

# KIC 007045435

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007045435-01	OBS	No	0.934807	132.332540	107.4	0.725	10.8	17.4	1.05	6018	1.44	4099.14
007045435-02	OBS	4608.01	0.934811	131.860994	444.3	1.500	8.3	-1.0	1.05	6018	2.23	4099.12

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007045435-01	OBS	FP	0.00	1	0	0	0	LPP_ALT
007045435-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—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 007045435-01

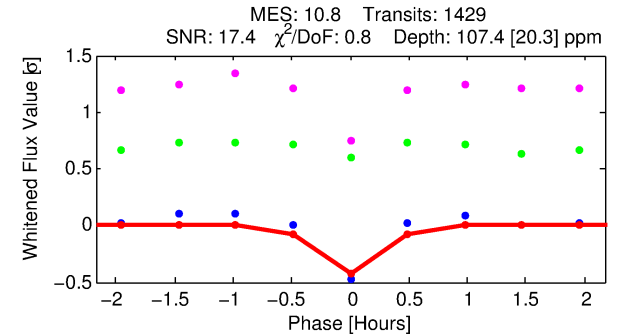
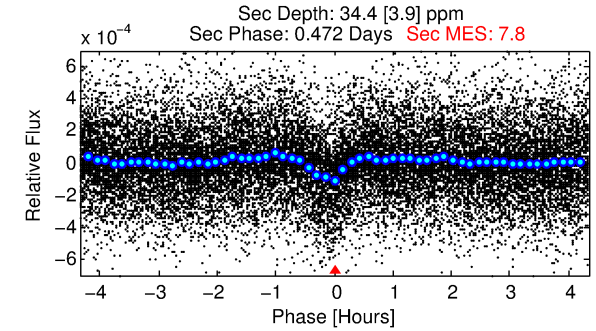
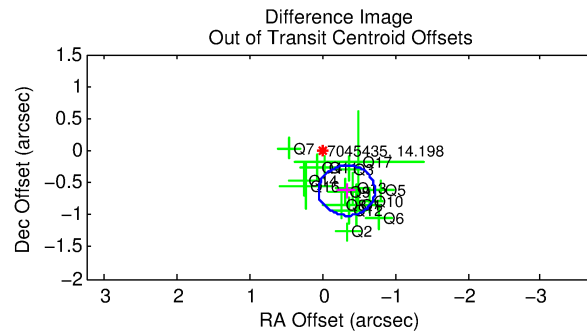
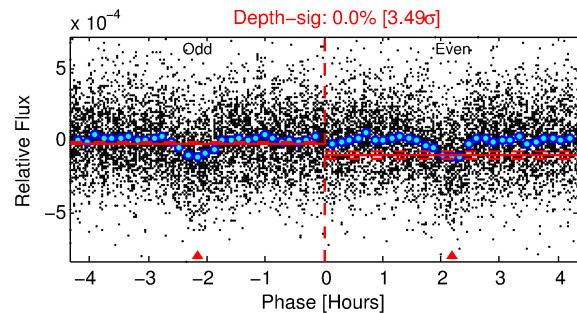
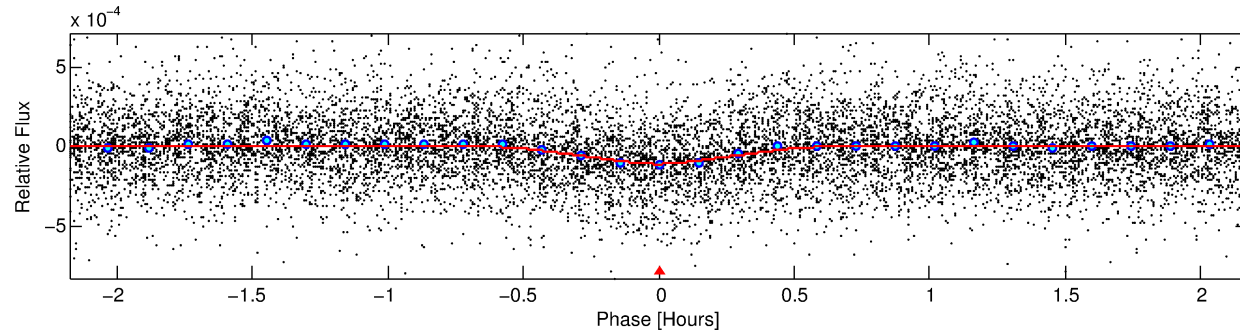
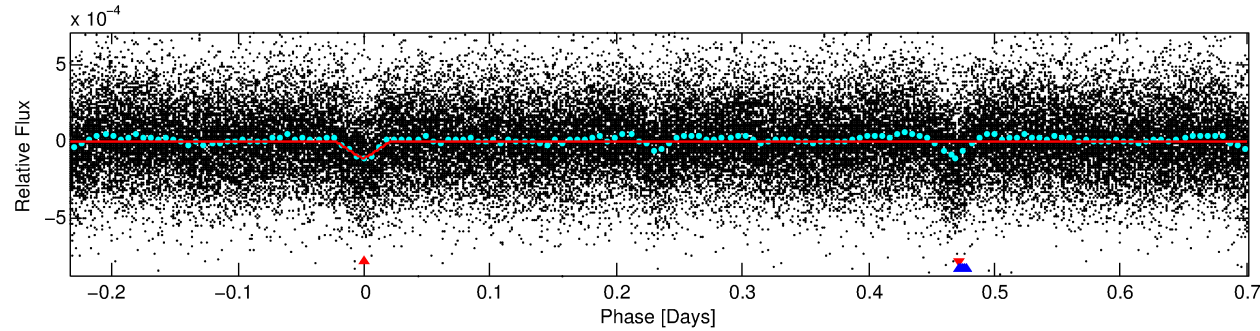
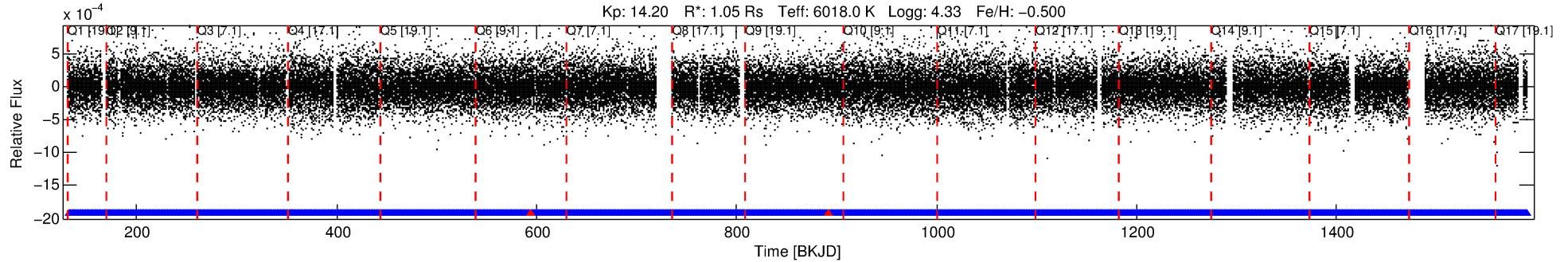
No Significant Match Found

# DV One-Page Summary

KIC: 7045435 Candidate: 1 of 2 Period: 0.935 d

KOI: K04608 Corr: No Ephemeris Match

Kp: 14.20 R\*: 1.05 Rs Teff: 6018.0 K Logg: 4.33 Fe/H: -0.500



## DV Fit Results:

Period = 0.93481 [0.00001] d  
Epoch = 132.3325 [0.0008] BKJD  
Rp/R\* = 0.0125 [0.0037]  
a/R\* = 3.06 [4.00]  
b = 0.97 [0.10]  
Seff = 4099.14 [1431.34]  
Teq = 2040 [178] K  
Rp = 1.44 [0.57] Re  
a = 0.0178 [0.0040] AU  
Ag = 2.90 [1.98] [0.96σ]  
Teffp = 4116 [627] K [3.18σ]

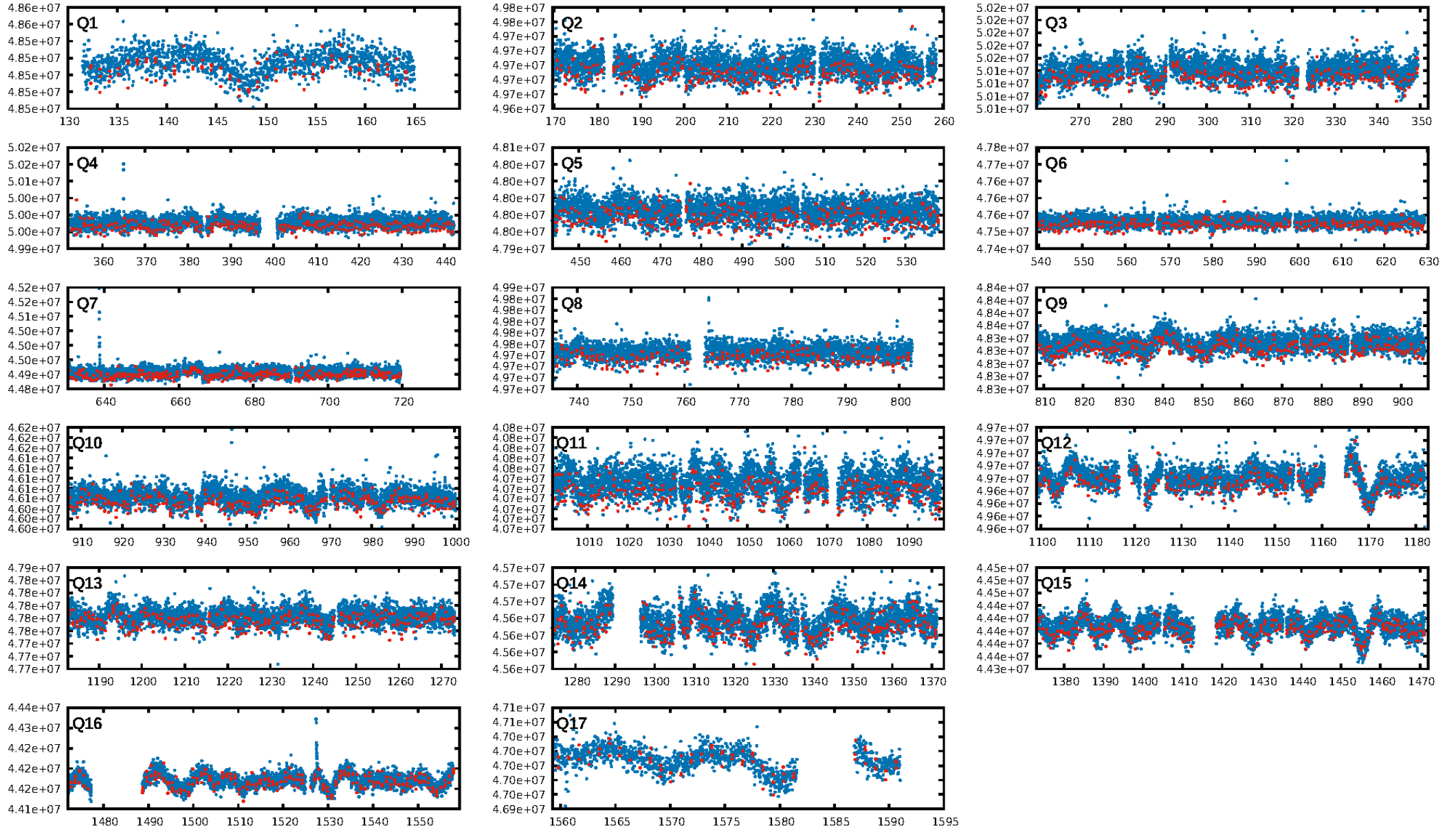
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.06e-27  
RollingBand-fgt: 1.00 [1363/1365]  
GhostDiagnostic-chr: 3.252  
Centroid-sig: 6.6%  
Centroid-so: 1.224 arcsec [1.73σ]  
OotOffset-rm: 0.707 arcsec [5.45σ]  
KicOffset-rm: 0.881 arcsec [7.06σ]  
OotOffset-st: 4/3/4/5 [16]  
KicOffset-st: 4/3/4/5 [16]  
DiffImageQuality-fgm: 1.00 [16/16]  
DiffImageOverlap-fno: 1.00 [17/17]

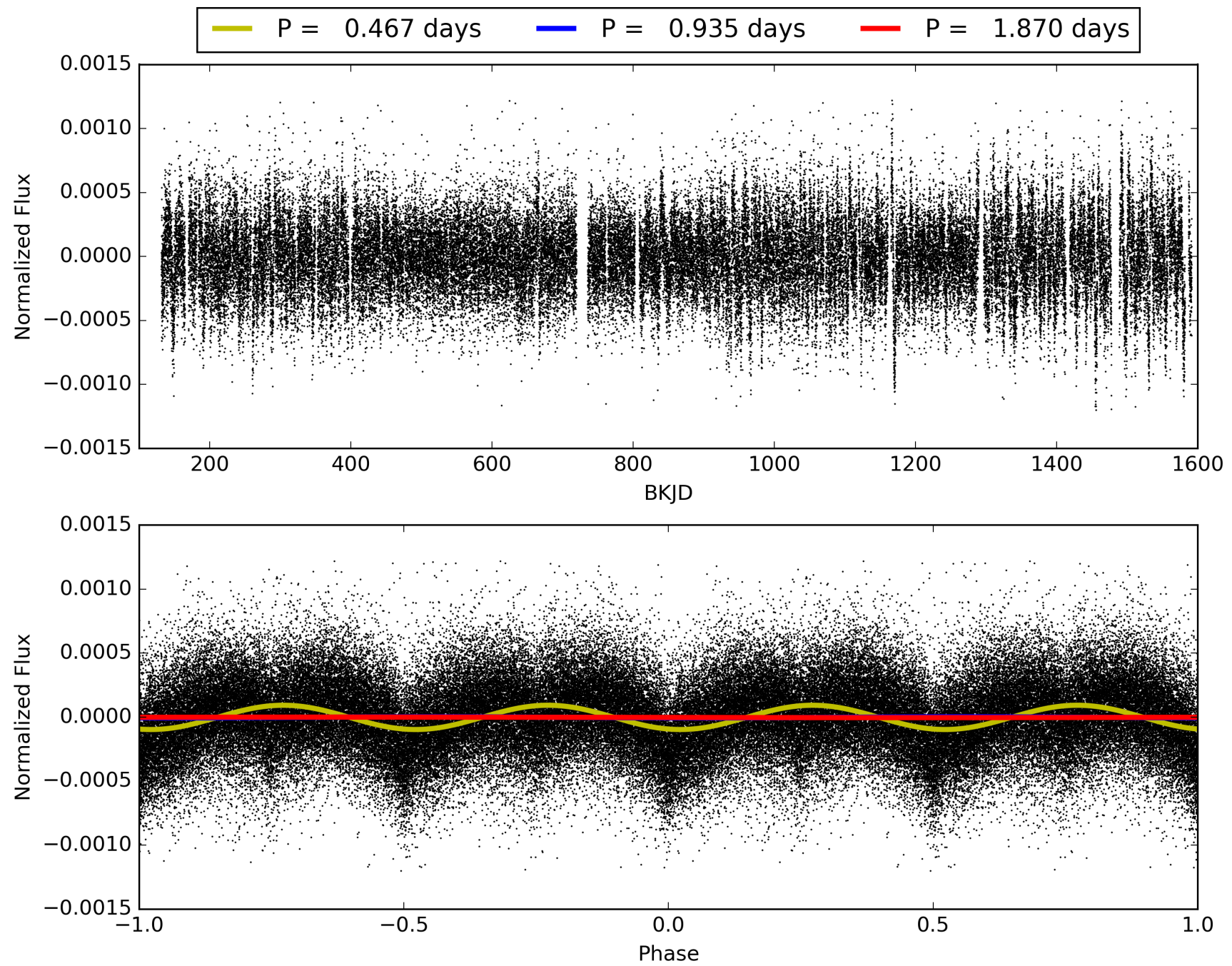
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:47:20 Z

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

# TCE 007045435-01, PDC Light Curves



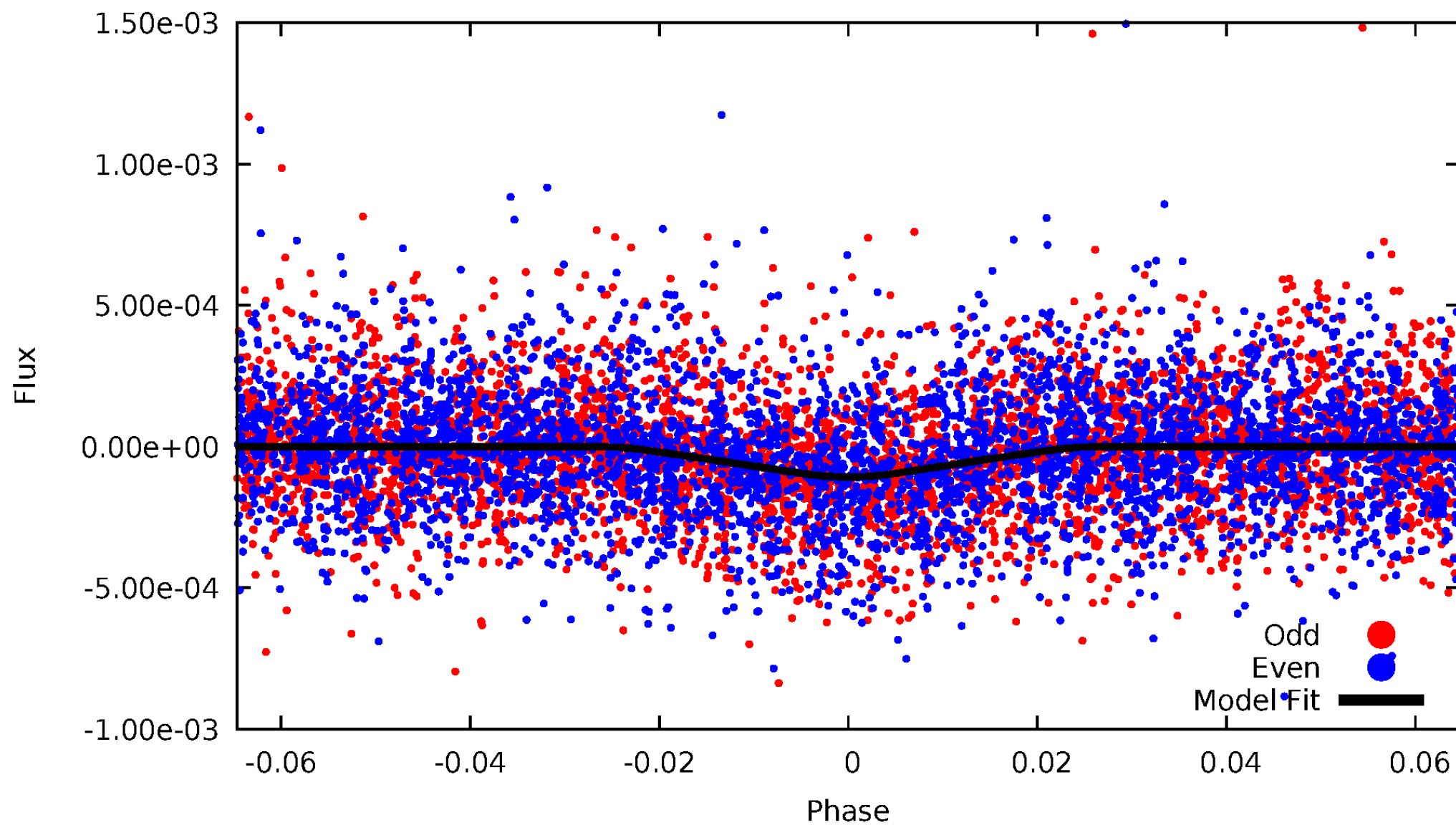
TCE 007045435-01





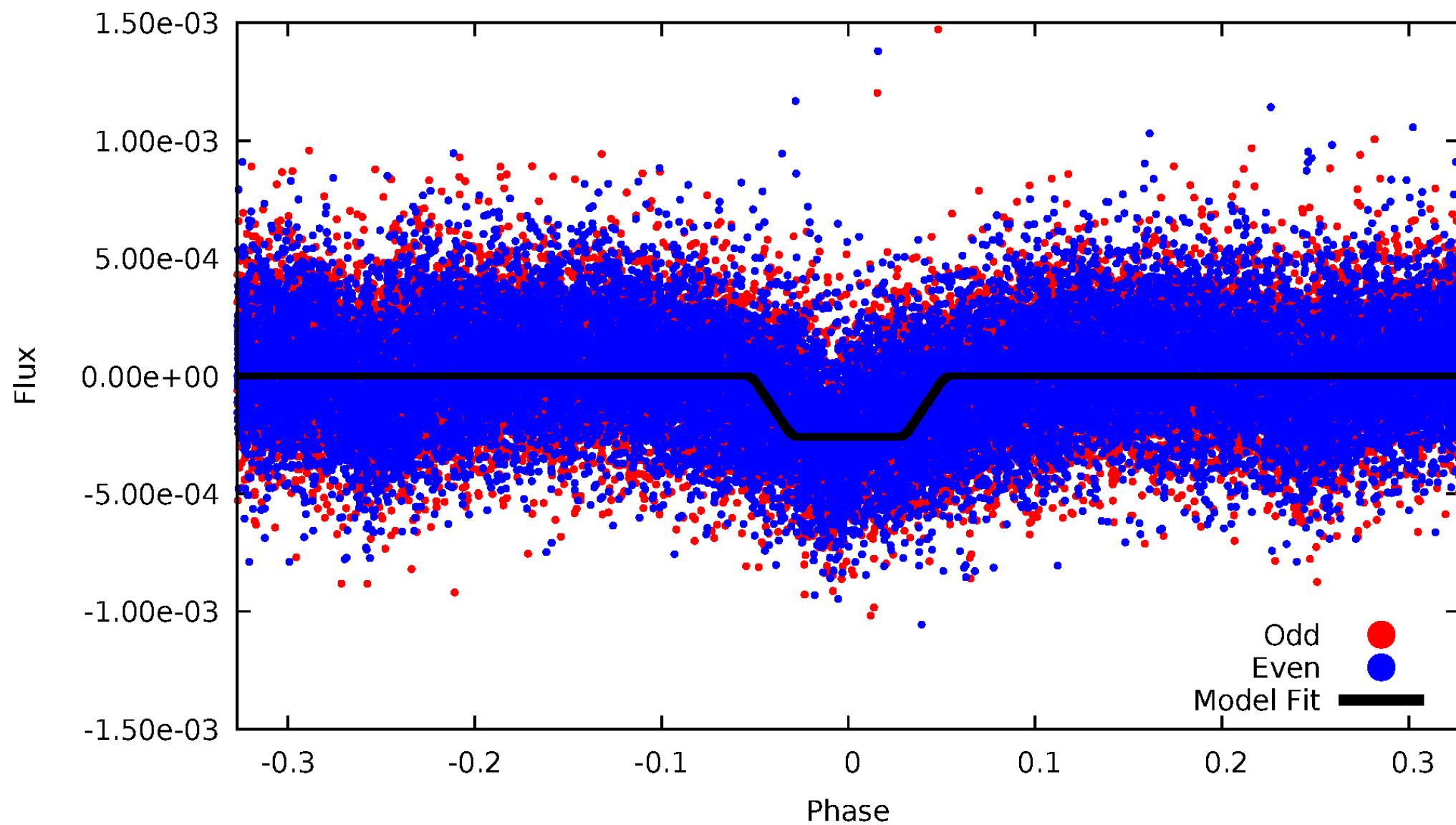
# DV Odd/Even

TCE 007045435-01

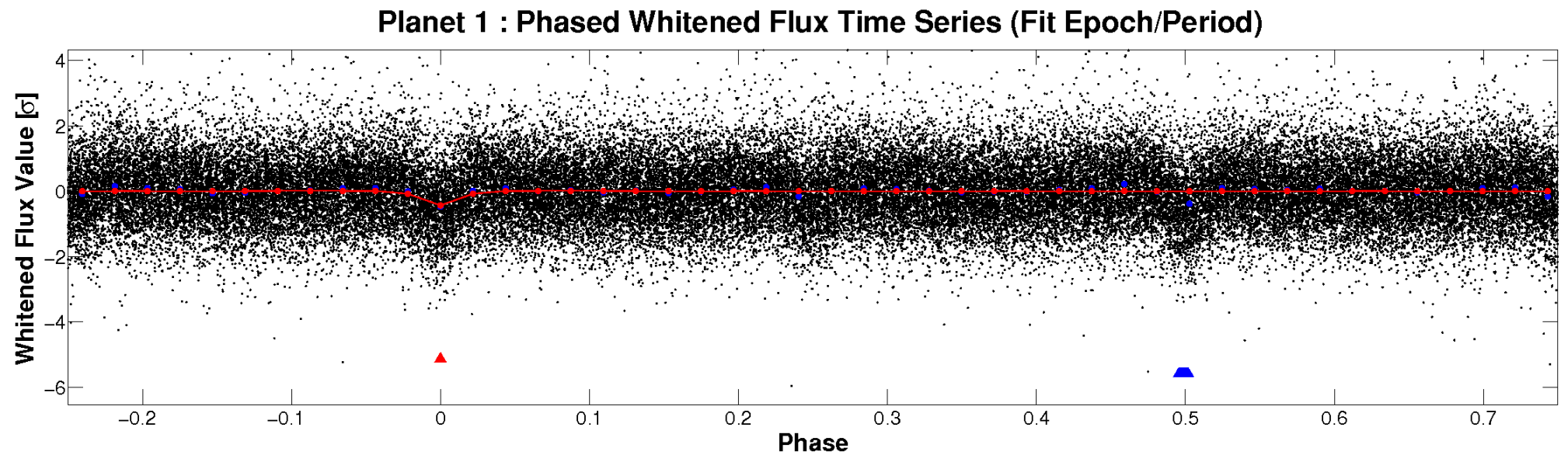
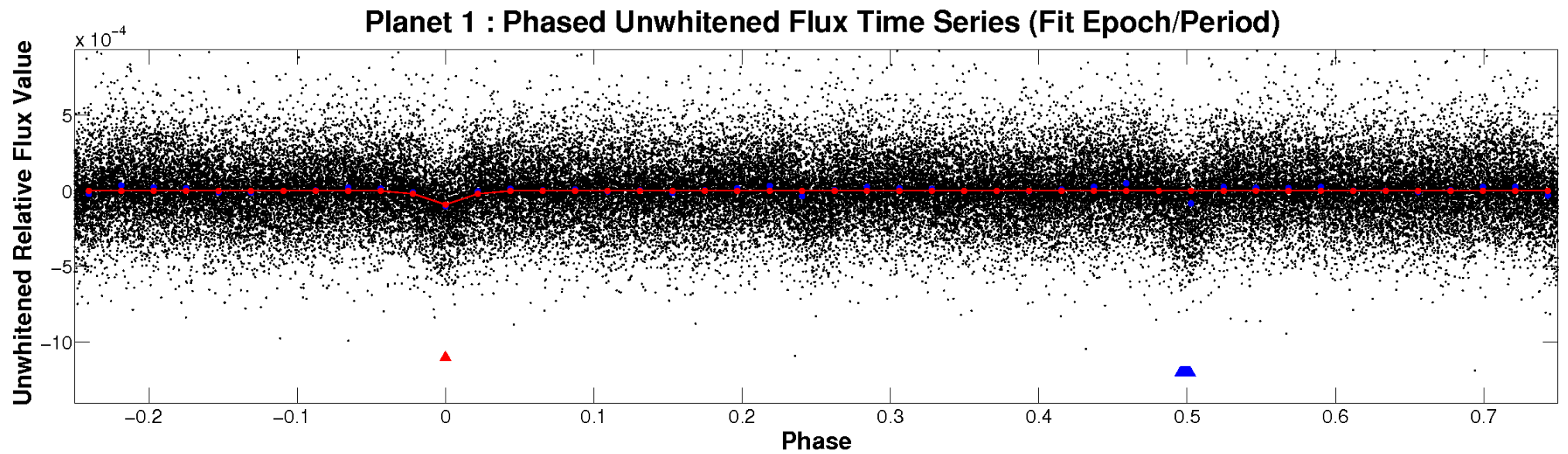


# ALT Odd/Even

TCE 007045435-01

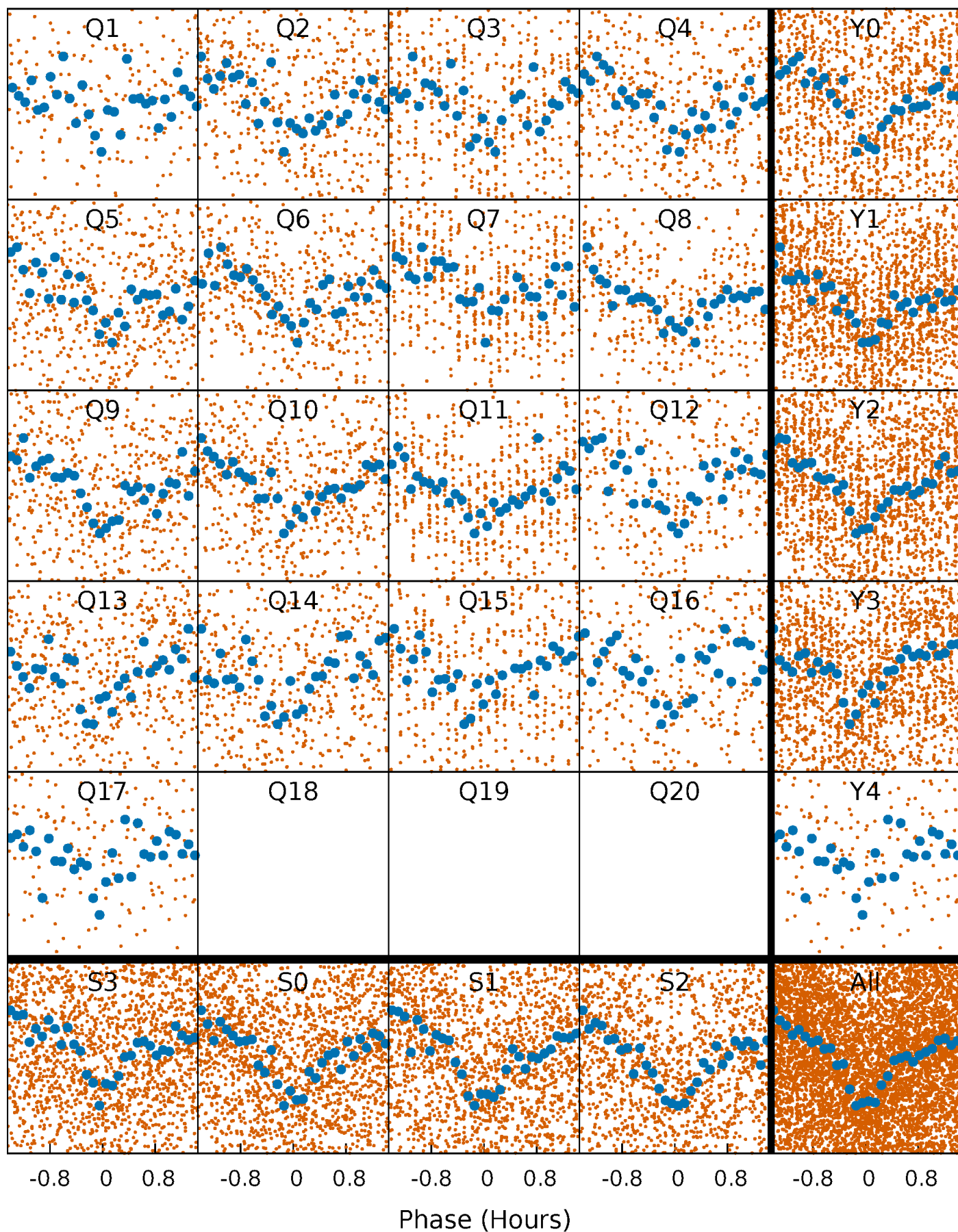


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

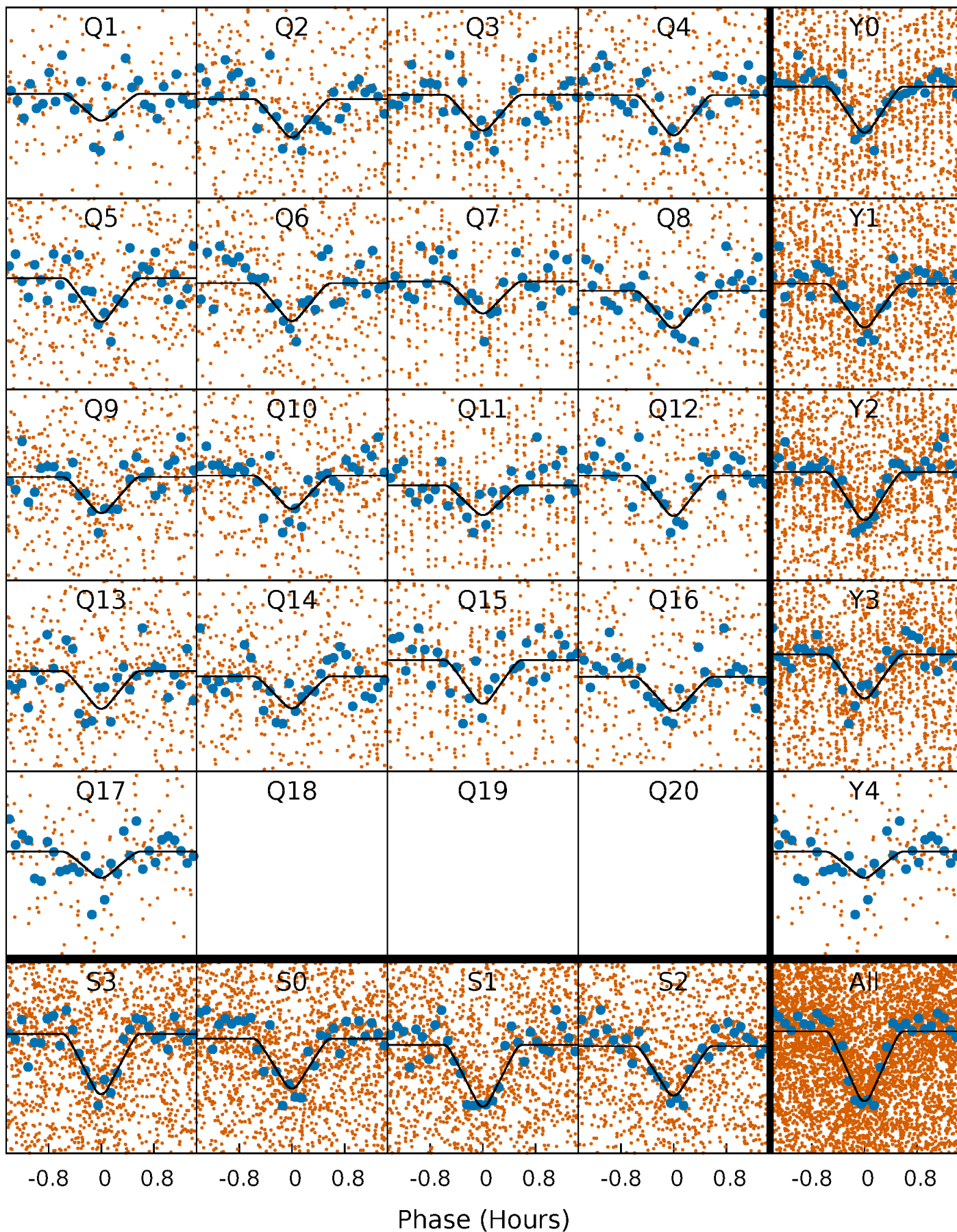
TCE 007045435-01 P= 0.934807 Days  $T_0=132.332540$  (BKJD)





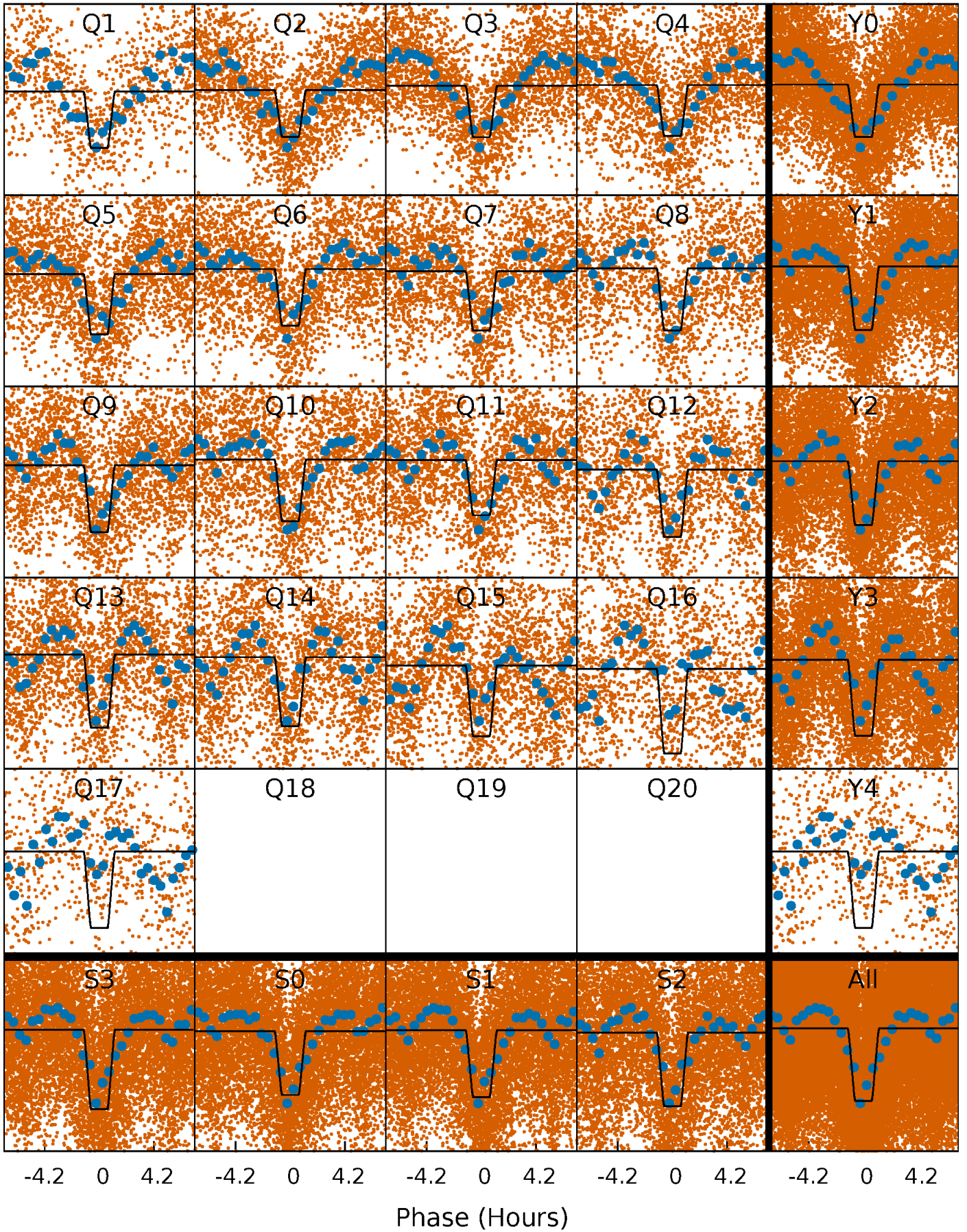
# DV Quarter-Phased Transit Curves

TCE 007045435-01   P= 0.934807 Days    $T_0=132.332540$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

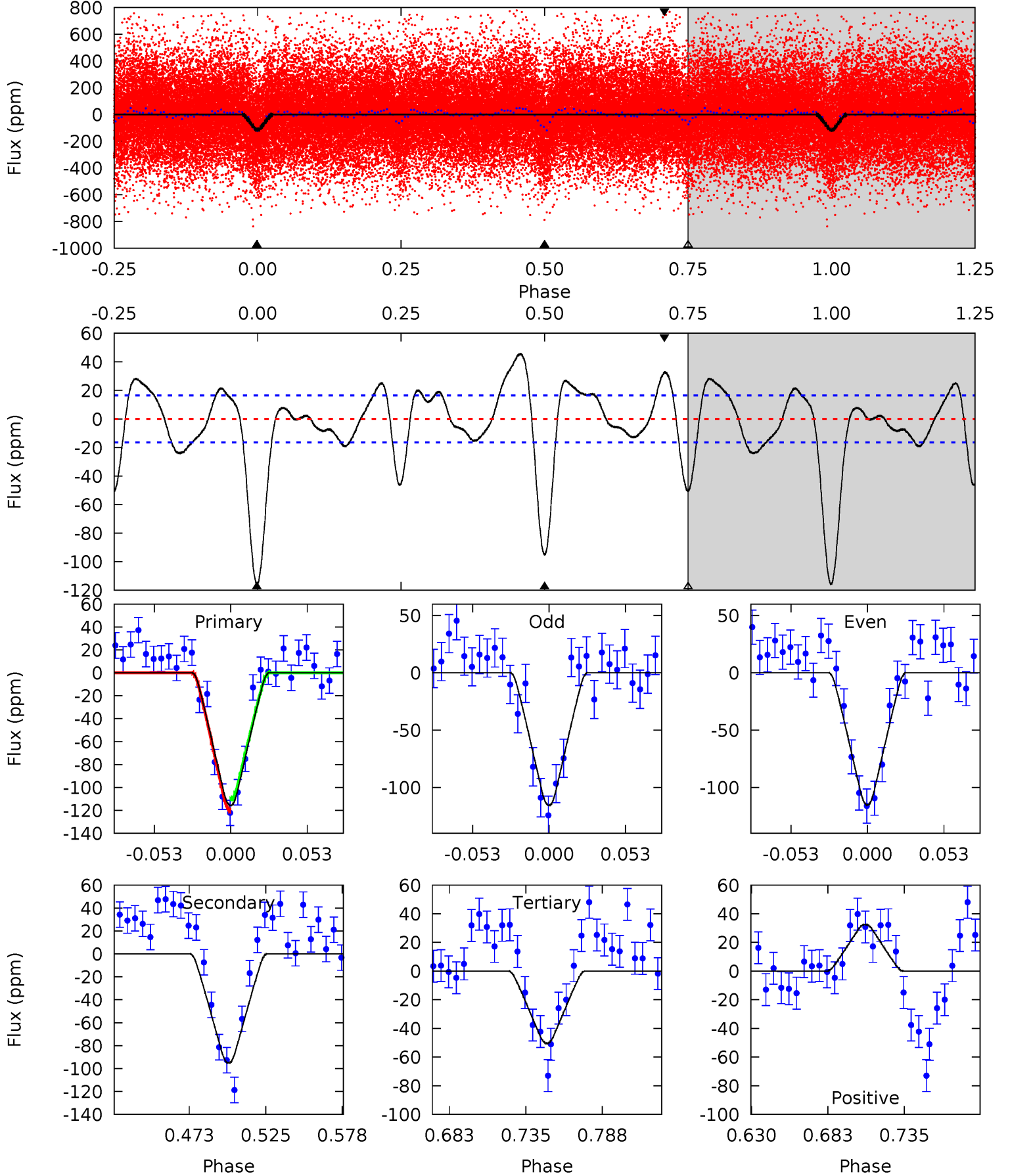
TCE 007045435-01 P= 0.934795 Days  $T_0=132.348005$  (BKJD)



# DV Model-Shift Uniqueness Test

007045435-01, P = 0.934807 Days, E = 131.397733 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
33.1	27.2	14.4	9.33	4.70	1.94	5.14	18.7	23.8	12.8	17.9	0.05	1.00	0.28	1.44

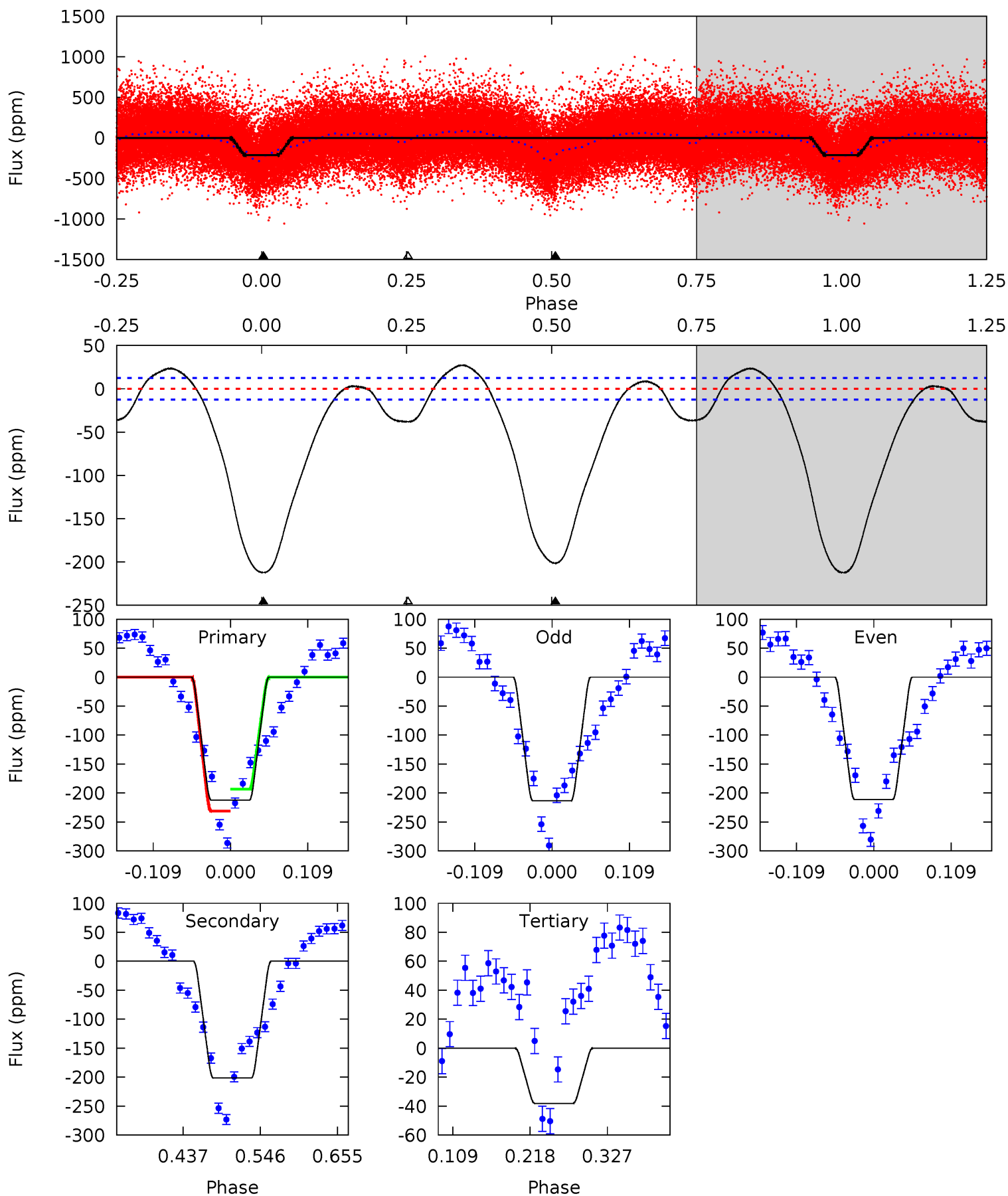




# Alt Model-Shift Uniqueness Test

007045435-01, P = 0.934795 Days, E = 131.413210 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
77.6	73.7	13.9	0	4.55	1.60	7.38	63.7	77.6	59.7	73.7	0.41	0.98	0.11	6.95





### Stellar Parameters For KIC 007045435

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6018^{+179}_{-179}$	$4.330^{+0.180}_{-0.180}$	$-0.500^{+0.300}_{-0.300}$	$1.053^{+0.280}_{-0.229}$	$0.864^{+0.118}_{-0.069}$	$1.042^{+0.961}_{-0.499}$
	+3%/-3%	+4%/-4%	+60%/-60%	+27%/-22%	+14%/-8%	+92%/-48%
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 007045435-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-95 \pm 3$	$1.44^{+0.51}_{-0.44}$	$2860^{+209}_{-210}$	$5298^{+1005}_{-584}$	$8.239^{+8.728}_{-3.673}$
Alt.	$-201 \pm 3$	$1.87^{+0.52}_{-0.49}$	$2855^{+217}_{-179}$	$5627^{+811}_{-565}$	$10^{+9}_{-4}$

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

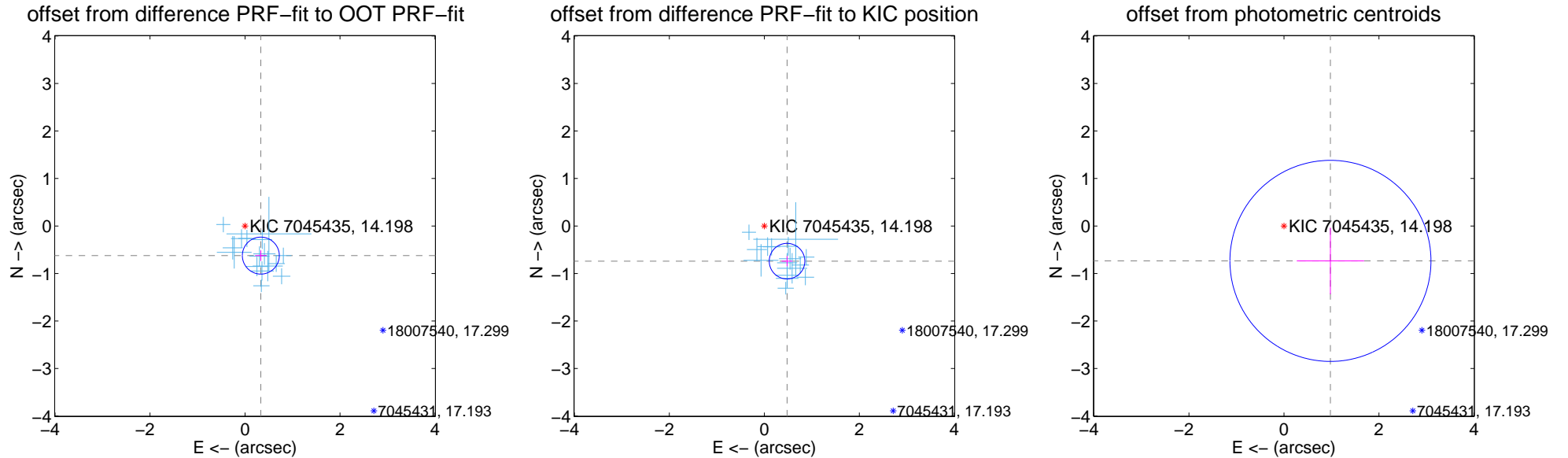
## DV Centroid Data

Supplemental centroid analysis for 007045435-01. Kepler magnitude: 14.20. Transit SNR 17.45

There are 16 quarters with good PRF difference image offsets

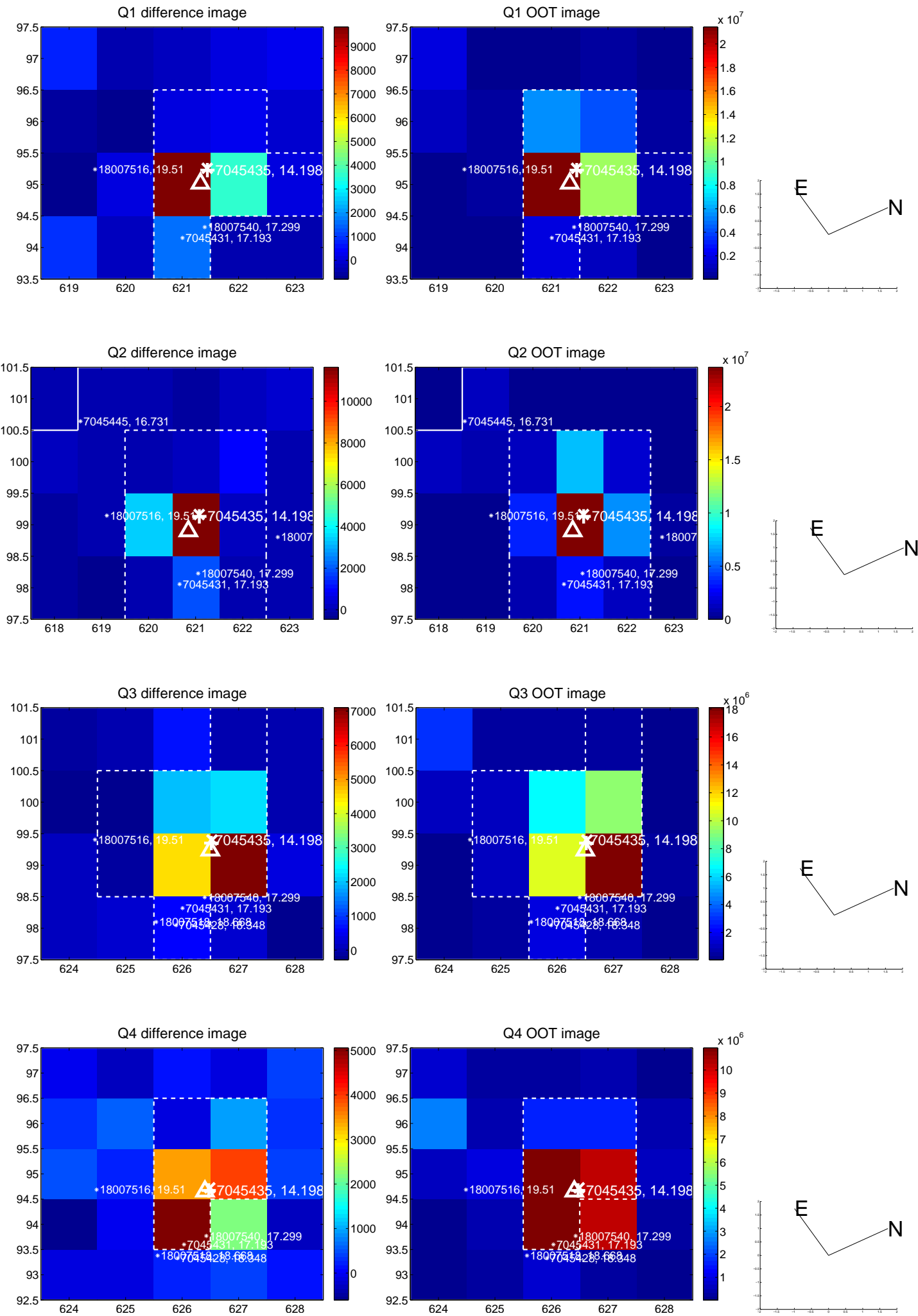
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.707 \pm 0.130$	5.45	$-0.333 \pm 0.120$	$-0.623 \pm 0.110$
PRF-fit source offset from KIC position	$0.881 \pm 0.125$	7.06	$-0.478 \pm 0.114$	$-0.740 \pm 0.106$
photometric centroid source offset	$1.22 \pm 0.71$	1.73	$-0.98 \pm 0.71$	$-0.73 \pm 0.70$

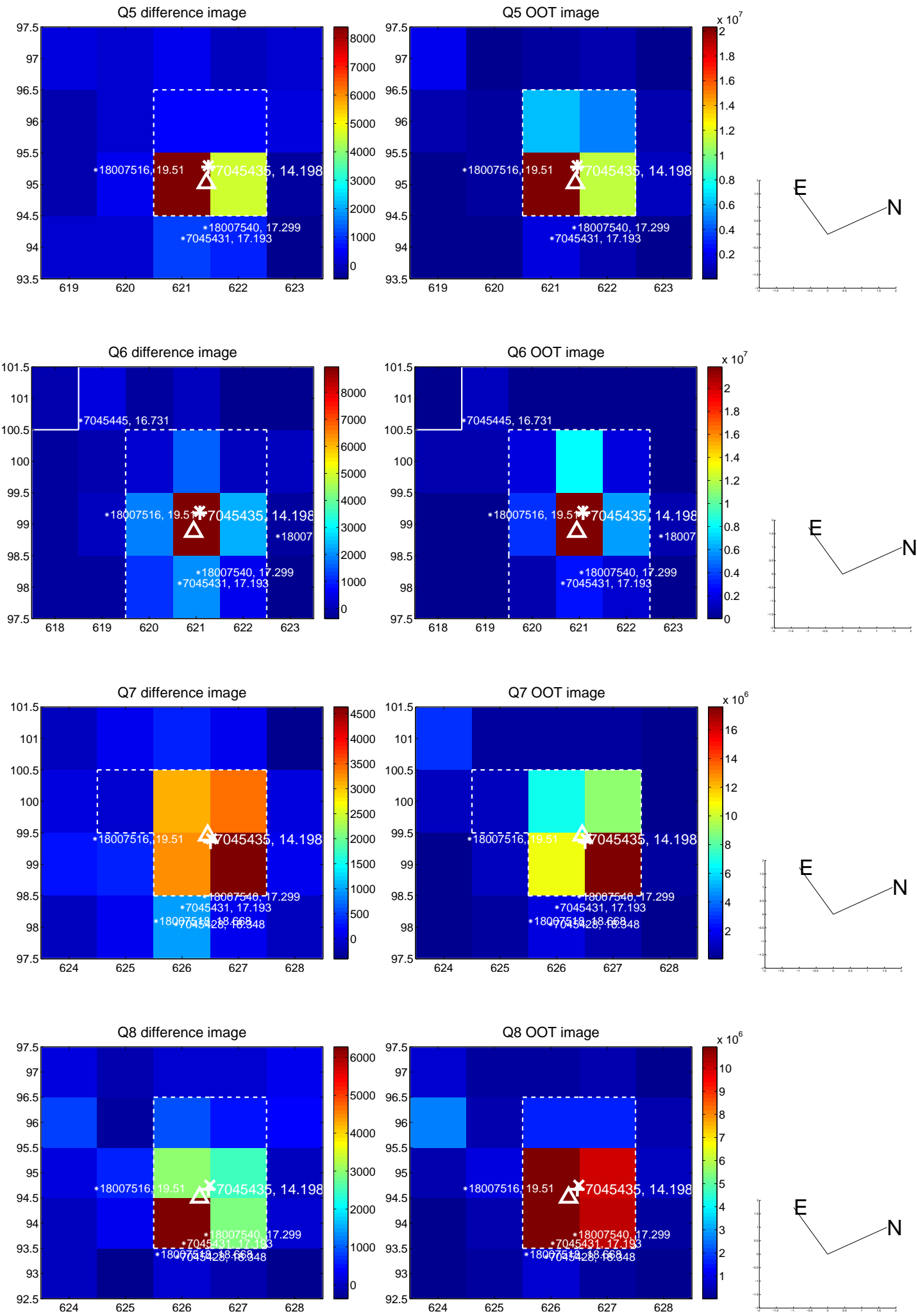


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

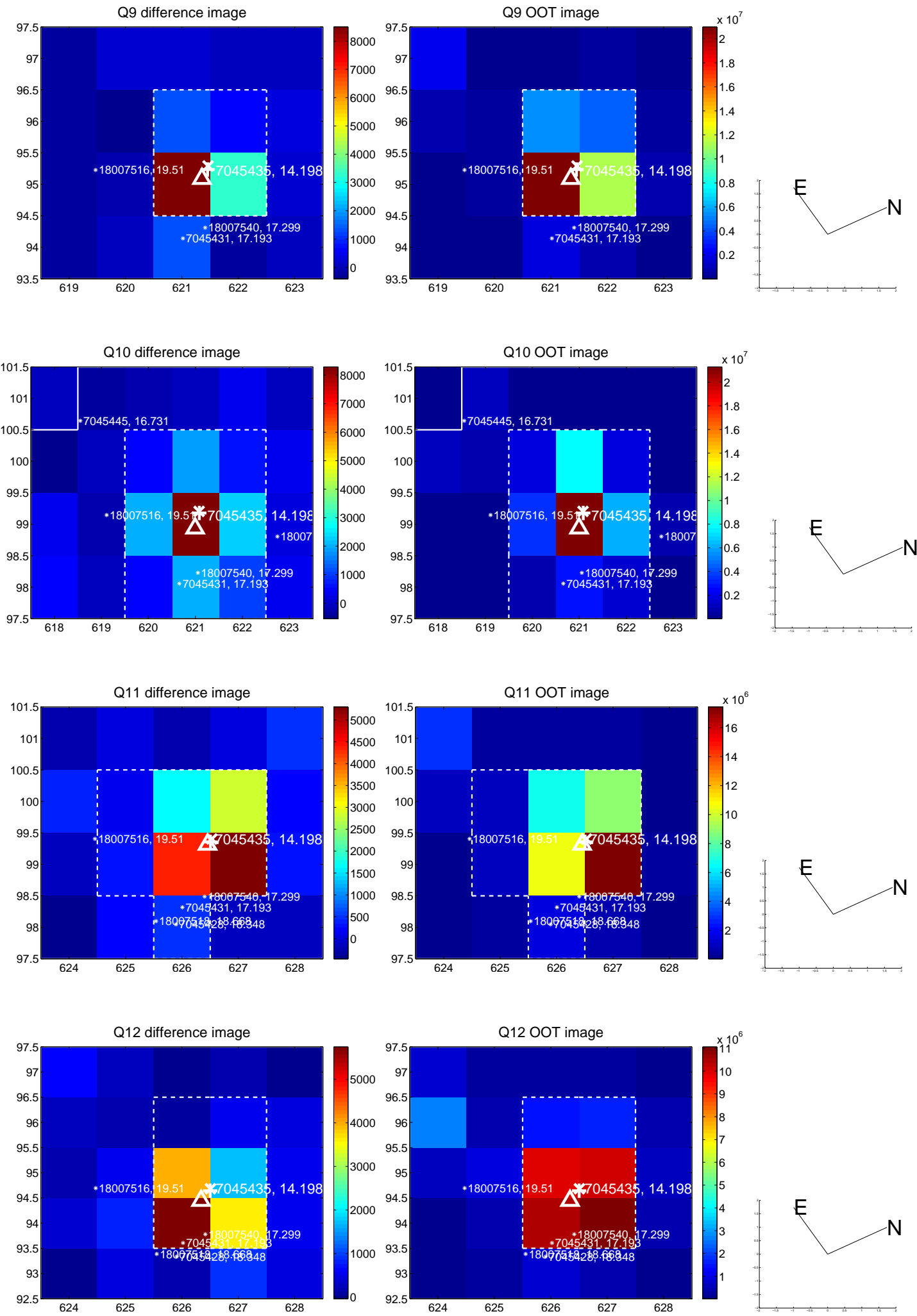


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

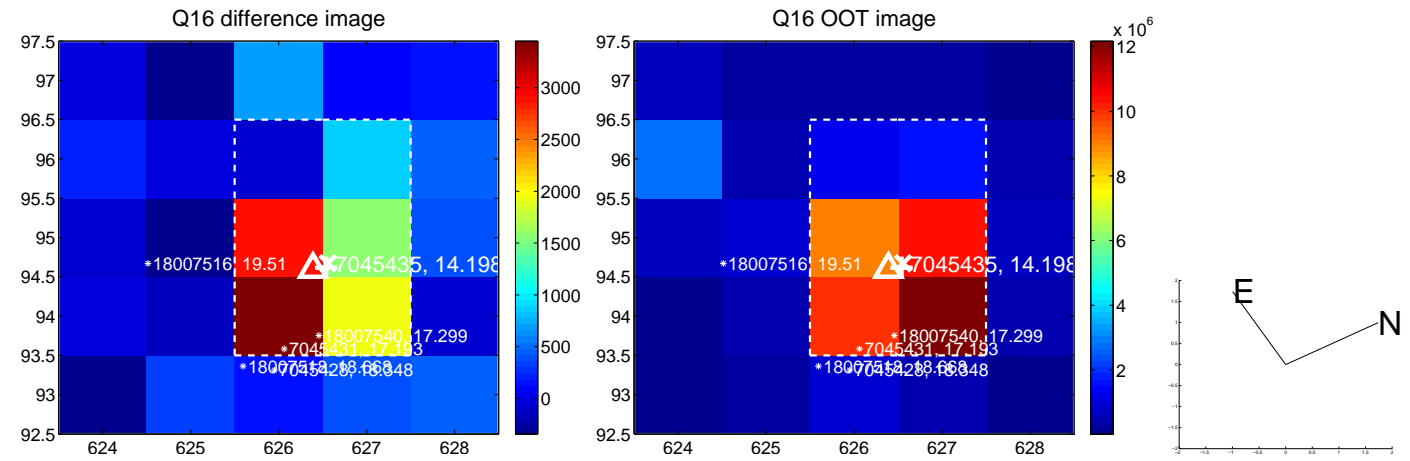
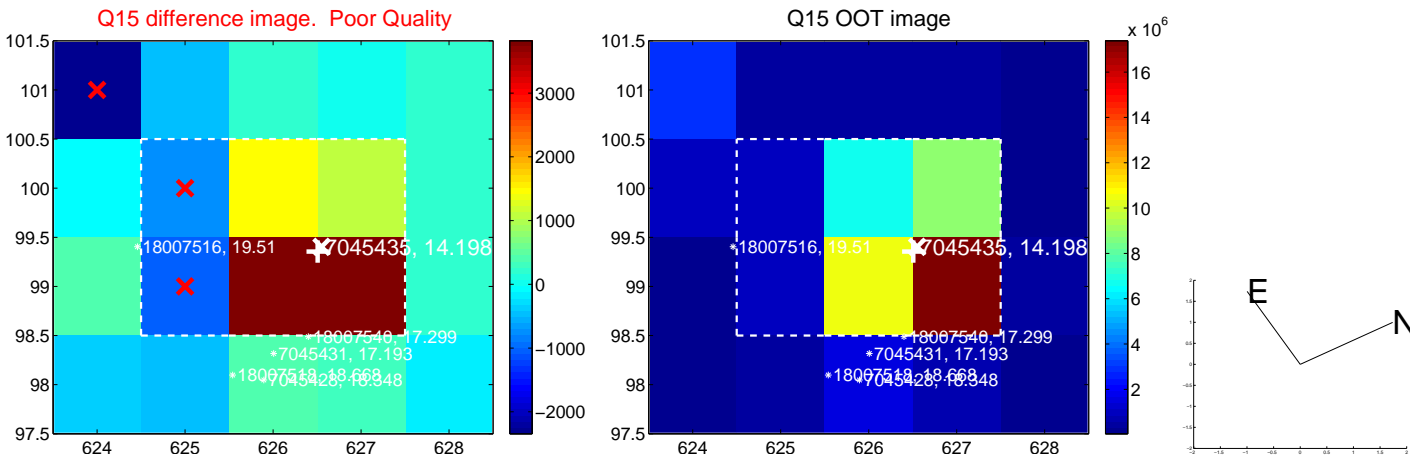
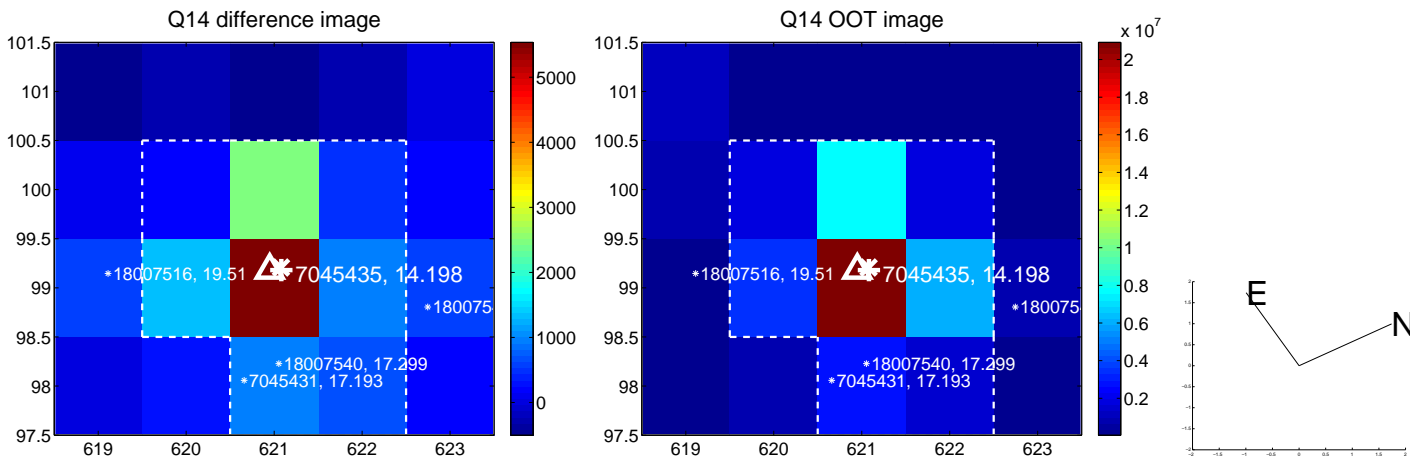
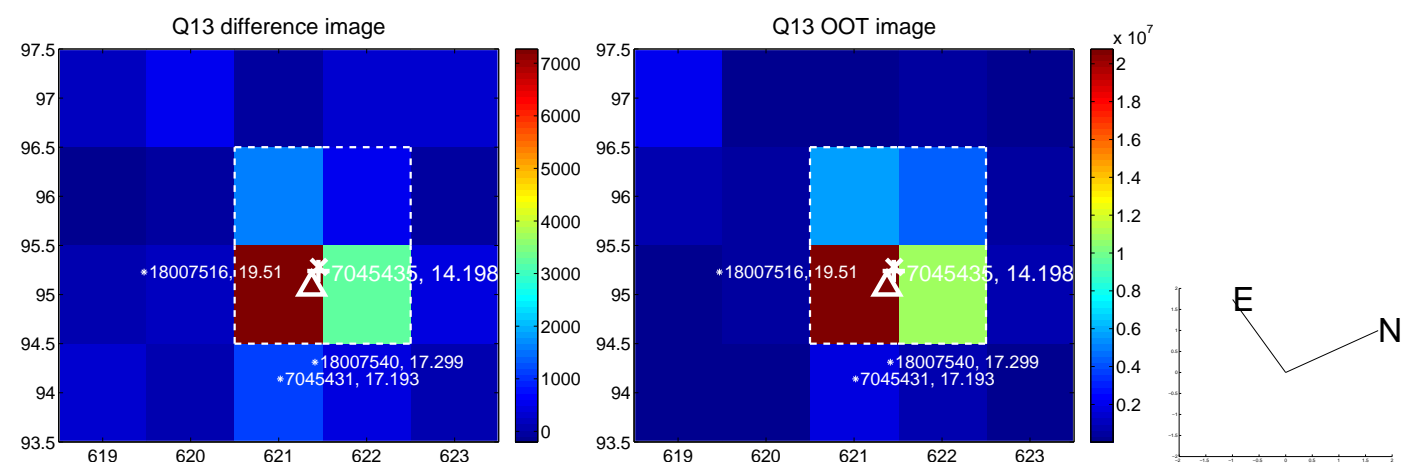




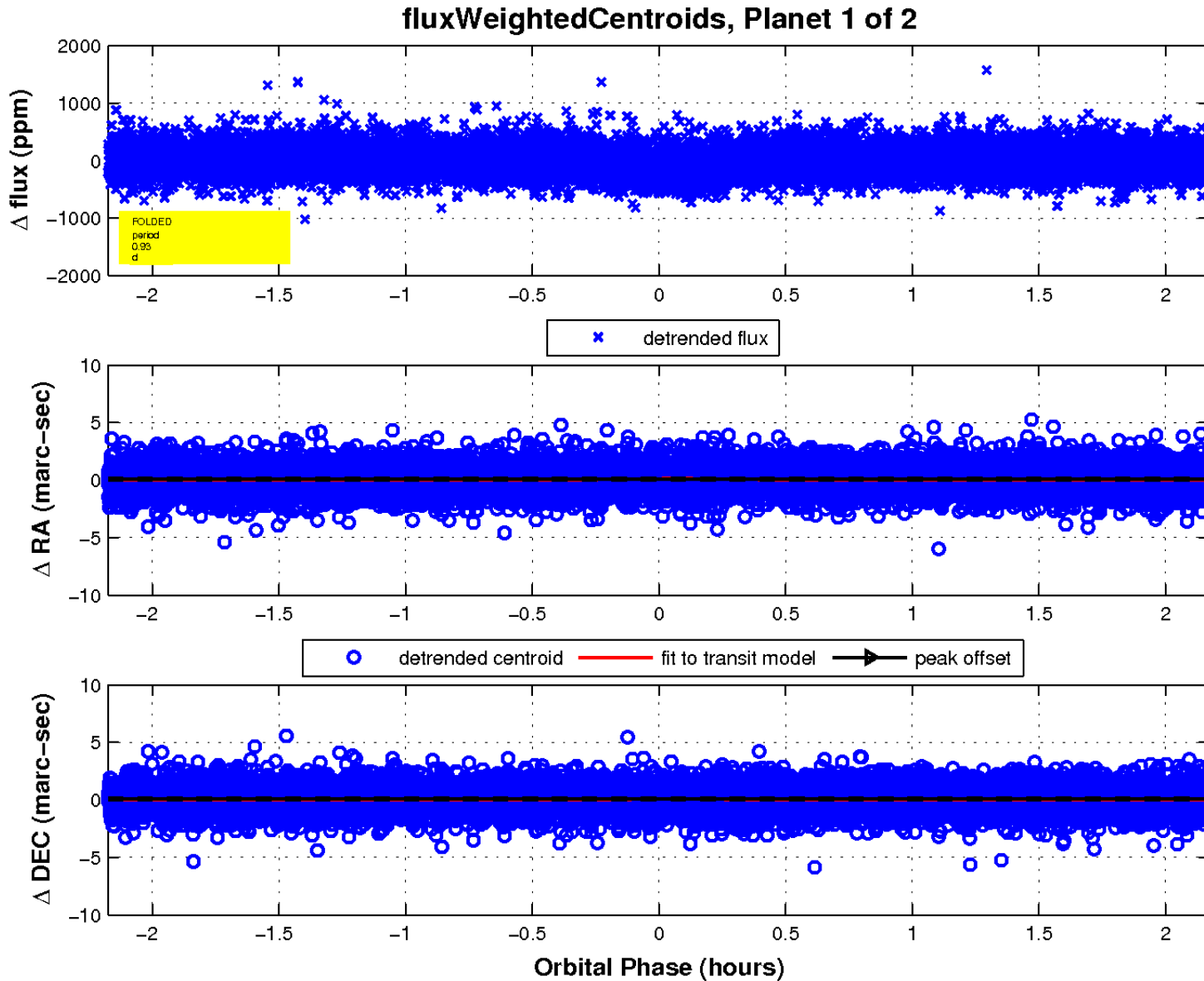
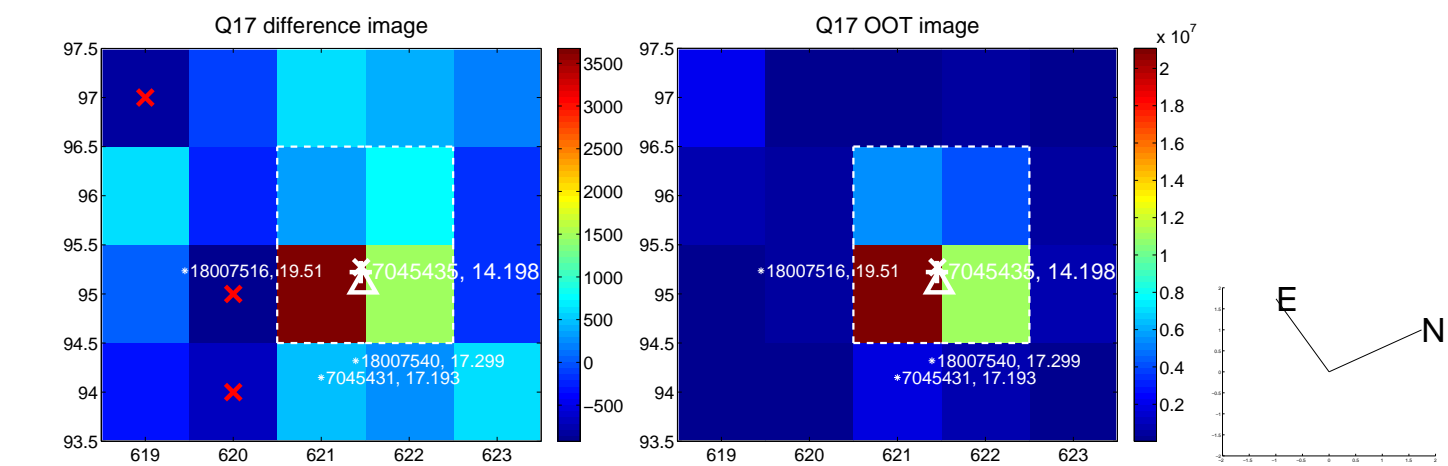
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

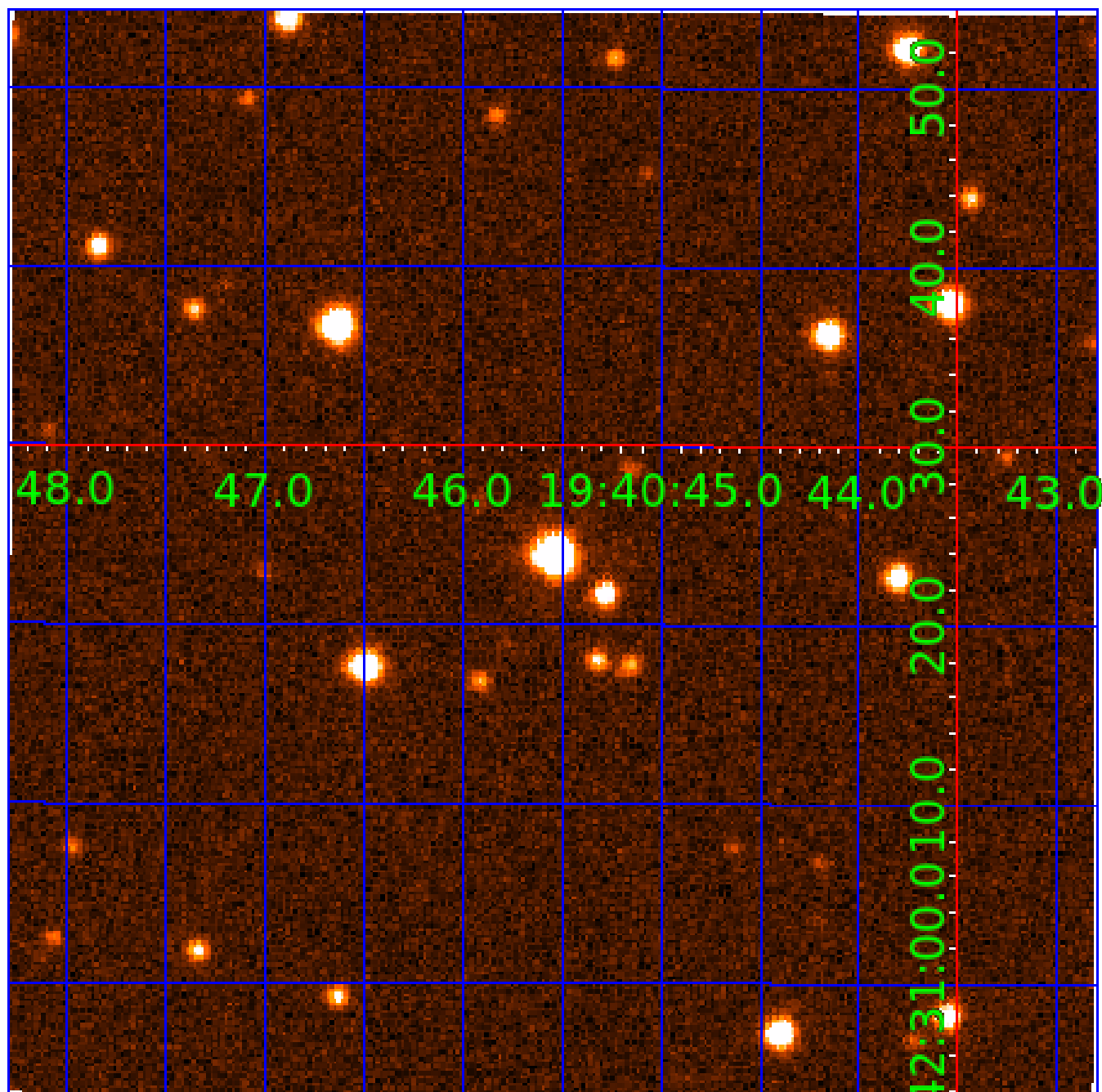


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007045435

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007045435-01	OBS	No	0.934807	132.332540	107.4	0.725	10.8	17.4	1.05	6018	1.44	4099.14
007045435-02	OBS	4608.01	0.934811	131.860994	444.3	1.500	8.3	-1.0	1.05	6018	2.23	4099.12

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007045435-01	OBS	FP	0.00	1	0	0	0	LPP_ALT
007045435-02	OBS	FP	0.00	1	0	0	0	LPP_DV—SAME_NTL_PERIOD—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.

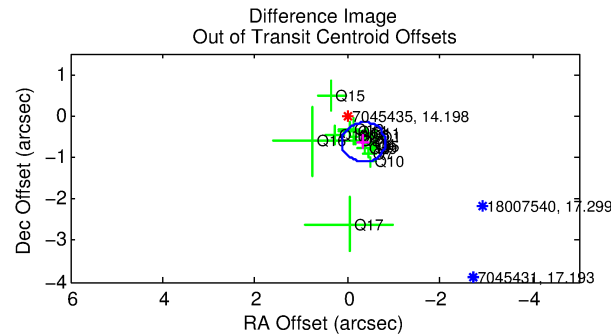
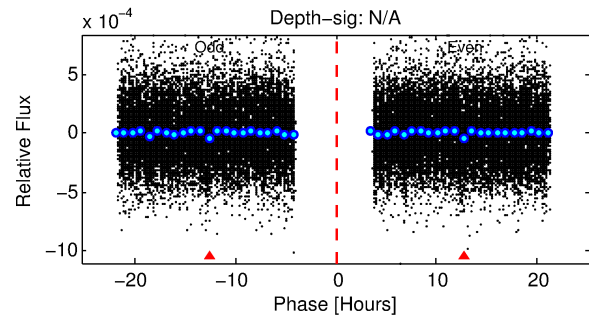
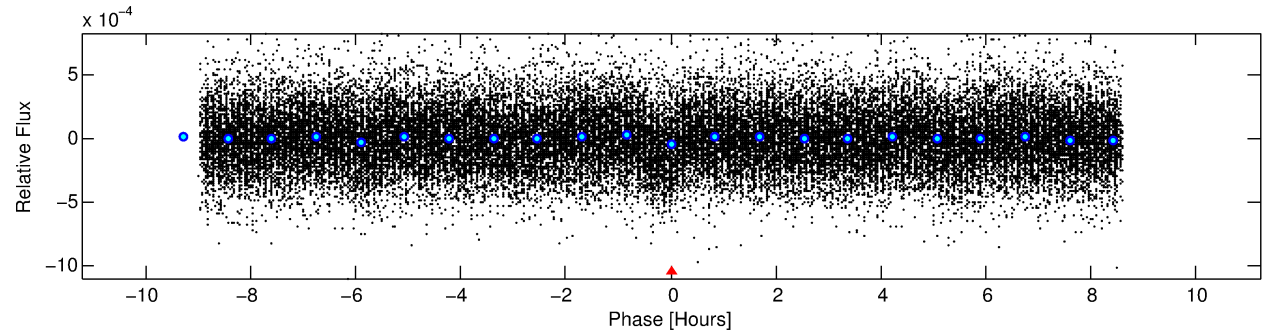
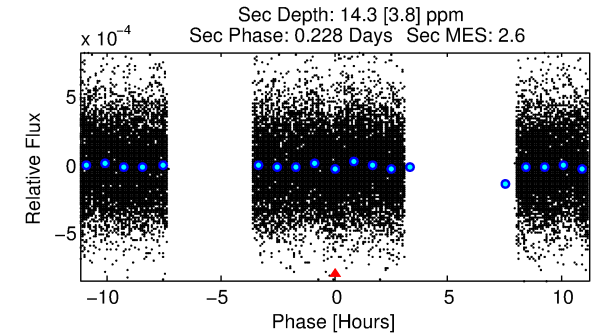
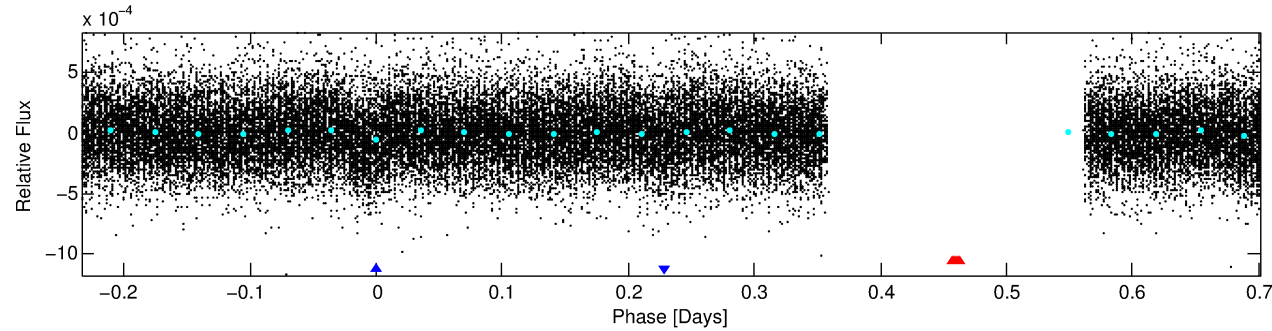
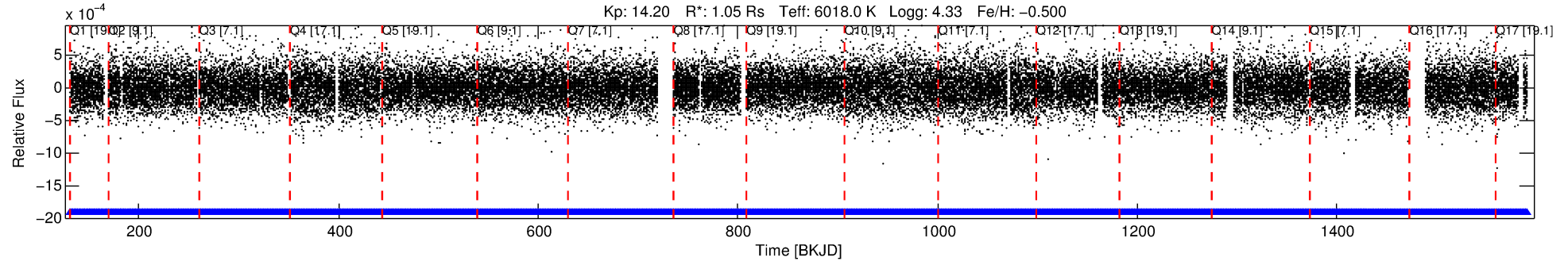
## Ephemeris Match Information For 007045435-02

No Significant Match Found

# DV One-Page Summary

KIC: 7045435 Candidate: 2 of 2 Period: 0.935 d  
KOI: K04608 Corr: No Ephemeris Match

Kp: 14.20 R\*: 1.05 Rs Teff: 6018.0 K Logg: 4.33 Fe/H: -0.500



TPS TCE Results:

Period = 0.93481 d  
Epoch = 131.8610 BKJD

DV fit results are unavailable

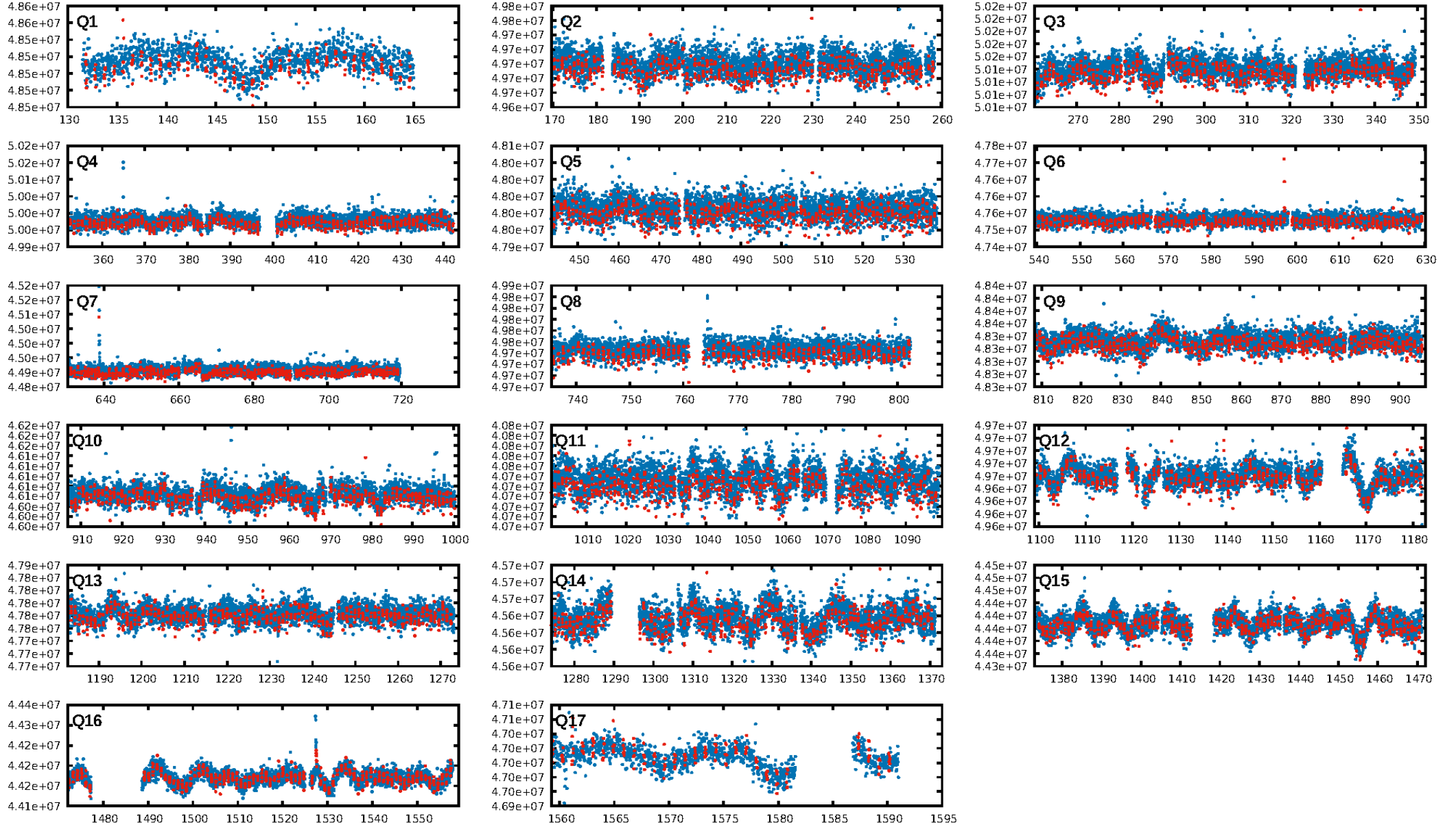
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.00e-17  
RollingBand-fgt: 1.00 [1375/1375]  
GhostDiagnostic-chr: 0.3454  
Centroid-sig: 0.0%  
Centroid-so: 0.640 arcsec [4.72σ]  
OotOffset-rm: 0.717 arcsec [4.55σ]  
KicOffset-rm: 0.887 arcsec [6.02σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.94 [16/17]  
DiffImageOverlap-fno: 1.00 [17/17]

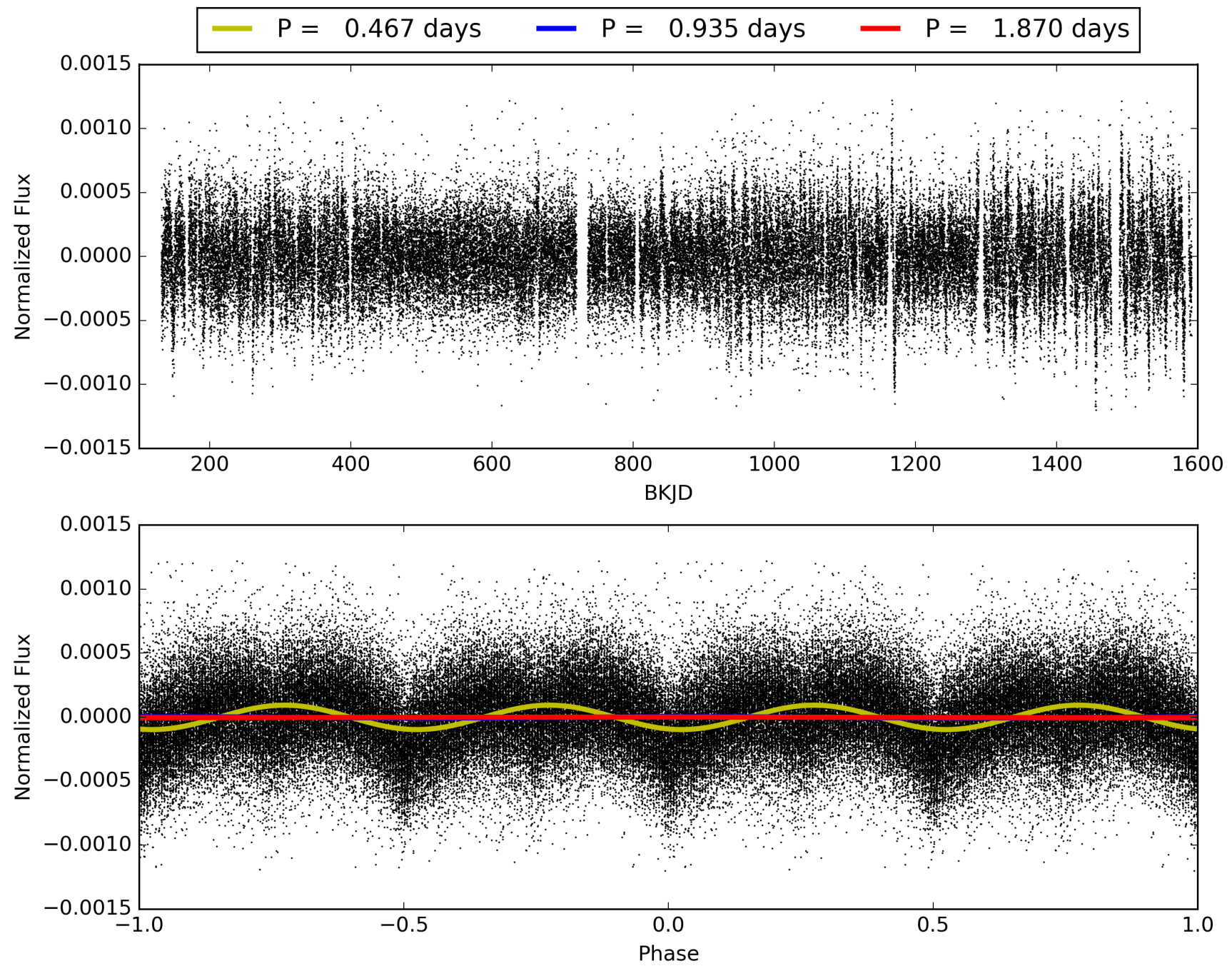
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:47:29 Z

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

# TCE 007045435-02, PDC Light Curves



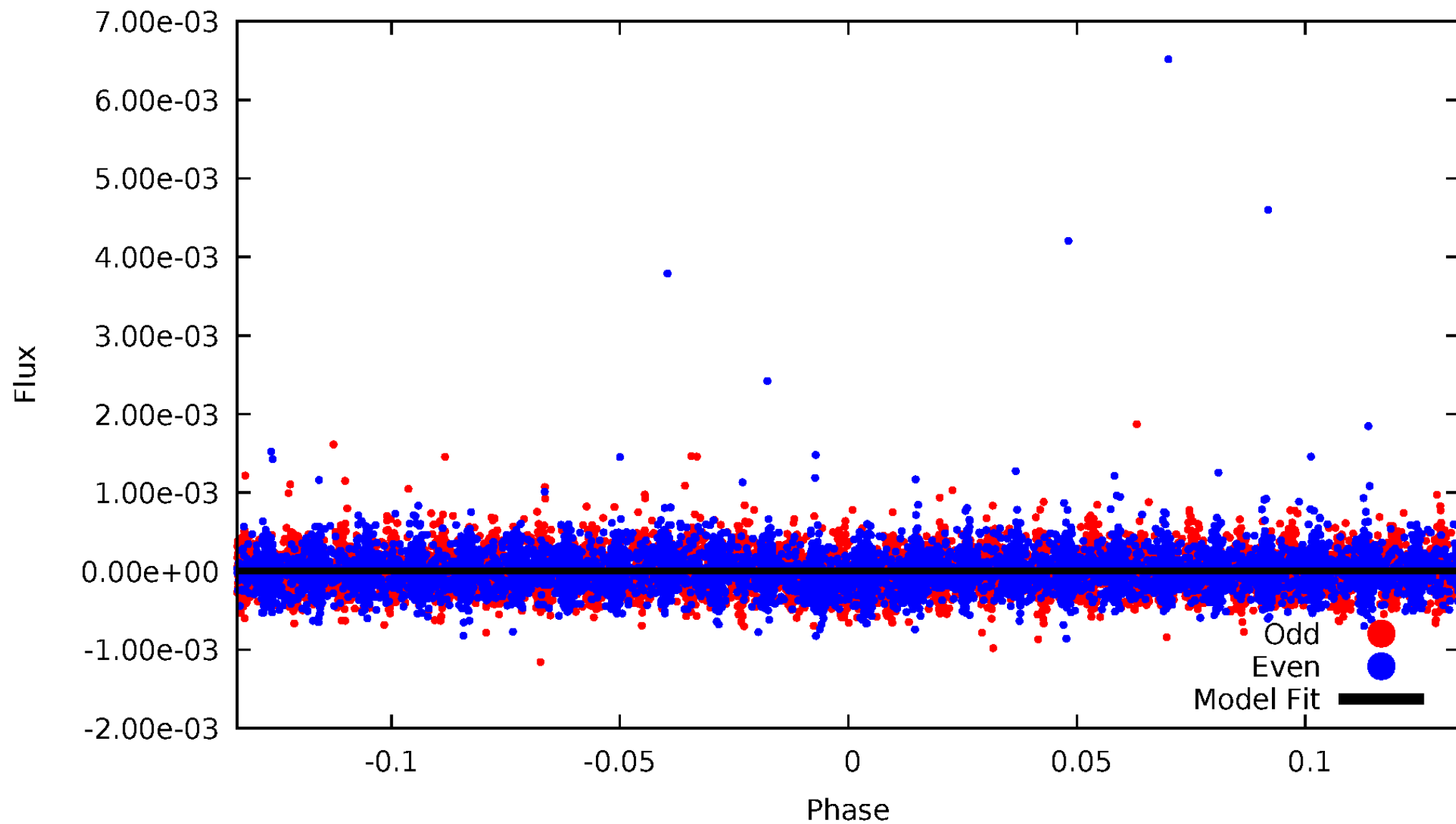
TCE 007045435-02





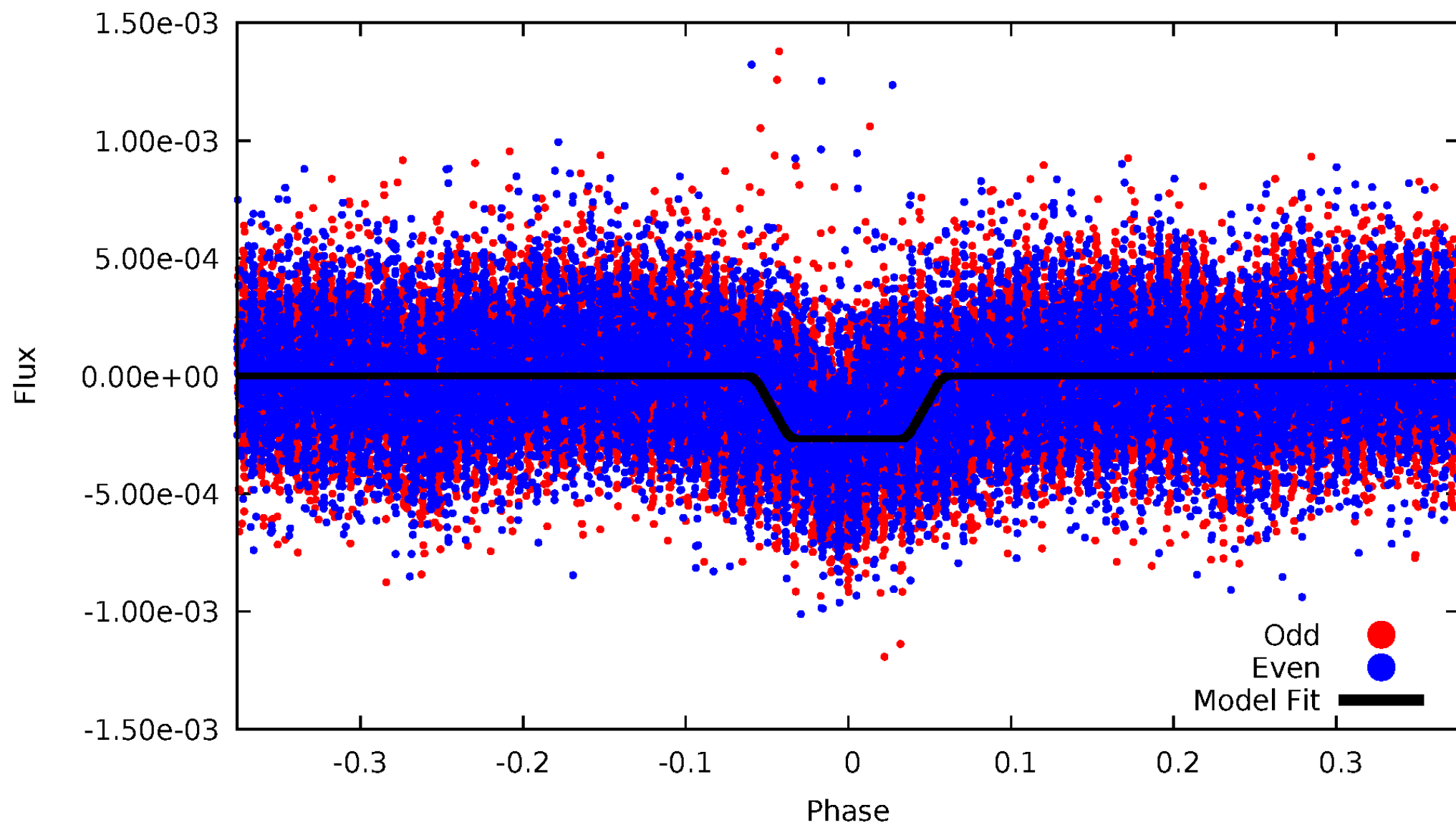
# DV Odd/Even

TCE 007045435-02



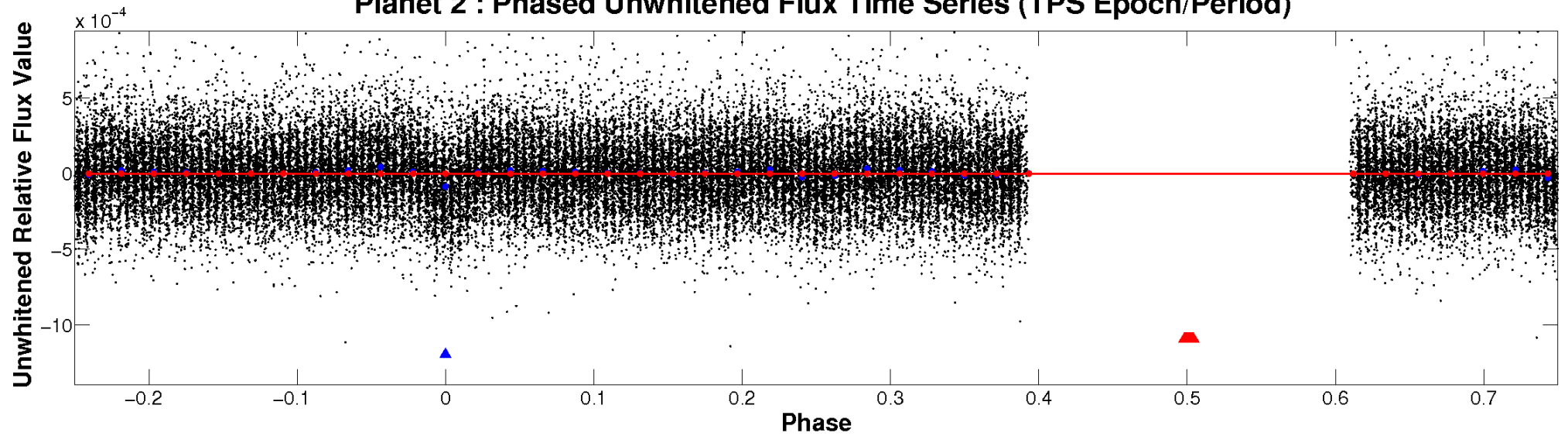
# ALT Odd/Even

TCE 007045435-02



# Non-Whitened Vs. Whitened Light Curve

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

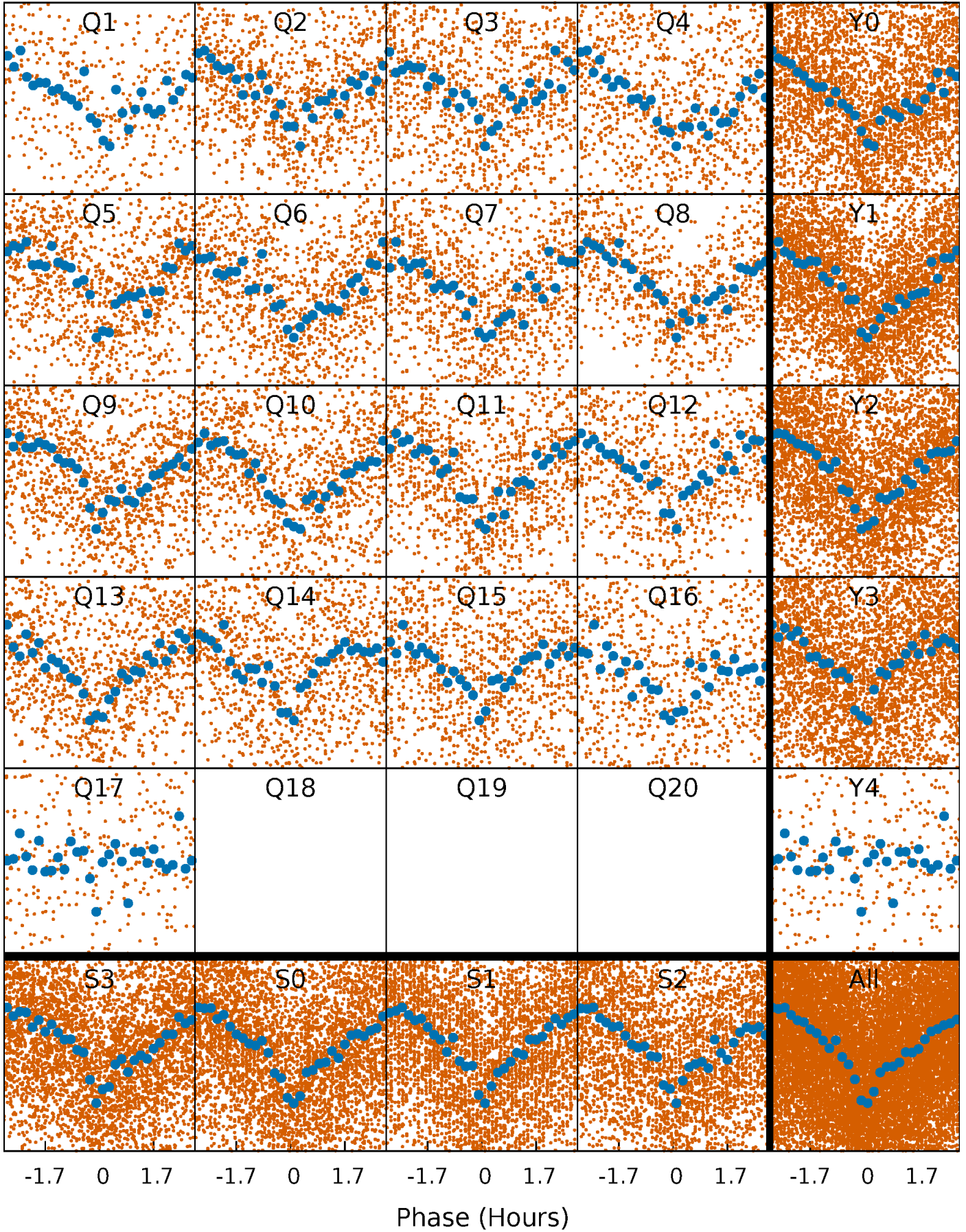


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

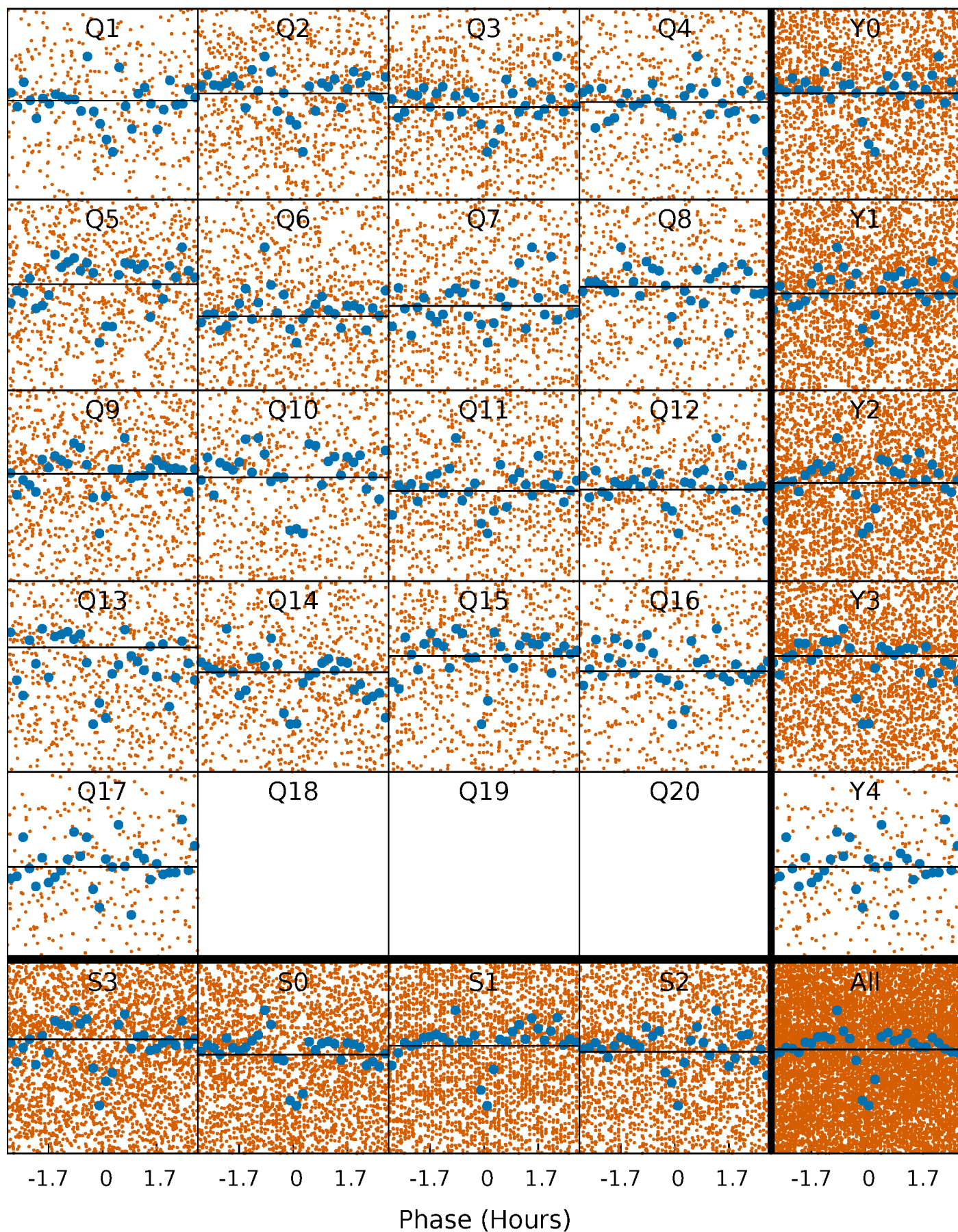
TCE 007045435-02   P= 0.934811 Days    $T_0=131.860994$  (BKJD)





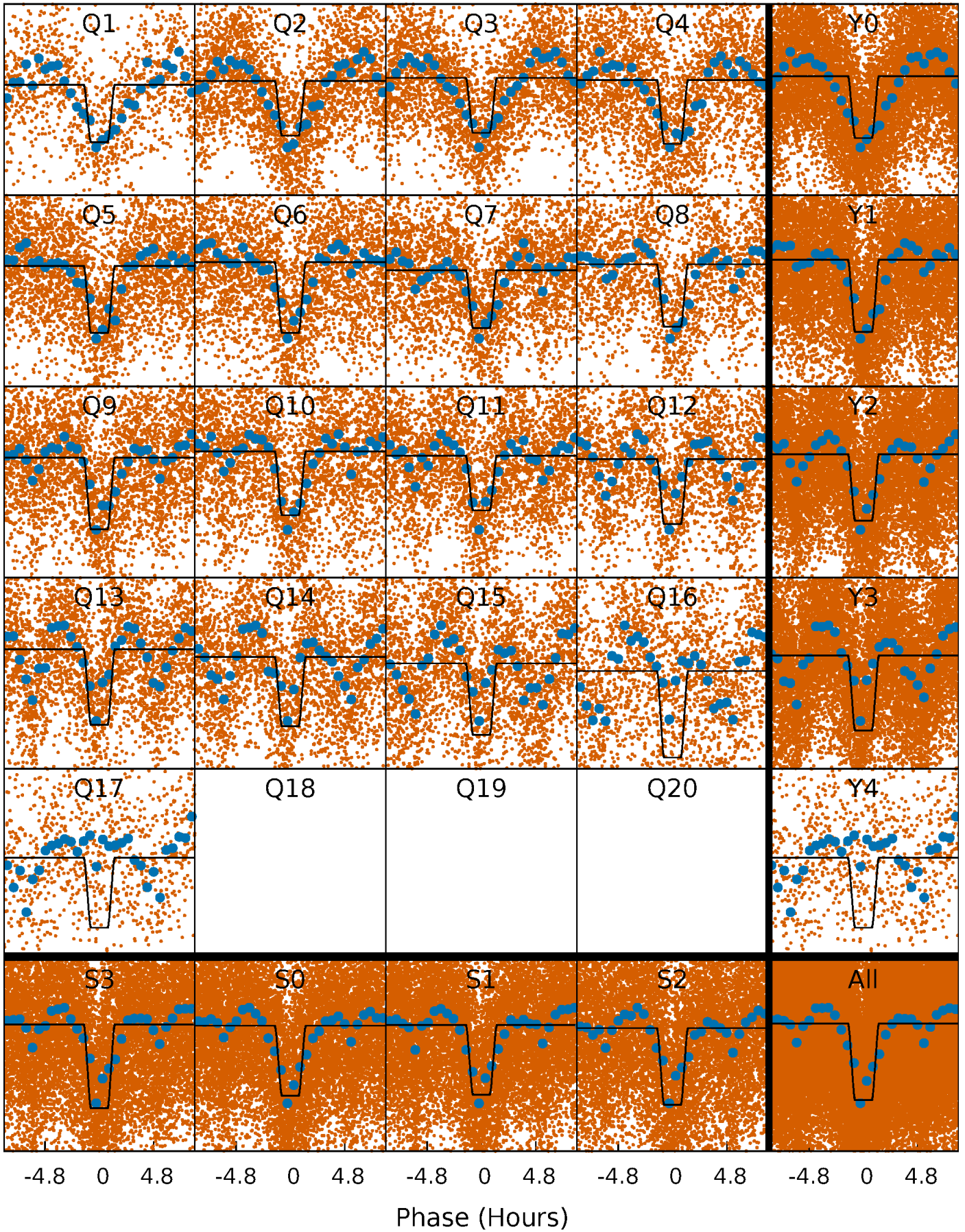
# DV Quarter-Phased Transit Curves

TCE 007045435-02 P= 0.934811 Days  $T_0=131.860994$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007045435-02     $P = 0.934811$  Days     $T_0 = 131.869845$  (BKJD)

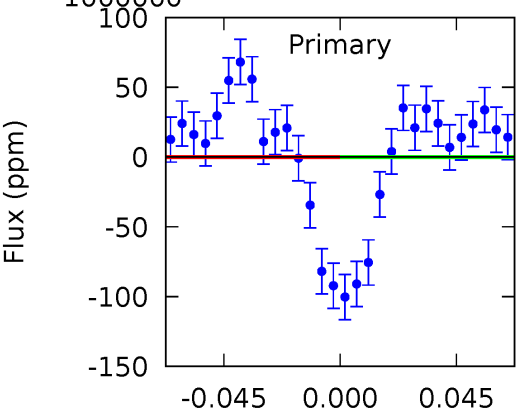
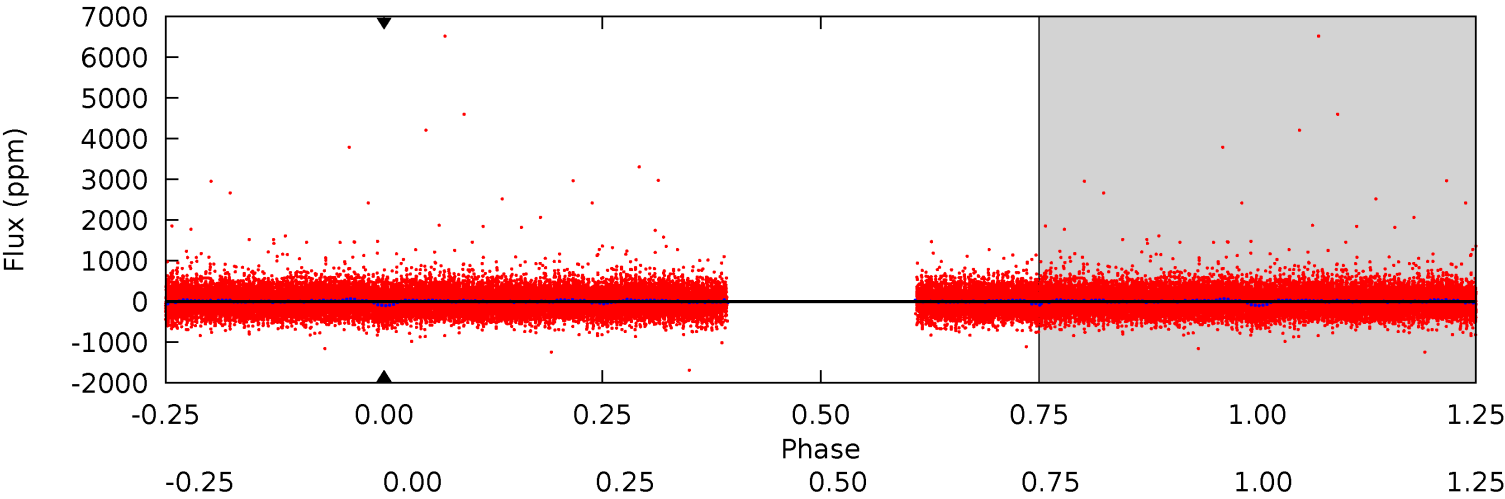




# DV Model-Shift Uniqueness Test

007045435-02, P = 0.934811 Days, E = 130.926183 Days

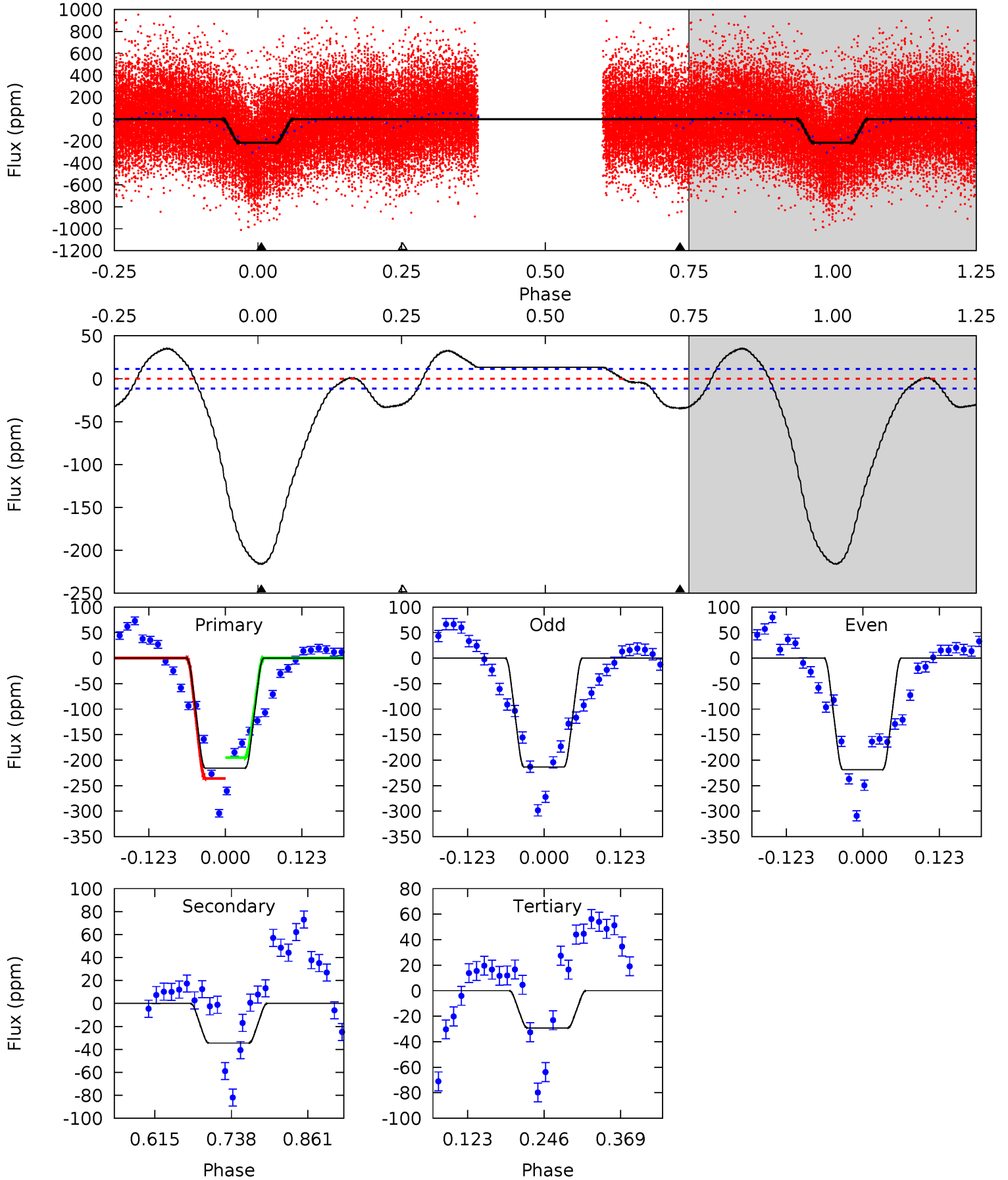
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

007045435-02, P = 0.934811 Days, E = 130.935034 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
85.4	13.7	11.6	0	4.52	1.54	8.70	73.8	85.4	2.04	13.7	1.02	0.96	0.14	8.07



### Stellar Parameters For KIC 007045435

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6018^{+179}_{-179}$	$4.330^{+0.180}_{-0.180}$	$-0.500^{+0.300}_{-0.300}$	$1.053^{+0.280}_{-0.229}$	$0.864^{+0.118}_{-0.069}$	$1.042^{+0.961}_{-0.499}$
	+3%/-3%	+4%/-4%	+60%/-60%	+27%/-22%	+14%/-8%	+92%/-48%
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 007045435-02 / KOI 4608.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$8.61^{+9.97}_{-5.86}$	$2870^{+198}_{-195}$	$-3021^{+25602}_{-19140}$	$-0.038^{+400.204}_{-409.652}$
Alt.	$-34 \pm 3$	$8.14^{+8.83}_{-5.74}$	$2846^{+224}_{-189}$	$-2804^{+6260}_{-212}$	$0.091^{+0.983}_{-0.070}$

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

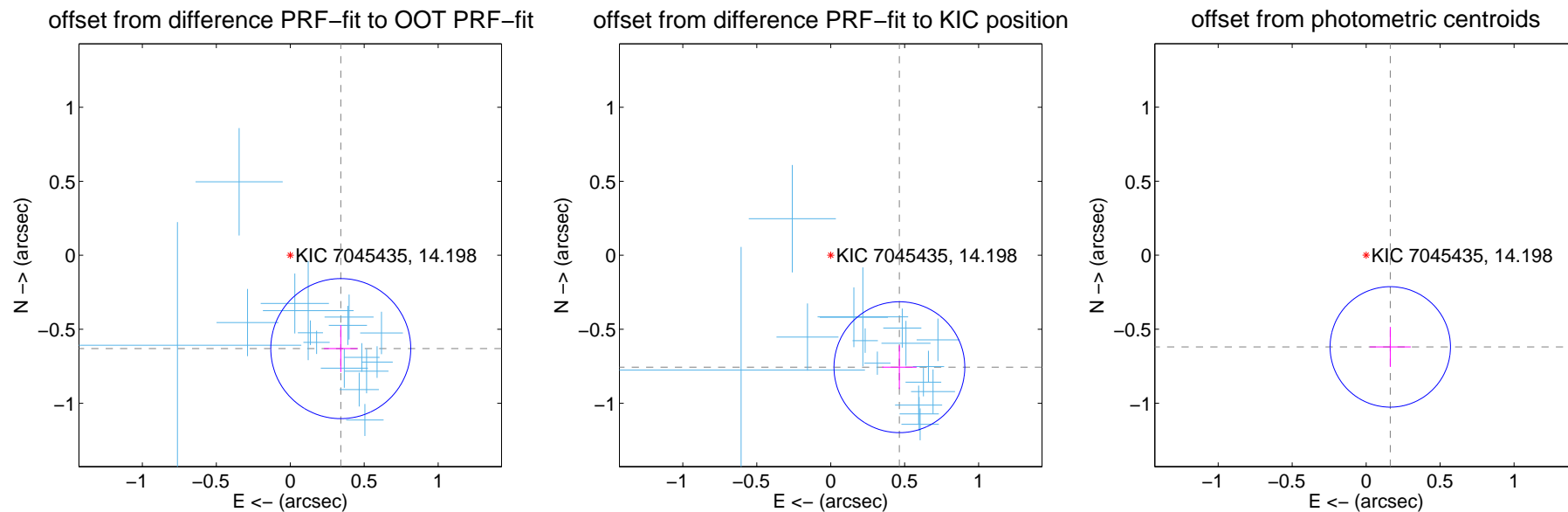
## DV Centroid Data

Supplemental centroid analysis for 007045435-02. Kepler magnitude: 14.20. Transit SNR -1.00

There are 16 quarters with good PRF difference image offsets

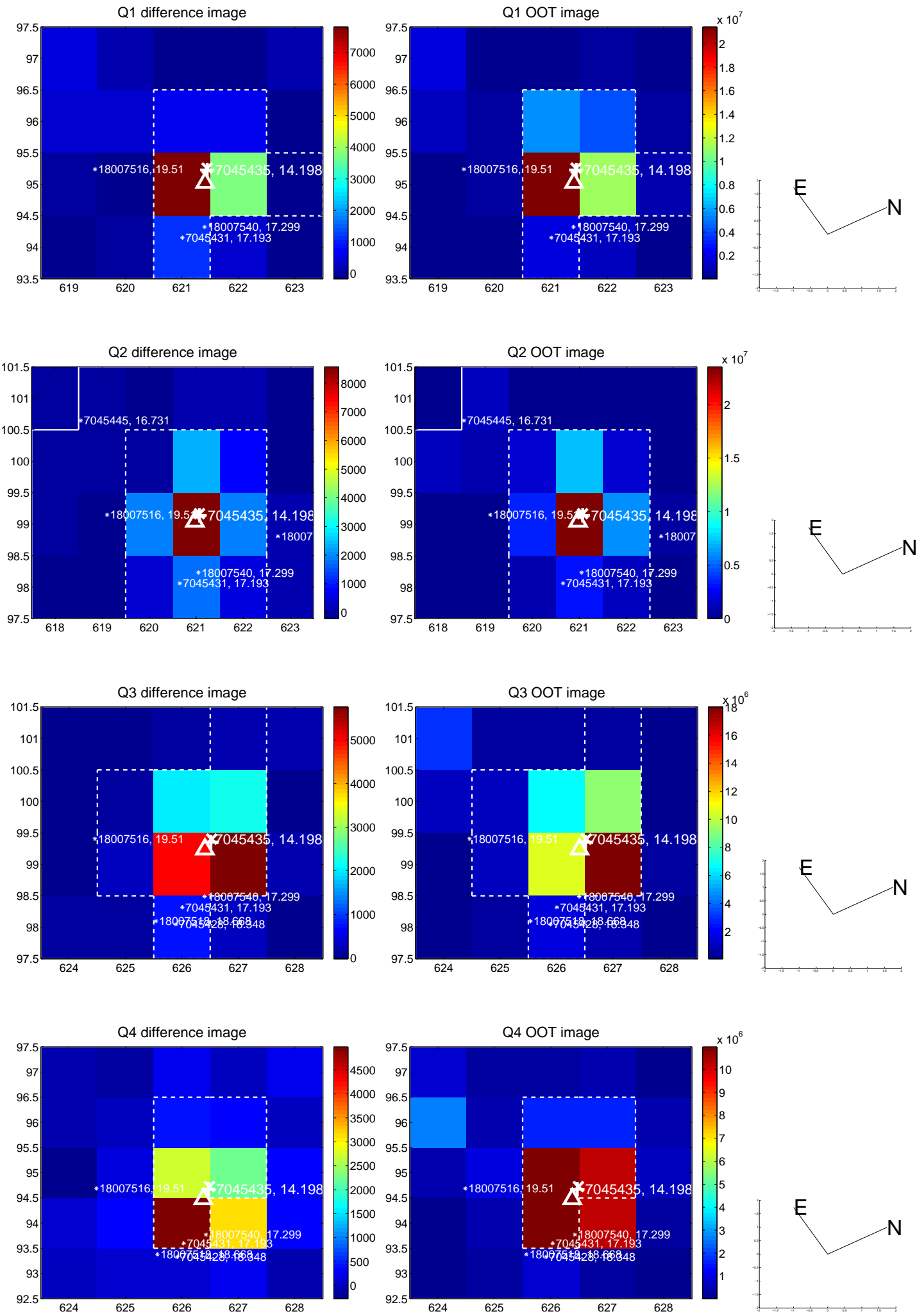
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.717 \pm 0.158$	4.55	$-0.341 \pm 0.114$	$-0.630 \pm 0.159$
PRF-fit source offset from KIC position	$0.887 \pm 0.147$	6.02	$-0.464 \pm 0.116$	$-0.756 \pm 0.147$
photometric centroid source offset	$0.64 \pm 0.14$	4.72	$-0.16 \pm 0.14$	$-0.62 \pm 0.14$



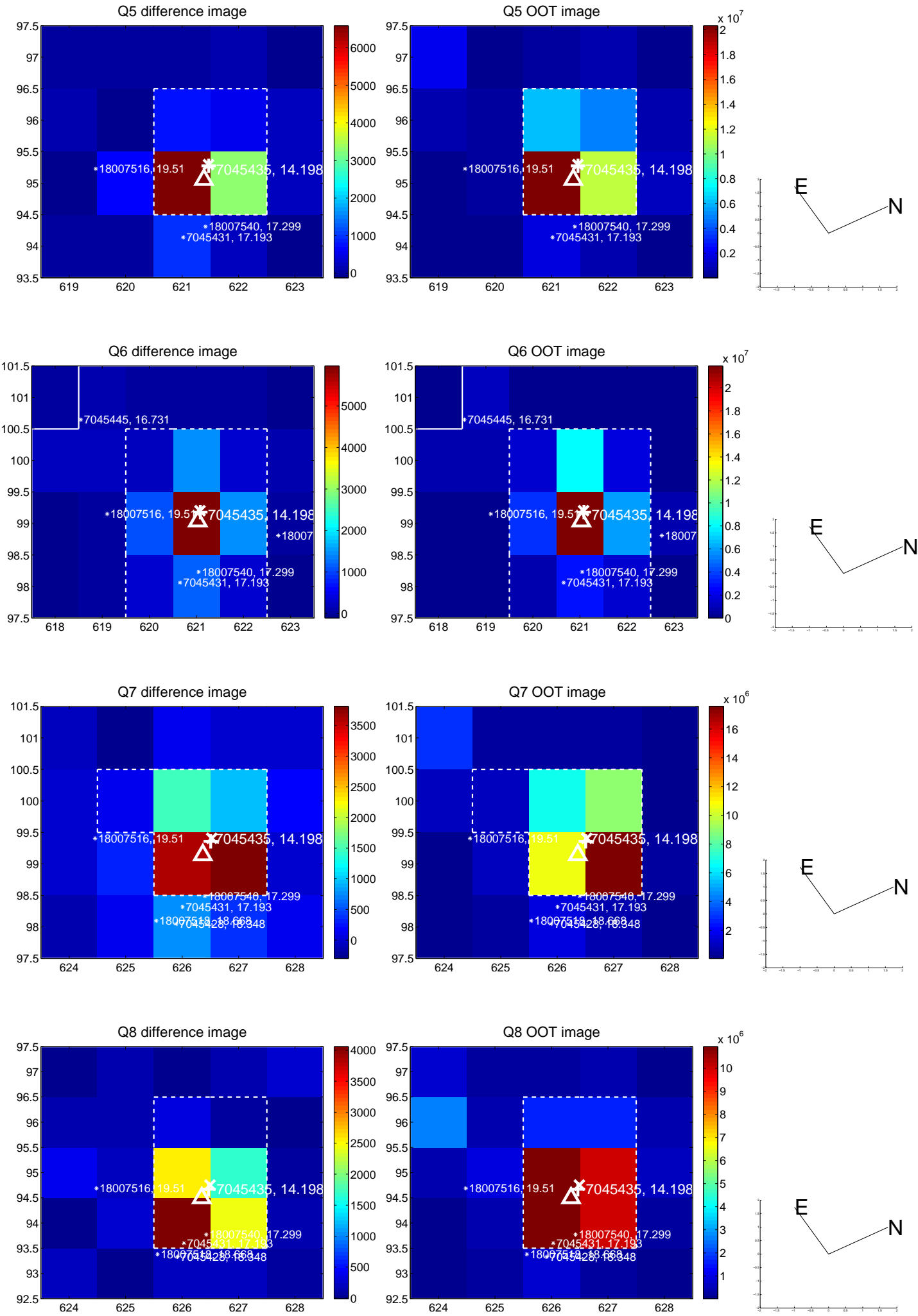
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

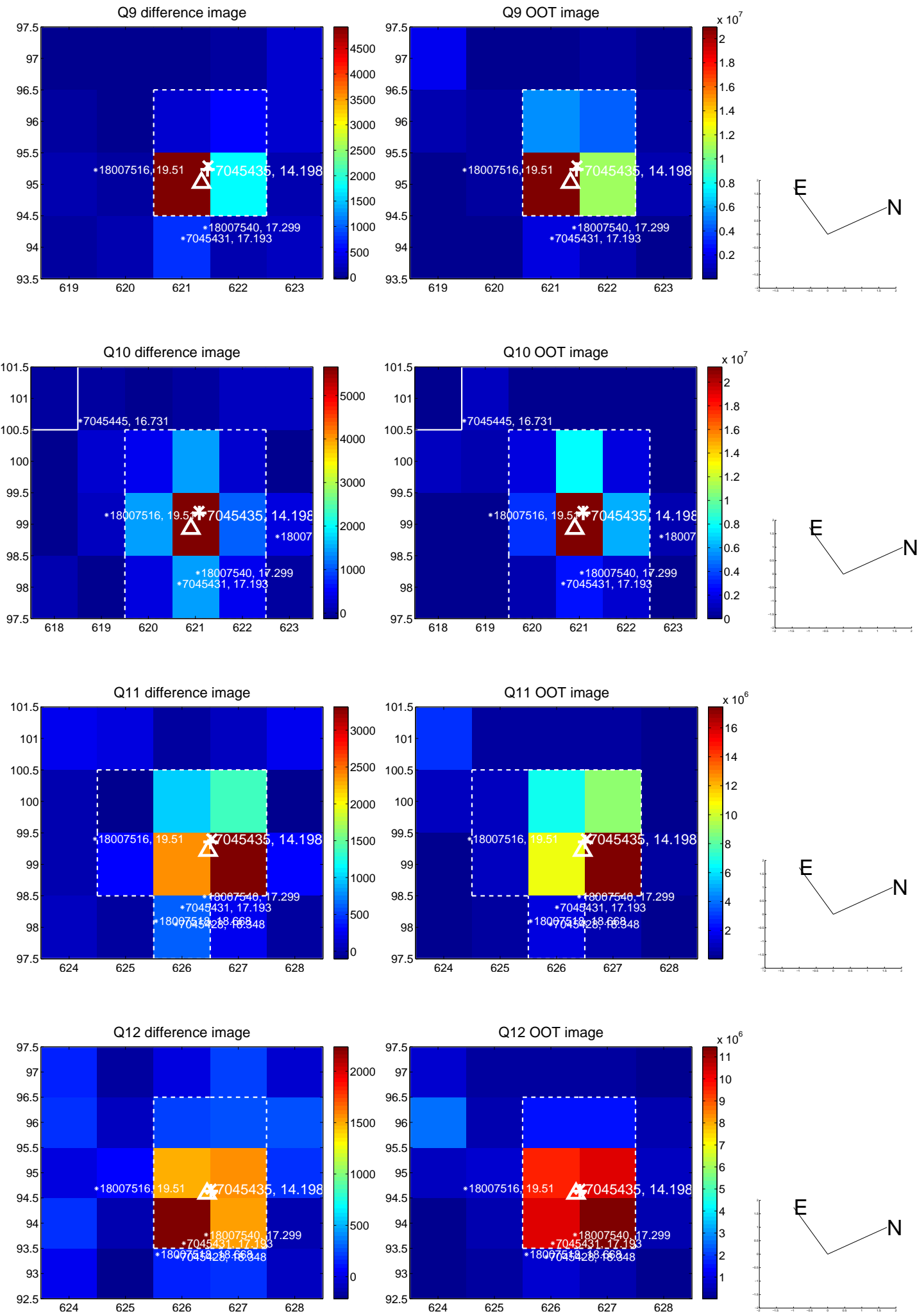




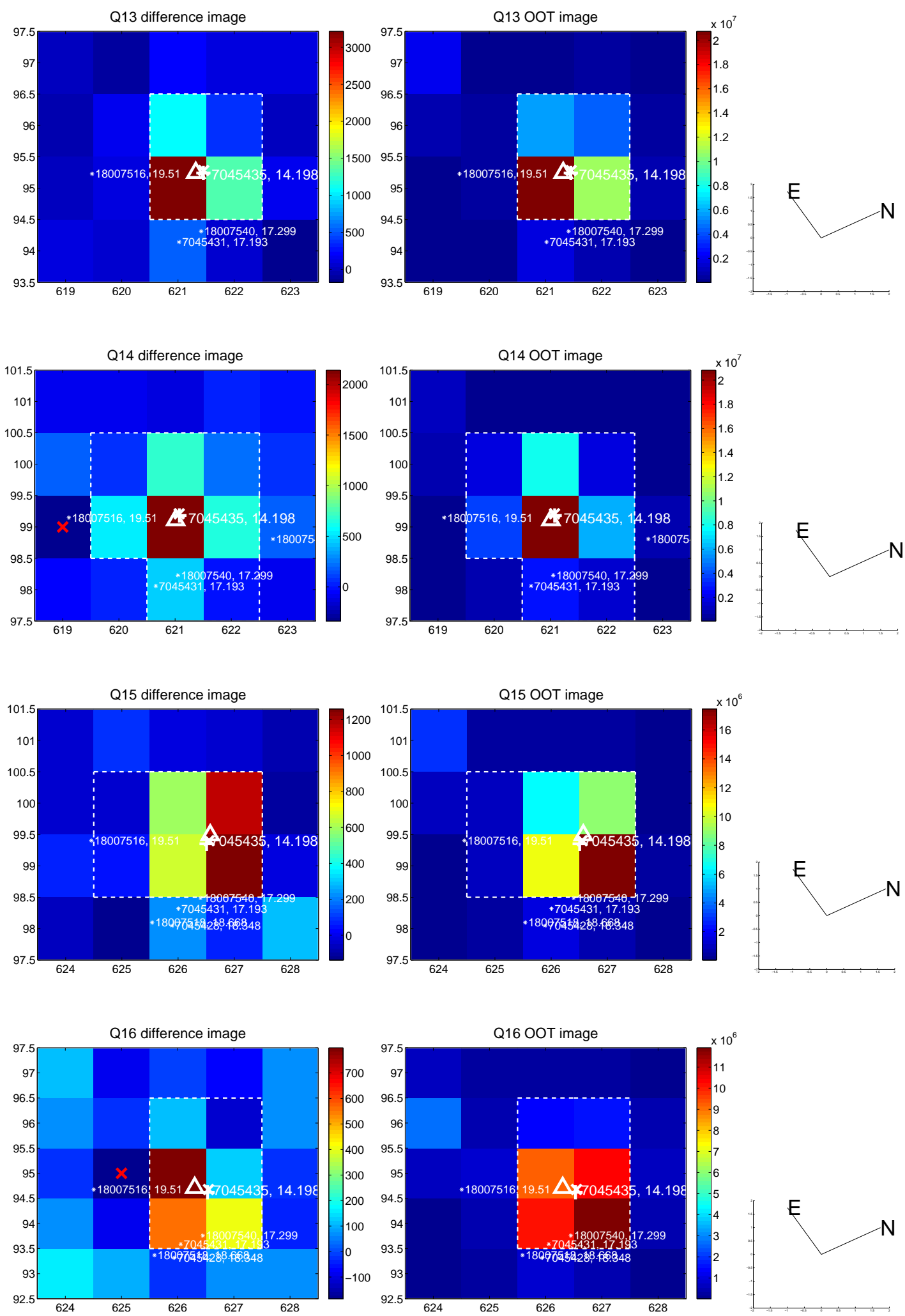
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



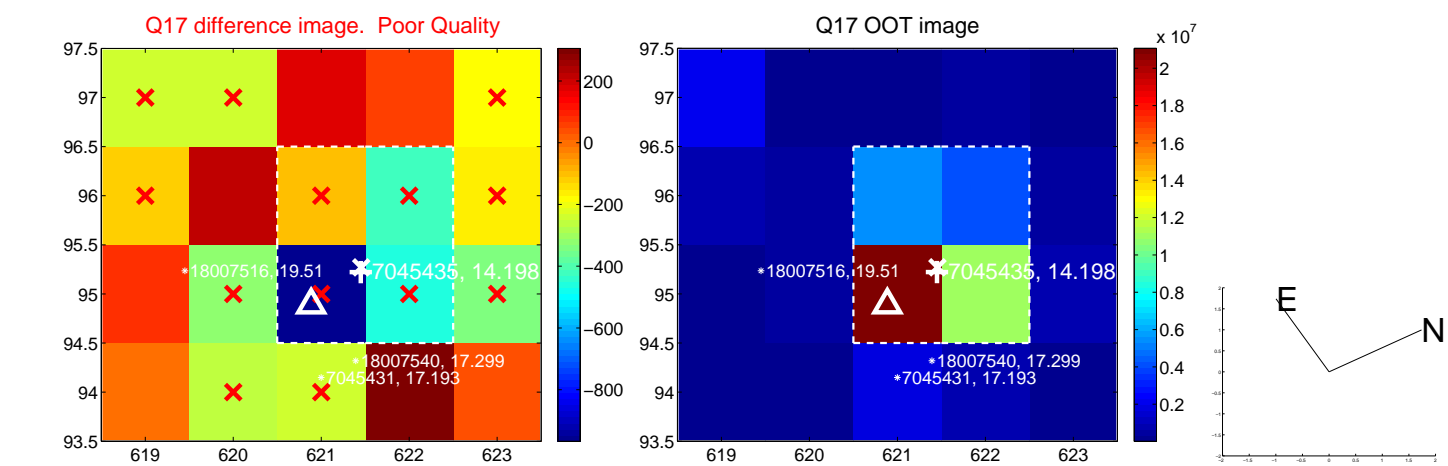
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



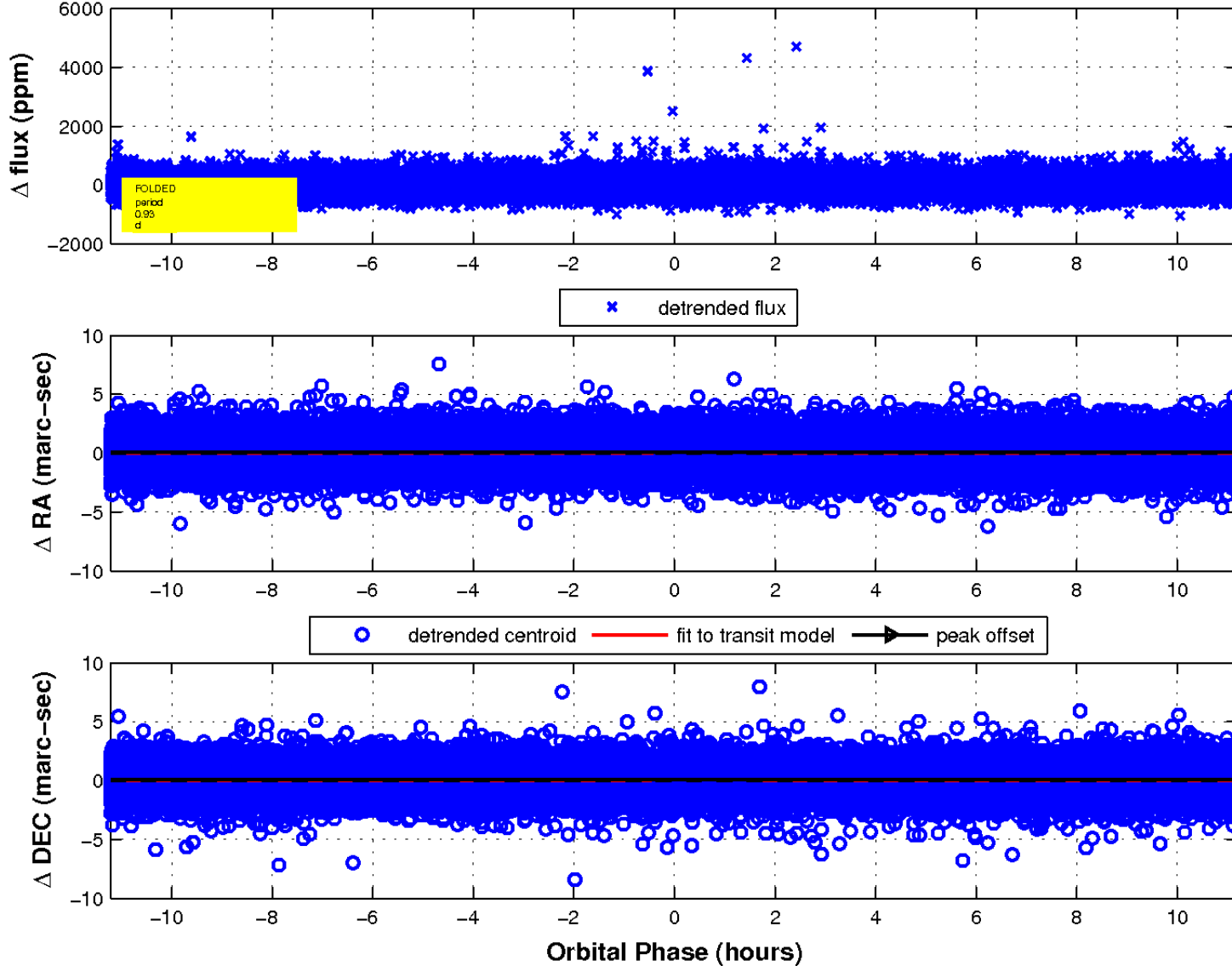
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

