

# KIC 004064365

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004064365-01	OBS	No	8.956704	135.096496	115.3	10.968	17.0	18.5	4.71	11360	8.75	20153.33
004064365-02	OBS	No	2.985840	132.941470	0.0	4.291	17.6	0.0	4.71	11360	0.10	87187.83
004064365-03	OBS	No	2.985527	132.805413	110.0	28.844	14.6	18.9	4.71	11360	5.97	87200.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004064365-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
004064365-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD
004064365-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD

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

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

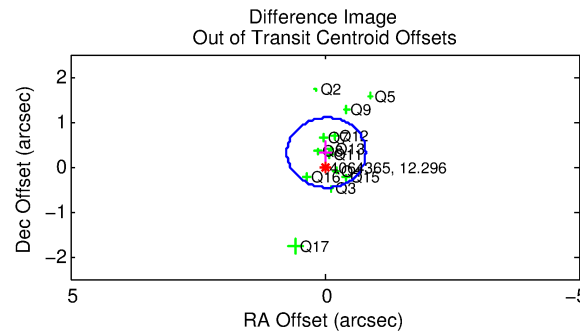
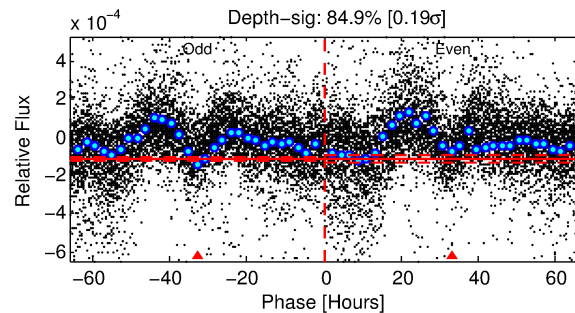
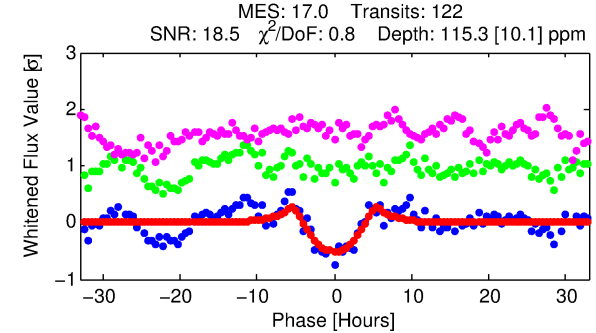
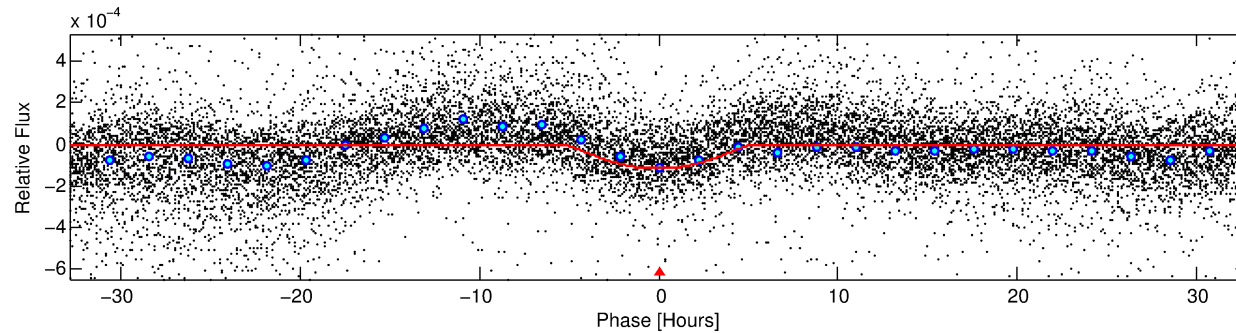
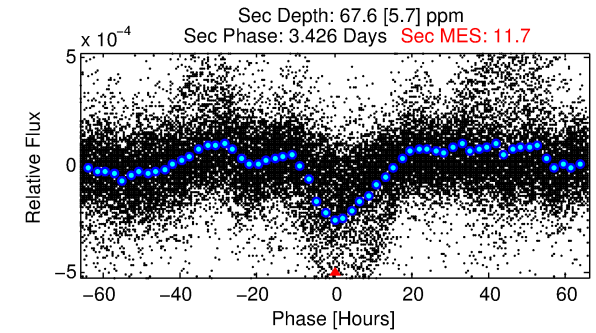
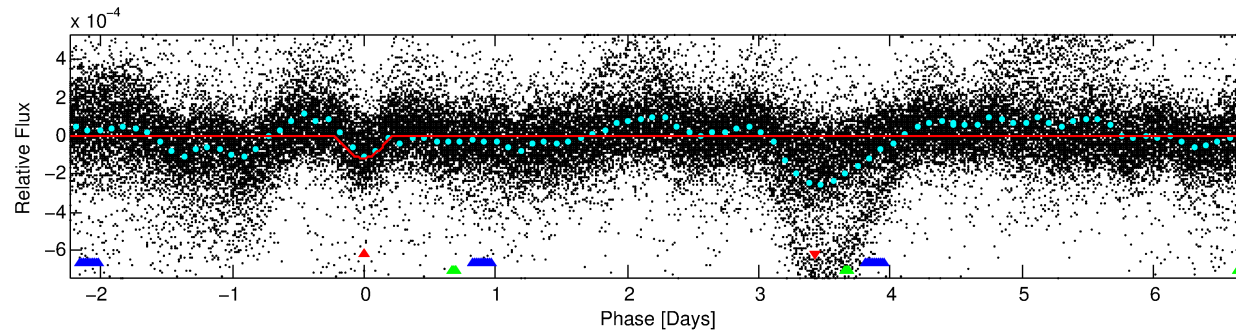
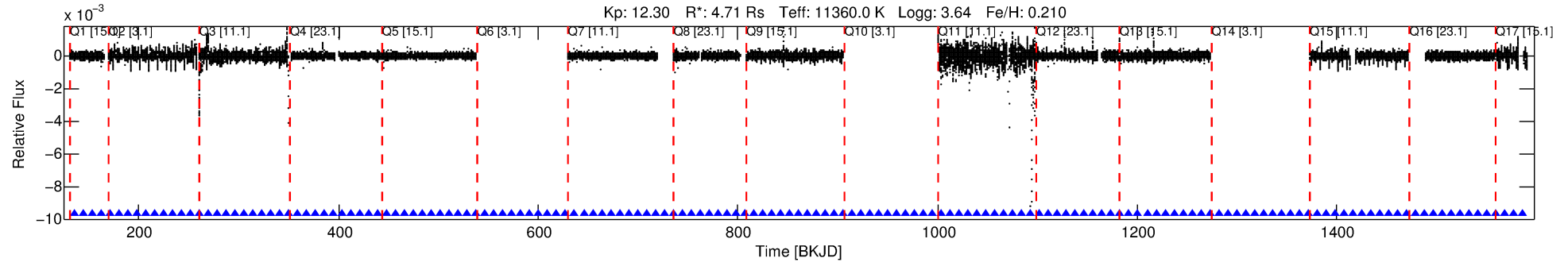
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 004064365-01

No Significant Match Found

# DV One-Page Summary

KIC: 4064365 Candidate: 1 of 3 Period: 8.957 d



## DV Fit Results:

Period = 8.95670 [0.00010] d  
Epoch = 135.0965 [0.0087] BKJD  
Rp/R\* = 0.0170 [0.0105]  
a/R\* = 1.58 [0.17]  
b = 1.00 [0.02]  
Seff = 20153.33 [19341.37]  
Teq = 3038 [729] K  
Rp = 8.75 [6.72] Re  
a = 0.1282 [0.0552] AU  
Ag = 7.98 [11.31] [0.62σ]  
Teffp = 7895 [2788] K [1.69σ]

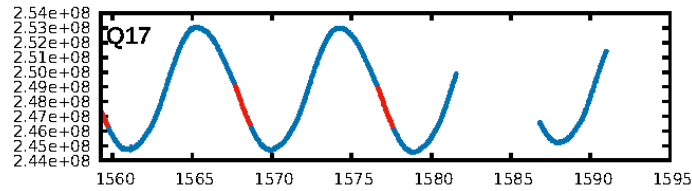
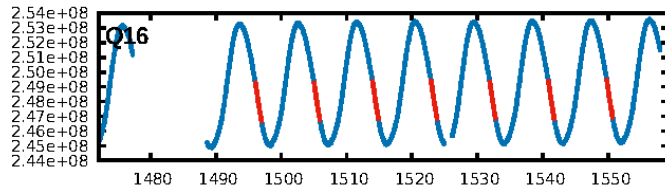
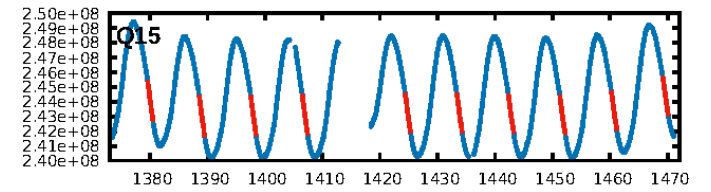
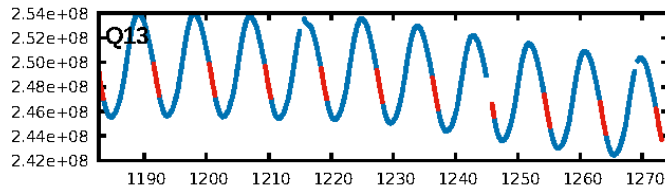
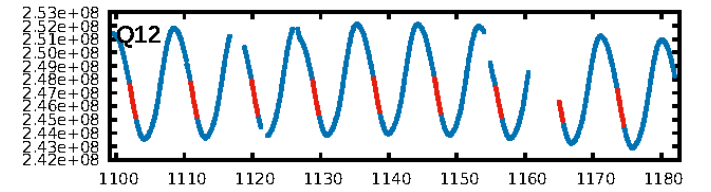
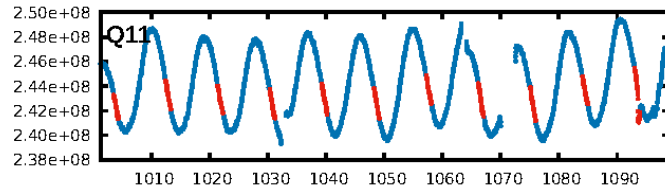
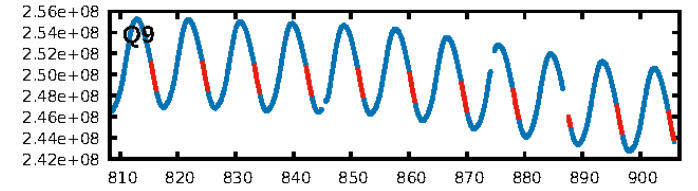
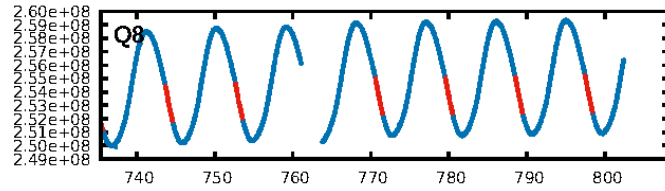
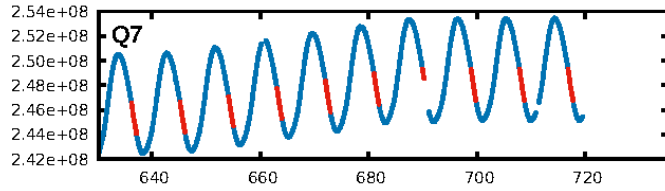
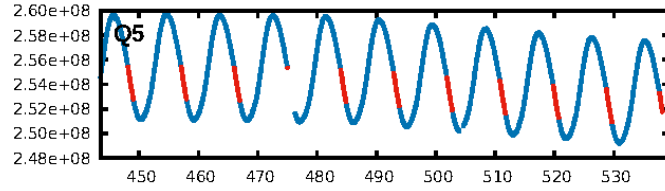
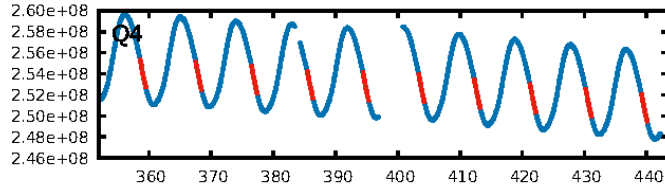
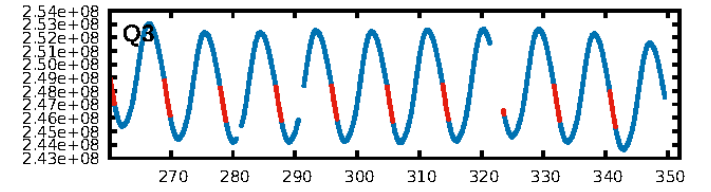
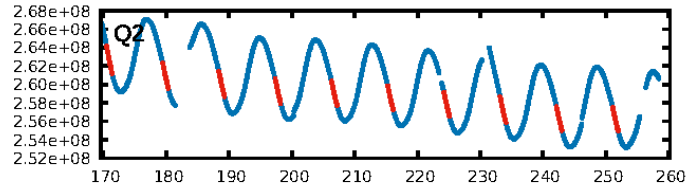
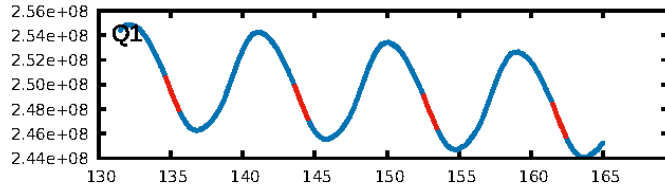
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.17σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 83.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [115/115]  
**GhostDiagnostic-chr: 0.7847**  
Centroid-sig: 0.5%  
Centroid-so: 0.841 arcsec [1.78σ]  
OotOffset-rm: 0.314 arcsec [1.21σ]  
OotOffset-st: 1/4/4/4 [13]  
KicOffset-rm: 0.421 arcsec [1.76σ]  
KicOffset-st: 1/4/4/4 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 0.00 [0/14]

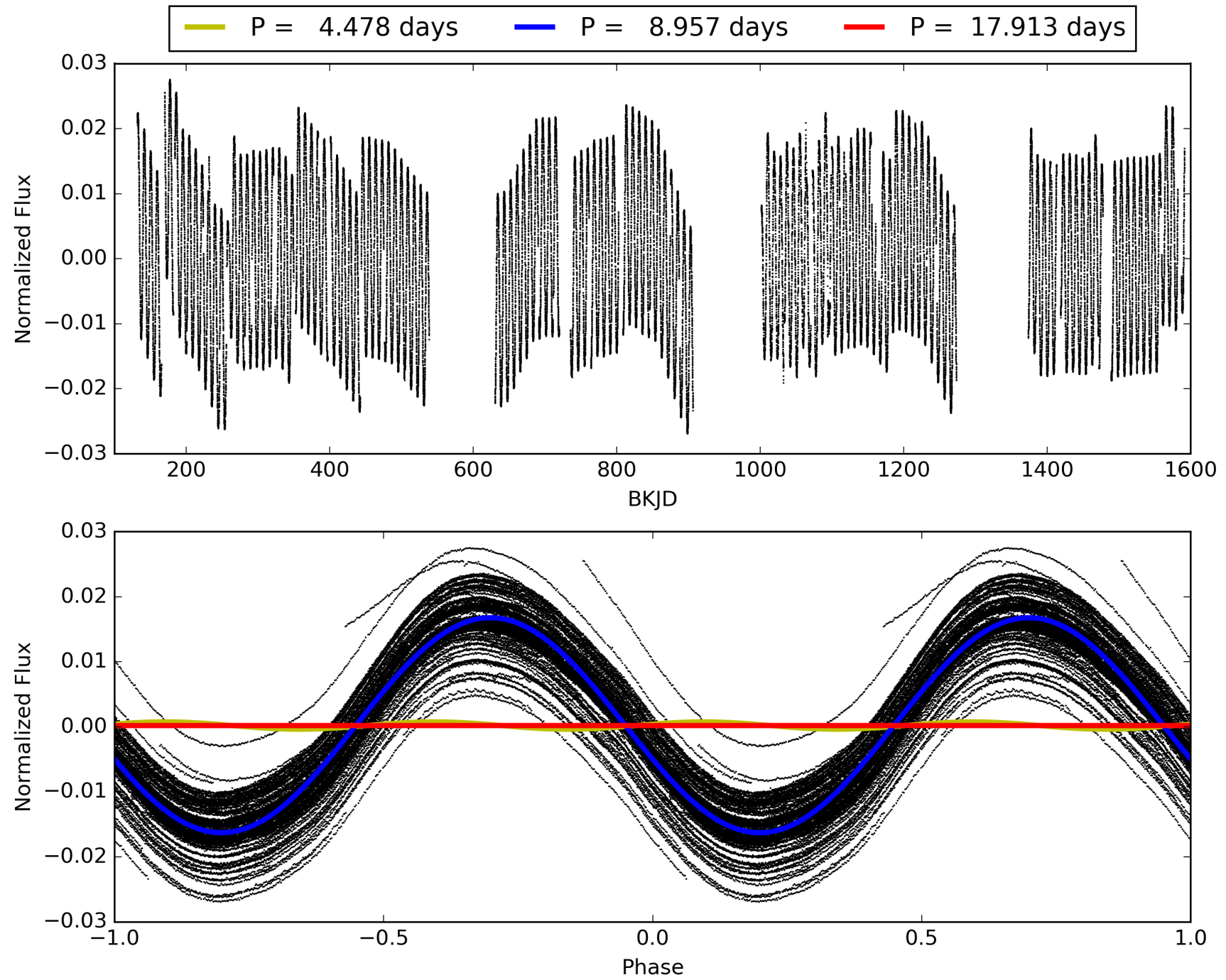
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:21:06 Z

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

# TCE 004064365-01, PDC Light Curves

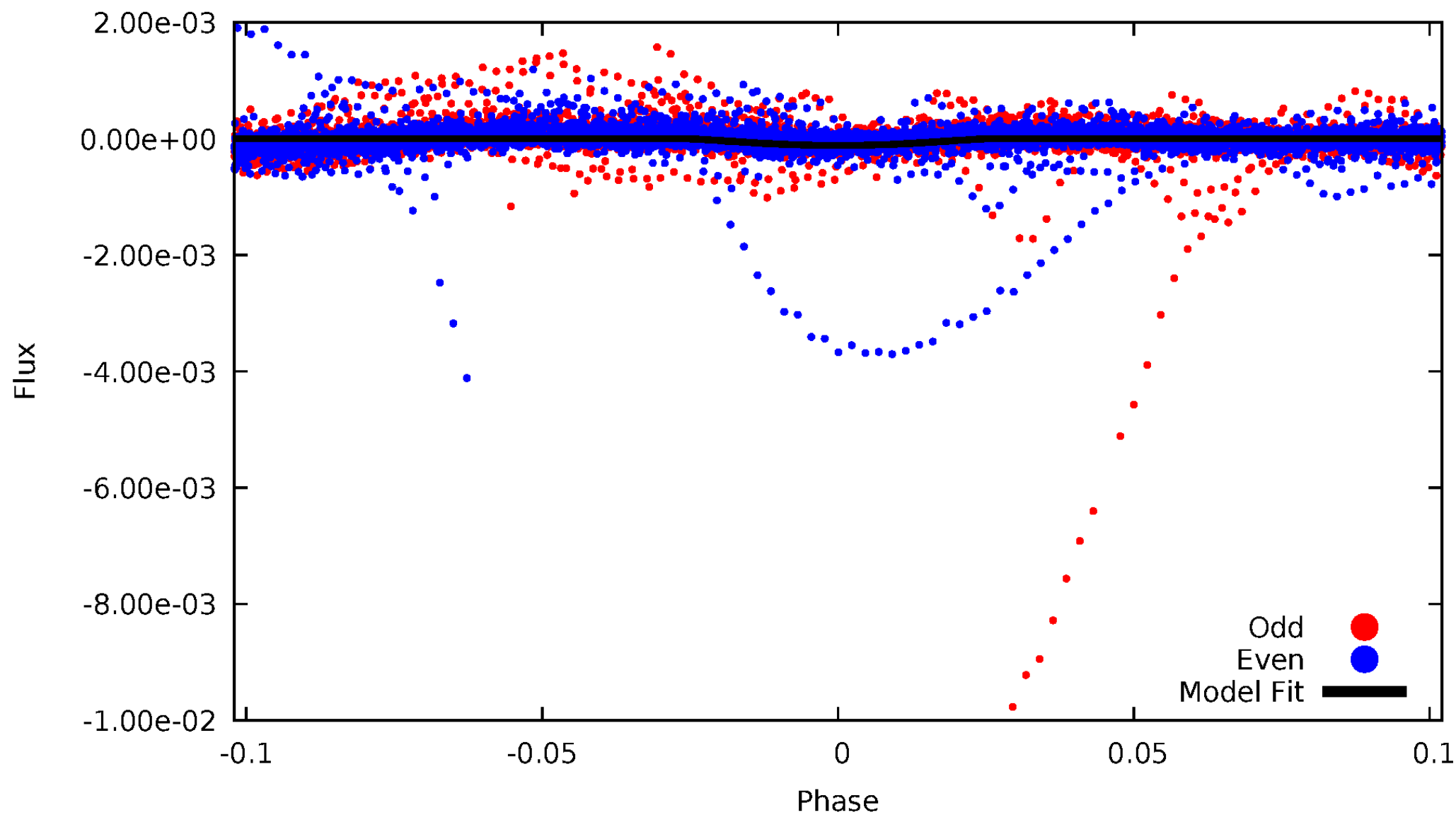


TCE 004064365-01



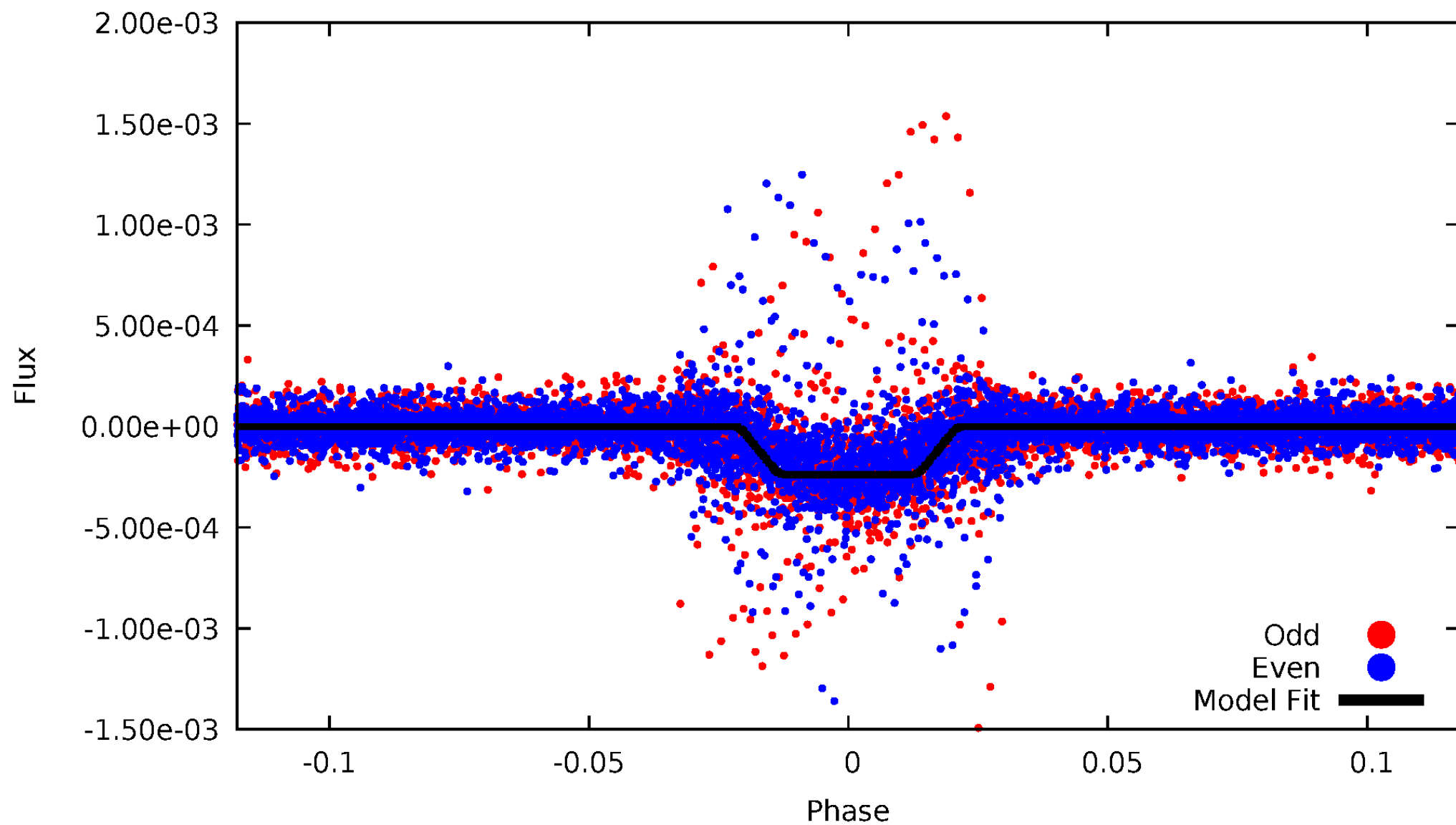
# DV Odd/Even

TCE 004064365-01



# ALT Odd/Even

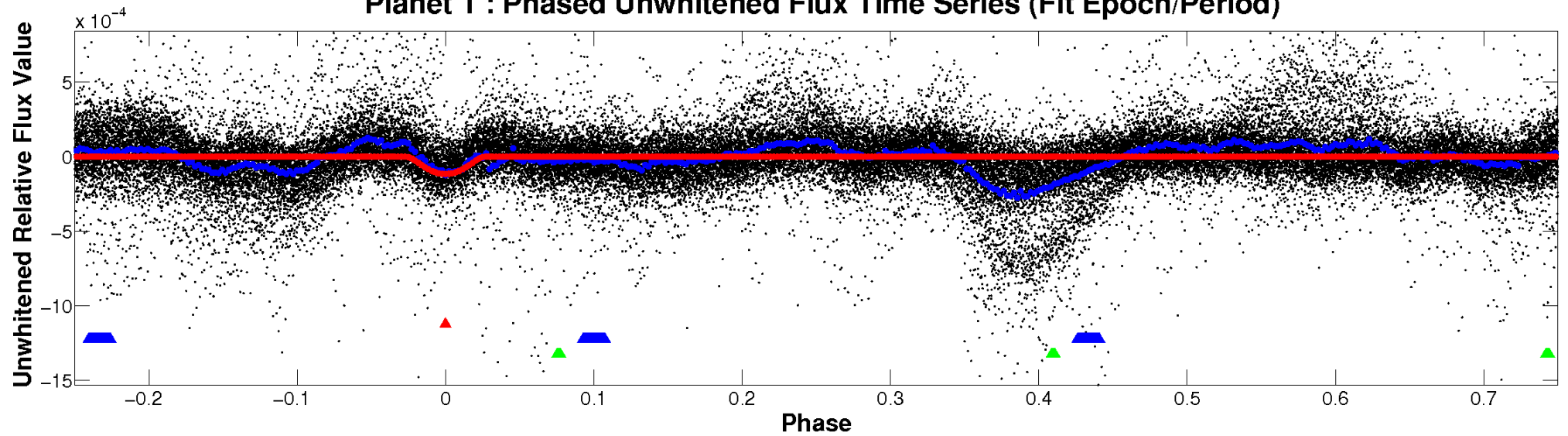
TCE 004064365-01



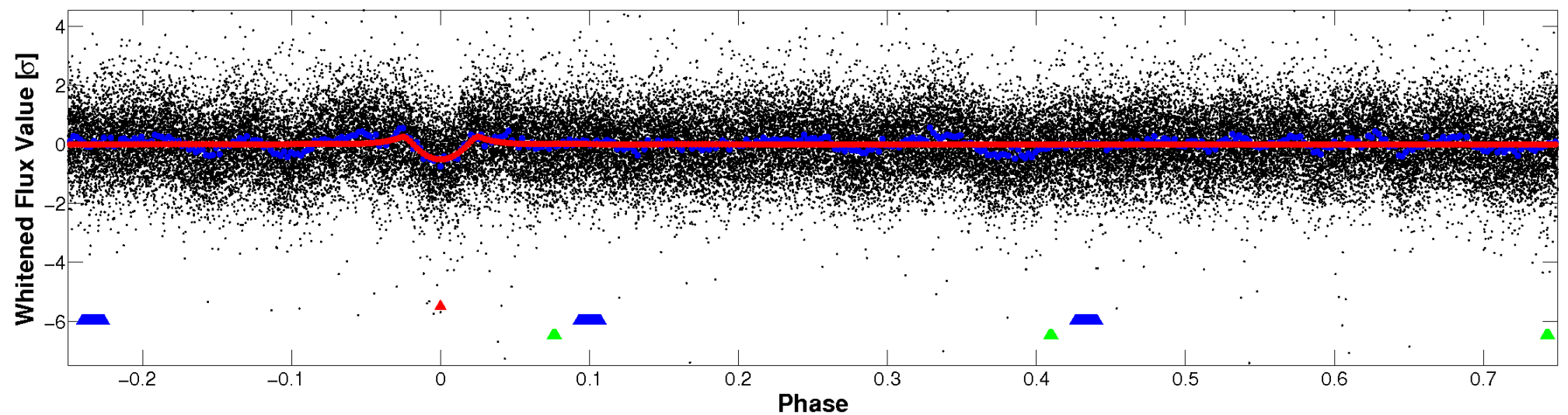


# Non-Whitened Vs. Whitened Light Curve

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

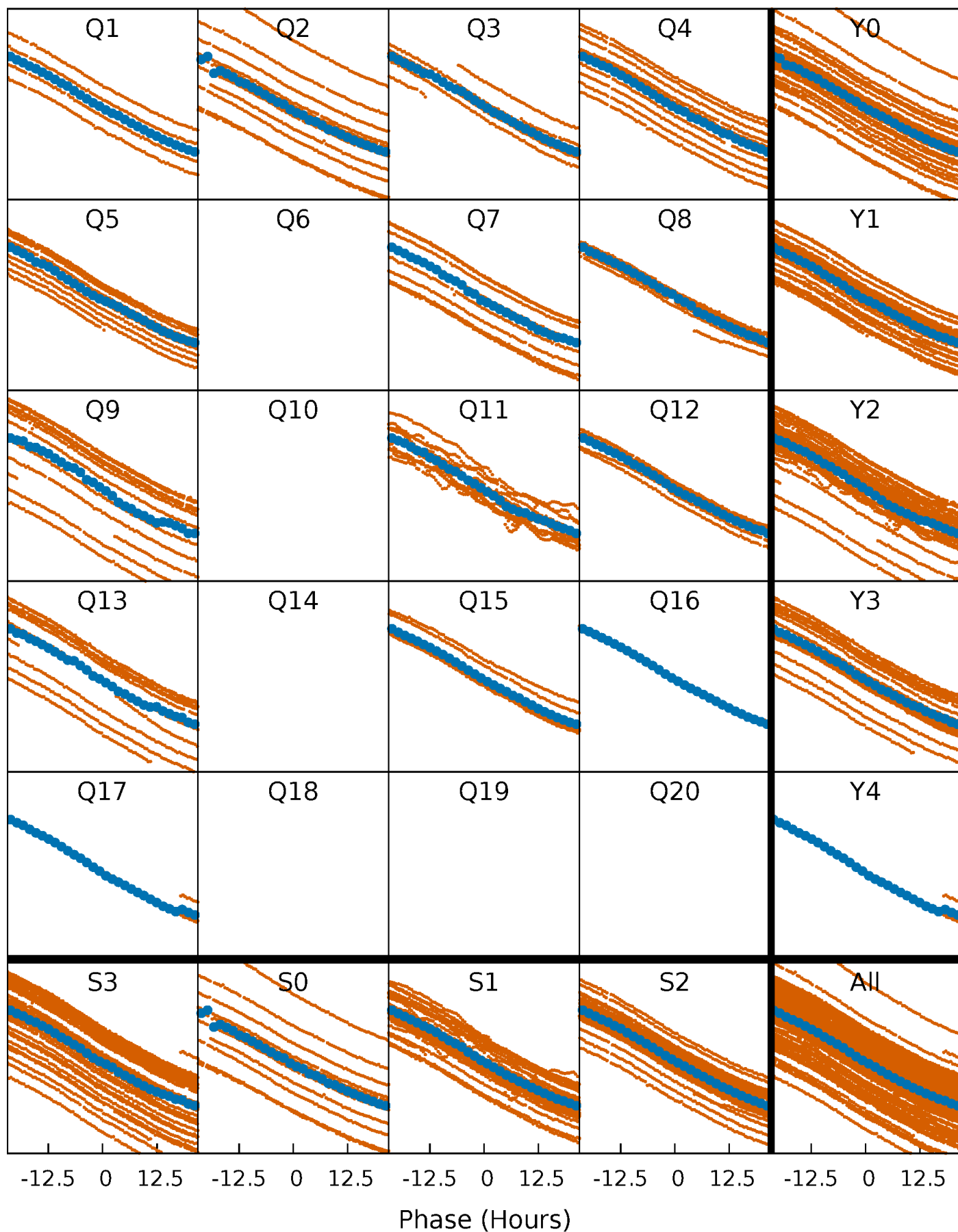


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

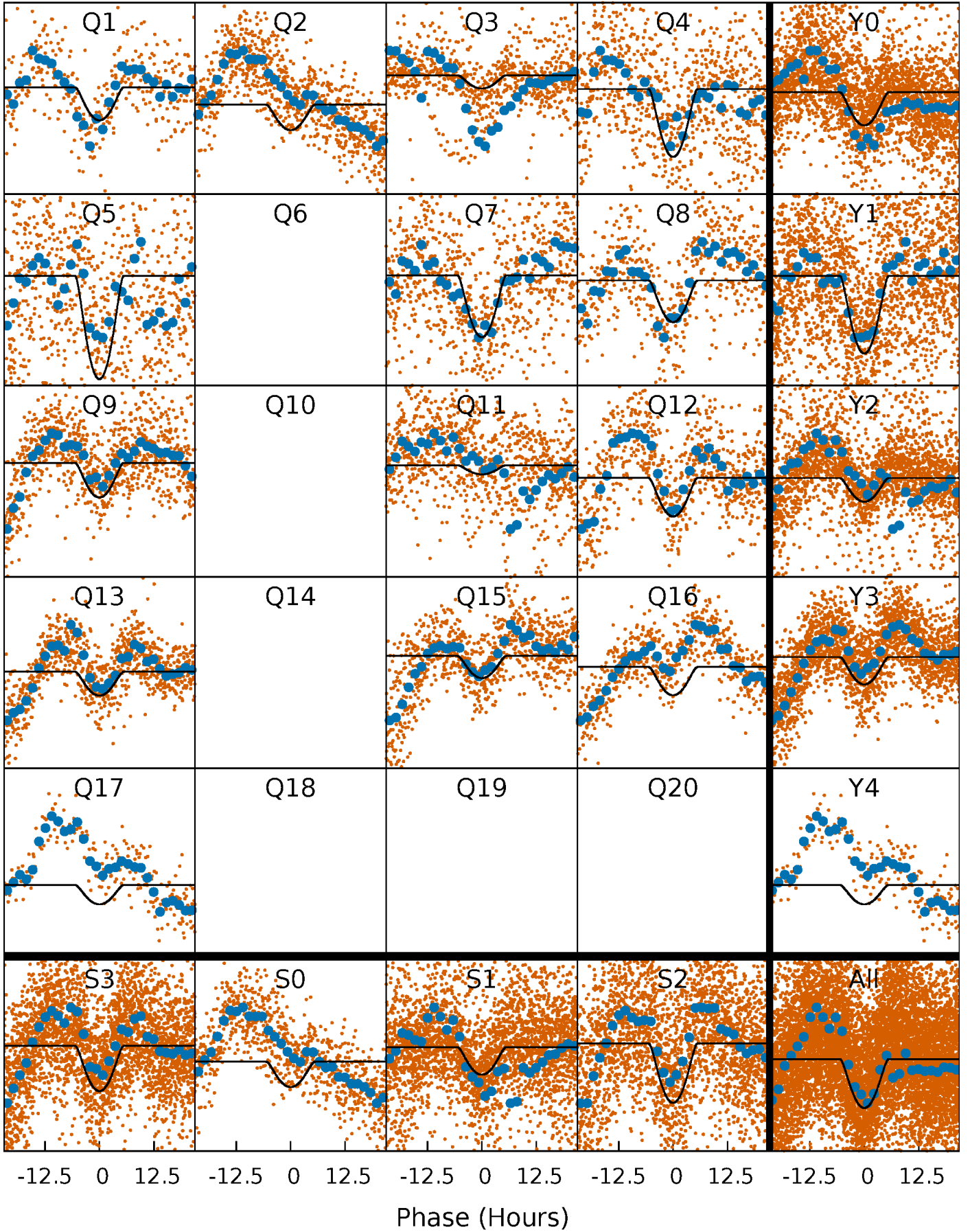
TCE 004064365-01   P= 8.956704 Days    $T_0=135.096496$  (BKJD)





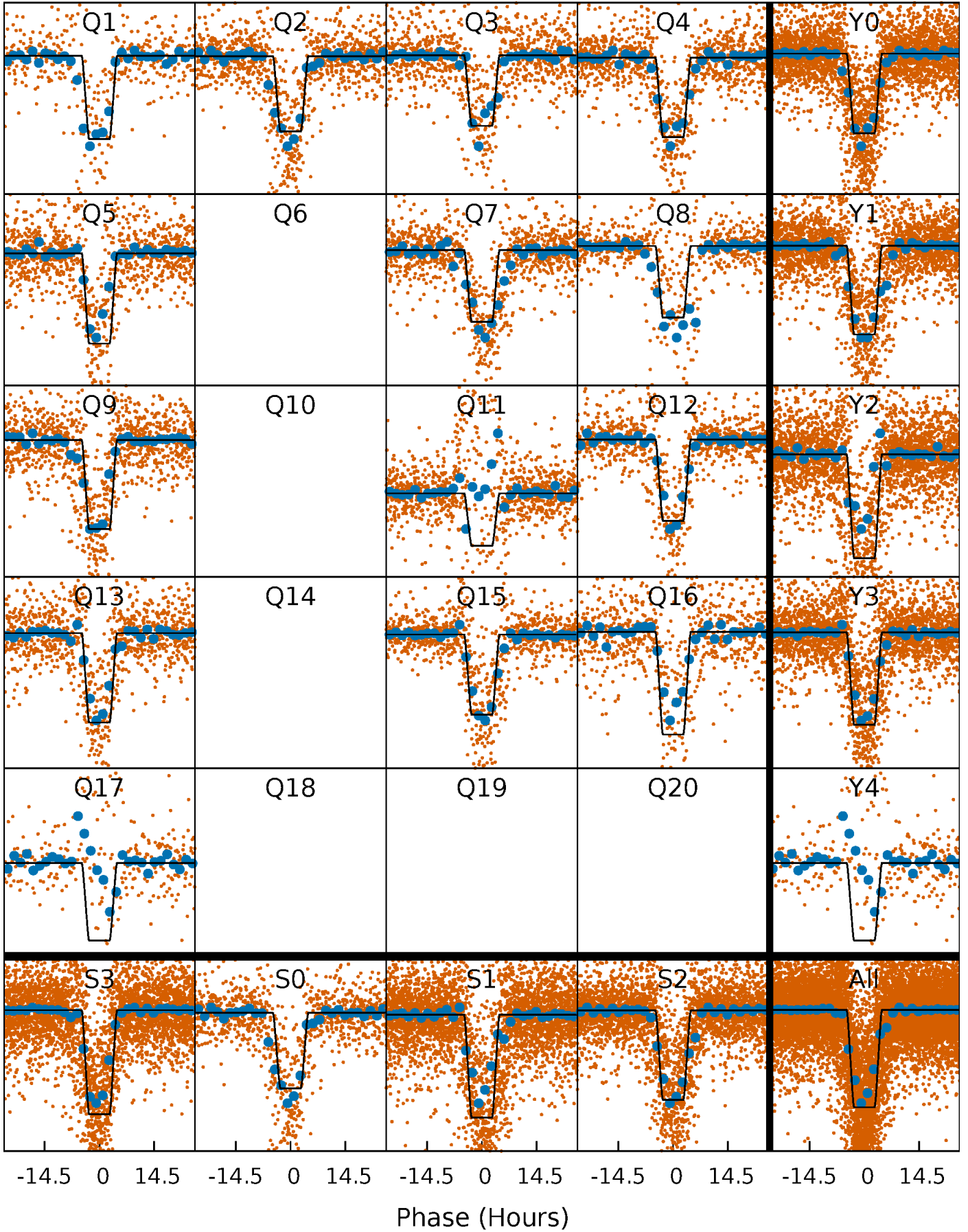
# DV Quarter-Phased Transit Curves

TCE 004064365-01   P= 8.956704 Days    $T_0=135.096496$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

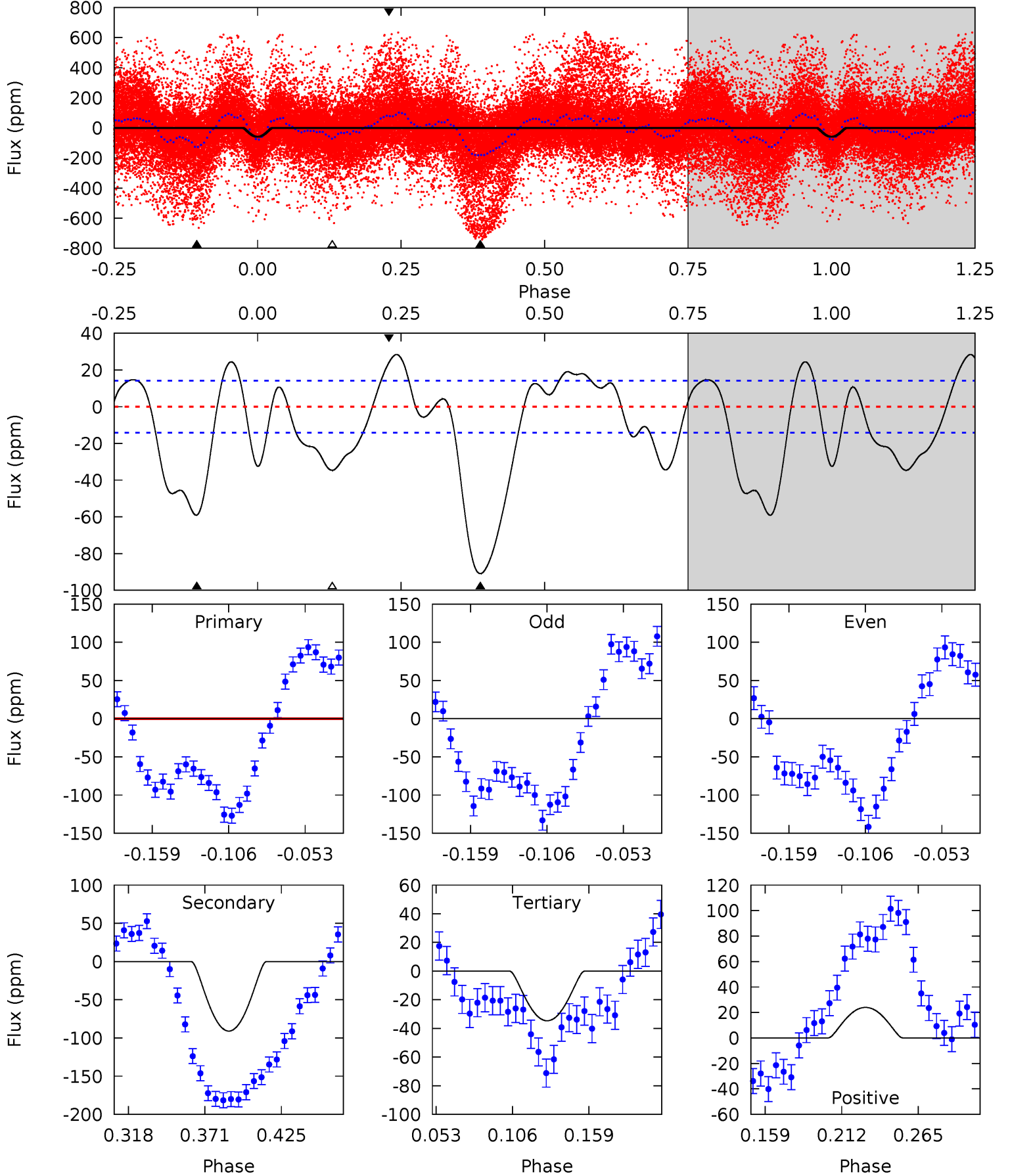
TCE 004064365-01 P= 8.956696 Days  $T_0=135.101092$  (BKJD)



# DV Model-Shift Uniqueness Test

004064365-01, P = 8.956704 Days, E = 126.139792 Days

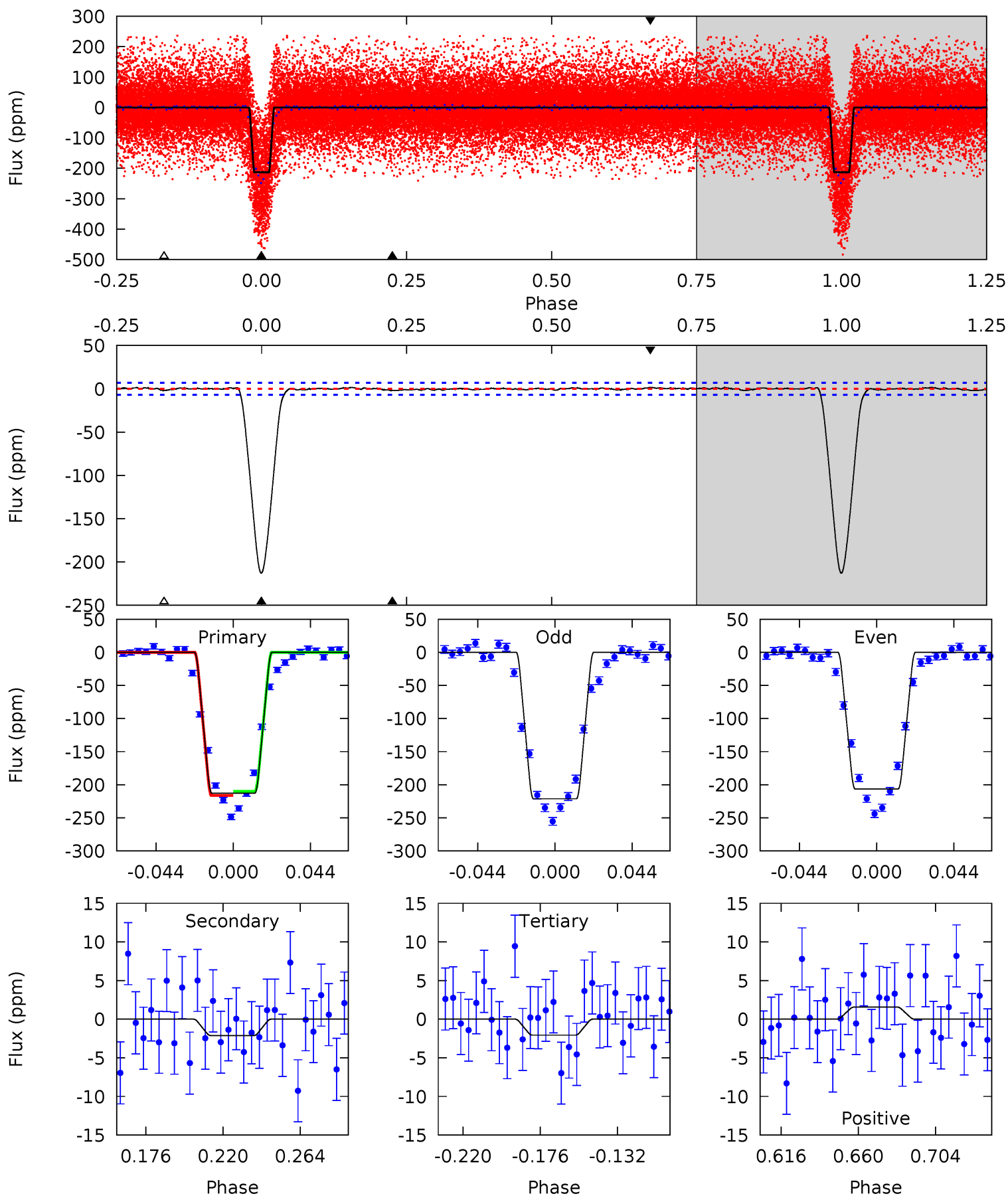
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.6	30.2	11.5	7.96	4.70	1.93	5.92	8.10	11.6	18.7	22.2	0.78	1.46	0.24	0.62



# Alt Model-Shift Uniqueness Test

004064365-01, P = 8.956696 Days, E = 126.144396 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
145.7	1.45	1.41	1.07	4.73	2.01	0.48	144.3	144.6	0.04	0.38	5.10	0.94	0.01	2.11



### Stellar Parameters For KIC 004064365

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$11360^{+597}_{-1911}$	$3.636^{+0.400}_{-0.100}$	$0.210^{+0.150}_{-0.150}$	$4.712^{+0.534}_{-2.135}$	$3.504^{+0.070}_{-0.927}$	$0.047^{+0.162}_{-0.011}$
	+5%/-17%	+11%/-3%	+71%/-71%	+11%/-45%	+2%/-26%	+344%/-24%
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 004064365-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-91 \pm 3$	$8.18^{+5.52}_{-4.25}$	$4003^{+498}_{-774}$	$7213^{+4073}_{-1770}$	$12^{+38}_{-8}$
Alt.	$-2 \pm 1$	$7.66^{+5.08}_{-4.59}$	$3969^{+524}_{-642}$	$-2120^{+6378}_{-1249}$	$0.291^{+1.417}_{-0.228}$

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

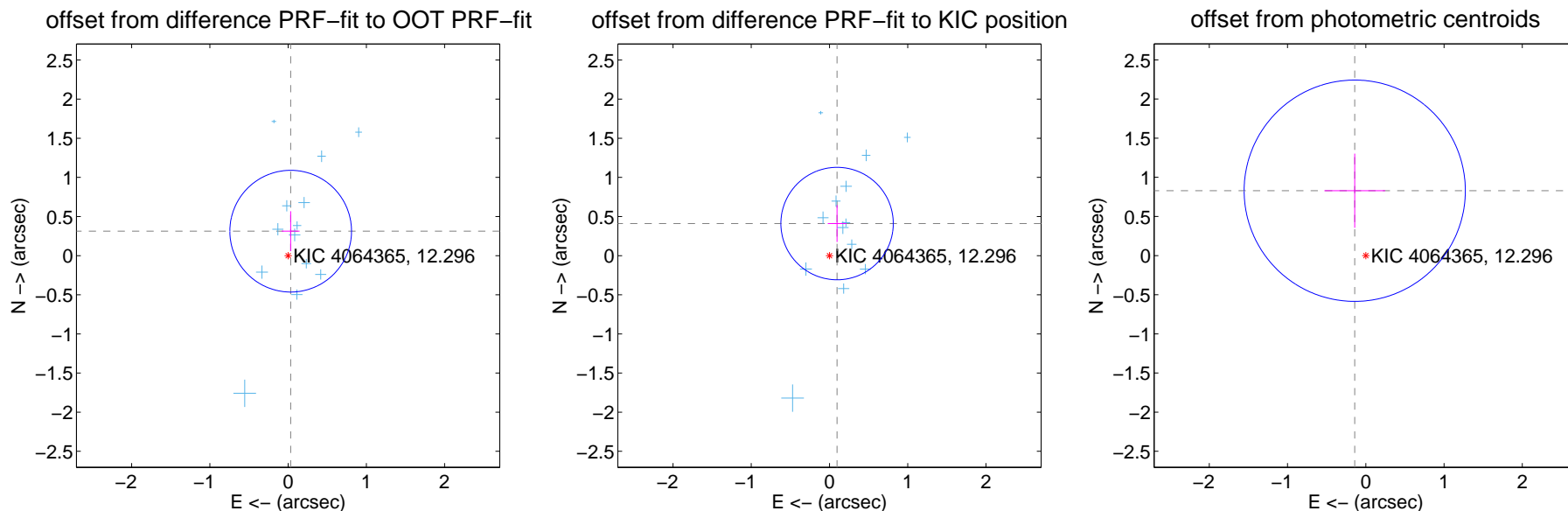
## DV Centroid Data

Supplemental centroid analysis for 004064365-01. Kepler magnitude: 12.30. Transit SNR 18.51

There are 13 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

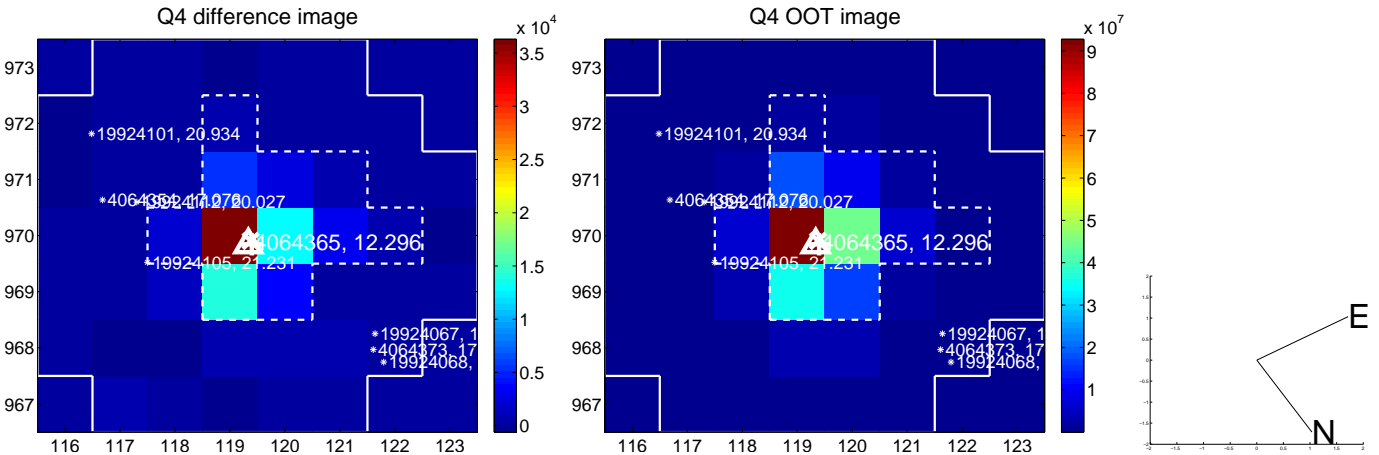
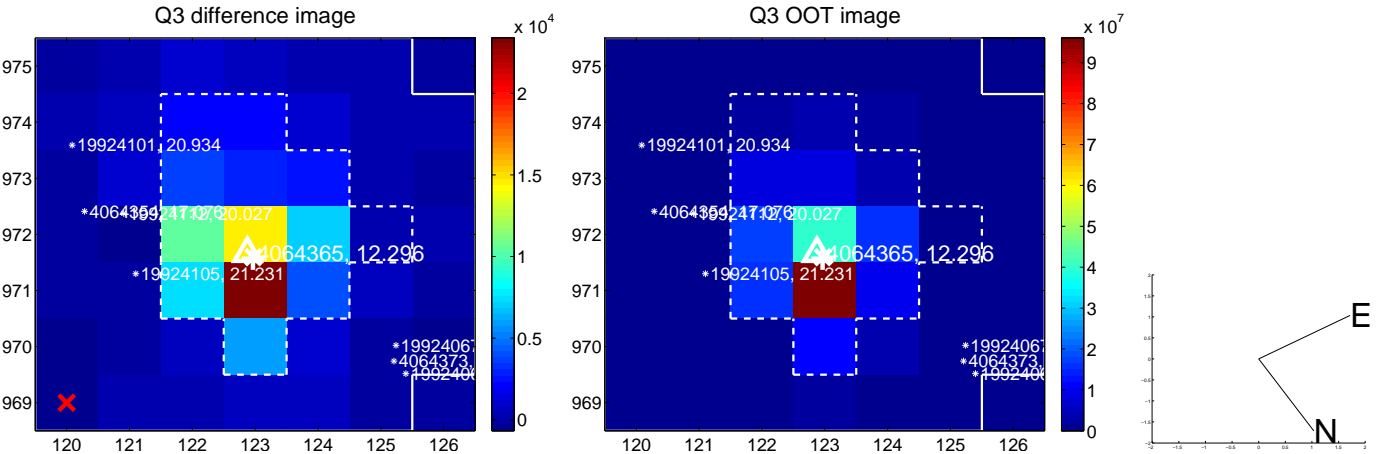
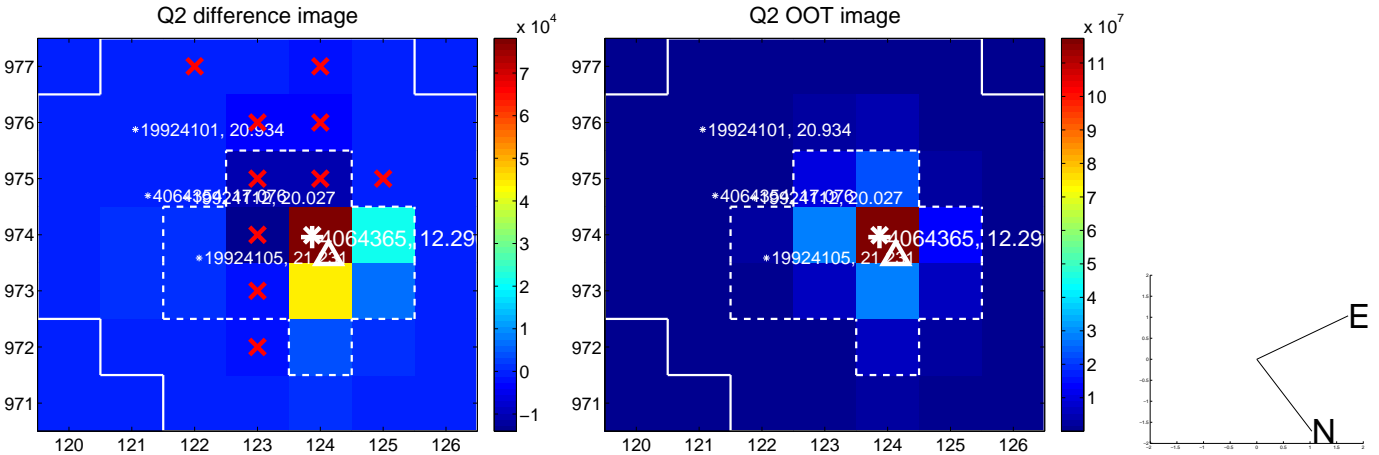
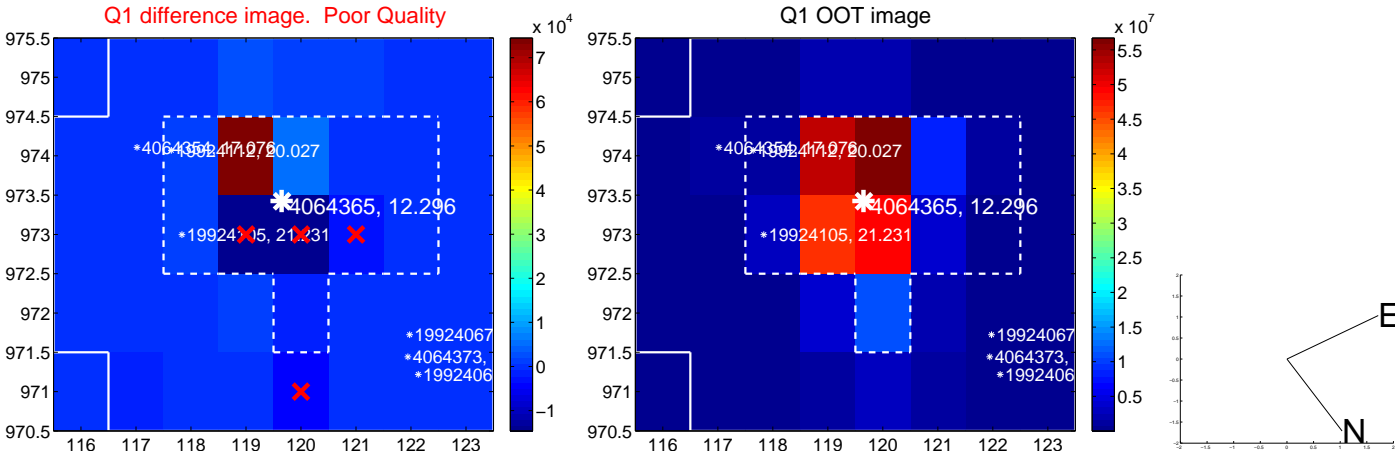
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.314 \pm 0.259$	1.21	$-0.033 \pm 0.114$	$0.313 \pm 0.255$
PRF-fit source offset from KIC position	$0.421 \pm 0.239$	1.76	$-0.097 \pm 0.120$	$0.410 \pm 0.235$
photometric centroid source offset	$0.84 \pm 0.47$	1.78	$0.14 \pm 0.39$	$0.83 \pm 0.47$



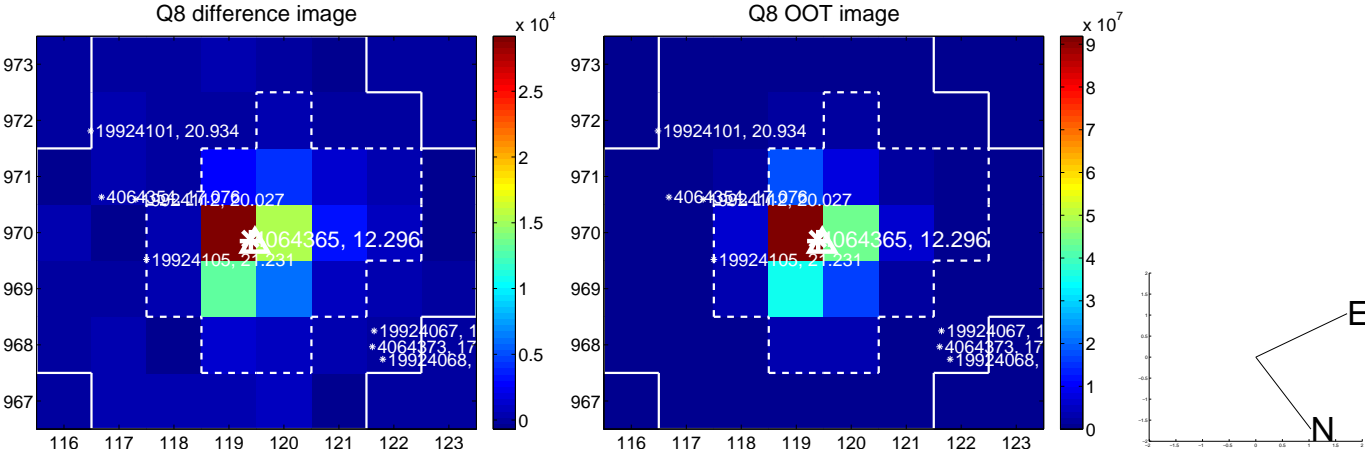
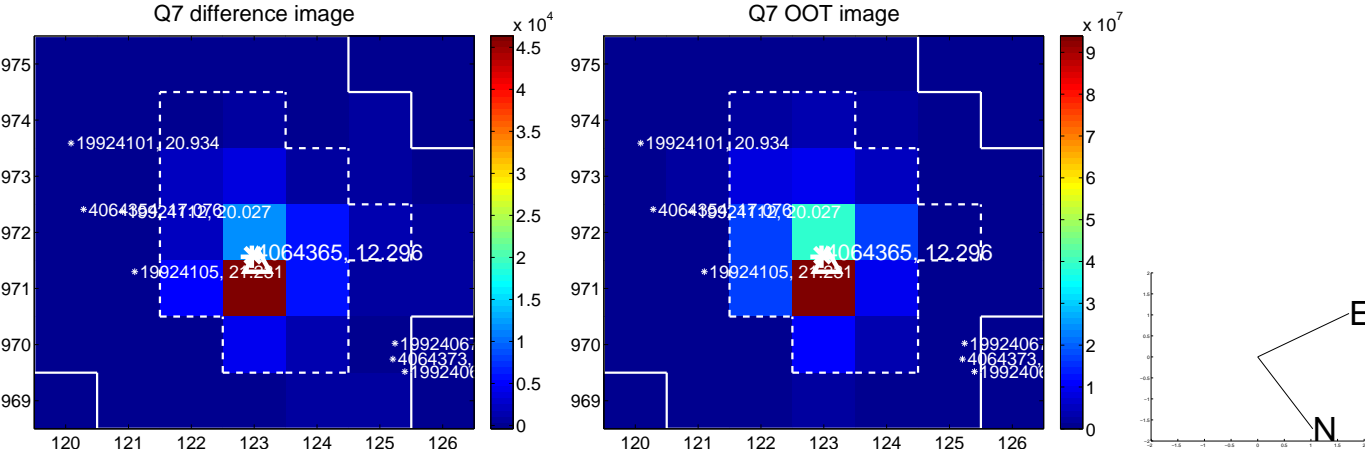
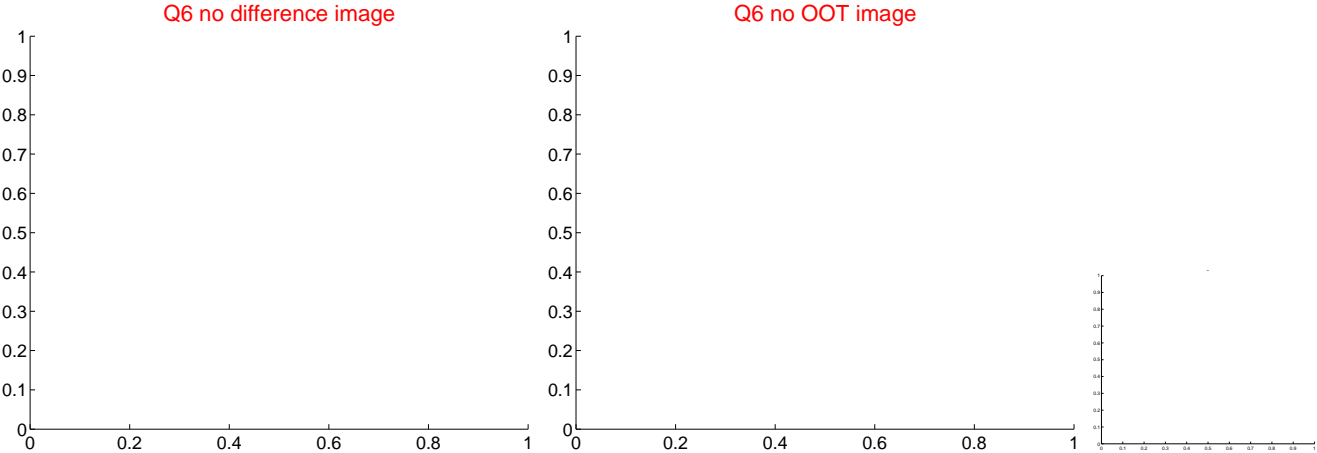
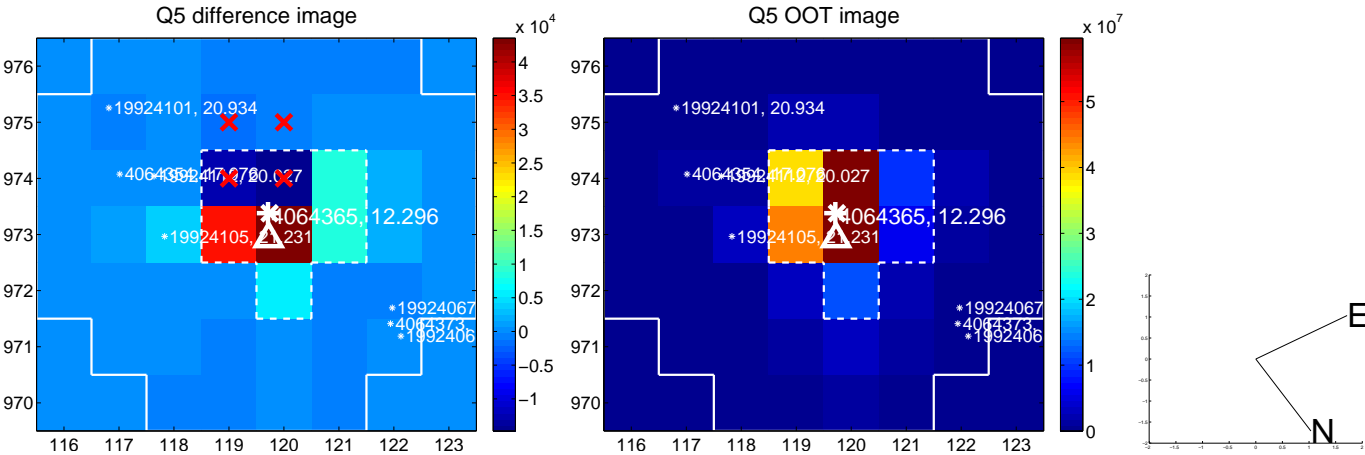
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



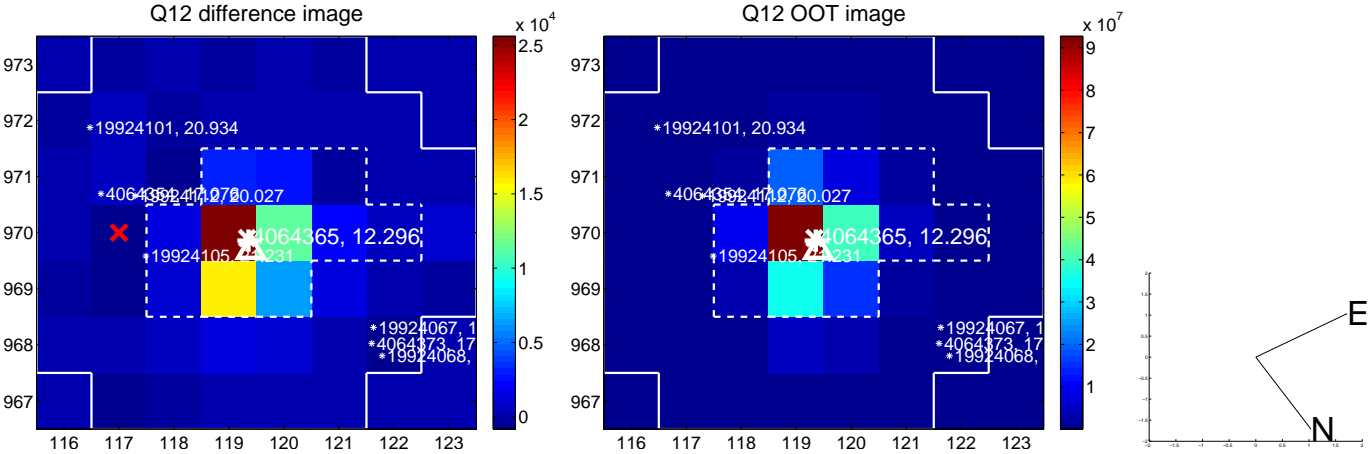
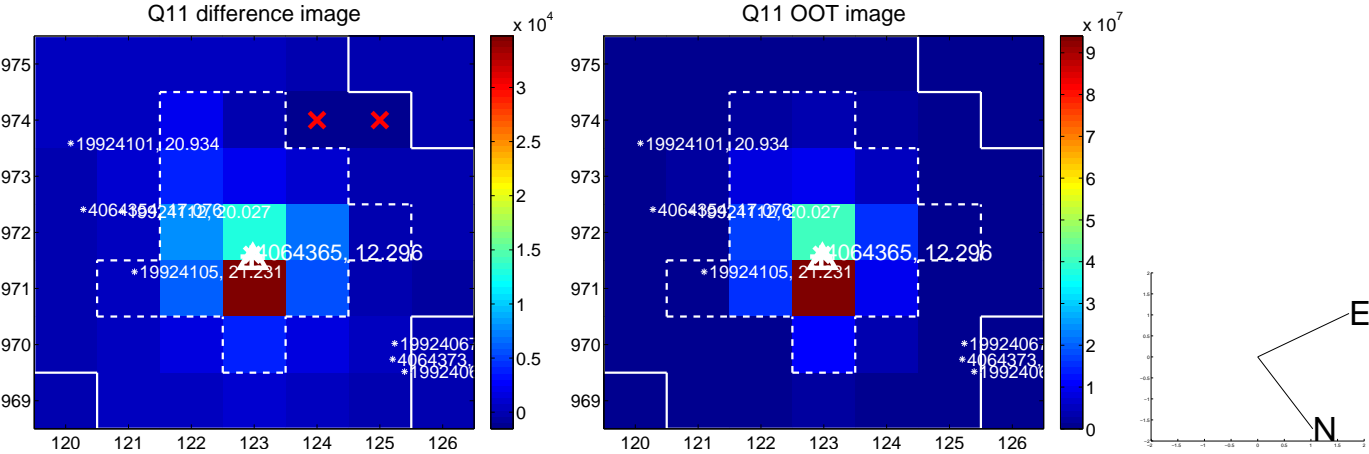
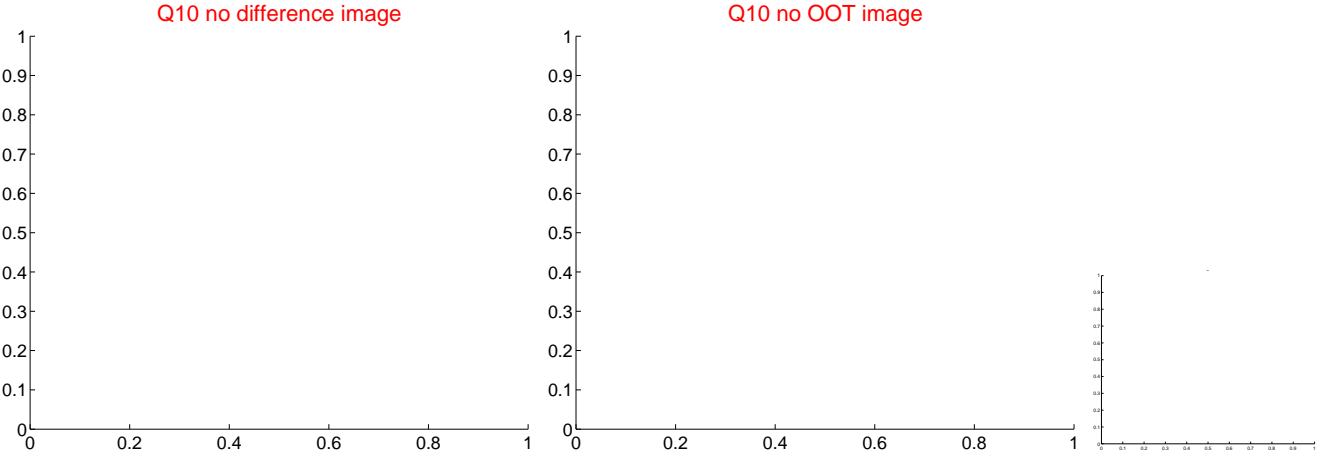
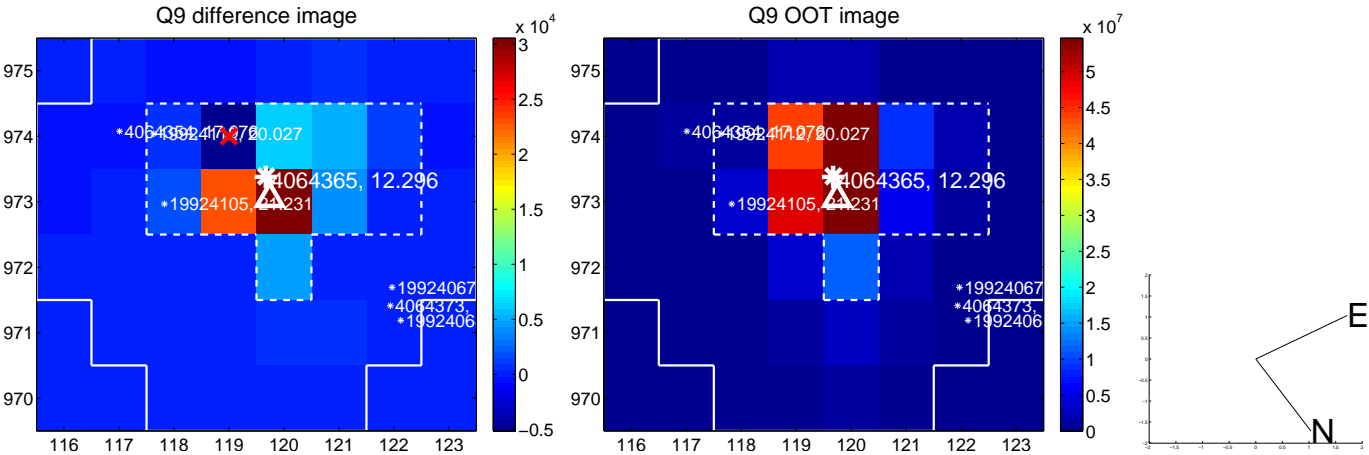
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



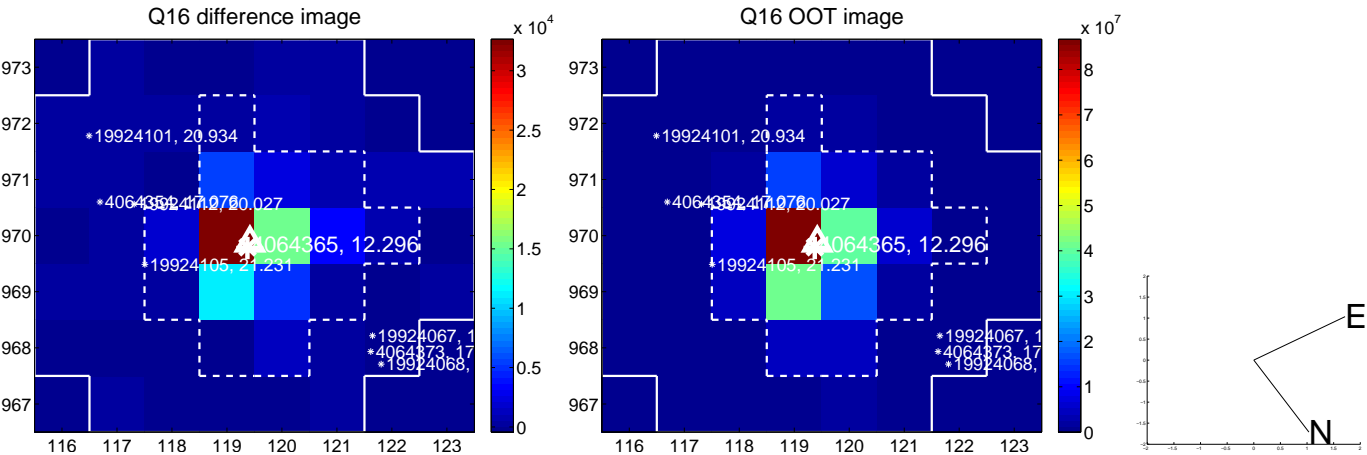
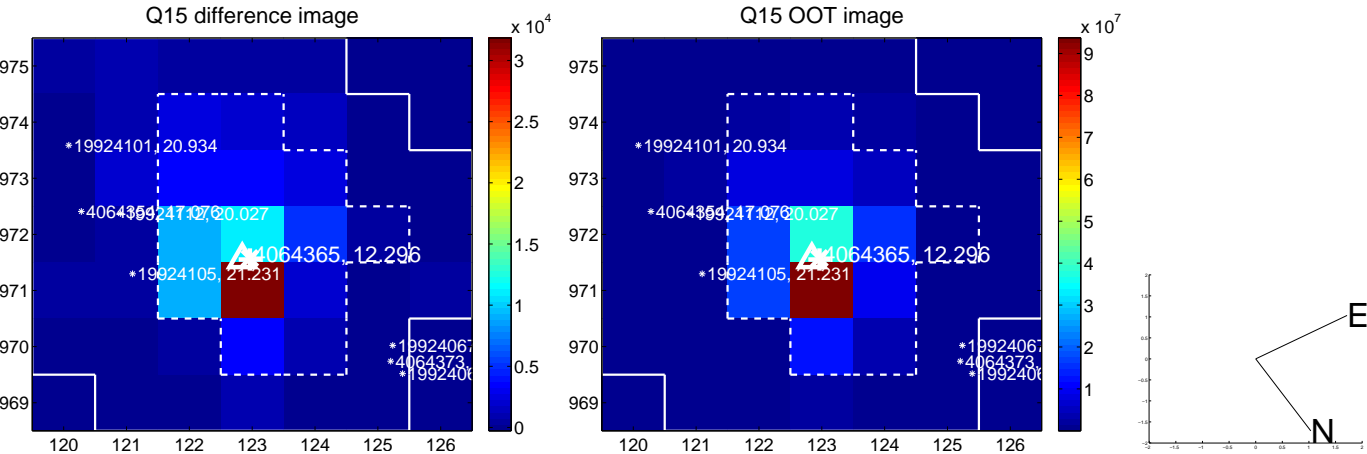
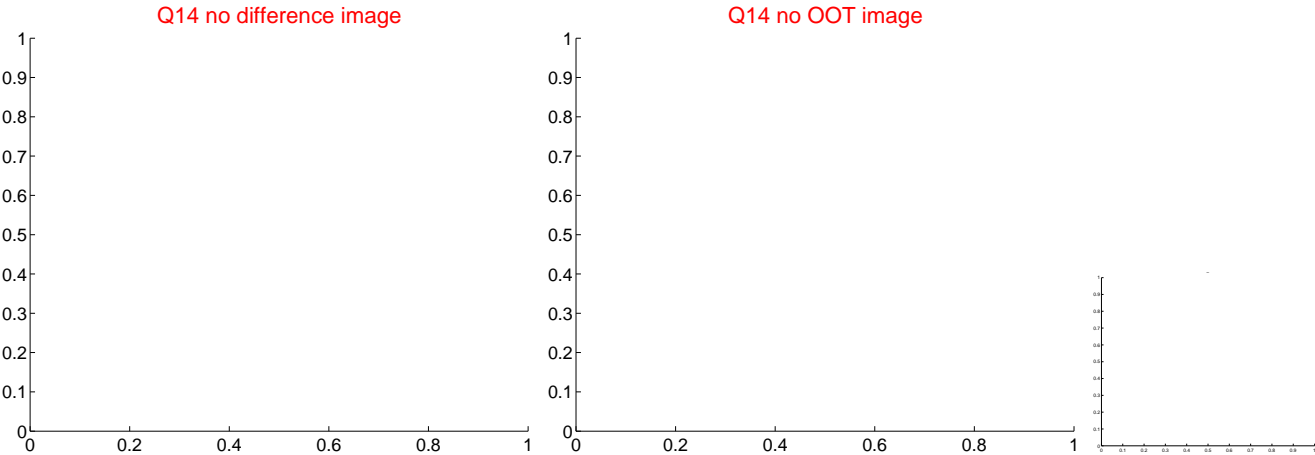
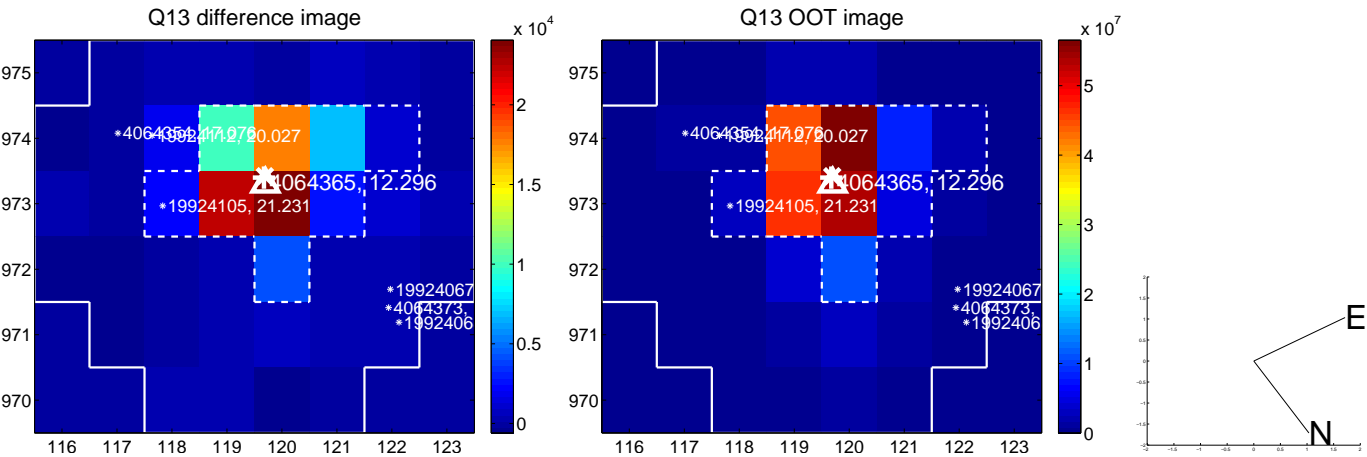
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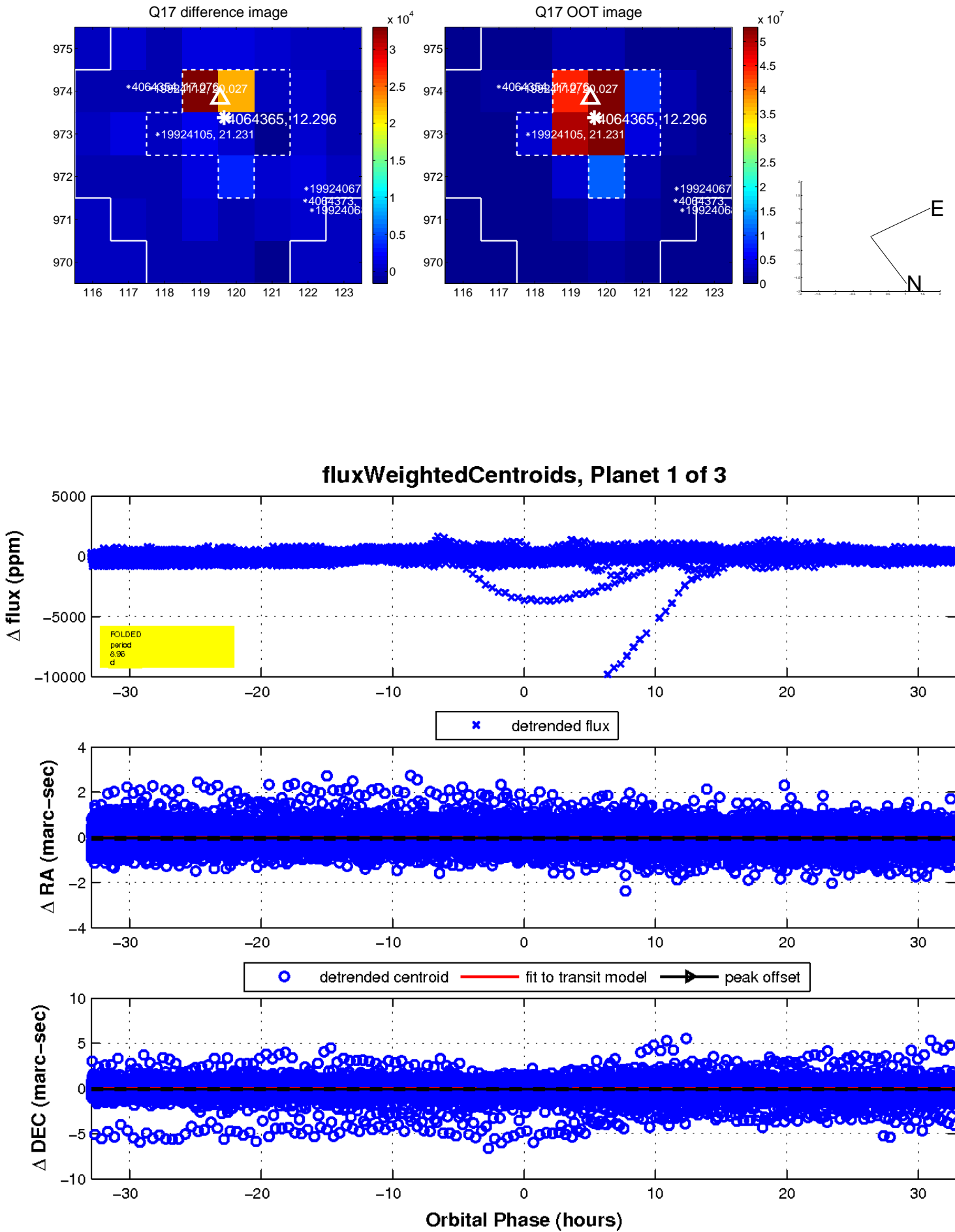
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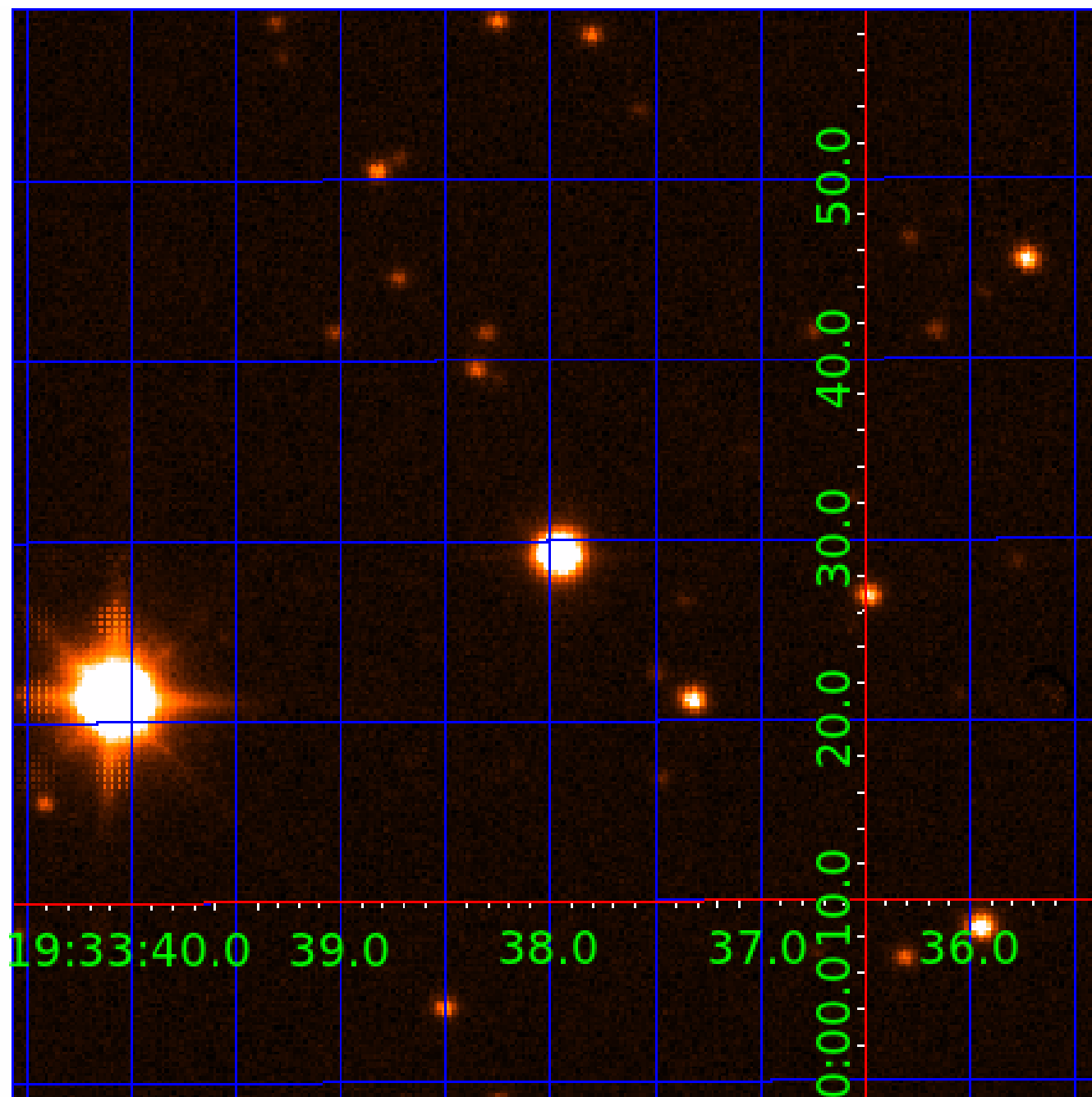


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 004064365

## 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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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004064365-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
004064365-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD
004064365-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD

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

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

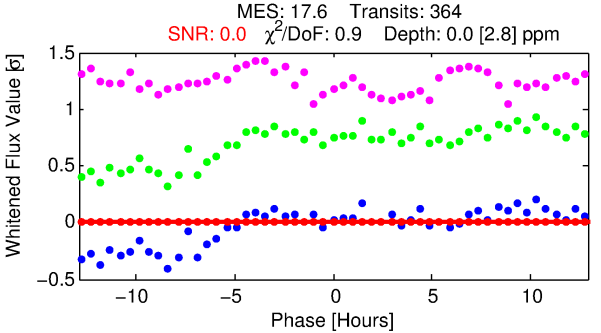
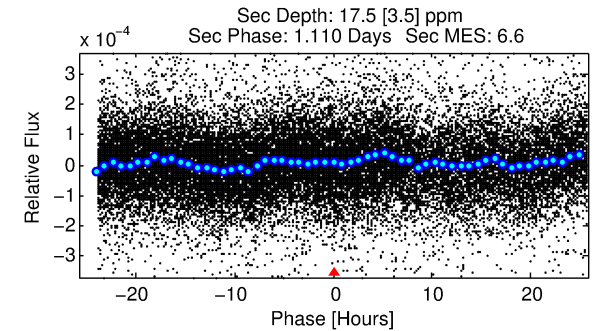
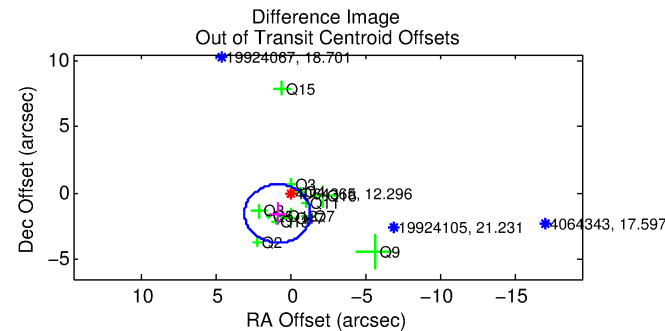
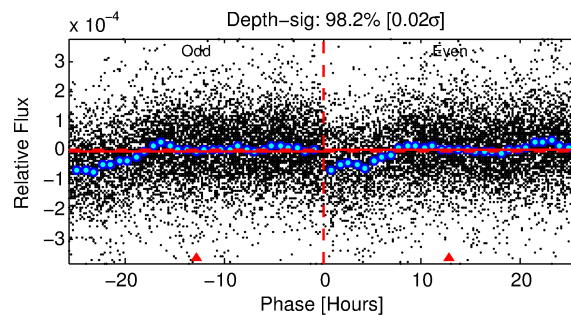
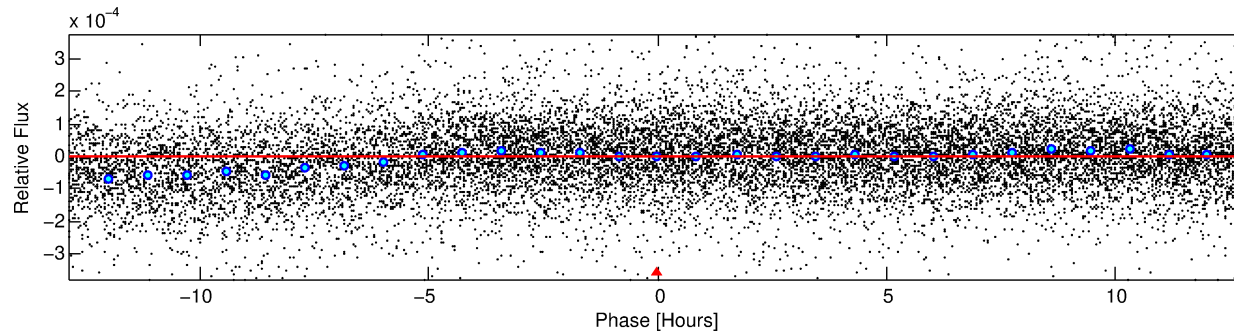
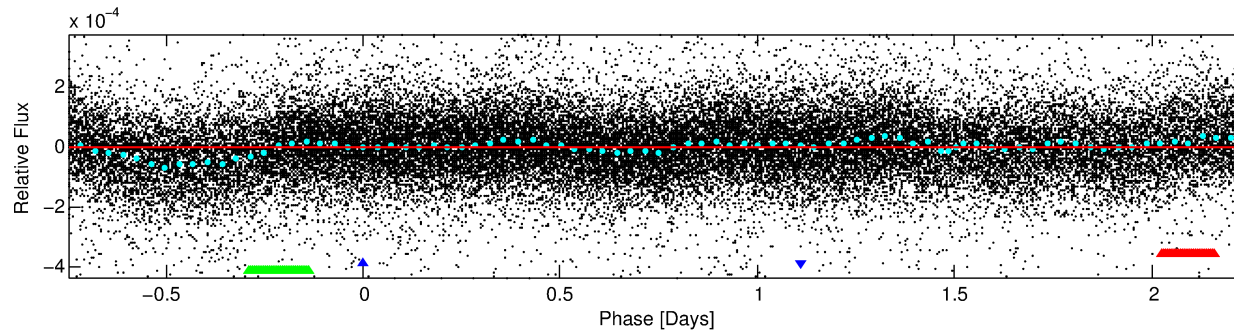
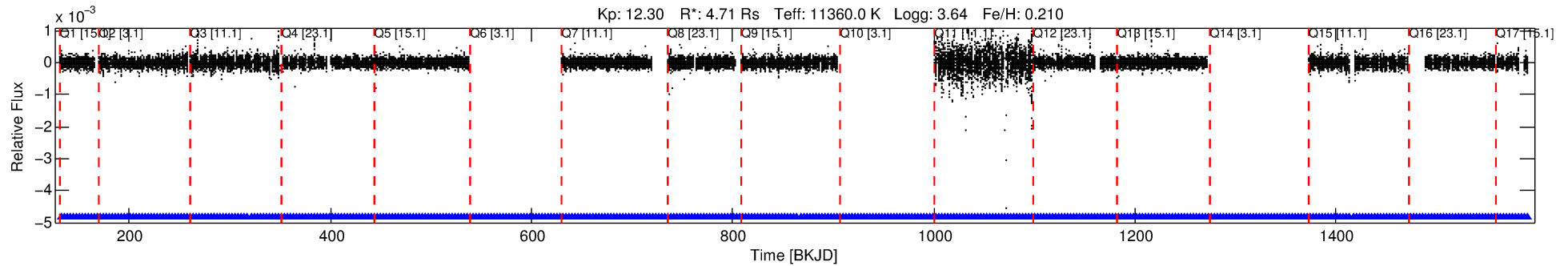
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004064365-02

No Significant Match Found

# DV One-Page Summary

KIC: 4064365 Candidate: 2 of 3 Period: 2.986 d



## DV Fit Results:

Period = 2.98584 [0.01818] d  
Epoch = 132.9415 [3.3224] BKJD  
Rp/R\* = 0.0002 [0.0087]  
a/R\* = 2.26 [31.11]  
b = 0.92 [3.24]  
Seff = 87187.83 [83678.10]  
Teq = 4382 [1051] K  
Rp = 0.09 [4.46] Re  
a = 0.0616 [0.0266] AU  
Ag = 4072.24 [383533.98] [0.01σ]  
Teffp = 54118 [1274269] K [0.04σ]

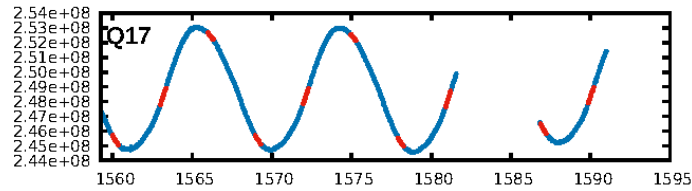
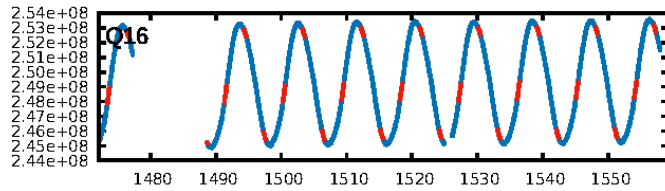
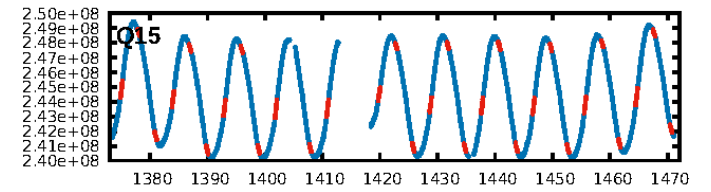
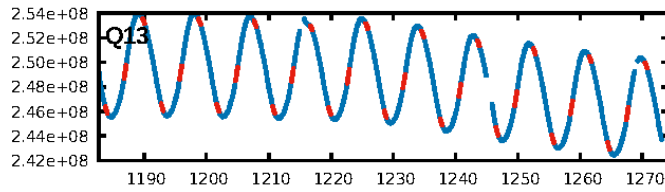
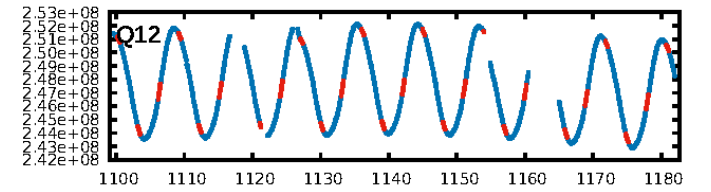
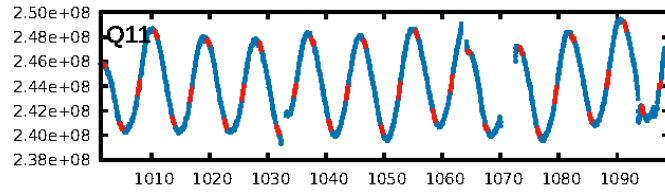
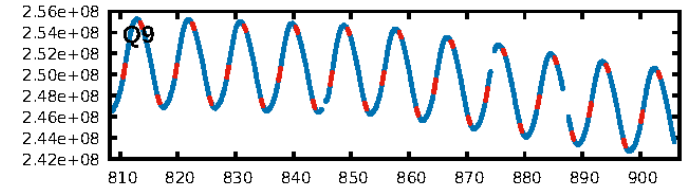
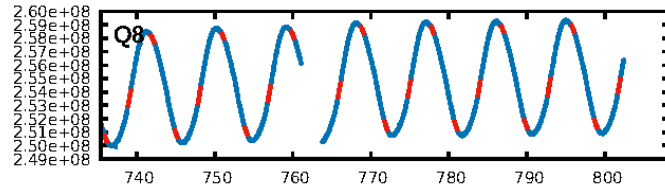
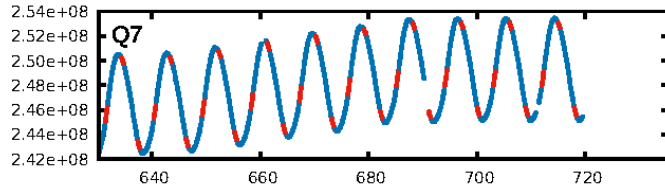
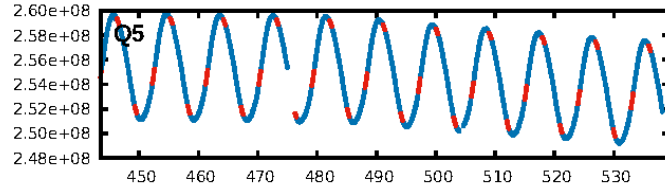
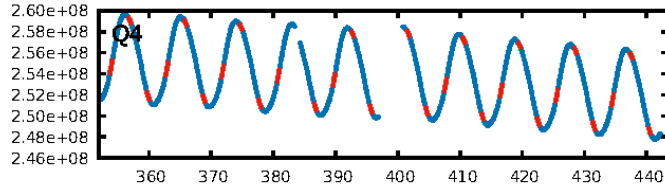
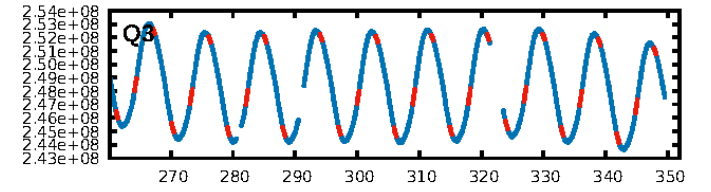
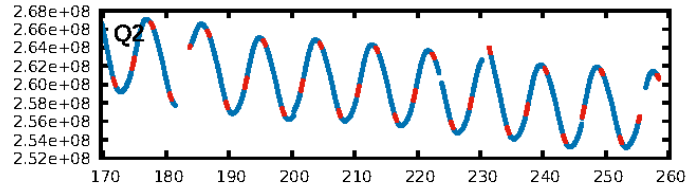
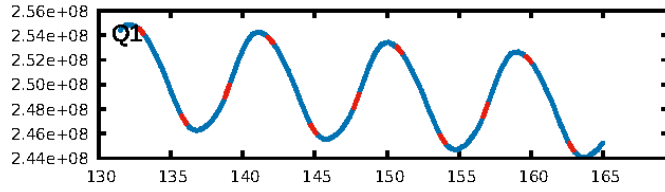
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [12.17σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [343/343]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 1.764 arcsec [2.40σ]  
KicOffset-rm: 1.703 arcsec [2.52σ]  
OotOffset-st: 1/4/4/4 [13]  
KicOffset-st: 1/4/4/4 [13]  
DiffImageQuality-fgm: 0.77 [10/13]  
DiffImageOverlap-fno: 0.00 [0/14]

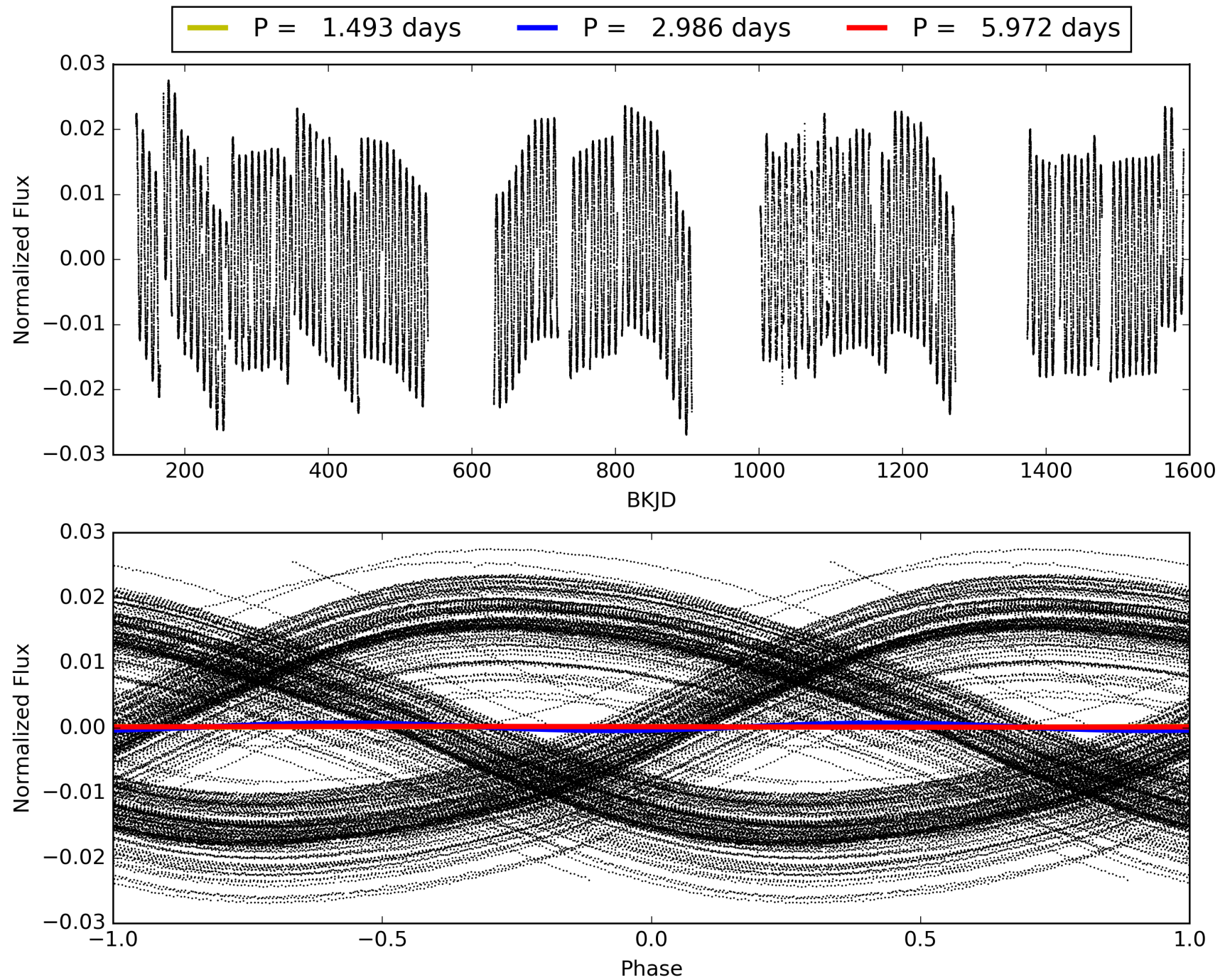
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:21:13 Z

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

# TCE 004064365-02, PDC Light Curves

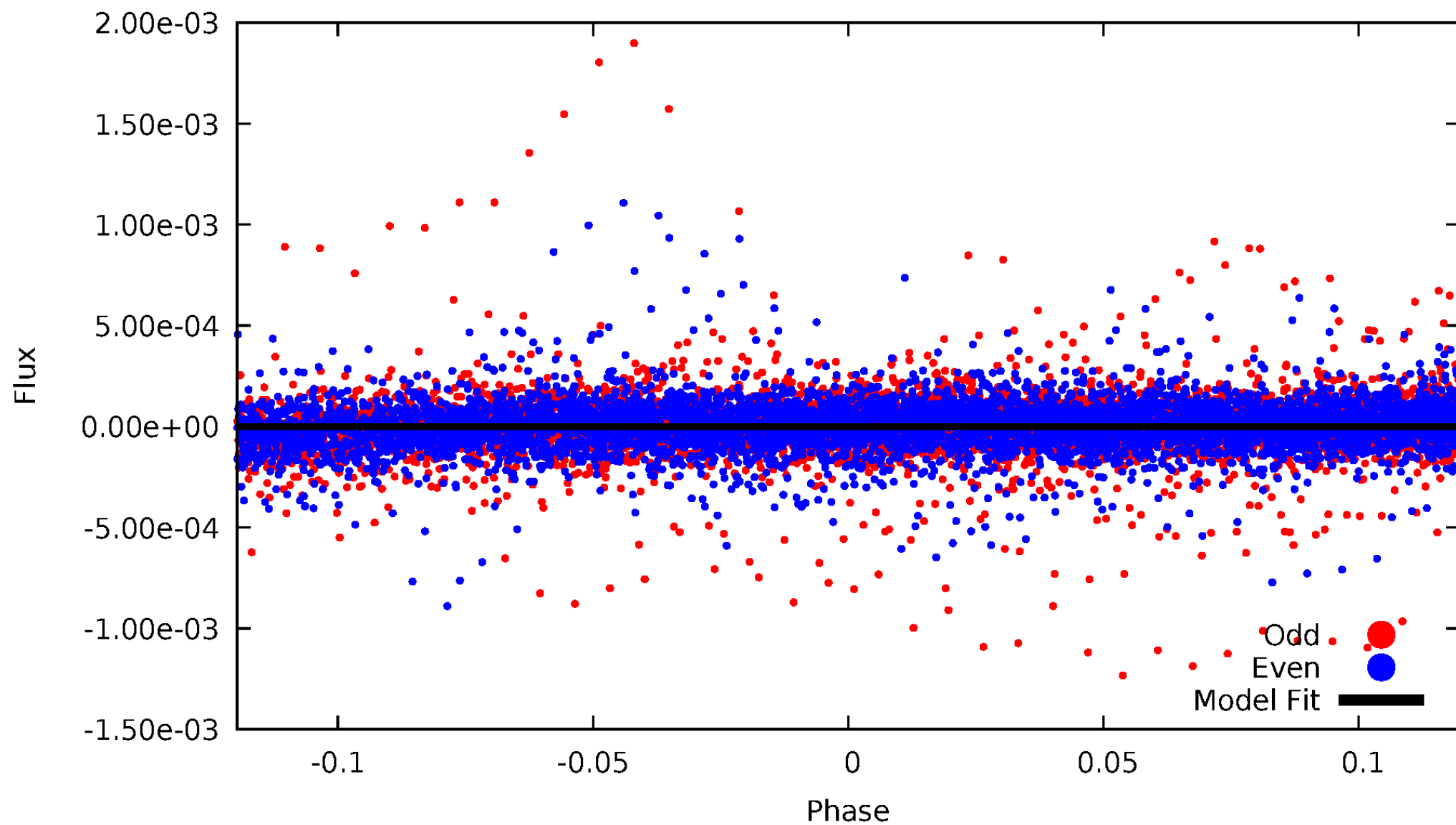


TCE 004064365-02



# DV Odd/Even

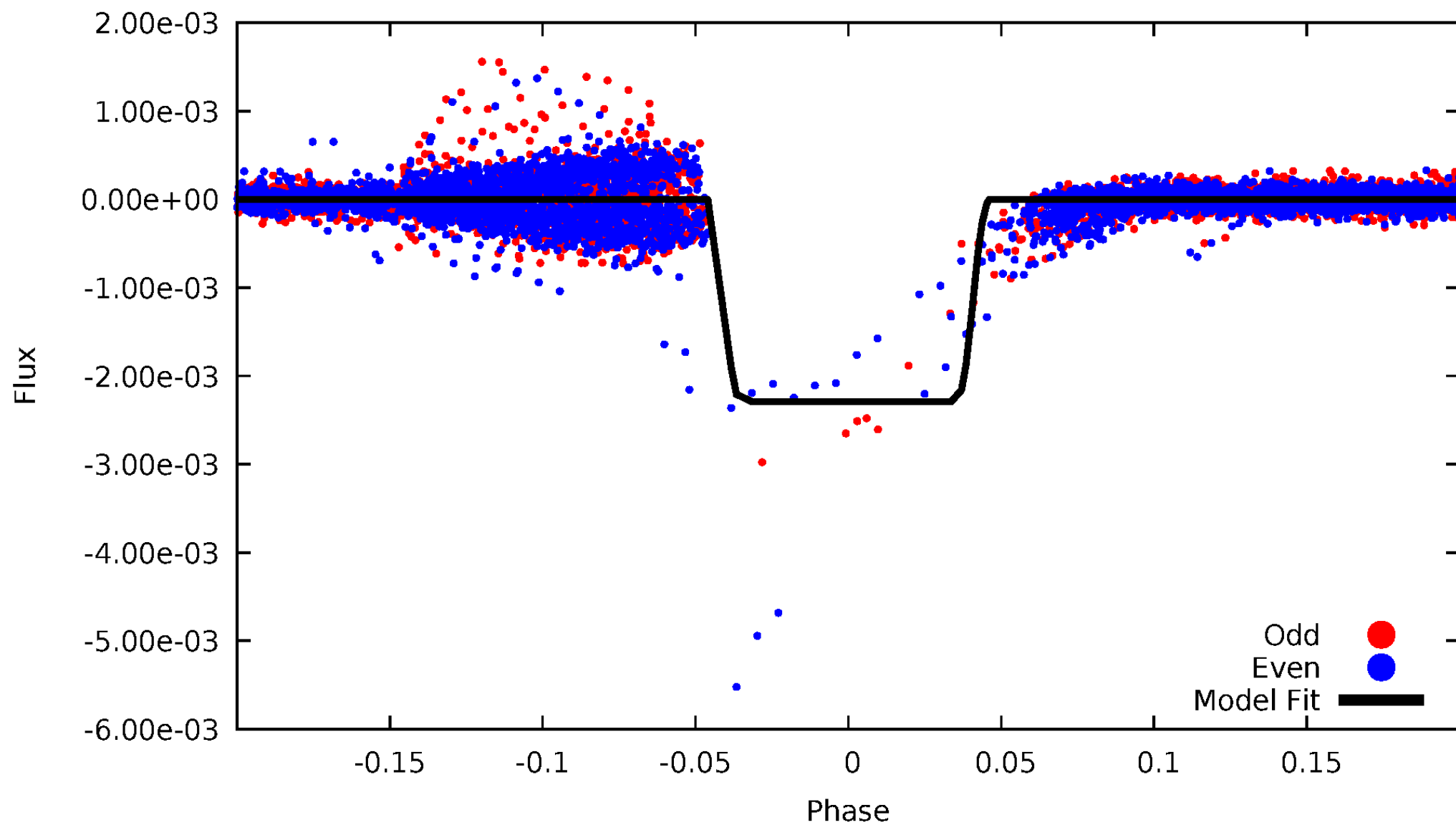
TCE 004064365-02





# ALT Odd/Even

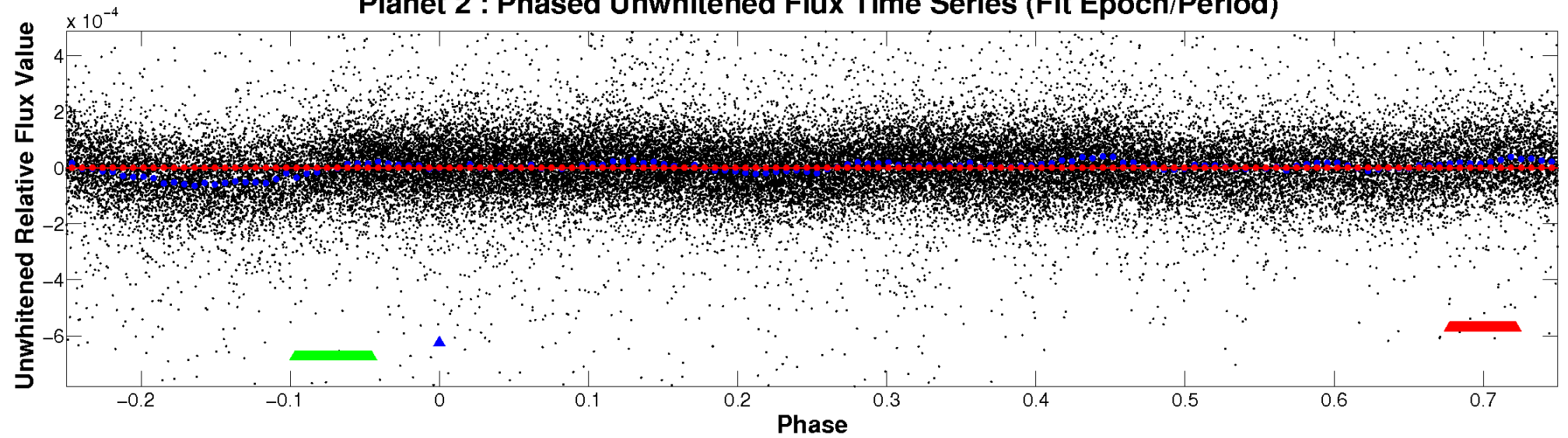
TCE 004064365-02



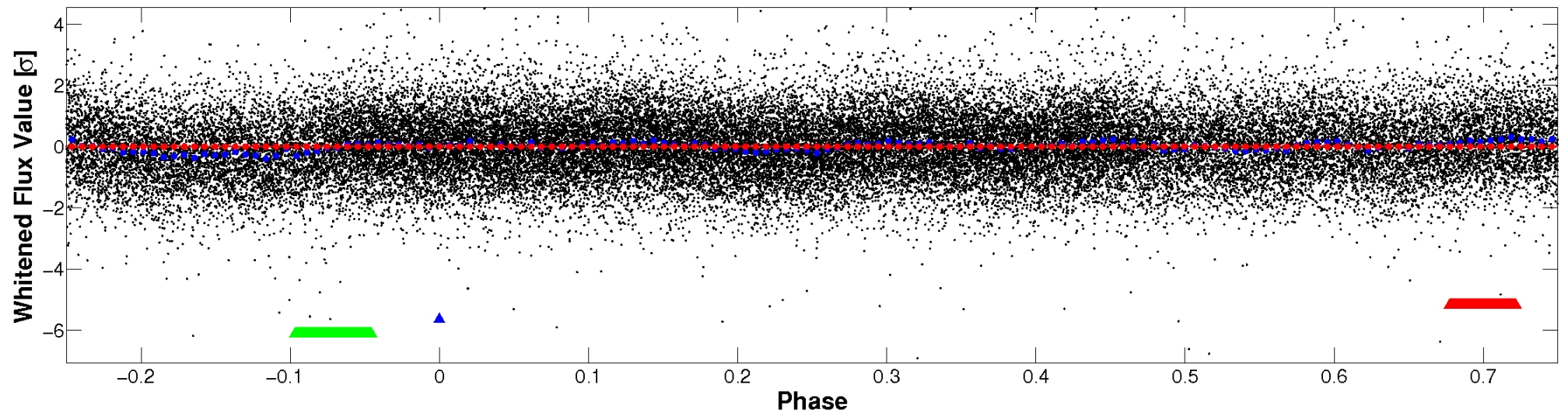


# Non-Whitened Vs. Whitened Light Curve

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

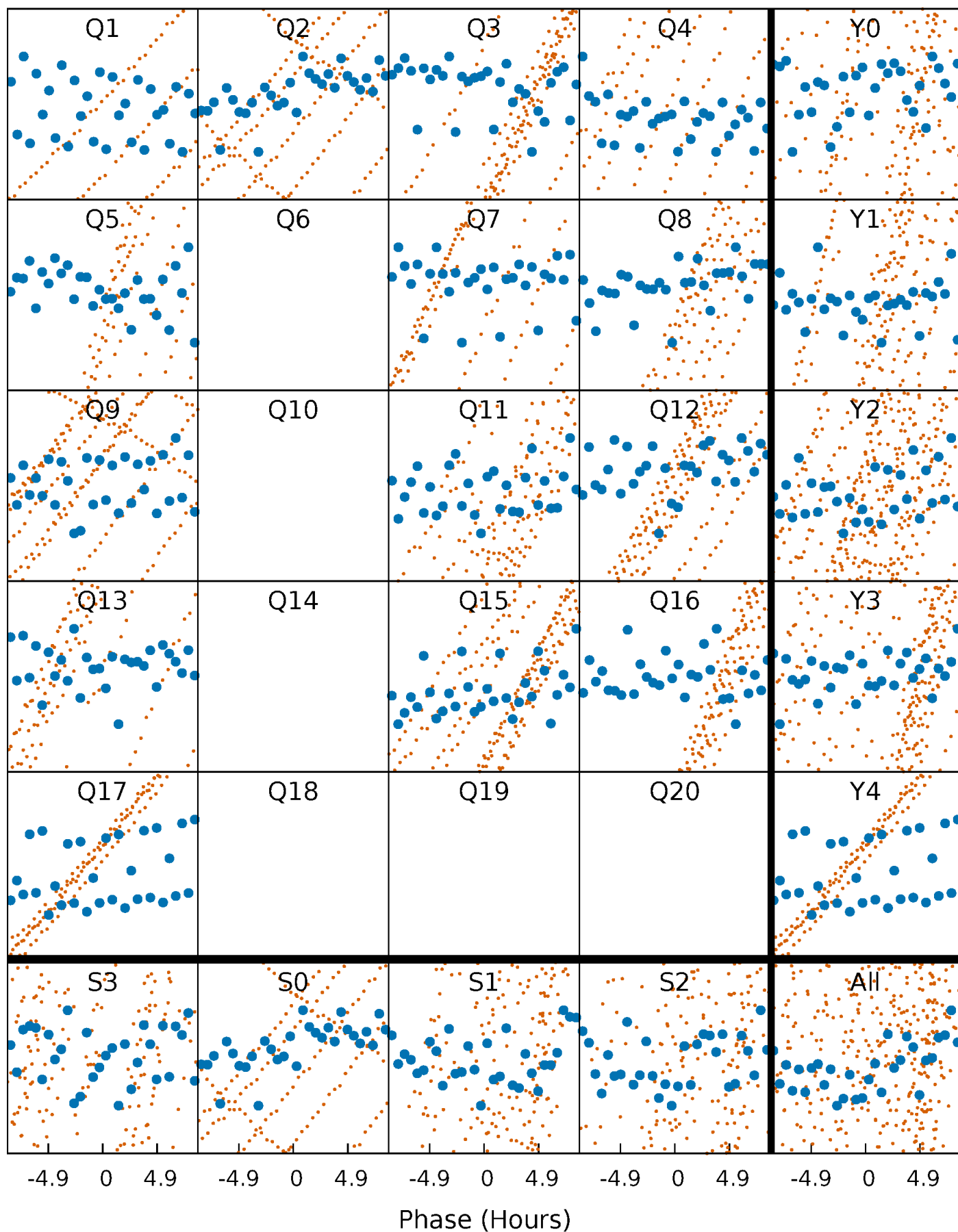


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



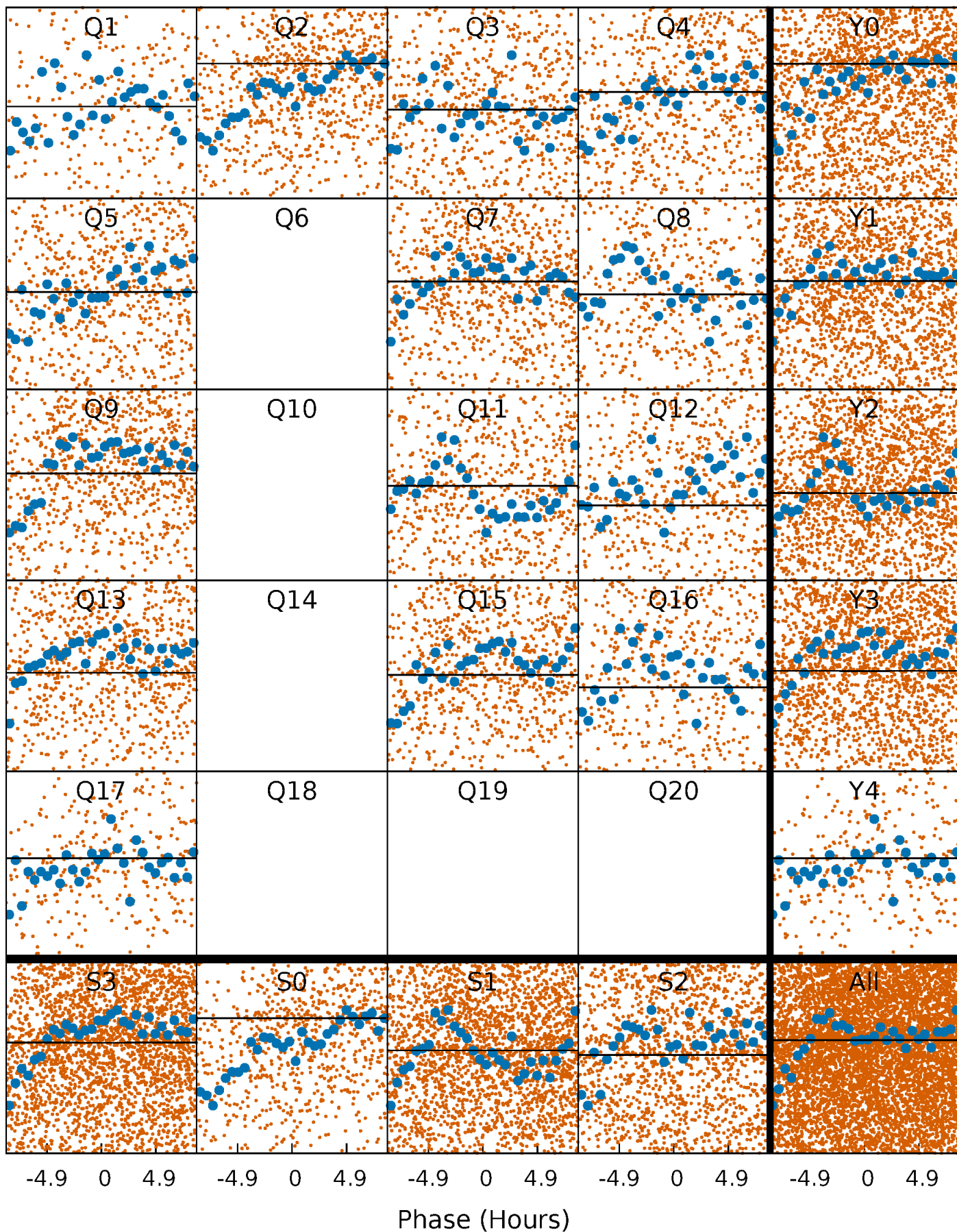
# PDC Quarter-Phased Transit Curves

TCE 004064365-02   P= 2.985840 Days    $T_0=132.941470$  (BKJD)



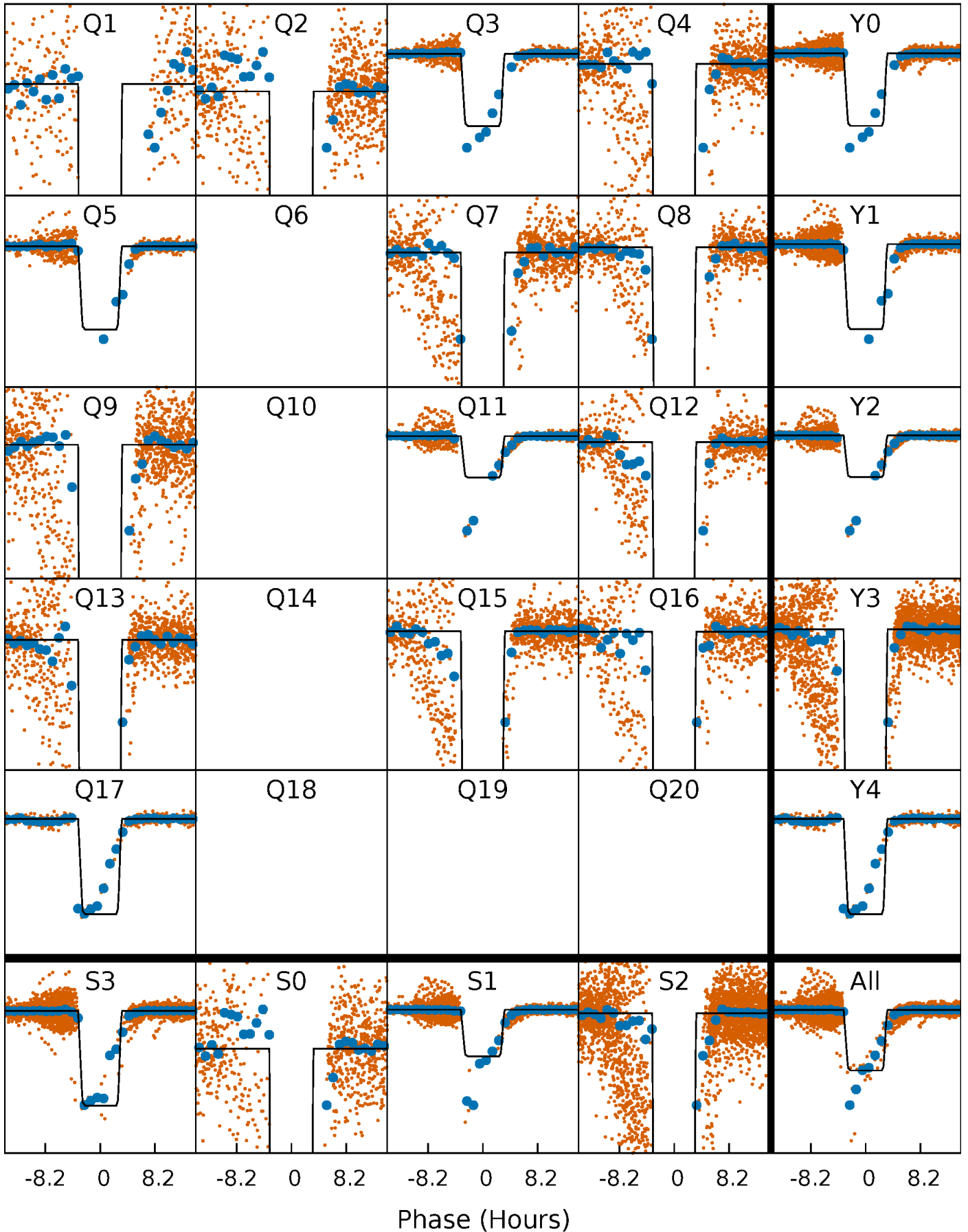
# DV Quarter-Phased Transit Curves

TCE 004064365-02    P= 2.985840 Days     $T_0=132.941470$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 004064365-02   P= 2.985667 Days    $T_0=132.926974$  (BKJD)

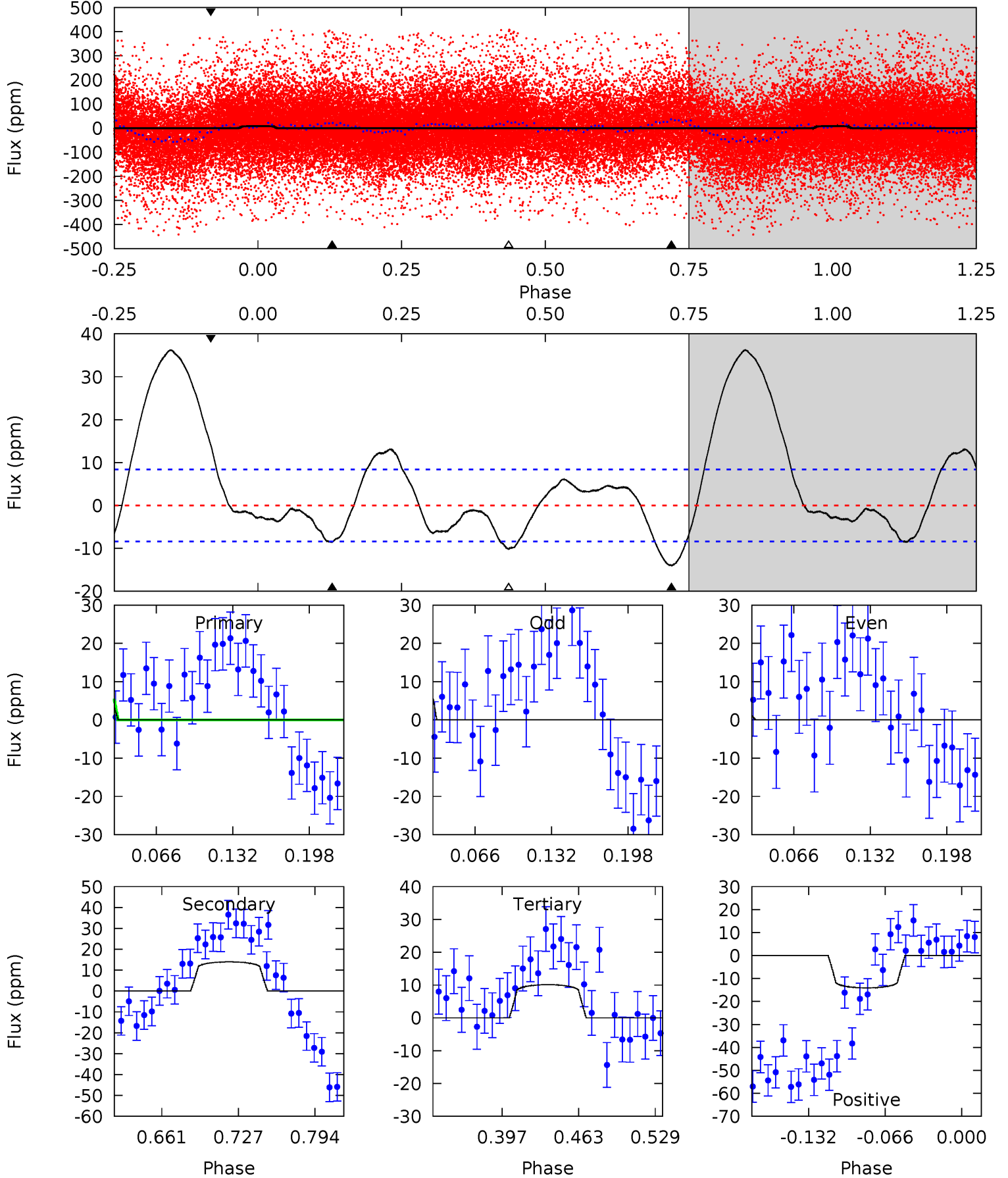




# DV Model-Shift Uniqueness Test

004064365-02, P = 2.985840 Days, E = 129.955630 Days

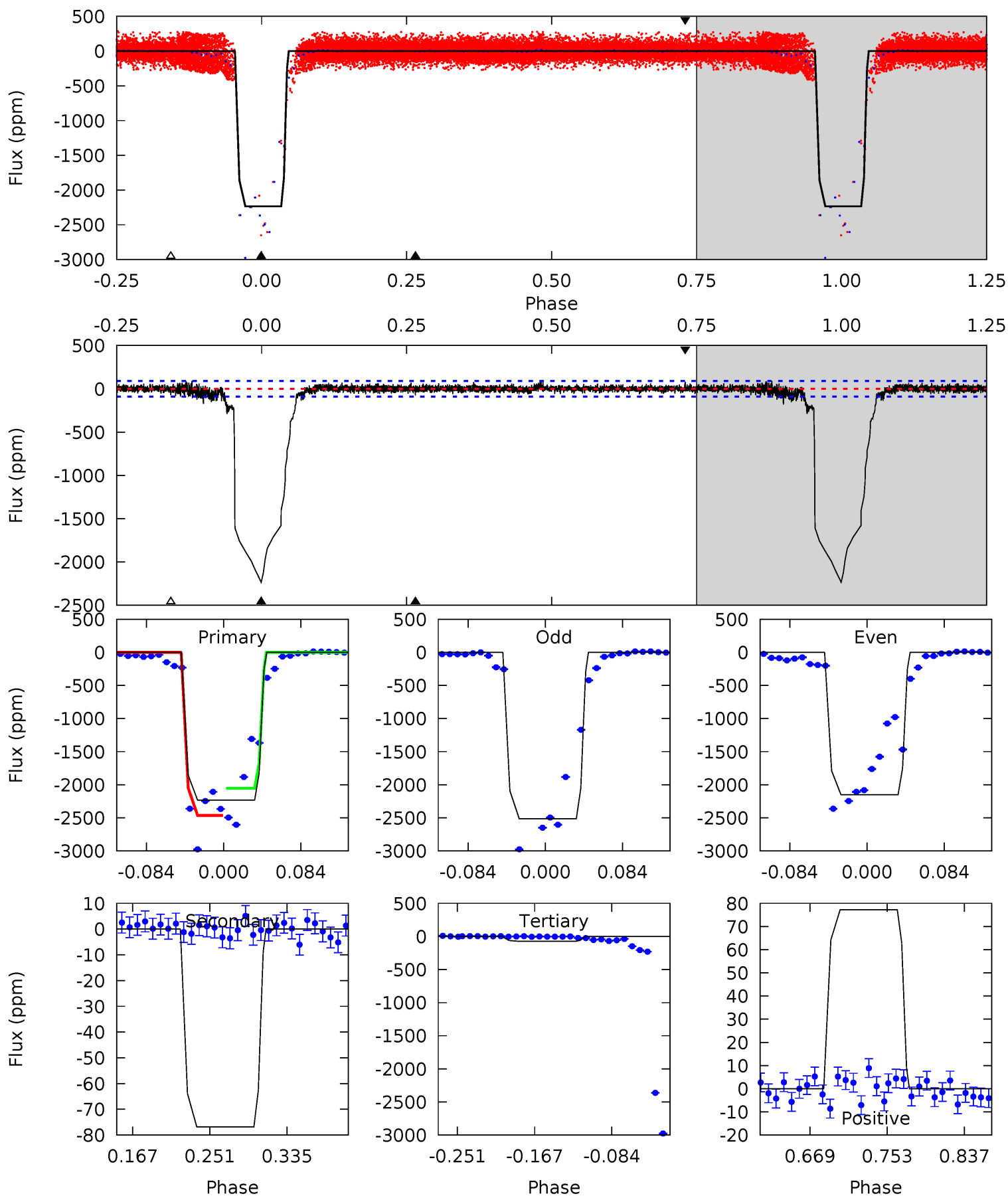
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.72	7.75	5.61	7.82	4.65	1.84	6.30	-0.90	-3.11	2.14	-0.07	3.28	0.35	0.72	2.31



# Alt Model-Shift Uniqueness Test

004064365-02, P = 2.985667 Days, E = 129.941307 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
114.9	3.95	3.80	3.97	4.60	1.73	1.22	111.1	111.0	0.15	-0.02	10.3	1.12	0.04	9.12





### Stellar Parameters For KIC 004064365

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$11360^{+597}_{-1911}$	$3.636^{+0.400}_{-0.100}$	$0.210^{+0.150}_{-0.150}$	$4.712^{+0.534}_{-2.135}$	$3.504^{+0.070}_{-0.927}$	$0.047^{+0.162}_{-0.011}$
	+5%/-17%	+11%/-3%	+71%/-71%	+11%/-45%	+2%/-26%	+344%/-24%
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 004064365-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-14 \pm 2$	$2.88^{+2.93}_{-2.05}$	$5731^{+722}_{-990}$	$7435^{+13092}_{-2685}$	$3.503^{+38.840}_{-2.666}$
Alt.	$-77 \pm 19$	$23.03^{+5.77}_{-6.14}$	$5813^{+660}_{-988}$	$-2552^{+6607}_{-1319}$	$0.291^{+0.264}_{-0.119}$

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

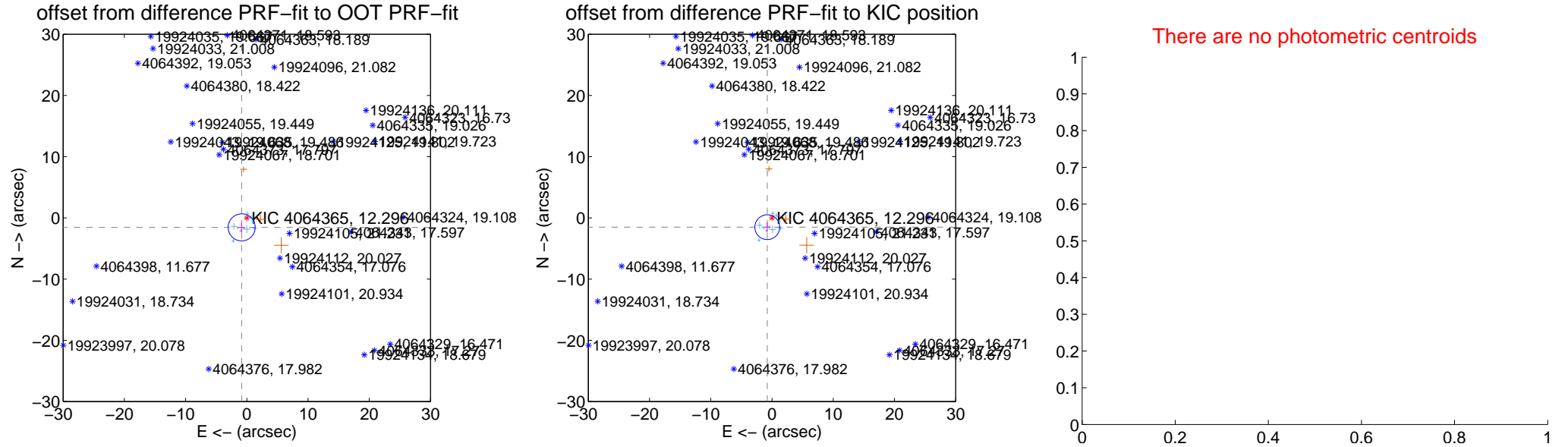
## DV Centroid Data

Supplemental centroid analysis for 004064365-02. Kepler magnitude: 12.30. Transit SNR 0.01

There are 10 quarters with good PRF difference image offsets

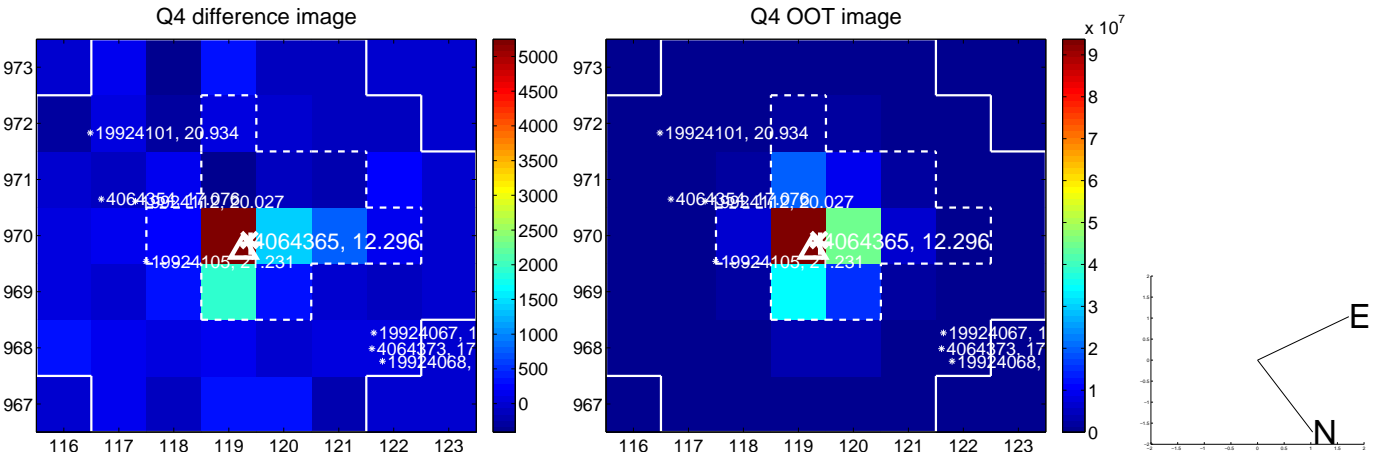
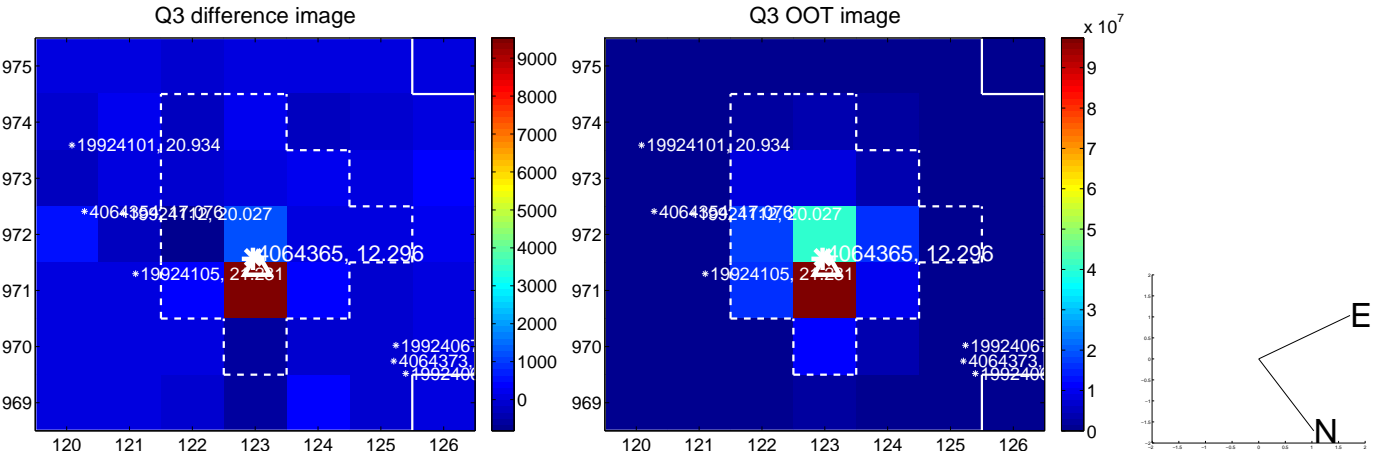
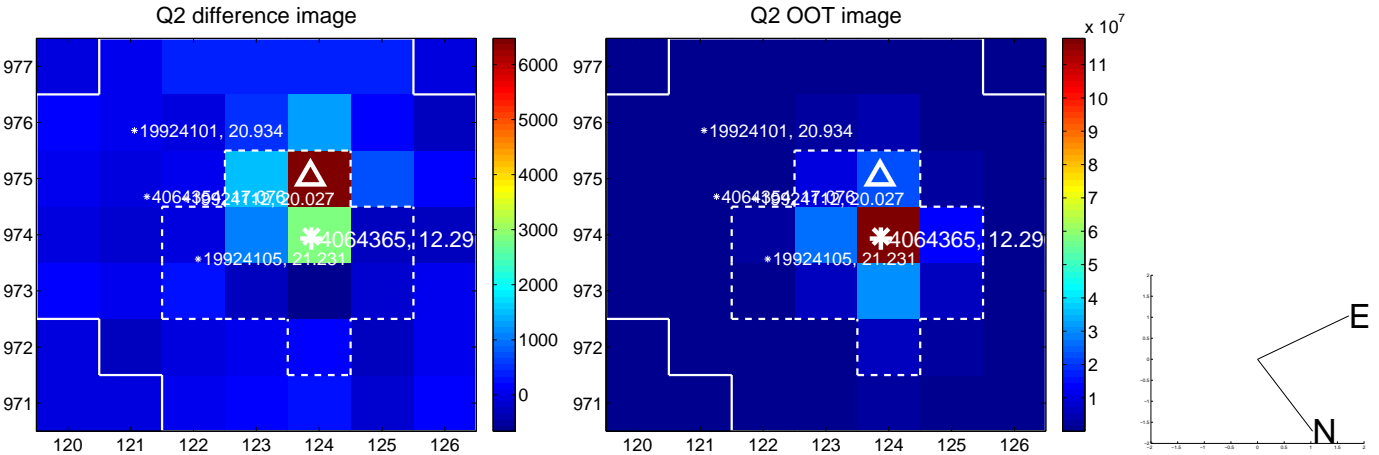
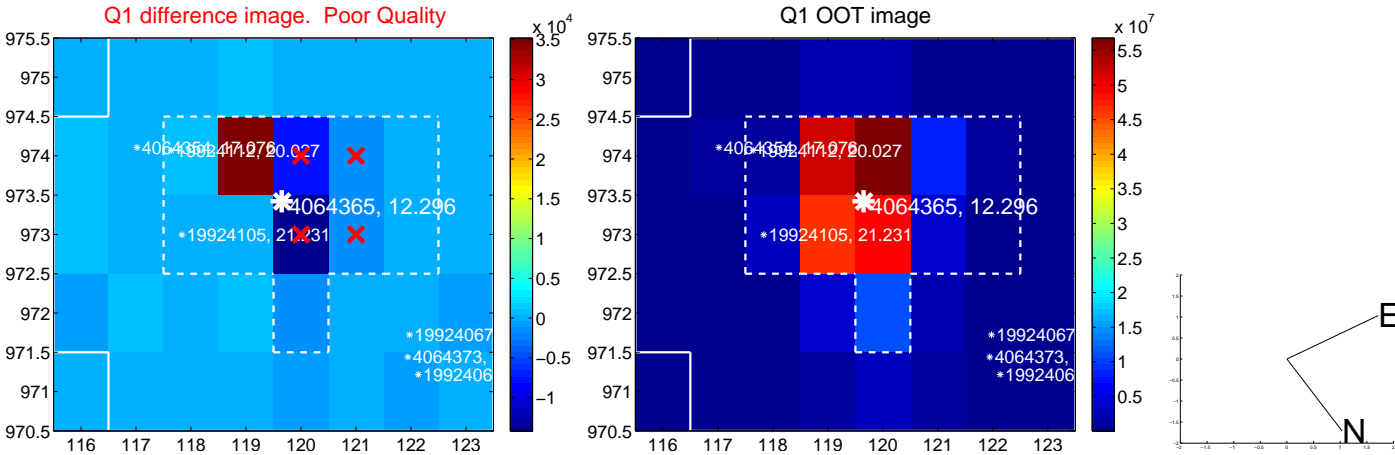
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.764 \pm 0.736$	2.40	$0.842 \pm 0.530$	$-1.551 \pm 0.831$
PRF-fit source offset from KIC position	$1.703 \pm 0.677$	2.52	$0.769 \pm 0.530$	$-1.519 \pm 0.770$
photometric centroid source offset	—	—	—	—

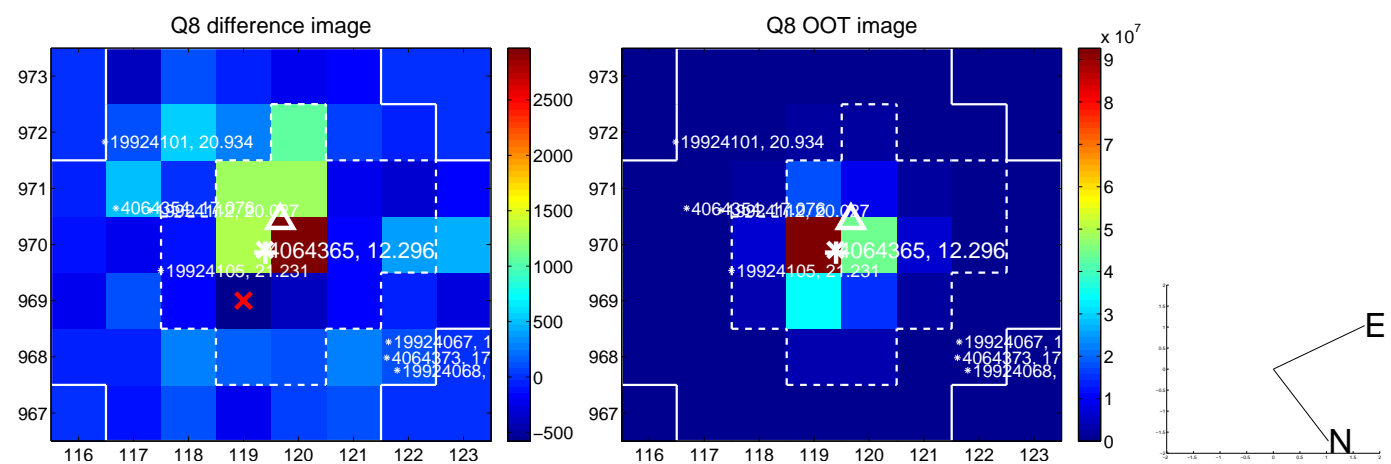
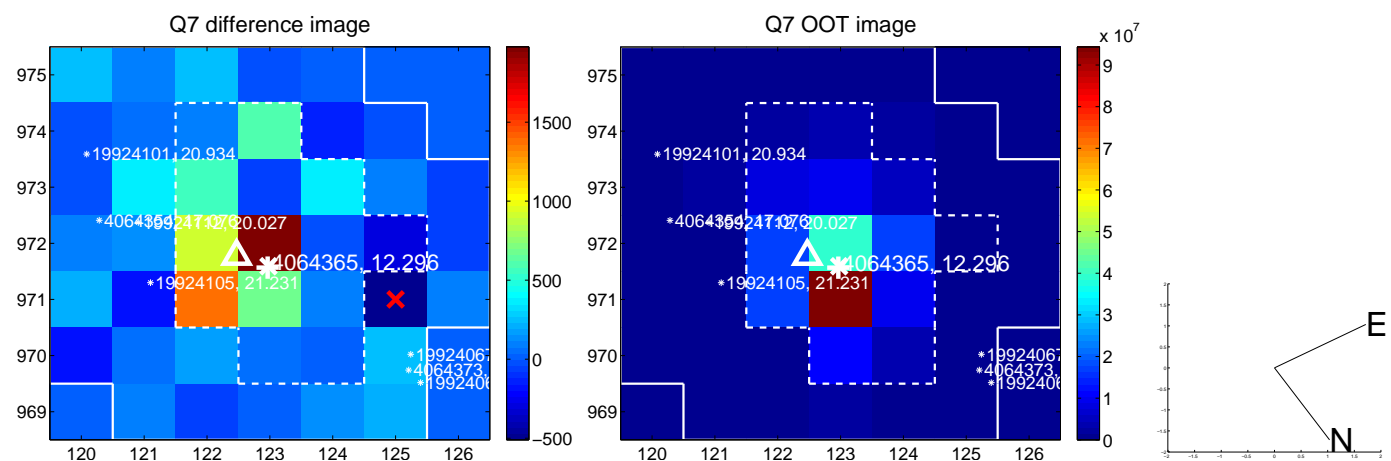
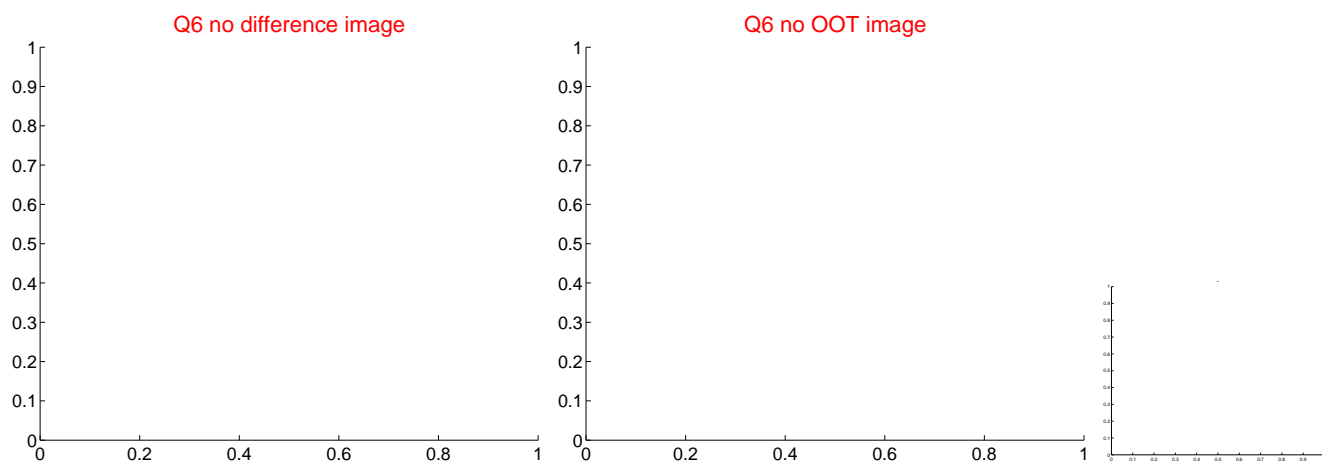
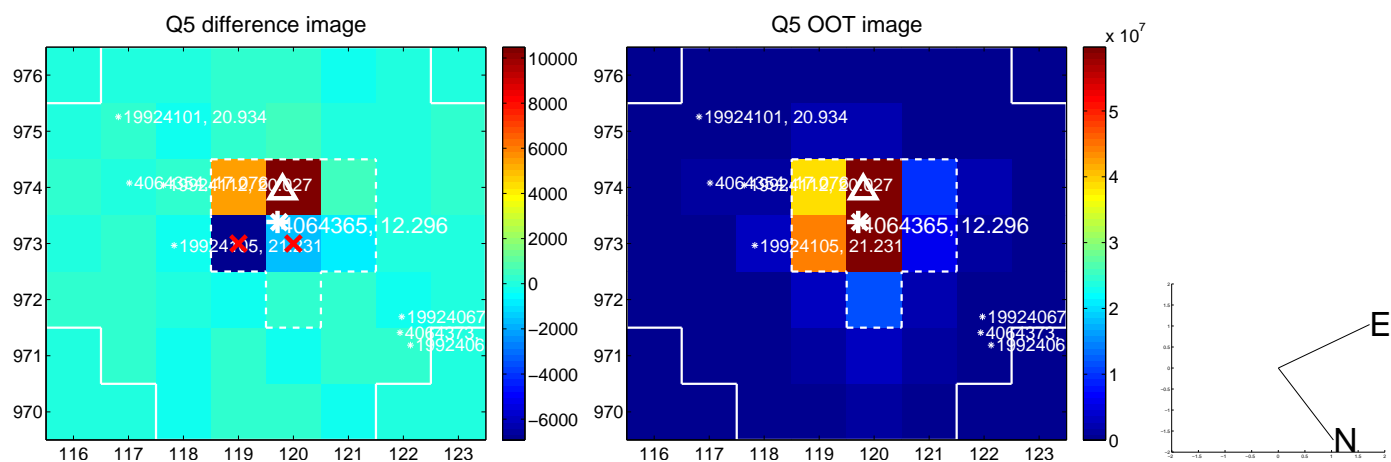


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

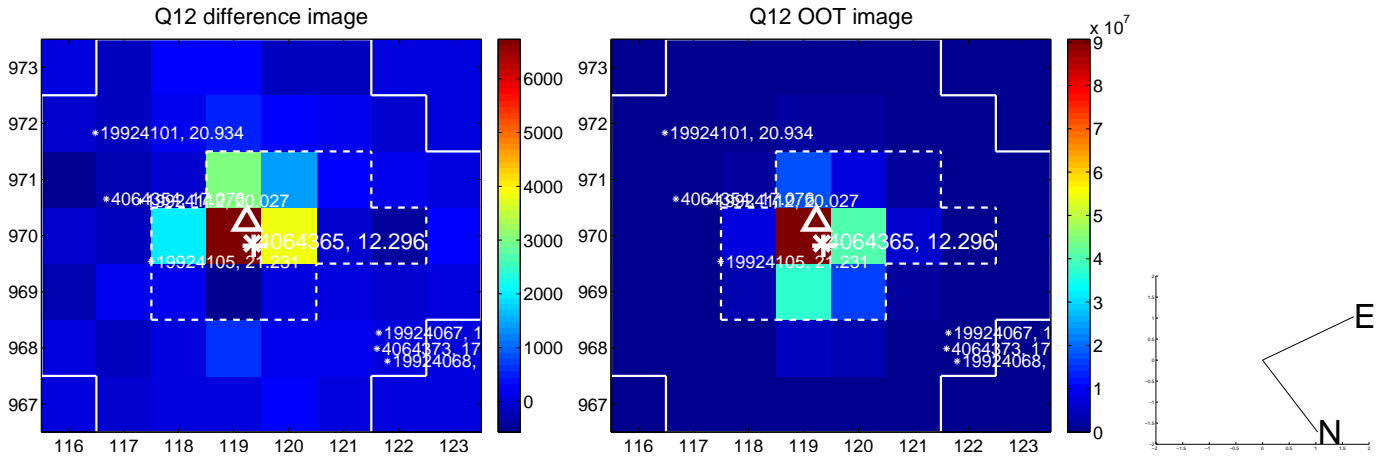
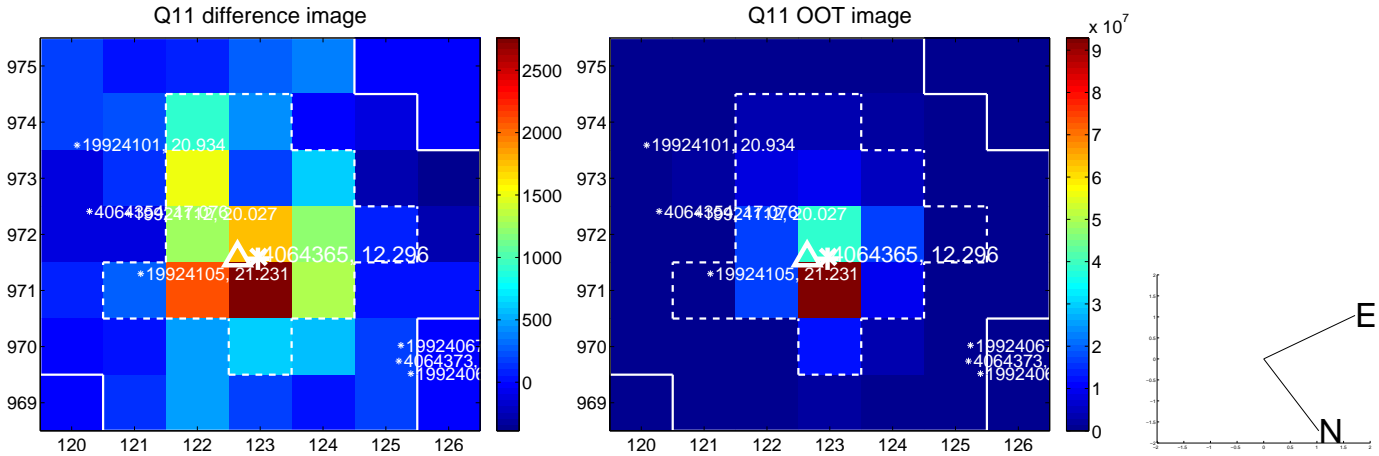
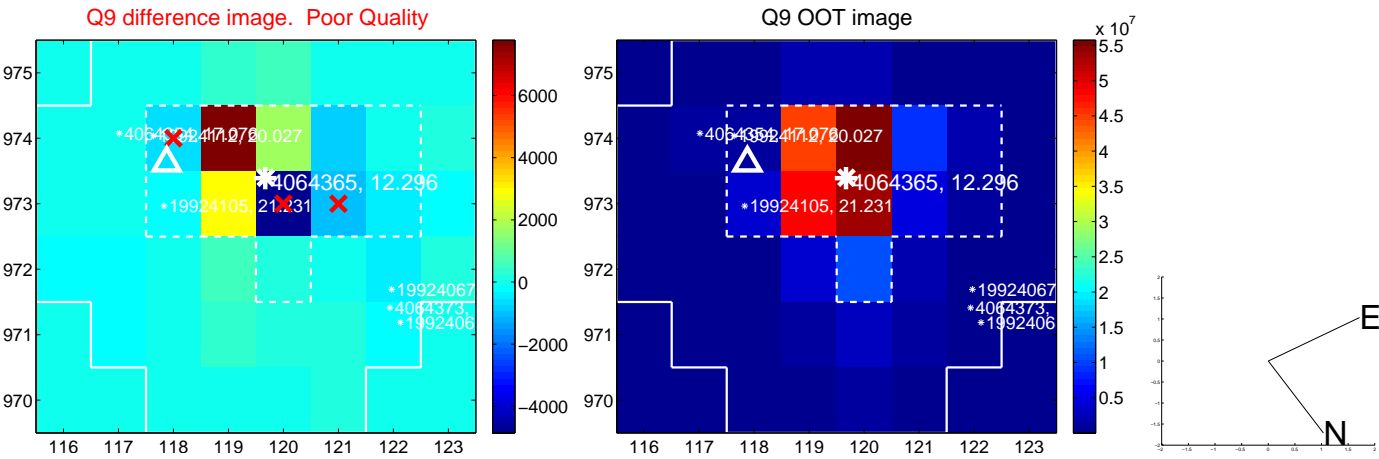
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



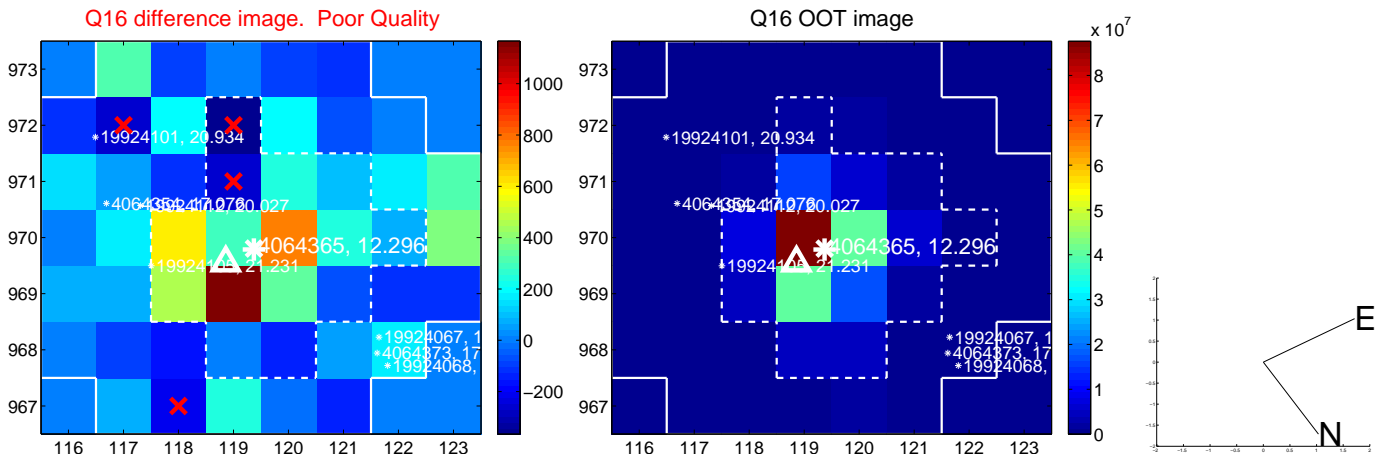
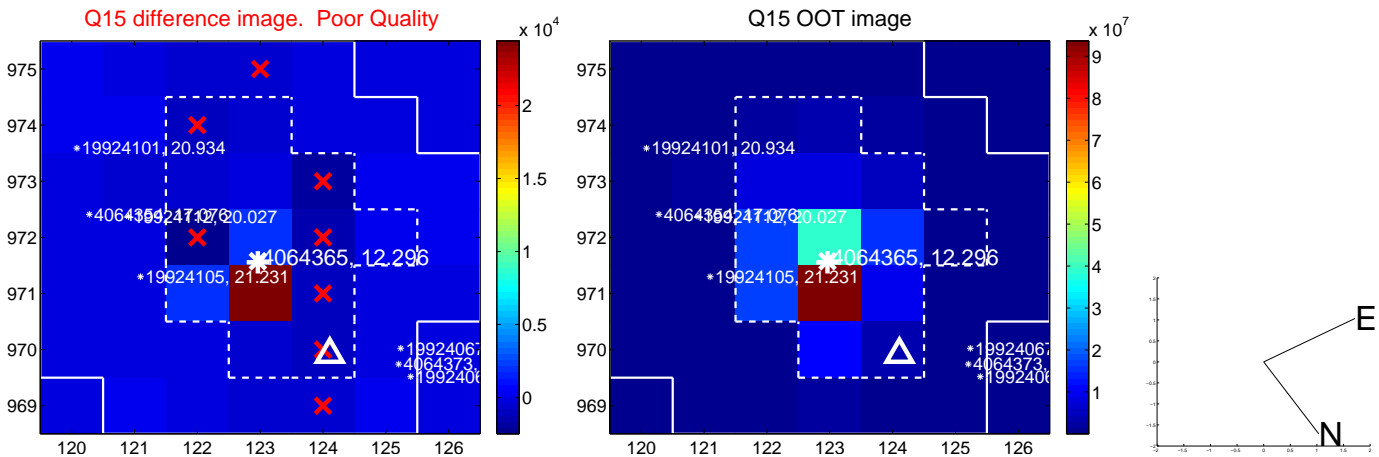
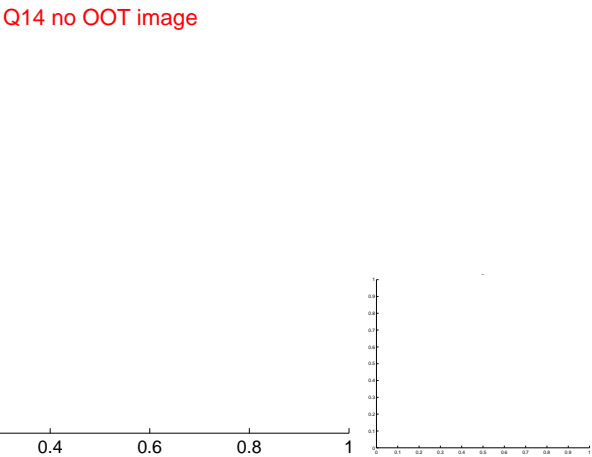
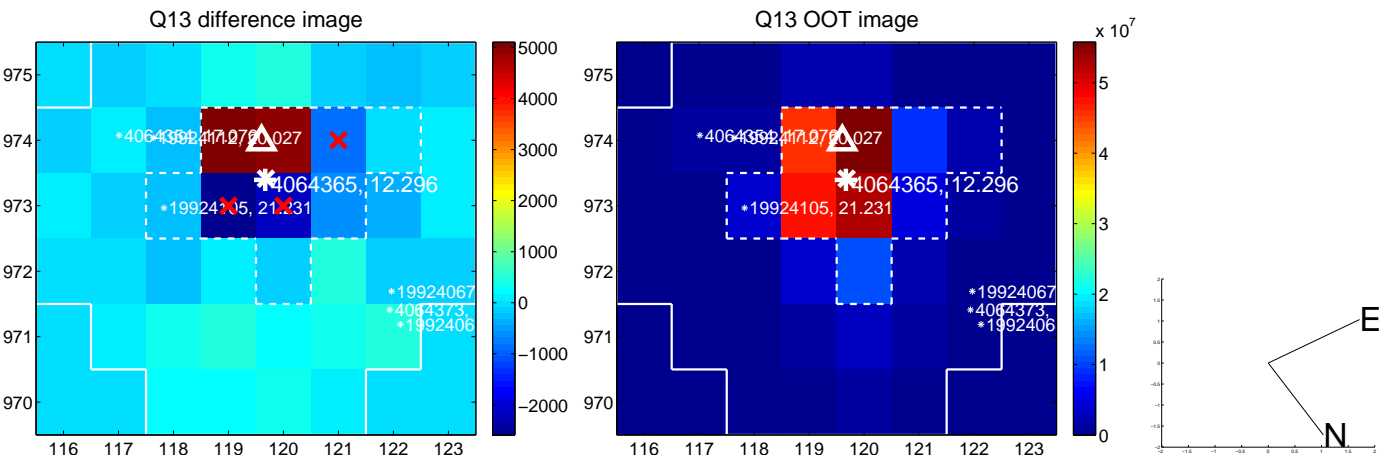
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



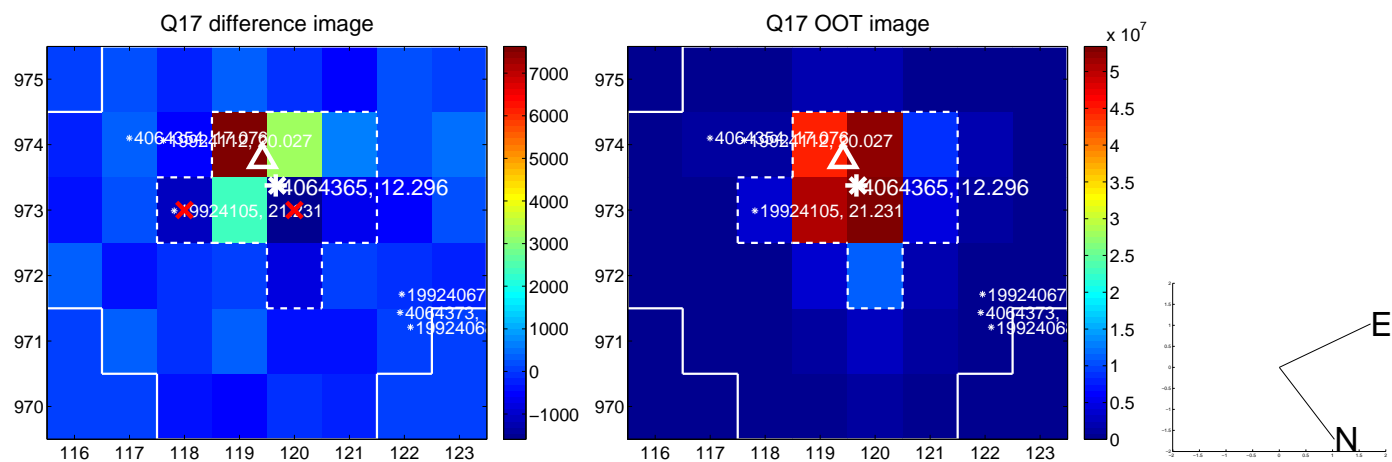
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



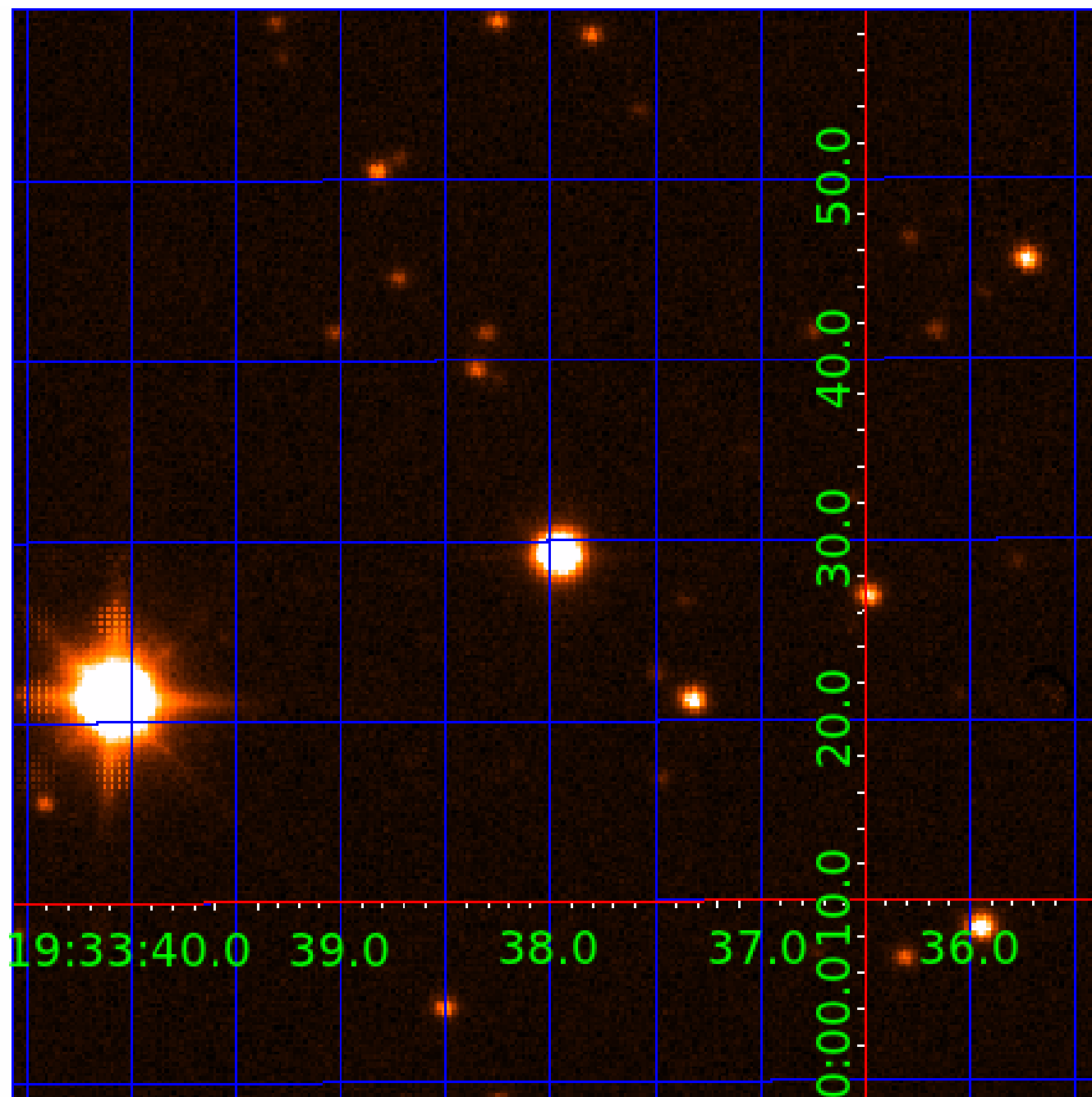
folded centroid time series figure for this object.





UKIRT Image

Declination



# KIC 004064365

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004064365-01	OBS	No	8.956704	135.096496	115.3	10.968	17.0	18.5	4.71	11360	8.75	20153.33
004064365-02	OBS	No	2.985840	132.941470	0.0	4.291	17.6	0.0	4.71	11360	0.10	87187.83
004064365-03	OBS	No	2.985527	132.805413	110.0	28.844	14.6	18.9	4.71	11360	5.97	87200.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004064365-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
004064365-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD
004064365-03	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD

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

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

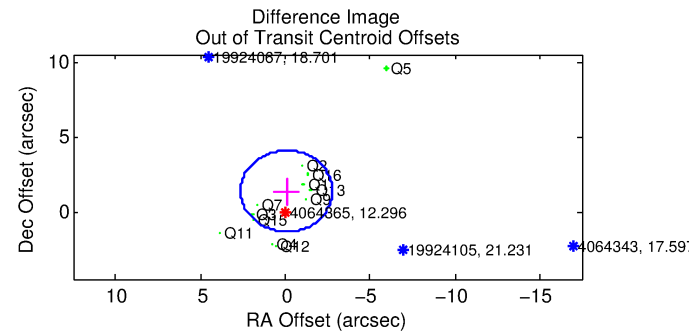
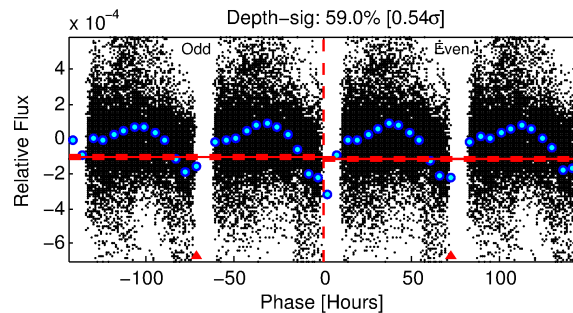
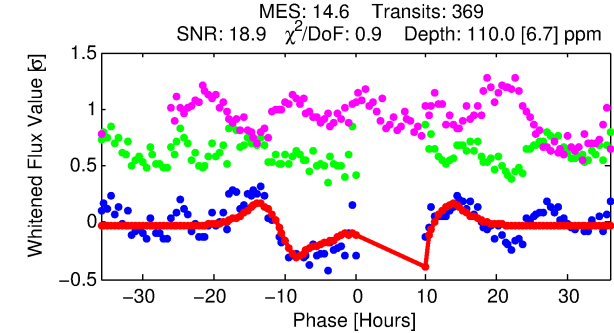
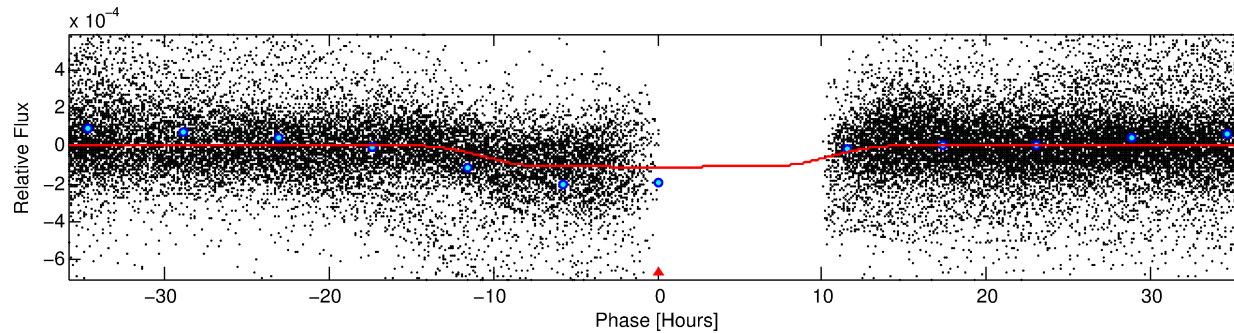
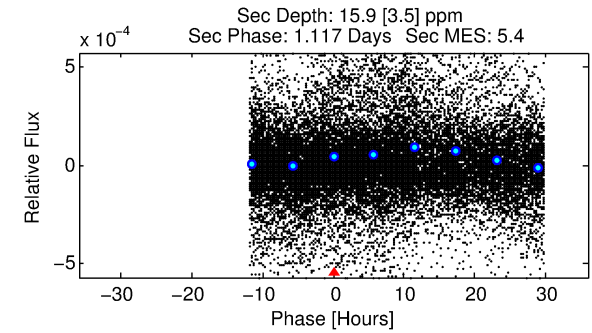
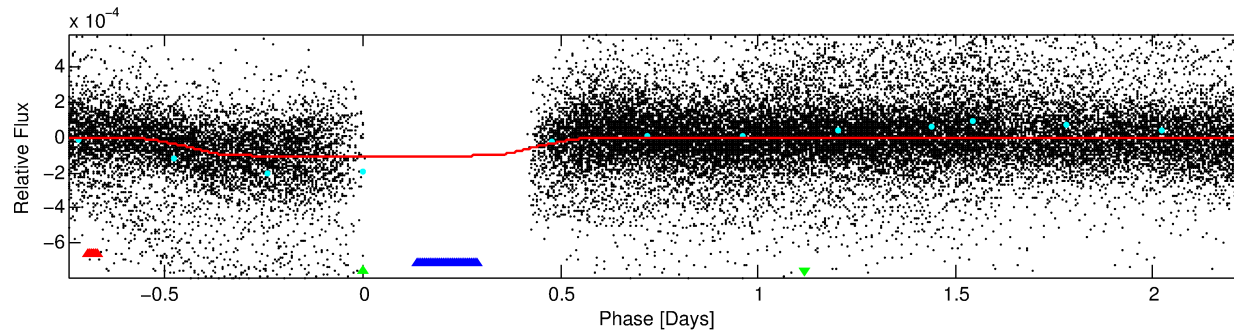
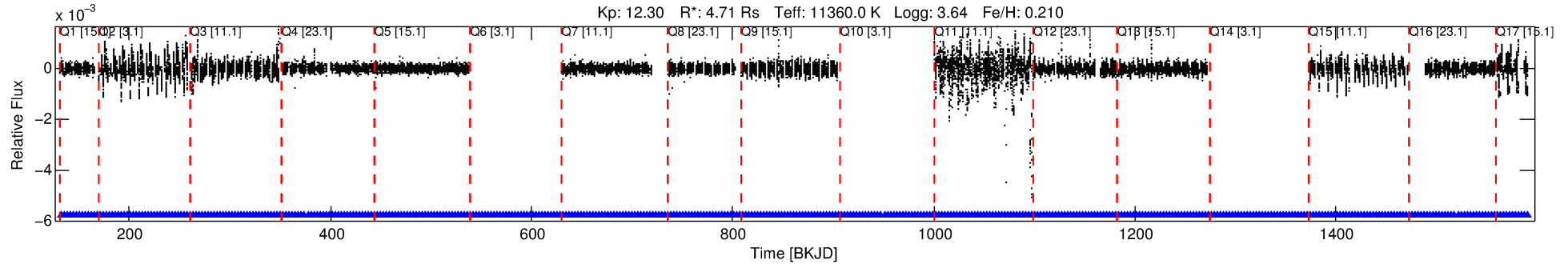
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004064365-03

No Significant Match Found

# DV One-Page Summary

KIC: 4064365 Candidate: 3 of 3 Period: 2.986 d



## DV Fit Results:

Period = 2.98553 [0.00005] d  
Epoch = 132.8054 [0.0106] BKJD  
Rp/R\* = 0.0116 [0.0004]  
a/R\* = 1.02 [0.00]  
b = 0.97 [0.00]  
Seff = 87200.02 [83686.80]  
Teq = 4382 [1051] K  
Rp = 5.97 [2.71] Re  
a = 0.0616 [0.0265] AU  
Ag = 0.93 [0.67] [-0.10σ]  
Teffp = 6661 [1182] K [1.44σ]

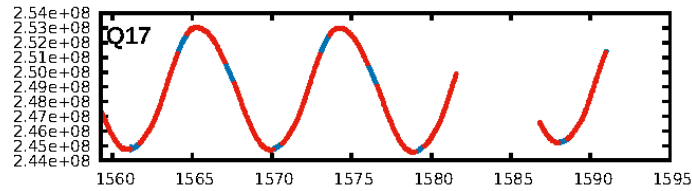
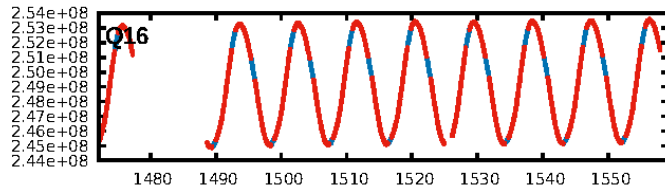
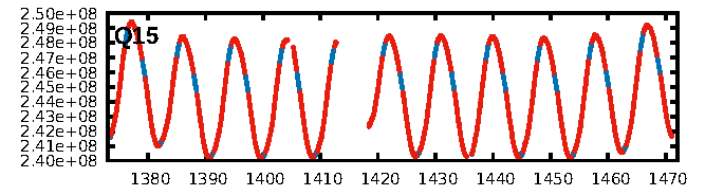
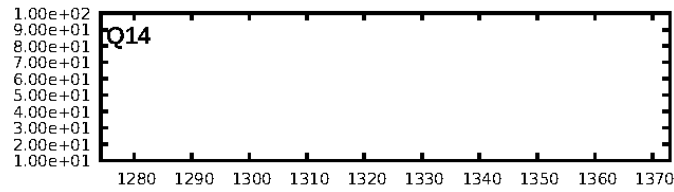
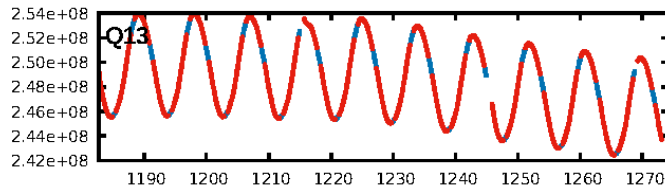
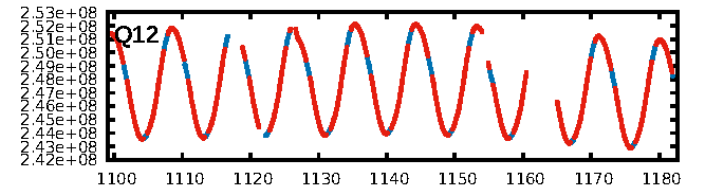
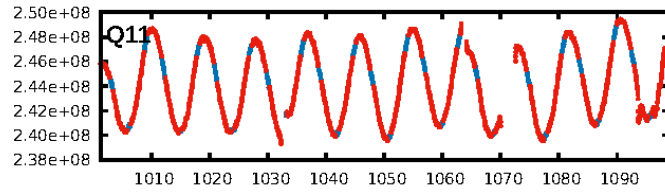
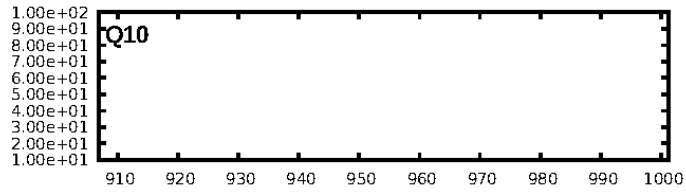
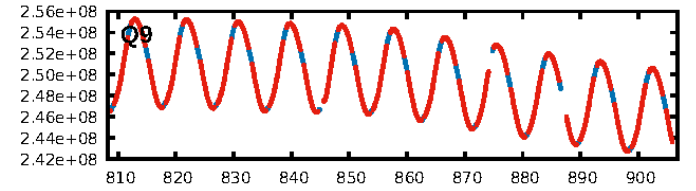
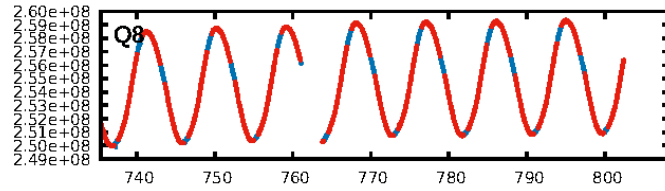
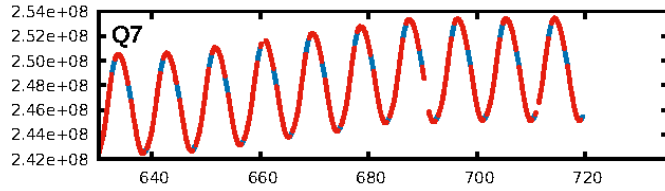
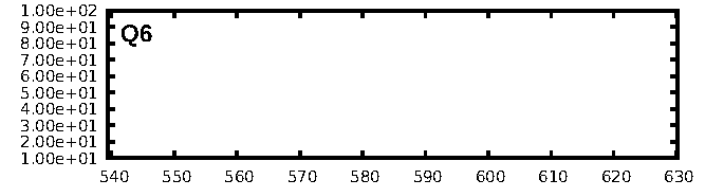
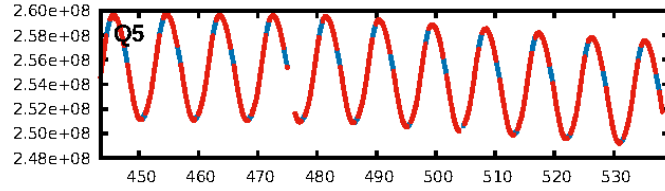
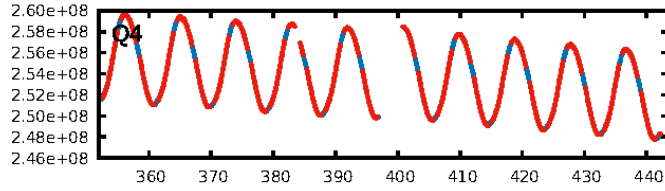
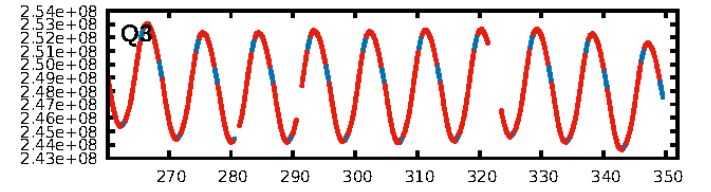
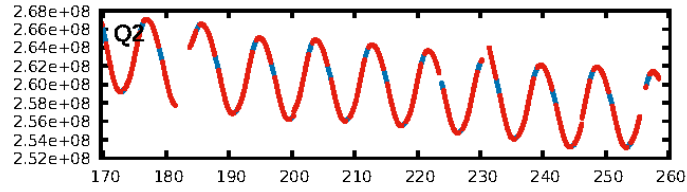
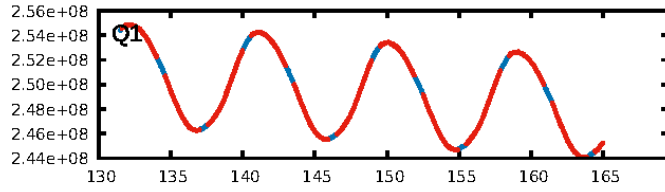
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [348/348]  
GhostDiagnostic-chr: 1.368  
Centroid-sig: 0.0%  
Centroid-so: 0.676 arcsec [3.35σ]  
OotOffset-rm: 1.361 arcsec [1.50σ]  
KicOffset-rm: 1.389 arcsec [1.69σ]  
OotOffset-st: 1/4/3/4 [12]  
KicOffset-st: 1/4/3/4 [12]  
DiffImageQuality-fgm: 0.75 [9/12]  
DiffImageOverlap-fno: 0.00 [0/14]

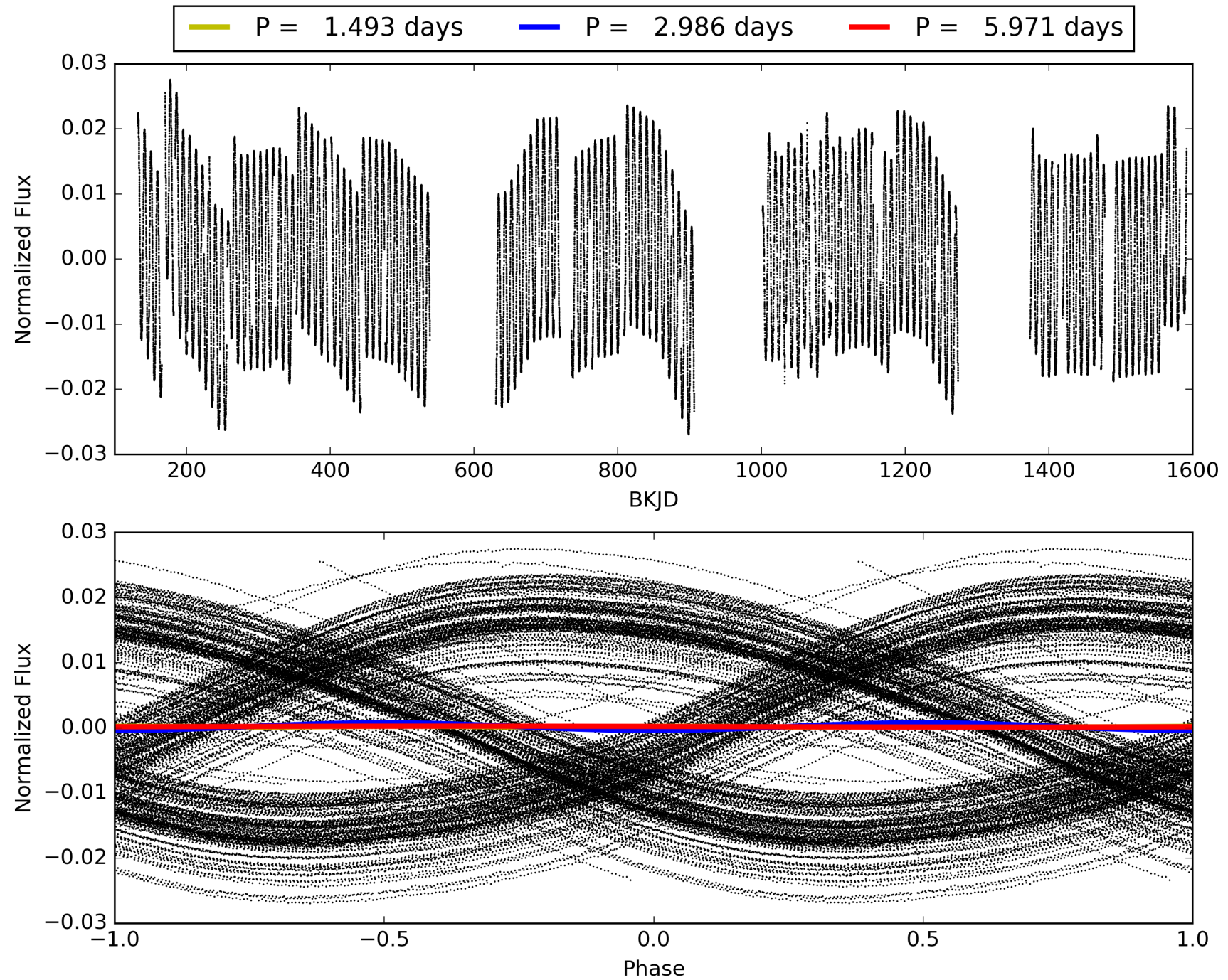
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:21:25 Z

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

# TCE 004064365-03, PDC Light Curves



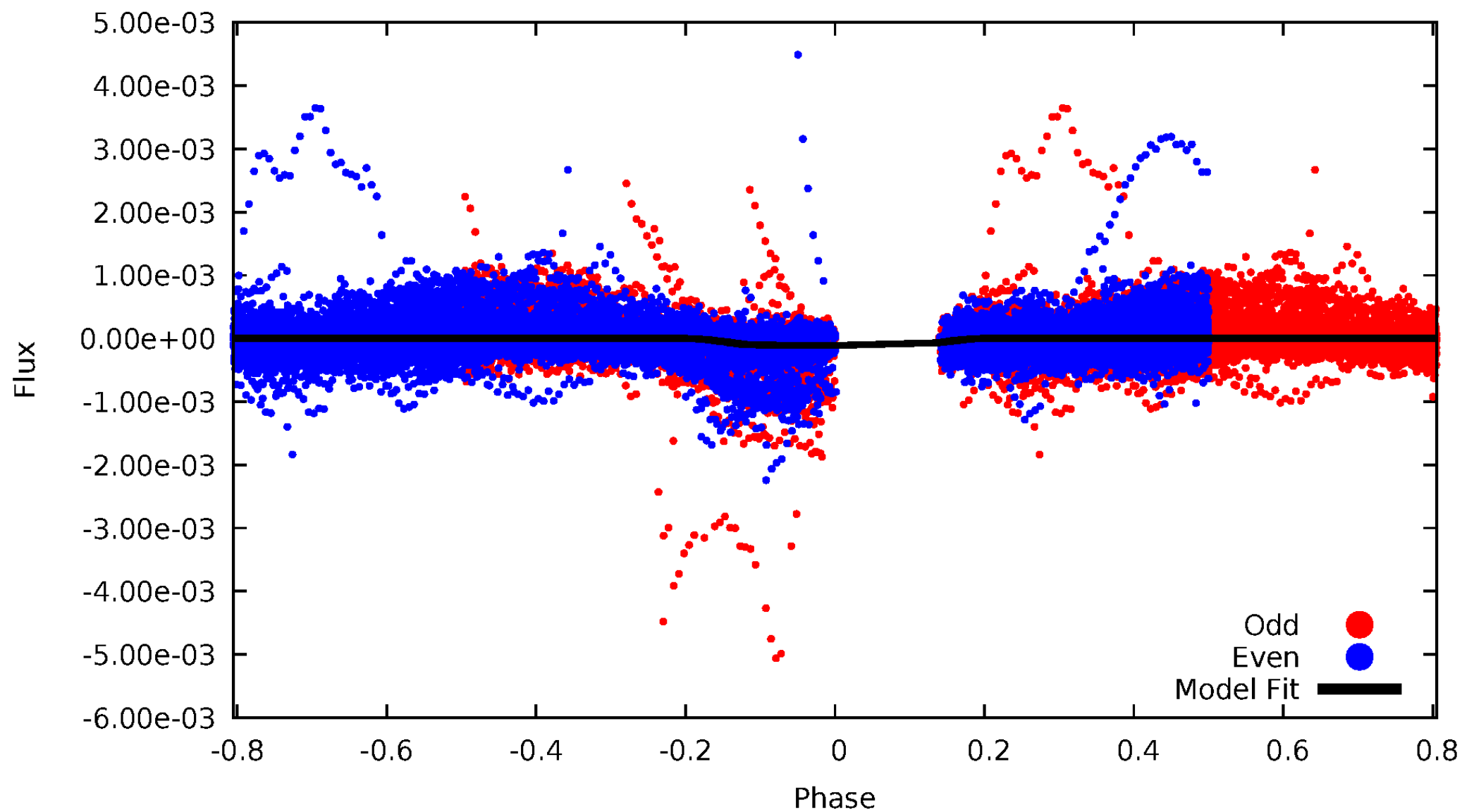
TCE 004064365-03





# DV Odd/Even

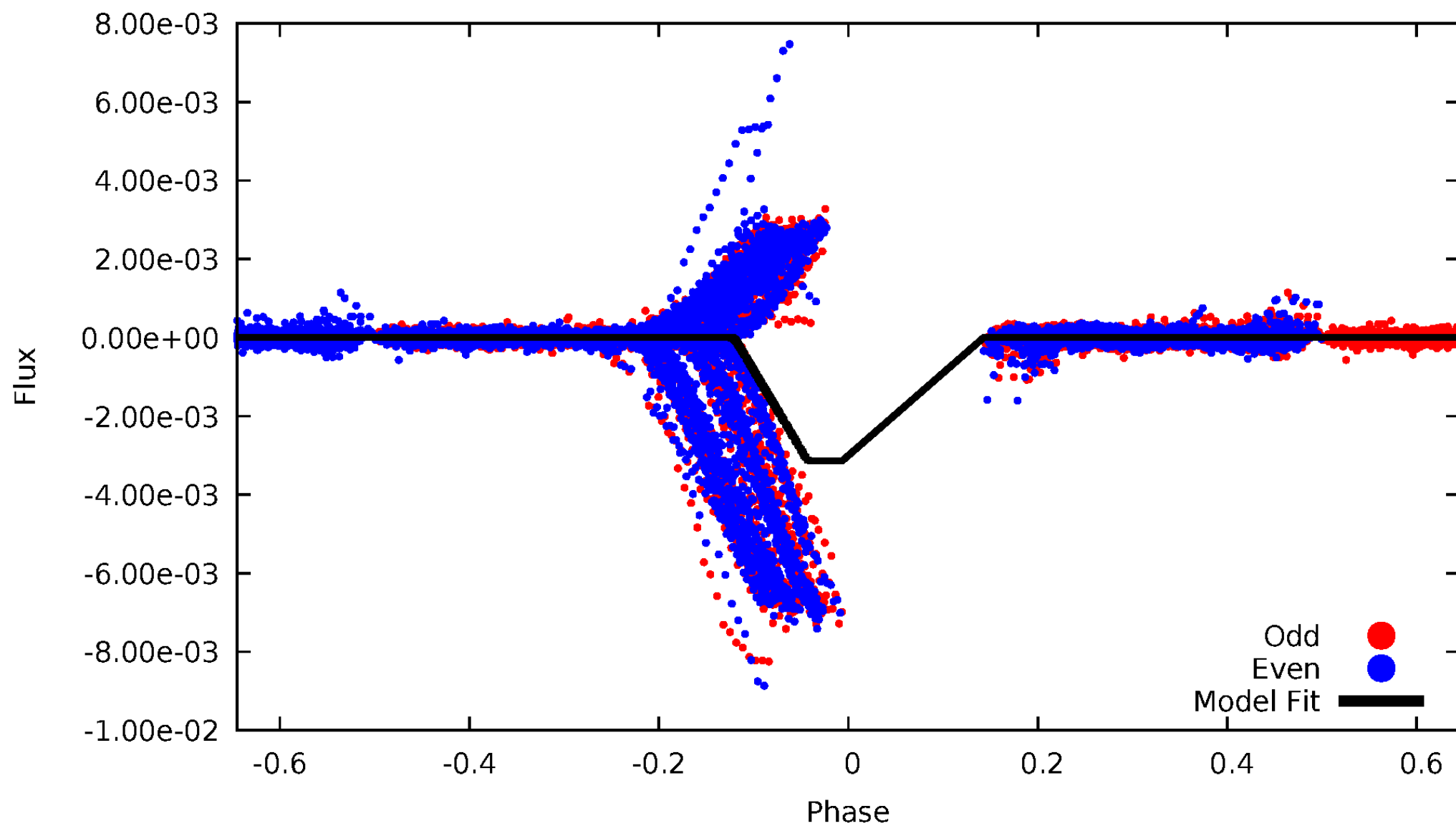
TCE 004064365-03





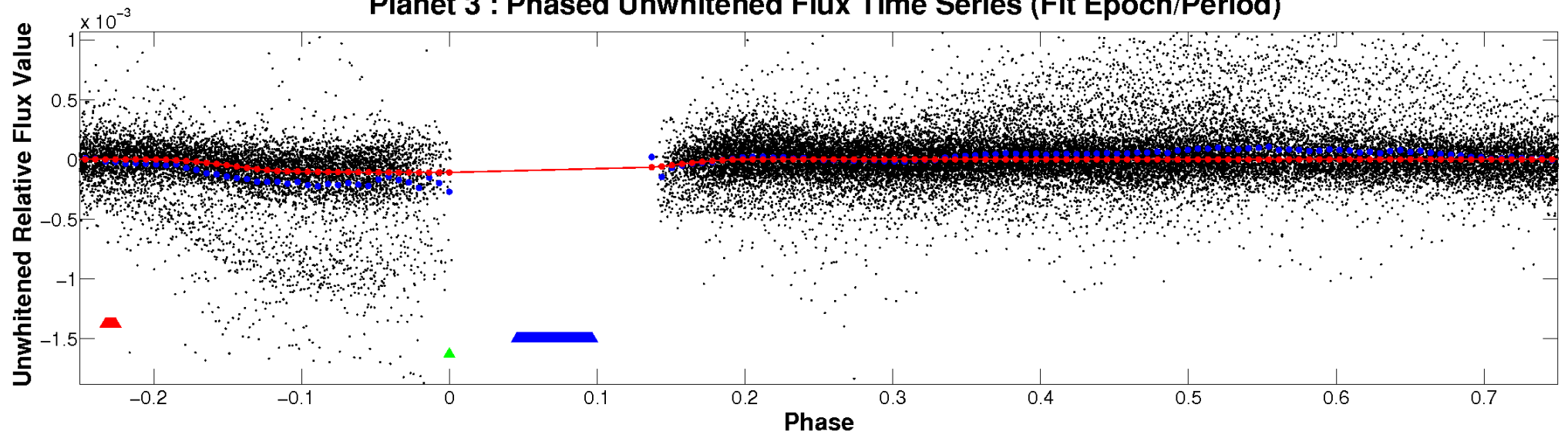
# ALT Odd/Even

TCE 004064365-03

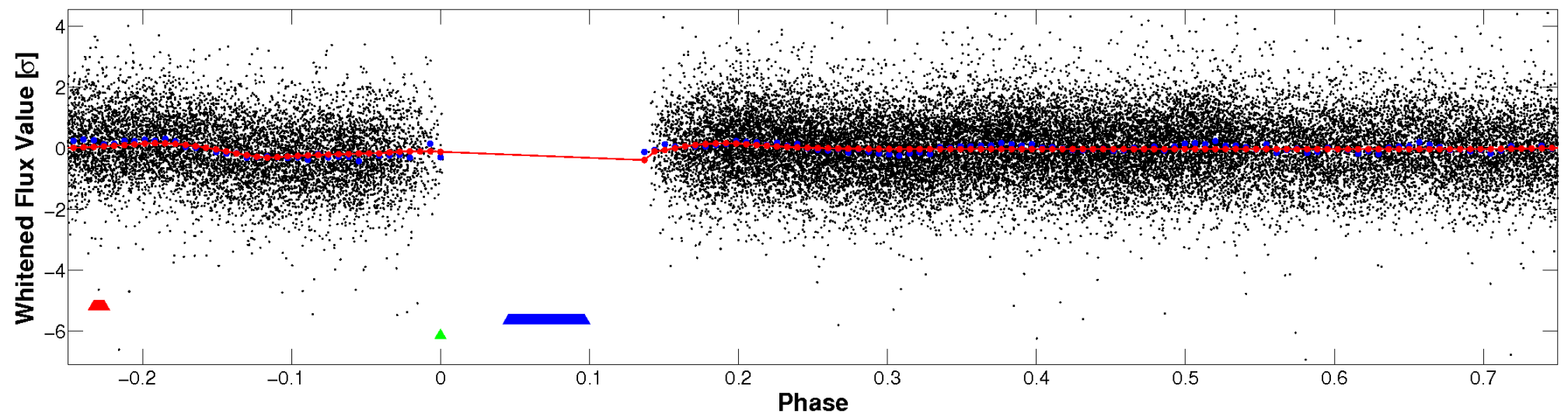


# Non-Whitened Vs. Whitened Light Curve

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

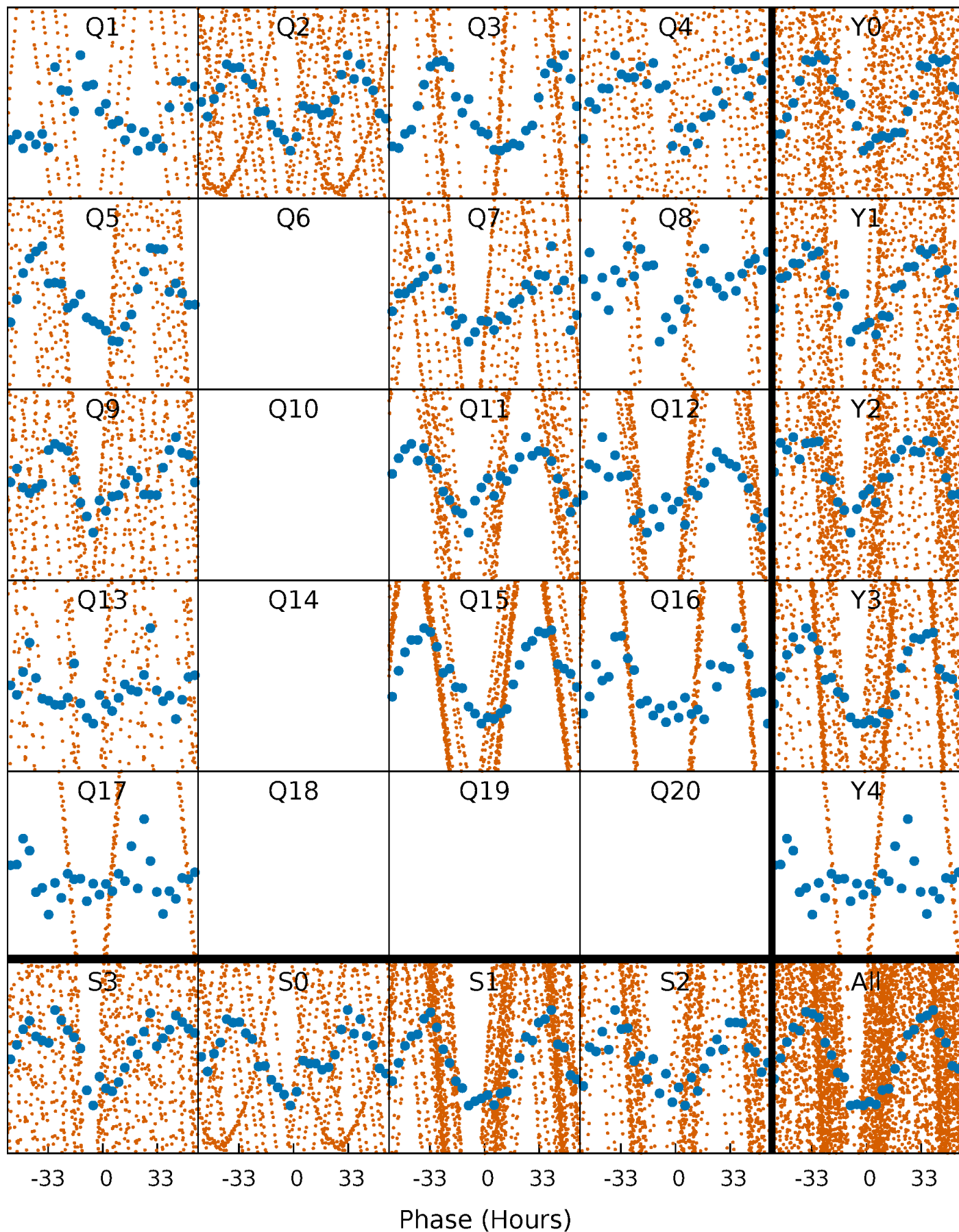


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



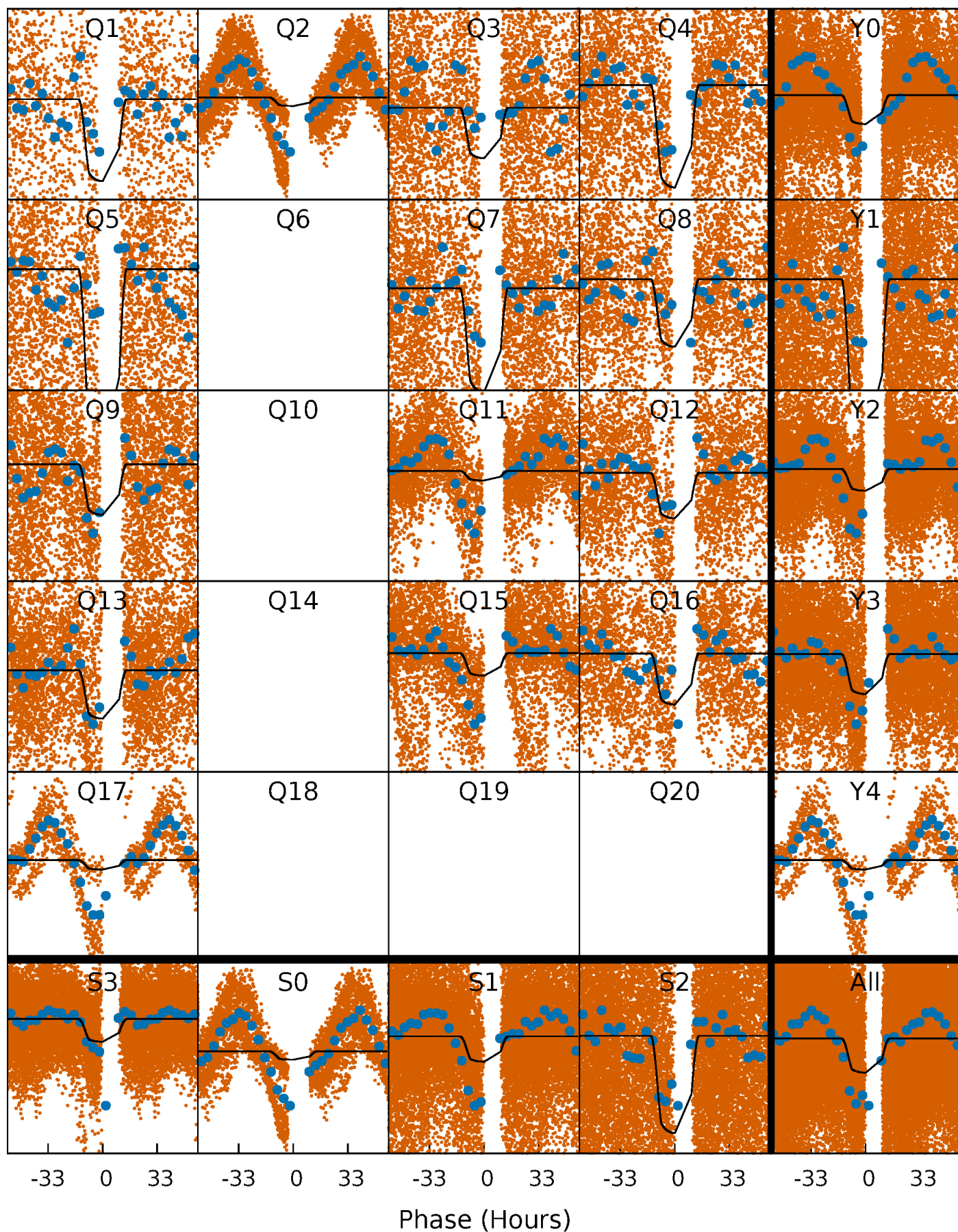
# PDC Quarter-Phased Transit Curves

TCE 004064365-03   P= 2.985527 Days    $T_0=132.805413$  (BKJD)



# DV Quarter-Phased Transit Curves

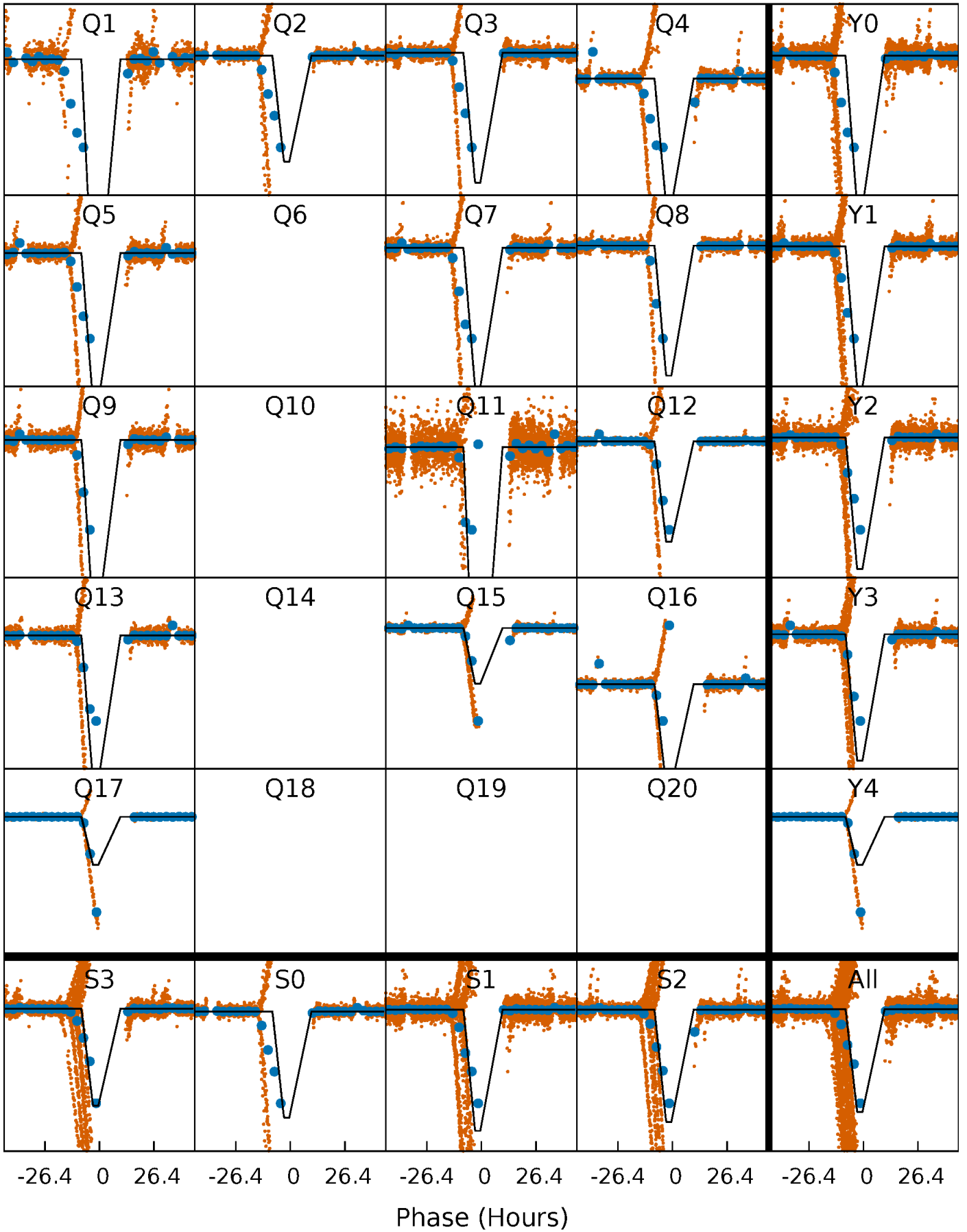
TCE 004064365-03   P= 2.985527 Days    $T_0=132.805413$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

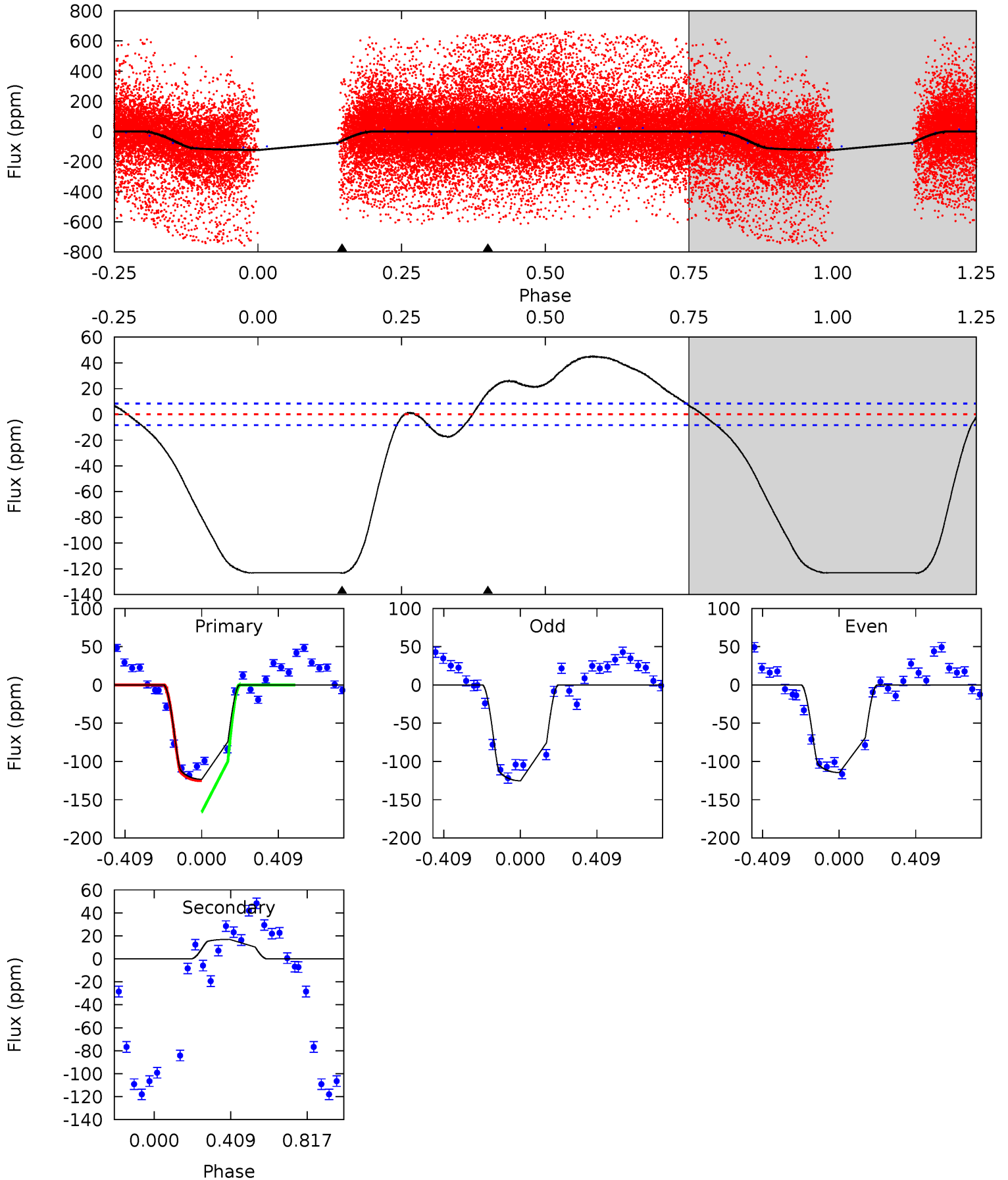
TCE 004064365-03   P= 2.985309 Days    $T_0=132.929230$  (BKJD)



# DV Model-Shift Uniqueness Test

004064365-03, P = 2.985527 Days, E = 129.819886 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
63.0	-8.68	0	0	4.26	0.83	4.94	63.0	63.0	-8.68	-8.68	2.83	2.48	0.27	9.75

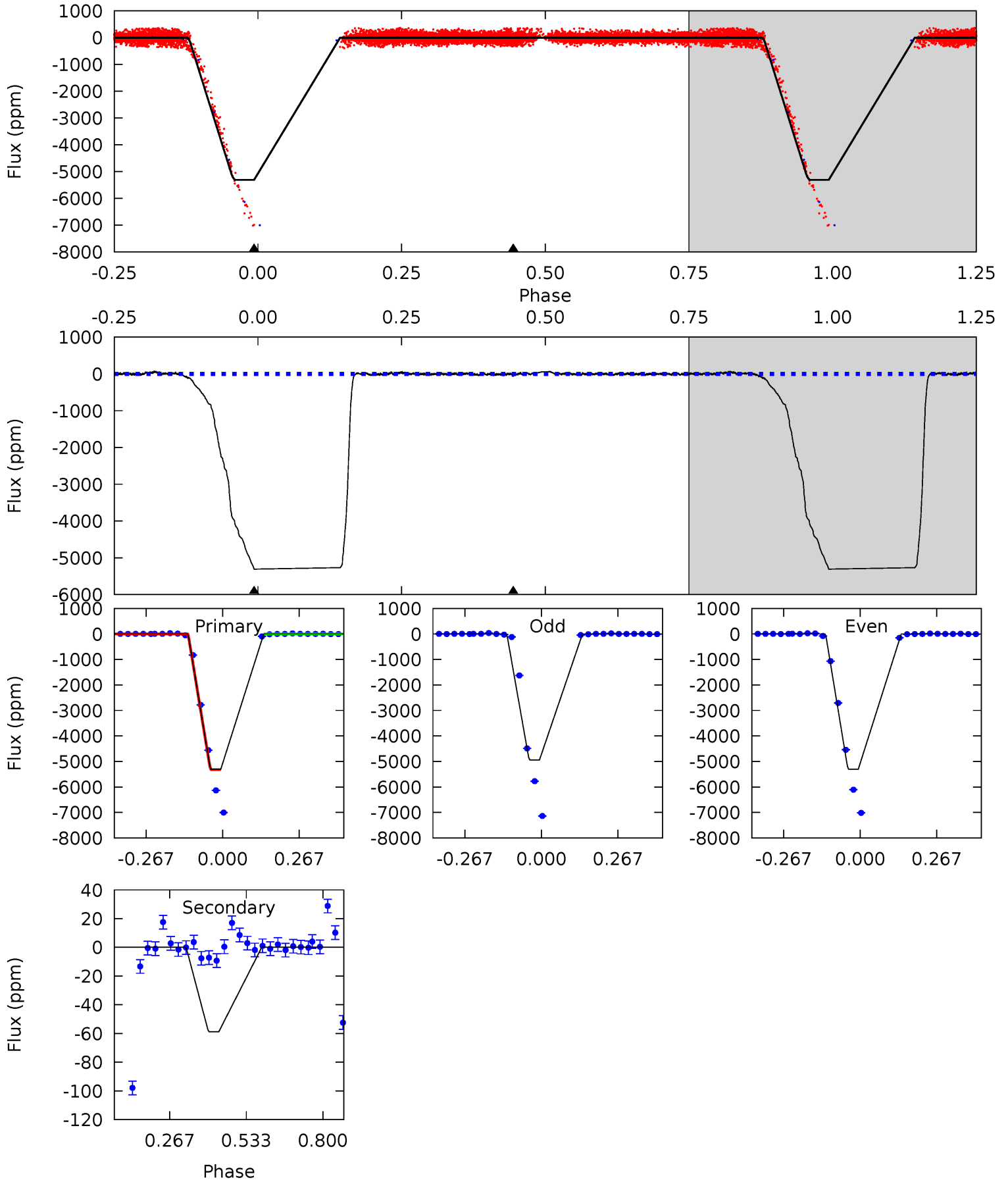




# Alt Model-Shift Uniqueness Test

004064365-03, P = 2.985309 Days, E = 129.943921 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
875.2	9.70	0	0	4.35	1.11	1.64	875.2	875.2	9.70	9.70	31.7	0	0.01	0



### Stellar Parameters For KIC 004064365

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$11360^{+597}_{-1911}$	$3.636^{+0.400}_{-0.100}$	$0.210^{+0.150}_{-0.150}$	$4.712^{+0.534}_{-2.135}$	$3.504^{+0.070}_{-0.927}$	$0.047^{+0.162}_{-0.011}$
	+5%/-17%	+11%/-3%	+71%/-71%	+11%/-45%	+2%/-26%	+344%/-24%
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 004064365-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$17 \pm 2$	$5.75^{+0.64}_{-1.24}$	$5795^{+686}_{-1064}$	$-6242^{+671}_{-393}$	$-1.055^{+0.231}_{-0.605}$
Alt.	$-59 \pm 6$	$28.06^{+2.63}_{-6.88}$	$5711^{+805}_{-1016}$	$-3813^{+949}_{-432}$	$0.157^{+0.102}_{-0.032}$

$T_{max}$  = 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

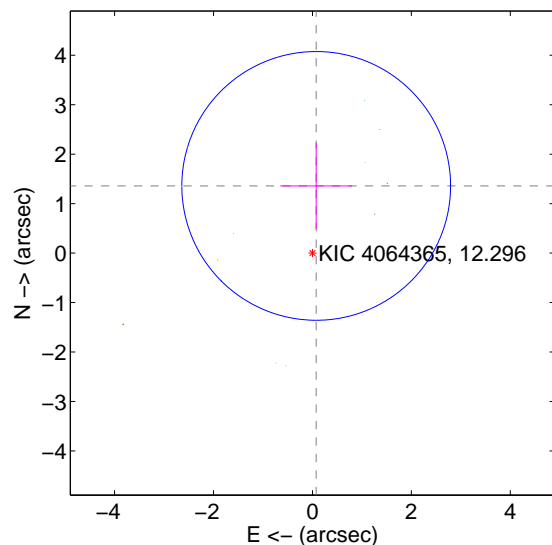
Supplemental centroid analysis for 004064365-03. Kepler magnitude: 12.30. Transit SNR 18.90

There are 9 quarters with good PRF difference image offsets

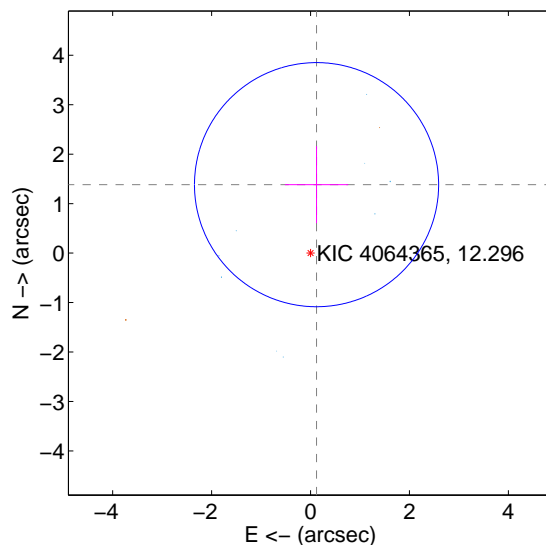
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.361 \pm 0.905$	1.50	$-0.076 \pm 0.725$	$1.359 \pm 0.871$
PRF-fit source offset from KIC position	$1.389 \pm 0.823$	1.69	$-0.122 \pm 0.640$	$1.384 \pm 0.778$
photometric centroid source offset	$0.68 \pm 0.20$	<b>3.35</b>	$0.07 \pm 0.14$	$0.67 \pm 0.20$

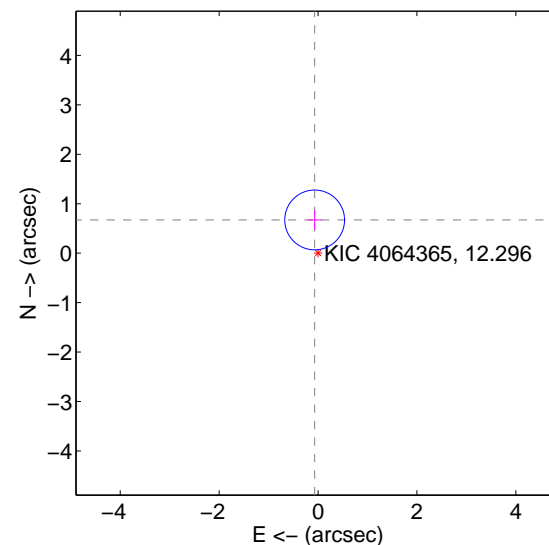
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

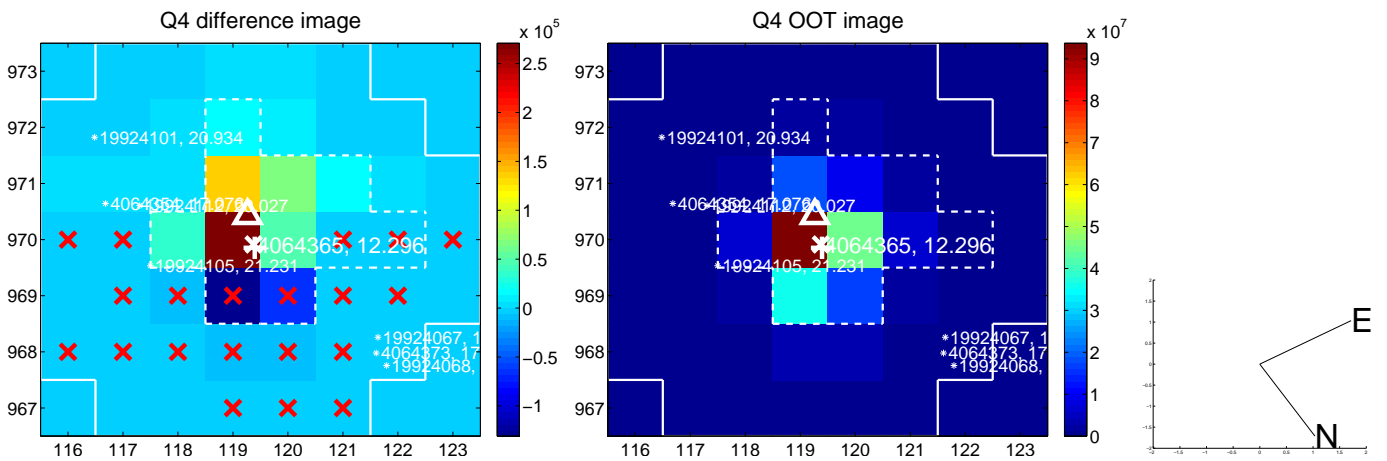
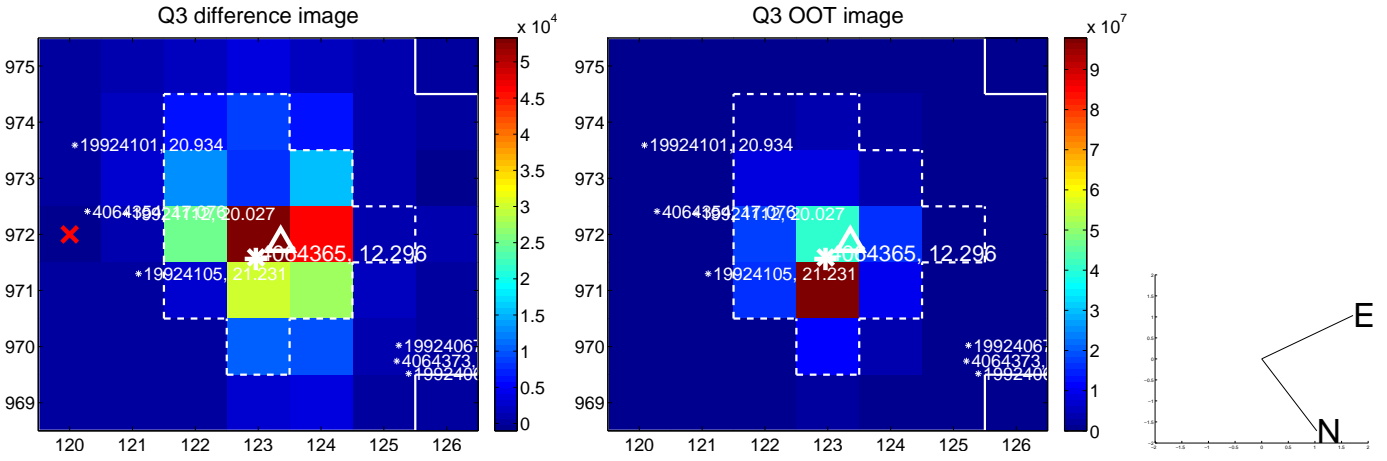
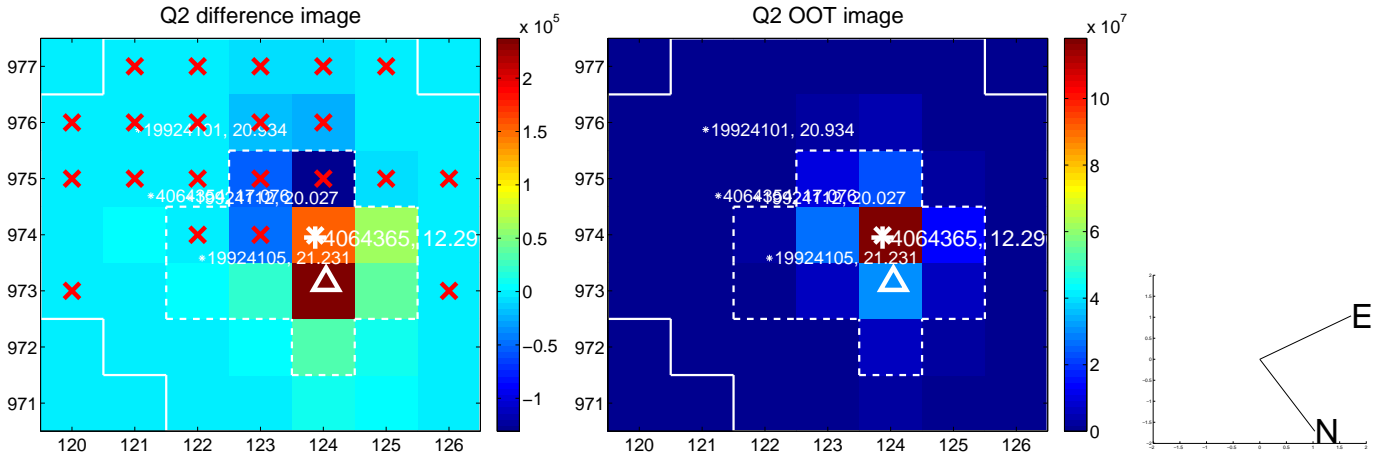
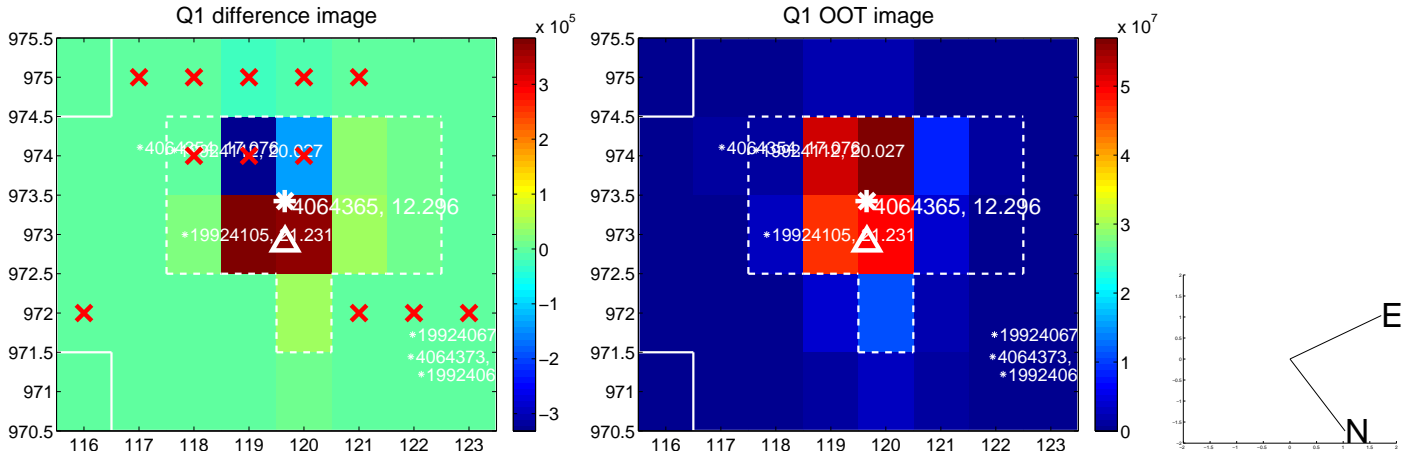


offset from photometric centroids

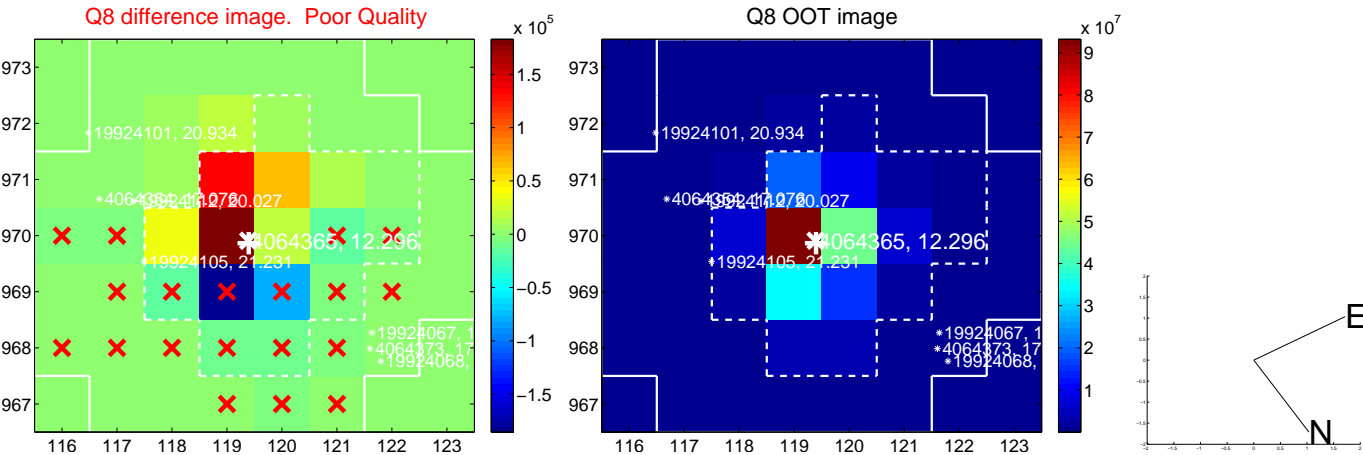
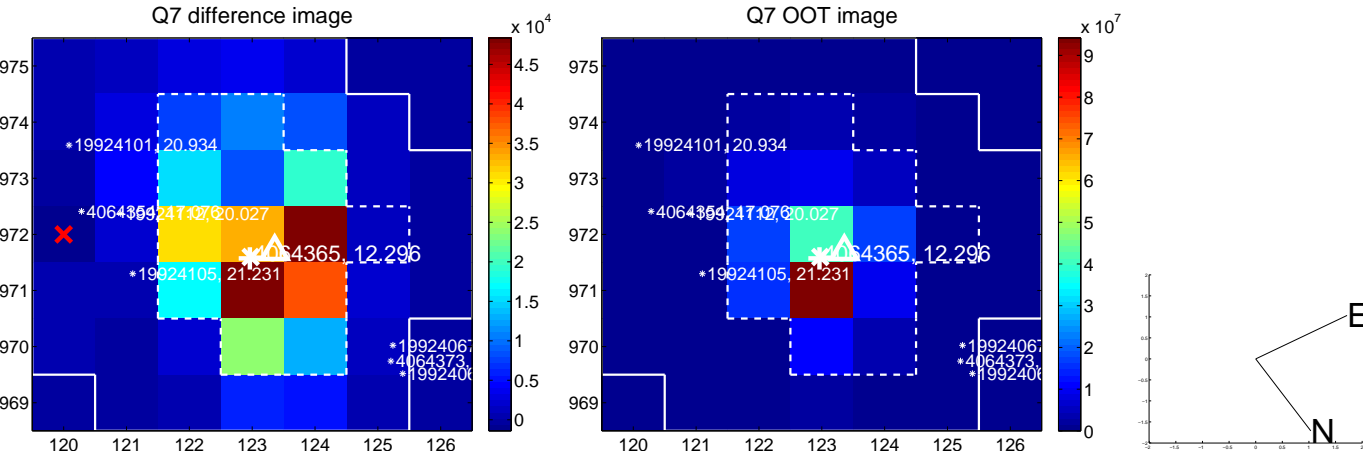
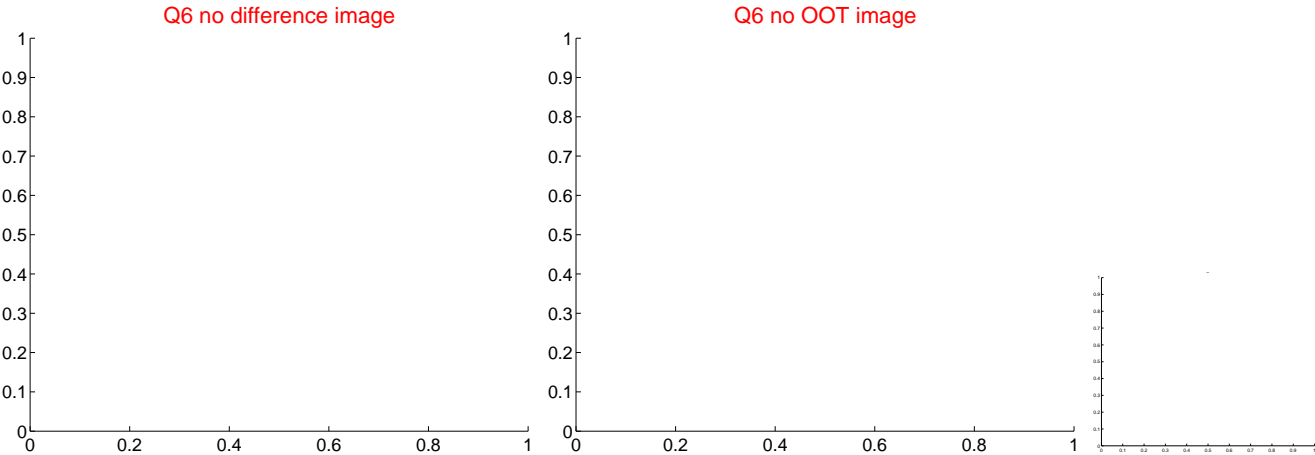
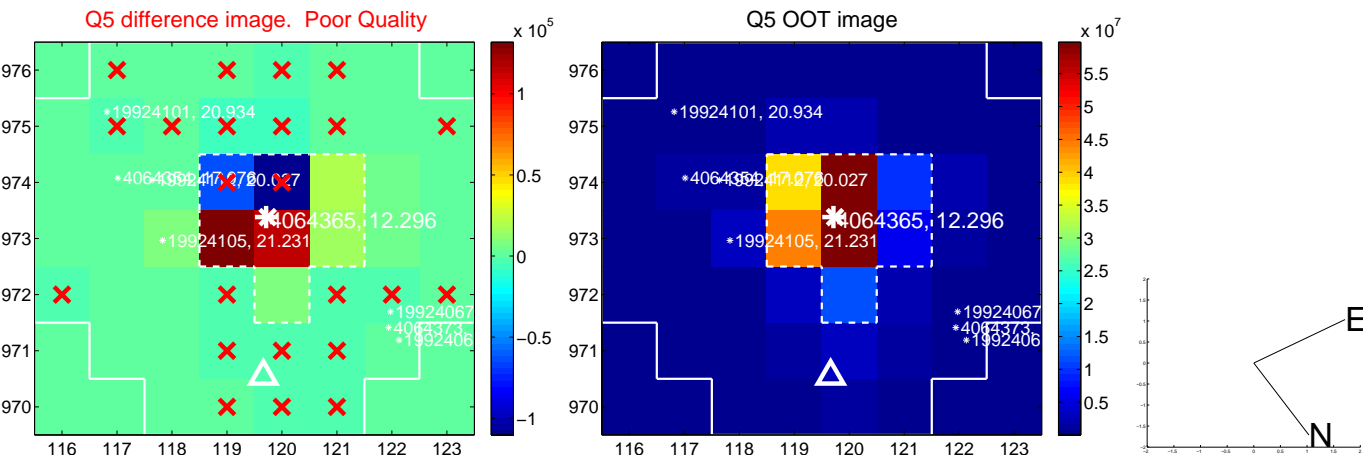


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

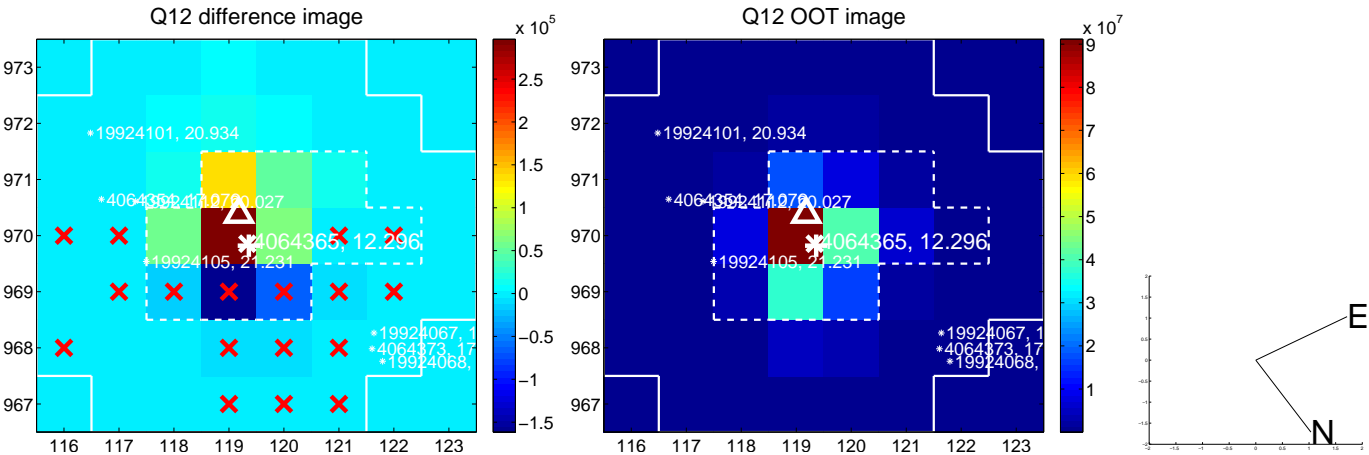
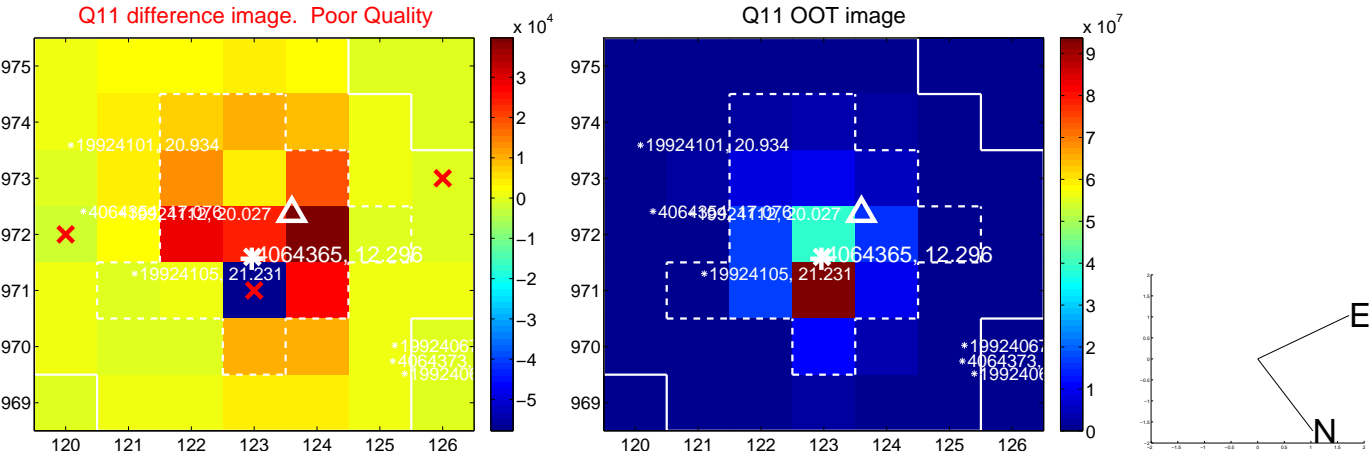
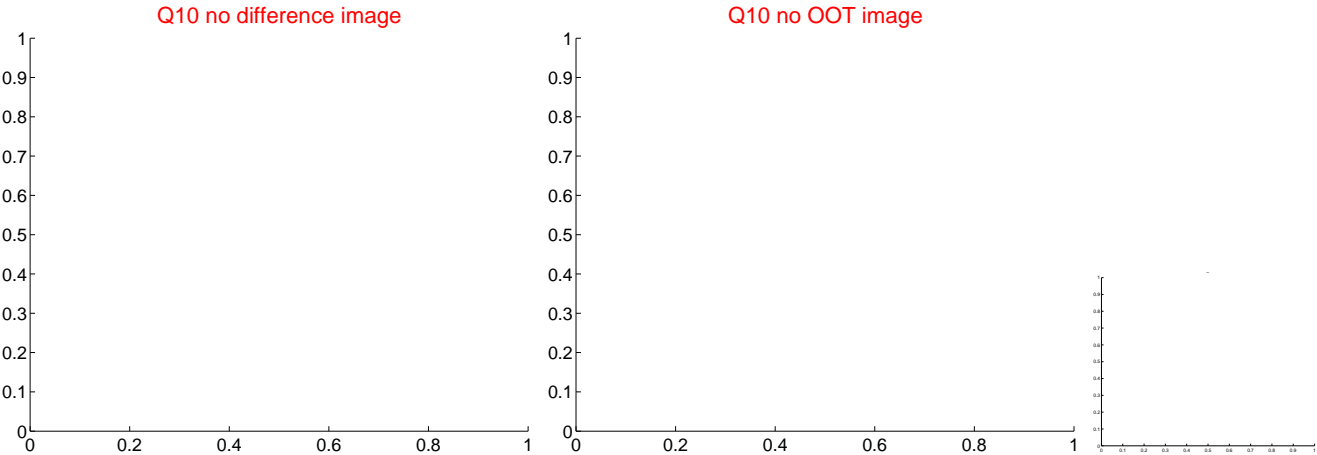
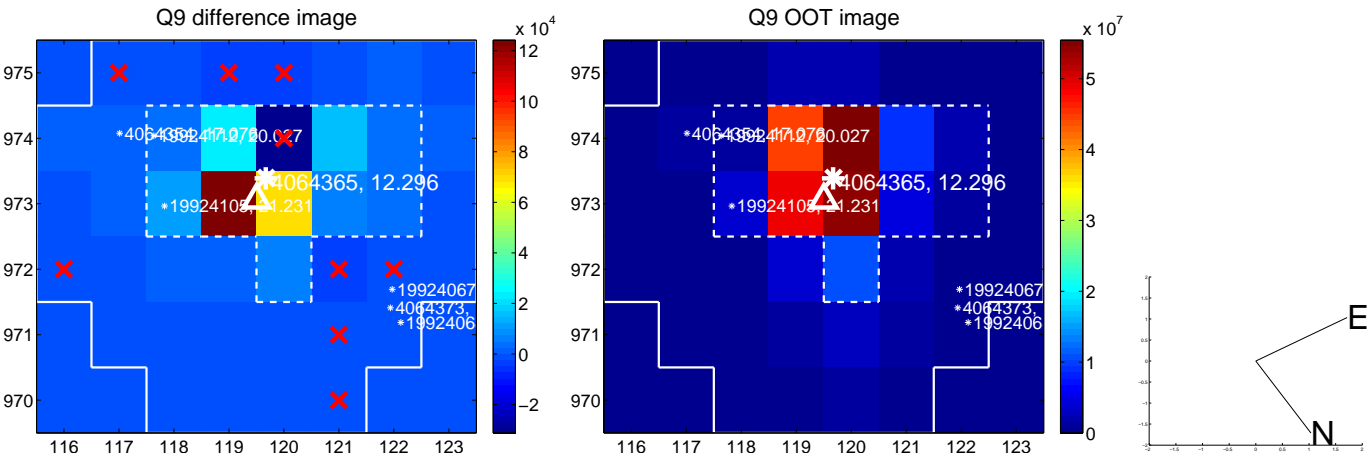
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



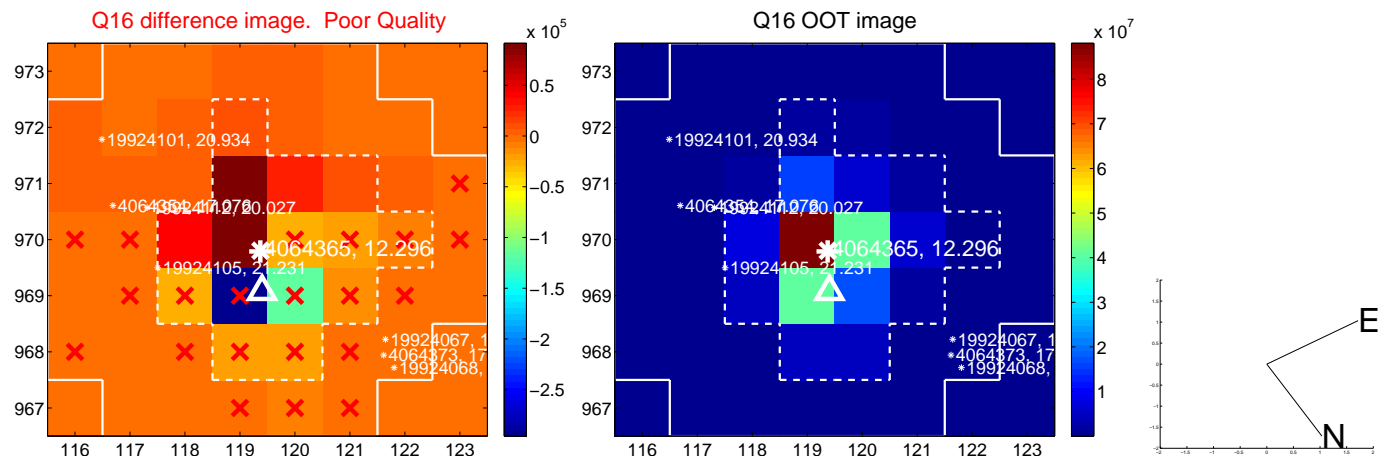
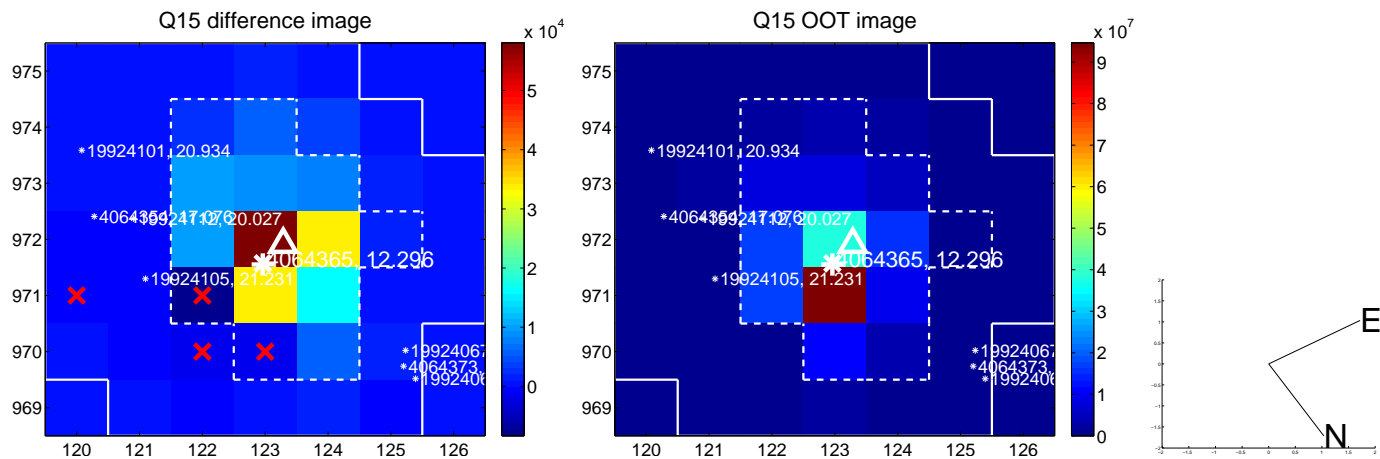
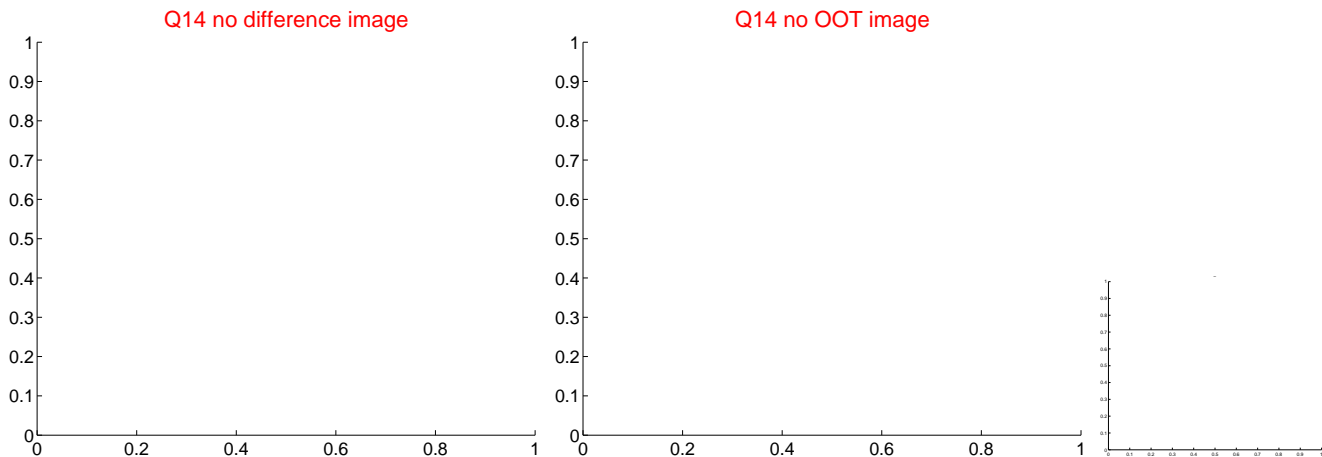
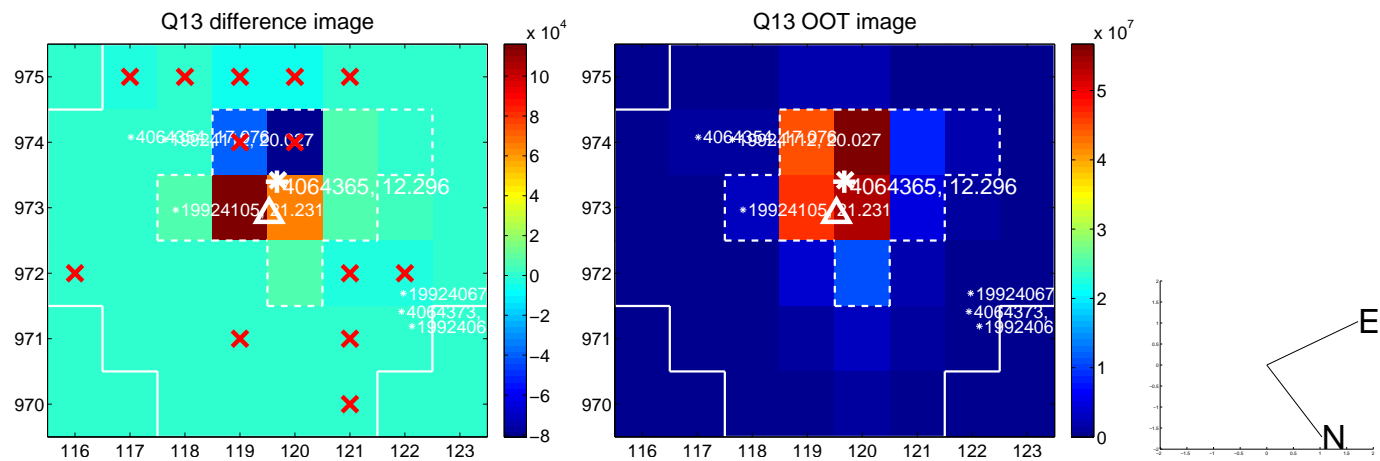
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

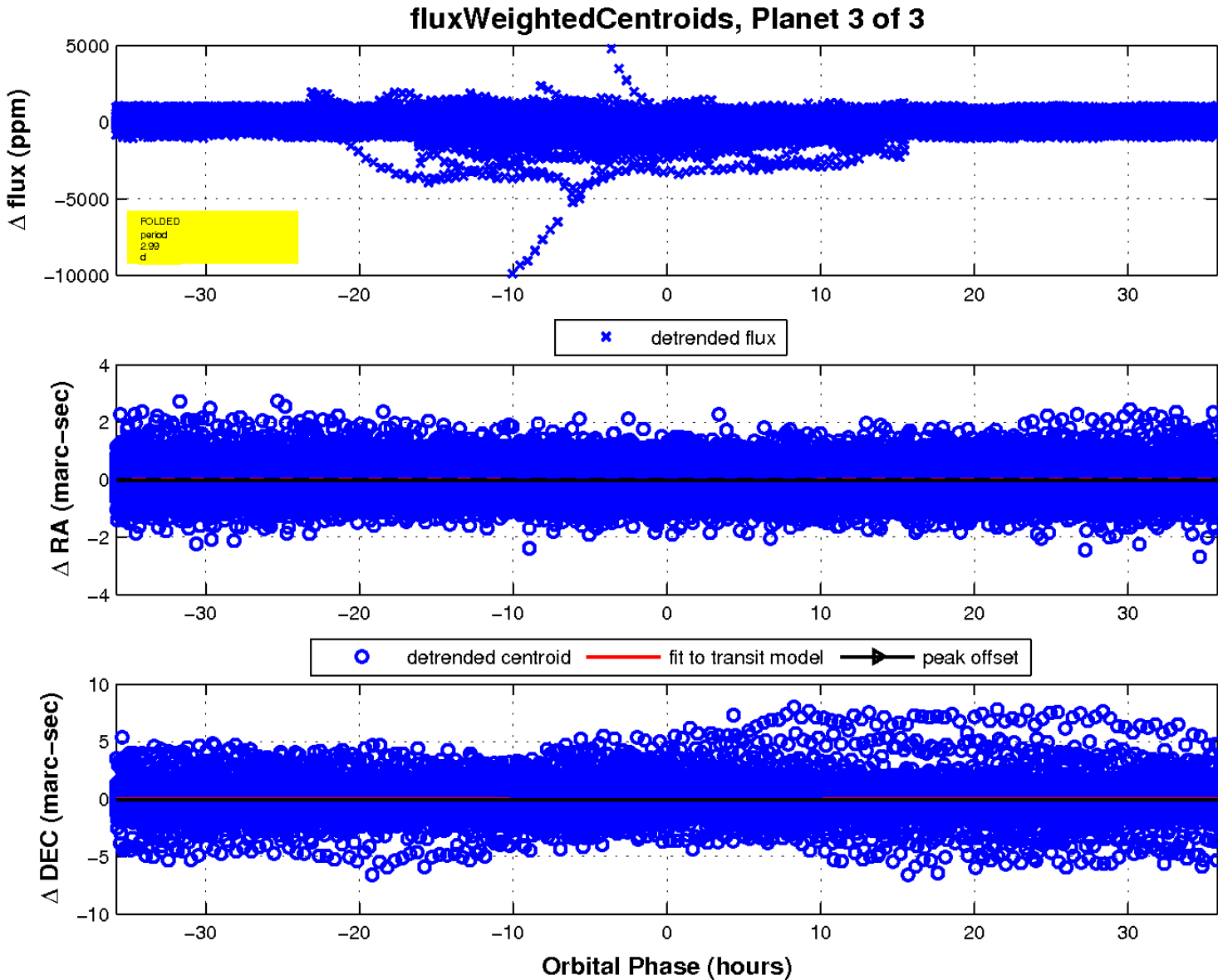
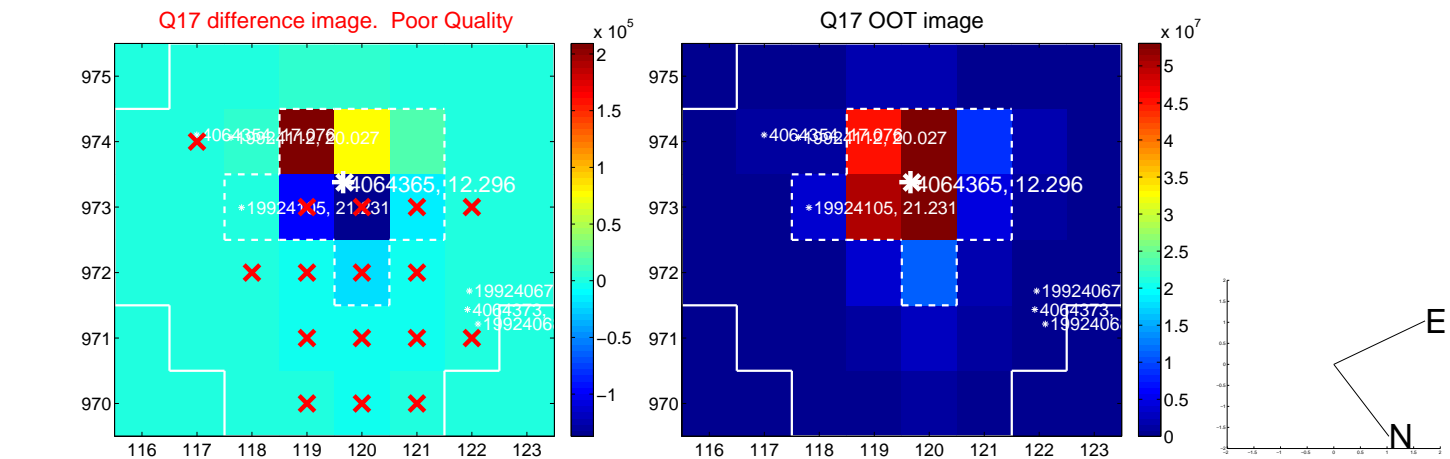


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

