

KIC 009953851

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})
009953851-01	OBS	No	0.691239	131.973048	42.0	4.760	12.1	11.4	0.96	6311	0.64	5547.98
009953851-02	OBS	No	34.524304	147.528033	784.3	3.447	10.3	10.5	0.96	6311	4.33	30.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009953851-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009953851-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

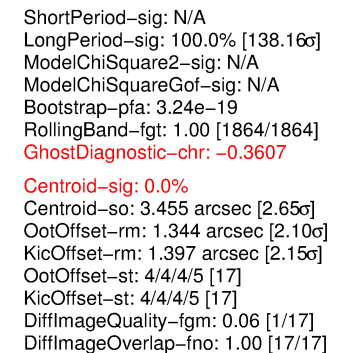
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

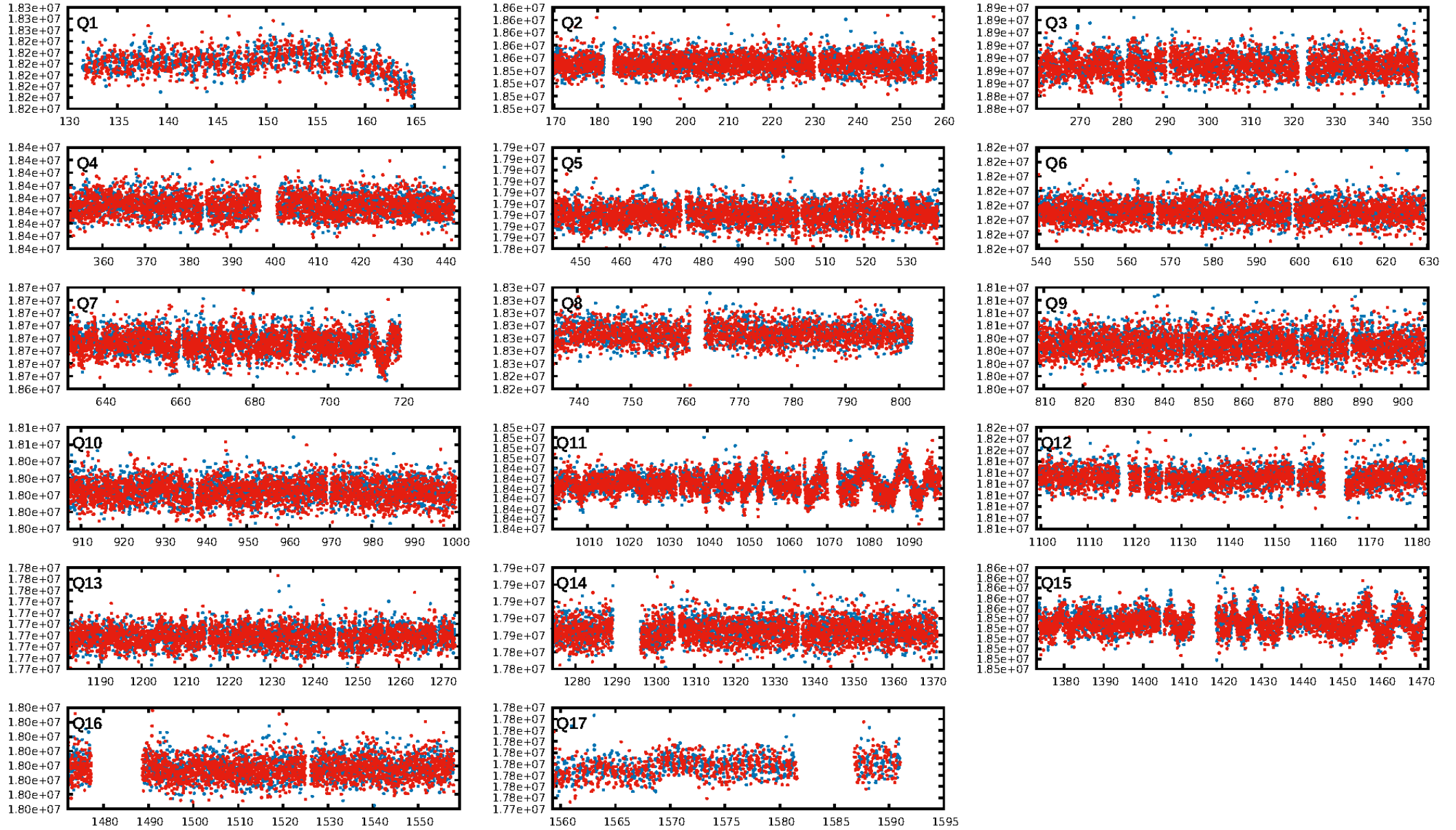
Ephemeris Match Information For 009953851-01

No Significant Match Found

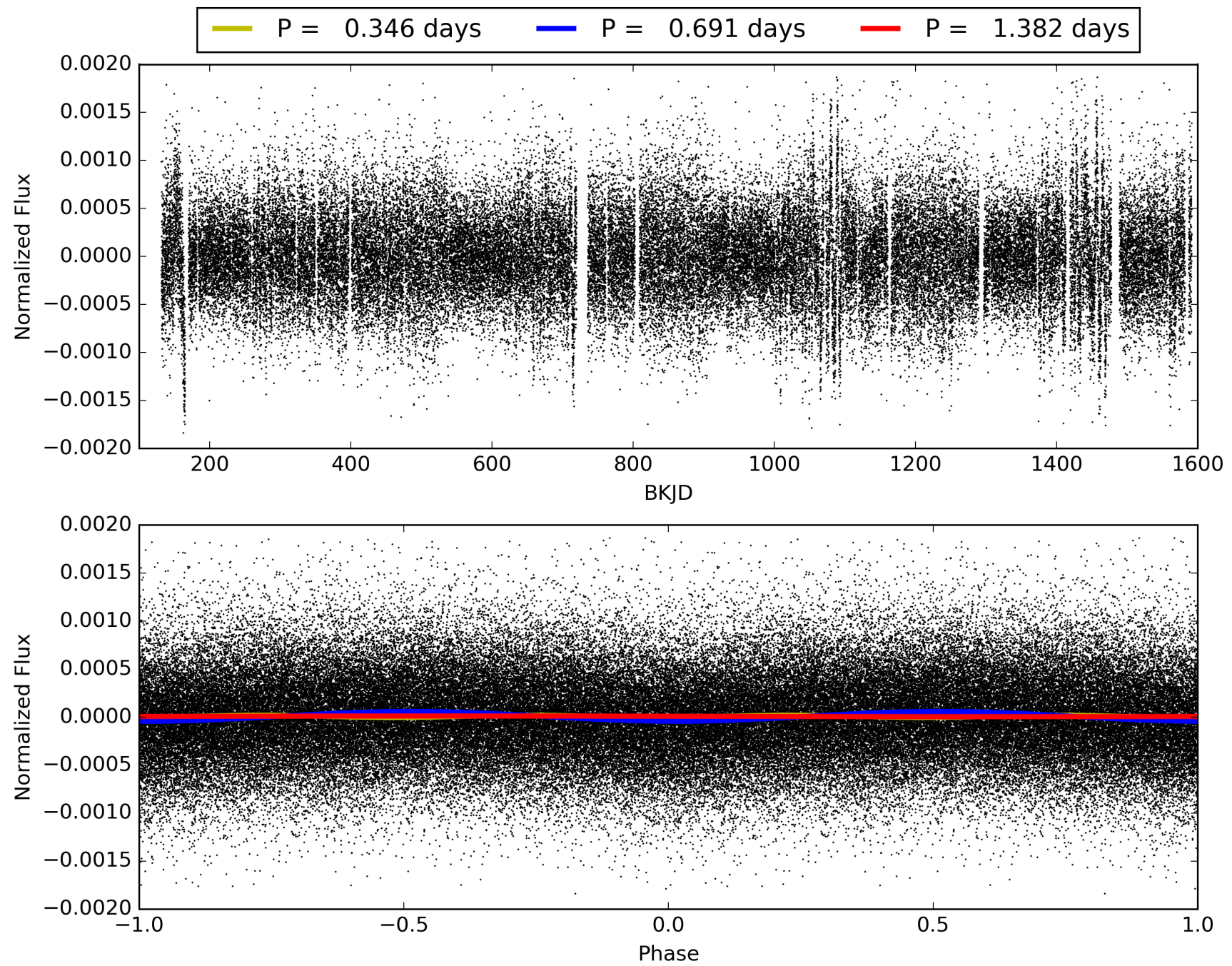
KIC: 9953851 Candidate: 1 of 2 Period: 0.691 d



TCE 009953851-01, PDC Light Curves

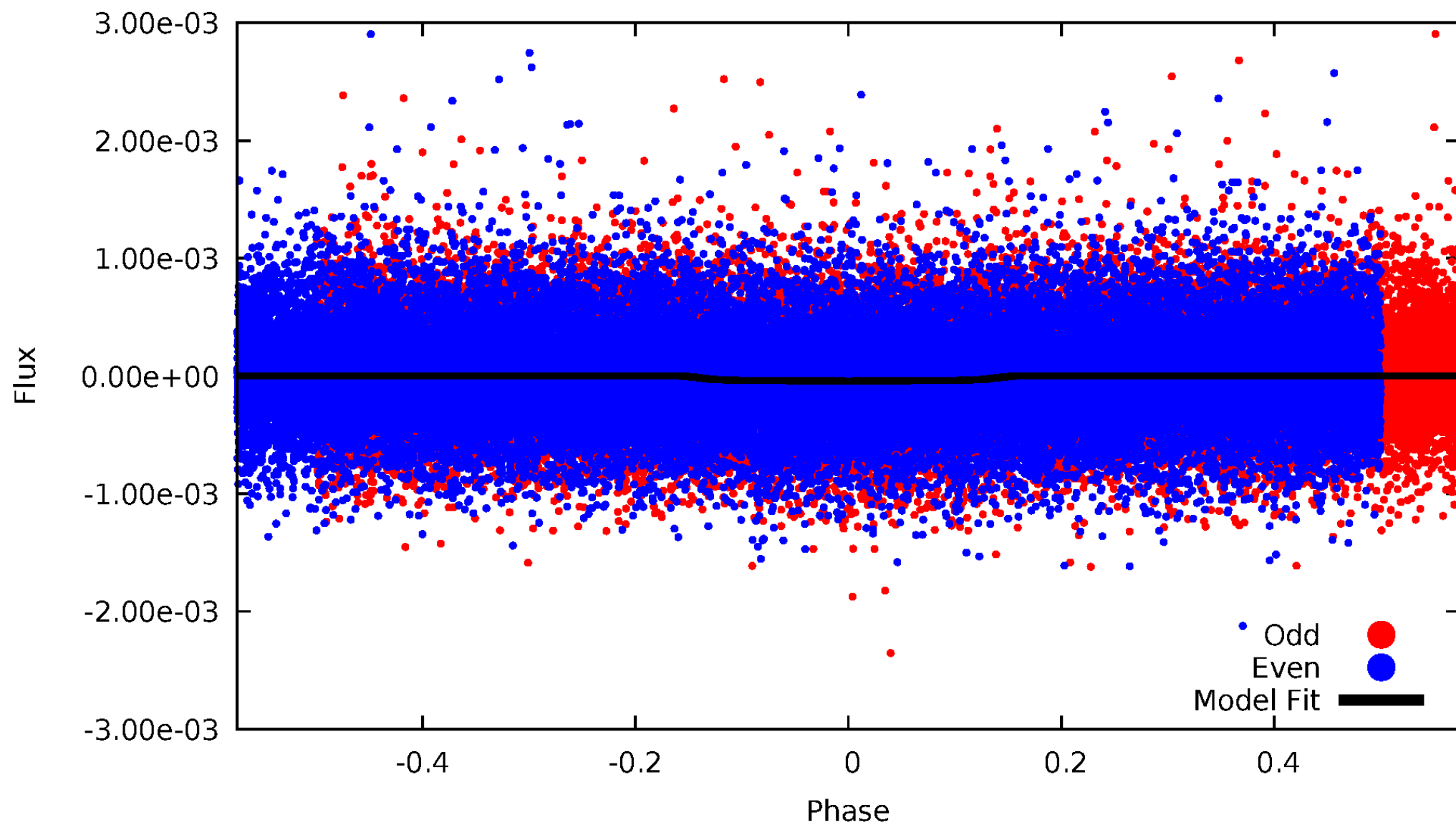


TCE 009953851-01



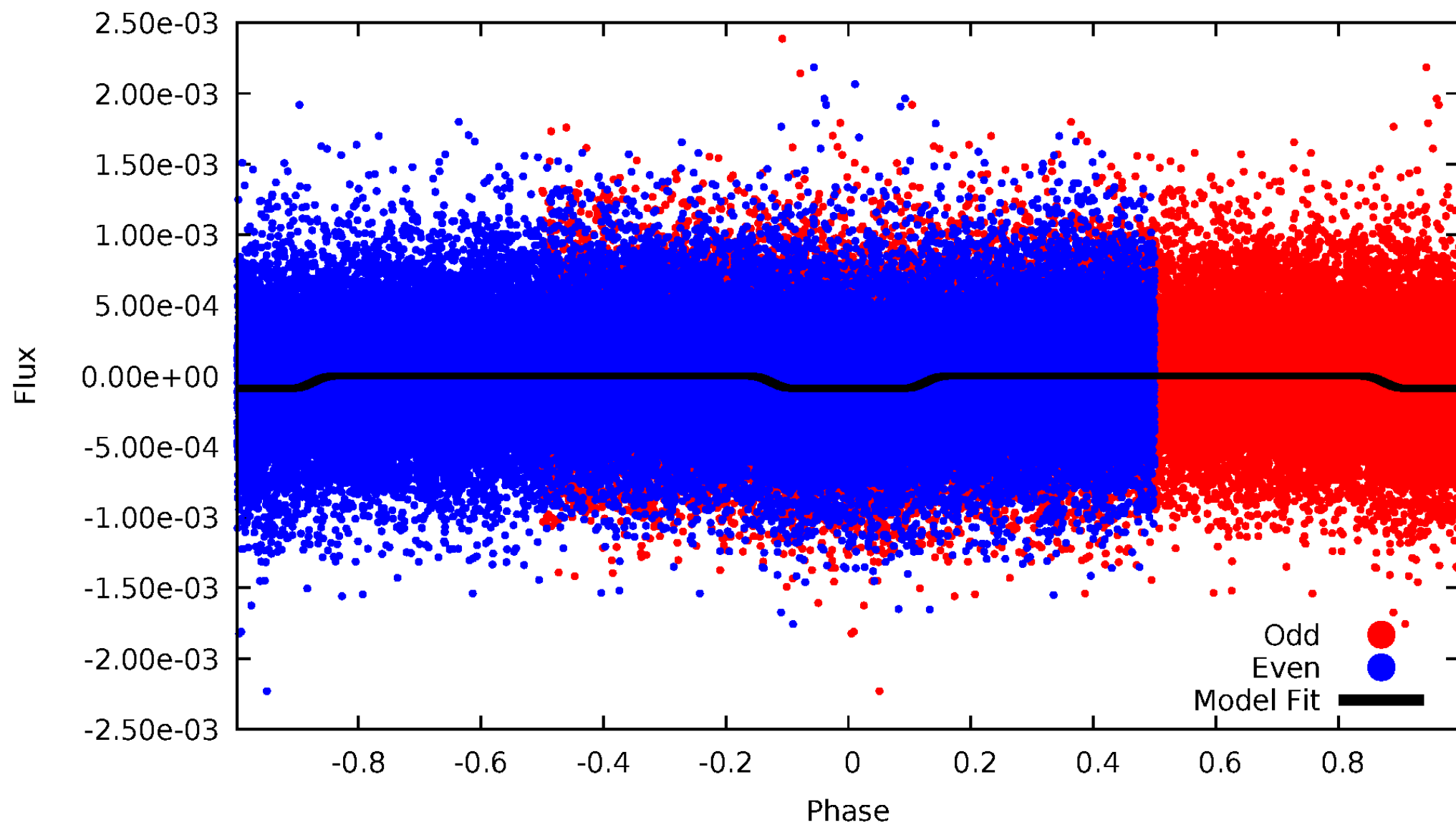
DV Odd/Even

TCE 009953851-01



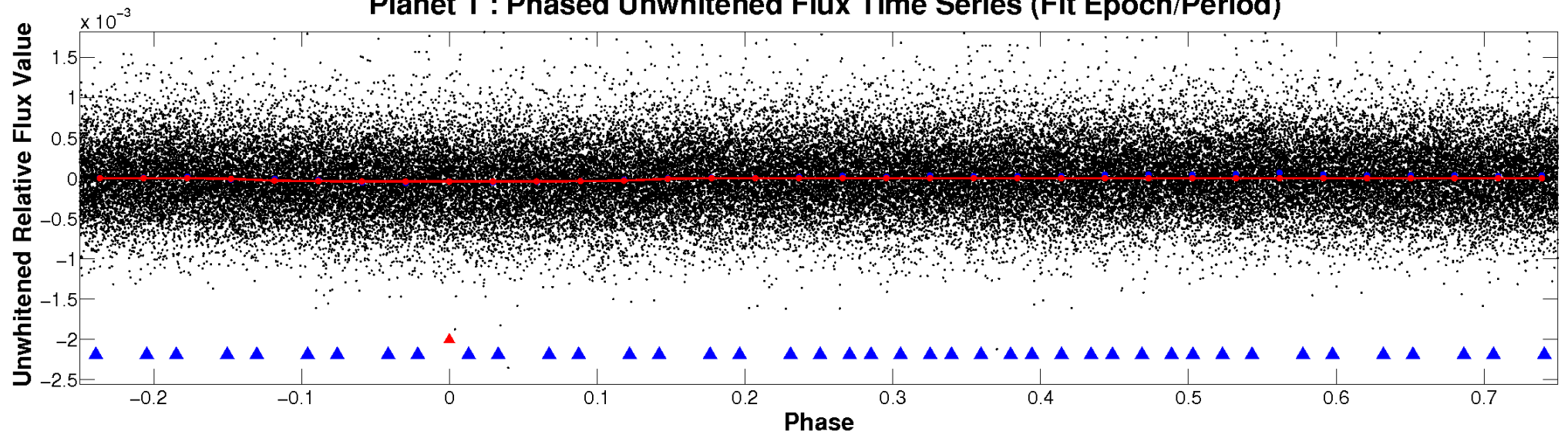
ALT Odd/Even

TCE 009953851-01

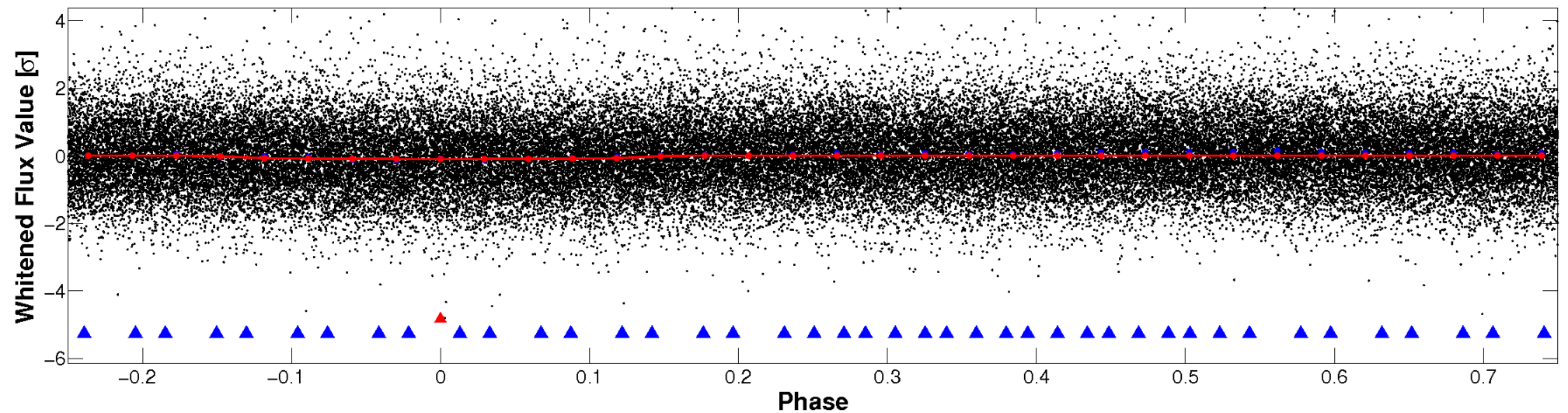


Non-Whitened Vs. Whitened Light Curve

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

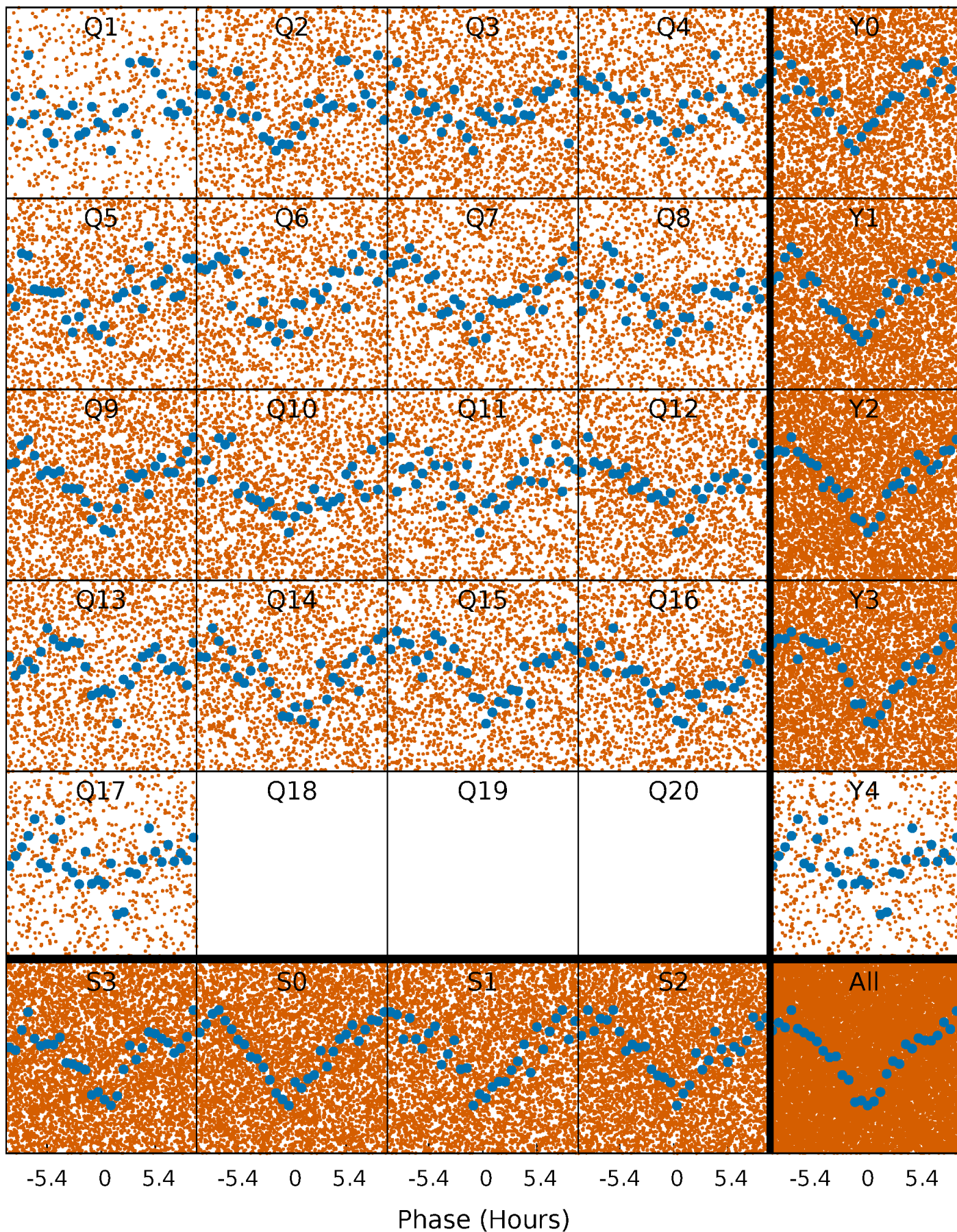


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



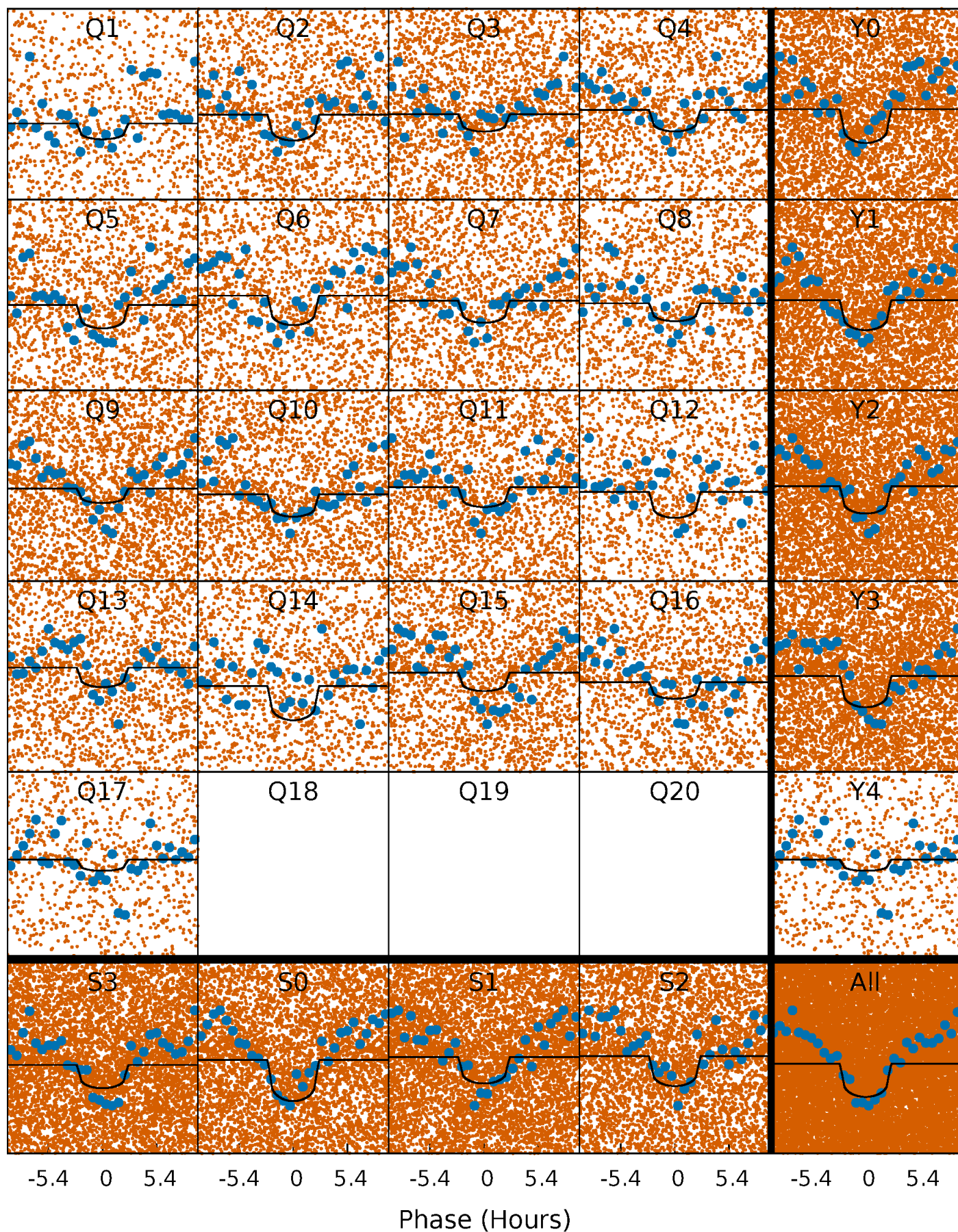
PDC Quarter-Phased Transit Curves

TCE 009953851-01 P= 0.691239 Days $T_0=131.973048$ (BKJD)



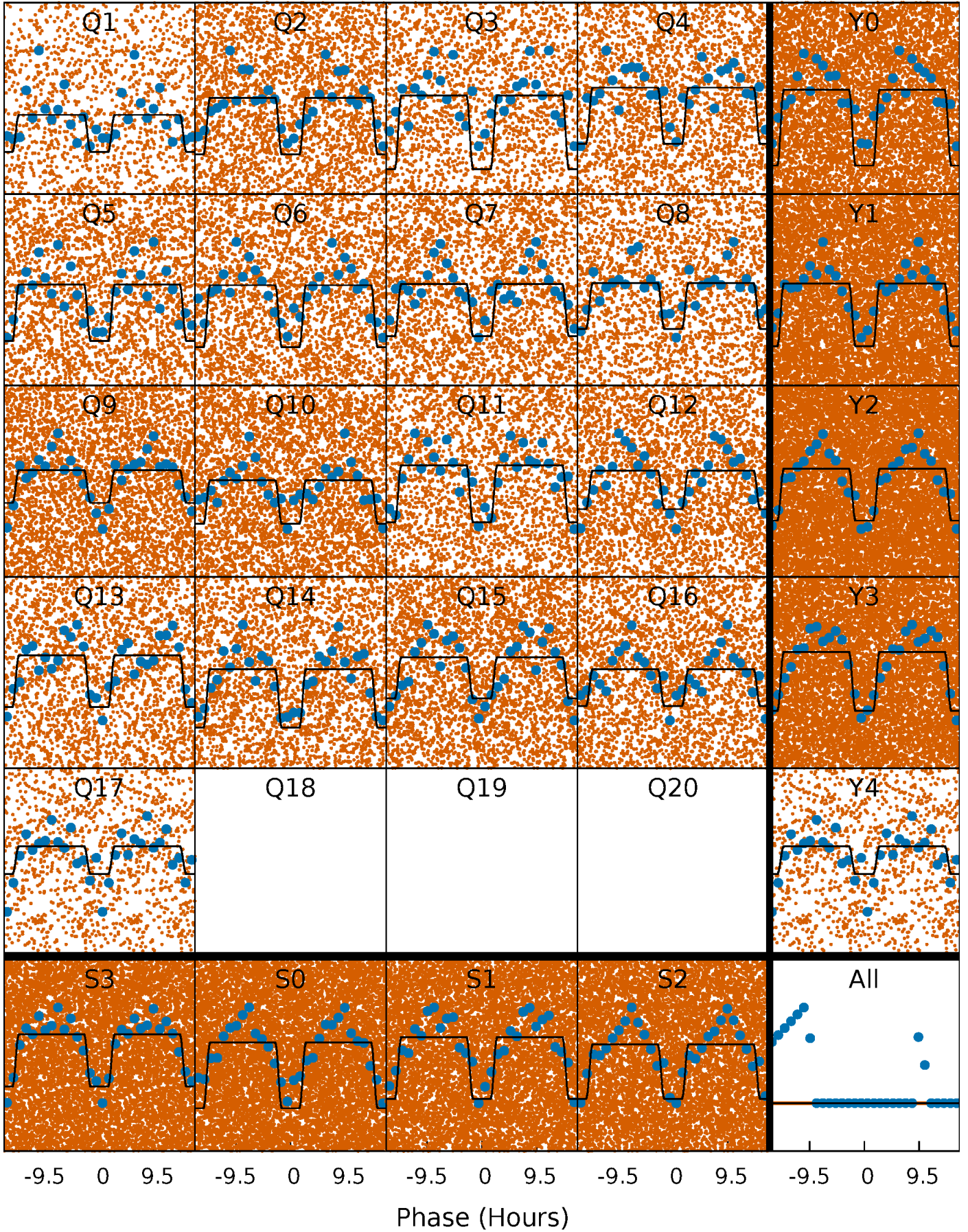
DV Quarter-Phased Transit Curves

TCE 009953851-01 P= 0.691239 Days $T_0=131.973048$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

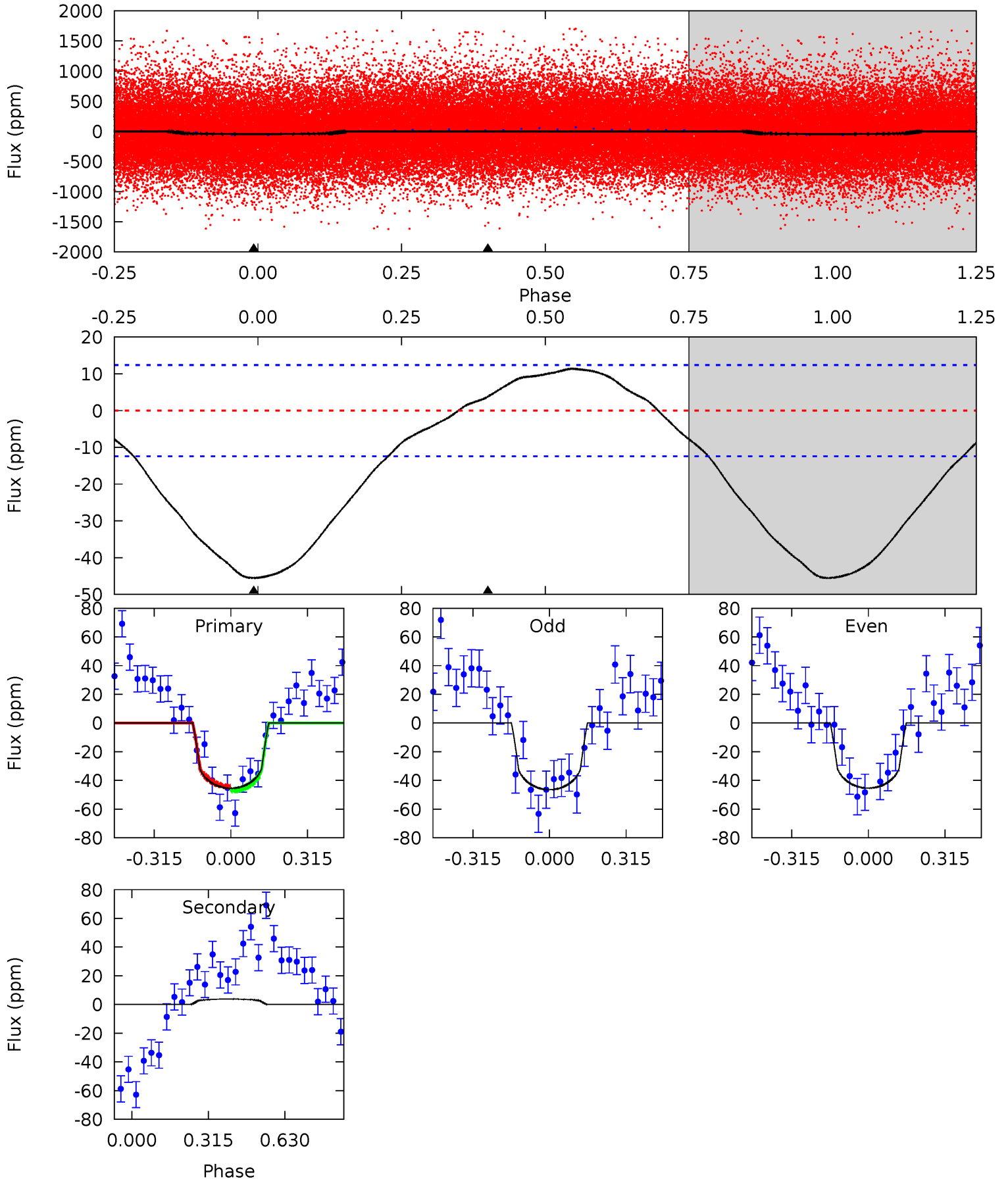
TCE 009953851-01 P= 0.691286 Days $T_0=131.922211$ (BKJD)



DV Model-Shift Uniqueness Test

009953851-01, $P = 0.691239$ Days, $E = 131.281809$ Days

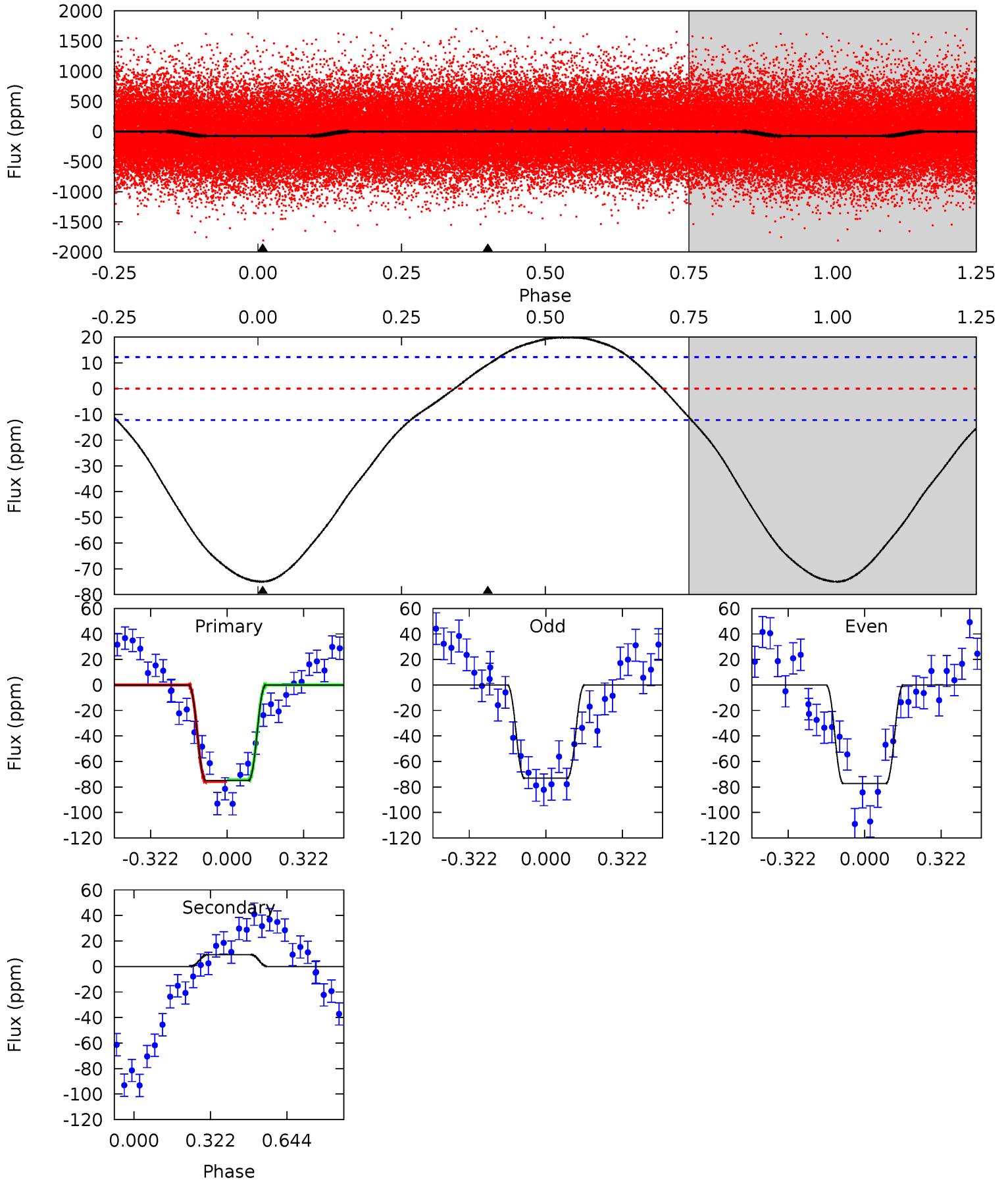
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	-1.32	0	0	4.32	1.01	1.37	15.8	15.8	-1.32	-1.32	0.19	0.92	0.20	0.46



Alt Model-Shift Uniqueness Test

009953851-01, P = 0.691286 Days, E = 131.230925 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.4	-3.28	0	0	4.31	0.99	2.42	26.4	26.4	-3.28	-3.28	0.73	1.03	0.21	0.20



Stellar Parameters For KIC 009953851

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6311^{+170}_{-226}	$4.481^{+0.050}_{-0.200}$	$-0.380^{+0.300}_{-0.300}$	$0.965^{+0.290}_{-0.097}$	$1.028^{+0.133}_{-0.133}$	$1.611^{+0.423}_{-0.806}$
	+3%/-4%	+1%/-4%	+79%/-79%	+30%/-10%	+13%/-13%	+26%/-50%
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 009953851-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	4 ± 3	$0.84^{+0.62}_{-0.55}$	3129^{+236}_{-147}	-3807^{+501}_{-1375}	$-0.592^{+0.501}_{-3.983}$
Alt.	9 ± 3	$1.06^{+0.63}_{-0.58}$	3130^{+219}_{-156}	-4065^{+470}_{-1319}	$-1.029^{+0.660}_{-4.177}$

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

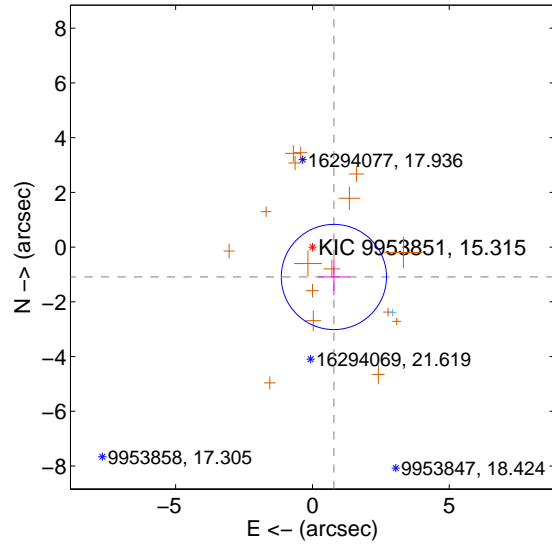
Supplemental centroid analysis for 009953851-01. Kepler magnitude: 15.31. Transit SNR 11.43

There are 1 quarters with good PRF difference image offsets

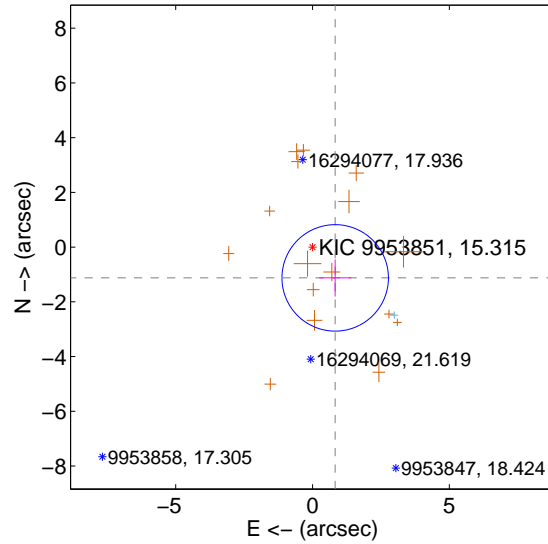
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.344 ± 0.641	2.10	-0.784 ± 0.584	-1.092 ± 0.668
PRF-fit source offset from KIC position	1.397 ± 0.649	2.15	-0.828 ± 0.583	-1.126 ± 0.682
photometric centroid source offset	3.45 ± 1.31	2.65	-0.70 ± 1.15	-3.38 ± 1.31

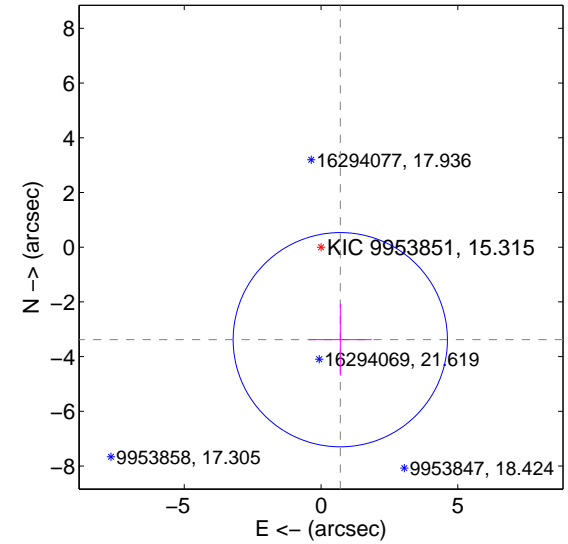
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

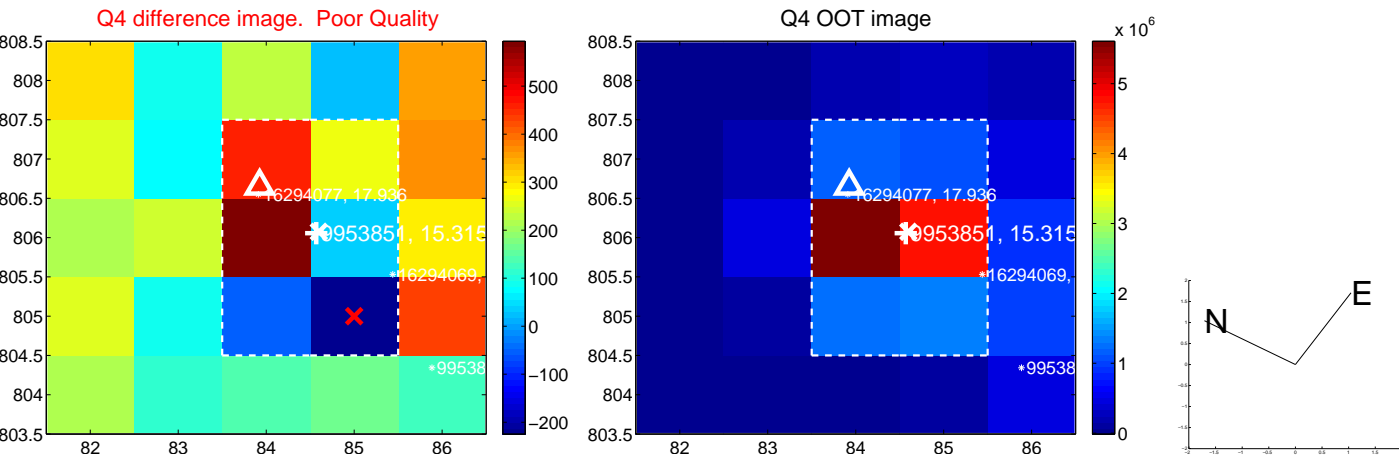
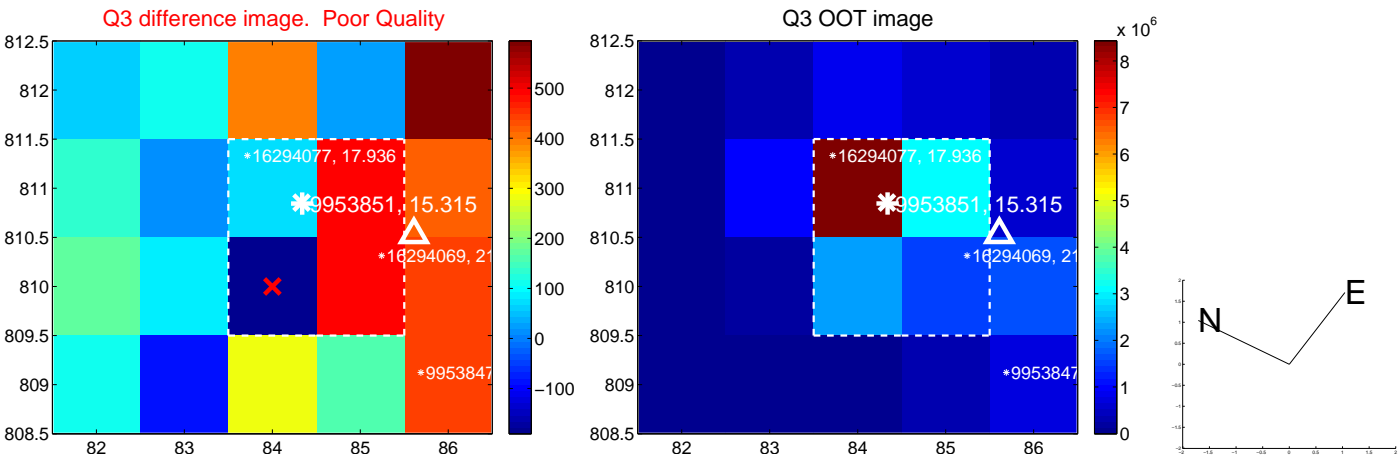
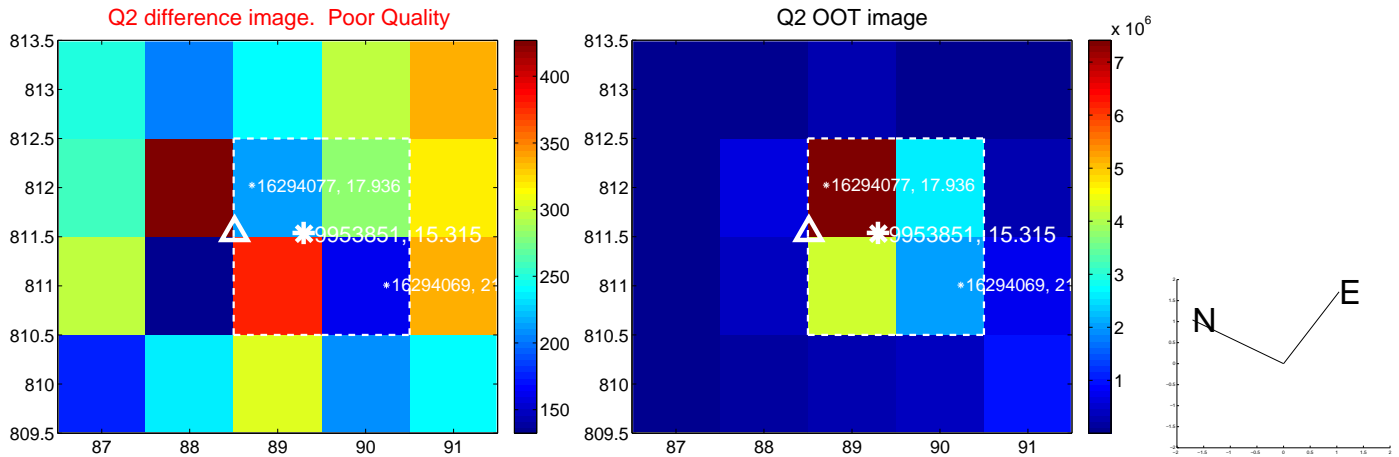
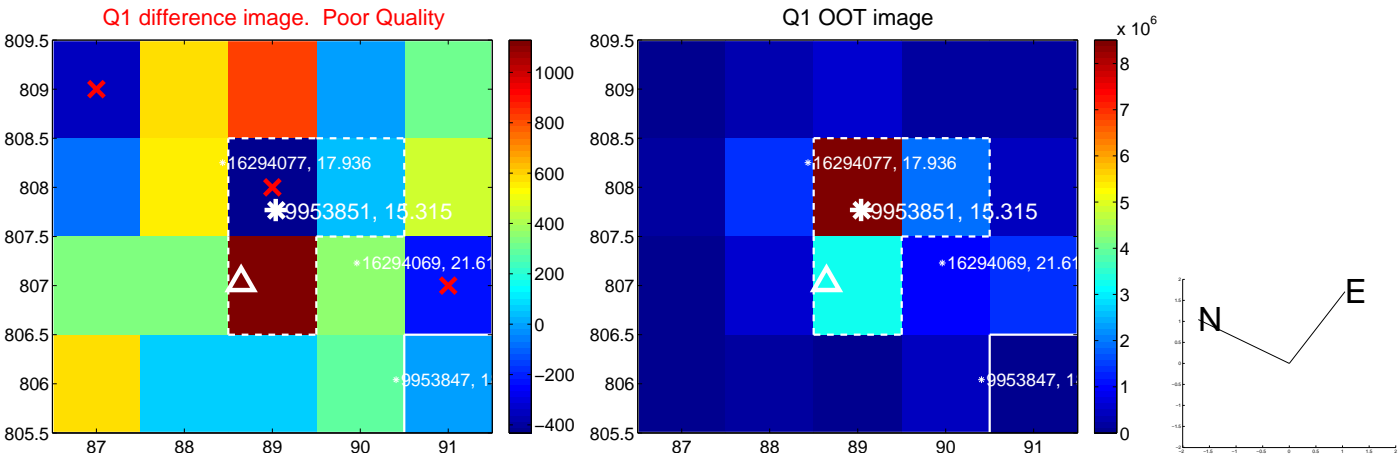


offset from photometric centroids

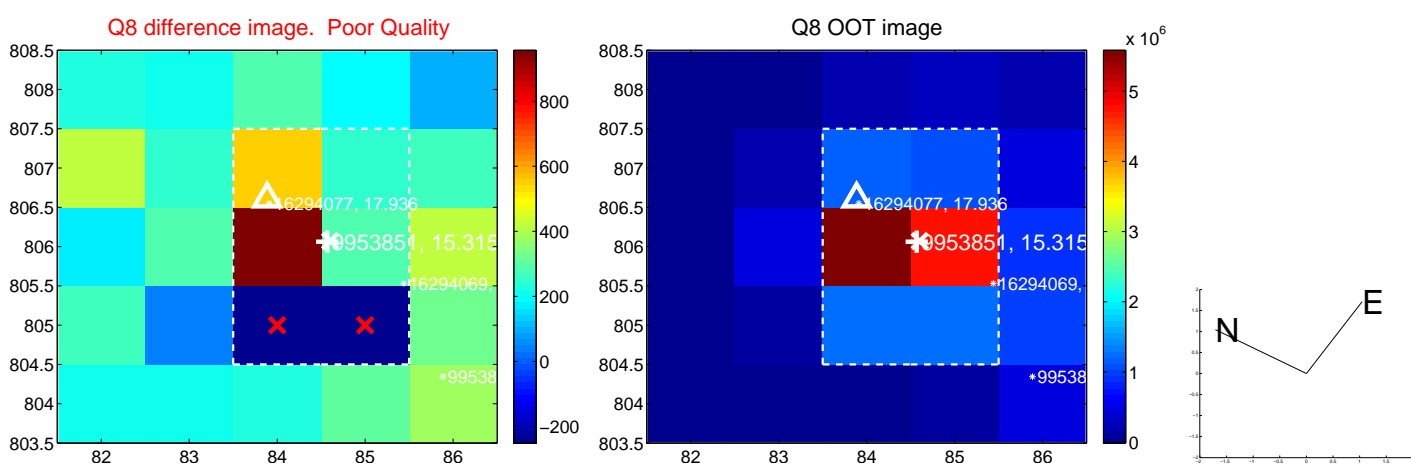
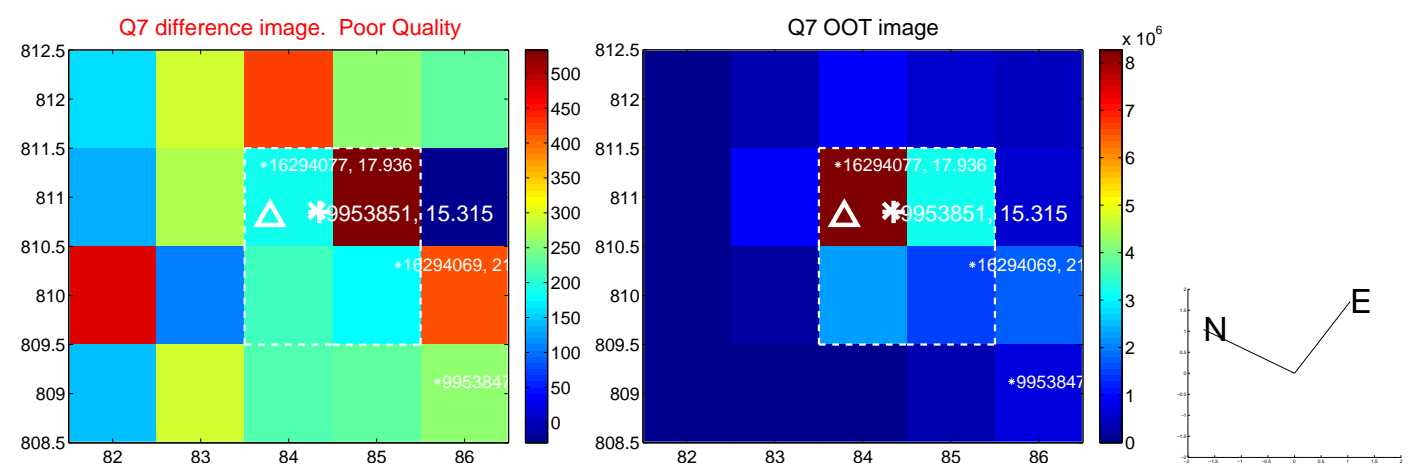
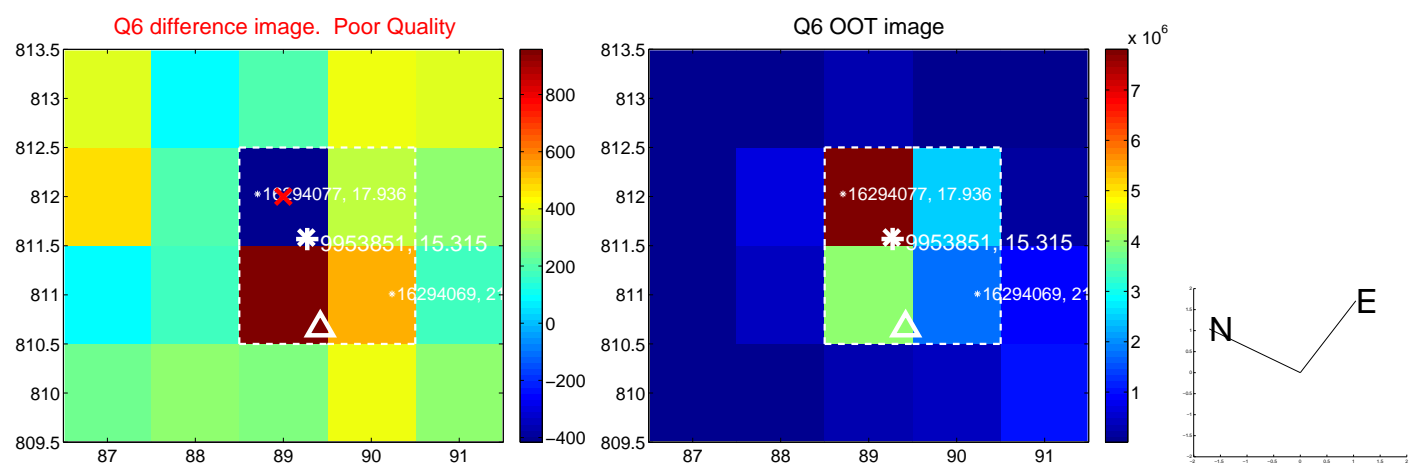
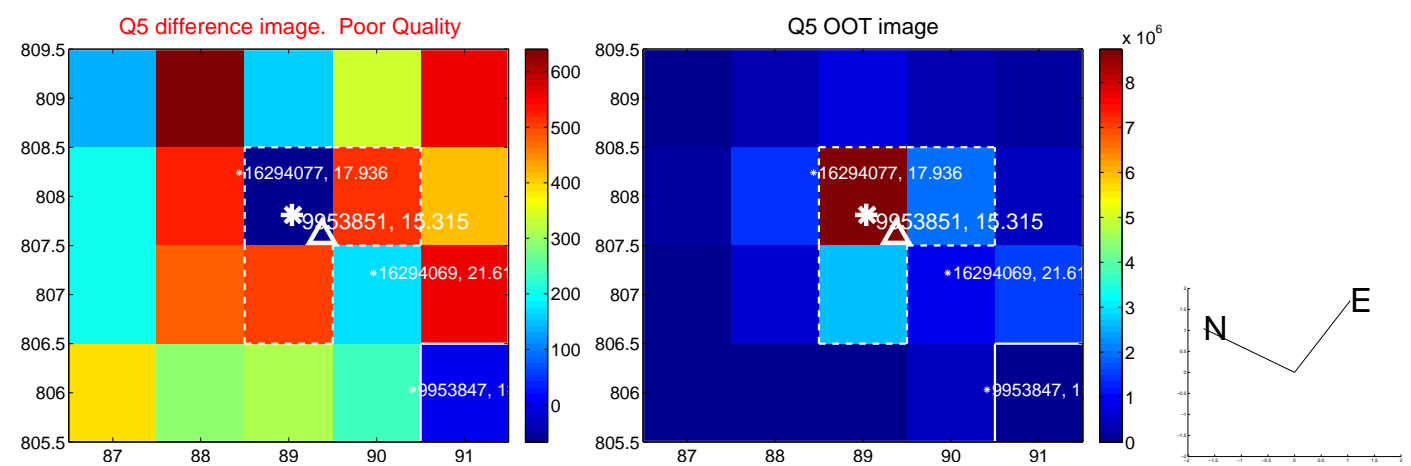


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

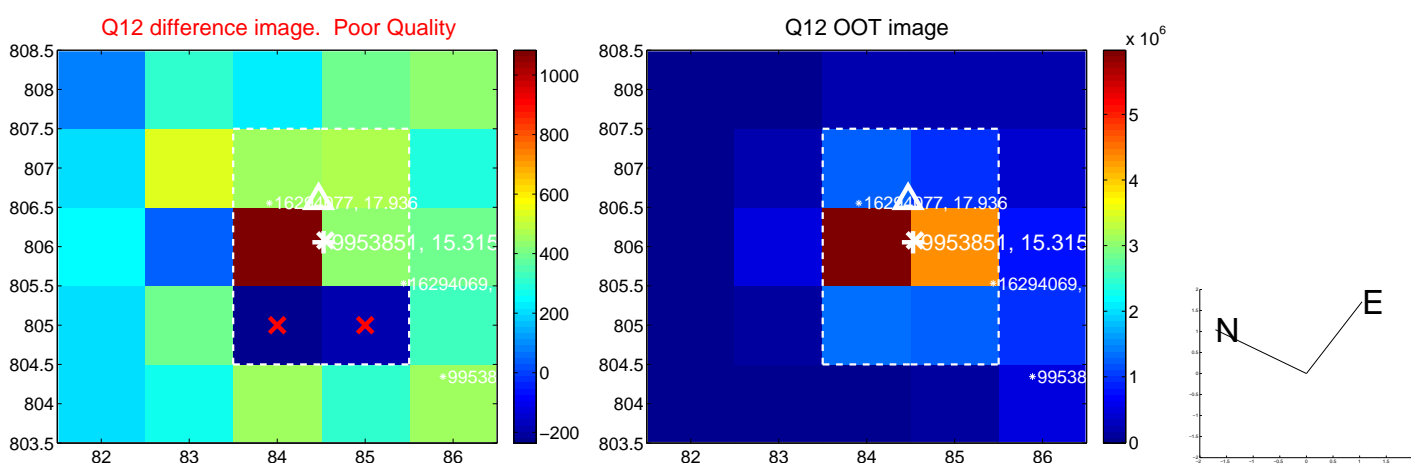
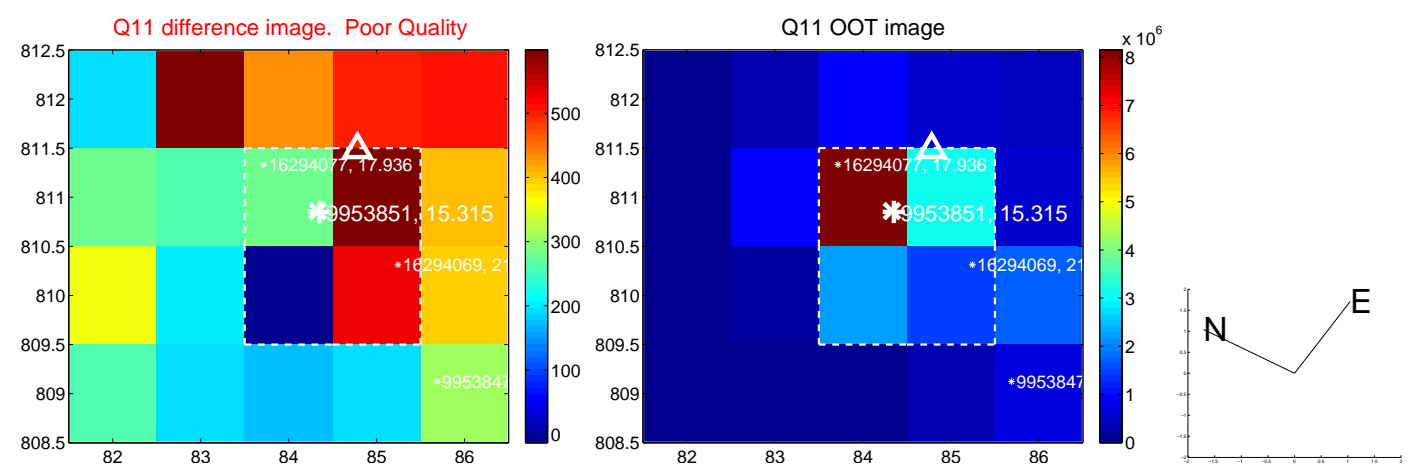
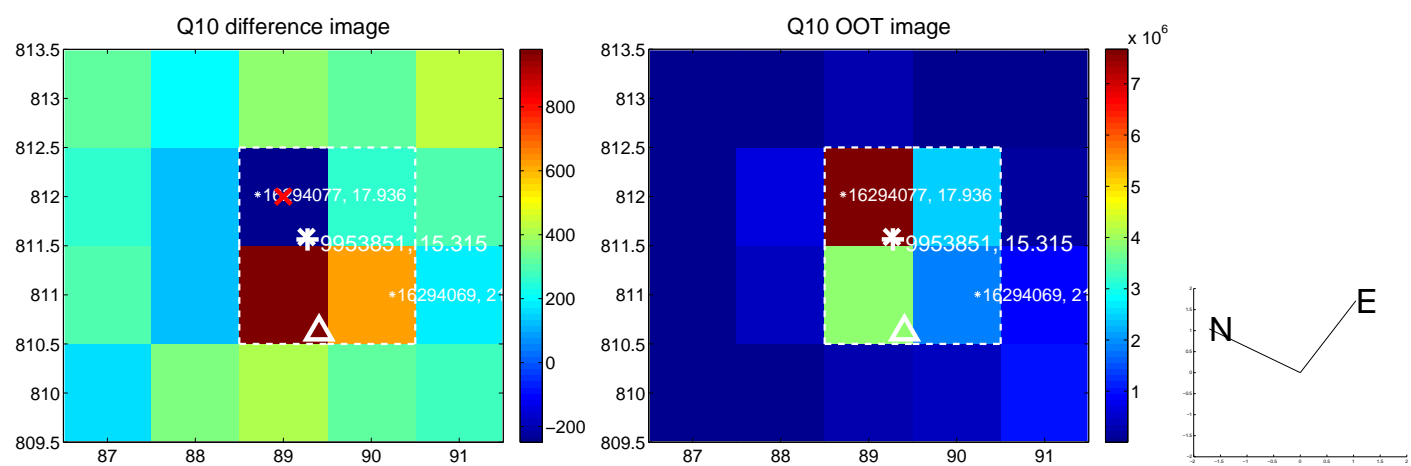
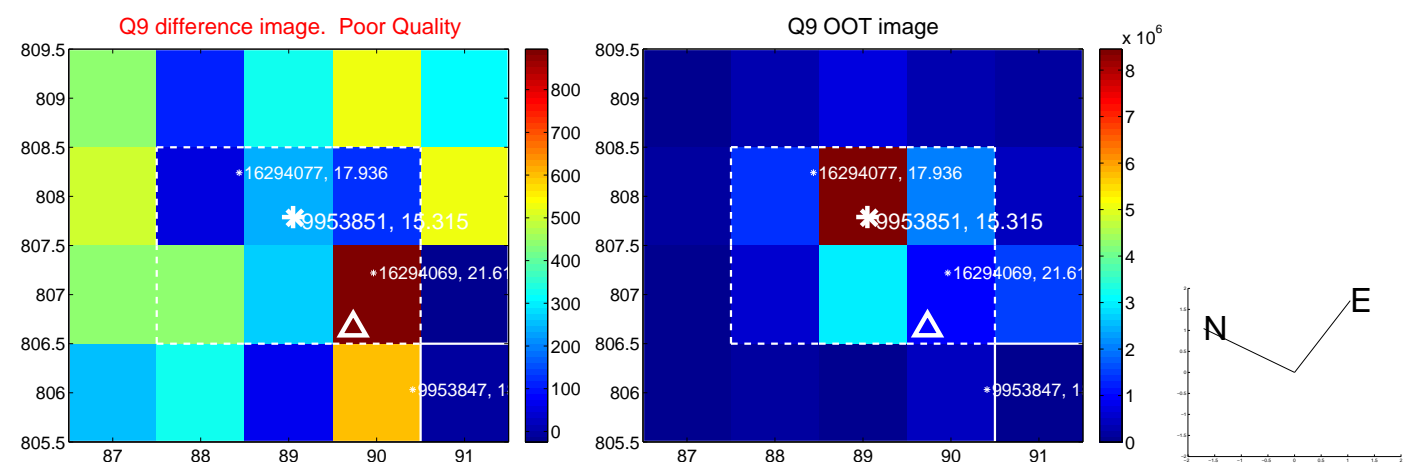
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



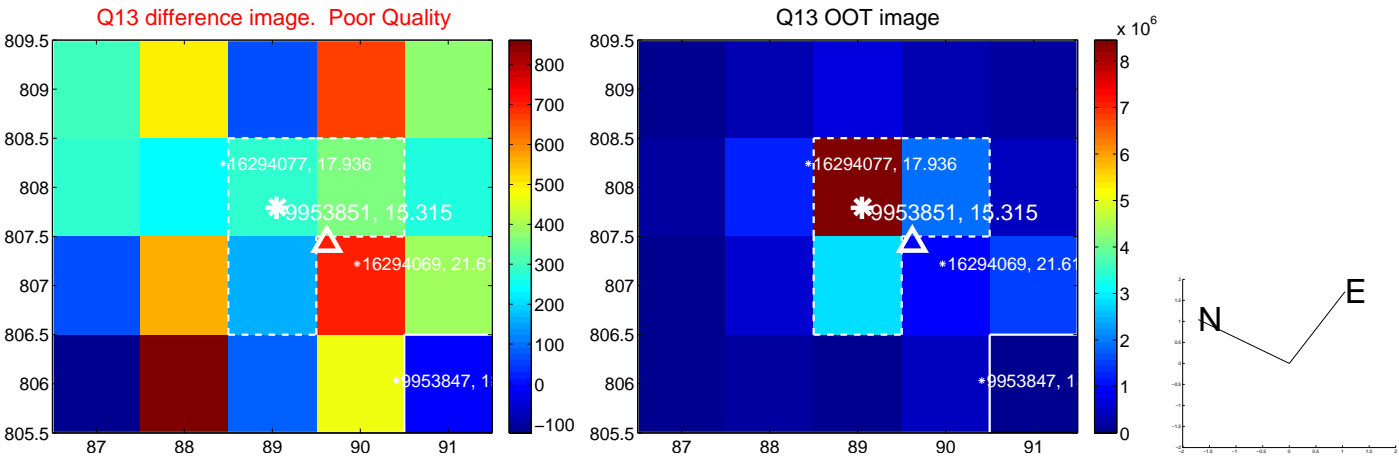
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



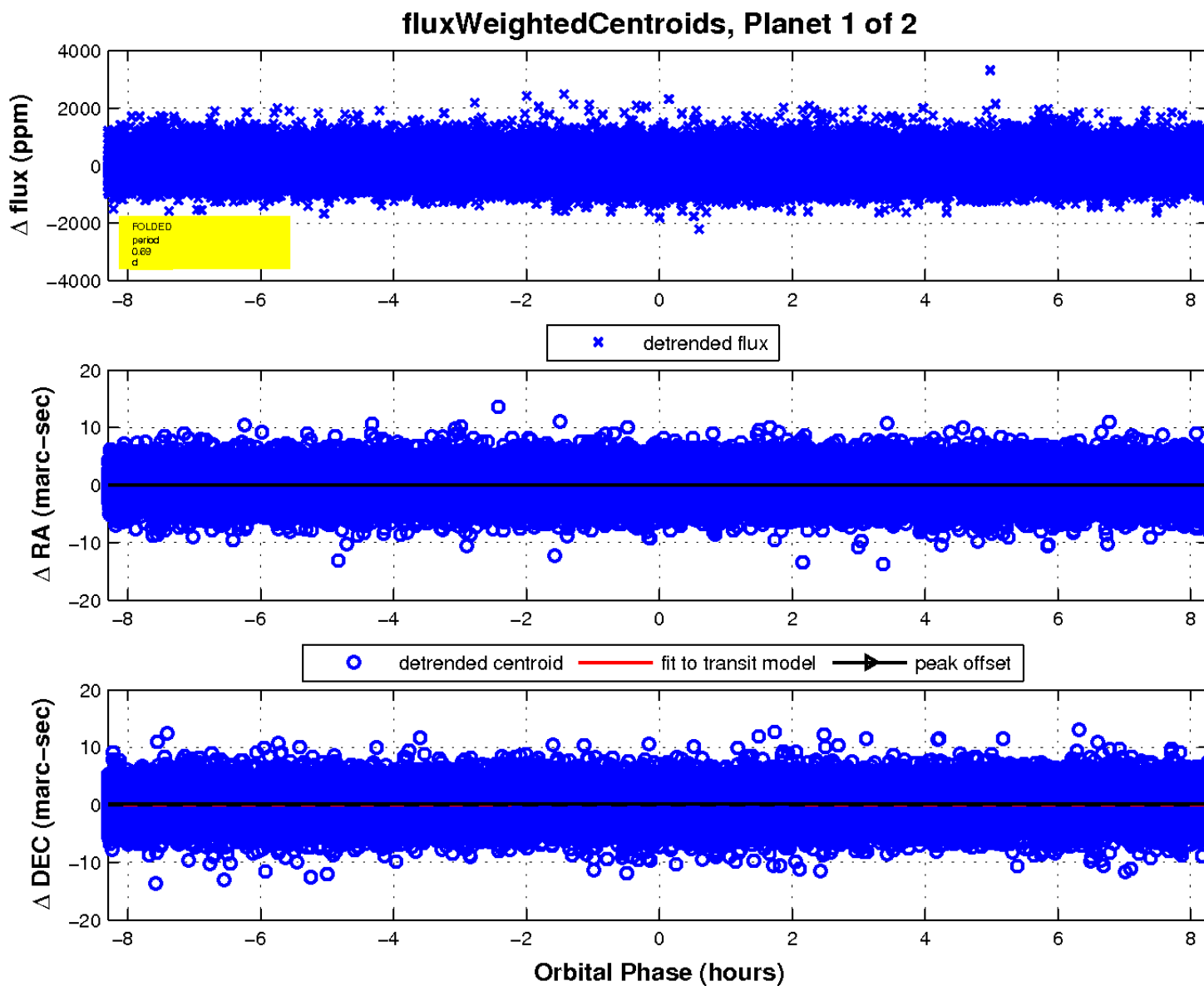
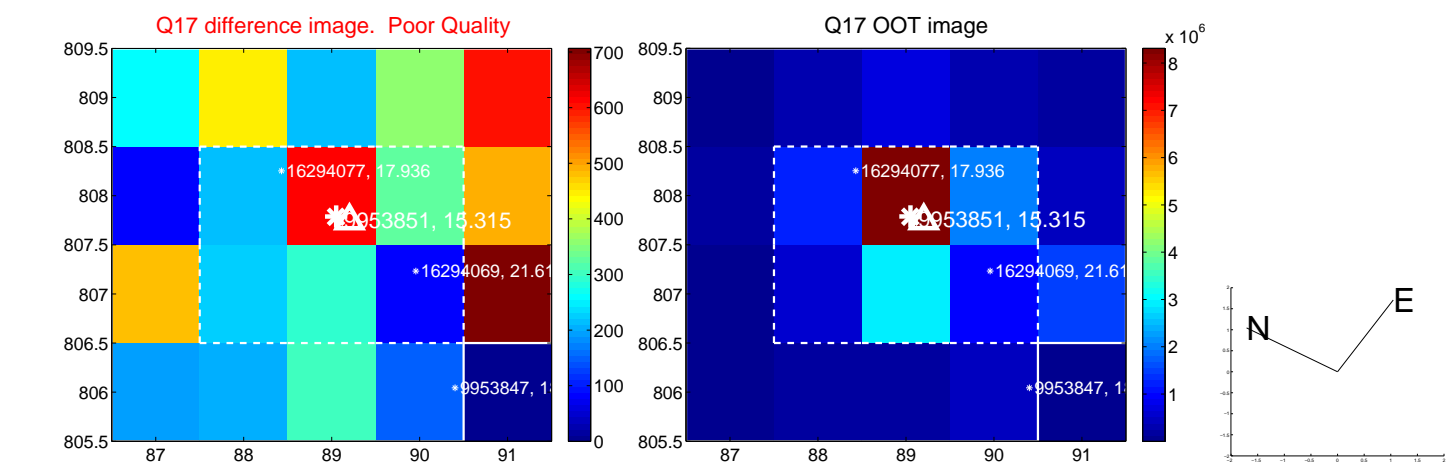
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

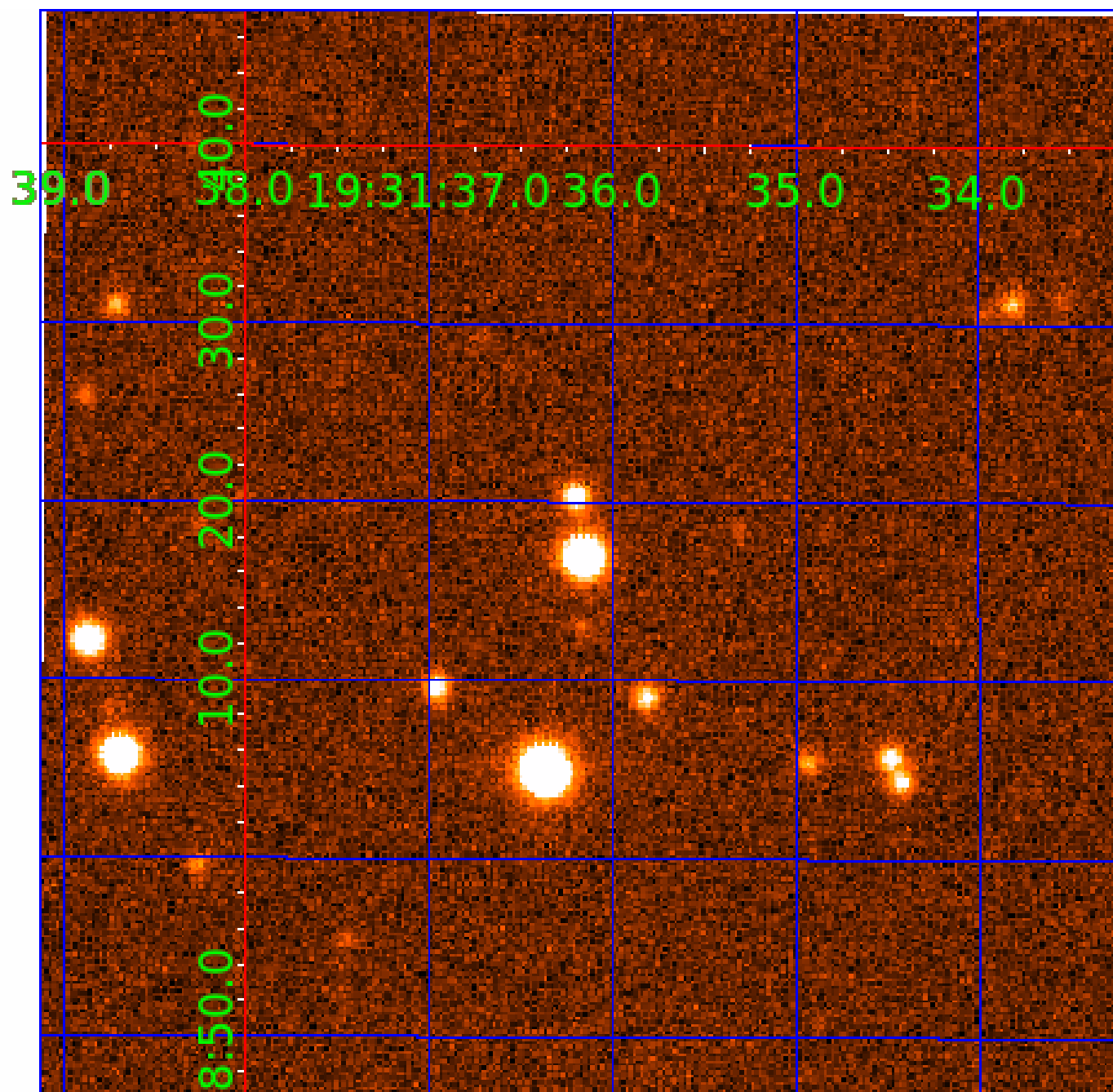


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009953851

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})
009953851-01	OBS	No	0.691239	131.973048	42.0	4.760	12.1	11.4	0.96	6311	0.64	5547.98
009953851-02	OBS	No	34.524304	147.528033	784.3	3.447	10.3	10.5	0.96	6311	4.33	30.16

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009953851-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009953851-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST

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

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

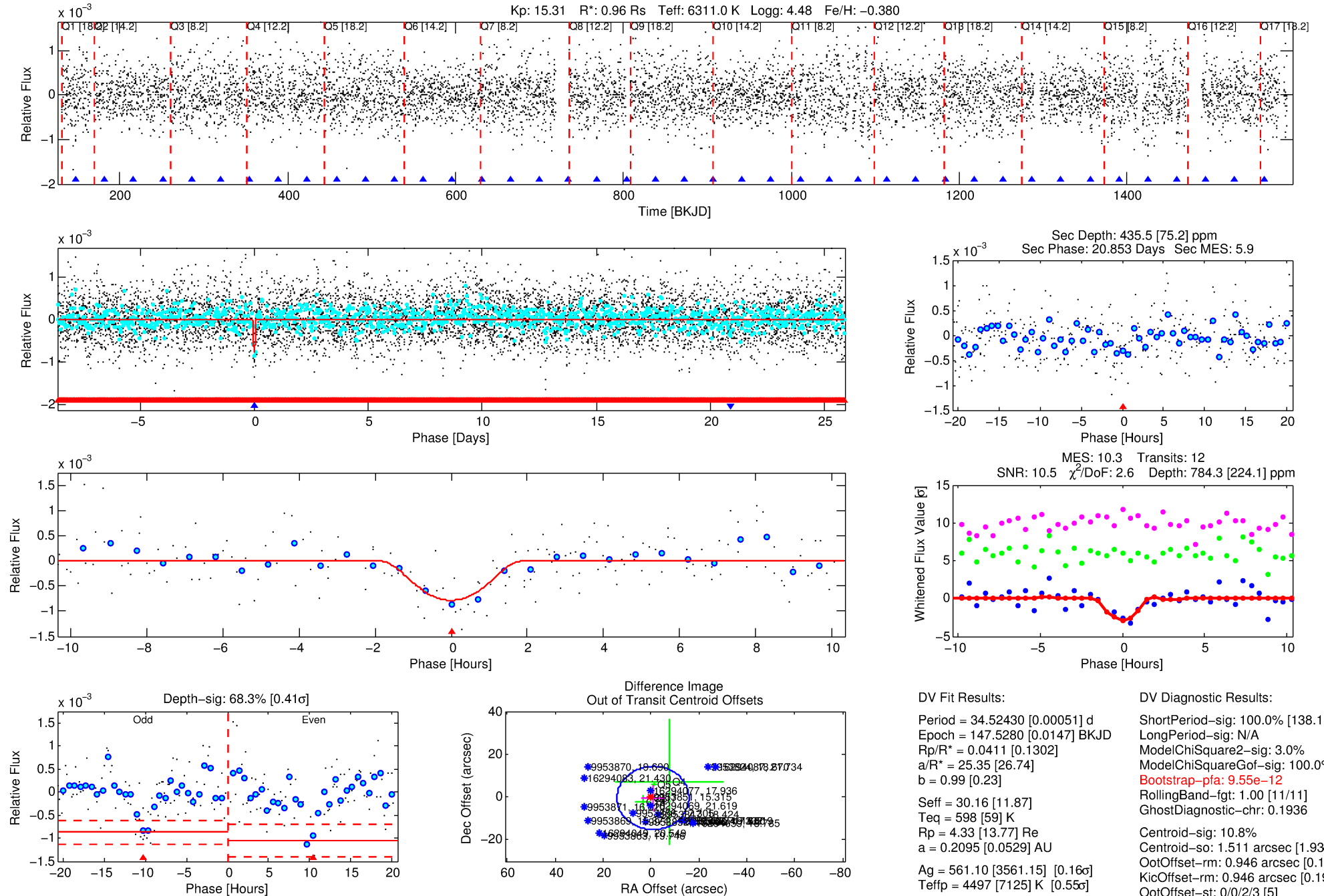
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009953851-02

No Significant Match Found

DV One-Page Summary

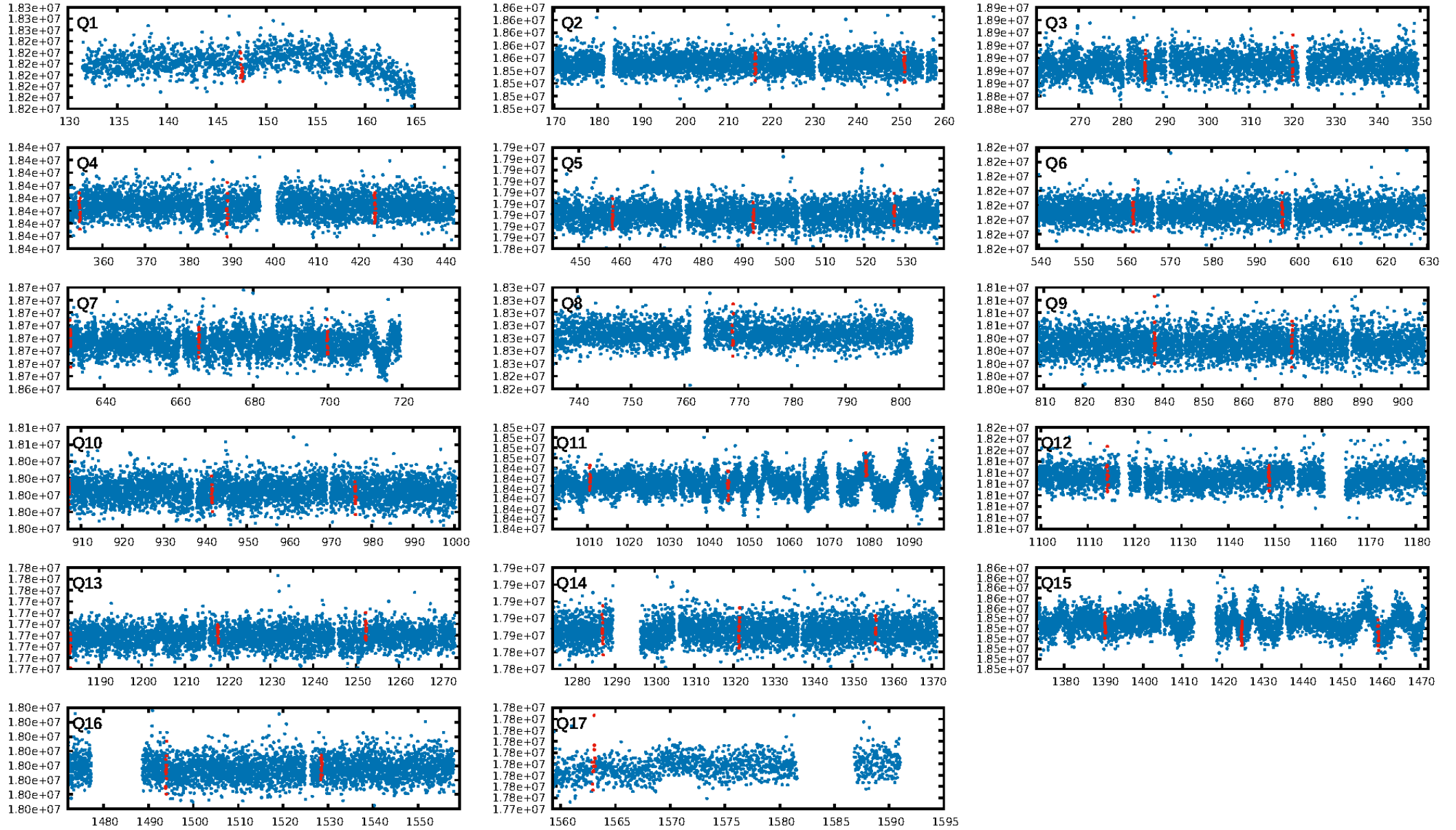
KIC: 9953851 Candidate: 2 of 2 Period: 34.524 d



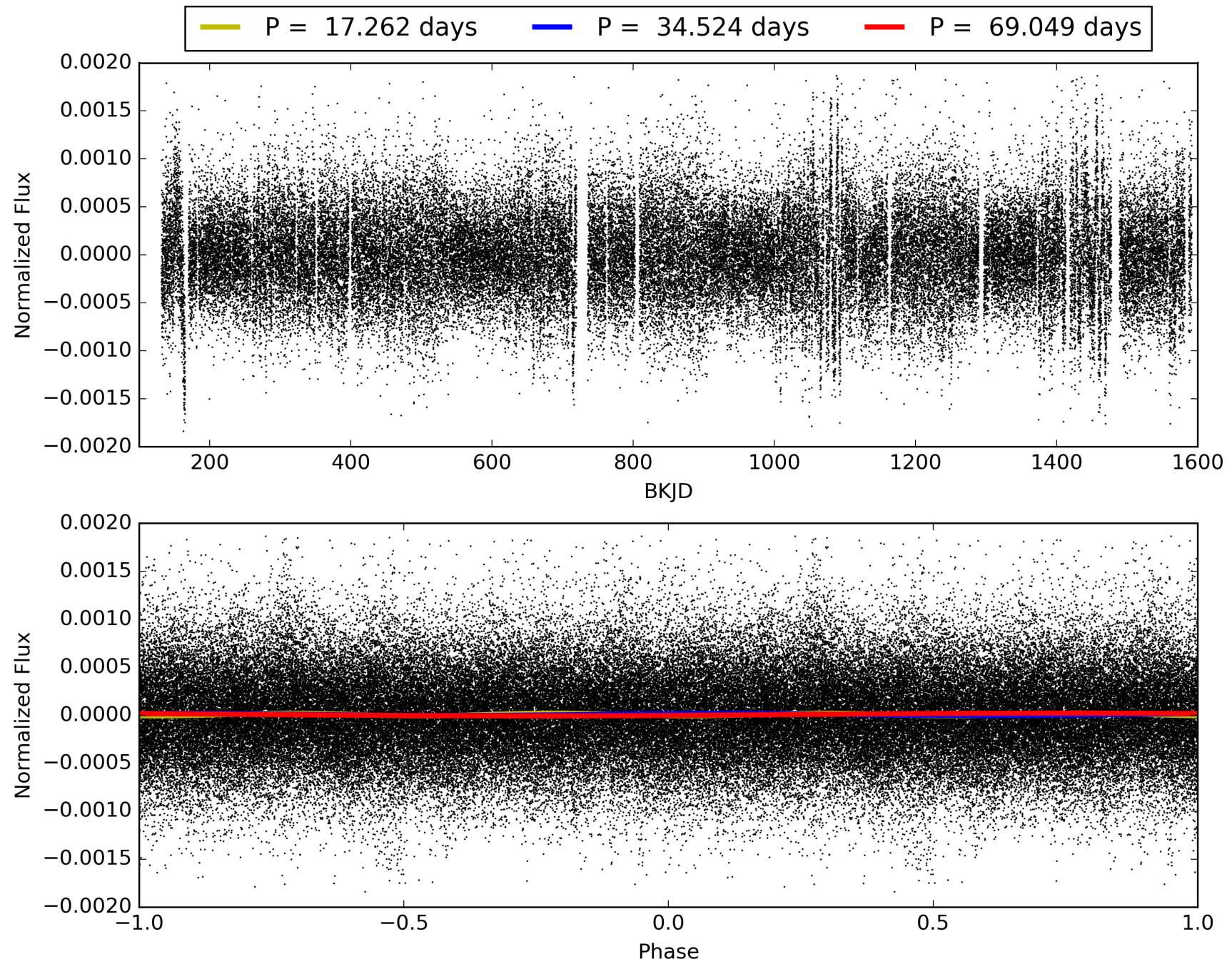
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 21:15:35 Z

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

TCE 009953851-02, PDC Light Curves

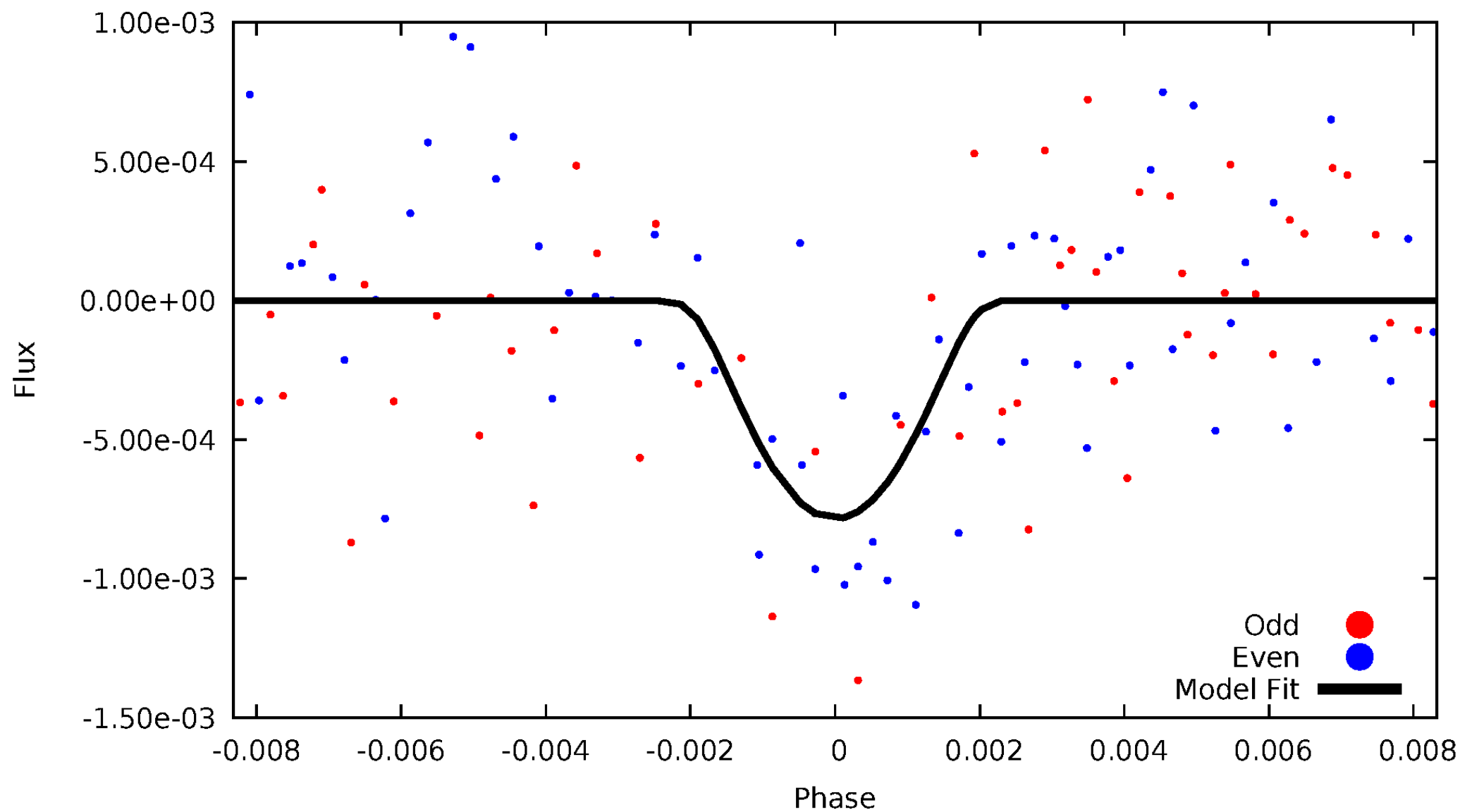


TCE 009953851-02



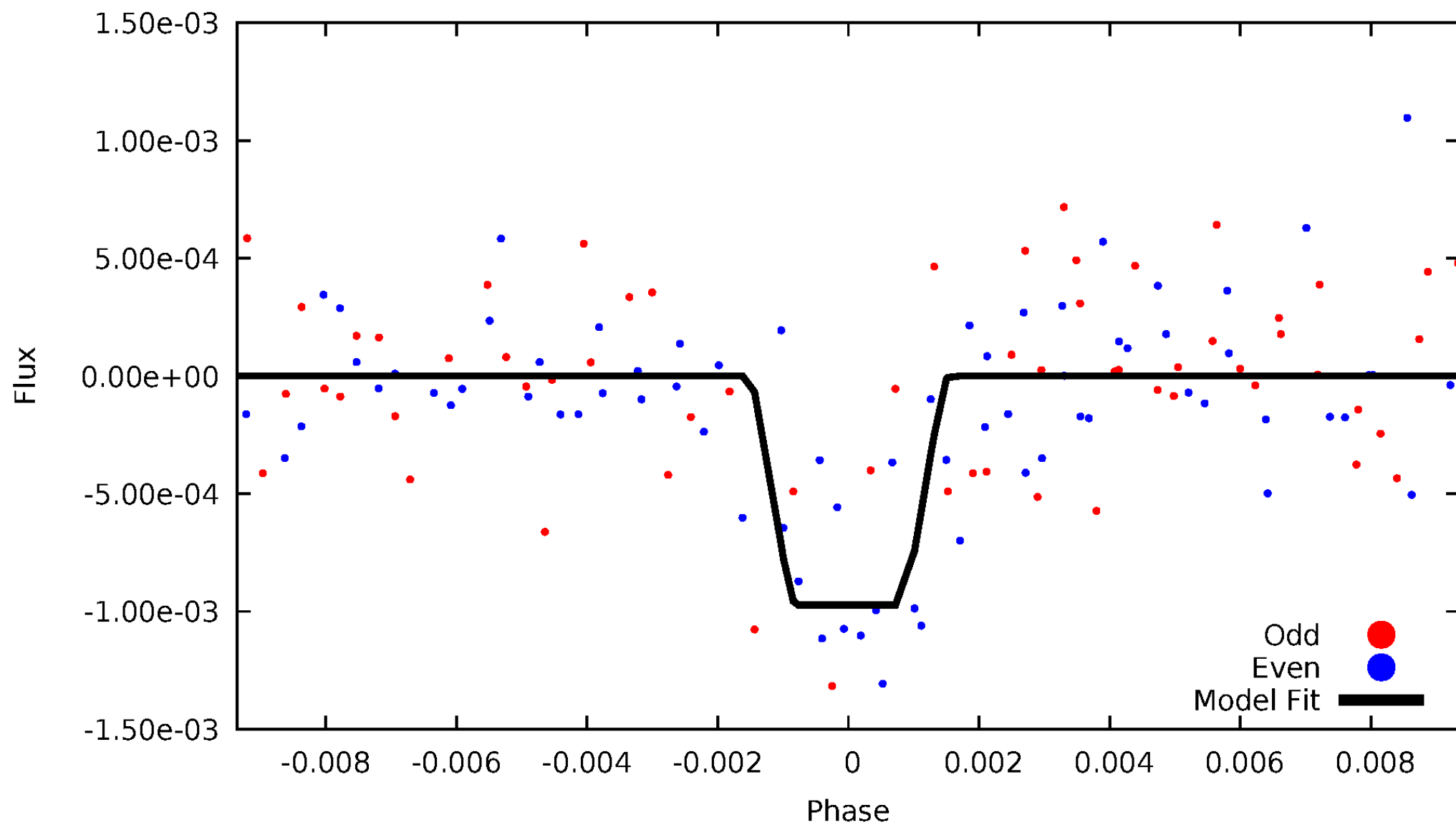
DV Odd/Even

TCE 009953851-02



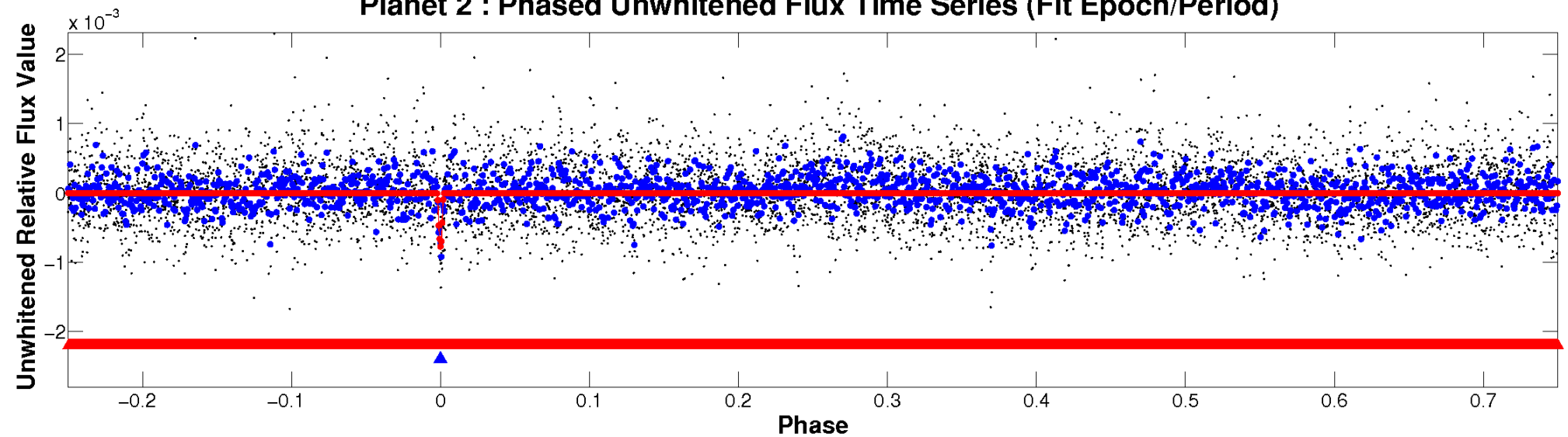
ALT Odd/Even

TCE 009953851-02

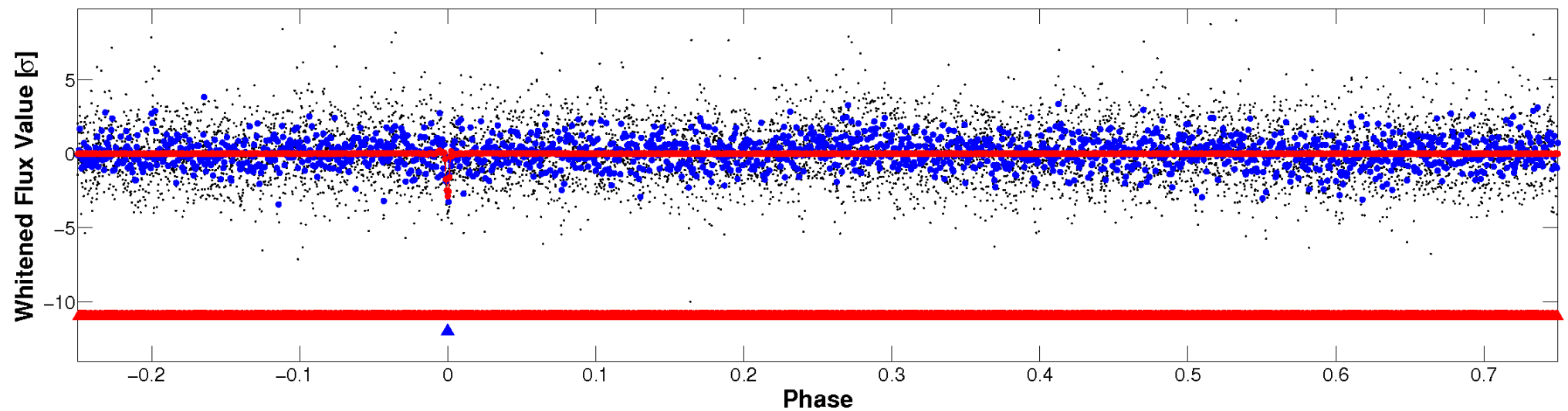


Non-Whitened Vs. Whitened Light Curve

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

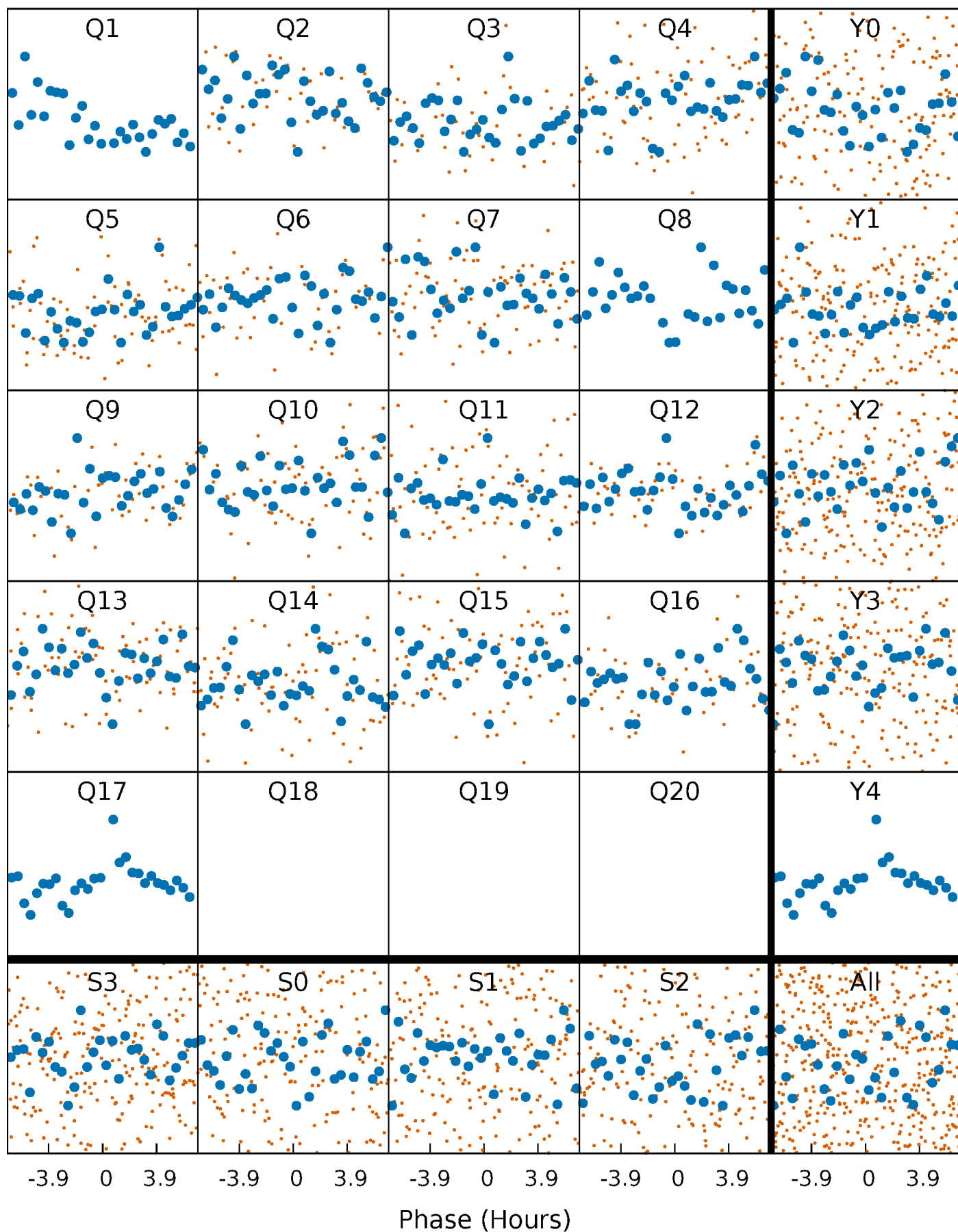


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



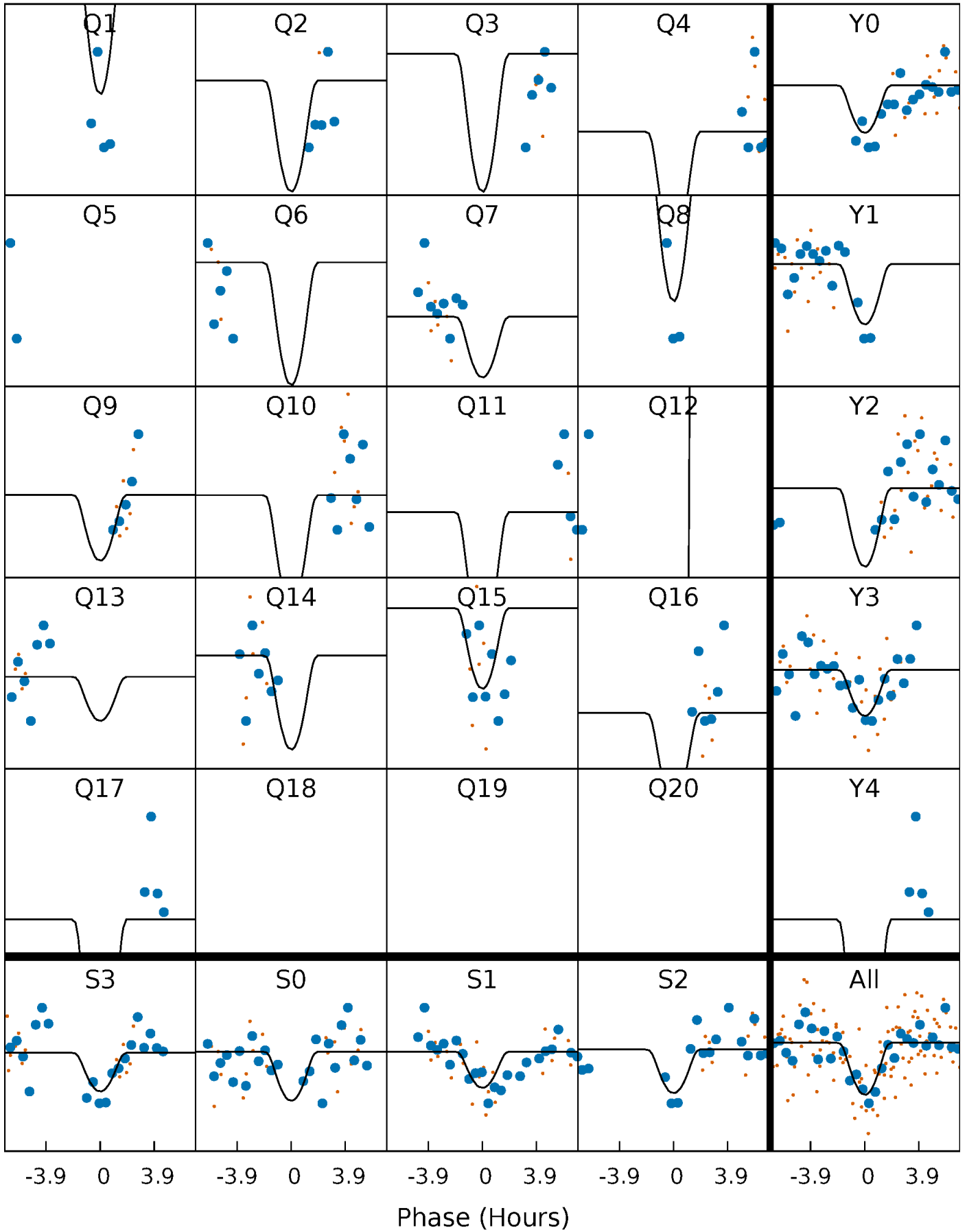
PDC Quarter-Phased Transit Curves

TCE 009953851-02 P= 34.524304 Days $T_0=147.528033$ (BKJD)



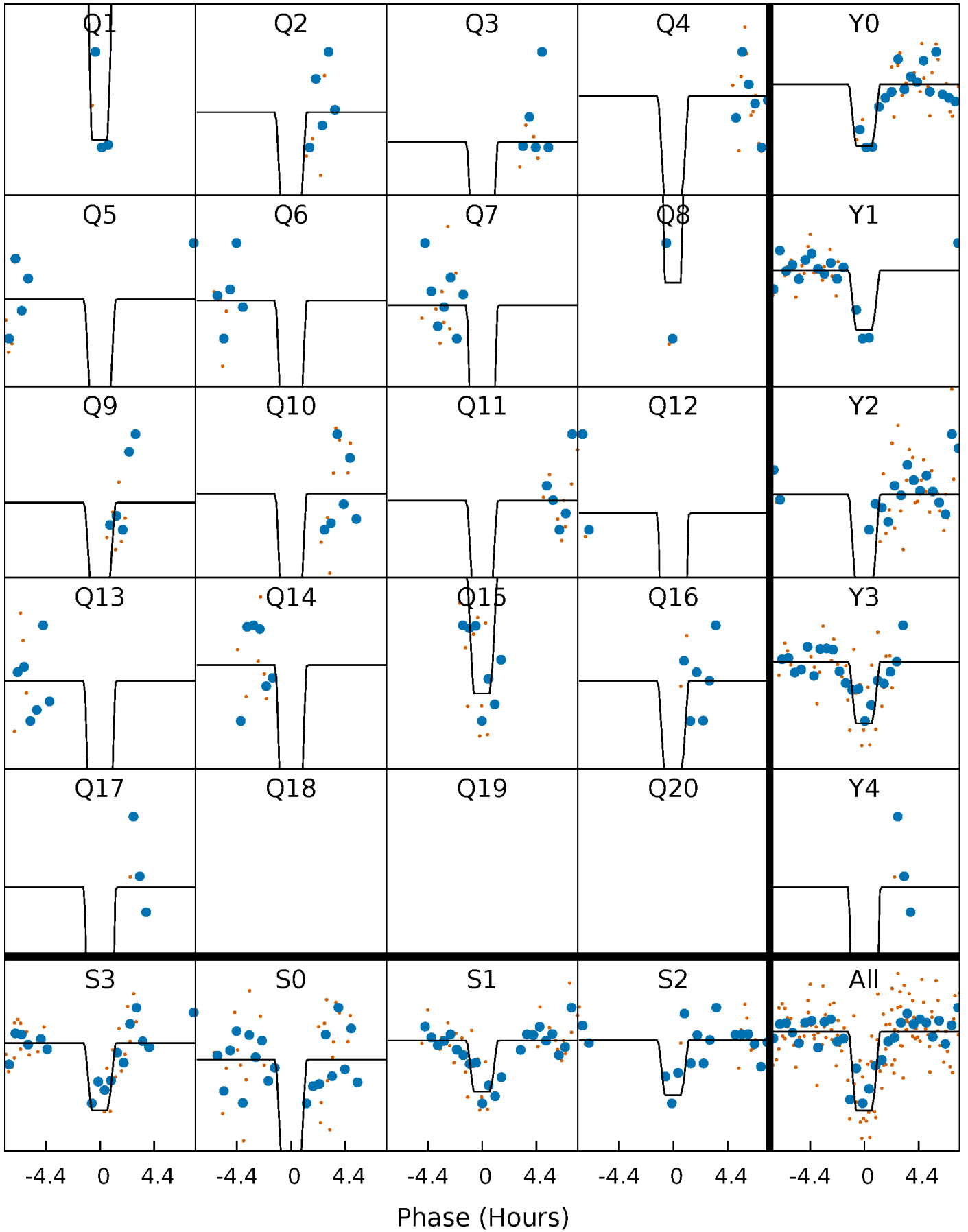
DV Quarter-Phased Transit Curves

TCE 009953851-02 P= 34.524304 Days $T_0=147.528033$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

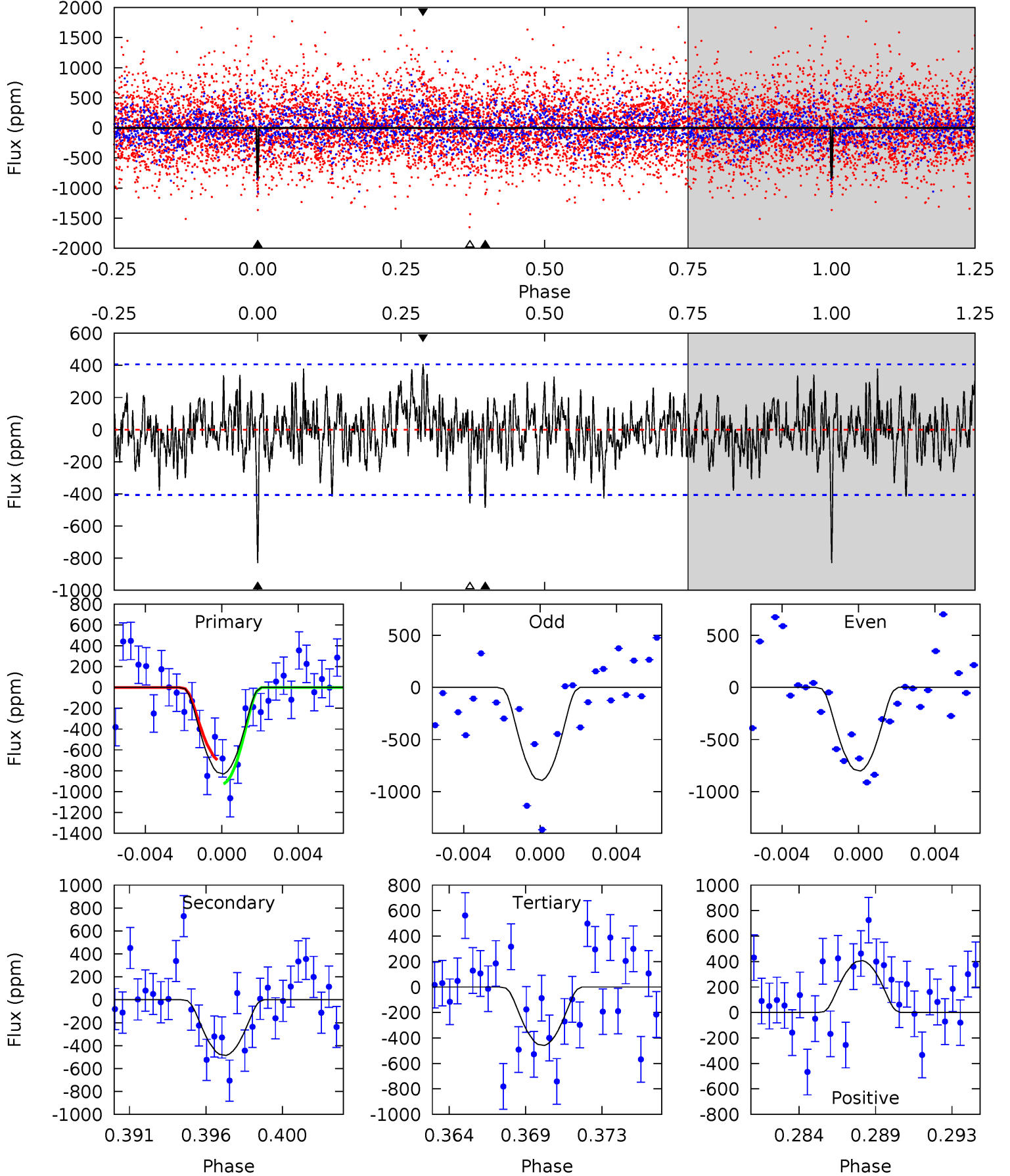
TCE 009953851-02 P= 34.525104 Days $T_0=147.518045$ (BKJD)



DV Model-Shift Uniqueness Test

009953851-02, P = 34.524304 Days, E = 113.003729 Days

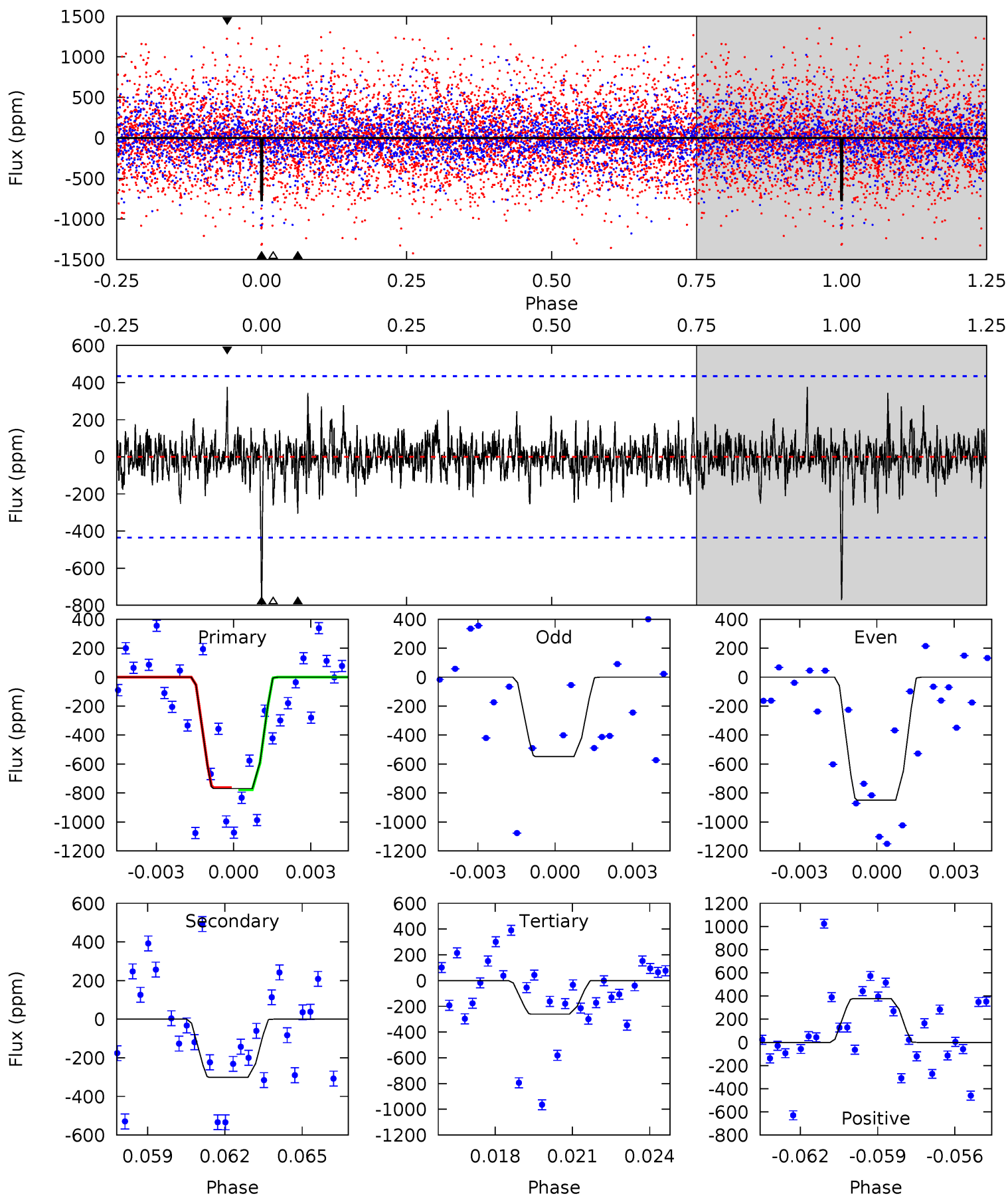
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	6.19	5.85	5.19	5.18	2.84	1.61	4.74	5.40	0.35	1.01	0.53	0.94	0.33	1.45



Alt Model-Shift Uniqueness Test

009953851-02, P = 34.525104 Days, E = 112.992941 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.29	3.64	3.15	4.54	5.26	2.97	0.96	6.15	4.75	0.50	-0.90	1.61	0.82	0.33	0.08



Stellar Parameters For KIC 009953851

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6311^{+170}_{-226}	$4.481^{+0.050}_{-0.200}$	$-0.380^{+0.300}_{-0.300}$	$0.965^{+0.290}_{-0.097}$	$1.028^{+0.133}_{-0.133}$	$1.611^{+0.423}_{-0.806}$
	+3%/-4%	+1%/-4%	+79%/-79%	+30%/-10%	+13%/-13%	+26%/-50%
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 009953851-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-486 ± 78	$11.13^{+12.54}_{-7.70}$	853^{+62}_{-40}	3422^{+1982}_{-620}	91^{+915}_{-70}
Alt.	-302 ± 83	$10.95^{+12.07}_{-7.61}$	852^{+61}_{-39}	3216^{+1667}_{-619}	58^{+602}_{-46}

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

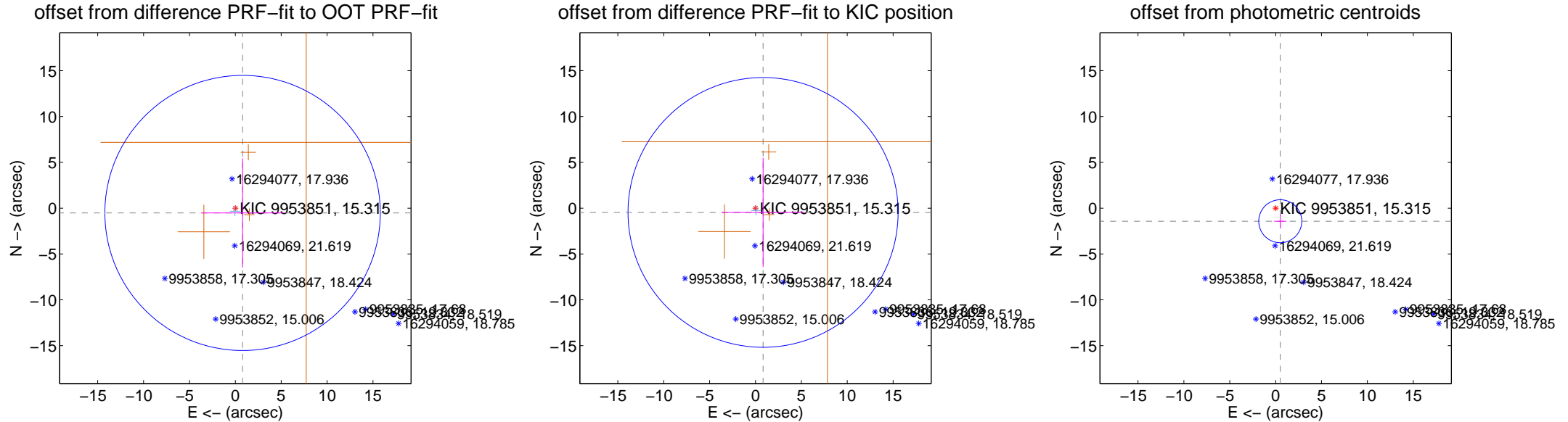
DV Centroid Data

Supplemental centroid analysis for 009953851-02. Kepler magnitude: 15.31. Transit SNR 10.47

There are 1 quarters with good PRF difference image offsets

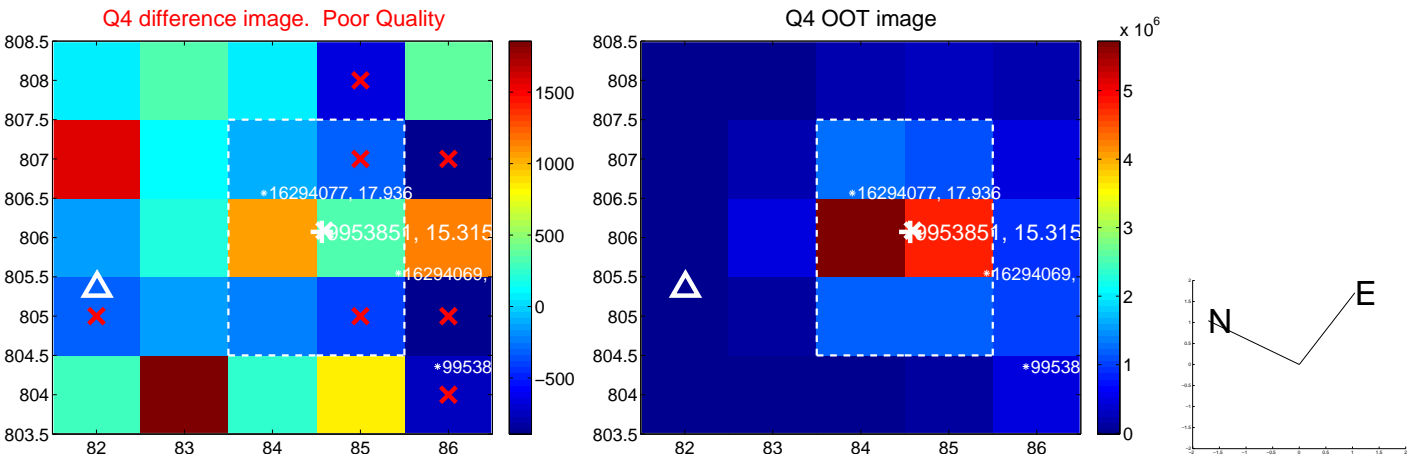
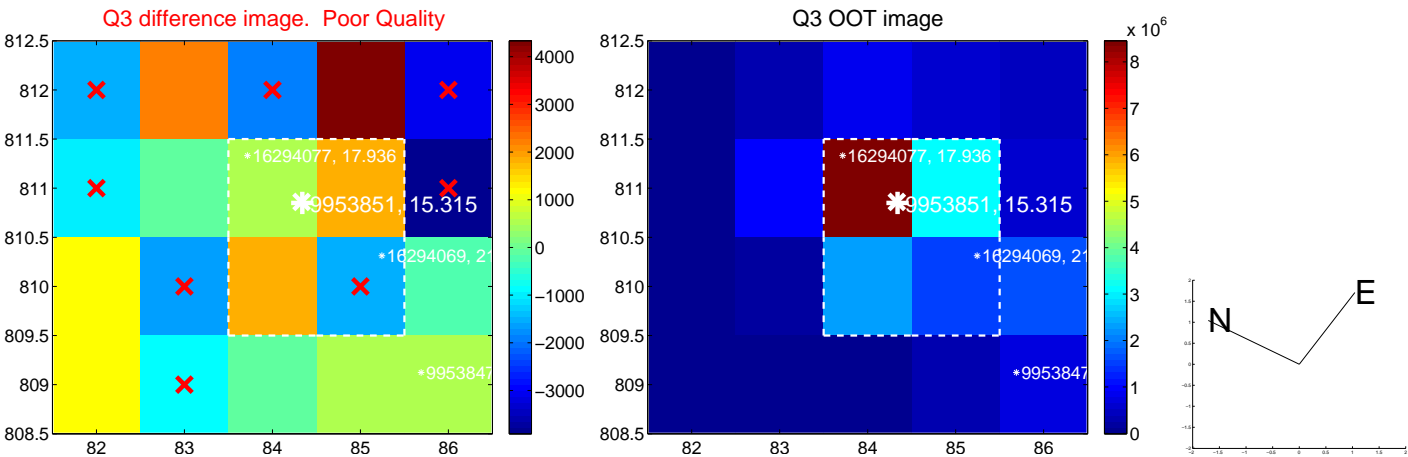
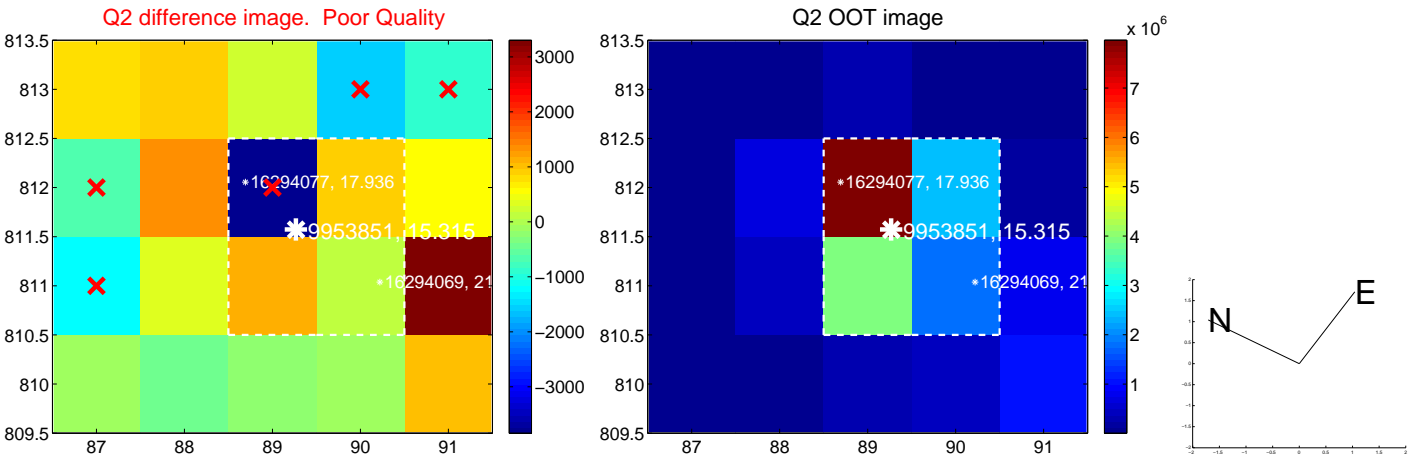
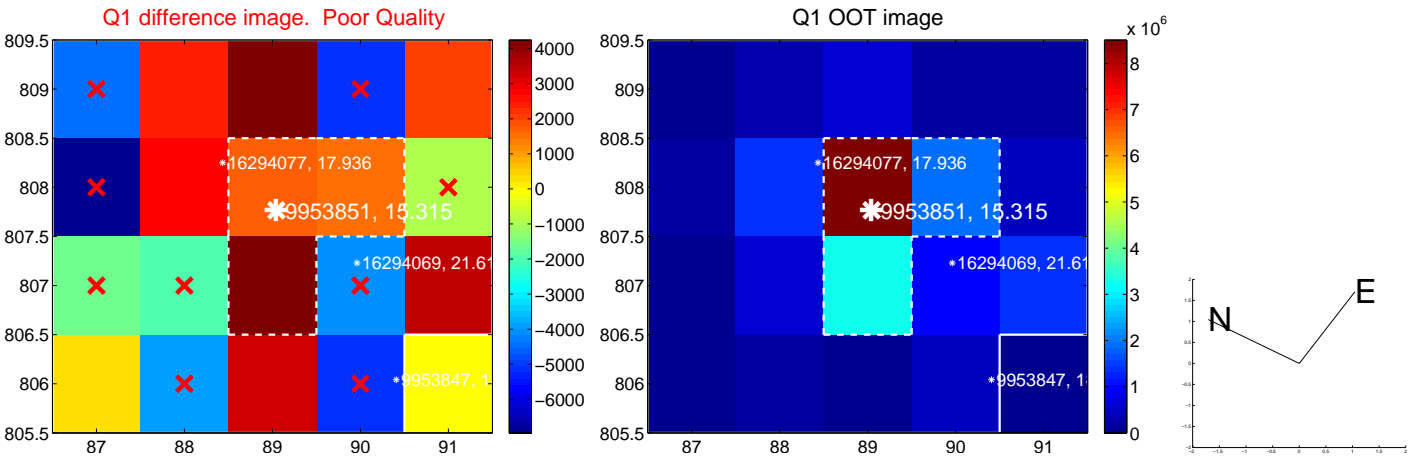
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.946 ± 5.001	0.19	-0.790 ± 4.524	-0.522 ± 5.952
PRF-fit source offset from KIC position	0.946 ± 4.904	0.19	-0.825 ± 4.524	-0.463 ± 5.952
photometric centroid source offset	1.51 ± 0.78	1.93	-0.50 ± 0.67	-1.43 ± 0.79

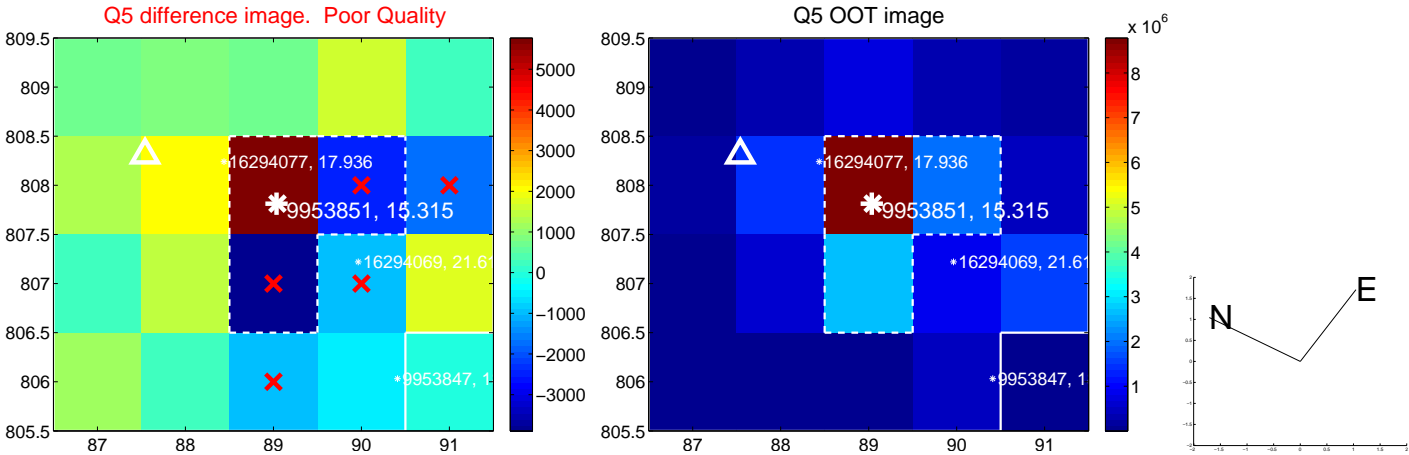


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

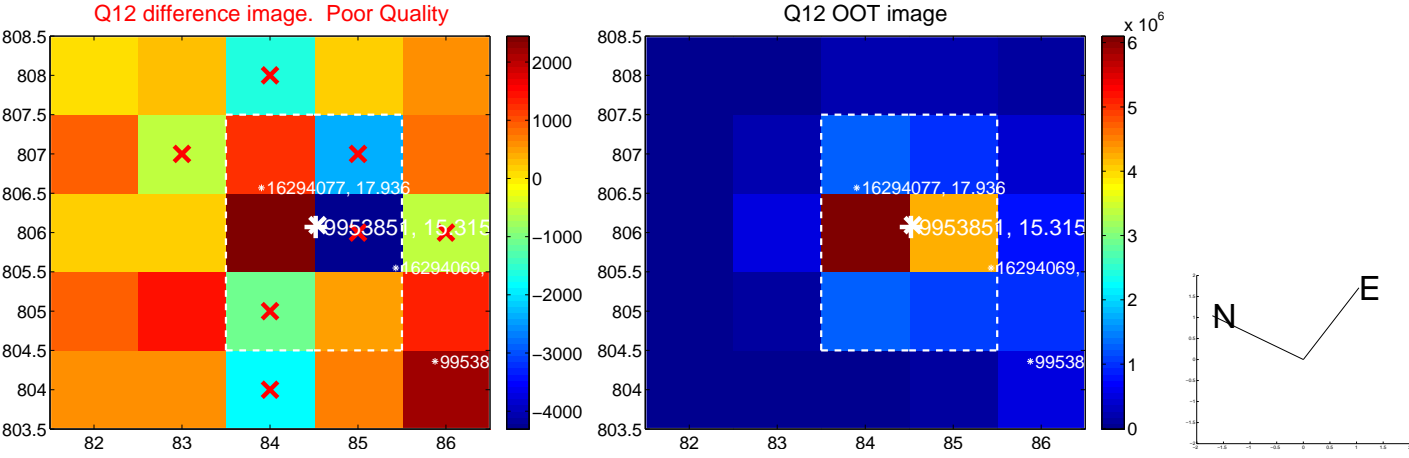
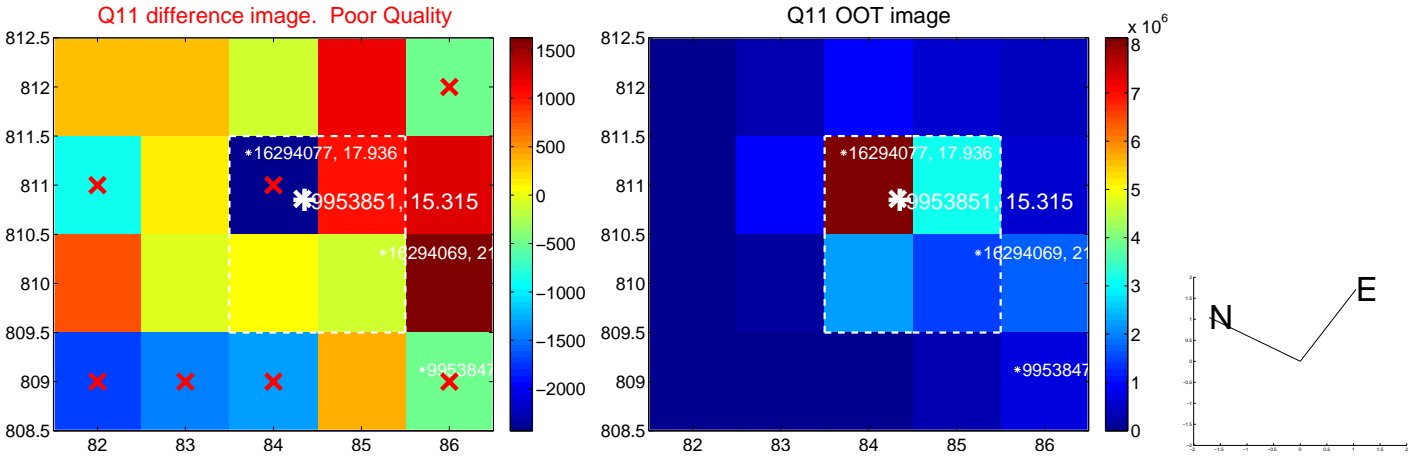
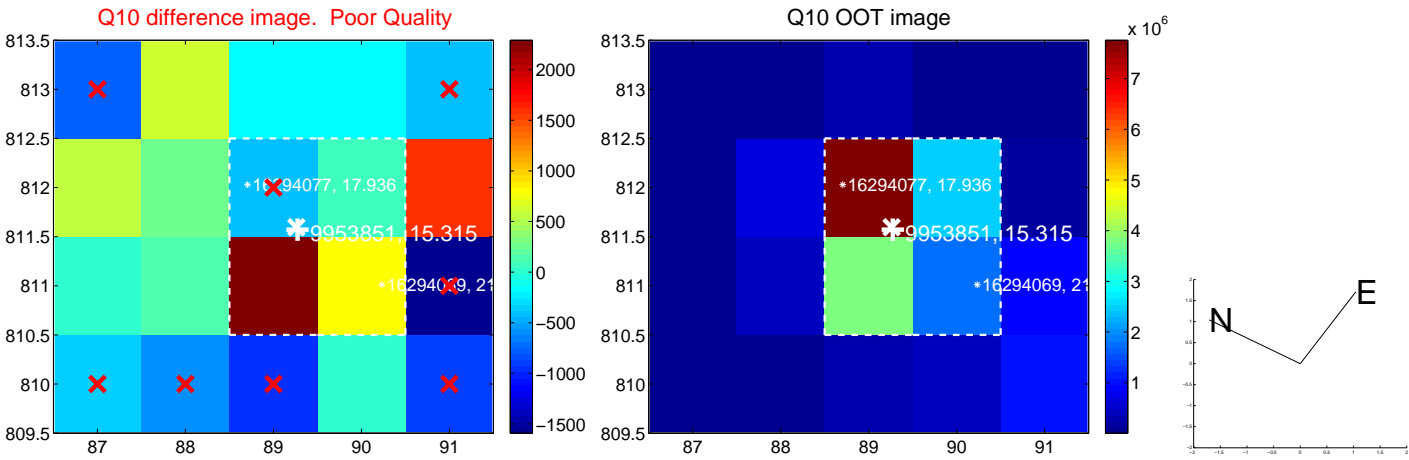
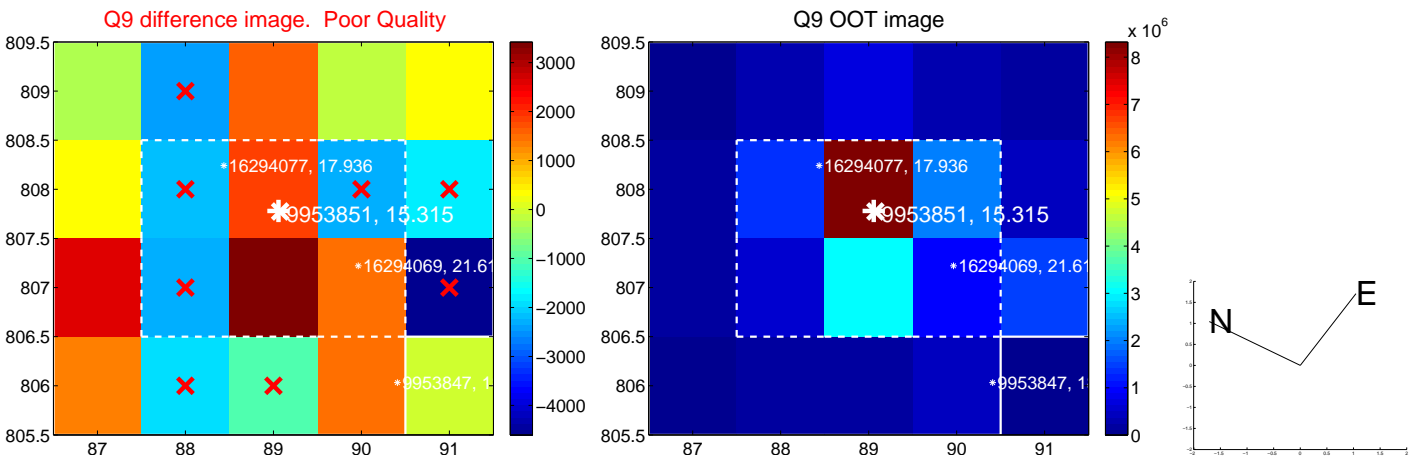
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



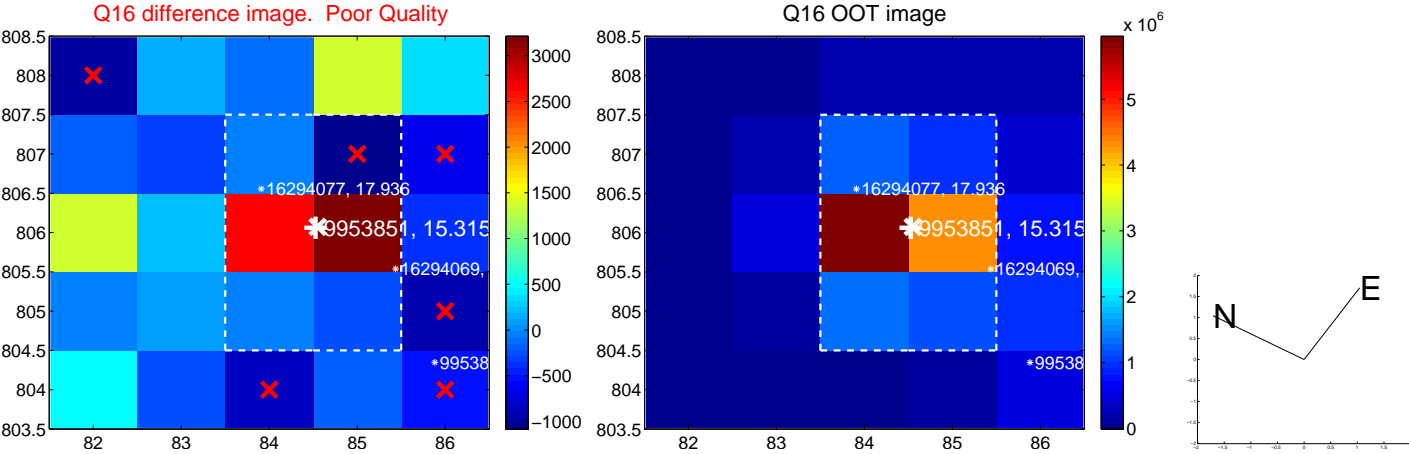
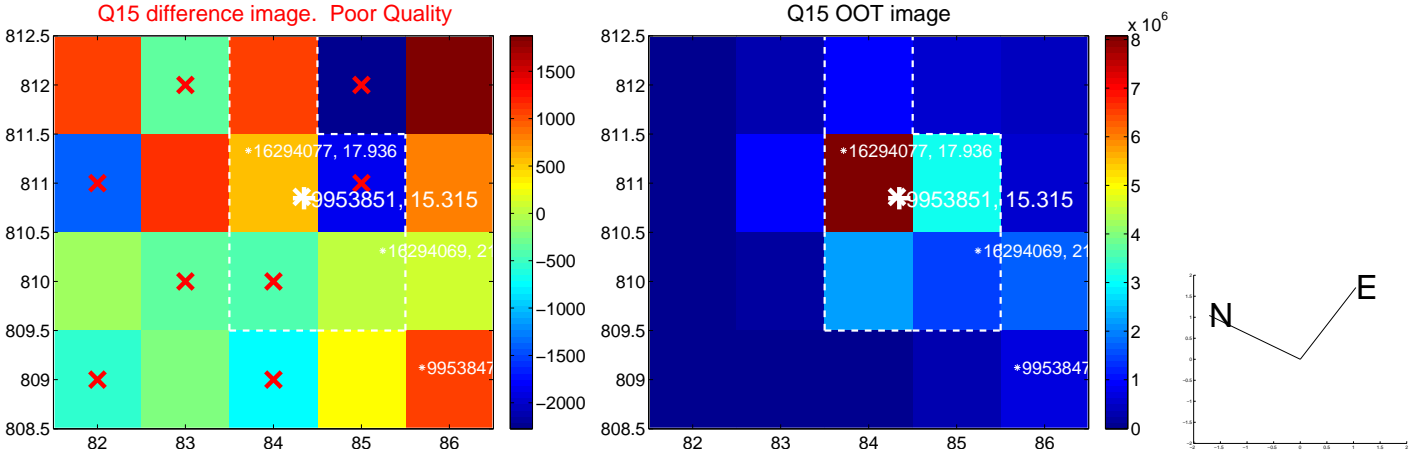
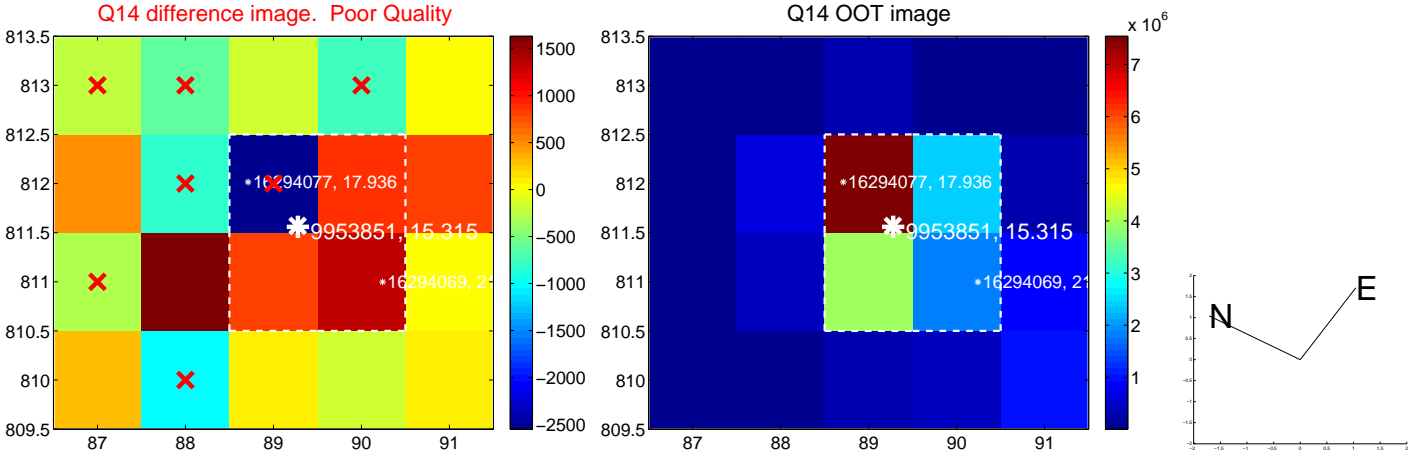
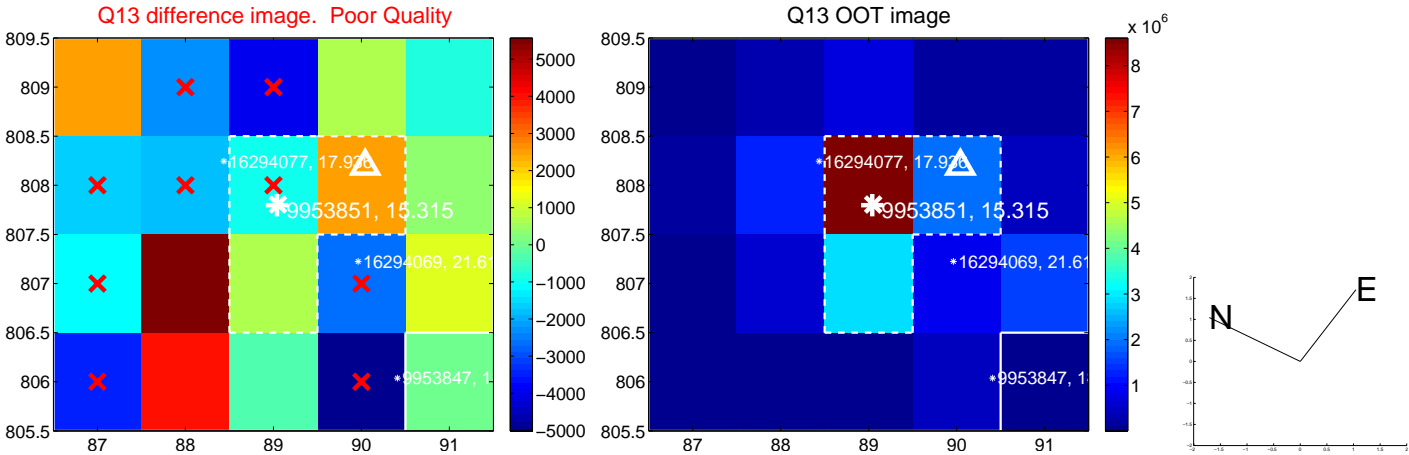
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



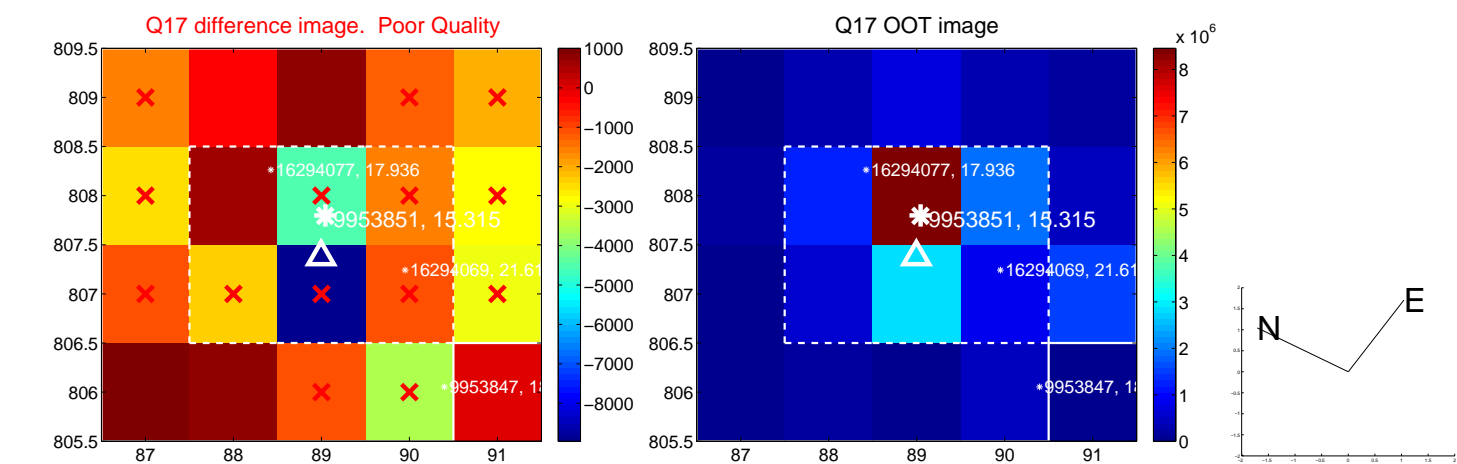
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



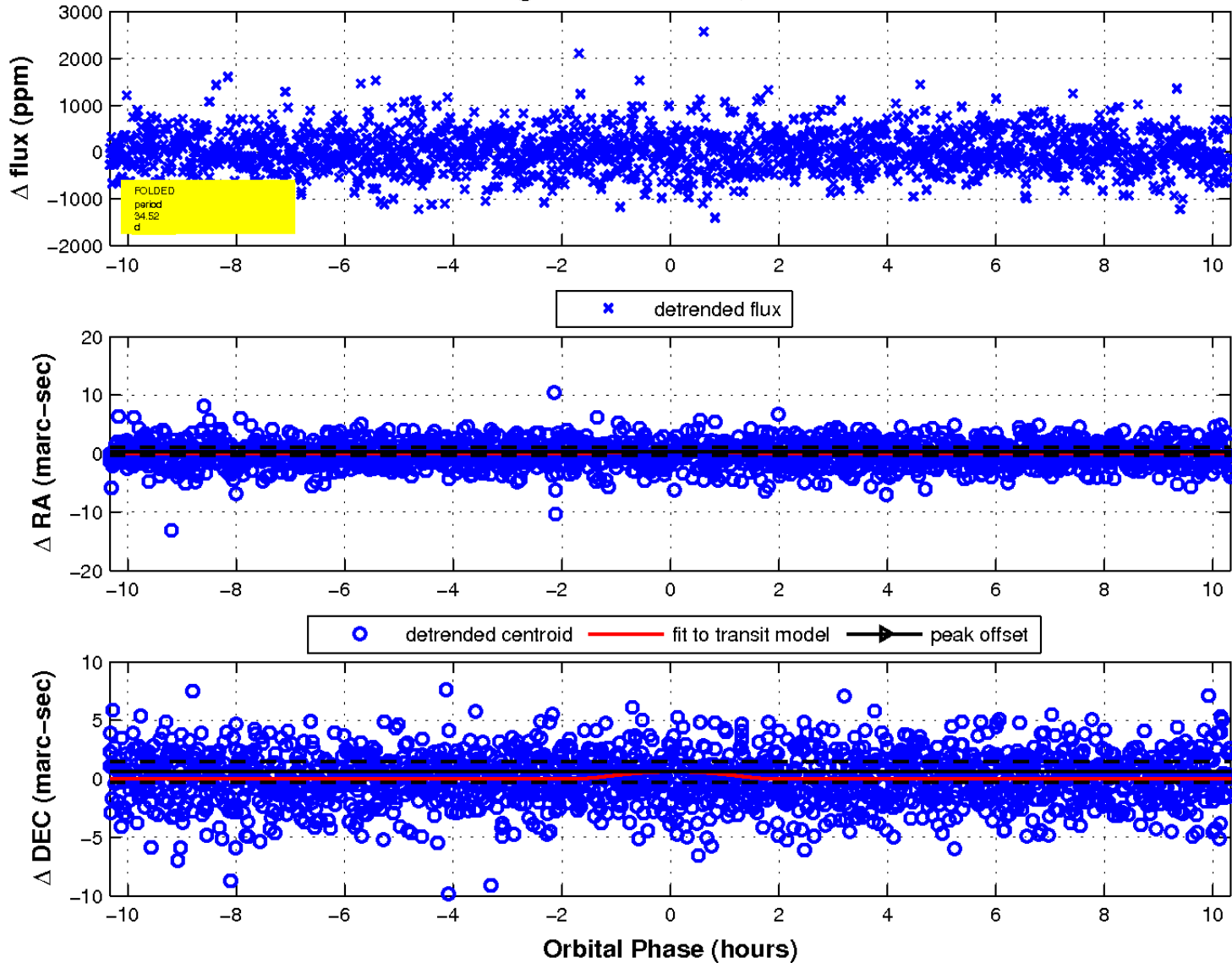
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

