

# KIC 005123624

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005123624-01	OBS	No	0.935616	132.369687	22.9	1.292	7.4	8.4	0.79	5655	0.45	2054.05
005123624-02	OBS	No	0.935557	131.946796	11.1	5.118	7.7	8.1	0.79	5655	0.29	2054.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005123624-01	OBS	FP	0.00	1	0	1	0	LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
005123624-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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

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

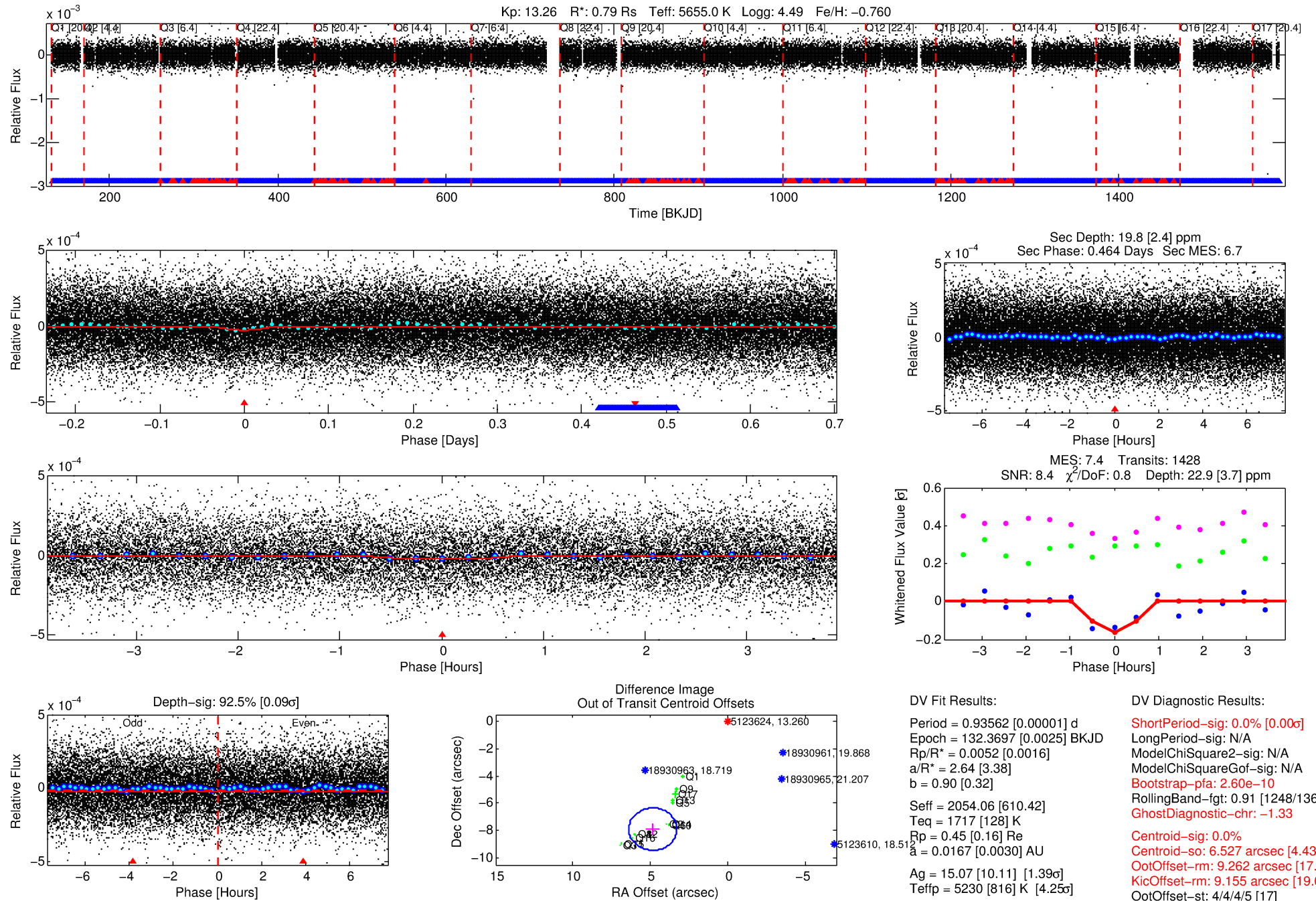
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005123624-01

No Significant Match Found

# DV One-Page Summary

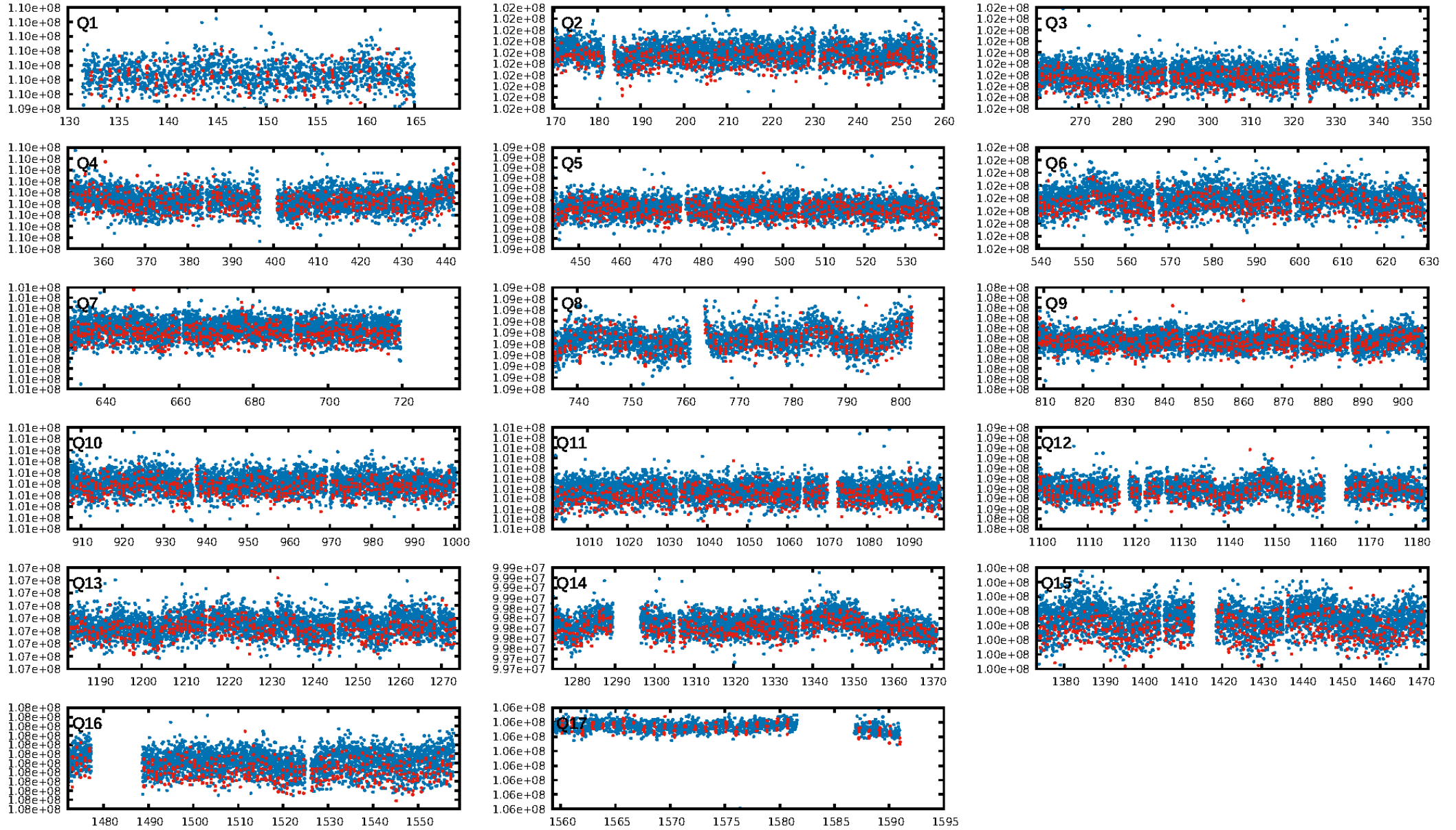
KIC: 5123624 Candidate: 1 of 2 Period: 0.936 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:21:09 Z

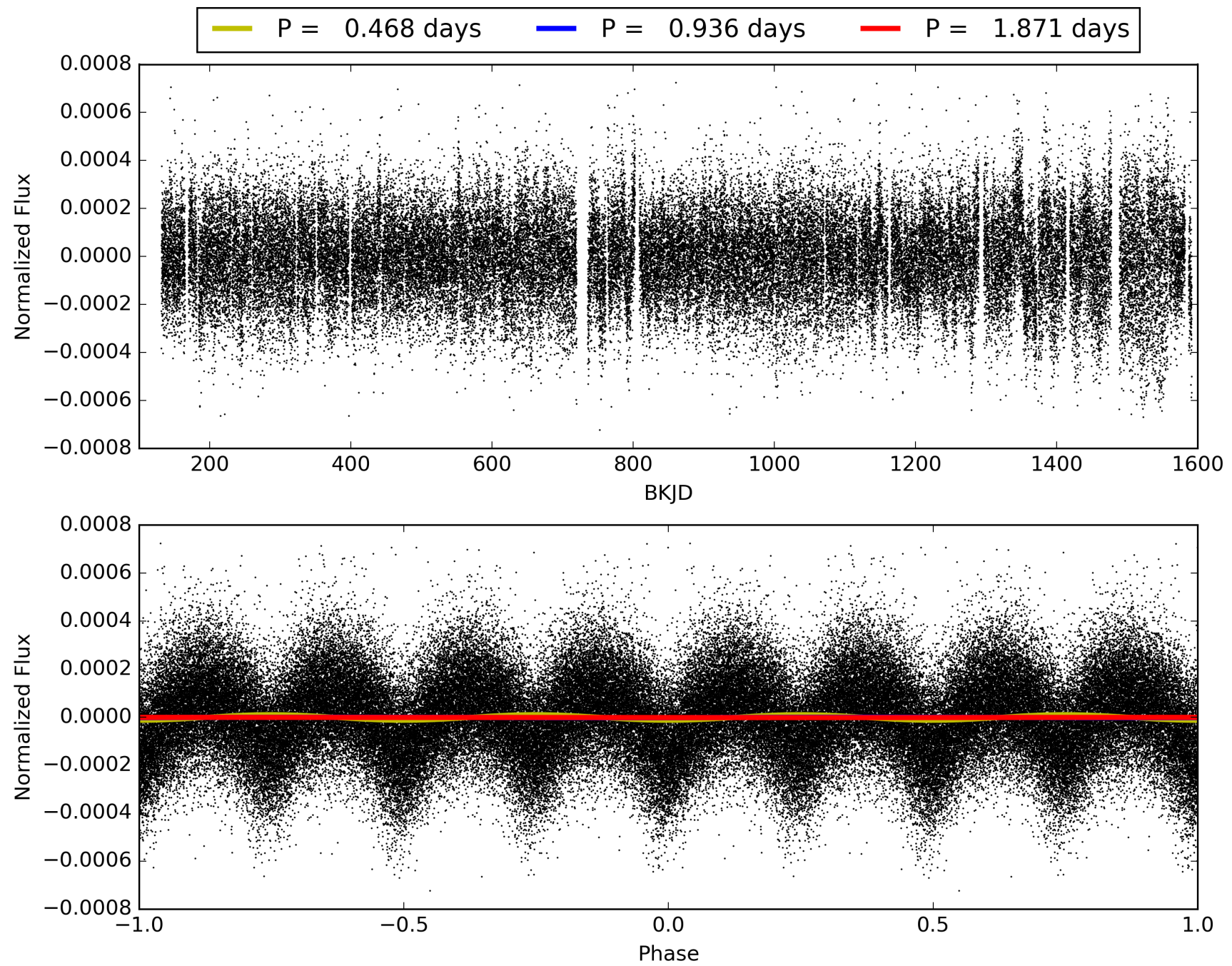
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005123624-01, PDC Light Curves



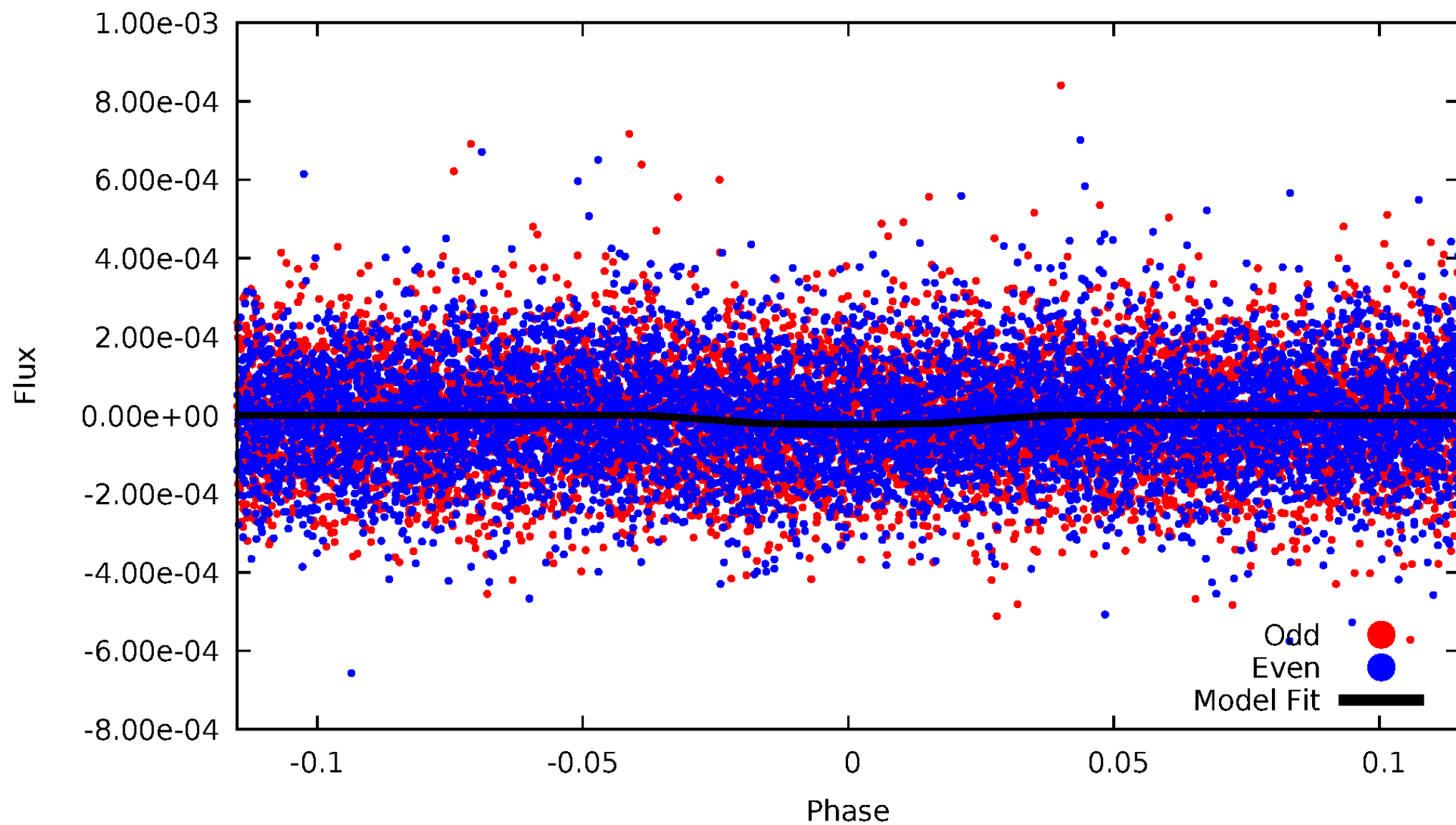


TCE 005123624-01



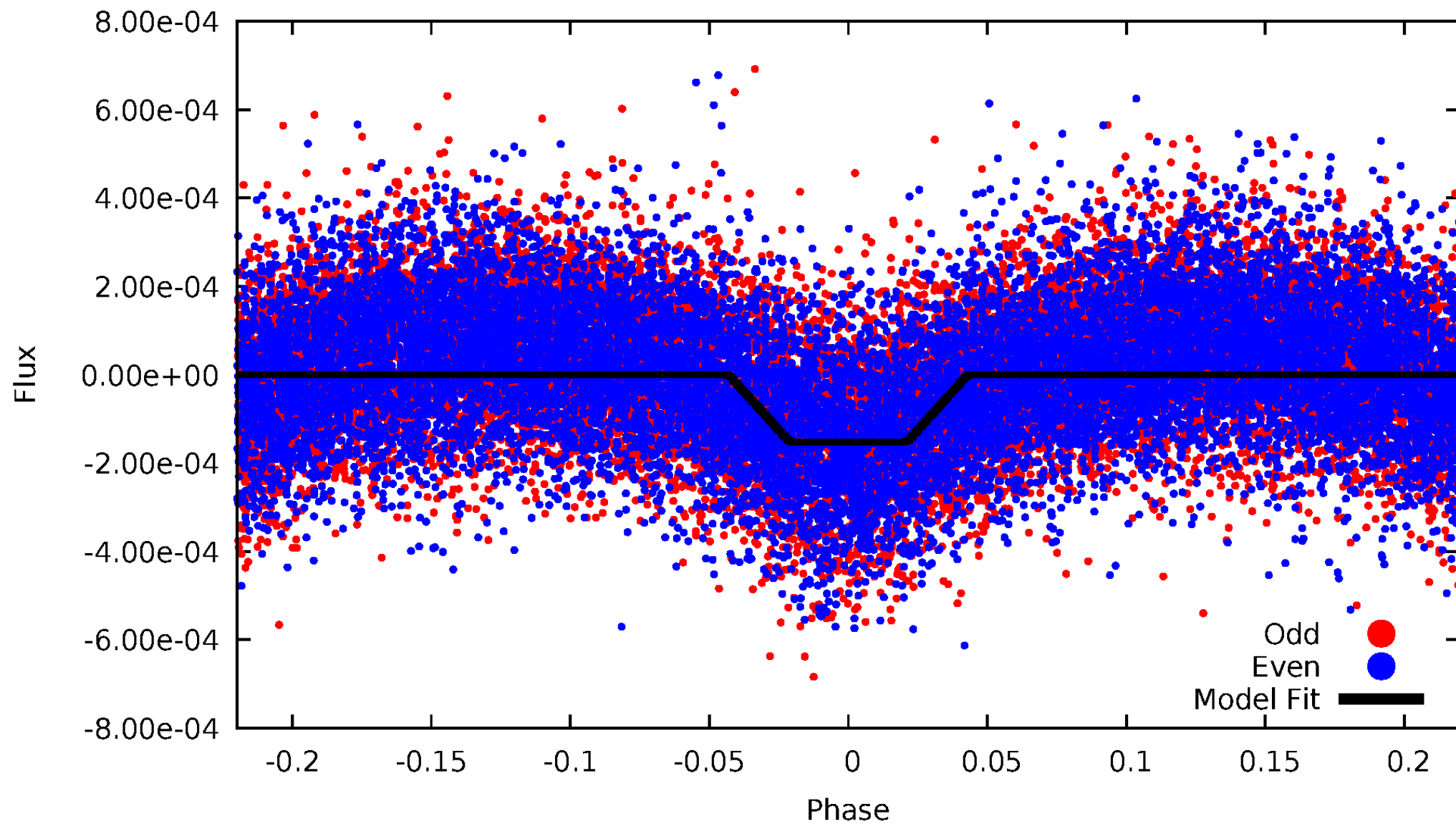
# DV Odd/Even

TCE 005123624-01



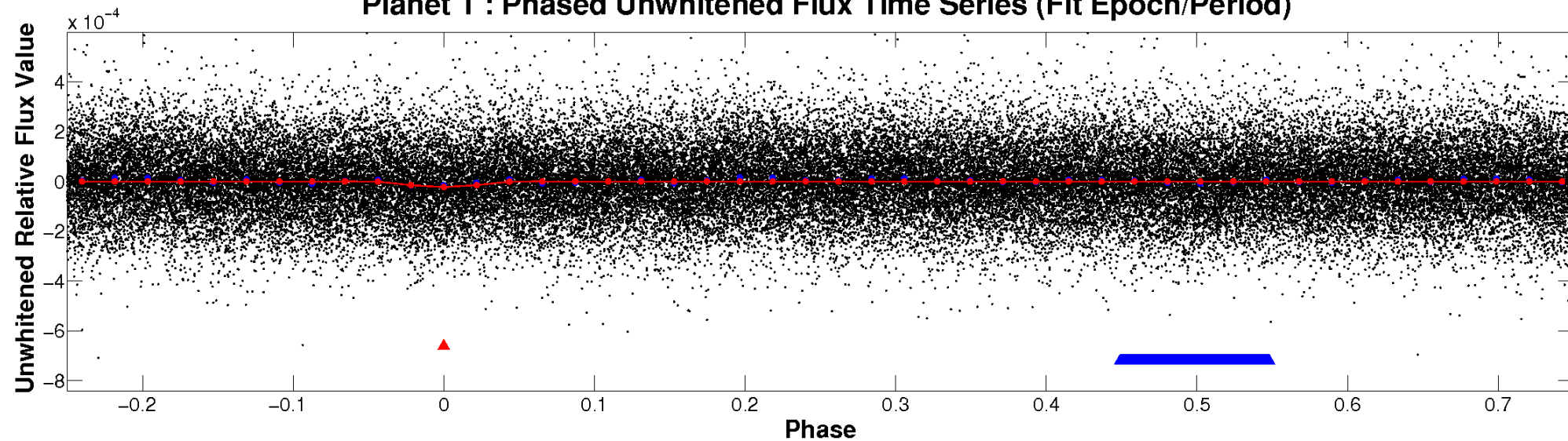
# ALT Odd/Even

TCE 005123624-01

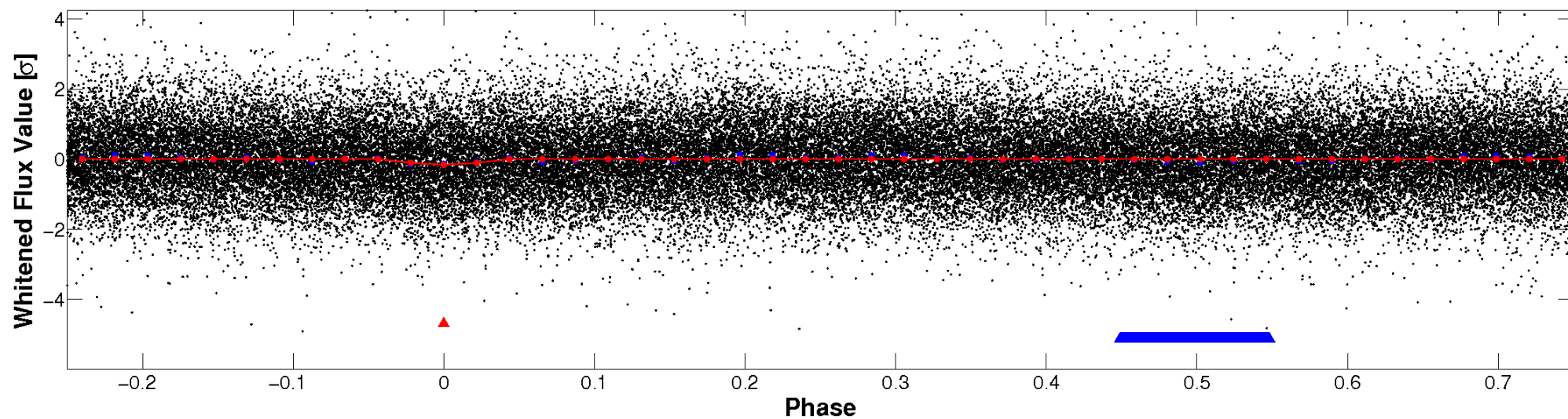


# Non-Whitened Vs. Whitened Light Curve

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



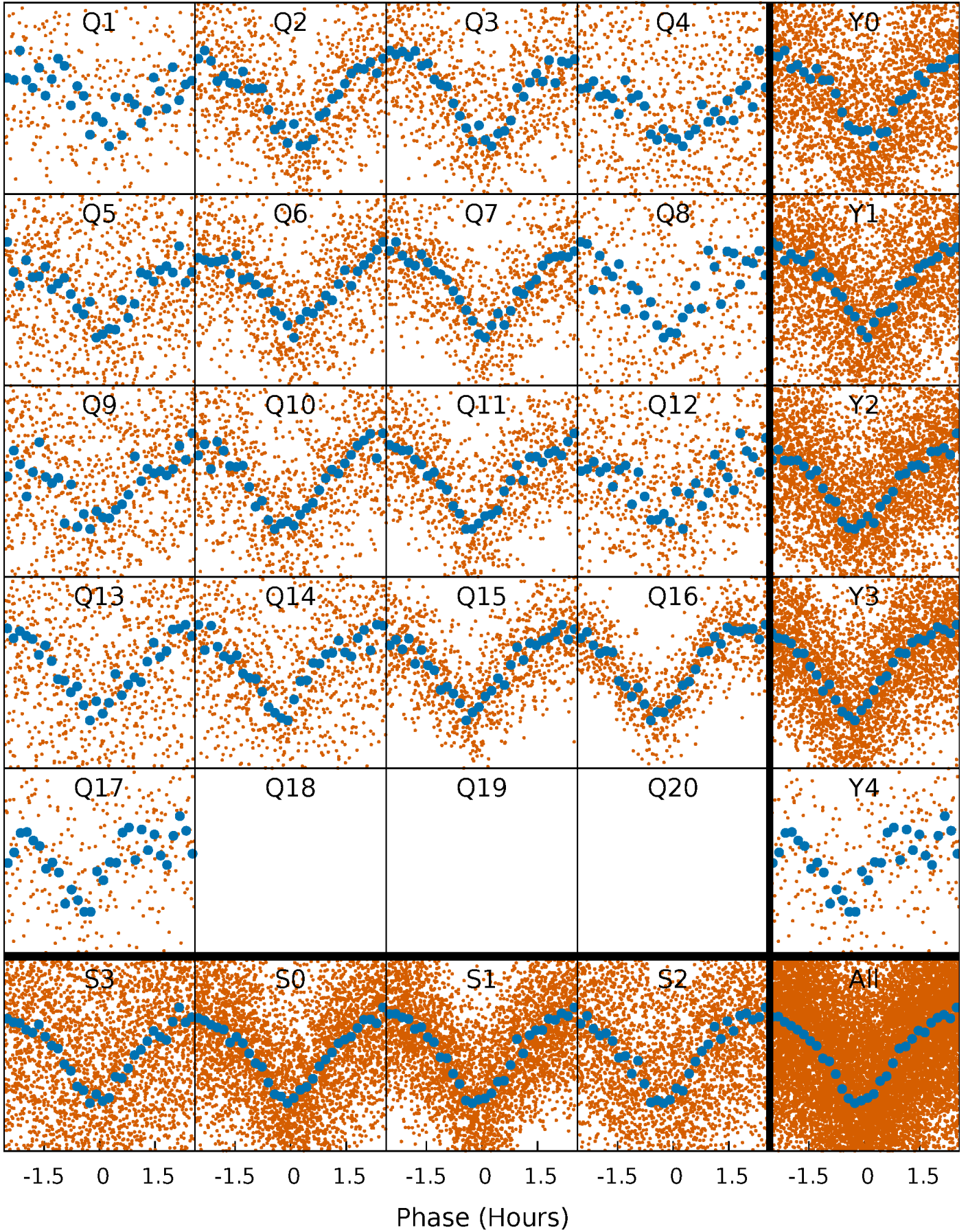
## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

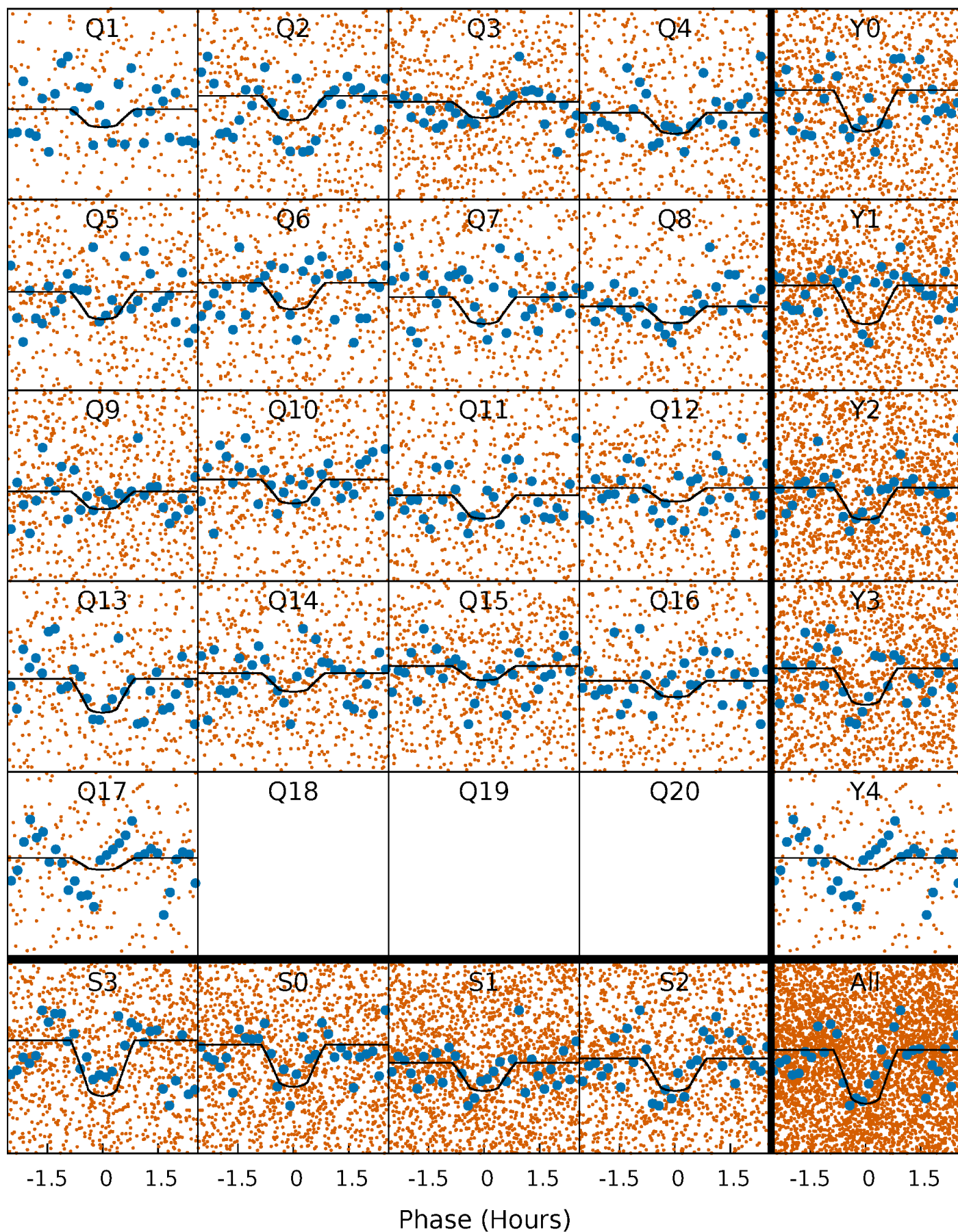
TCE 005123624-01 P= 0.935616 Days  $T_0=132.369687$  (BKJD)





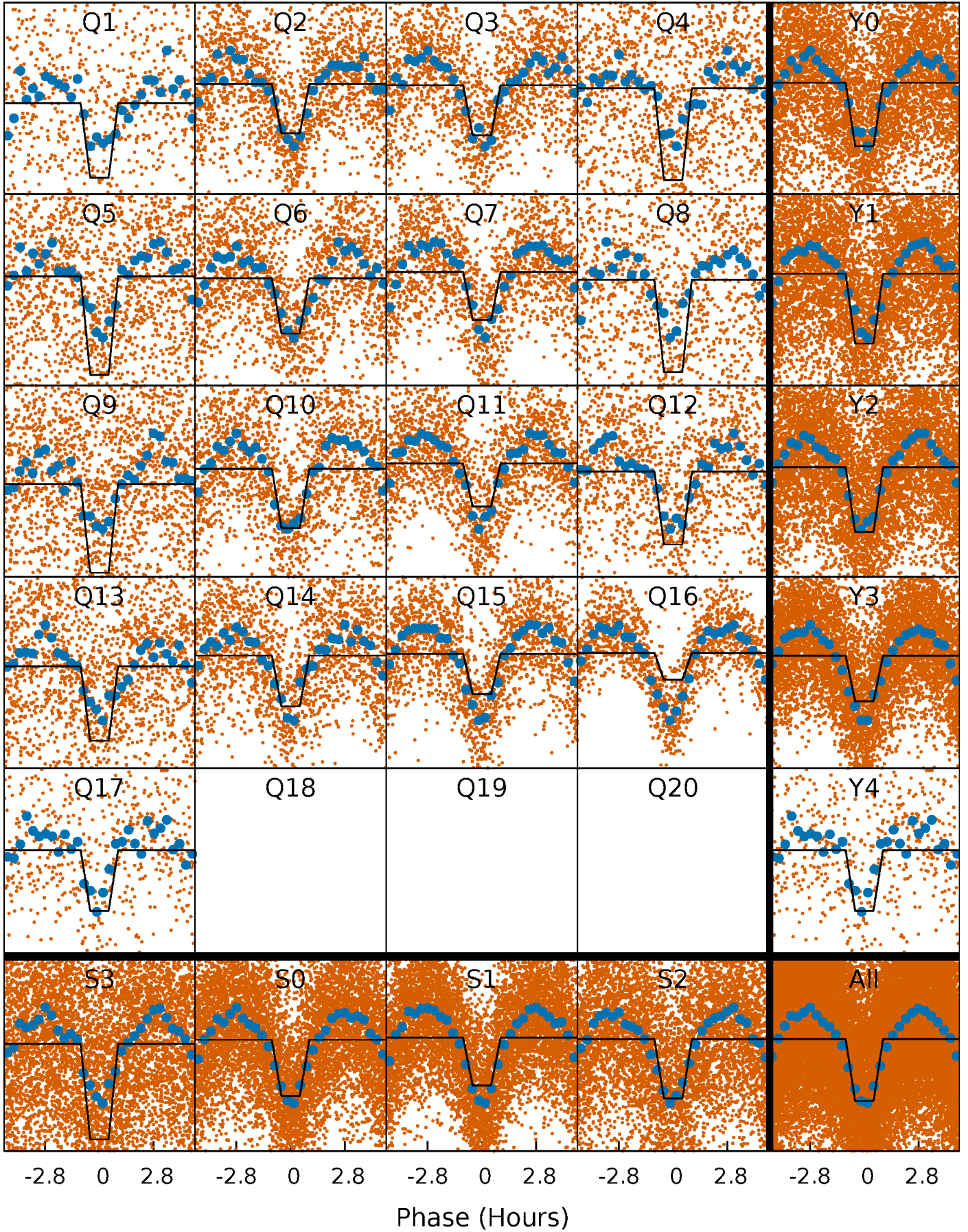
# DV Quarter-Phased Transit Curves

TCE 005123624-01 P= 0.935616 Days  $T_0=132.369687$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

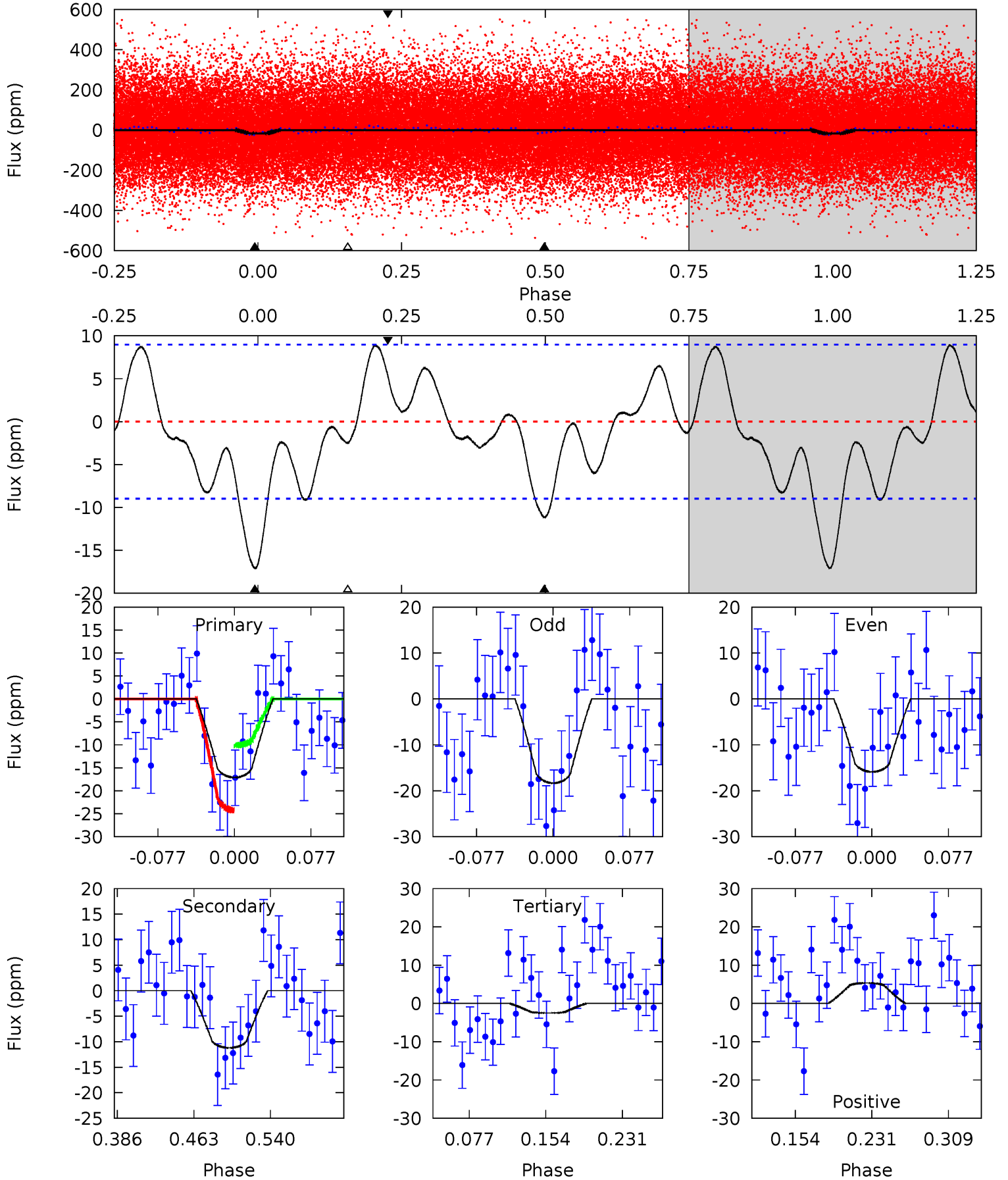
TCE 005123624-01 P= 0.935603 Days  $T_0=132.376557$  (BKJD)



# DV Model-Shift Uniqueness Test

005123624-01, P = 0.935616 Days, E = 131.434071 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.80	5.76	1.29	2.75	4.62	1.77	2.25	7.51	6.04	4.47	3.00	0.63	0.90	0.34	3.64

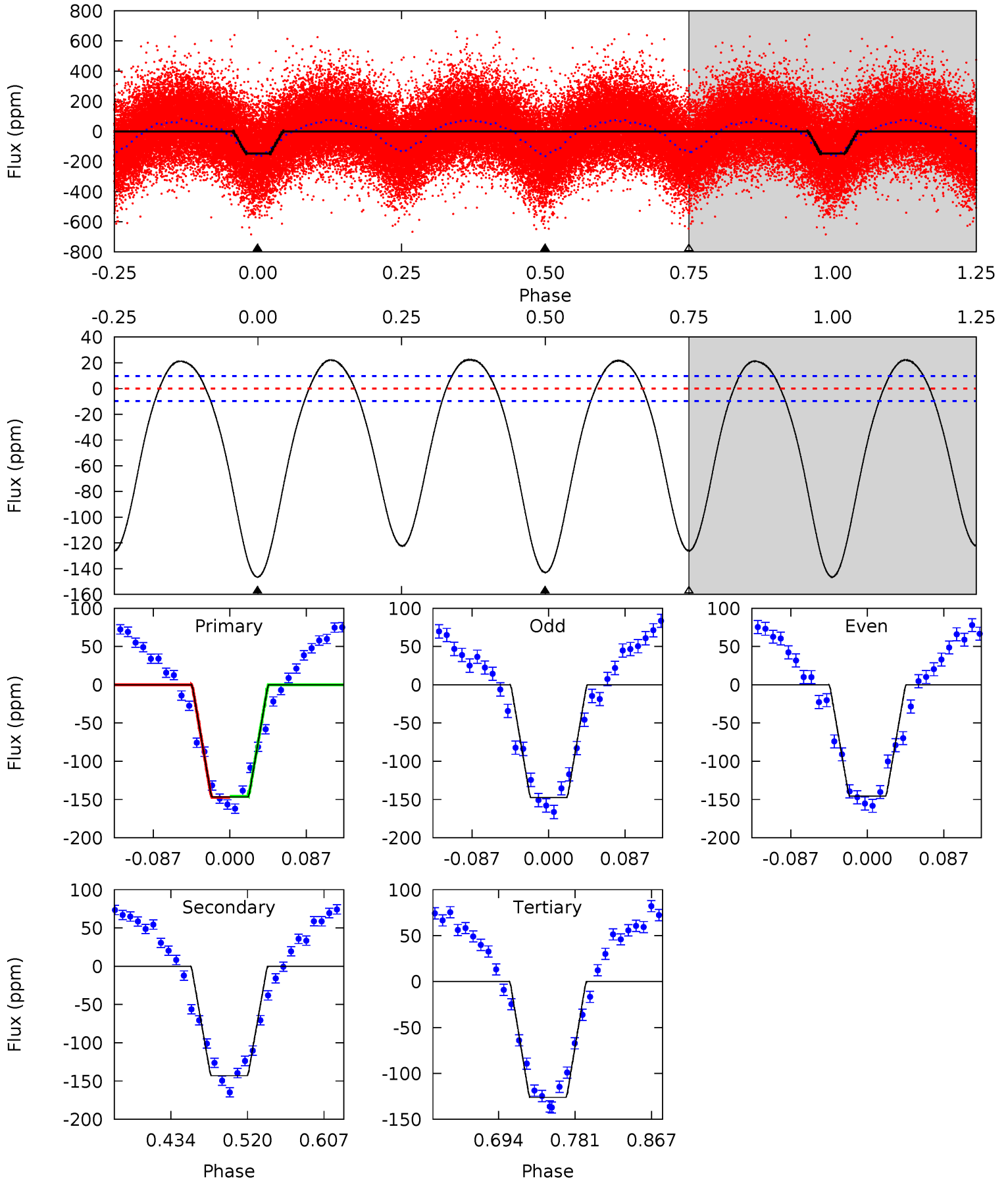




# Alt Model-Shift Uniqueness Test

005123624-01, P = 0.935603 Days, E = 131.440954 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
69.4	67.7	59.7	0	4.59	1.71	23.8	9.69	69.4	7.97	67.7	0.43	1.04	0.13	0.34





### Stellar Parameters For KIC 005123624

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5655^{+166}_{-166}$	$4.493^{+0.126}_{-0.154}$	$-0.760^{+0.350}_{-0.300}$	$0.791^{+0.162}_{-0.108}$	$0.709^{+0.097}_{-0.032}$	$2.021^{+1.157}_{-0.840}$
	+3%/-3%	+3%/-3%	+46%/-39%	+20%/-14%	+14%/-5%	+57%/-42%
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 005123624-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-11 \pm 2$	$0.45^{+0.16}_{-0.14}$	$2404^{+143}_{-121}$	$4641^{+832}_{-523}$	$8.455^{+9.570}_{-3.828}$
Alt.	$-143 \pm 2$	$1.08^{+0.19}_{-0.15}$	$2406^{+146}_{-139}$	$5555^{+386}_{-325}$	$19^{+6}_{-5}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

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

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

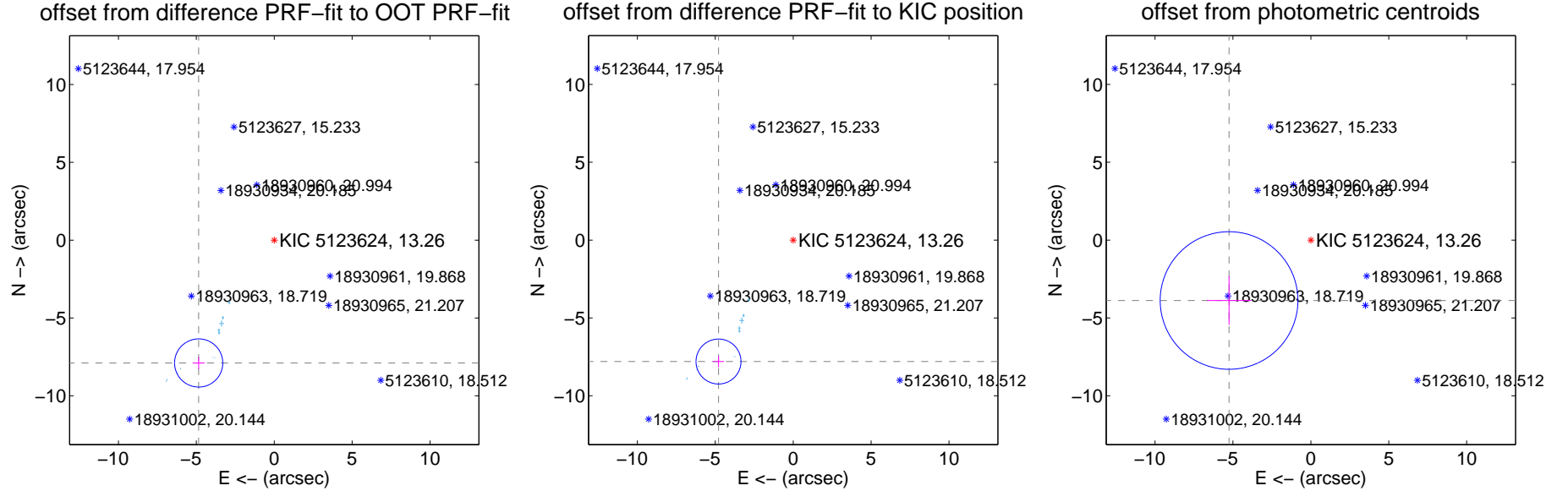
## DV Centroid Data

Supplemental centroid analysis for 005123624-01. Kepler magnitude: 13.26. Transit SNR 8.42

There are 17 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

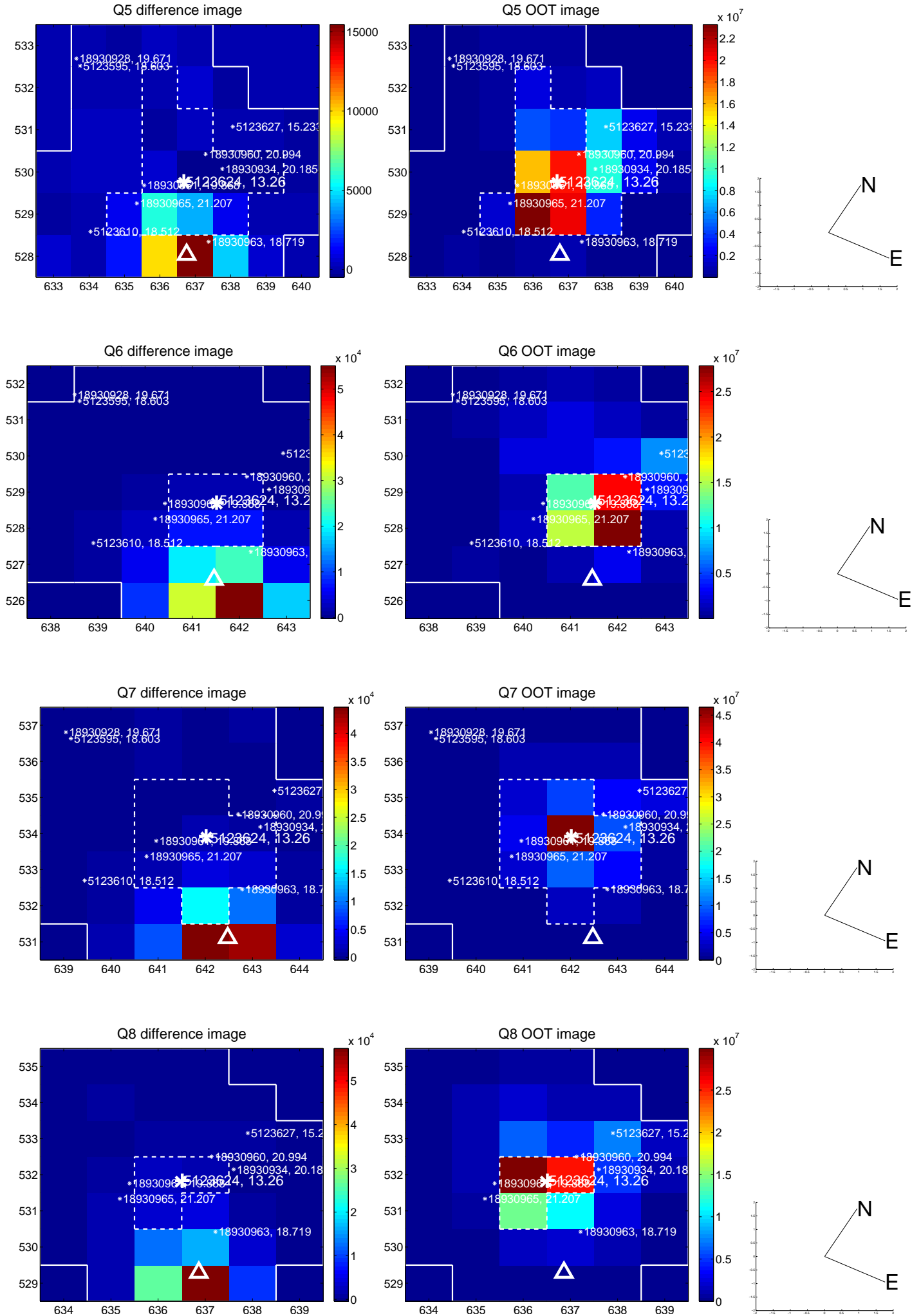
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>9.262 <math>\pm</math> 0.516</b>	<b>17.96</b>	4.850 $\pm$ 0.384	-7.890 $\pm$ 0.389
PRF-fit source offset from KIC position	<b>9.155 <math>\pm</math> 0.481</b>	<b>19.03</b>	4.793 $\pm$ 0.363	-7.800 $\pm$ 0.365
photometric centroid source offset	<b>6.53 <math>\pm</math> 1.47</b>	<b>4.43</b>	5.25 $\pm$ 1.42	-3.88 $\pm$ 1.56



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- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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.

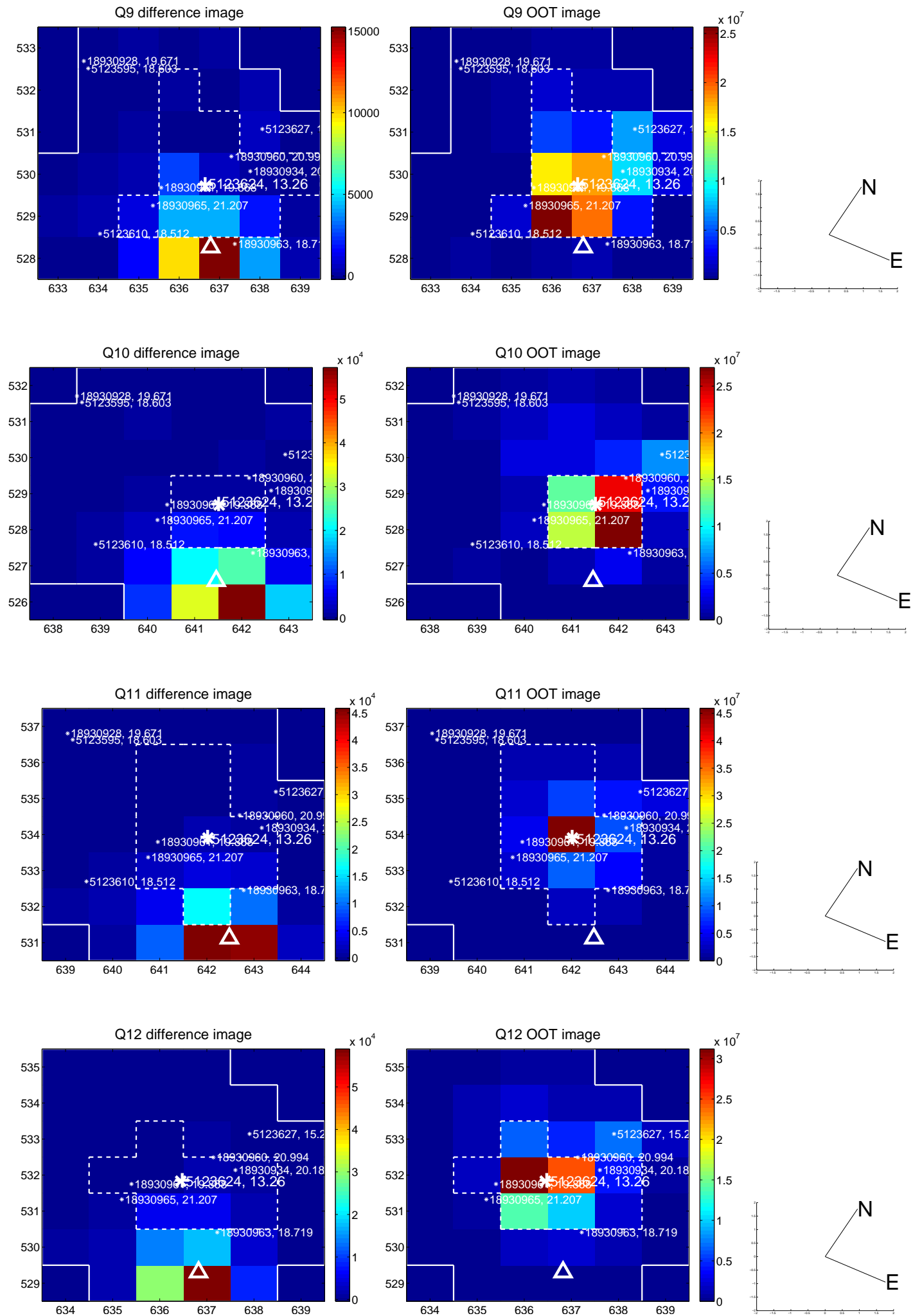


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

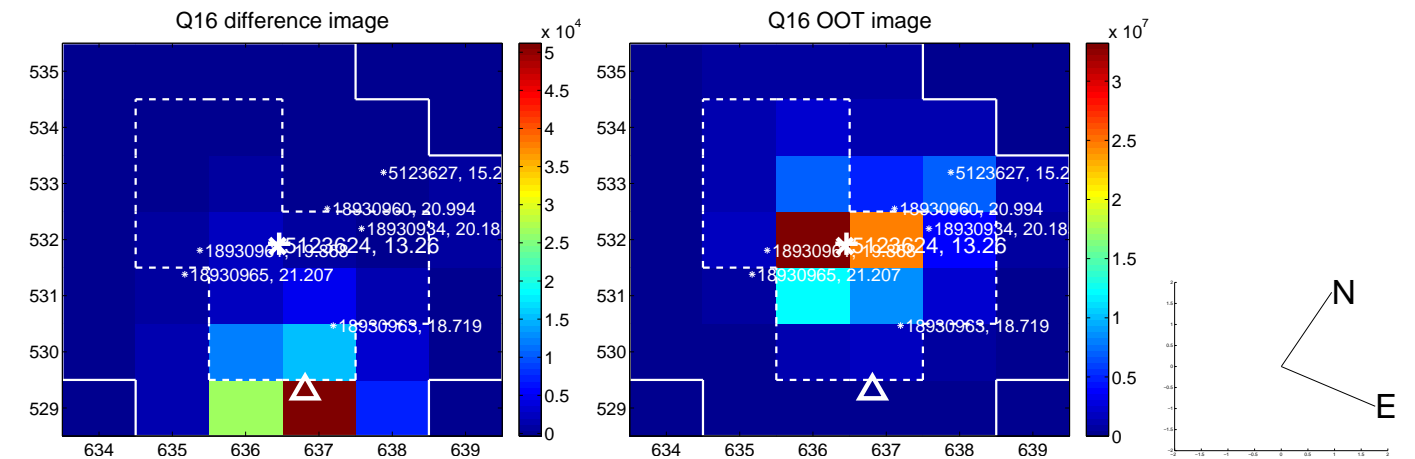
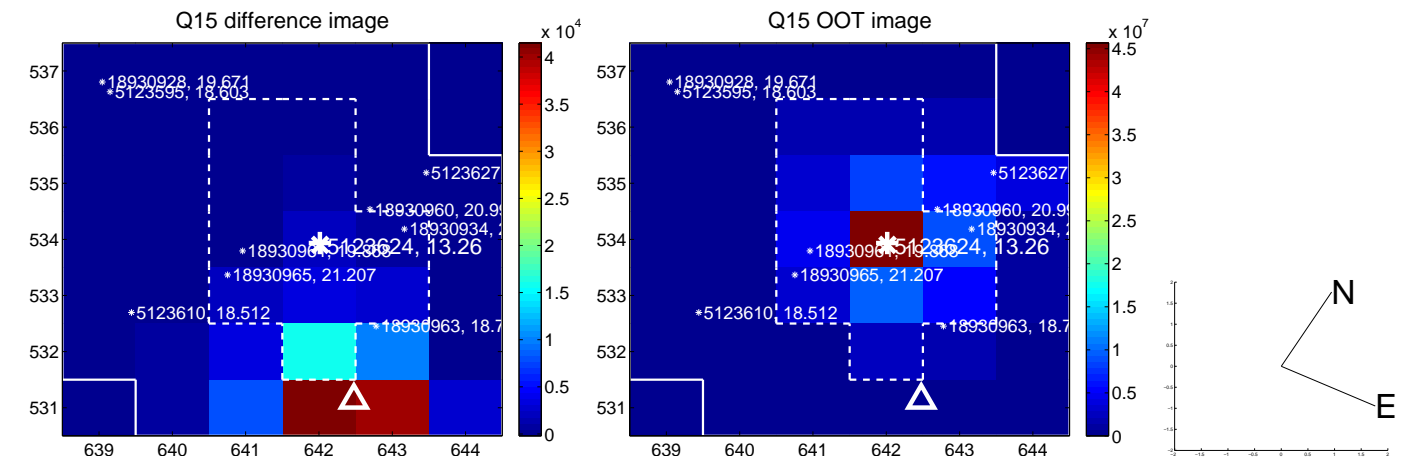
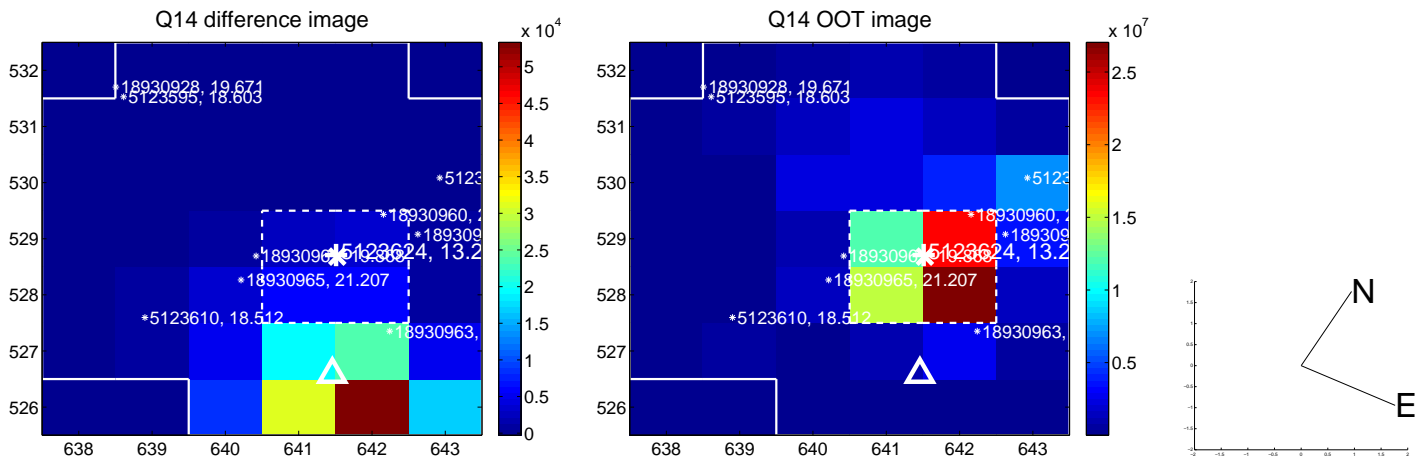
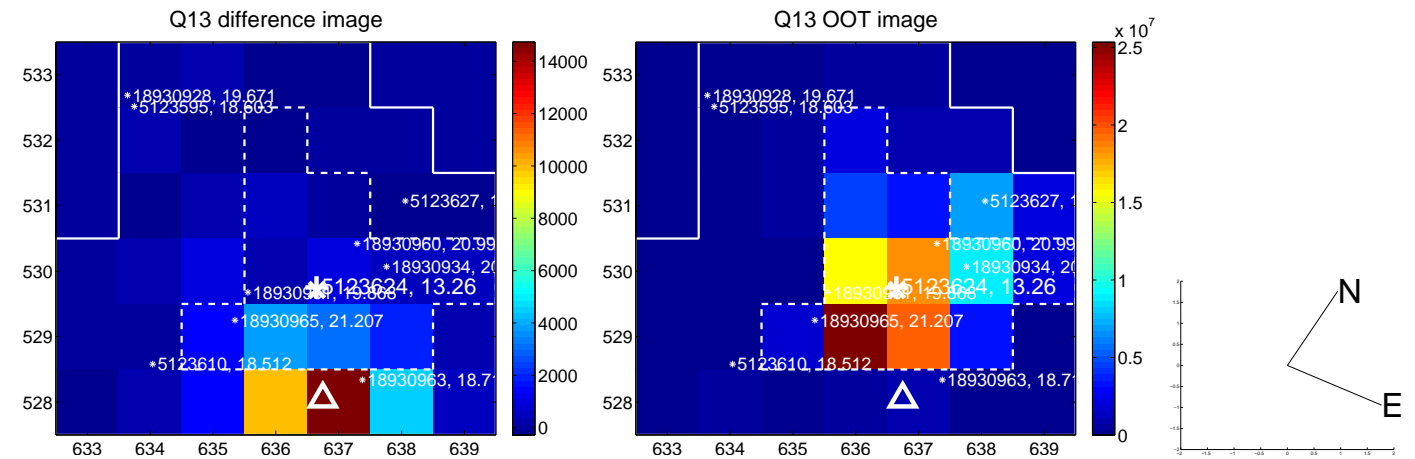




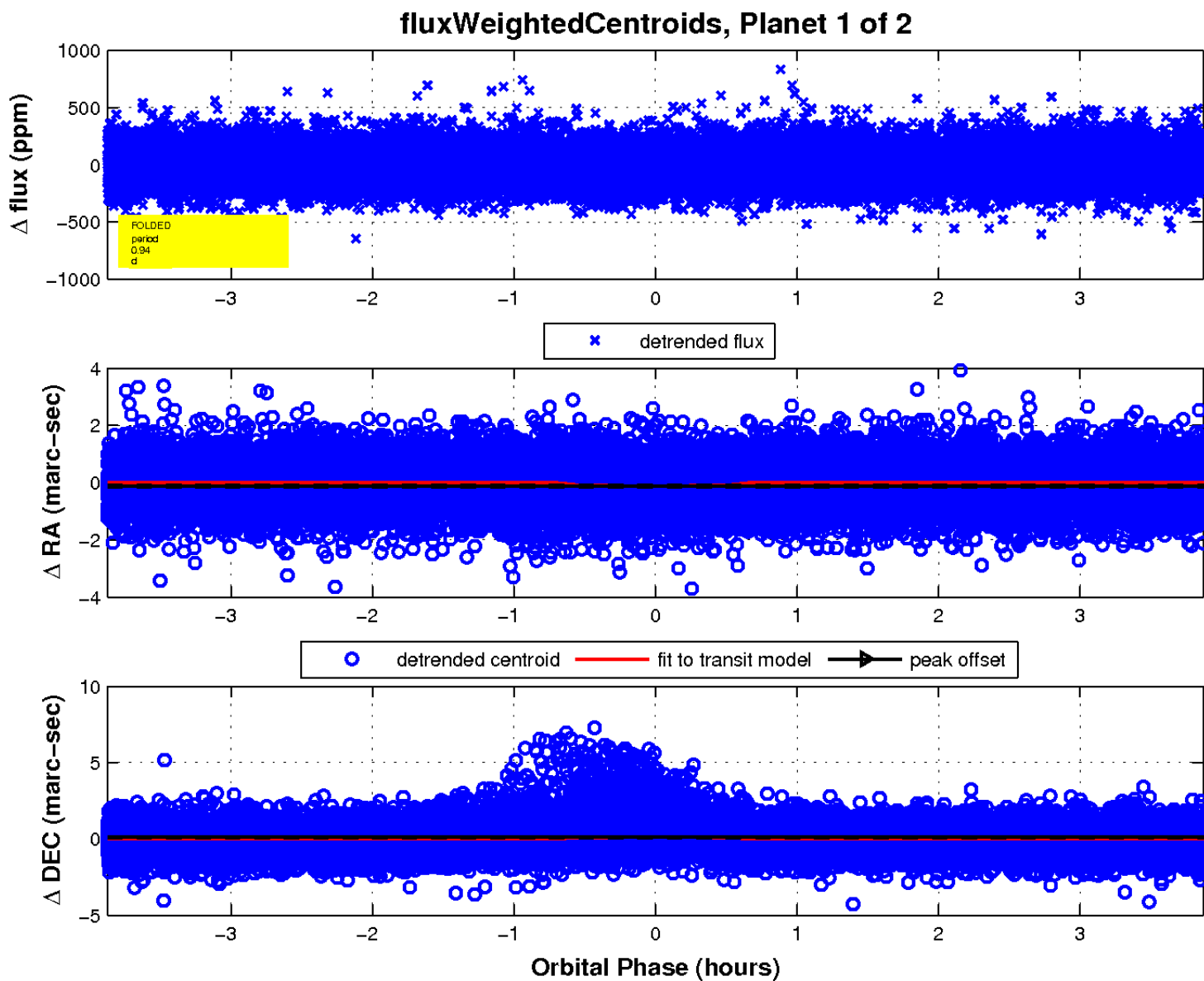
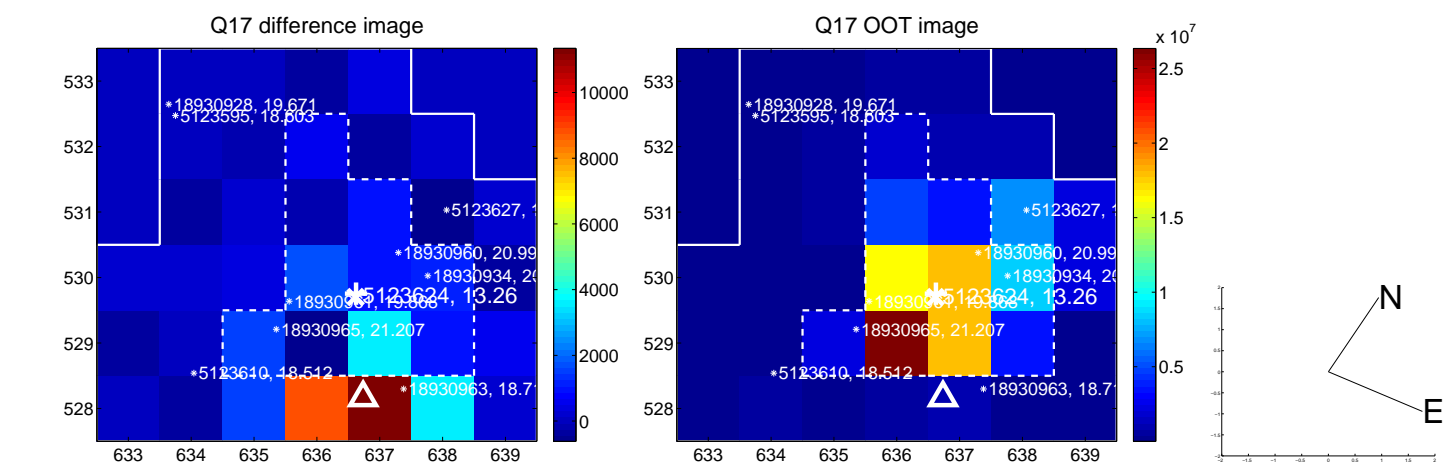
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



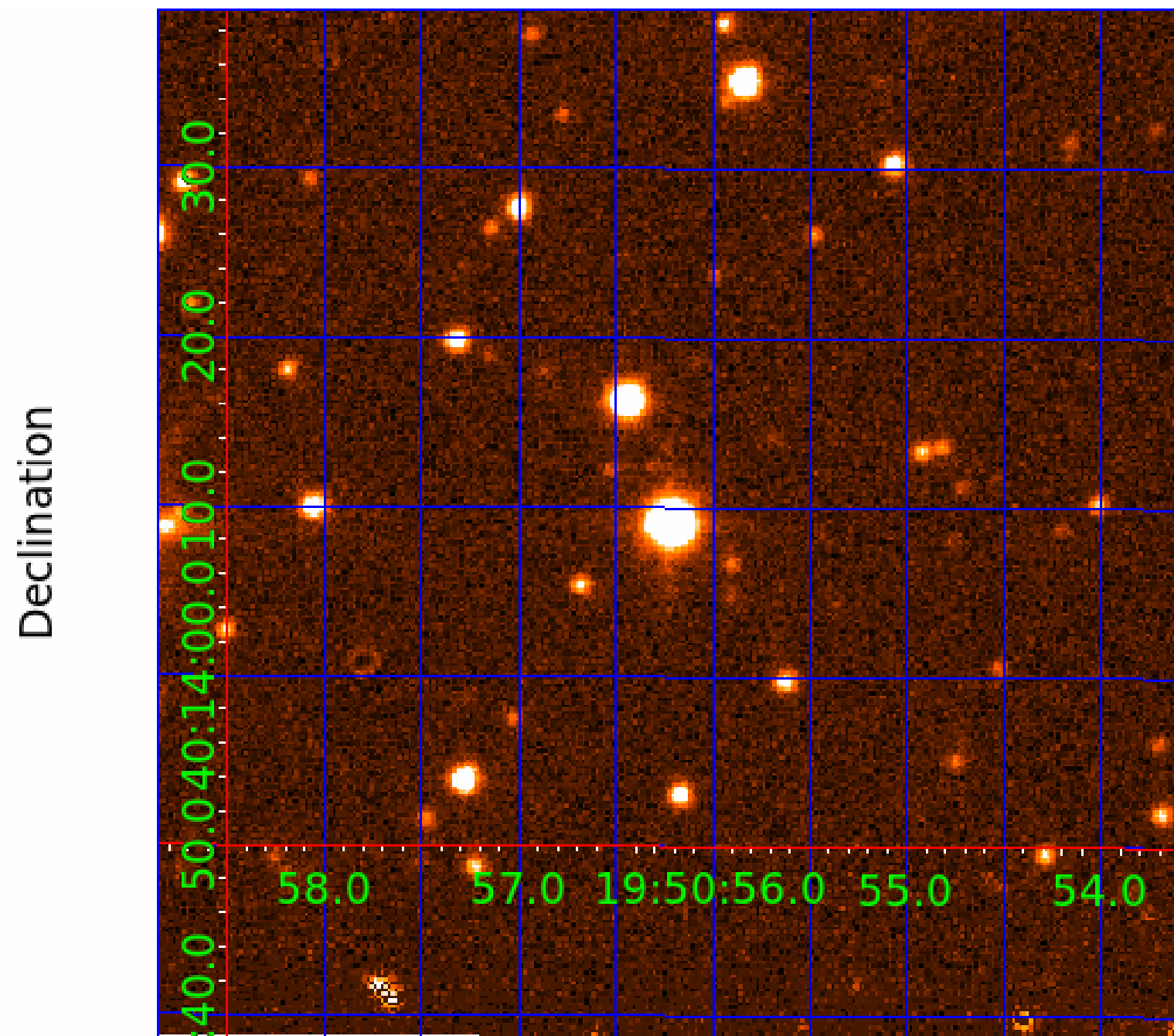
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





# KIC 005123624

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005123624-01	OBS	No	0.935616	132.369687	22.9	1.292	7.4	8.4	0.79	5655	0.45	2054.05
005123624-02	OBS	No	0.935557	131.946796	11.1	5.118	7.7	8.1	0.79	5655	0.29	2054.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005123624-01	OBS	FP	0.00	1	0	1	0	LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
005123624-02	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET

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

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

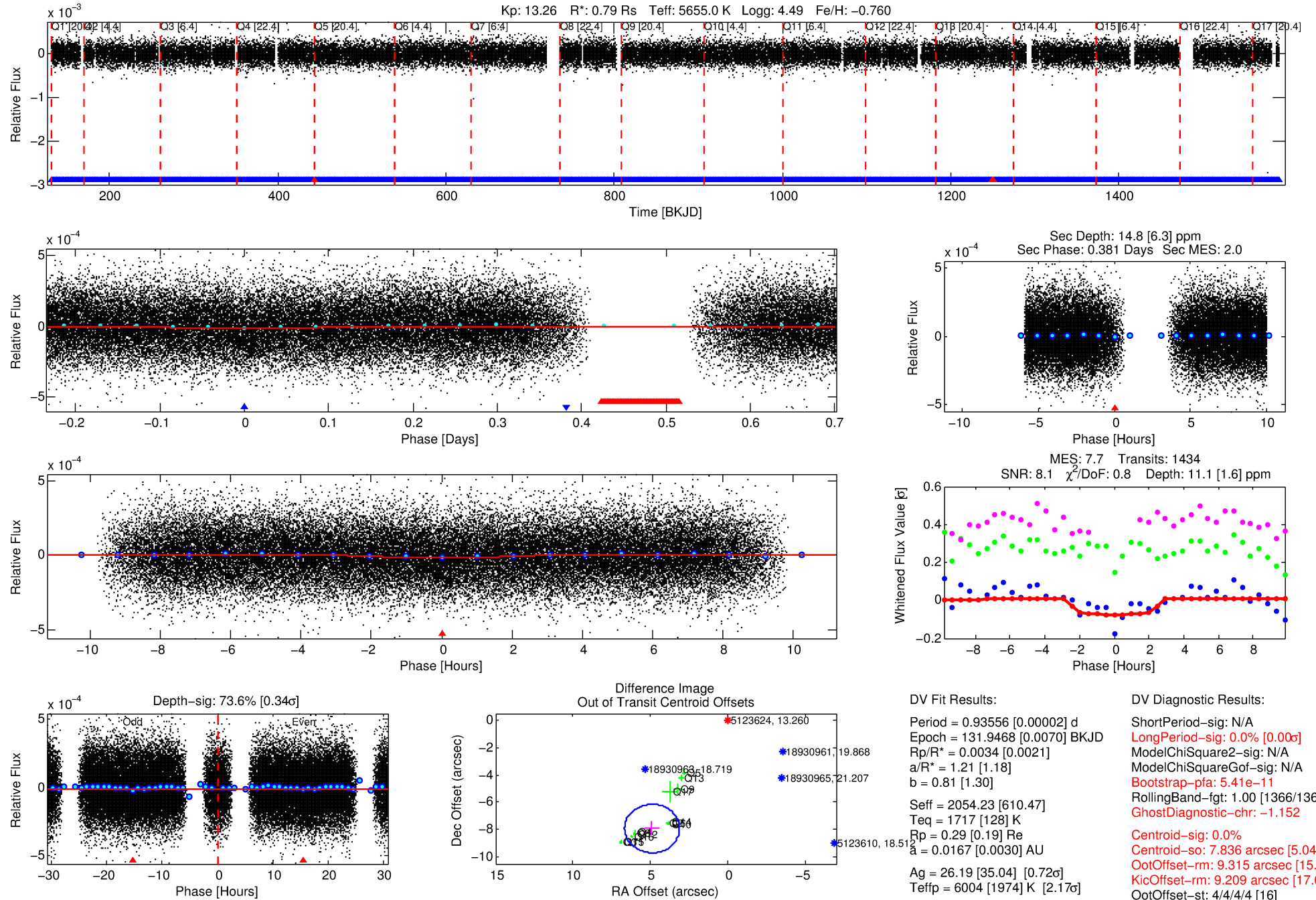
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005123624-02

No Significant Match Found

# DV One-Page Summary

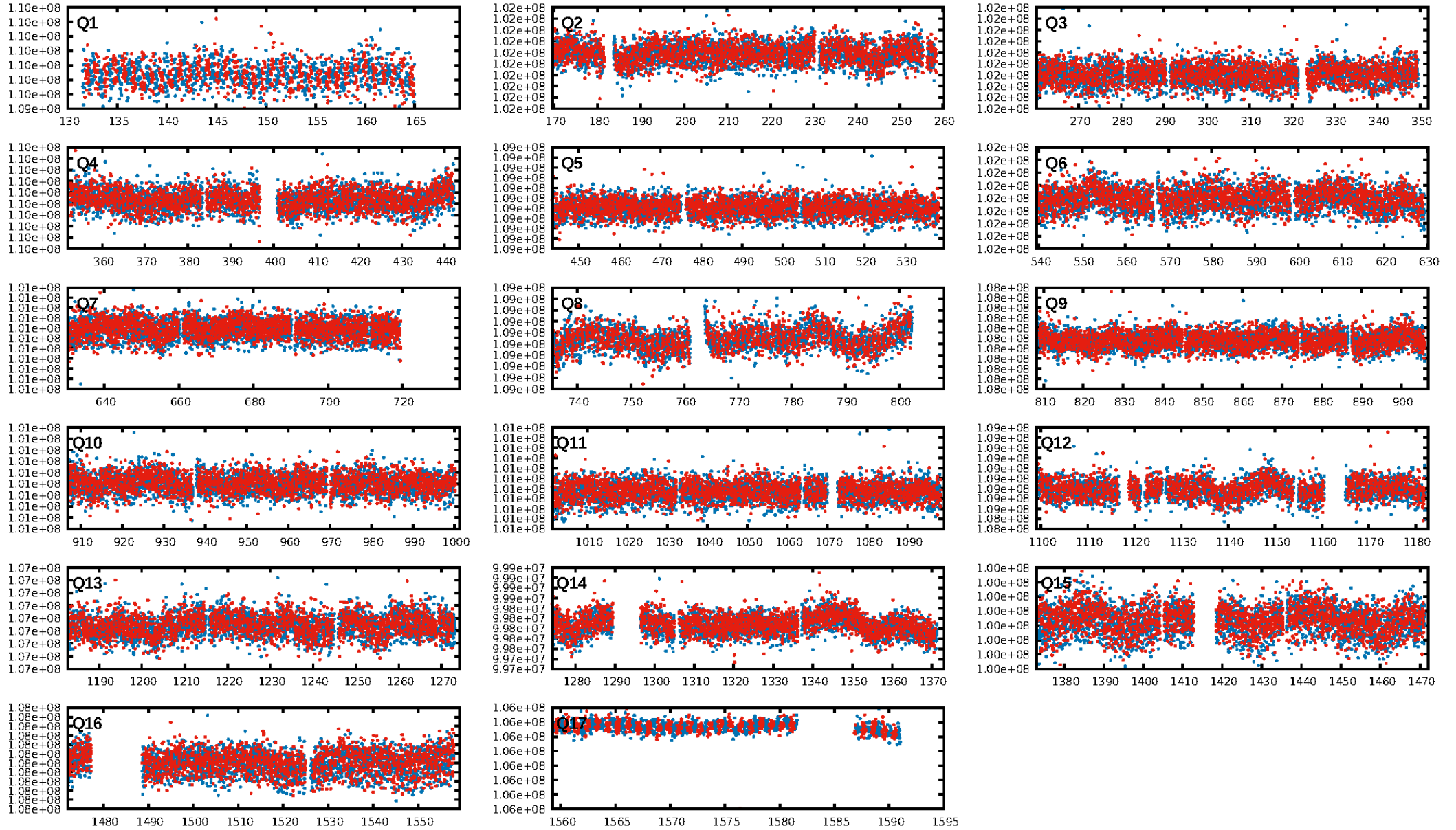
KIC: 5123624 Candidate: 2 of 2 Period: 0.936 d



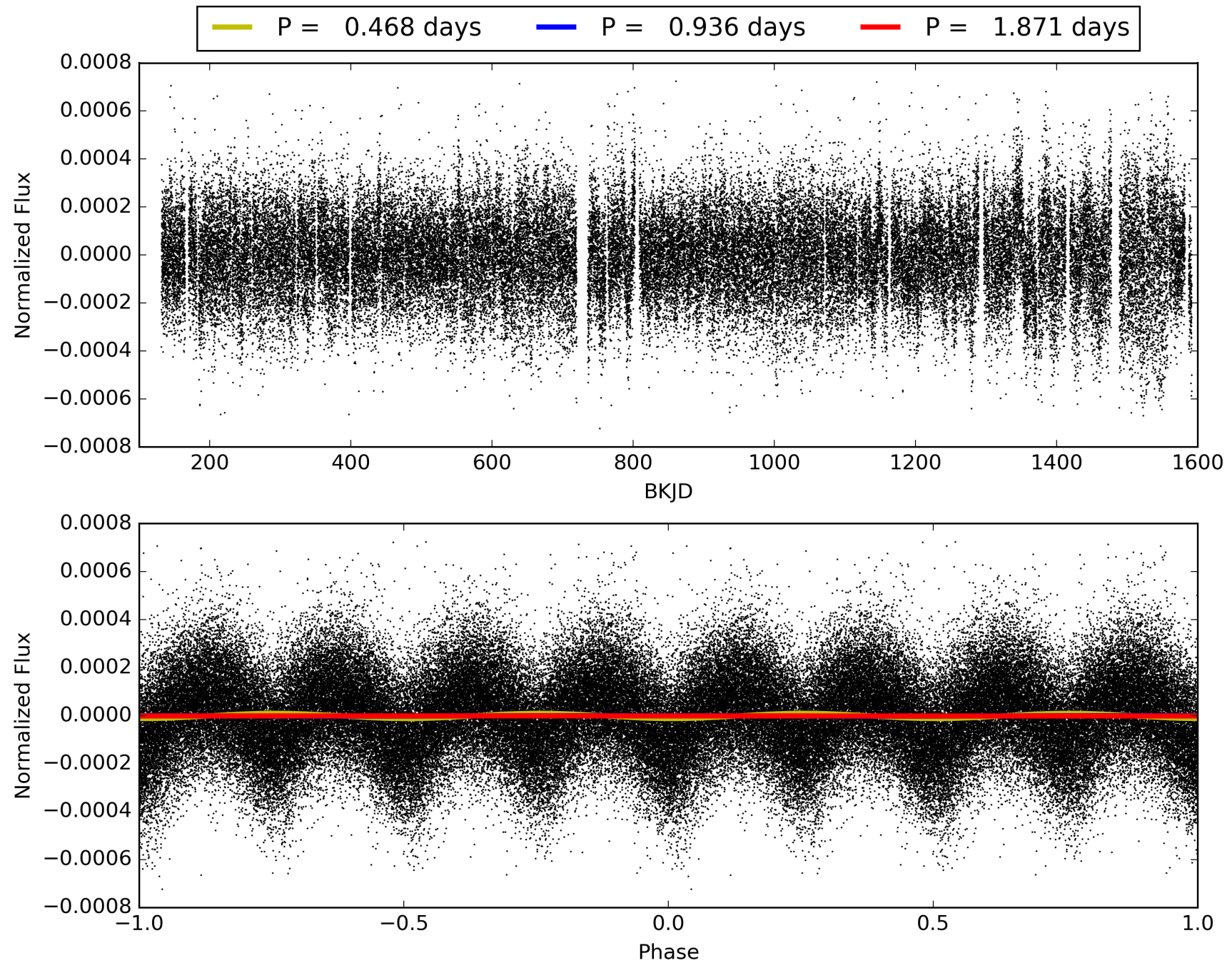
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:21:20 Z

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

# TCE 005123624-02, PDC Light Curves



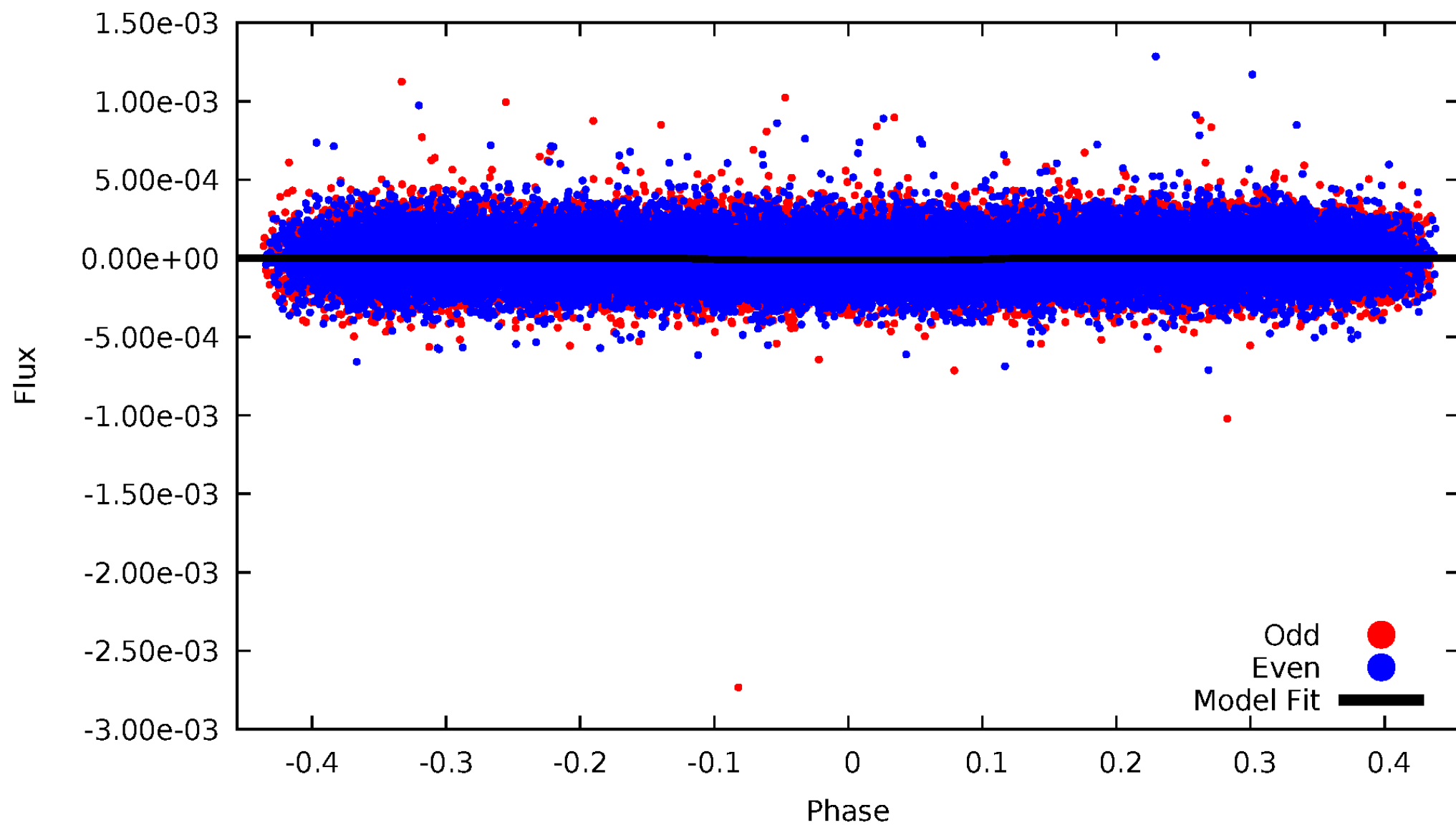
TCE 005123624-02





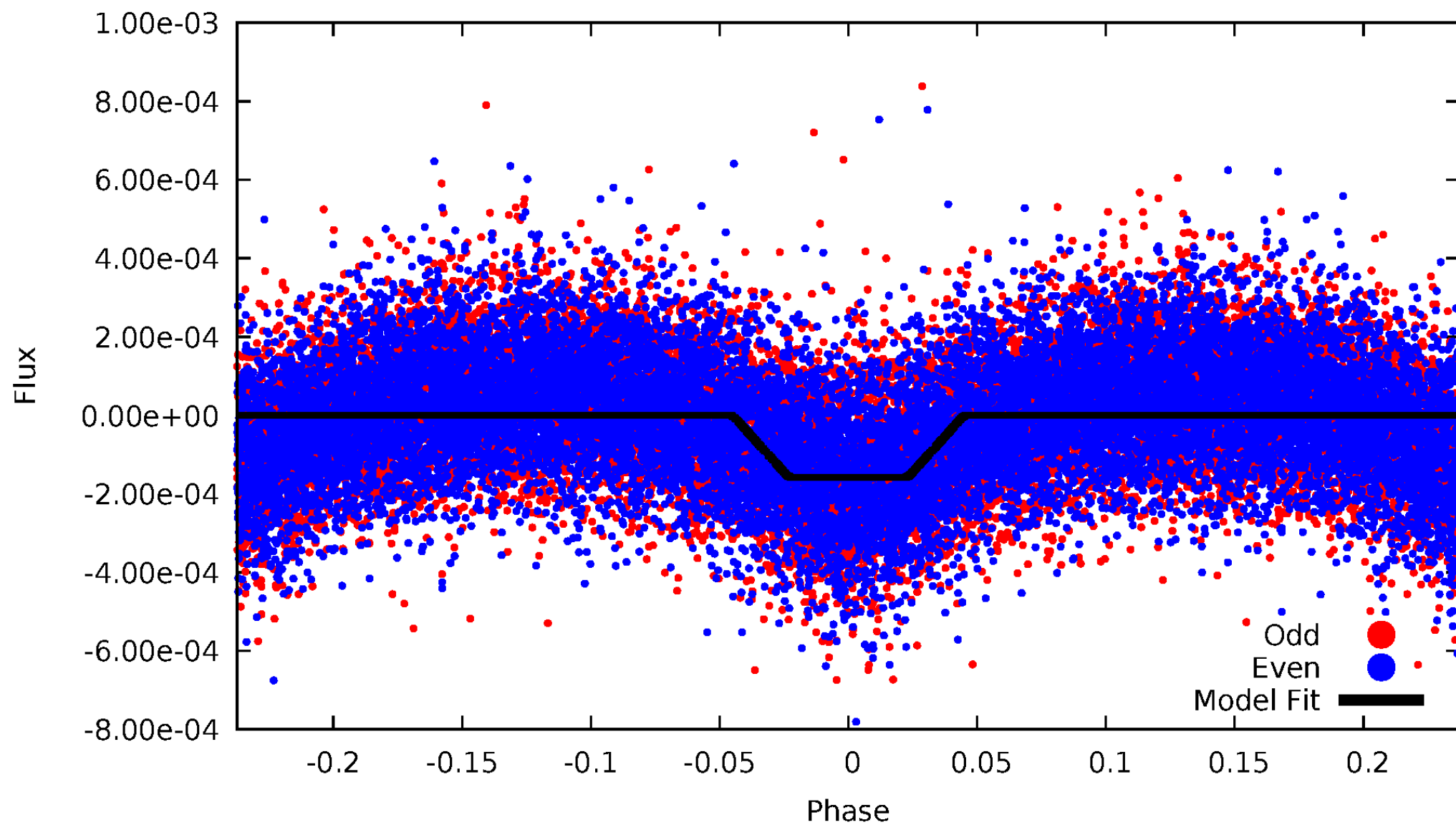
# DV Odd/Even

TCE 005123624-02



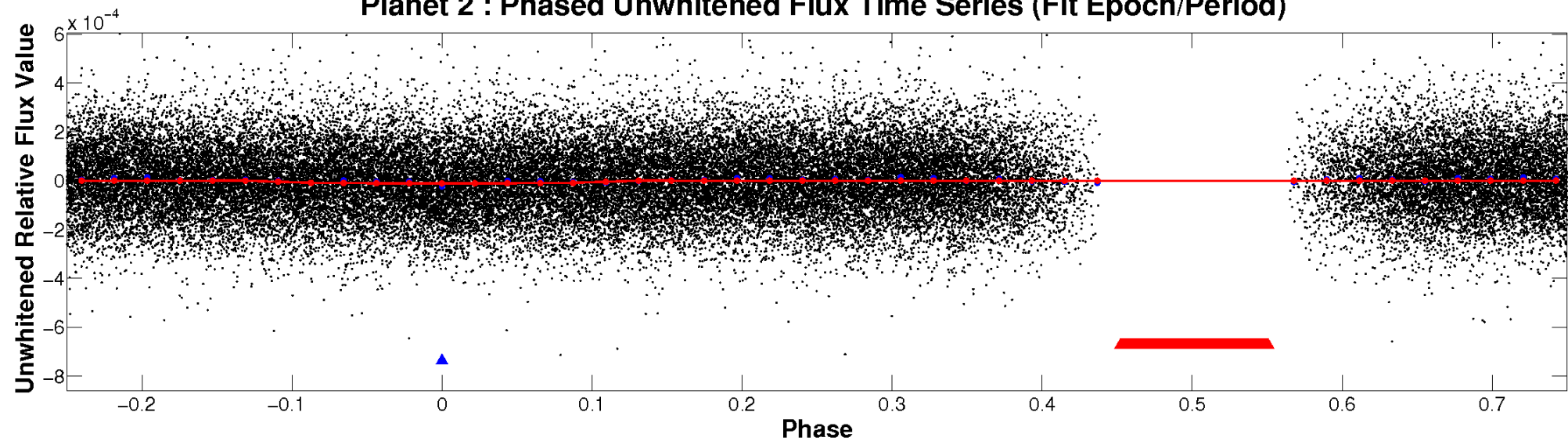
# ALT Odd/Even

TCE 005123624-02

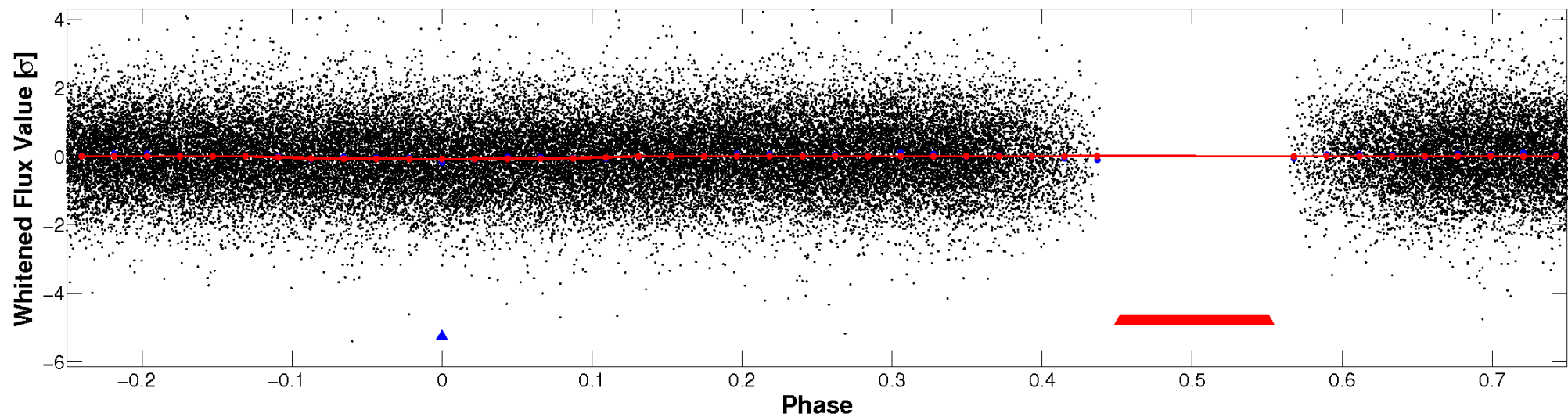


# Non-Whitened Vs. Whitened Light Curve

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

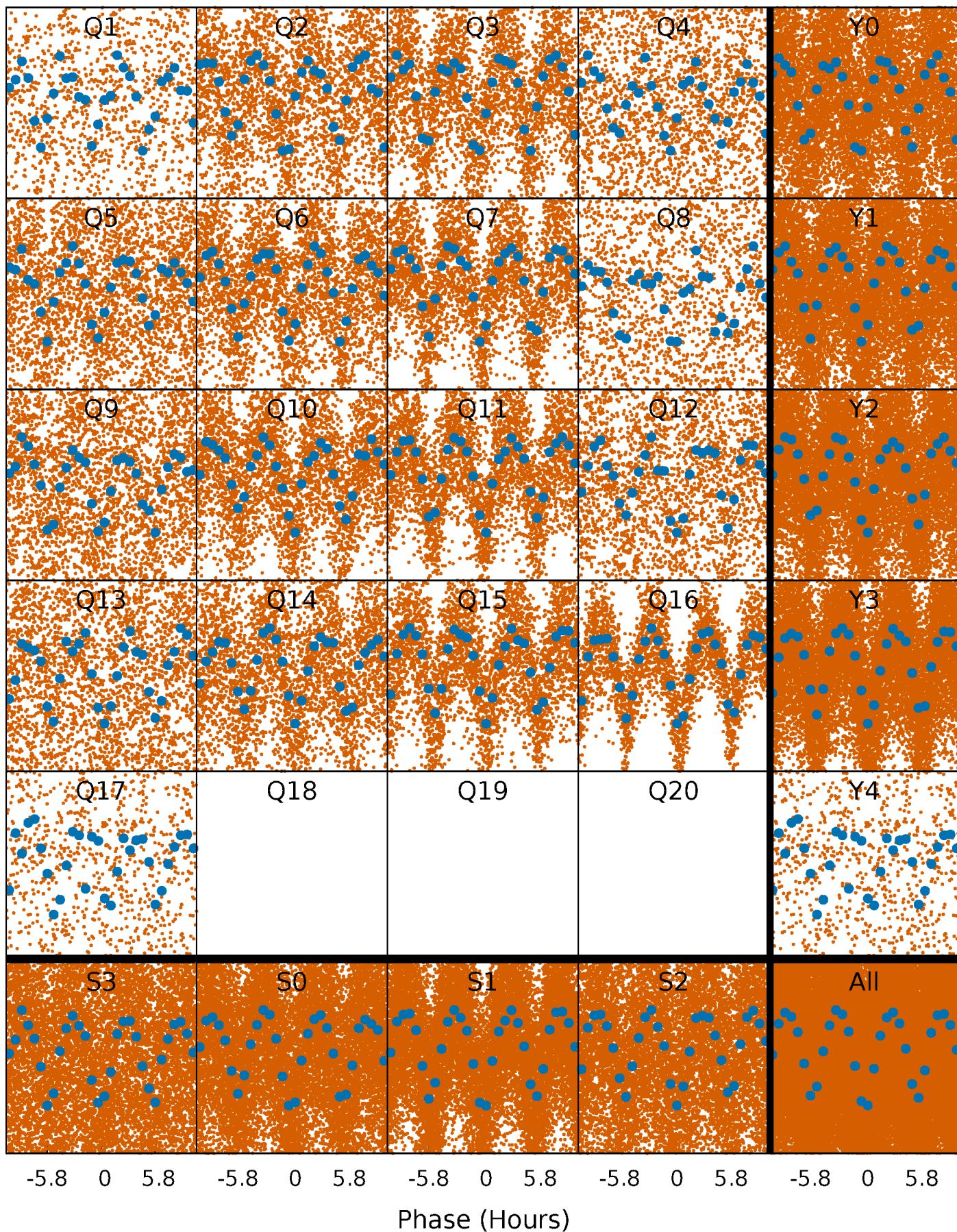


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

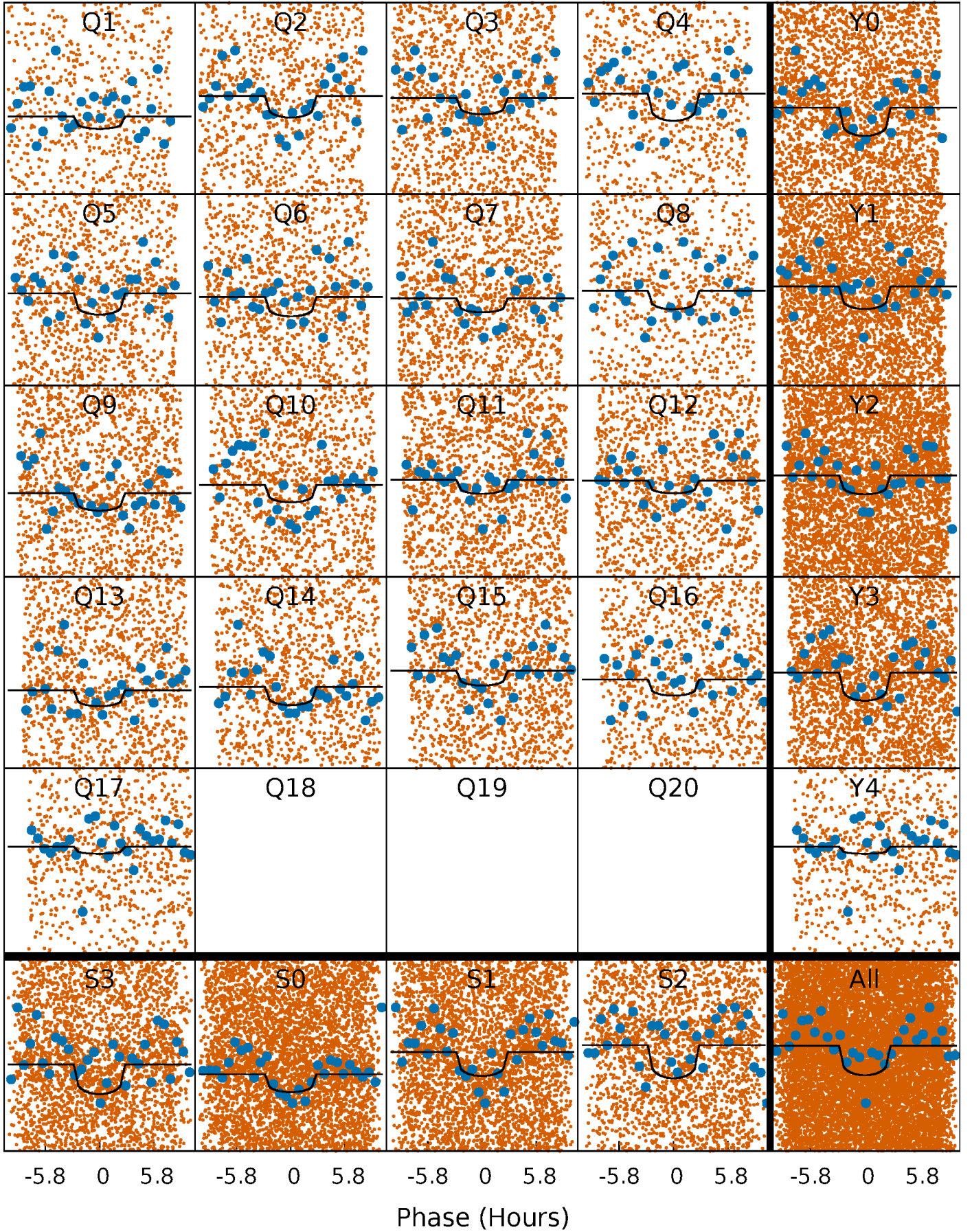
TCE 005123624-02   P= 0.935557 Days    $T_0=131.946796$  (BKJD)





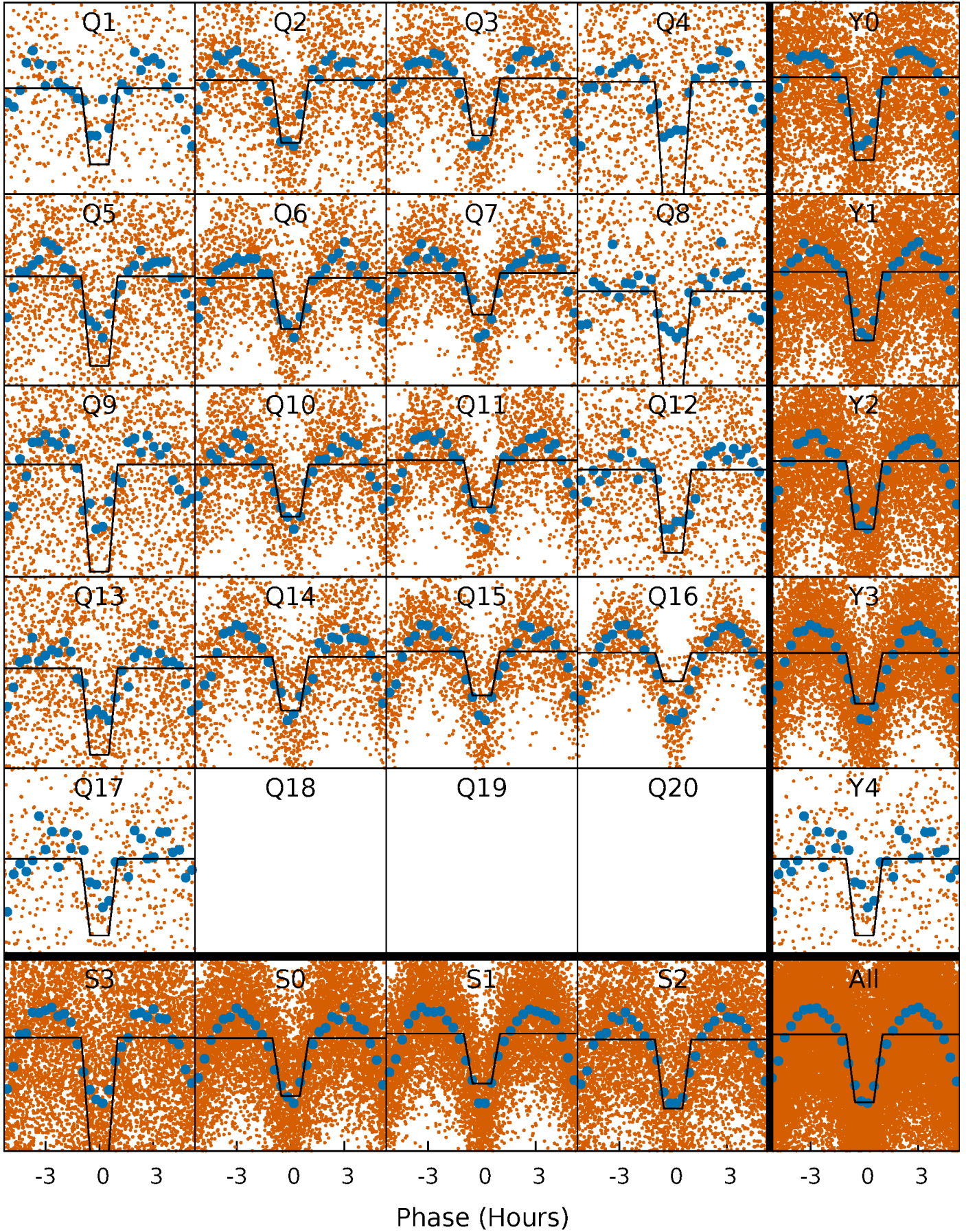
# DV Quarter-Phased Transit Curves

TCE 005123624-02   P= 0.935557 Days    $T_0=131.946796$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005123624-02   P= 0.935587 Days    $T_0=131.921841$  (BKJD)

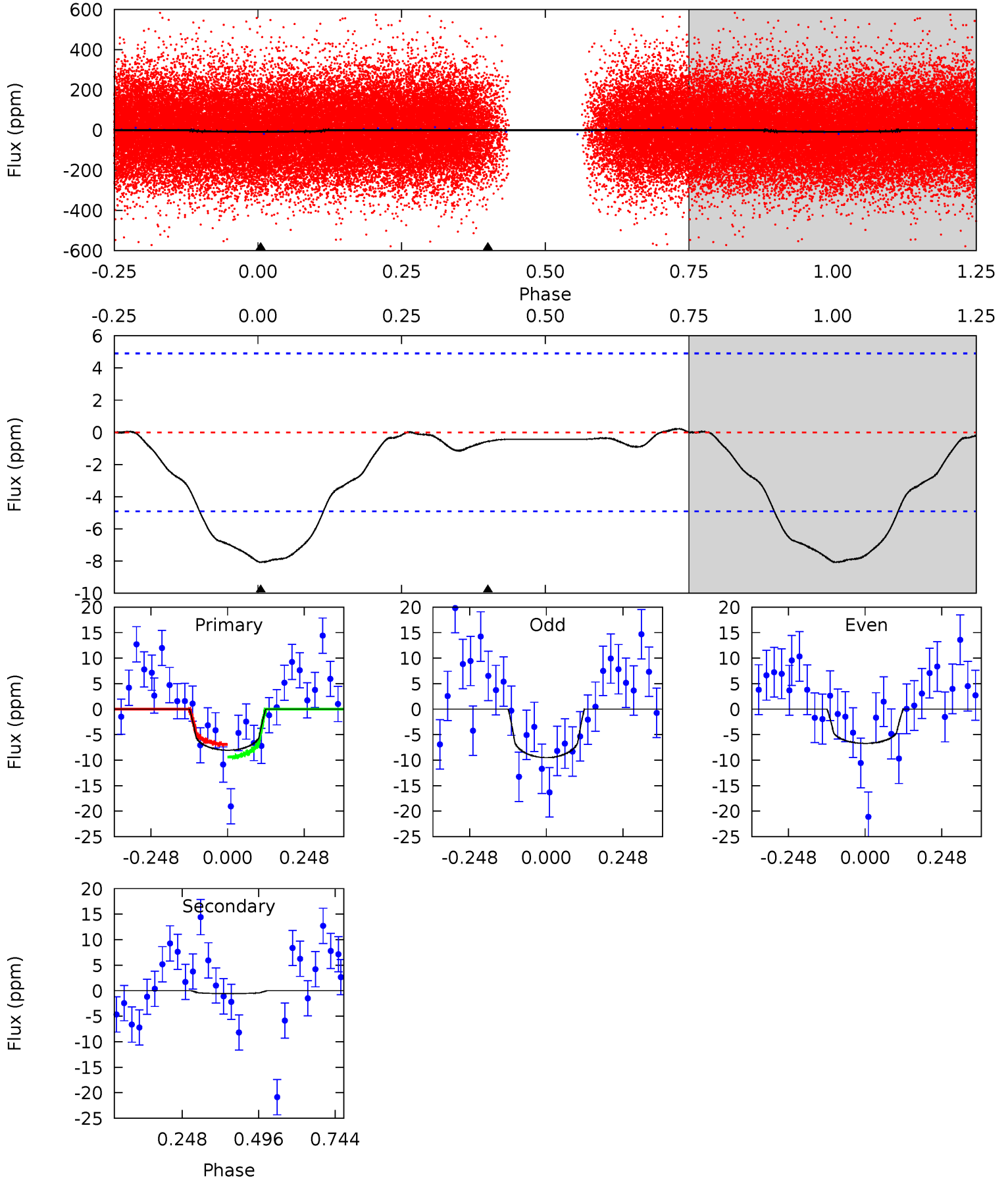




# DV Model-Shift Uniqueness Test

005123624-02, P = 0.935557 Days, E = 131.011239 Days

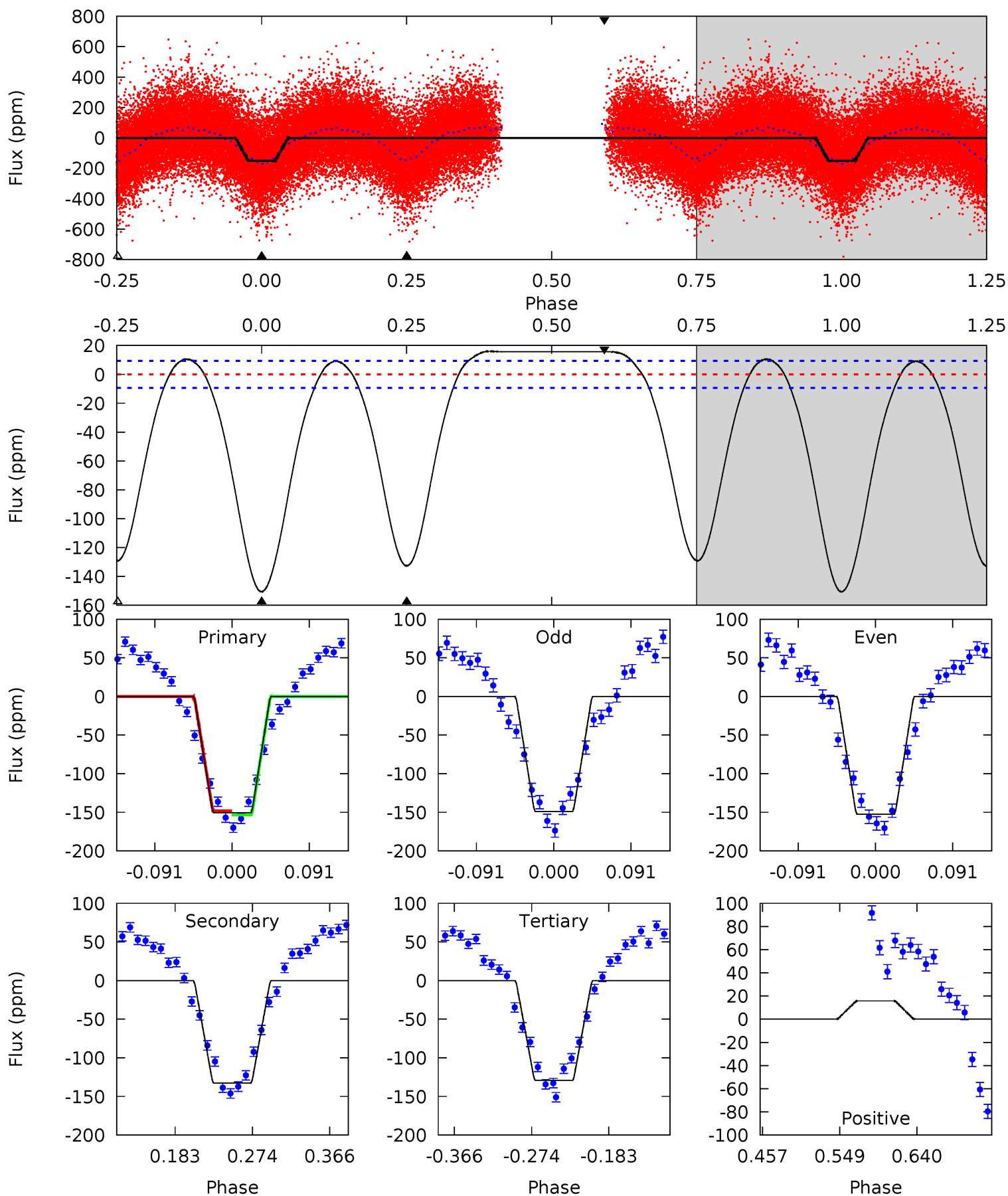
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.18	0.50	0	0	4.37	1.16	0.37	7.18	7.18	0.50	0.50	1.25	1.09	0.03	1.11



# Alt Model-Shift Uniqueness Test

005123624-02, P = 0.935587 Days, E = 130.986254 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
73.8	65.0	63.3	7.72	4.58	1.69	23.0	10.5	66.1	1.71	57.3	0.86	1.03	0.10	1.33



### Stellar Parameters For KIC 005123624

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5655^{+166}_{-166}$	$4.493^{+0.126}_{-0.154}$	$-0.760^{+0.350}_{-0.300}$	$0.791^{+0.162}_{-0.108}$	$0.709^{+0.097}_{-0.032}$	$2.021^{+1.157}_{-0.840}$
	+3%/-3%	+3%/-3%	+46%/-39%	+20%/-14%	+14%/-5%	+57%/-42%
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 005123624-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1 \pm 1$	$0.32^{+0.18}_{-0.16}$	$2407^{+152}_{-126}$	$2797^{+1284}_{-6128}$	$0.645^{+3.693}_{-1.645}$
Alt.	$-133 \pm 2$	$1.10^{+0.23}_{-0.22}$	$2400^{+159}_{-125}$	$5413^{+513}_{-418}$	$17^{+9}_{-5}$

$T_{max}$  = 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  $A_{obs} \gg 1.0$

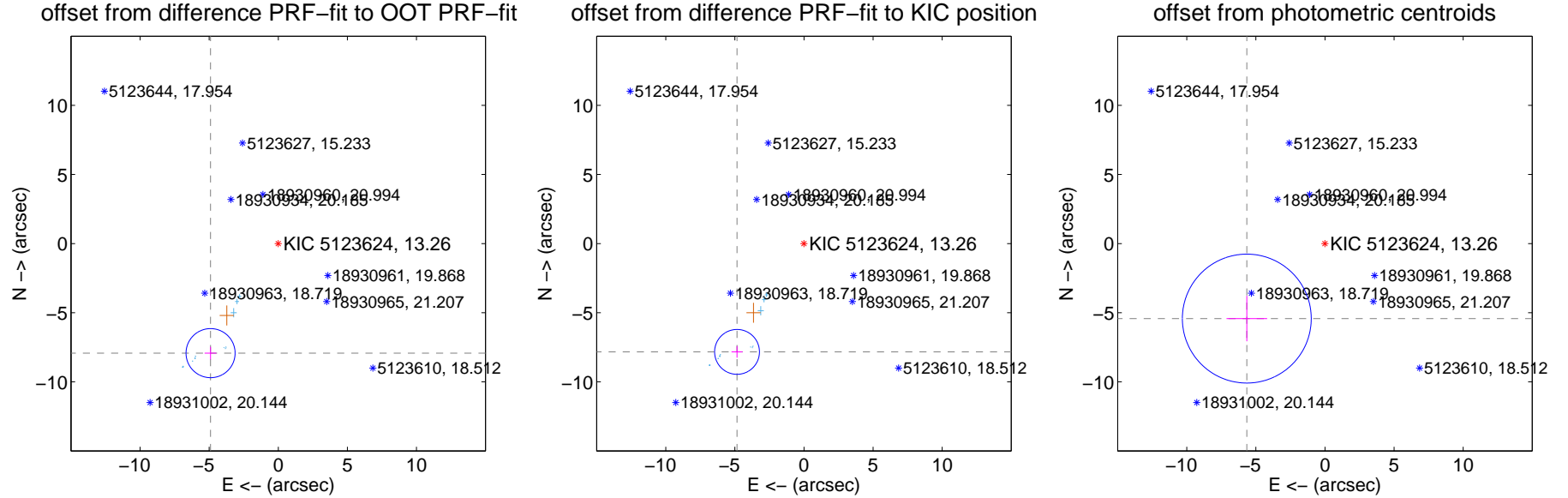
## DV Centroid Data

Supplemental centroid analysis for 005123624-02. Kepler magnitude: 13.26. Transit SNR 8.05

There are 15 quarters with good PRF difference image offsets

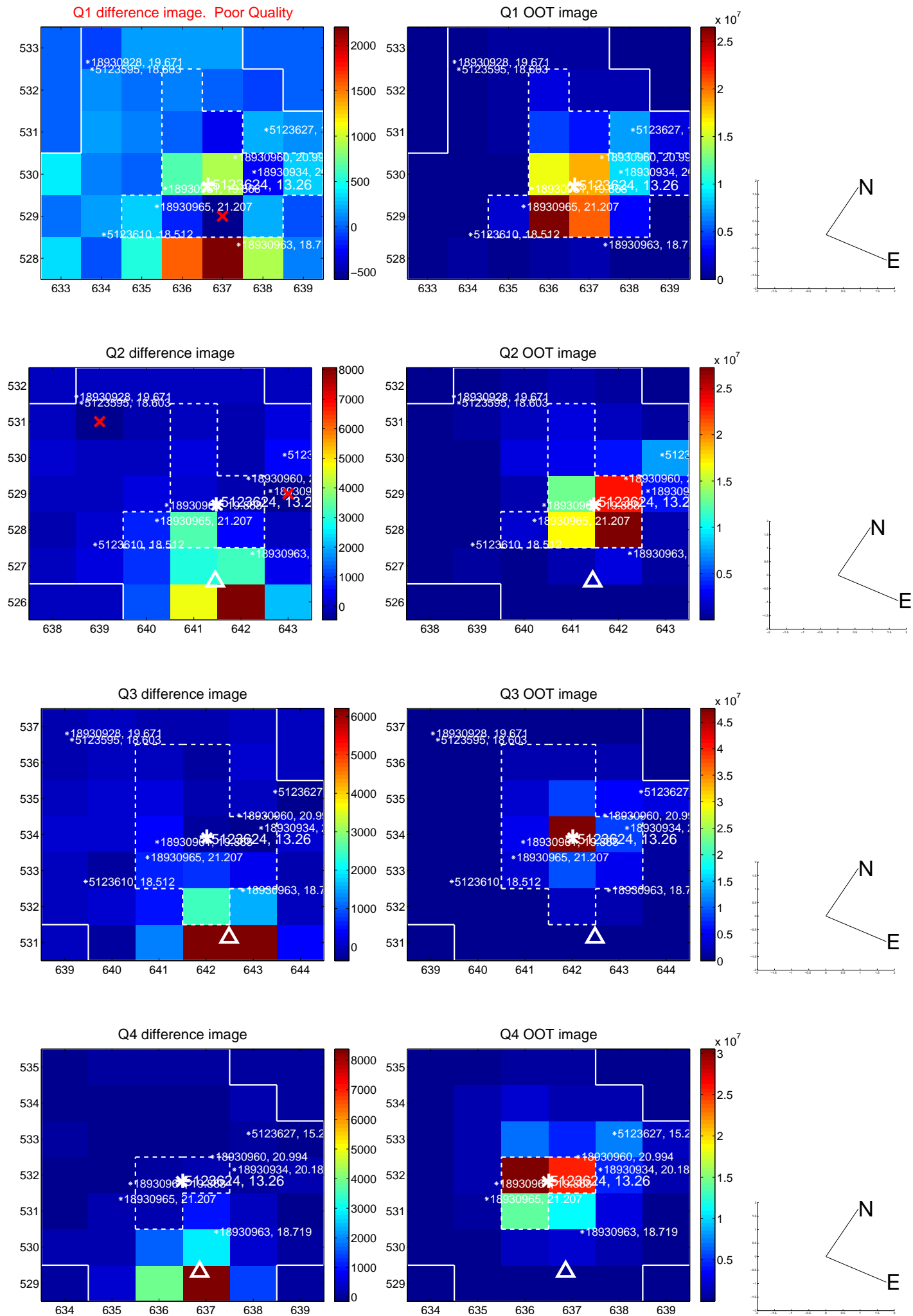
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	9.315 $\pm$ 0.592	15.74	4.898 $\pm$ 0.427	-7.923 $\pm$ 0.455
PRF-fit source offset from KIC position	9.209 $\pm$ 0.541	17.03	4.844 $\pm$ 0.395	-7.833 $\pm$ 0.421
photometric centroid source offset	7.84 $\pm$ 1.55	5.04	5.66 $\pm$ 1.47	-5.42 $\pm$ 1.64

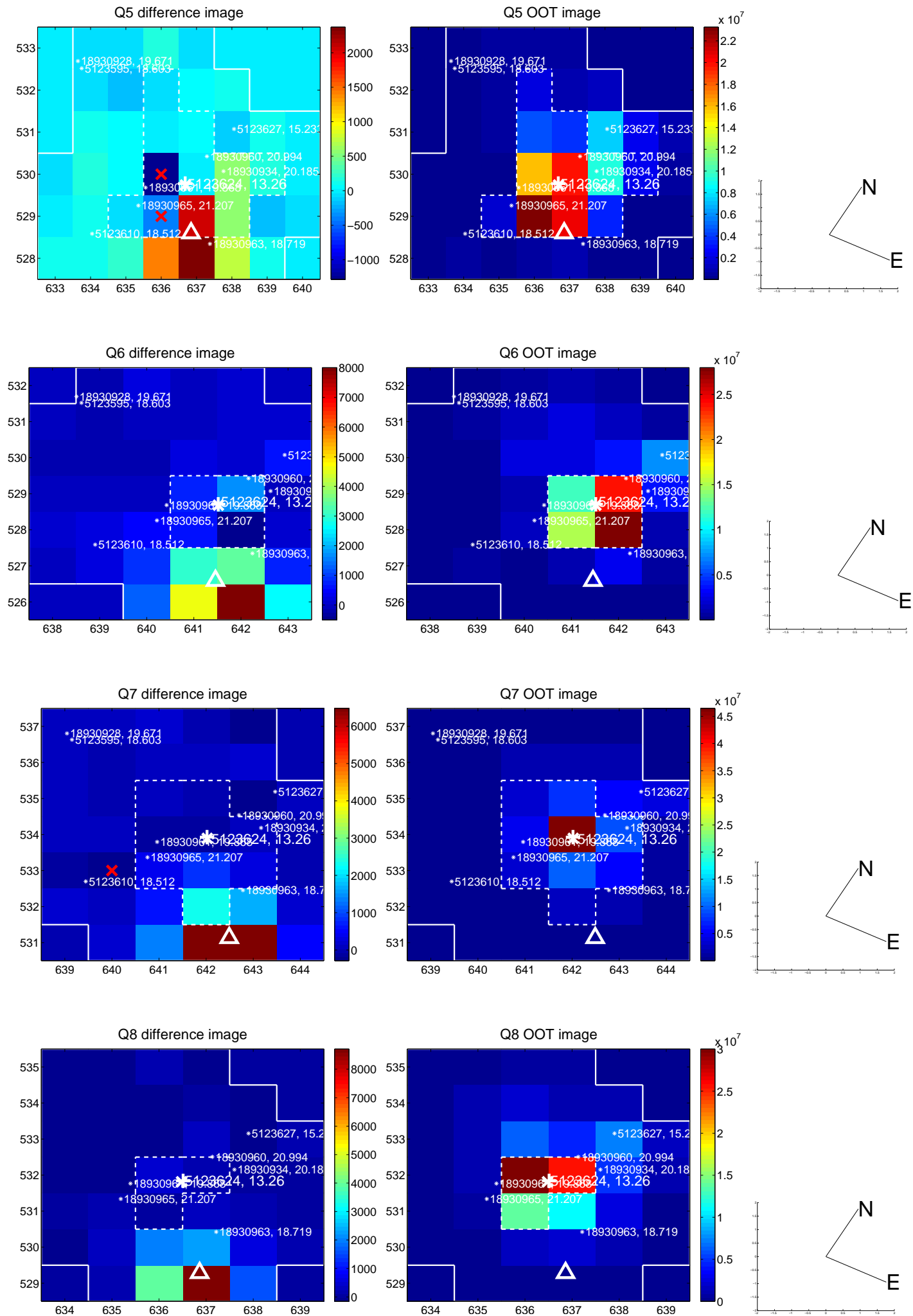


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

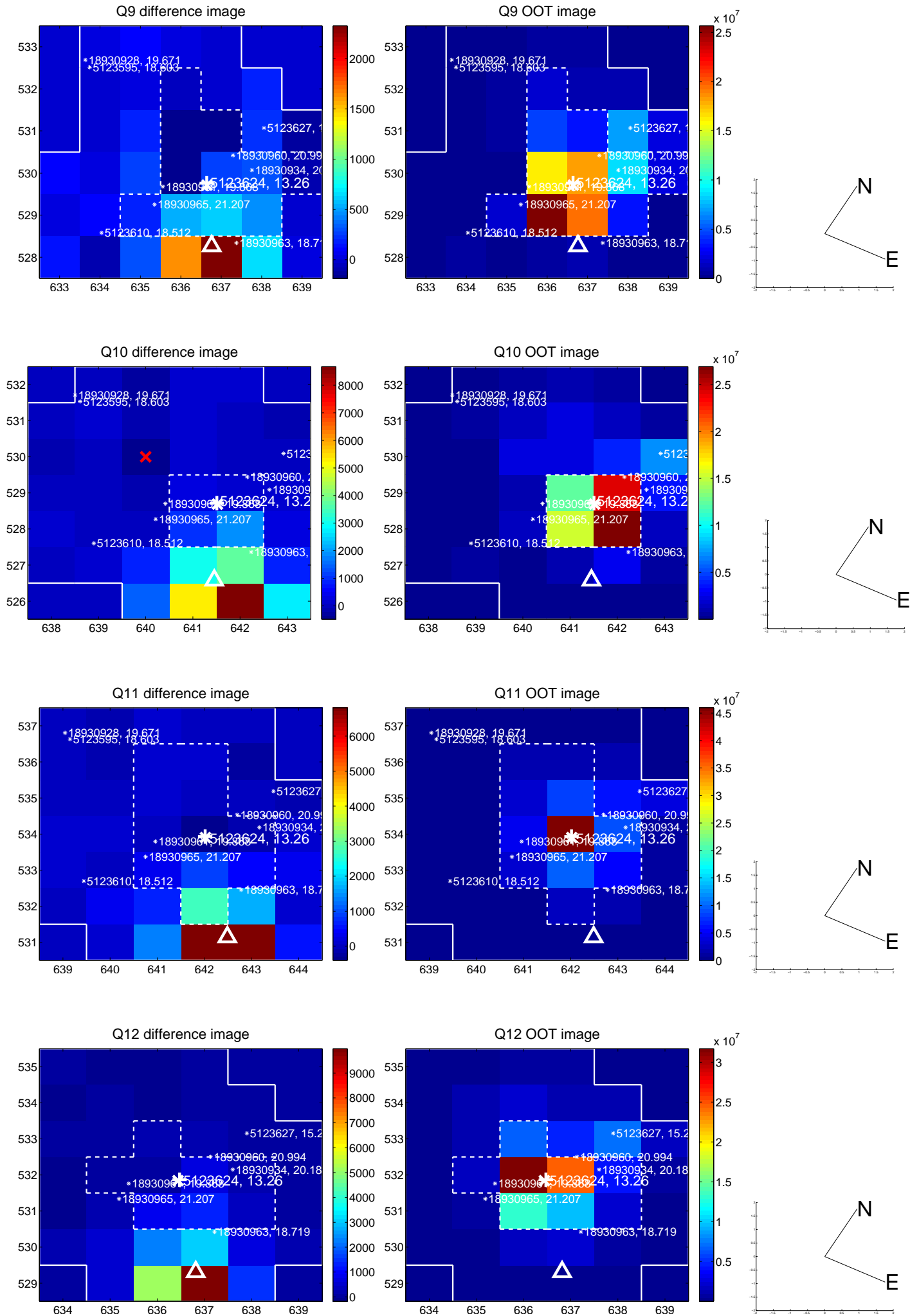


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

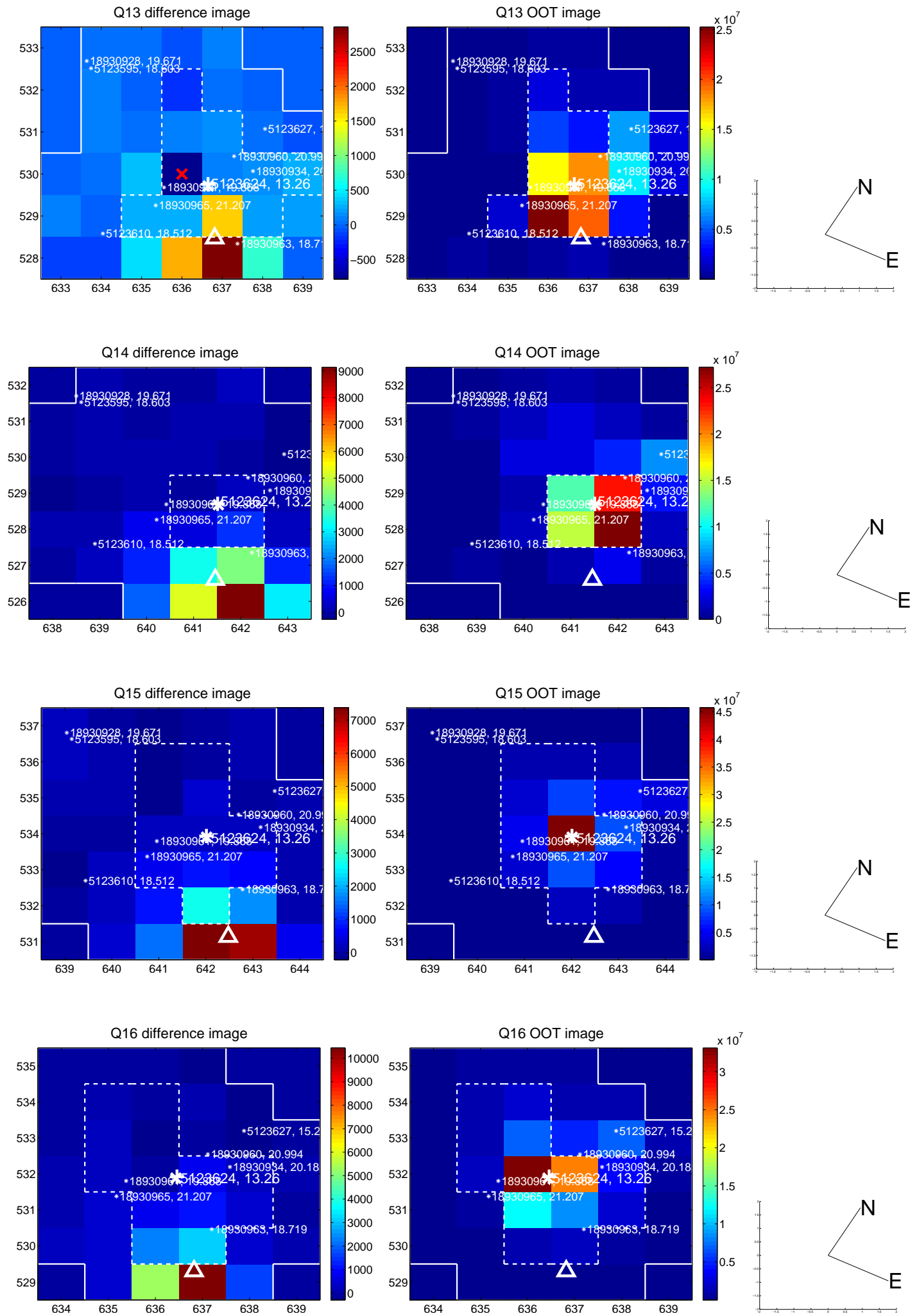




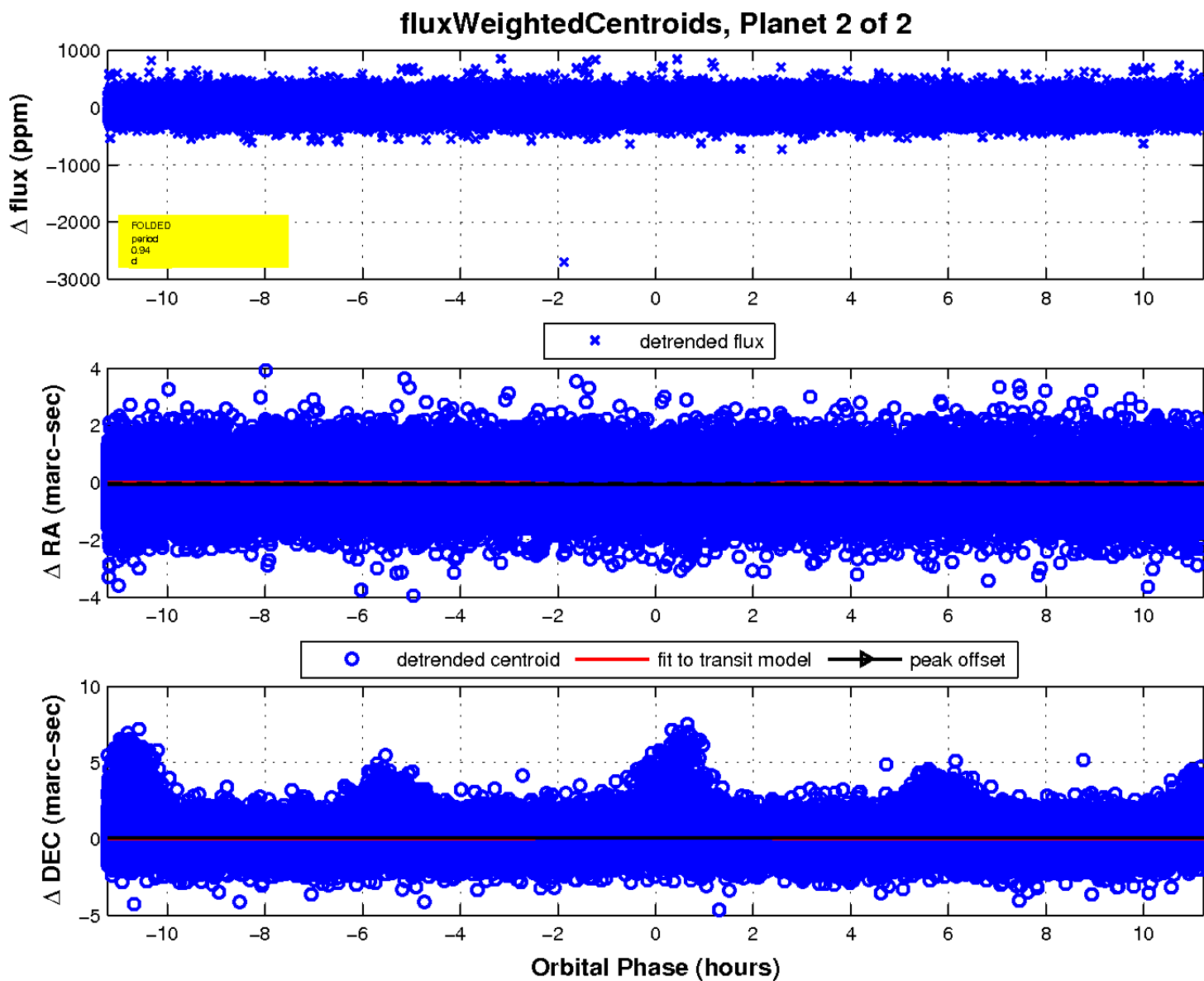
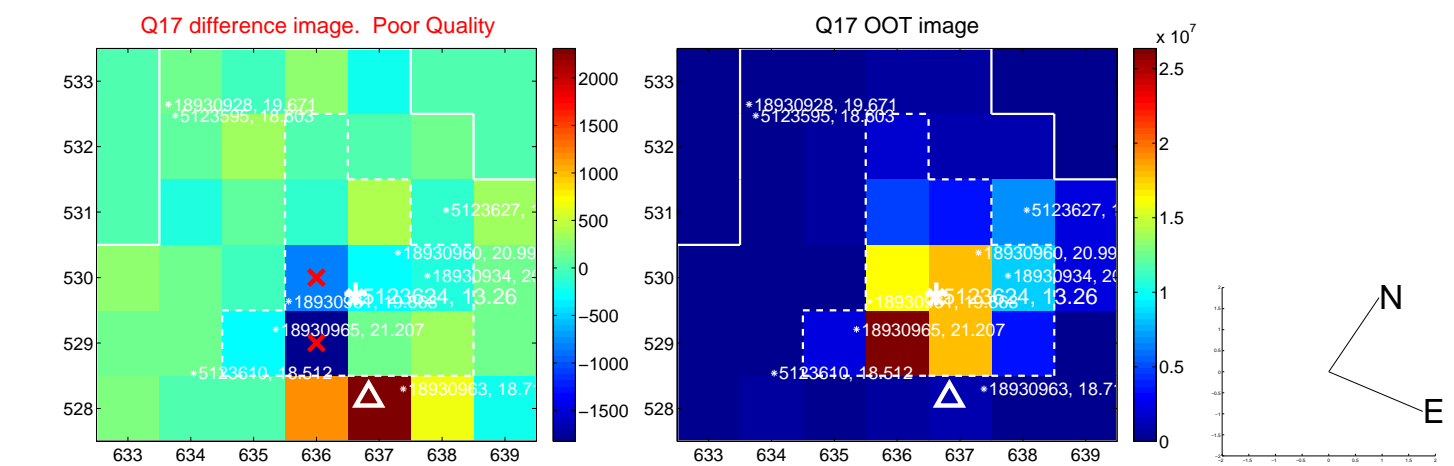
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

