

# KIC 009052363

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009052363-01	OBS	No	0.677215	131.616408	6.2	1.814	8.5	10.4	3.10	7810	0.90	91124.79
009052363-02	OBS	No	313.042139	296.620970	61.5	12.500	8.8	-1.0	3.10	7810	2.45	25.50
009052363-03	OBS	No	316.380203	297.891909	148.9	14.954	21.7	14.1	3.10	7810	7.04	25.14

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009052363-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009052363-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009052363-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

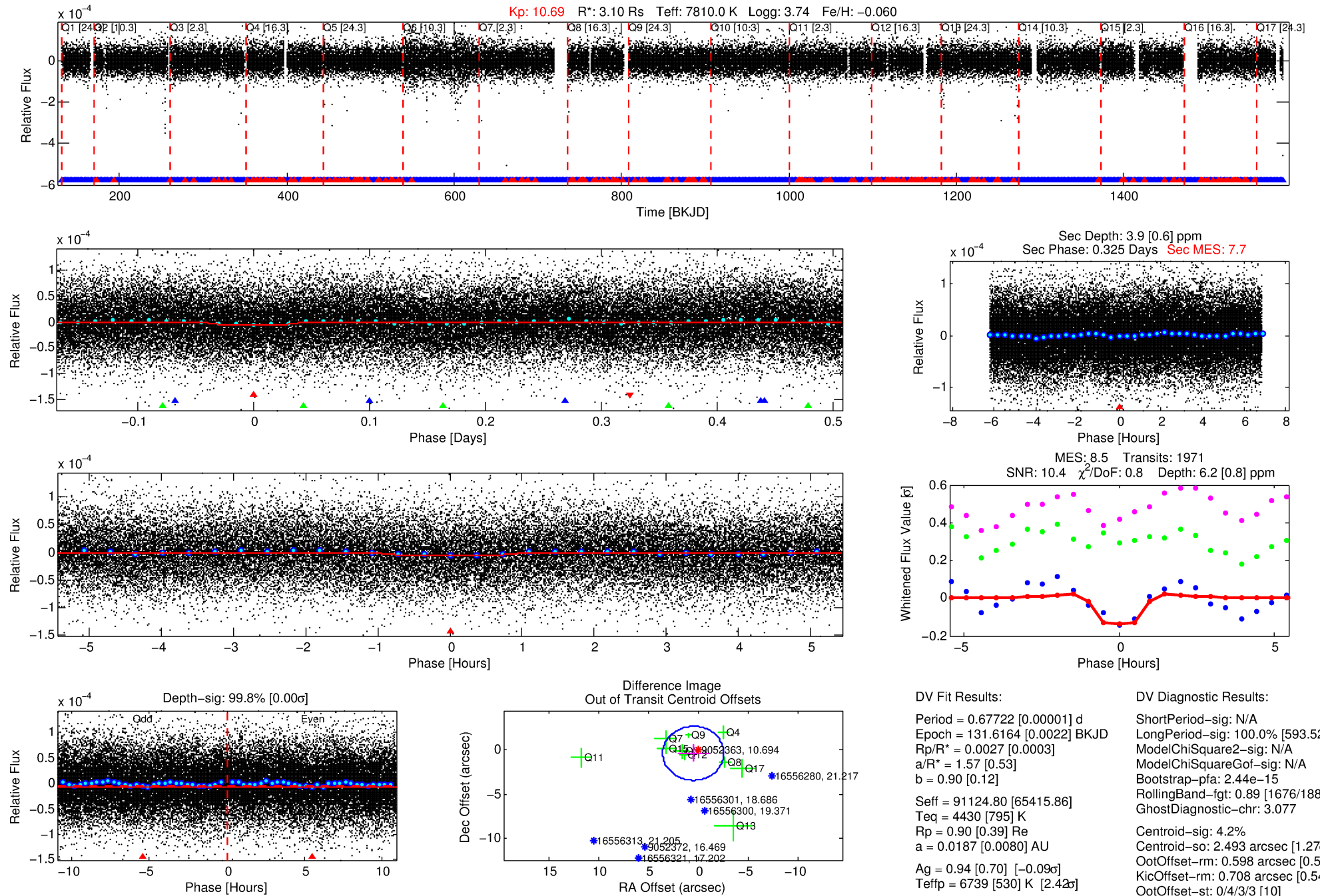
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 009052363-01

No Significant Match Found

# DV One-Page Summary

KIC: 9052363 Candidate: 1 of 3 Period: 0.677 d



## DV Fit Results:

Period = 0.67722 [0.00001] d  
Epoch = 131.6164 [0.0022] BKJD  
Rp/R\* = 0.0027 [0.0003]  
a/R\* = 1.57 [0.53]  
b = 0.90 [0.12]  
Seff = 91124.80 [65415.86]  
Teq = 4430 [795] K  
Rp = 0.90 [0.39] Re  
a = 0.0187 [0.0080] AU  
Ag = 0.94 [0.70] [-0.09]  
Teffp = 6739 [530] K [2.42]

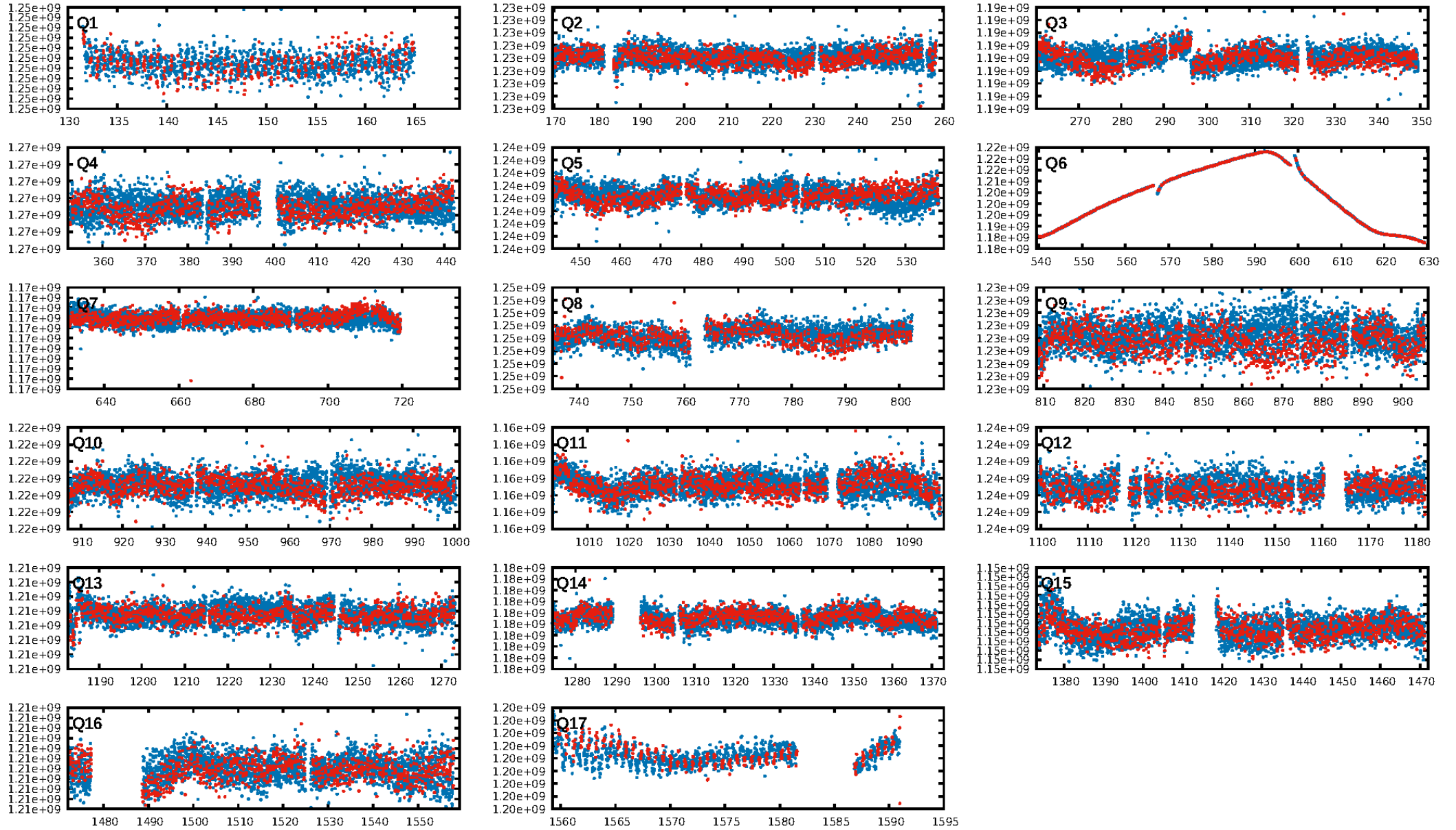
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [593.52]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.44e-15  
RollingBand-fgt: 0.89 [1676/1881]  
GhostDiagnostic-chr: 3.077  
Centroid-sig: 4.2%  
Centroid-so: 2.493 arcsec [1.27]  
OotOffset-rm: 0.598 arcsec [0.58]  
KicOffset-rm: 0.708 arcsec [0.54]  
OotOffset-st: 0/4/3/3 [10]  
KicOffset-st: 0/4/3/3 [10]  
DiffImageQuality-fgm: 0.20 [2/10]  
DiffImageOverlap-fno: 1.00 [17/17]

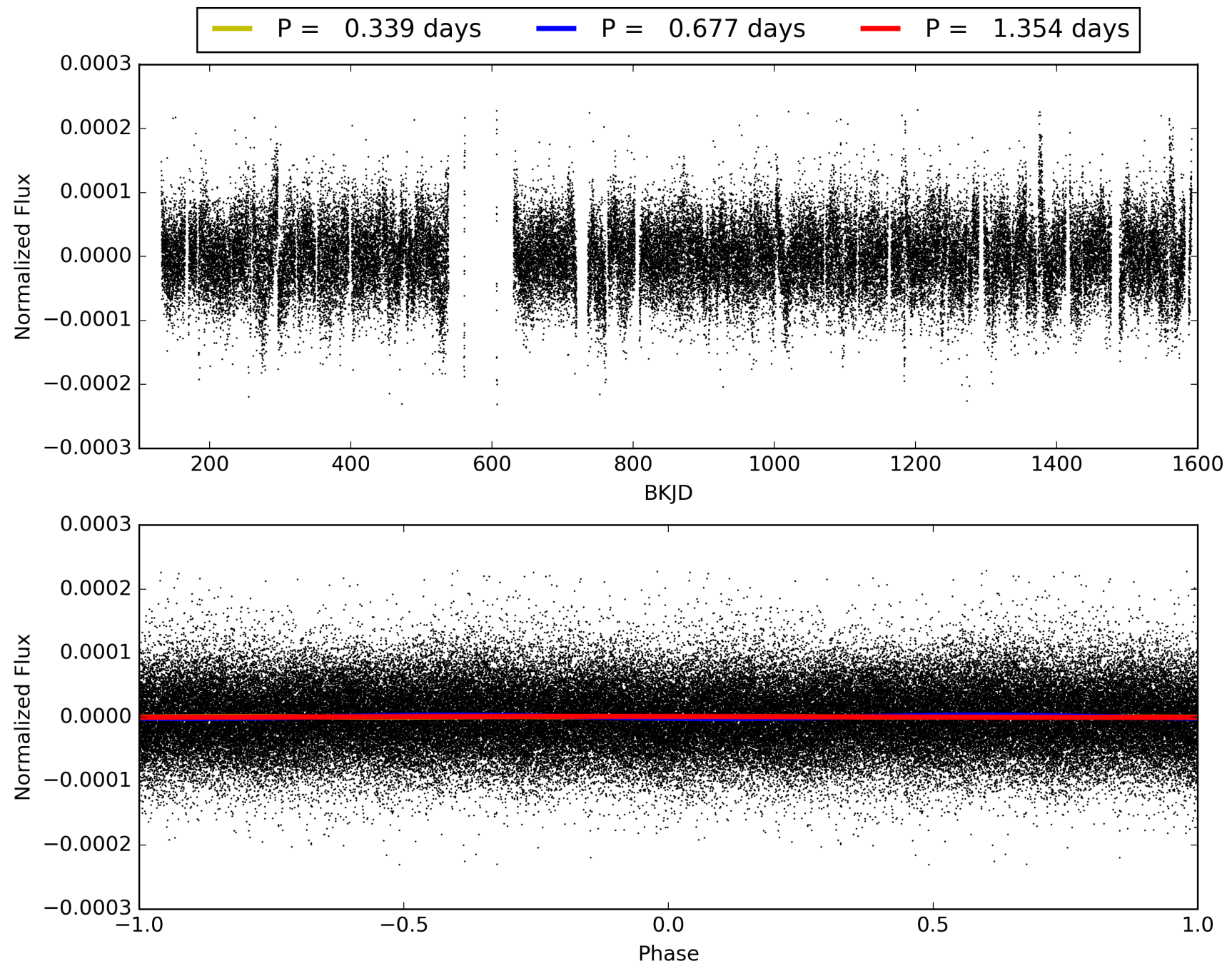
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:38:52 Z

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

# TCE 009052363-01, PDC Light Curves

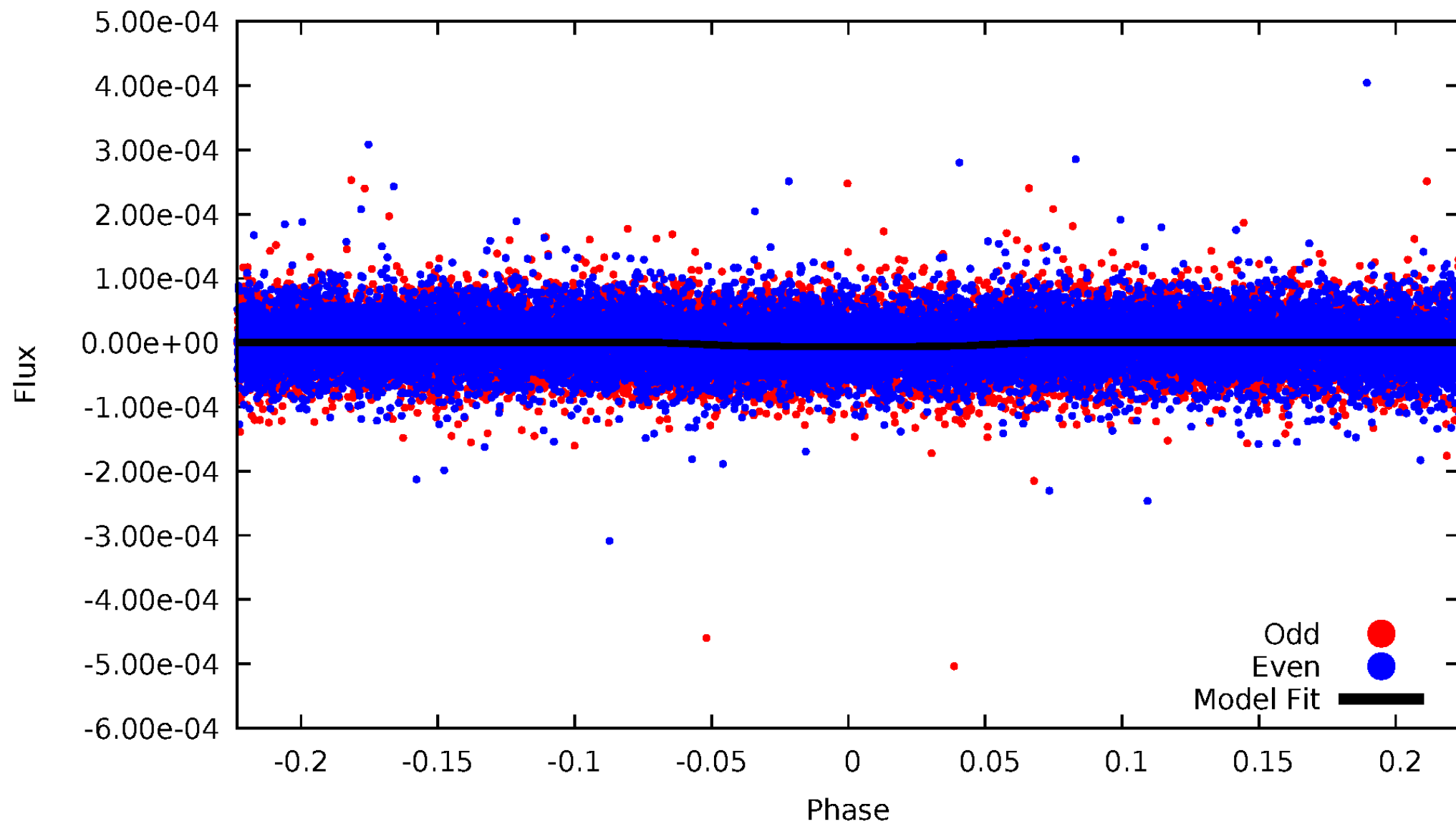


TCE 009052363-01



# DV Odd/Even

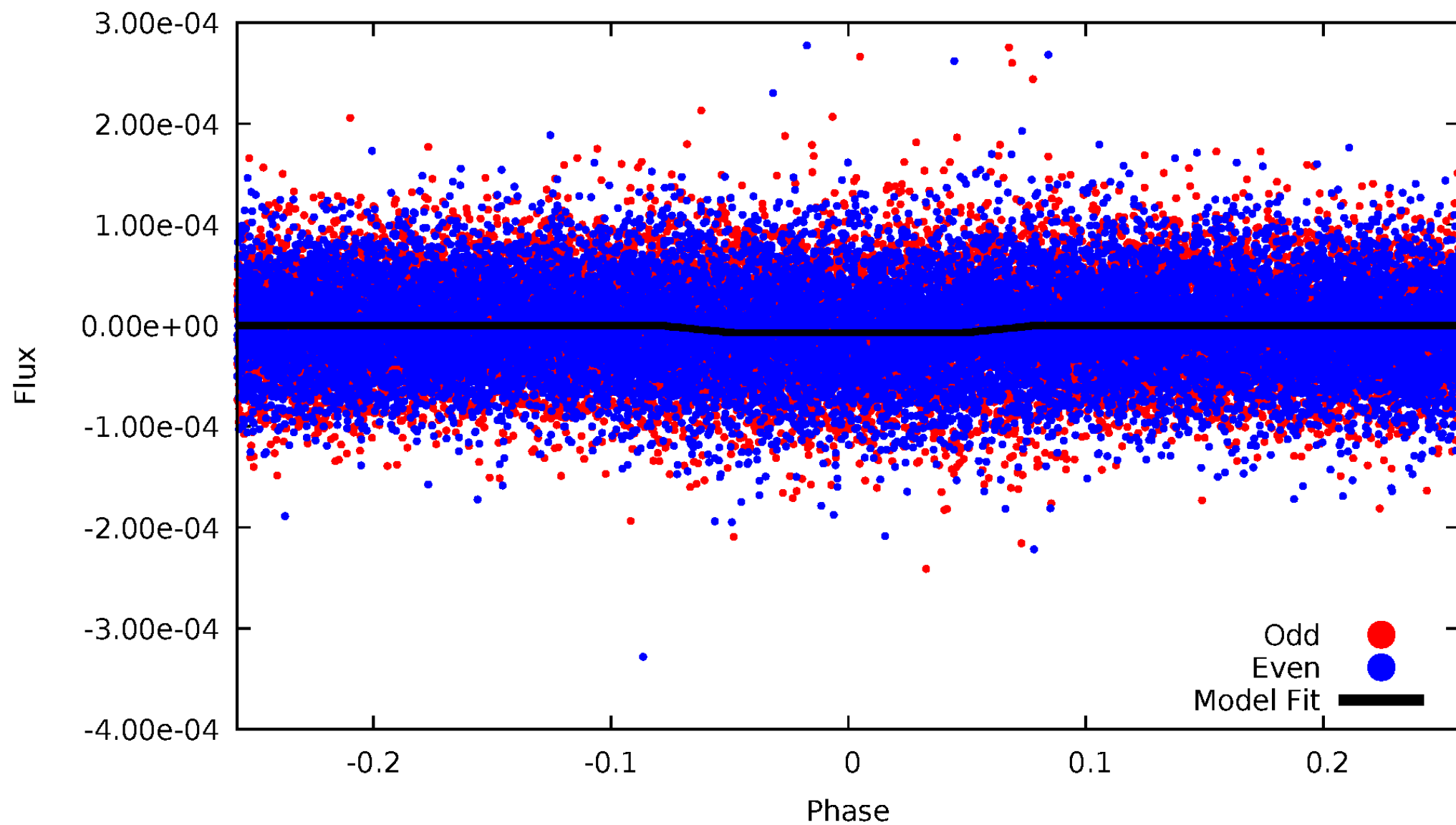
TCE 009052363-01





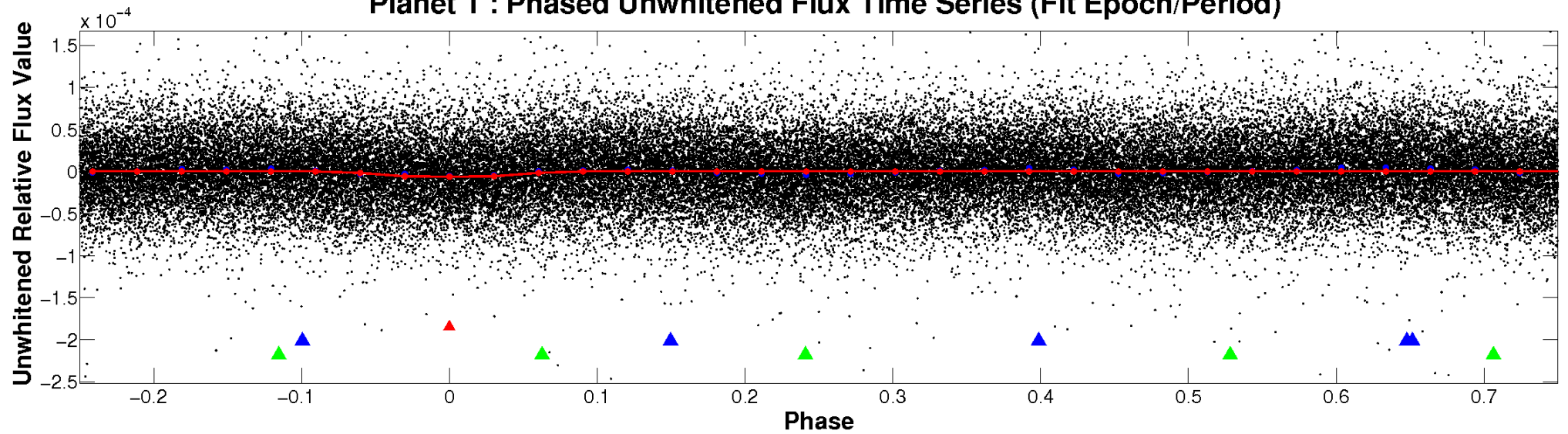
# ALT Odd/Even

TCE 009052363-01

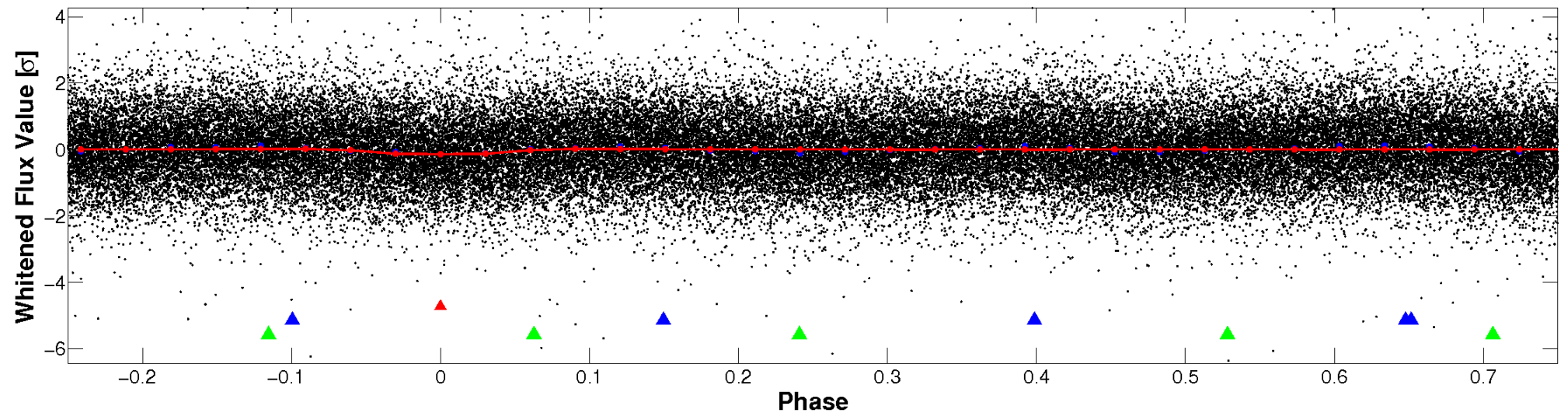


# Non-Whitened Vs. Whitened Light Curve

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

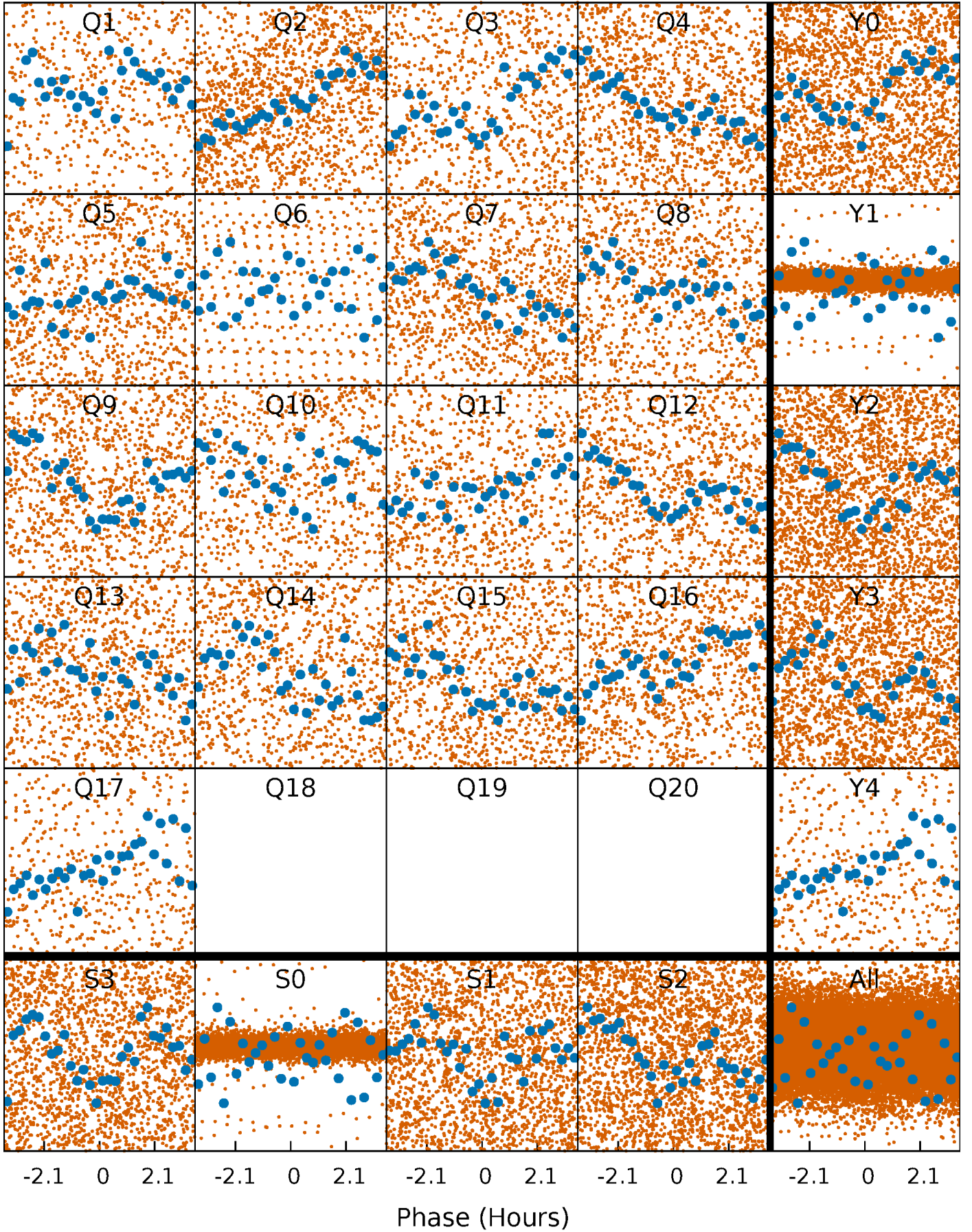


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

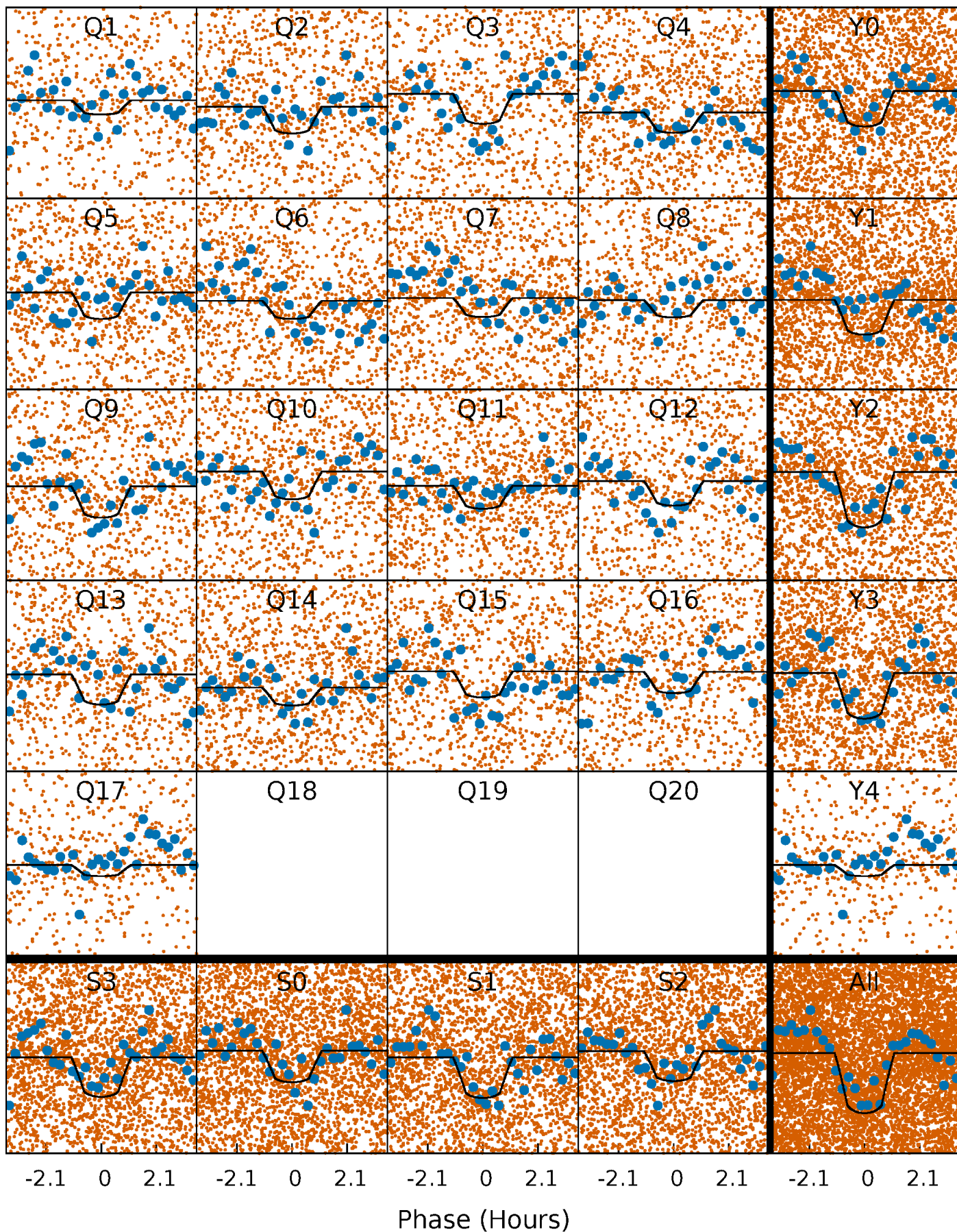
TCE 009052363-01   P= 0.677215 Days    $T_0=131.616408$  (BKJD)





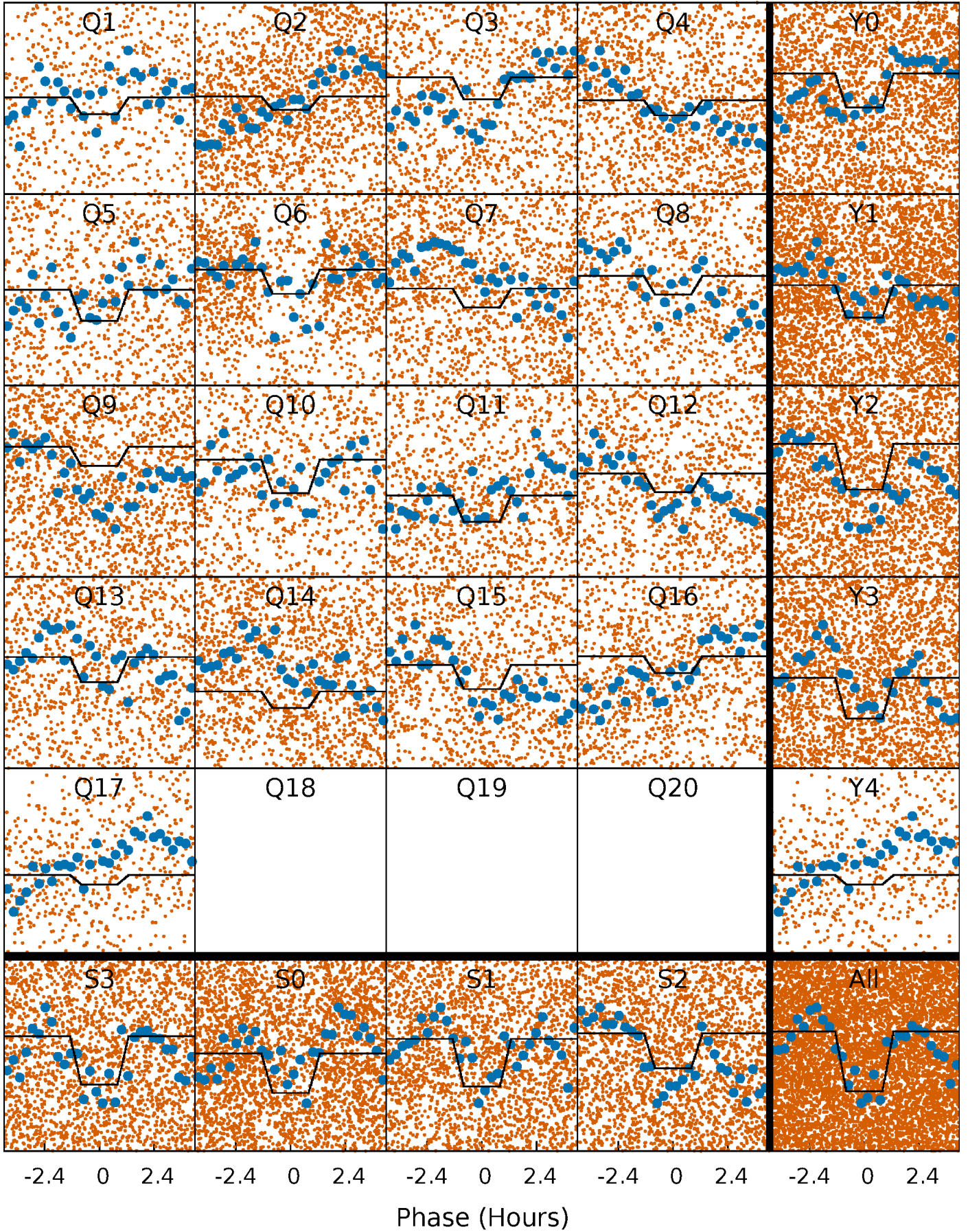
# DV Quarter-Phased Transit Curves

TCE 009052363-01 P= 0.677215 Days  $T_0=131.616408$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009052363-01 P= 0.677213 Days  $T_0=131.616143$  (BKJD)

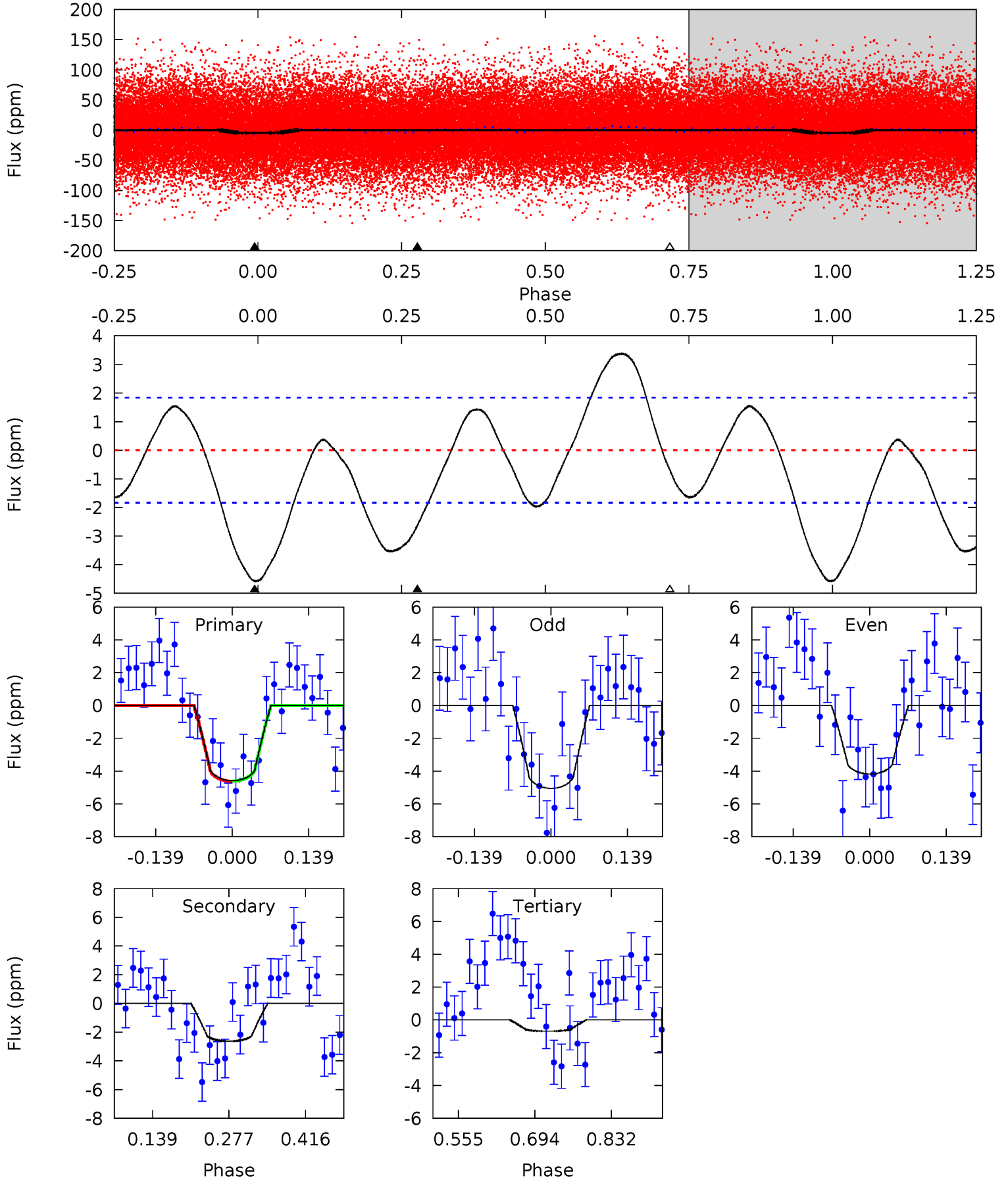




# DV Model-Shift Uniqueness Test

009052363-01, P = 0.677215 Days, E = 130.939193 Days

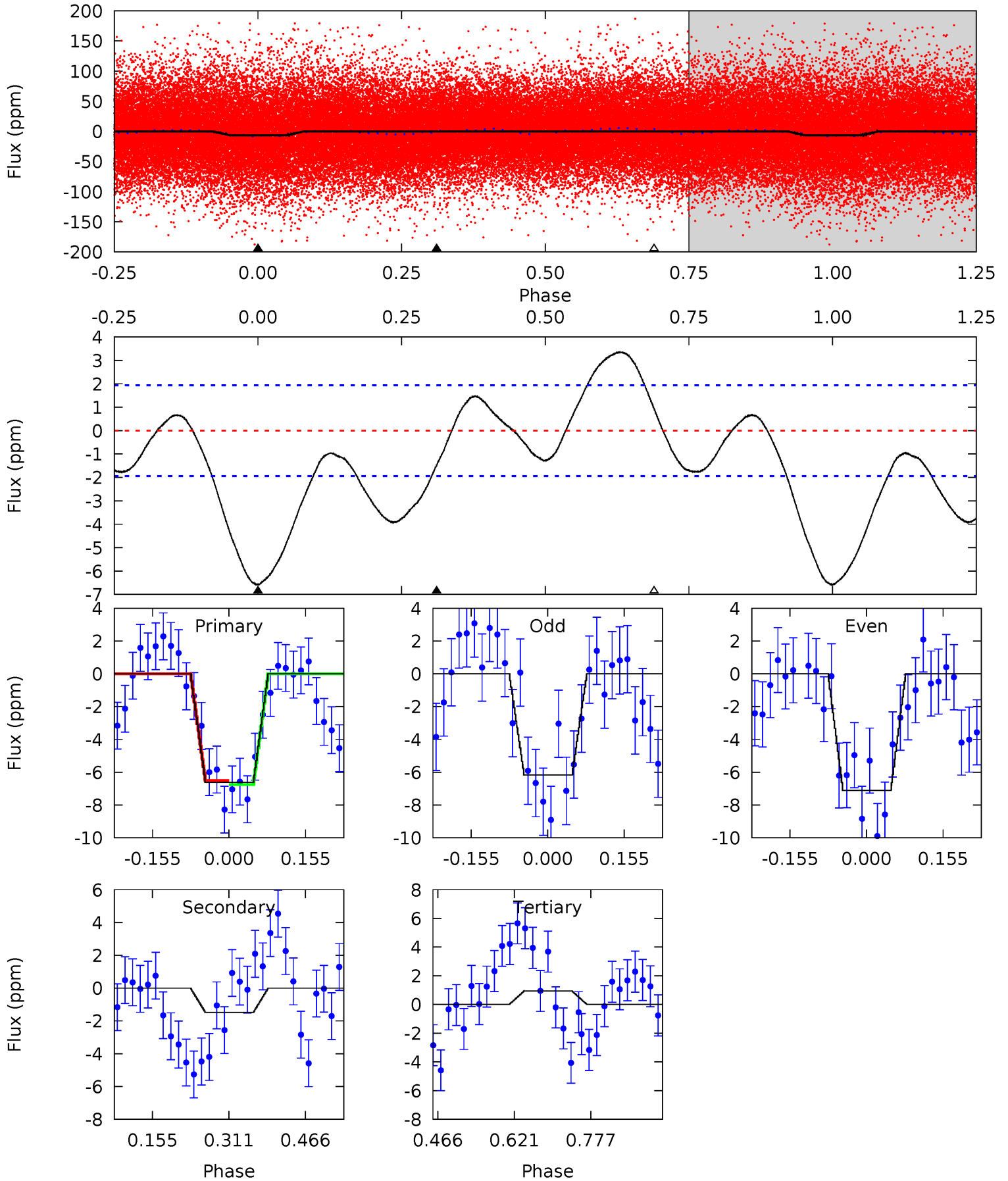
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	6.44	1.69	0	4.50	1.48	4.07	9.51	11.2	4.75	6.44	1.08	0.92	0.43	0.03



# Alt Model-Shift Uniqueness Test

009052363-01, P = 0.677213 Days, E = 130.938930 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
15.2	3.43	-2.16	0	4.47	1.42	3.97	17.4	15.2	5.58	3.43	1.07	0.89	0.34	0.29





### Stellar Parameters For KIC 009052363

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7810^{+216}_{-324}$	$3.737^{+0.417}_{-0.098}$	$-0.060^{+0.200}_{-0.300}$	$3.095^{+0.463}_{-1.297}$	$1.905^{+0.120}_{-0.384}$	$0.091^{+0.300}_{-0.028}$
	+3%/-4%	+11%/-3%	+333%/-500%	+15%/-42%	+6%/-20%	+331%/-31%
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 009052363-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-3 \pm 0$	$0.84^{+0.16}_{-0.20}$	$6030^{+413}_{-713}$	$5275^{+629}_{-661}$	$0.718^{+0.487}_{-0.224}$
Alt.	$-1 \pm 0$	$0.85^{+0.15}_{-0.19}$	$5969^{+468}_{-643}$	$3925^{+889}_{-7607}$	$0.389^{+0.276}_{-0.148}$

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

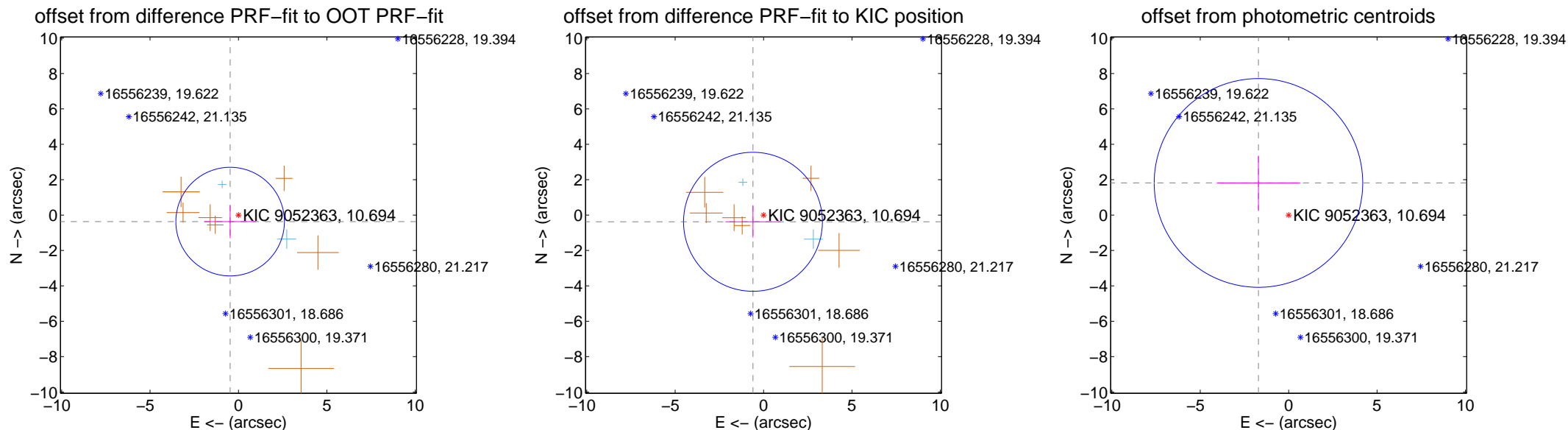
## DV Centroid Data

Supplemental centroid analysis for 009052363-01. **Kepler magnitude: 10.69.** Transit SNR 10.43

**There are 2 quarters with good PRF difference image offsets**

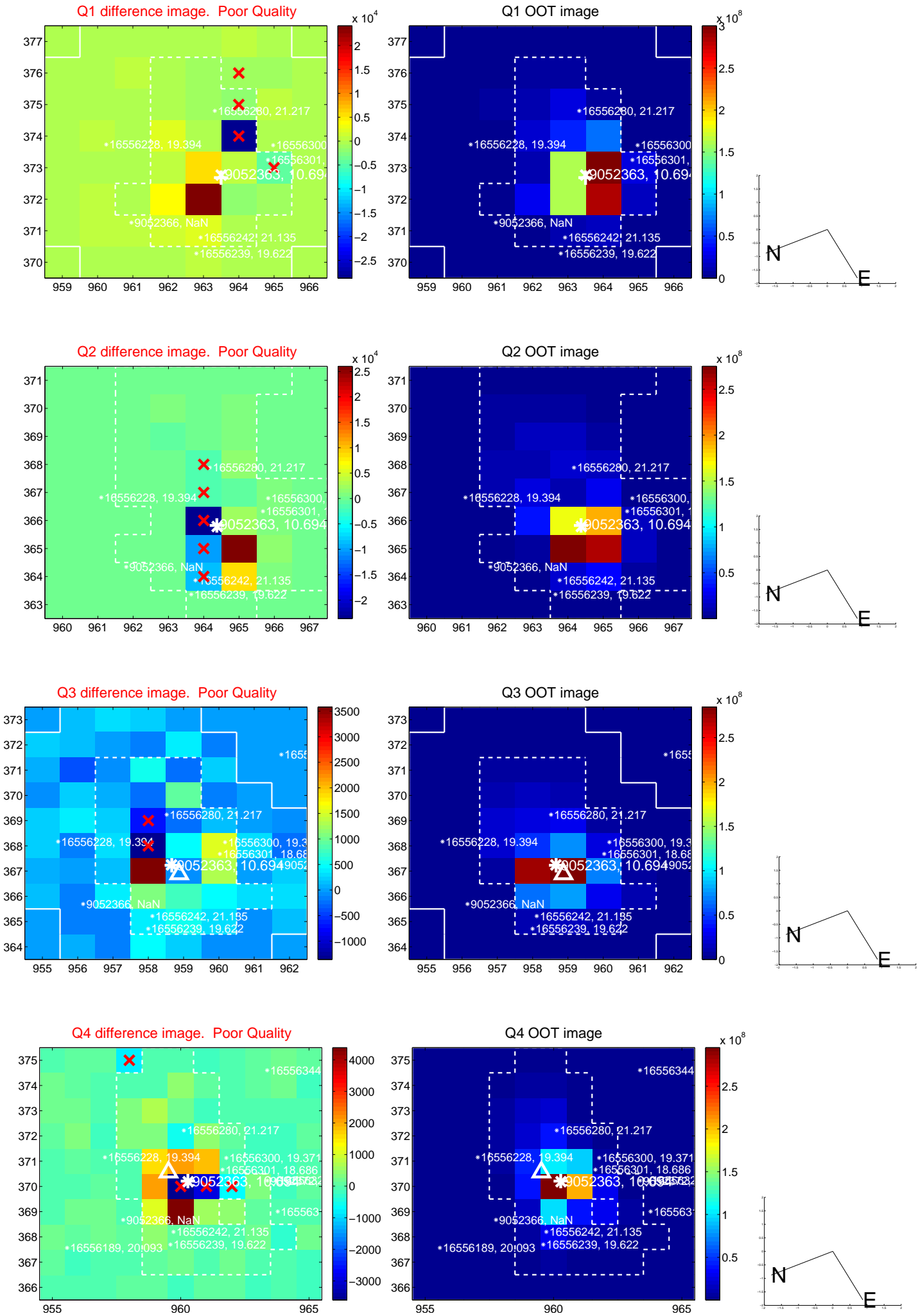
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.598 \pm 1.023$	0.58	$0.471 \pm 1.472$	$-0.369 \pm 0.937$
PRF-fit source offset from KIC position	$0.708 \pm 1.309$	0.54	$0.598 \pm 1.557$	$-0.379 \pm 0.893$
photometric centroid source offset	$2.49 \pm 1.97$	1.27	$1.71 \pm 2.36$	$1.82 \pm 1.54$

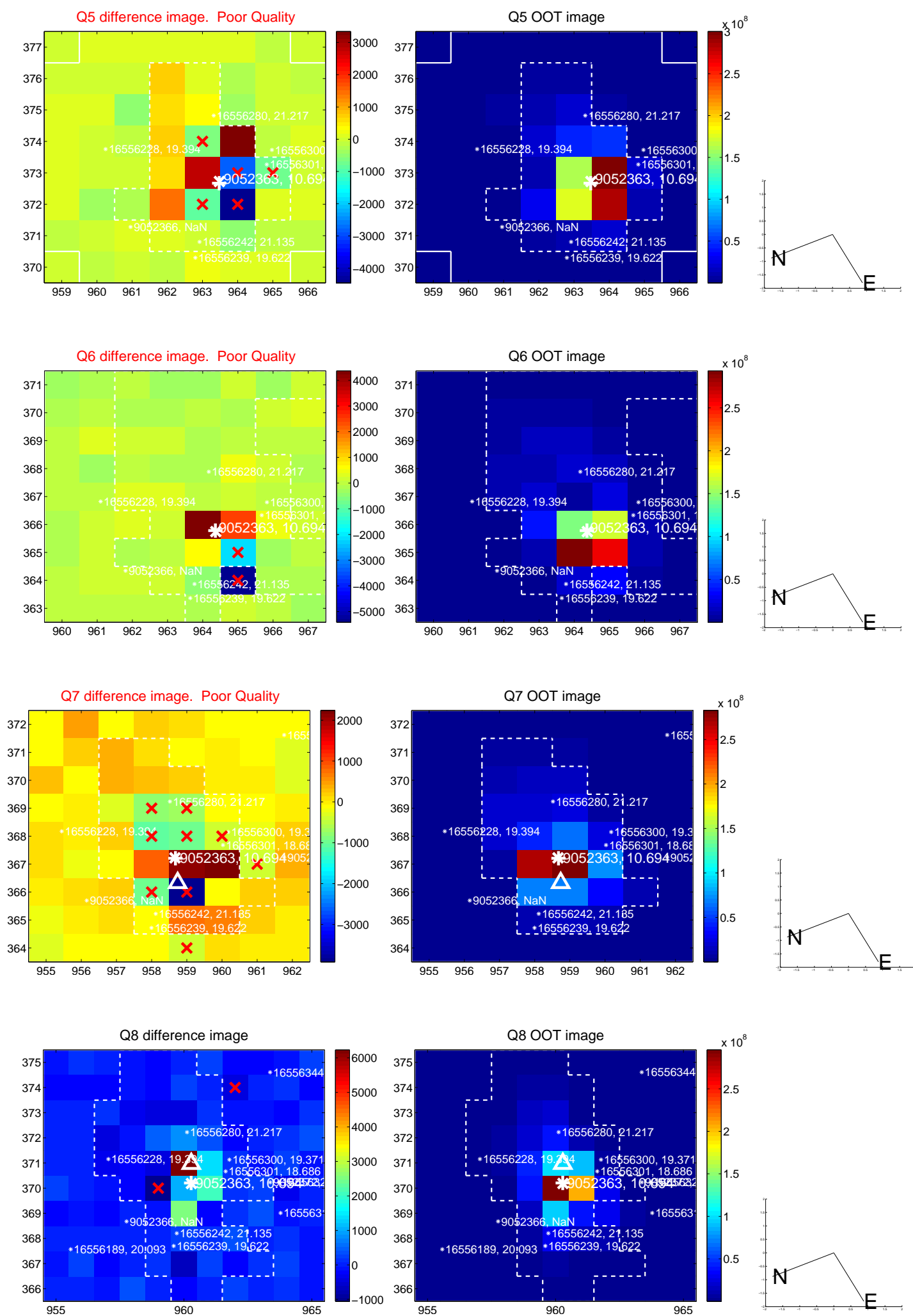


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

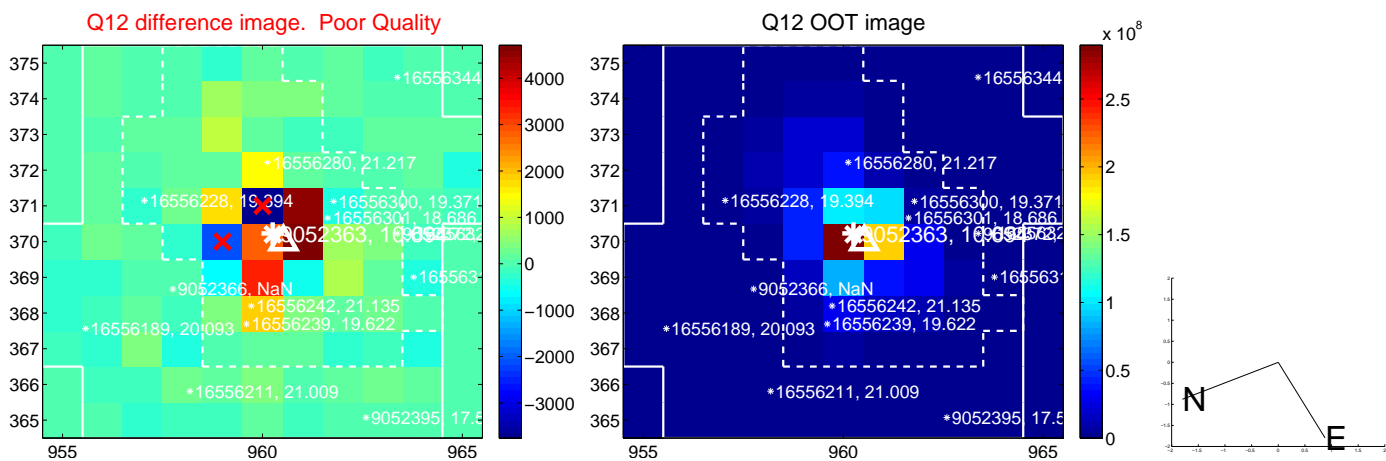
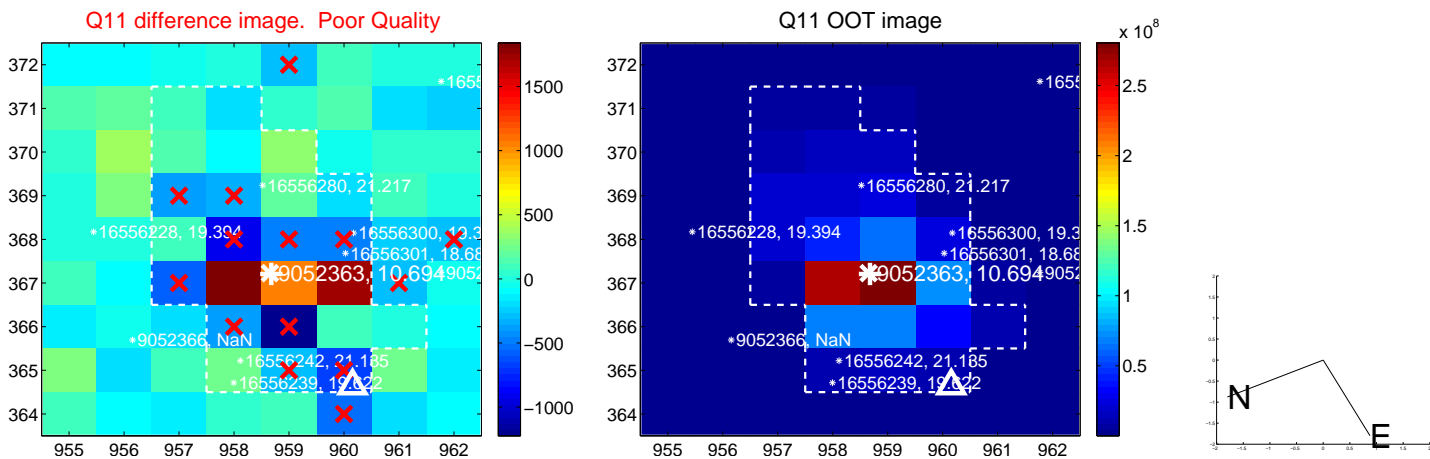
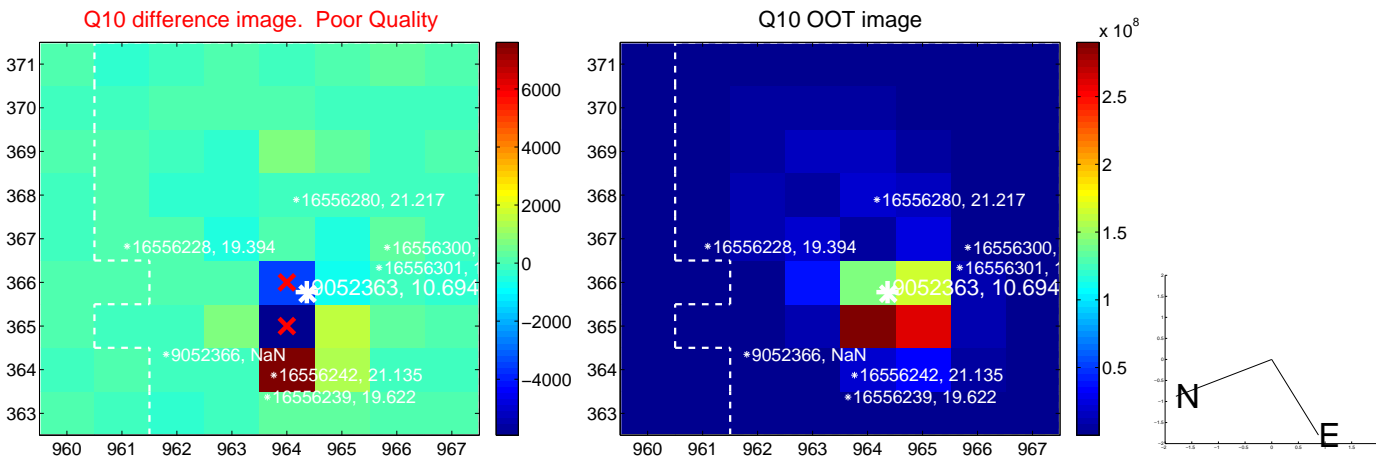
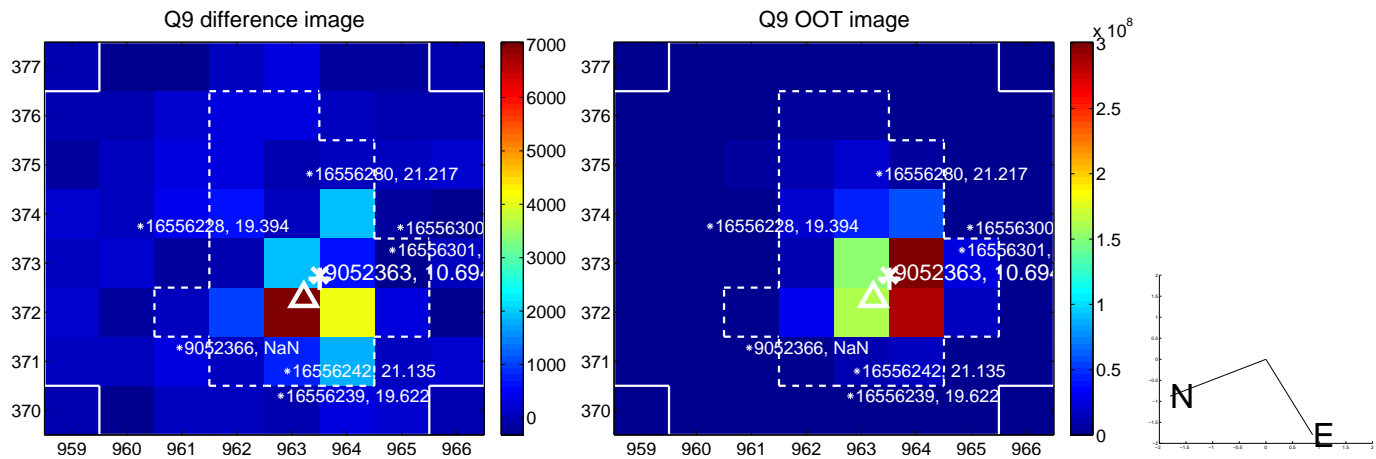


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

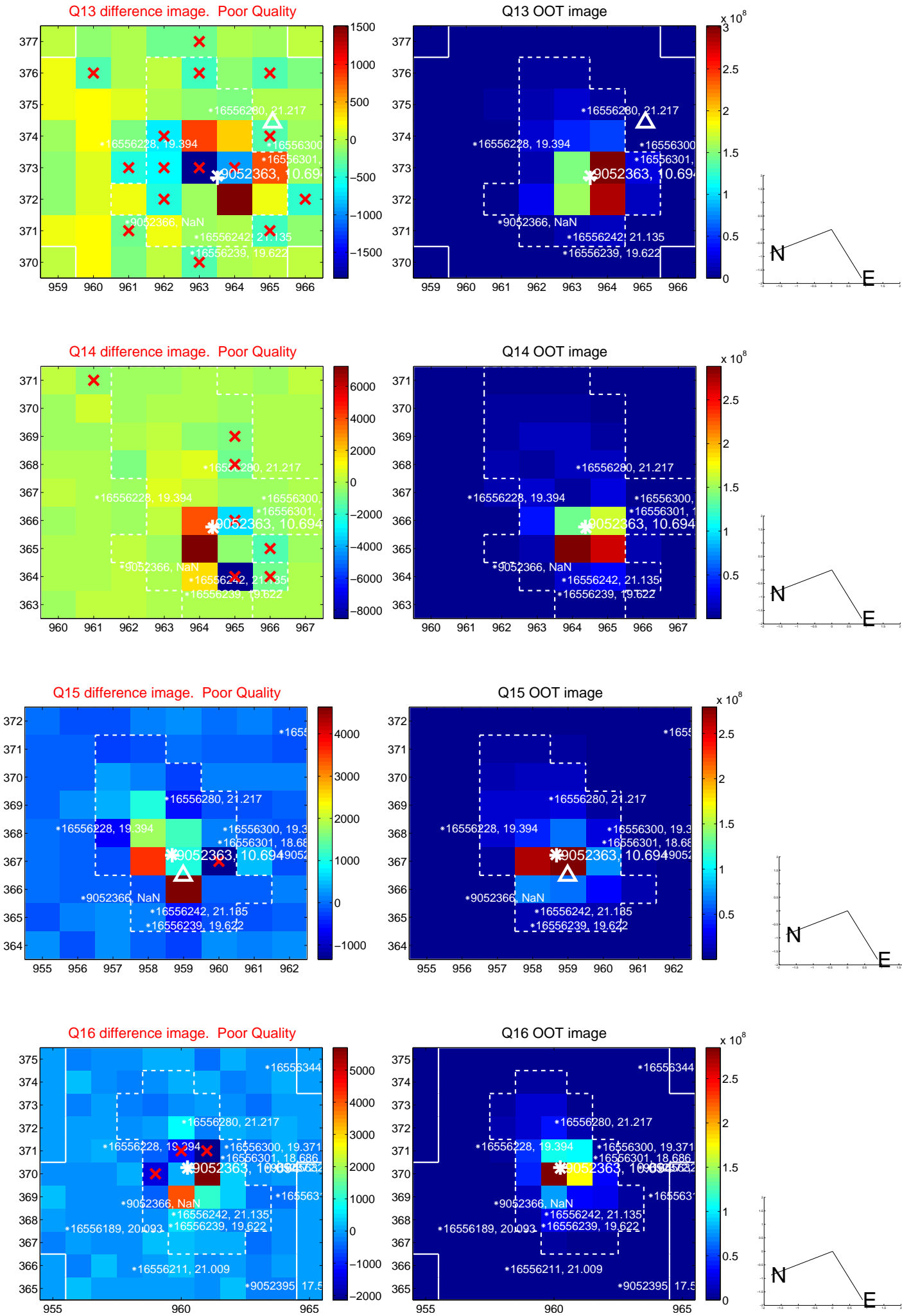




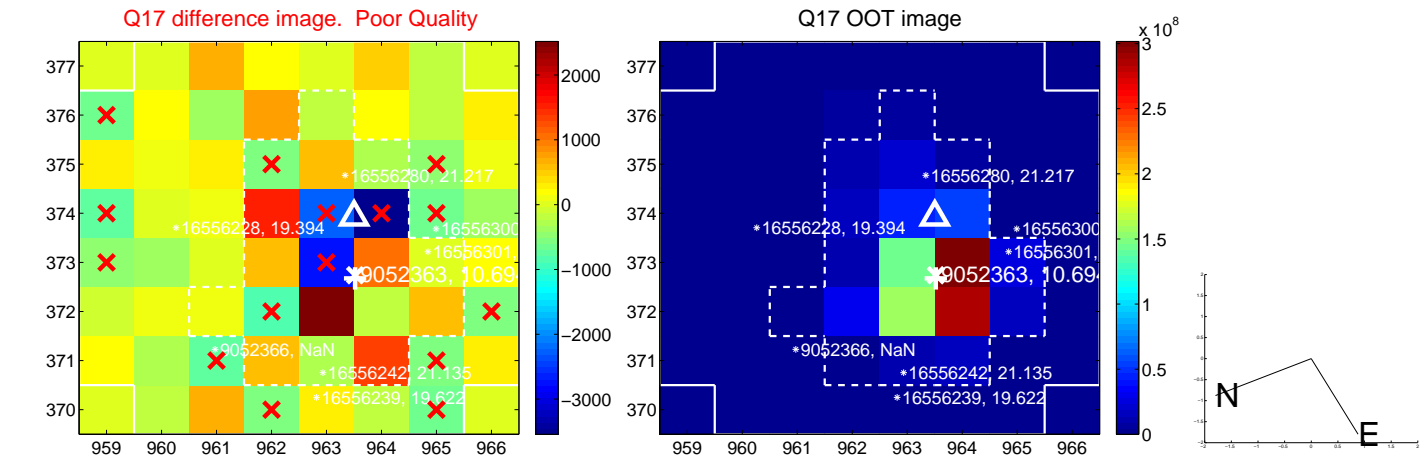
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



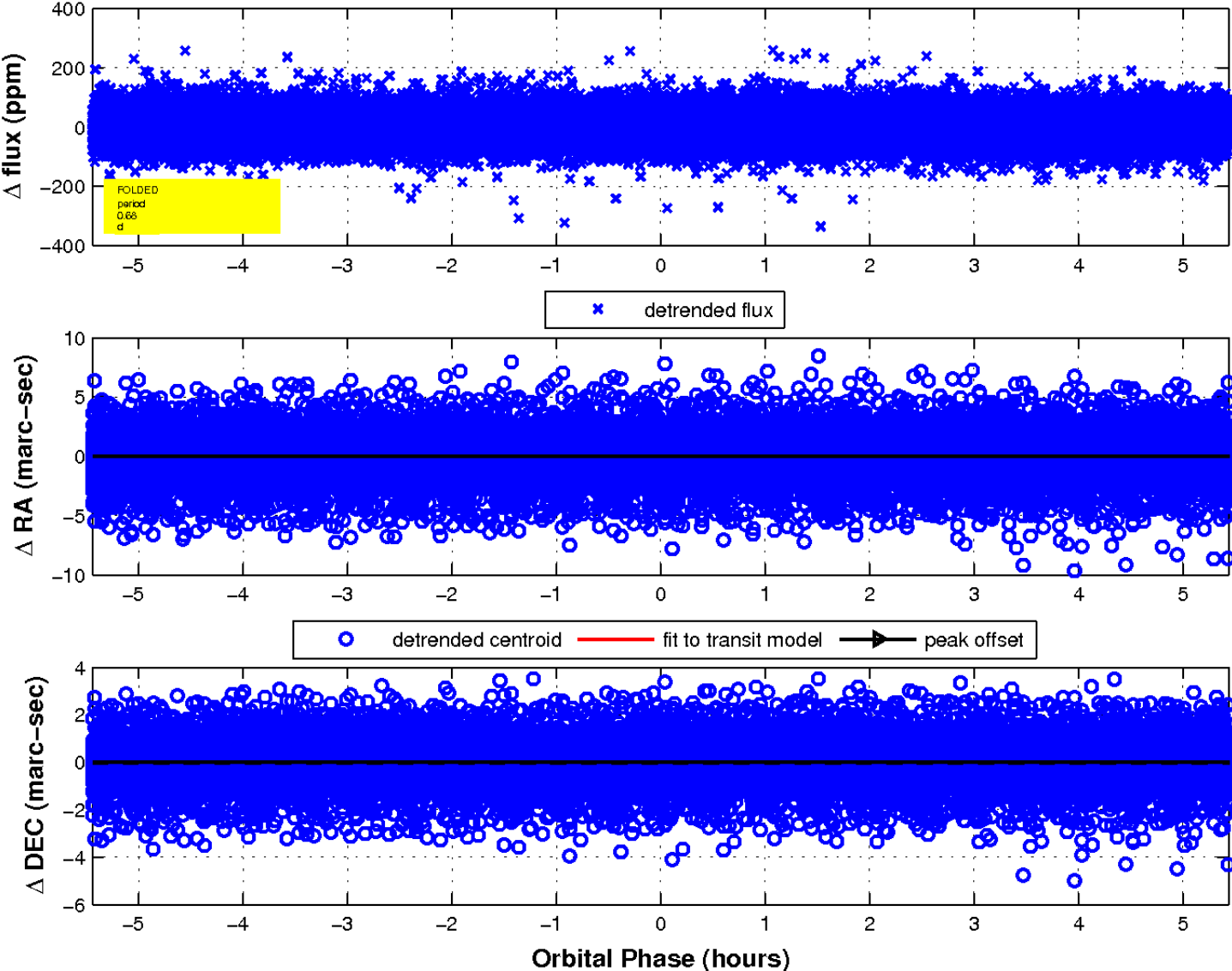
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

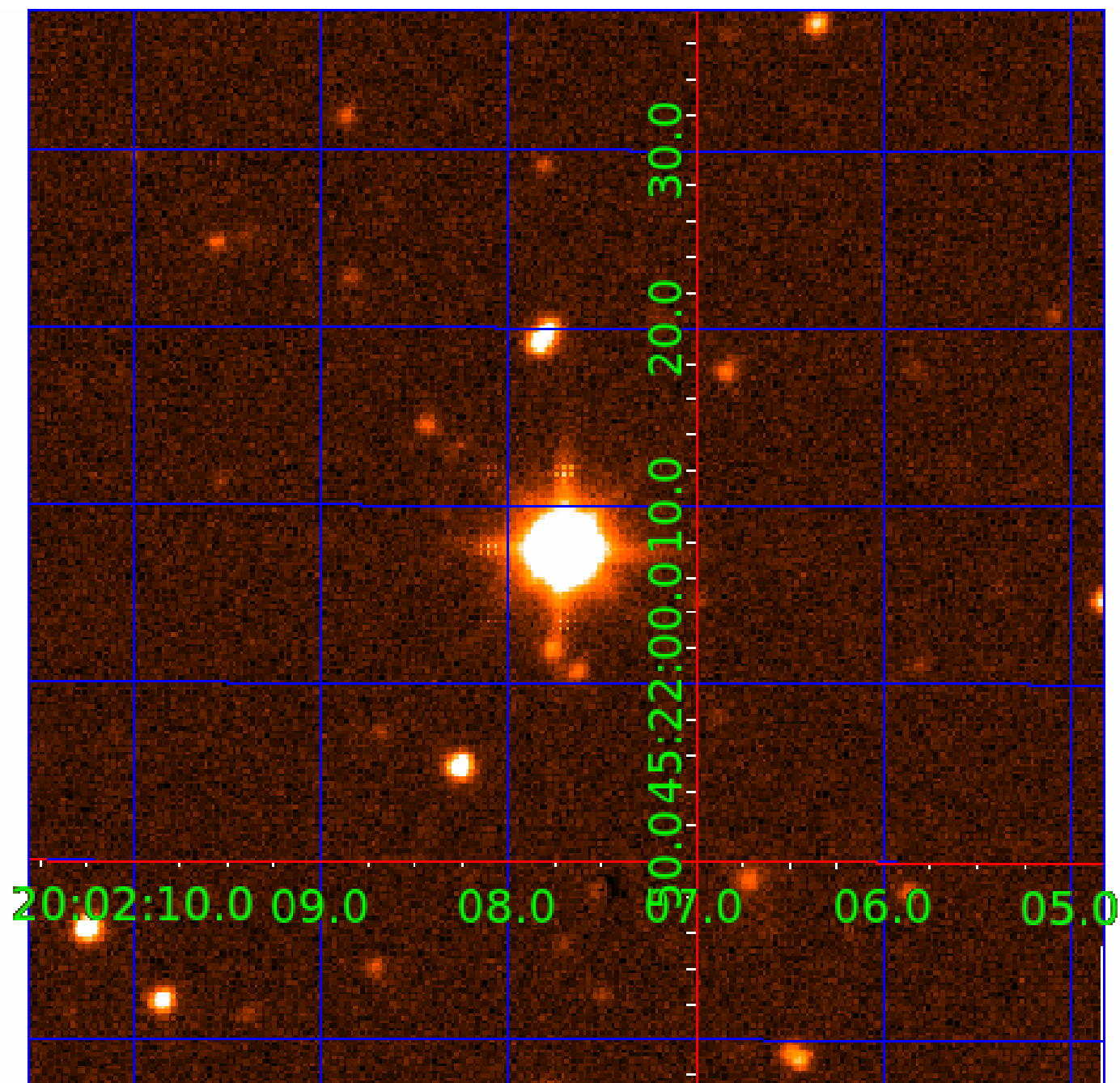


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 009052363

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009052363-01	OBS	No	0.677215	131.616408	6.2	1.814	8.5	10.4	3.10	7810	0.90	91124.79
009052363-02	OBS	No	313.042139	296.620970	61.5	12.500	8.8	-1.0	3.10	7810	2.45	25.50
009052363-03	OBS	No	316.380203	297.891909	148.9	14.954	21.7	14.1	3.10	7810	7.04	25.14

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009052363-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009052363-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009052363-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

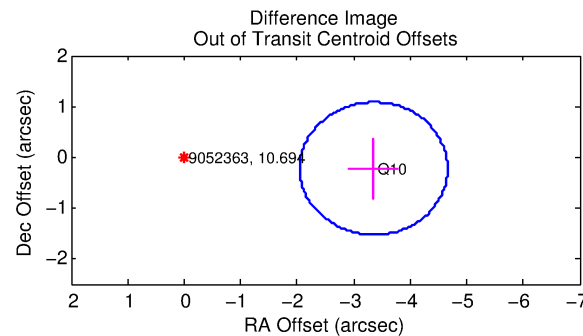
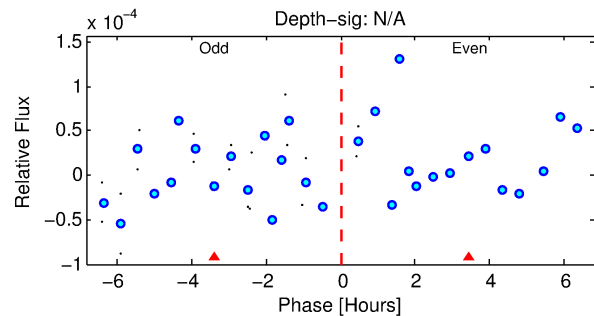
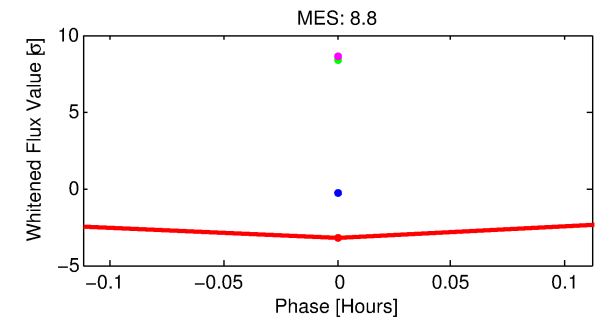
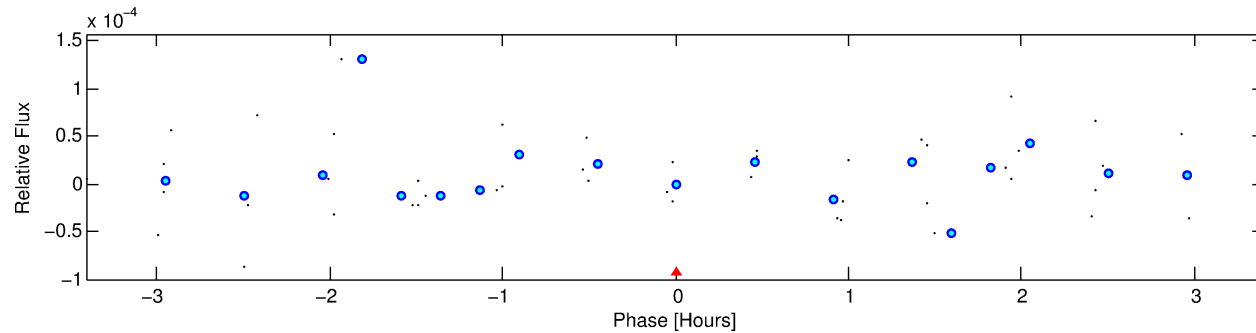
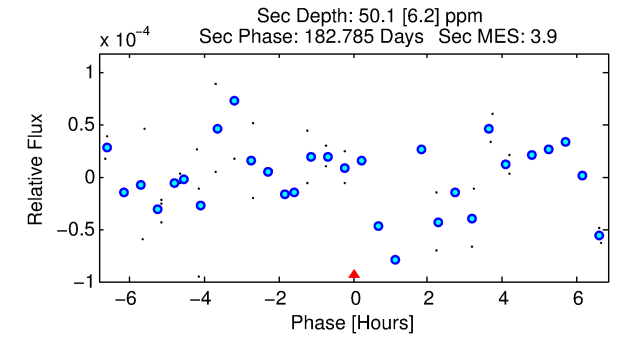
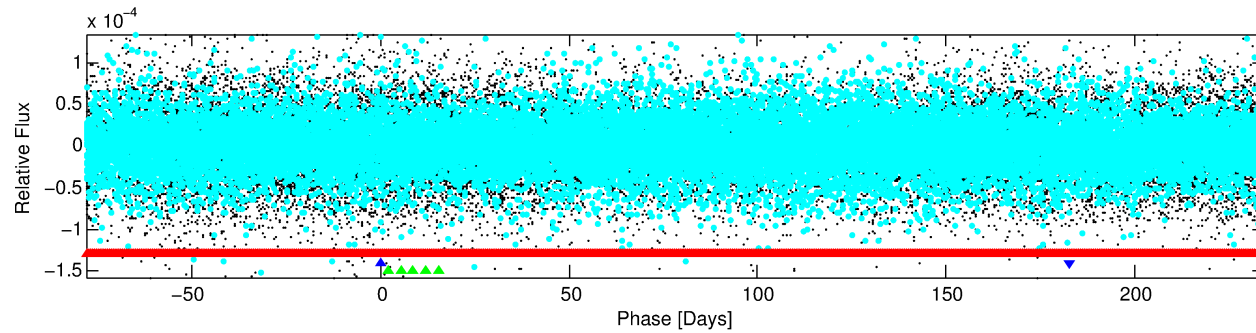
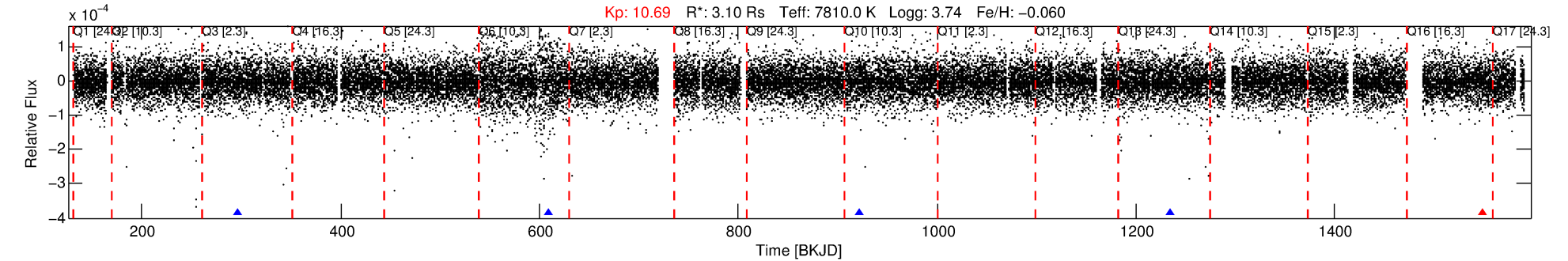
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009052363-02

No Significant Match Found

# DV One-Page Summary

KIC: 9052363 Candidate: 2 of 3 Period: 313.042 d



## TPS TCE Results:

Period = 313.04214 d  
Epoch = 296.6210 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

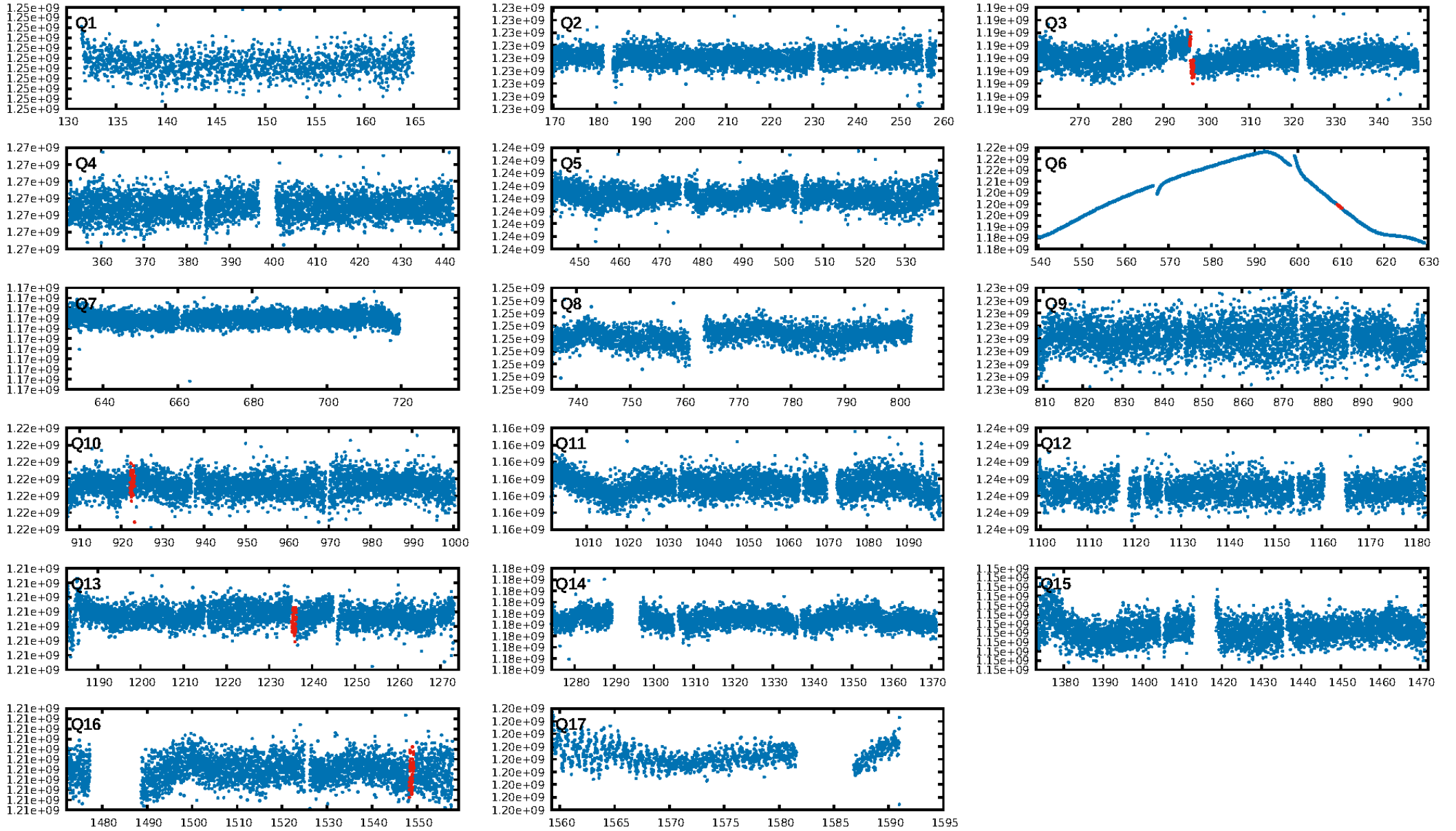
ShortPeriod-sig: 100.0% [593.52σ]  
LongPeriod-sig: 100.0% [4.11σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.61e-13  
RollingBand-fgt: 0.67 [2/3]  
GhostDiagnostic-chr: N/A

Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 3.359 arcsec [7.71σ]  
KicOffset-rm: 3.404 arcsec [7.81σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 0.00 [0/5]

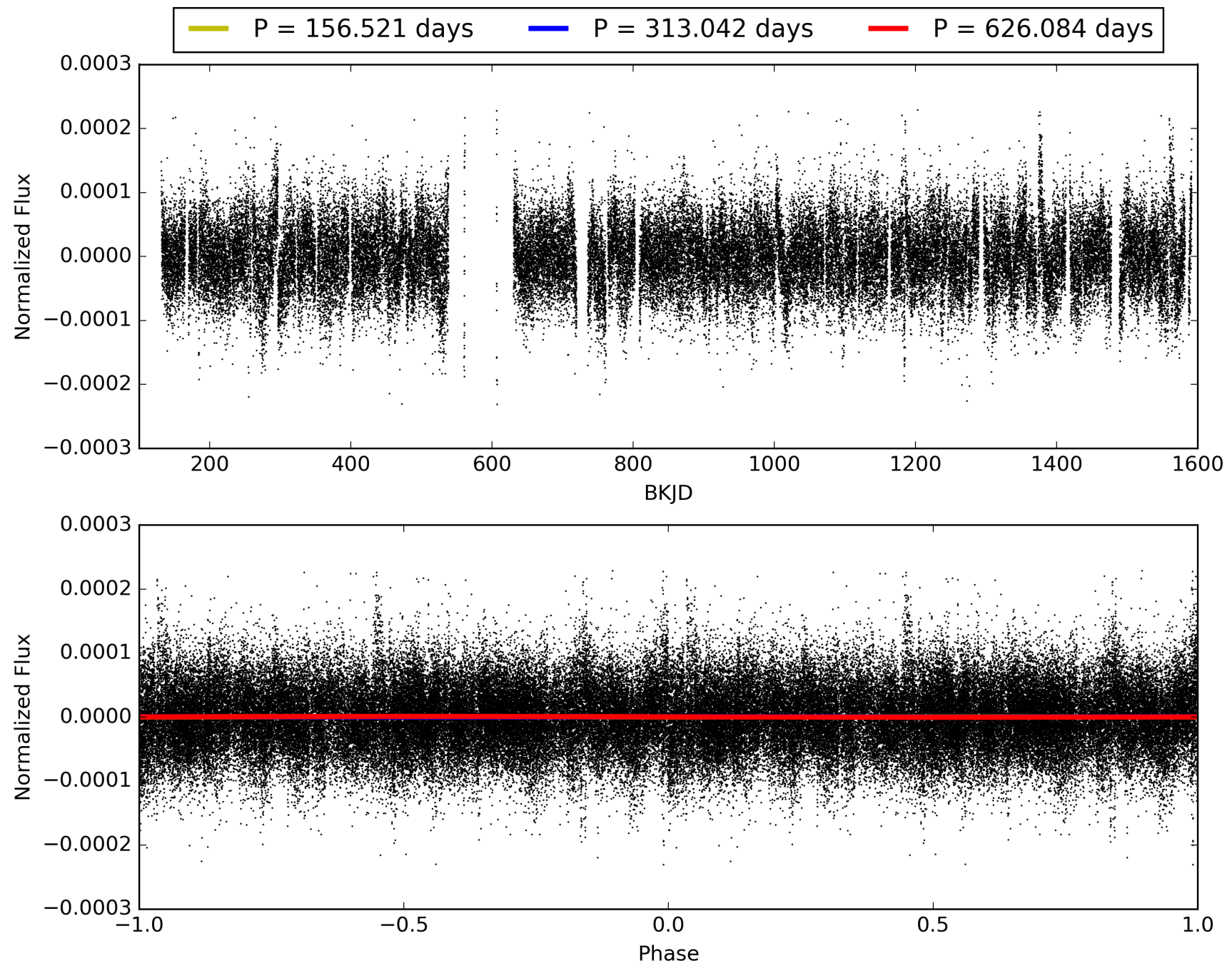
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:39:19 Z

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

# TCE 009052363-02, PDC Light Curves

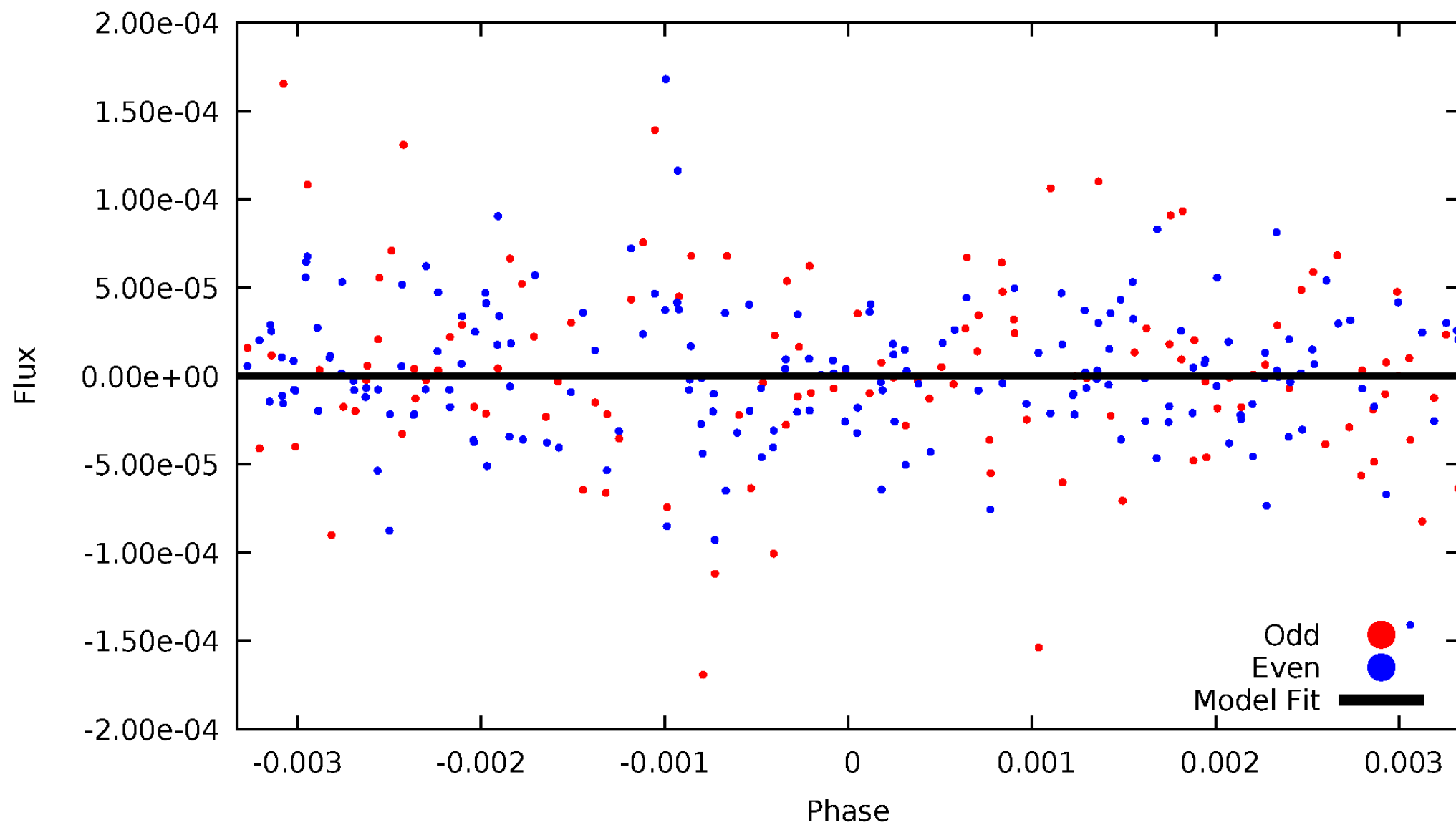


TCE 009052363-02



# DV Odd/Even

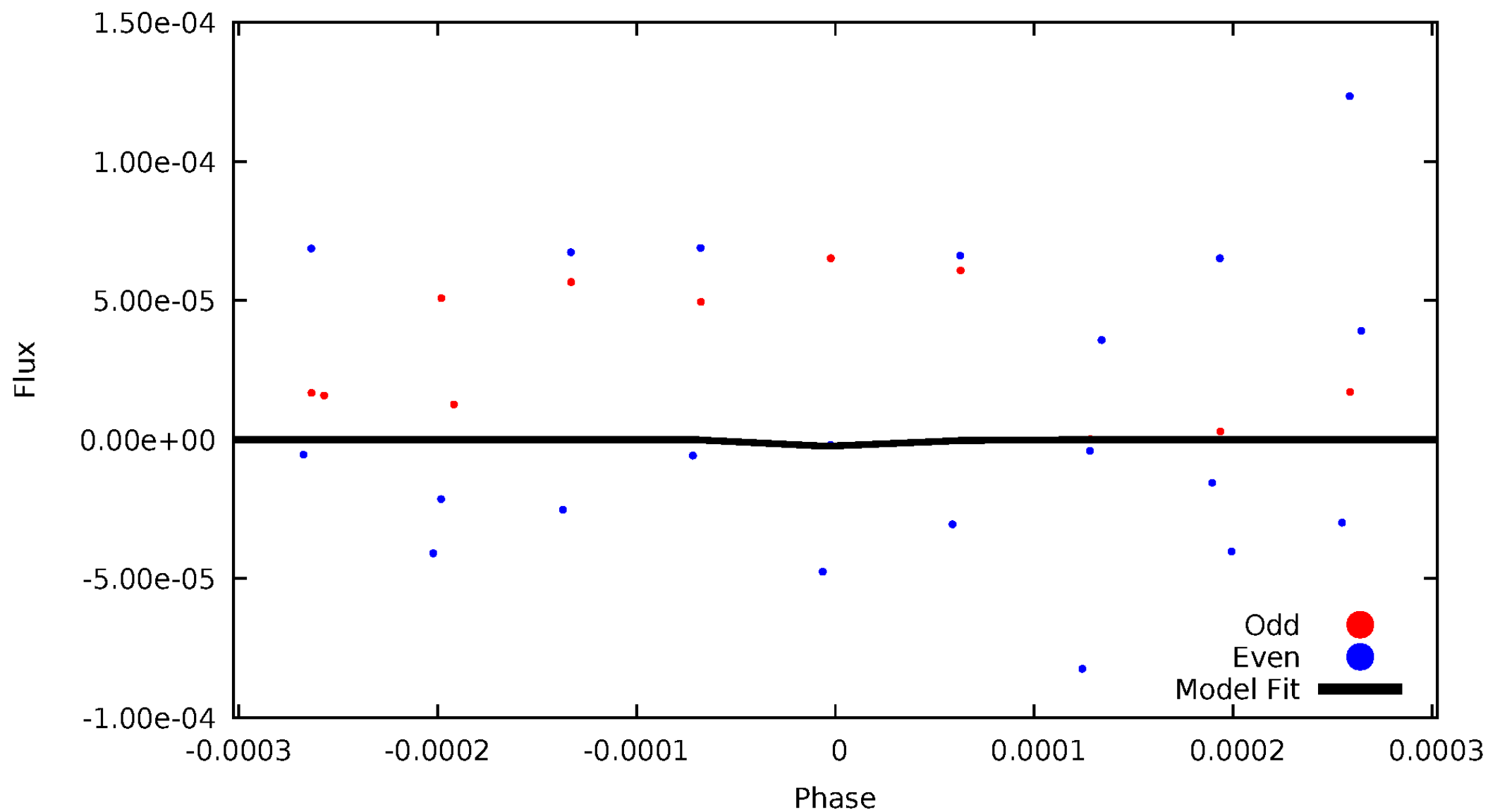
TCE 009052363-02





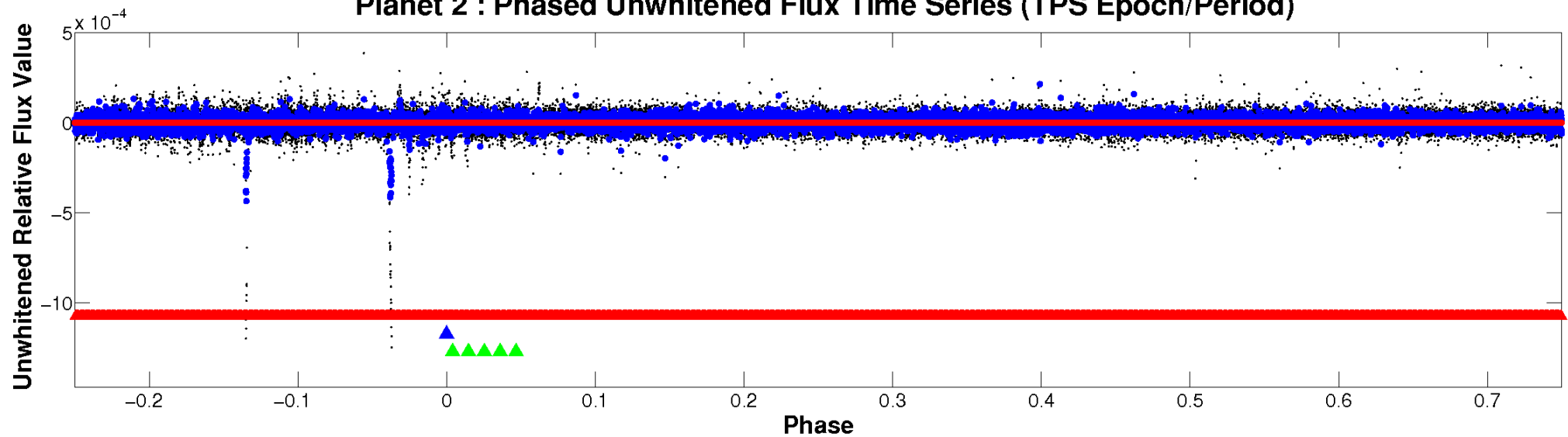
# ALT Odd/Even

TCE 009052363-02

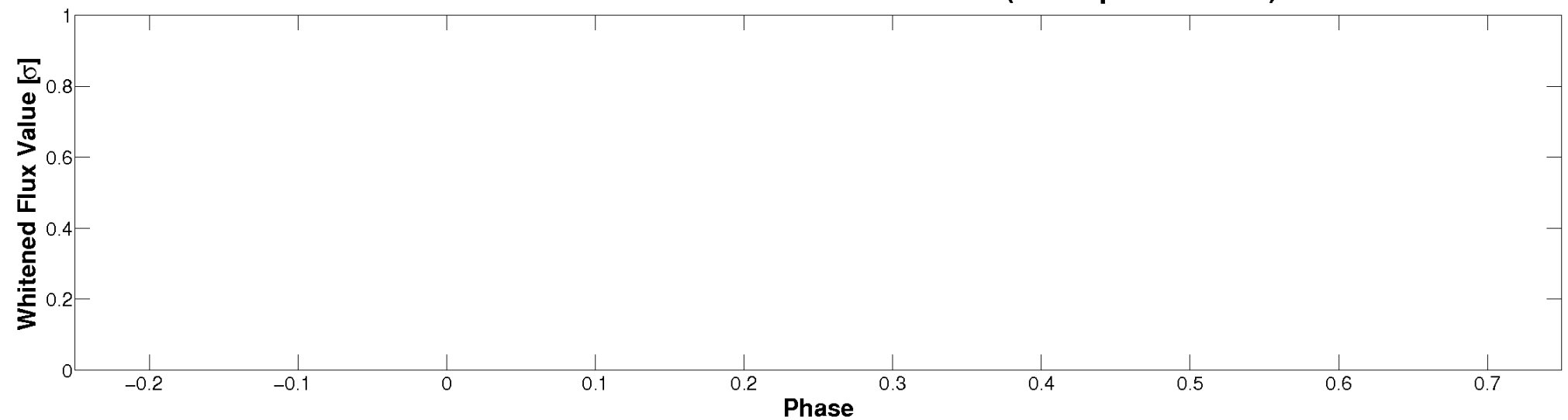


# Non-Whitened Vs. Whitened Light Curve

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

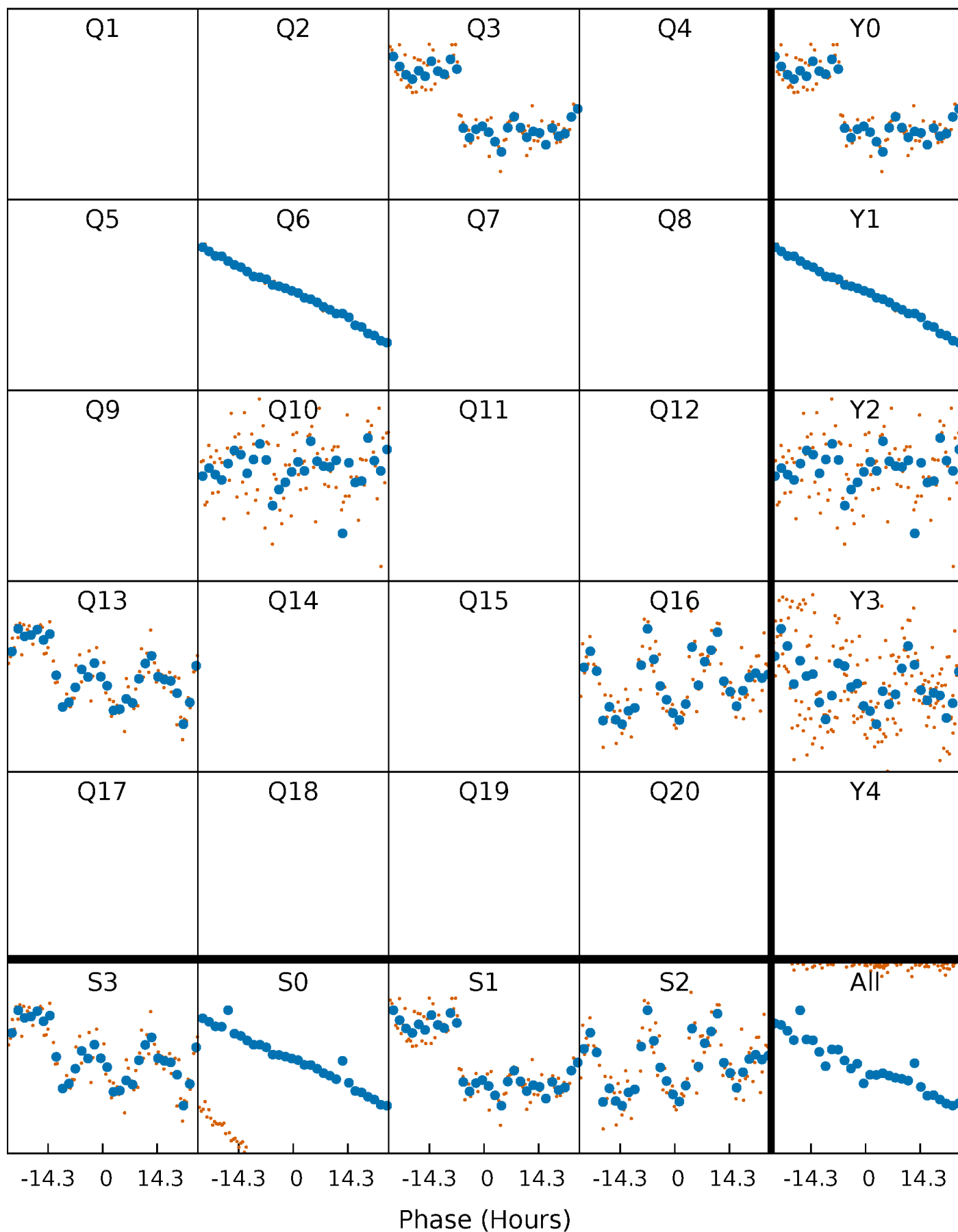


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



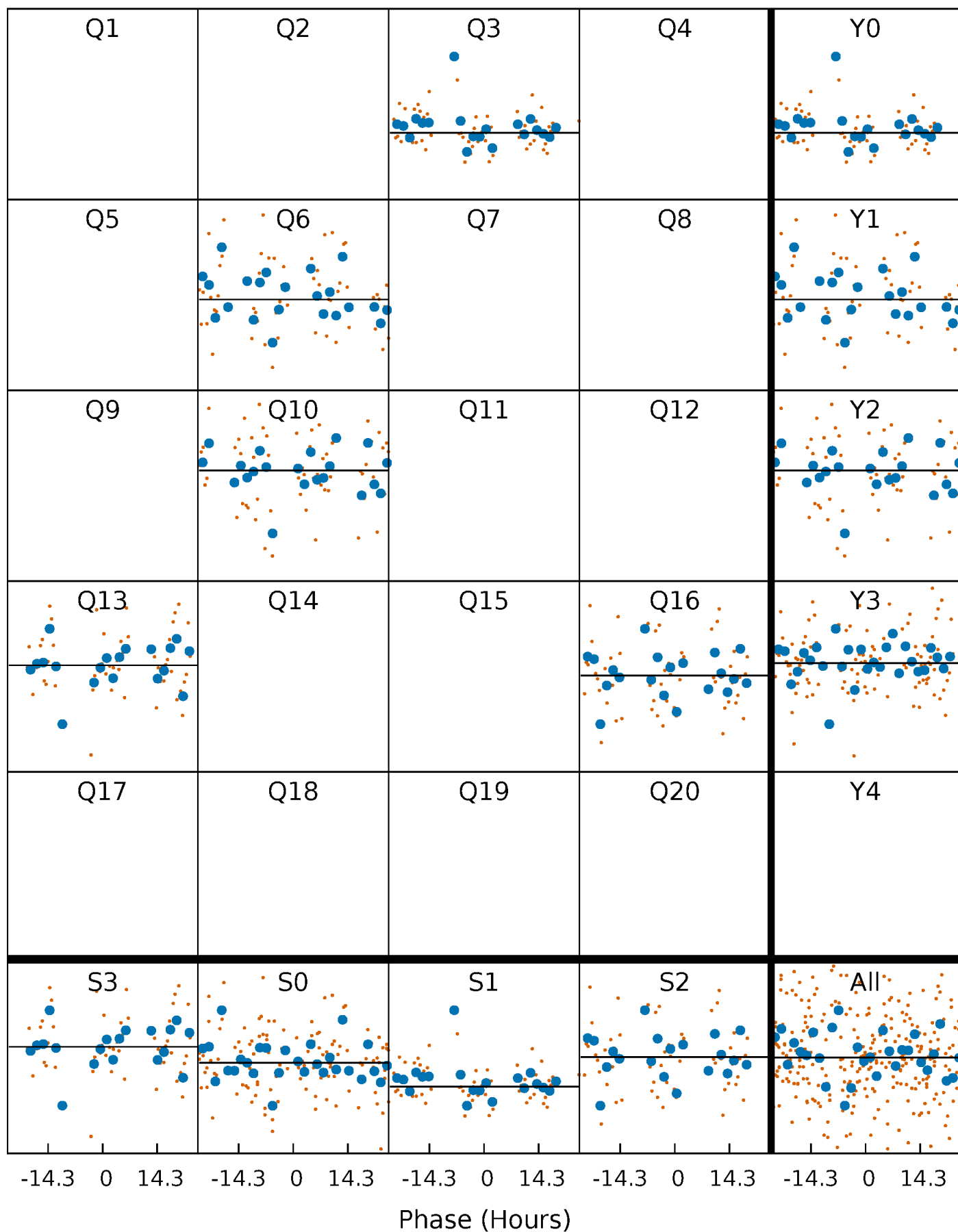
# PDC Quarter-Phased Transit Curves

TCE 009052363-02 P=313.042139 Days  $T_0=296.620970$  (BKJD)



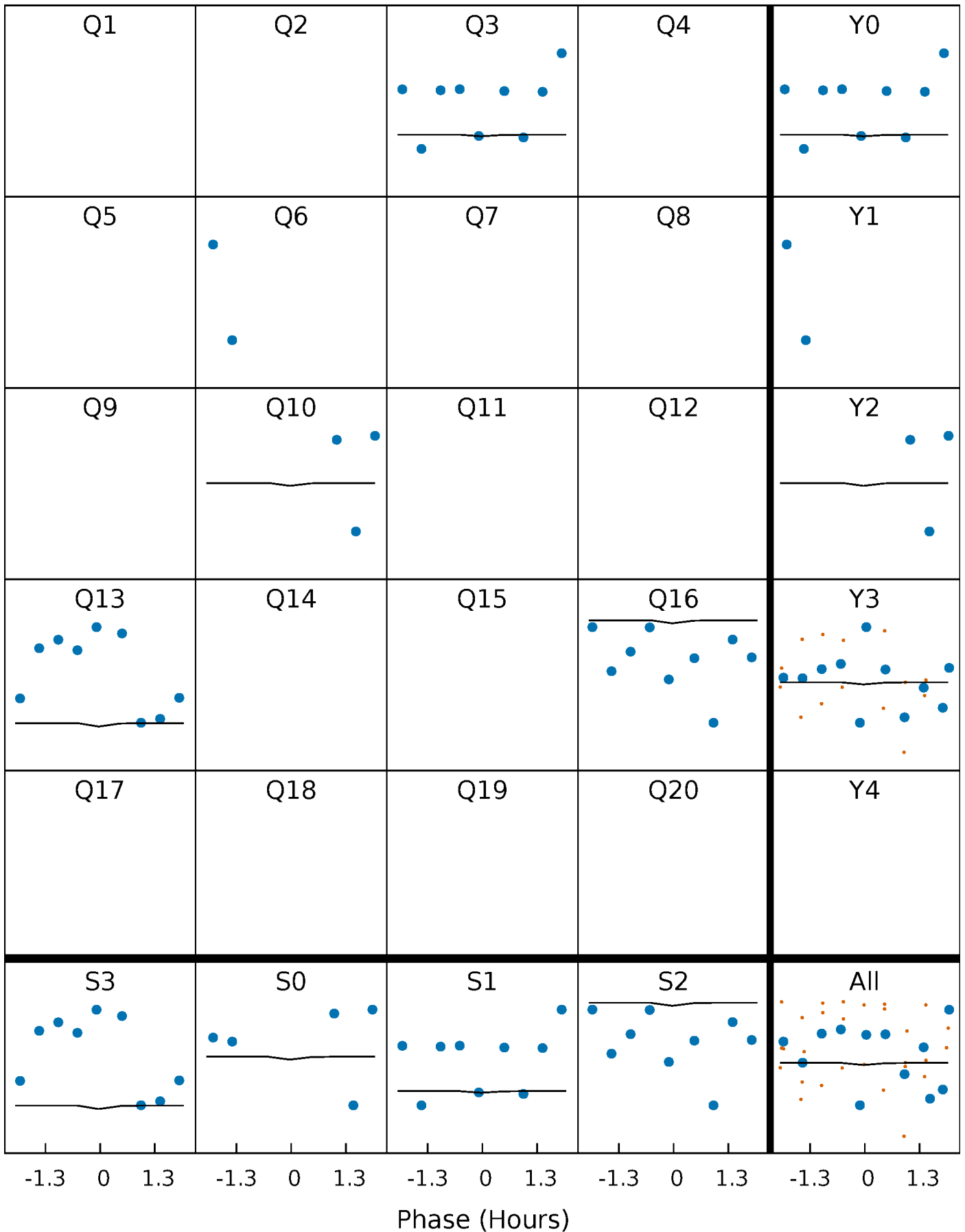
# DV Quarter-Phased Transit Curves

TCE 009052363-02     $P=313.042139$  Days     $T_0=296.620970$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009052363-02 P=313.042139 Days  $T_0=295.942840$  (BKJD)

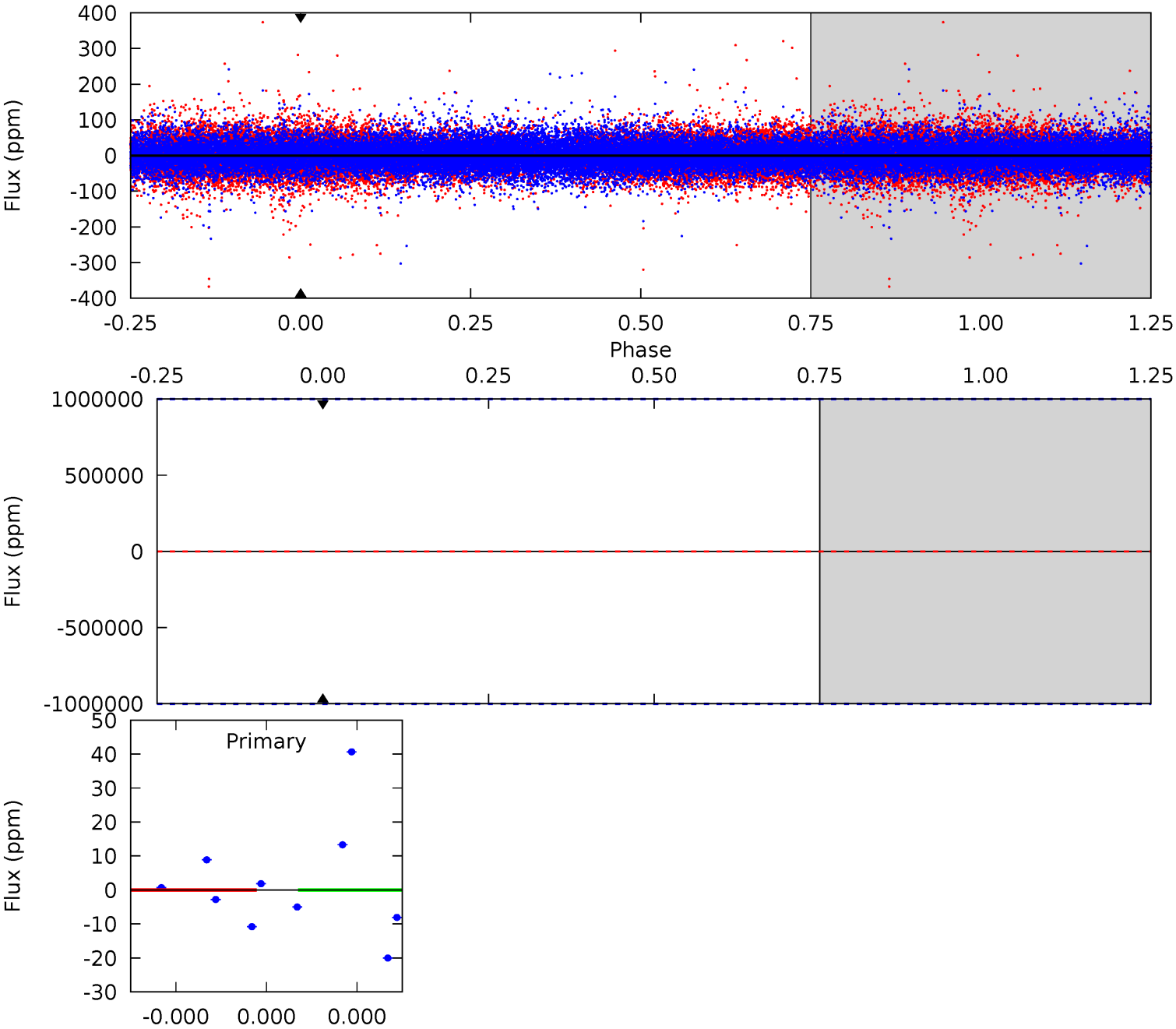




# DV Model-Shift Uniqueness Test

009052363-02, P = 313.042139 Days, E = 296.620970 Days

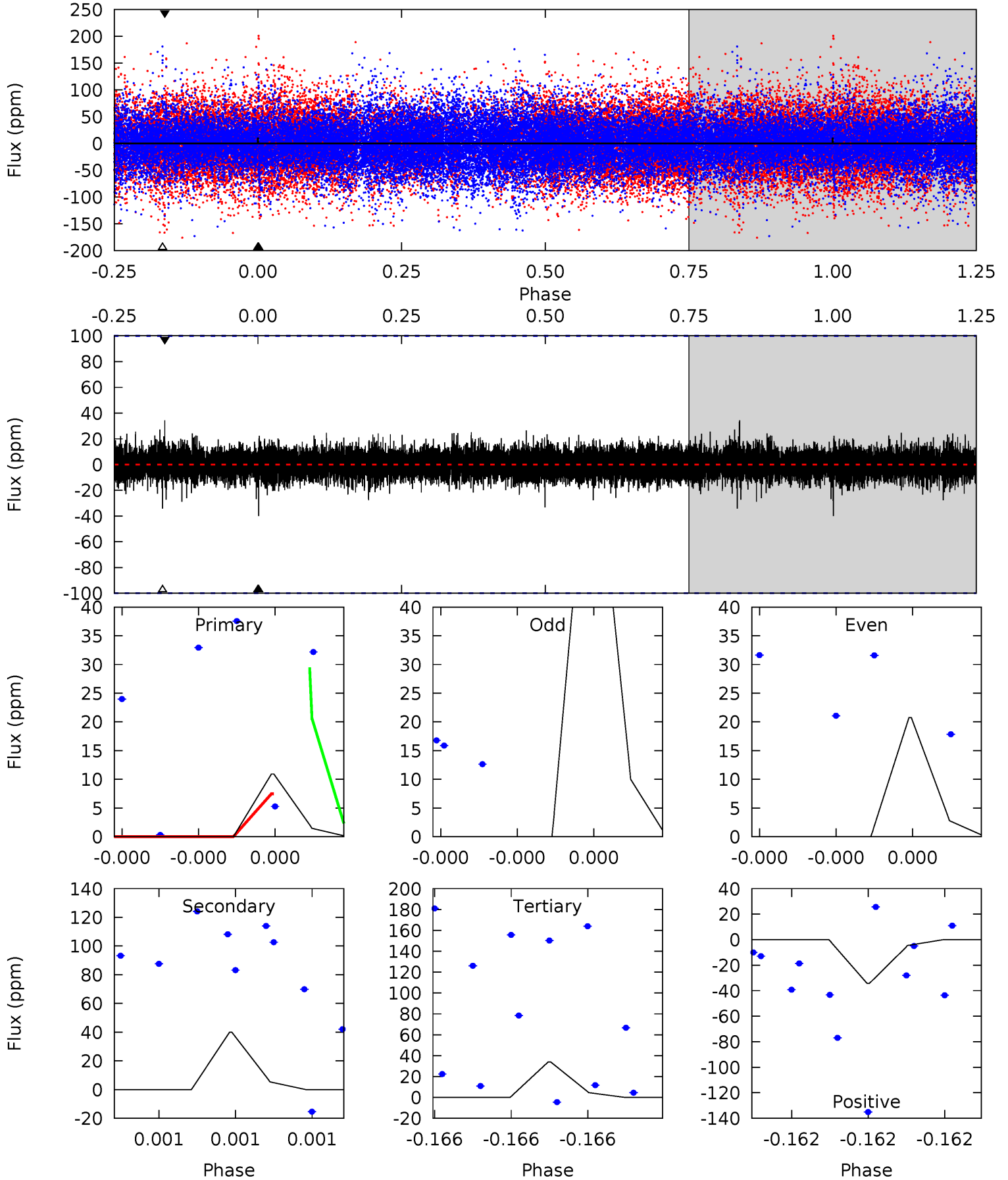
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

009052363-02, P = 313.042139 Days, E = 295.942840 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
0.63	2.31	1.97	1.99	5.80	3.83	0.39	-1.34	-1.35	0.34	0.33	1.49	1.07	0.46	0.60



### Stellar Parameters For KIC 009052363

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7810^{+216}_{-324}$	$3.737^{+0.417}_{-0.098}$	$-0.060^{+0.200}_{-0.300}$	$3.095^{+0.463}_{-1.297}$	$1.905^{+0.120}_{-0.384}$	$0.091^{+0.300}_{-0.028}$
	+3%/-4%	+11%/-3%	+333%/-500%	+15%/-42%	+6%/-20%	+331%/-31%
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 009052363-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$20.55^{+23.62}_{-14.97}$	$773^{+59}_{-80}$	$4727^{+50985}_{-54723}$	$811^{+333963}_{-328375}$
Alt.	$-40 \pm 17$	$21.97^{+22.21}_{-16.14}$	$776^{+56}_{-89}$	$2925^{+1538}_{-515}$	$53^{+671}_{-42}$

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

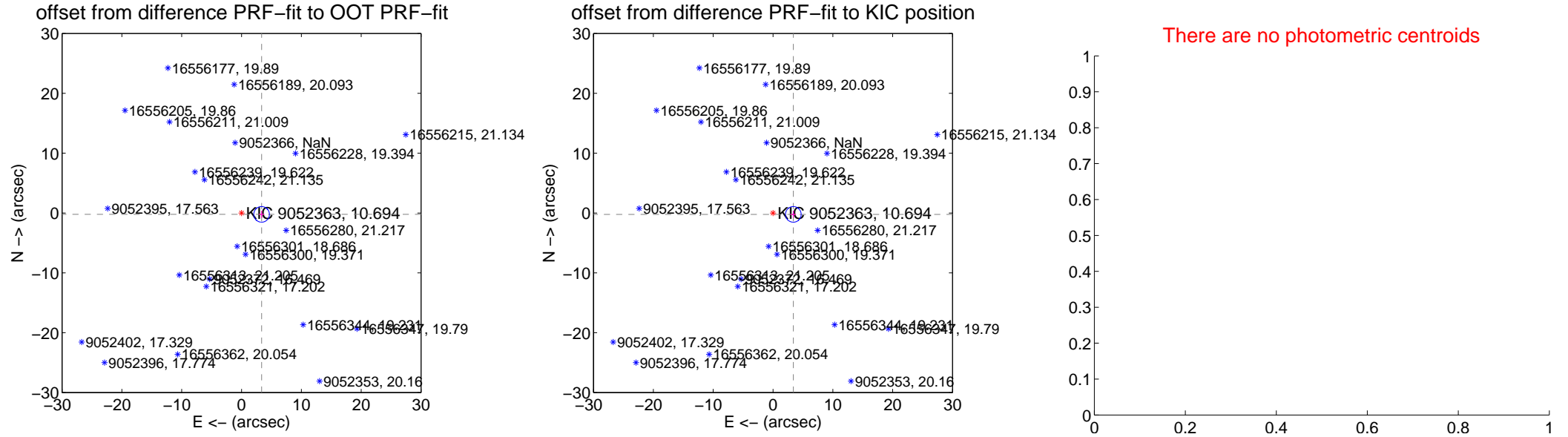
## DV Centroid Data

Supplemental centroid analysis for 009052363-02. **Kepler magnitude: 10.69.** Transit SNR -1.00

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

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

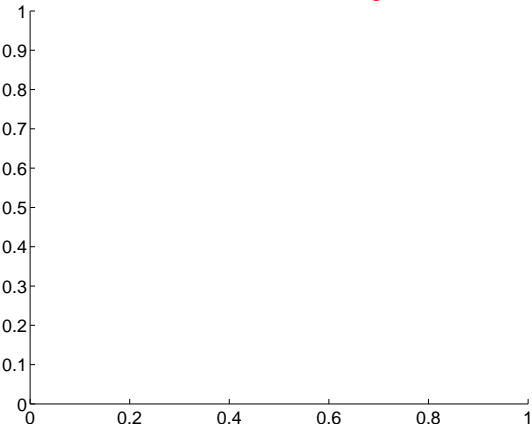
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>3.359 \pm 0.436</math></b>	<b>7.71</b>	$-3.351 \pm 0.435$	$-0.226 \pm 0.593$
PRF-fit source offset from KIC position	<b><math>3.404 \pm 0.436</math></b>	<b>7.81</b>	$-3.396 \pm 0.435$	$-0.228 \pm 0.593$
photometric centroid source offset	—	—	—	—



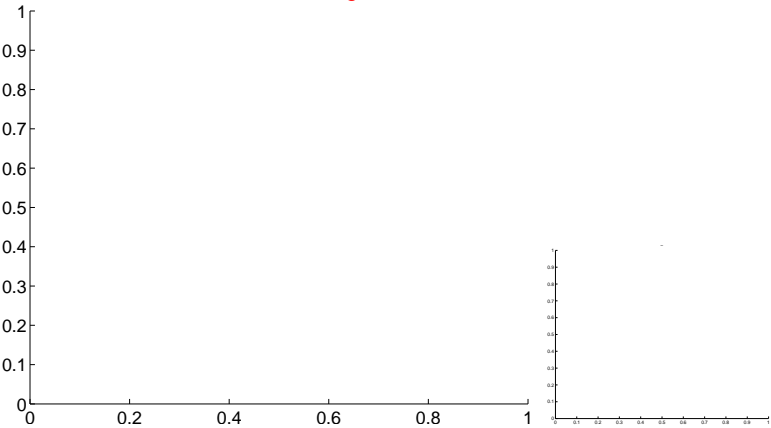
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

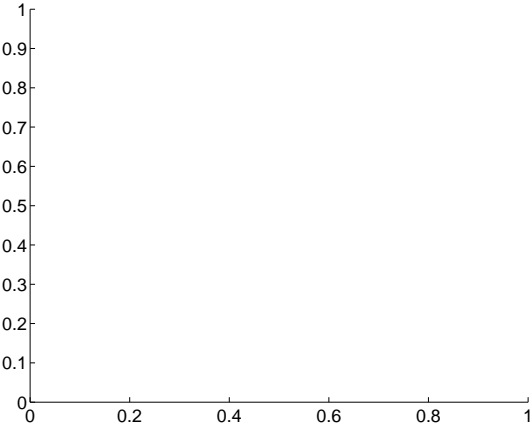
Q1 no difference image



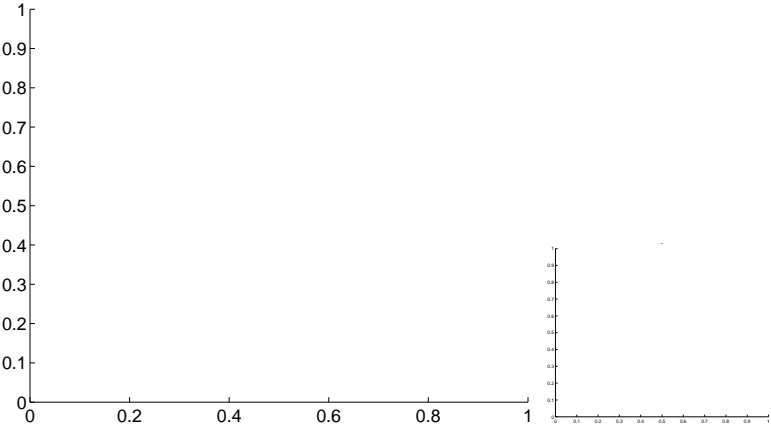
Q1 no OOT image



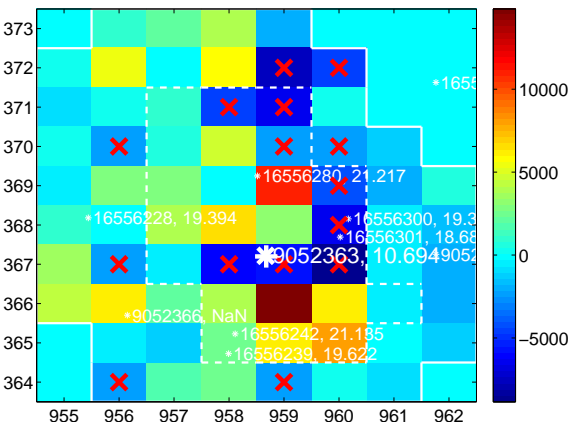
Q2 no difference image



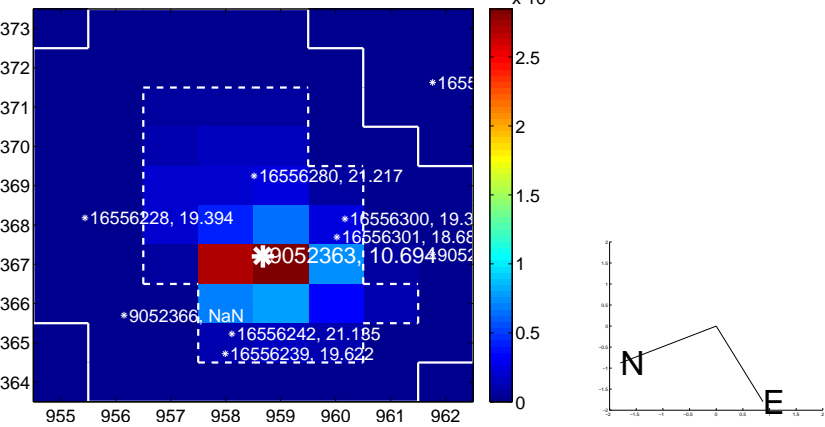
Q2 no OOT image



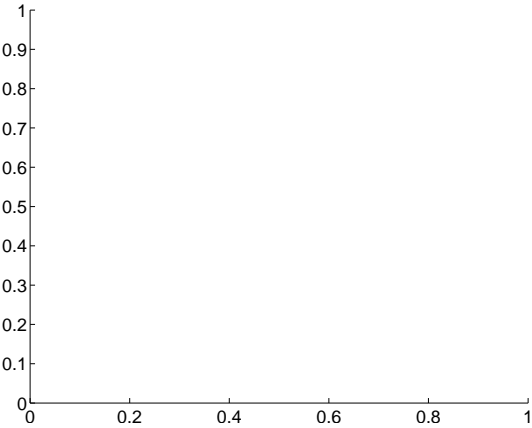
Q3 difference image. Poor Quality



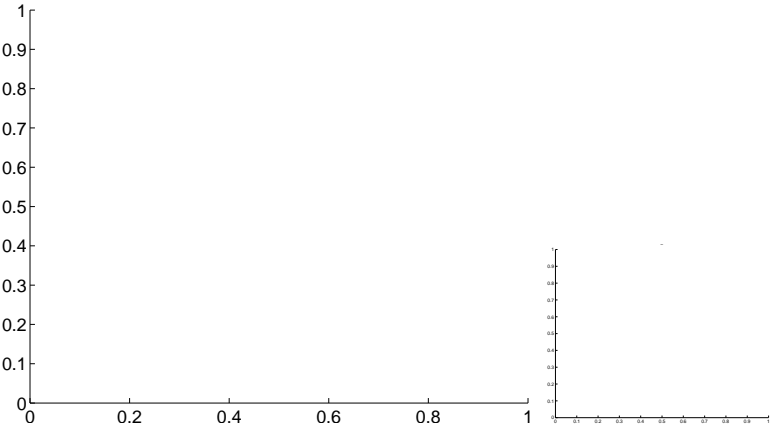
Q3 OOT image



Q4 no difference image

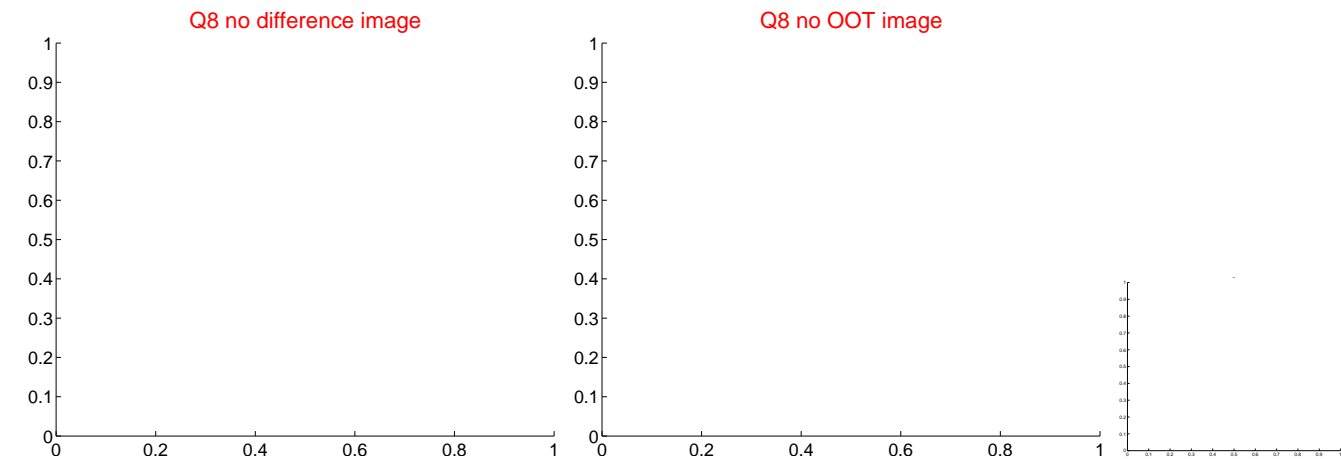
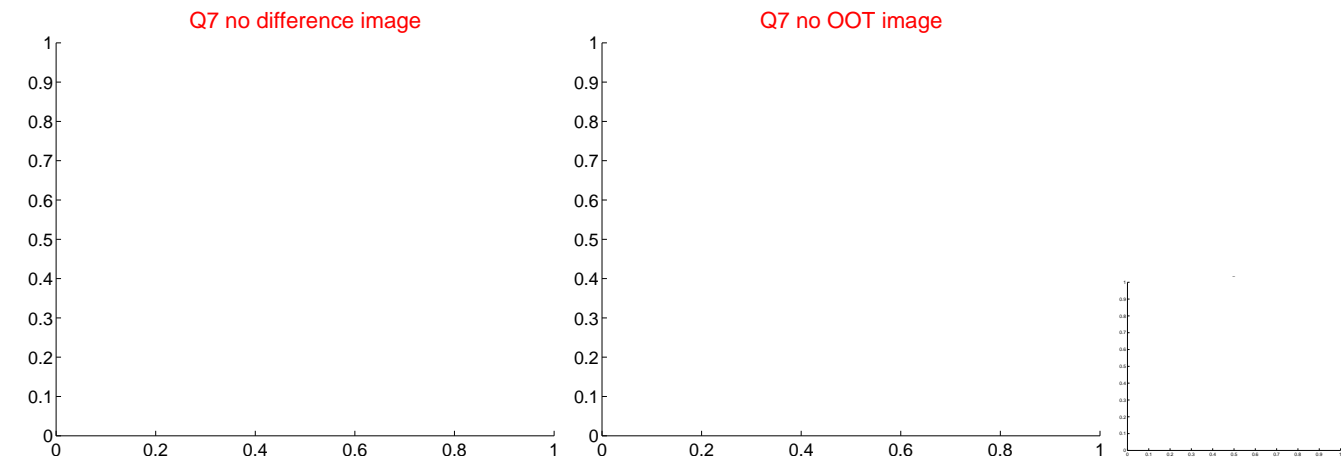
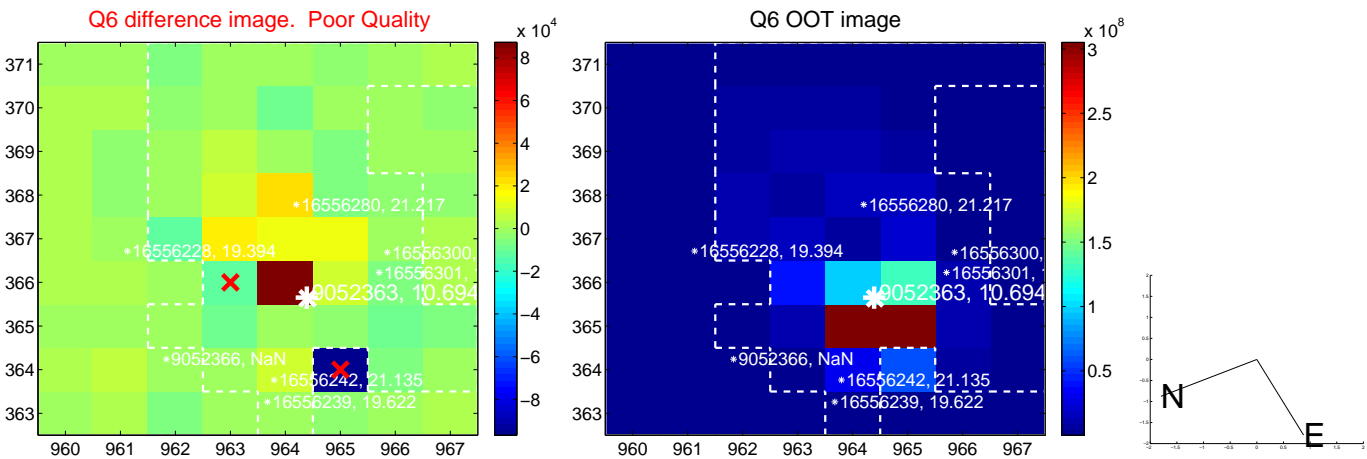
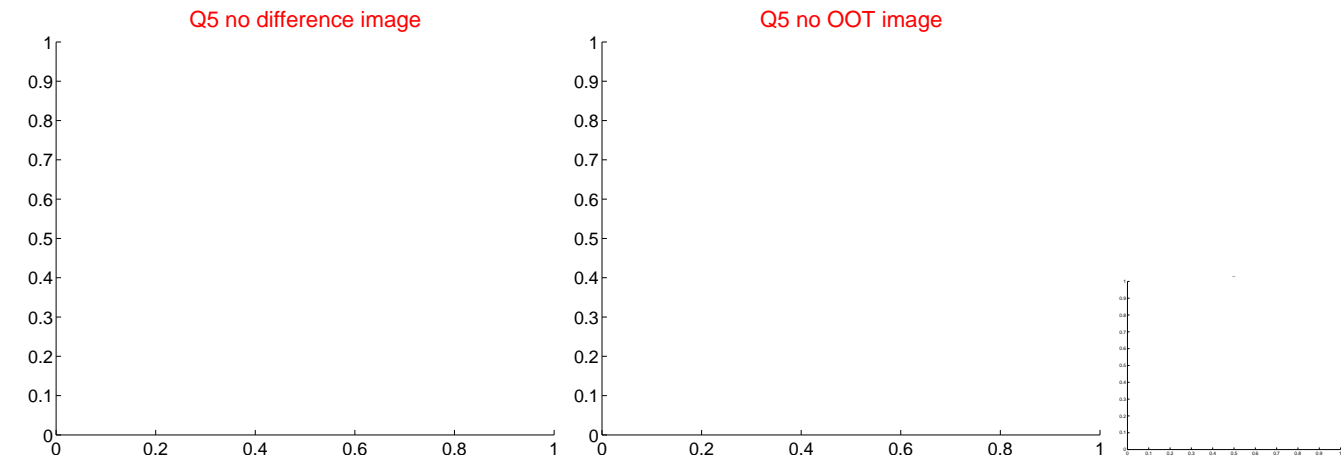


Q4 no OOT image

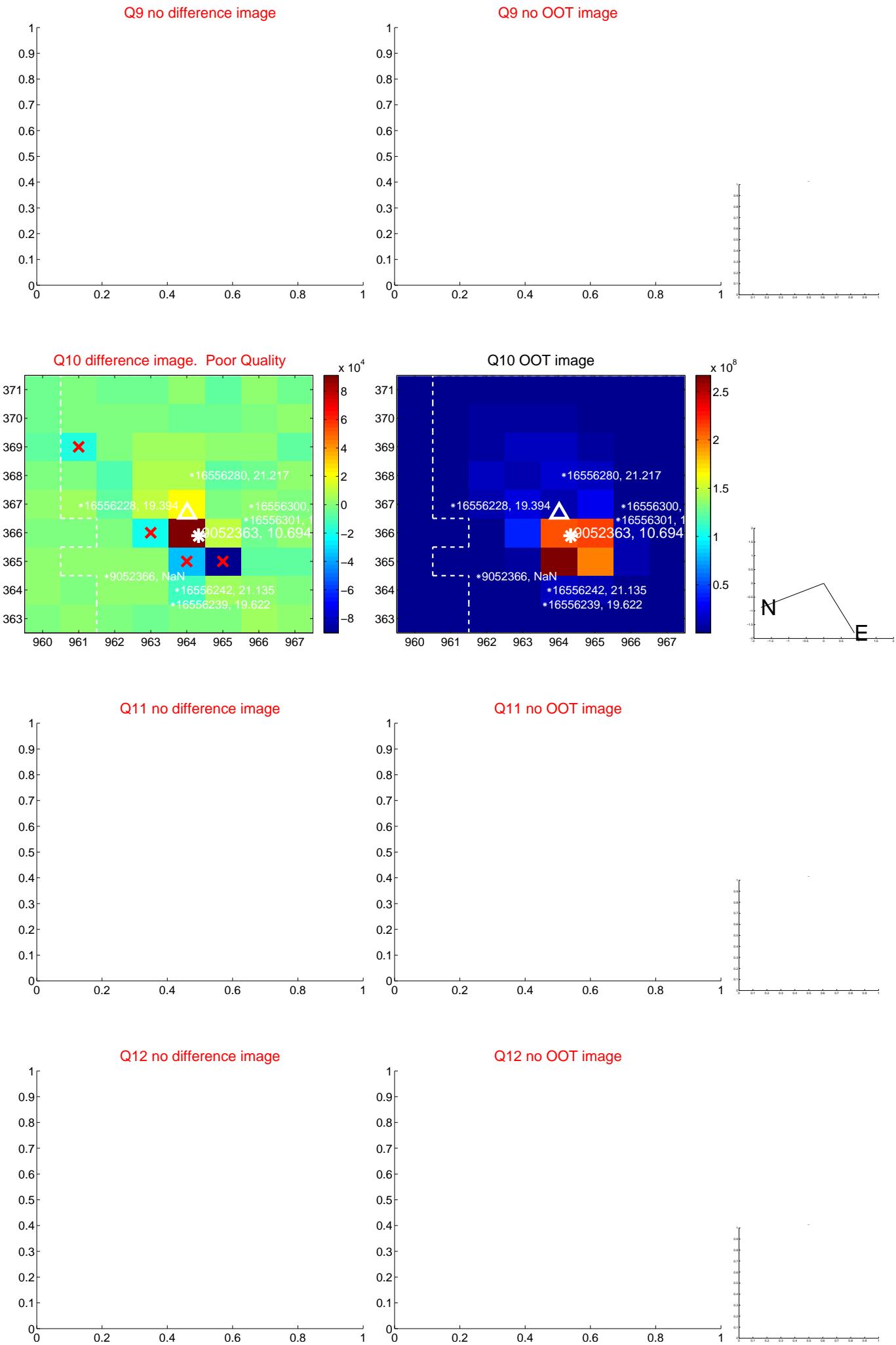




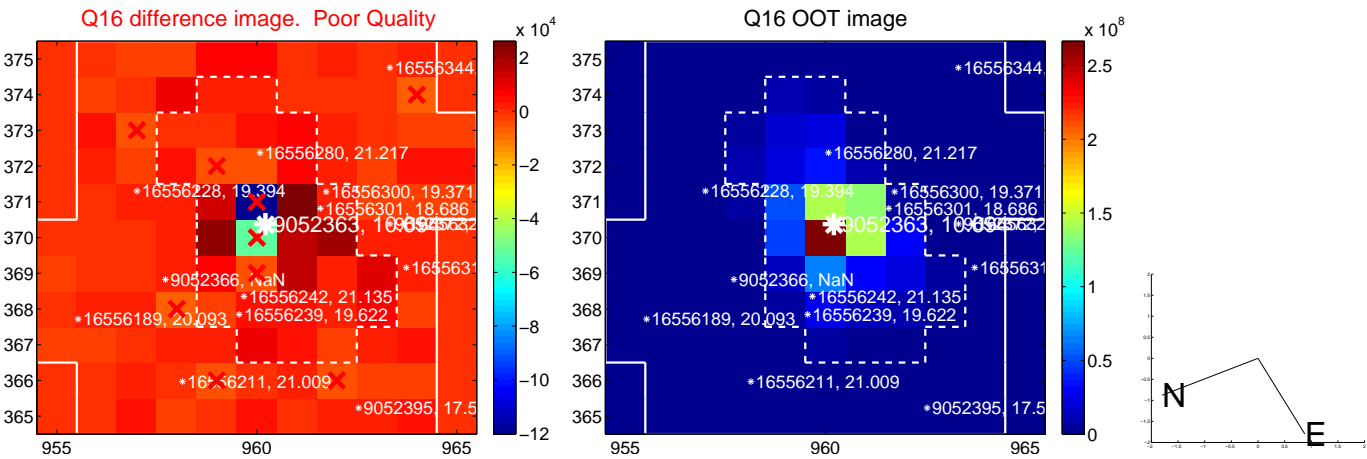
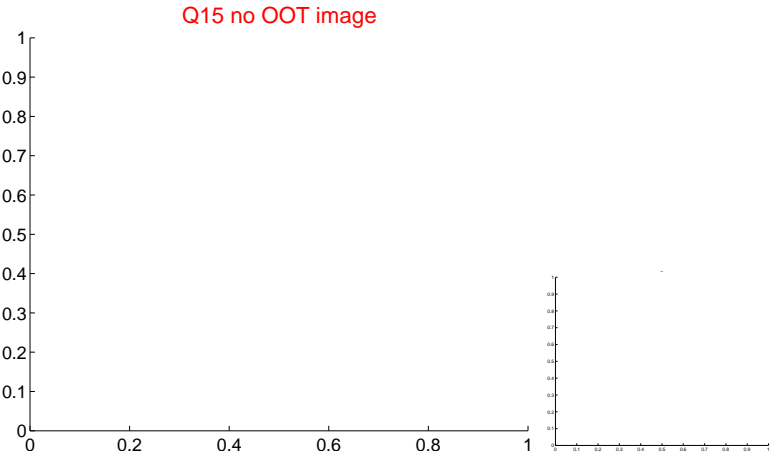
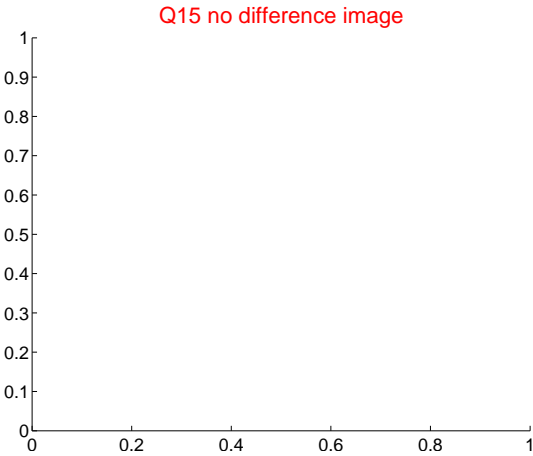
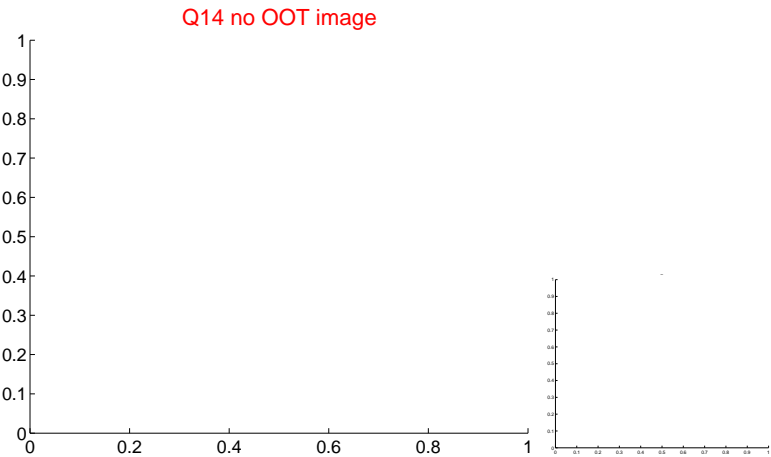
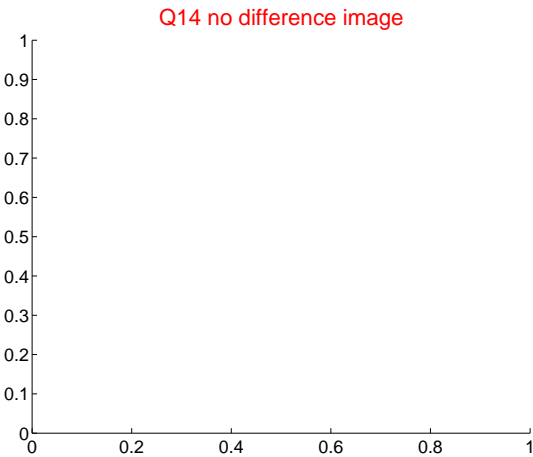
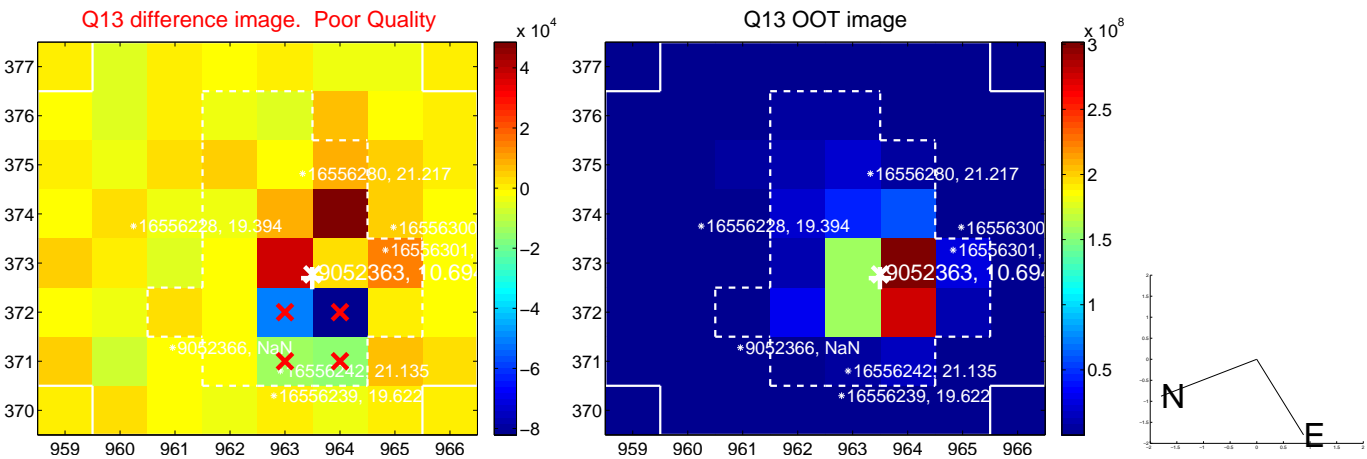
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



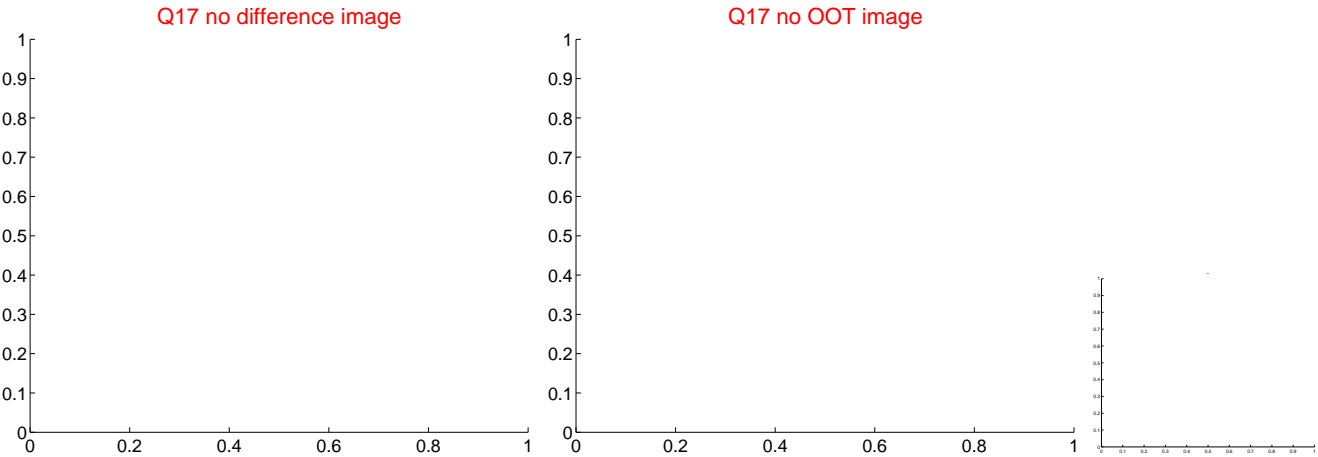
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



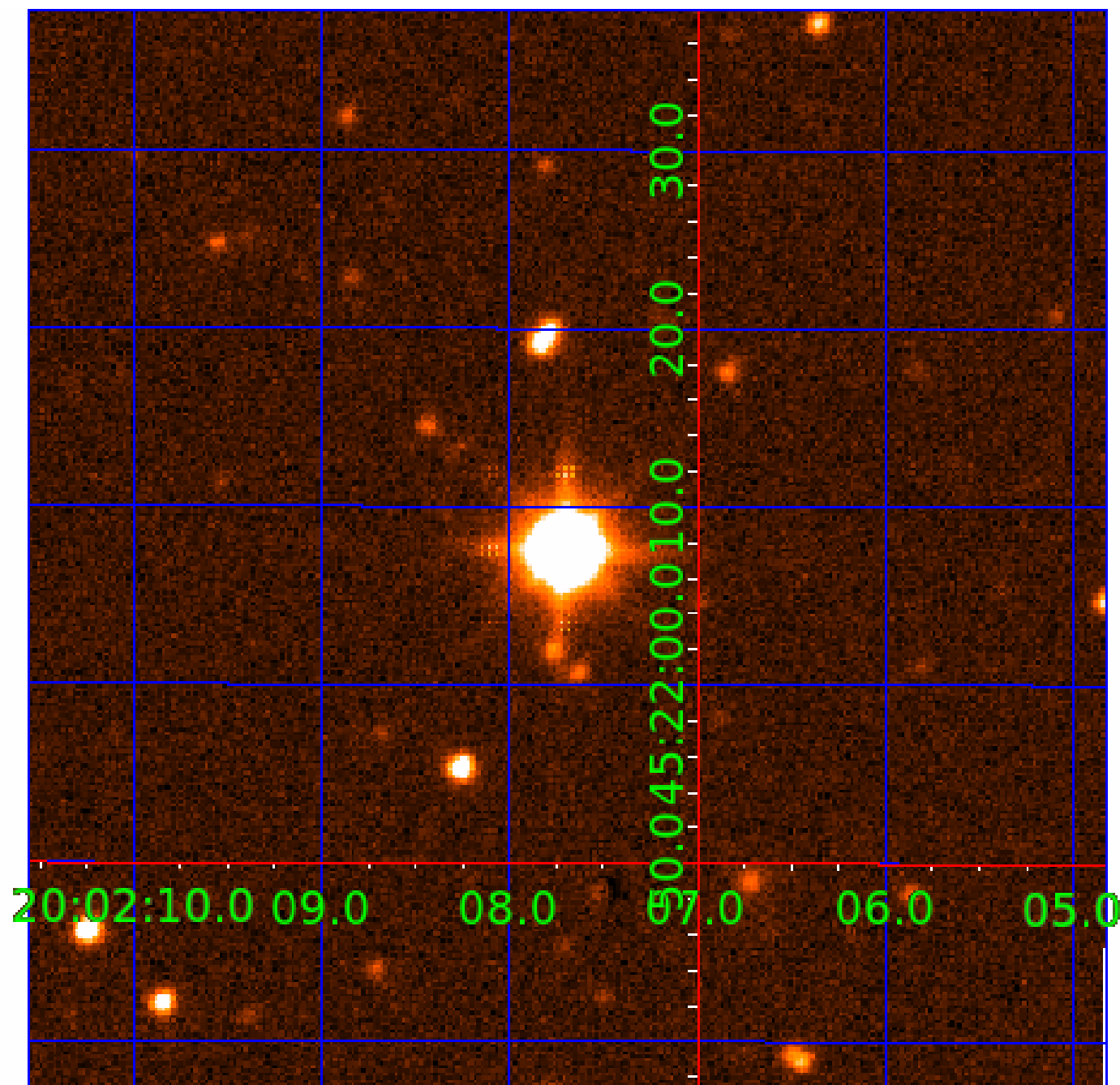
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination





# KIC 009052363

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009052363-01	OBS	No	0.677215	131.616408	6.2	1.814	8.5	10.4	3.10	7810	0.90	91124.79
009052363-02	OBS	No	313.042139	296.620970	61.5	12.500	8.8	-1.0	3.10	7810	2.45	25.50
009052363-03	OBS	No	316.380203	297.891909	148.9	14.954	21.7	14.1	3.10	7810	7.04	25.14

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009052363-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009052363-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009052363-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

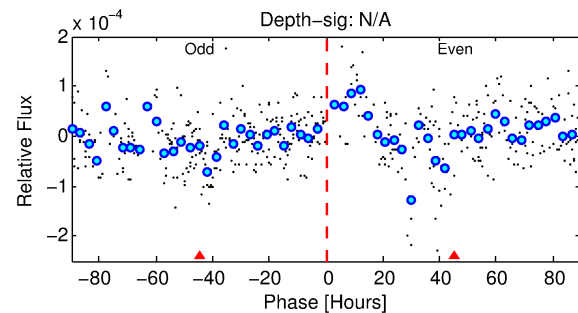
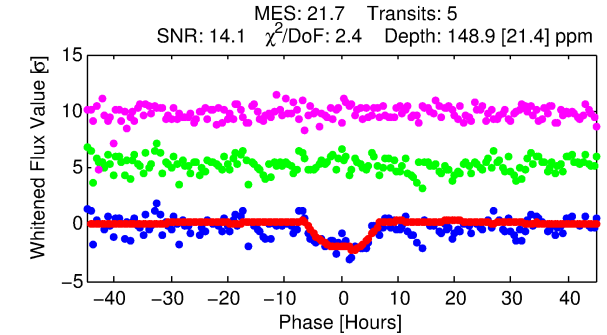
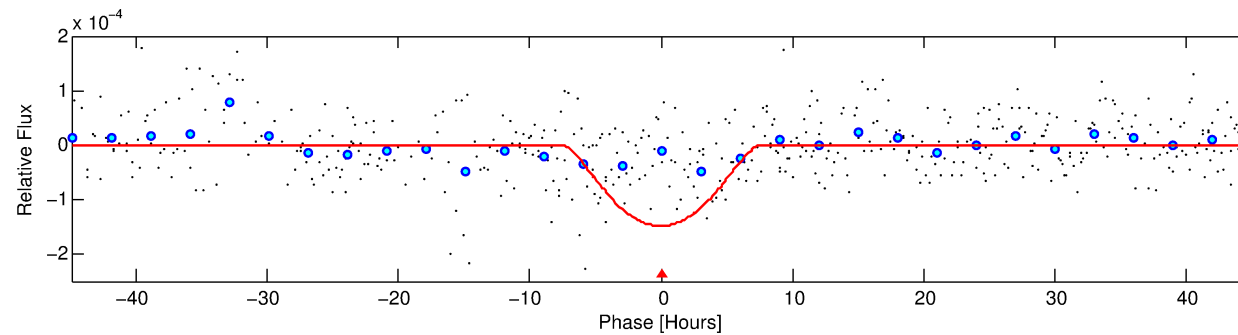
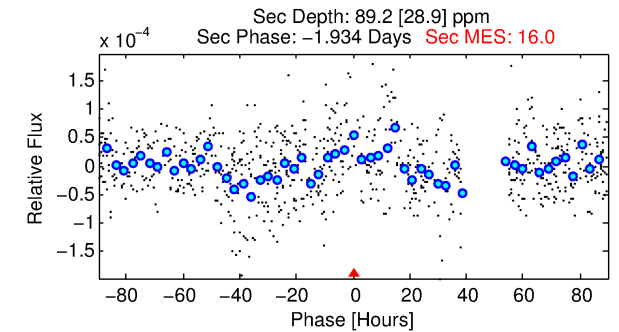
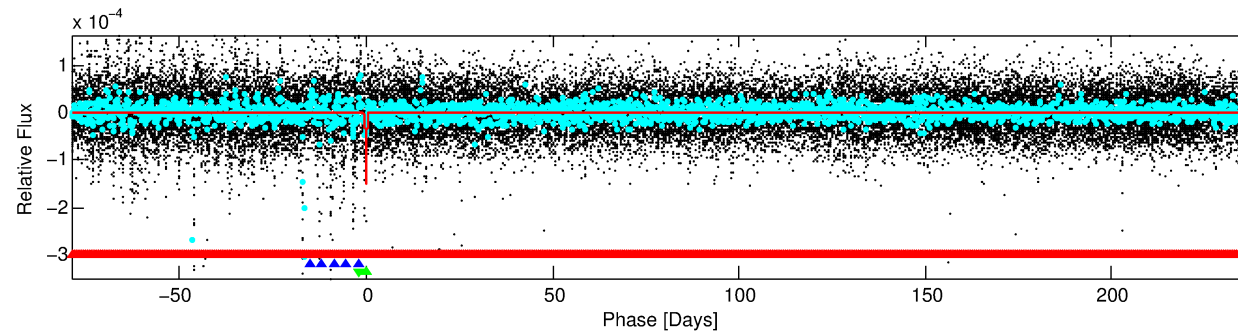
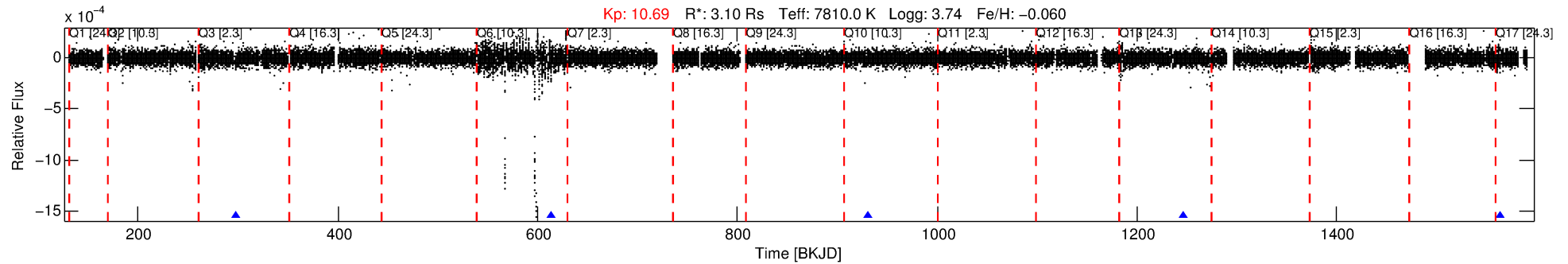
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009052363-03

No Significant Match Found

# DV One-Page Summary

KIC: 9052363 Candidate: 3 of 3 Period: 316.380 d



## DV Fit Results:

Period = 316.38020 [0.01522] d  
Epoch = 297.8919 [0.0369] BKJD  
 $R_p/R^*$  = 0.0208 [0.0568]  
 $a/R^*$  = 34.41 [26.96]  
 $b$  = 1.00 [0.09]  
 $\text{Seff}$  = 25.14 [18.05]  
 $\text{Teq}$  = 571 [102] K  
 $R_p$  = 7.04 [19.40]  $R_e$   
 $a$  = 1.1271 [0.4788] AU  
 $\text{Ag}$  = 1257.64 [6918.34] [0.18σ]  
 $\text{Teffp}$  = 5257 [7175] K [0.65σ]

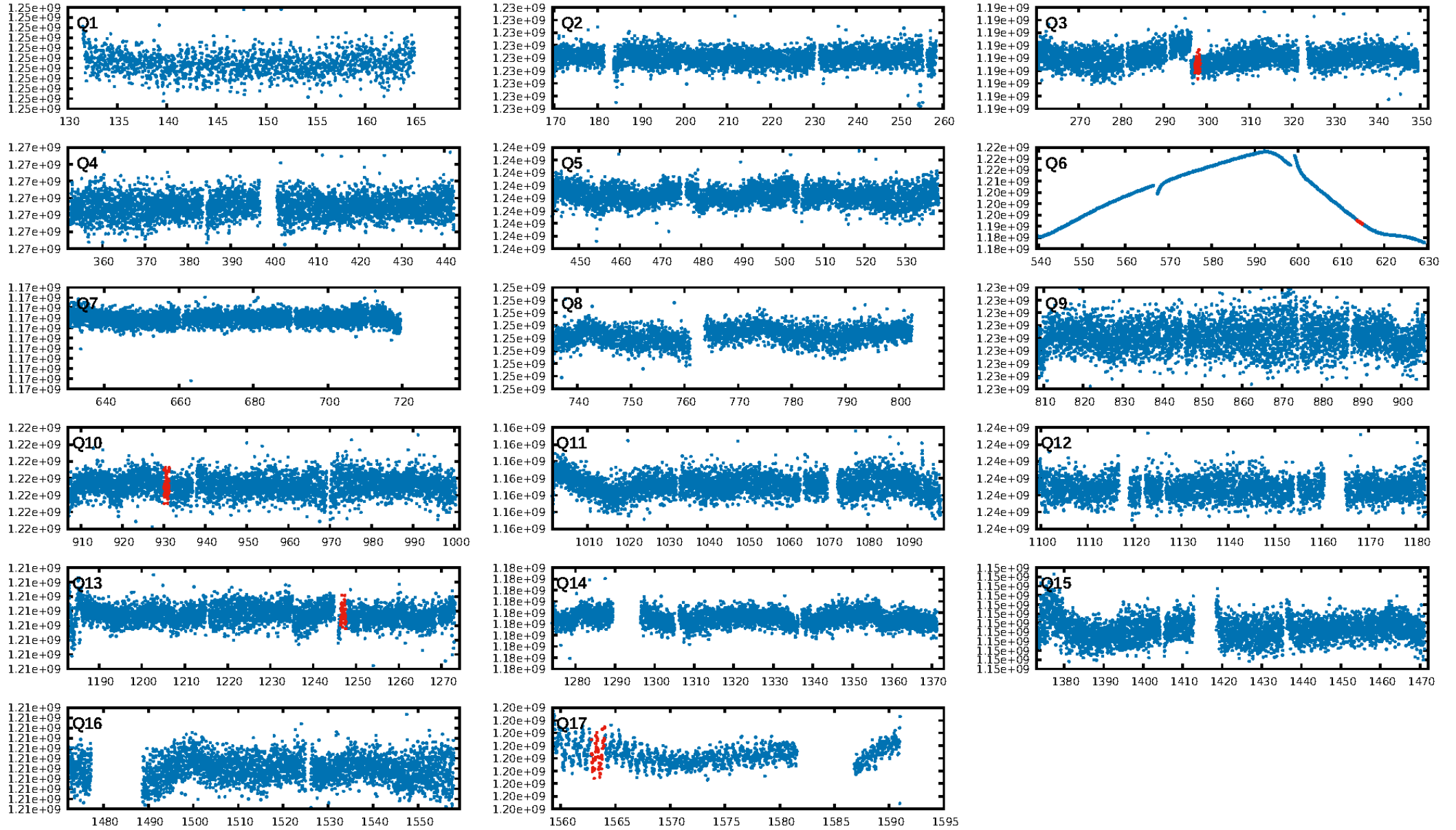
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.11σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 1.6%  
Bootstrap-pfa: 9.37e-61  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 2.89  
Centroid-sig: 21.8%  
Centroid-so: 2.356 arcsec [1.18σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 0.00 [0/3]

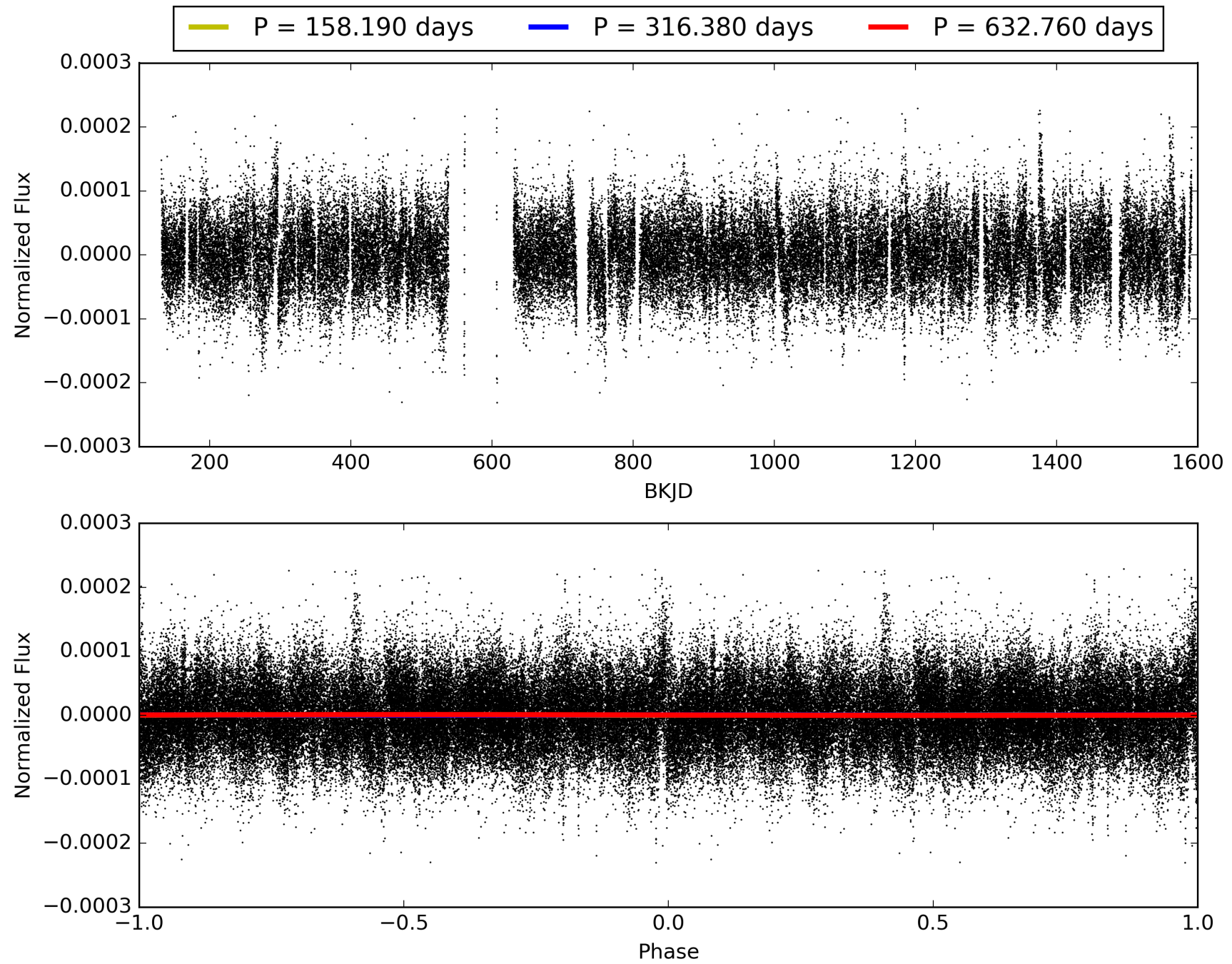
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 18:39:26 Z

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

# TCE 009052363-03, PDC Light Curves

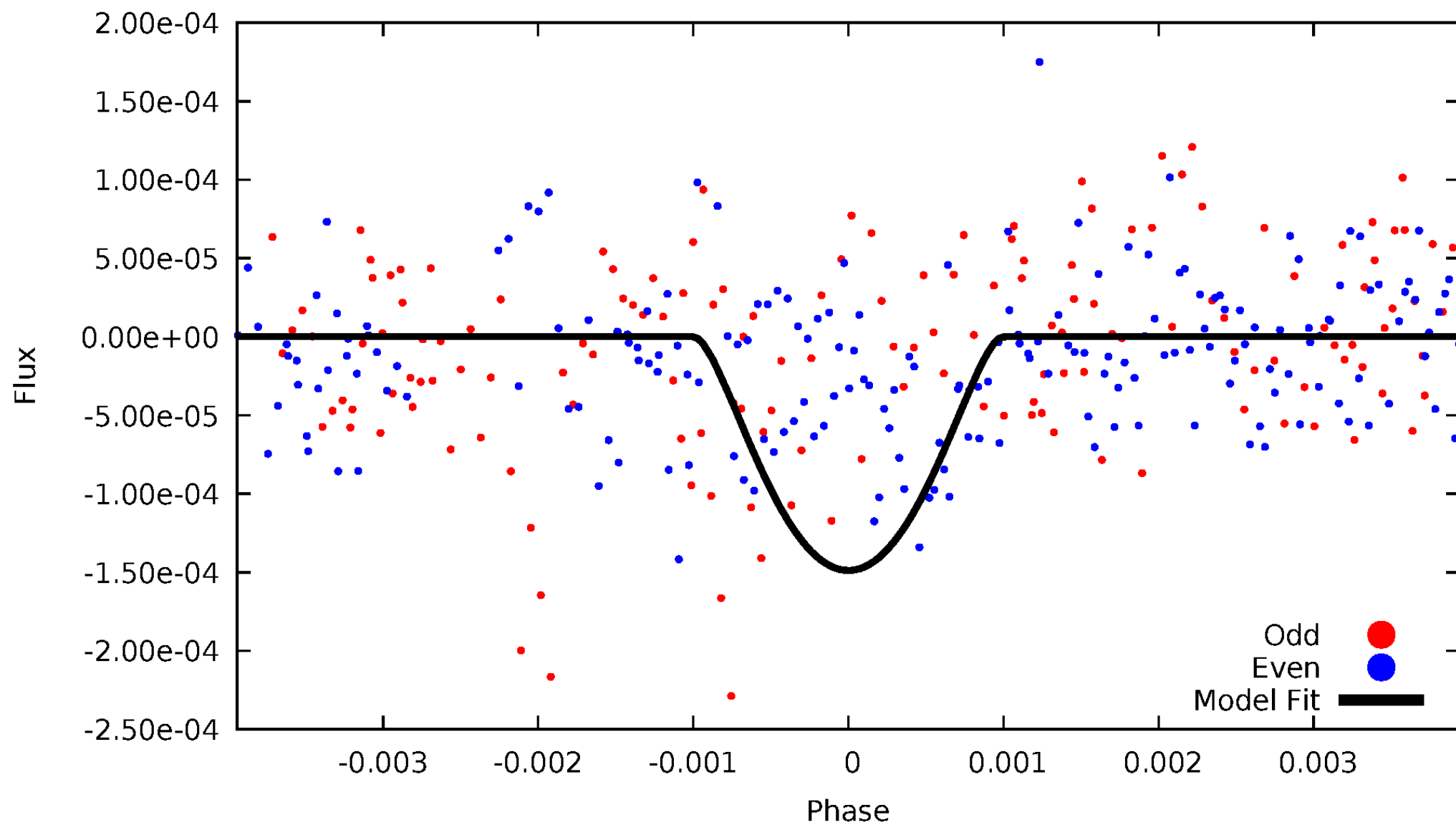


TCE 009052363-03



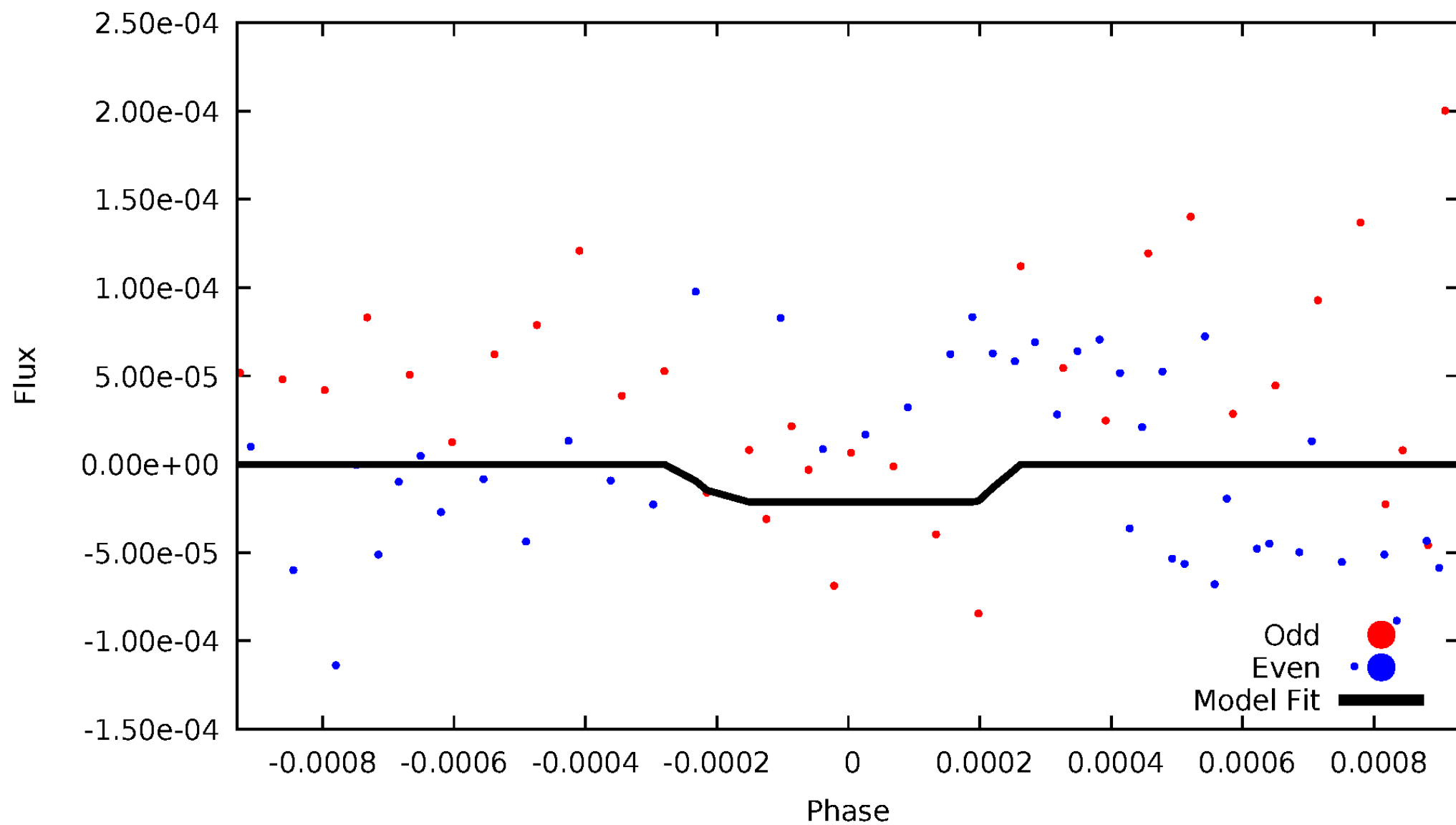
# DV Odd/Even

TCE 009052363-03

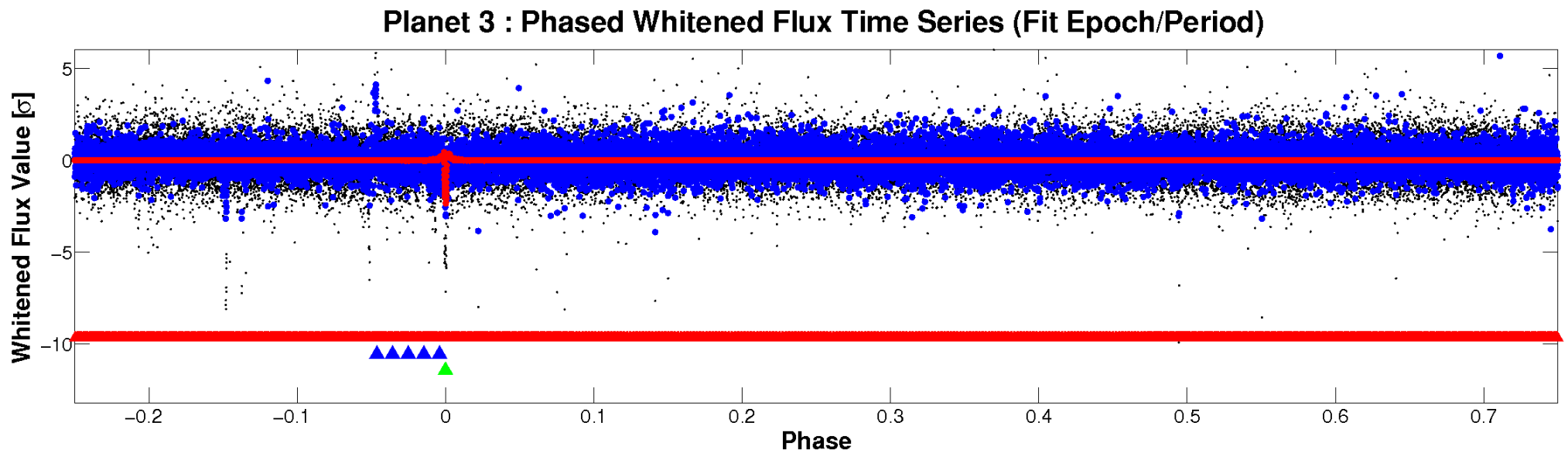
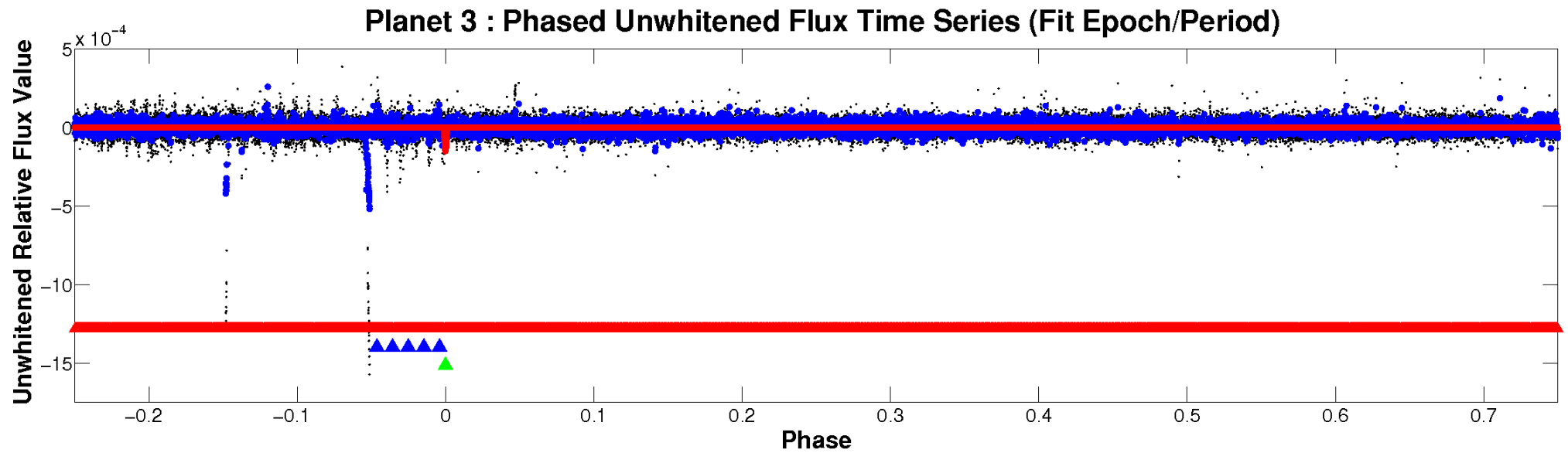


# ALT Odd/Even

TCE 009052363-03



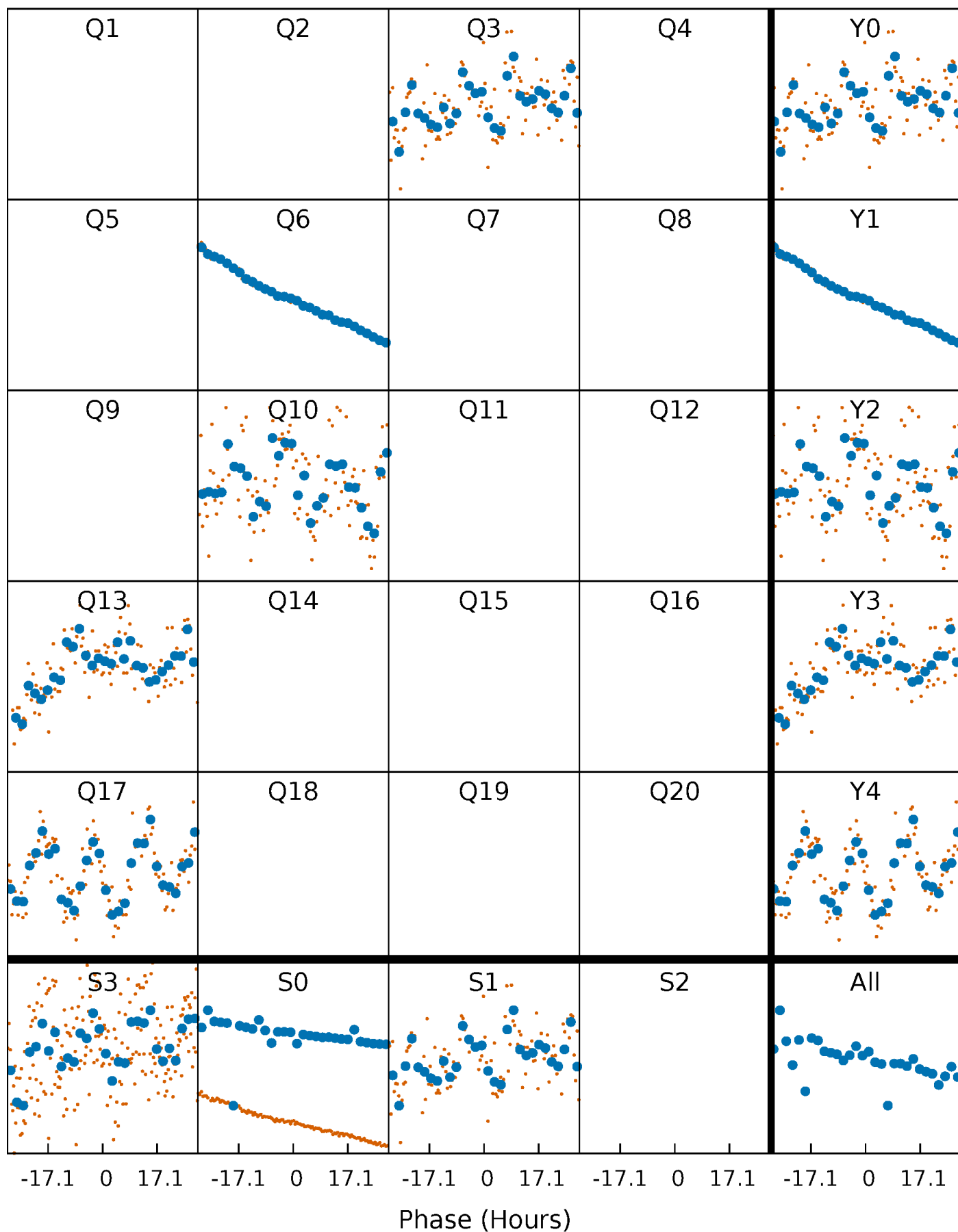
# Non-Whitened Vs. Whitened Light Curve





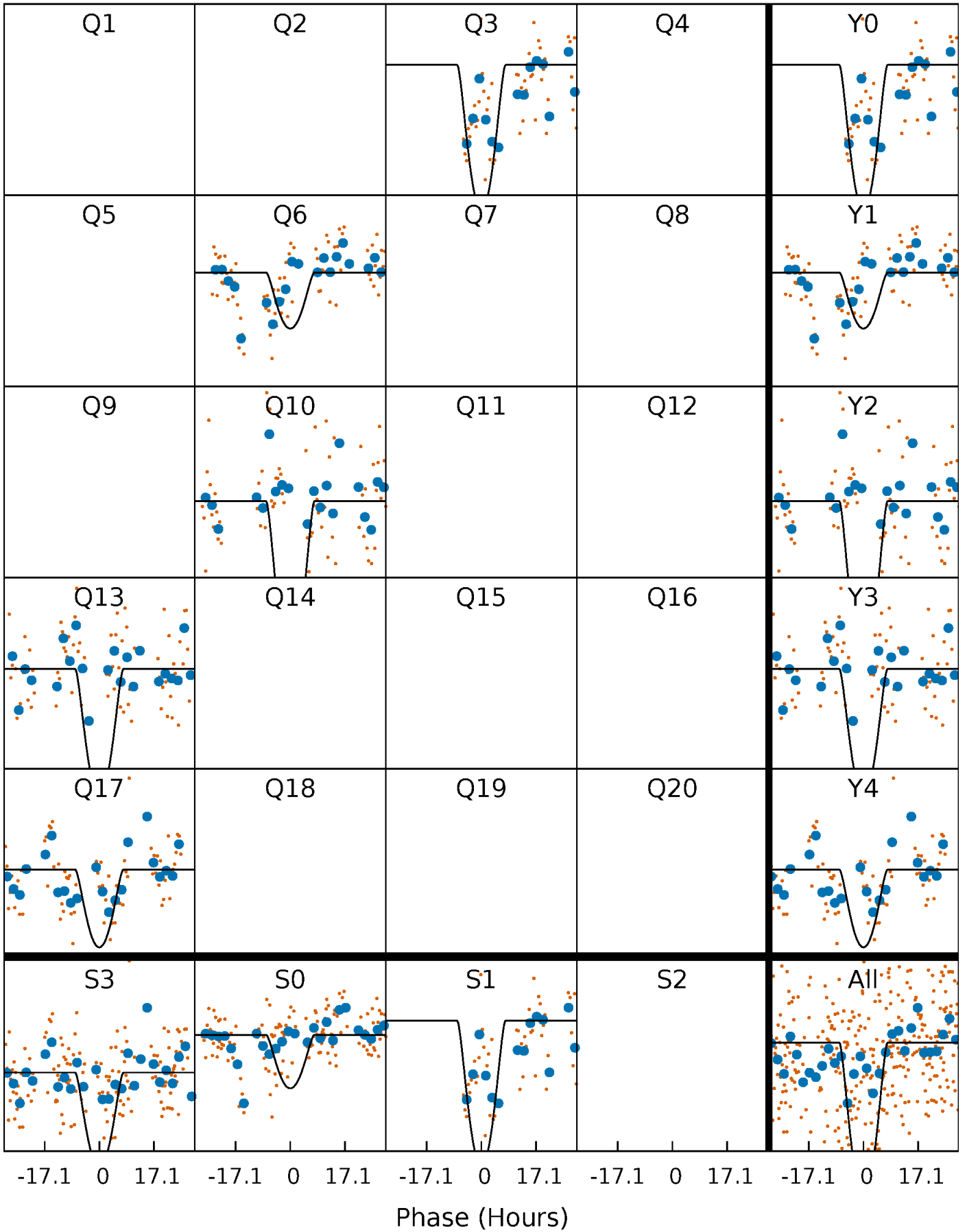
# PDC Quarter-Phased Transit Curves

TCE 009052363-03 P=316.380203 Days  $T_0=297.891909$  (BKJD)



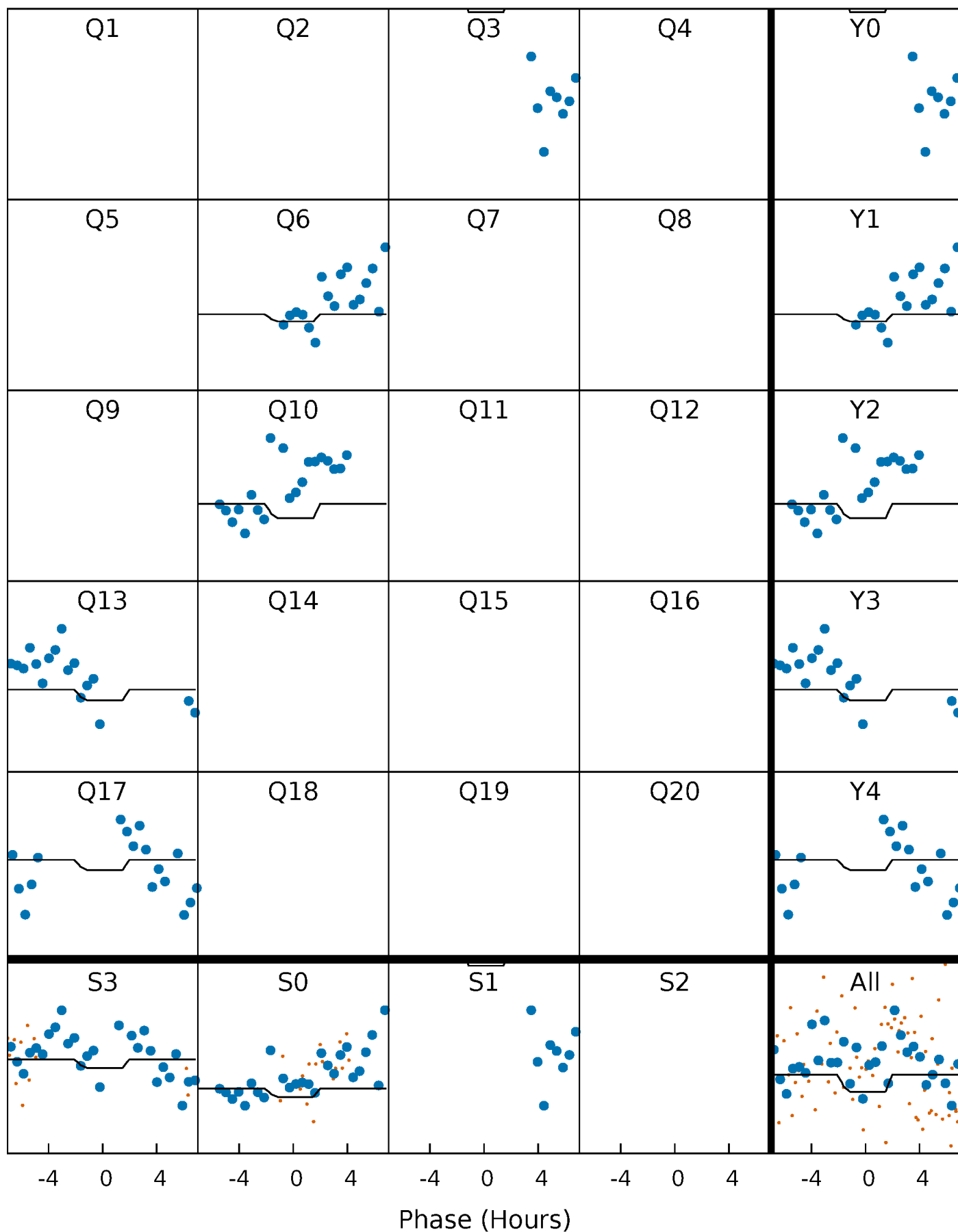
# DV Quarter-Phased Transit Curves

TCE 009052363-03     $P=316.380203$  Days     $T_0=297.891909$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

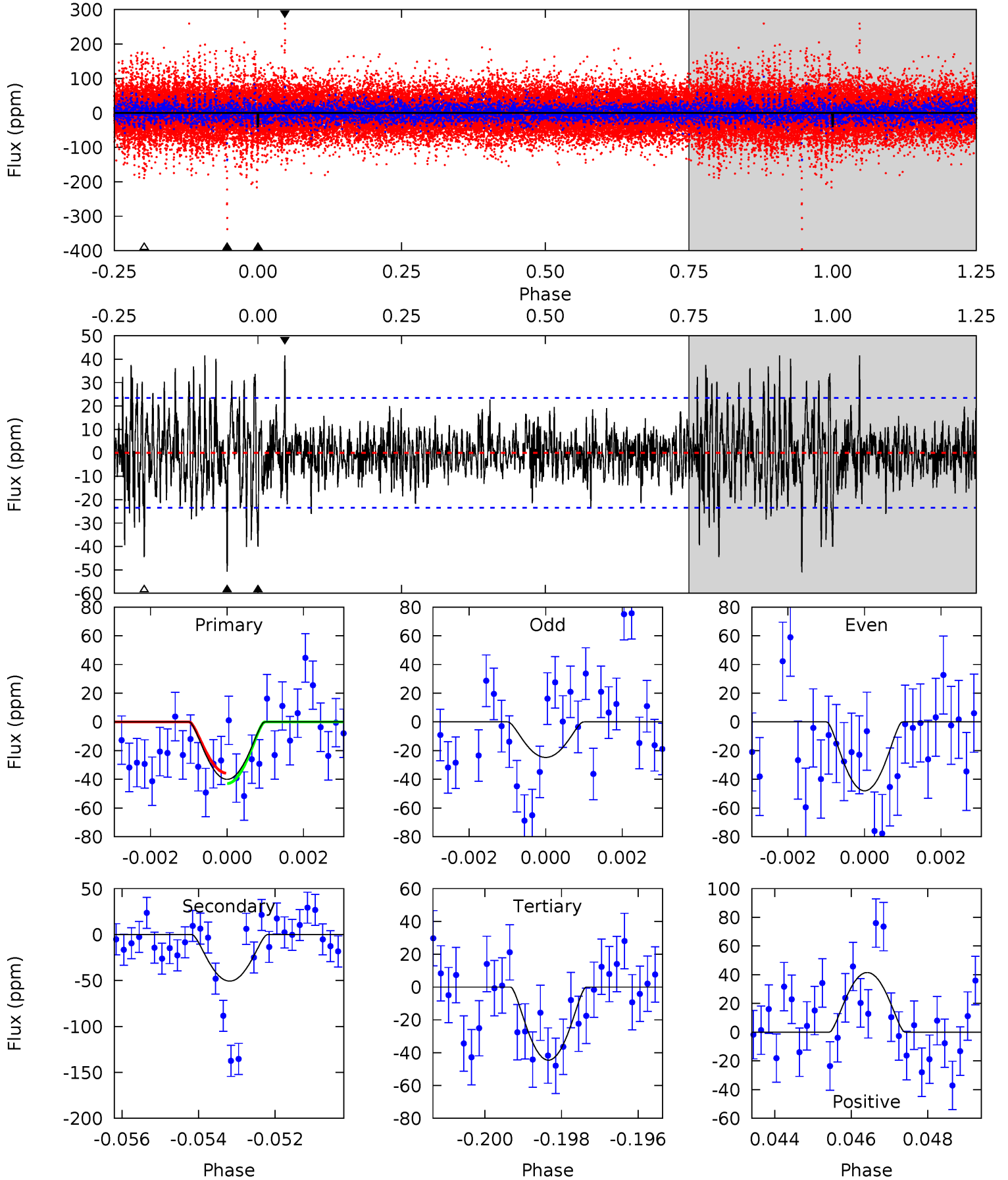
TCE 009052363-03     $P=316.447732$  Days     $T_0=297.522930$  (BKJD)



# DV Model-Shift Uniqueness Test

009052363-03, P = 316.380203 Days, E = 297.891909 Days

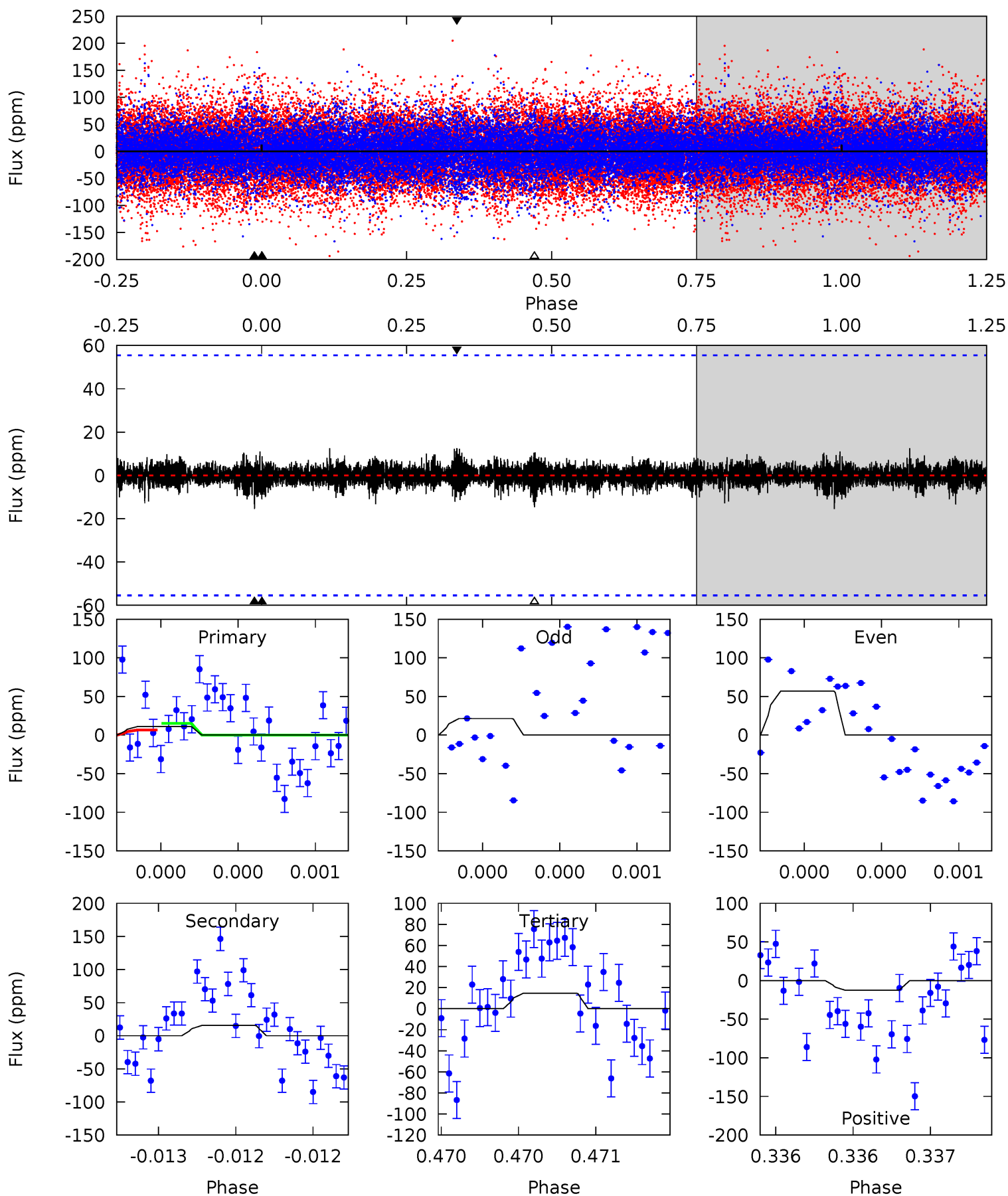
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.09	11.5	10.1	9.42	5.33	3.09	2.25	-1.02	-0.34	1.39	2.08	2.24	0.78	0.45	0.82



# Alt Model-Shift Uniqueness Test

009052363-03, P = 316.447732 Days, E = 297.522930 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.10	1.56	1.48	1.26	5.58	3.48	0.33	-0.38	-0.16	0.08	0.30	1.78	1.38	0.45	0.43



### Stellar Parameters For KIC 009052363

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7810^{+216}_{-324}$	$3.737^{+0.417}_{-0.098}$	$-0.060^{+0.200}_{-0.300}$	$3.095^{+0.463}_{-1.297}$	$1.905^{+0.120}_{-0.384}$	$0.091^{+0.300}_{-0.028}$
	+3%/-4%	+11%/-3%	+333%/-500%	+15%/-42%	+6%/-20%	+331%/-31%
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 009052363-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-51 \pm 4$	$15.20^{+14.37}_{-10.75}$	$772^{+57}_{-89}$	$3397^{+1816}_{-594}$	$150^{+1638}_{-111}$
Alt.	$-15 \pm 10$	$11.68^{+14.17}_{-8.27}$	$771^{+59}_{-90}$	$2939^{+1572}_{-582}$	$57^{+649}_{-47}$

$T_{max}$  = 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

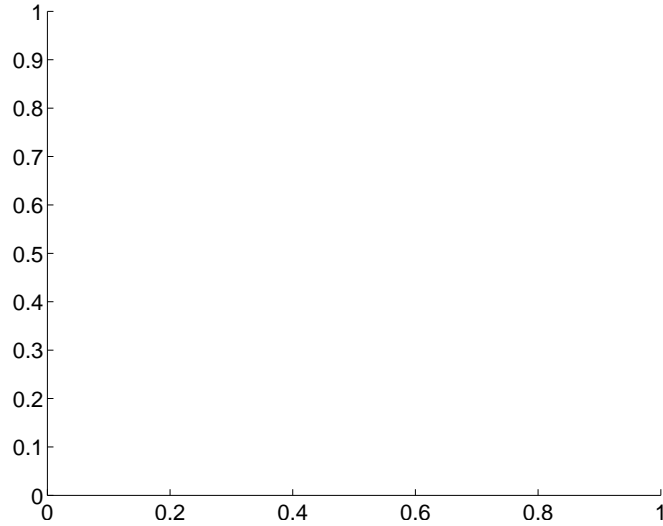
Supplemental centroid analysis for 009052363-03. **Kepler magnitude: 10.69.** Transit SNR 14.08

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

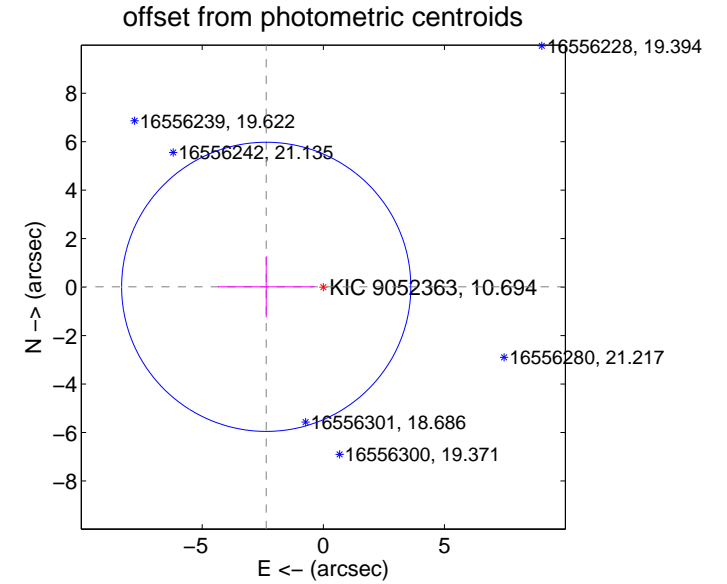
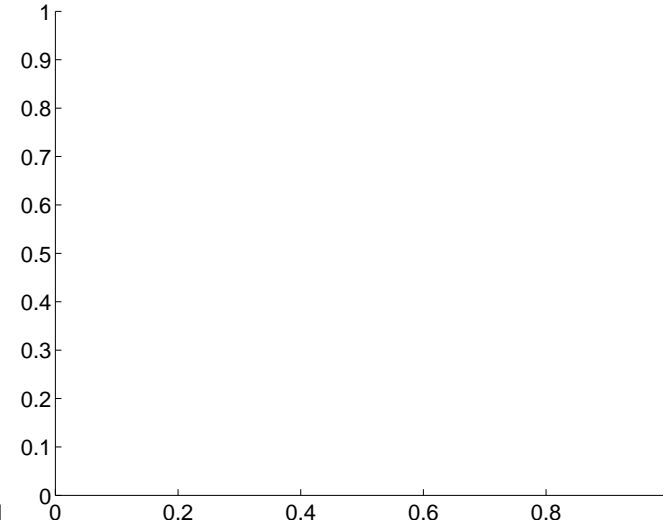
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$2.36 \pm 1.99$	1.18	$2.36 \pm 1.99$	$0.01 \pm 1.26$

**There is no PRF-fit offset from OOT-fit**



**There is no PRF-fit offset from KIC**

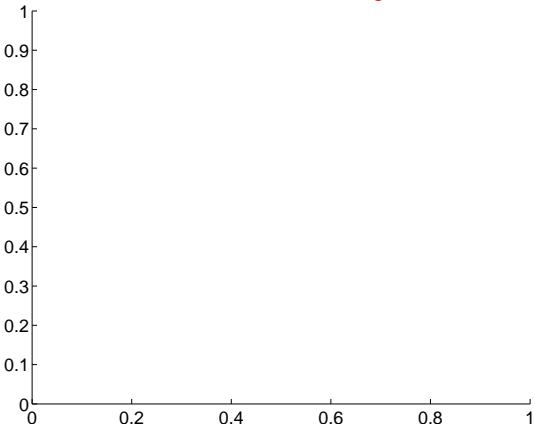


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

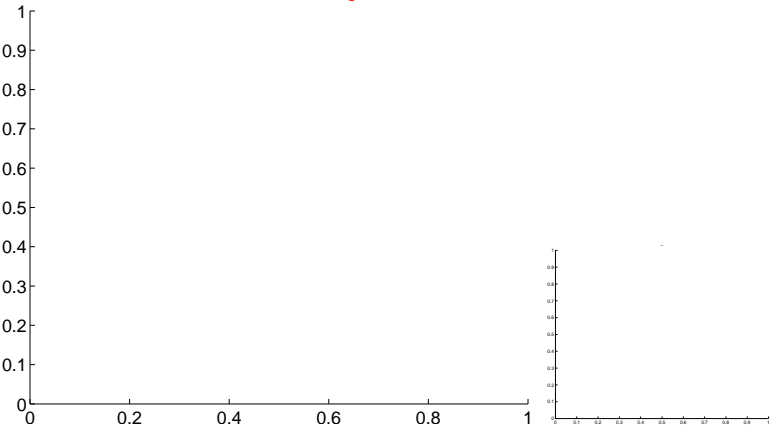


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

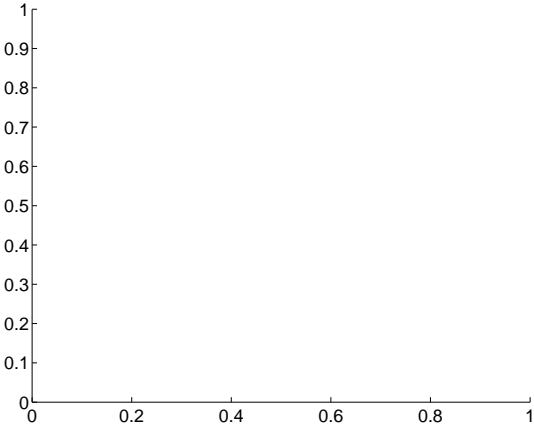
Q1 no difference image



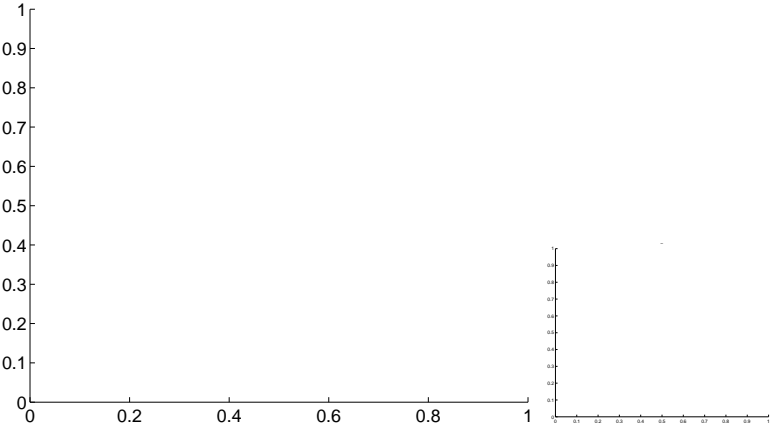
Q1 no OOT image



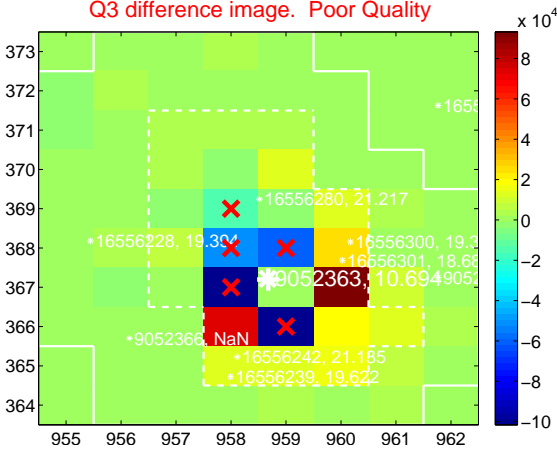
Q2 no difference image



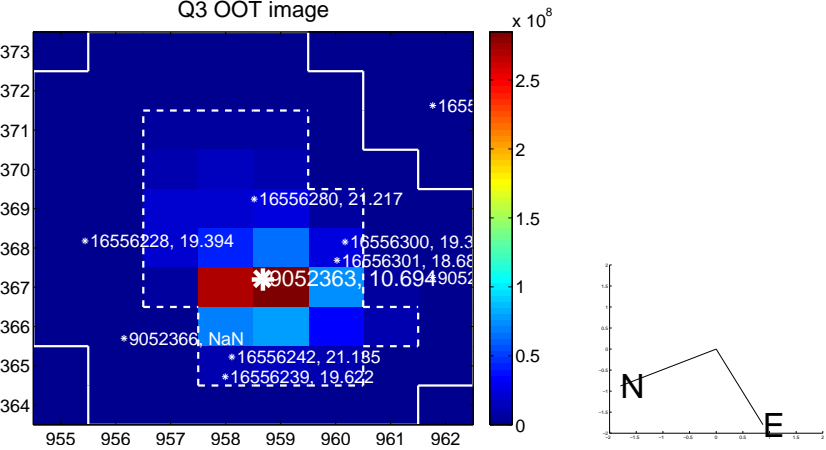
Q2 no OOT image



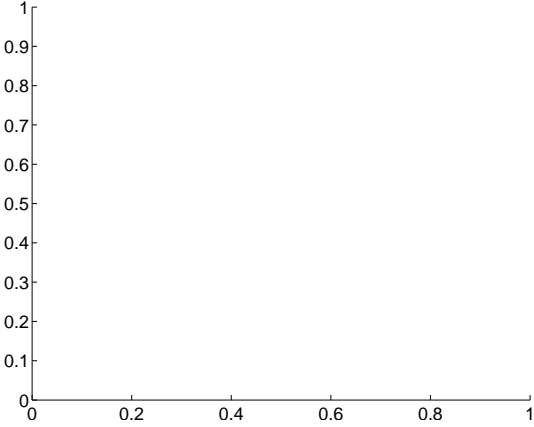
Q3 difference image. Poor Quality



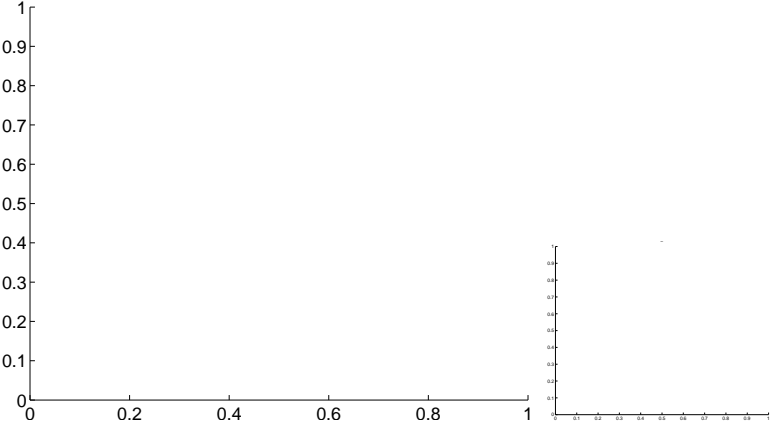
Q3 OOT image



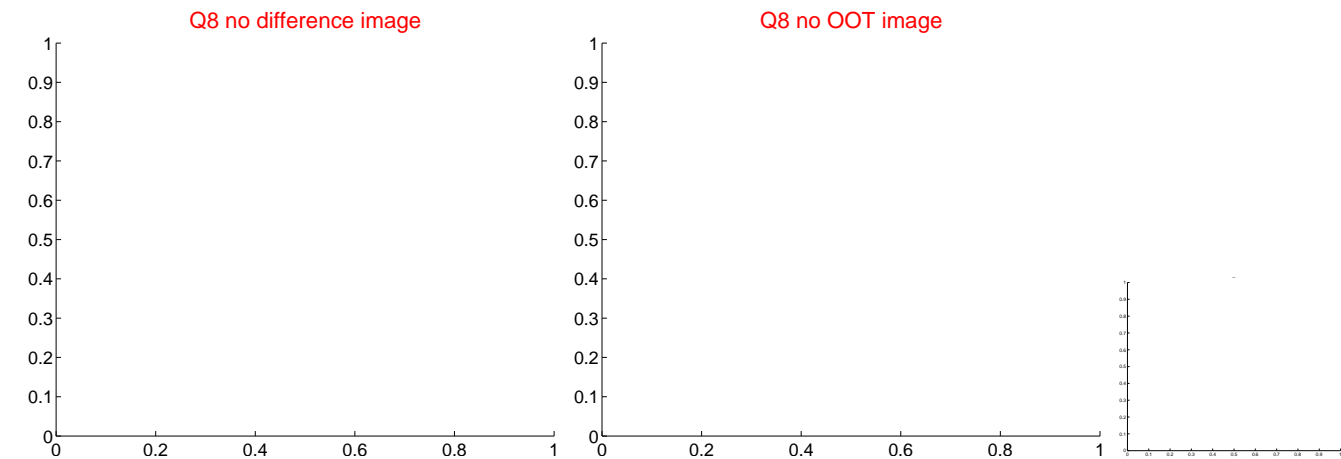
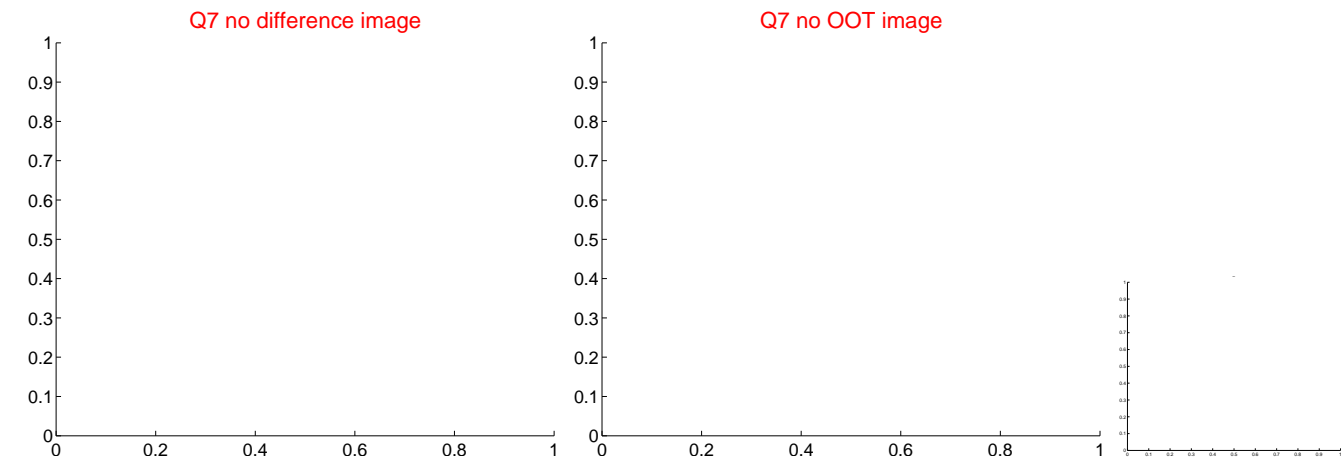
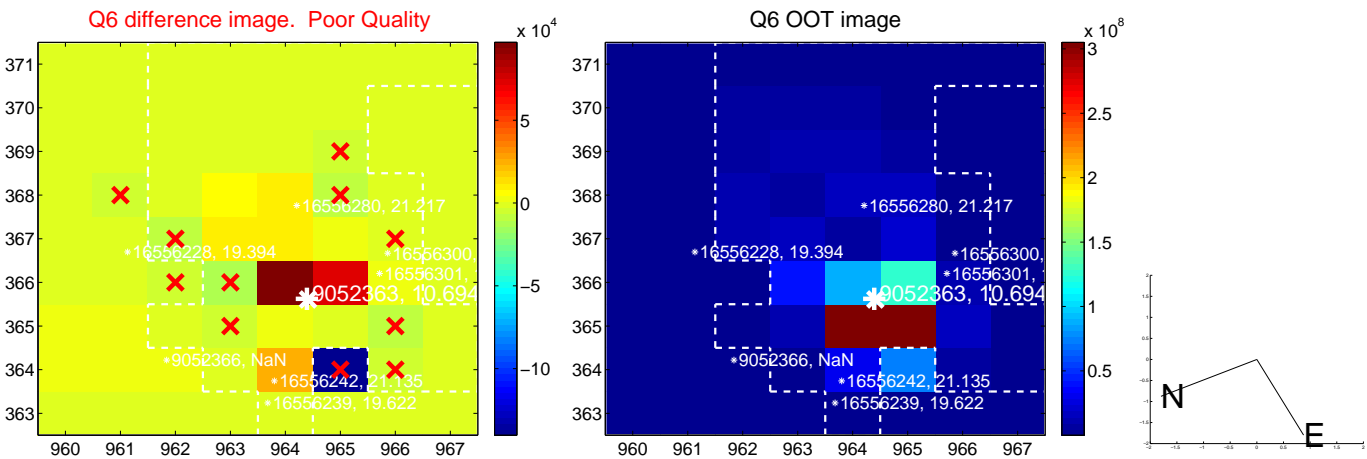
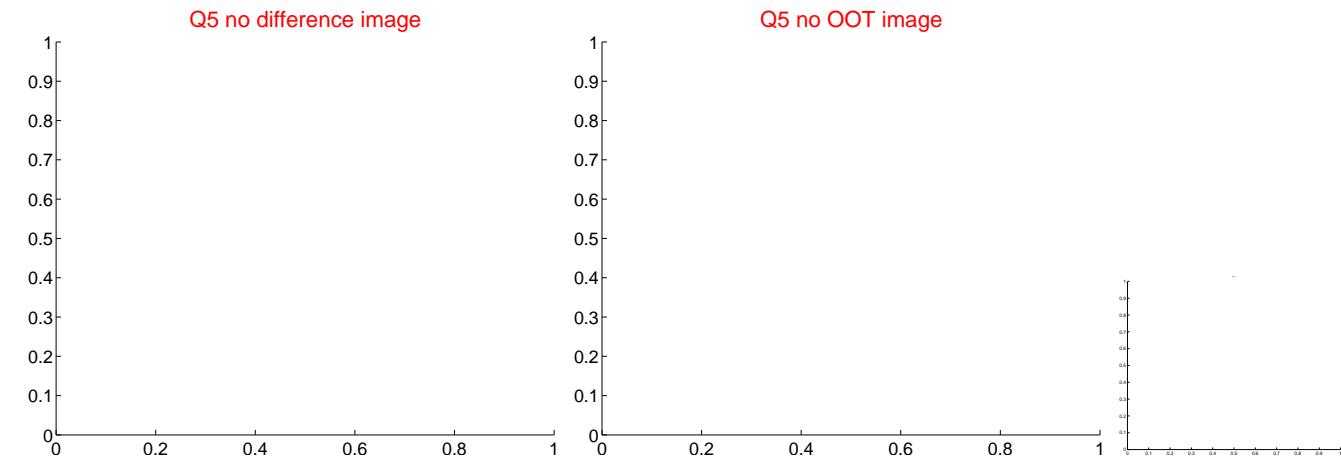
Q4 no difference image



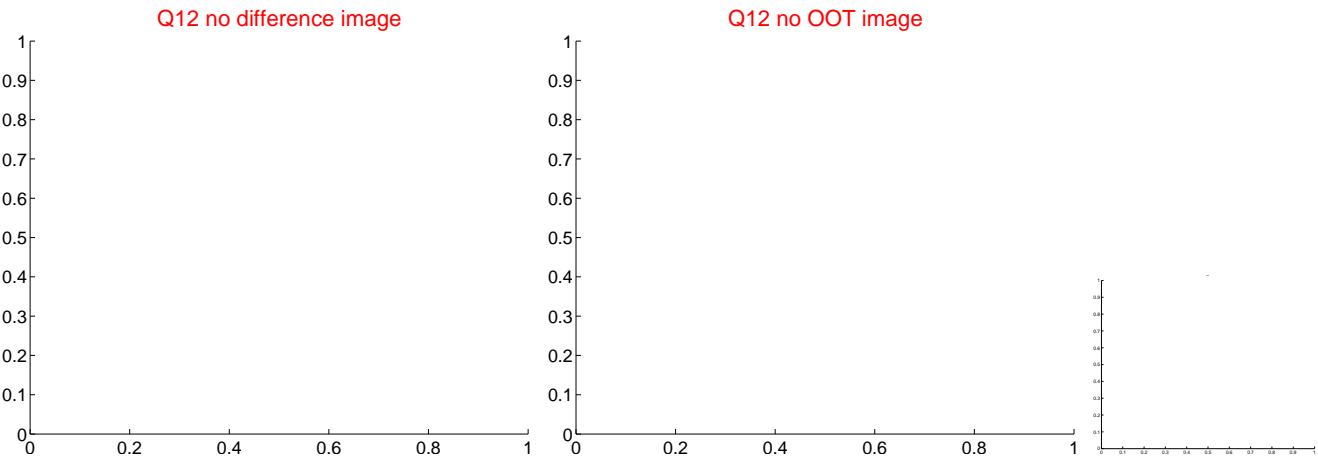
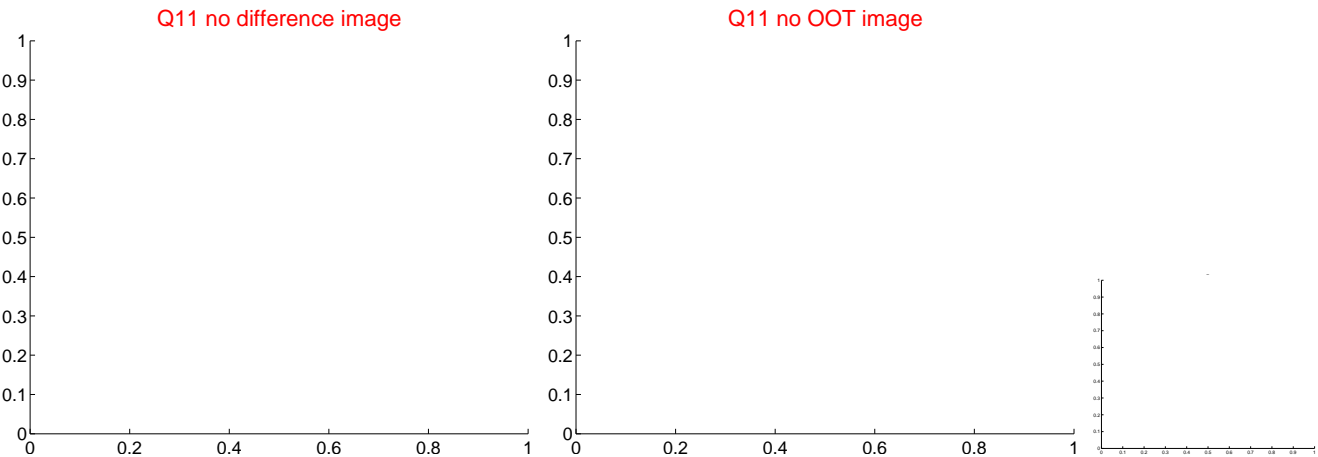
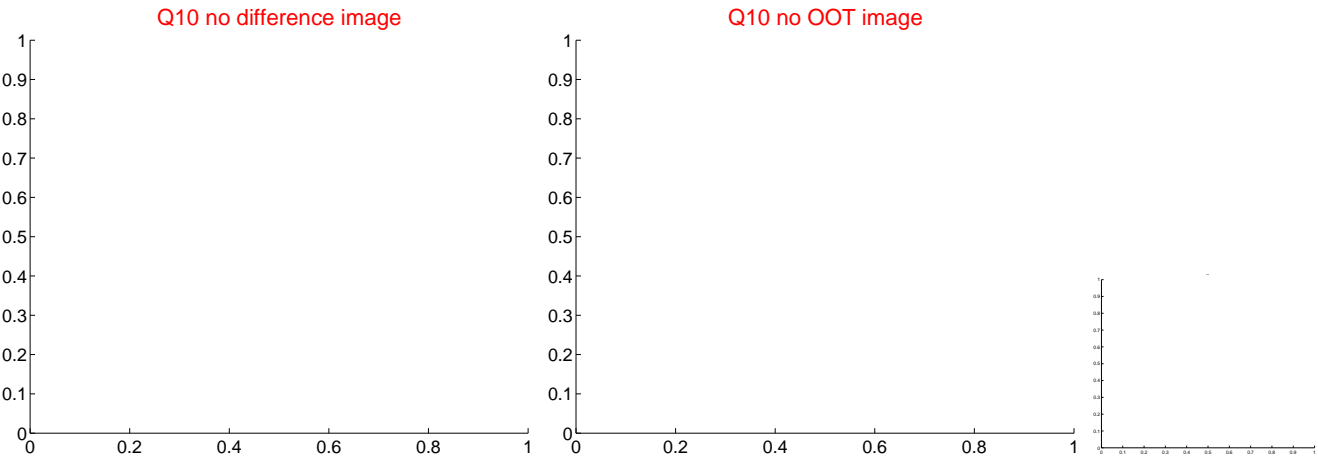
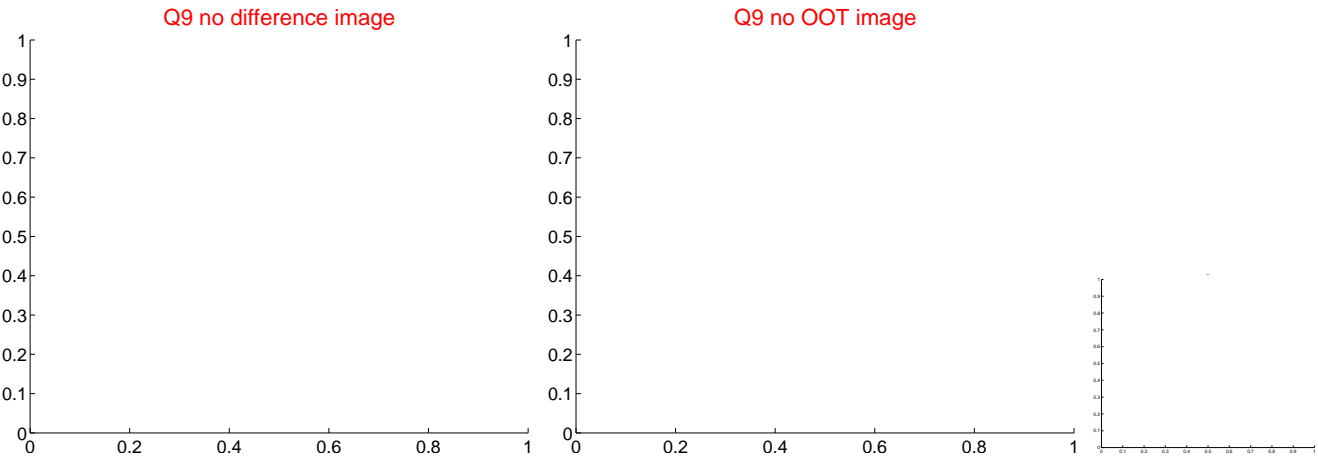
Q4 no OOT image



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



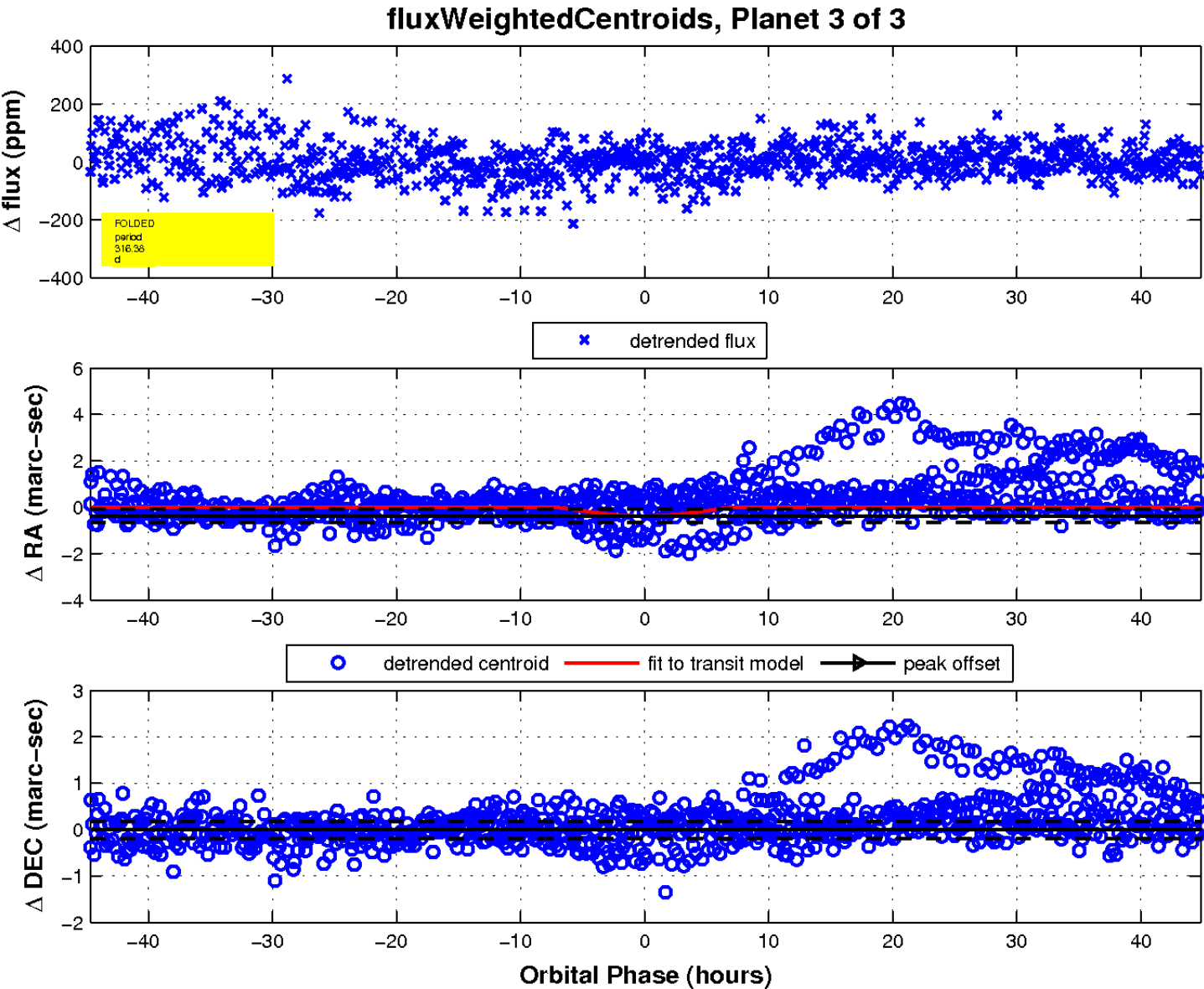
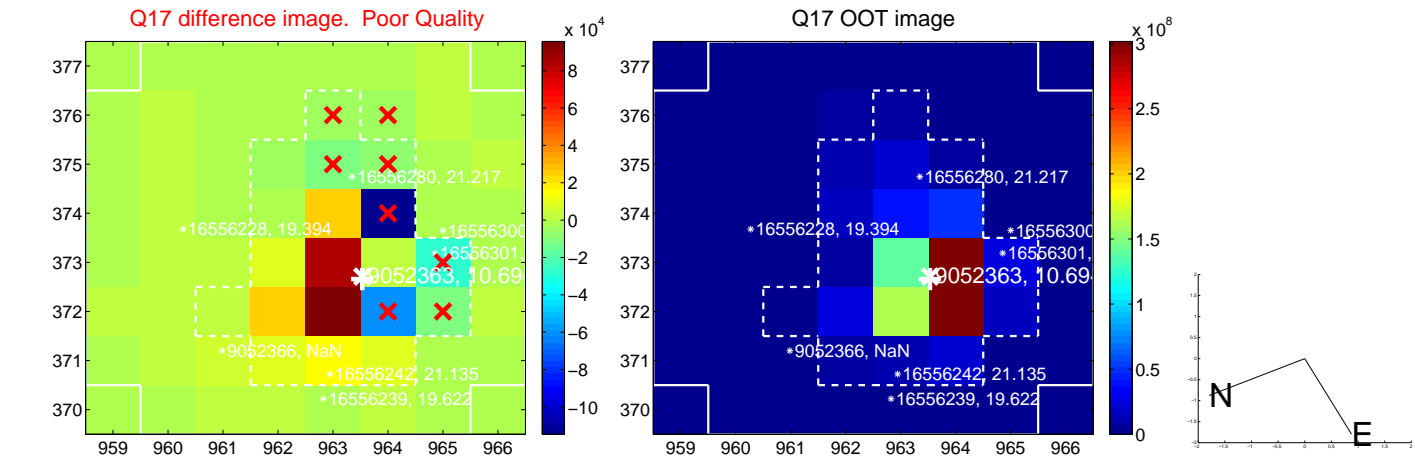
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

