

# KIC 012254419

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012254419-01	OBS	No	521.908887	236.859348	84.5	4.610	7.6	7.2	2.26	7675	2.33	6.56
012254419-02	OBS	No	476.615377	278.796483	55.9	10.671	7.7	8.0	2.26	7675	1.96	7.41
012254419-03	OBS	No	478.946657	277.736809	50.2	18.437	7.3	8.1	2.26	7675	1.86	7.36

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012254419-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_ALT—CENT_SATURATED
012254419-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
012254419-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED

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

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

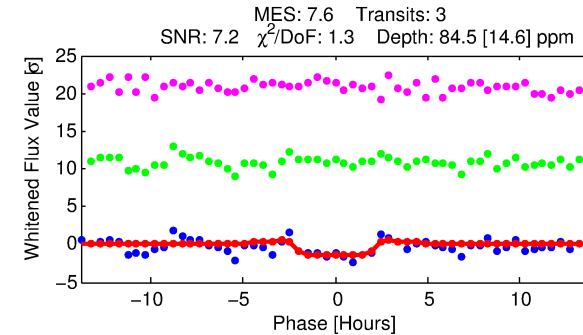
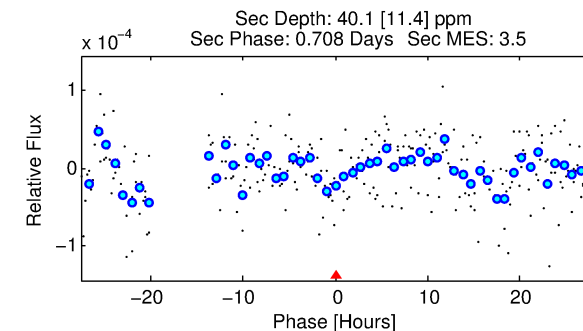
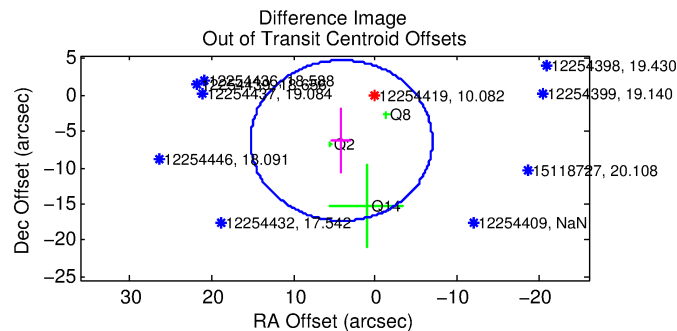
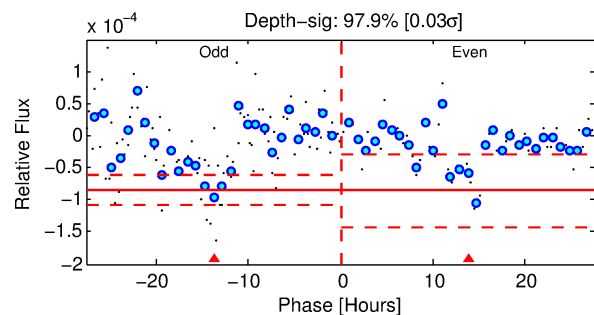
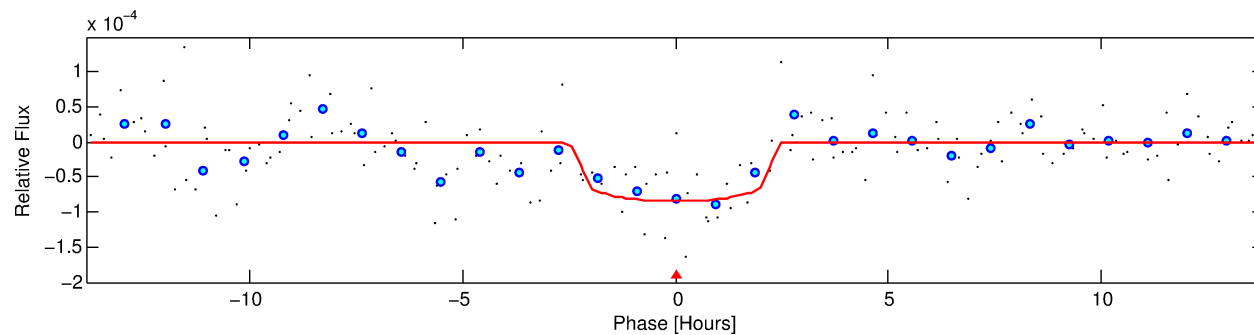
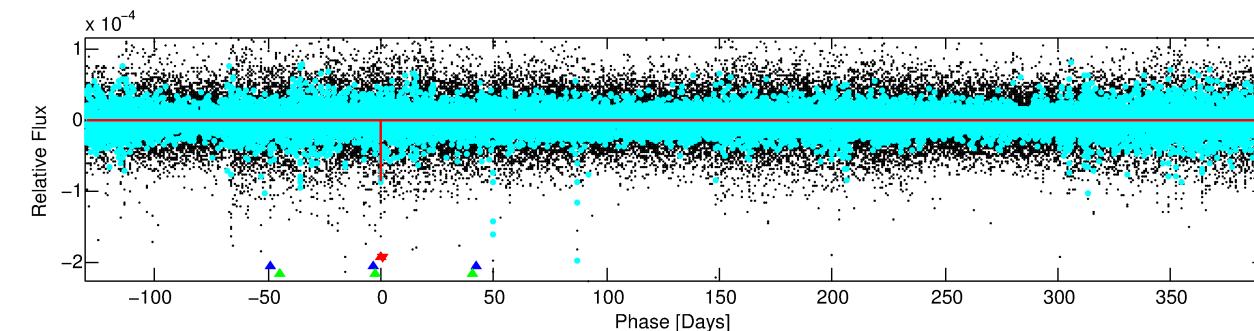
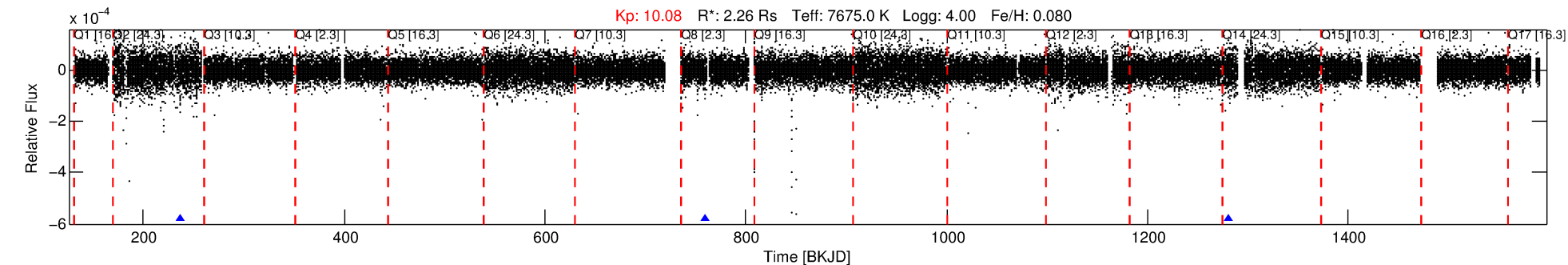
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 012254419-01

No Significant Match Found

# DV One-Page Summary

KIC: 12254419 Candidate: 1 of 3 Period: 521.909 d



## DV Fit Results:

Period = 521.90889 [0.00807] d  
Epoch = 236.8593 [0.0086] BKJD  
 $R_p/R^* = 0.0095$  [0.0035]  
 $a/R^* = 475.45$  [1060.40]  
 $b = 0.85$  [0.76]  
 $\text{Seff} = 6.56$  [2.50]  
 $T_{\text{eq}} = 408$  [39] K  
 $R_p = 2.33$  [1.08]  $R_e$   
 $a = 1.5549$  [0.3645] AU  
 $A_g = 9826.36$  [8484.23] [1.16 $\sigma$ ]  
 $T_{\text{eff}} = 6282$  [1273] K [4.61 $\sigma$ ]

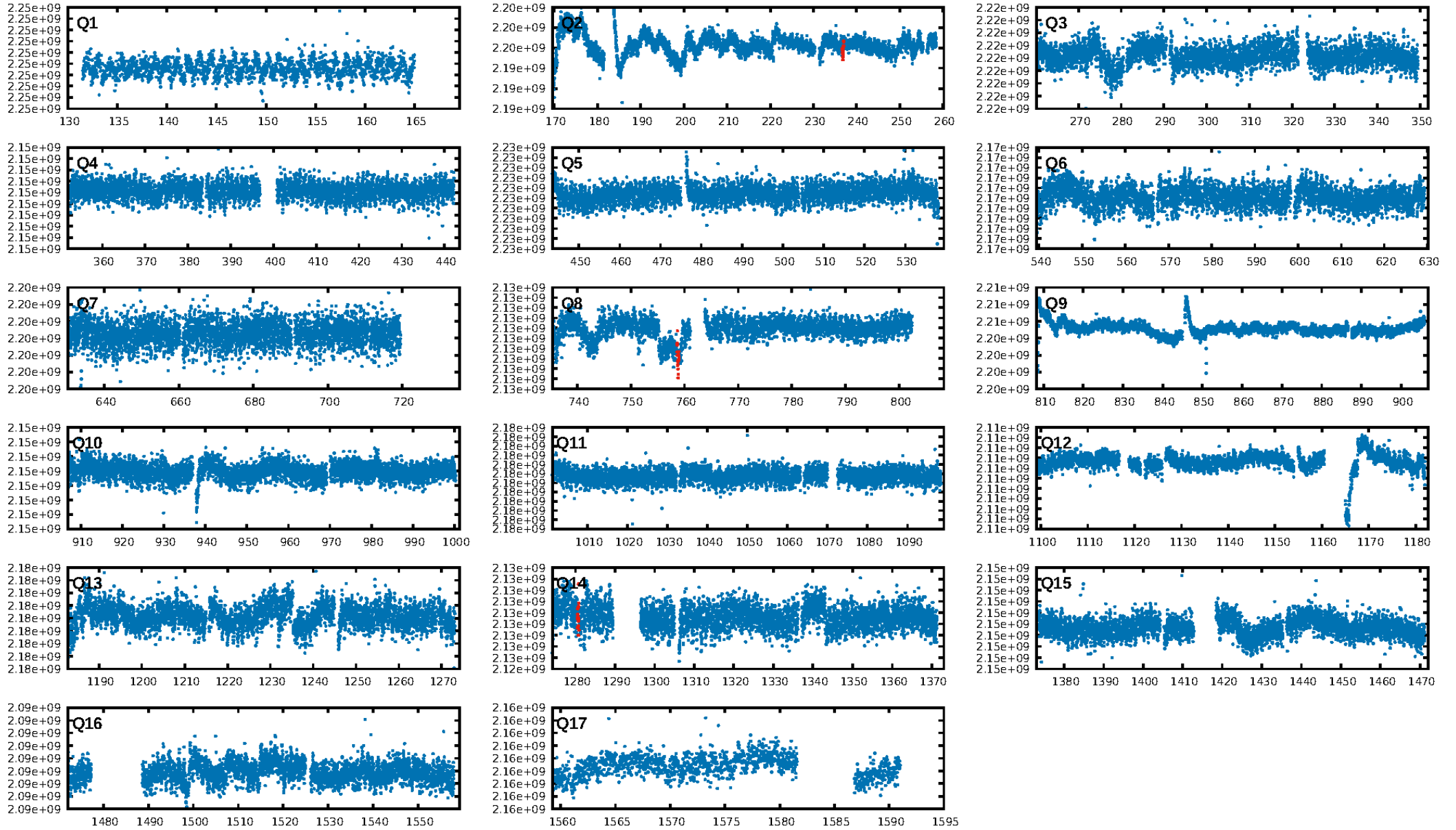
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [54.26 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 54.0%  
ModelChiSquareGof-sig: 87.9%  
**Bootstrap-pfa: 8.75e-11**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 60.2%  
Centroid-so: 1.502 arcsec [0.70 $\sigma$ ]  
OotOffset-rm: 7.510 arcsec [2.04 $\sigma$ ]  
OotOffset-st: 2/0/1/0 [3]  
KicOffset-rm: **6.587 arcsec [3.68 $\sigma$ ]**  
KicOffset-st: 2/0/1/0 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [3/3]

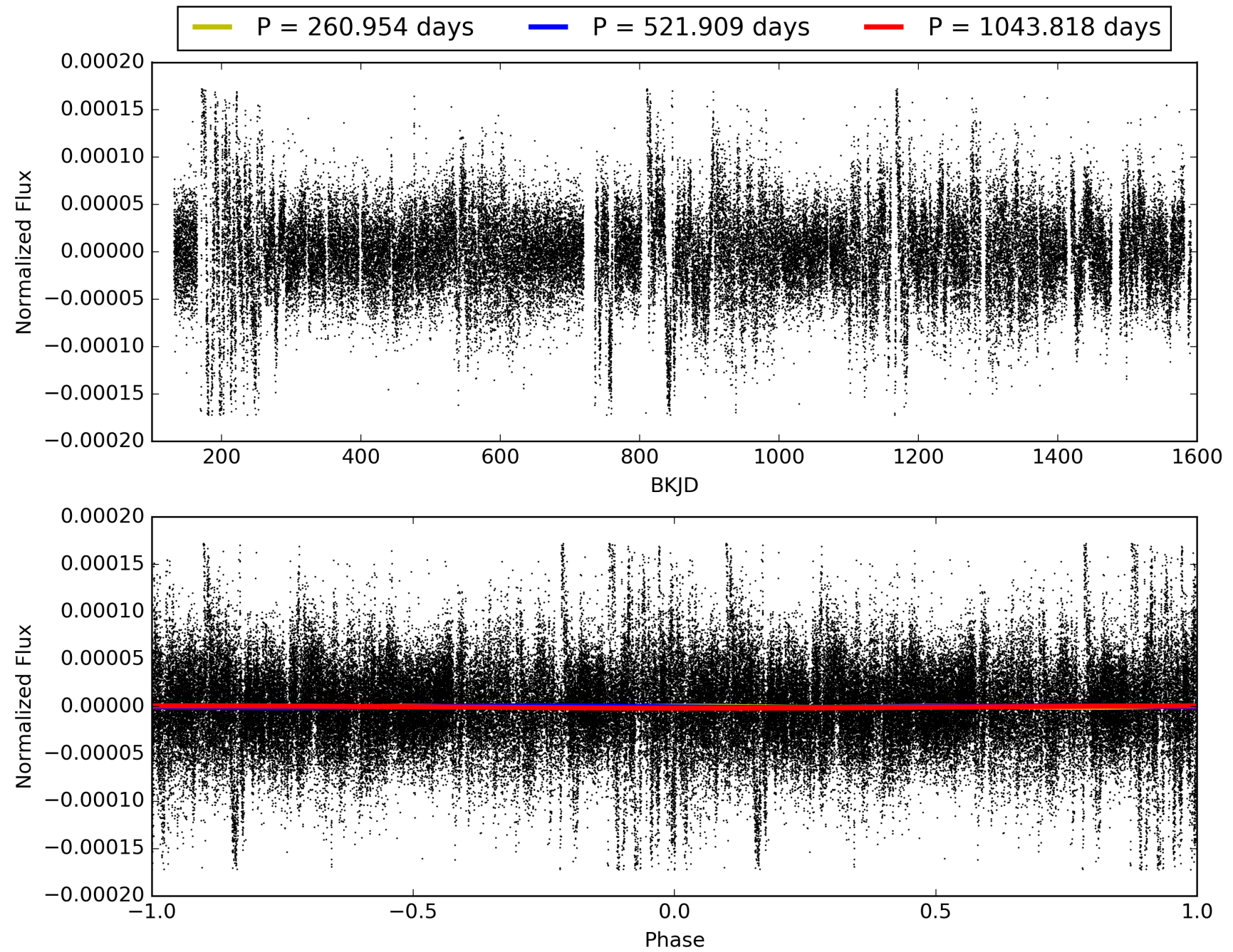
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:22:31 Z

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

# TCE 012254419-01, PDC Light Curves

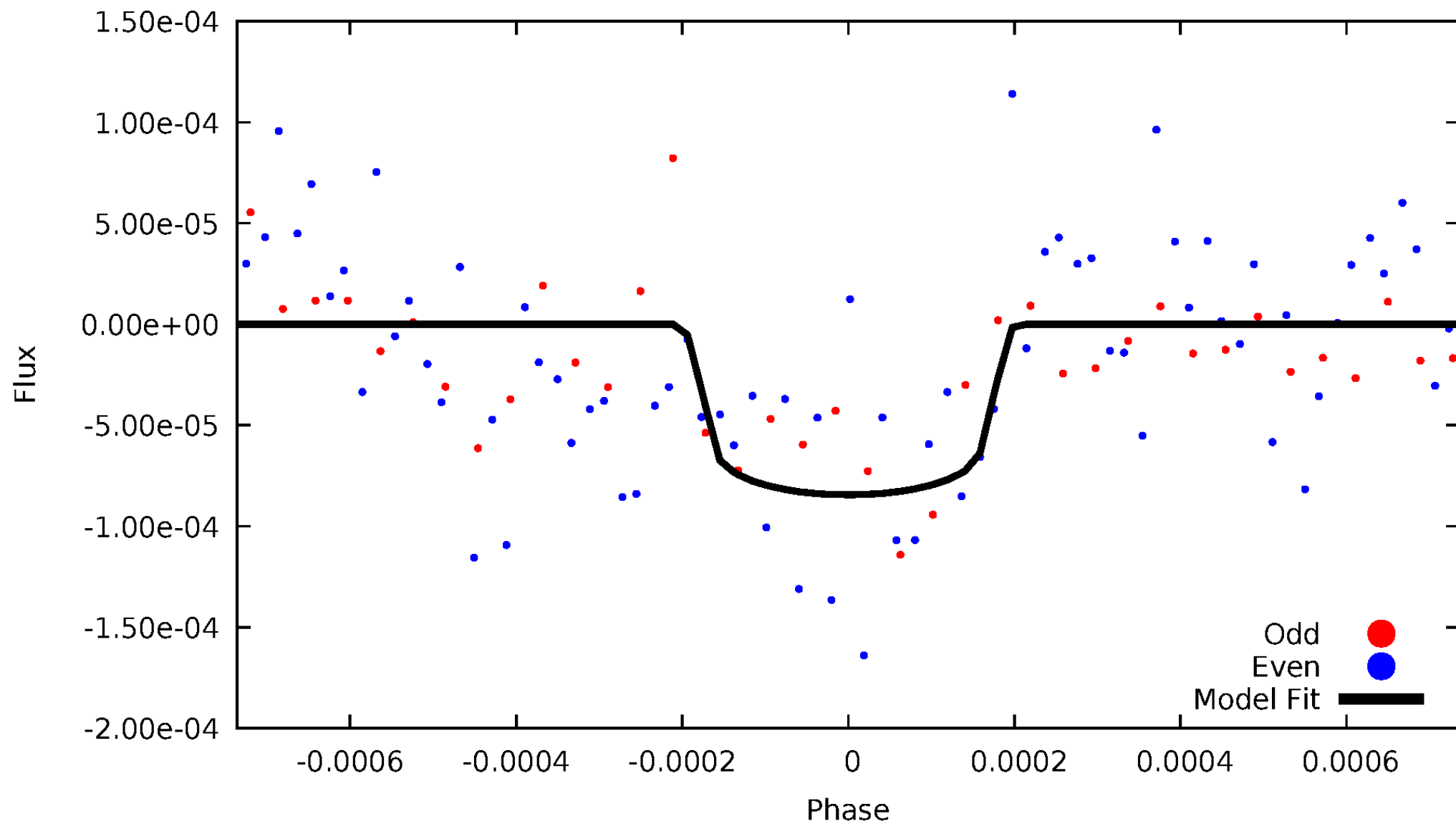


# TCE 012254419-01



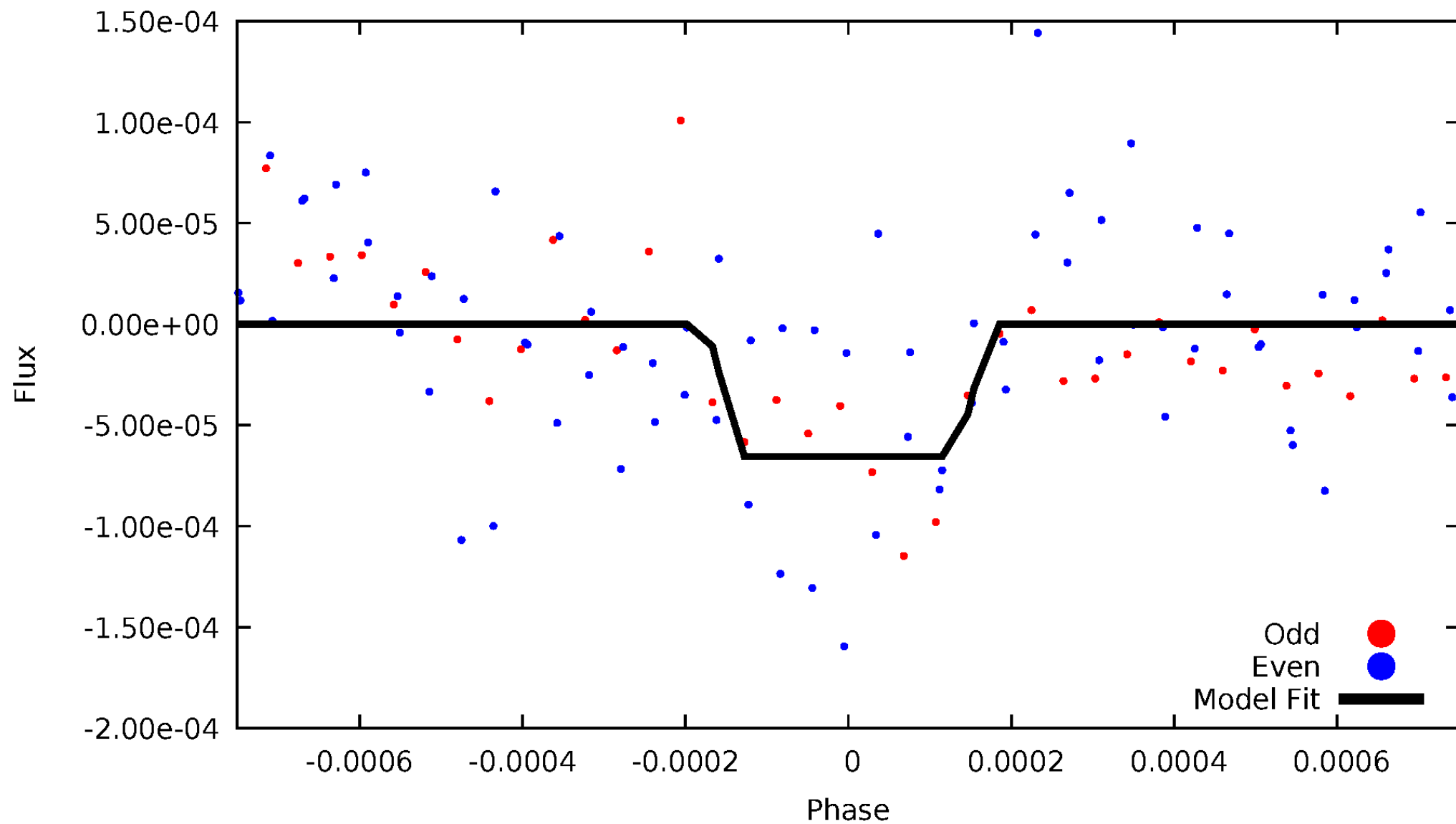
# DV Odd/Even

TCE 012254419-01



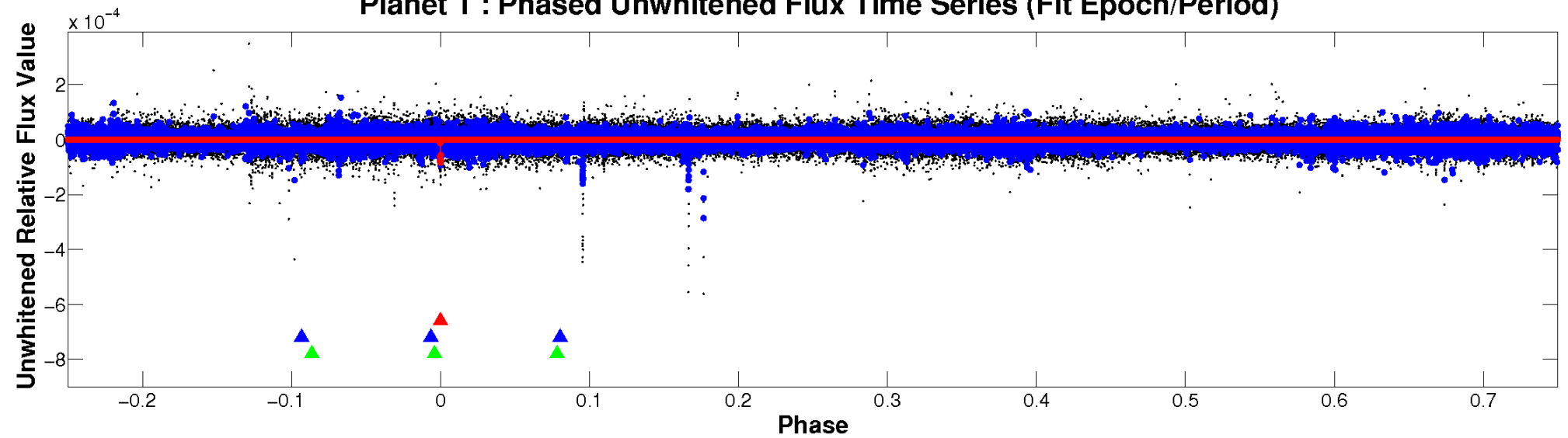
# ALT Odd/Even

TCE 012254419-01

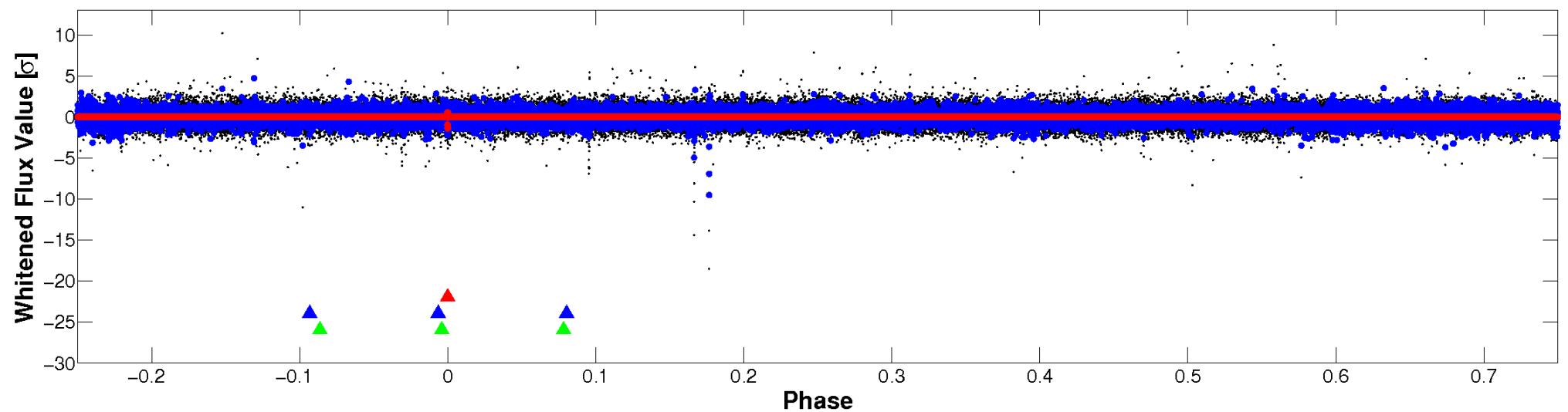


# Non-Whitened Vs. Whitened Light Curve

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

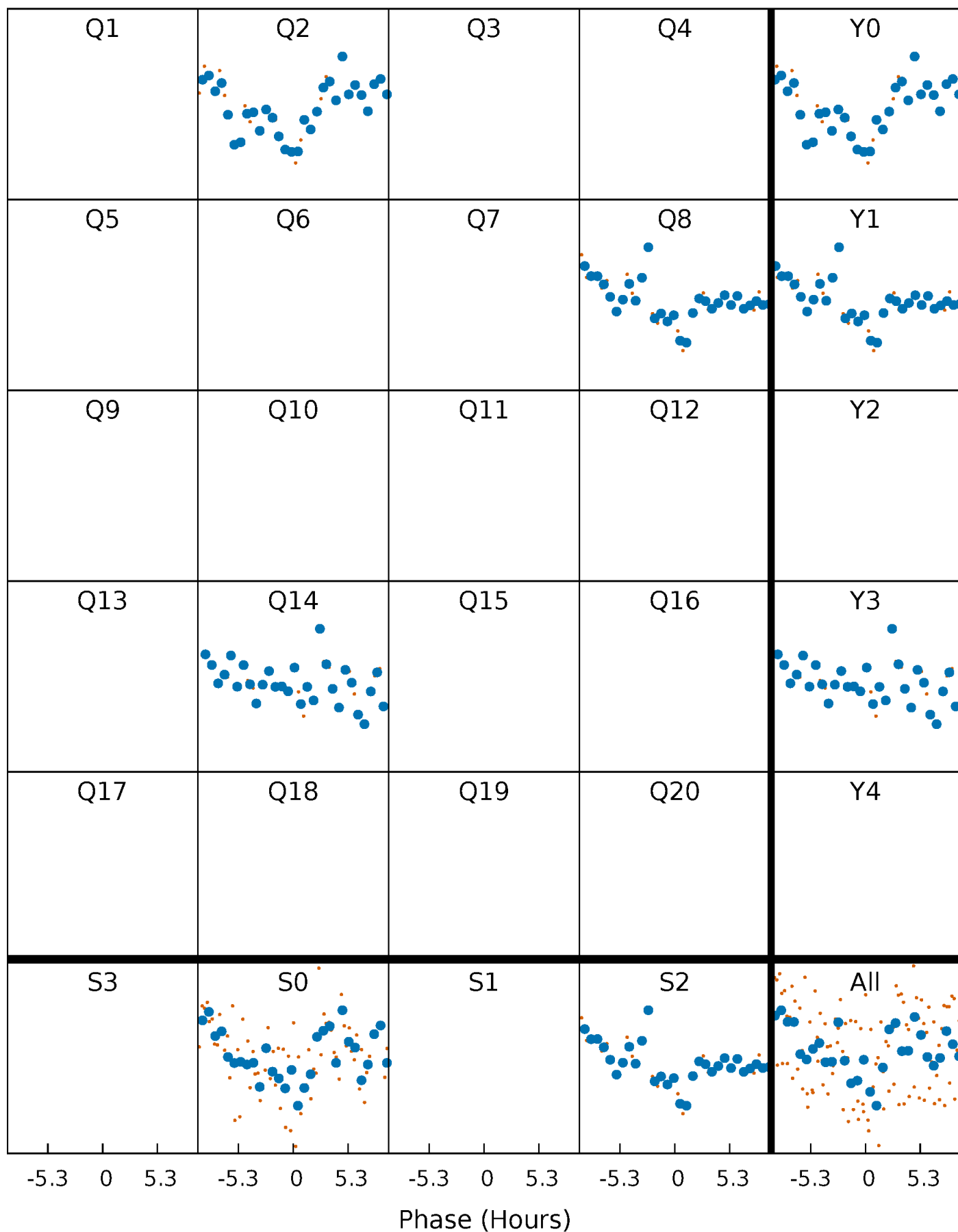


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

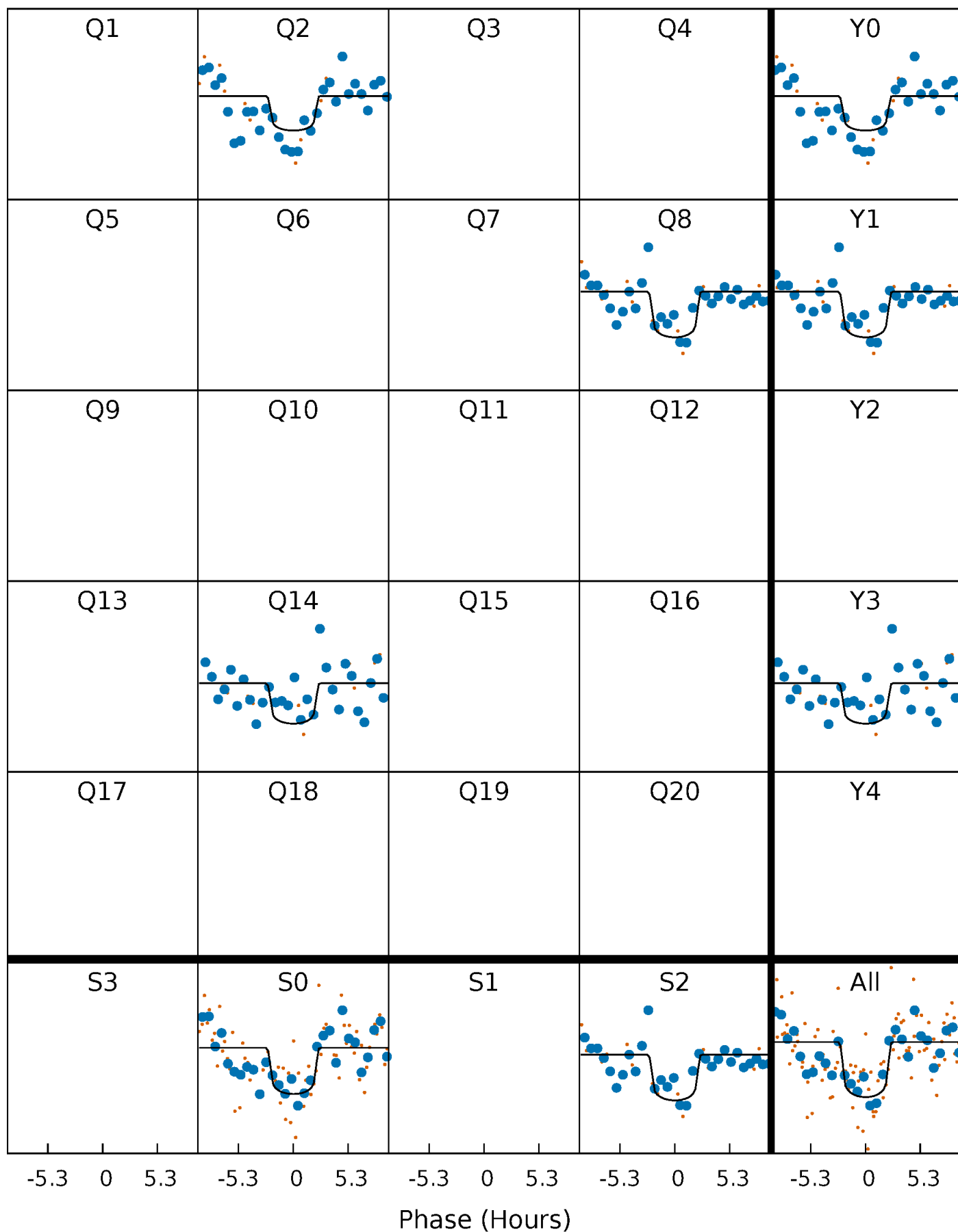
TCE 012254419-01 P=521.908887 Days  $T_0=236.859348$  (BKJD)





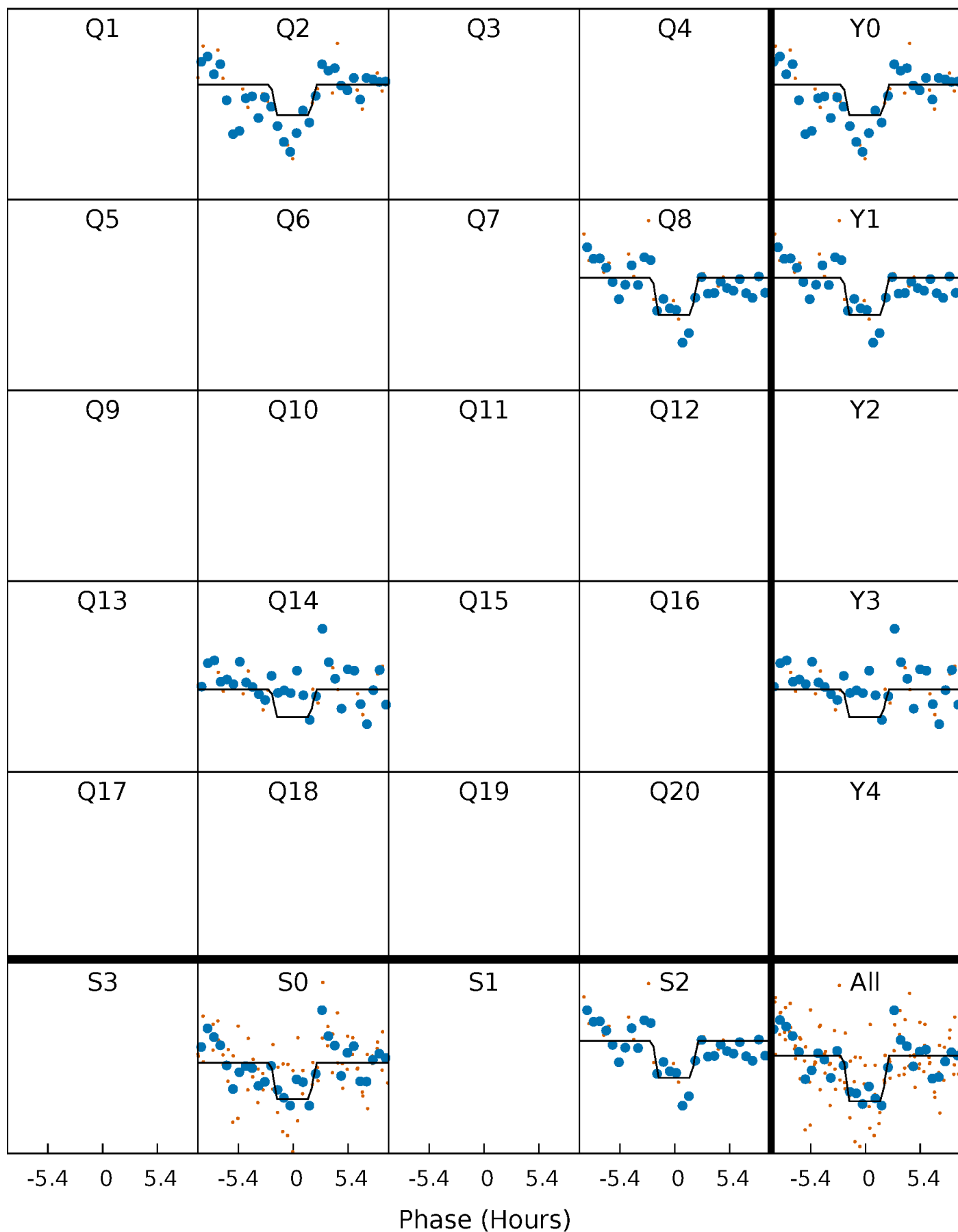
# DV Quarter-Phased Transit Curves

TCE 012254419-01 P=521.908887 Days  $T_0=236.859348$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

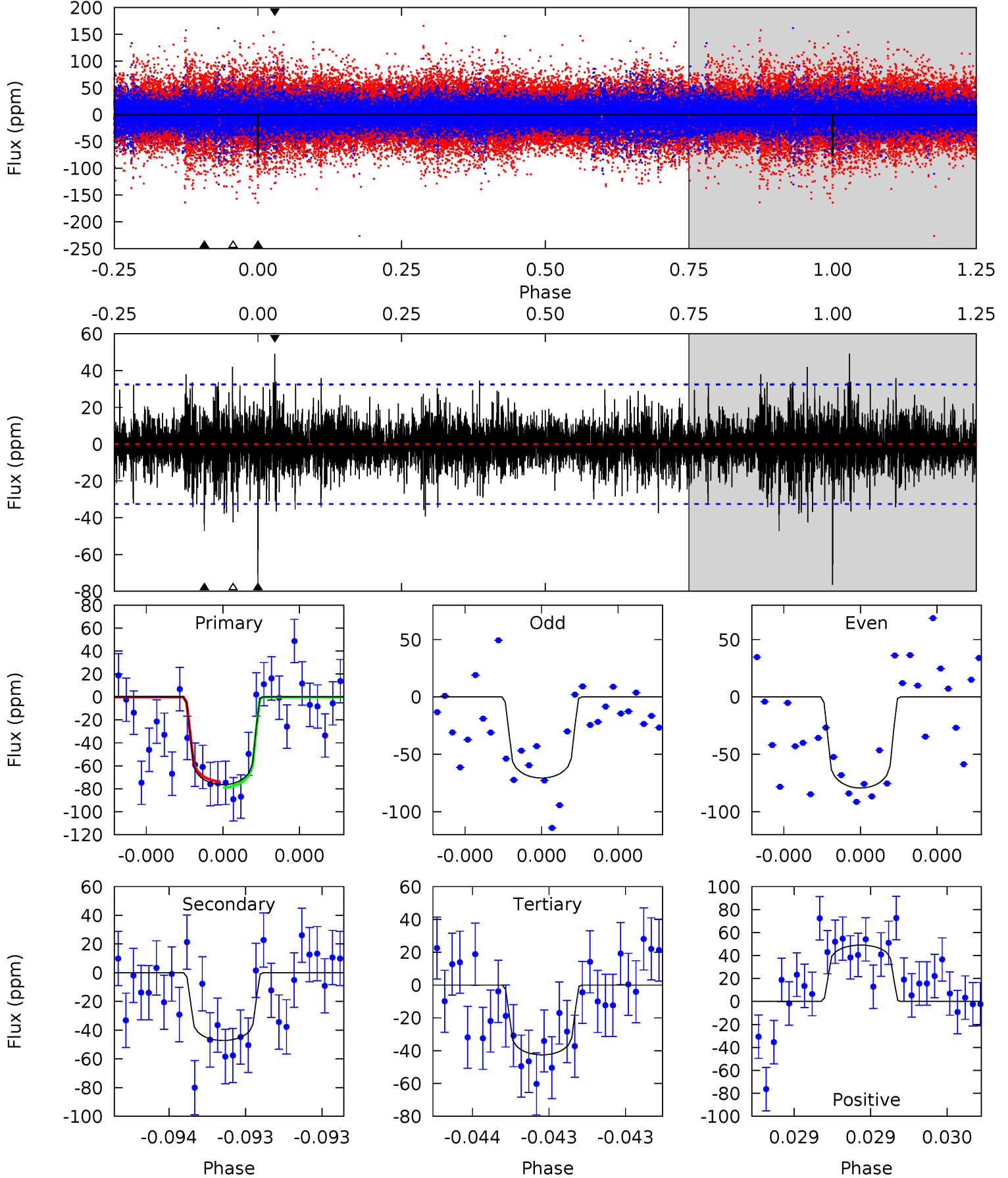
TCE 012254419-01 P=521.893556 Days  $T_0=236.871844$  (BKJD)



# DV Model-Shift Uniqueness Test

012254419-01, P = 521.908887 Days, E = 236.859348 Days

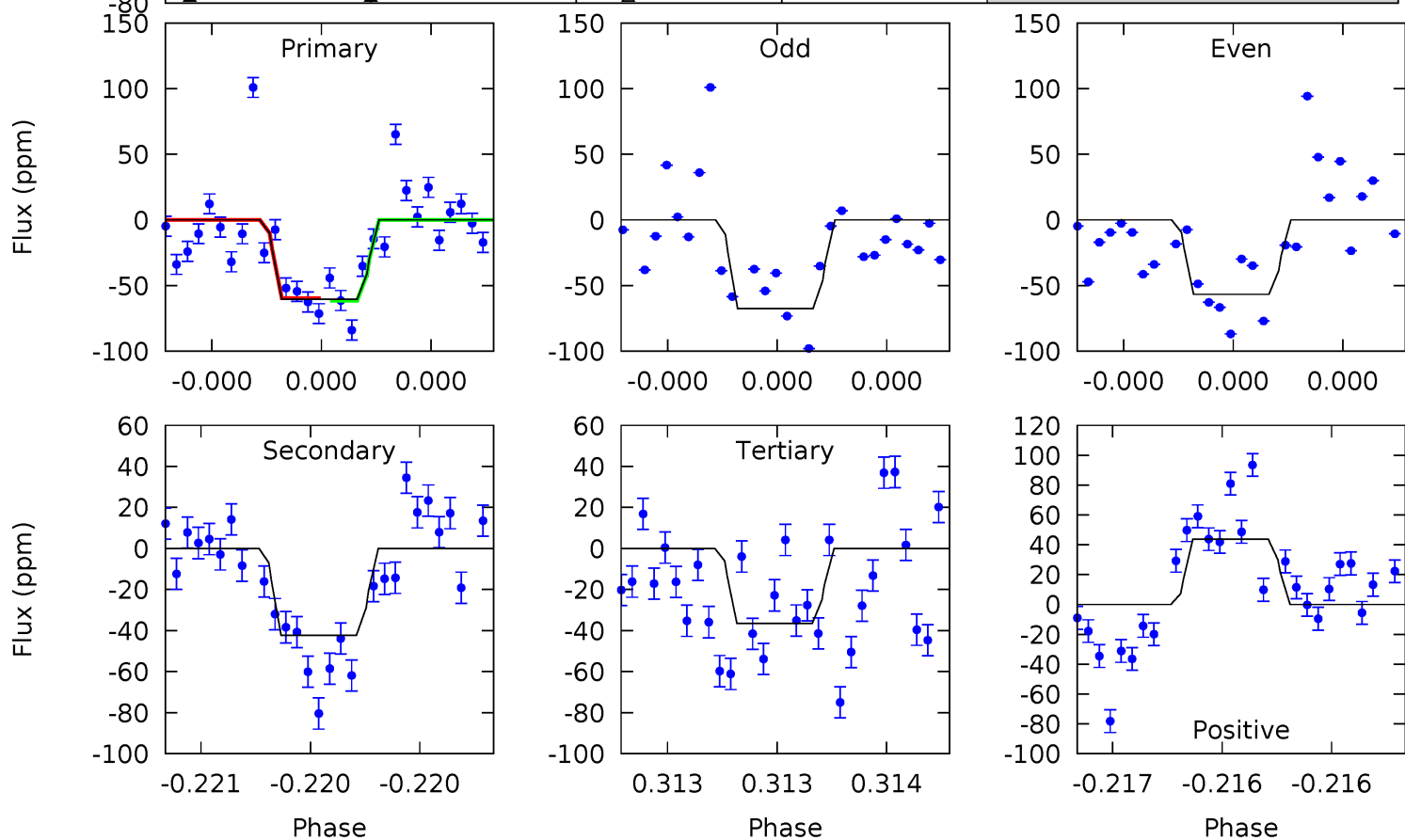
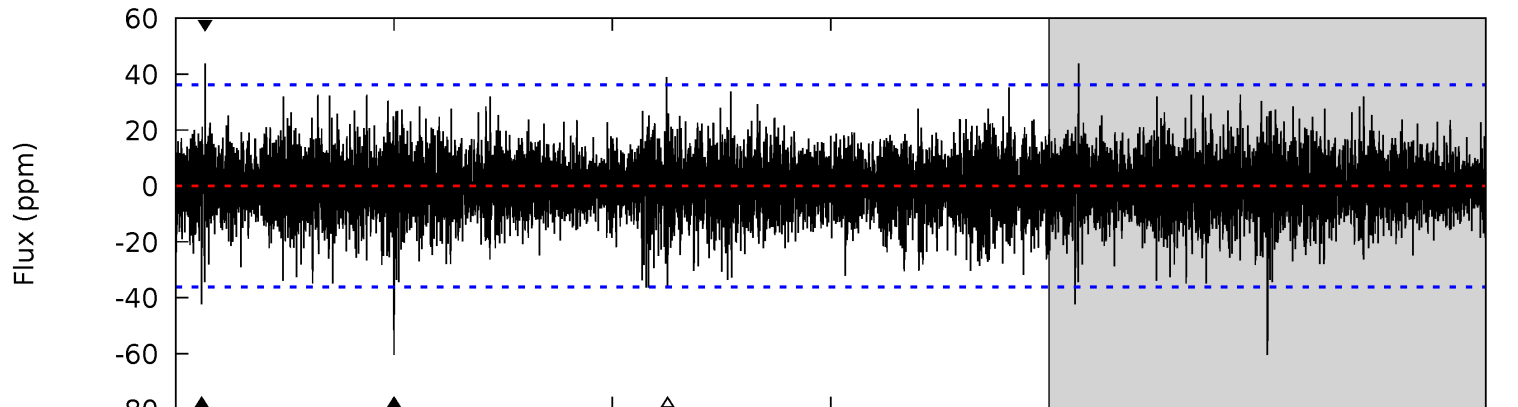
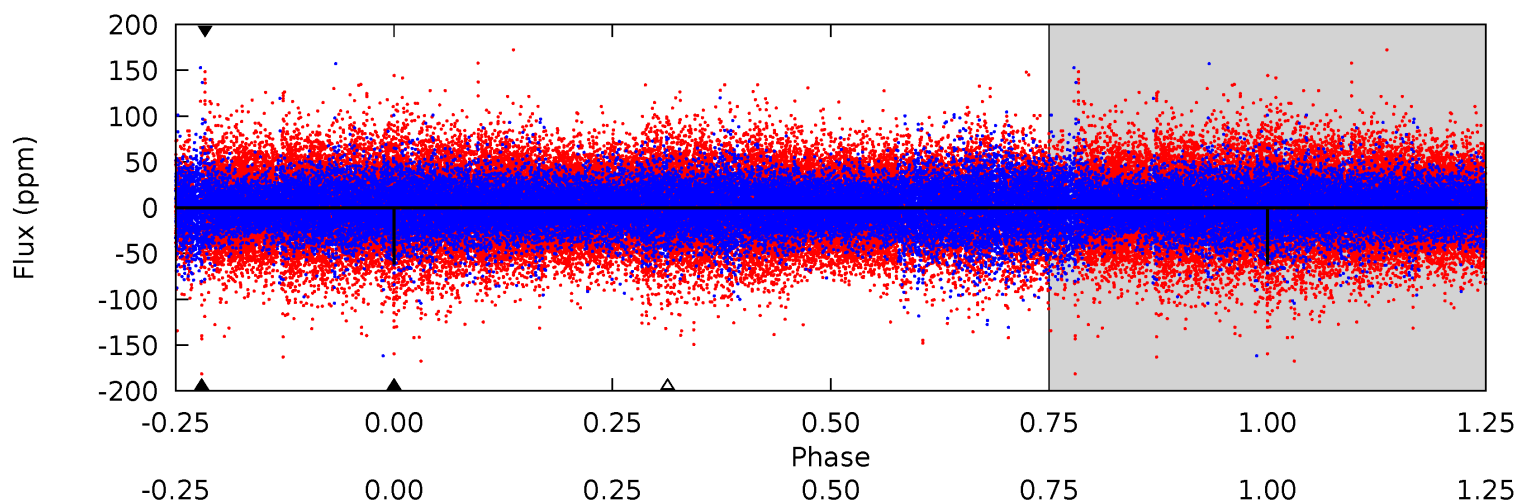
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	8.14	7.34	8.47	5.61	3.53	1.60	5.85	4.73	0.80	-0.33	0.71	1.09	0.39	0.44



# Alt Model-Shift Uniqueness Test

012254419-01, P = 521.893556 Days, E = 236.871844 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
9.40	6.59	5.69	6.82	5.63	3.57	1.44	3.71	2.58	0.90	-0.23	0.78	0.89	0.42	0.15



### Stellar Parameters For KIC 012254419

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7675^{+214}_{-322}$	$3.995^{+0.187}_{-0.153}$	$0.080^{+0.200}_{-0.350}$	$2.259^{+0.514}_{-0.628}$	$1.840^{+0.145}_{-0.339}$	$0.225^{+0.251}_{-0.088}$
	+3%/-4%	+5%/-4%	+250%/-438%	+23%/-28%	+8%/-18%	+112%/-39%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 012254419-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-47 \pm 6$	$2.29^{+0.96}_{-0.93}$	$567^{+38}_{-41}$	$6403^{+2021}_{-969}$	$12138^{+20202}_{-6325}$
Alt.	$-42 \pm 6$	$1.90^{+1.01}_{-0.83}$	$567^{+39}_{-42}$	$6804^{+2746}_{-1211}$	$15104^{+31352}_{-8717}$

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

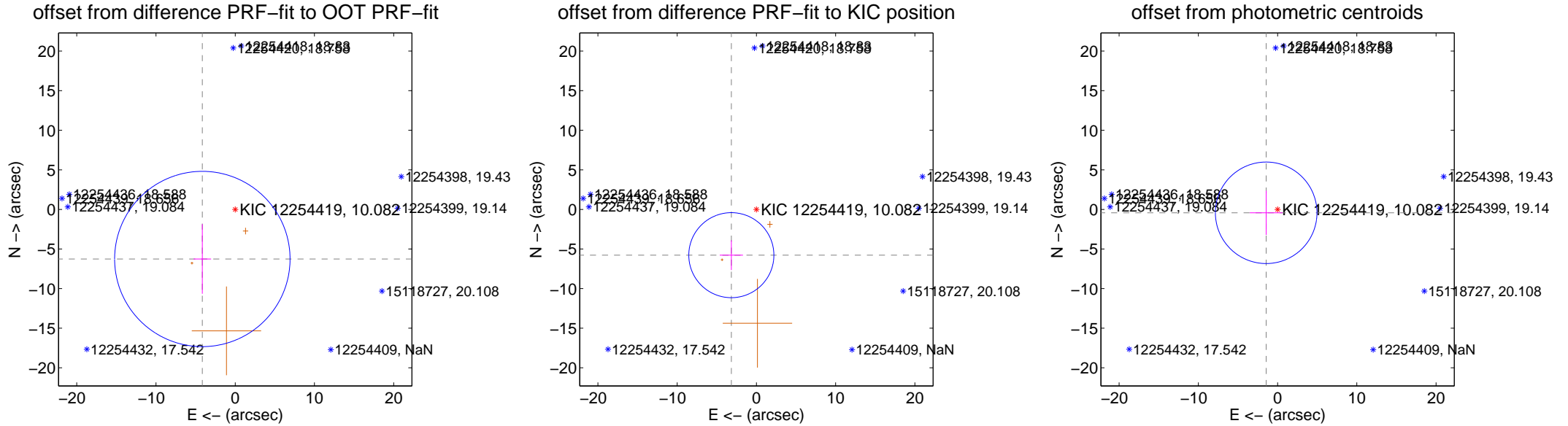
## DV Centroid Data

Supplemental centroid analysis for 012254419-01. **Kepler magnitude: 10.08.** Transit SNR 7.17

**There are 0 quarters with good PRF difference image offsets**

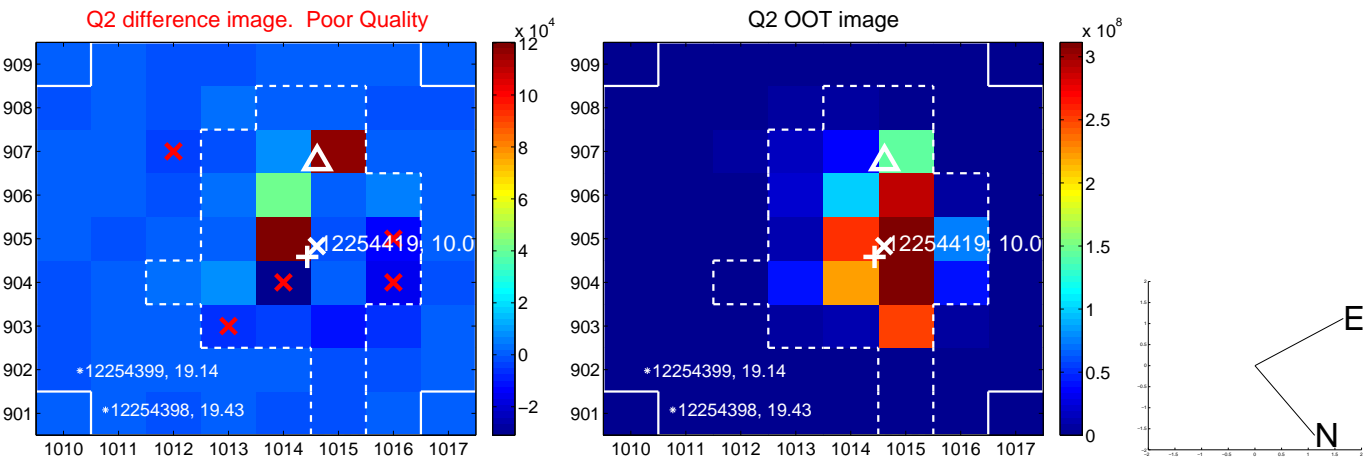
The direct PRF centroid is offset from the target star catalog position by about 1.57 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$7.510 \pm 3.690$	2.04	$4.149 \pm 1.102$	$-6.260 \pm 4.396$
PRF-fit source offset from KIC position	<b><math>6.587 \pm 1.790</math></b>	<b>3.68</b>	$3.163 \pm 1.465$	$-5.778 \pm 1.876$
photometric centroid source offset	$1.50 \pm 2.14$	0.70	$1.44 \pm 2.07$	$-0.43 \pm 2.79$

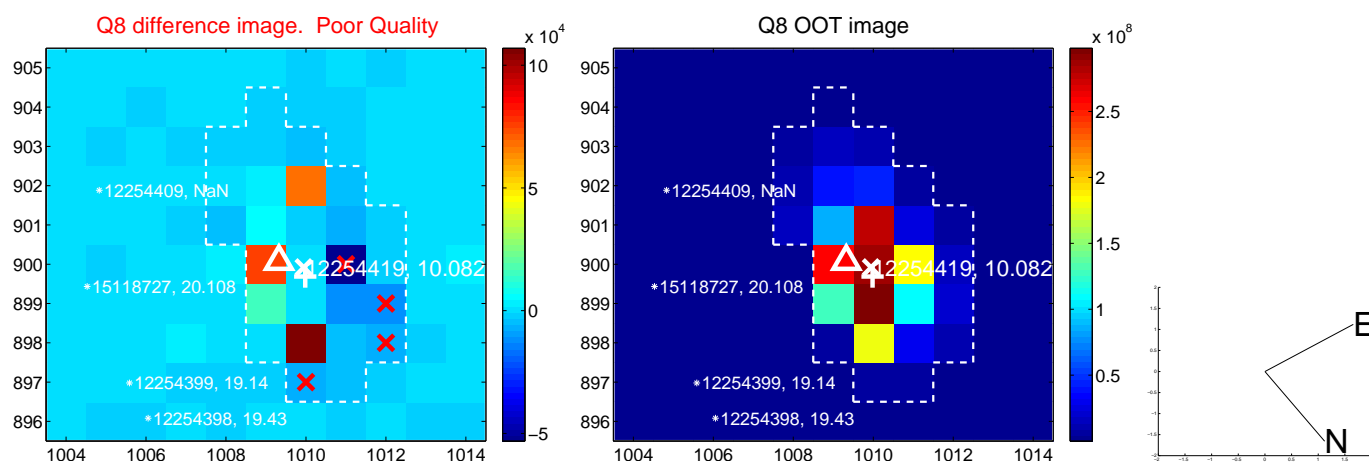


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

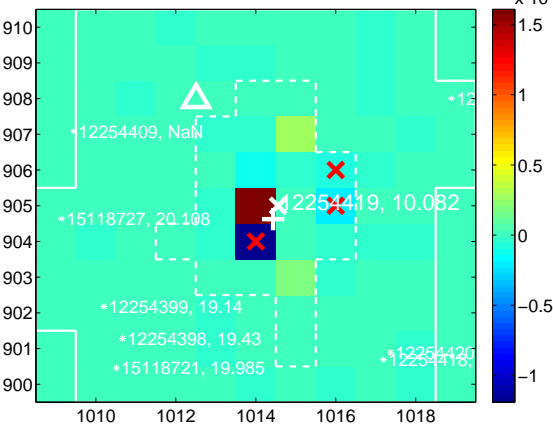
Q13 no difference image



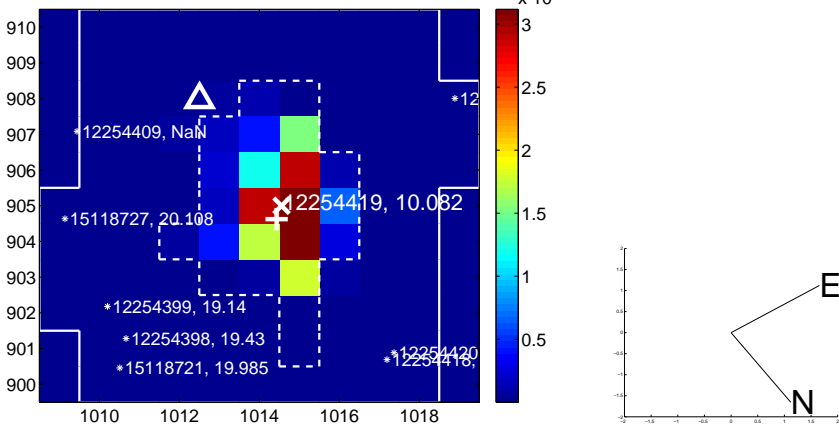
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



Q15 no difference image



Q15 no OOT image



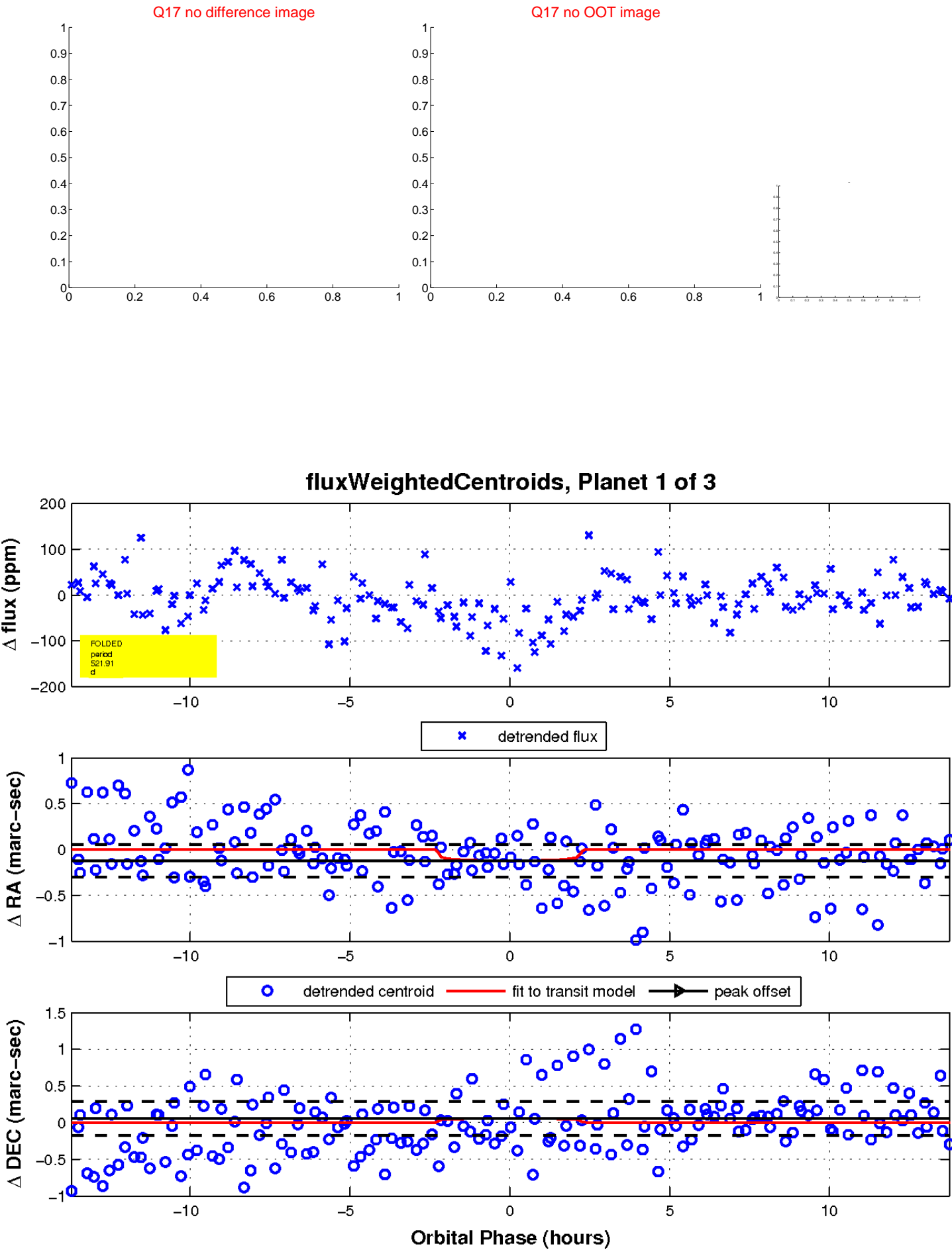
Q16 no difference image



Q16 no OOT image

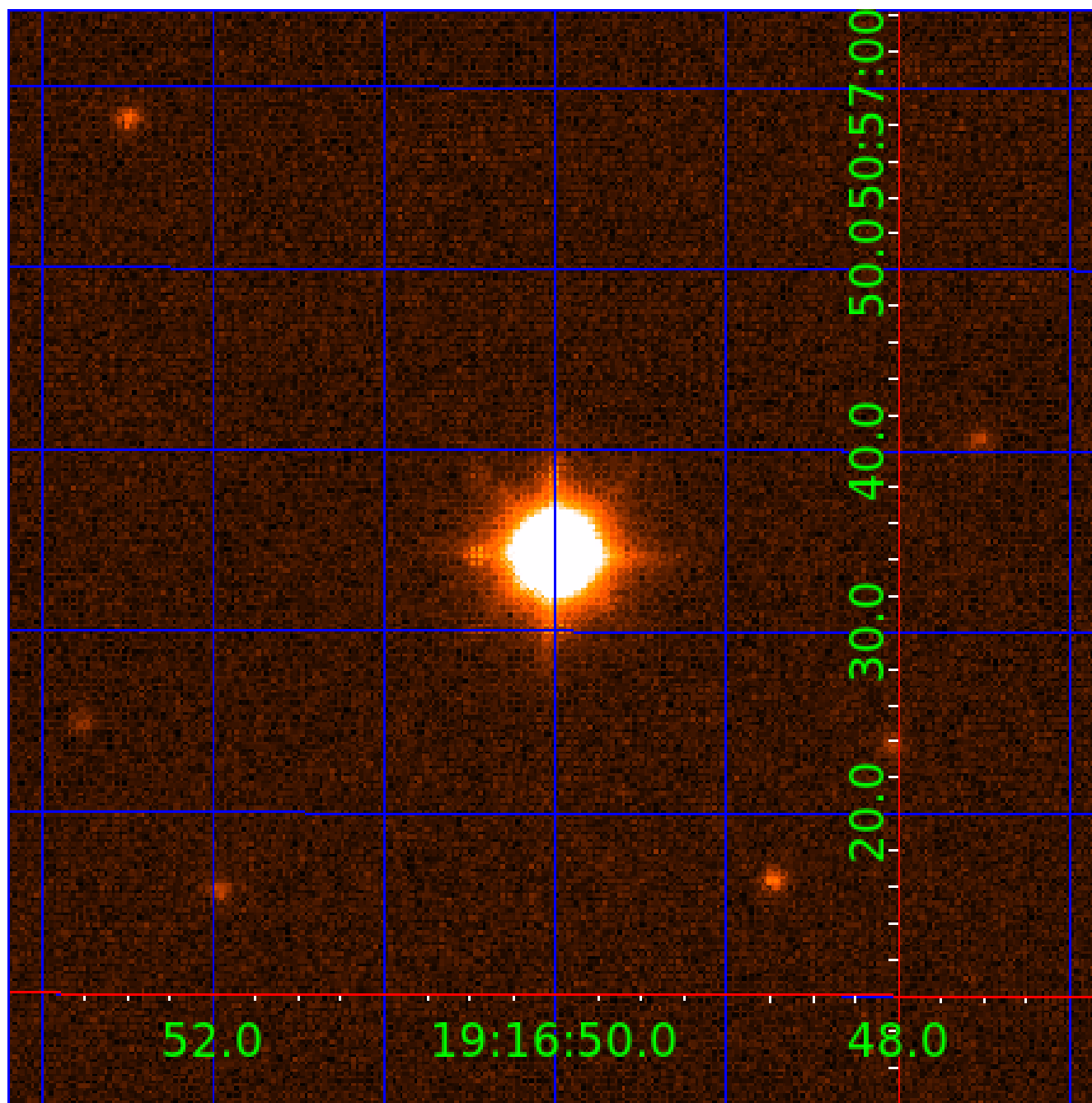


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 012254419

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012254419-01	OBS	No	521.908887	236.859348	84.5	4.610	7.6	7.2	2.26	7675	2.33	6.56
012254419-02	OBS	No	476.615377	278.796483	55.9	10.671	7.7	8.0	2.26	7675	1.96	7.41
012254419-03	OBS	No	478.946657	277.736809	50.2	18.437	7.3	8.1	2.26	7675	1.86	7.36

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012254419-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_ALT—CENT_SATURATED
012254419-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
012254419-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED

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

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

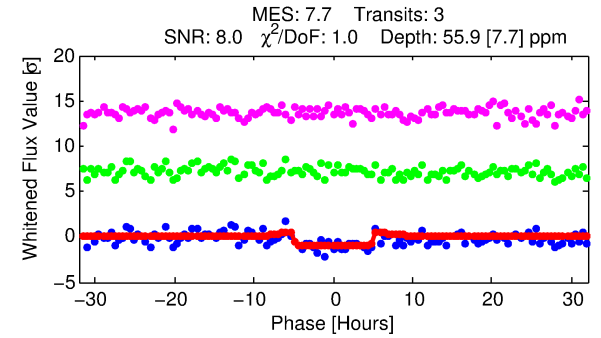
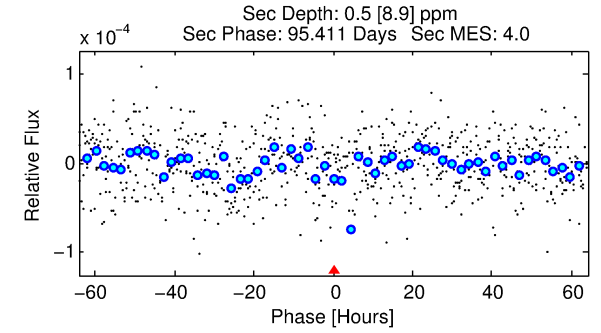
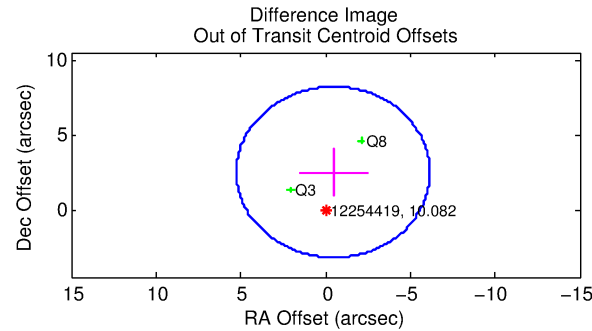
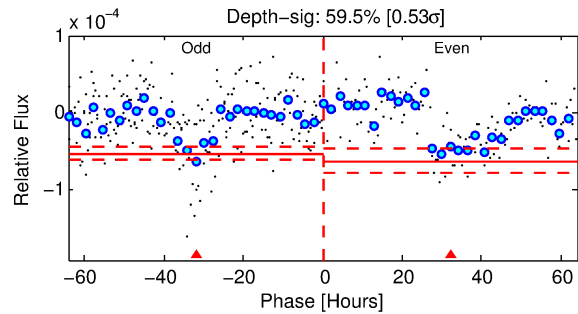
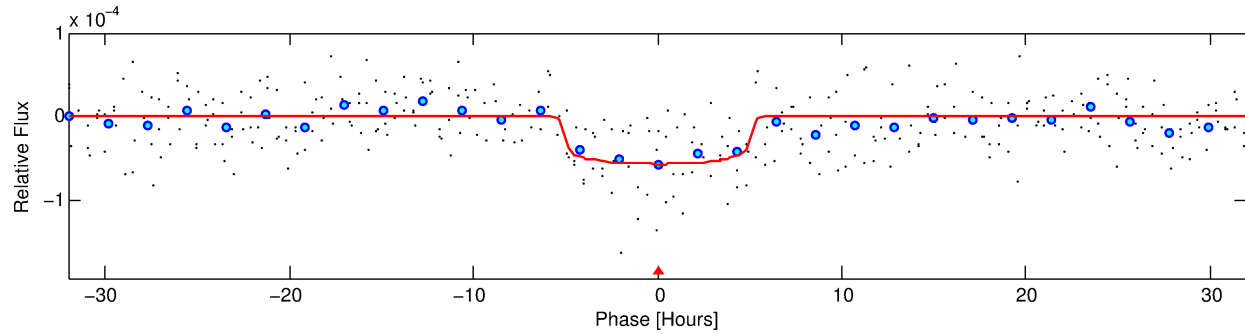
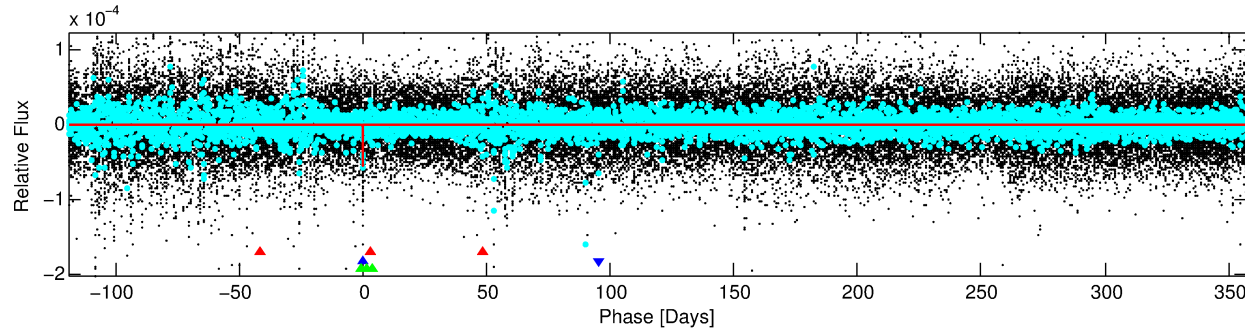
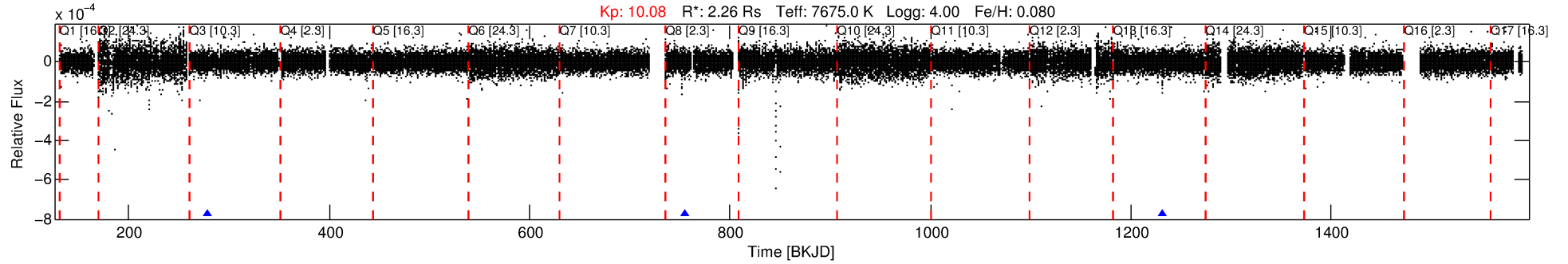
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012254419-02

No Significant Match Found

# DV One-Page Summary

KIC: 12254419 Candidate: 2 of 3 Period: 476.615 d



## DV Fit Results:

Period = 476.61538 [0.01075] d  
Epoch = 278.7965 [0.0130] BKJD  
Rp/R\* = 0.0079 [0.0012]  
a/R\* = 154.93 [130.58]  
b = 0.90 [0.18]  
Seff = 7.41 [2.82]  
Teq = 421 [40] K  
Rp = 1.96 [0.62] Re  
a = 1.4636 [0.3431] AU  
Ag = 167.09 [2743.15] [0.06 $\sigma$ ]  
Teffp = 2338 [9595] K [0.20 $\sigma$ ]

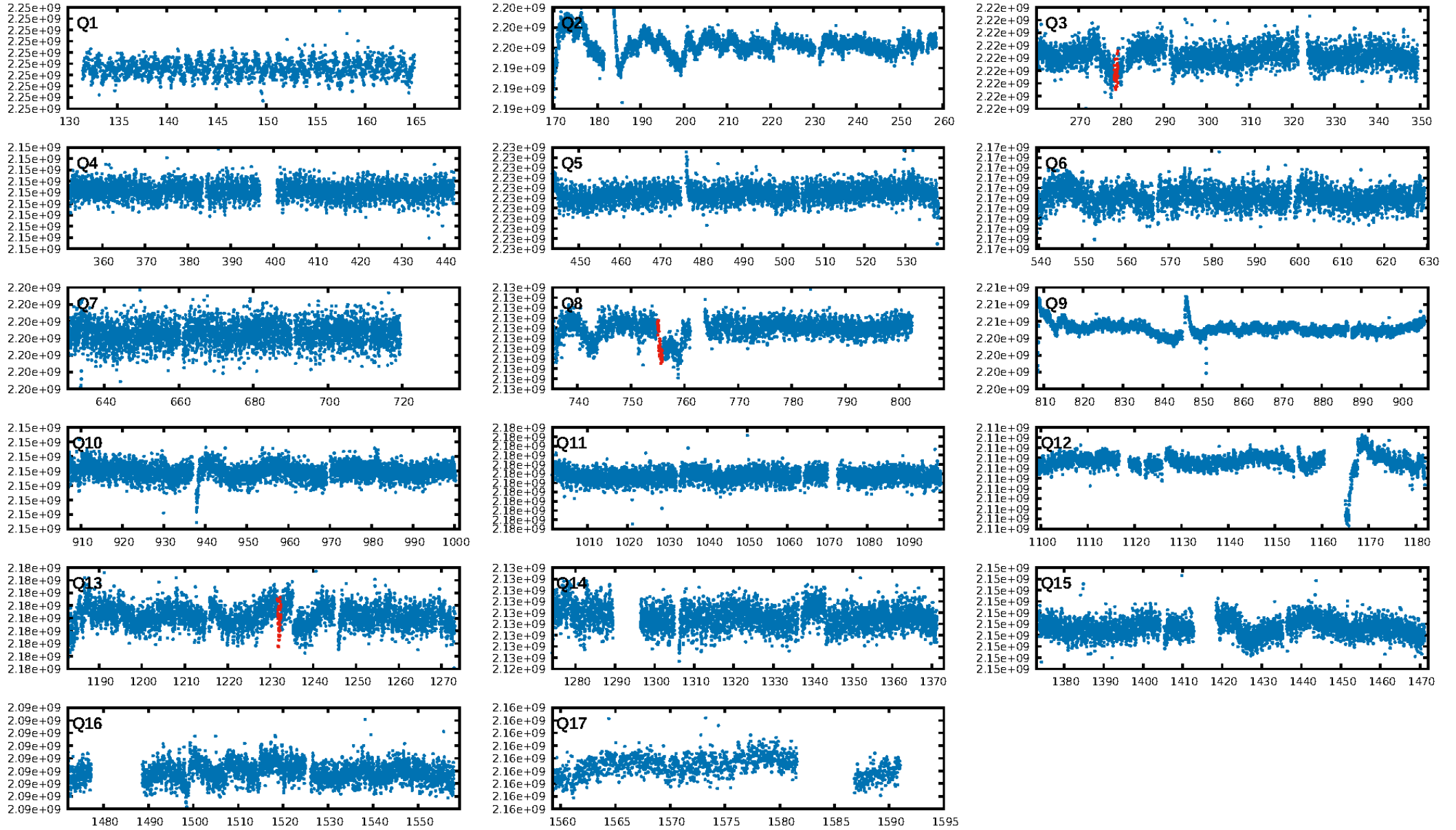
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 99.1% [2.63 $\sigma$ ]  
ModelChiSquare2-sig: 15.2%  
ModelChiSquareGof-sig: 97.0%  
Bootstrap-pfa: 1.46e-09  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 0.0%  
Centroid-so: 7.821 arcsec [2.45 $\sigma$ ]  
OotOffset-rm: 2.535 arcsec [1.33 $\sigma$ ]  
KicOffset-rm: 3.433 arcsec [1.90 $\sigma$ ]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.50 [1/2]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:22:42 Z

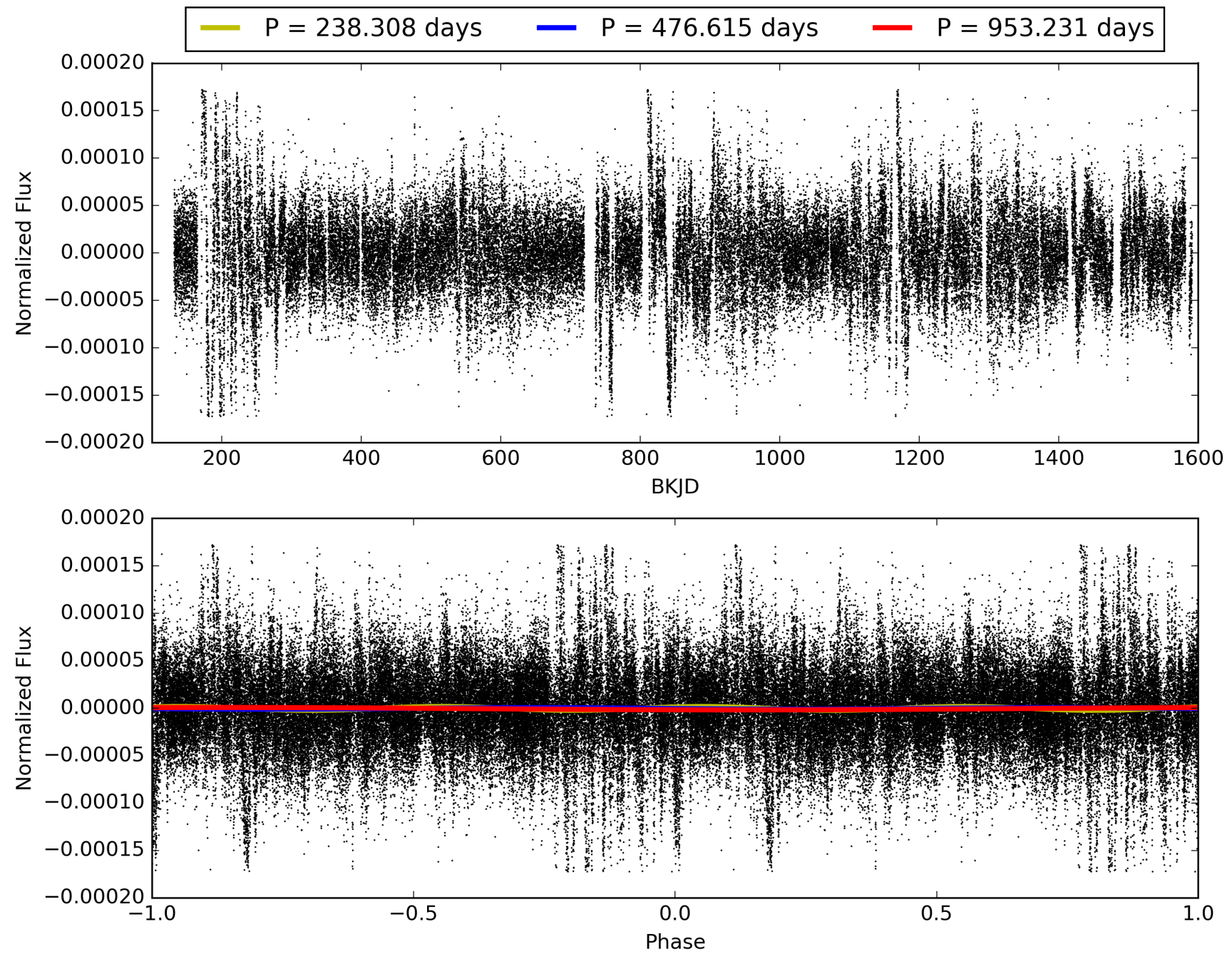
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 012254419-02, PDC Light Curves





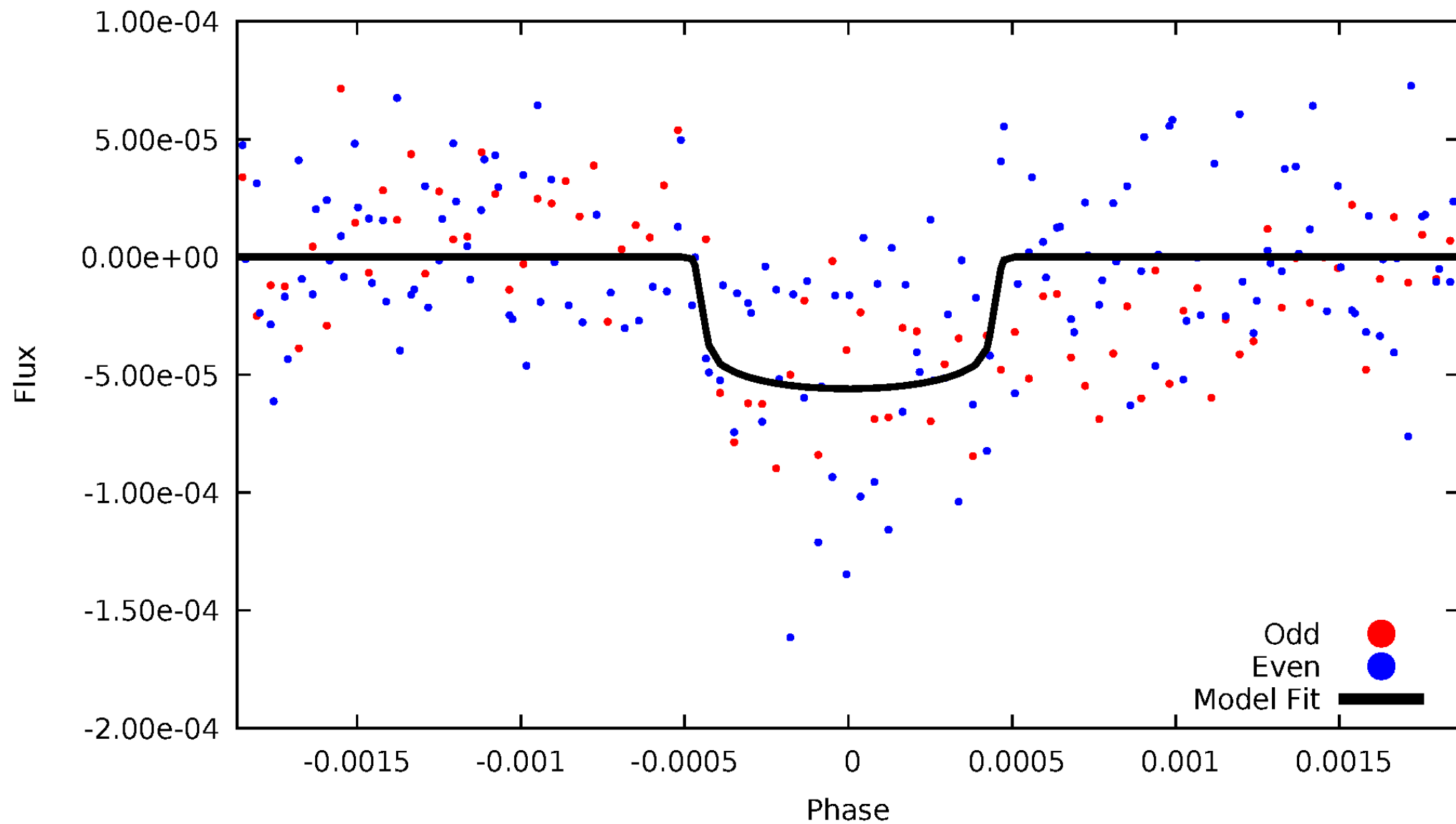
# TCE 012254419-02





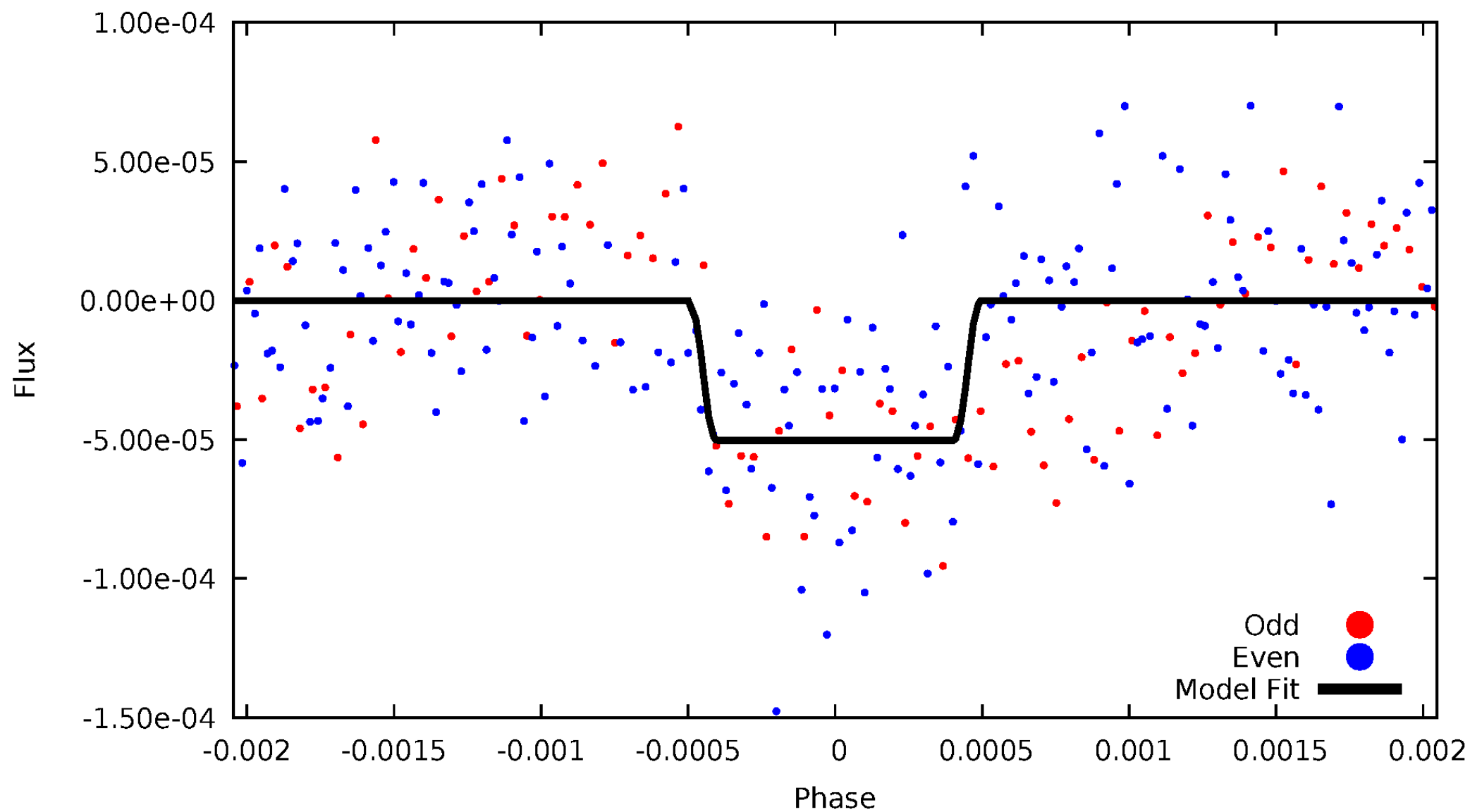
# DV Odd/Even

TCE 012254419-02



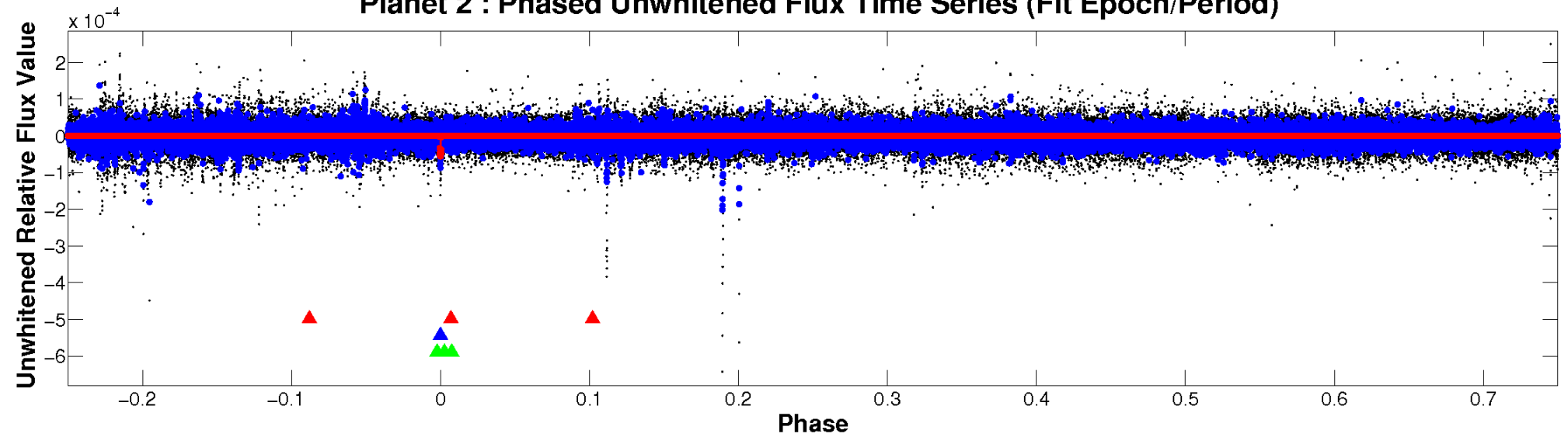
# ALT Odd/Even

TCE 012254419-02

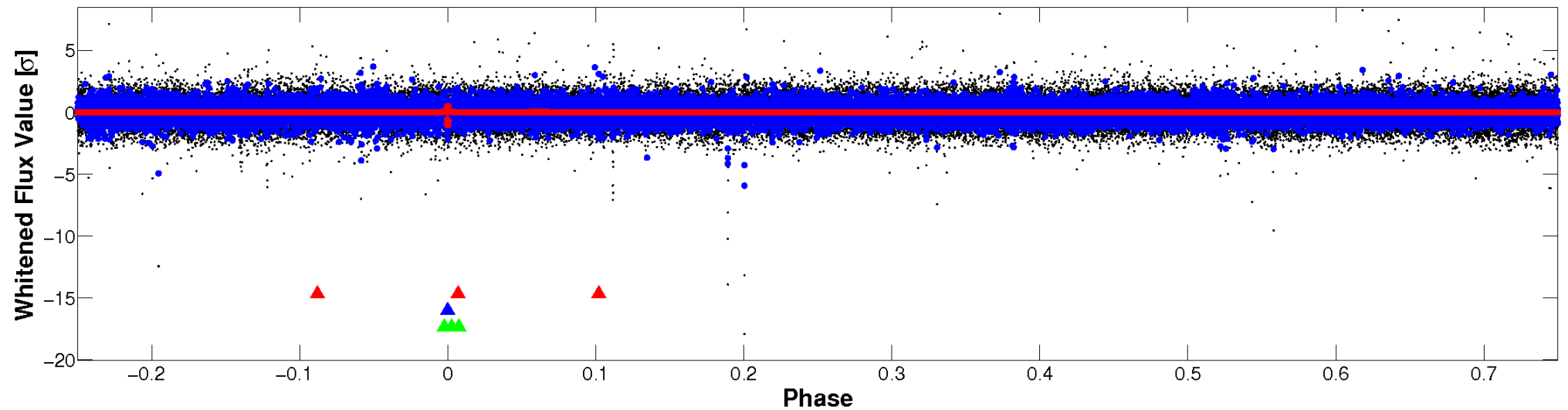


# Non-Whitened Vs. Whitened Light Curve

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

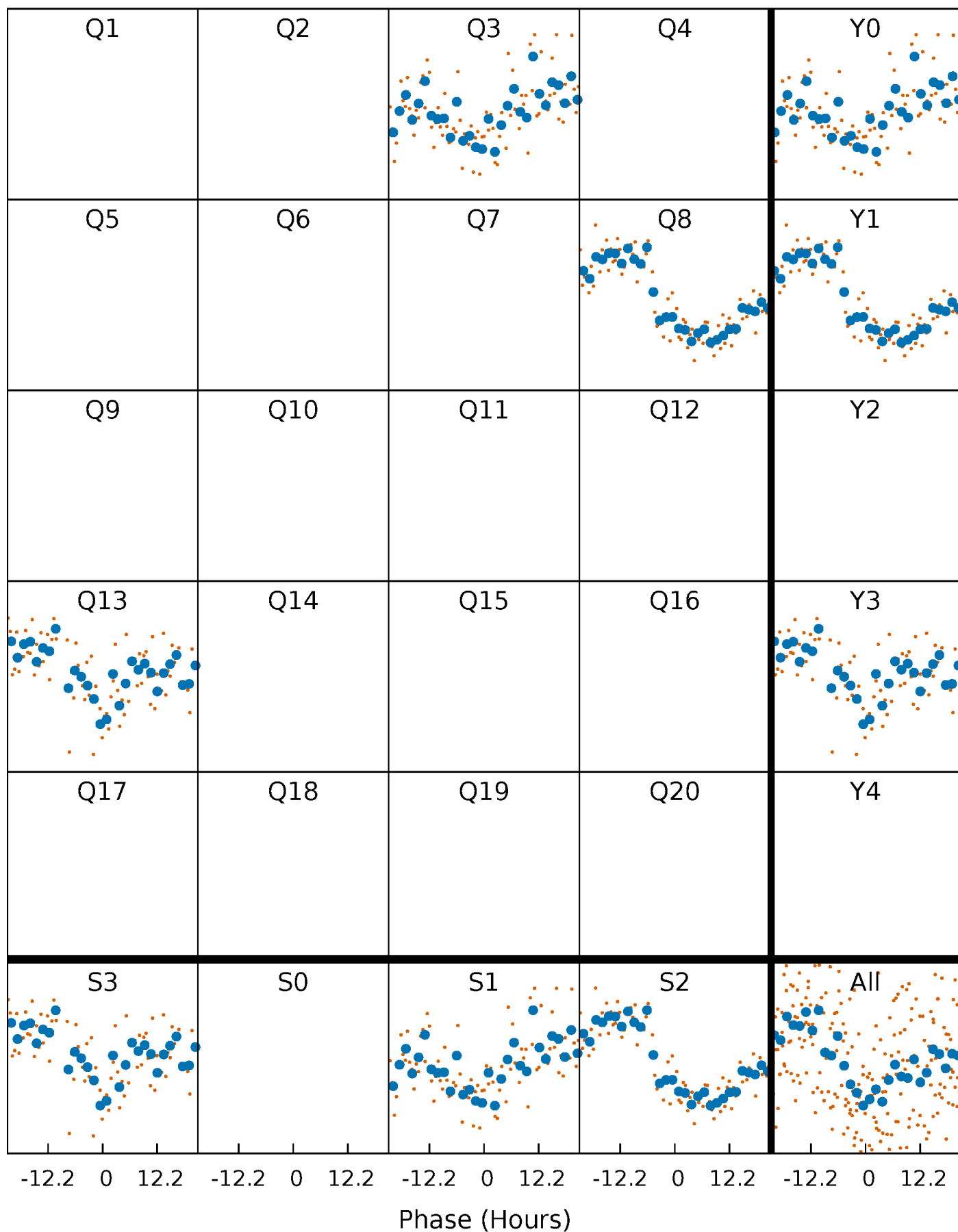


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



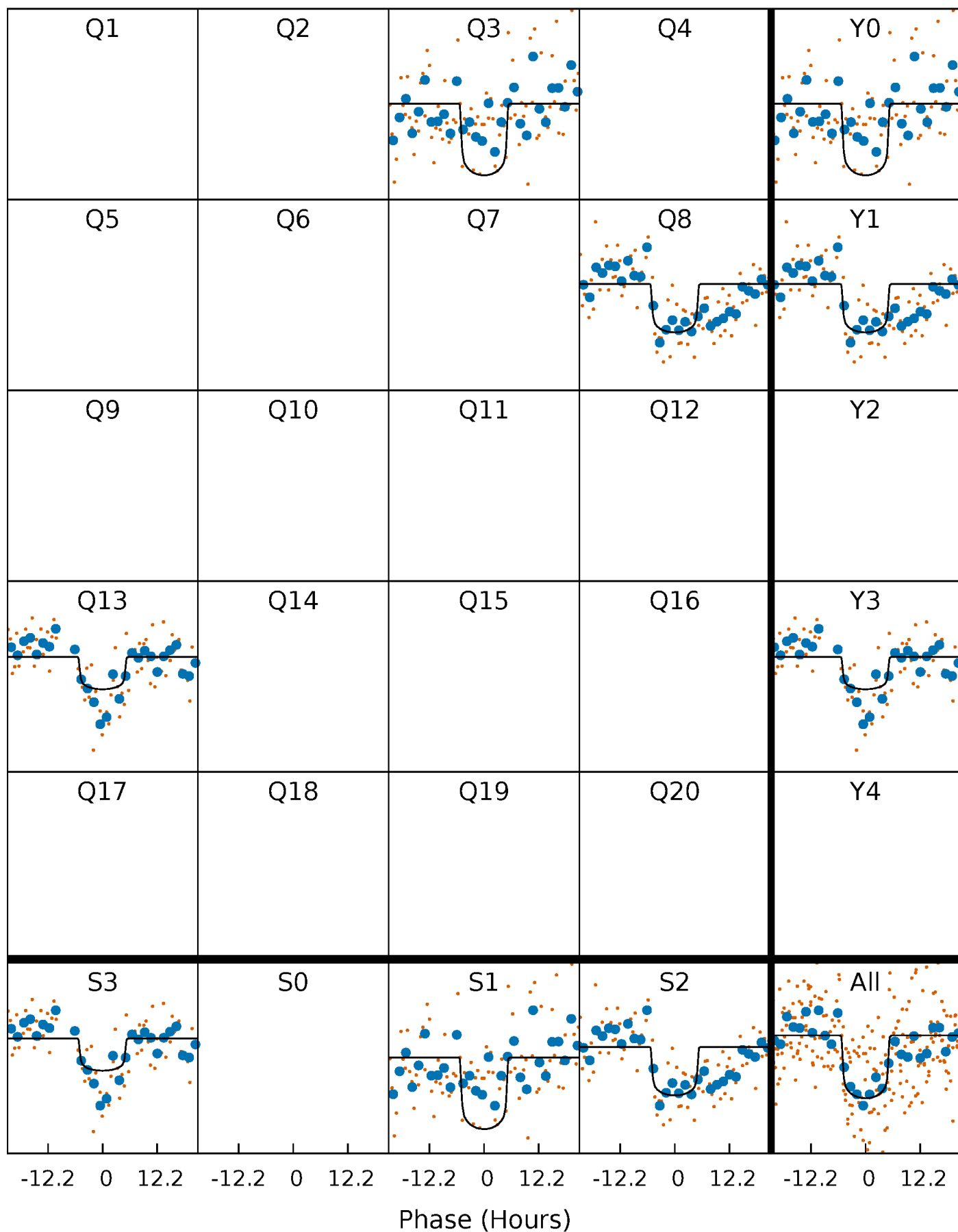
# PDC Quarter-Phased Transit Curves

TCE 012254419-02 P=476.615377 Days  $T_0=278.796483$  (BKJD)



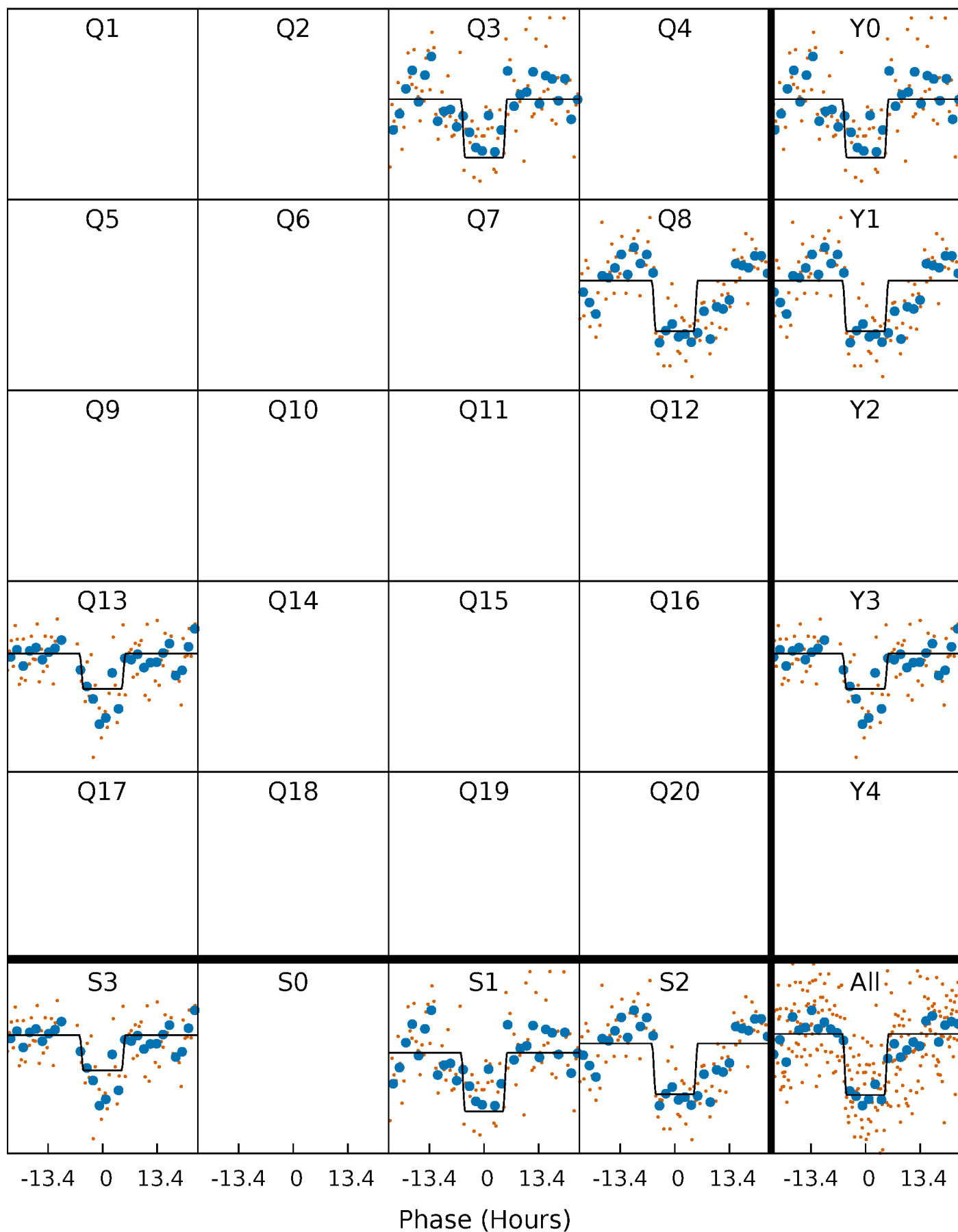
# DV Quarter-Phased Transit Curves

TCE 012254419-02     $P=476.615377$  Days     $T_0=278.796483$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

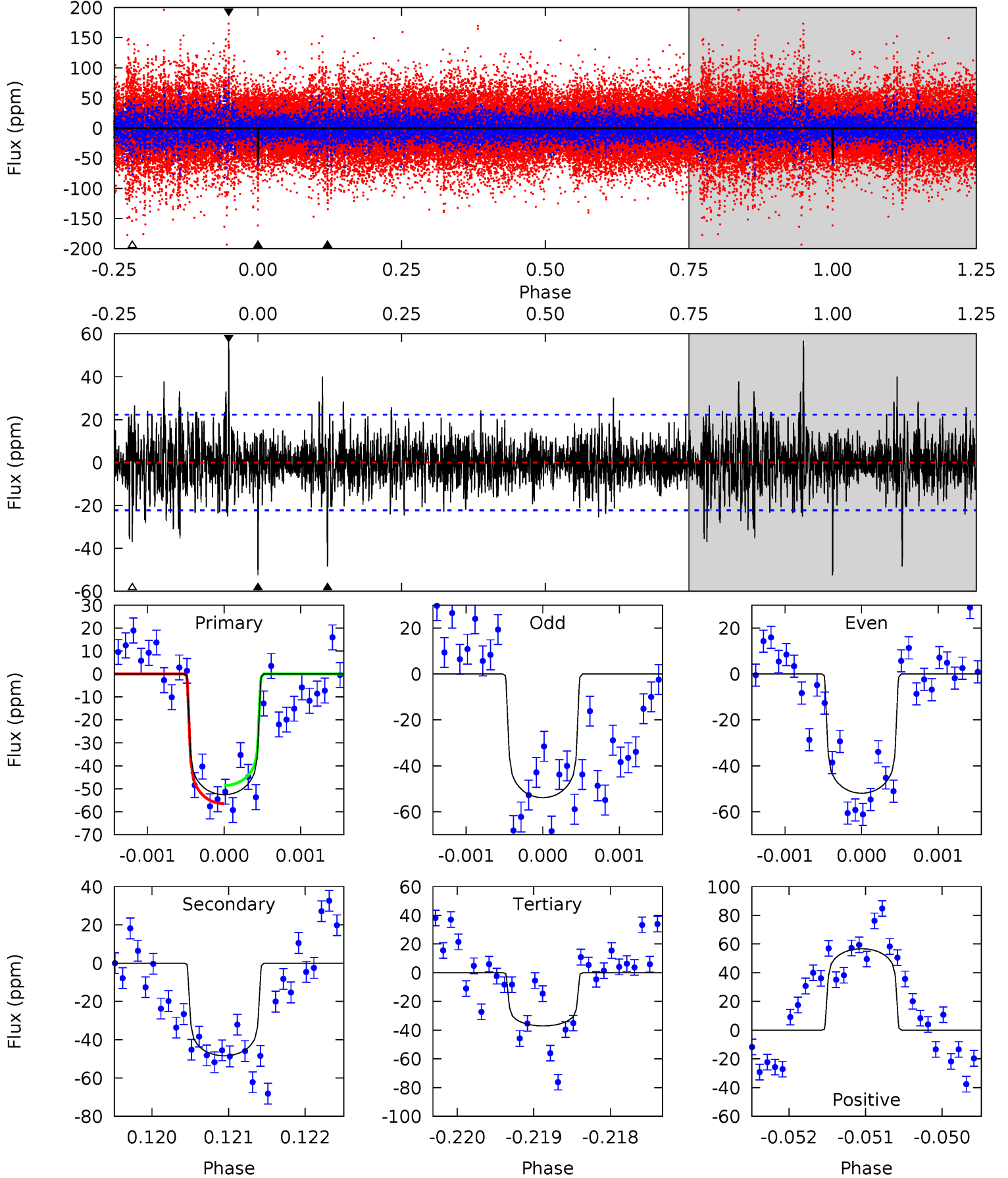
TCE 012254419-02 P=476.619598 Days  $T_0=278.798625$  (BKJD)



# DV Model-Shift Uniqueness Test

012254419-02, P = 476.615377 Days, E = 278.796483 Days

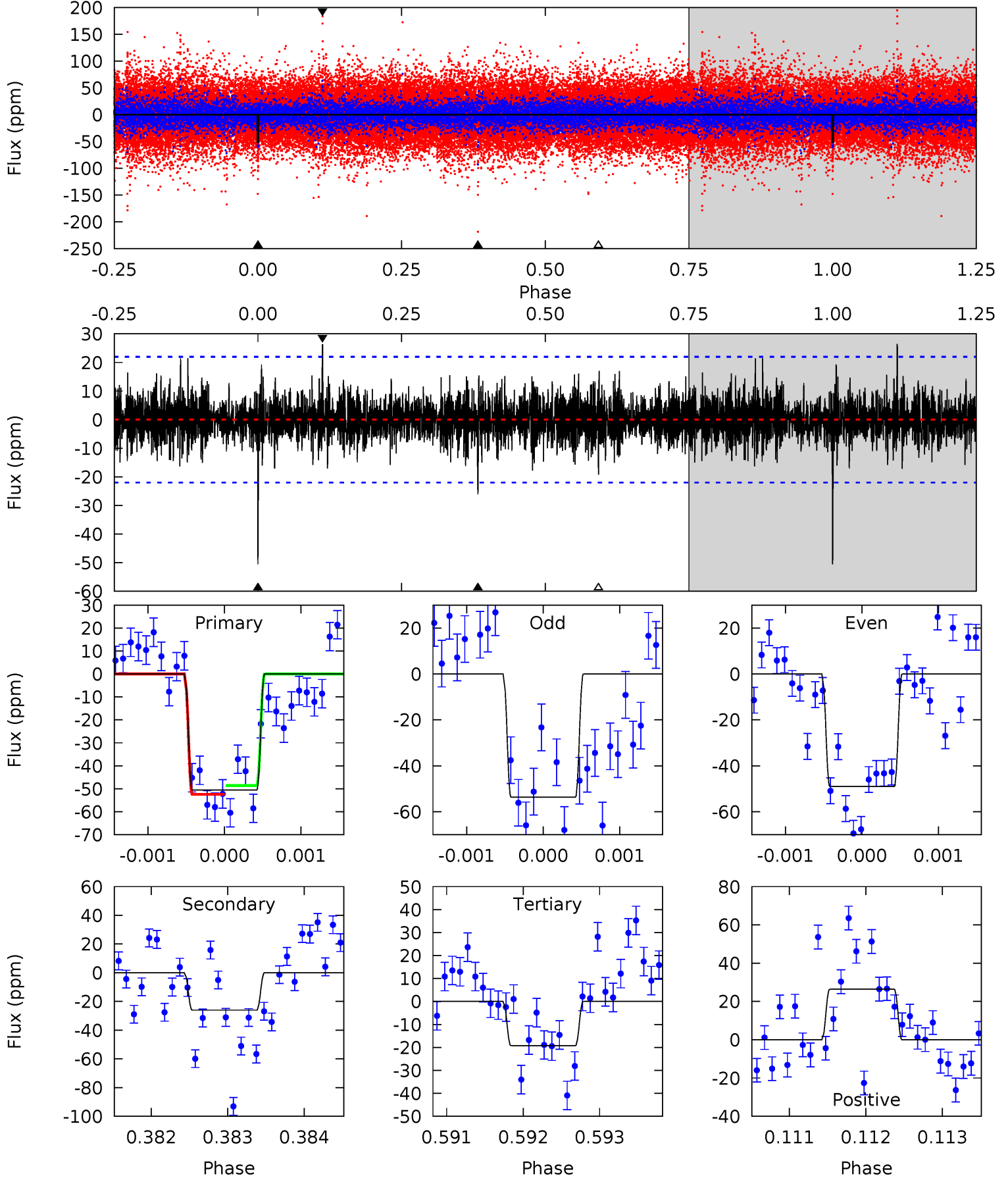
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	11.8	9.06	13.9	5.46	3.30	2.05	3.80	-1.01	2.77	-2.04	0.22	0.98	0.52	0.97



# Alt Model-Shift Uniqueness Test

012254419-02, P = 476.619598 Days, E = 278.798625 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
12.6	6.48	4.78	6.56	5.46	3.30	1.34	7.78	6.00	1.70	-0.08	0.54	0.94	0.34	0.48





### Stellar Parameters For KIC 012254419

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7675^{+214}_{-322}$	$3.995^{+0.187}_{-0.153}$	$0.080^{+0.200}_{-0.350}$	$2.259^{+0.514}_{-0.628}$	$1.840^{+0.145}_{-0.339}$	$0.225^{+0.251}_{-0.088}$
	+3%/-4%	+5%/-4%	+250%/-438%	+23%/-28%	+8%/-18%	+112%/-39%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 012254419-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-48 \pm 4$	$1.92^{+0.44}_{-0.37}$	$586^{+40}_{-43}$	$7073^{+810}_{-608}$	$15019^{+8244}_{-4962}$
Alt.	$-26 \pm 4$	$1.73^{+0.42}_{-0.38}$	$585^{+41}_{-42}$	$6359^{+693}_{-526}$	$9937^{+6540}_{-3484}$

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

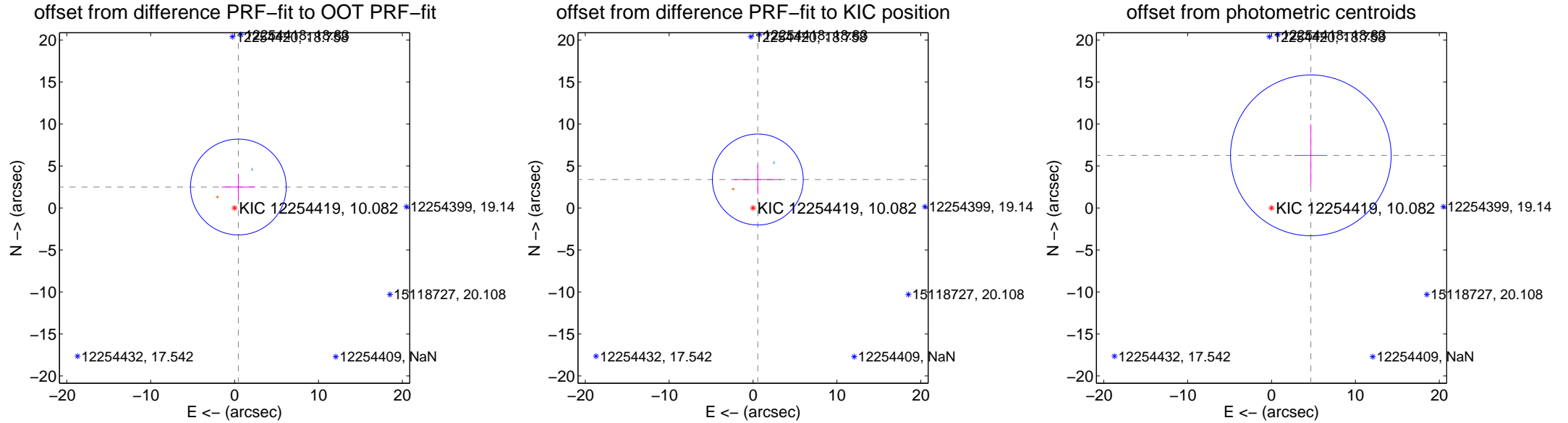
## DV Centroid Data

Supplemental centroid analysis for 012254419-02. **Kepler magnitude: 10.08.** Transit SNR 8.01

**There are 1 quarters with good PRF difference image offsets**

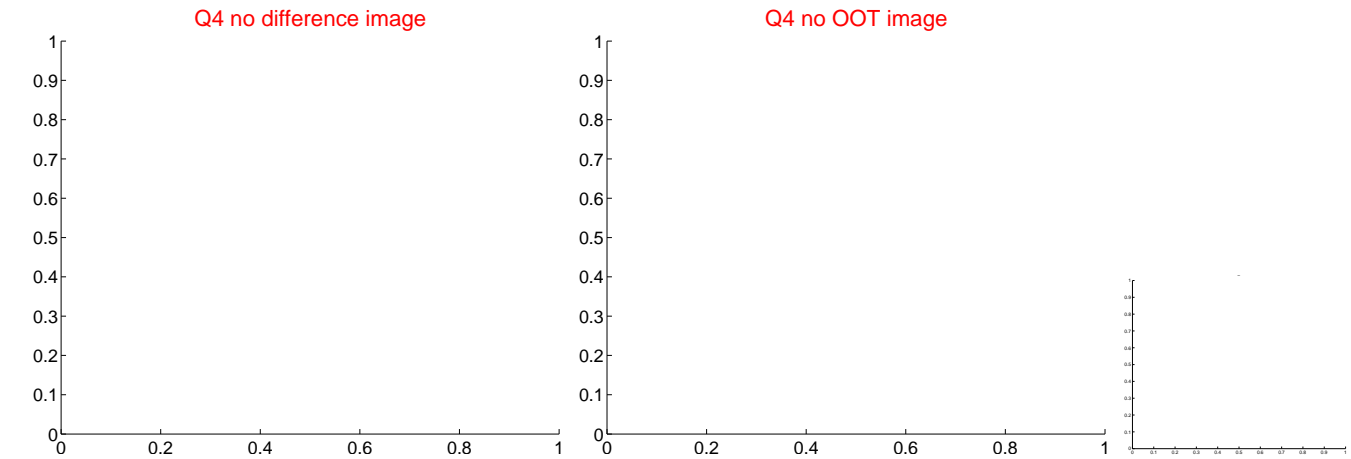
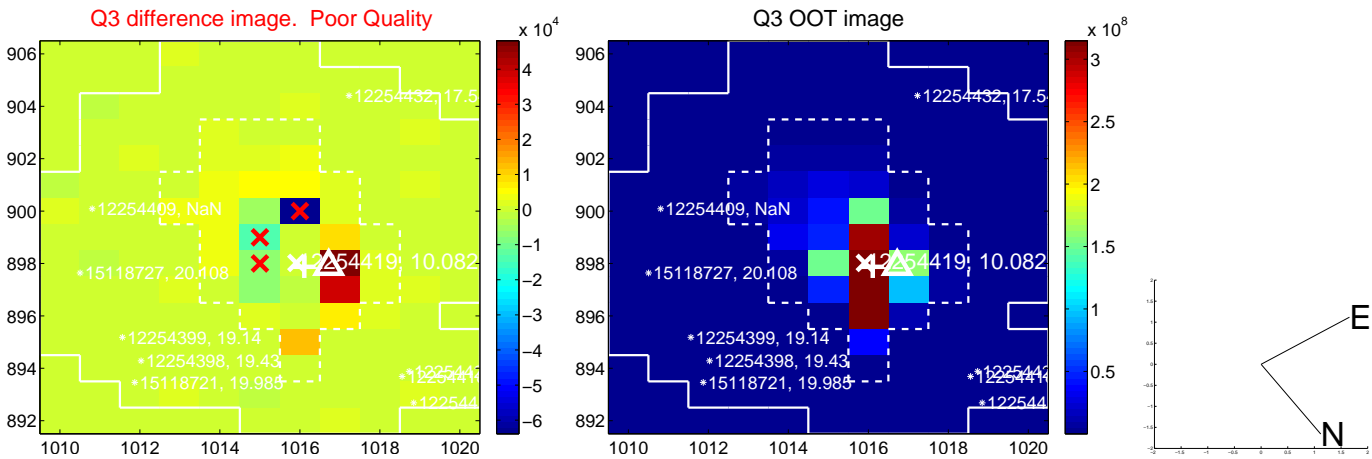
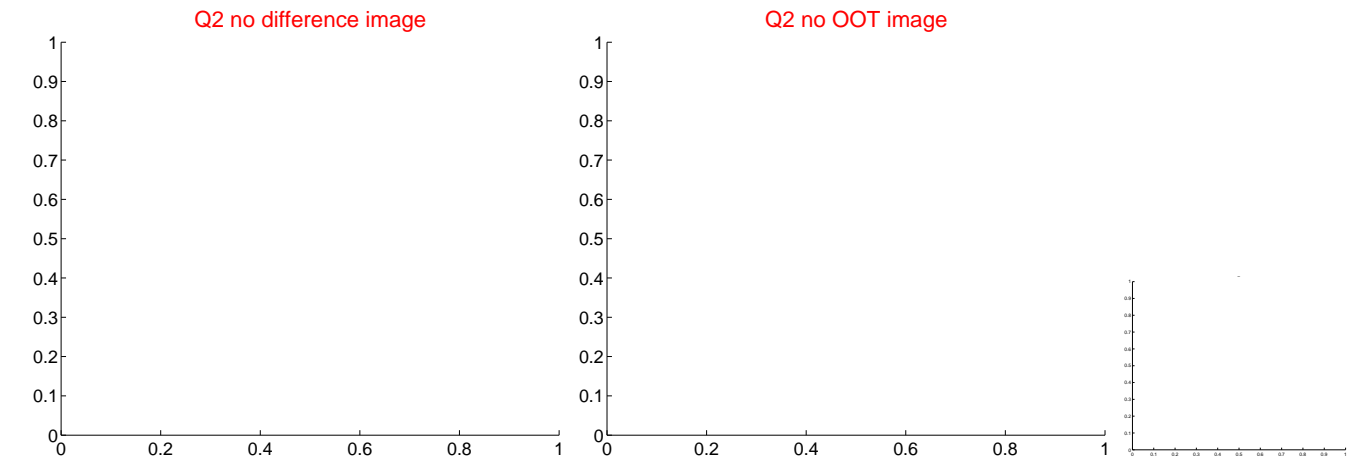
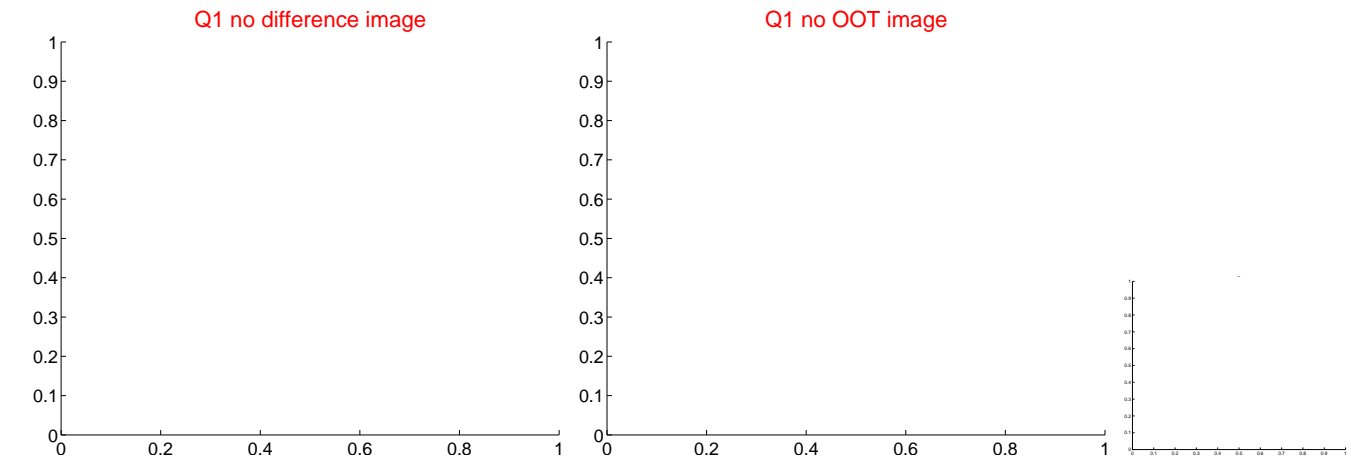
The direct PRF centroid is offset from the target star catalog position by about 0.90 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.535 \pm 1.901$	1.33	$-0.452 \pm 1.989$	$2.495 \pm 1.573$
PRF-fit source offset from KIC position	$3.433 \pm 1.806$	1.90	$-0.565 \pm 2.784$	$3.386 \pm 1.771$
photometric centroid source offset	$7.82 \pm 3.19$	2.45	$-4.69 \pm 1.93$	$6.26 \pm 3.71$

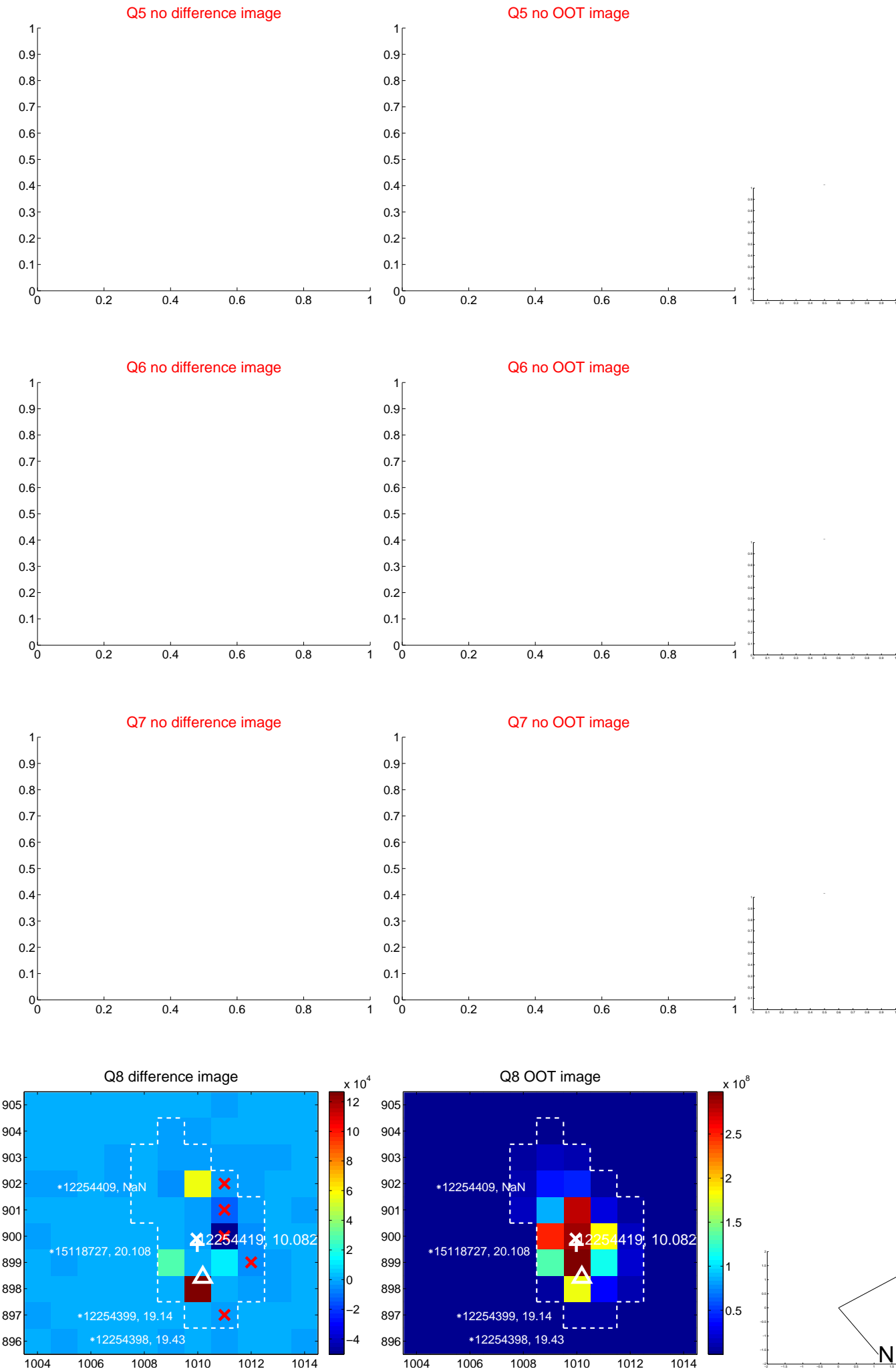


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



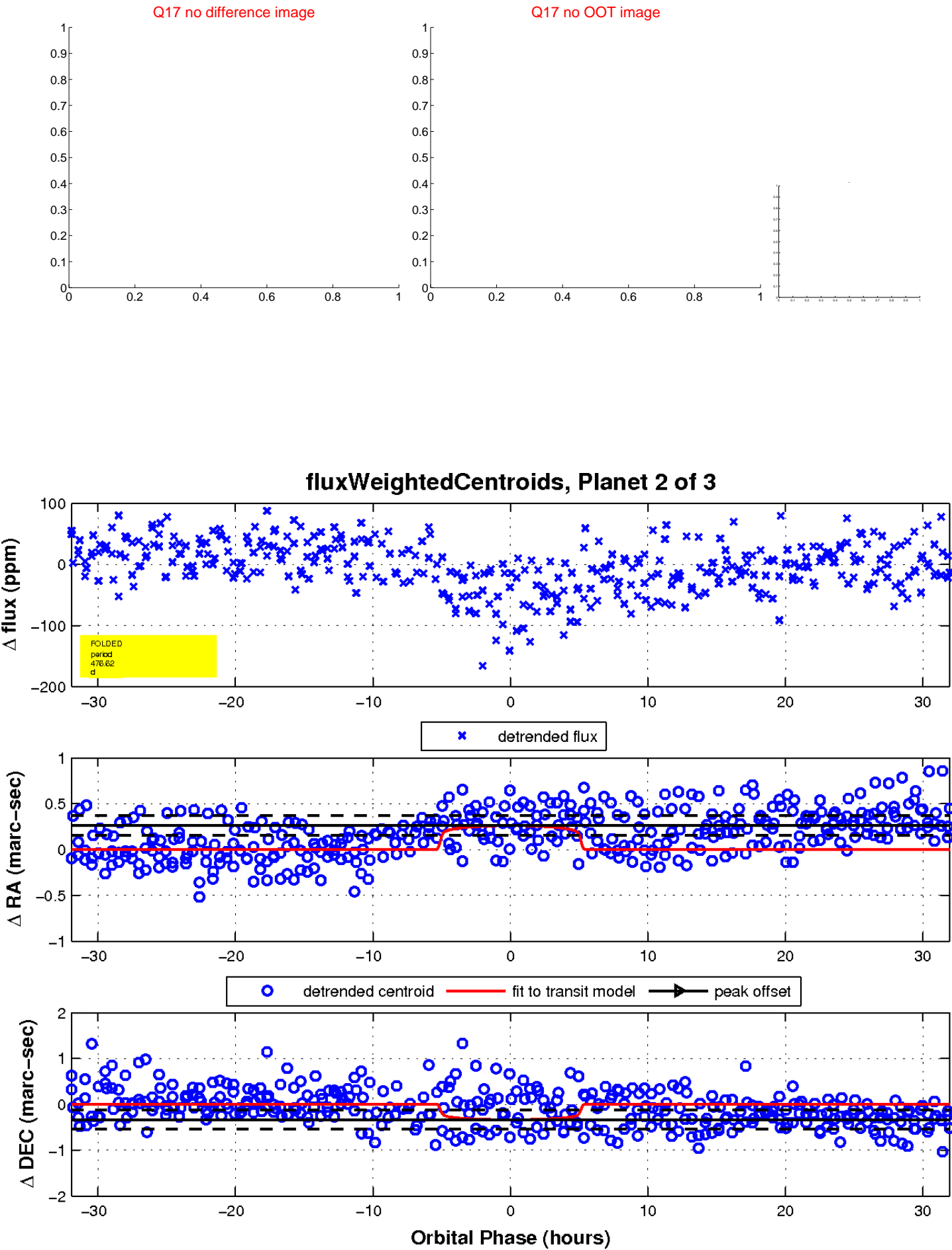
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

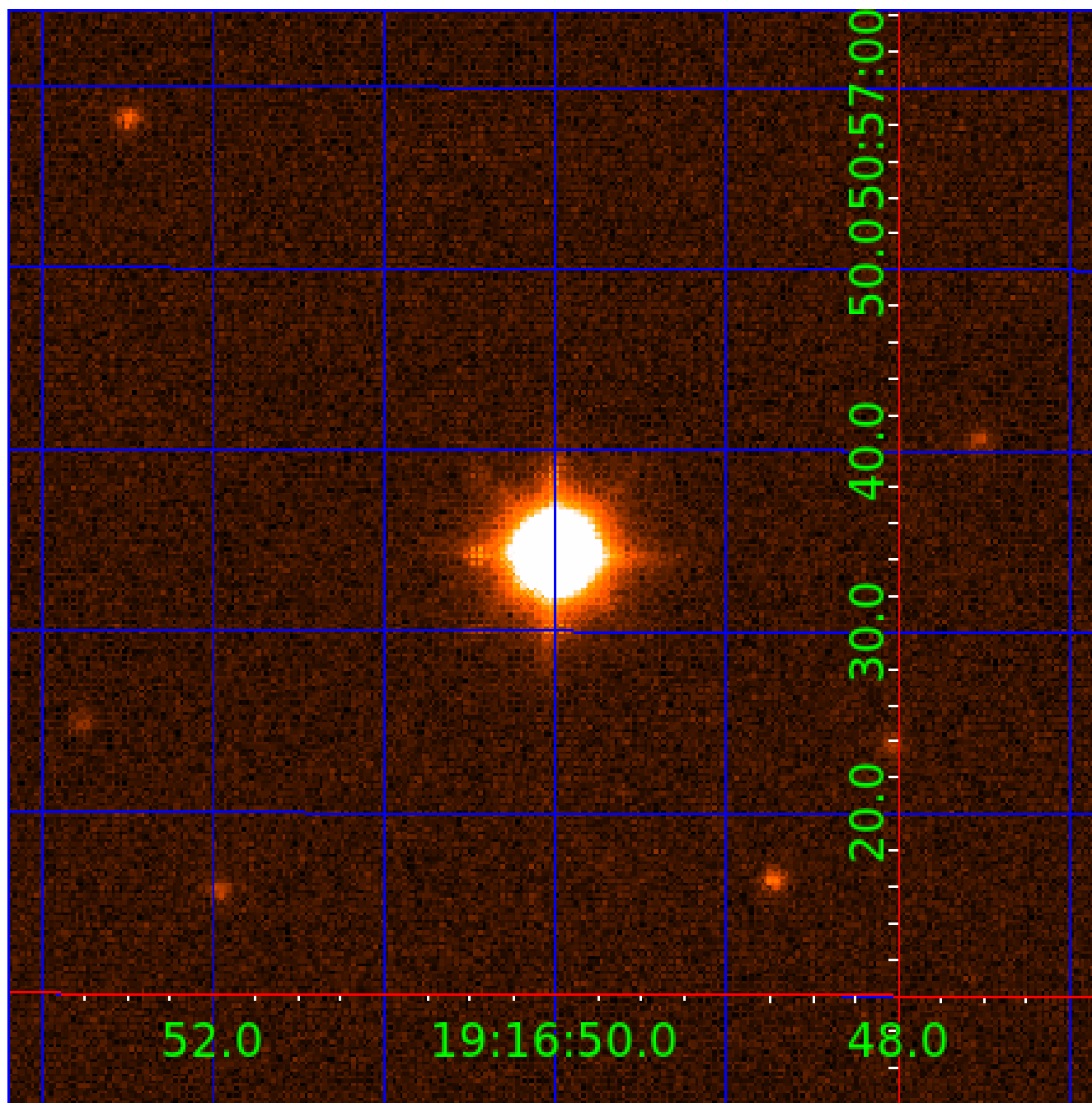


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 012254419

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012254419-01	OBS	No	521.908887	236.859348	84.5	4.610	7.6	7.2	2.26	7675	2.33	6.56
012254419-02	OBS	No	476.615377	278.796483	55.9	10.671	7.7	8.0	2.26	7675	1.96	7.41
012254419-03	OBS	No	478.946657	277.736809	50.2	18.437	7.3	8.1	2.26	7675	1.86	7.36

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012254419-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_ALT—CENT_SATURATED
012254419-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
012254419-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED

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

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

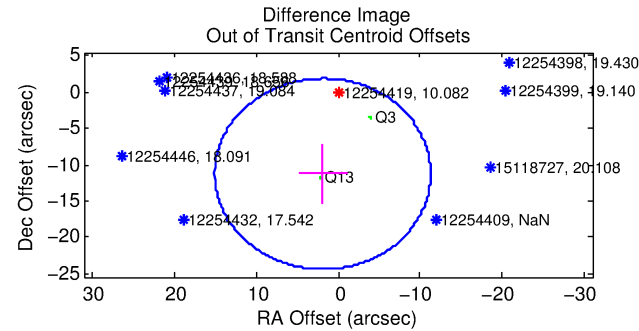
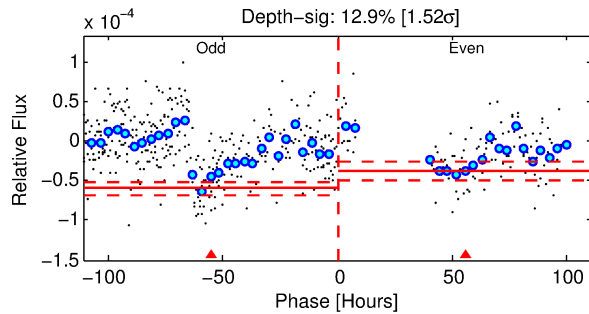
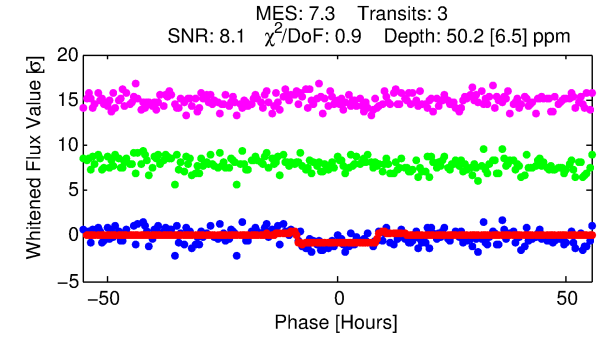
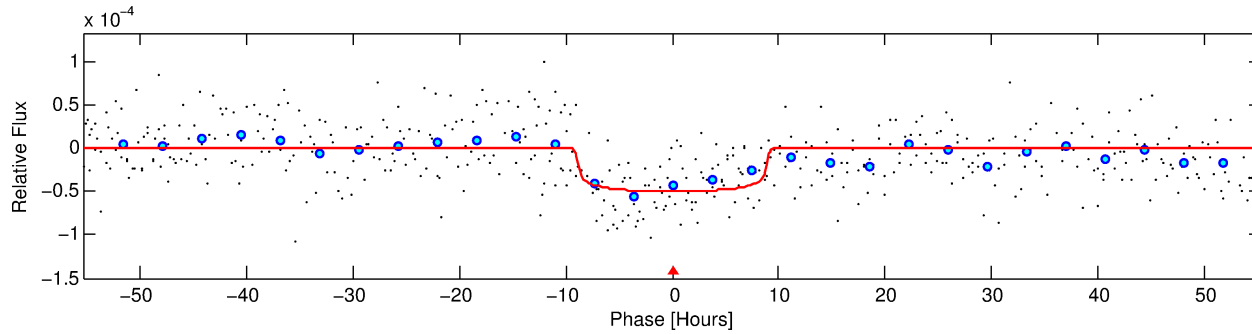
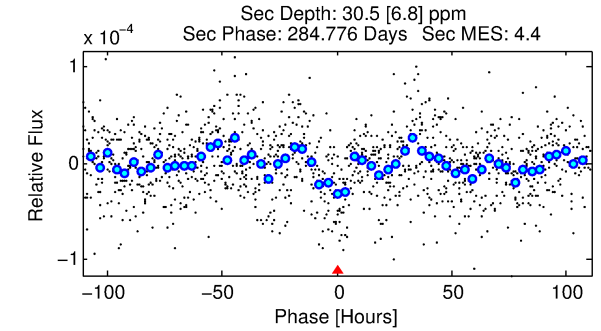
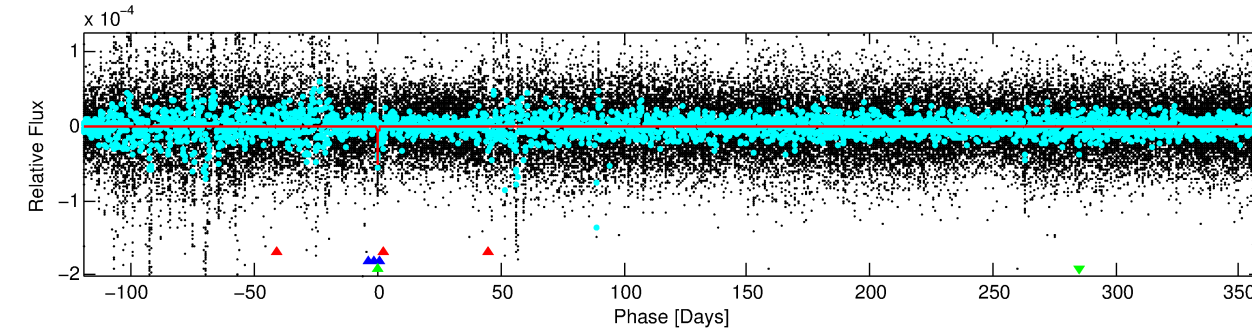
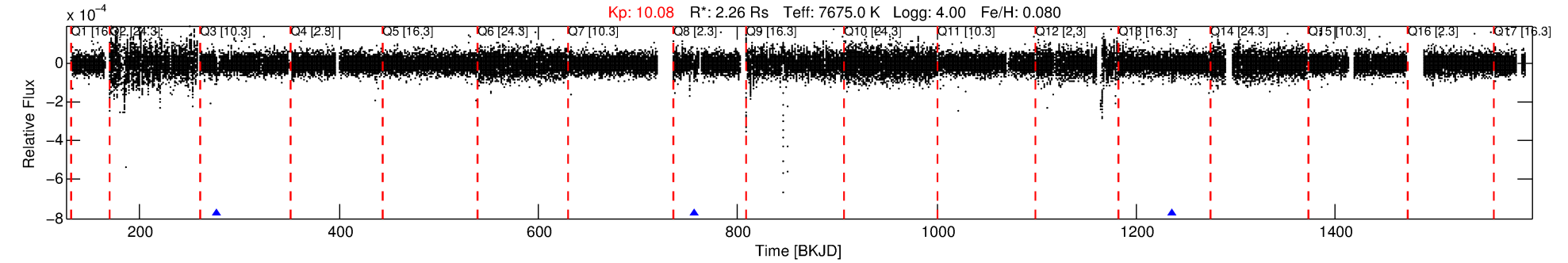
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 012254419-03

No Significant Match Found

# DV One-Page Summary

KIC: 12254419 Candidate: 3 of 3 Period: 478.947 d



## DV Fit Results:

Period = 478.94666 [0.01268] d  
Epoch = 277.7368 [0.0140] BKJD  
Rp/R\* = 0.0076 [0.0008]  
a/R\* = 87.48 [45.97]  
b = 0.91 [0.11]  
Seff = 7.36 [2.80]  
Teq = 420 [40] K  
Rp = 1.86 [0.56] Re  
a = 1.4684 [0.3442] AU  
Ag = 10435.44 [4811.28] [2.17σ]  
Teffp = 6563 [578] K [10.61σ]

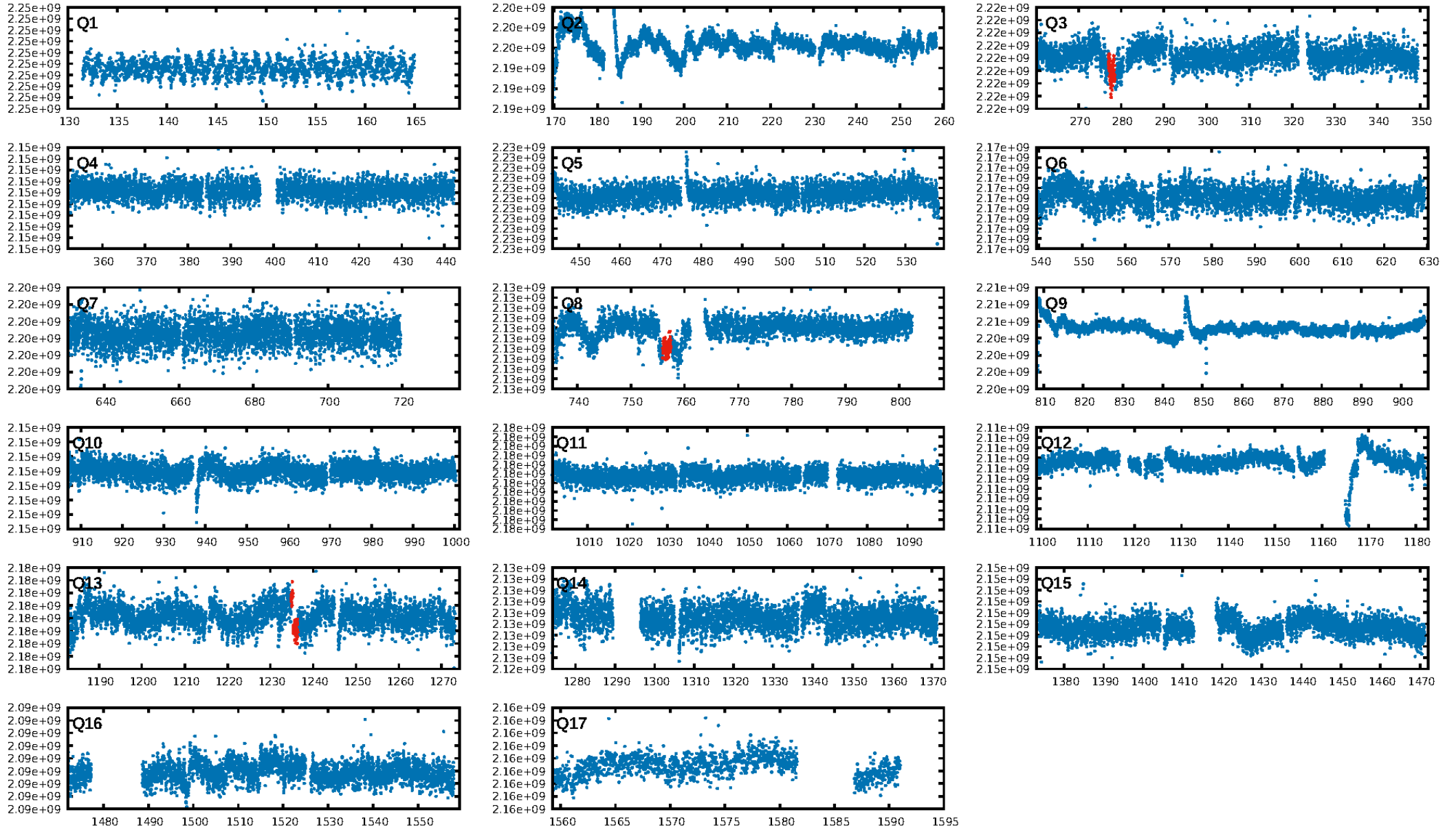
## DV Diagnostic Results:

ShortPeriod-sig: 99.1% [2.63σ]  
LongPeriod-sig: 100.0% [54.26σ]  
ModelChiSquare2-sig: 32.0%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 2.67e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 29.3%  
Centroid-so: 2.895 arcsec [0.99σ]  
OotOffset-rm: 11.435 arcsec [2.61σ]  
OotOffset-st: 0/1/0/1 [2]  
KicOffset-rm: 9.924 arcsec [2.37σ]  
KicOffset-st: 0/1/0/1 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 0.33 [1/3]

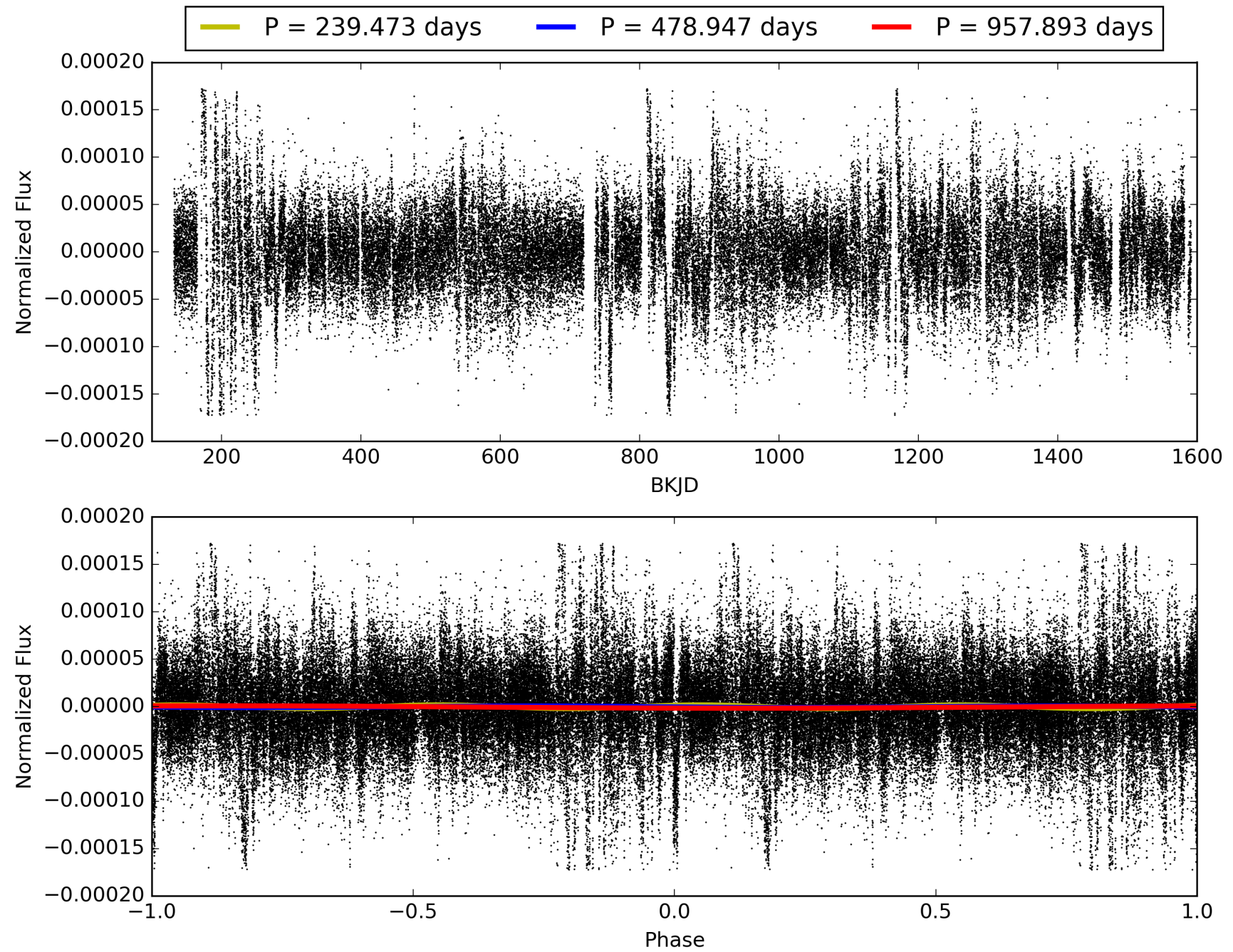
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 08:22:50 Z

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

# TCE 012254419-03, PDC Light Curves

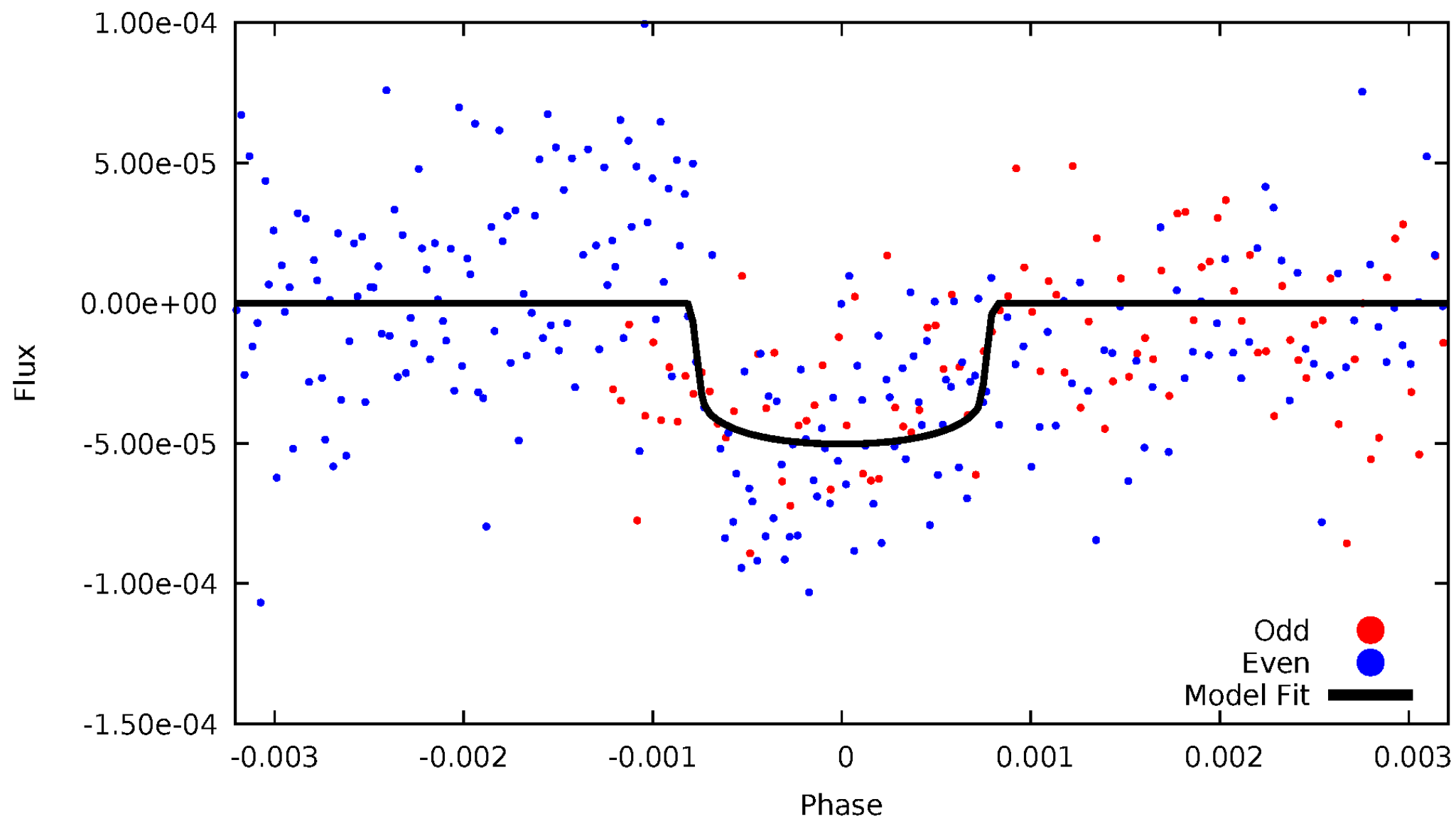


# TCE 012254419-03



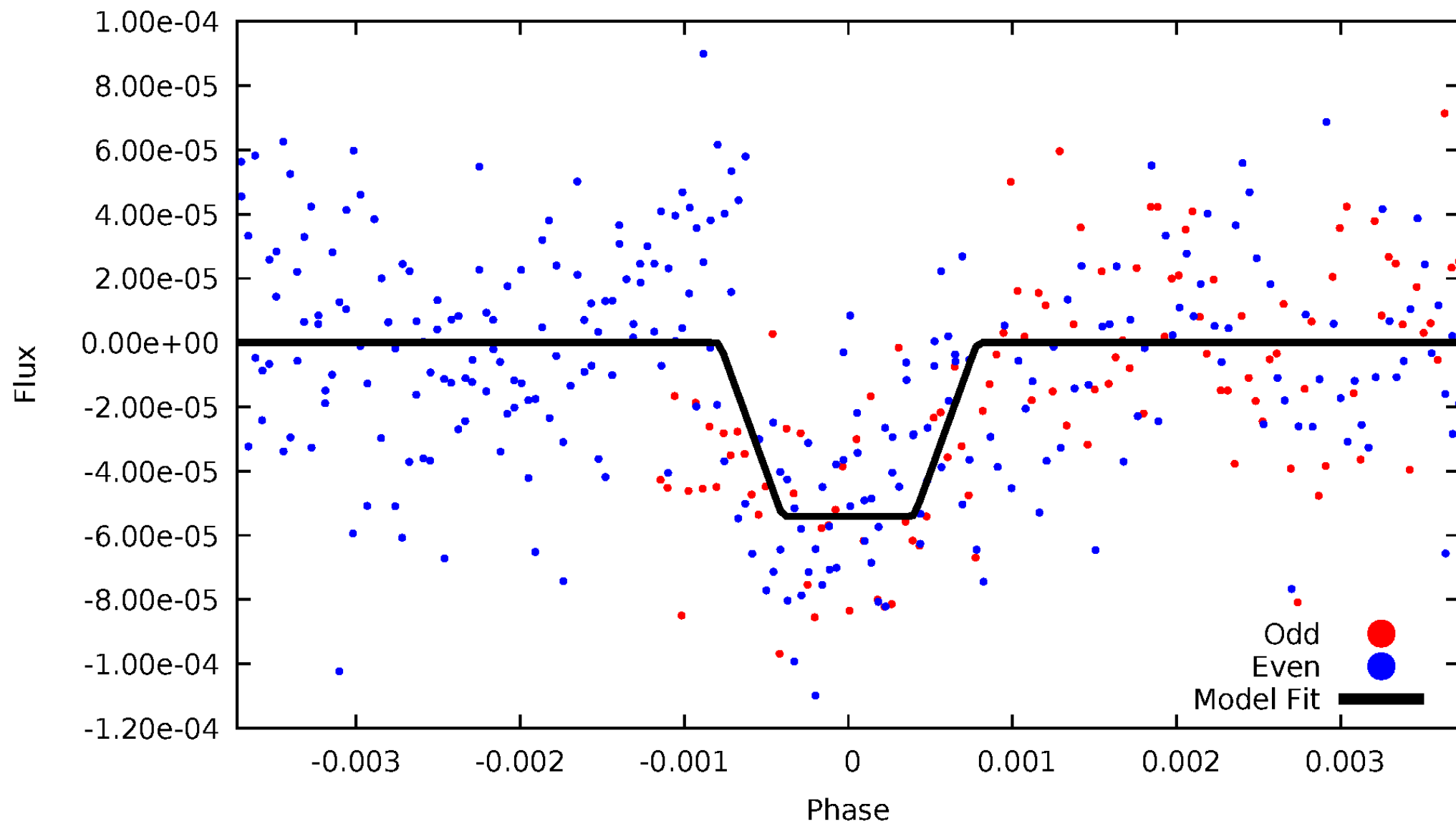
# DV Odd/Even

TCE 012254419-03



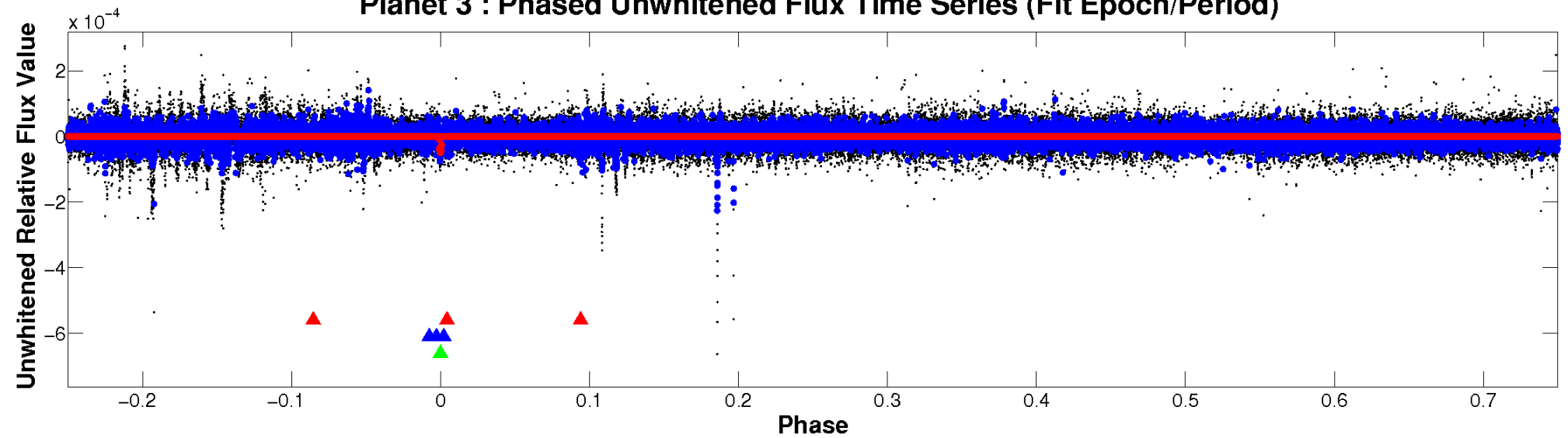
# ALT Odd/Even

TCE 012254419-03

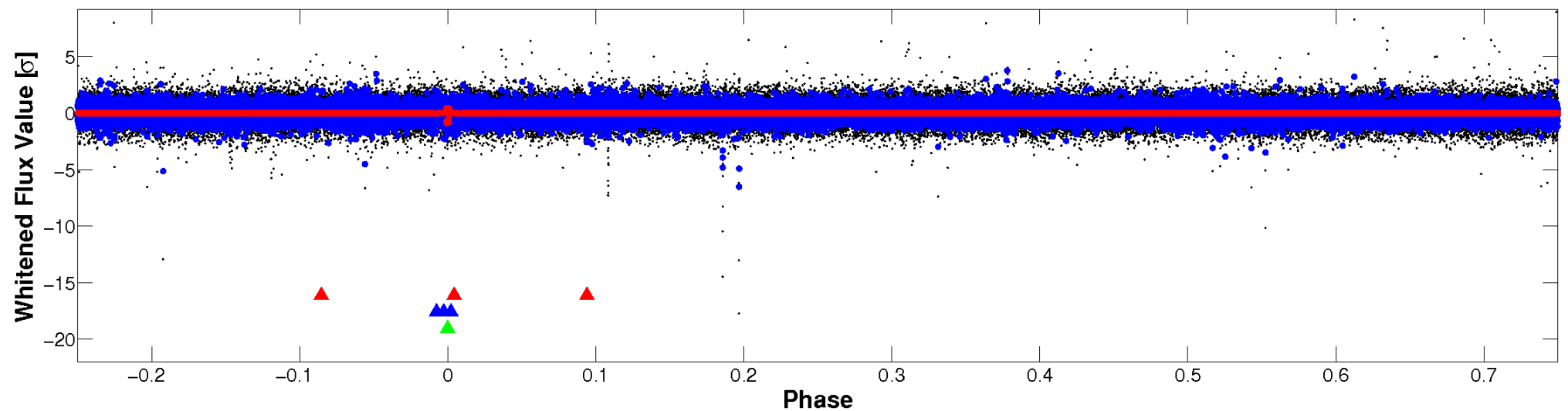


# Non-Whitened Vs. Whitened Light Curve

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

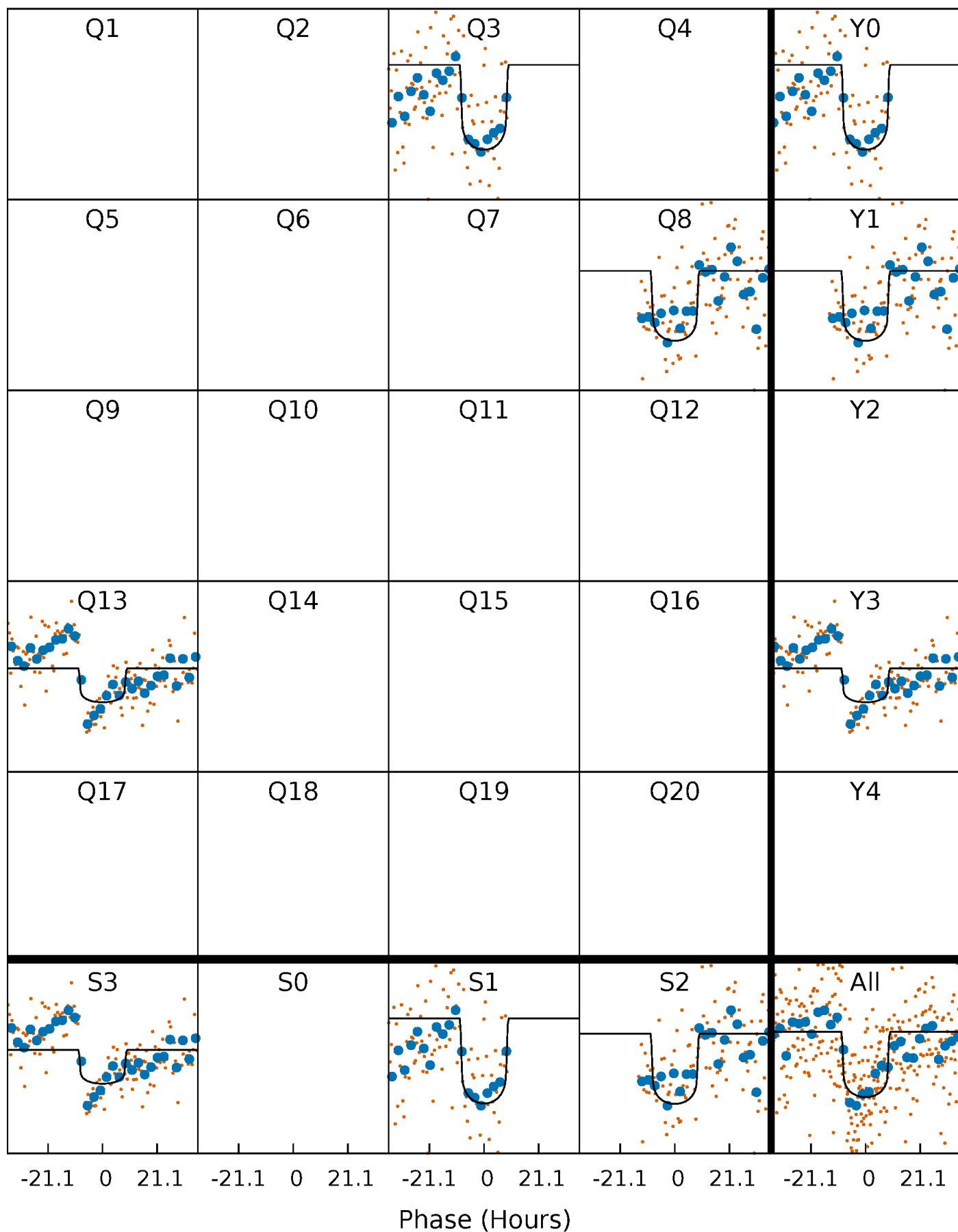
TCE 012254419-03 P=478.946657 Days  $T_0=277.736809$  (BKJD)





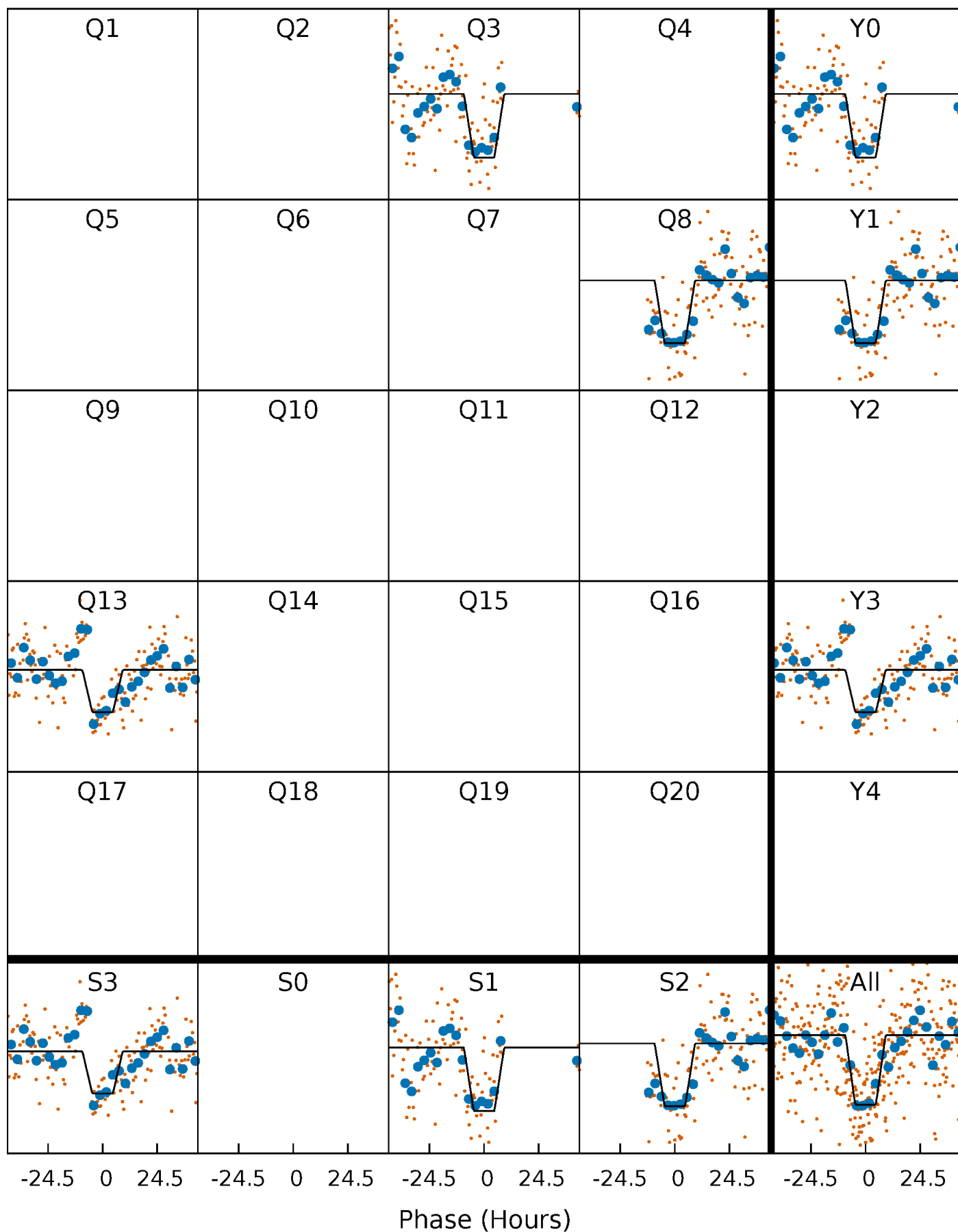
# DV Quarter-Phased Transit Curves

TCE 012254419-03 P=478.946657 Days  $T_0=277.736809$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

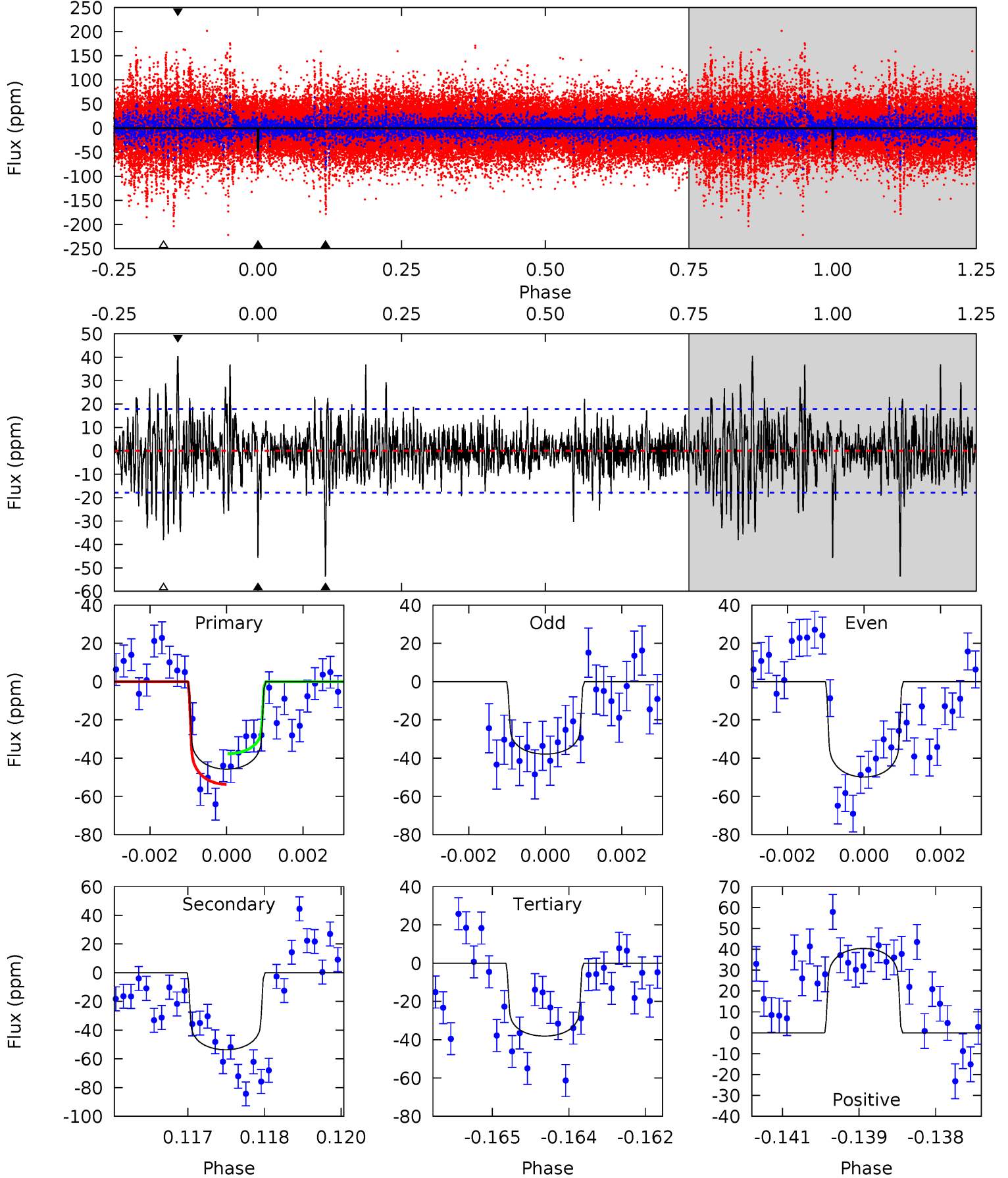
TCE 012254419-03 P=478.901346 Days  $T_0=277.750445$  (BKJD)



# DV Model-Shift Uniqueness Test

012254419-03, P = 478.946657 Days, E = 277.736809 Days

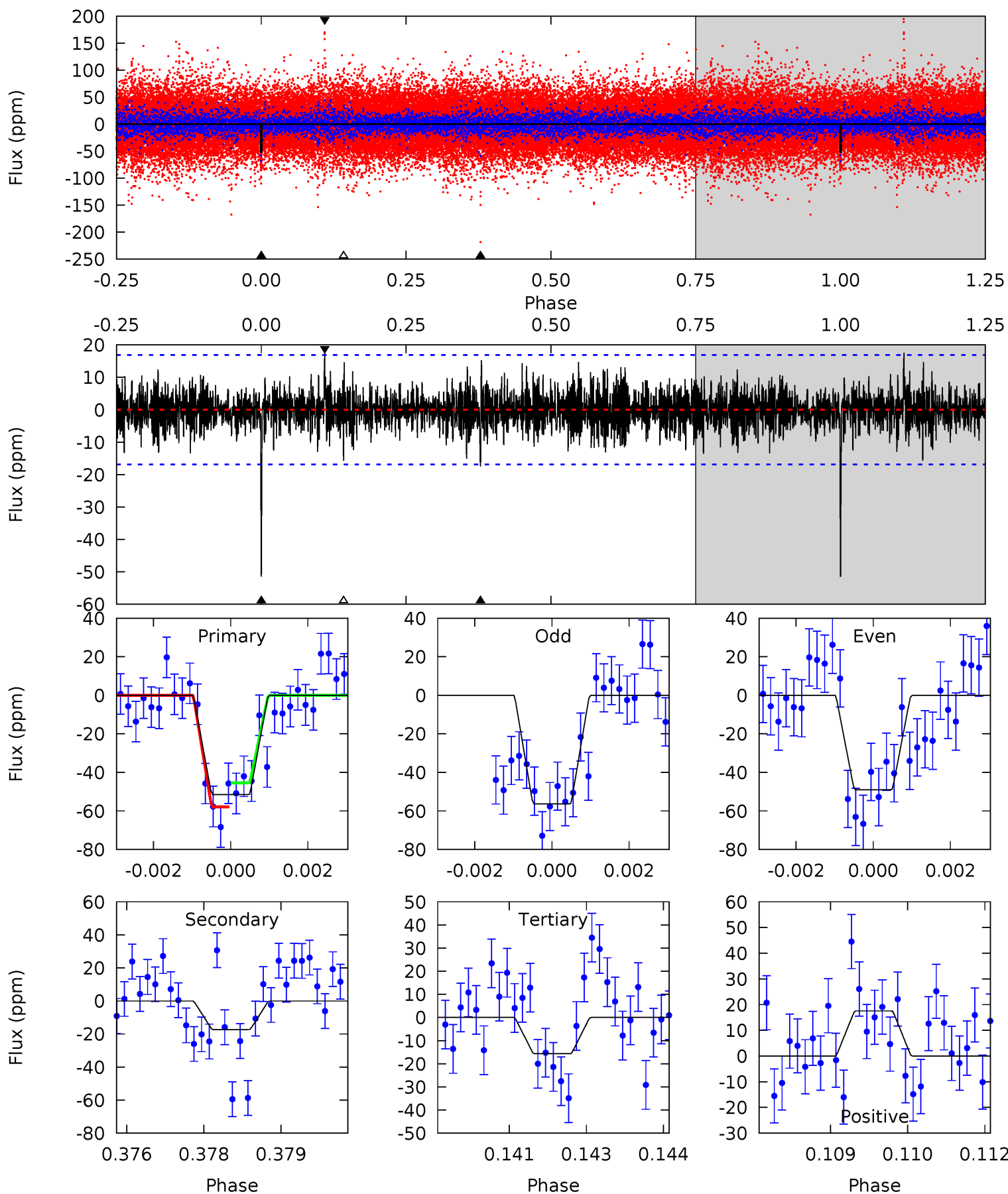
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	16.1	11.5	12.2	5.36	3.15	2.52	2.30	1.60	4.66	3.96	1.69	1.04	0.43	2.40



# Alt Model-Shift Uniqueness Test

012254419-03, P = 478.901346 Days, E = 277.750445 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
16.4	5.50	4.98	5.58	5.36	3.15	1.43	11.4	10.8	0.52	-0.09	1.10	1.00	0.25	1.98



### Stellar Parameters For KIC 012254419

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7675^{+214}_{-322}$	$3.995^{+0.187}_{-0.153}$	$0.080^{+0.200}_{-0.350}$	$2.259^{+0.514}_{-0.628}$	$1.840^{+0.145}_{-0.339}$	$0.225^{+0.251}_{-0.088}$
	+3%/-4%	+5%/-4%	+250%/-438%	+23%/-28%	+8%/-18%	+112%/-39%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 012254419-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-54 \pm 3$	$1.83^{+0.33}_{-0.31}$	$584^{+42}_{-43}$	$7509^{+613}_{-548}$	$18519^{+8411}_{-4998}$
Alt.	$-17 \pm 3$	$1.81^{+0.33}_{-0.33}$	$586^{+42}_{-44}$	$5646^{+425}_{-419}$	$6117^{+2987}_{-1988}$

$T_{\text{max}}$  = 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

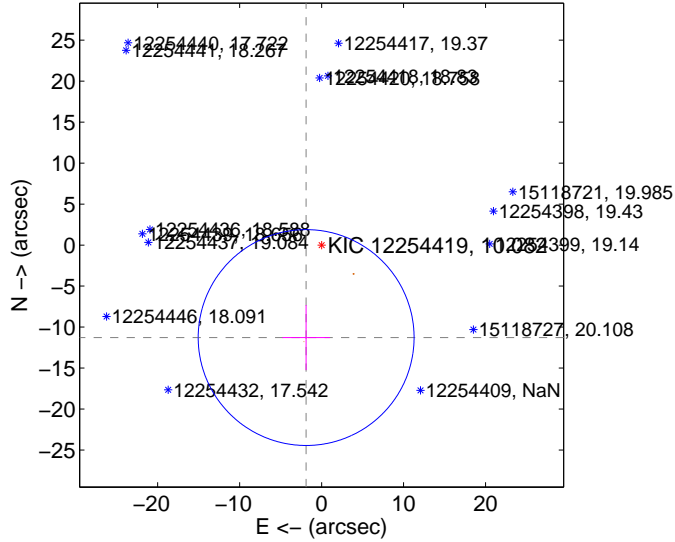
Supplemental centroid analysis for 012254419-03. **Kepler magnitude: 10.08.** Transit SNR 8.09

**There are 0 quarters with good PRF difference image offsets**

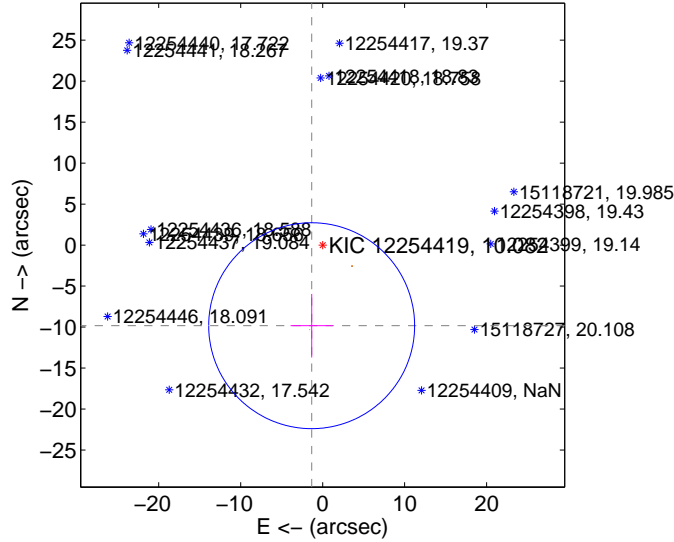
The direct PRF centroid is offset from the target star catalog position by about 1.59 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$11.435 \pm 4.389$	2.61	$1.888 \pm 2.899$	$-11.278 \pm 3.965$
PRF-fit source offset from KIC position	$9.924 \pm 4.186$	2.37	$1.341 \pm 2.577$	$-9.833 \pm 3.874$
photometric centroid source offset	$2.89 \pm 2.92$	0.99	$2.47 \pm 2.19$	$-1.50 \pm 4.33$

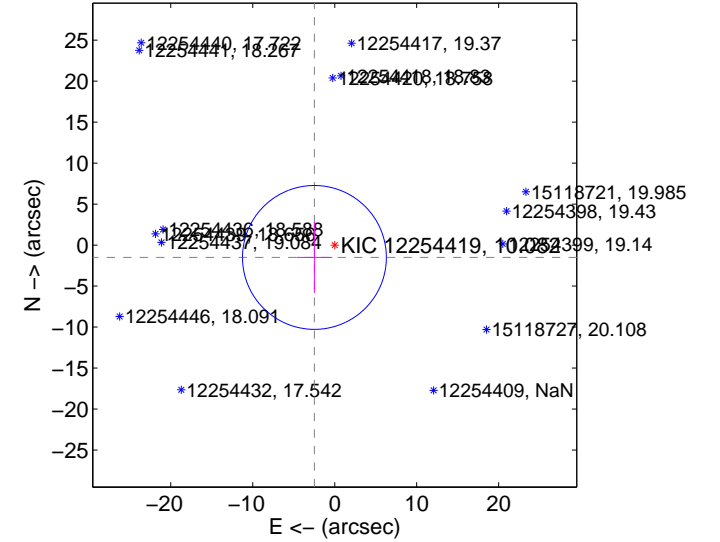
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

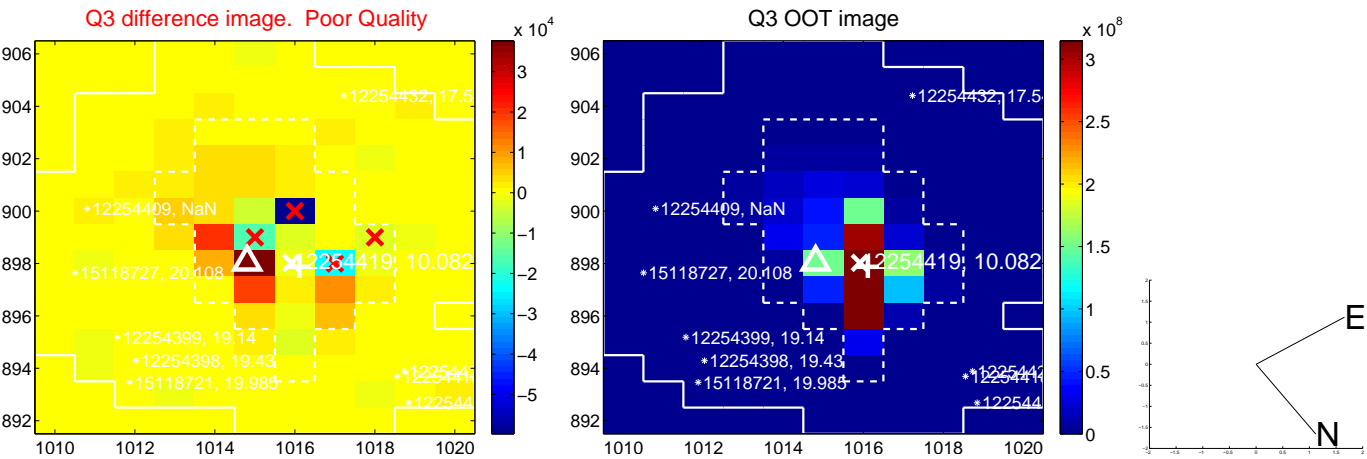


offset from photometric centroids

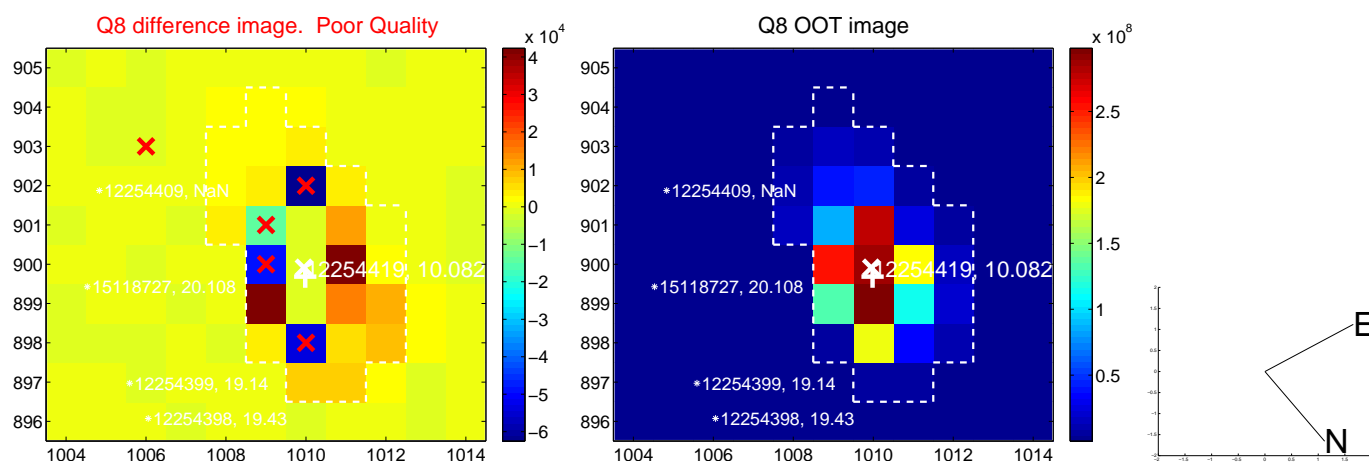


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

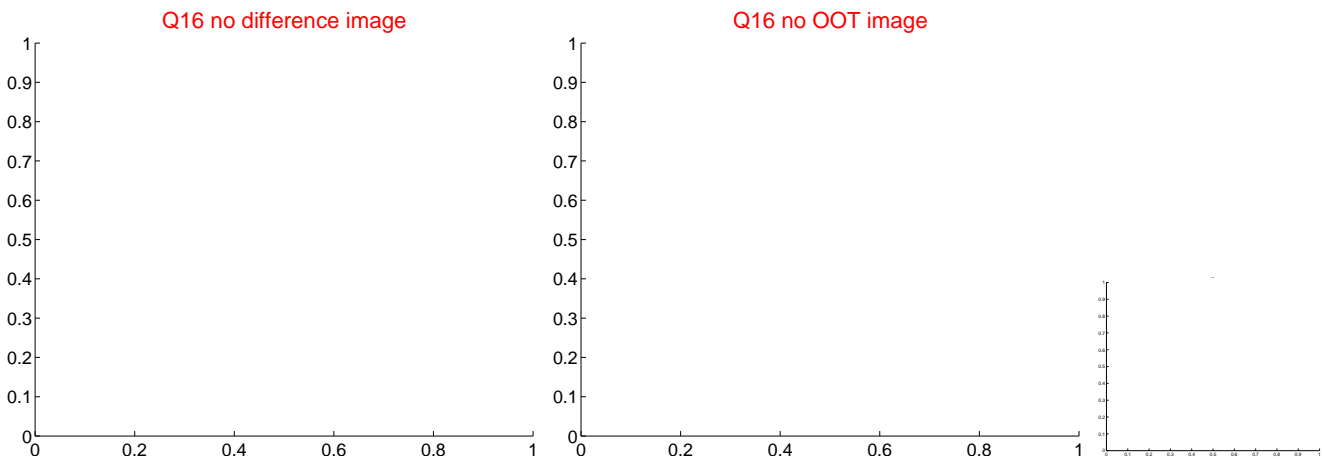
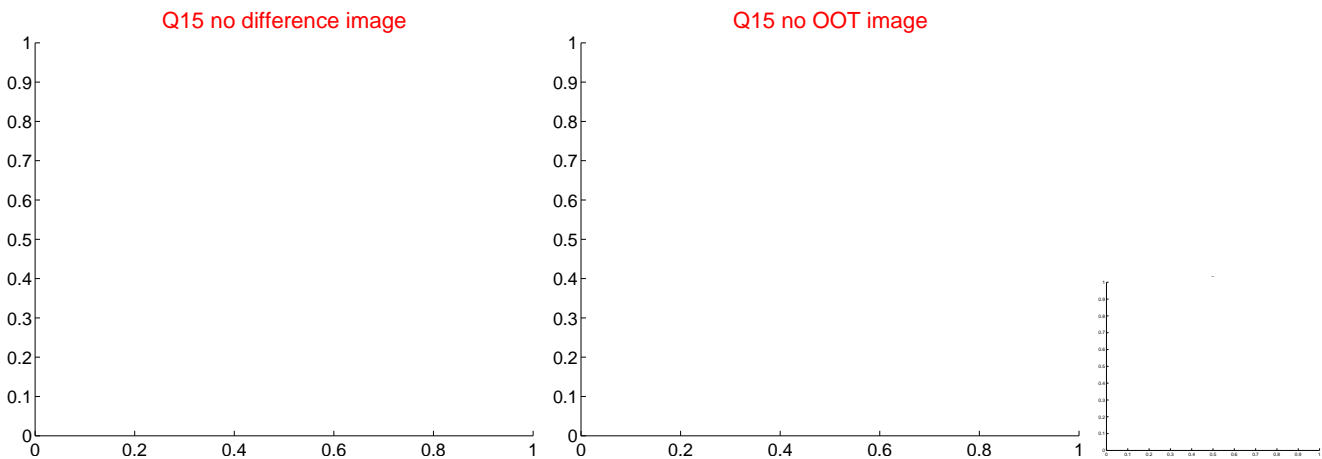
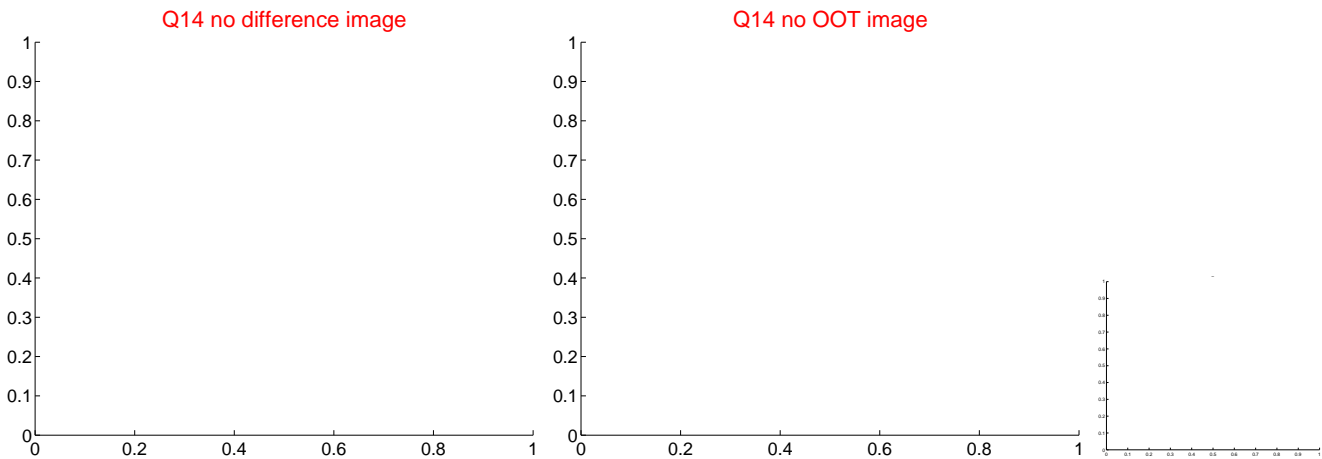
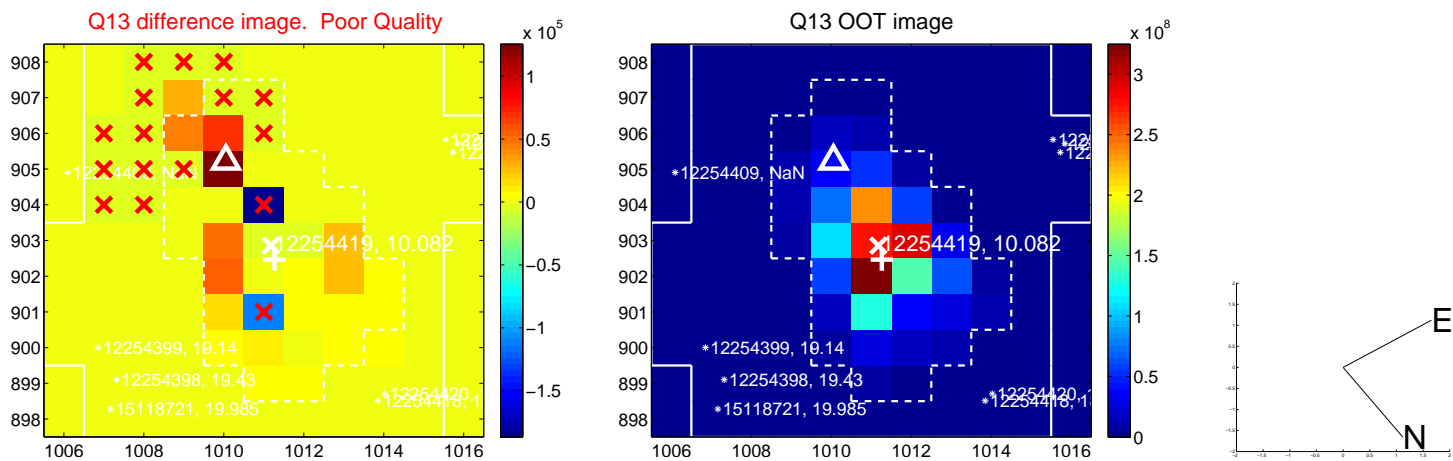




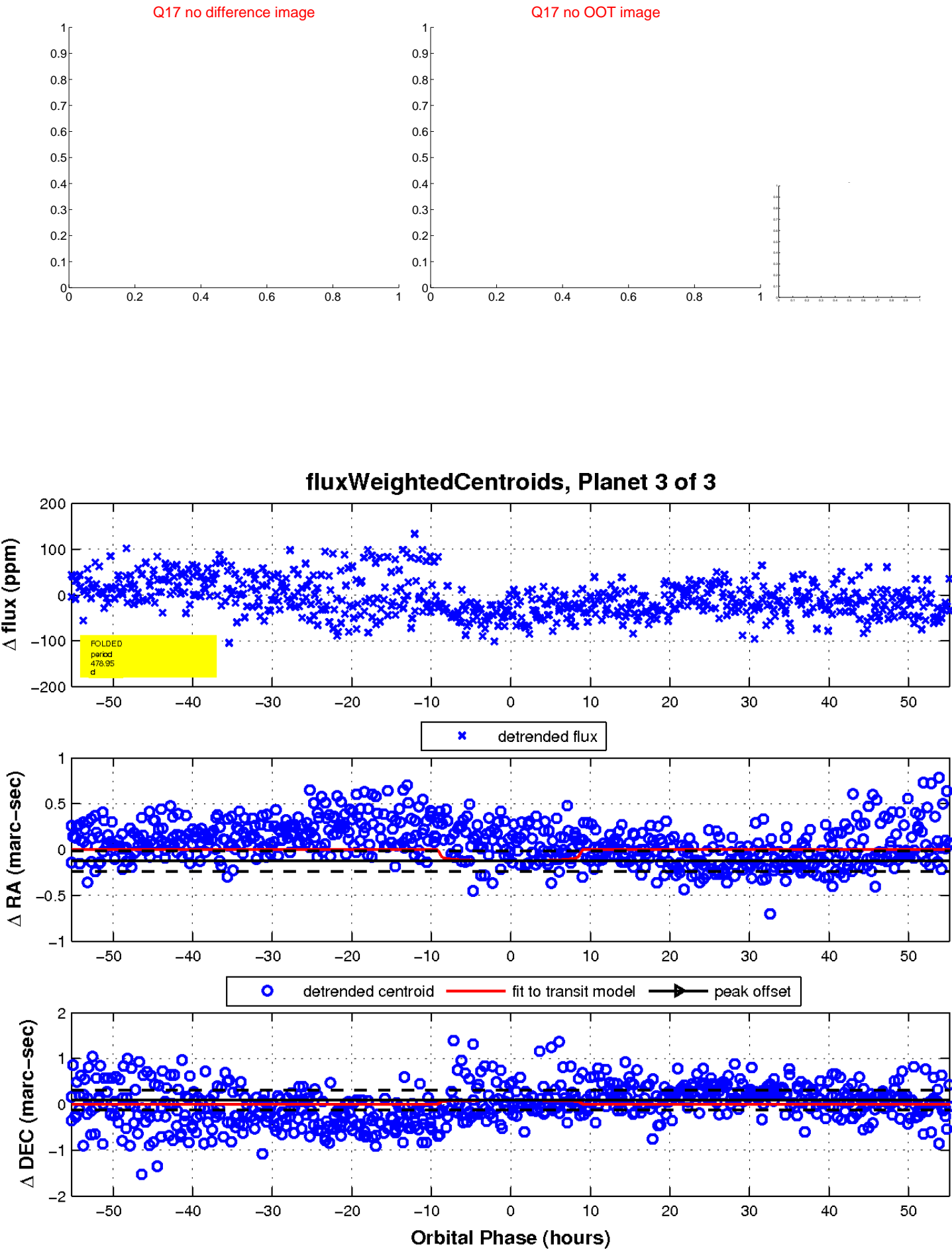
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

