

# KIC 006153673

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006153673-01	OBS	No	3.167617	133.652933	45.7	7.668	8.9	8.2	1.57	6572	1.27	1992.40
006153673-02	OBS	No	3.167515	131.811669	54.9	9.964	10.1	10.9	1.57	6572	1.38	1992.49
006153673-03	OBS	No	376.993981	237.726594	860.2	14.105	9.3	8.7	1.57	6572	8.73	3.40
006153673-04	OBS	No	113.429564	221.504564	544.8	2.661	8.0	8.2	1.57	6572	6.97	16.88
006153673-05	OBS	No	80.177986	183.297440	416.4	2.386	7.1	7.2	1.57	6572	3.69	26.81

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006153673-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006153673-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
006153673-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006153673-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
006153673-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

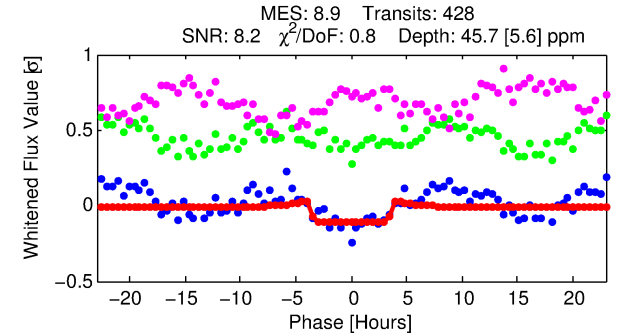
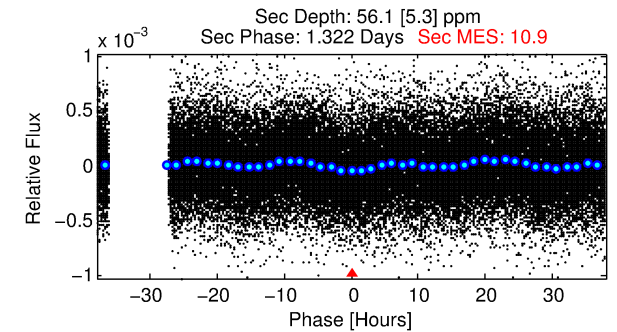
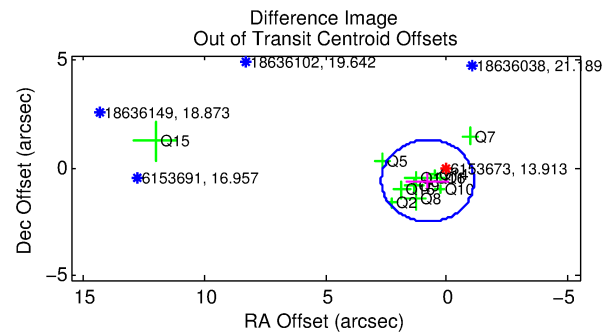
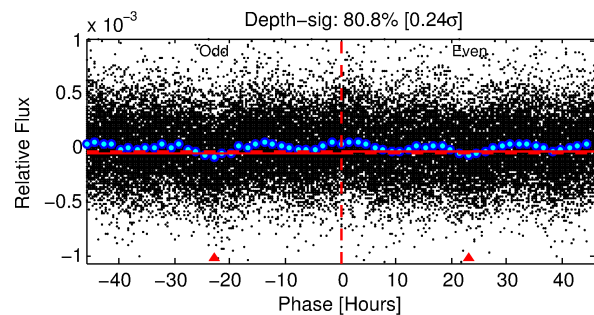
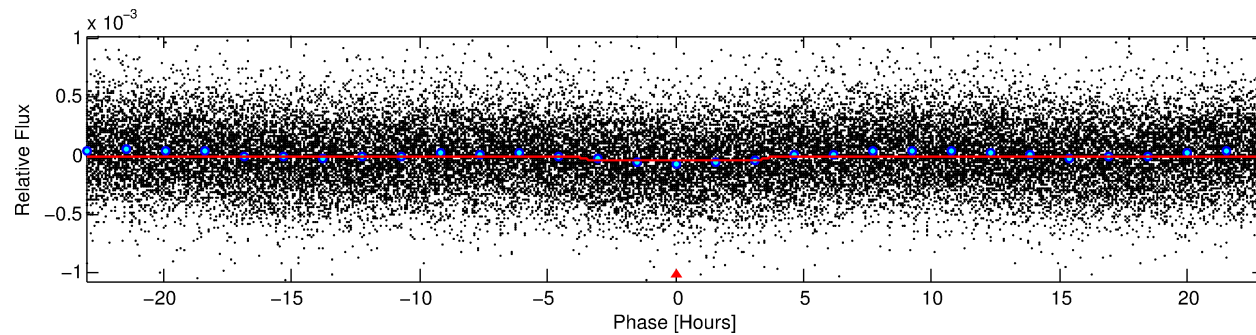
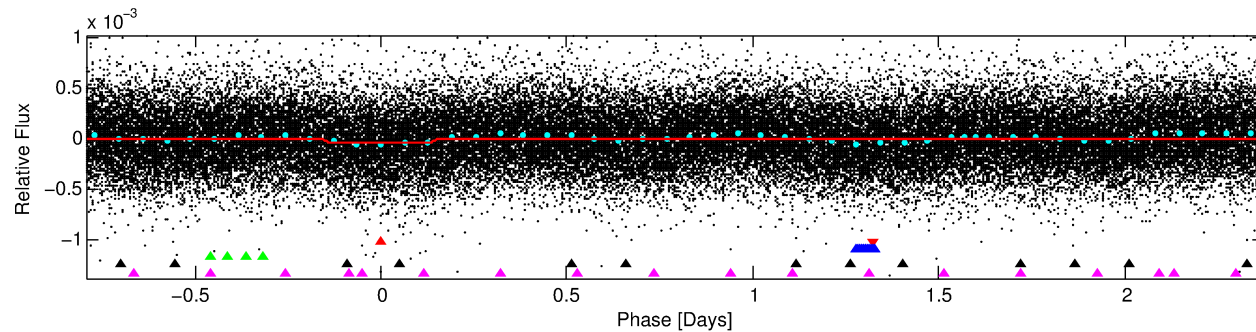
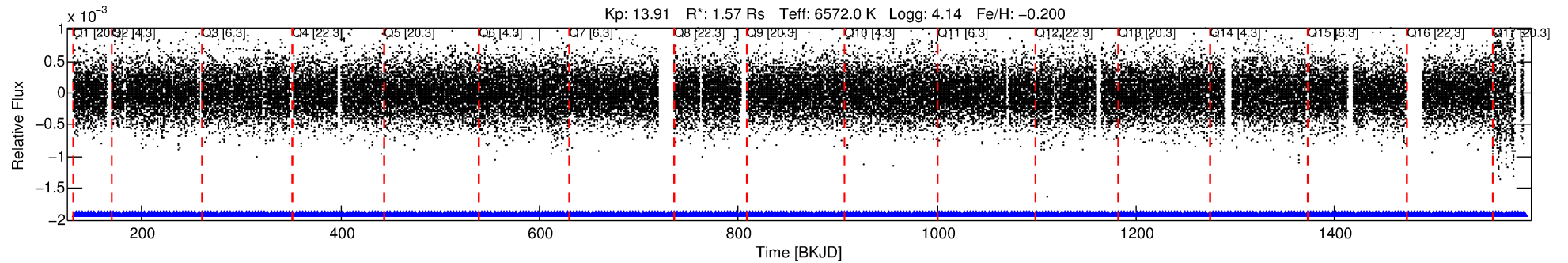
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 006153673-01

No Significant Match Found

# DV One-Page Summary

KIC: 6153673 Candidate: 1 of 5 Period: 3.168 d



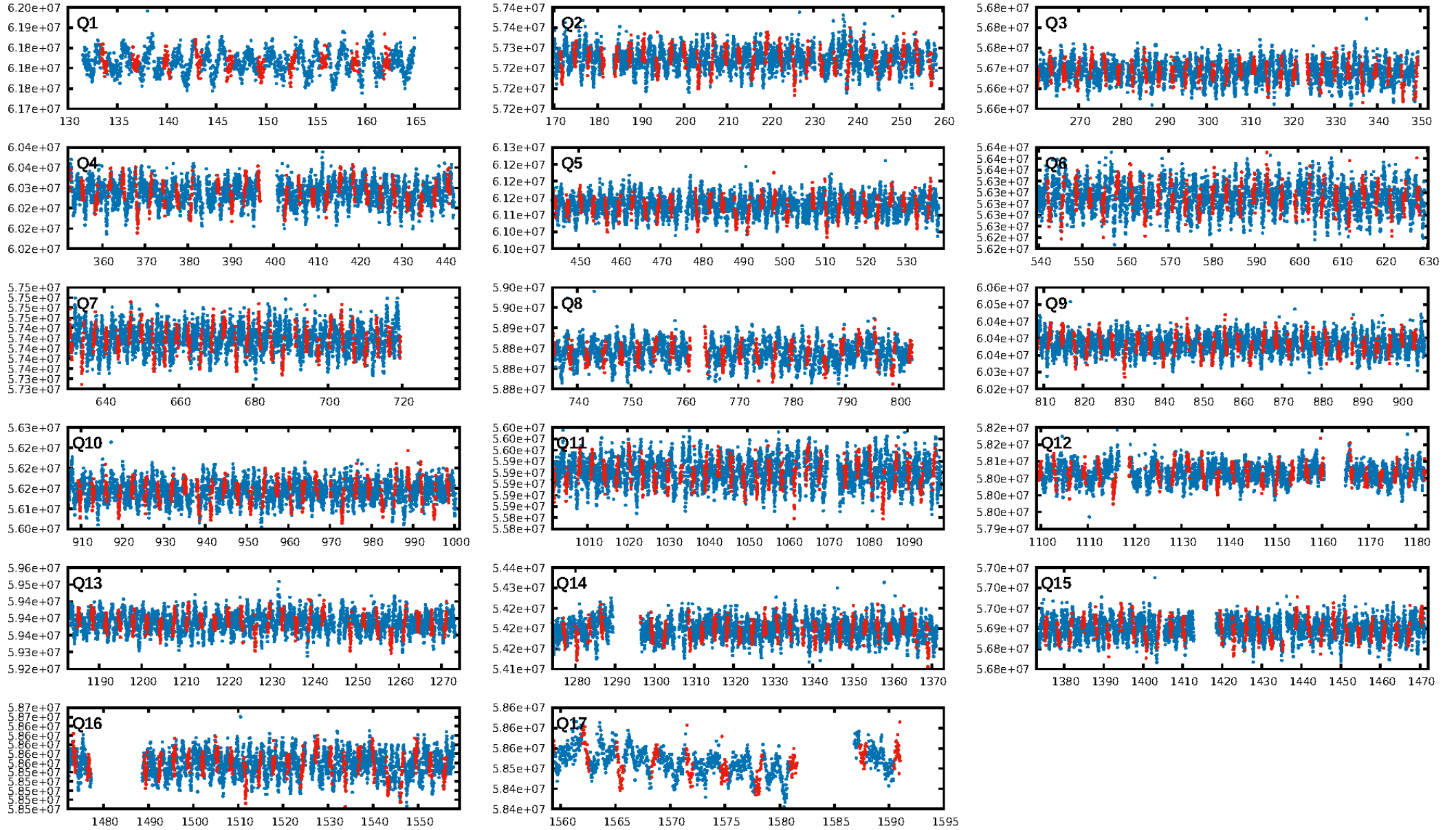
## DV Fit Results:

Period = 3.16762 [0.00004] d  
Epoch = 133.6529 [0.0073] BKJD  
Rp/R\* = 0.0074 [0.0014]  
a/R\* = 1.58 [1.02]  
b = 0.93 [0.17]  
Seff = 1992.40 [788.43]  
Teq = 1704 [169] K  
Rp = 1.27 [0.43] Re  
a = 0.0456 [0.0112] AU  
Ag = 39.78 [21.57] [1.80 $\sigma$ ]  
Teffp = 6615 [693] K [6.89 $\sigma$ ]

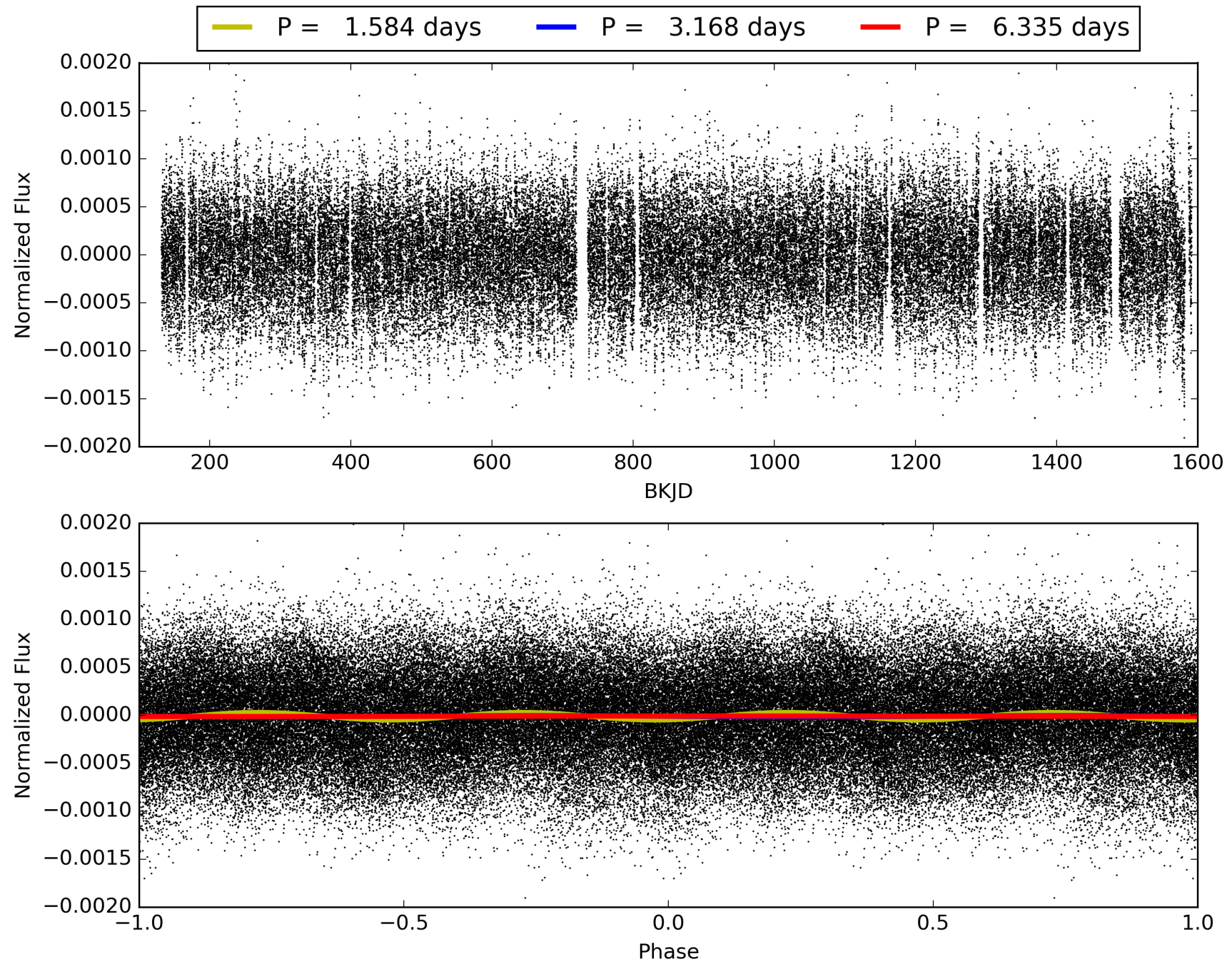
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: 100.0% [230.16 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.67e-16  
RollingBand-fgt: 1.00 [408/408]  
GhostDiagnostic-chr: 3.788  
Centroid-sig: 0.0%  
Centroid-so: 1.870 arcsec [2.26 $\sigma$ ]  
OotOffset-rm: 0.999 arcsec [1.56 $\sigma$ ]  
KicOffset-rm: 0.929 arcsec [1.40 $\sigma$ ]  
OotOffset-st: 4/3/2/3 [12]  
KicOffset-st: 4/3/2/3 [12]  
DiffImageQuality-fgm: 0.83 [10/12]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 006153673-01, PDC Light Curves

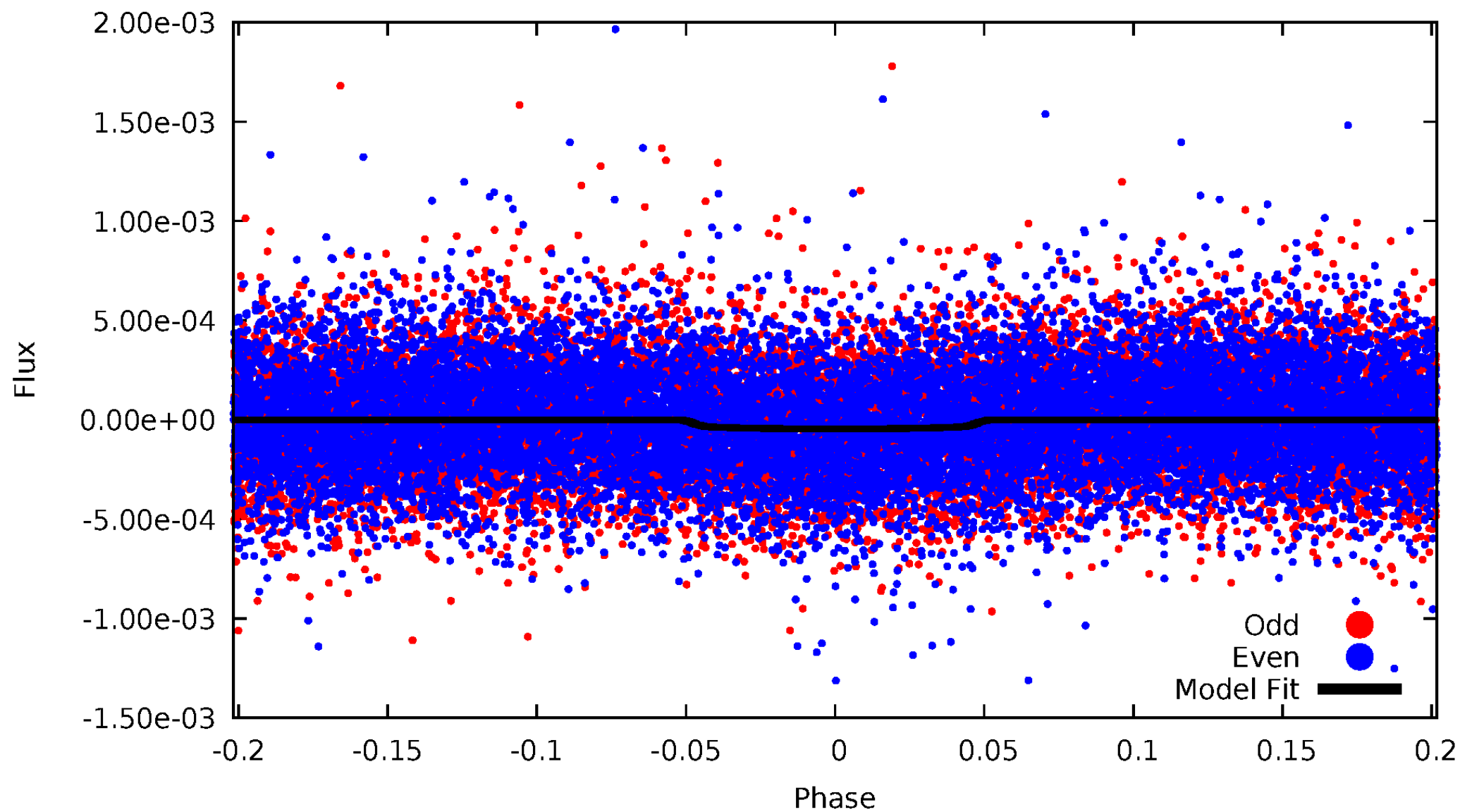


TCE 006153673-01



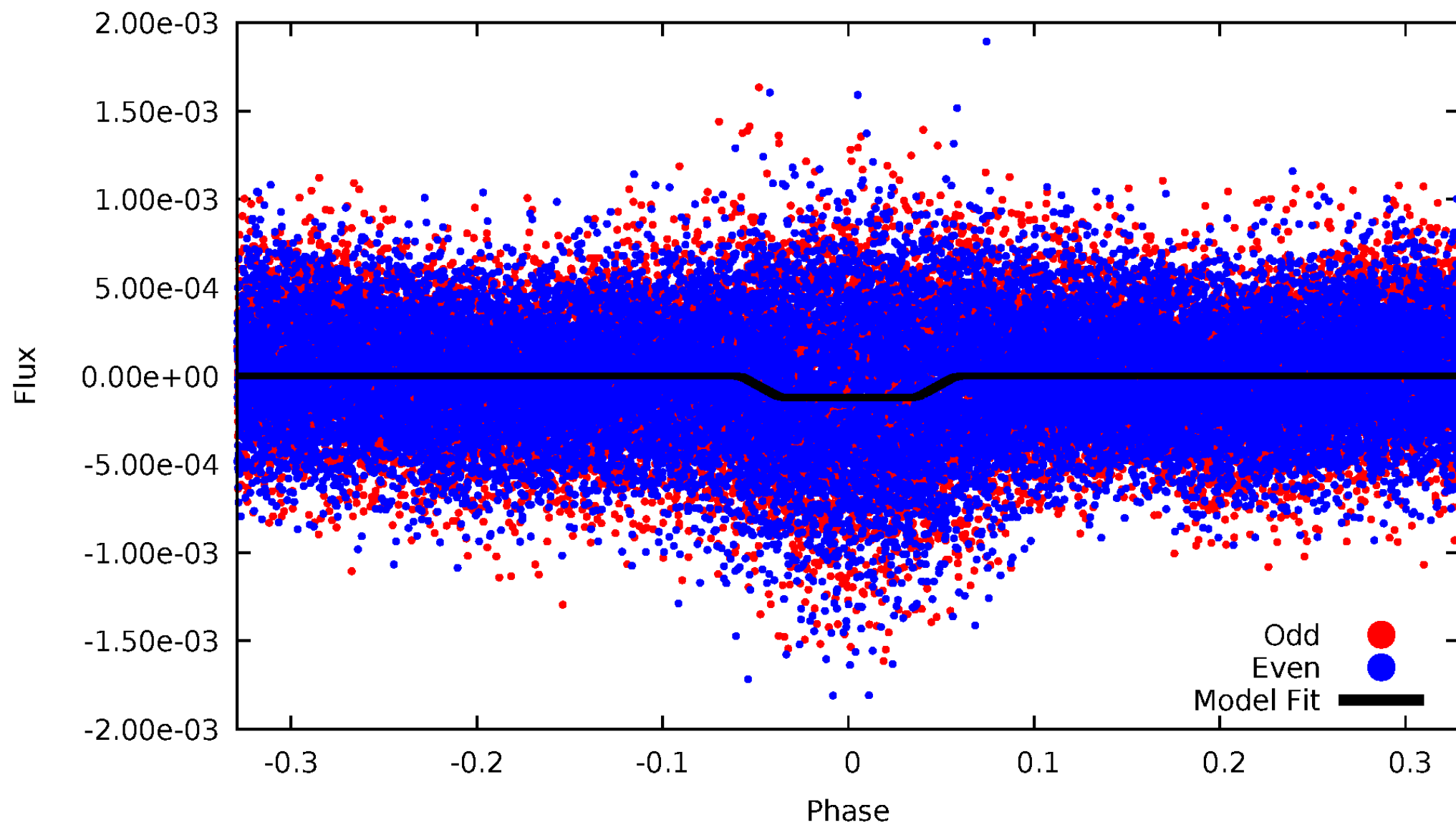
# DV Odd/Even

TCE 006153673-01

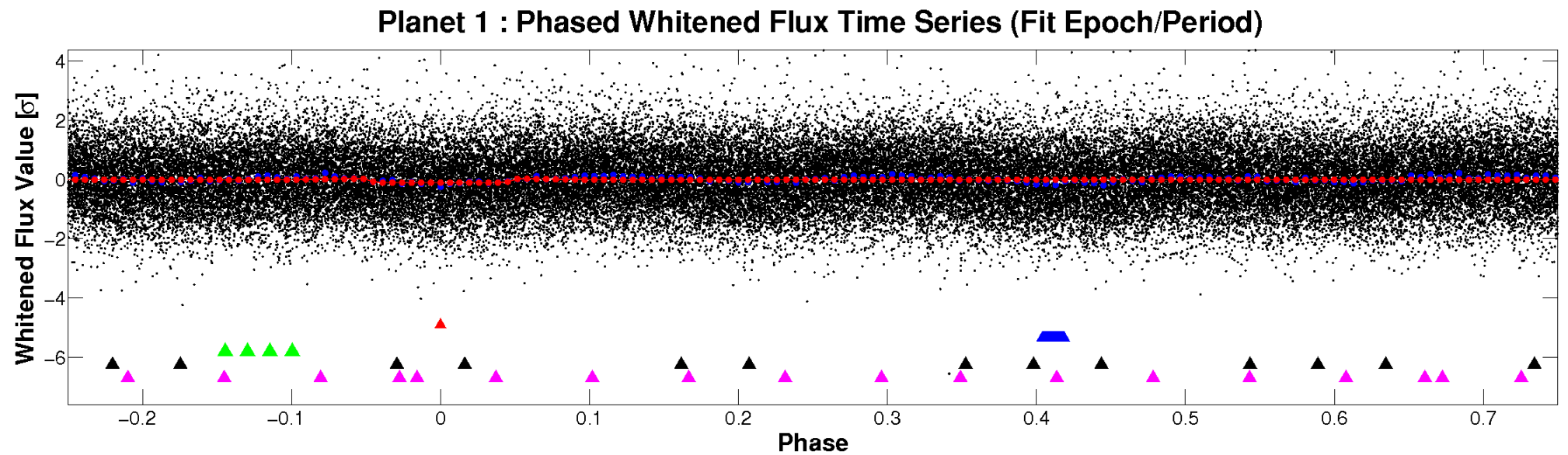
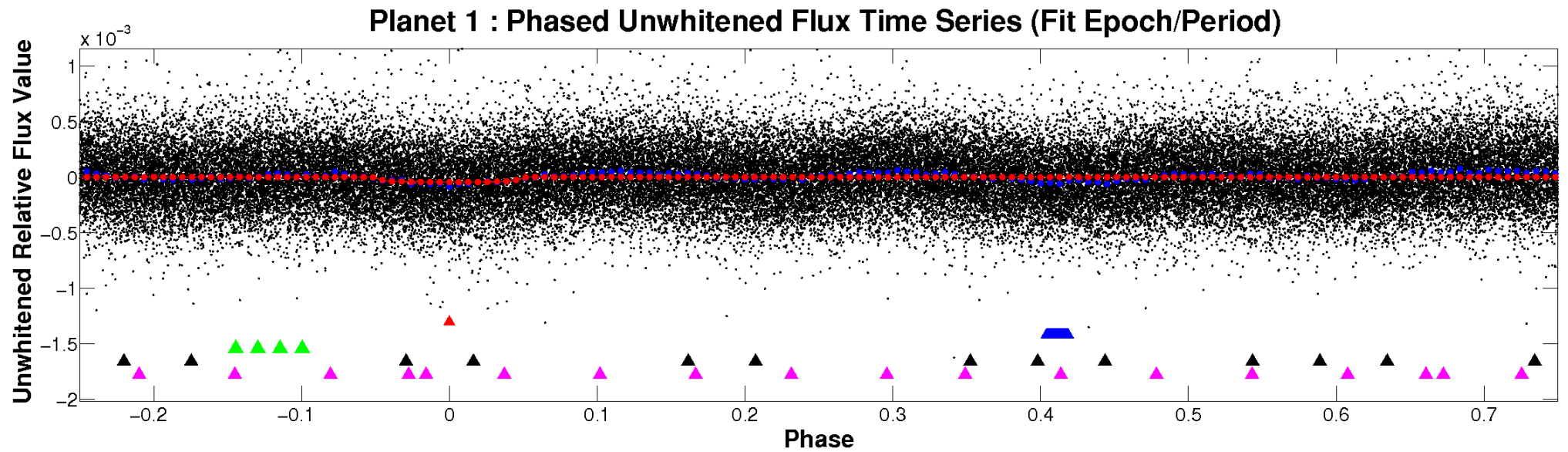


# ALT Odd/Even

TCE 006153673-01

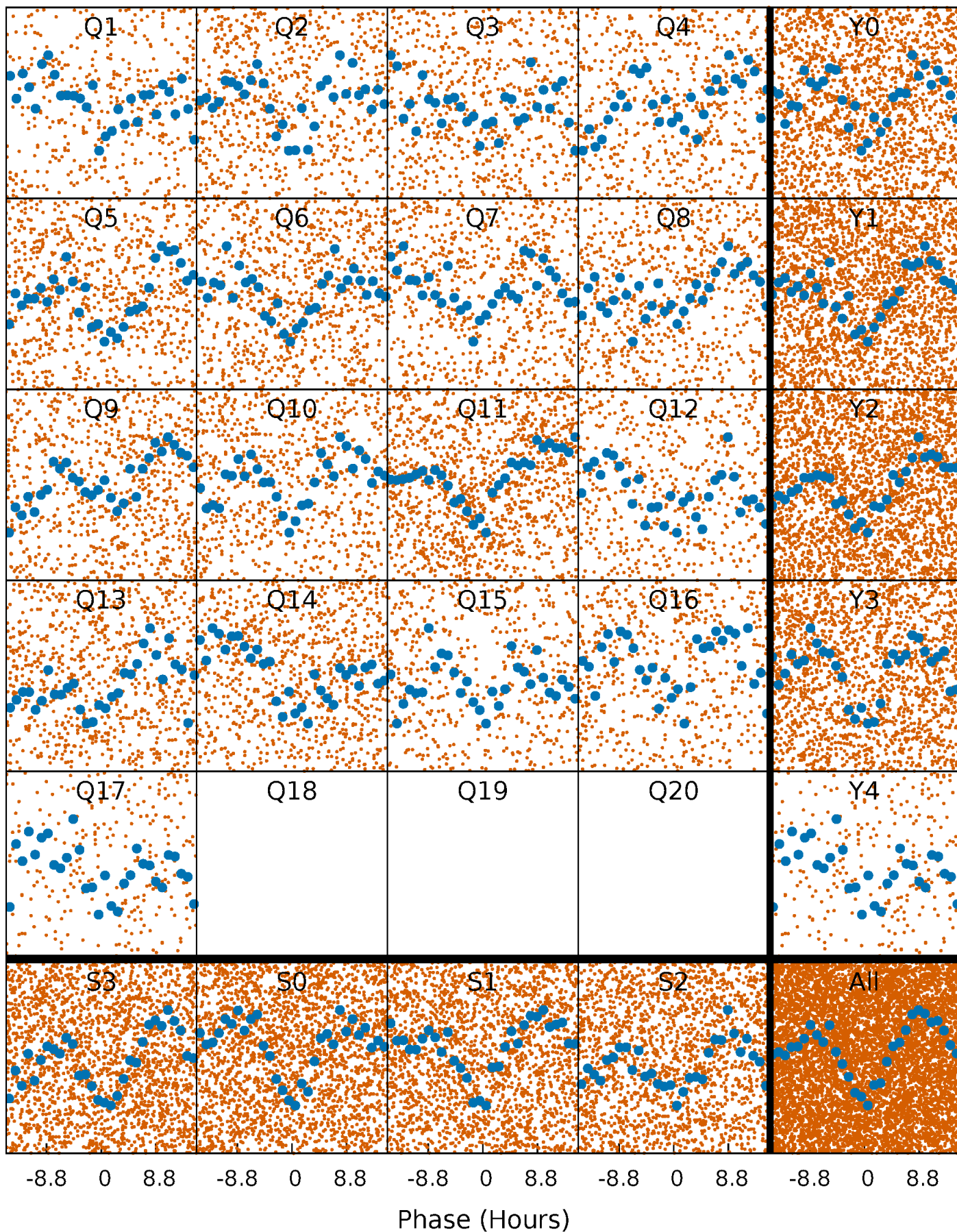


# Non-Whitened Vs. Whitened Light Curve



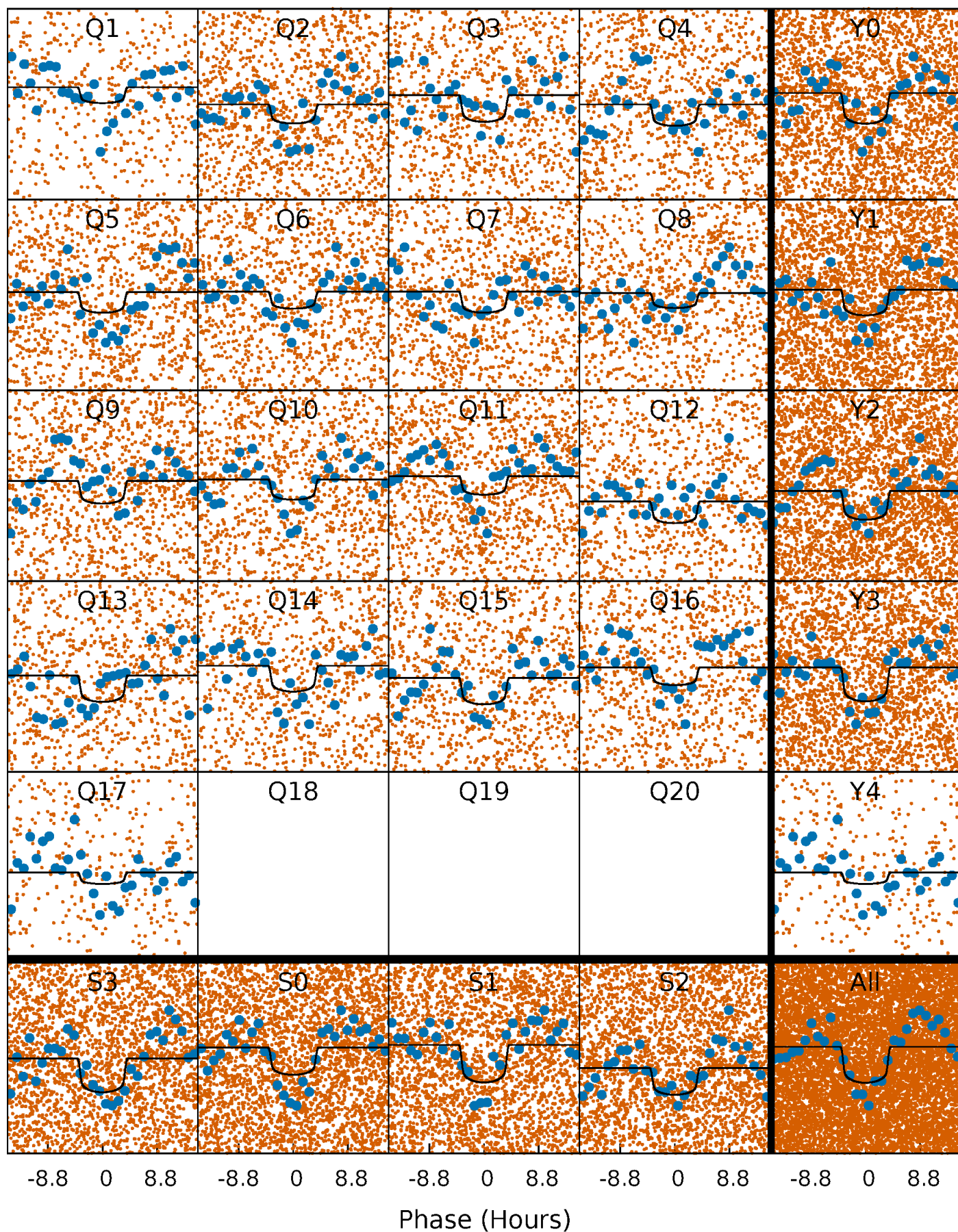
# PDC Quarter-Phased Transit Curves

TCE 006153673-01 P= 3.167617 Days  $T_0=133.652933$  (BKJD)



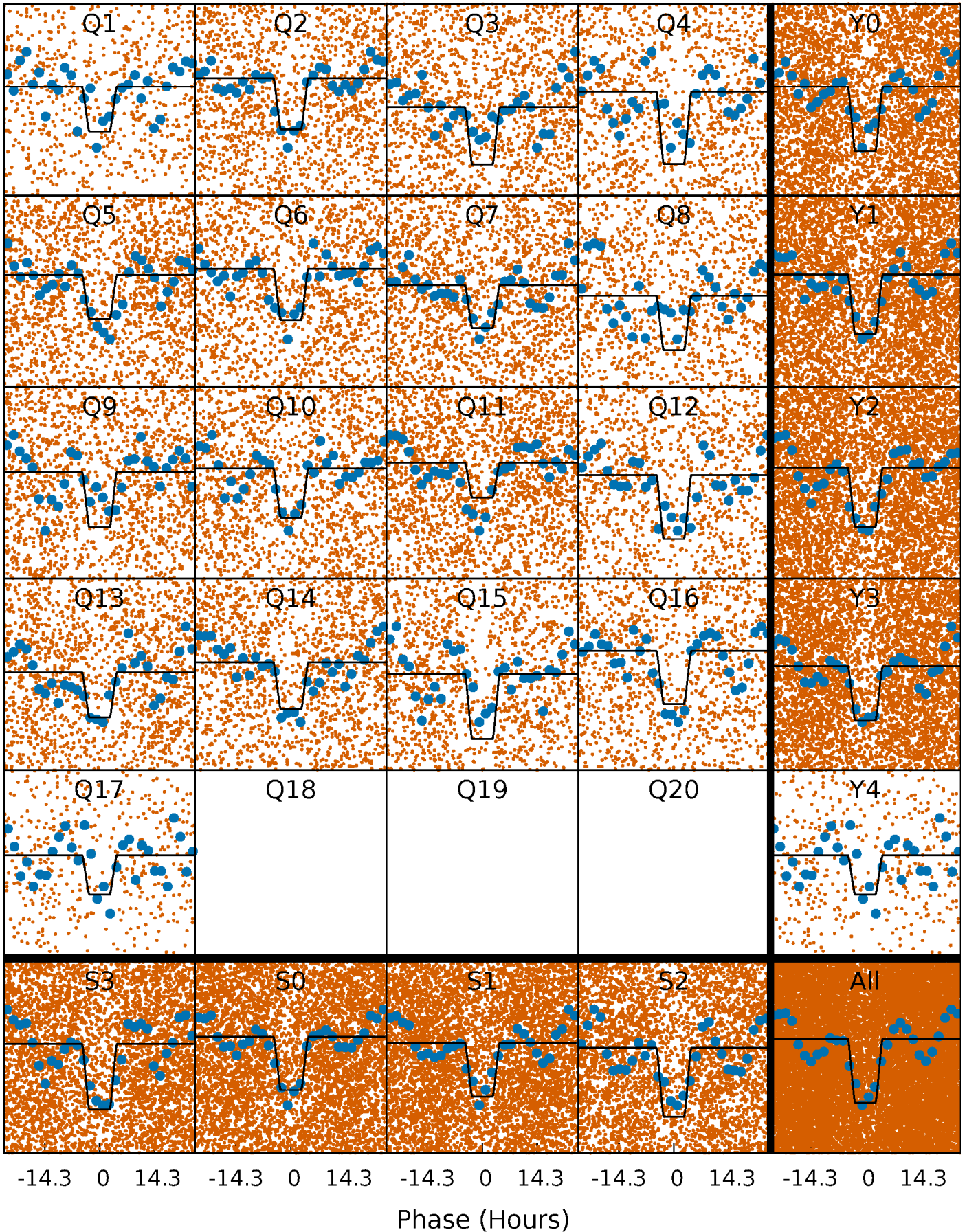
# DV Quarter-Phased Transit Curves

TCE 006153673-01 P= 3.167617 Days  $T_0=133.652933$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

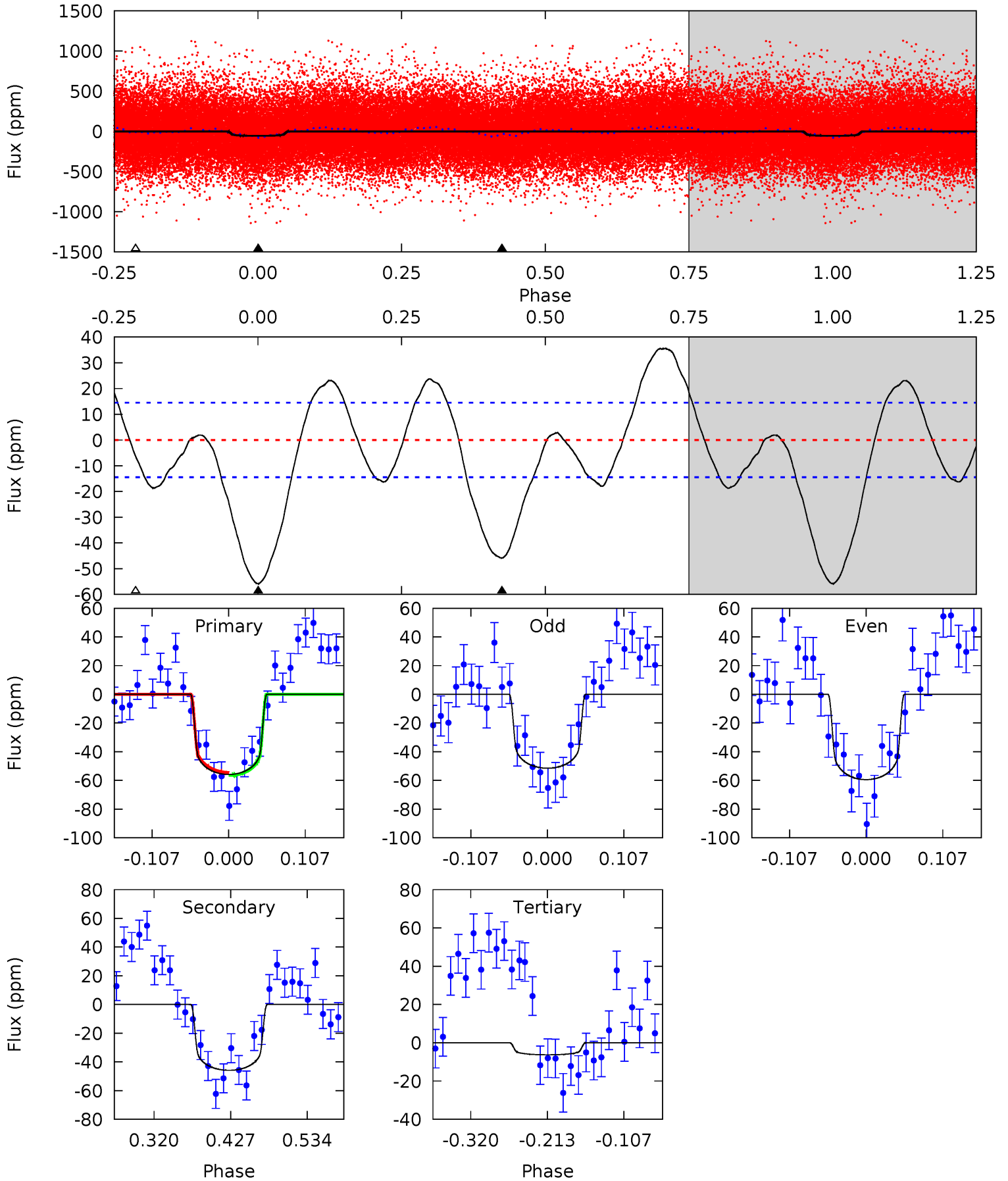
TCE 006153673-01 P= 3.167502 Days  $T_0=133.693980$  (BKJD)



# DV Model-Shift Uniqueness Test

006153673-01, P = 3.167617 Days, E = 130.485316 Days

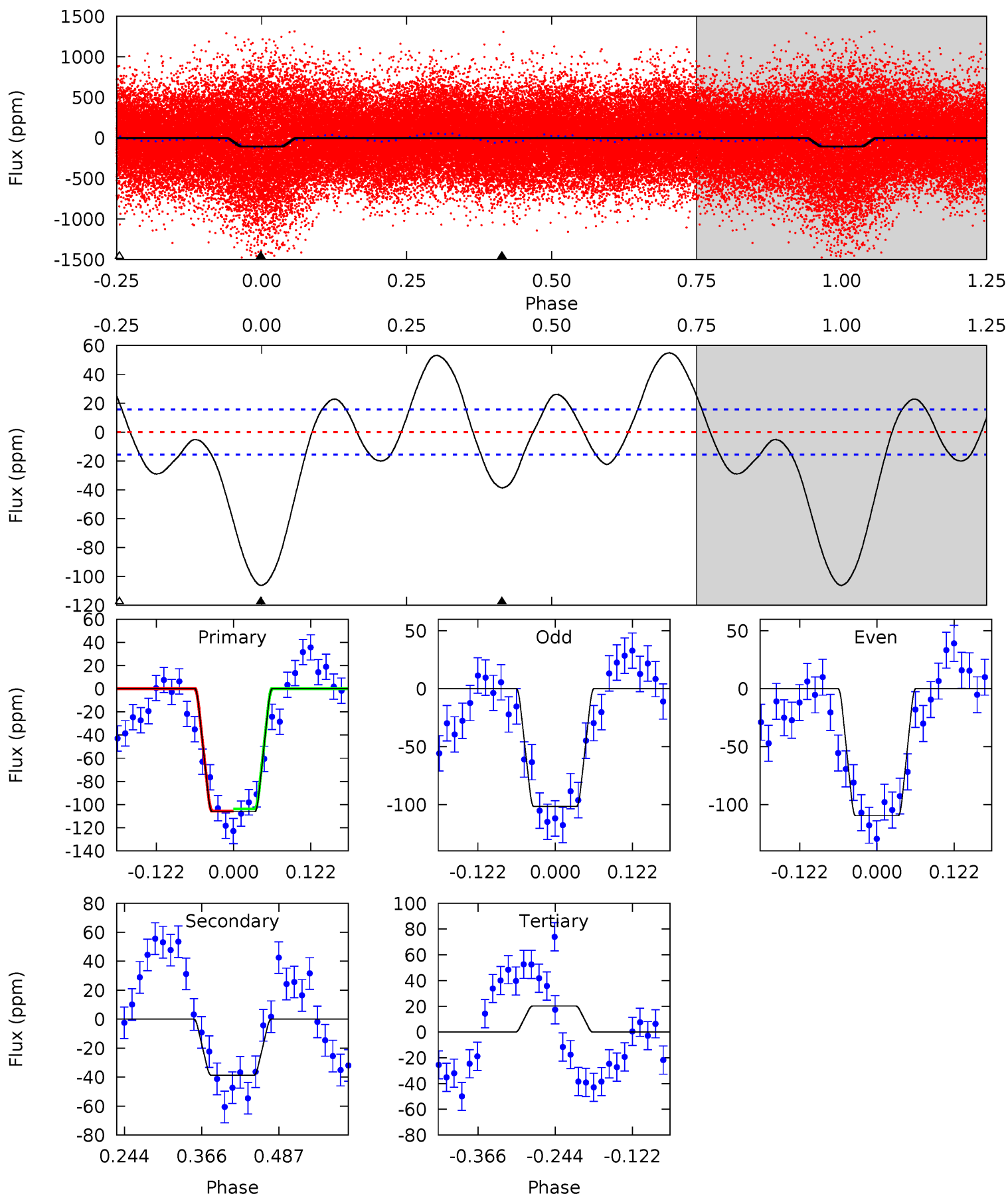
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.6	14.4	1.98	0	4.55	1.61	5.22	15.6	17.6	12.4	14.4	1.26	0.89	0.39	0.33



# Alt Model-Shift Uniqueness Test

006153673-01, P = 3.167502 Days, E = 130.526478 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
30.8	11.2	-5.86	0	4.52	1.55	7.32	36.6	30.8	17.1	11.2	1.15	1.00	0.34	0.24



### Stellar Parameters For KIC 006153673

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6572^{+181}_{-227}$	$4.144^{+0.209}_{-0.171}$	$-0.200^{+0.250}_{-0.300}$	$1.574^{+0.439}_{-0.439}$	$1.265^{+0.181}_{-0.221}$	$0.457^{+0.544}_{-0.214}$
	+3%/-3%	+5%/-4%	+125%/-150%	+28%/-28%	+14%/-17%	+119%/-47%
Source	PHO1	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 006153673-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-46 \pm 3$	$1.24^{+0.33}_{-0.28}$	$2381^{+170}_{-188}$	$6282^{+824}_{-546}$	$34^{+22}_{-13}$
Alt.	$-39 \pm 3$	$1.87^{+0.40}_{-0.36}$	$2364^{+187}_{-185}$	$4968^{+356}_{-279}$	$12^{+7}_{-4}$

$T_{\text{max}}$  = 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

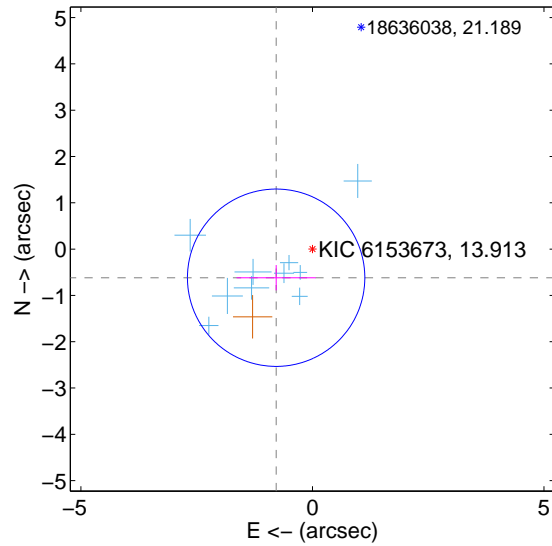
Supplemental centroid analysis for 006153673-01. Kepler magnitude: 13.91. Transit SNR 8.17

There are 10 quarters with good PRF difference image offsets

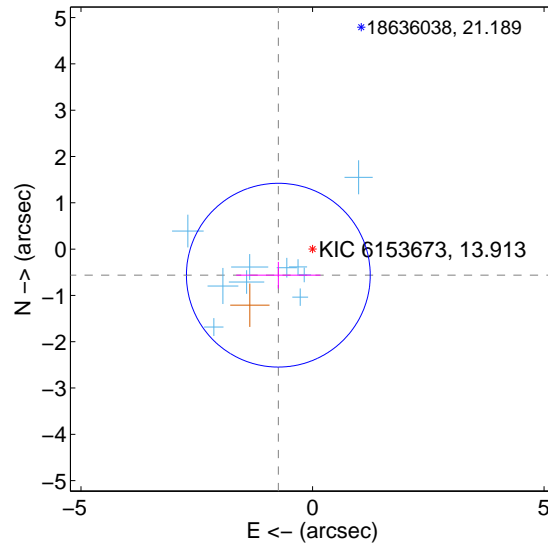
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.999 \pm 0.638$	1.56	$0.784 \pm 0.856$	$-0.618 \pm 0.273$
PRF-fit source offset from KIC position	$0.929 \pm 0.662$	1.40	$0.738 \pm 0.911$	$-0.563 \pm 0.286$
photometric centroid source offset	$1.87 \pm 0.83$	2.26	$0.08 \pm 1.72$	$-1.87 \pm 0.83$

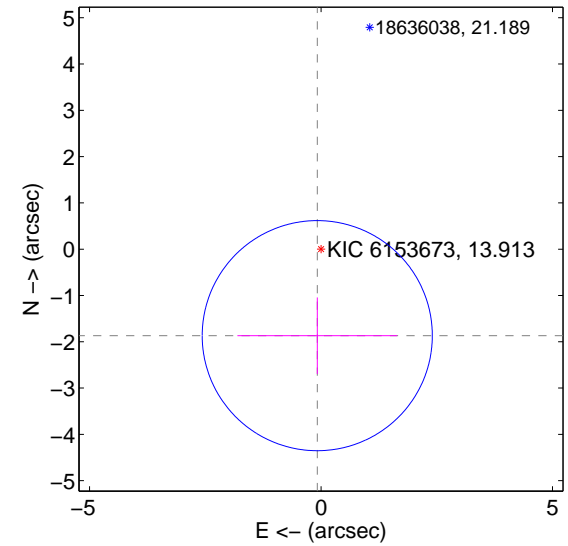
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

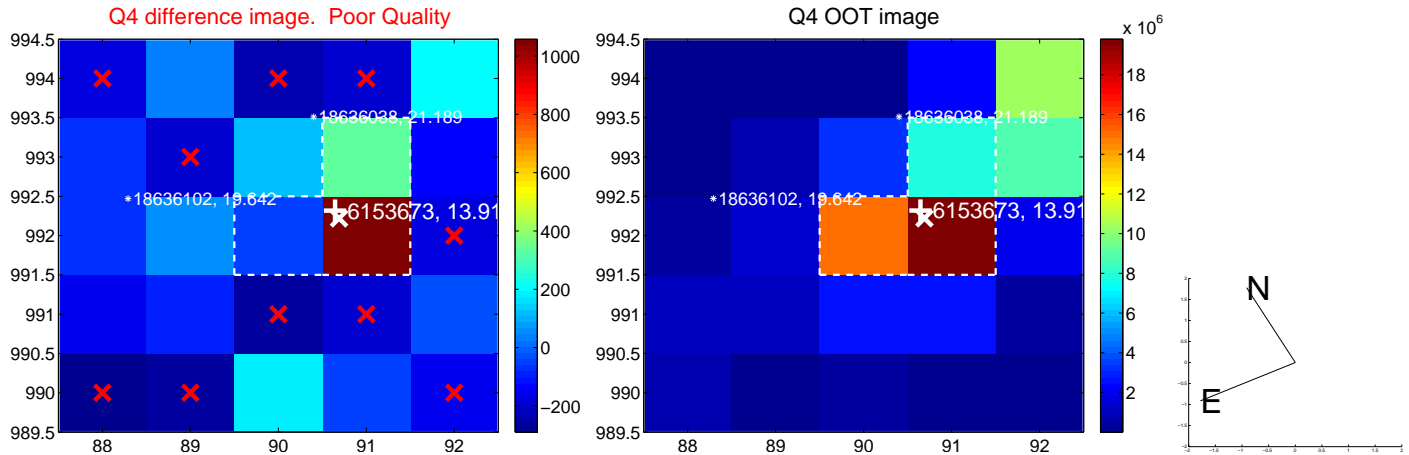
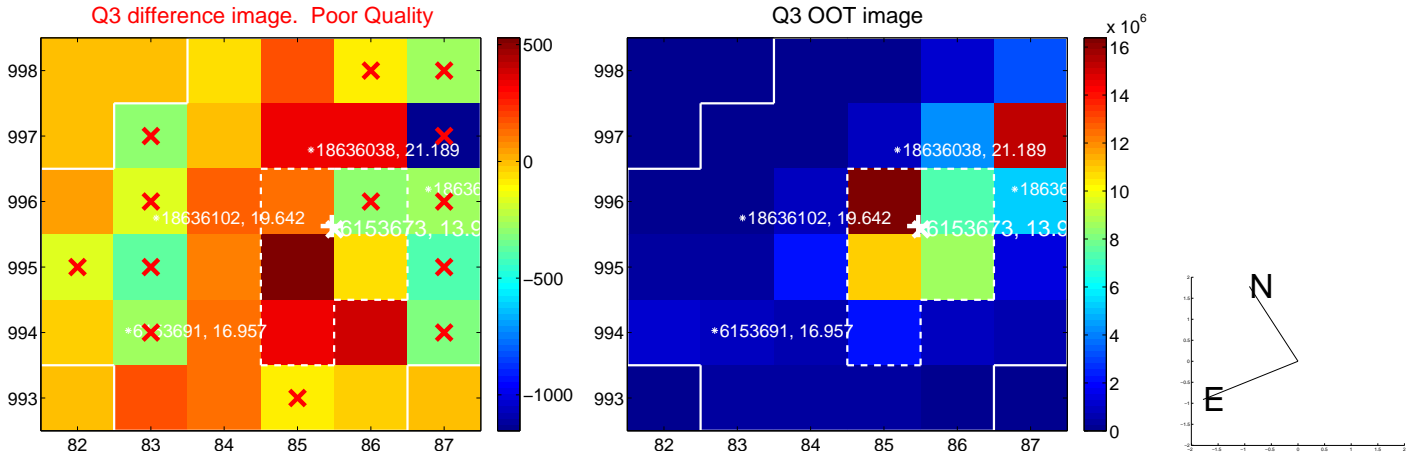
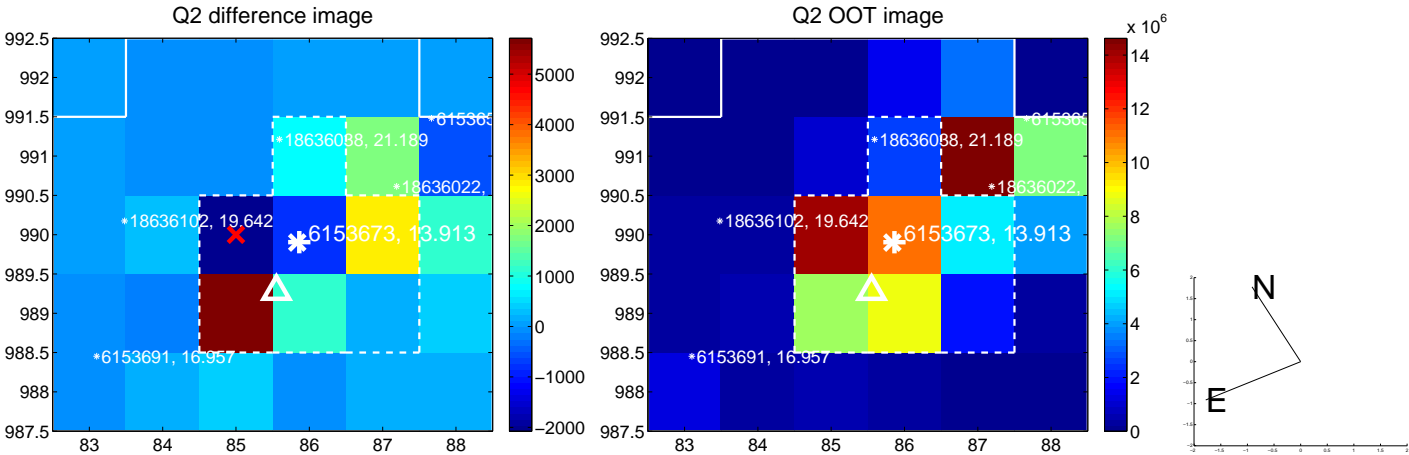
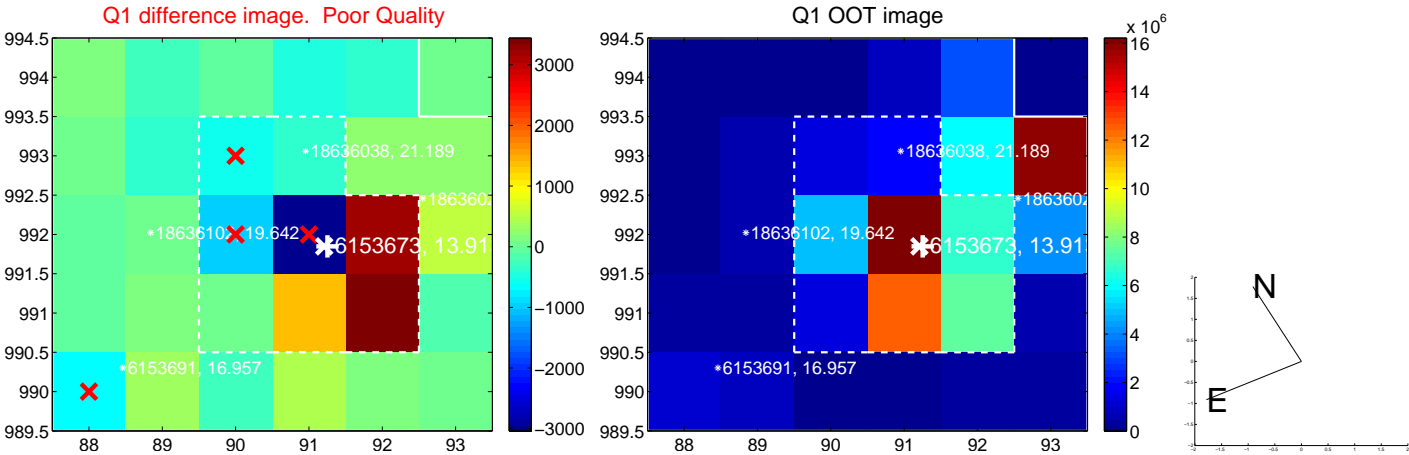


offset from photometric centroids

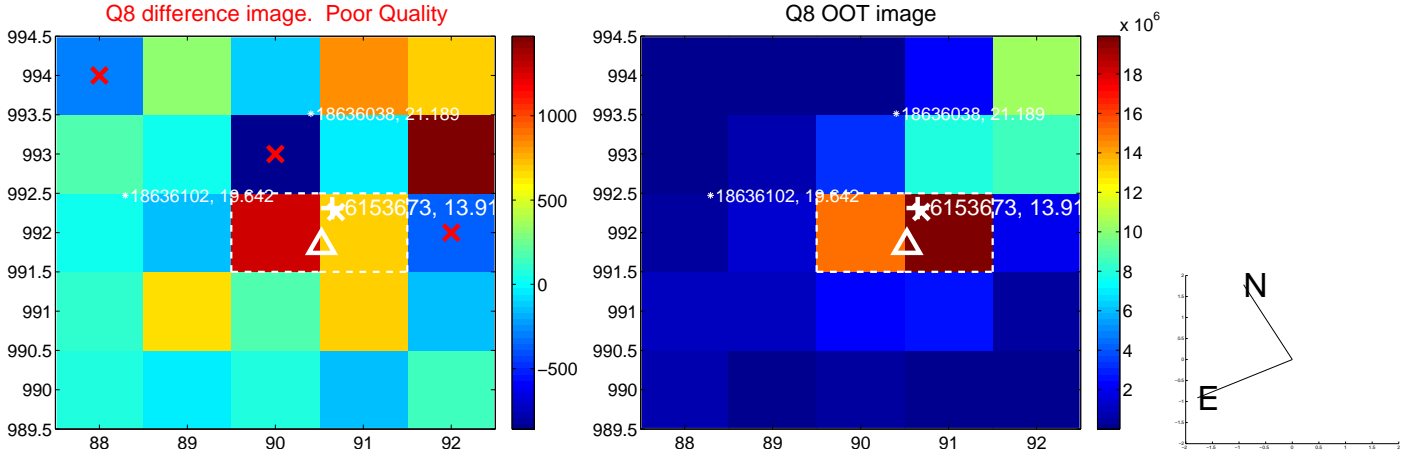
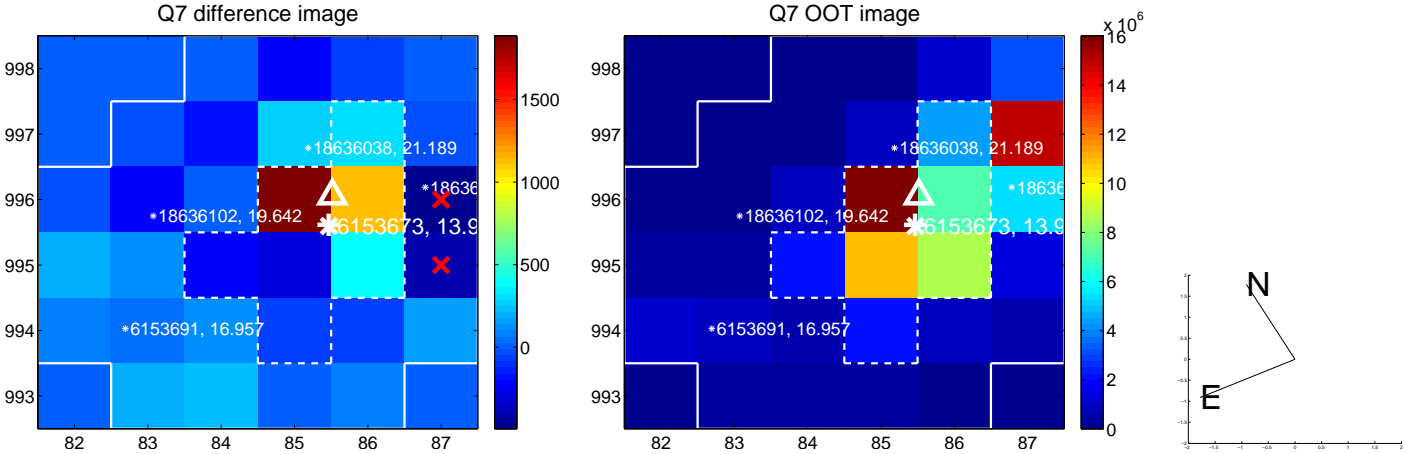
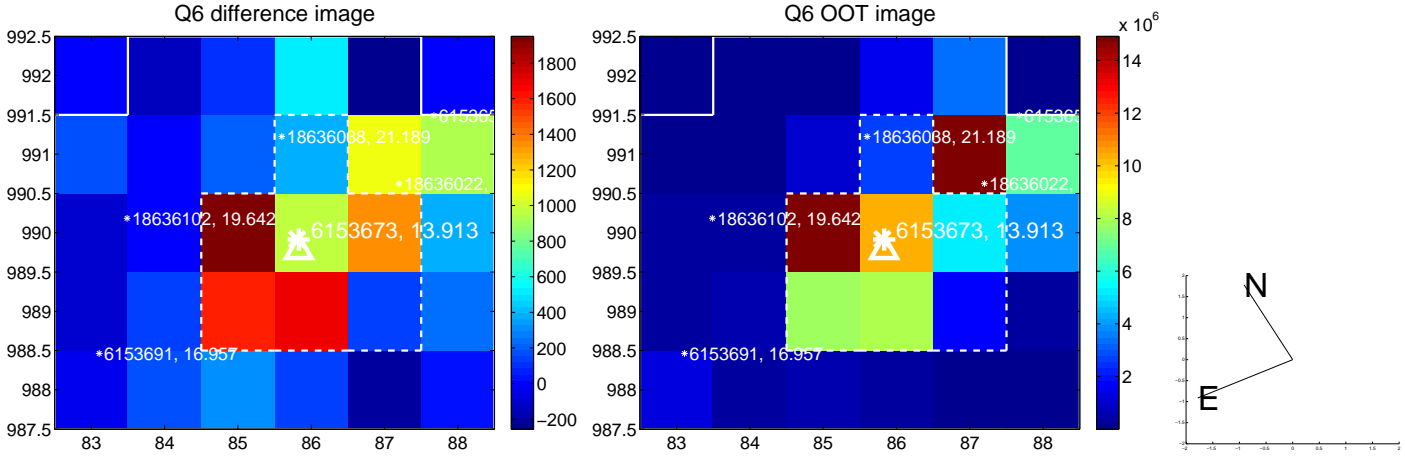
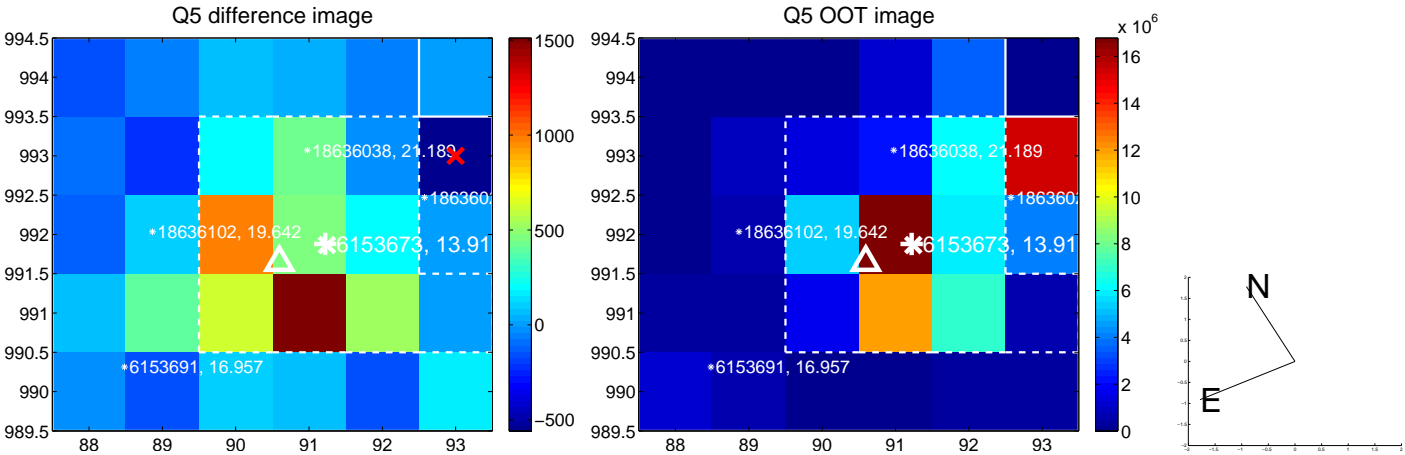


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

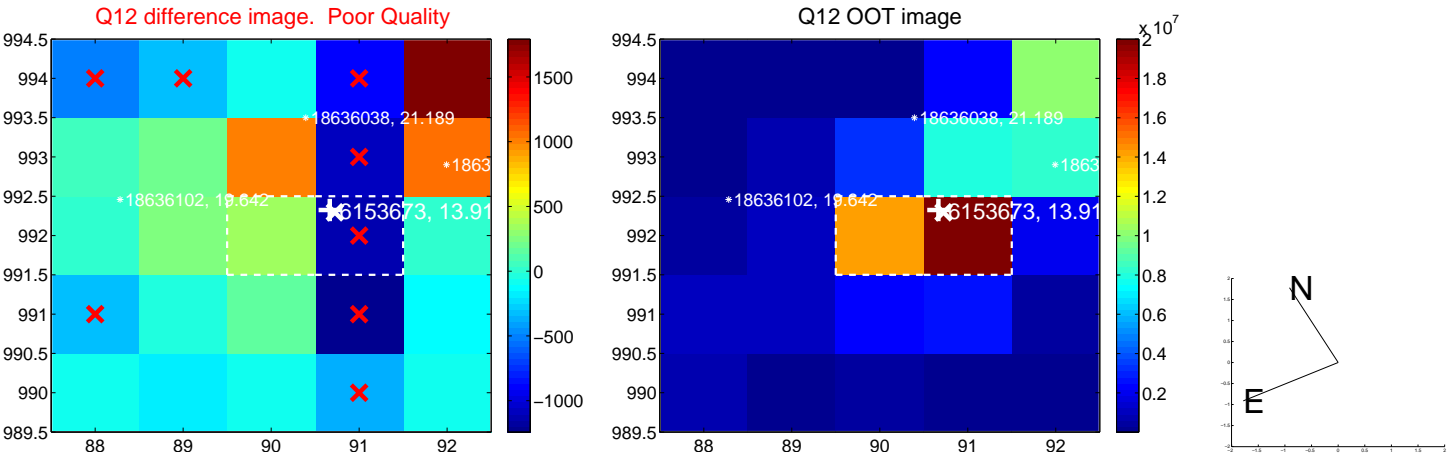
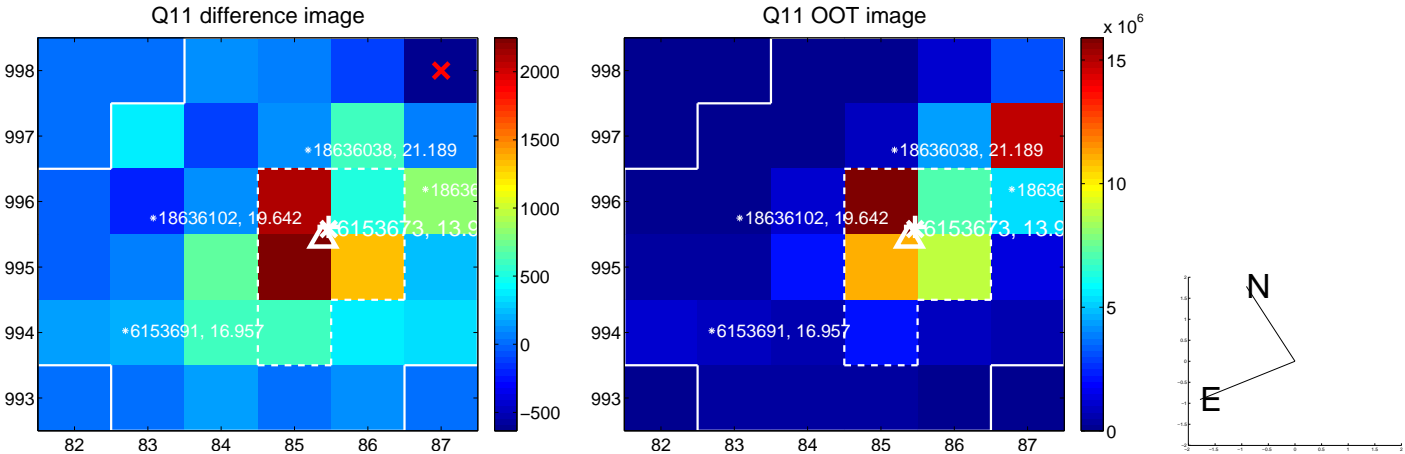
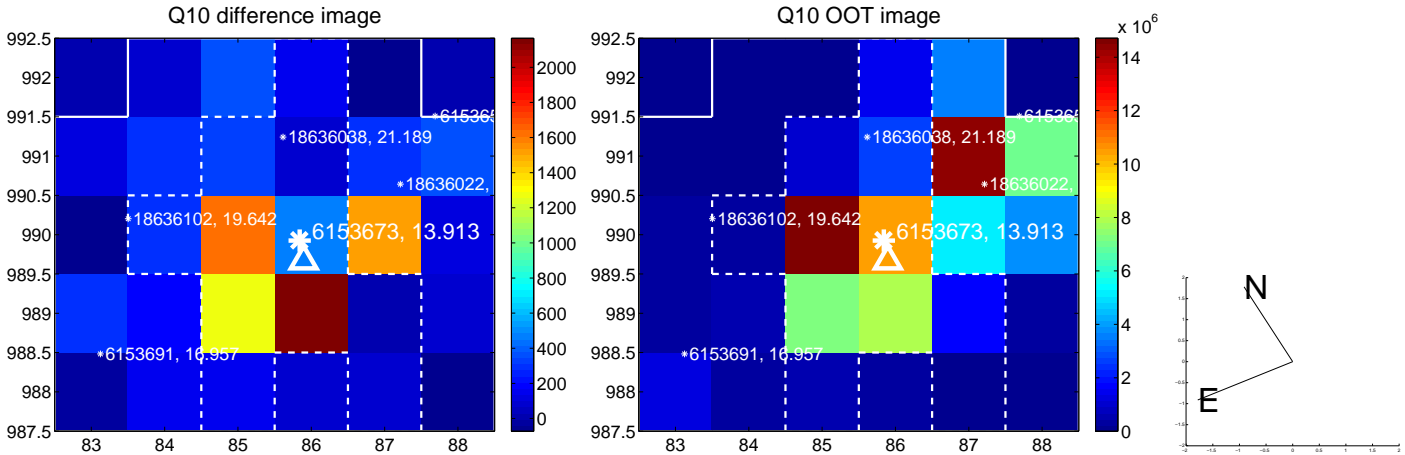
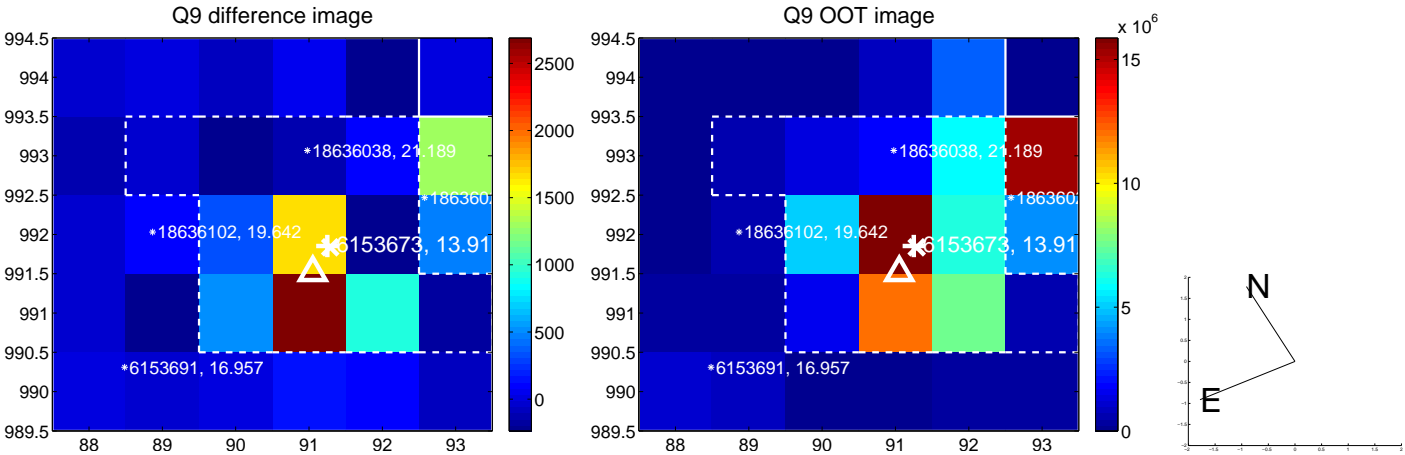
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



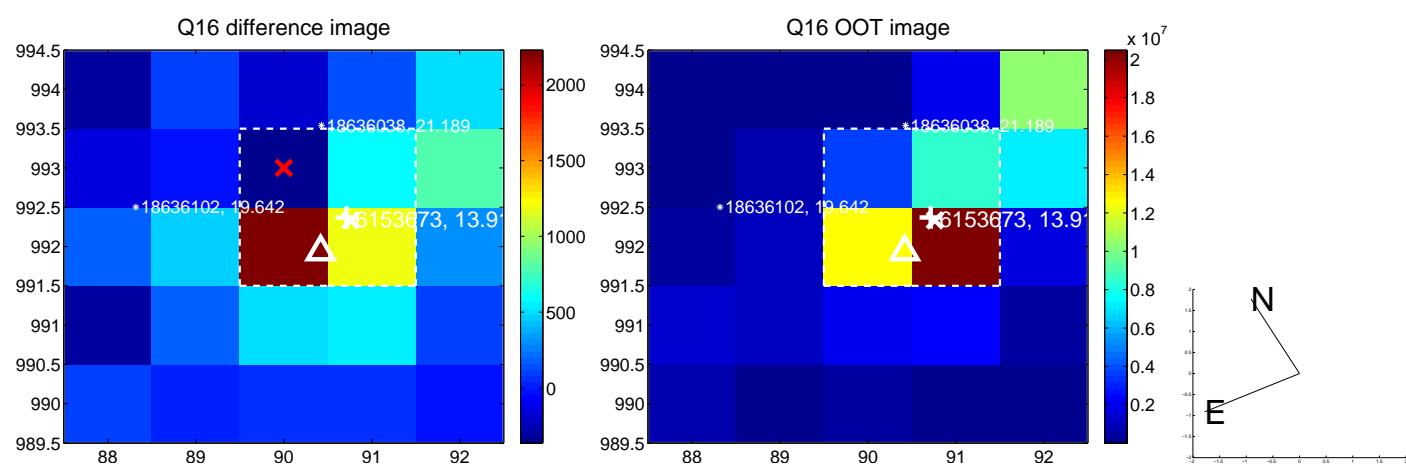
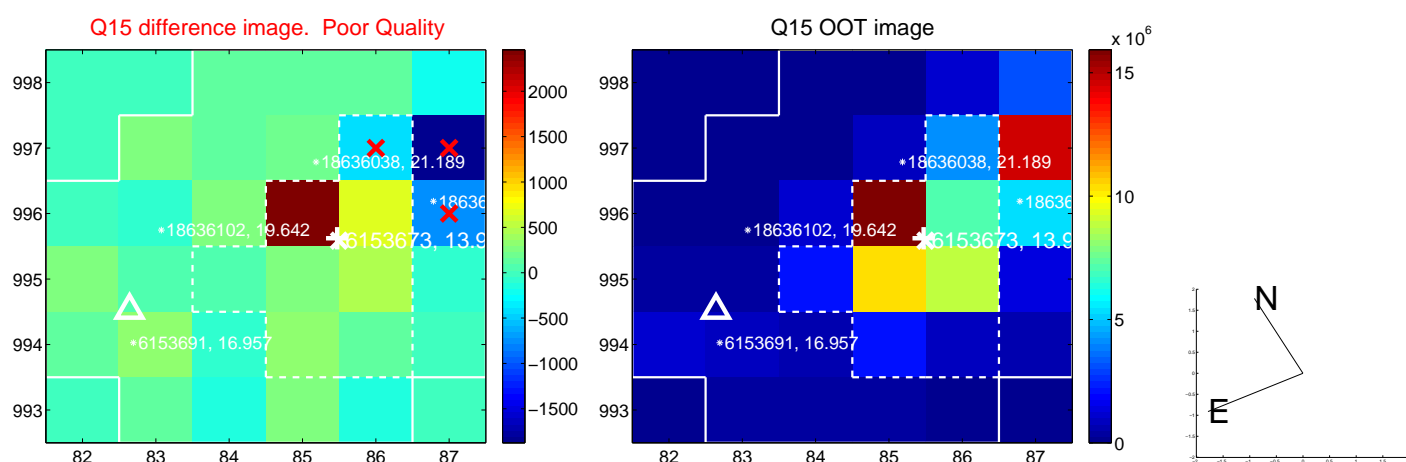
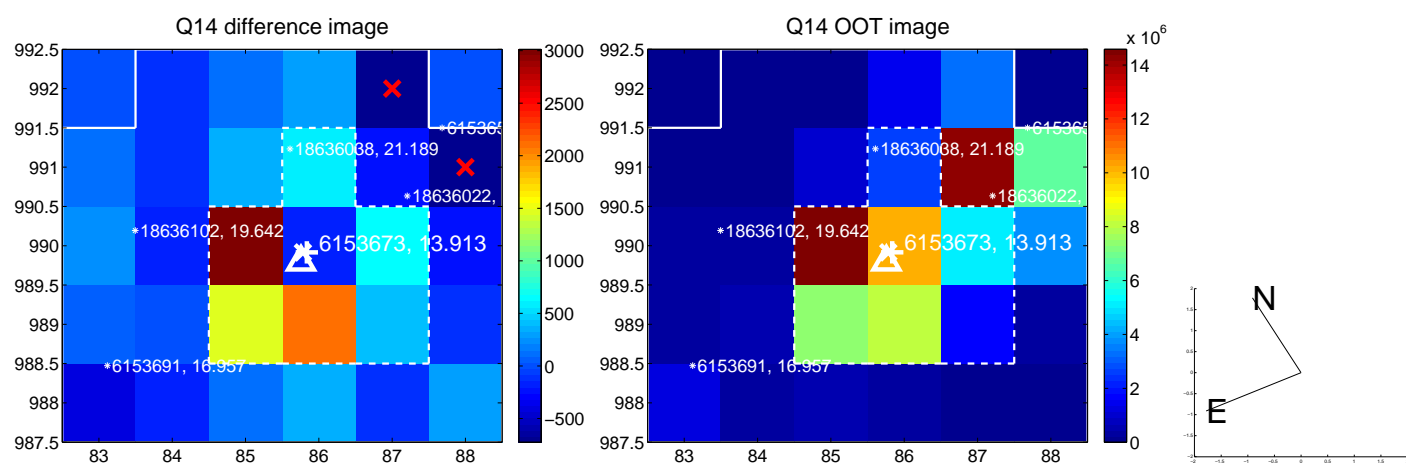
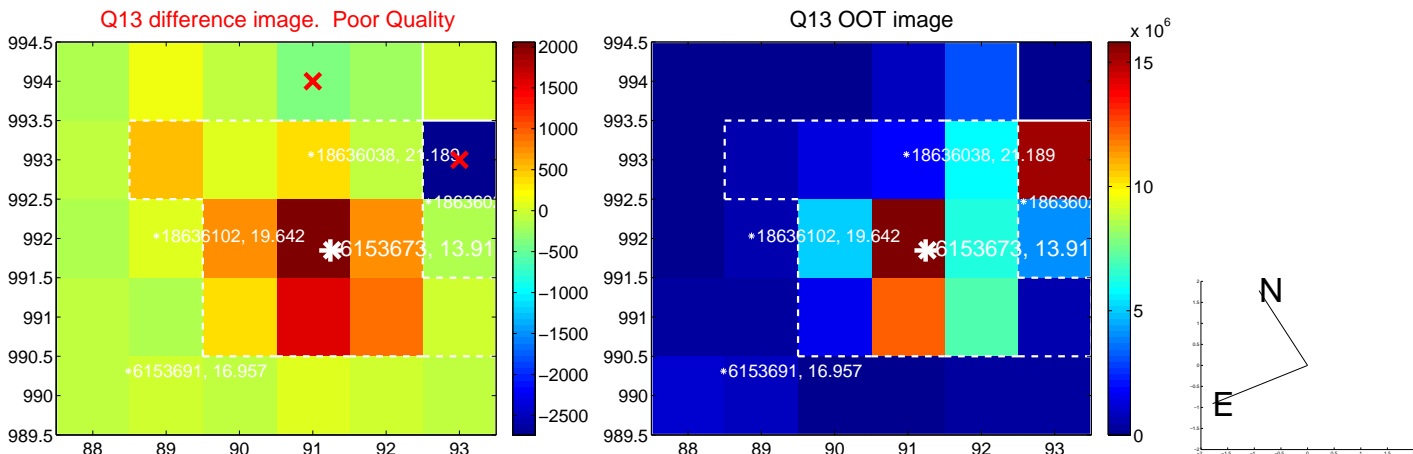
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



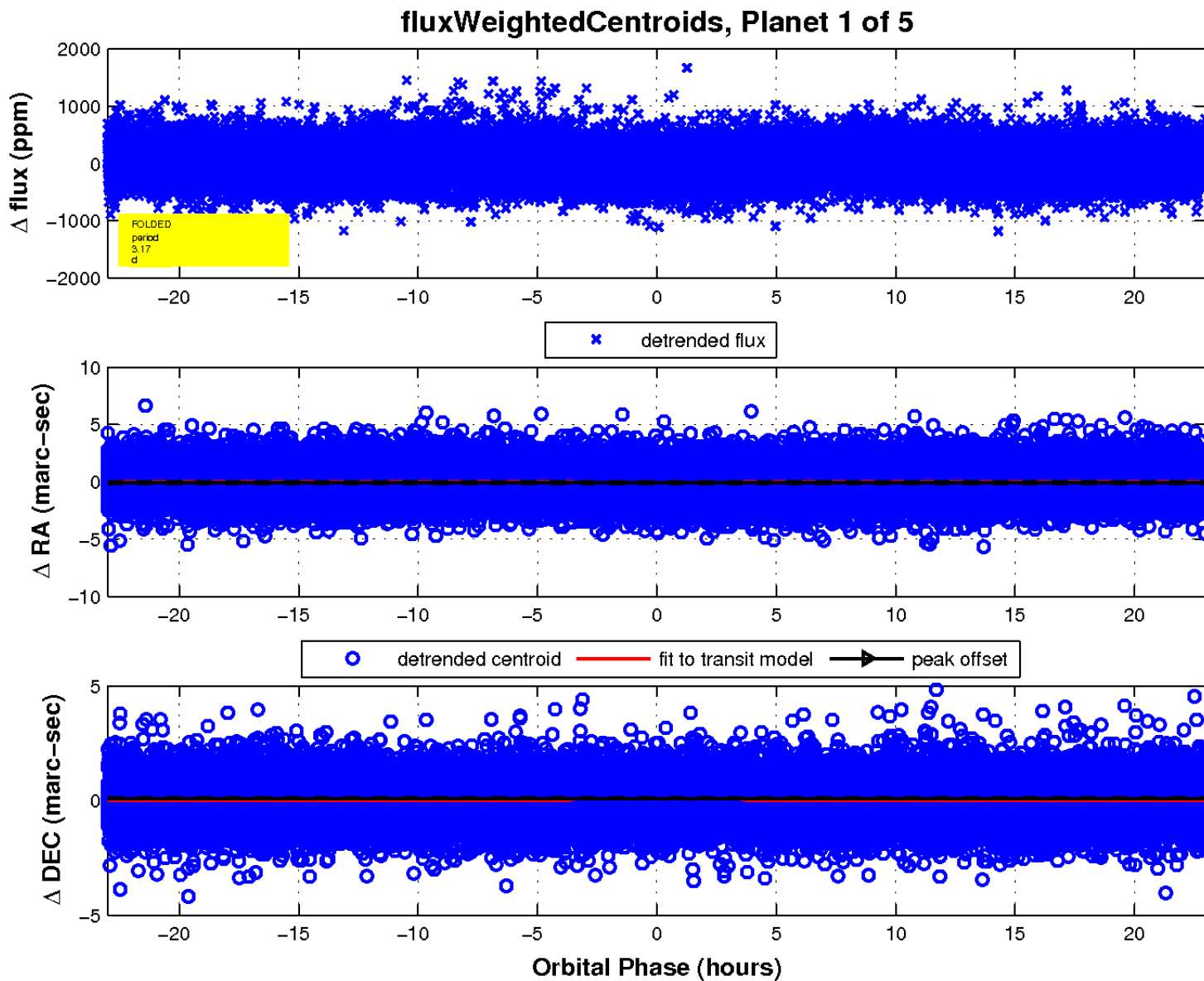
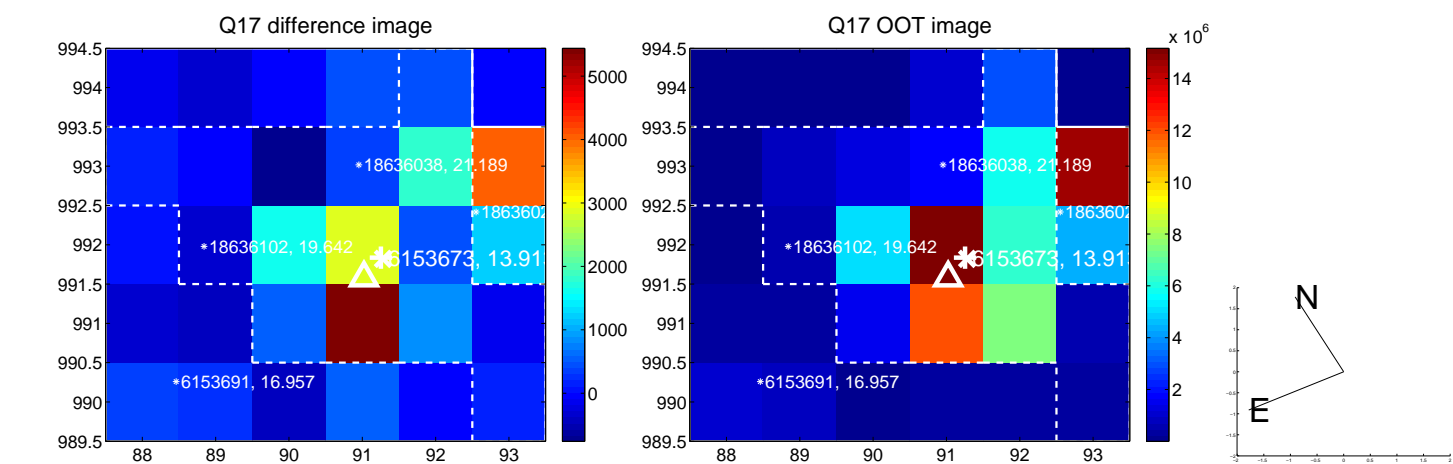
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

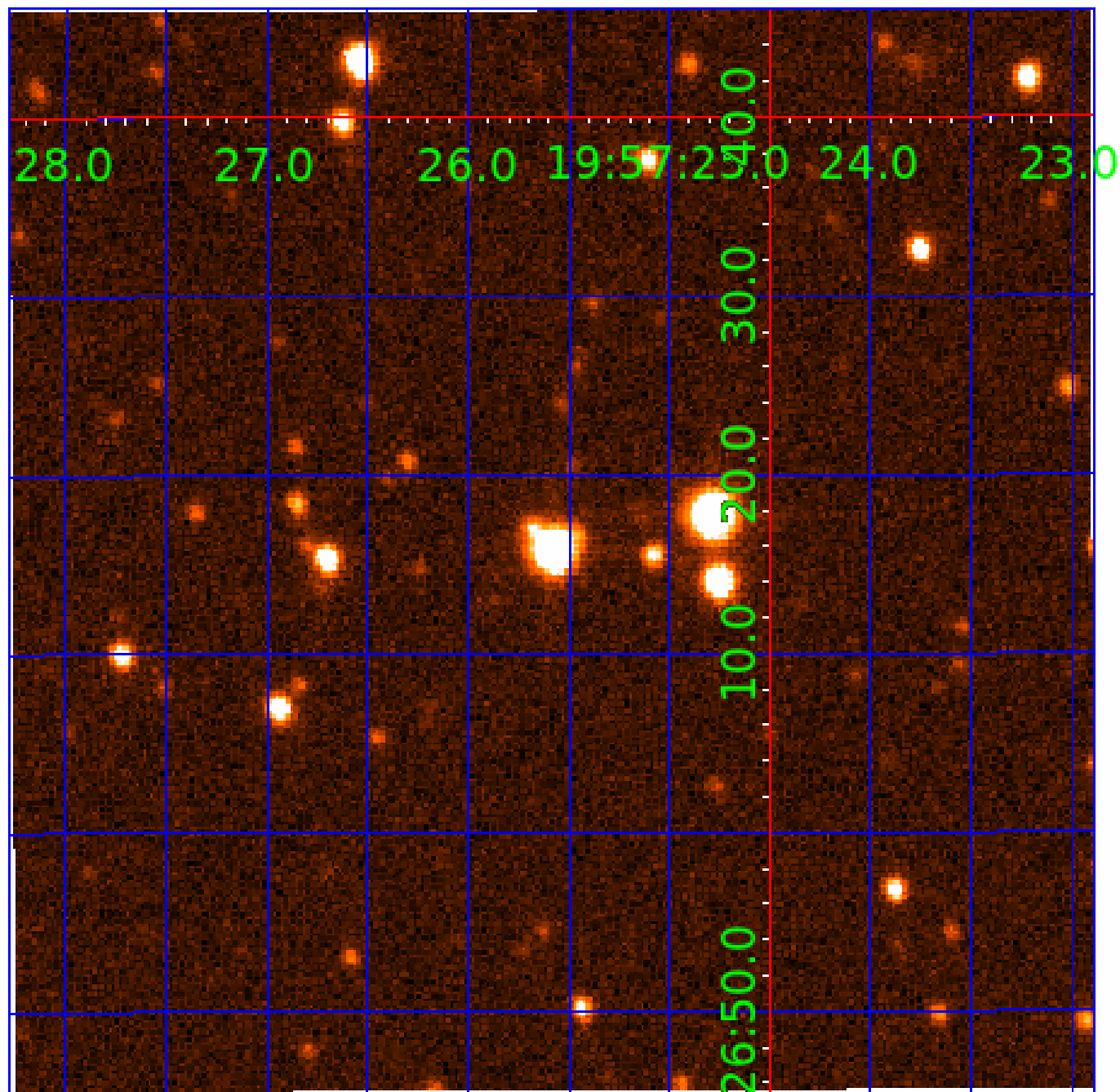


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006153673

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006153673-01	OBS	No	3.167617	133.652933	45.7	7.668	8.9	8.2	1.57	6572	1.27	1992.40
006153673-02	OBS	No	3.167515	131.811669	54.9	9.964	10.1	10.9	1.57	6572	1.38	1992.49
006153673-03	OBS	No	376.993981	237.726594	860.2	14.105	9.3	8.7	1.57	6572	8.73	3.40
006153673-04	OBS	No	113.429564	221.504564	544.8	2.661	8.0	8.2	1.57	6572	6.97	16.88
006153673-05	OBS	No	80.177986	183.297440	416.4	2.386	7.1	7.2	1.57	6572	3.69	26.81

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006153673-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006153673-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
006153673-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006153673-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
006153673-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

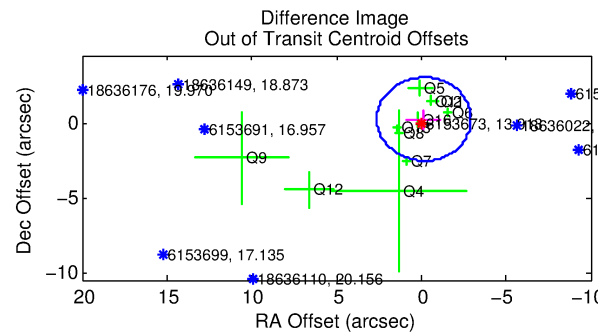
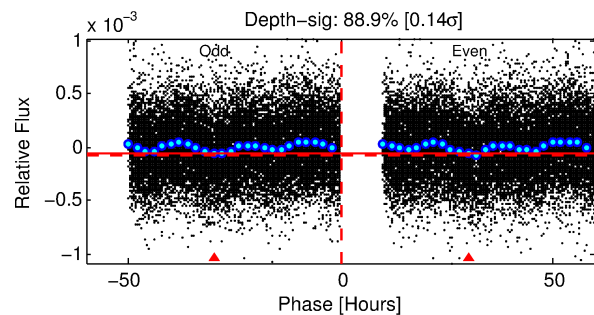
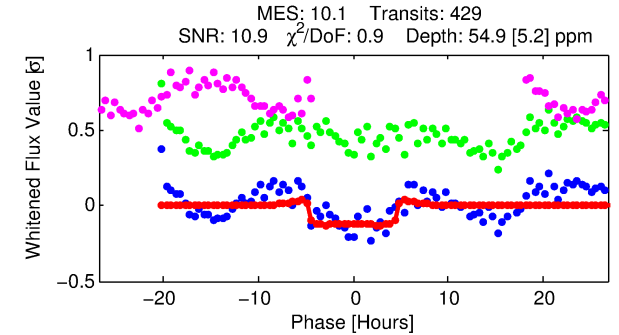
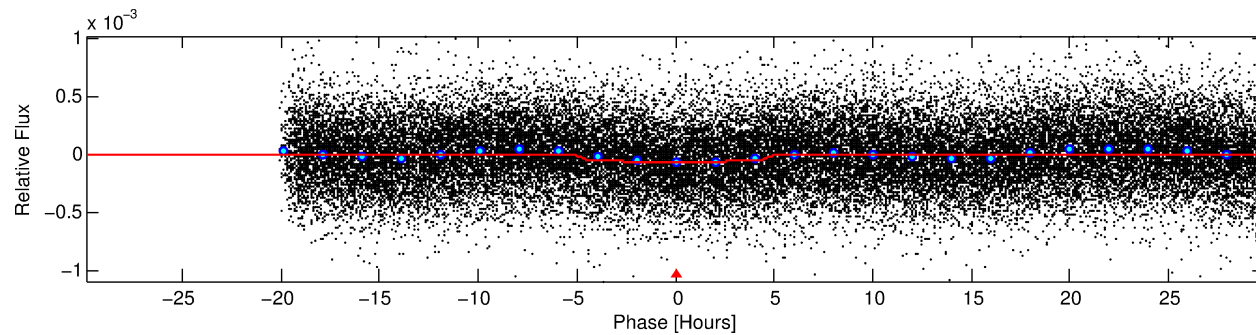
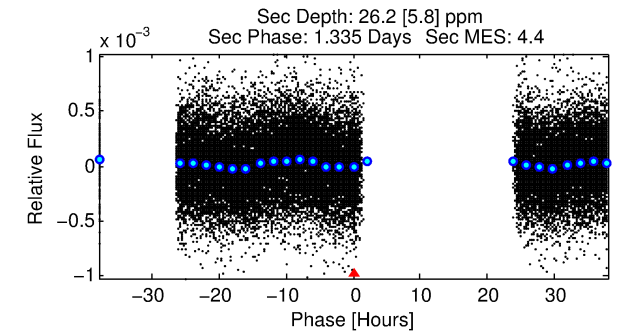
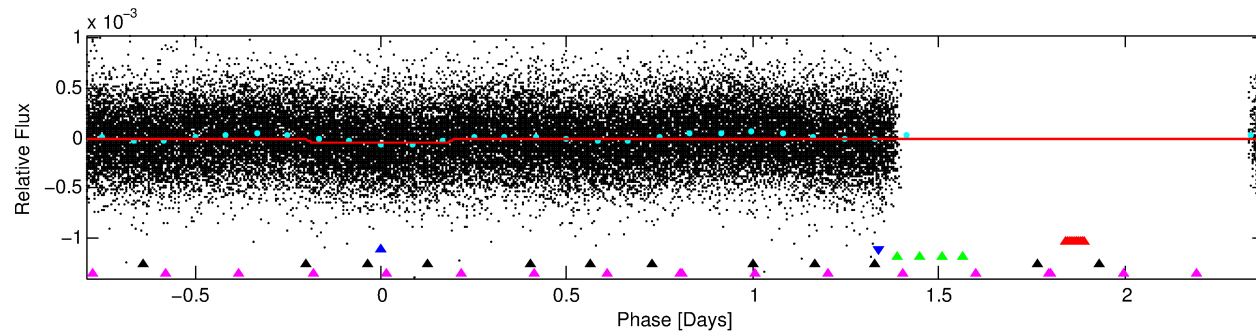
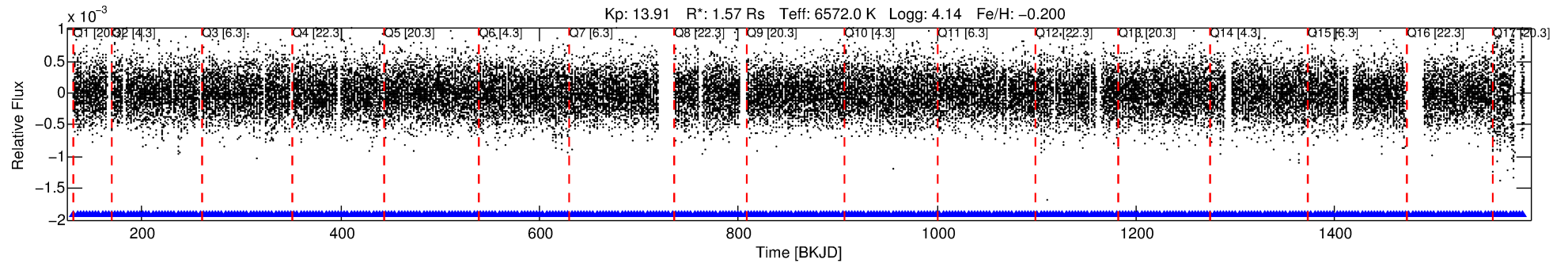
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006153673-02

No Significant Match Found

# DV One-Page Summary

KIC: 6153673 Candidate: 2 of 5 Period: 3.168 d



## DV Fit Results:

Period = 3.16752 [0.00003] d  
Epoch = 131.8117 [0.0068] BKJD  
Rp/R\* = 0.0080 [0.0011]  
a/R\* = 1.40 [0.49]  
b = 0.91 [0.13]  
Seff = 1992.49 [788.46]  
Teff = 1704 [169] K  
Rp = 1.38 [0.42] Re  
a = 0.0456 [0.0112] AU  
Ag = 15.76 [7.95] [1.86σ]  
Teffp = 5248 [484] K [6.91σ]

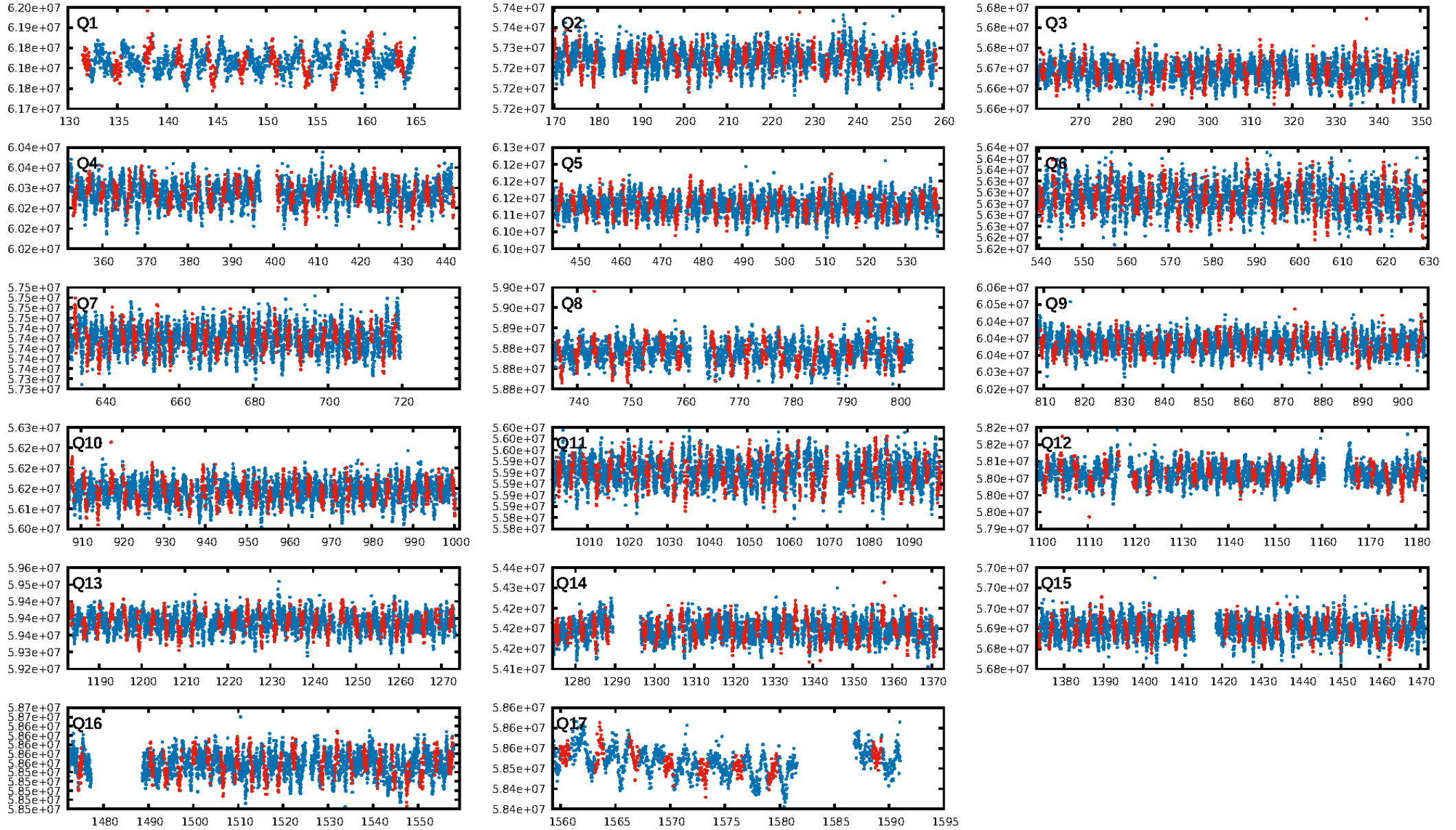
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.21e-22  
RollingBand-fgt: 1.00 [410/410]  
GhostDiagnostic-chr: 3.503  
Centroid-sig: 0.1%  
Centroid-so: 0.968 arcsec [0.94σ]  
OotOffset-rm: 0.286 arcsec [0.31σ]  
KicOffset-rm: 0.357 arcsec [0.39σ]  
OotOffset-st: 2/2/4/3 [11]  
KicOffset-st: 2/2/4/3 [11]  
DiffImageQuality-fgm: 0.64 [7/11]  
DiffImageOverlap-fno: 1.00 [17/17]

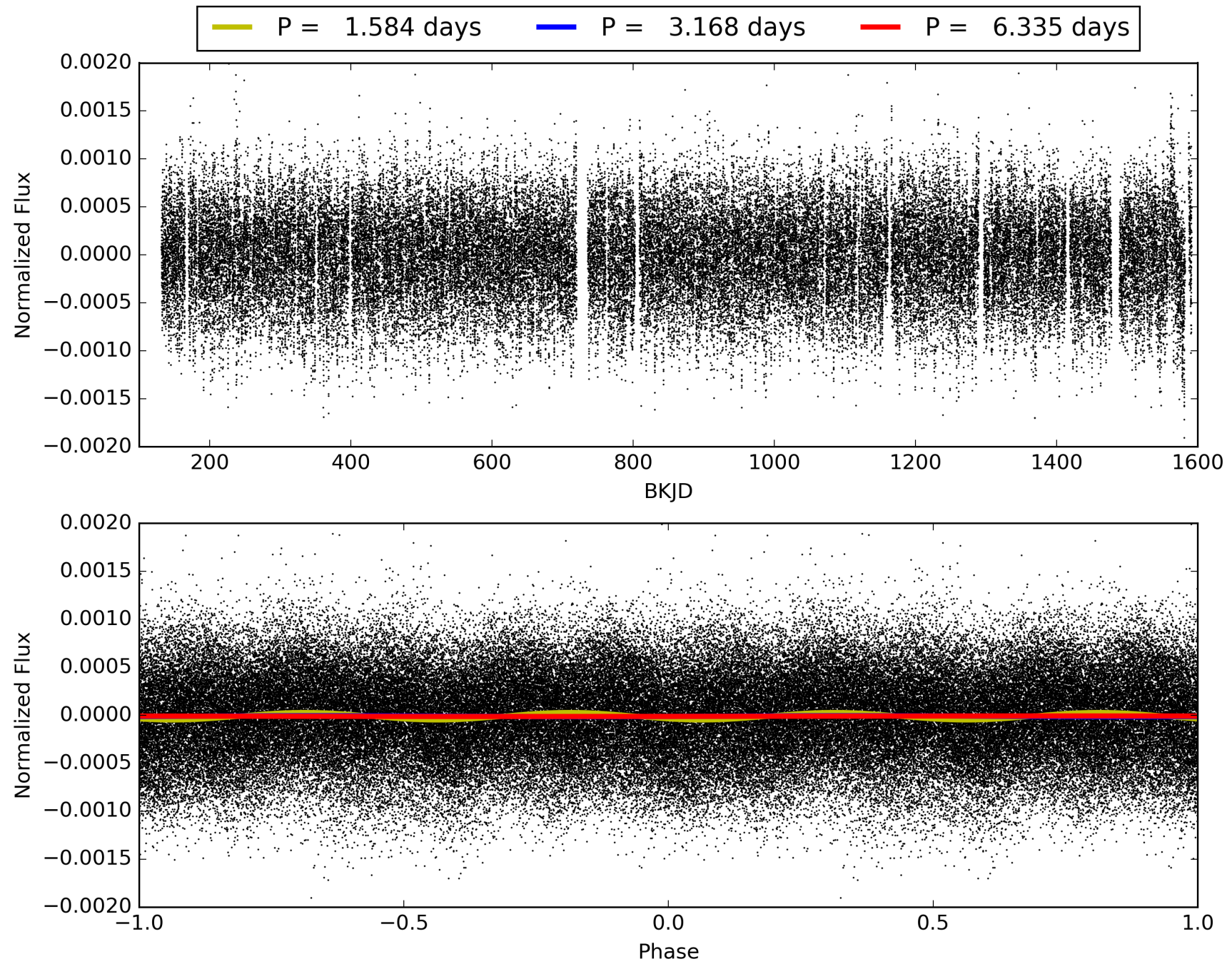
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:53:21 Z

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

# TCE 006153673-02, PDC Light Curves

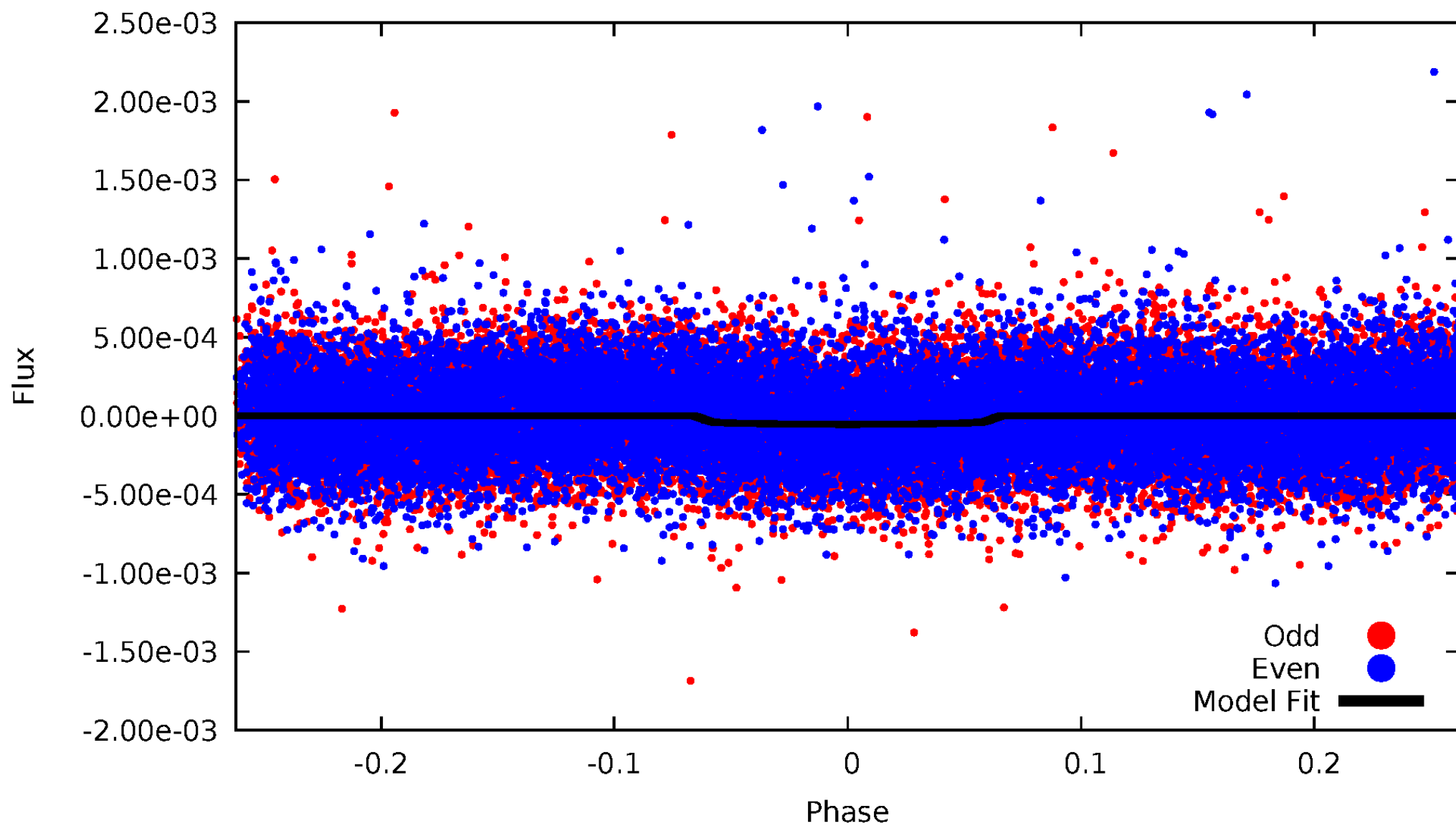


TCE 006153673-02



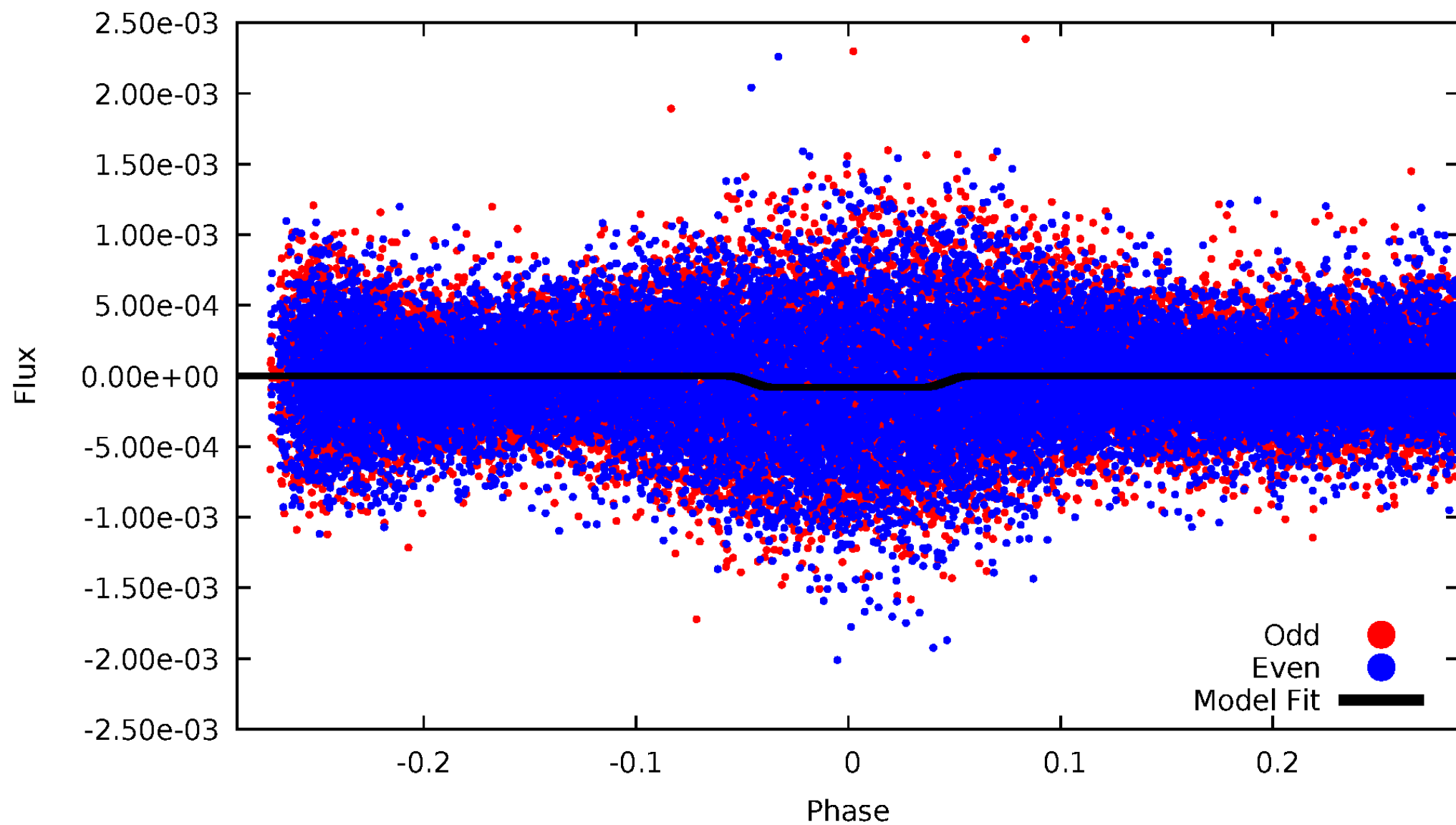
# DV Odd/Even

TCE 006153673-02



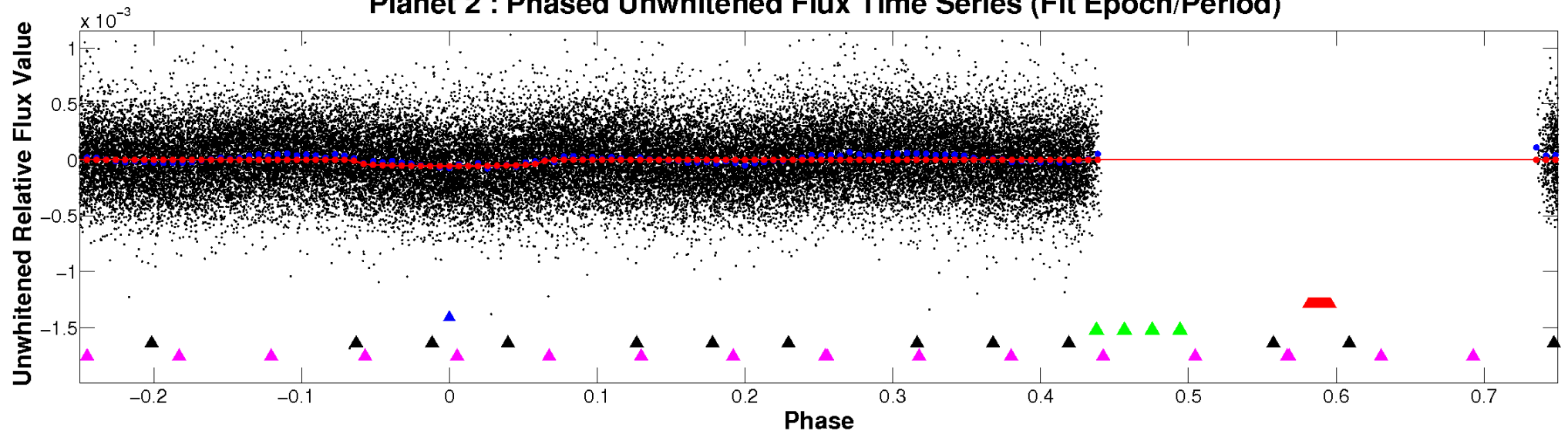
# ALT Odd/Even

TCE 006153673-02

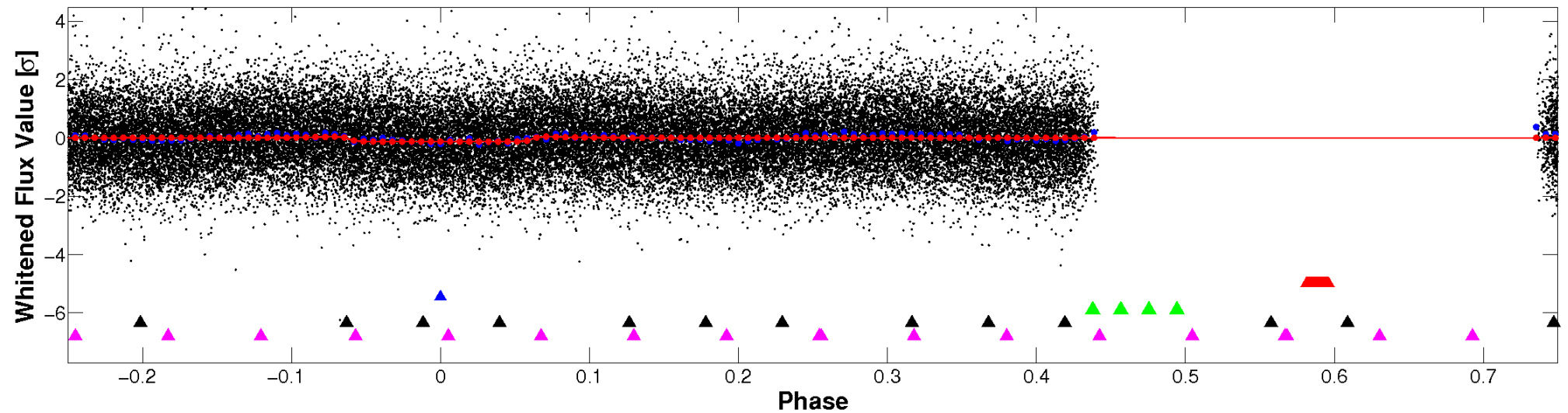


# Non-Whitened Vs. Whitened Light Curve

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

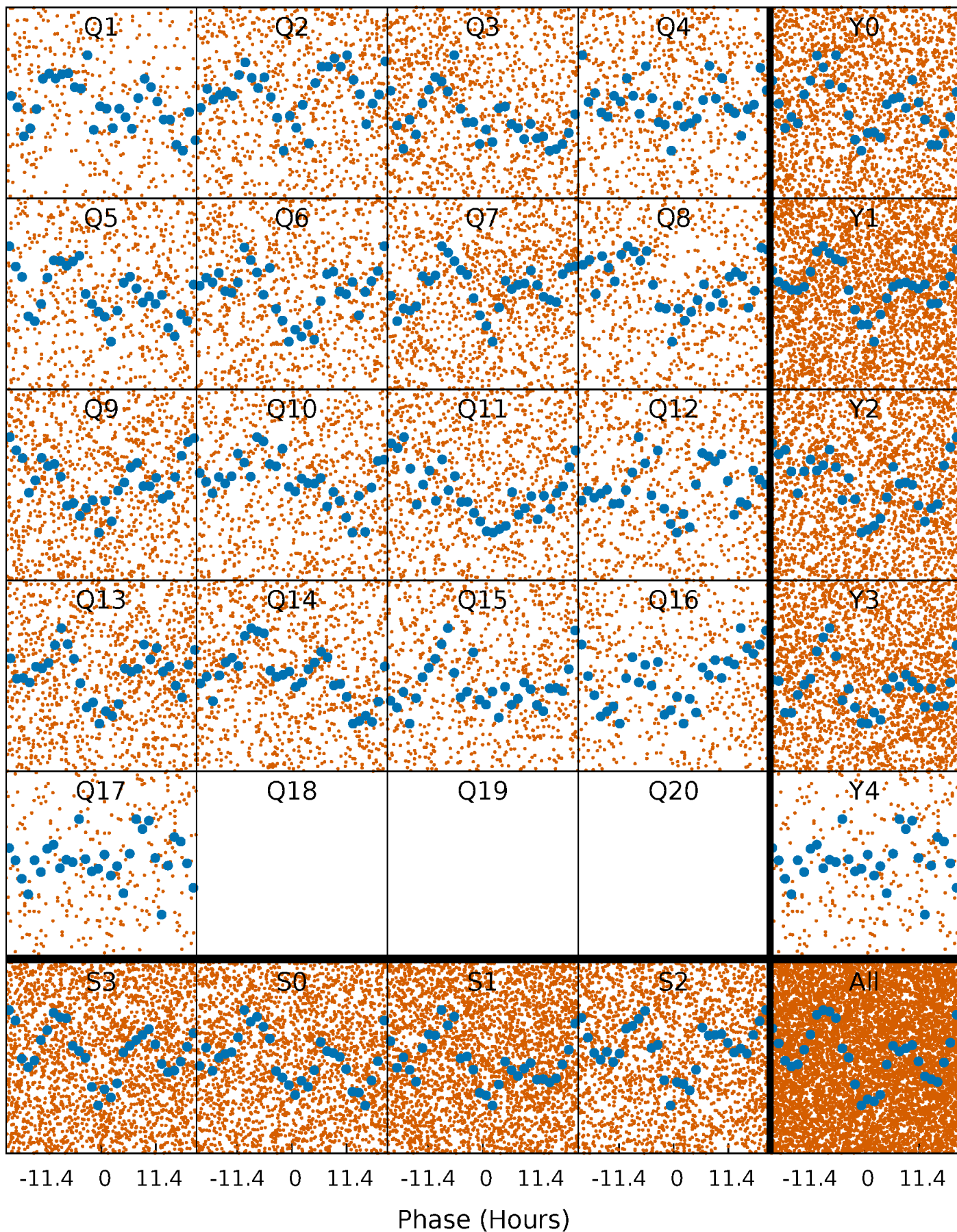


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



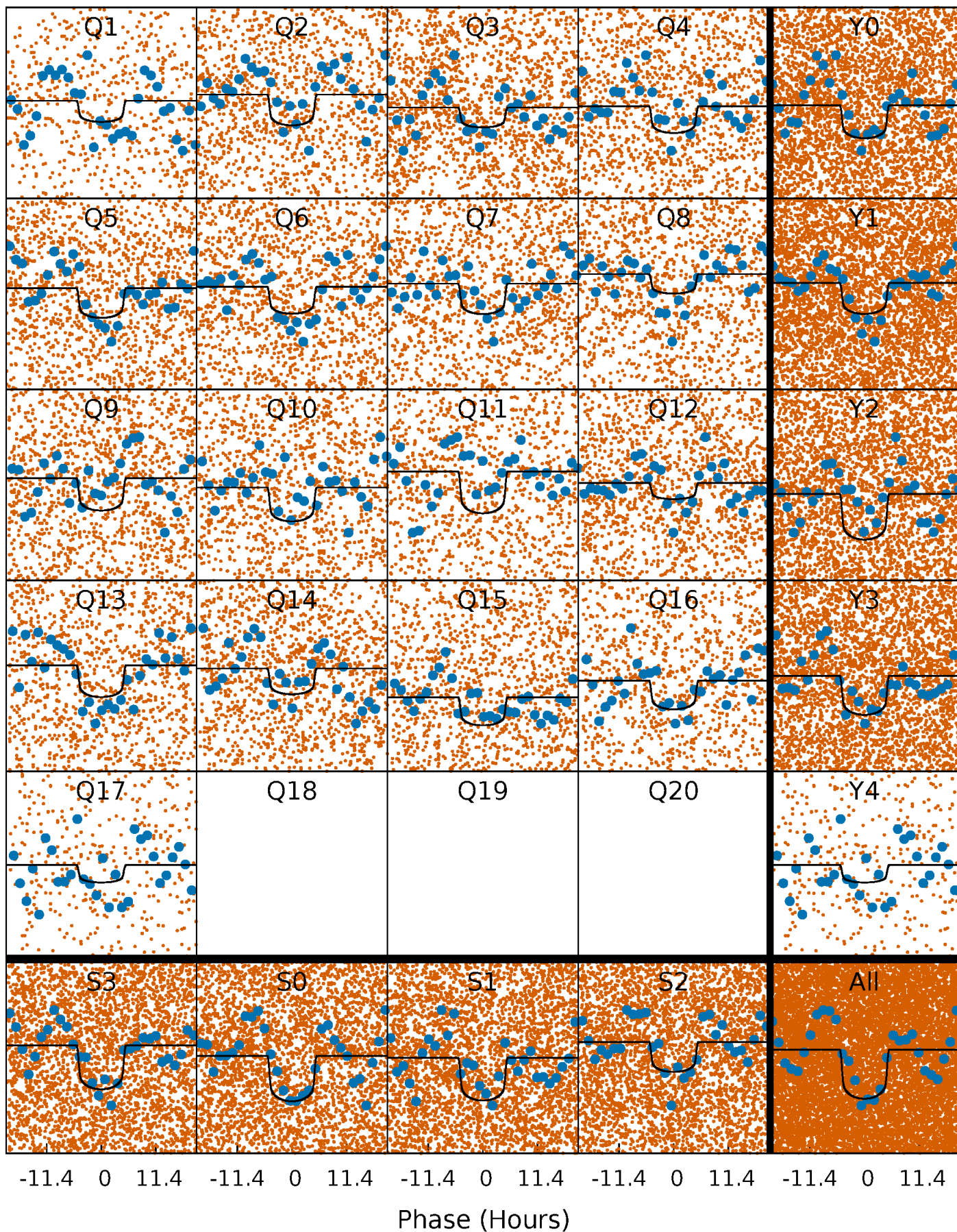
# PDC Quarter-Phased Transit Curves

TCE 006153673-02 P= 3.167515 Days  $T_0=131.811669$  (BKJD)



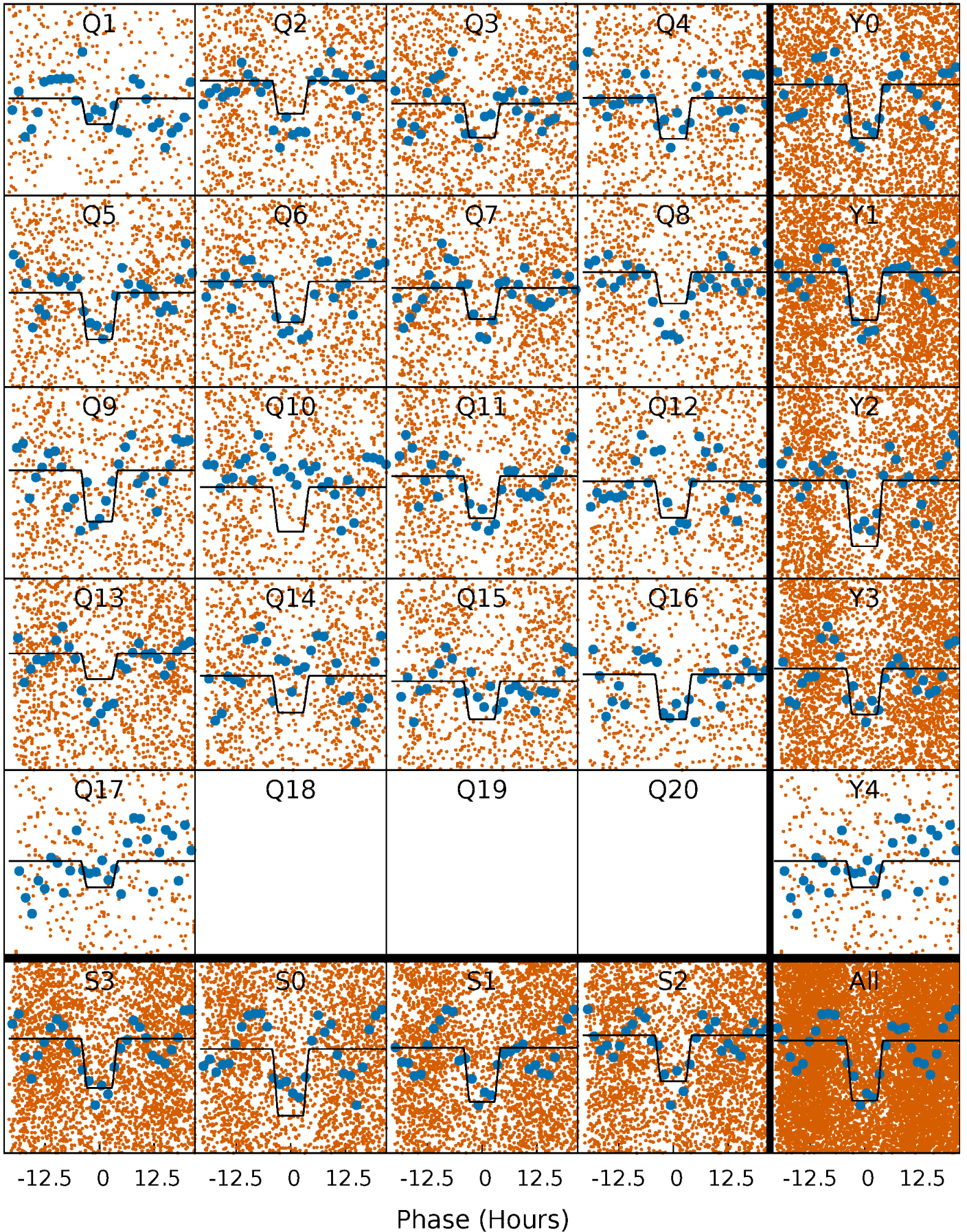
# DV Quarter-Phased Transit Curves

TCE 006153673-02   P= 3.167515 Days    $T_0=131.811669$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

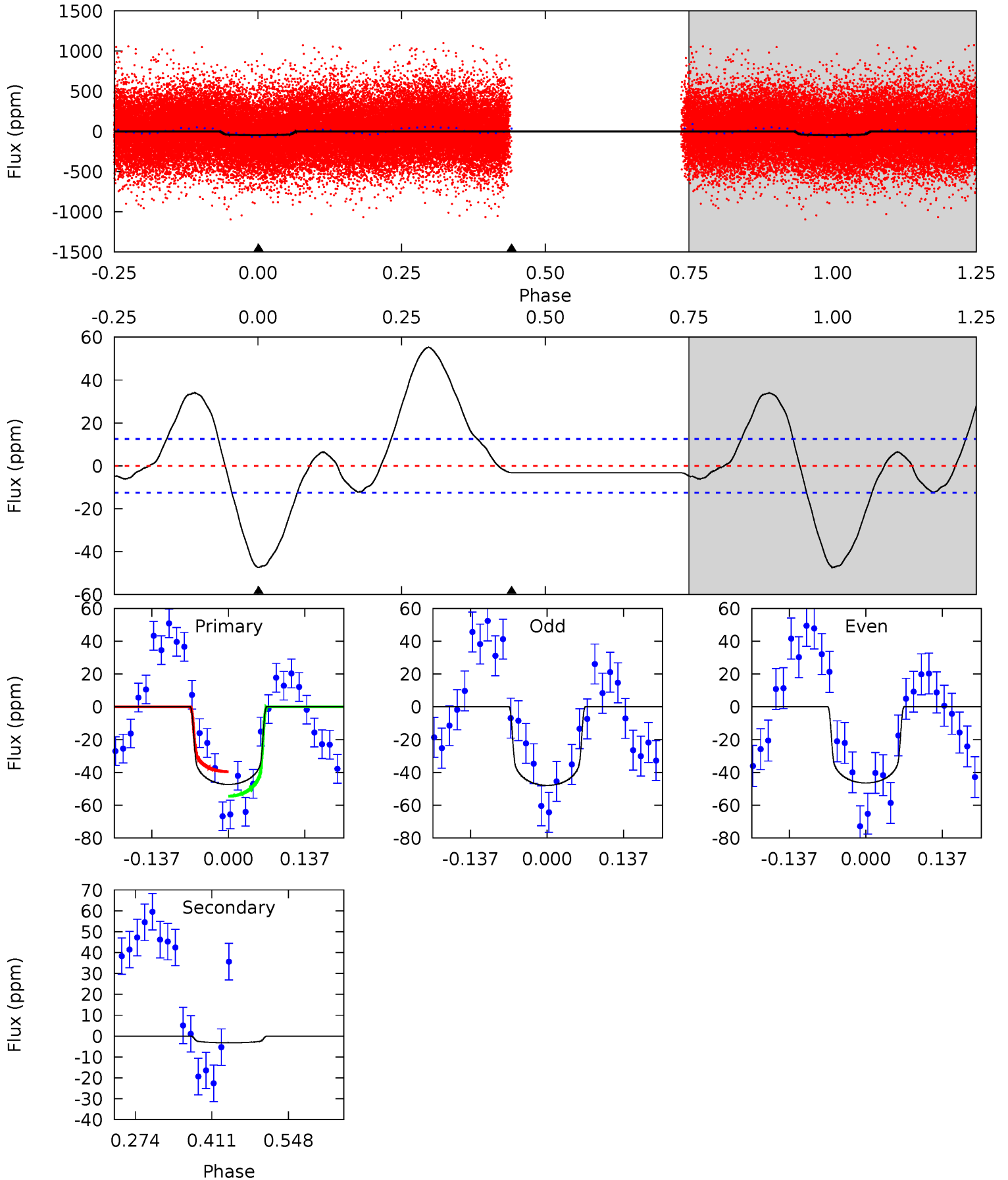
TCE 006153673-02     $P = 3.167465$  Days     $T_0 = 131.840406$  (BKJD)



# DV Model-Shift Uniqueness Test

006153673-02, P = 3.167515 Days, E = 128.644154 Days

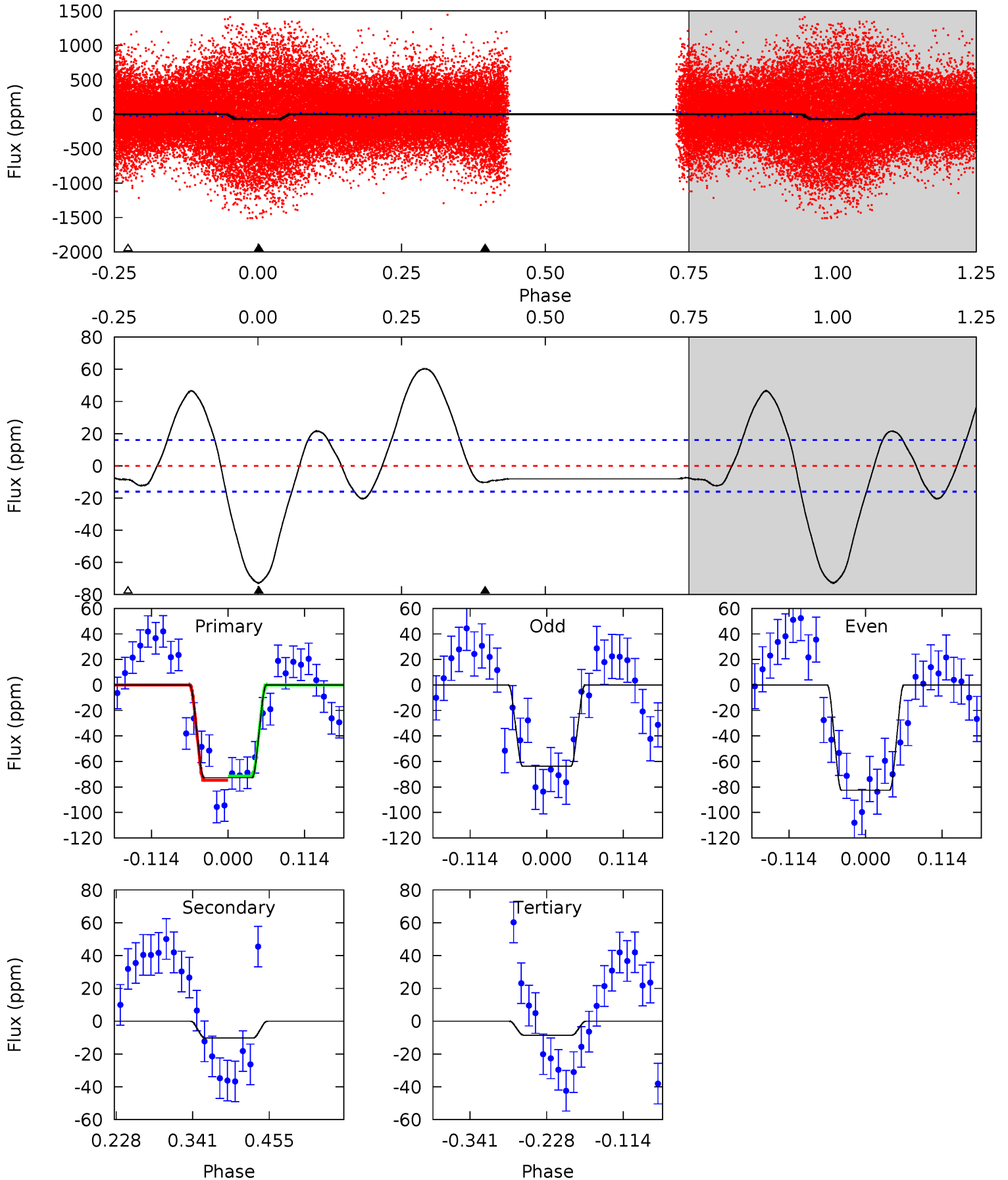
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.0	1.15	0	0	4.50	1.49	7.33	17.0	17.0	1.15	1.15	0.27	0.83	0.54	2.69



# Alt Model-Shift Uniqueness Test

006153673-02, P = 3.167465 Days, E = 128.672941 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.6	2.90	2.42	0	4.54	1.58	6.42	18.1	20.6	0.48	2.90	2.61	0.76	0.45	0.50



### Stellar Parameters For KIC 006153673

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6572^{+181}_{-227}$	$4.144^{+0.209}_{-0.171}$	$-0.200^{+0.250}_{-0.300}$	$1.574^{+0.439}_{-0.439}$	$1.265^{+0.181}_{-0.221}$	$0.457^{+0.544}_{-0.214}$
	+3%/-3%	+5%/-4%	+125%/-150%	+28%/-28%	+14%/-17%	+119%/-47%
Source	PHO1	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 006153673-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-3 \pm 3$	$1.37^{+0.29}_{-0.23}$	$2381^{+166}_{-179}$	$3432^{+525}_{-1287}$	$1.815^{+2.153}_{-1.481}$
Alt.	$-10 \pm 4$	$1.54^{+0.32}_{-0.29}$	$2372^{+179}_{-178}$	$4137^{+328}_{-388}$	$4.899^{+3.076}_{-2.167}$

$T_{\text{max}}$  = 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

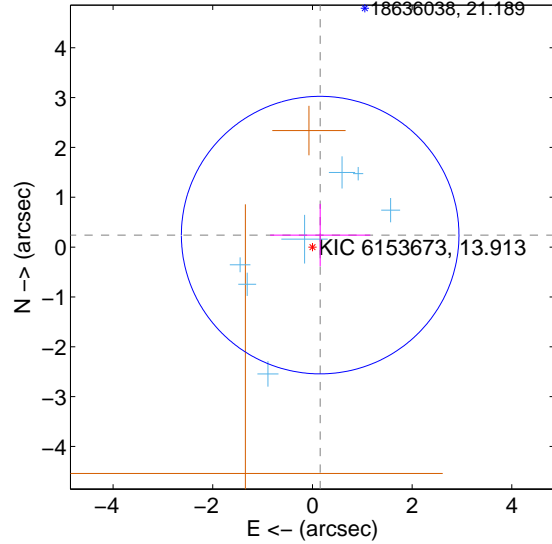
Supplemental centroid analysis for 006153673-02. Kepler magnitude: 13.91. Transit SNR 10.85

There are 7 quarters with good PRF difference image offsets

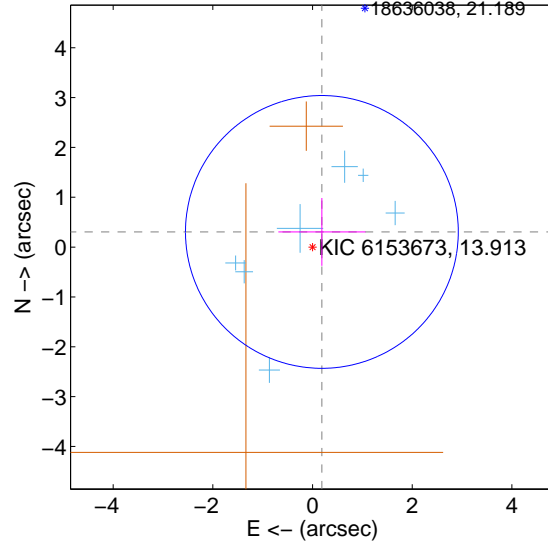
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.286 \pm 0.928$	0.31	$-0.155 \pm 1.005$	$0.241 \pm 0.625$
PRF-fit source offset from KIC position	$0.357 \pm 0.912$	0.39	$-0.188 \pm 0.875$	$0.304 \pm 0.681$
photometric centroid source offset	$0.97 \pm 1.03$	0.94	$0.68 \pm 1.32$	$-0.69 \pm 0.62$

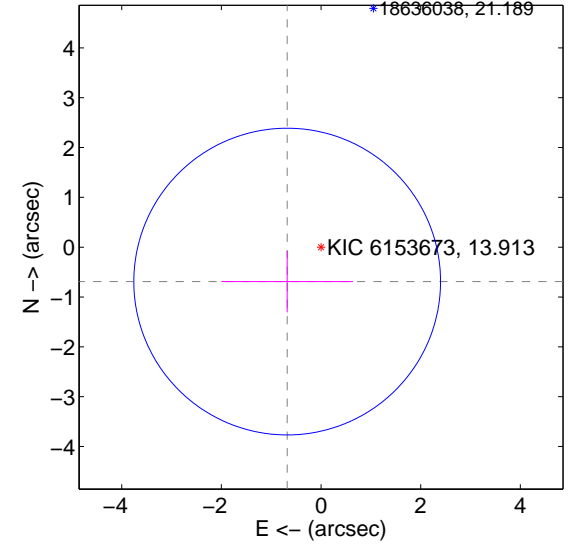
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

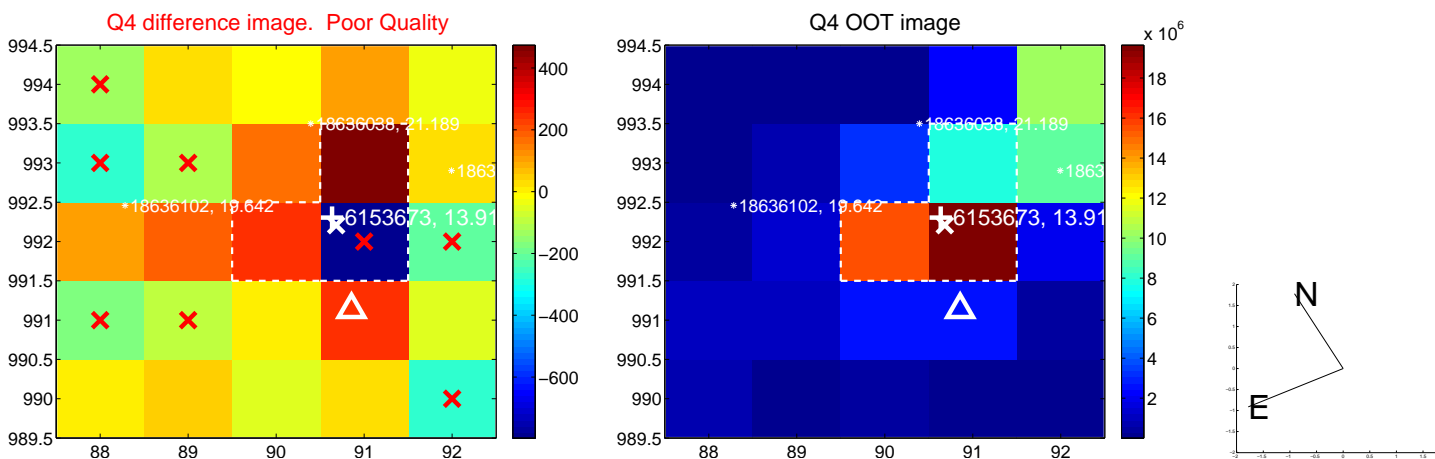
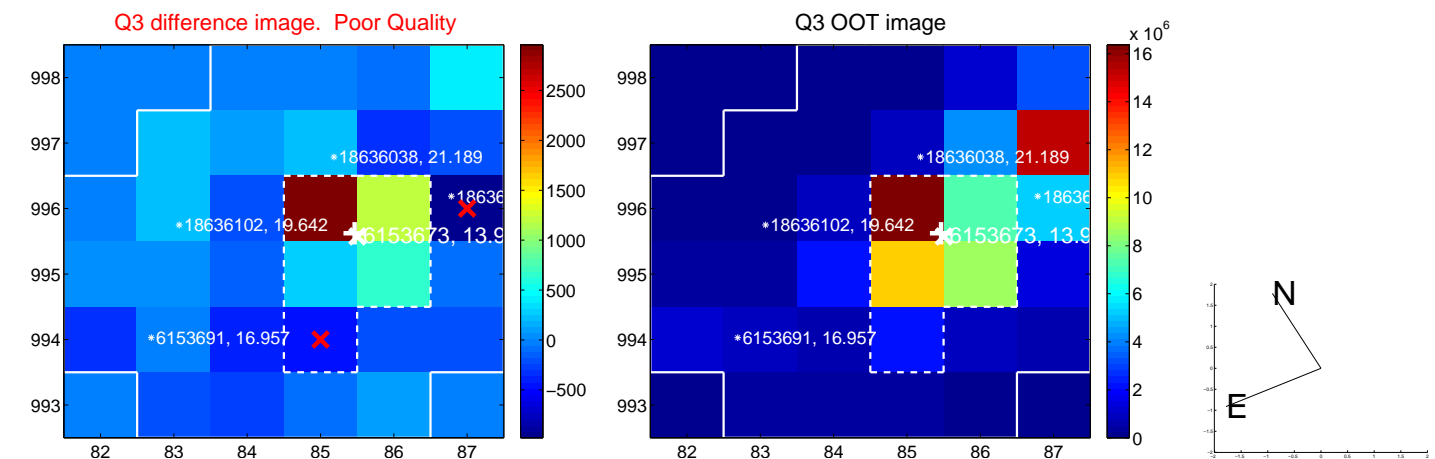
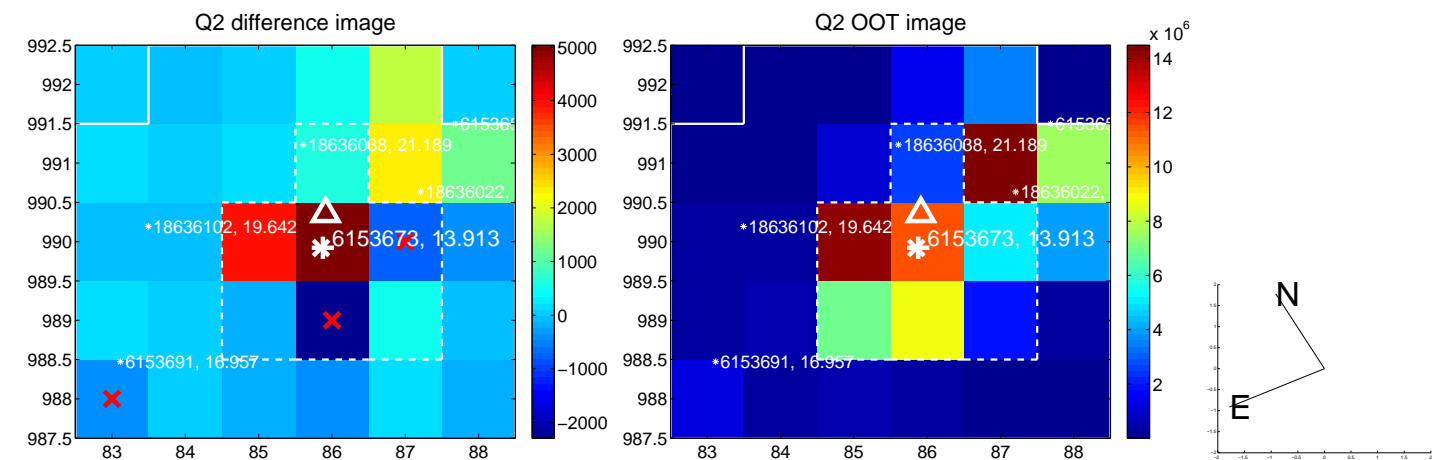
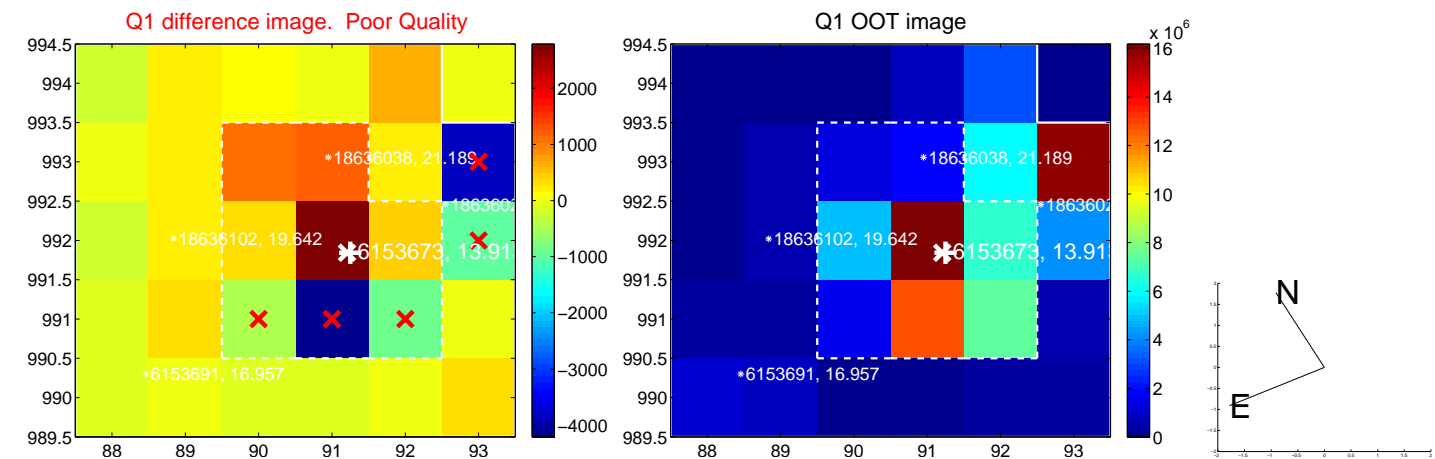


offset from photometric centroids

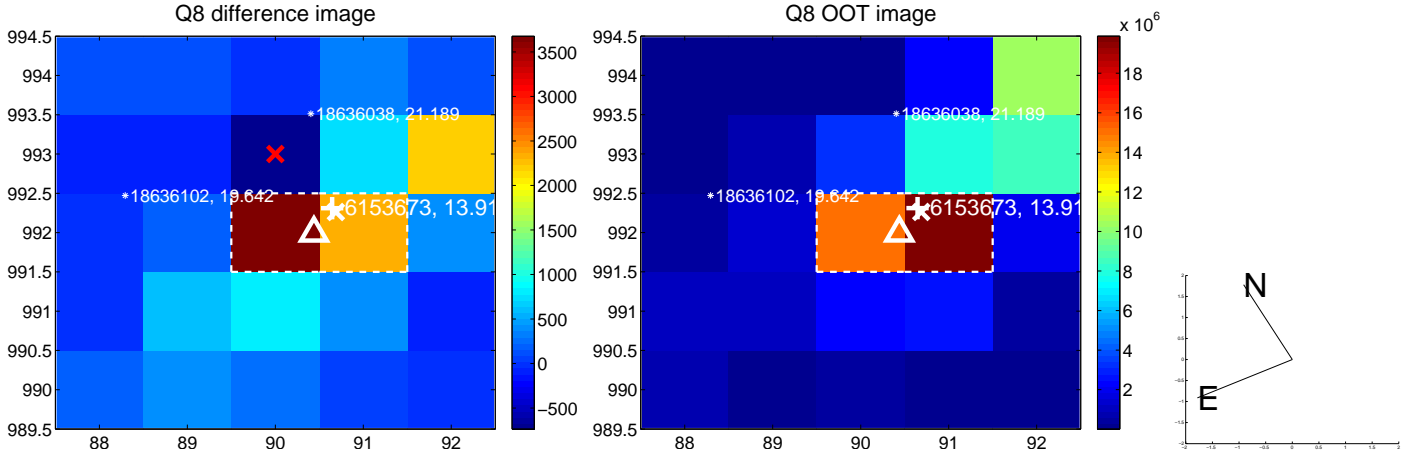
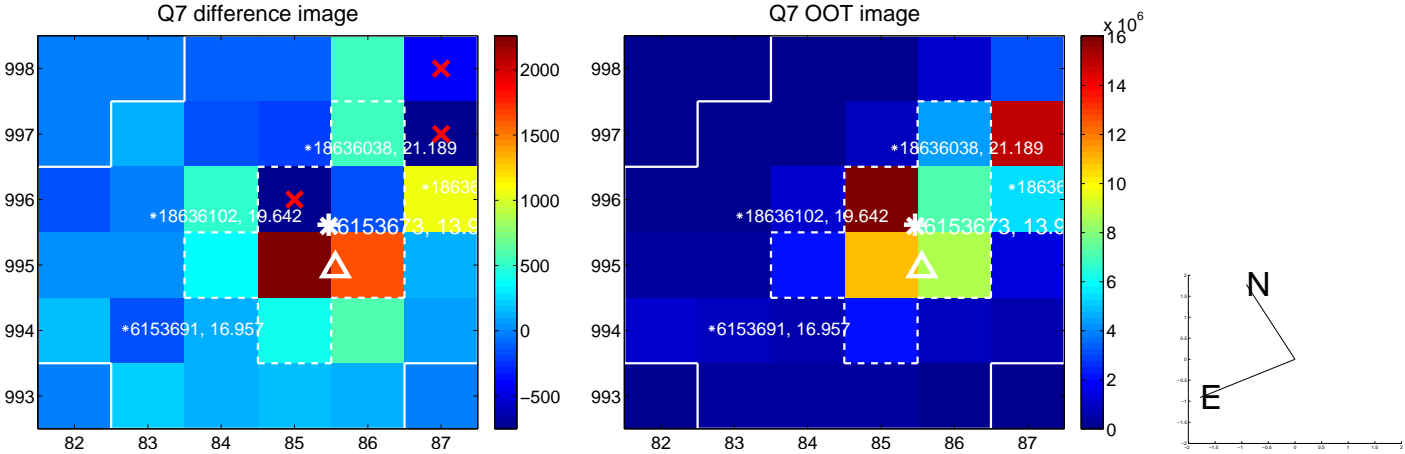
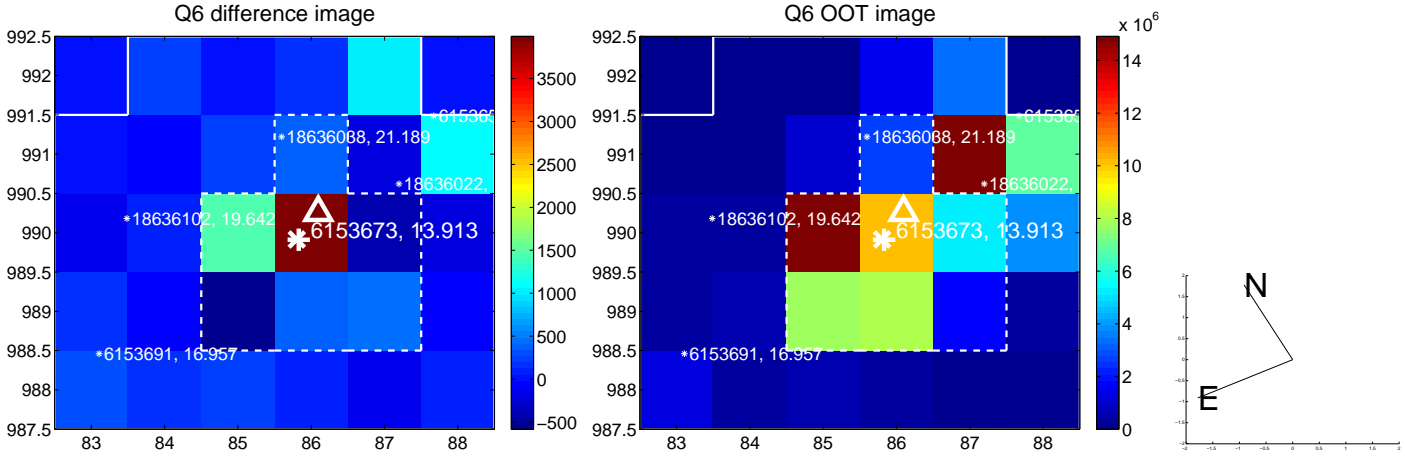
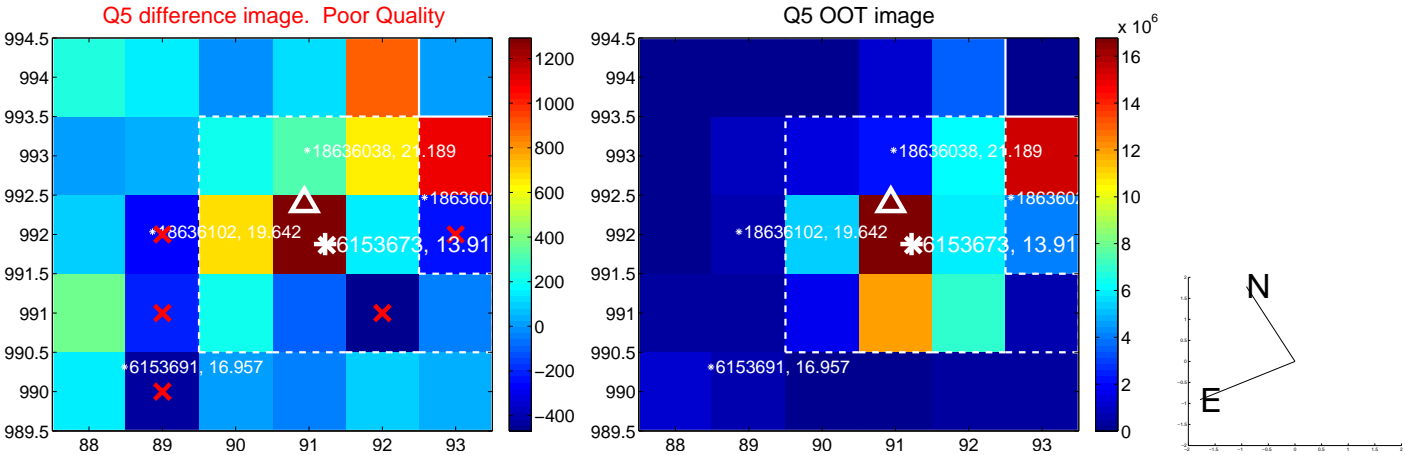


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

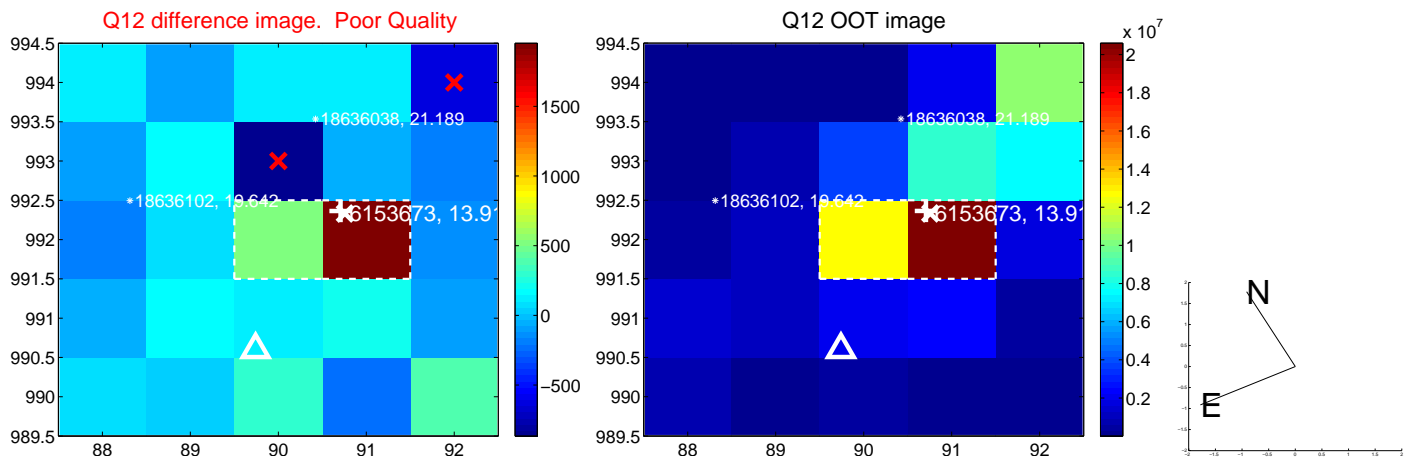
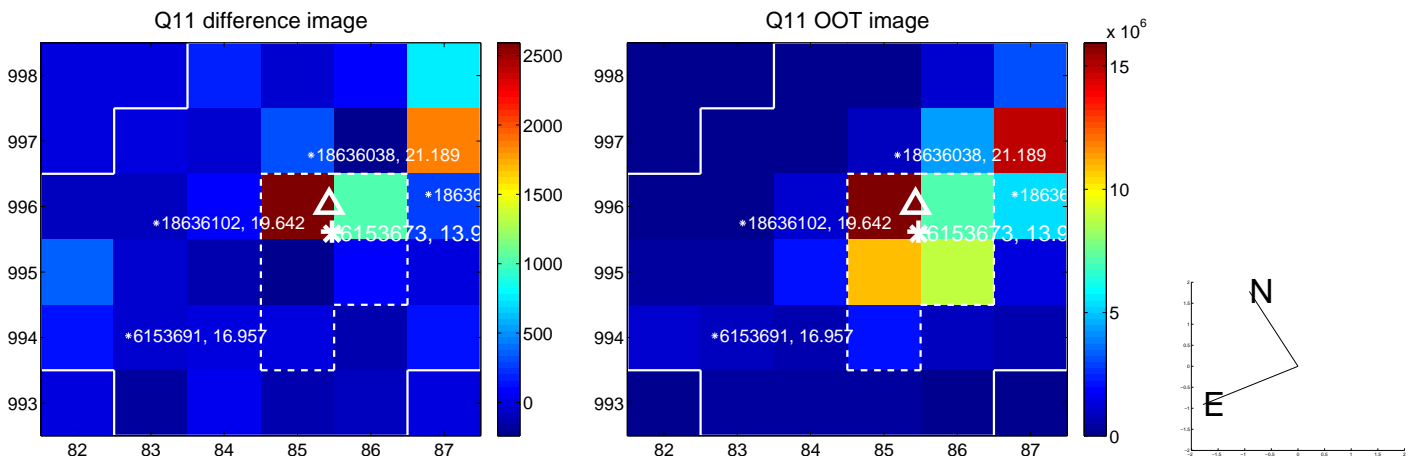
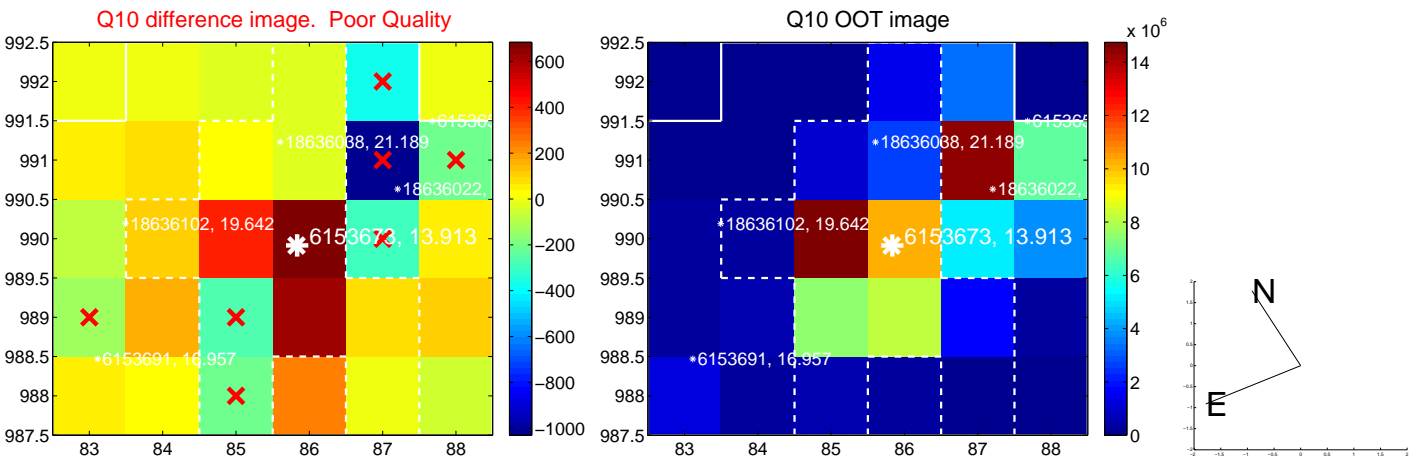
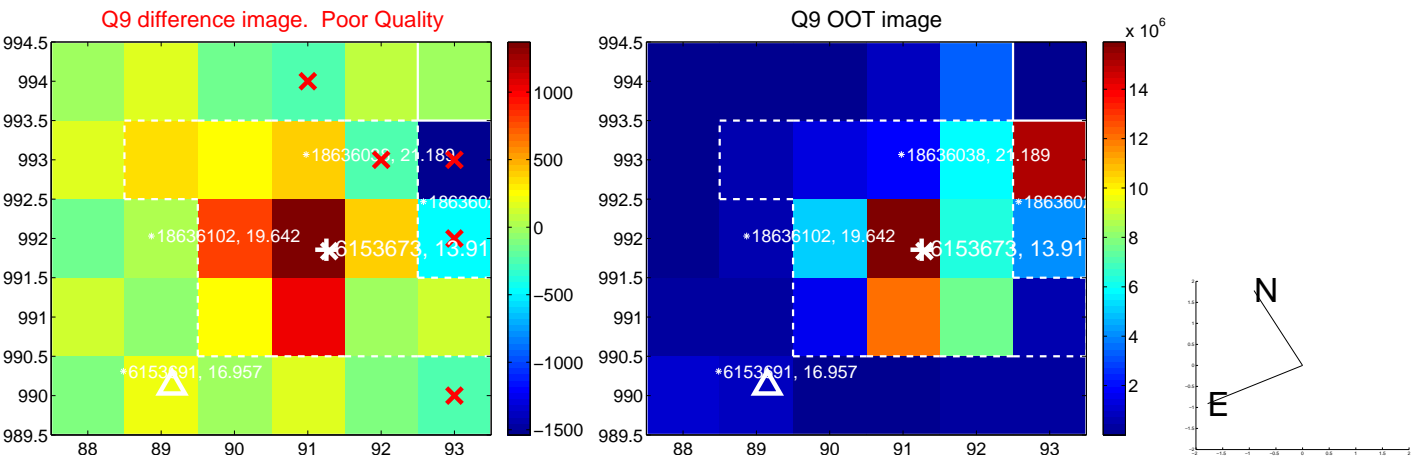
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



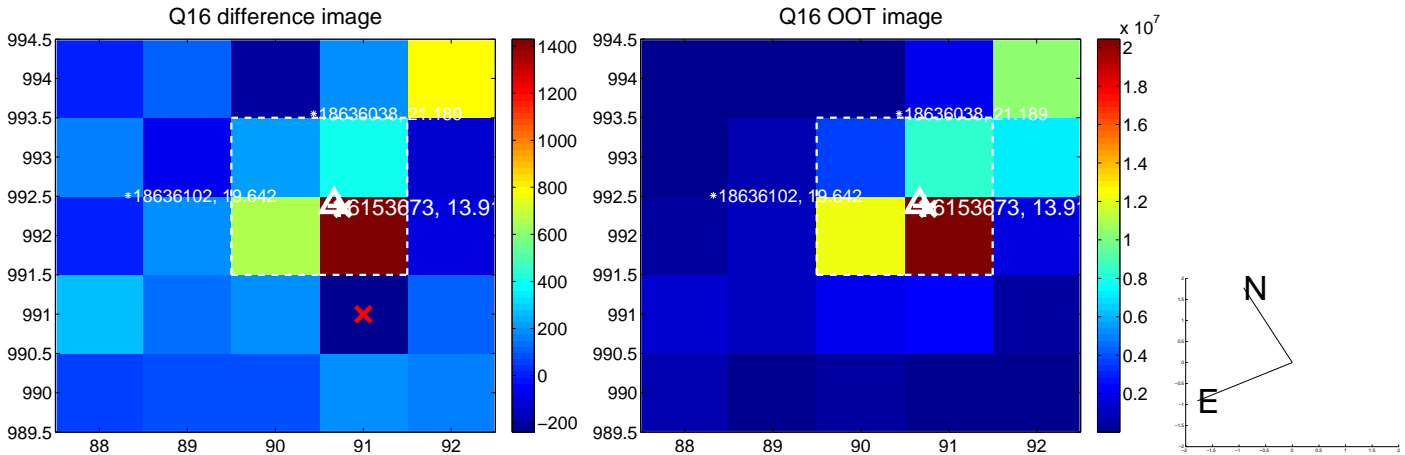
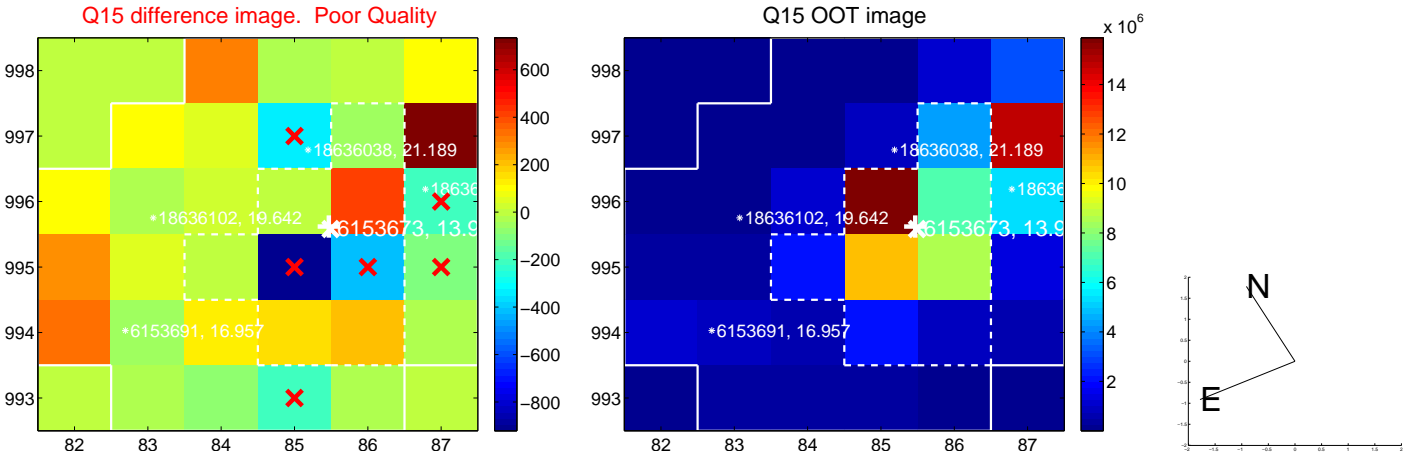
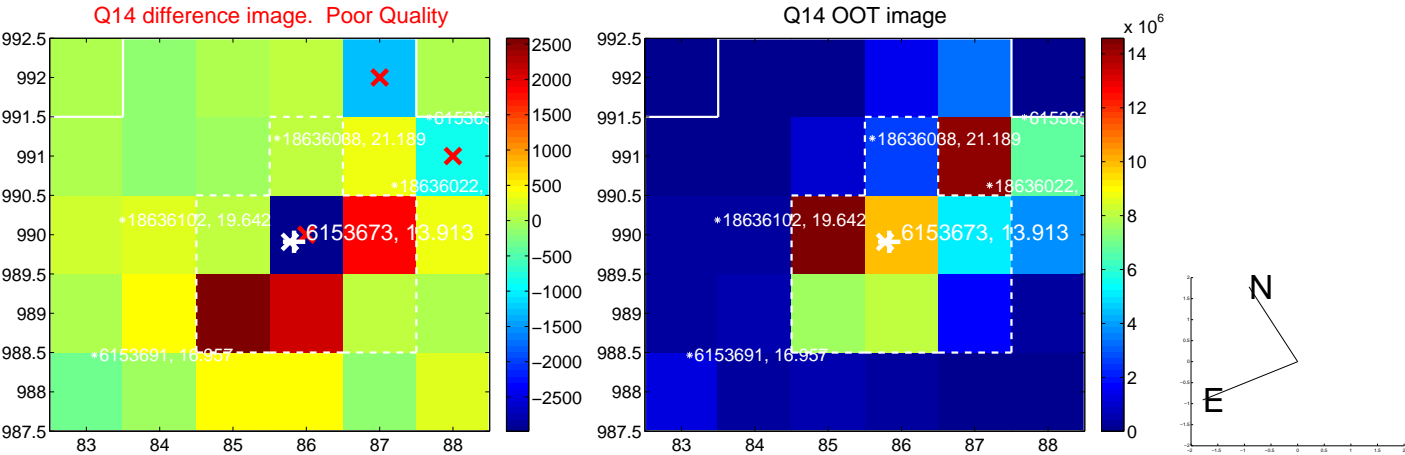
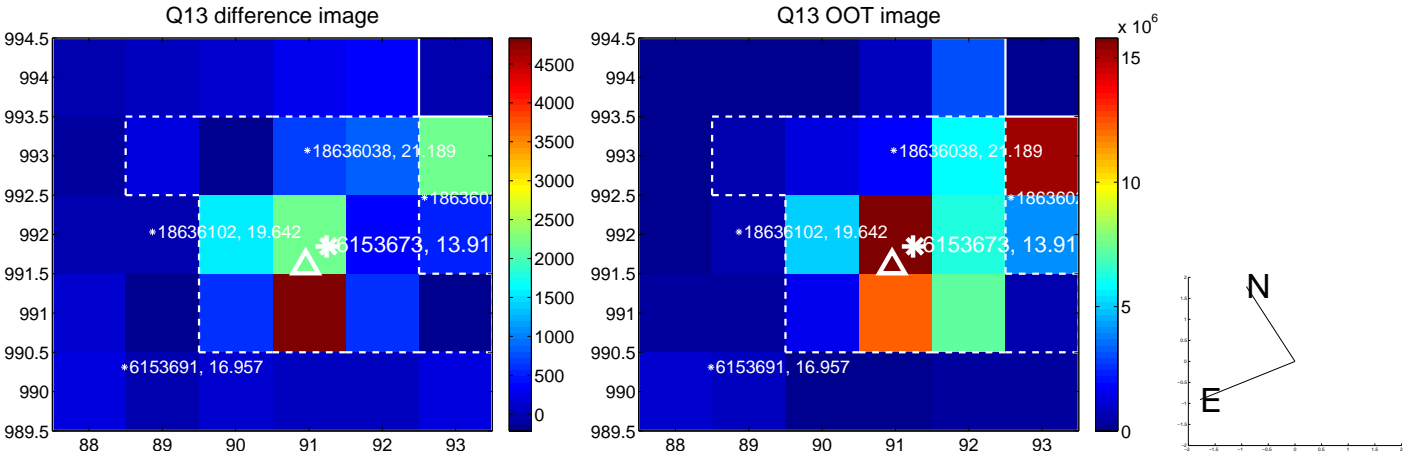
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



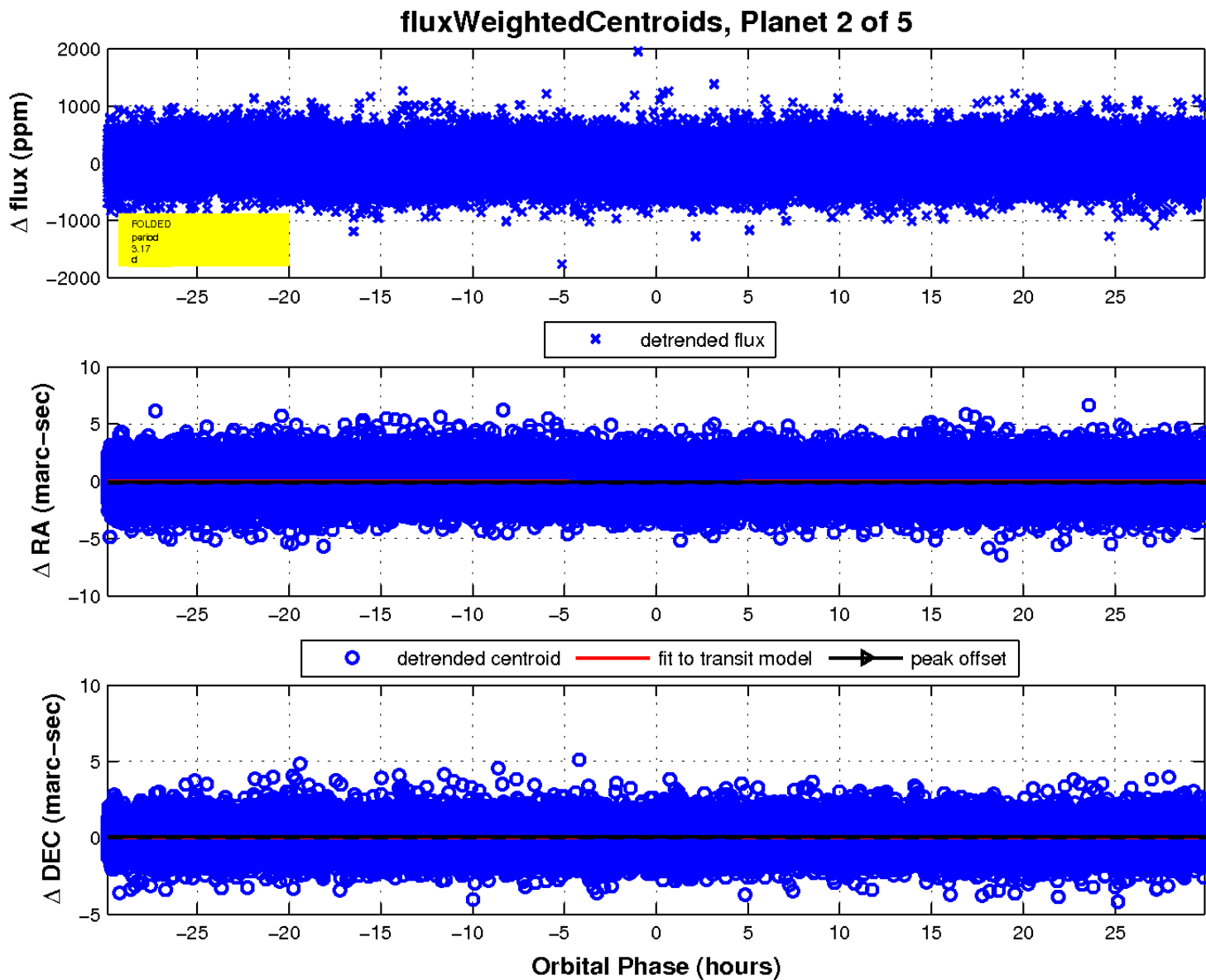
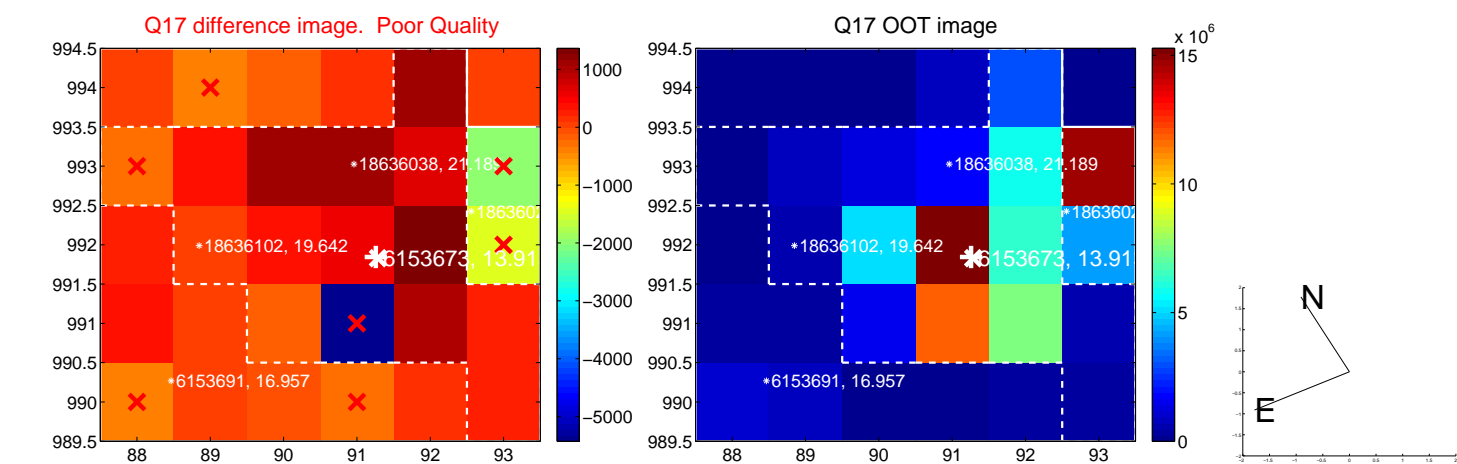
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

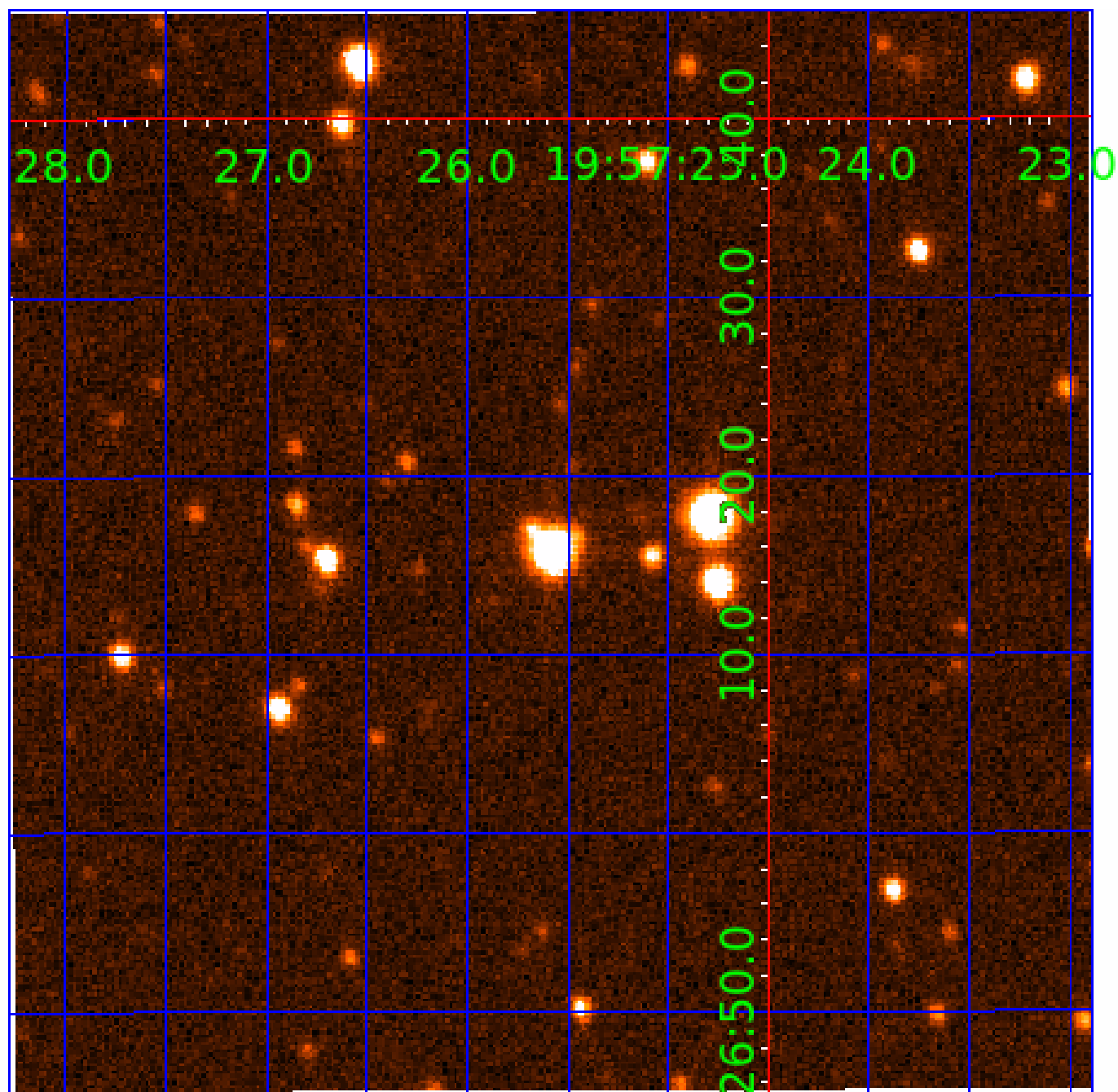


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006153673

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006153673-01	OBS	No	3.167617	133.652933	45.7	7.668	8.9	8.2	1.57	6572	1.27	1992.40
006153673-02	OBS	No	3.167515	131.811669	54.9	9.964	10.1	10.9	1.57	6572	1.38	1992.49
006153673-03	OBS	No	376.993981	237.726594	860.2	14.105	9.3	8.7	1.57	6572	8.73	3.40
006153673-04	OBS	No	113.429564	221.504564	544.8	2.661	8.0	8.2	1.57	6572	6.97	16.88
006153673-05	OBS	No	80.177986	183.297440	416.4	2.386	7.1	7.2	1.57	6572	3.69	26.81

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006153673-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006153673-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
006153673-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006153673-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
006153673-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

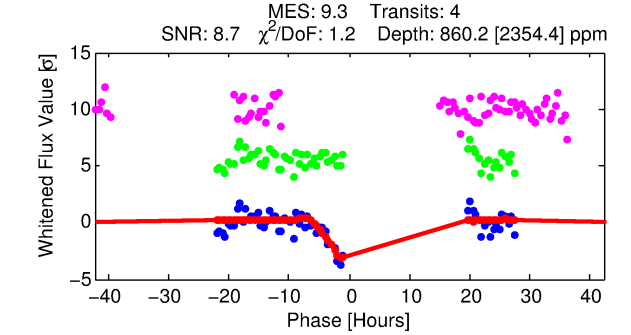
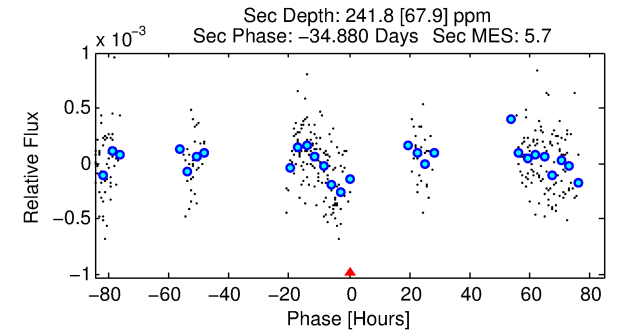
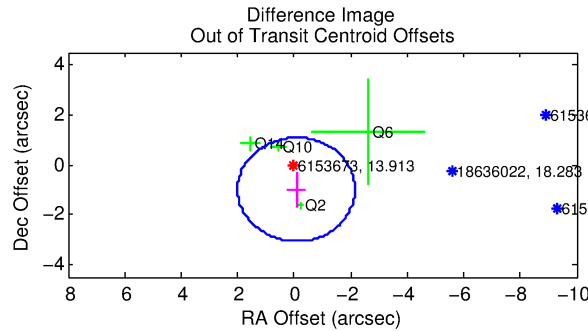
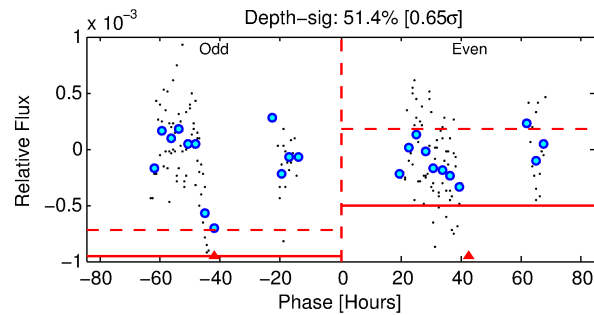
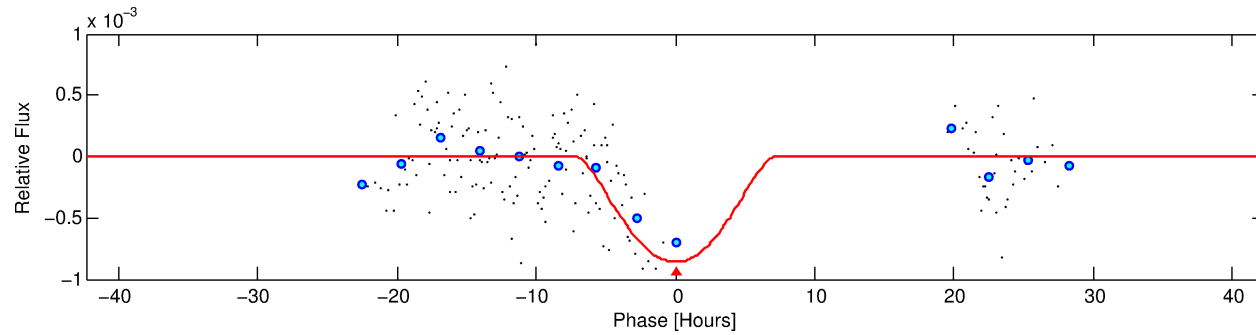
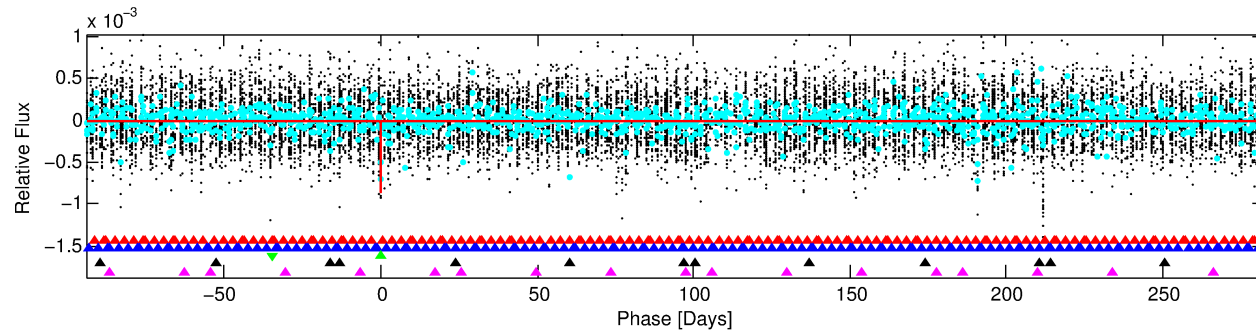
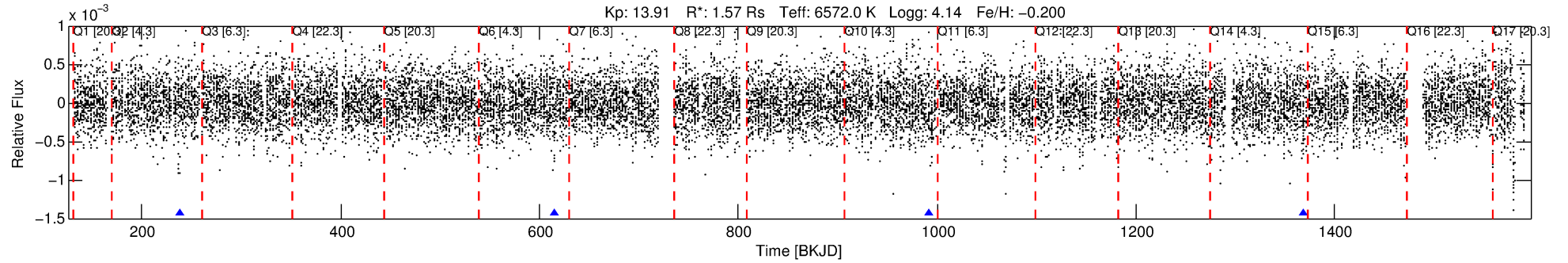
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006153673-03

No Significant Match Found

# DV One-Page Summary

KIC: 6153673 Candidate: 3 of 5 Period: 376.994 d



## DV Fit Results:

Period = 376.99398 [0.01603] d  
Epoch = 237.7266 [0.0596] BKJD  
Rp/R\* = 0.0508 [0.2431]  
a/R\* = 65.94 [68.03]  
b = 1.00 [0.26]  
Seff = 3.40 [1.35]  
Teq = 346 [34] K  
Rp = 8.73 [41.82] Re  
a = 1.1030 [0.2709] AU  
Ag = 2122.59 [20323.37] [0.10 $\sigma$ ]  
Teffp = 3635 [8695] K [0.38 $\sigma$ ]

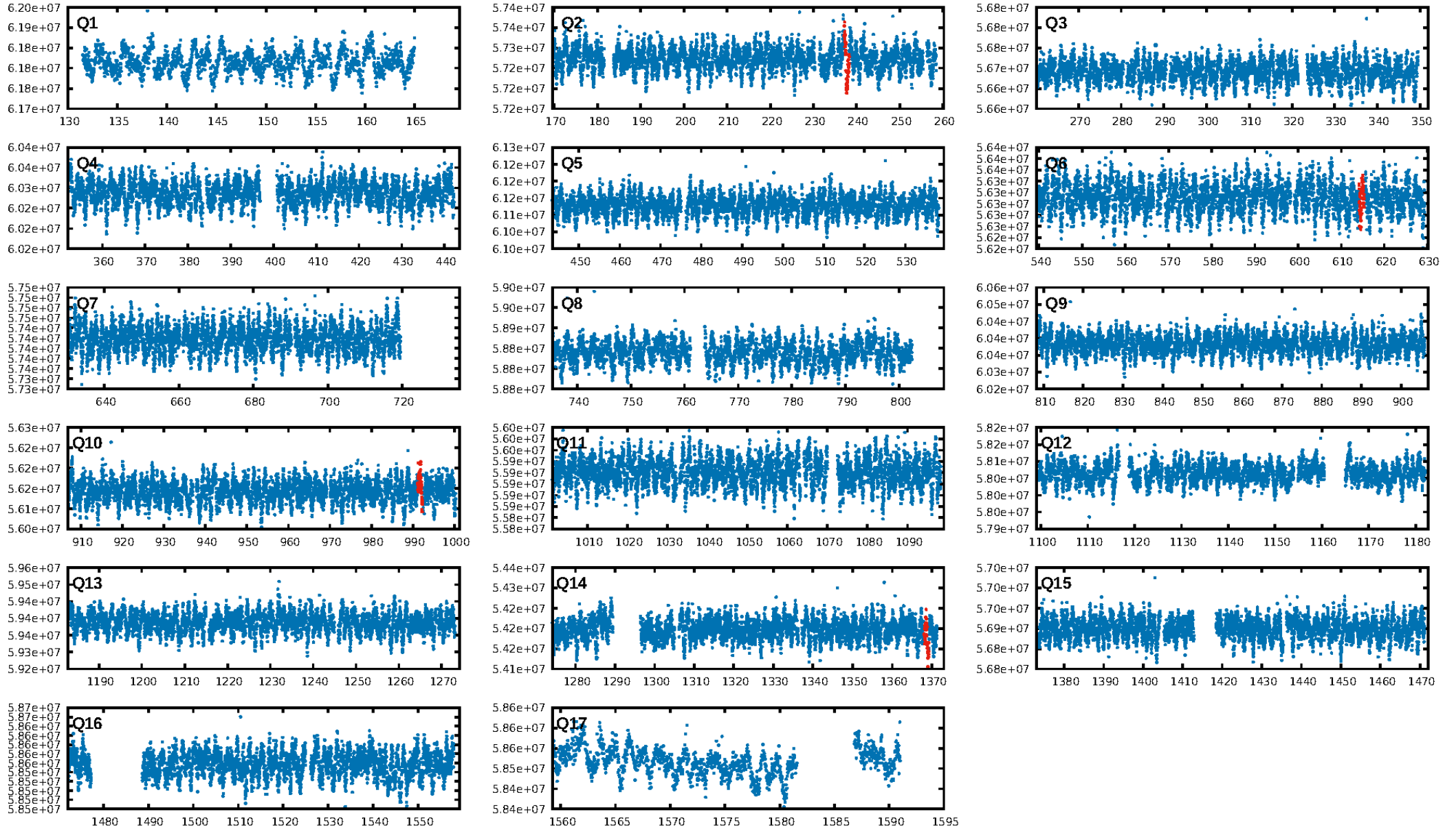
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [440.68 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 33.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.00e-13  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: 0.6655**  
Centroid-sig: 74.5%  
Centroid-so: 2.073 arcsec [1.60 $\sigma$ ]  
OotOffset-rm: 0.998 arcsec [1.44 $\sigma$ ]  
KicOffset-rm: 1.054 arcsec [1.57 $\sigma$ ]  
OotOffset-st: 4/0/0/0 [4]  
KicOffset-st: 4/0/0/0 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 0.00 [0/4]

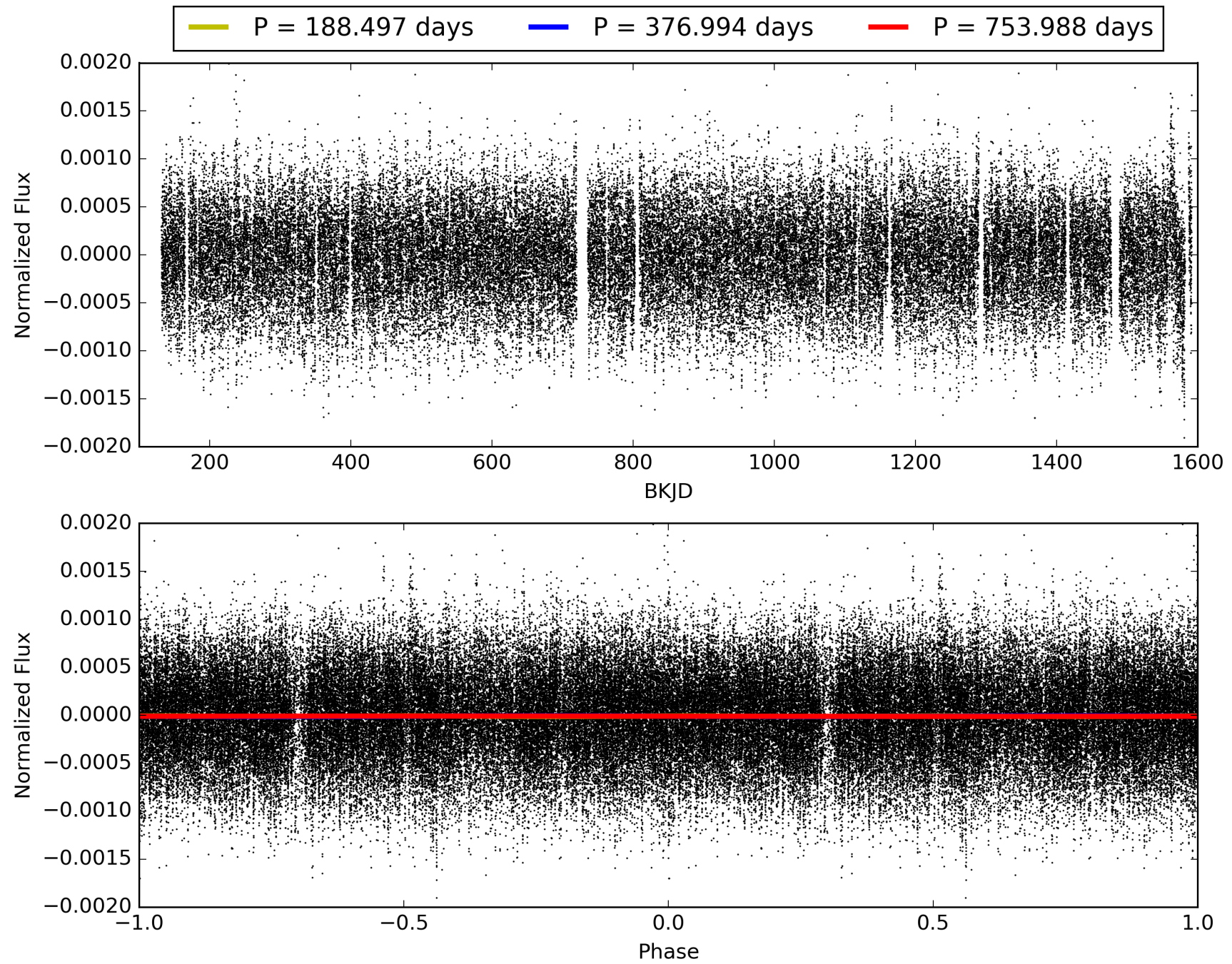
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:53:30 Z

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

# TCE 006153673-03, PDC Light Curves

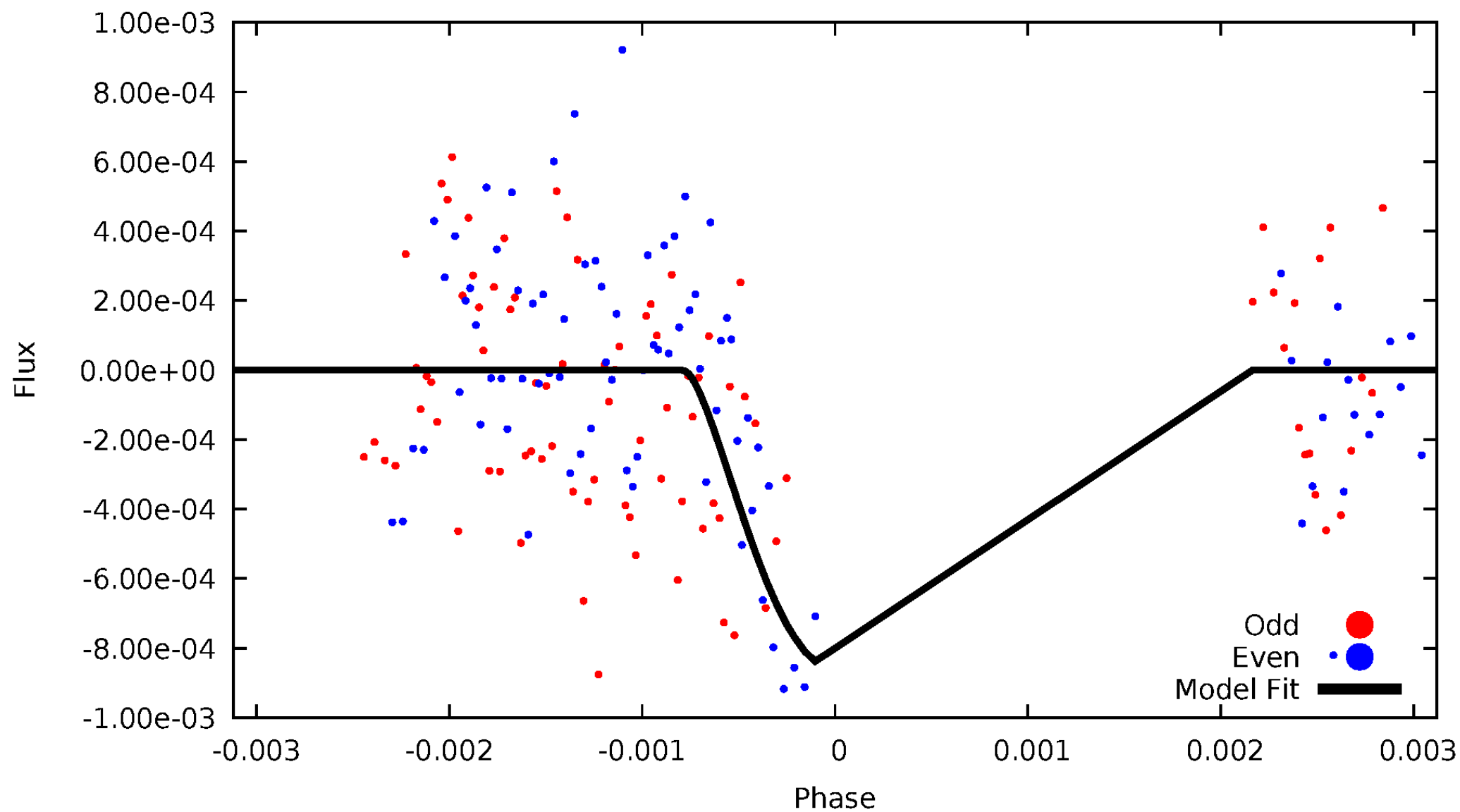


TCE 006153673-03



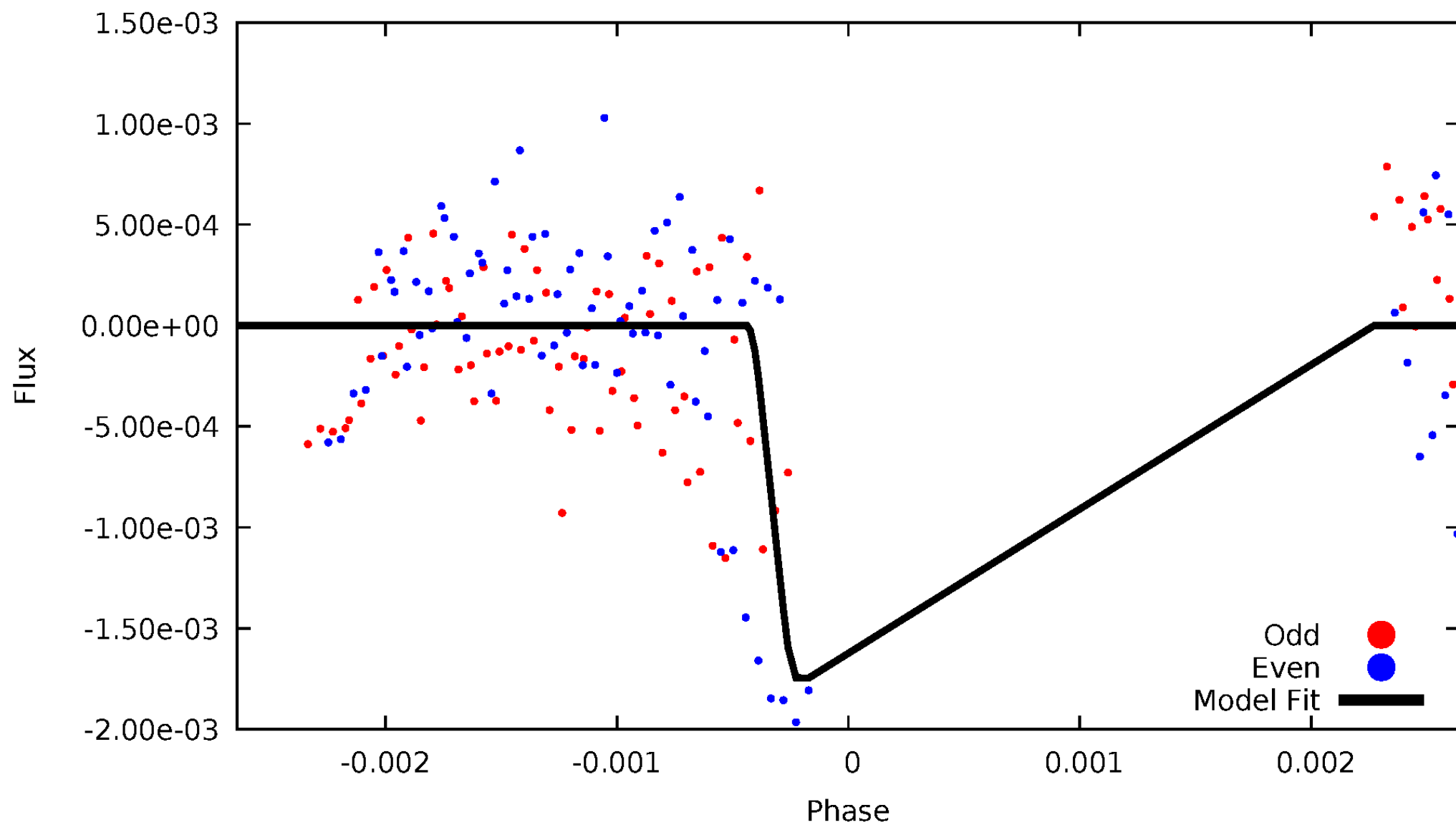
DV Odd/Even

TCE 006153673-03



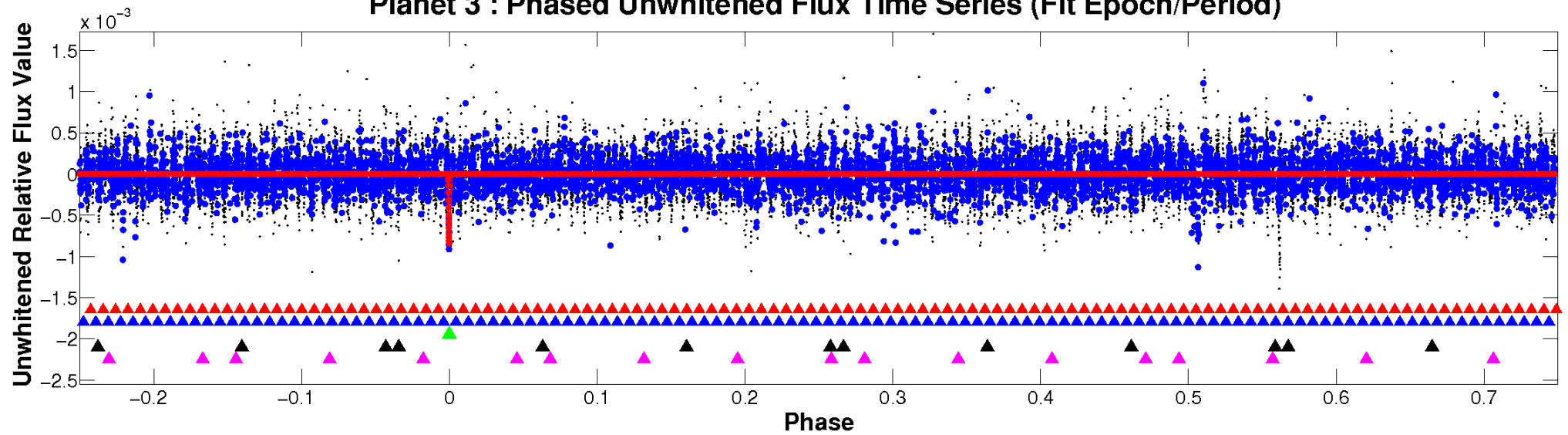
# ALT Odd/Even

TCE 006153673-03

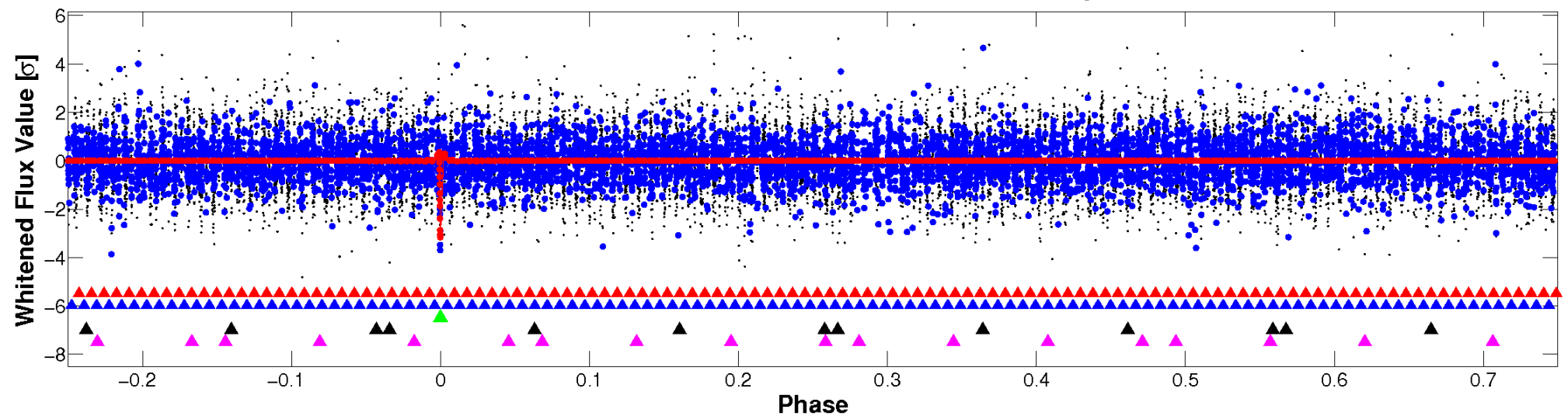


# Non-Whitened Vs. Whitened Light Curve

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

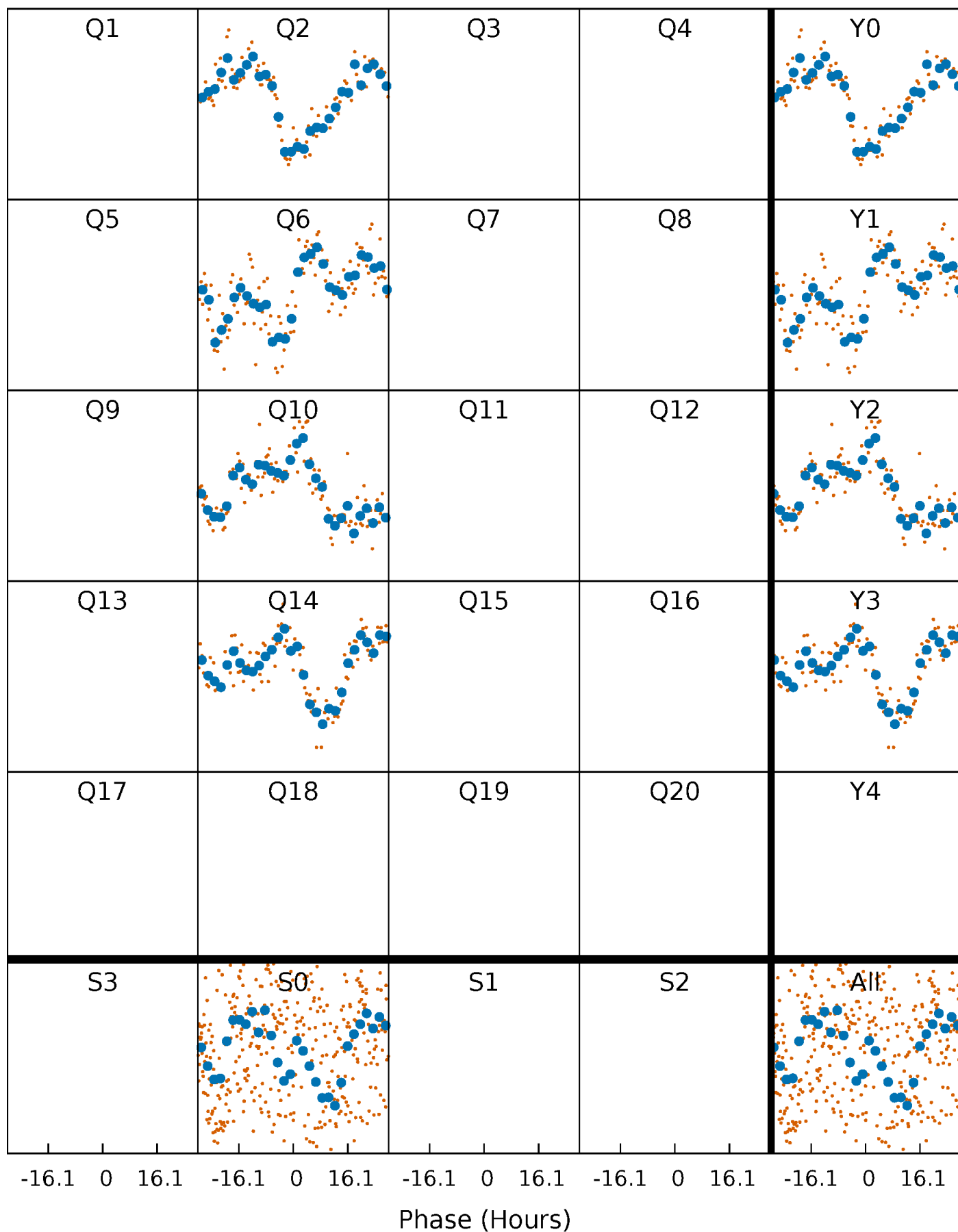


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



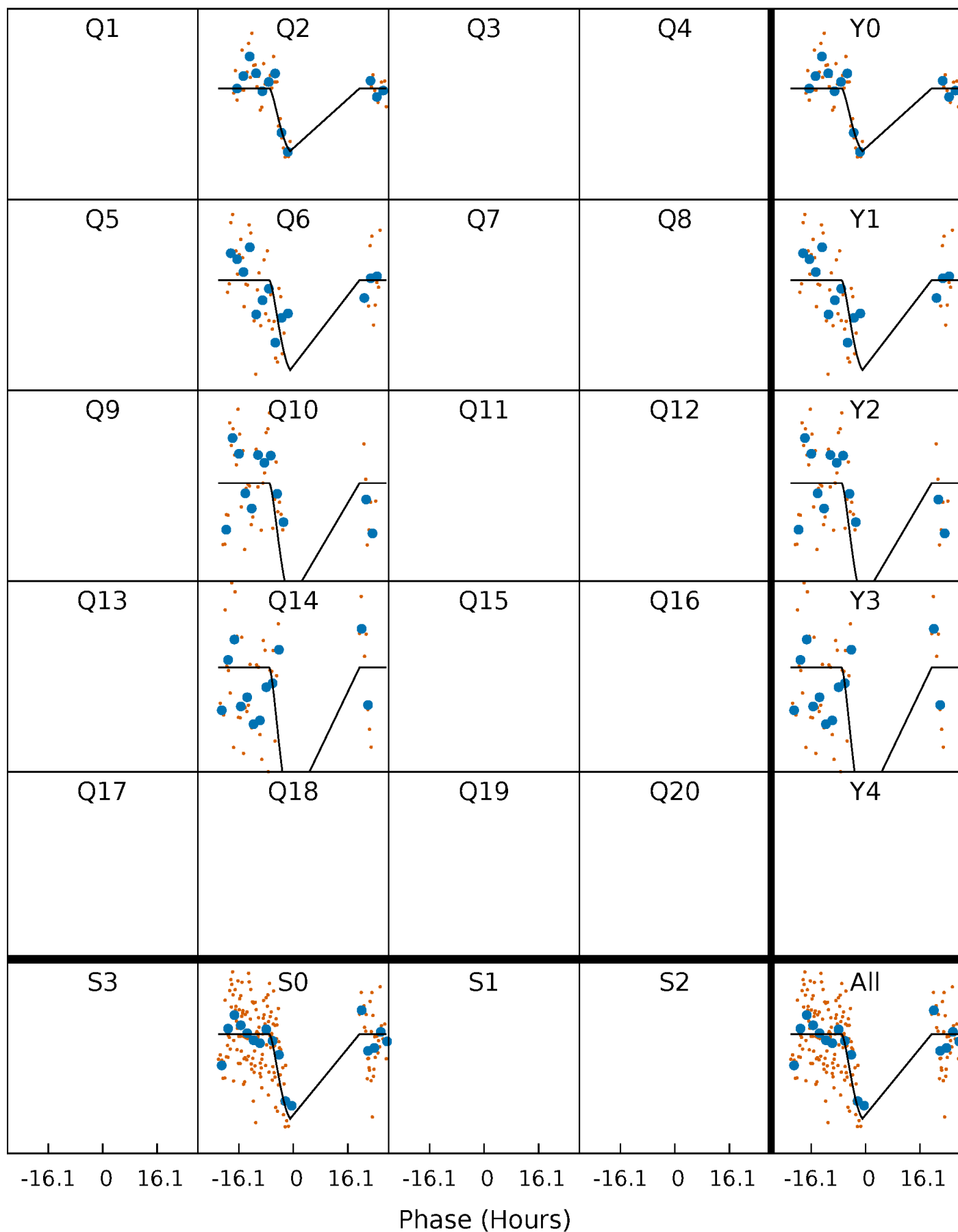
# PDC Quarter-Phased Transit Curves

TCE 006153673-03     $P=376.993981$  Days     $T_0=237.726594$  (BKJD)



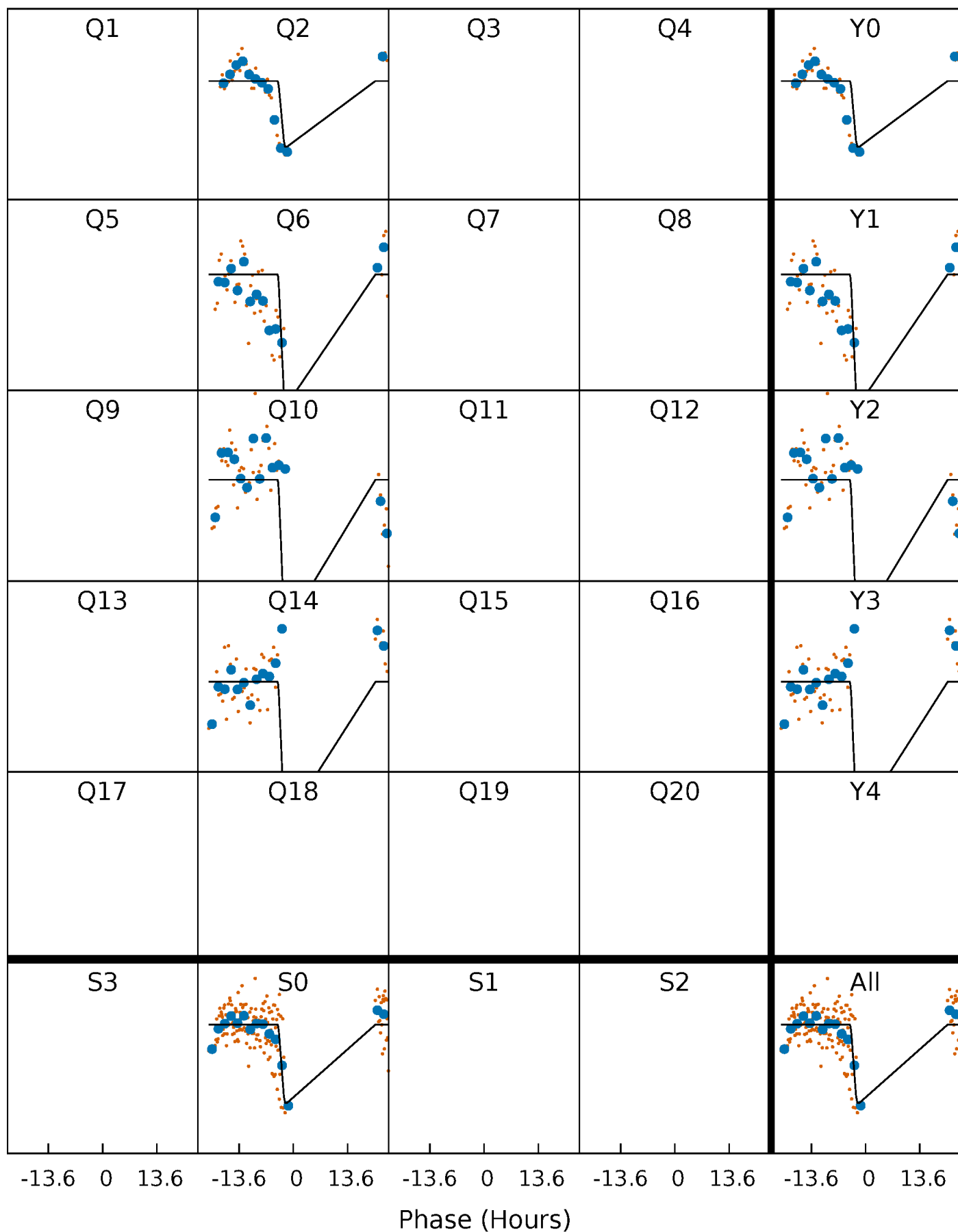
# DV Quarter-Phased Transit Curves

TCE 006153673-03 P=376.993981 Days  $T_0=237.726594$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

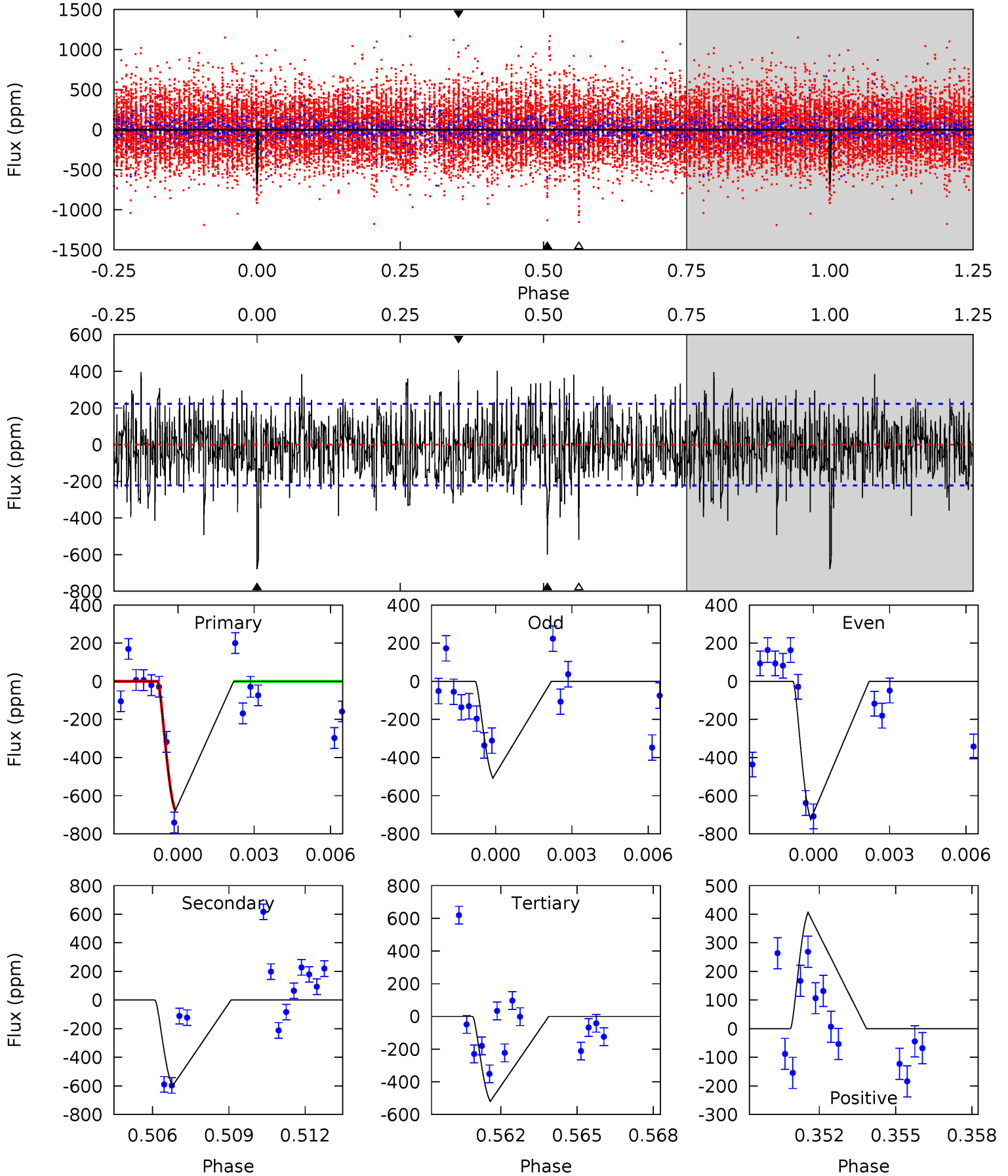
TCE 006153673-03 P=376.971937 Days  $T_0=237.752416$  (BKJD)



# DV Model-Shift Uniqueness Test

006153673-03, P = 376.993981 Days, E = 237.726594 Days

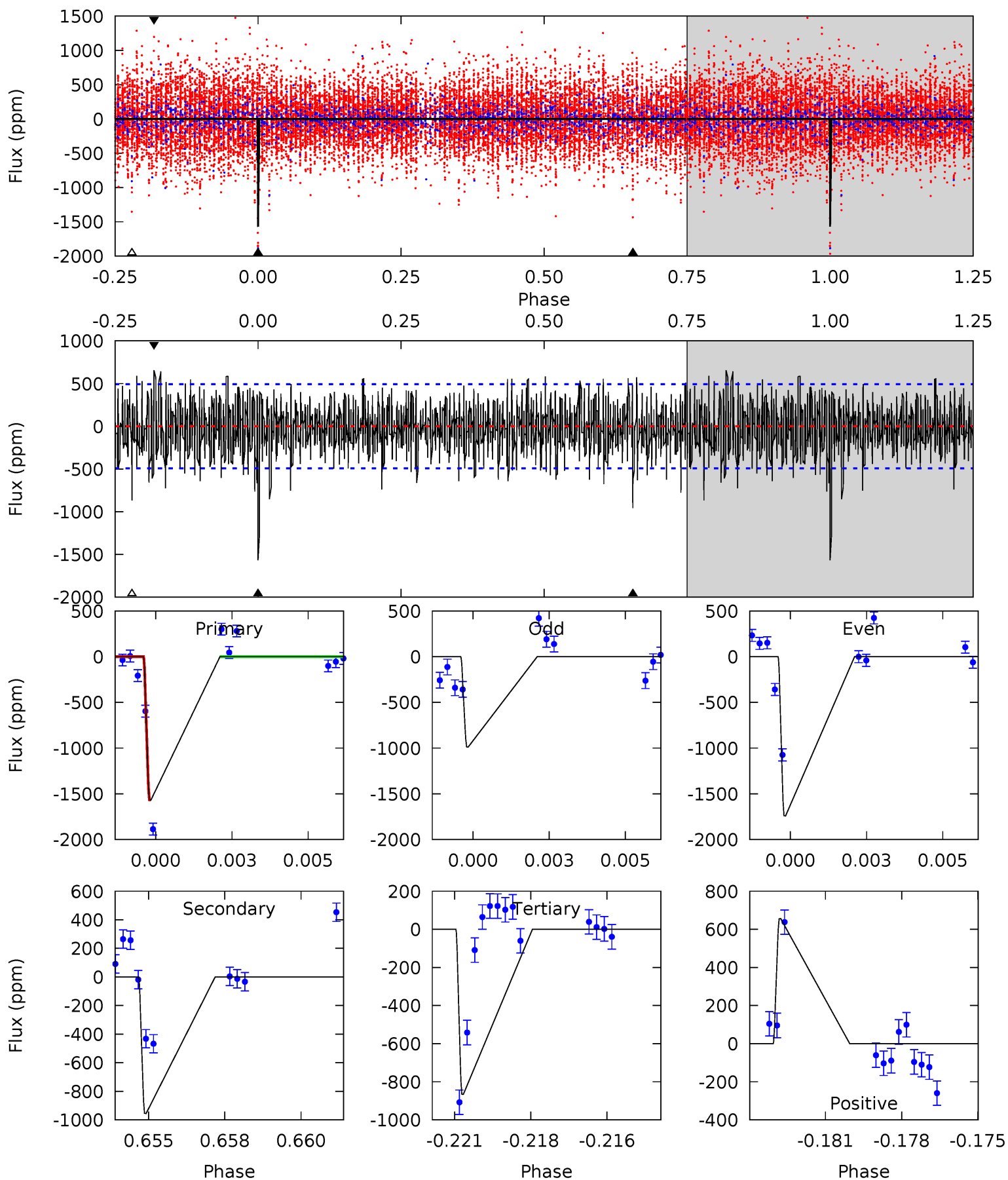
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.0	14.2	12.3	9.59	5.26	2.97	2.87	3.75	6.42	1.89	4.56	2.53	0	0.37	0



# Alt Model-Shift Uniqueness Test

006153673-03, P = 376.971937 Days, E = 237.752416 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	10.2	9.28	7.03	5.27	3.00	2.10	7.51	9.76	0.96	3.21	3.82	0	0.30	0



### Stellar Parameters For KIC 006153673

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6572^{+181}_{-227}$	$4.144^{+0.209}_{-0.171}$	$-0.200^{+0.250}_{-0.300}$	$1.574^{+0.439}_{-0.439}$	$1.265^{+0.181}_{-0.221}$	$0.457^{+0.544}_{-0.214}$
	+3%/-3%	+5%/-4%	+125%/-150%	+28%/-28%	+14%/-17%	+119%/-47%
Source	PHO1	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 006153673-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-600 \pm 42$	$30.88^{+30.43}_{-20.76}$	$483^{+40}_{-38}$	$3044^{+1287}_{-509}$	$423^{+3422}_{-316}$
Alt.	$-956 \pm 93$	$30.21^{+33.48}_{-21.96}$	$484^{+40}_{-33}$	$3317^{+1909}_{-623}$	$718^{+8758}_{-564}$

$T_{\text{max}}$  = 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

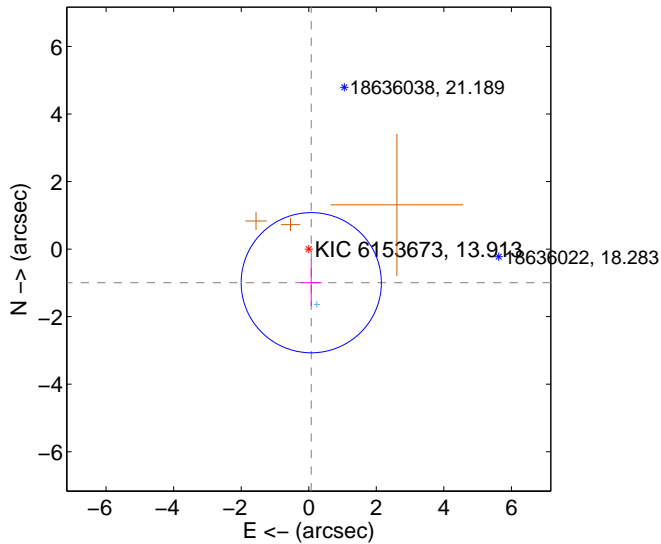
Supplemental centroid analysis for 006153673-03. Kepler magnitude: 13.91. Transit SNR 8.71

There are 1 quarters with good PRF difference image offsets

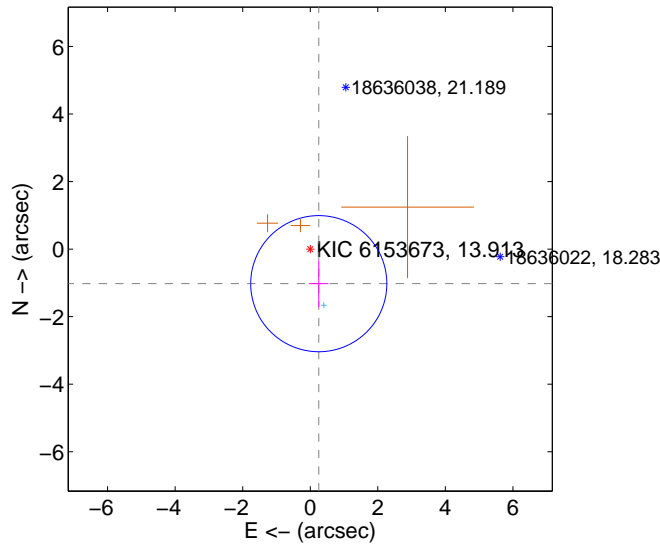
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.998 \pm 0.692$	1.44	$-0.074 \pm 0.311$	$-0.995 \pm 0.693$
PRF-fit source offset from KIC position	$1.054 \pm 0.672$	1.57	$-0.252 \pm 0.290$	$-1.024 \pm 0.688$
photometric centroid source offset	$2.07 \pm 1.30$	1.60	$-2.06 \pm 1.30$	$0.20 \pm 0.53$

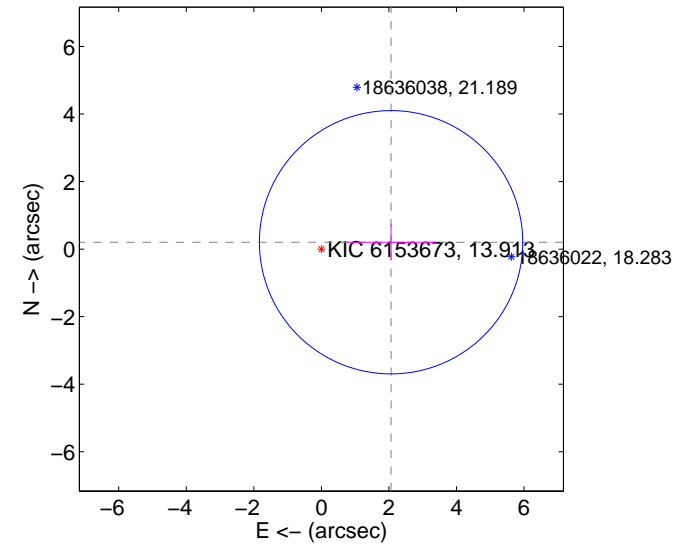
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



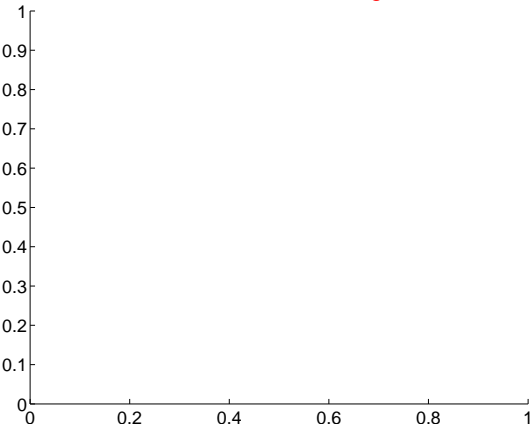
offset from photometric centroids



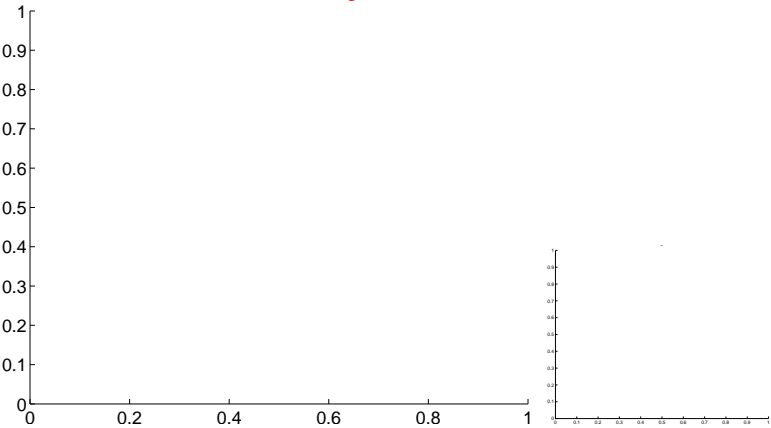
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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

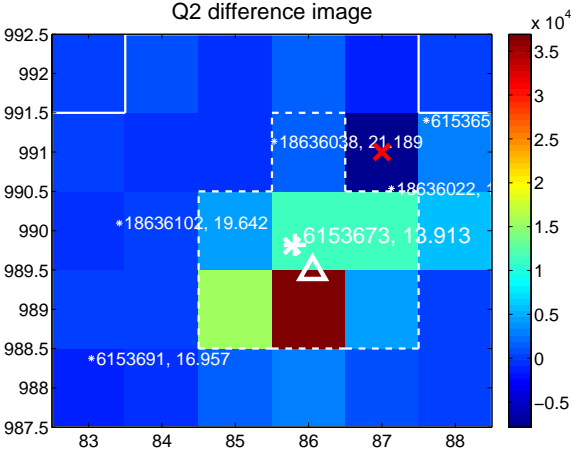
Q1 no difference image



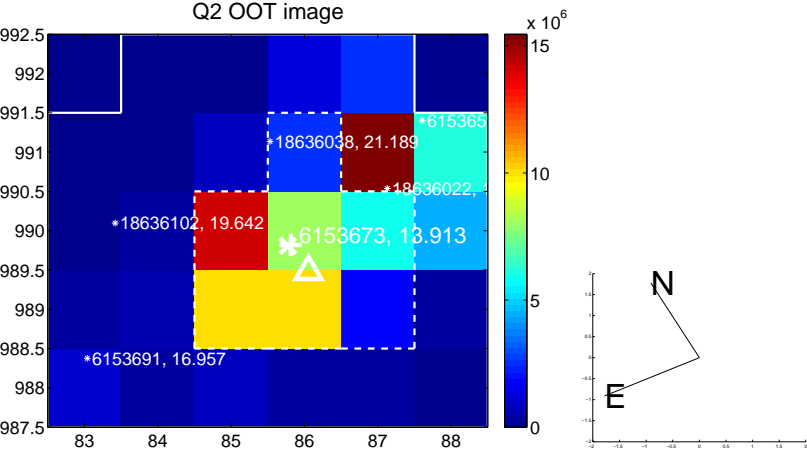
Q1 no OOT image



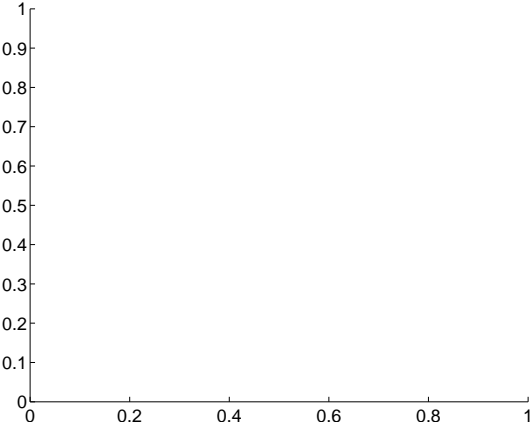
Q2 difference image



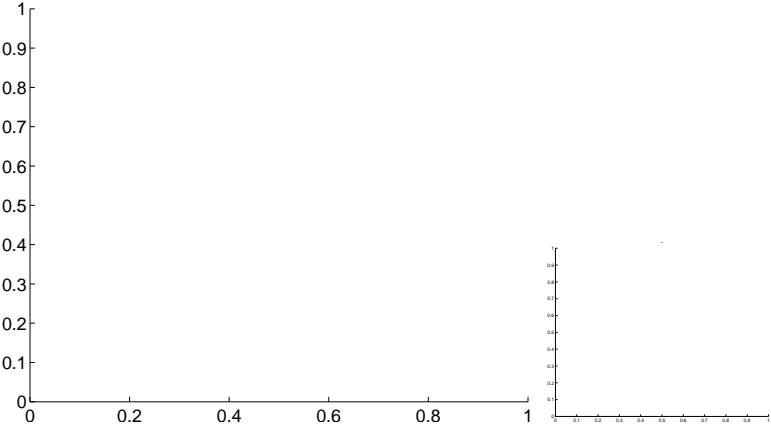
Q2 OOT image



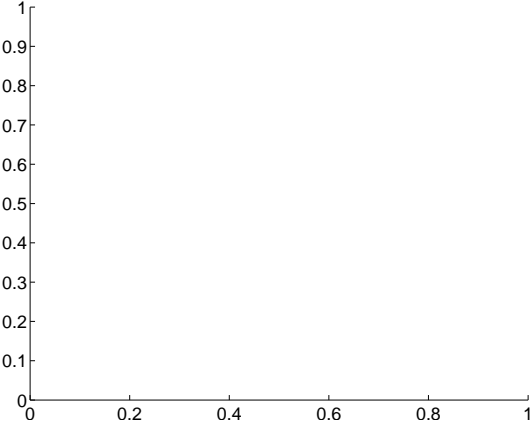
Q3 no difference image



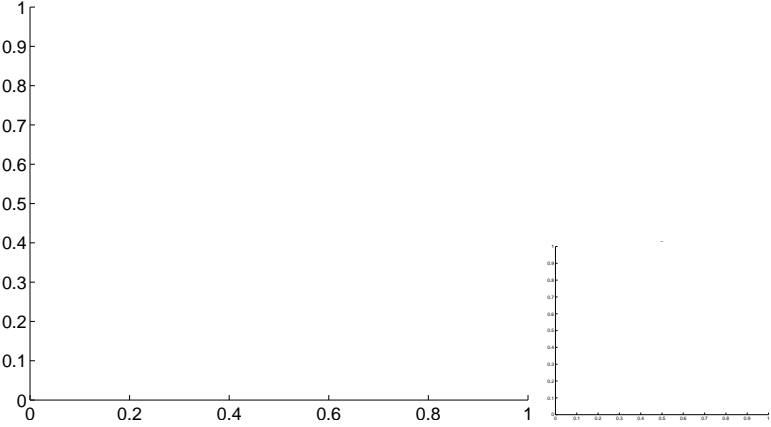
Q3 no OOT image



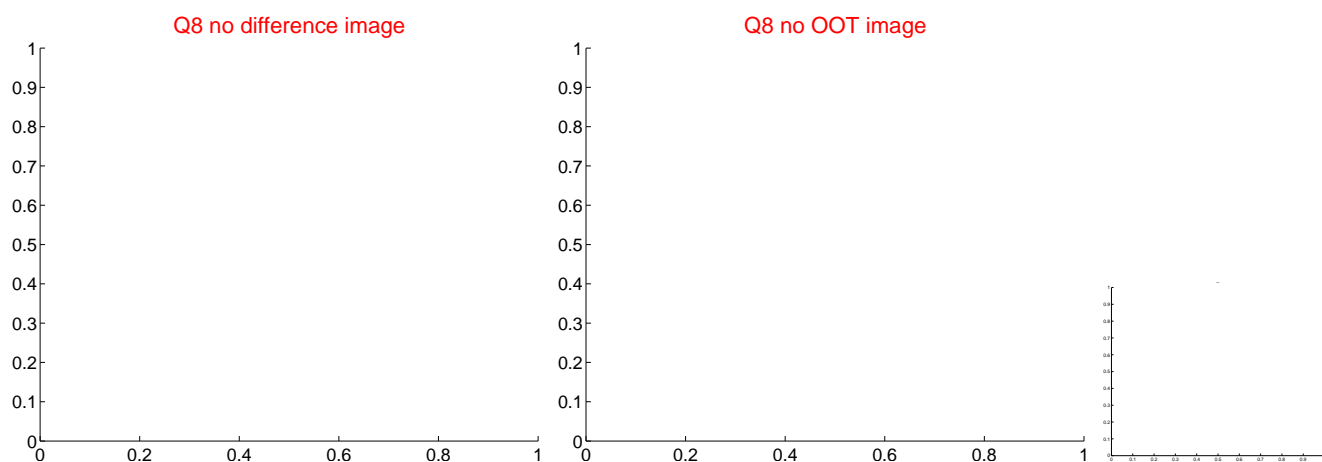
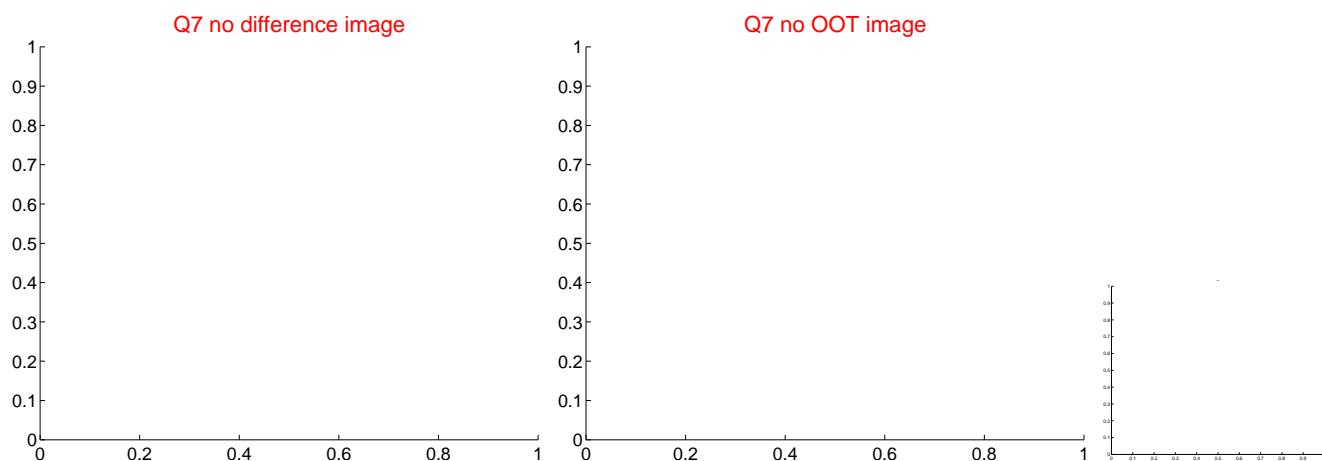
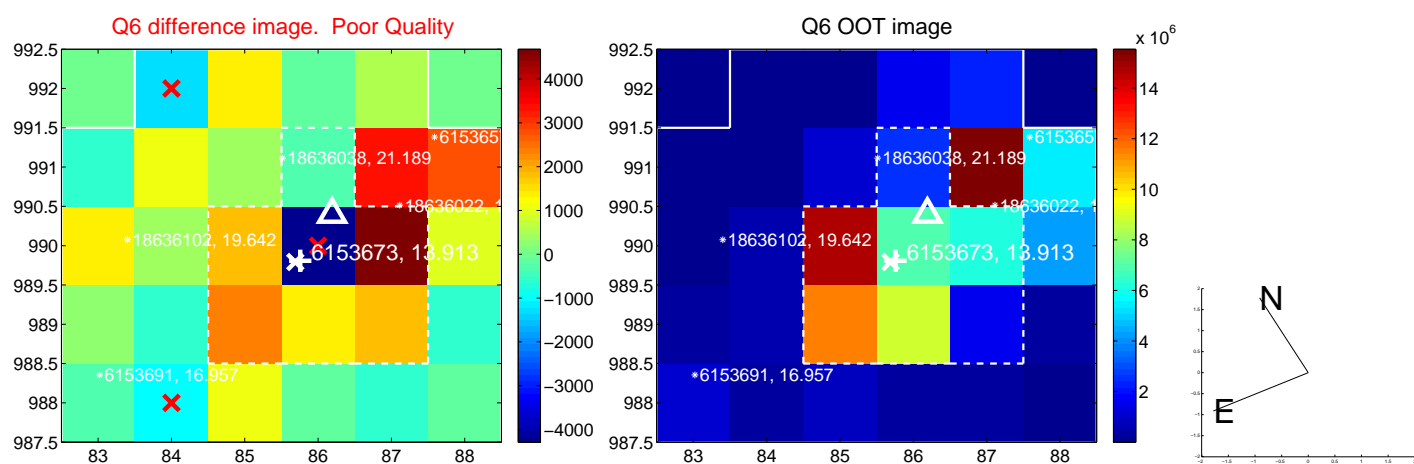
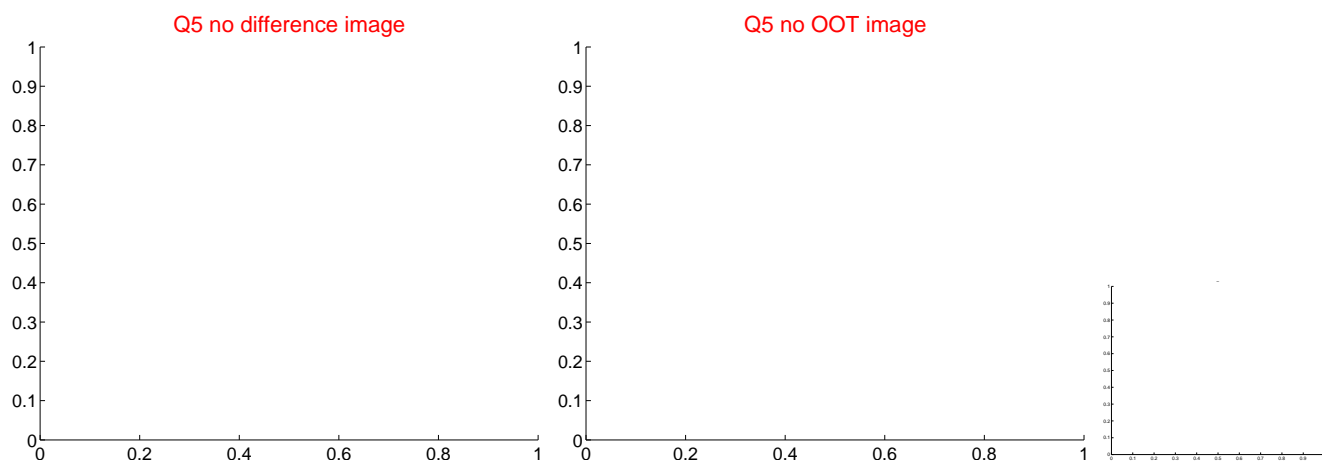
Q4 no difference image



Q4 no OOT image

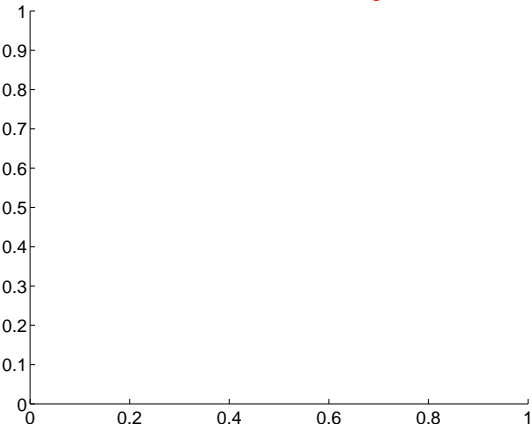


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

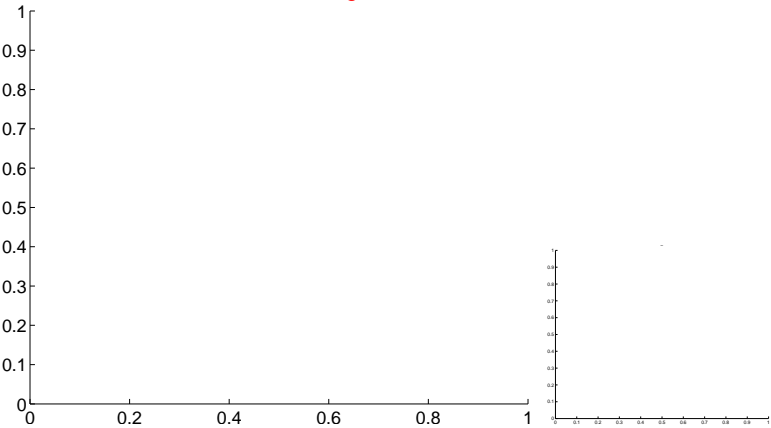


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

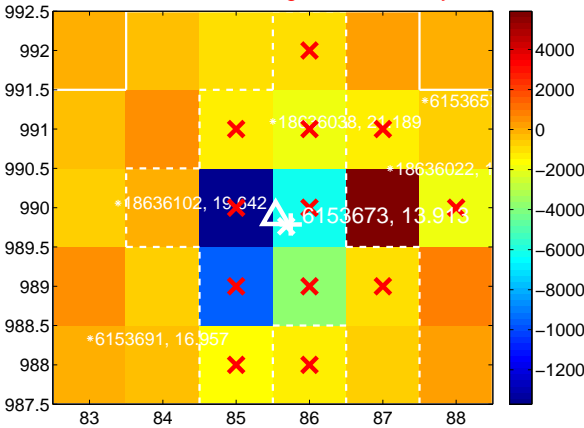
Q9 no difference image



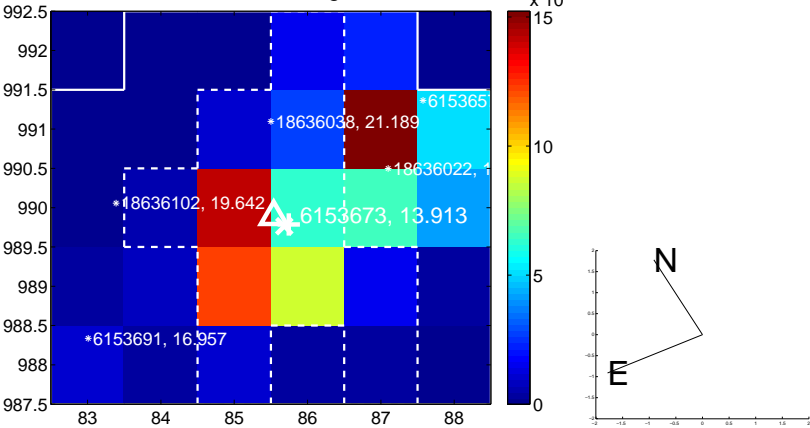
Q9 no OOT image



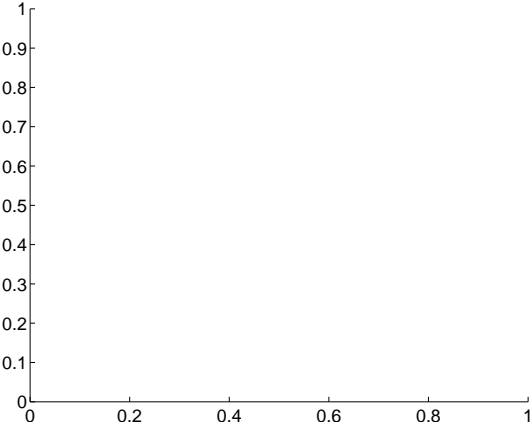
Q10 difference image. Poor Quality



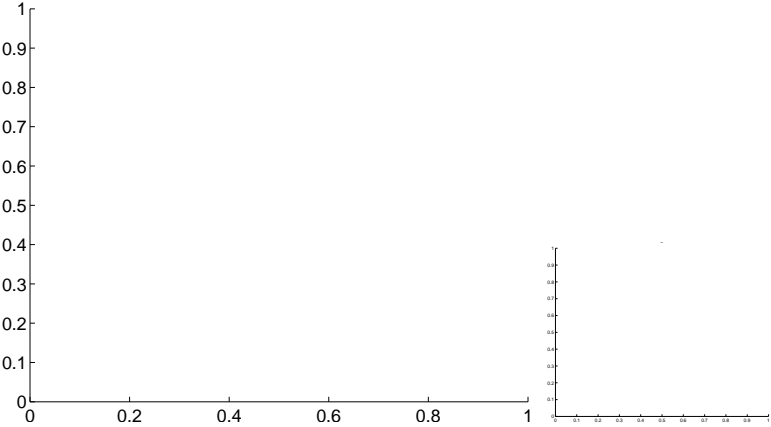
Q10 OOT image



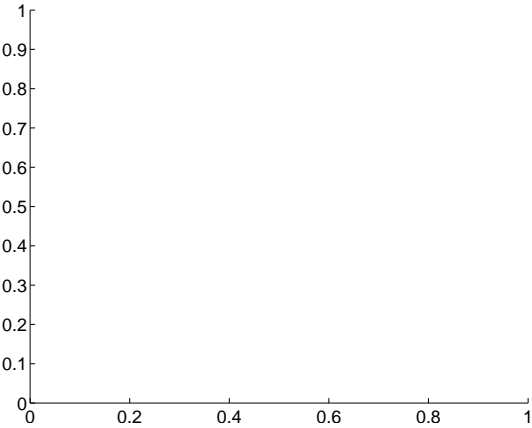
Q11 no difference image



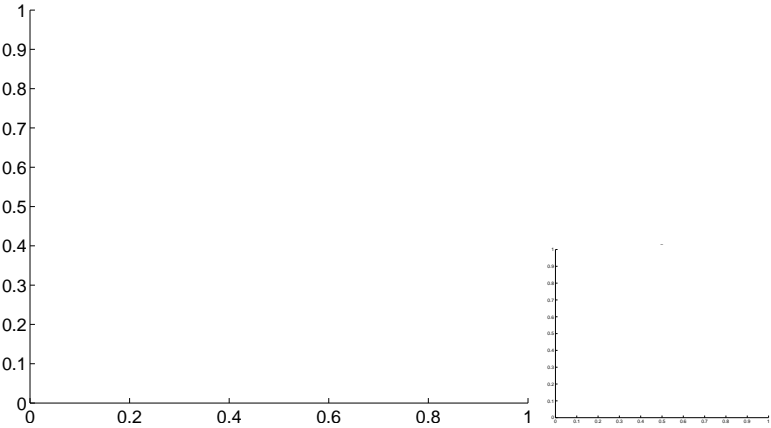
Q11 no OOT image



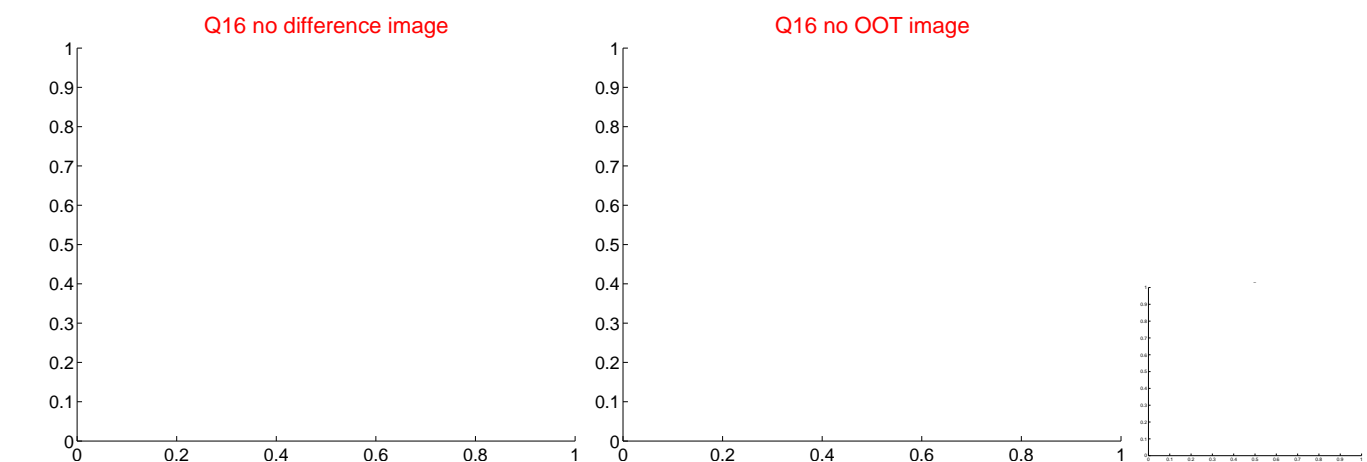
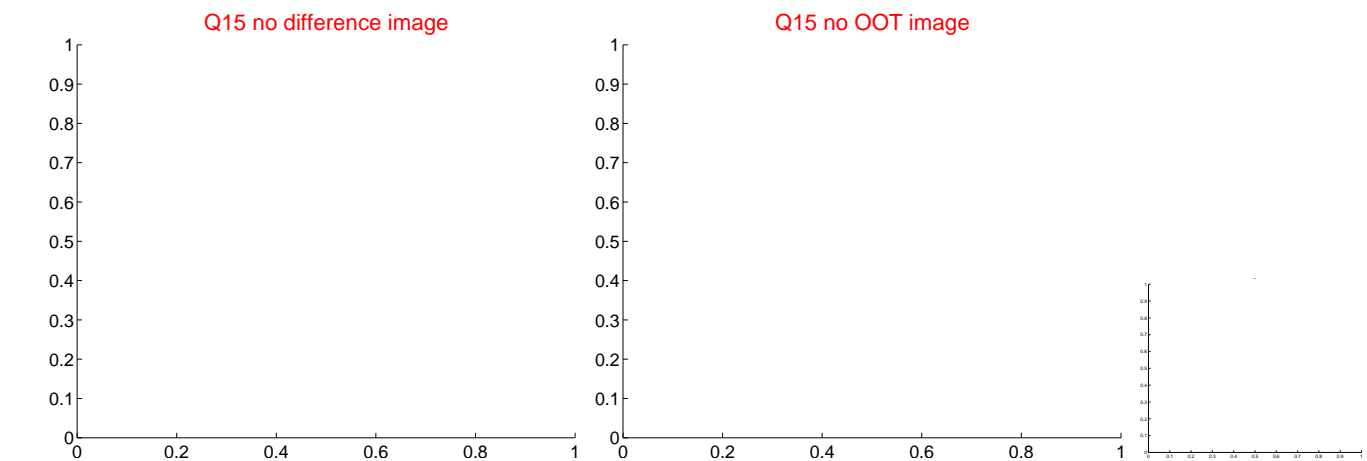
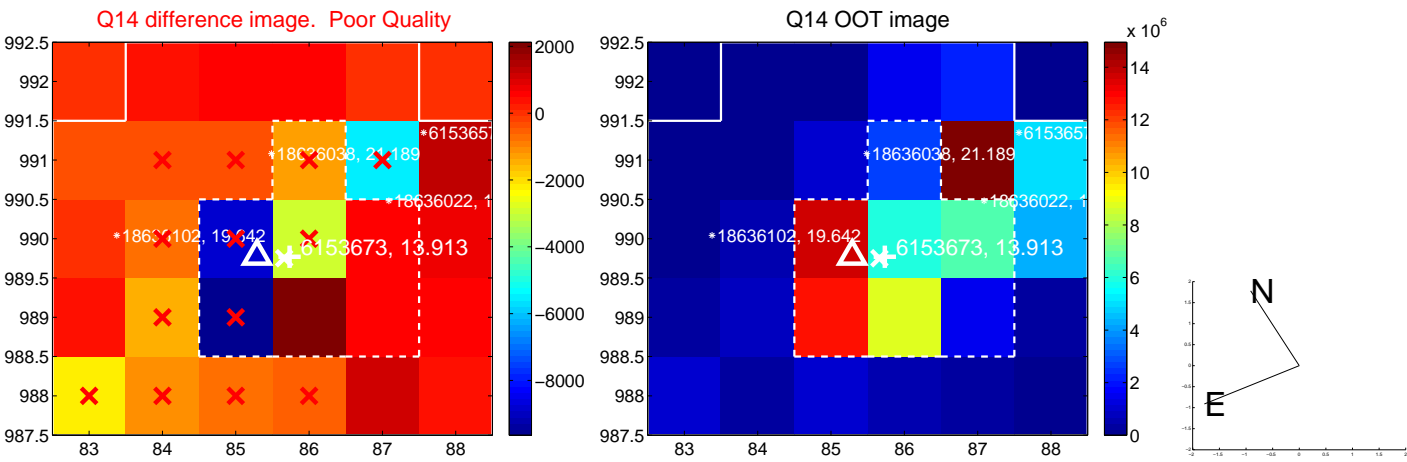
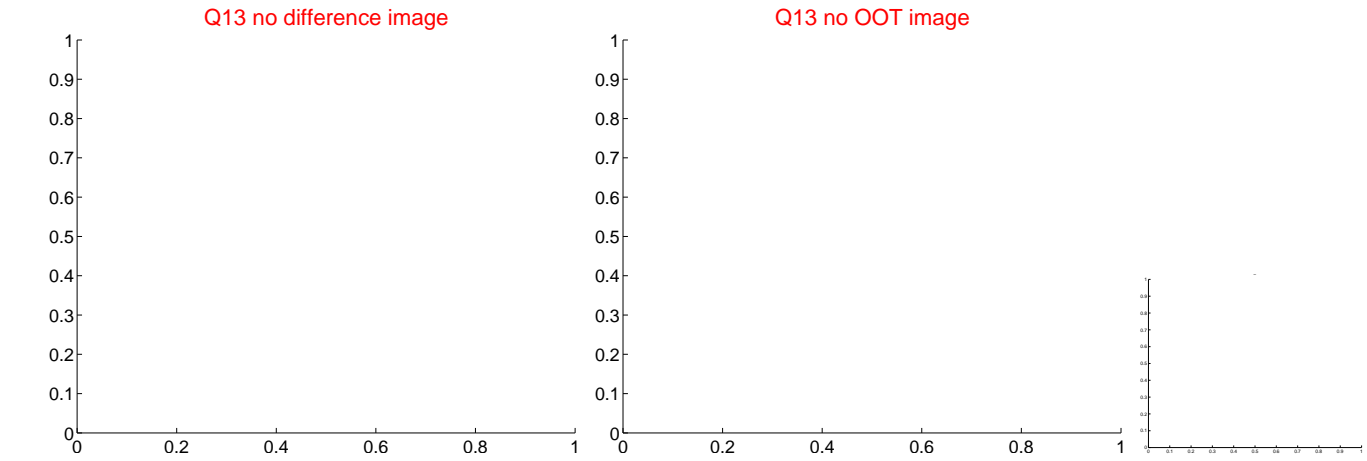
Q12 no difference image



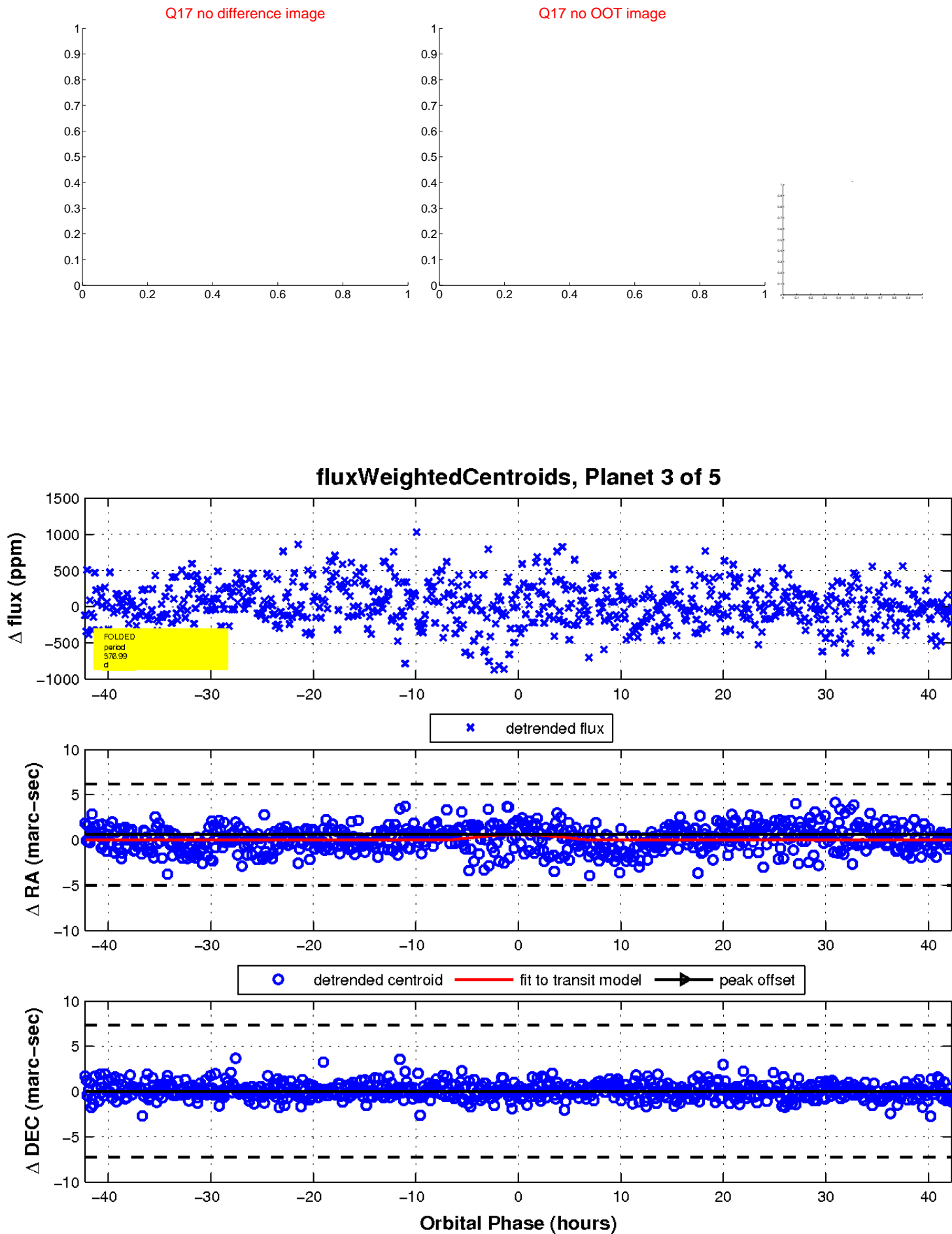
Q12 no OOT image



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

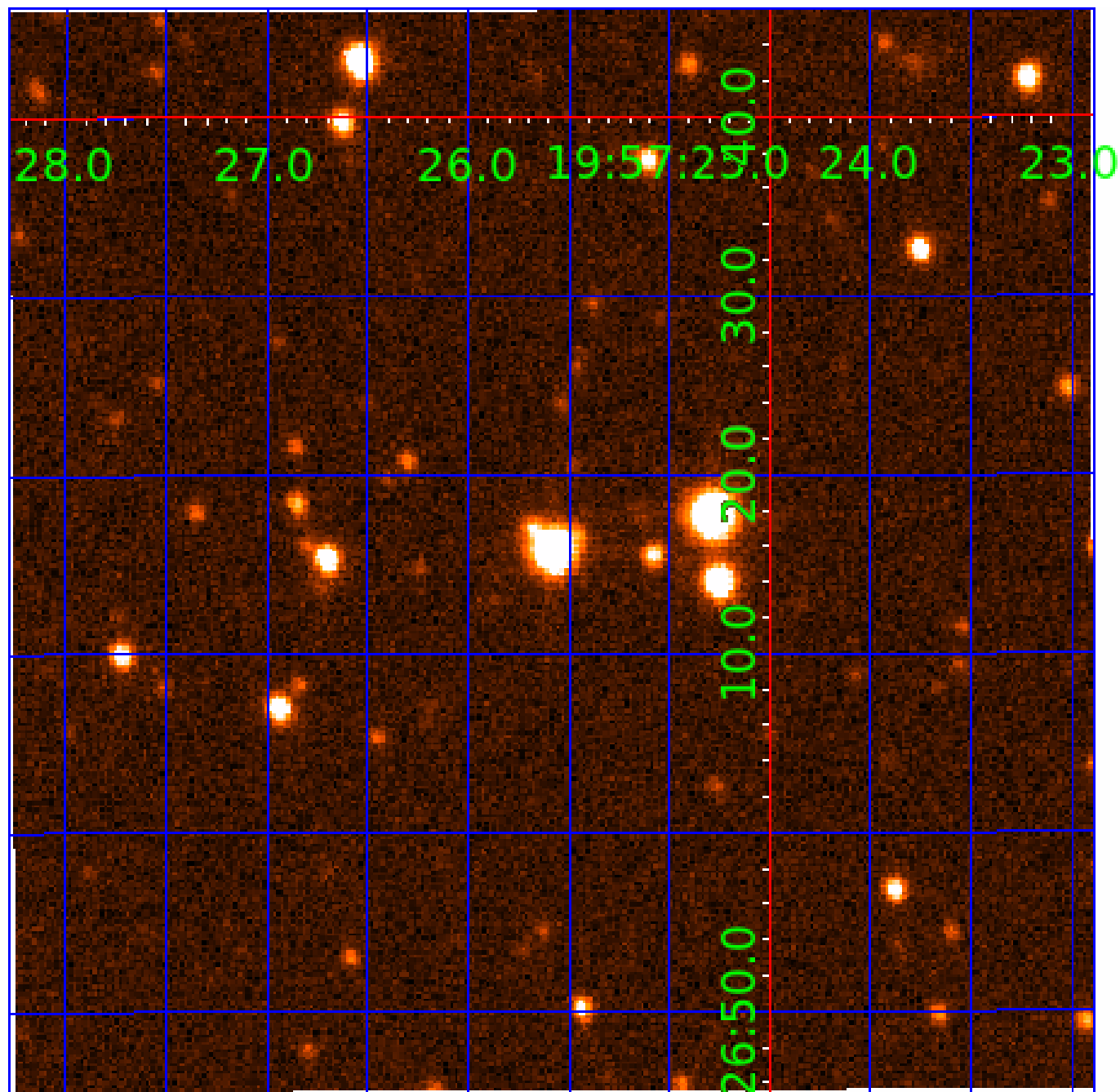


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006153673

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006153673-01	OBS	No	3.167617	133.652933	45.7	7.668	8.9	8.2	1.57	6572	1.27	1992.40
006153673-02	OBS	No	3.167515	131.811669	54.9	9.964	10.1	10.9	1.57	6572	1.38	1992.49
006153673-03	OBS	No	376.993981	237.726594	860.2	14.105	9.3	8.7	1.57	6572	8.73	3.40
006153673-04	OBS	No	113.429564	221.504564	544.8	2.661	8.0	8.2	1.57	6572	6.97	16.88
006153673-05	OBS	No	80.177986	183.297440	416.4	2.386	7.1	7.2	1.57	6572	3.69	26.81

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006153673-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006153673-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
006153673-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006153673-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
006153673-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

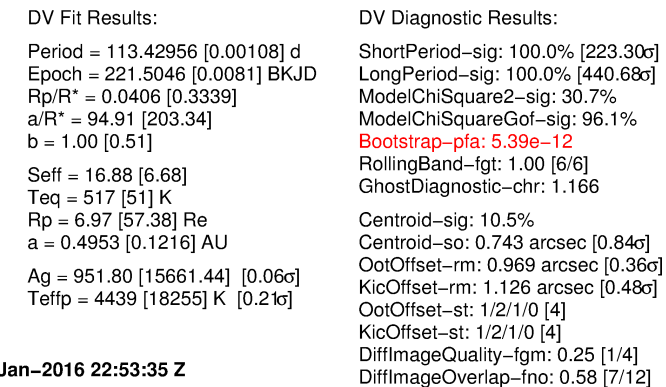
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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 006153673-04

No Significant Match Found

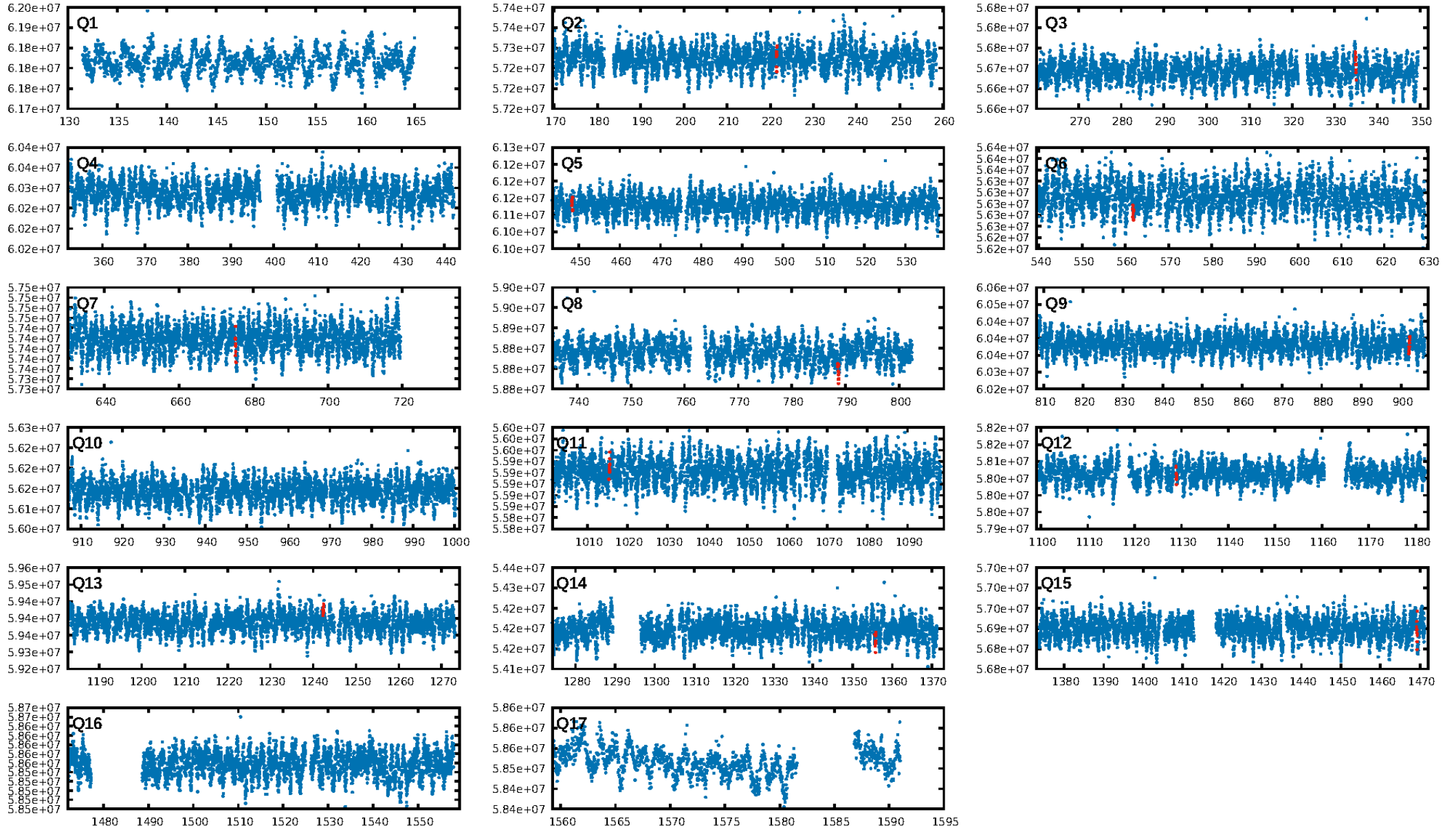
## KIC: 6153673    Candidate: 4 of 5    Period: 113.430 d



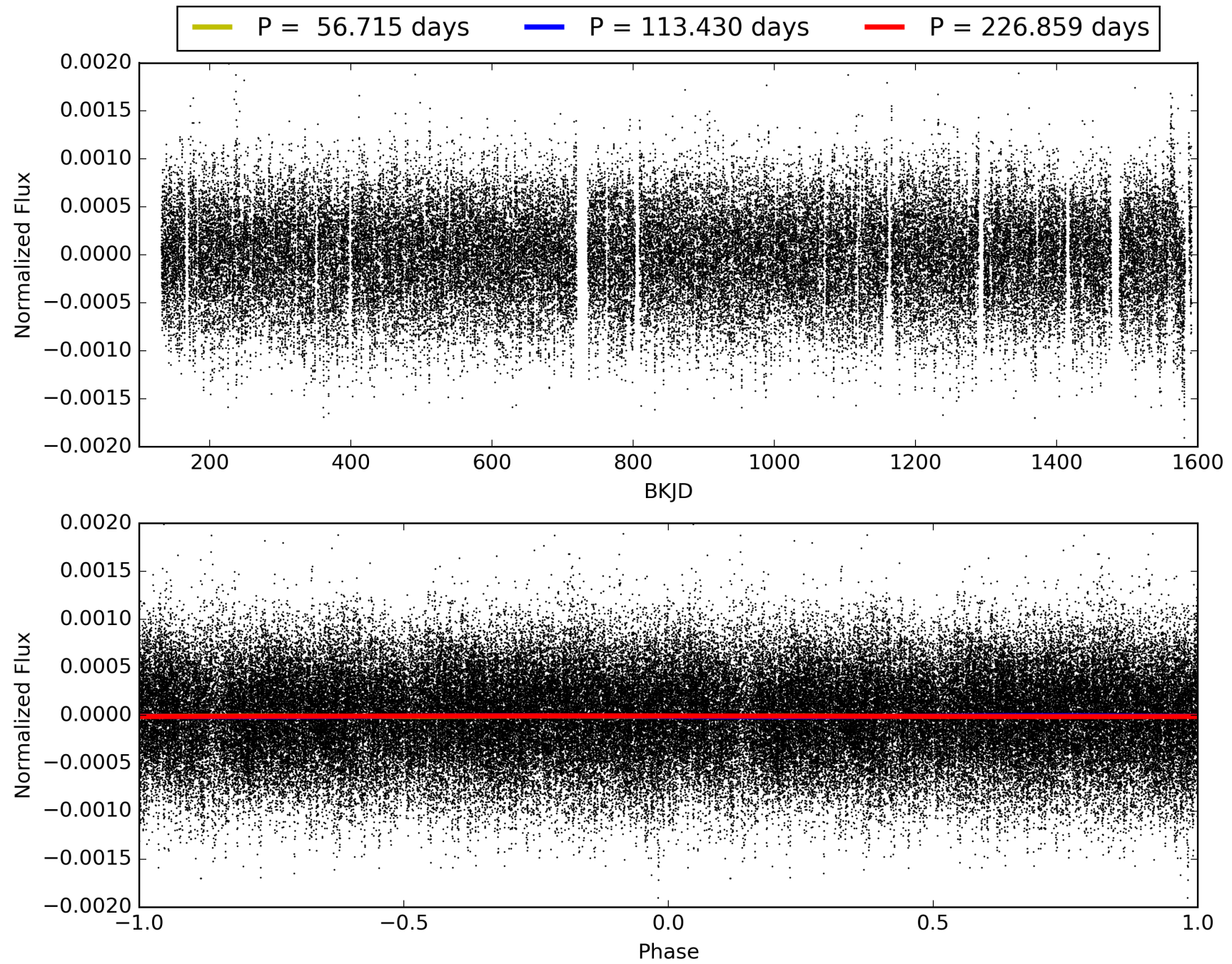
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:53:35 Z

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

# TCE 006153673-04, PDC Light Curves

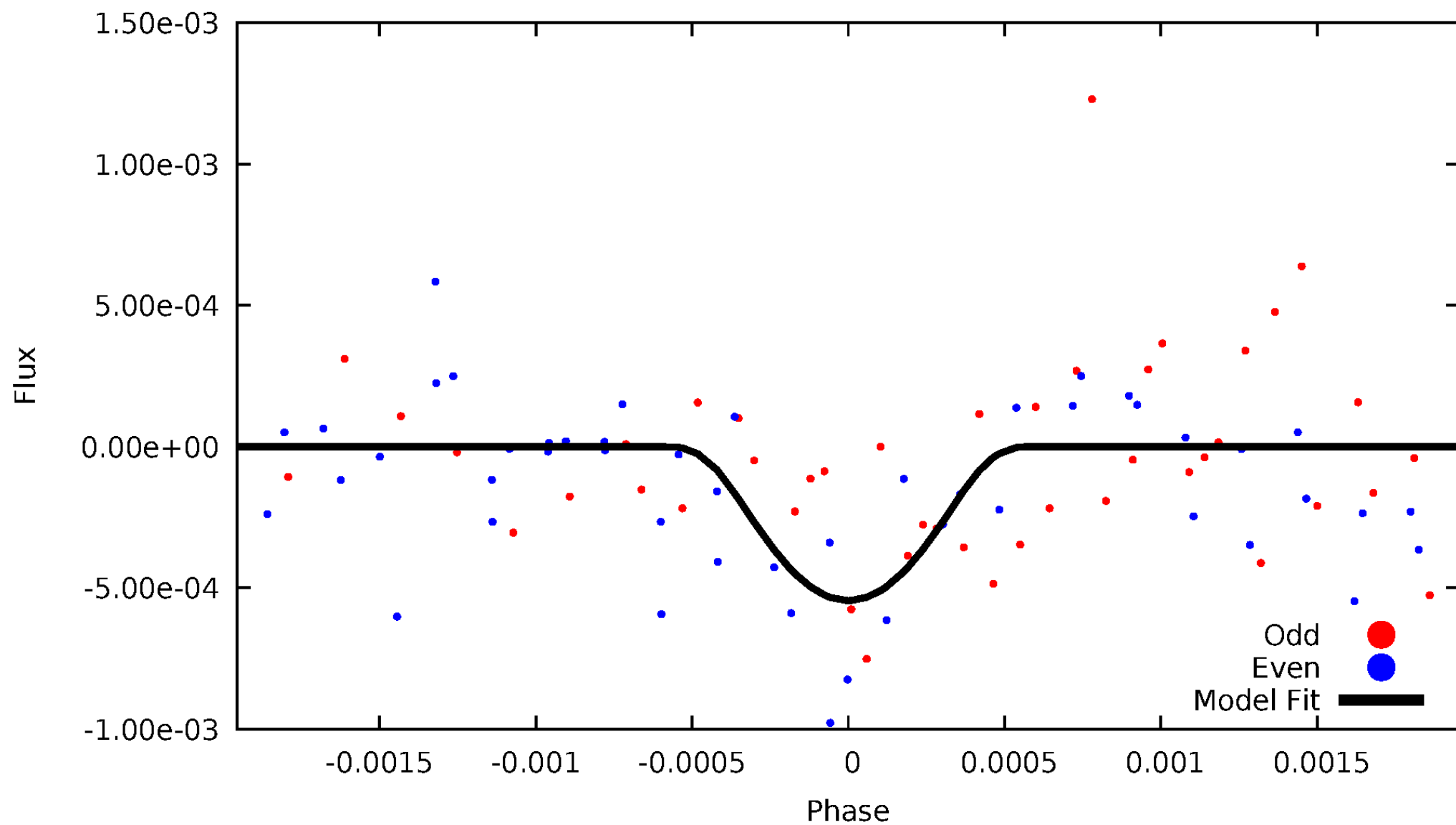


TCE 006153673-04



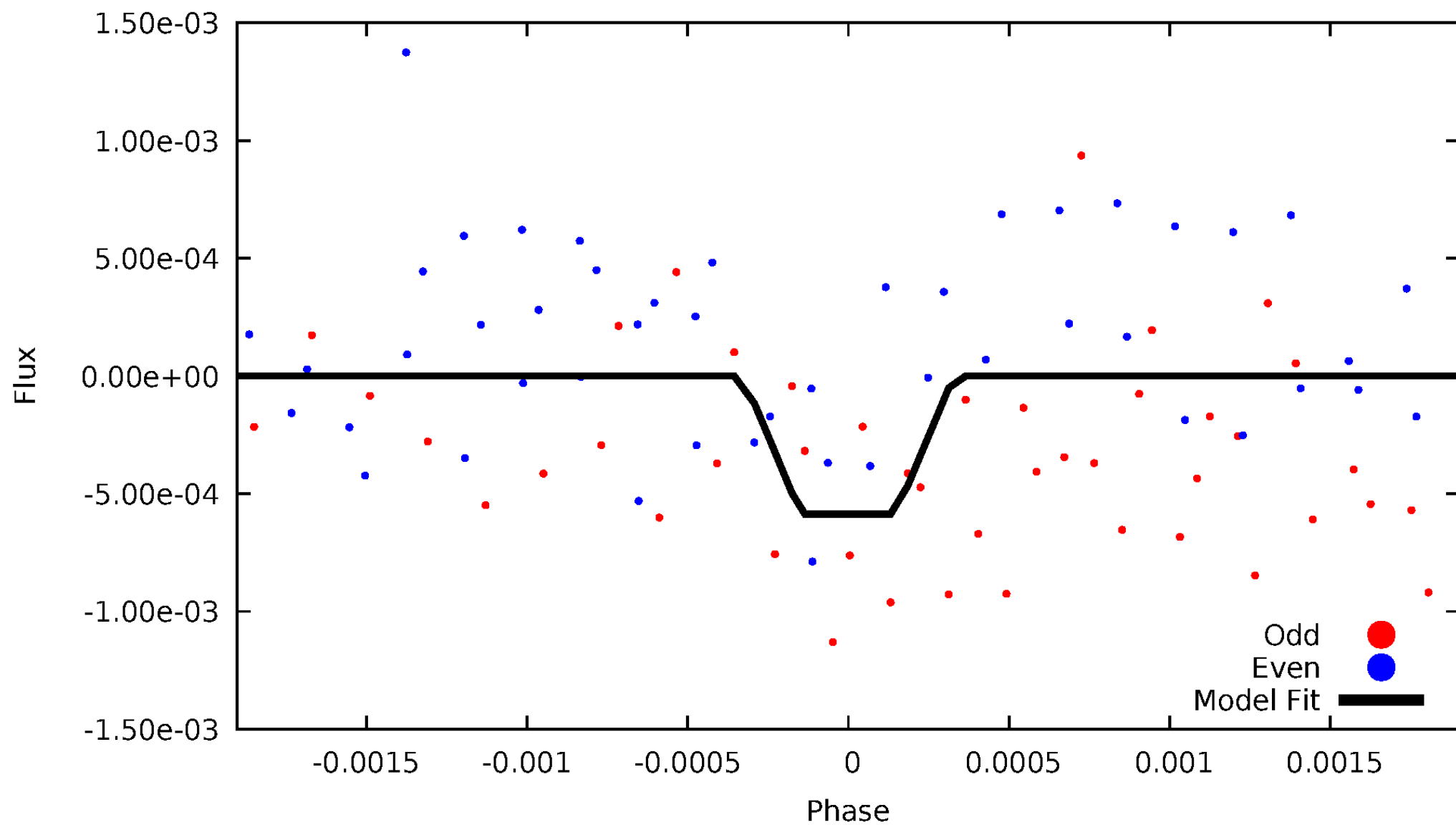
# DV Odd/Even

TCE 006153673-04



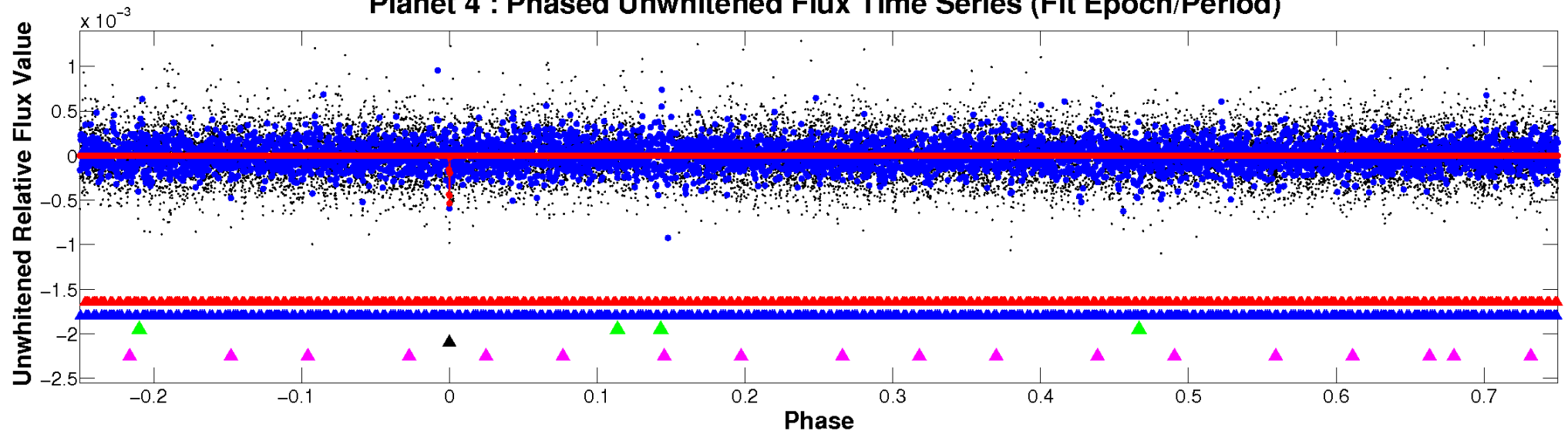
# ALT Odd/Even

TCE 006153673-04

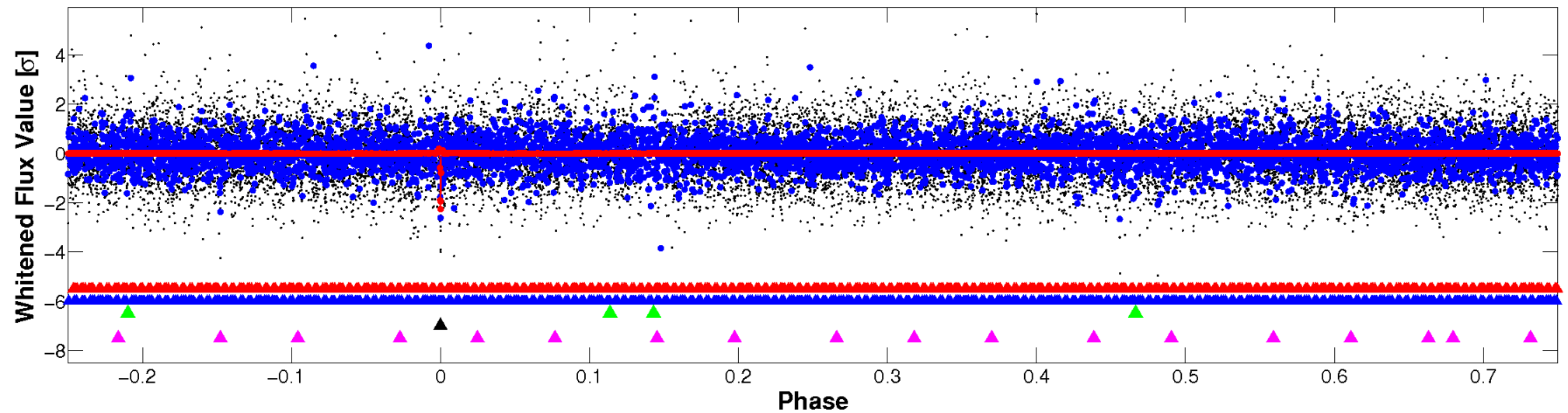


# Non-Whitened Vs. Whitened Light Curve

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

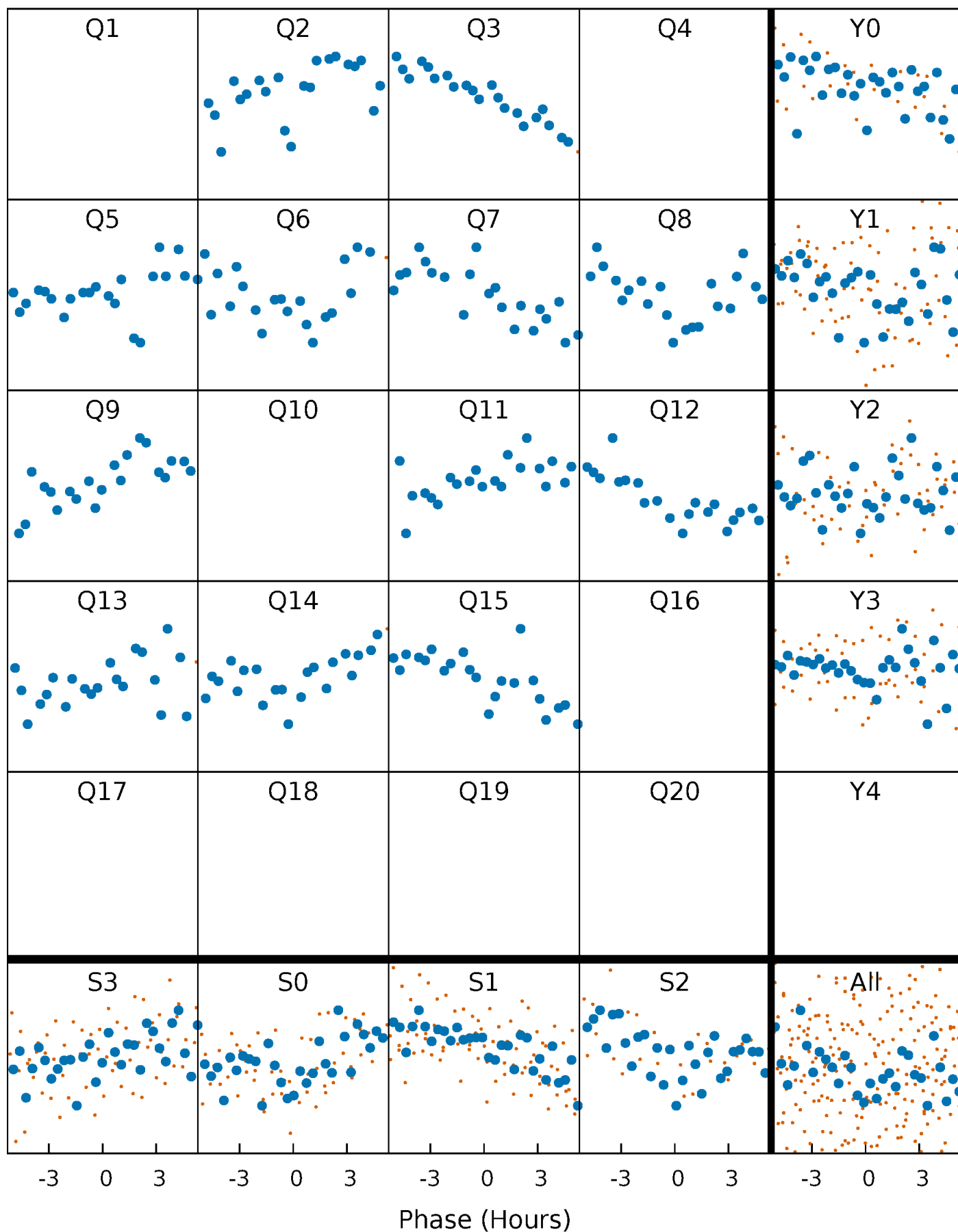


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



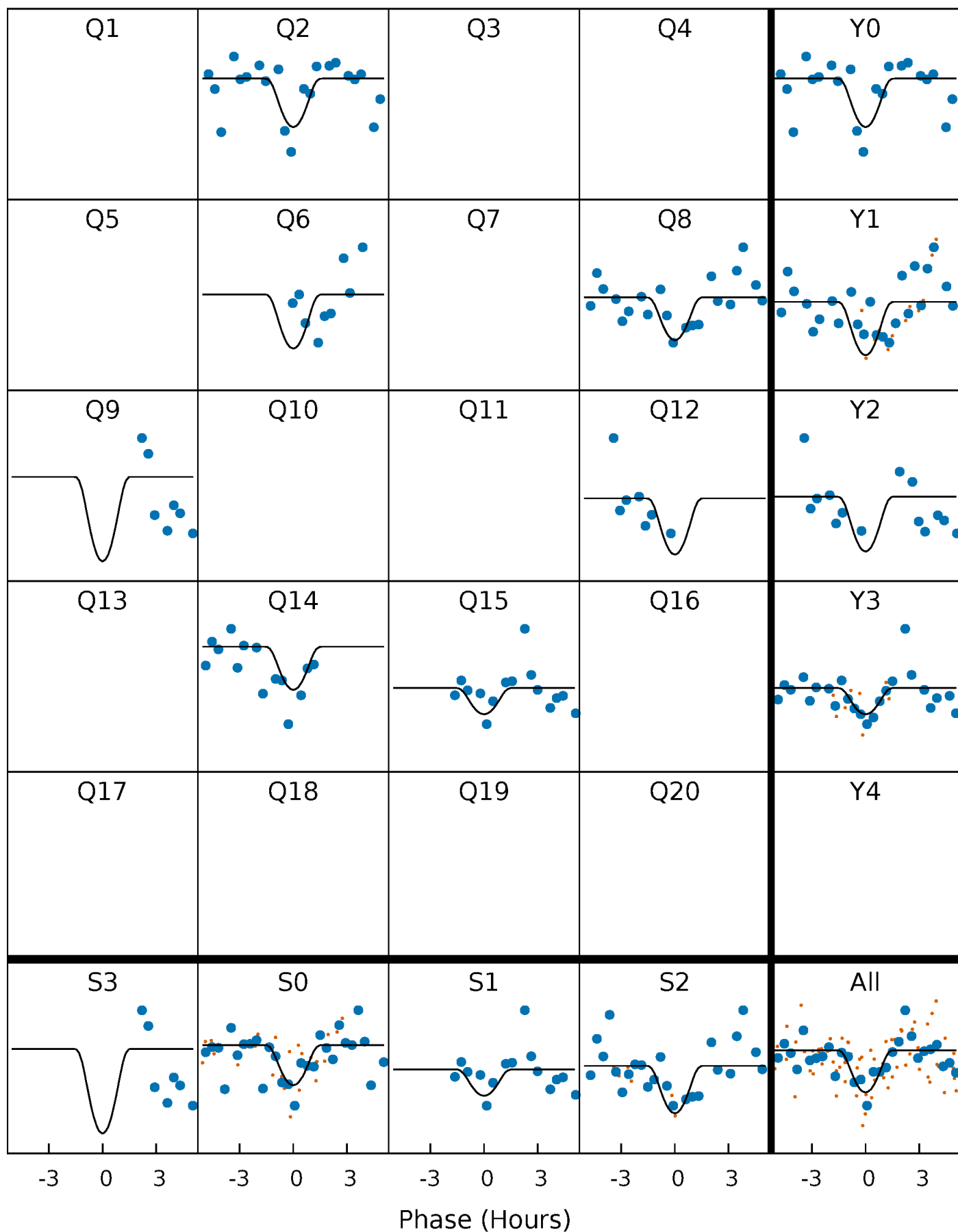
# PDC Quarter-Phased Transit Curves

TCE 006153673-04 P=113.429564 Days  $T_0=221.504564$  (BKJD)



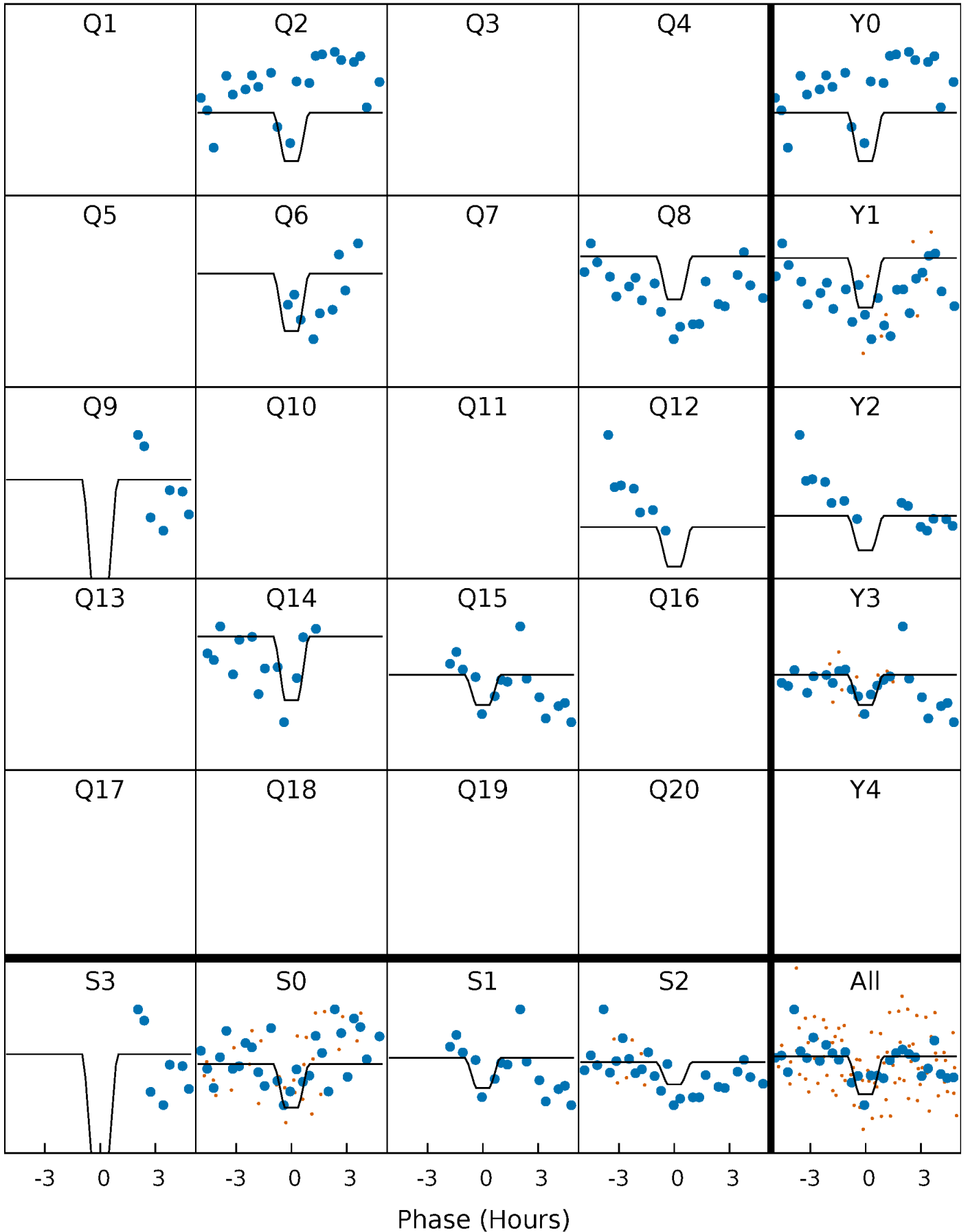
# DV Quarter-Phased Transit Curves

TCE 006153673-04 P=113.429564 Days  $T_0=221.504564$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

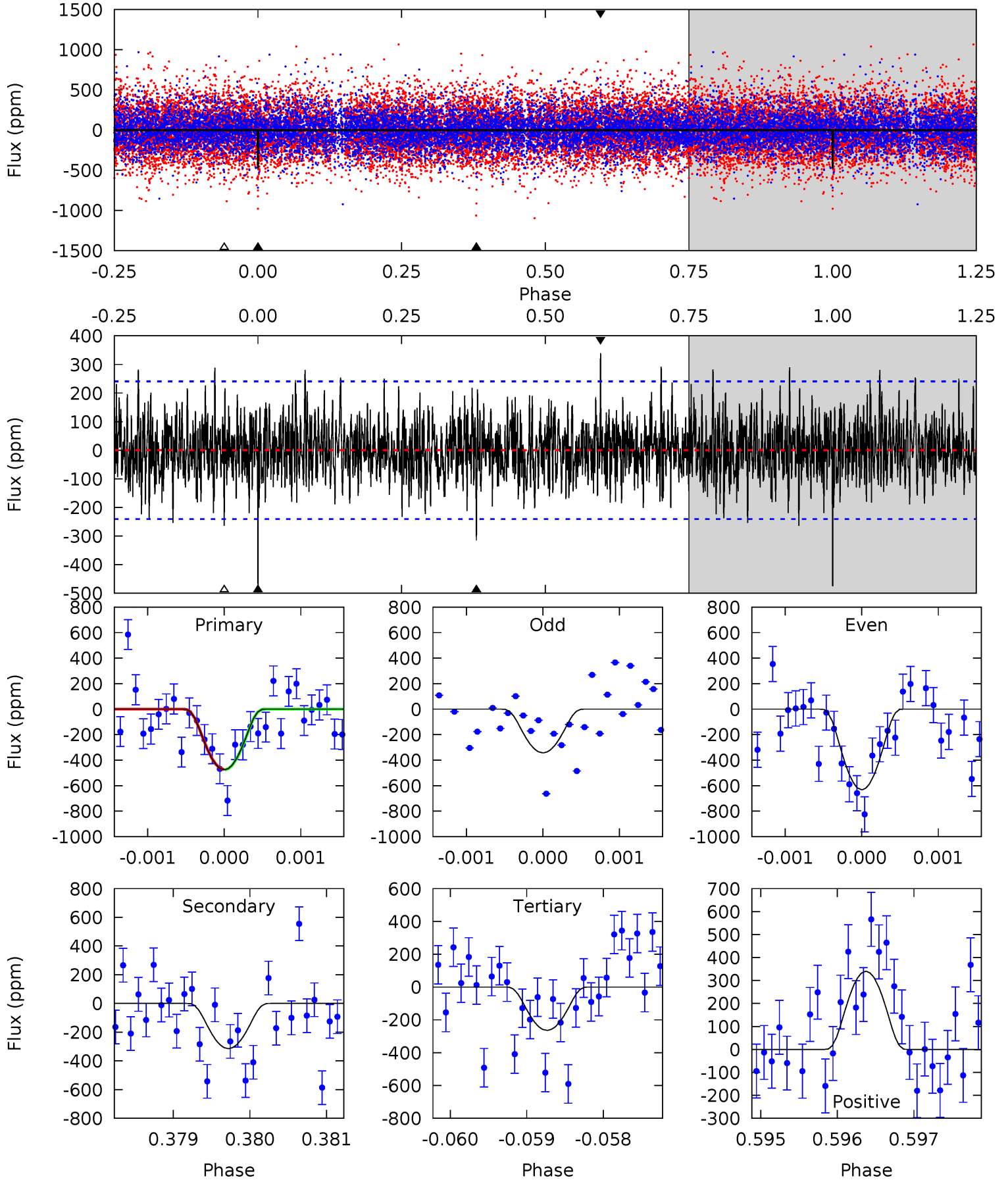
TCE 006153673-04 P=113.429496 Days  $T_0=221.511443$  (BKJD)



# DV Model-Shift Uniqueness Test

006153673-04, P = 113.429564 Days, E = 108.075000 Days

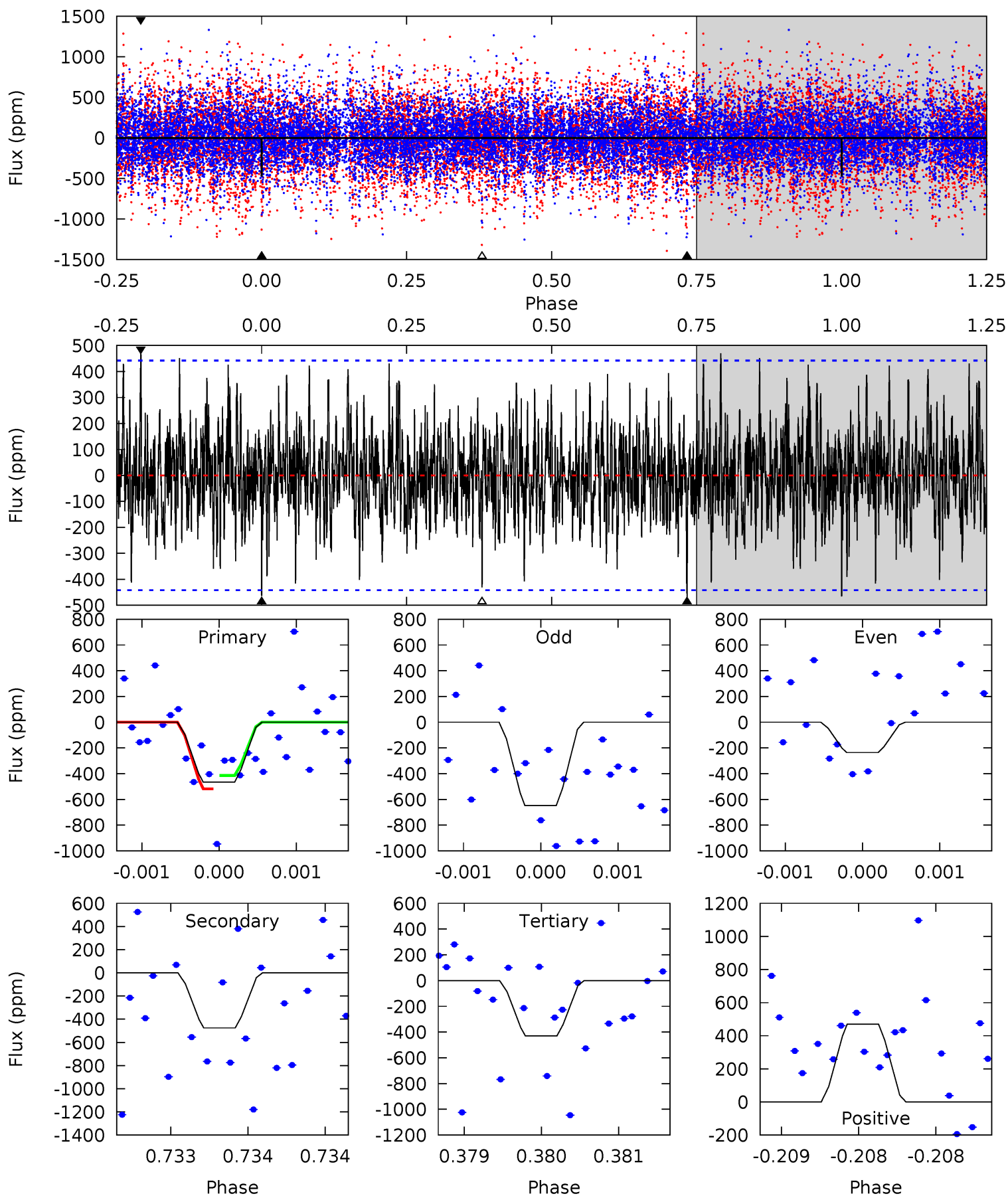
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	7.10	5.96	7.67	5.44	3.27	1.81	4.76	3.05	1.14	-0.58	3.32	1.05	0.42	0.03



# Alt Model-Shift Uniqueness Test

006153673-04, P = 113.429496 Days, E = 108.081947 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.83	5.95	5.38	5.86	5.53	3.41	1.62	0.45	-0.04	0.57	0.08	2.56	1.04	0.50	0.64



### Stellar Parameters For KIC 006153673

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6572^{+181}_{-227}$	$4.144^{+0.209}_{-0.171}$	$-0.200^{+0.250}_{-0.300}$	$1.574^{+0.439}_{-0.439}$	$1.265^{+0.181}_{-0.221}$	$0.457^{+0.544}_{-0.214}$
	+3%/-3%	+5%/-4%	+125%/-150%	+28%/-28%	+14%/-17%	+119%/-47%
Source	PHO1	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 006153673-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-314 \pm 44$	$40.57^{+48.15}_{-28.22}$	$721^{+56}_{-61}$	$2603^{+1075}_{-438}$	$26^{+249}_{-20}$
Alt.	$-476 \pm 80$	$41.27^{+46.13}_{-28.23}$	$723^{+55}_{-57}$	$2751^{+1142}_{-472}$	$38^{+341}_{-30}$

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

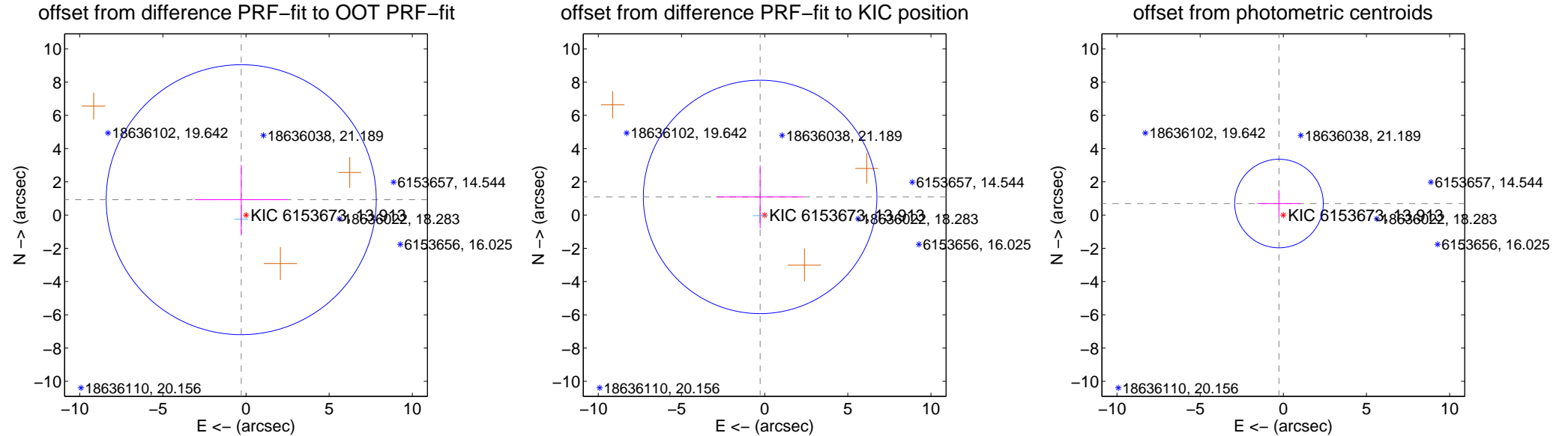
## DV Centroid Data

Supplemental centroid analysis for 006153673-04. Kepler magnitude: 13.91. Transit SNR 8.23

There are 1 quarters with good PRF difference image offsets

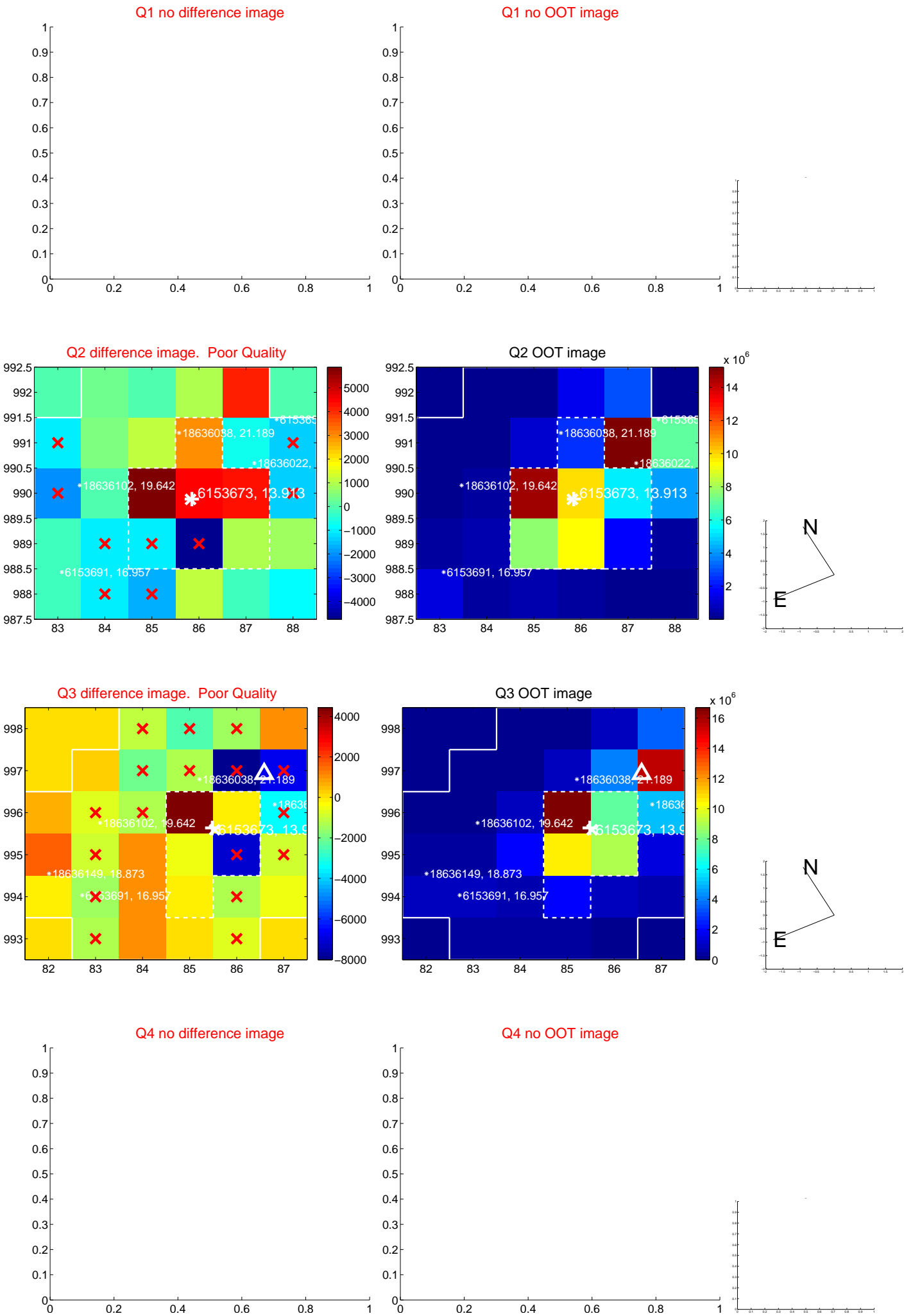
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.969 \pm 2.706$	0.36	$0.288 \pm 2.776$	$0.925 \pm 2.085$
PRF-fit source offset from KIC position	$1.126 \pm 2.340$	0.48	$0.272 \pm 2.645$	$1.092 \pm 1.897$
photometric centroid source offset	$0.74 \pm 0.89$	0.84	$0.26 \pm 1.30$	$0.70 \pm 0.81$

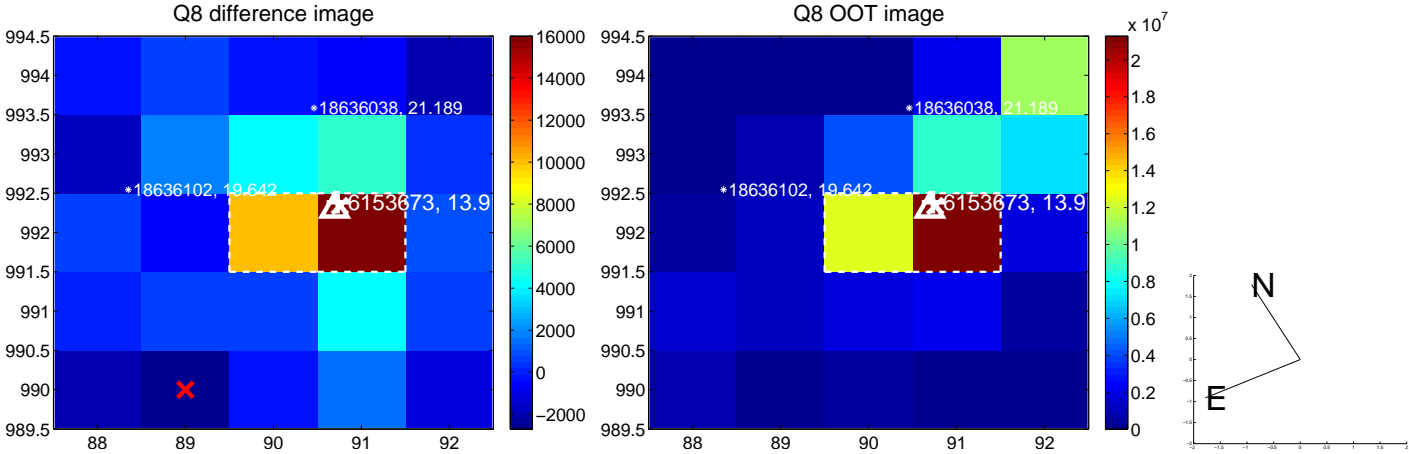
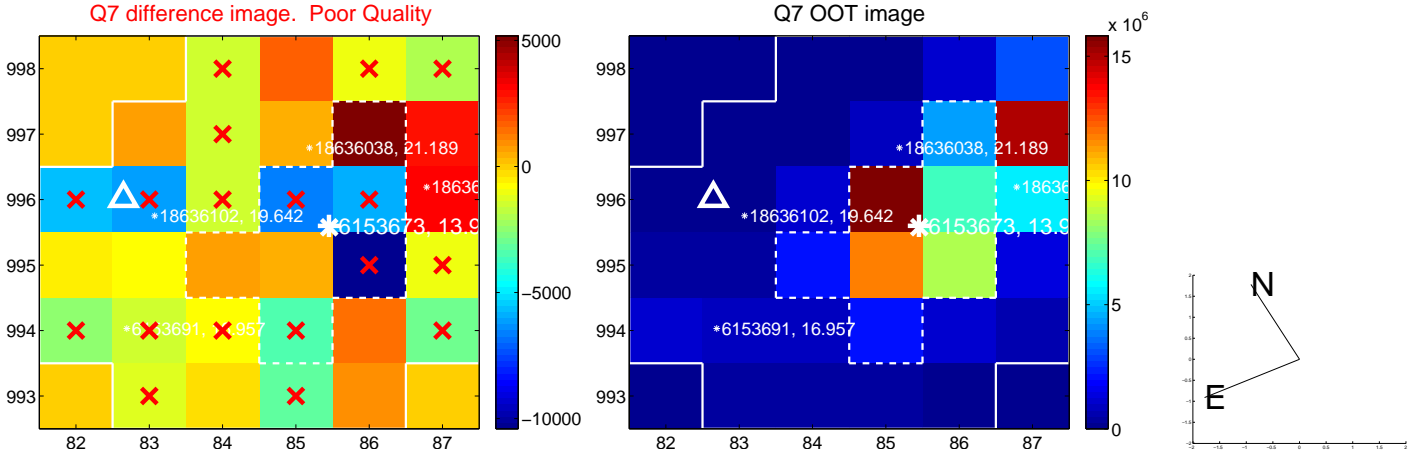
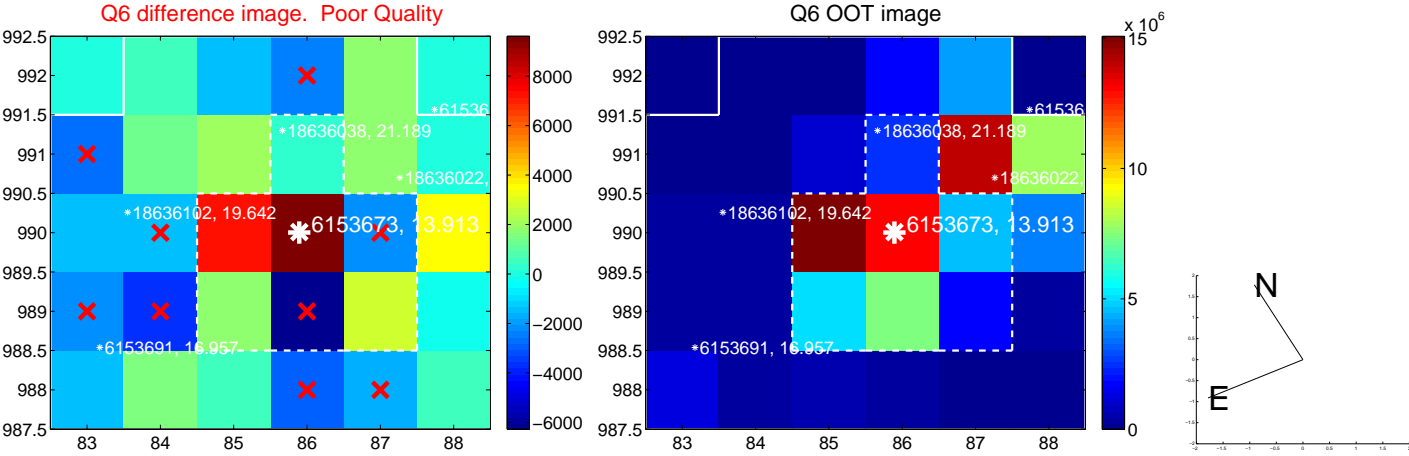
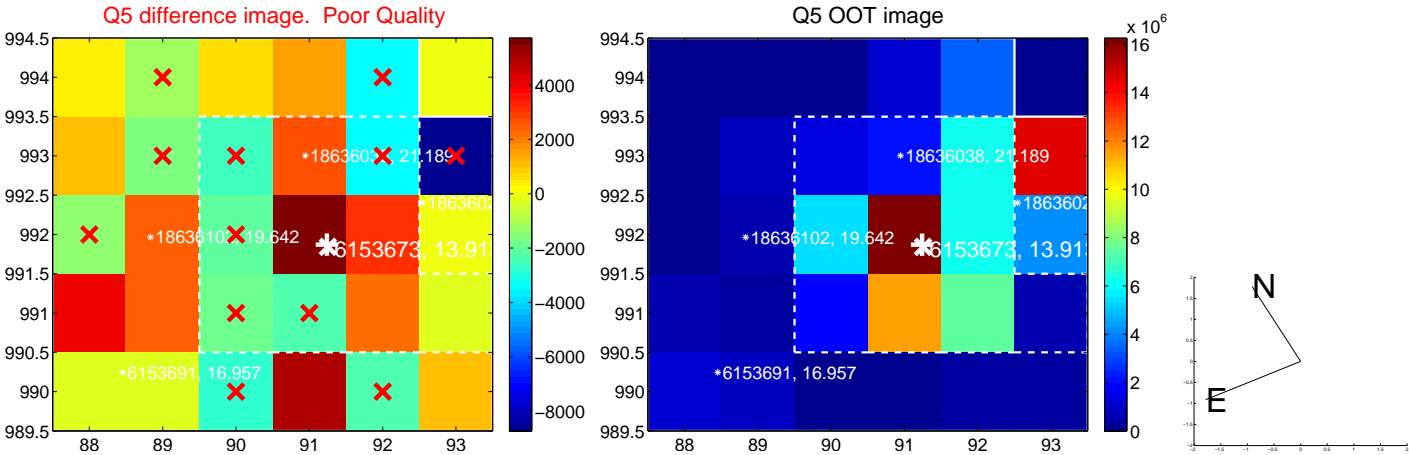


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

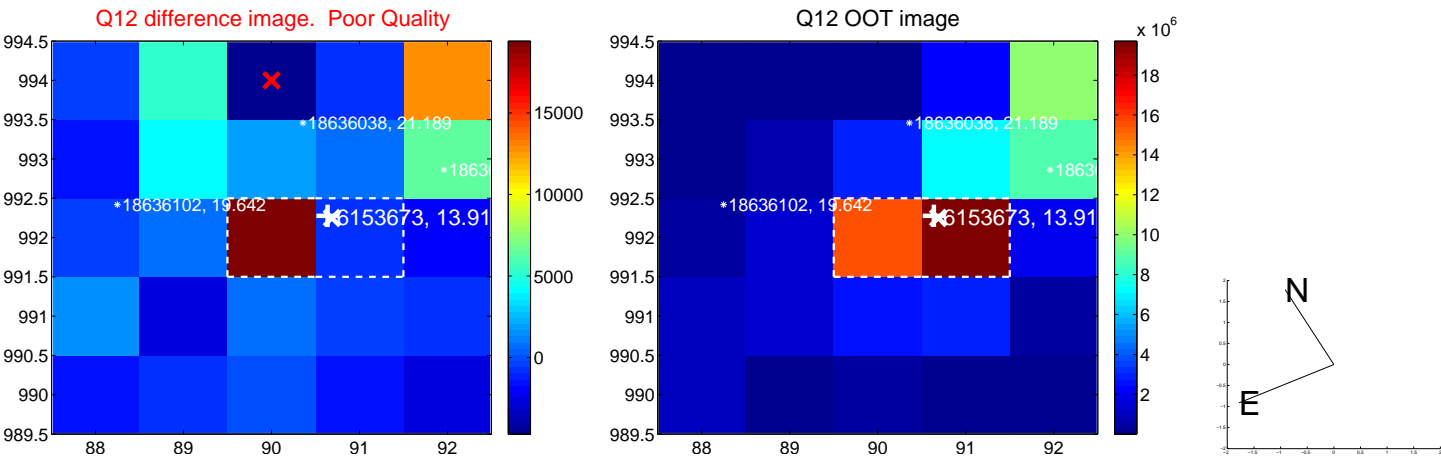
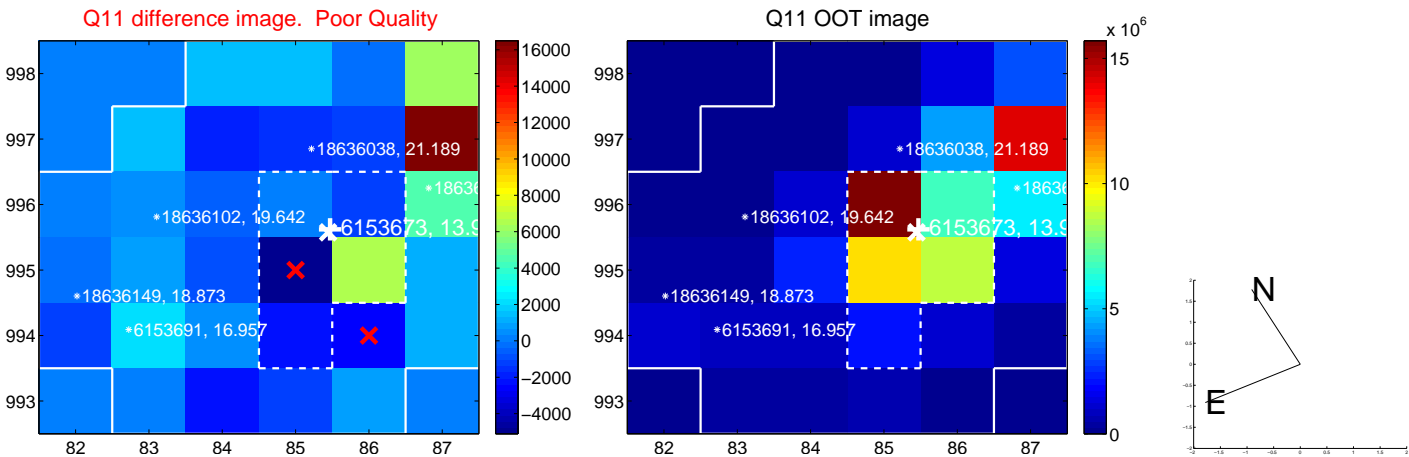
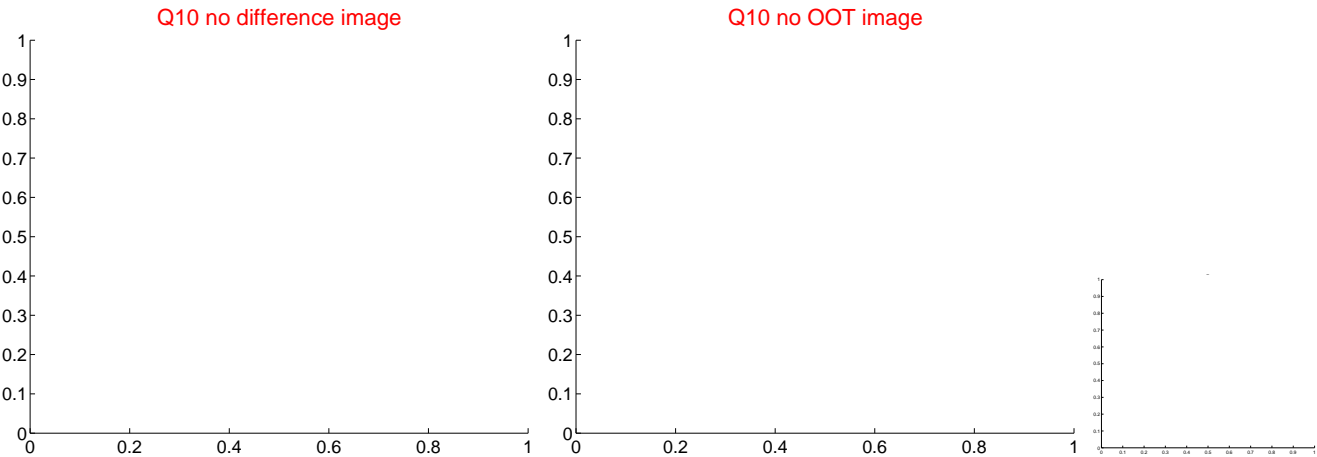
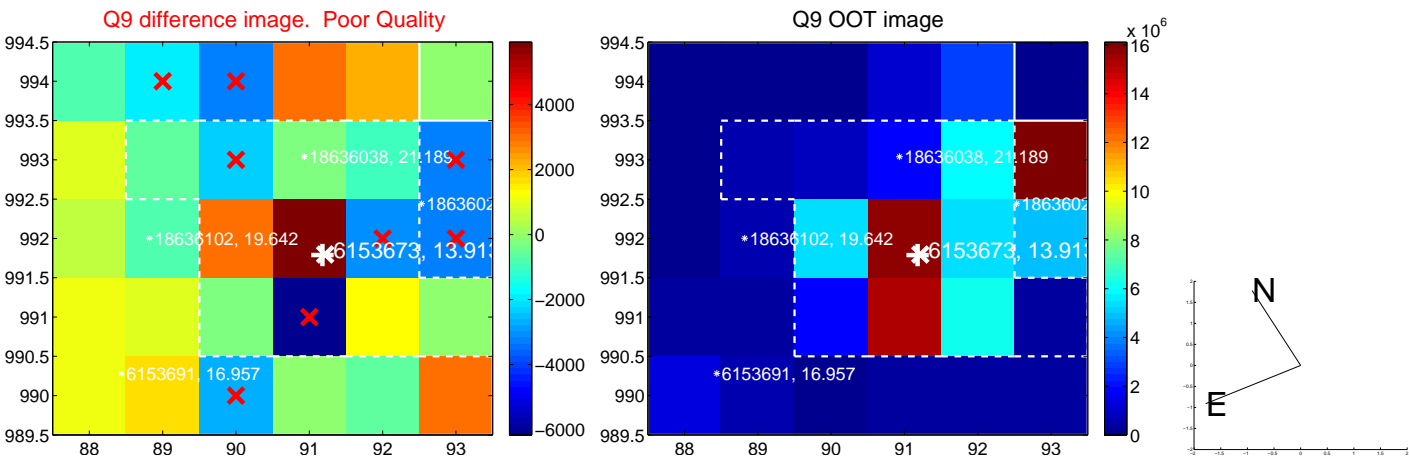
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



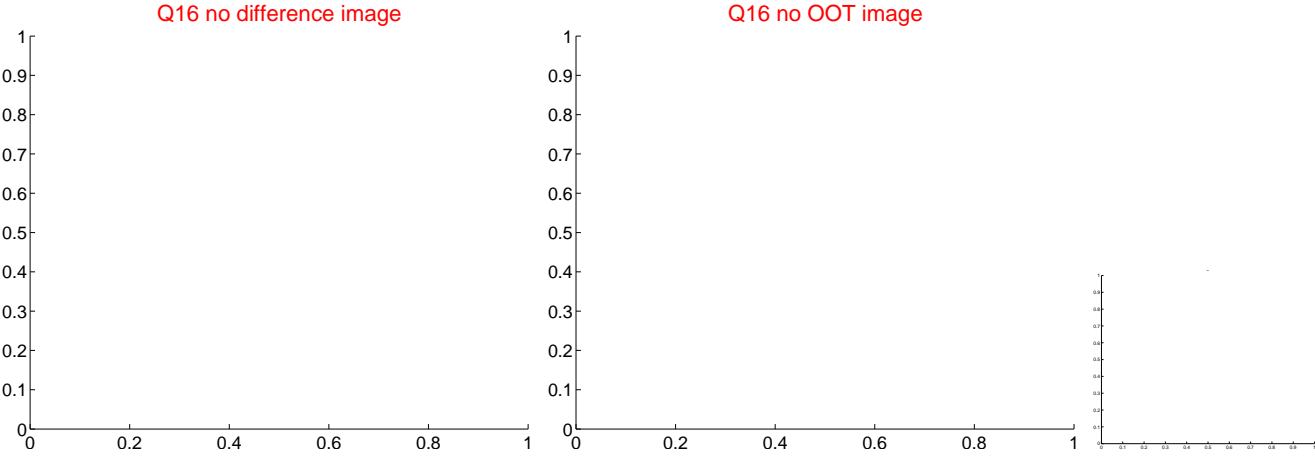
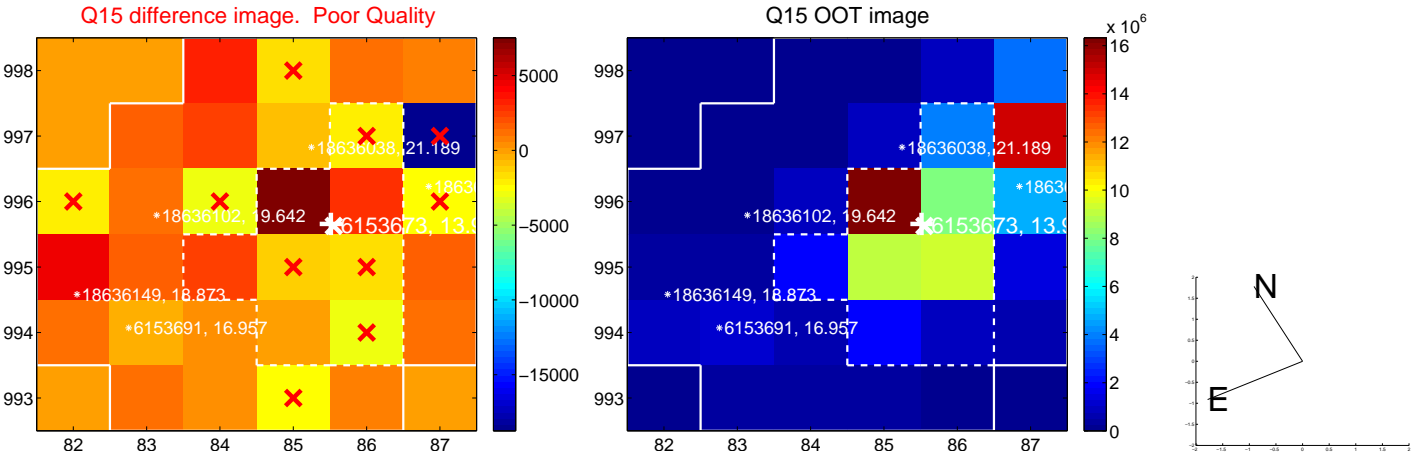
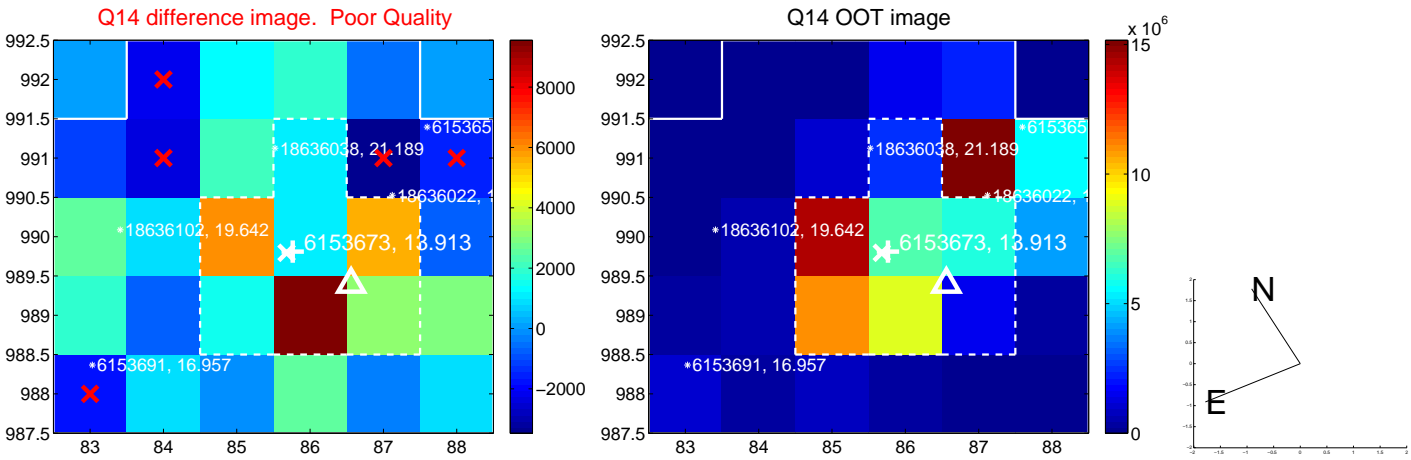
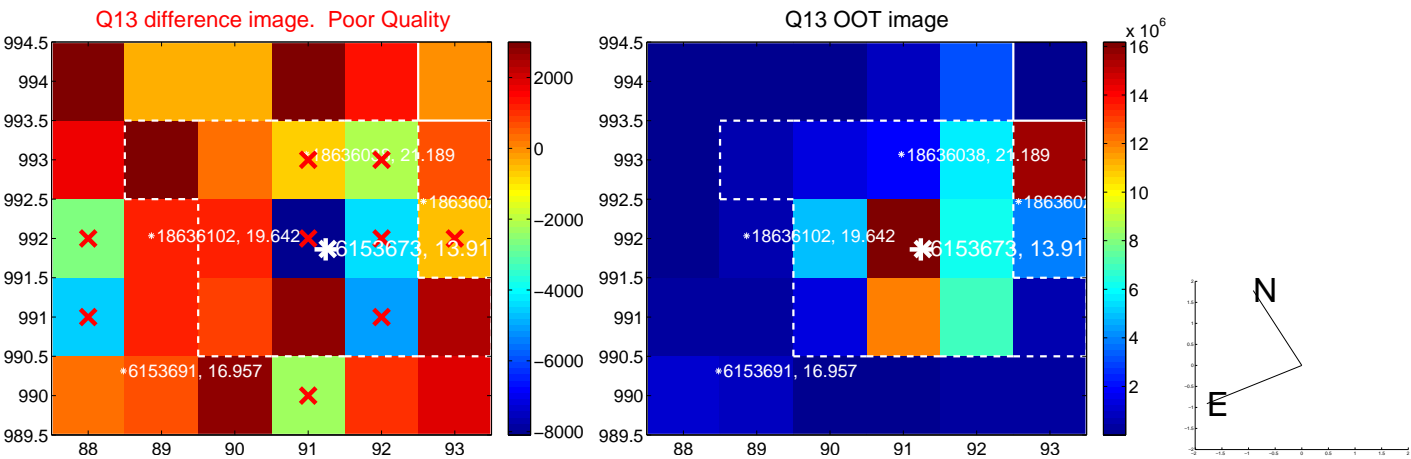
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



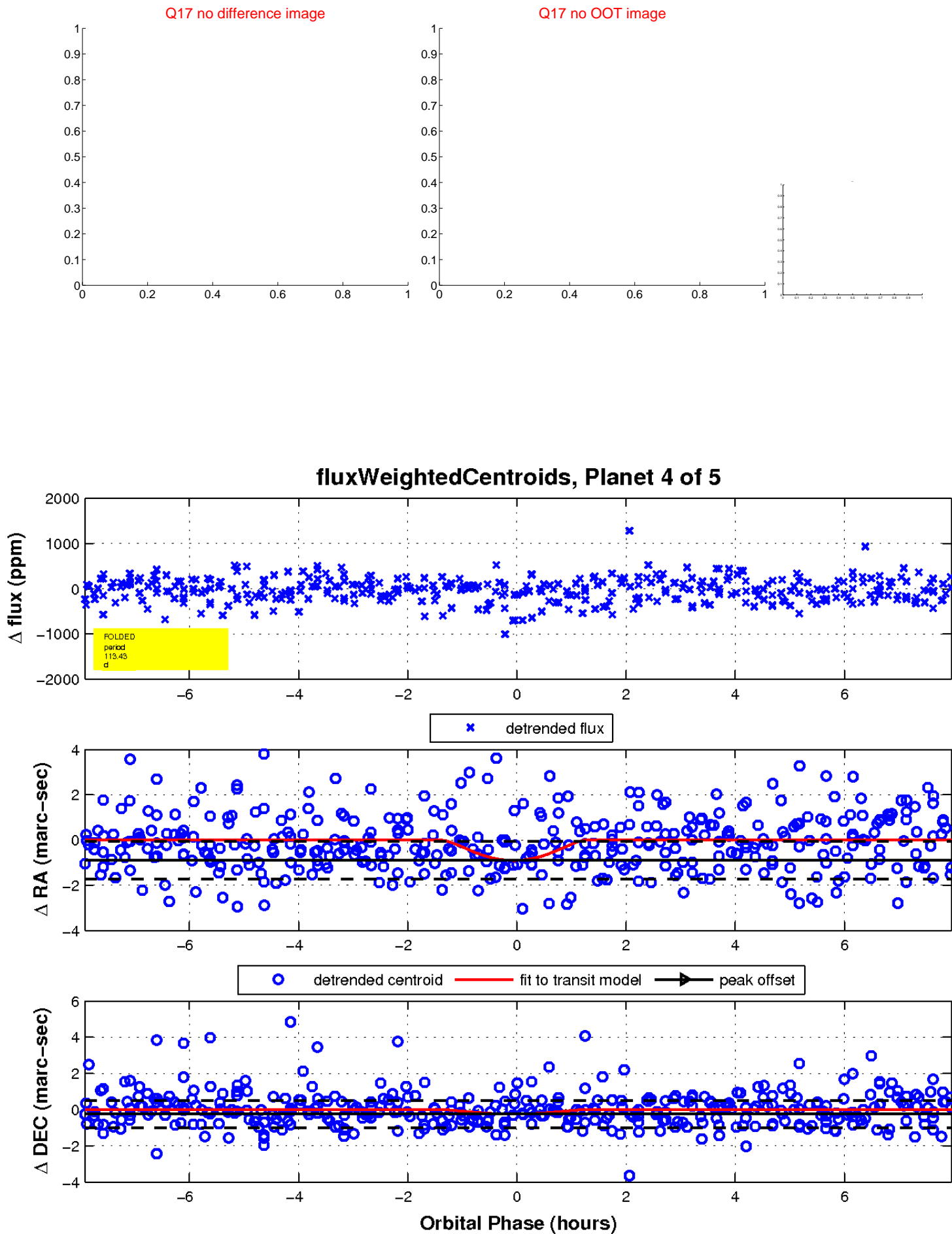
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

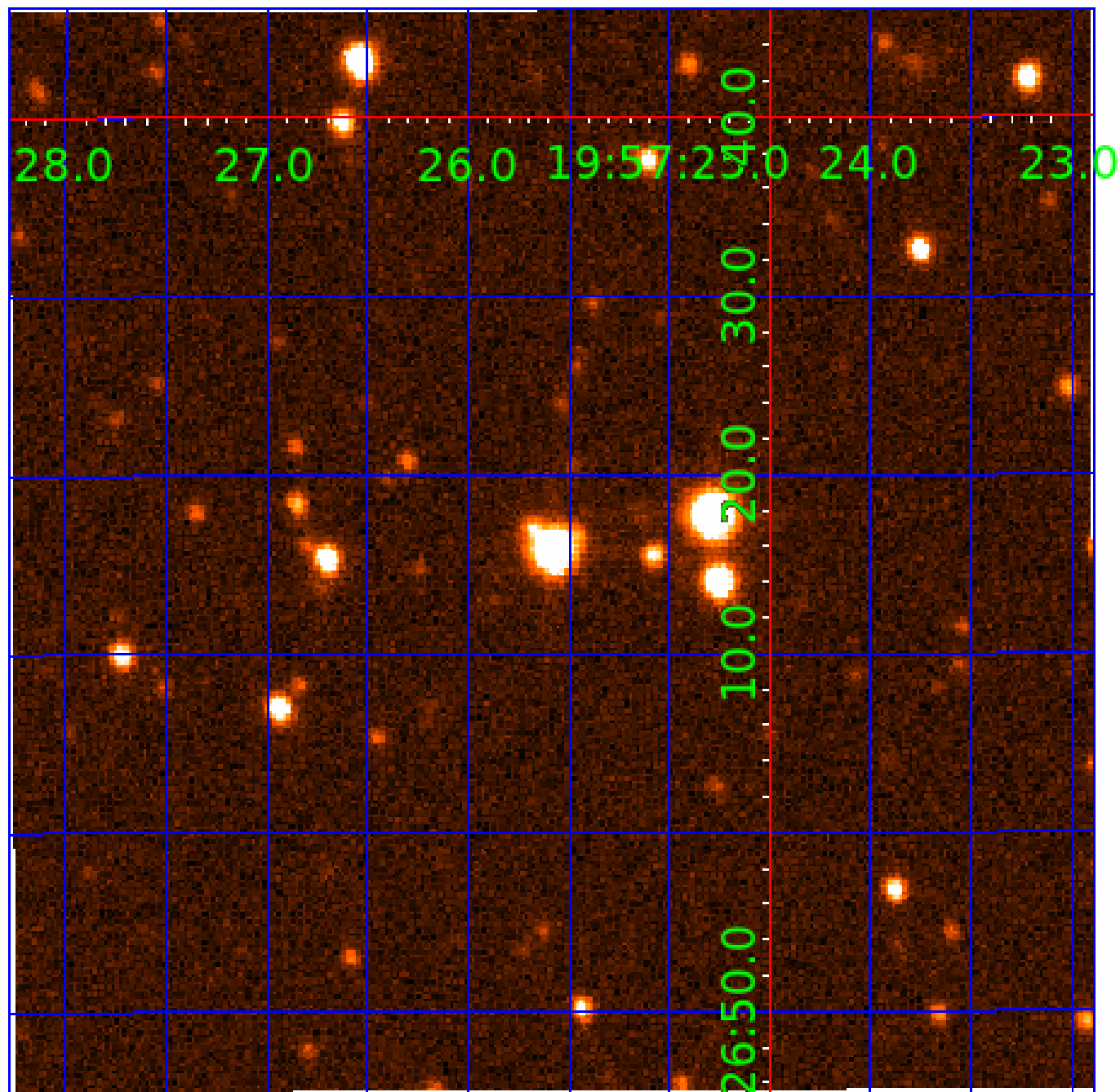


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006153673

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006153673-01	OBS	No	3.167617	133.652933	45.7	7.668	8.9	8.2	1.57	6572	1.27	1992.40
006153673-02	OBS	No	3.167515	131.811669	54.9	9.964	10.1	10.9	1.57	6572	1.38	1992.49
006153673-03	OBS	No	376.993981	237.726594	860.2	14.105	9.3	8.7	1.57	6572	8.73	3.40
006153673-04	OBS	No	113.429564	221.504564	544.8	2.661	8.0	8.2	1.57	6572	6.97	16.88
006153673-05	OBS	No	80.177986	183.297440	416.4	2.386	7.1	7.2	1.57	6572	3.69	26.81

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006153673-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006153673-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
006153673-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
006153673-04	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
006153673-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

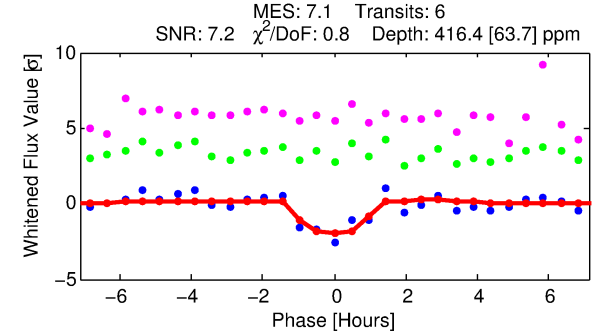
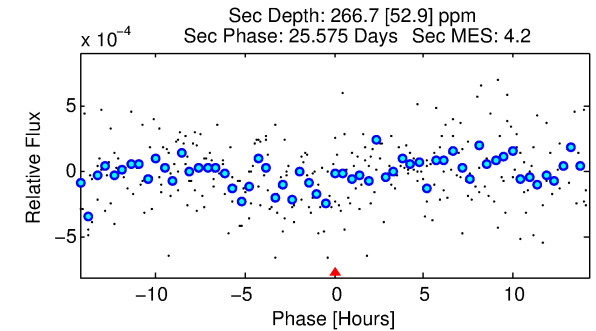
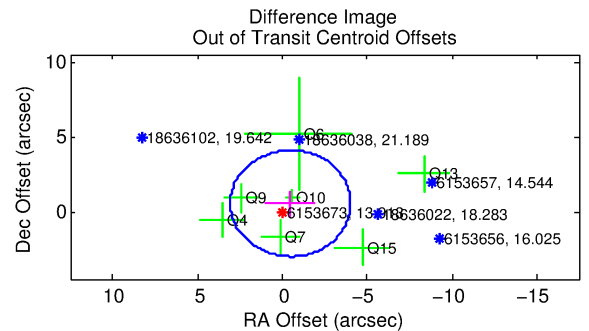
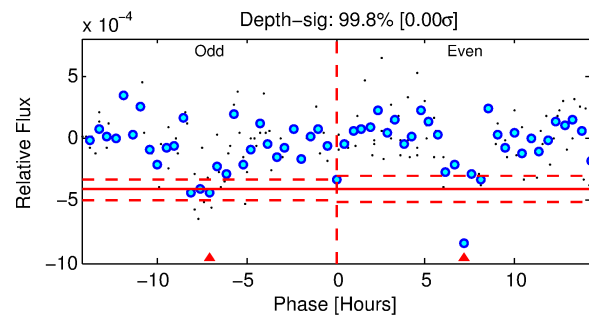
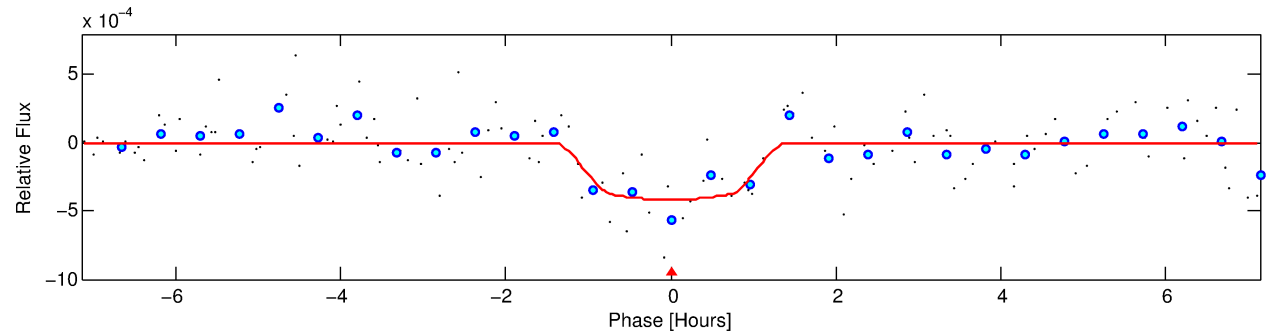
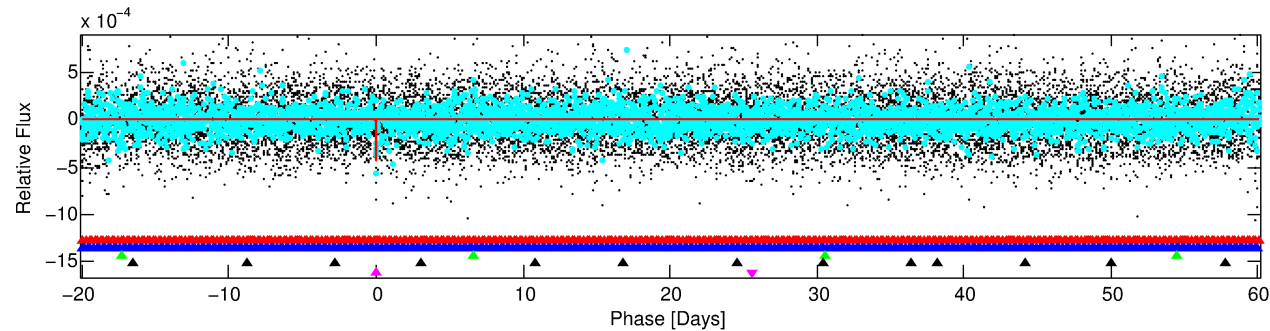
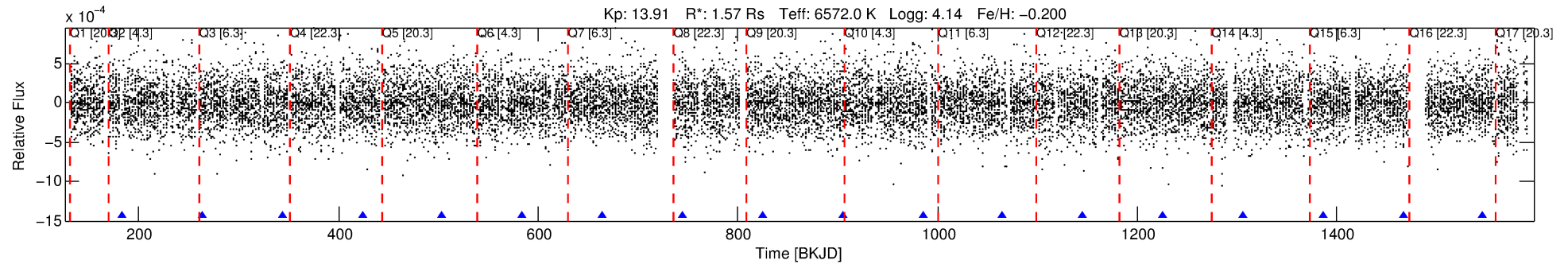
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 006153673-05

No Significant Match Found

# DV One-Page Summary

KIC: 6153673 Candidate: 5 of 5 Period: 80.178 d



## DV Fit Results:

Period = 80.17799 [0.00103] d  
Epoch = 183.2974 [0.0116] BKJD  
Rp/R\* = 0.0215 [0.0217]  
a/R\* = 134.76 [773.84]  
b = 0.88 [1.54]  
Seff = 26.81 [10.61]  
Teq = 580 [57] K  
Rp = 3.69 [3.87] Re  
a = 0.3930 [0.0965] AU  
Ag = 1664.47 [3433.39] [0.48 $\sigma$ ]  
Teffp = 5730 [2914] K [1.77 $\sigma$ ]

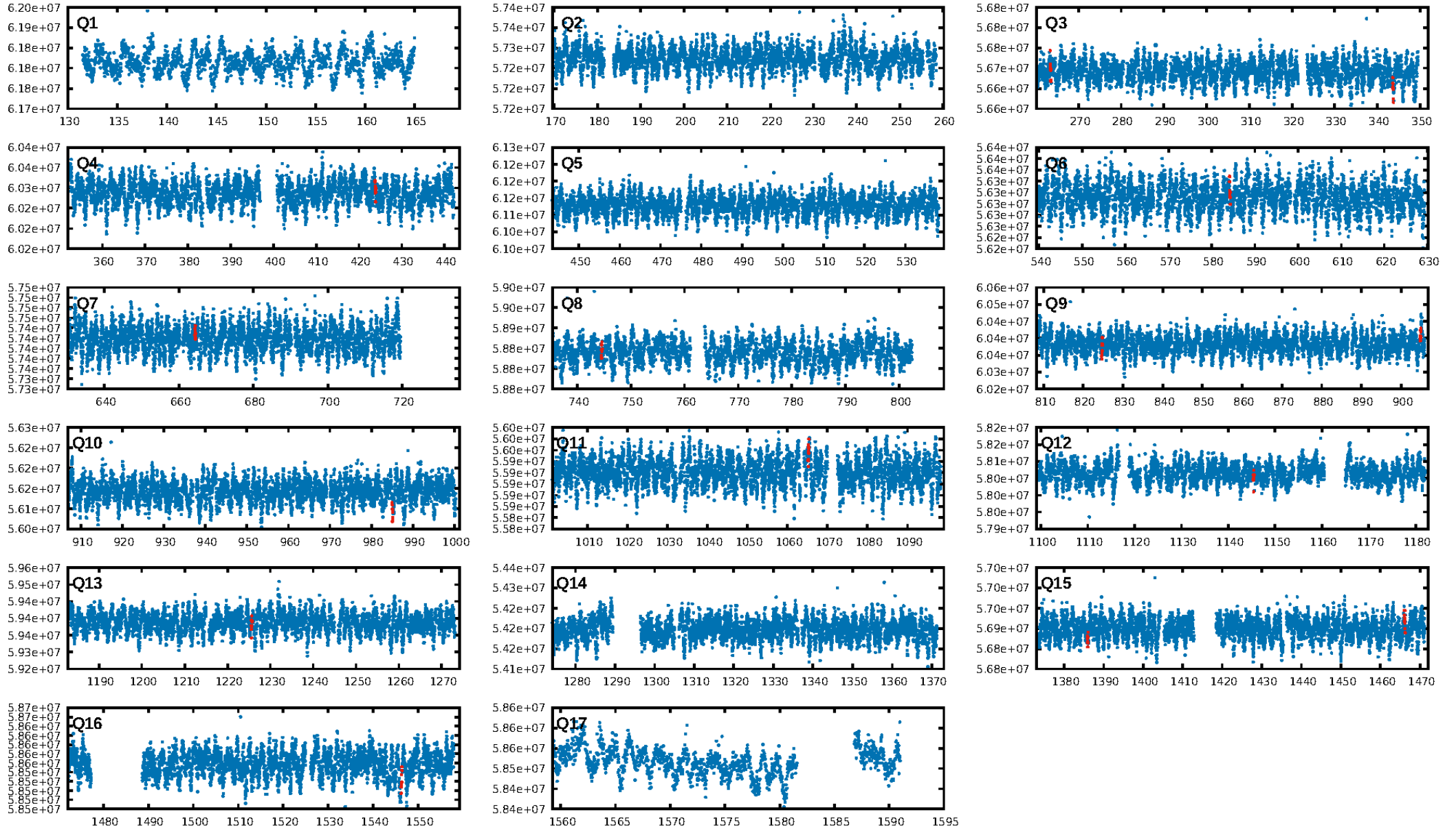
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [230.16 $\sigma$ ]  
LongPeriod-sig: 100.0% [223.30 $\sigma$ ]  
ModelChiSquare2-sig: 80.3%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 5.02e-10**  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: -0.2934  
Centroid-sig: 1.3%  
Centroid-so: 1.236 arcsec [1.17 $\sigma$ ]  
OotOffset-rm: 0.726 arcsec [0.61 $\sigma$ ]  
KicOffset-rm: 0.887 arcsec [0.73 $\sigma$ ]  
OotOffset-st: 2/2/1/2 [7]  
KicOffset-st: 2/2/1/2 [7]  
DiffImageQuality-fgm: 0.14 [1/7]  
DiffImageOverlap-fno: 0.70 [7/10]

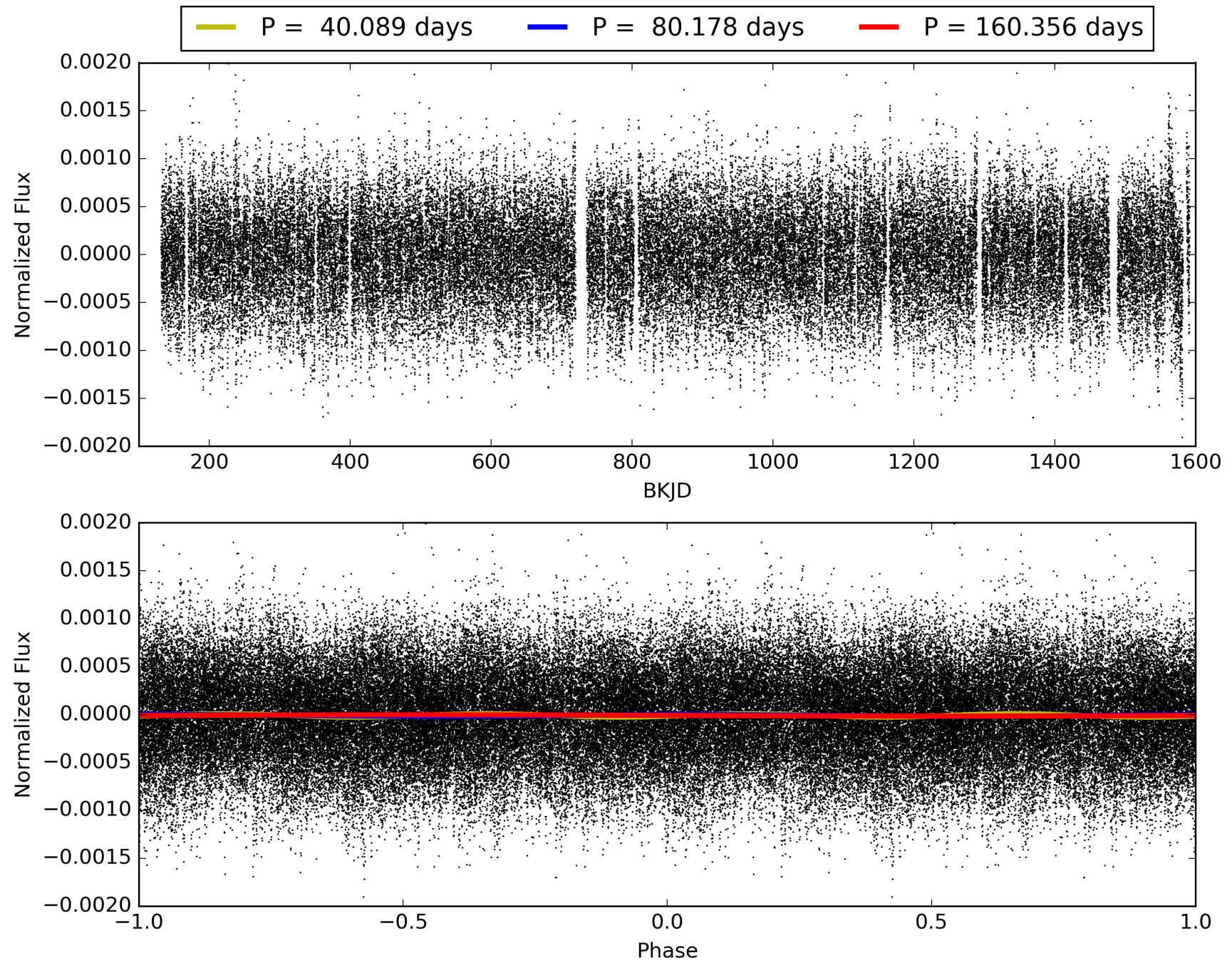
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:53:40 Z

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

# TCE 006153673-05, PDC Light Curves

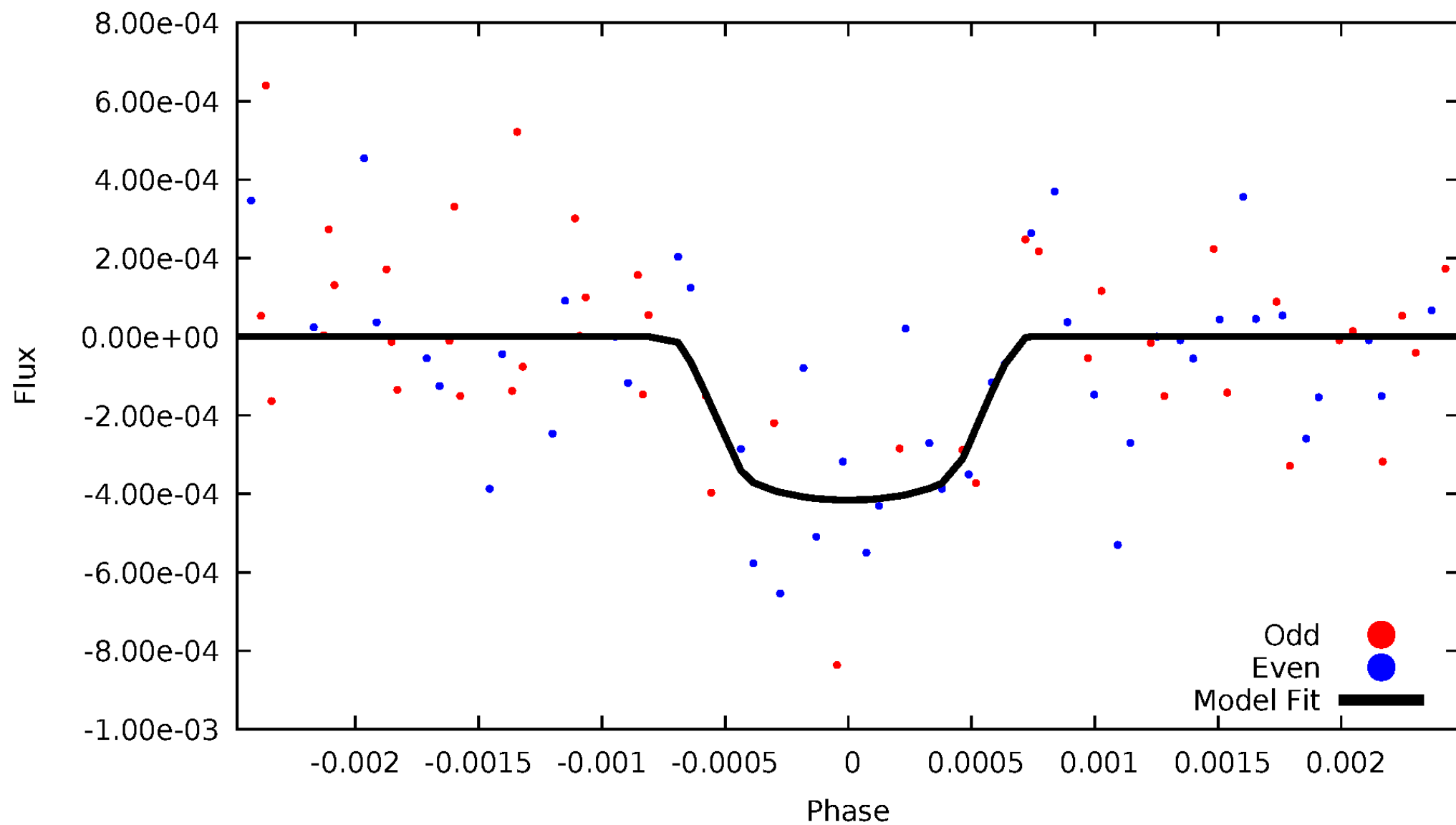


TCE 006153673-05



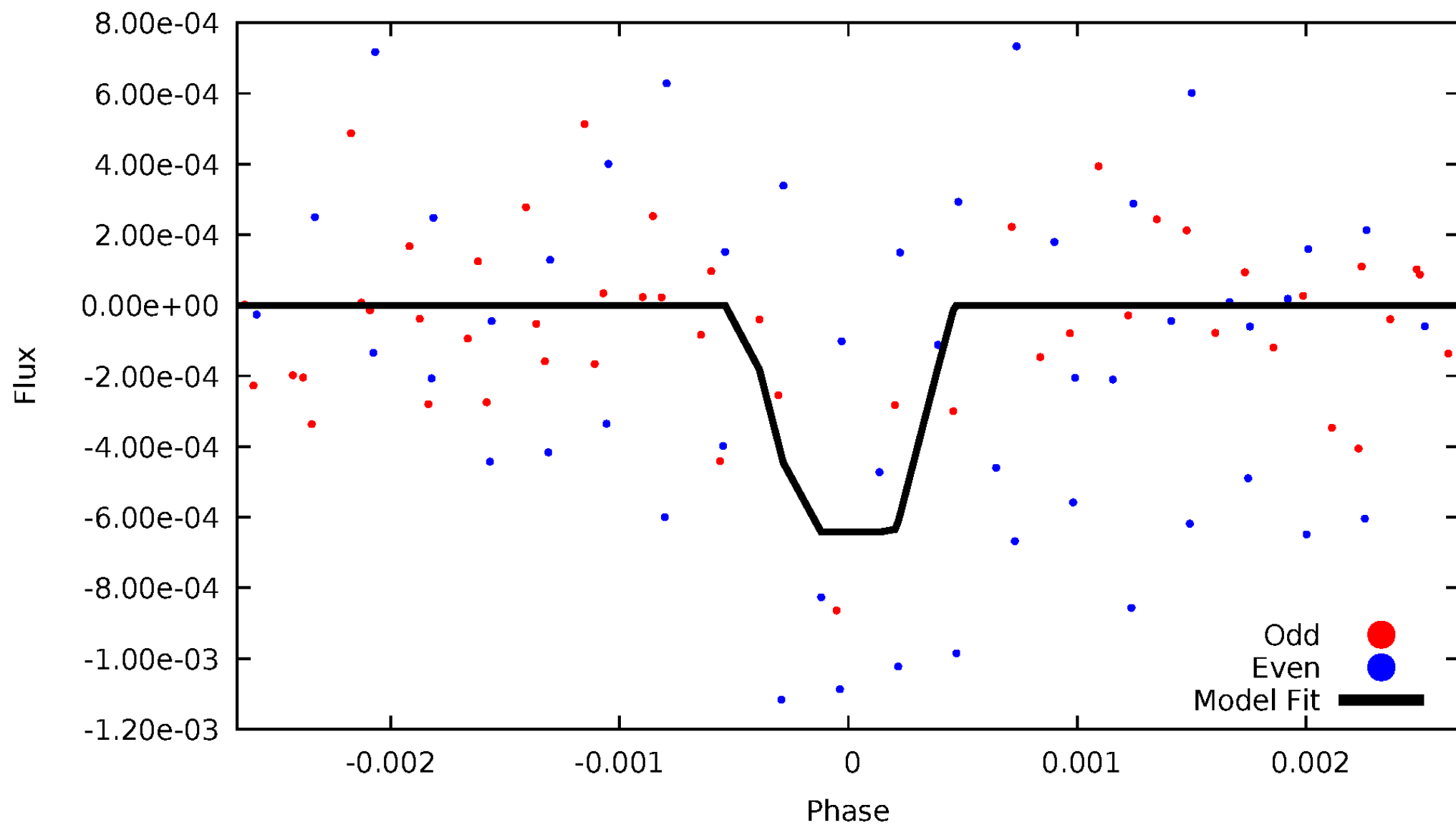
# DV Odd/Even

TCE 006153673-05



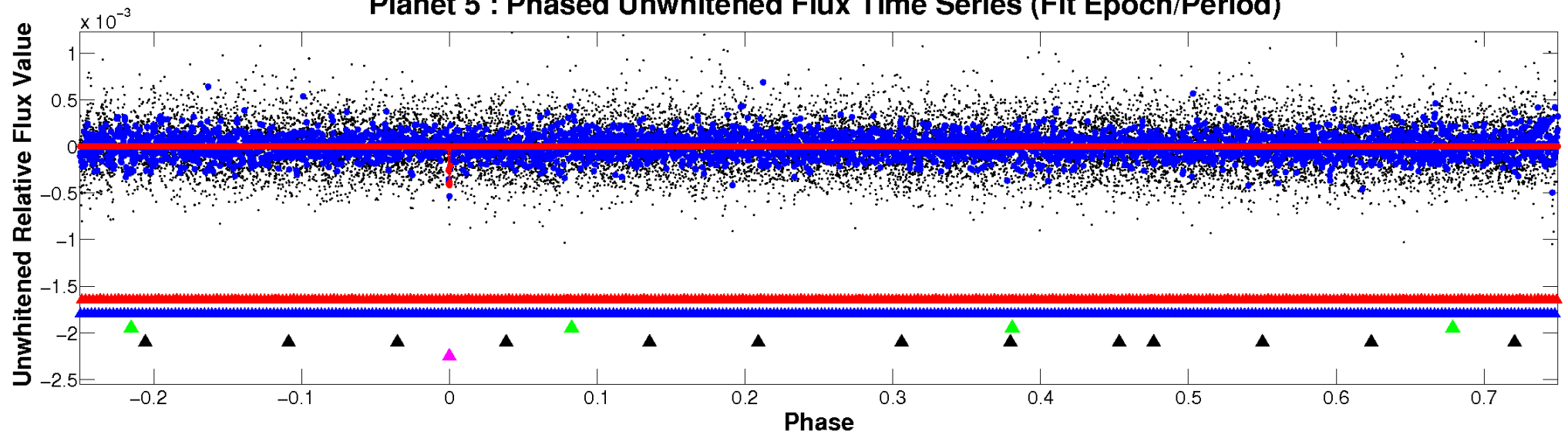
# ALT Odd/Even

TCE 006153673-05

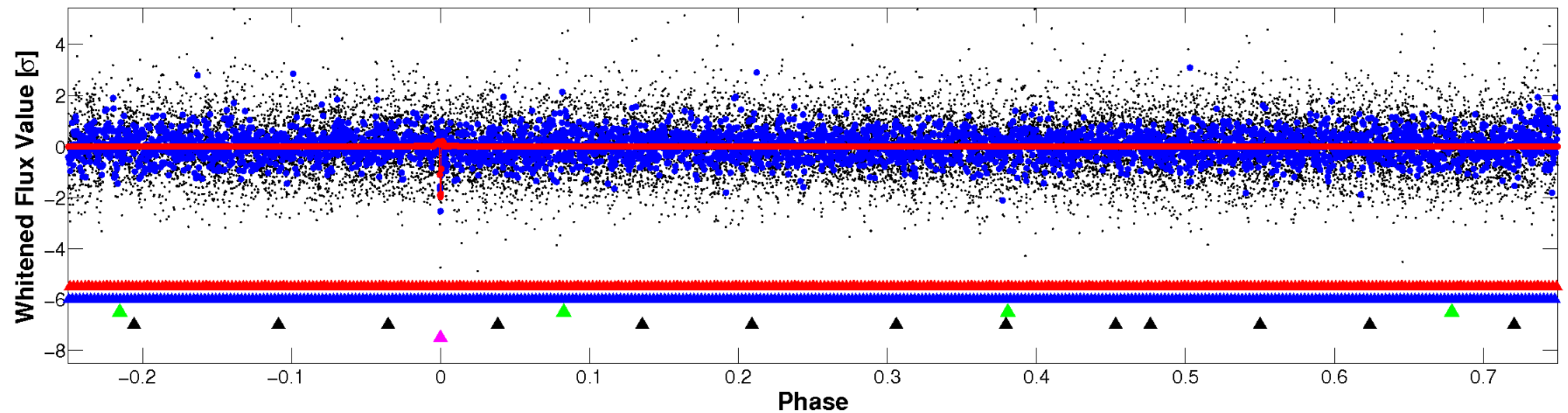


# Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

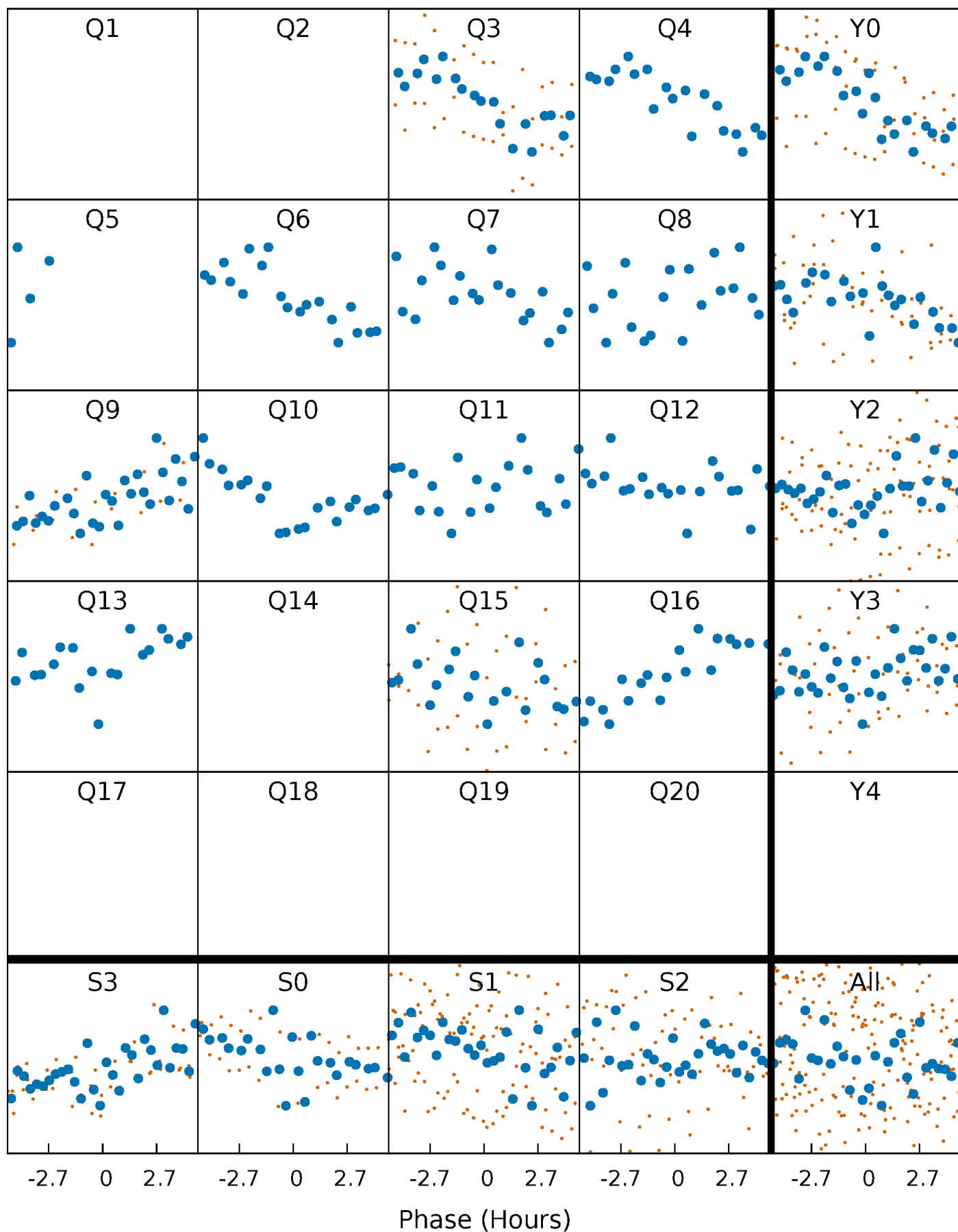


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



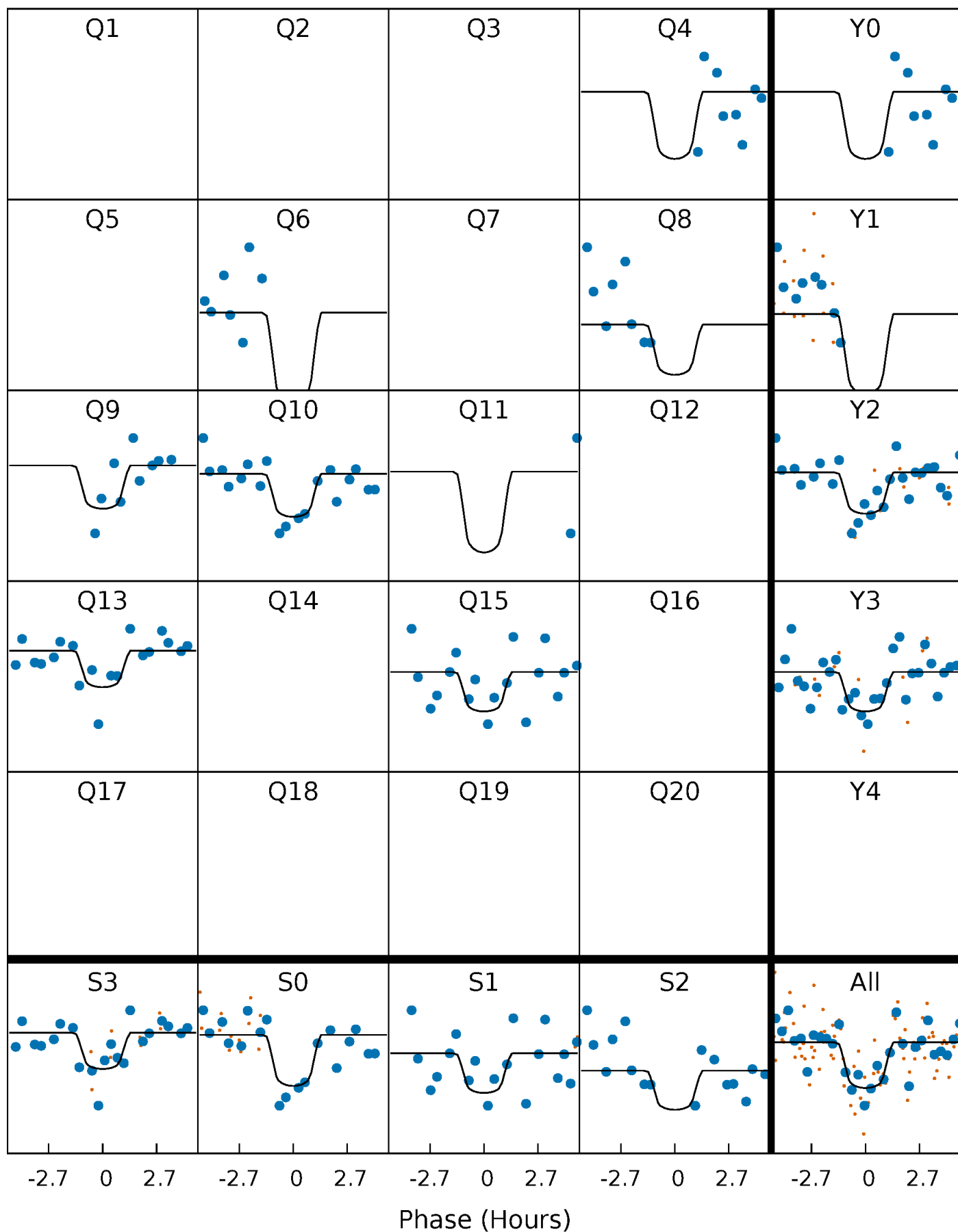
# PDC Quarter-Phased Transit Curves

TCE 006153673-05   P= 80.177986 Days    $T_0=183.297440$  (BKJD)



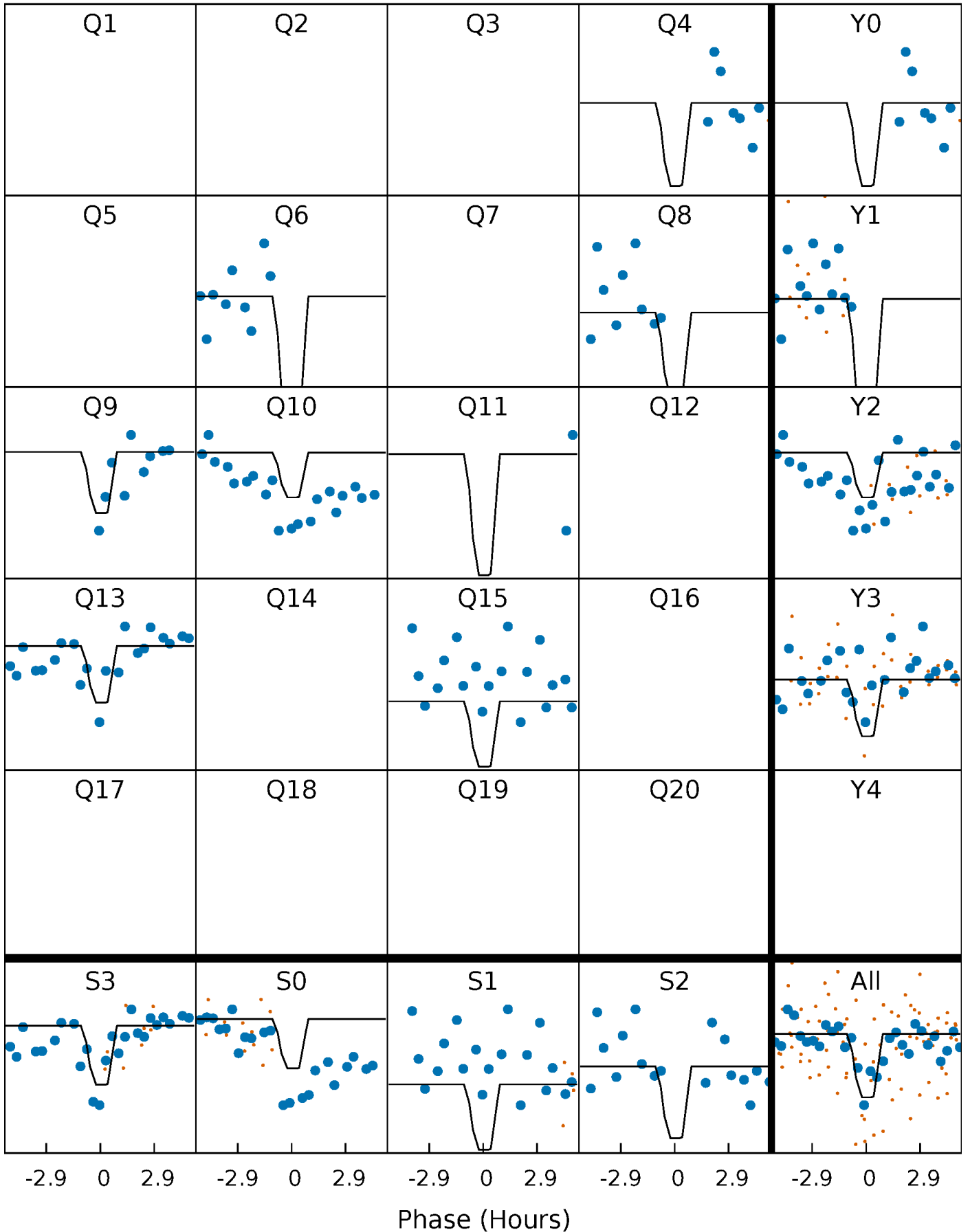
# DV Quarter-Phased Transit Curves

TCE 006153673-05     $P = 80.177986$  Days     $T_0 = 183.297440$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

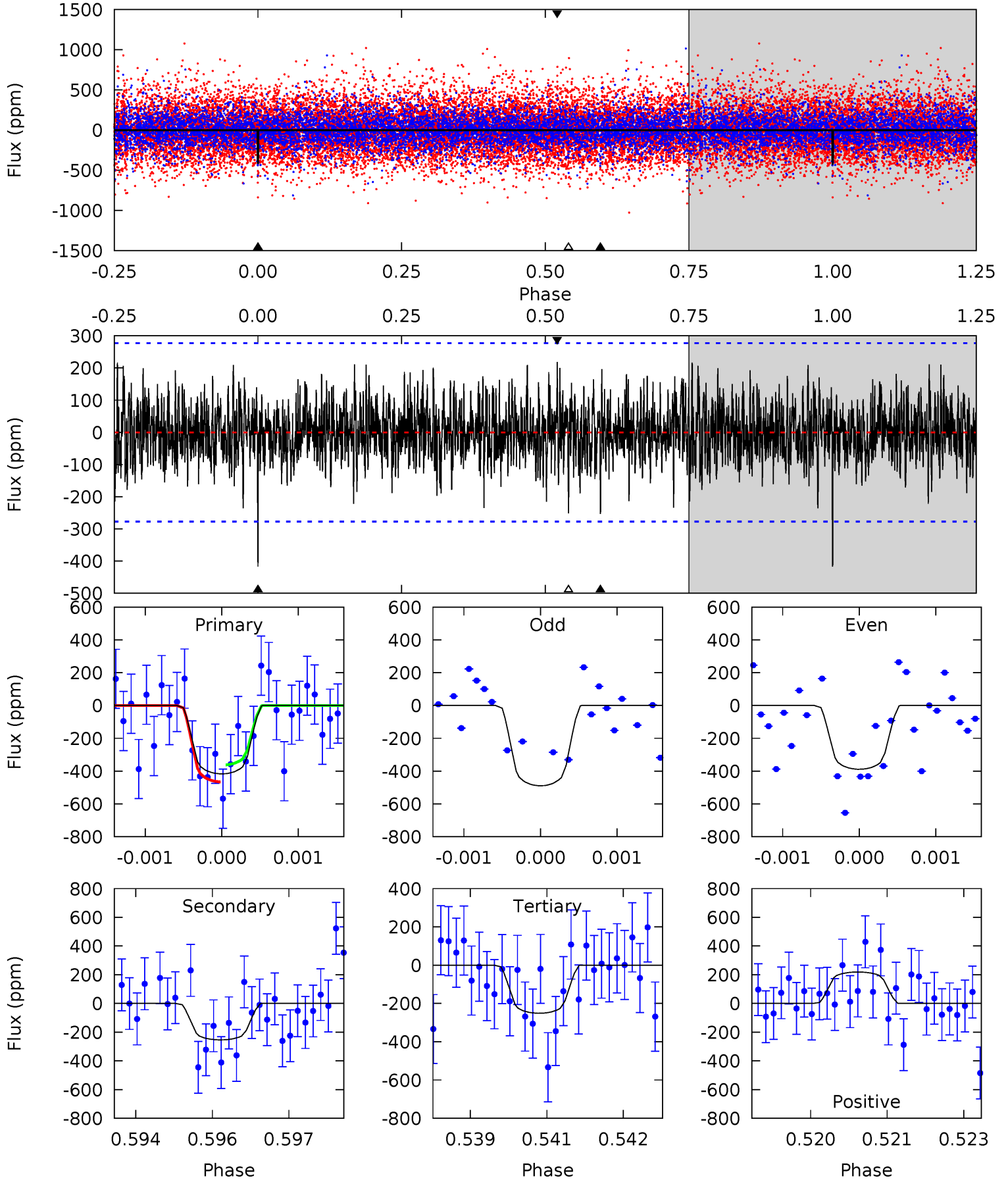
TCE 006153673-05     $P = 80.180596$  Days     $T_0 = 183.263889$  (BKJD)



# DV Model-Shift Uniqueness Test

006153673-05, P = 80.177986 Days, E = 103.119454 Days

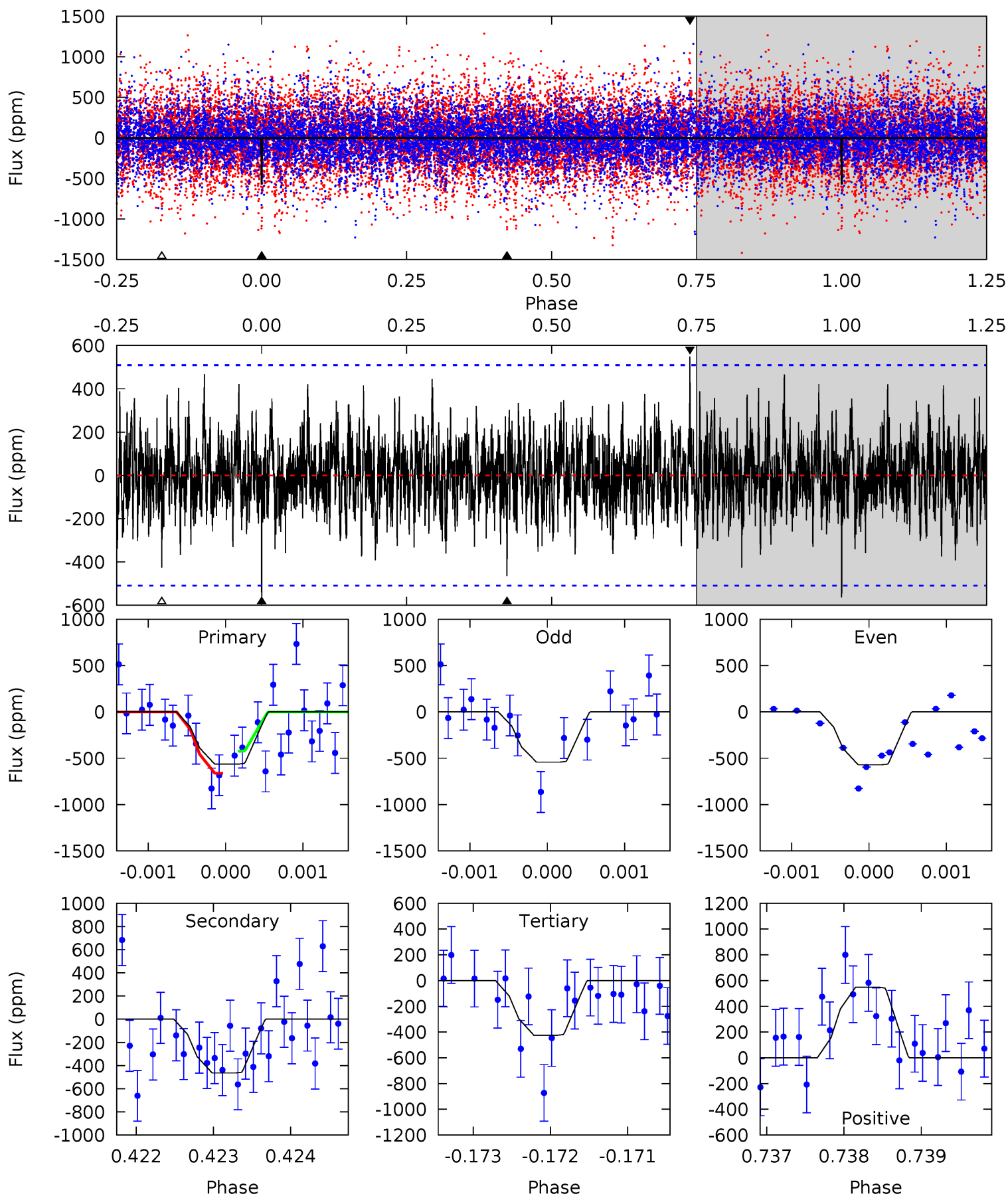
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.11	4.94	4.89	4.26	5.39	3.20	1.38	3.22	3.85	0.05	0.68	0.94	0.99	0.34	1.01



# Alt Model-Shift Uniqueness Test

006153673-05,  $P = 80.180596$  Days,  $E = 103.083293$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.06	5.00	4.57	5.91	5.48	3.34	1.33	1.49	0.16	0.42	-0.91	0.13	0.95	0.49	1.25



### Stellar Parameters For KIC 006153673

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6572^{+181}_{-227}$	$4.144^{+0.209}_{-0.171}$	$-0.200^{+0.250}_{-0.300}$	$1.574^{+0.439}_{-0.439}$	$1.265^{+0.181}_{-0.221}$	$0.457^{+0.544}_{-0.214}$
	+3%/-3%	+5%/-4%	+125%/-150%	+28%/-28%	+14%/-17%	+119%/-47%
Source	PHO1	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 006153673-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-254 \pm 51$	$4.29^{+3.60}_{-2.69}$	$807^{+60}_{-59}$	$5241^{+3429}_{-1133}$	$1154^{+6285}_{-814}$
Alt.	$-464 \pm 93$	$4.71^{+3.63}_{-2.71}$	$809^{+66}_{-63}$	$5806^{+3532}_{-1287}$	$1796^{+8175}_{-1243}$

$T_{\text{max}}$  = 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

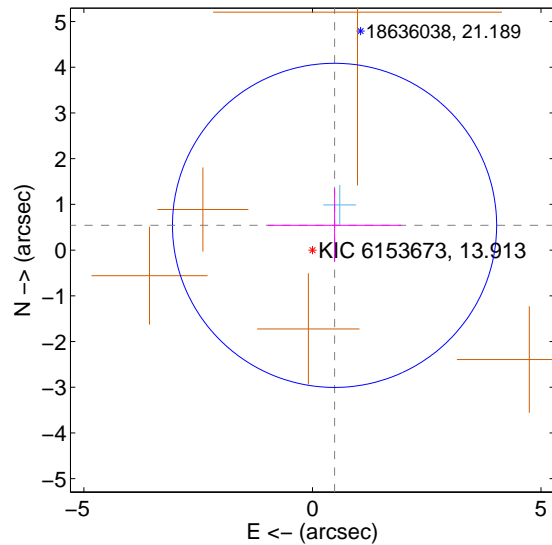
Supplemental centroid analysis for 006153673-05. Kepler magnitude: 13.91. Transit SNR 7.18

There are 1 quarters with good PRF difference image offsets

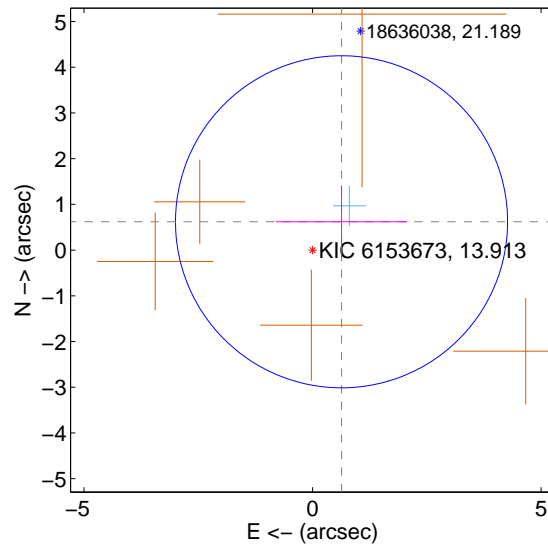
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.726 \pm 1.182$	0.61	$-0.484 \pm 1.462$	$0.541 \pm 0.800$
PRF-fit source offset from KIC position	$0.887 \pm 1.210$	0.73	$-0.635 \pm 1.436$	$0.619 \pm 0.797$
photometric centroid source offset	$1.24 \pm 1.06$	1.17	$0.87 \pm 1.27$	$0.88 \pm 0.79$

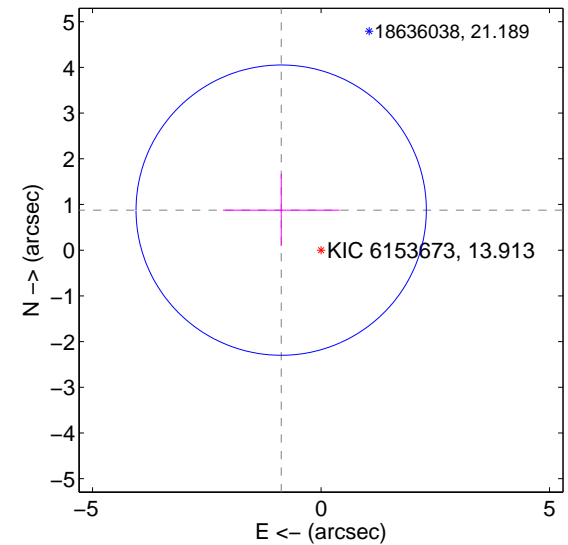
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

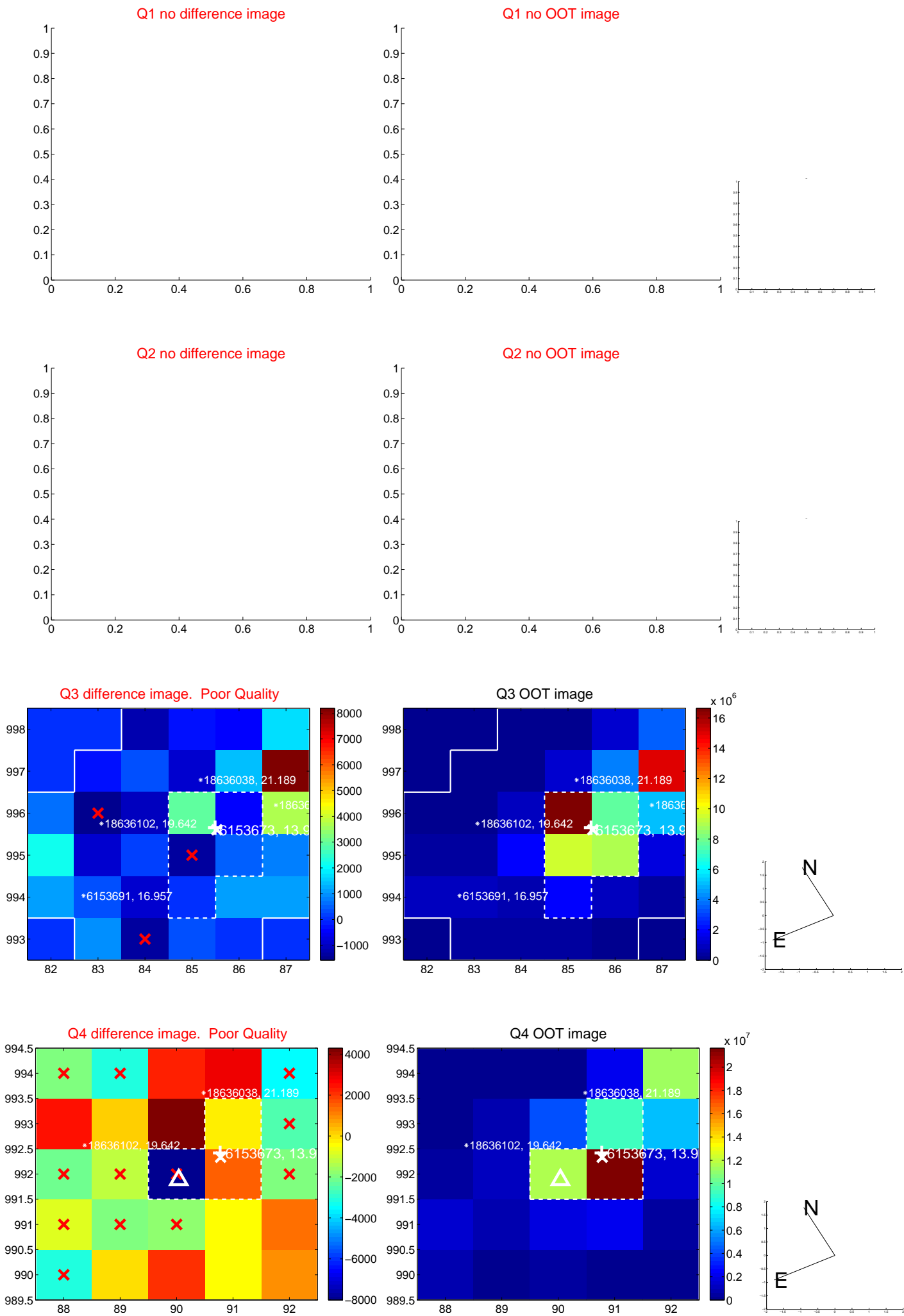


offset from photometric centroids

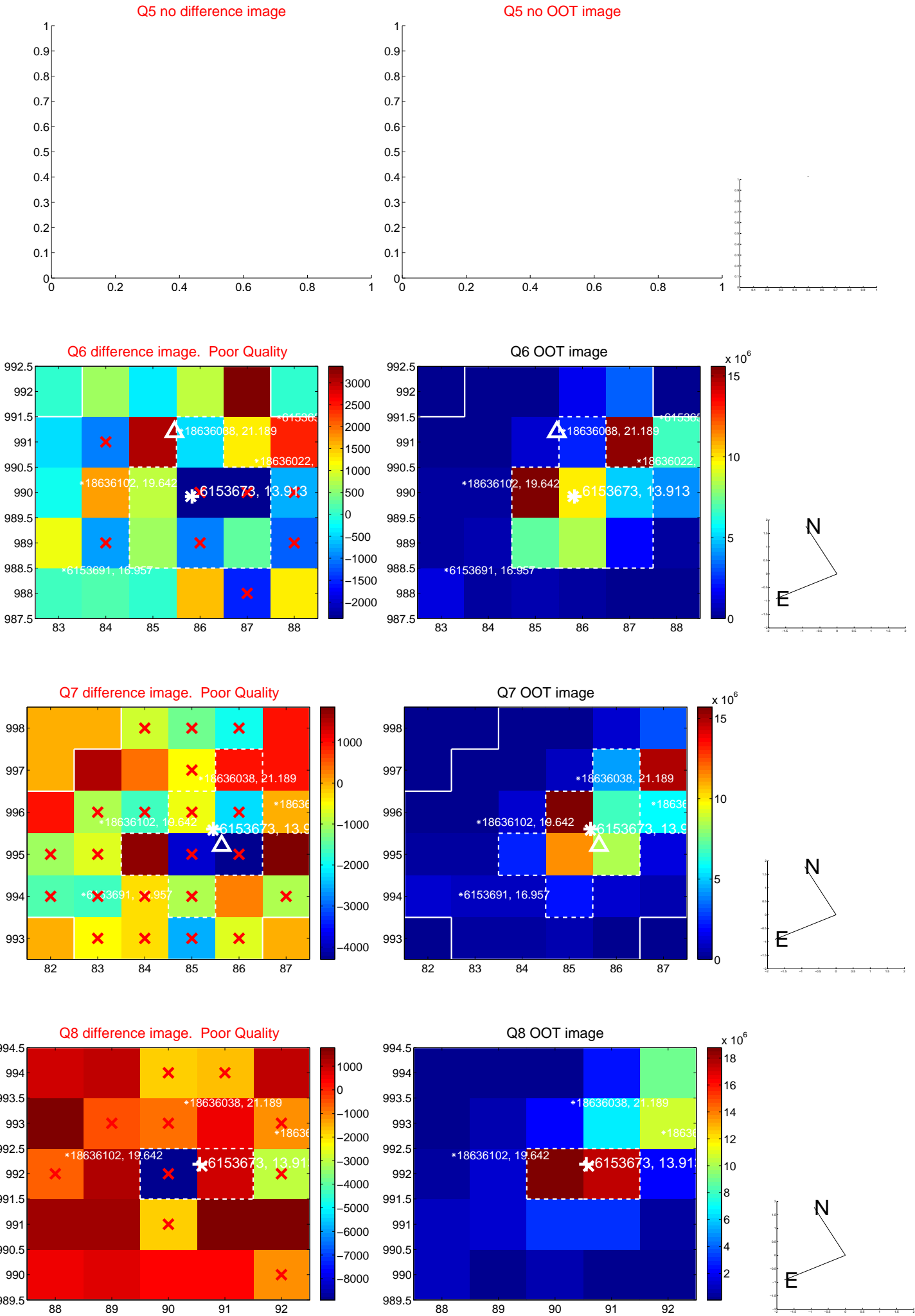


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

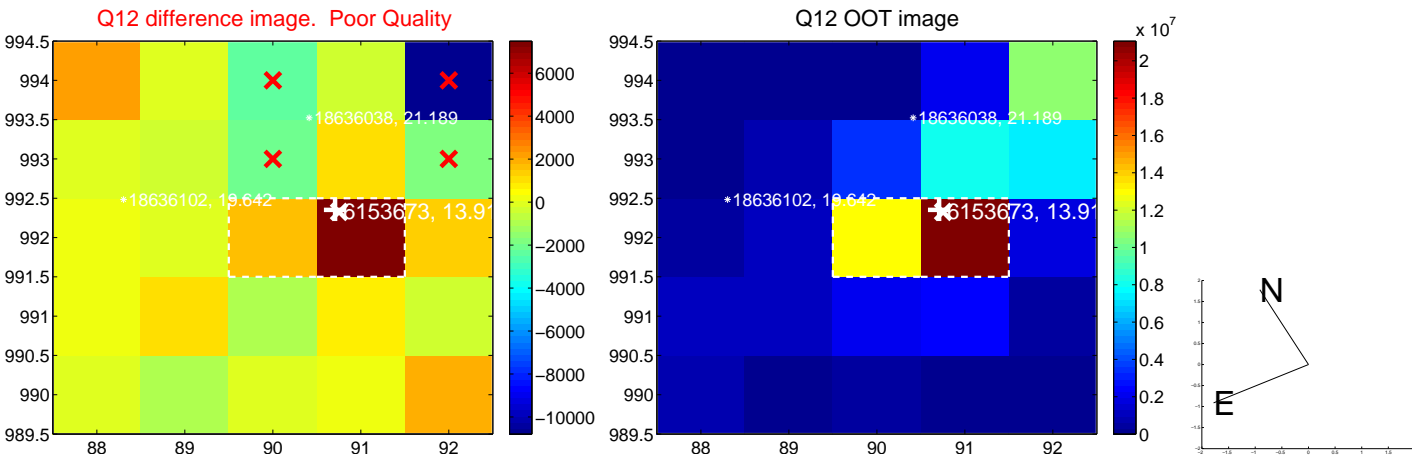
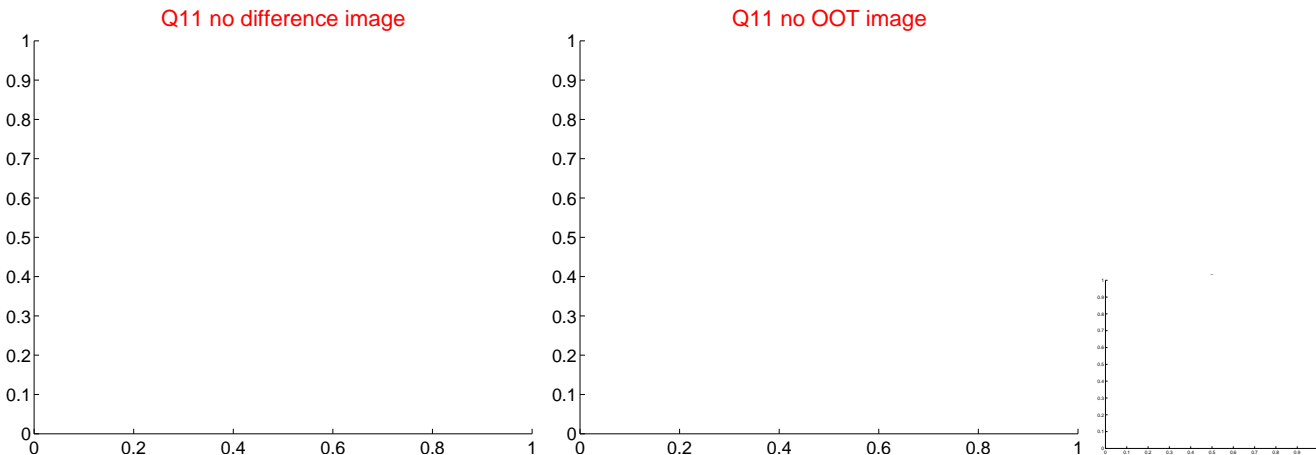
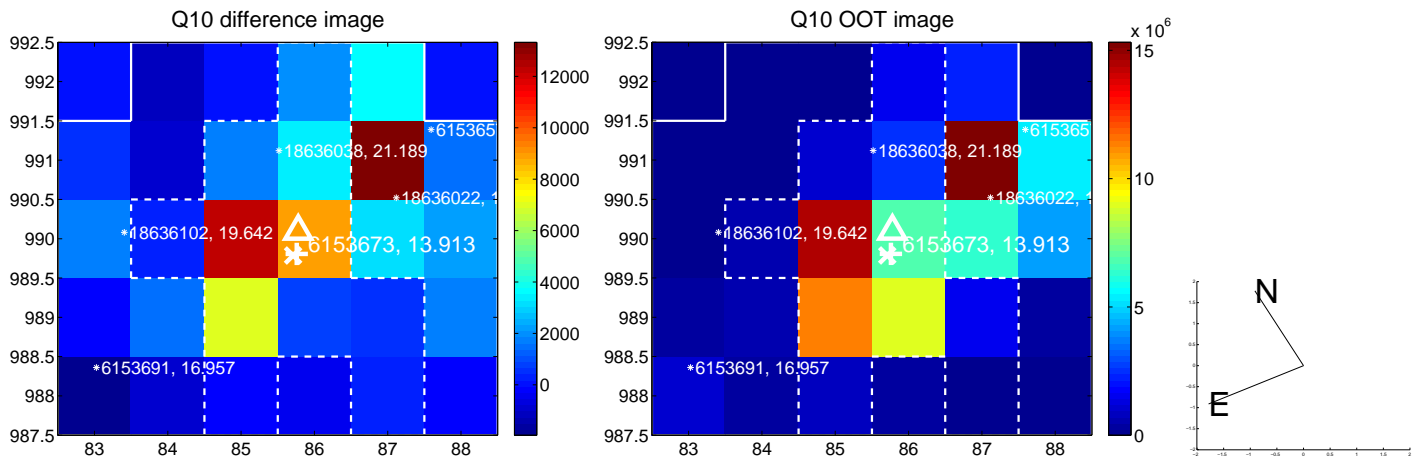
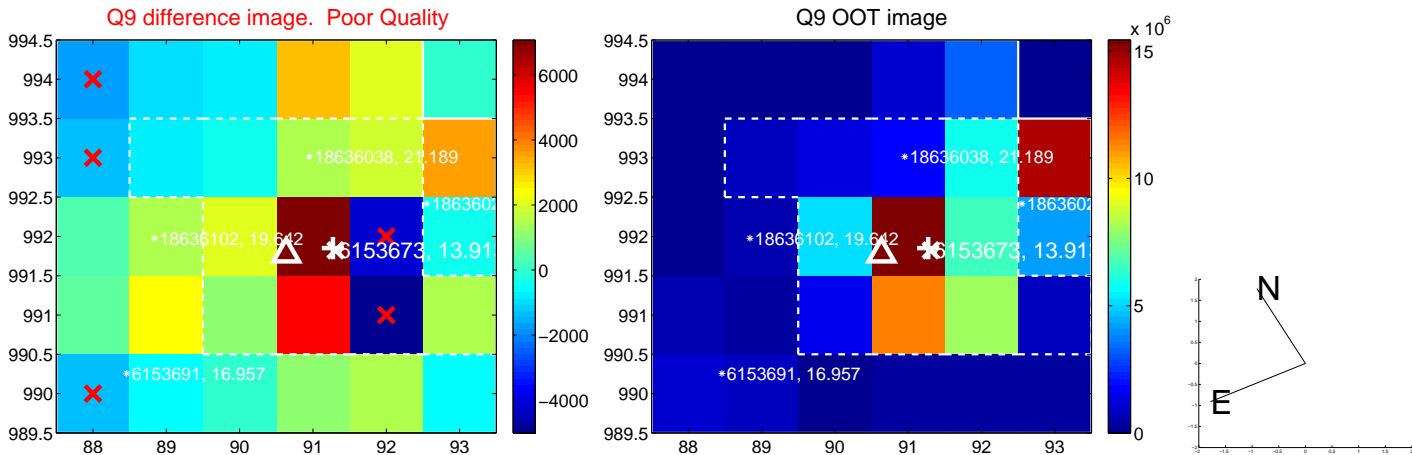
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



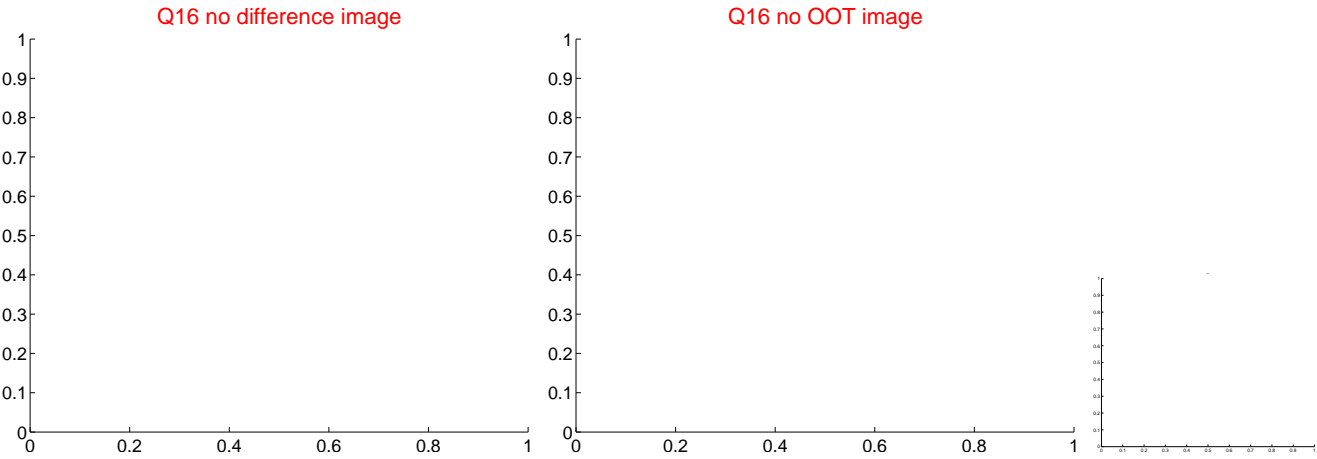
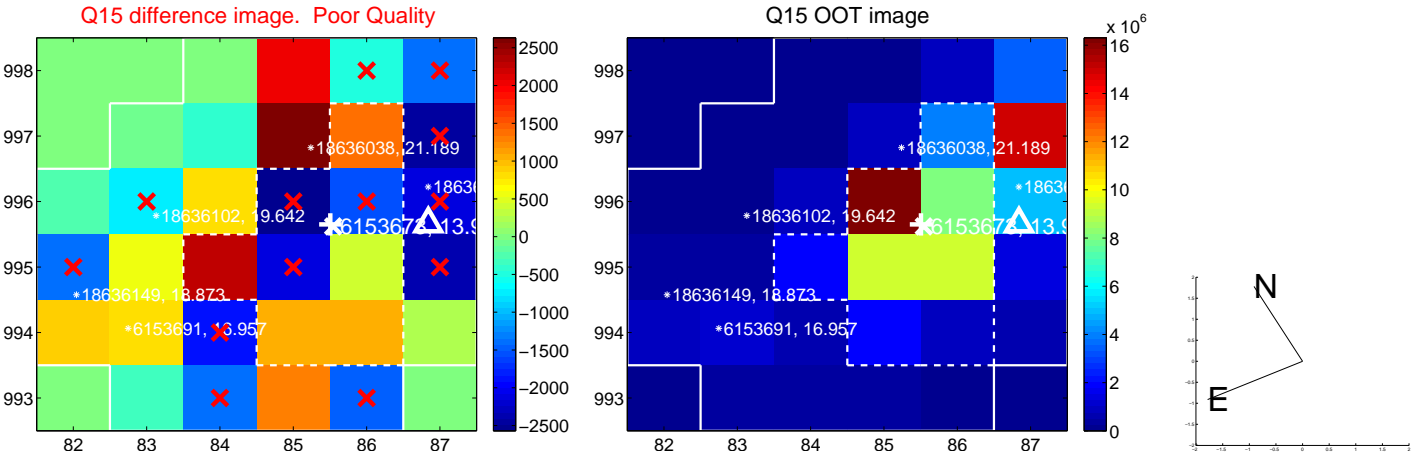
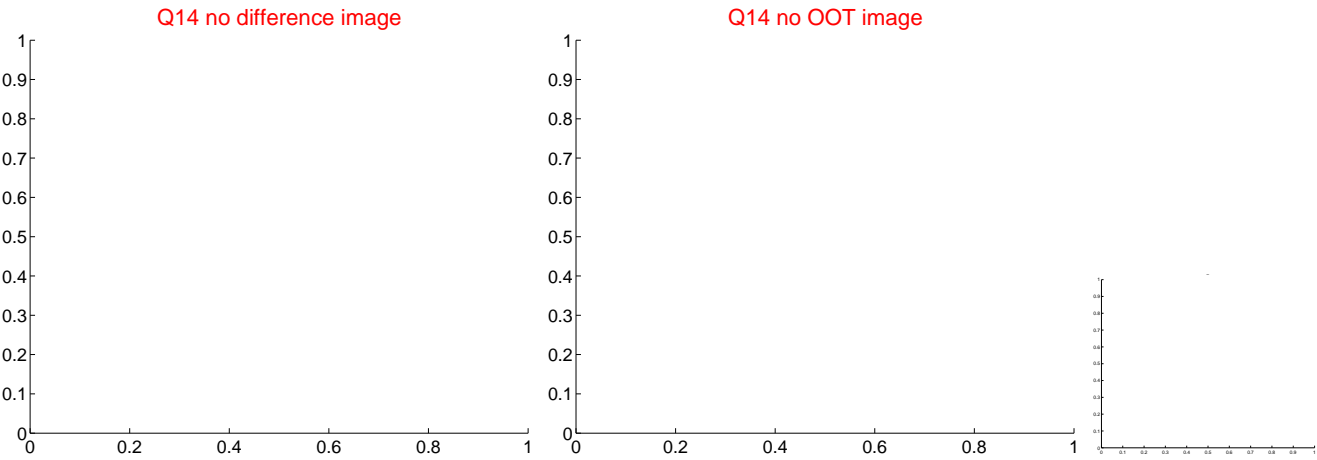
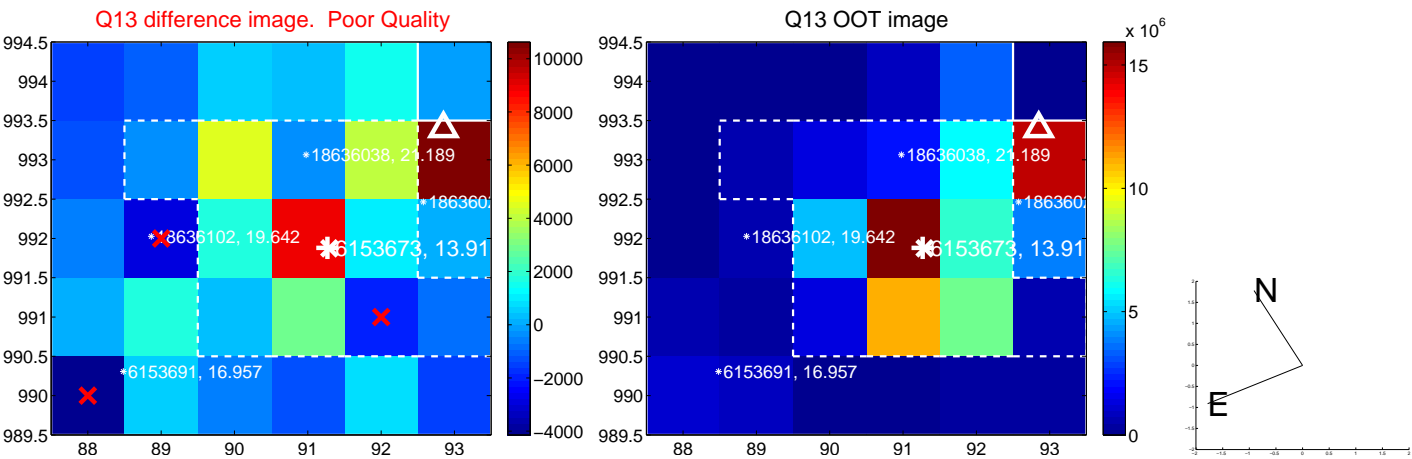
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



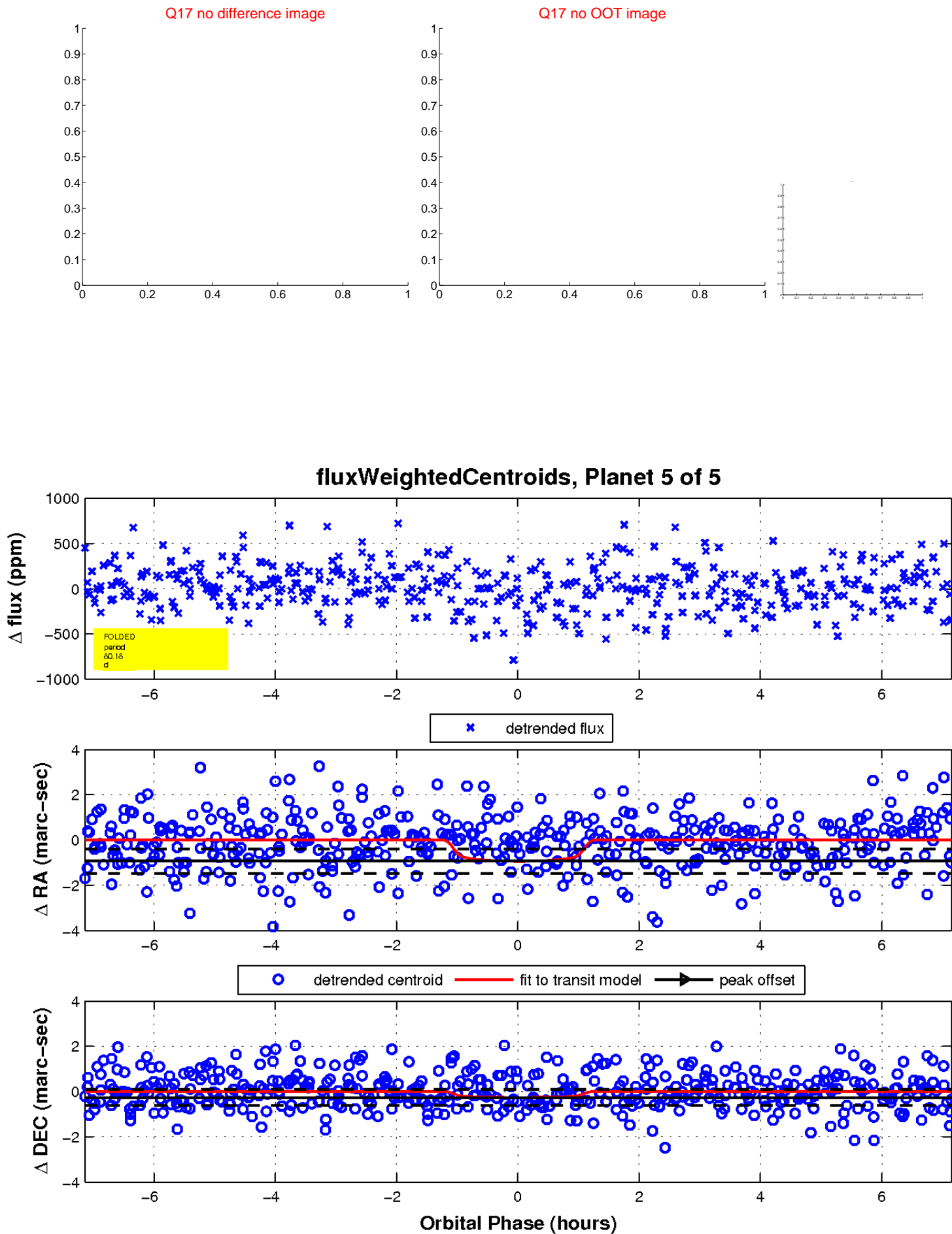
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

