

# KIC 005614247

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005614247-01	OBS	No	5.716072	134.537342	66.9	10.599	12.1	11.2	1.80	6802	1.72	1246.45
005614247-02	OBS	No	5.715381	132.714984	95.2	14.405	12.3	14.1	1.80	6802	2.50	1246.65
005614247-03	OBS	No	417.258401	302.427892	125.4	7.442	10.9	2.6	1.80	6802	2.29	4.09

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005614247-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
005614247-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
005614247-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

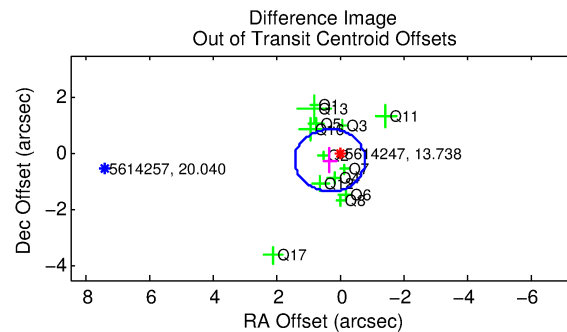
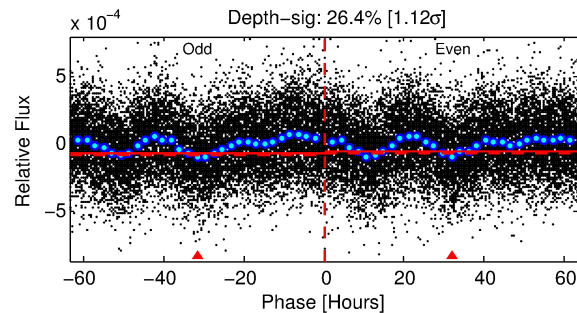
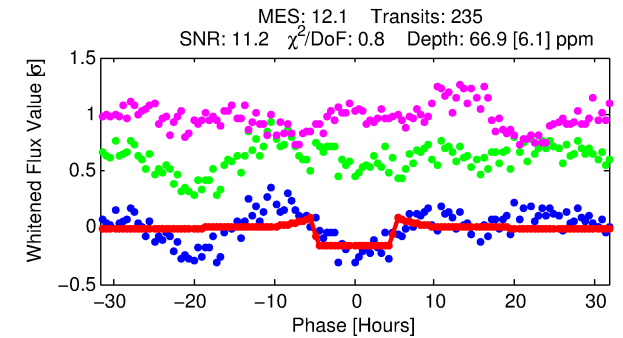
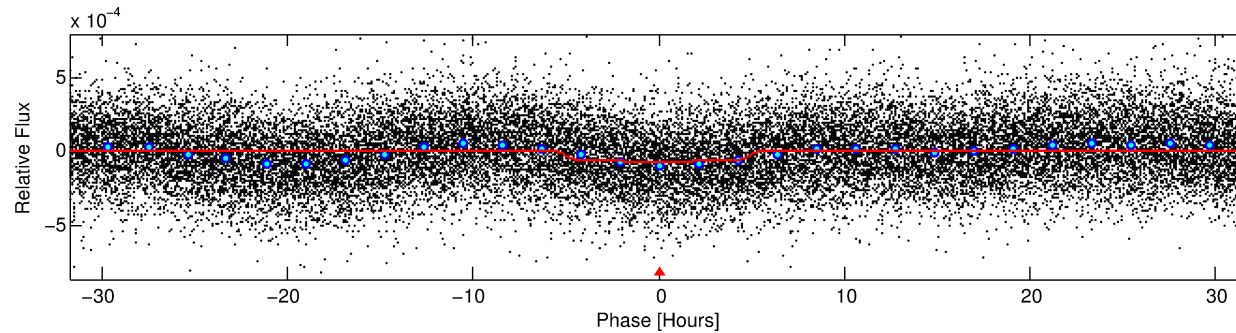
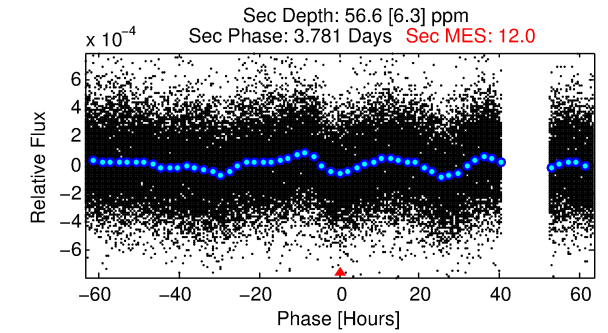
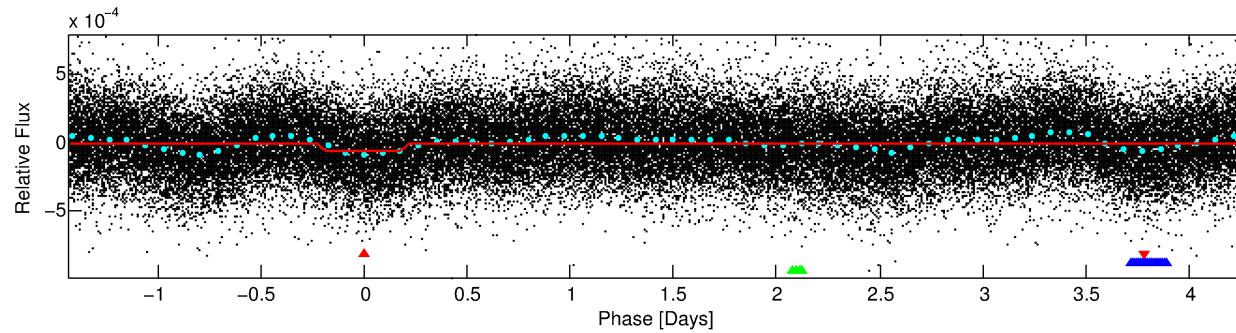
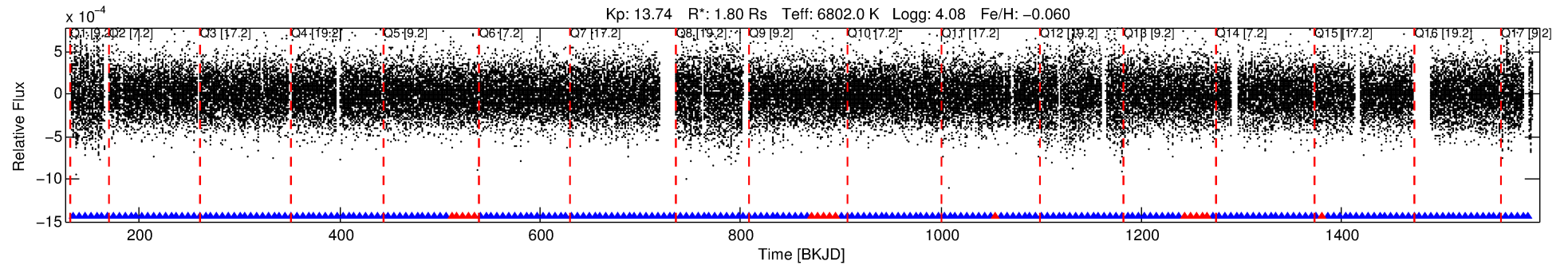
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005614247-01

No Significant Match Found

# DV One-Page Summary

KIC: 5614247 Candidate: 1 of 3 Period: 5.716 d



## DV Fit Results:

Period = 5.71607 [0.00006] d  
Epoch = 134.5373 [0.0072] BKJD  
Rp/R\* = 0.0088 [0.0009]  
a/R\* = 2.03 [0.83]  
b = 0.91 [0.10]  
Seff = 1246.45 [518.01]  
Teq = 1515 [157] K  
Rp = 1.72 [0.56] Re  
a = 0.0705 [0.0184] AU  
Ag = 52.04 [23.24] [2.20σ]  
Teffp = 6292 [451] K [10.00σ]

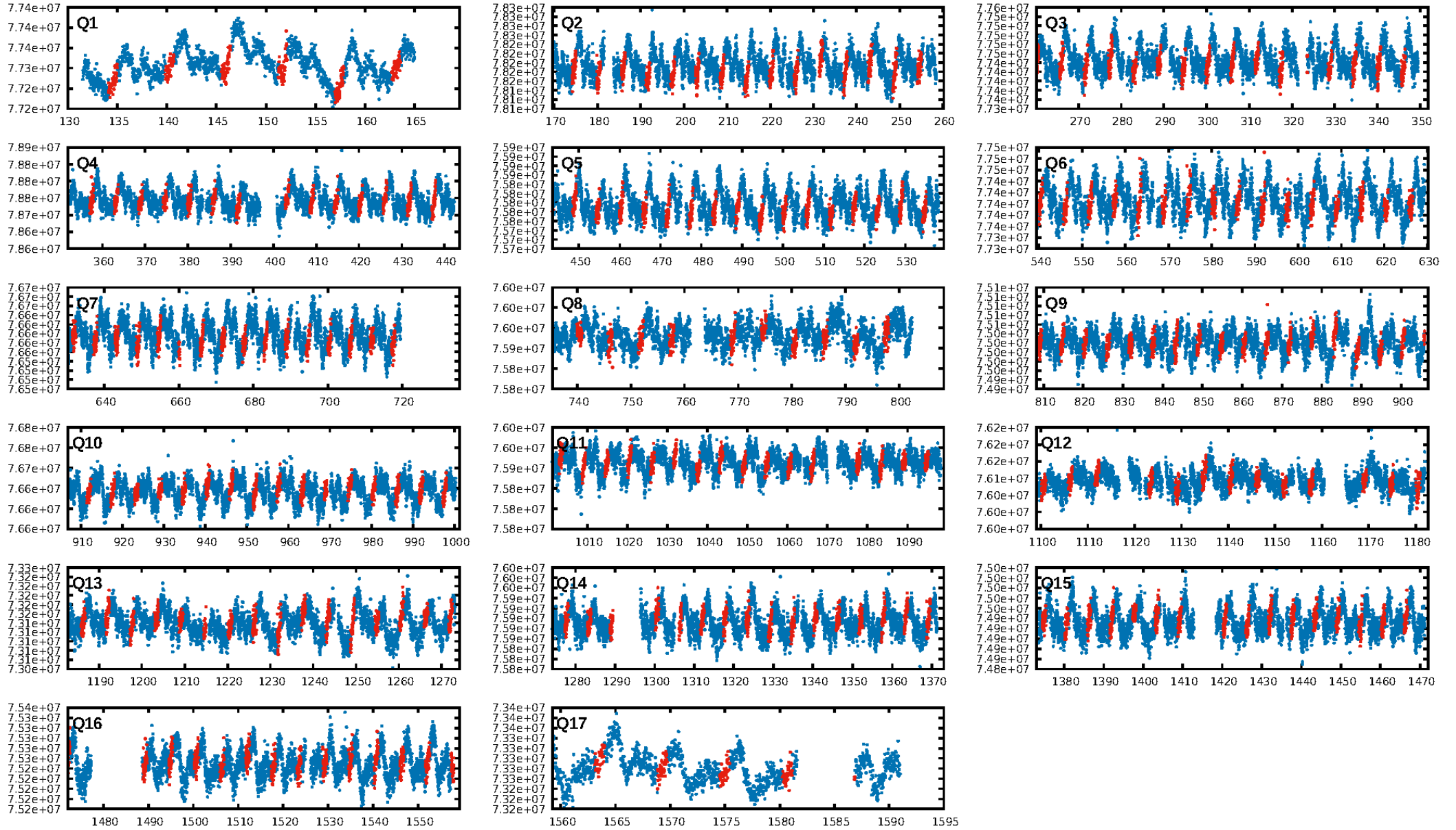
## DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]  
LongPeriod-sig: 100.0% [762.68σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.24e-26  
RollingBand-fgt: 0.92 [208/225]  
GhostDiagnostic-chr: 2.072  
Centroid-sig: 1.5%  
Centroid-so: 0.912 arcsec [1.40σ]  
OotOffset-rm: 0.410 arcsec [1.11σ]  
OotOffset-st: 2/3/4/4 [13]  
KicOffset-rm: 0.417 arcsec [1.16σ]  
KicOffset-st: 2/3/4/4 [13]  
DiffImageQuality-fgm: 0.92 [12/13]  
DiffImageOverlap-fno: 1.00 [17/17]

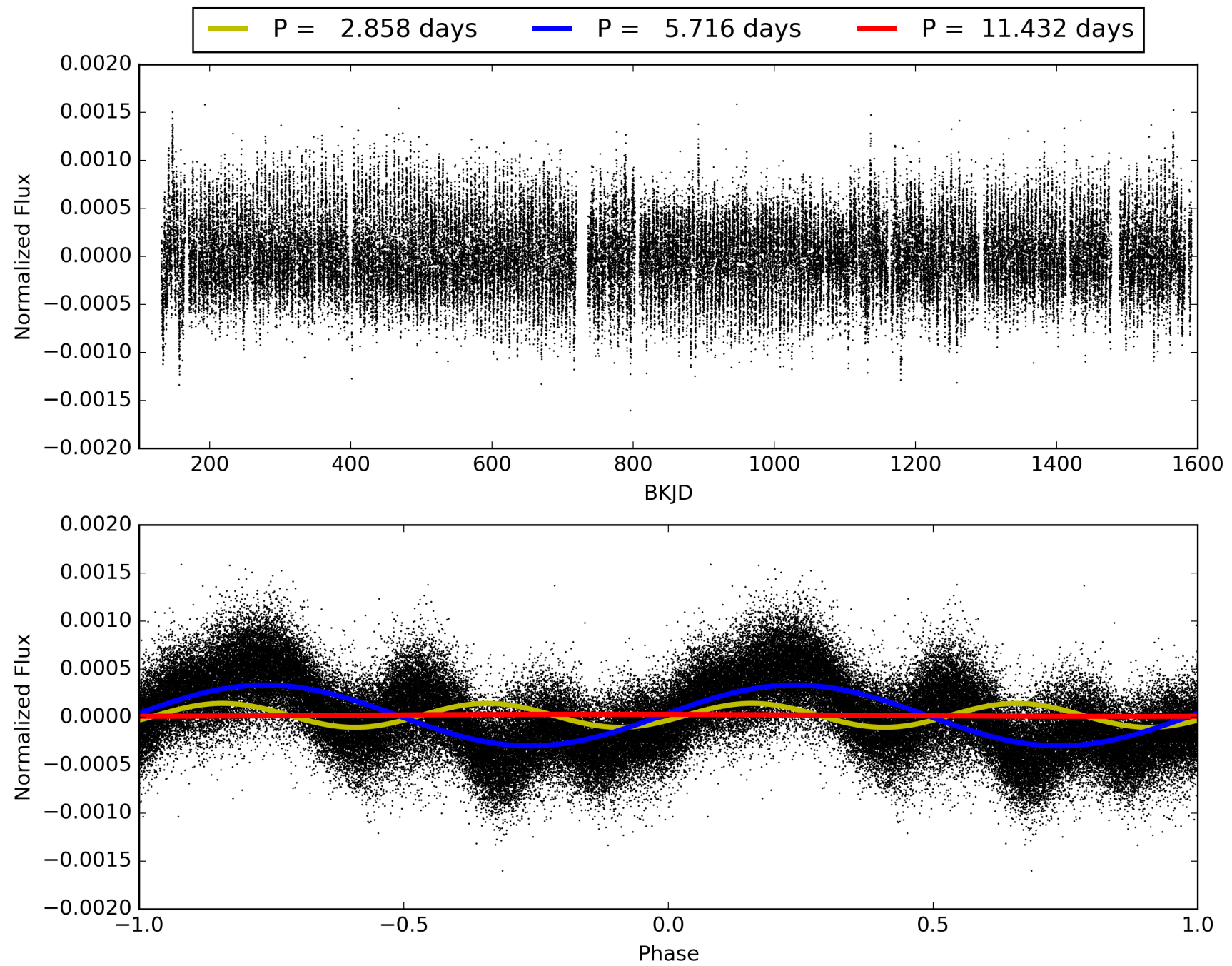
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:02:08 Z

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

# TCE 005614247-01, PDC Light Curves



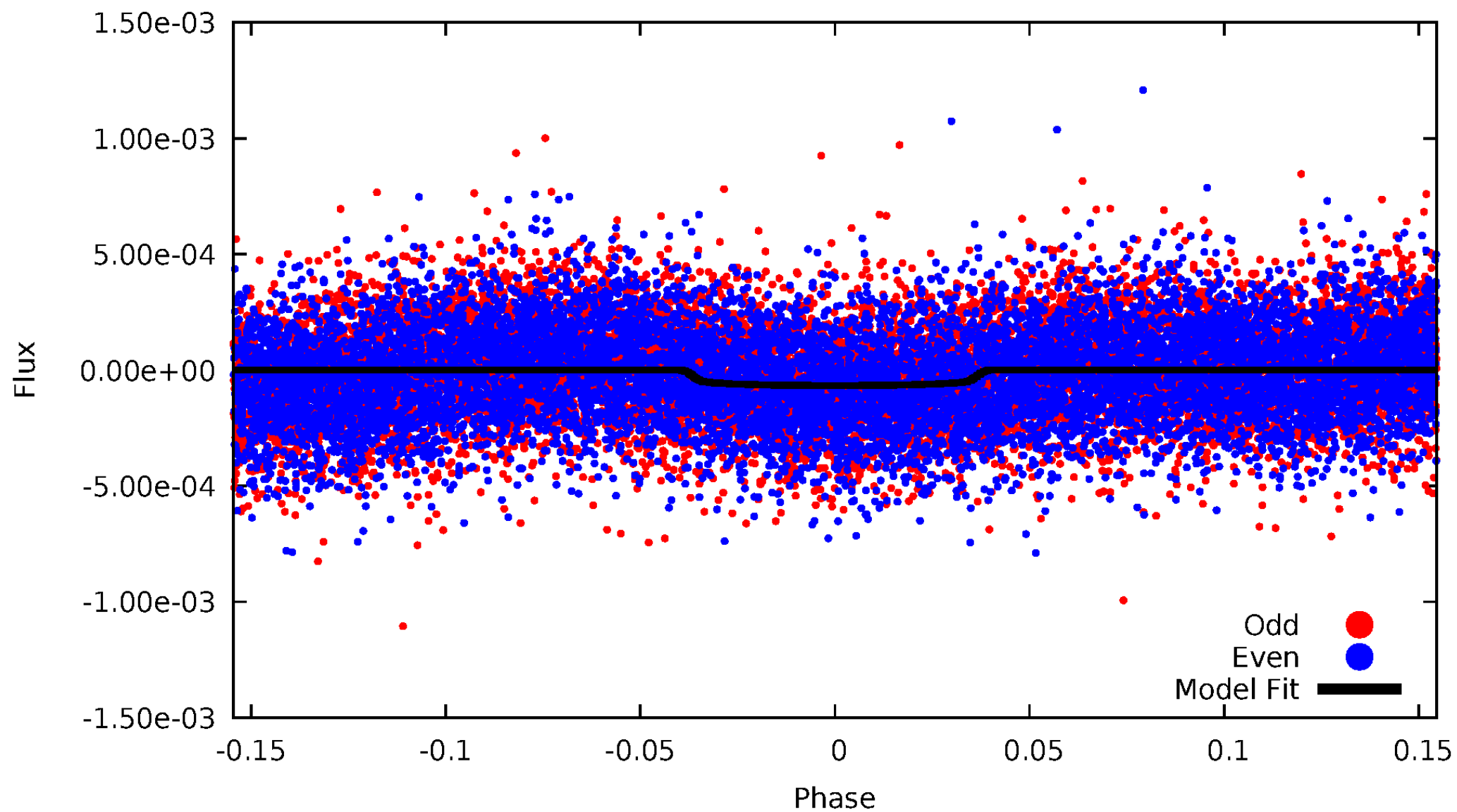
TCE 005614247-01





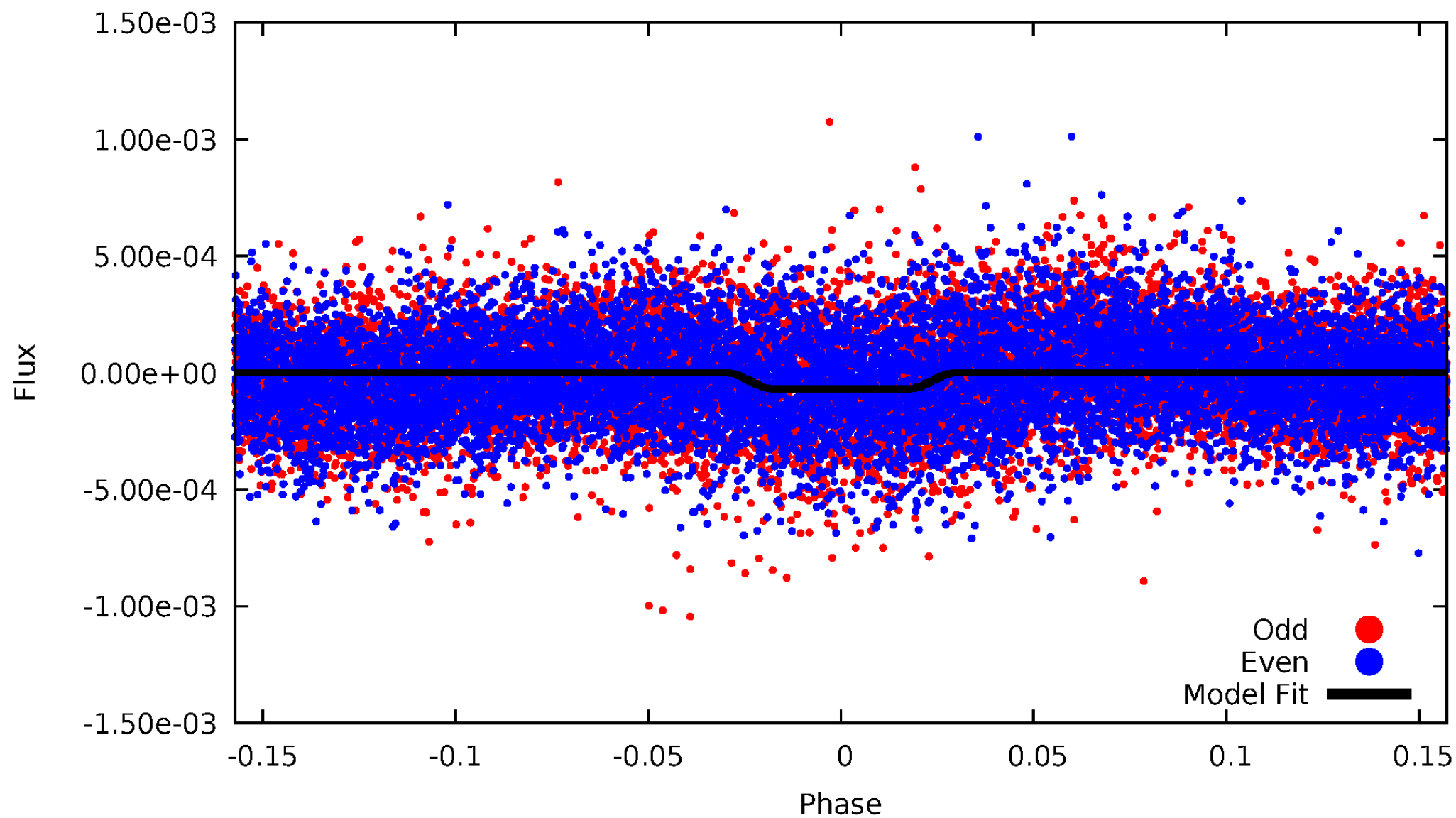
# DV Odd/Even

TCE 005614247-01



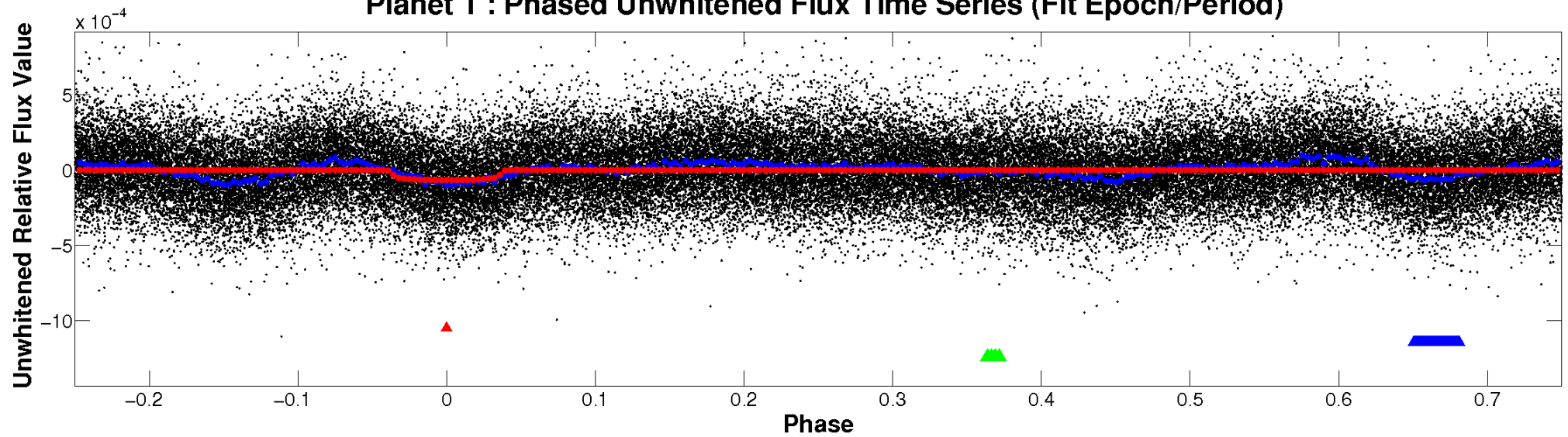
# ALT Odd/Even

TCE 005614247-01

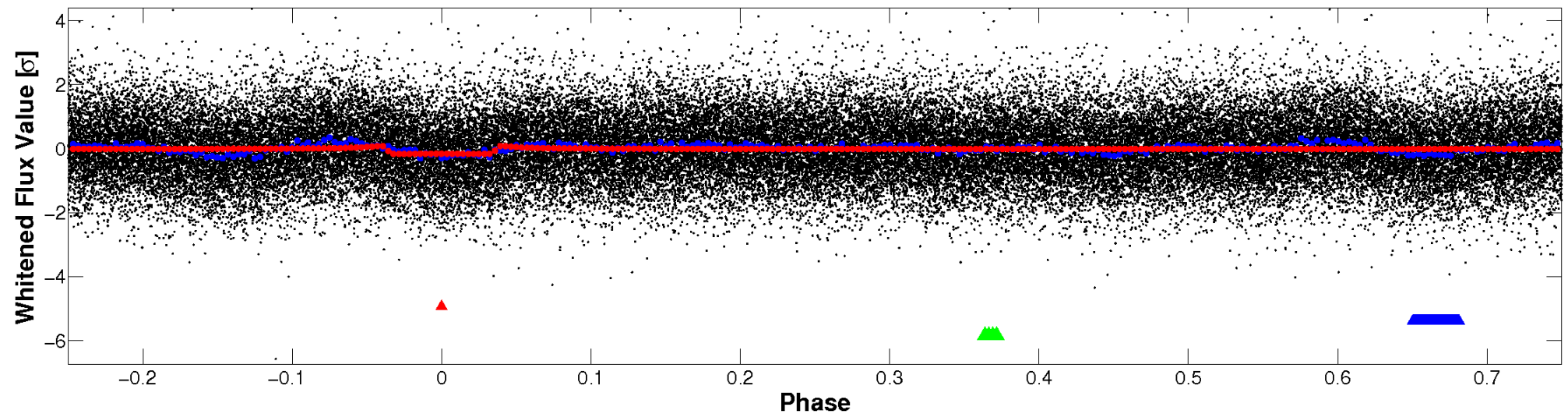


# Non-Whitened Vs. Whitened Light Curve

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

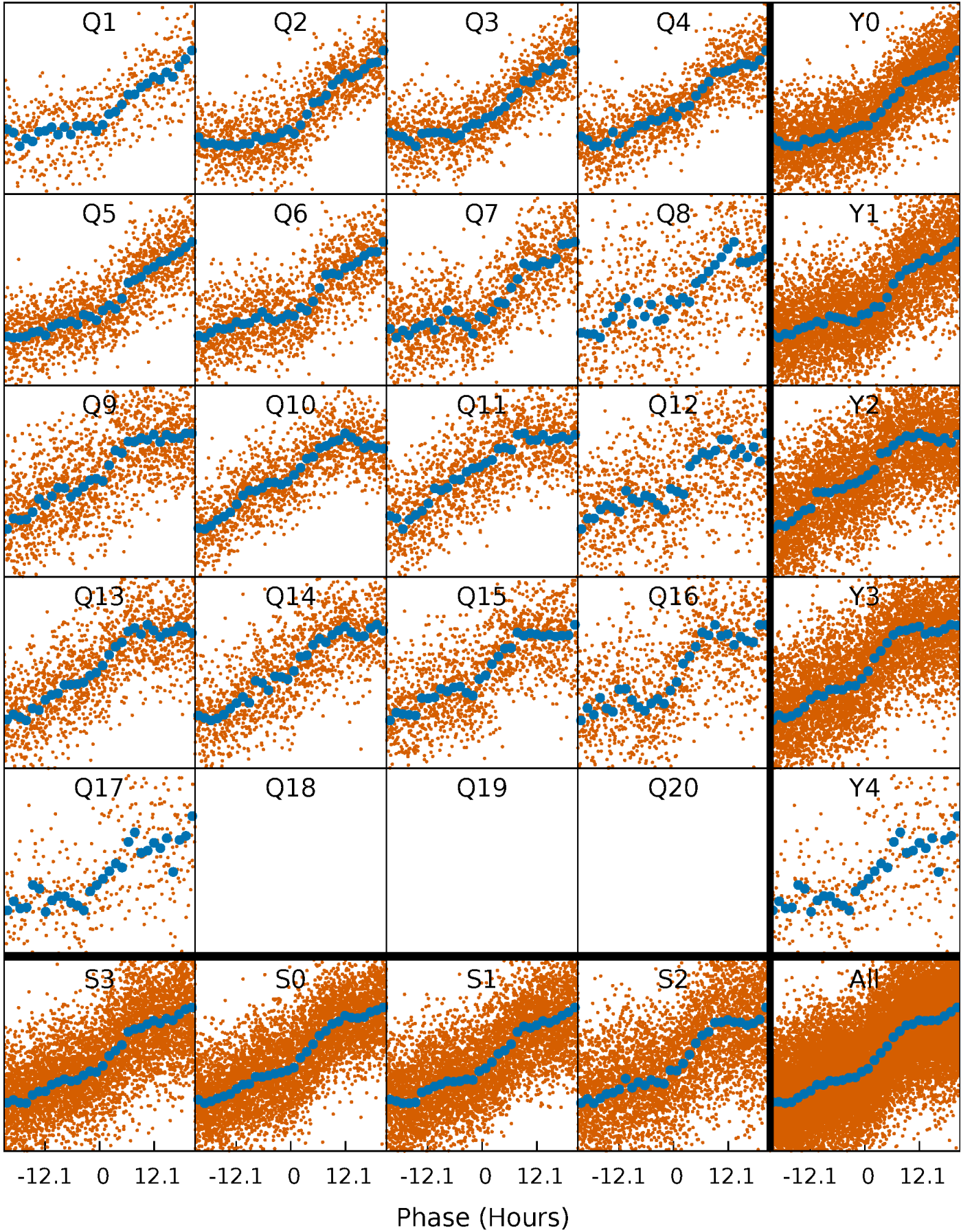


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

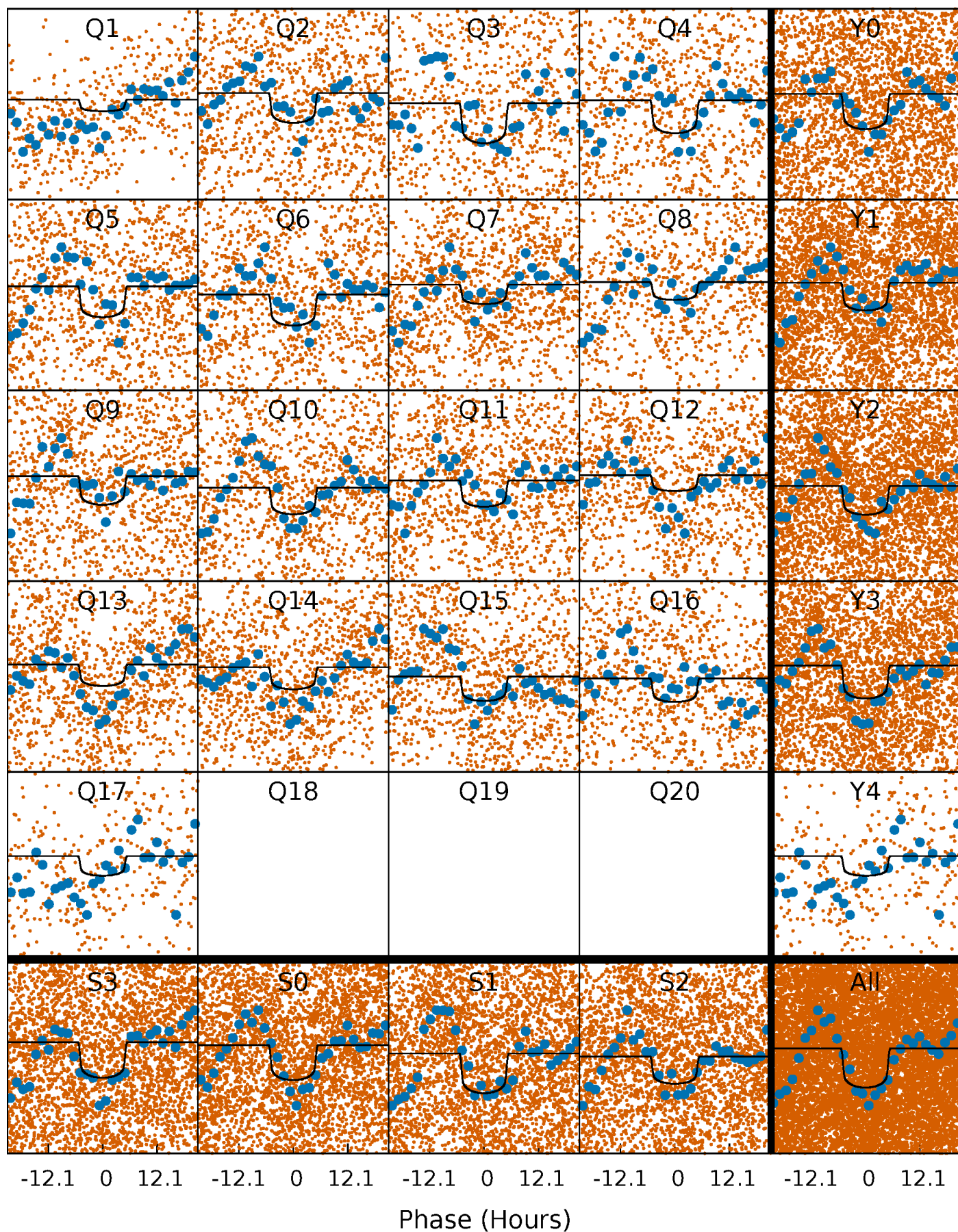
TCE 005614247-01   P= 5.716072 Days    $T_0=134.537342$  (BKJD)





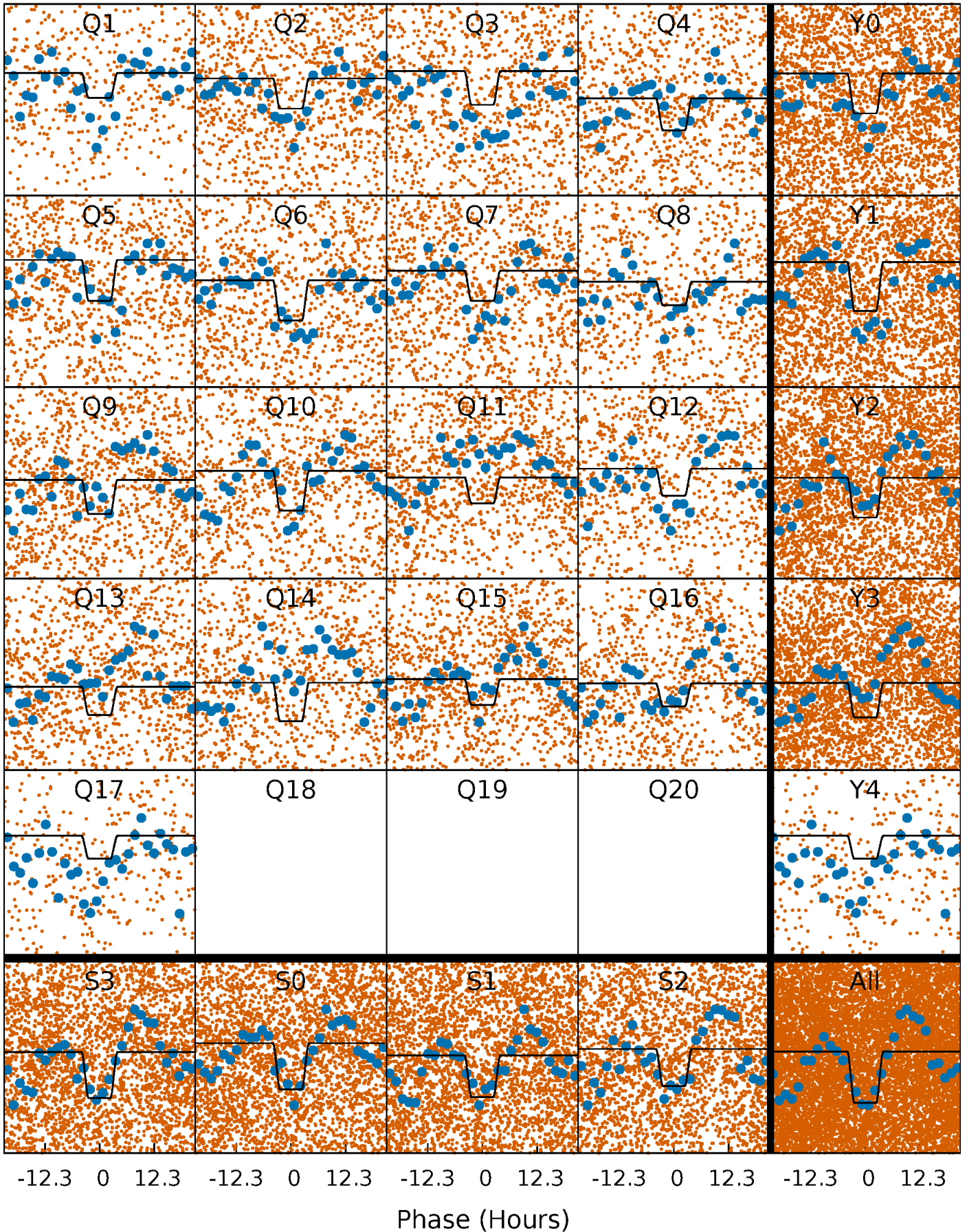
# DV Quarter-Phased Transit Curves

TCE 005614247-01 P= 5.716072 Days  $T_0=134.537342$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005614247-01 P= 5.715749 Days  $T_0=134.546646$  (BKJD)

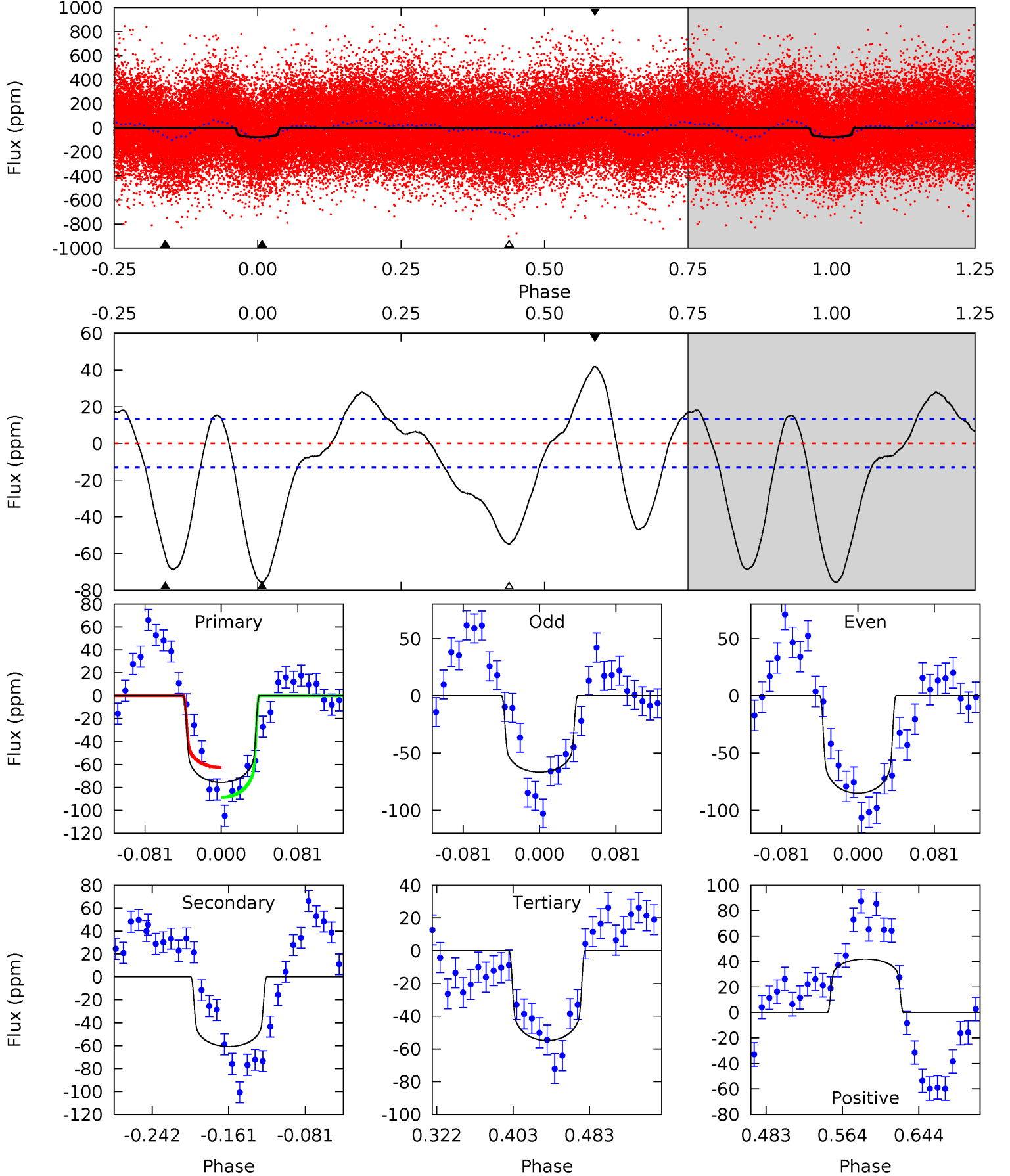




# DV Model-Shift Uniqueness Test

005614247-01, P = 5.716072 Days, E = 128.821270 Days

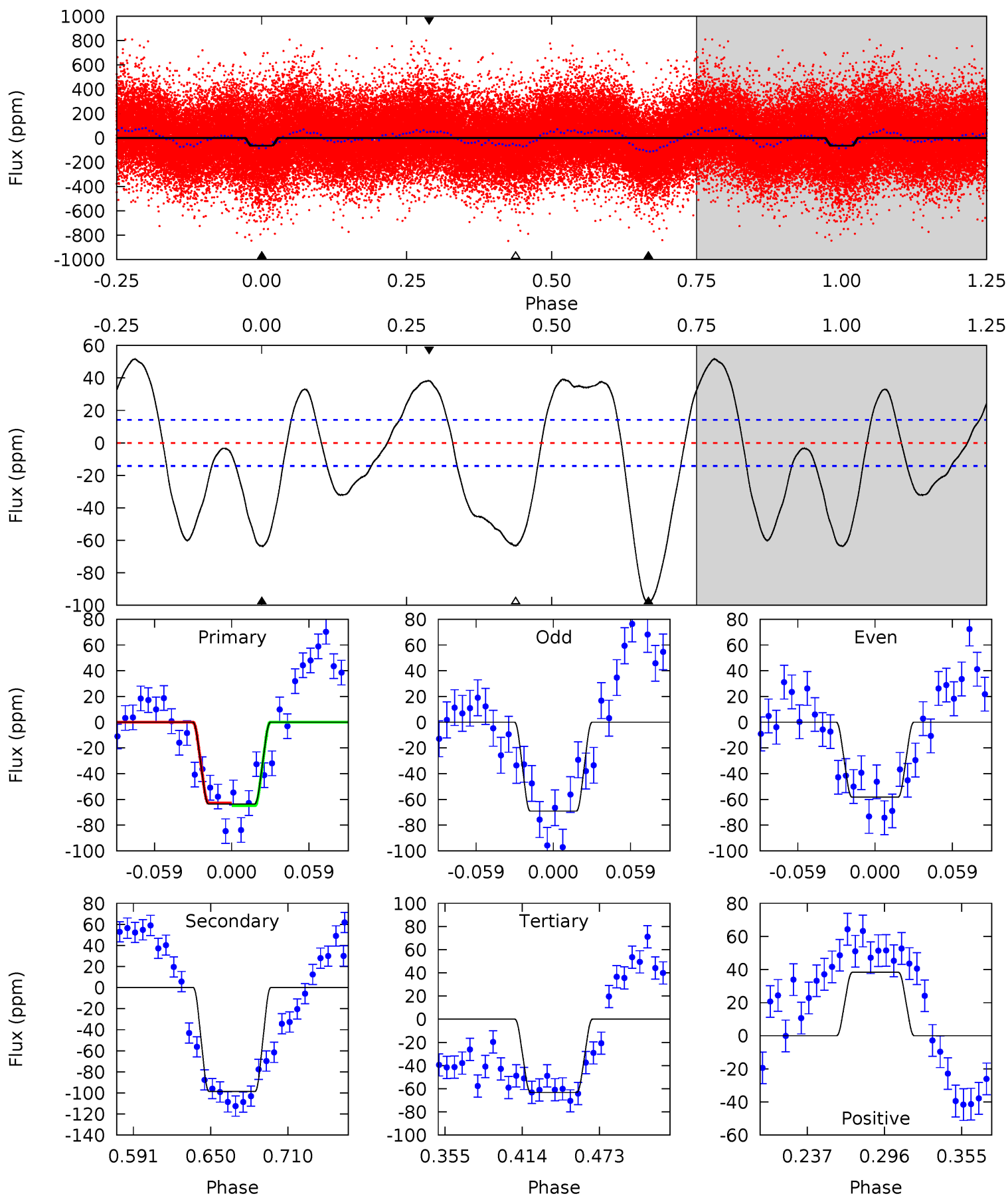
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.4	21.3	19.2	14.7	4.61	1.75	8.81	7.23	11.8	2.05	6.58	3.24	1.02	0.36	4.60



# Alt Model-Shift Uniqueness Test

005614247-01, P = 5.715749 Days, E = 128.830897 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
20.9	32.5	20.8	12.6	4.67	1.89	11.4	0.09	8.31	11.6	19.8	1.78	0.99	0.34	0.31





### Stellar Parameters For KIC 005614247

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6802^{+189}_{-283}$	$4.084^{+0.209}_{-0.171}$	$-0.060^{+0.250}_{-0.350}$	$1.797^{+0.553}_{-0.502}$	$1.433^{+0.208}_{-0.277}$	$0.348^{+0.425}_{-0.167}$
	+3%/-4%	+5%/-4%	+417%/-583%	+31%/-28%	+15%/-19%	+122%/-48%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 005614247-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-61 \pm 3$	$1.69^{+0.33}_{-0.31}$	$2100^{+163}_{-161}$	$6354^{+457}_{-380}$	$57^{+29}_{-17}$
Alt.	$-99 \pm 3$	$1.61^{+0.33}_{-0.26}$	$2105^{+166}_{-153}$	$7462^{+625}_{-483}$	$103^{+41}_{-32}$

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

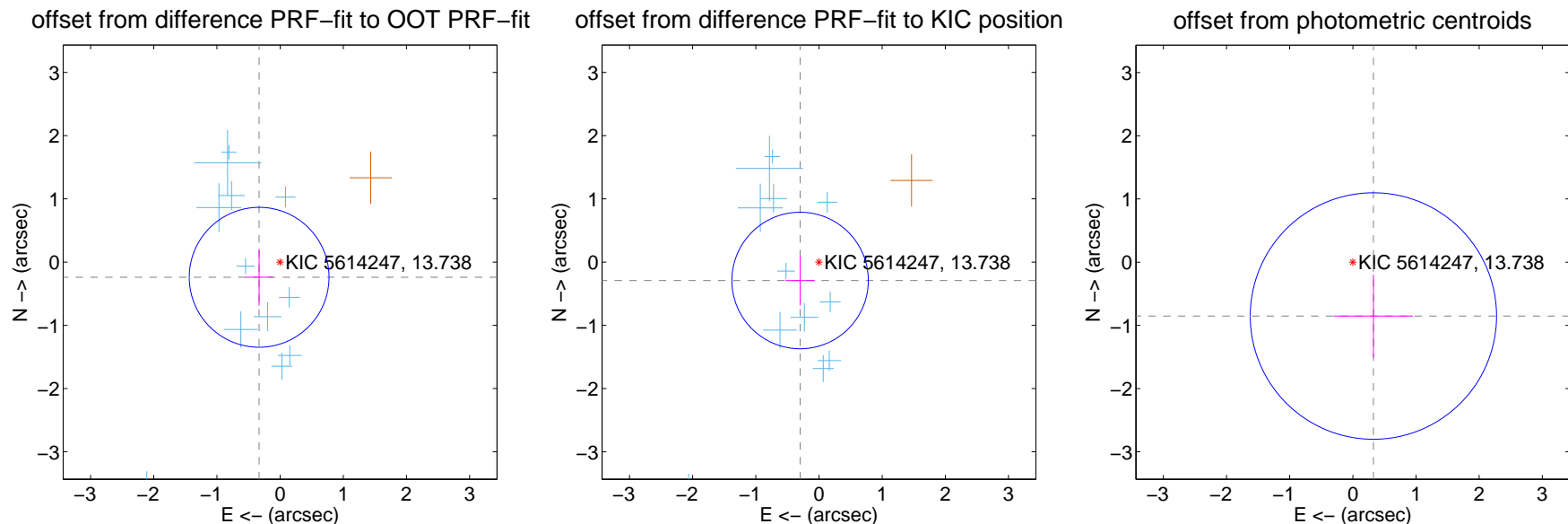
## DV Centroid Data

Supplemental centroid analysis for 005614247-01. Kepler magnitude: 13.74. Transit SNR 11.15

There are 12 quarters with good PRF difference image offsets

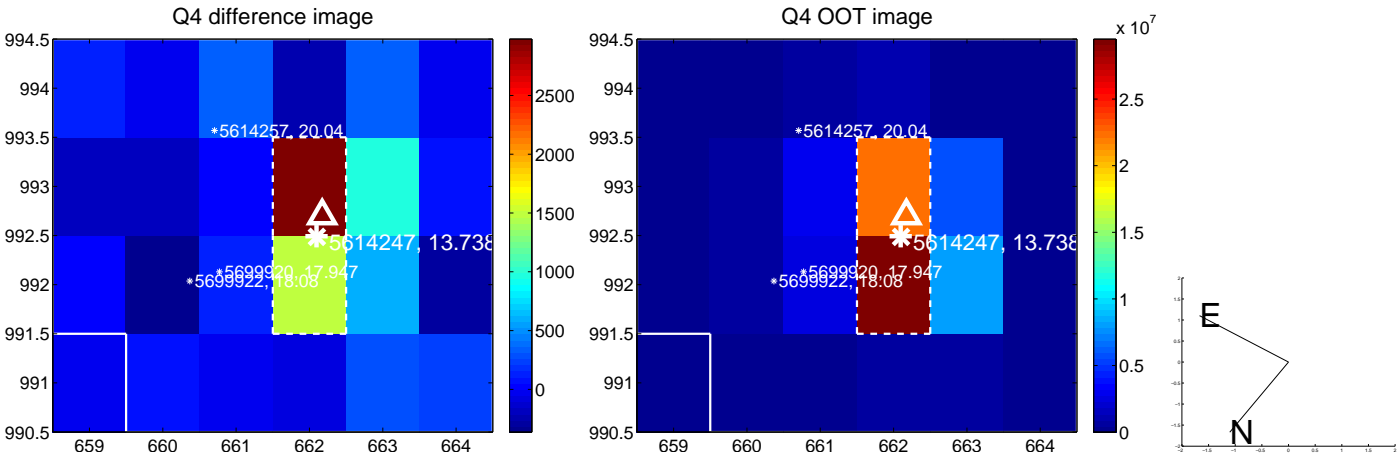
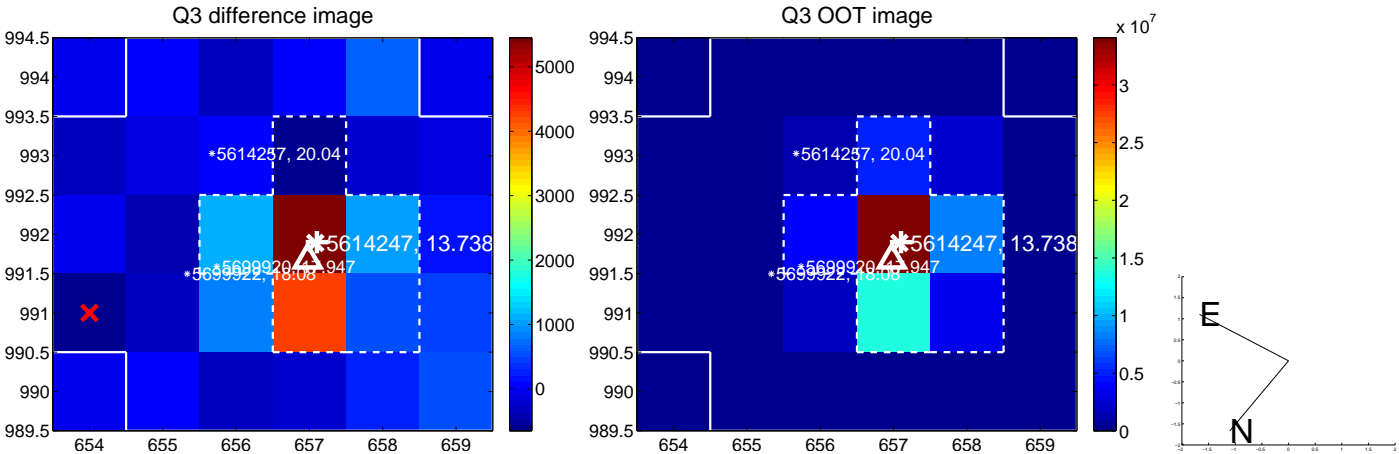
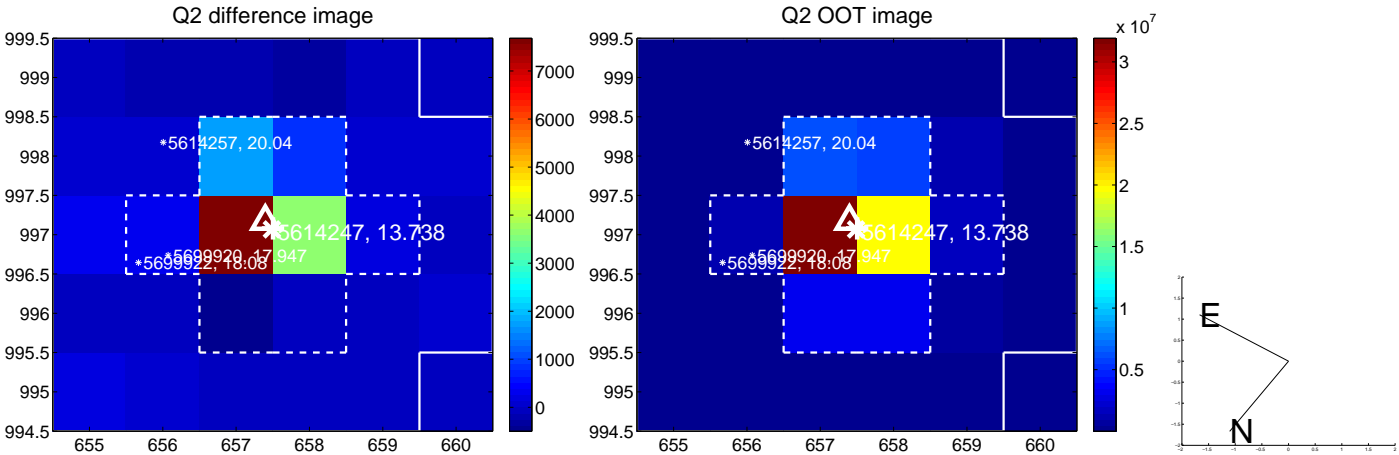
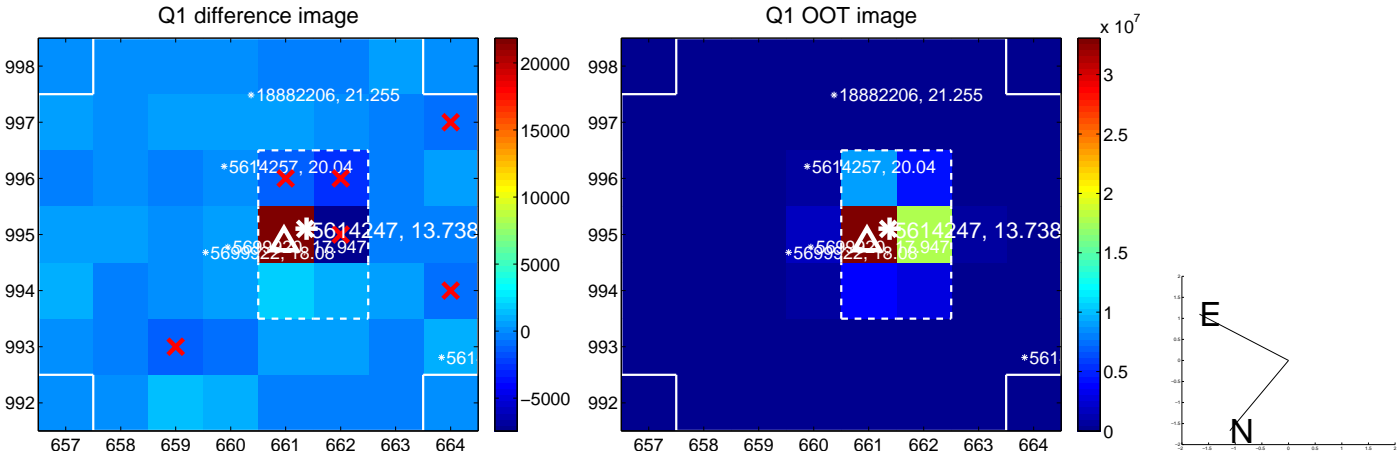
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.410 \pm 0.369$	1.11	$0.332 \pm 0.221$	$-0.240 \pm 0.446$
PRF-fit source offset from KIC position	$0.417 \pm 0.360$	1.16	$0.299 \pm 0.232$	$-0.291 \pm 0.395$
photometric centroid source offset	$0.91 \pm 0.65$	1.40	$-0.33 \pm 0.63$	$-0.85 \pm 0.65$

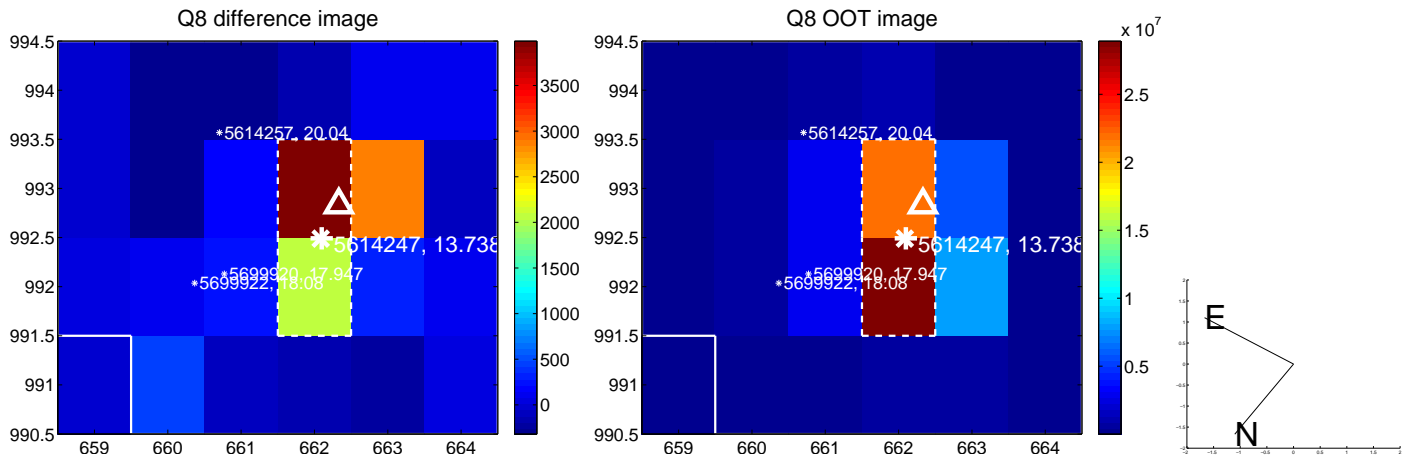
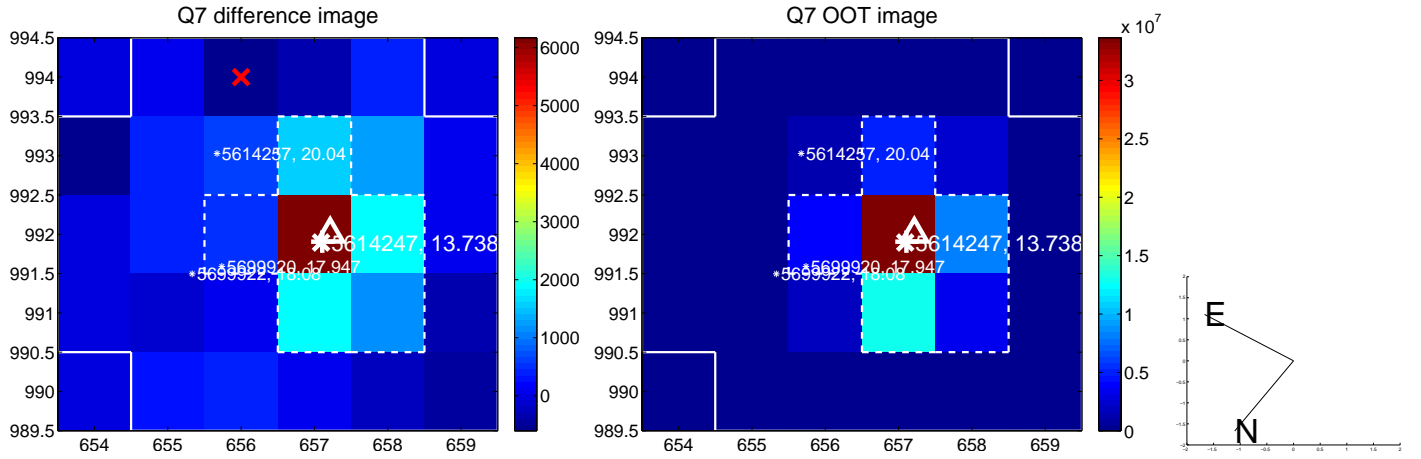
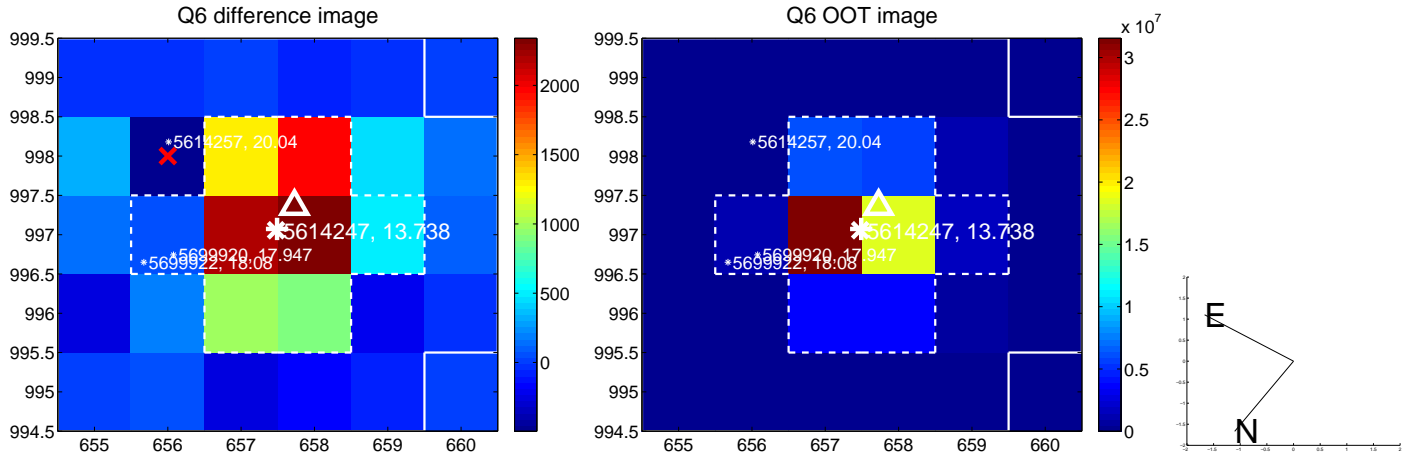
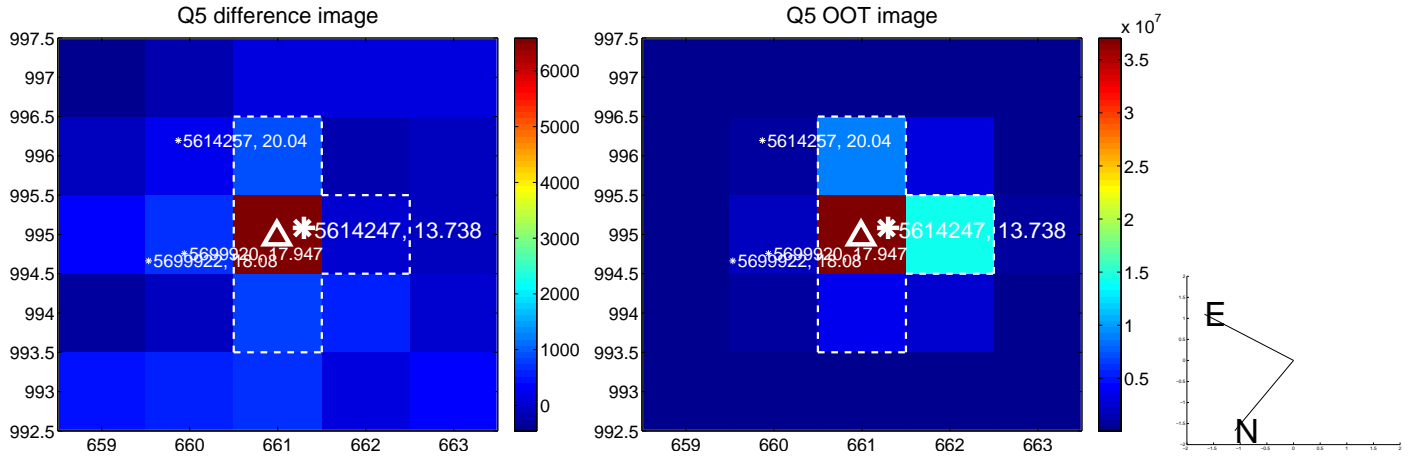


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

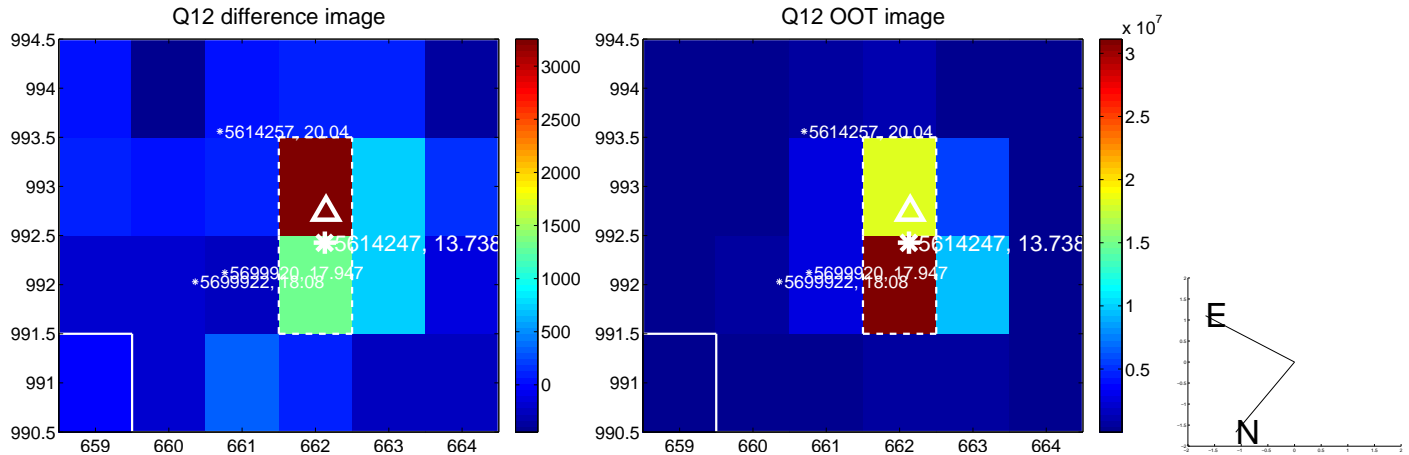
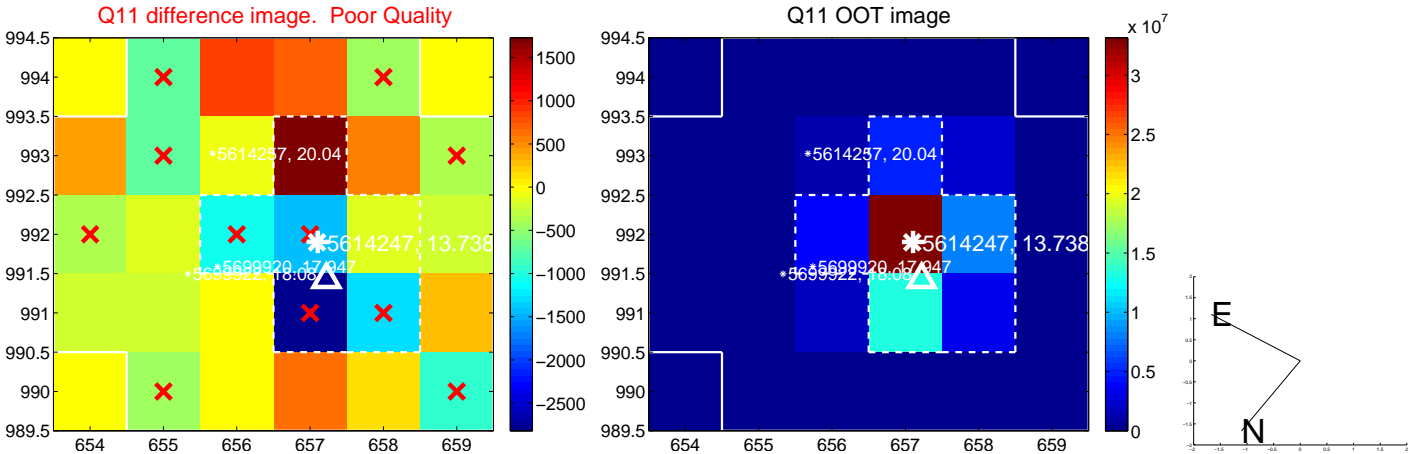
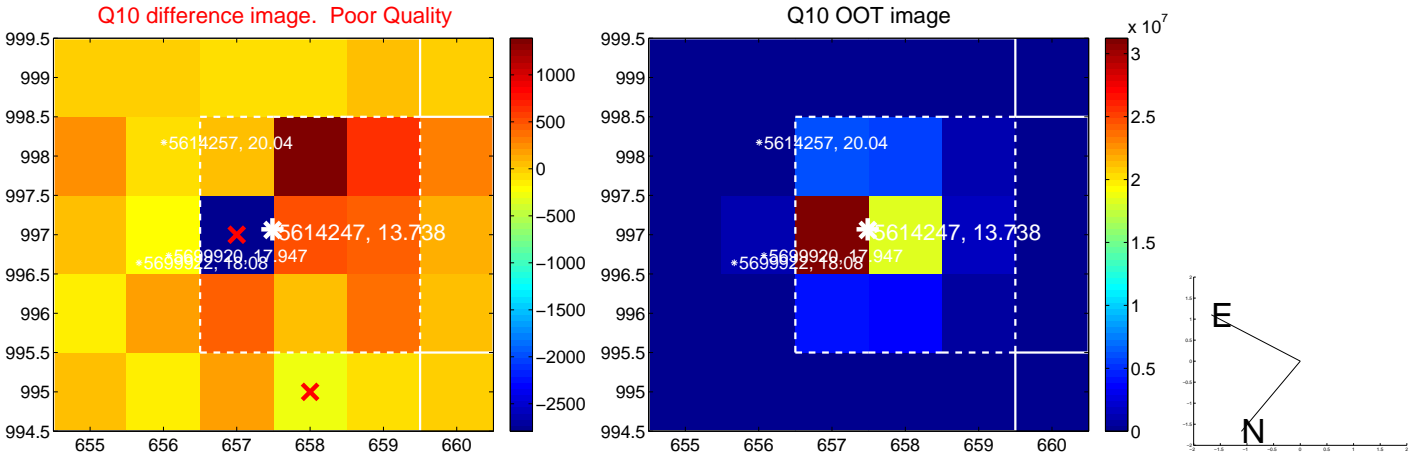
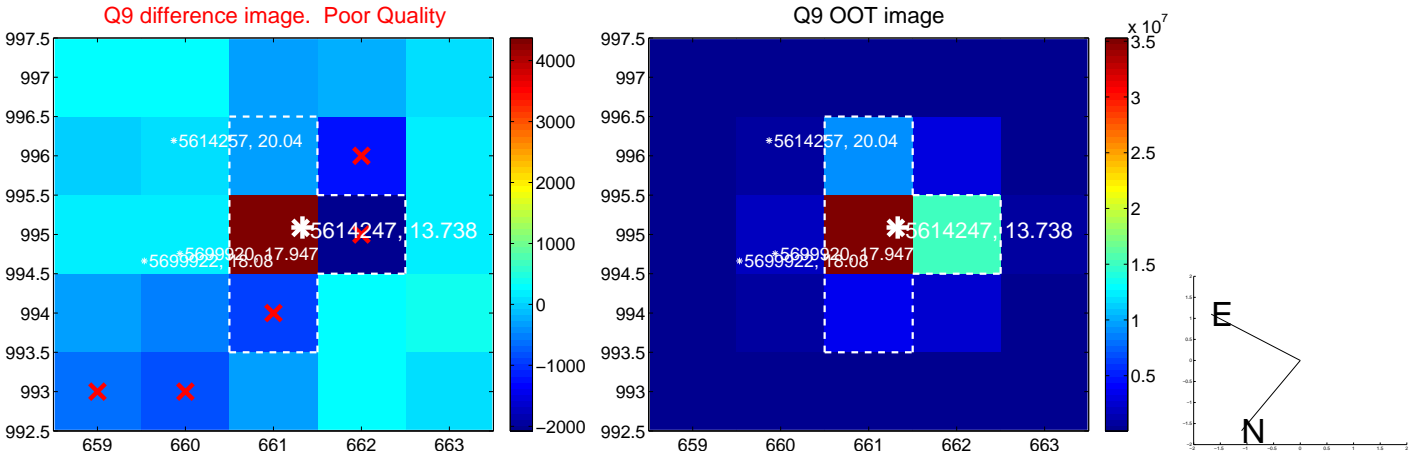


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

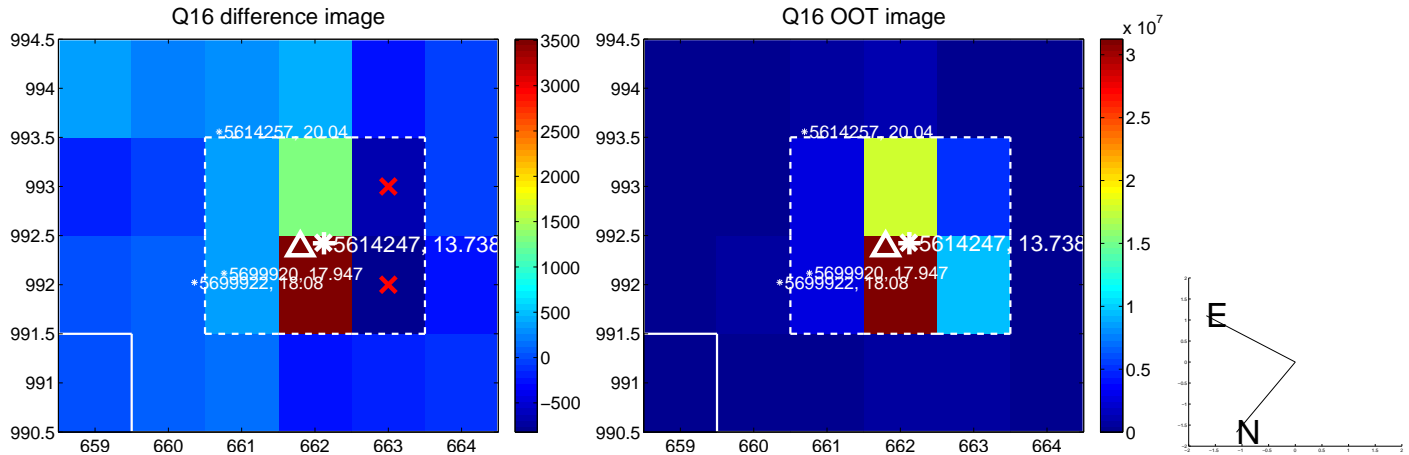
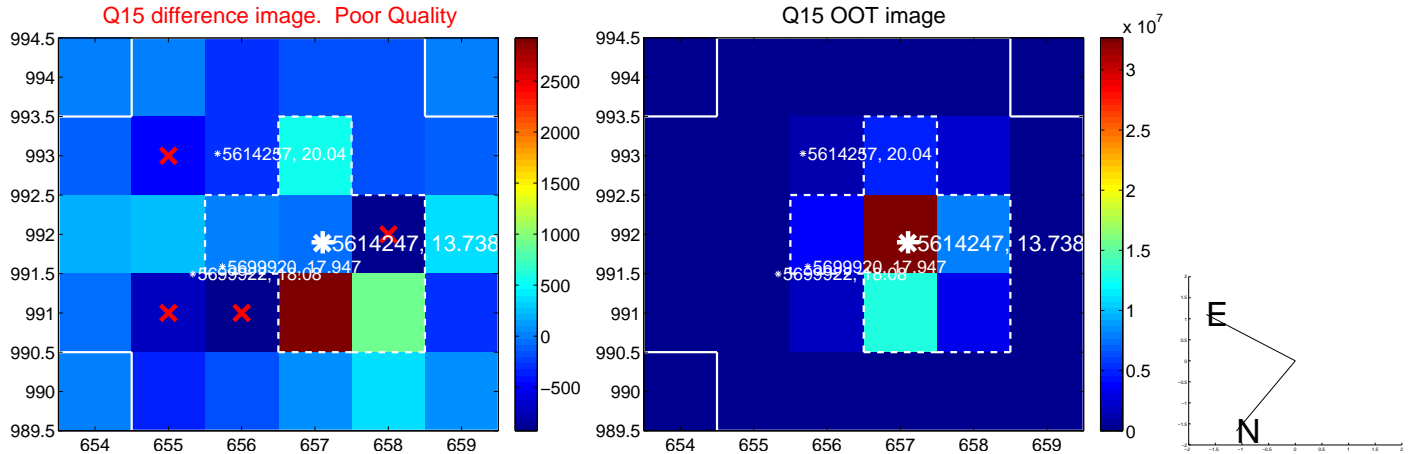
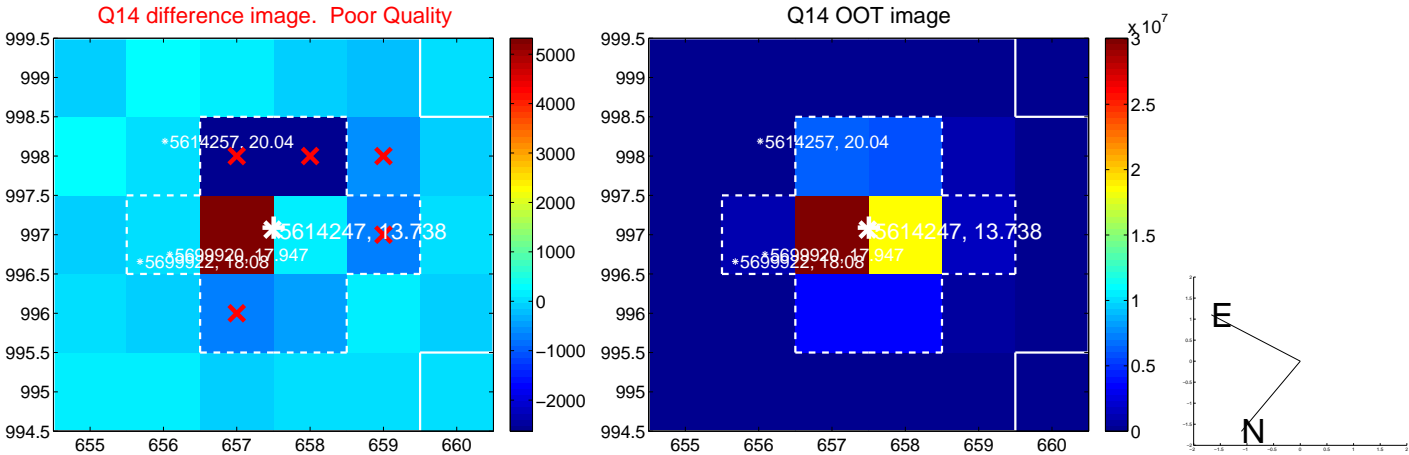
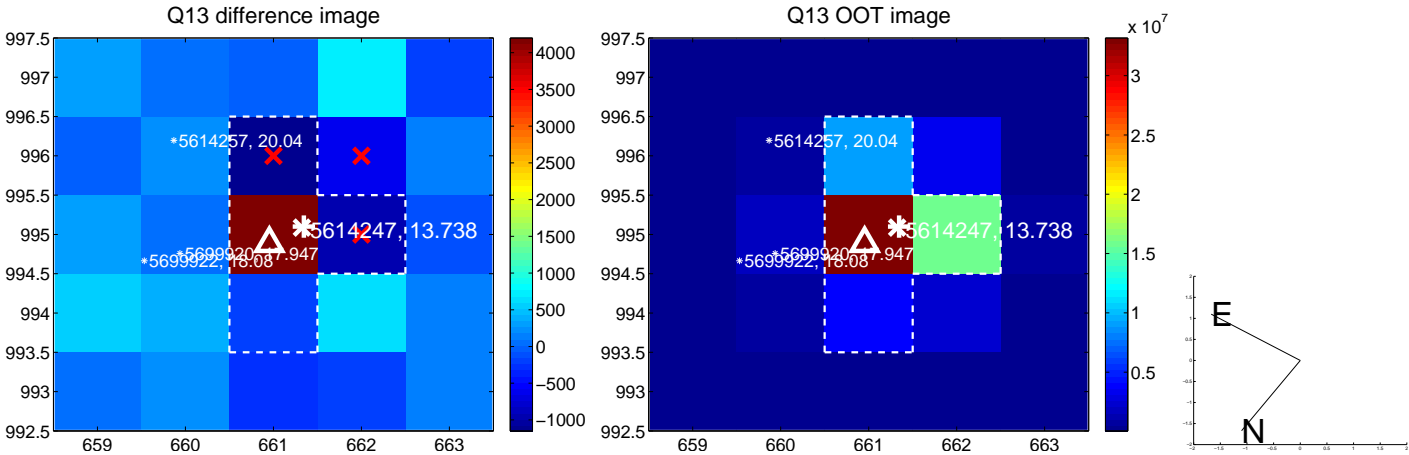




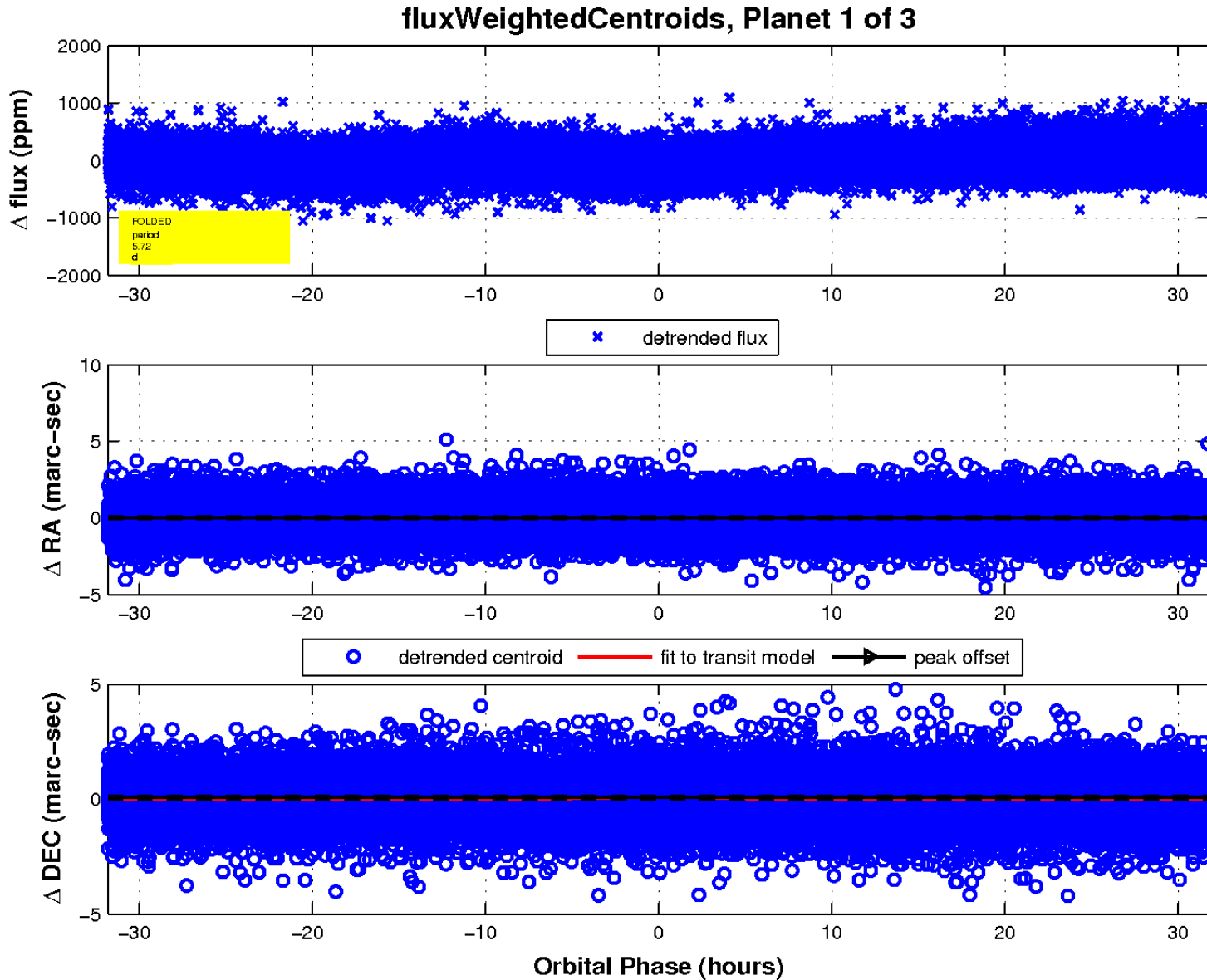
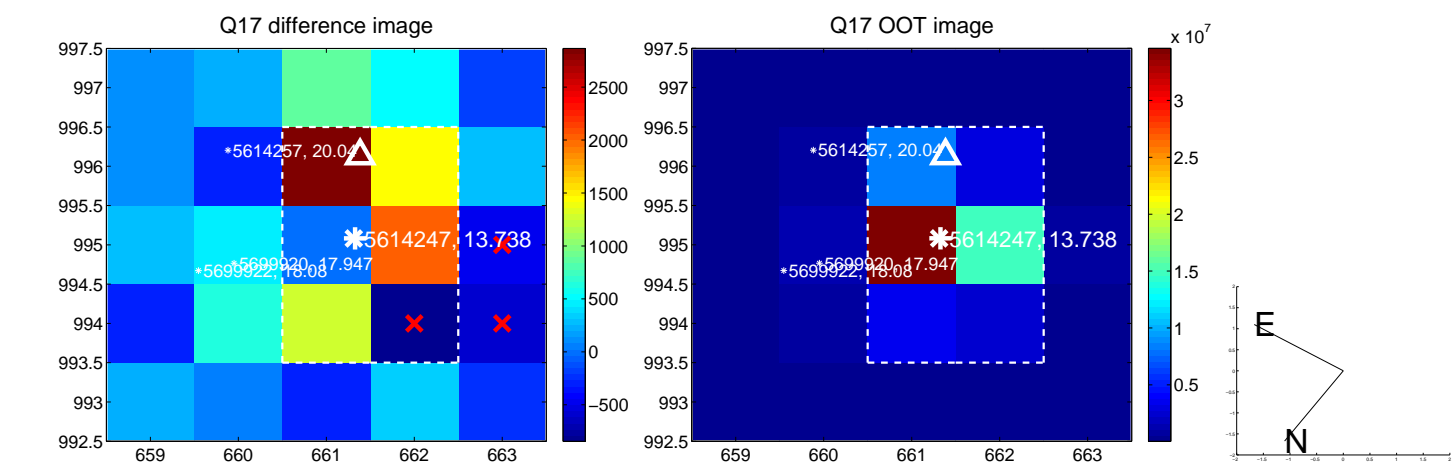
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

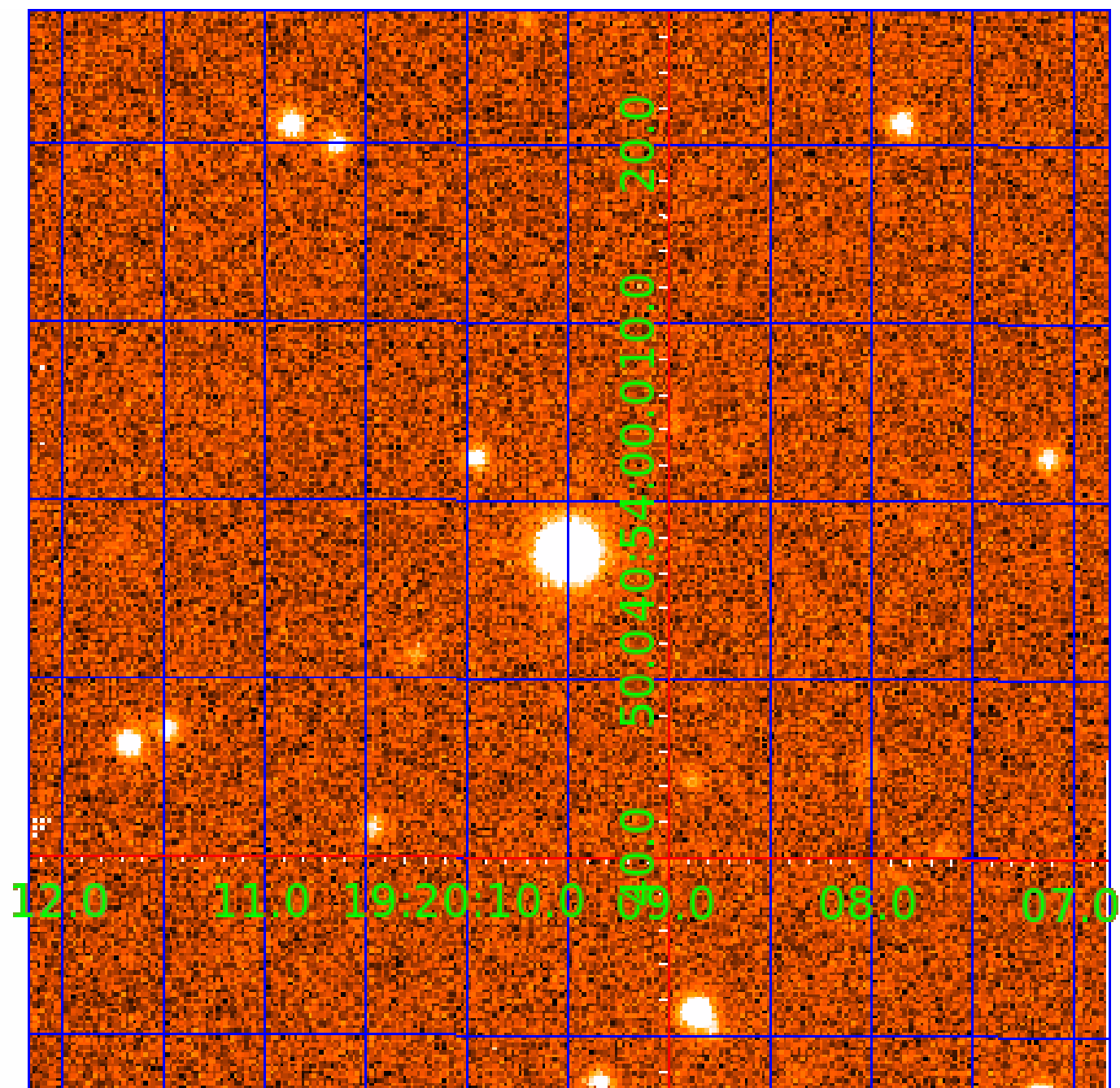


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 005614247

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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005614247-02	OBS	No	5.715381	132.714984	95.2	14.405	12.3	14.1	1.80	6802	2.50	1246.65
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005614247-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
005614247-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
005614247-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

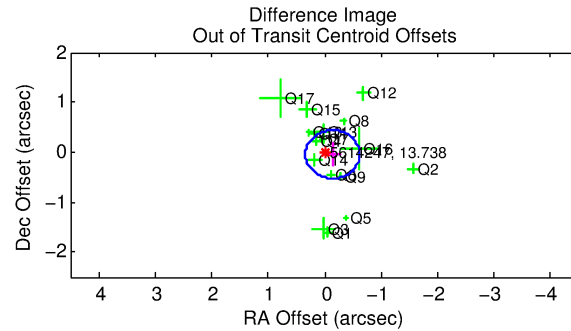
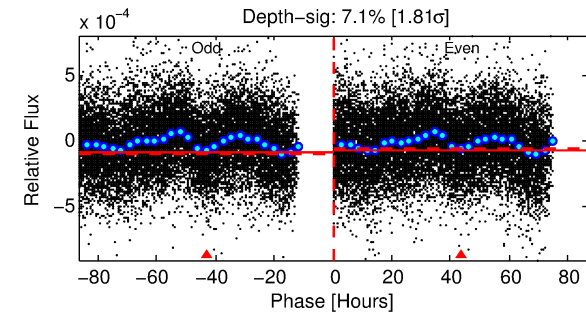
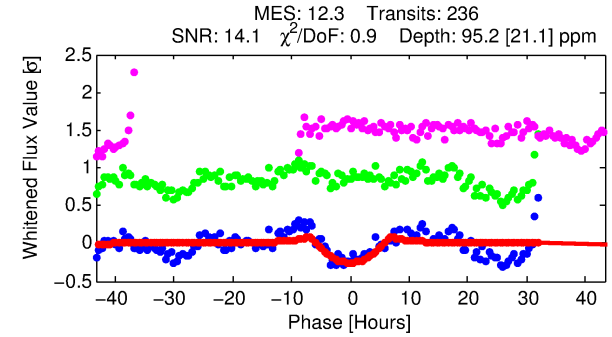
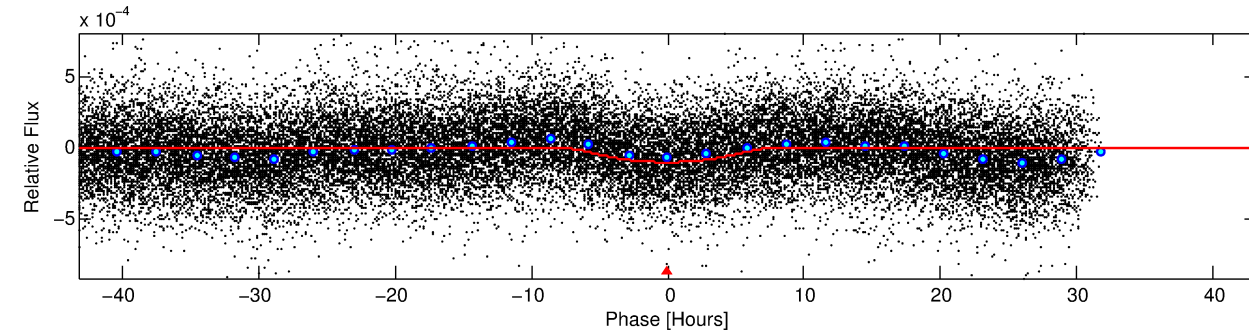
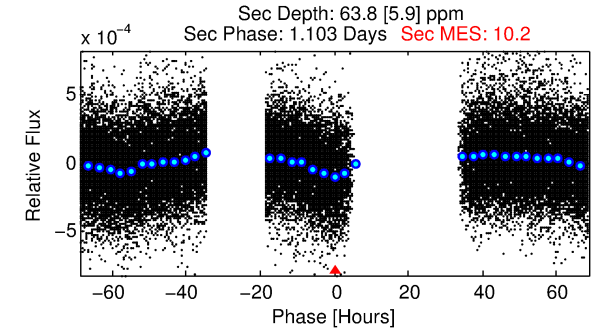
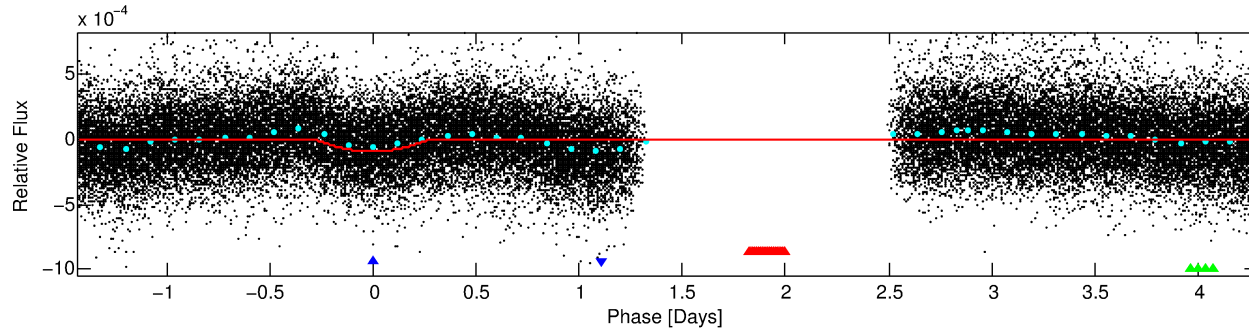
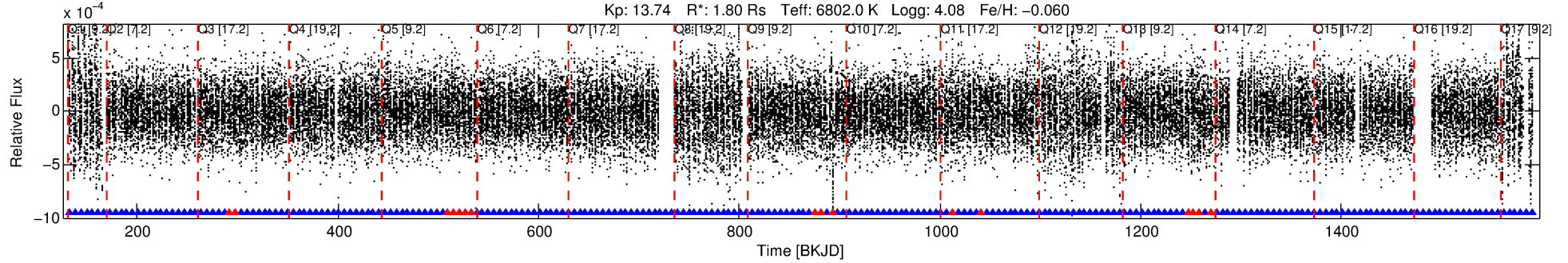
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005614247-02

No Significant Match Found

# DV One-Page Summary

KIC: 5614247 Candidate: 2 of 3 Period: 5.715 d



## DV Fit Results:

Period = 5.71538 [0.00013] d  
Epoch = 132.7150 [0.0182] BKJD  
Rp/R\* = 0.0127 [0.0025]  
a/R\* = 1.19 [0.04]  
b = 0.99 [0.01]  
Seff = 1246.65 [518.10]  
Teq = 1515 [157] K  
Rp = 2.50 [0.91] Re  
a = 0.0705 [0.0184] AU  
Ag = 28.00 [15.53] [1.74σ]  
Teffp = 5389 [588] K [6.37σ]

## DV Diagnostic Results:

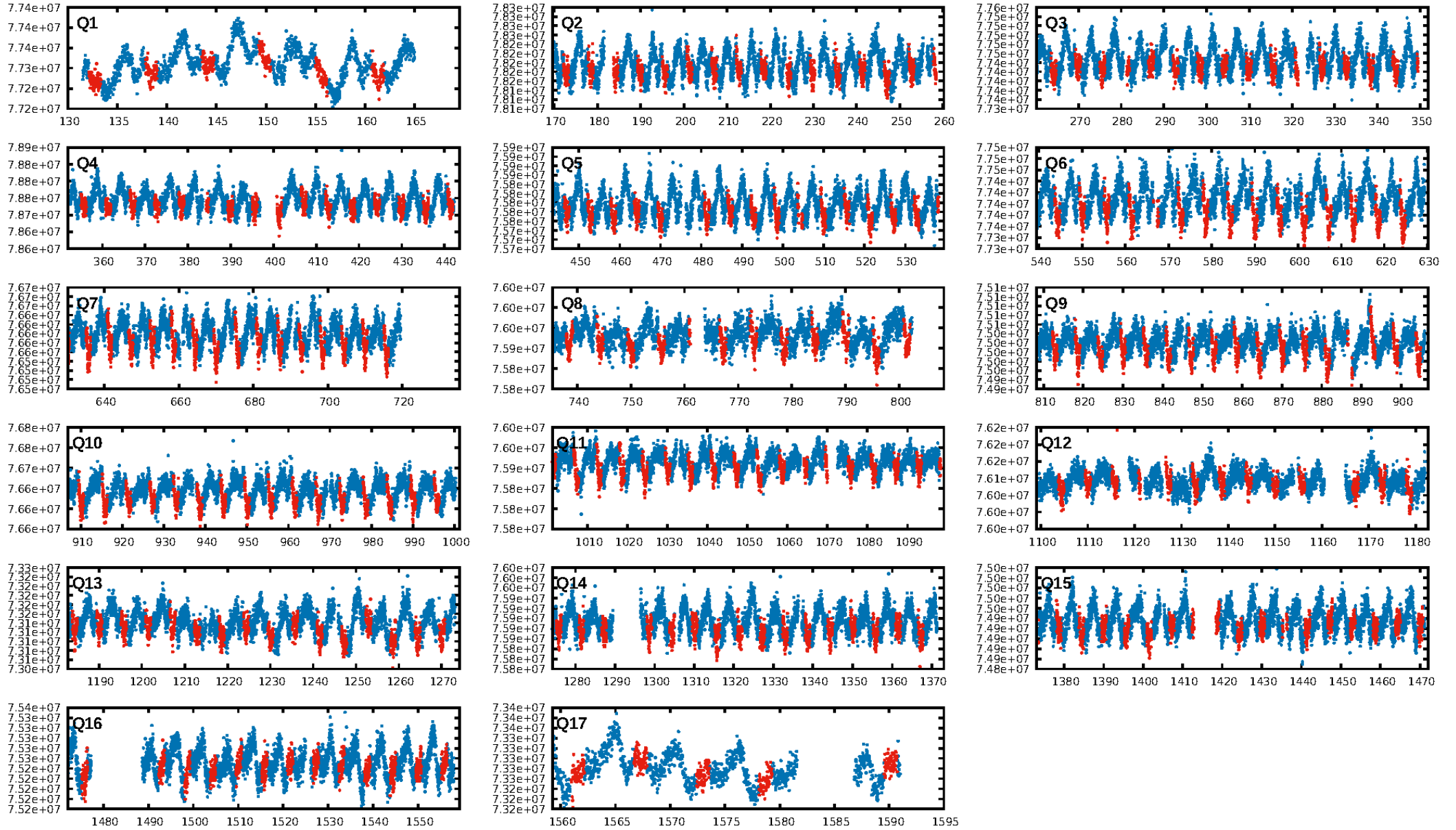
ShortPeriod-sig: N/A  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.98e-25  
RollingBand-fgt: 0.93 [209/225]  
GhostDiagnostic-chr: 0.9488  
Centroid-sig: 2.7%  
Centroid-so: 0.831 arcsec [1.65σ]  
OotOffset-rm: 0.145 arcsec [0.91σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 0.208 arcsec [1.22σ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:02:18 Z

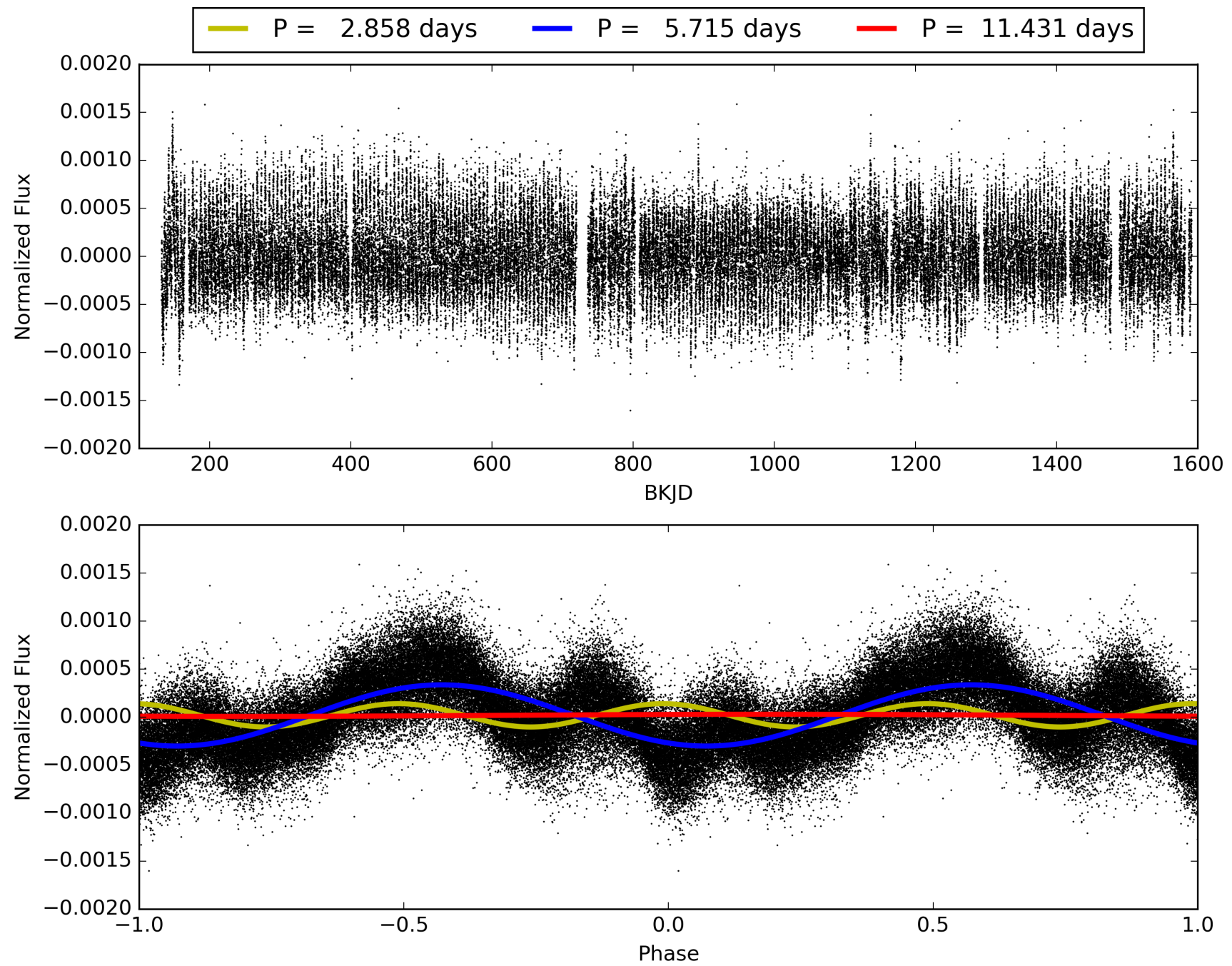
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005614247-02, PDC Light Curves

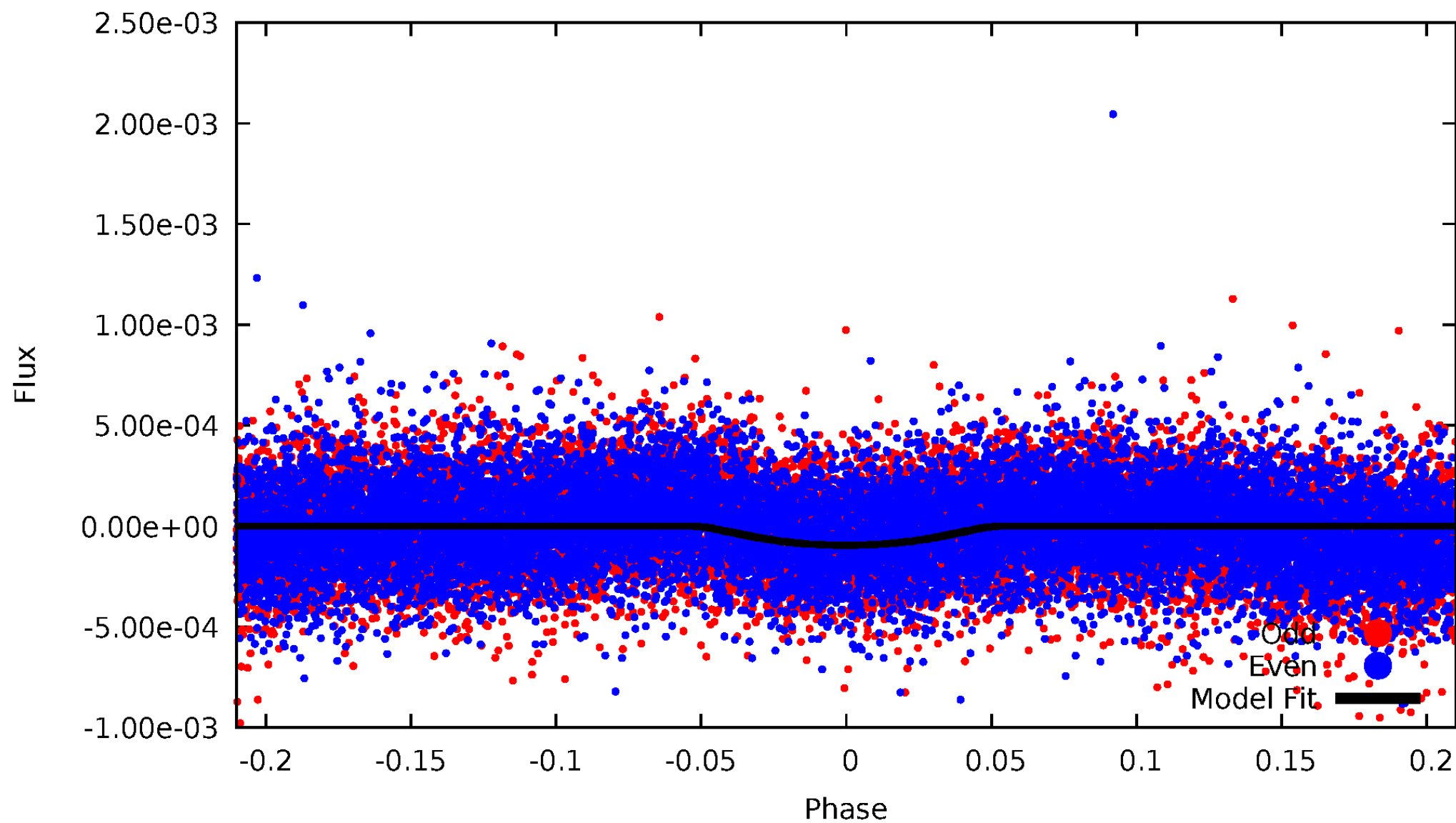


TCE 005614247-02



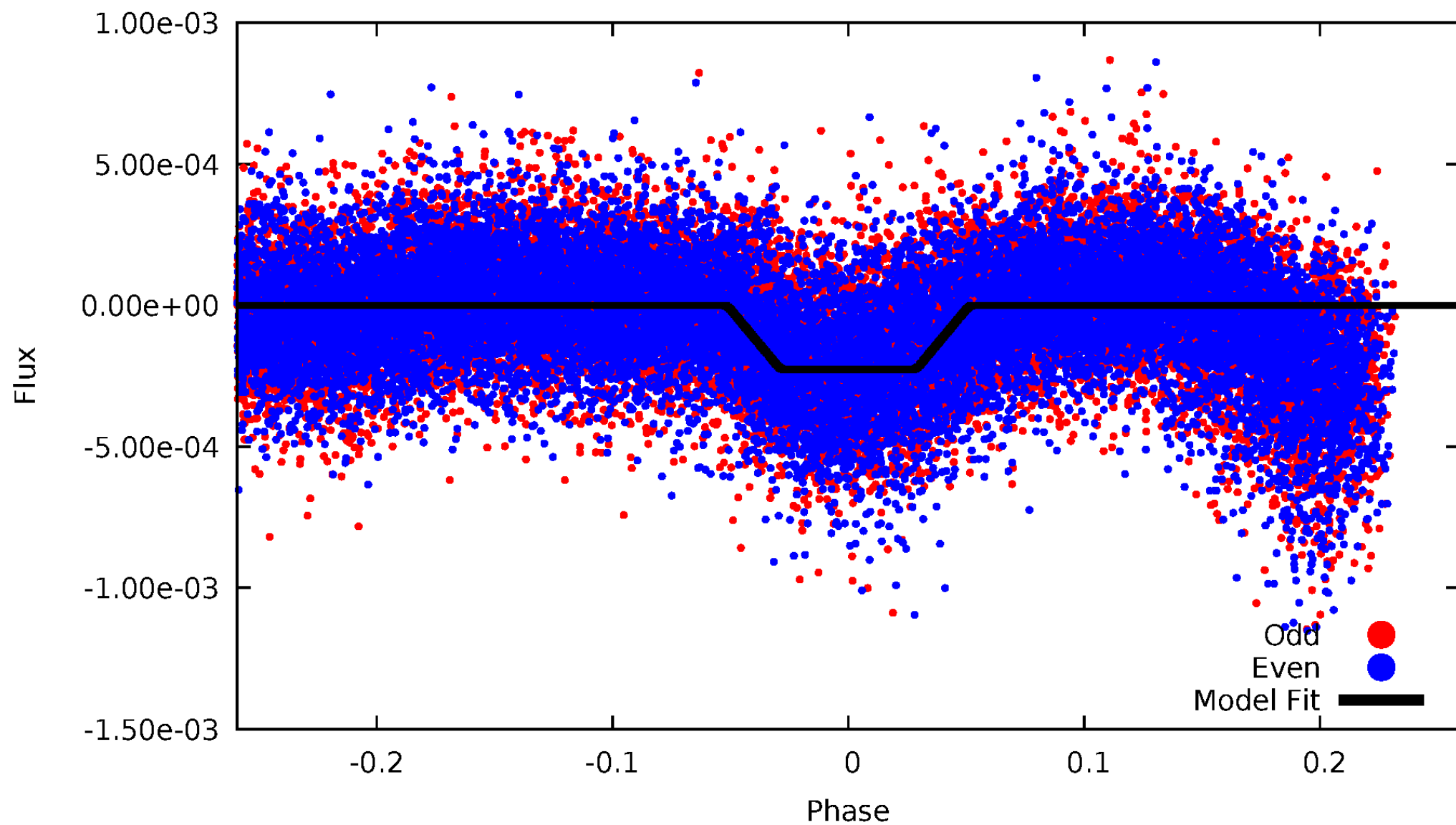
# DV Odd/Even

TCE 005614247-02



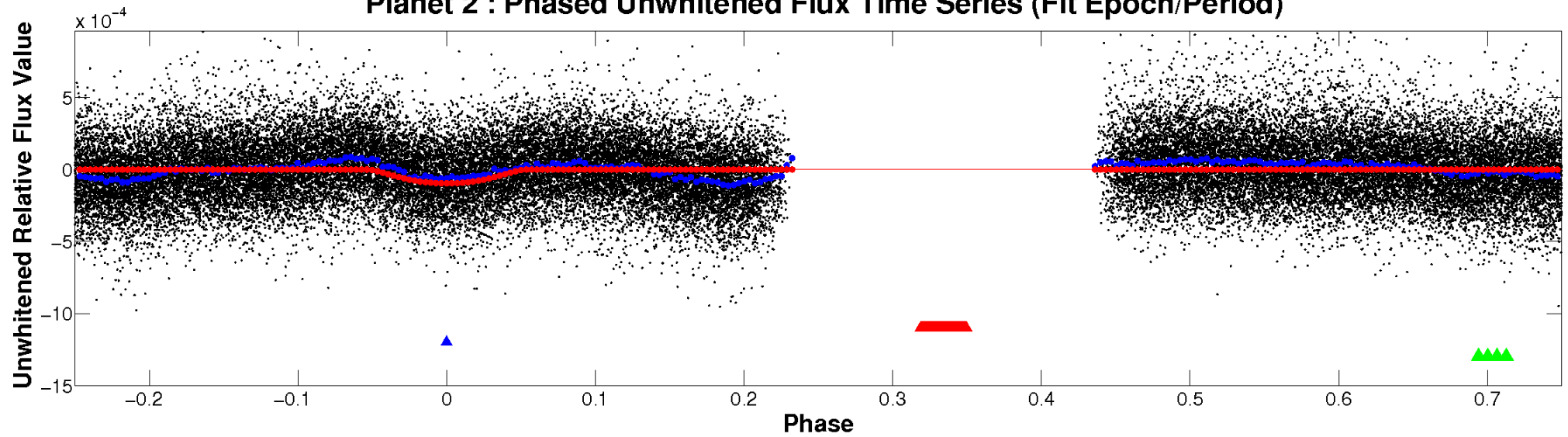
# ALT Odd/Even

TCE 005614247-02

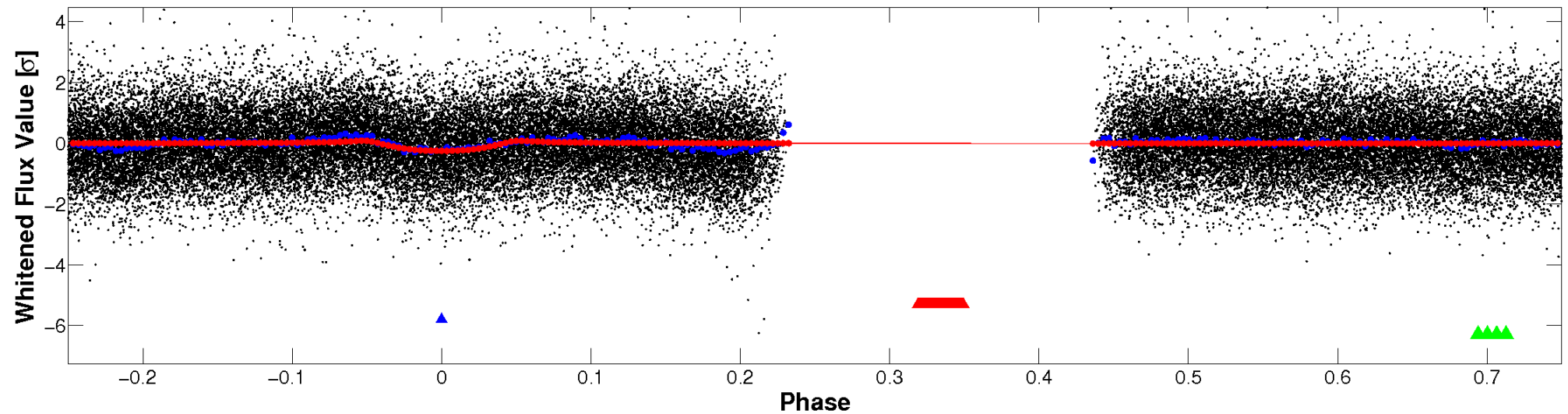


# Non-Whitened Vs. Whitened Light Curve

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



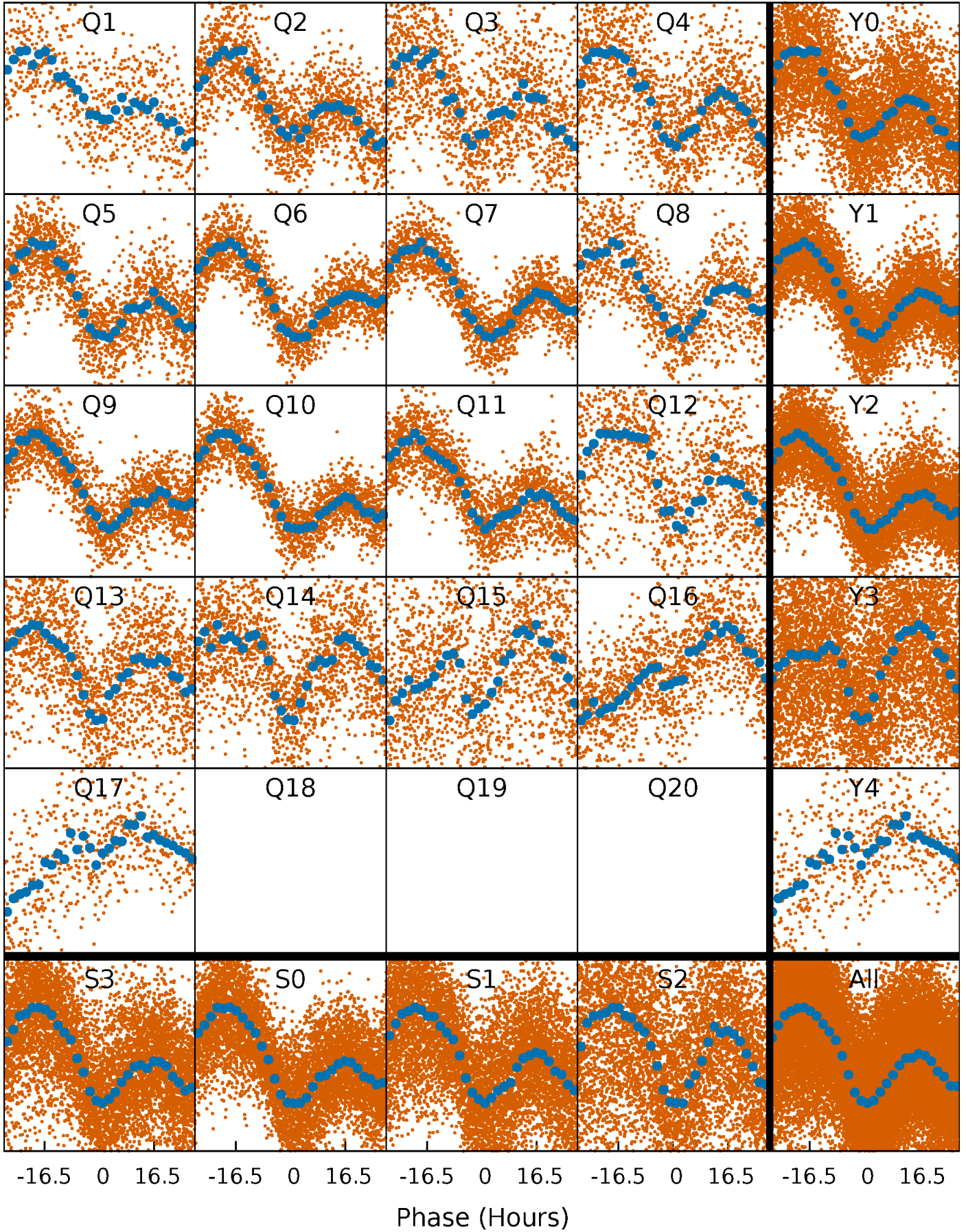
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

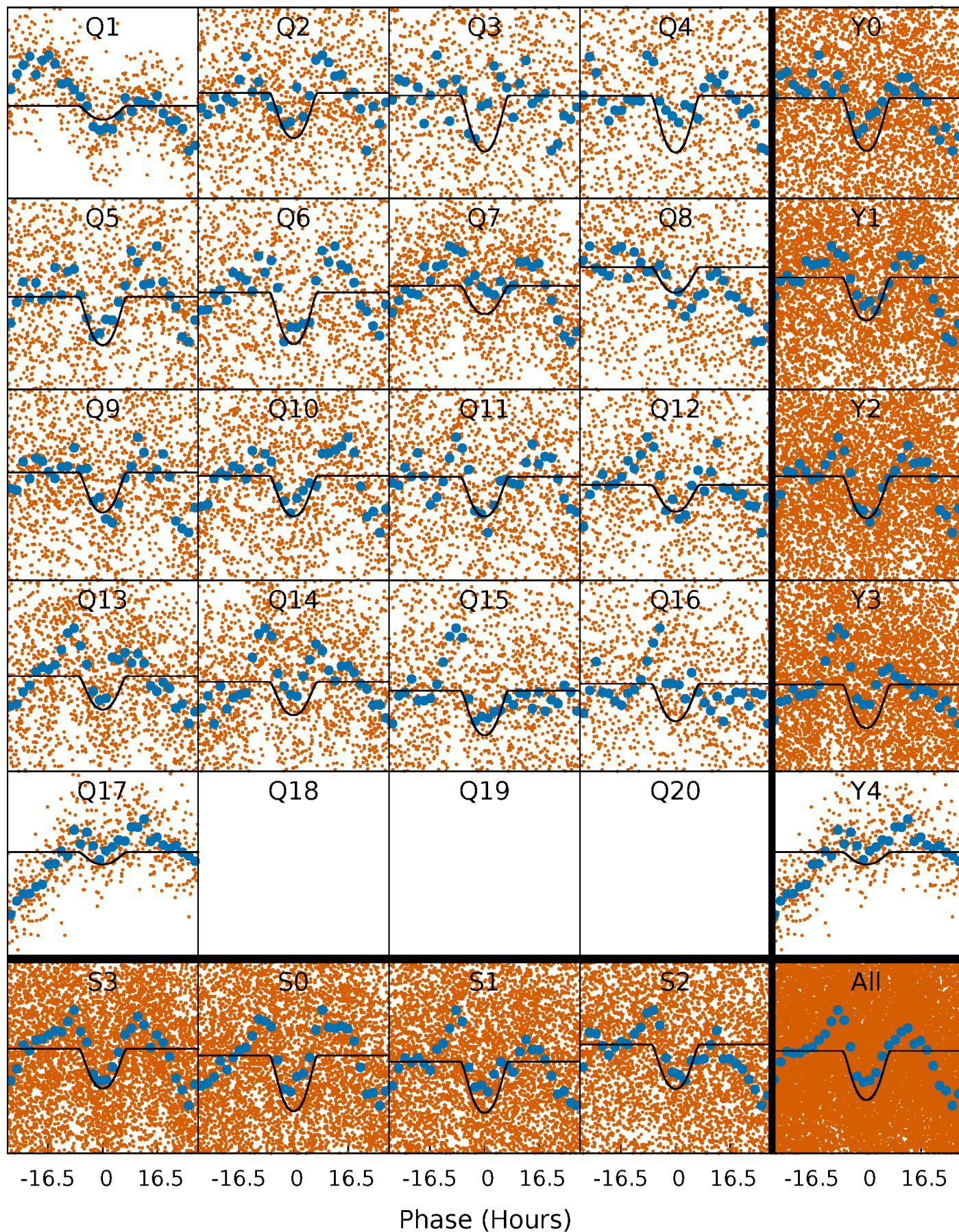
TCE 005614247-02   P= 5.715381 Days    $T_0=132.714983$  (BKJD)





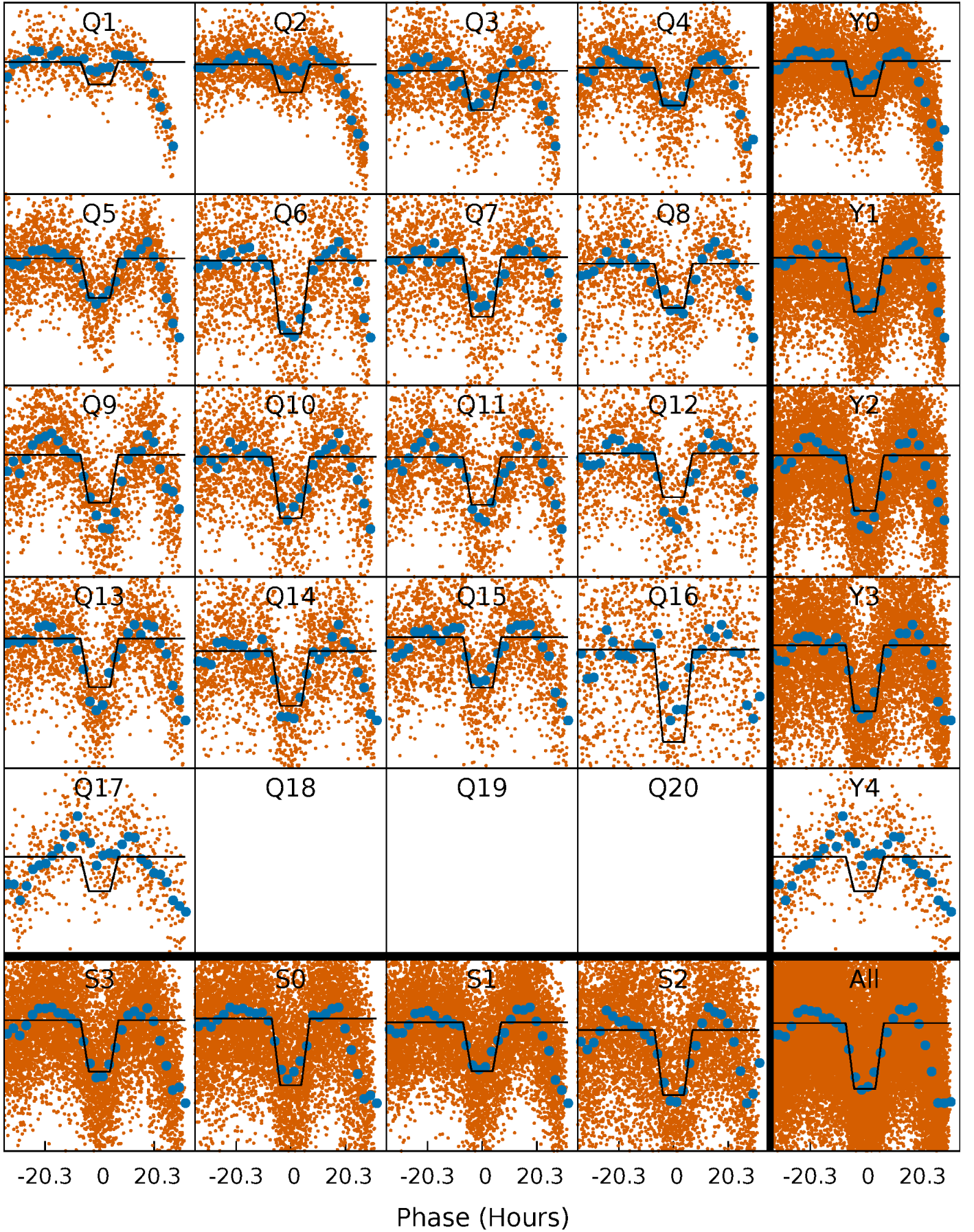
# DV Quarter-Phased Transit Curves

TCE 005614247-02 P= 5.715381 Days  $T_0=132.714983$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005614247-02   P= 5.715427 Days    $T_0=132.700516$  (BKJD)

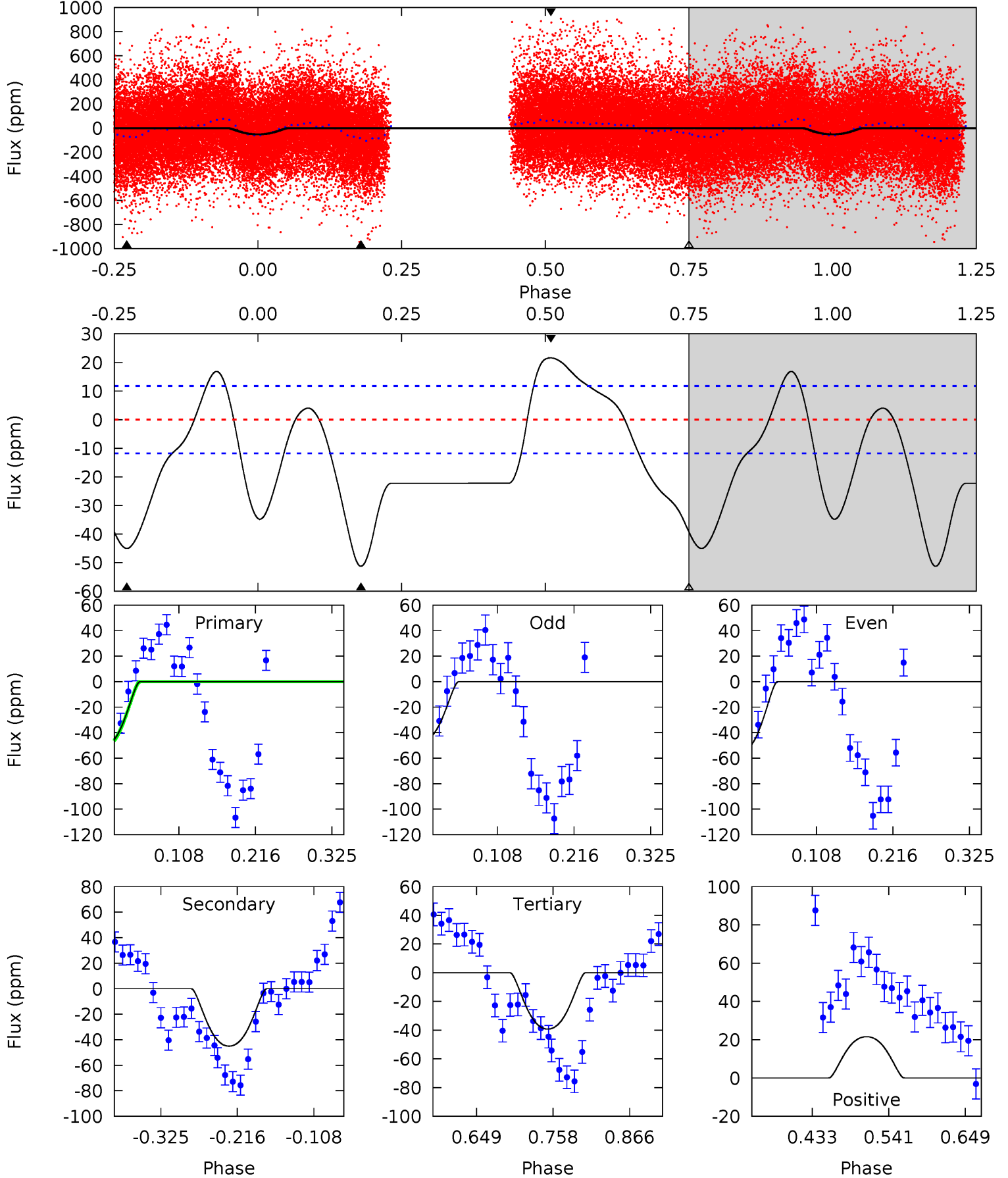




# DV Model-Shift Uniqueness Test

005614247-02, P = 5.715381 Days, E = 126.999602 Days

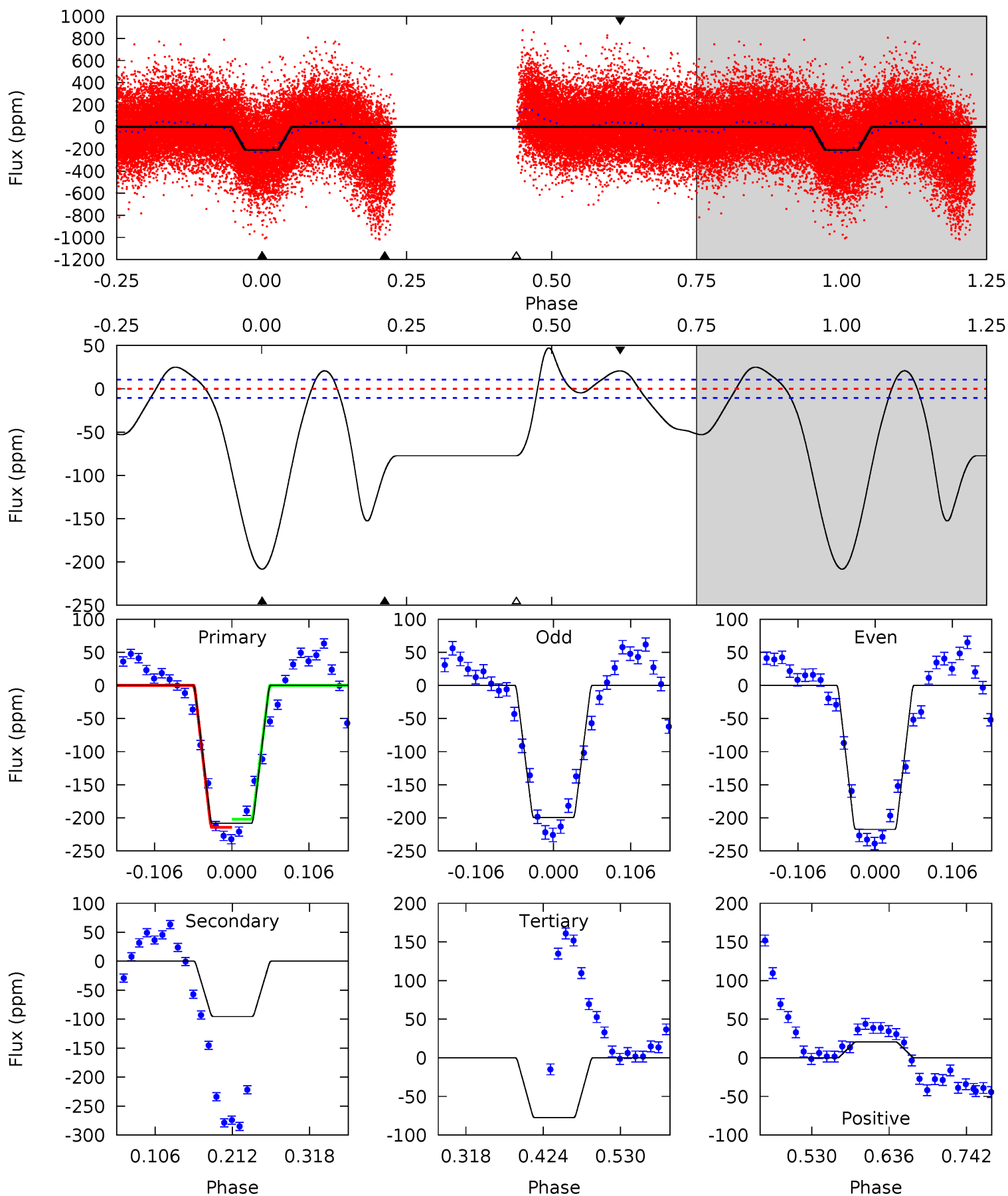
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.8	17.4	15.1	8.33	4.55	1.61	7.00	4.63	11.4	2.23	9.04	1.66	1.05	0.30	0.27



# Alt Model-Shift Uniqueness Test

005614247-02, P = 5.715427 Days, E = 126.985089 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
90.5	41.4	33.6	8.99	4.55	1.62	12.5	56.9	81.5	7.82	32.4	3.90	0.95	0.18	2.54



### Stellar Parameters For KIC 005614247

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6802^{+189}_{-283}$	$4.084^{+0.209}_{-0.171}$	$-0.060^{+0.250}_{-0.350}$	$1.797^{+0.553}_{-0.502}$	$1.433^{+0.208}_{-0.277}$	$0.348^{+0.425}_{-0.167}$
	+3%/-4%	+5%/-4%	+417%/-583%	+31%/-28%	+15%/-19%	+122%/-48%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 005614247-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-45 \pm 3$	$2.45^{+0.69}_{-0.55}$	$2102^{+182}_{-161}$	$4957^{+509}_{-371}$	$20^{+13}_{-8}$
Alt.	$-95 \pm 2$	$2.90^{+0.76}_{-0.59}$	$2113^{+166}_{-178}$	$5452^{+568}_{-409}$	$31^{+18}_{-11}$

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



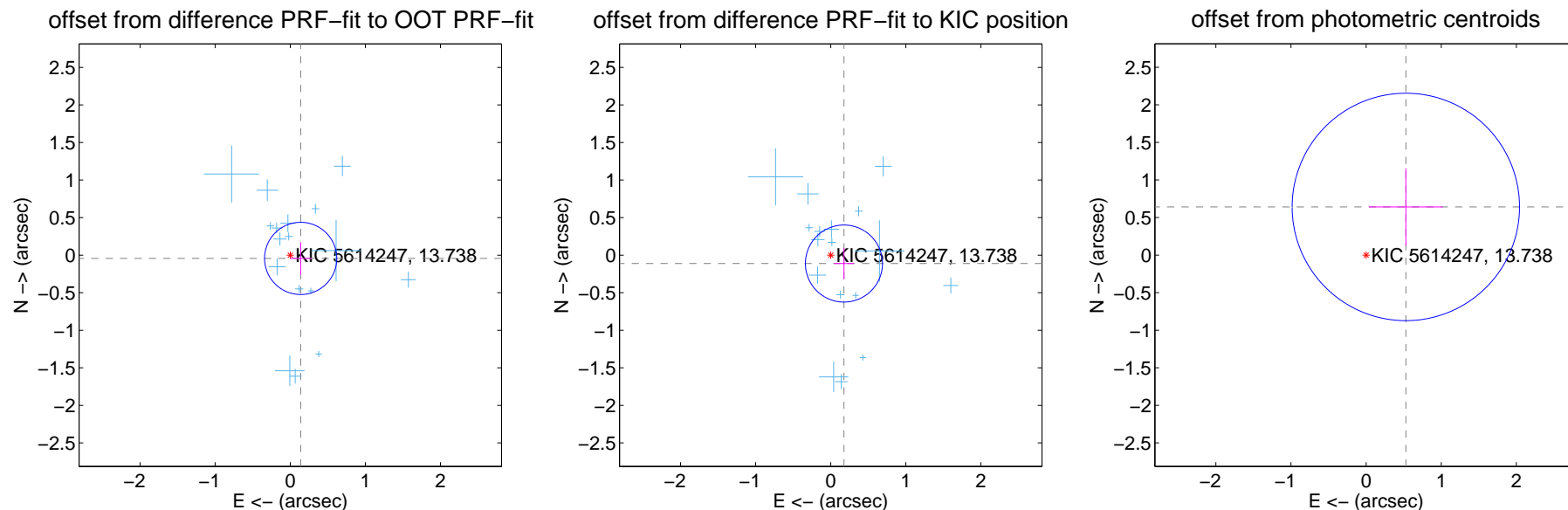
## DV Centroid Data

Supplemental centroid analysis for 005614247-02. Kepler magnitude: 13.74. Transit SNR 14.08

There are 17 quarters with good PRF difference image offsets

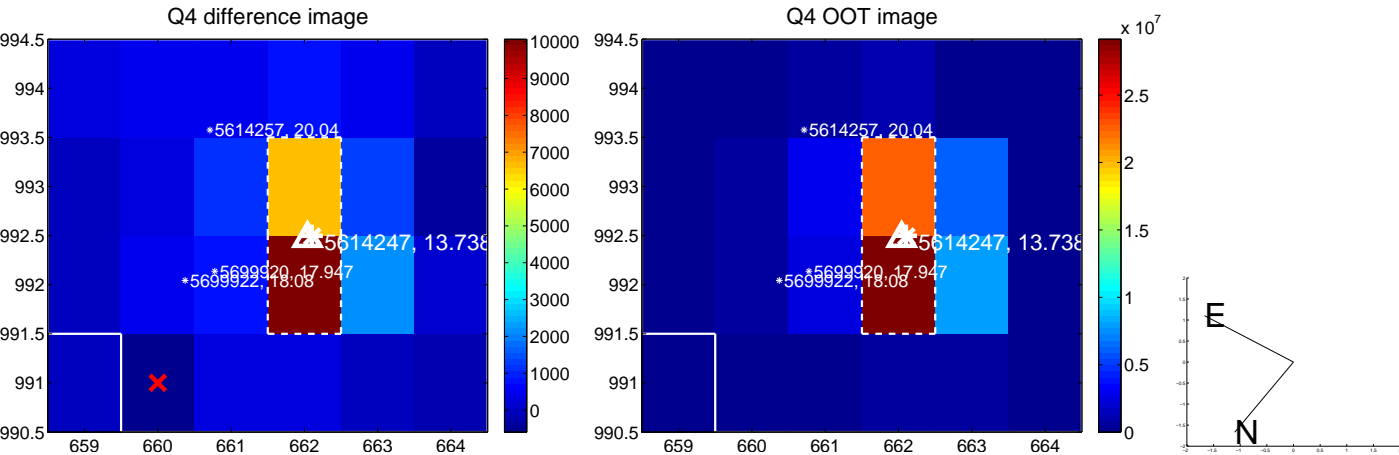
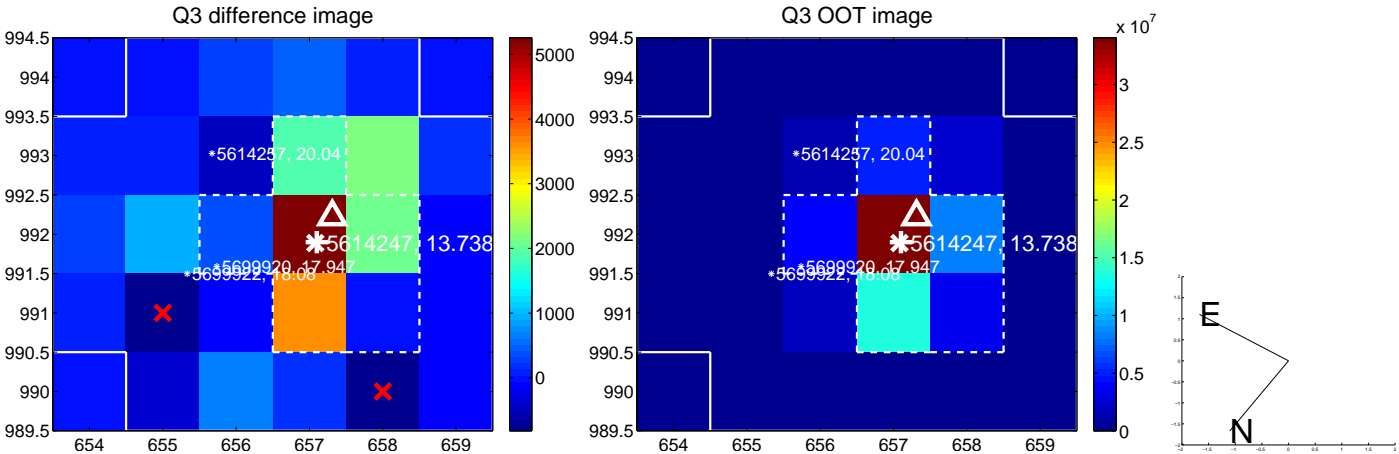
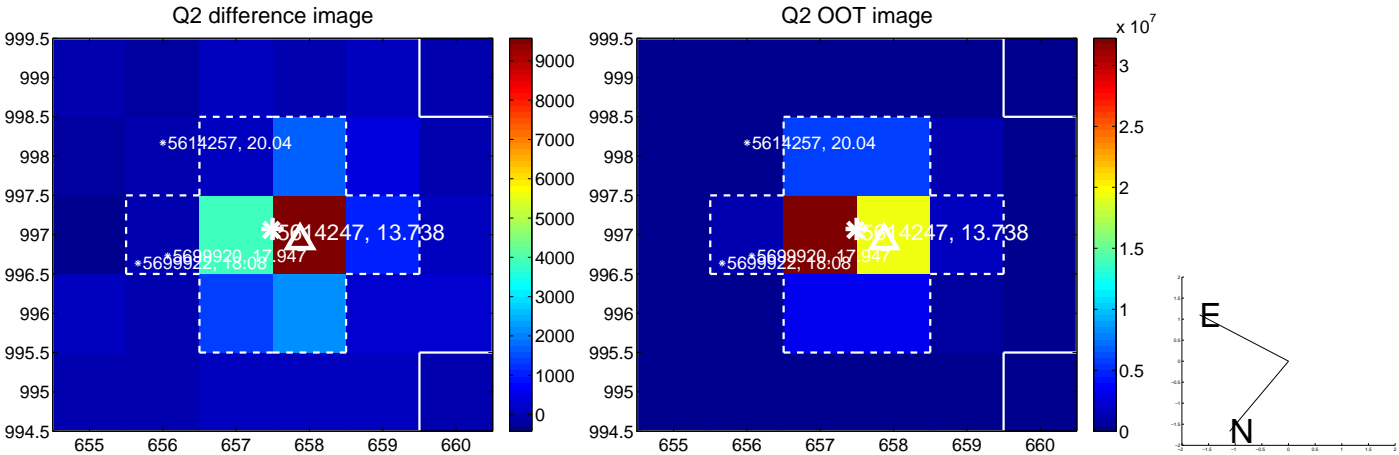
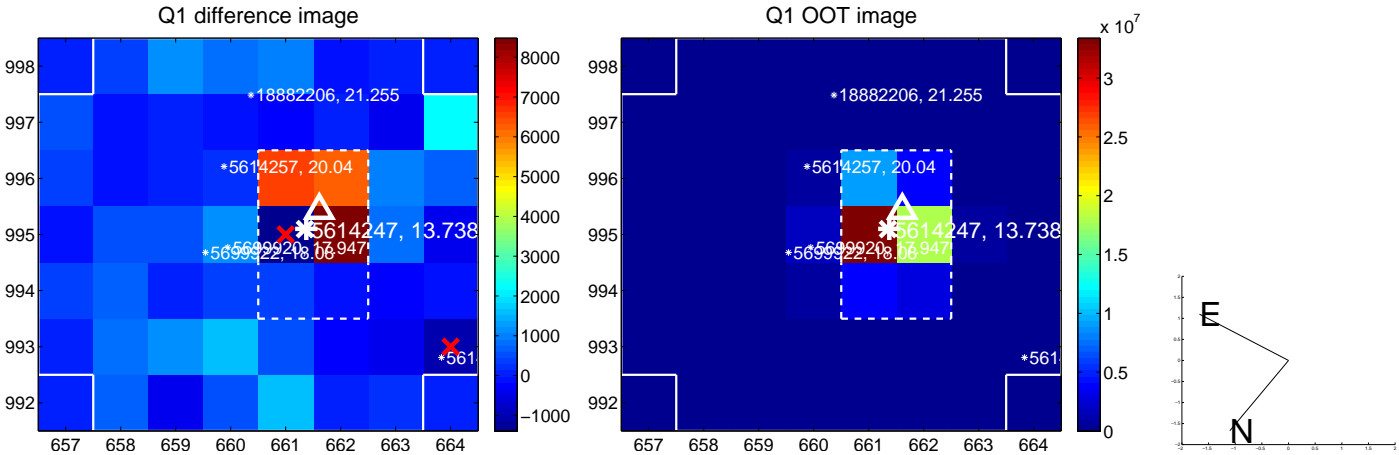
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.145 \pm 0.160$	0.91	$-0.139 \pm 0.144$	$-0.043 \pm 0.217$
PRF-fit source offset from KIC position	$0.208 \pm 0.171$	1.22	$-0.176 \pm 0.133$	$-0.112 \pm 0.208$
photometric centroid source offset	$0.83 \pm 0.50$	1.65	$-0.53 \pm 0.49$	$0.64 \pm 0.51$

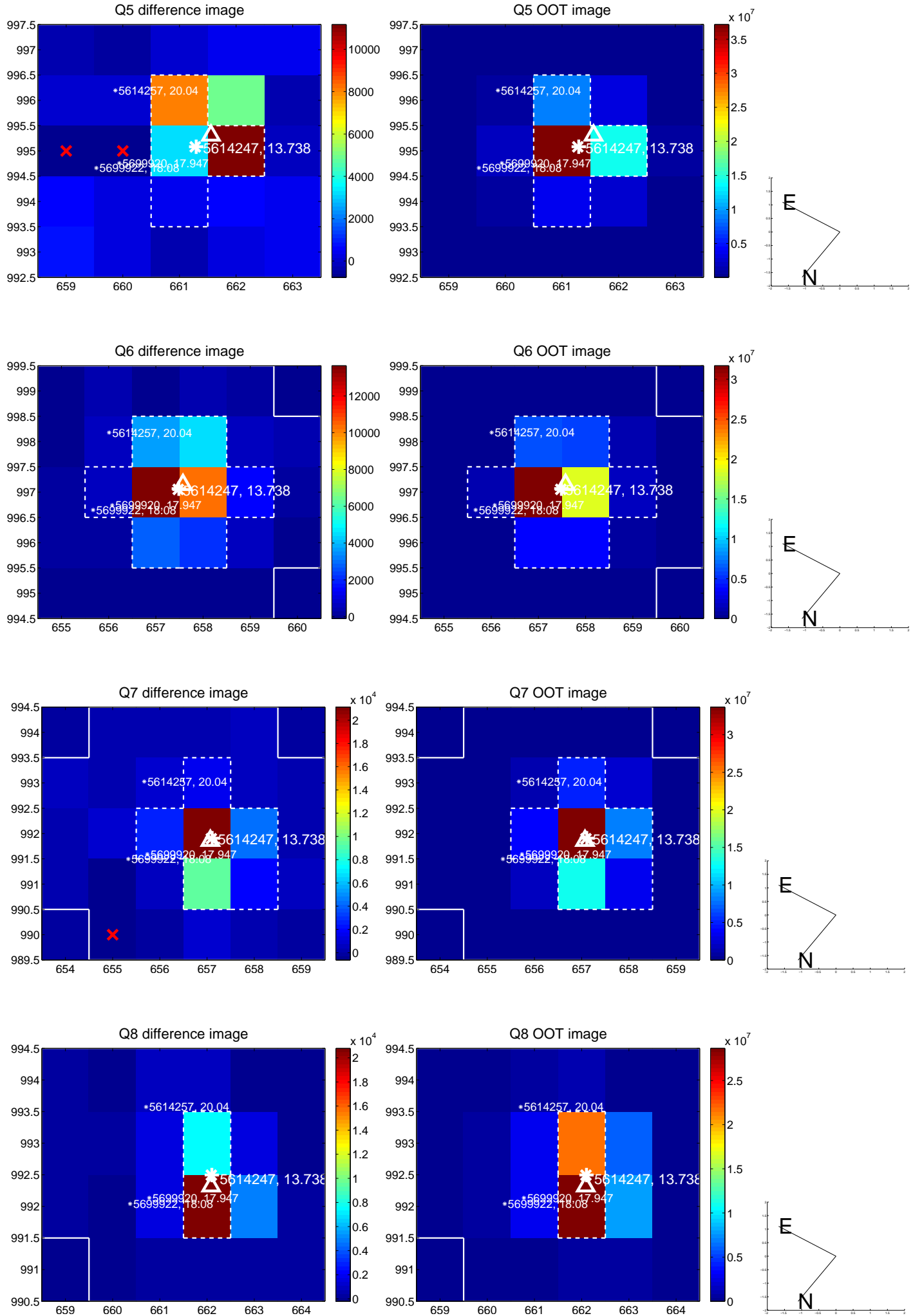


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

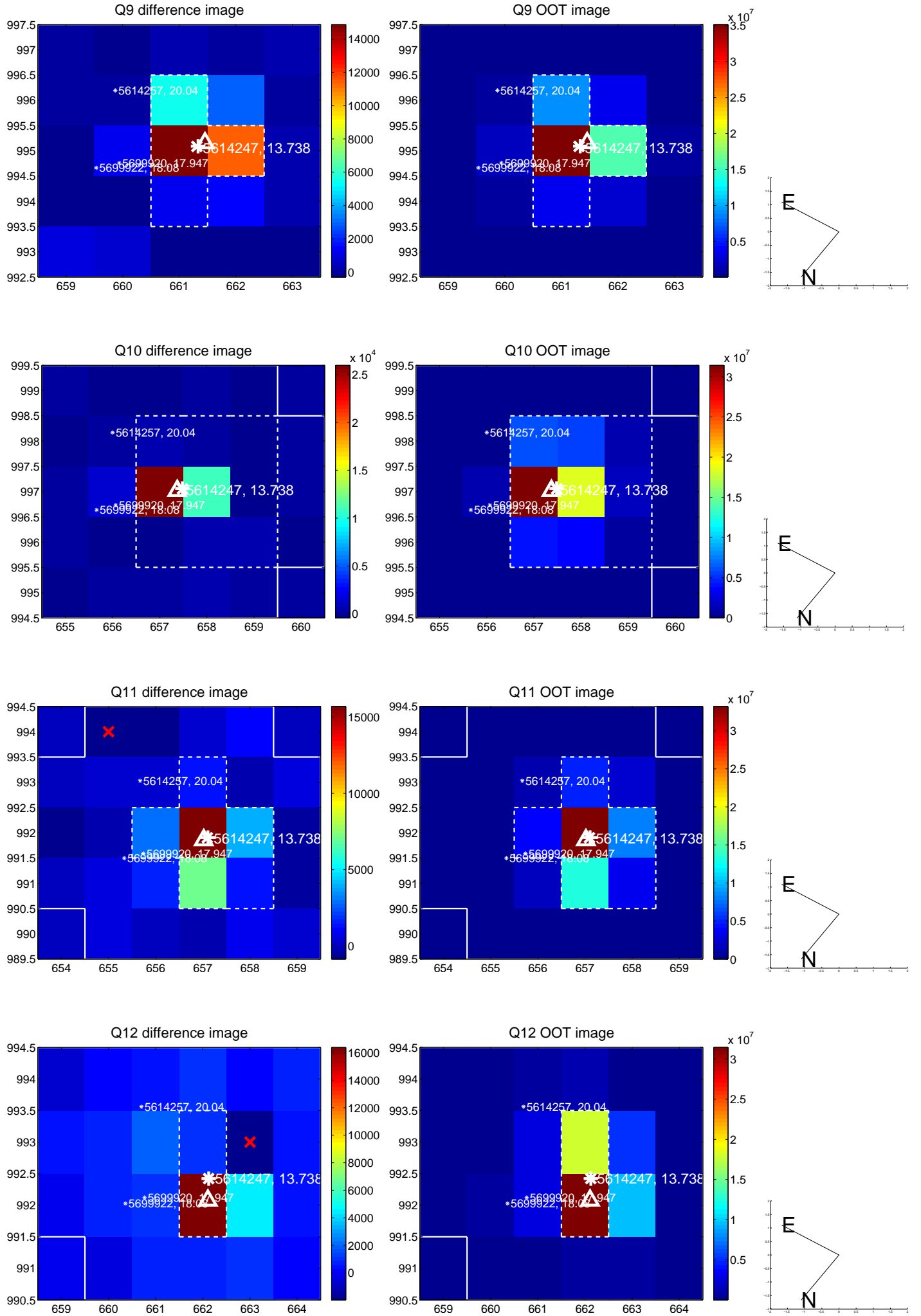
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



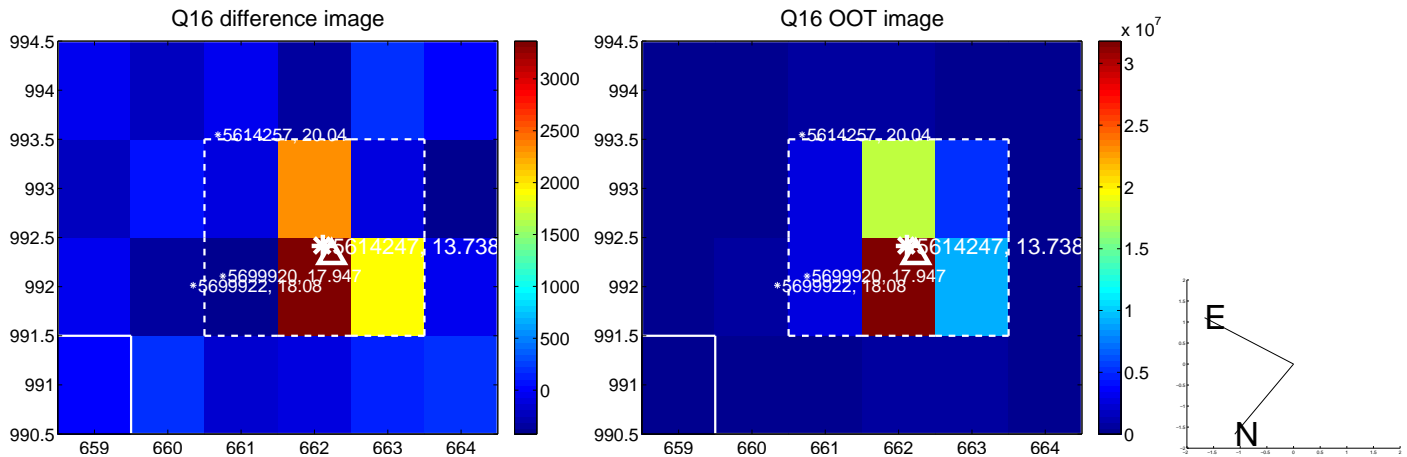
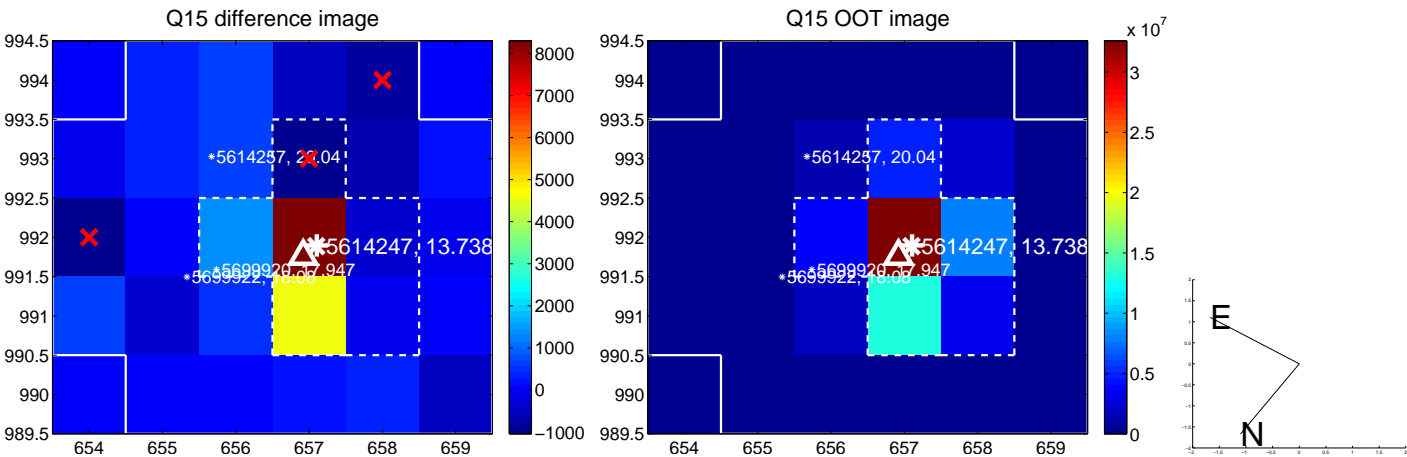
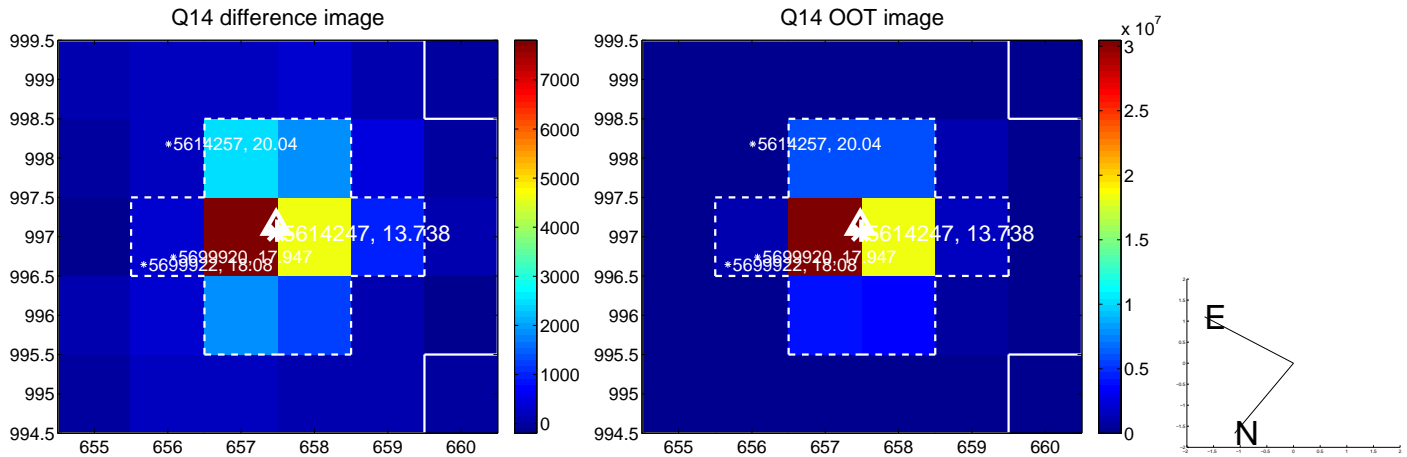
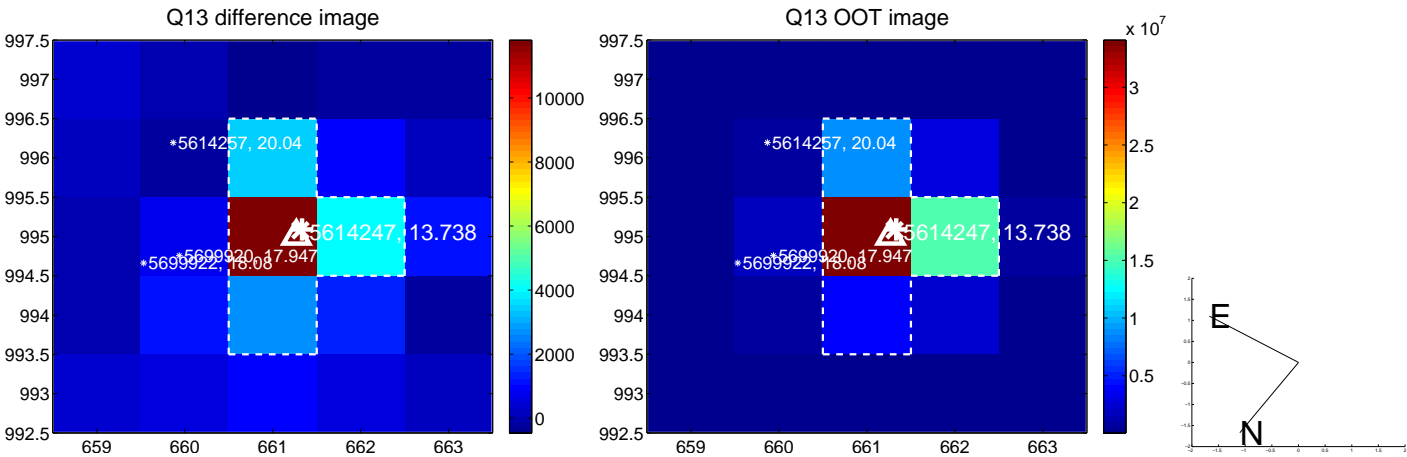
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

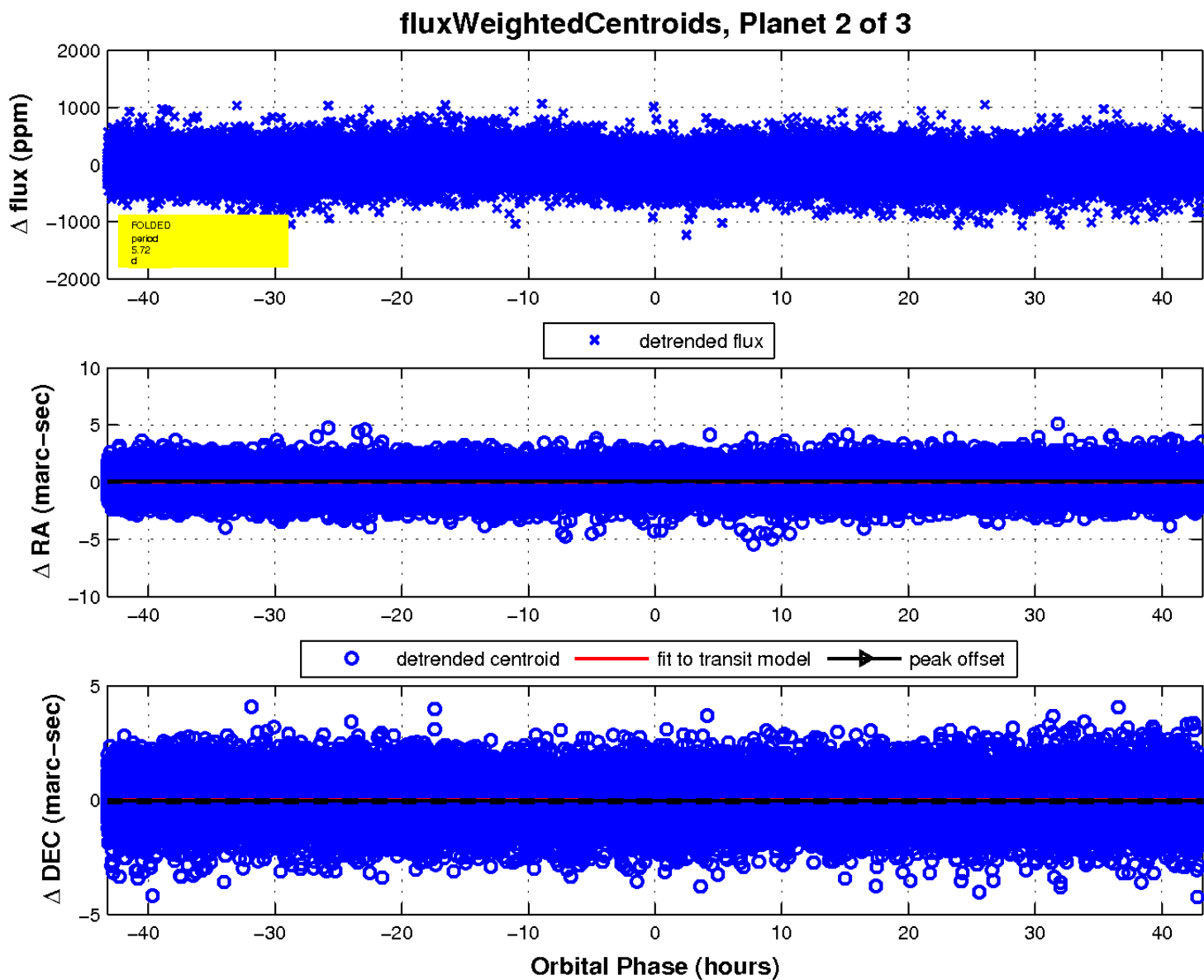
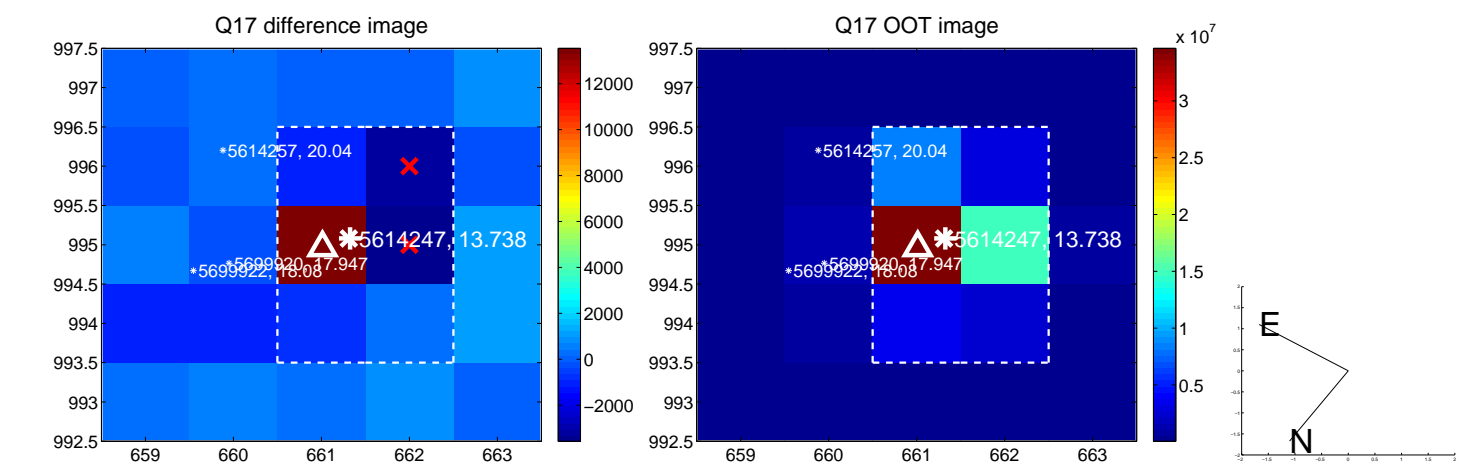


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



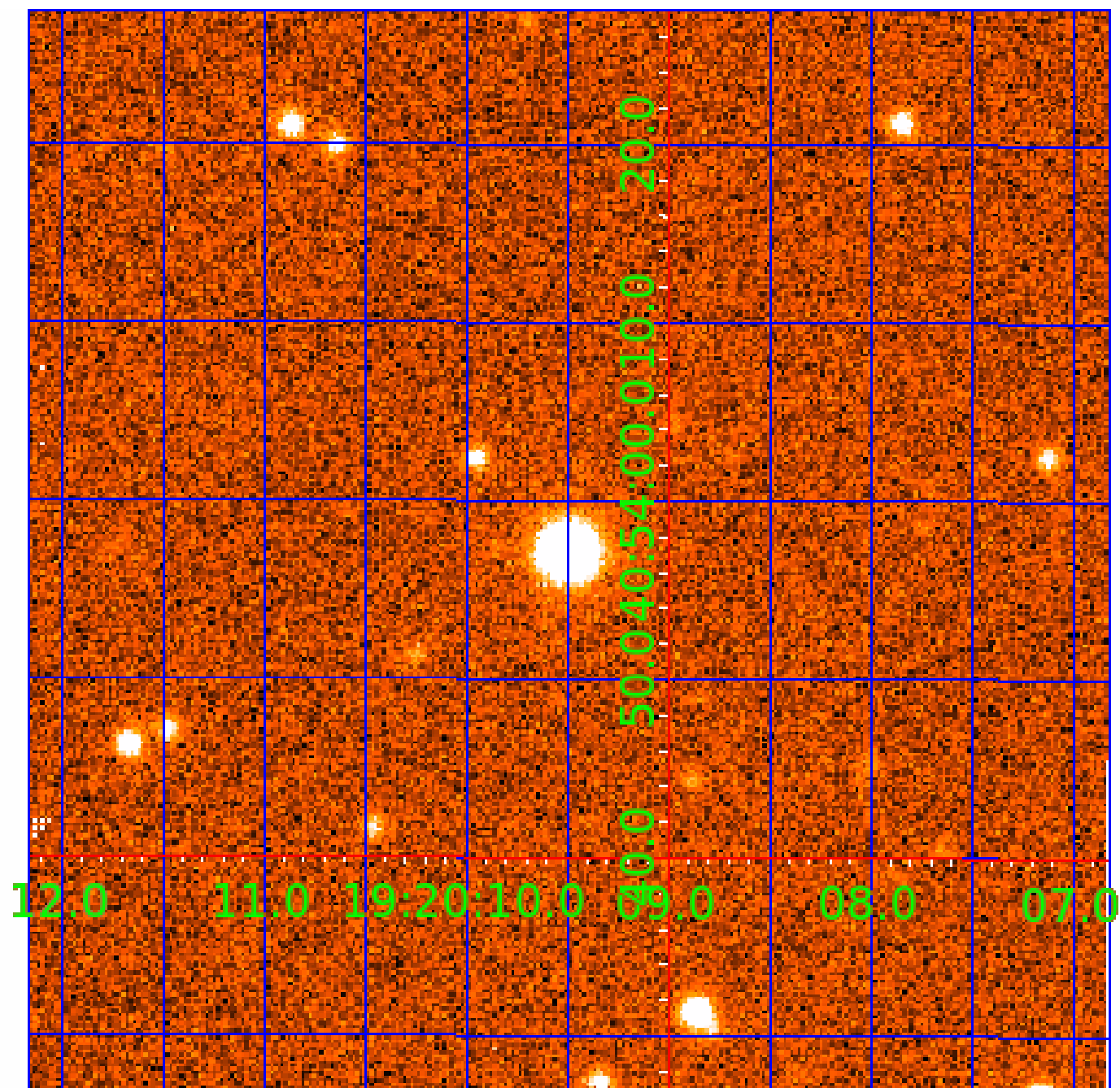


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 005614247

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005614247-01	OBS	No	5.716072	134.537342	66.9	10.599	12.1	11.2	1.80	6802	1.72	1246.45
005614247-02	OBS	No	5.715381	132.714984	95.2	14.405	12.3	14.1	1.80	6802	2.50	1246.65
005614247-03	OBS	No	417.258401	302.427892	125.4	7.442	10.9	2.6	1.80	6802	2.29	4.09

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005614247-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
005614247-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
005614247-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

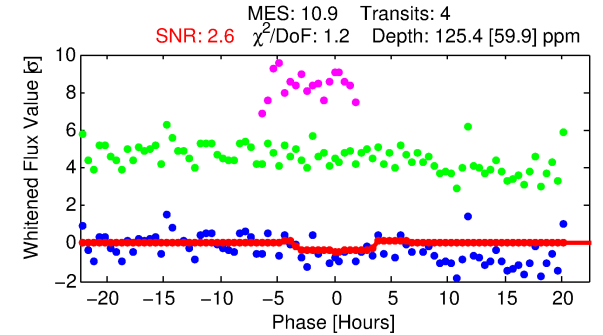
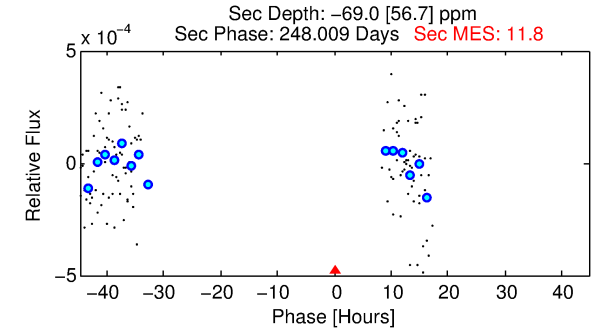
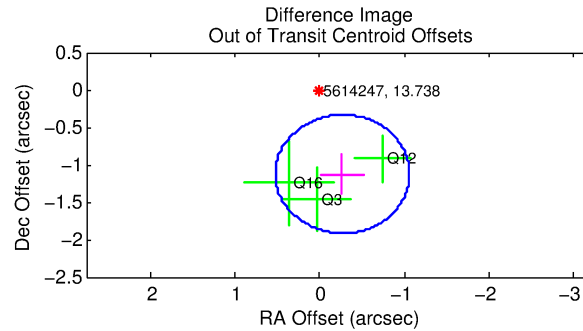
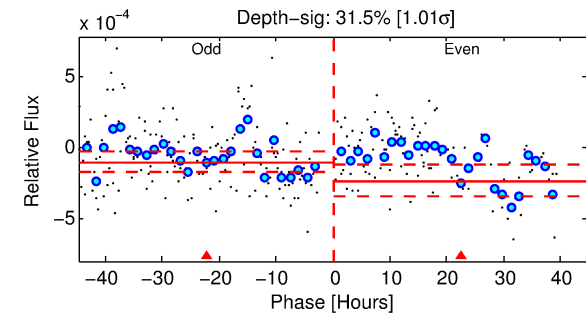
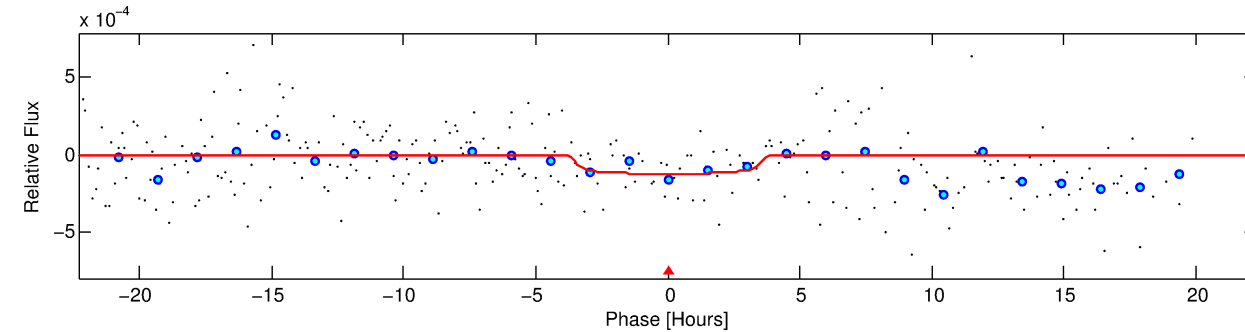
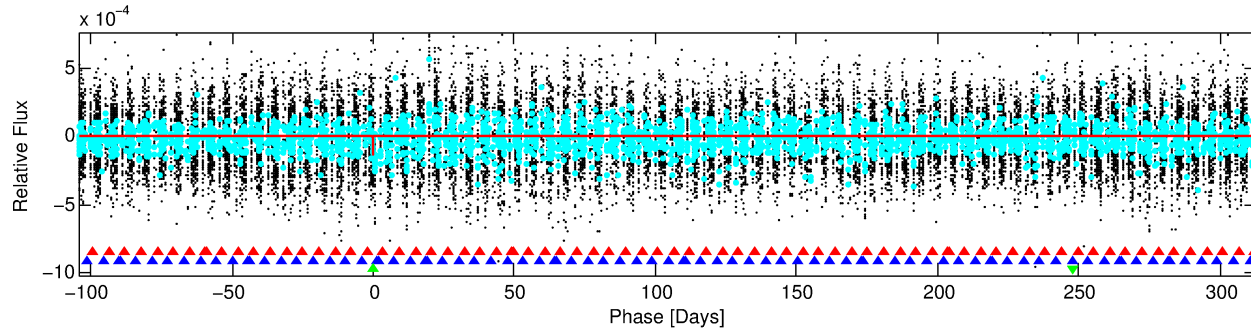
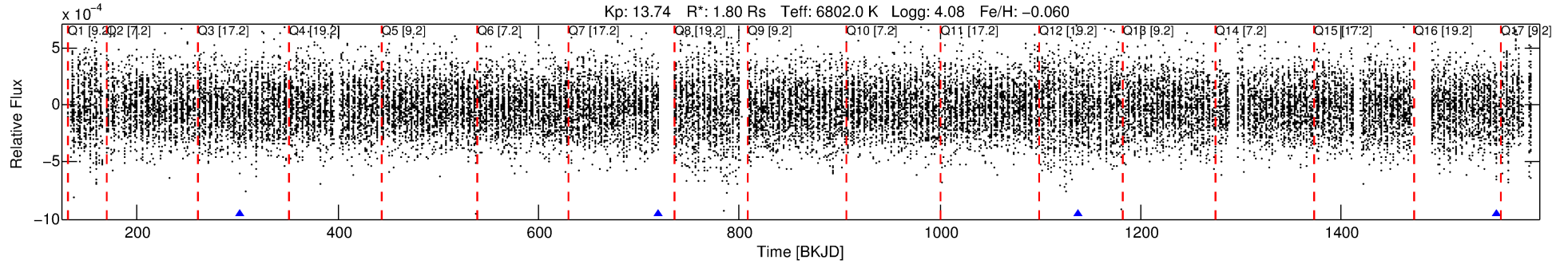
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005614247-03

No Significant Match Found

# DV One-Page Summary

KIC: 5614247 Candidate: 3 of 3 Period: 417.258 d



## DV Fit Results:

Period = 417.25840 [0.01686] d  
Epoch = 302.4279 [0.0362] BKJD  
Rp/R\* = 0.0117 [0.0128]  
a/R\* = 224.04 [1378.63]  
b = 0.87 [1.79]  
Seff = 4.09 [1.70]  
Teff = 363 [38] K  
Rp = 2.29 [2.60] Re  
a = 1.2312 [0.3206] AU  
Ag = N/A  
Teffp = N/A

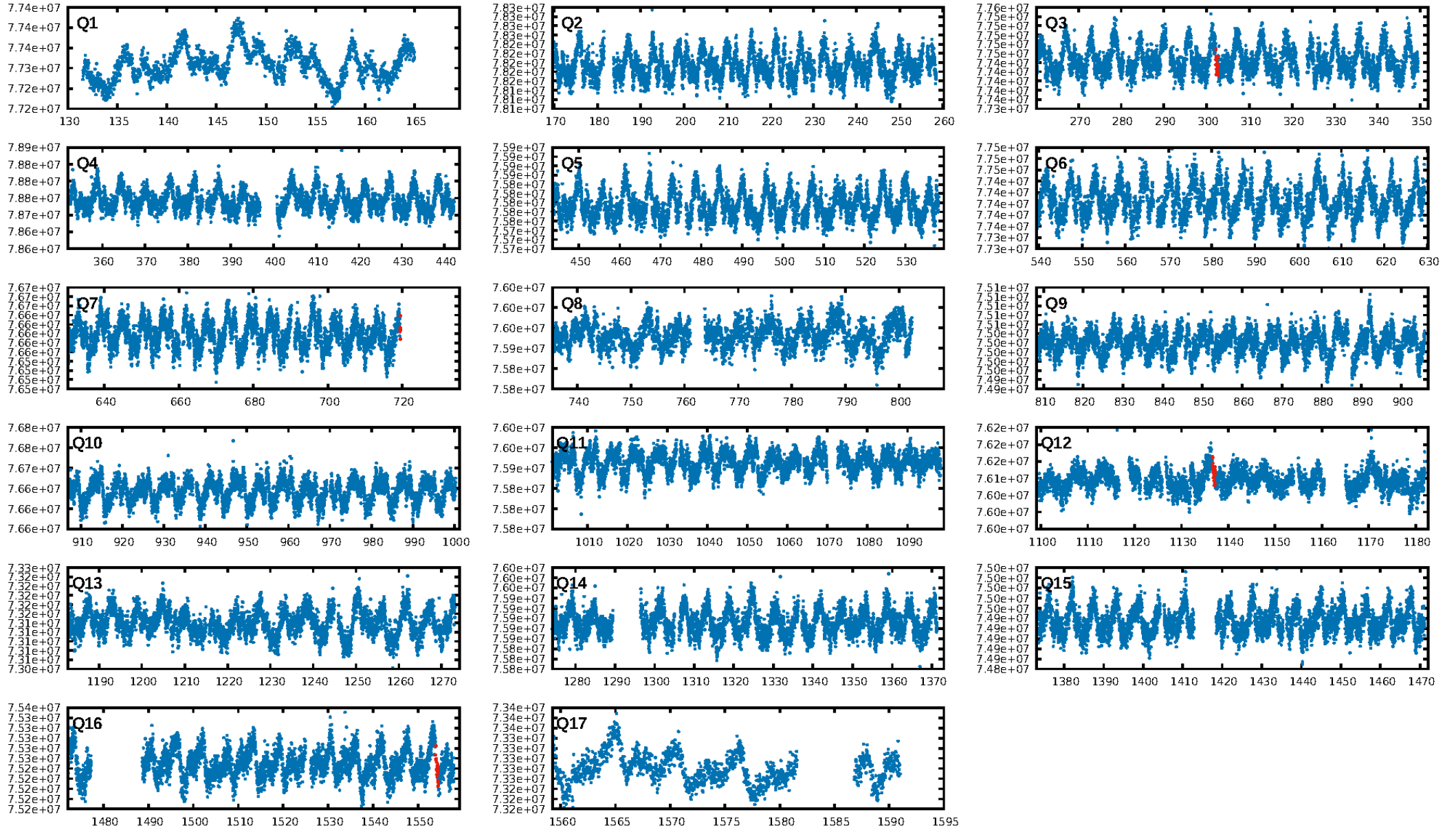
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [762.68 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 14.1%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.43e-10**  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: 0.9138**  
Centroid-sig: 7.8%  
Centroid-so: 4.208 arcsec [1.33 $\sigma$ ]  
**OotOffset-rm: 1.158 arcsec [4.39 $\sigma$ ]**  
**KicOffset-rm: 1.189 arcsec [4.50 $\sigma$ ]**  
OotOffset-st: 0/1/2/0 [3]  
KicOffset-st: 0/1/2/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:02:29 Z

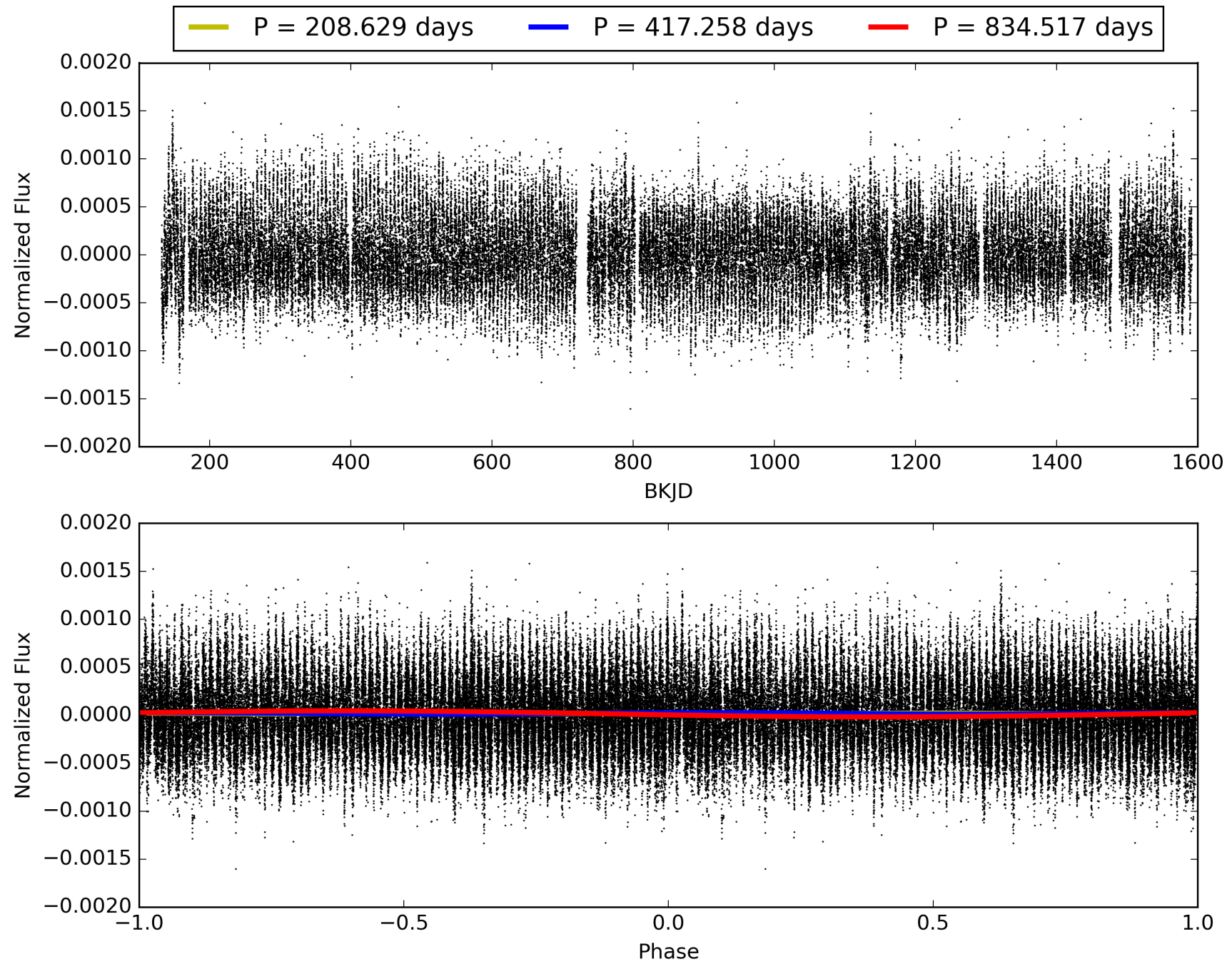
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005614247-03, PDC Light Curves



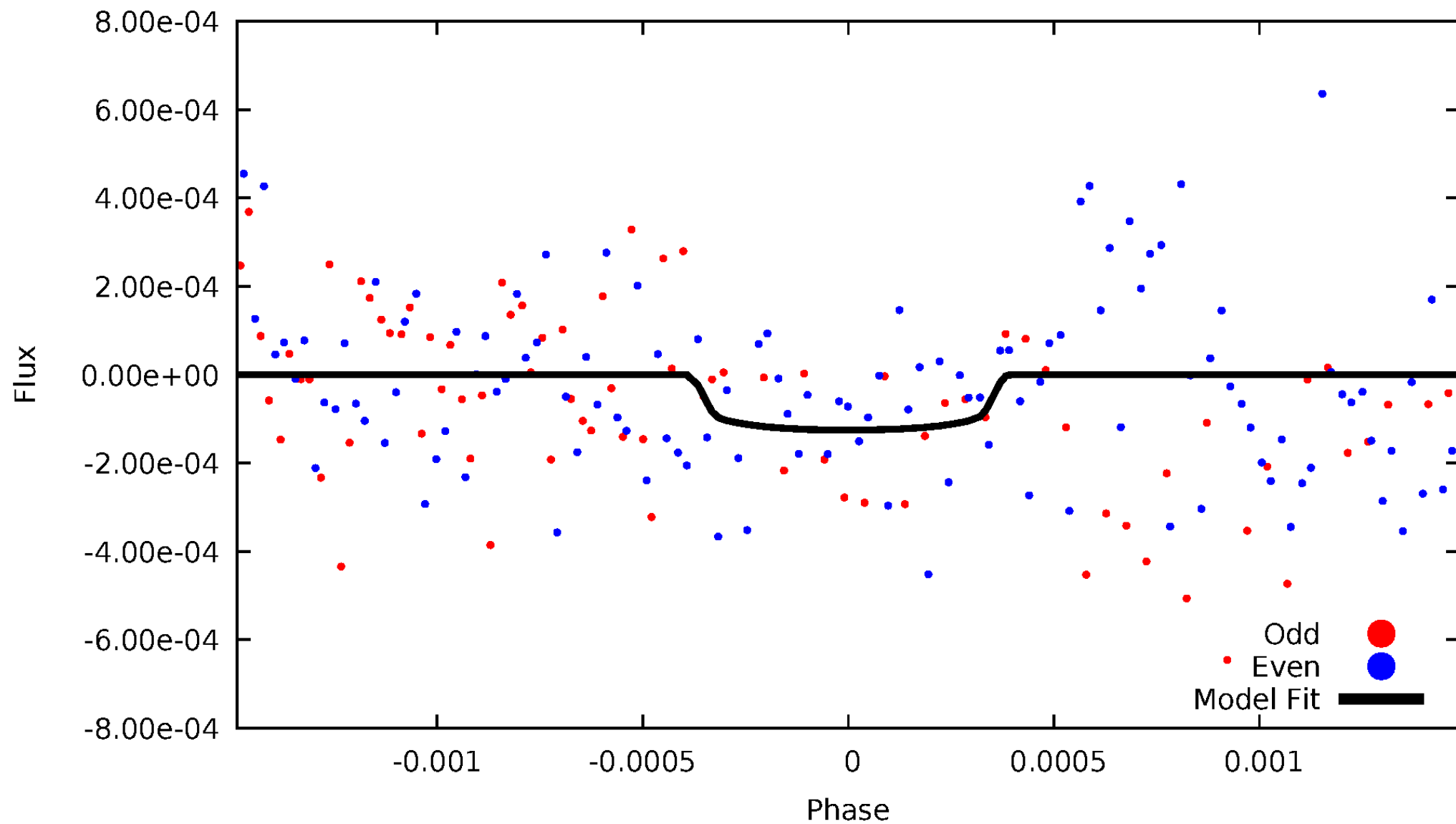


TCE 005614247-03



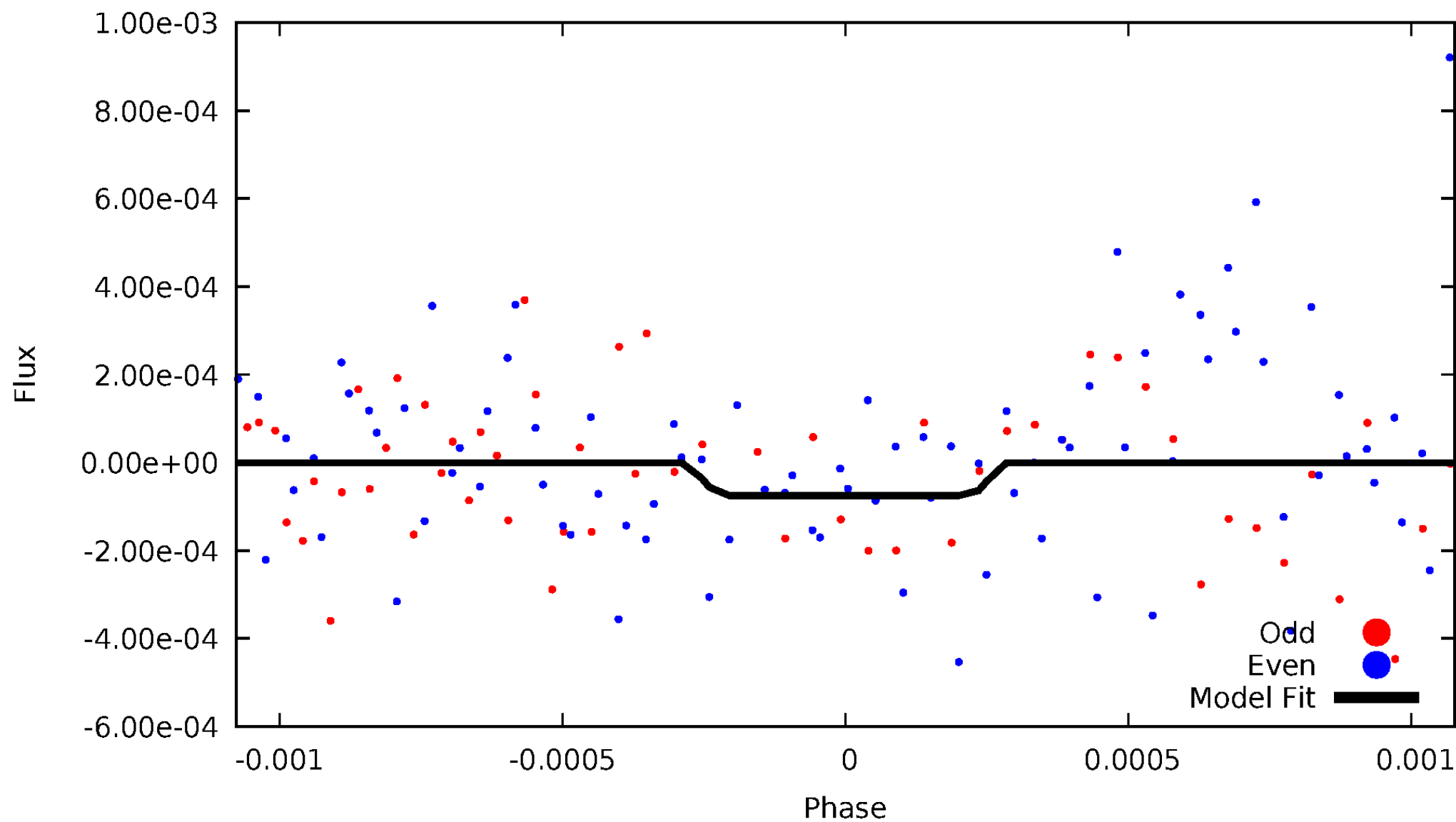
# DV Odd/Even

TCE 005614247-03

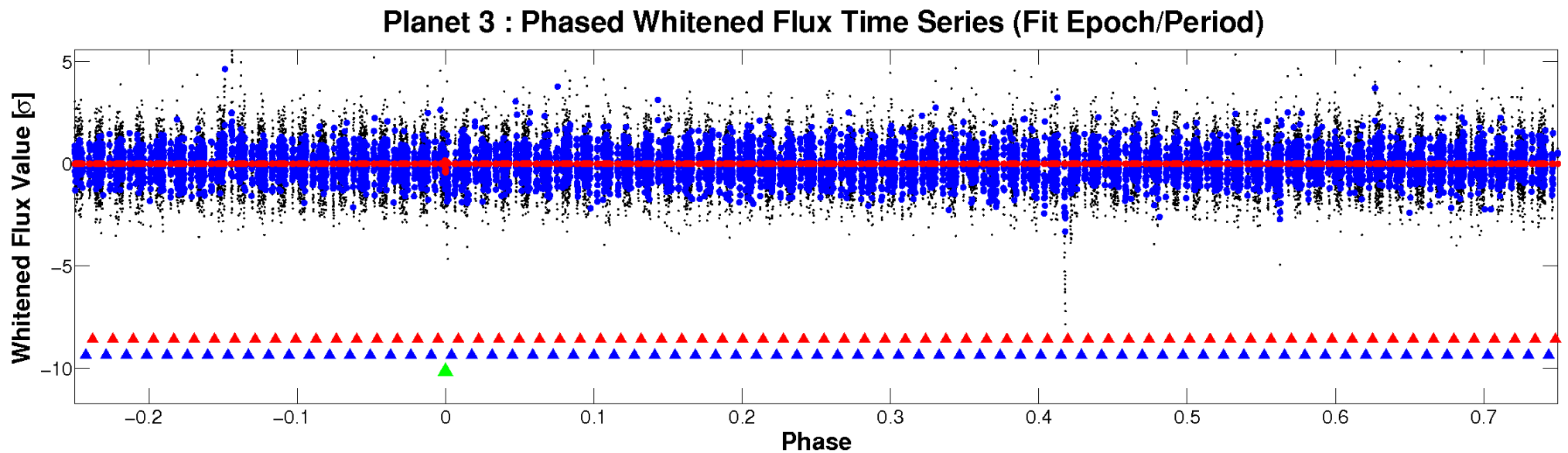
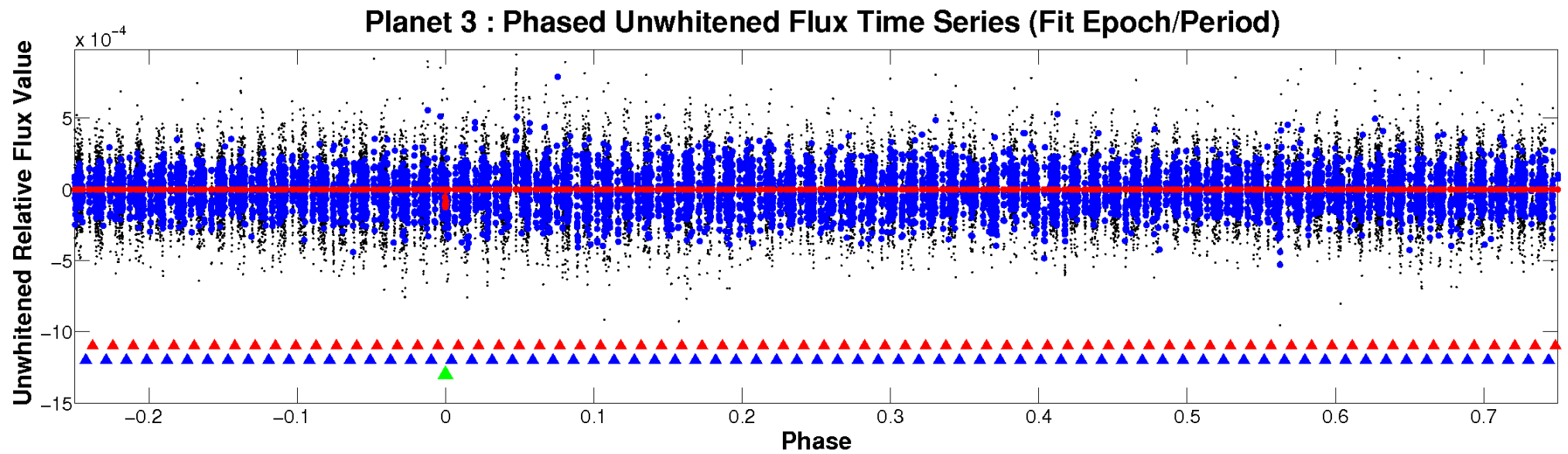


# ALT Odd/Even

TCE 005614247-03

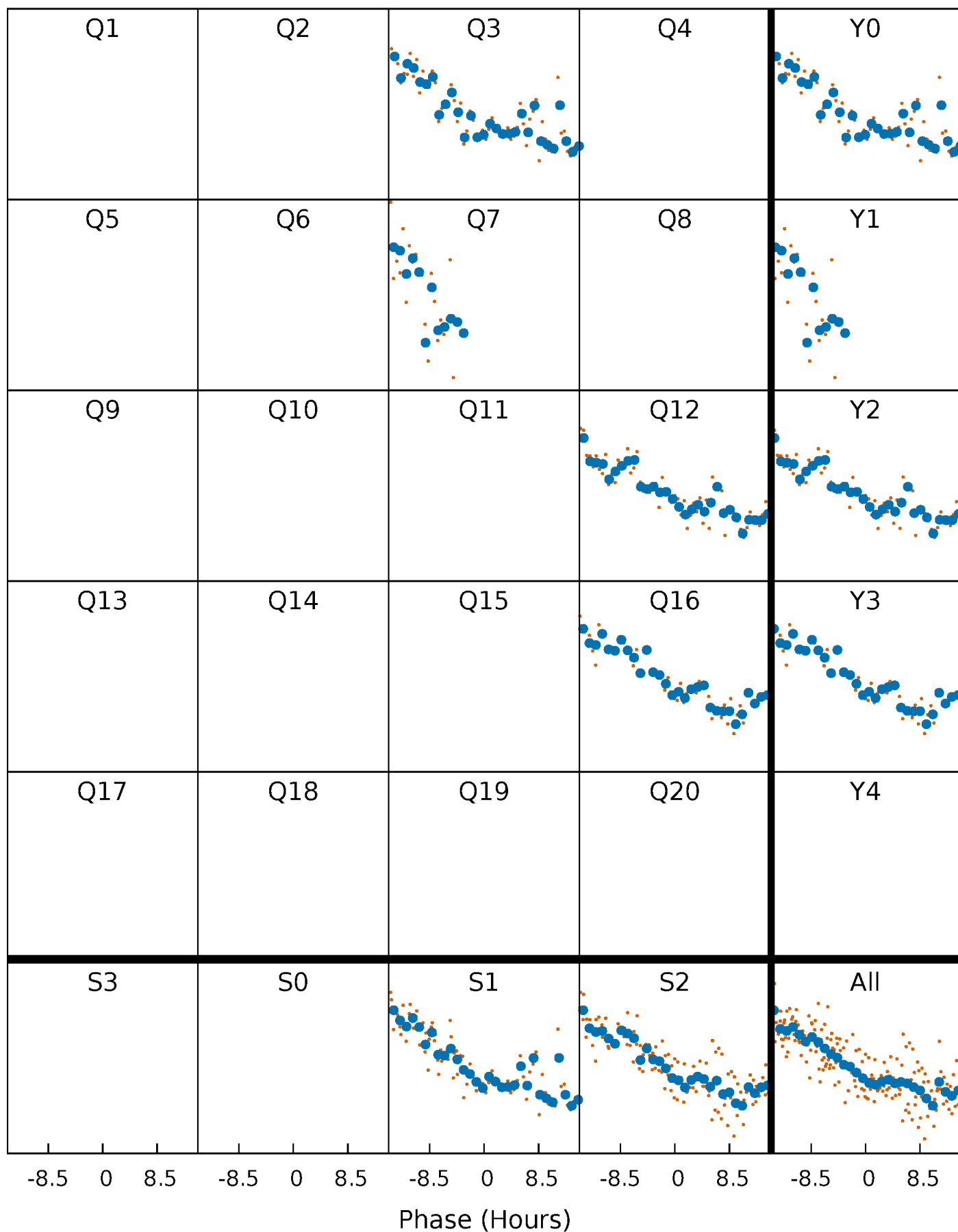


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

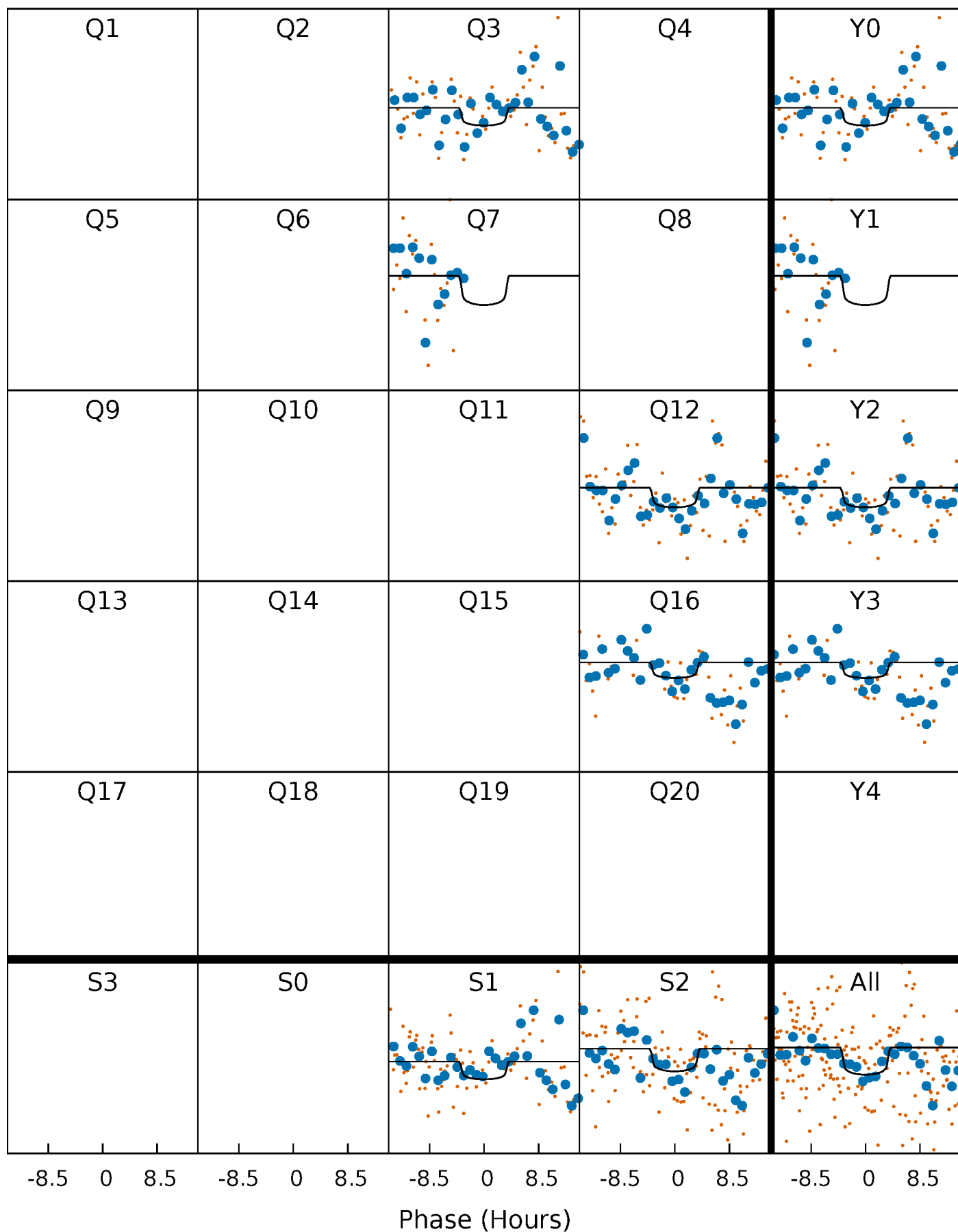
TCE 005614247-03 P=417.258401 Days  $T_0=302.427892$  (BKJD)





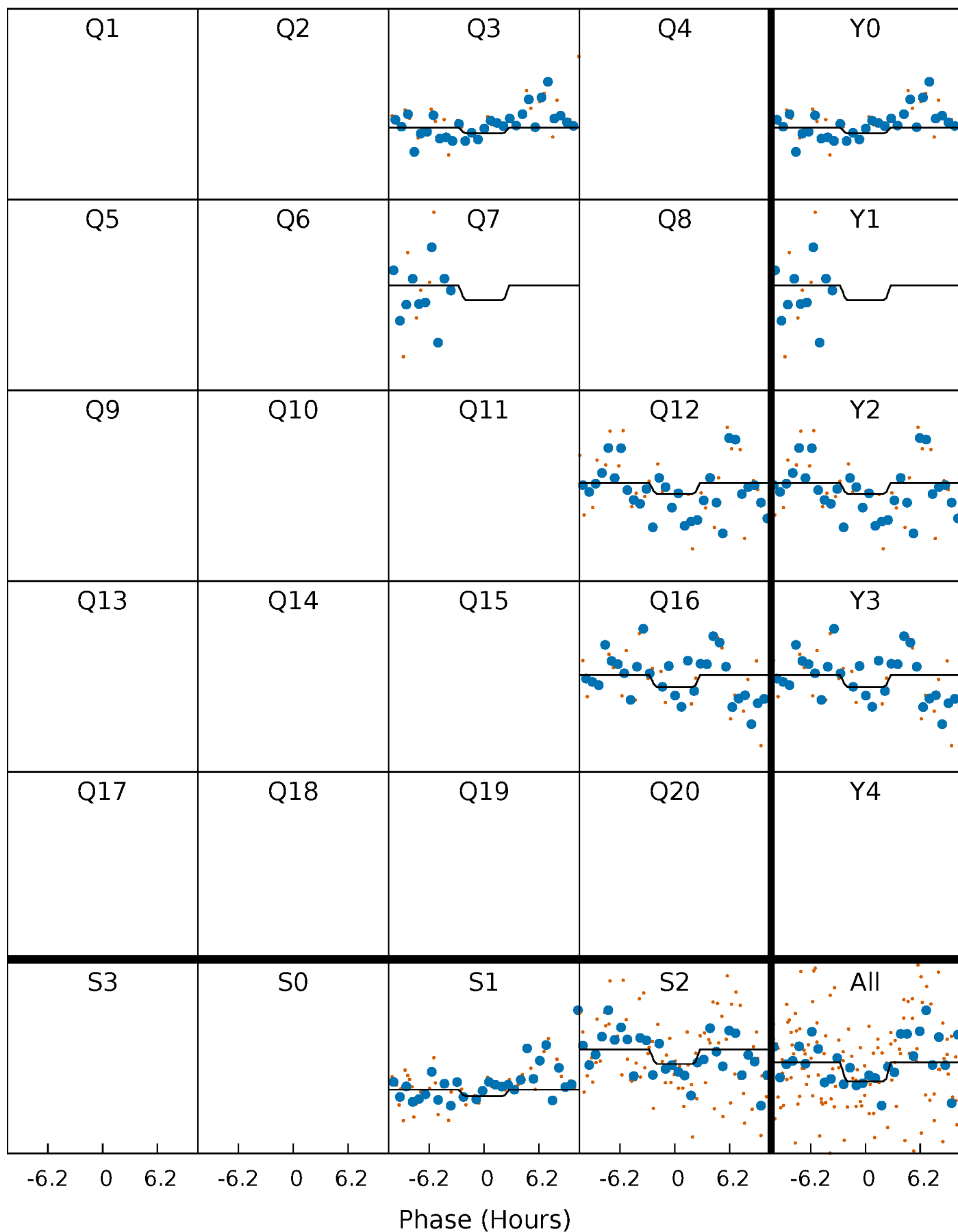
# DV Quarter-Phased Transit Curves

TCE 005614247-03 P=417.258401 Days  $T_0=302.427892$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

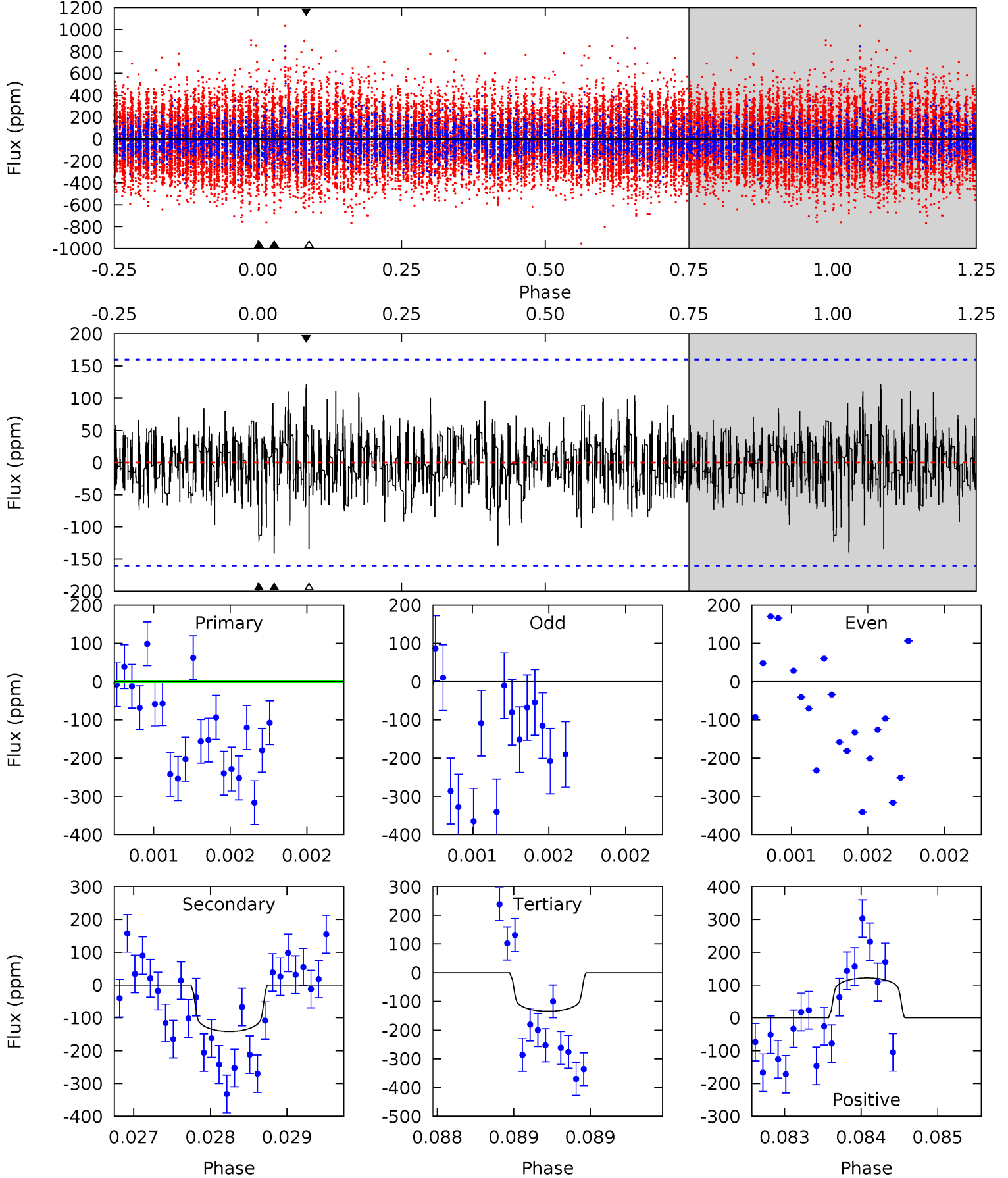
TCE 005614247-03     $P=417.239673$  Days     $T_0=302.463113$  (BKJD)



# DV Model-Shift Uniqueness Test

005614247-03, P = 417.258401 Days, E = 302.427892 Days

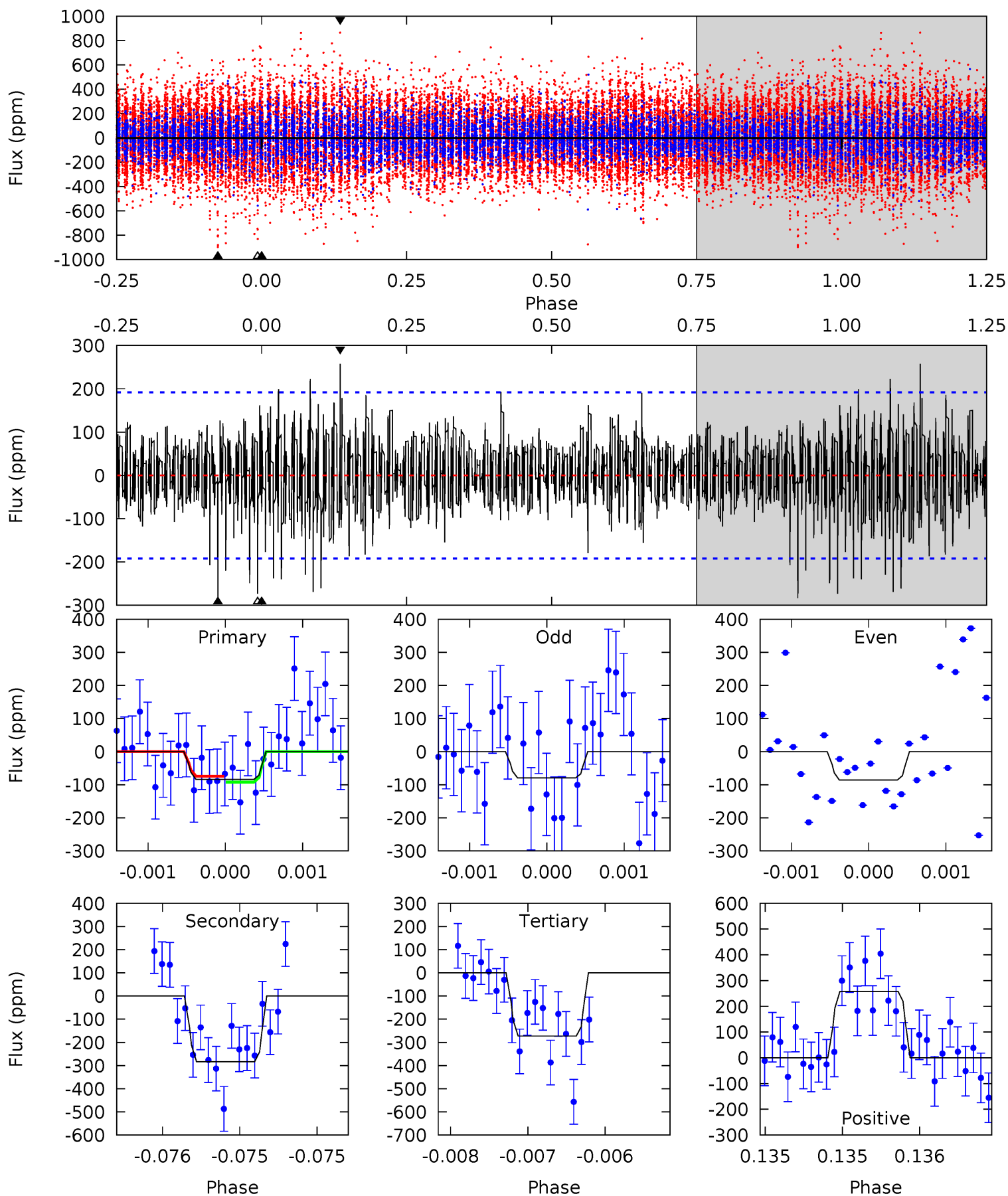
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.05	4.85	4.60	4.18	5.49	3.36	1.15	-0.56	-0.13	0.25	0.67	0.39	0.85	0.46	0.11



# Alt Model-Shift Uniqueness Test

005614247-03, P = 417.239673 Days, E = 302.463113 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
2.43	8.22	7.92	7.47	5.56	3.46	1.62	-5.49	-5.04	0.30	0.75	0.09	1.03	0.48	0.26



### Stellar Parameters For KIC 005614247

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6802^{+189}_{-283}$	$4.084^{+0.209}_{-0.171}$	$-0.060^{+0.250}_{-0.350}$	$1.797^{+0.553}_{-0.502}$	$1.433^{+0.208}_{-0.277}$	$0.348^{+0.425}_{-0.167}$
	+3%/-4%	+5%/-4%	+417%/-583%	+31%/-28%	+15%/-19%	+122%/-48%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 005614247-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-141 \pm 29$	$2.83^{+2.40}_{-1.73}$	$506^{+38}_{-43}$	$6008^{+4890}_{-1380}$	$14411^{+77406}_{-10243}$
Alt.	$-283 \pm 34$	$2.36^{+2.25}_{-1.54}$	$500^{+40}_{-38}$	$7891^{+12490}_{-2234}$	$41098^{+315947}_{-30057}$

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



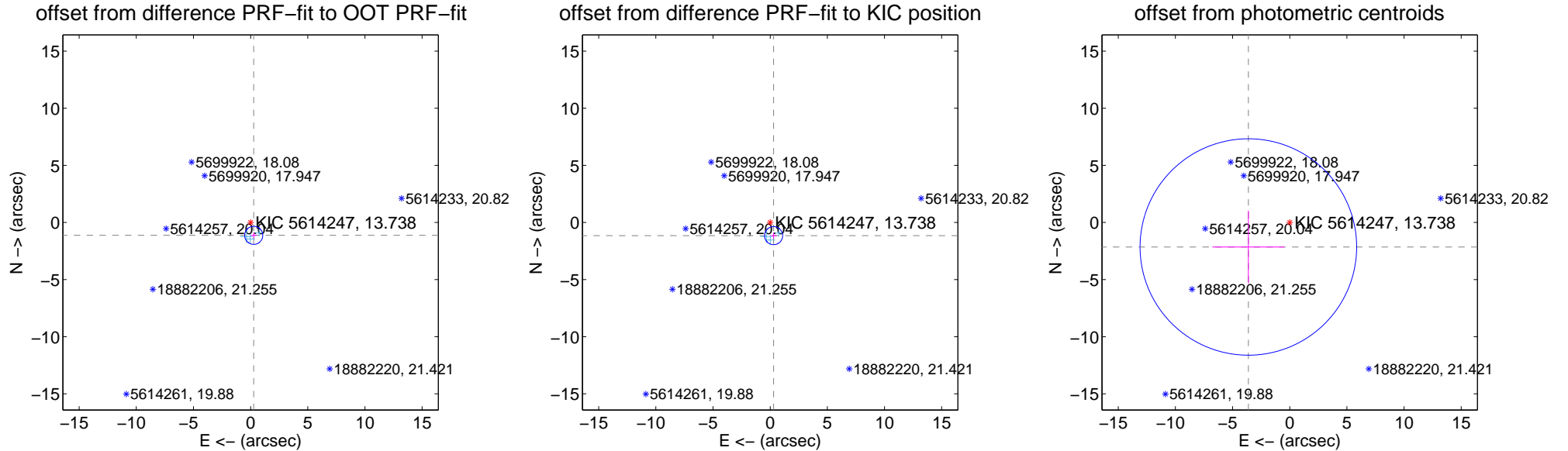
## DV Centroid Data

Supplemental centroid analysis for 005614247-03. Kepler magnitude: 13.74. Transit SNR 2.61

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.158 \pm 0.264$	4.39	$-0.270 \pm 0.261$	$-1.126 \pm 0.264$
PRF-fit source offset from KIC position	$1.189 \pm 0.264$	4.50	$-0.298 \pm 0.261$	$-1.151 \pm 0.264$
photometric centroid source offset	$4.21 \pm 3.16$	1.33	$3.62 \pm 3.15$	$-2.15 \pm 3.19$



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.

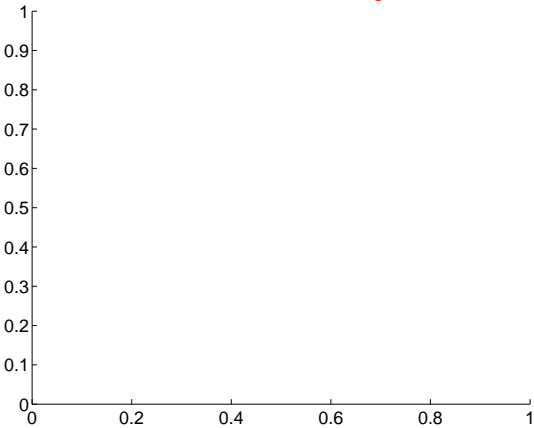
Q1 no difference image



Q1 no OOT image



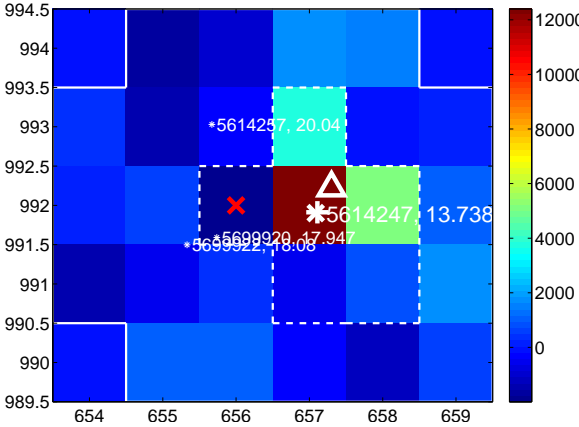
Q2 no difference image



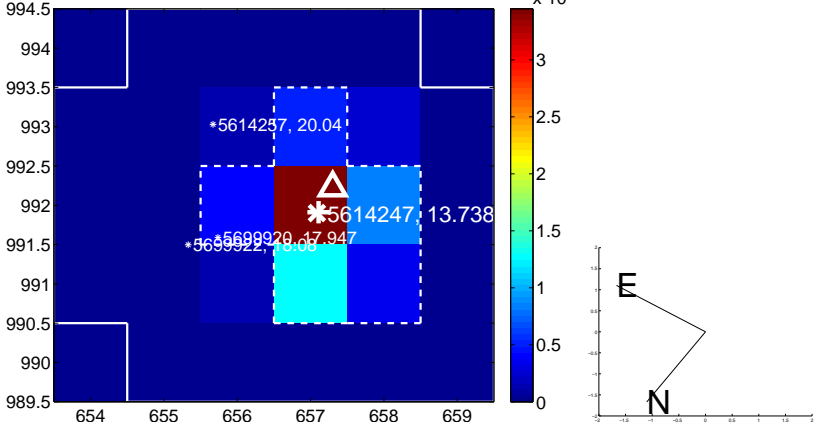
Q2 no OOT image



Q3 difference image



Q3 OOT image



Q4 no difference image



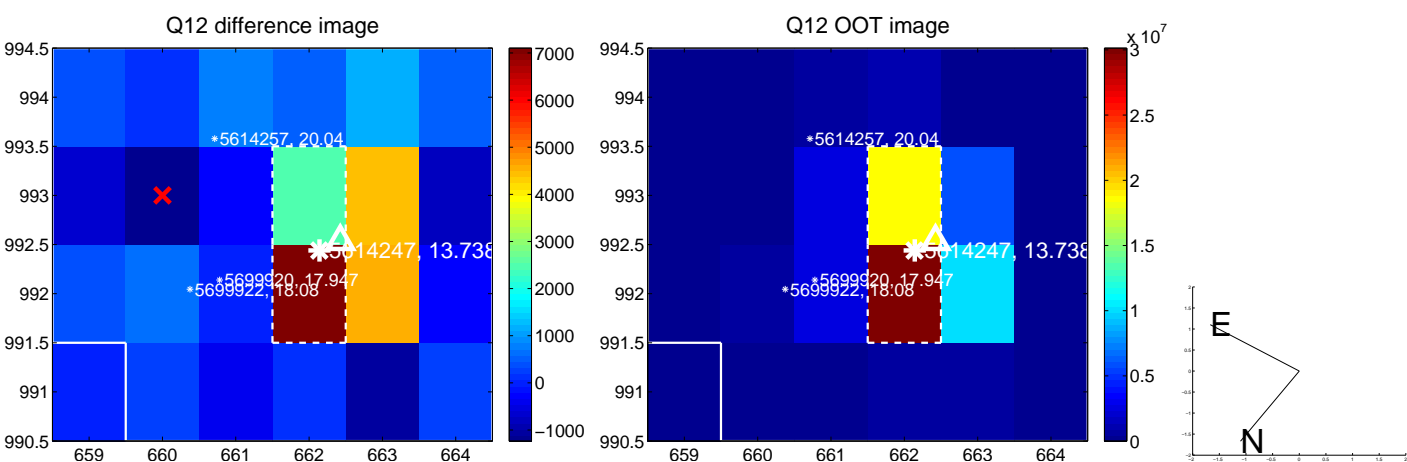
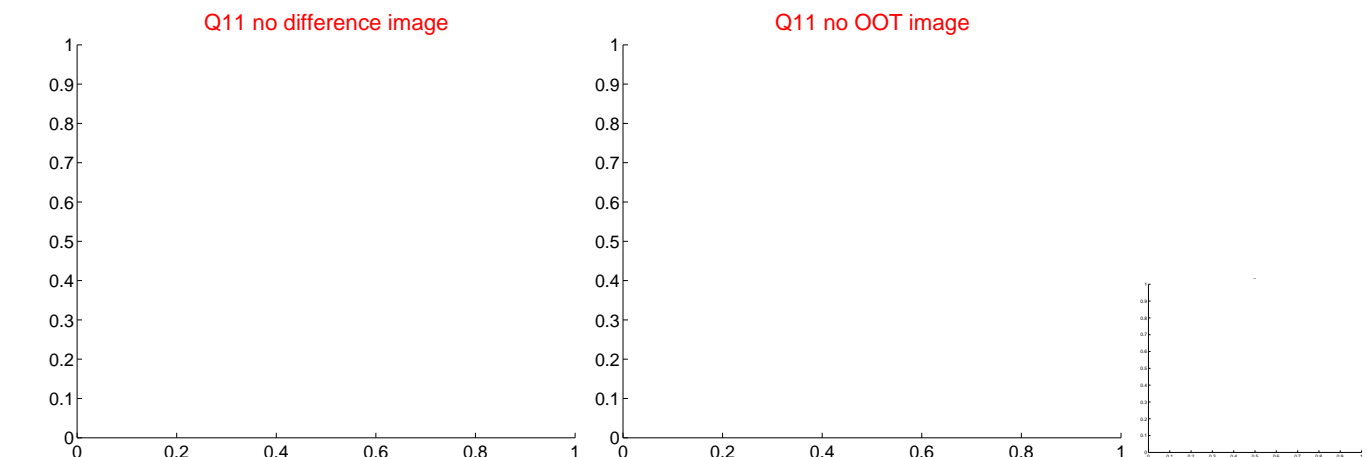
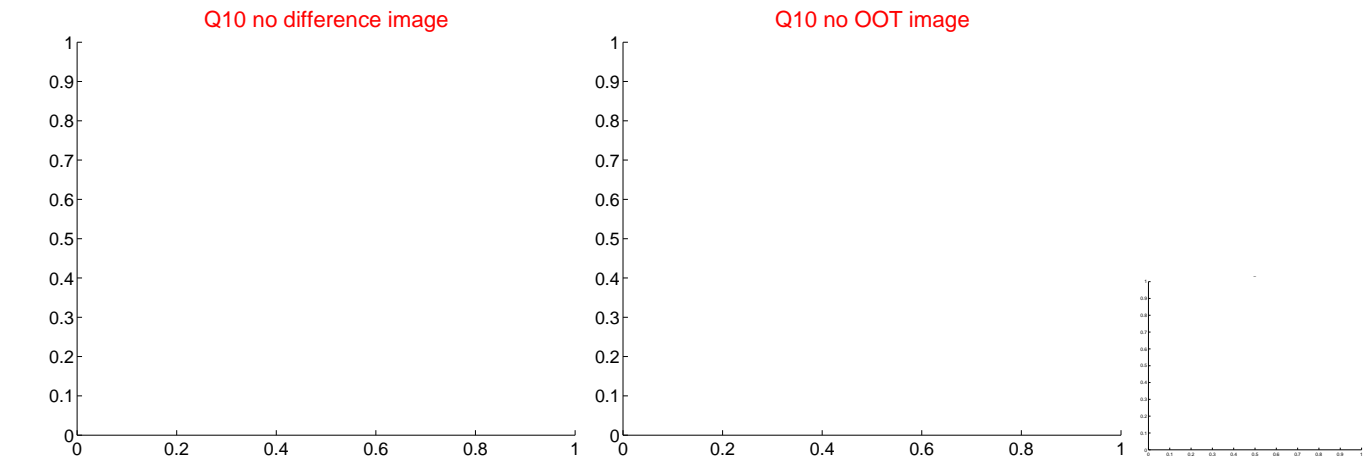
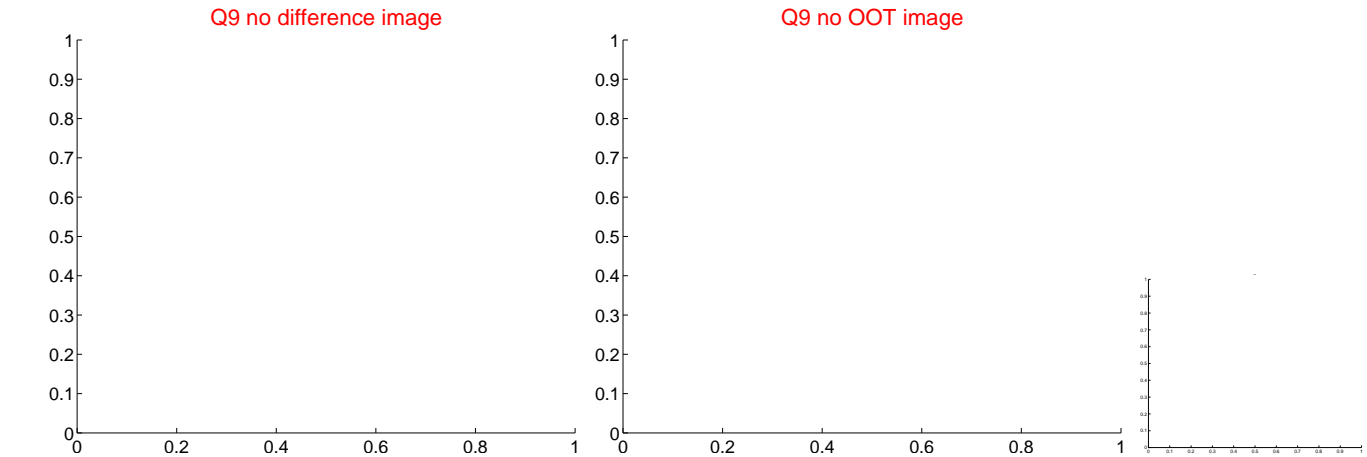
Q4 no OOT image



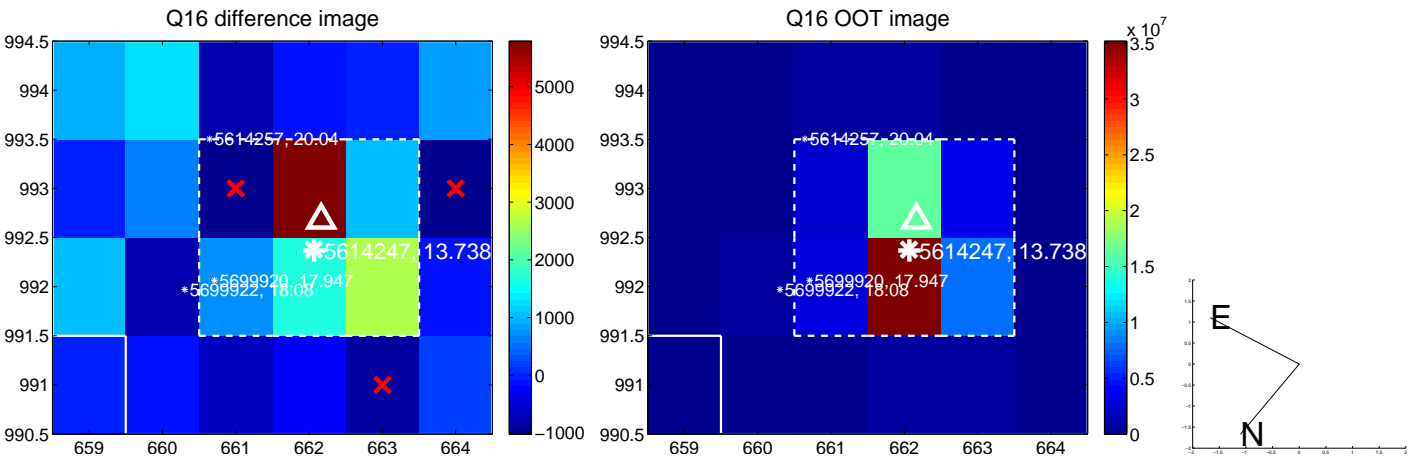
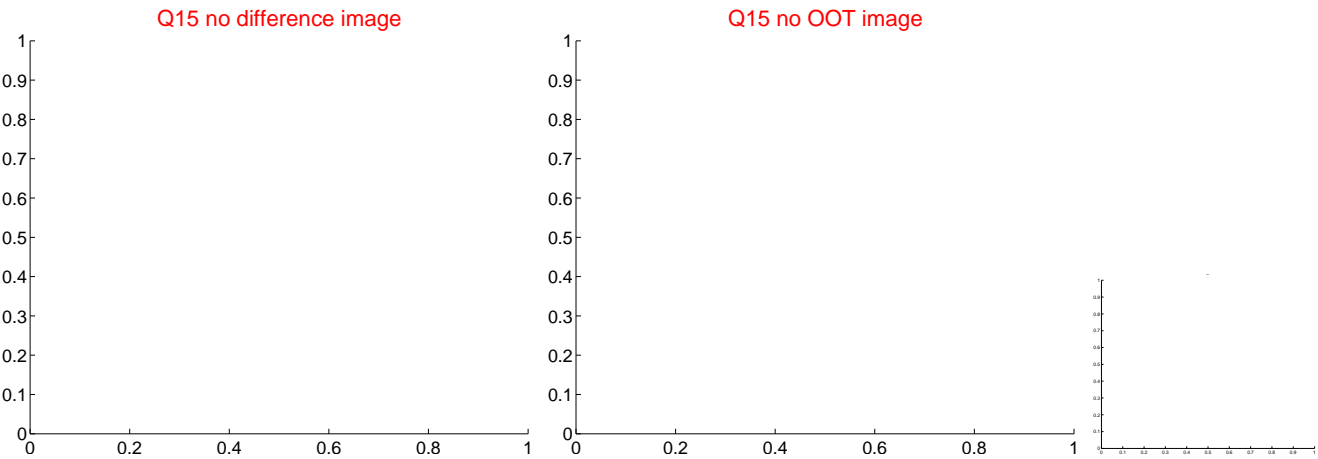
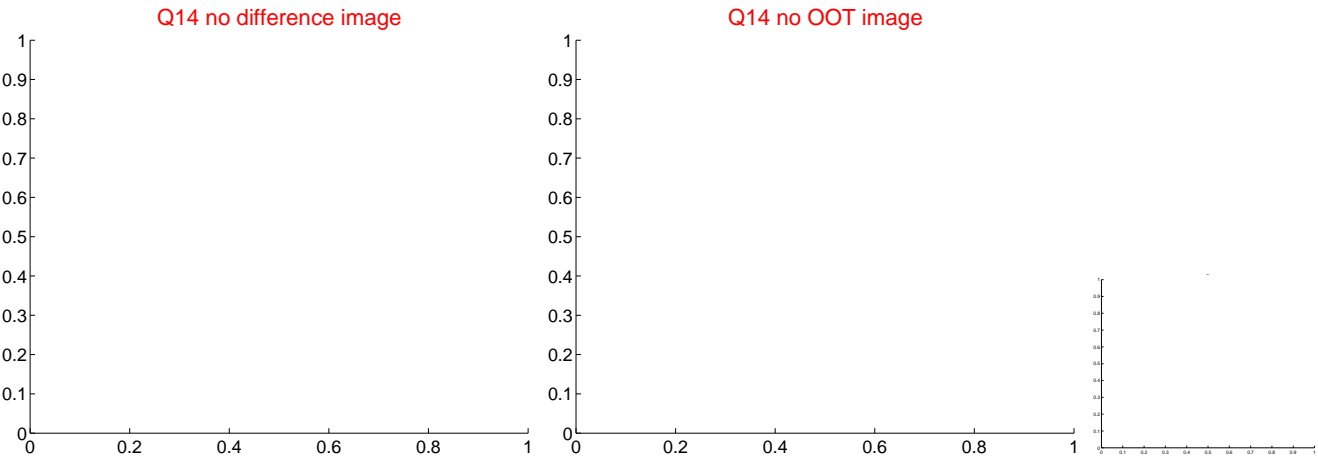
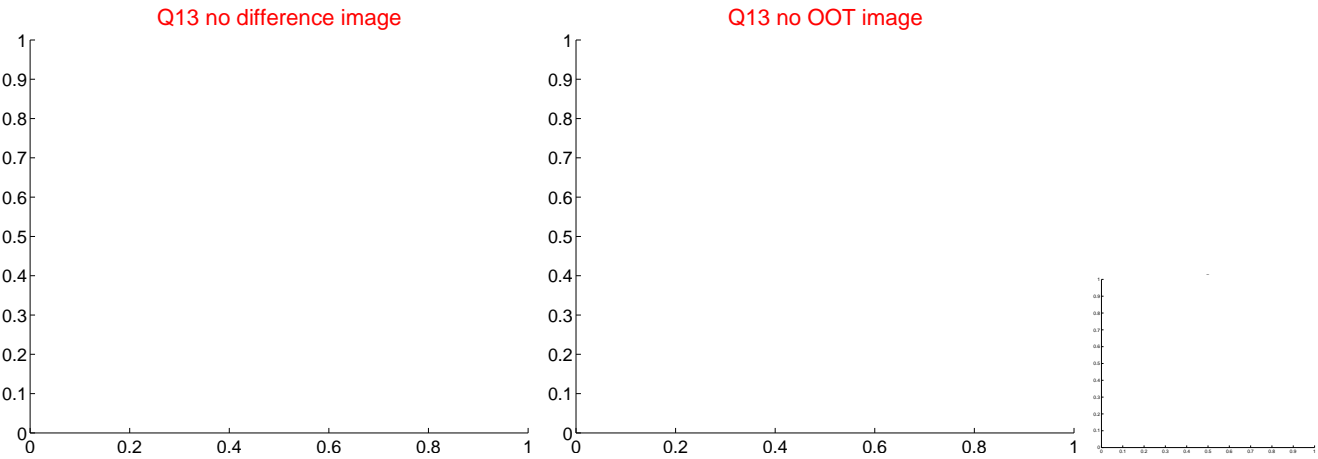
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

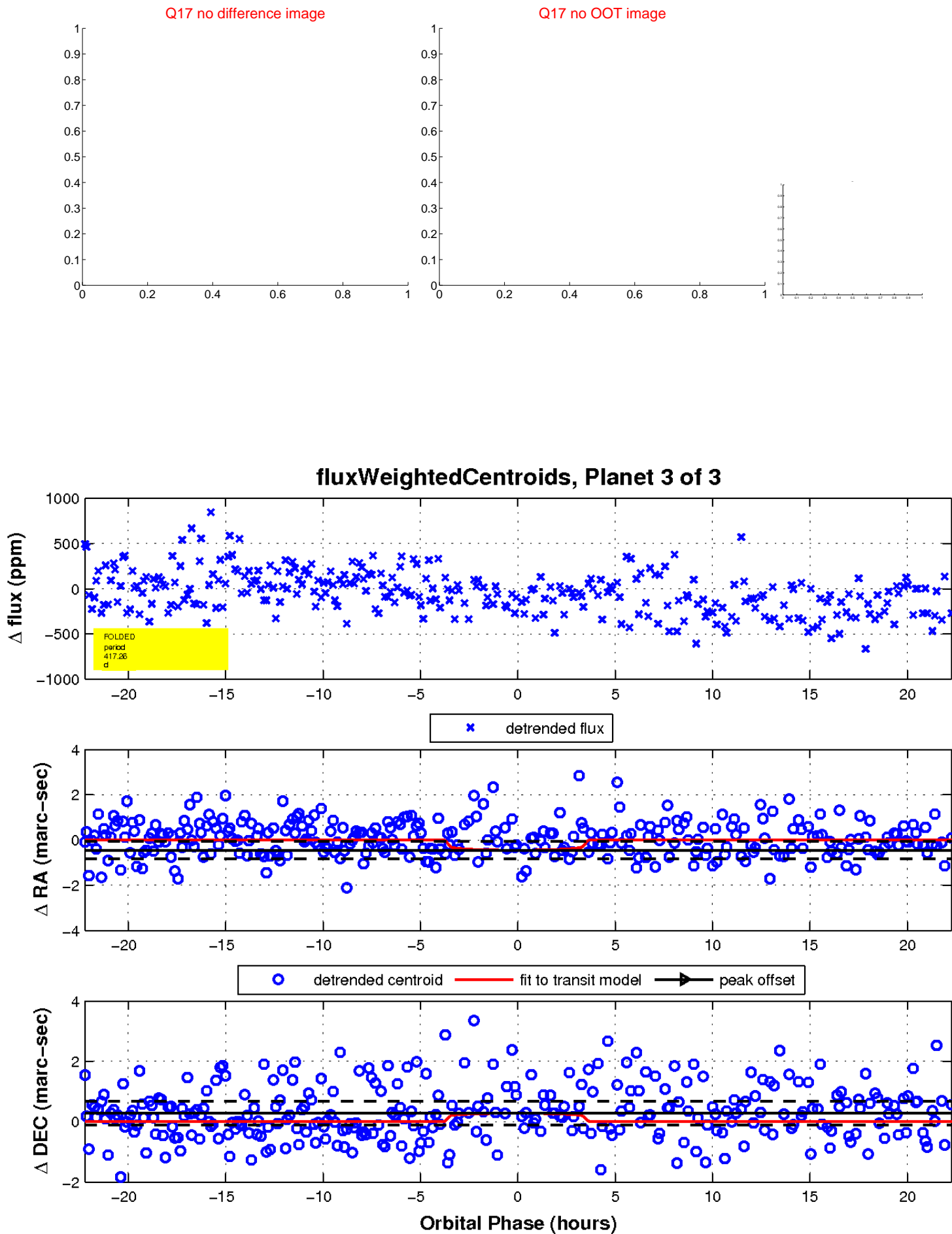


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



# UKIRT Image

Declination

