

KIC 009528212

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})
009528212-01	OBS	No	4.933950	132.686062	47.3	20.354	8.5	9.7	0.97	5872	0.78	331.13
009528212-02	OBS	No	4.933752	135.109725	36.2	27.176	7.8	7.5	0.97	5872	0.58	331.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009528212-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009528212-02	OBS	FP	0.00	1	0	0	0	LPP_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.

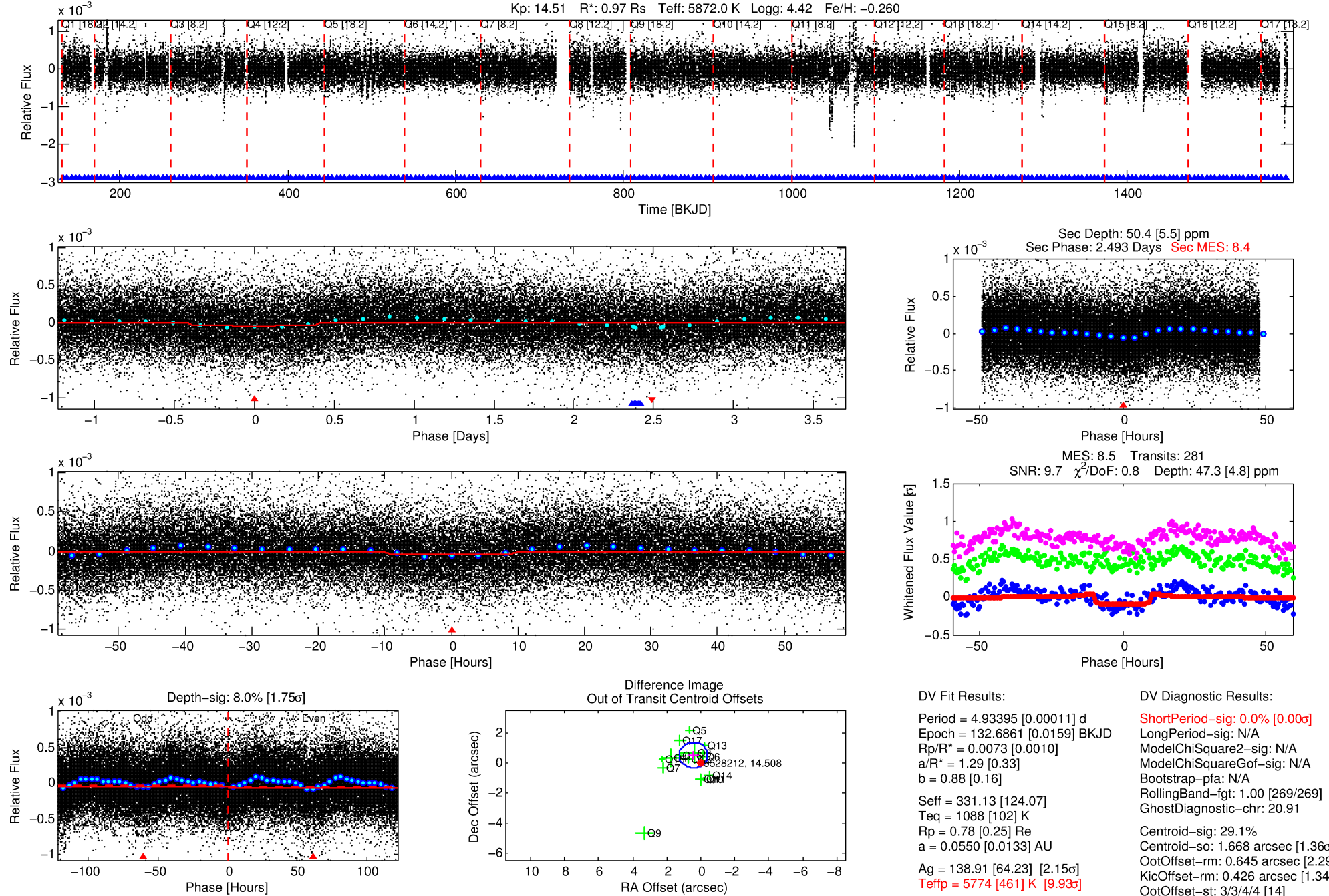
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009528212-01

No Significant Match Found

DV One-Page Summary

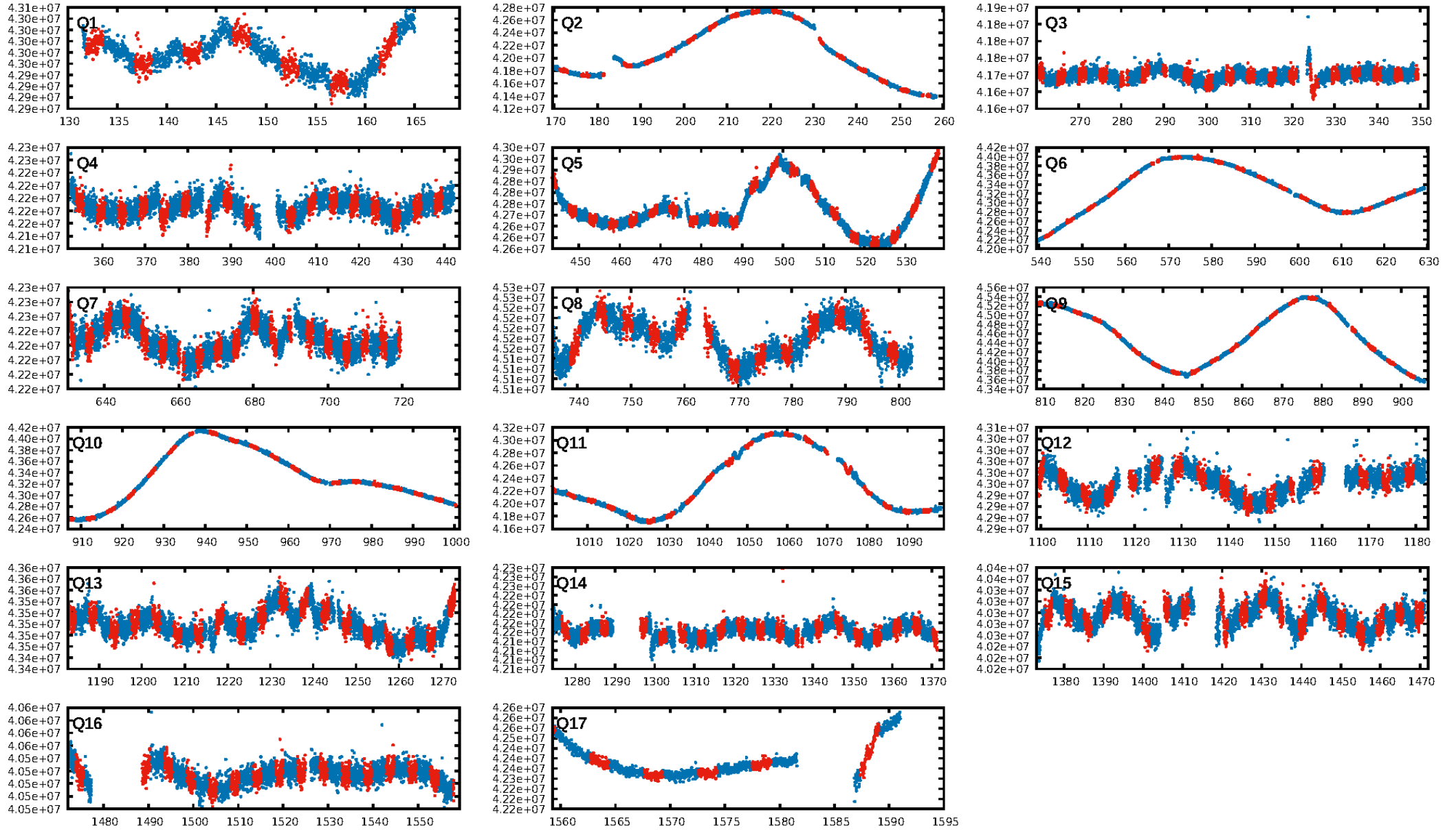
KIC: 9528212 Candidate: 1 of 2 Period: 4.934 d



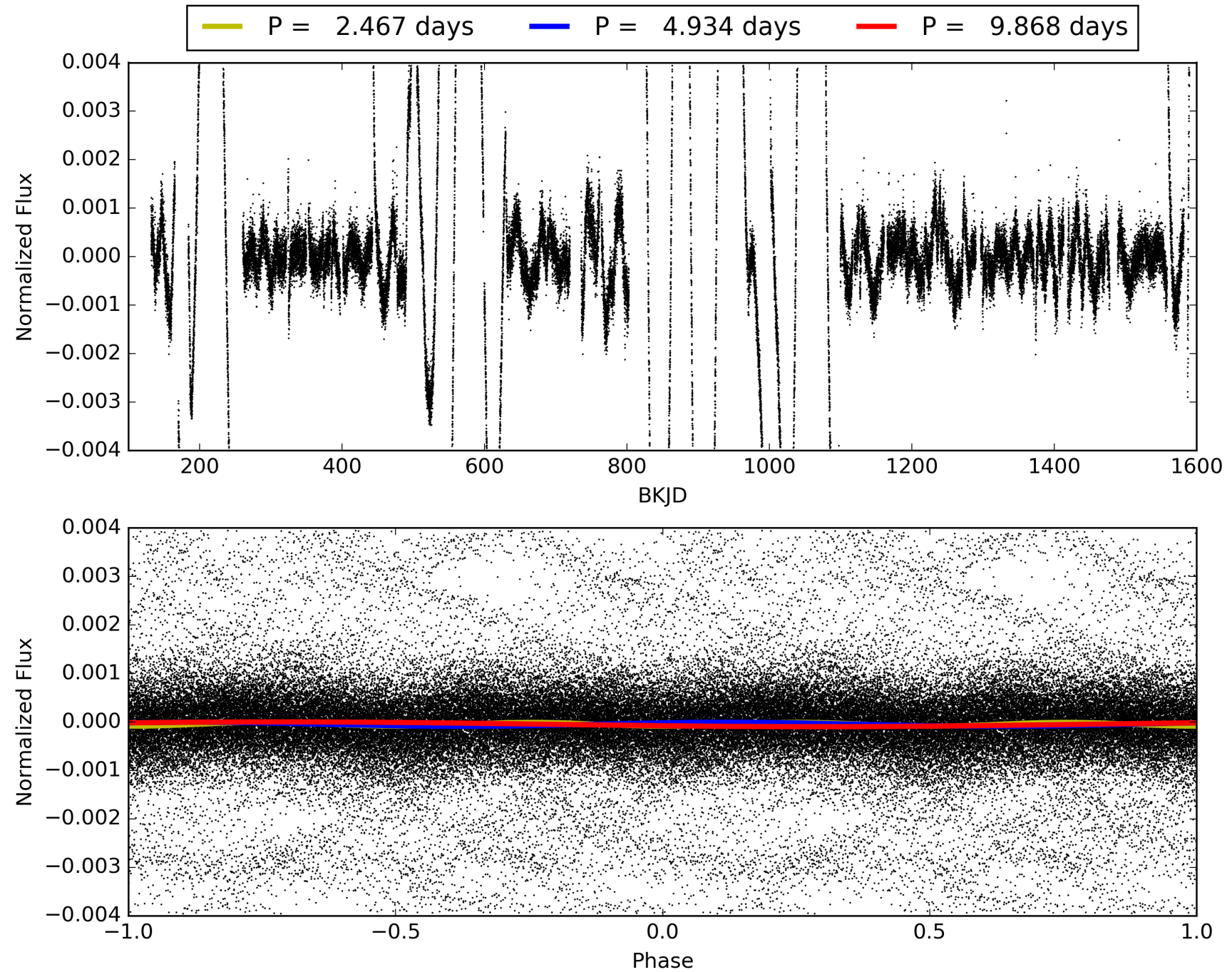
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:36:58 Z

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

TCE 009528212-01, PDC Light Curves

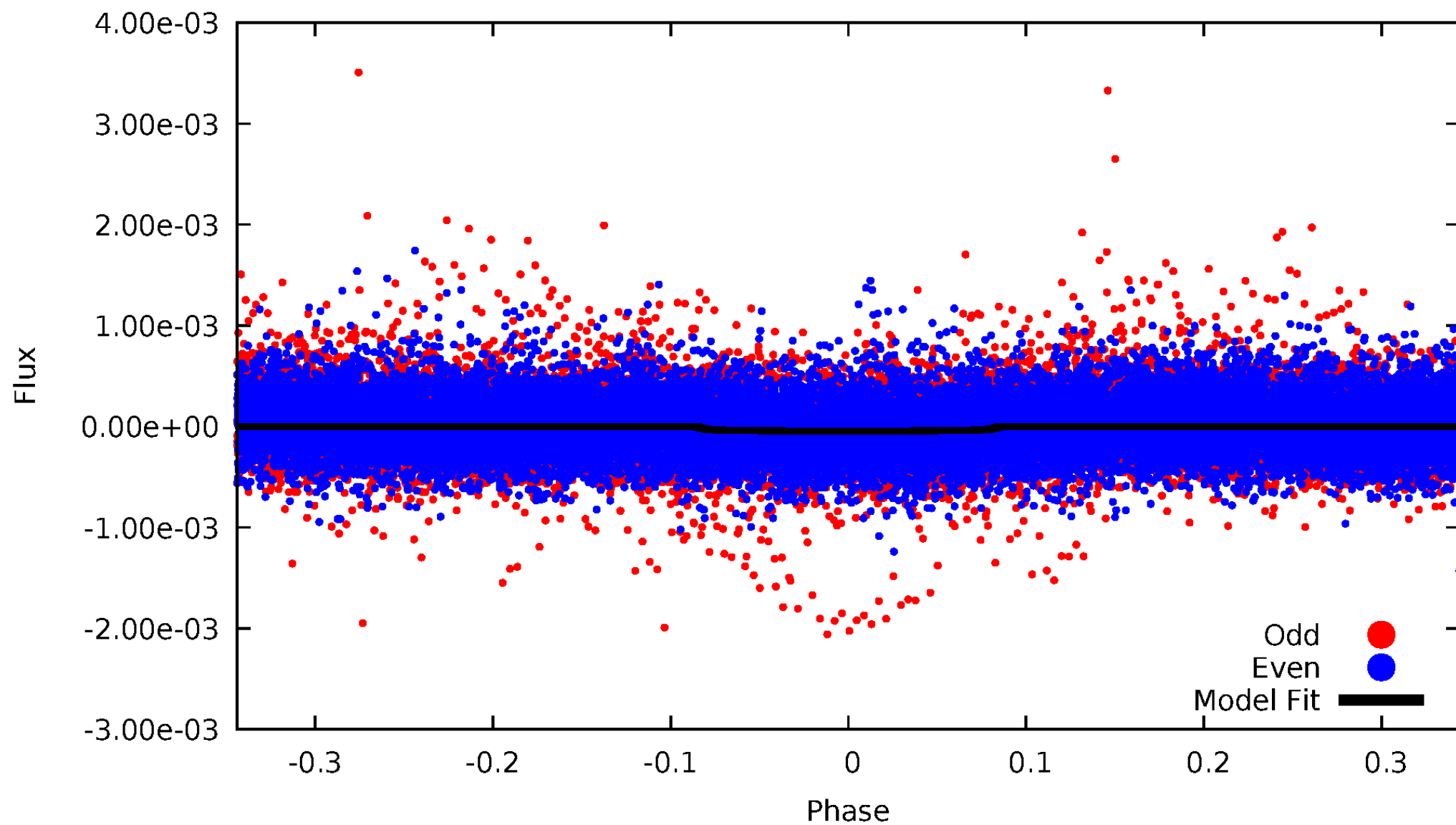


TCE 009528212-01



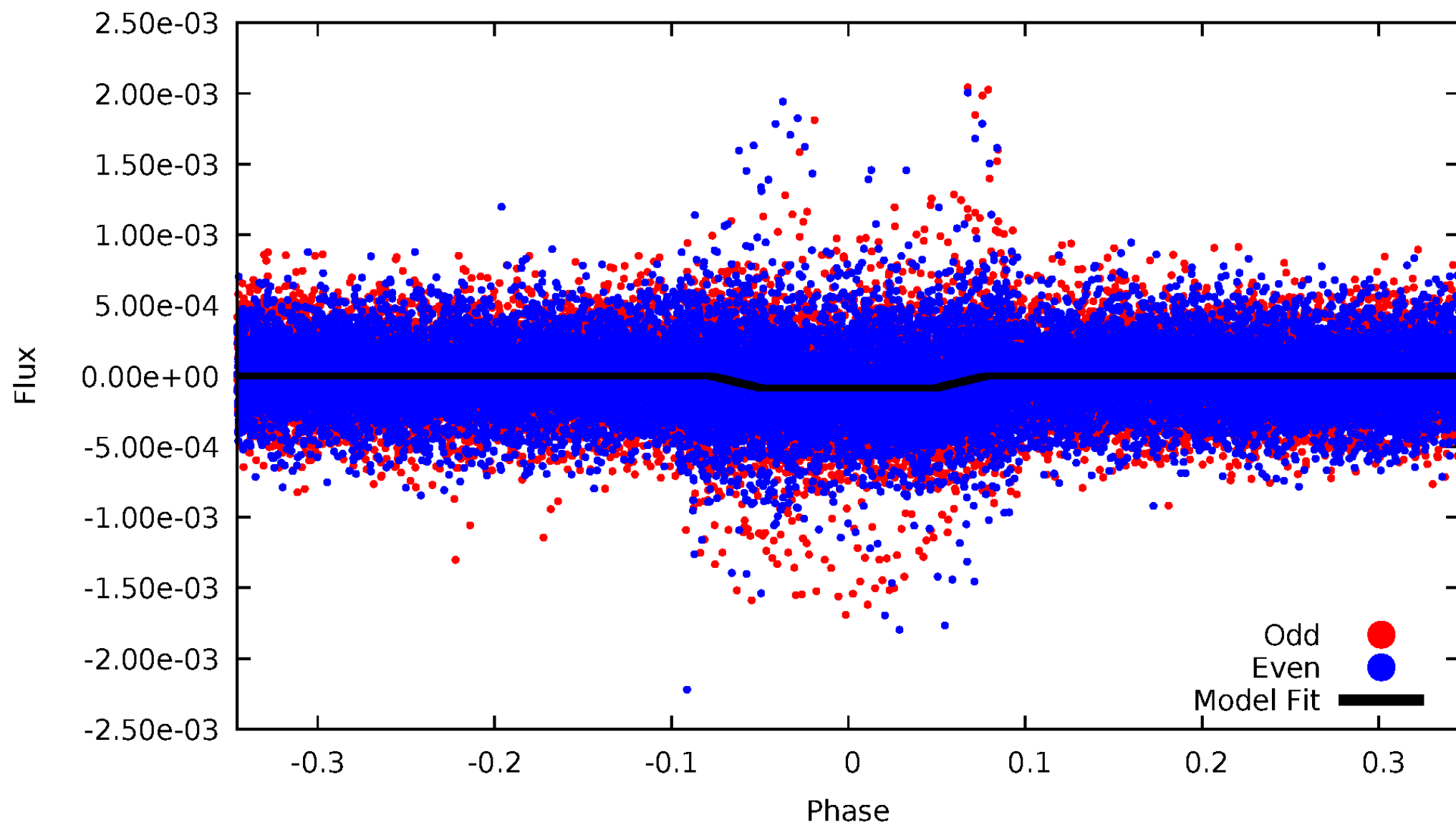
DV Odd/Even

TCE 009528212-01

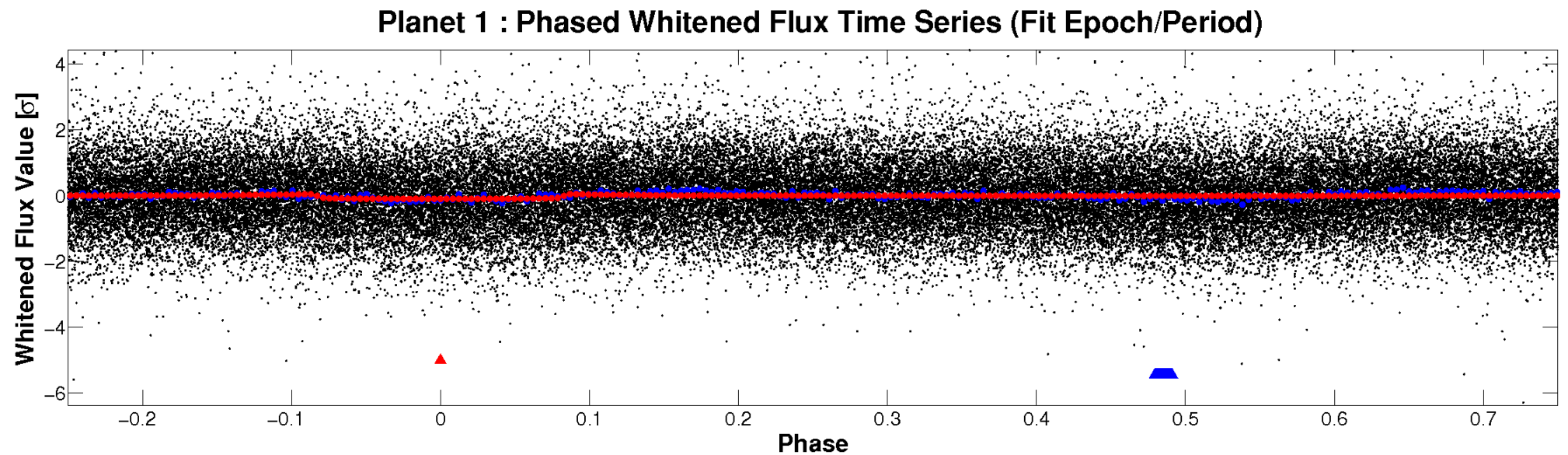
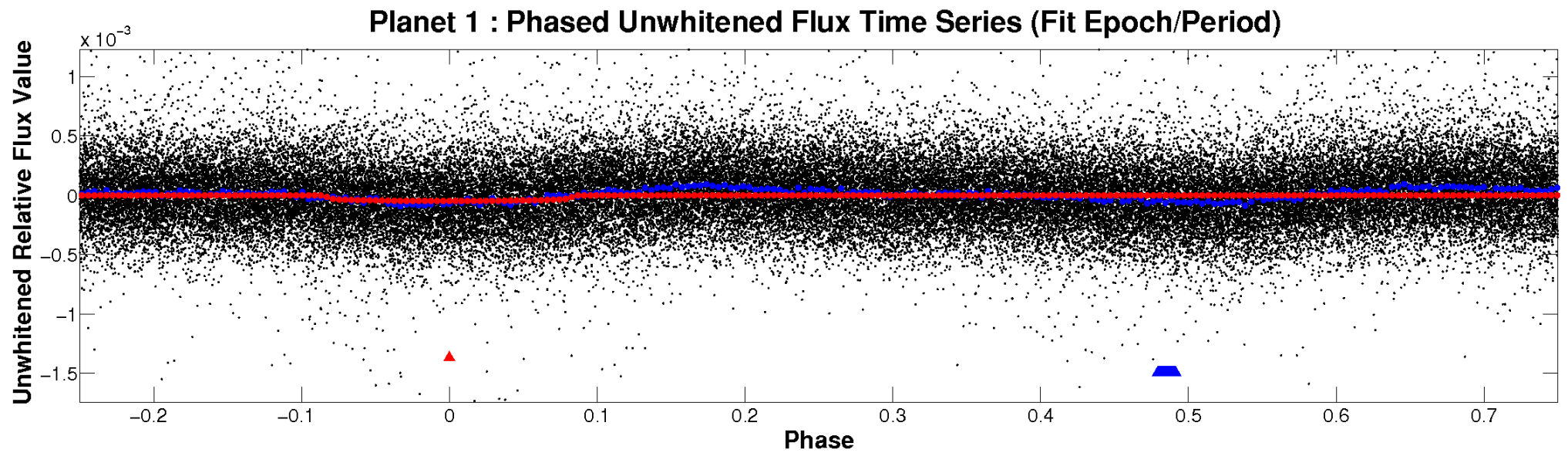


ALT Odd/Even

TCE 009528212-01

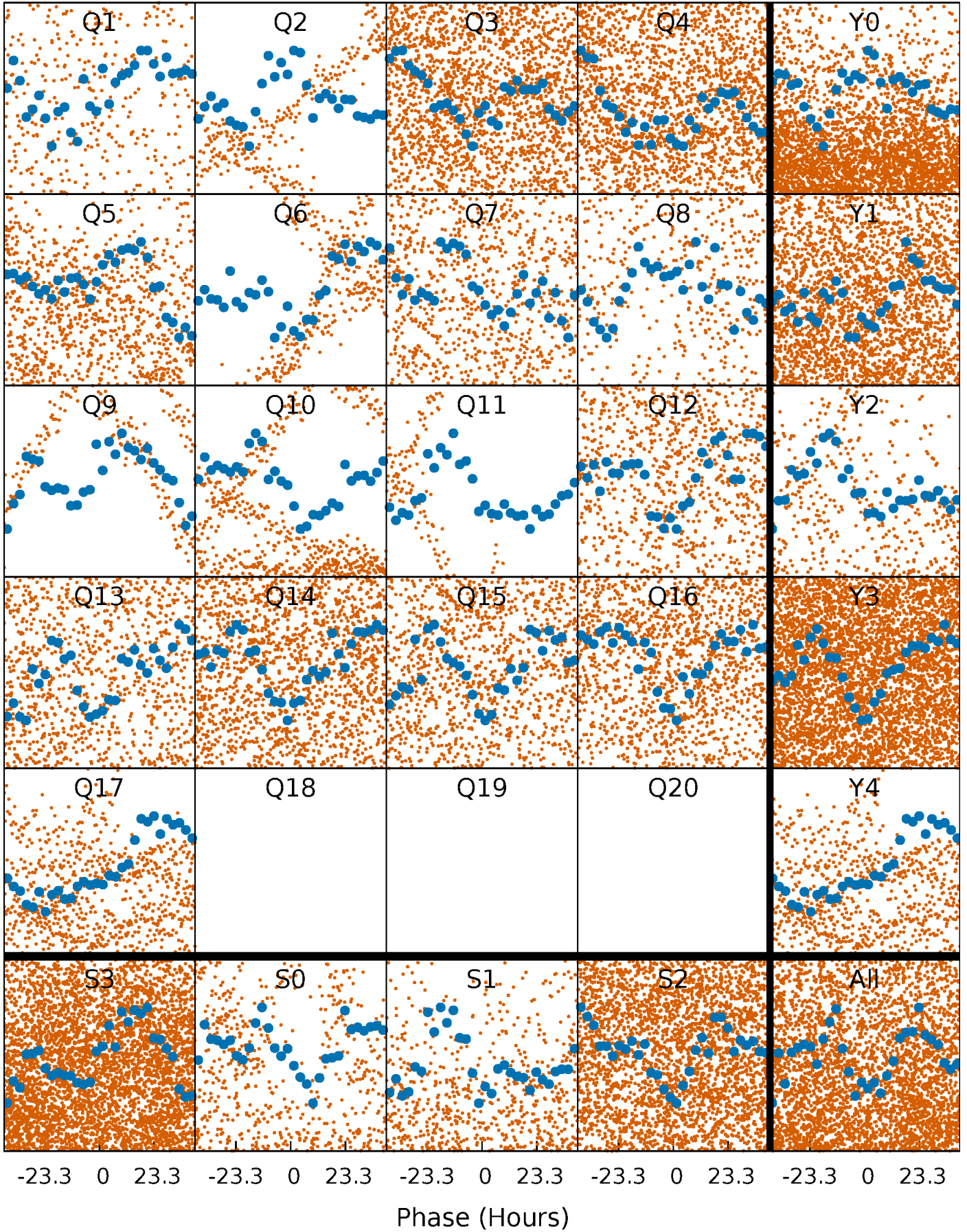


Non-Whitened Vs. Whitened Light Curve



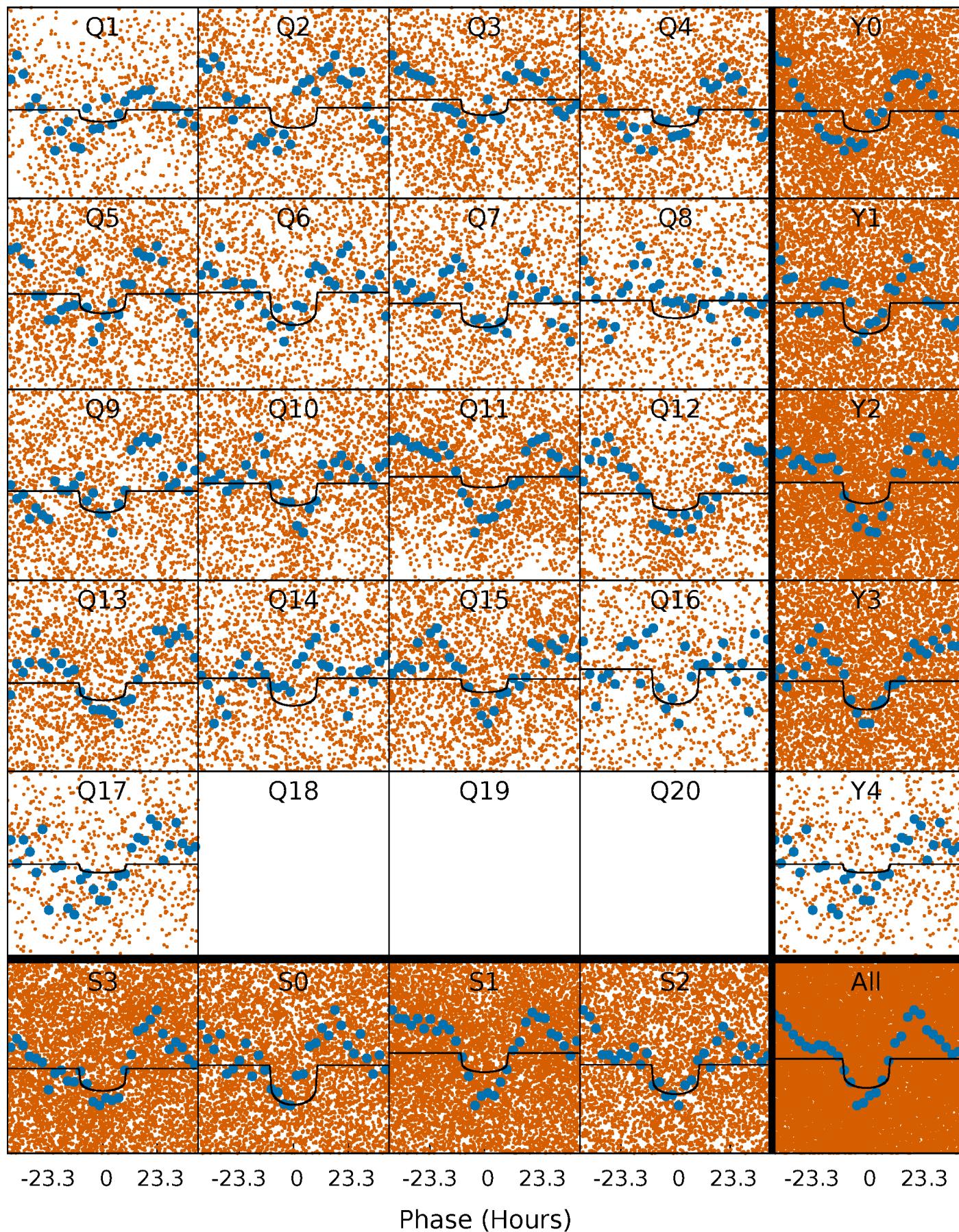
PDC Quarter-Phased Transit Curves

TCE 009528212-01 P= 4.933950 Days $T_0=132.686062$ (BKJD)



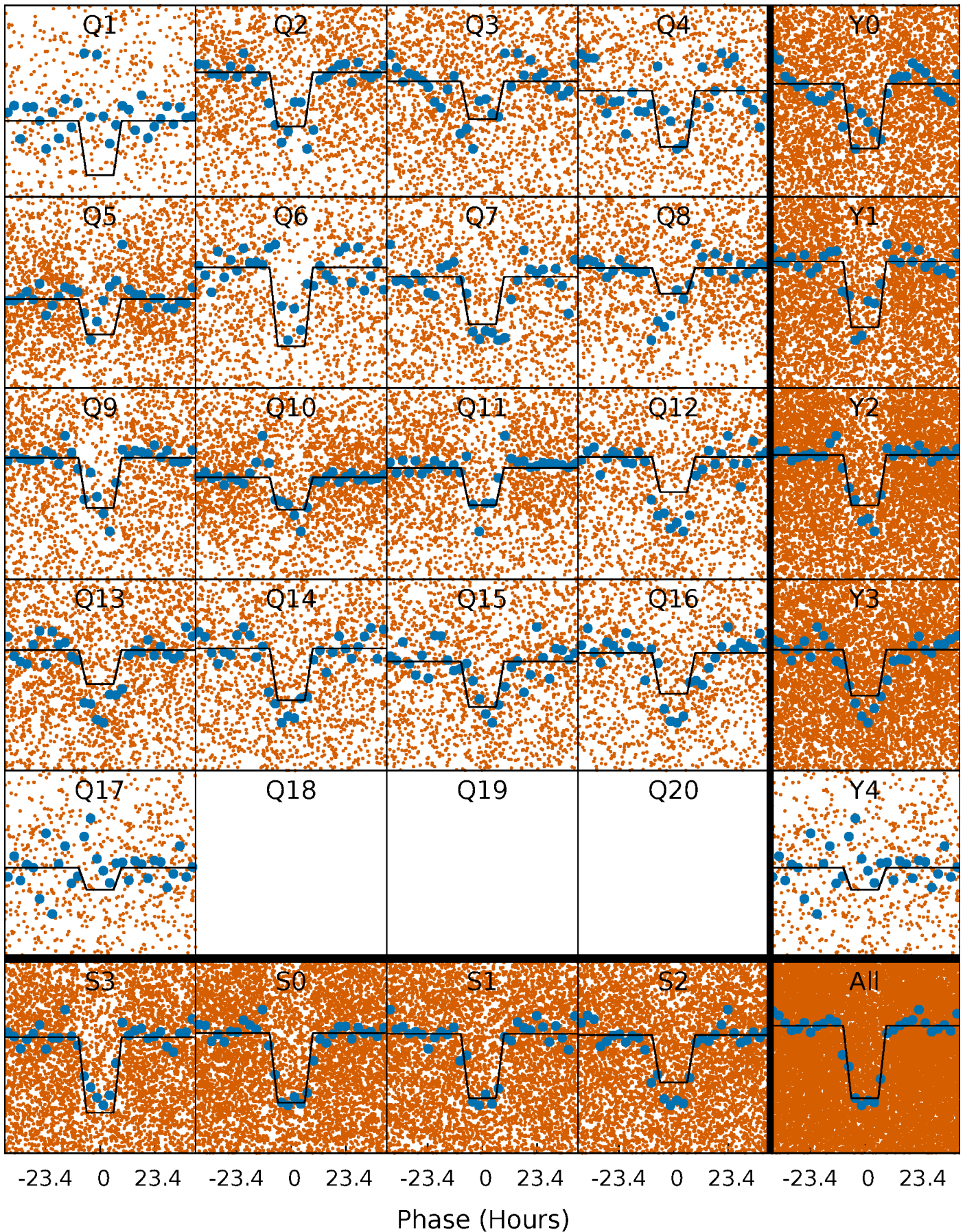
DV Quarter-Phased Transit Curves

TCE 009528212-01 P= 4.933950 Days $T_0=132.686062$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

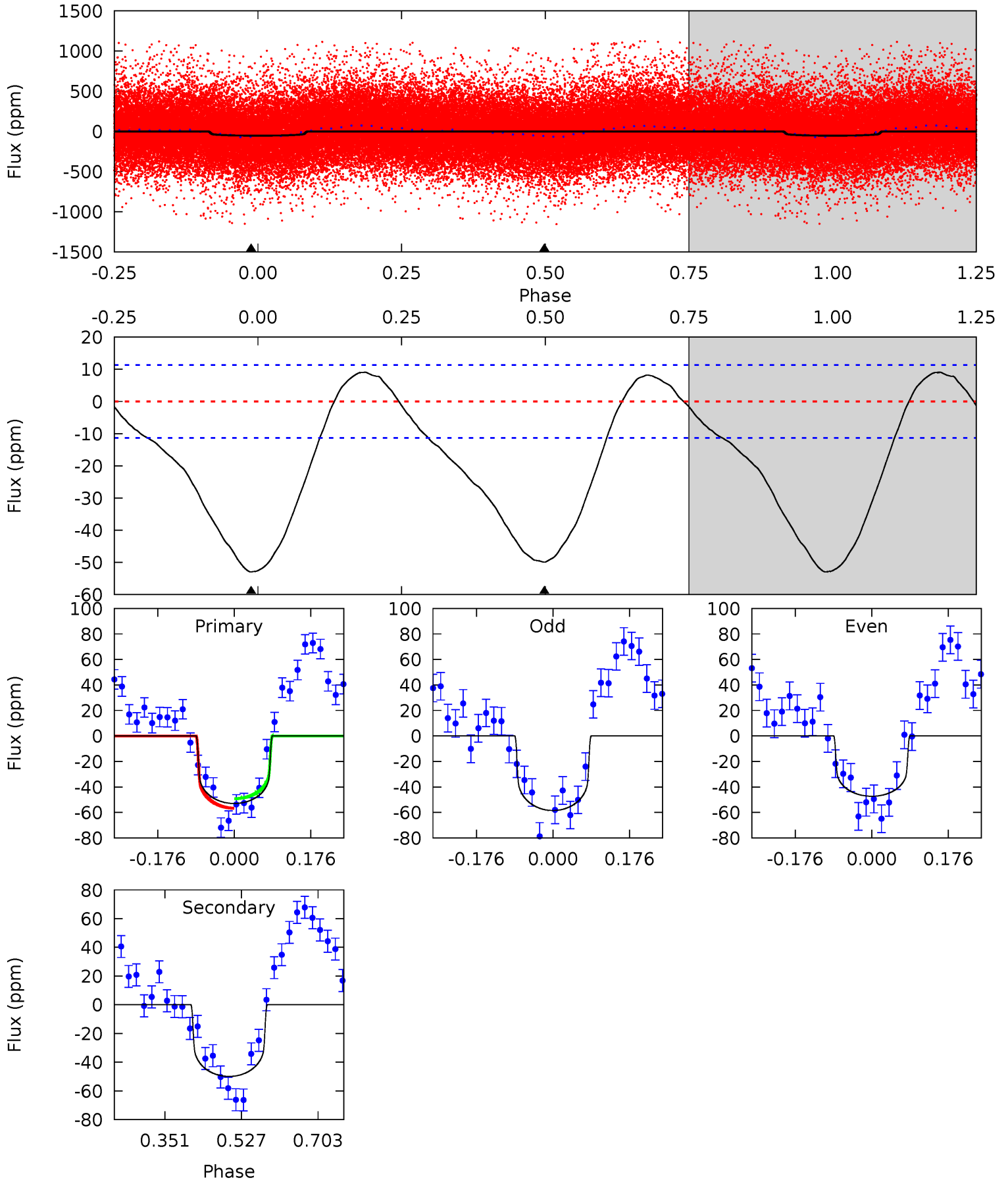
TCE 009528212-01 P= 4.933390 Days $T_0=132.741878$ (BKJD)



DV Model-Shift Uniqueness Test

009528212-01, P = 4.933950 Days, E = 127.752112 Days

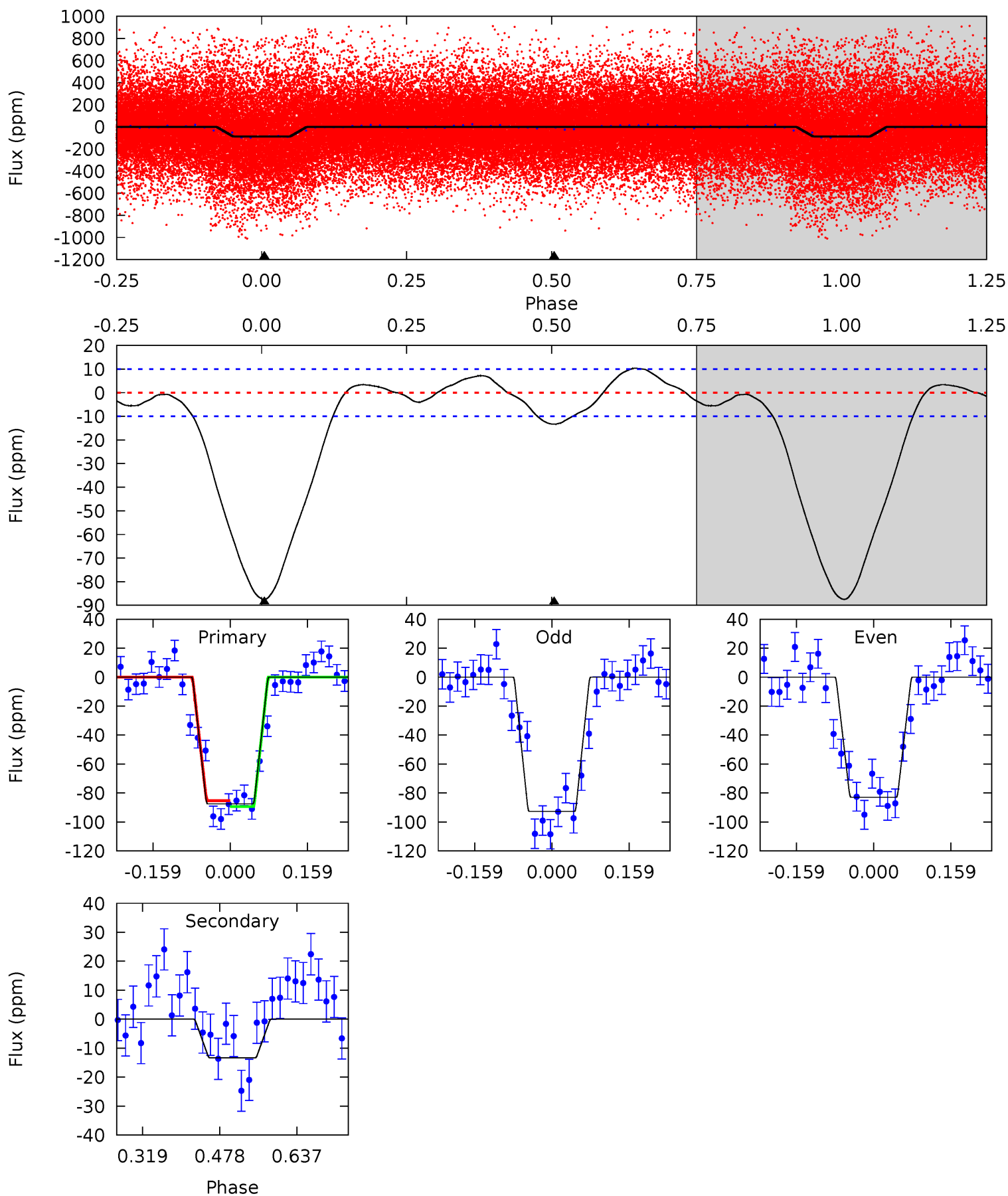
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.7	19.5	0	0	4.45	1.35	3.01	20.7	20.7	19.5	19.5	2.19	1.07	0.15	1.47



Alt Model-Shift Uniqueness Test

009528212-01, P = 4.933390 Days, E = 127.808488 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.2	5.97	0	0	4.47	1.41	1.61	39.2	39.2	5.97	5.97	2.18	0.53	0.11	0.92



Stellar Parameters For KIC 009528212

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5872^{+158}_{-175}	$4.424^{+0.105}_{-0.195}$	$-0.260^{+0.300}_{-0.300}$	$0.969^{+0.278}_{-0.139}$	$0.909^{+0.119}_{-0.097}$	$1.408^{+0.737}_{-0.695}$
	+3%/-3%	+2%/-4%	+115%/-115%	+29%/-14%	+13%/-11%	+52%/-49%
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 009528212-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-50 ± 3	$0.81^{+0.15}_{-0.15}$	1532^{+109}_{-79}	5729^{+473}_{-345}	128^{+59}_{-38}
Alt.	-13 ± 2	$1.00^{+0.19}_{-0.15}$	1537^{+117}_{-85}	3991^{+230}_{-205}	22^{+9}_{-7}

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

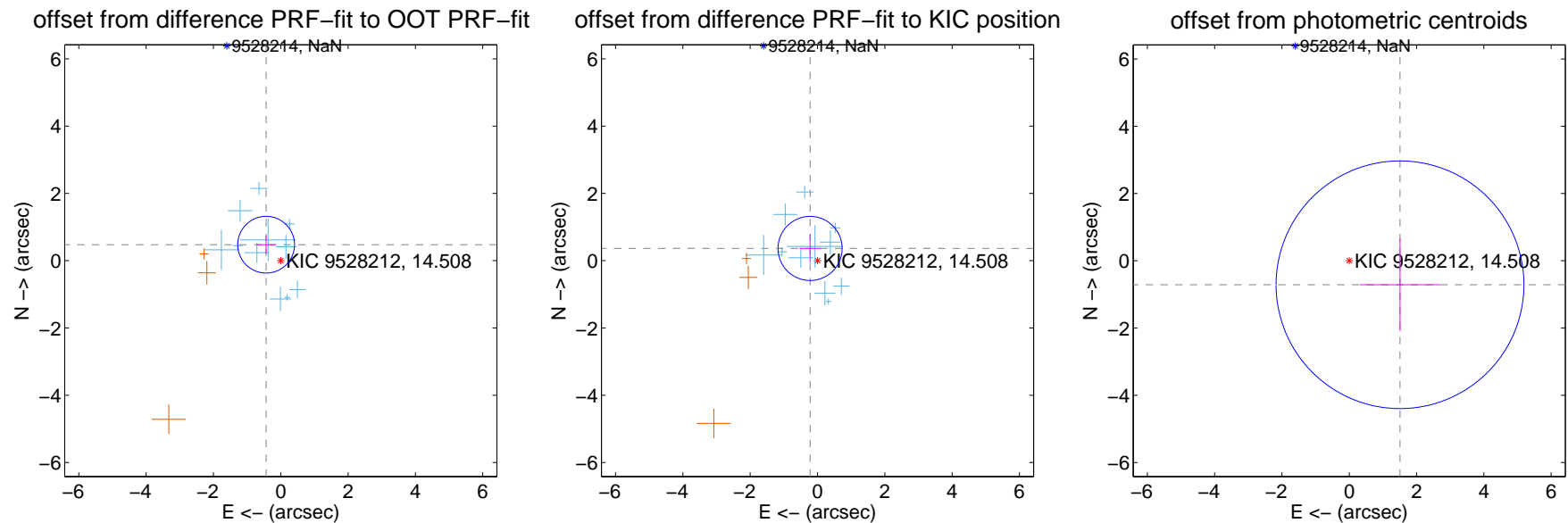
DV Centroid Data

Supplemental centroid analysis for 009528212-01. Kepler magnitude: 14.51. Transit SNR 9.74

There are 11 quarters with good PRF difference image offsets

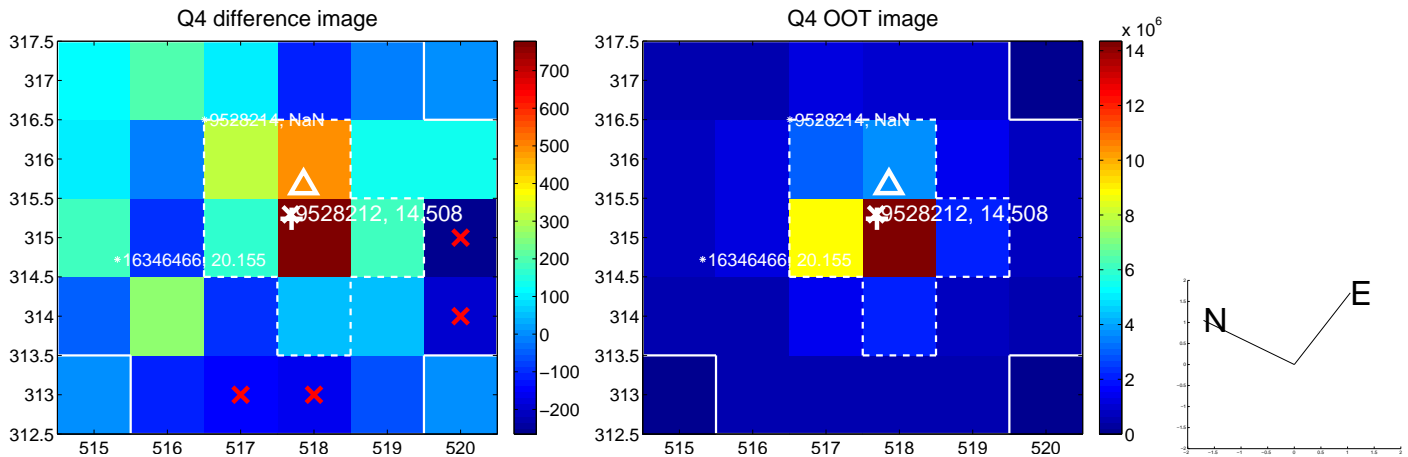
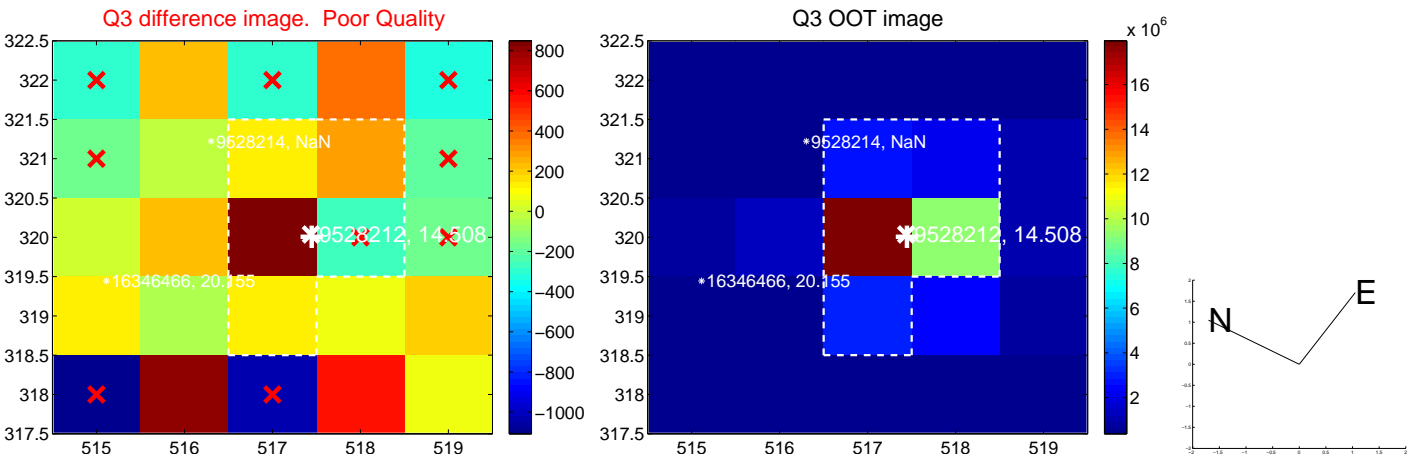
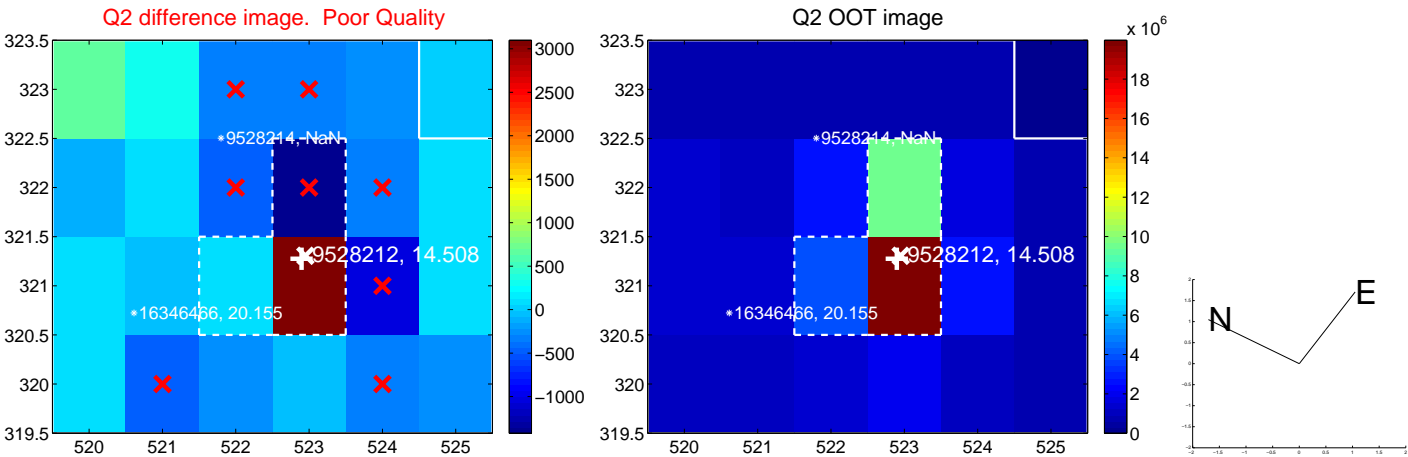
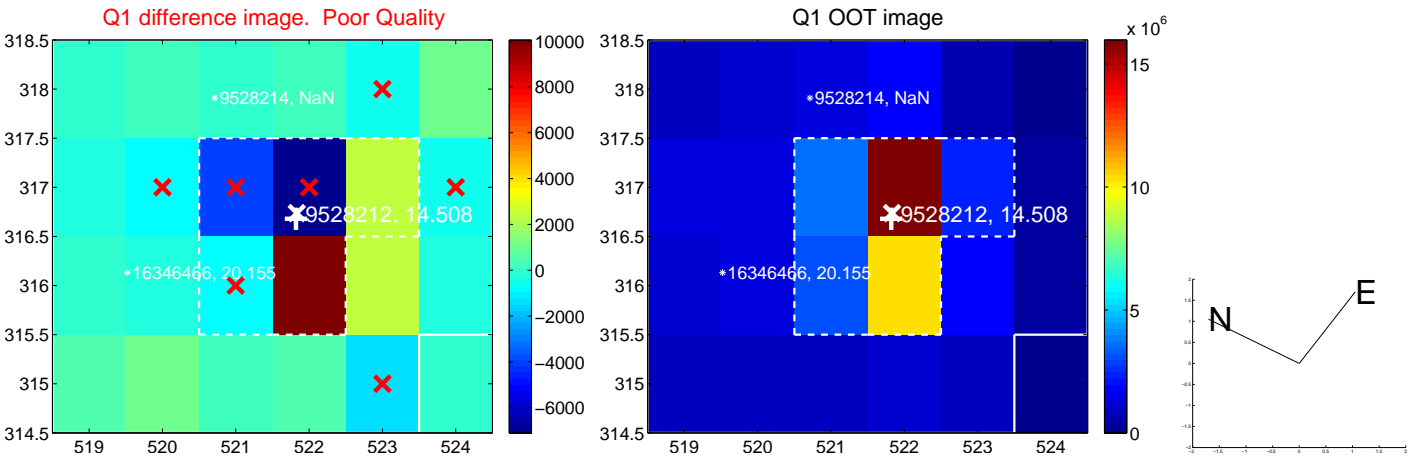
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.645 ± 0.281	2.29	0.435 ± 0.294	0.476 ± 0.270
PRF-fit source offset from KIC position	0.426 ± 0.318	1.34	0.220 ± 0.315	0.365 ± 0.420
photometric centroid source offset	1.67 ± 1.23	1.36	-1.51 ± 1.19	-0.71 ± 1.38

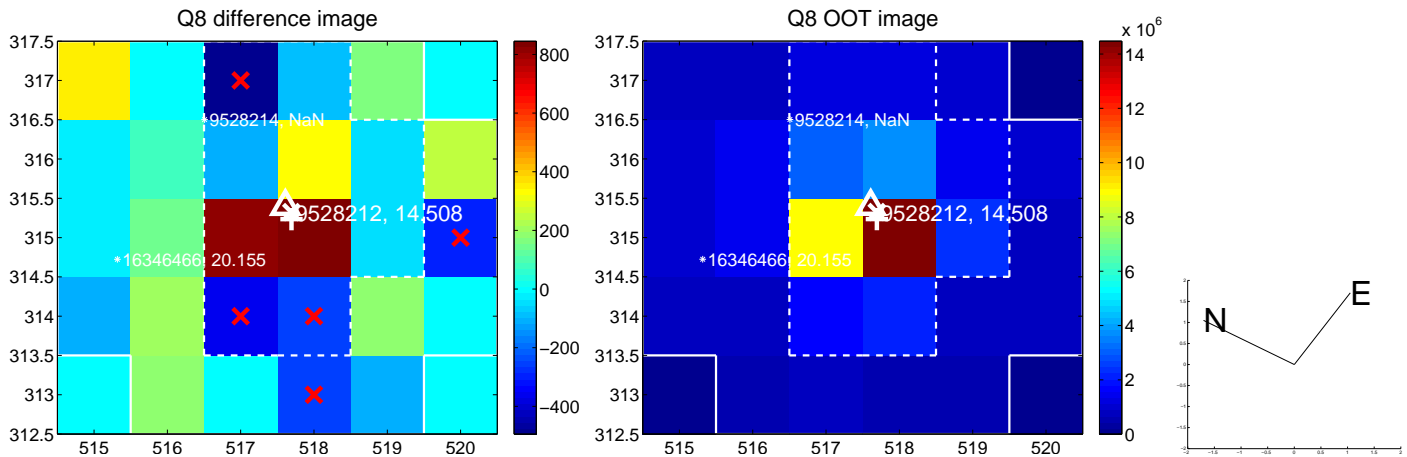
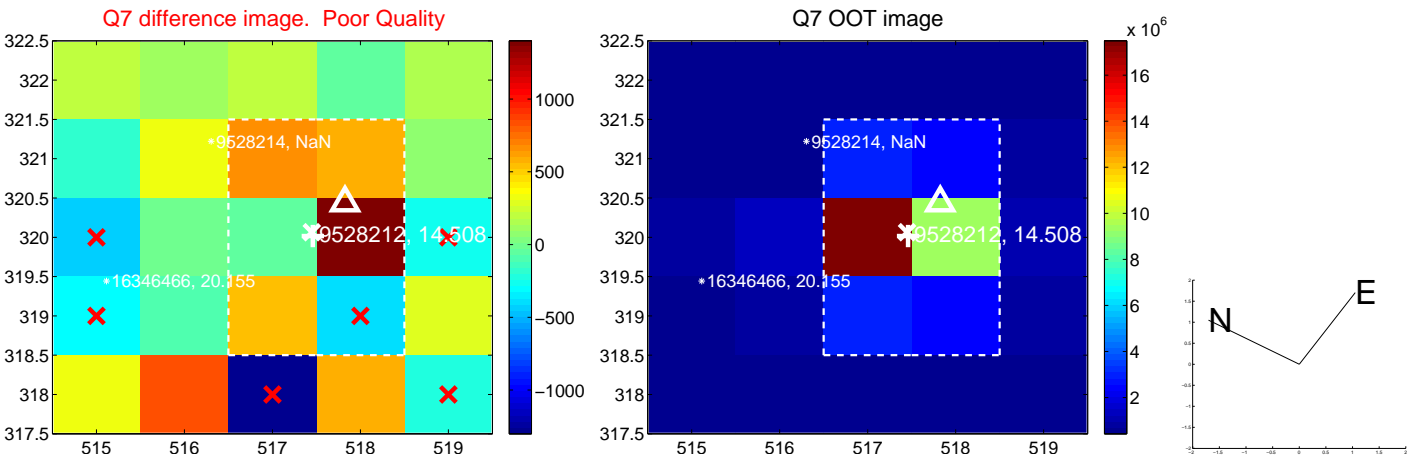
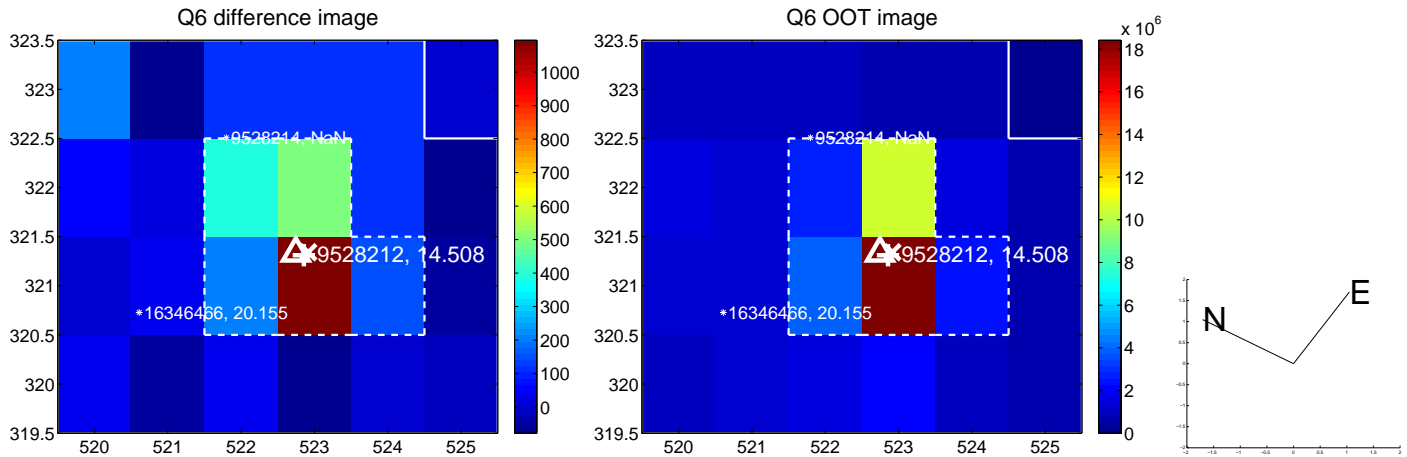
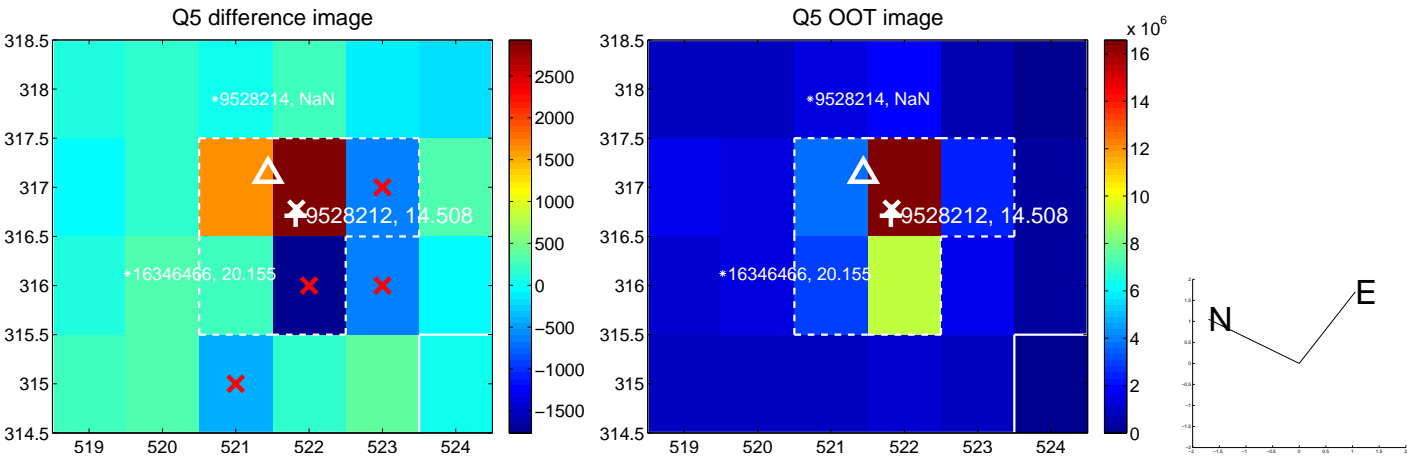


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

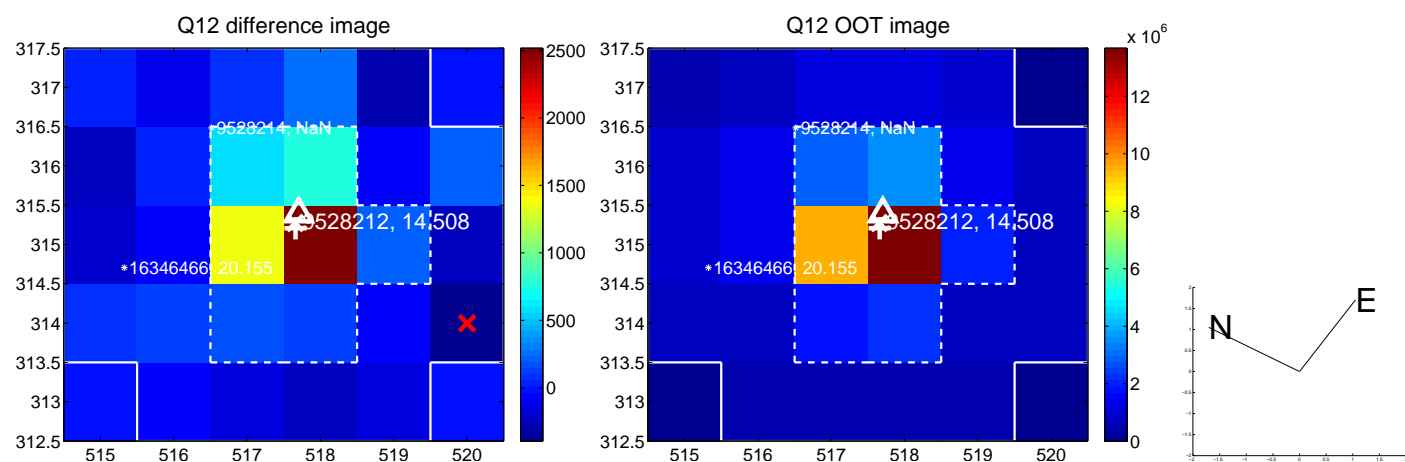
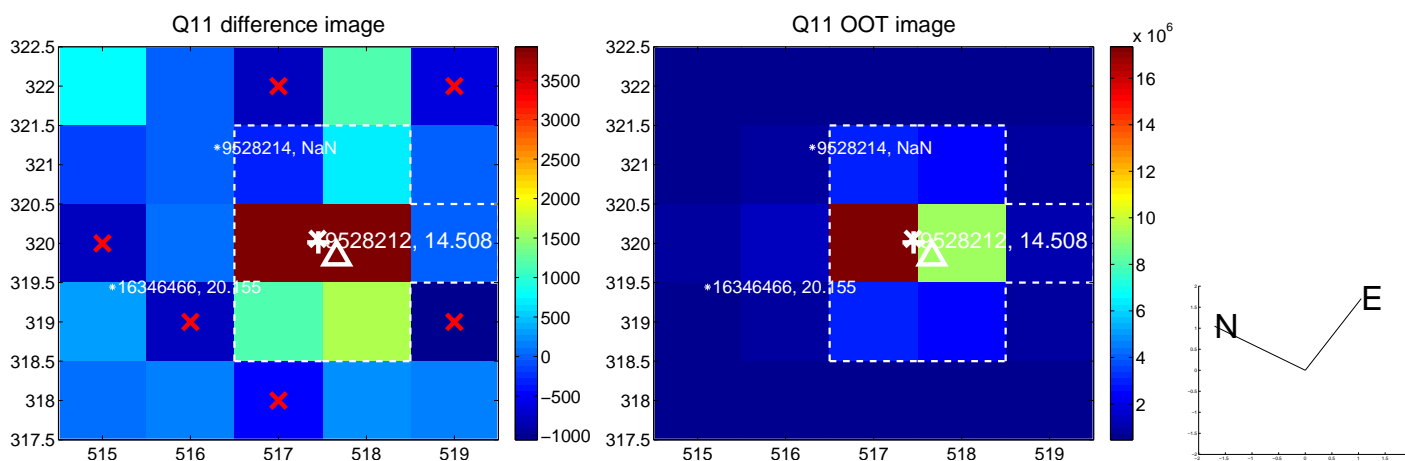
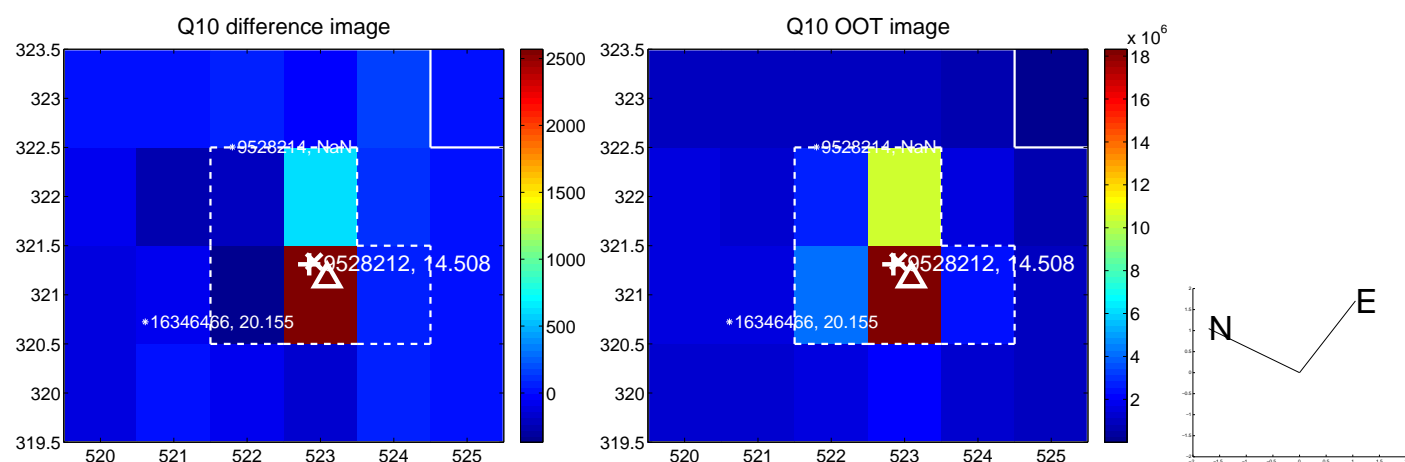
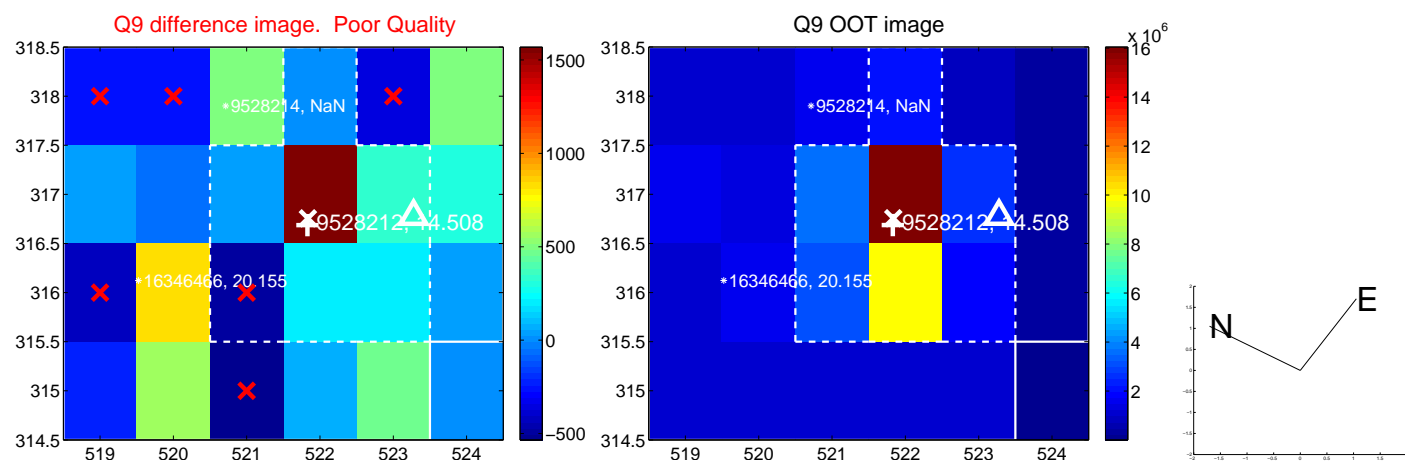
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



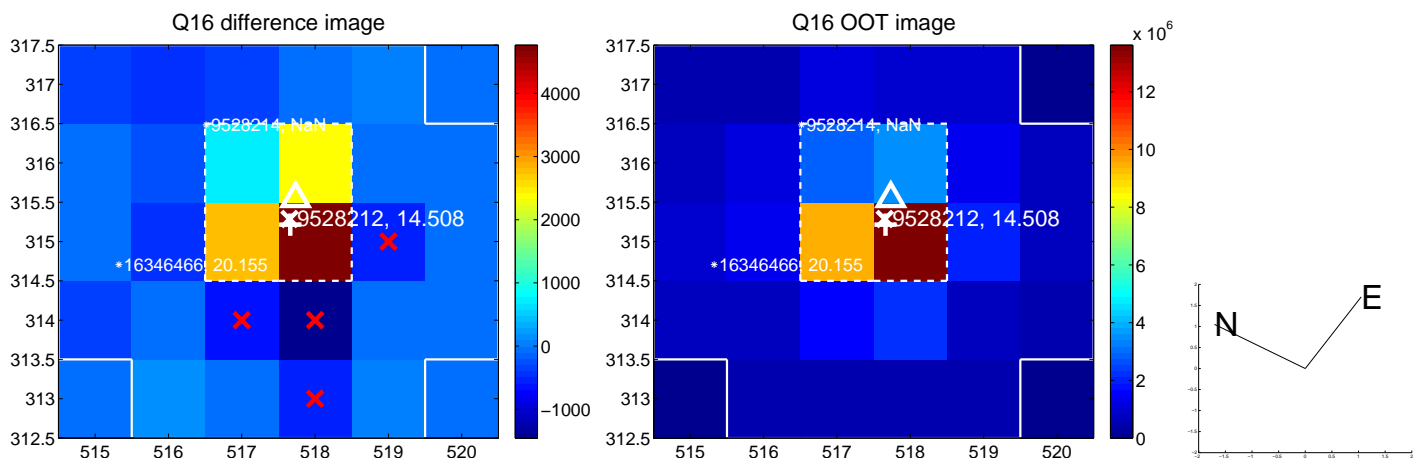
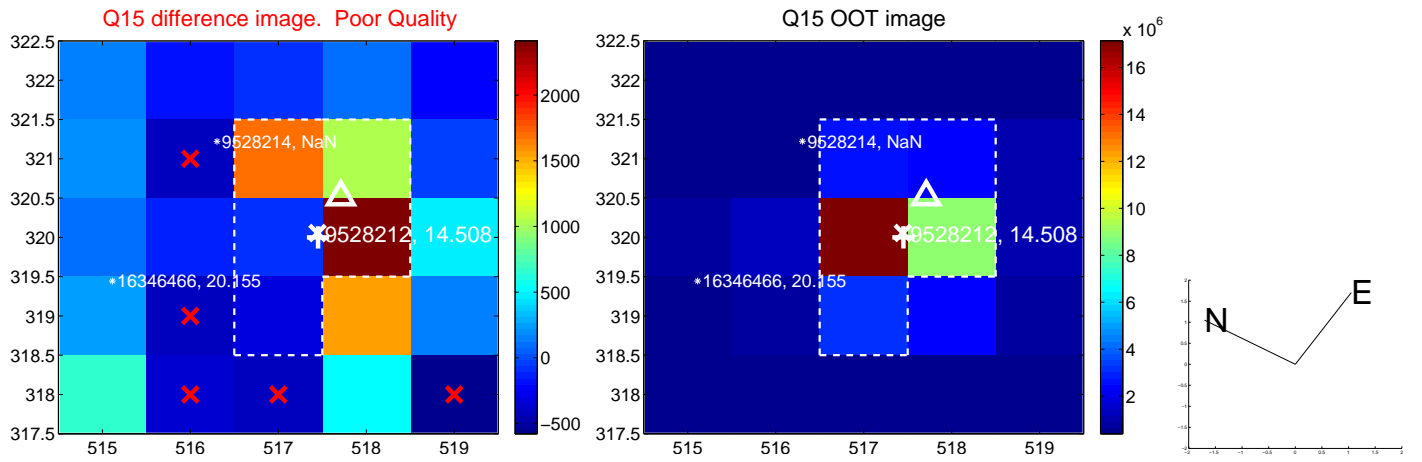
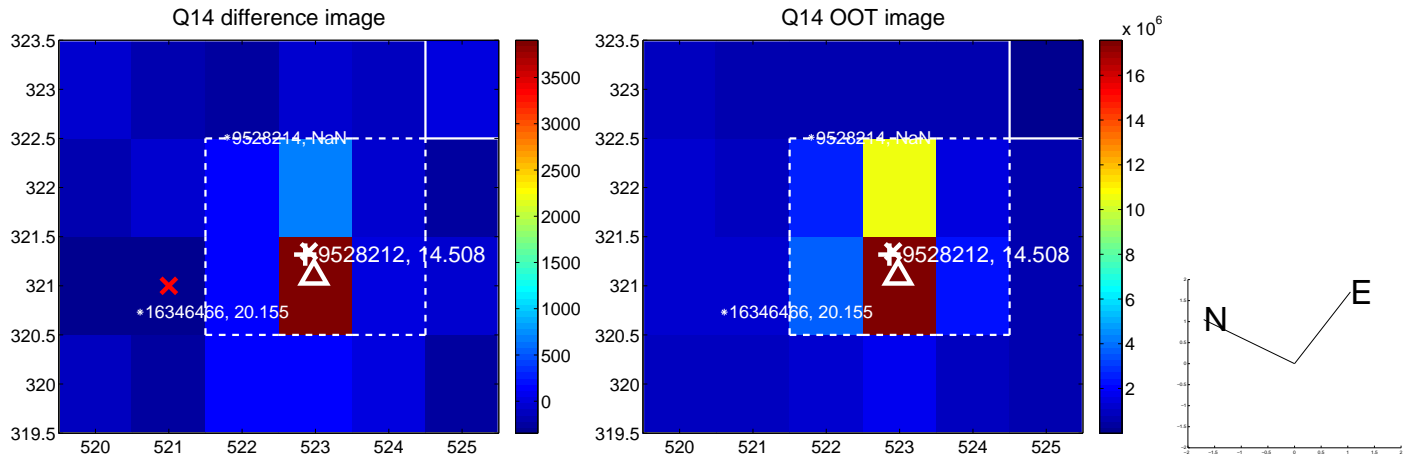
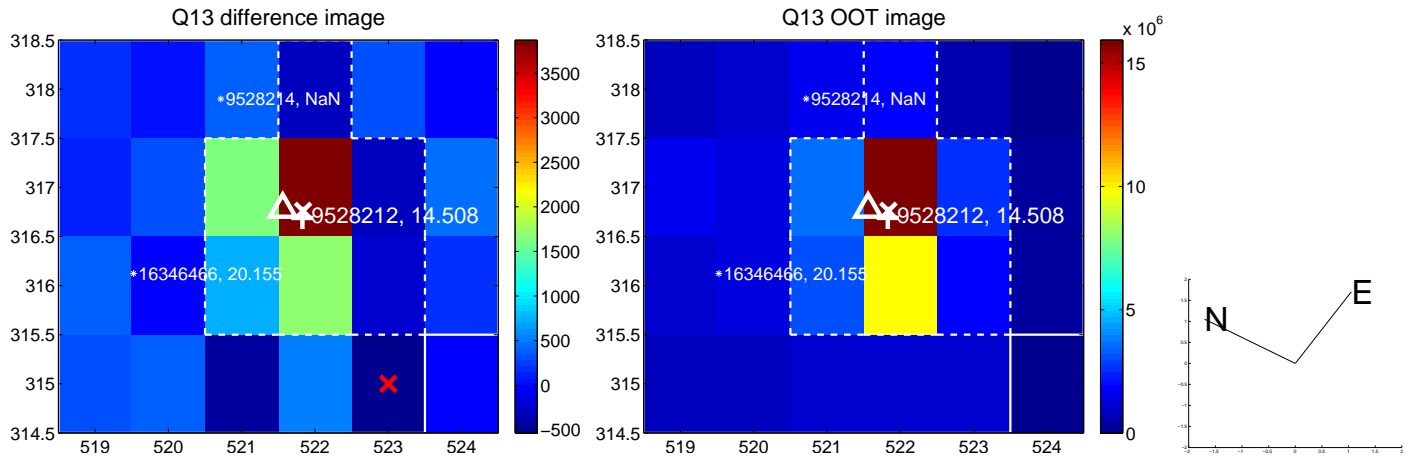
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



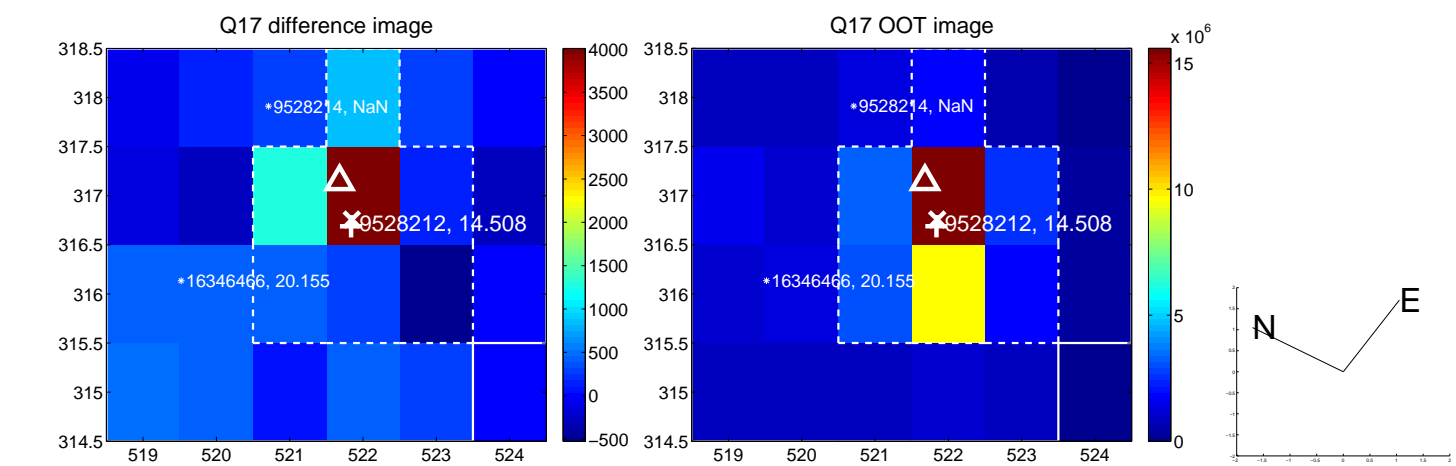
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



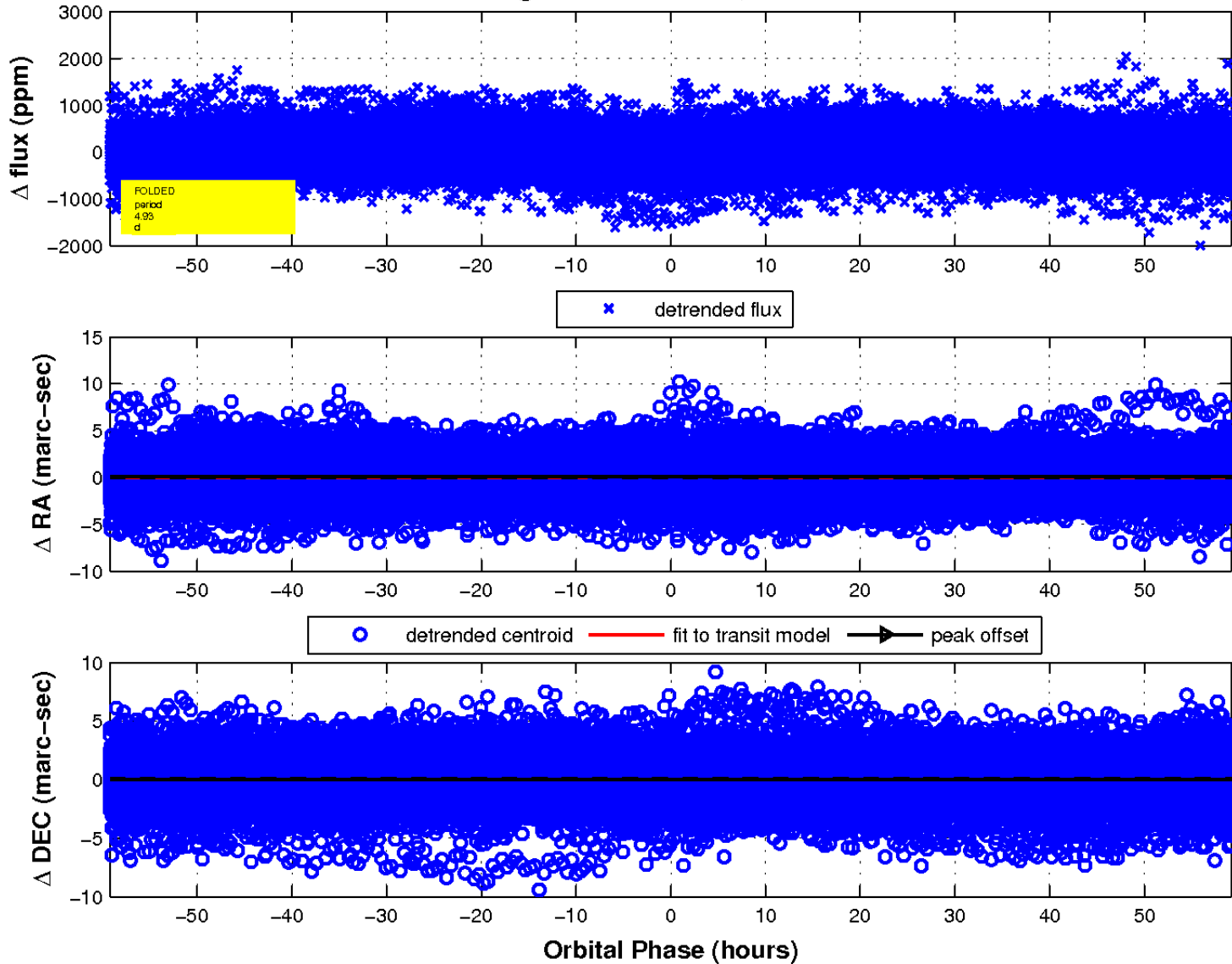
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

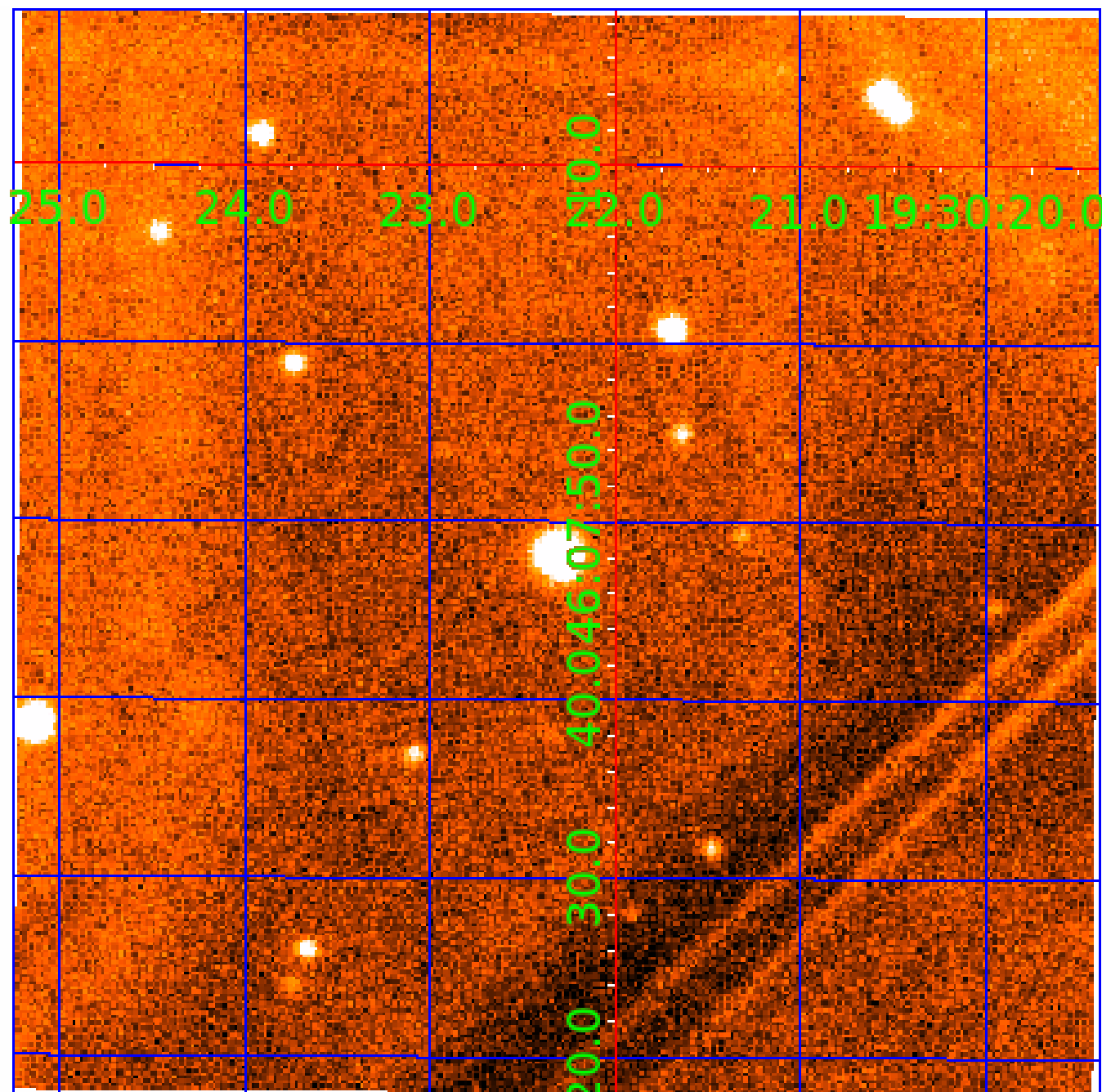


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009528212

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})
009528212-01	OBS	No	4.933950	132.686062	47.3	20.354	8.5	9.7	0.97	5872	0.78	331.13
009528212-02	OBS	No	4.933752	135.109725	36.2	27.176	7.8	7.5	0.97	5872	0.58	331.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009528212-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009528212-02	OBS	FP	0.00	1	0	0	0	LPP_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.

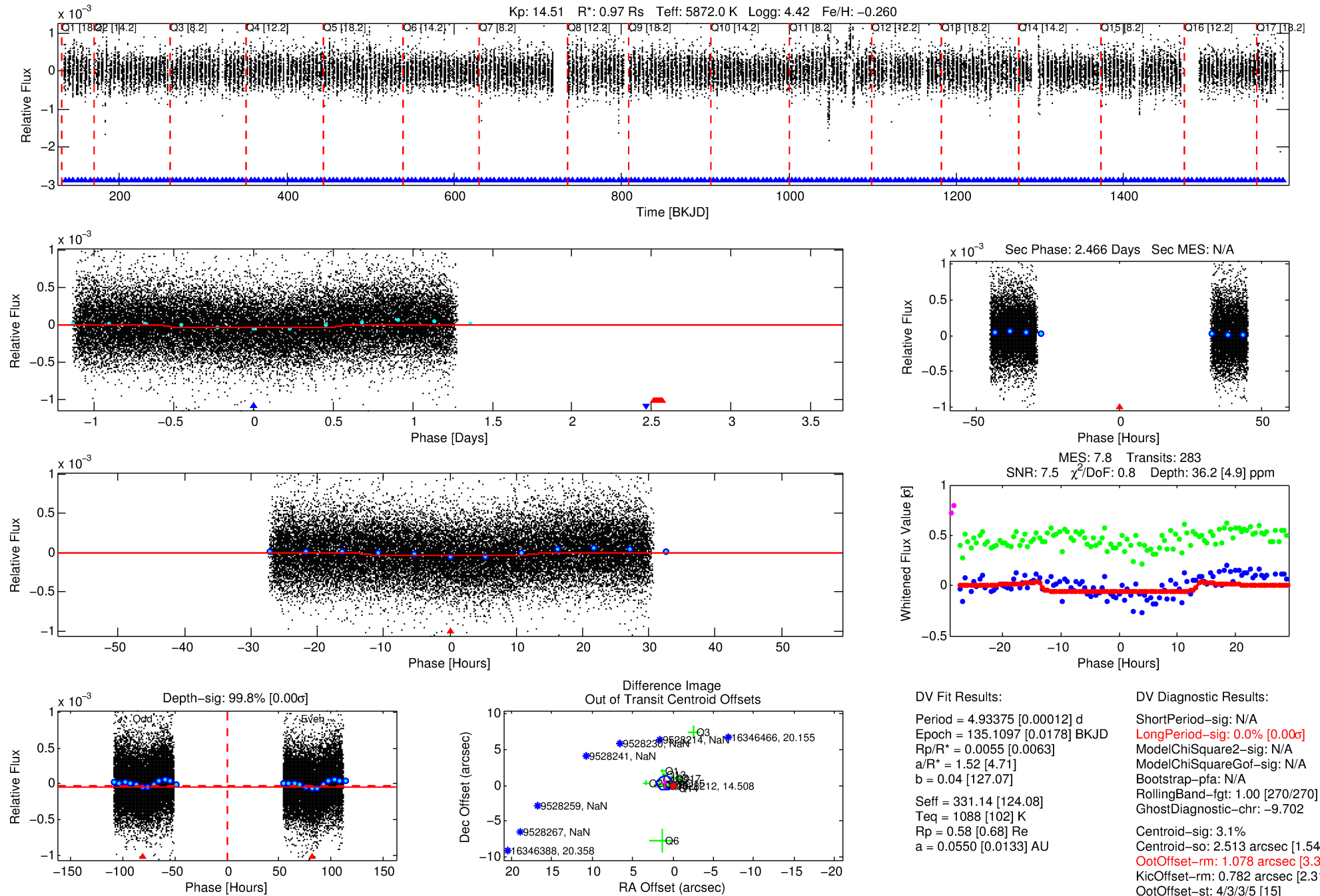
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009528212-02

No Significant Match Found

DV One-Page Summary

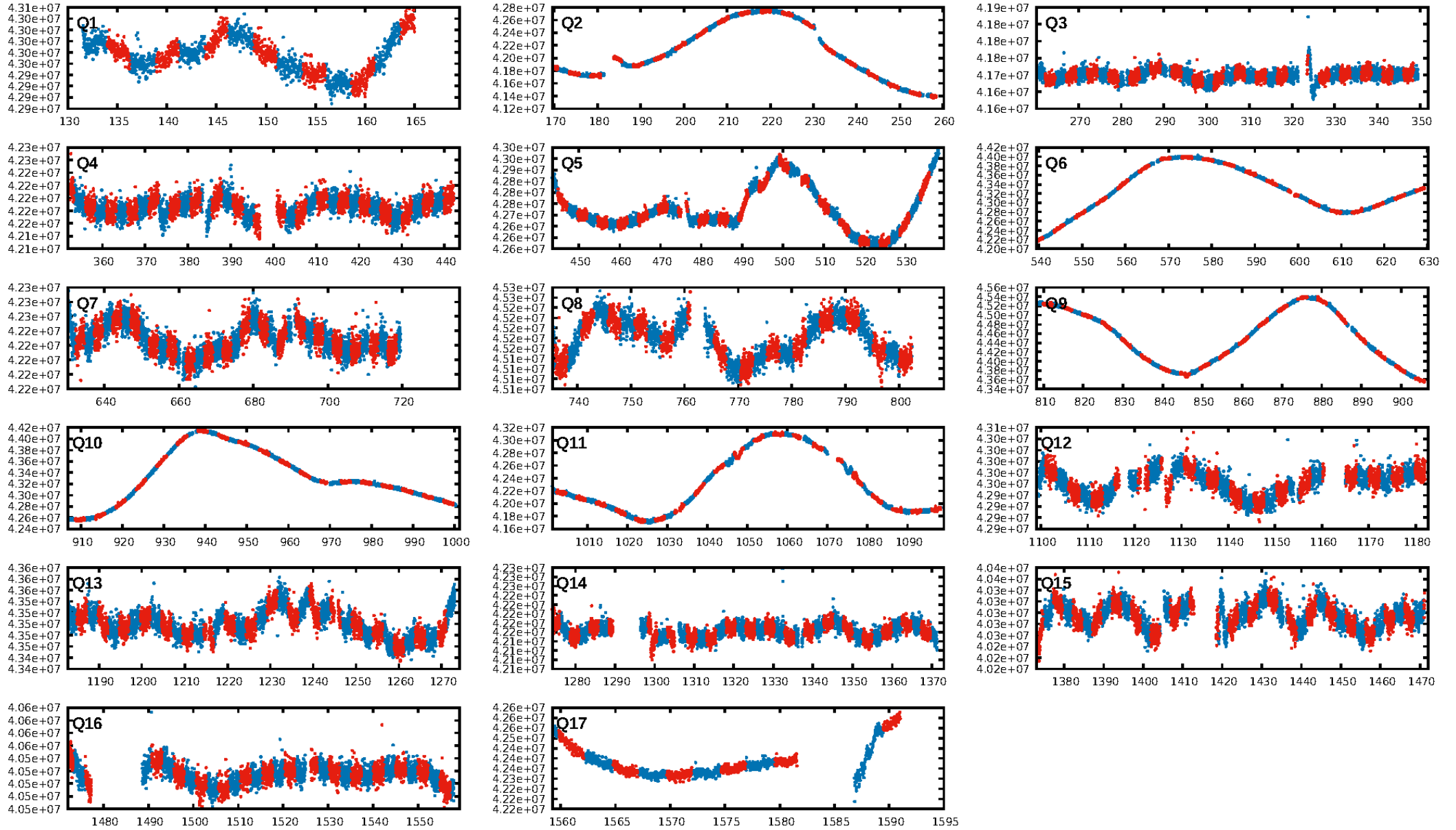
KIC: 9528212 Candidate: 2 of 2 Period: 4.934 d



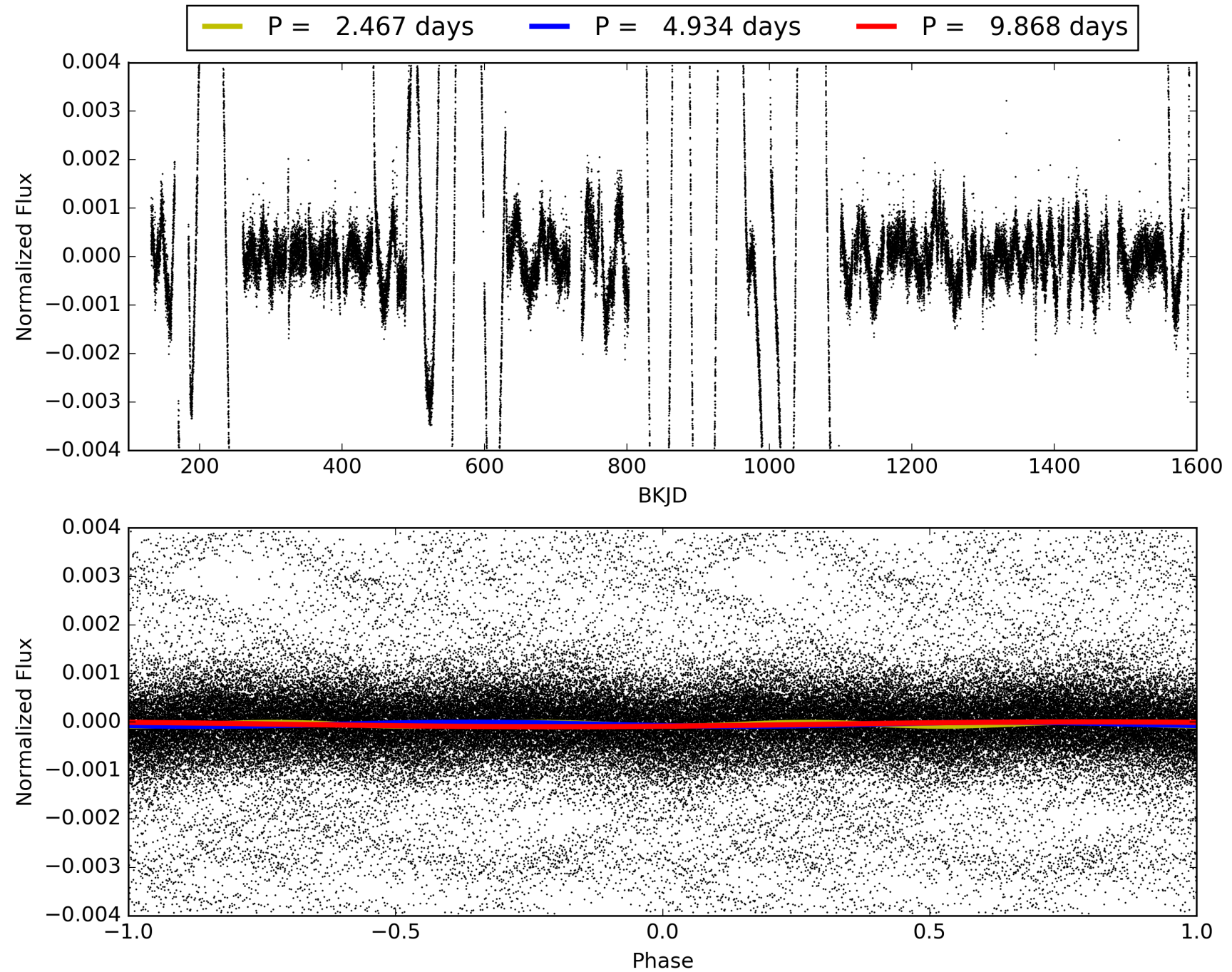
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 16:37:12 Z

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

TCE 009528212-02, PDC Light Curves

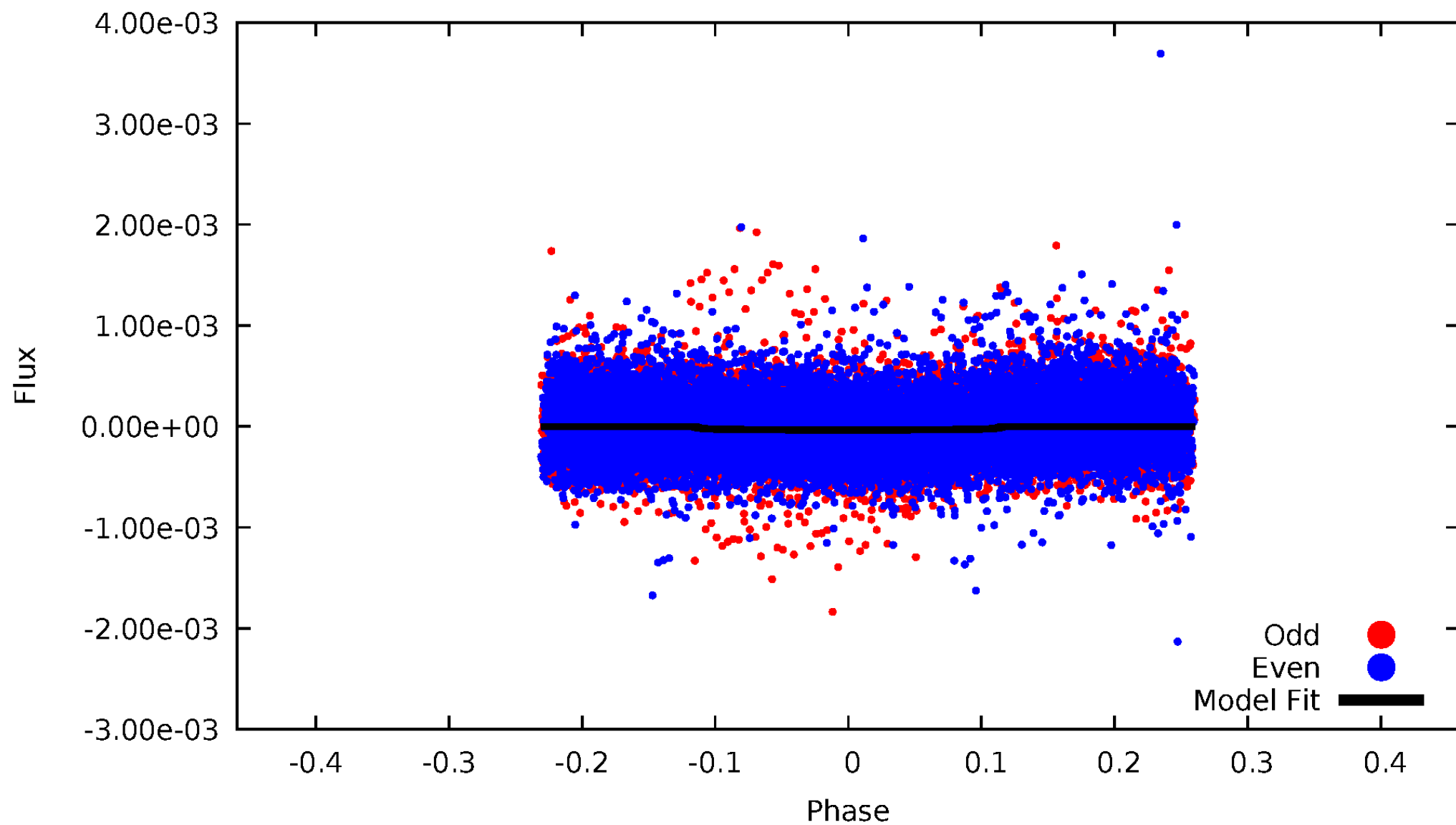


TCE 009528212-02



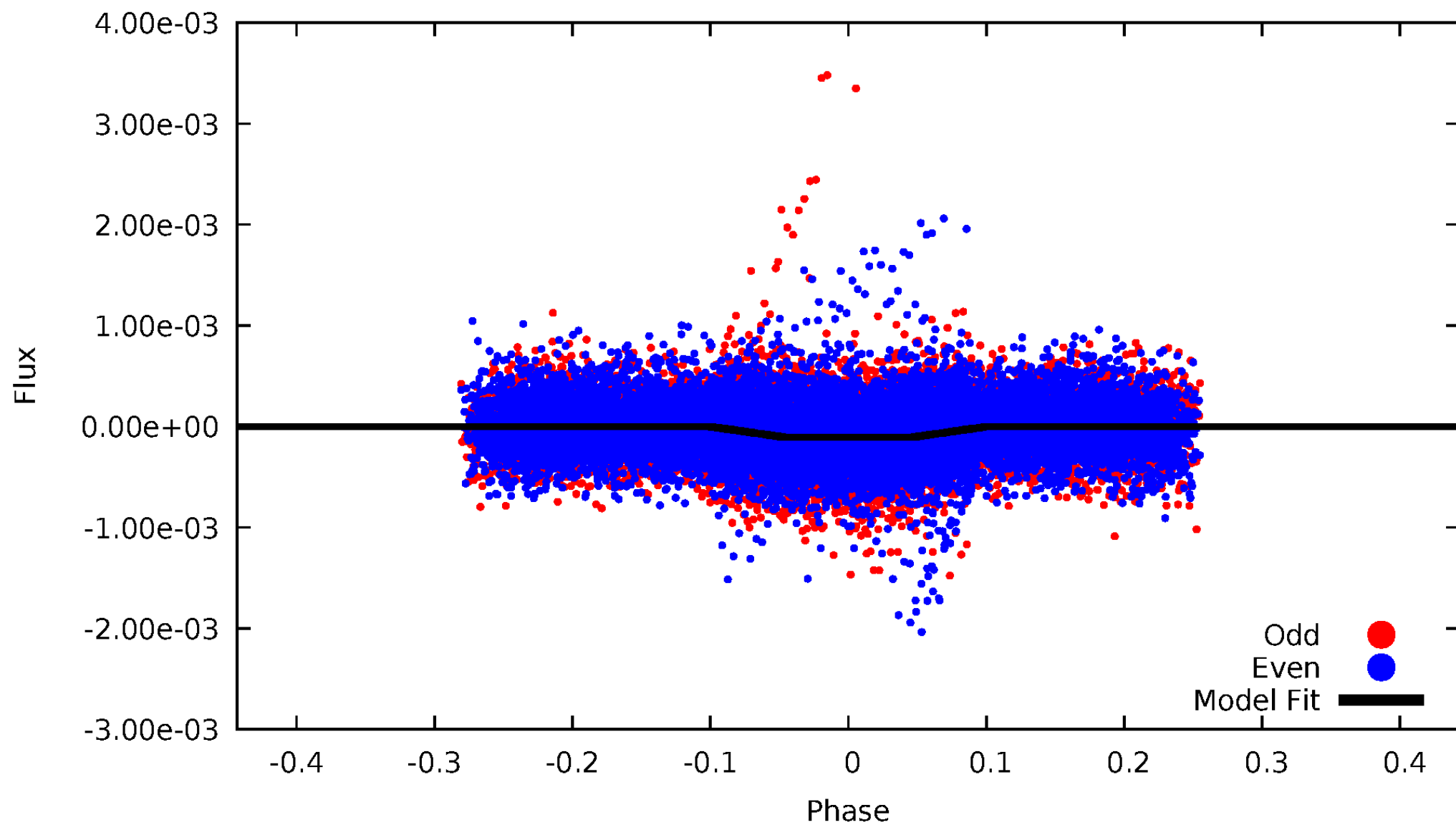
DV Odd/Even

TCE 009528212-02



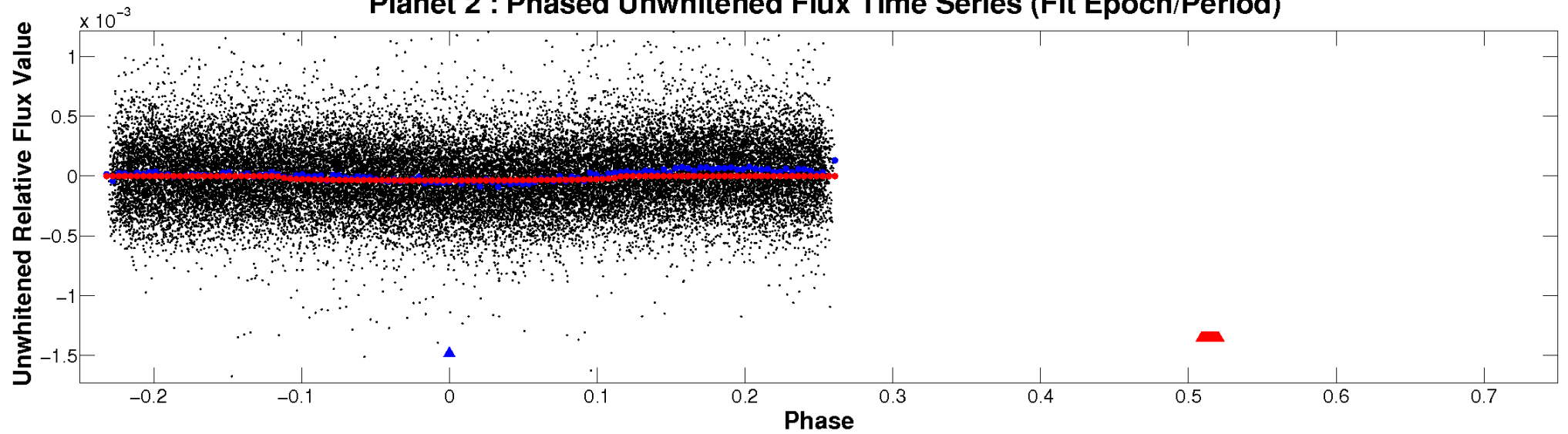
ALT Odd/Even

TCE 009528212-02

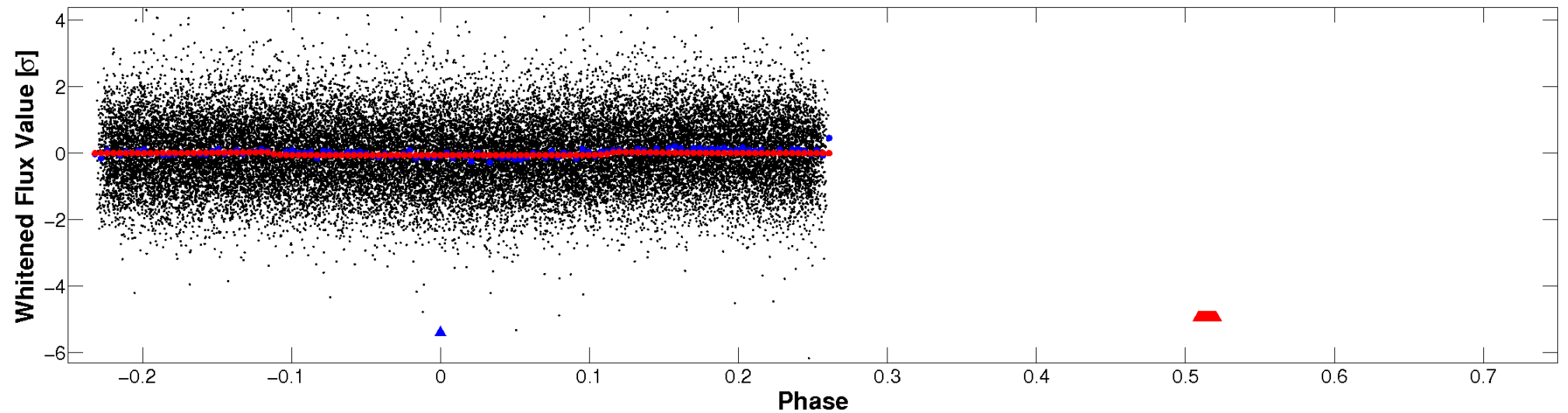


Non-Whitened Vs. Whitened Light Curve

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

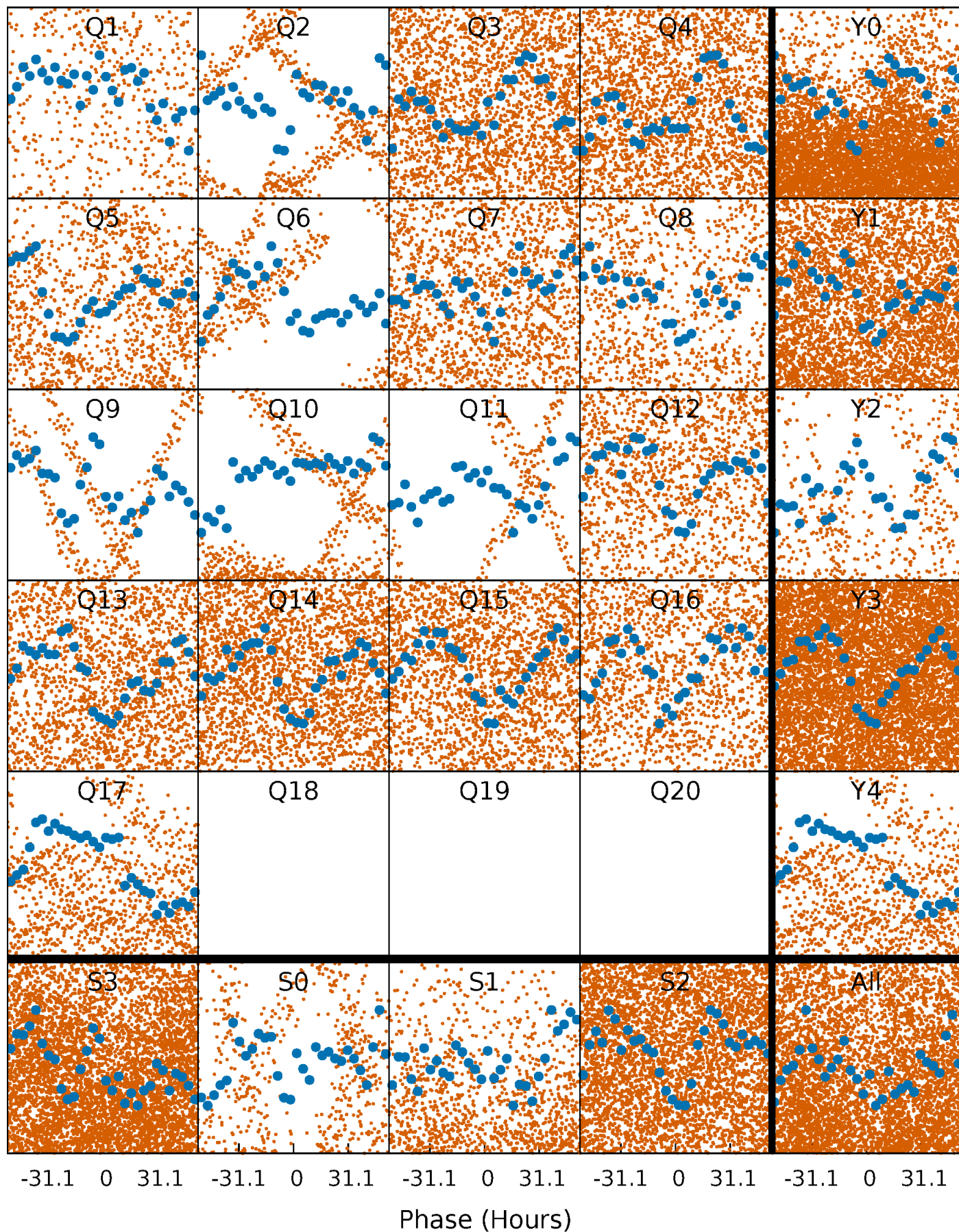


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



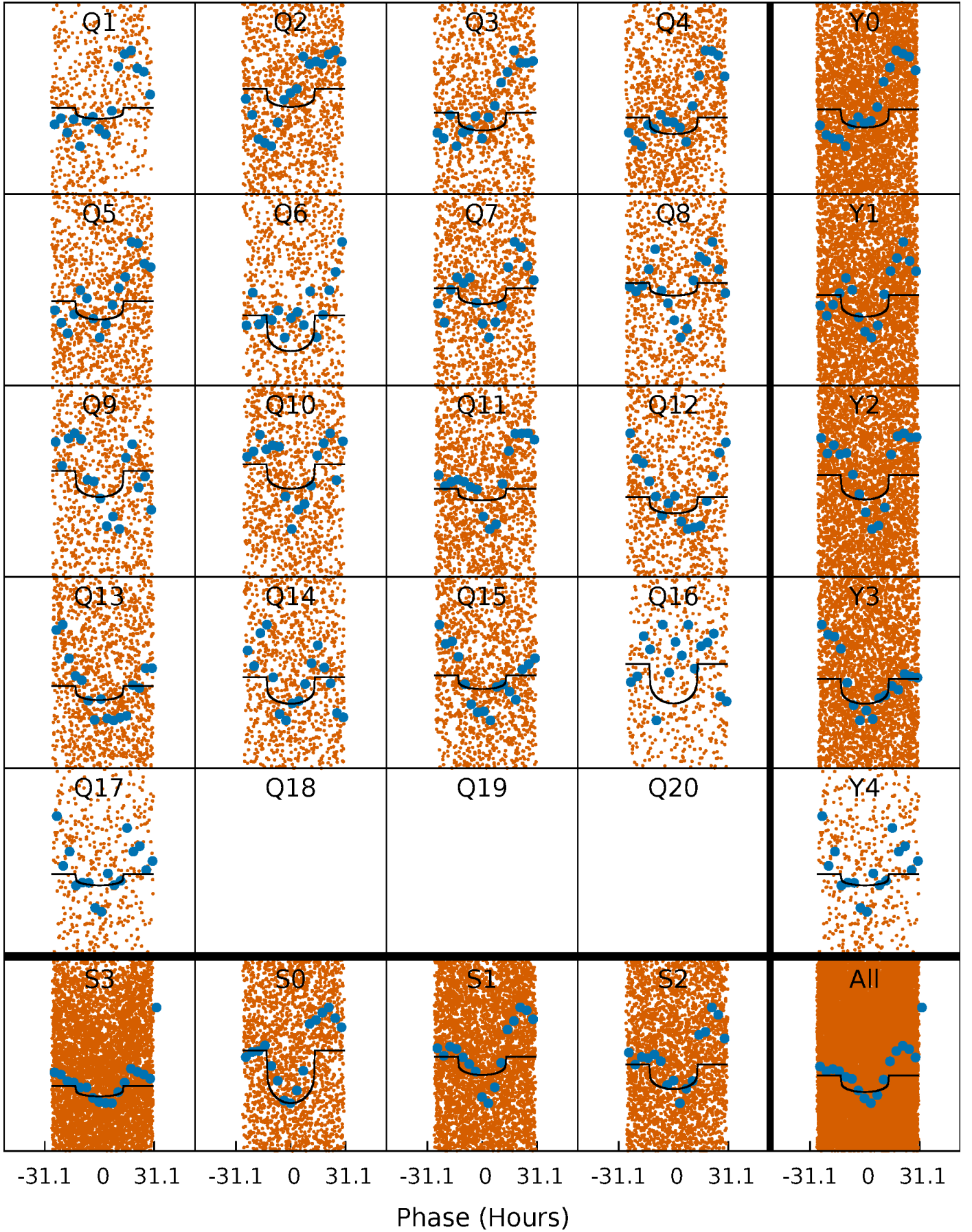
PDC Quarter-Phased Transit Curves

TCE 009528212-02 P= 4.933752 Days $T_0=135.109725$ (BKJD)



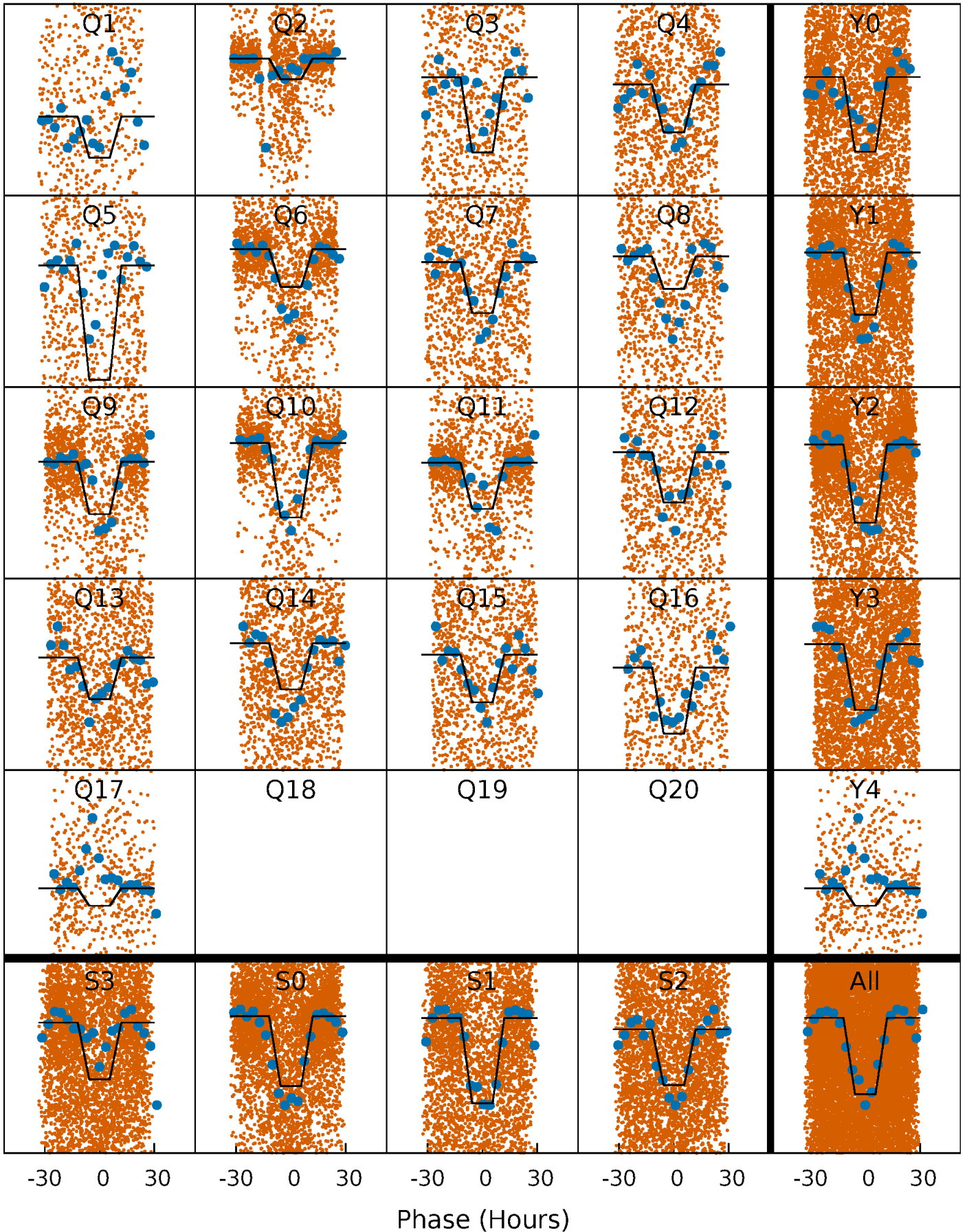
DV Quarter-Phased Transit Curves

TCE 009528212-02 P= 4.933752 Days $T_0=135.109725$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

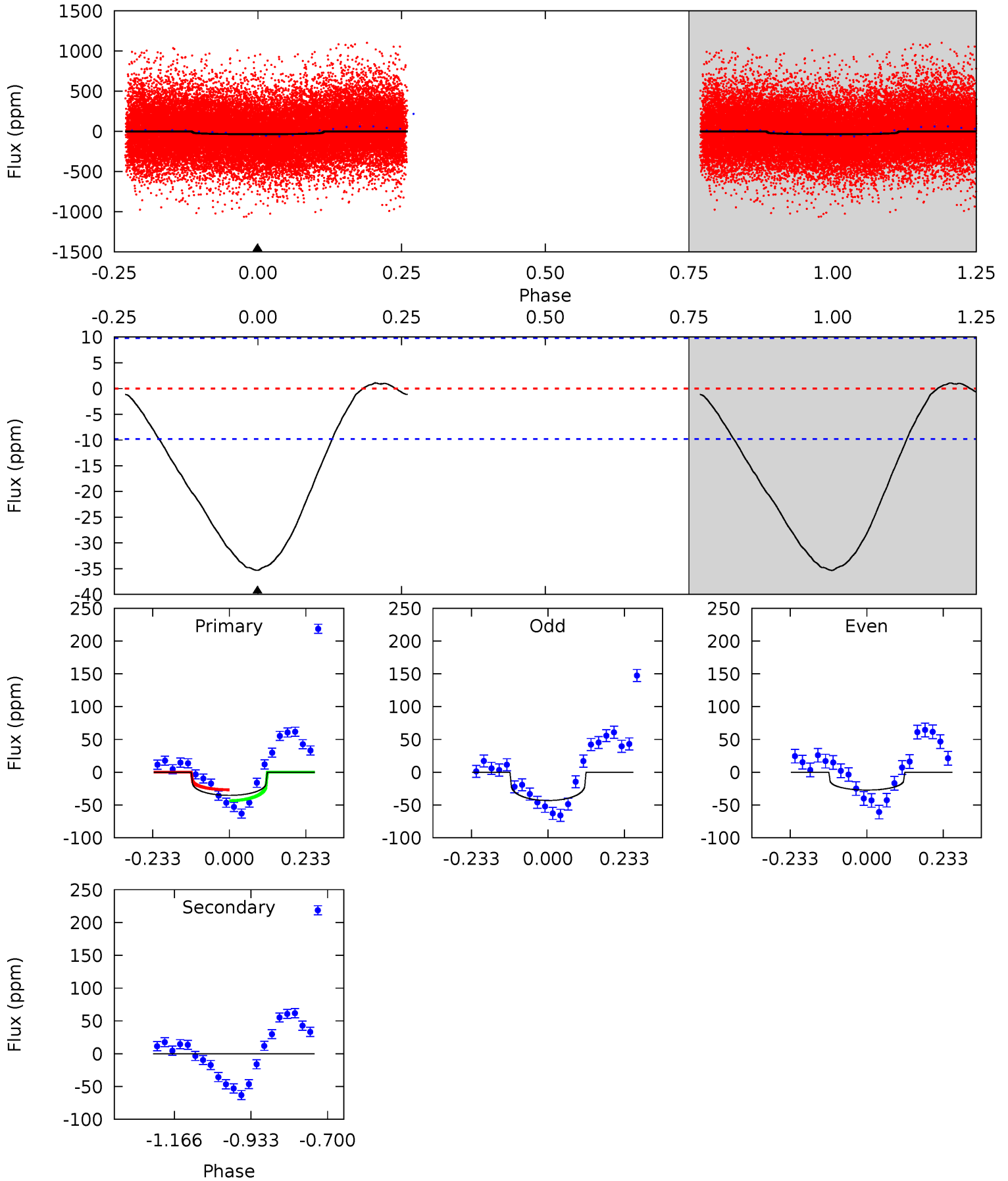
TCE 009528212-02 P= 4.932967 Days $T_0=135.360721$ (BKJD)



DV Model-Shift Uniqueness Test

009528212-02, P = 4.933752 Days, E = 130.175973 Days

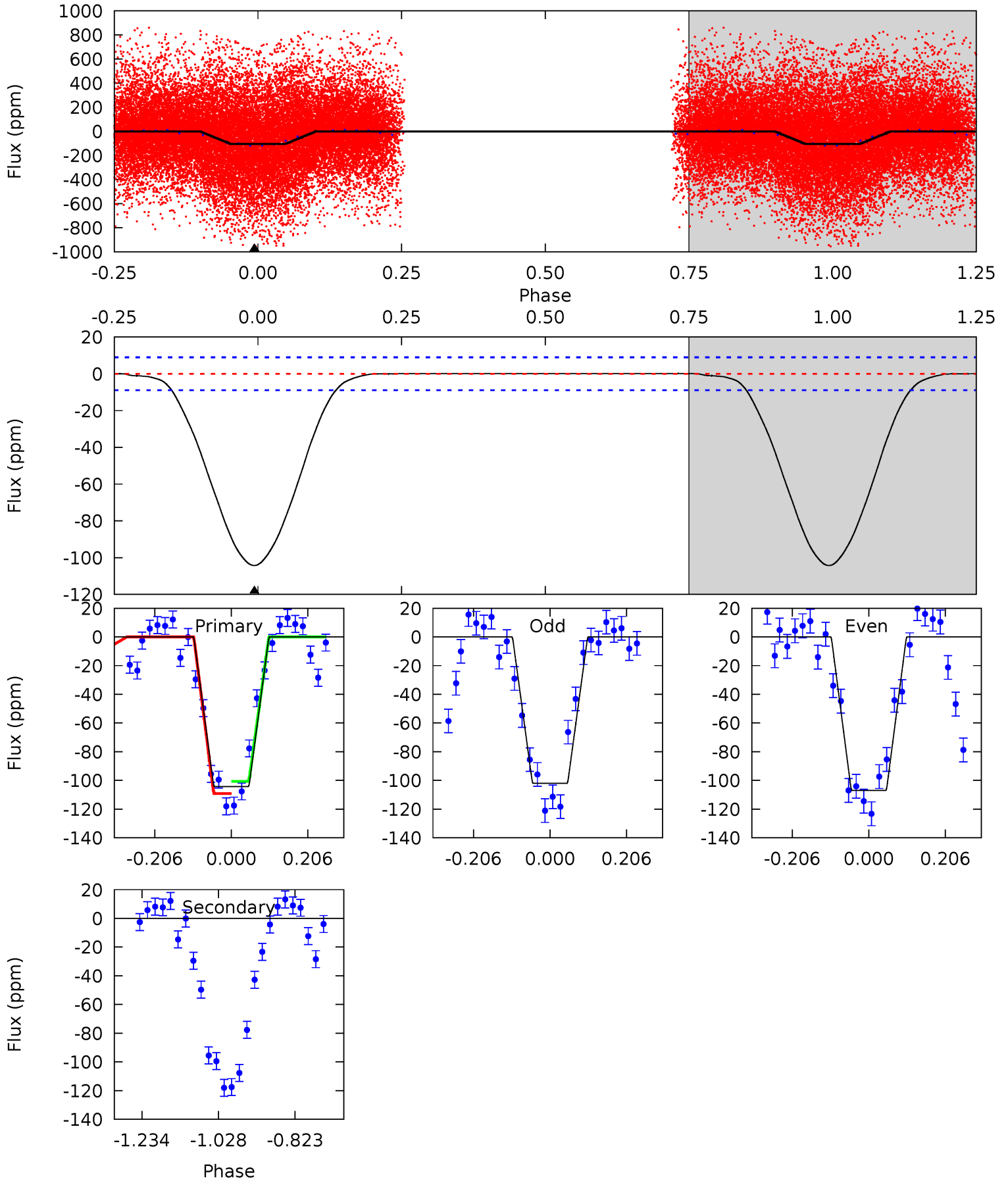
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	0	0	0	4.38	1.19	0.45	15.8	15.8	0	0	3.54	1.06	0.03	3.76



Alt Model-Shift Uniqueness Test

009528212-02, P = 4.932967 Days, E = 130.427754 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
51.4	0	0	0	4.41	1.27	0.20	51.4	51.4	0	0	1.23	1.03	0.00	2.08



Stellar Parameters For KIC 009528212

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5872^{+158}_{-175}	$4.424^{+0.105}_{-0.195}$	$-0.260^{+0.300}_{-0.300}$	$0.969^{+0.278}_{-0.139}$	$0.909^{+0.119}_{-0.097}$	$1.408^{+0.737}_{-0.695}$
	+3%/-3%	+2%/-4%	+115%/-115%	+29%/-14%	+13%/-11%	+52%/-49%
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 009528212-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 2	$0.75^{+0.67}_{-0.50}$	1535^{+112}_{-83}	-2302^{+5832}_{-1296}	$-0.072^{+11.034}_{-11.065}$
Alt.	0 ± 2	$1.15^{+0.71}_{-0.58}$	1539^{+102}_{-91}	-2214^{+5107}_{-804}	$-0.000^{+3.044}_{-3.304}$

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

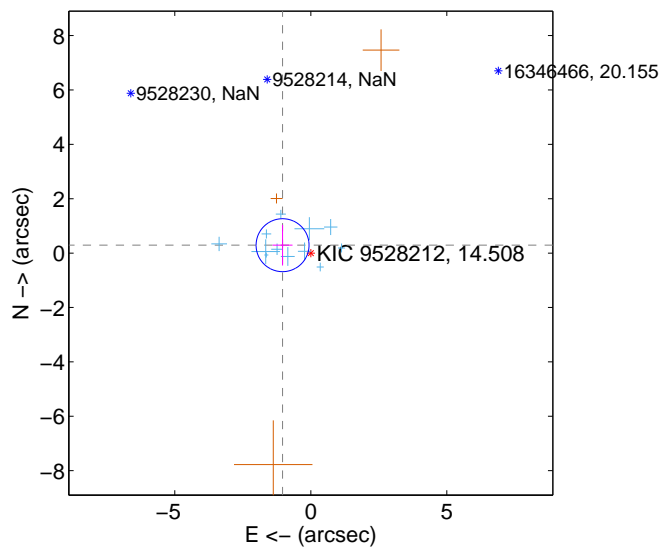
Supplemental centroid analysis for 009528212-02. Kepler magnitude: 14.51. Transit SNR 7.46

There are 12 quarters with good PRF difference image offsets

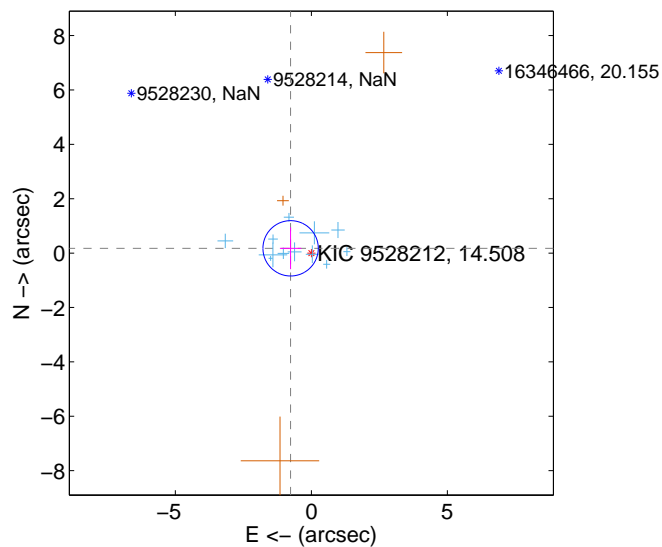
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.078 \pm 0.324	3.32	1.038 \pm 0.365	0.291 \pm 0.746
PRF-fit source offset from KIC position	0.782 \pm 0.339	2.31	0.762 \pm 0.395	0.176 \pm 0.769
photometric centroid source offset	2.51 \pm 1.63	1.54	-1.15 \pm 1.42	-2.24 \pm 1.69

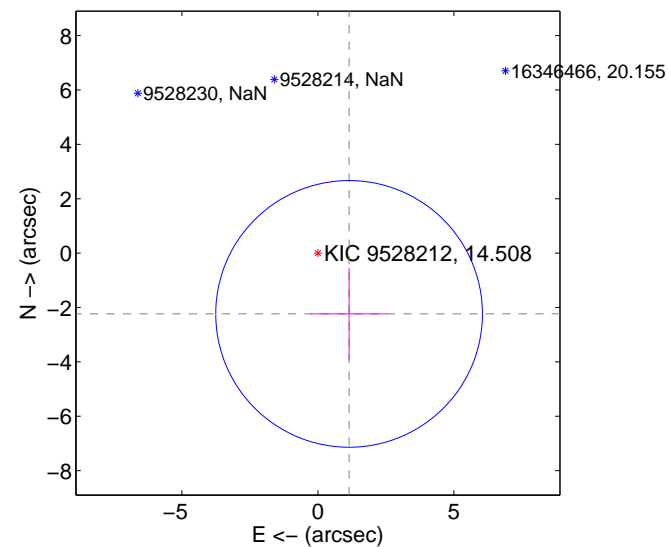
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

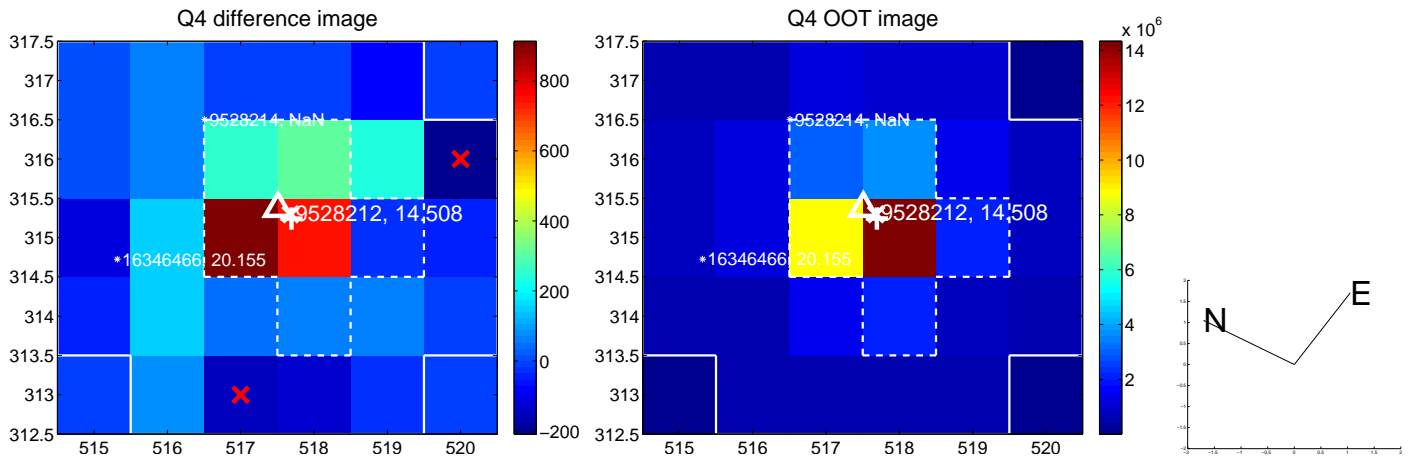
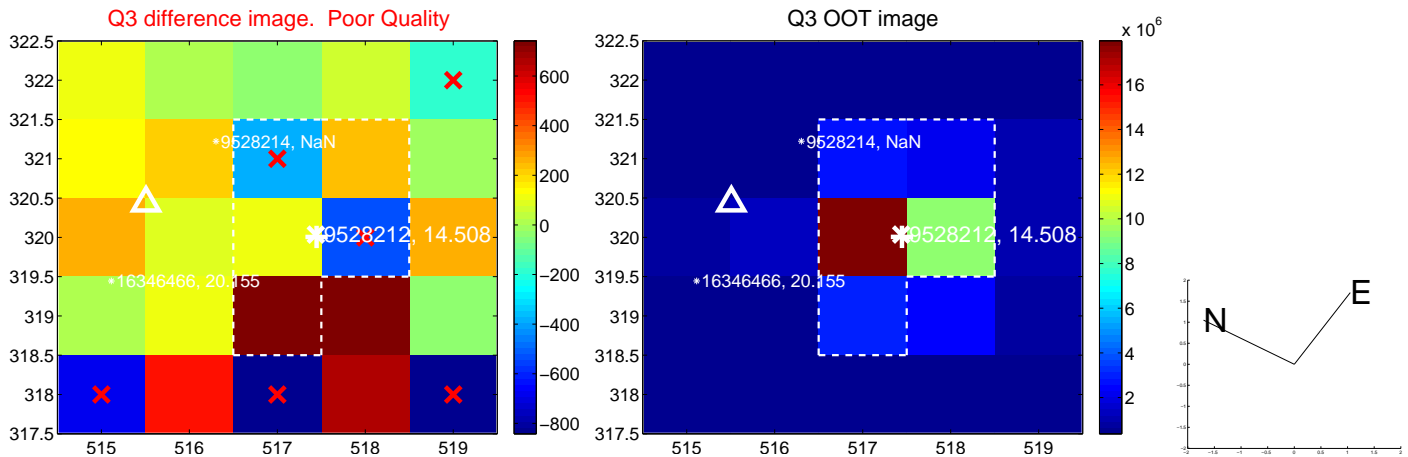
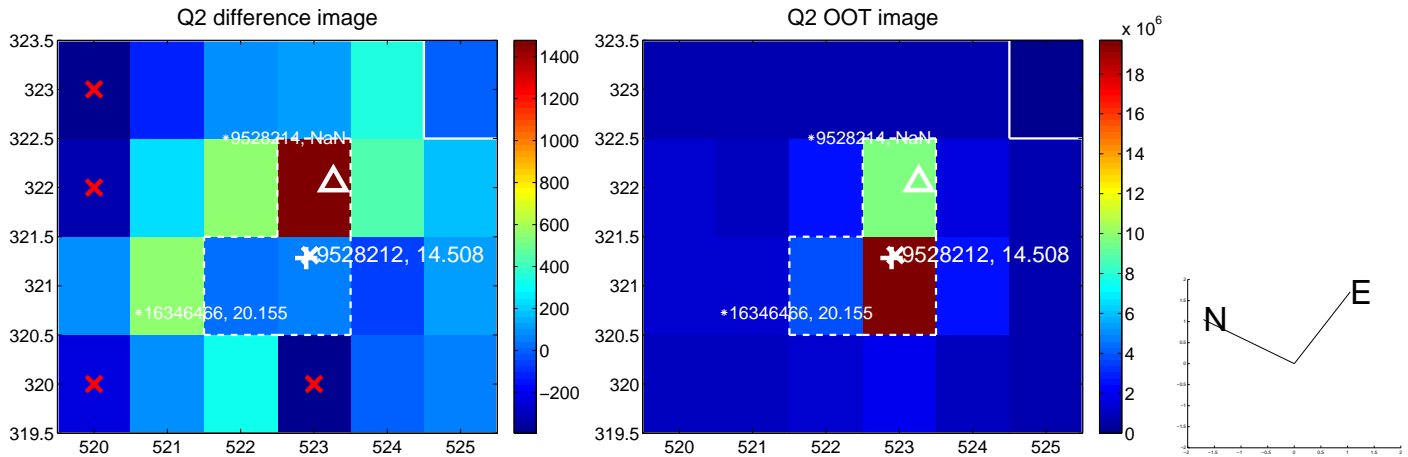
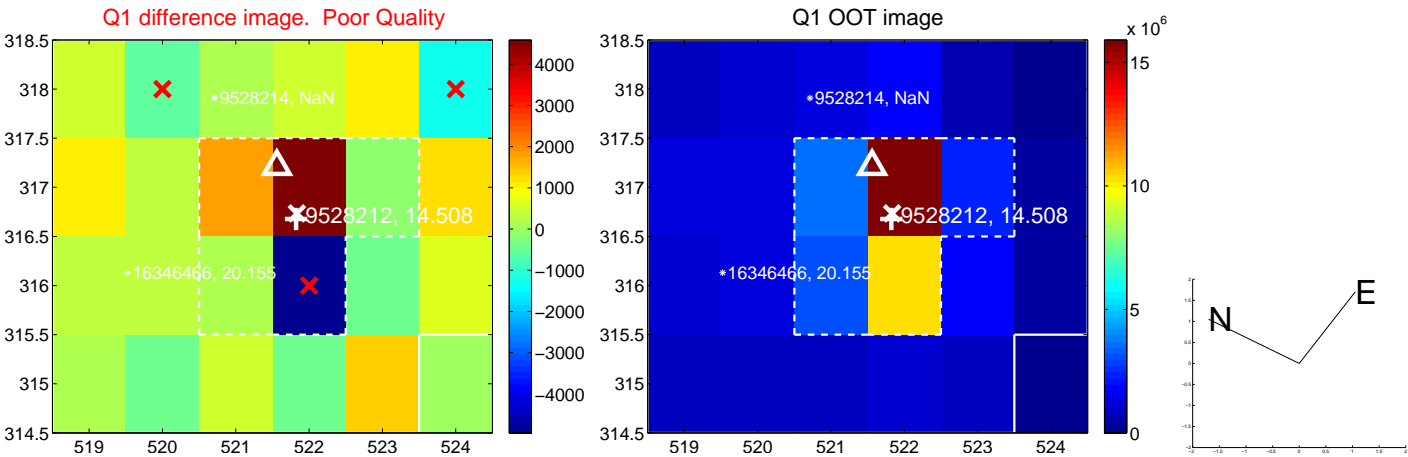


offset from photometric centroids

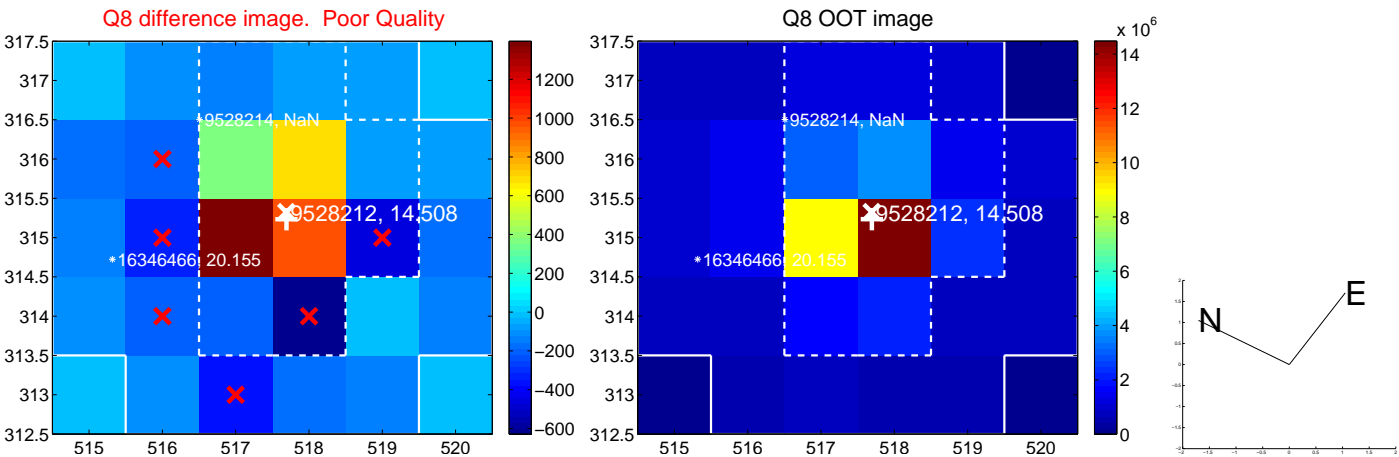
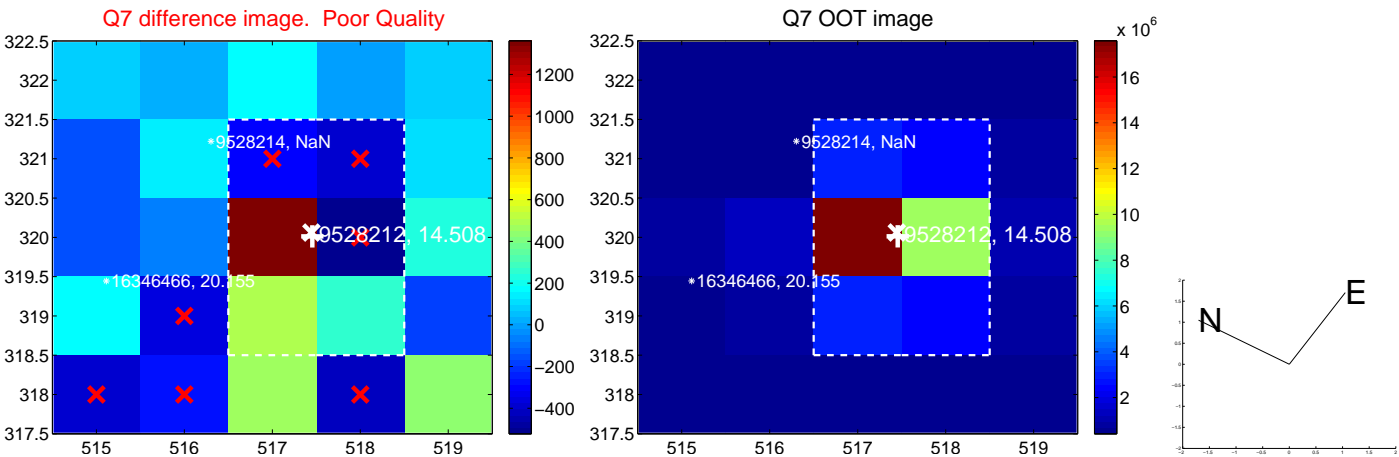
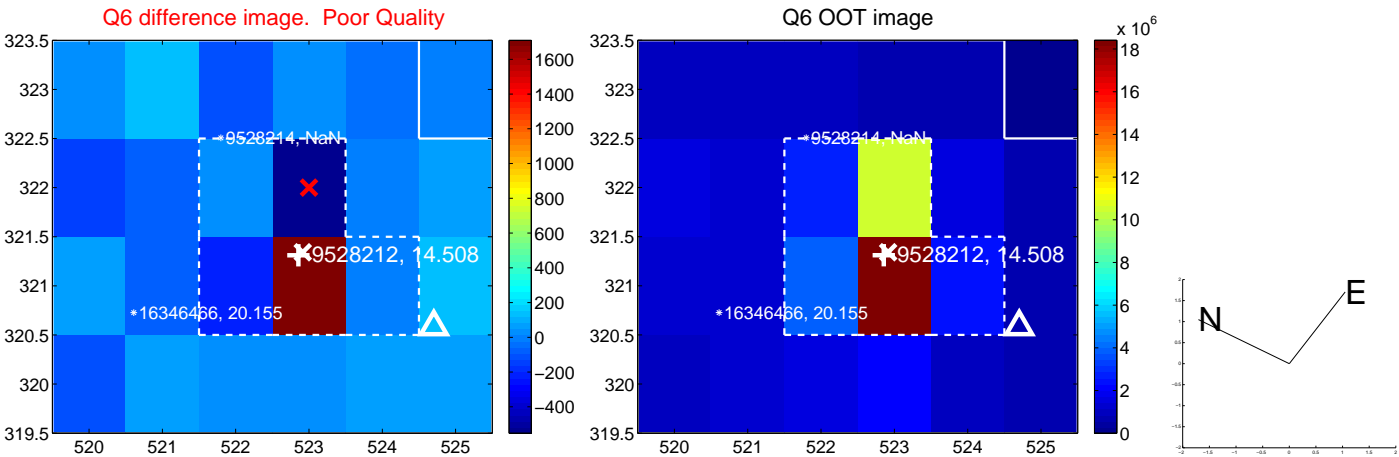
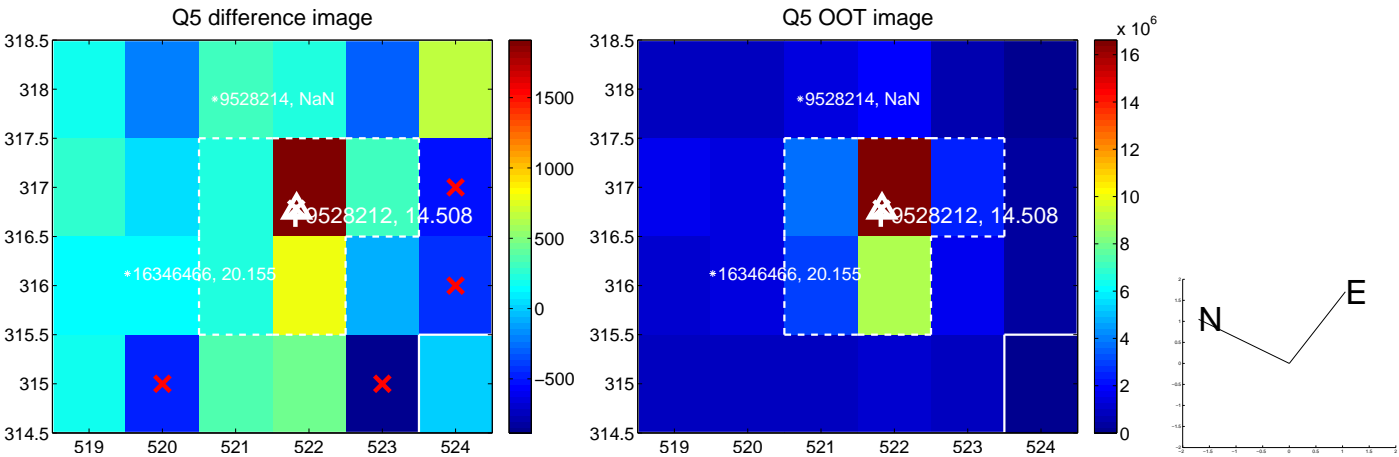


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

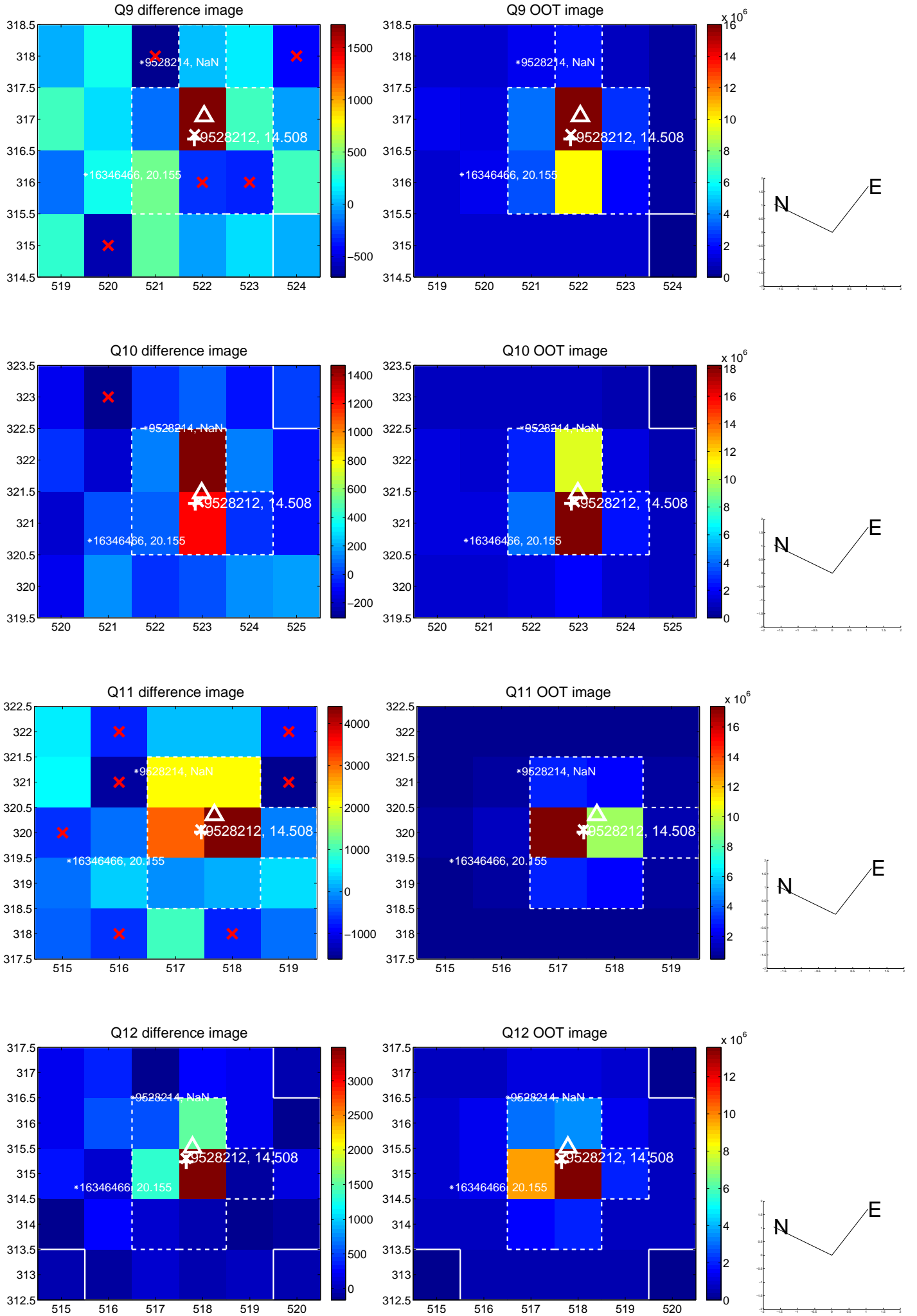
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



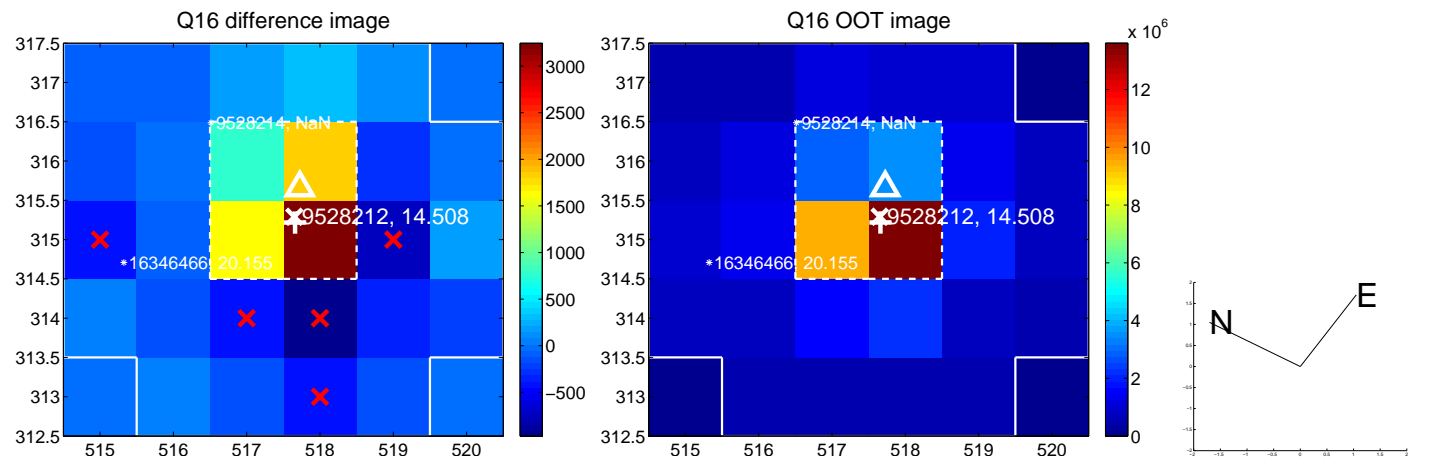
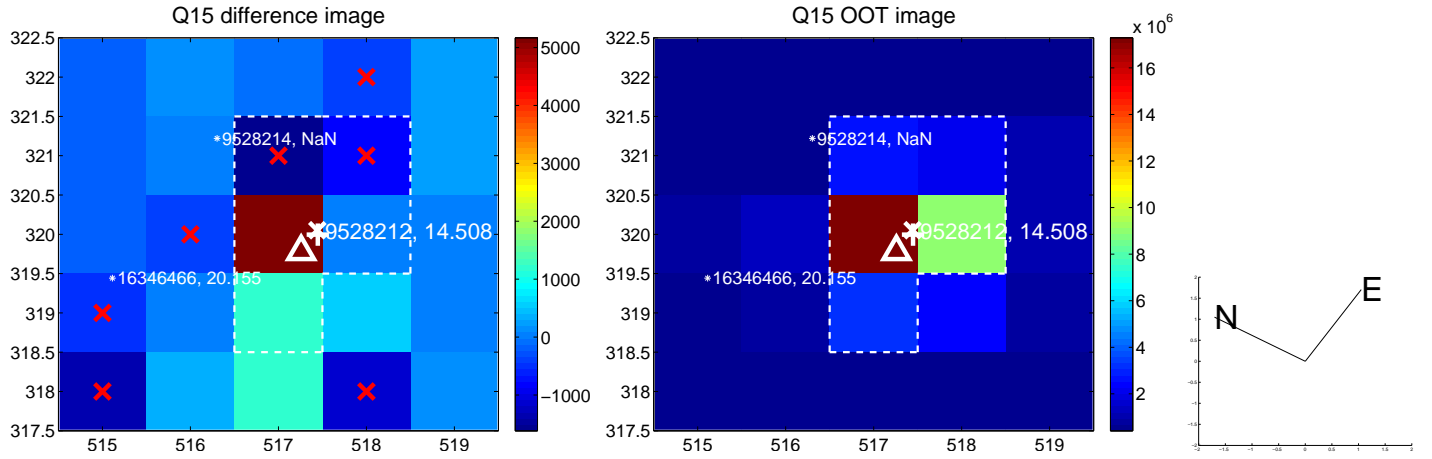
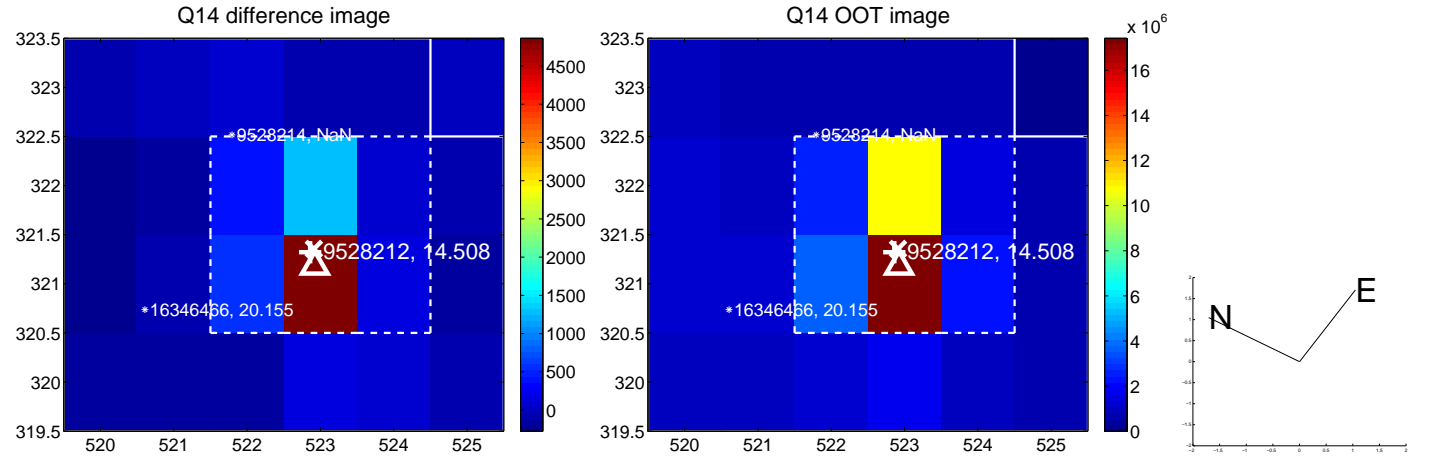
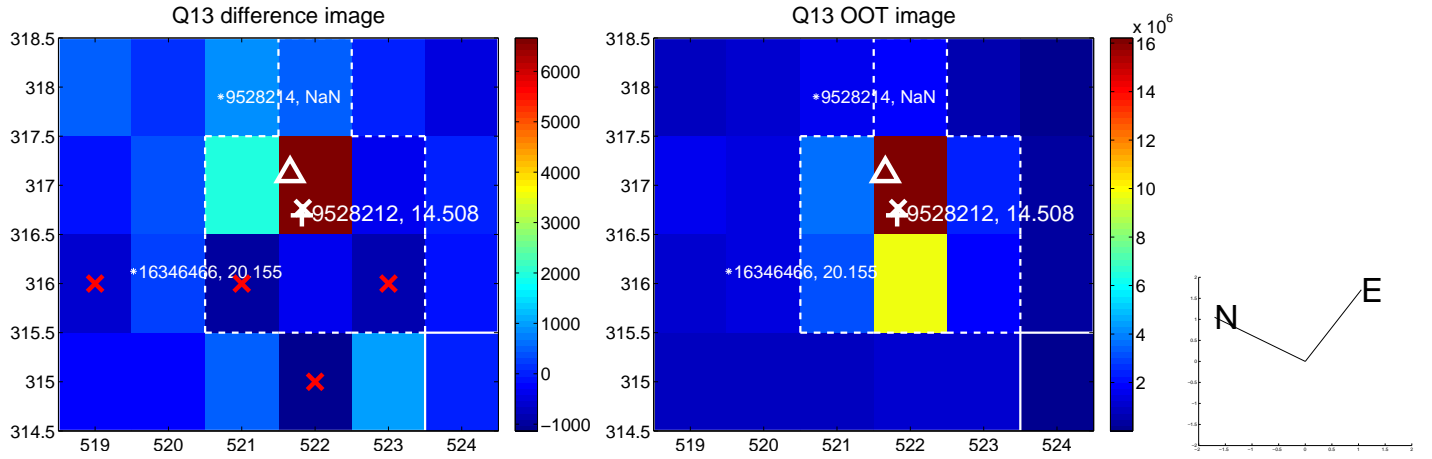
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



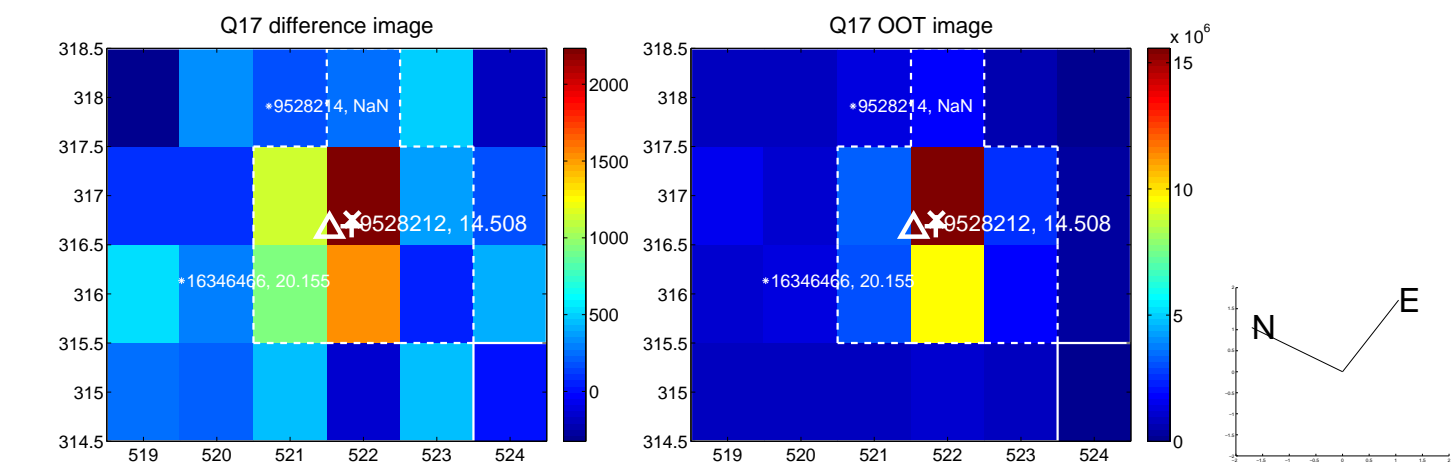
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



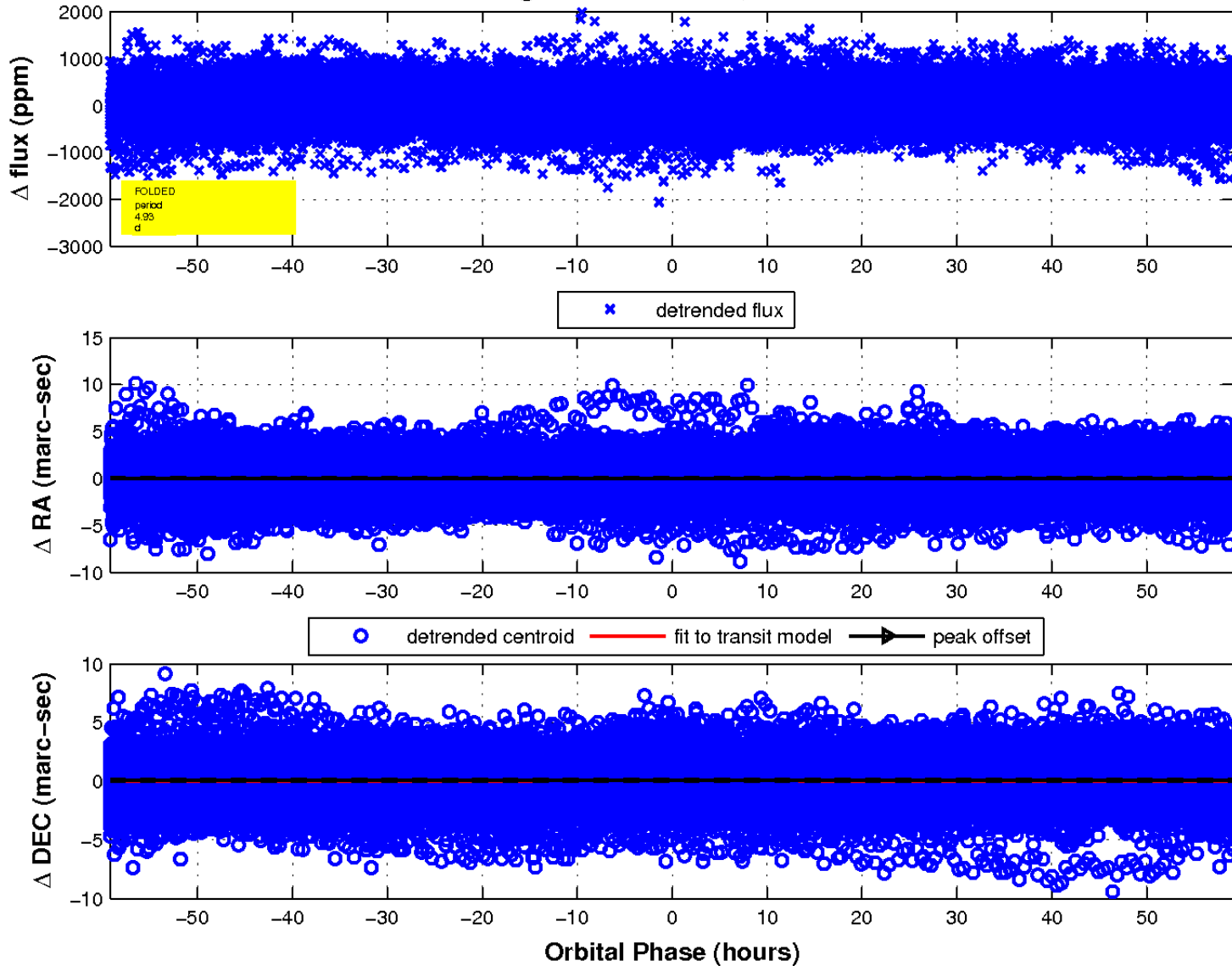
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

