

# KIC 008845026

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008845026-01	OBS	0044.01	66.467559	160.474998	12804.5	19.727	275.8	375.1	1.07	5843	12.13	11.20
008845026-02	OBS	No	66.467277	182.233208	452.9	17.248	14.1	14.5	1.07	5843	2.72	11.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008845026-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE
008845026-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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

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

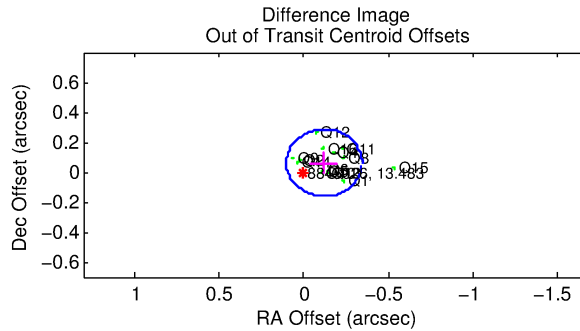
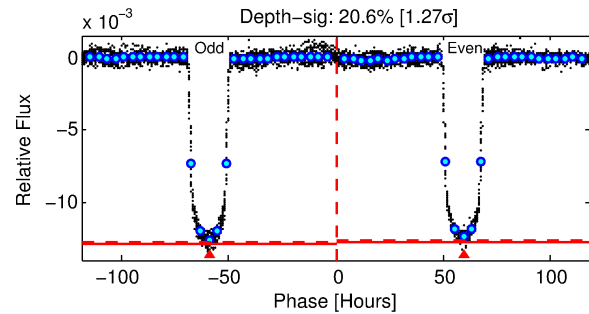
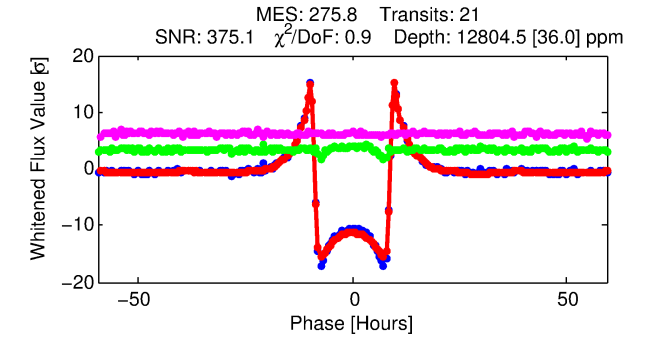
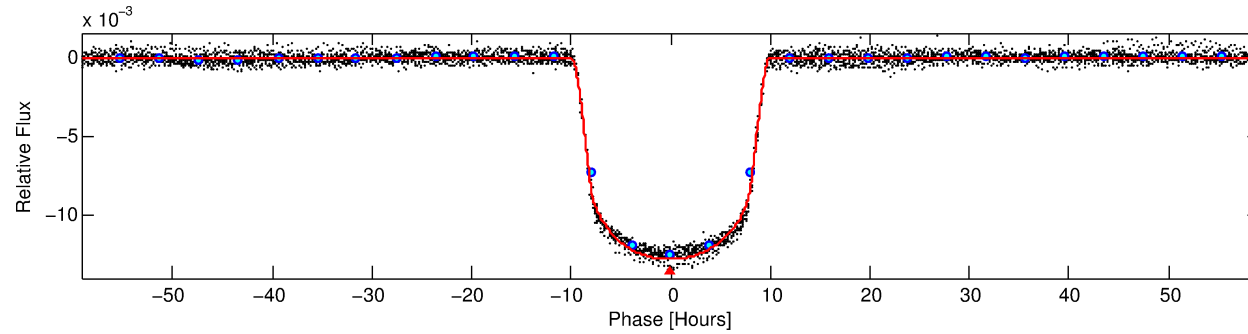
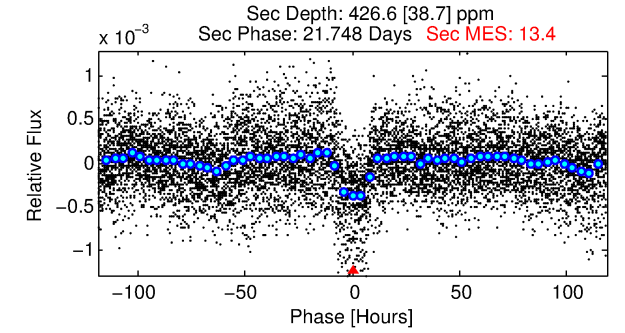
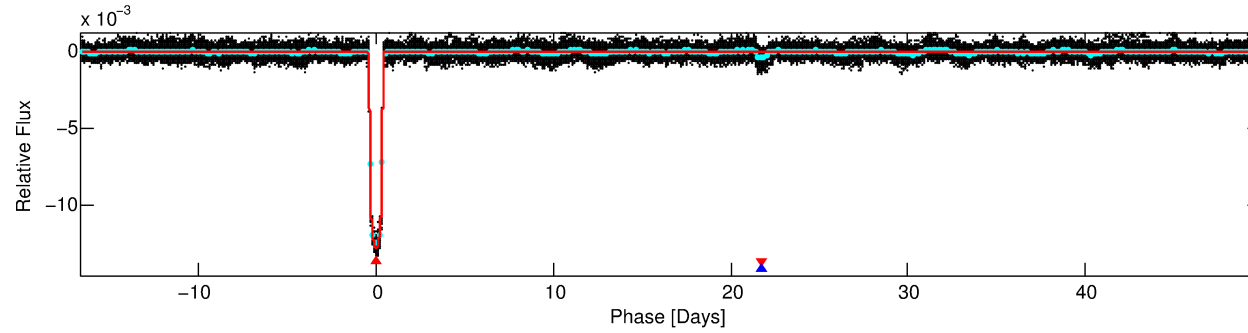
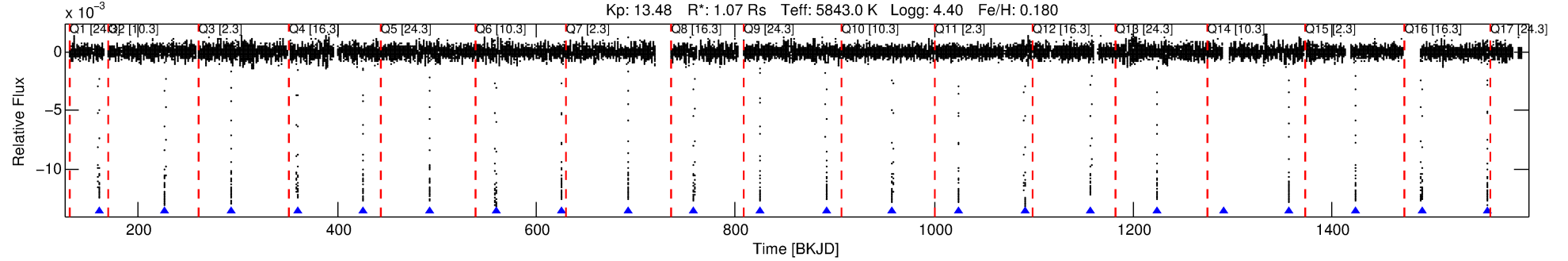
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008845026-01

No Significant Match Found

# DV One-Page Summary

KIC: 8845026 Candidate: 1 of 2 Period: 66.468 d  
KOI: K00044.01 Corr: 0.999



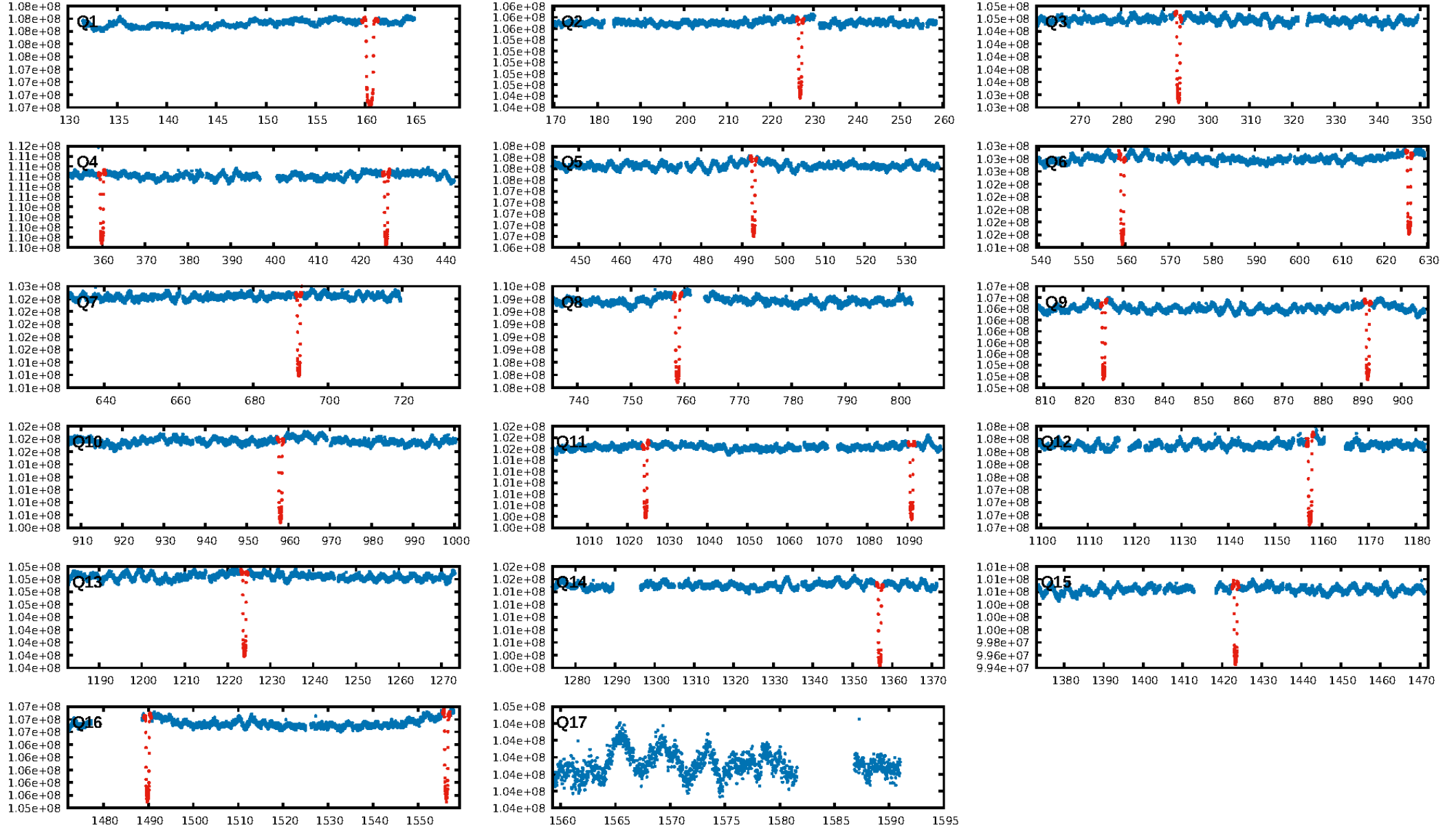
## DV Fit Results:

Period = 66.46756 [0.00003] d  
Epoch = 160.4750 [0.0004] BKJD  
Rp/R\* = 0.1036 [0.0002]  
a/R\* = 27.37 [0.13]  
b = 0.30 [0.01]  
Seff = 11.20 [4.38]  
Teff = 466 [46] K  
Rp = 12.13 [3.47] Re  
a = 0.3277 [0.0807] AU  
Ag = 171.18 [64.45] [2.64 $\sigma$ ]  
**Teffp = 2608 [108] K [18.23 $\sigma$ ]**

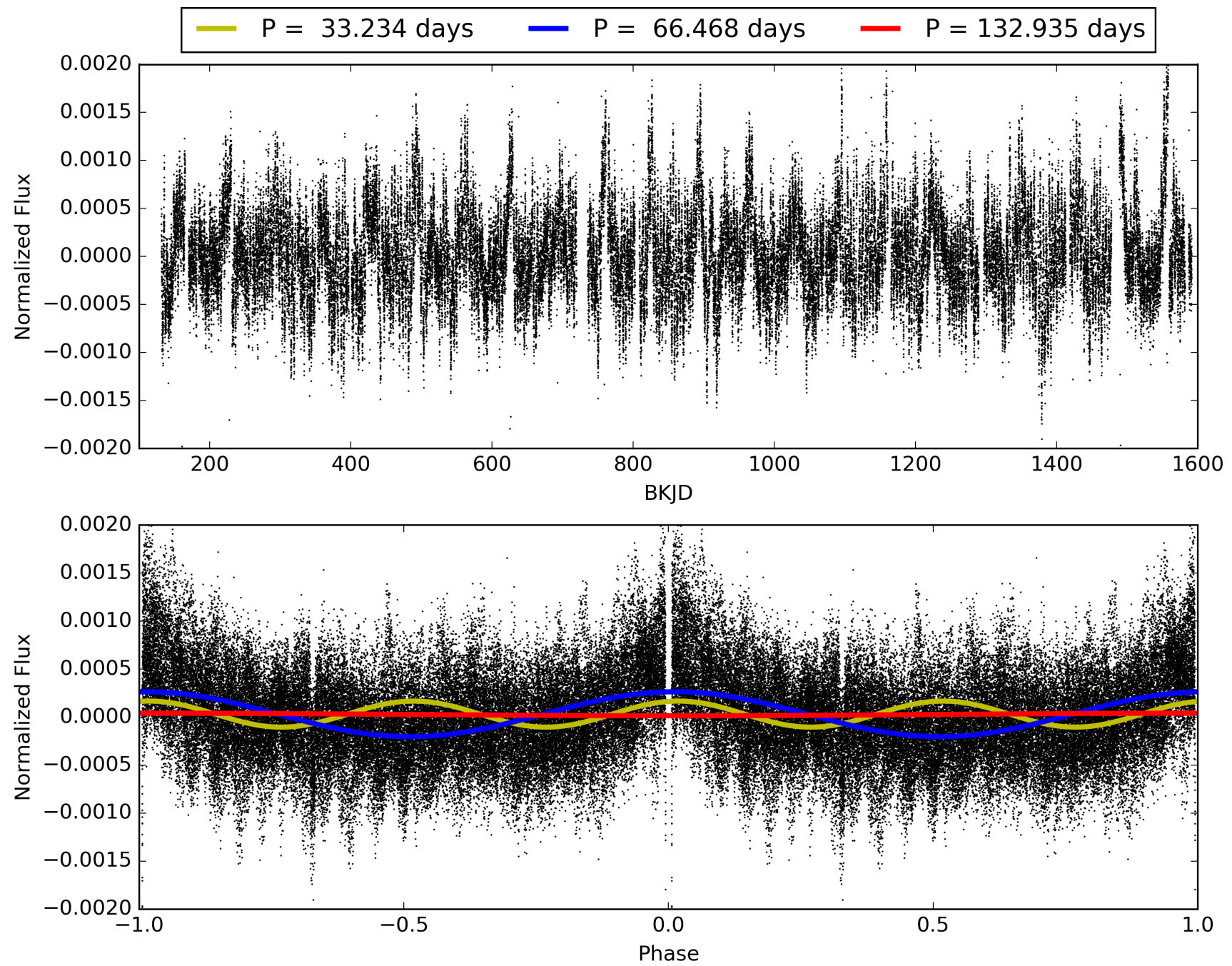
## DV Diagnostic Results:

**ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]**  
LongPeriod-sig: N/A  
**ModelChiSquare2-sig: 0.0%**  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [20/20]  
GhostDiagnostic-chr: 3.812  
**Centroid-sig: 0.0%**  
**Centroid-so: 0.737 arcsec [51.58 $\sigma$ ]**  
OotOffset-rm: 0.136 arcsec [1.82 $\sigma$ ]  
KicOffset-rm: 0.100 arcsec [1.27 $\sigma$ ]  
OotOffset-st: 4/2/4/4 [14]  
KicOffset-st: 4/2/4/4 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 008845026-01, PDC Light Curves

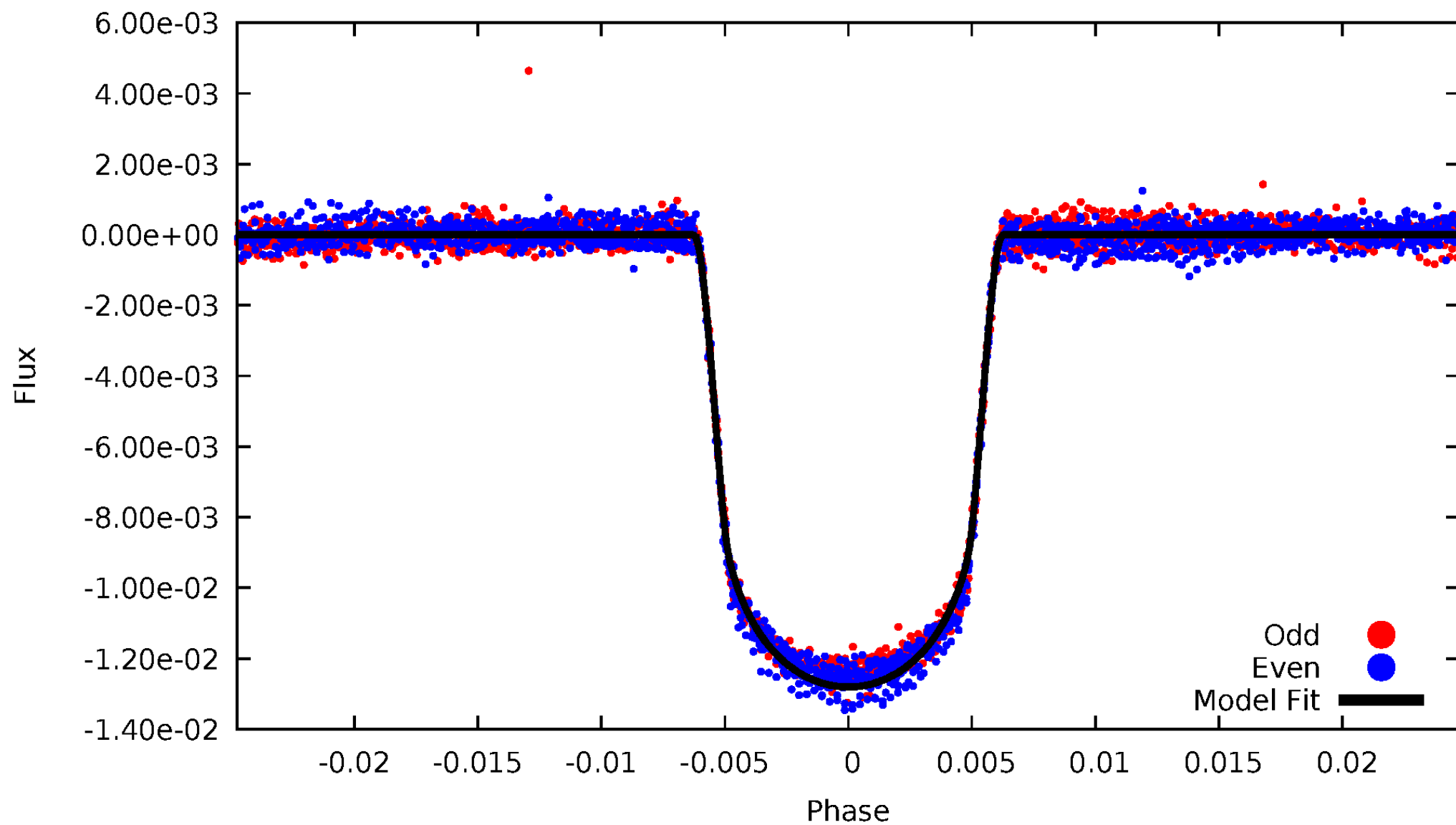


TCE 008845026-01



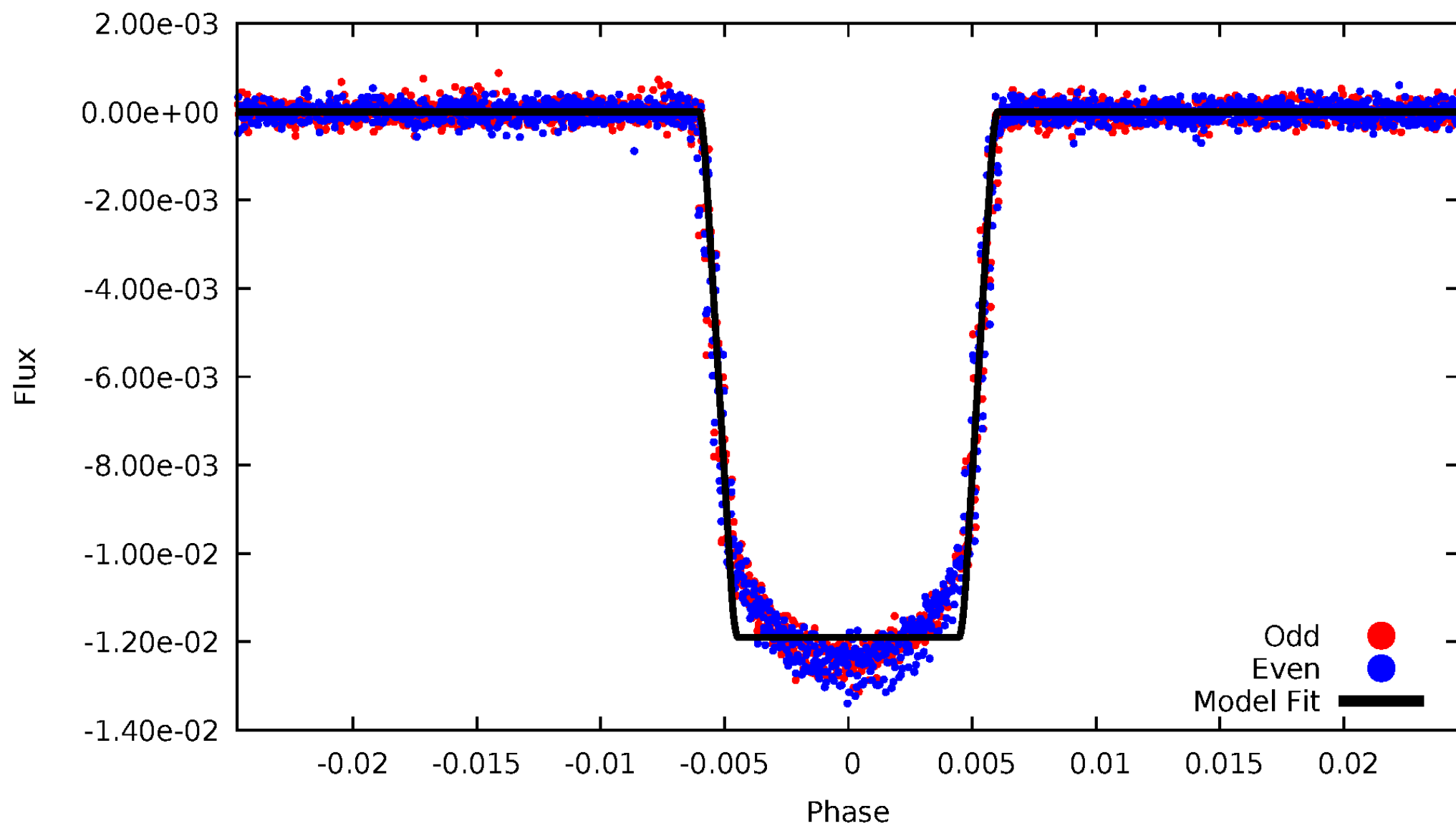
# DV Odd/Even

TCE 008845026-01

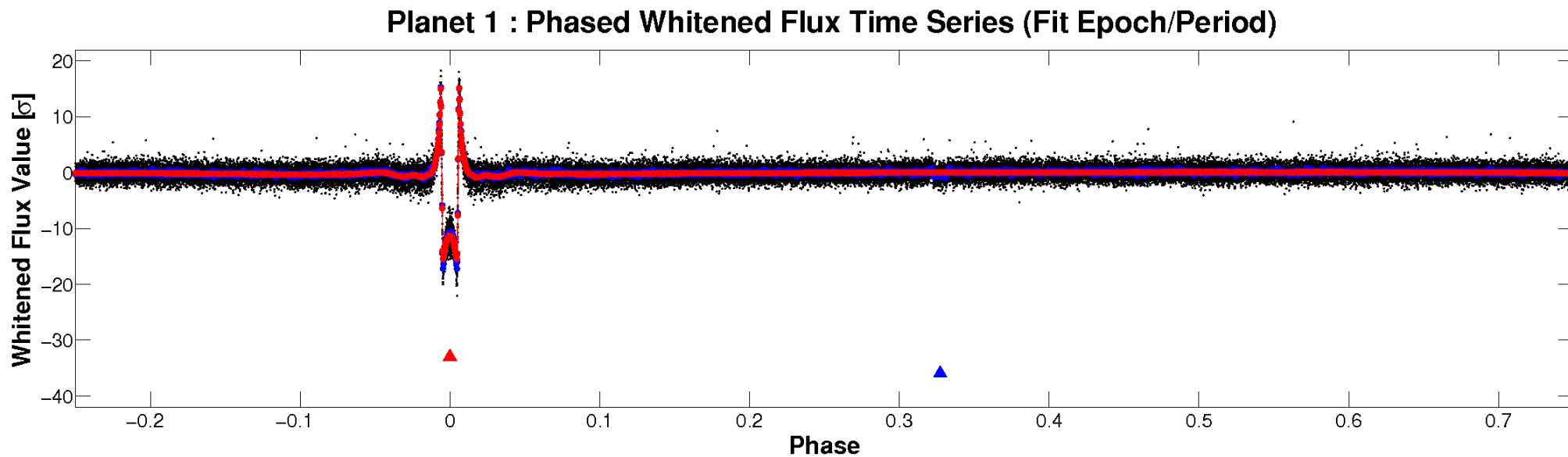
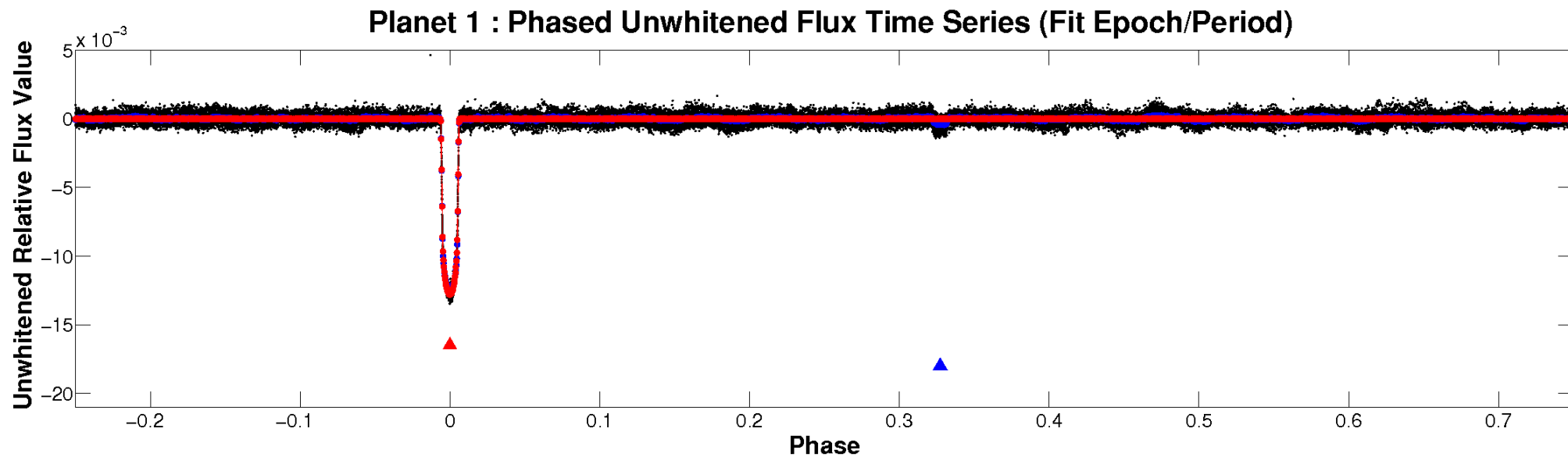


# ALT Odd/Even

TCE 008845026-01

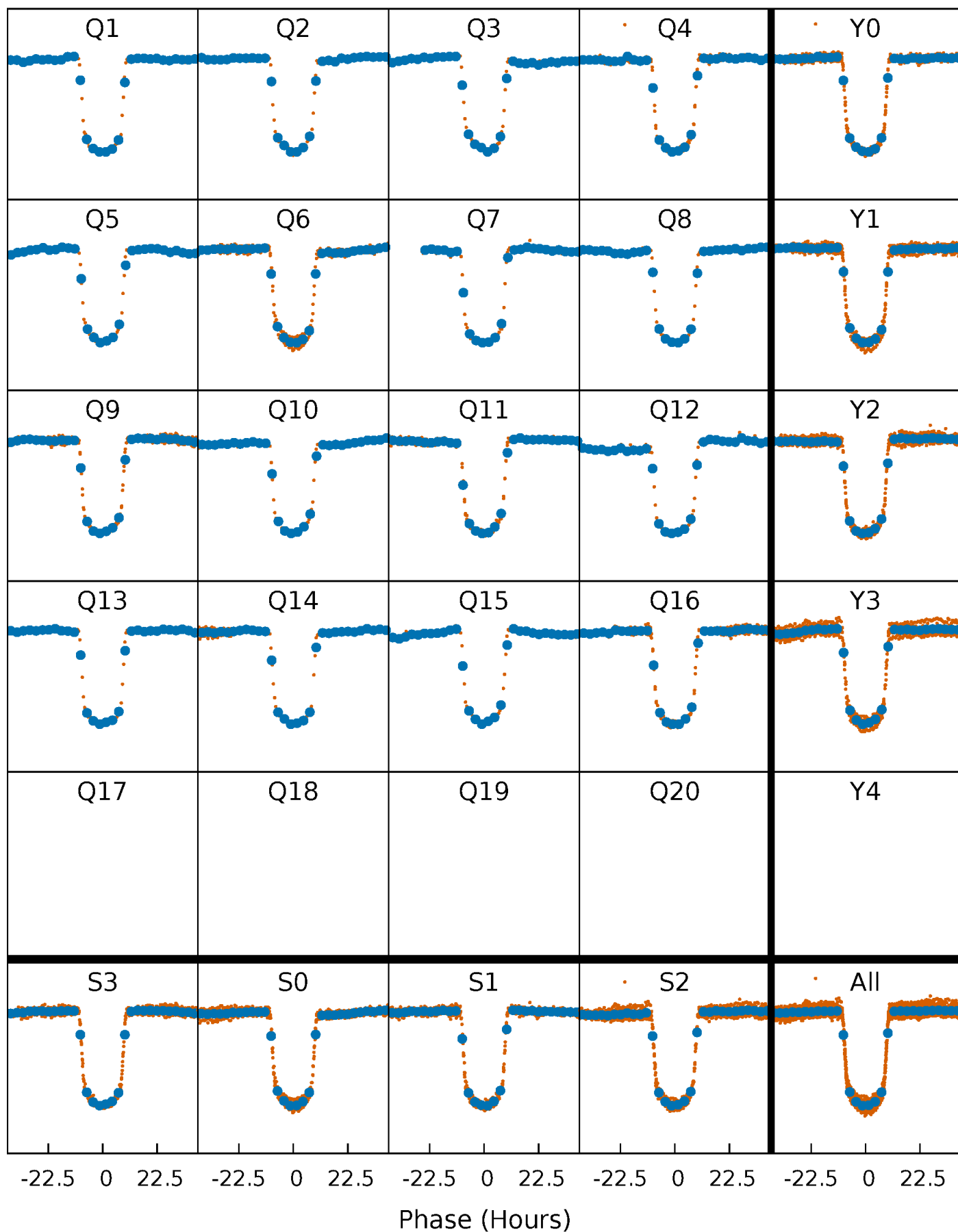


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

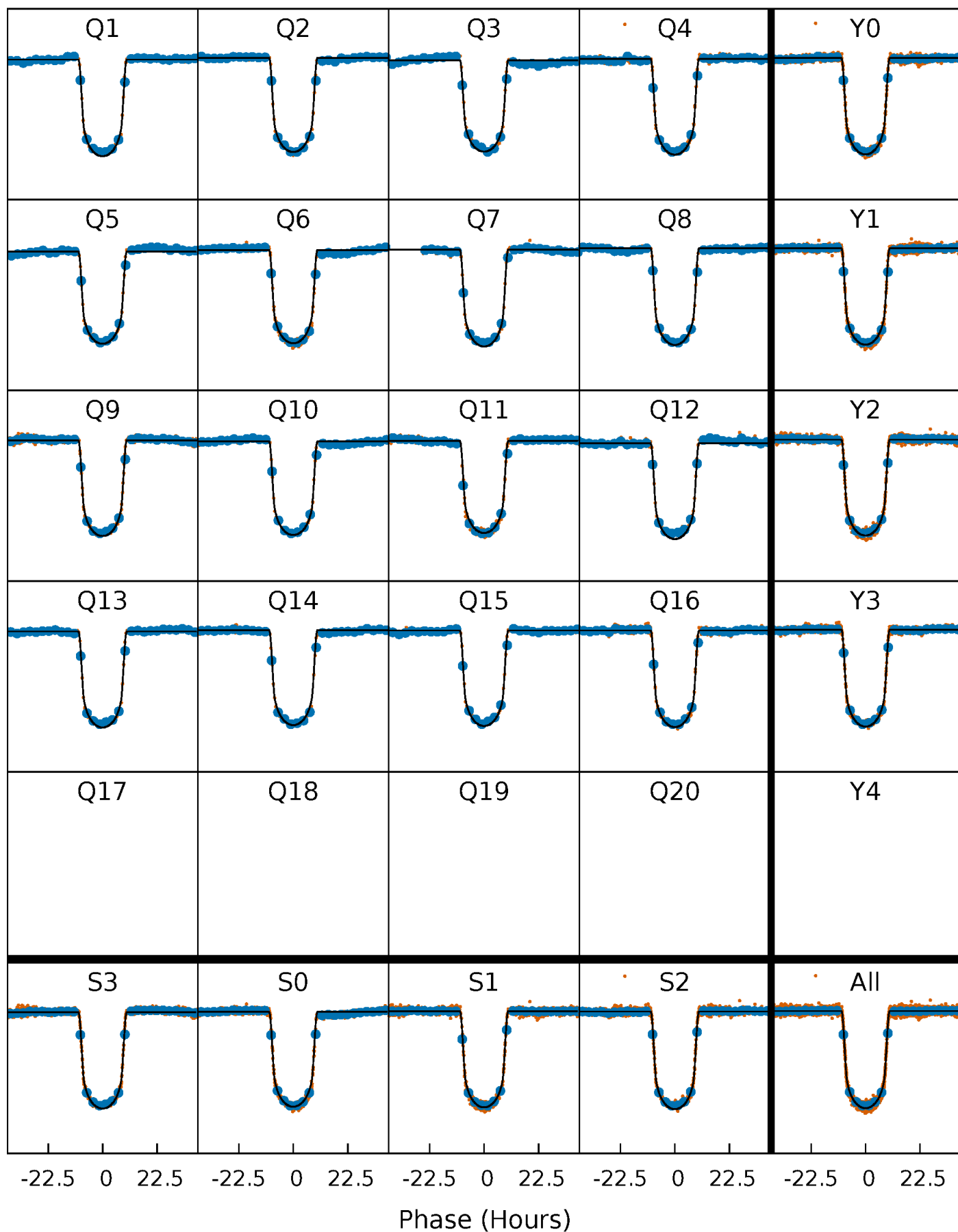
TCE 008845026-01 P= 66.467559 Days  $T_0=160.474998$  (BKJD)





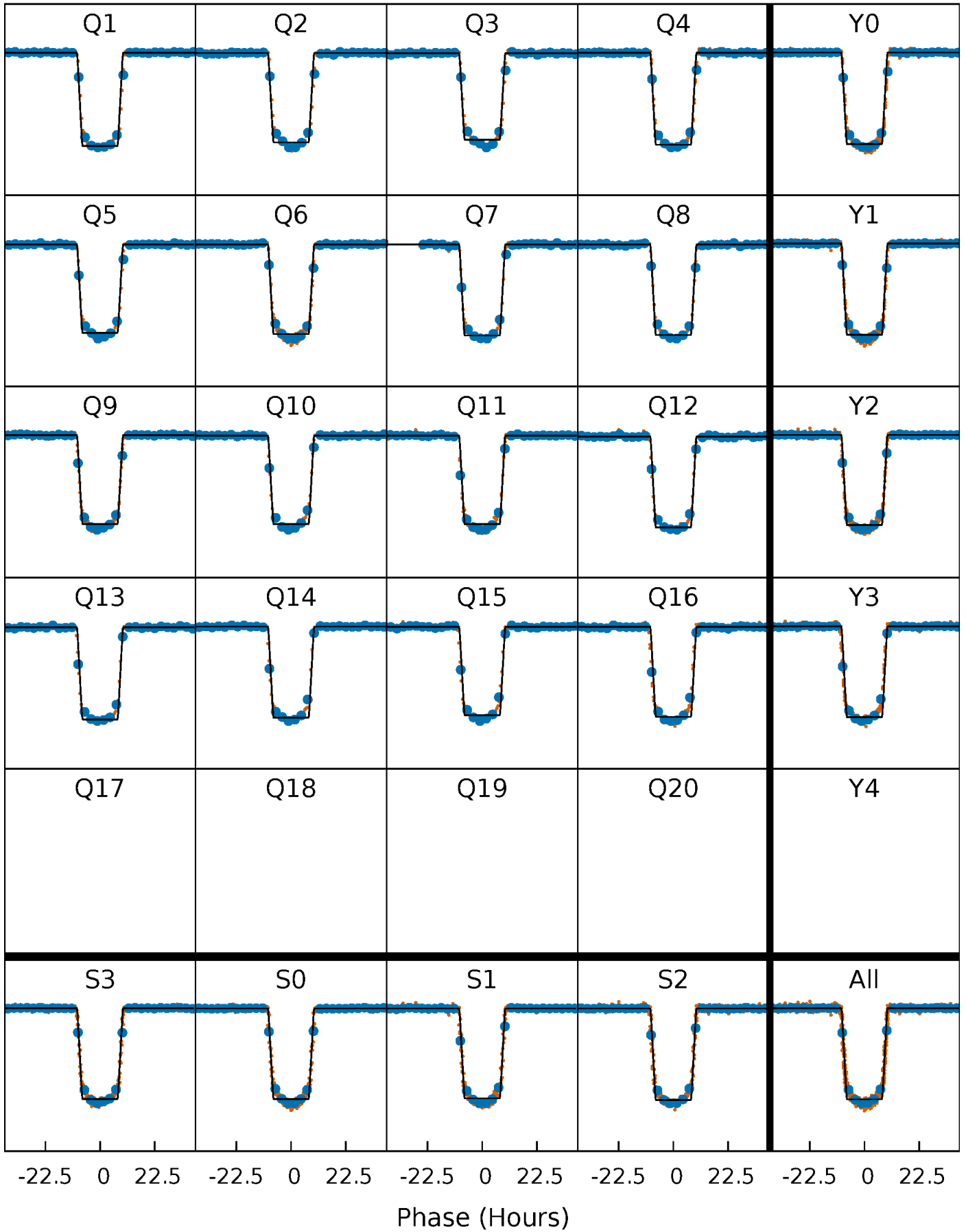
# DV Quarter-Phased Transit Curves

TCE 008845026-01 P= 66.467559 Days  $T_0=160.474998$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

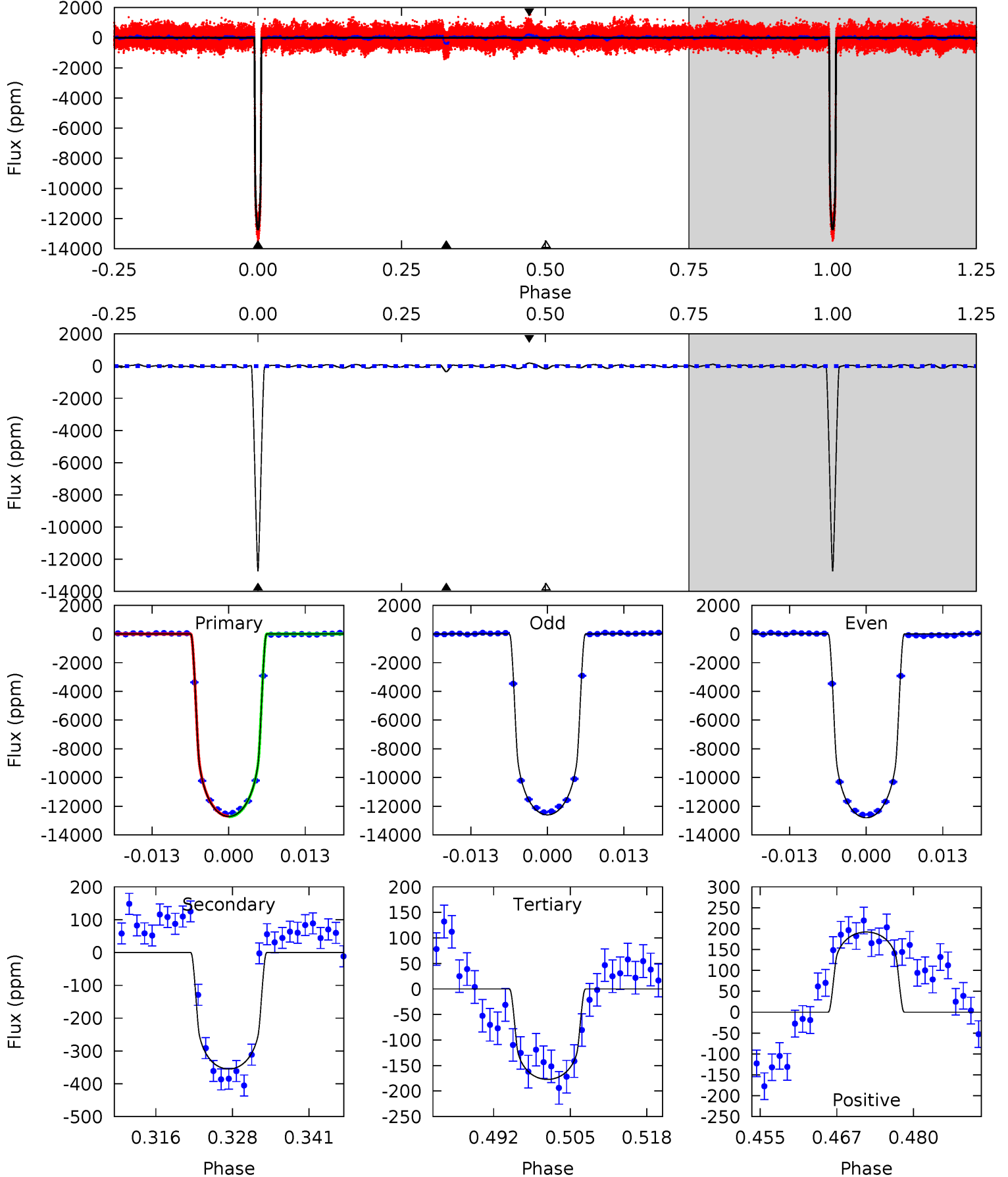
TCE 008845026-01 P= 66.469567 Days  $T_0=160.455411$  (BKJD)



# DV Model-Shift Uniqueness Test

008845026-01, P = 66.467559 Days, E = 94.007439 Days

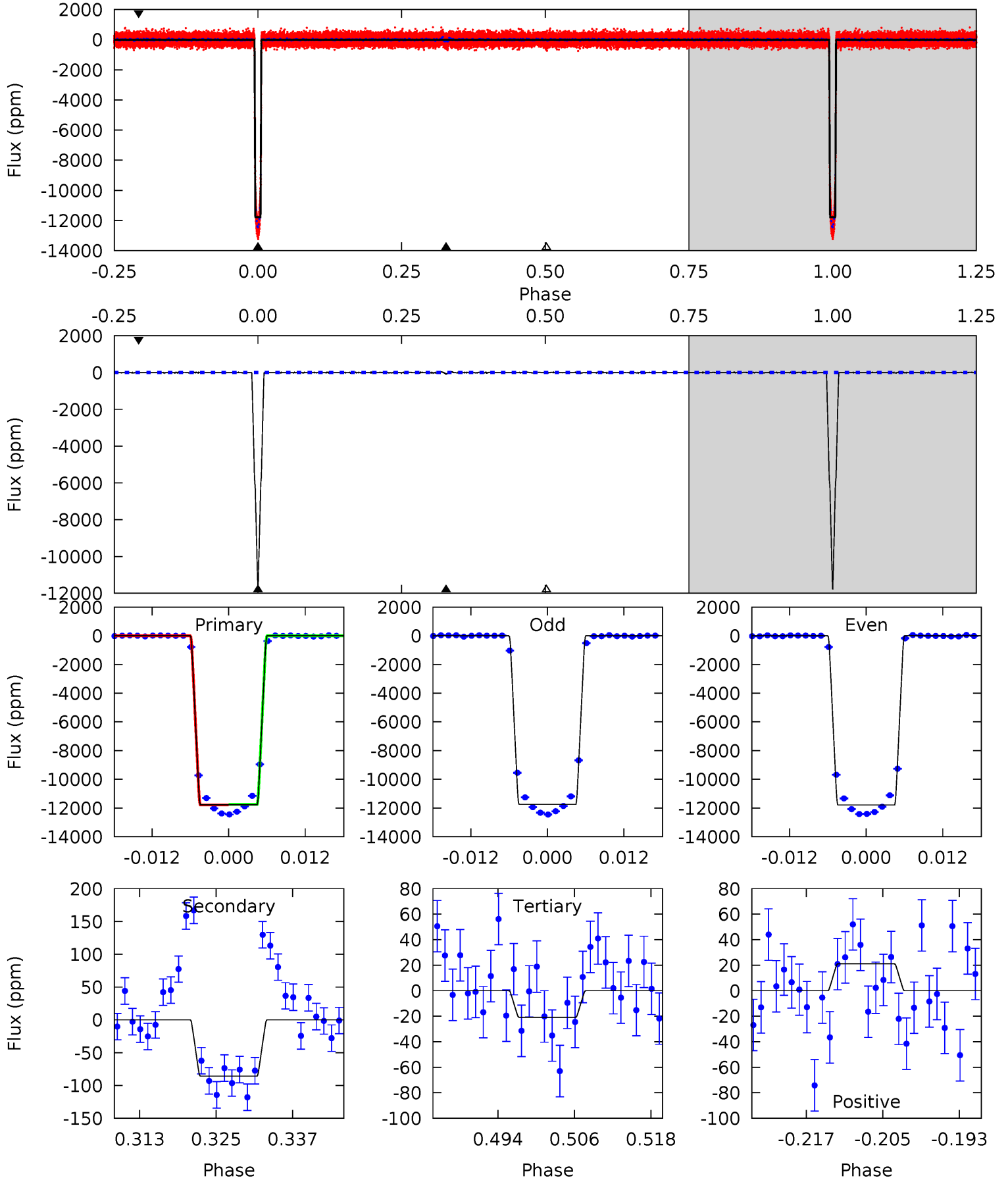
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1104	30.8	15.4	16.7	4.98	2.49	5.26	1089	1088	15.4	14.2	8.91	1.00	0.01	1.76



# Alt Model-Shift Uniqueness Test

008845026-01, P = 66.469567 Days, E = 93.985844 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
1670	12.2	2.96	3.00	4.99	2.51	0.93	1667	1667	9.21	9.17	2.95	1.00	0.00	2.70



### Stellar Parameters For KIC 008845026

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5843^{+182}_{-203}$	$4.403^{+0.087}_{-0.203}$	$0.180^{+0.200}_{-0.300}$	$1.073^{+0.307}_{-0.141}$	$1.061^{+0.125}_{-0.125}$	$1.210^{+0.539}_{-0.597}$
	+3%/-3%	+2%/-5%	+111%/-167%	+29%/-13%	+12%/-12%	+45%/-49%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008845026-01 / KOI 0044.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-355 \pm 12$	$12.35^{+2.01}_{-1.02}$	$662^{+48}_{-38}$	$3116^{+58}_{-68}$	$136^{+24}_{-33}$
Alt.	$-86 \pm 7$	$12.98^{+2.20}_{-1.07}$	$663^{+50}_{-38}$	$2539^{+48}_{-56}$	$29^{+6}_{-7}$

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

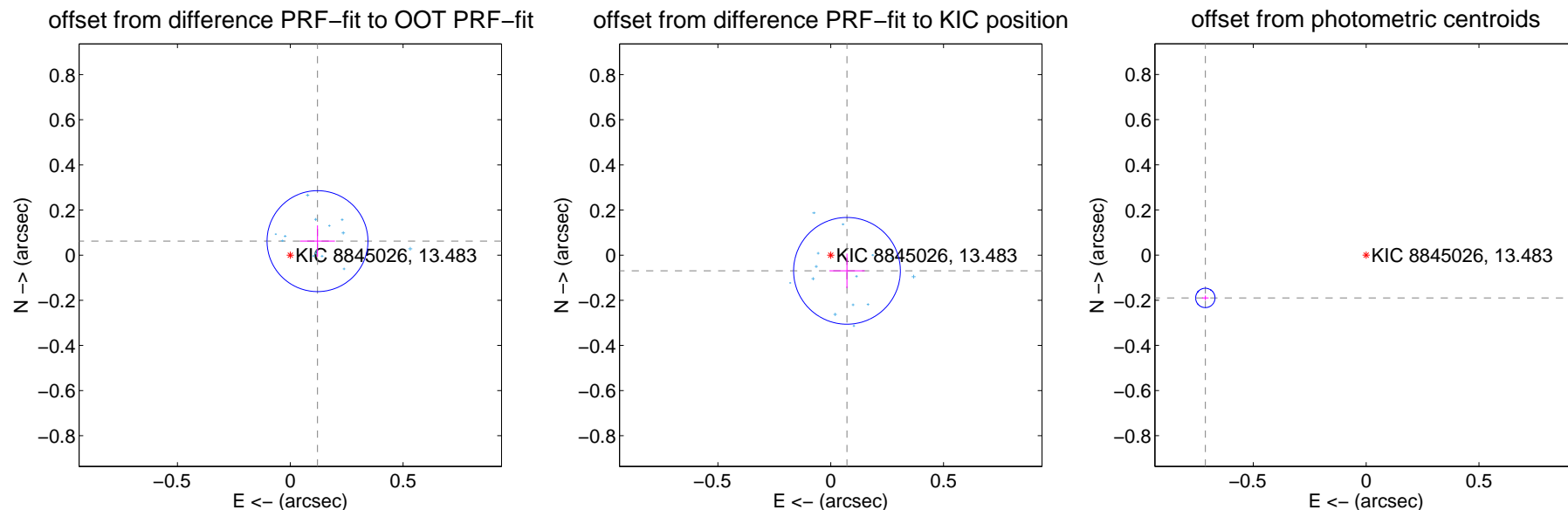
## DV Centroid Data

Supplemental centroid analysis for 008845026-01. Kepler magnitude: 13.48. Transit SNR 375.07

There are 14 quarters with good PRF difference image offsets

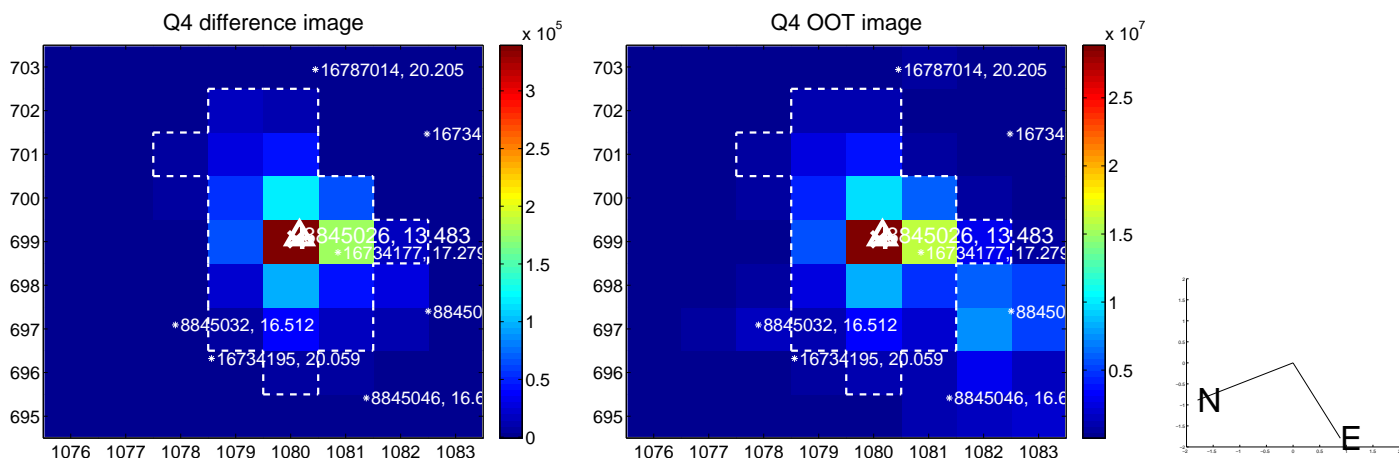
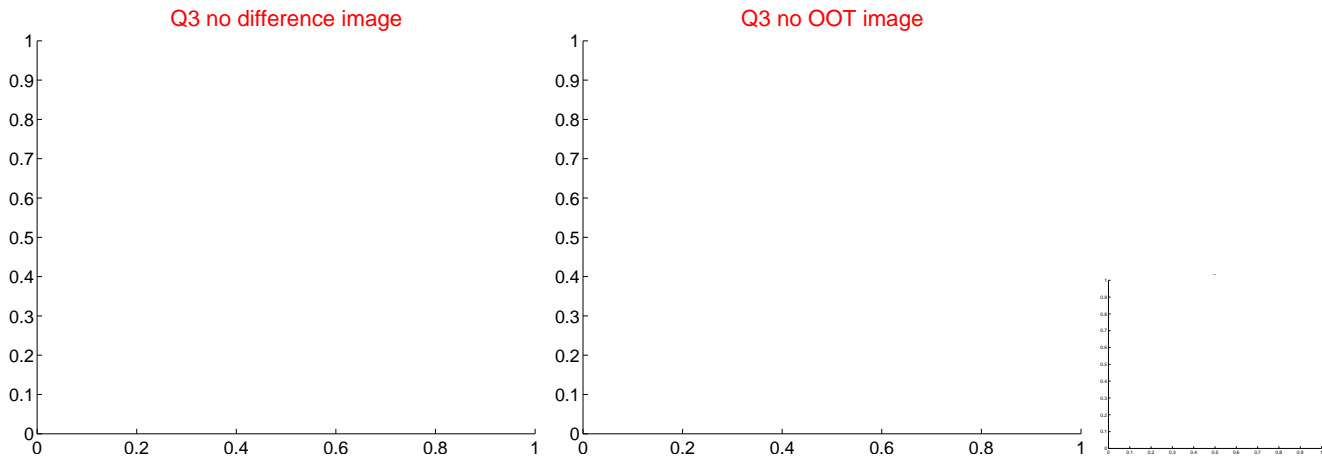
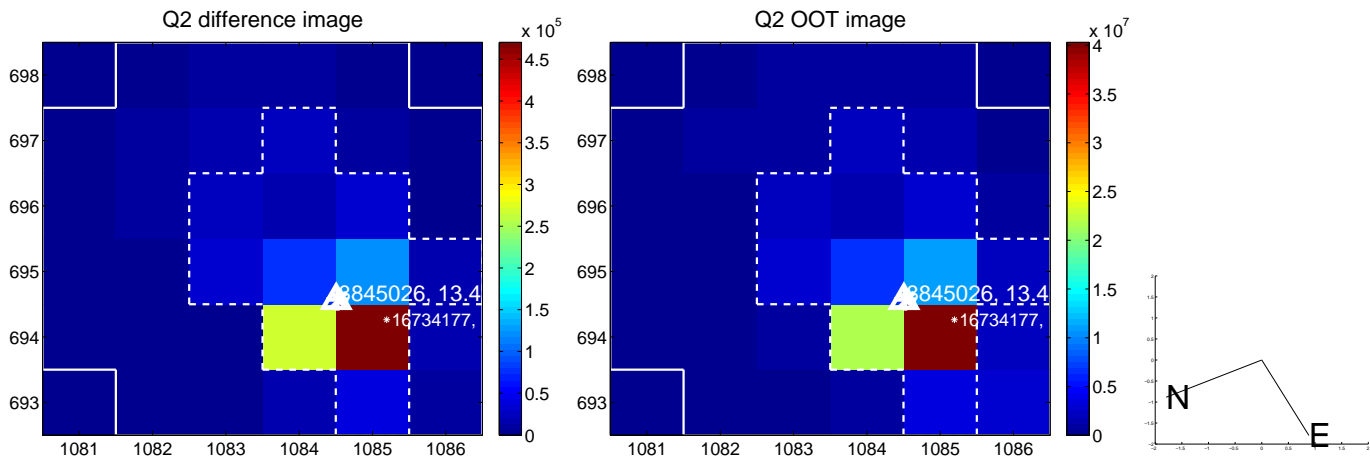
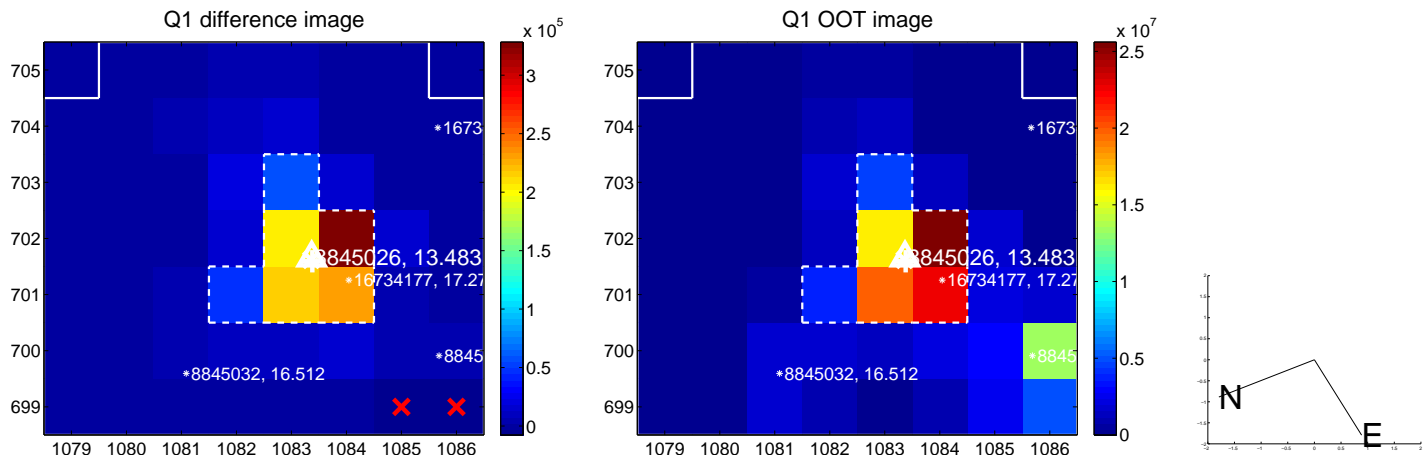
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.136 \pm 0.075$	1.82	$-0.121 \pm 0.077$	$0.062 \pm 0.070$
PRF-fit source offset from KIC position	$0.100 \pm 0.079$	1.27	$-0.072 \pm 0.078$	$-0.070 \pm 0.077$
photometric centroid source offset	$0.74 \pm 0.01$	51.58	$0.71 \pm 0.01$	$-0.19 \pm 0.01$

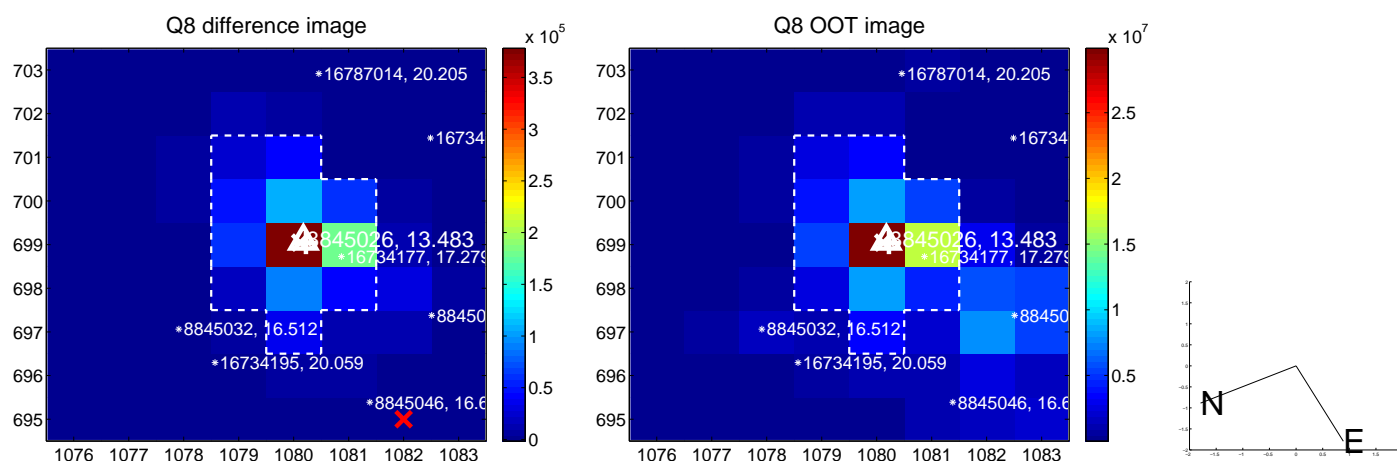
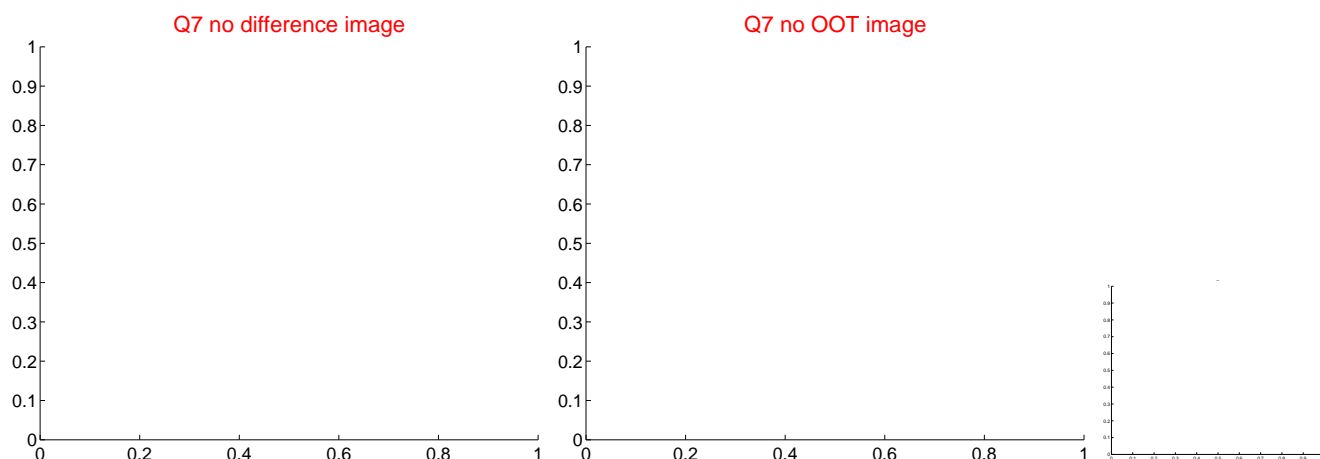
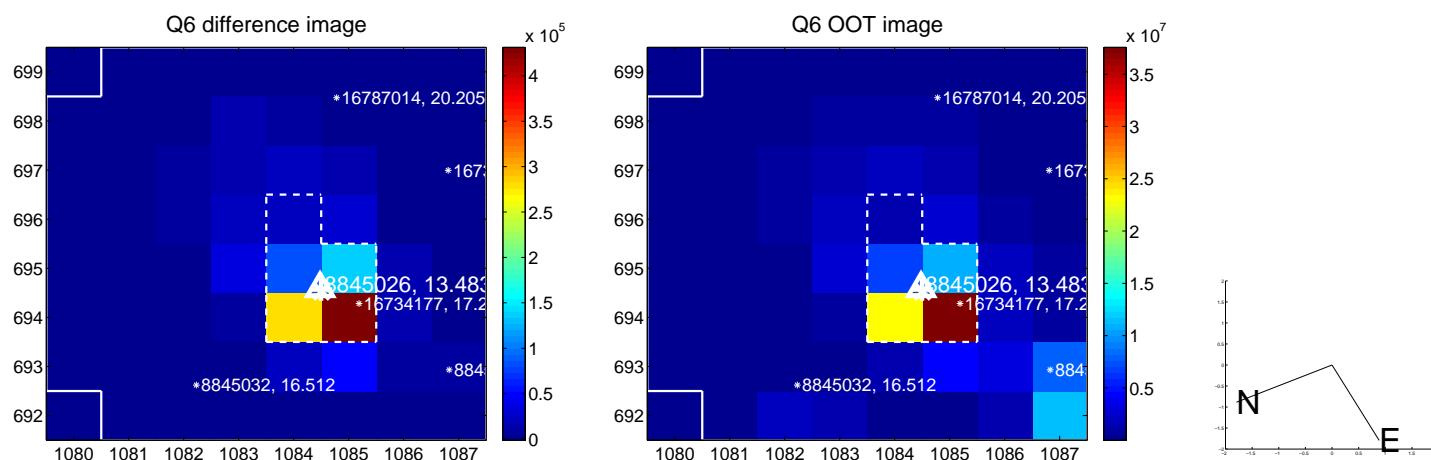
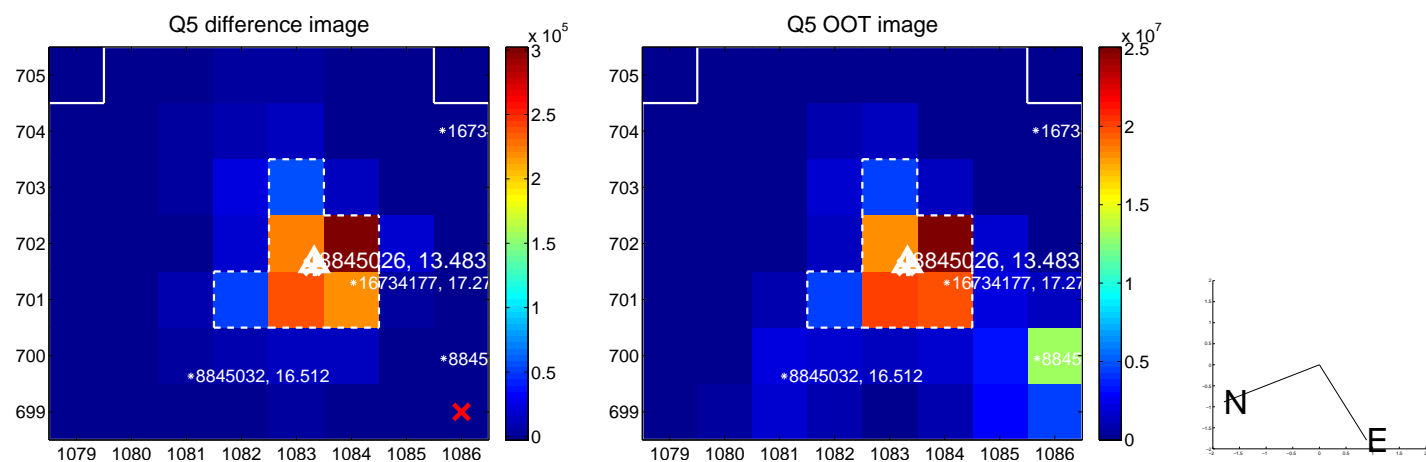


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

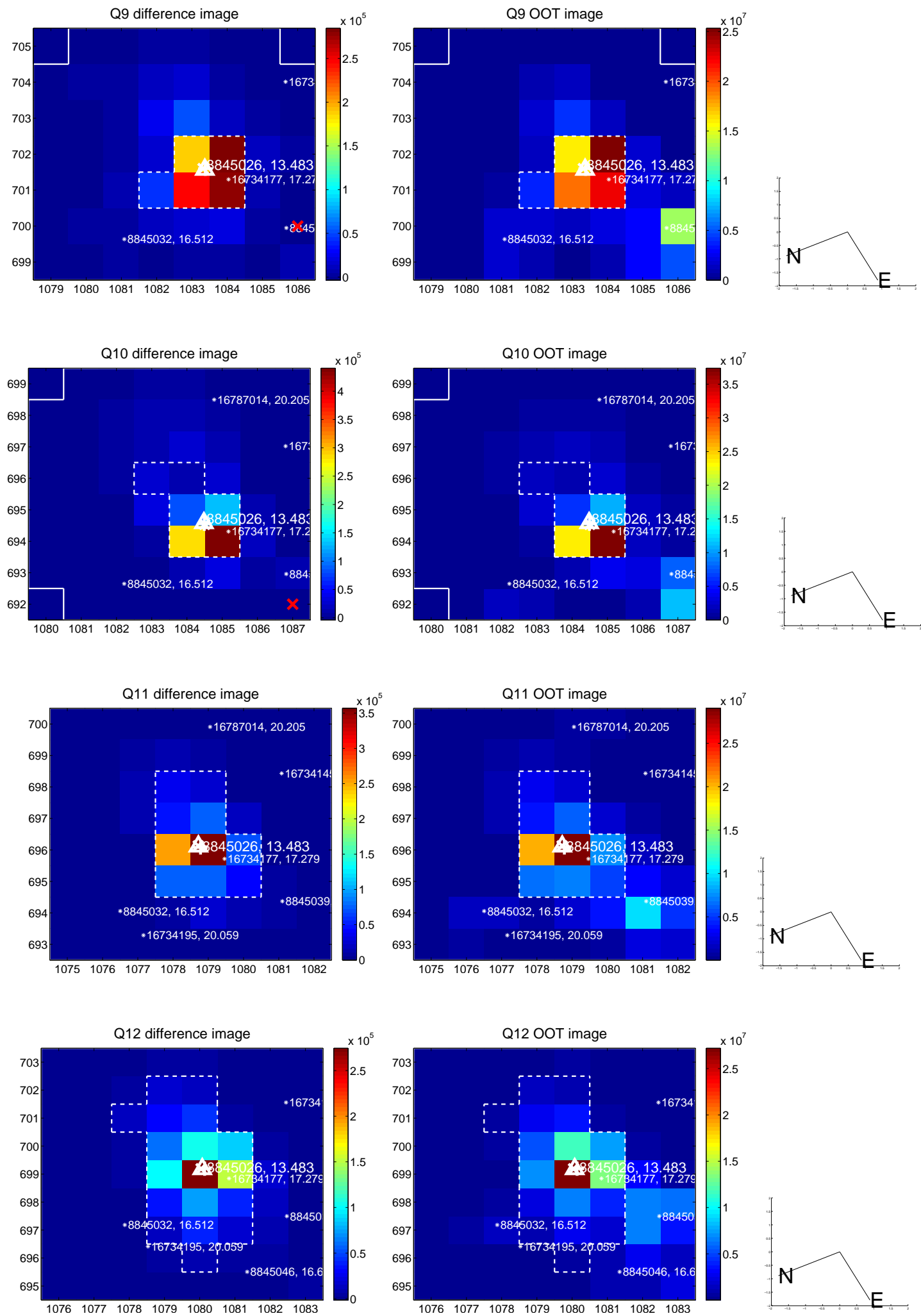


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

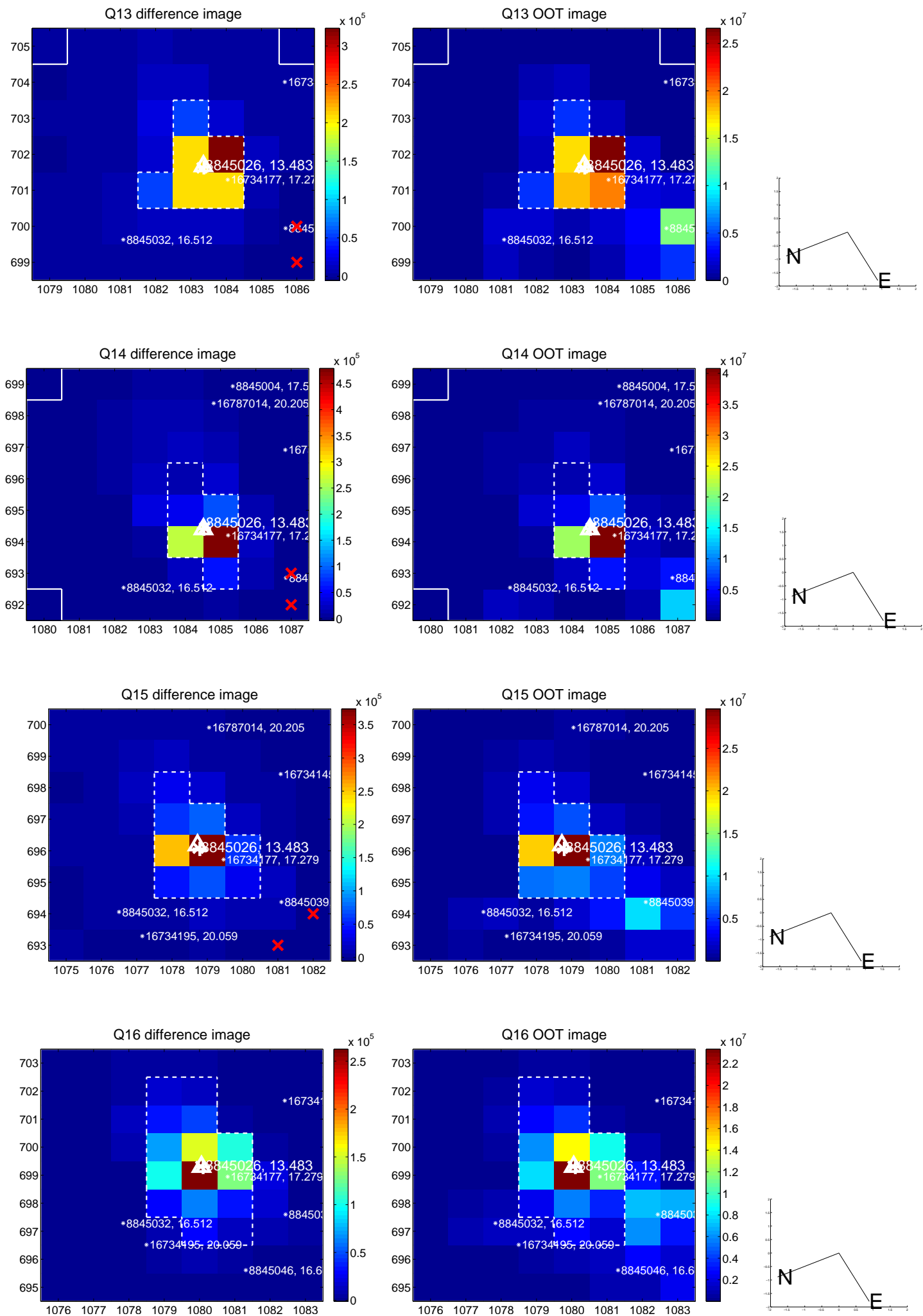




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



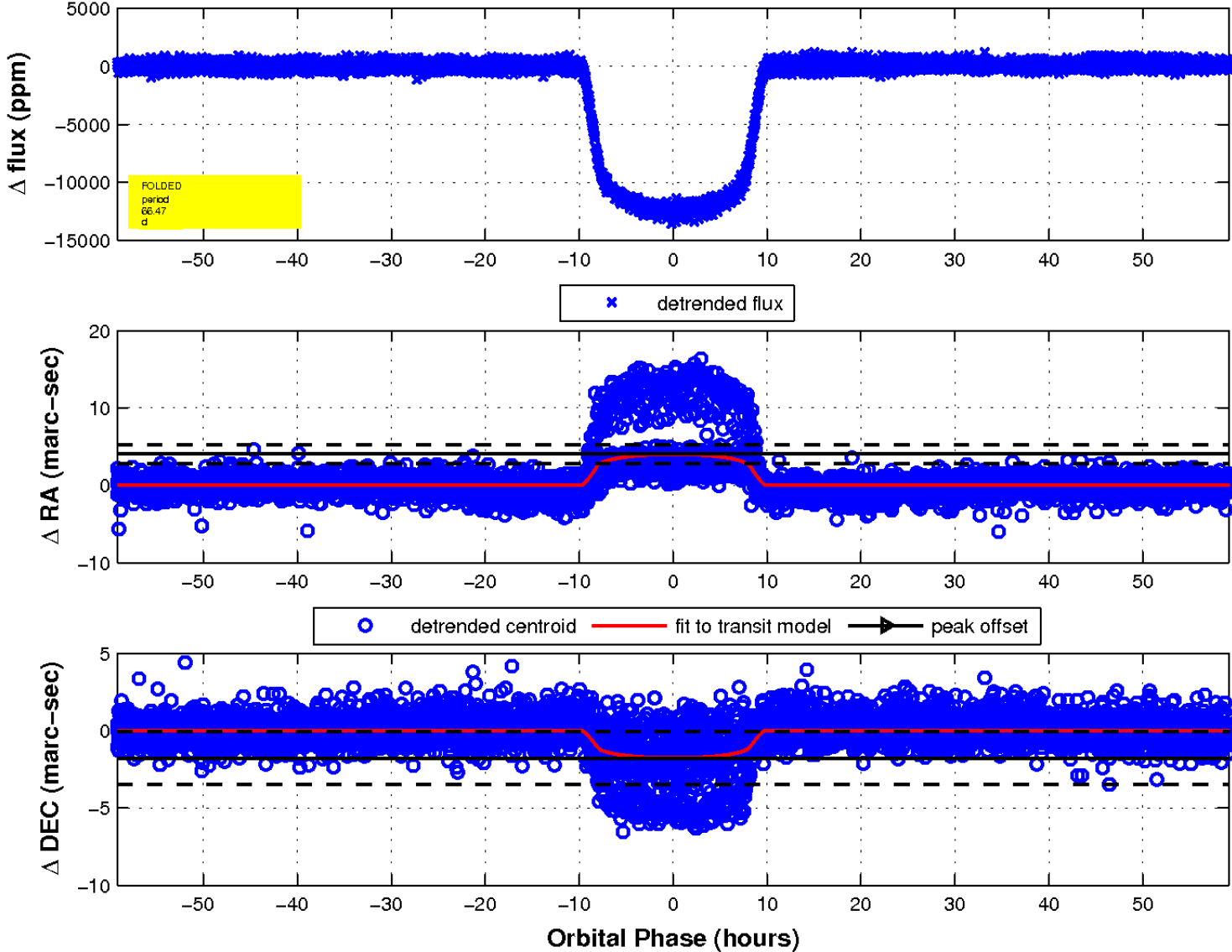
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q17 no difference image

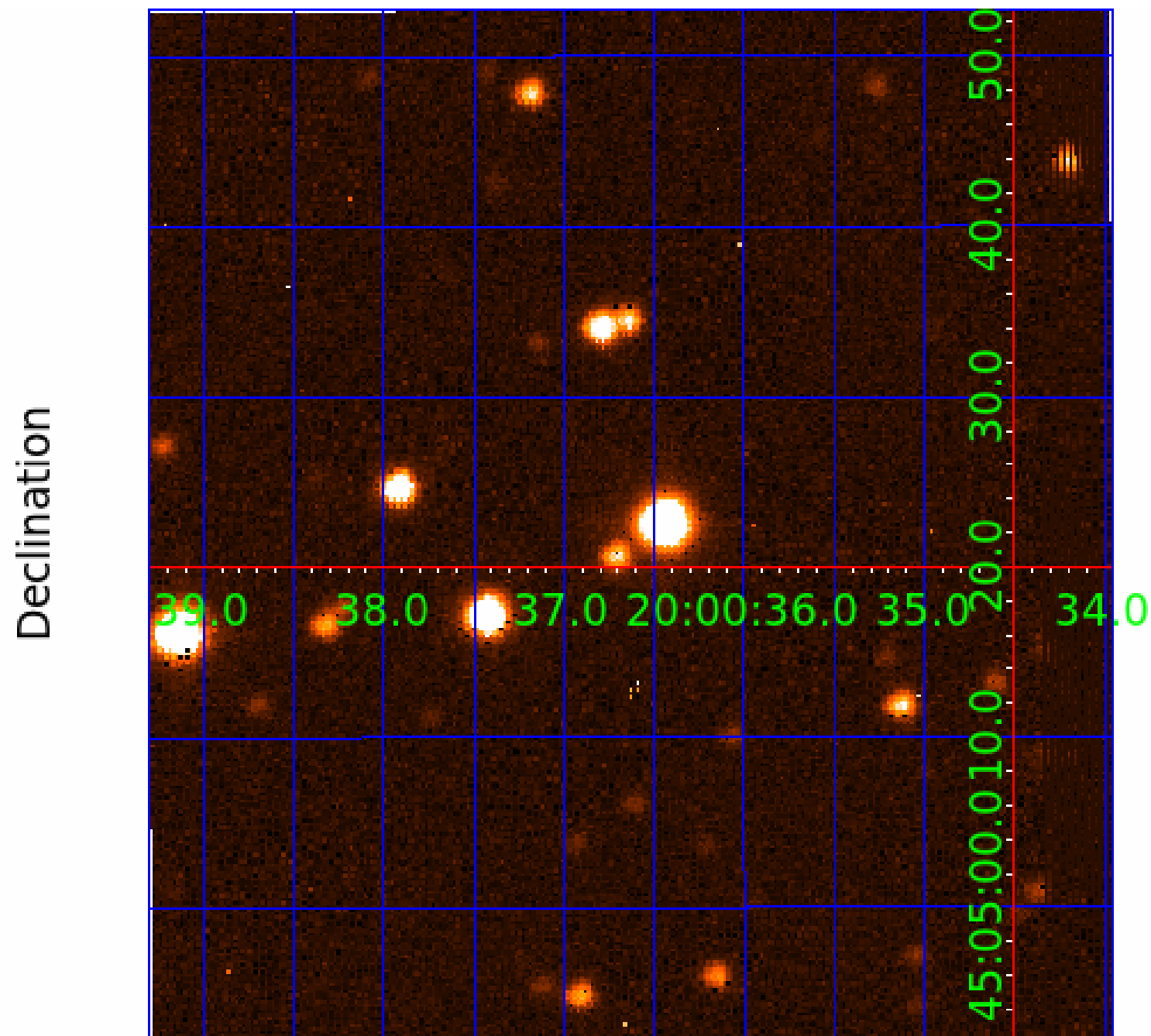
Q17 no OOT image



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



# KIC 008845026

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008845026-01	OBS	0044.01	66.467559	160.474998	12804.5	19.727	275.8	375.1	1.07	5843	12.13	11.20
008845026-02	OBS	No	66.467277	182.233208	452.9	17.248	14.1	14.5	1.07	5843	2.72	11.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008845026-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE
008845026-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

**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 008845026-02

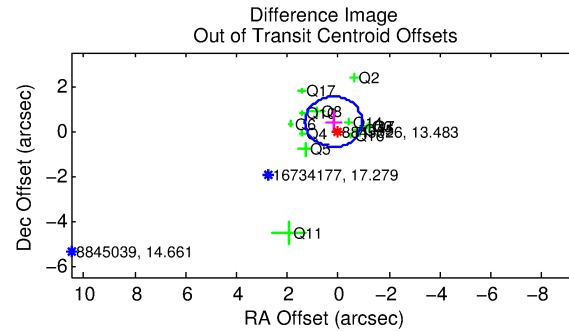
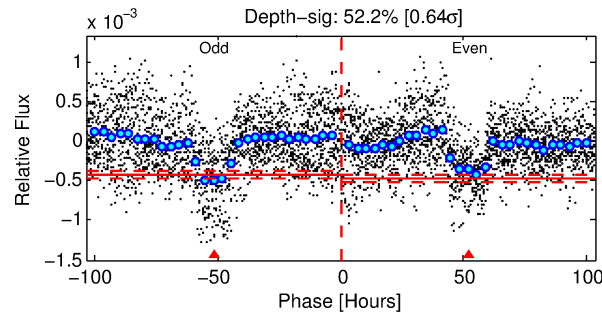
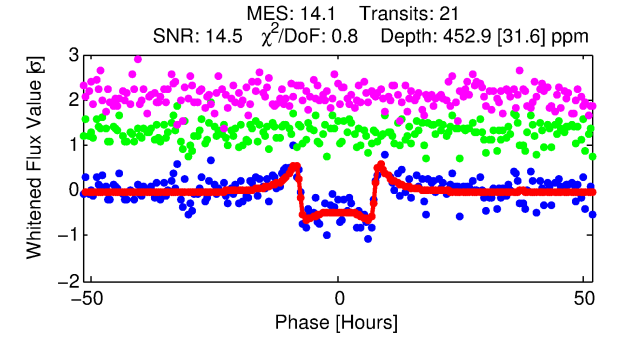
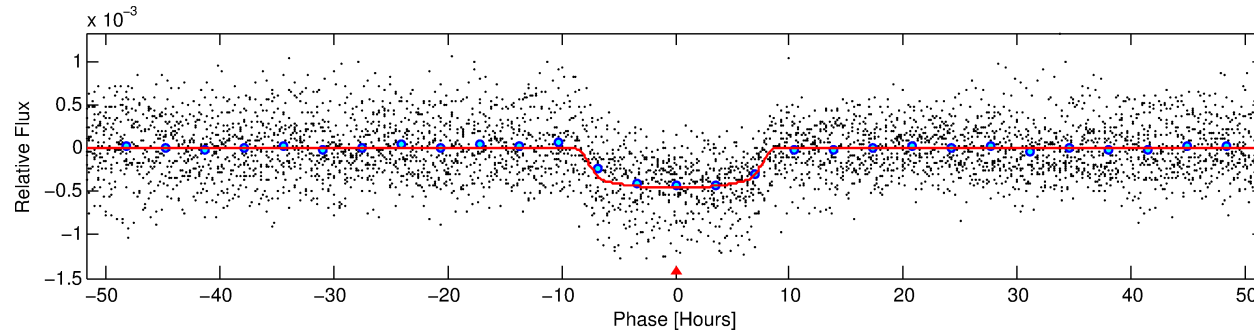
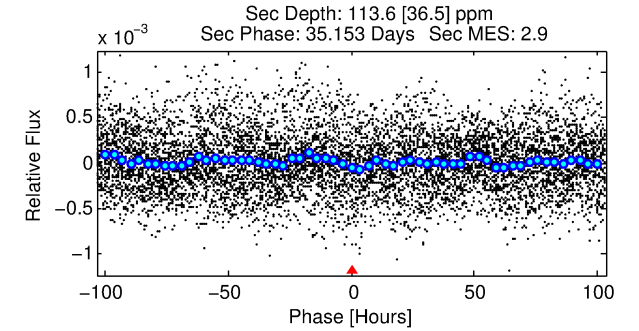
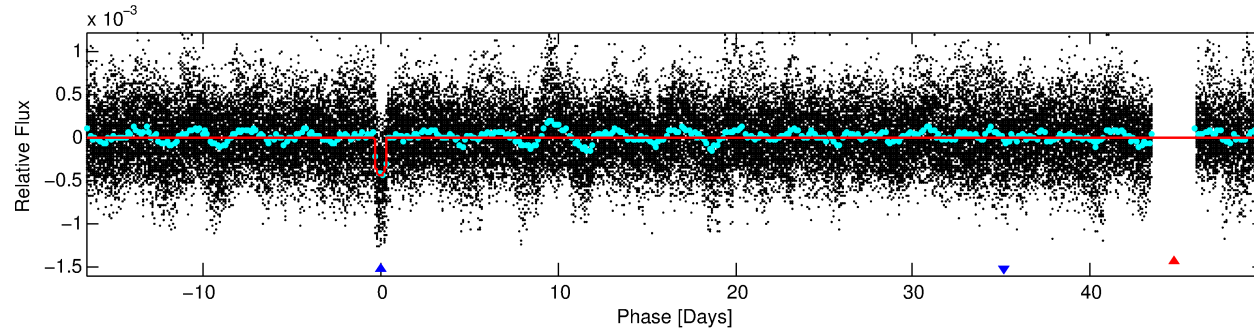
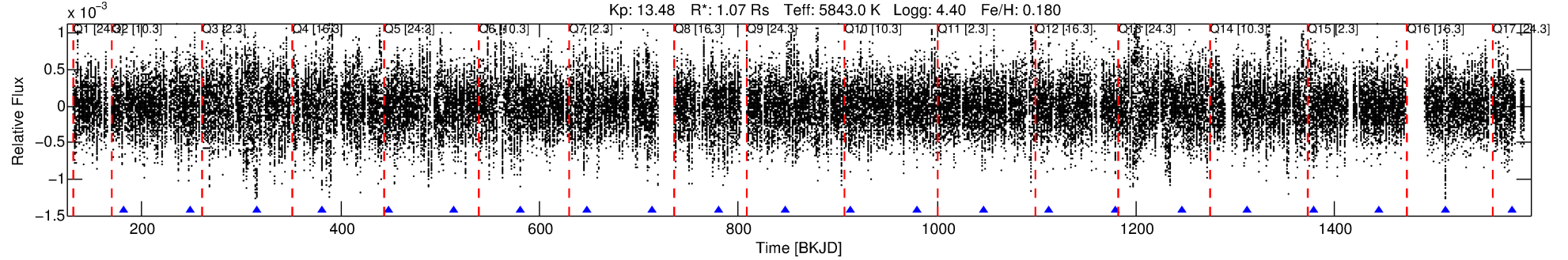
No Significant Match Found

# DV One-Page Summary

KIC: 8845026 Candidate: 2 of 2 Period: 66.467 d

KOI: K00044 Corr: No Ephemeris Match

Kp: 13.48 R\*: 1.07 Rs Teff: 5843.0 K Logg: 4.40 Fe/H: 0.180



## DV Fit Results:

Period = 66.46728 [0.00076] d  
Epoch = 182.2332 [0.0095] BKJD  
Rp/R\* = 0.0232 [0.0010]  
a/R\* = 14.27 [1.51]  
b = 0.90 [0.02]  
Seff = 11.20 [4.38]  
Teq = 466 [46] K  
Rp = 2.72 [0.79] Re  
a = 0.3277 [0.0807] AU  
Ag = 907.00 [448.57] [2.02σ]  
Teff = 3958 [357] K [9.69σ]

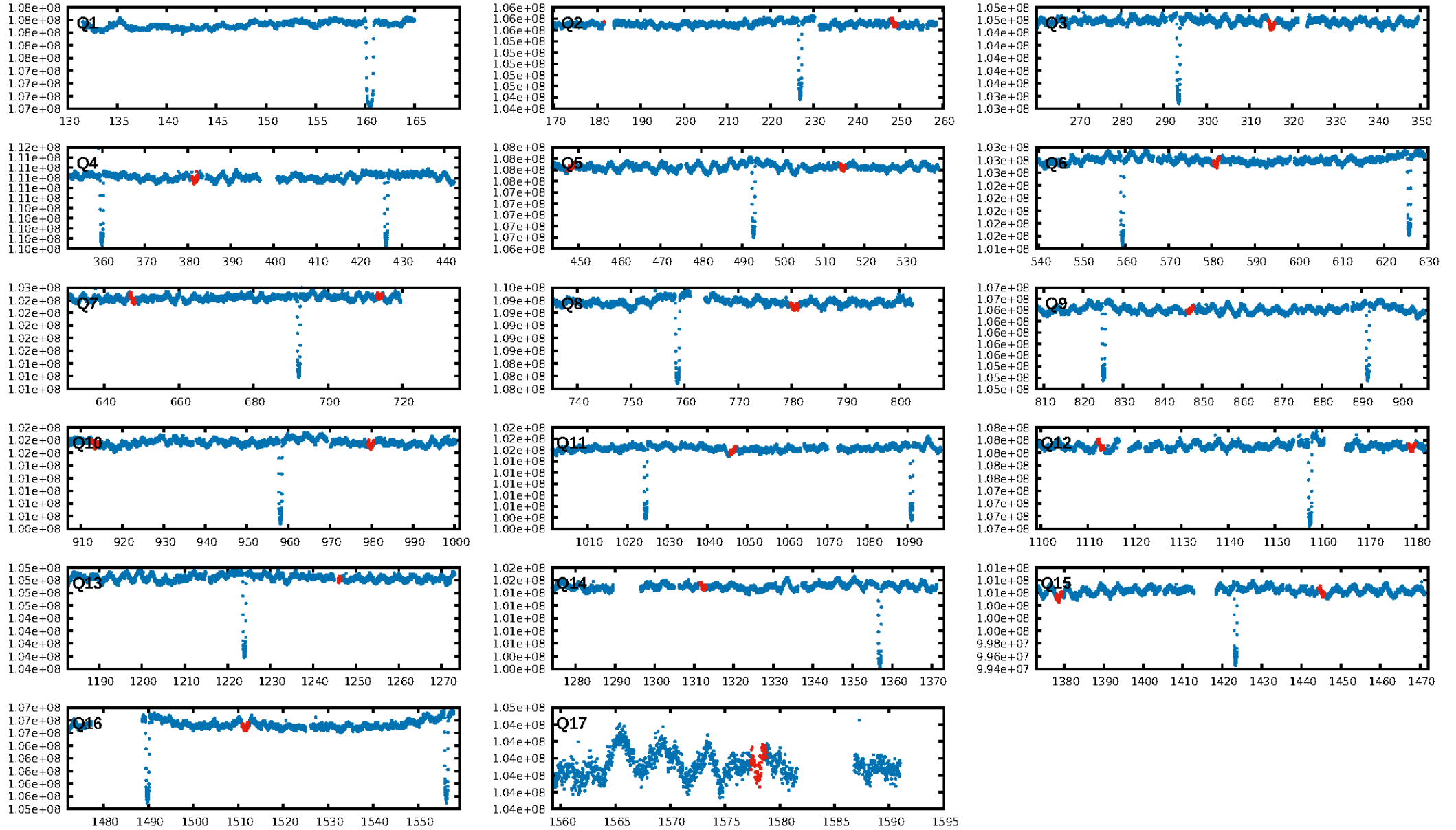
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 49.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 7.35e-40  
RollingBand-fgt: 1.00 [20/20]  
GhostDiagnostic-chr: -13.84  
Centroid-sig: 1.2%  
Centroid-so: 1.222 arcsec [2.99σ]  
OotOffset-rm: 0.455 arcsec [1.22σ]  
KicOffset-rm: 0.414 arcsec [1.26σ]  
OotOffset-st: 4/4/3/2 [13]  
KicOffset-st: 4/4/3/2 [13]  
DiffImageQuality-fgm: 0.92 [12/13]  
DiffImageOverlap-fno: 1.00 [13/13]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:33:06 Z

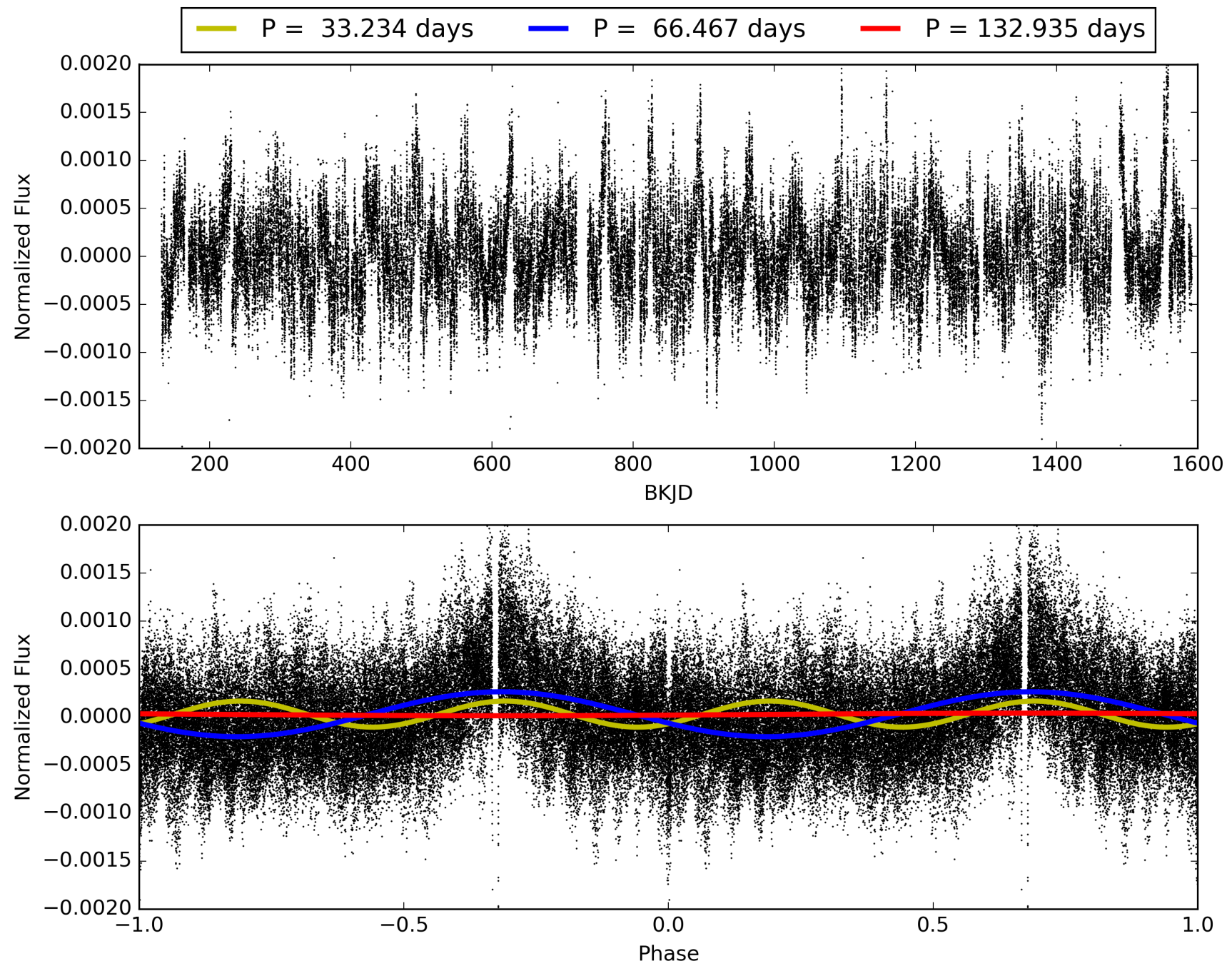
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008845026-02, PDC Light Curves





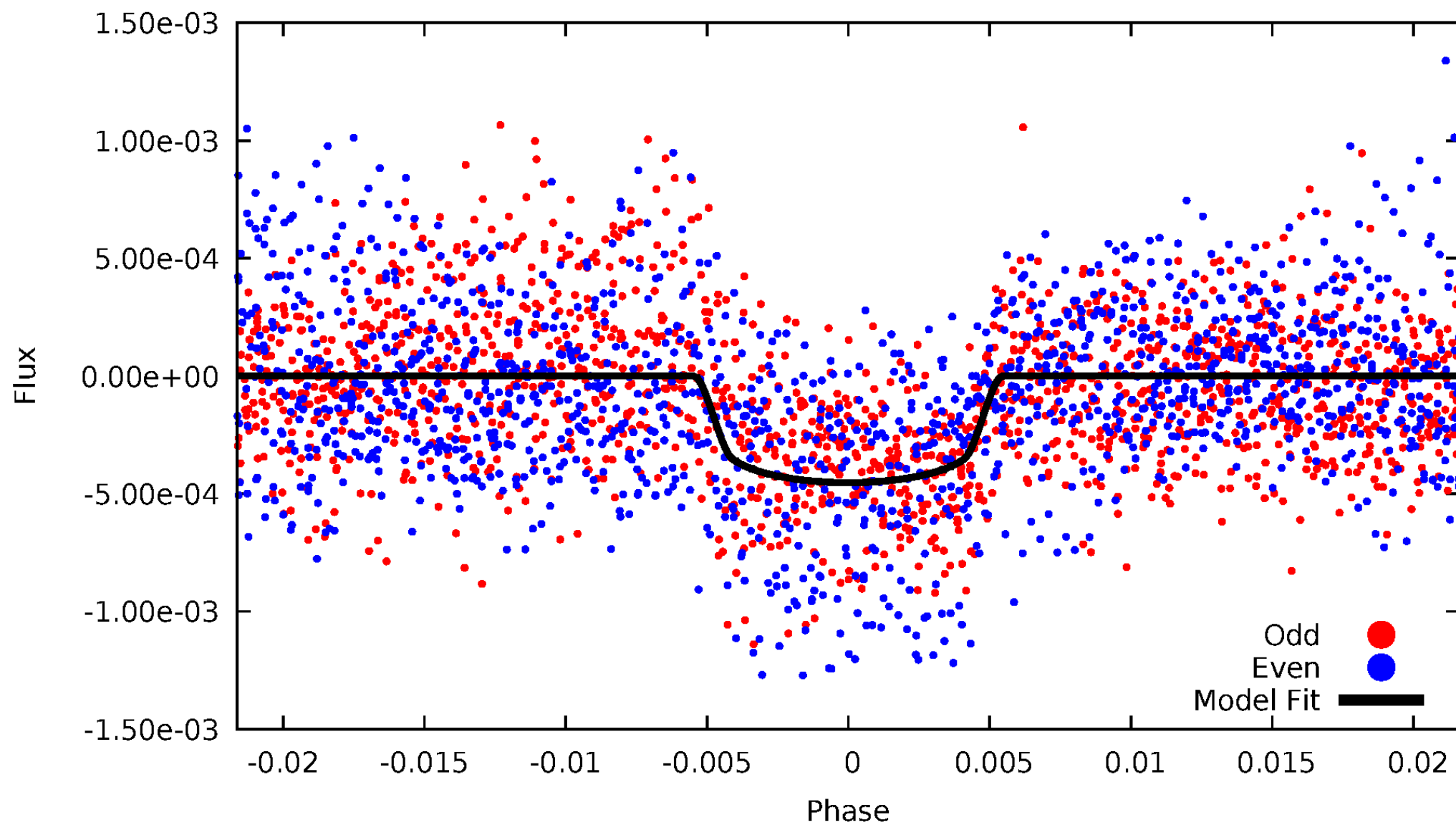
TCE 008845026-02





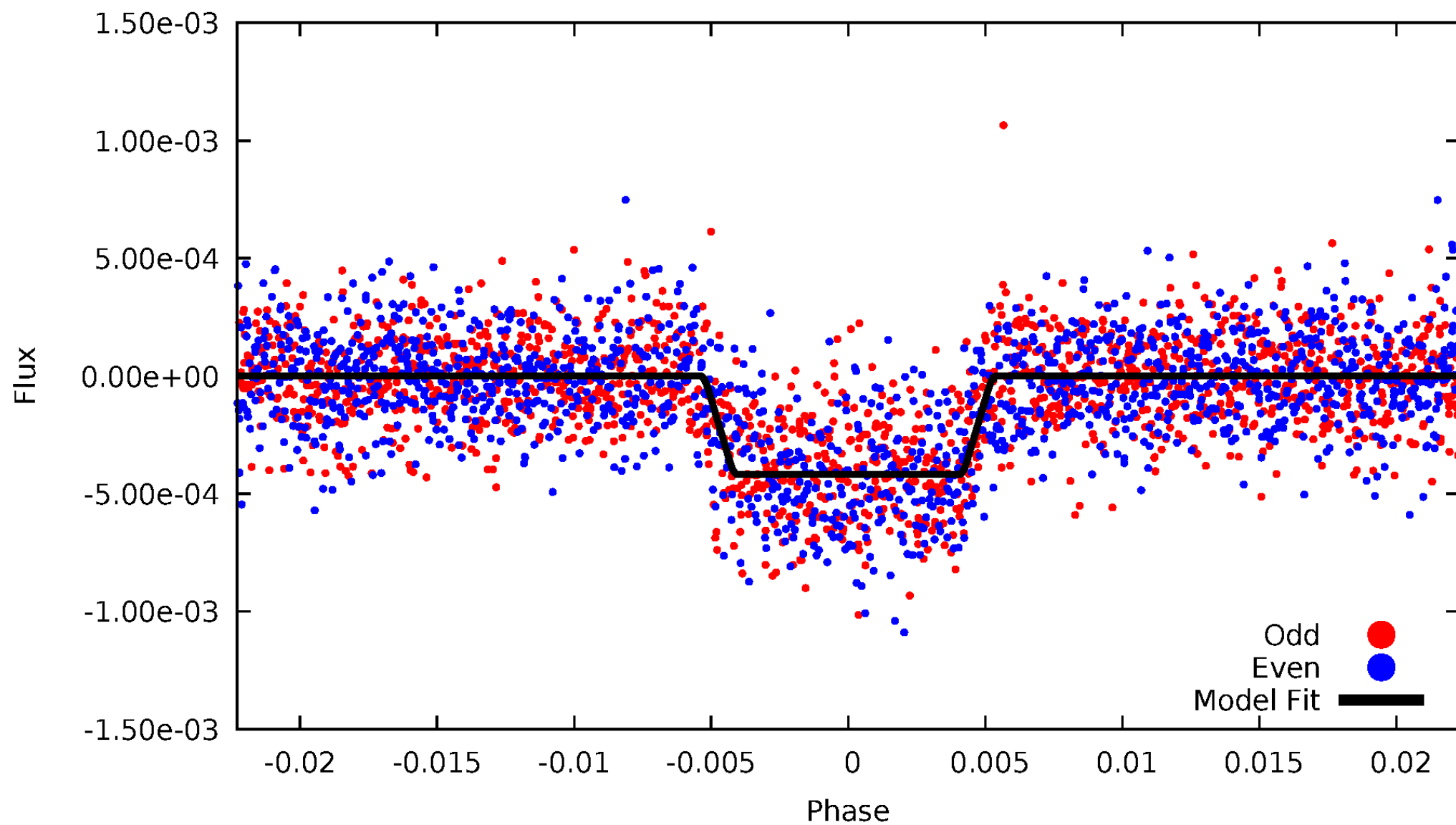
# DV Odd/Even

TCE 008845026-02



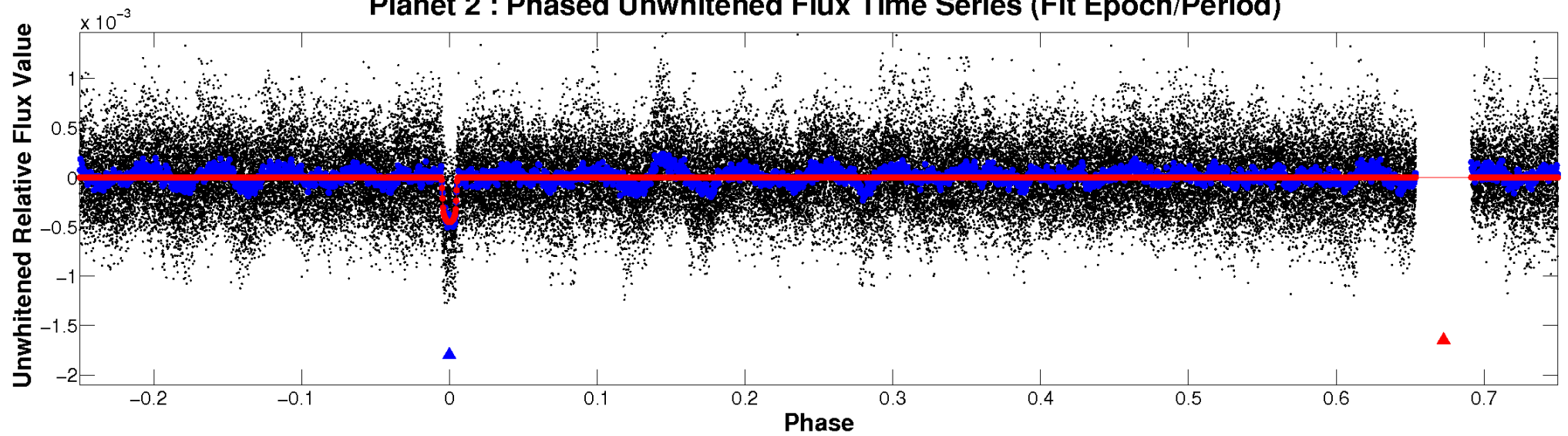
# ALT Odd/Even

TCE 008845026-02

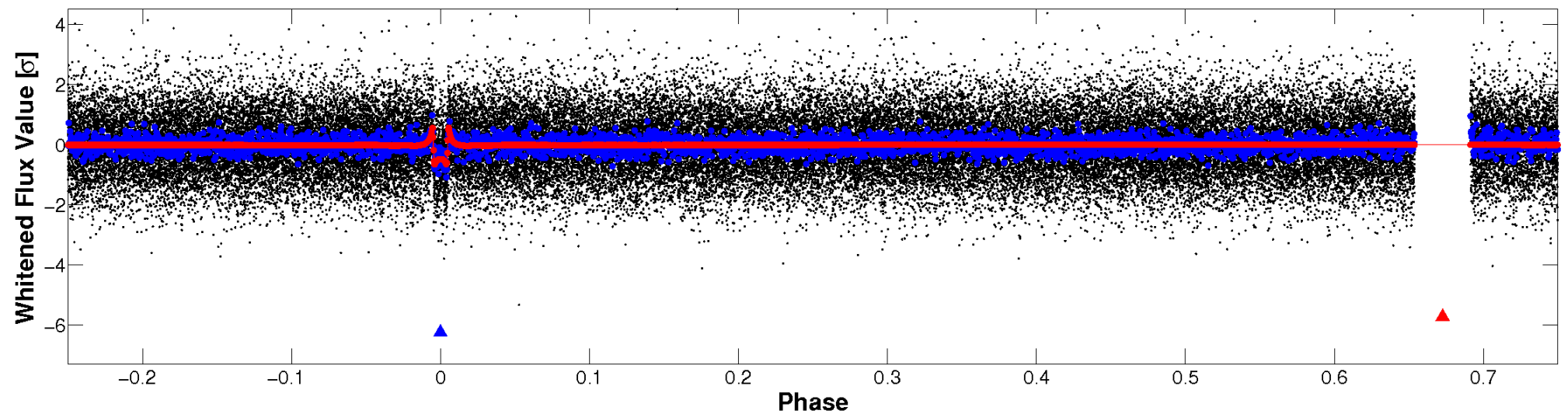


# Non-Whitened Vs. Whitened Light Curve

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

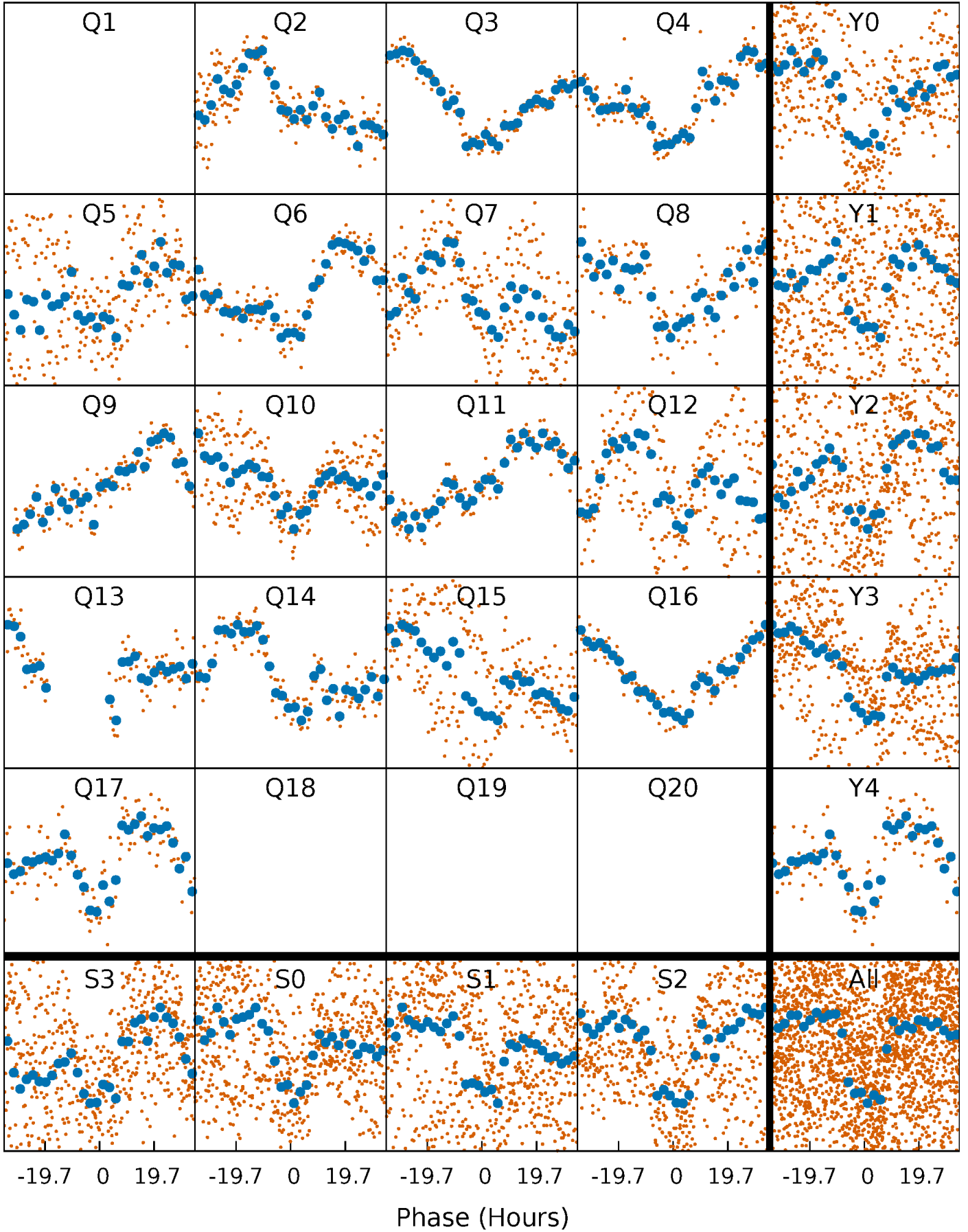


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



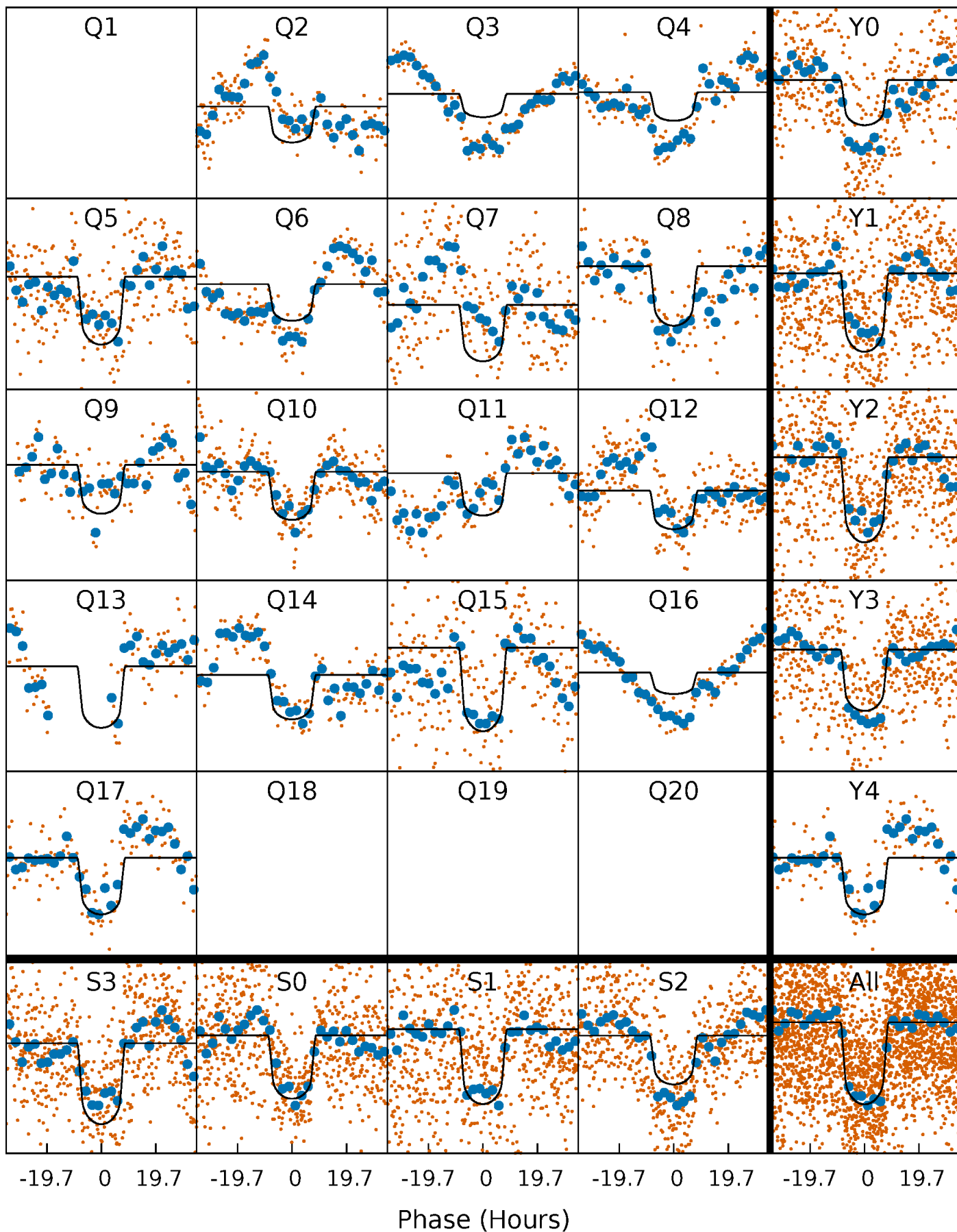
# PDC Quarter-Phased Transit Curves

TCE 008845026-02    P= 66.467277 Days     $T_0=182.233208$  (BKJD)



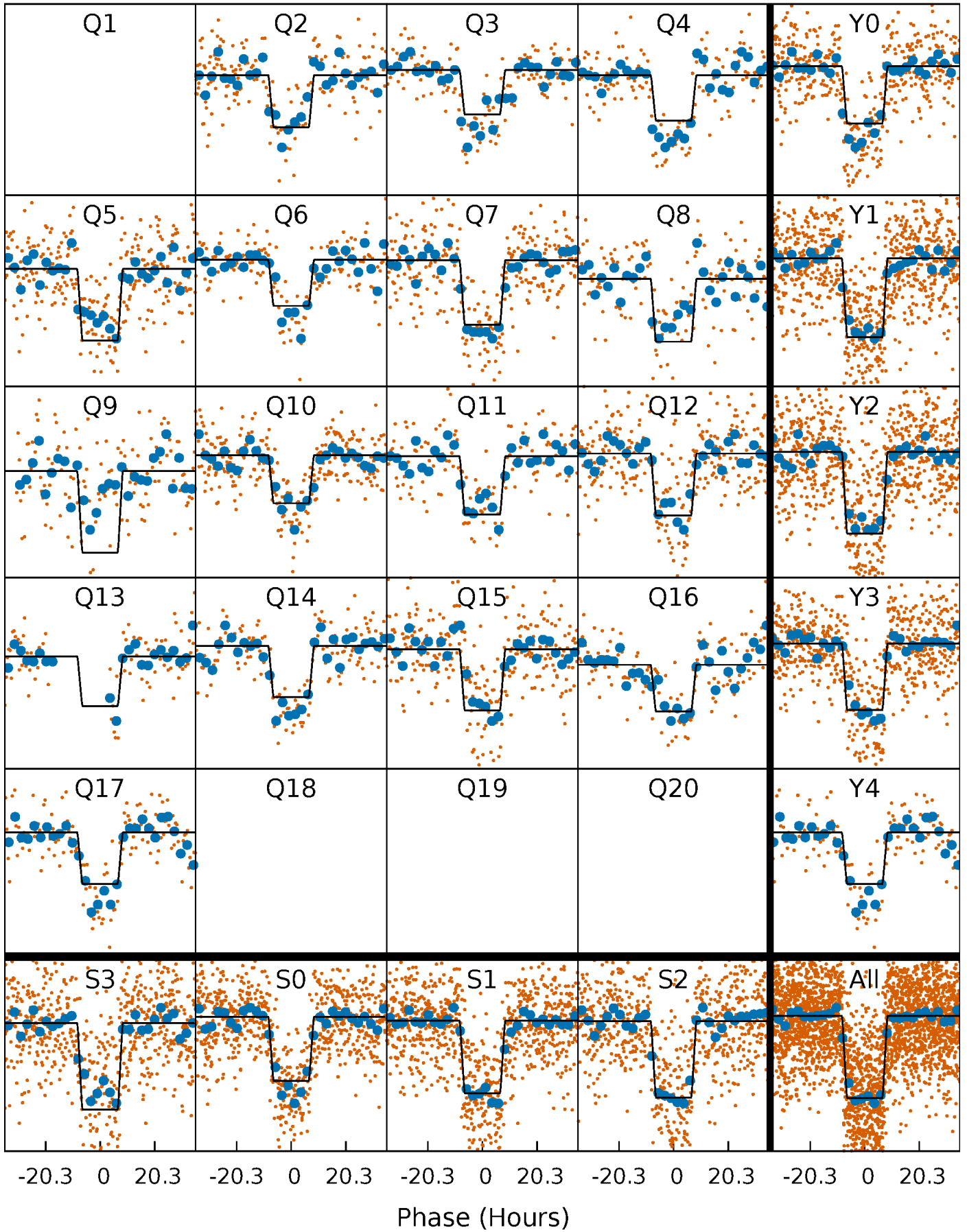
# DV Quarter-Phased Transit Curves

TCE 008845026-02   P= 66.467277 Days    $T_0=182.233208$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008845026-02     $P = 66.463886$  Days     $T_0 = 182.277577$  (BKJD)

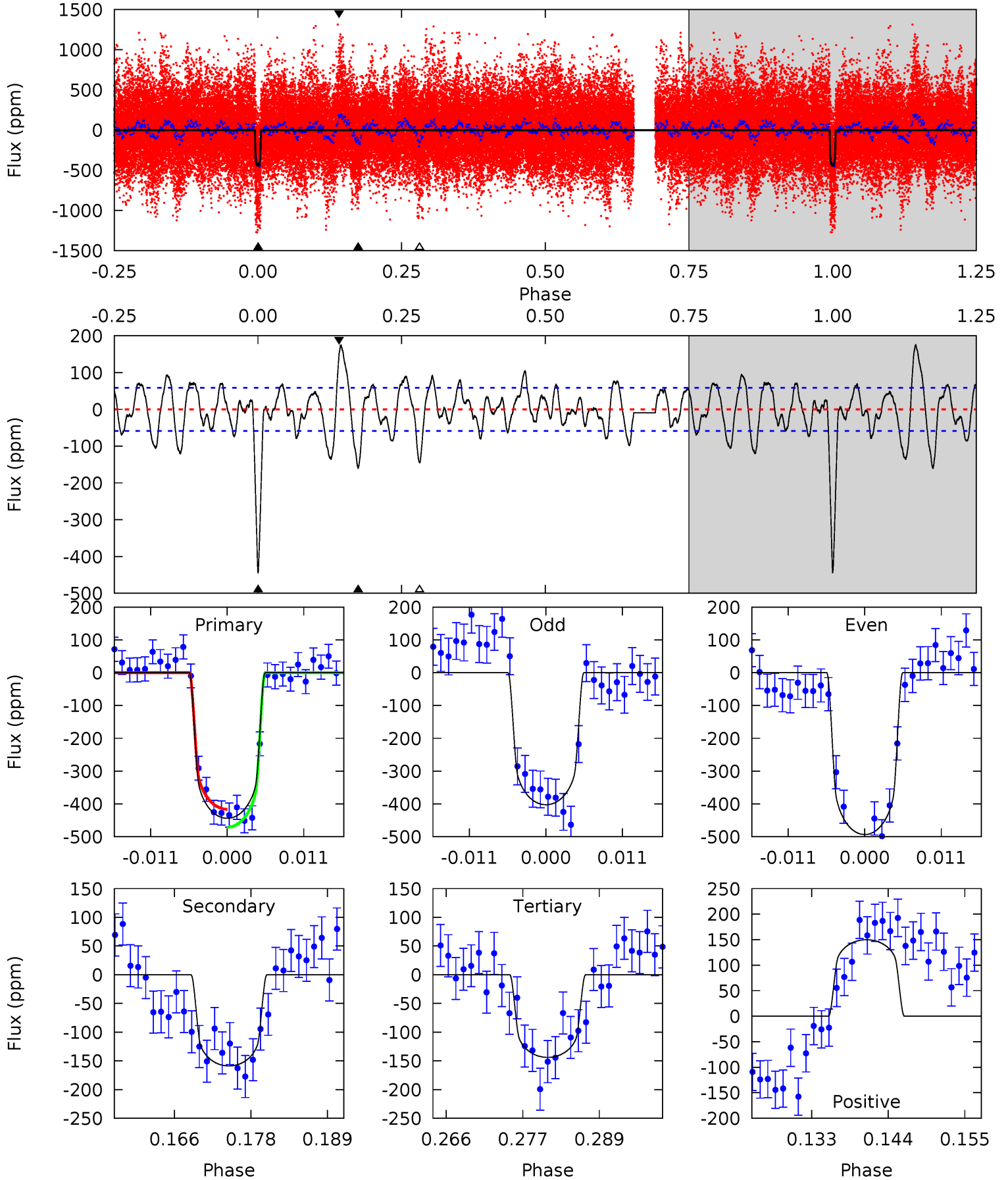




# DV Model-Shift Uniqueness Test

008845026-02, P = 66.467277 Days, E = 115.765931 Days

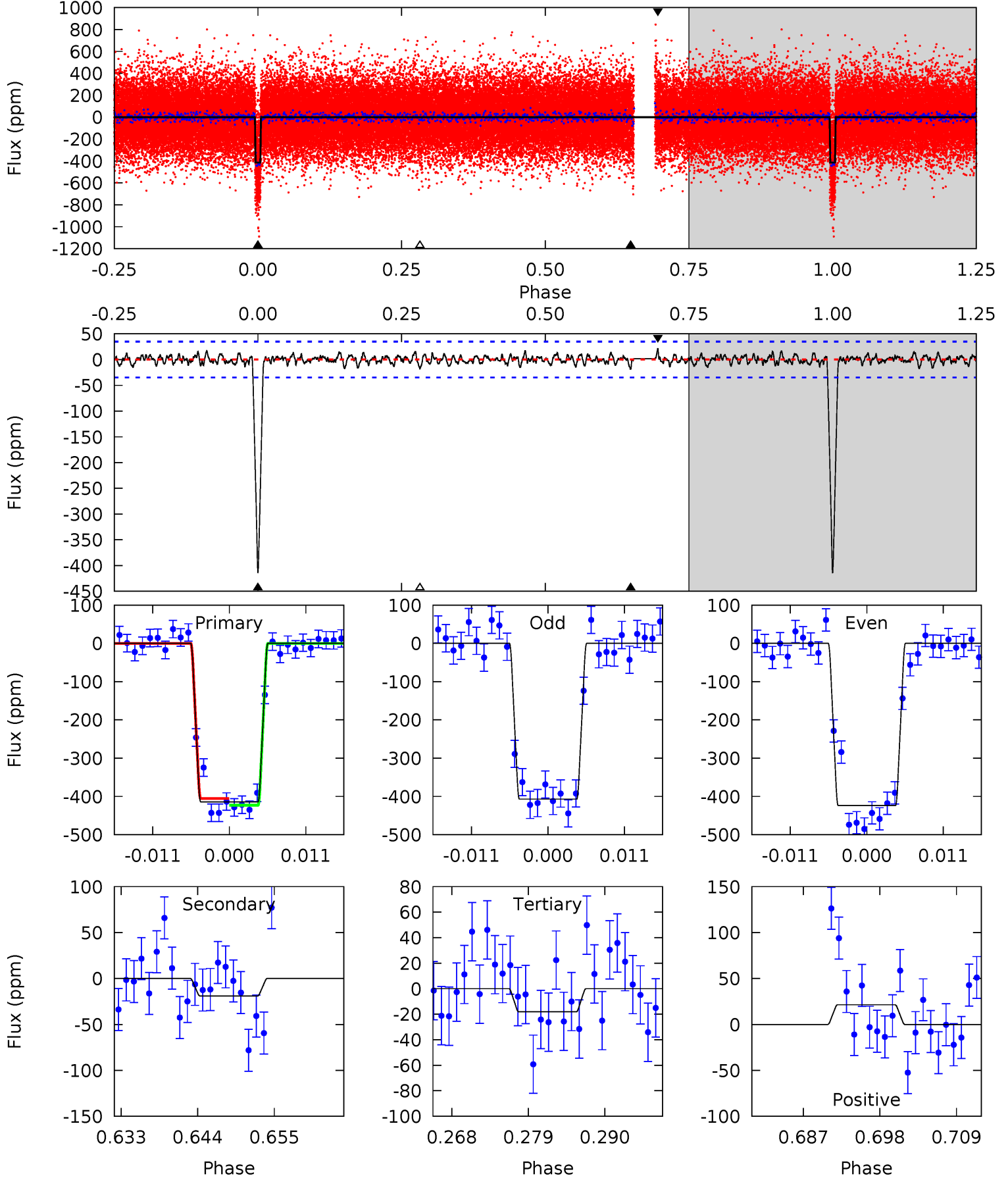
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.8	13.5	12.3	12.8	5.01	2.54	4.44	25.5	25.0	1.27	0.77	3.86	1.16	0.28	2.34



# Alt Model-Shift Uniqueness Test

008845026-02, P = 66.463886 Days, E = 115.813691 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
59.6	2.74	2.61	3.08	5.01	2.55	0.90	57.0	56.5	0.13	-0.34	1.19	0.95	0.05	1.23





### Stellar Parameters For KIC 008845026

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5843^{+182}_{-203}$	$4.403^{+0.087}_{-0.203}$	$0.180^{+0.200}_{-0.300}$	$1.073^{+0.307}_{-0.141}$	$1.061^{+0.125}_{-0.125}$	$1.210^{+0.539}_{-0.597}$
	+3%/-3%	+2%/-5%	+111%/-167%	+29%/-13%	+12%/-12%	+45%/-49%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008845026-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-159 \pm 12$	$2.77^{+0.44}_{-0.29}$	$660^{+48}_{-34}$	$4485^{+155}_{-161}$	$1196^{+288}_{-306}$
Alt.	$-19 \pm 7$	$2.45^{+0.39}_{-0.25}$	$660^{+46}_{-33}$	$3261^{+181}_{-219}$	$180^{+85}_{-74}$

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

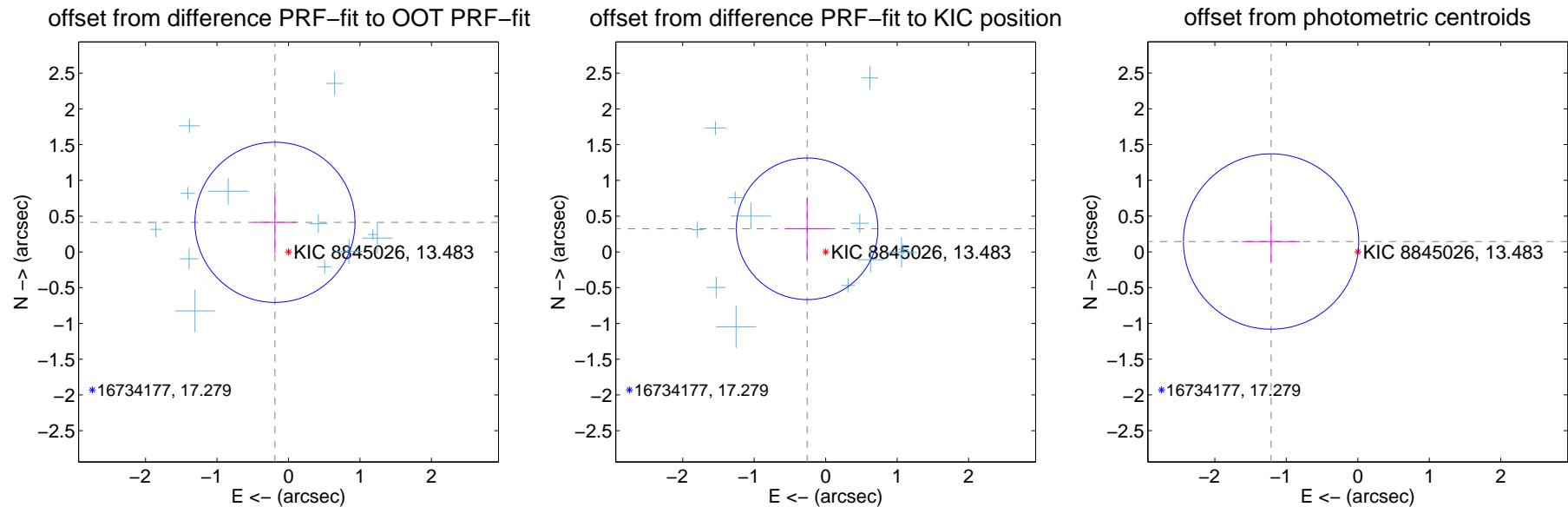
## DV Centroid Data

Supplemental centroid analysis for 008845026-02. Kepler magnitude: 13.48. Transit SNR 14.47

There are 12 quarters with good PRF difference image offsets

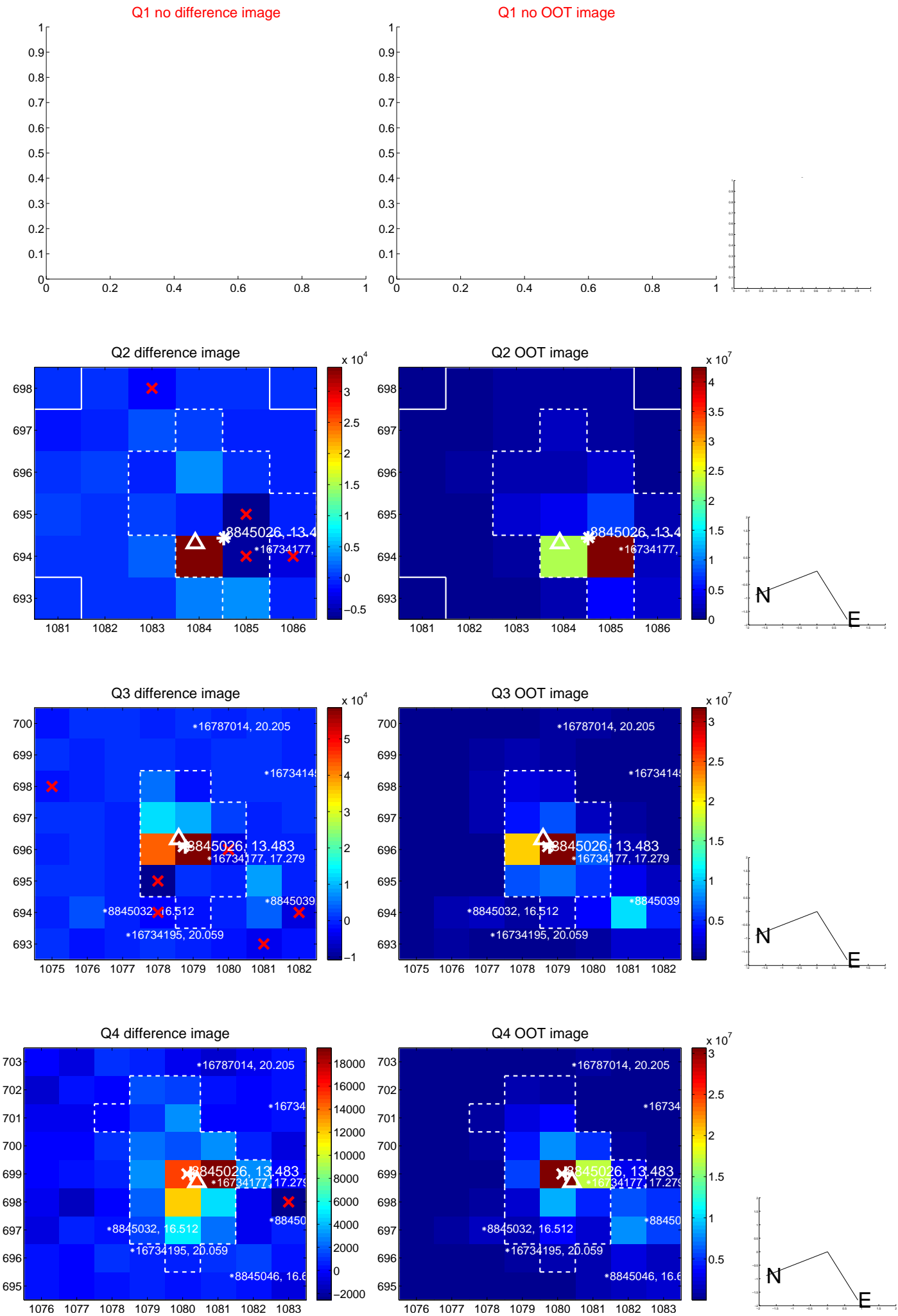
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.455 \pm 0.373$	1.22	$0.189 \pm 0.302$	$0.414 \pm 0.440$
PRF-fit source offset from KIC position	$0.414 \pm 0.330$	1.26	$0.259 \pm 0.312$	$0.323 \pm 0.431$
photometric centroid source offset	$1.22 \pm 0.41$	2.99	$1.21 \pm 0.41$	$0.14 \pm 0.30$

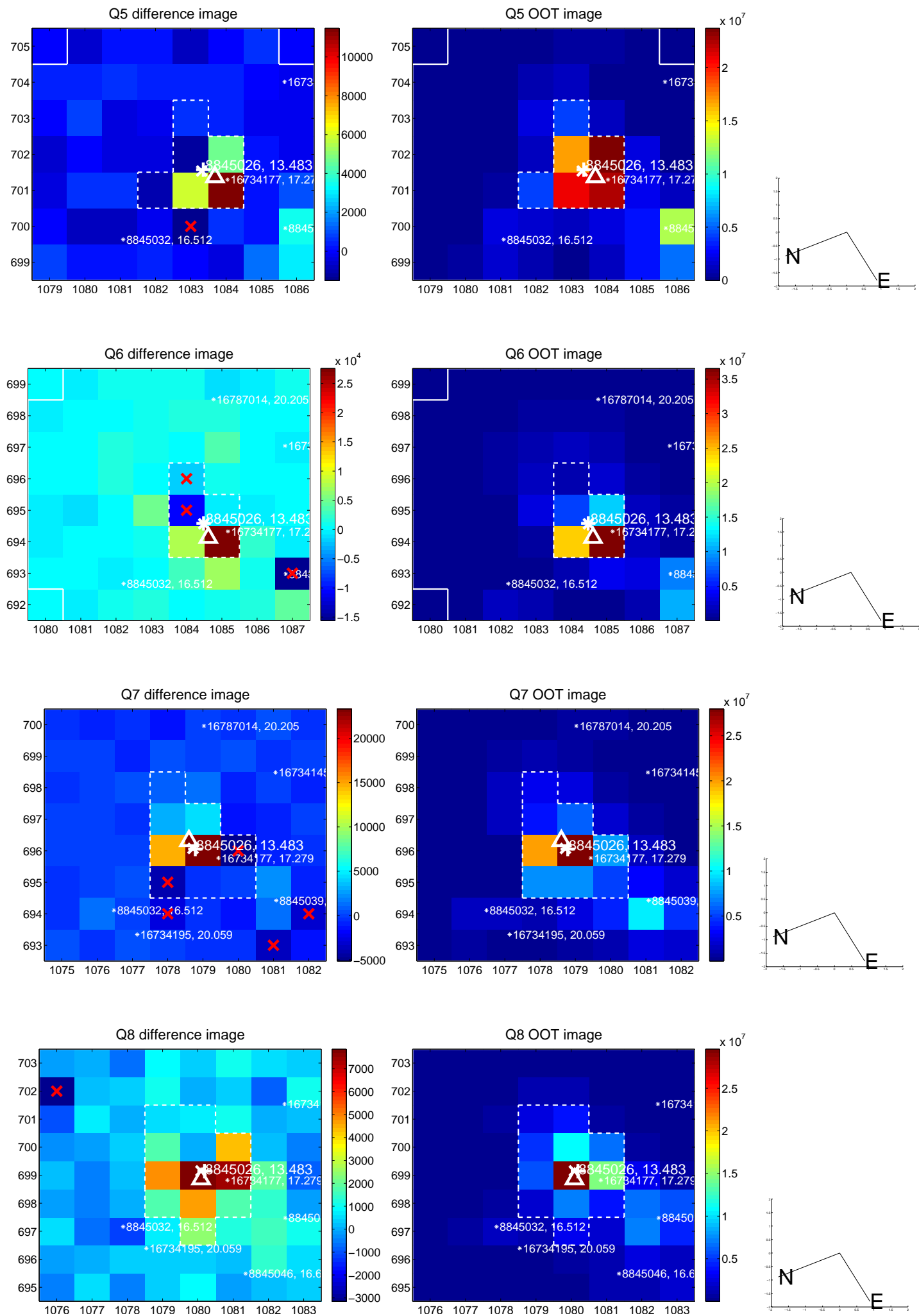


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



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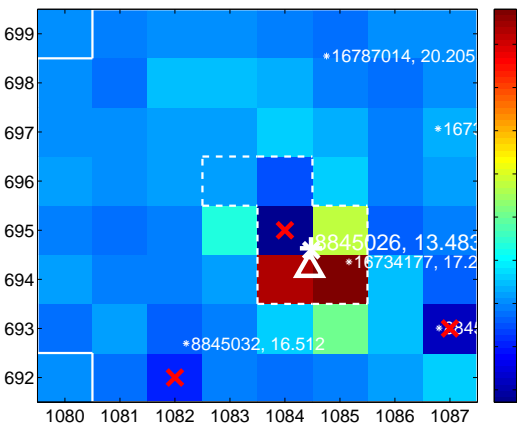
Q9 no difference image



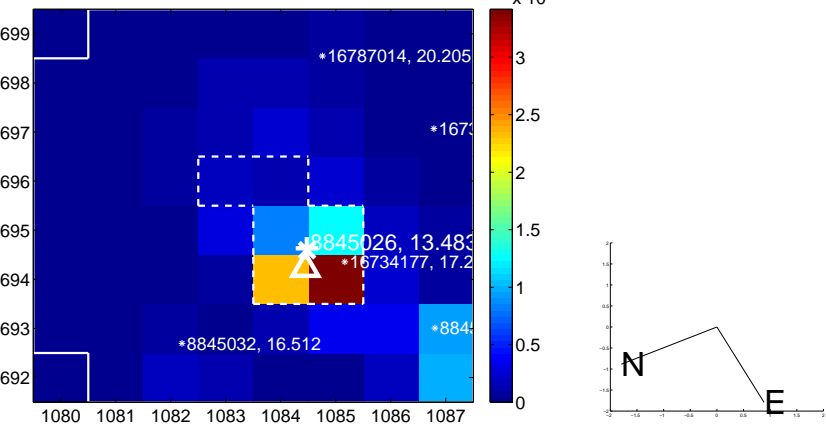
Q9 no OOT image



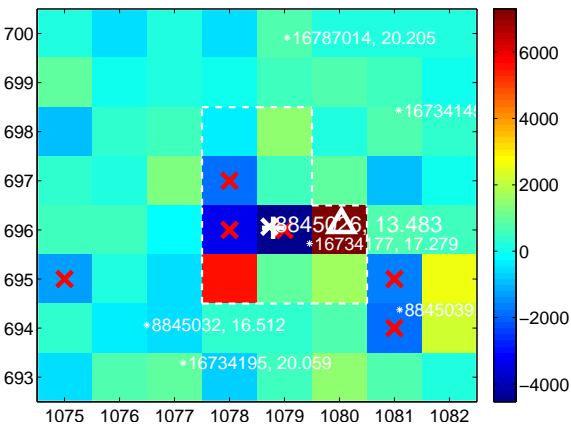
Q10 difference image



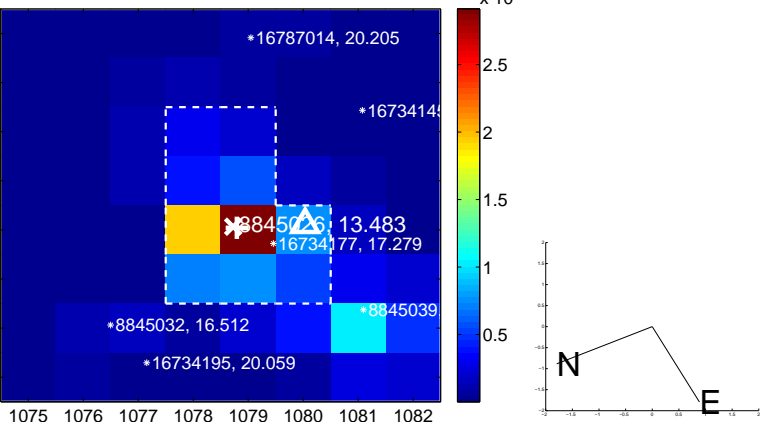
Q10 OOT image



Q11 difference image. Poor Quality



Q11 OOT image



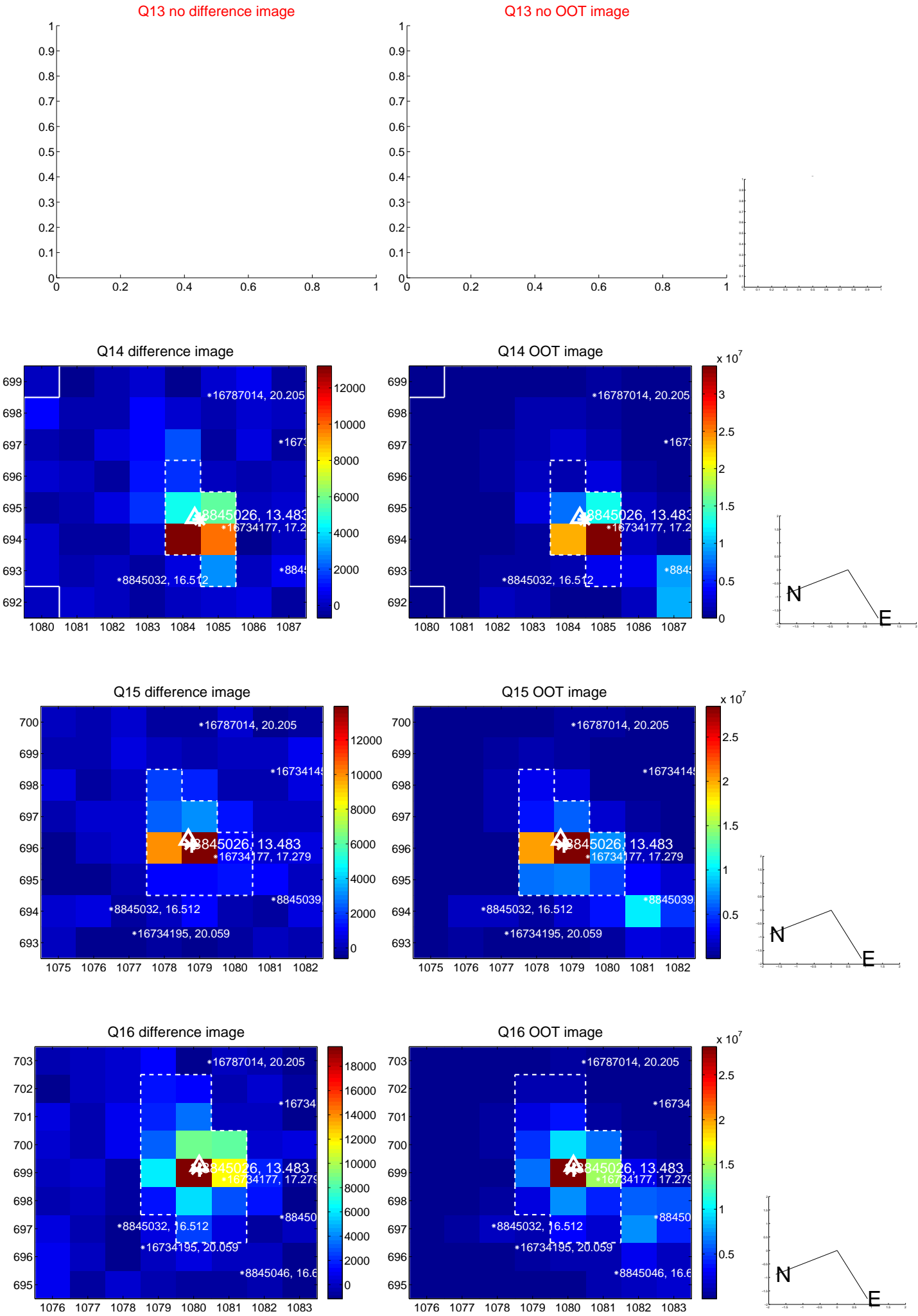
Q12 no difference image



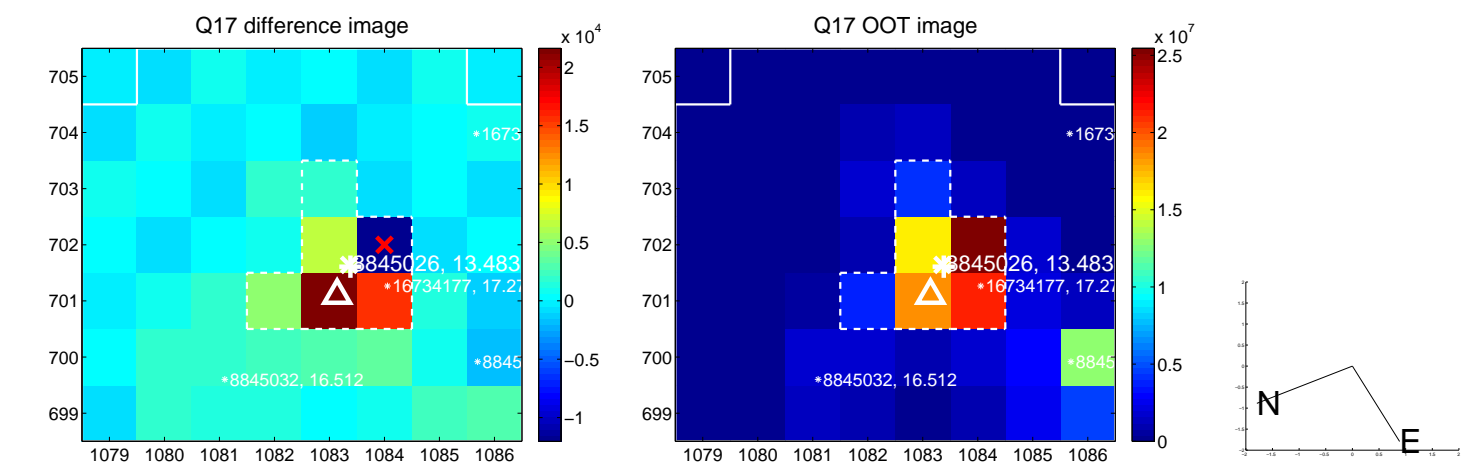
Q12 no OOT image



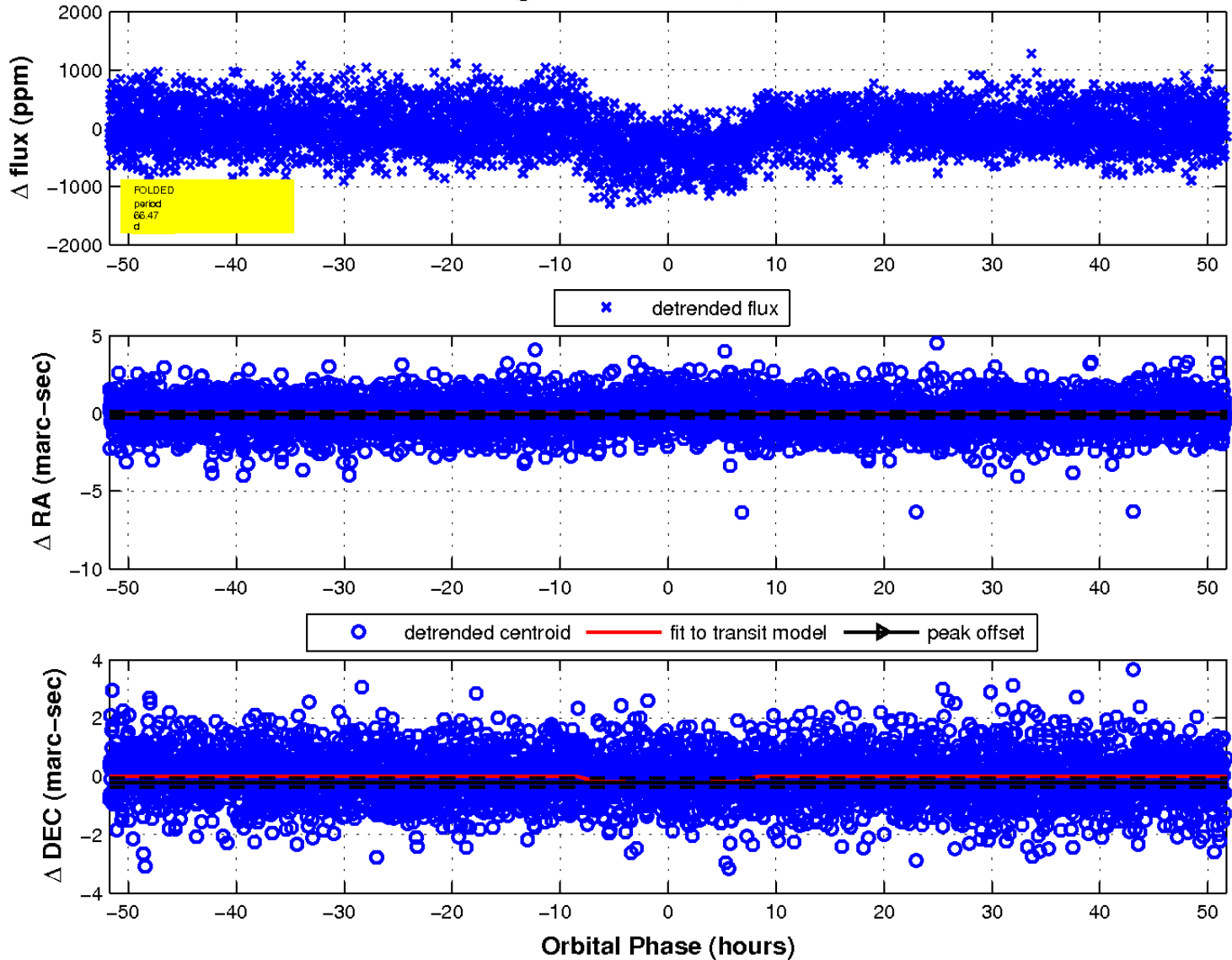
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fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

