

# KIC 003453272

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003453272-01	OBS	No	0.753914	131.995425	33.6	4.996	7.5	7.6	1.36	7103	0.80	13500.53
003453272-02	OBS	No	1.583335	131.923829	322.2	5.757	13.4	18.7	1.36	7103	4.65	5019.76
003453272-03	OBS	No	14.291134	145.154691	614.3	5.175	12.6	11.9	1.36	7103	4.31	267.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003453272-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
003453272-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
003453272-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

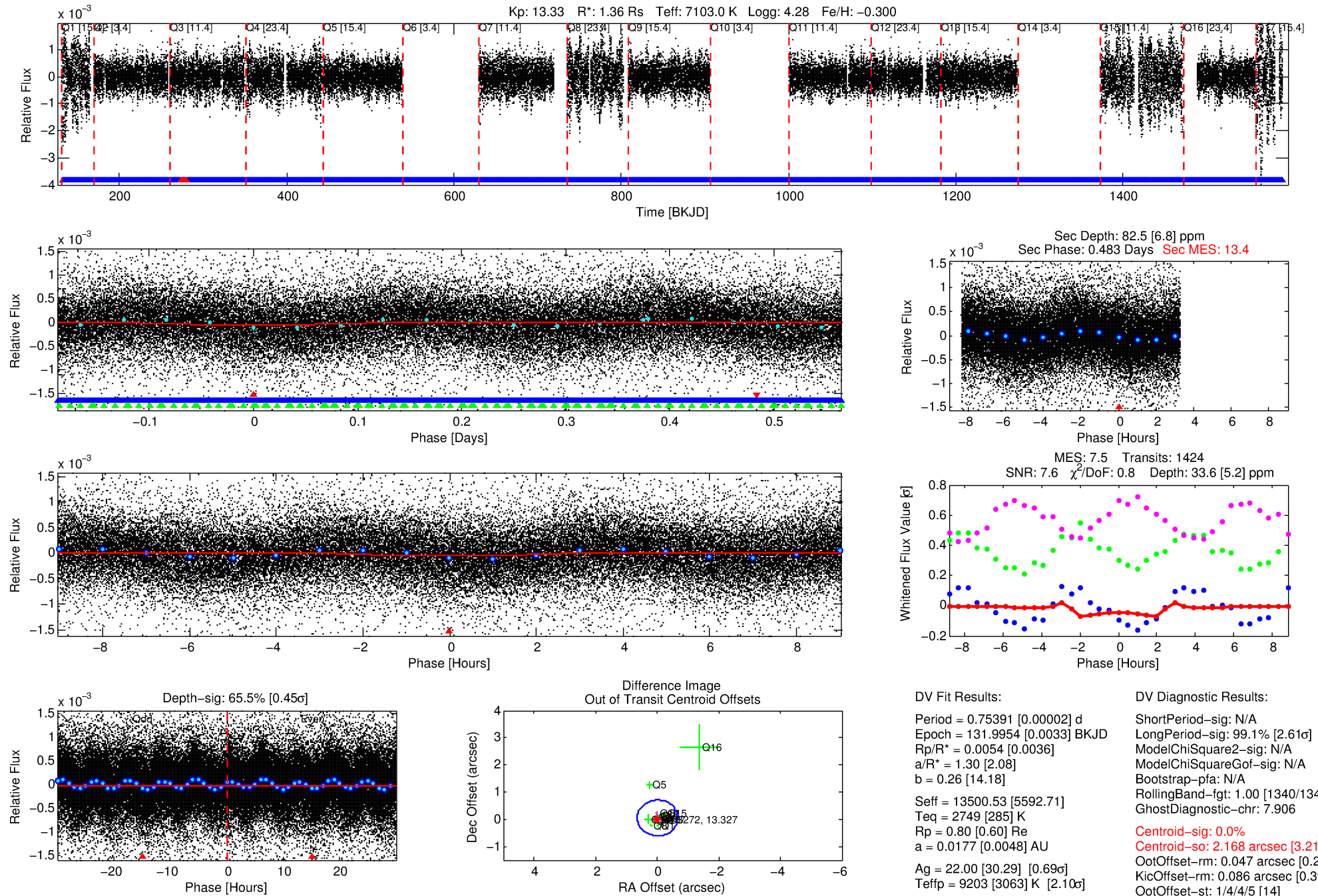
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003453272-01

No Significant Match Found

# DV One-Page Summary

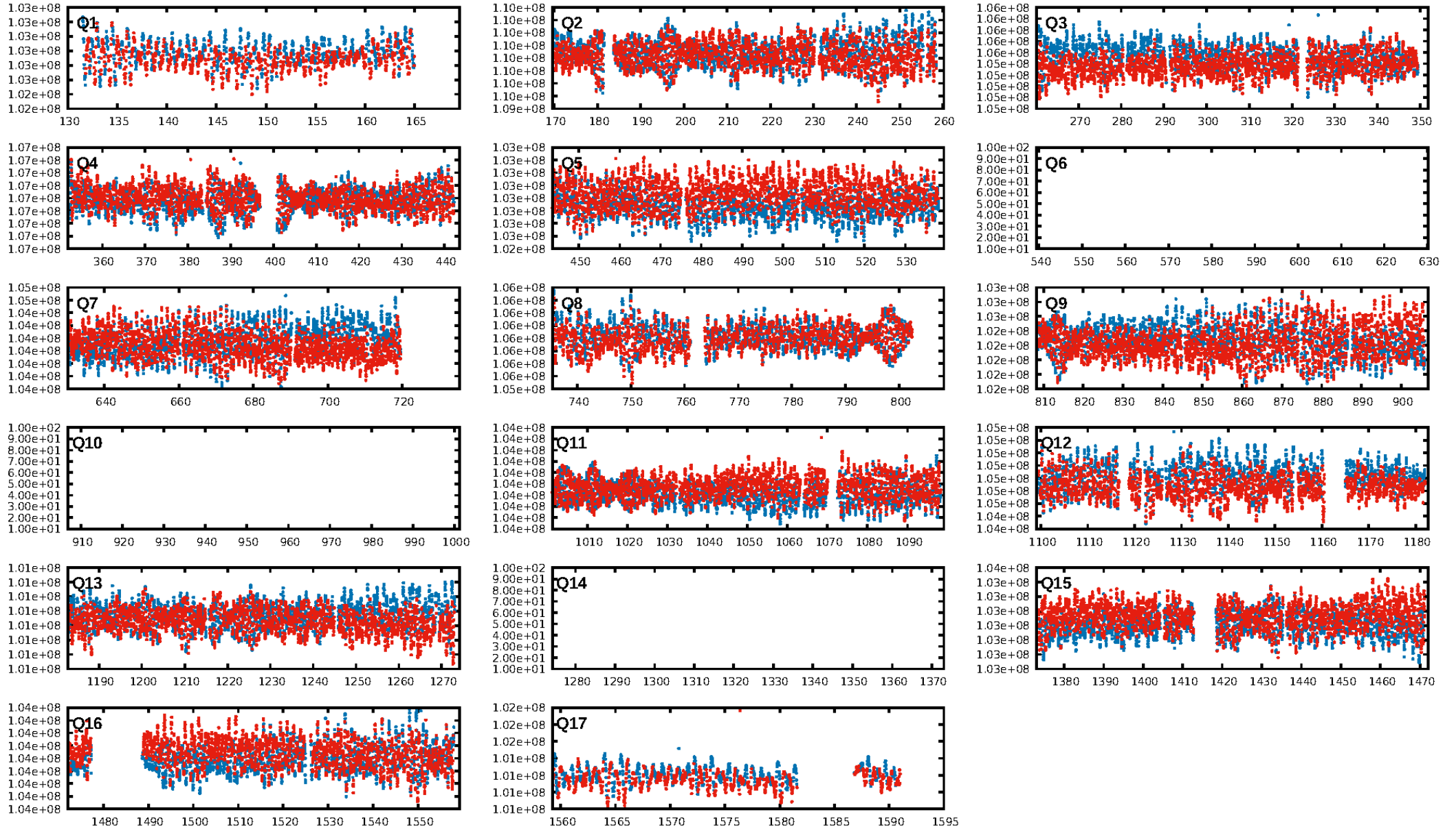
KIC: 3453272 Candidate: 1 of 3 Period: 0.754 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:13:53 Z

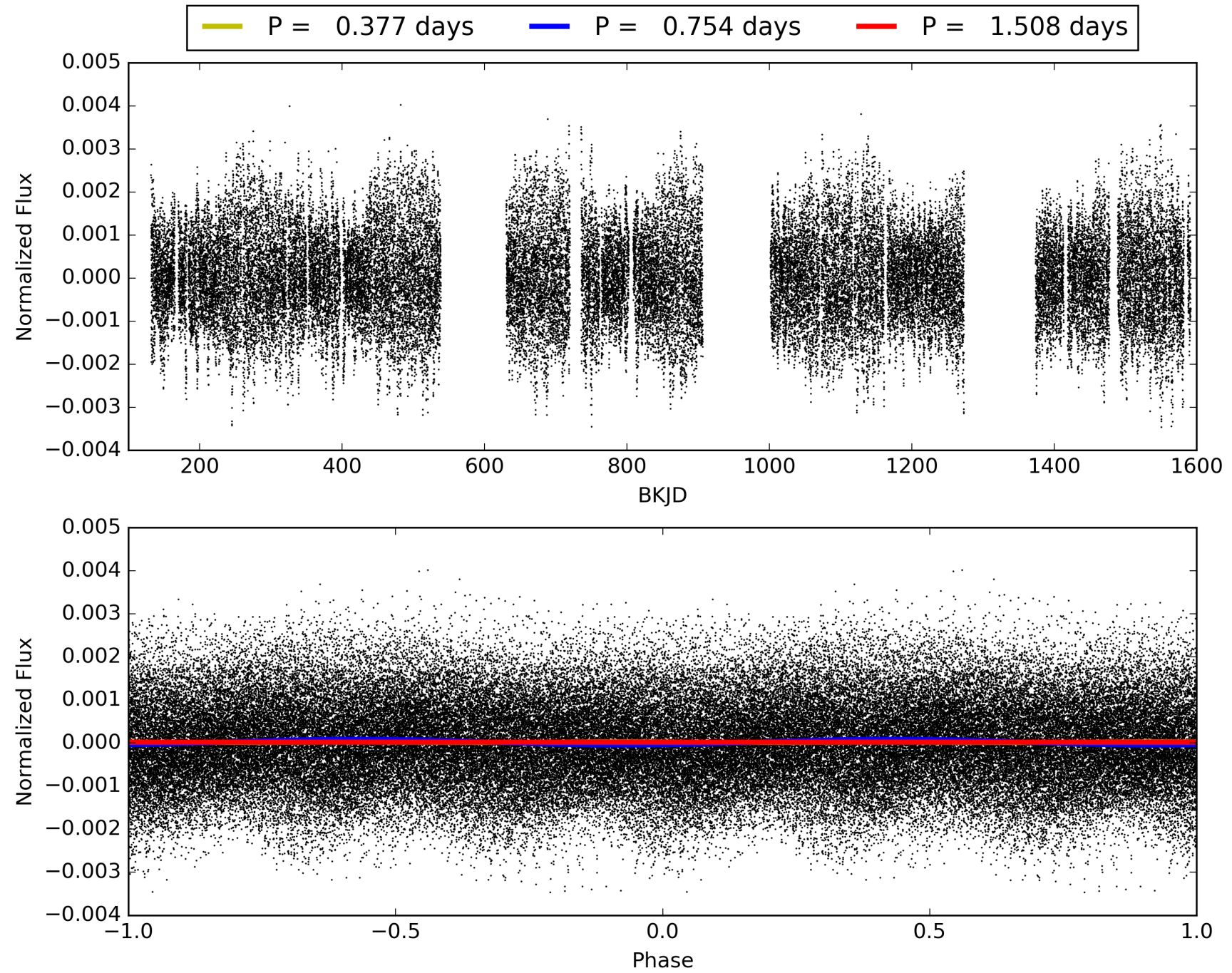
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003453272-01, PDC Light Curves





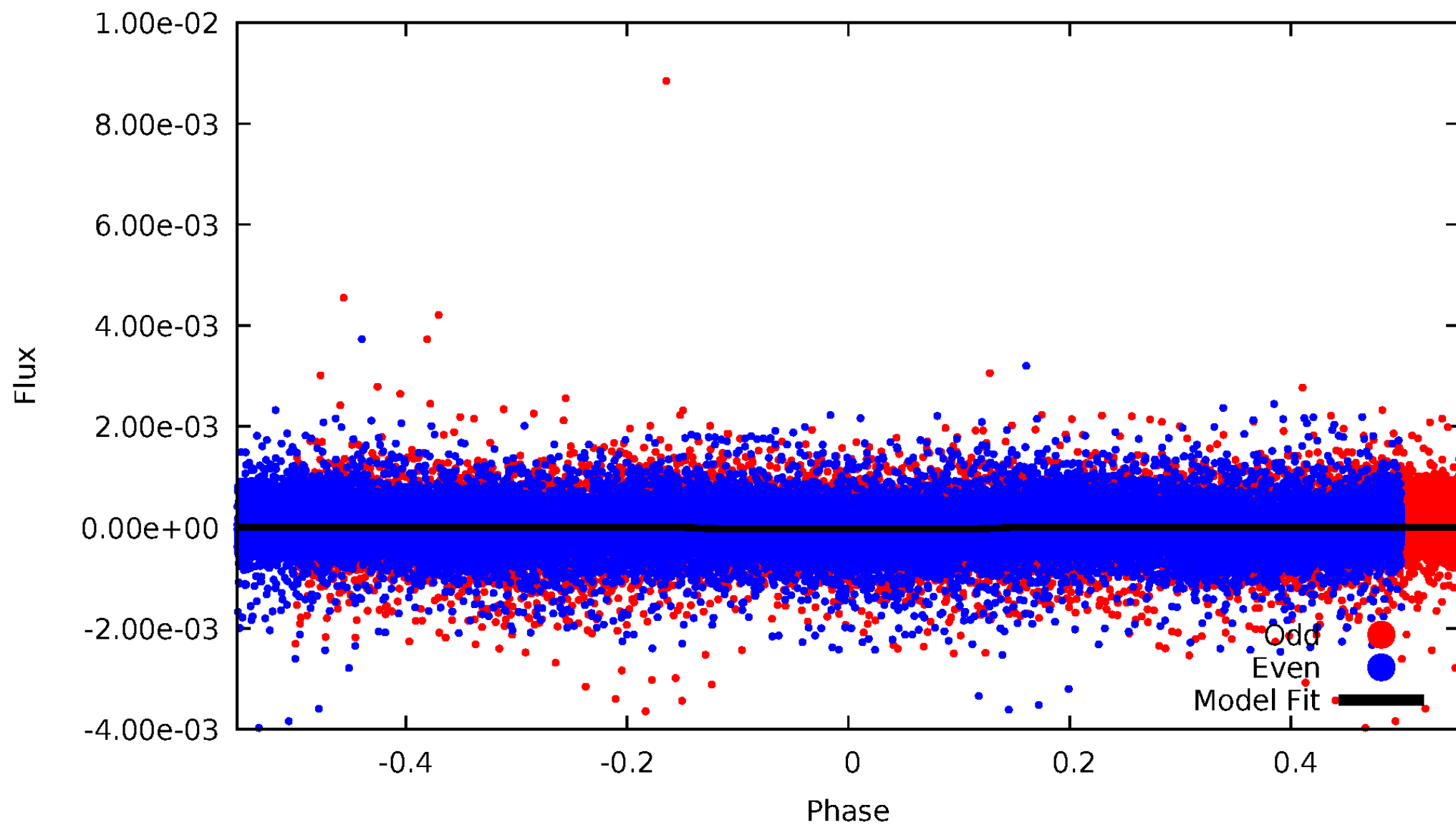
TCE 003453272-01





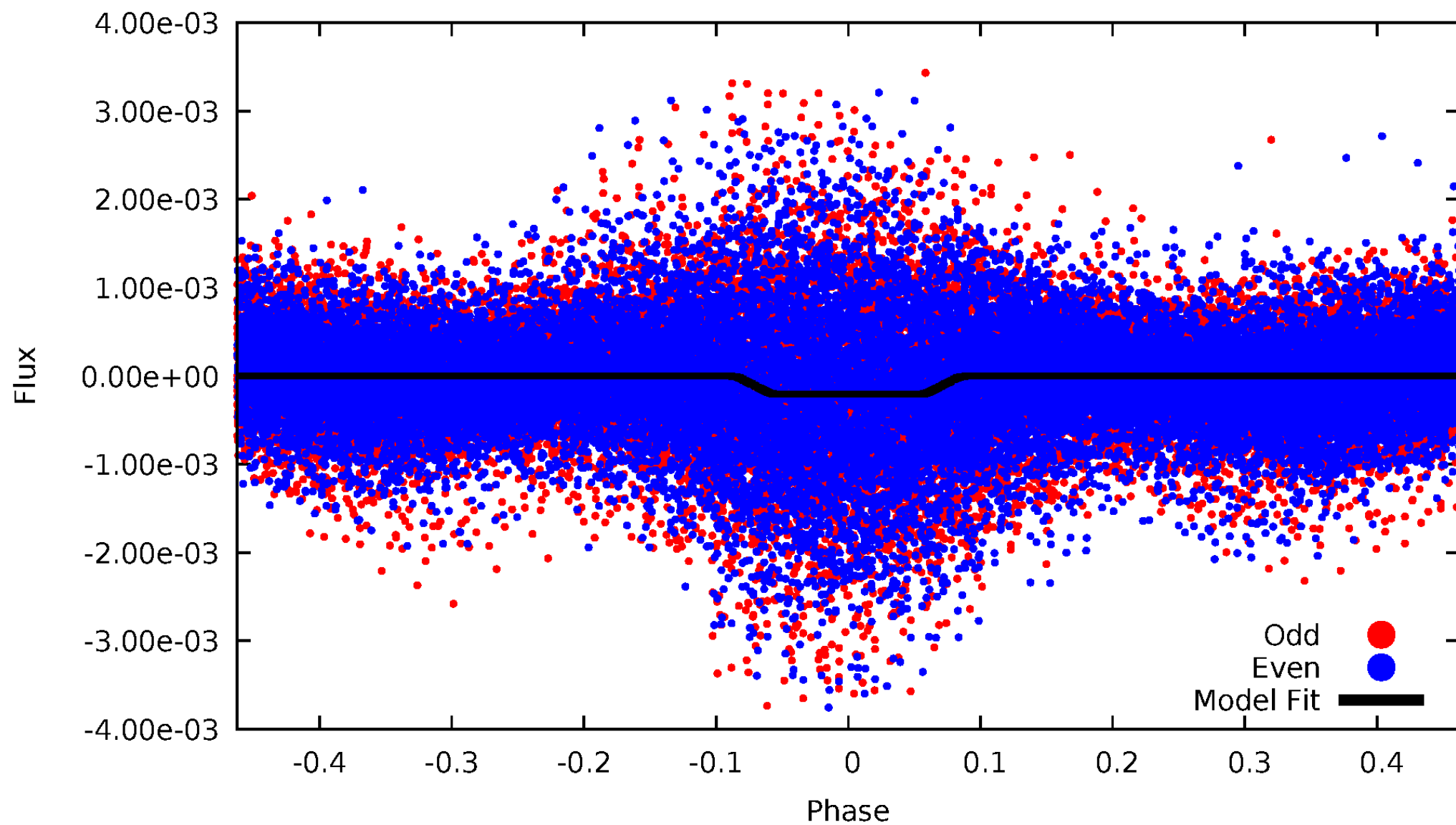
# DV Odd/Even

TCE 003453272-01



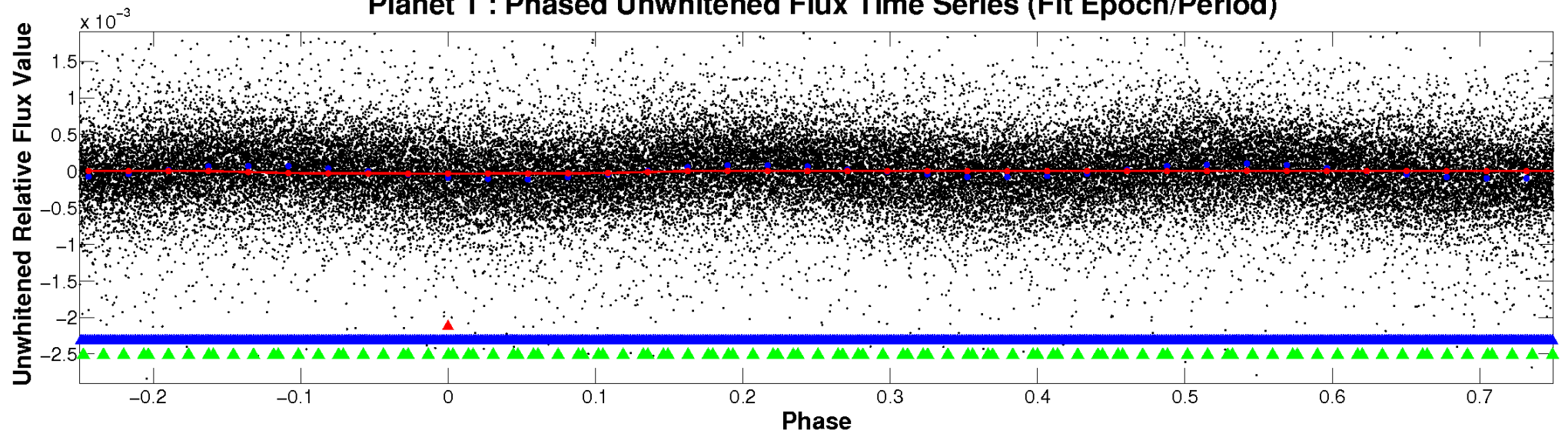
# ALT Odd/Even

TCE 003453272-01

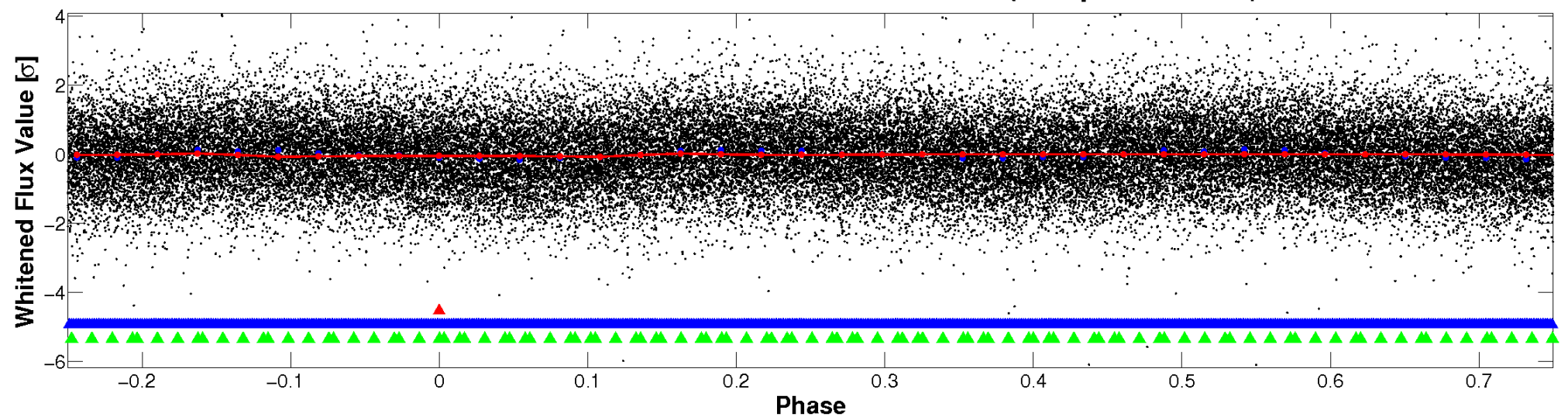


# Non-Whitened Vs. Whitened Light Curve

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



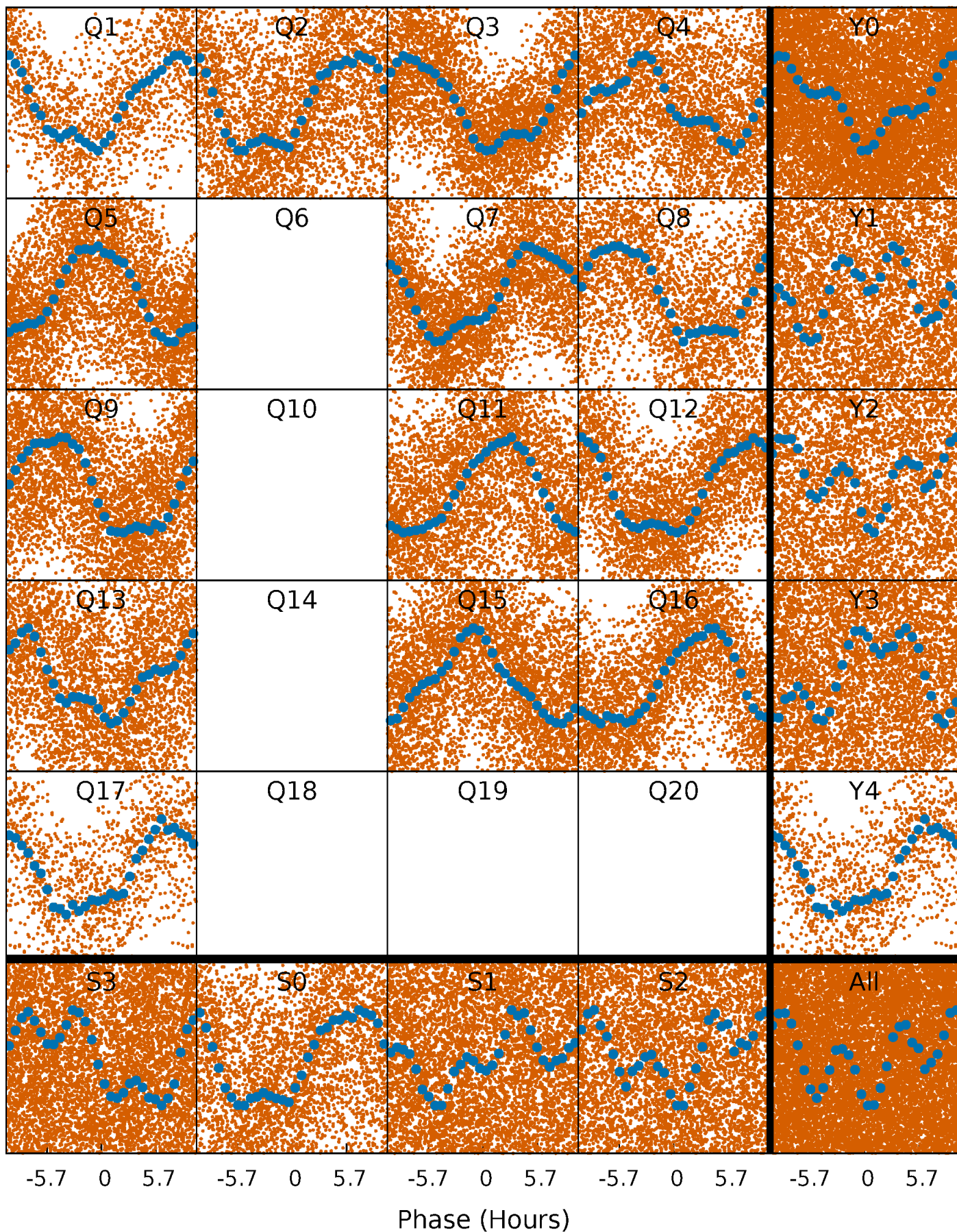
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





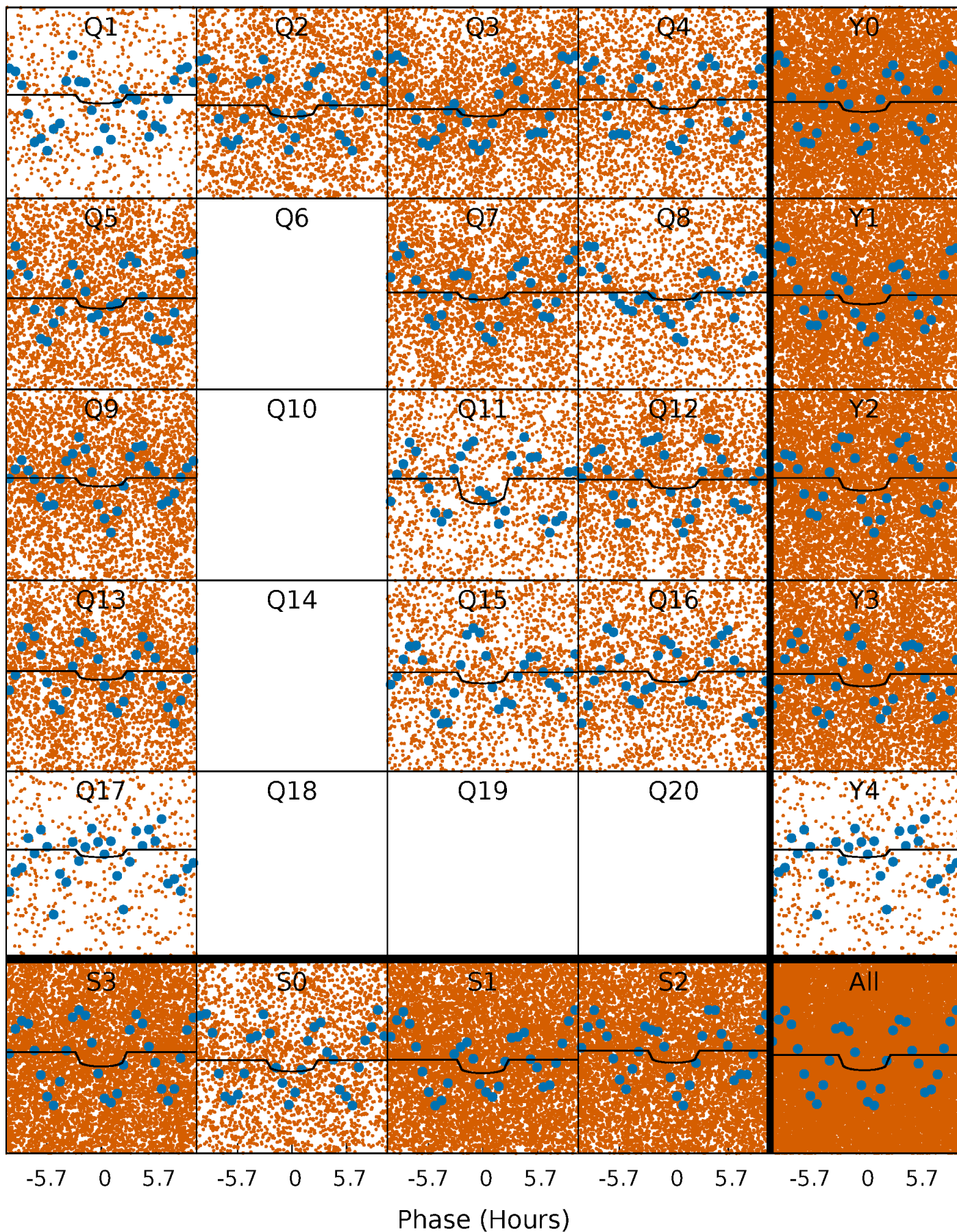
# PDC Quarter-Phased Transit Curves

TCE 003453272-01 P= 0.753914 Days  $T_0=131.995425$  (BKJD)



# DV Quarter-Phased Transit Curves

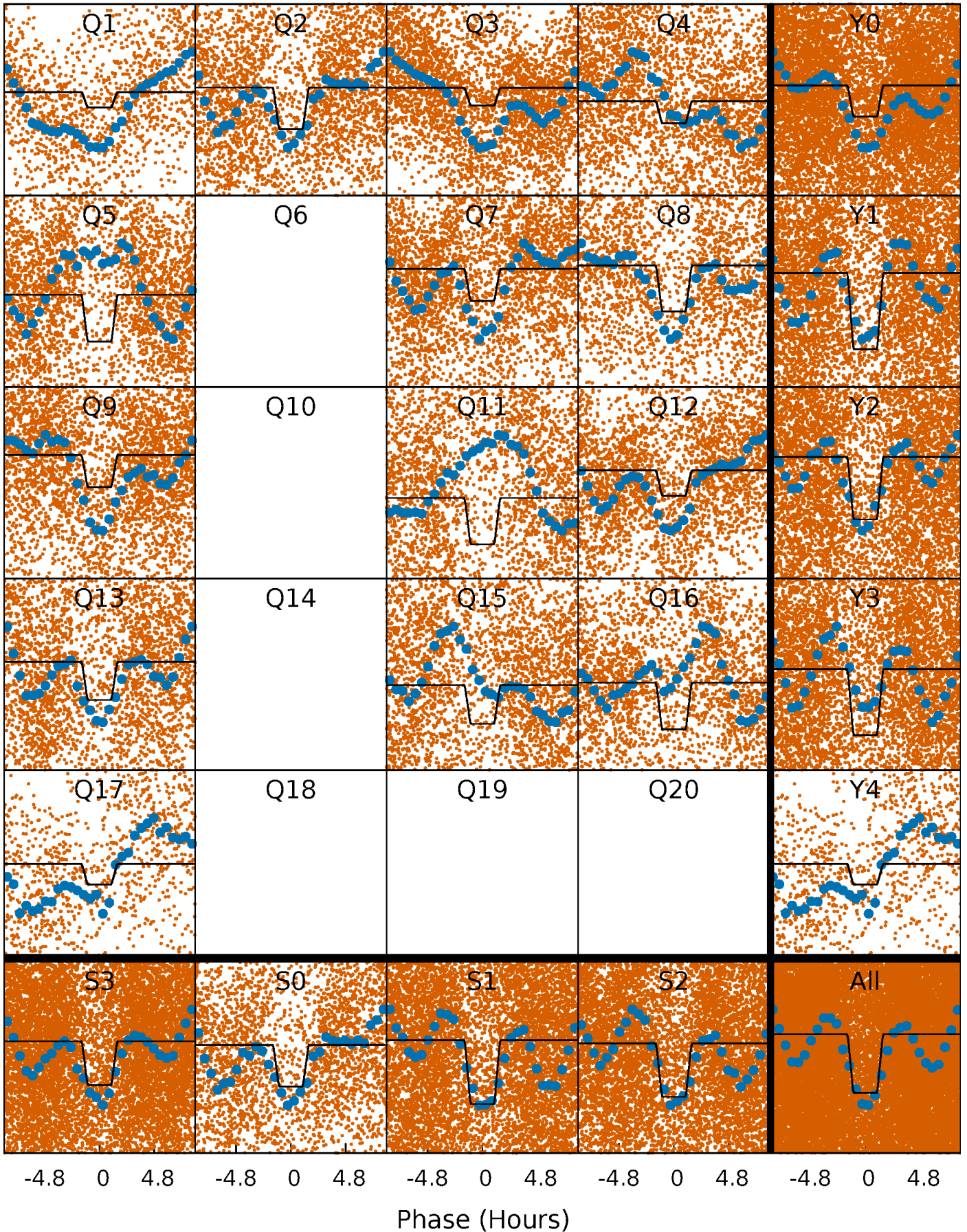
TCE 003453272-01   P= 0.753914 Days    $T_0=131.995425$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 003453272-01   P= 0.753966 Days    $T_0=131.982480$  (BKJD)

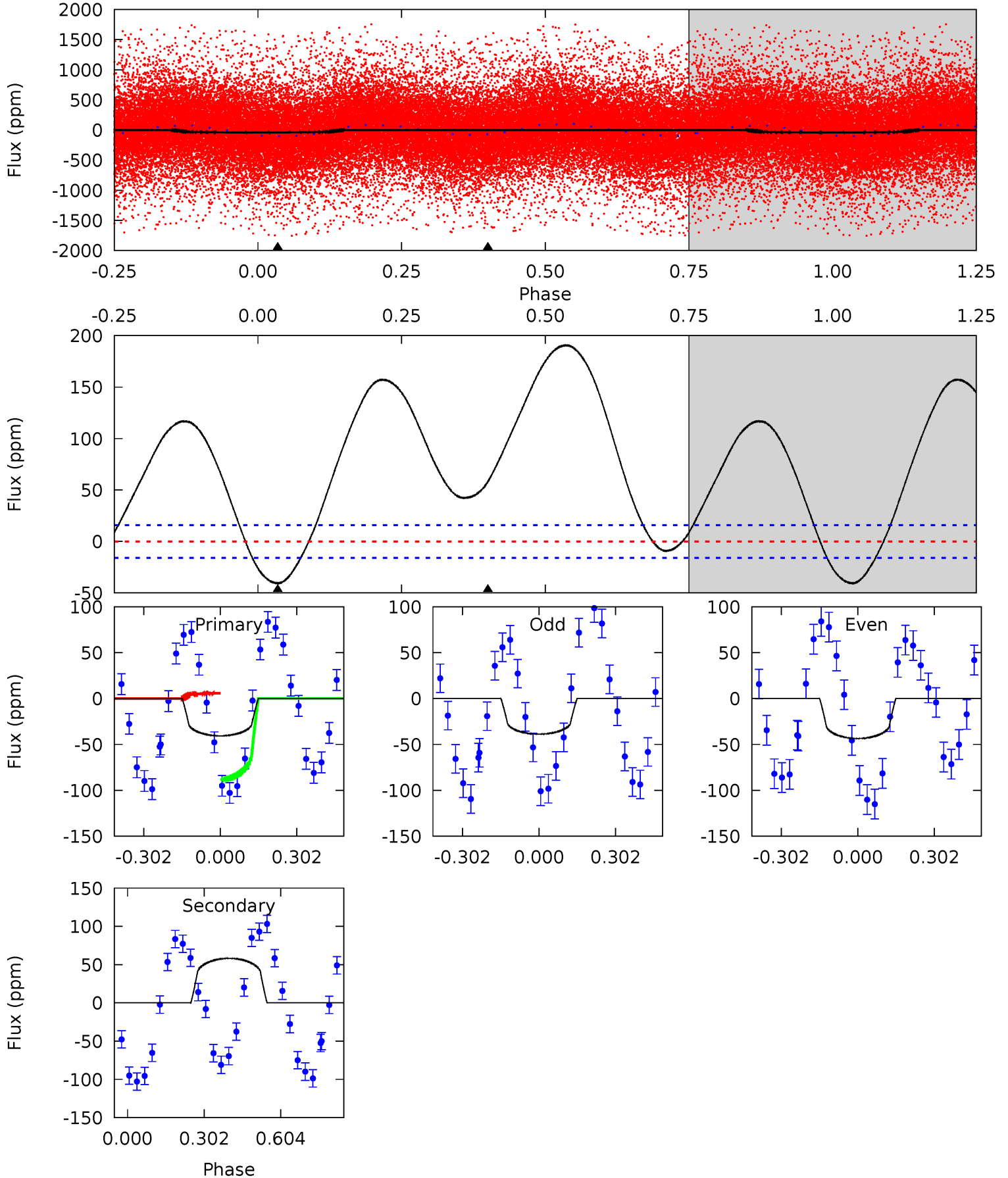




# DV Model-Shift Uniqueness Test

003453272-01, P = 0.753914 Days, E = 131.241511 Days

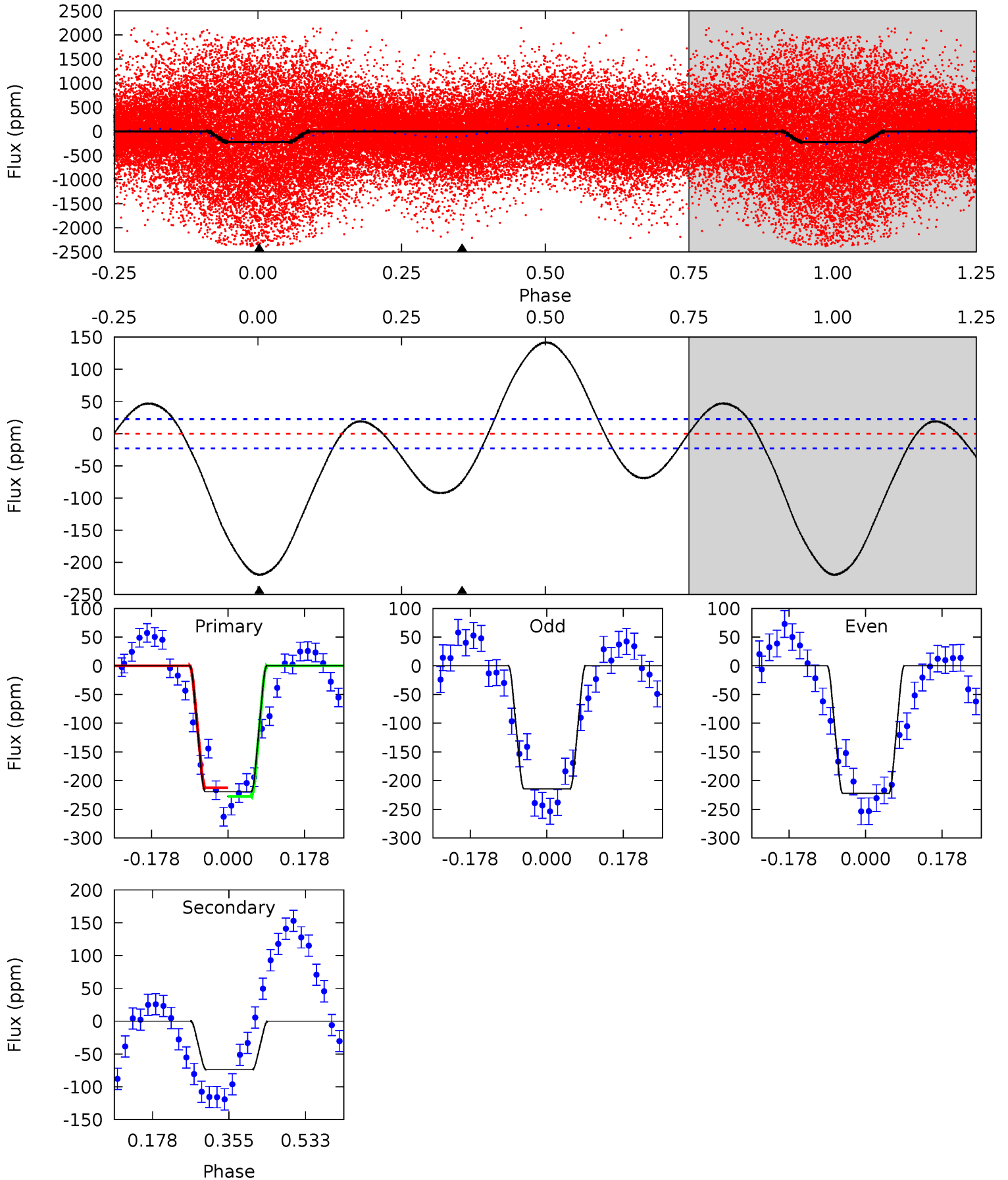
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	-15.9	0	0	4.33	1.03	2.89	11.1	11.1	-15.9	-15.9	0.65	1.21	0.82	11.6



# Alt Model-Shift Uniqueness Test

003453272-01, P = 0.753966 Days, E = 131.228514 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
42.6	14.4	0	0	4.44	1.35	10.5	42.6	42.6	14.4	14.4	0.77	1.24	0.39	1.50



### Stellar Parameters For KIC 003453272

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7103^{+199}_{-274}$	$4.284^{+0.087}_{-0.203}$	$-0.300^{+0.250}_{-0.350}$	$1.362^{+0.460}_{-0.197}$	$1.307^{+0.200}_{-0.200}$	$0.729^{+0.340}_{-0.369}$
	+3%/-4%	+2%/-5%	+83%/-117%	+34%/-14%	+15%/-15%	+47%/-51%
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 003453272-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$58 \pm 4$	$0.86^{+0.55}_{-0.49}$	$3890^{+292}_{-214}$	$-8592^{+2042}_{-7818}$	$-13.367^{+8.364}_{-55.565}$
Alt.	$-74 \pm 5$	$2.23^{+0.68}_{-0.58}$	$3890^{+316}_{-231}$	$5278^{+857}_{-577}$	$2.511^{+2.093}_{-0.983}$

$T_{max}$  = 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

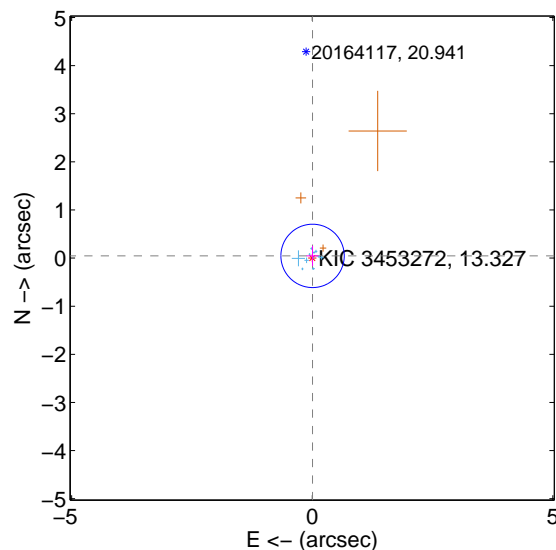
Supplemental centroid analysis for 003453272-01. Kepler magnitude: 13.33. Transit SNR 7.55

There are 11 quarters with good PRF difference image offsets

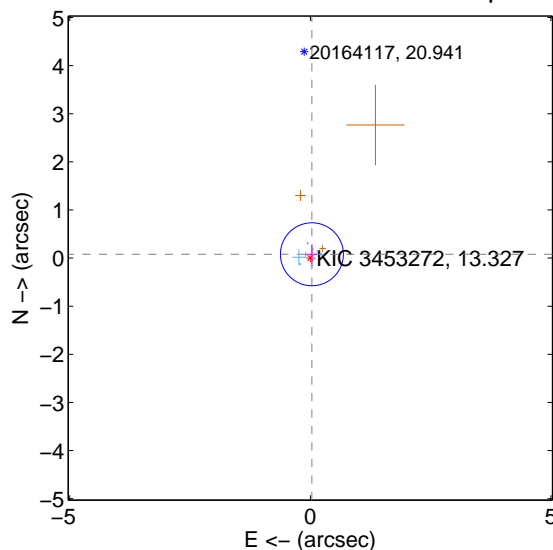
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.047 \pm 0.219$	0.21	$-0.007 \pm 0.126$	$0.046 \pm 0.209$
PRF-fit source offset from KIC position	$0.086 \pm 0.218$	0.39	$-0.033 \pm 0.121$	$0.080 \pm 0.204$
photometric centroid source offset	$2.17 \pm 0.67$	3.21	$0.59 \pm 0.63$	$2.09 \pm 0.68$

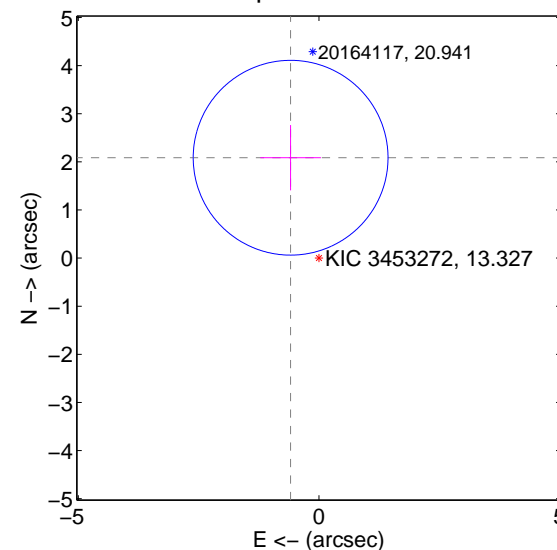
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

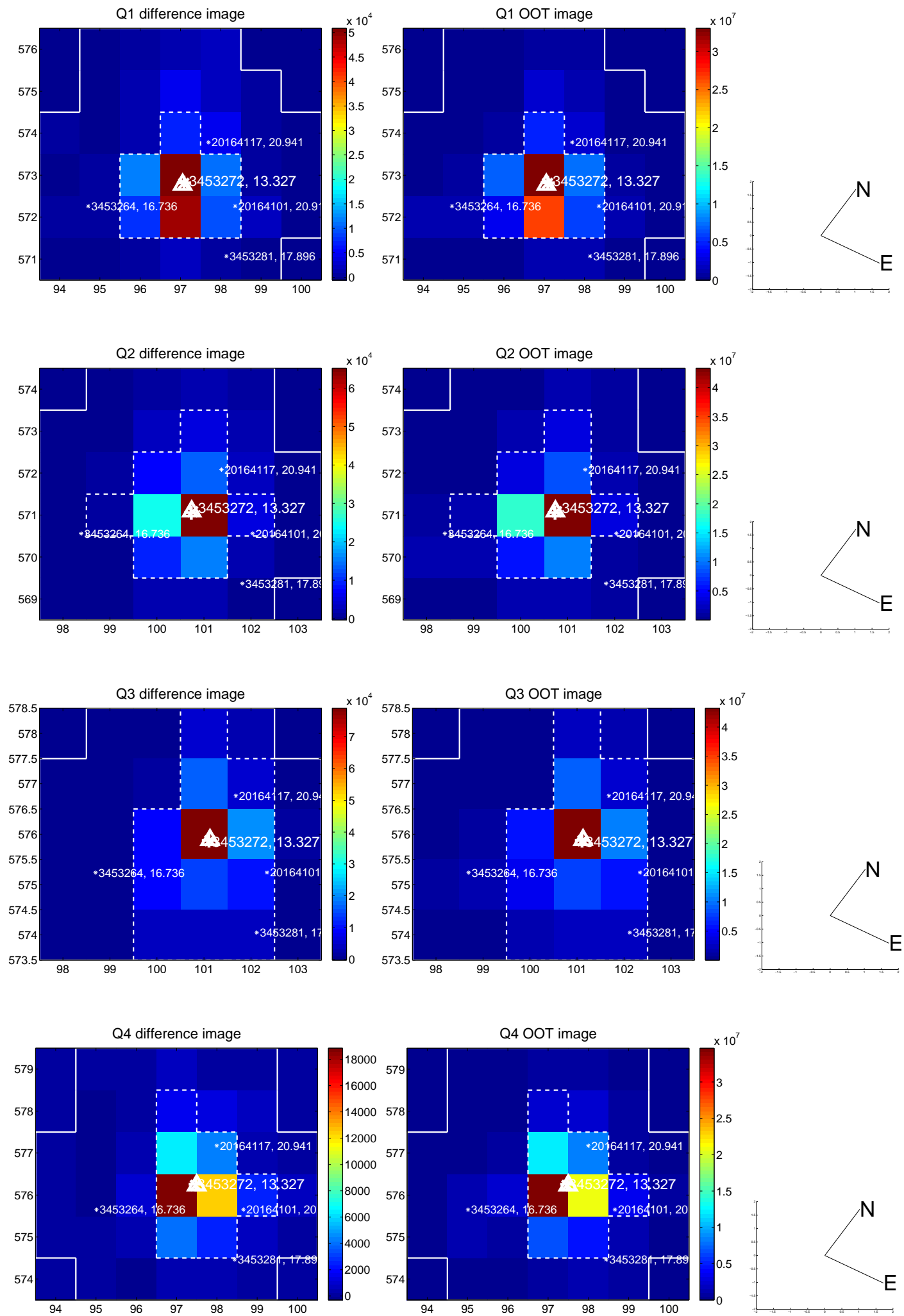


offset from photometric centroids

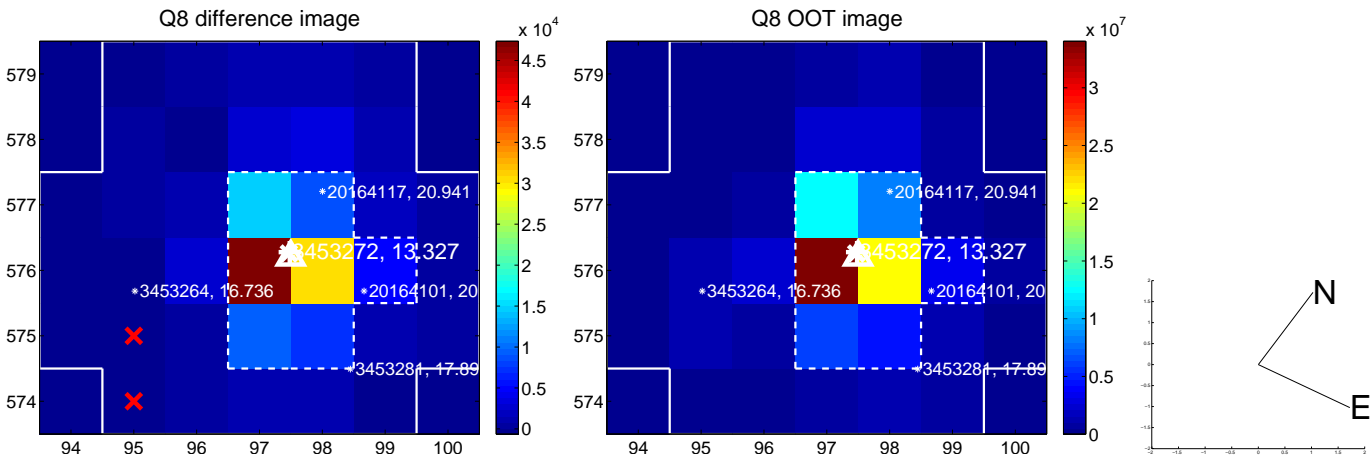
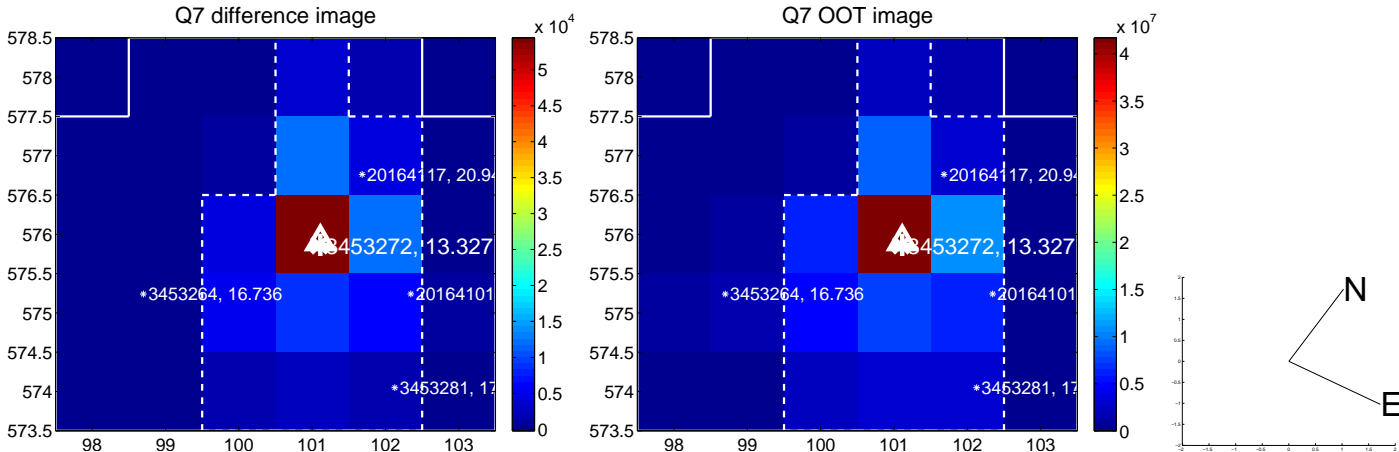
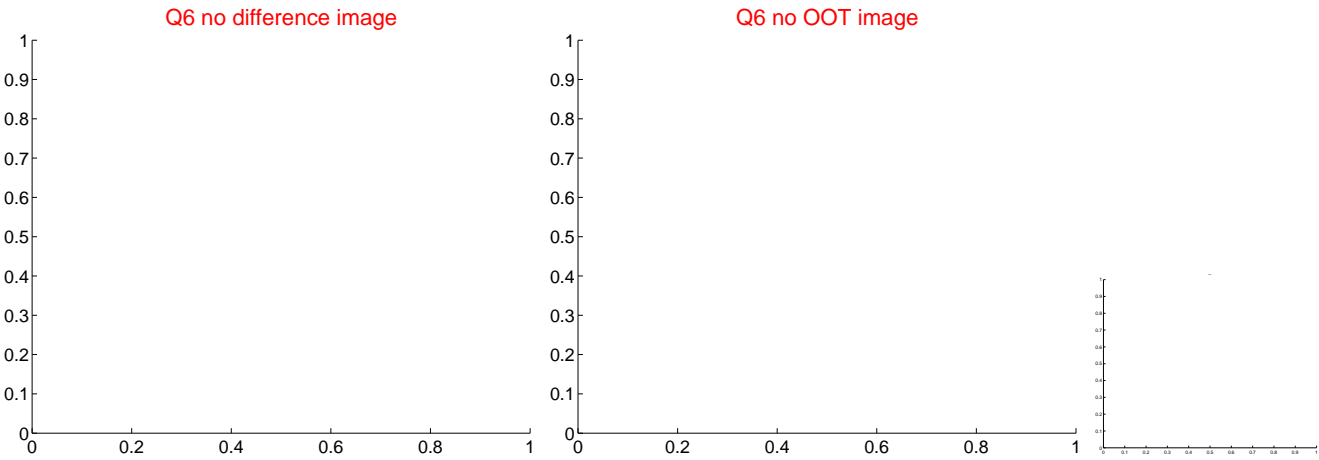
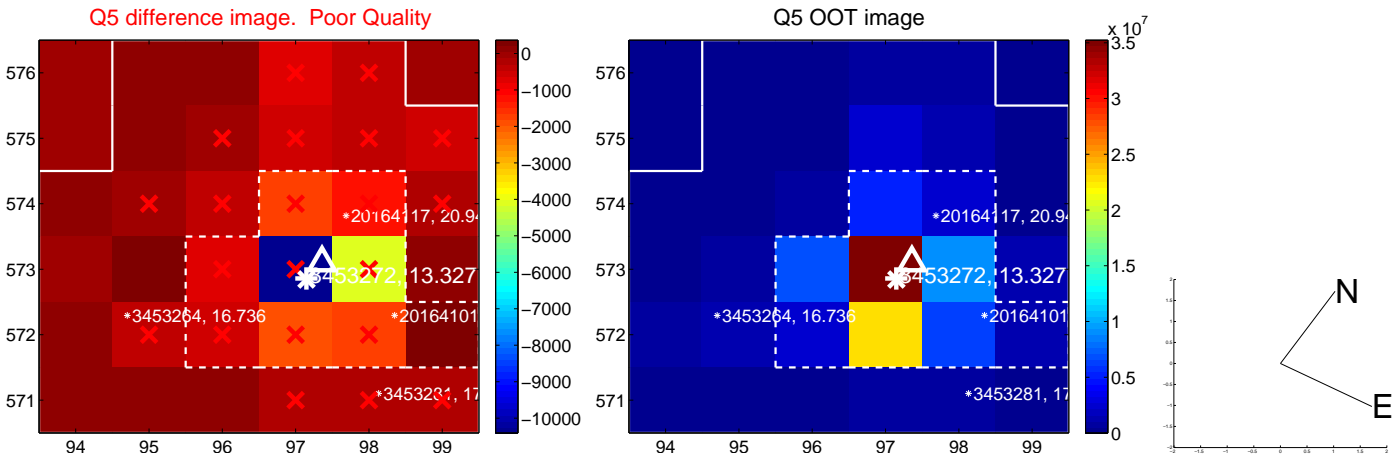


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

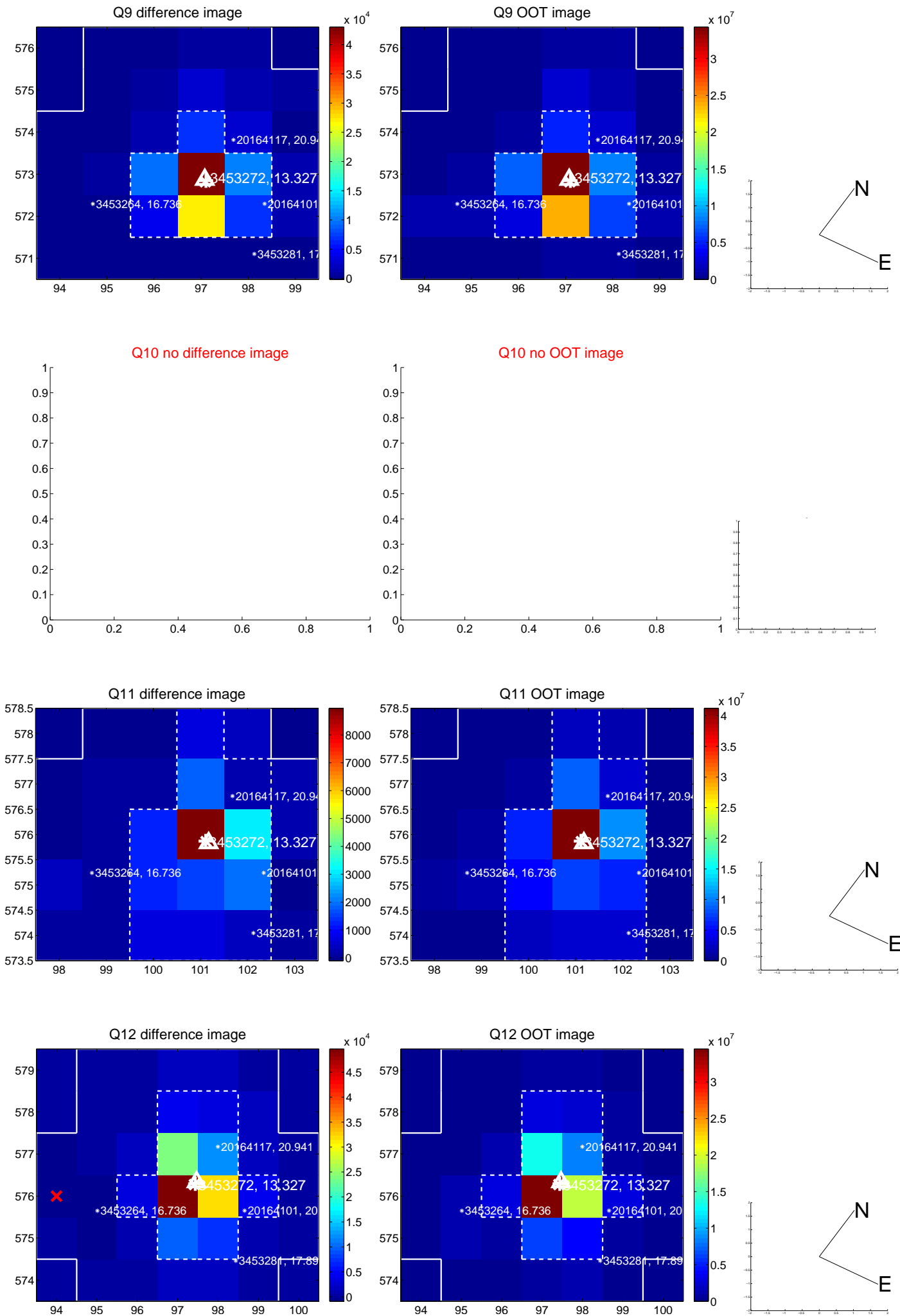


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

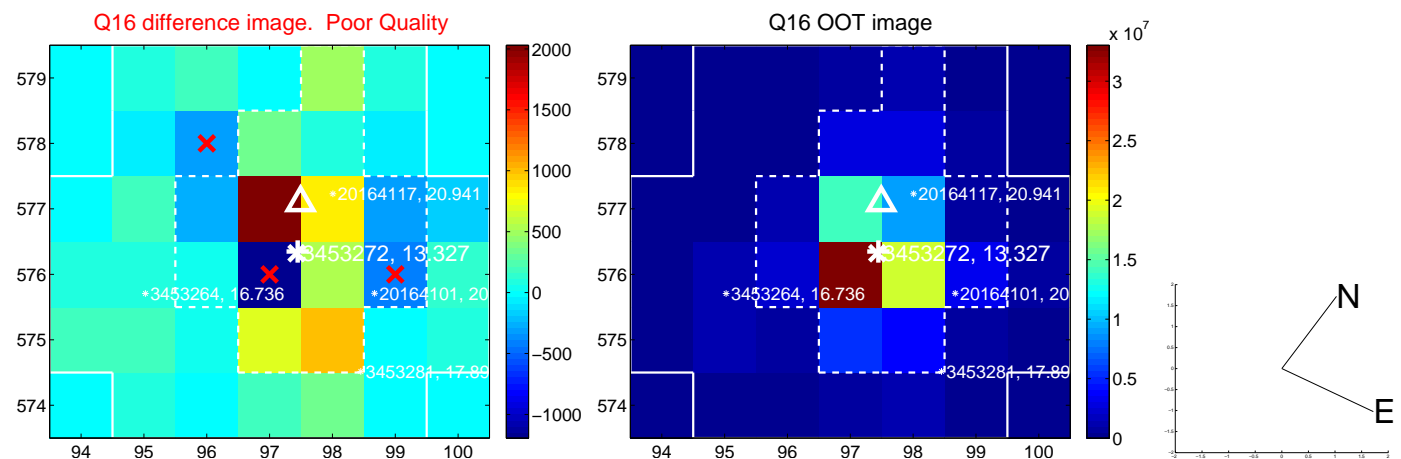
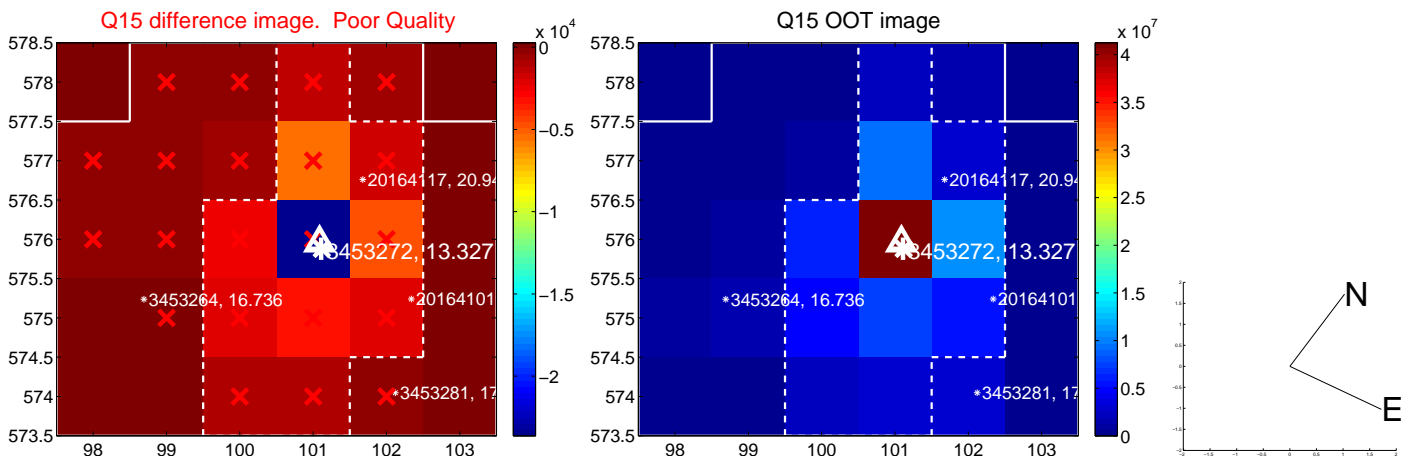
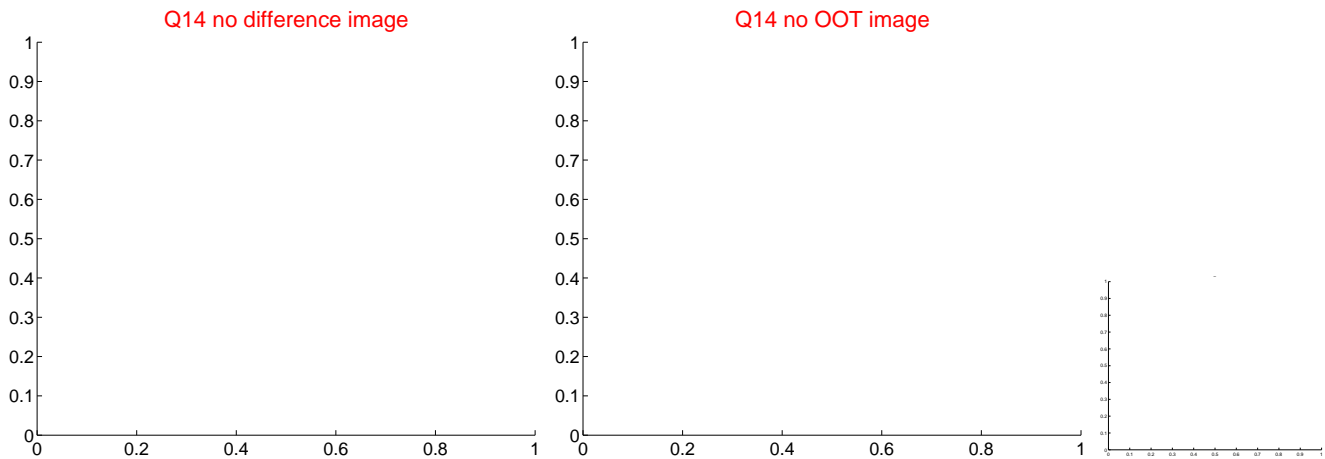
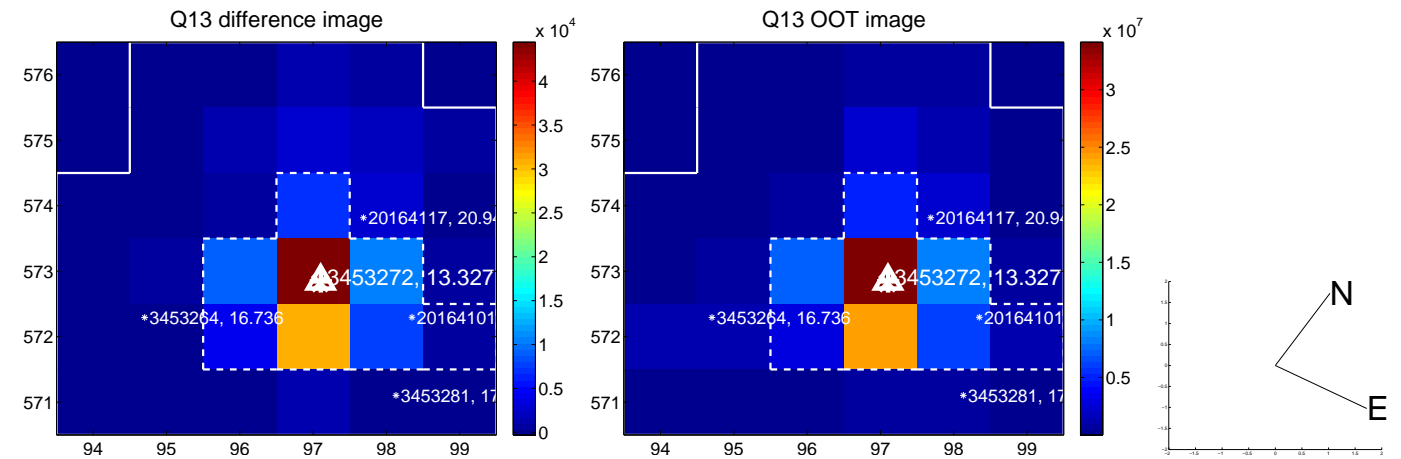




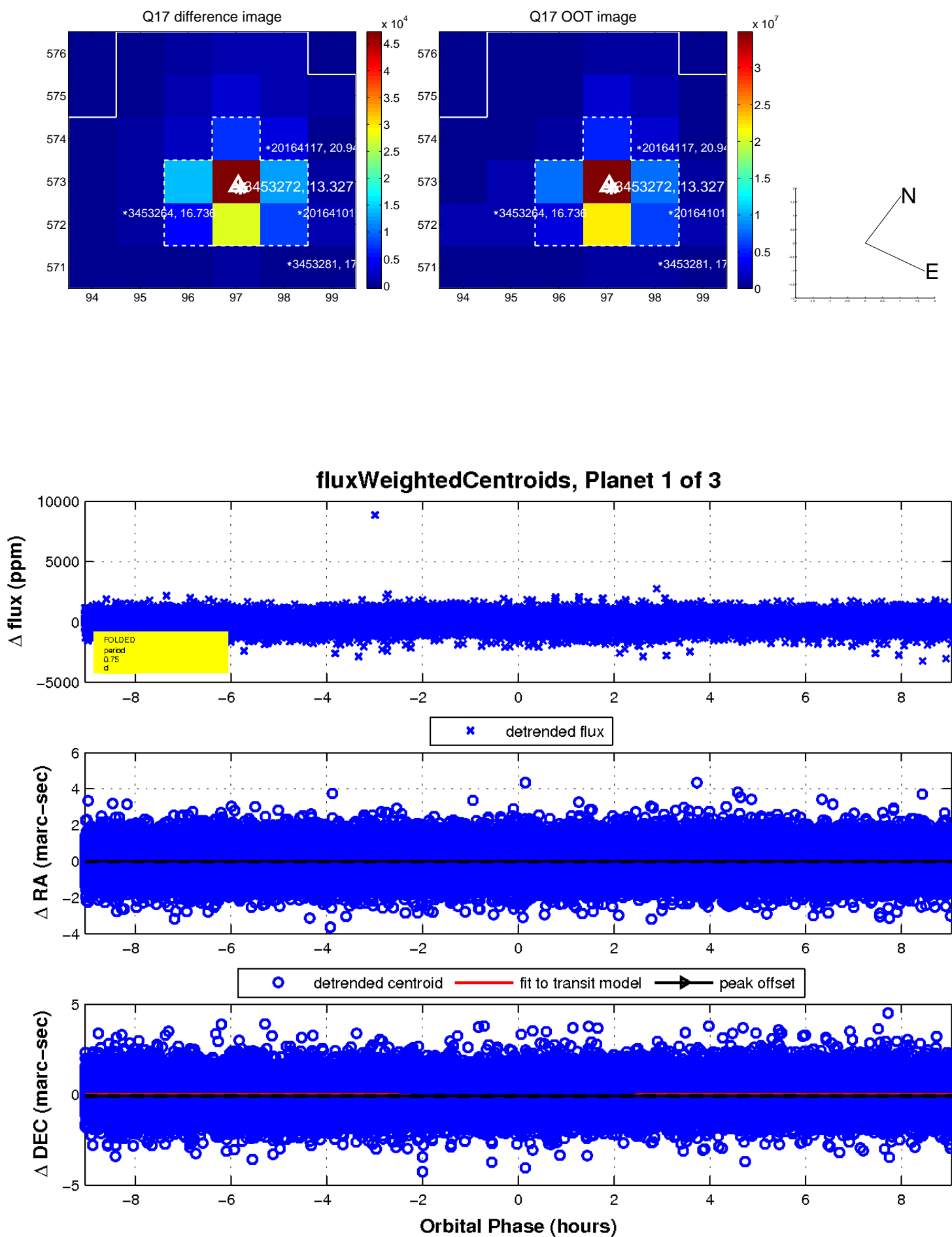
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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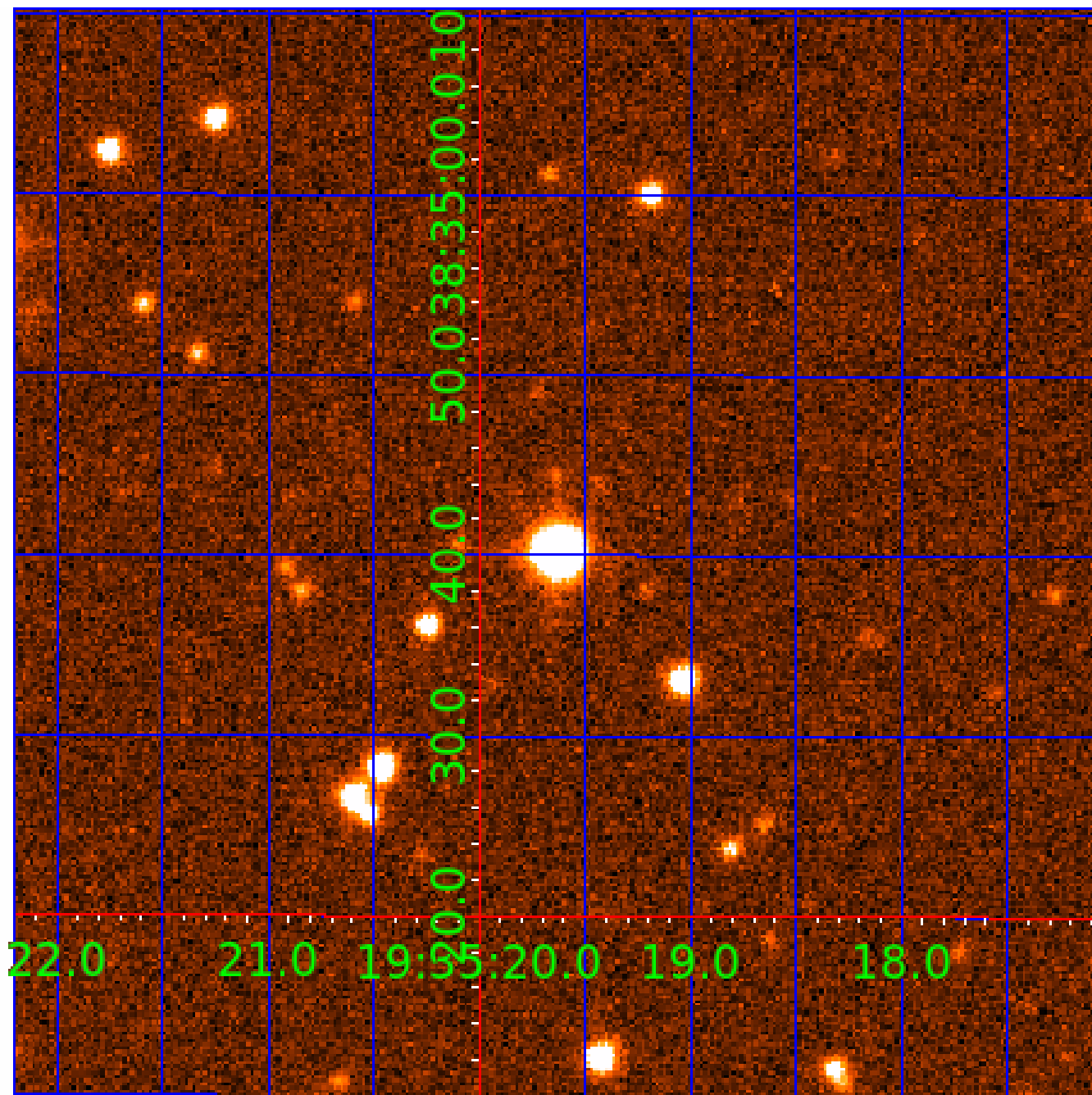


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 003453272

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003453272-01	OBS	No	0.753914	131.995425	33.6	4.996	7.5	7.6	1.36	7103	0.80	13500.53
003453272-02	OBS	No	1.583335	131.923829	322.2	5.757	13.4	18.7	1.36	7103	4.65	5019.76
003453272-03	OBS	No	14.291134	145.154691	614.3	5.175	12.6	11.9	1.36	7103	4.31	267.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003453272-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
003453272-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
003453272-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

**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.

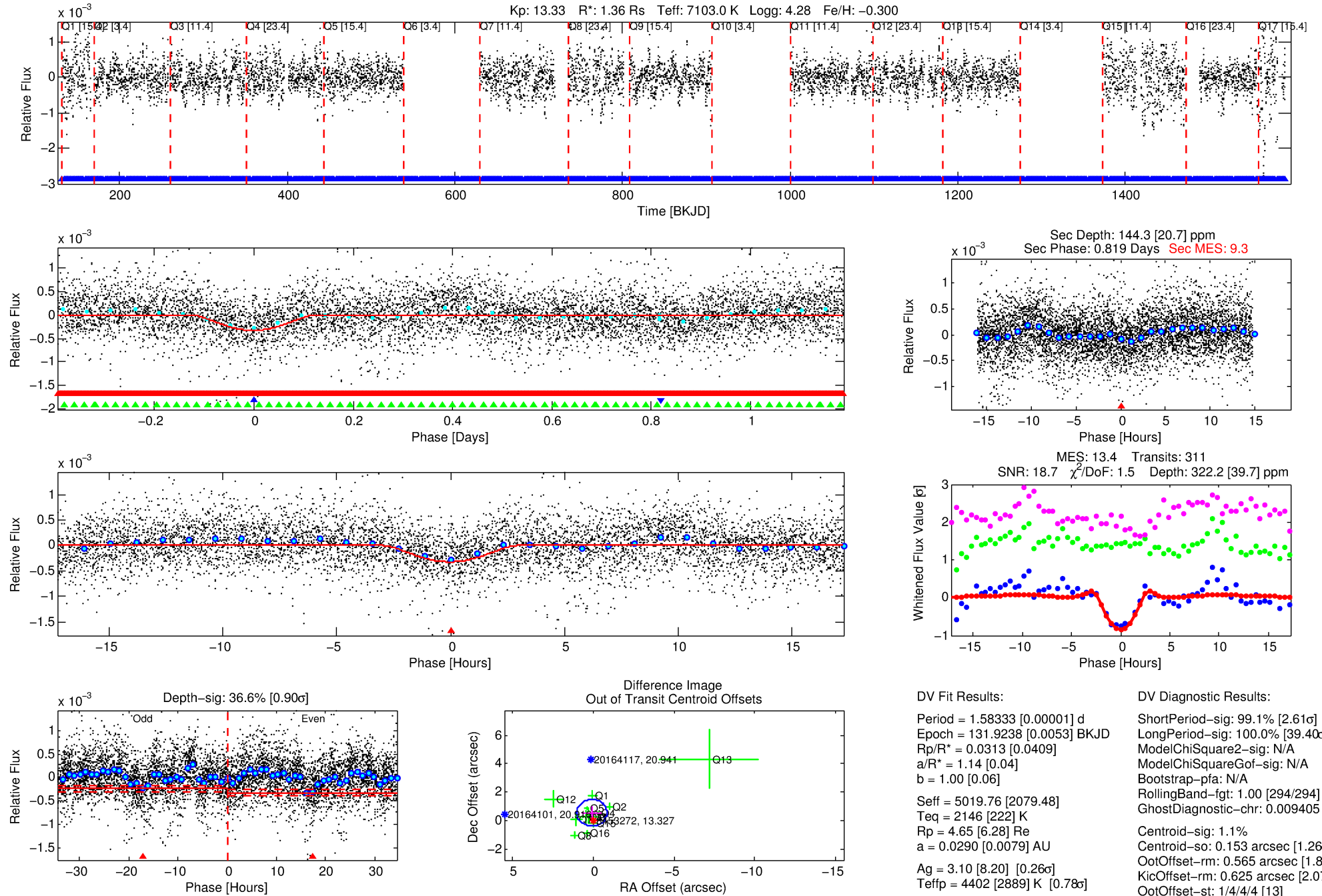
## Ephemeris Match Information For 003453272-02

No Significant Match Found



# DV One-Page Summary

KIC: 3453272 Candidate: 2 of 3 Period: 1.583 d



## DV Fit Results:

Period = 1.58333 [0.00001] d  
Epoch = 131.9238 [0.0053] BKJD  
Rp/R\* = 0.0313 [0.0409]  
a/R\* = 1.14 [0.04]  
b = 1.00 [0.06]  
Seff = 5019.76 [2079.48]  
Teff = 2146 [222] K  
Rp = 4.65 [6.28] Re  
a = 0.0290 [0.0079] AU  
Ag = 3.10 [8.20] [0.26 $\sigma$ ]  
Teffp = 4402 [2889] K [0.78 $\sigma$ ]

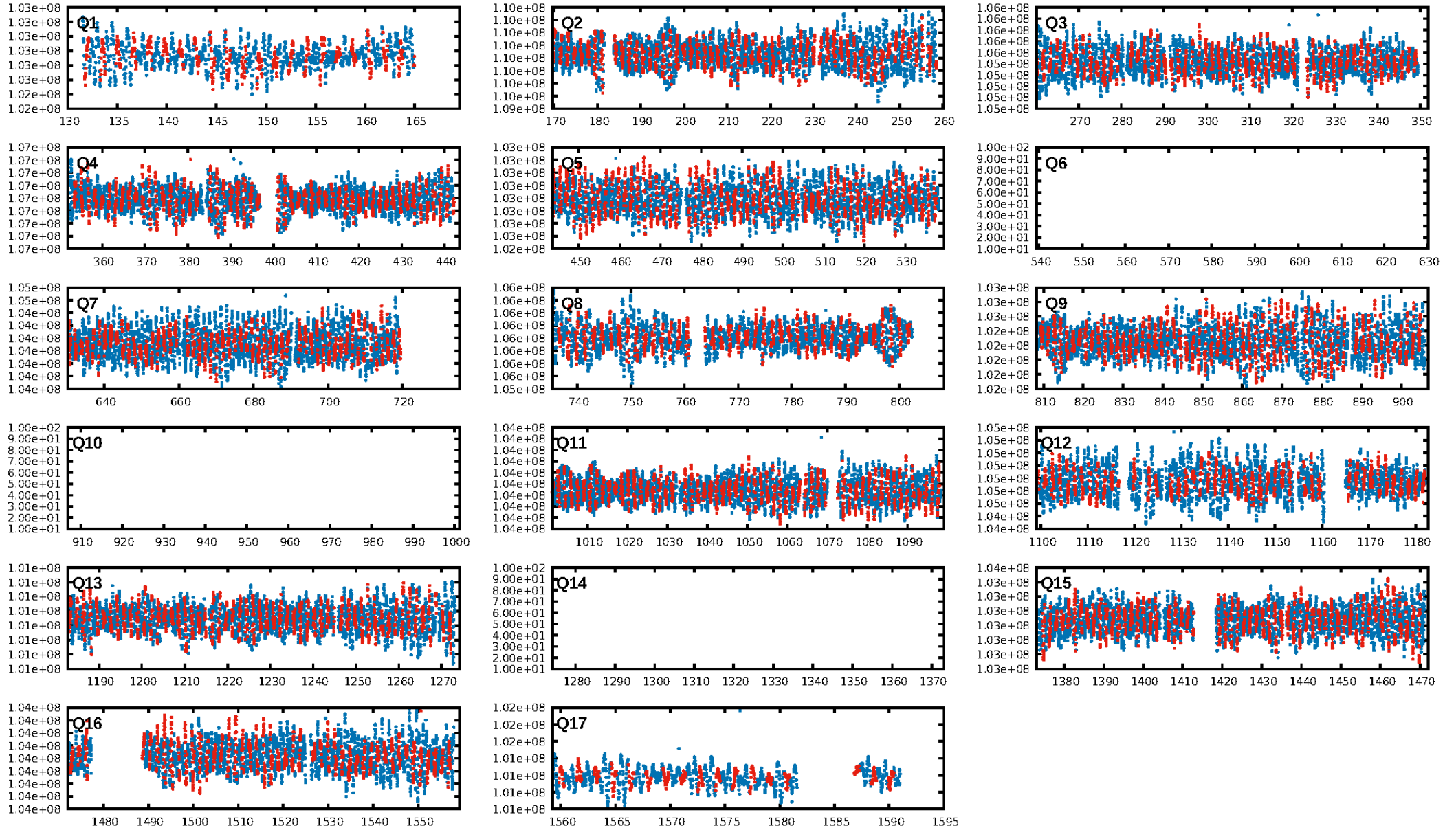
## DV Diagnostic Results:

ShortPeriod-sig: 99.1% [2.61 $\sigma$ ]  
LongPeriod-sig: 100.0% [39.40 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [294/294]  
GhostDiagnostic-chr: 0.009405  
Centroid-sig: 1.1%  
Centroid-so: 0.153 arcsec [1.26 $\sigma$ ]  
OotOffset-rm: 0.565 arcsec [1.81 $\sigma$ ]  
KicOffset-rm: 0.625 arcsec [2.07 $\sigma$ ]  
OotOffset-st: 1/4/4/4 [13]  
KicOffset-st: 1/4/4/4 [13]  
DiffImageQuality-fgm: 0.62 [8/13]  
DiffImageOverlap-fno: 0.00 [0/14]

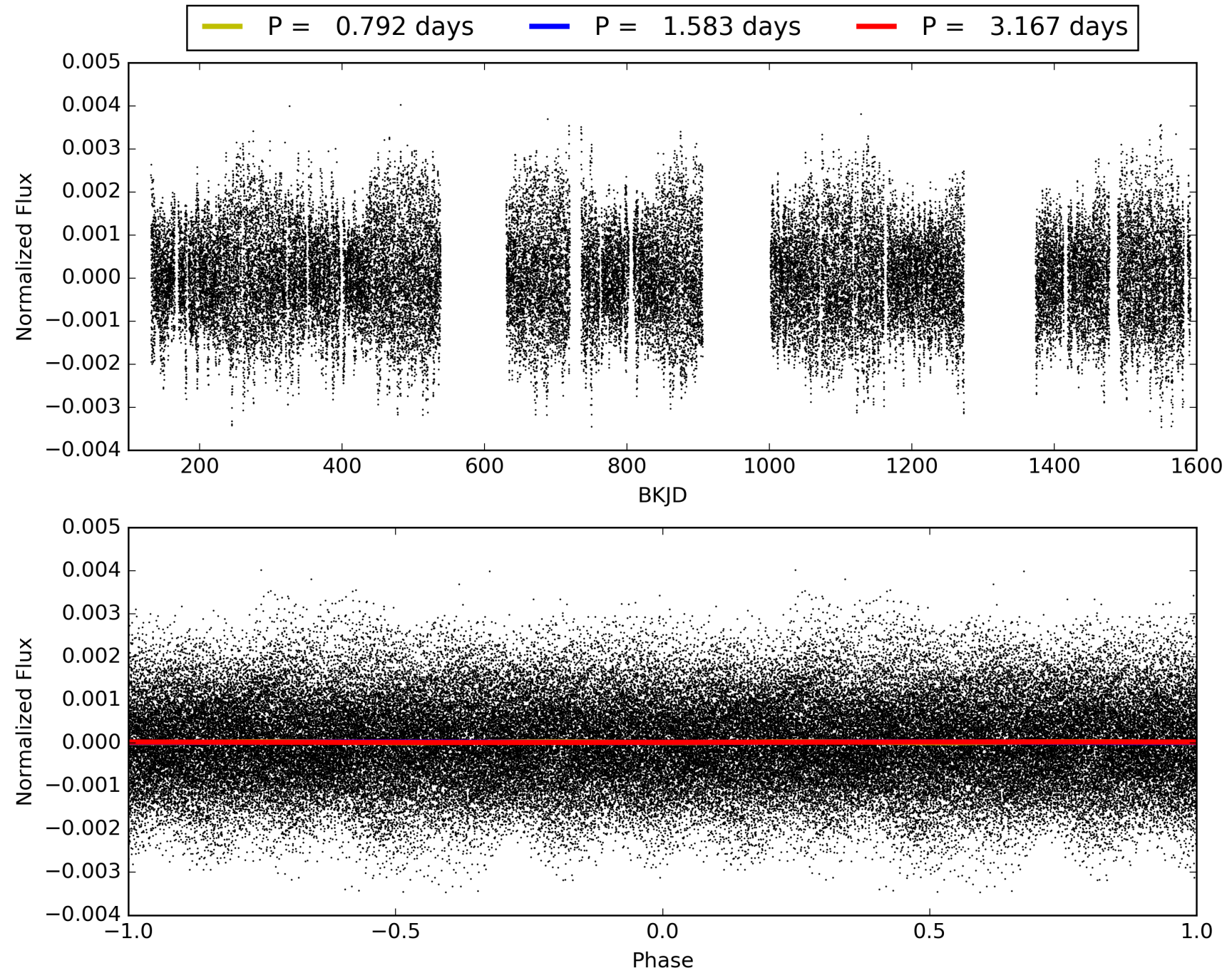
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:14:05 Z

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

# TCE 003453272-02, PDC Light Curves

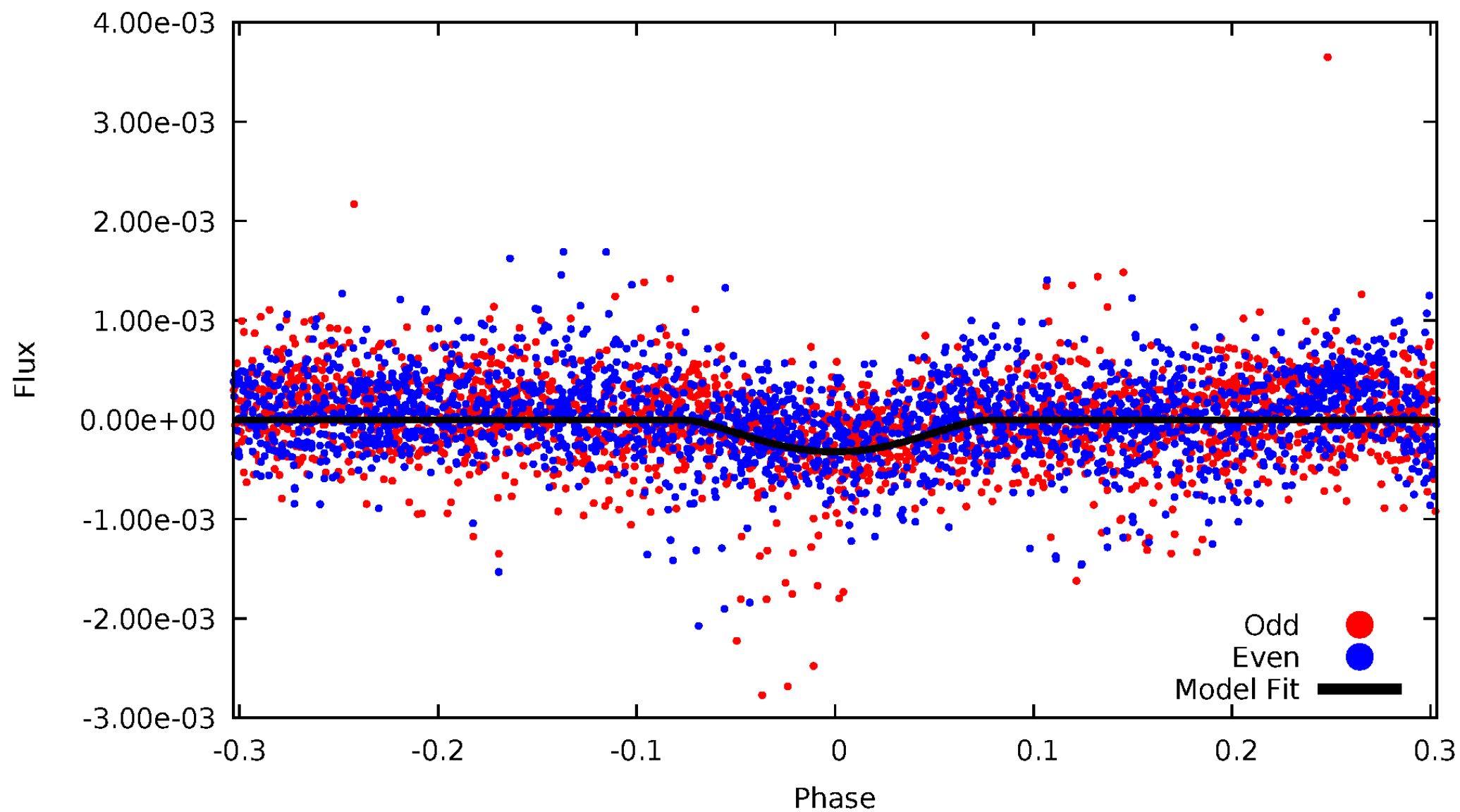


# TCE 003453272-02



DV Odd/Even

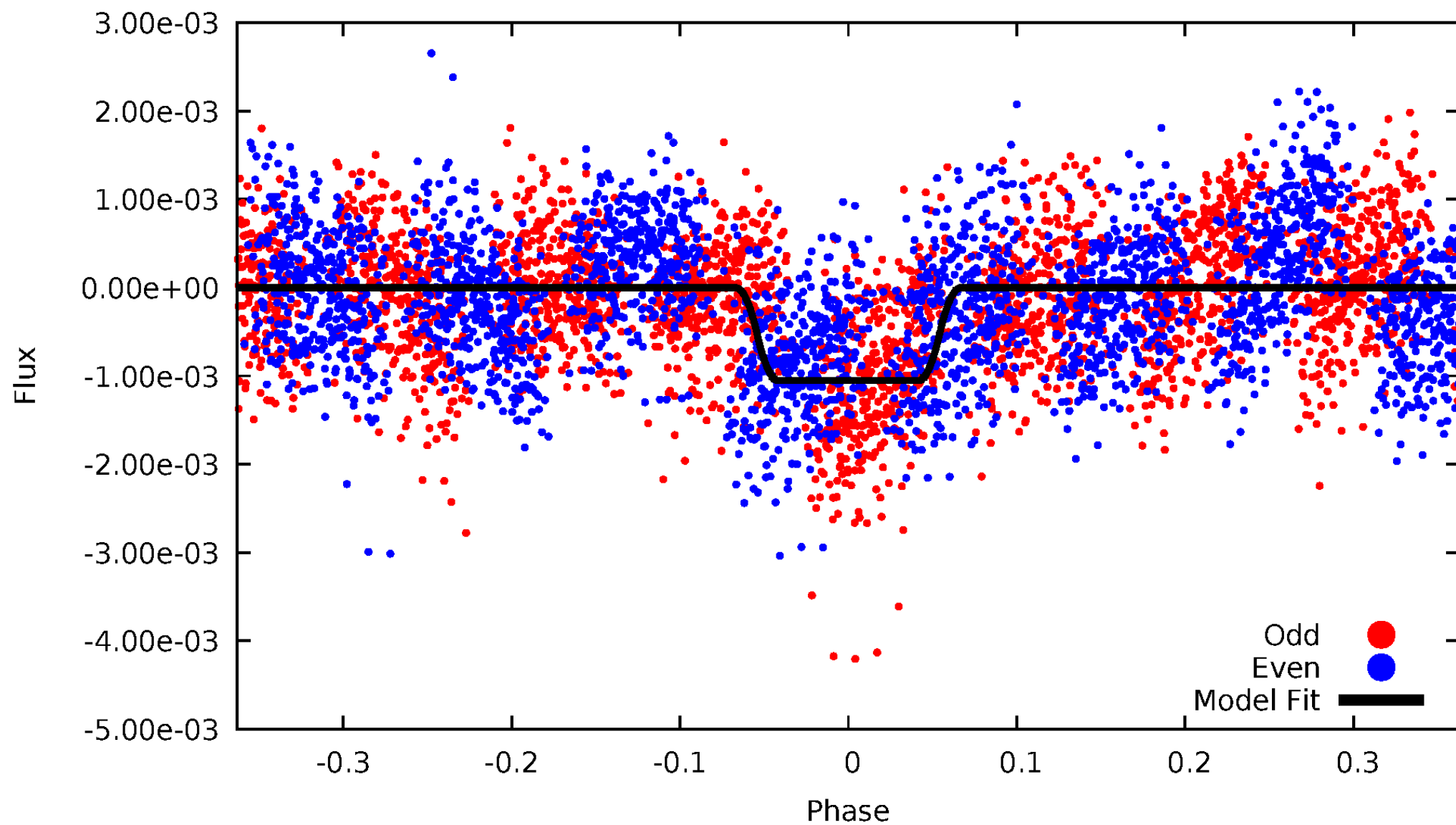
TCE 003453272-02





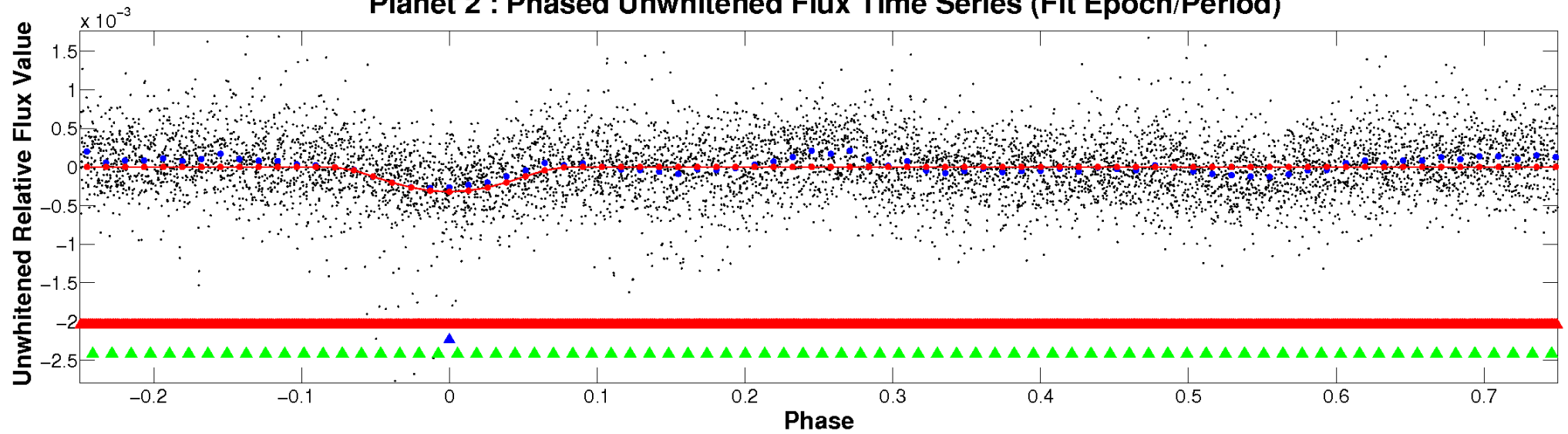
# ALT Odd/Even

TCE 003453272-02

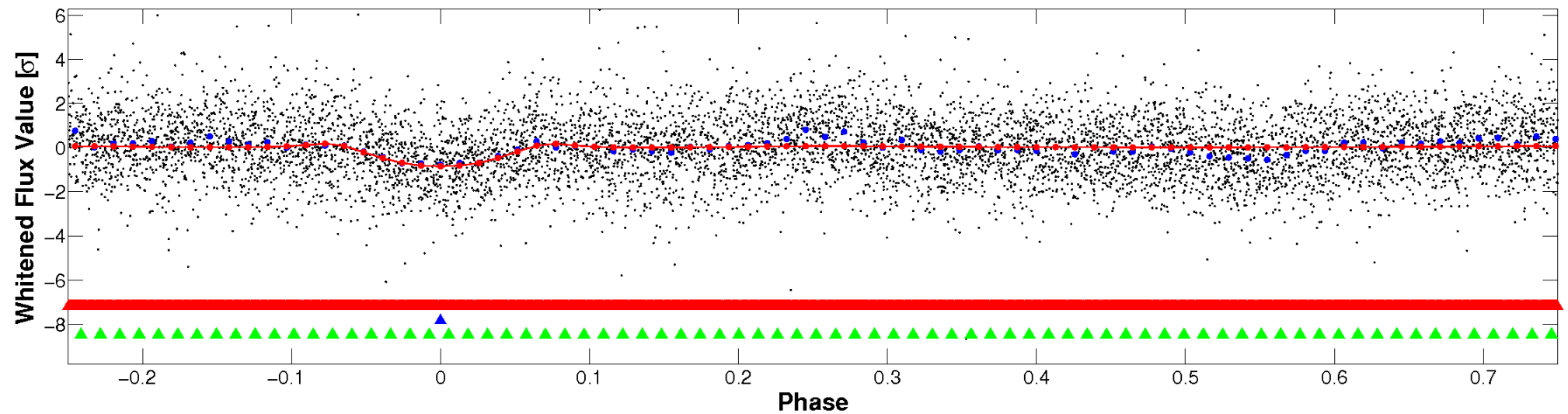


# Non-Whitened Vs. Whitened Light Curve

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

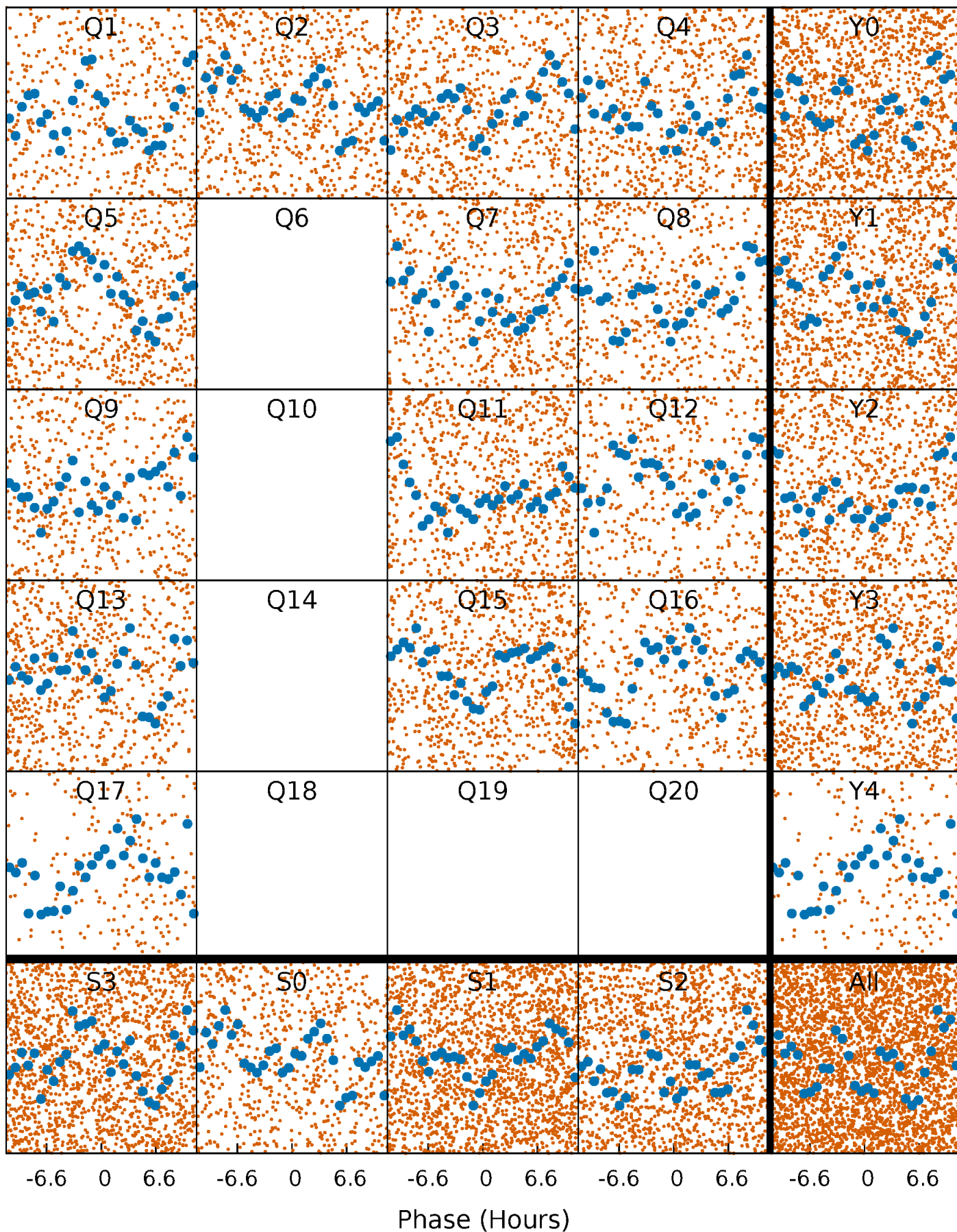


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



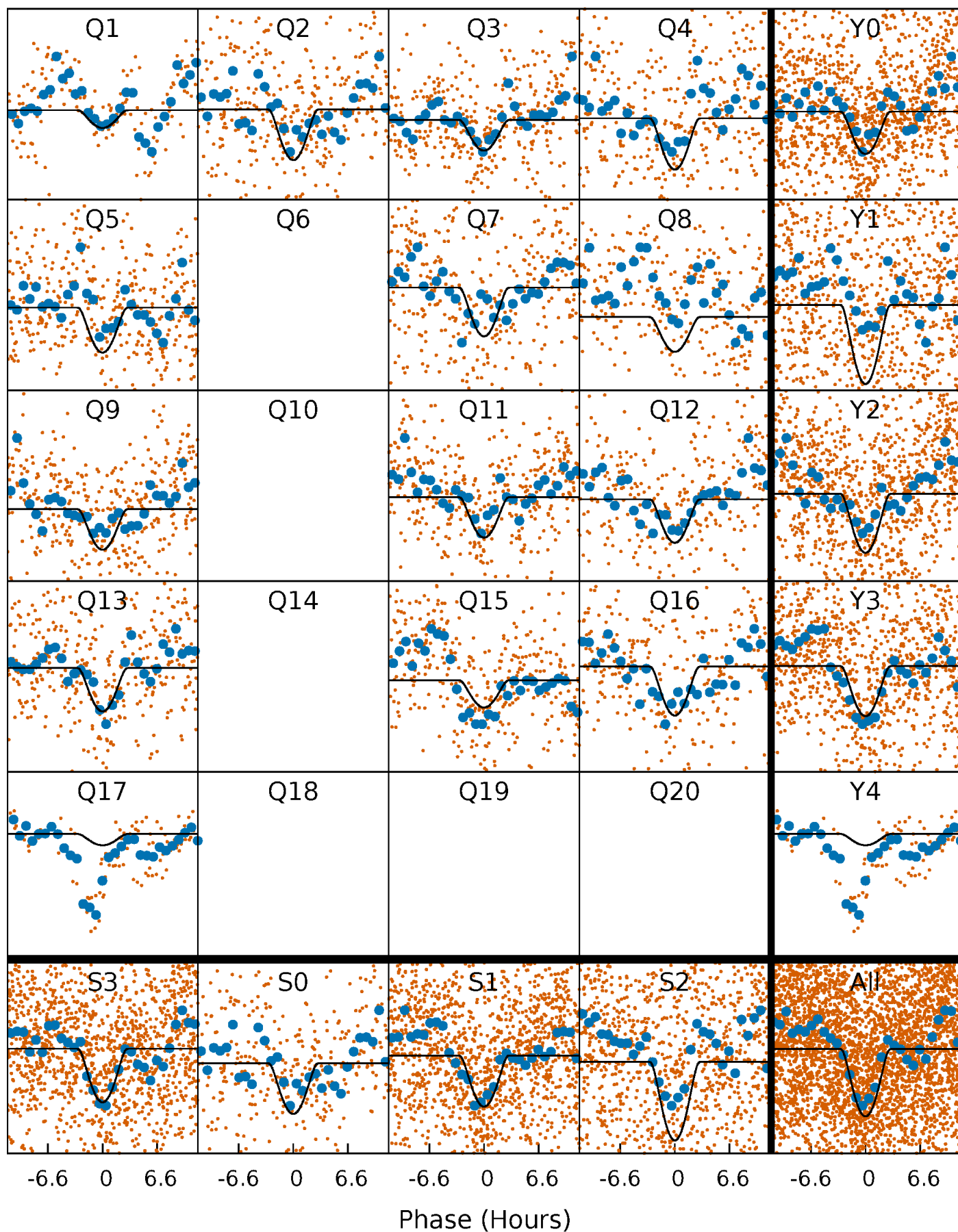
# PDC Quarter-Phased Transit Curves

TCE 003453272-02   P= 1.583335 Days    $T_0=131.923829$  (BKJD)



# DV Quarter-Phased Transit Curves

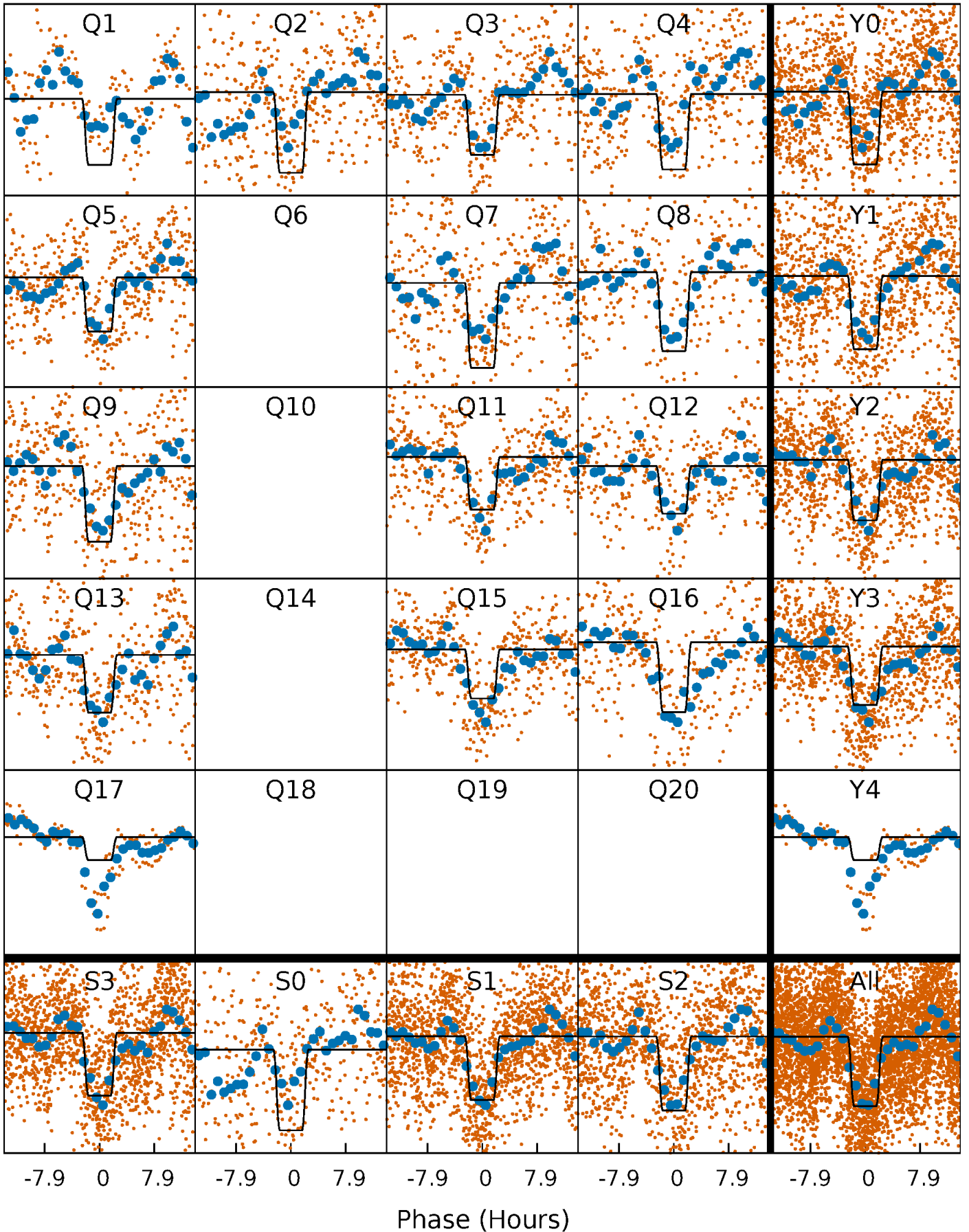
TCE 003453272-02 P= 1.583335 Days  $T_0=131.923829$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

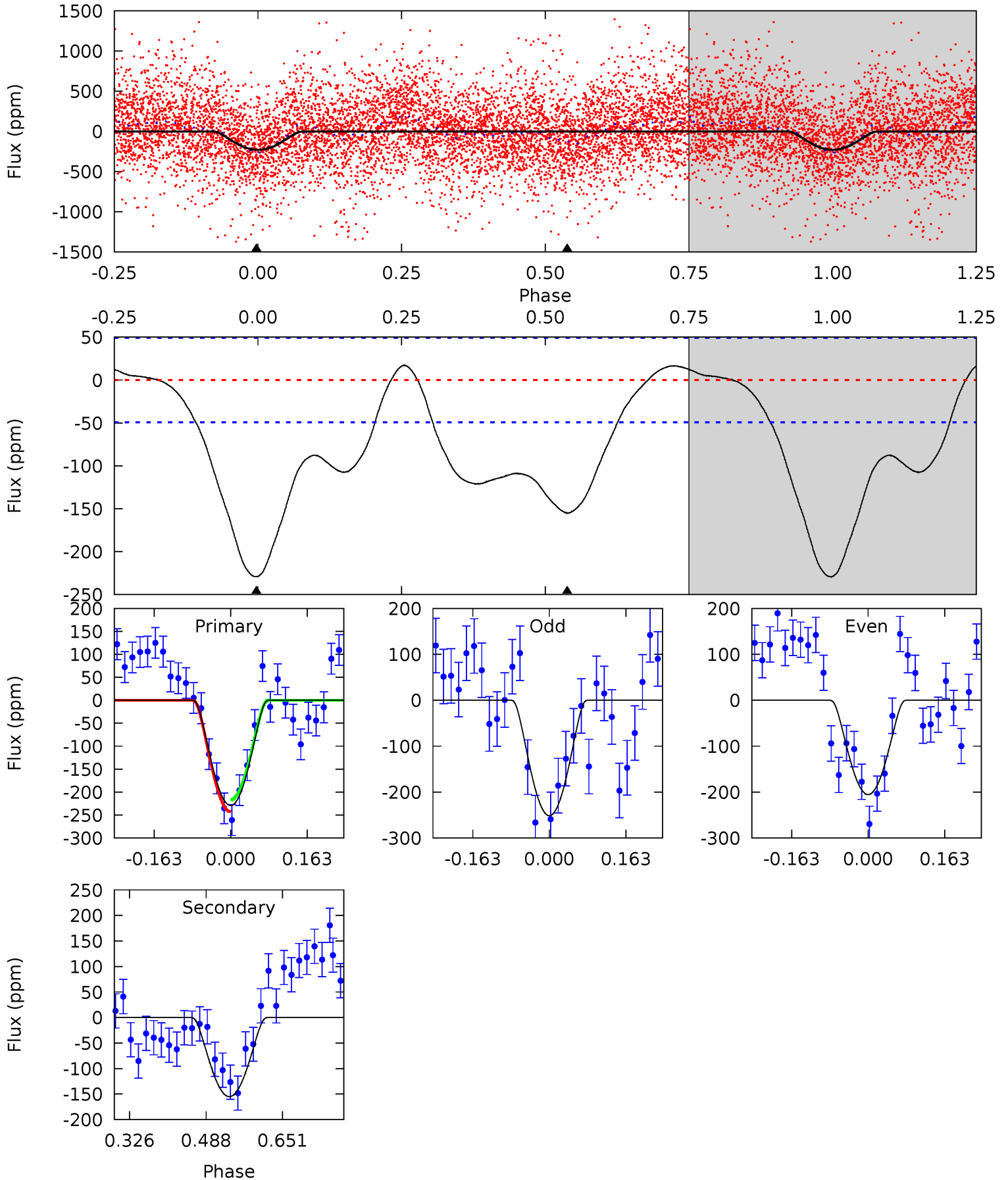
TCE 003453272-02     $P = 1.583257$  Days     $T_0 = 131.949669$  (BKJD)



# DV Model-Shift Uniqueness Test

003453272-02, P = 1.583335 Days, E = 130.340494 Days

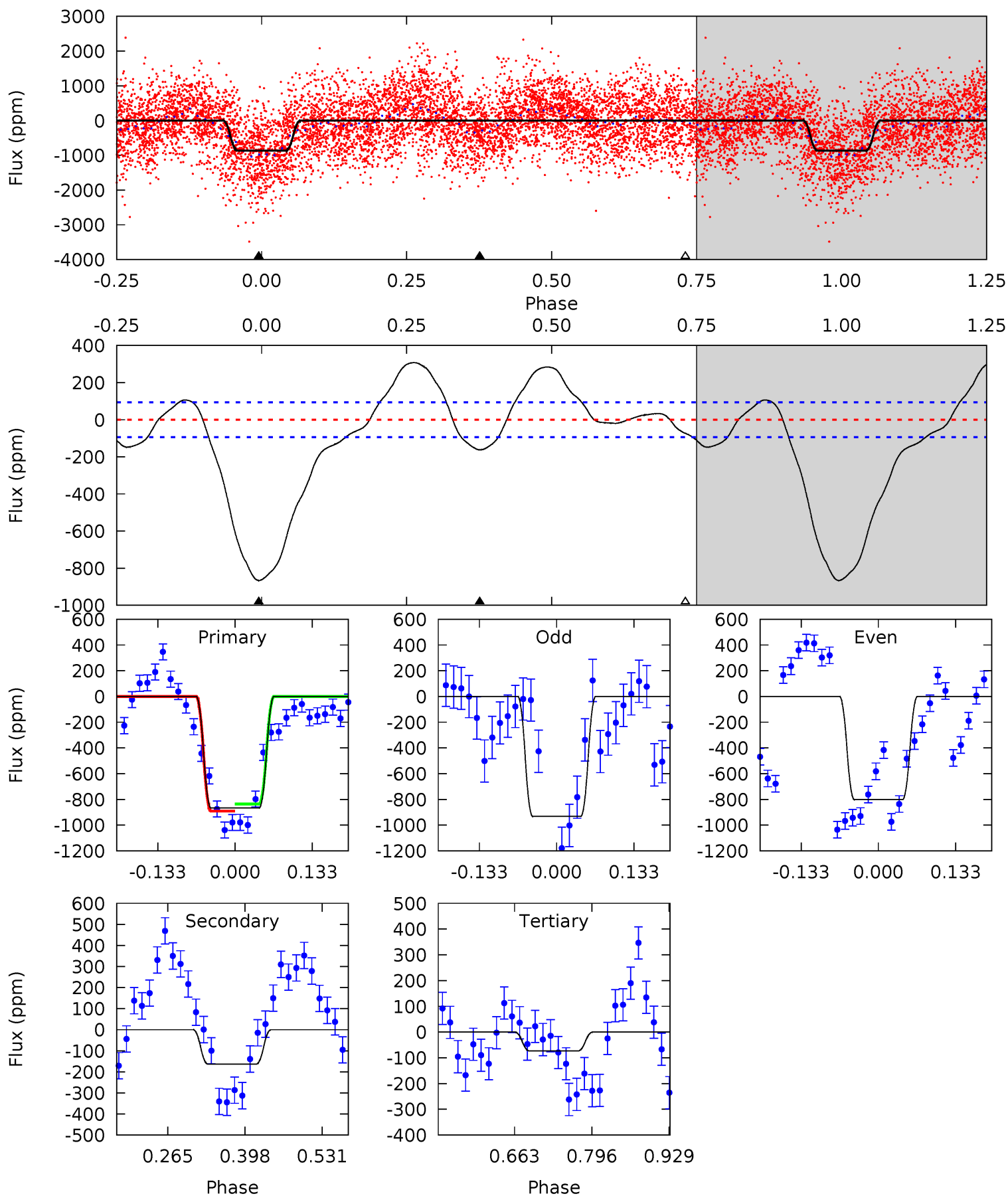
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.8	14.0	0	0	4.46	1.40	4.25	20.8	20.8	14.0	14.0	2.09	0.50	0.07	1.19



# Alt Model-Shift Uniqueness Test

003453272-02, P = 1.583257 Days, E = 130.366412 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
41.6	7.84	3.53	0	4.51	1.50	5.00	38.1	41.6	4.31	7.84	3.11	1.00	0.26	1.26



### Stellar Parameters For KIC 003453272

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7103^{+199}_{-274}$	$4.284^{+0.087}_{-0.203}$	$-0.300^{+0.250}_{-0.350}$	$1.362^{+0.460}_{-0.197}$	$1.307^{+0.200}_{-0.200}$	$0.729^{+0.340}_{-0.369}$
	+3%/-4%	+2%/-5%	+83%/-117%	+34%/-14%	+15%/-15%	+47%/-51%
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 003453272-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-155 \pm 11$	$6.37^{+5.61}_{-4.03}$	$3022^{+232}_{-168}$	$3962^{+2309}_{-1048}$	$1.737^{+11.692}_{-1.246}$
Alt.	$-163 \pm 21$	$6.64^{+5.85}_{-4.06}$	$3041^{+219}_{-187}$	$3956^{+2120}_{-1081}$	$1.581^{+9.189}_{-1.111}$

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



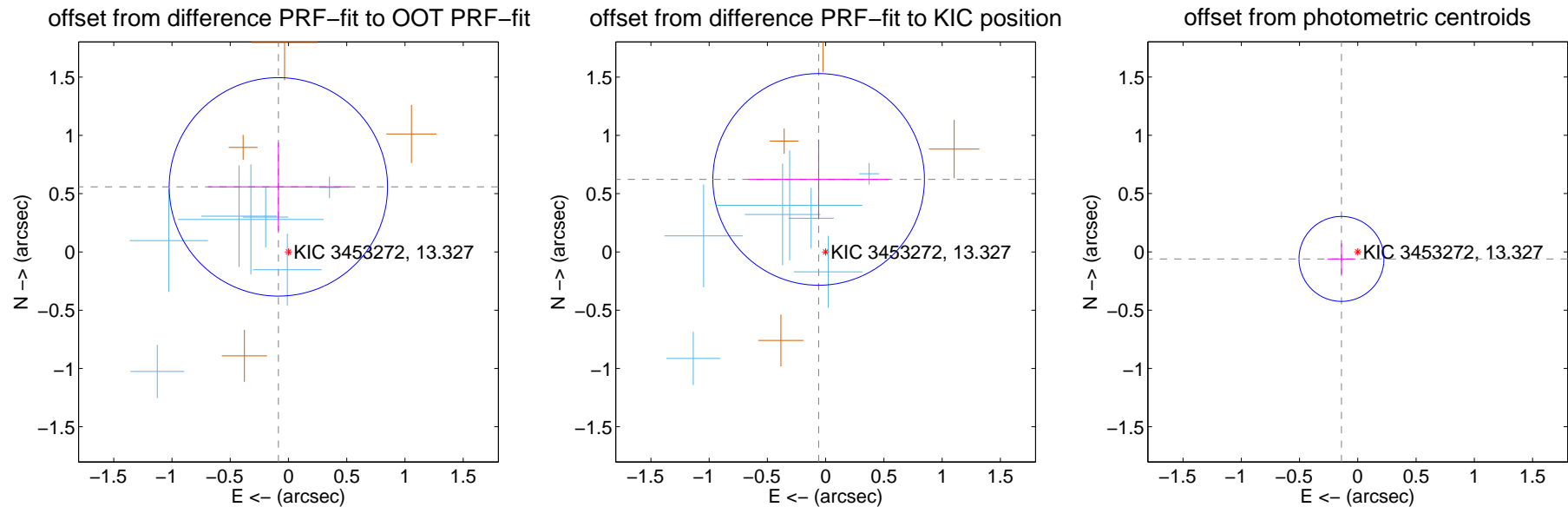
## DV Centroid Data

Supplemental centroid analysis for 003453272-02. Kepler magnitude: 13.33. Transit SNR 18.68

There are 8 quarters with good PRF difference image offsets

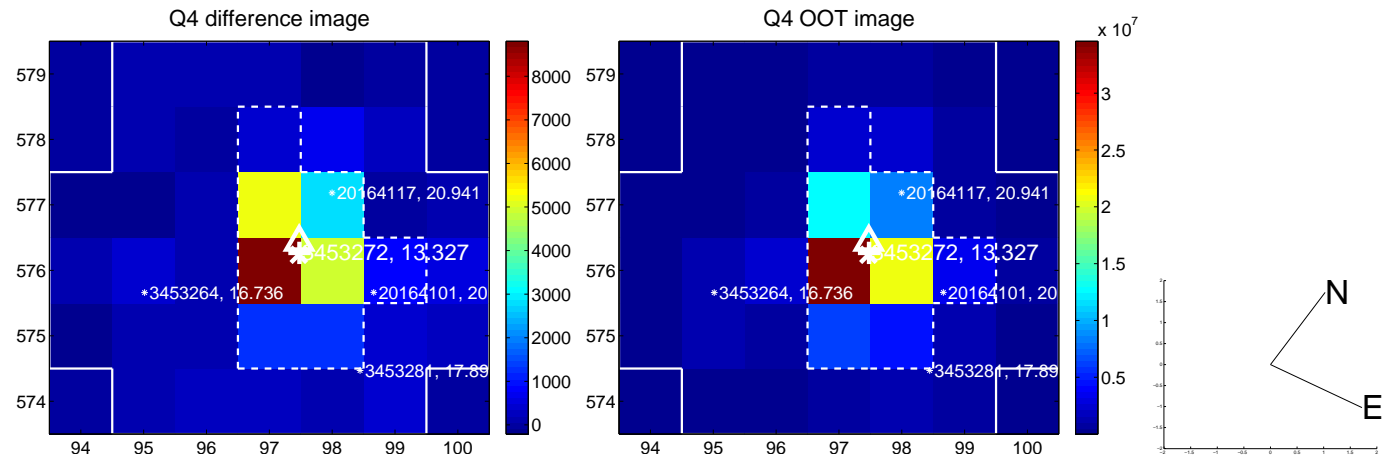
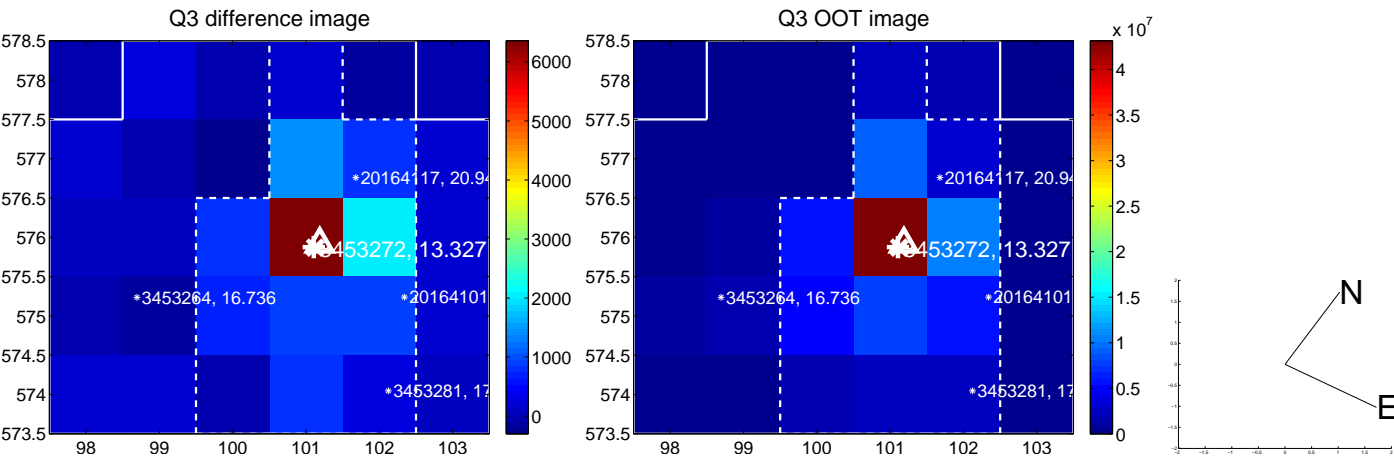
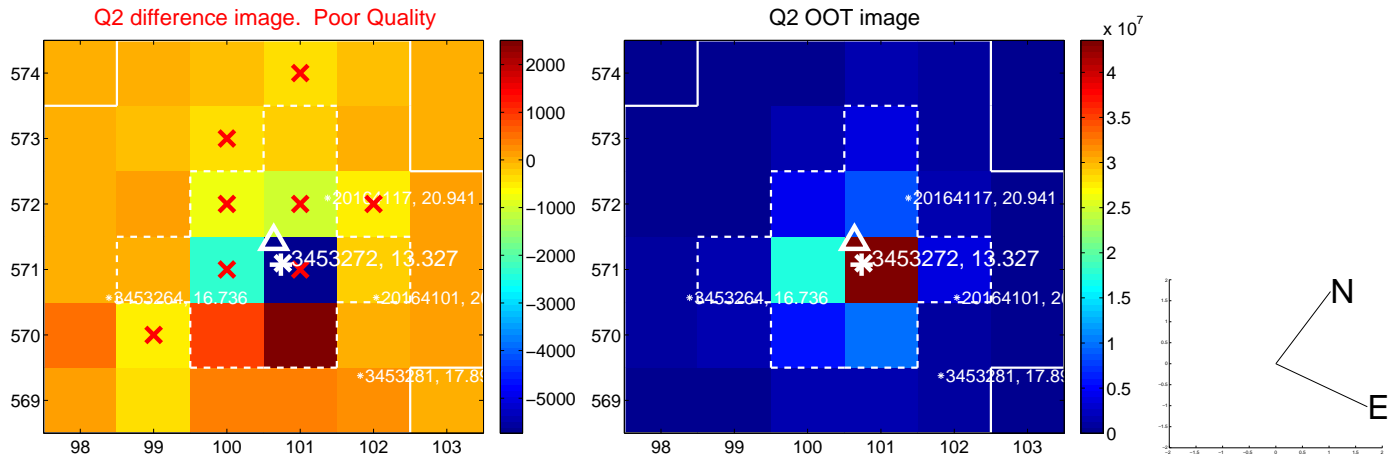
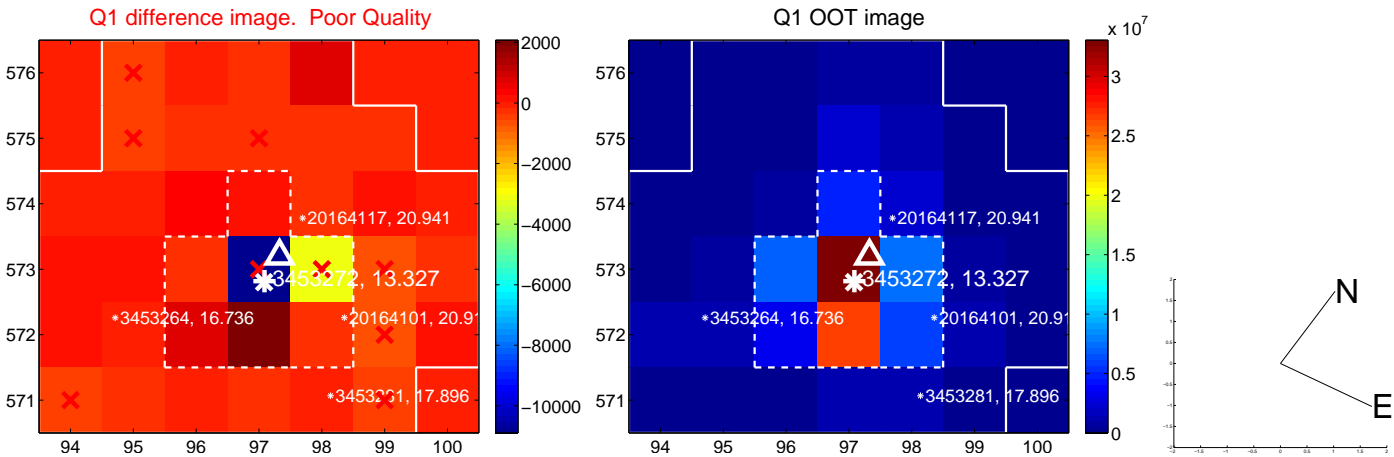
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.565 \pm 0.312$	1.81	$0.087 \pm 0.604$	$0.558 \pm 0.379$
PRF-fit source offset from KIC position	$0.625 \pm 0.303$	2.07	$0.060 \pm 0.604$	$0.622 \pm 0.342$
photometric centroid source offset	$0.15 \pm 0.12$	1.26	$0.14 \pm 0.12$	$-0.06 \pm 0.13$

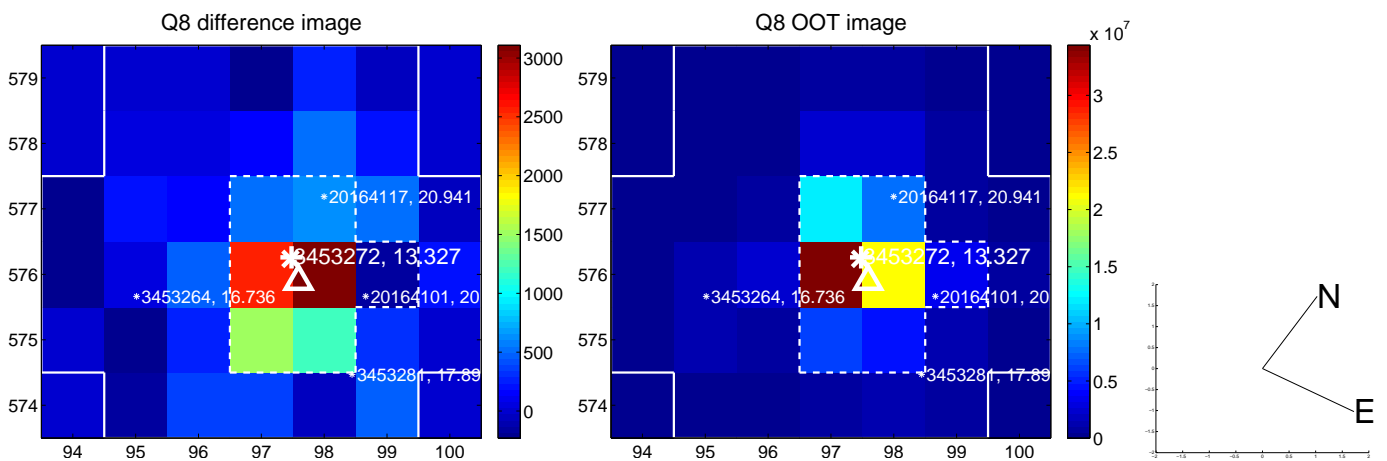
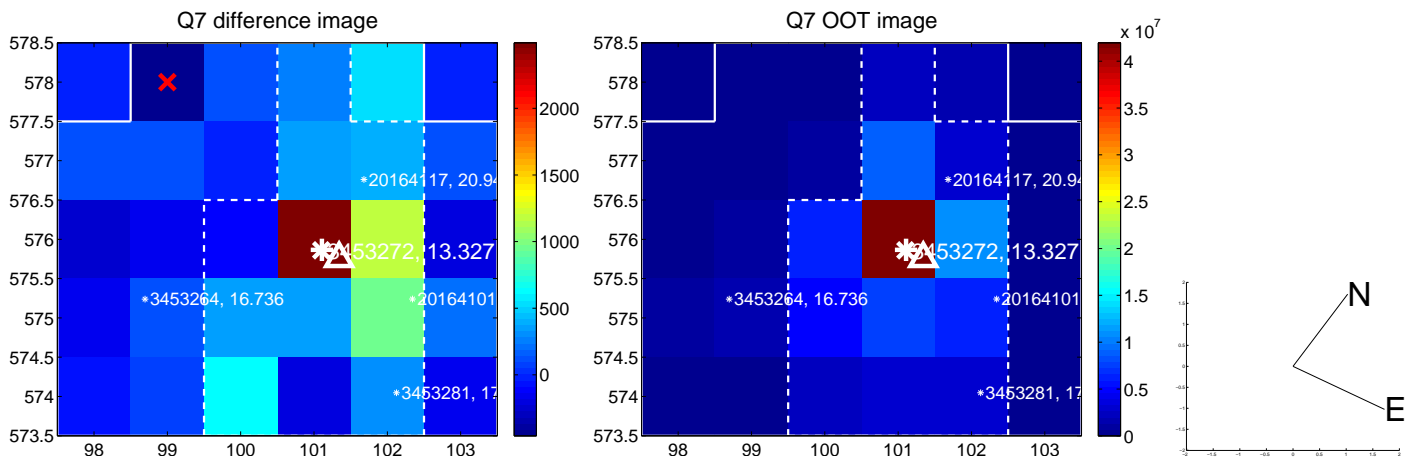
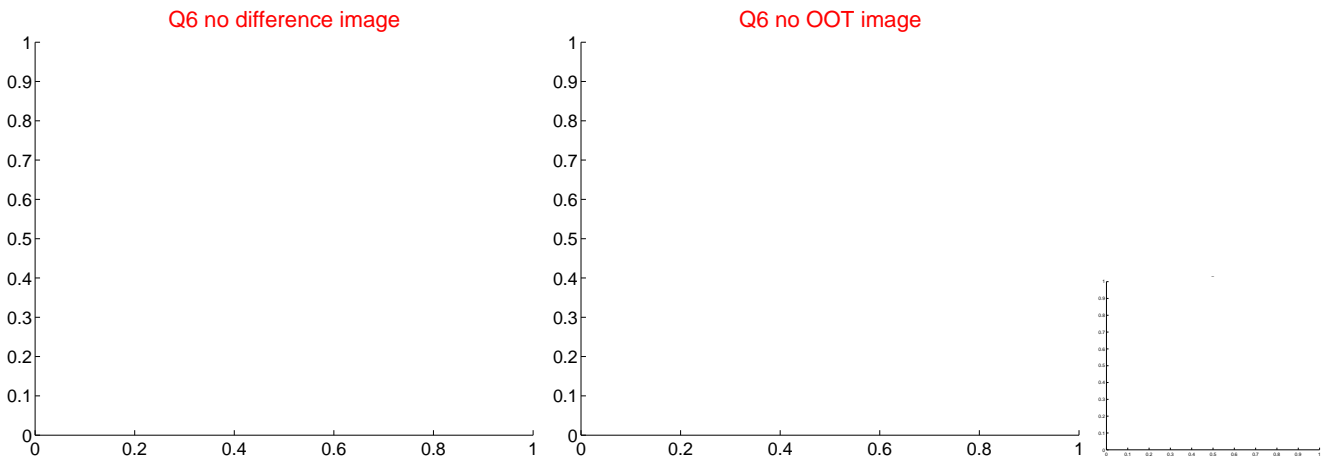
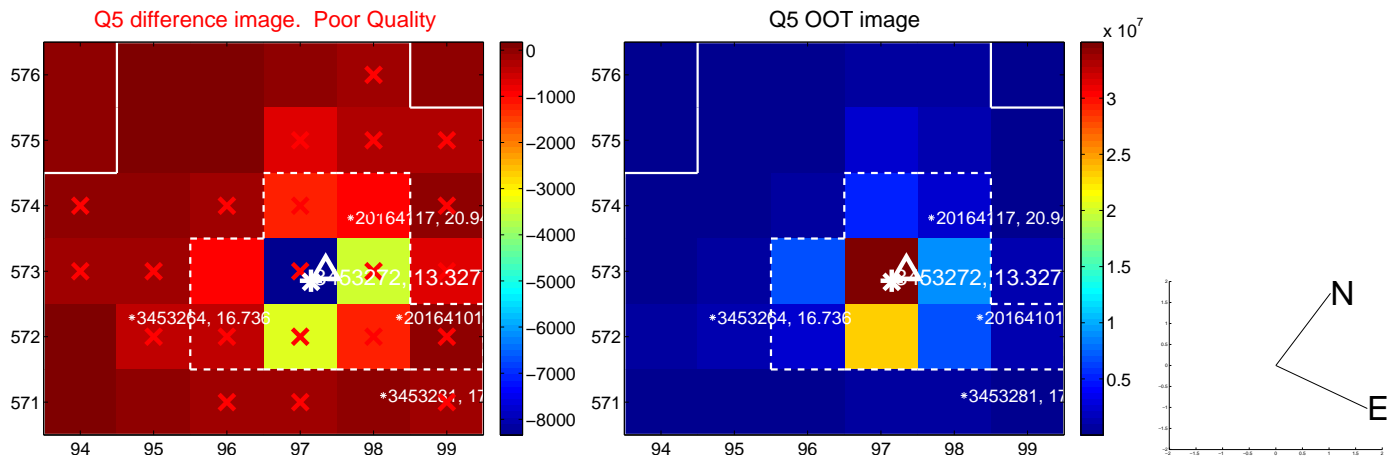


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

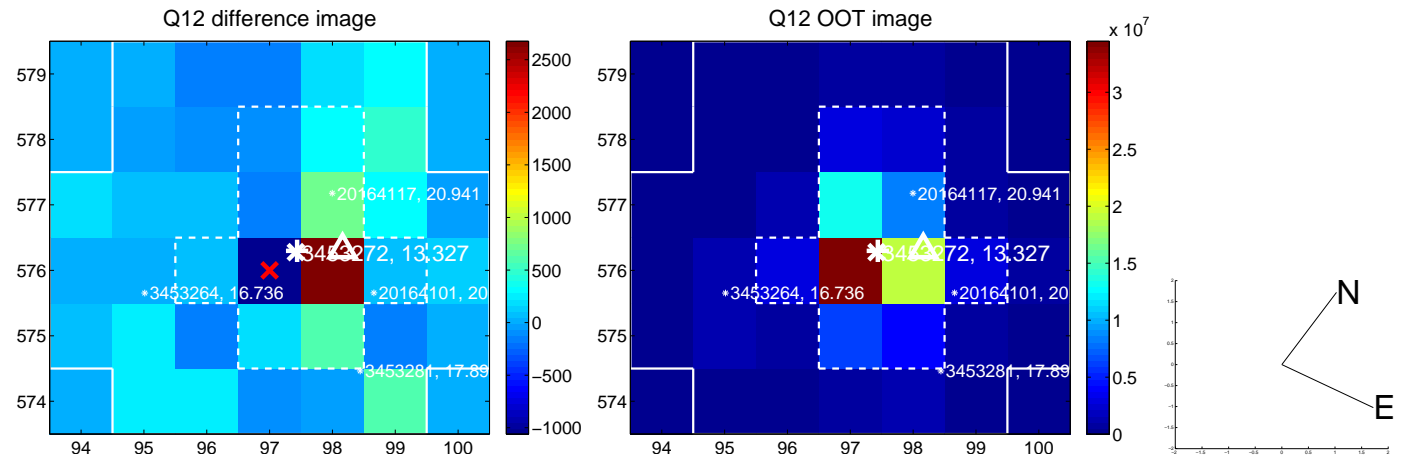
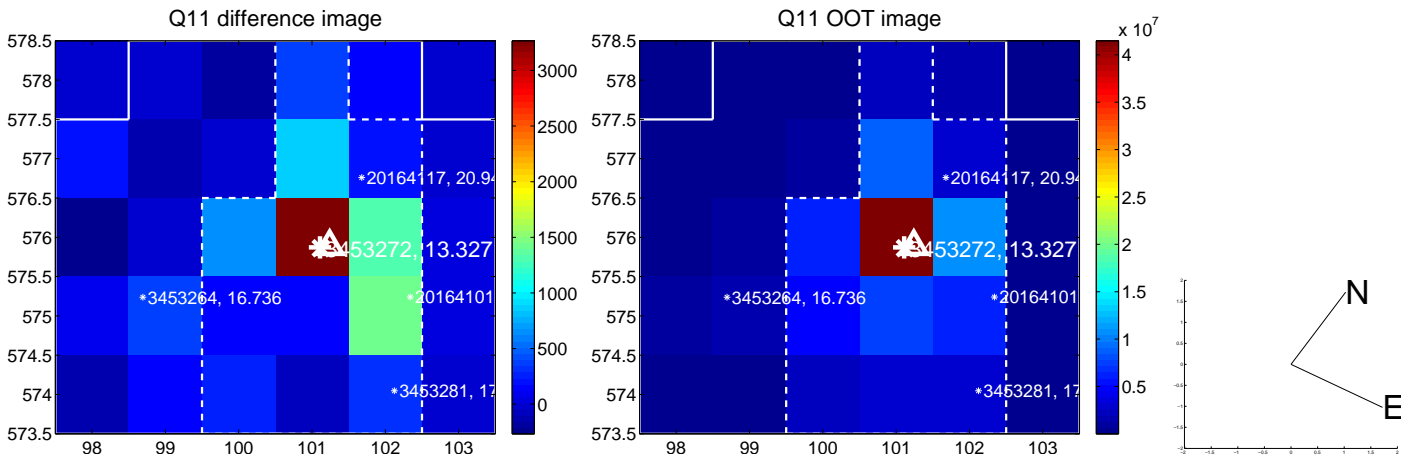
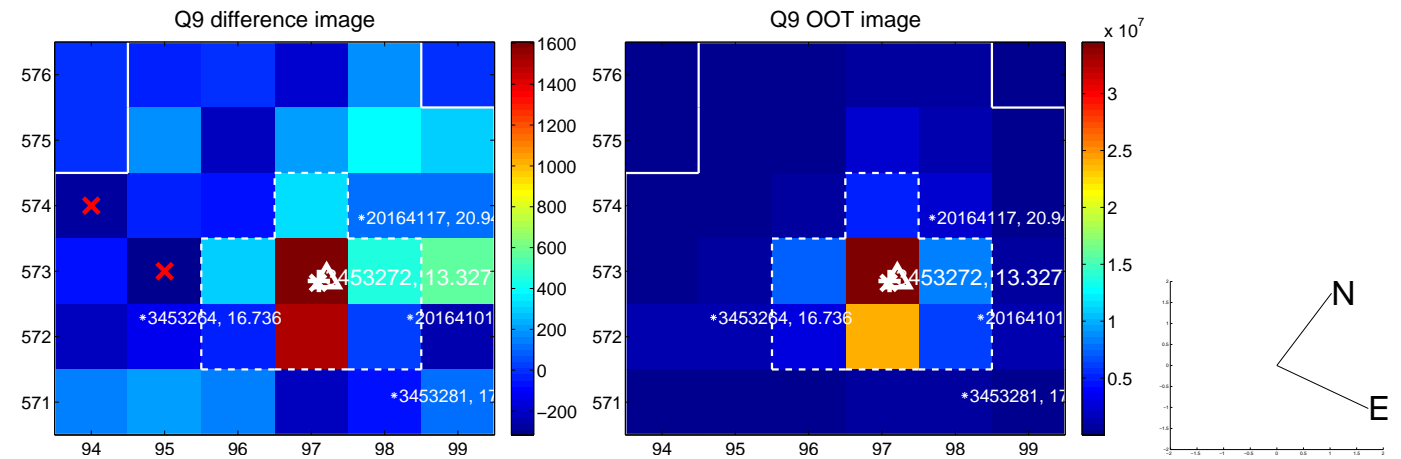
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



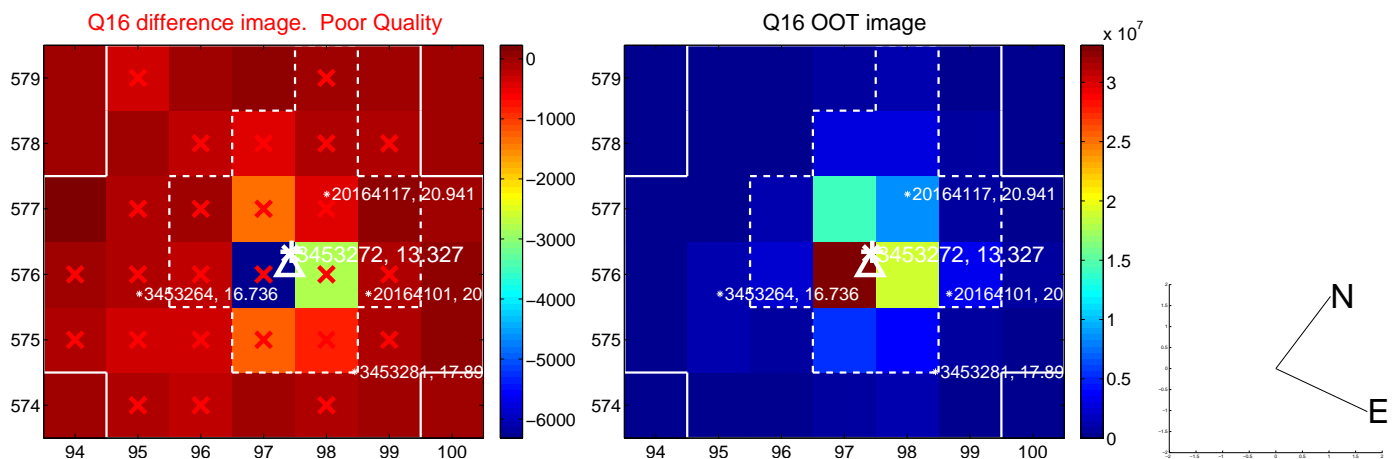
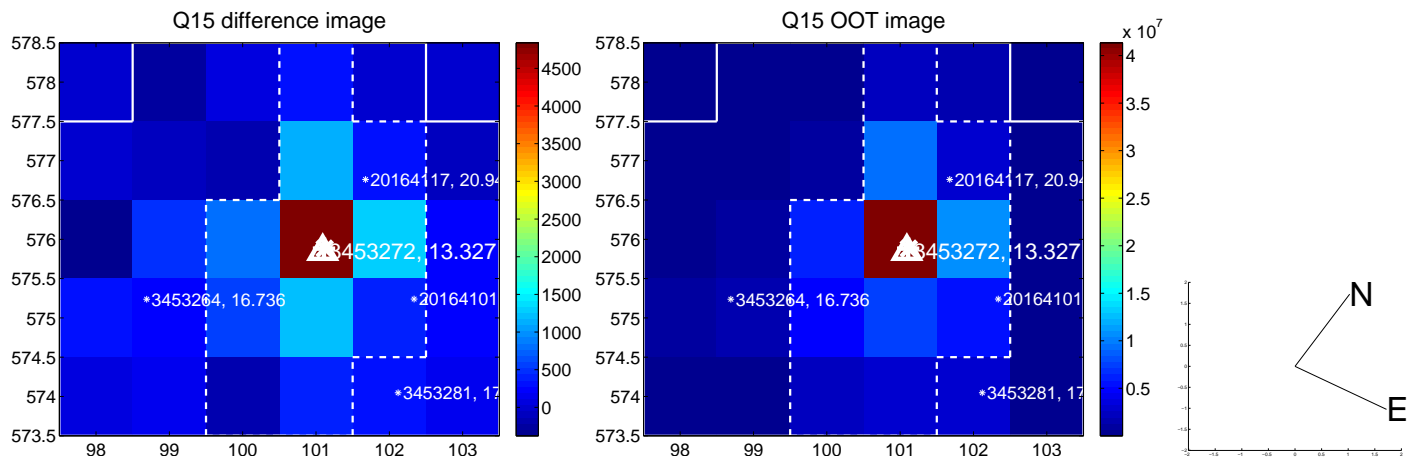
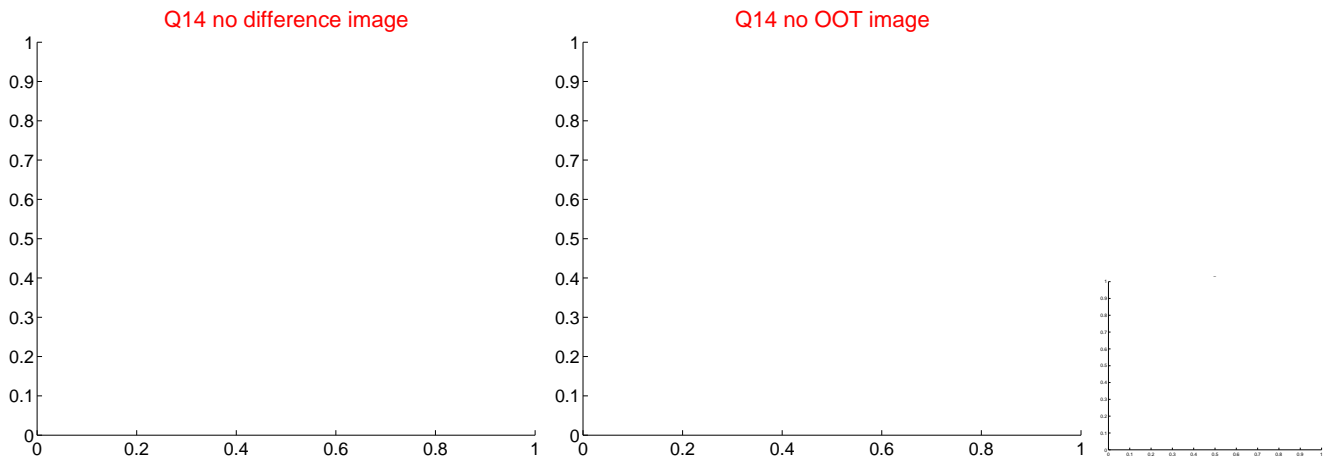
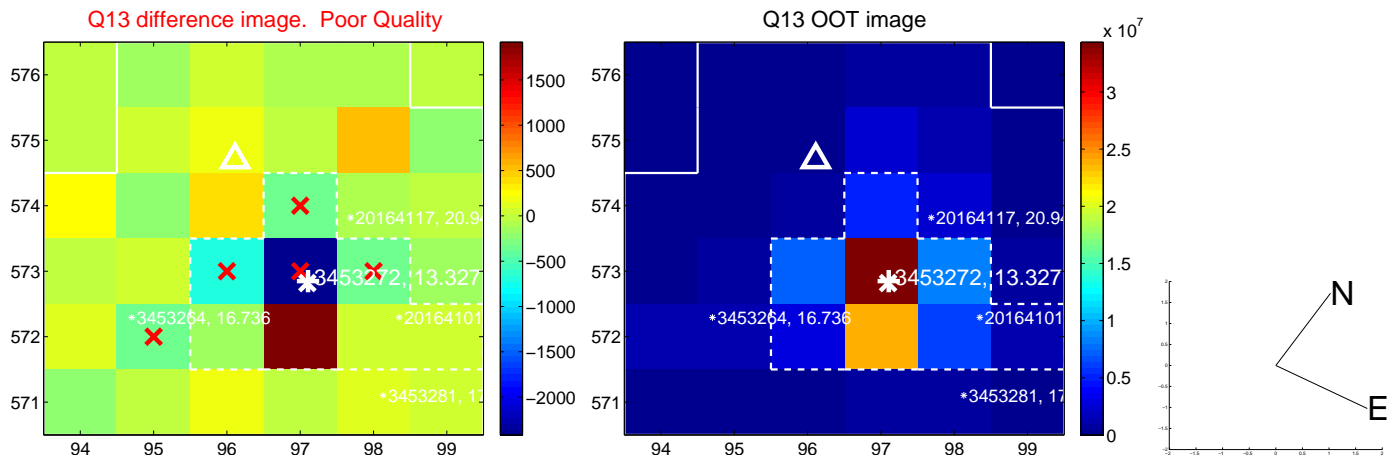
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

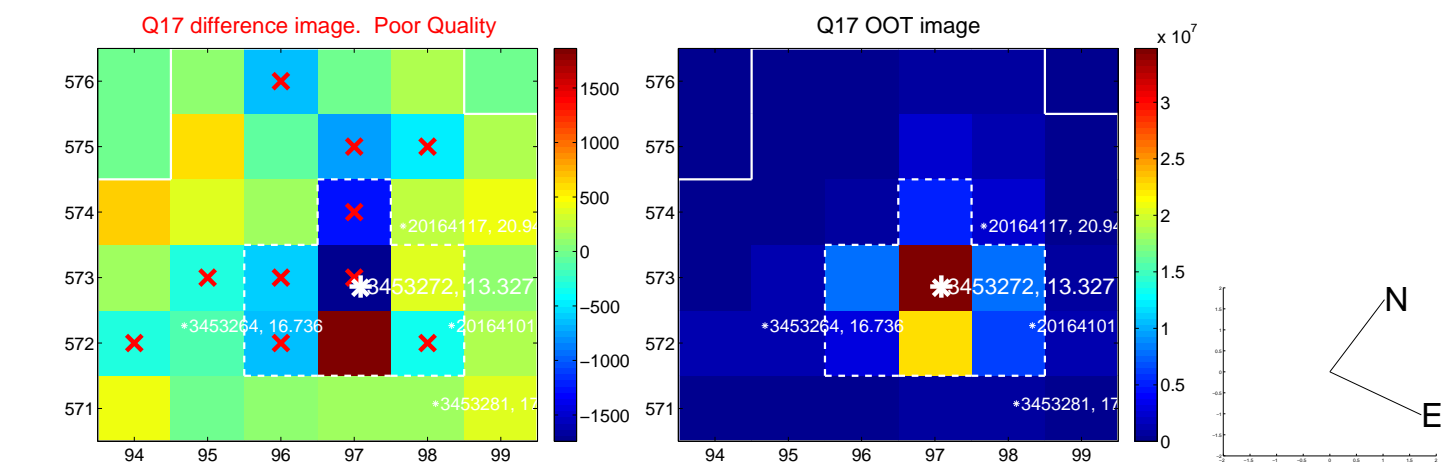


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

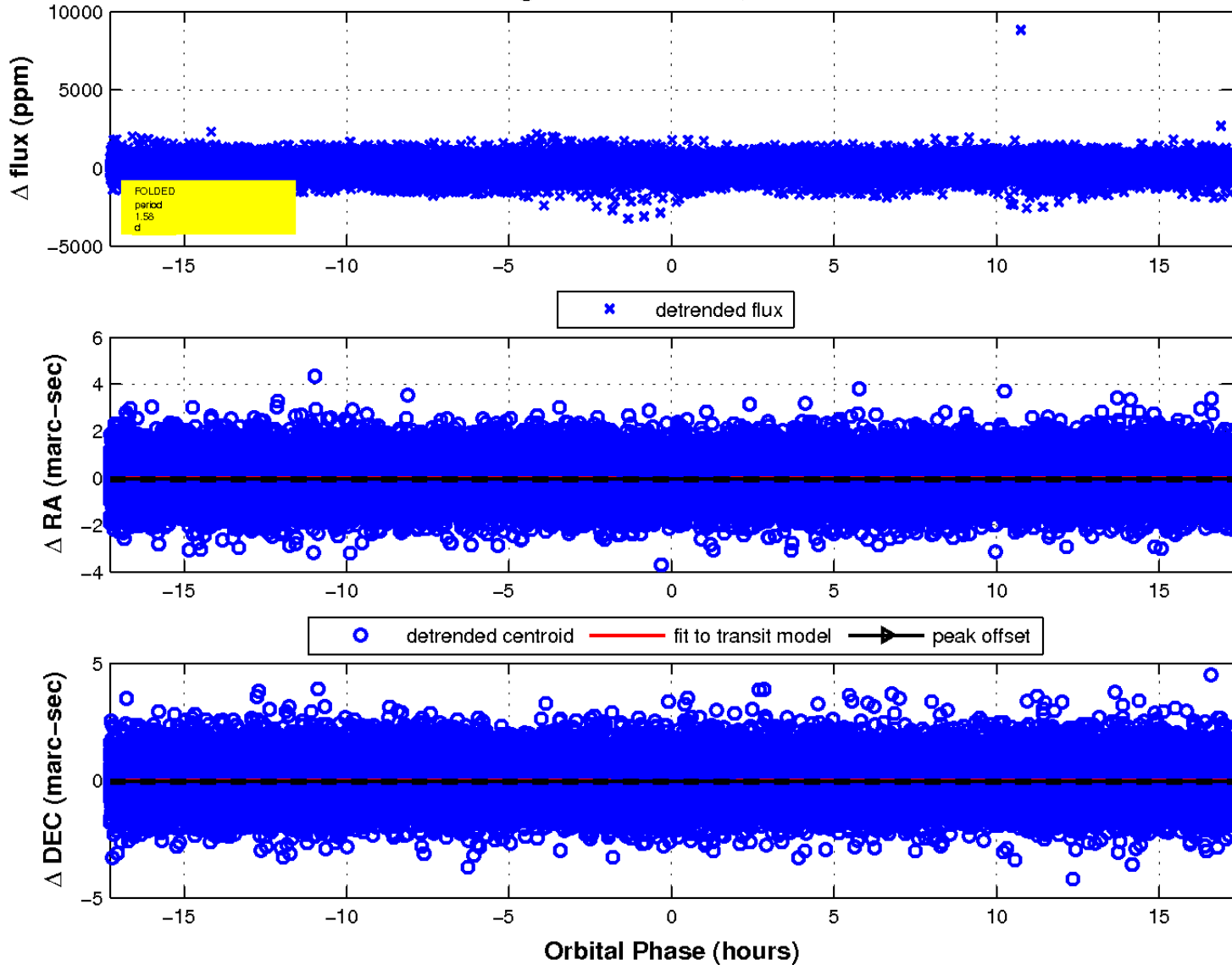




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

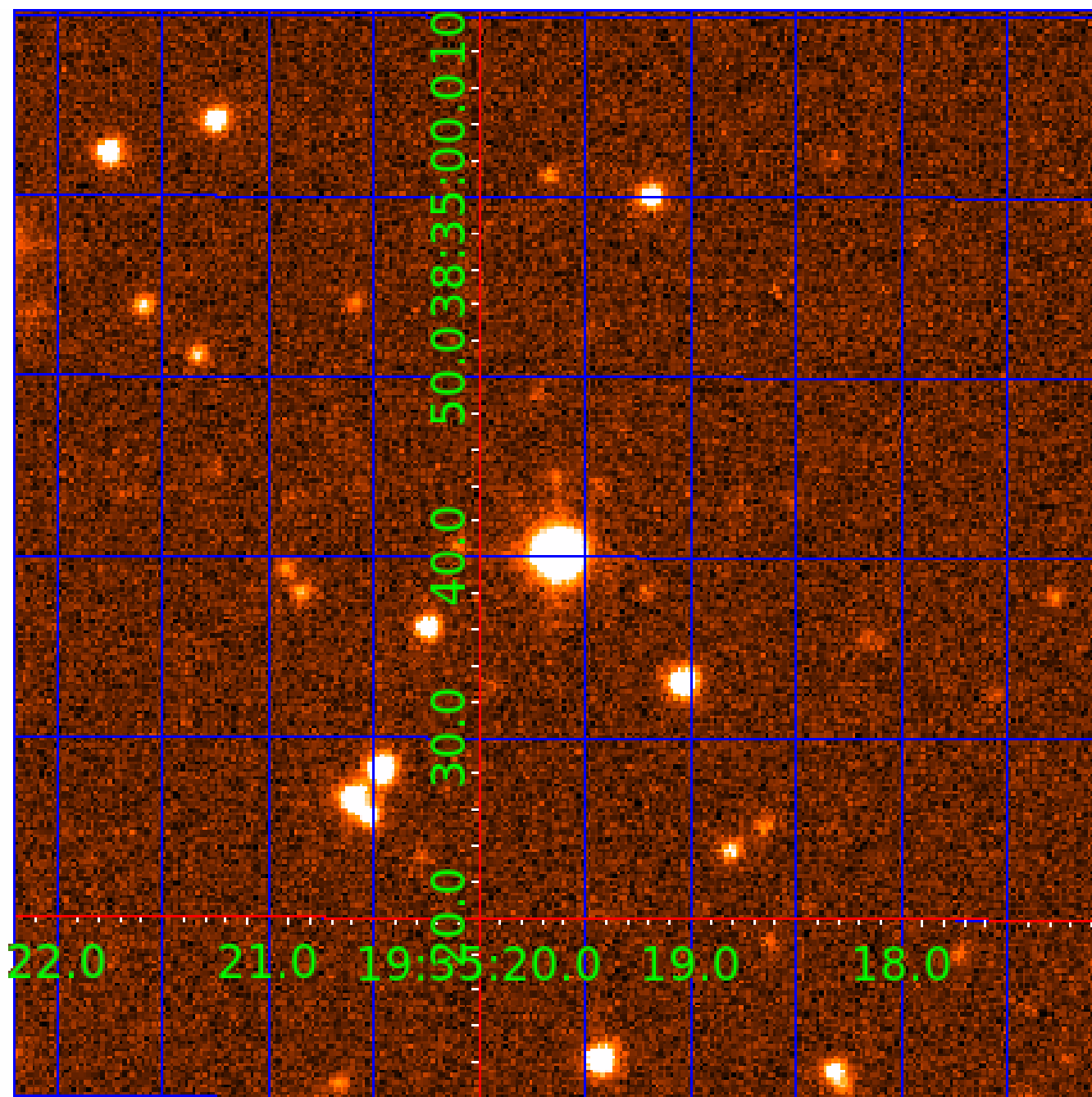


### fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



# KIC 003453272

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003453272-01	OBS	No	0.753914	131.995425	33.6	4.996	7.5	7.6	1.36	7103	0.80	13500.53
003453272-02	OBS	No	1.583335	131.923829	322.2	5.757	13.4	18.7	1.36	7103	4.65	5019.76
003453272-03	OBS	No	14.291134	145.154691	614.3	5.175	12.6	11.9	1.36	7103	4.31	267.11

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003453272-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT
003453272-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
003453272-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

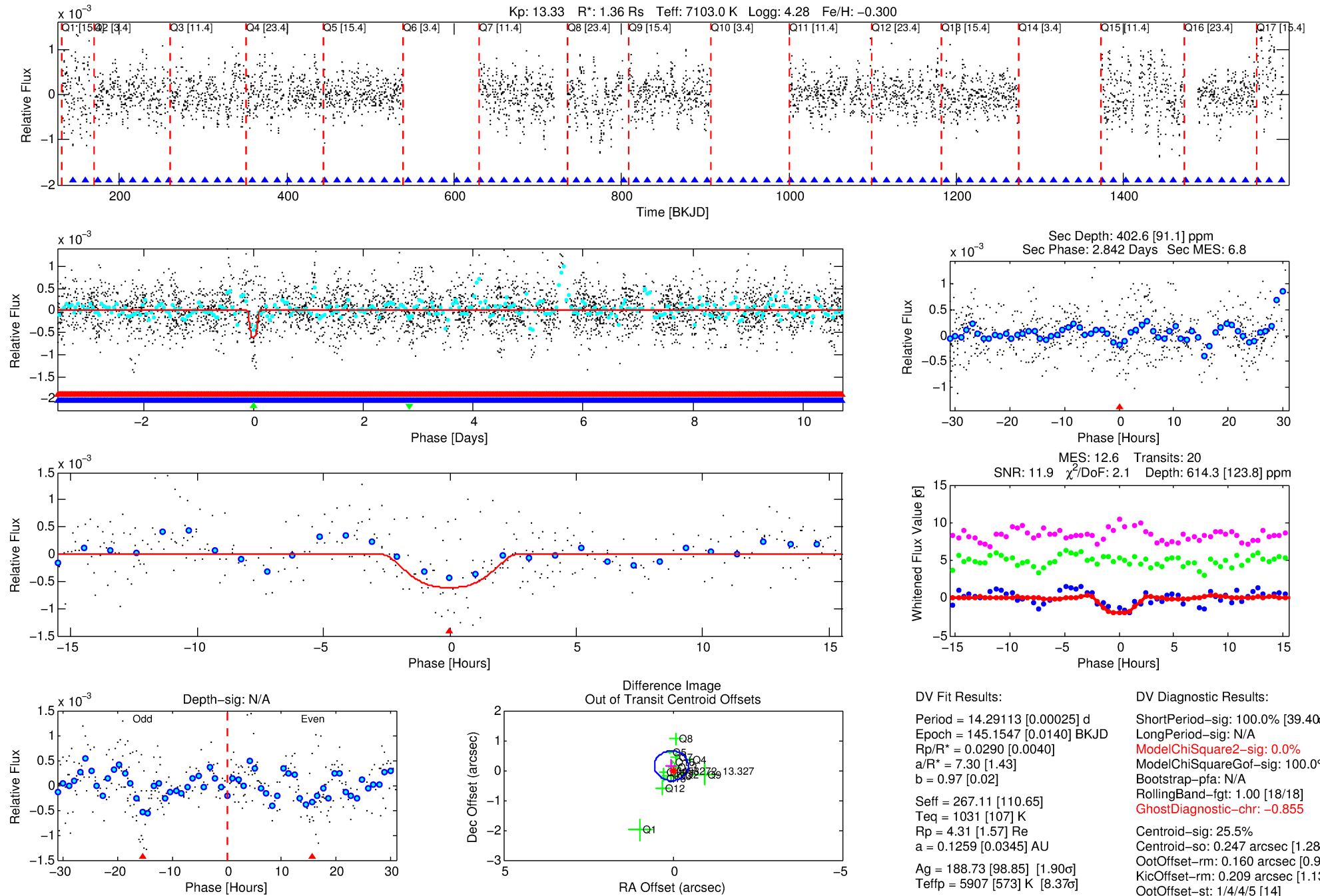
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 003453272-03

No Significant Match Found

# DV One-Page Summary

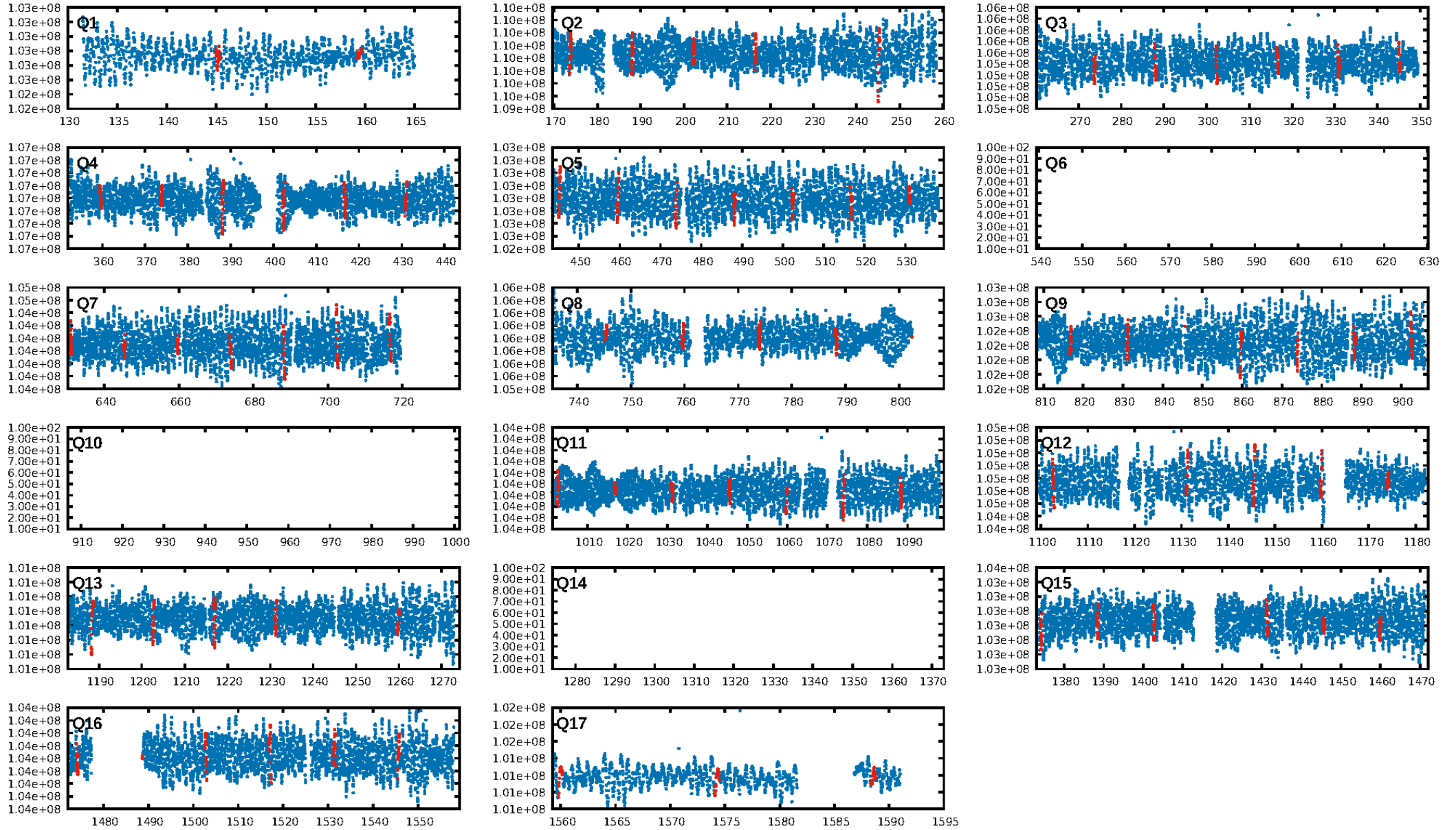
KIC: 3453272 Candidate: 3 of 3 Period: 14.291 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 21:14:09 Z

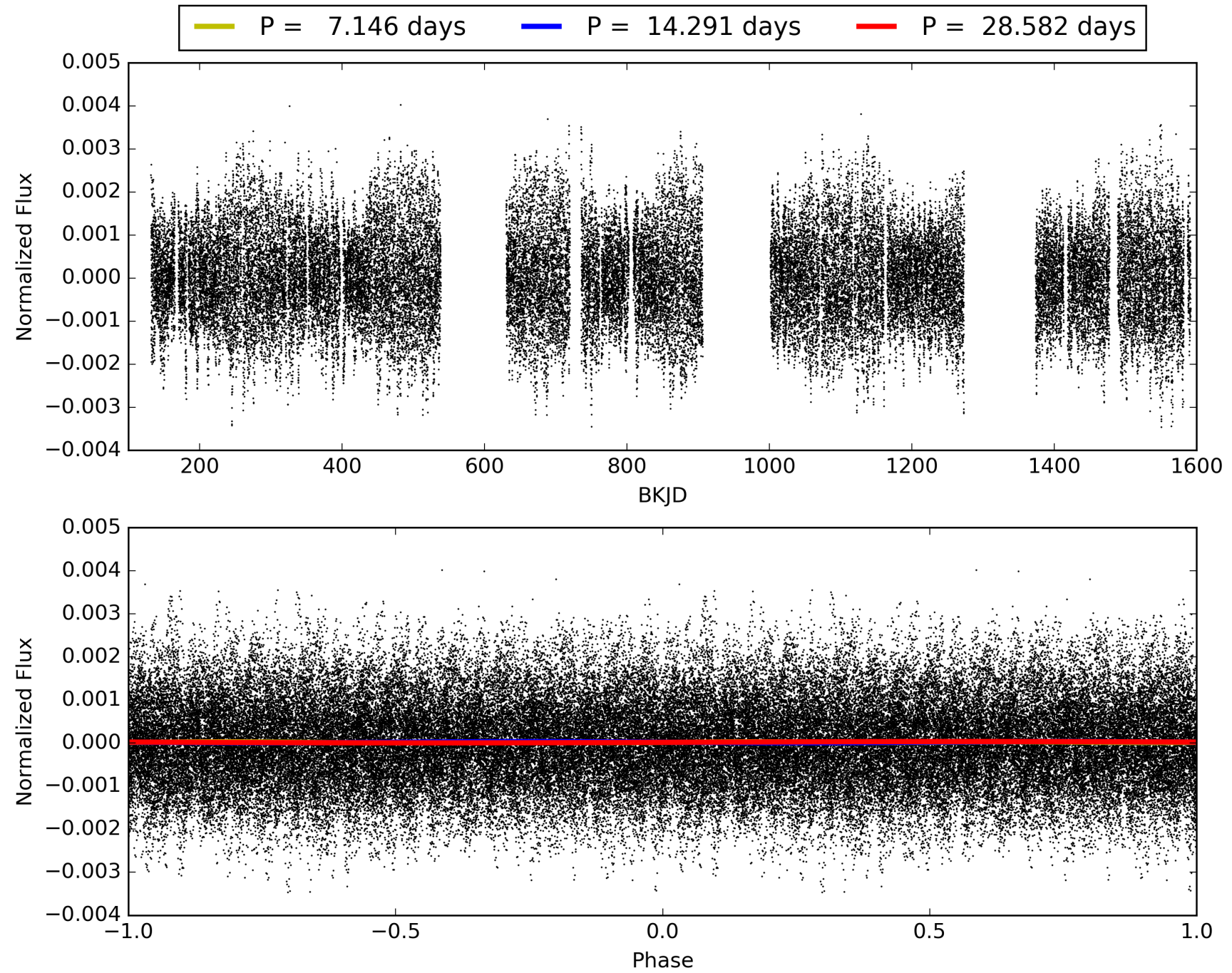
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 003453272-03, PDC Light Curves



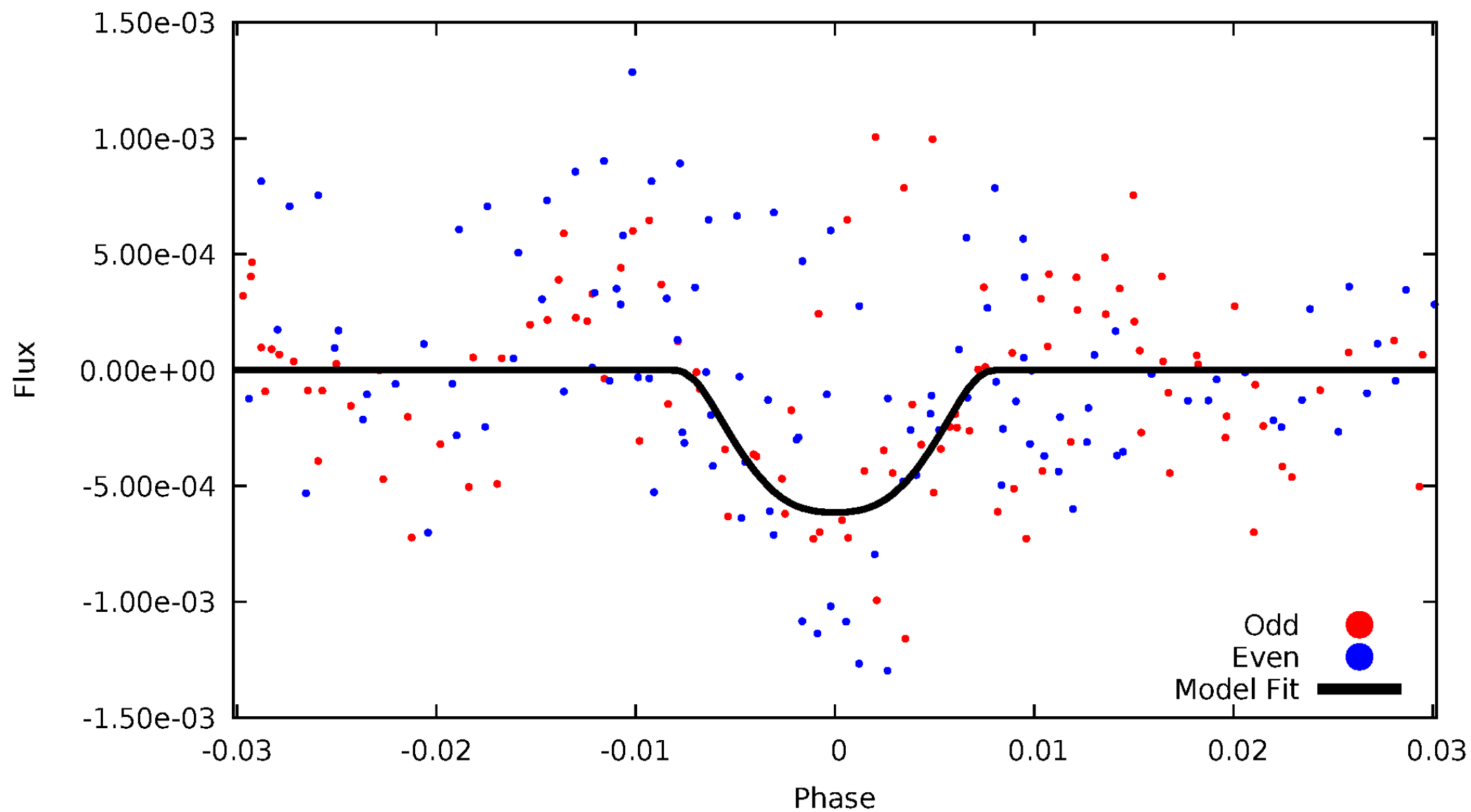


# TCE 003453272-03



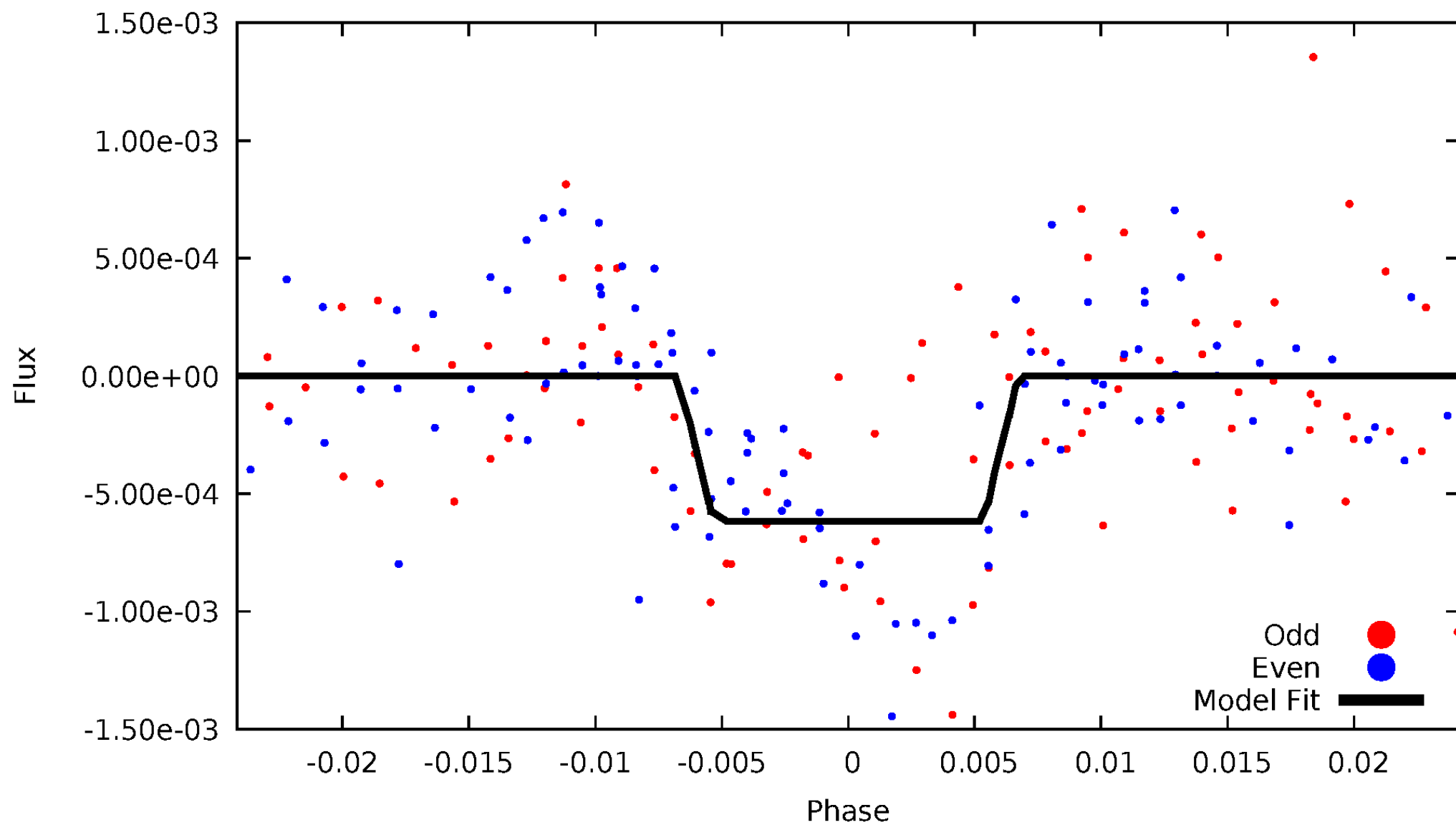
# DV Odd/Even

TCE 003453272-03



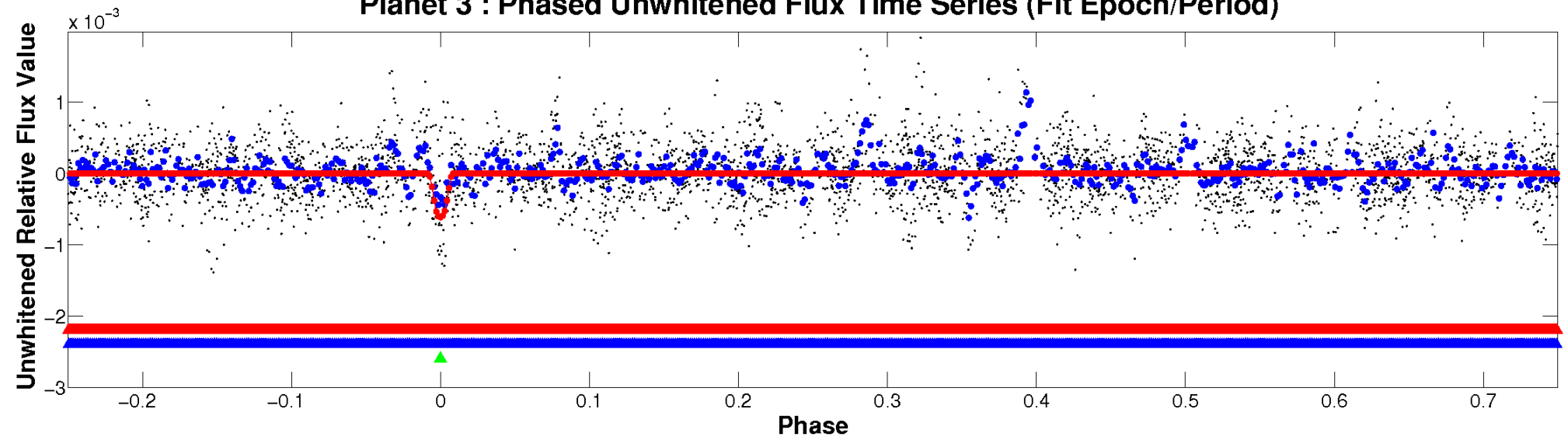
# ALT Odd/Even

TCE 003453272-03

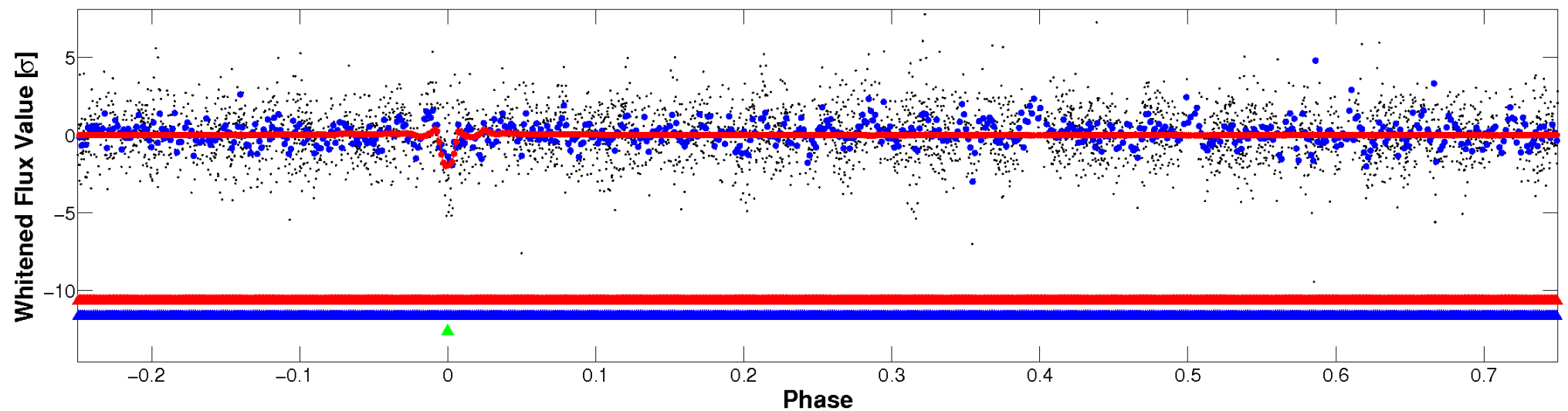


# Non-Whitened Vs. Whitened Light Curve

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

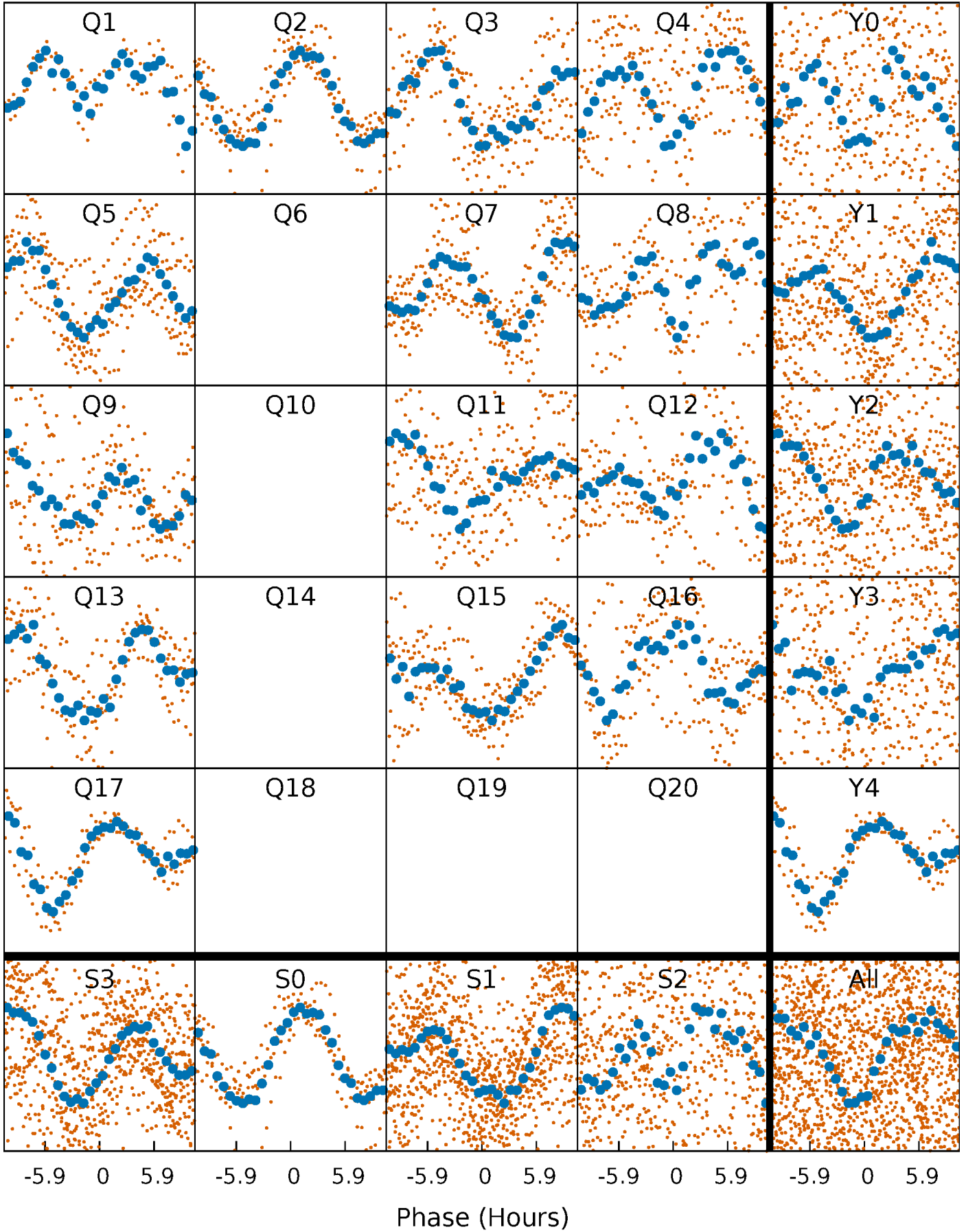


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

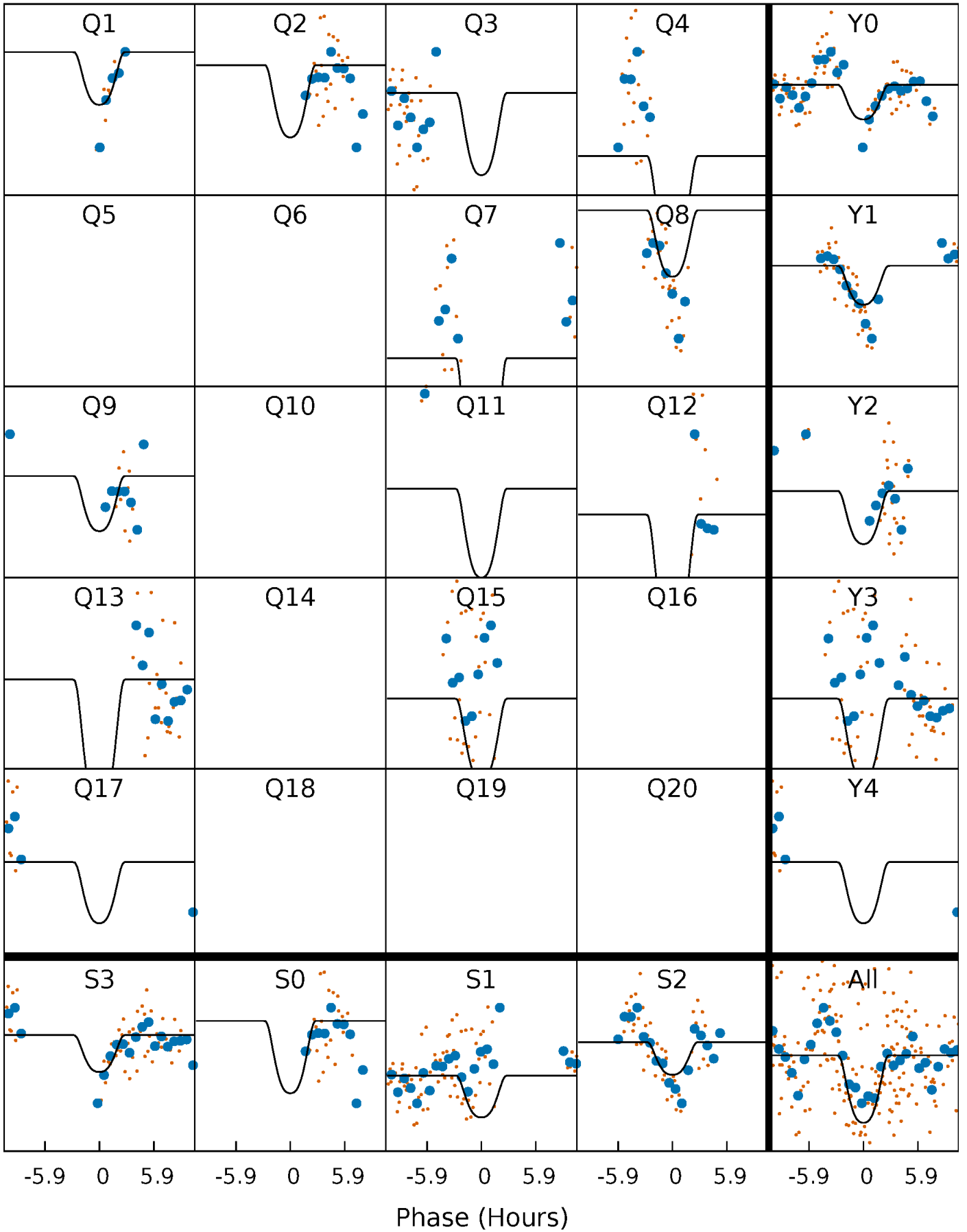
TCE 003453272-03 P= 14.291134 Days  $T_0=145.154691$  (BKJD)





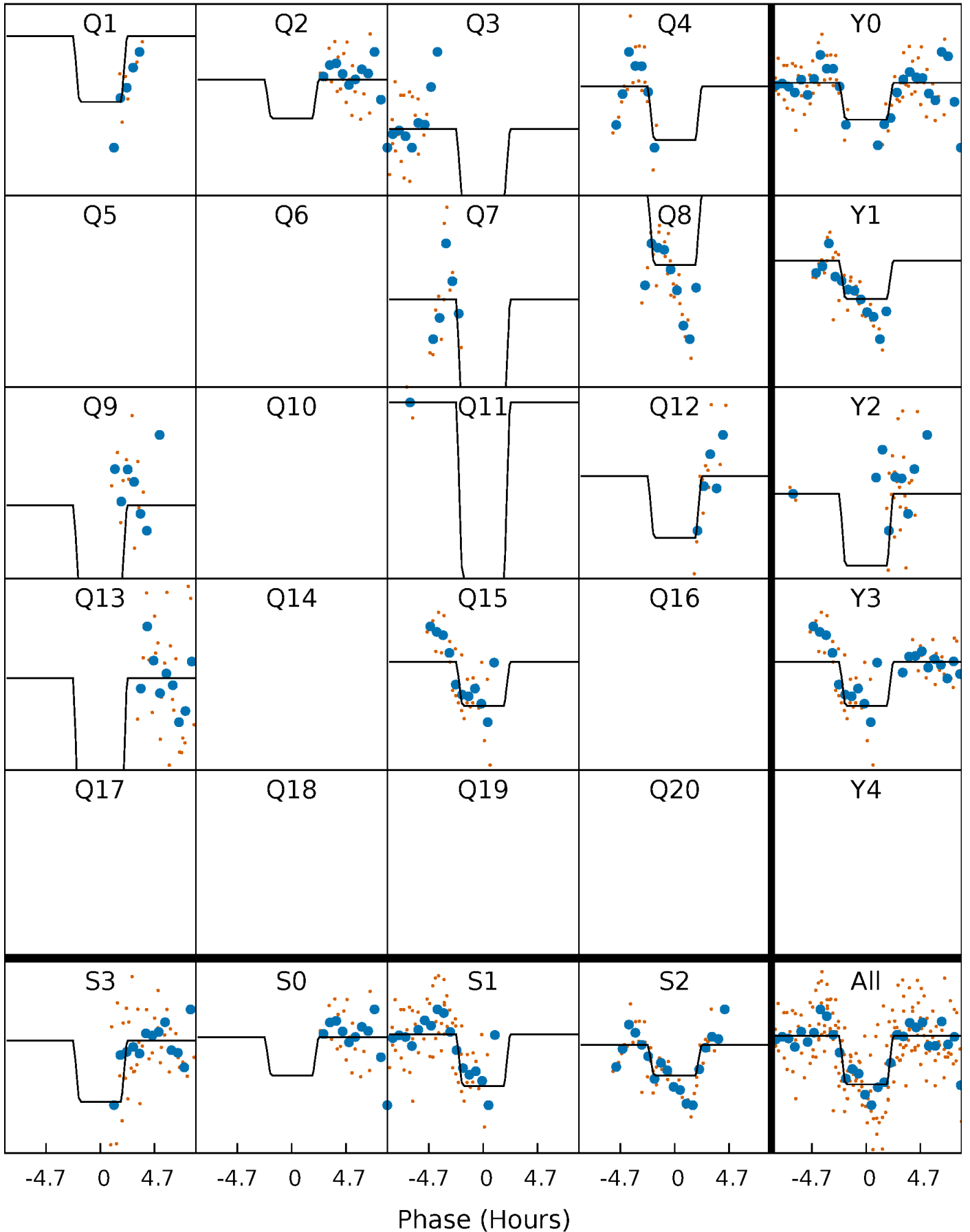
# DV Quarter-Phased Transit Curves

TCE 003453272-03   P= 14.291134 Days    $T_0=145.154691$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

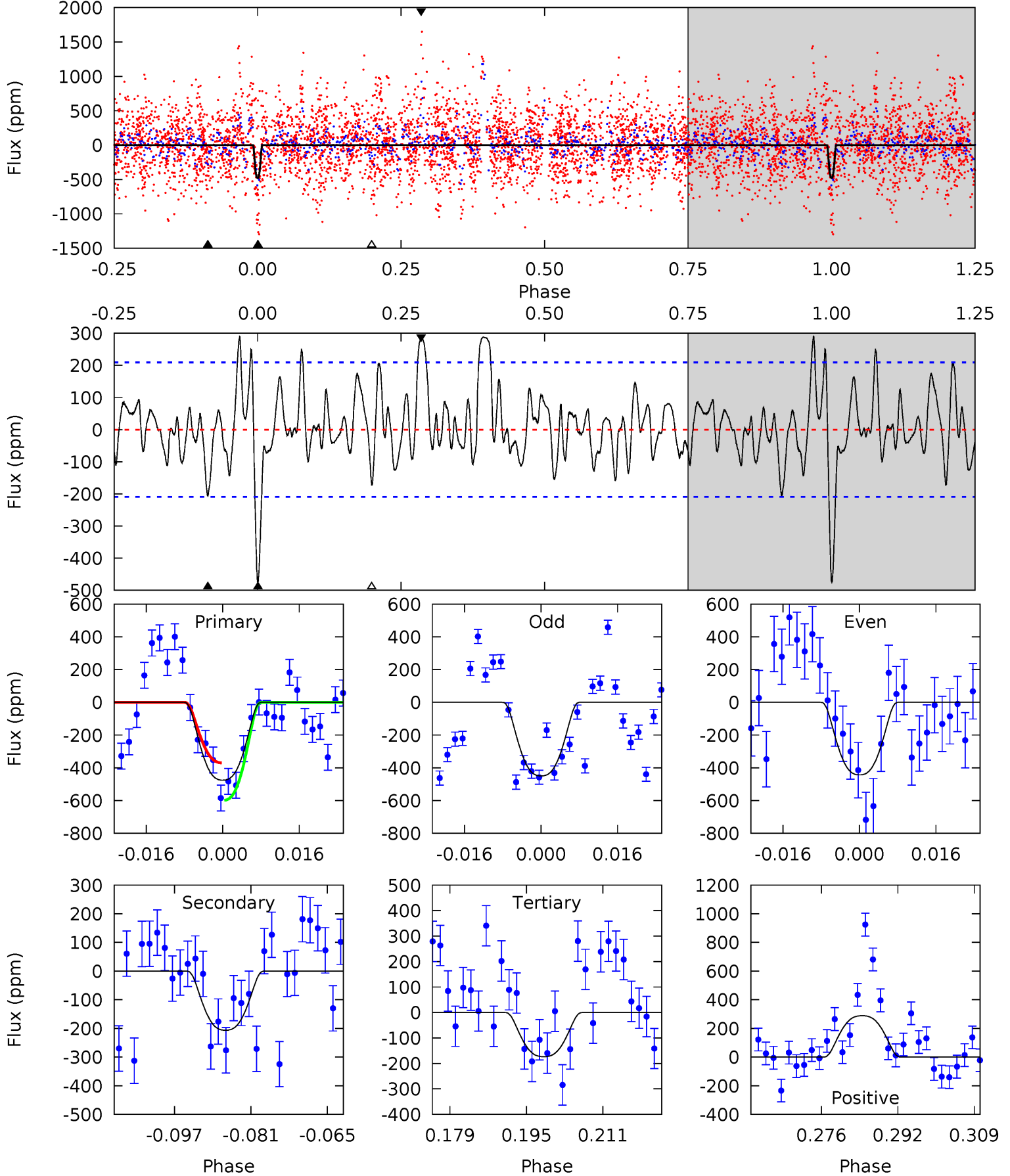
TCE 003453272-03     $P = 14.292072$  Days     $T_0 = 145.103986$  (BKJD)



# DV Model-Shift Uniqueness Test

003453272-03, P = 14.291134 Days, E = 130.863557 Days

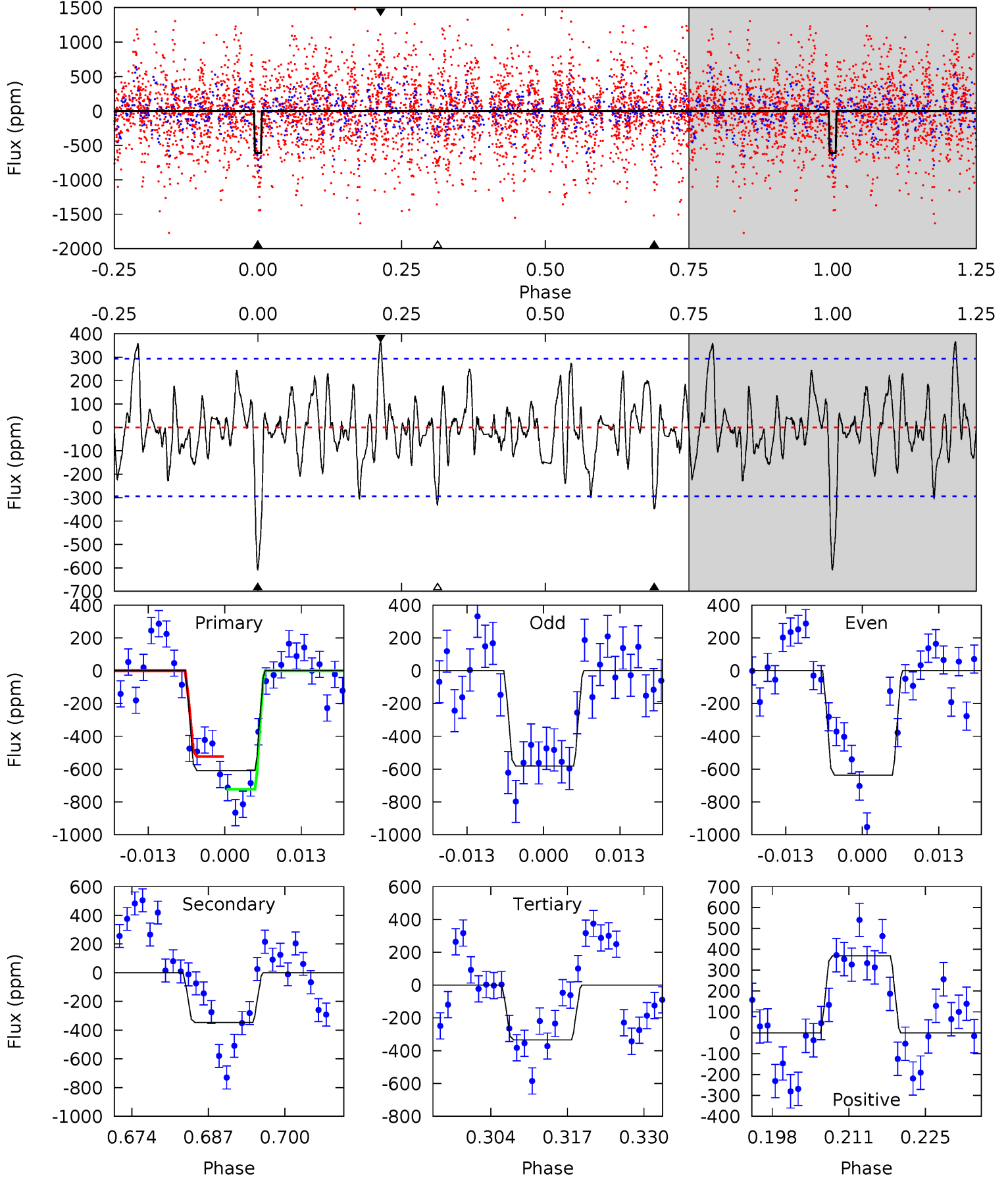
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	4.86	4.09	6.80	4.93	2.40	2.00	7.12	4.40	0.78	-1.94	0.08	0.17	0.38	2.71



# Alt Model-Shift Uniqueness Test

003453272-03, P = 14.292072 Days, E = 130.811914 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
10.3	5.88	5.66	6.24	4.97	2.48	1.96	4.67	4.10	0.21	-0.36	0.47	0.90	0.38	1.70



### Stellar Parameters For KIC 003453272

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7103^{+199}_{-274}$	$4.284^{+0.087}_{-0.203}$	$-0.300^{+0.250}_{-0.350}$	$1.362^{+0.460}_{-0.197}$	$1.307^{+0.200}_{-0.200}$	$0.729^{+0.340}_{-0.369}$
	+3%/-4%	+2%/-5%	+83%/-117%	+34%/-14%	+15%/-15%	+47%/-51%
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 003453272-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-206 \pm 42$	$4.44^{+0.92}_{-0.81}$	$1457^{+108}_{-84}$	$5018^{+466}_{-367}$	$89^{+49}_{-31}$
Alt.	$-347 \pm 59$	$3.81^{+0.86}_{-0.76}$	$1464^{+113}_{-88}$	$6072^{+716}_{-484}$	$202^{+123}_{-74}$

$T_{max}$  = 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

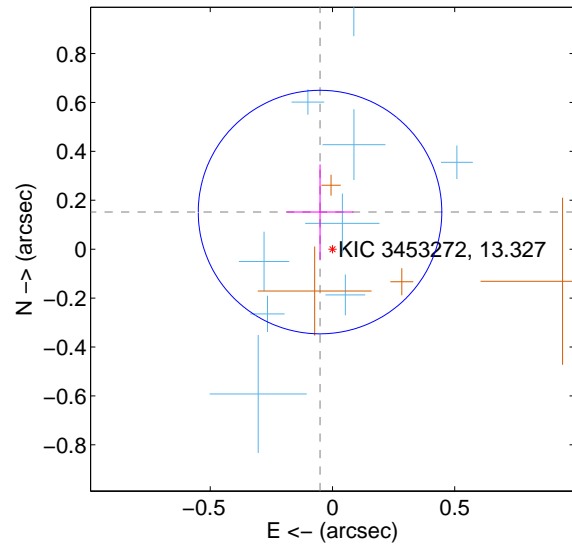
Supplemental centroid analysis for 003453272-03. Kepler magnitude: 13.33. Transit SNR 11.88

There are 10 quarters with good PRF difference image offsets

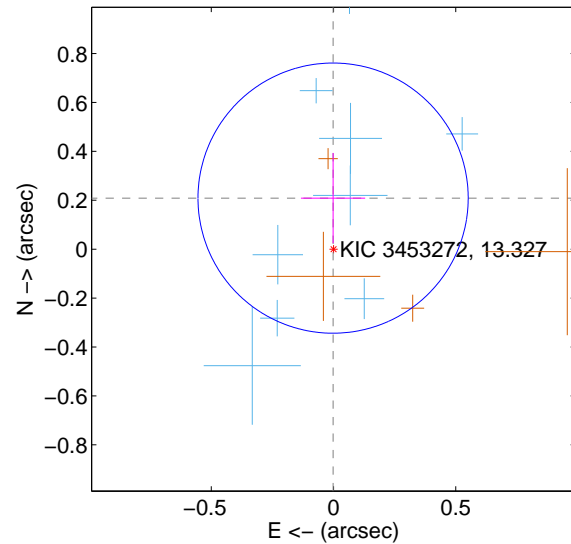
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.160 \pm 0.166$	0.96	$0.051 \pm 0.137$	$0.152 \pm 0.195$
PRF-fit source offset from KIC position	$0.209 \pm 0.184$	1.13	$0.002 \pm 0.131$	$0.209 \pm 0.185$
photometric centroid source offset	$0.25 \pm 0.19$	1.28	$0.19 \pm 0.18$	$-0.16 \pm 0.20$

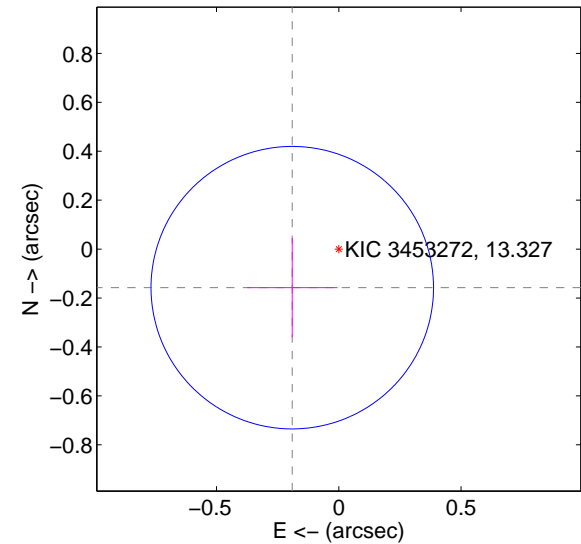
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

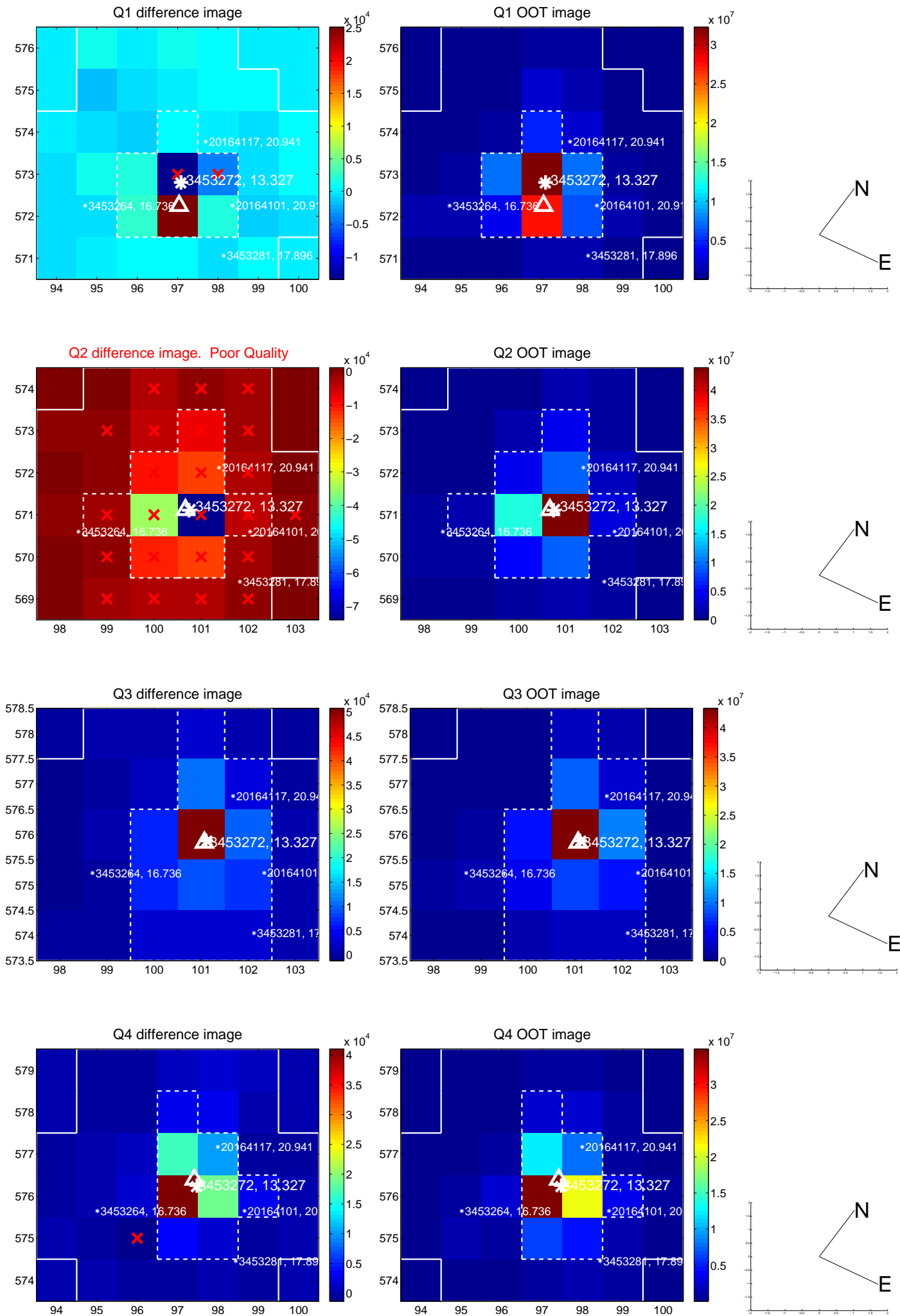


offset from photometric centroids

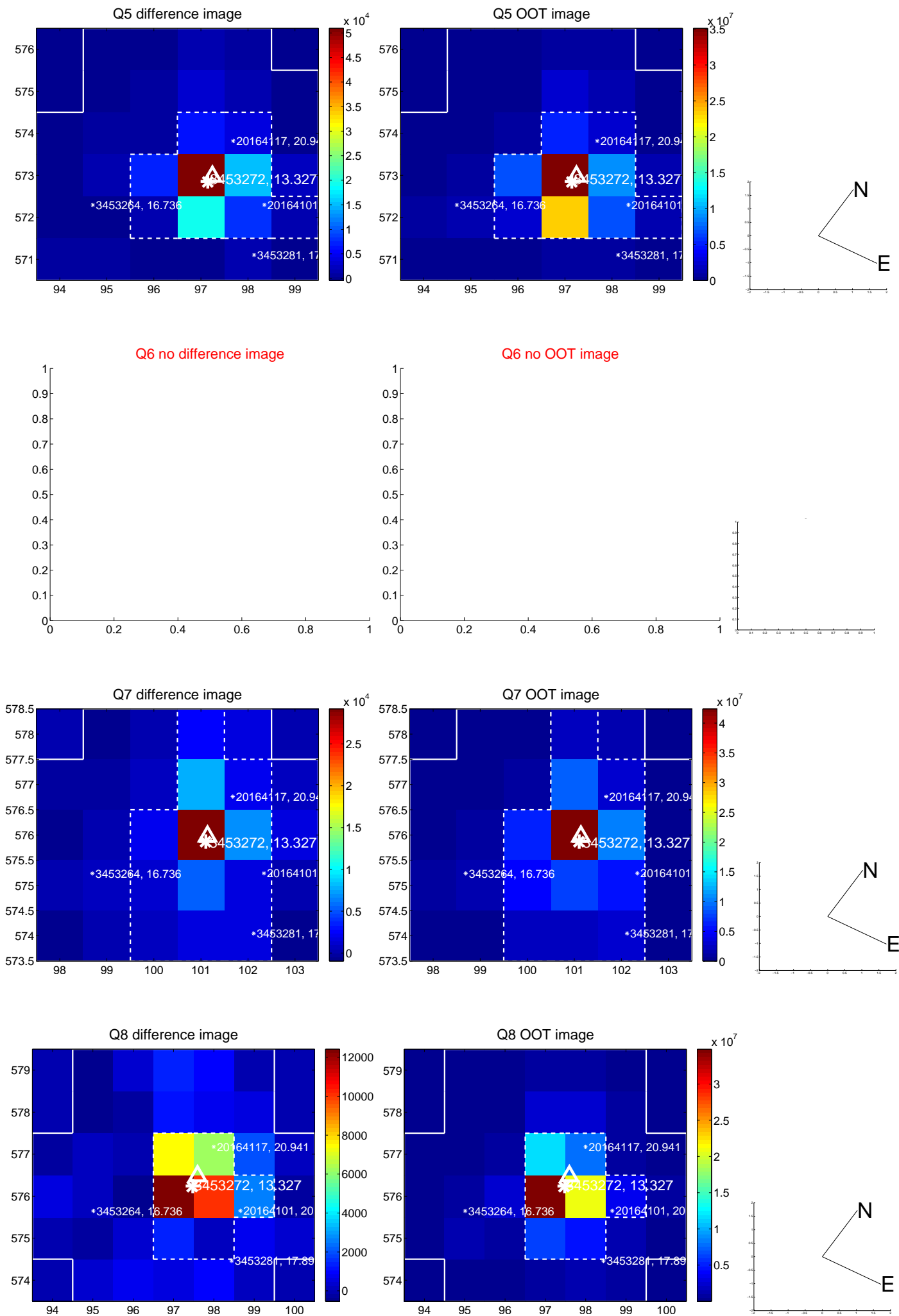


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

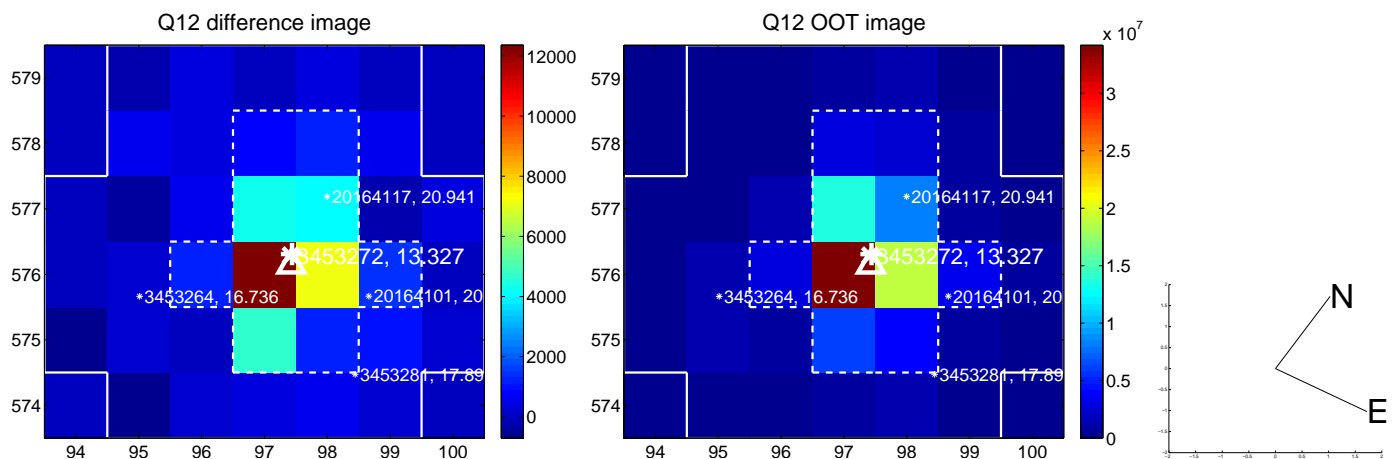
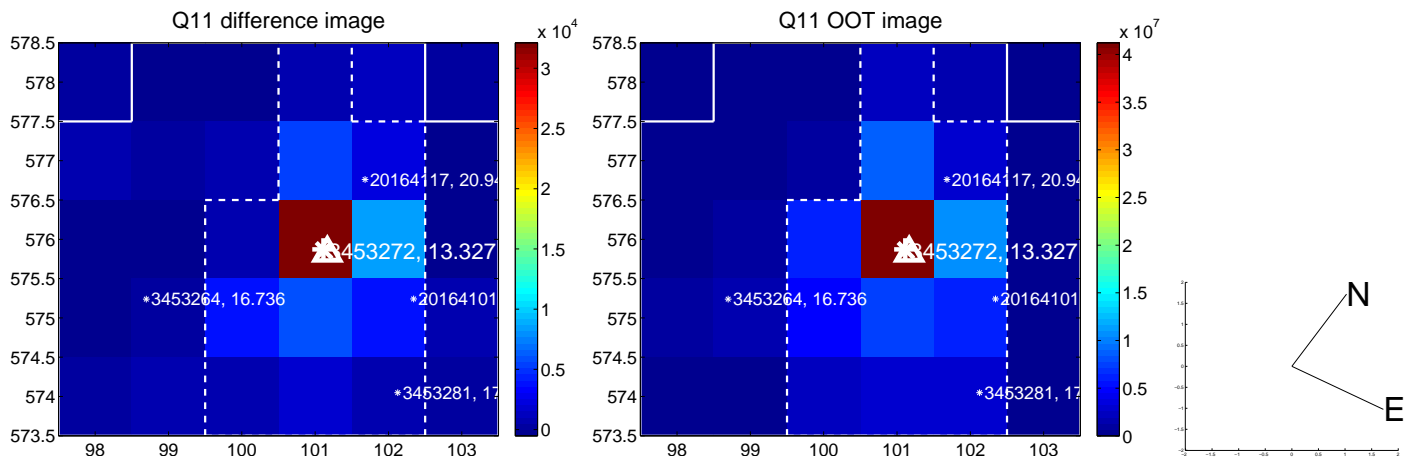
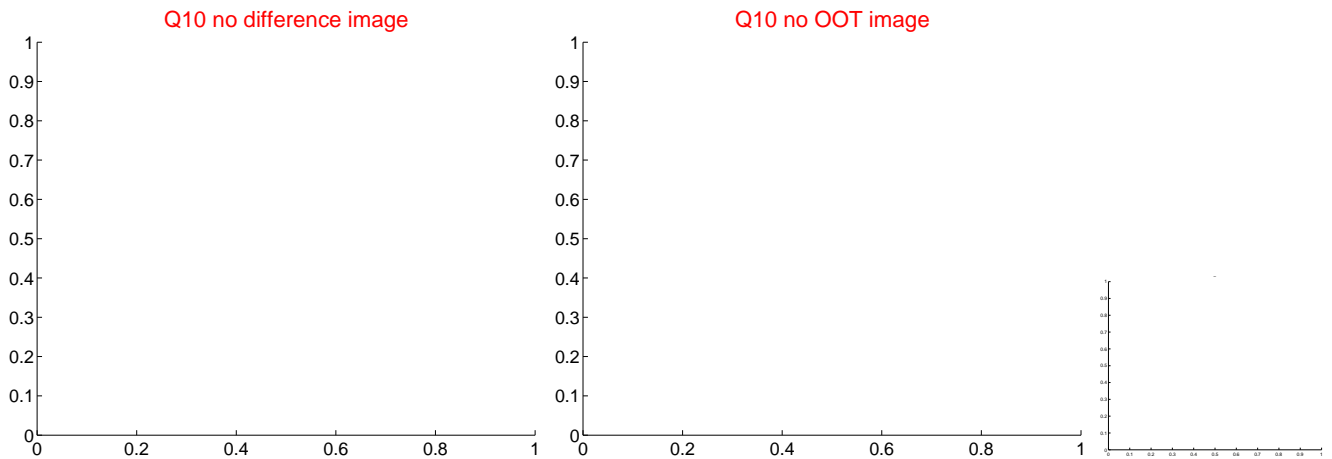
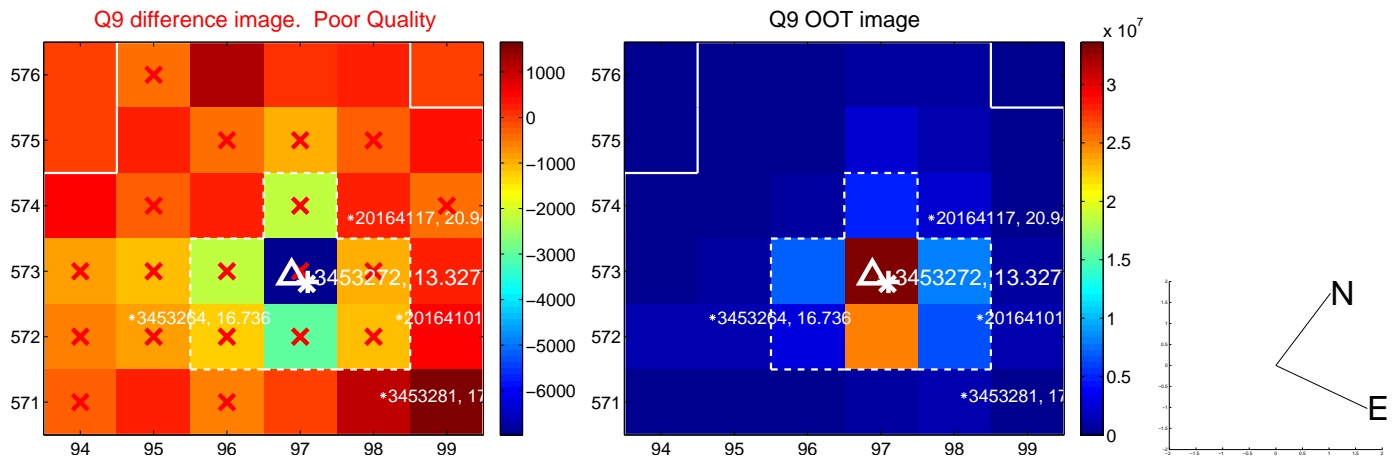
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



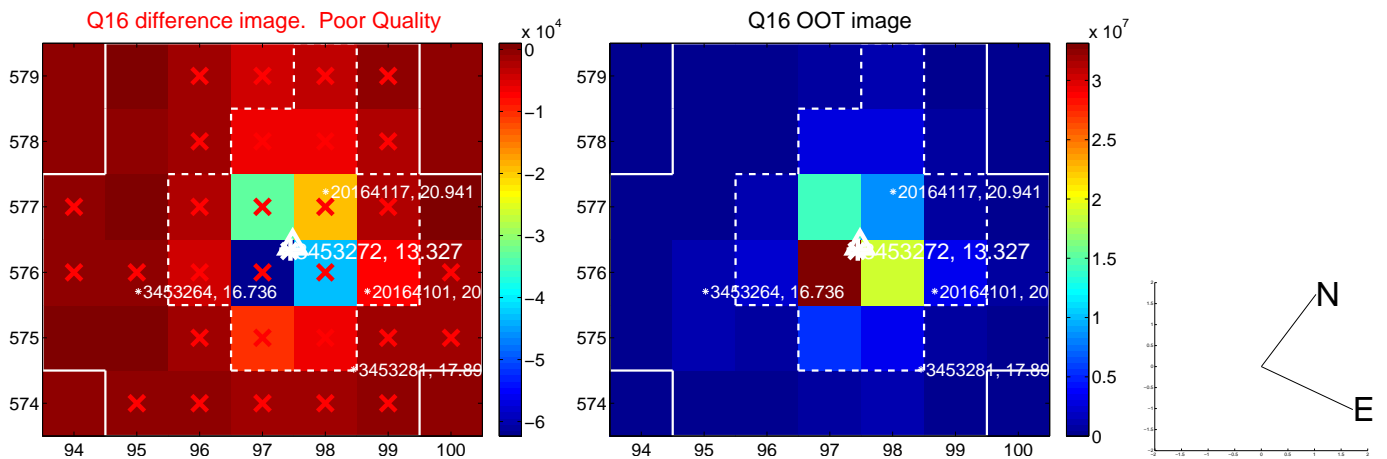
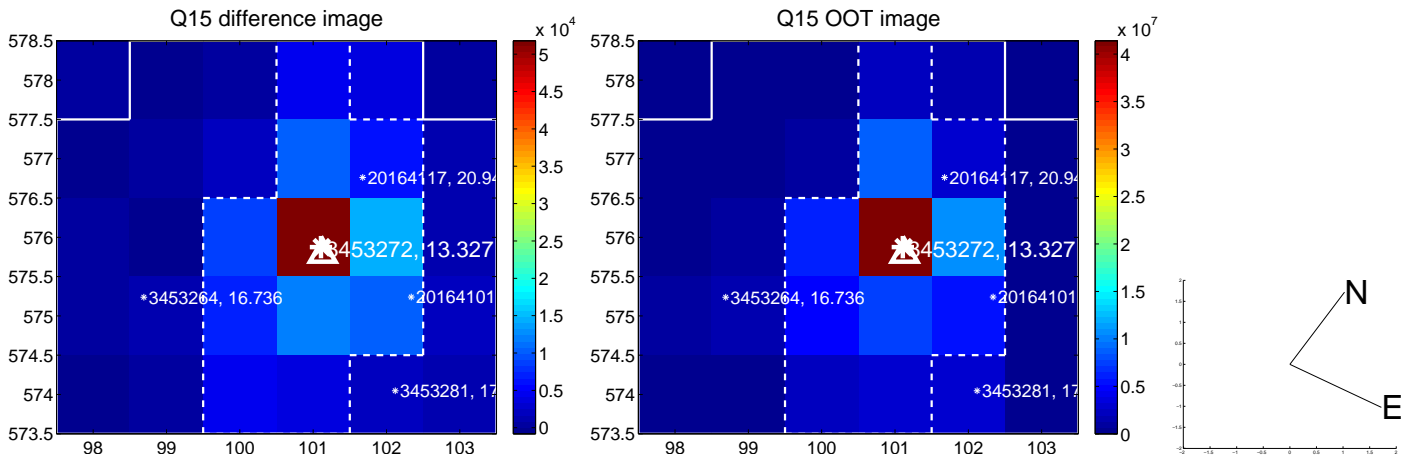
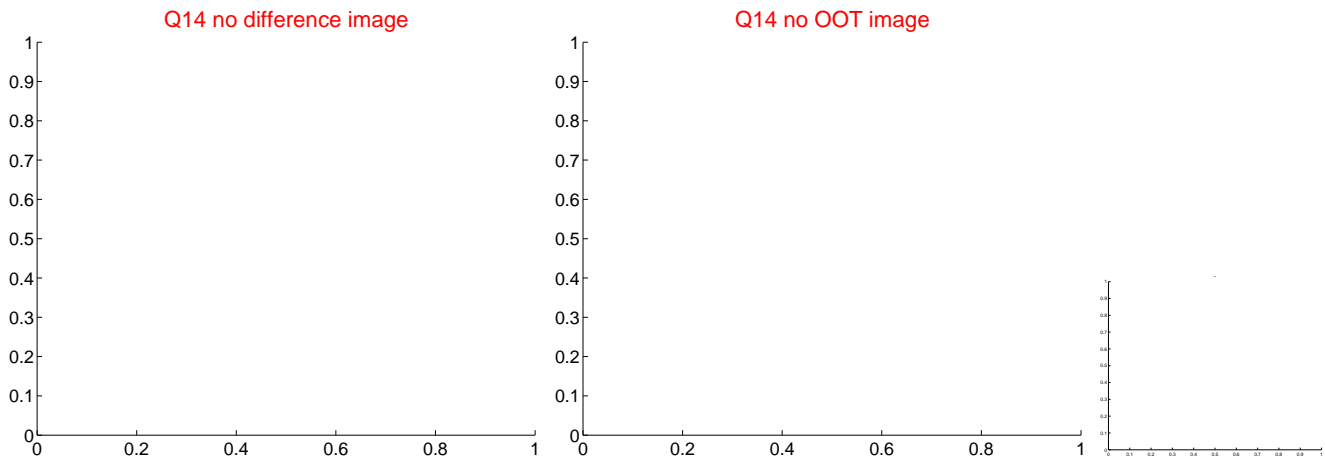
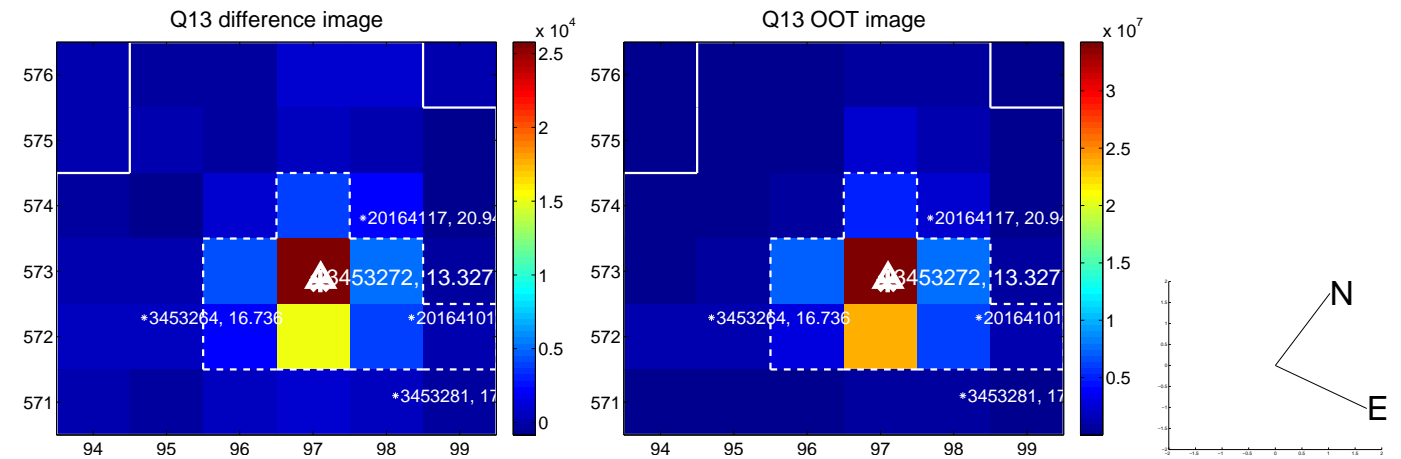
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

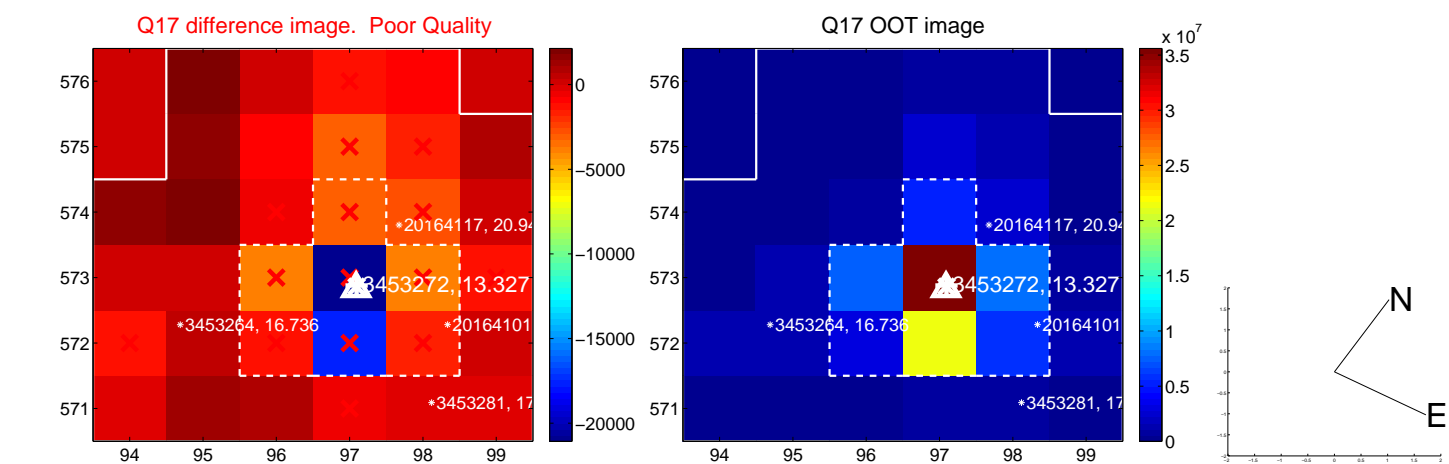


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

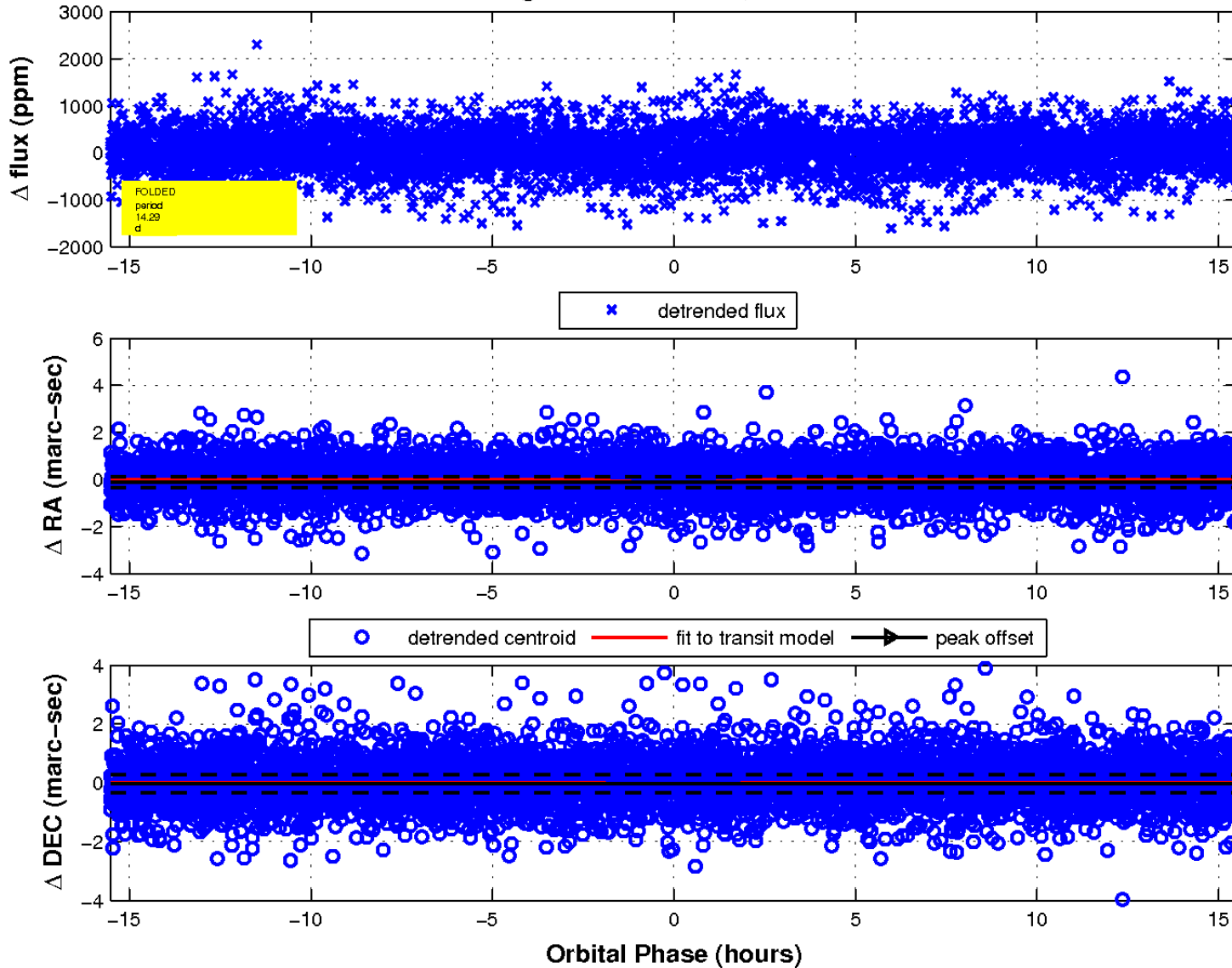




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

