

# KIC 009471755

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009471755-01	OBS	6204.01	0.953745	132.411089	326.4	1.303	107.7	141.8	1.46	7332	3.07	12081.18
009471755-02	OBS	No	0.953896	131.925427	26.0	1.202	24.1	12.7	1.46	7332	0.87	12078.65
009471755-03	OBS	No	4.521604	135.464888	211.9	6.000	16.8	-1.0	1.46	7332	2.15	1516.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009471755-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
009471755-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
009471755-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—CENT_NOFITS

**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 009471755-01

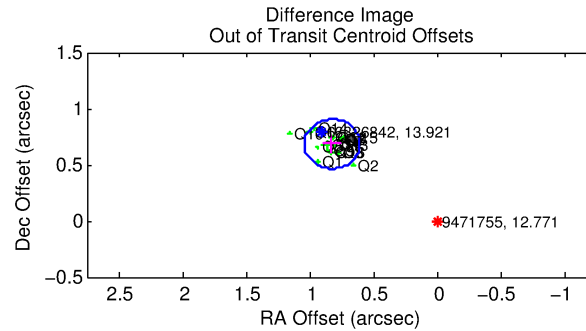
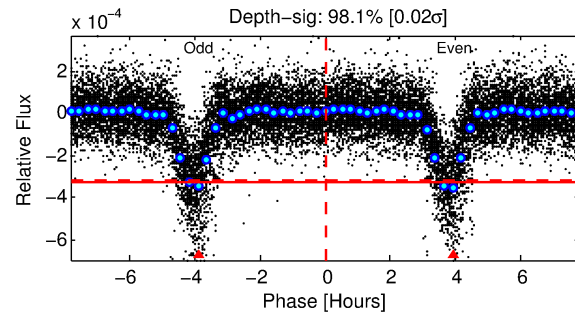
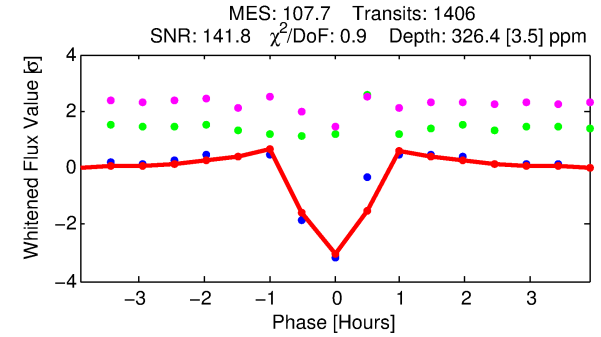
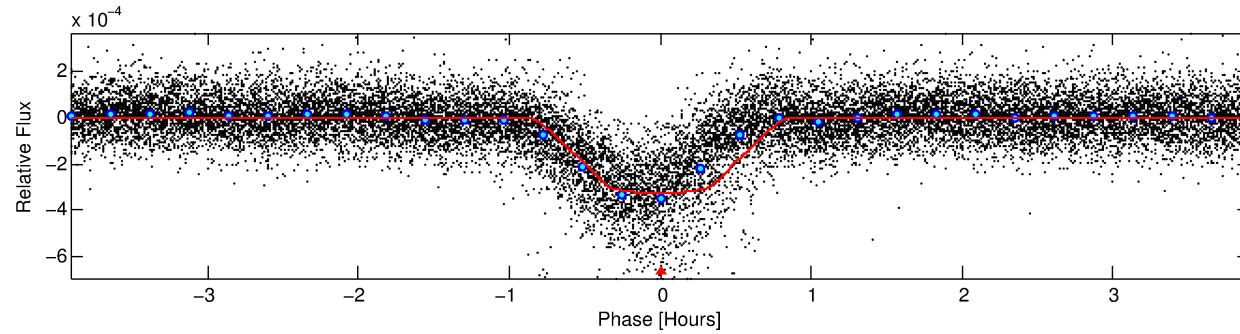
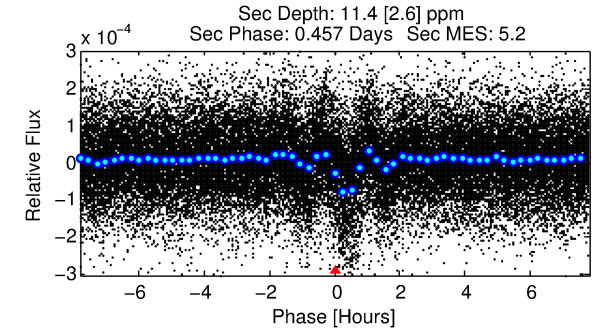
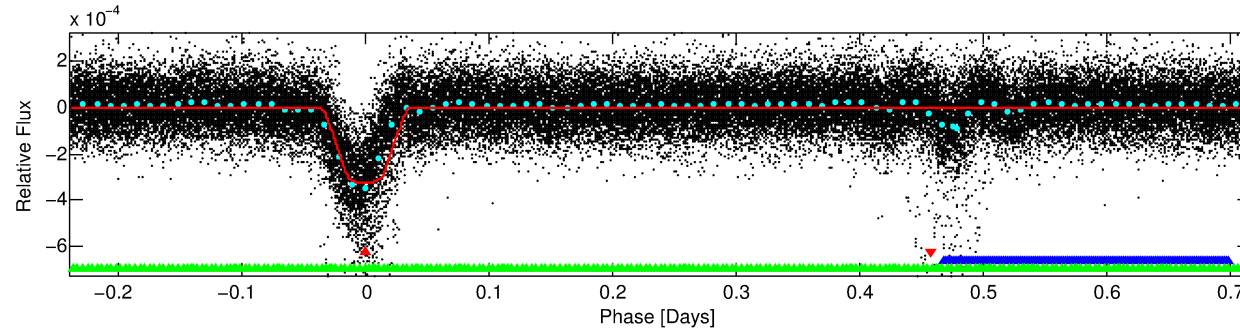
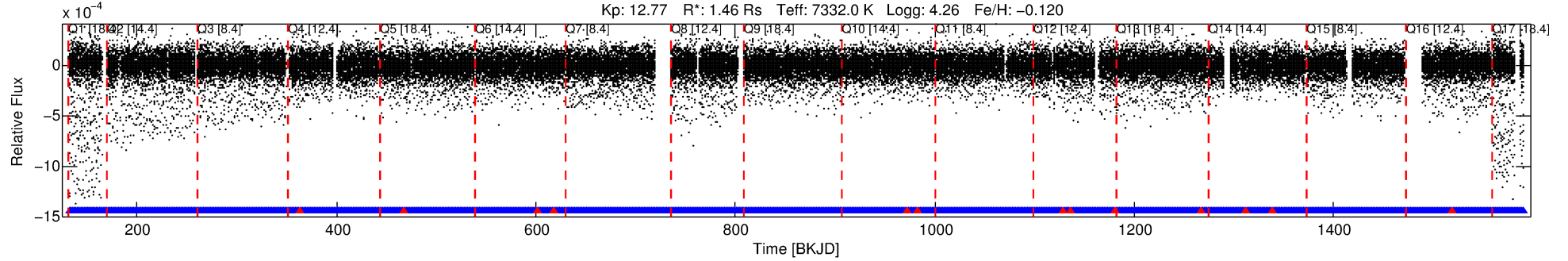
No Significant Match Found

# DV One-Page Summary

KIC: 9471755 Candidate: 1 of 3 Period: 0.954 d

KOI: K06204.01 Corr: 0.846

Kp: 12.77 R\*: 1.46 Rs Teff: 7332.0 K Logg: 4.26 Fe/H: -0.120



## DV Fit Results:

Period = 0.95375 [0.00000] d  
Epoch = 132.4111 [0.0001] BKJD  
Rp/R\* = 0.0193 [0.0006]  
a/R\* = 2.82 [0.47]  
b = 0.90 [0.04]  
Seff = 12081.18 [11174.70]  
Teq = 2673 [618] K  
Rp = 3.07 [1.13] Re  
a = 0.0214 [0.0063] AU  
Ag = 0.30 [0.14] [-4.85σ]  
Teffp = 3066 [661] K [0.43σ]

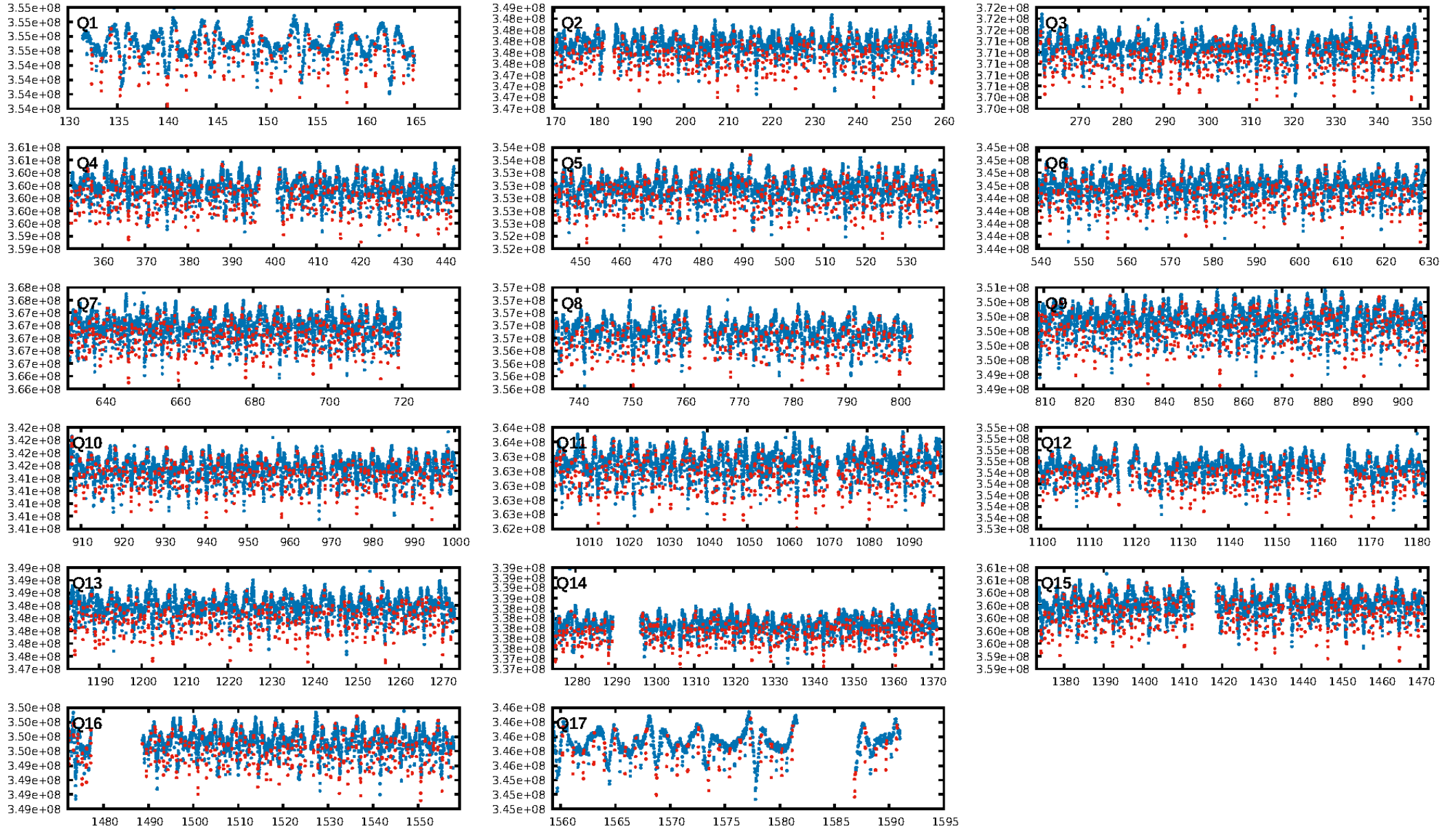
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.2% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.99 [1329/1342]  
GhostDiagnostic-chr: 5.048  
Centroid-sig: 0.0%  
Centroid-so: 0.654 arcsec [12.40σ]  
OotOffset-rm: 1.071 arcsec [14.67σ]  
KicOffset-rm: 1.250 arcsec [16.87σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:32:05 Z

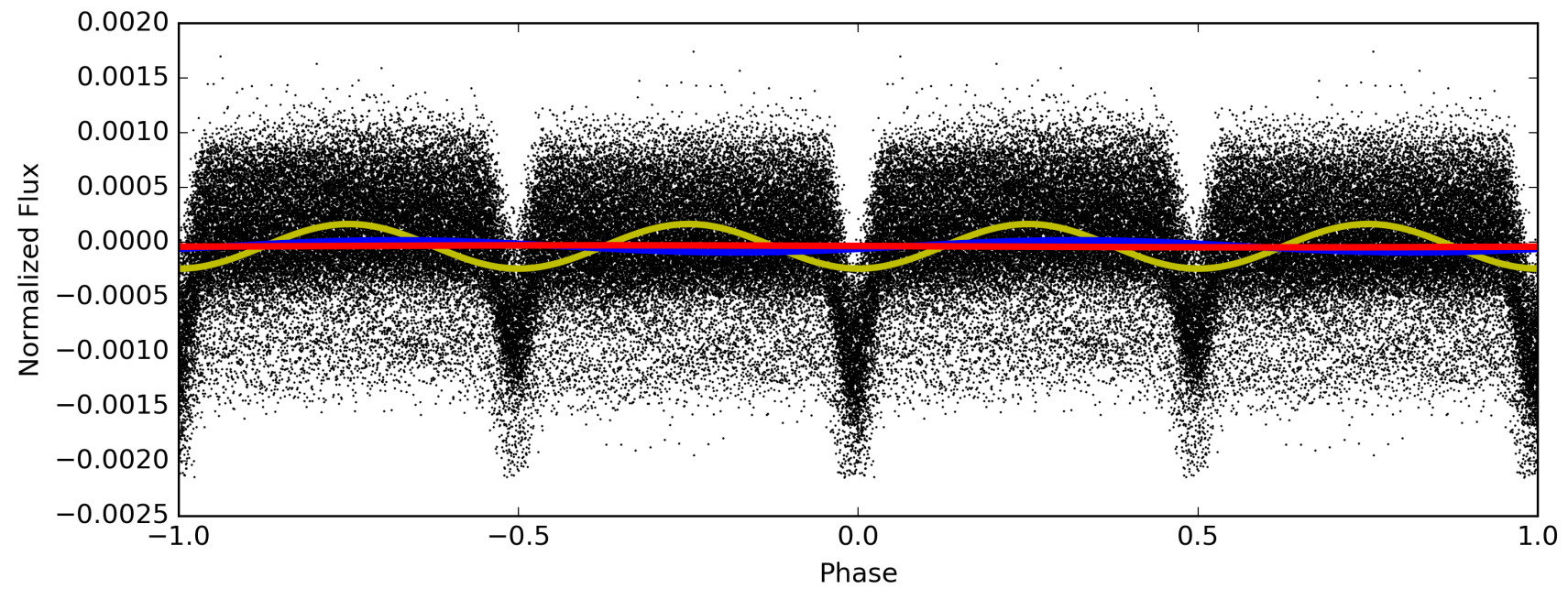
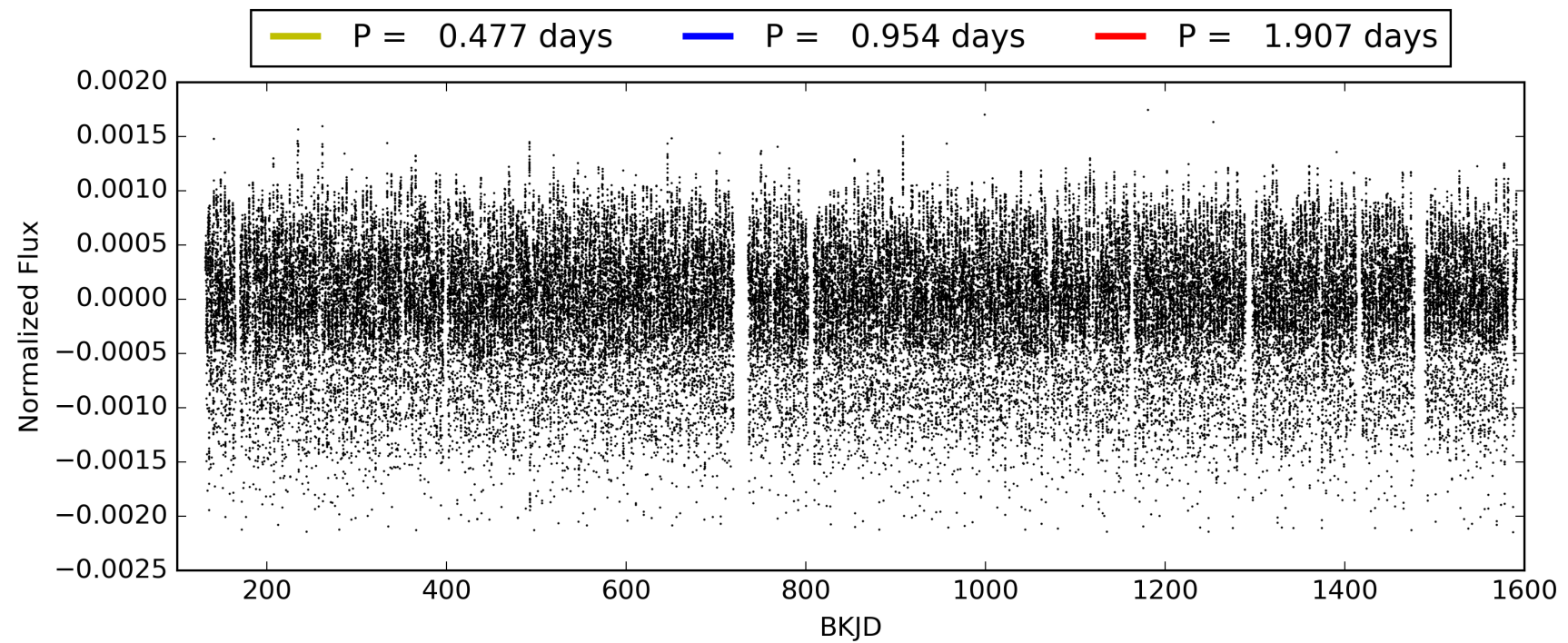
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009471755-01, PDC Light Curves





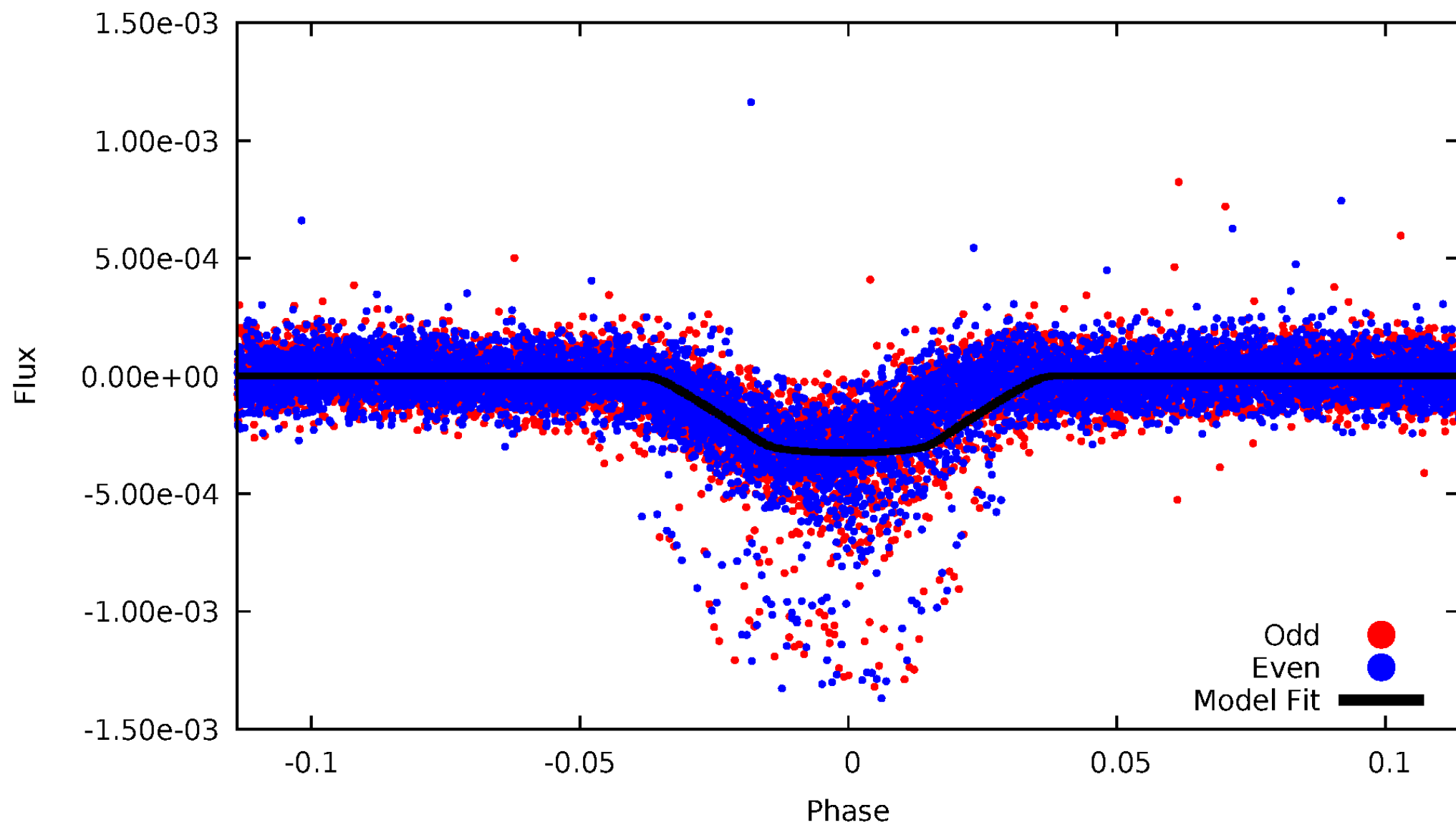
TCE 009471755-01





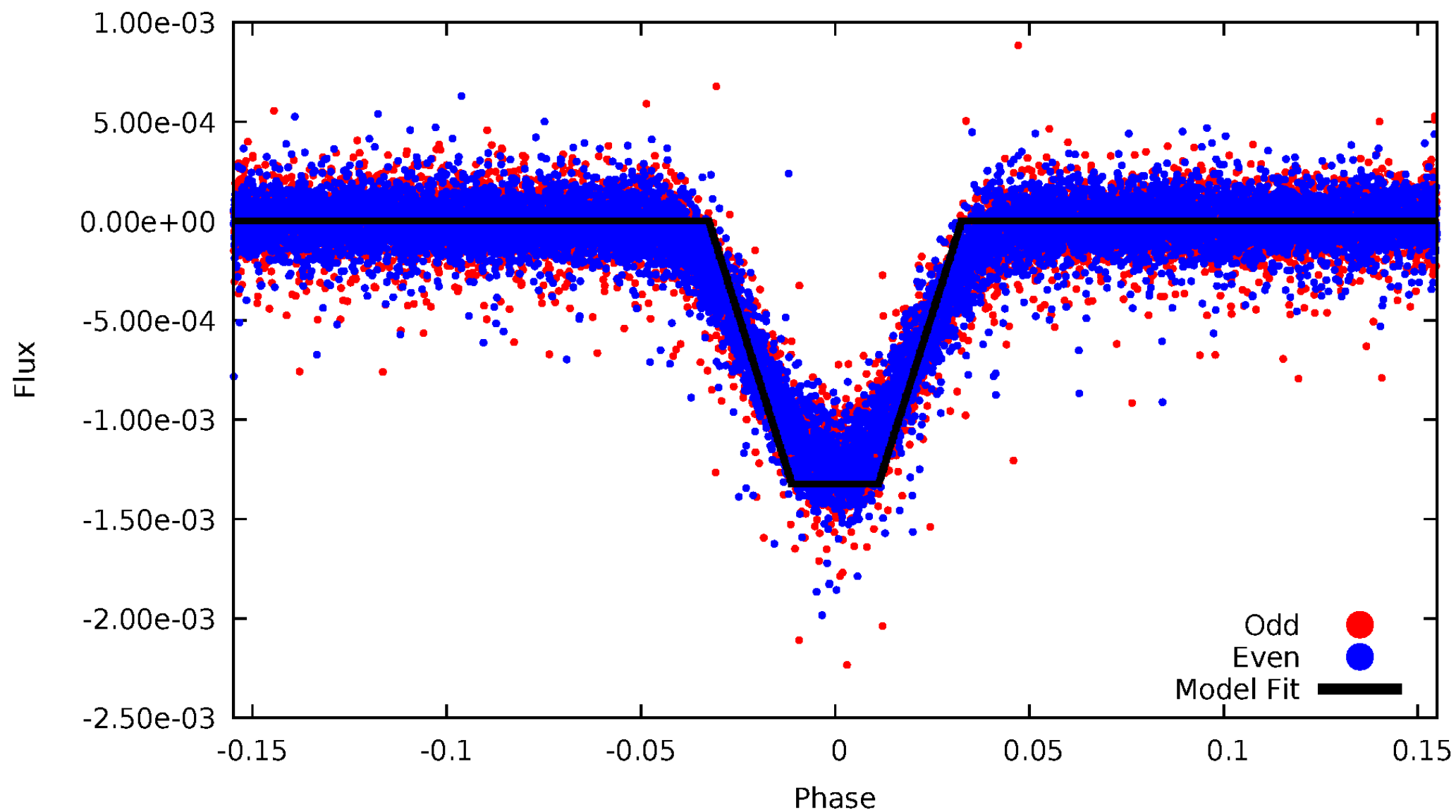
# DV Odd/Even

TCE 009471755-01



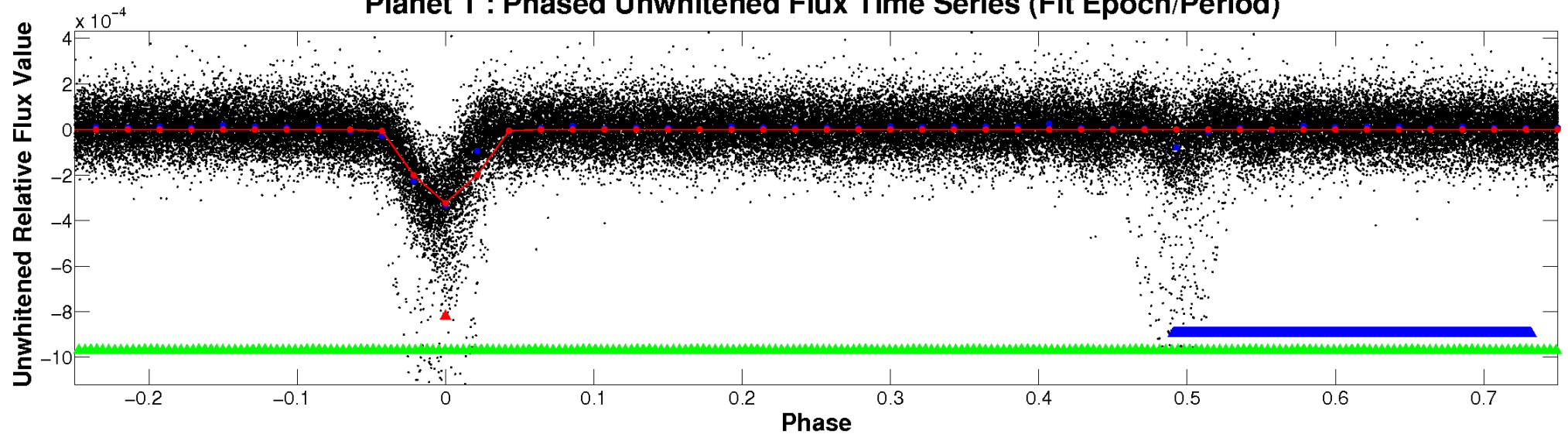
# ALT Odd/Even

TCE 009471755-01

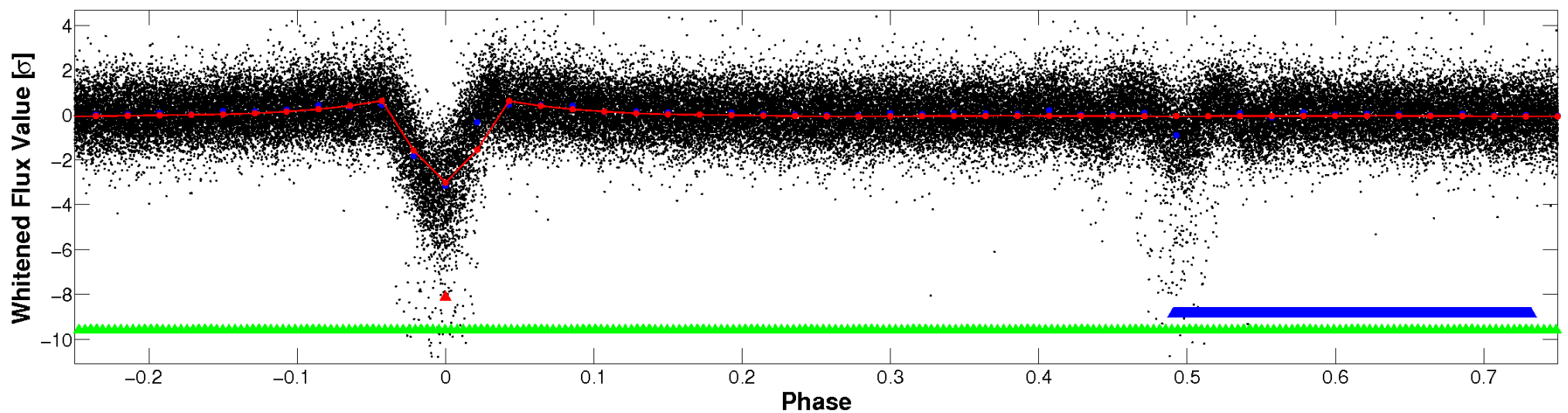


# Non-Whitened Vs. Whitened Light Curve

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



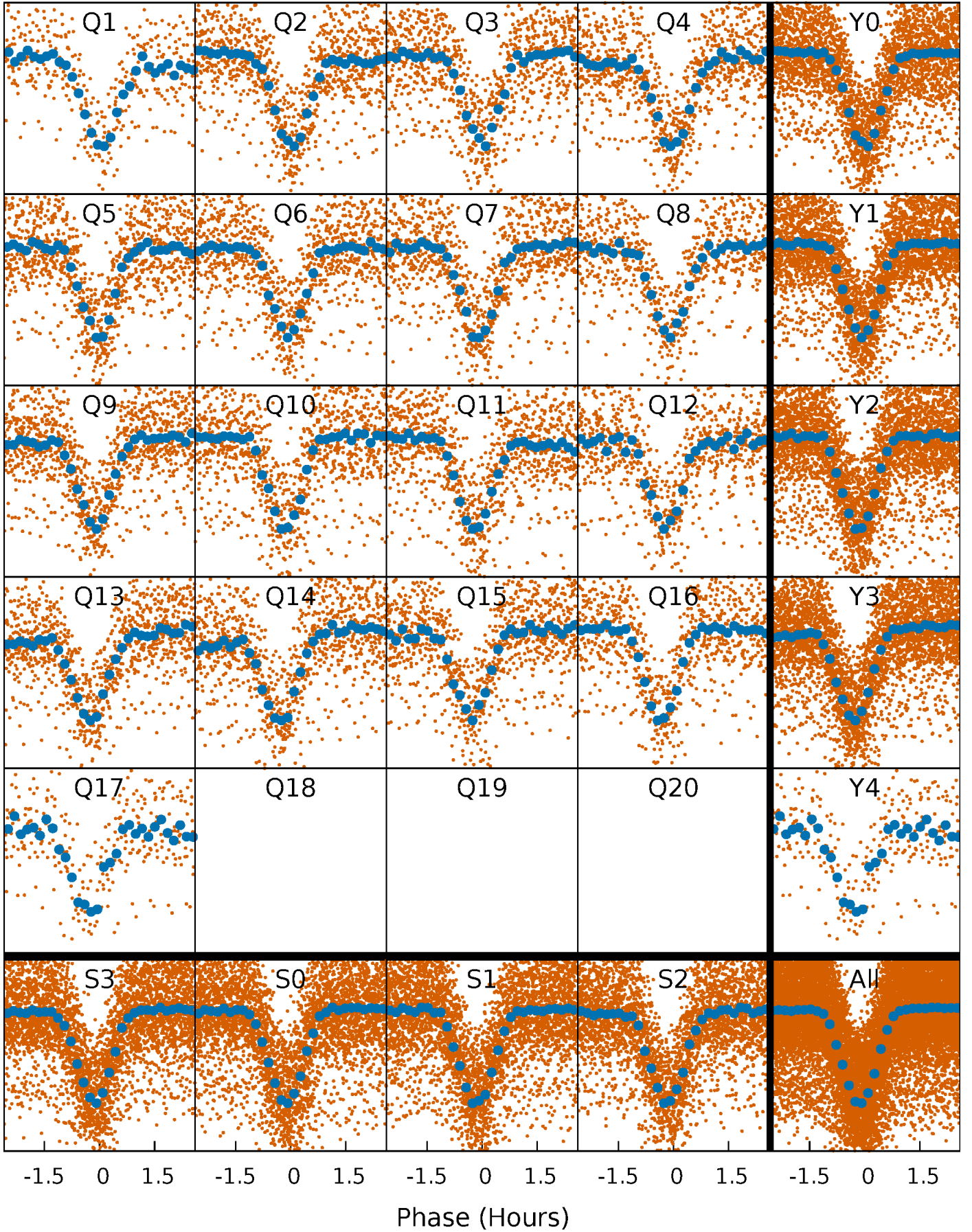
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





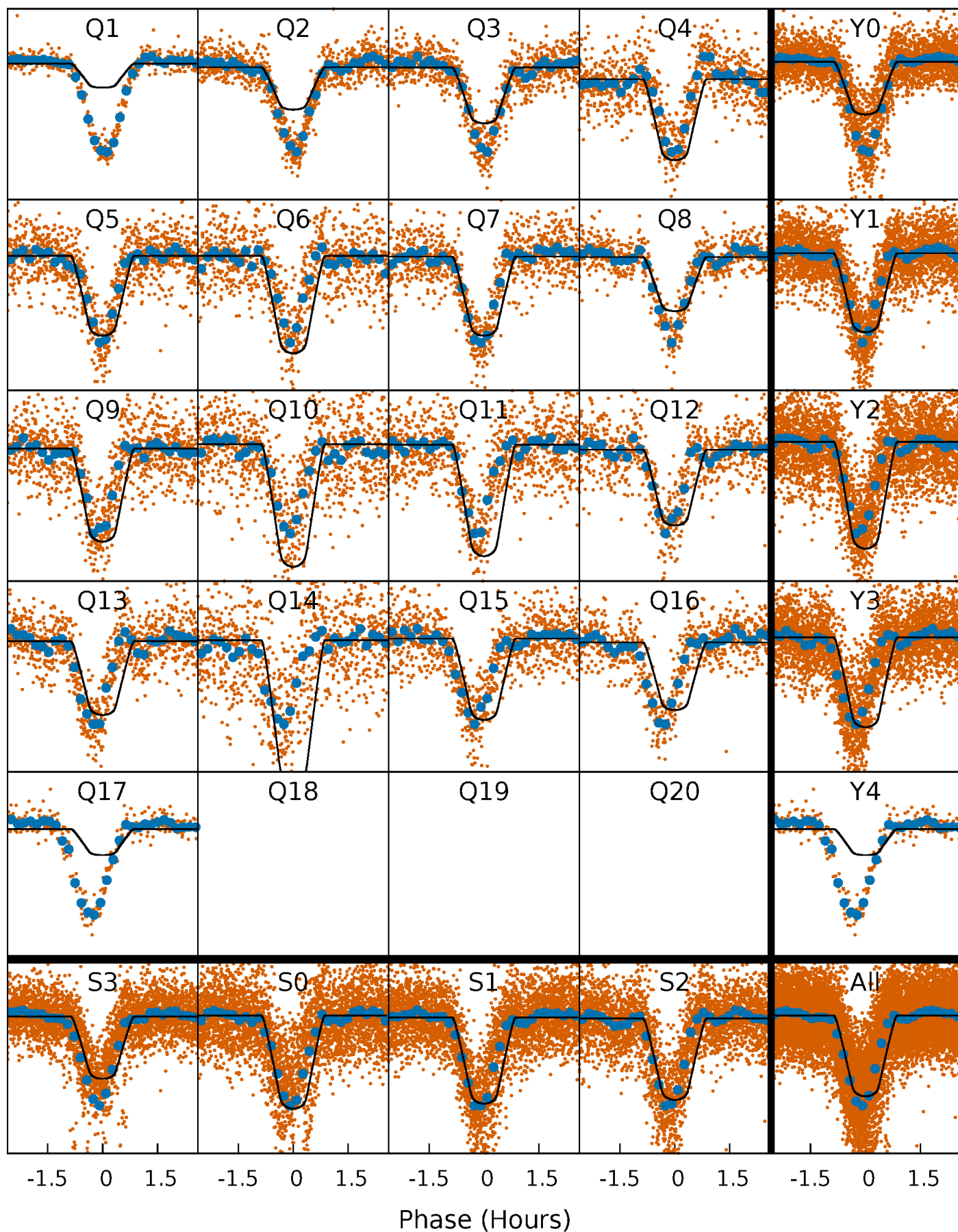
# PDC Quarter-Phased Transit Curves

TCE 009471755-01   P= 0.953745 Days    $T_0=132.411089$  (BKJD)



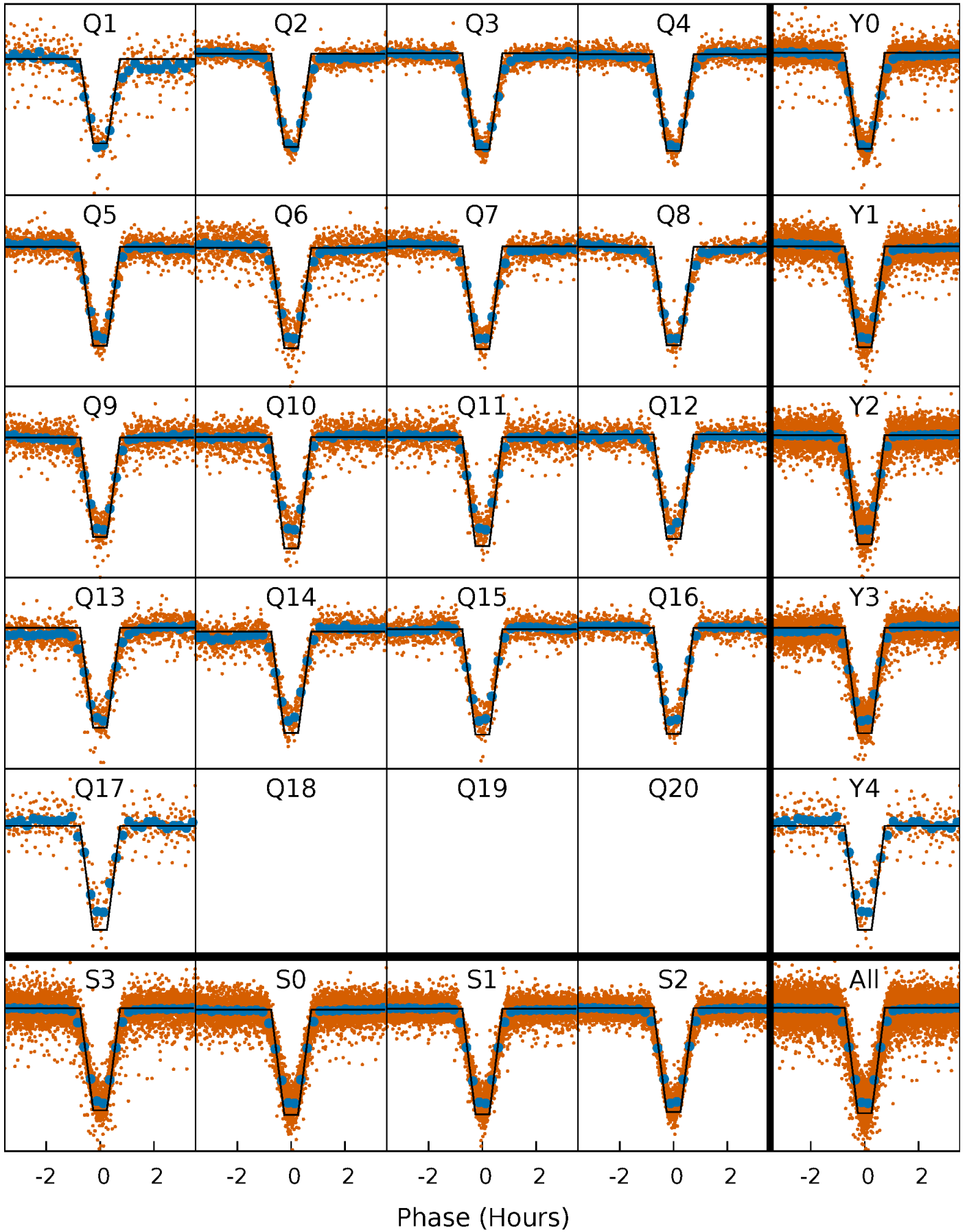
# DV Quarter-Phased Transit Curves

TCE 009471755-01 P= 0.953745 Days  $T_0=132.411089$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009471755-01 P= 0.953736 Days  $T_0=132.412148$  (BKJD)

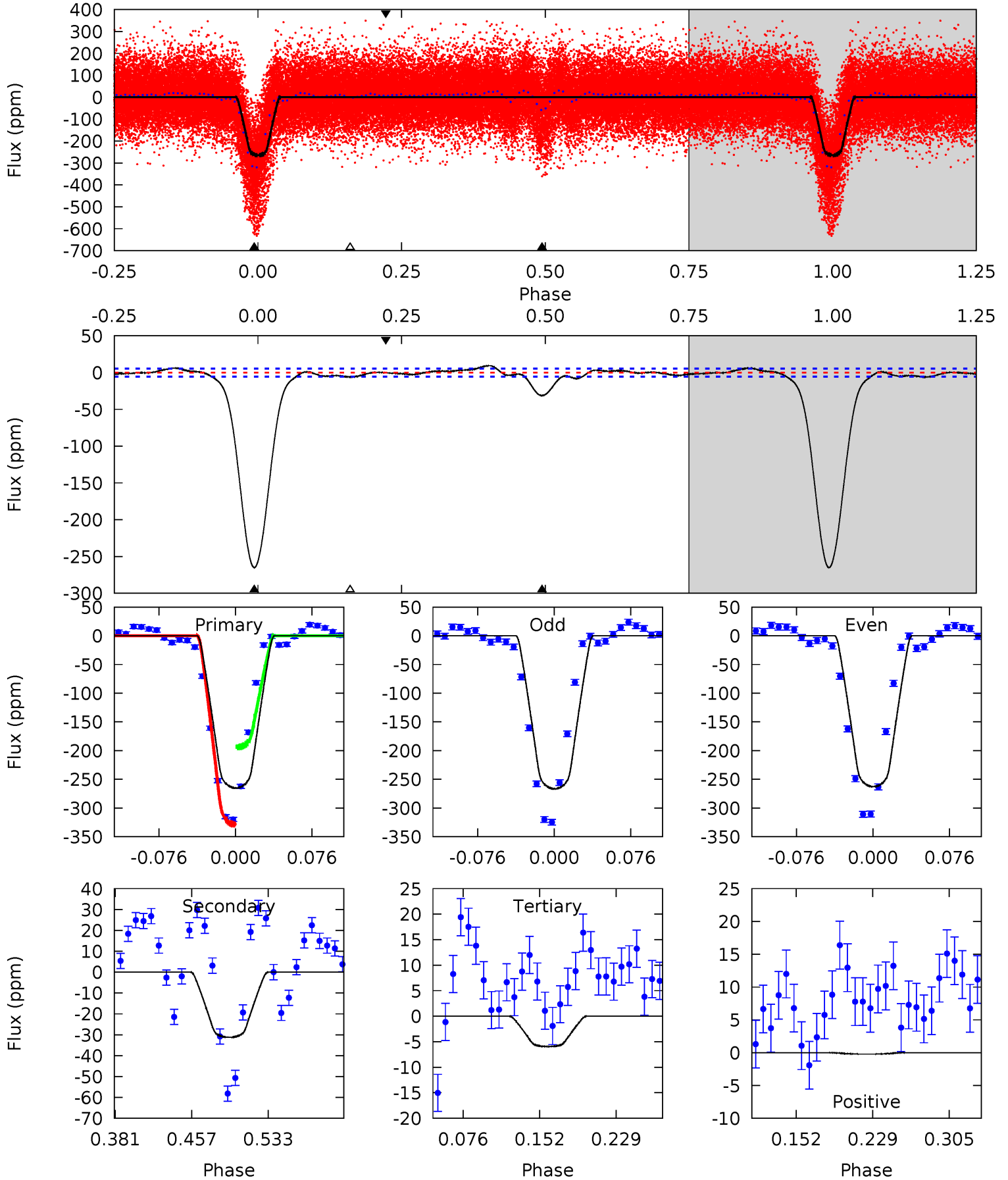




# DV Model-Shift Uniqueness Test

009471755-01, P = 0.953745 Days, E = 131.457344 Days

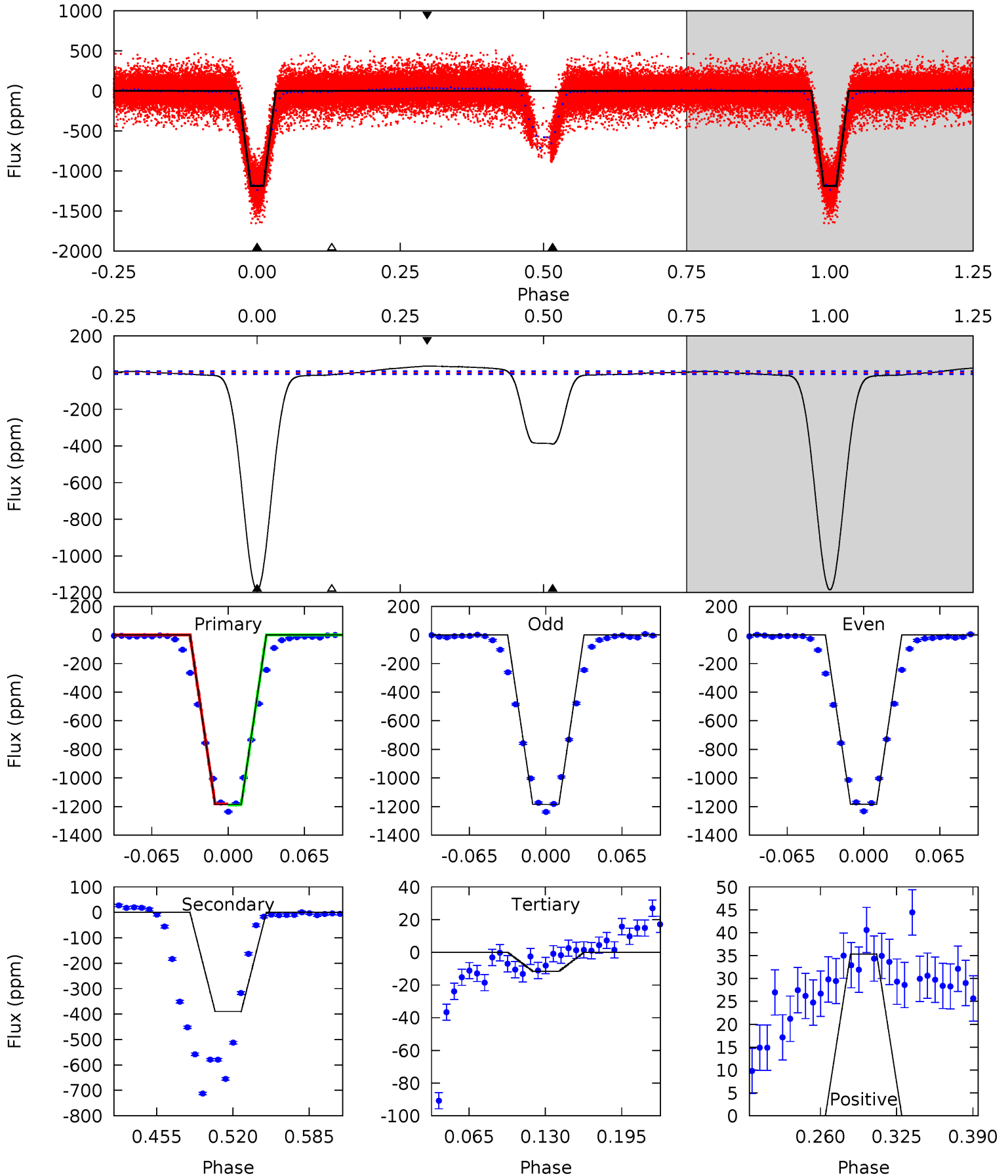
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
222.5	26.2	4.99	-0.18	4.62	1.77	2.70	217.5	222.6	21.2	26.4	1.54	1.15	0.03	56.3



# Alt Model-Shift Uniqueness Test

009471755-01, P = 0.953736 Days, E = 131.458412 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
676.7	222.6	6.63	20.2	4.65	1.85	9.93	670.1	656.5	216.0	202.4	0.17	1.00	0.03	2.07



### Stellar Parameters For KIC 009471755

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7332^{+506}_{-1519}$	$4.265^{+0.215}_{-0.193}$	$-0.120^{+0.300}_{-0.300}$	$1.460^{+0.487}_{-0.536}$	$1.430^{+0.212}_{-0.495}$	$0.648^{+0.930}_{-0.329}$
	+7%/-21%	+5%/-5%	+250%/-250%	+33%/-37%	+15%/-35%	+144%/-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 009471755-01 / KOI 6204.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-31 \pm 1$	$3.07^{+0.57}_{-0.53}$	$3652^{+471}_{-774}$	$3746^{+301}_{-502}$	$0.815^{+0.292}_{-0.216}$
Alt.	$-390 \pm 2$	$5.76^{+1.14}_{-1.11}$	$3621^{+524}_{-710}$	$5218^{+291}_{-848}$	$2.933^{+1.111}_{-0.835}$

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



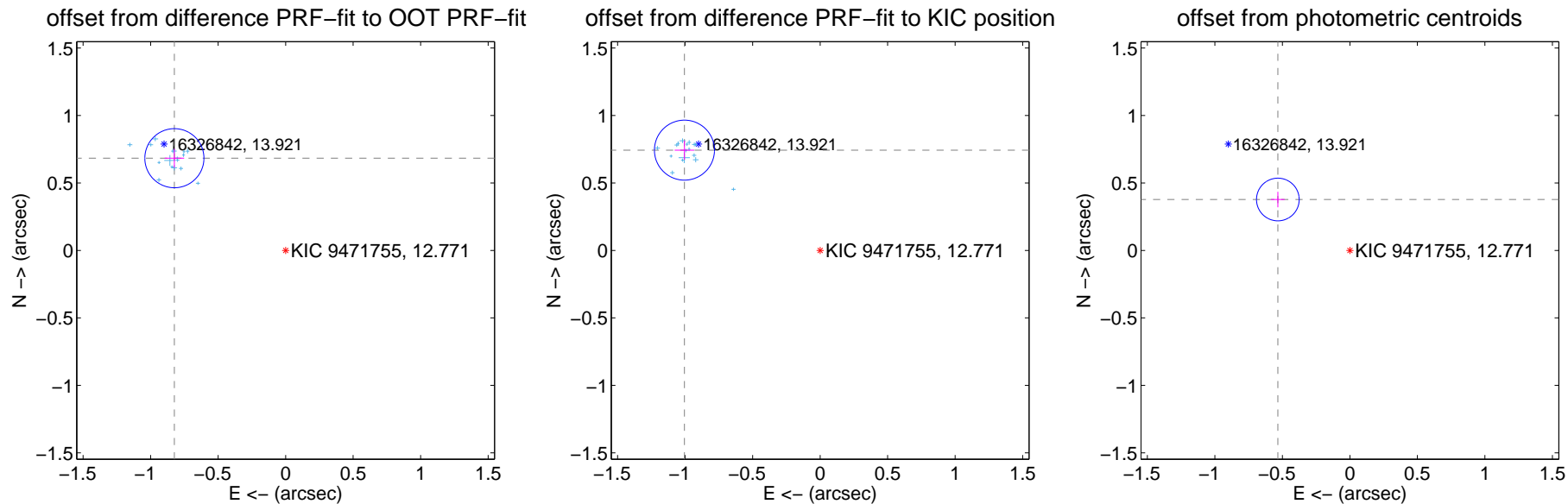
## DV Centroid Data

Supplemental centroid analysis for 009471755-01. Kepler magnitude: 12.77. Transit SNR 141.77

There are 17 quarters with good PRF difference image offsets

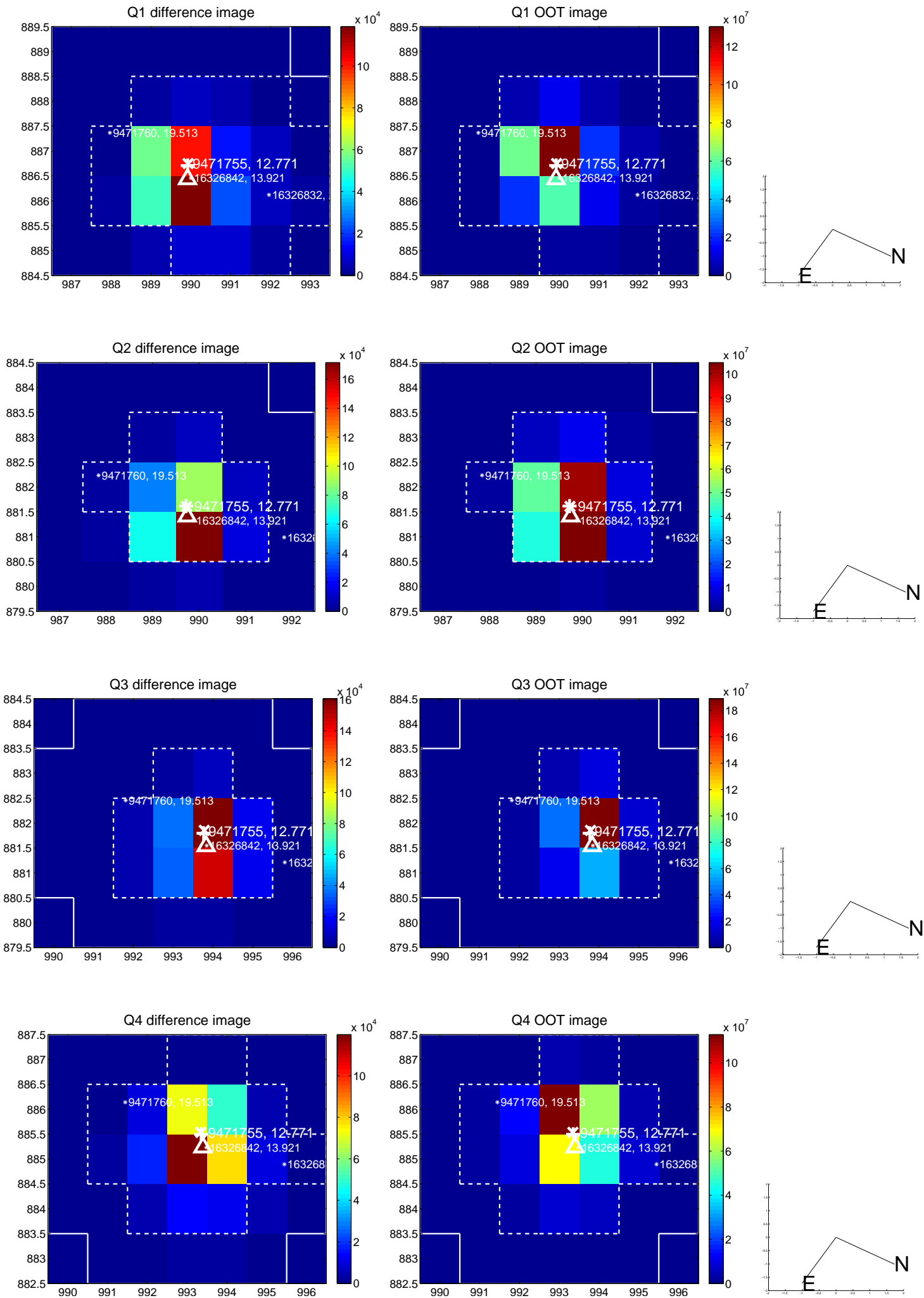
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.071 \pm 0.073$	14.67	$0.824 \pm 0.072$	$0.683 \pm 0.070$
PRF-fit source offset from KIC position	$1.250 \pm 0.074$	16.87	$1.005 \pm 0.073$	$0.743 \pm 0.070$
photometric centroid source offset	$0.65 \pm 0.05$	12.40	$0.53 \pm 0.05$	$0.38 \pm 0.06$

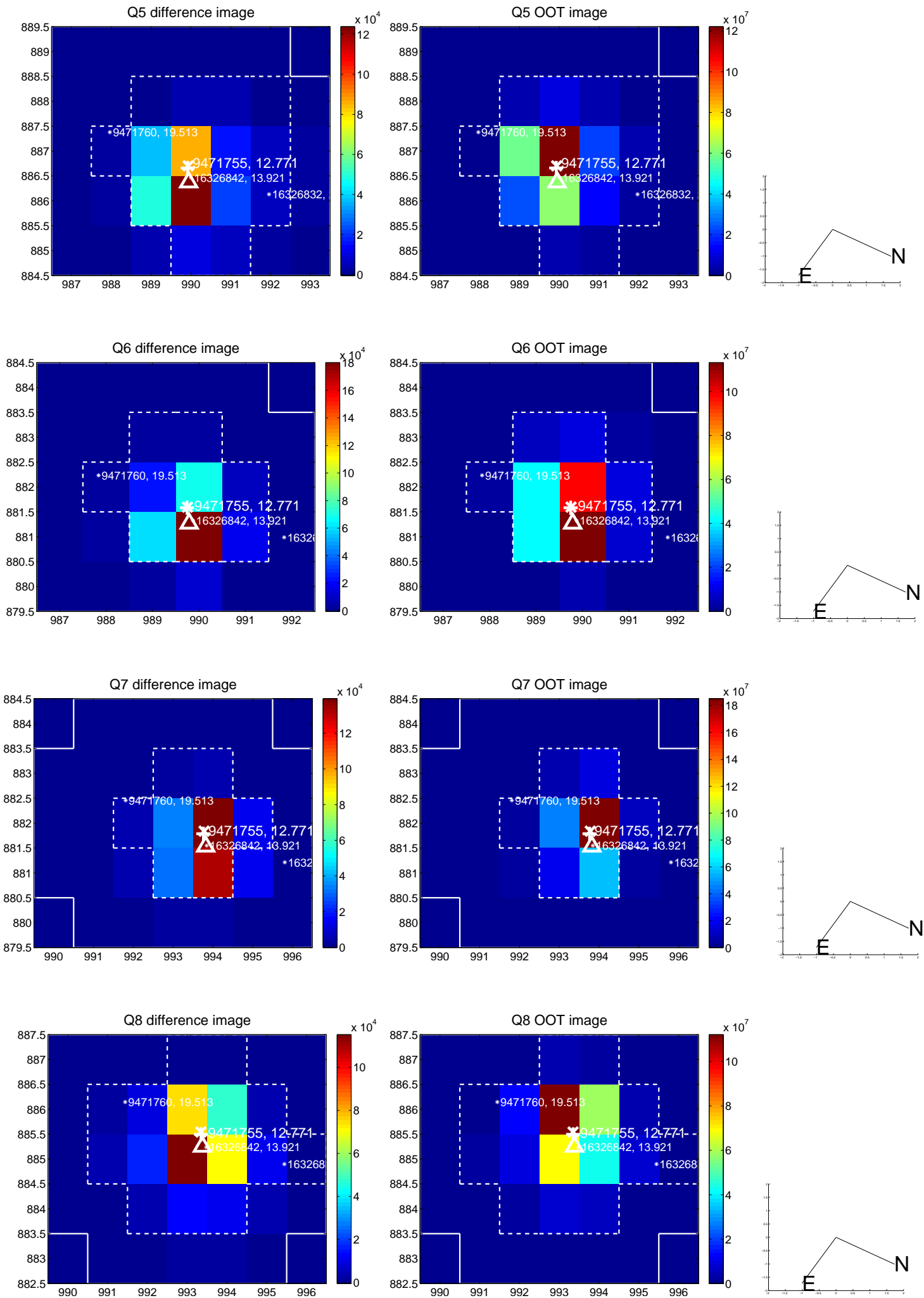


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

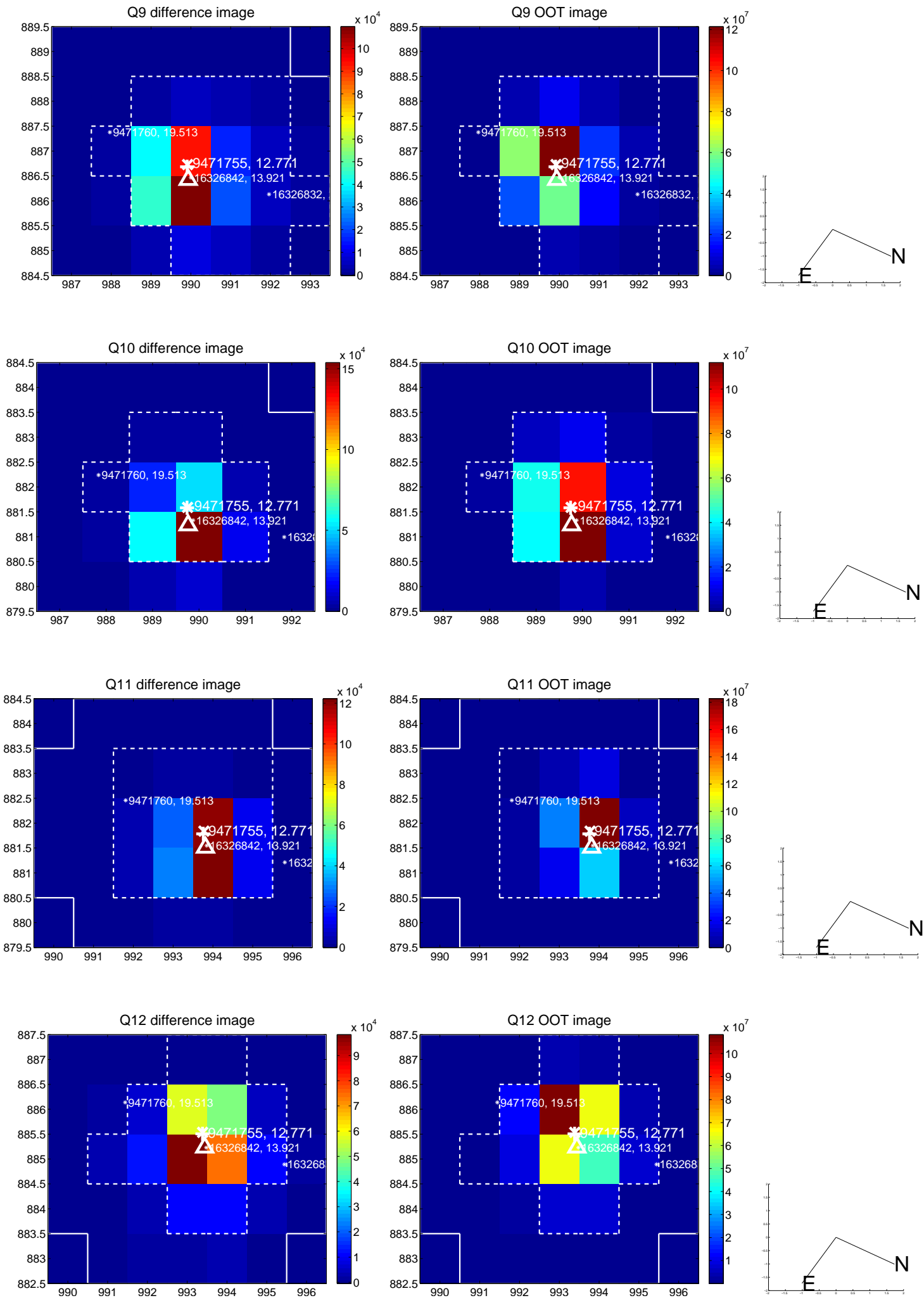


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

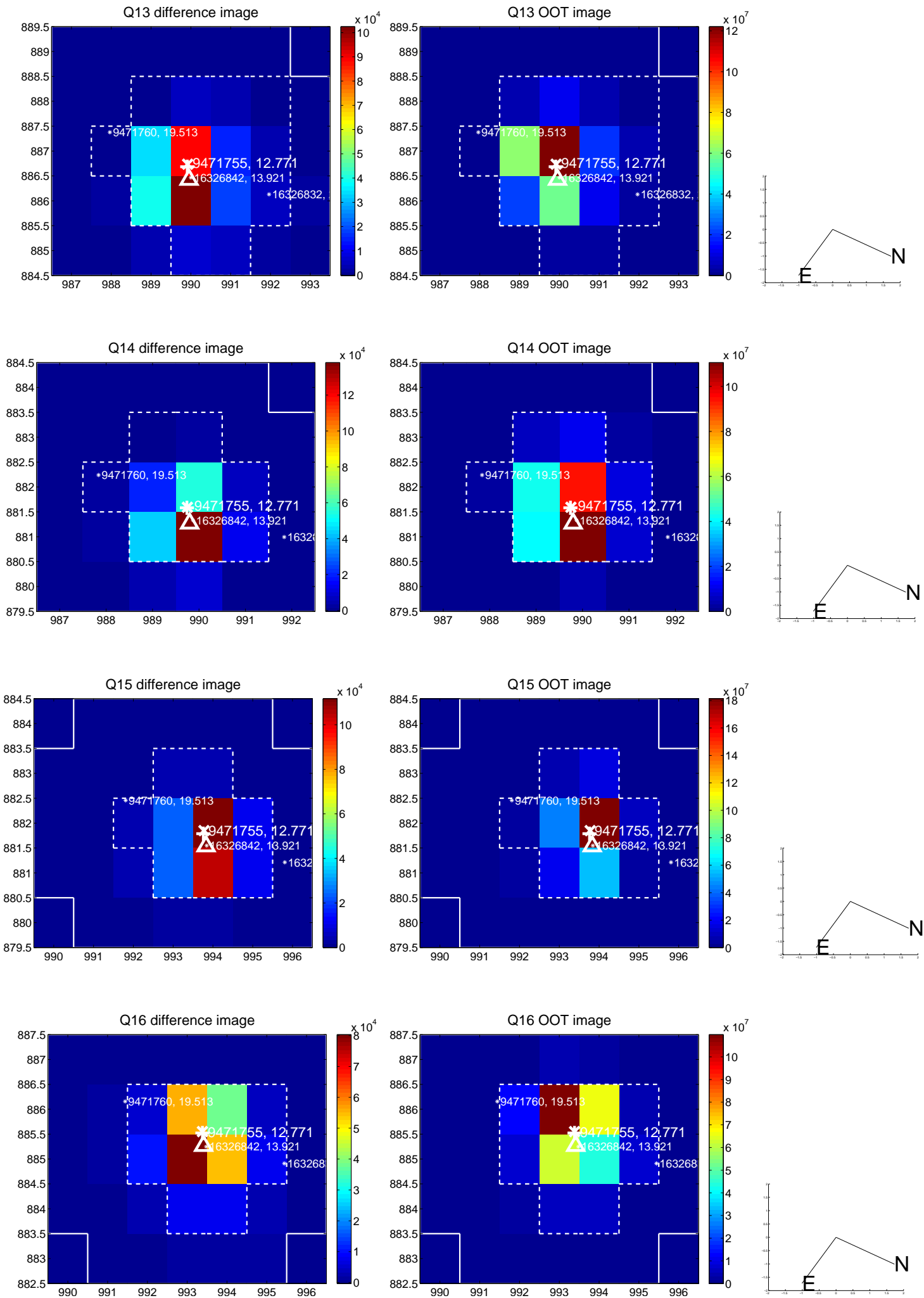




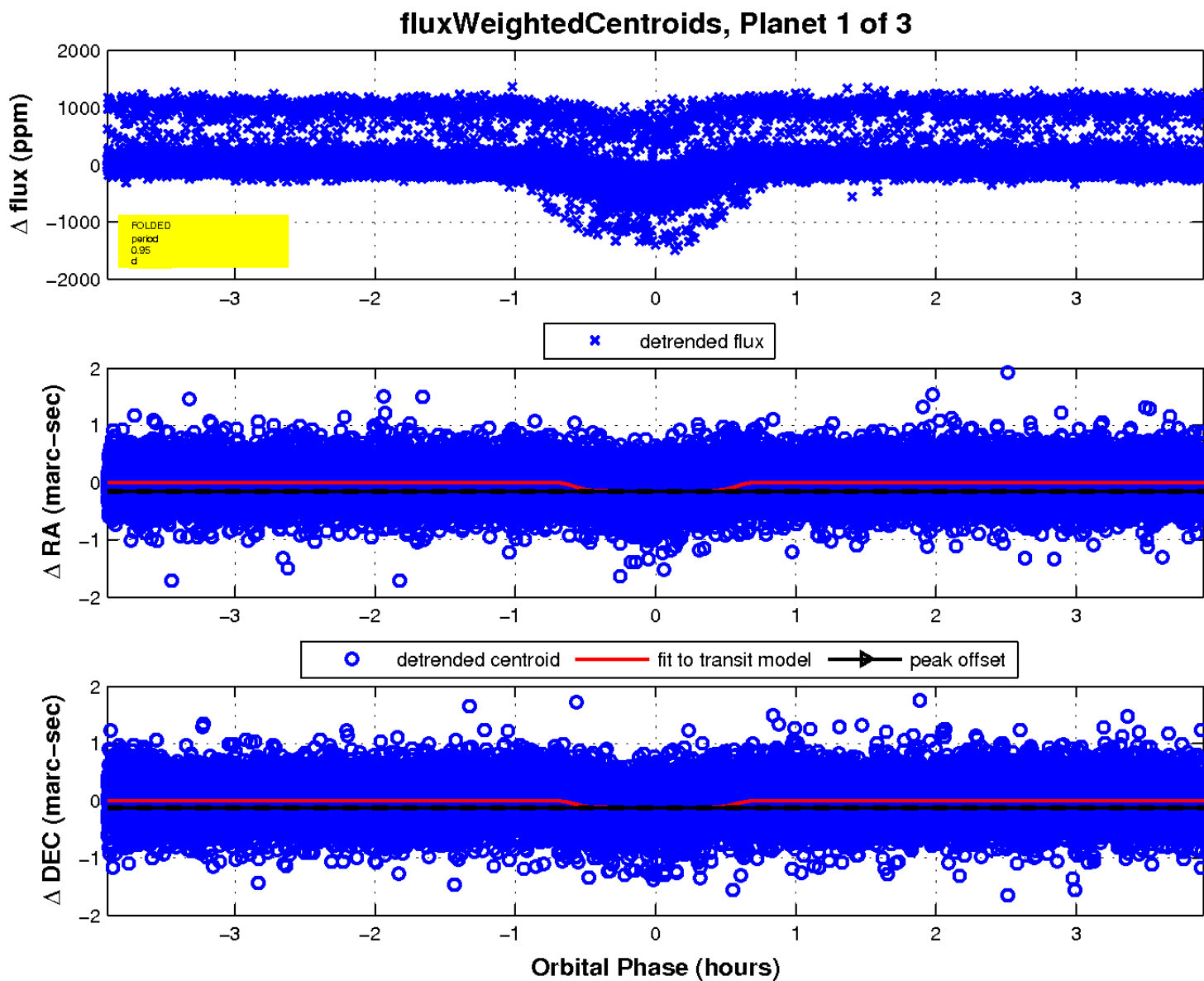
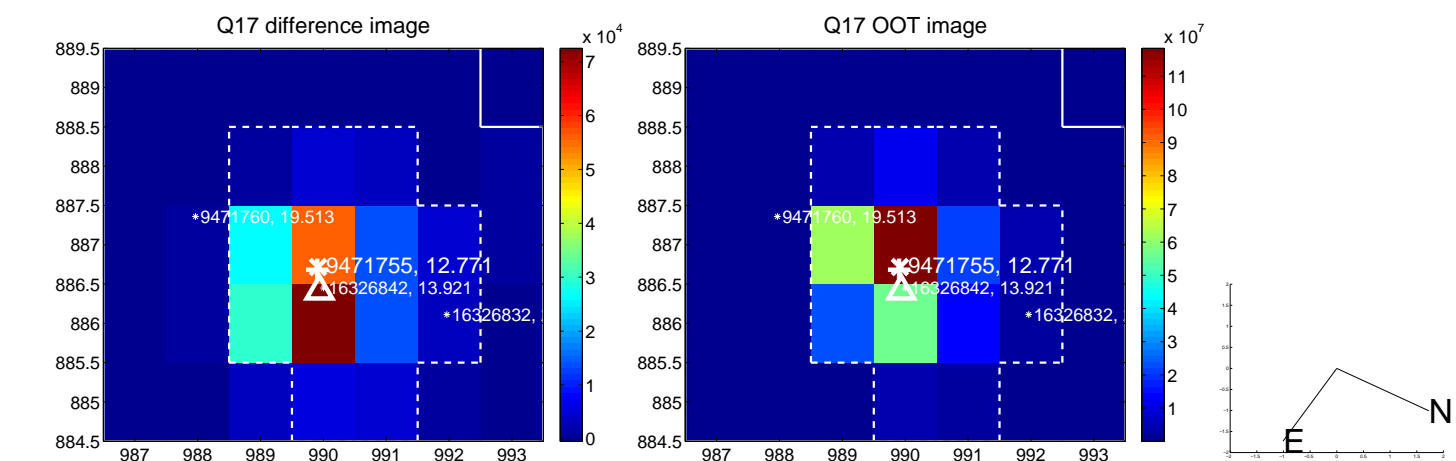
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

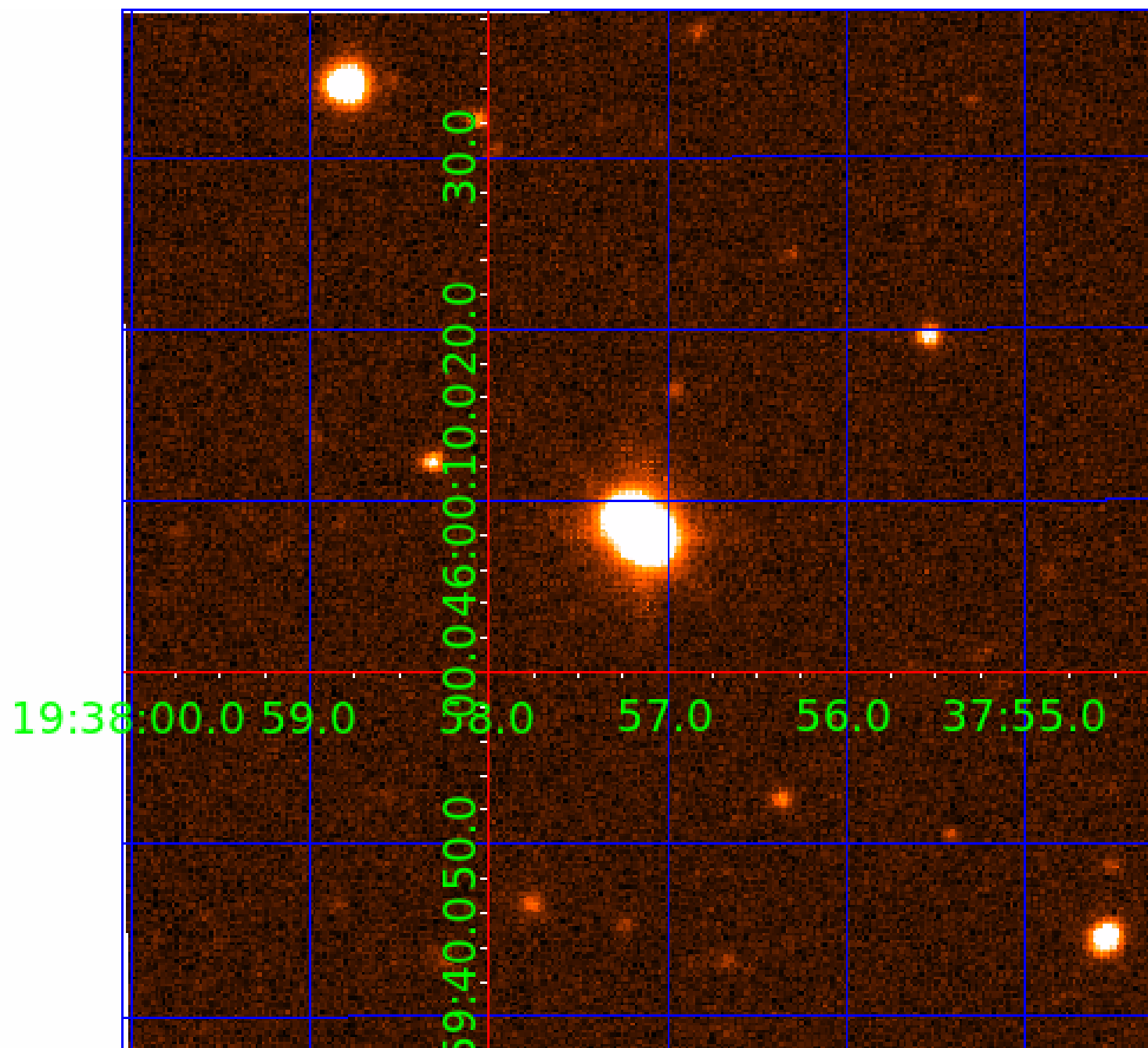


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 009471755

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009471755-01	OBS	6204.01	0.953745	132.411089	326.4	1.303	107.7	141.8	1.46	7332	3.07	12081.18
009471755-02	OBS	No	0.953896	131.925427	26.0	1.202	24.1	12.7	1.46	7332	0.87	12078.65
009471755-03	OBS	No	4.521604	135.464888	211.9	6.000	16.8	-1.0	1.46	7332	2.15	1516.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009471755-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
009471755-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
009471755-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—CENT_NOFITS

**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 009471755-02

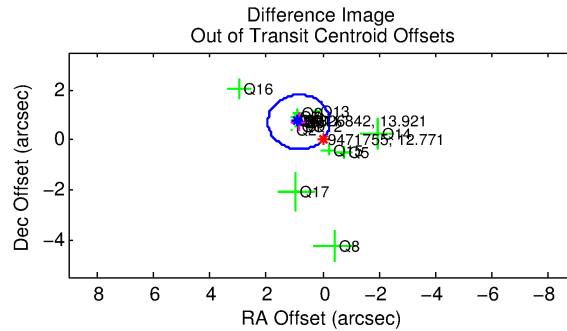
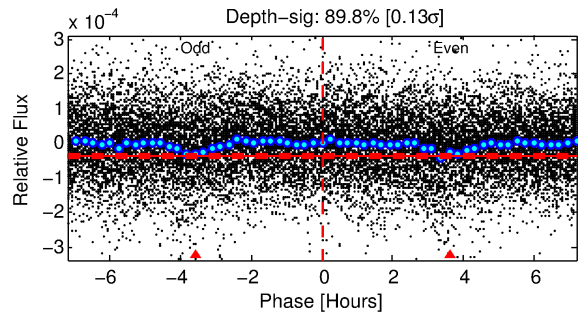
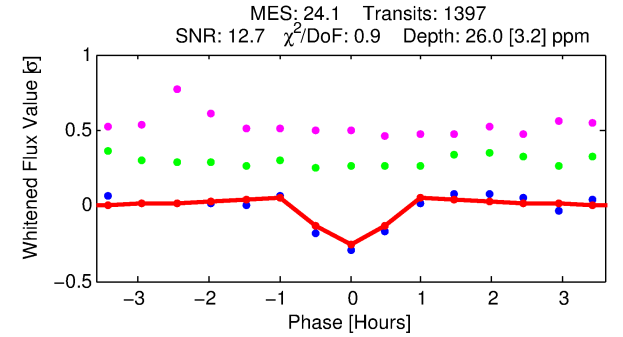
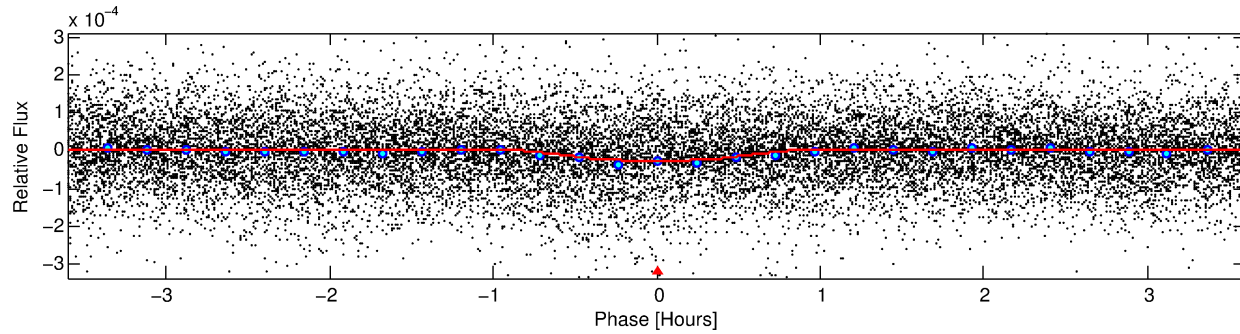
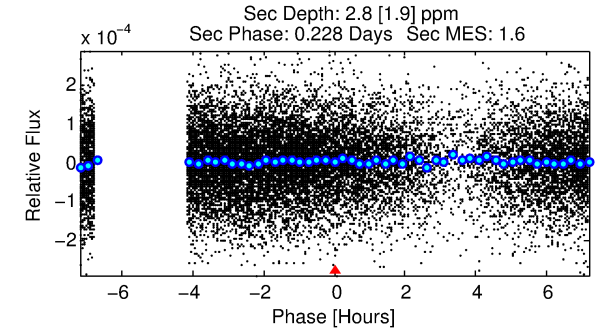
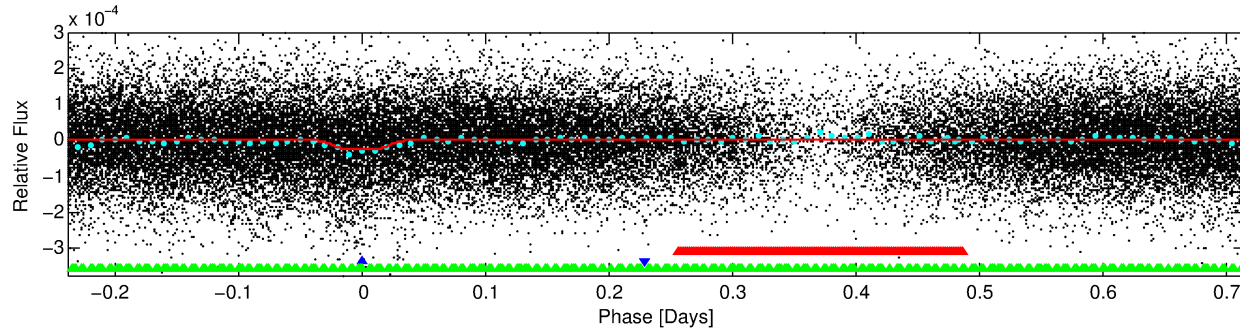
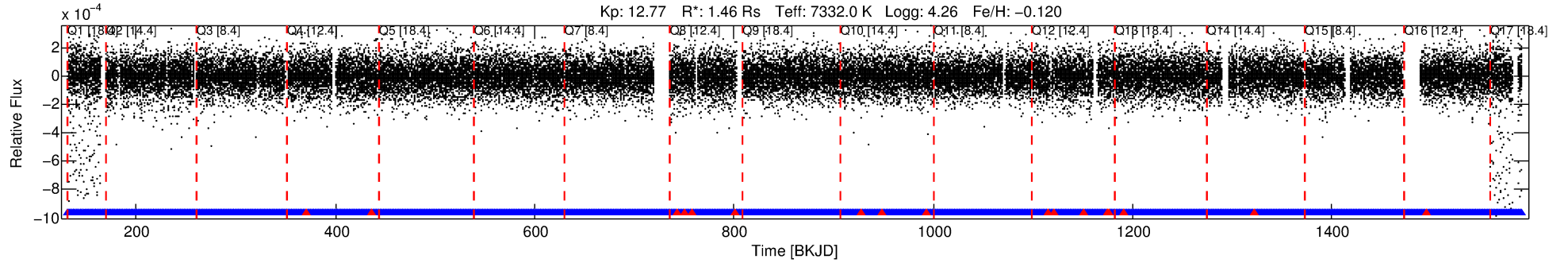
No Significant Match Found



# DV One-Page Summary

KIC: 9471755 Candidate: 2 of 3 Period: 0.954 d

KOI: K06204 Corr: No Ephemeris Match



## DV Fit Results:

Period = 0.95390 [0.00001] d  
Epoch = 131.9254 [0.0014] BKJD  
Rp/R\* = 0.0055 [0.0008]  
a/R\* = 2.80 [2.06]  
b = 0.91 [0.17]  
Seff = 12078.65 [11172.35]  
Teff = 2673 [618] K  
Rp = 0.87 [0.34] Re  
a = 0.0214 [0.0063] AU  
Ag = 0.94 [0.78] [-0.08σ]  
Teffp = 4067 [1115] K [1.09σ]

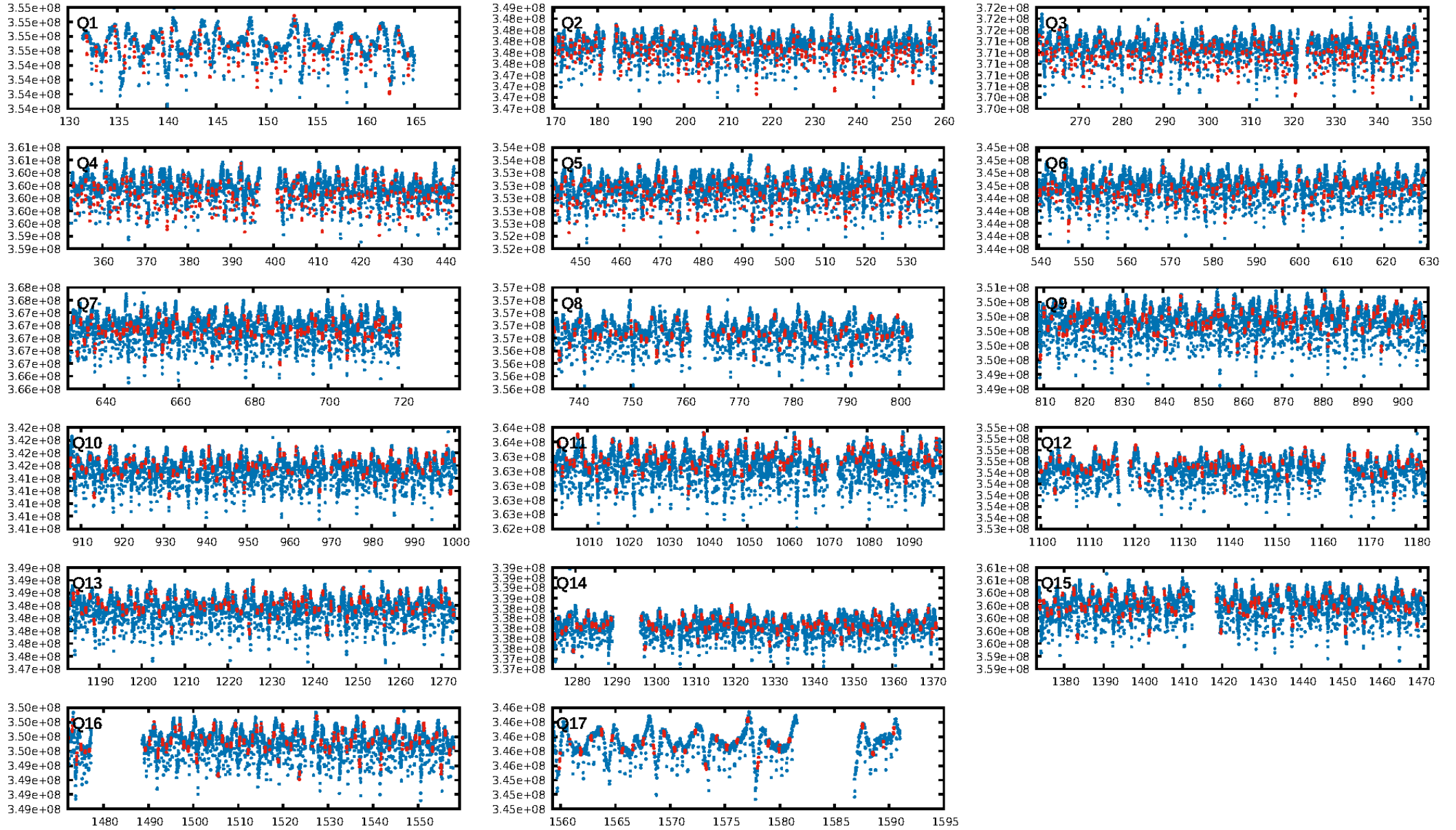
## DV Diagnostic Results:

ShortPeriod-sig: 0.2% [0.00σ]  
LongPeriod-sig: 100.0% [13.99σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.99 [1318/1335]  
GhostDiagnostic-chr: 2.302  
Centroid-sig: 4.1%  
Centroid-so: 1.031 arcsec [1.53σ]  
OotOffset-rm: 1.098 arcsec [3.00σ]  
KicOffset-rm: 1.264 arcsec [3.78σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.59 [10/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:32:14 Z

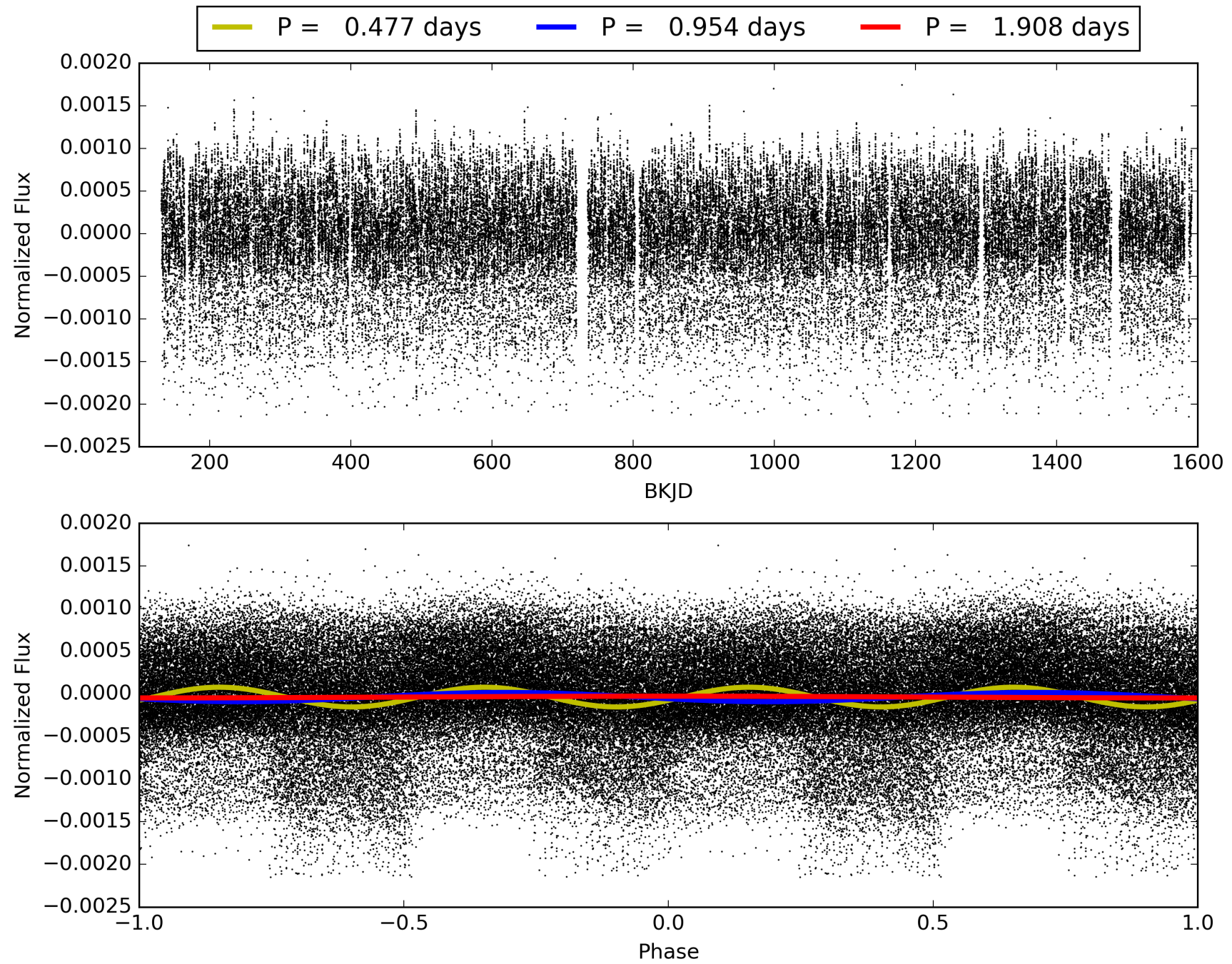
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009471755-02, PDC Light Curves



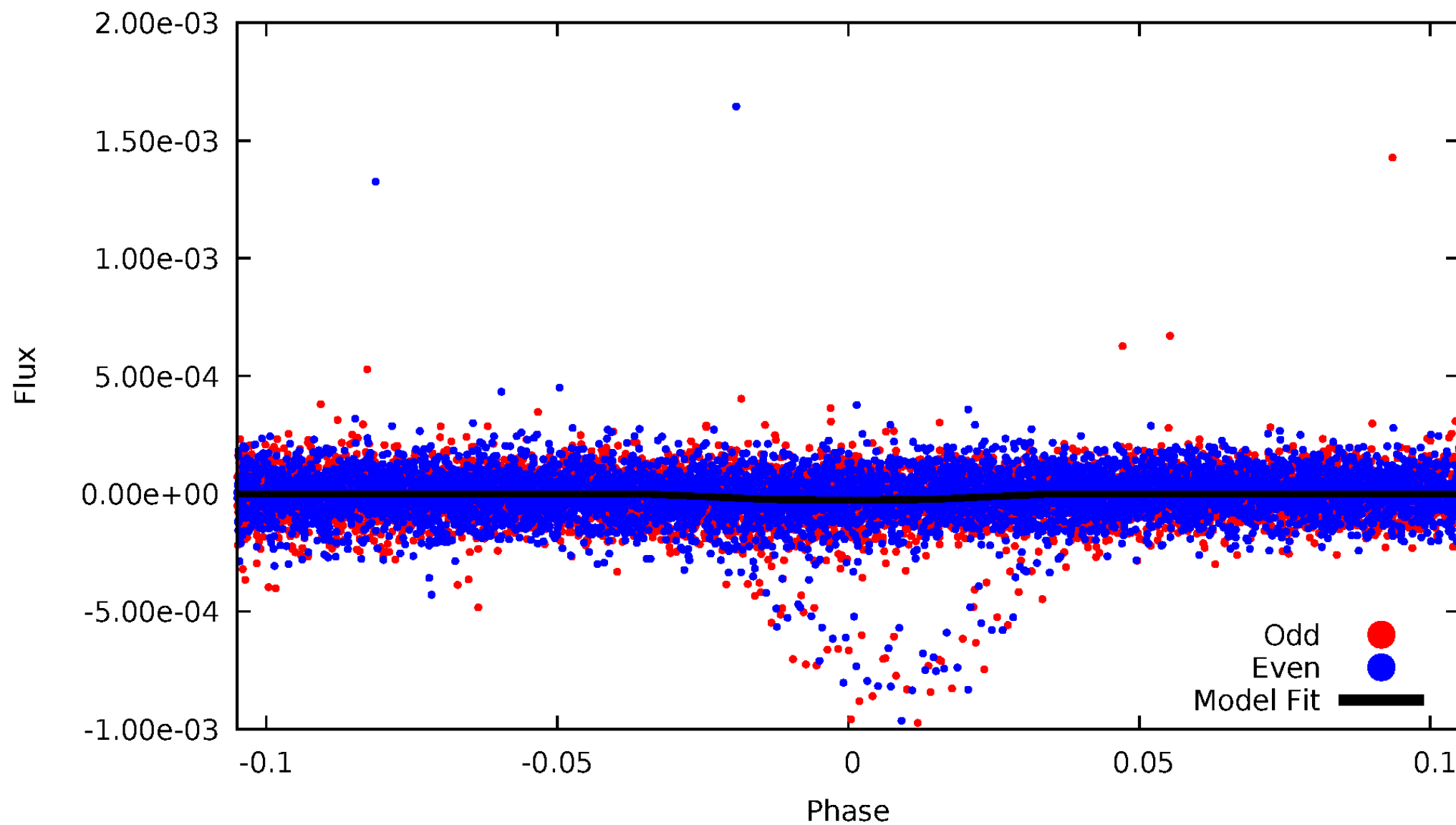


TCE 009471755-02



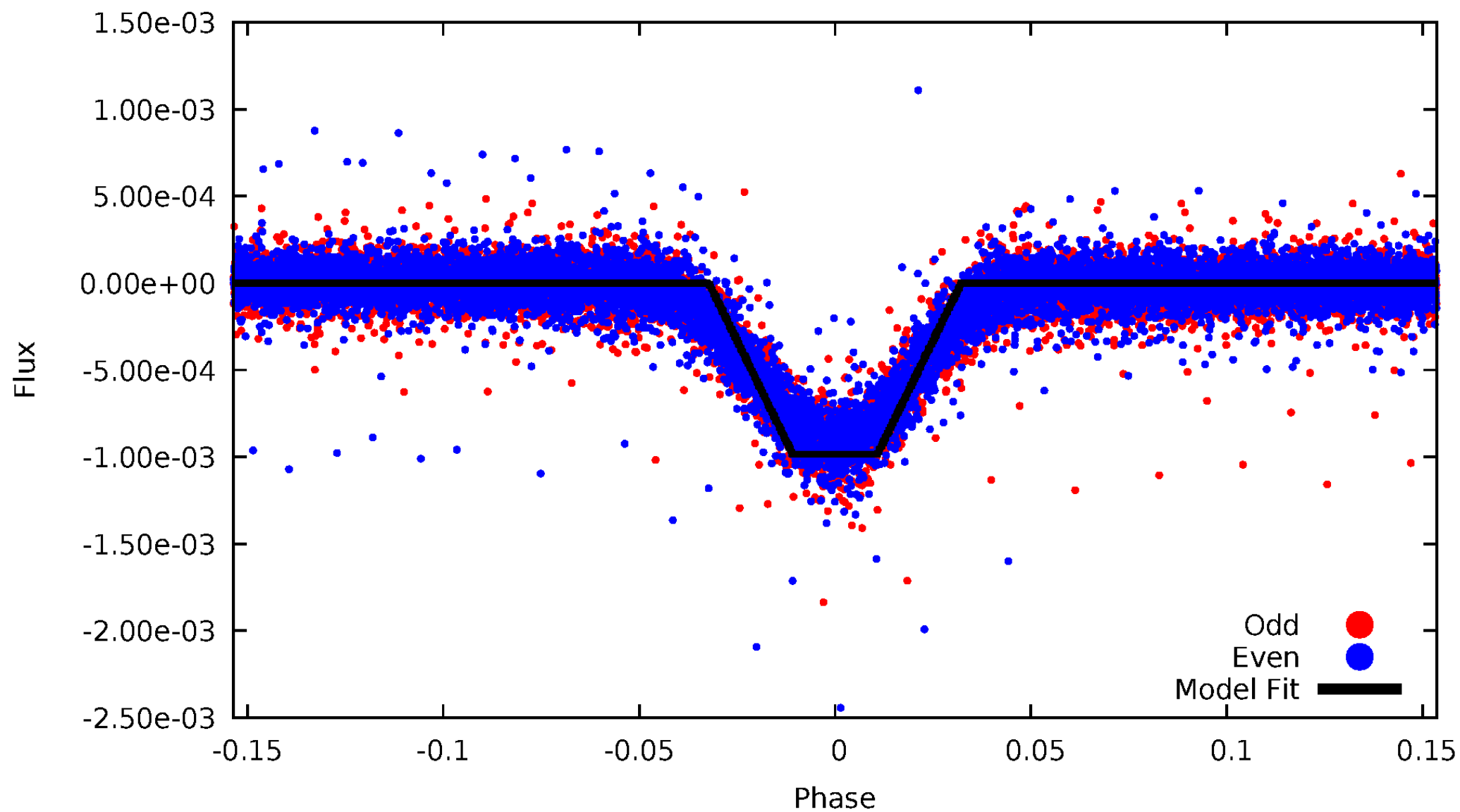
# DV Odd/Even

TCE 009471755-02



# ALT Odd/Even

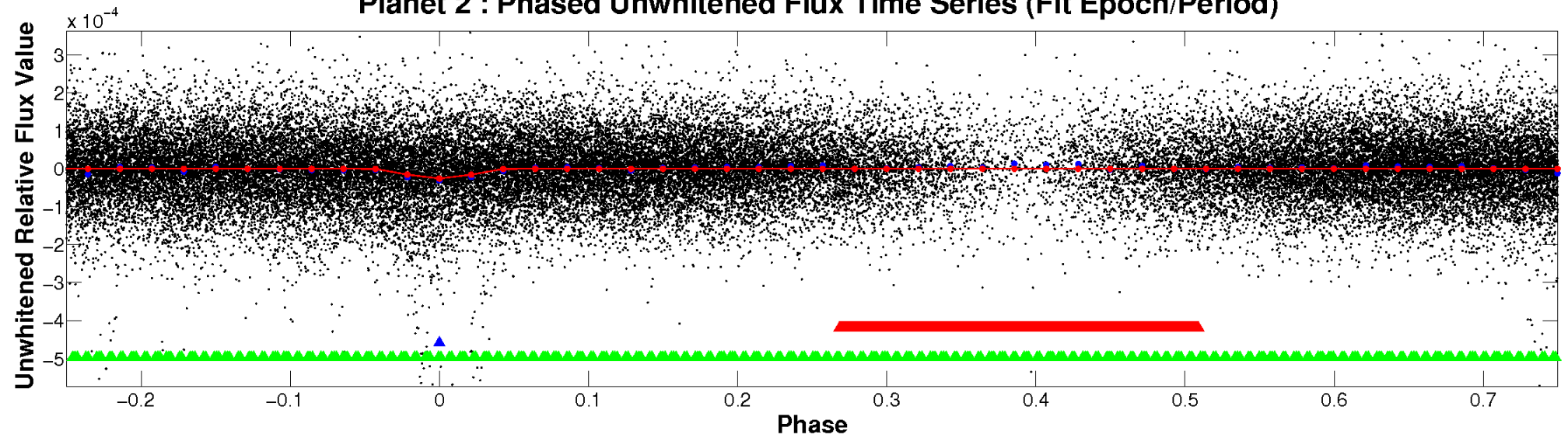
TCE 009471755-02



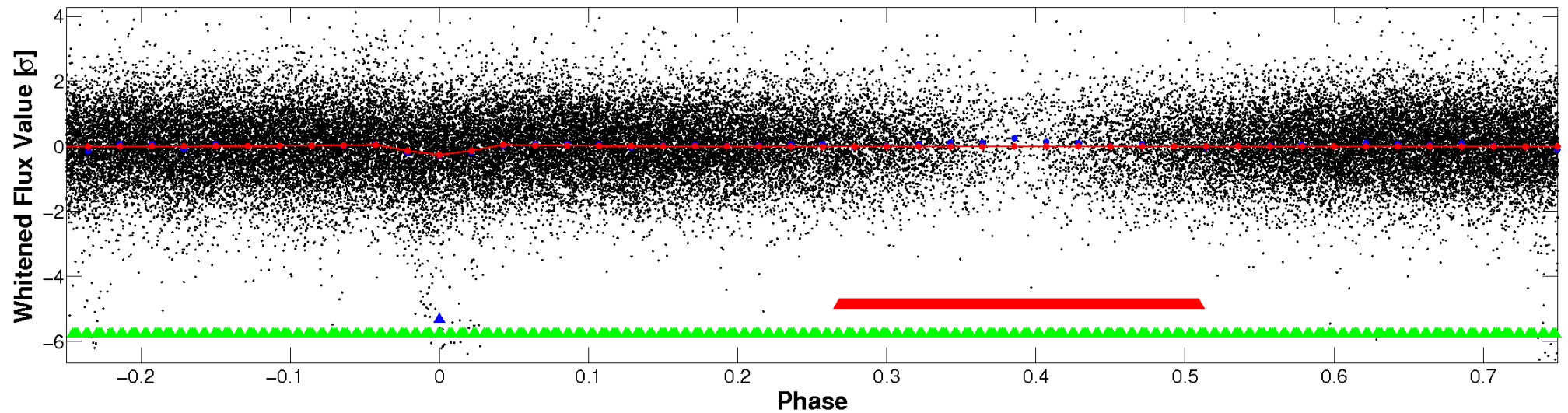


# Non-Whitened Vs. Whitened Light Curve

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

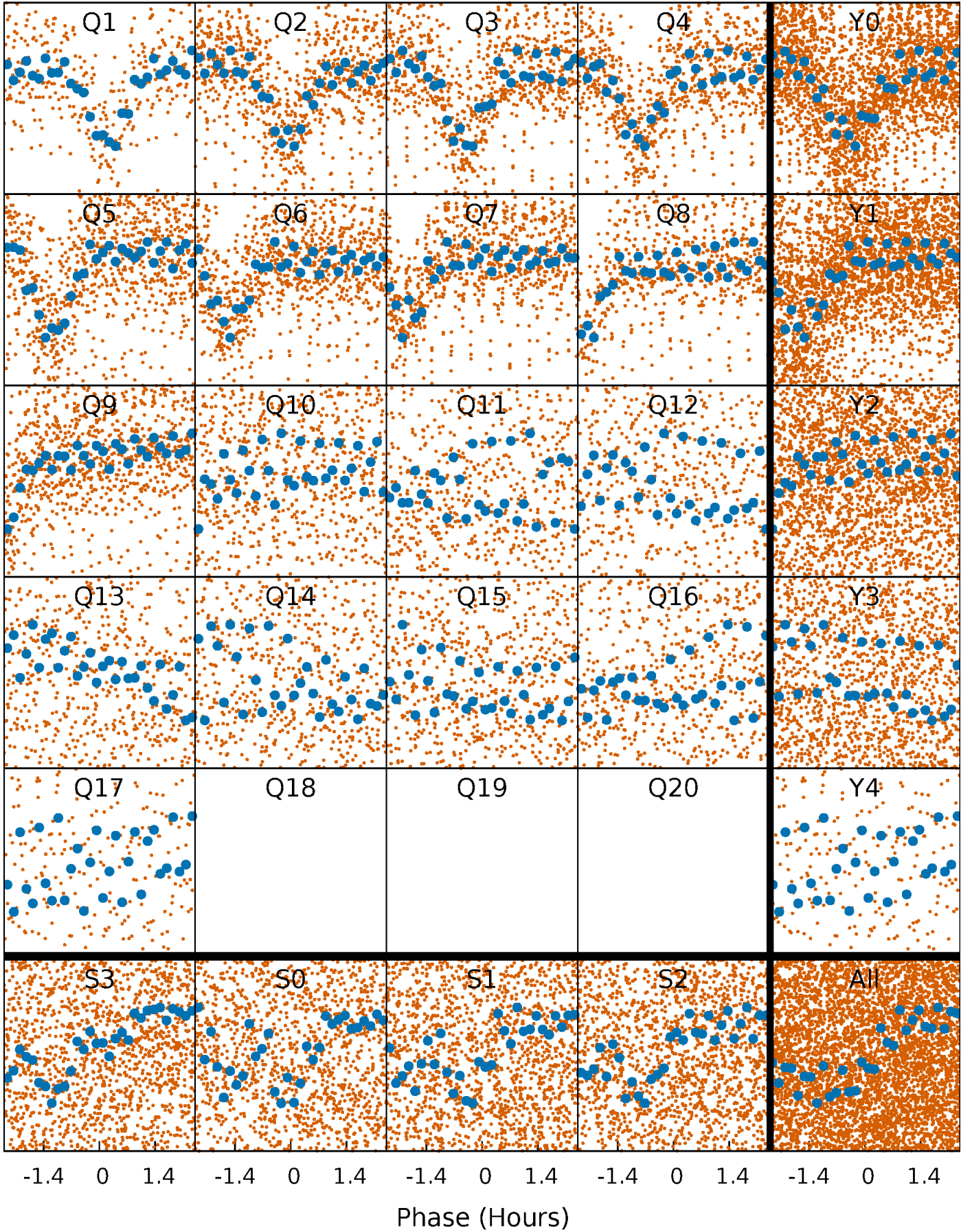


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

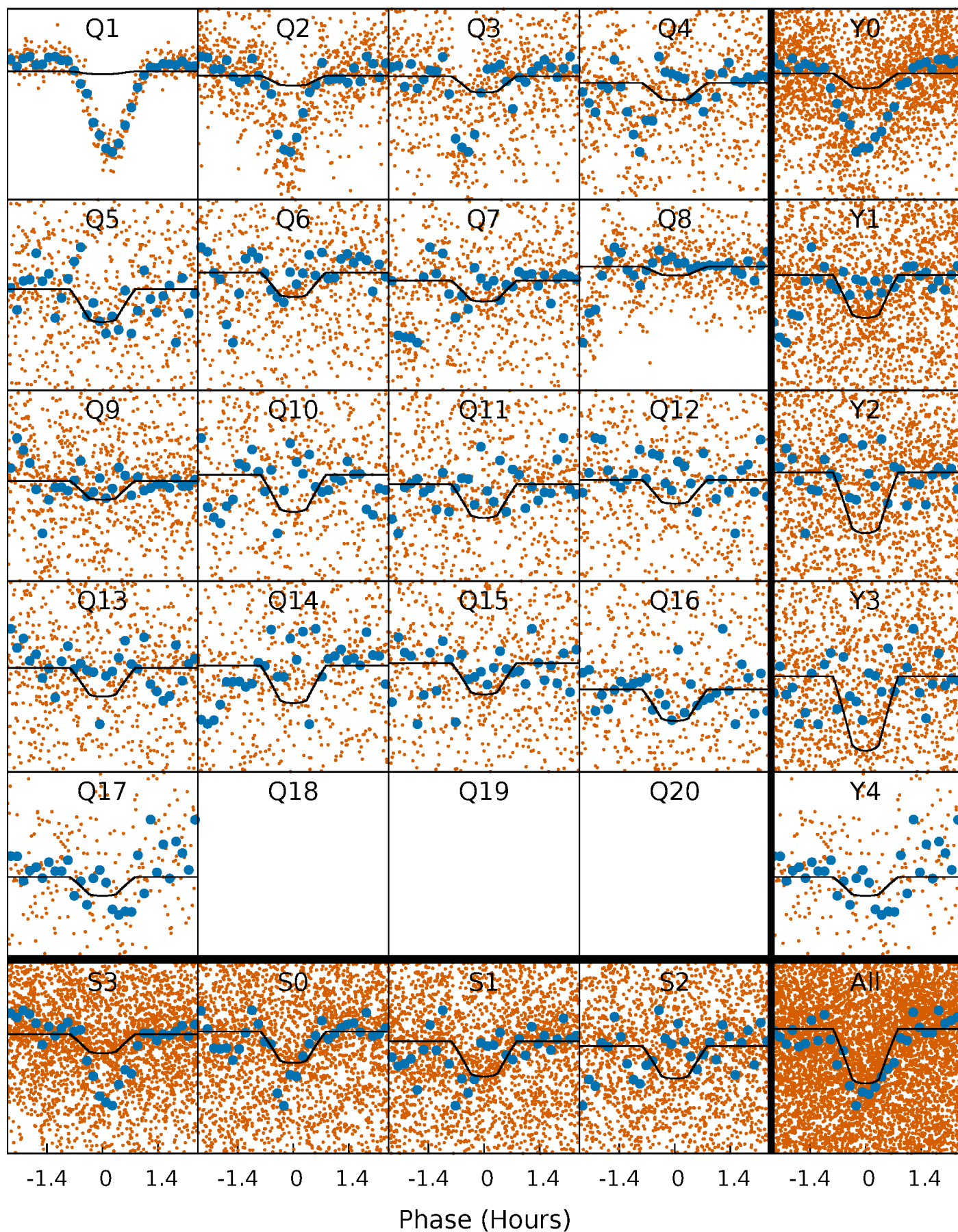
TCE 009471755-02     $P = 0.953896$  Days     $T_0 = 131.925427$  (BKJD)





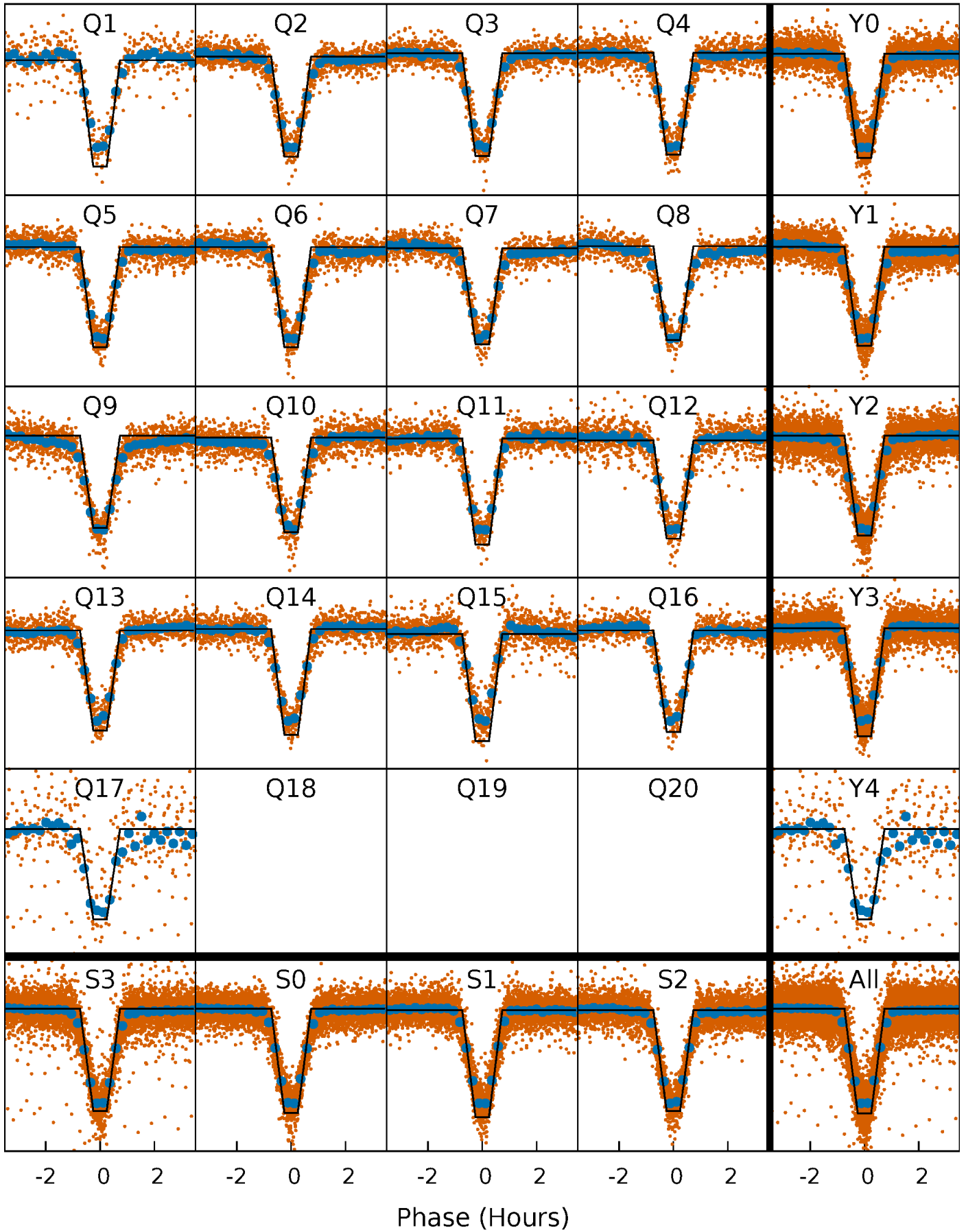
# DV Quarter-Phased Transit Curves

TCE 009471755-02 P= 0.953896 Days  $T_0=131.925427$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

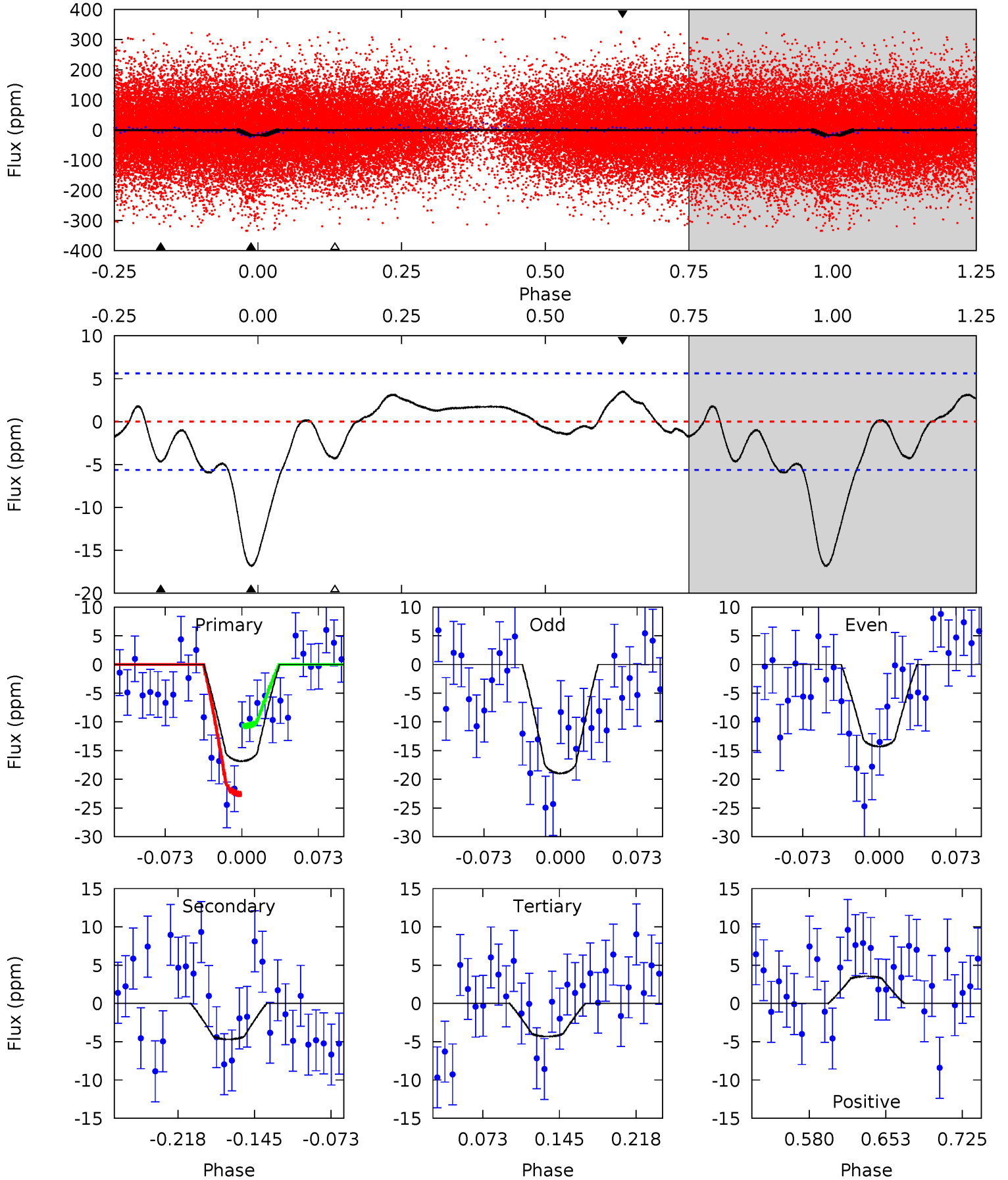
TCE 009471755-02     $P = 0.953736$  Days     $T_0 = 131.935326$  (BKJD)



# DV Model-Shift Uniqueness Test

009471755-02, P = 0.953896 Days, E = 130.971531 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	3.85	3.55	2.91	4.63	1.80	1.71	10.3	10.9	0.30	0.94	1.93	2.18	0.17	4.81

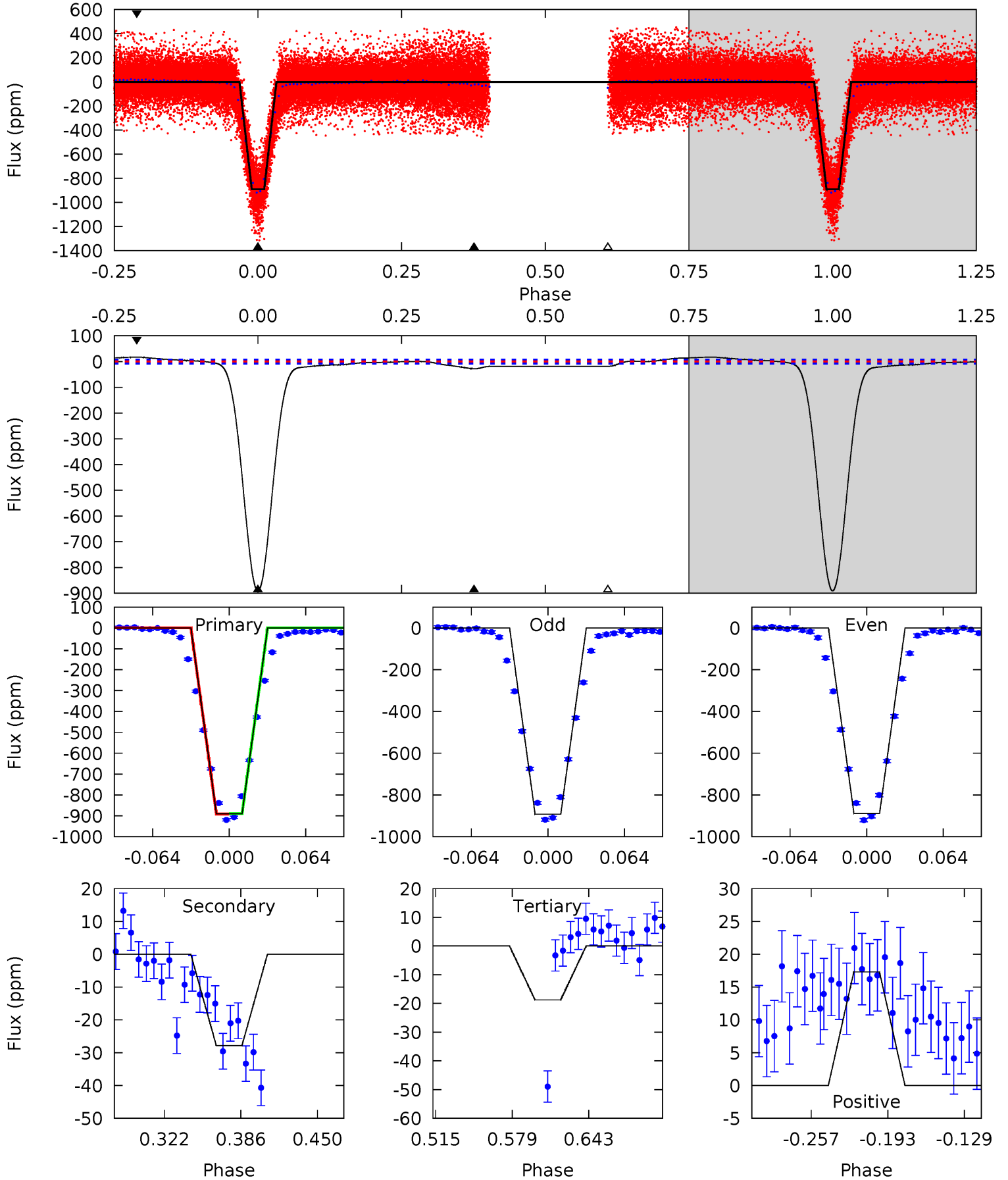




# Alt Model-Shift Uniqueness Test

009471755-02, P = 0.953736 Days, E = 130.981590 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
517.8	16.2	10.9	10.1	4.66	1.85	6.07	506.8	507.7	5.28	6.13	1.17	1.01	0.02	0.60



### Stellar Parameters For KIC 009471755

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7332^{+506}_{-1519}$	$4.265^{+0.215}_{-0.193}$	$-0.120^{+0.300}_{-0.300}$	$1.460^{+0.487}_{-0.536}$	$1.430^{+0.212}_{-0.495}$	$0.648^{+0.930}_{-0.329}$
	+7%/-21%	+5%/-5%	+250%/-250%	+33%/-37%	+15%/-35%	+144%/-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 009471755-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-5 \pm 1$	$0.85^{+0.24}_{-0.19}$	$3626^{+493}_{-675}$	$4344^{+606}_{-651}$	$1.542^{+1.034}_{-0.610}$
Alt.	$-28 \pm 2$	$5.01^{+0.90}_{-0.93}$	$3633^{+518}_{-760}$	$-2359^{+5075}_{-679}$	$0.274^{+0.117}_{-0.070}$

$T_{\text{max}}$  = 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

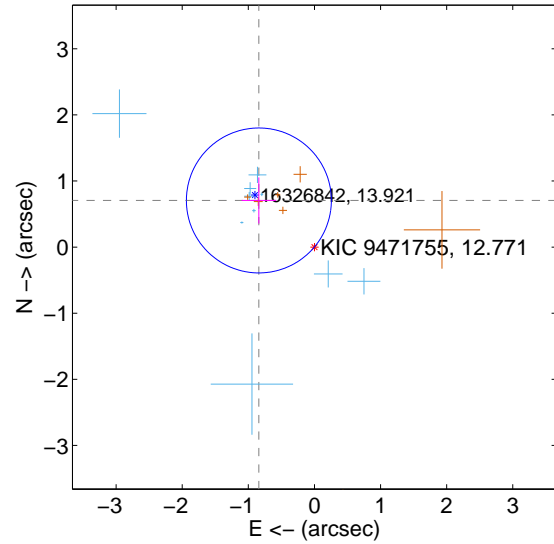
Supplemental centroid analysis for 009471755-02. Kepler magnitude: 12.77. Transit SNR 12.69

There are 10 quarters with good PRF difference image offsets

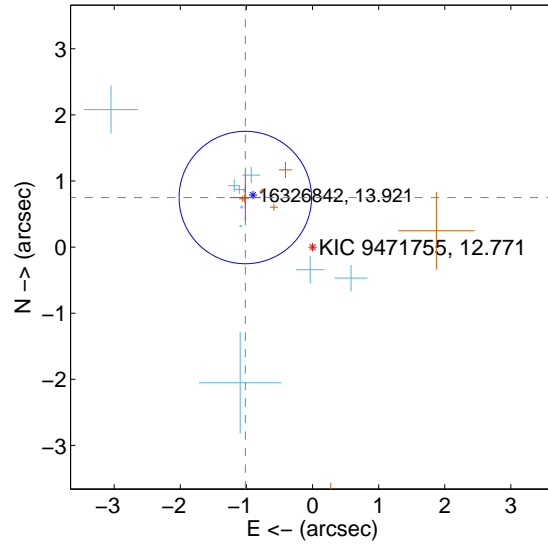
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.098 \pm 0.366$	3.00	$0.841 \pm 0.261$	$0.706 \pm 0.349$
PRF-fit source offset from KIC position	$1.264 \pm 0.334$	3.78	$1.017 \pm 0.237$	$0.750 \pm 0.344$
photometric centroid source offset	$1.03 \pm 0.67$	1.53	$-0.80 \pm 0.63$	$0.65 \pm 0.73$

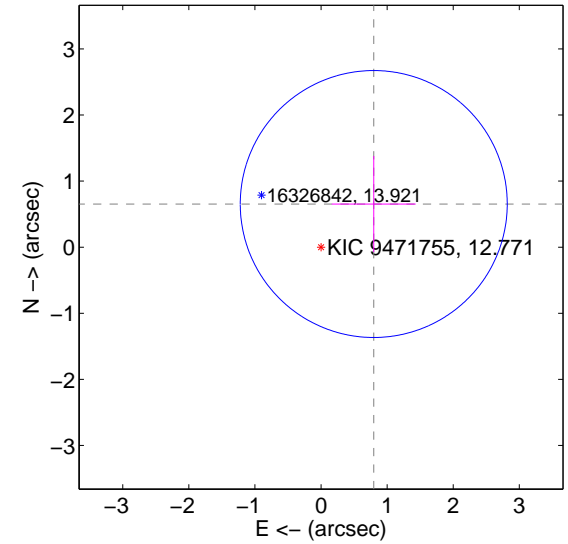
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

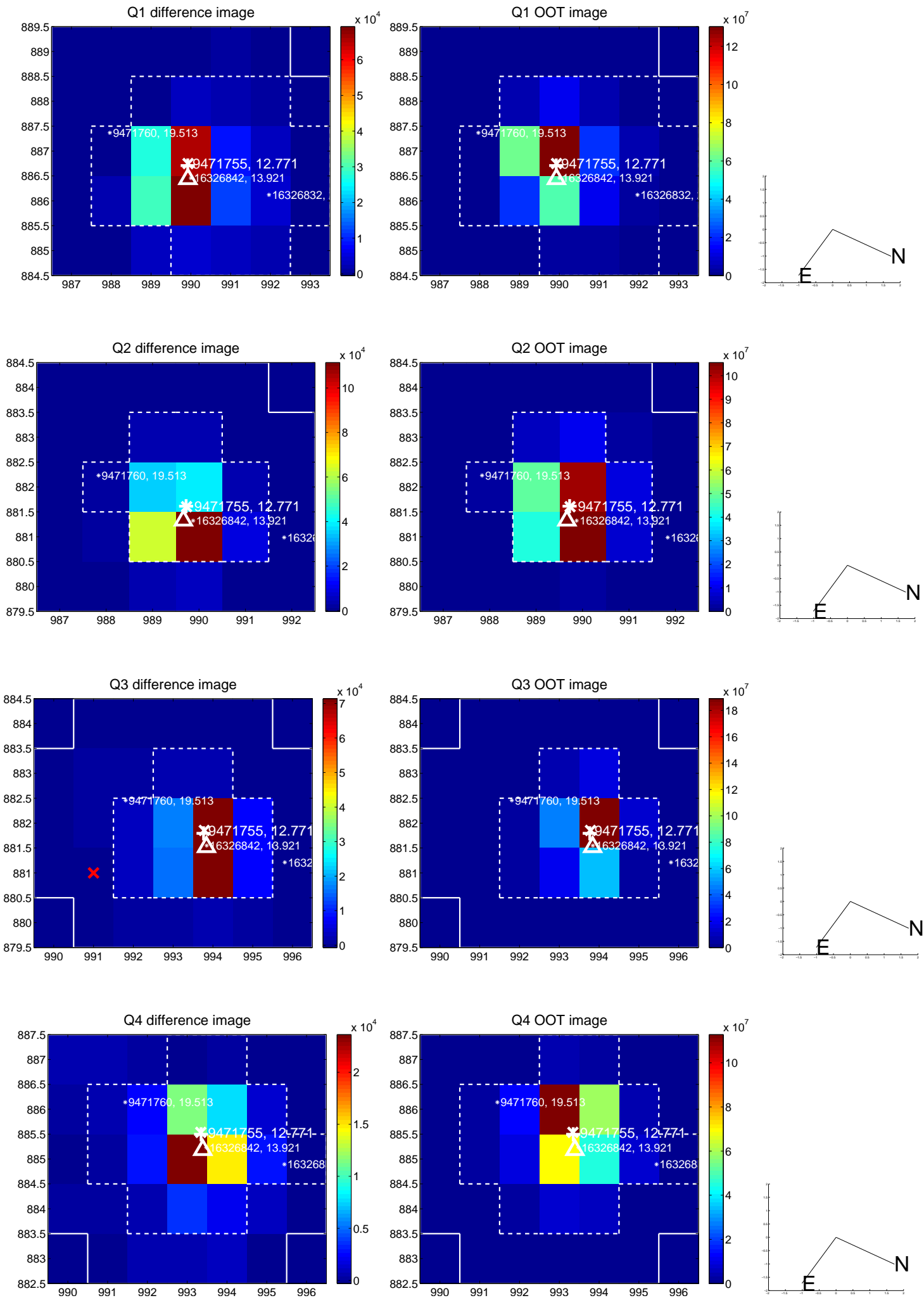


offset from photometric centroids

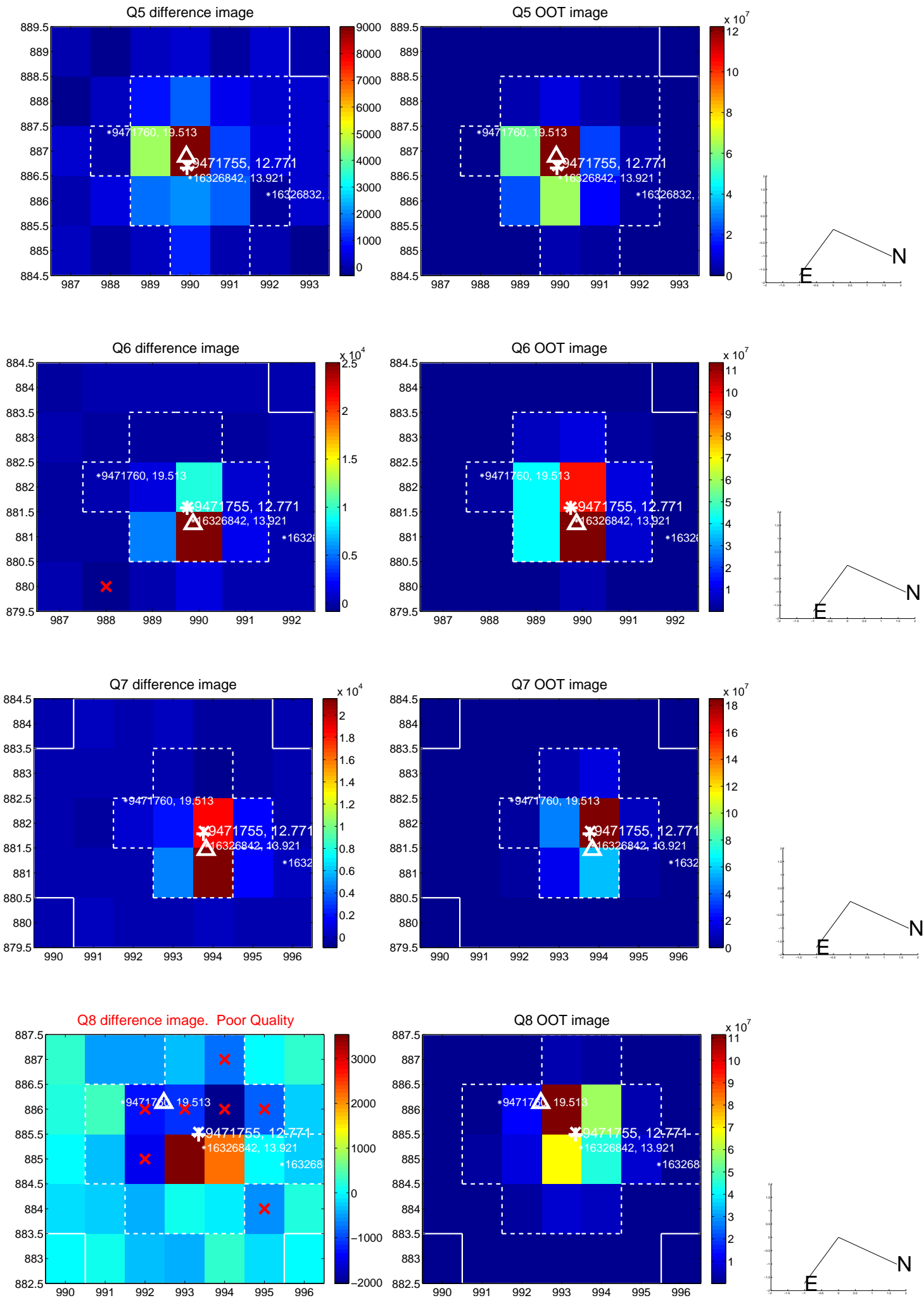


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

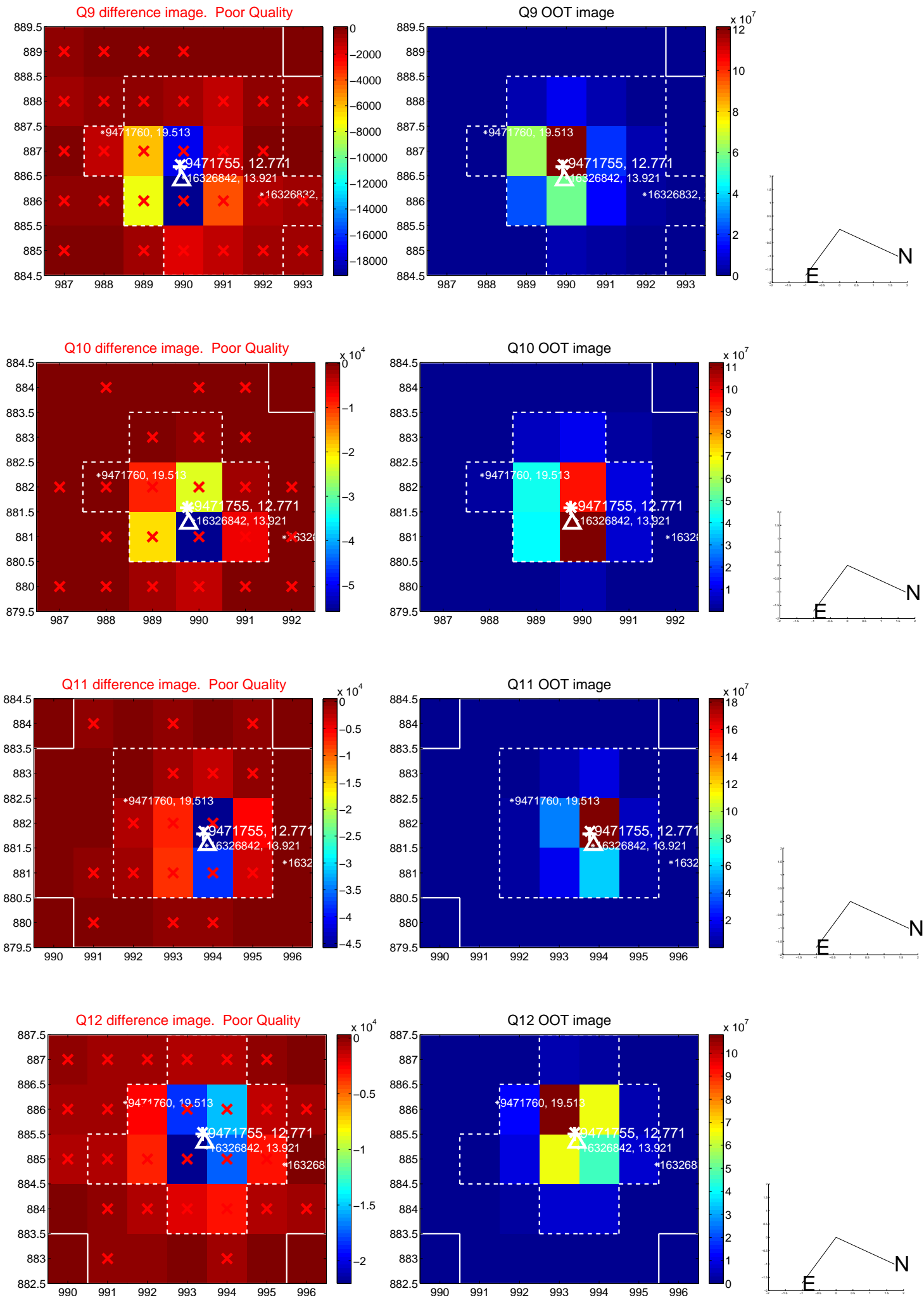


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

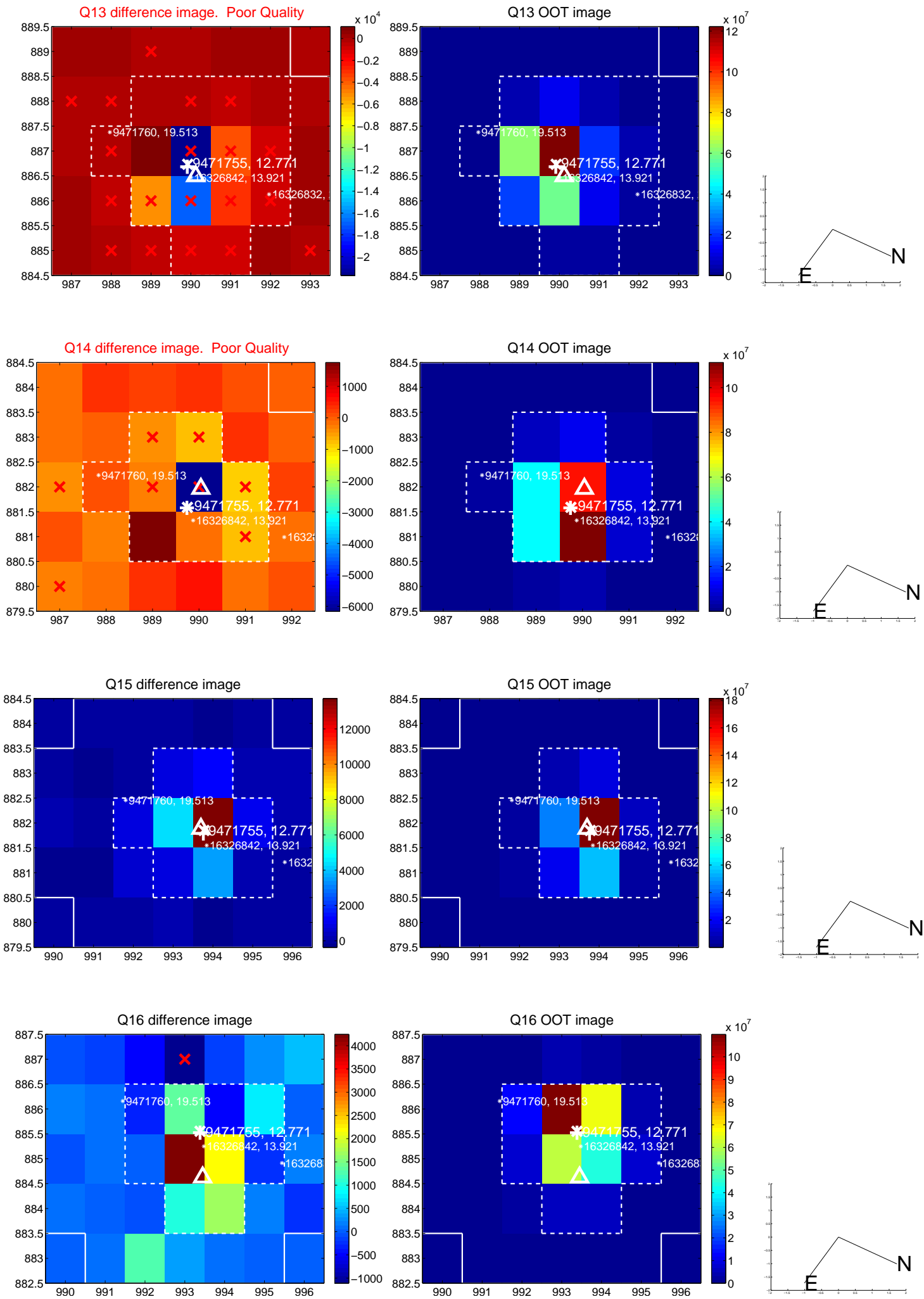




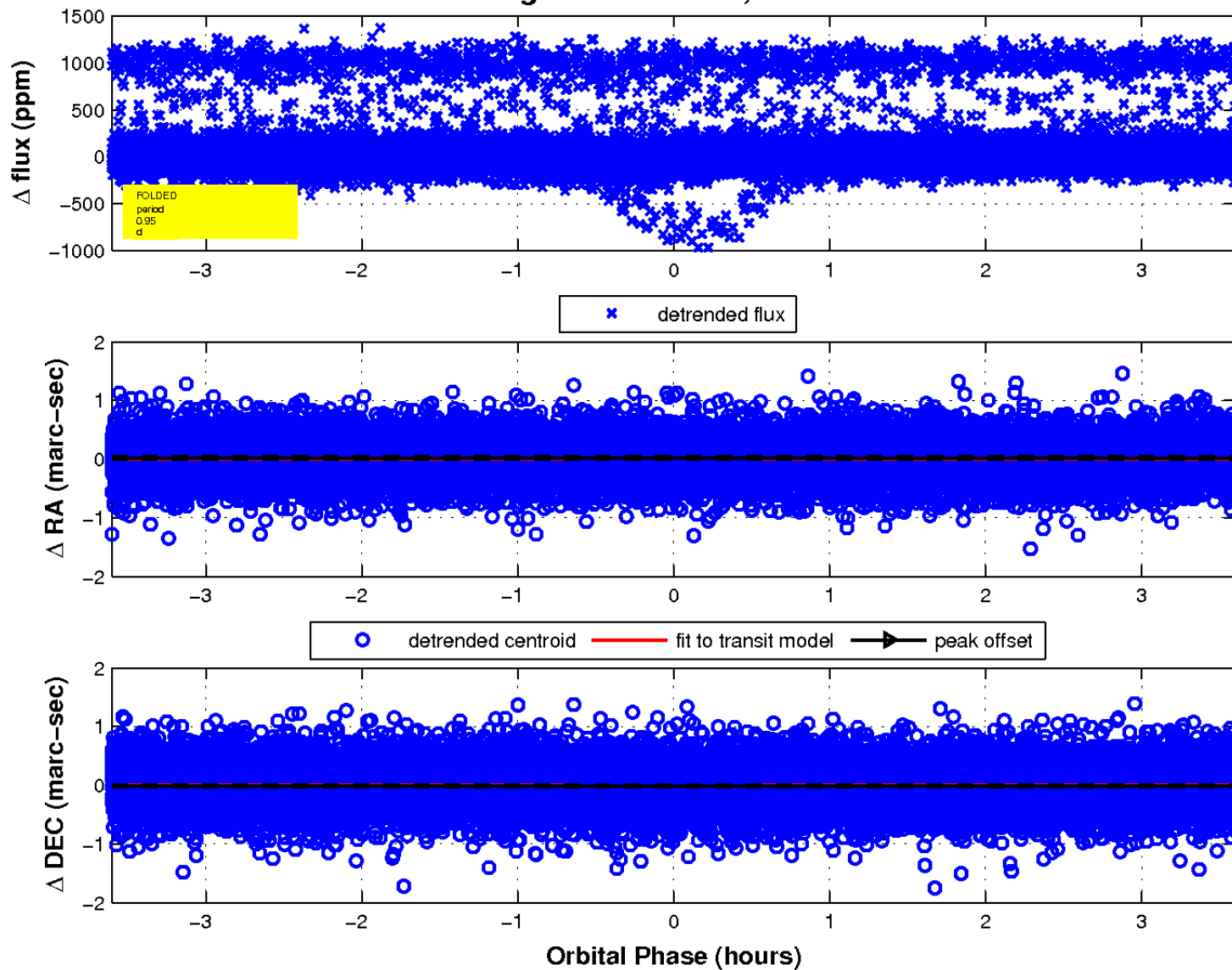
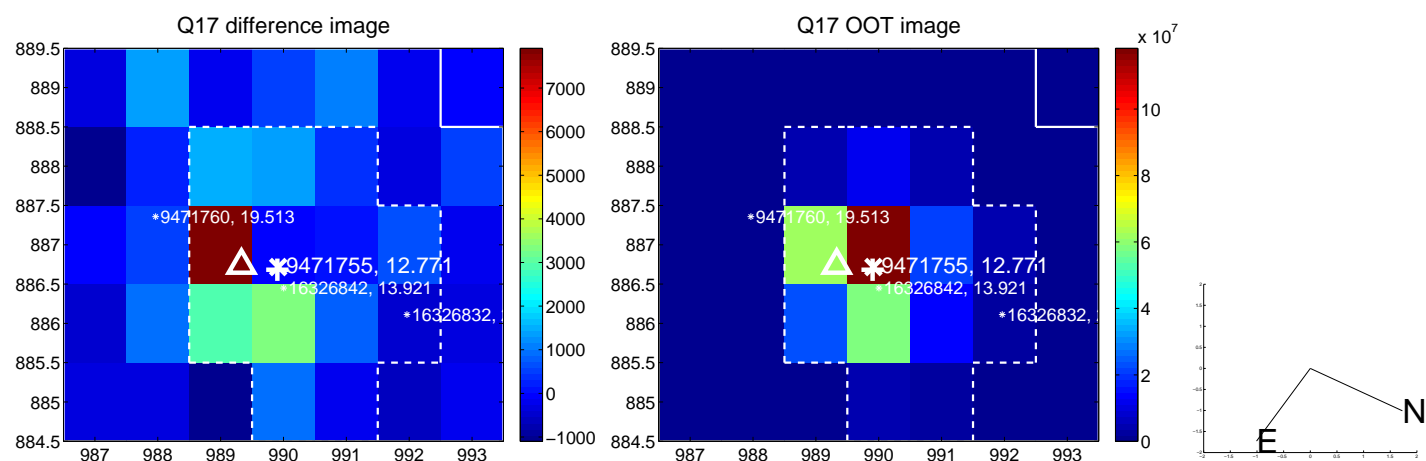
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

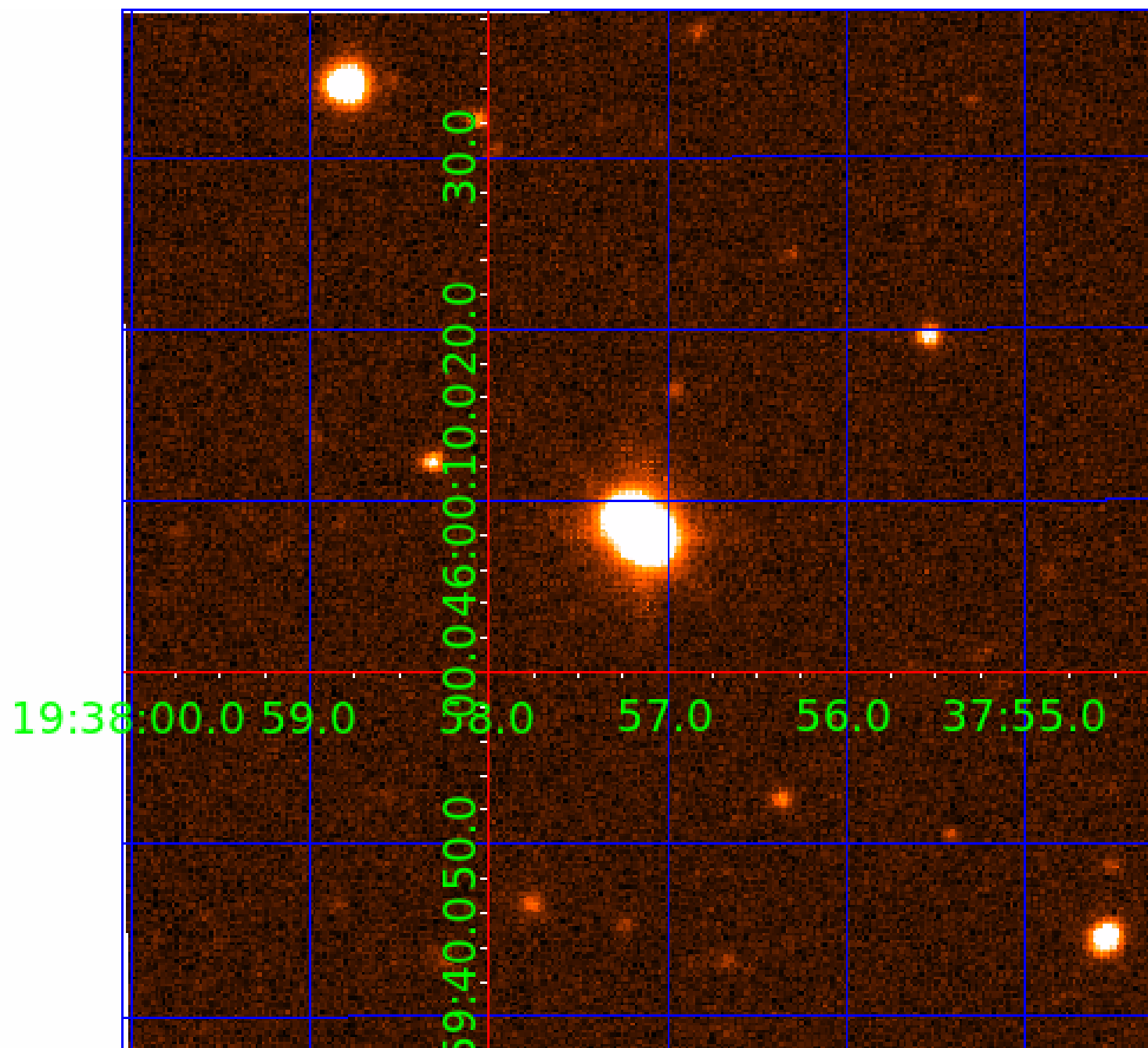


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 009471755

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009471755-01	OBS	6204.01	0.953745	132.411089	326.4	1.303	107.7	141.8	1.46	7332	3.07	12081.18
009471755-02	OBS	No	0.953896	131.925427	26.0	1.202	24.1	12.7	1.46	7332	0.87	12078.65
009471755-03	OBS	No	4.521604	135.464888	211.9	6.000	16.8	-1.0	1.46	7332	2.15	1516.92

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009471755-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
009471755-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
009471755-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—CENT_NOFITS

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

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

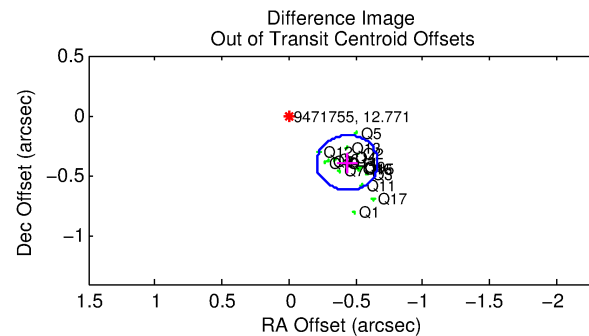
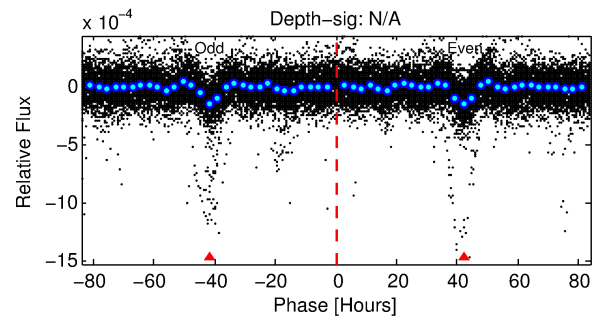
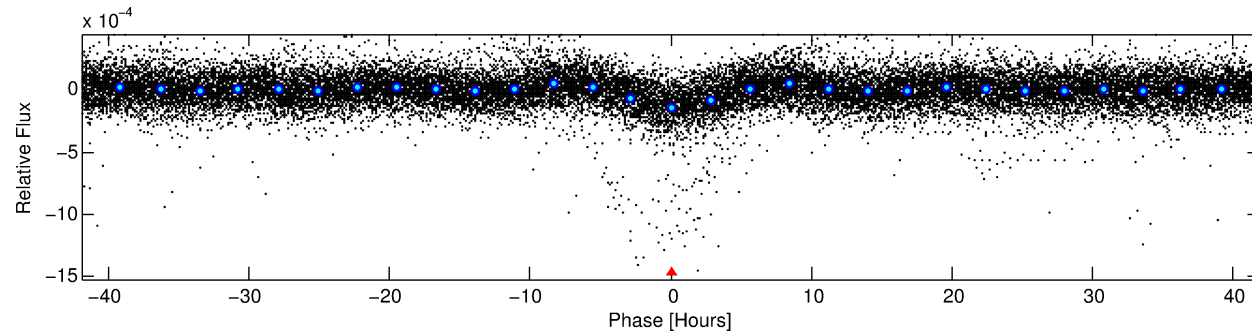
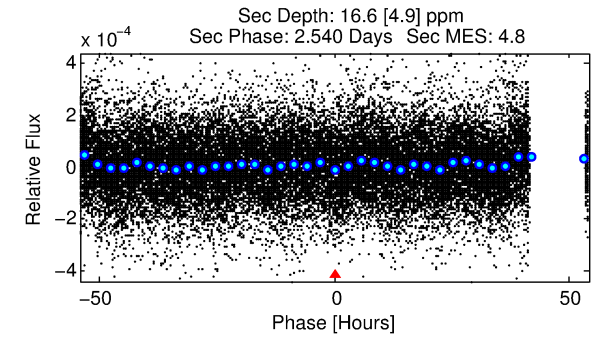
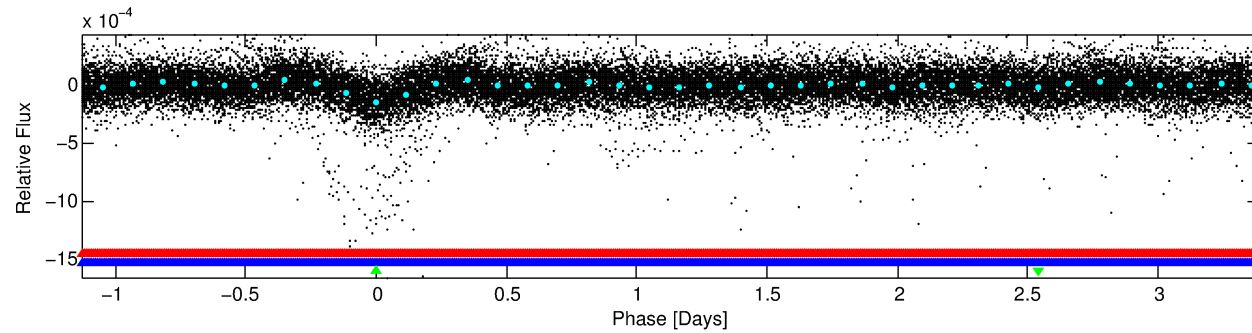
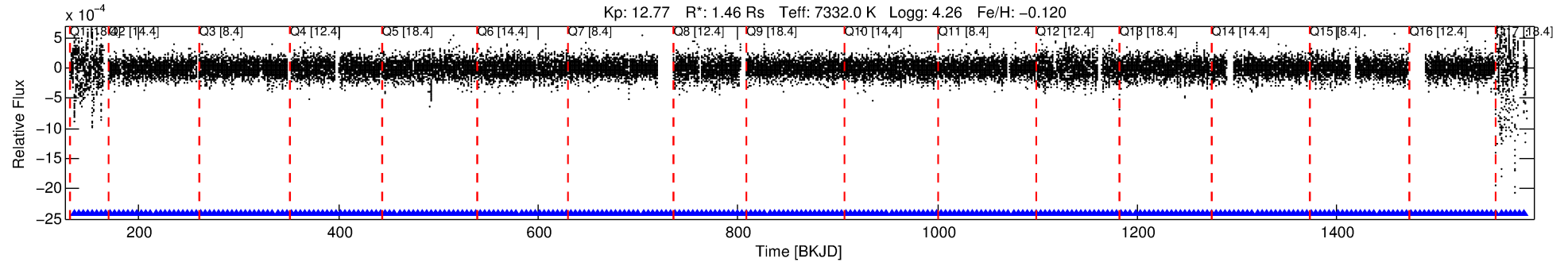
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009471755-03

No Significant Match Found

# DV One-Page Summary

KIC: 9471755 Candidate: 3 of 3 Period: 4.522 d  
KOI: K06204 Corr: No Ephemeris Match



## TPS TCE Results:

Period = 4.52160 d  
Epoch = 135.4649 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

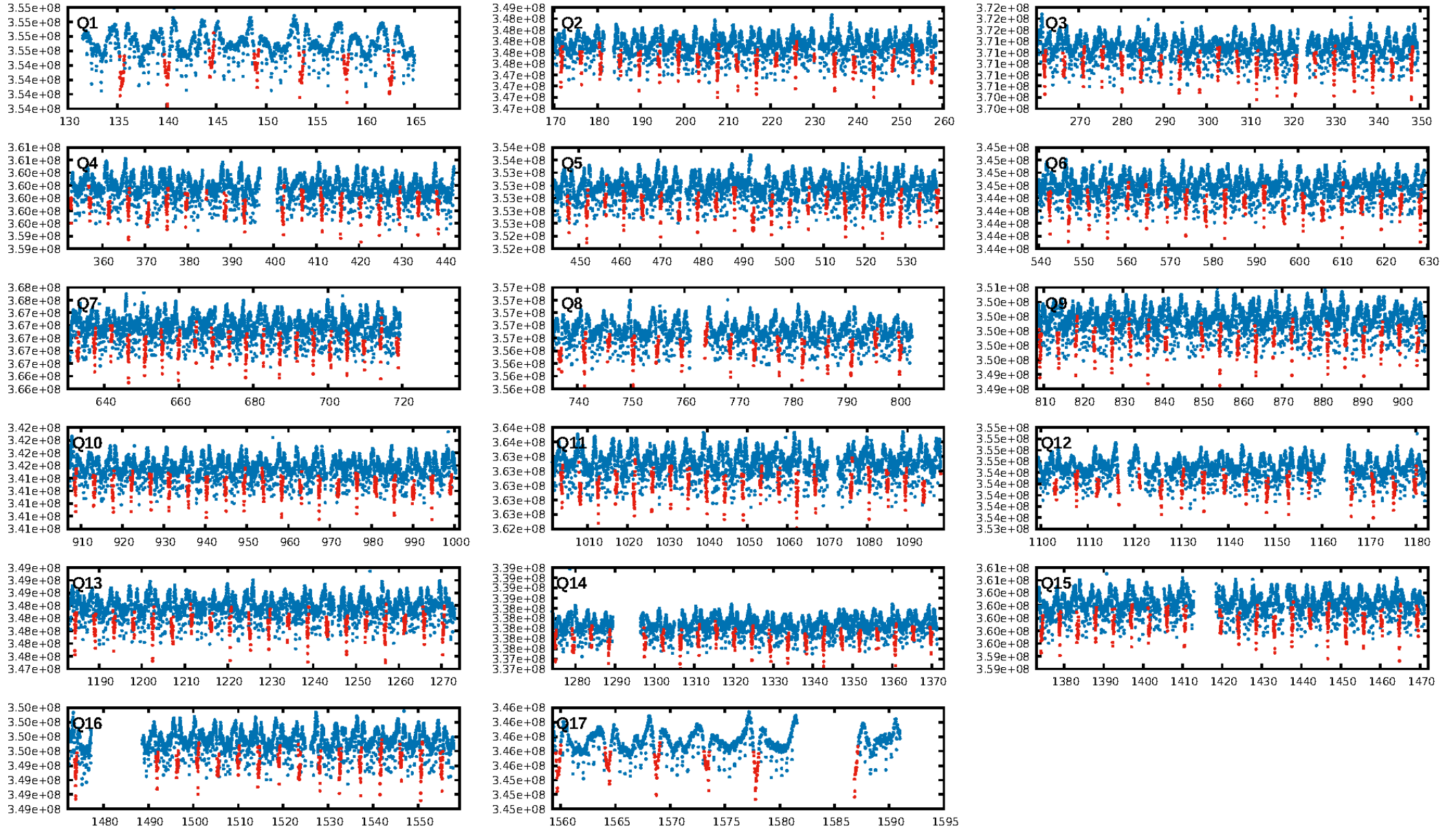
ShortPeriod-sig: 100.0% [13.99σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [293/293]  
GhostDiagnostic-chr: 0.6897  
Centroid-sig: 0.0%  
Centroid-so: 0.102 arcsec [5.54σ]  
OotOffset-rm: 0.585 arcsec [7.65σ]  
KicOffset-rm: 0.478 arcsec [6.23σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:32:23 Z

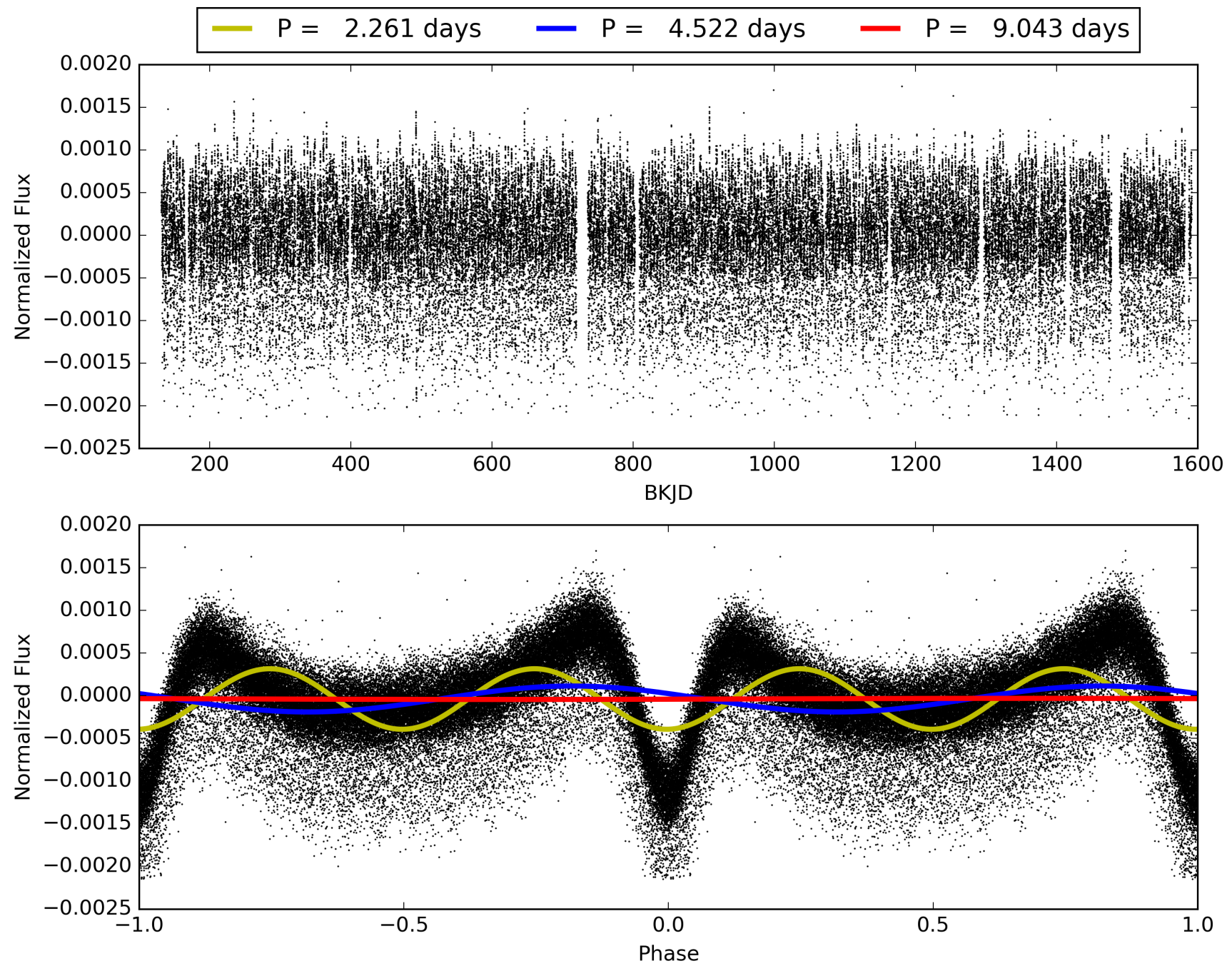
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 009471755-03, PDC Light Curves

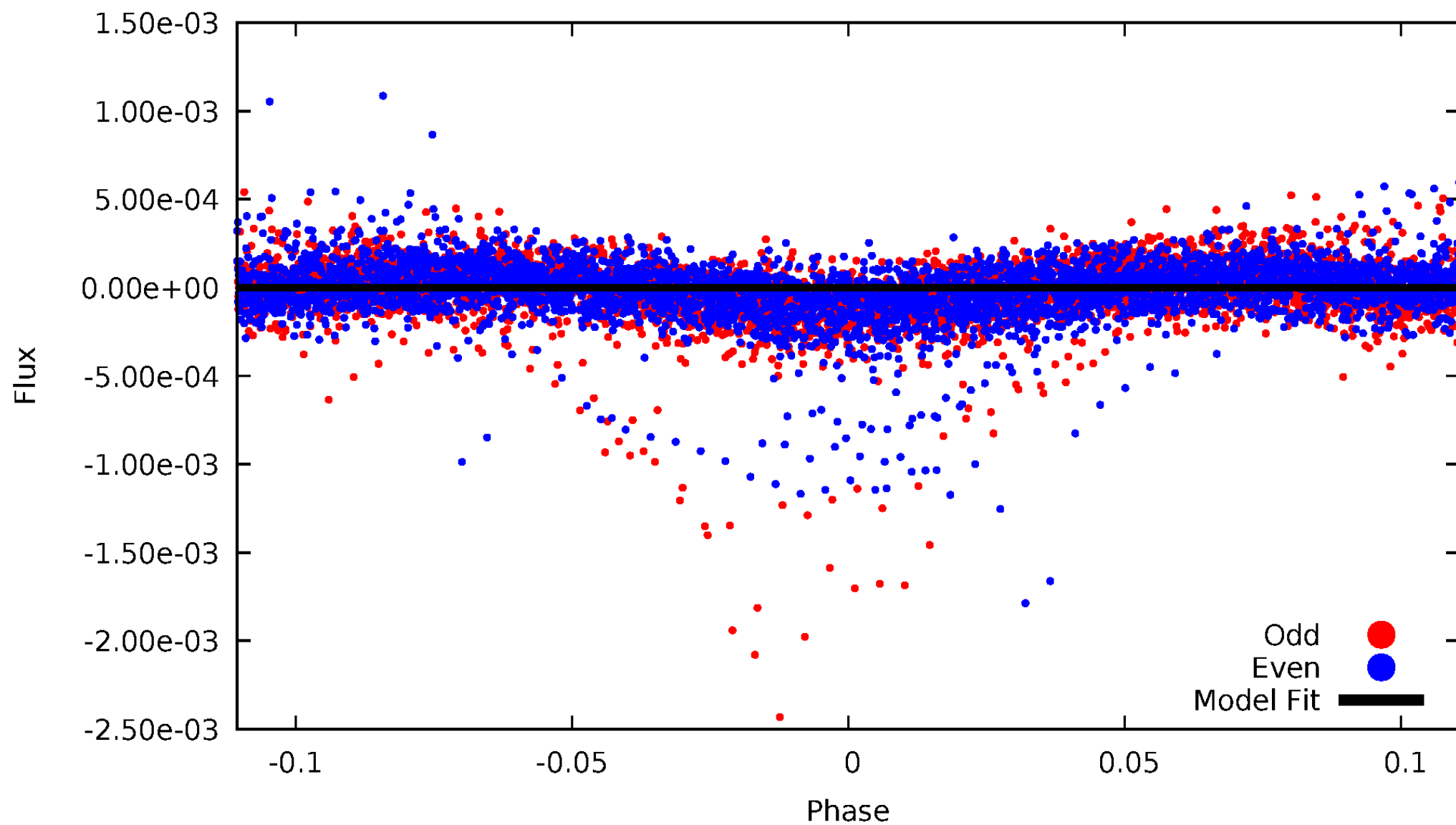


TCE 009471755-03



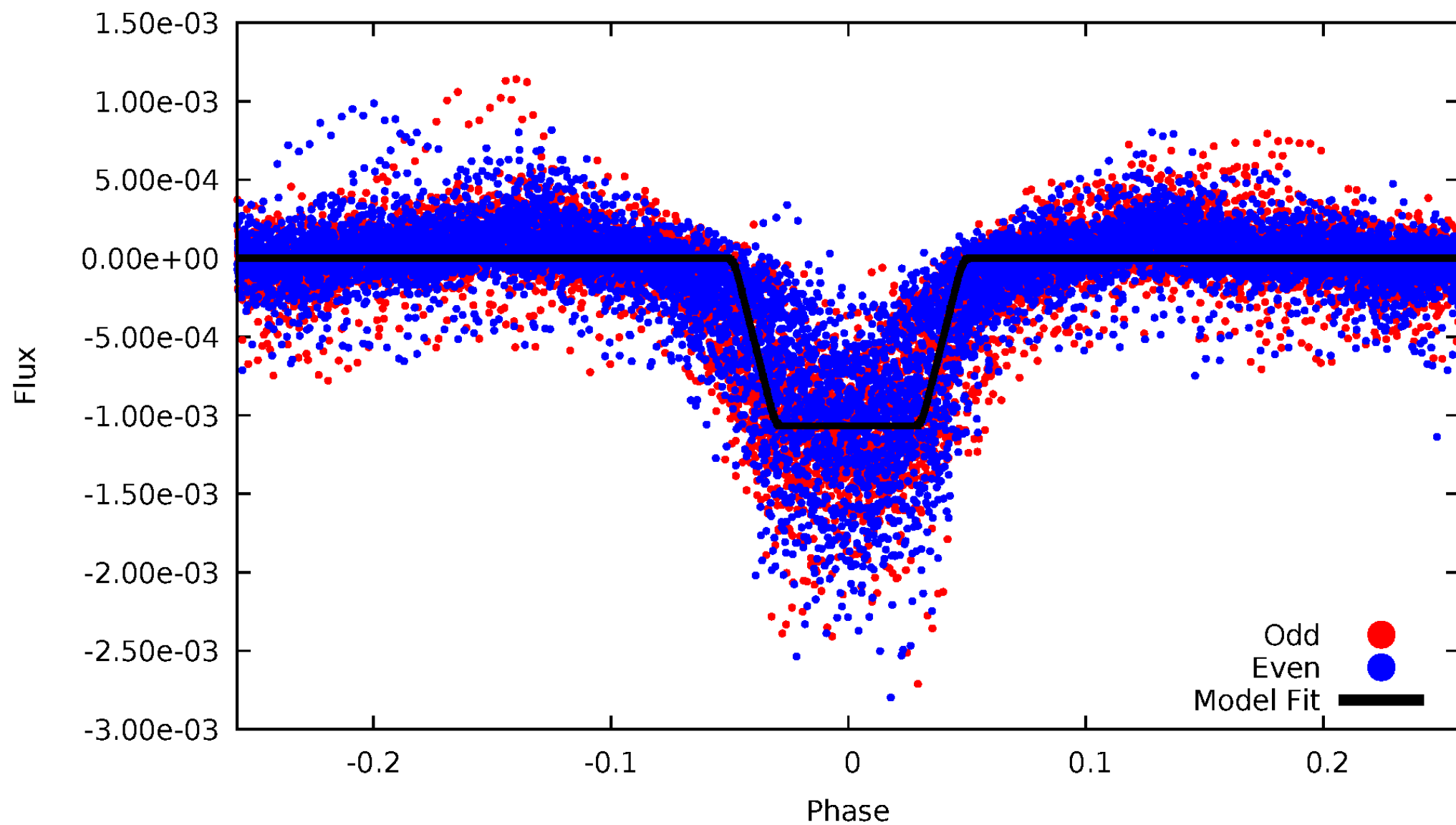
# DV Odd/Even

TCE 009471755-03

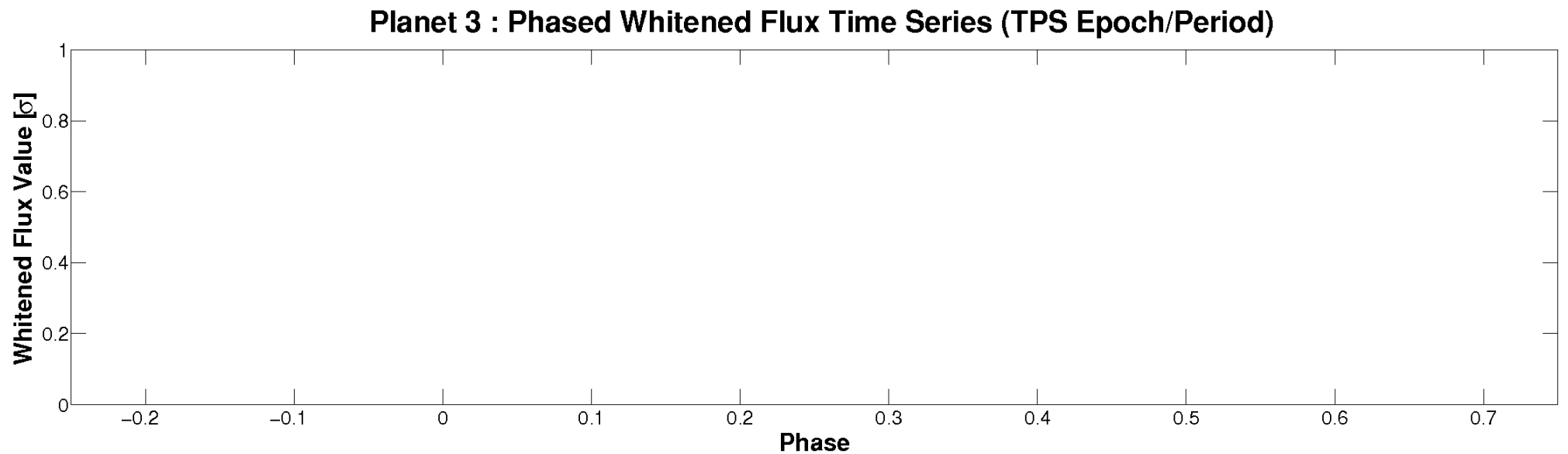
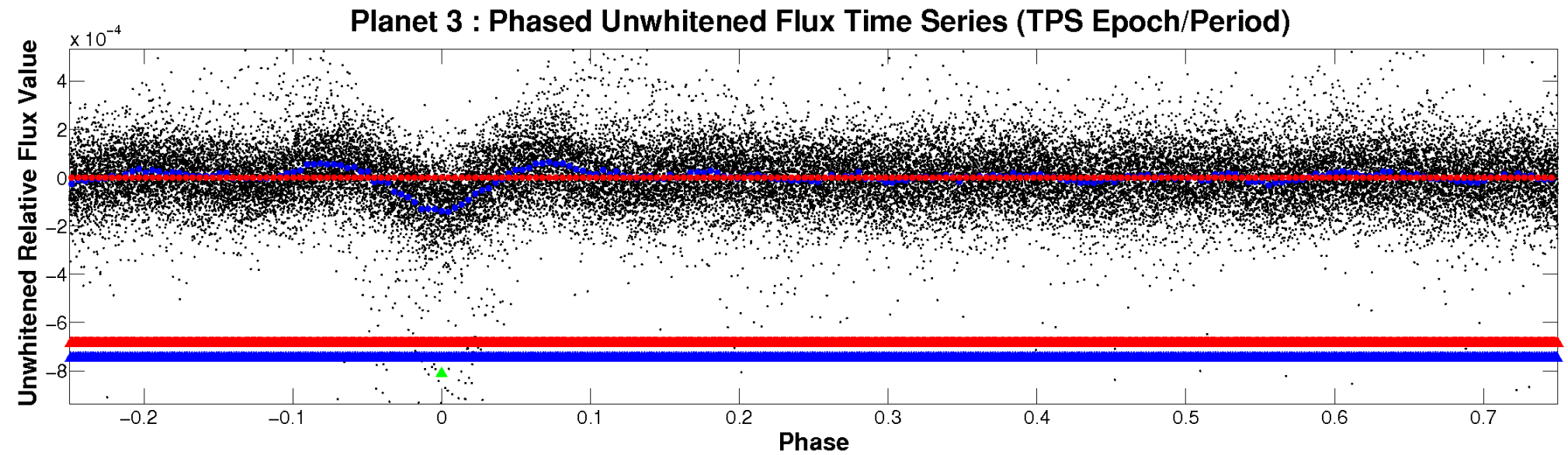


# ALT Odd/Even

TCE 009471755-03



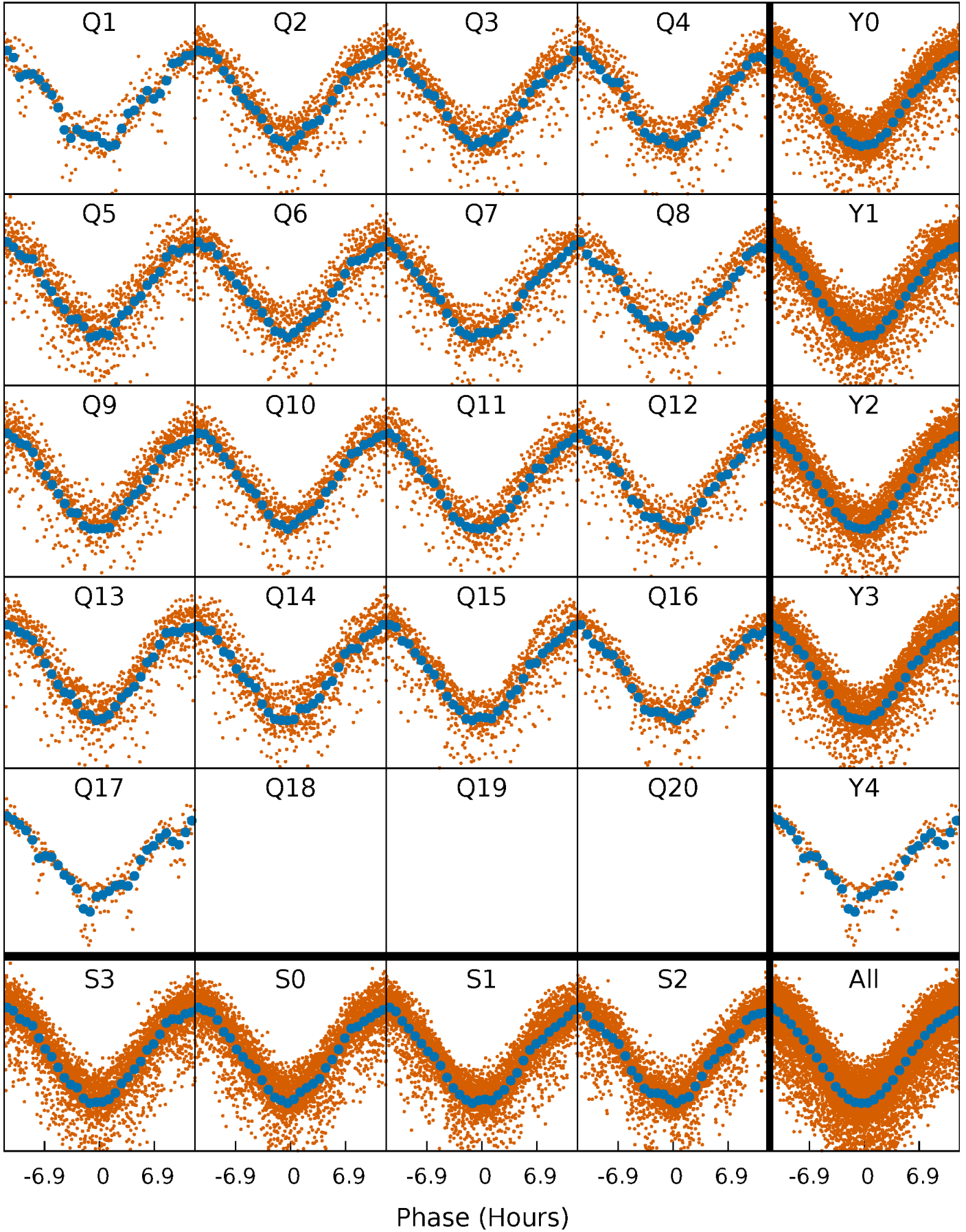
# Non-Whitened Vs. Whitened Light Curve





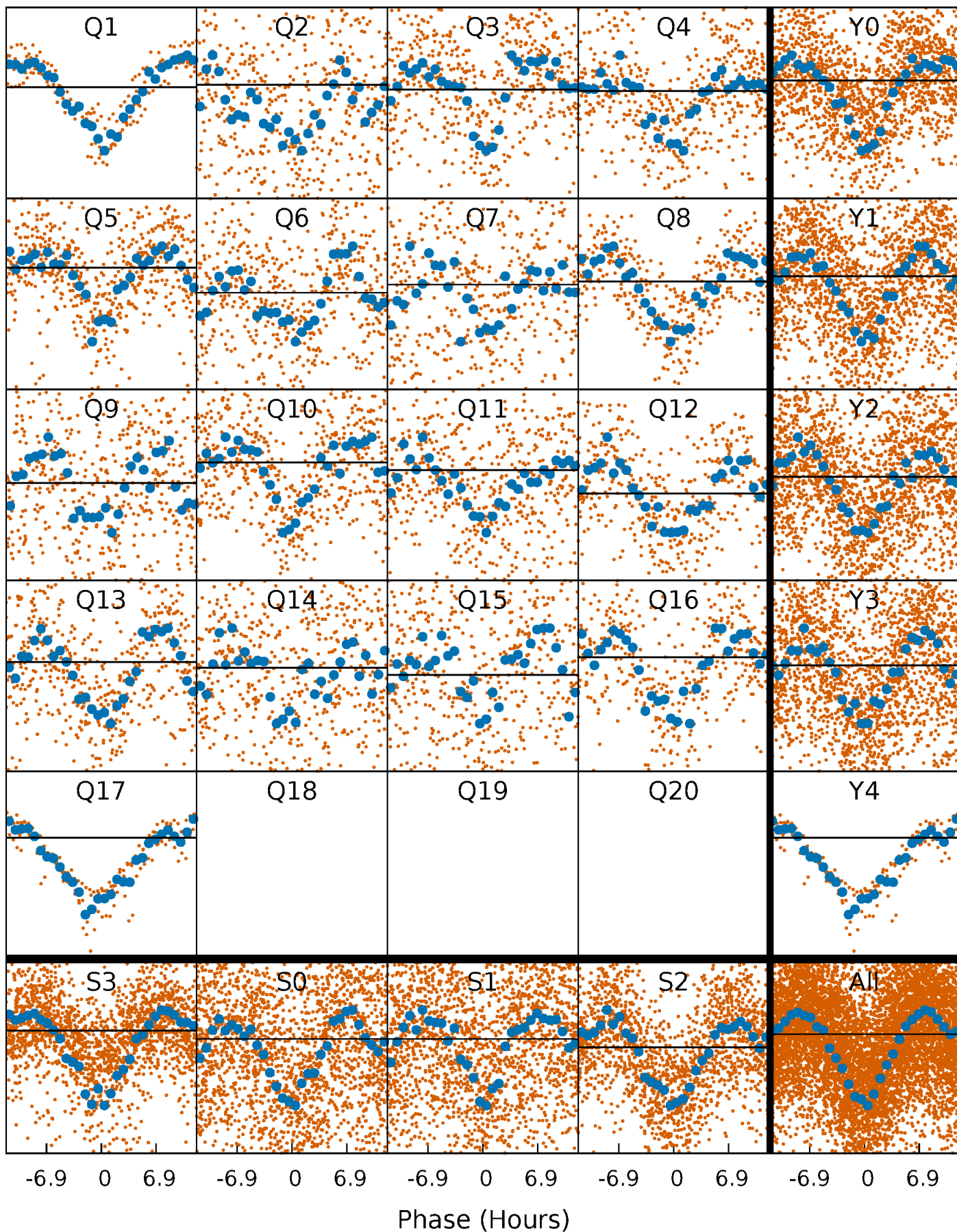
# PDC Quarter-Phased Transit Curves

TCE 009471755-03 P= 4.521604 Days  $T_0=135.464888$  (BKJD)



# DV Quarter-Phased Transit Curves

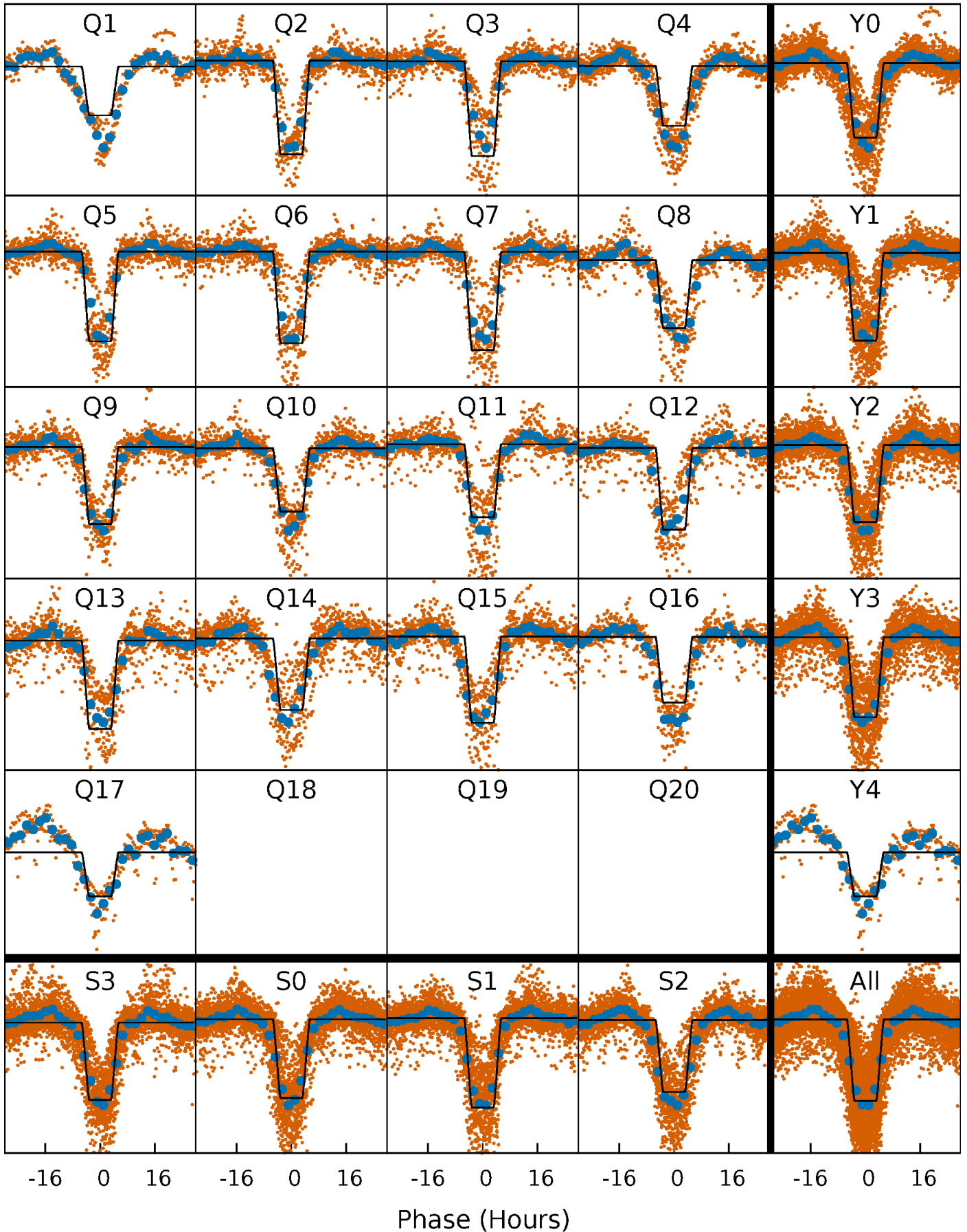
TCE 009471755-03 P= 4.521604 Days  $T_0=135.464888$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

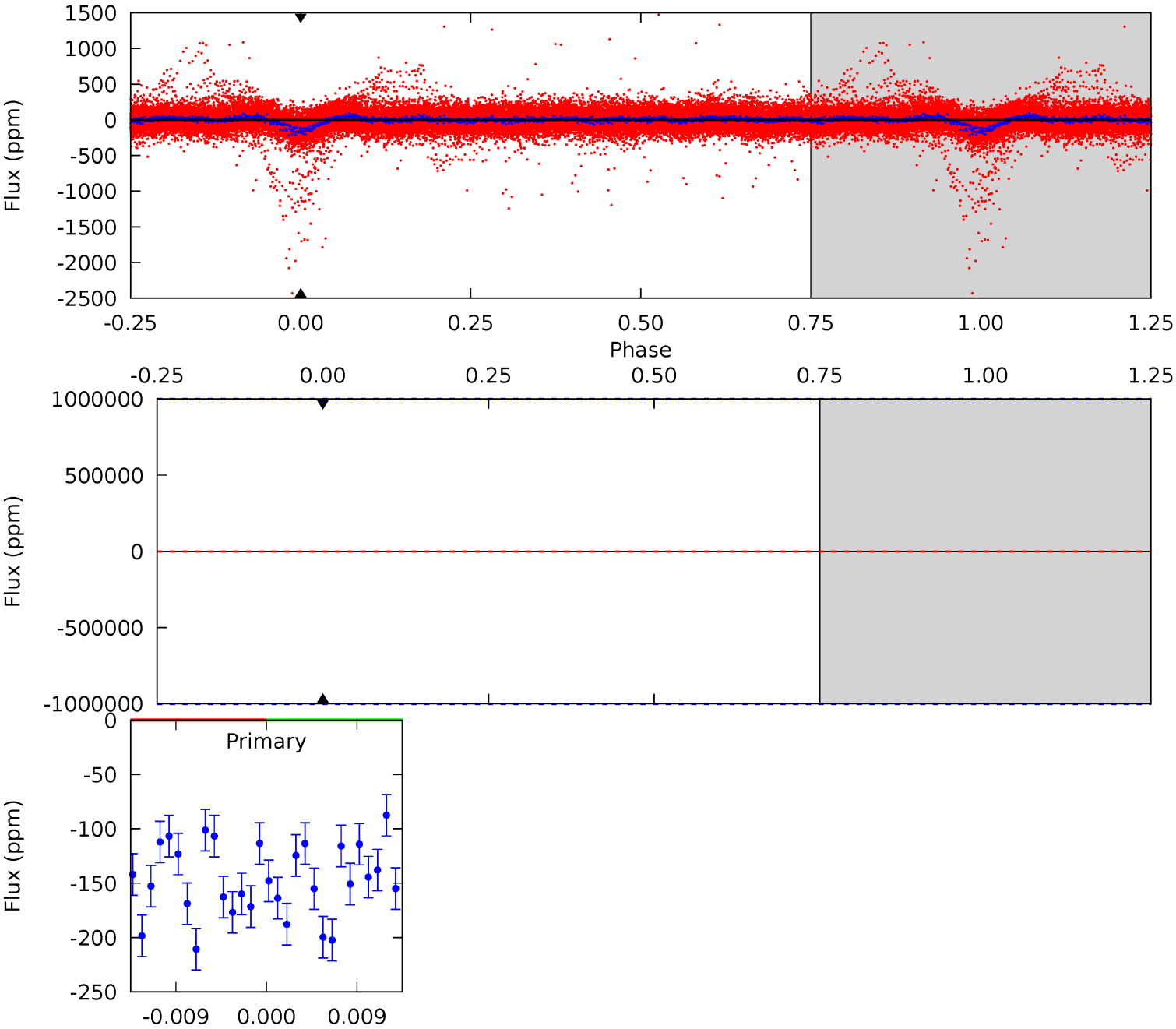
TCE 009471755-03 P= 4.521604 Days  $T_0=135.448834$  (BKJD)



DV Model-Shift Uniqueness Test

009471755-03, P = 4.521604 Days, E = 130.943284 Days

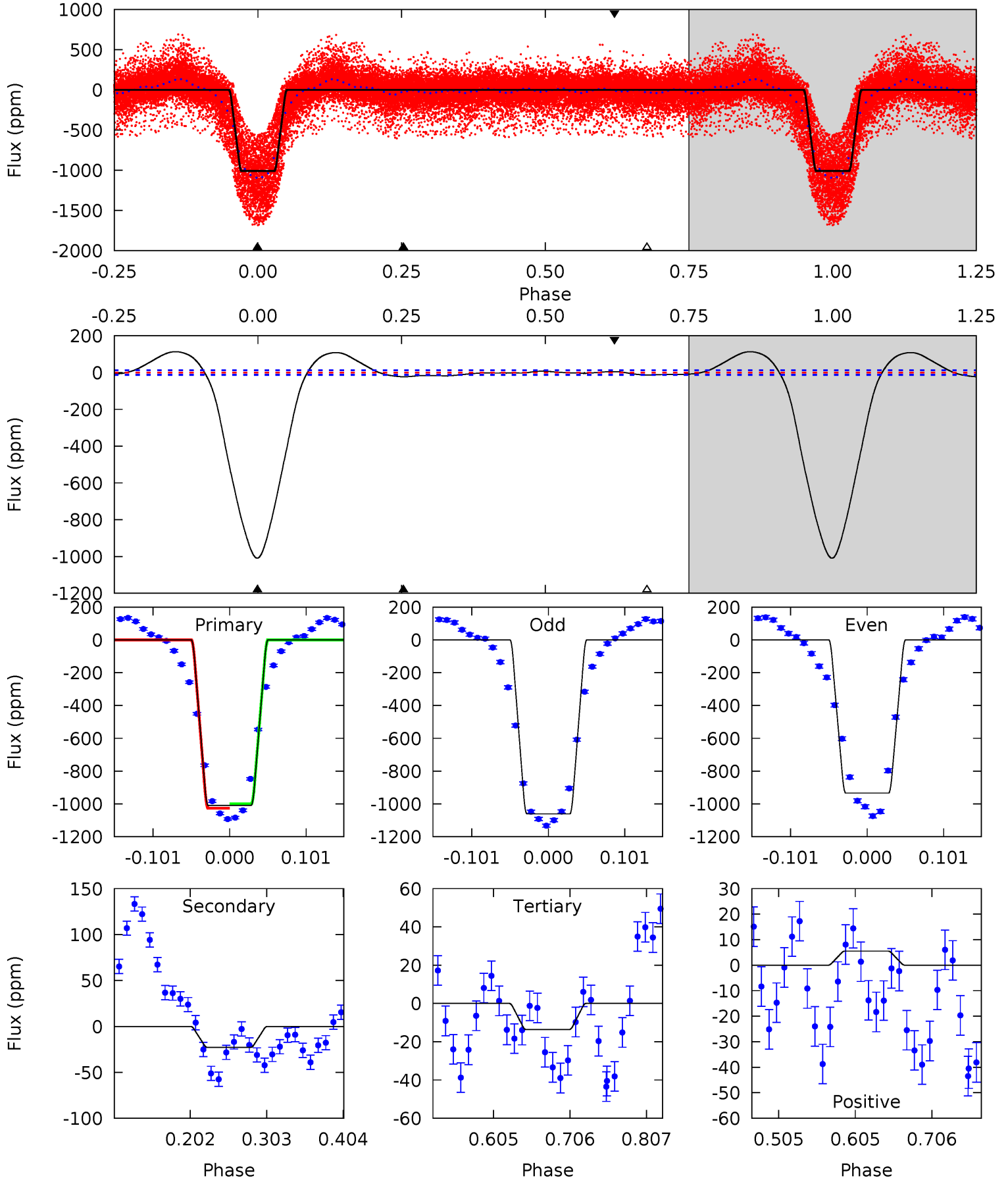
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

009471755-03, P = 4.521604 Days, E = 130.927230 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
368.0	8.34	4.98	2.01	4.56	1.64	15.3	363.0	366.0	3.36	6.33	23.3	1.01	0.10	4.70



### Stellar Parameters For KIC 009471755

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7332^{+506}_{-1519}$	$4.265^{+0.215}_{-0.193}$	$-0.120^{+0.300}_{-0.300}$	$1.460^{+0.487}_{-0.536}$	$1.430^{+0.212}_{-0.495}$	$0.648^{+0.930}_{-0.329}$
	+7%/-21%	+5%/-5%	+250%/-250%	+33%/-37%	+15%/-35%	+144%/-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 009471755-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$10.65^{+11.56}_{-6.83}$	$2184^{+293}_{-436}$	$6274^{+34409}_{-36149}$	$65^{+3515}_{-2088}$
Alt.	$-23 \pm 3$	$13.60^{+12.56}_{-9.71}$	$2163^{+288}_{-404}$	$-1970^{+5404}_{-572}$	$0.241^{+2.721}_{-0.176}$

$T_{\text{max}}$  = 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

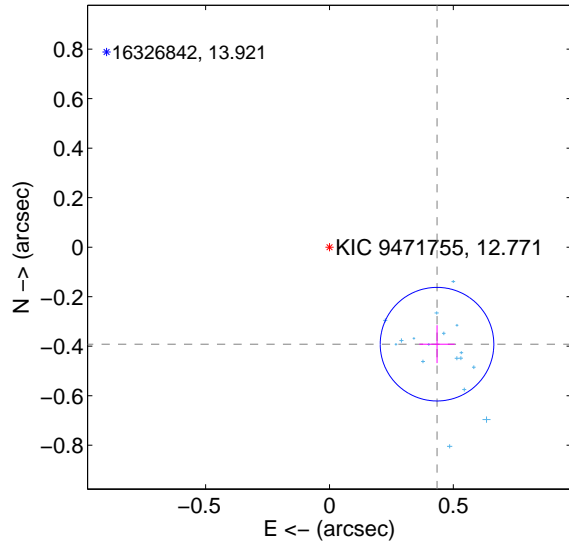
Supplemental centroid analysis for 009471755-03. Kepler magnitude: 12.77. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

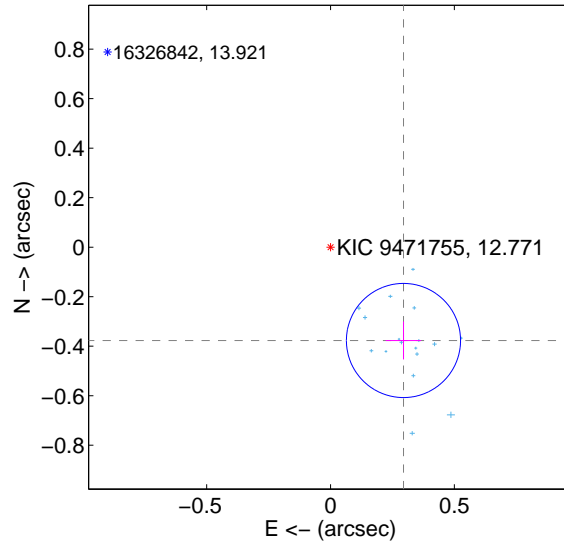
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.585 \pm 0.076$	7.65	$-0.434 \pm 0.072$	$-0.392 \pm 0.077$
PRF-fit source offset from KIC position	$0.478 \pm 0.077$	6.23	$-0.295 \pm 0.071$	$-0.377 \pm 0.077$
photometric centroid source offset	$0.10 \pm 0.02$	5.54	$-0.00 \pm 0.02$	$-0.10 \pm 0.02$

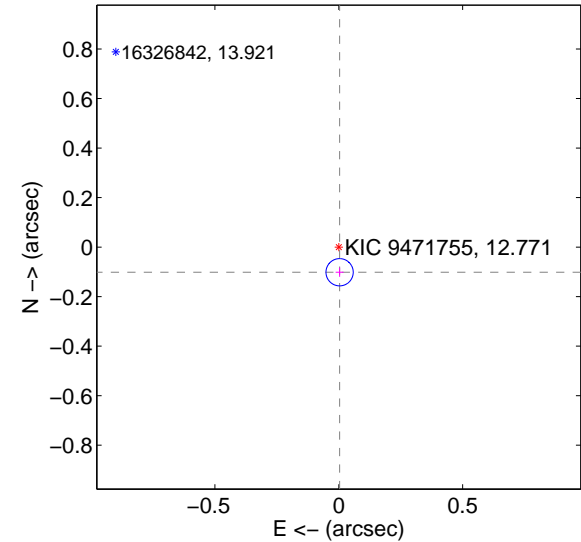
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

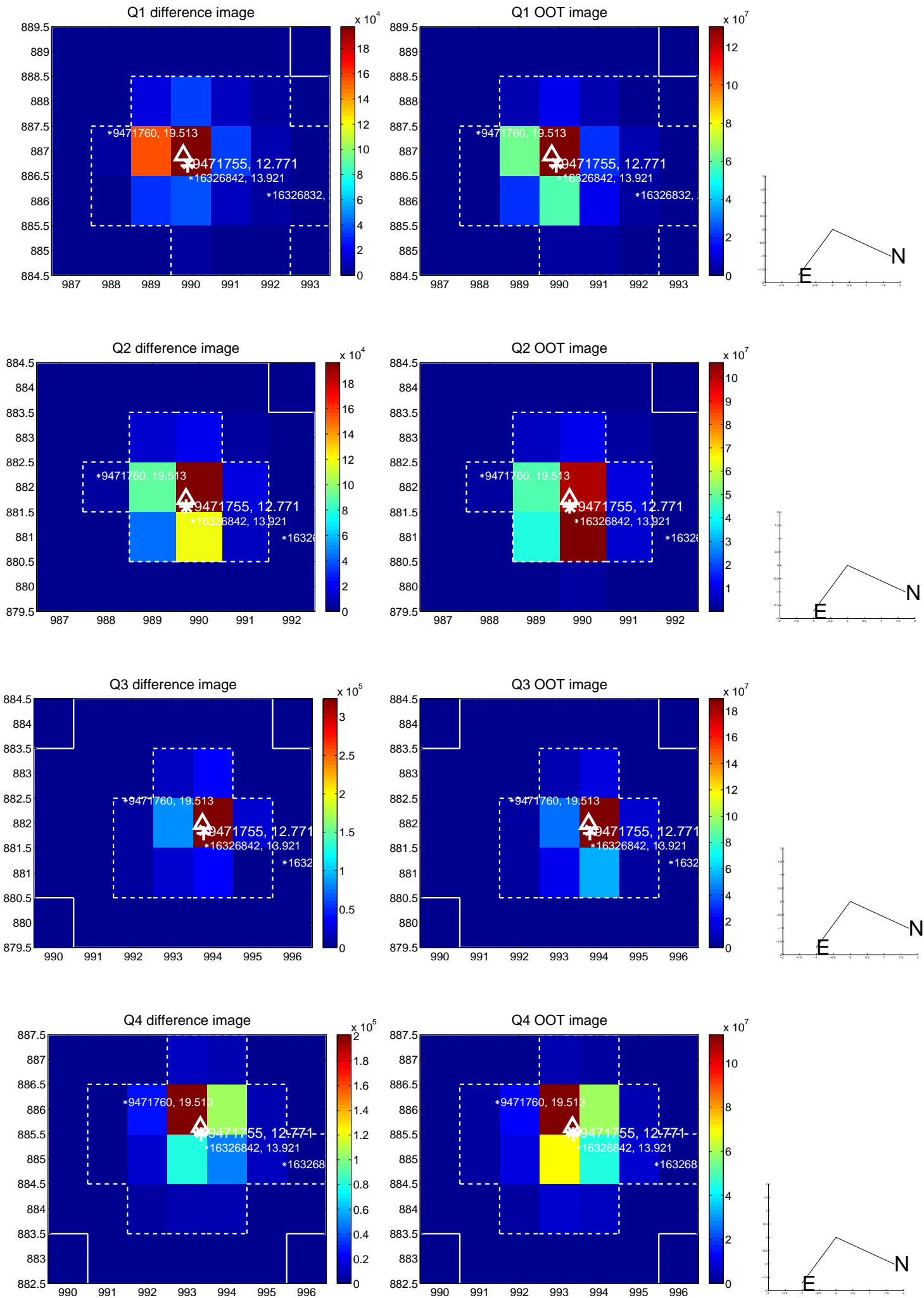


offset from photometric centroids



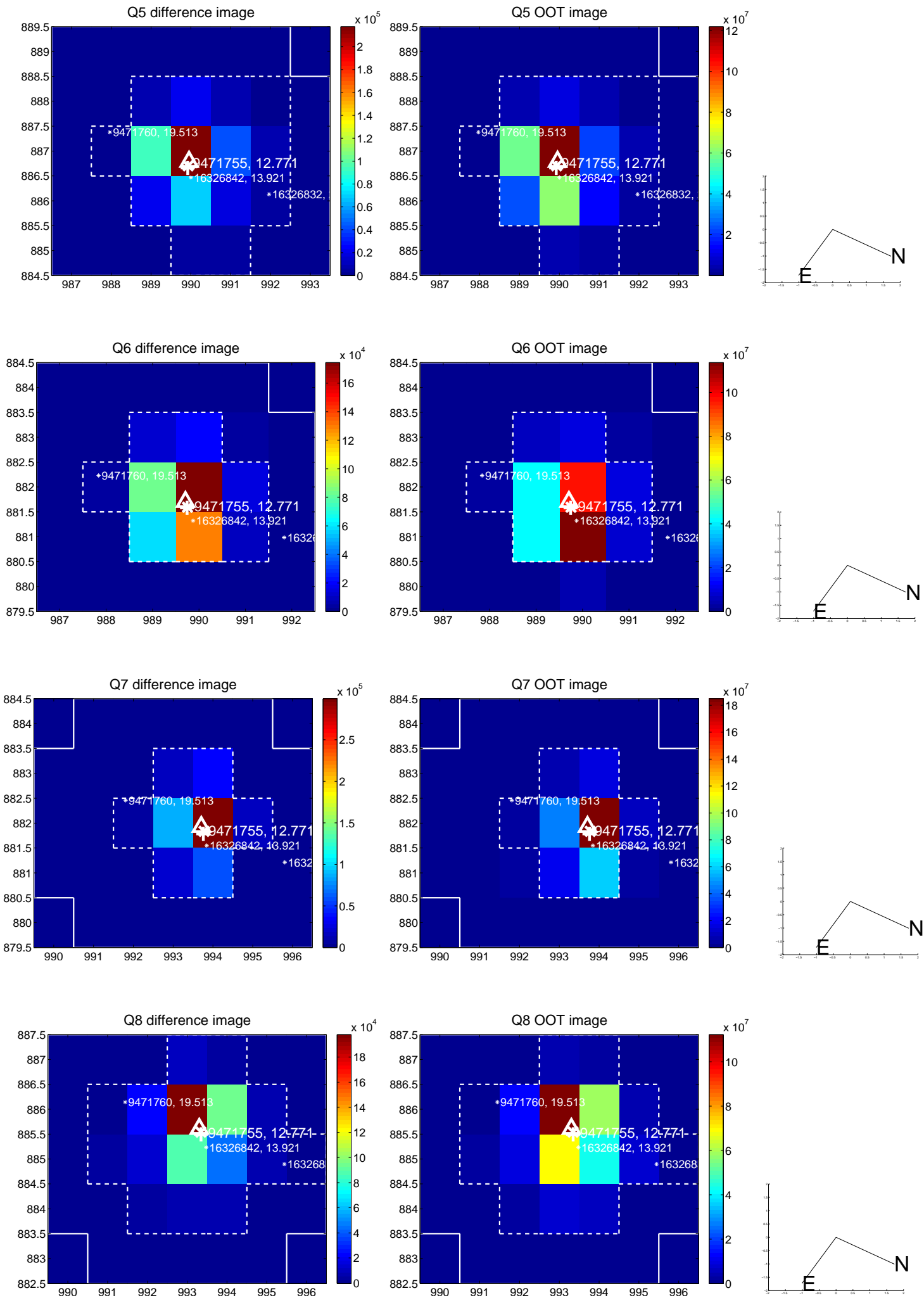
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

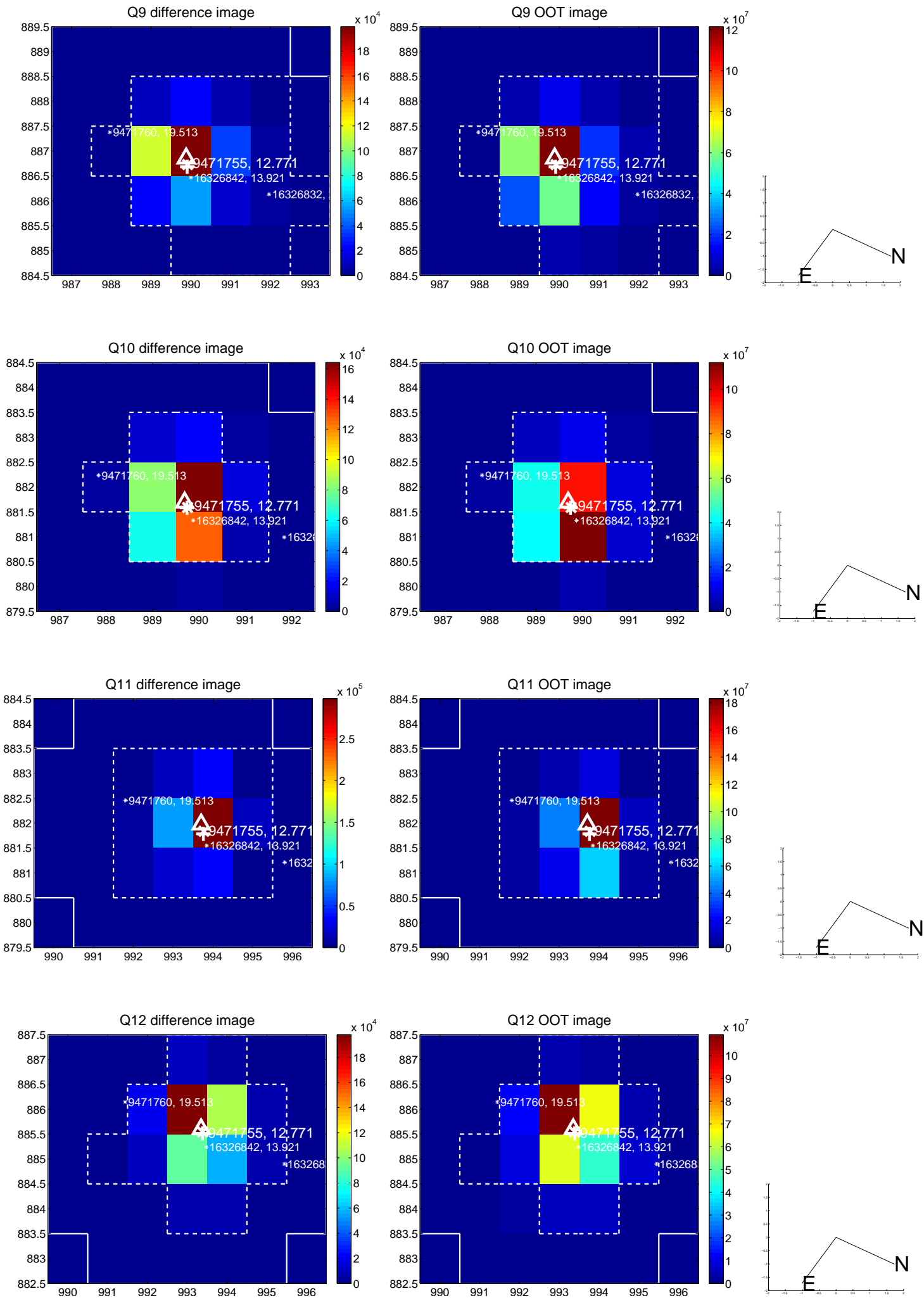




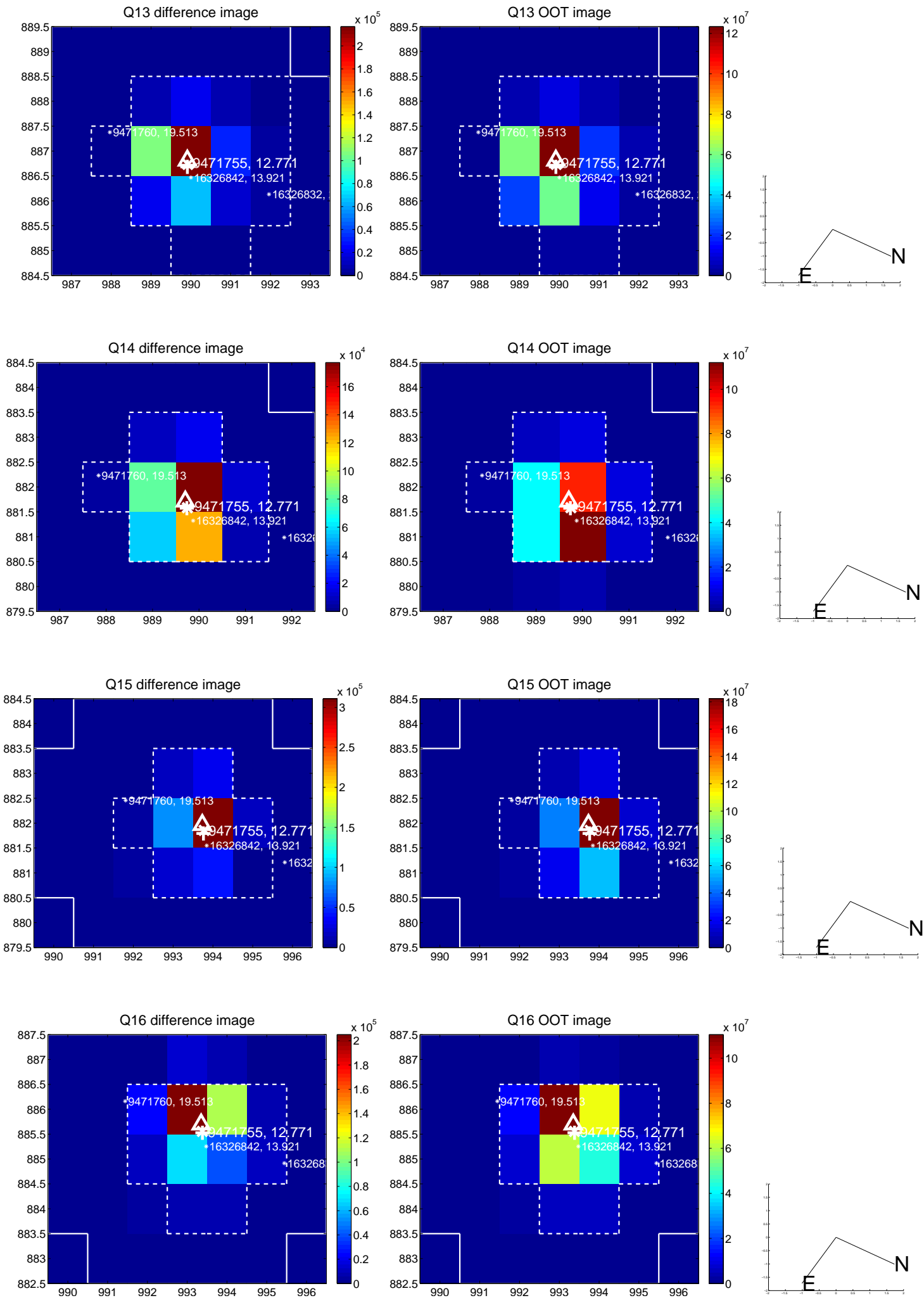
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



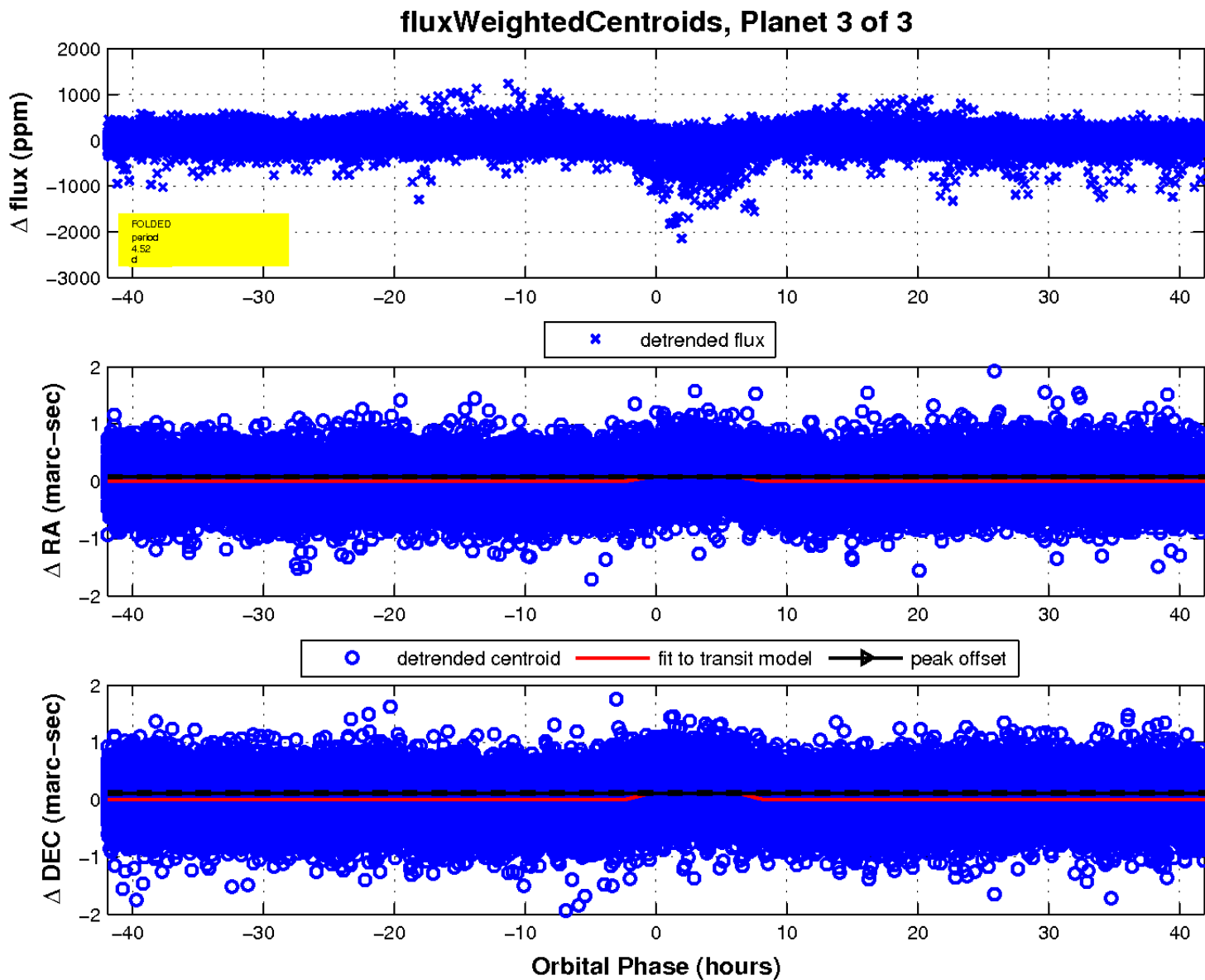
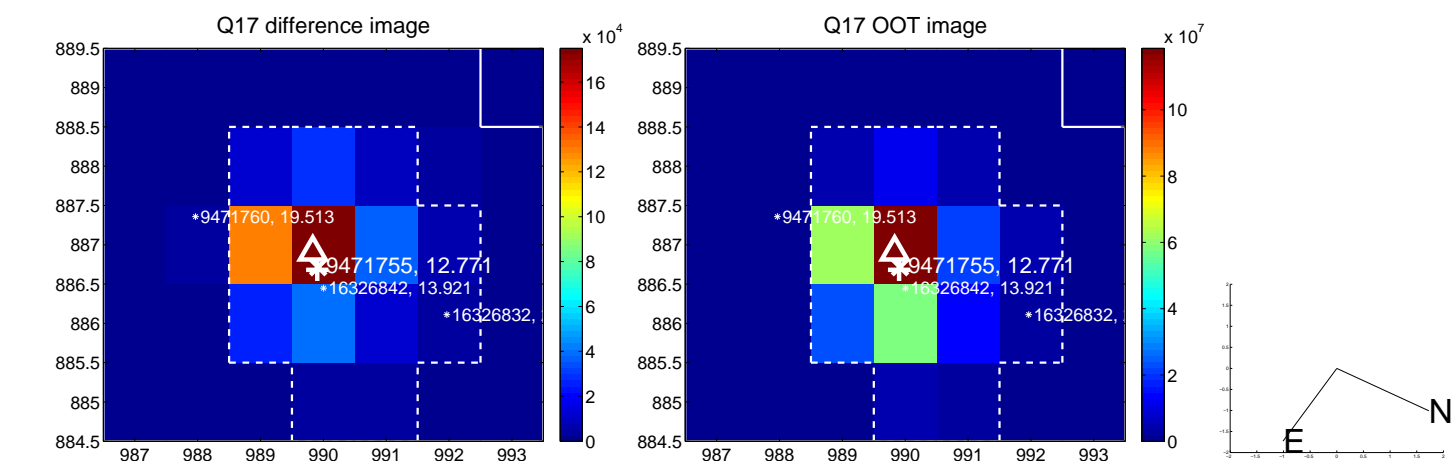
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

