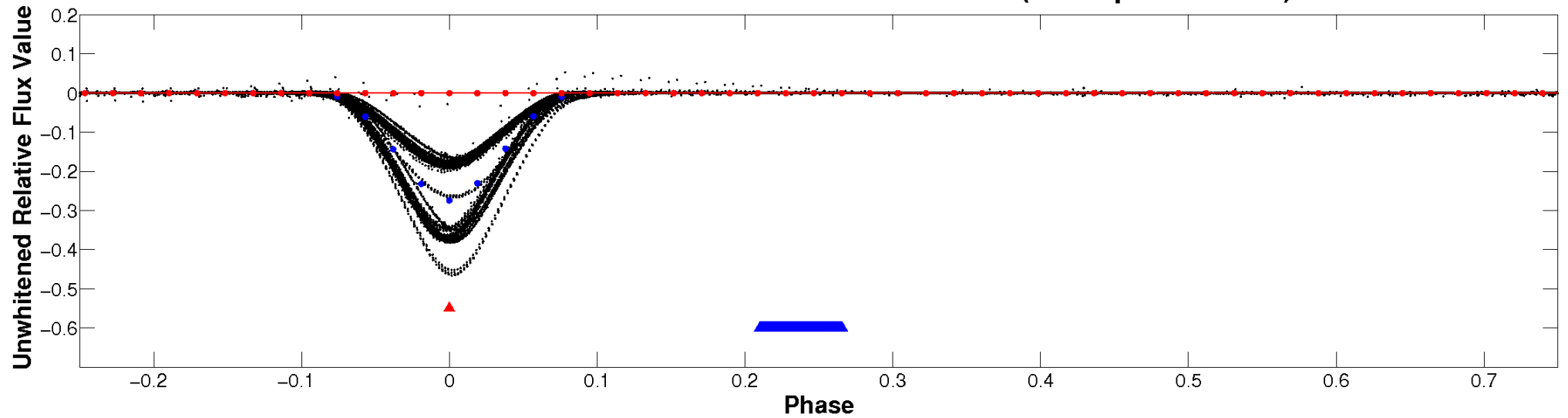
ALT Odd/Even

TCE 009540450-01



Non-Whitened Vs. Whitened Light Curve

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

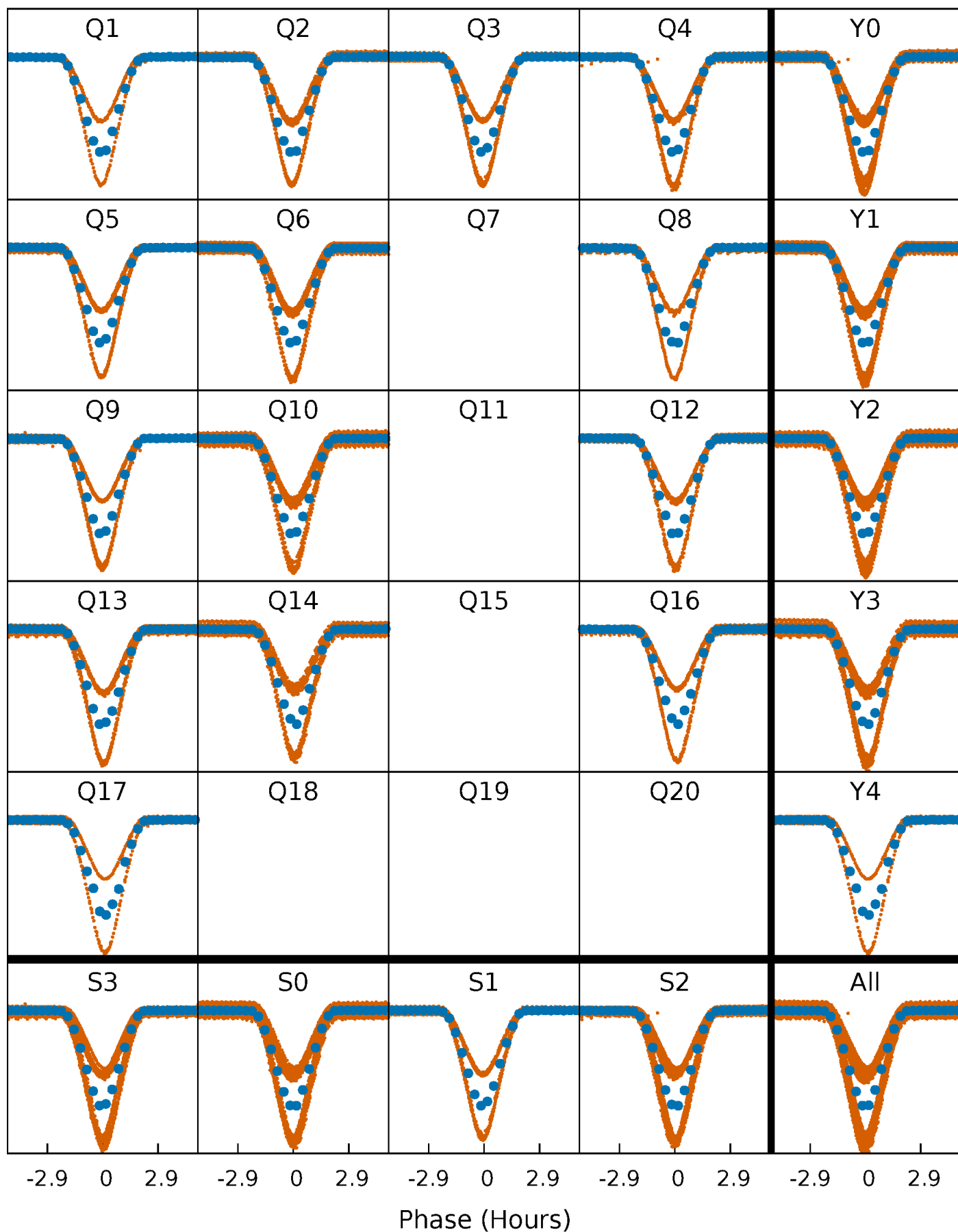


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



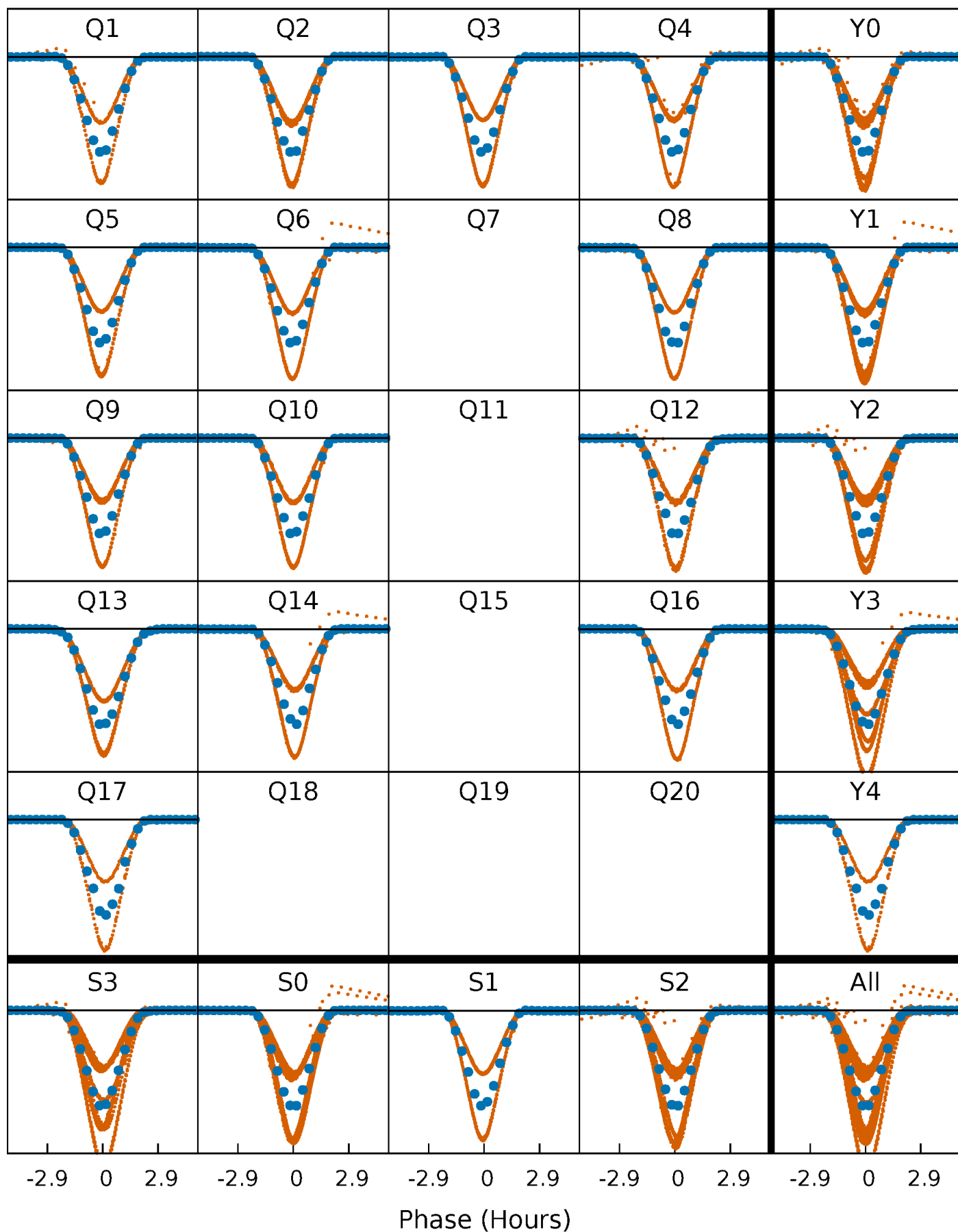
PDC Quarter-Phased Transit Curves

TCE 009540450-01 P= 1.077352 Days $T_0=131.604744$ (BKJD)



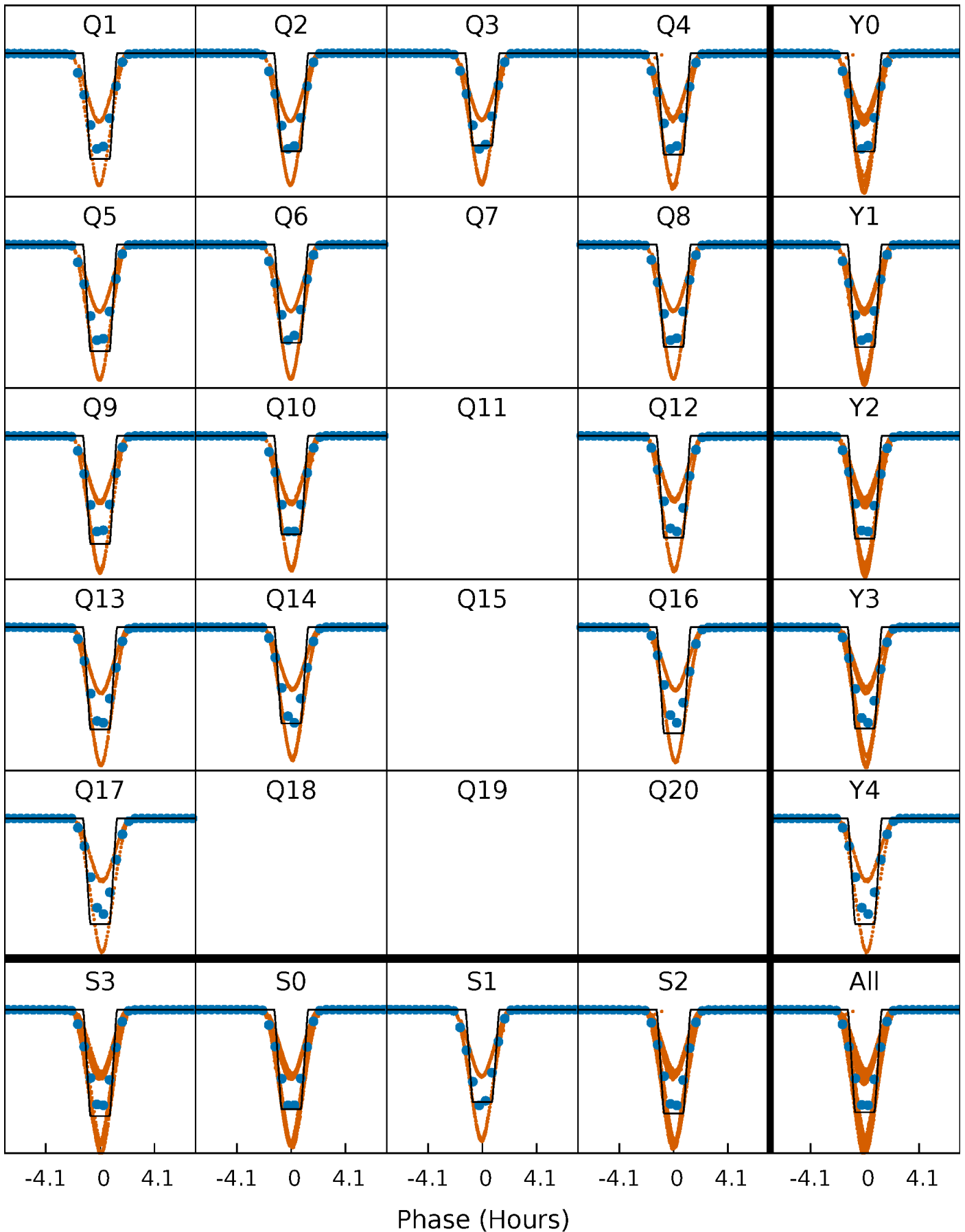
DV Quarter-Phased Transit Curves

TCE 009540450-01 P= 1.077352 Days $T_0=131.604744$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

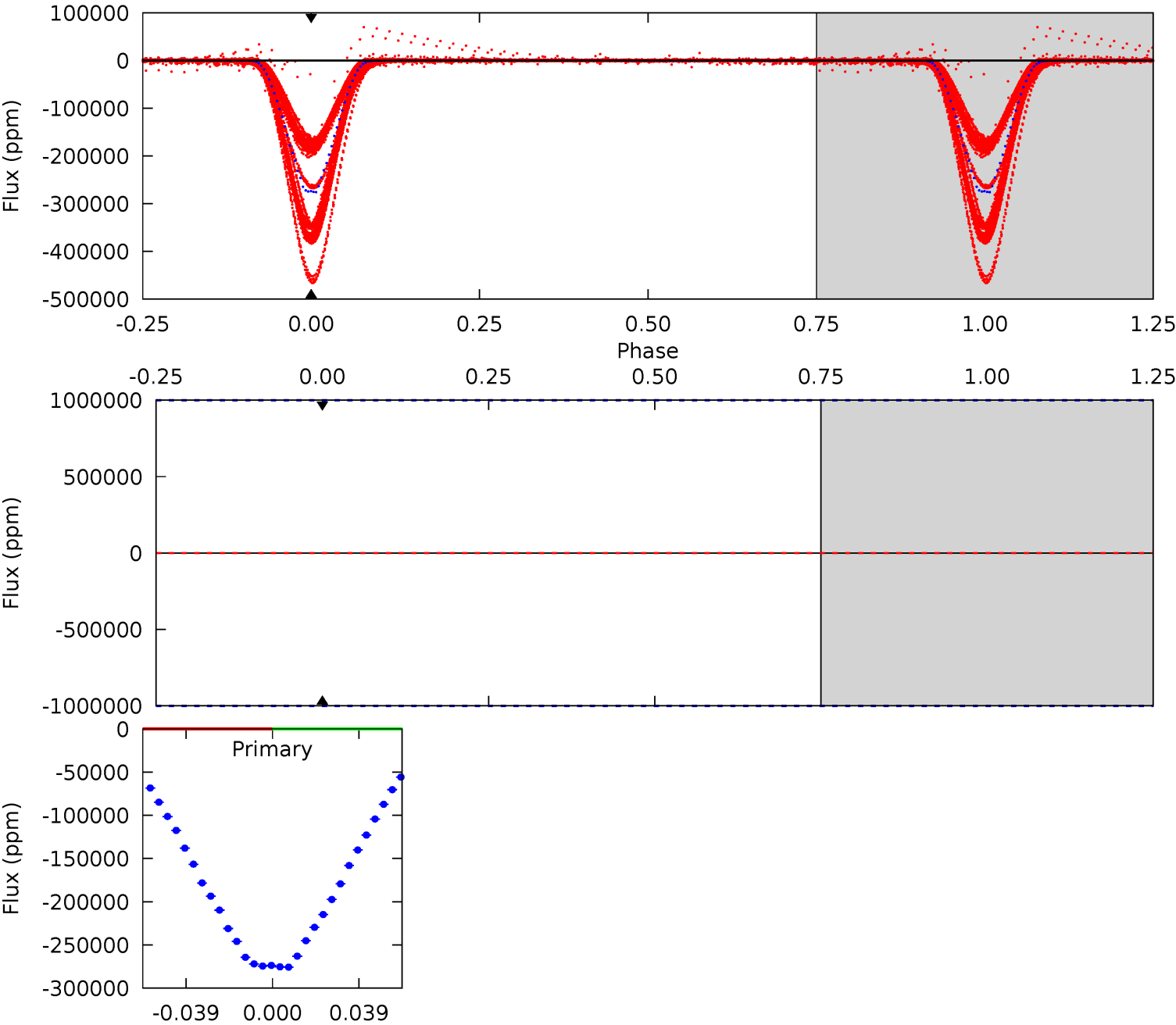
TCE 009540450-01 P= 1.077352 Days $T_0=131.604239$ (BKJD)



DV Model-Shift Uniqueness Test

009540450-01, P = 1.077352 Days, E = 130.527392 Days

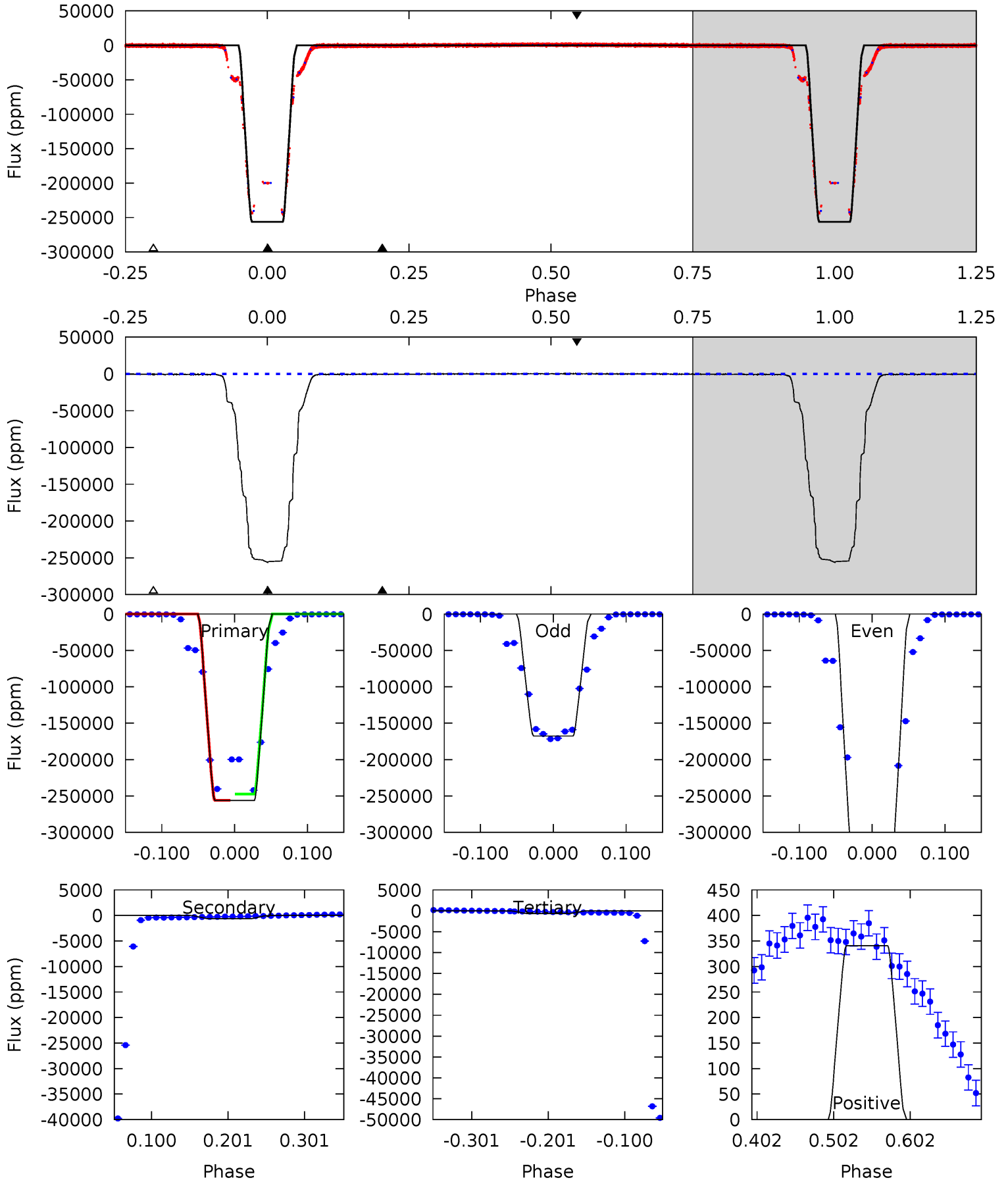
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009540450-01, P = 1.077352 Days, E = 130.526887 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4021	9.99	10.2	5.34	4.56	1.64	5.45	4011	4016	-0.21	4.65	2655	1.29	0.00	0



Stellar Parameters For KIC 009540450

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6100^{+298}_{-364}	$4.397^{+0.112}_{-0.208}$	$-0.100^{+0.300}_{-0.300}$	$1.064^{+0.338}_{-0.182}$	$1.029^{+0.177}_{-0.145}$	$1.203^{+0.612}_{-0.642}$
	+5%/-6%	+3%/-5%	+300%/-300%	+32%/-17%	+17%/-14%	+51%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009540450-01 / KOI 7187.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$46.12^{+15.98}_{-12.22}$	2722^{+241}_{-201}	-1766^{+7629}_{-3768}	$0.296^{+14.745}_{-11.067}$
Alt.	-637 ± 64	$63.97^{+15.92}_{-12.93}$	2737^{+229}_{-216}	-2876^{+134}_{-152}	$0.036^{+0.020}_{-0.012}$

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

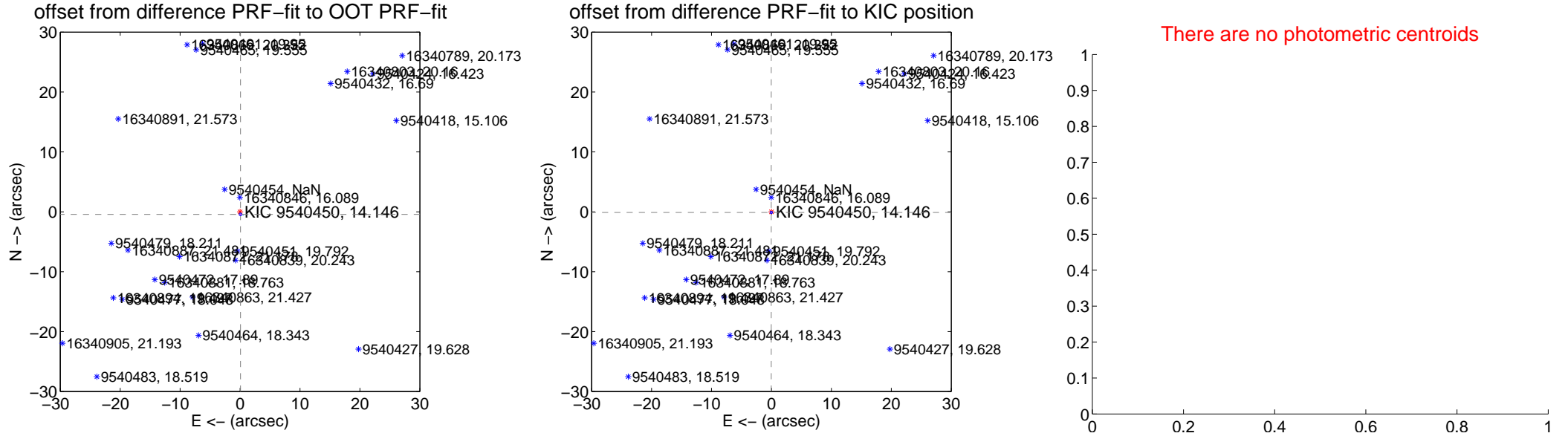
DV Centroid Data

Supplemental centroid analysis for 009540450-01. Kepler magnitude: 14.15. Transit SNR -1.00

There are 14 quarters with good PRF difference image offsets

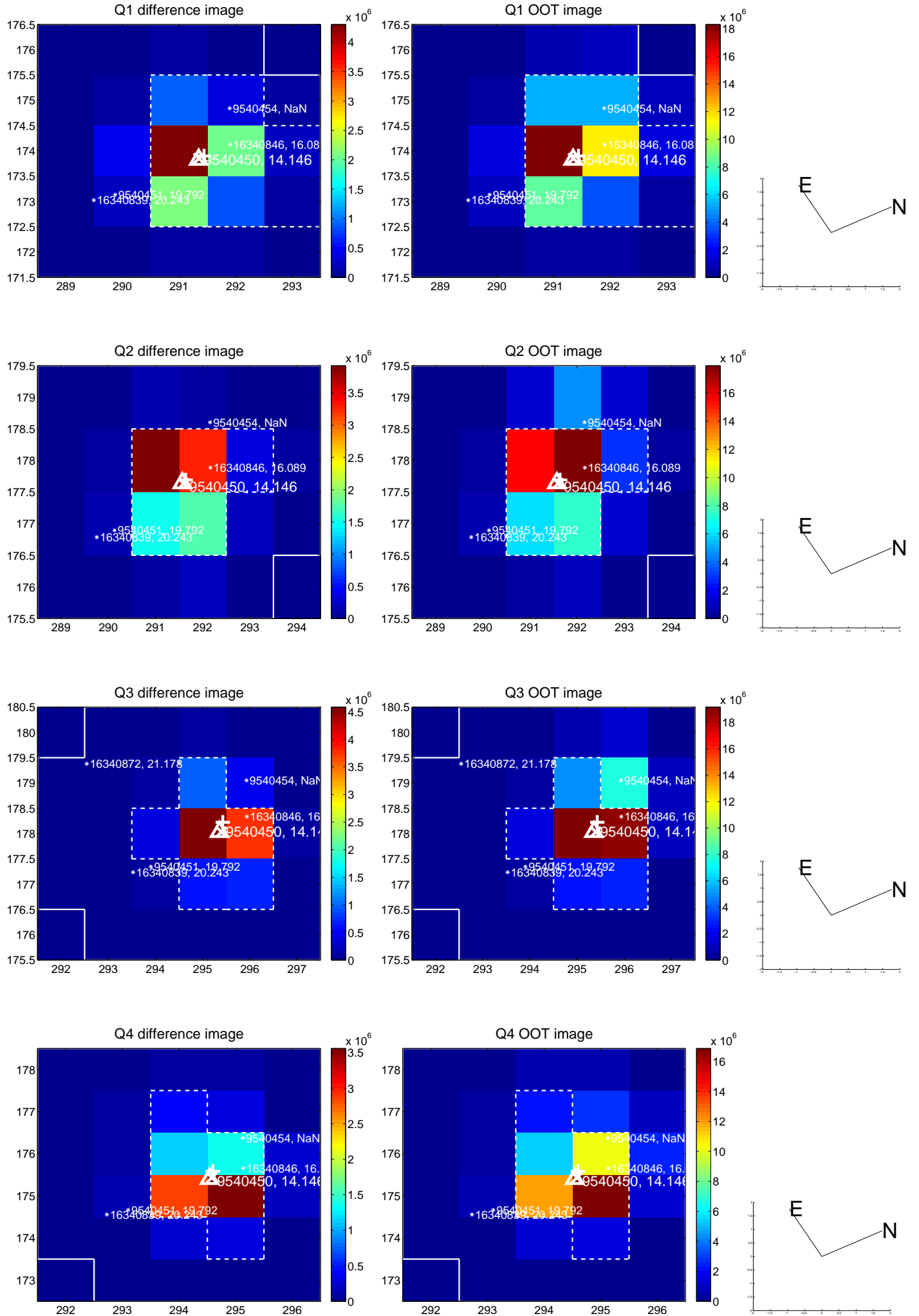
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.435 \pm 0.074	5.91	-0.071 \pm 0.068	-0.430 \pm 0.074
PRF-fit source offset from KIC position	0.109 \pm 0.068	1.62	0.032 \pm 0.068	-0.104 \pm 0.067
photometric centroid source offset	—	—	—	—

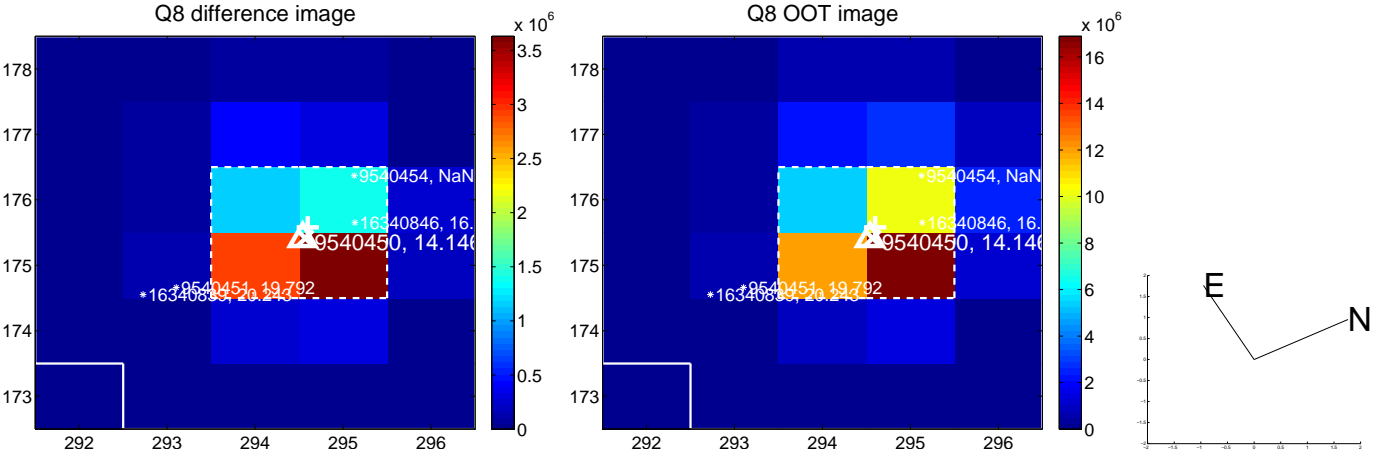
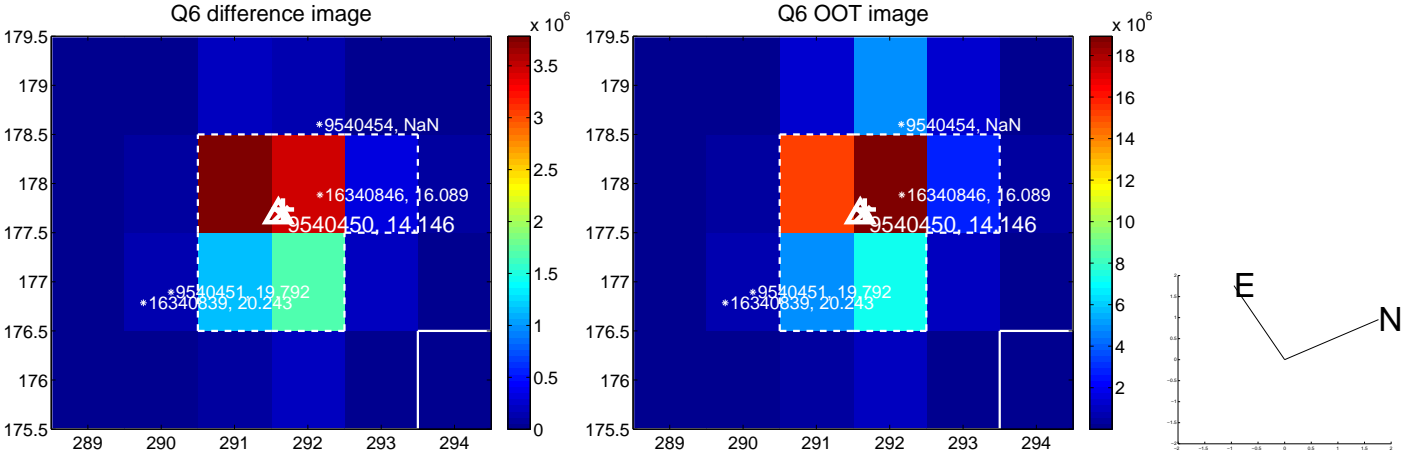
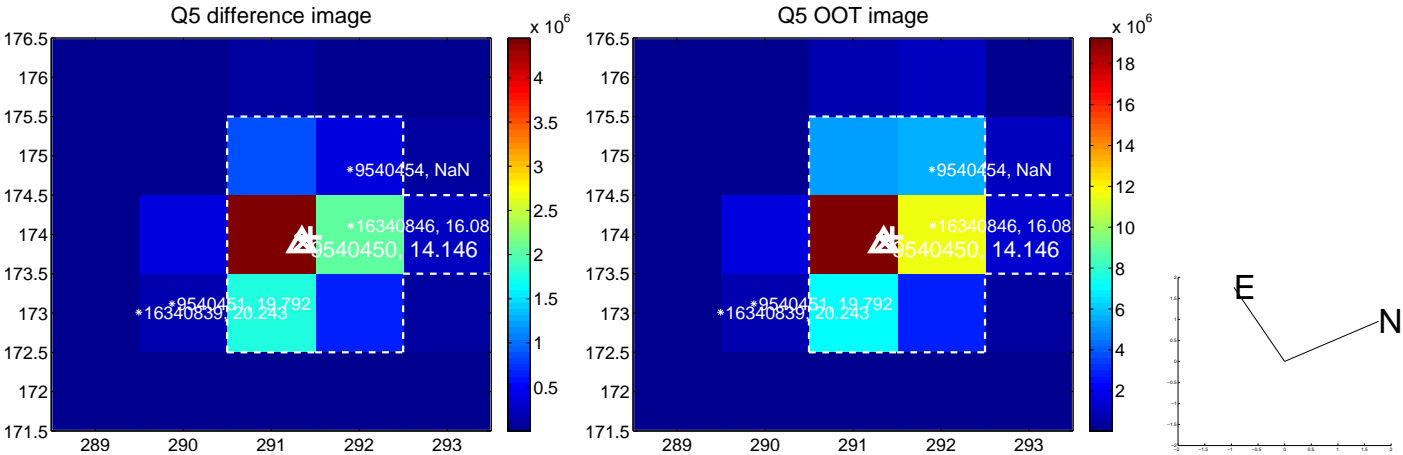


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

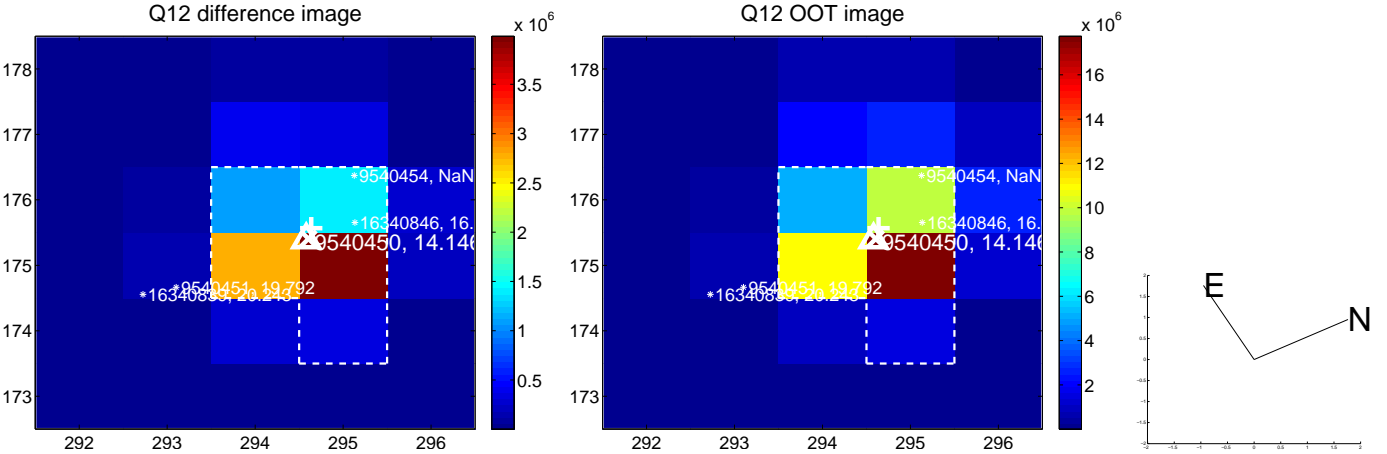
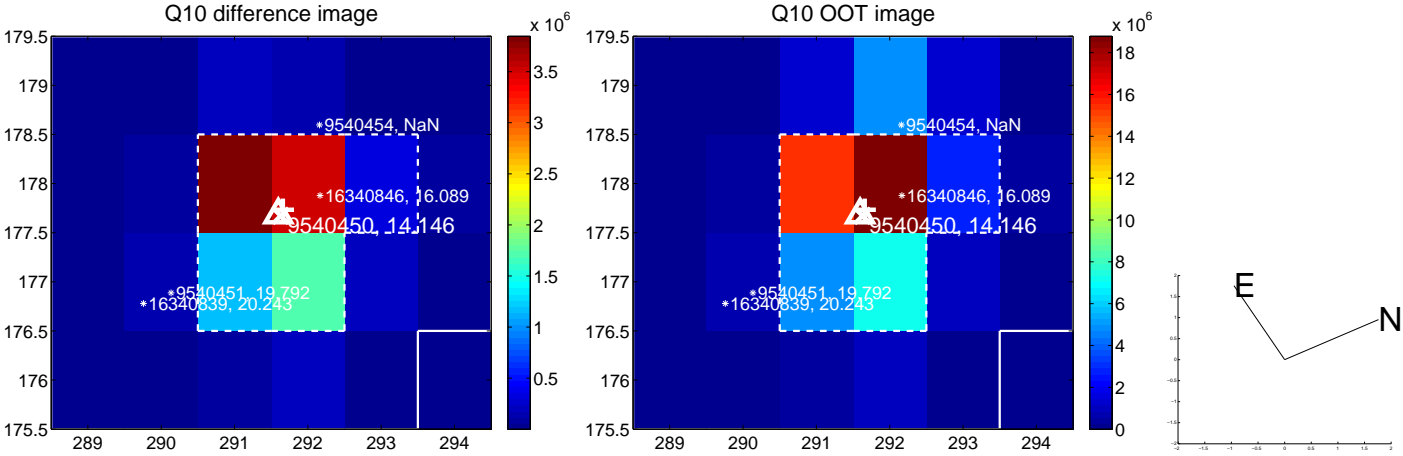
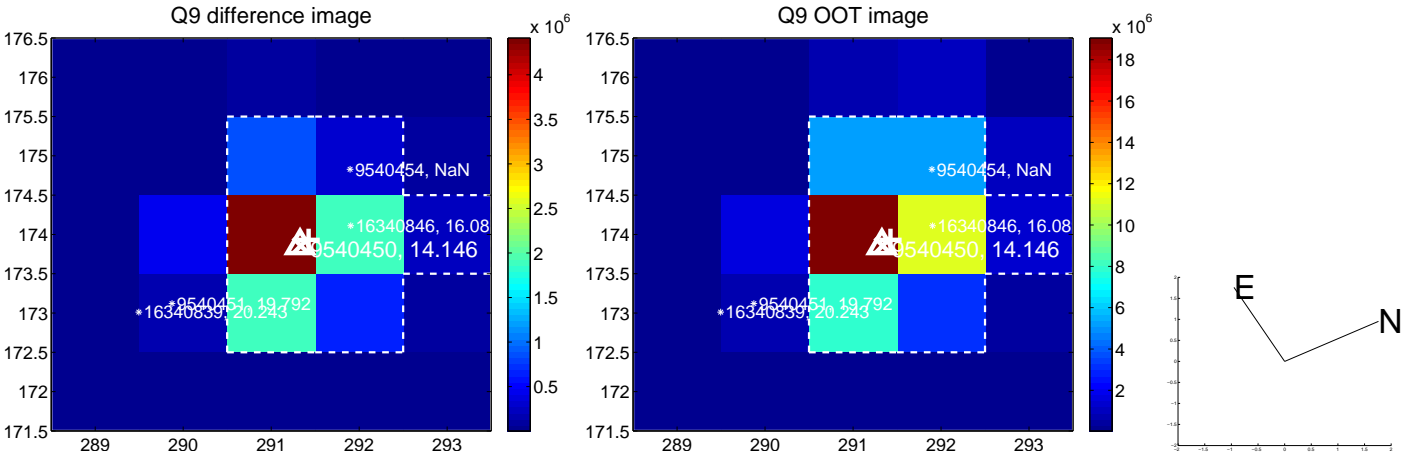
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



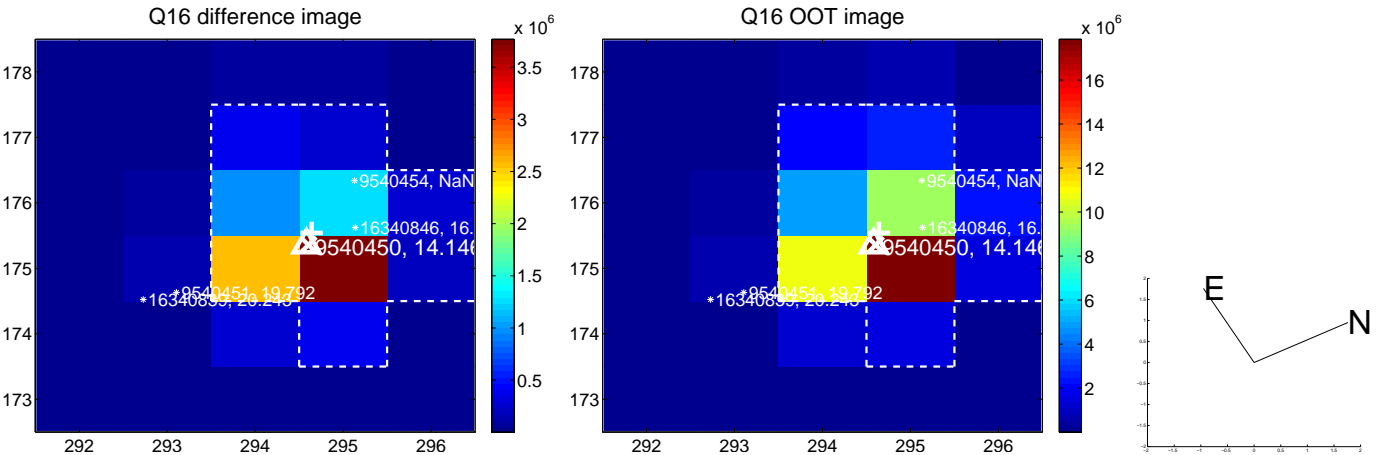
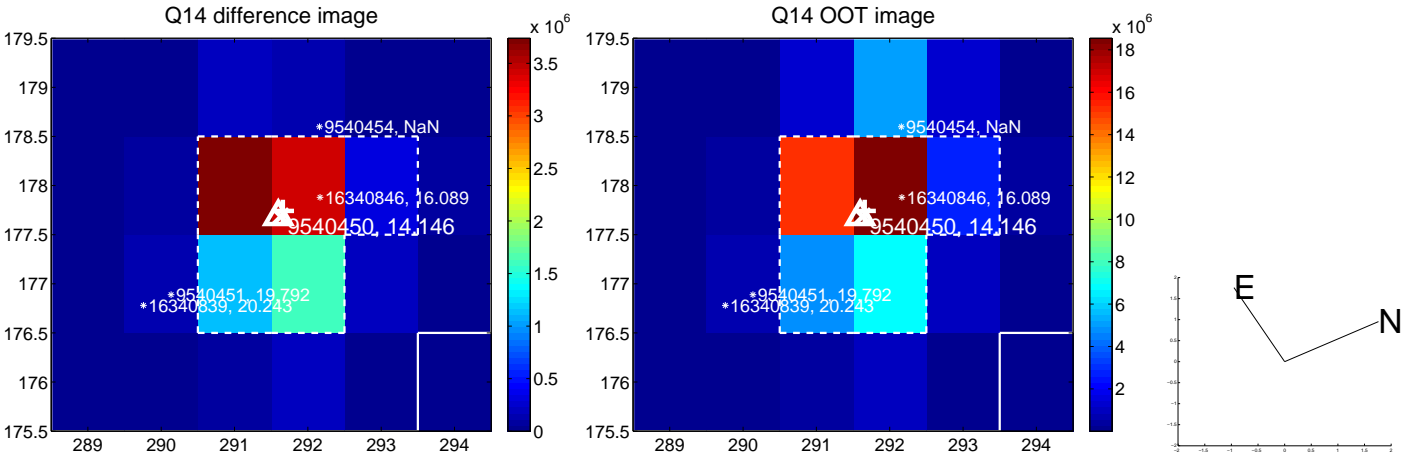
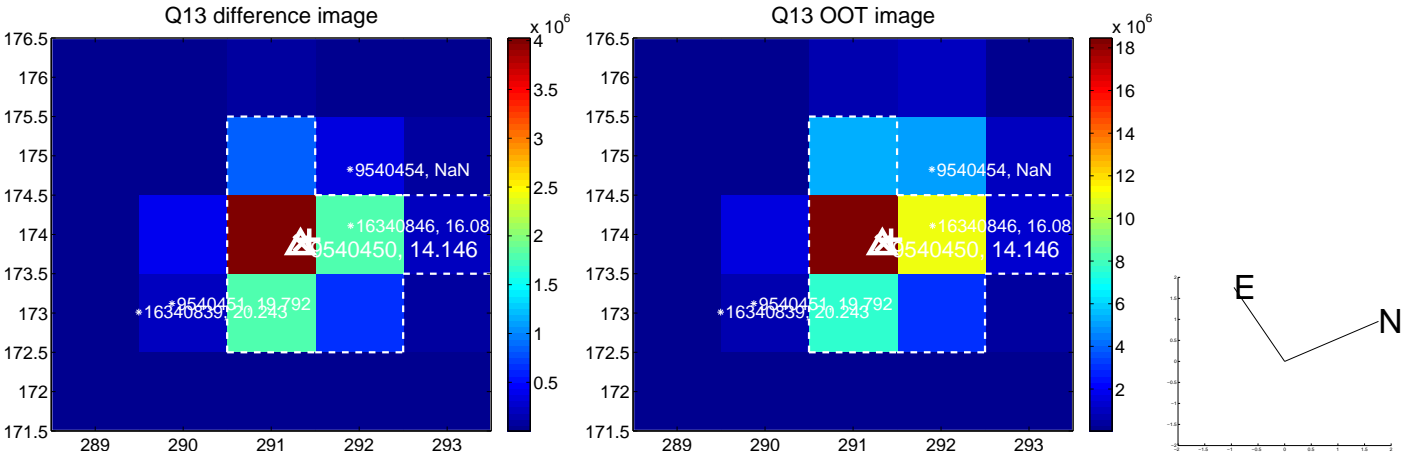
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



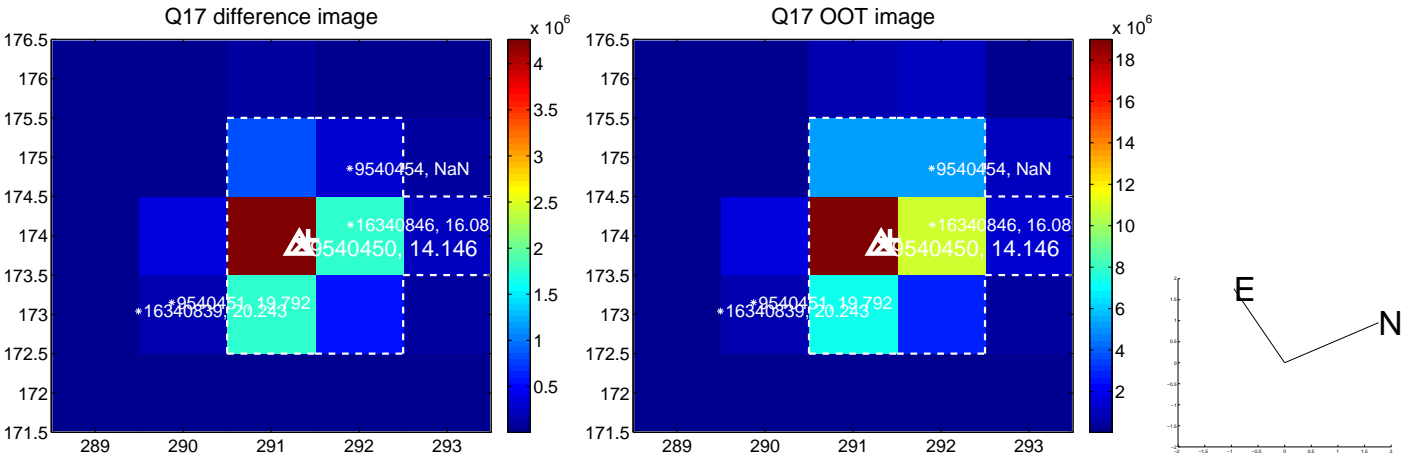
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



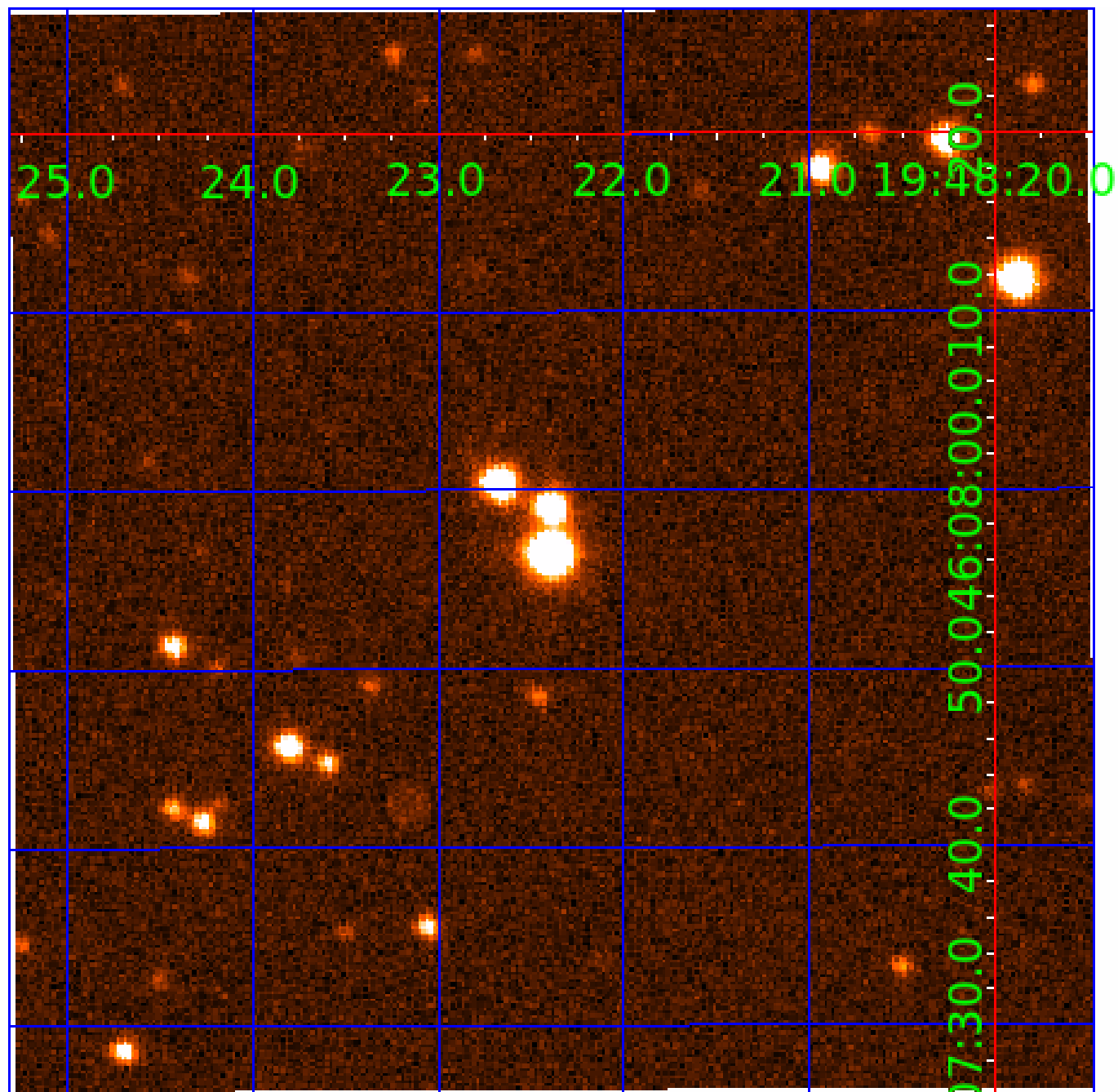
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 009540450

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})
009540450-01	OBS	7187.01	1.077352	131.604744	274619.4	2.500	19133.0	-1.0	1.06	6100	45.12	3253.60
009540450-02	OBS	No	4.309584	131.831120	17947.6	15.000	4086.5	-1.0	1.06	6100	14.24	512.38

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009540450-01	OBS	FP	0.00	0	1	0	0	DEPTH_ODDEVEN_DV—DEPTH_ODDEVEN_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
009540450-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—RESIDUAL_TCE—CENT_NOFITS

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

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

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

Ephemeris Match Information For 009540450-02

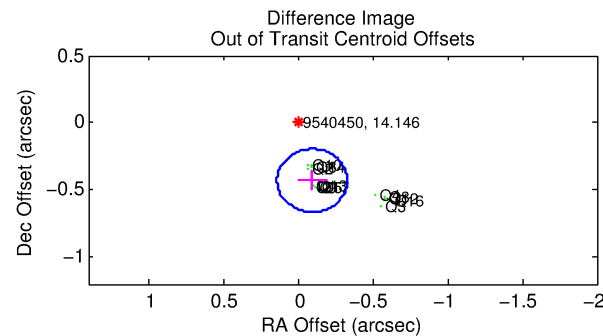
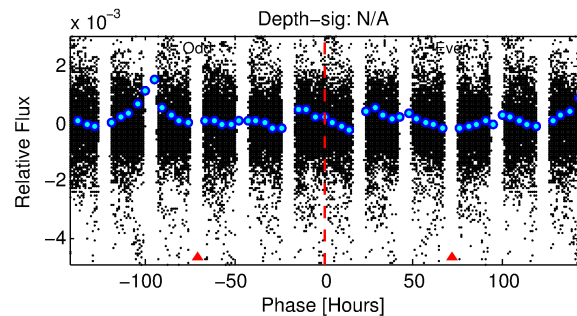
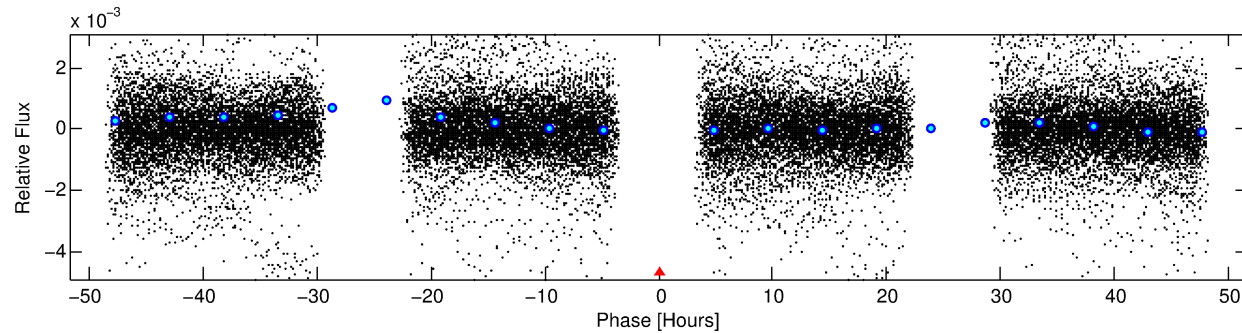
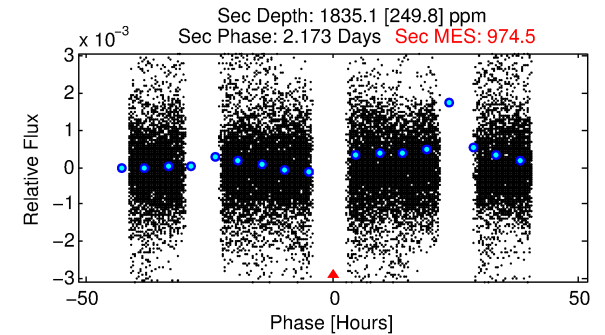
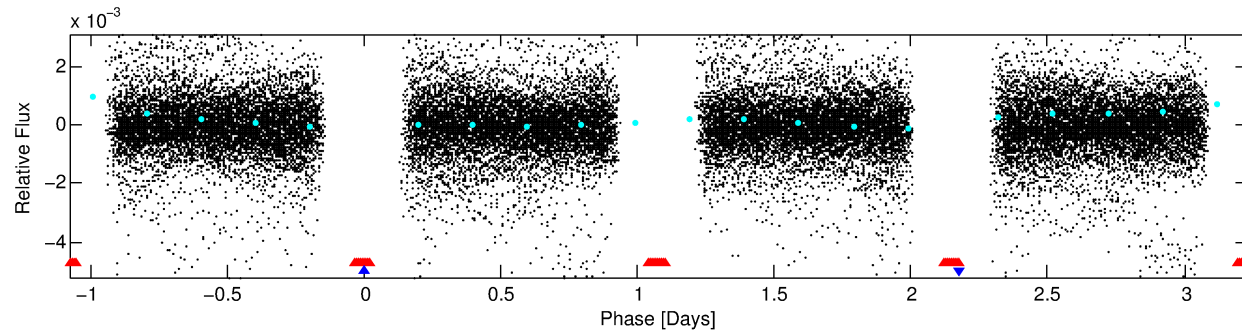
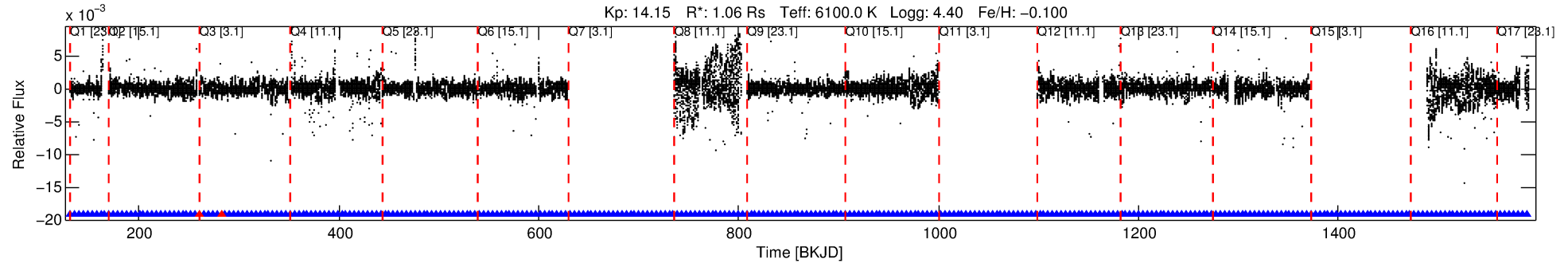
No Significant Match Found

DV One-Page Summary

KIC: 9540450 Candidate: 2 of 2 Period: 4.310 d

KOI: K07187 Corr: No Ephemeris Match

Kp: 14.15 R*: 1.06 Rs Teff: 6100.0 K Logg: 4.40 Fe/H: -0.100



TPS TCE Results:

Period = 4.30958 d
Epoch = 131.8311 BKJD

DV fit results are unavailable

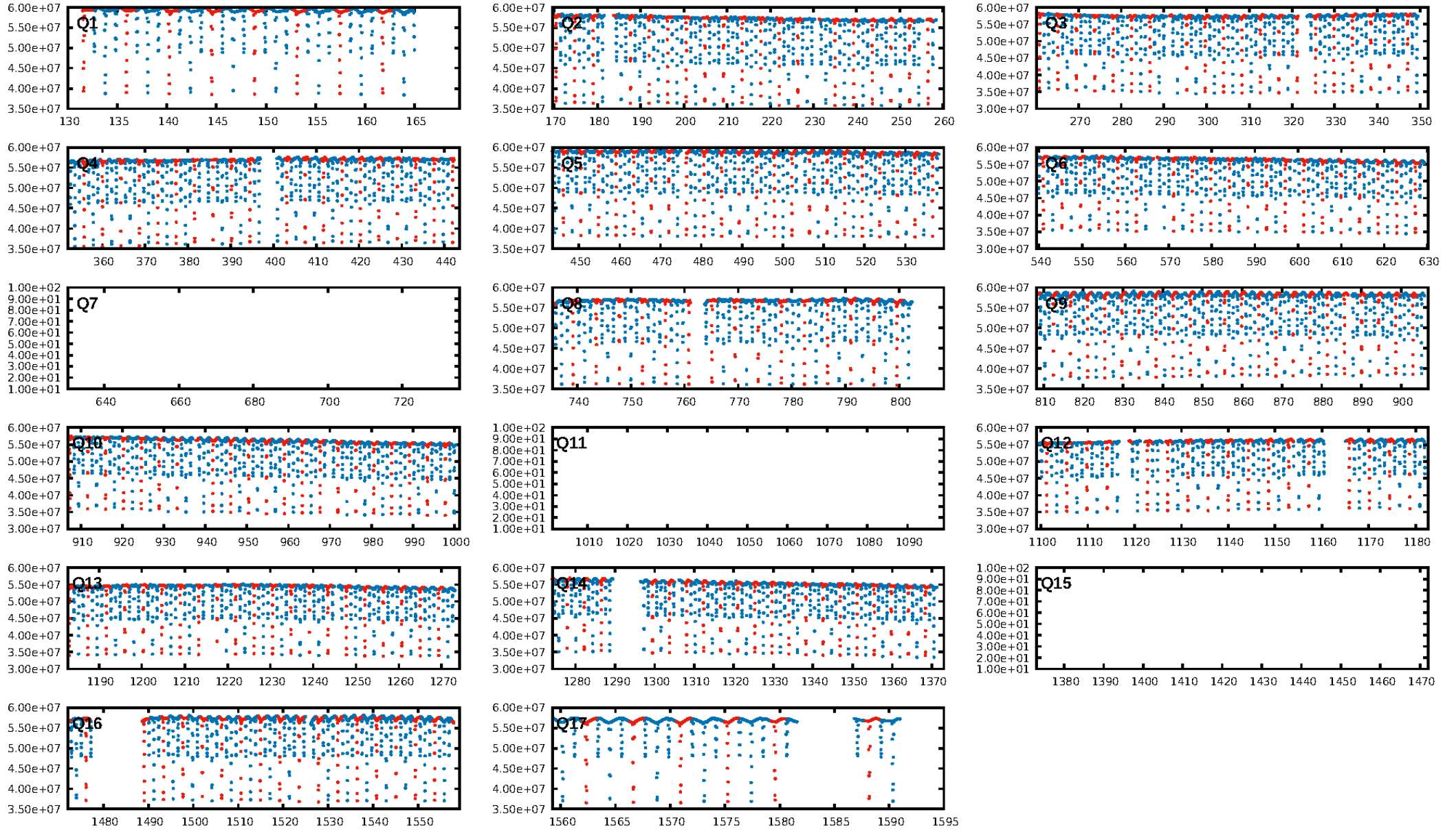
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.10σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [240/242]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.440 arcsec [5.63σ]
KicOffset-rm: 0.101 arcsec [1.49σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 0.00 [0/14]

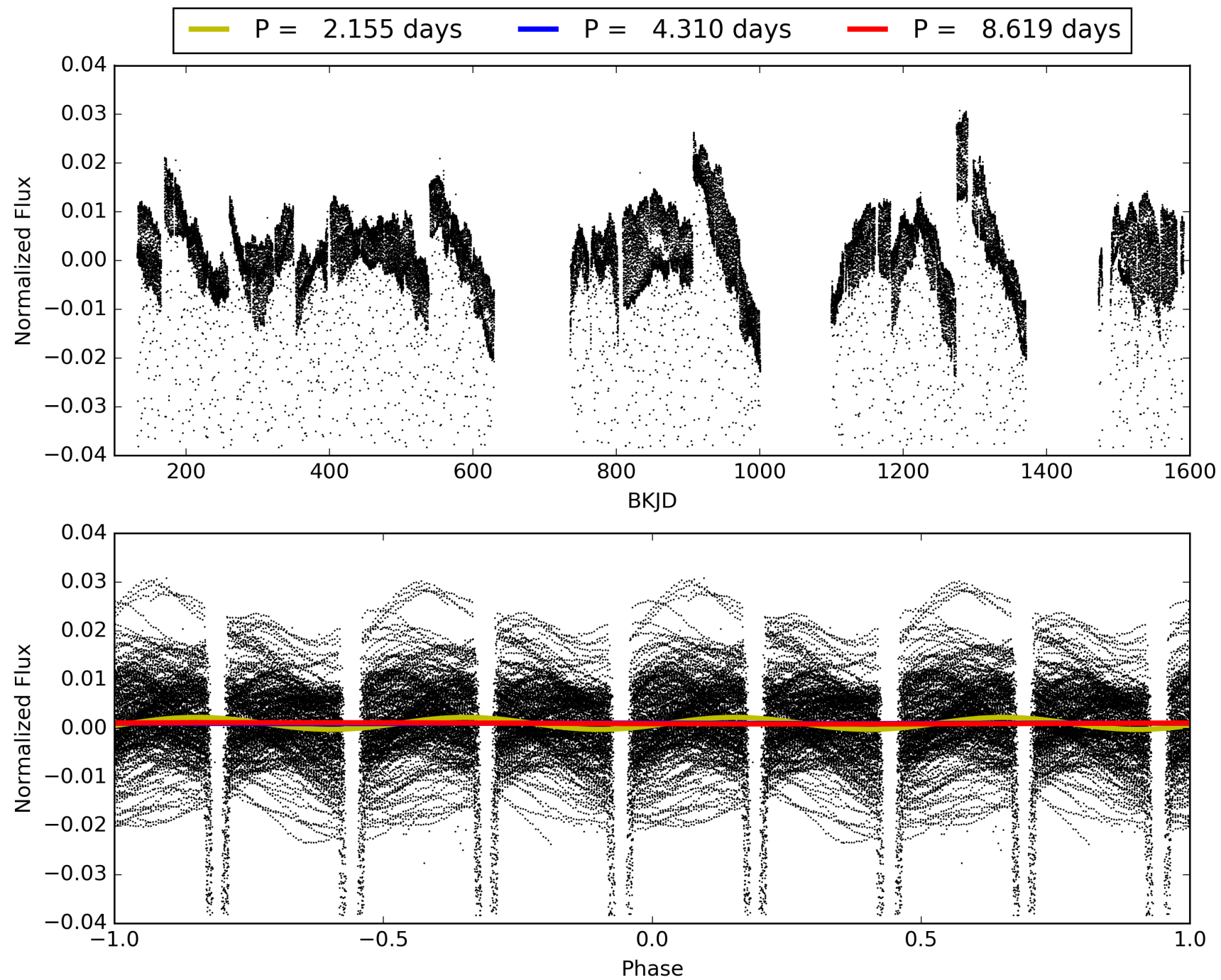
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 21:01:15 Z

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

TCE 009540450-02, PDC Light Curves

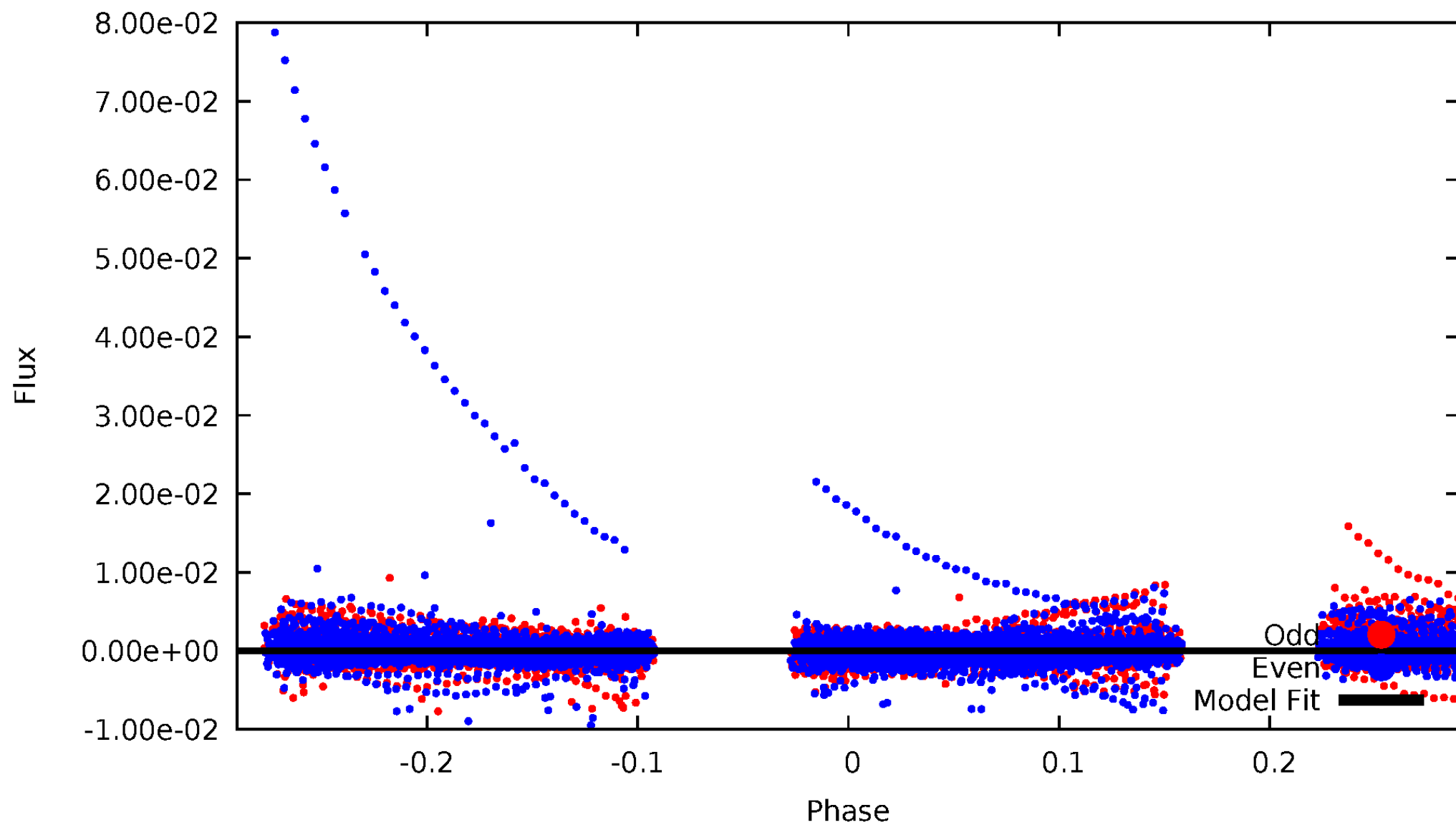


TCE 009540450-02



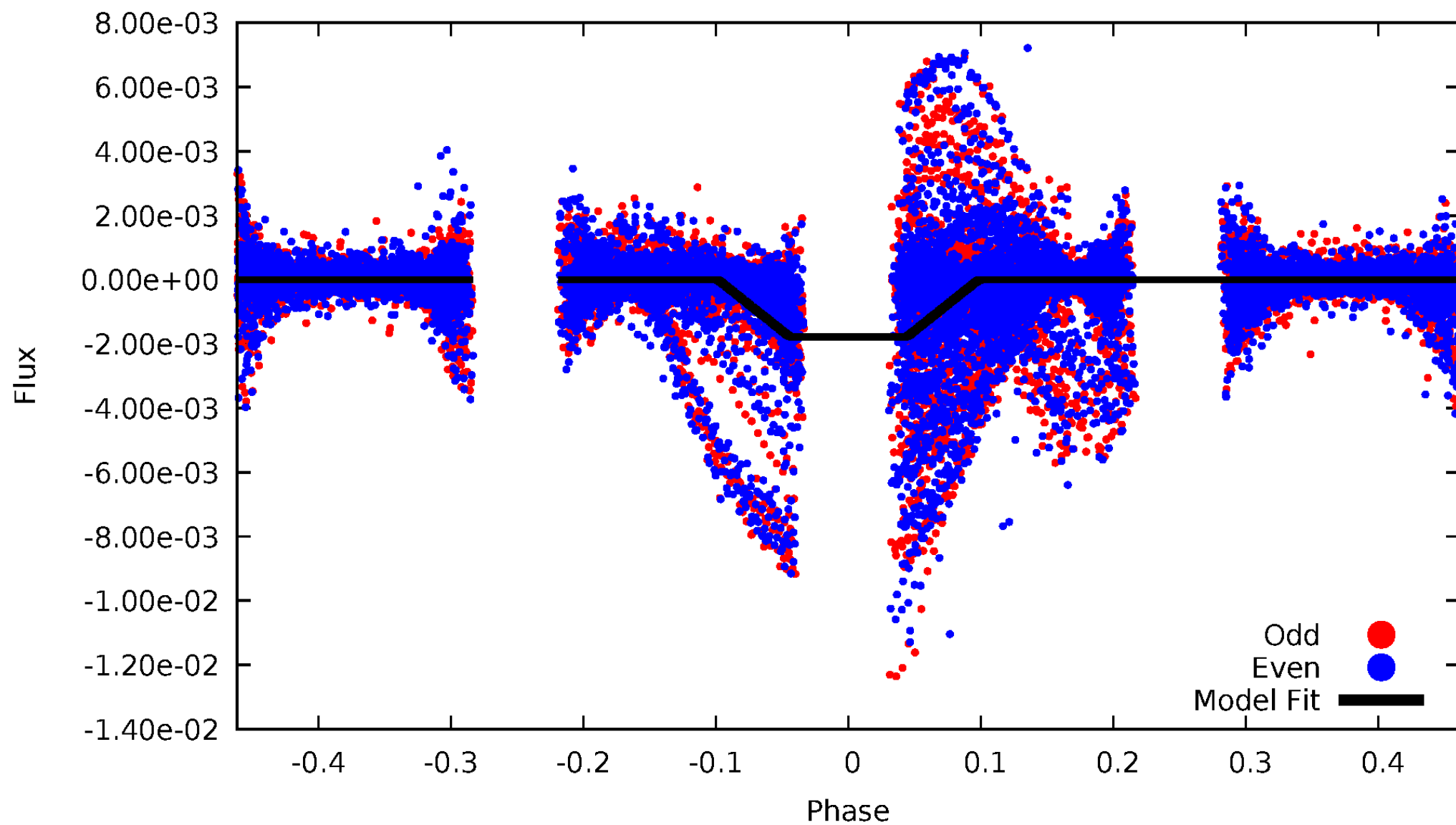
DV Odd/Even

TCE 009540450-02



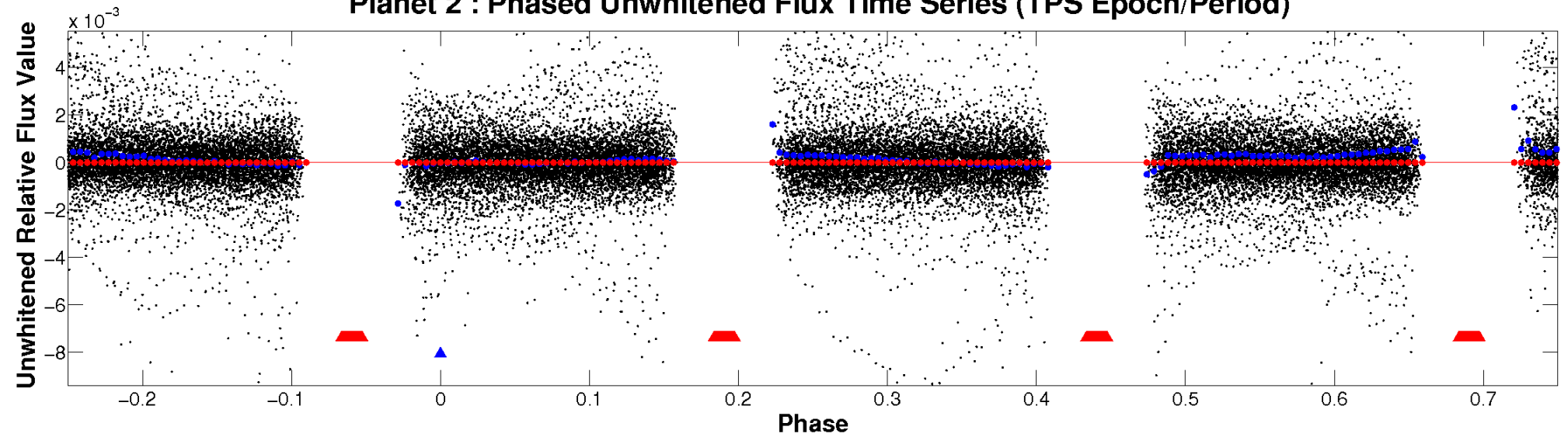
ALT Odd/Even

TCE 009540450-02



Non-Whitened Vs. Whitened Light Curve

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

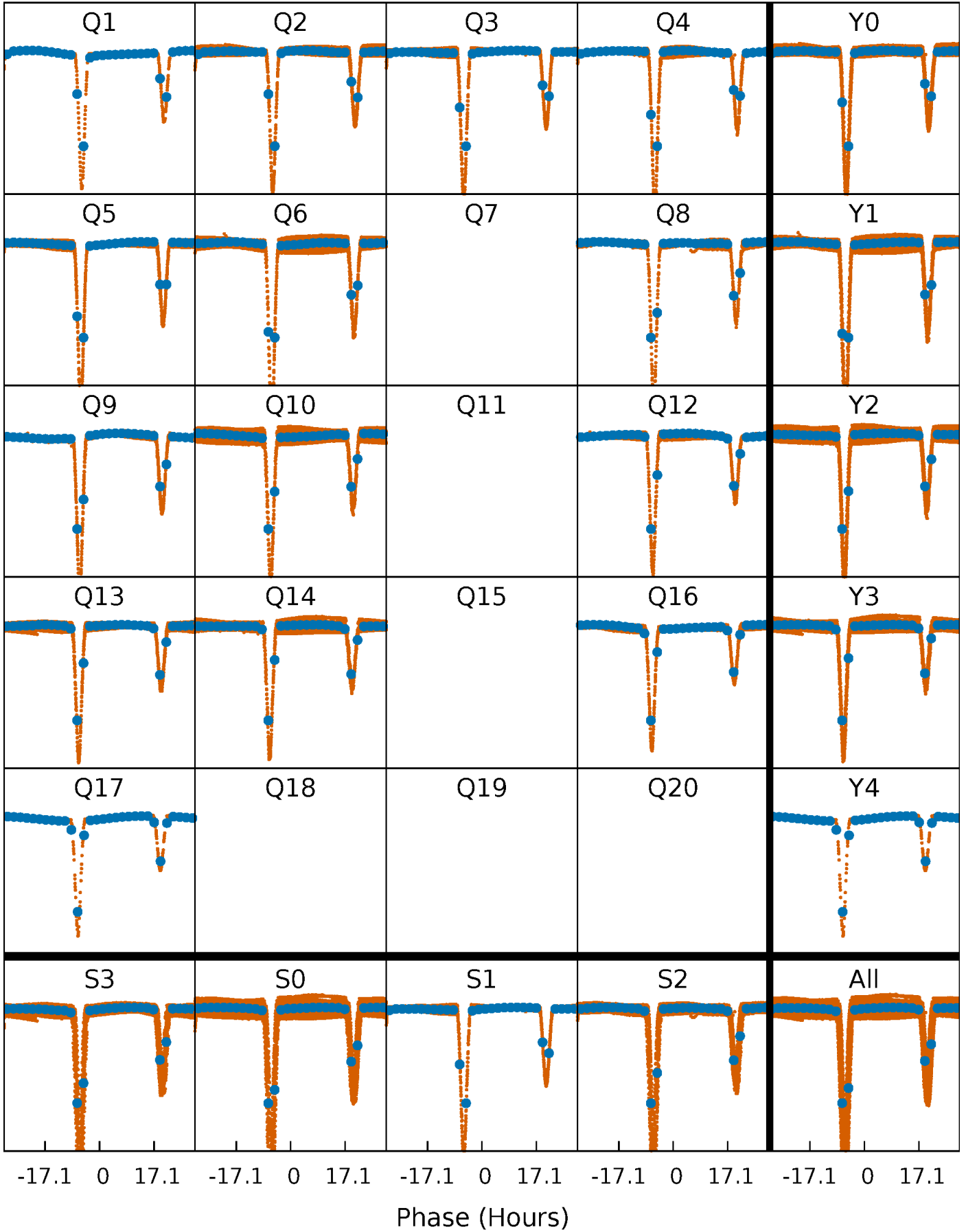


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



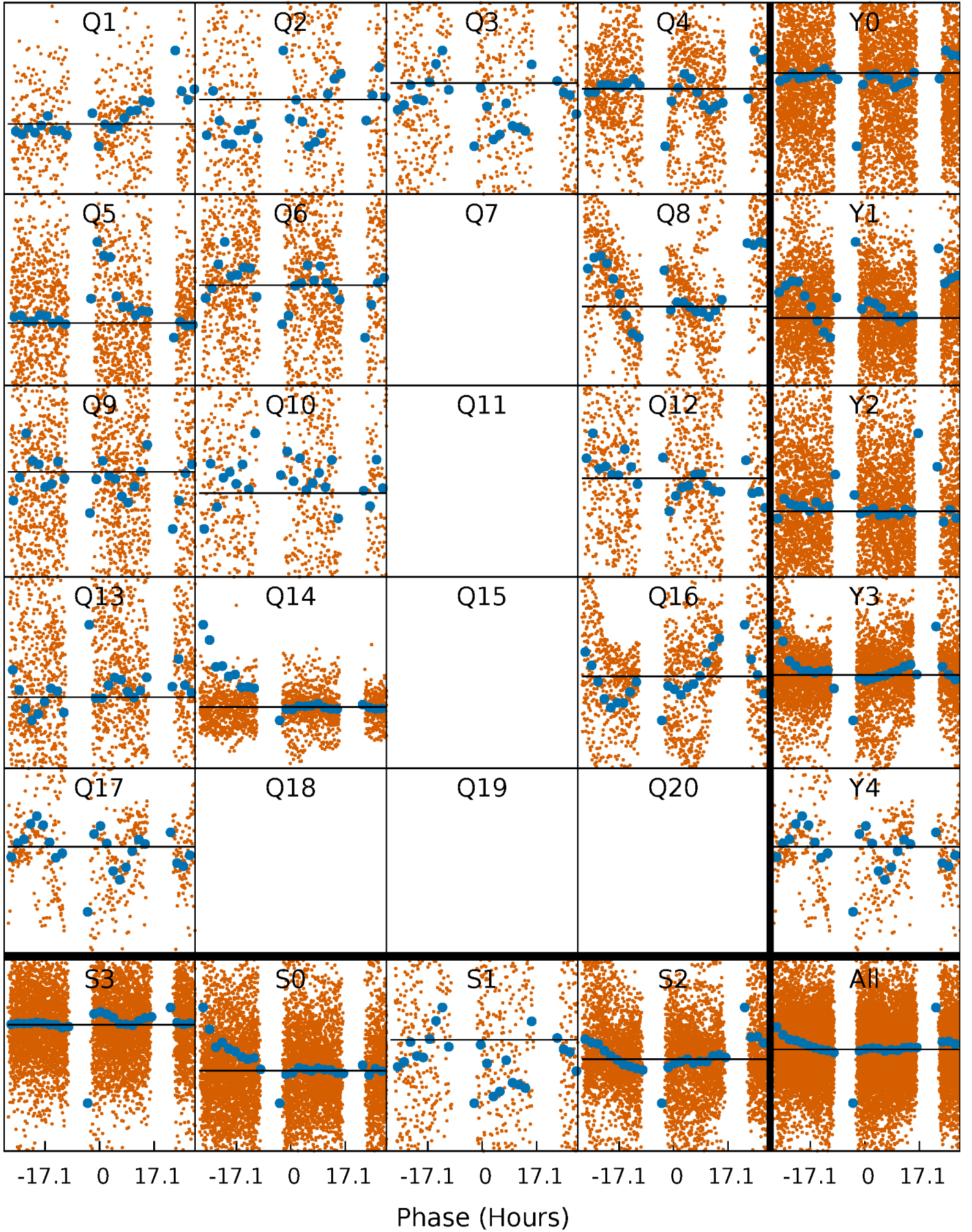
PDC Quarter-Phased Transit Curves

TCE 009540450-02 P= 4.309584 Days $T_0=131.831120$ (BKJD)



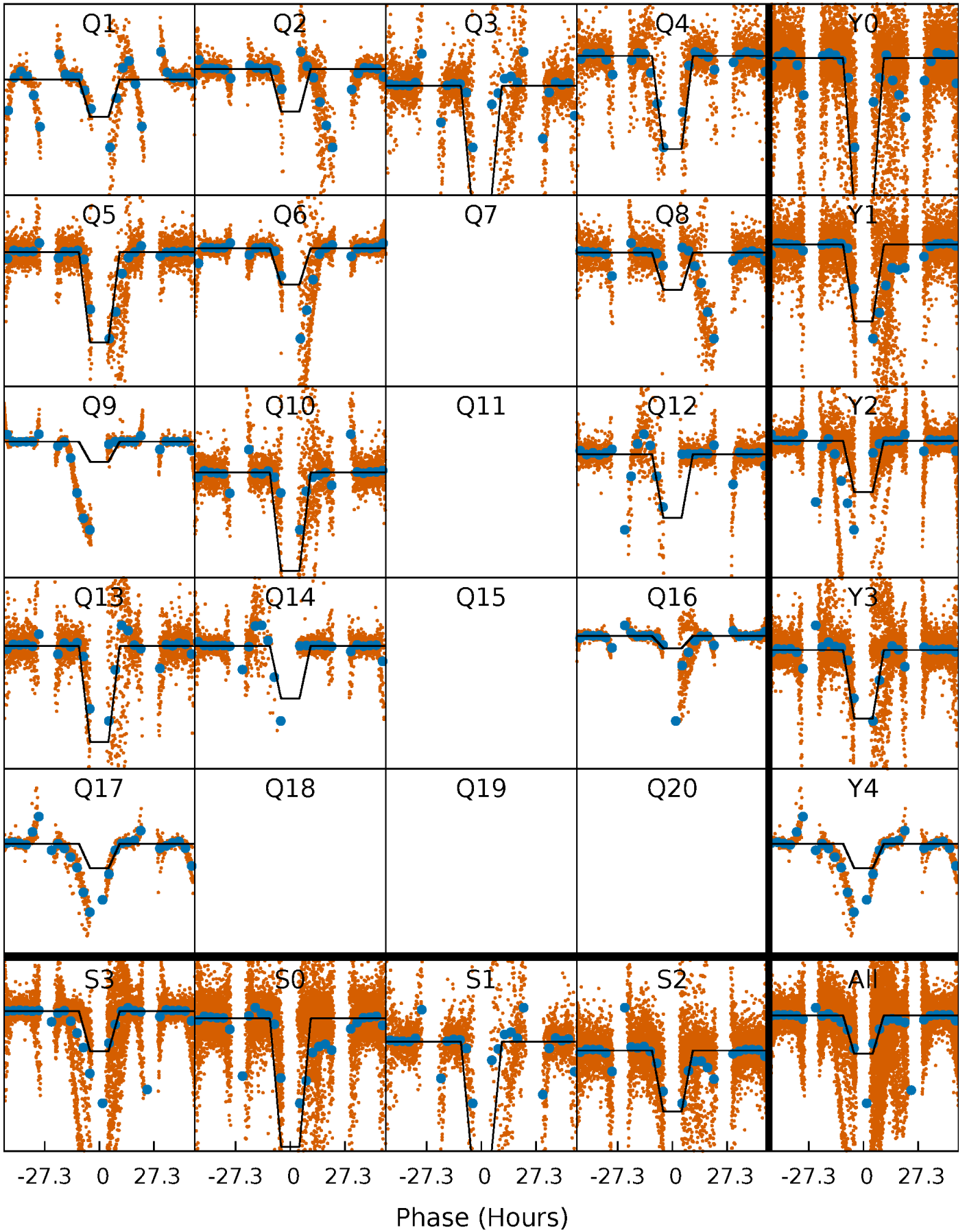
DV Quarter-Phased Transit Curves

TCE 009540450-02 P= 4.309584 Days $T_0=131.831120$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

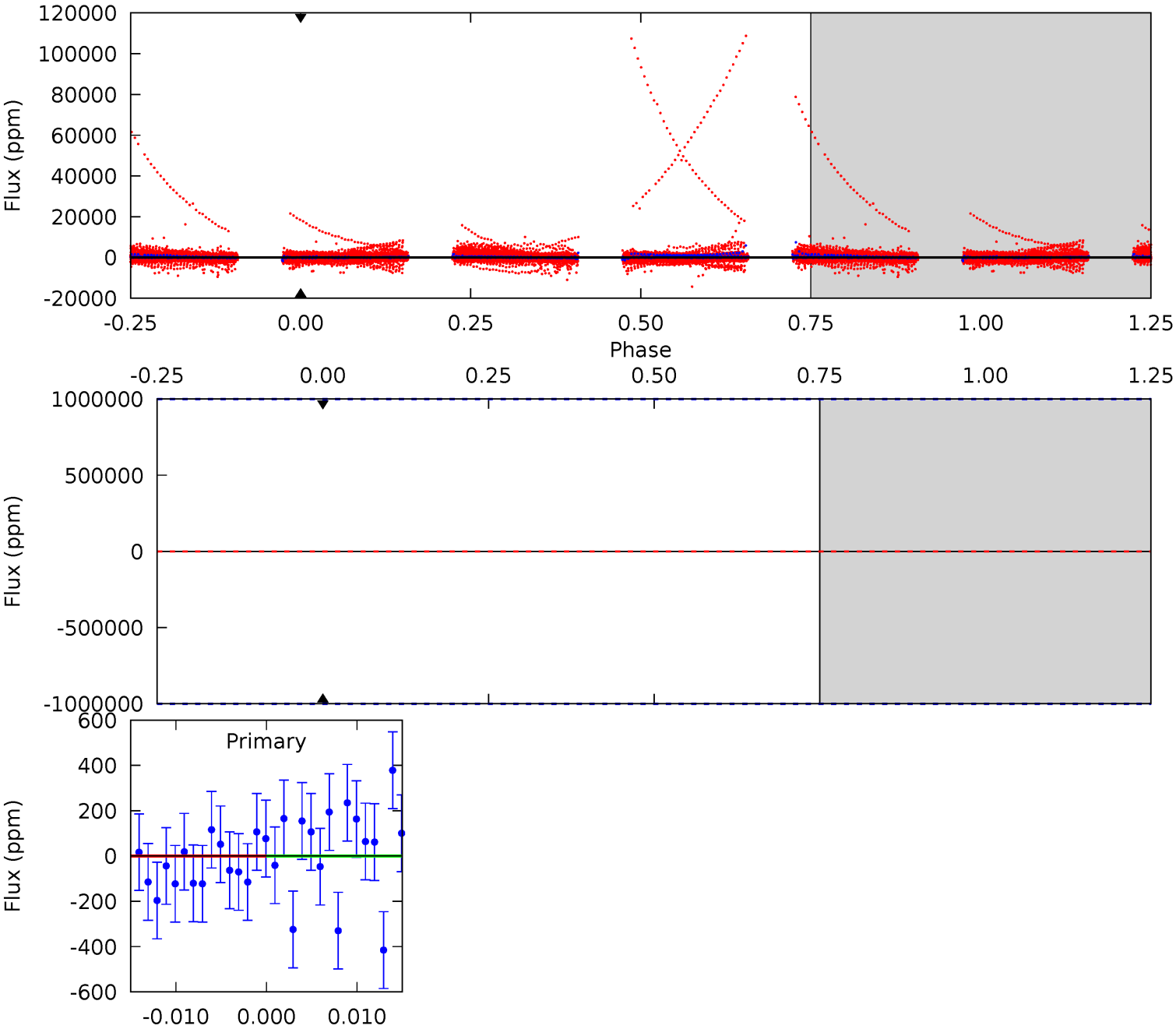
TCE 009540450-02 P= 4.309584 Days $T_0=131.580533$ (BKJD)



DV Model-Shift Uniqueness Test

009540450-02, P = 4.309584 Days, E = 127.521536 Days

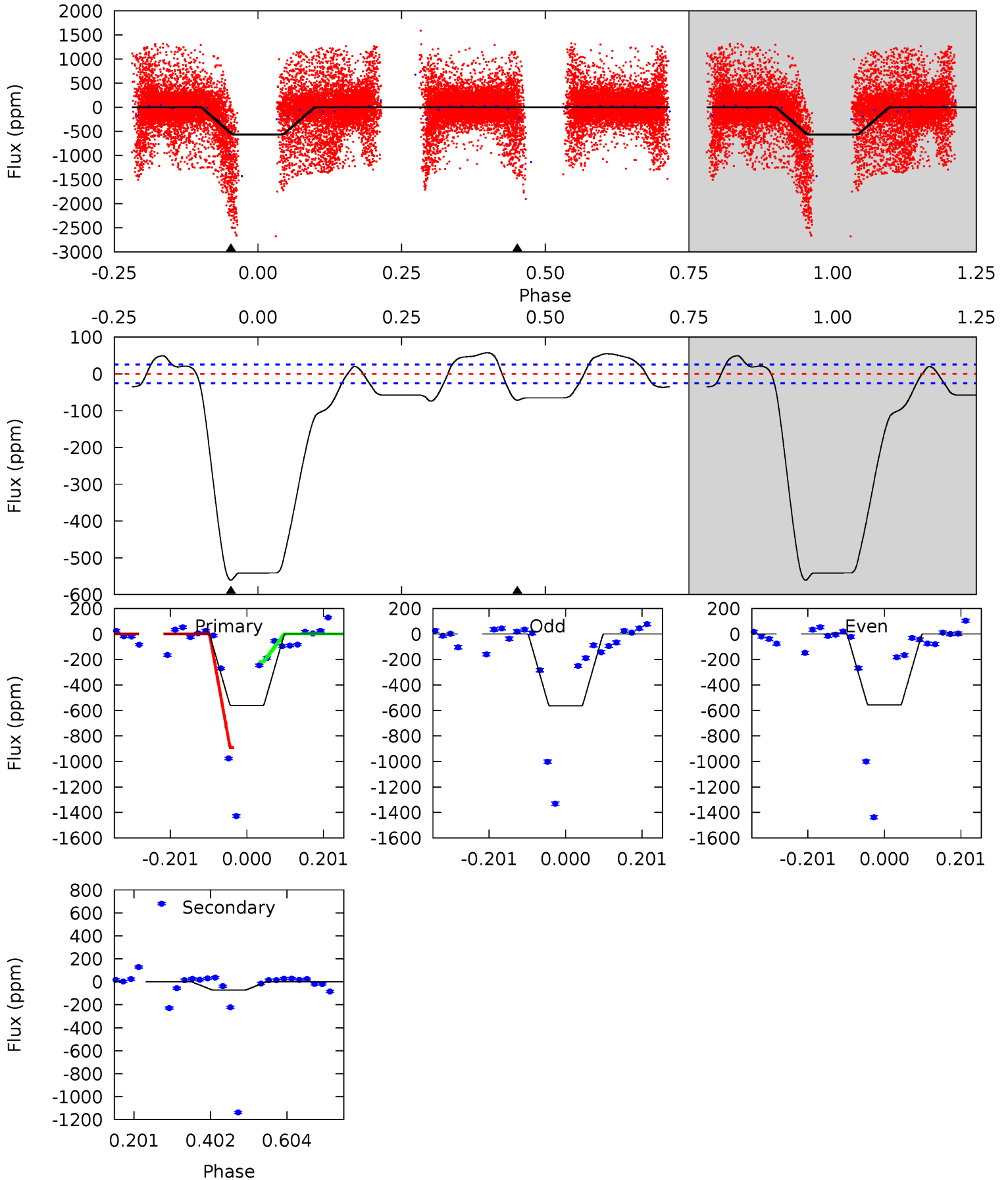
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

009540450-02, P = 4.309584 Days, E = 131.580533 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
97.7	12.4	0	0	4.42	1.28	4.27	97.7	97.7	12.4	12.4	0.48	2.15	0.09	40.8



Stellar Parameters For KIC 009540450

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6100^{+298}_{-364}	$4.397^{+0.112}_{-0.208}$	$-0.100^{+0.300}_{-0.300}$	$1.064^{+0.338}_{-0.182}$	$1.029^{+0.177}_{-0.145}$	$1.203^{+0.612}_{-0.642}$
	+5%/-6%	+3%/-5%	+300%/-300%	+32%/-17%	+17%/-14%	+51%/-53%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 009540450-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$16.61^{+11.11}_{-10.21}$	1716^{+146}_{-134}	-3027^{+15041}_{-8447}	$-2.594^{+925.926}_{-843.886}$
Alt.	-71 ± 6	$9.52^{+10.29}_{-6.29}$	1713^{+150}_{-128}	2629^{+1157}_{-4441}	$1.201^{+9.110}_{-0.926}$

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

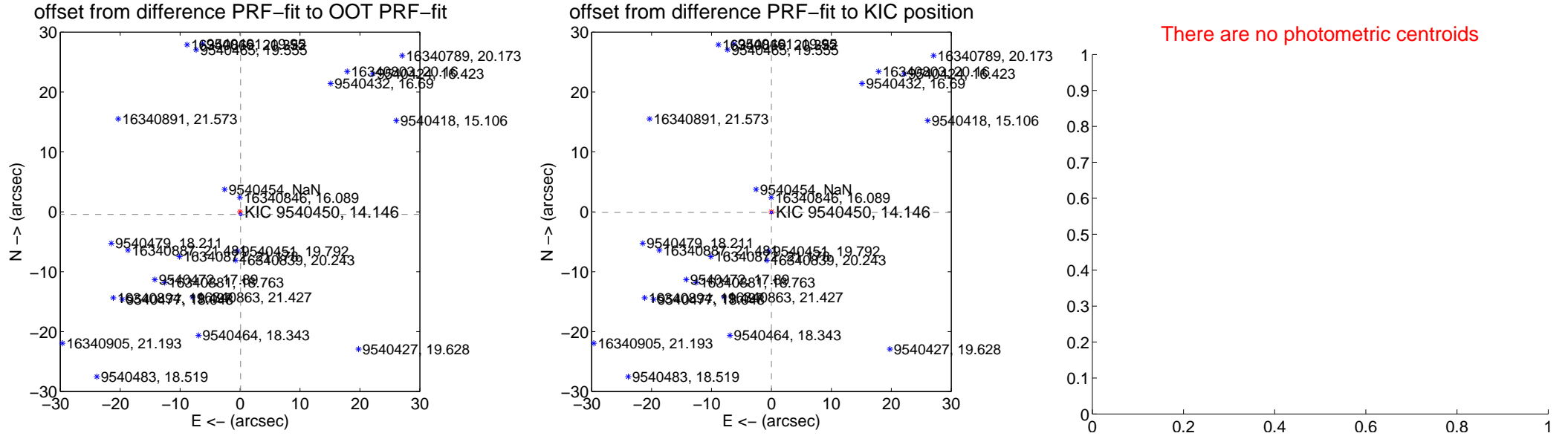
DV Centroid Data

Supplemental centroid analysis for 009540450-02. Kepler magnitude: 14.15. Transit SNR -1.00

There are 14 quarters with good PRF difference image offsets

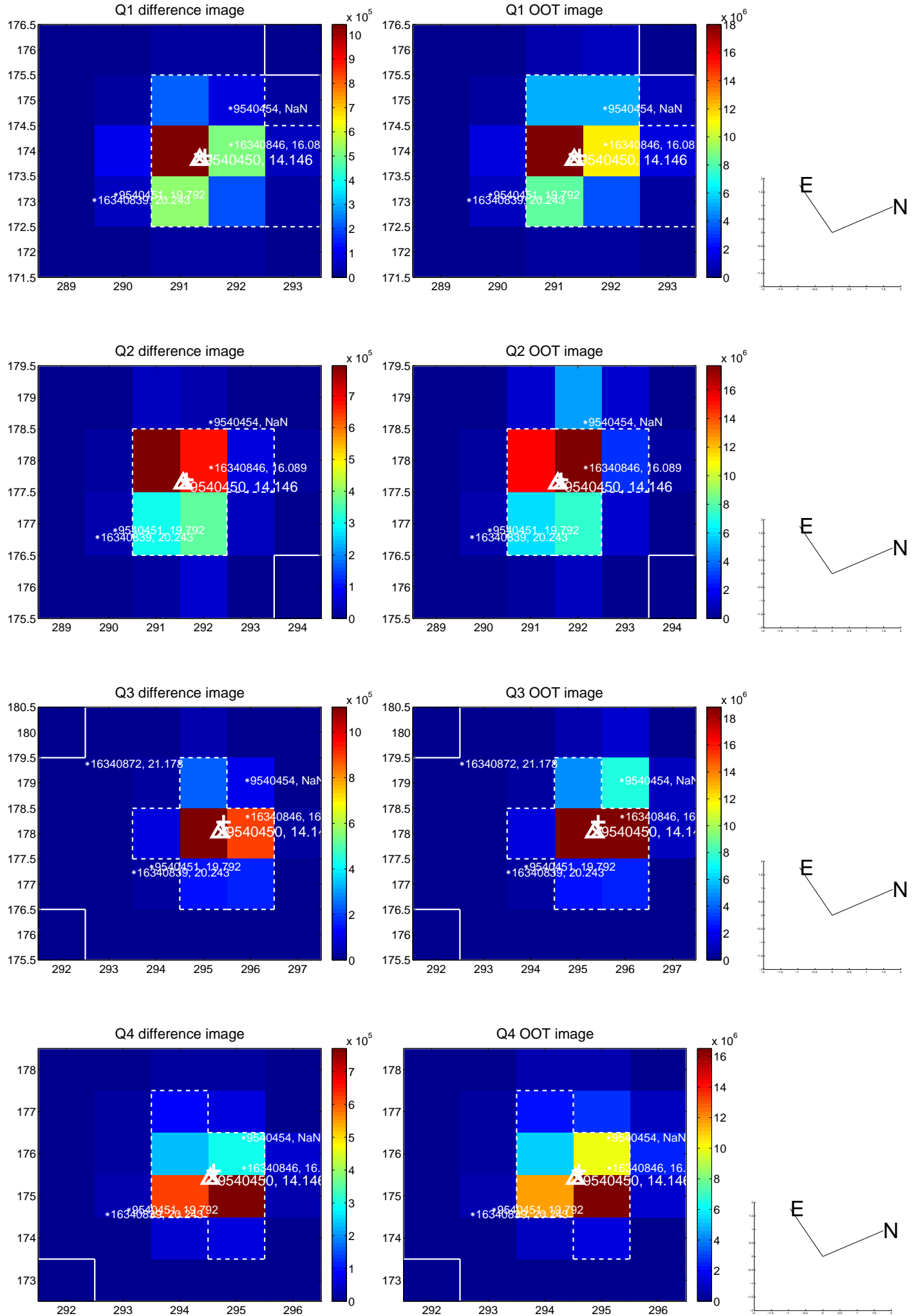
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.440 \pm 0.078	5.63	-0.095 \pm 0.093	-0.430 \pm 0.073
PRF-fit source offset from KIC position	0.101 \pm 0.068	1.49	0.006 \pm 0.069	-0.101 \pm 0.068
photometric centroid source offset	—	—	—	—

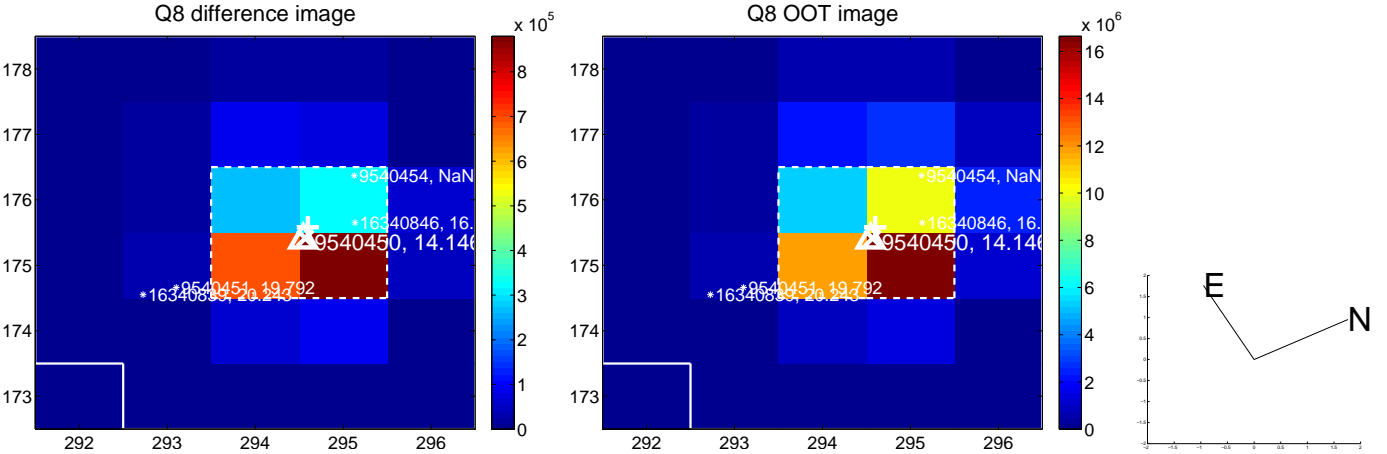
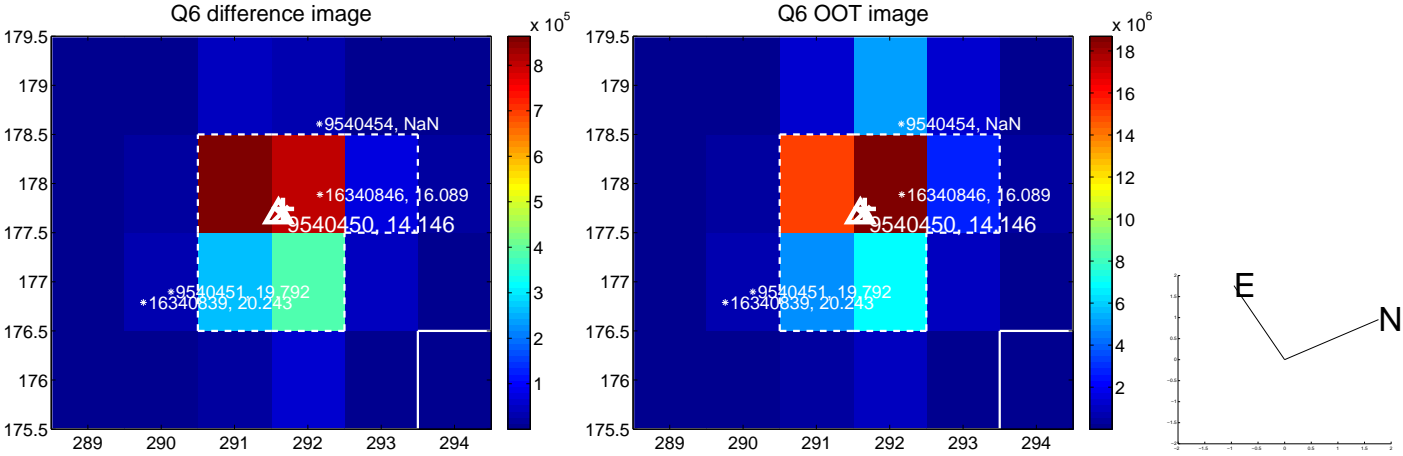
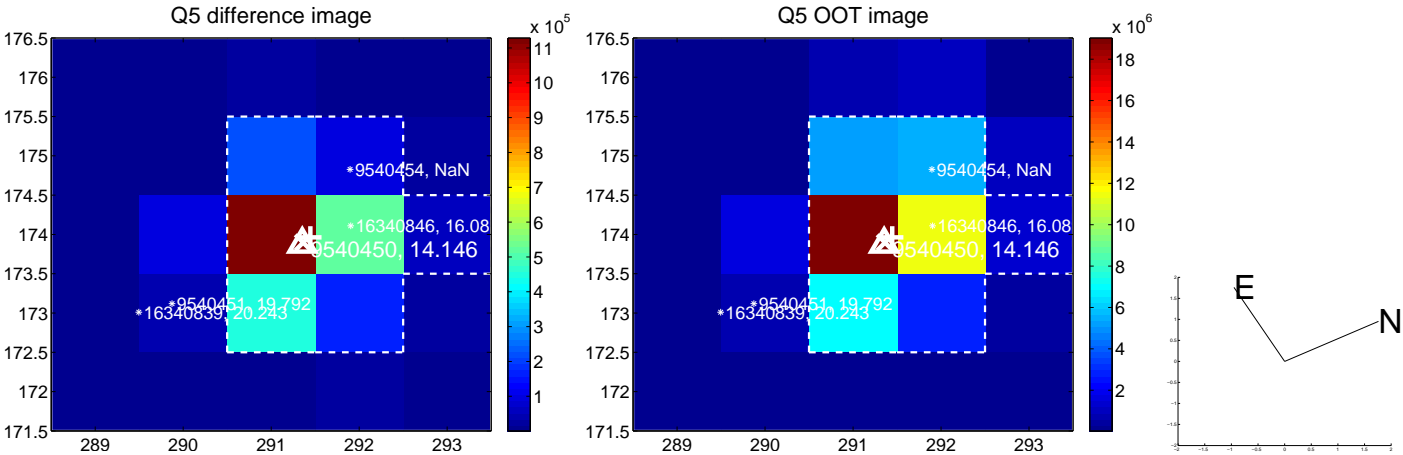


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

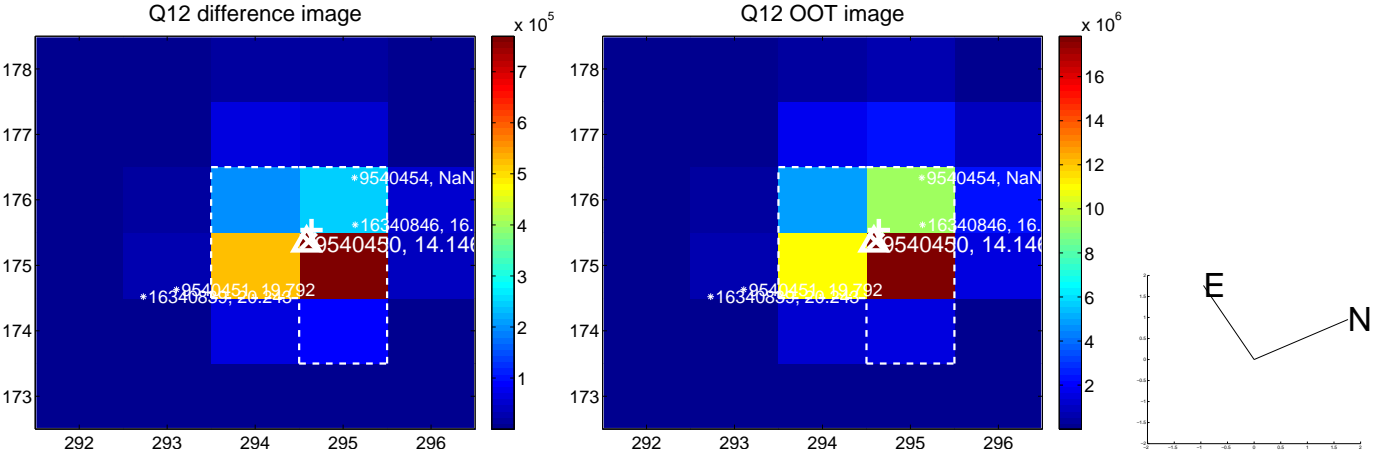
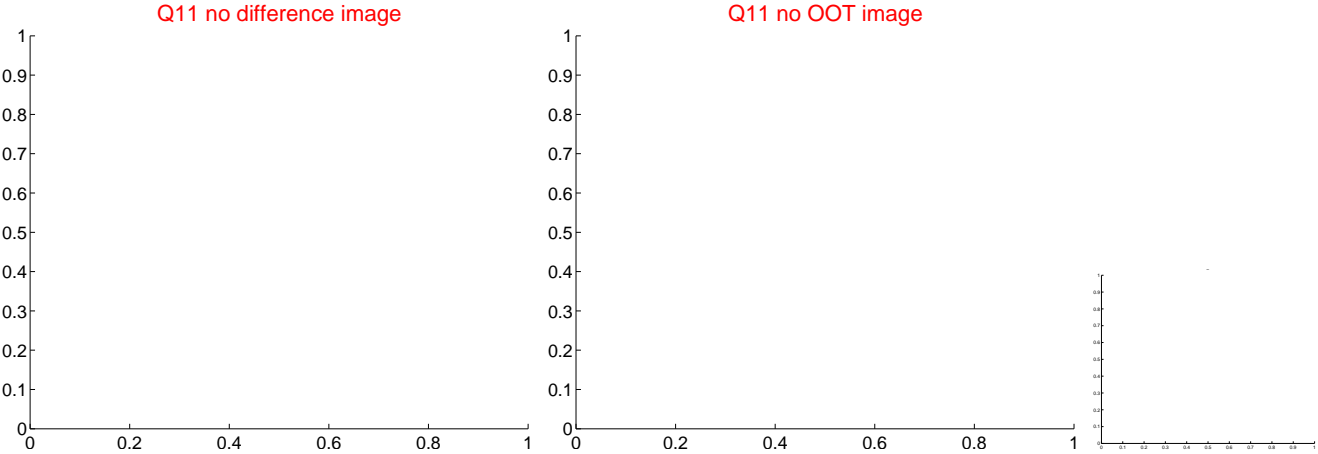
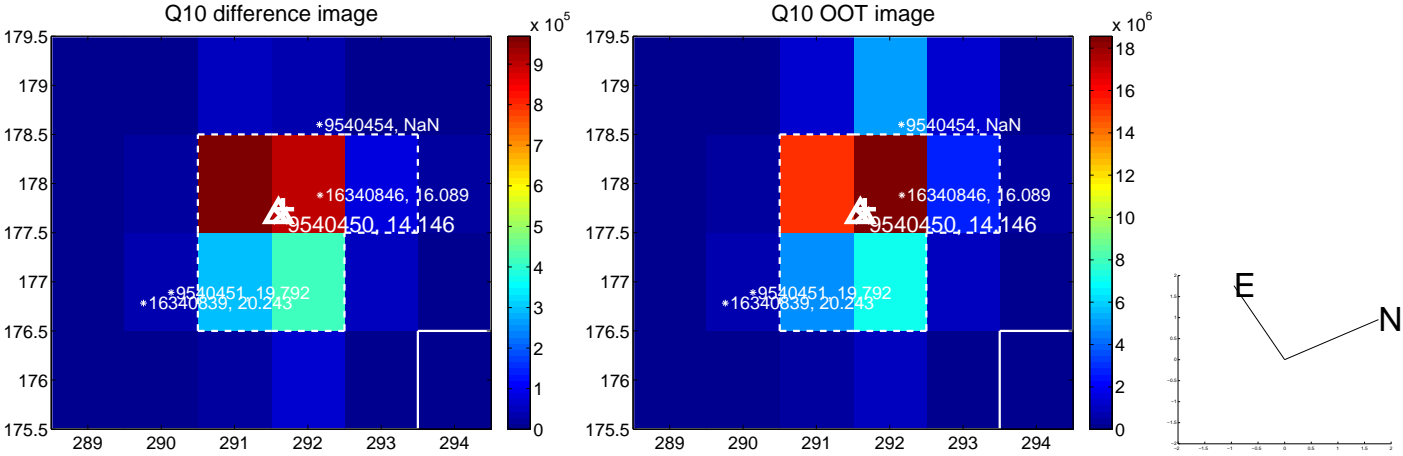
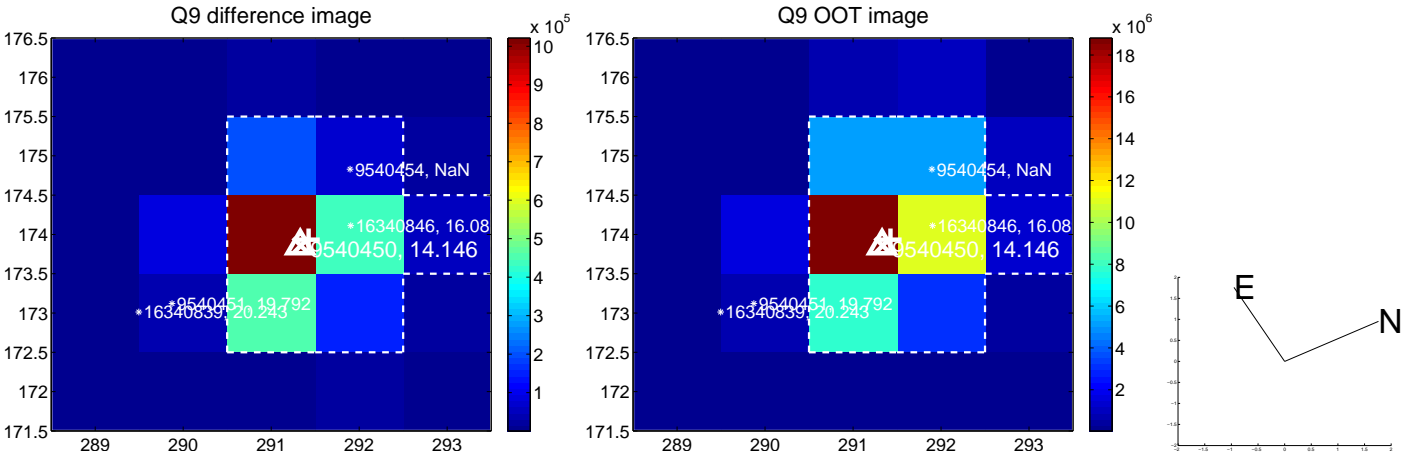
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



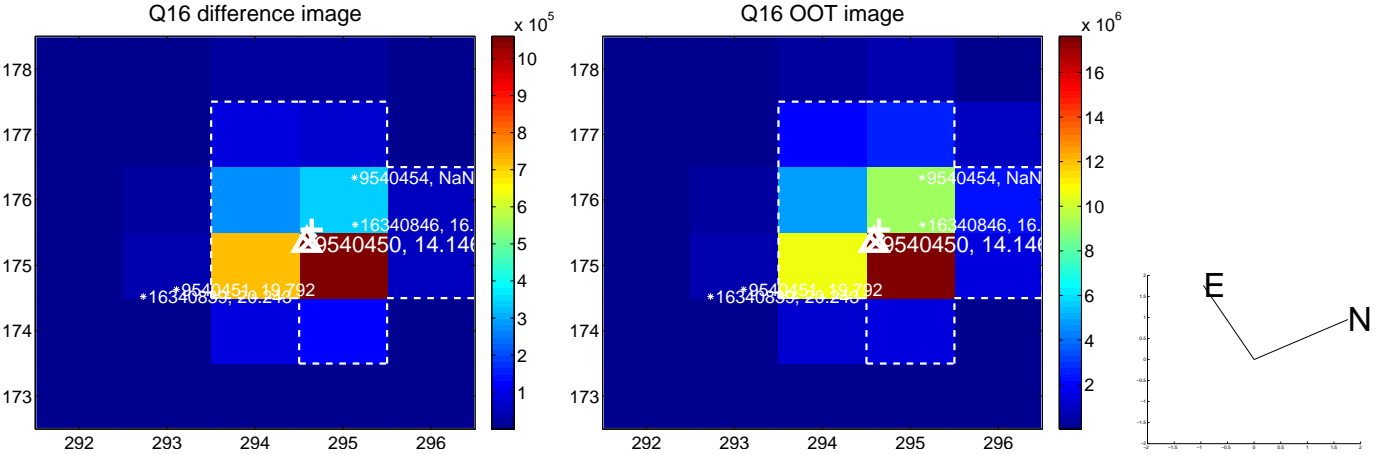
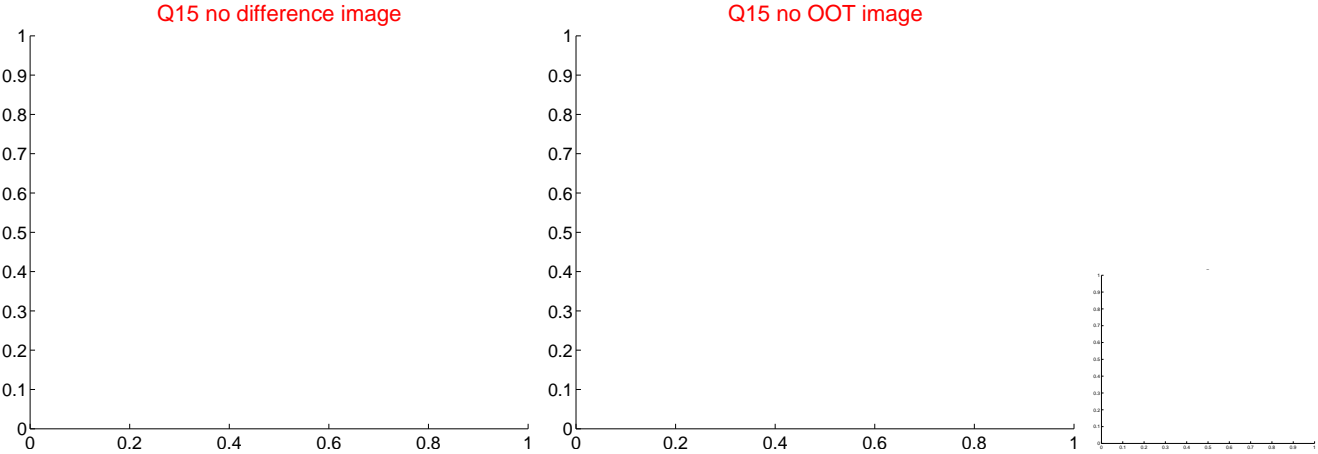
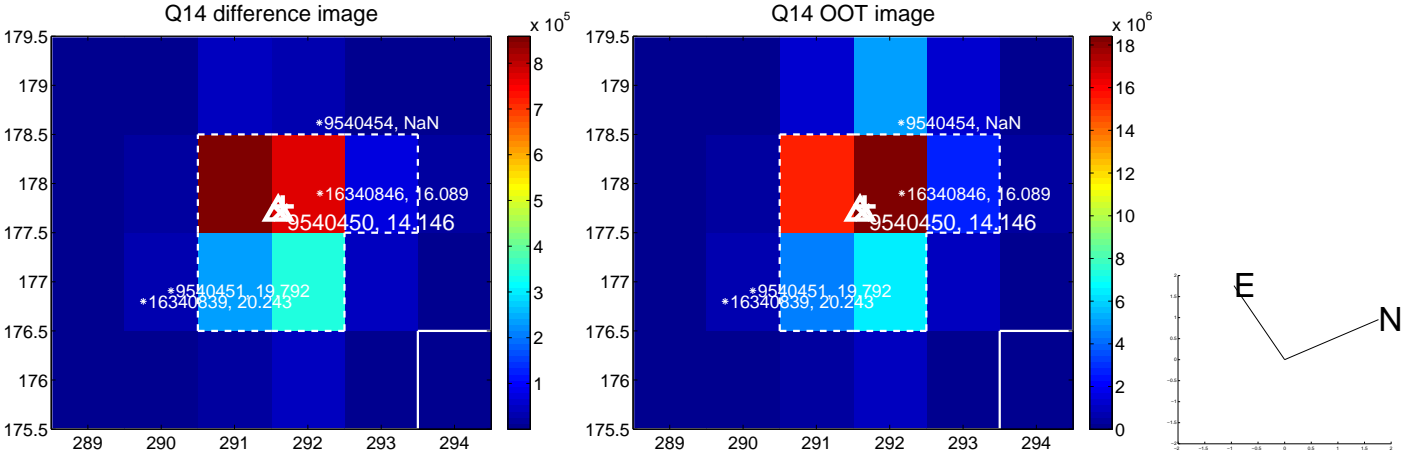
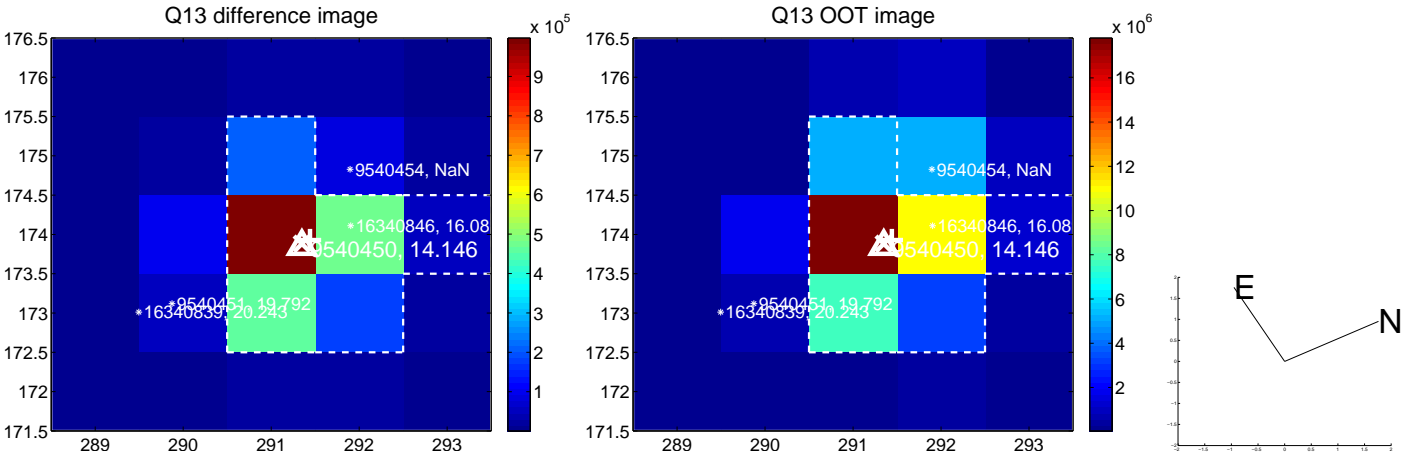
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



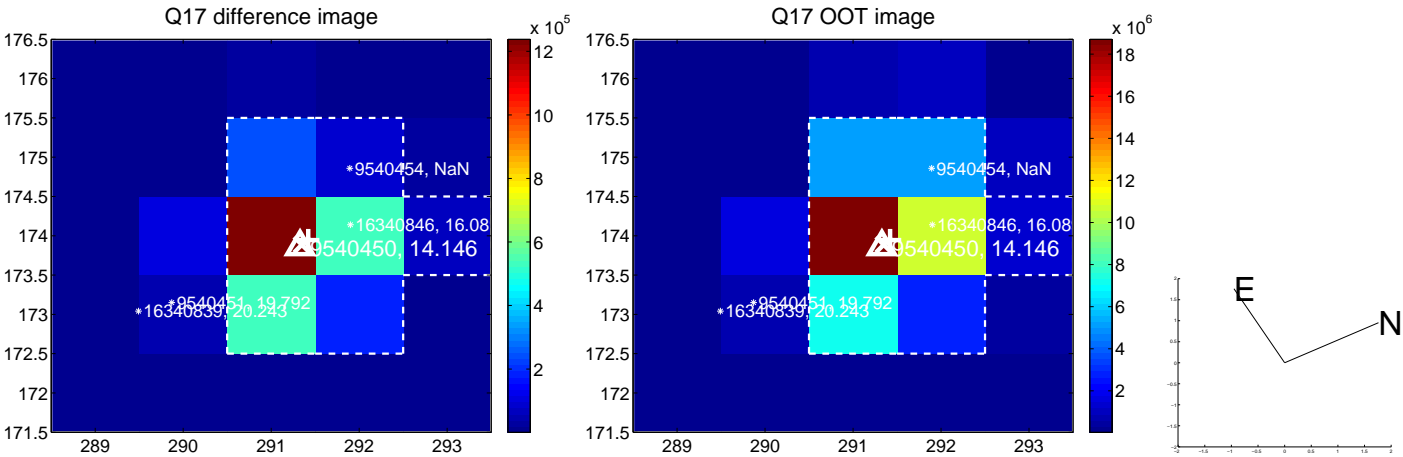
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



folded centroid time series figure for this object.

UKIRT Image

Declination

