

# KIC 010924400

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010924400-01	OBS	7388.01	0.750719	131.824655	18.9	1.751	11.1	10.1	0.76	5151	0.40	1563.44
010924400-02	OBS	No	0.750726	132.191962	19.6	1.594	10.0	10.3	0.76	5151	0.41	1563.42
010924400-03	OBS	No	129.034956	198.195615	202.9	3.793	8.2	4.9	0.76	5151	1.18	1.64
010924400-04	OBS	No	149.735615	157.181118	211.7	8.568	7.8	4.6	0.76	5151	1.27	1.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010924400-01	OBS	FP	0.00	0	1	1	1	HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
010924400-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
010924400-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
010924400-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS

**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.

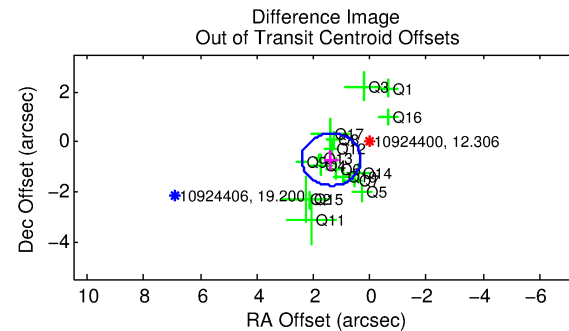
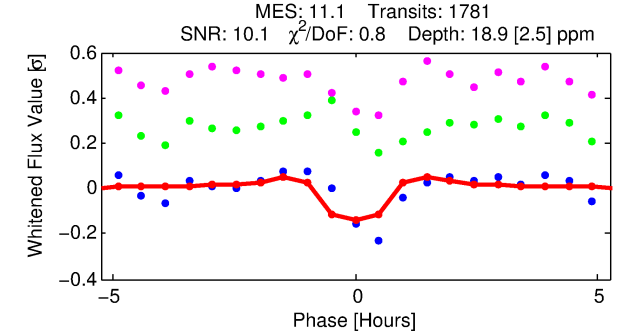
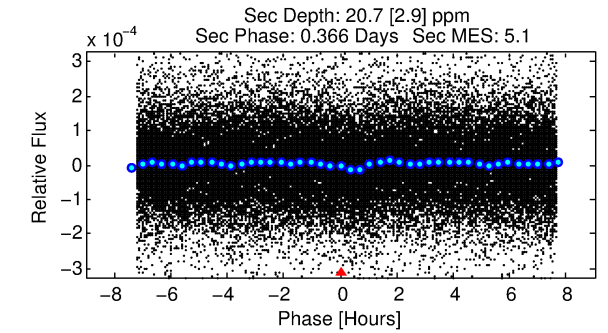
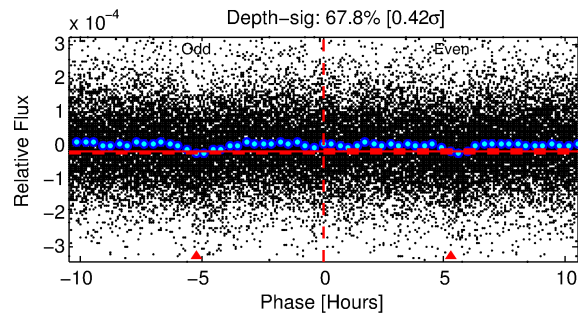
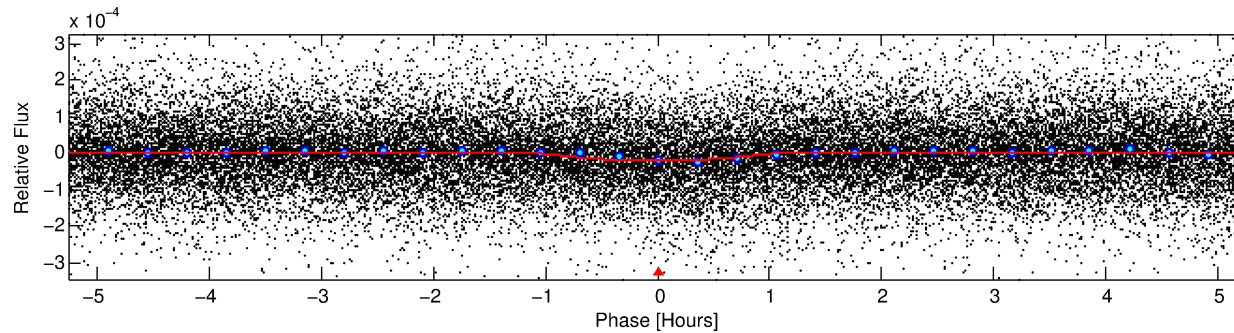
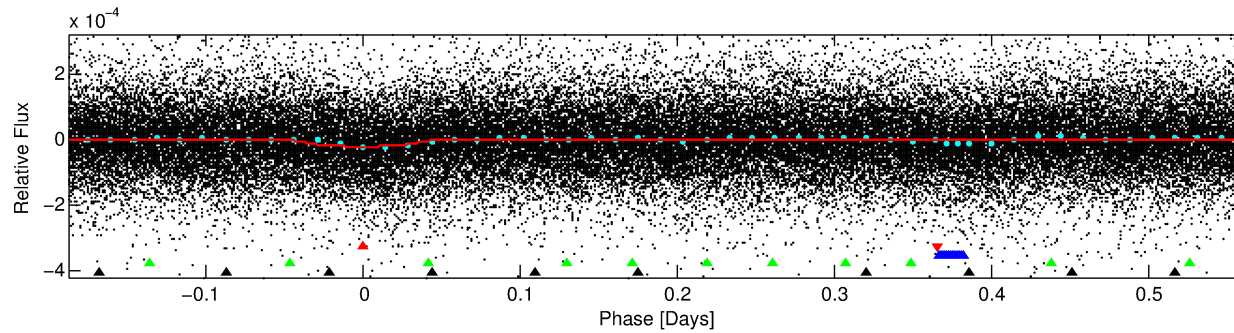
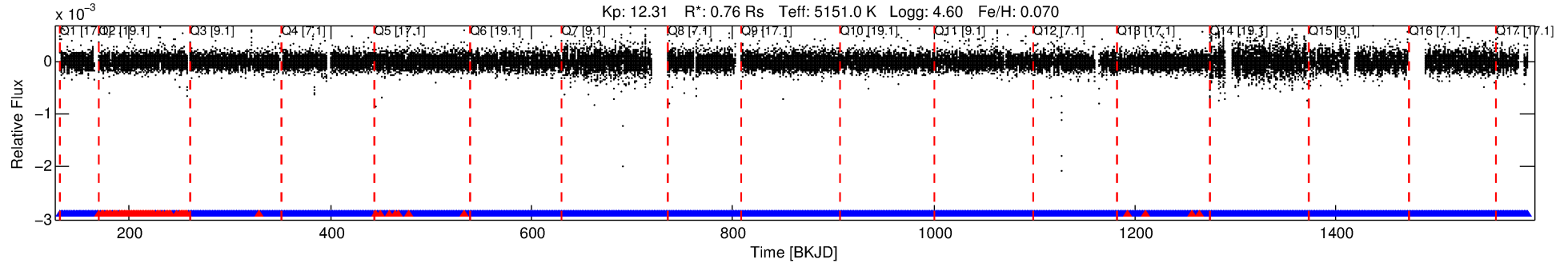
## Ephemeris Match Information For 010924400-01

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
010924400-01	10924400	010924340-01	10924340	1:1	86.7	-22	1	13.94	12.30	2.63	Direct-PRF	1	2.38	1.31

**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 10924400 Candidate: 1 of 4 Period: 0.751 d  
KOI: K07388.01 Corr: 0.810



## DV Fit Results:

Period = 0.75072 [0.00001] d  
Epoch = 131.8247 [0.0018] BKJD  
Rp/R\* = 0.0049 [0.0014]  
a/R\* = 1.72 [1.38]  
b = 0.90 [0.25]  
Seff = 1563.44 [221.07]  
Teff = 1603 [57] K  
Rp = 0.40 [0.12] Re  
a = 0.0153 [0.0012] AU  
Ag = 16.27 [10.05] [1.52 $\sigma$ ]  
Teffp = 4979 [759] K [4.44 $\sigma$ ]

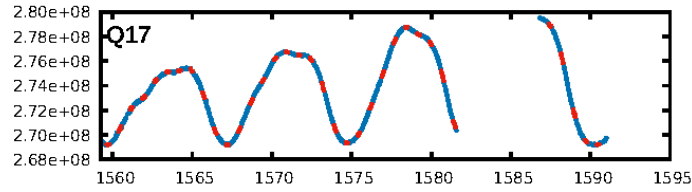
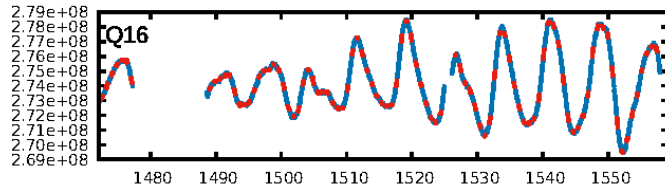
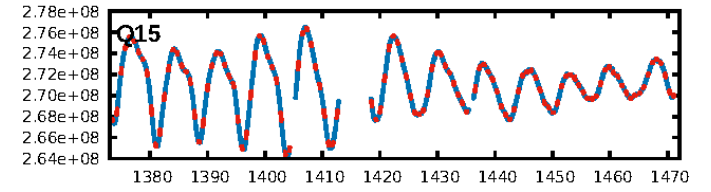
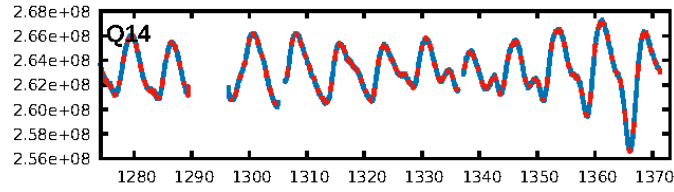
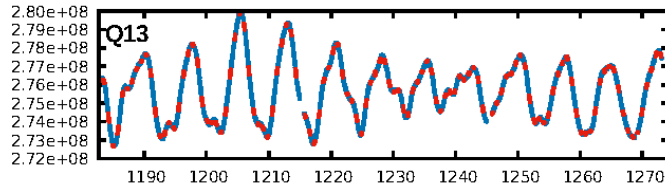
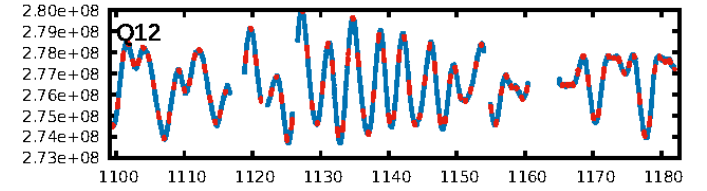
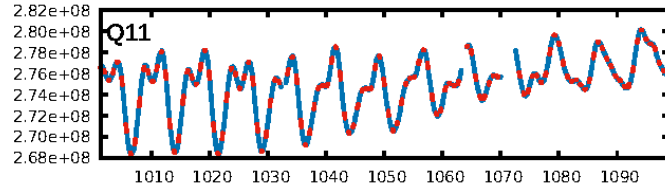
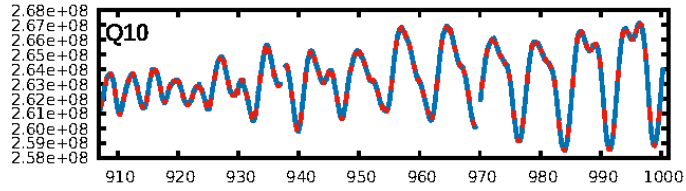
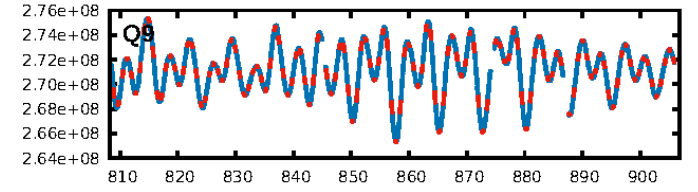
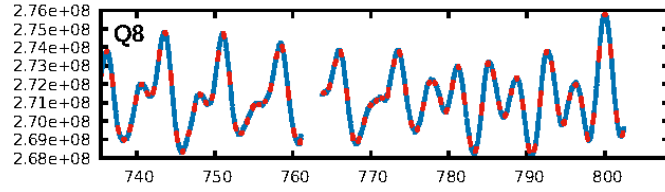
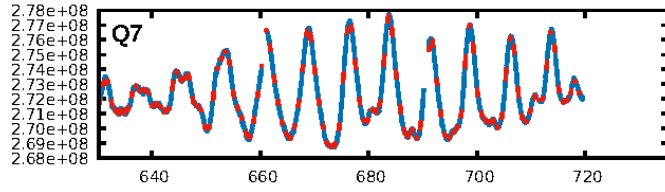
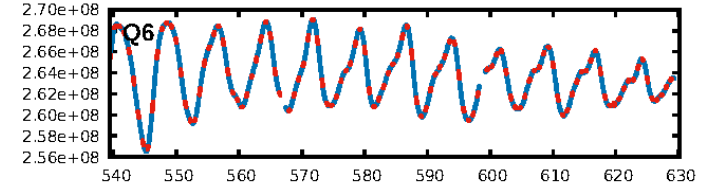
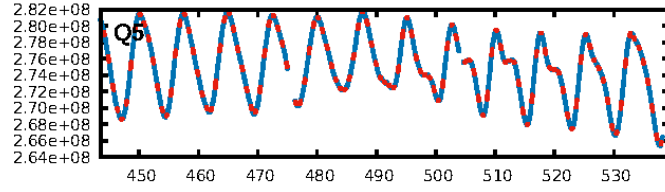
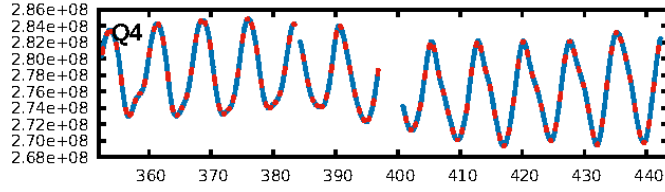
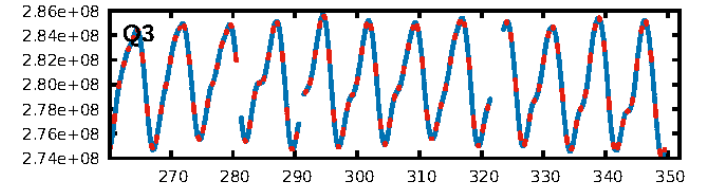
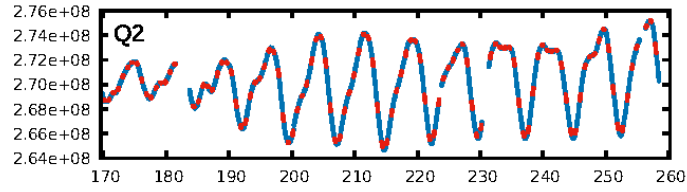
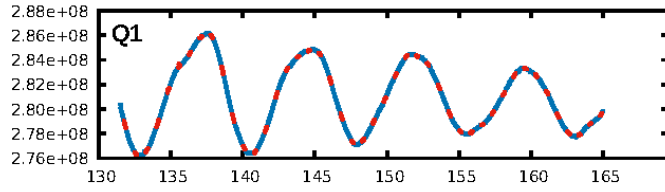
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.01e-28  
RollingBand-fgm: 0.96 [1625/1701]  
GhostDiagnostic-chr: 3.266  
Centroid-sig: 0.0%  
Centroid-so: 3.009 arcsec [4.25 $\sigma$ ]  
OotOffset-rm: 1.547 arcsec [4.45 $\sigma$ ]  
KicOffset-rm: 1.466 arcsec [4.66 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.82 [14/17]  
DiffImageOverlap-fno: 1.00 [17/17]

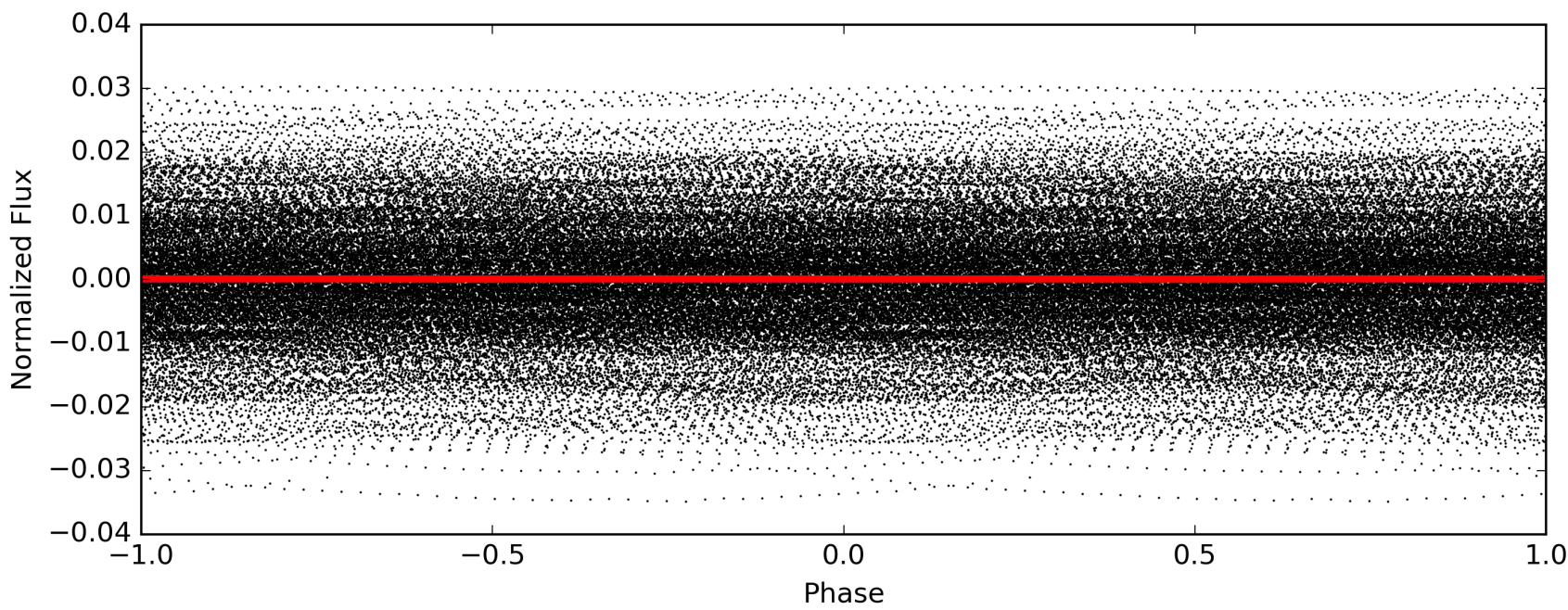
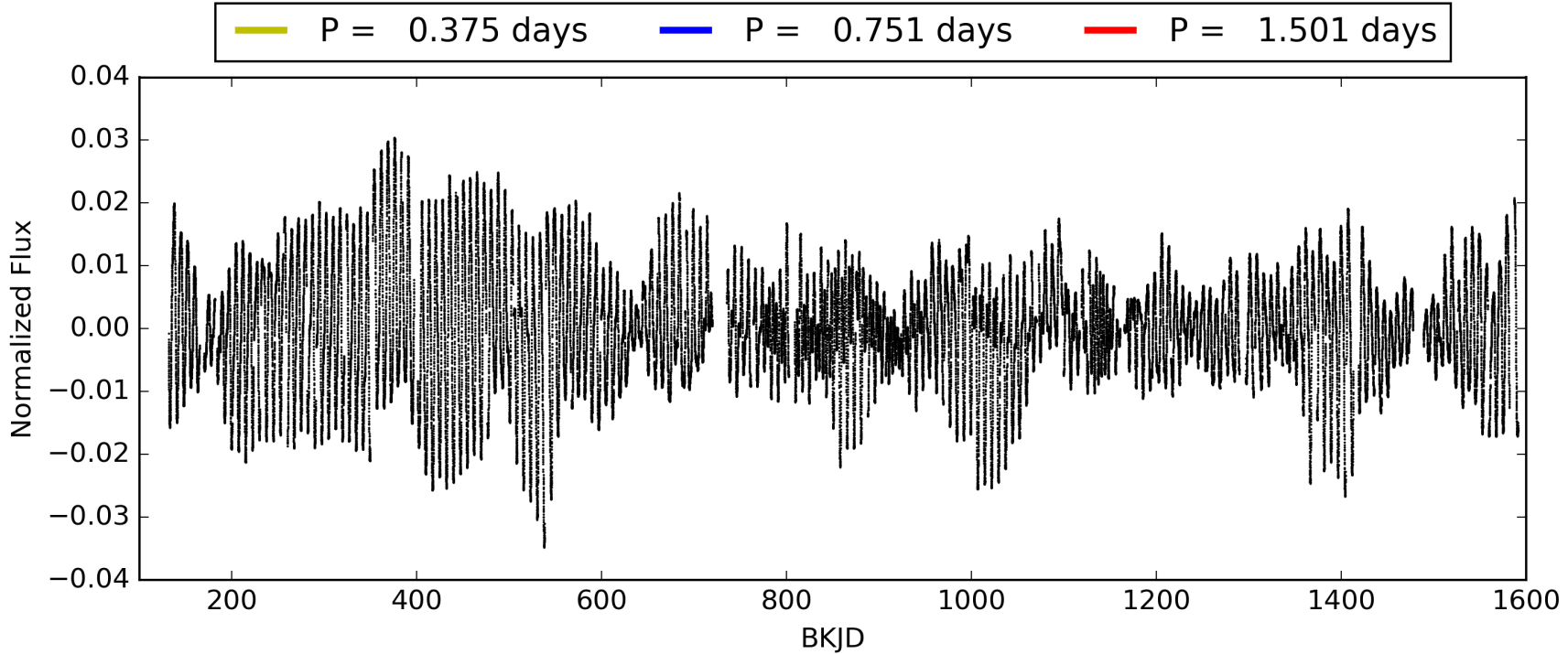
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:50:48 Z

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

# TCE 010924400-01, PDC Light Curves



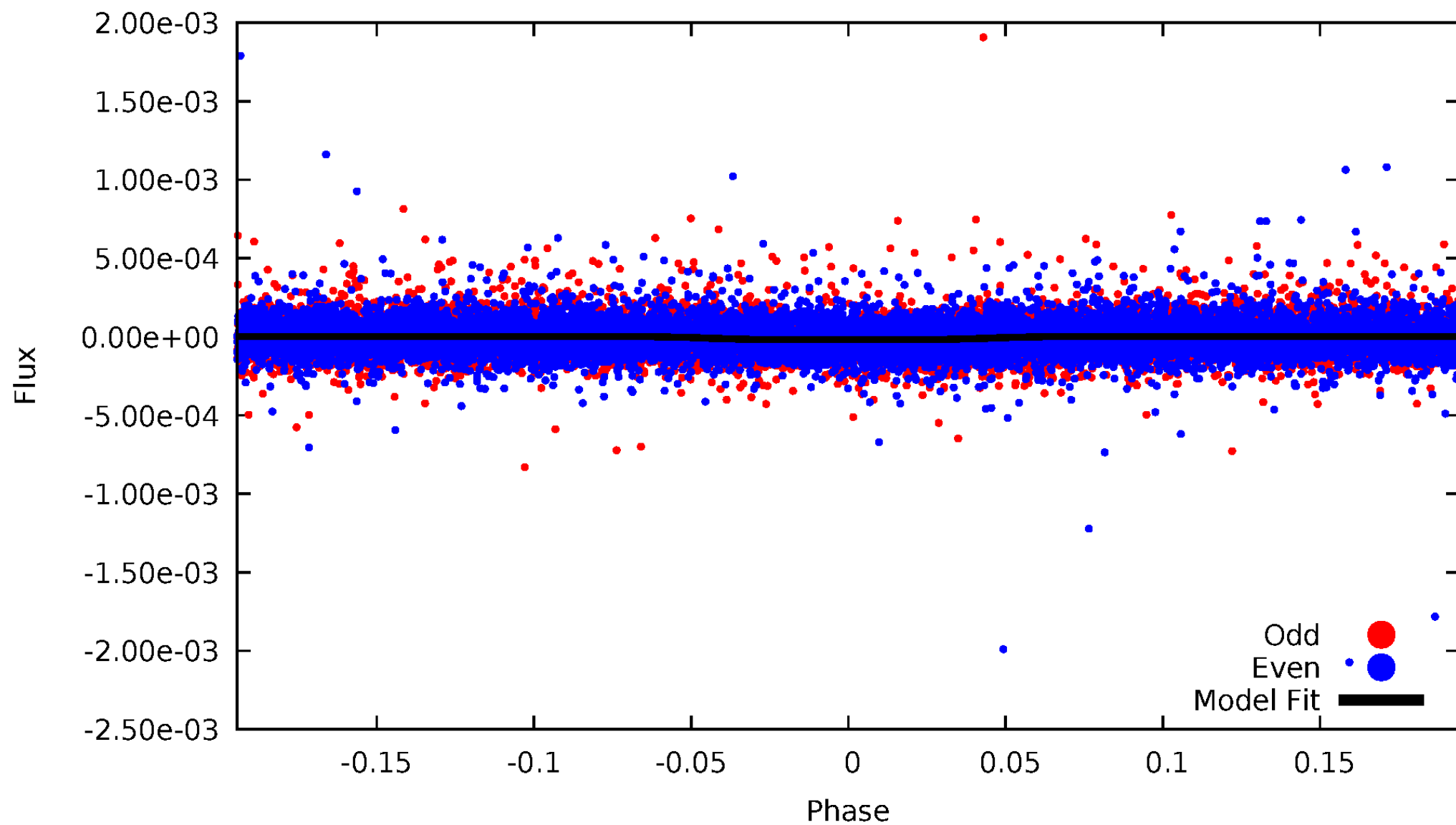
TCE 010924400-01





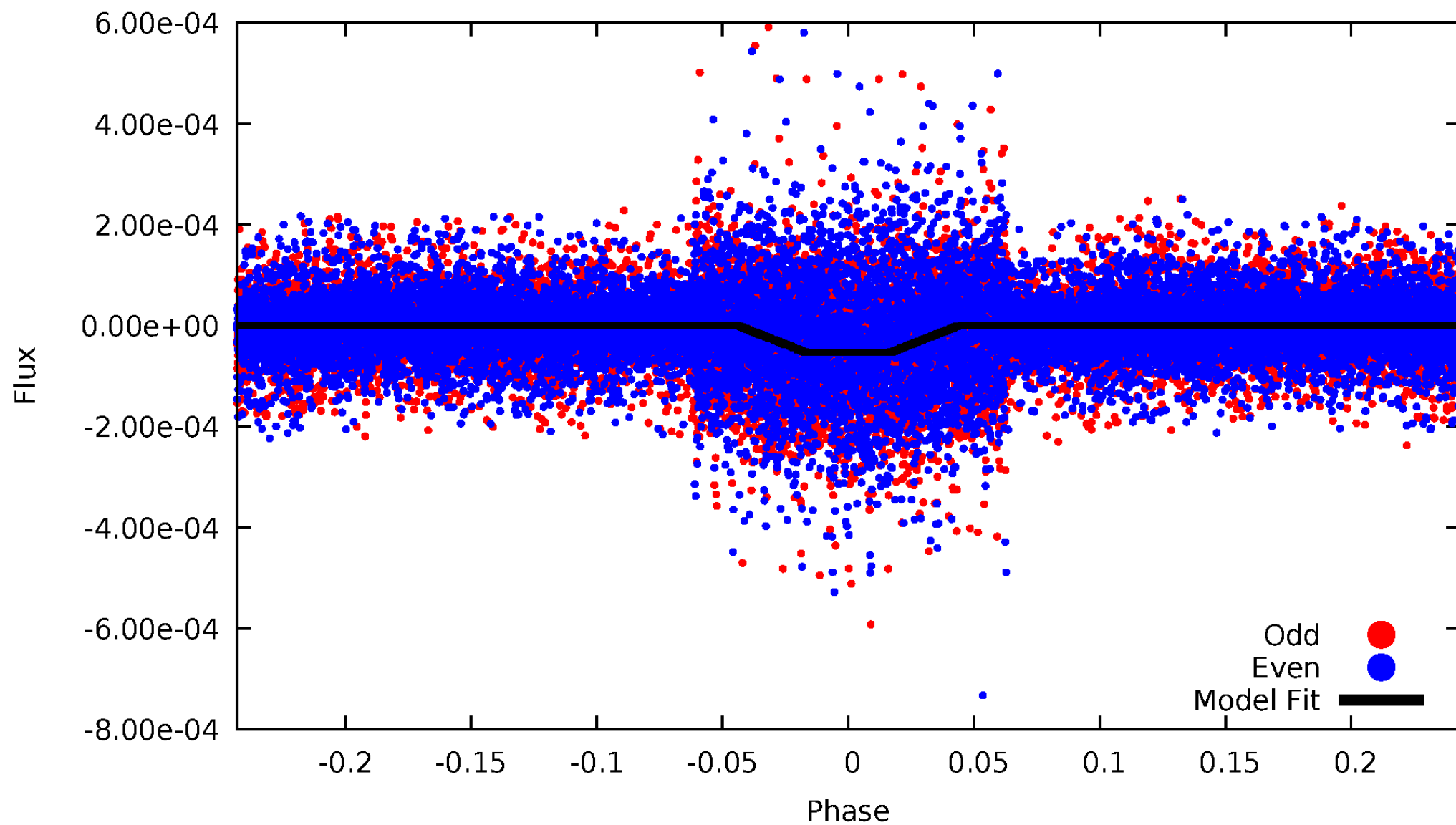
# DV Odd/Even

TCE 010924400-01



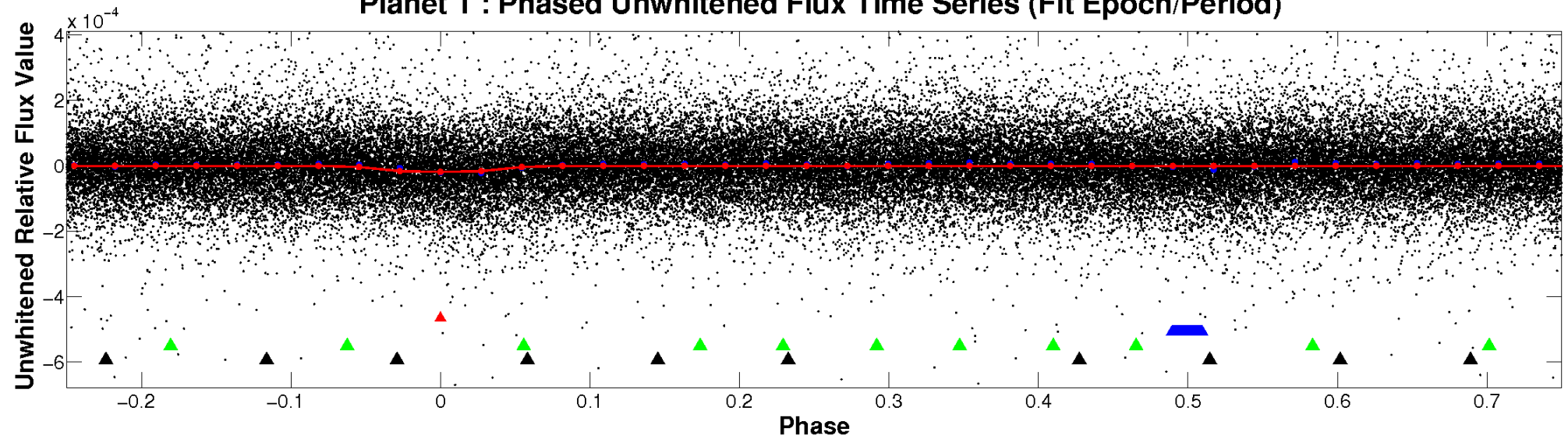
# ALT Odd/Even

TCE 010924400-01

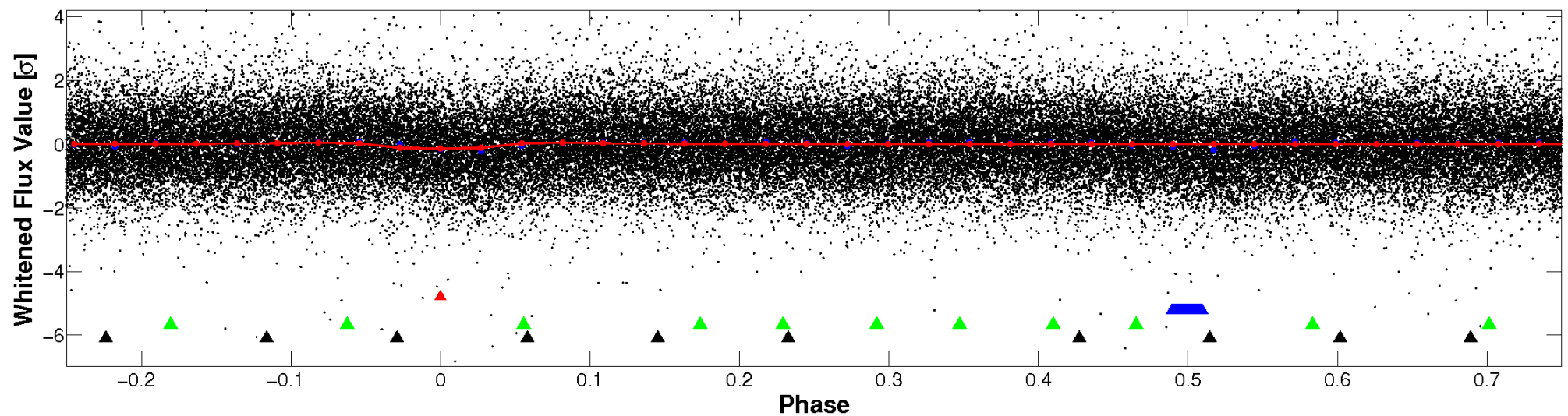


# Non-Whitened Vs. Whitened Light Curve

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

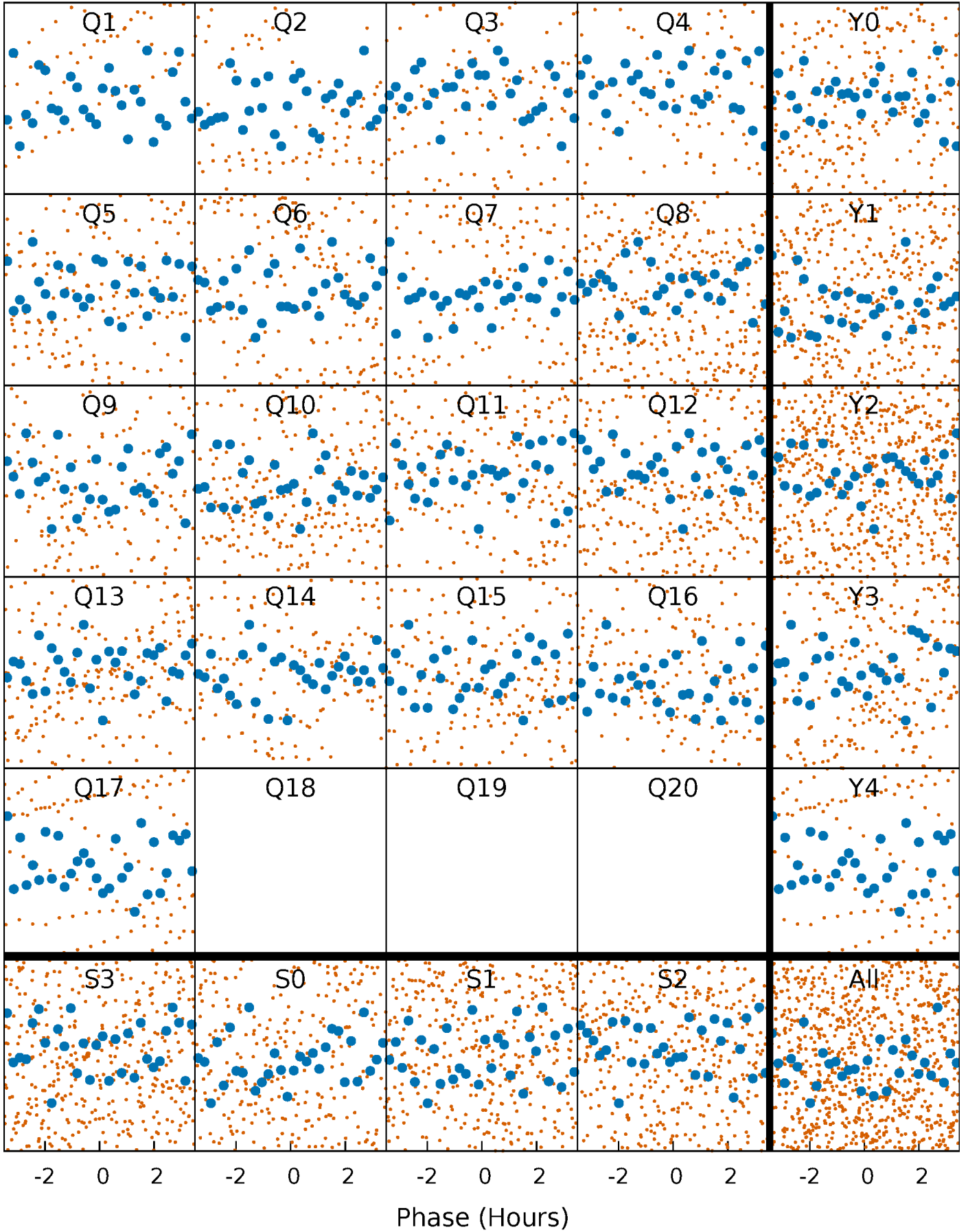


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

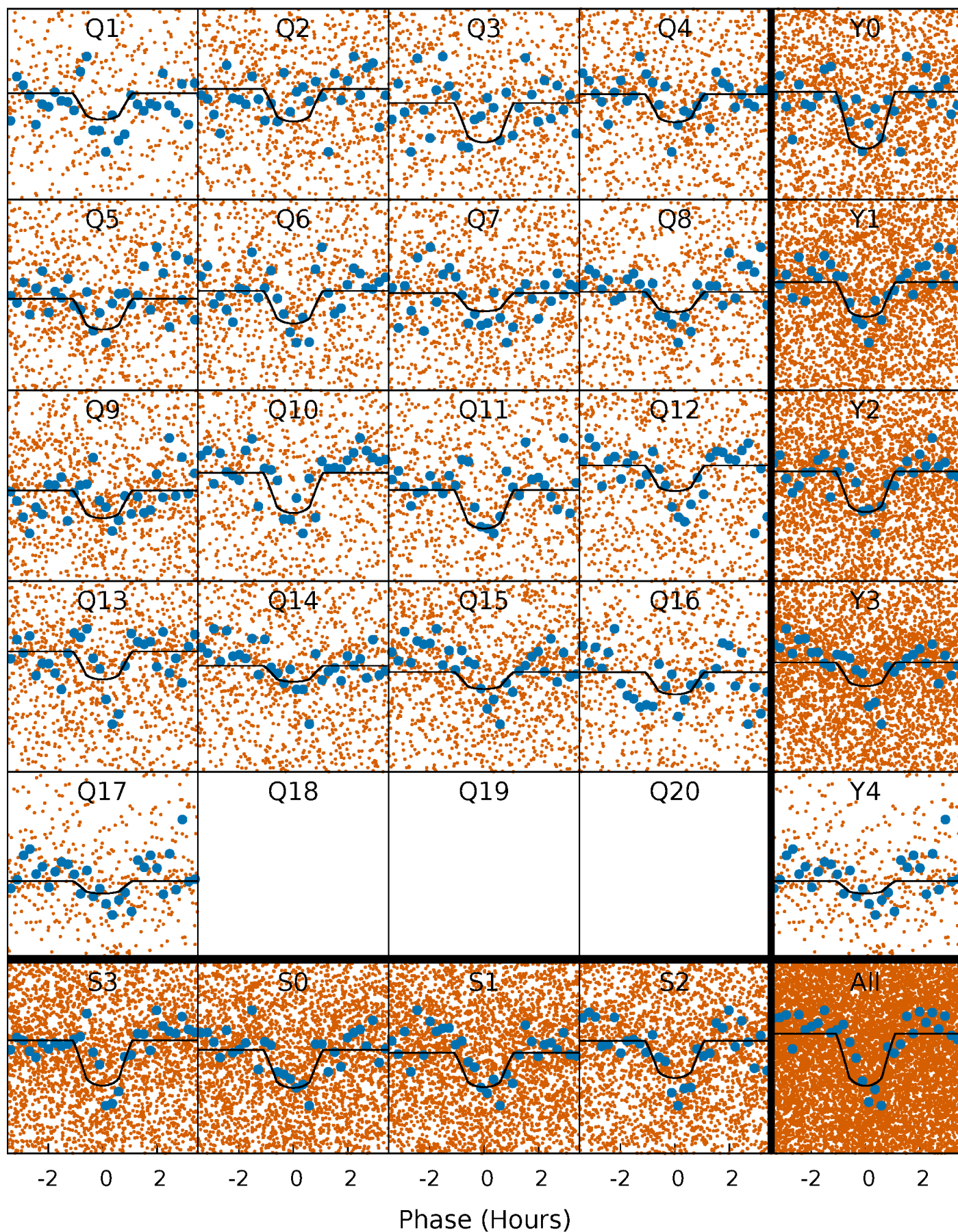
TCE 010924400-01 P= 0.750719 Days  $T_0=131.824655$  (BKJD)





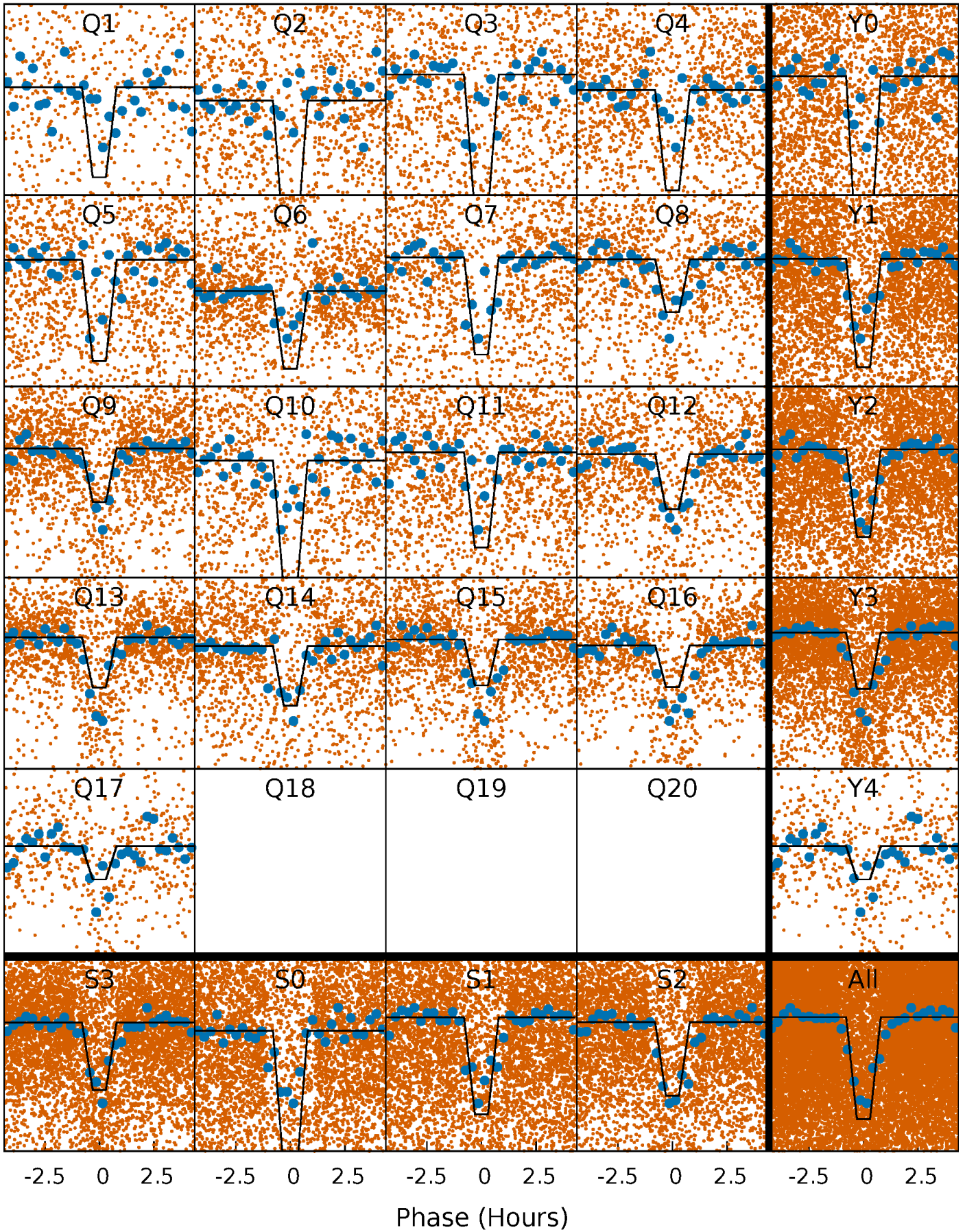
# DV Quarter-Phased Transit Curves

TCE 010924400-01 P= 0.750719 Days  $T_0=131.824655$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010924400-01 P= 0.750735 Days  $T_0=131.817998$  (BKJD)

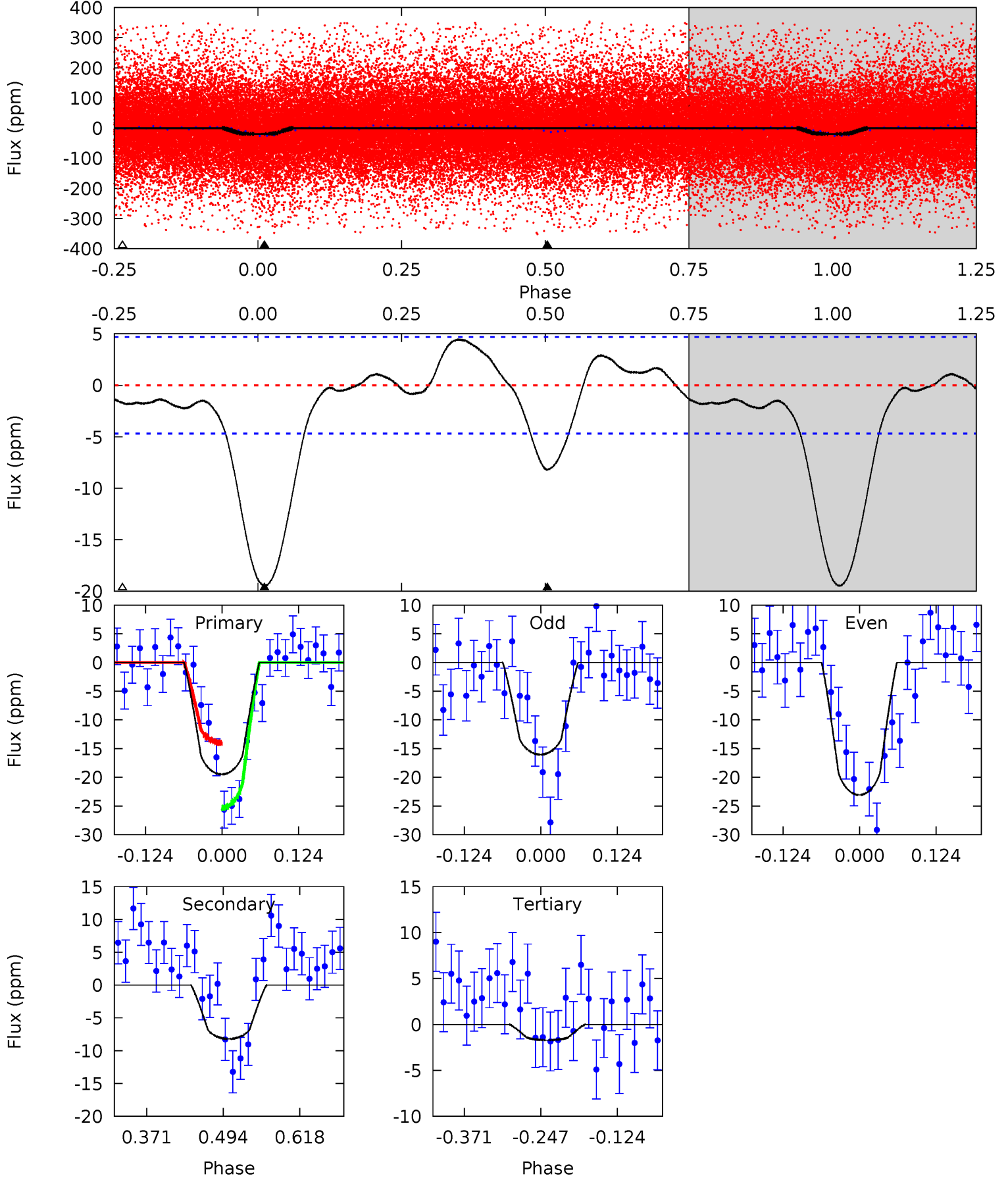




# DV Model-Shift Uniqueness Test

010924400-01, P = 0.750719 Days, E = 131.073936 Days

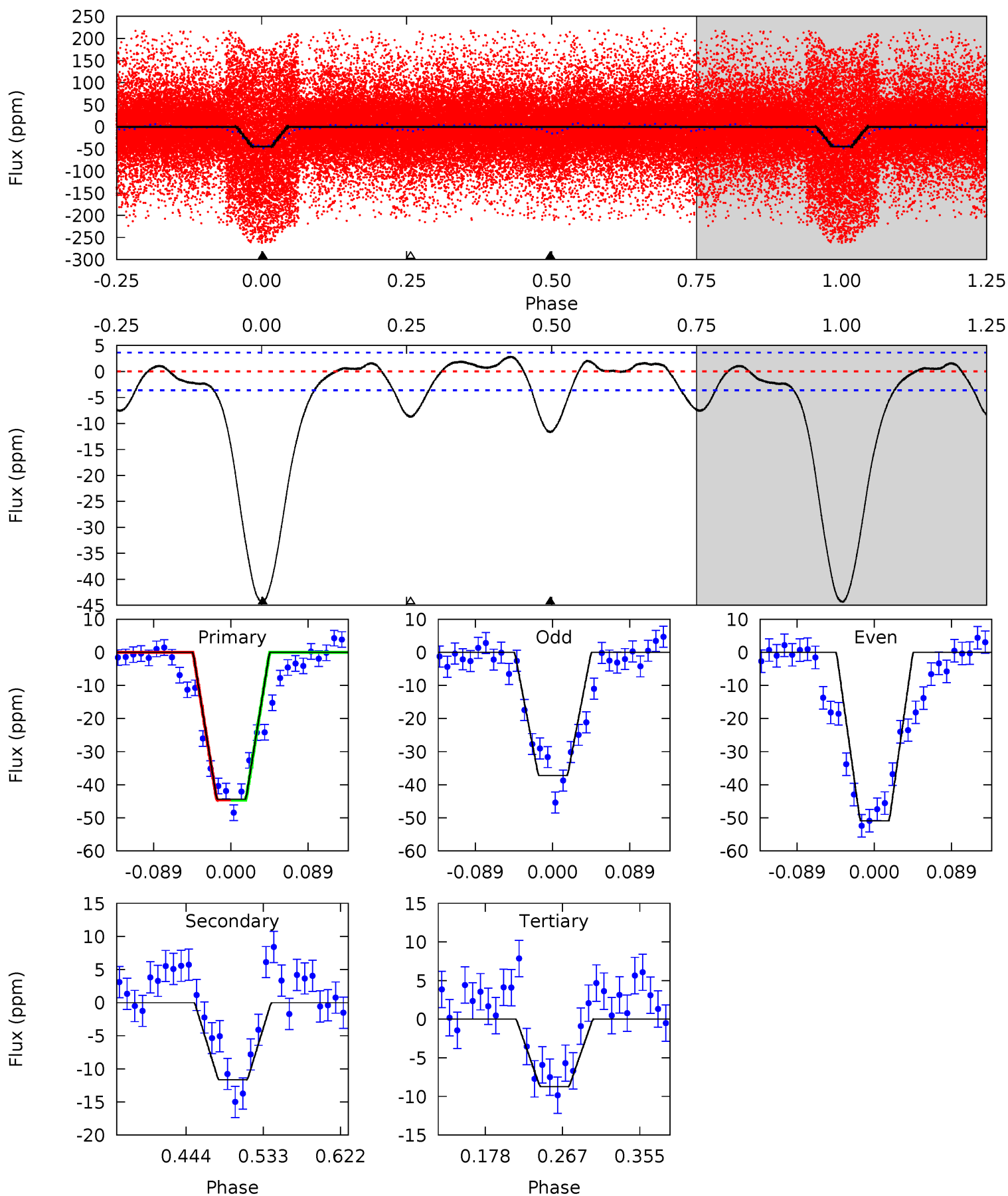
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.8	7.92	1.65	0	4.52	1.54	1.76	17.1	18.8	6.27	7.92	3.41	1.09	0.19	5.48



# Alt Model-Shift Uniqueness Test

010924400-01, P = 0.750735 Days, E = 131.067263 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
56.2	14.8	11.1	0	4.59	1.70	3.62	45.2	56.2	3.70	14.8	8.67	1.02	0.06	0





### Stellar Parameters For KIC 010924400

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5151^{+72}_{-92}$	$4.602^{+0.010}_{-0.070}$	$0.070^{+0.150}_{-0.150}$	$0.761^{+0.066}_{-0.024}$	$0.874^{+0.027}_{-0.064}$	$2.798^{+0.140}_{-0.676}$
	+1%/-2%	+0%/-2%	+214%/-214%	+9%/-3%	+3%/-7%	+5%/-24%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 010924400-01 / KOI 7388.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-8 \pm 1$	$0.41^{+0.12}_{-0.12}$	$2268^{+51}_{-52}$	$4130^{+633}_{-392}$	$6.121^{+6.590}_{-2.493}$
Alt.	$-12 \pm 1$	$0.62^{+0.13}_{-0.12}$	$2264^{+51}_{-48}$	$3791^{+327}_{-249}$	$3.857^{+2.179}_{-1.217}$

$T_{\text{max}}$  = 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

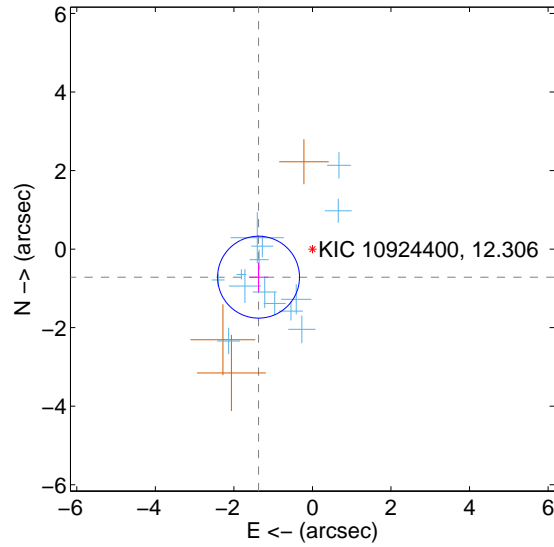
Supplemental centroid analysis for 010924400-01. Kepler magnitude: 12.31. Transit SNR 10.09

There are 14 quarters with good PRF difference image offsets

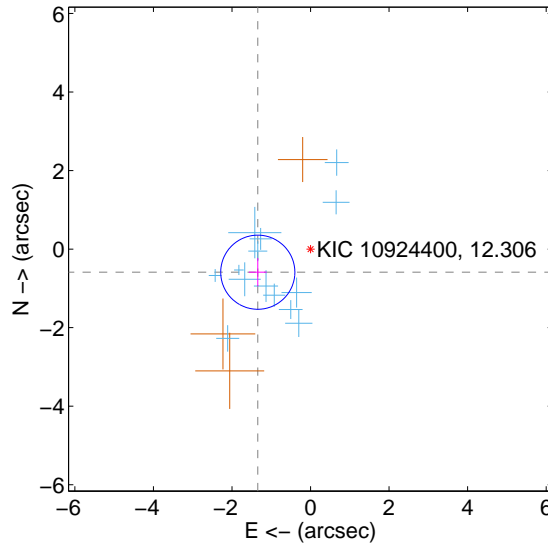
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.547 \pm 0.348$	4.45	$1.372 \pm 0.241$	$-0.715 \pm 0.368$
PRF-fit source offset from KIC position	$1.466 \pm 0.315$	4.66	$1.343 \pm 0.227$	$-0.589 \pm 0.358$
photometric centroid source offset	$3.01 \pm 0.71$	4.25	$2.07 \pm 0.73$	$-2.19 \pm 0.69$

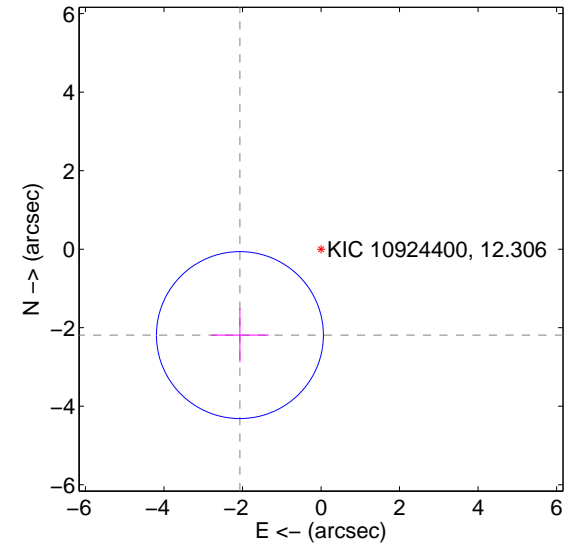
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

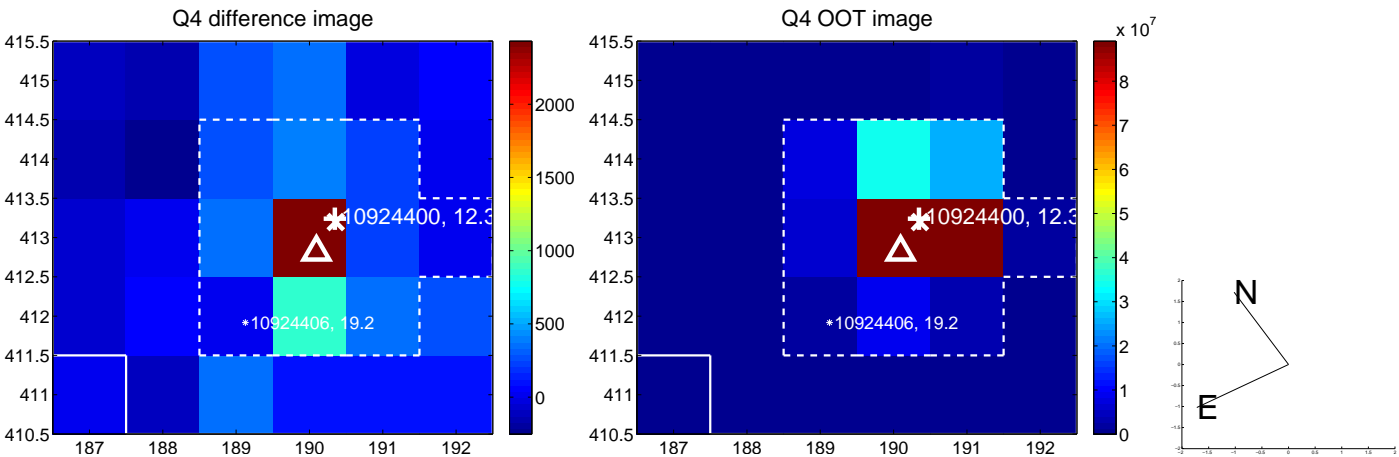
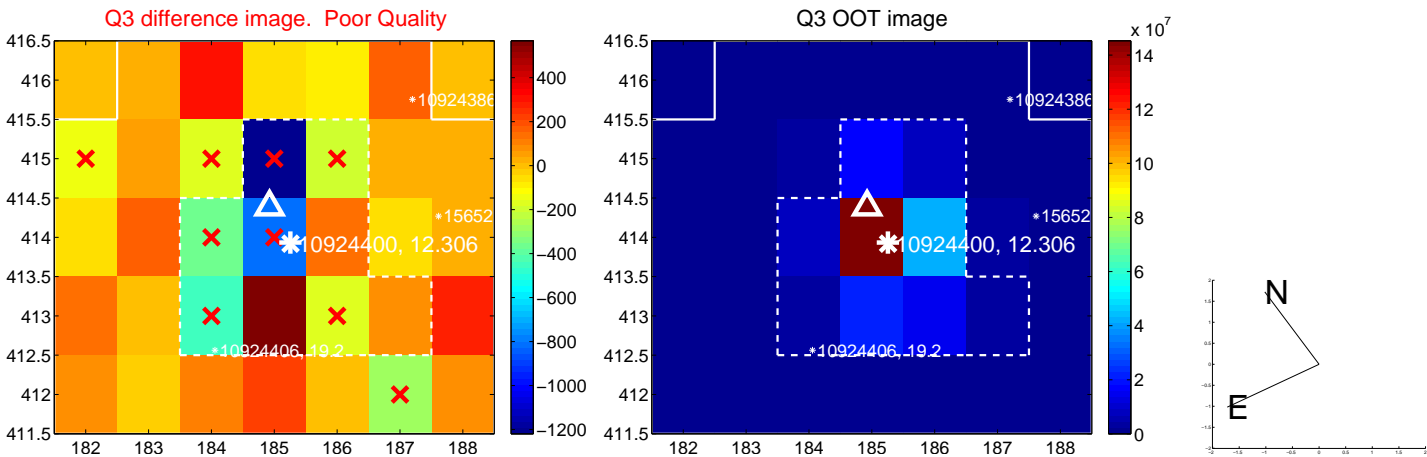
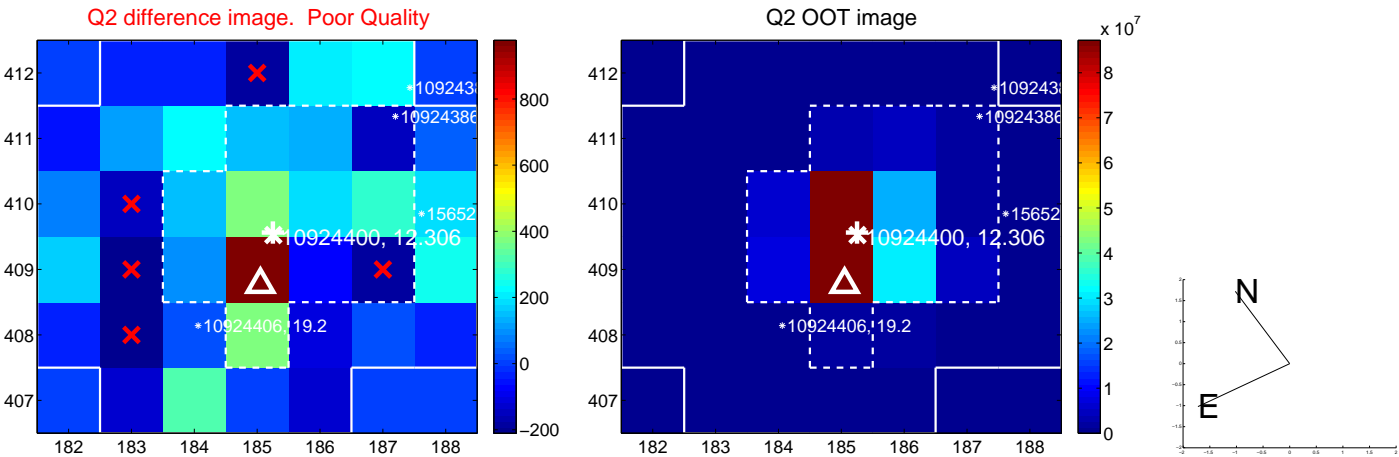
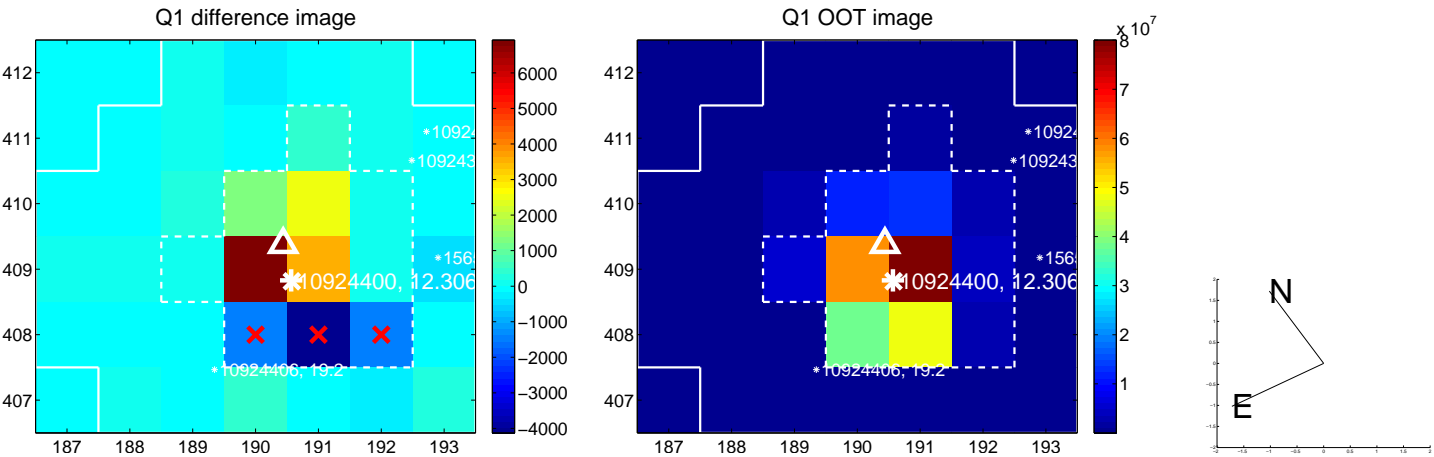


offset from photometric centroids

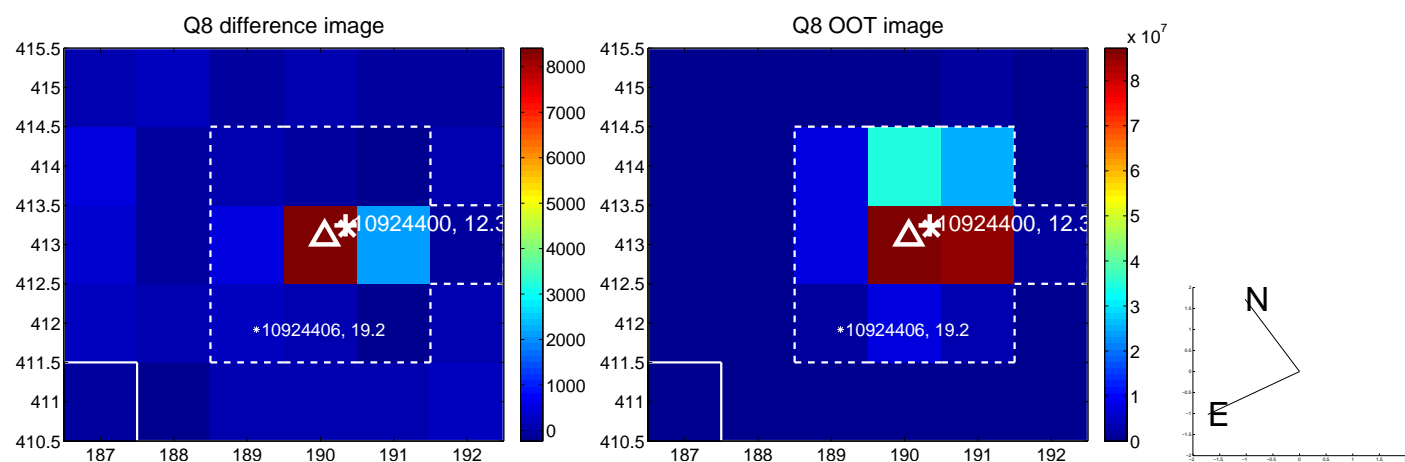
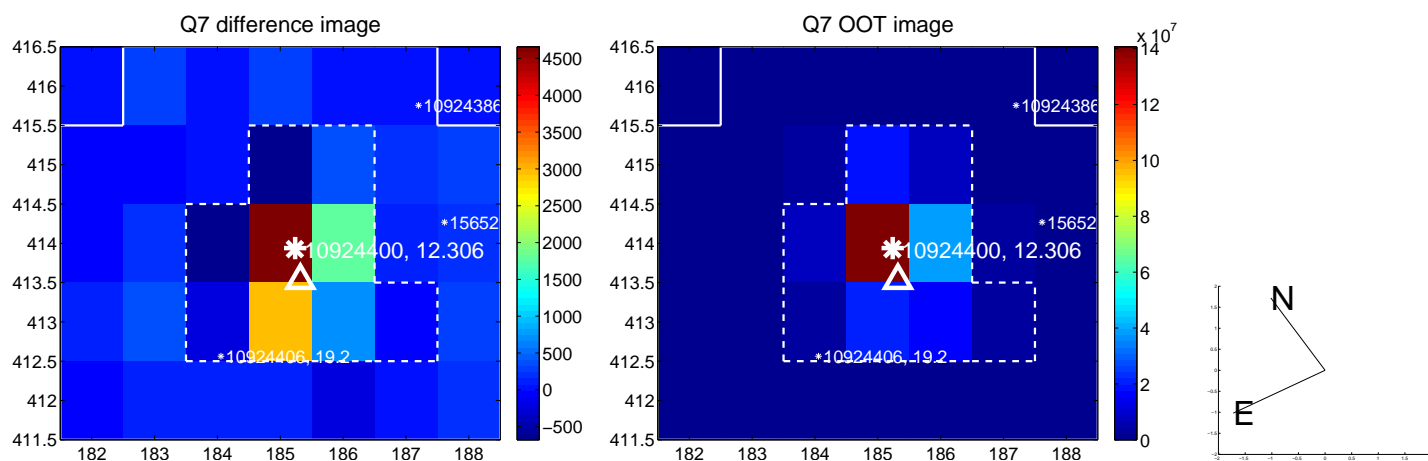
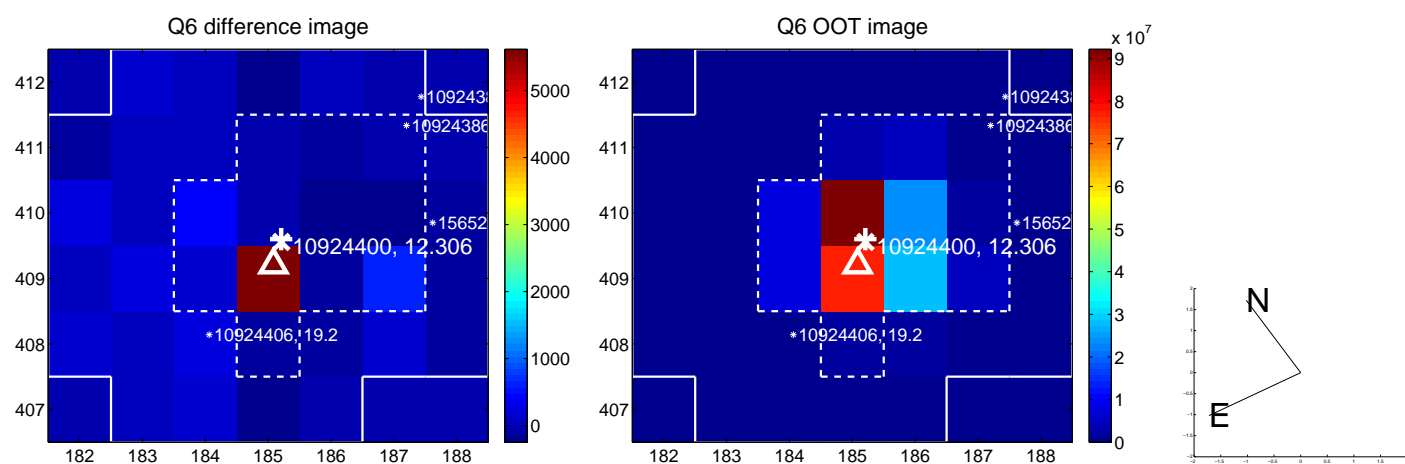
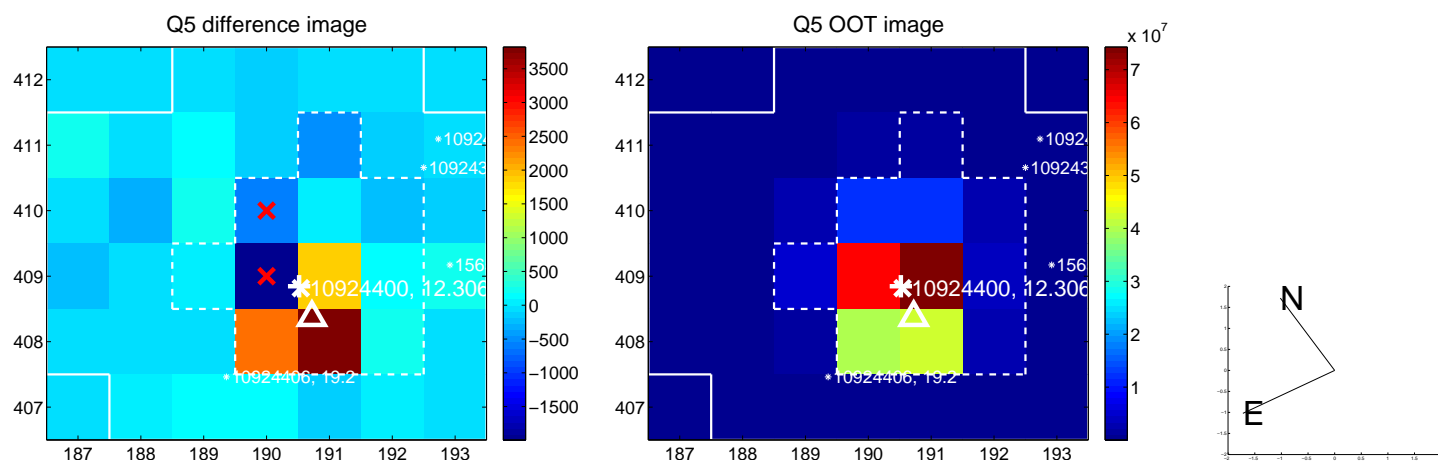


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

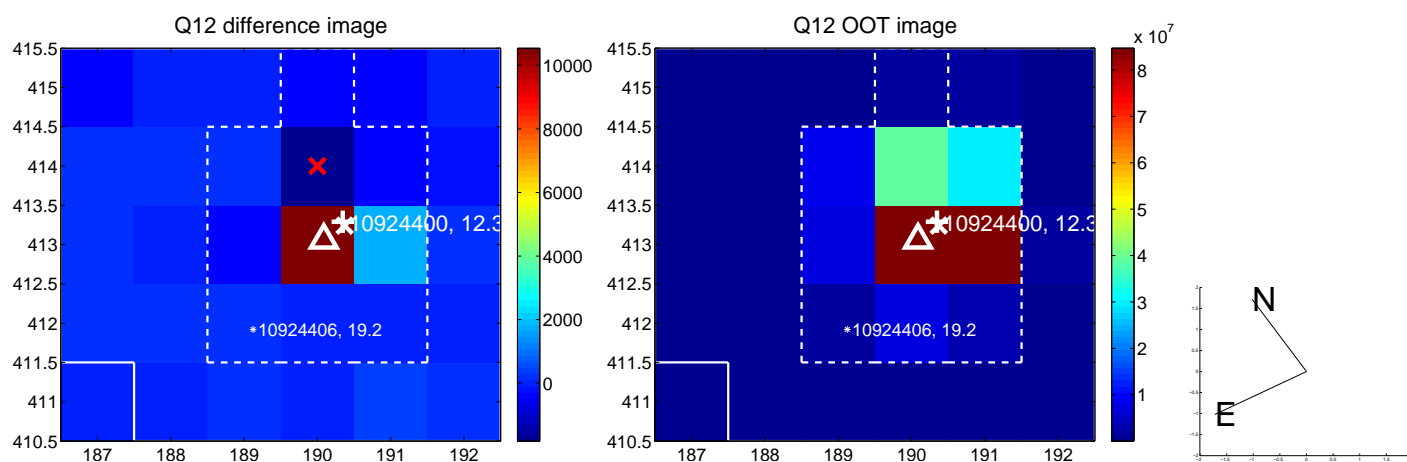
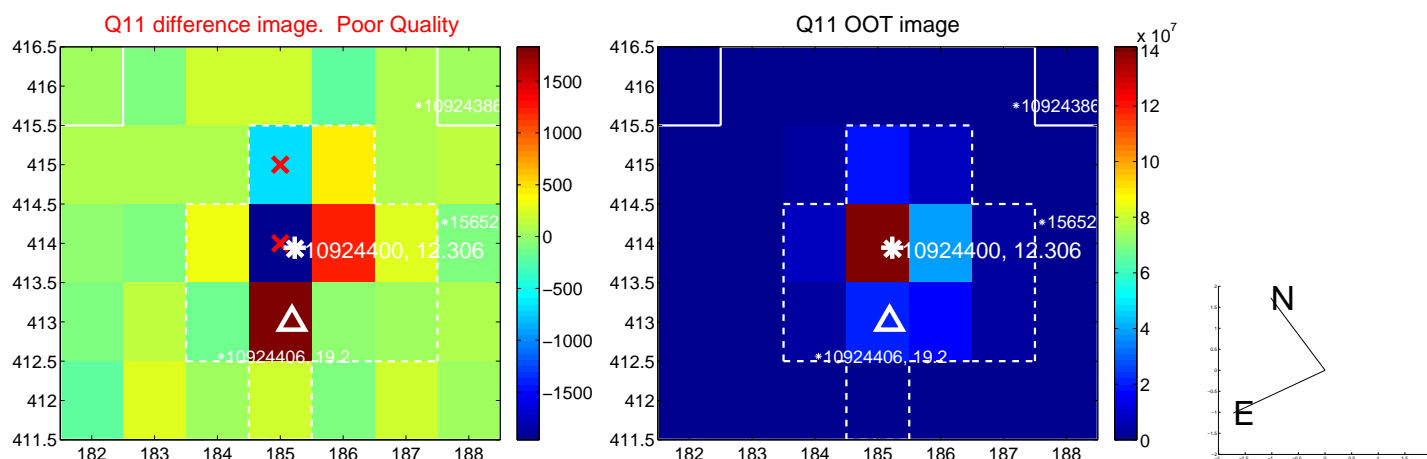
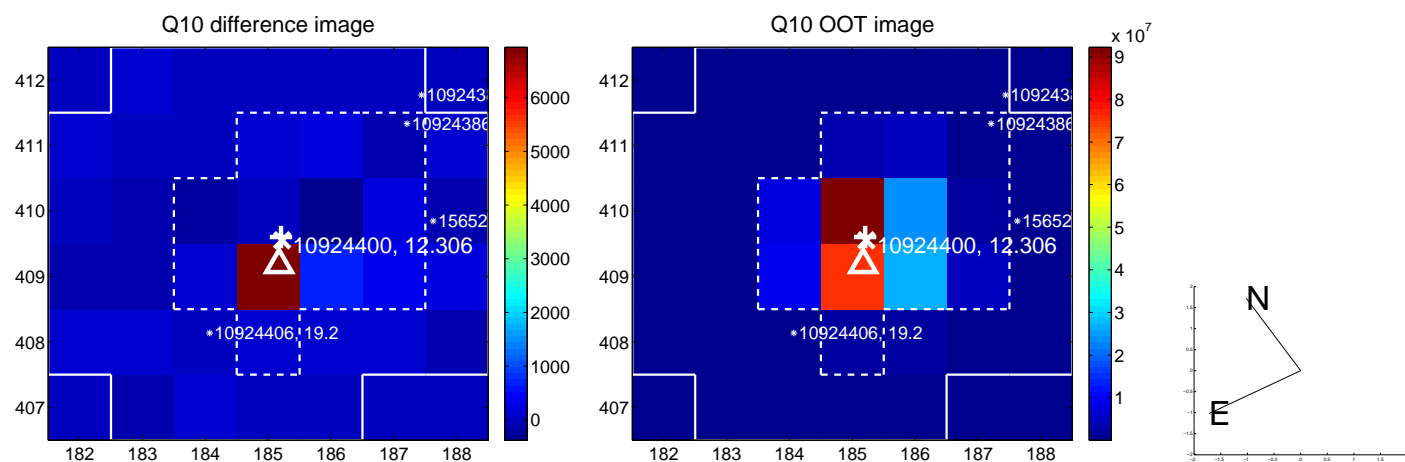
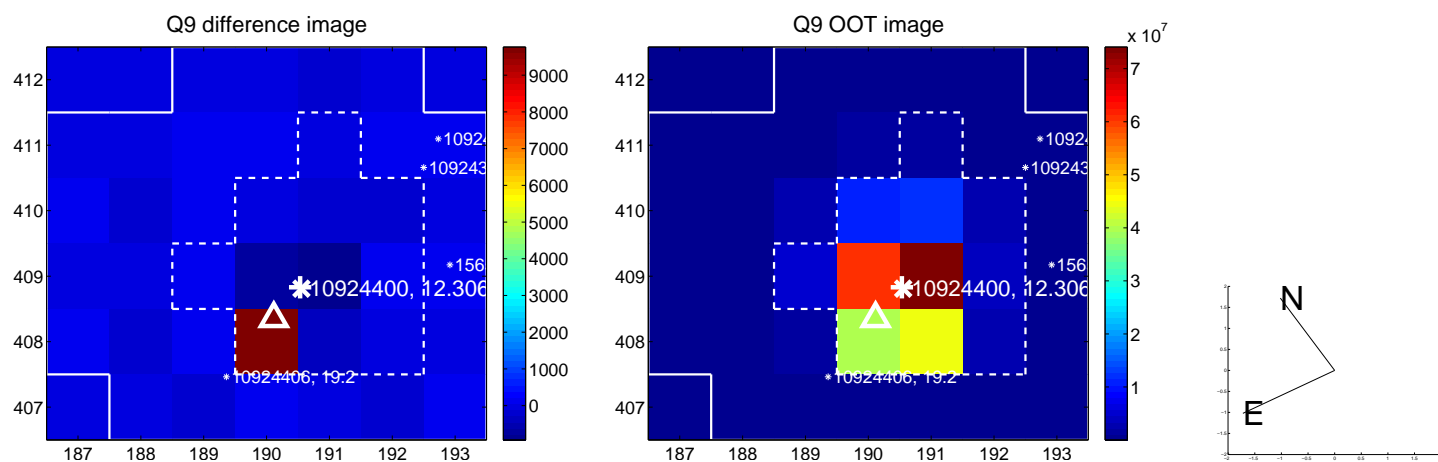


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



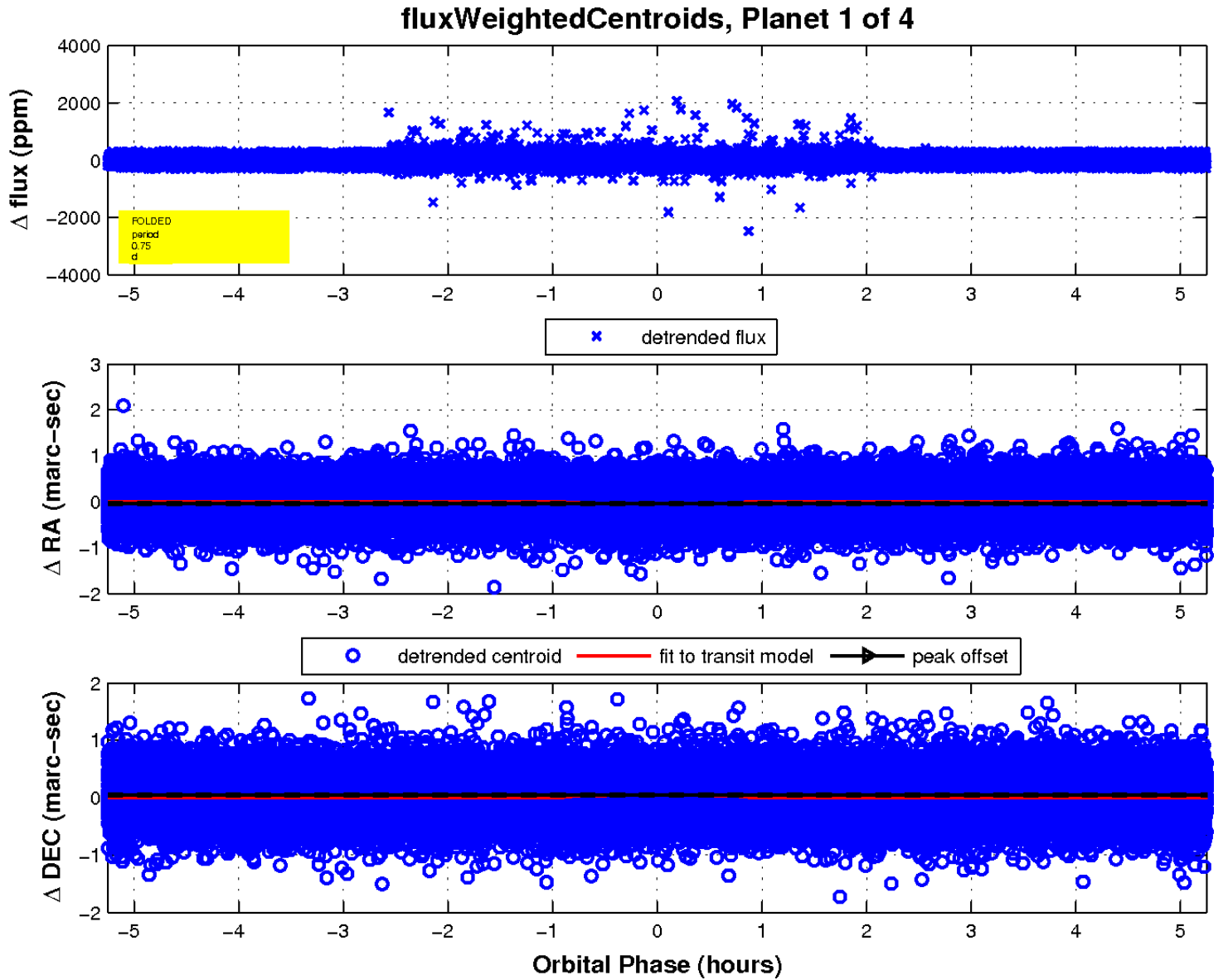
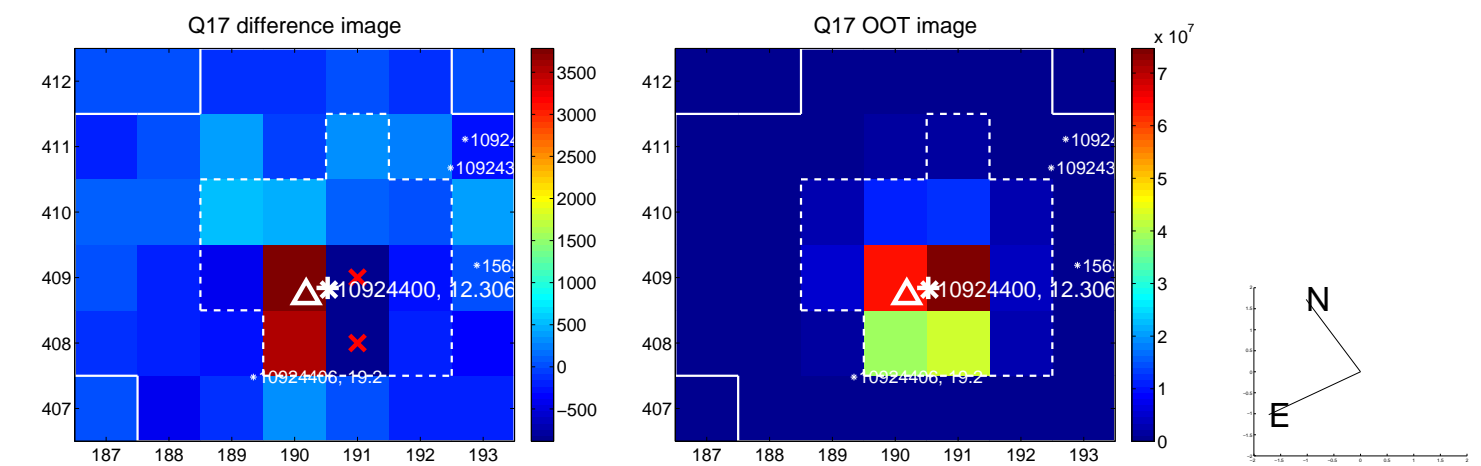


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



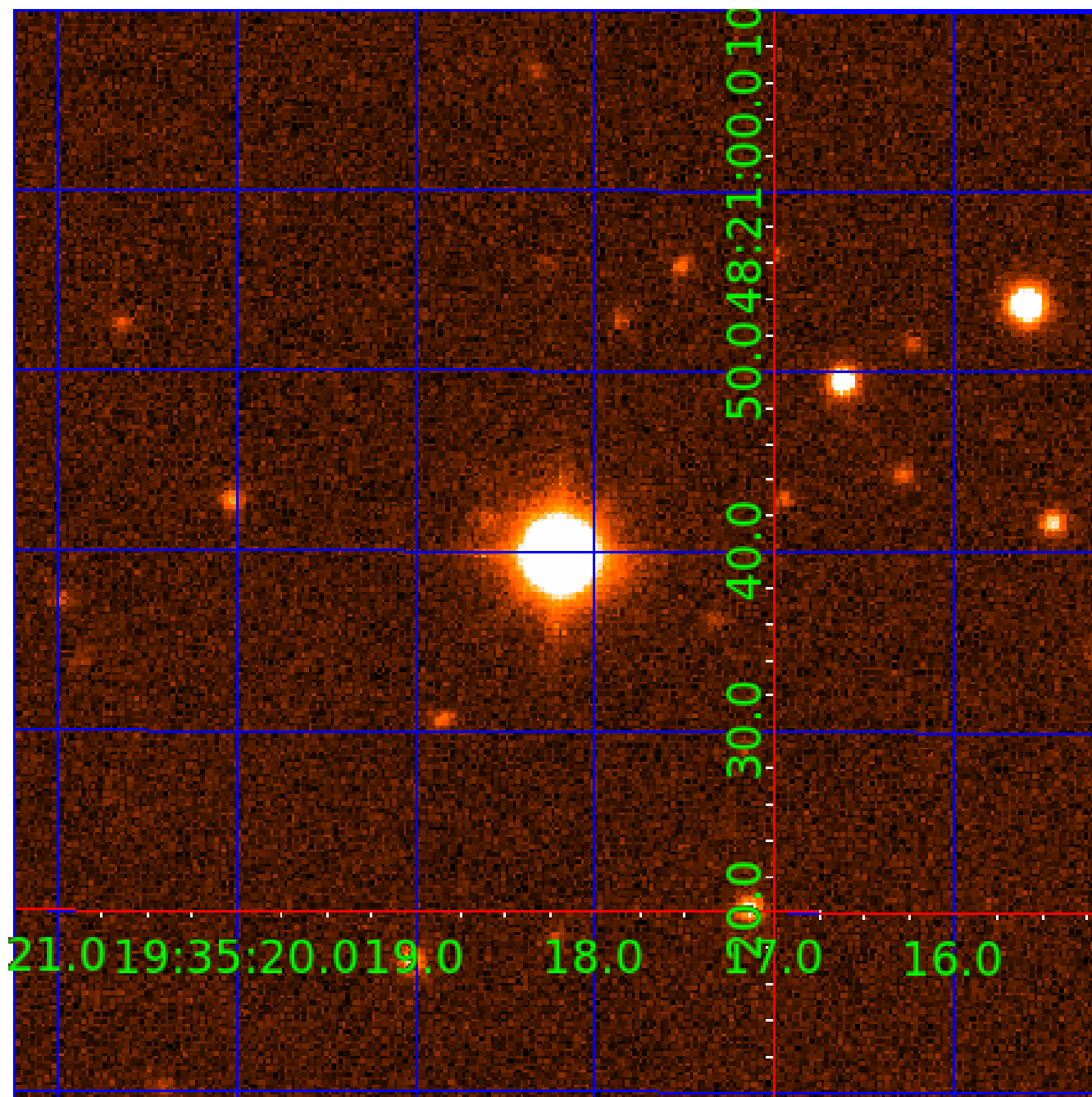


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 010924400

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010924400-01	OBS	7388.01	0.750719	131.824655	18.9	1.751	11.1	10.1	0.76	5151	0.40	1563.44
010924400-02	OBS	No	0.750726	132.191962	19.6	1.594	10.0	10.3	0.76	5151	0.41	1563.42
010924400-03	OBS	No	129.034956	198.195615	202.9	3.793	8.2	4.9	0.76	5151	1.18	1.64
010924400-04	OBS	No	149.735615	157.181118	211.7	8.568	7.8	4.6	0.76	5151	1.27	1.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010924400-01	OBS	FP	0.00	0	1	1	1	HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
010924400-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
010924400-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
010924400-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS

**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 010924400-02

TCE (1)	KIC	Parent (2)	Parent KIC	P <sub>1</sub> :P <sub>2</sub>	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	m <sub>2</sub>	m <sub>1</sub>	D <sub>2</sub> /D <sub>1</sub>	Mechanism	Flag	$\sigma_P$	$\sigma_T$
010924400-02	10924400	4326.01	10924340	1:1	86.7	-22	1	13.94	12.30	9.80	Direct-PRF	1	2.54	0.84

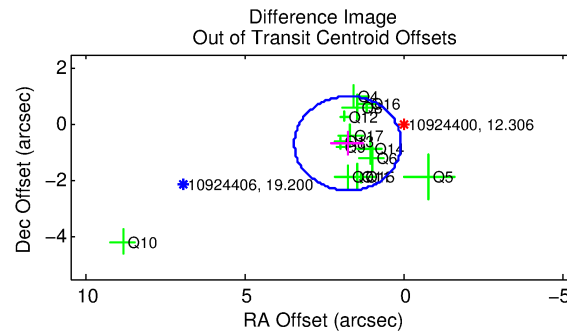
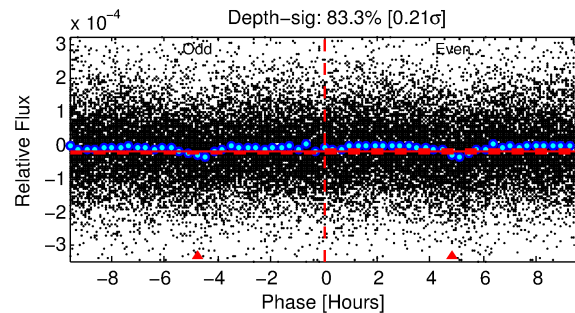
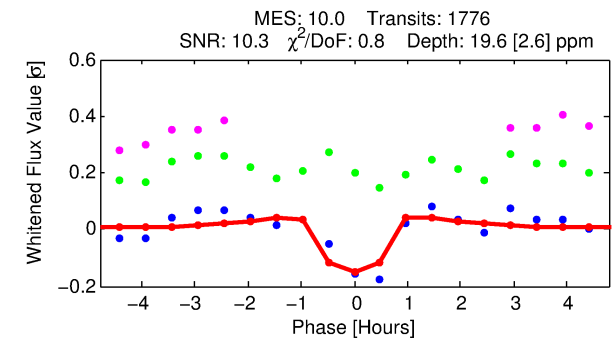
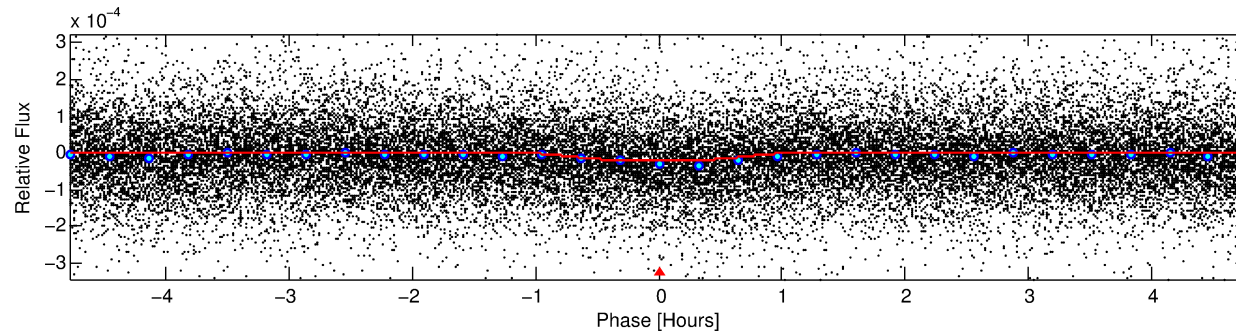
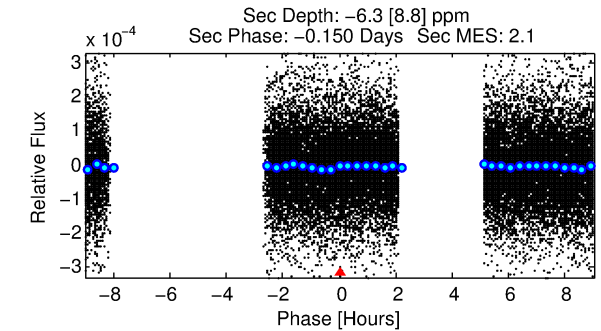
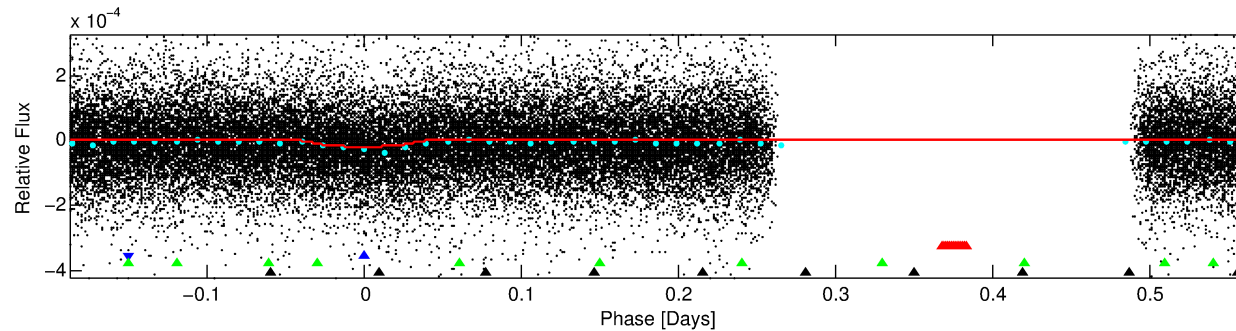
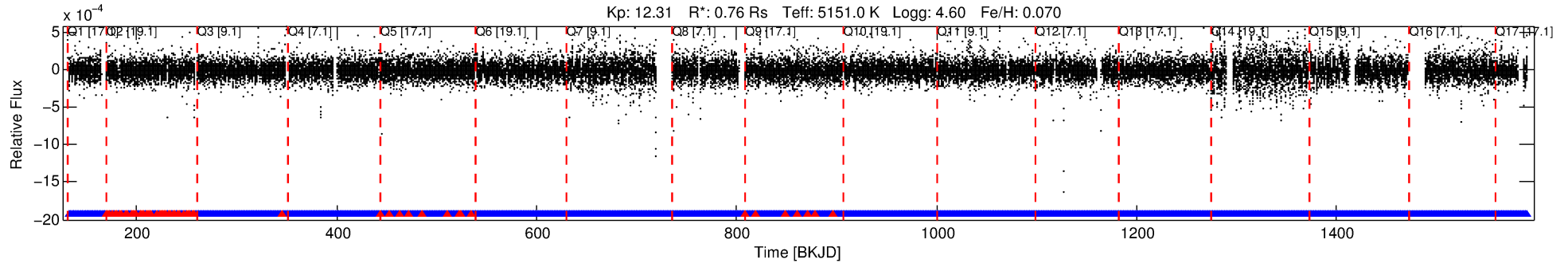
**Notes:** P<sub>1</sub>:P<sub>2</sub> is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column. m<sub>2</sub> and m<sub>1</sub> are the magnitudes of the parent and child. D<sub>2</sub>/D<sub>1</sub> is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 10924400 Candidate: 2 of 4 Period: 0.751 d

KOI: K07388 Corr: No Ephemeris Match

Kp: 12.31 R\*: 0.76 Rs Teff: 5151.0 K Logg: 4.60 Fe/H: 0.070



## DV Fit Results:

Period = 0.75073 [0.00001] d  
Epoch = 132.1920 [0.0017] BKJD  
Rp/R\* = 0.0049 [0.0012]  
a/R\* = 1.87 [1.26]  
b = 0.90 [0.21]  
Seff = 1563.42 [221.06]  
Teq = 1603 [57] K  
Rp = 0.41 [0.10] Re  
a = 0.0153 [0.0012] AU  
Ag = N/A  
Teffp = N/A

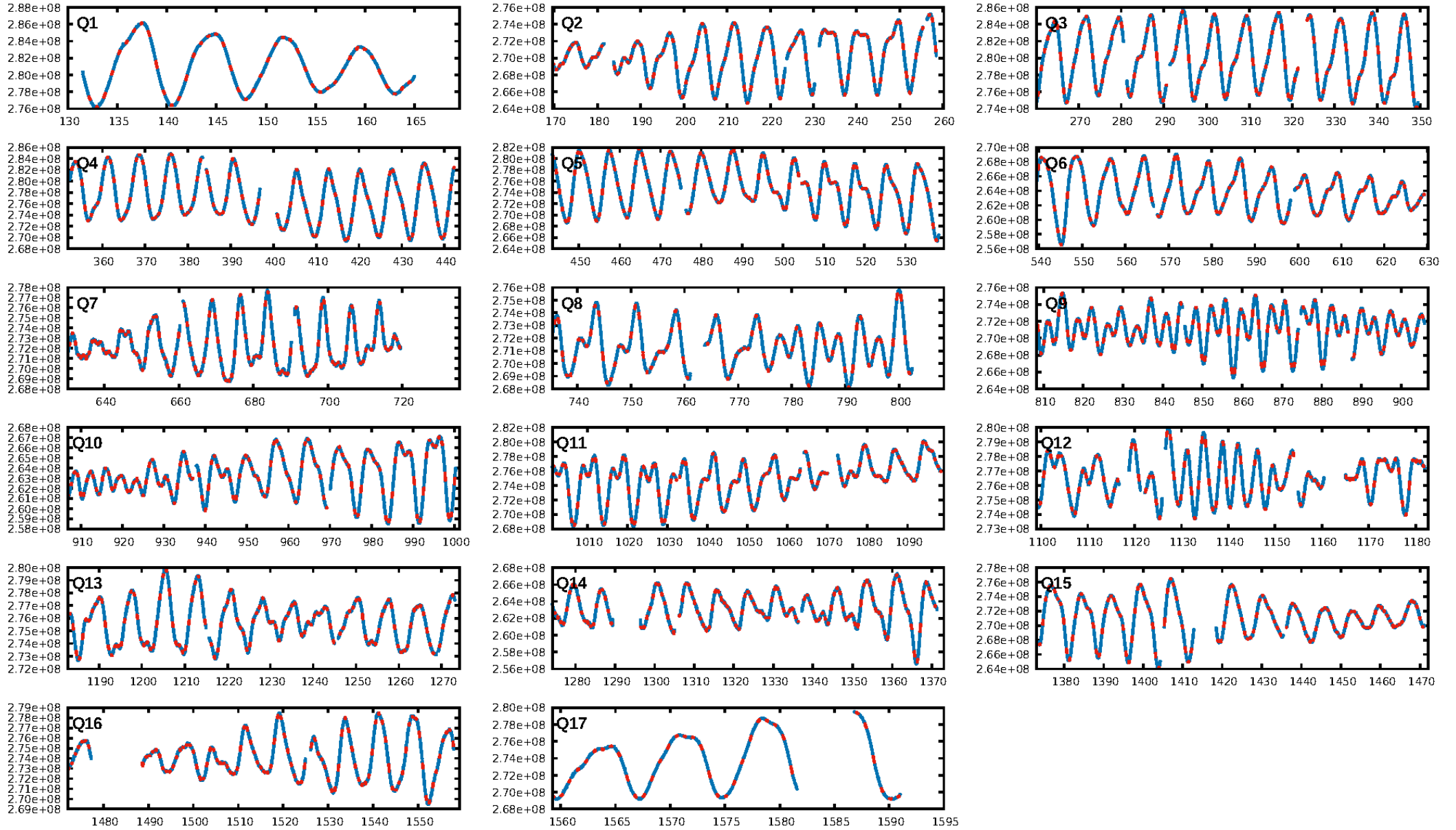
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [748.30σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.70e-24  
RollingBand-fgt: 0.96 [1629/1696]  
GhostDiagnostic-chr: 2.253  
Centroid-sig: 0.0%  
Centroid-so: 4.487 arcsec [6.21σ]  
OotOffset-rm: 1.897 arcsec [3.39σ]  
KicOffset-rm: 1.856 arcsec [3.15σ]  
OotOffset-st: 3/3/4/4 [14]  
KicOffset-st: 3/3/4/4 [14]  
DiffImageQuality-fgm: 0.86 [12/14]  
DiffImageOverlap-fno: 1.00 [17/17]

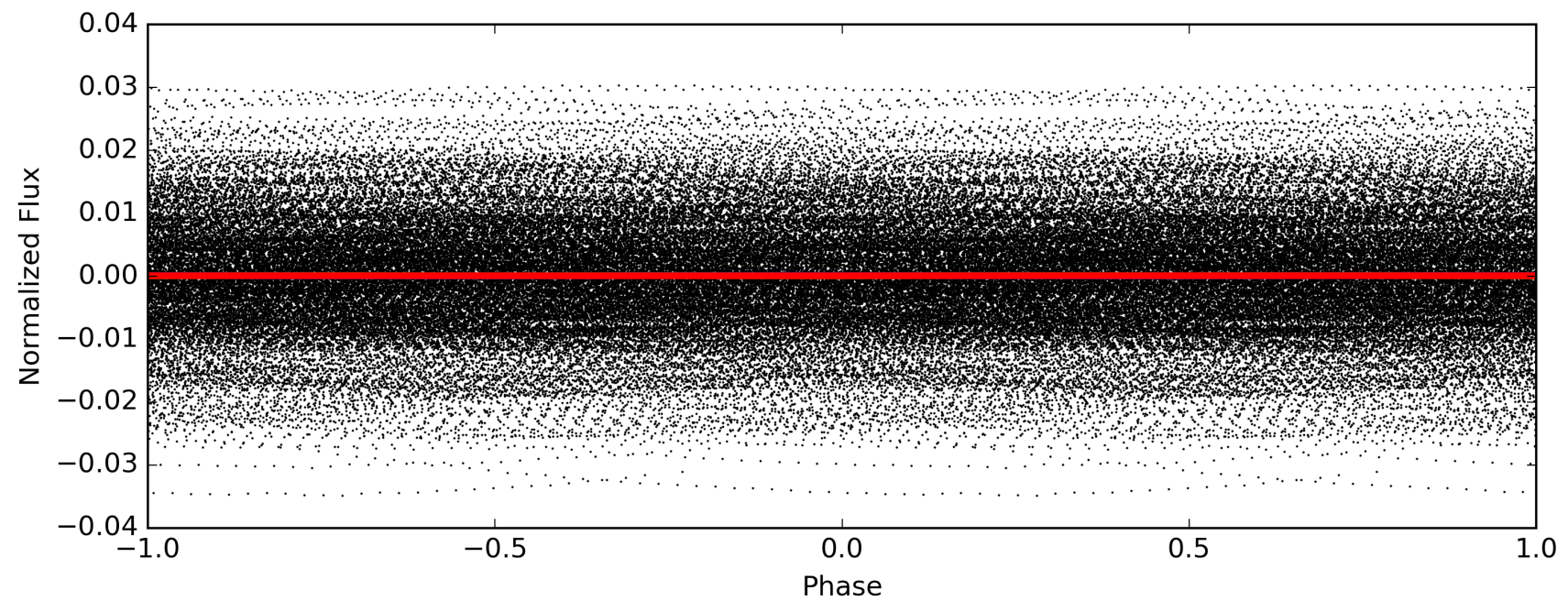
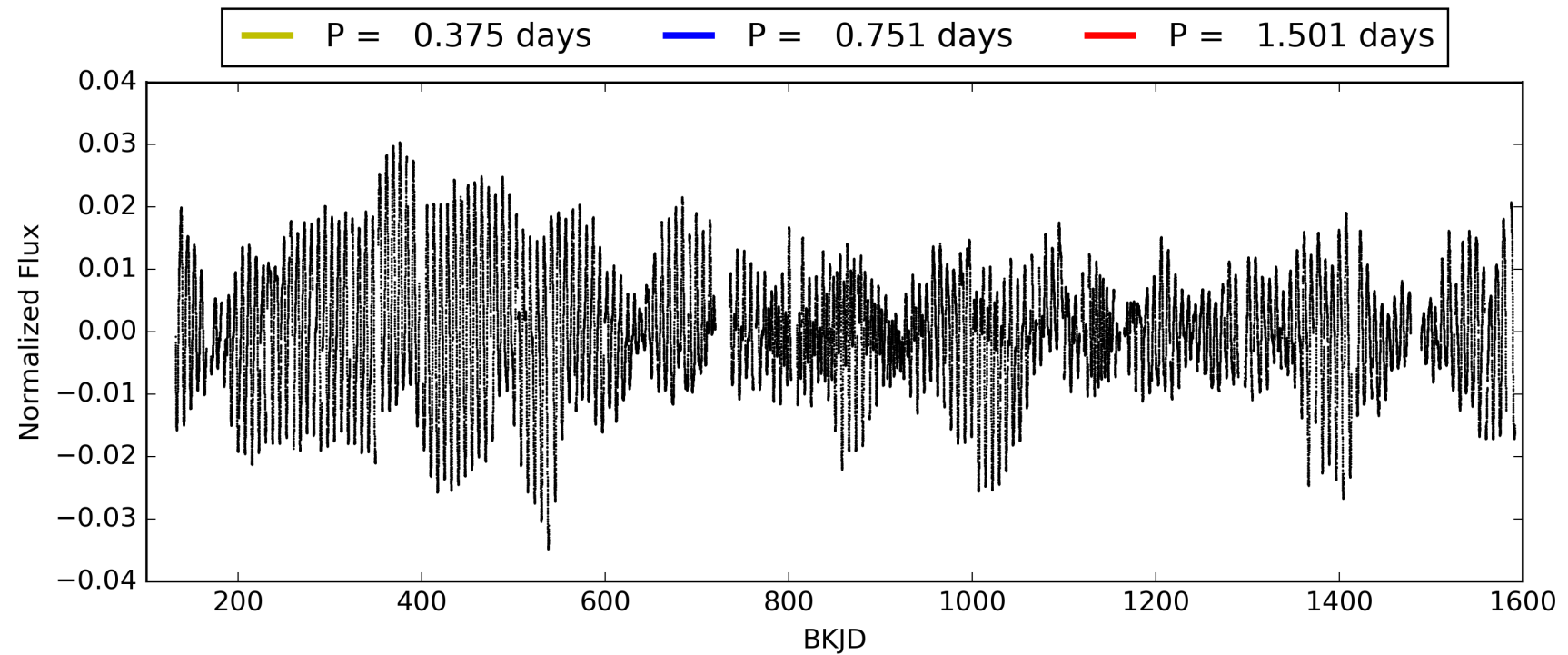
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:50:58 Z

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

# TCE 010924400-02, PDC Light Curves

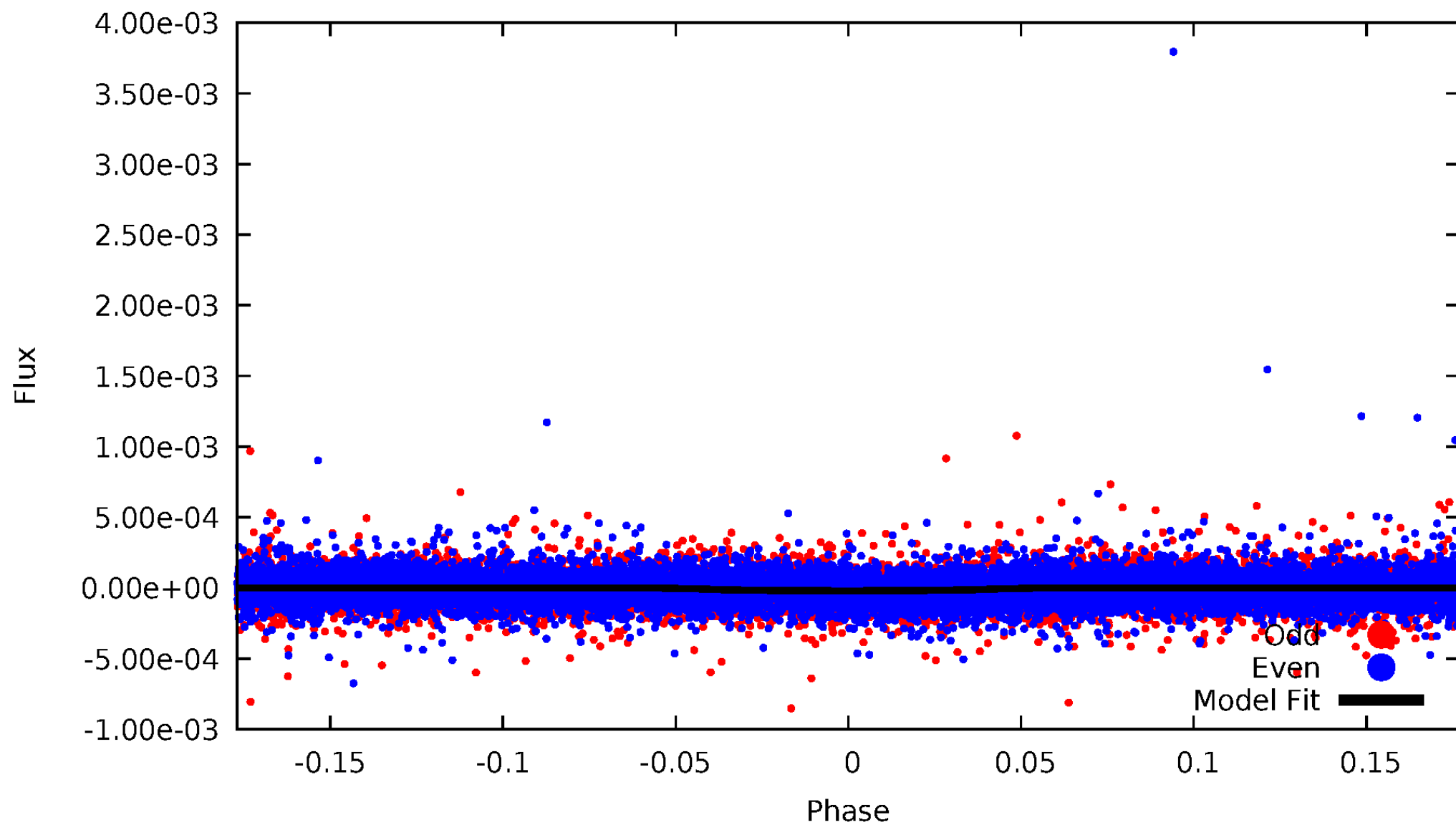


TCE 010924400-02



# DV Odd/Even

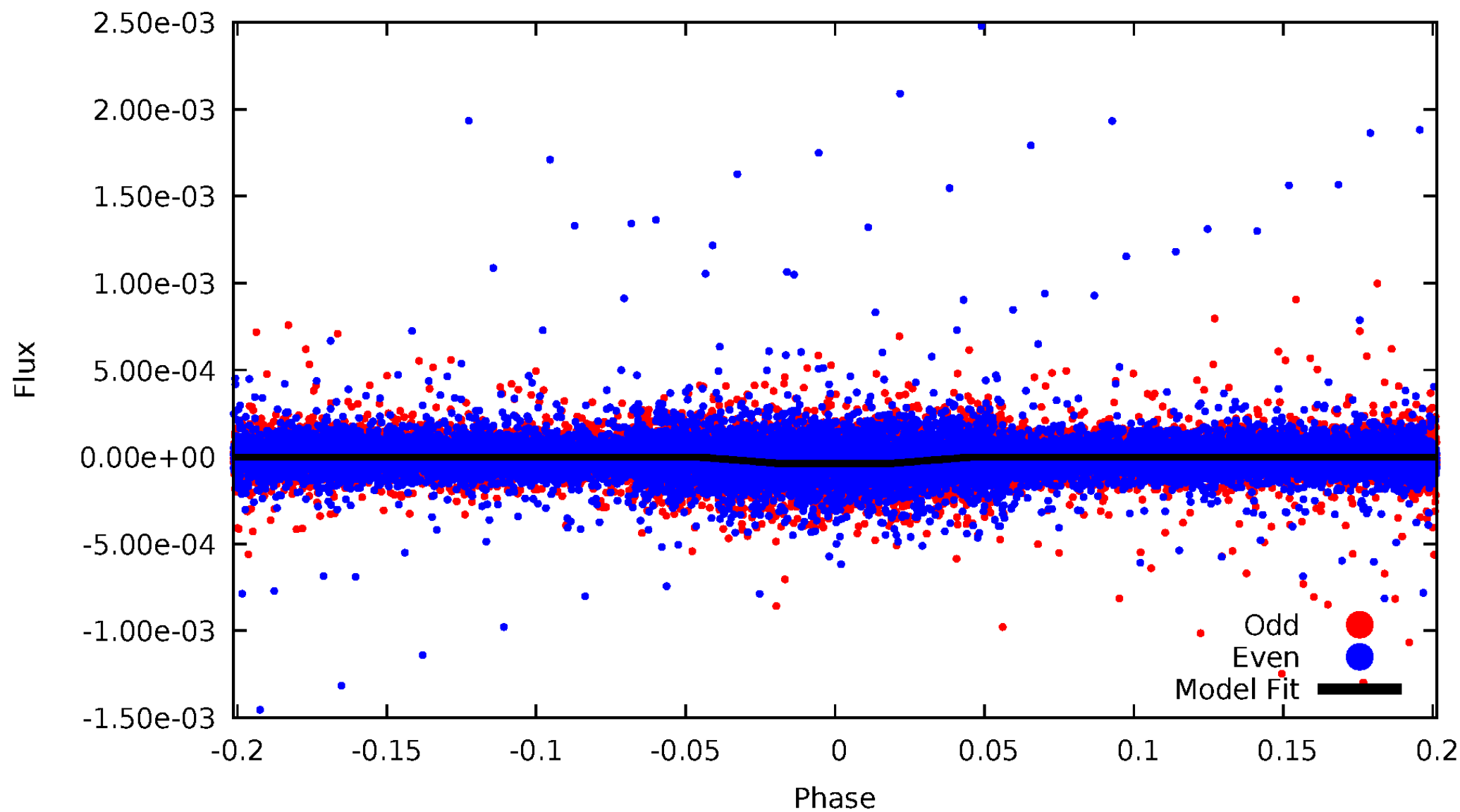
TCE 010924400-02





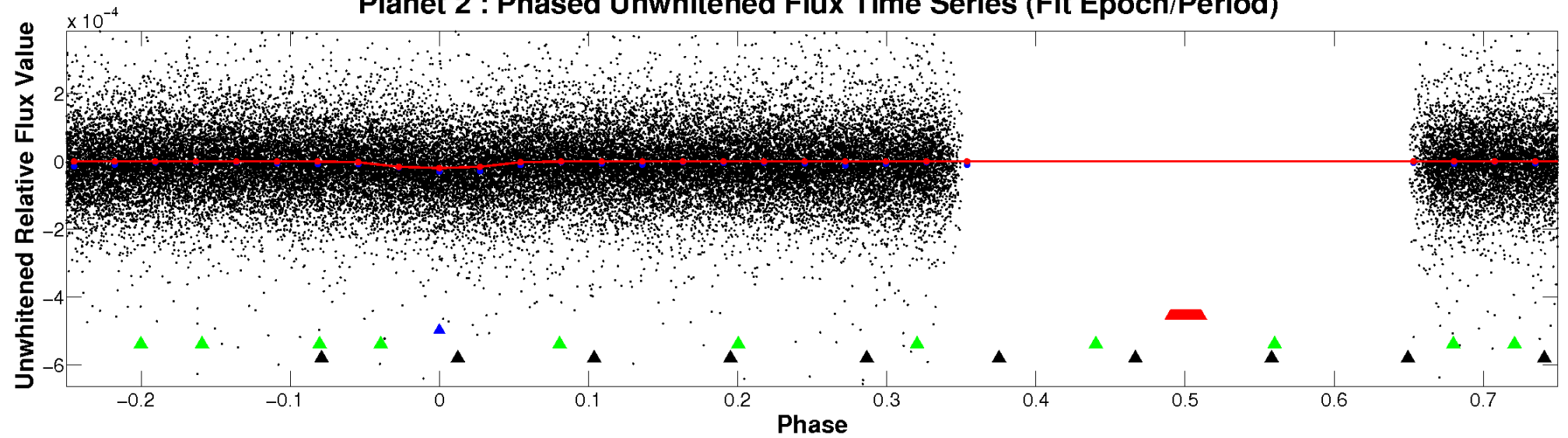
# ALT Odd/Even

TCE 010924400-02

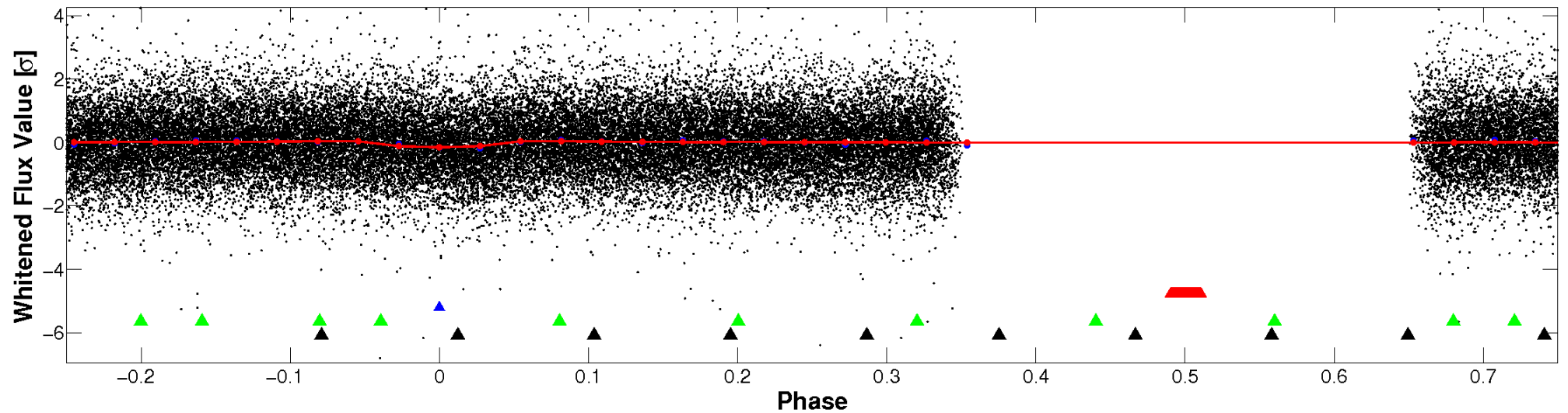


# Non-Whitened Vs. Whitened Light Curve

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



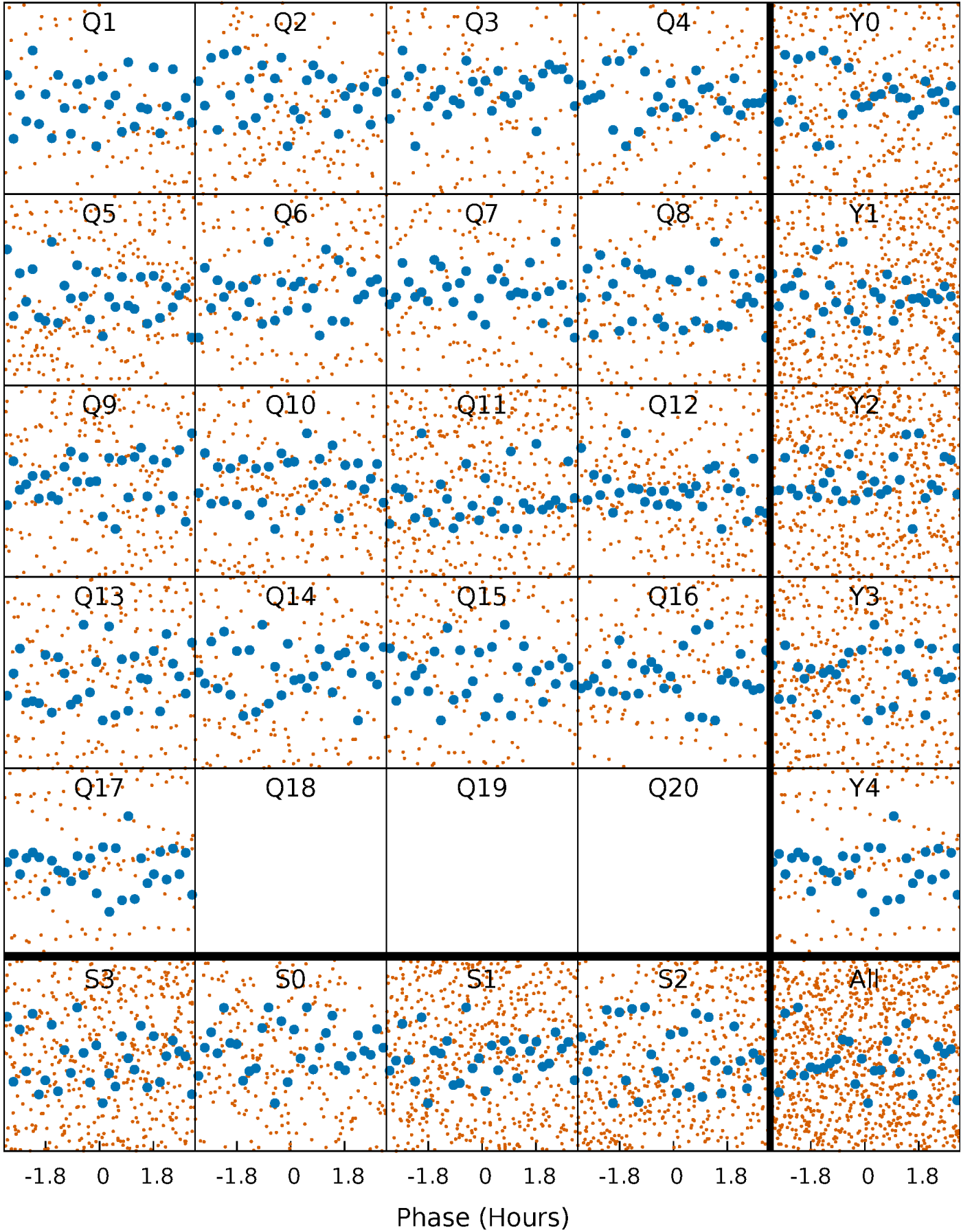
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





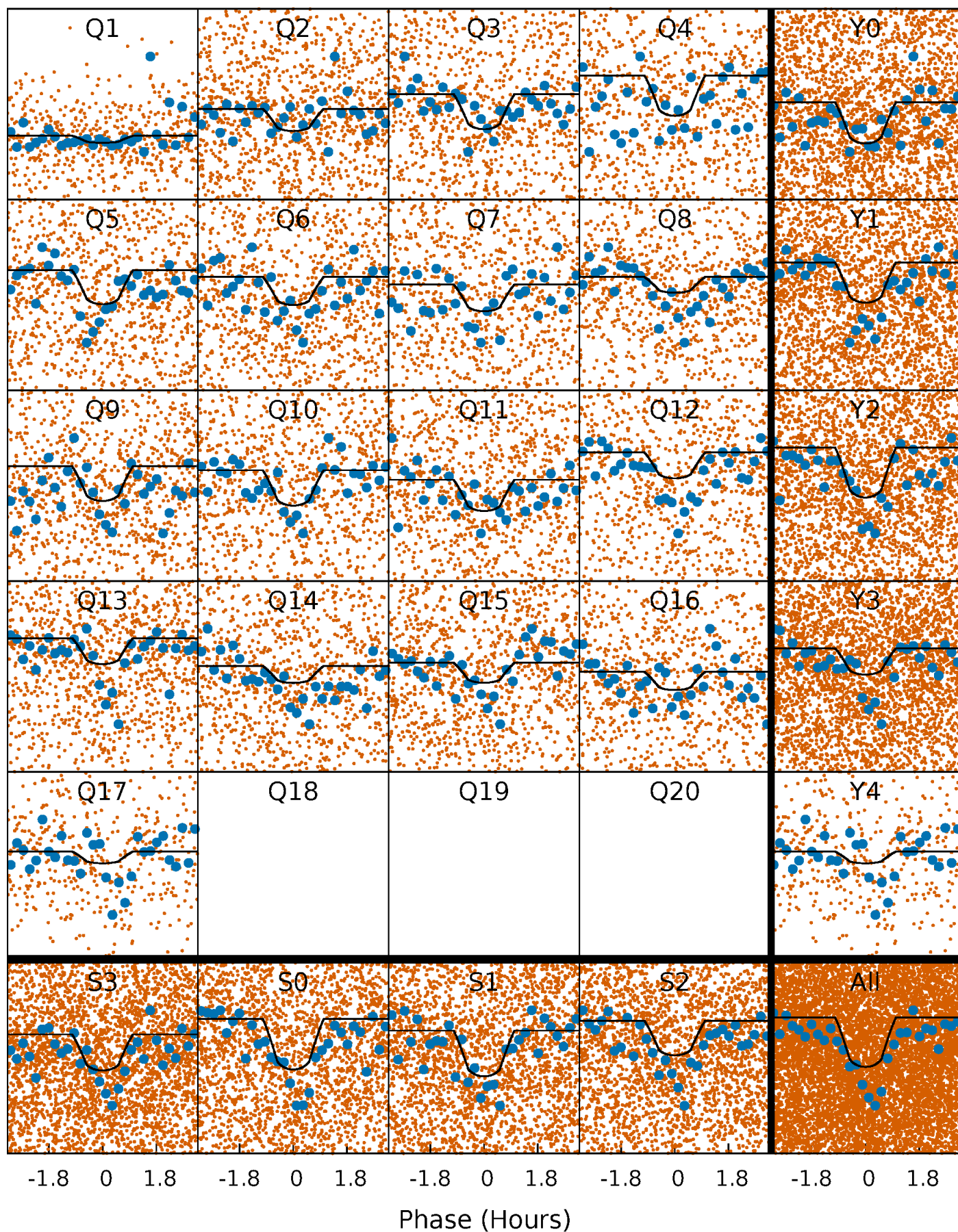
# PDC Quarter-Phased Transit Curves

TCE 010924400-02     $P = 0.750726$  Days     $T_0 = 132.191962$  (BKJD)



# DV Quarter-Phased Transit Curves

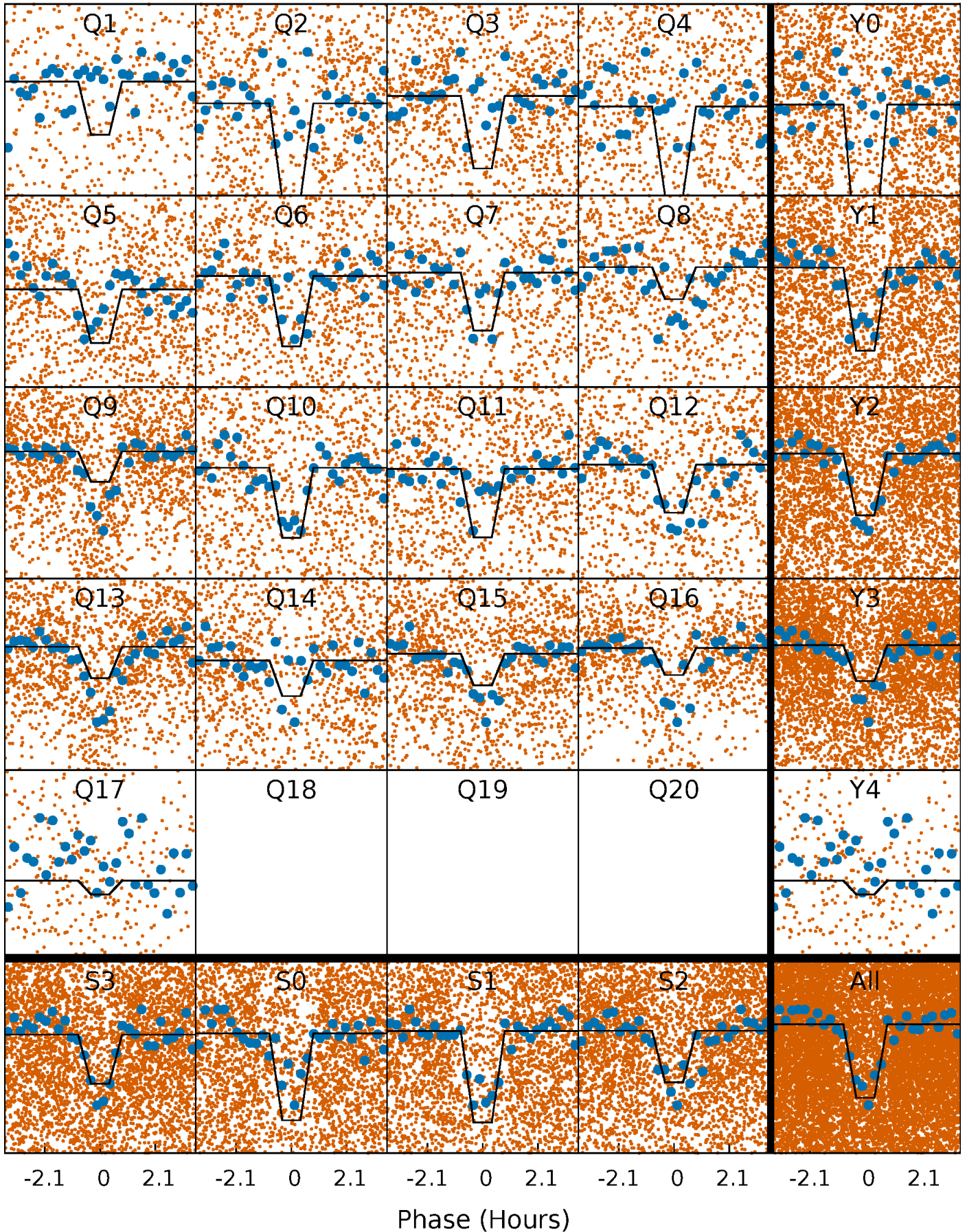
TCE 010924400-02     $P = 0.750726$  Days     $T_0 = 132.191962$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

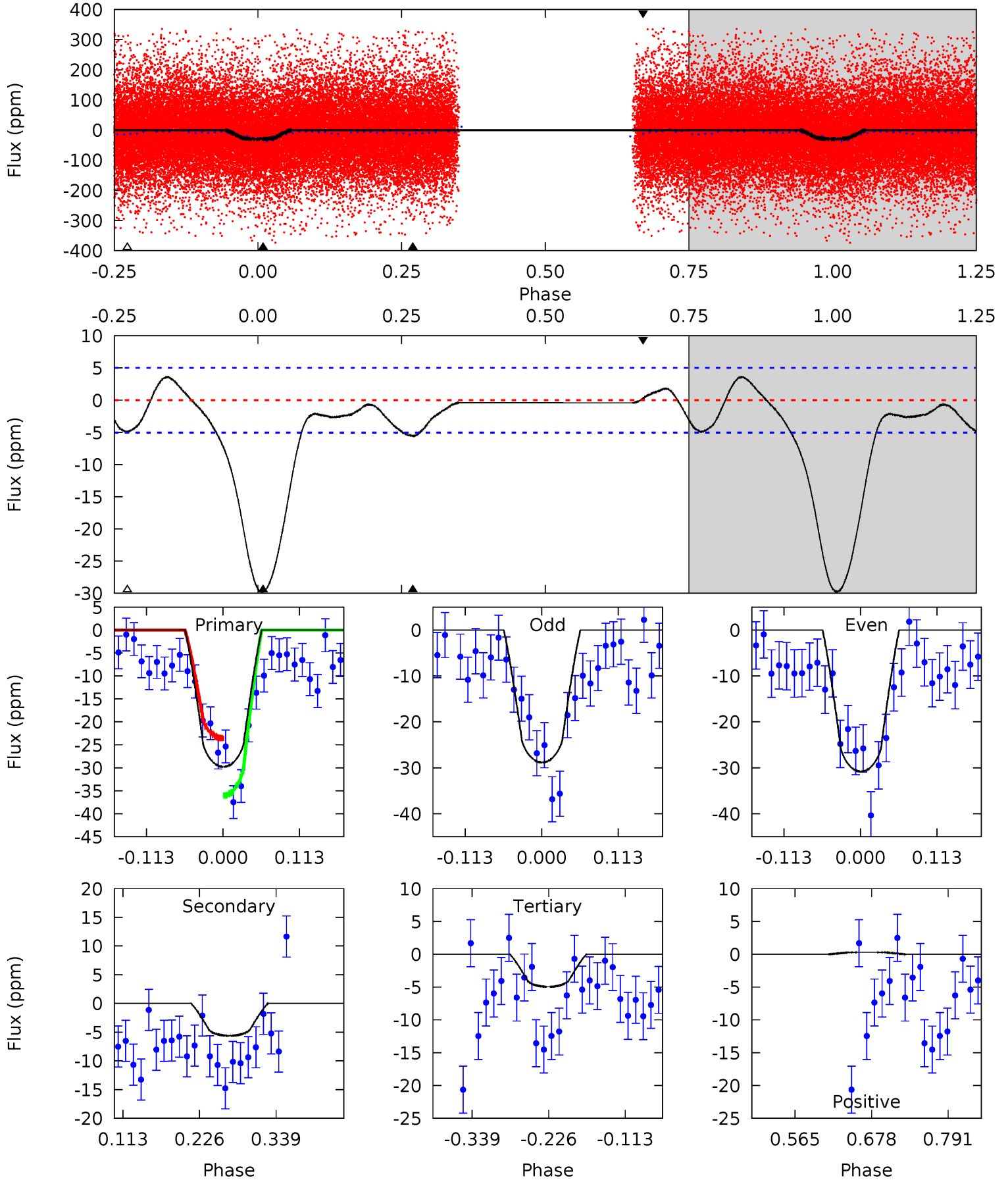
TCE 010924400-02     $P = 0.750735$  Days     $T_0 = 132.190581$  (BKJD)



# DV Model-Shift Uniqueness Test

010924400-02, P = 0.750726 Days, E = 131.441236 Days

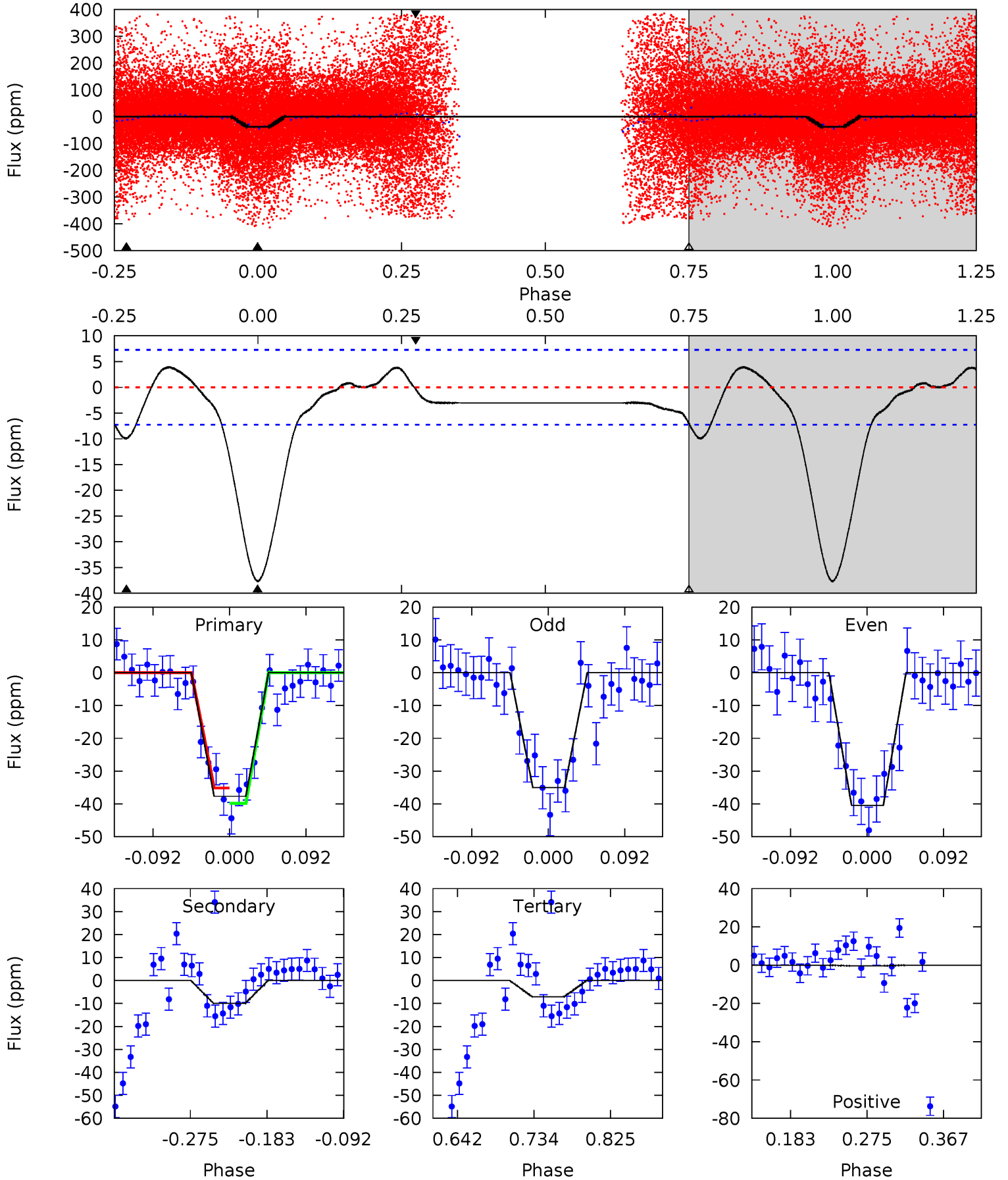
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.9	5.08	4.49	0.27	4.54	1.59	2.24	22.4	26.6	0.59	4.81	0.90	0.97	0.11	5.74



# Alt Model-Shift Uniqueness Test

010924400-02, P = 0.750735 Days, E = 131.439846 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
23.7	6.27	4.46	-0.22	4.58	1.69	1.58	19.2	23.9	1.81	6.49	1.75	0.93	0.09	2.03



### Stellar Parameters For KIC 010924400

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5151^{+72}_{-92}$	$4.602^{+0.010}_{-0.070}$	$0.070^{+0.150}_{-0.150}$	$0.761^{+0.066}_{-0.024}$	$0.874^{+0.027}_{-0.064}$	$2.798^{+0.140}_{-0.676}$
	+1%/-2%	+0%/-2%	+214%/-214%	+9%/-3%	+3%/-7%	+5%/-24%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 010924400-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-6 \pm 1$	$0.41^{+0.12}_{-0.09}$	$2267^{+57}_{-48}$	$3842^{+452}_{-351}$	$4.146^{+3.064}_{-1.685}$
Alt.	$-10 \pm 2$	$0.52^{+0.11}_{-0.09}$	$2268^{+52}_{-47}$	$3938^{+347}_{-278}$	$4.757^{+2.616}_{-1.599}$

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

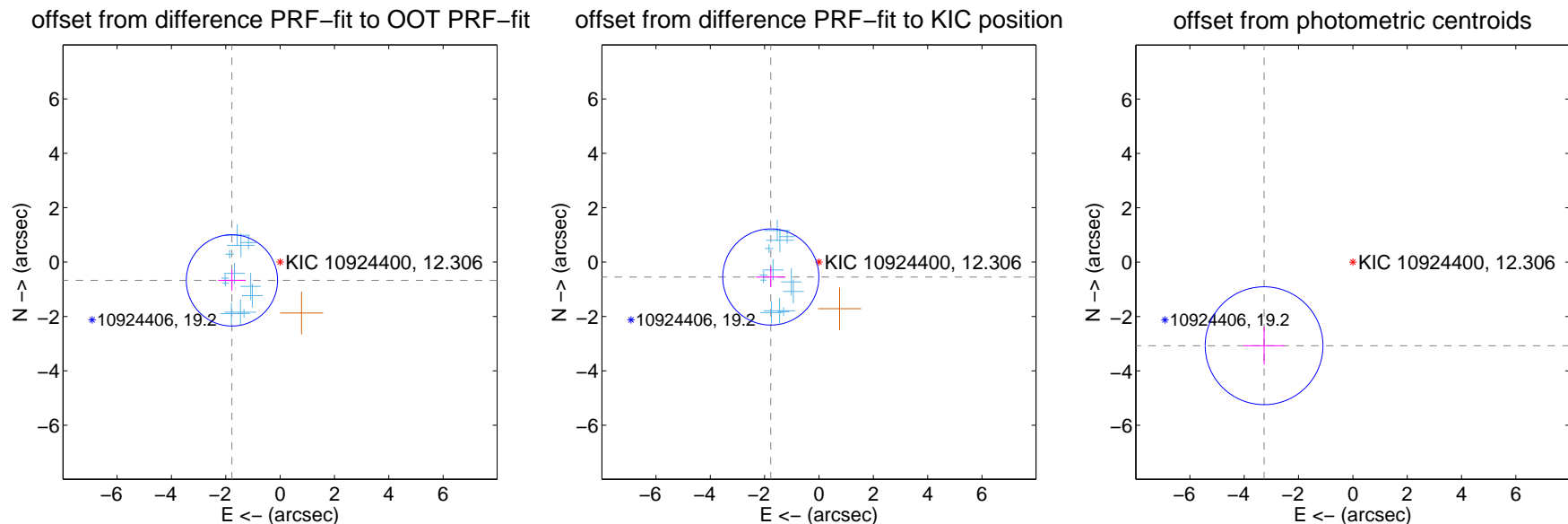
## DV Centroid Data

Supplemental centroid analysis for 010924400-02. Kepler magnitude: 12.31. Transit SNR 10.25

There are 12 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

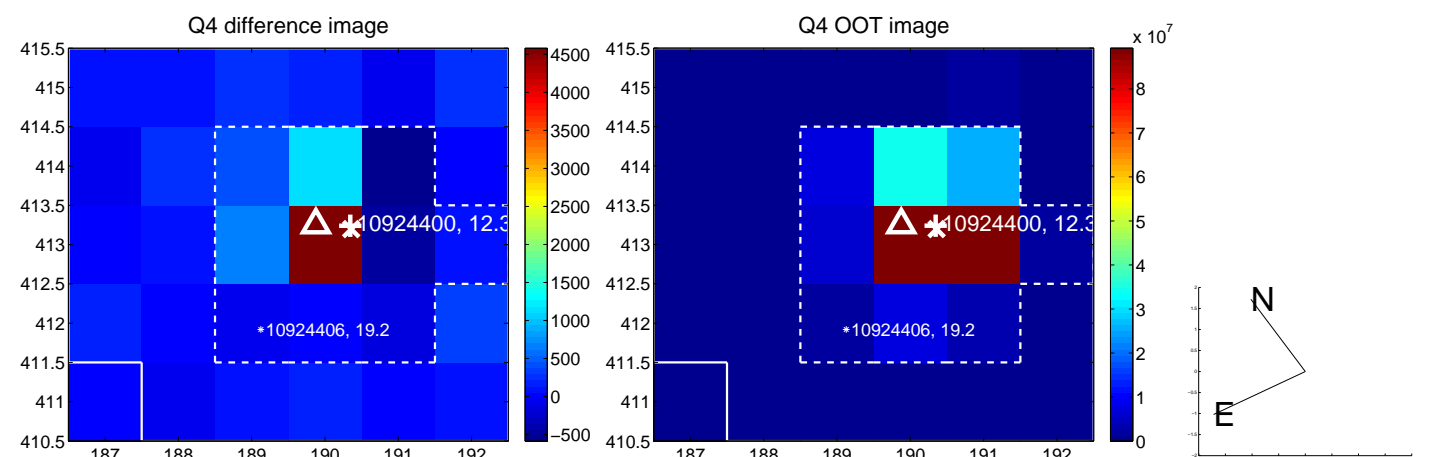
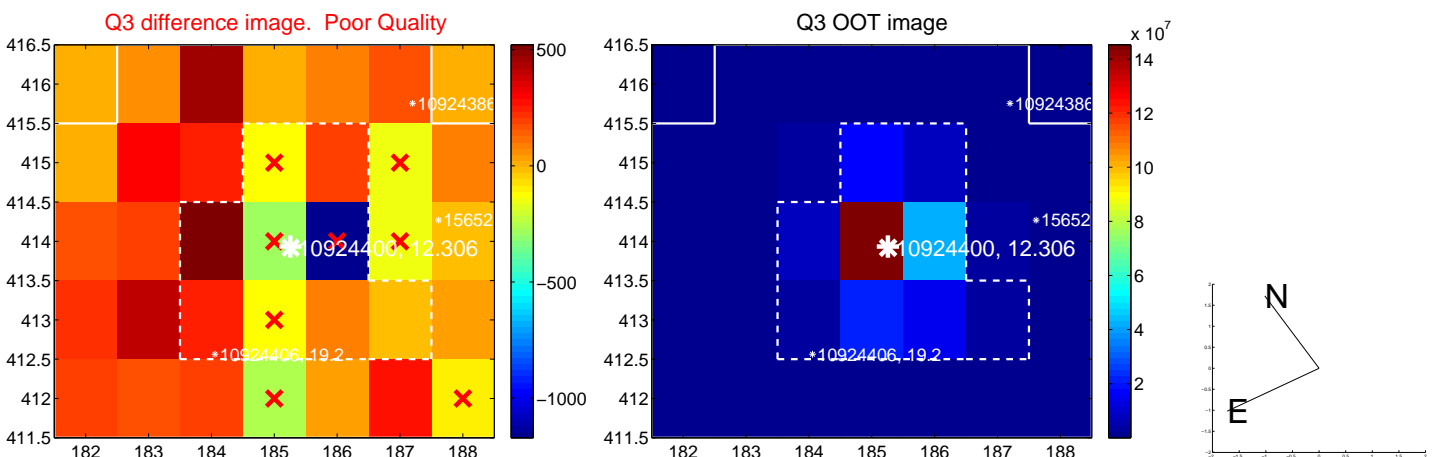
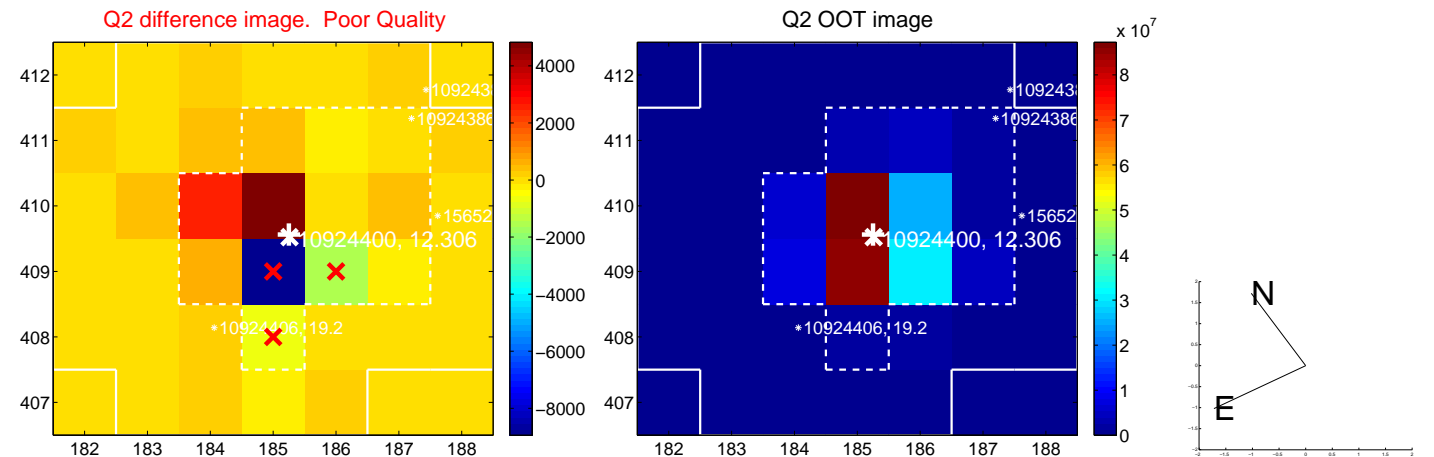
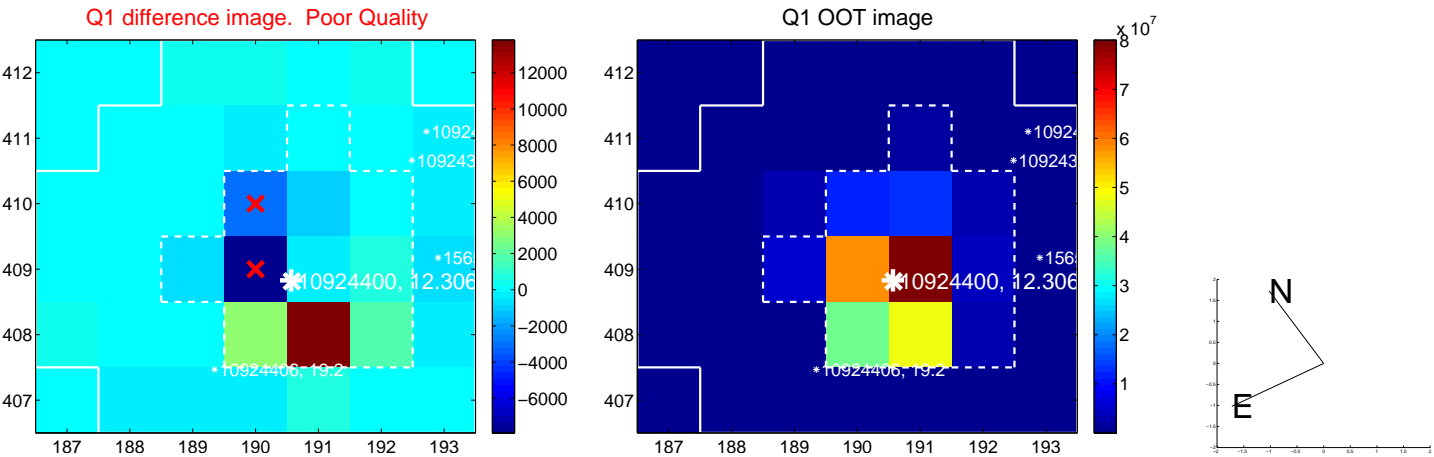
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.897 \pm 0.560$	<b>3.39</b>	$1.774 \pm 0.506$	$-0.673 \pm 0.388$
PRF-fit source offset from KIC position	$1.856 \pm 0.590$	<b>3.15</b>	$1.773 \pm 0.545$	$-0.548 \pm 0.368$
photometric centroid source offset	$4.49 \pm 0.72$	<b>6.21</b>	$3.27 \pm 0.75$	$-3.07 \pm 0.70$



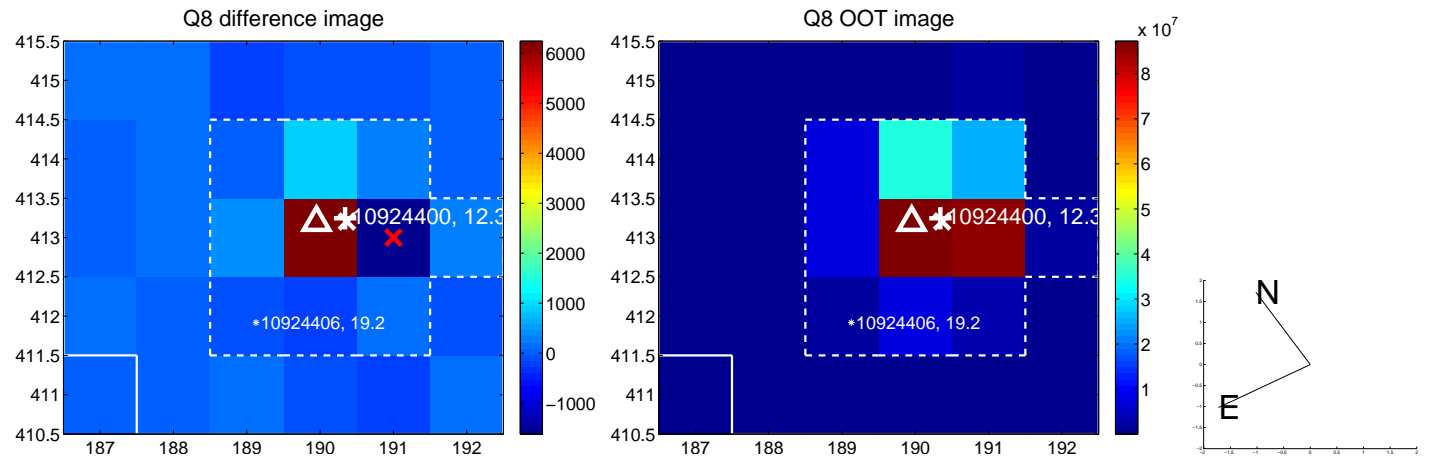
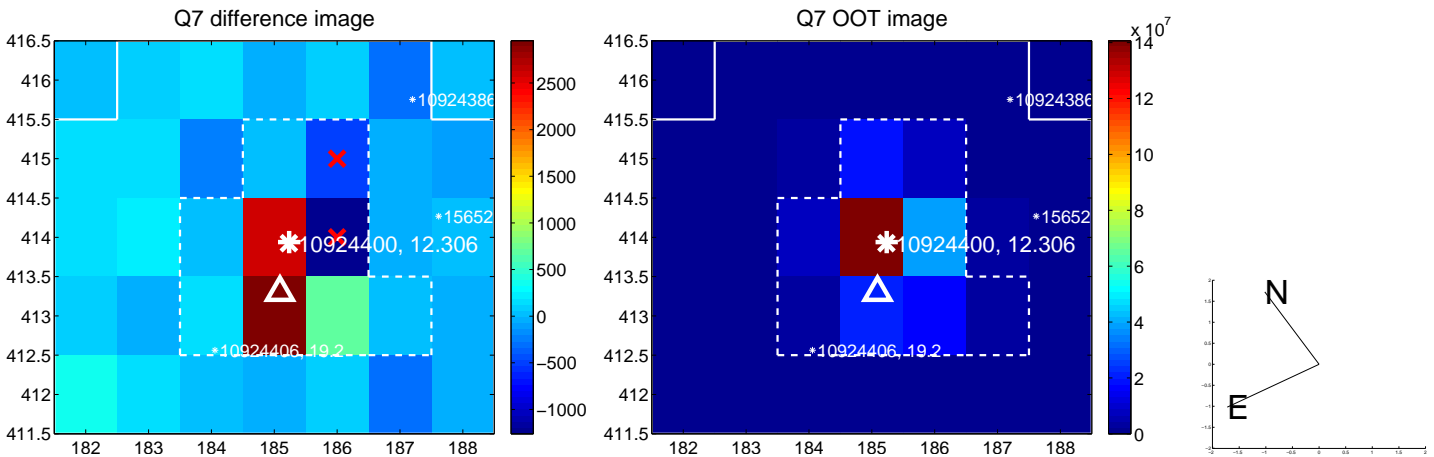
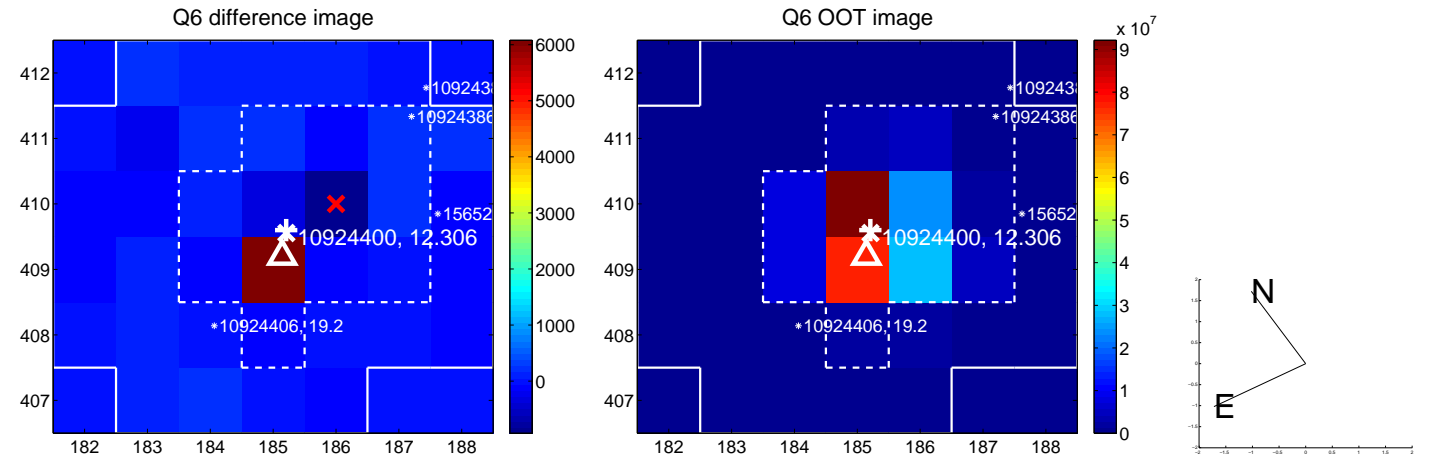
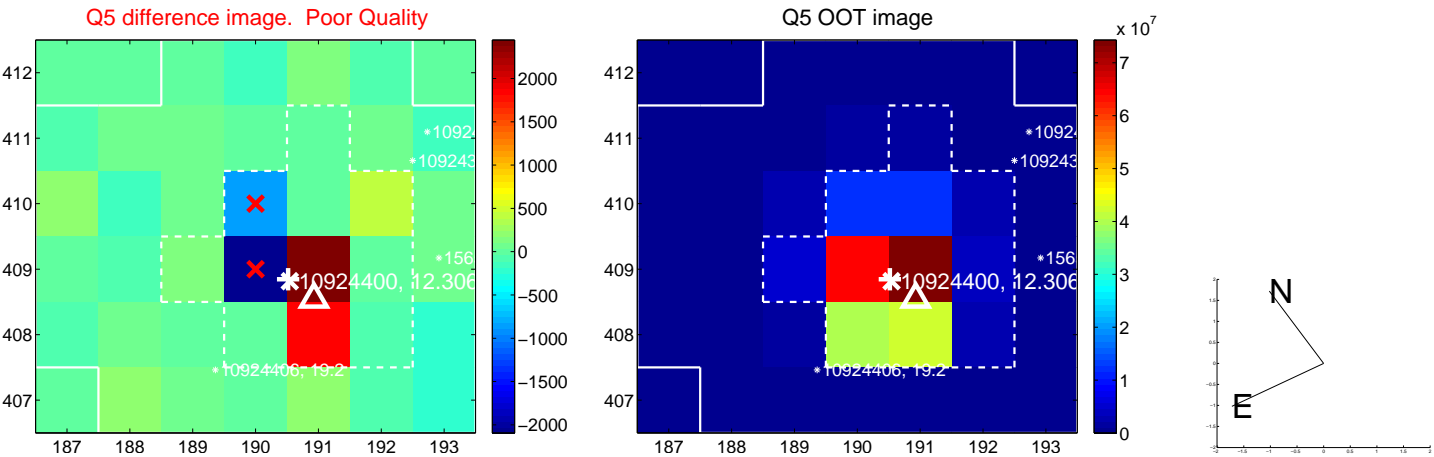
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



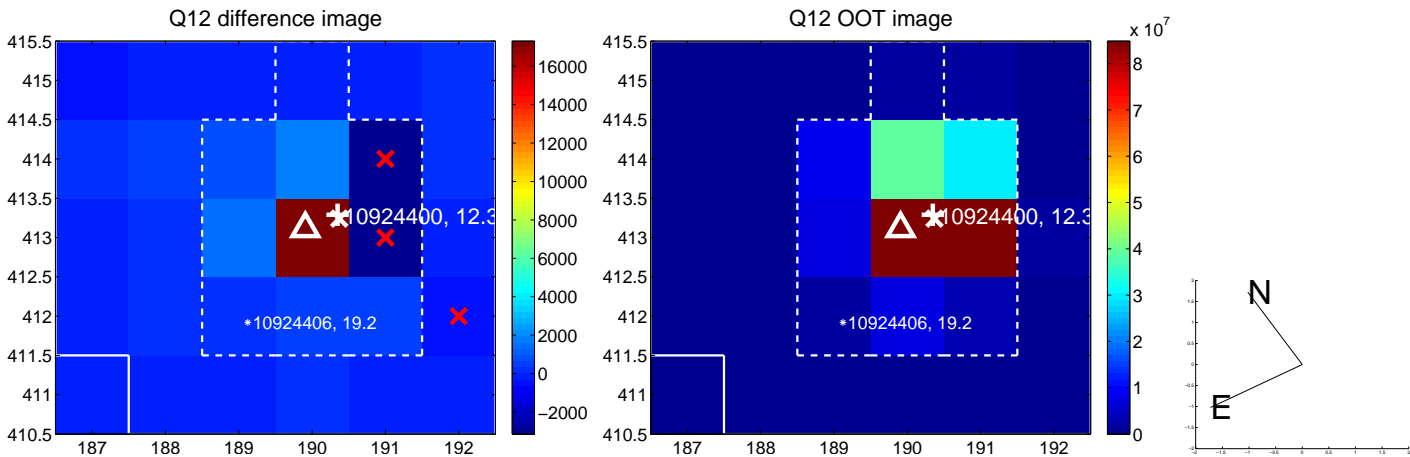
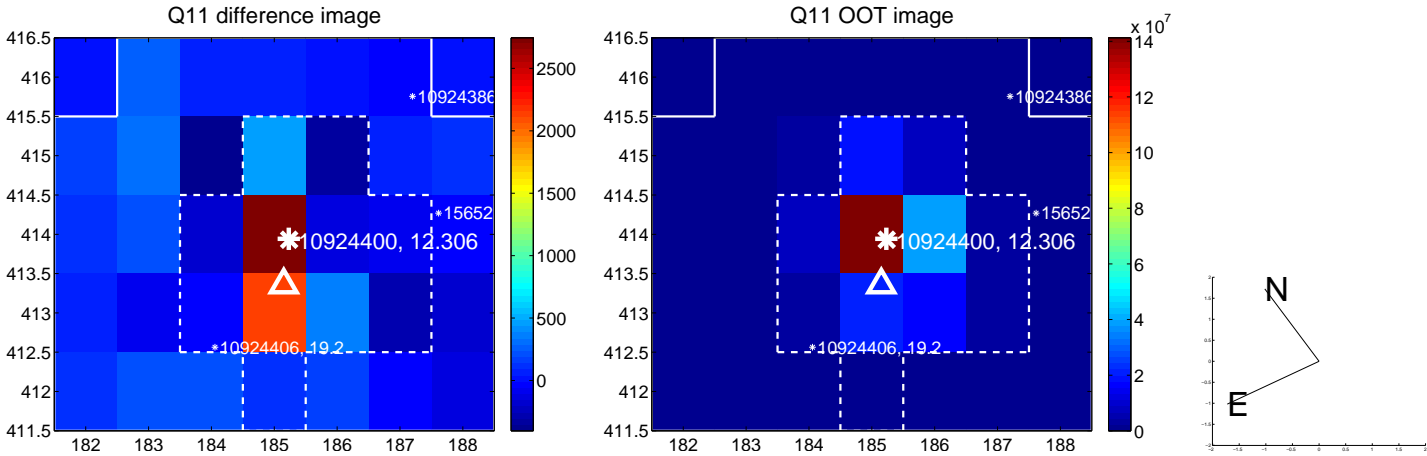
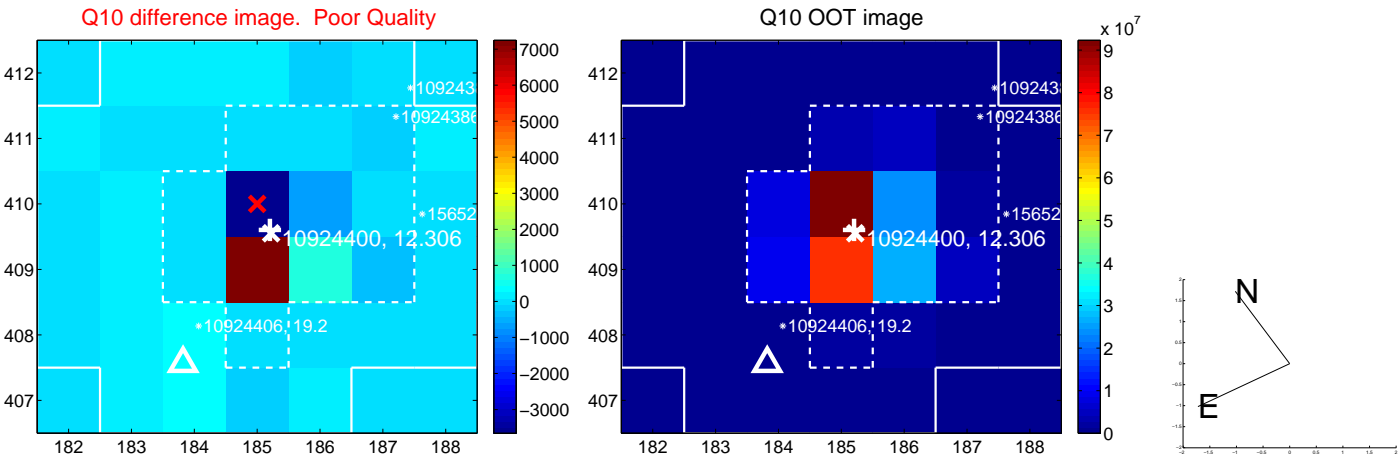
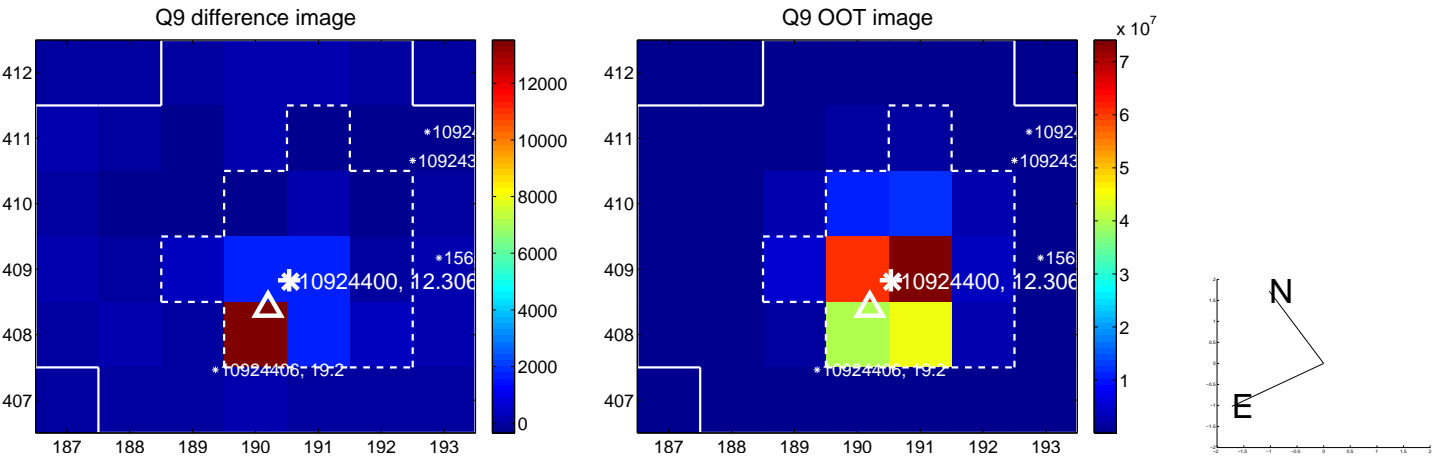
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



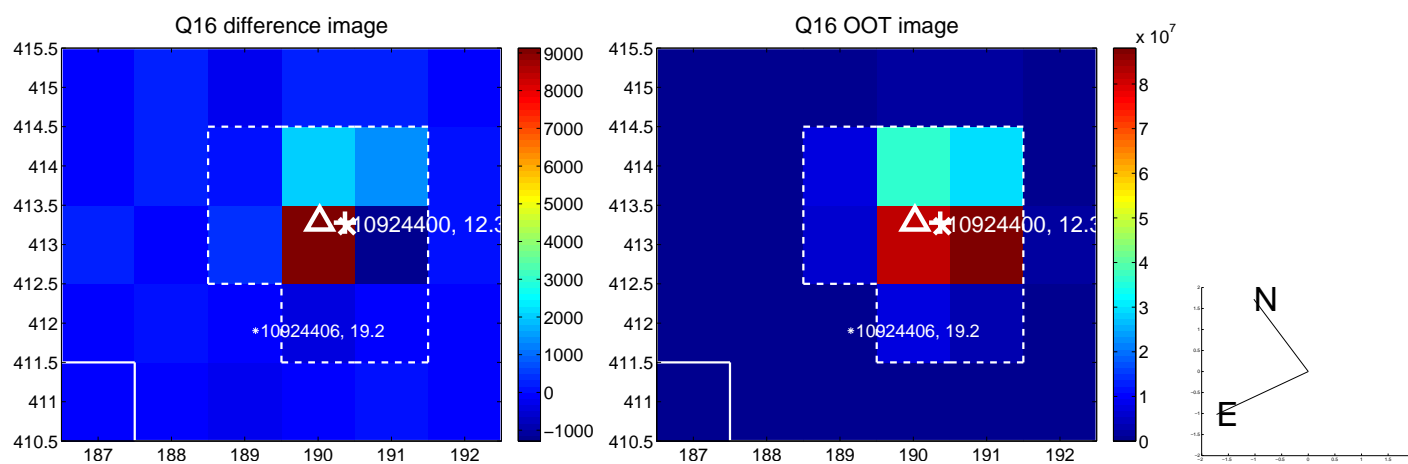
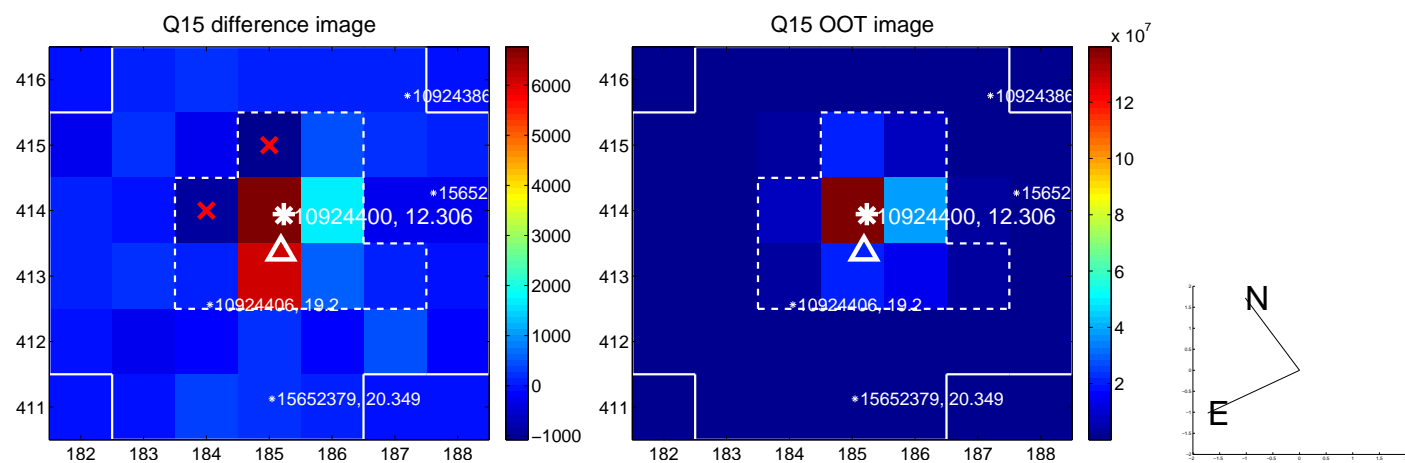
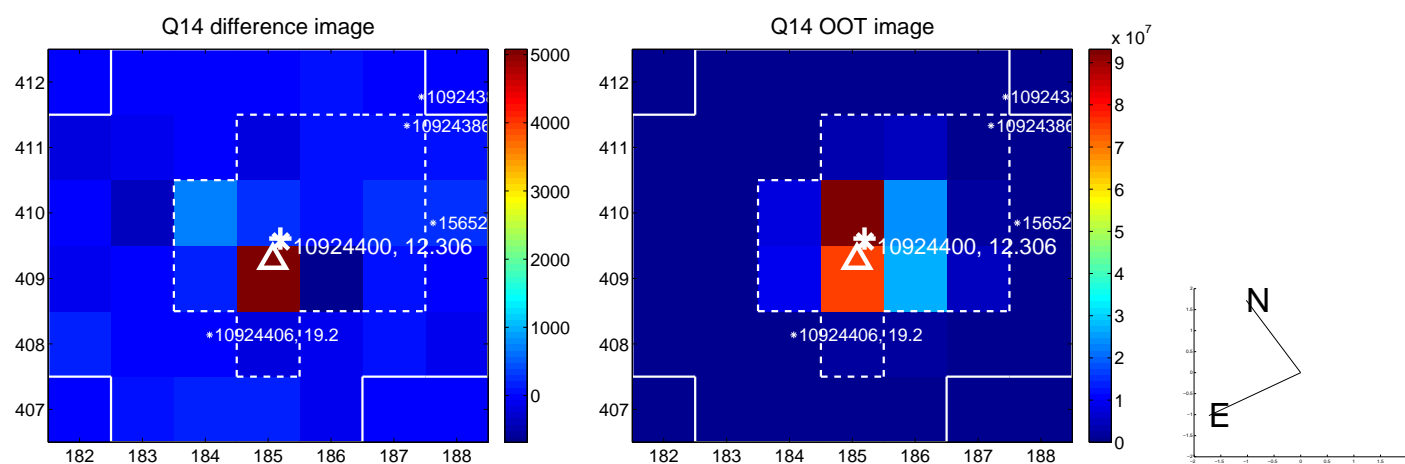
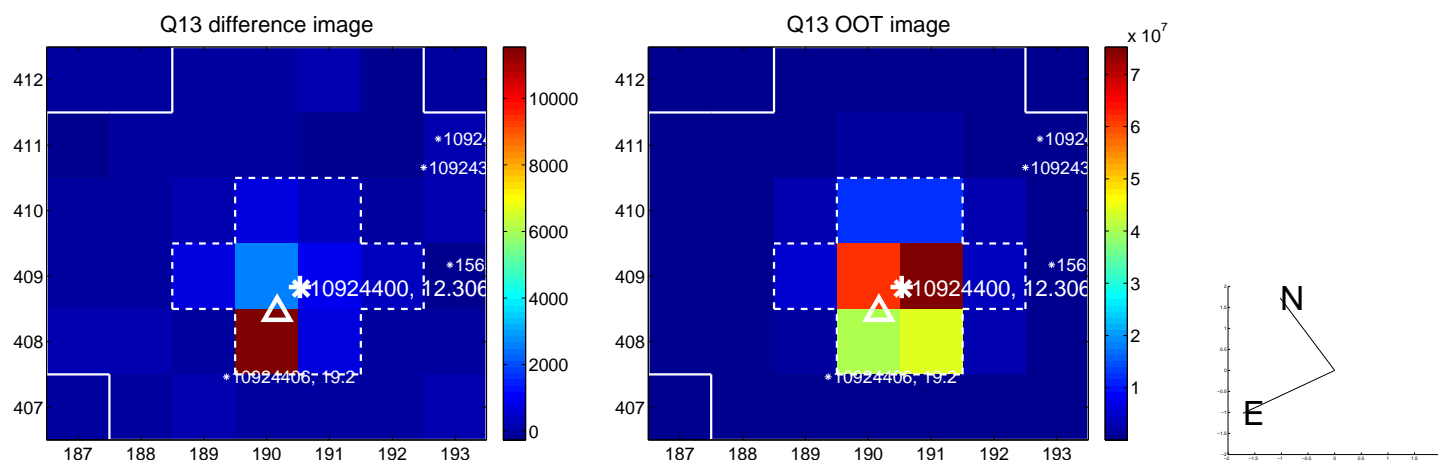
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



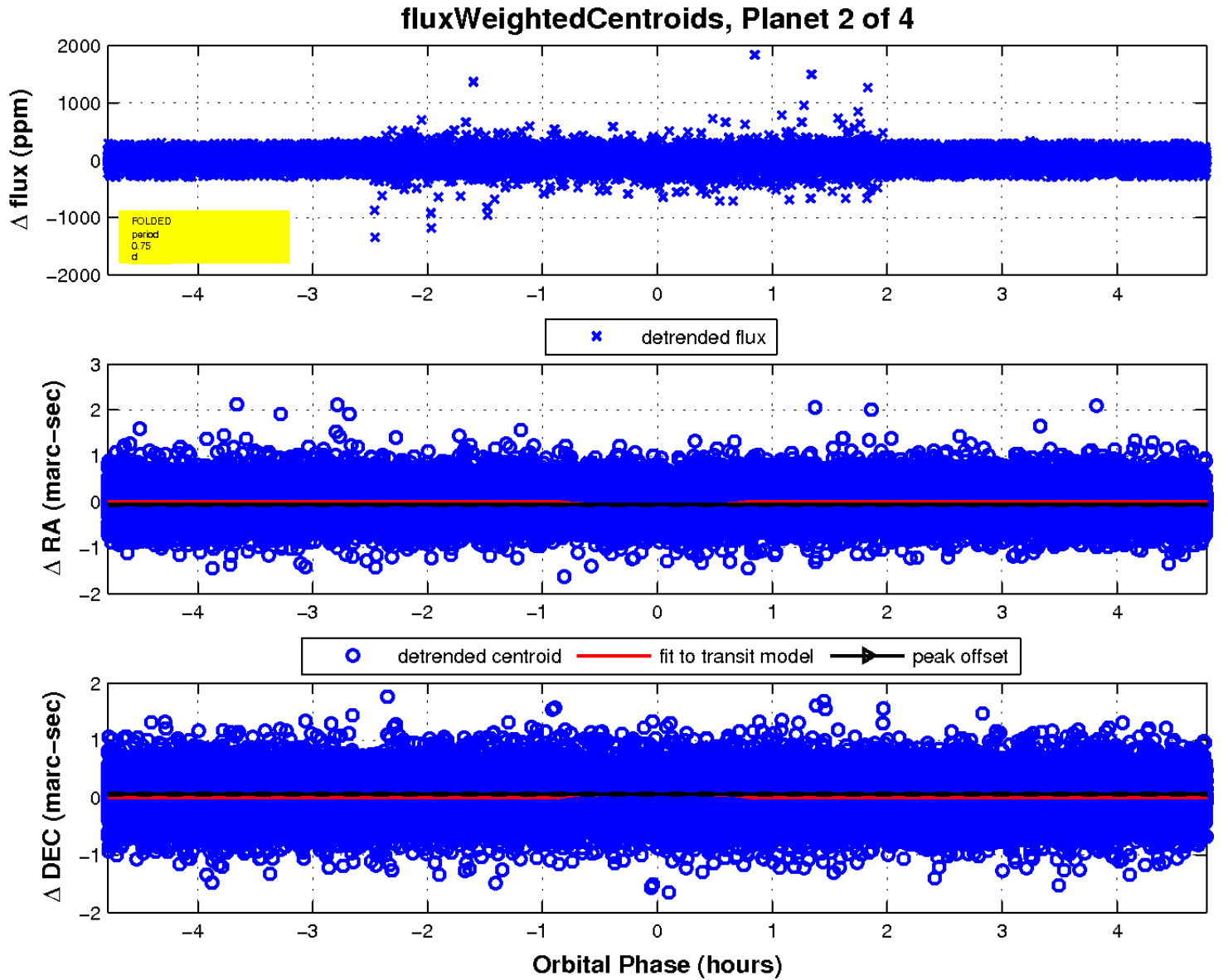
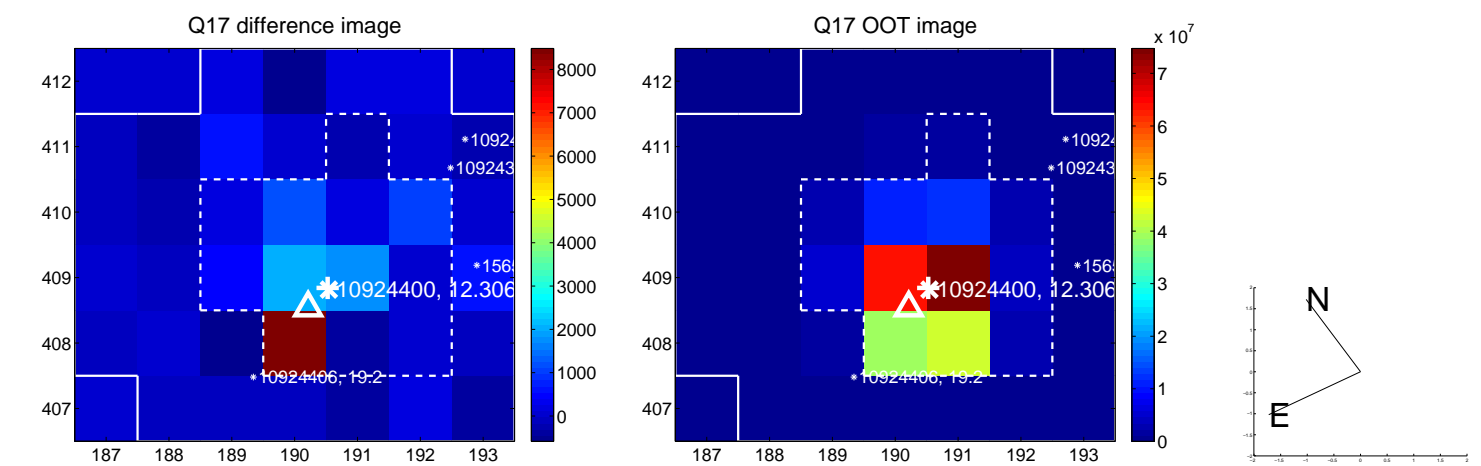
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

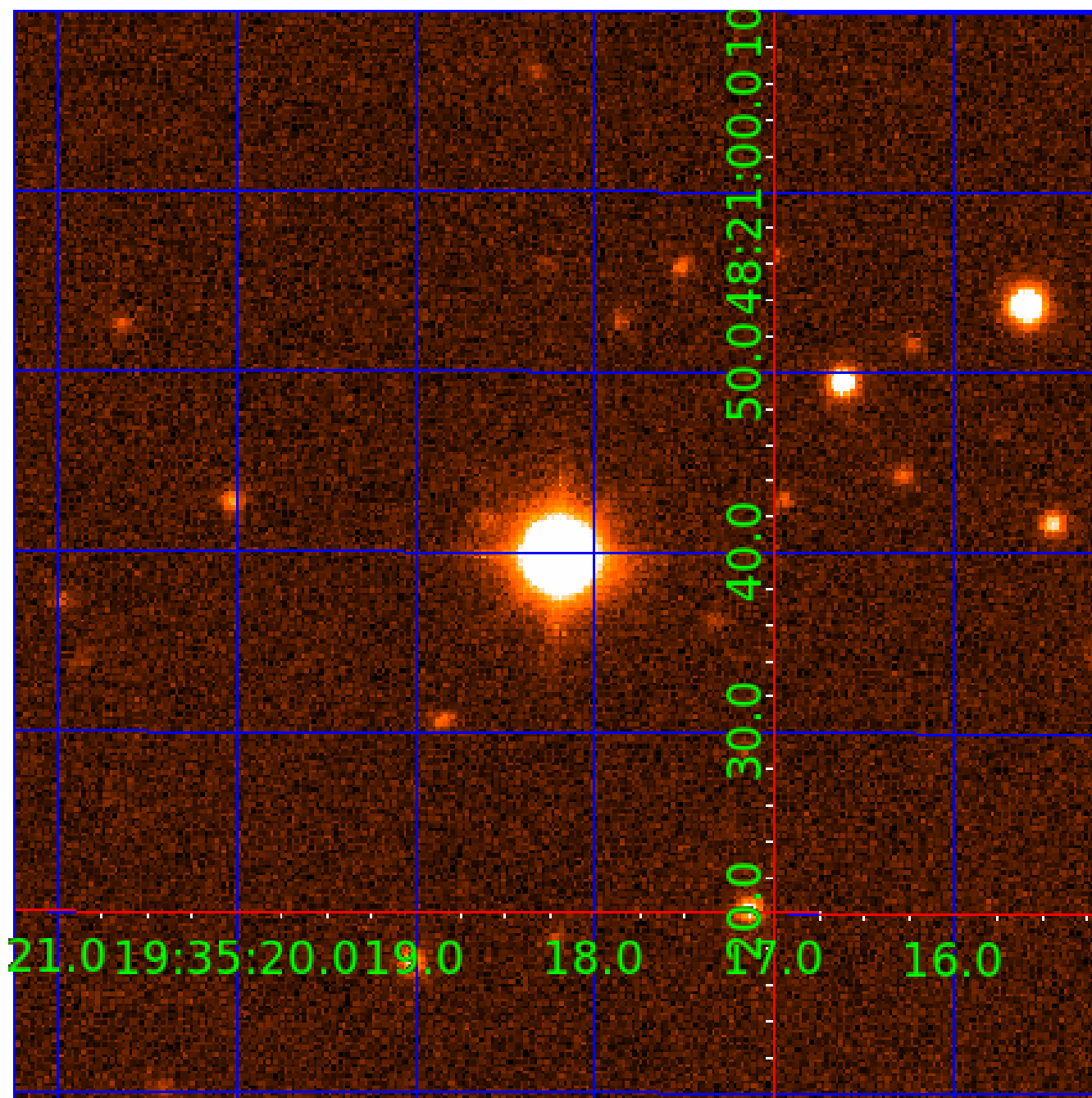


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010924400

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010924400-01	OBS	7388.01	0.750719	131.824655	18.9	1.751	11.1	10.1	0.76	5151	0.40	1563.44
010924400-02	OBS	No	0.750726	132.191962	19.6	1.594	10.0	10.3	0.76	5151	0.41	1563.42
010924400-03	OBS	No	129.034956	198.195615	202.9	3.793	8.2	4.9	0.76	5151	1.18	1.64
010924400-04	OBS	No	149.735615	157.181118	211.7	8.568	7.8	4.6	0.76	5151	1.27	1.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010924400-01	OBS	FP	0.00	0	1	1	1	HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
010924400-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
010924400-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
010924400-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS

**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 010924400-03

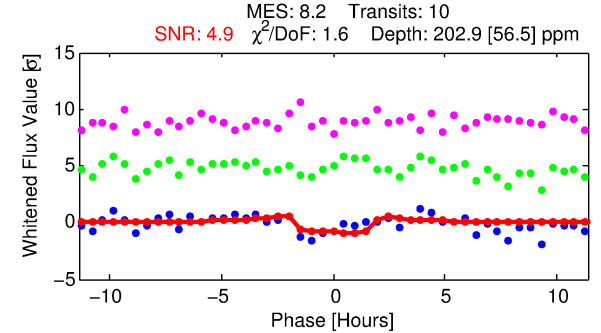
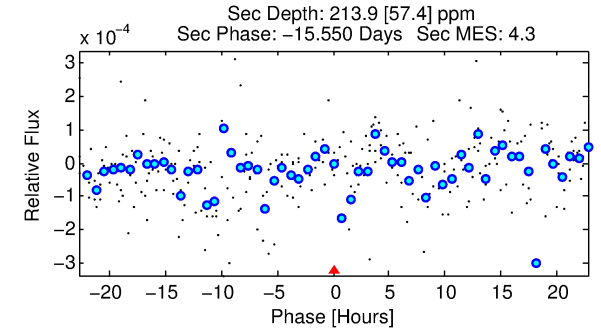
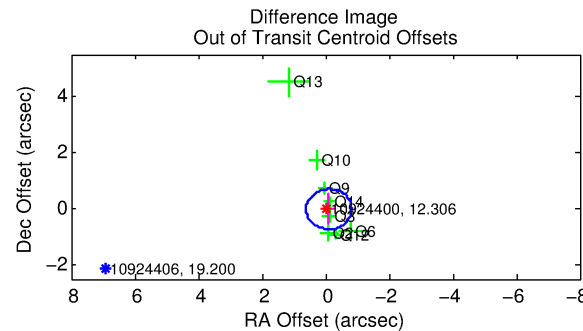
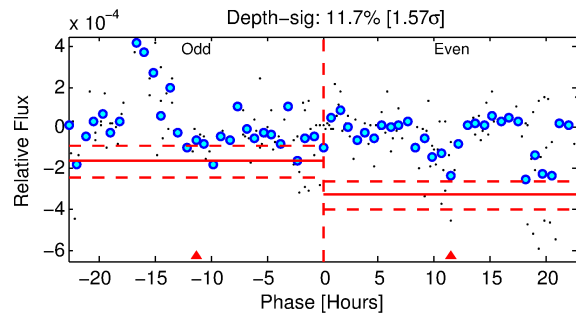
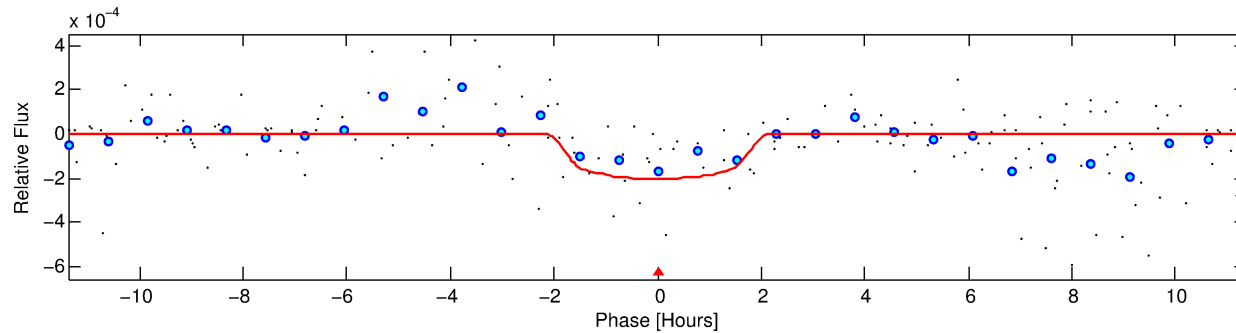
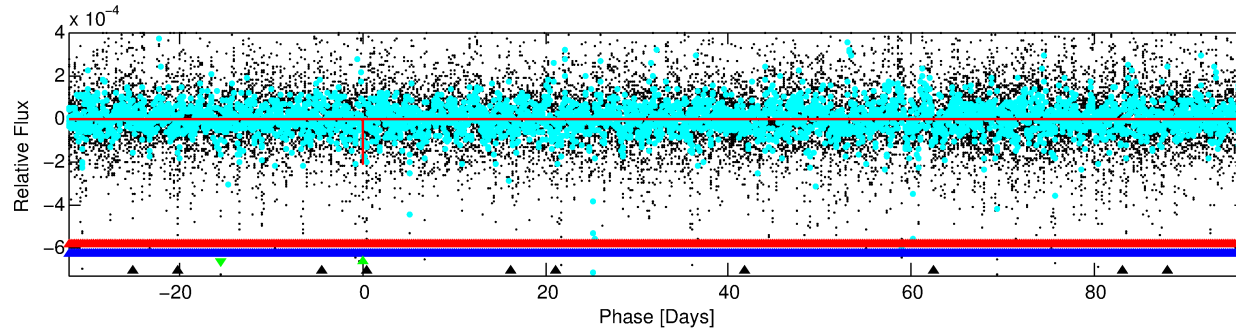
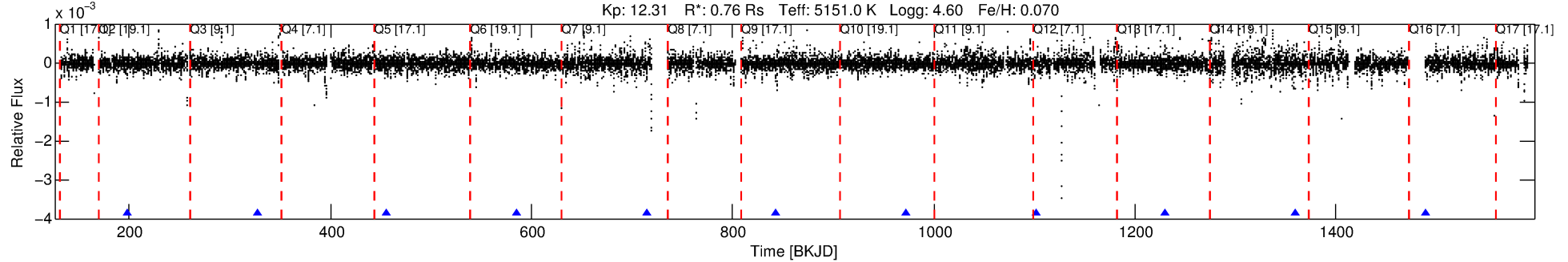
No Significant Match Found



# DV One-Page Summary

KIC: 10924400 Candidate: 3 of 4 Period: 129.035 d  
KOI: K07388 Corr: No Ephemeris Match

Kp: 12.31 R\*: 0.76 Rs Teff: 5151.0 K Logg: 4.60 Fe/H: 0.070



## DV Fit Results:

Period = 129.03496 [0.00242] d  
Epoch = 198.1956 [0.0112] BKJD  
Rp/R\* = 0.0142 [0.0229]  
a/R\* = 176.56 [1029.17]  
b = 0.75 [3.44]  
Seff = 1.64 [0.23]  
Teq = 288 [10] K  
Rp = 1.18 [1.91] Re  
a = 0.4725 [0.0373] AU  
Ag = 18778.45 [60682.38] [0.31σ]  
Teffp = 5219 [4215] K [1.17σ]

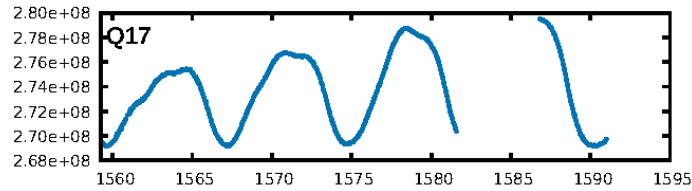
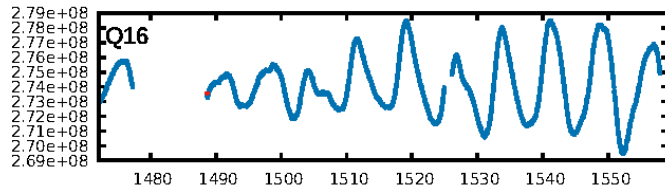
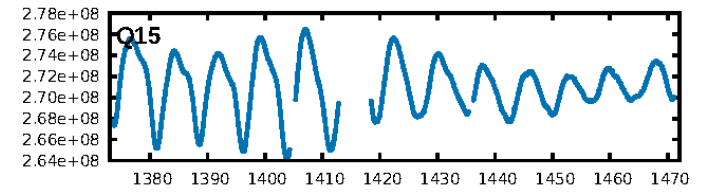
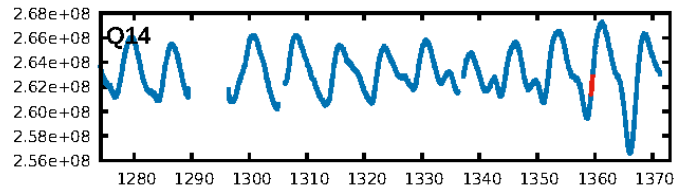
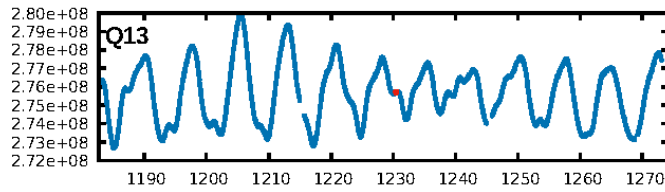
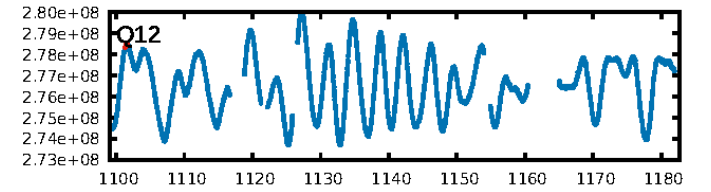
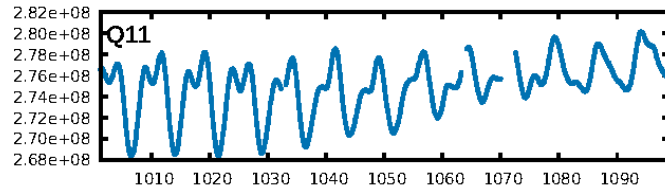
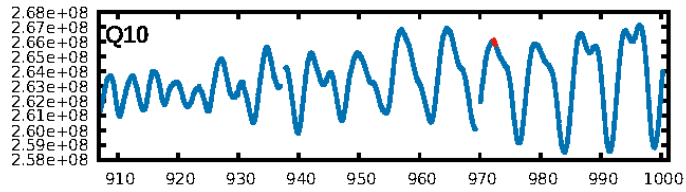
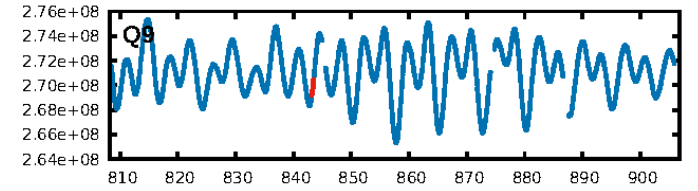
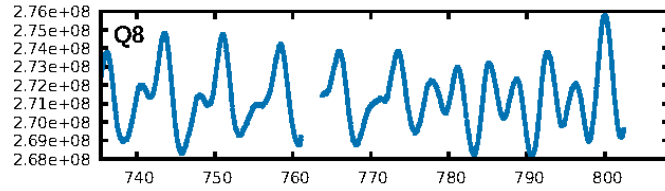
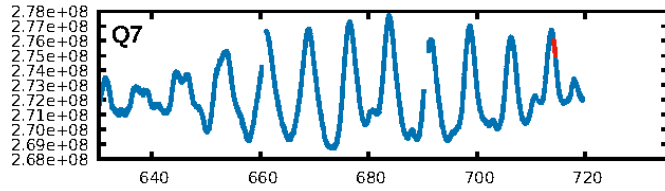
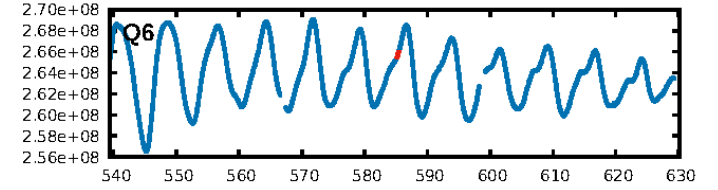
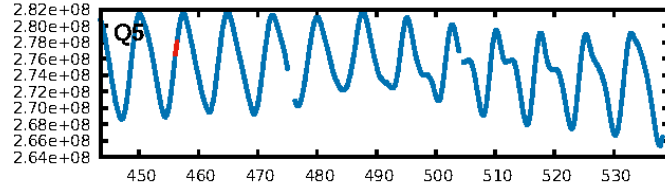
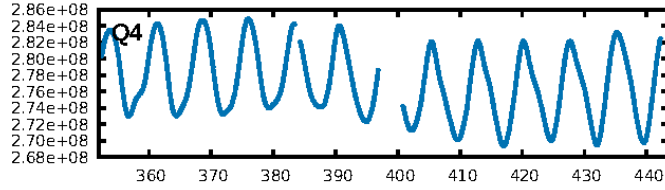
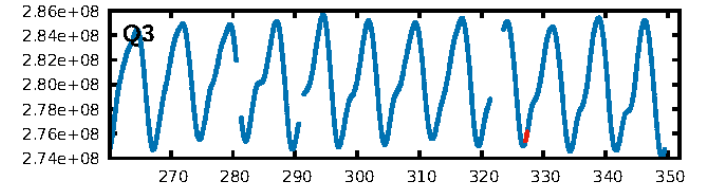
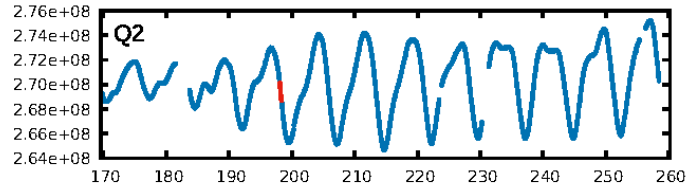
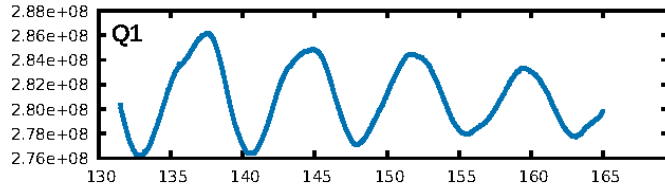
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [748.30σ]  
LongPeriod-sig: 100.0% [53.02σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 99.9%  
Bootstrap-pfa: 8.65e-09  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: -3.555  
Centroid-sig: 1.5%  
Centroid-so: 0.906 arcsec [1.38σ]  
OotOffset-rm: 0.107 arcsec [0.45σ]  
OotOffset-st: 4/1/1/2 [8]  
KicOffset-rm: 0.185 arcsec [0.55σ]  
KicOffset-st: 4/1/1/2 [8]  
DiffImageQuality-fgm: 0.50 [4/8]  
DiffImageOverlap-fno: 0.00 [0/9]

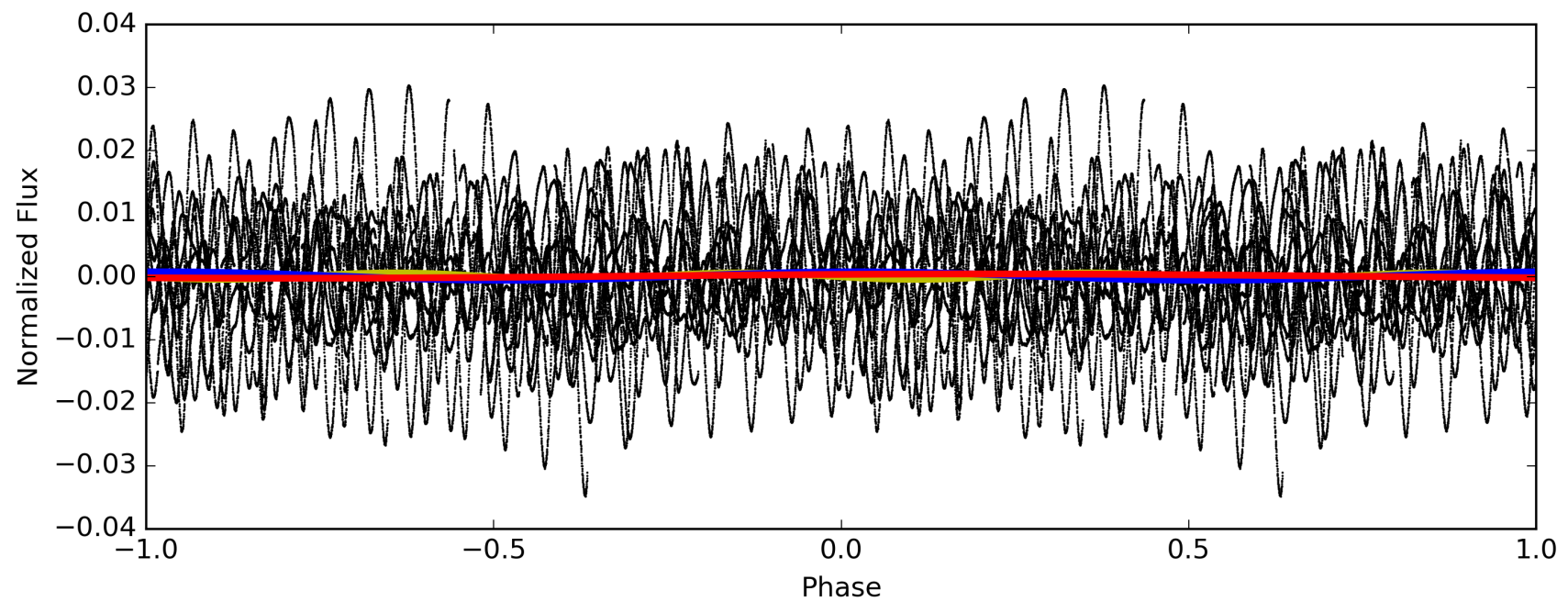
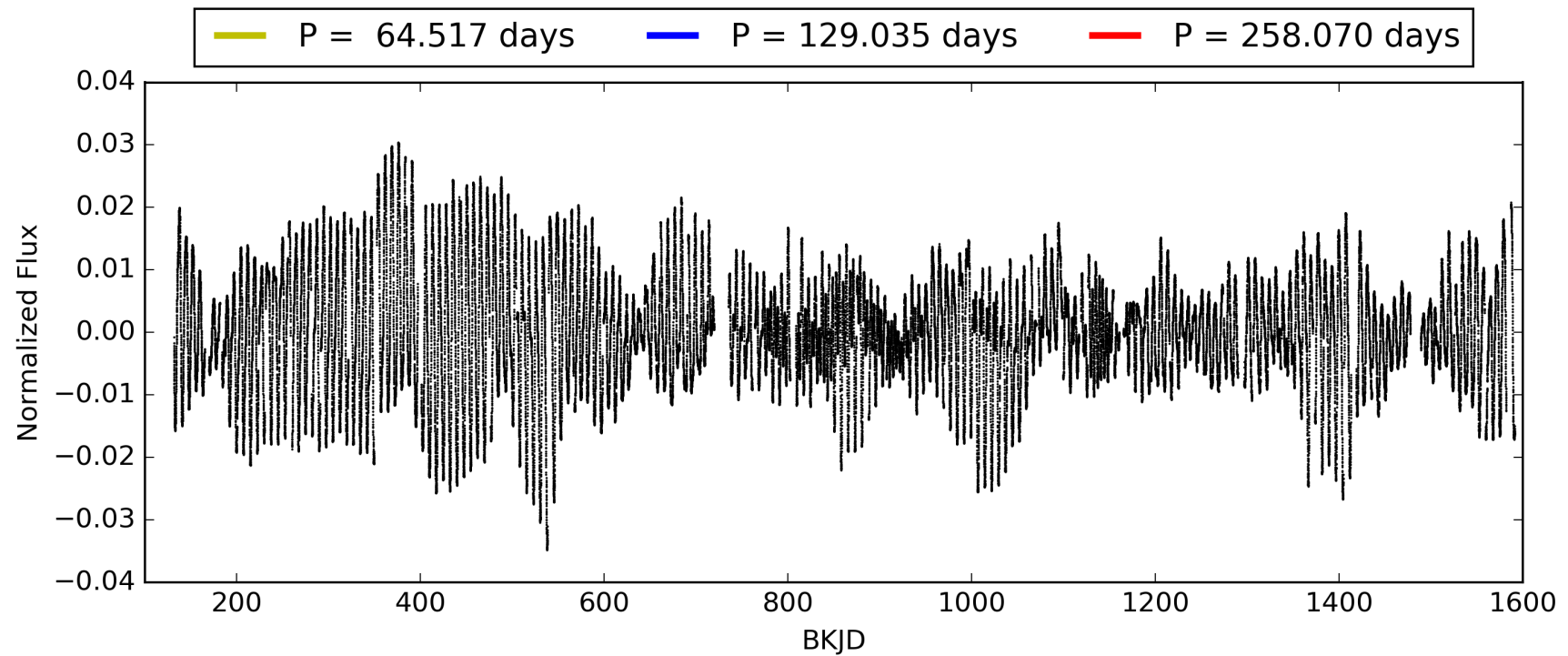
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:51:07 Z

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

# TCE 010924400-03, PDC Light Curves

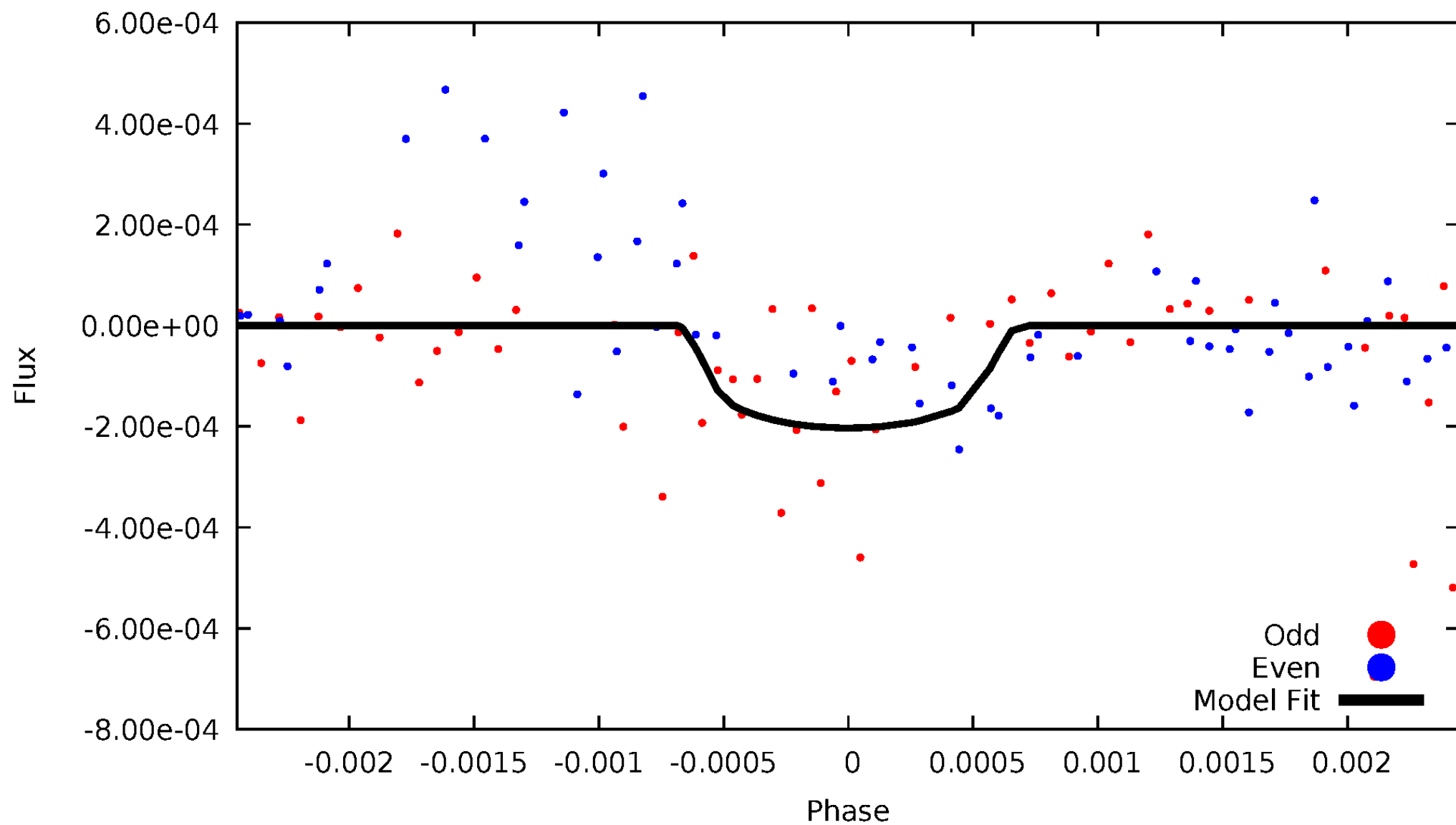


TCE 010924400-03



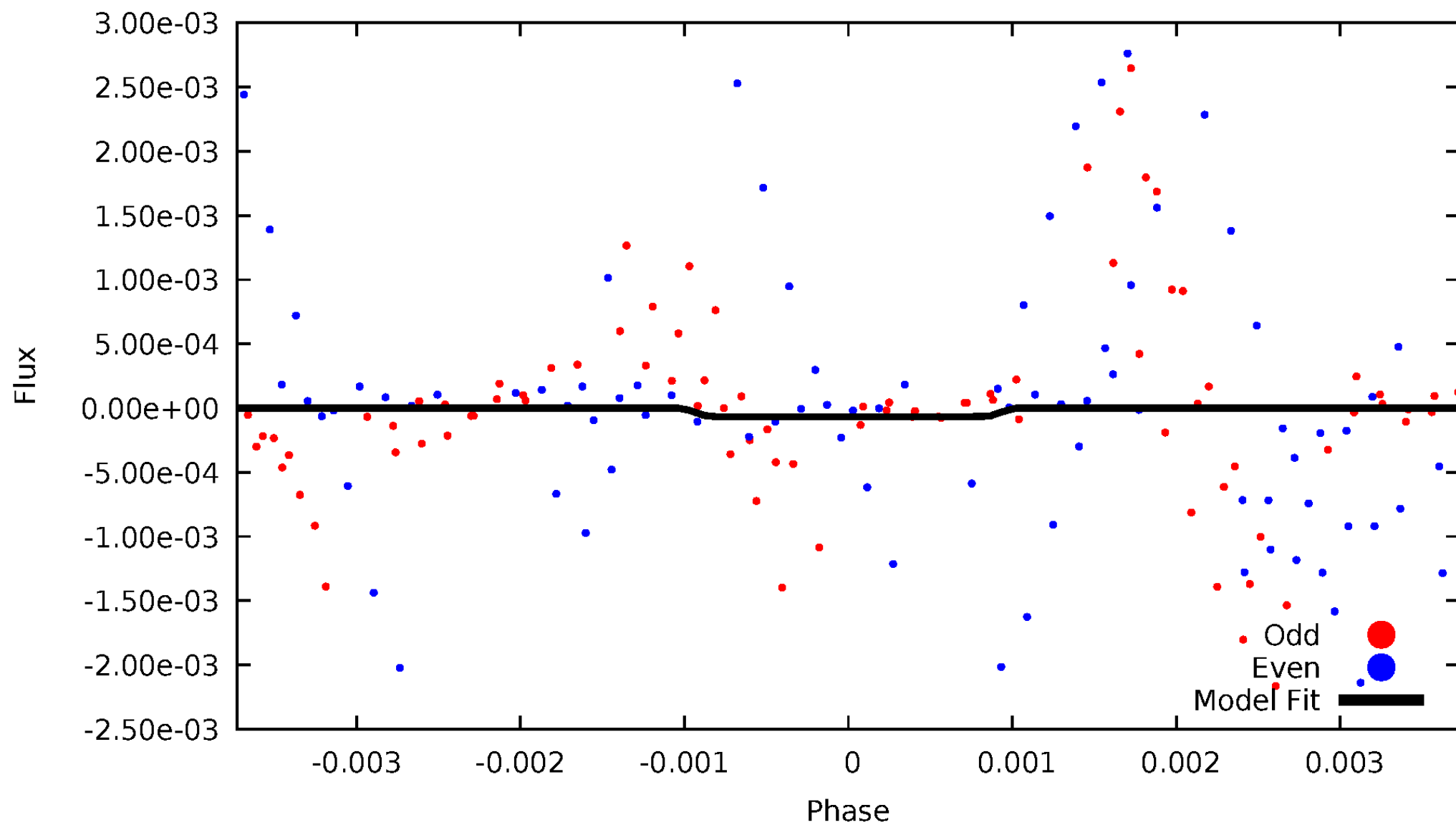
# DV Odd/Even

TCE 010924400-03



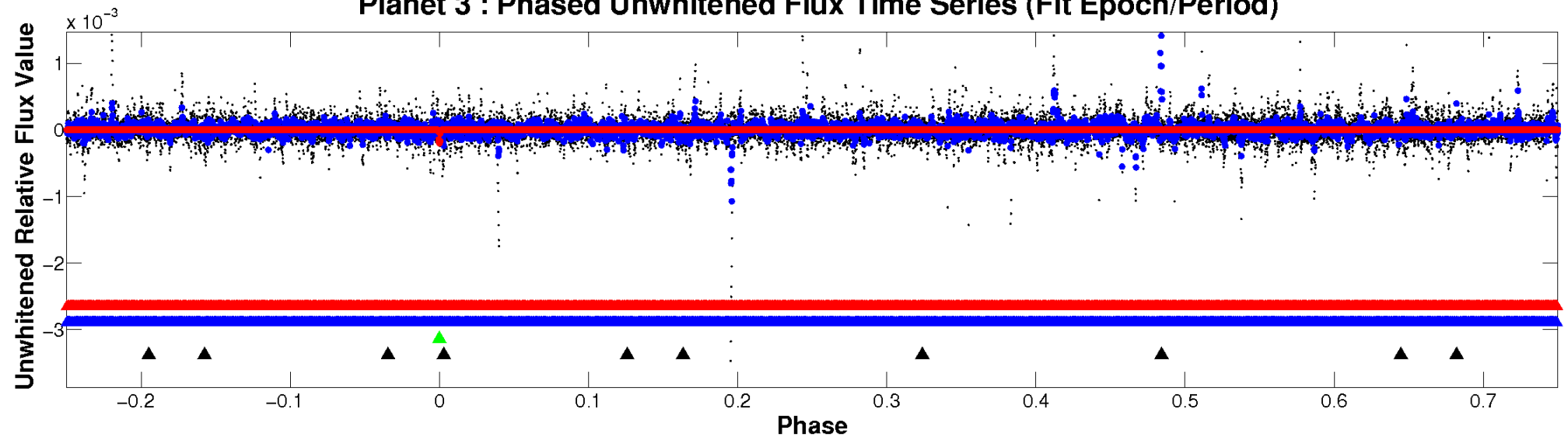
# ALT Odd/Even

TCE 010924400-03

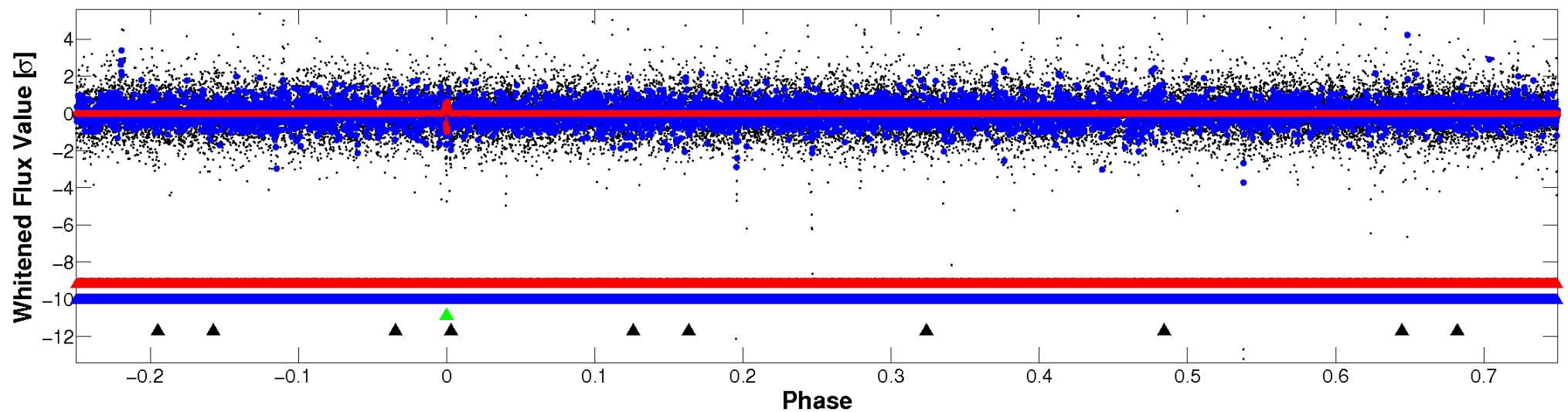


# Non-Whitened Vs. Whitened Light Curve

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



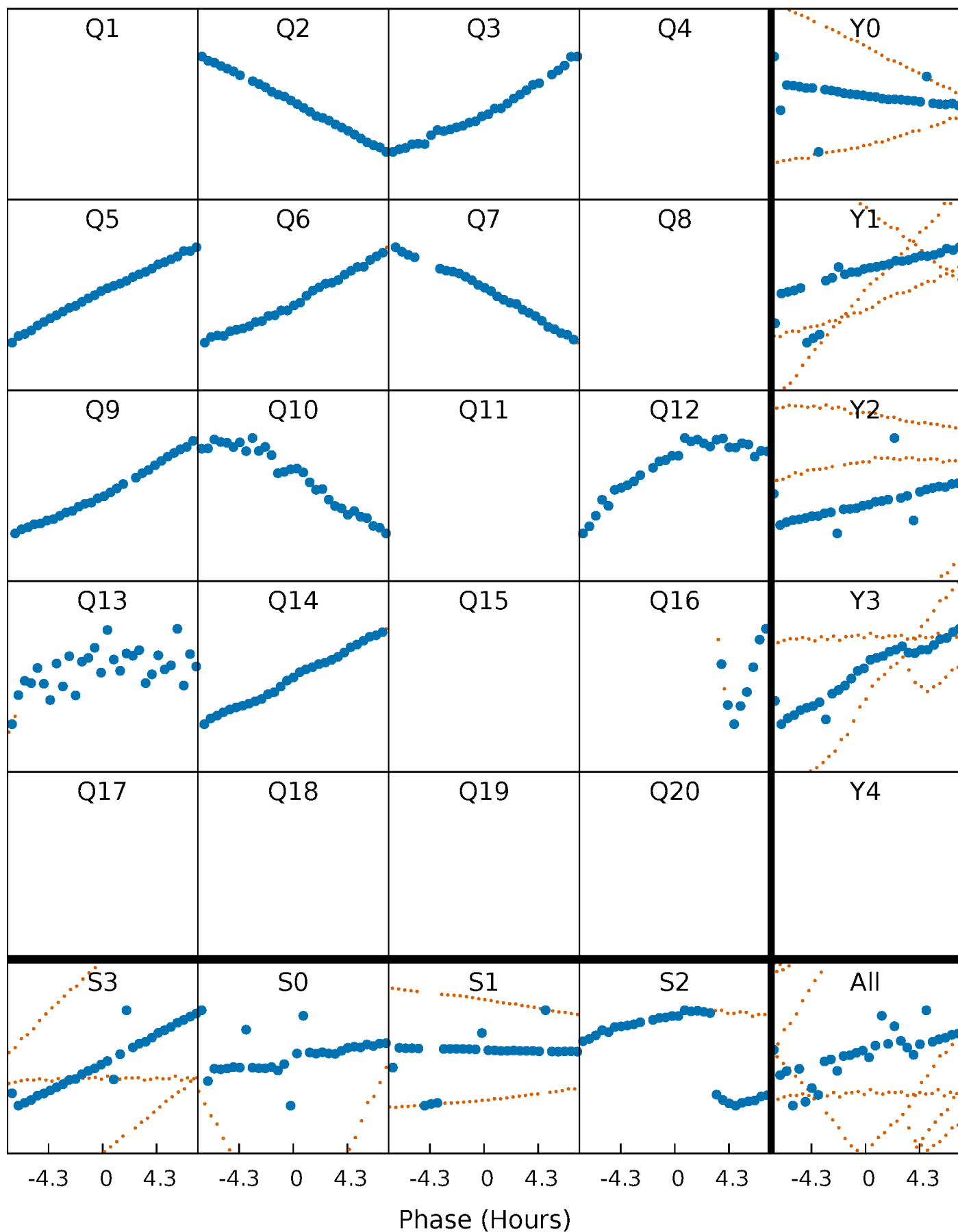
Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





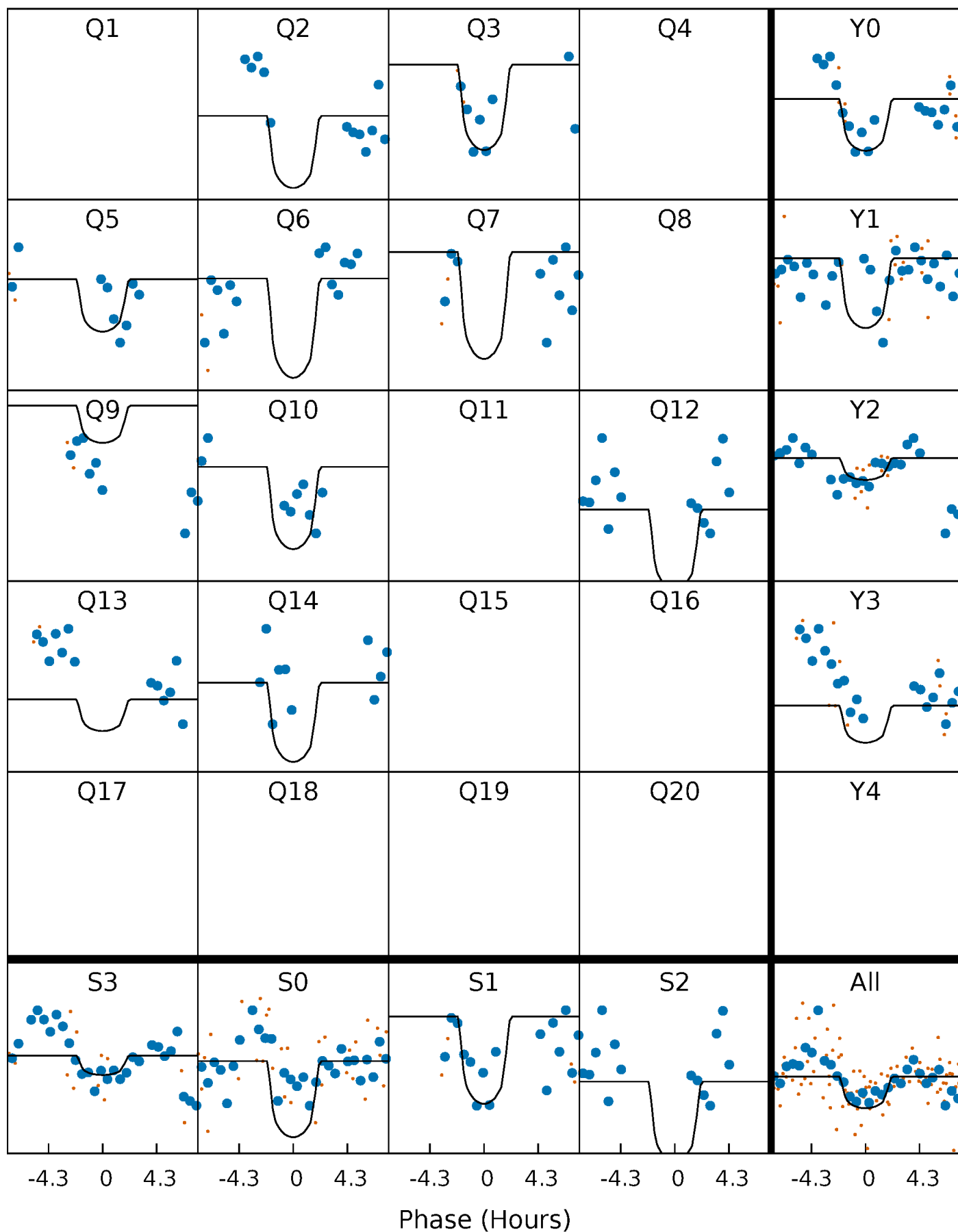
# PDC Quarter-Phased Transit Curves

TCE 010924400-03     $P=129.034956$  Days     $T_0=198.195615$  (BKJD)



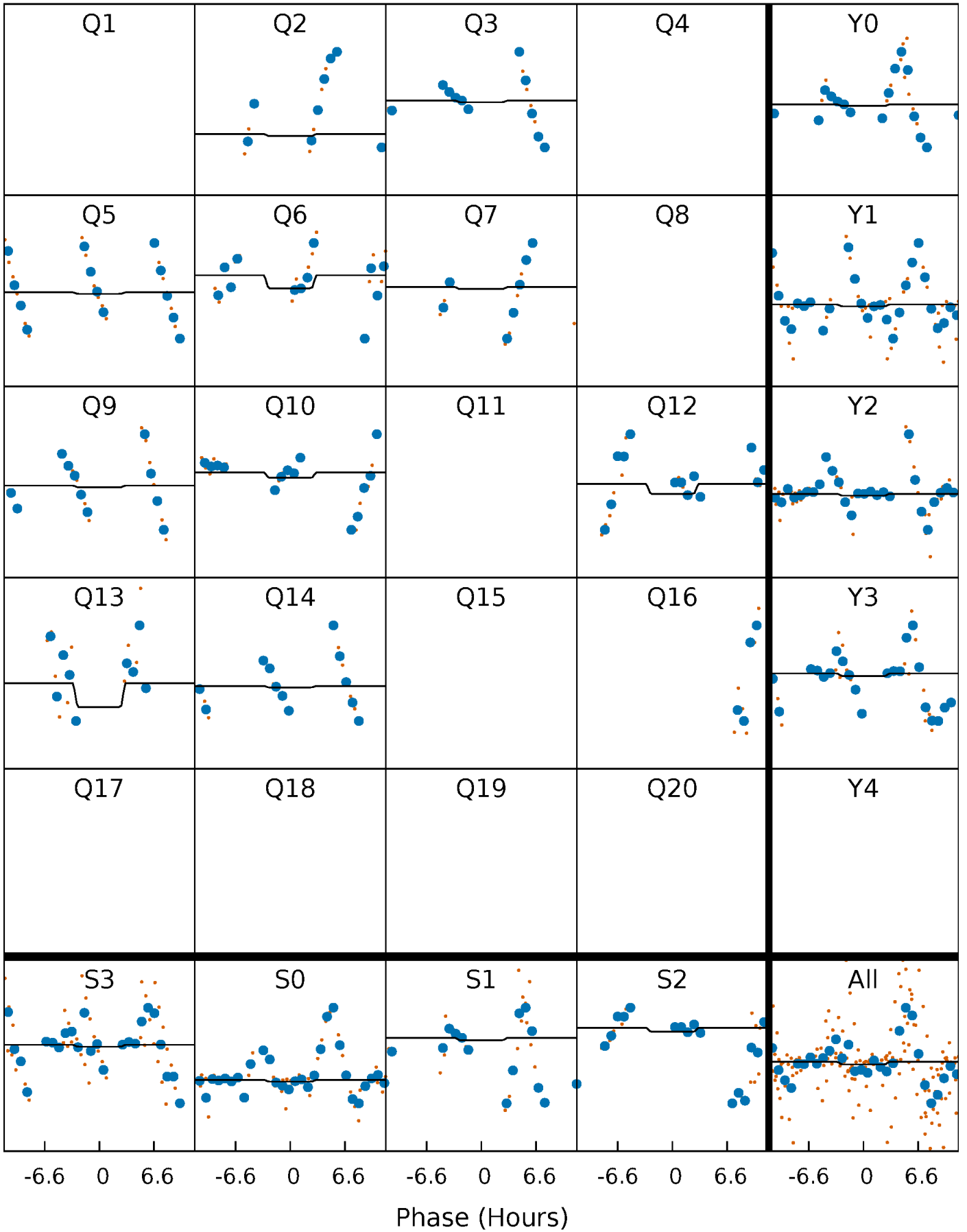
# DV Quarter-Phased Transit Curves

TCE 010924400-03     $P=129.034956$  Days     $T_0=198.195615$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

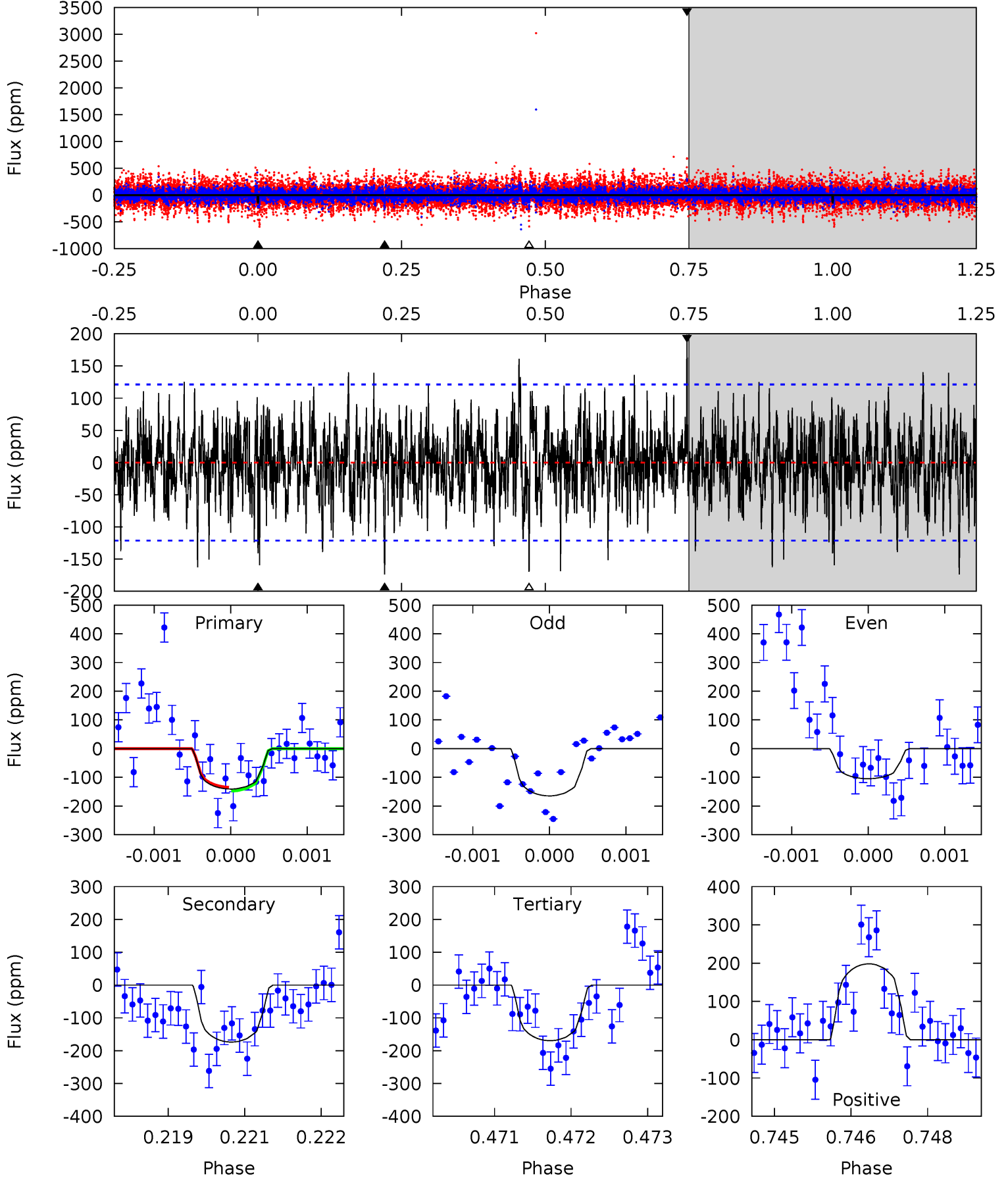
TCE 010924400-03 P=129.026548 Days  $T_0=198.295759$  (BKJD)



# DV Model-Shift Uniqueness Test

010924400-03, P = 129.034956 Days, E = 69.160659 Days

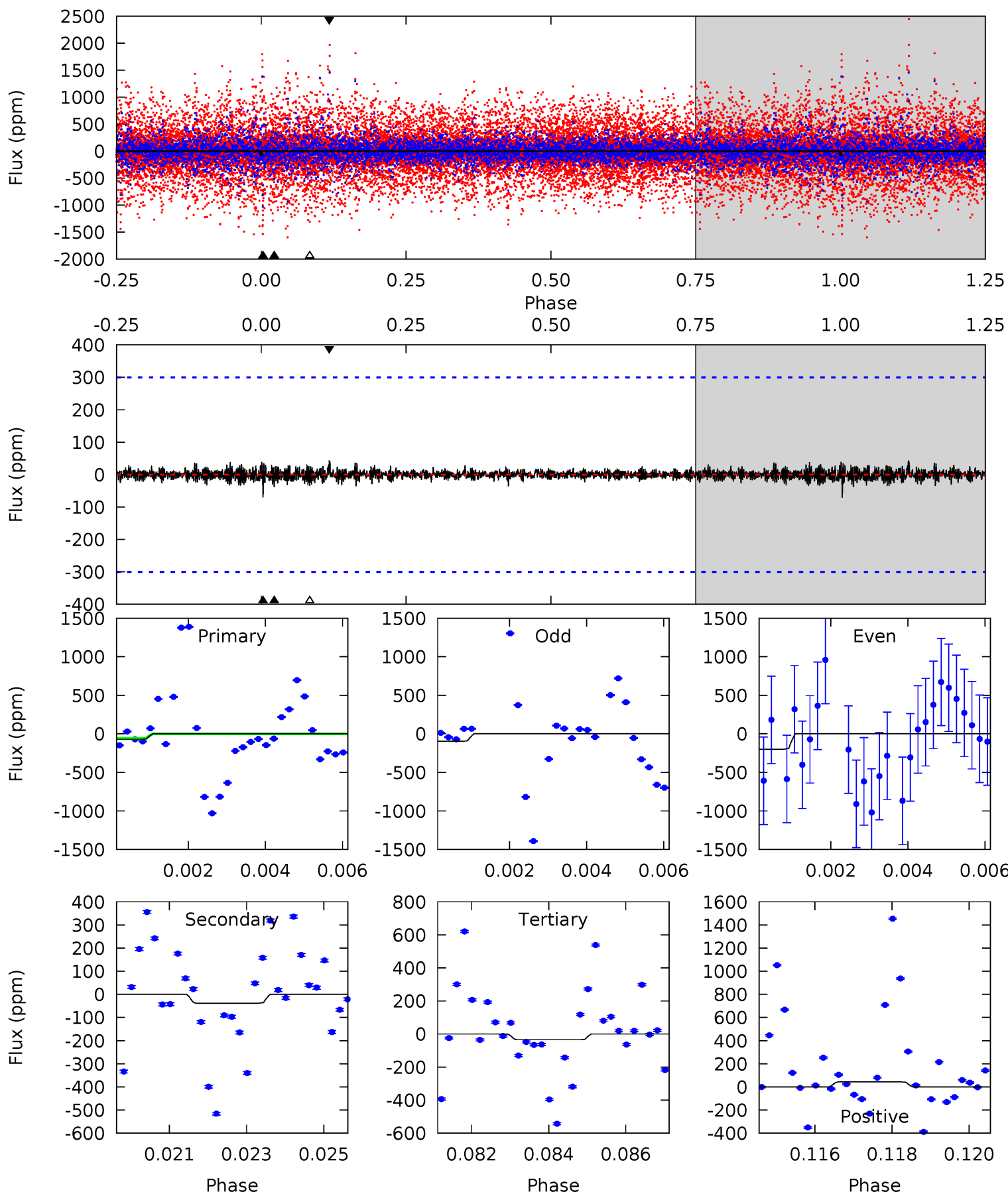
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.27	7.74	7.55	8.83	5.40	3.21	2.00	-1.28	-2.56	0.19	-1.09	1.19	1.12	0.53	0.30



# Alt Model-Shift Uniqueness Test

010924400-03, P = 129.026548 Days, E = 69.269211 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
1.25	0.67	0.62	0.76	5.34	3.11	0.18	0.63	0.49	0.06	-0.09	0.82	1.03	0.38	0.33



### Stellar Parameters For KIC 010924400

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5151^{+72}_{-92}$	$4.602^{+0.010}_{-0.070}$	$0.070^{+0.150}_{-0.150}$	$0.761^{+0.066}_{-0.024}$	$0.874^{+0.027}_{-0.064}$	$2.798^{+0.140}_{-0.676}$
	+1%/-2%	+0%/-2%	+214%/-214%	+9%/-3%	+3%/-7%	+5%/-24%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 010924400-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-174 \pm 22$	$1.90^{+1.70}_{-1.25}$	$408^{+10}_{-8}$	$4191^{+2372}_{-828}$	$6010^{+40775}_{-4384}$
Alt.	$-38 \pm 56$	$1.57^{+1.66}_{-1.08}$	$408^{+9}_{-9}$	$3193^{+1942}_{-6106}$	$1113^{+15442}_{-1730}$

$T_{max}$  = 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

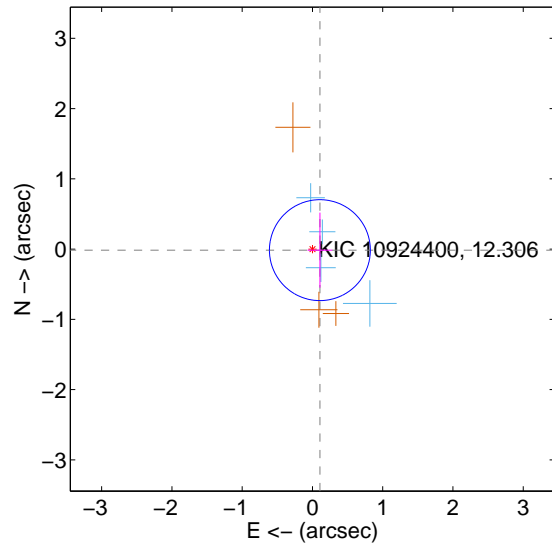
Supplemental centroid analysis for 010924400-03. Kepler magnitude: 12.31. Transit SNR 4.91

There are 4 quarters with good PRF difference image offsets

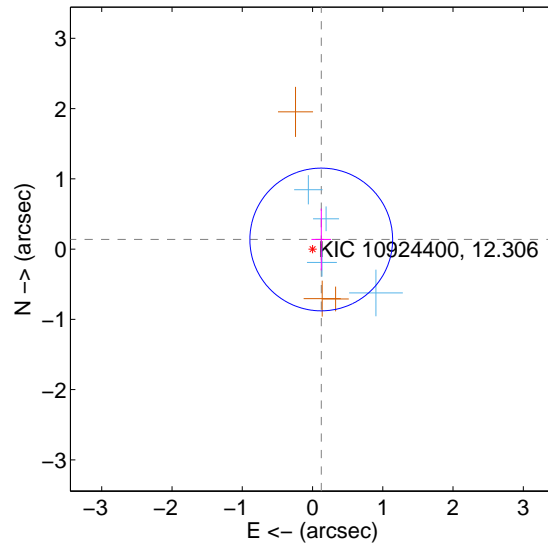
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.107 \pm 0.239$	0.45	$-0.106 \pm 0.176$	$-0.015 \pm 0.534$
PRF-fit source offset from KIC position	$0.185 \pm 0.339$	0.55	$-0.124 \pm 0.139$	$0.137 \pm 0.439$
photometric centroid source offset	$0.91 \pm 0.66$	1.38	$-0.20 \pm 0.70$	$-0.88 \pm 0.65$

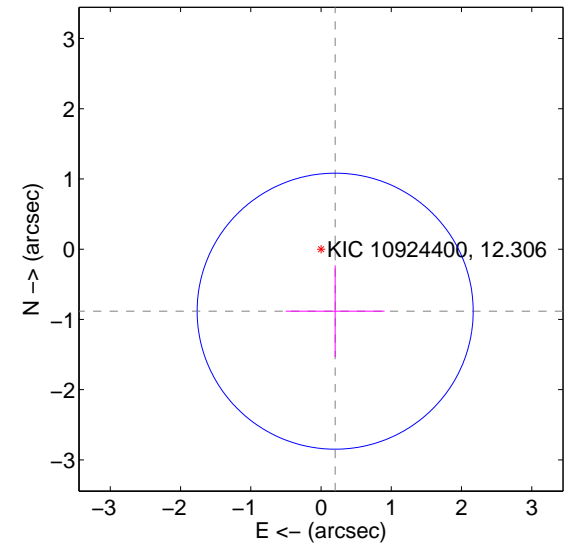
offset from difference PRF-fit to OOT PRF-fit



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- $\sigma$  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.

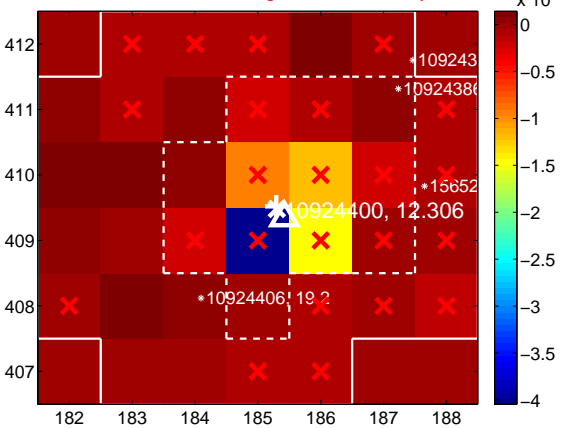
Q1 no difference image



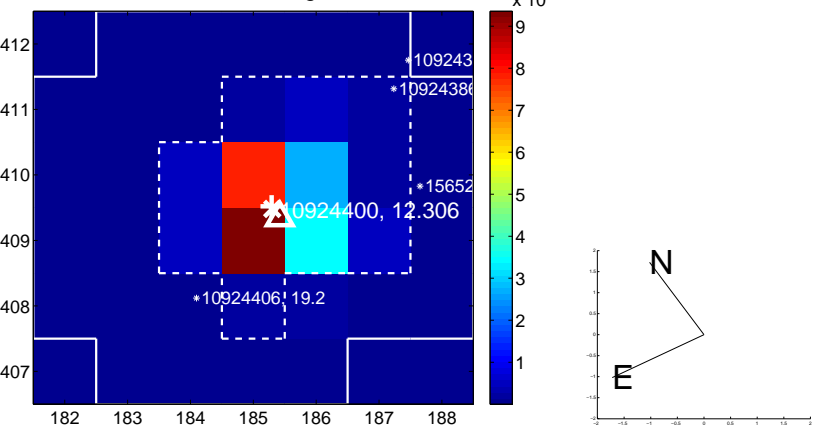
Q1 no OOT image



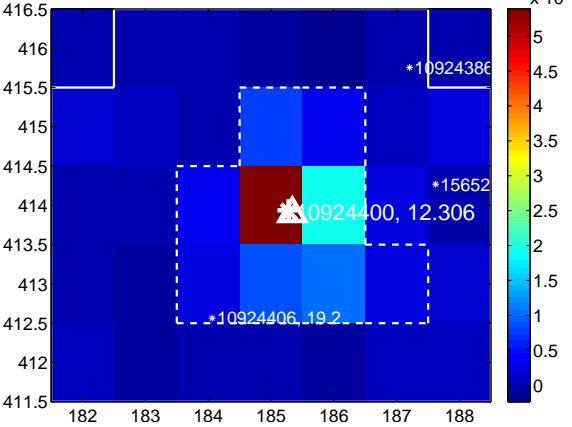
Q2 difference image. Poor Quality



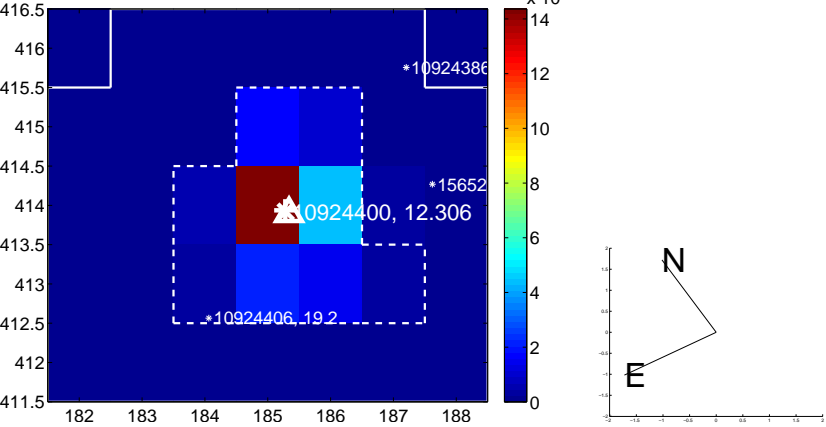
Q2 OOT image



Q3 difference image



Q3 OOT image



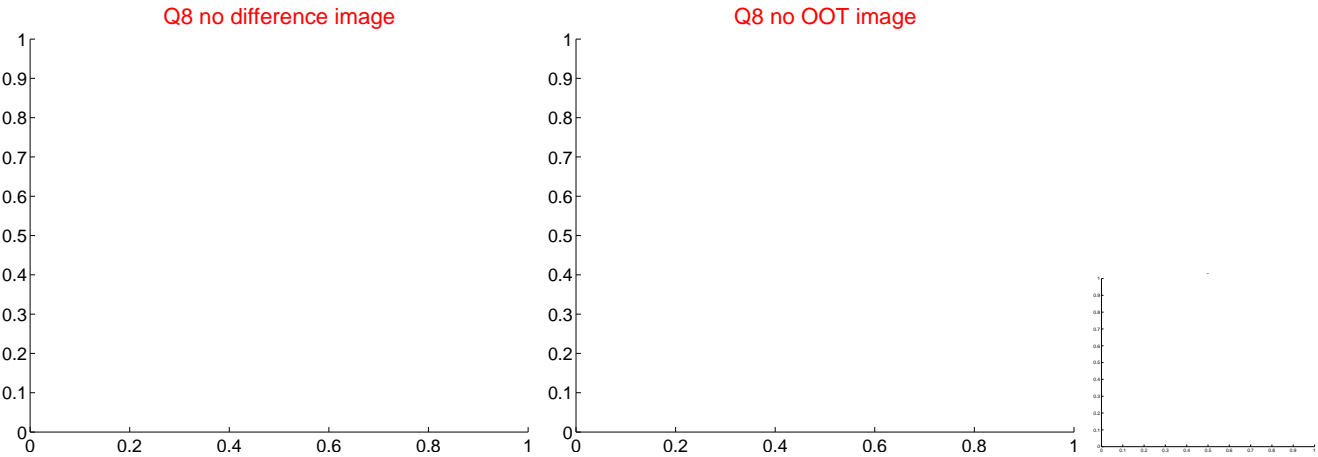
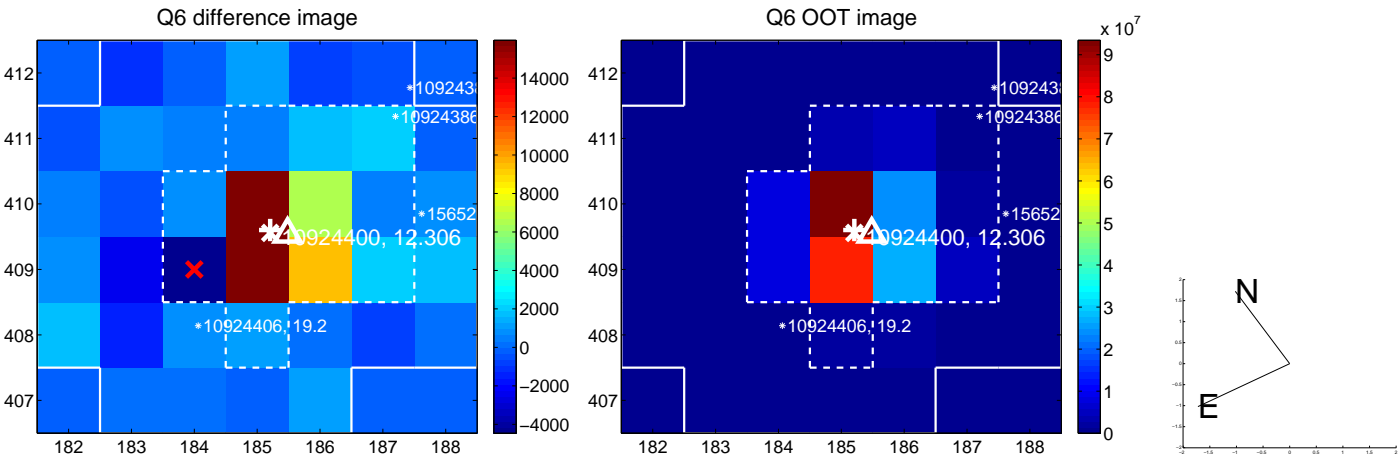
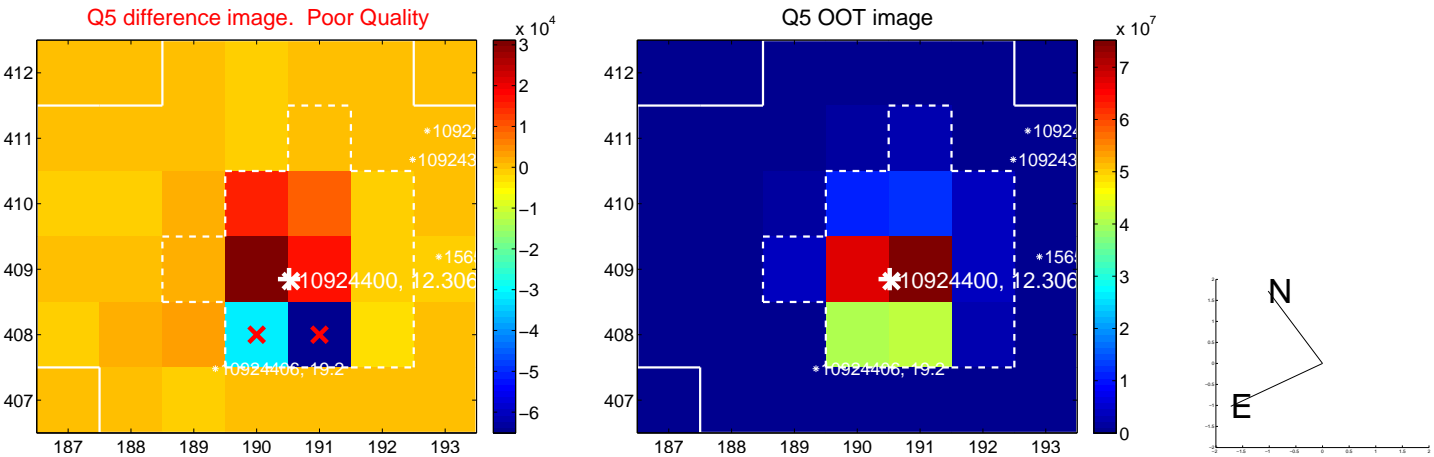
Q4 no difference image



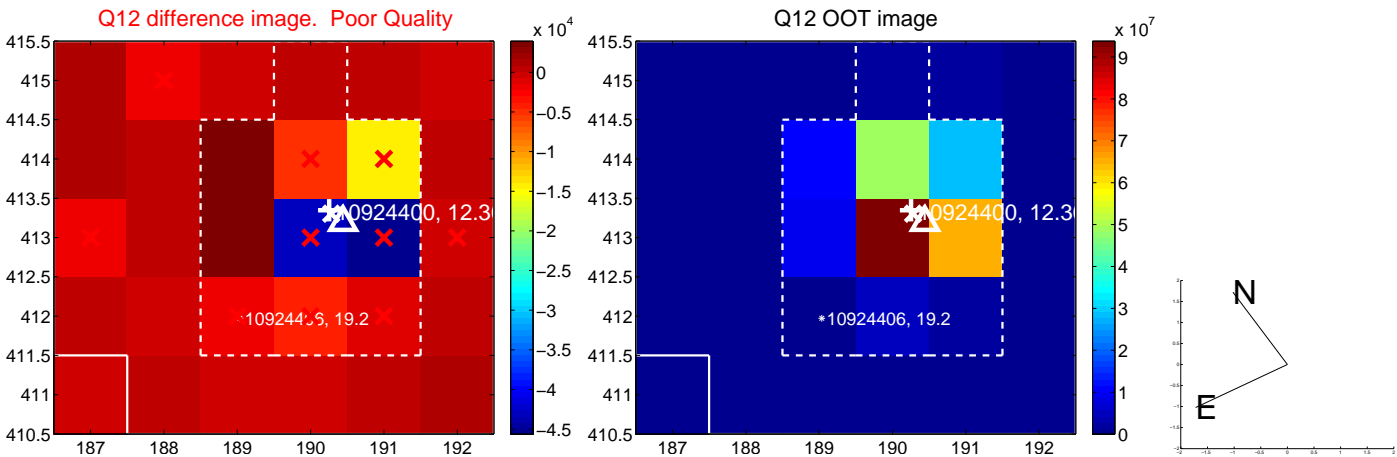
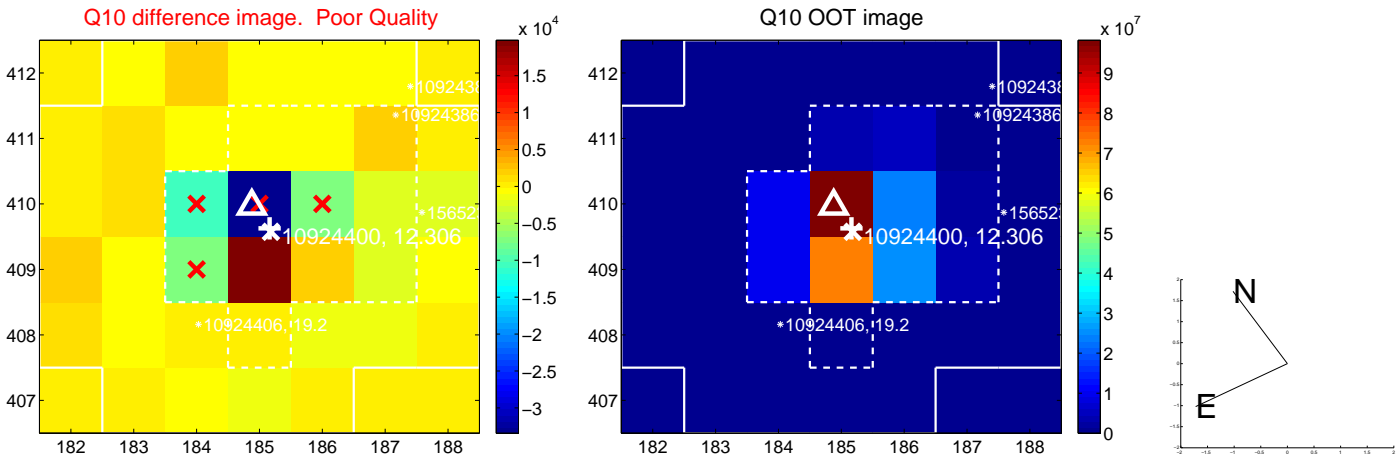
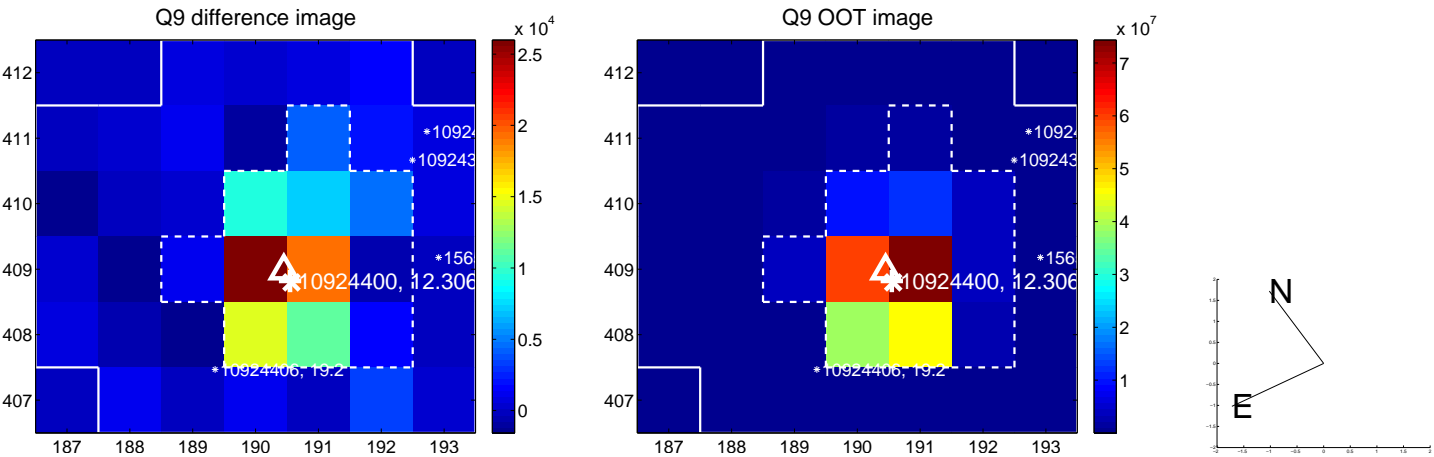
Q4 no OOT image



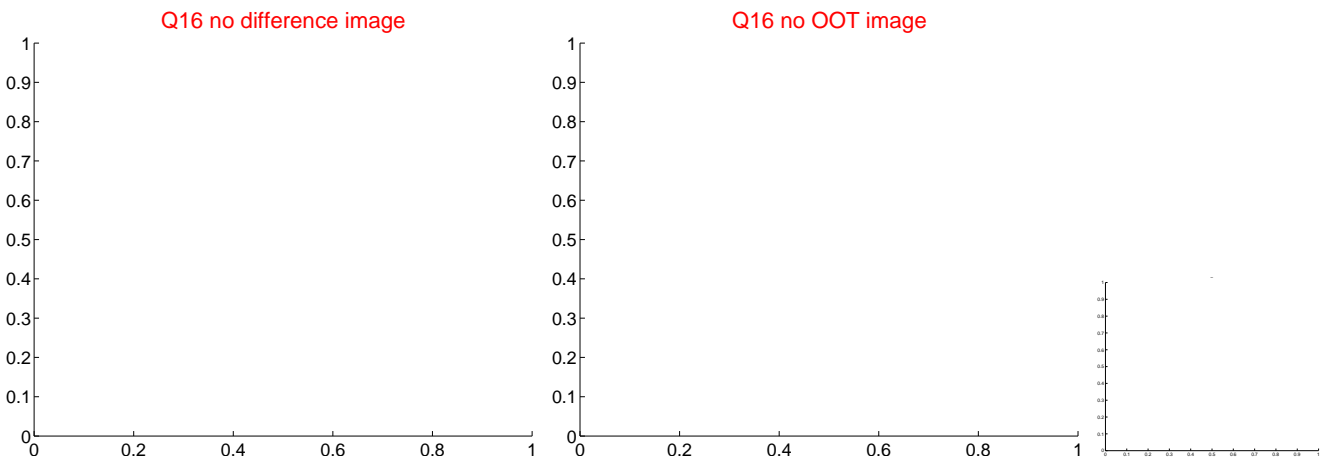
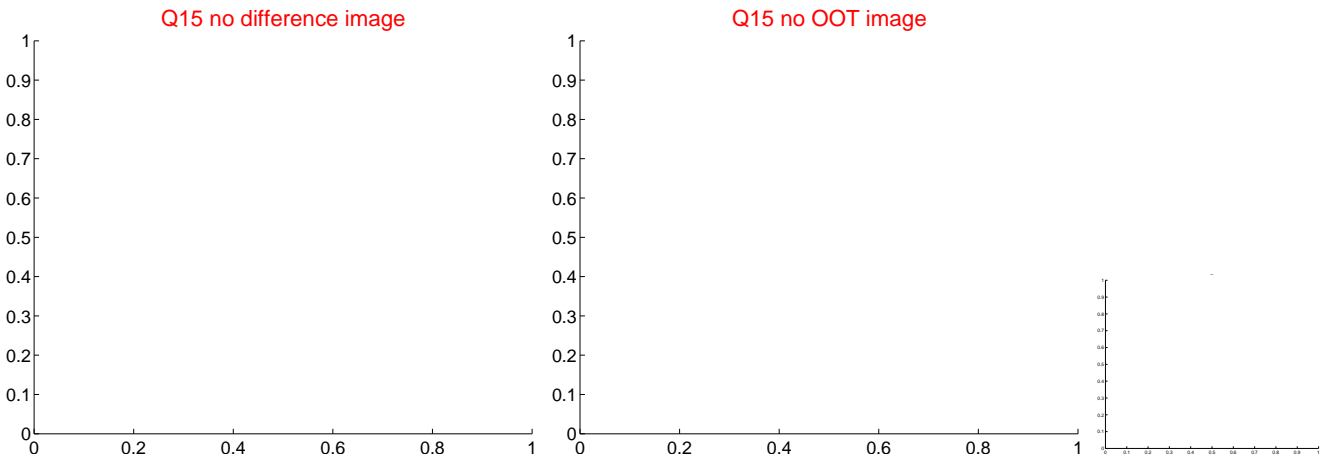
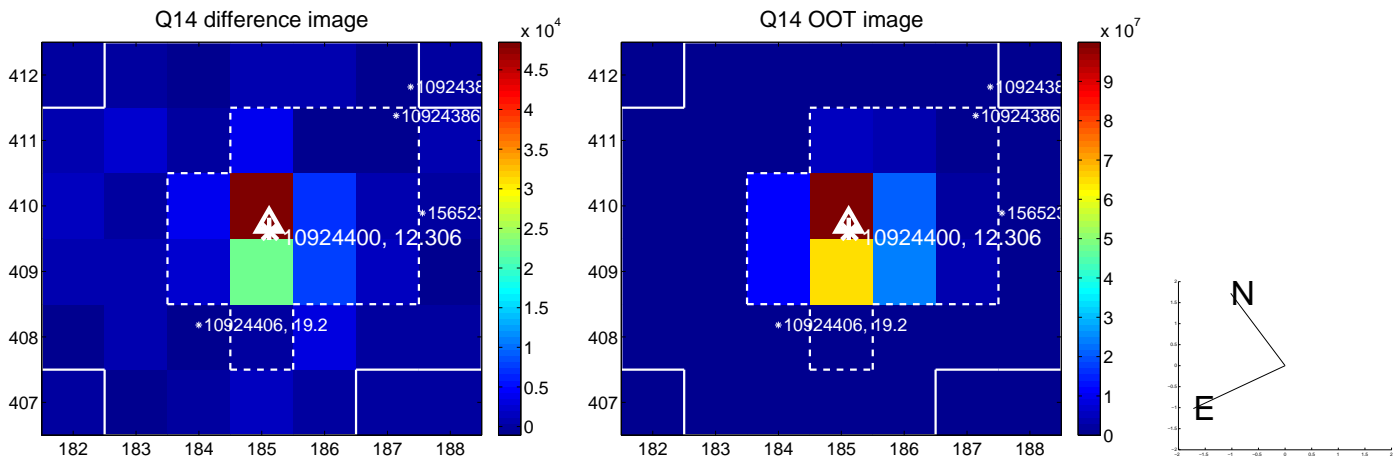
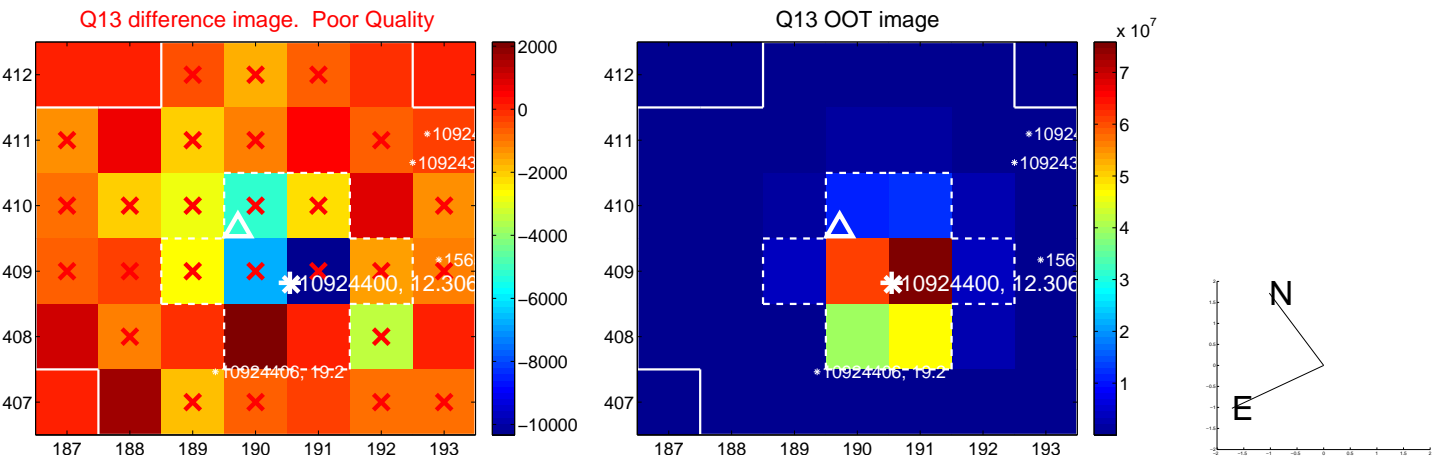
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



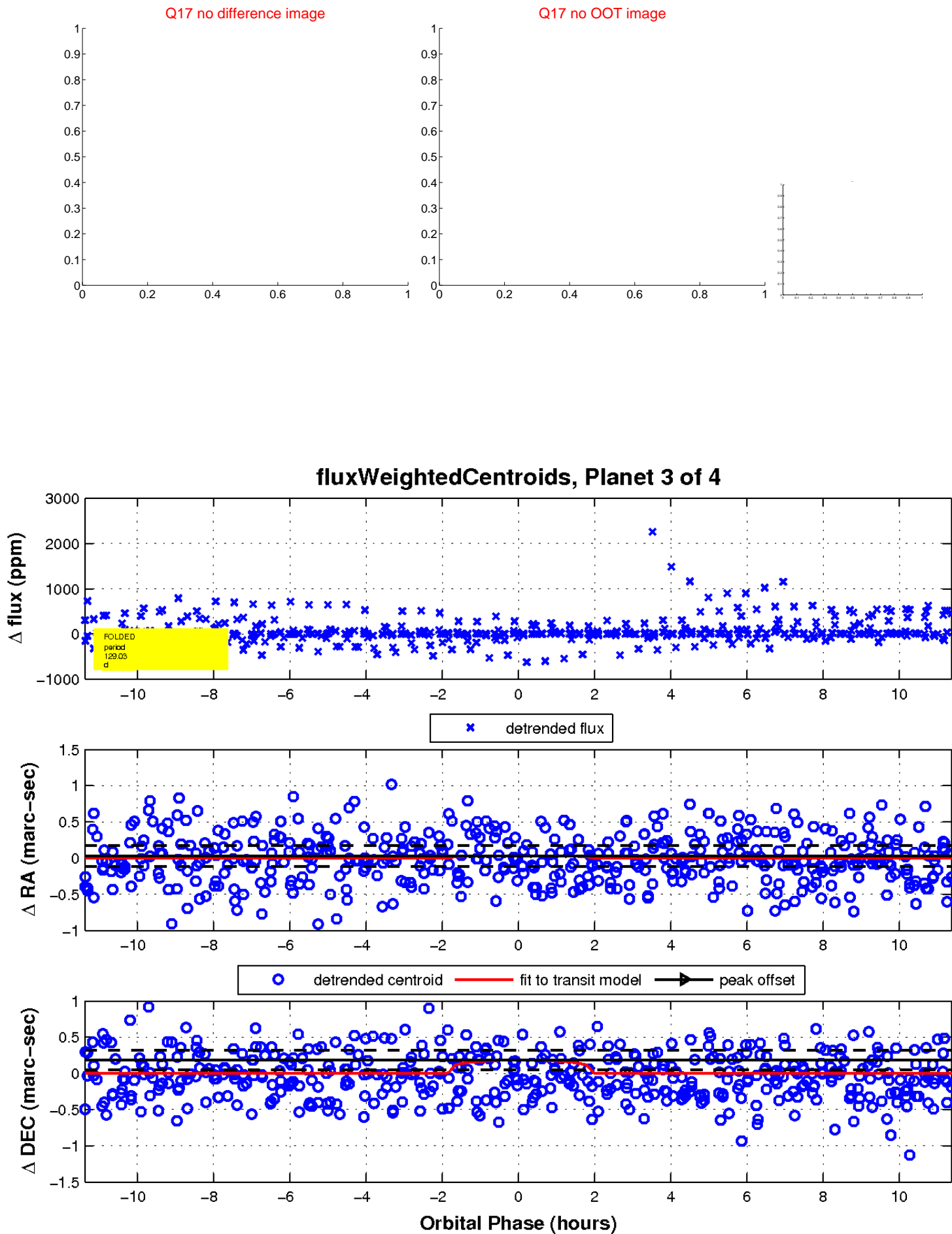
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



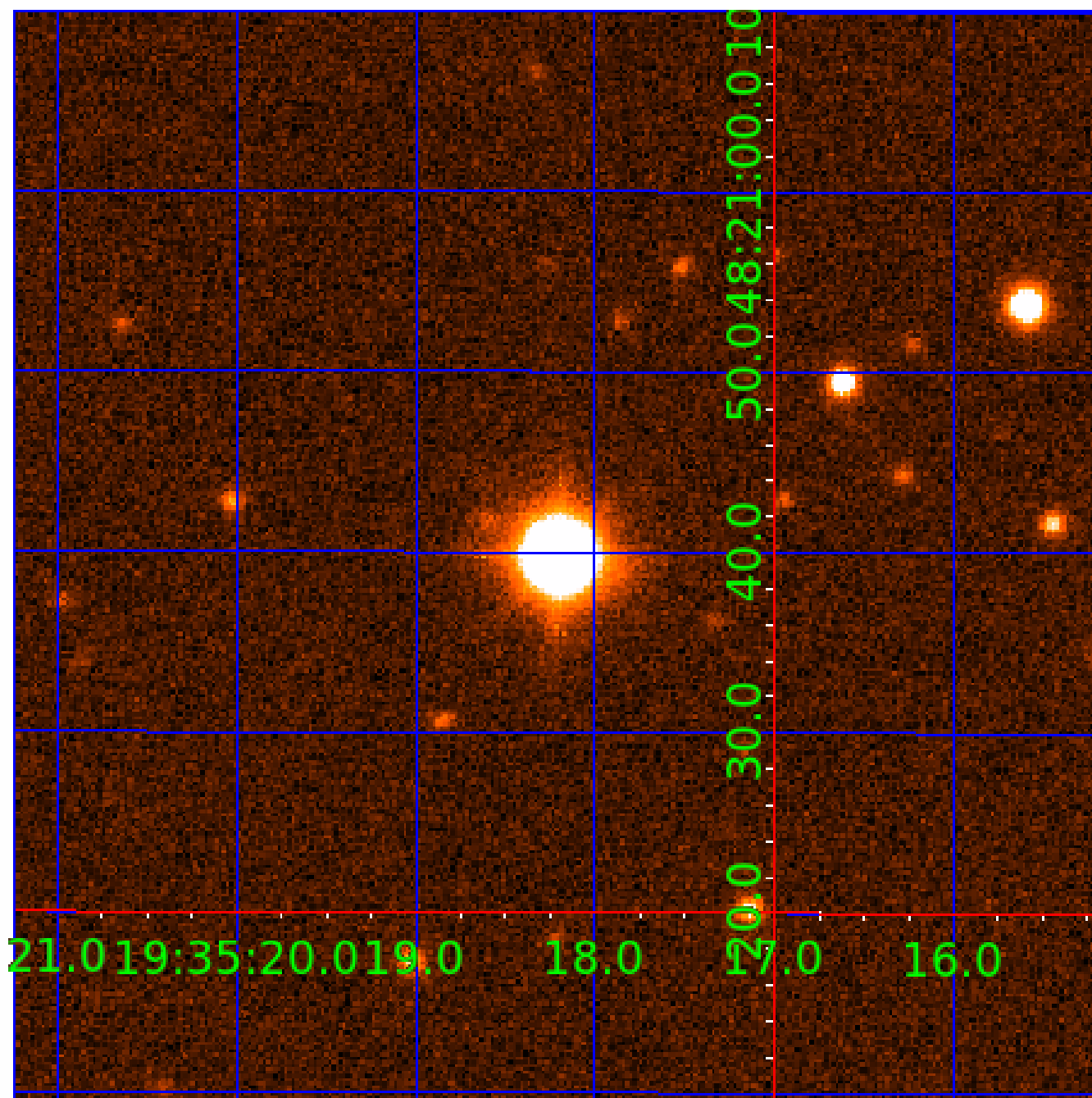
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 010924400

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010924400-01	OBS	7388.01	0.750719	131.824655	18.9	1.751	11.1	10.1	0.76	5151	0.40	1563.44
010924400-02	OBS	No	0.750726	132.191962	19.6	1.594	10.0	10.3	0.76	5151	0.41	1563.42
010924400-03	OBS	No	129.034956	198.195615	202.9	3.793	8.2	4.9	0.76	5151	1.18	1.64
010924400-04	OBS	No	149.735615	157.181118	211.7	8.568	7.8	4.6	0.76	5151	1.27	1.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010924400-01	OBS	FP	0.00	0	1	1	1	HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
010924400-02	OBS	FP	0.00	1	1	1	1	IS_SEC_TCE—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
010924400-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS
010924400-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS

**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.

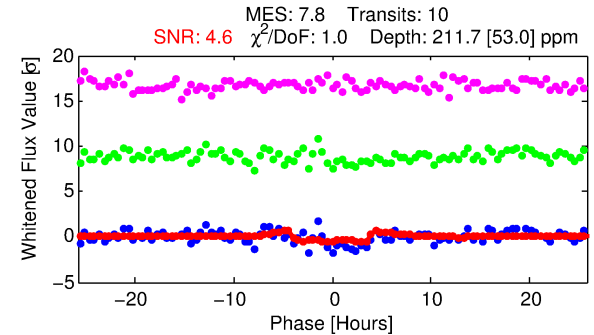
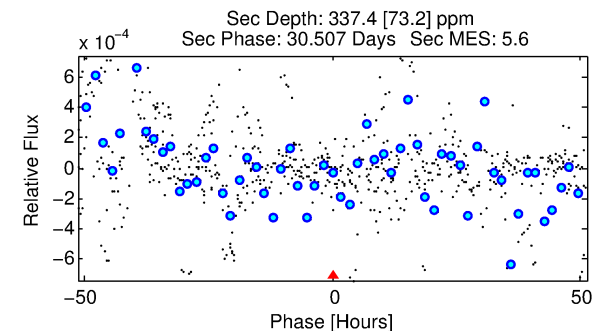
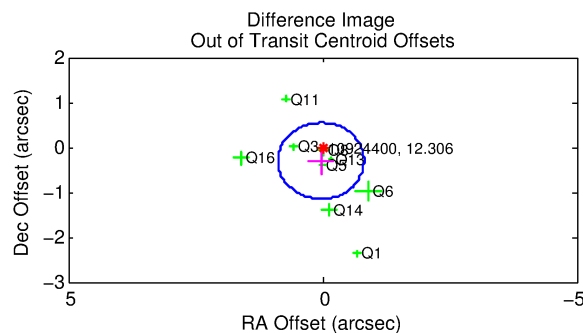
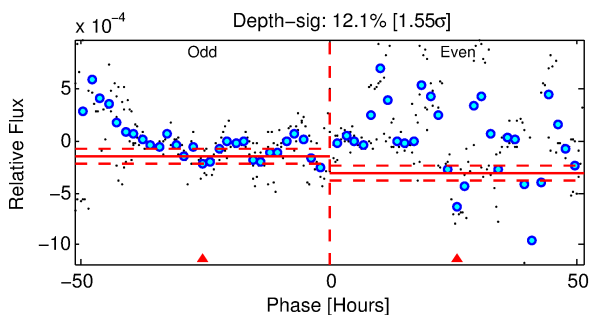
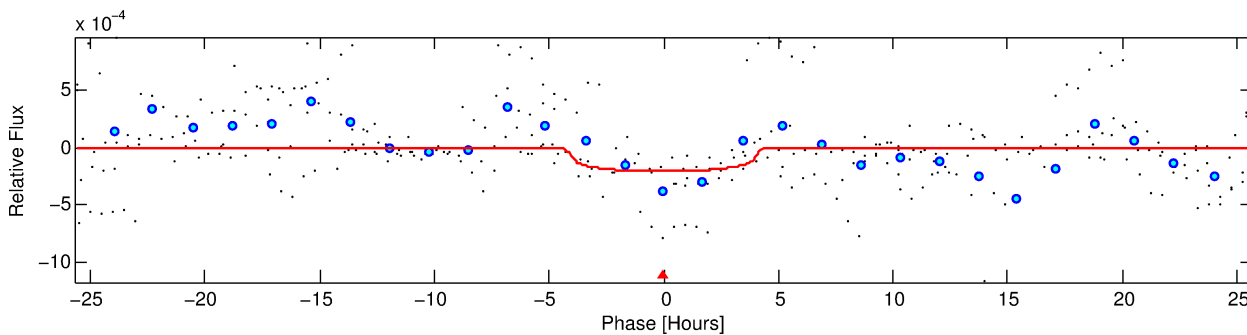
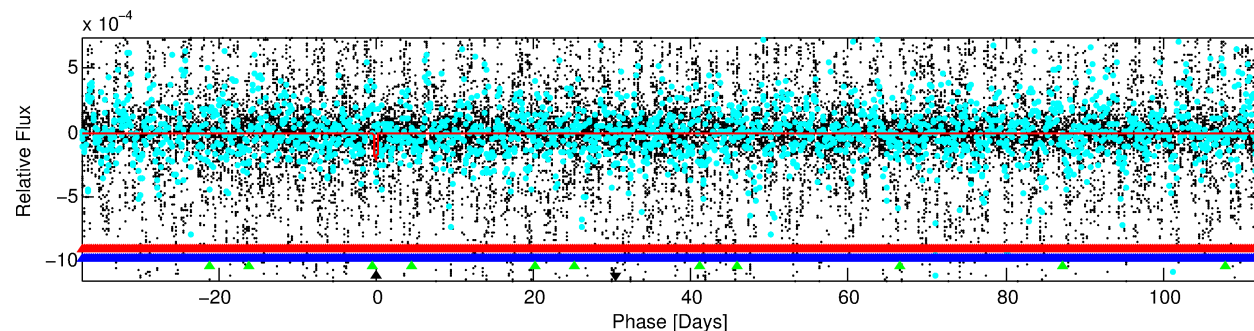
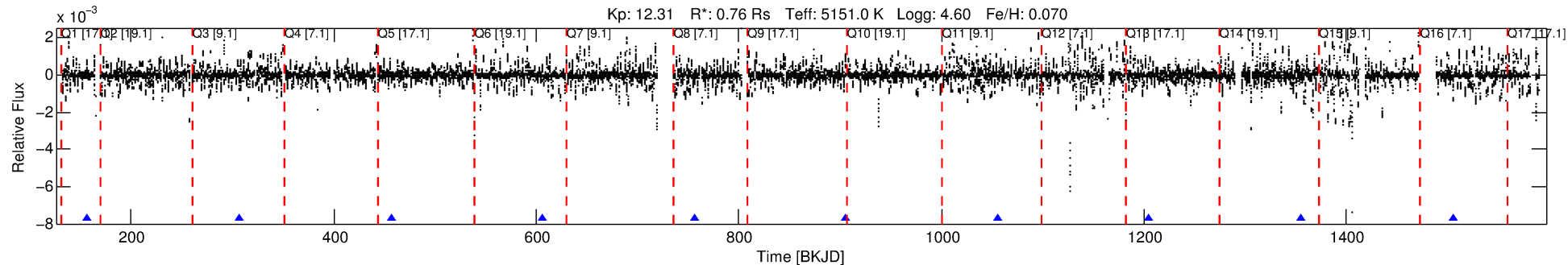
Ephemeris Match Information For 010924400-04

No Significant Match Found

# DV One-Page Summary

KIC: 10924400 Candidate: 4 of 4 Period: 149.736 d  
KOI: K07388 Corr: No Ephemeris Match

Kp: 12.31 R\*: 0.76 Rs Teff: 5151.0 K Logg: 4.60 Fe/H: 0.070



## DV Fit Results:

Period = 149.73562 [0.00562] d  
Epoch = 157.1811 [0.0380] BKJD  
Rp/R\* = 0.0152 [0.0063]  
a/R\* = 77.15 [116.09]  
b = 0.83 [0.56]  
Seff = 1.34 [0.19]  
Teq = 274 [10] K  
Rp = 1.27 [0.53] Re  
a = 0.5218 [0.0412] AU  
Ag = 31533.47 [27066.93] [1.16σ]  
Teffp = 5654 [1205] K [4.46σ]

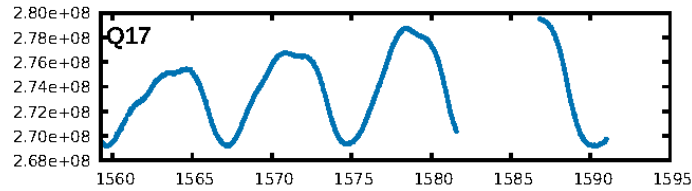
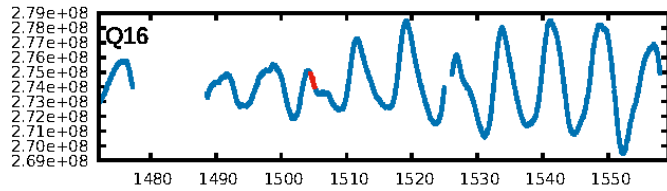
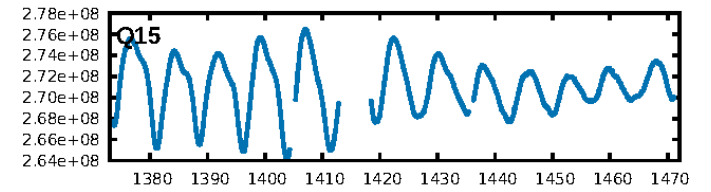
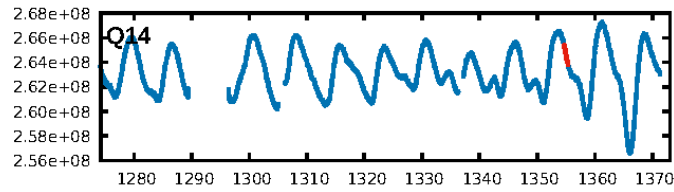
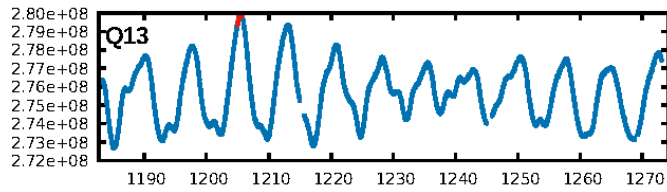
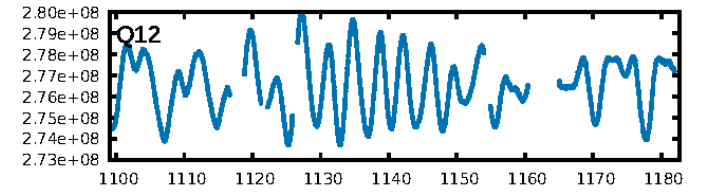
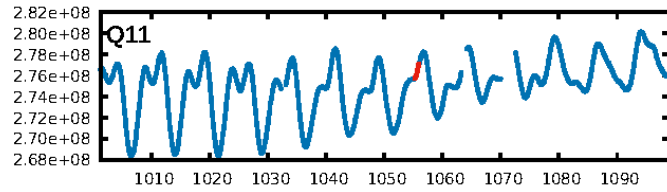
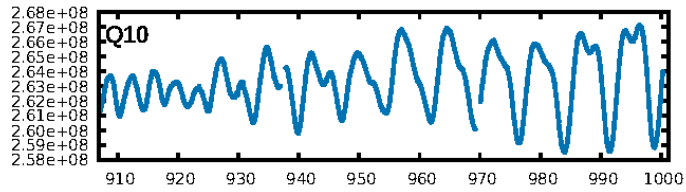
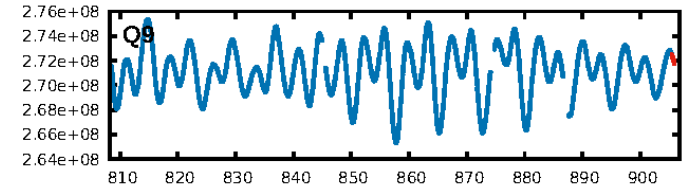
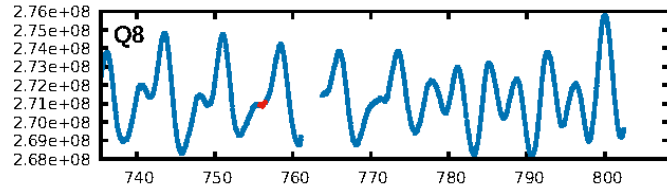
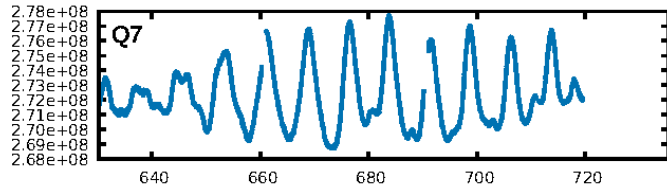
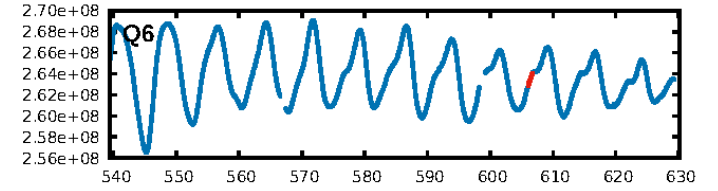
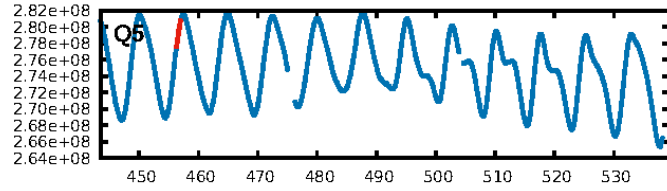
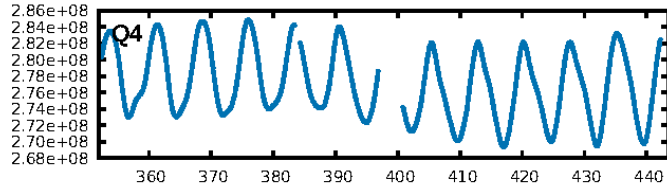
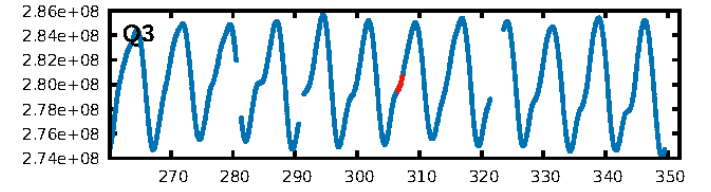
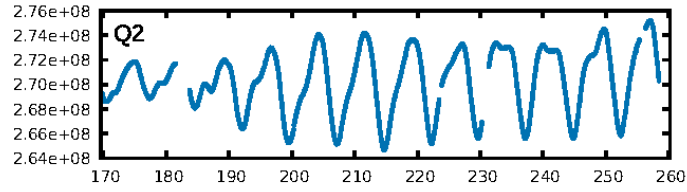
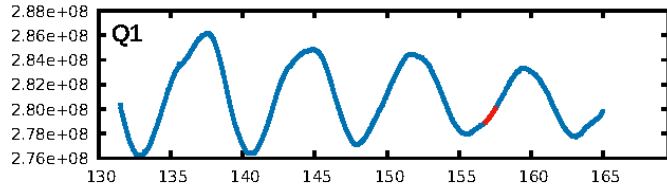
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [53.02σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 9.23e-08  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -1.703  
Centroid-sig: 55.1%  
Centroid-so: 0.285 arcsec [0.59σ]  
OotOffset-rm: 0.306 arcsec [1.08σ]  
OotOffset-st: 2/2/2/3 [9]  
KicOffset-rm: 0.181 arcsec [0.72σ]  
KicOffset-st: 2/2/2/3 [9]  
DiffImageQuality-fgm: 0.56 [5/9]  
DiffImageOverlap-fno: 0.00 [0/9]

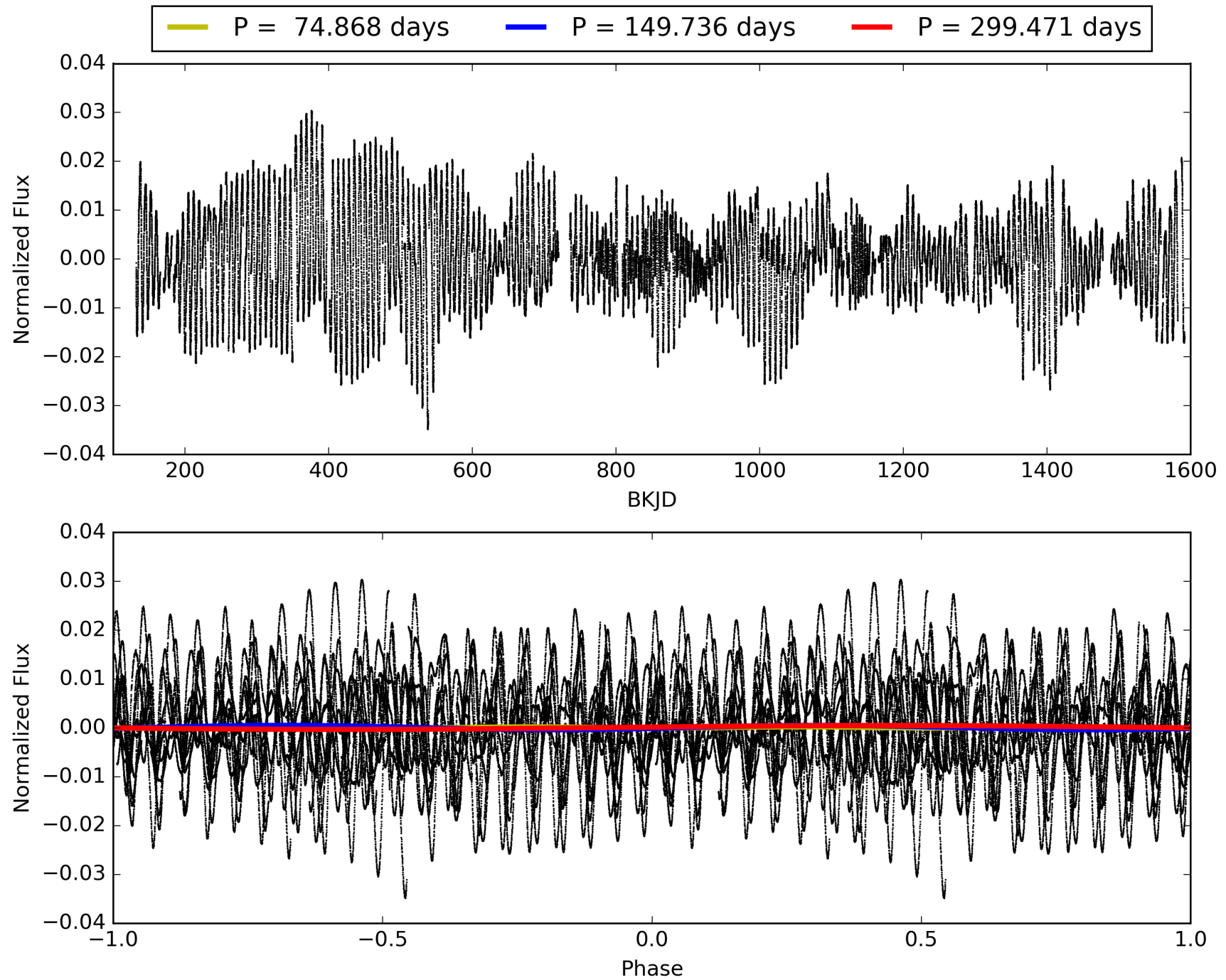
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 03:51:12 Z

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

# TCE 010924400-04, PDC Light Curves

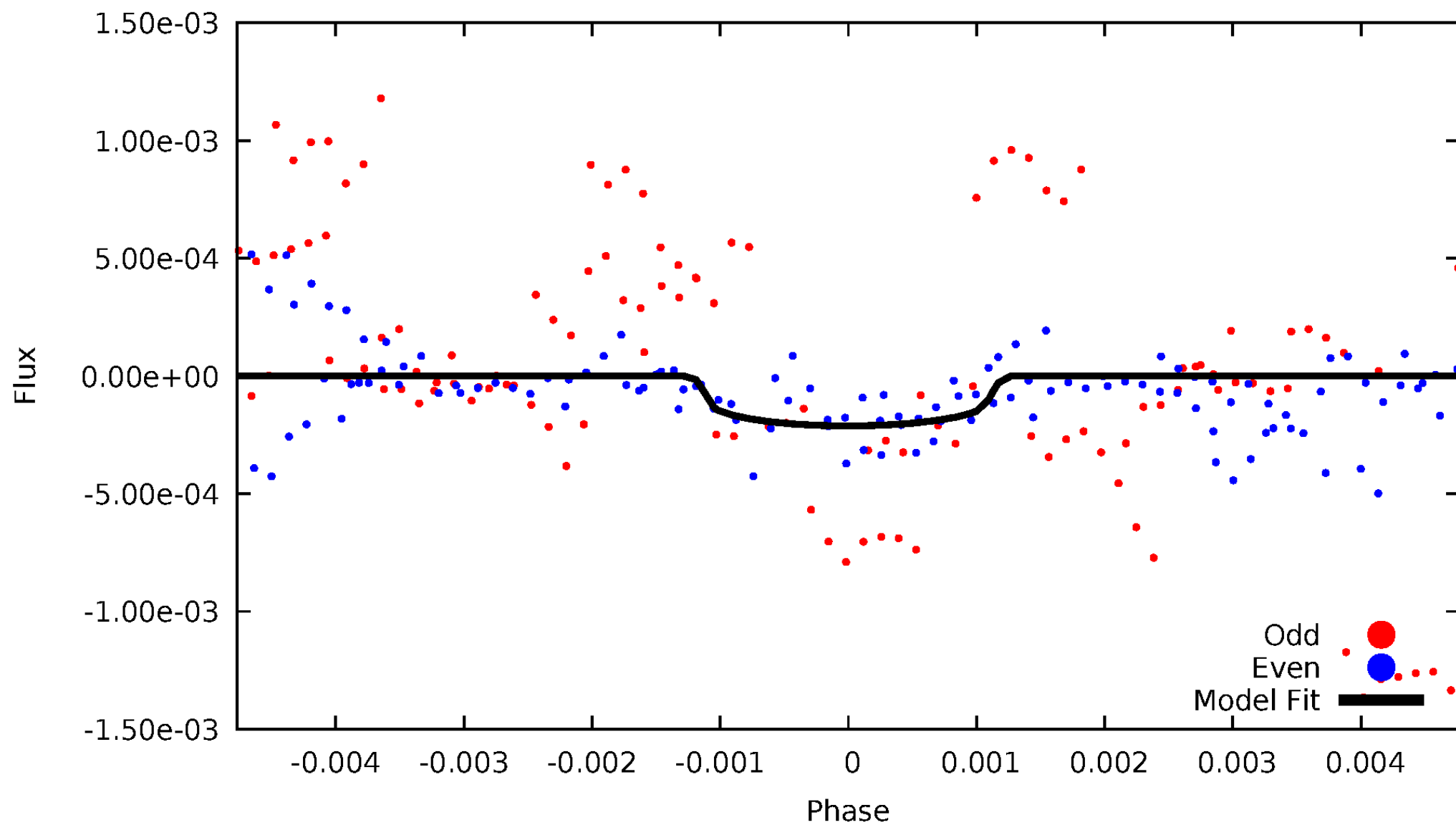


# TCE 010924400-04



# DV Odd/Even

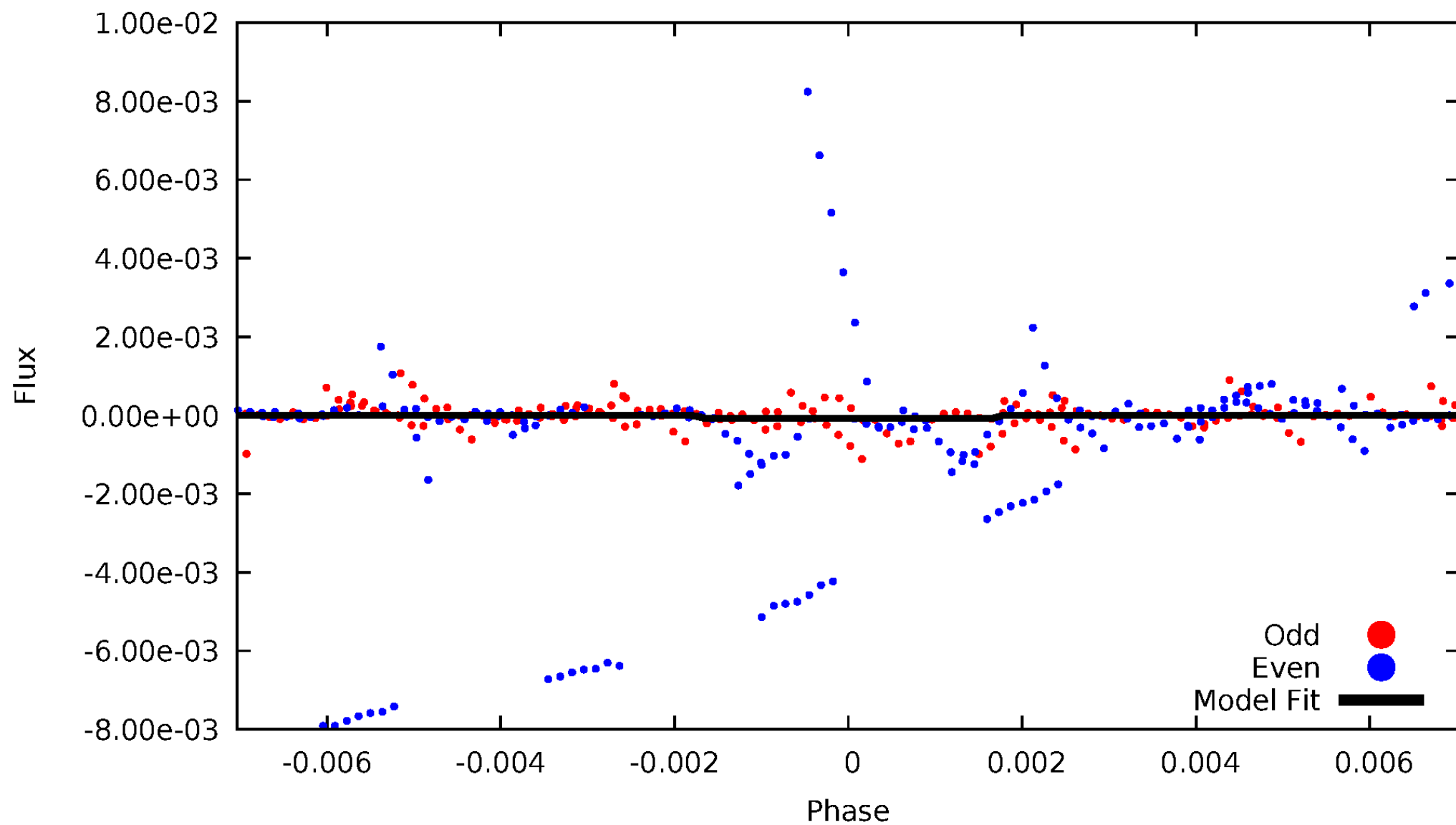
TCE 010924400-04





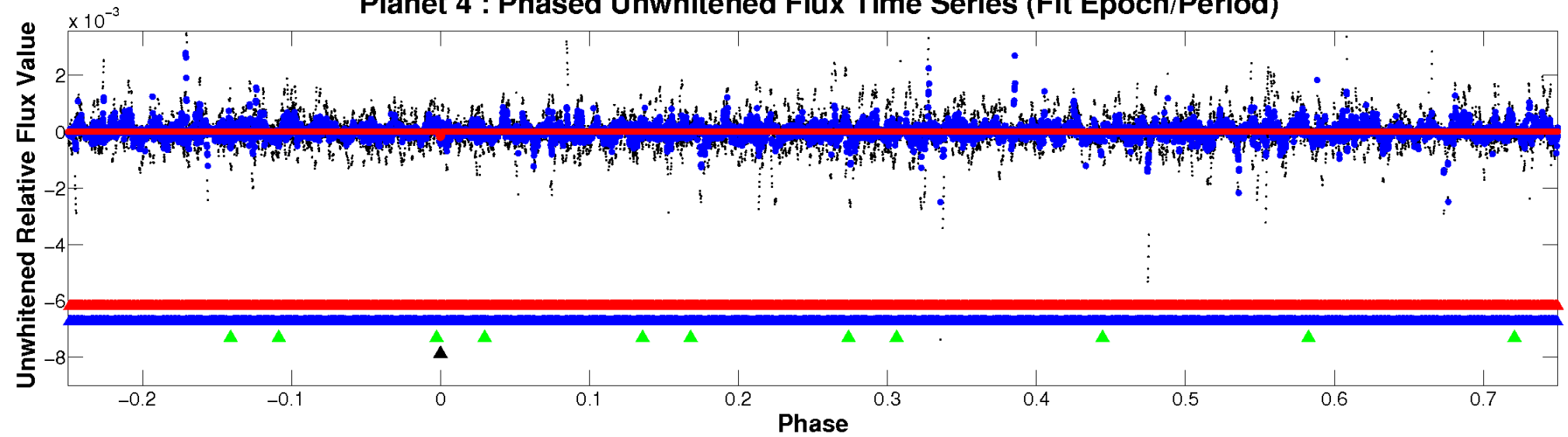
# ALT Odd/Even

TCE 010924400-04

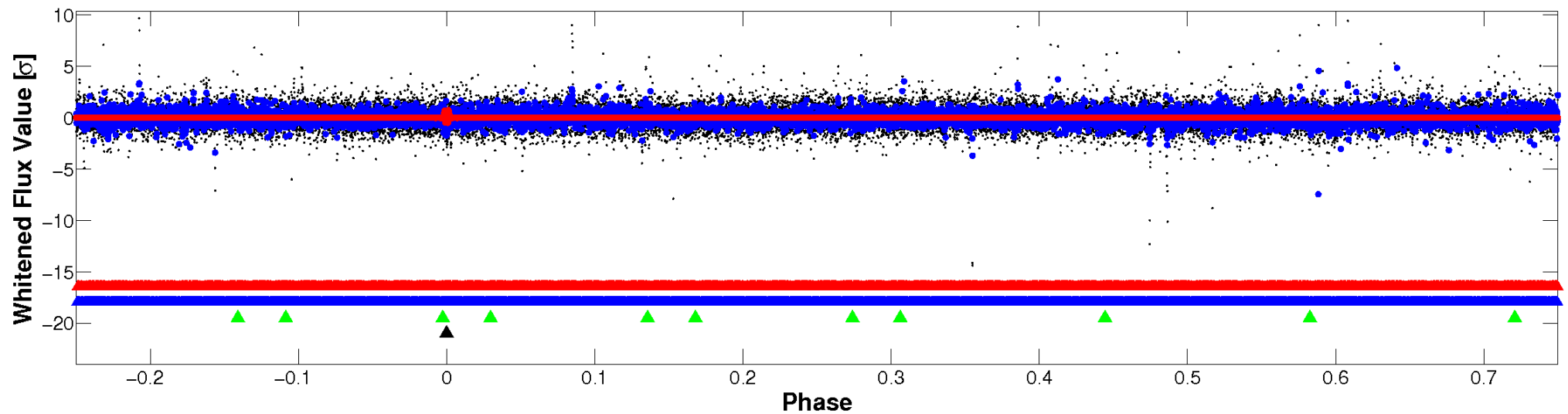


# Non-Whitened Vs. Whitened Light Curve

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

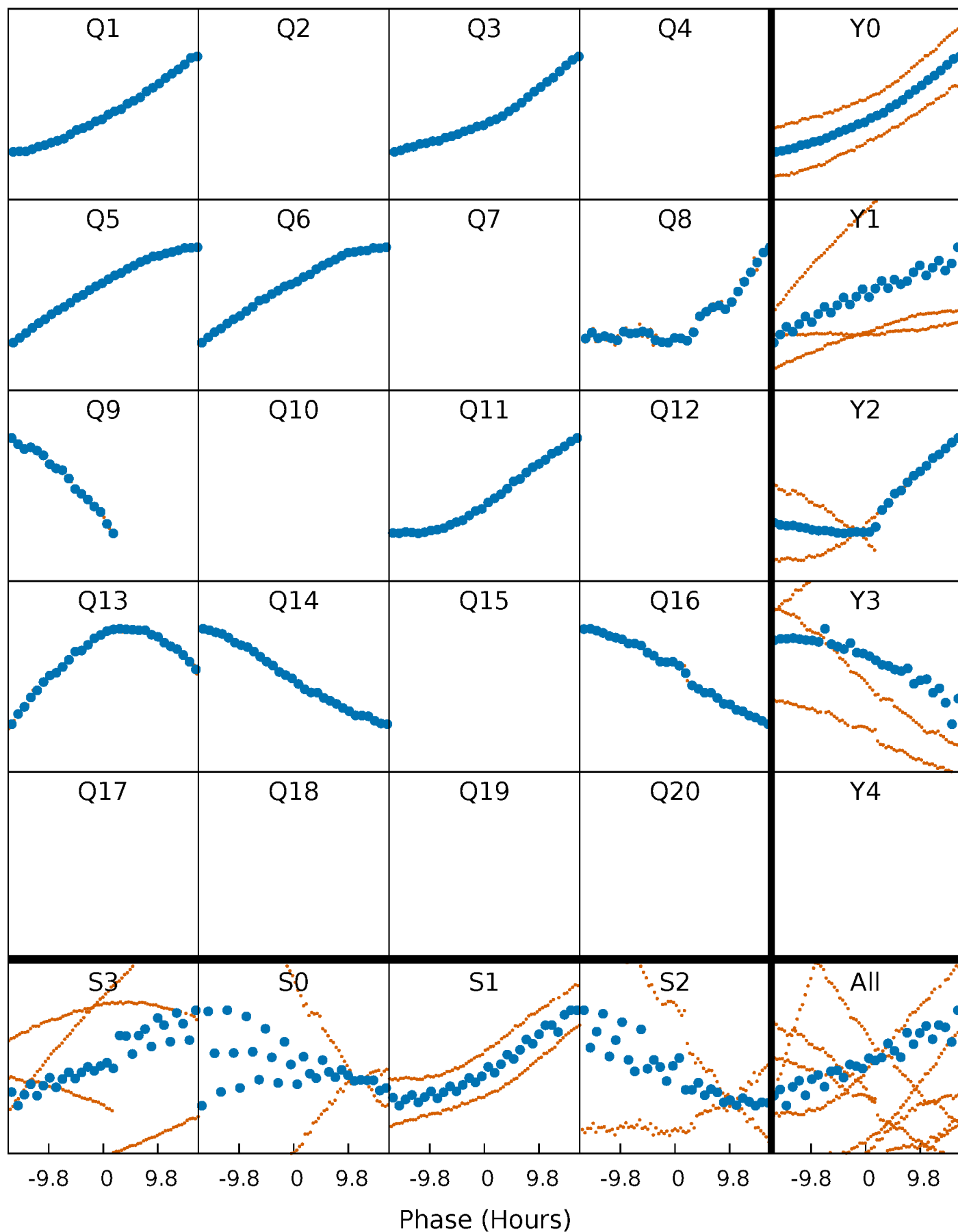


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



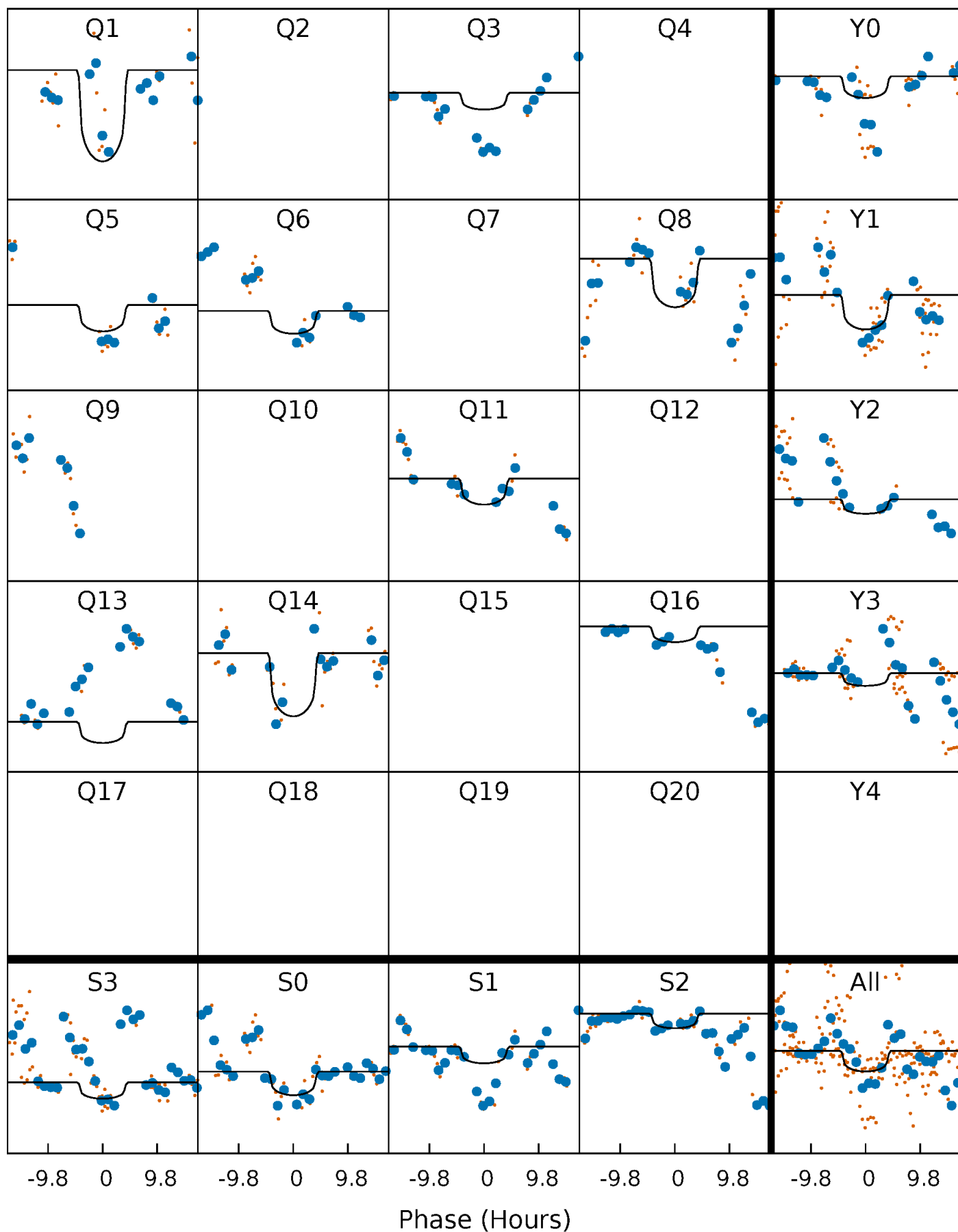
# PDC Quarter-Phased Transit Curves

TCE 010924400-04     $P=149.735615$  Days     $T_0=157.181118$  (BKJD)



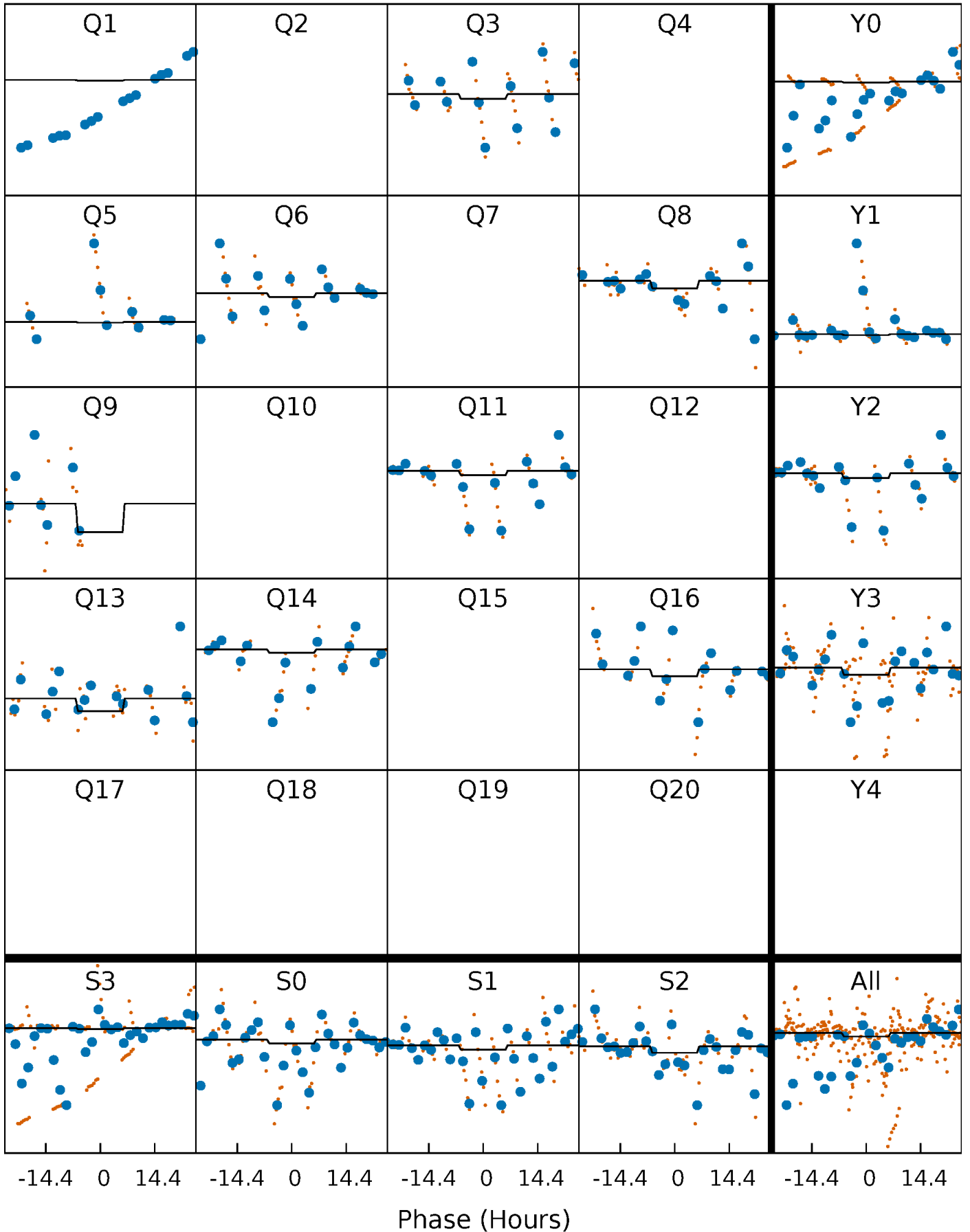
# DV Quarter-Phased Transit Curves

TCE 010924400-04 P=149.735615 Days  $T_0=157.181118$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

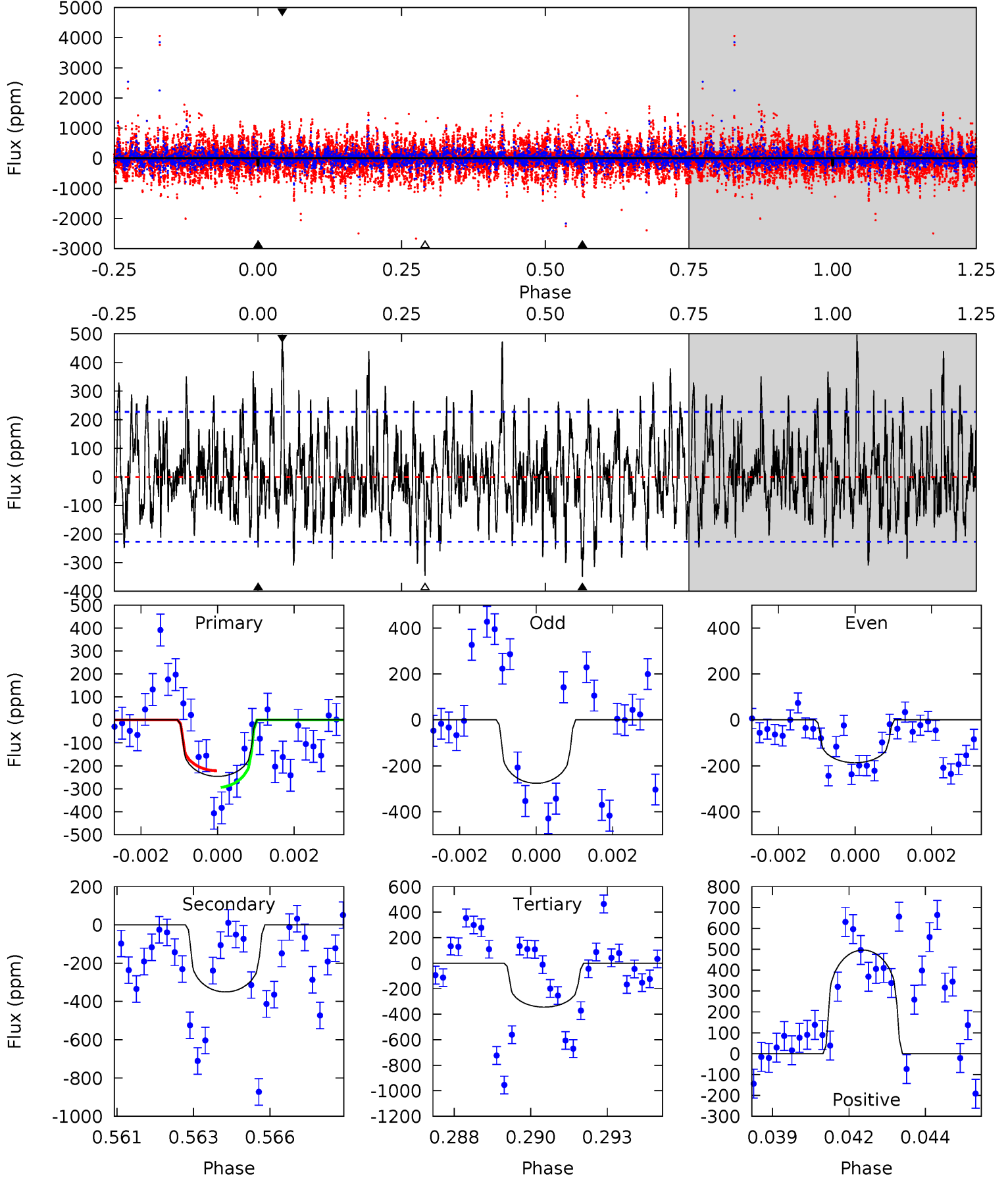
TCE 010924400-04     $P=149.727280$  Days     $T_0=157.244868$  (BKJD)



# DV Model-Shift Uniqueness Test

010924400-04, P = 149.735615 Days, E = 7.445503 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
5.73	8.15	8.02	11.5	5.29	3.03	2.86	-2.29	-5.82	0.14	-3.40	0.80	0.61	0.59	0.84

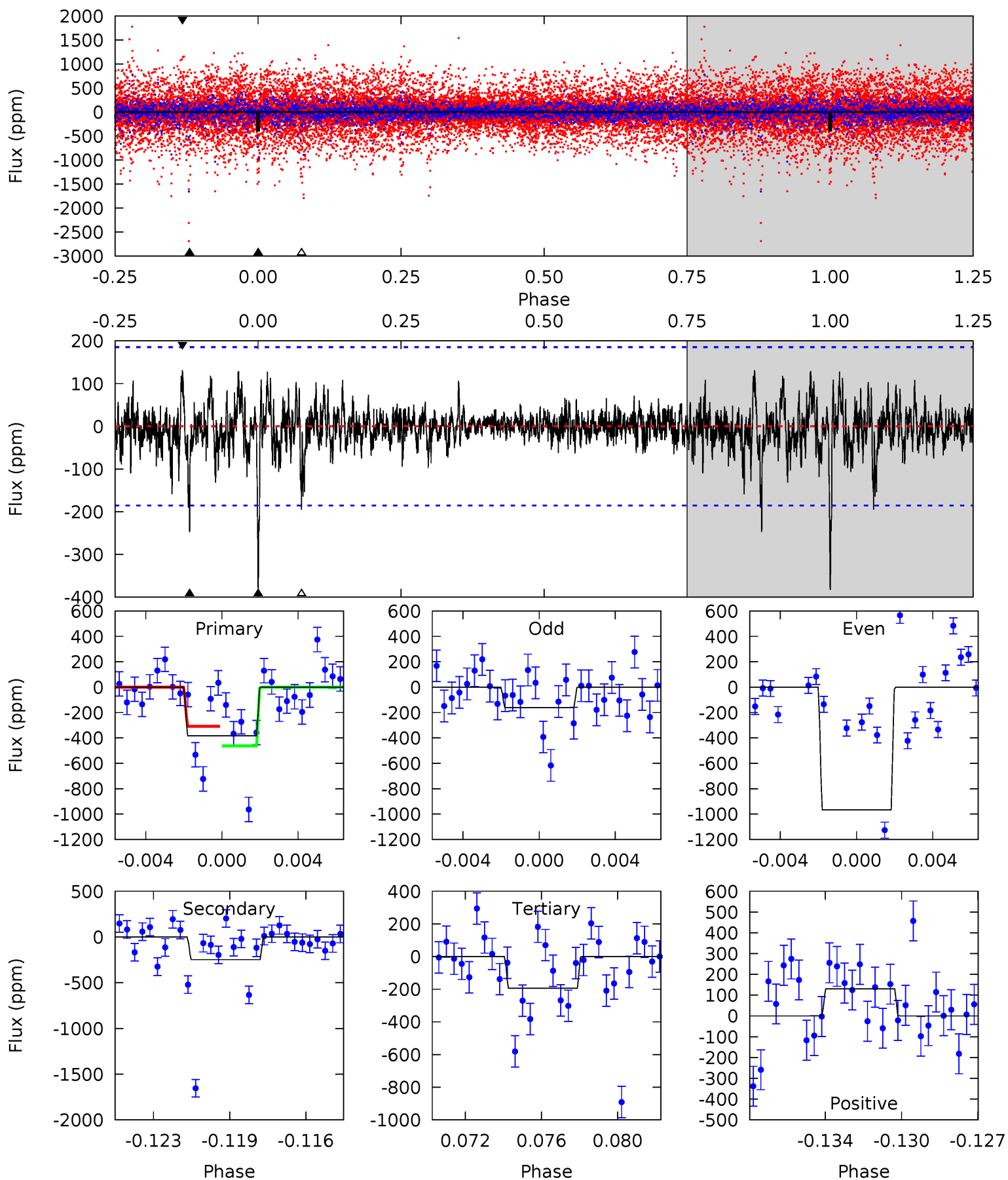




# Alt Model-Shift Uniqueness Test

010924400-04, P = 149.727280 Days, E = 7.517588 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
10.8	6.98	5.48	3.69	5.22	2.91	0.96	5.30	7.10	1.49	3.29	3.66	1.40	0.25	0



### Stellar Parameters For KIC 010924400

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5151^{+72}_{-92}$	$4.602^{+0.010}_{-0.070}$	$0.070^{+0.150}_{-0.150}$	$0.761^{+0.066}_{-0.024}$	$0.874^{+0.027}_{-0.064}$	$2.798^{+0.140}_{-0.676}$
	+1%/-2%	+0%/-2%	+214%/-214%	+9%/-3%	+3%/-7%	+5%/-24%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 010924400-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-350 \pm 43$	$1.32^{+0.55}_{-0.52}$	$388^{+8}_{-8}$	$5580^{+1659}_{-798}$	$29837^{+50401}_{-15142}$
Alt.	$-248 \pm 36$	$0.84^{+0.52}_{-0.48}$	$388^{+9}_{-9}$	$6413^{+4467}_{-1300}$	$51742^{+225012}_{-31779}$

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

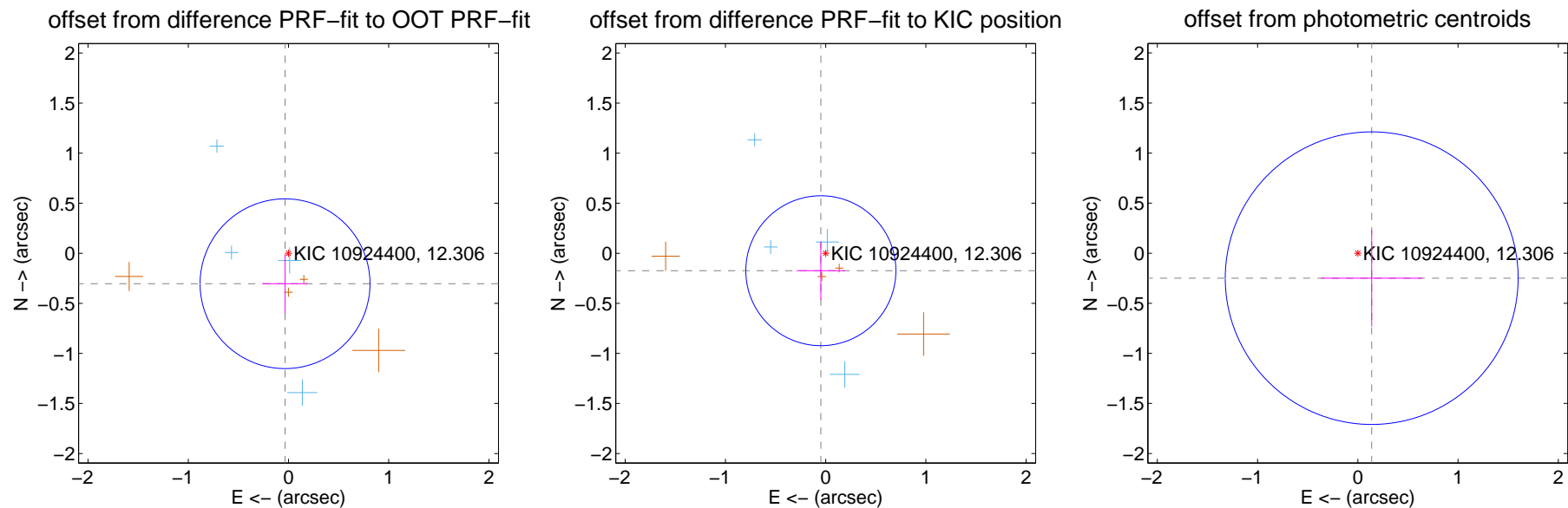
## DV Centroid Data

Supplemental centroid analysis for 010924400-04. Kepler magnitude: 12.31. Transit SNR 4.62

There are 5 quarters with good PRF difference image offsets

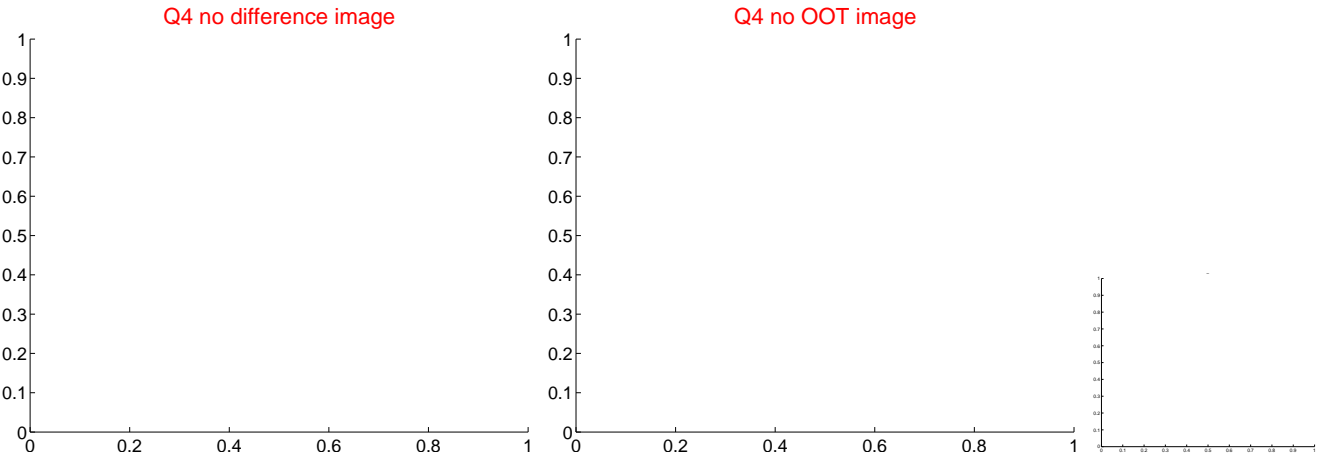
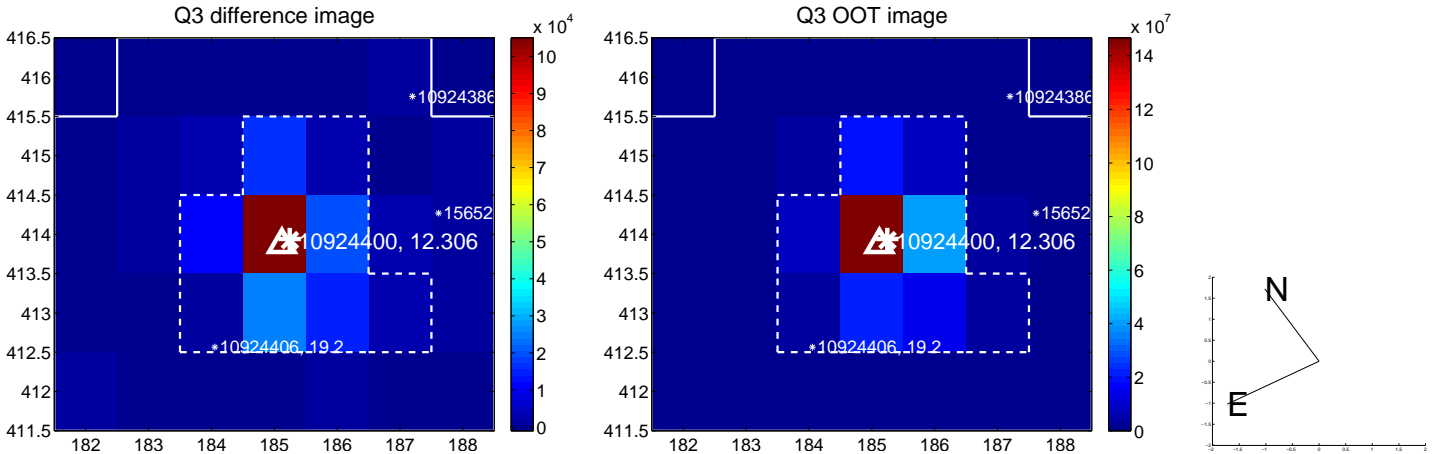
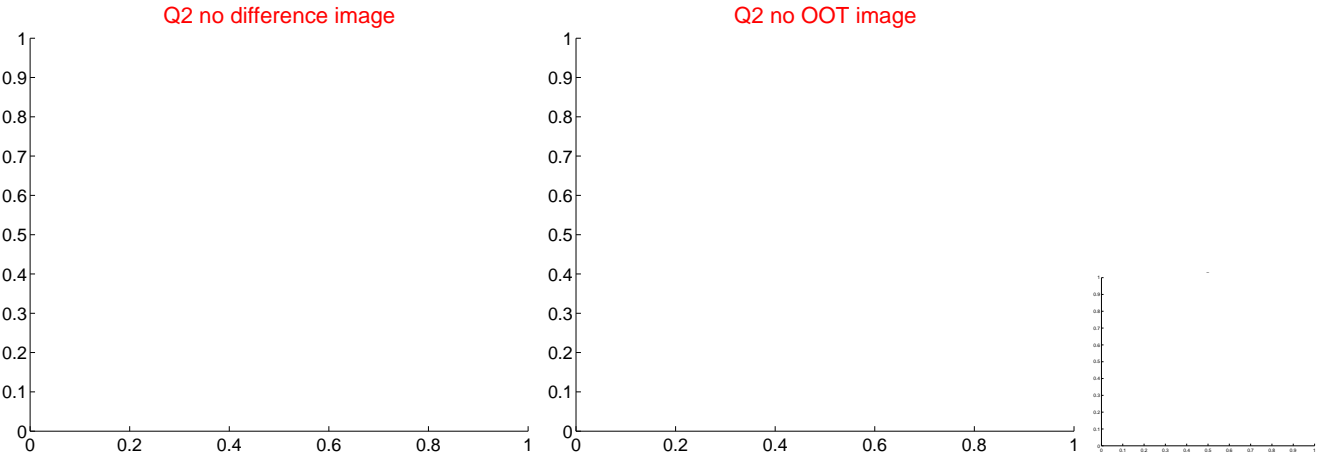
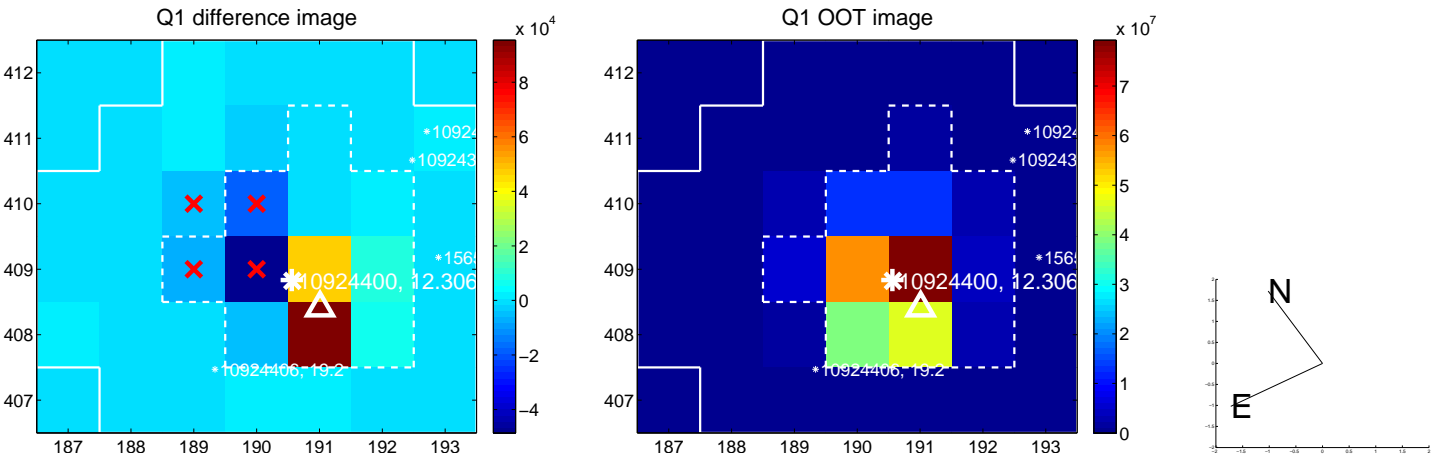
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.306 \pm 0.283$	1.08	$0.034 \pm 0.226$	$-0.304 \pm 0.294$
PRF-fit source offset from KIC position	$0.181 \pm 0.250$	0.72	$0.048 \pm 0.241$	$-0.174 \pm 0.291$
photometric centroid source offset	$0.29 \pm 0.49$	0.59	$-0.14 \pm 0.51$	$-0.25 \pm 0.48$

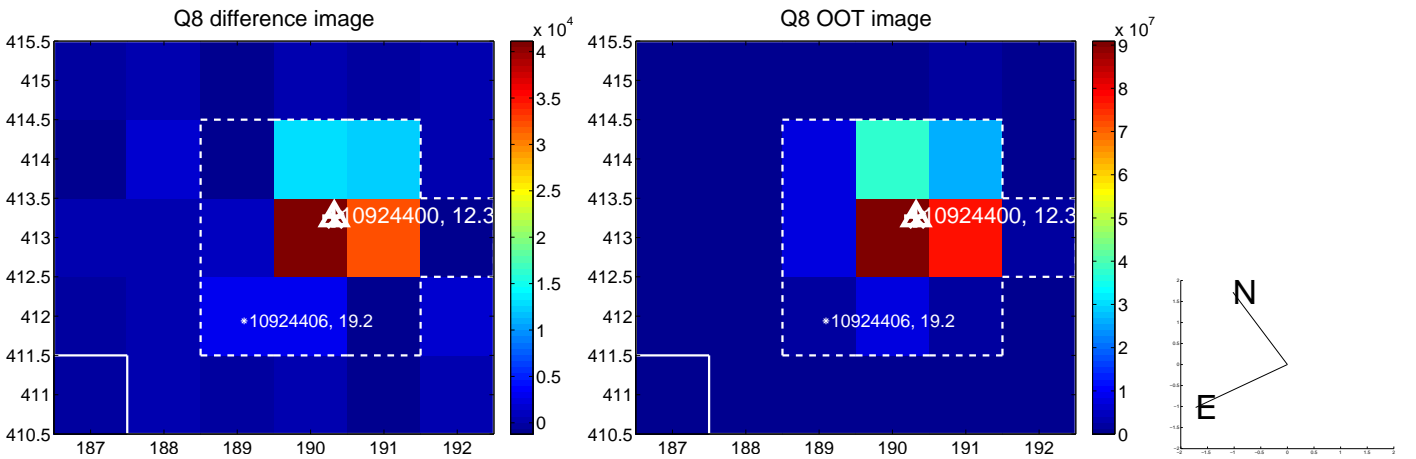
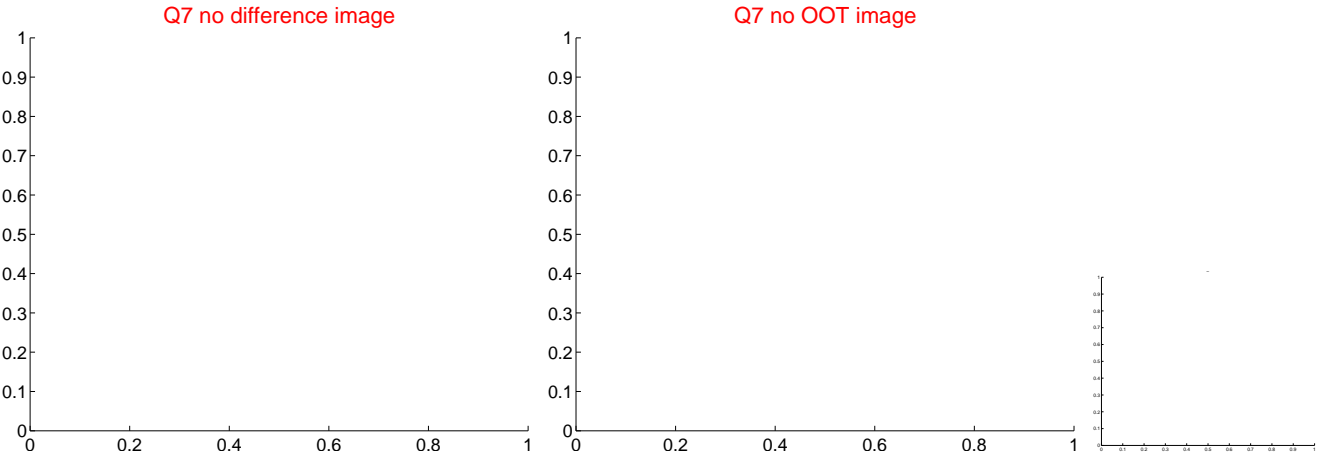
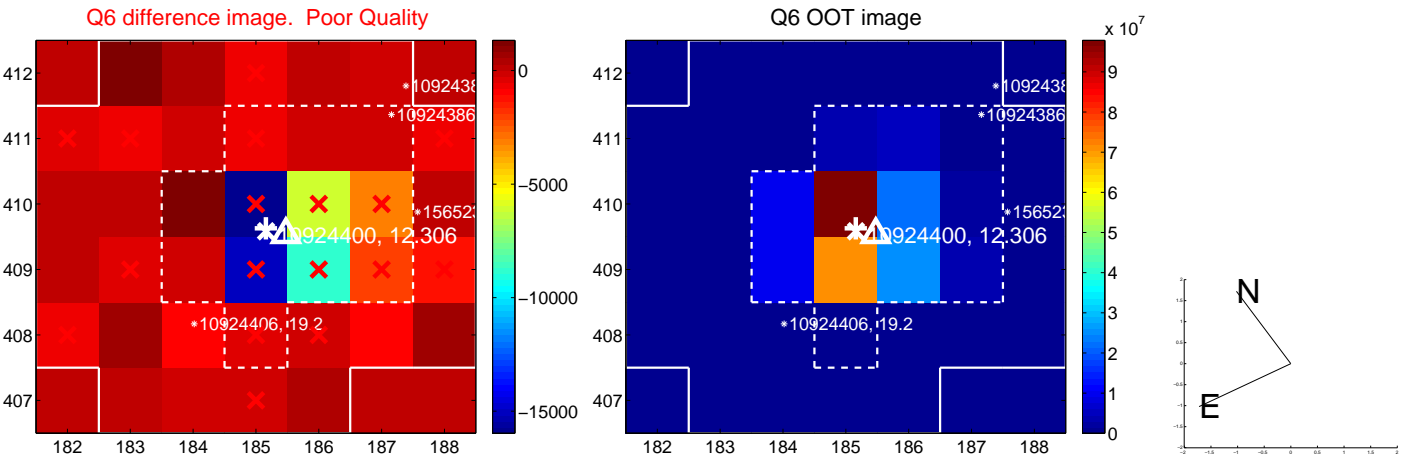
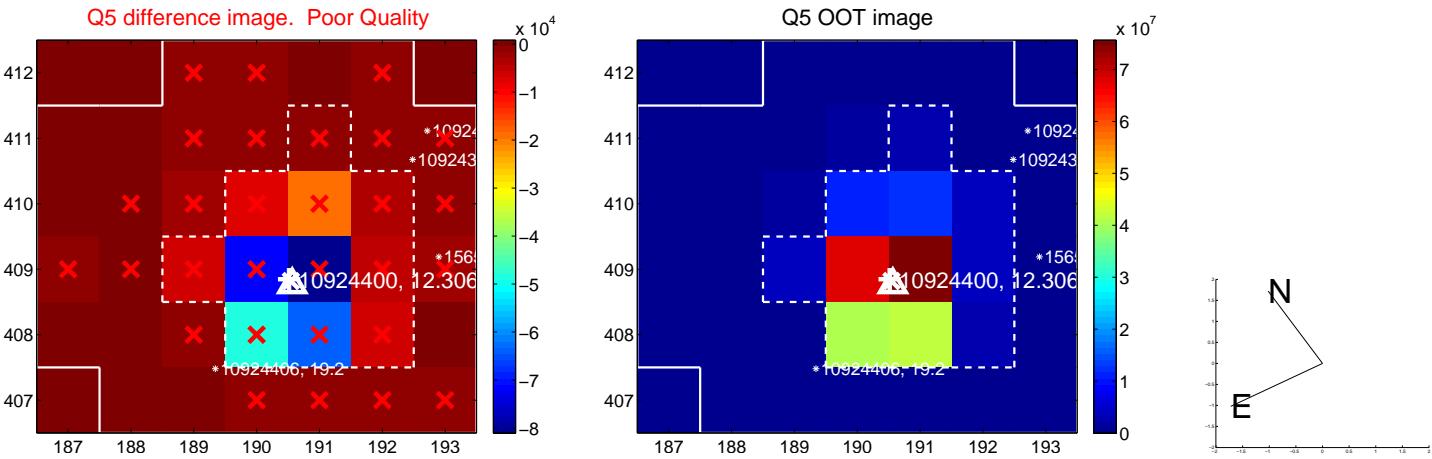


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

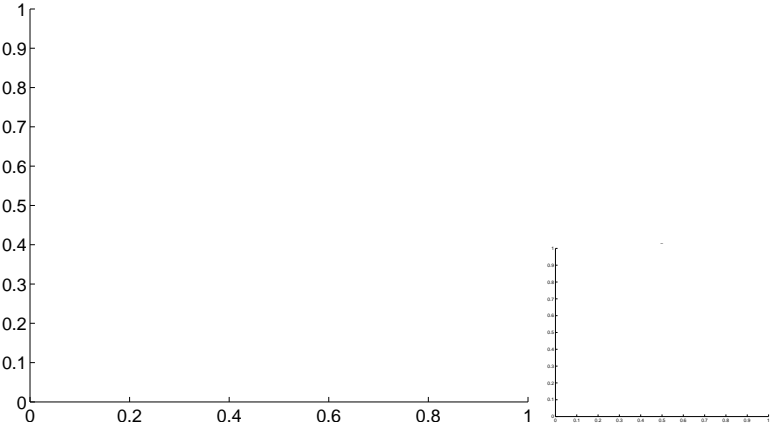


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q9 no difference image



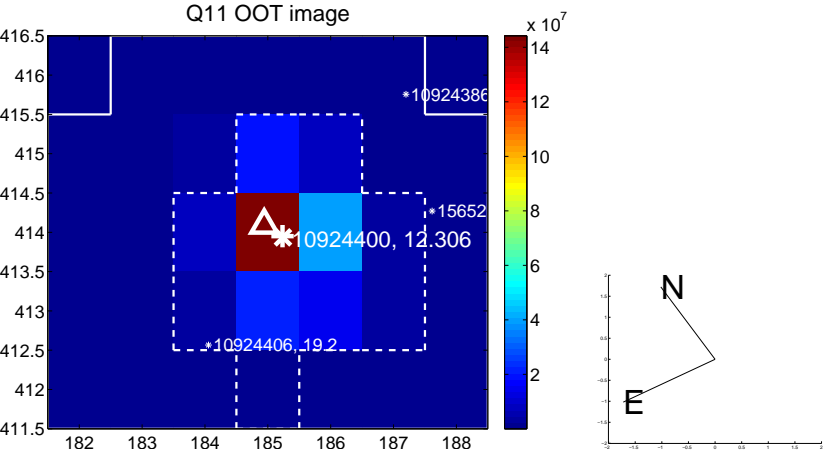
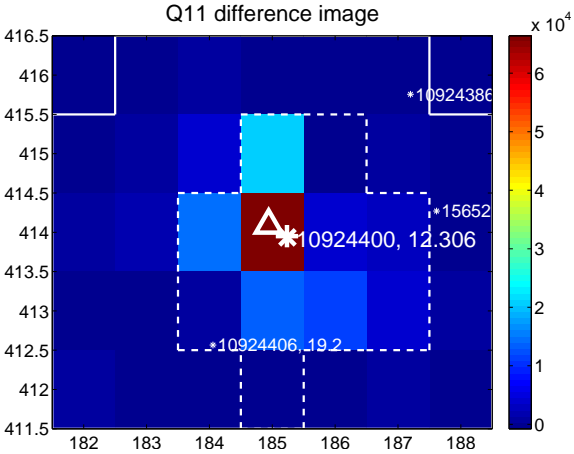
Q9 no OOT image



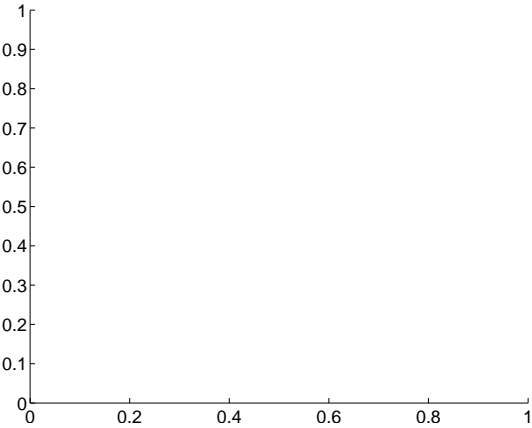
Q10 no difference image



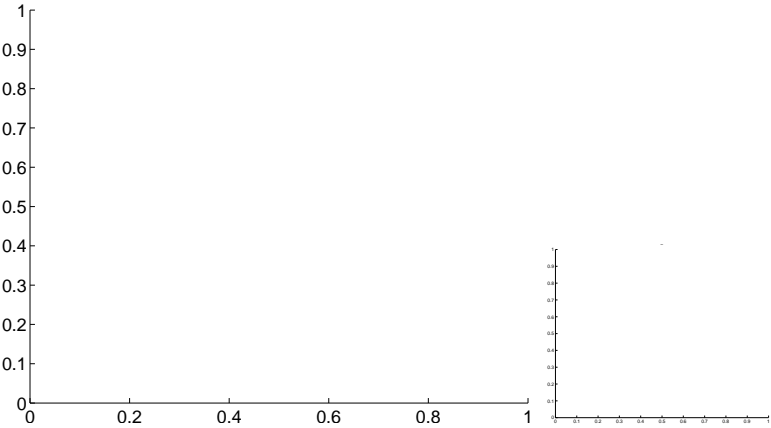
Q10 no OOT image



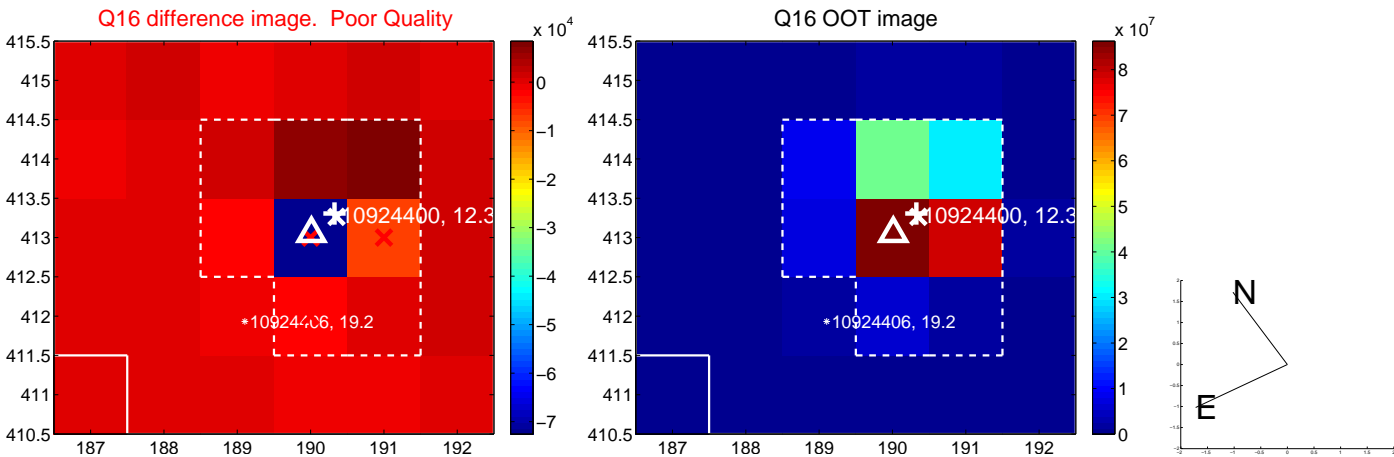
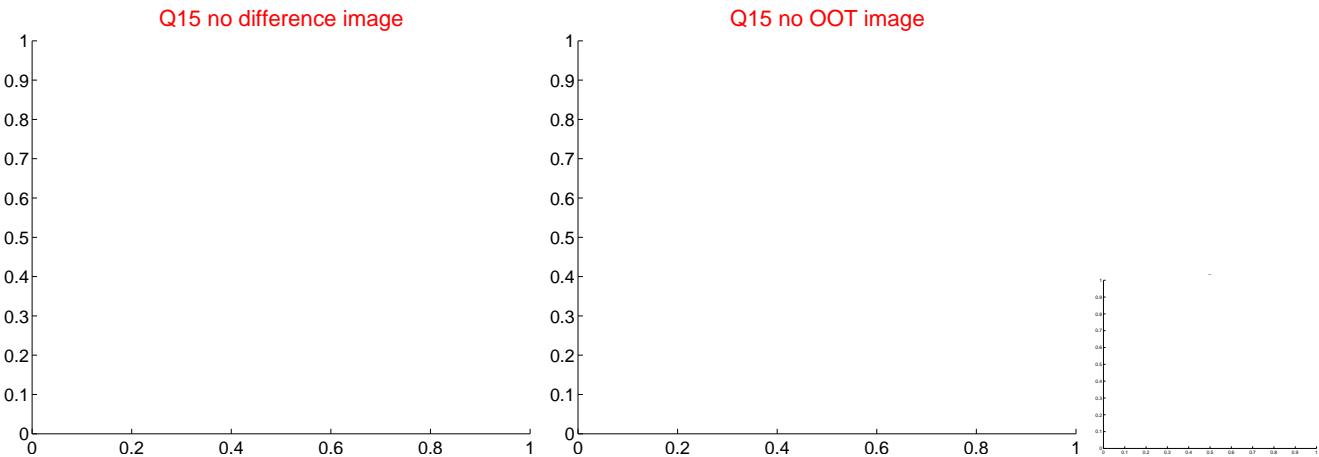
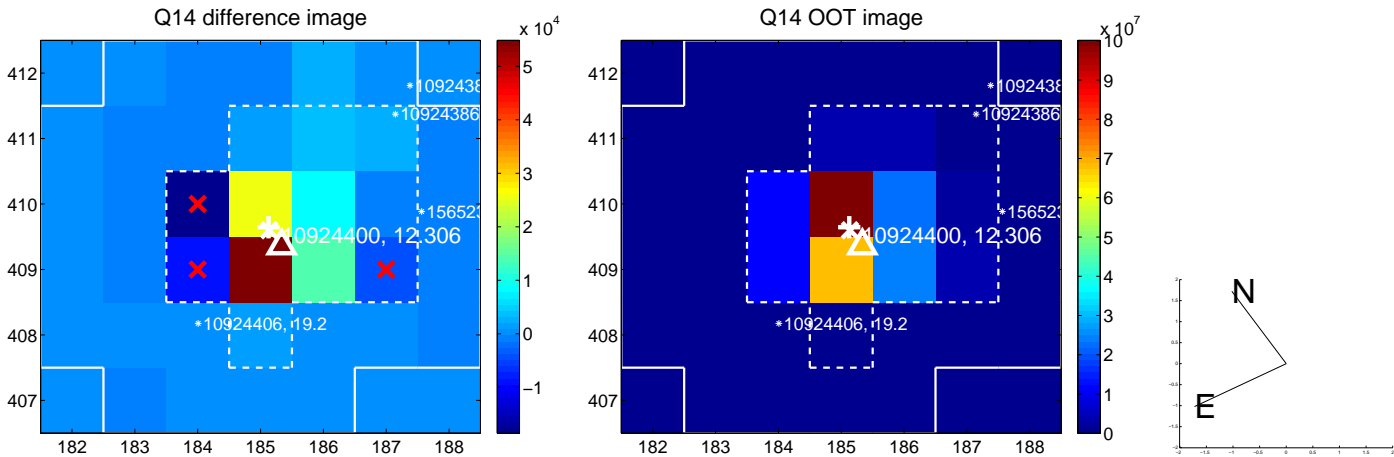
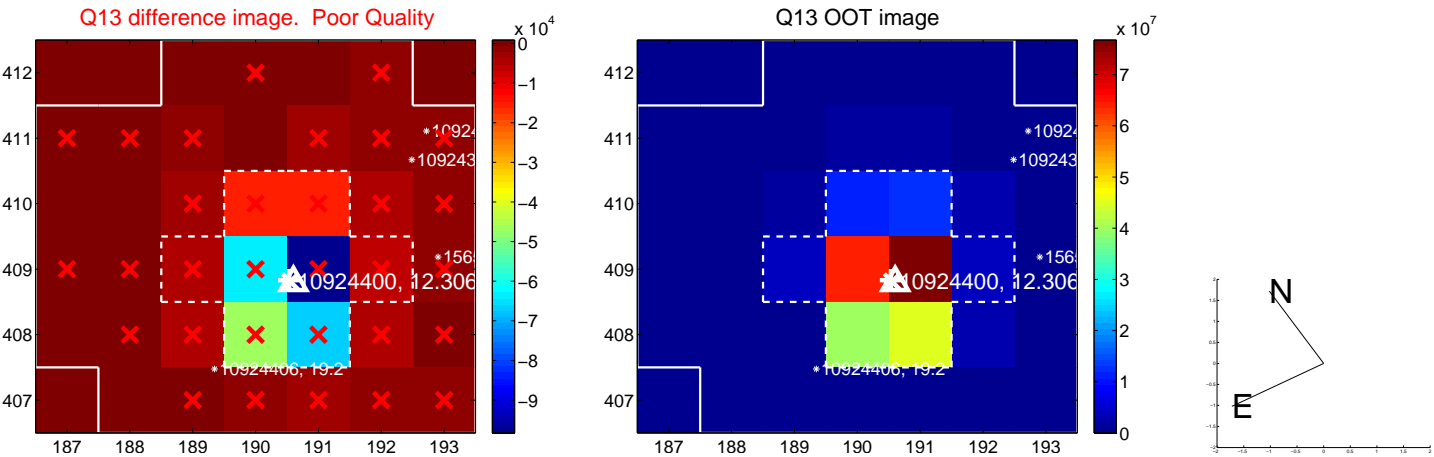
Q12 no difference image



Q12 no OOT image

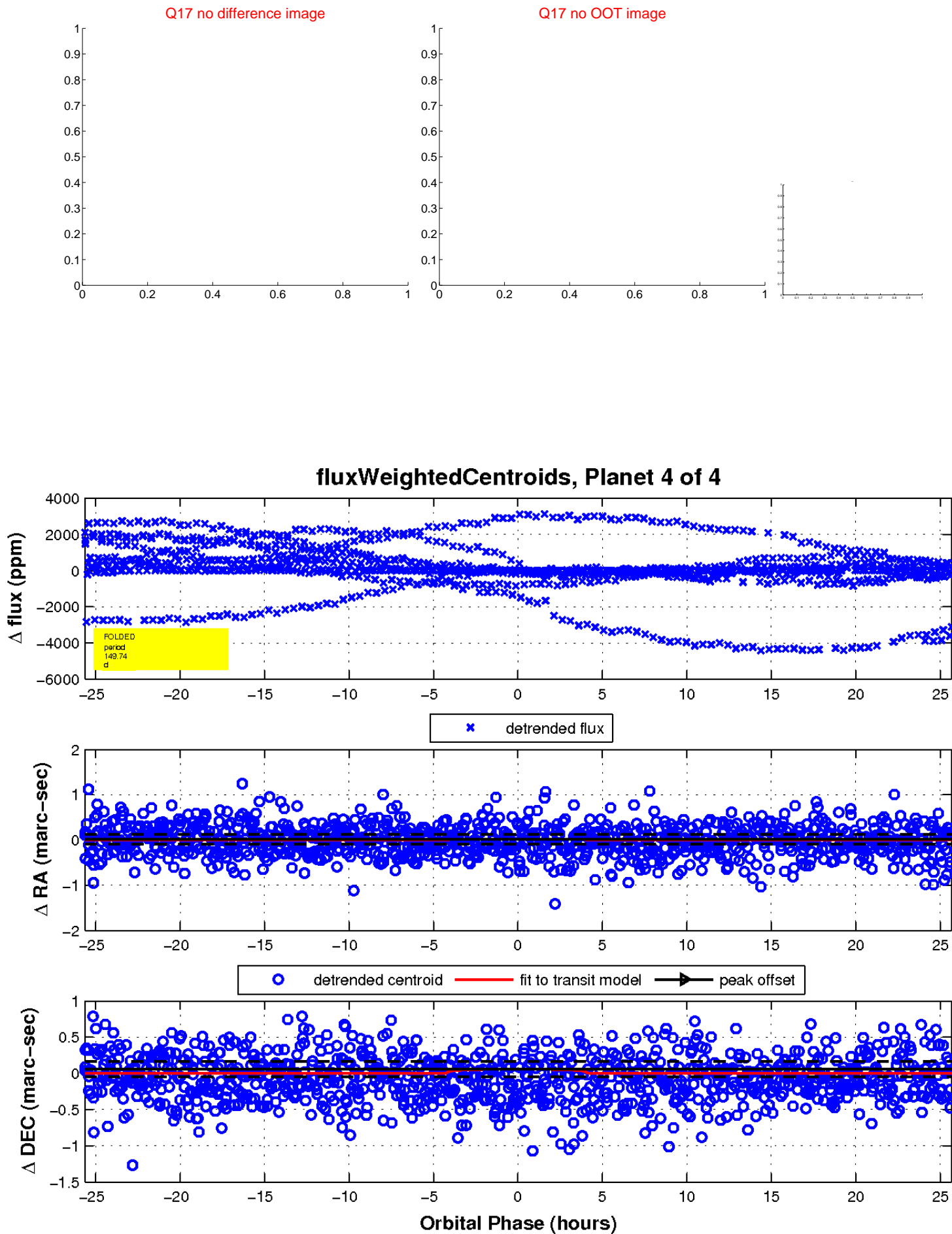


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

