

# KIC 008488876

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008488876-01	OBS	7047.01	5.801881	136.982196	34304.7	4.197	7082.3	6329.0	3.01	7259	62.88	3795.40
008488876-02	OBS	No	5.801890	134.585217	713.4	4.022	148.5	150.0	3.01	7259	10.92	3795.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008488876-01	OBS	FP	0.00	0	1	0	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—EPHEM_MATCH
008488876-02	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 008488876-01

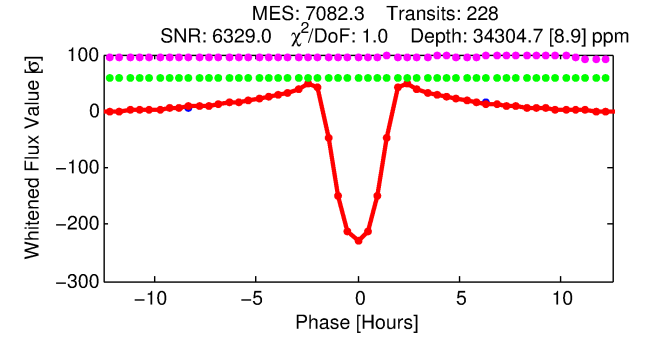
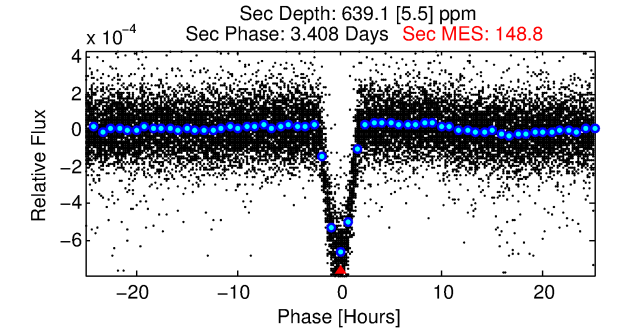
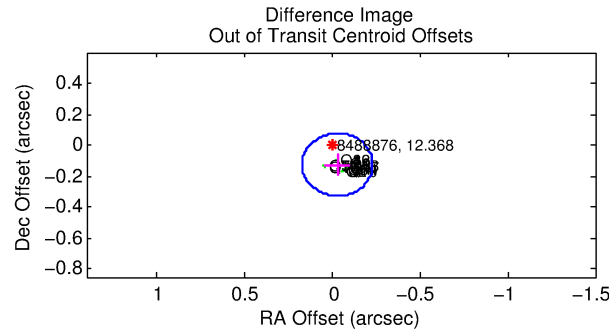
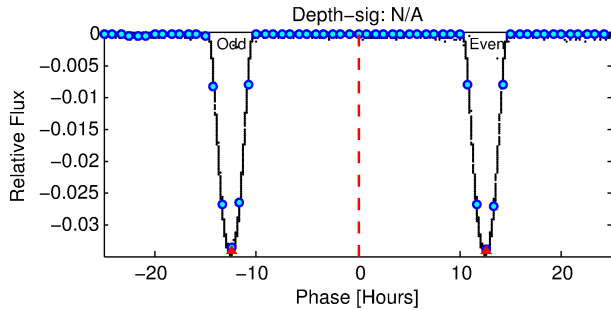
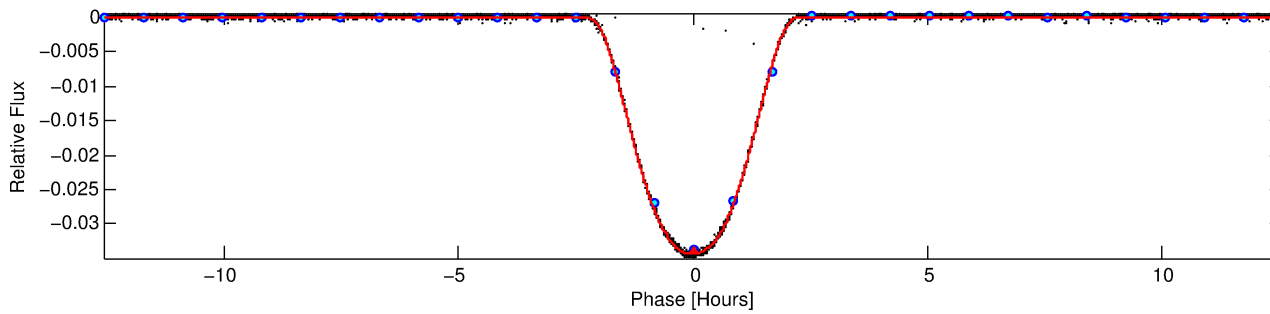
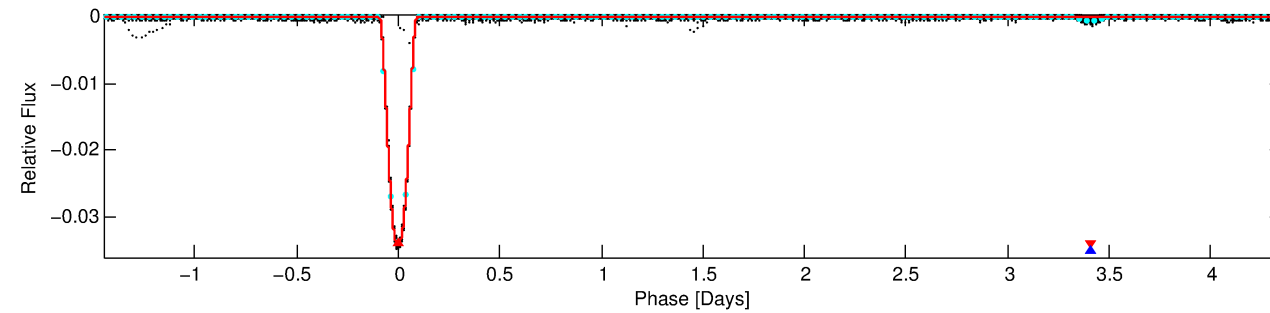
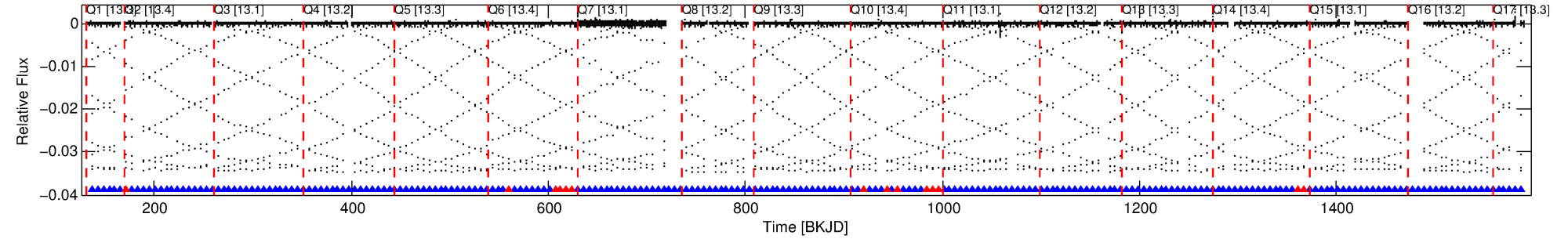
TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
008488876-01	8488876	1248.01	8488878	1:1	5.5	-1	1	15.36	12.37	1.30	Direct-PRF	0	0.01	0.01

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 8488876 Candidate: 1 of 2 Period: 5.802 d  
KOI: K07047.01 Corr: 0.999

Kp: 12.37 R\*: 3.01 Rs Teff: 7259.0 K Logg: 3.74 Fe/H: 0.020



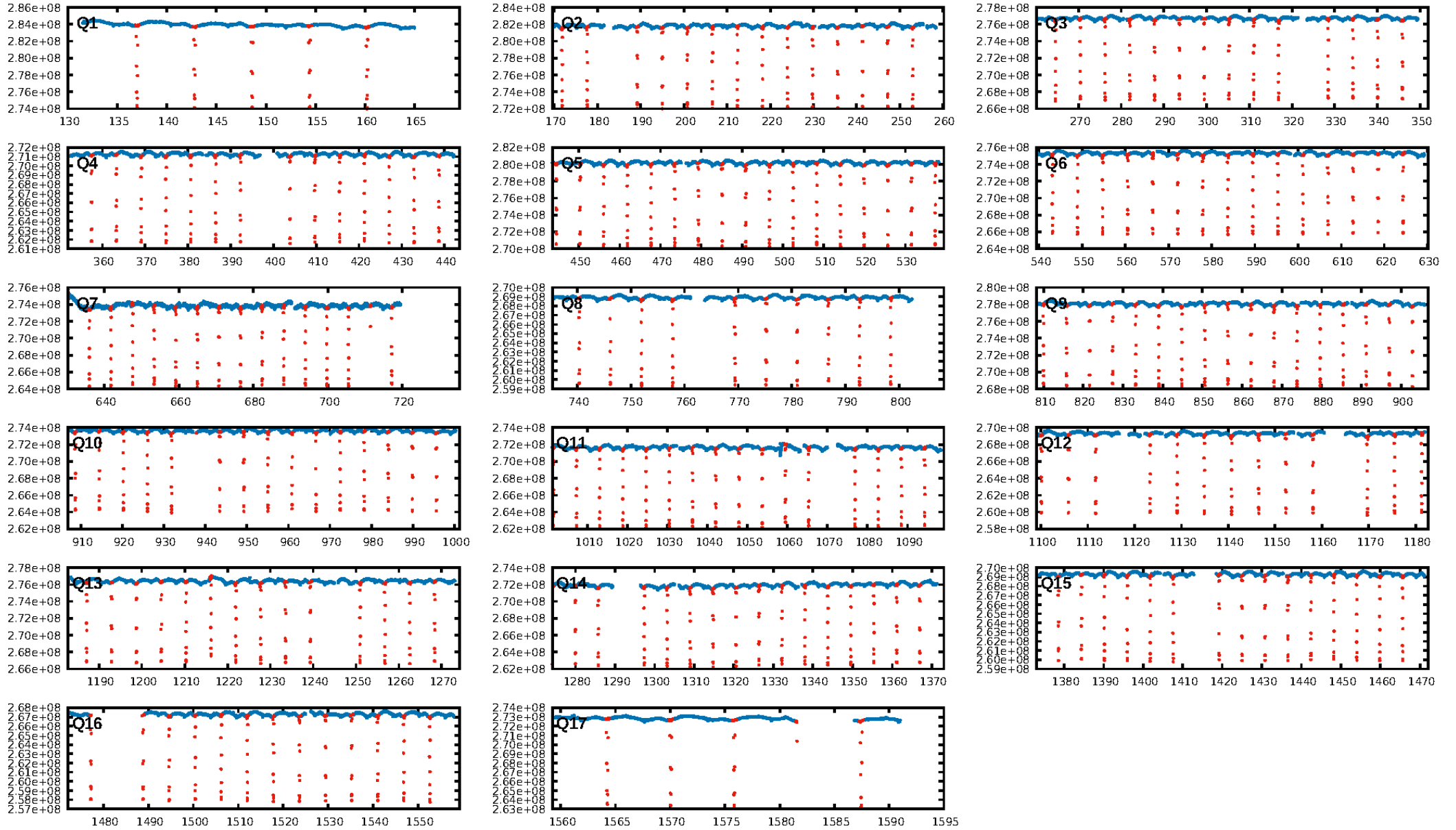
## DV Fit Results:

Period = 5.80188 [0.00000] d  
Epoch = 136.9822 [0.0000] BKJD  
Rp/R\* = 0.1915 [0.0001]  
a/R\* = 9.24 [0.00]  
b = 0.81 [0.00]  
Seff = 3795.40 [2588.18]  
Teq = 2001 [341] K  
Rp = 62.88 [25.87] Re  
a = 0.0770 [0.0314] AU  
Ag = 0.53 [0.35] [-1.35σ]  
Teffp = 2637 [110] K [1.77σ]

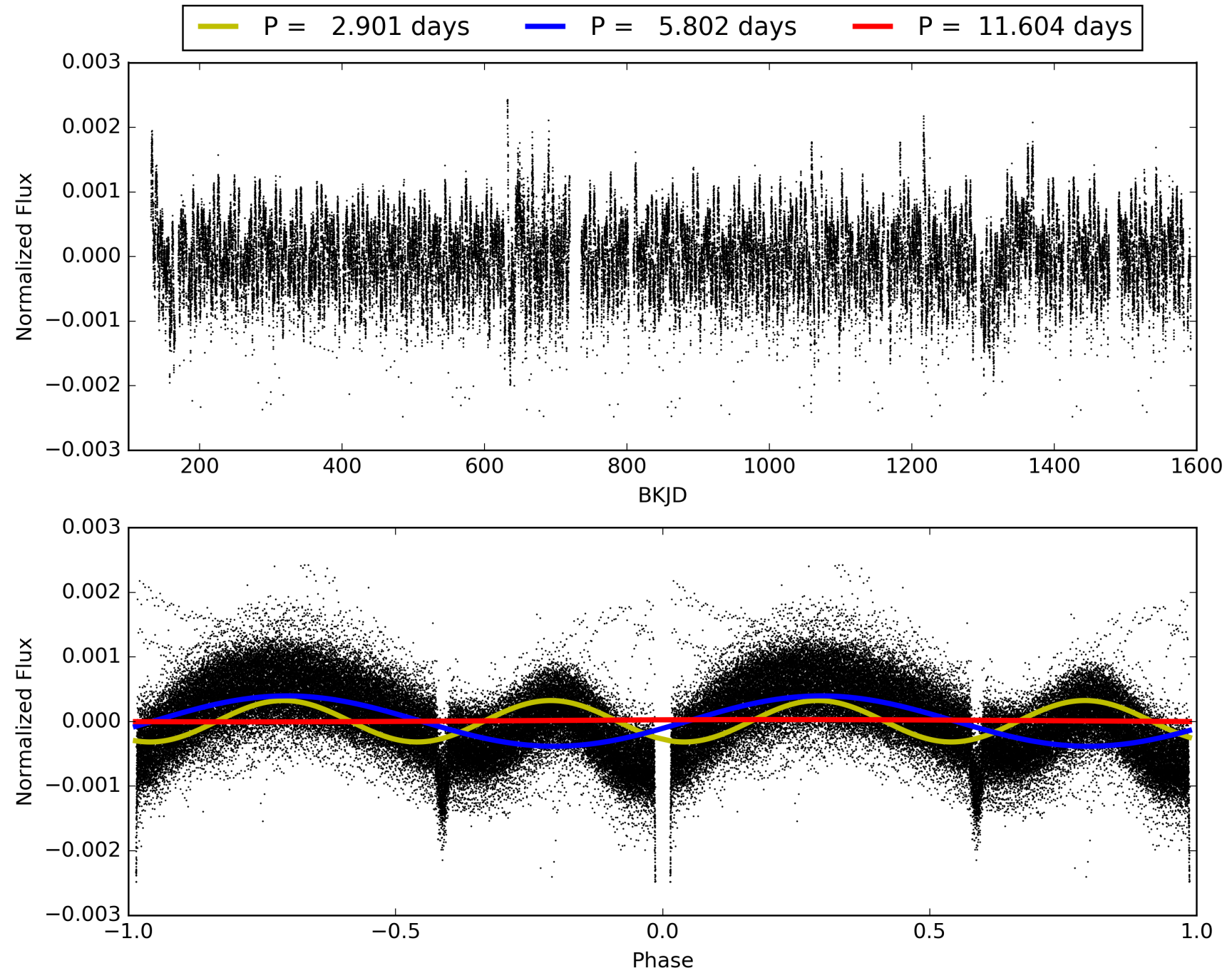
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.94 [204/218]  
GhostDiagnostic-chr: 8.444  
Centroid-sig: 0.0%  
Centroid-so: 0.225 arcsec [178.23σ]  
OotOffset-rm: 0.129 arcsec [1.92σ]  
KicOffset-rm: 0.184 arcsec [2.71σ]  
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]

# TCE 008488876-01, PDC Light Curves

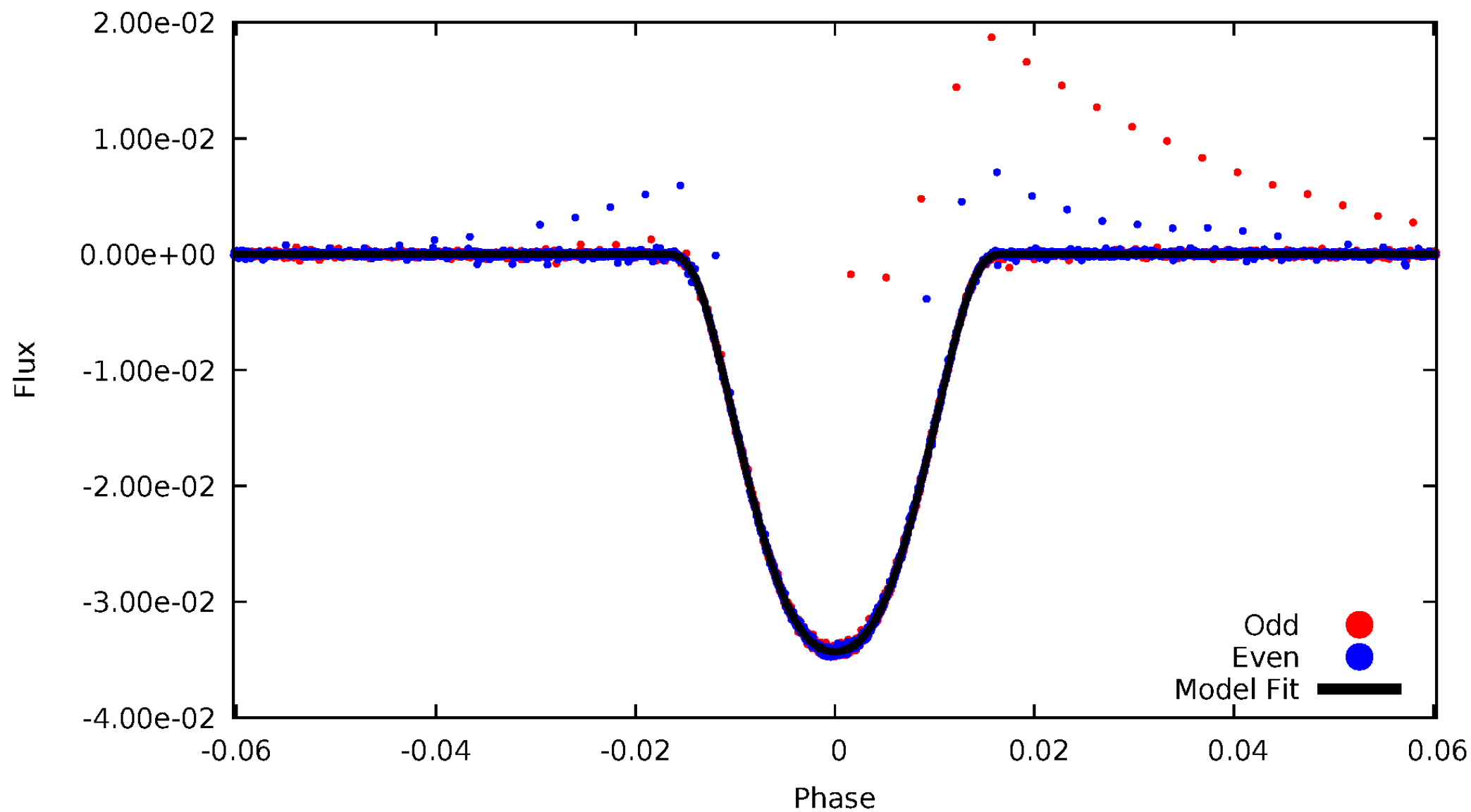


TCE 008488876-01



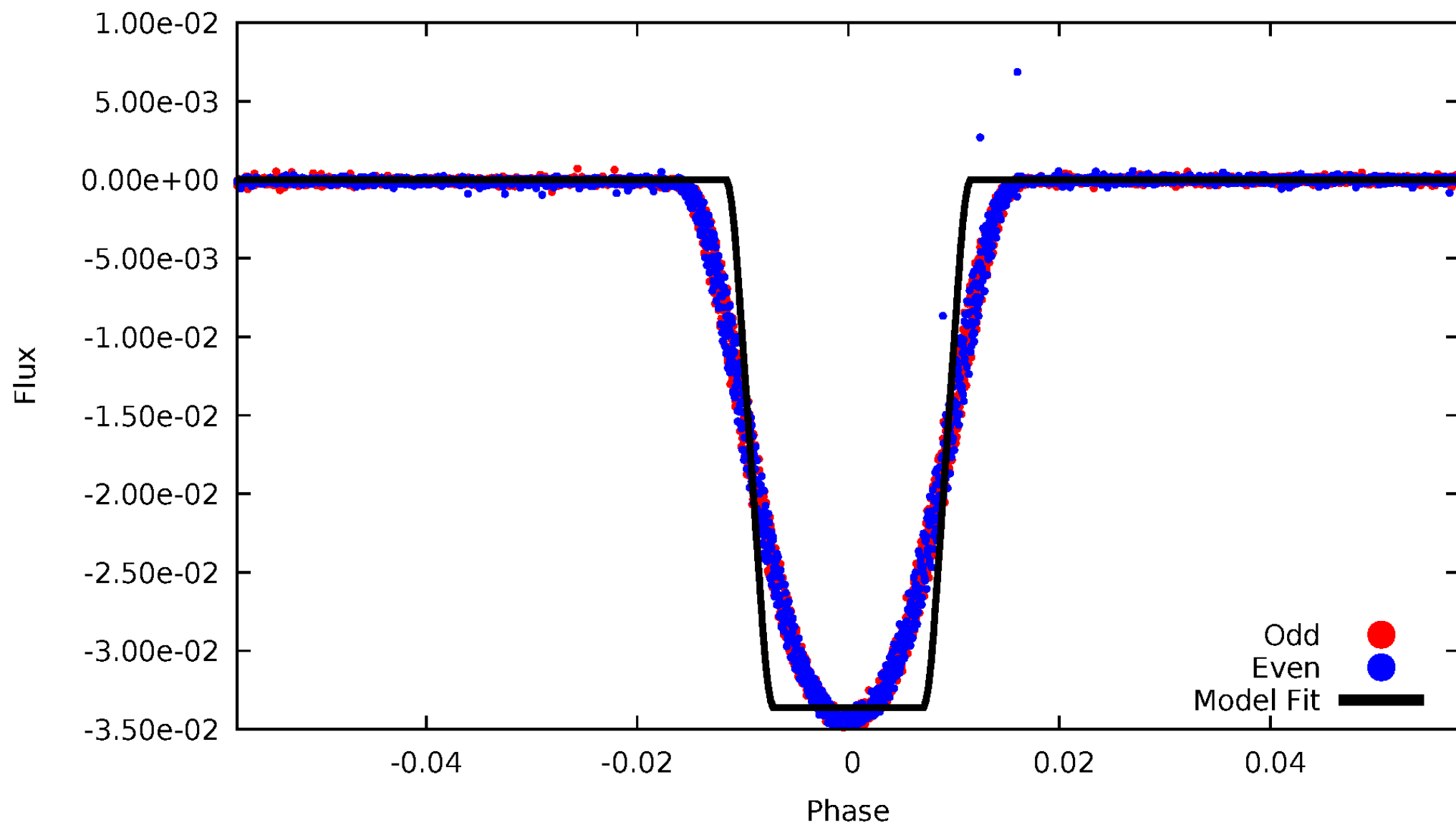
# DV Odd/Even

TCE 008488876-01



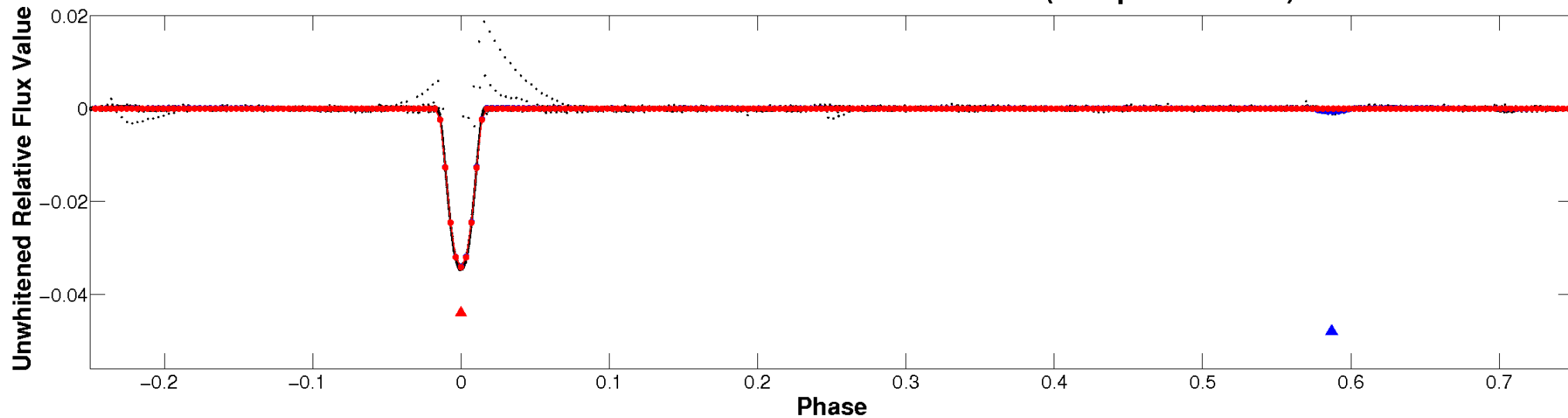
# ALT Odd/Even

TCE 008488876-01

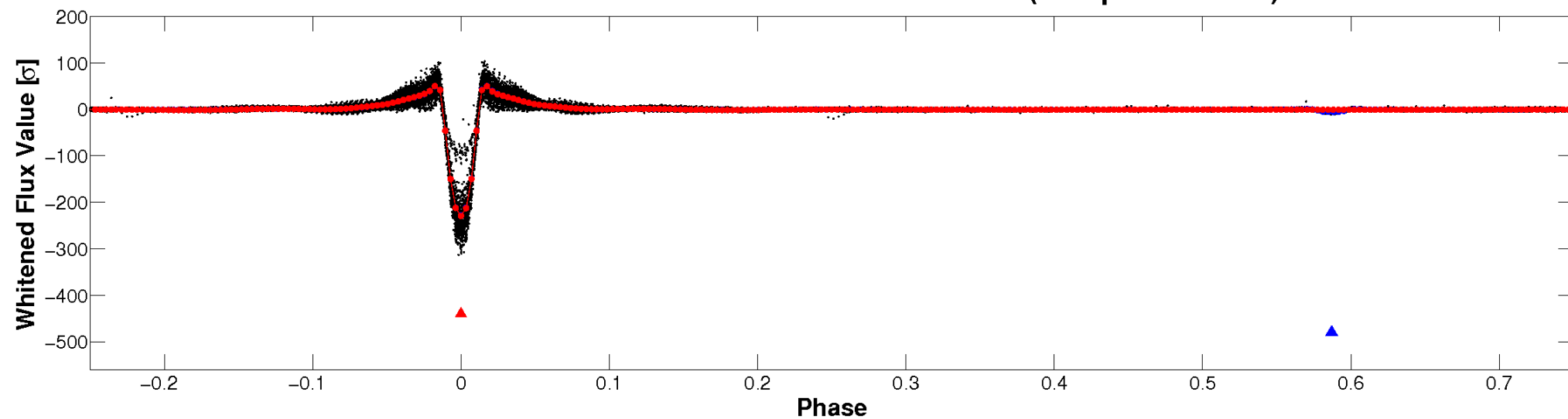


# Non-Whitened Vs. Whitened Light Curve

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

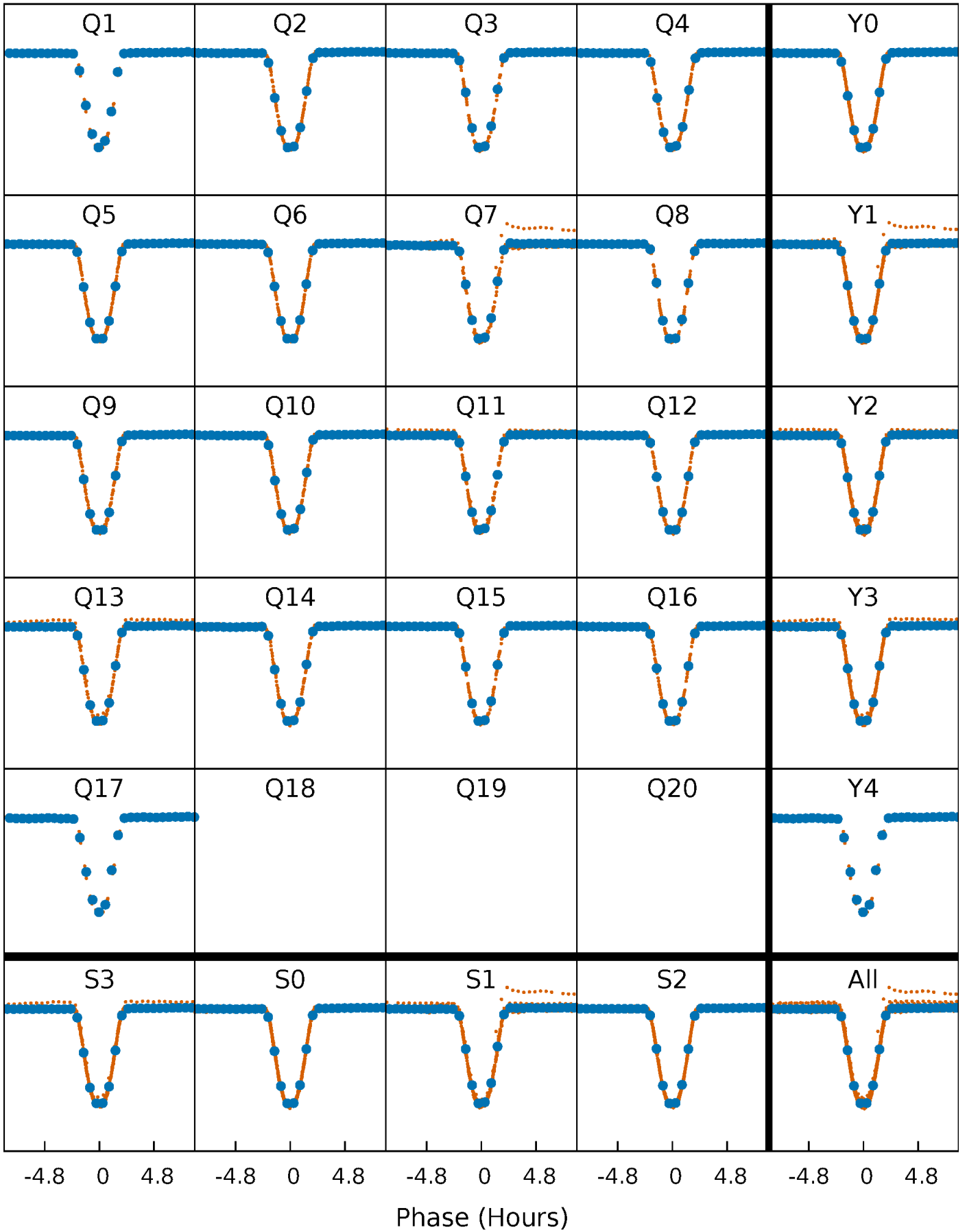


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

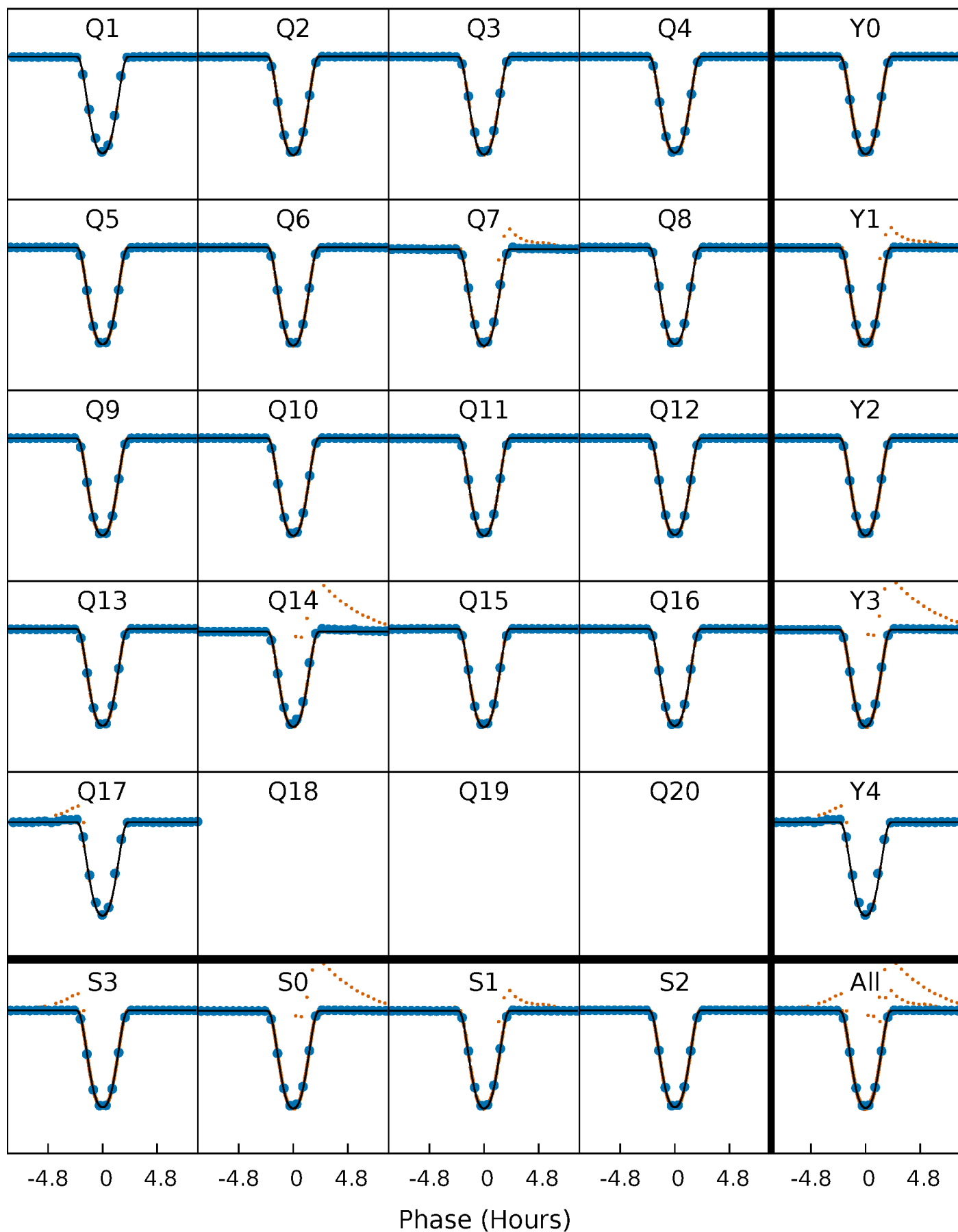
TCE 008488876-01 P= 5.801881 Days  $T_0=136.982196$  (BKJD)





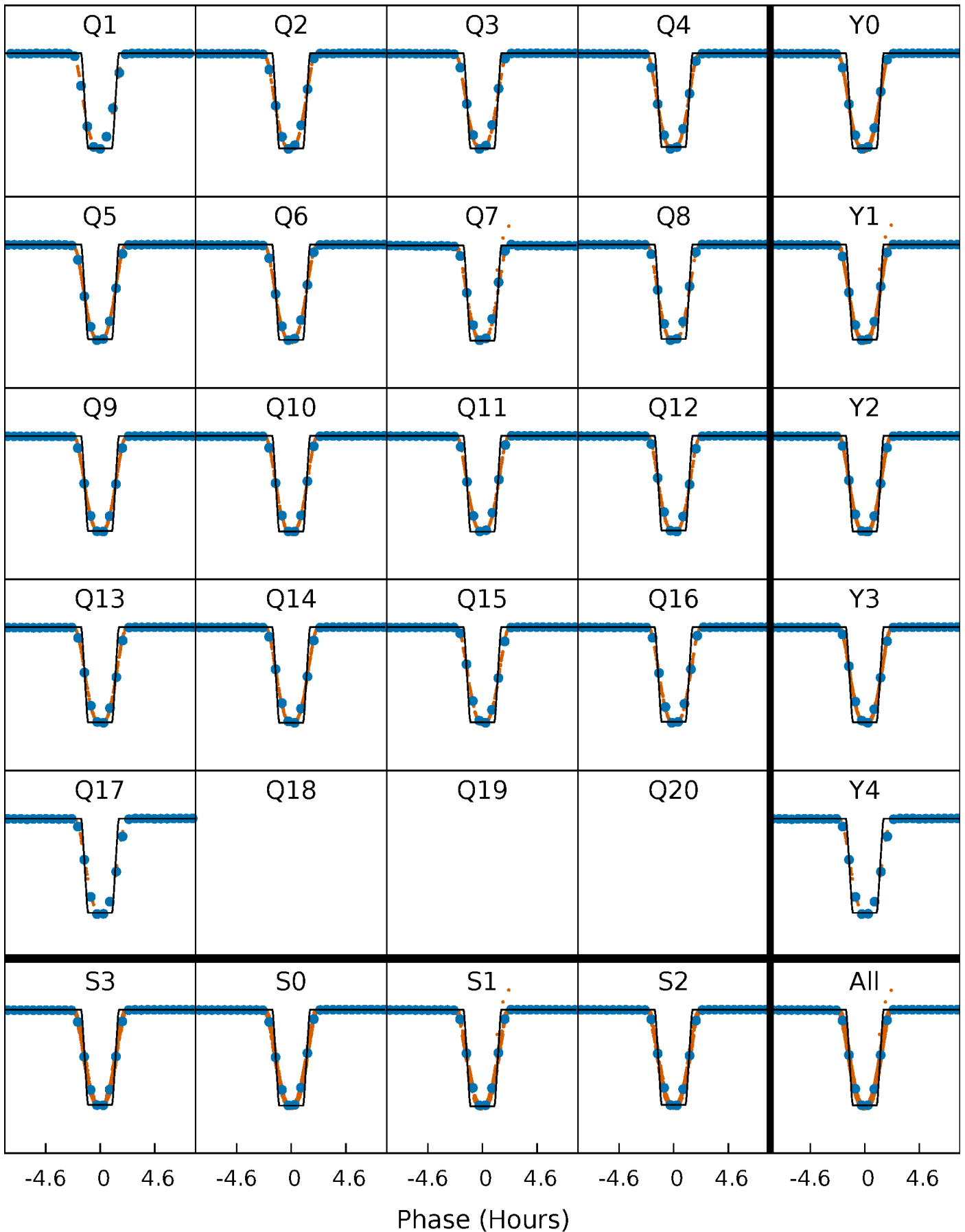
# DV Quarter-Phased Transit Curves

TCE 008488876-01 P= 5.801881 Days  $T_0=136.982196$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

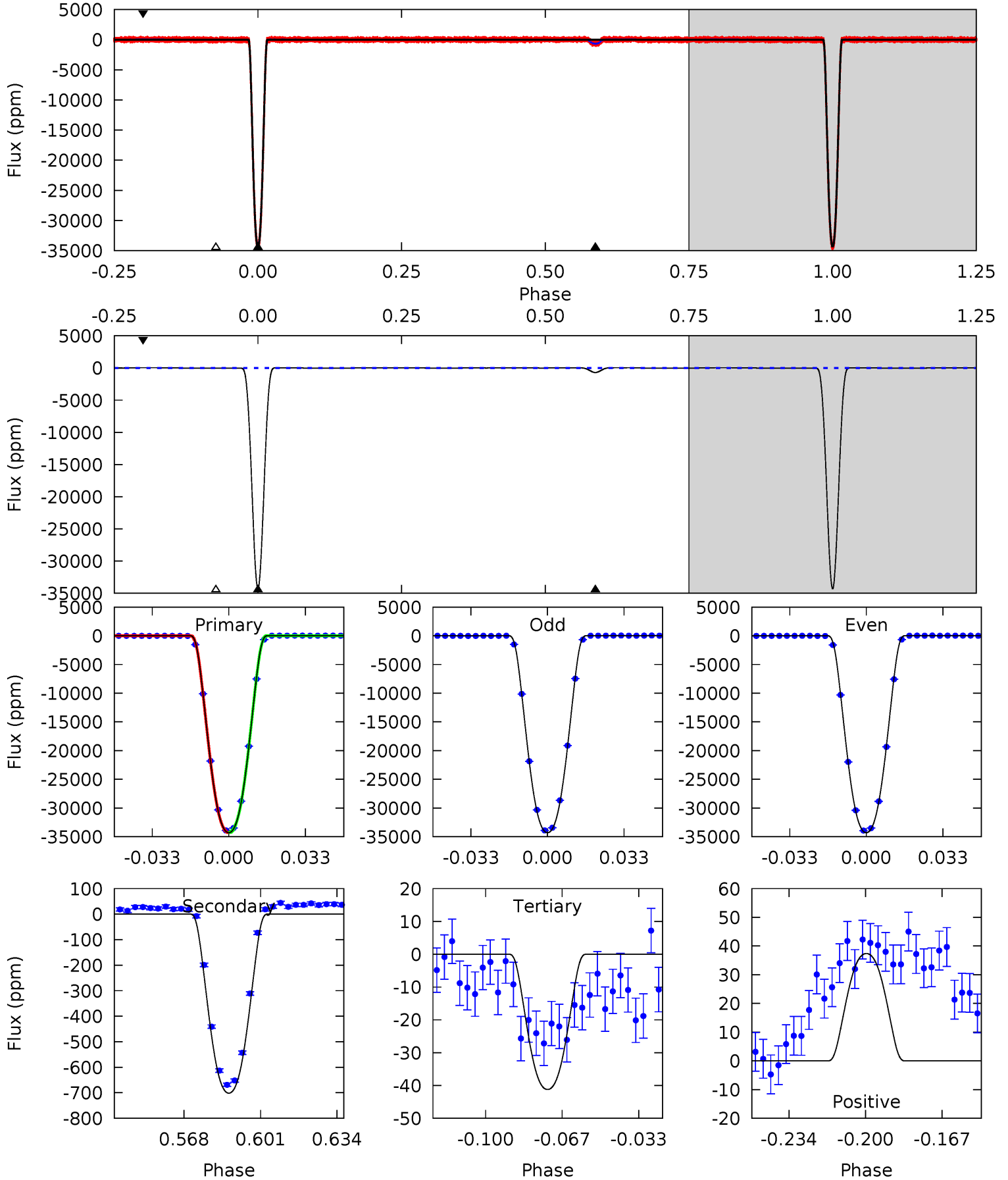
TCE 008488876-01 P= 5.801847 Days  $T_0=136.986347$  (BKJD)



# DV Model-Shift Uniqueness Test

008488876-01, P = 5.801881 Days, E = 131.180315 Days

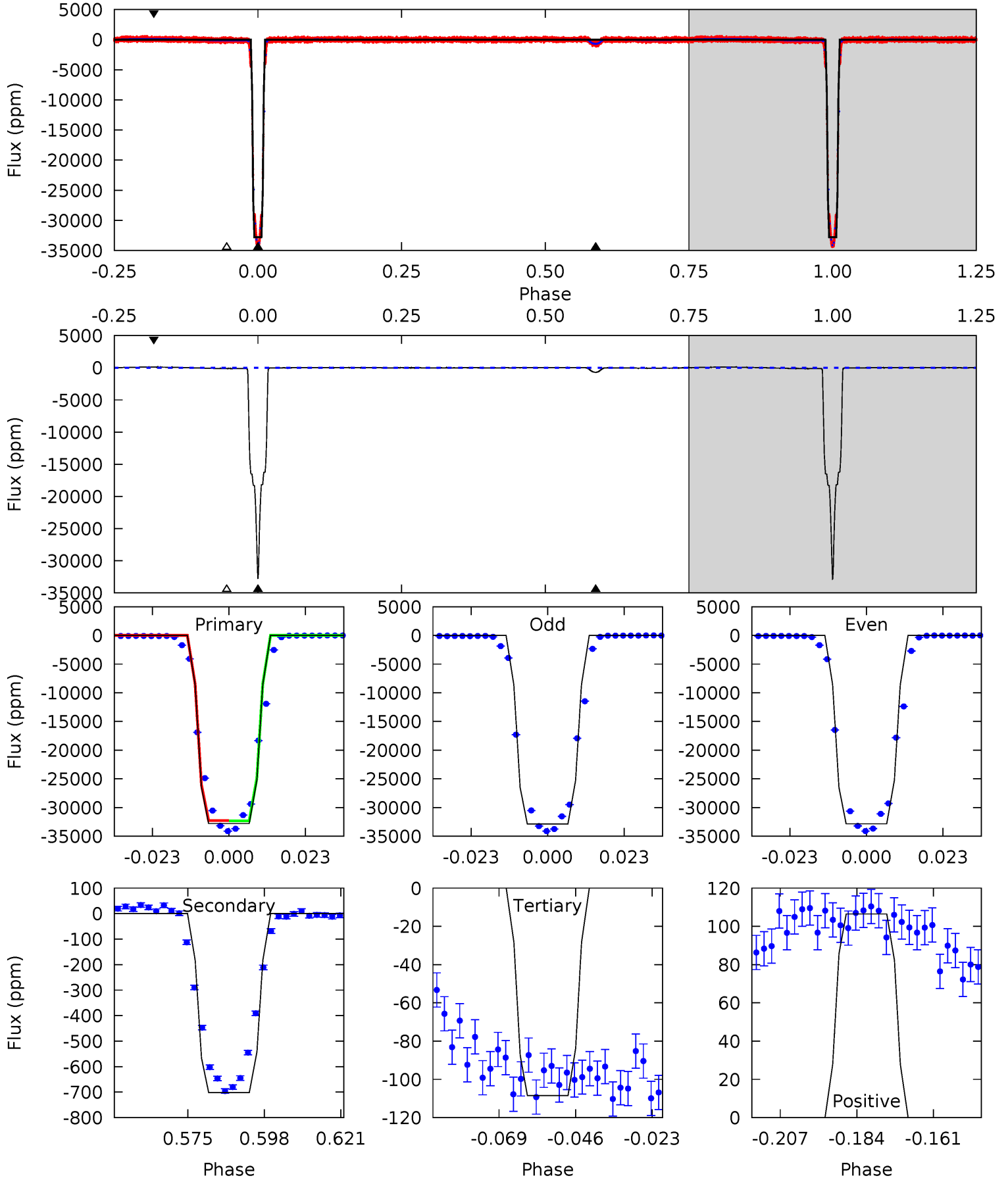
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13676	279.6	16.4	14.9	4.79	2.13	7.06	13659	13661	263.2	264.7	0.47	0.99	0.00	0.54



# Alt Model-Shift Uniqueness Test

008488876-01, P = 5.801847 Days, E = 131.184500 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
5942	127.2	19.7	19.3	4.86	2.27	8.00	5923	5923	107.5	107.9	3.94	1.00	0.00	3.39



### Stellar Parameters For KIC 008488876

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7259^{+201}_{-302}$	$3.739^{+0.392}_{-0.098}$	$0.020^{+0.200}_{-0.350}$	$3.009^{+0.442}_{-1.238}$	$1.808^{+0.196}_{-0.364}$	$0.093^{+0.312}_{-0.029}$
	+3%/-4%	+10%/-3%	+1000%/-1750%	+15%/-41%	+11%/-20%	+334%/-31%
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 008488876-01 / KOI 7047.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-702 \pm 3$	$62.00^{+6.36}_{-14.12}$	$2726^{+181}_{-301}$	$2939^{+139}_{-109}$	$0.607^{+0.374}_{-0.104}$
Alt.	$-702 \pm 6$	$59.10^{+6.23}_{-13.37}$	$2725^{+184}_{-300}$	$3017^{+118}_{-102}$	$0.668^{+0.407}_{-0.117}$

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

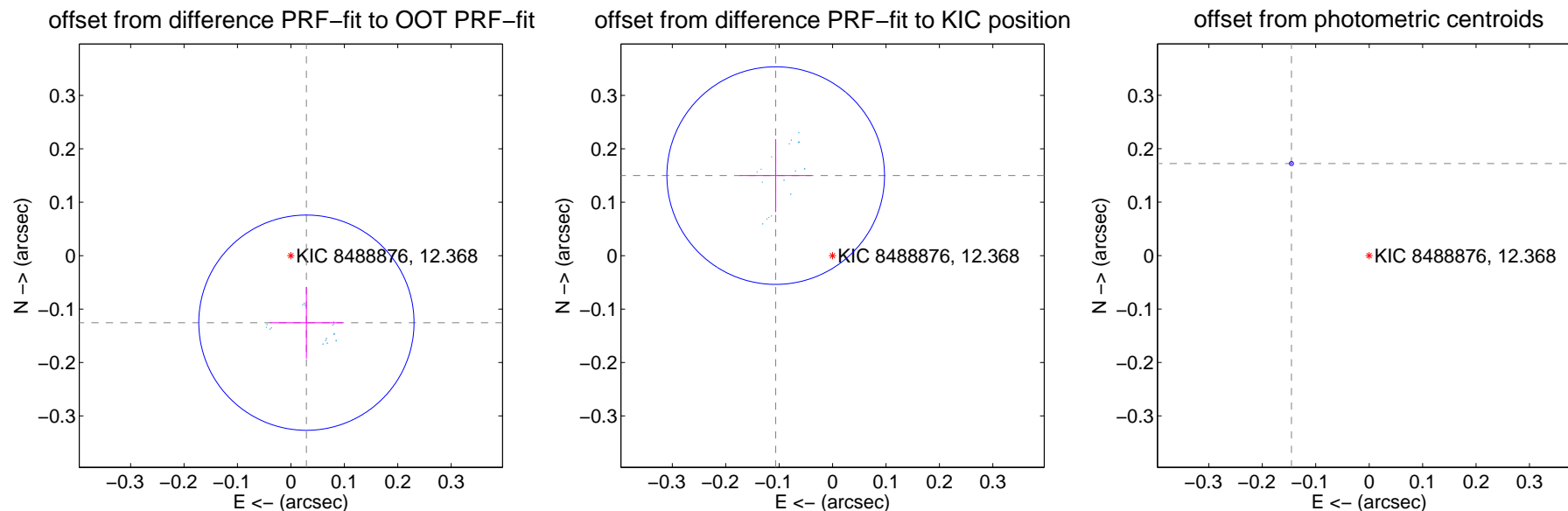
## DV Centroid Data

Supplemental centroid analysis for 008488876-01. Kepler magnitude: 12.37. Transit SNR 6328.97

There are 17 quarters with good PRF difference image offsets

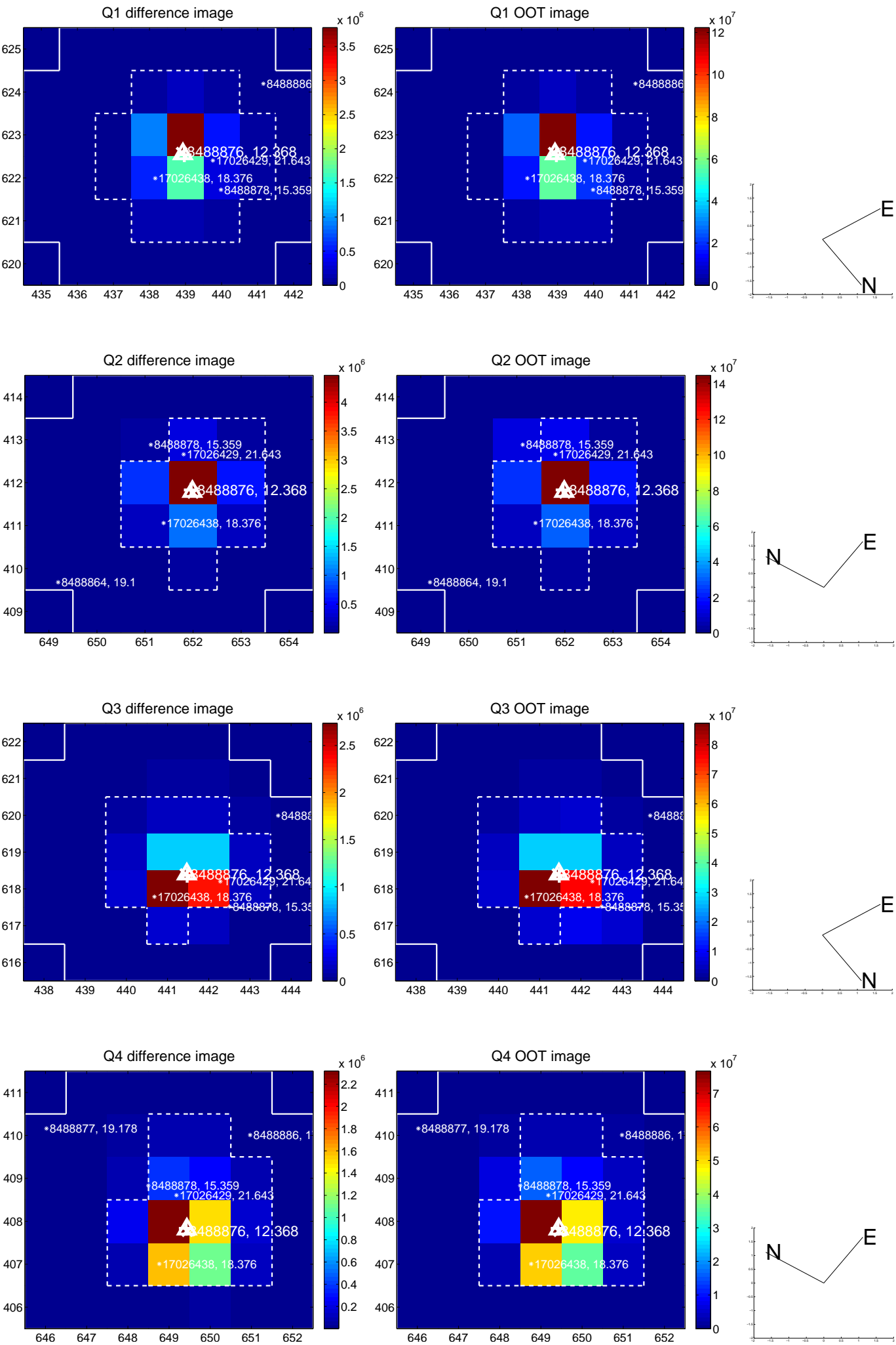
The direct PRF centroid is offset from the target star catalog position by about 0.39 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.129 \pm 0.067$	1.92	$-0.029 \pm 0.068$	$-0.125 \pm 0.067$
PRF-fit source offset from KIC position	$0.184 \pm 0.068$	2.71	$0.106 \pm 0.067$	$0.150 \pm 0.068$
photometric centroid source offset	$0.23 \pm 0.00$	178.23	$0.15 \pm 0.00$	$0.17 \pm 0.00$

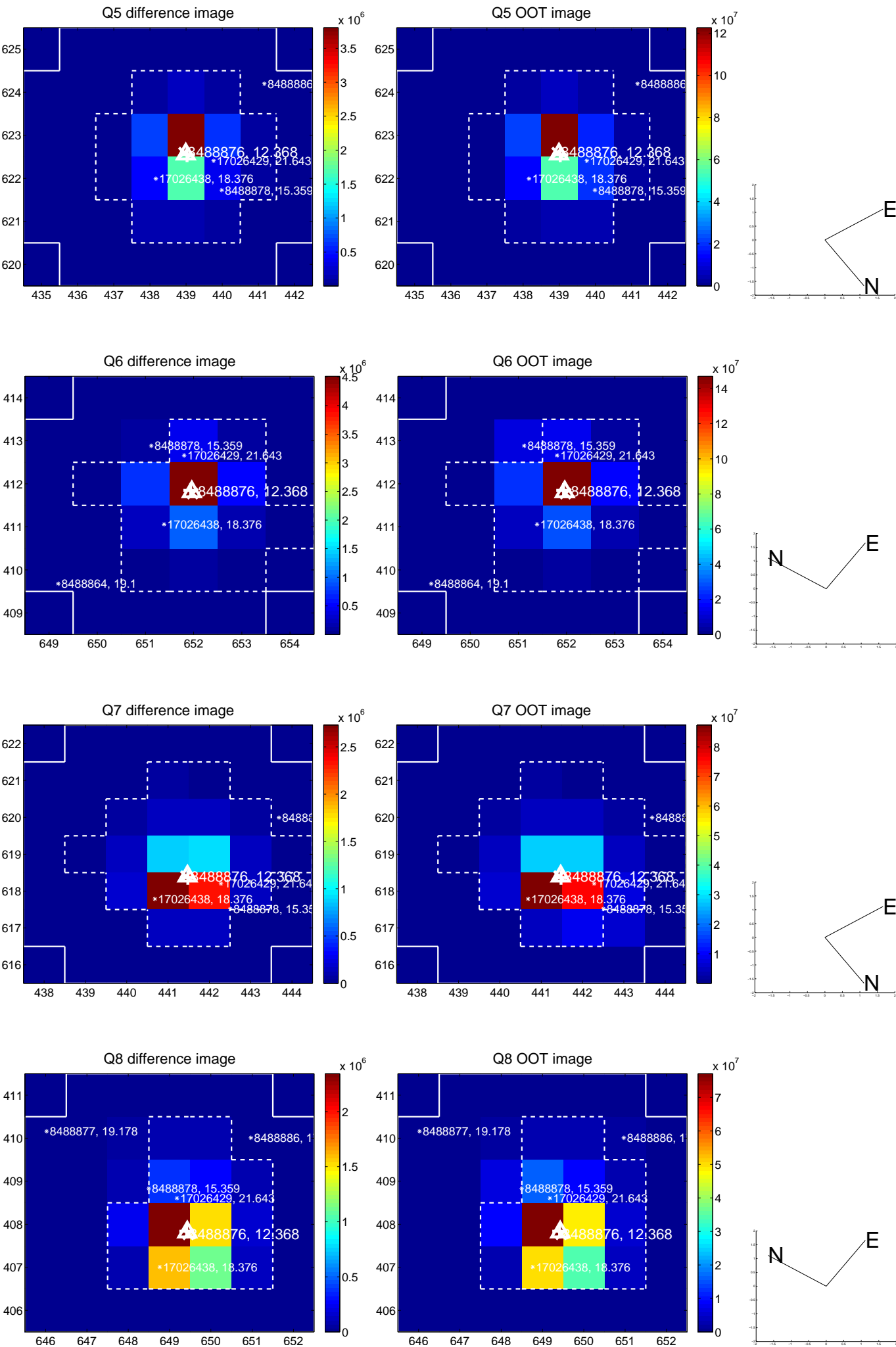


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

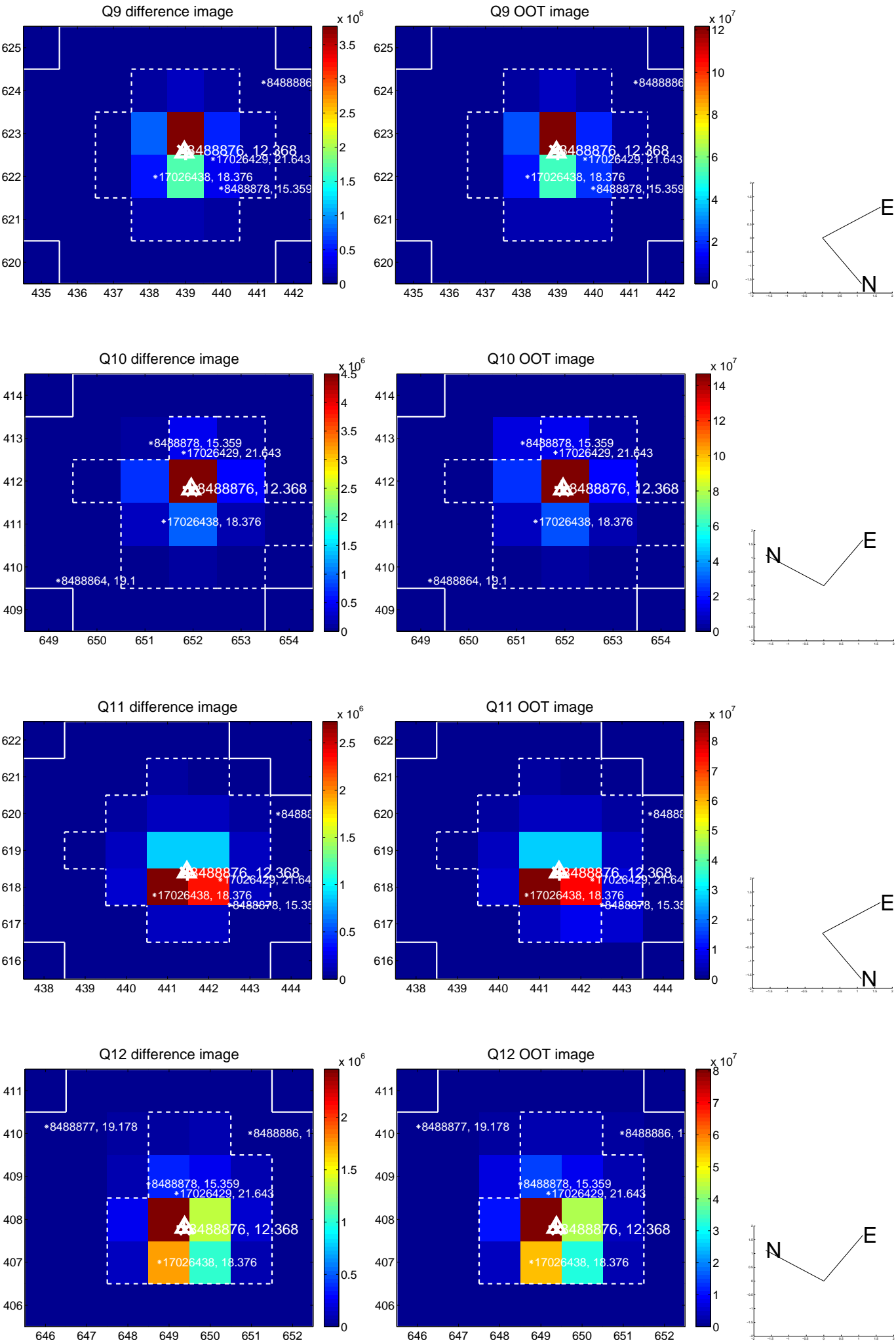


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

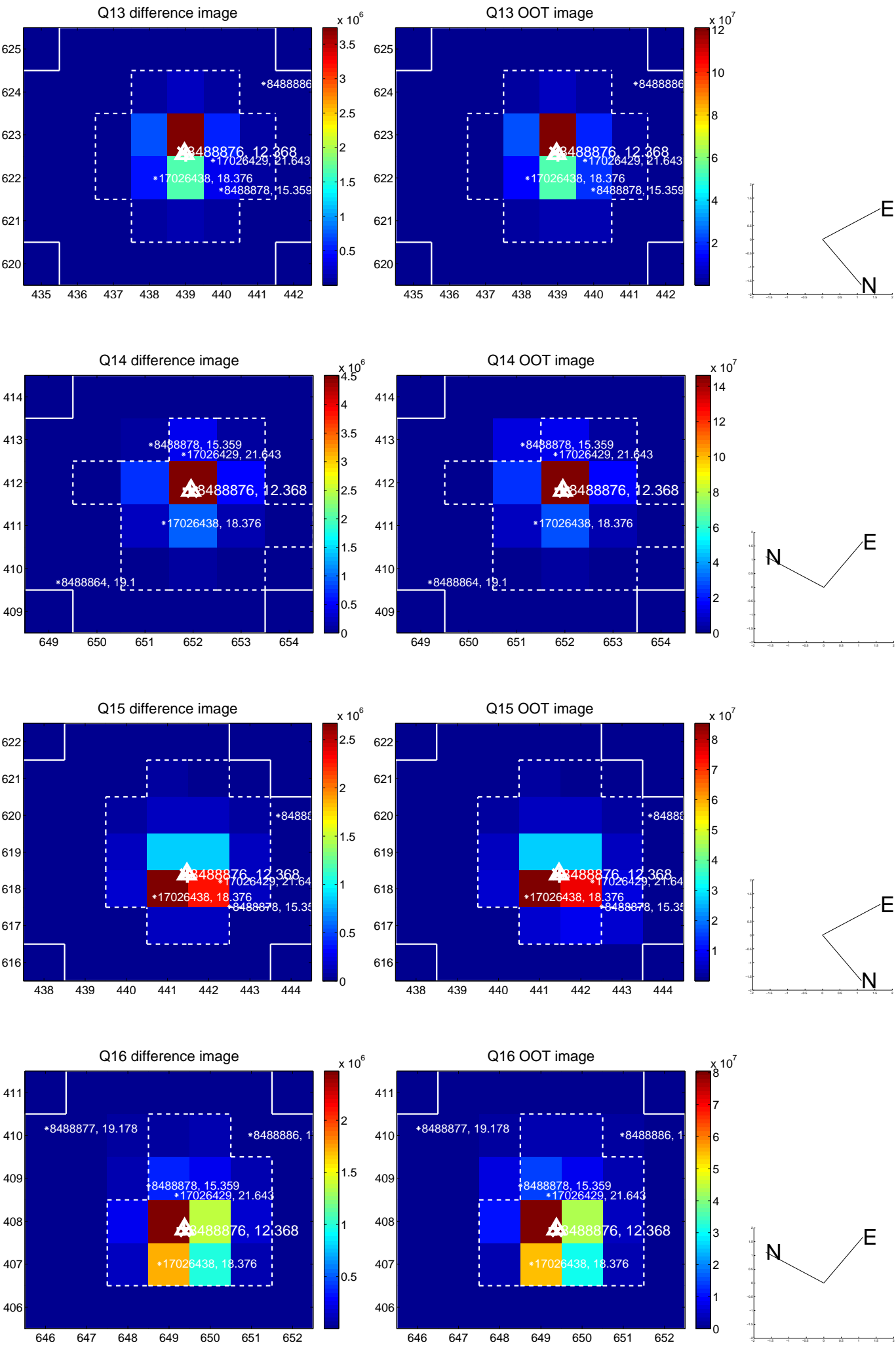




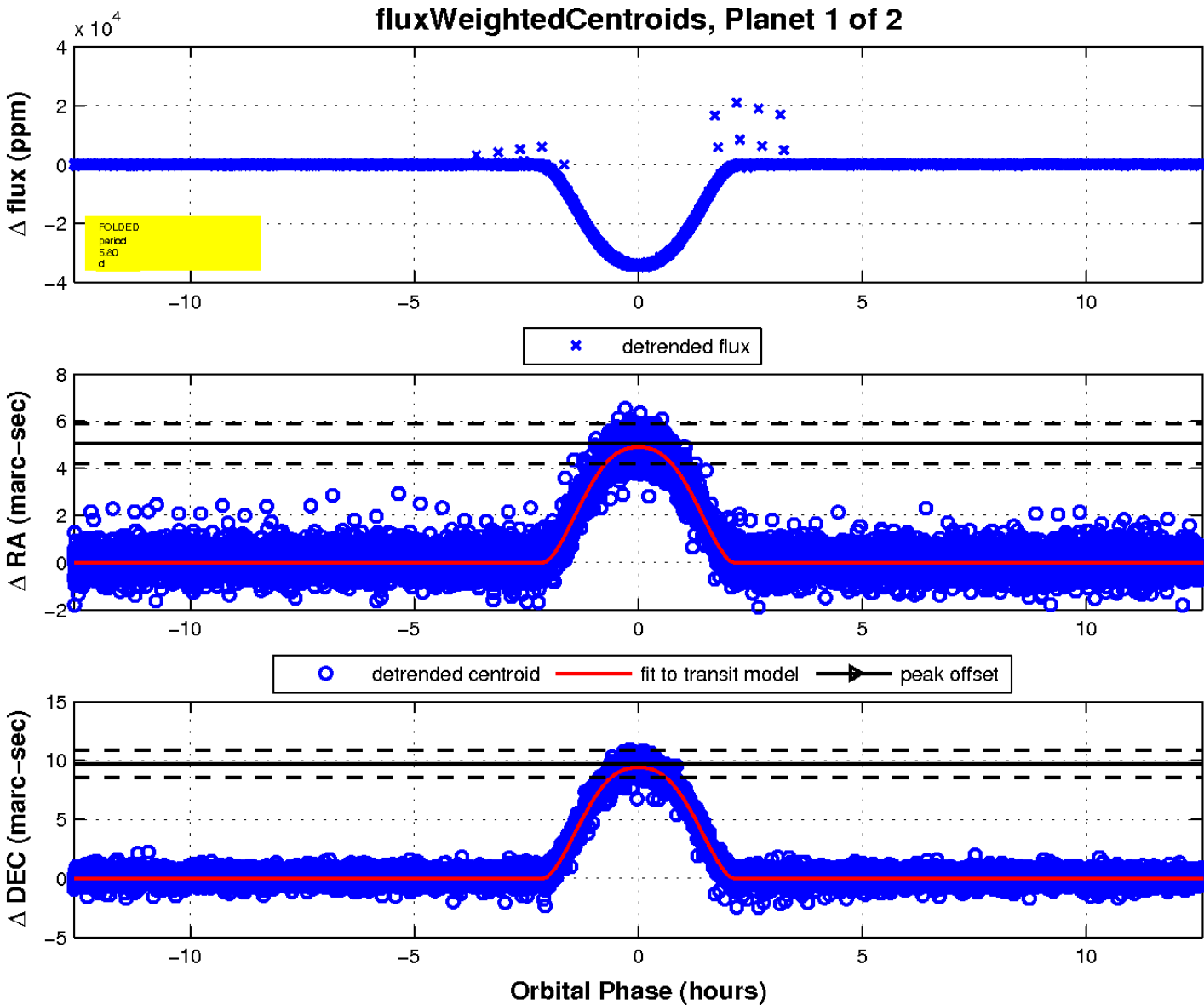
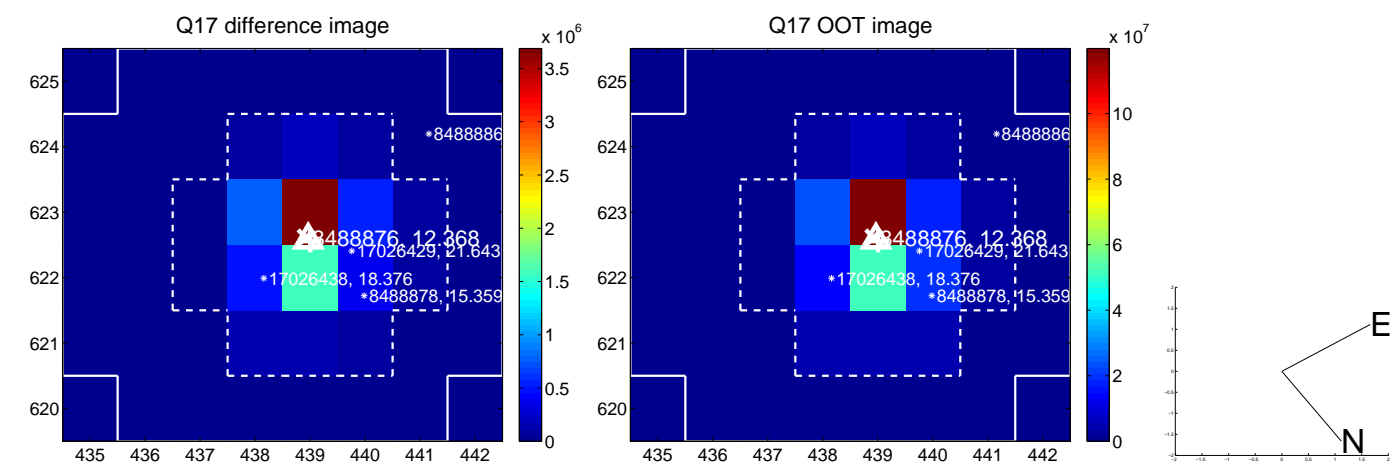
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

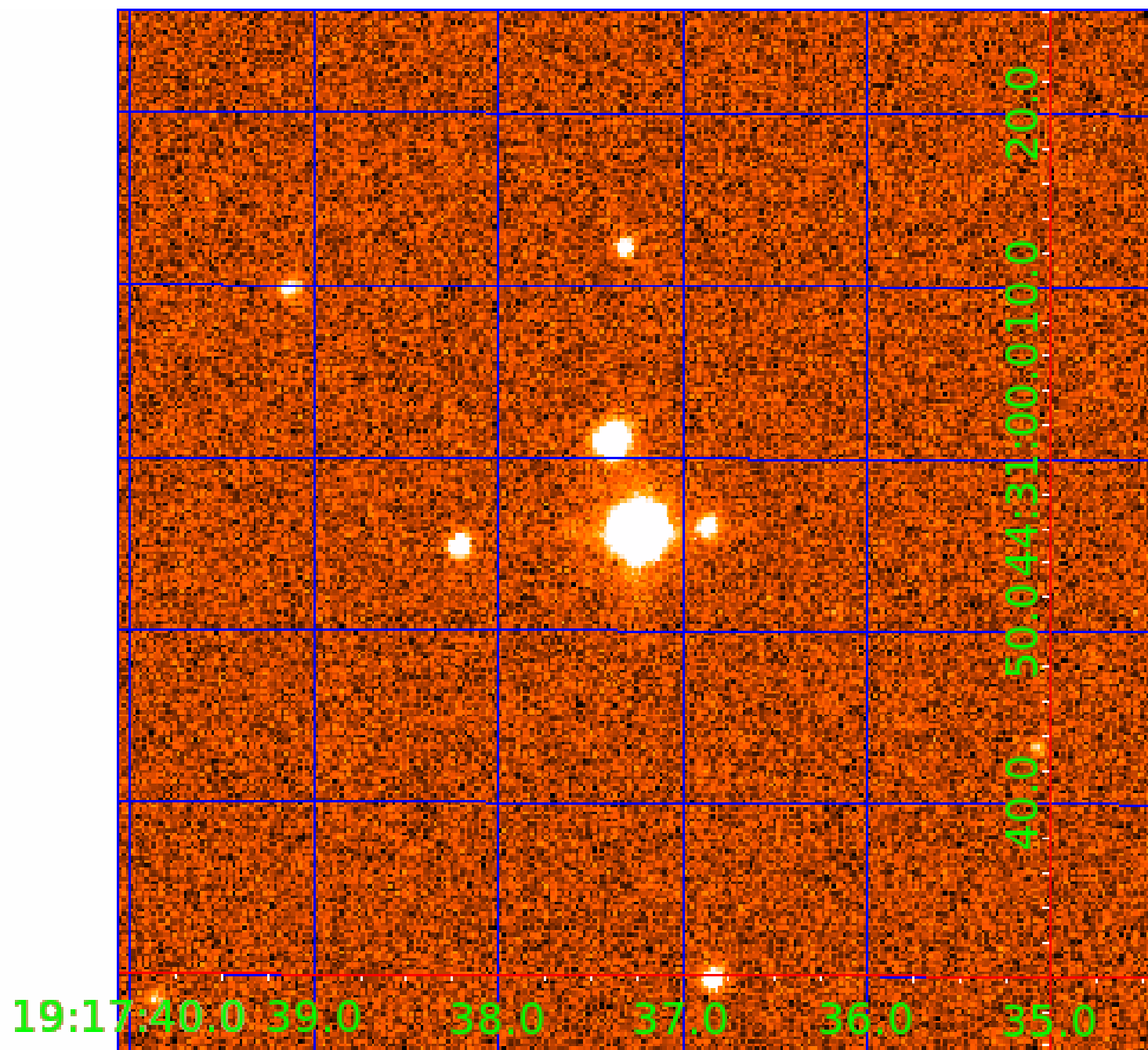


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008488876

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008488876-01	OBS	7047.01	5.801881	136.982196	34304.7	4.197	7082.3	6329.0	3.01	7259	62.88	3795.40
008488876-02	OBS	No	5.801890	134.585217	713.4	4.022	148.5	150.0	3.01	7259	10.92	3795.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008488876-01	OBS	FP	0.00	0	1	0	1	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—EPHEM_MATCH
008488876-02	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.

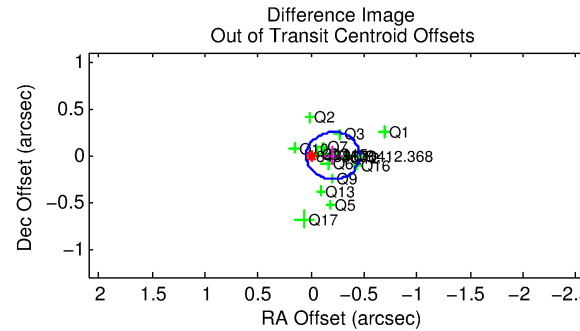
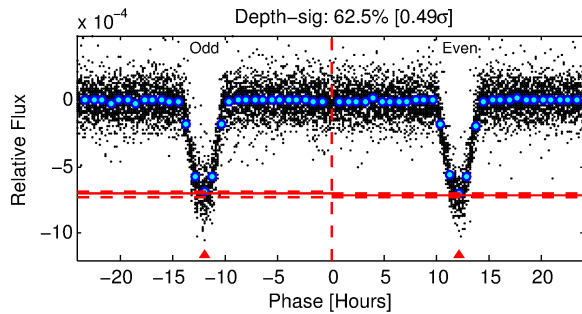
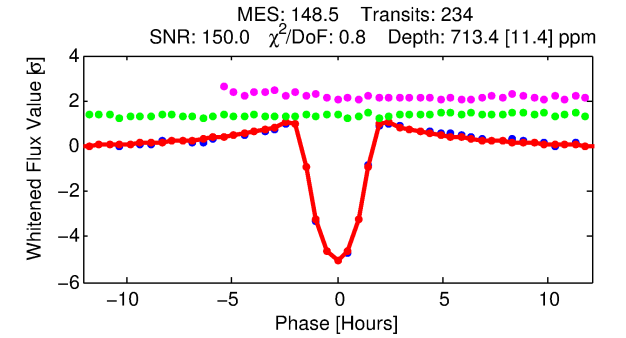
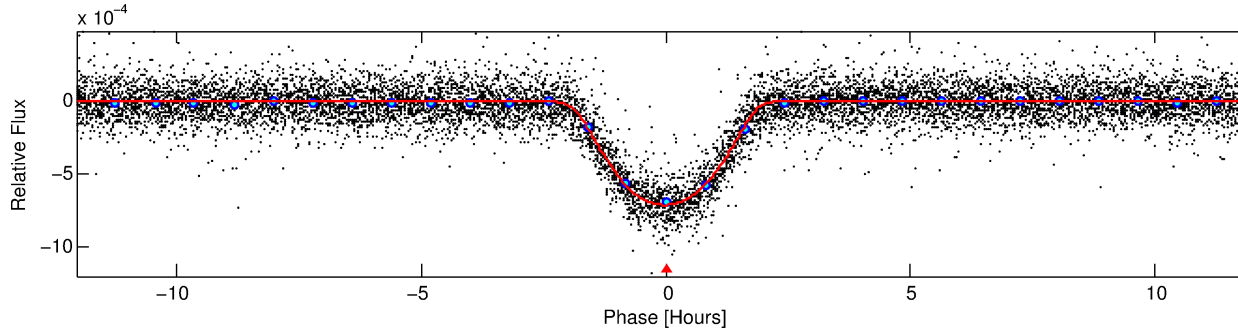
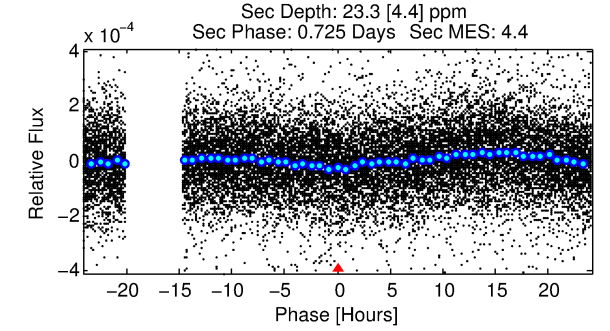
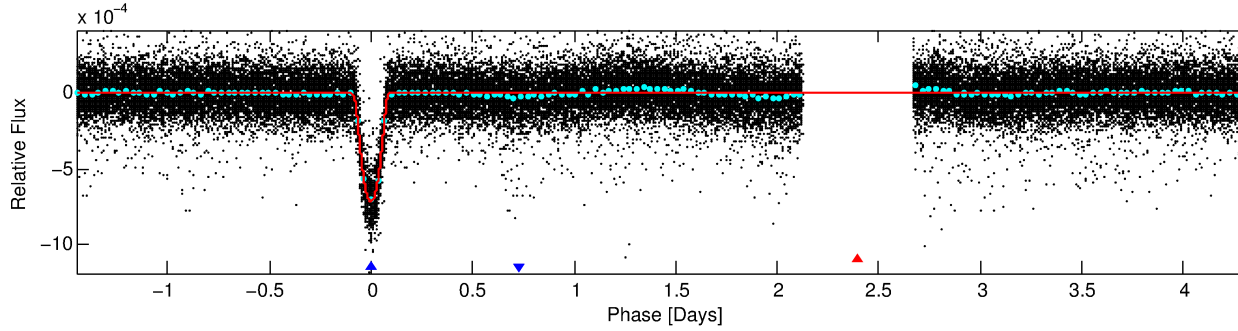
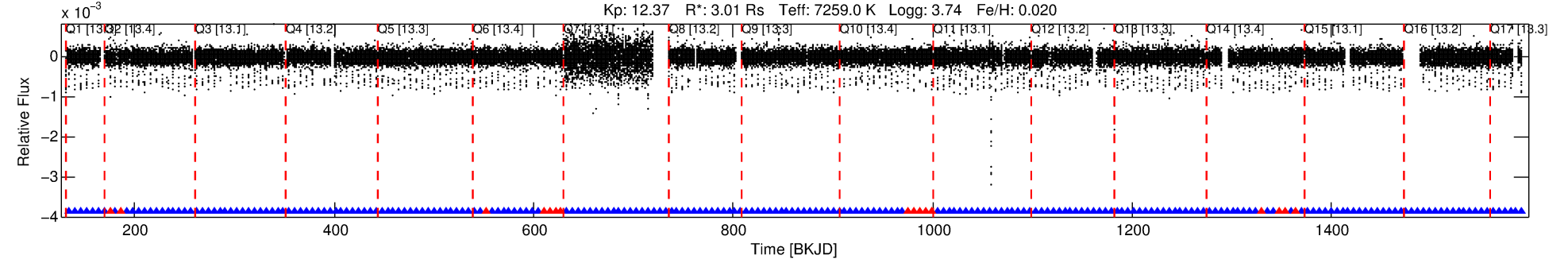
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008488876-02

No Significant Match Found

# DV One-Page Summary

KIC: 8488876 Candidate: 2 of 2 Period: 5.802 d  
KOI: K07047 Corr: No Ephemeris Match



## DV Fit Results:

Period = 5.80189 [0.00000] d  
Epoch = 134.5852 [0.0005] BKJD  
Rp/R\* = 0.0333 [0.0012]  
a/R\* = 3.85 [0.08]  
b = 0.98 [0.00]  
Seff = 3795.40 [2588.17]  
Teff = 2001 [341] K  
Rp = 10.92 [4.51] Re  
a = 0.0770 [0.0314] AU  
Ag = 0.64 [0.44] [-0.82σ]  
Teffp = 2766 [181] K [1.98σ]

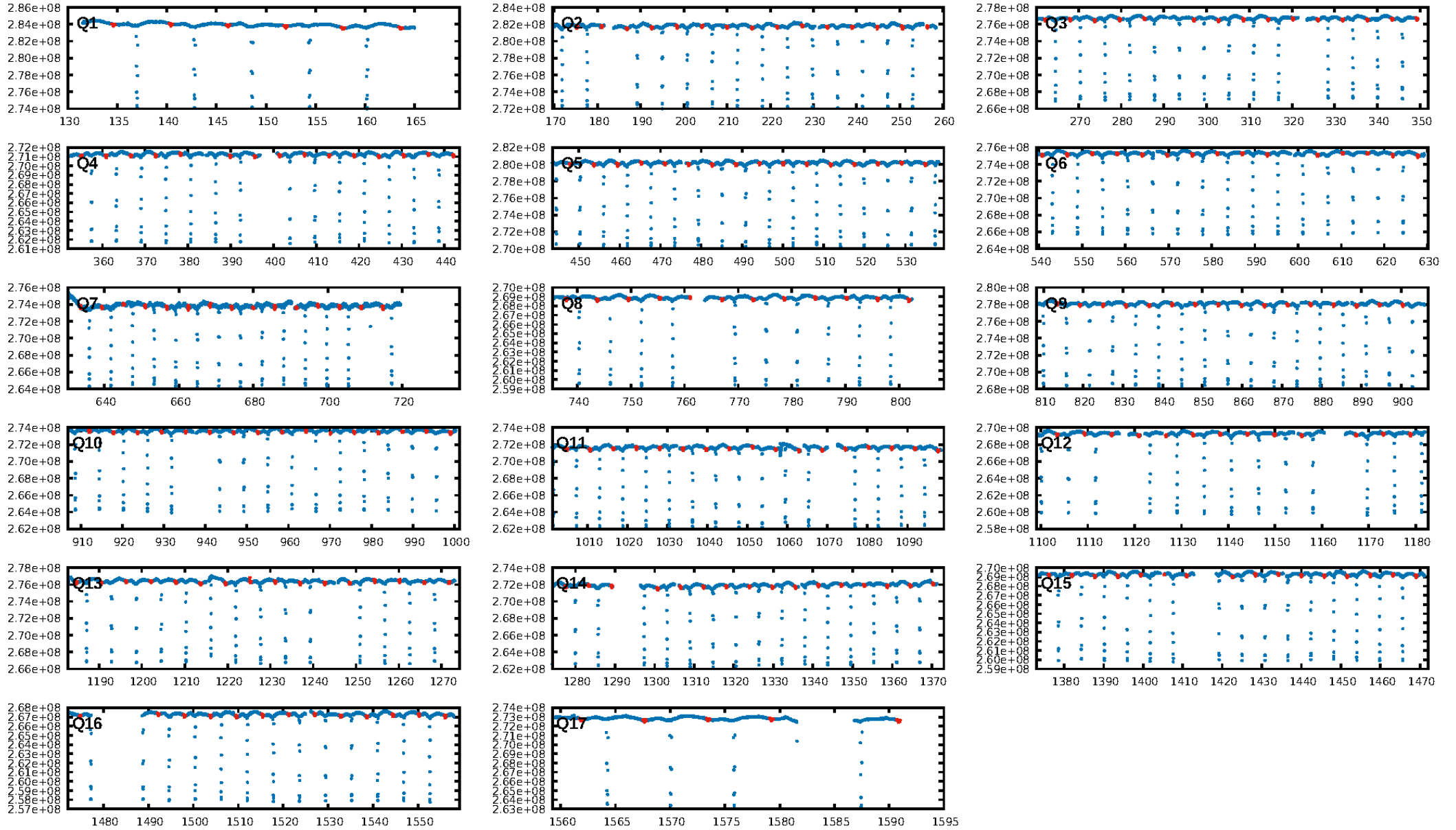
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.93 [207/223]  
GhostDiagnostic-chr: 3.38  
Centroid-sig: 0.0%  
Centroid-so: 0.176 arcsec [2.98σ]  
OotOffset-rm: 0.208 arcsec [2.47σ]  
KicOffset-rm: 0.244 arcsec [2.76σ]  
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: 31-Jan-2016 22:48:10 Z

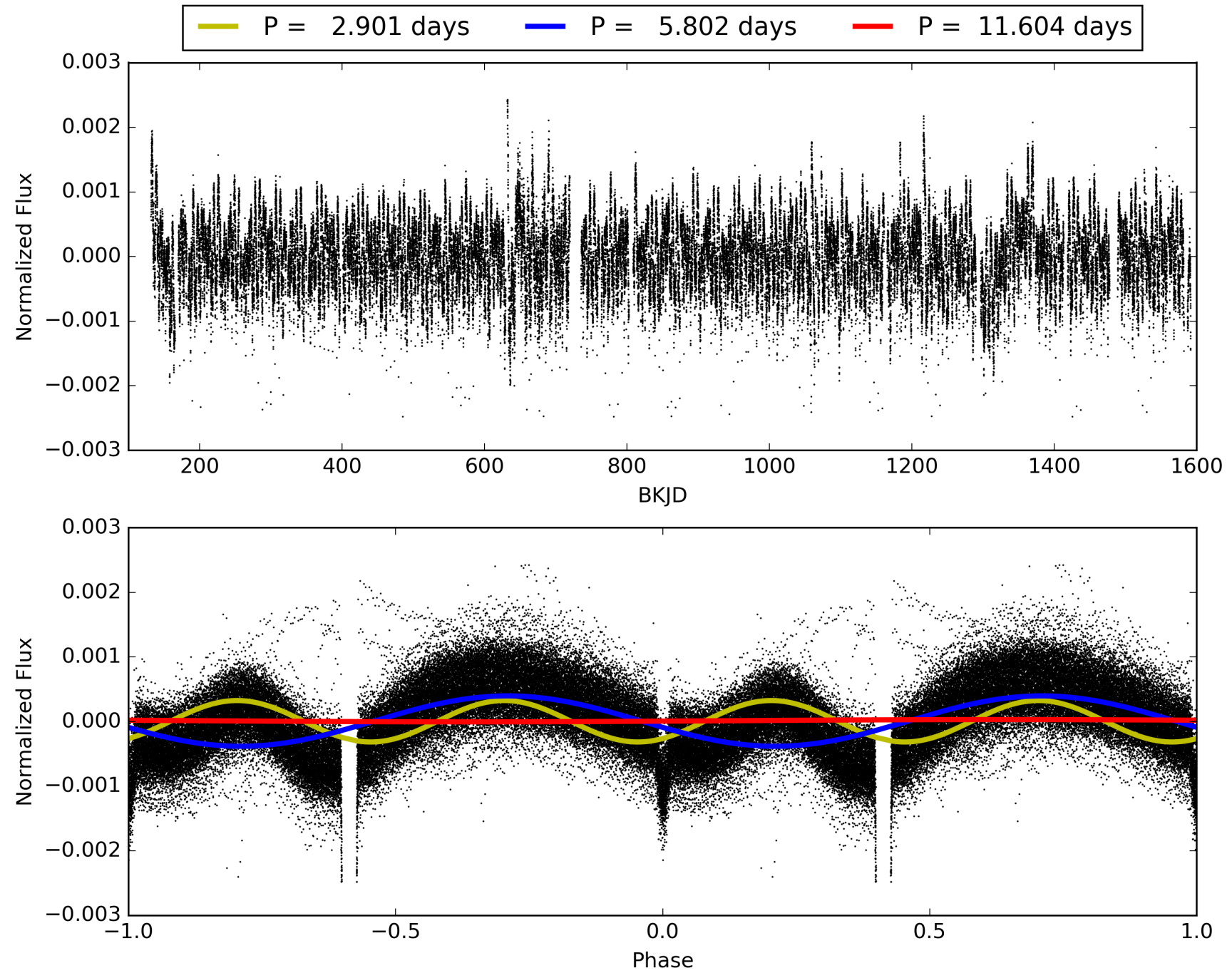
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 00848876-02, PDC Light Curves





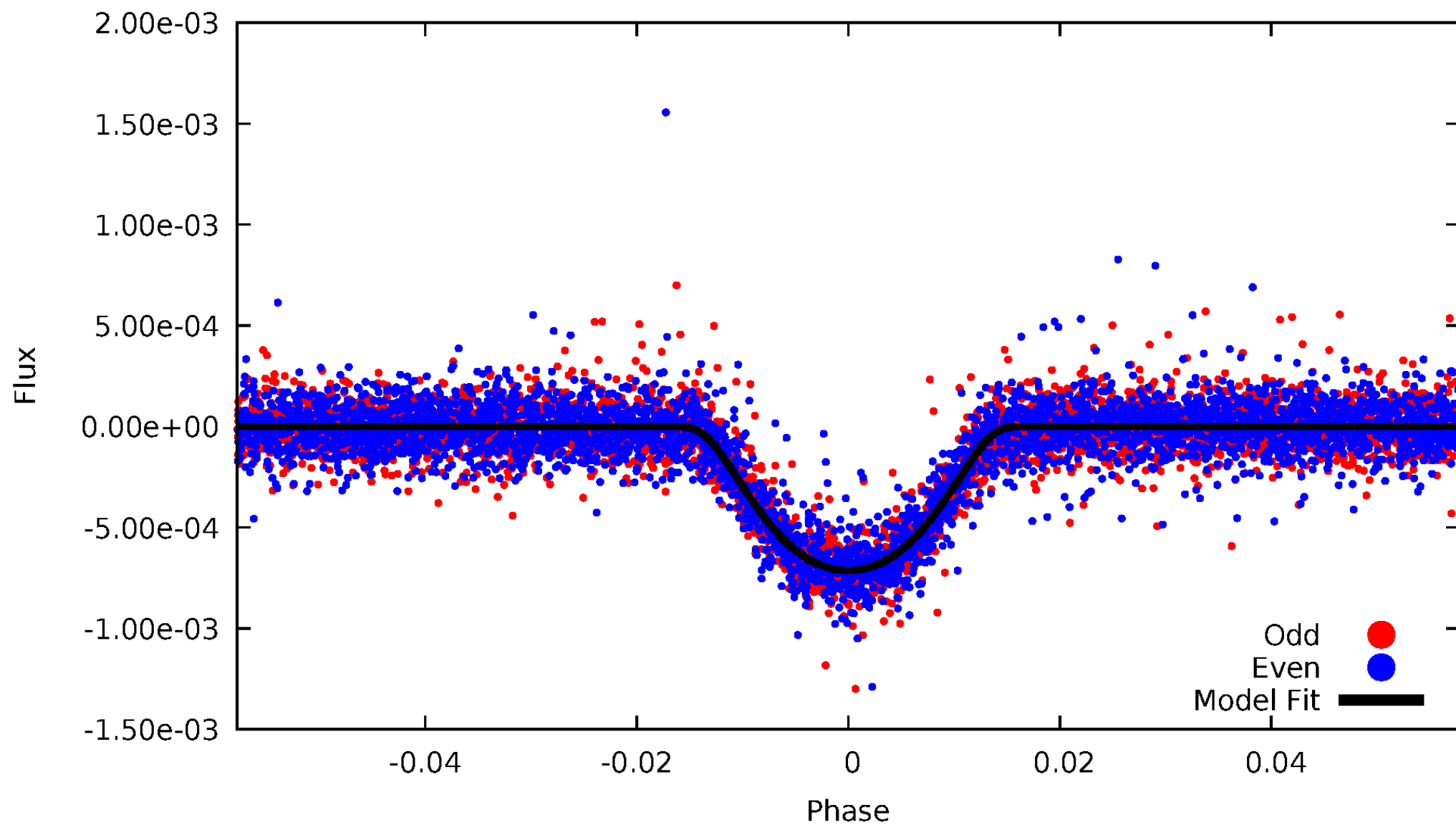
TCE 008488876-02





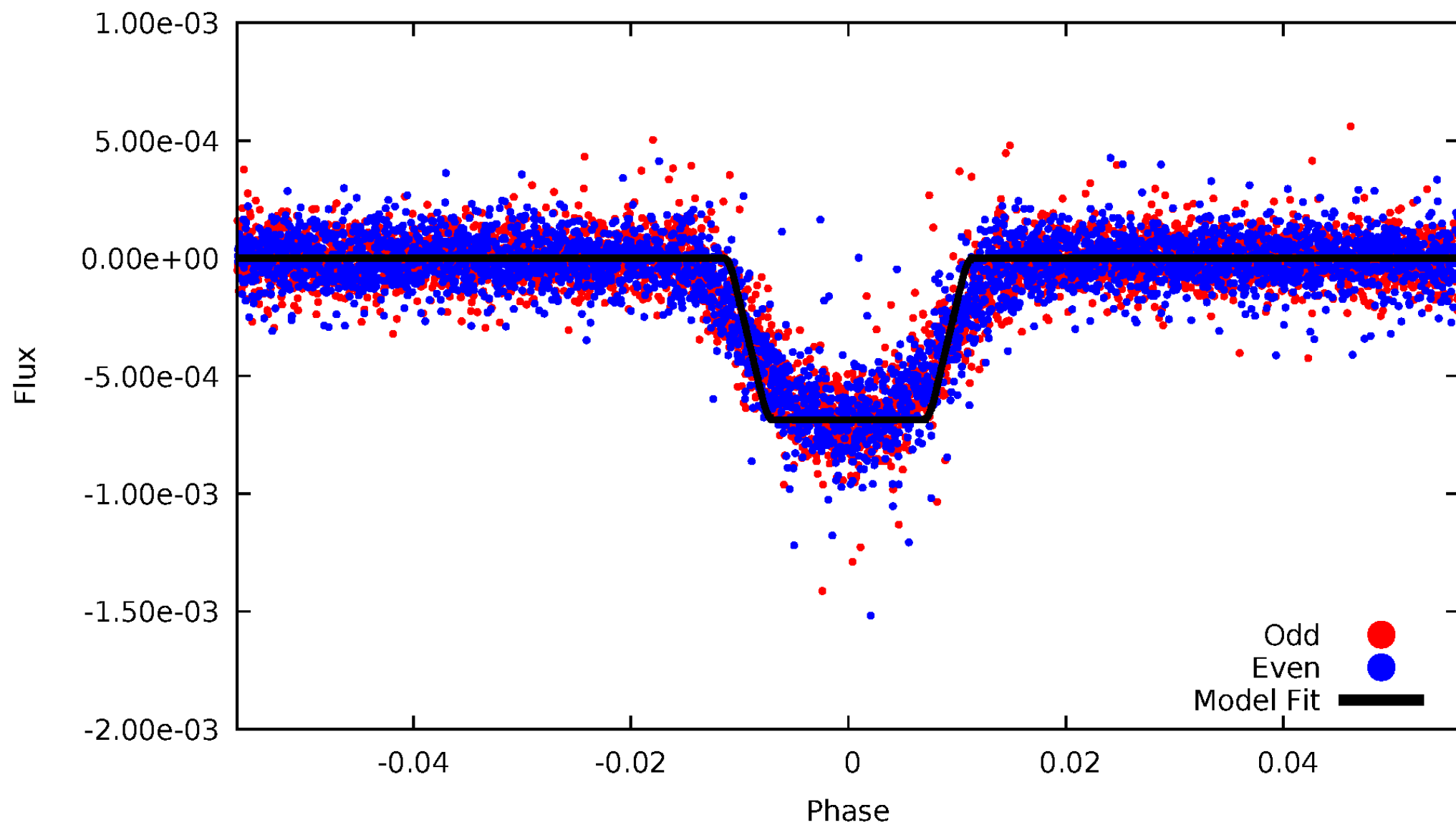
# DV Odd/Even

TCE 008488876-02



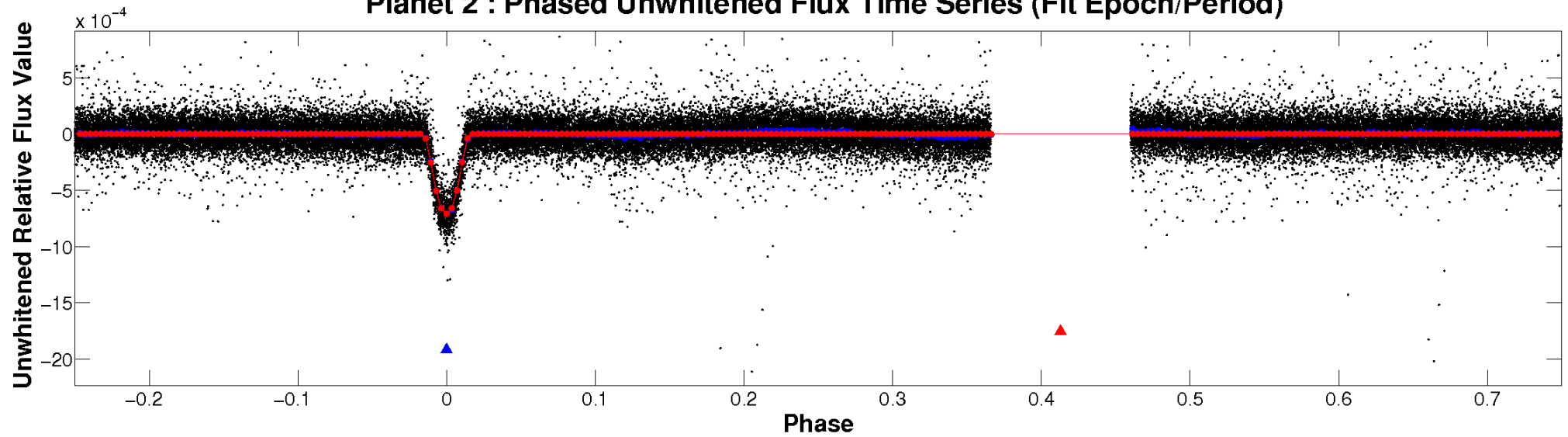
# ALT Odd/Even

TCE 008488876-02

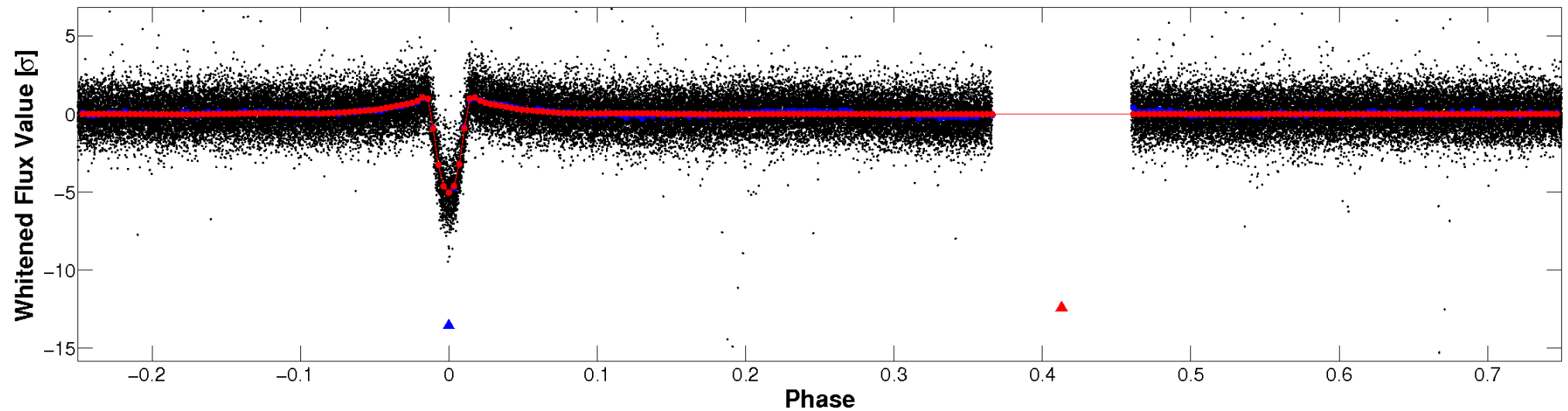


# Non-Whitened Vs. Whitened Light Curve

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

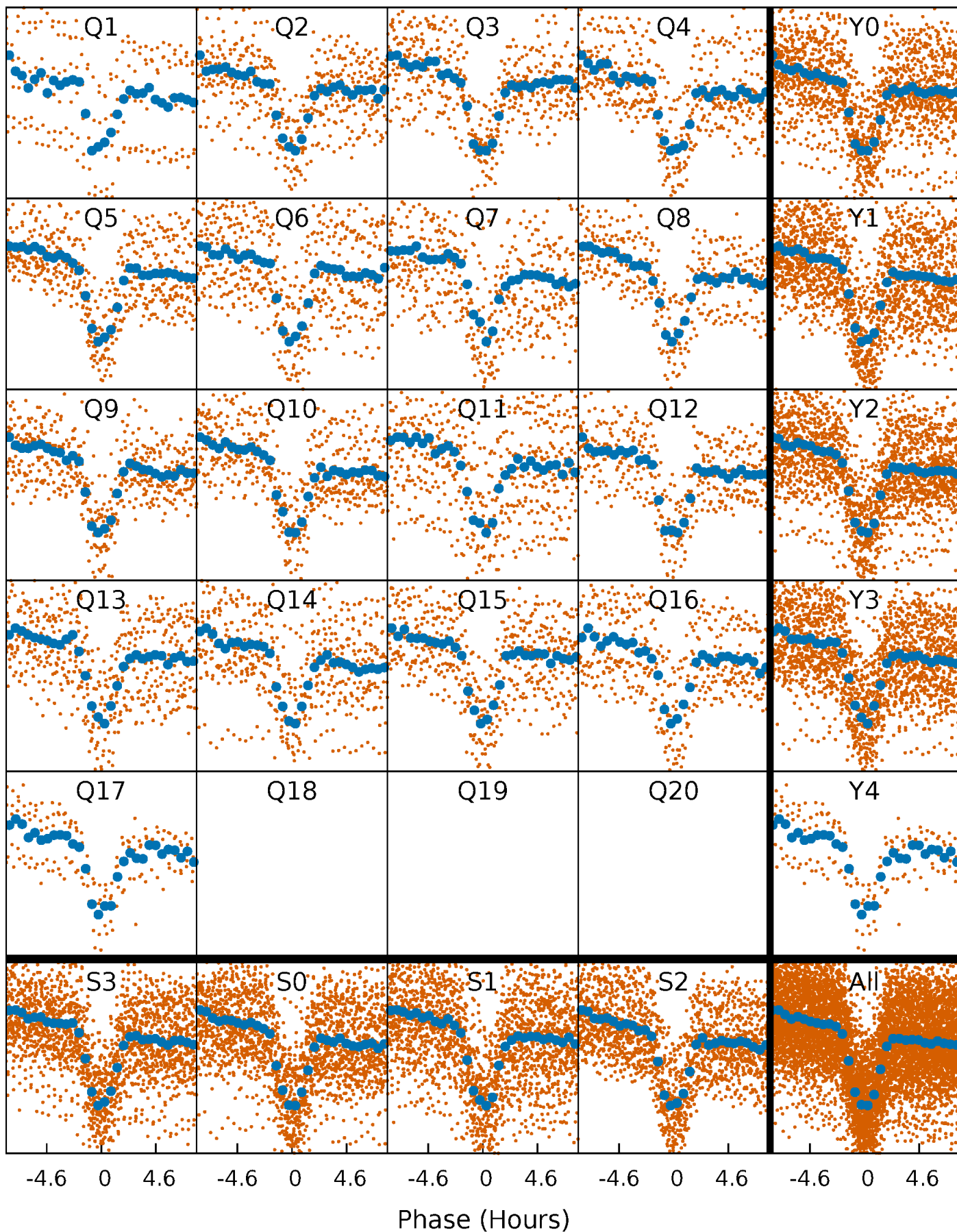


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



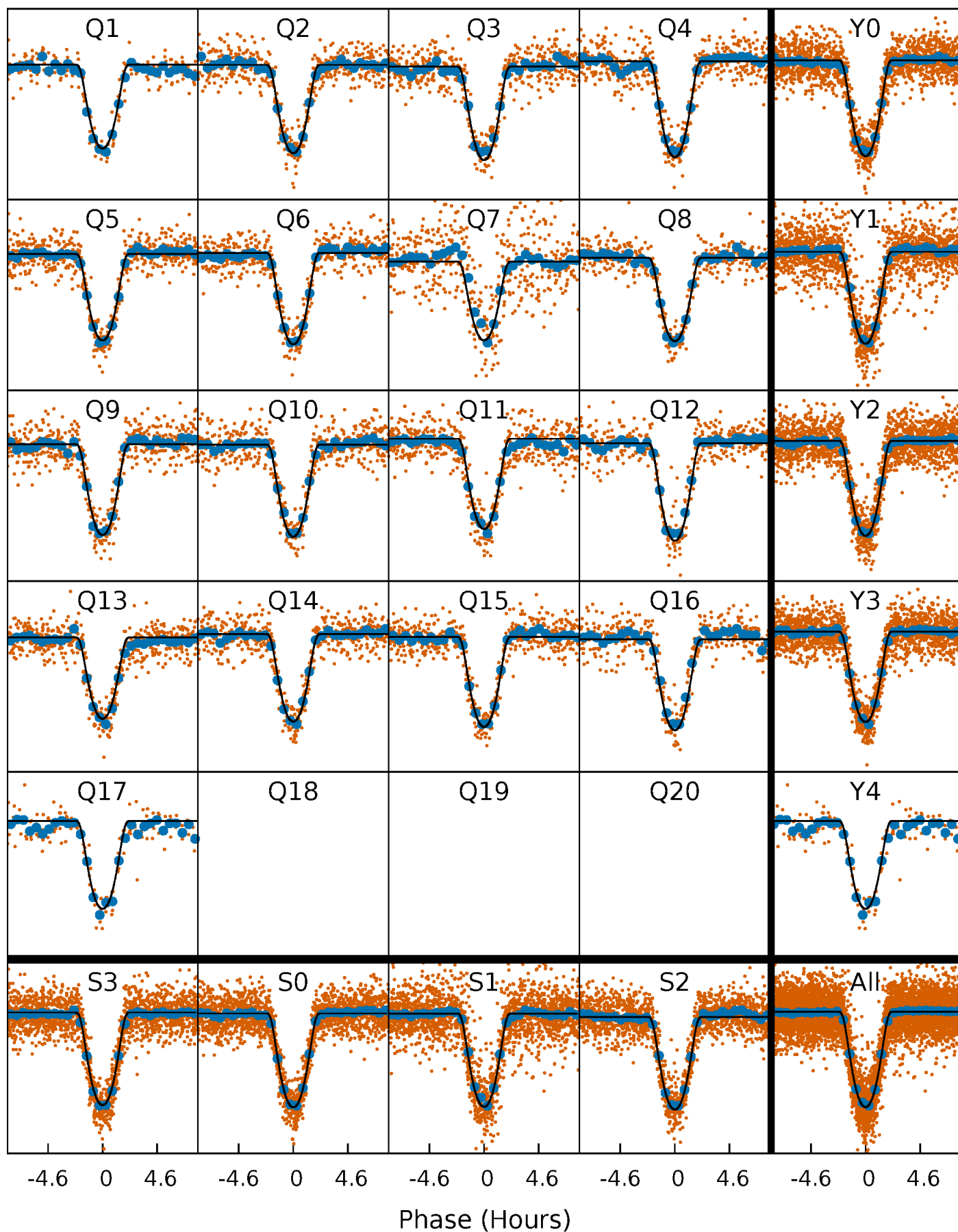
# PDC Quarter-Phased Transit Curves

TCE 008488876-02   P= 5.801890 Days    $T_0=134.585217$  (BKJD)



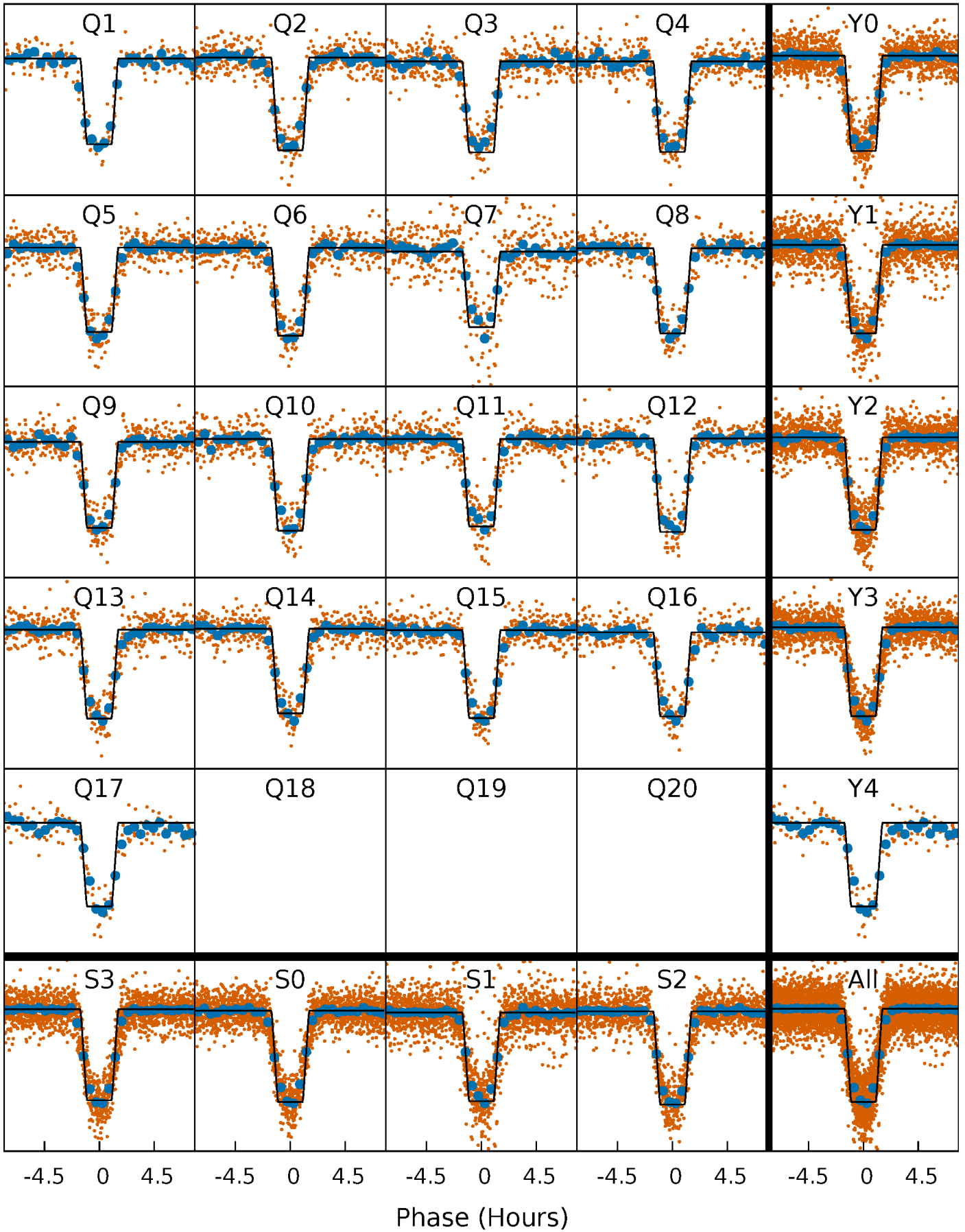
# DV Quarter-Phased Transit Curves

TCE 008488876-02   P= 5.801890 Days    $T_0=134.585217$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008488876-02   P= 5.801847 Days    $T_0=134.590699$  (BKJD)

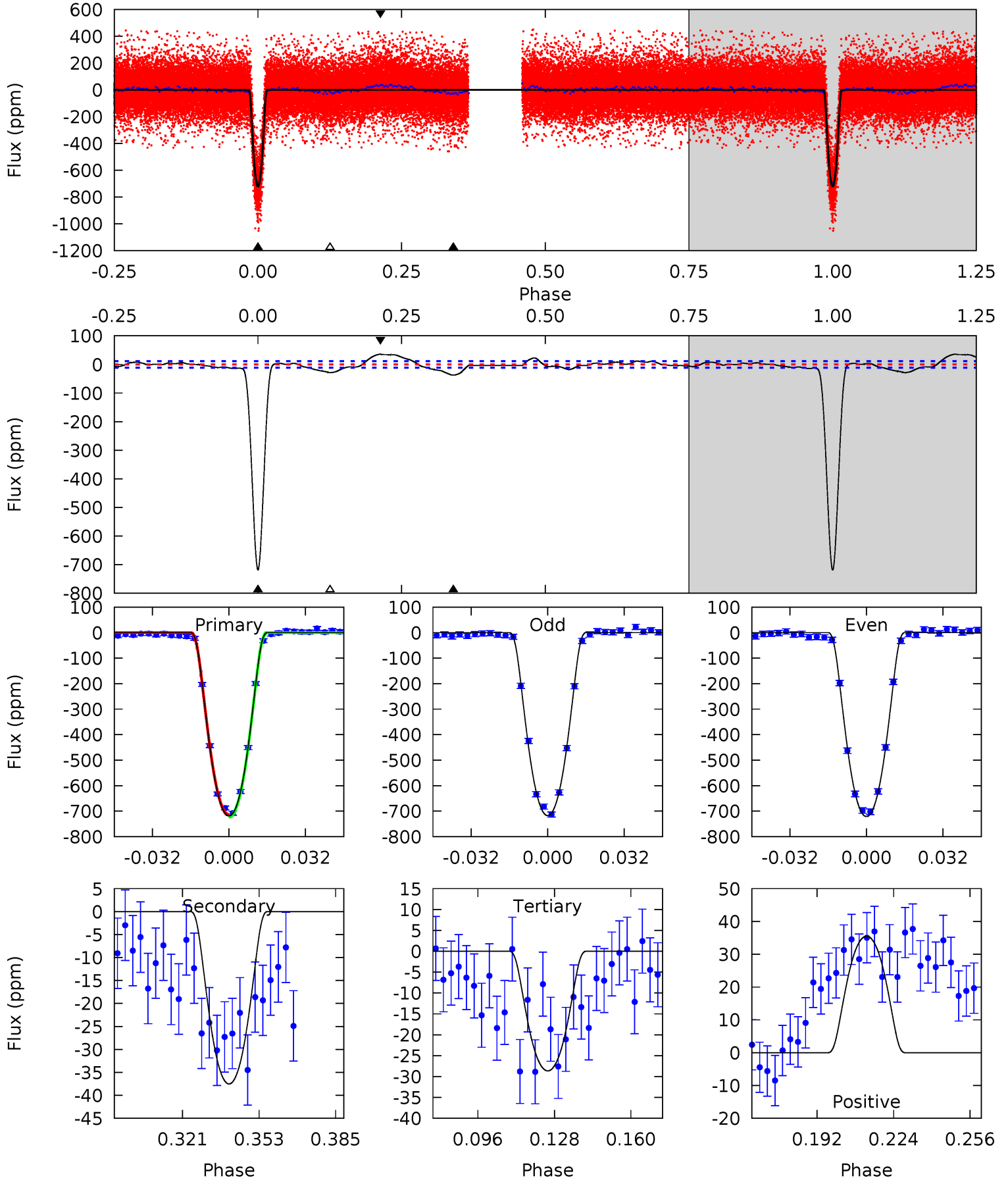




# DV Model-Shift Uniqueness Test

008488876-02, P = 5.801890 Days, E = 128.783327 Days

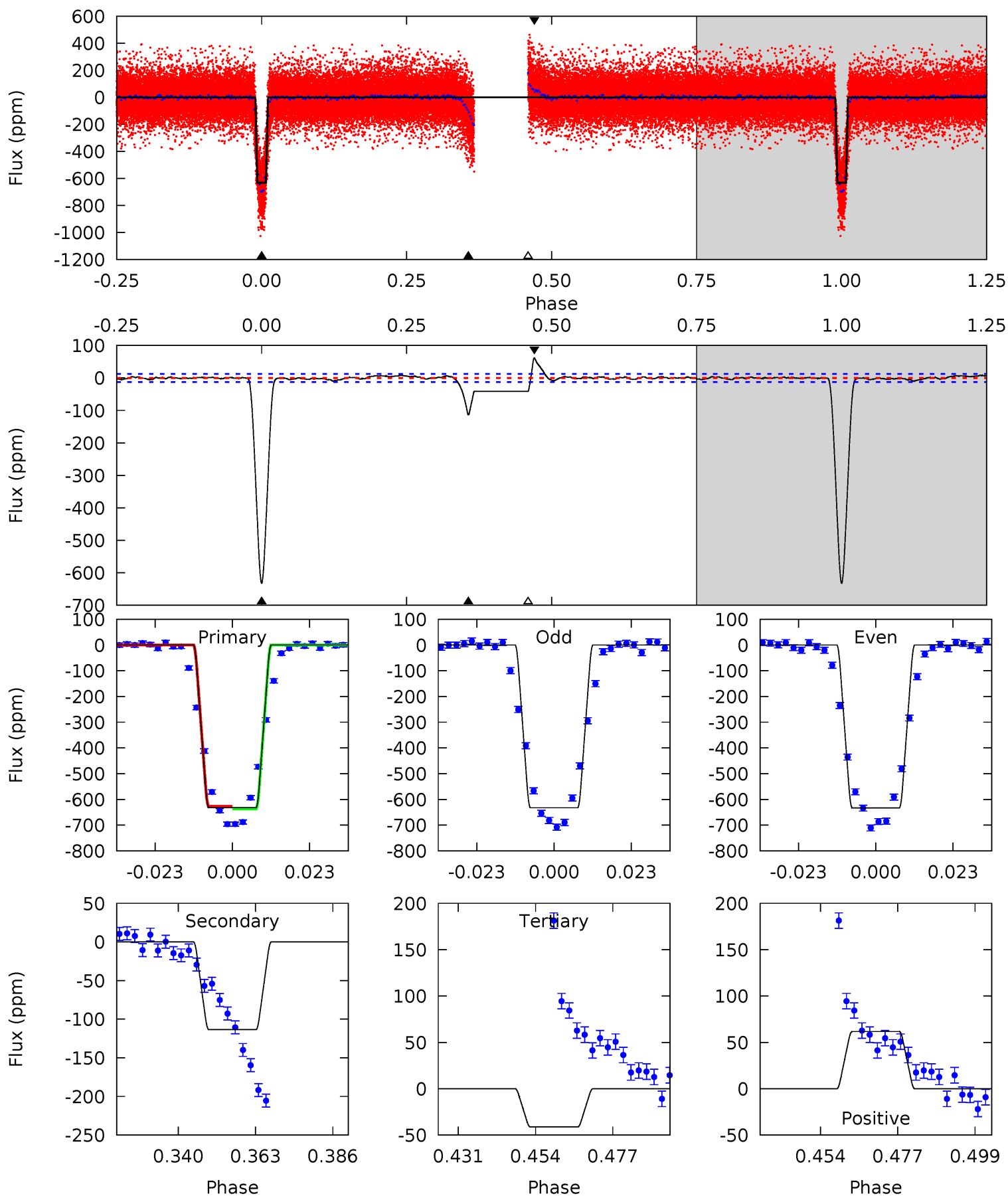
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
296.2	15.5	11.8	14.6	4.80	2.14	5.38	284.4	281.6	3.66	0.83	0.82	0.99	0.05	1.77



# Alt Model-Shift Uniqueness Test

008488876-02, P = 5.801847 Days, E = 128.788852 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
246.9	44.3	16.1	24.1	4.87	2.28	2.93	230.8	222.8	28.2	20.2	0.07	1.00	0.09	1.77





### Stellar Parameters For KIC 008488876

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7259^{+201}_{-302}$	$3.739^{+0.392}_{-0.098}$	$0.020^{+0.200}_{-0.350}$	$3.009^{+0.442}_{-1.238}$	$1.808^{+0.196}_{-0.364}$	$0.093^{+0.312}_{-0.029}$
	+3%/-4%	+10%/-3%	+1000%/-1750%	+15%/-41%	+11%/-20%	+334%/-31%
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 008488876-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-38 \pm 2$	$10.61^{+1.16}_{-2.25}$	$2718^{+185}_{-284}$	$3373^{+108}_{-115}$	$1.102^{+0.645}_{-0.219}$
Alt.	$-114 \pm 3$	$8.33^{+1.07}_{-1.78}$	$2728^{+184}_{-302}$	$4659^{+146}_{-150}$	$5.392^{+2.983}_{-1.077}$

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

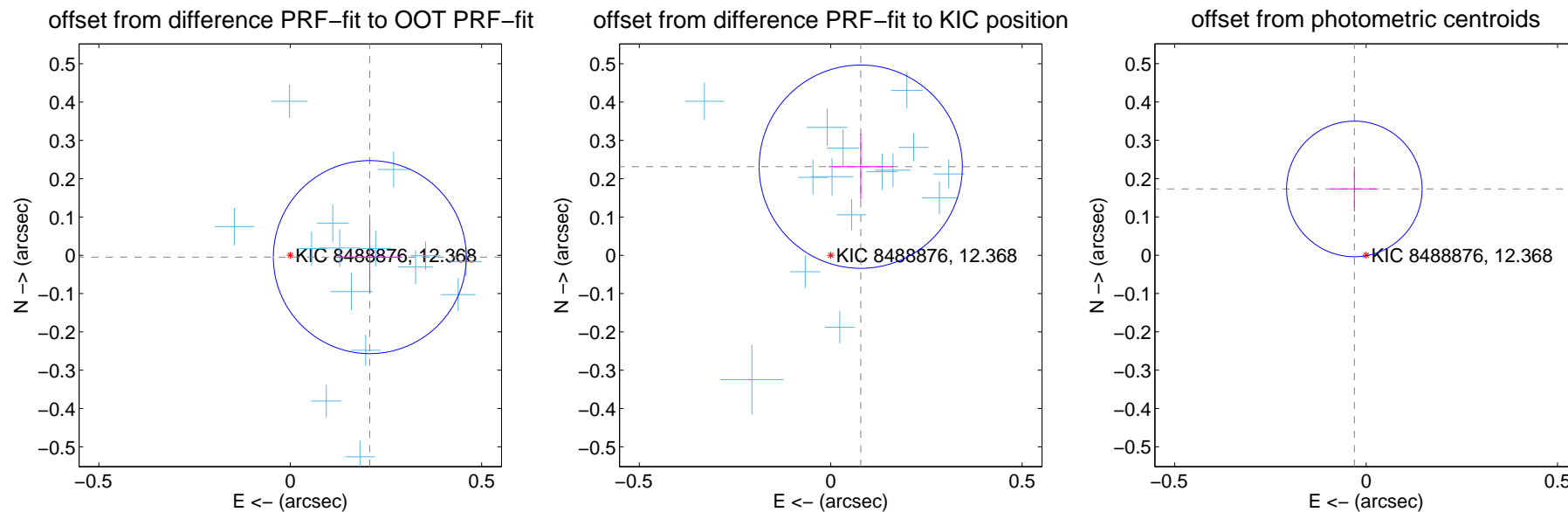
## DV Centroid Data

Supplemental centroid analysis for 008488876-02. Kepler magnitude: 12.37. Transit SNR 150.00

There are 17 quarters with good PRF difference image offsets

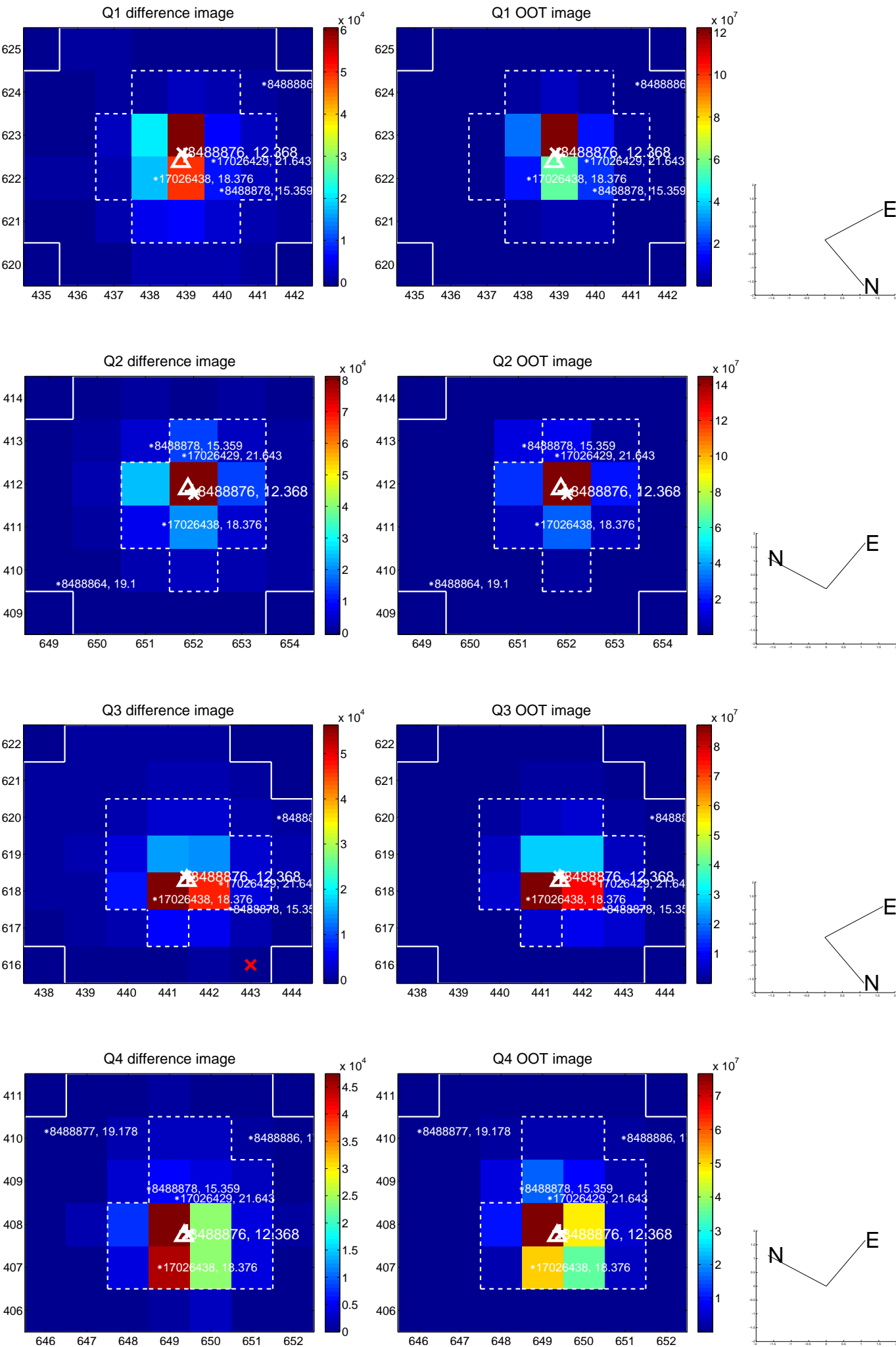
The direct PRF centroid is offset from the target star catalog position by about 0.39 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.208 \pm 0.084$	2.47	$-0.208 \pm 0.084$	$-0.005 \pm 0.094$
PRF-fit source offset from KIC position	$0.244 \pm 0.088$	2.76	$-0.078 \pm 0.084$	$0.231 \pm 0.086$
photometric centroid source offset	$0.18 \pm 0.06$	2.98	$0.03 \pm 0.06$	$0.17 \pm 0.06$

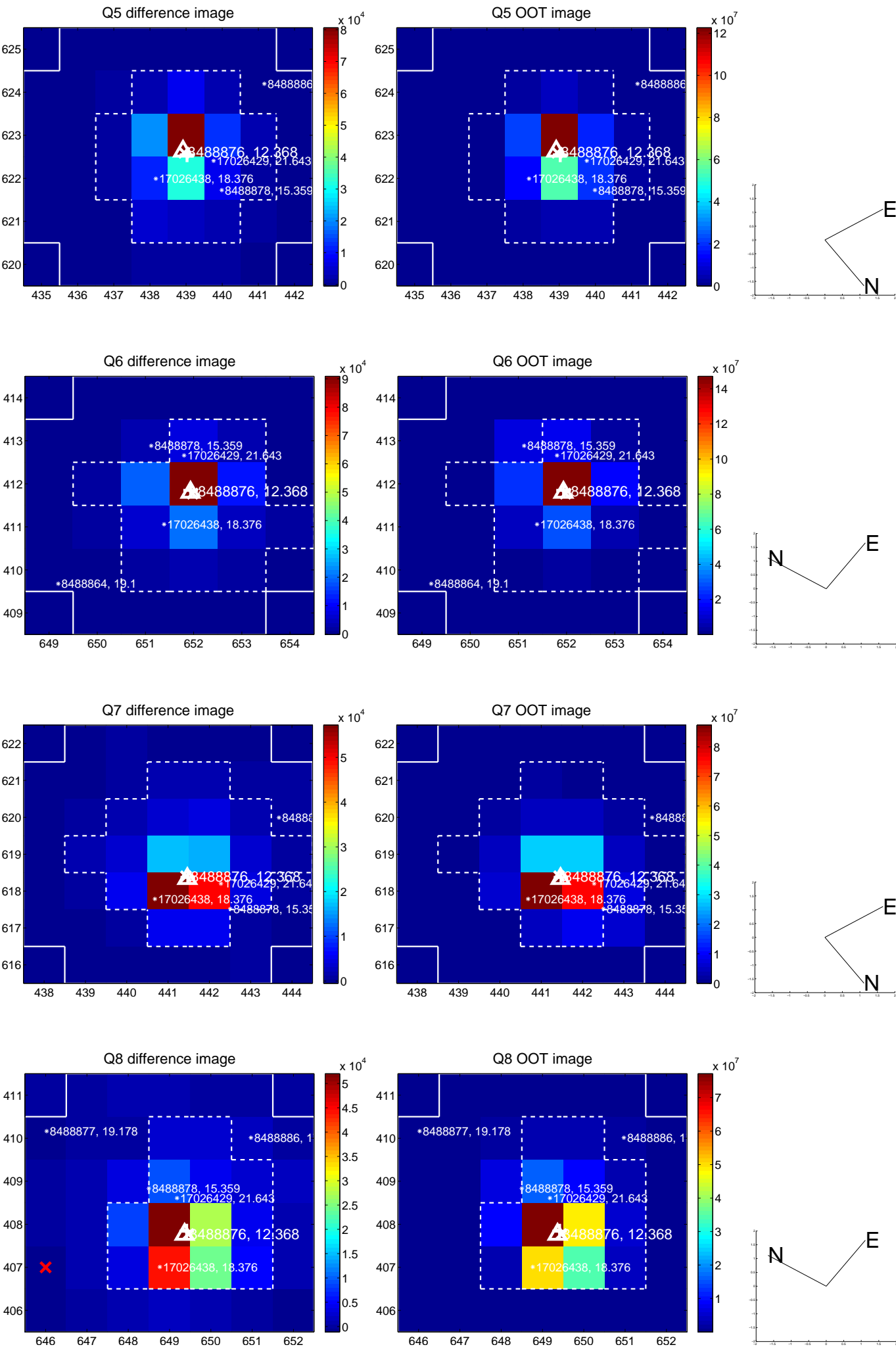


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

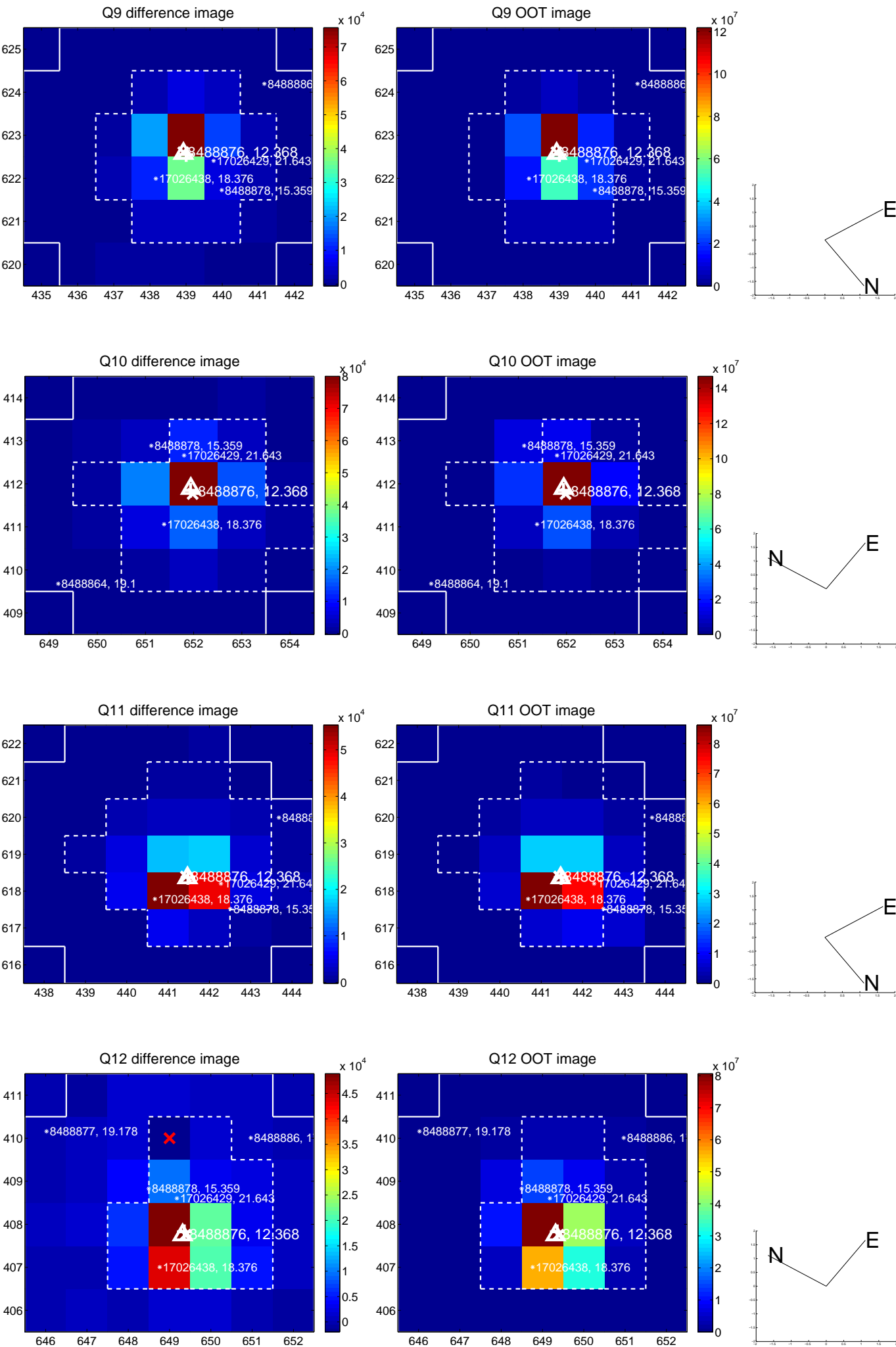
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



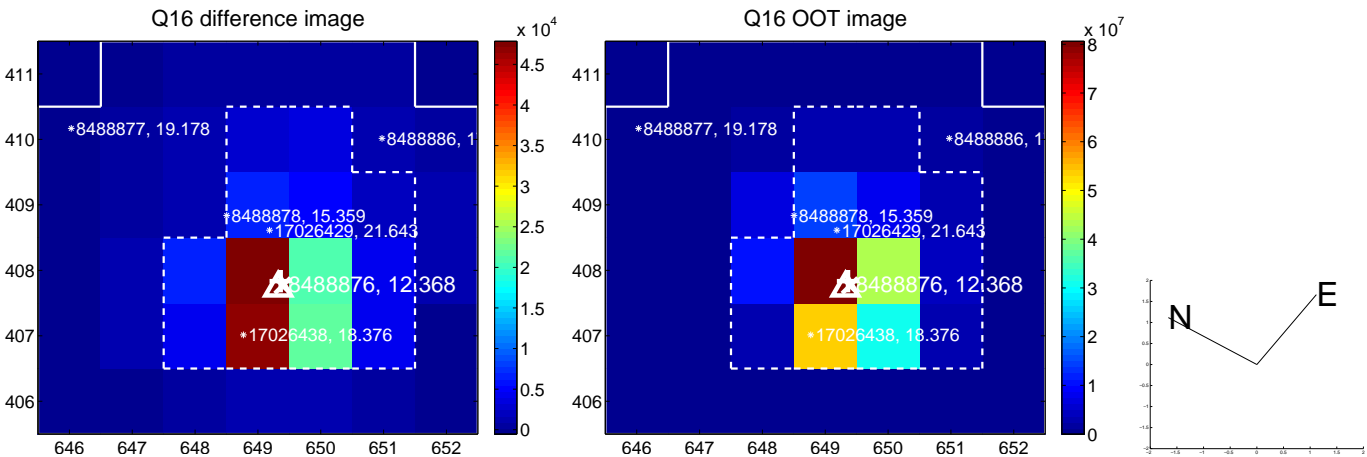
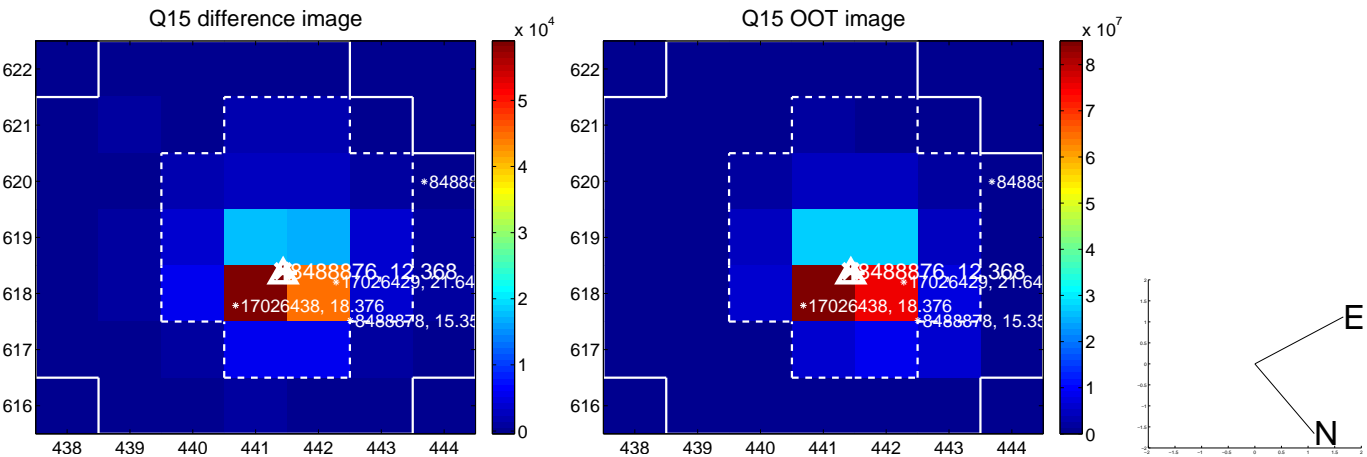
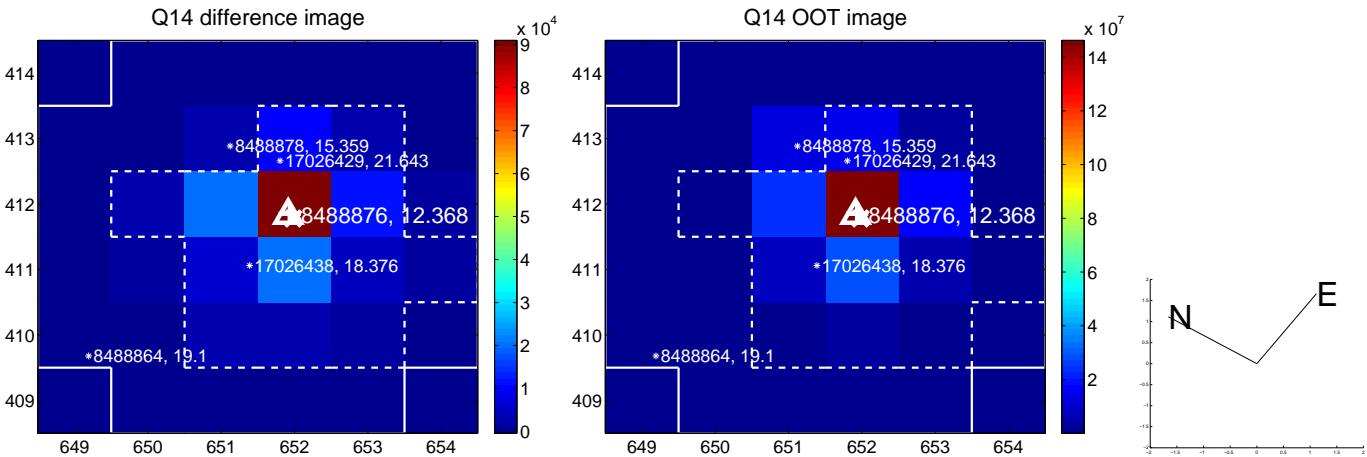
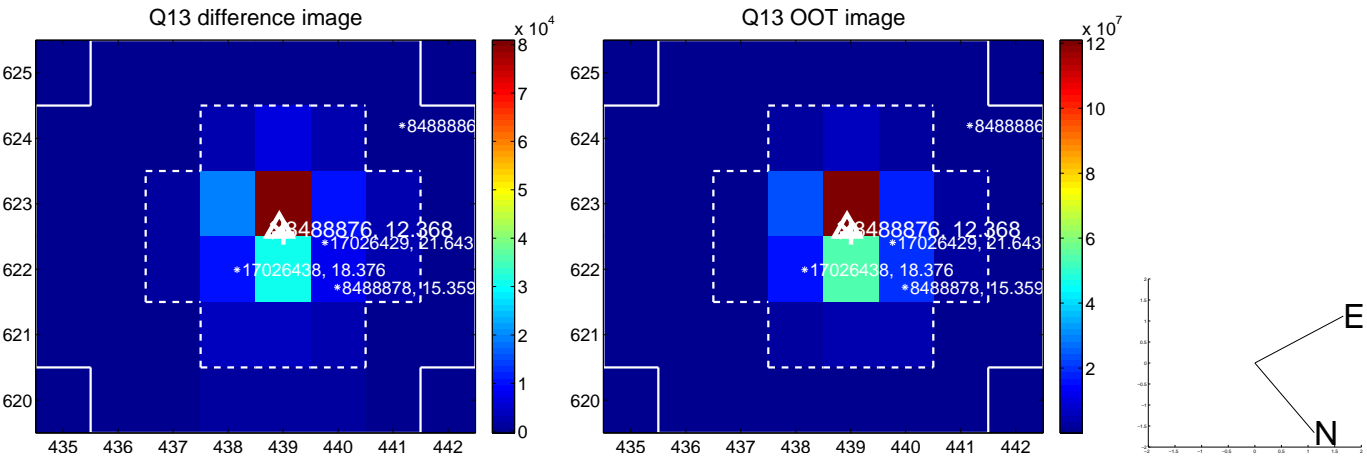
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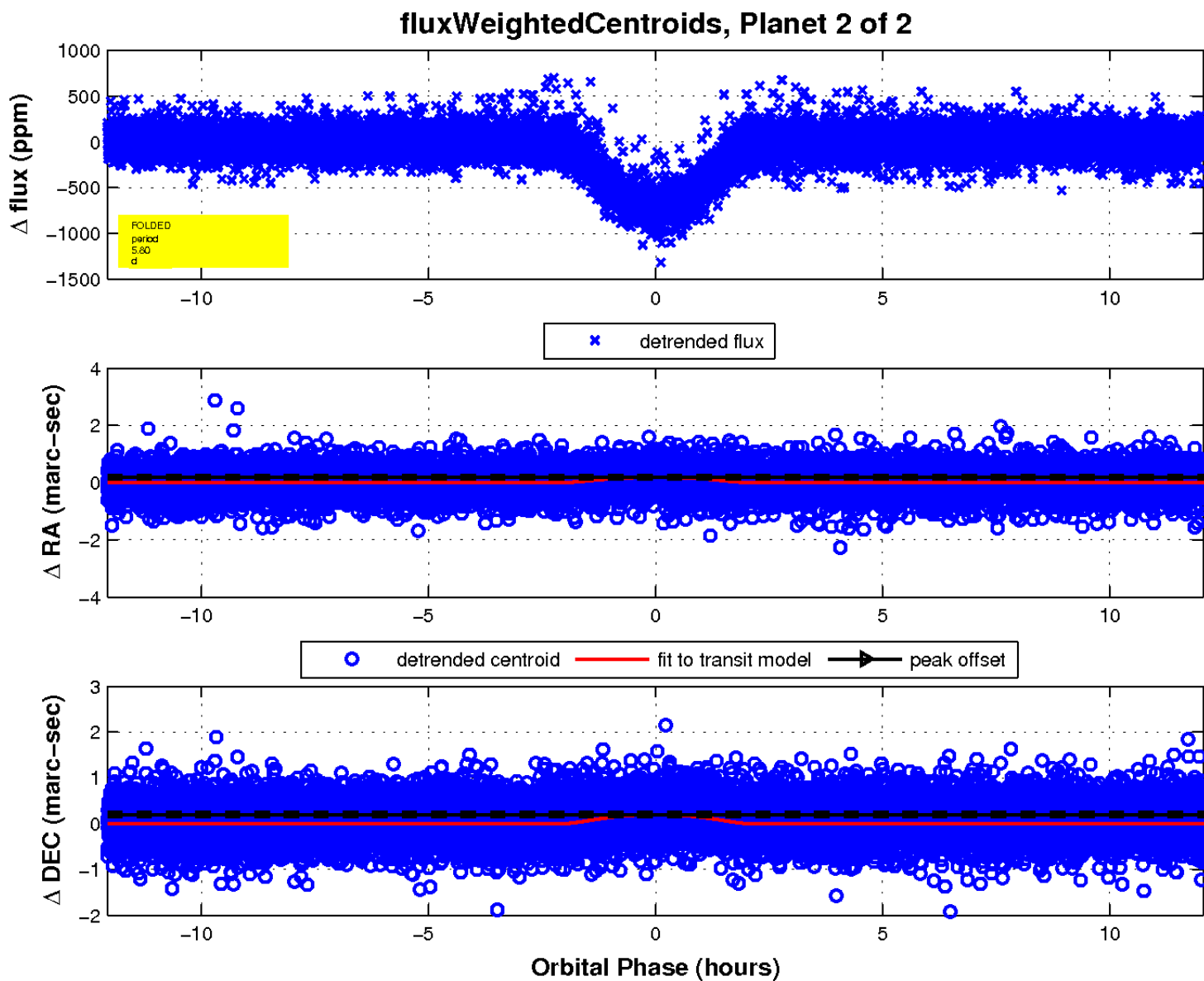
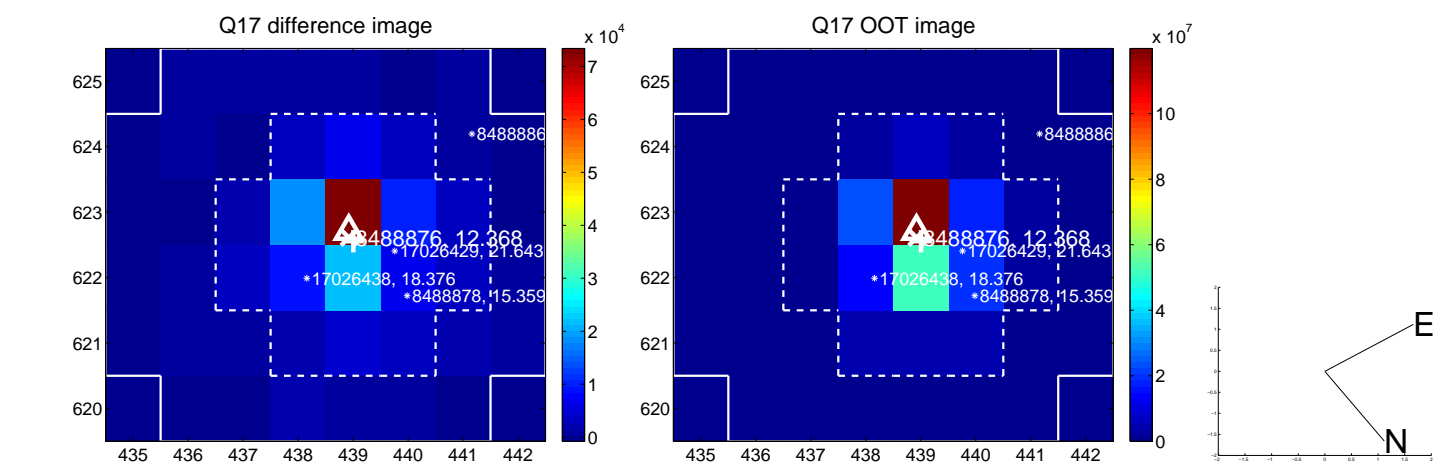
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UKIRT Image

Declination

