

# KIC 008878681

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008878681-01	OBS	7103.01	2.496328	132.205651	20135.6	2.643	4705.2	4262.0	2.62	6757	54.77	6820.60
008878681-02	OBS	No	2.496319	133.456857	165.0	1.565	39.3	40.9	2.62	6757	3.93	6820.63
008878681-03	OBS	No	2.496401	133.768902	59.7	6.000	8.5	-1.0	2.62	6757	2.04	6820.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008878681-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_SATURATED
008878681-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED
008878681-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_SATURATED

**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 008878681-01

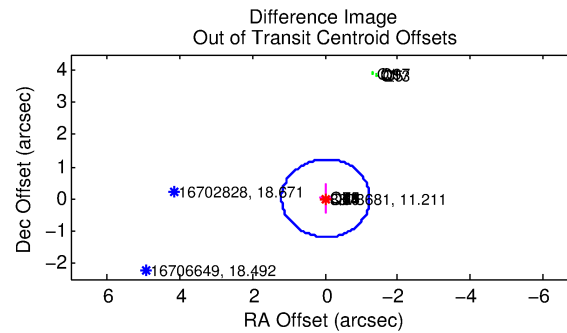
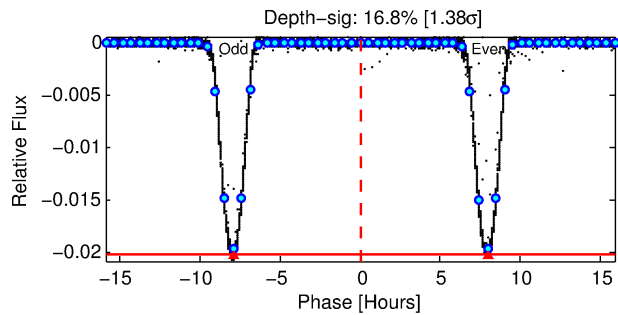
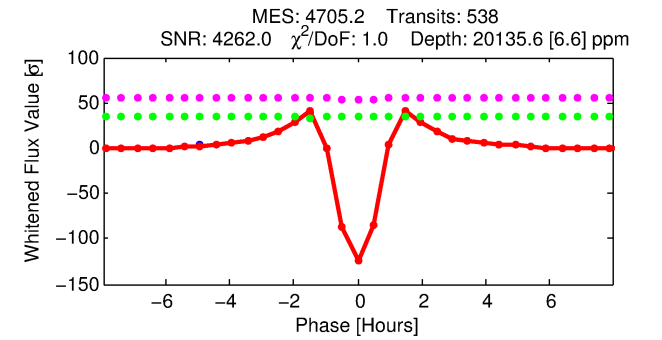
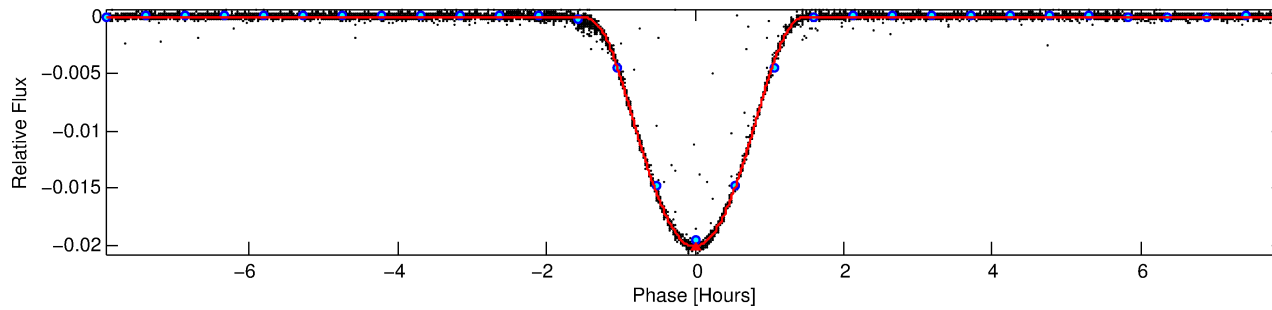
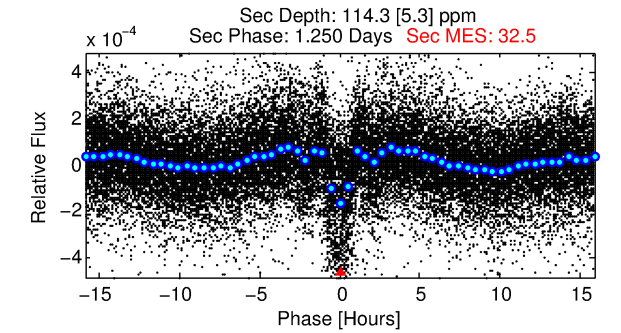
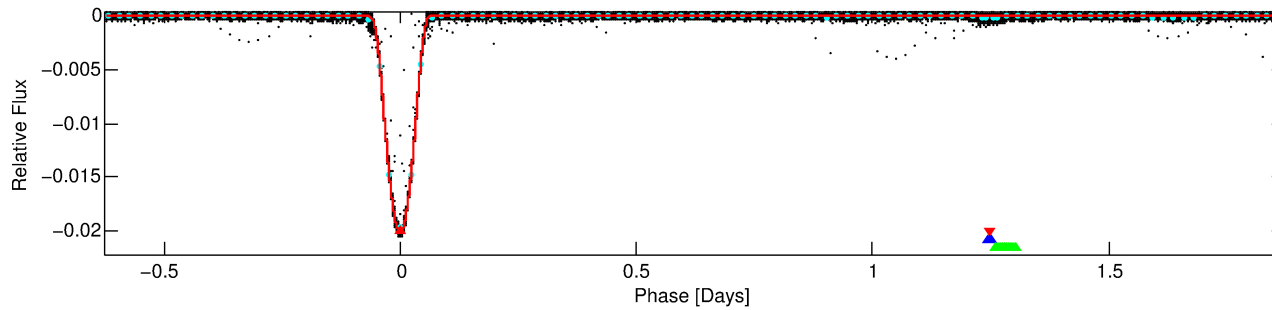
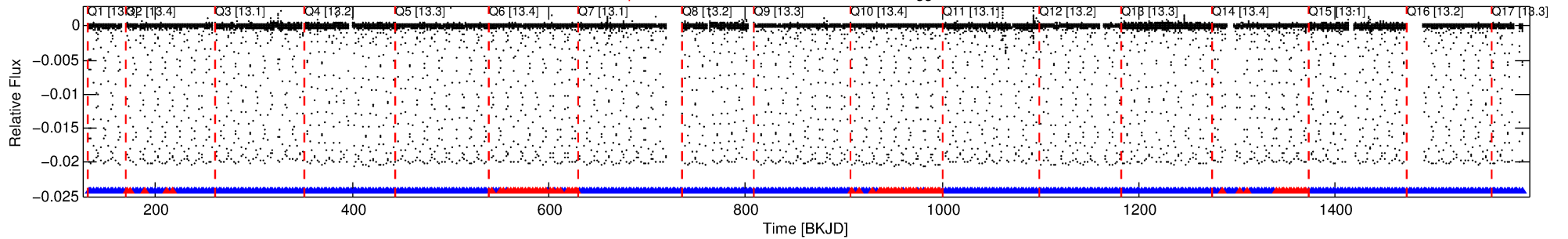
No Significant Match Found

# DV One-Page Summary

KIC: 8878681 Candidate: 1 of 3 Period: 2.496 d

KOI: K07103.01 Corr: 0.989

Kp: 11.21 R\*: 2.62 Rs Teff: 6757.0 K Logg: 3.84 Fe/H: 0.120



## DV Fit Results:

Period = 2.49633 [0.00000] d  
Epoch = 132.2057 [0.0000] BKJD  
Rp/R\* = 0.1919 [0.0011]  
a/R\* = 5.32 [0.01]  
b = 0.95 [0.00]  
Seff = 6820.60 [3372.81]  
Teq = 2317 [286] K  
Rp = 54.77 [18.81] Re  
a = 0.0433 [0.0134] AU  
Ag = 0.04 [0.02] [-51.01 $\sigma$ ]  
Teffp = 1595 [55] K [-2.48 $\sigma$ ]

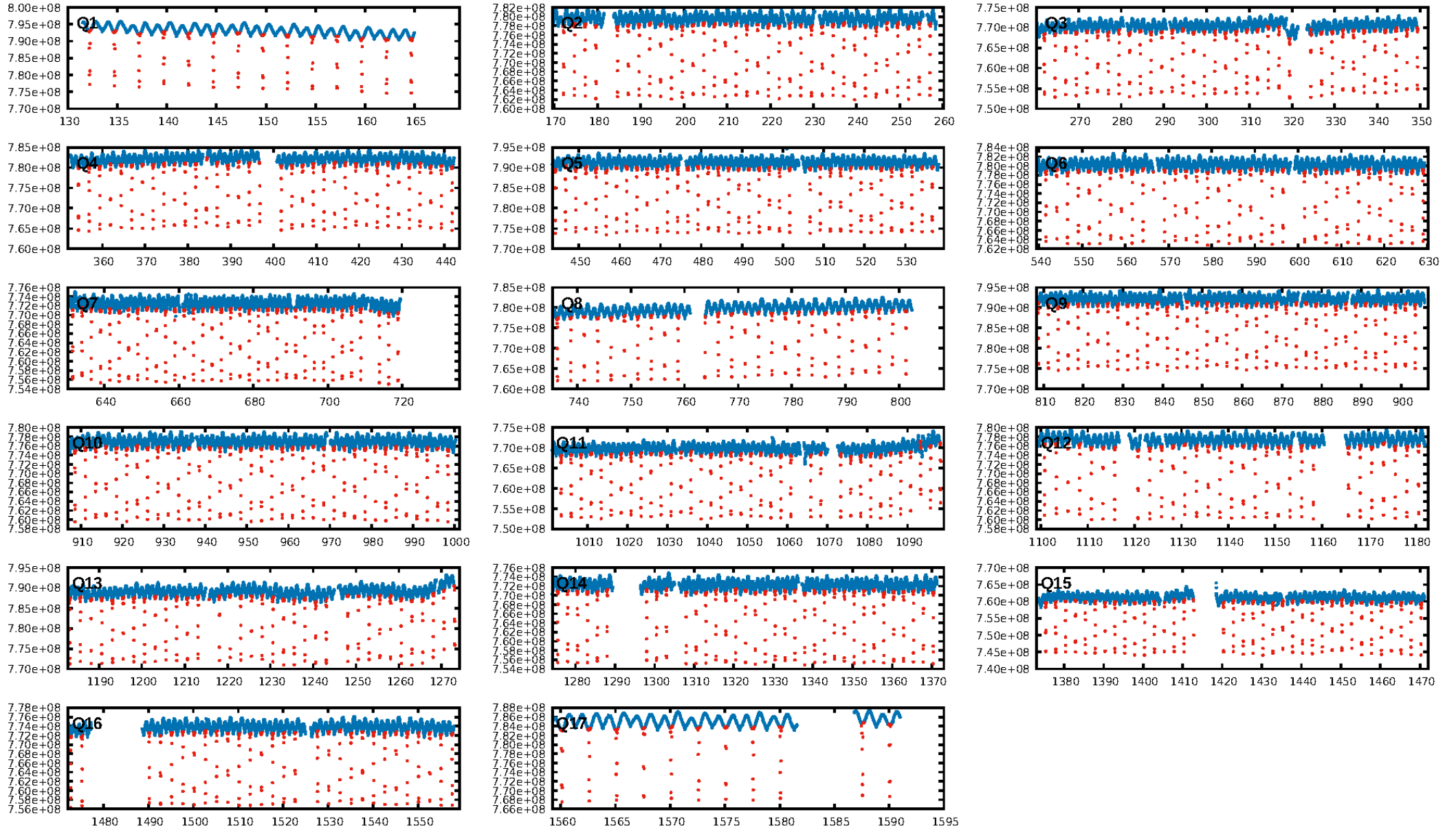
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.85 [438/513]  
GhostDiagnostic-chr: 5.356  
Centroid-sig: N/A  
Centroid-so: 0.356 arcsec [307.31 $\sigma$ ]  
OotOffset-rm: 0.024 arcsec [0.06 $\sigma$ ]  
KicOffset-rm: 0.325 arcsec [0.80 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.82 [14/17]  
DiffImageOverlap-fno: 1.00 [17/17]

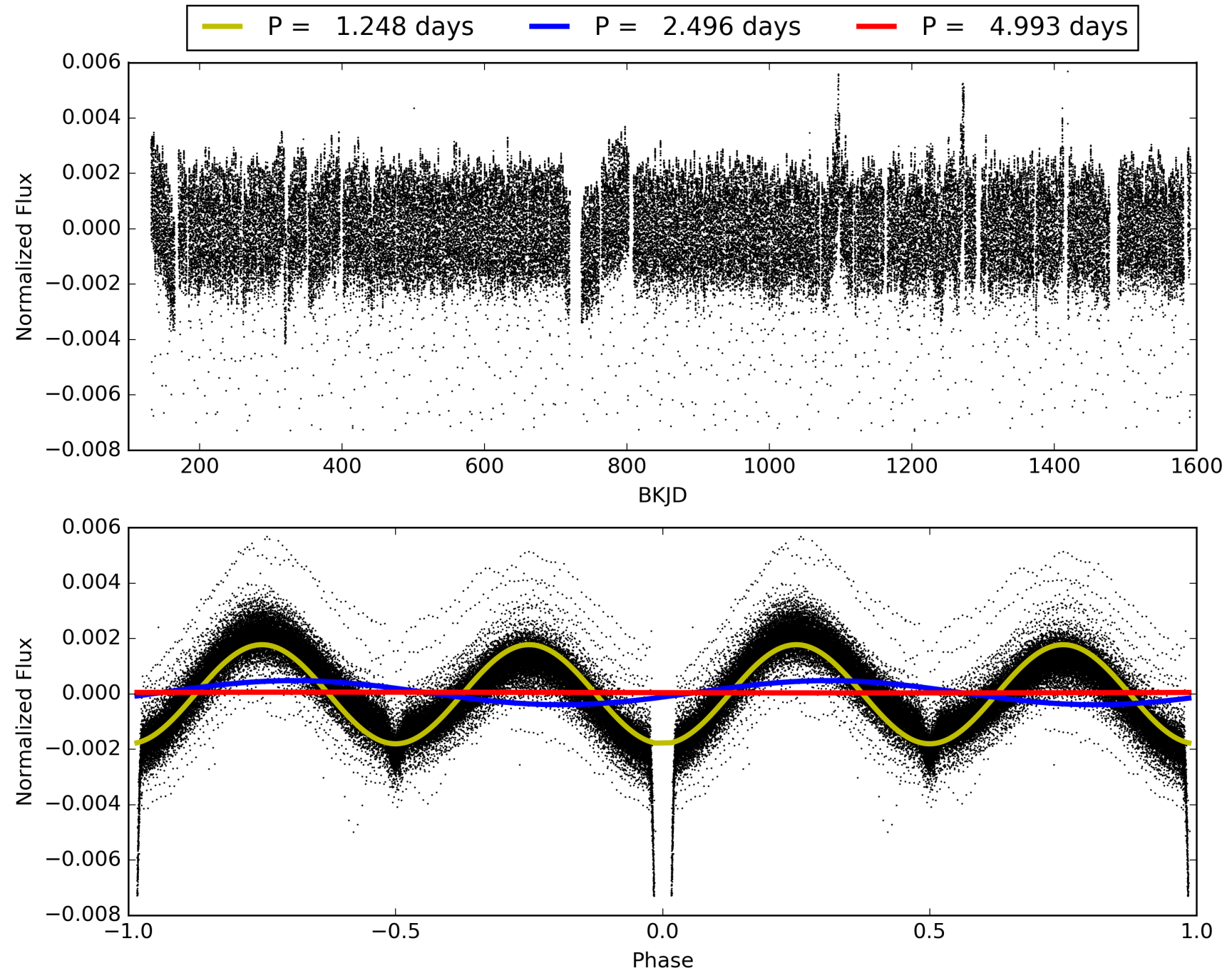
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:27:20 Z

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

# TCE 008878681-01, PDC Light Curves

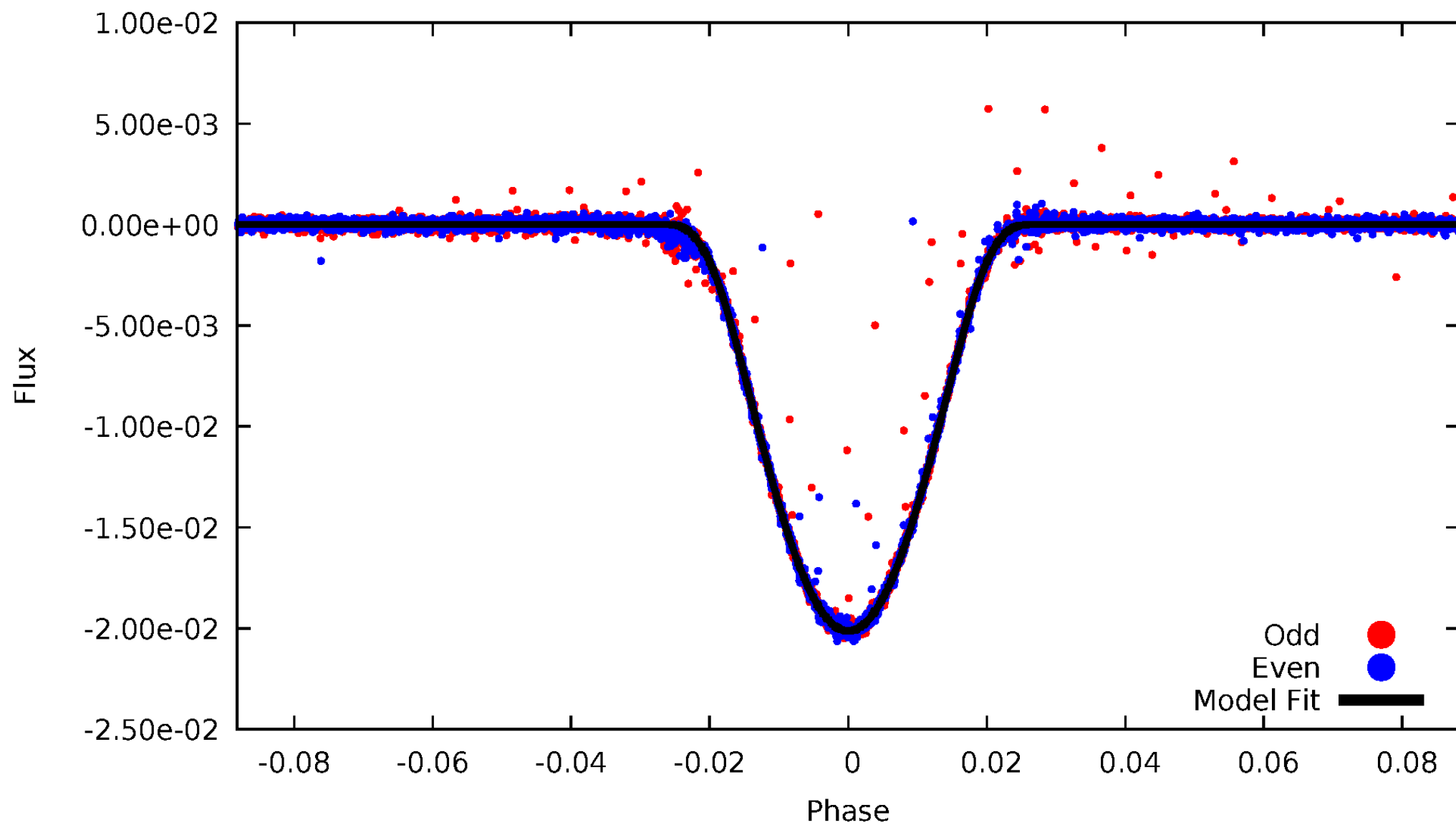


TCE 008878681-01



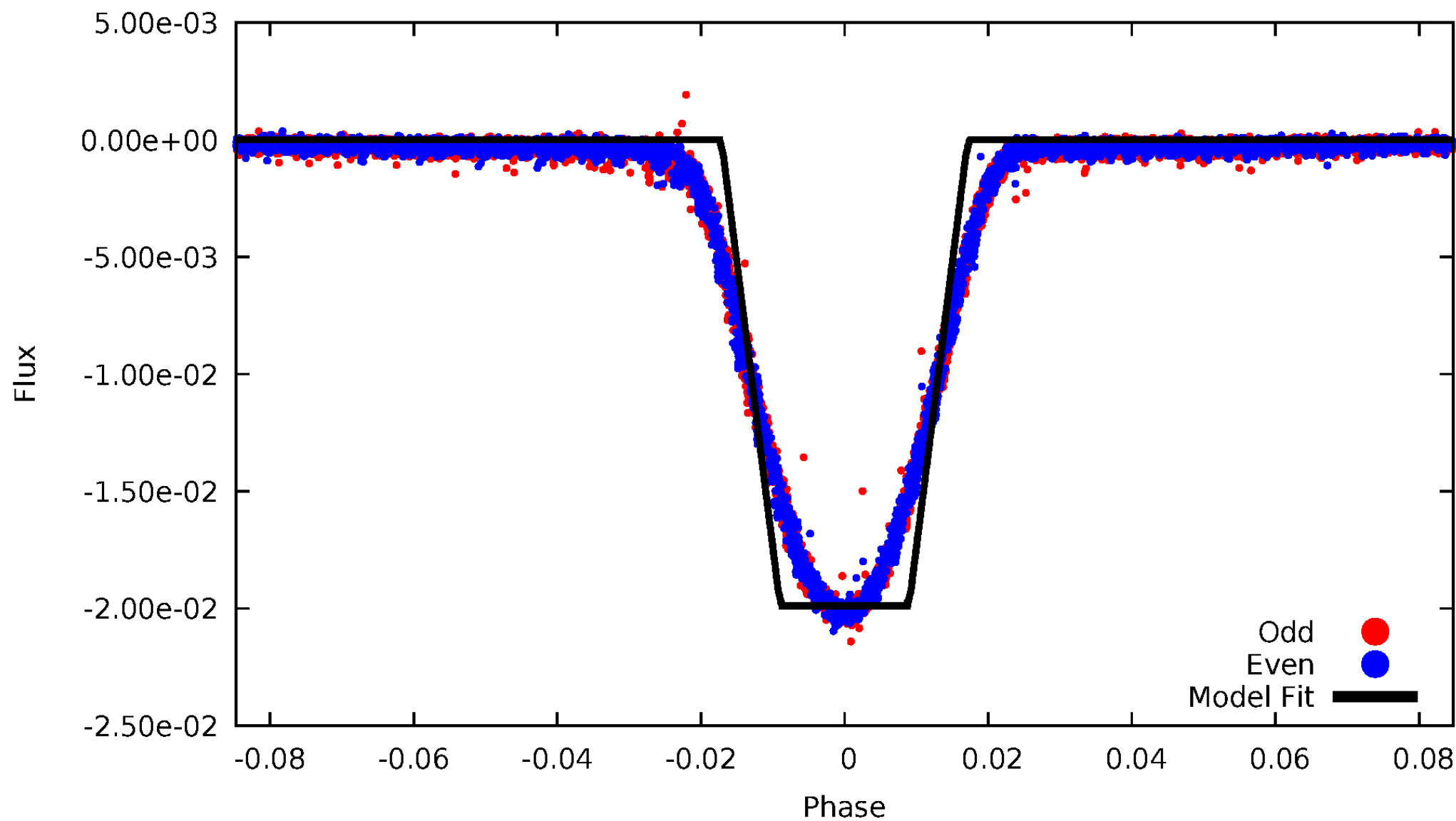
# DV Odd/Even

TCE 008878681-01



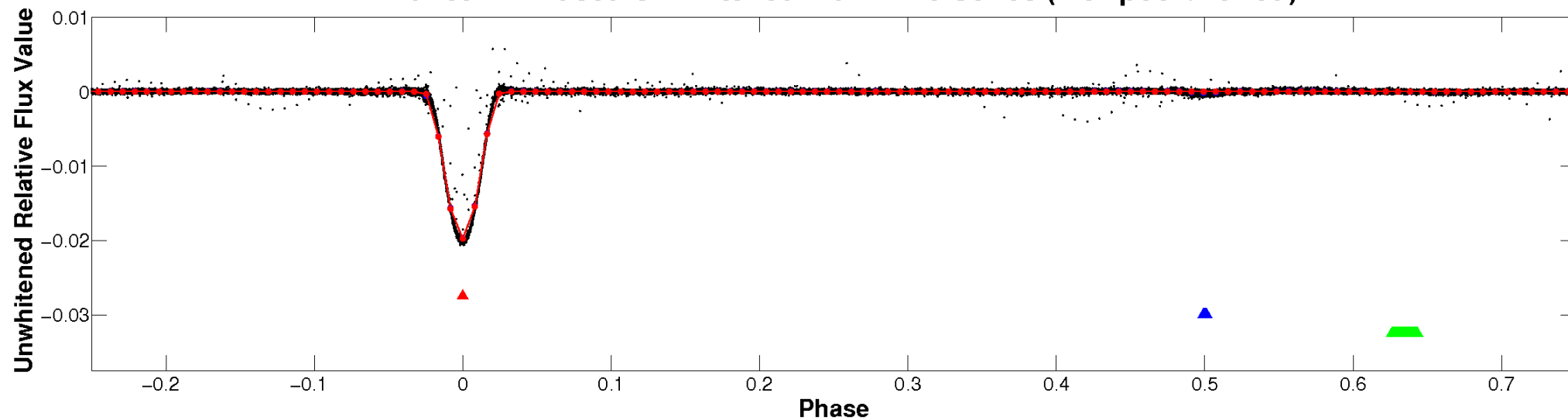
# ALT Odd/Even

TCE 008878681-01

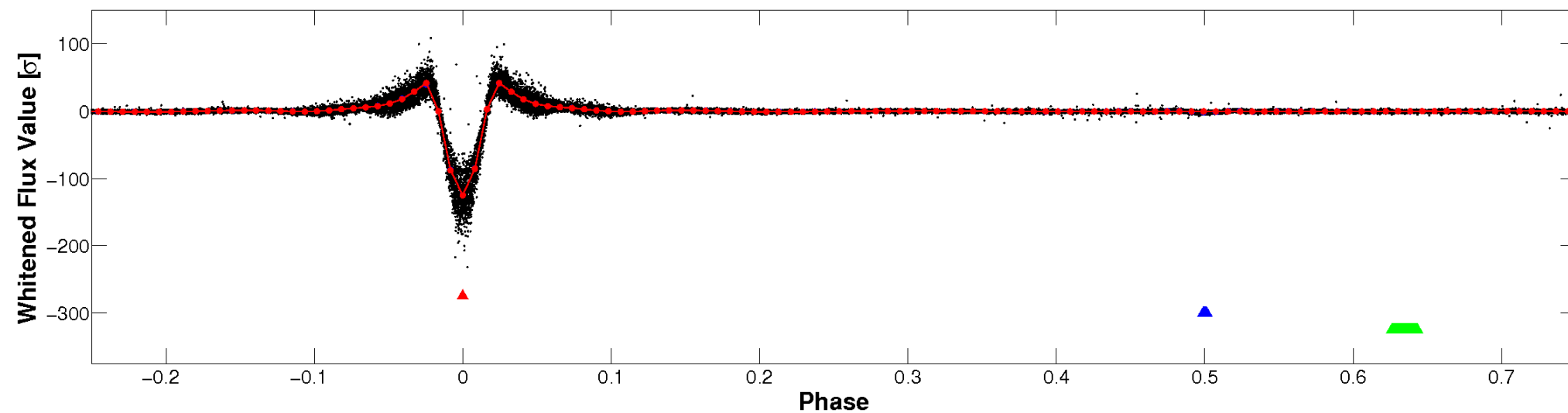


# Non-Whitened Vs. Whitened Light Curve

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

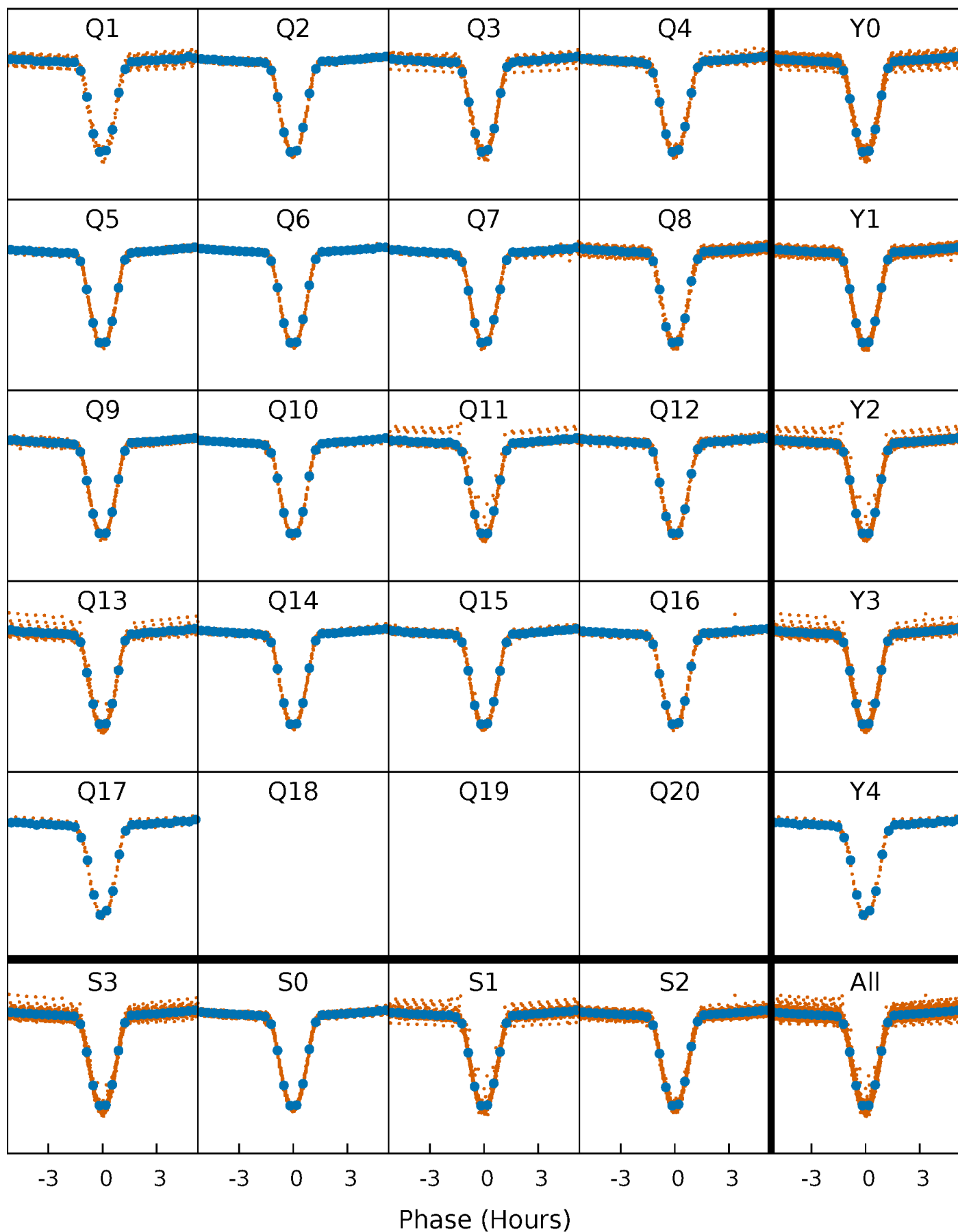


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

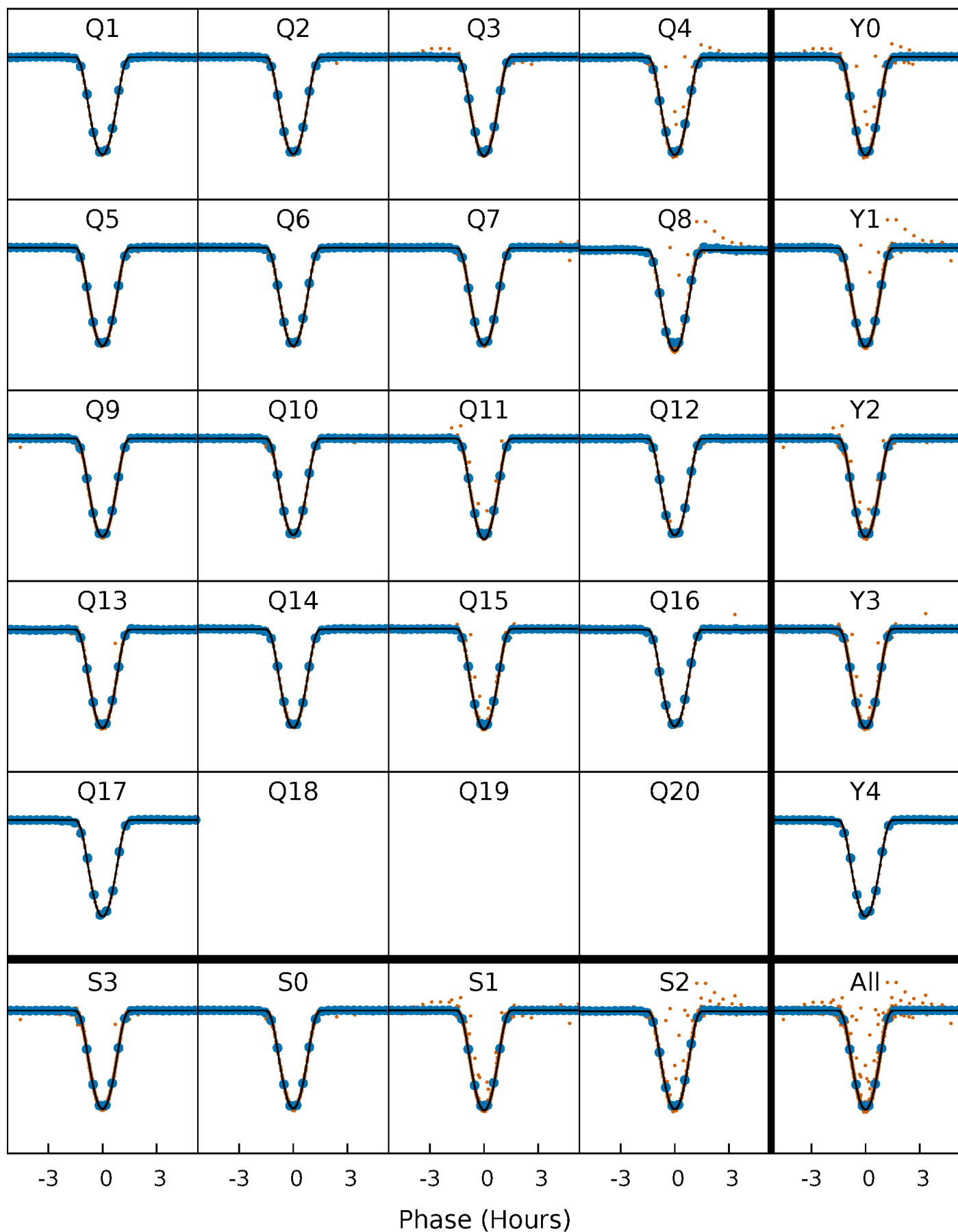
TCE 008878681-01 P= 2.496328 Days  $T_0=132.205651$  (BKJD)





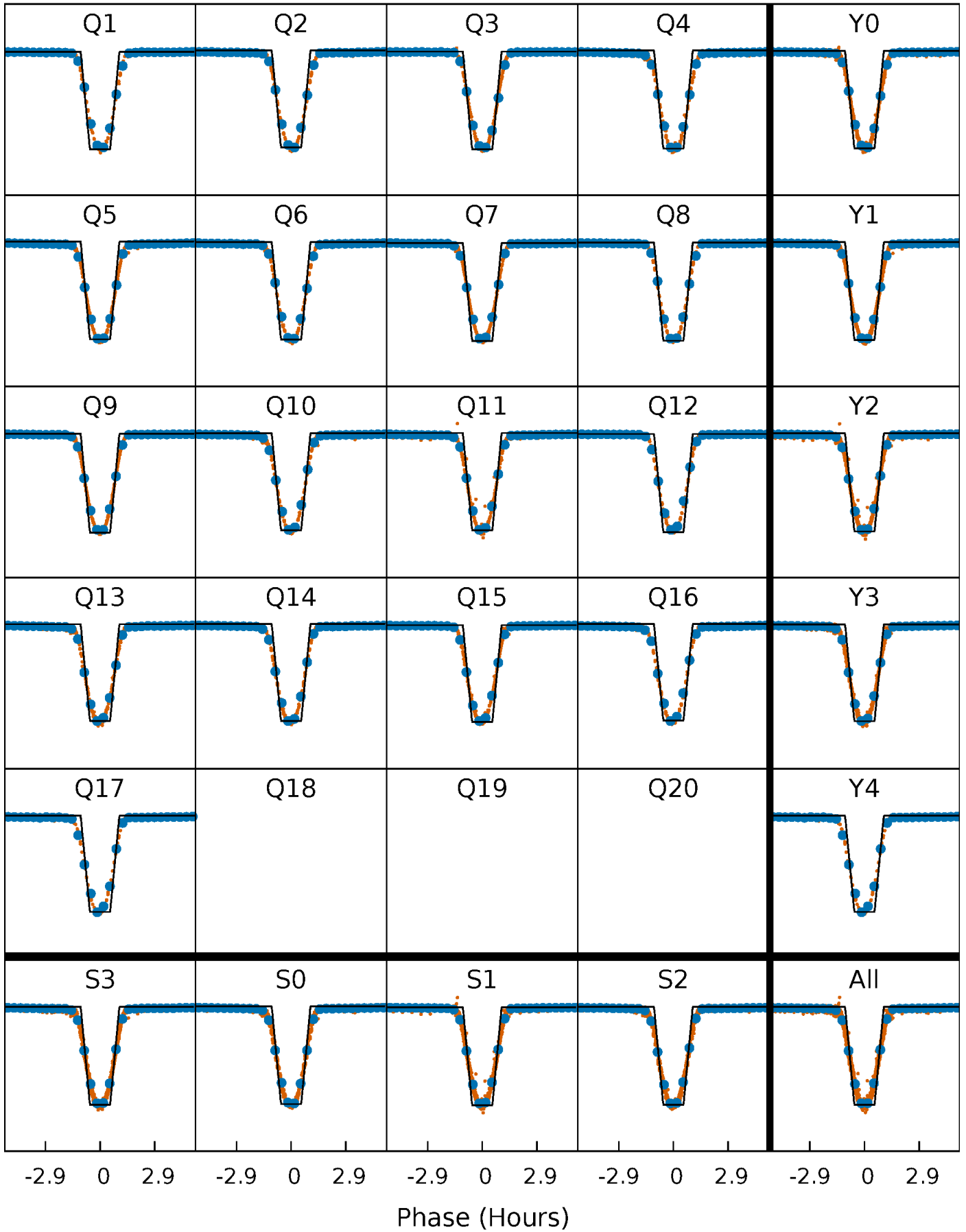
# DV Quarter-Phased Transit Curves

TCE 008878681-01 P= 2.496328 Days  $T_0=132.205651$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

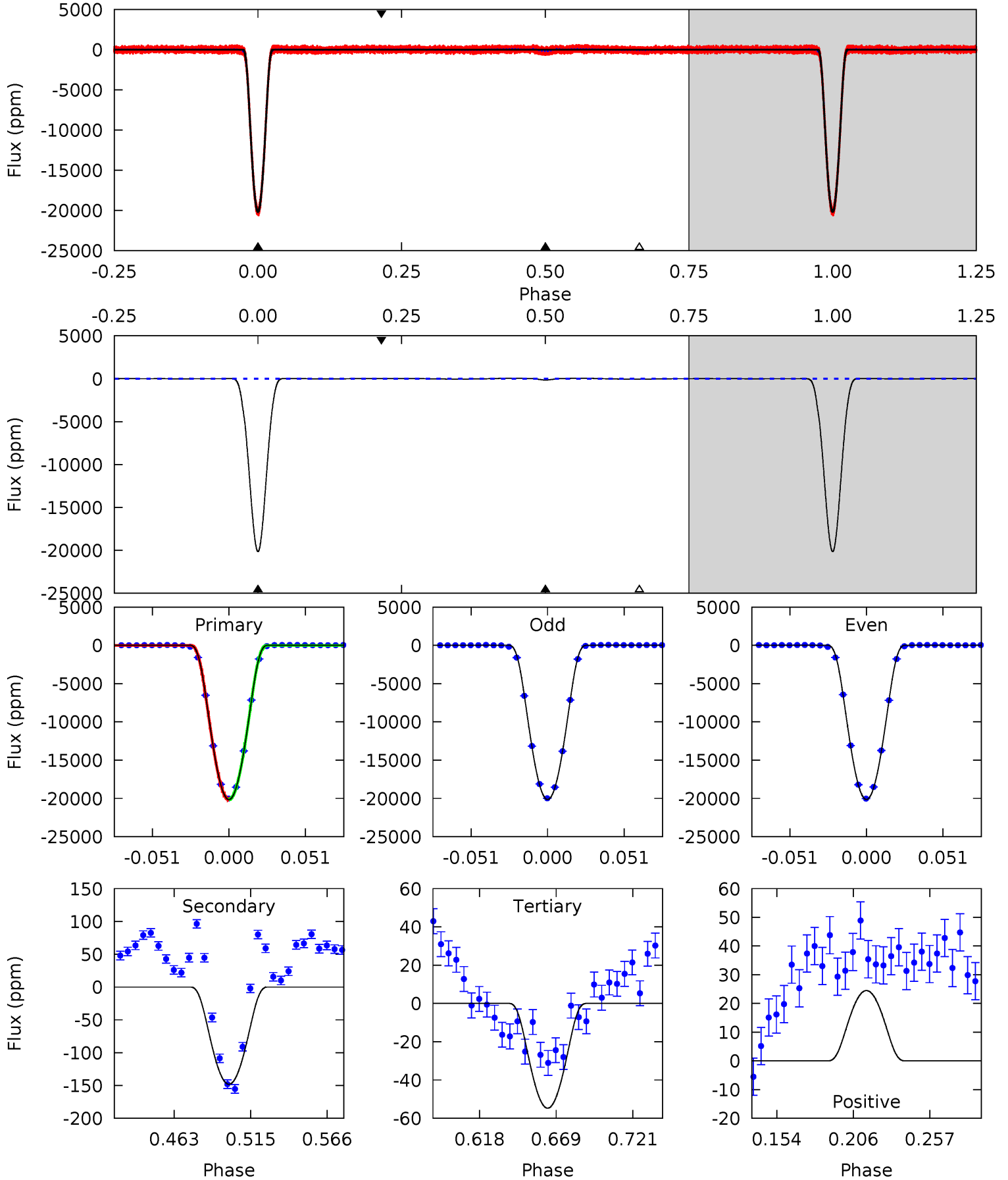
TCE 008878681-01 P= 2.496336 Days  $T_0=132.203534$  (BKJD)



# DV Model-Shift Uniqueness Test

008878681-01, P = 2.496328 Days, E = 129.709323 Days

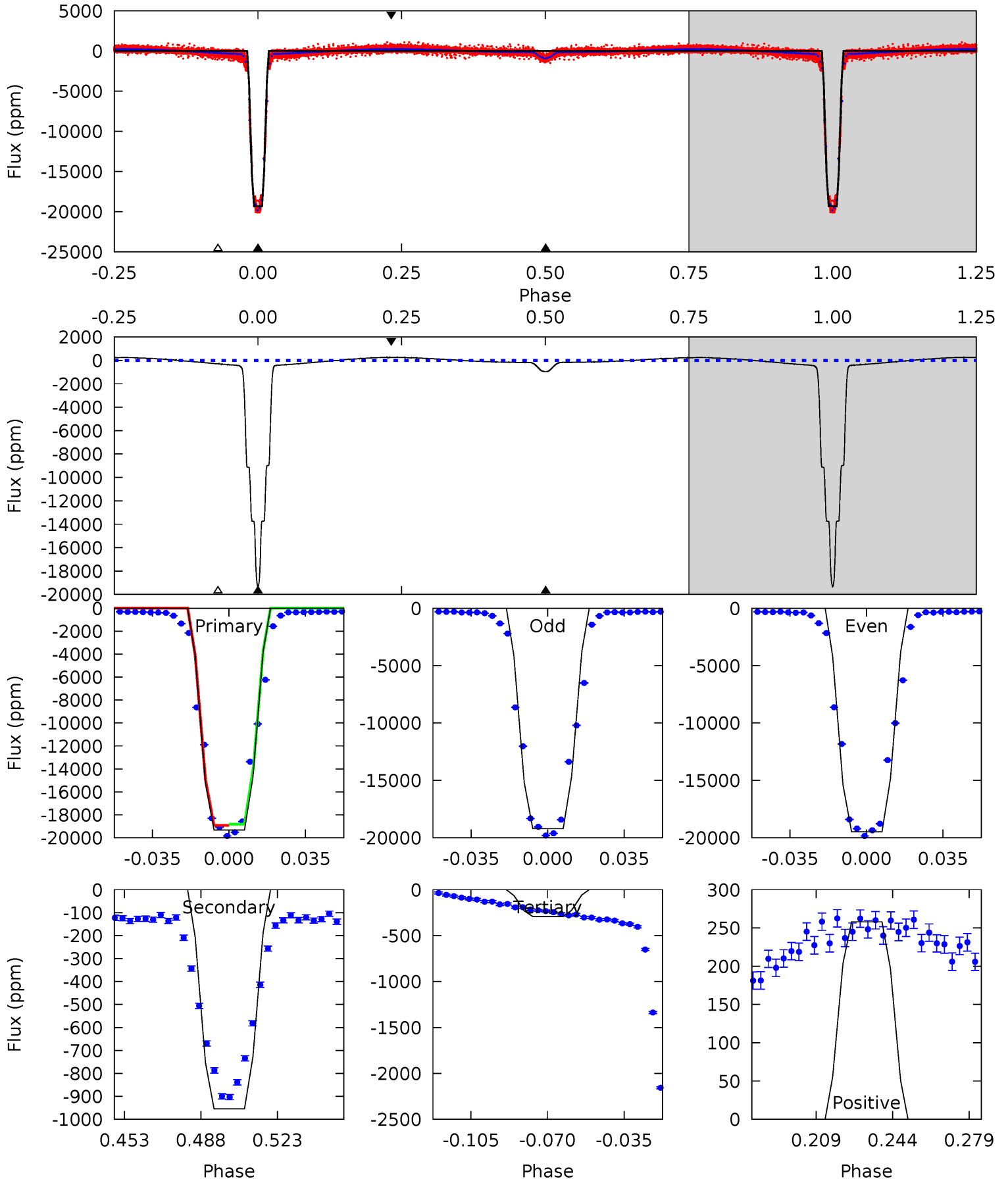
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8710	64.0	23.7	10.6	4.70	1.95	11.0	8687	8700	40.4	53.4	0.80	0.99	0.00	1.69



# Alt Model-Shift Uniqueness Test

008878681-01, P = 2.496336 Days, E = 129.707198 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
2610	128.9	39.5	34.8	4.78	2.11	24.8	2570	2575	89.5	94.1	18.5	1.00	0.01	5.63



### Stellar Parameters For KIC 008878681

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6757^{+150}_{-217}$	$3.842^{+0.273}_{-0.117}$	$0.120^{+0.250}_{-0.300}$	$2.615^{+0.483}_{-0.898}$	$1.734^{+0.152}_{-0.354}$	$0.137^{+0.267}_{-0.047}$
	+2%/-3%	+7%/-3%	+208%/-250%	+18%/-34%	+9%/-20%	+195%/-35%
Source	PHO1	FLK73	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 008878681-01 / KOI 7103.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-148 \pm 2$	$53.87^{+6.26}_{-9.86}$	$3183^{+195}_{-257}$	$-3106^{+175}_{-127}$	$0.052^{+0.021}_{-0.010}$
Alt.	$-955 \pm 7$	$39.57^{+4.64}_{-7.33}$	$3187^{+212}_{-279}$	$3247^{+132}_{-132}$	$0.620^{+0.272}_{-0.114}$

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

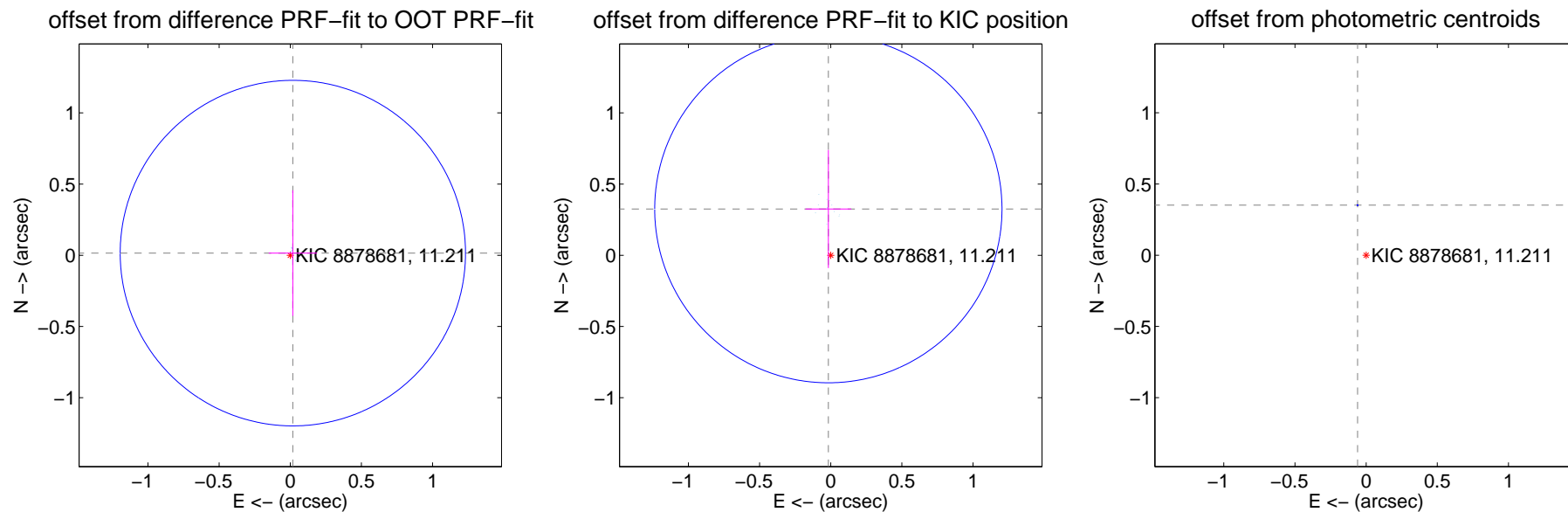
## DV Centroid Data

Supplemental centroid analysis for 008878681-01. **Kepler magnitude: 11.21.** Transit SNR 4262.03

There are 14 quarters with good PRF difference image offsets

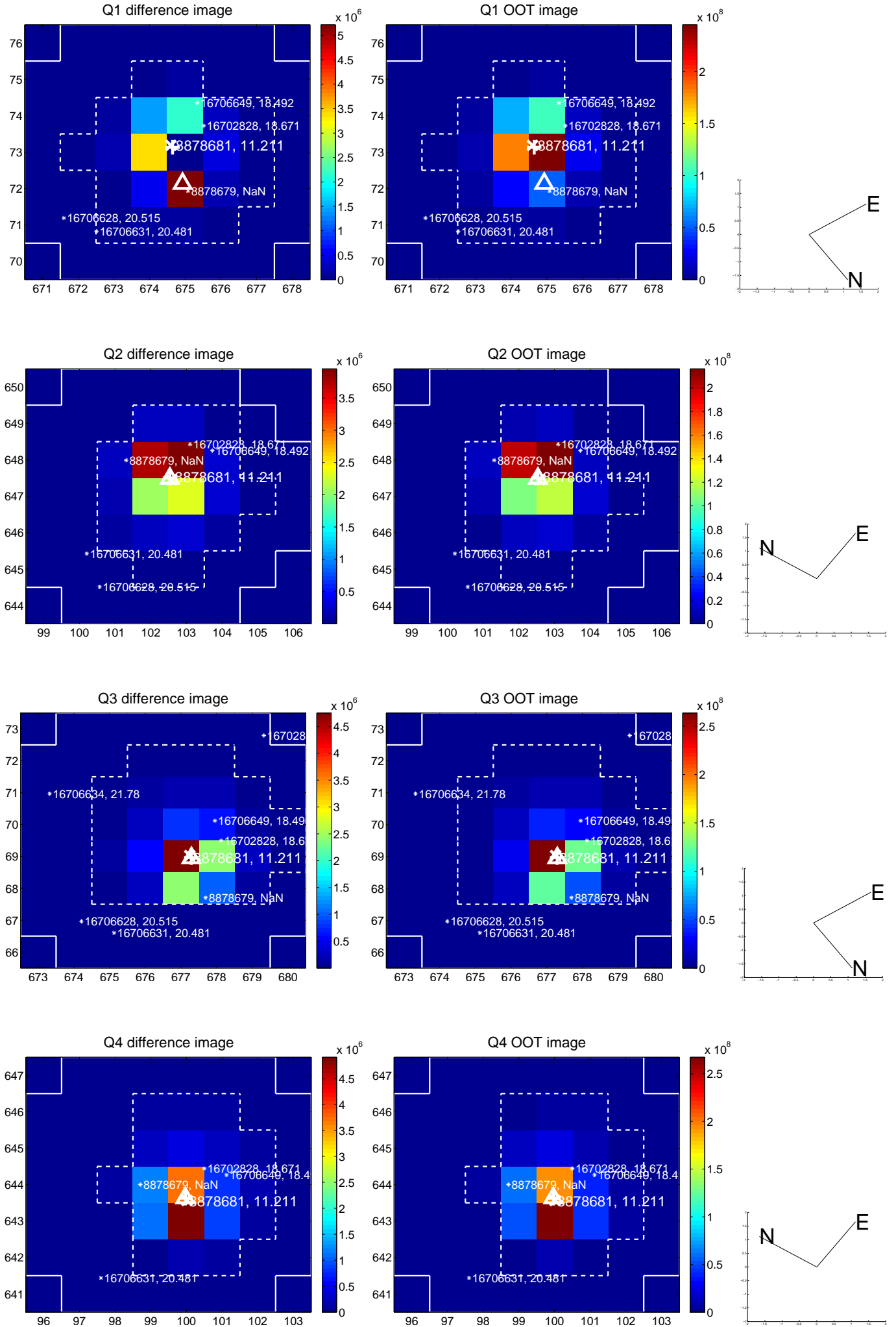
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.024 \pm 0.404$	0.06	$-0.018 \pm 0.170$	$0.015 \pm 0.441$
PRF-fit source offset from KIC position	$0.325 \pm 0.407$	0.80	$0.017 \pm 0.161$	$0.325 \pm 0.415$
photometric centroid source offset	<b><math>0.36 \pm 0.00</math></b>	<b>307.31</b>	$0.06 \pm 0.00$	$0.35 \pm 0.00$

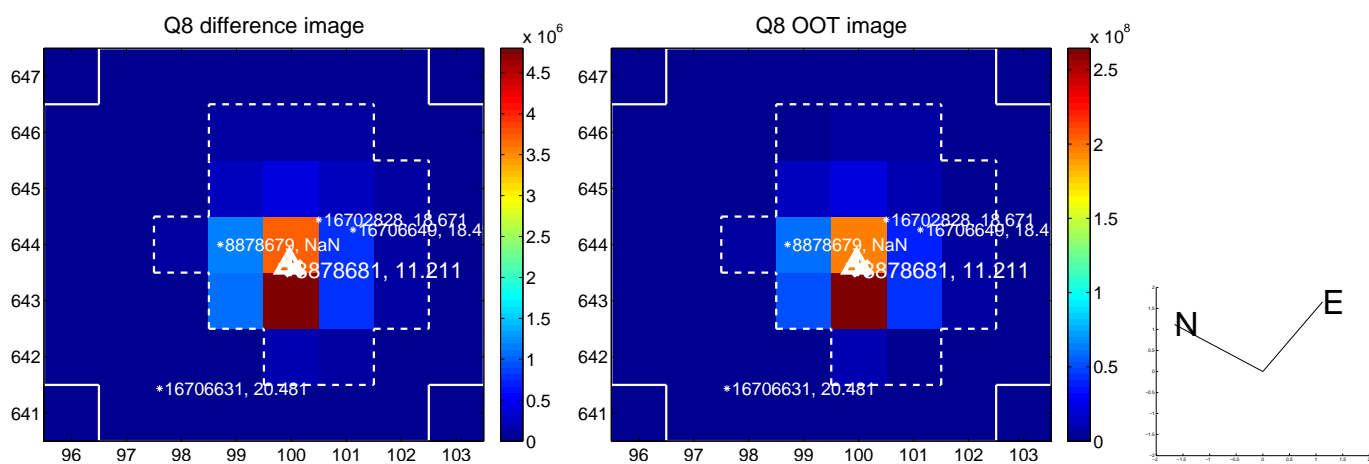
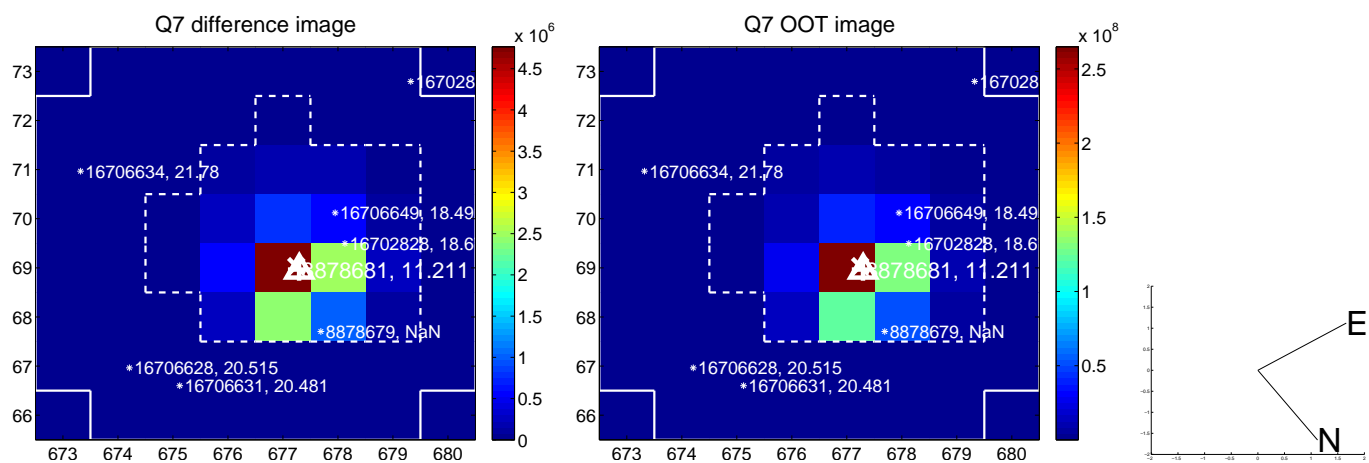
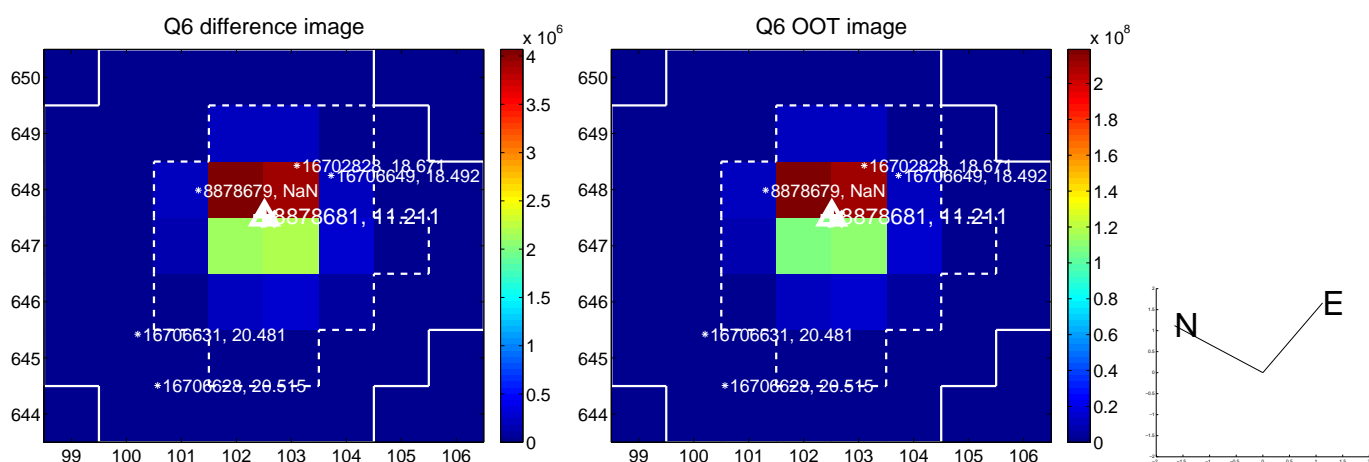
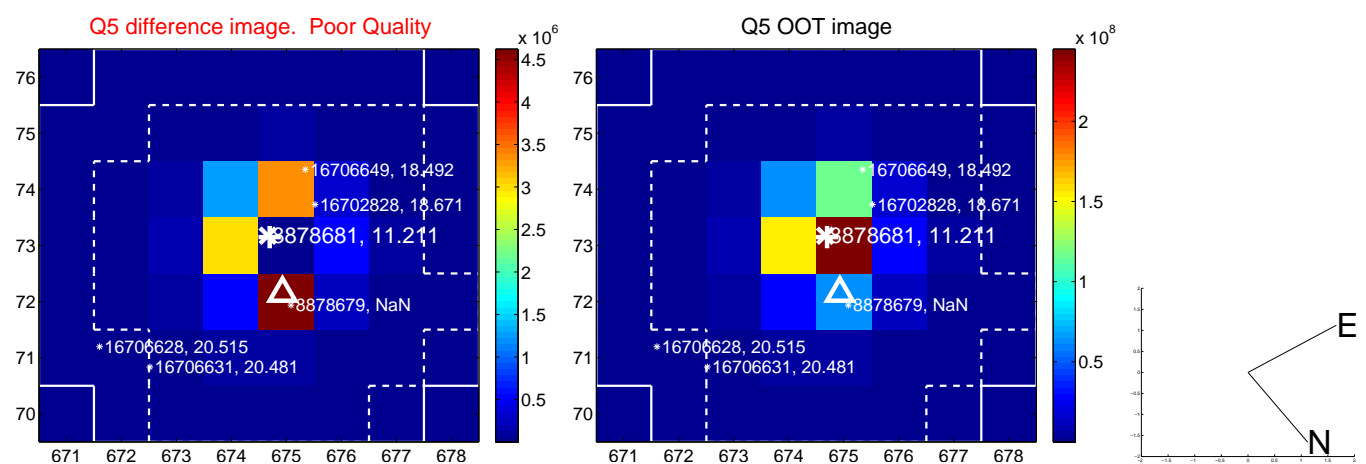


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

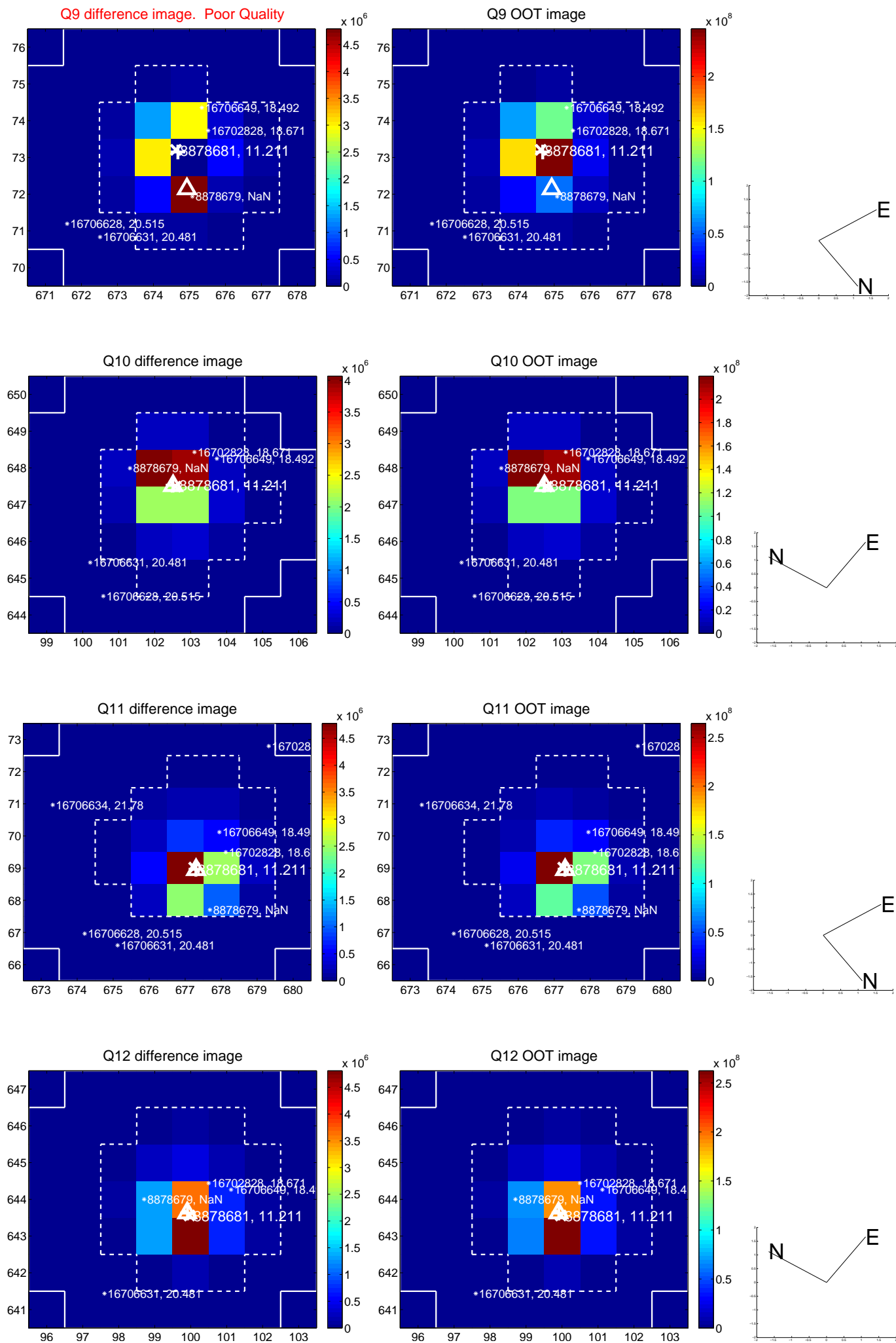


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

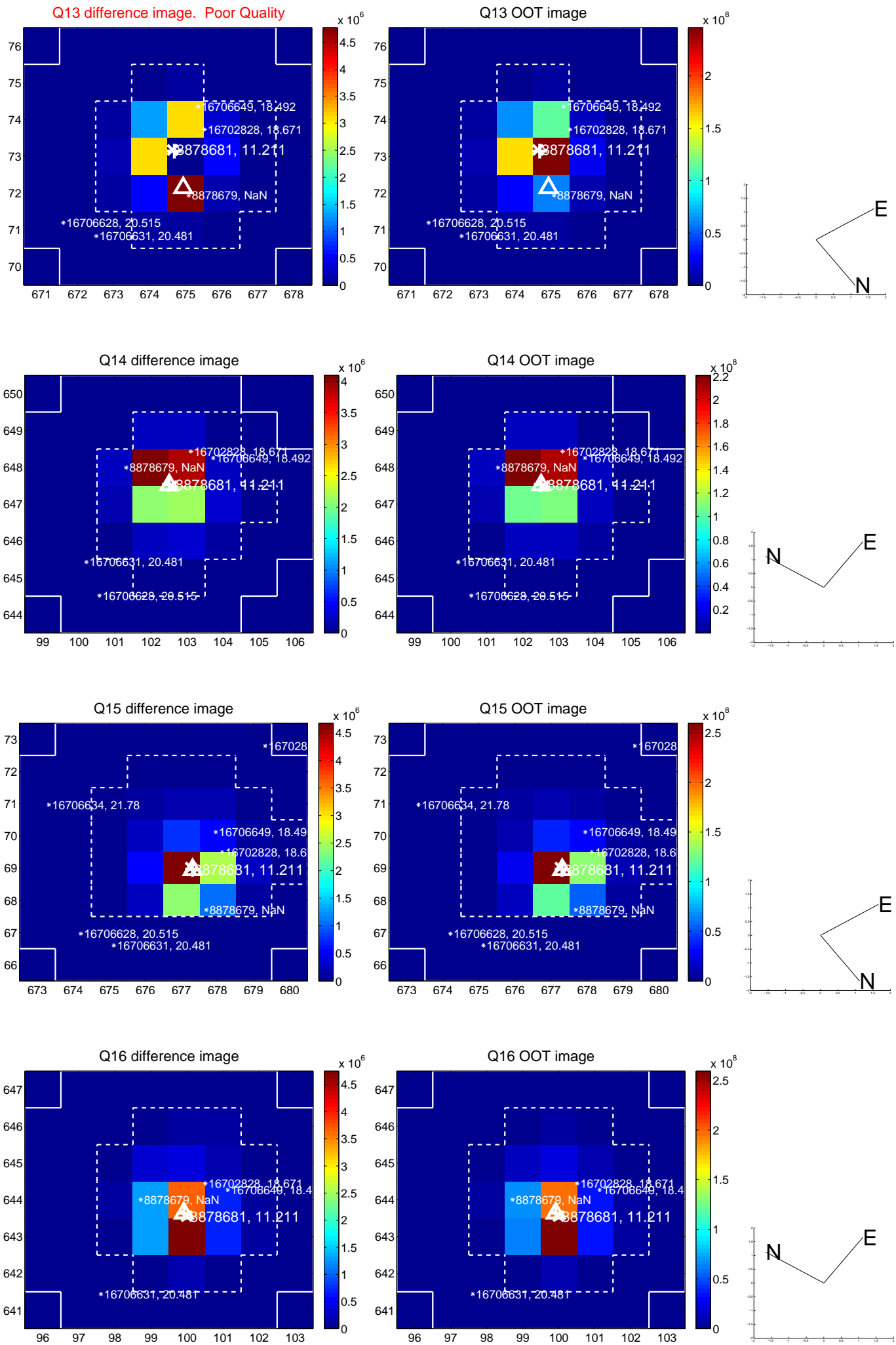




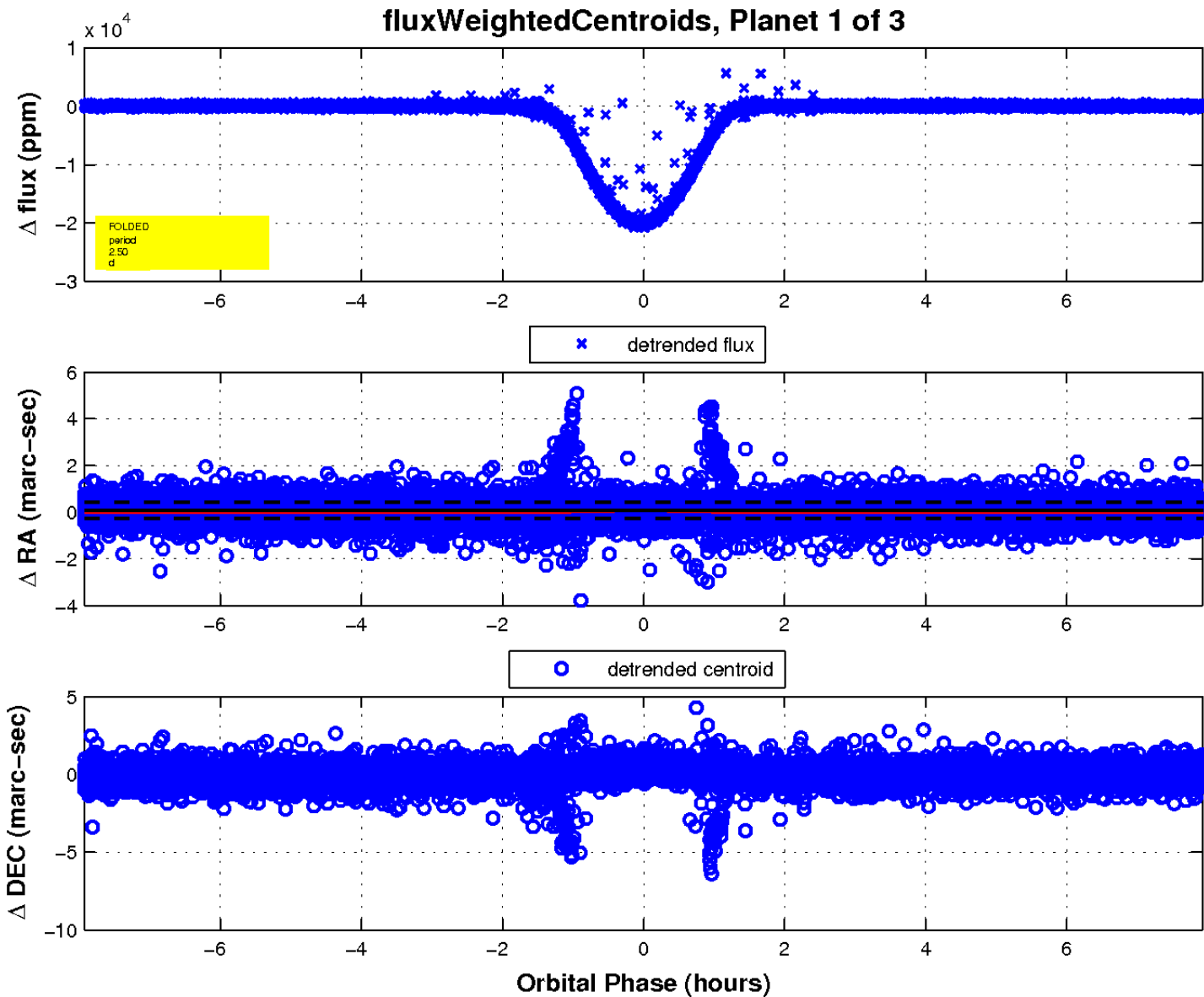
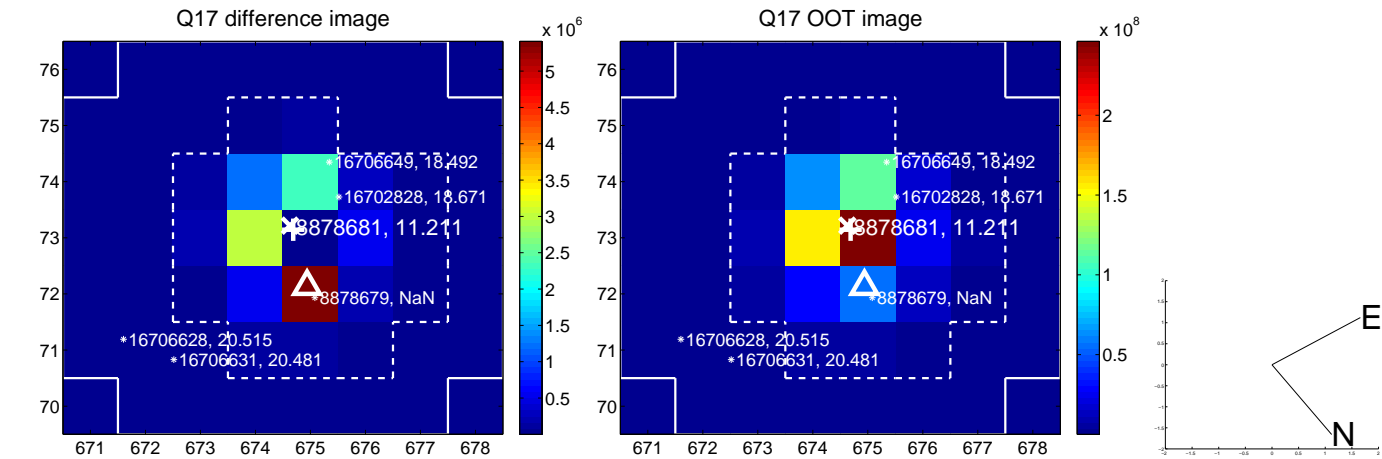
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

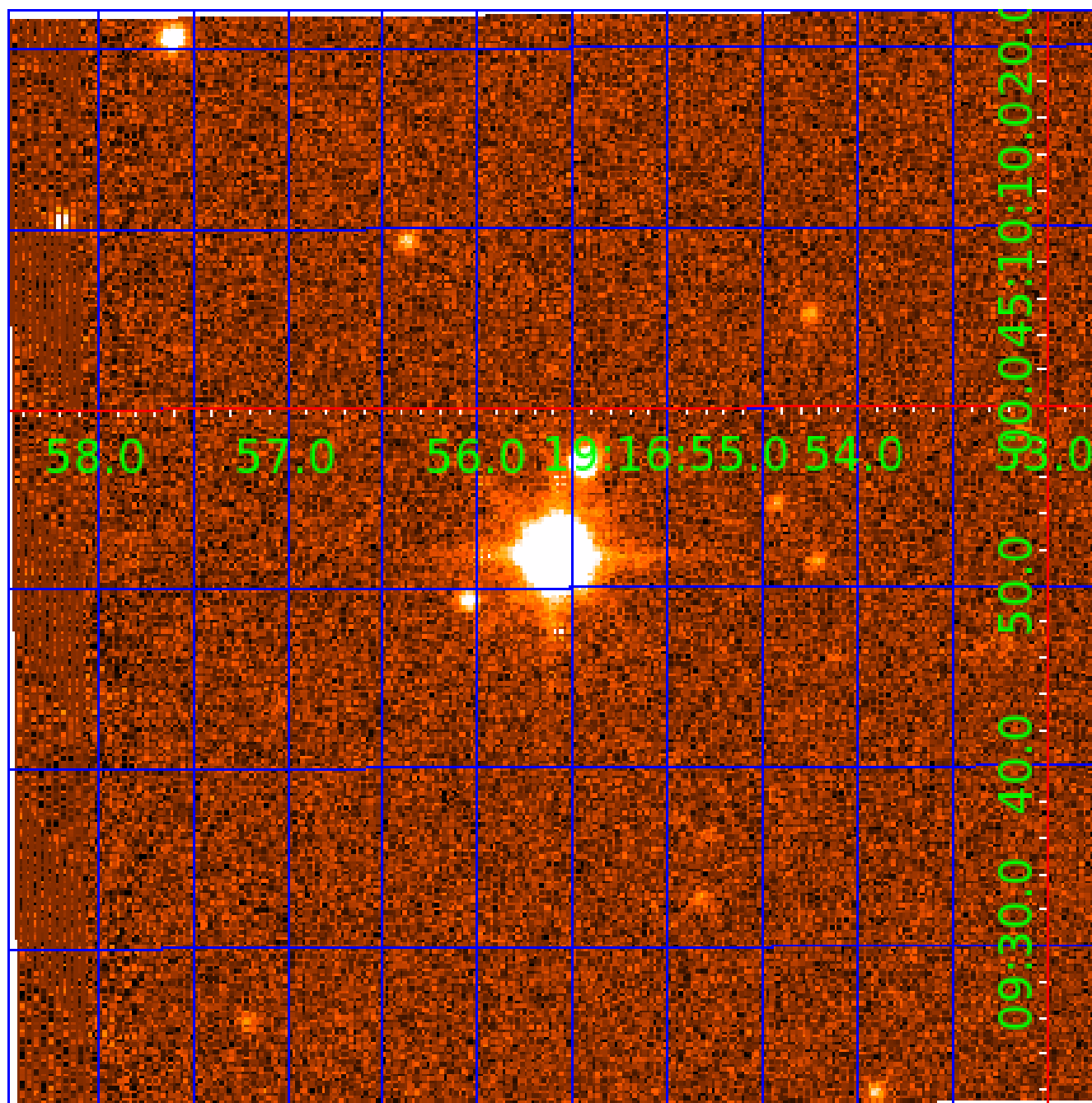


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008878681

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008878681-01	OBS	7103.01	2.496328	132.205651	20135.6	2.643	4705.2	4262.0	2.62	6757	54.77	6820.60
008878681-02	OBS	No	2.496319	133.456857	165.0	1.565	39.3	40.9	2.62	6757	3.93	6820.63
008878681-03	OBS	No	2.496401	133.768902	59.7	6.000	8.5	-1.0	2.62	6757	2.04	6820.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008878681-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_SATURATED
008878681-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED
008878681-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_SATURATED

**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.

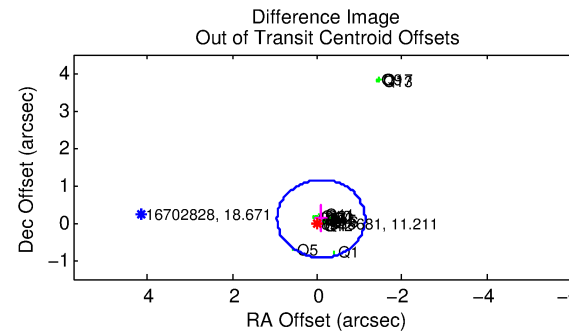
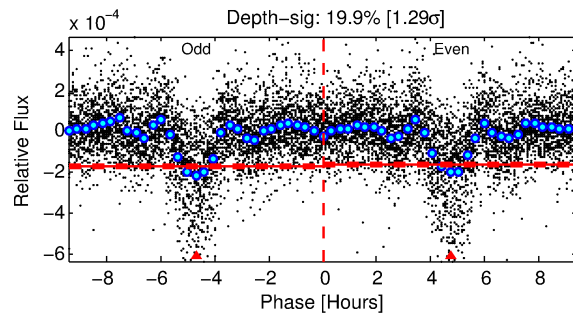
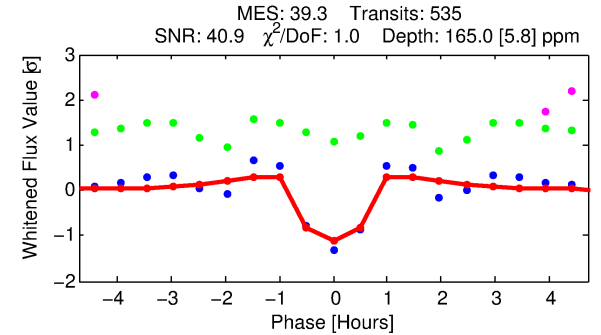
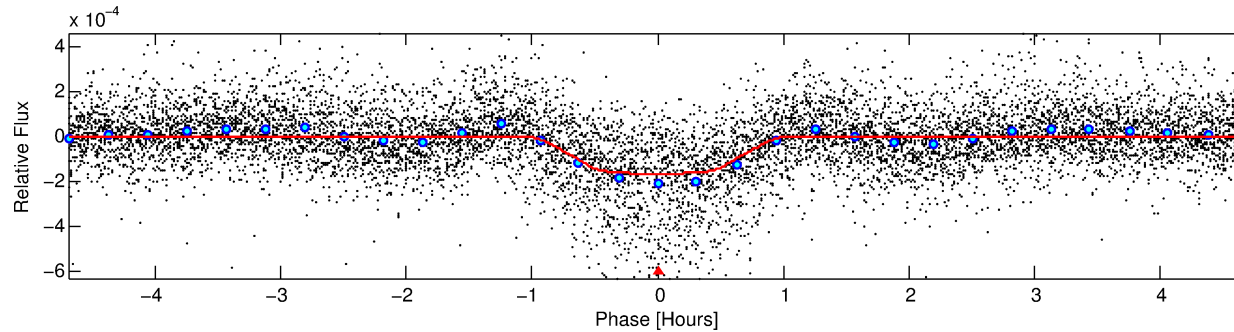
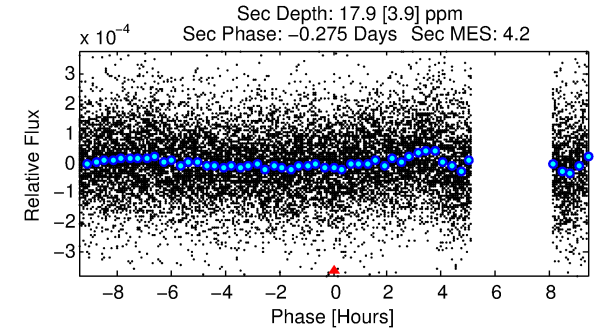
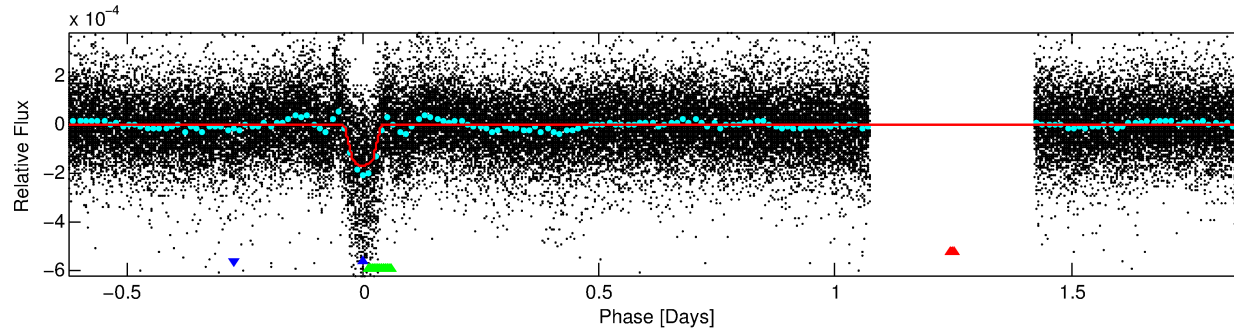
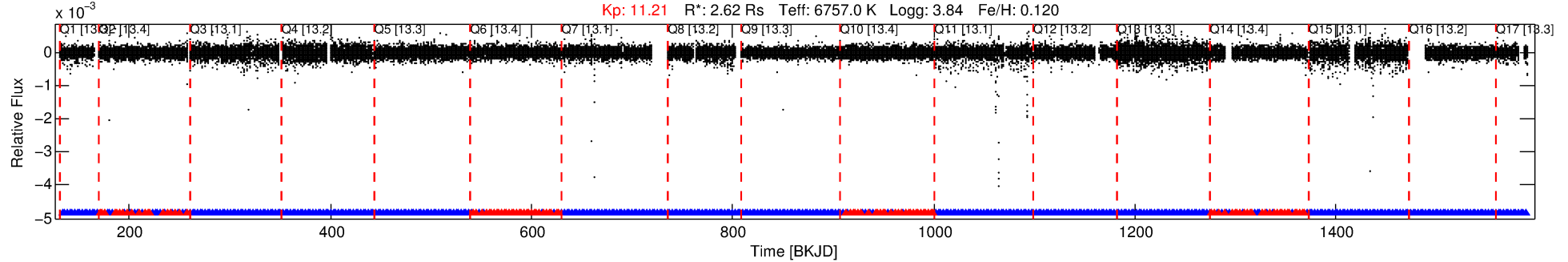
## Ephemeris Match Information For 008878681-02

No Significant Match Found

# DV One-Page Summary

KIC: 8878681 Candidate: 2 of 3 Period: 2.496 d  
KOI: K07103 Corr: No Ephemeris Match

Kp: 11.21 R\*: 2.62 Rs Teff: 6757.0 K Logg: 3.84 Fe/H: 0.120



## DV Fit Results:

Period = 2.49632 [0.00000] d  
Epoch = 133.4569 [0.0005] BKJD  
Rp/R\* = 0.0138 [0.0019]  
a/R\* = 5.71 [4.41]  
b = 0.90 [0.17]  
Seff = 6820.63 [3372.82]  
Teq = 2317 [286] K  
Rp = 3.93 [1.45] Re  
a = 0.0433 [0.0134] AU  
Ag = 1.20 [0.71] [0.28σ]  
Teffp = 3746 [350] K [3.16σ]

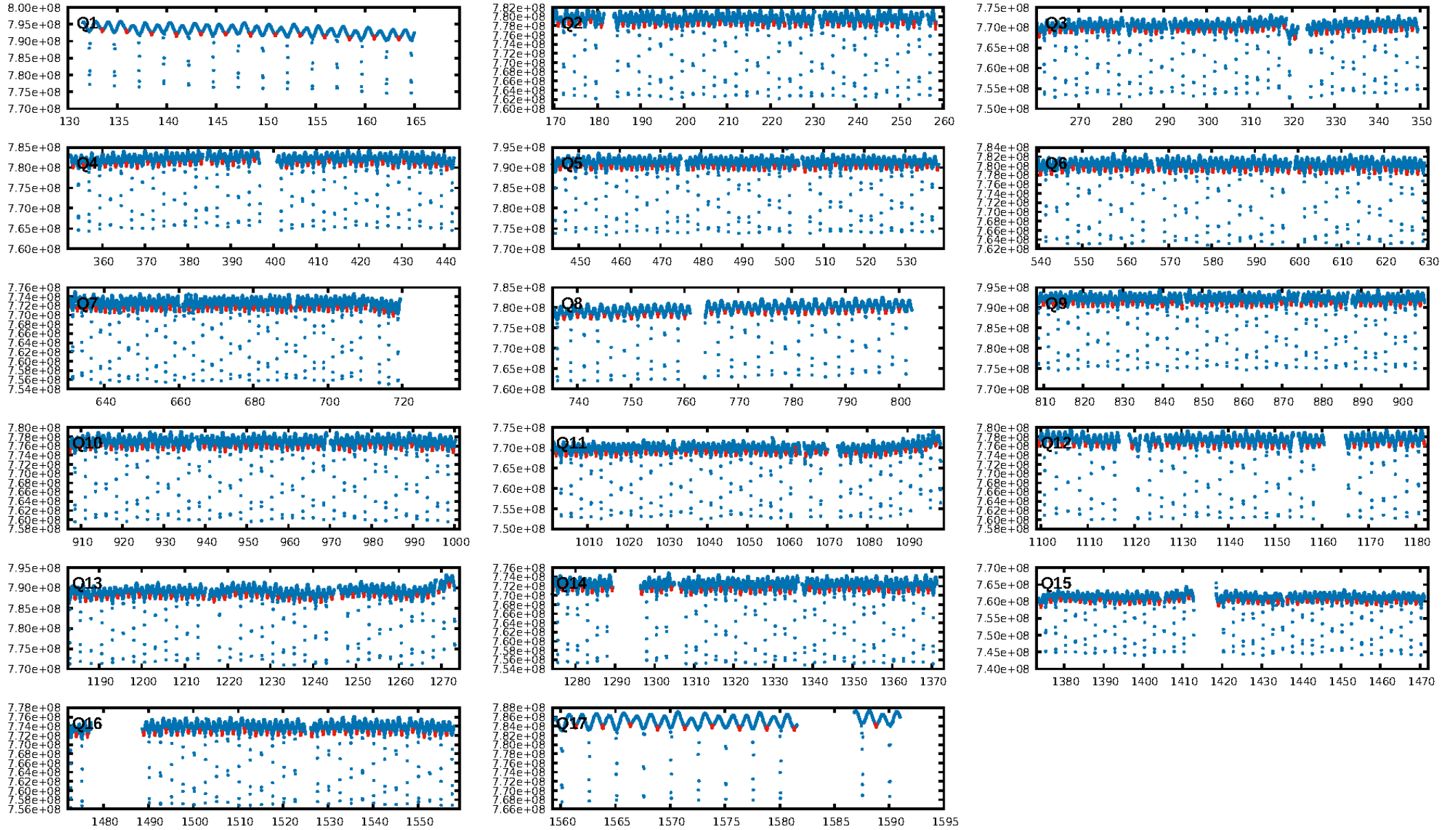
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.79 [407/512]  
GhostDiagnostic-chr: 1.339  
Centroid-sig: N/A  
Centroid-so: 0.565 arcsec [3.99σ]  
OotOffset-rm: 0.146 arcsec [0.42σ]  
KicOffset-rm: 0.420 arcsec [1.08σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.82 [14/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:27:26 Z

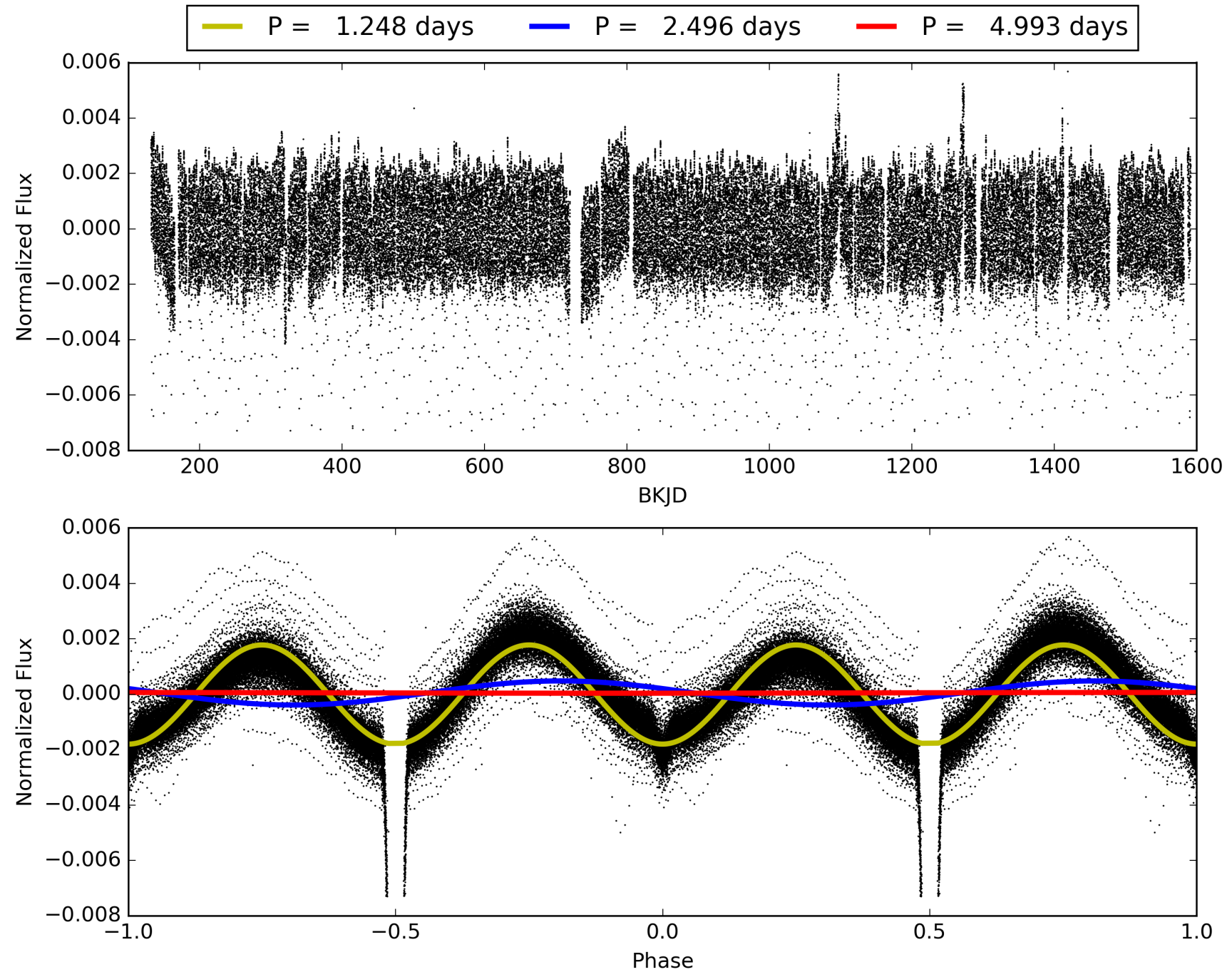
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008878681-02, PDC Light Curves





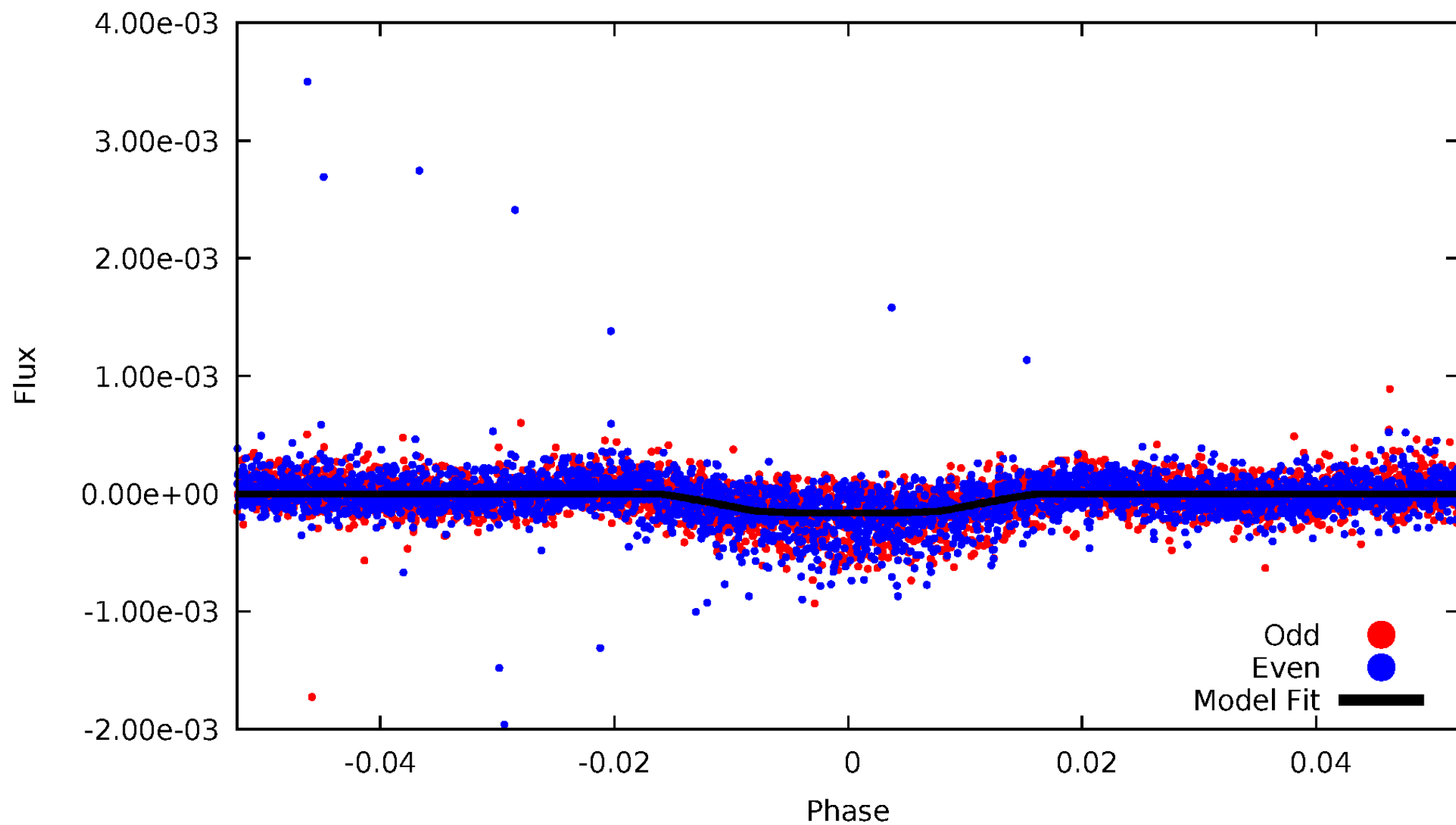
TCE 008878681-02





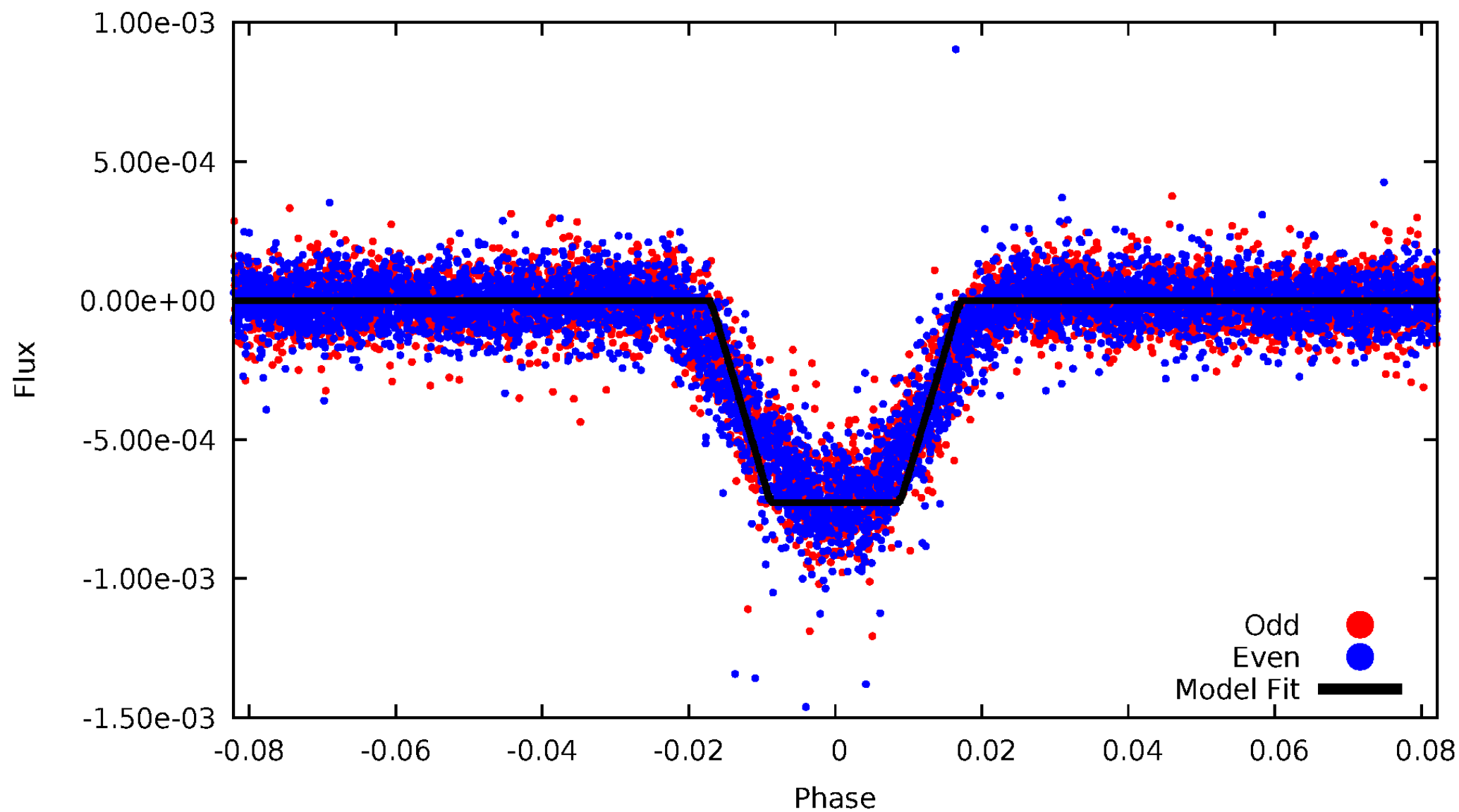
DV Odd/Even

TCE 008878681-02



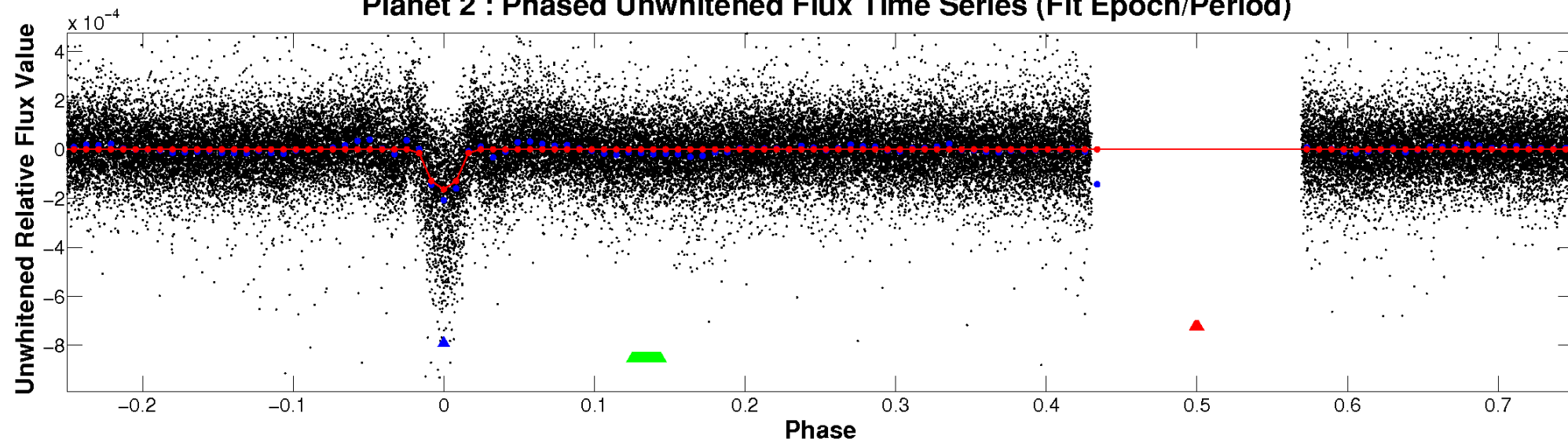
# ALT Odd/Even

TCE 008878681-02

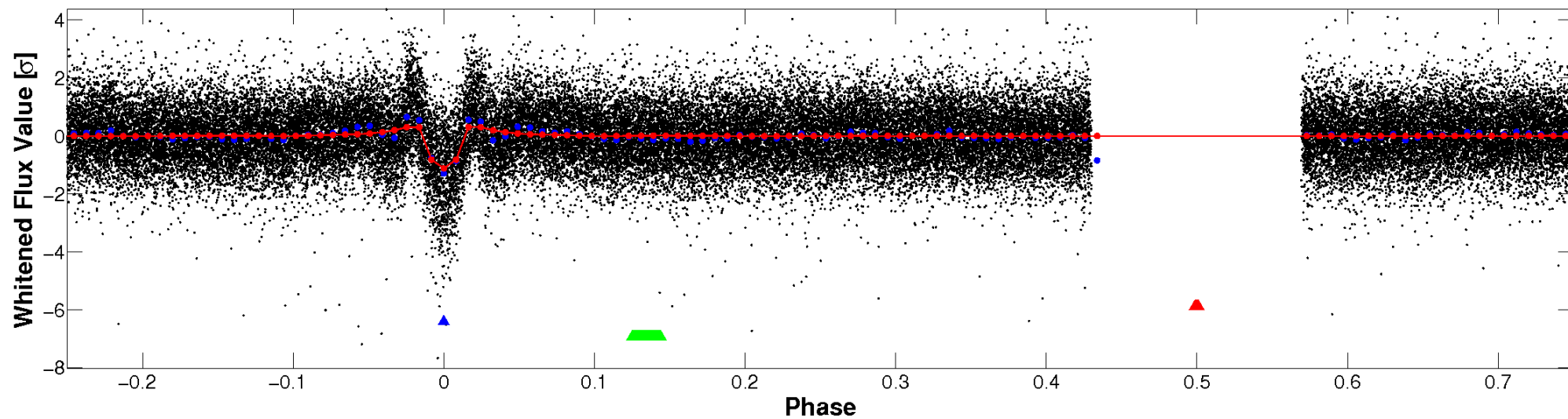


# Non-Whitened Vs. Whitened Light Curve

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

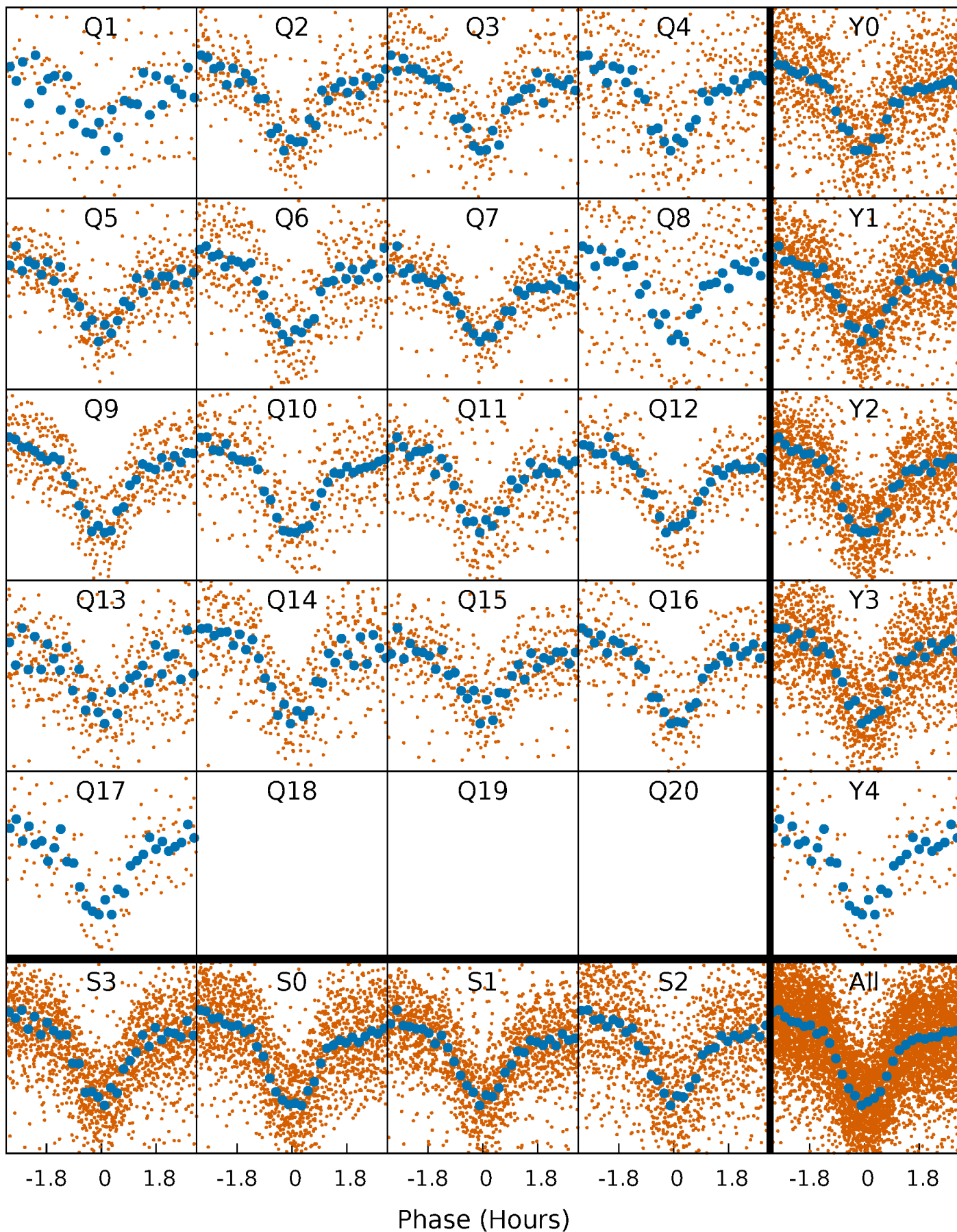


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



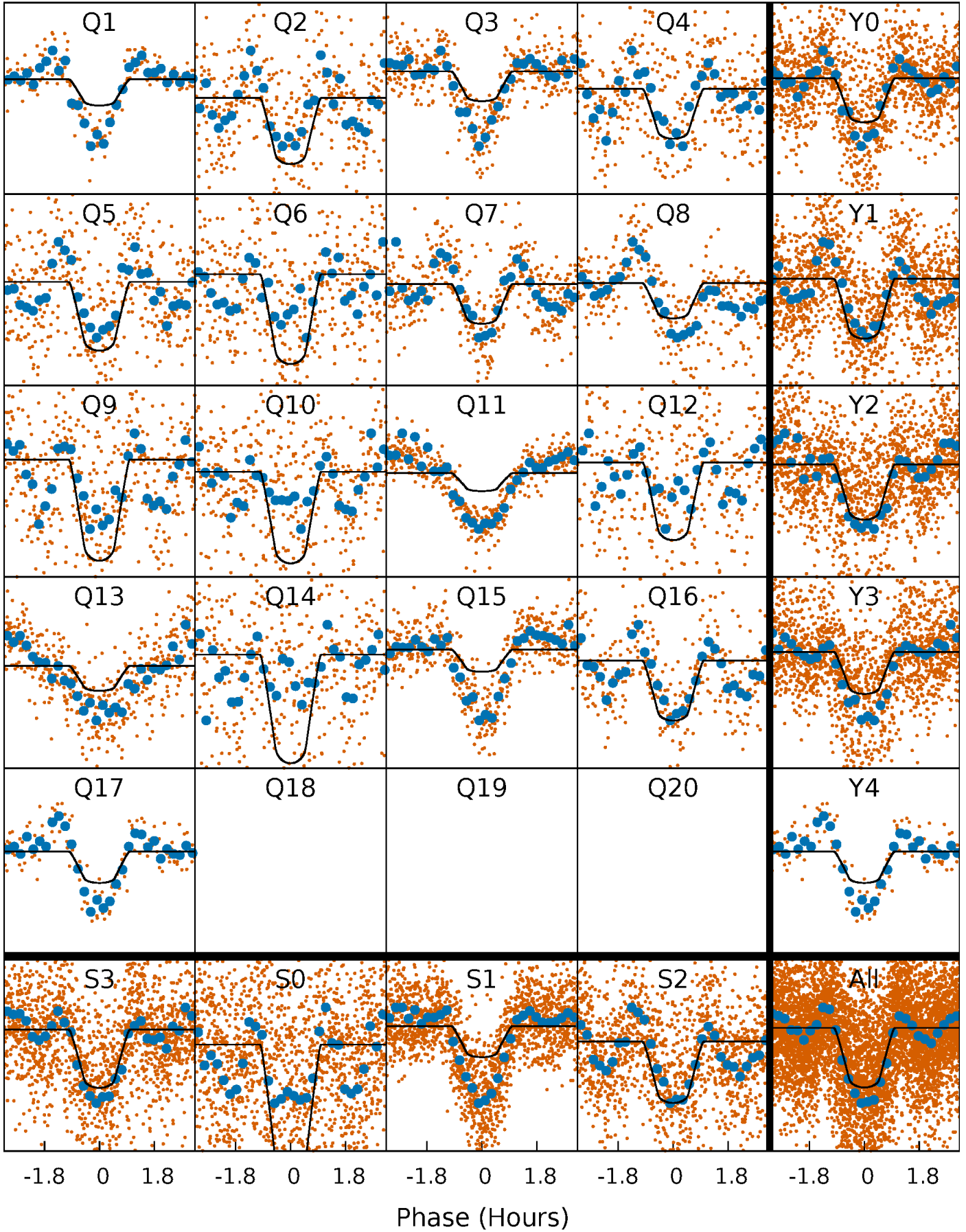
# PDC Quarter-Phased Transit Curves

TCE 008878681-02   P= 2.496319 Days    $T_0=133.456857$  (BKJD)



# DV Quarter-Phased Transit Curves

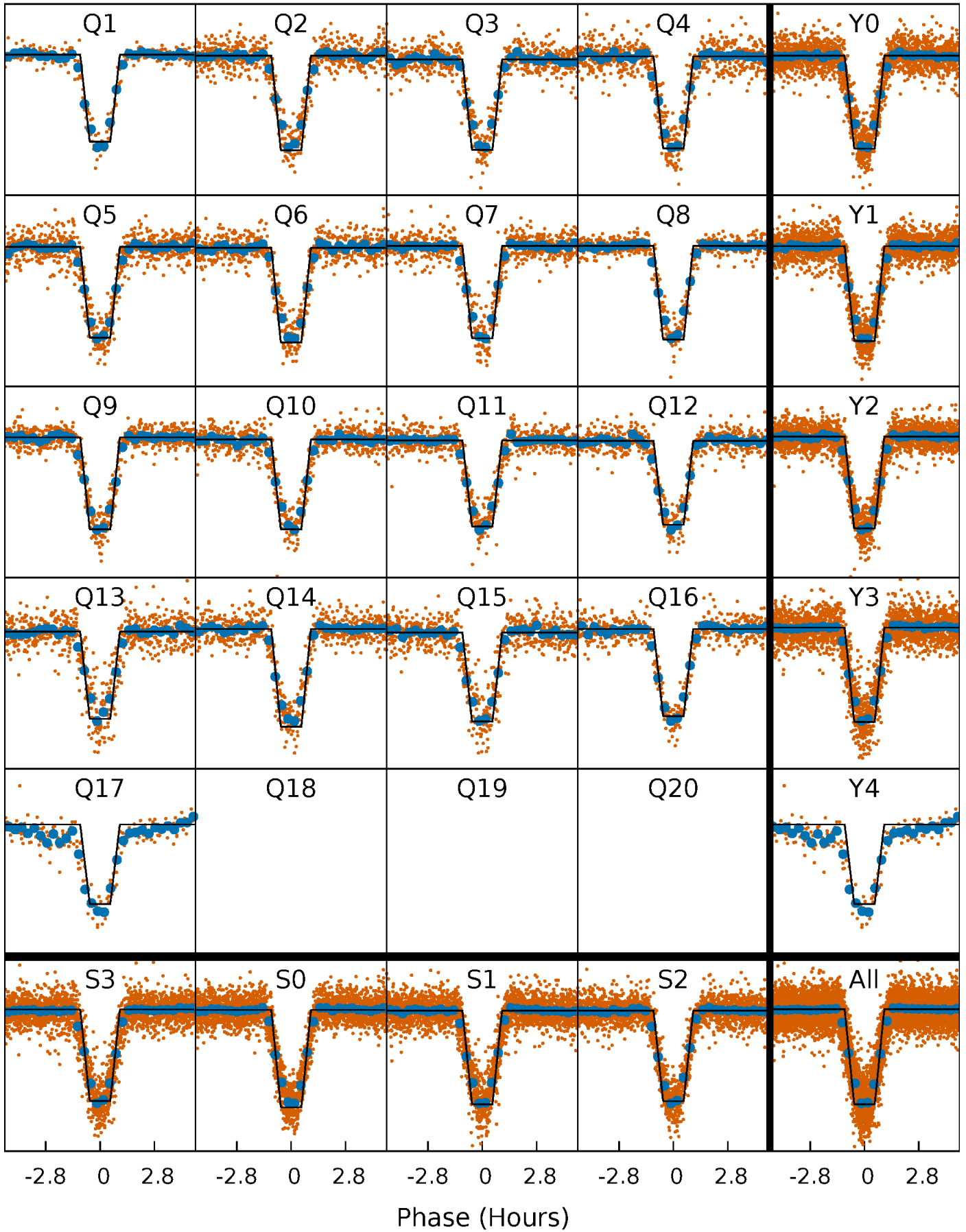
TCE 008878681-02 P= 2.496319 Days  $T_0=133.456857$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

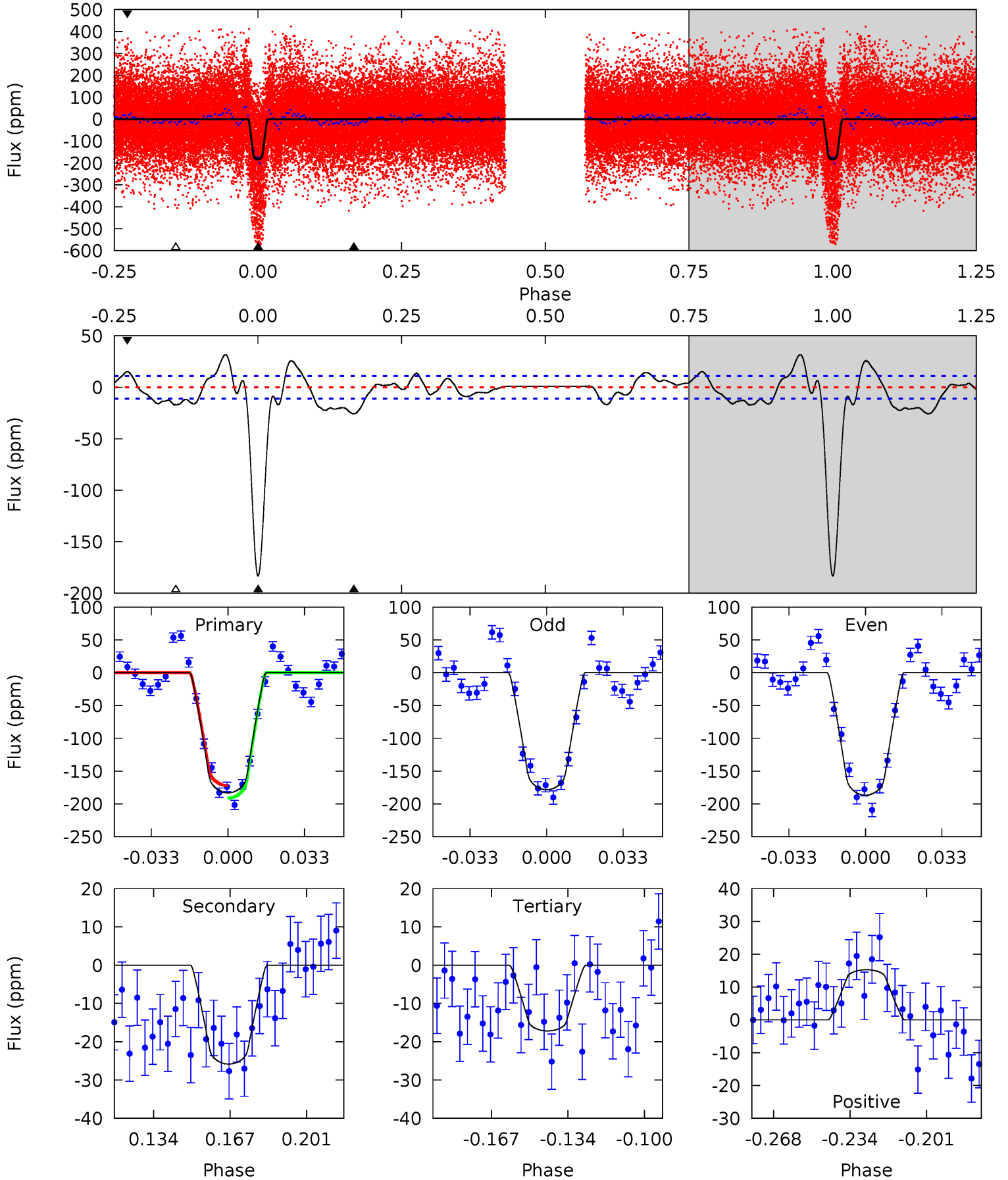
TCE 008878681-02   P= 2.496329 Days    $T_0=133.453429$  (BKJD)



# DV Model-Shift Uniqueness Test

008878681-02, P = 2.496319 Days, E = 130.960538 Days

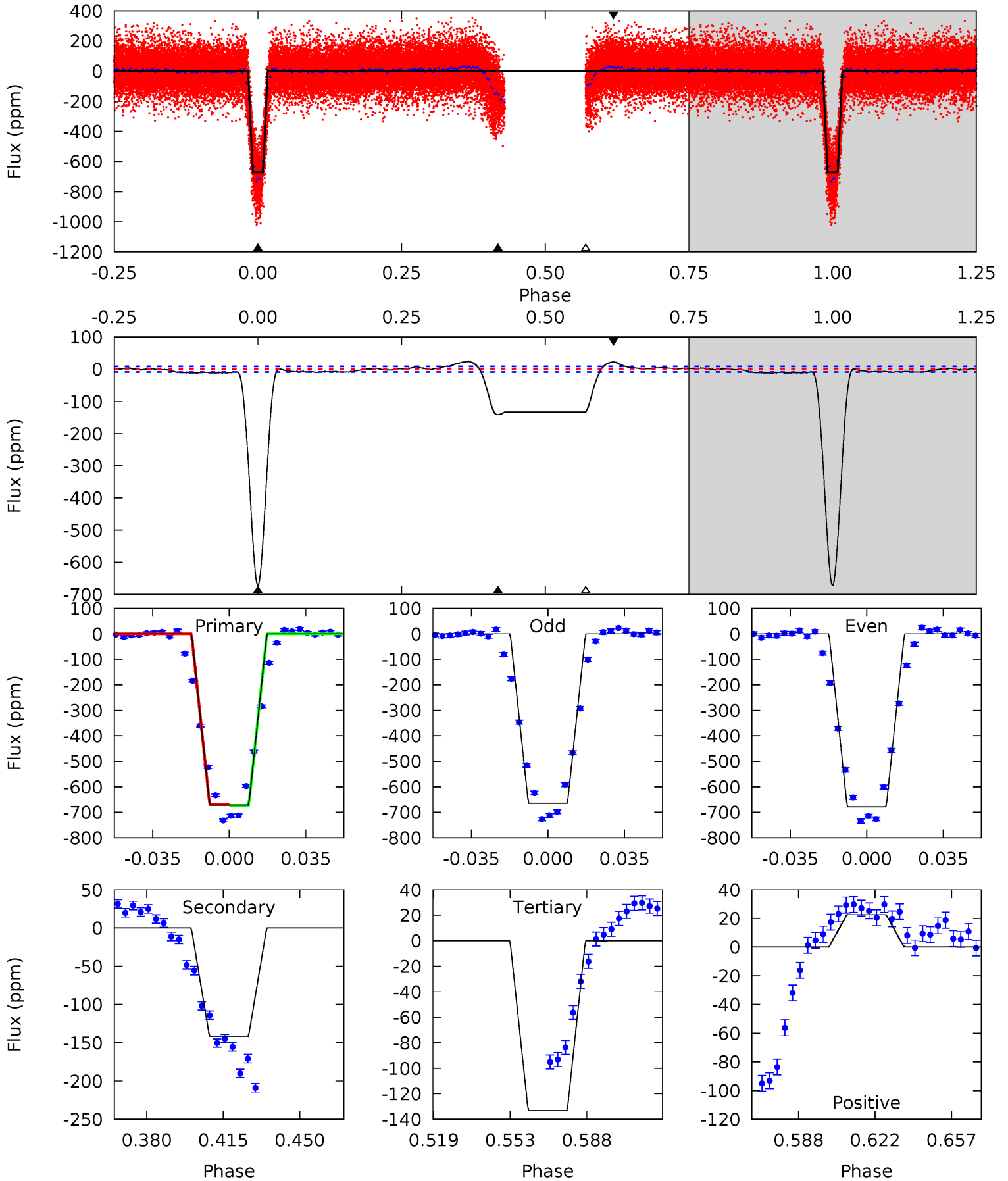
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
79.8	11.3	7.48	6.65	4.79	2.13	4.89	72.3	73.2	3.77	4.60	1.85	1.31	0.15	4.21



# Alt Model-Shift Uniqueness Test

008878681-02, P = 2.496329 Days, E = 130.957100 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
375.2	79.0	74.3	12.6	4.78	2.11	9.05	300.9	362.6	4.70	66.4	3.69	1.01	0.03	0.85





### Stellar Parameters For KIC 008878681

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6757^{+150}_{-217}$	$3.842^{+0.273}_{-0.117}$	$0.120^{+0.250}_{-0.300}$	$2.615^{+0.483}_{-0.898}$	$1.734^{+0.152}_{-0.354}$	$0.137^{+0.267}_{-0.047}$
	+2%/-3%	+7%/-3%	+208%/-250%	+18%/-34%	+9%/-20%	+195%/-35%
Source	PHO1	FLK73	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 008878681-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-26 \pm 2$	$3.76^{+0.73}_{-0.77}$	$3178^{+200}_{-275}$	$4173^{+274}_{-277}$	$1.899^{+0.964}_{-0.616}$
Alt.	$-141 \pm 2$	$7.45^{+1.14}_{-1.27}$	$3170^{+217}_{-256}$	$4508^{+169}_{-180}$	$2.602^{+1.066}_{-0.631}$

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

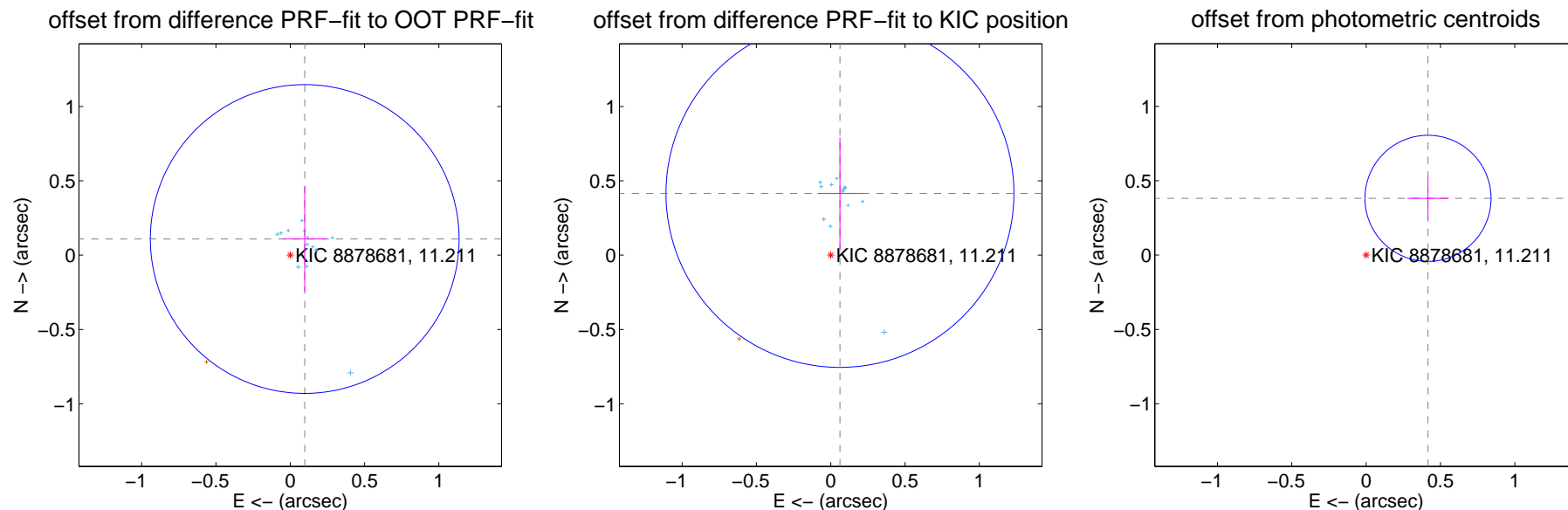
## DV Centroid Data

Supplemental centroid analysis for 008878681-02. **Kepler magnitude: 11.21.** Transit SNR 40.88

There are 14 quarters with good PRF difference image offsets

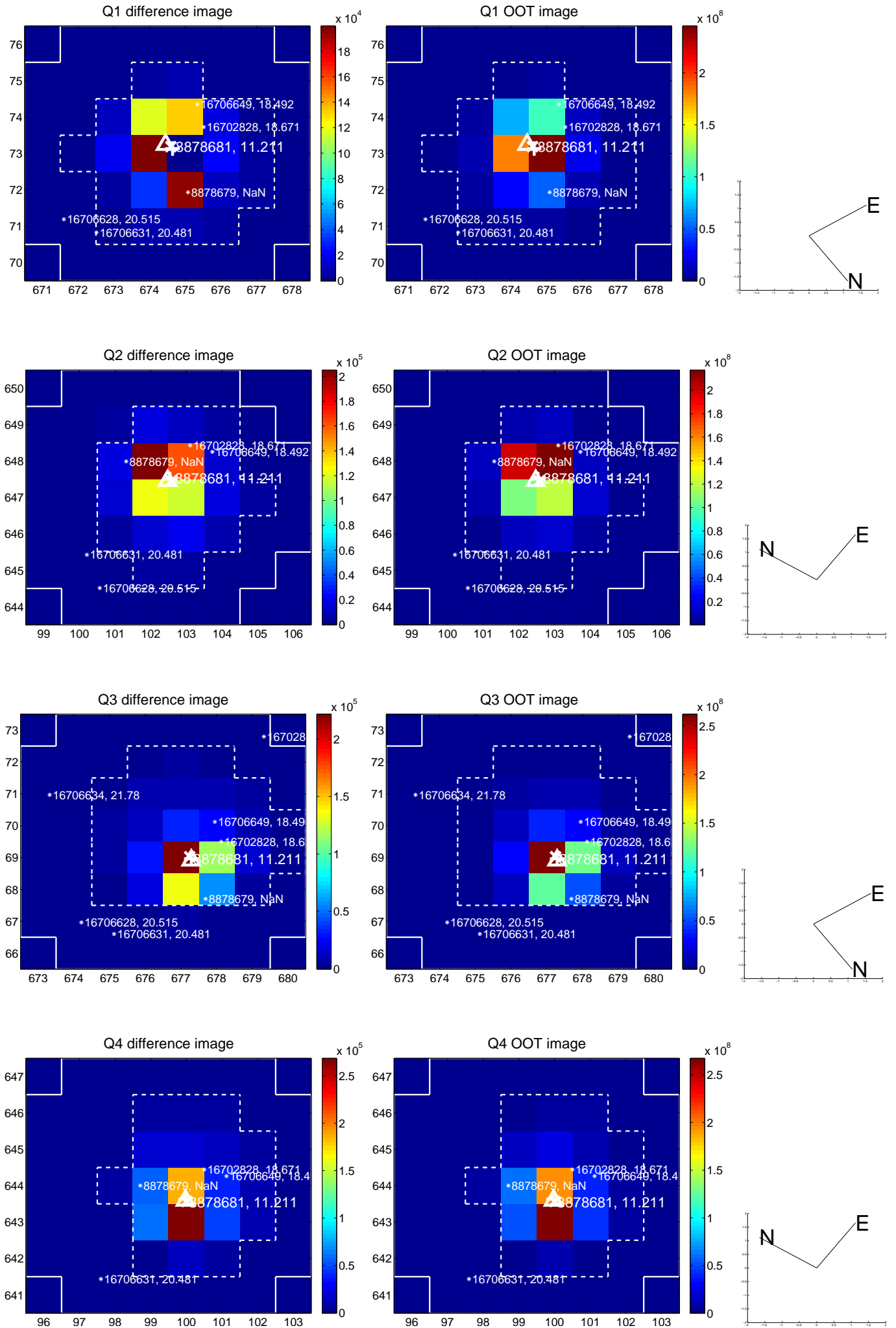
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.146 \pm 0.346$	0.42	$-0.097 \pm 0.145$	$0.109 \pm 0.354$
PRF-fit source offset from KIC position	$0.420 \pm 0.390$	1.08	$-0.062 \pm 0.152$	$0.416 \pm 0.375$
photometric centroid source offset	<b><math>0.56 \pm 0.14</math></b>	<b>3.99</b>	$-0.42 \pm 0.14$	$0.38 \pm 0.14$

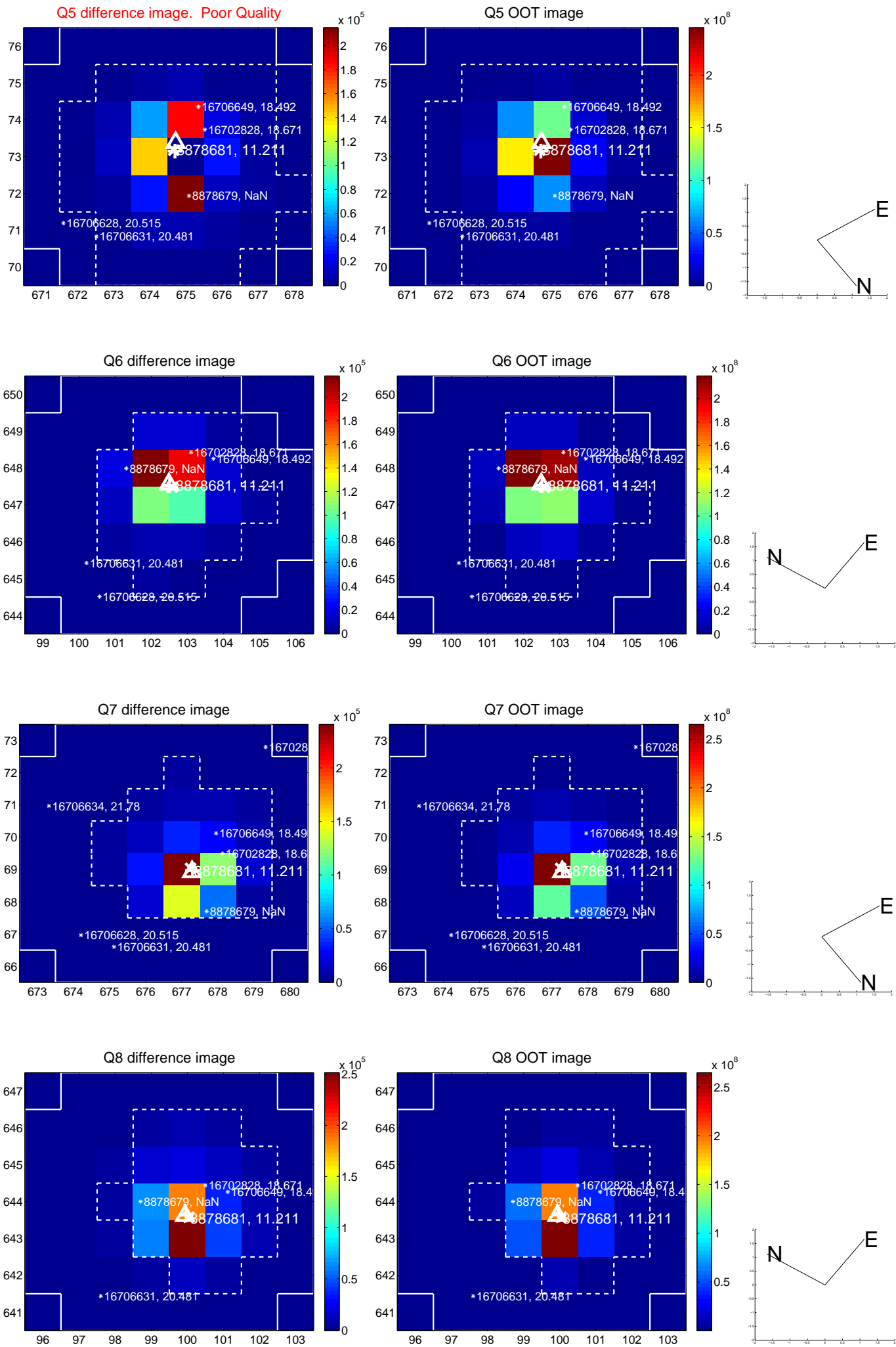


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

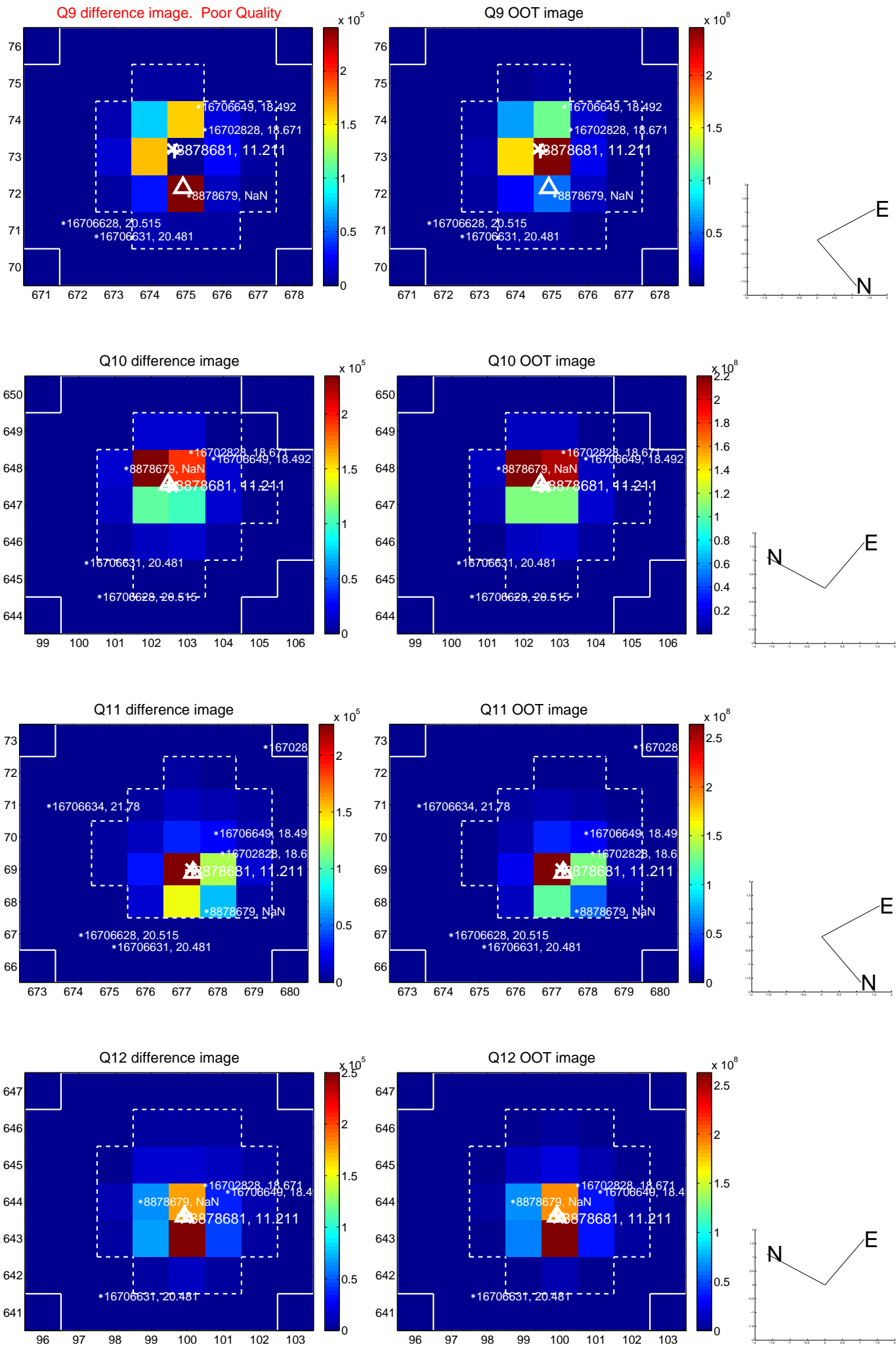
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



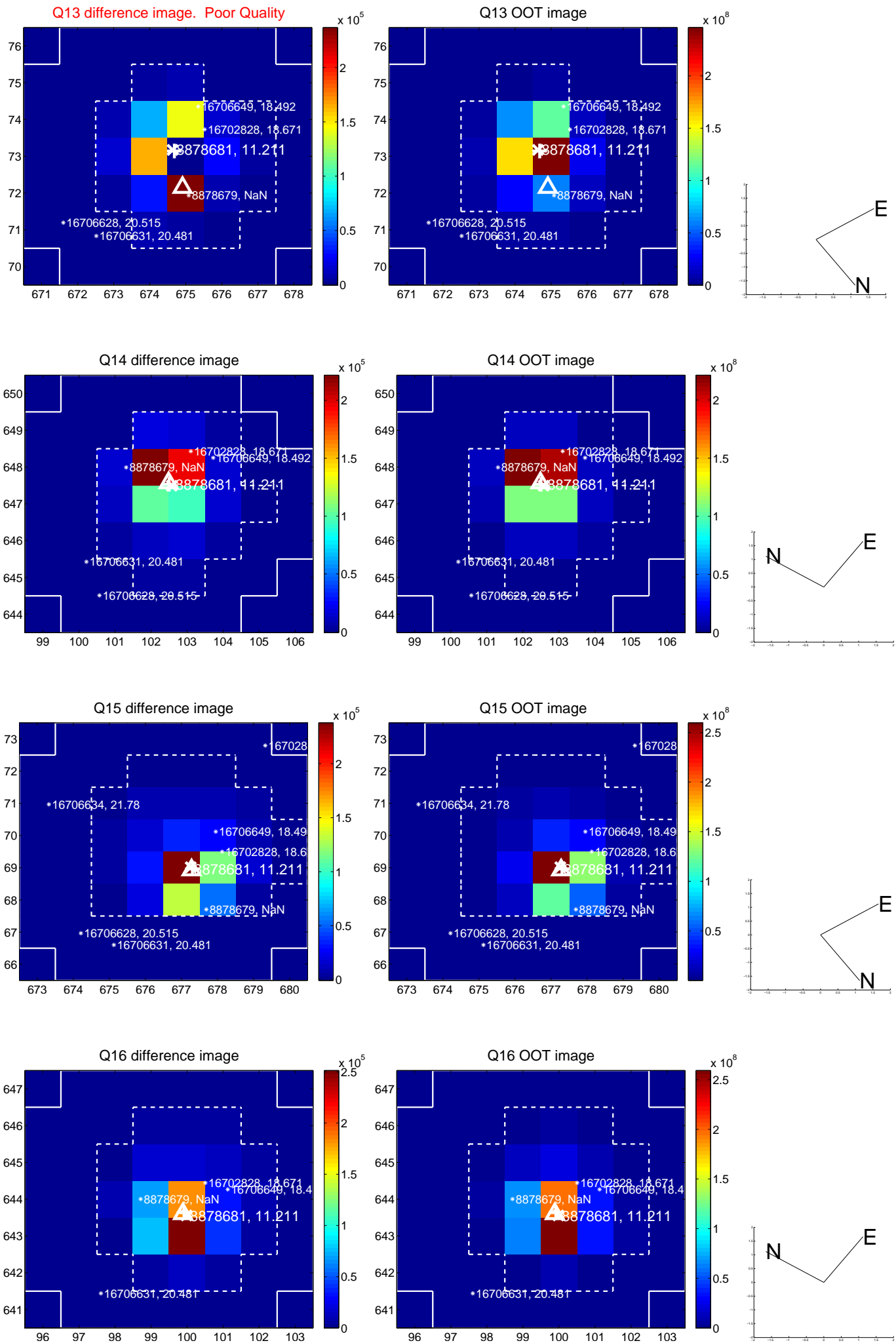
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



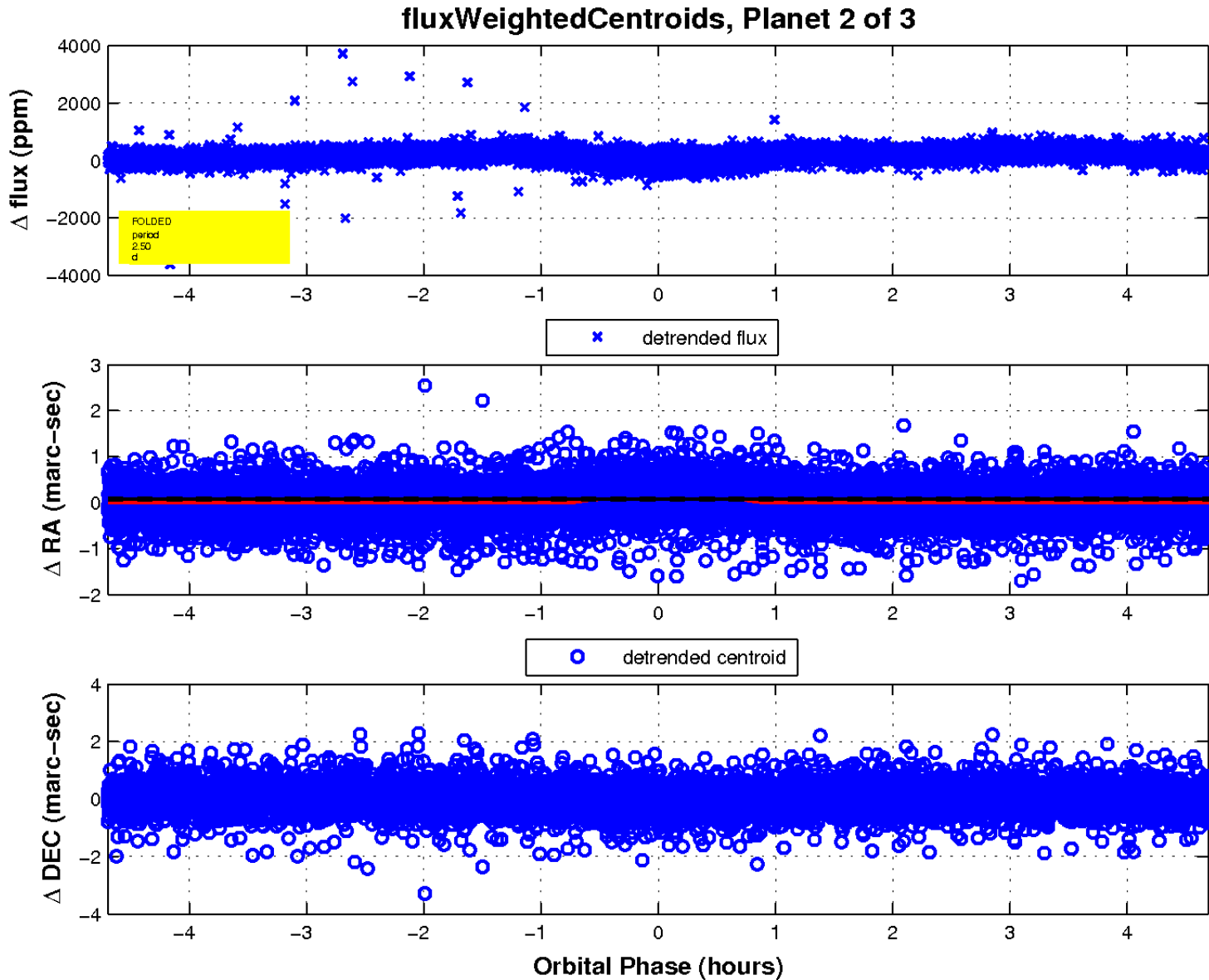
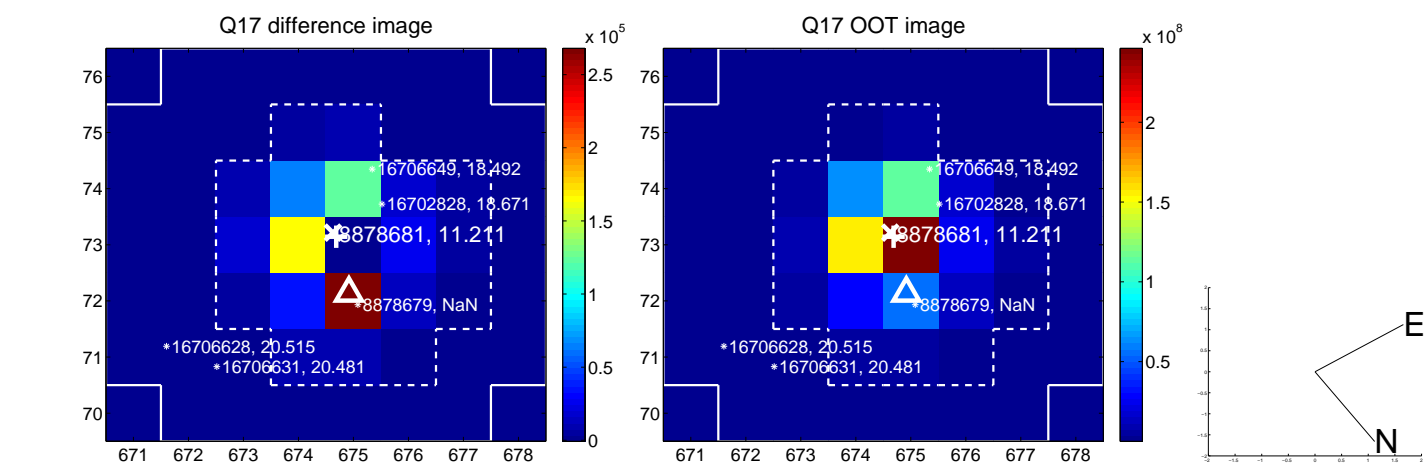
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

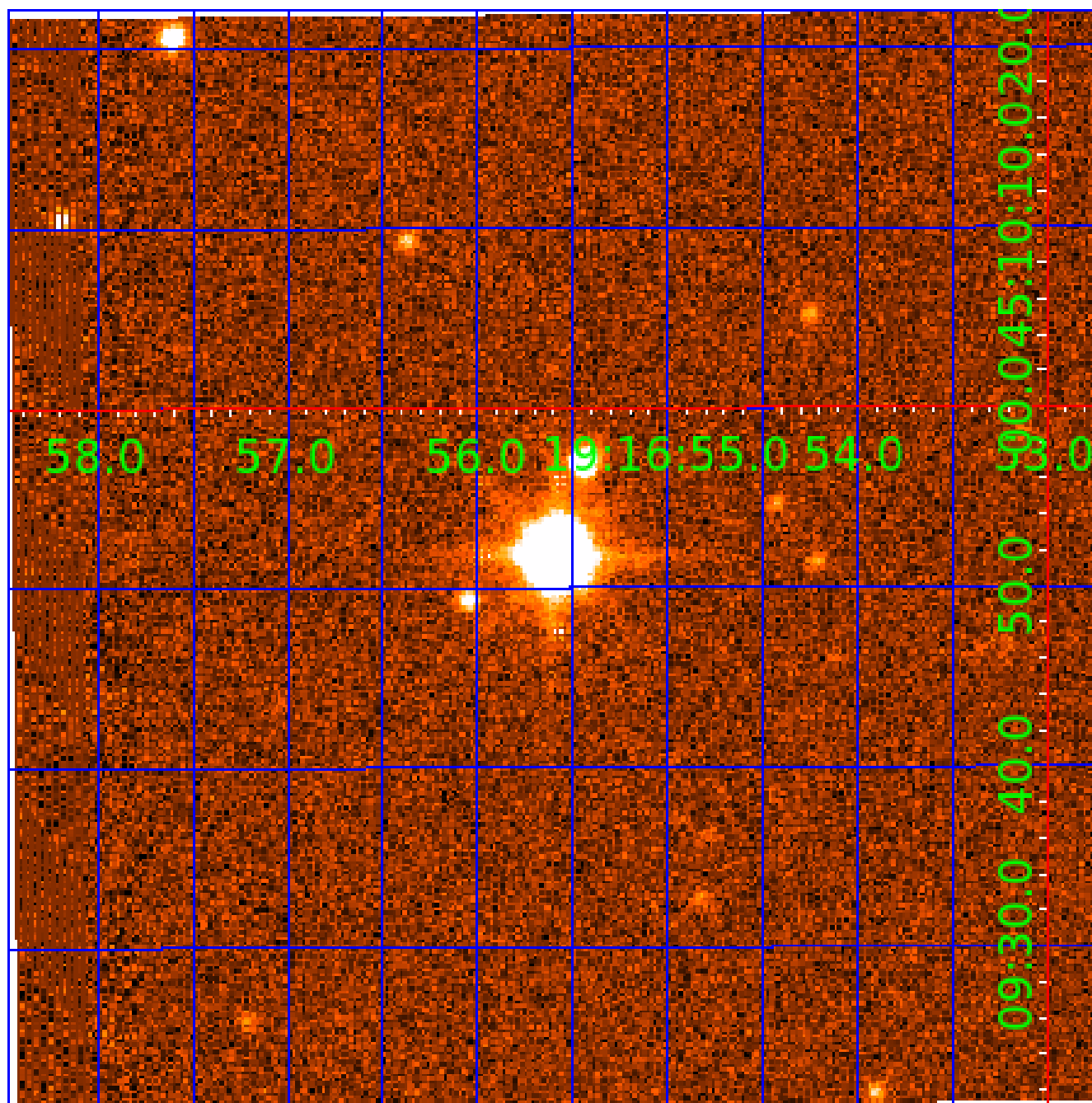


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008878681

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008878681-01	OBS	7103.01	2.496328	132.205651	20135.6	2.643	4705.2	4262.0	2.62	6757	54.77	6820.60
008878681-02	OBS	No	2.496319	133.456857	165.0	1.565	39.3	40.9	2.62	6757	3.93	6820.63
008878681-03	OBS	No	2.496401	133.768902	59.7	6.000	8.5	-1.0	2.62	6757	2.04	6820.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008878681-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_SATURATED
008878681-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_SATURATED
008878681-03	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_SATURATED

**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 008878681-03

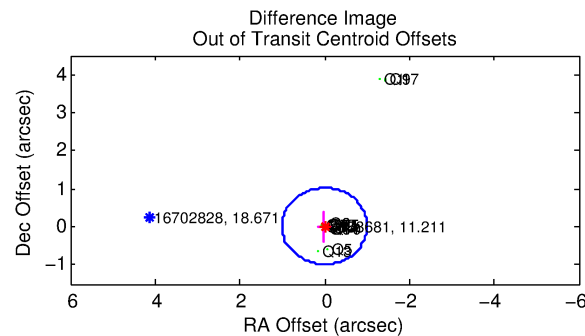
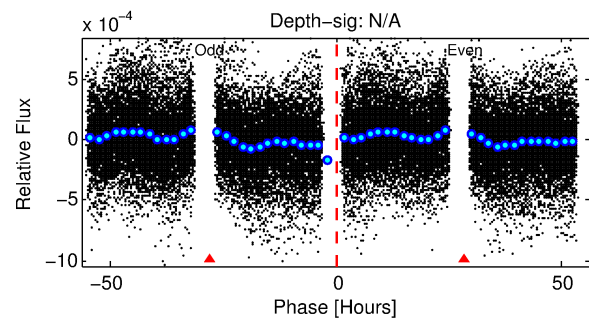
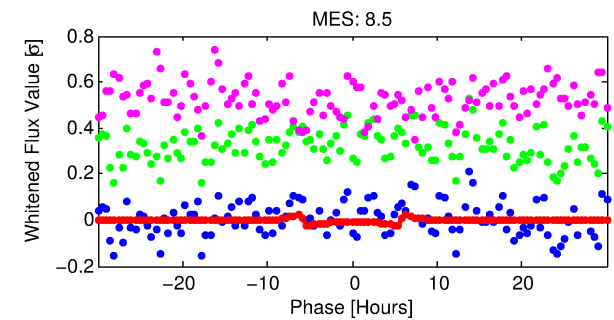
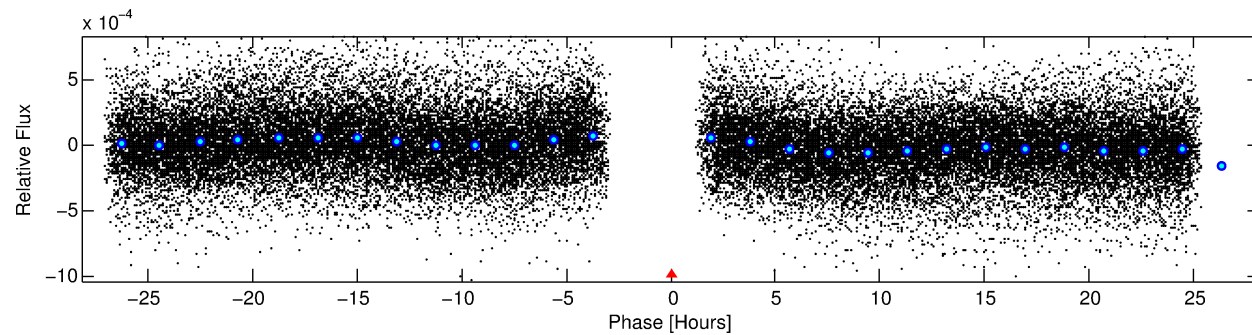
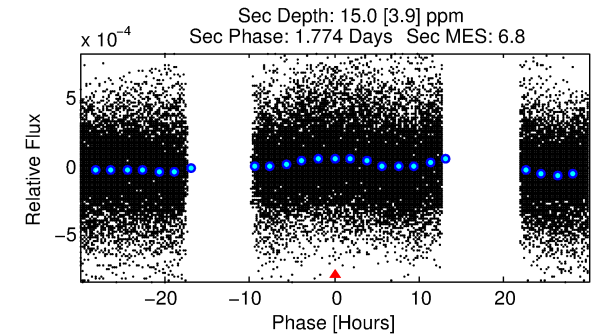
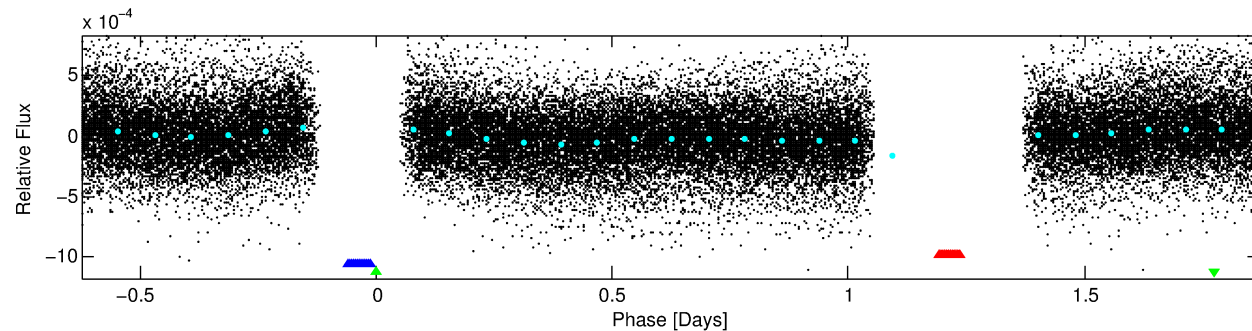
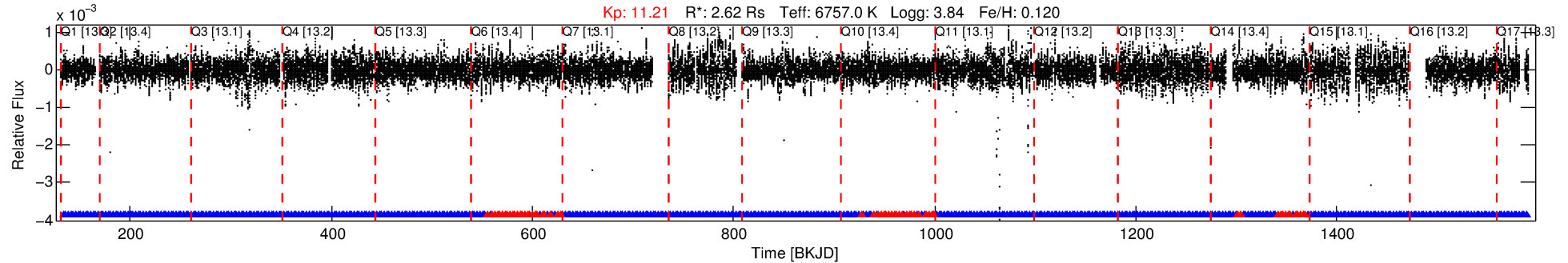
No Significant Match Found

# DV One-Page Summary

KIC: 8878681 Candidate: 3 of 3 Period: 2.496 d

KOI: K07103 Corr: No Ephemeris Match

Kp: 11.21 R\*: 2.62 Rs Teff: 6757.0 K Logg: 3.84 Fe/H: 0.120



TPS TCE Results:

Period = 2.49640 d  
Epoch = 133.7689 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: N/A

RollingBand-fgt: 0.89 [456/515]

GhostDiagnostic-chr: 2.106

Centroid-sig: N/A

Centroid-so: 0.272 arcsec [4.03σ]

OotOffset-rm: 0.020 arcsec [0.06σ]

KicOffset-rm: 0.331 arcsec [0.95σ]

OotOffset-st: 4/4/4/5 [17]

KicOffset-st: 4/4/4/5 [17]

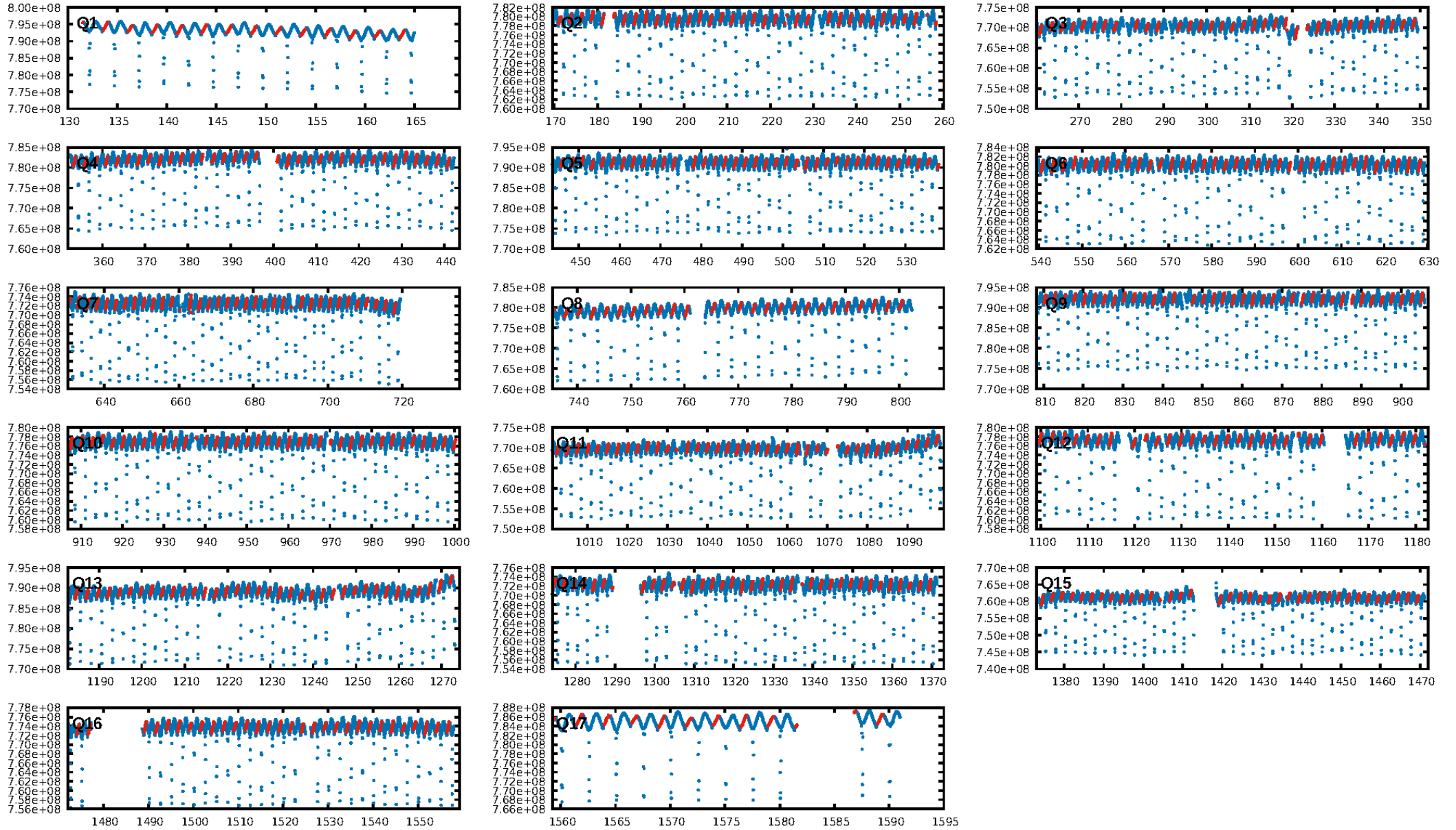
DiffImageQuality-fgm: 0.82 [14/17]

DiffImageOverlap-fno: 0.00 [0/17]

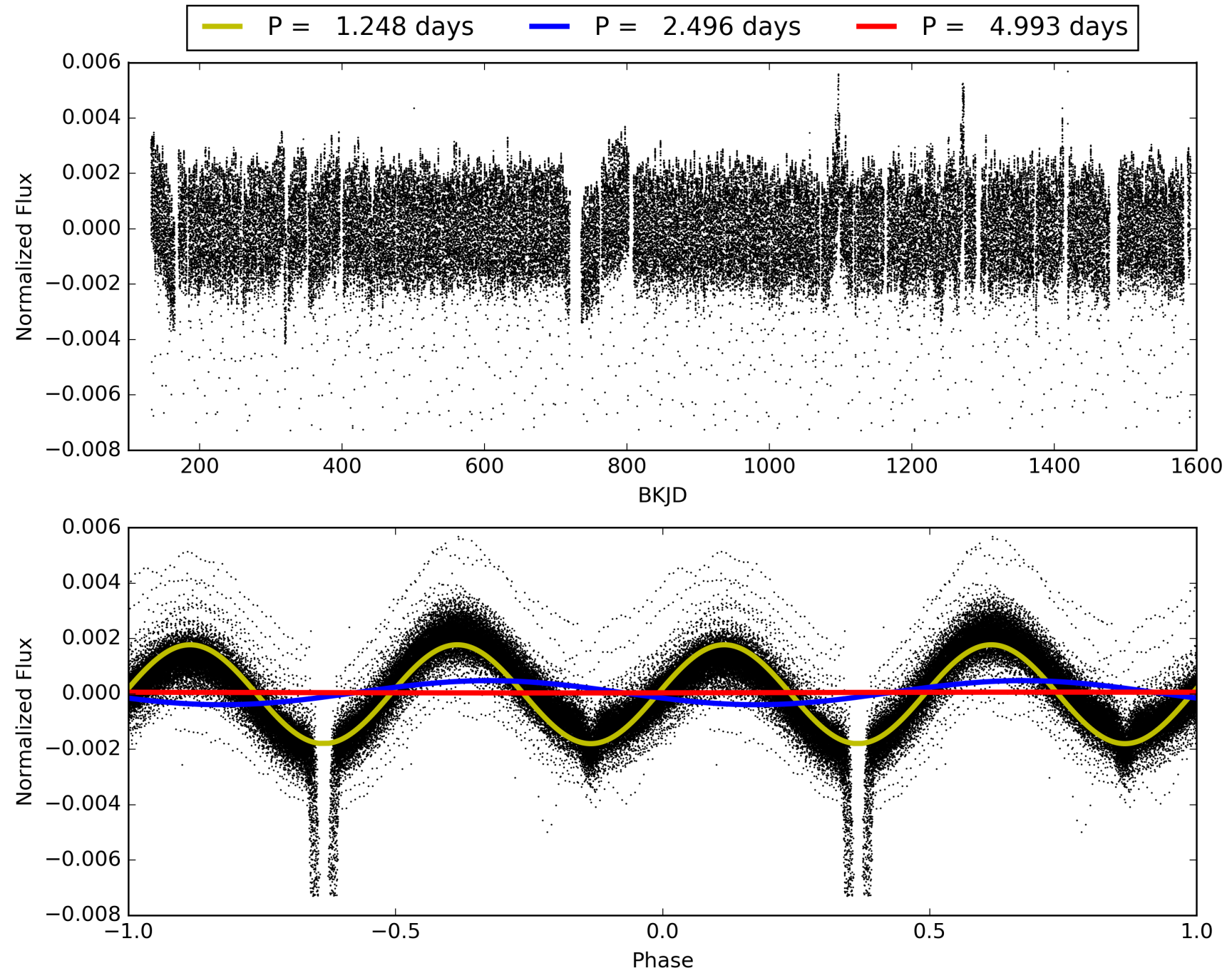
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:27:34 Z

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

# TCE 008878681-03, PDC Light Curves

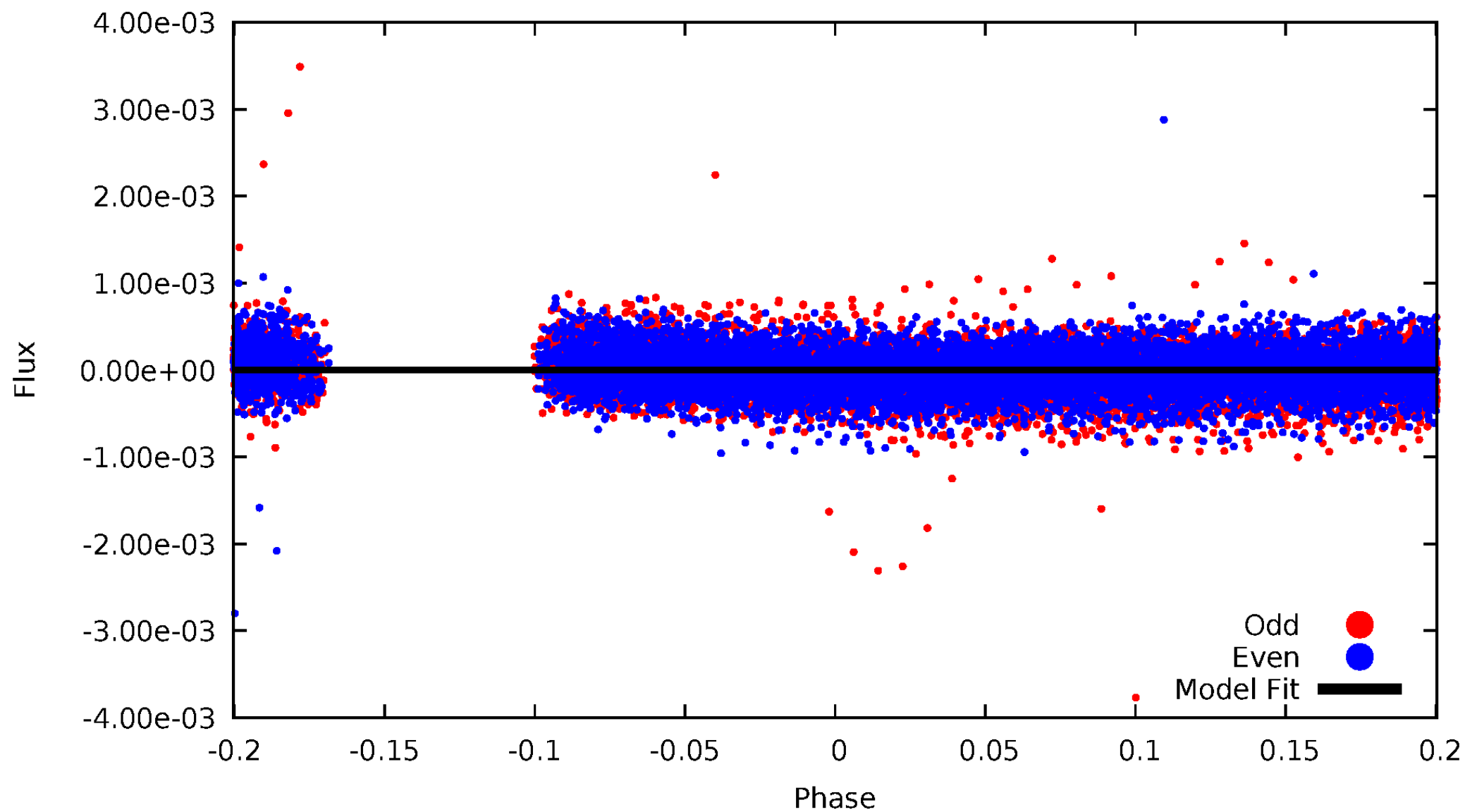


TCE 008878681-03



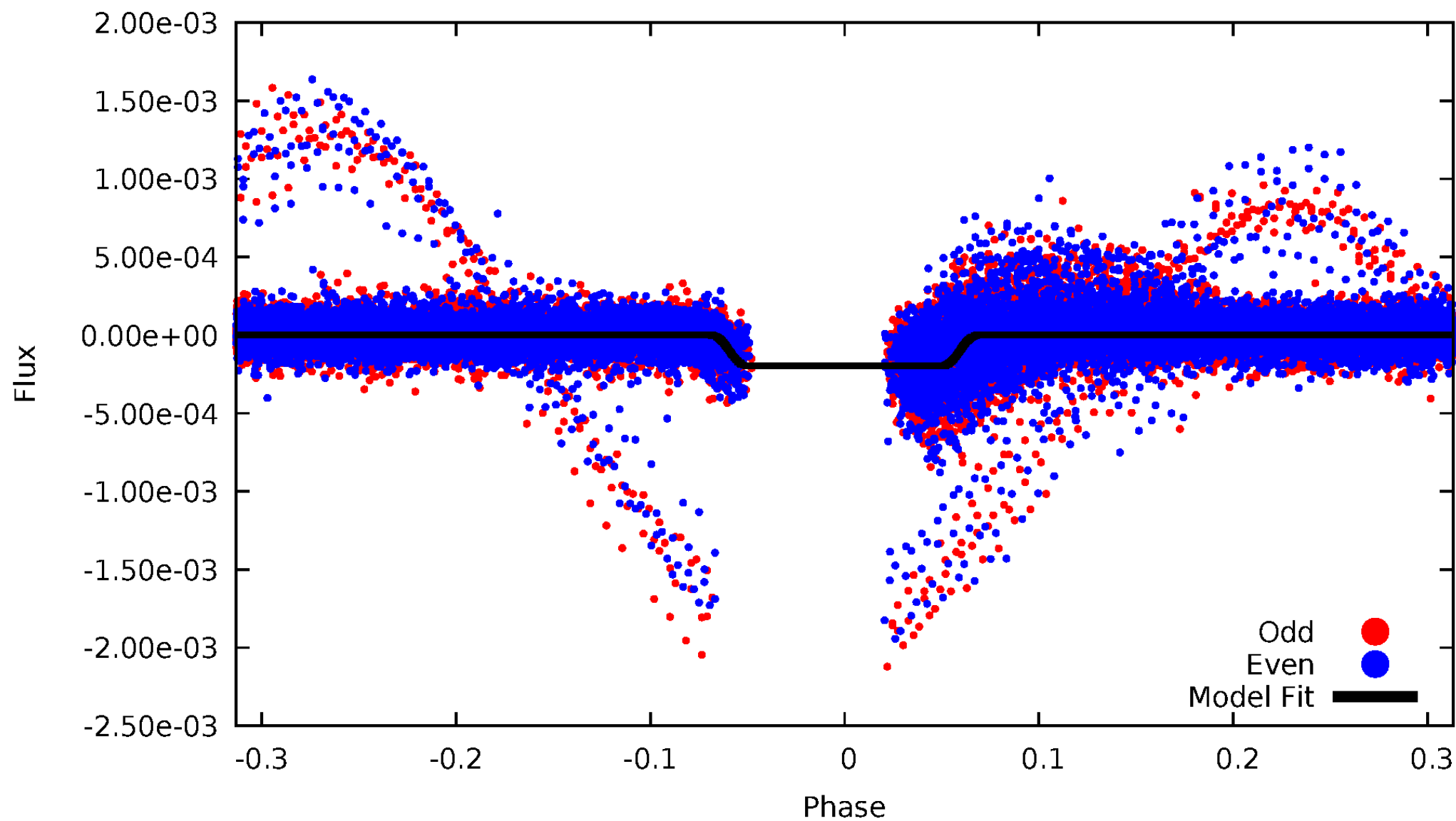
# DV Odd/Even

TCE 008878681-03



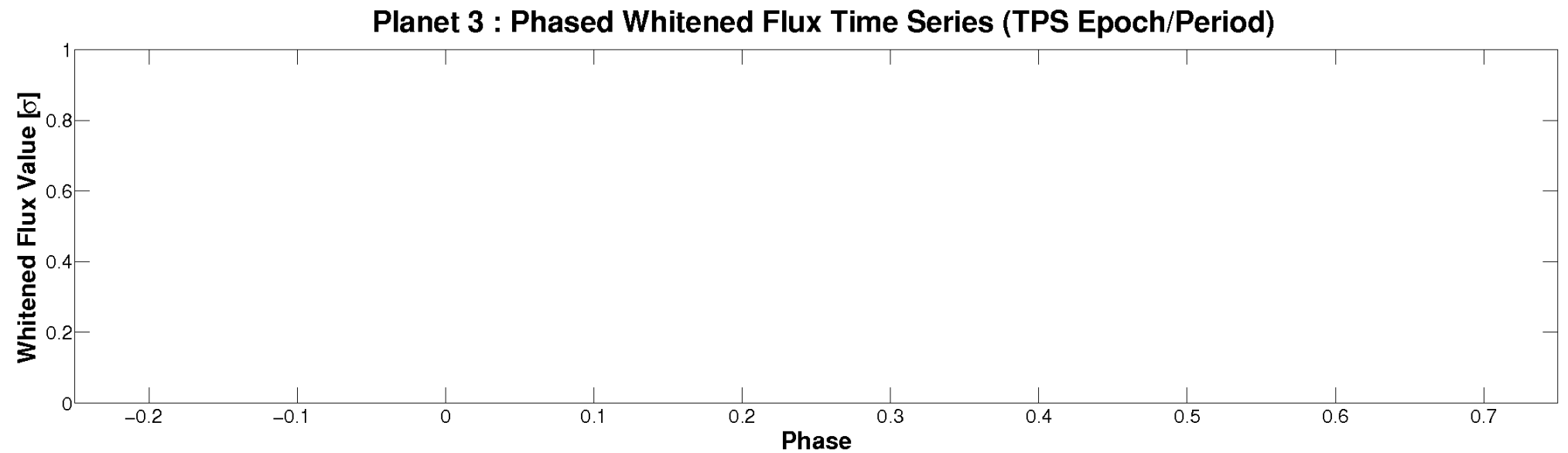
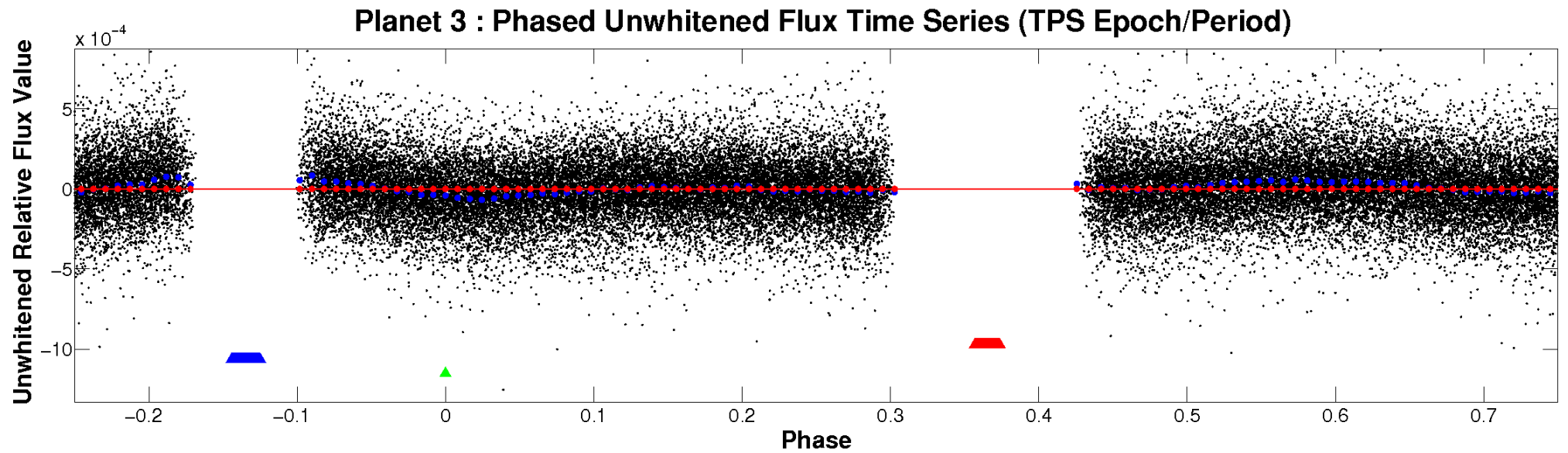
# ALT Odd/Even

TCE 008878681-03



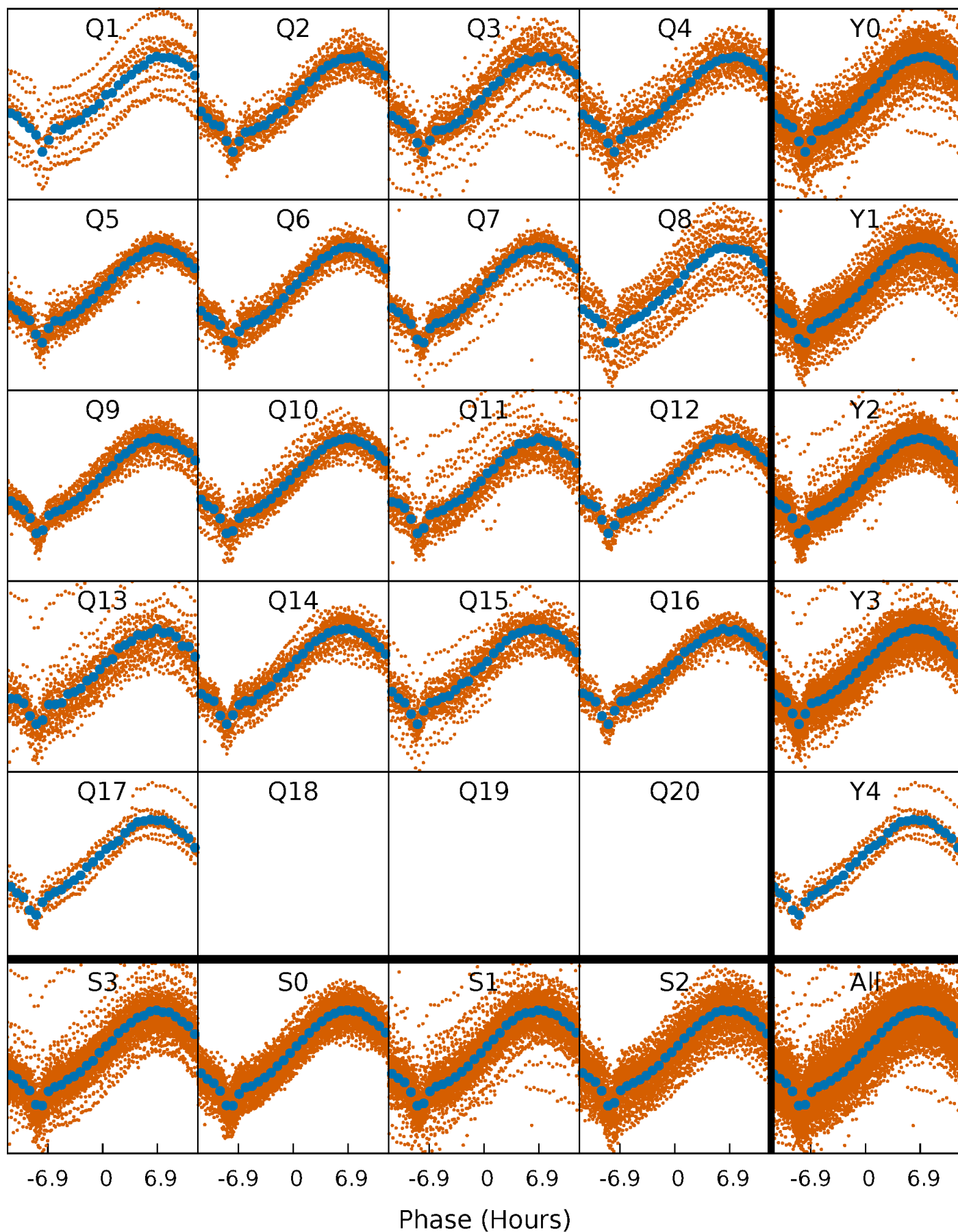


# Non-Whitened Vs. Whitened Light Curve



## PDC Quarter-Phased Transit Curves

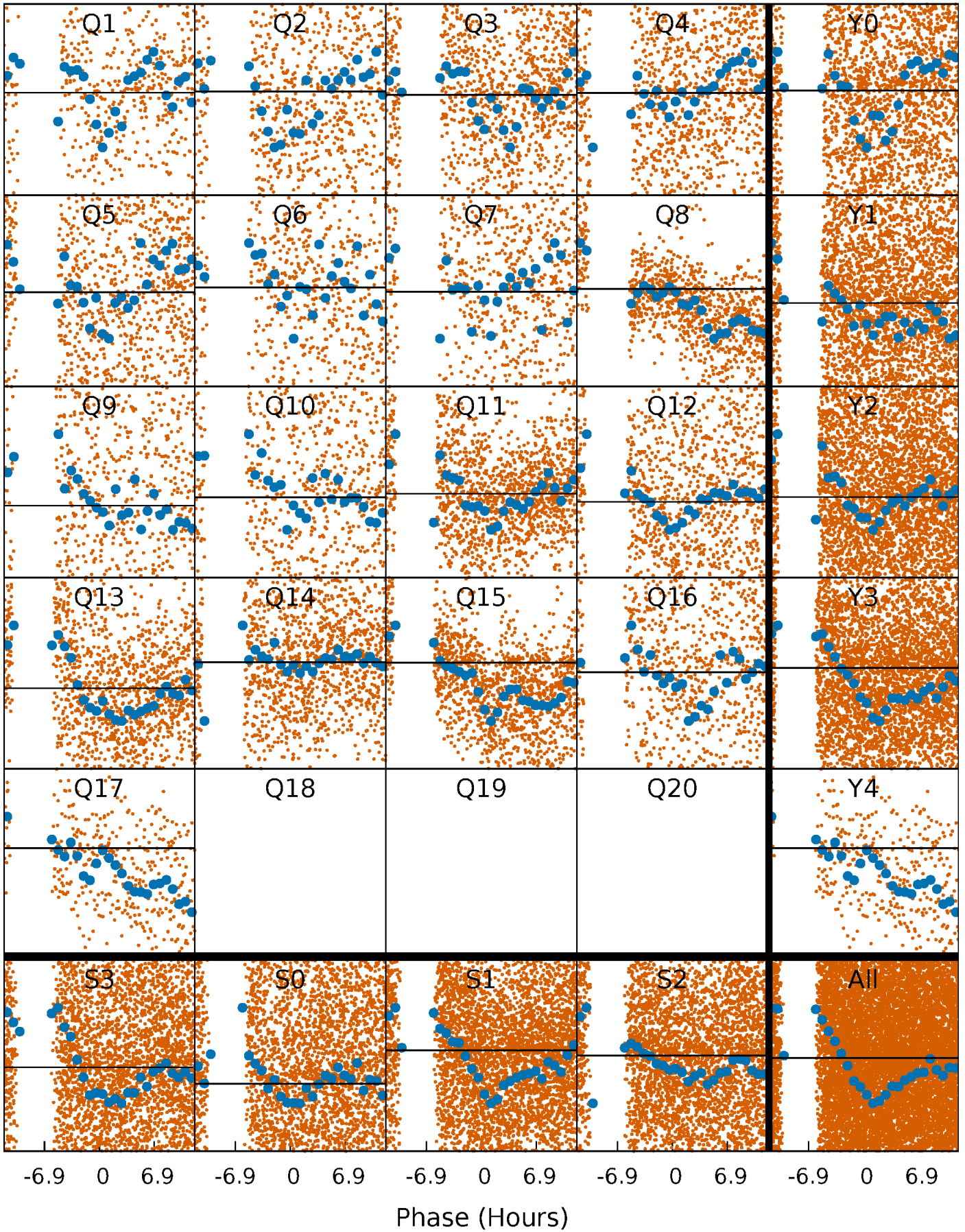
TCE 008878681-03   P= 2.496401 Days    $T_0=133.768902$  (BKJD)





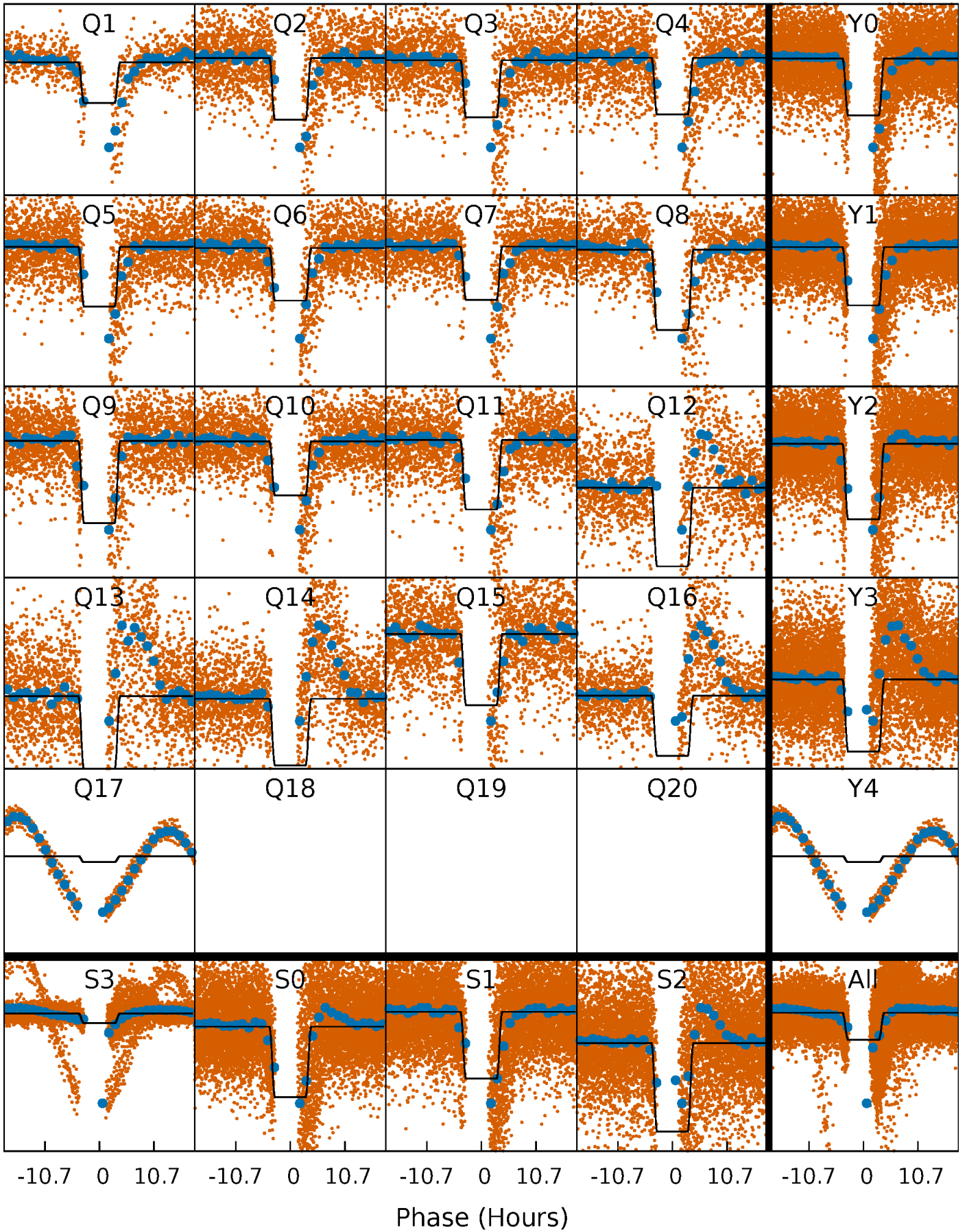
# DV Quarter-Phased Transit Curves

TCE 008878681-03   P= 2.496401 Days    $T_0=133.768902$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

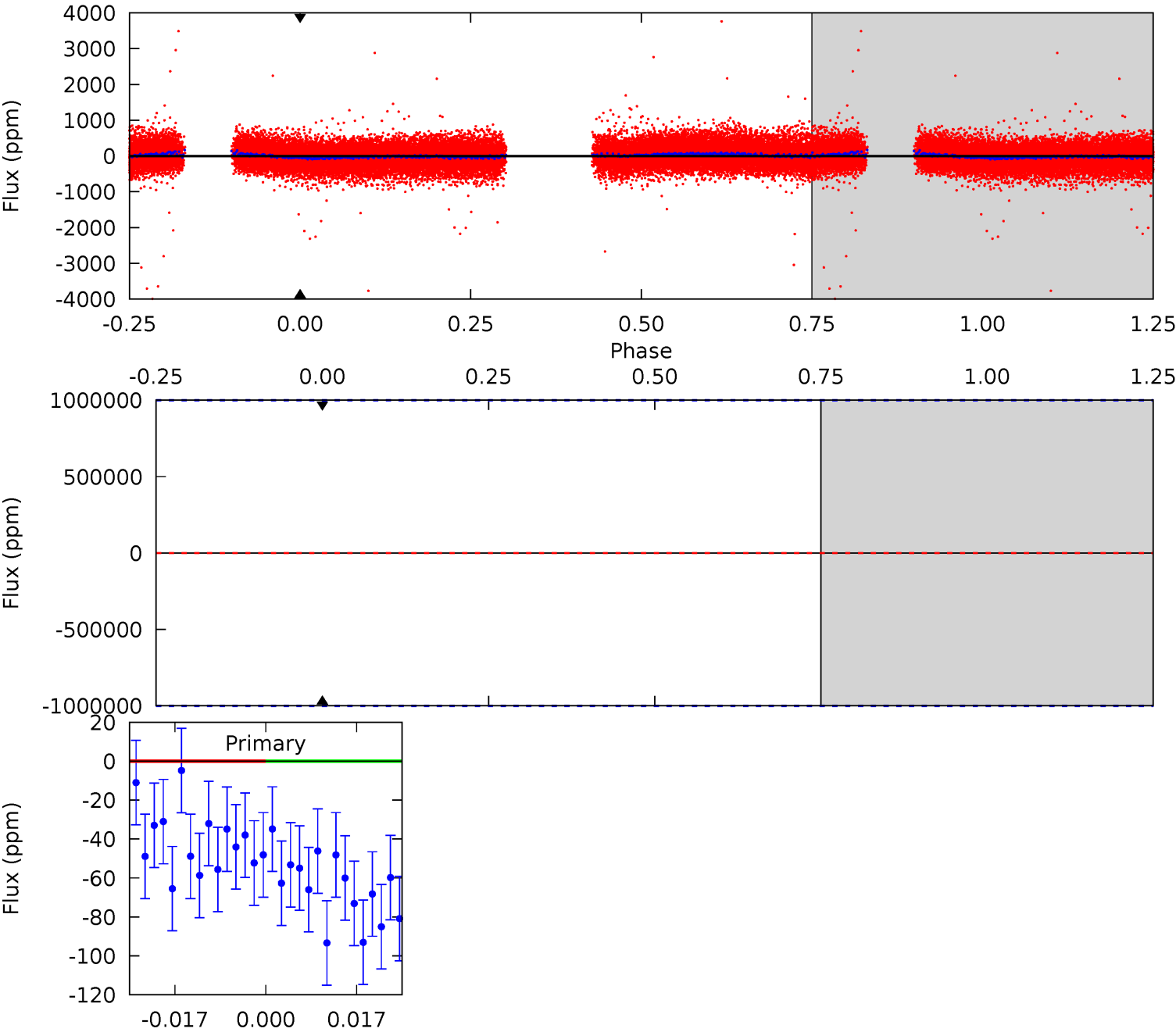
TCE 008878681-03   P= 2.496401 Days    $T_0=133.467398$  (BKJD)



DV Model-Shift Uniqueness Test

008878681-03, P = 2.496401 Days, E = 131.272501 Days

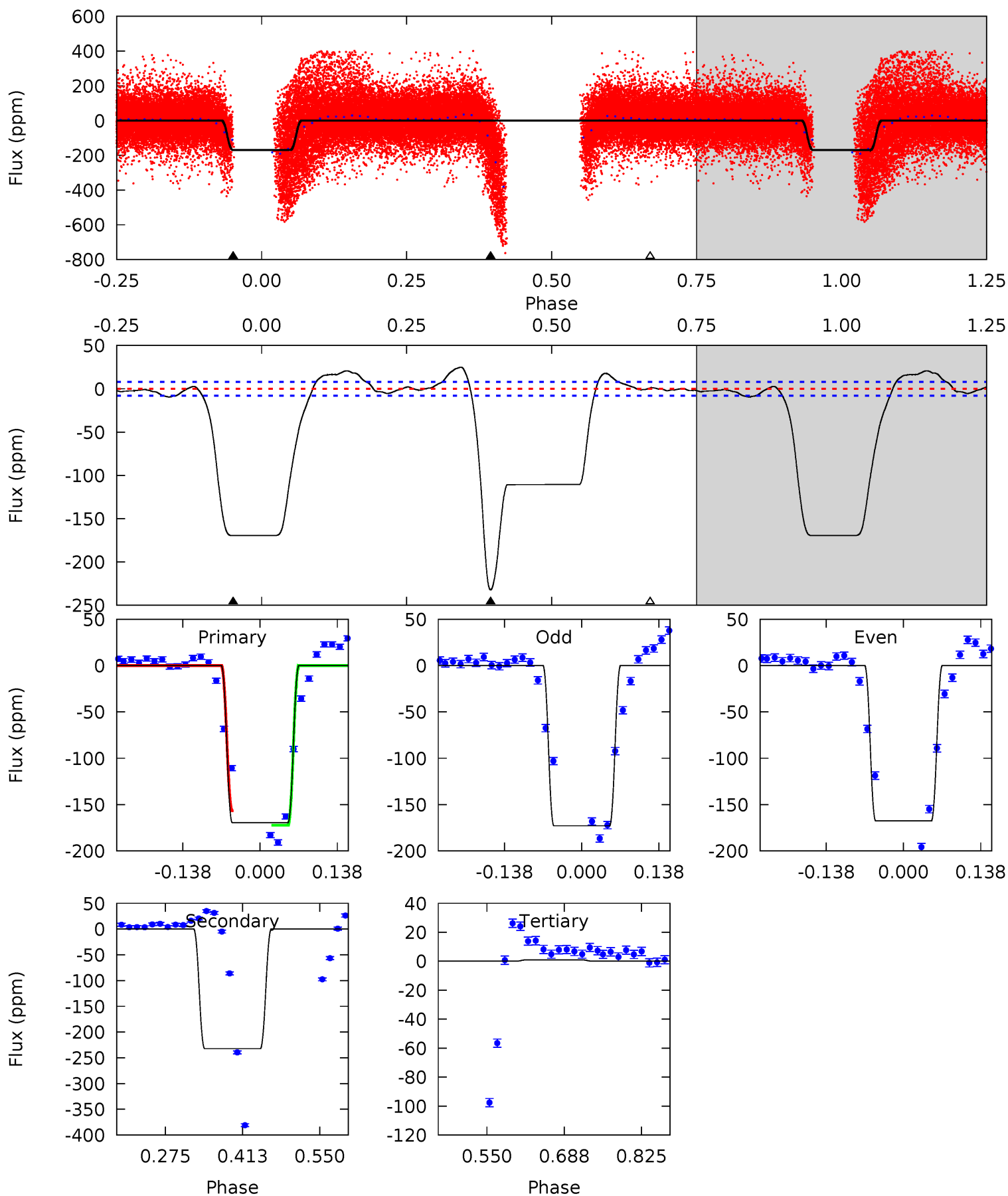
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008878681-03, P = 2.496401 Days, E = 130.970997 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
95.0	130.1	-0.53	0	4.50	1.48	7.49	95.5	95.0	130.6	130.1	1.55	1.22	0.10	4.35



### Stellar Parameters For KIC 008878681

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6757^{+150}_{-217}$	$3.842^{+0.273}_{-0.117}$	$0.120^{+0.250}_{-0.300}$	$2.615^{+0.483}_{-0.898}$	$1.734^{+0.152}_{-0.354}$	$0.137^{+0.267}_{-0.047}$
	+2%/-3%	+7%/-3%	+208%/-250%	+18%/-34%	+9%/-20%	+195%/-35%
Source	PHO1	FLK73	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 008878681-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$19.56^{+21.67}_{-13.07}$	$3202^{+180}_{-259}$	$-5423^{+35818}_{-24479}$	$-5.579^{+470.656}_{-416.854}$
Alt.	$-232 \pm 2$	$19.85^{+21.11}_{-13.20}$	$3189^{+214}_{-233}$	$3193^{+2032}_{-6138}$	$0.608^{+4.693}_{-0.468}$

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

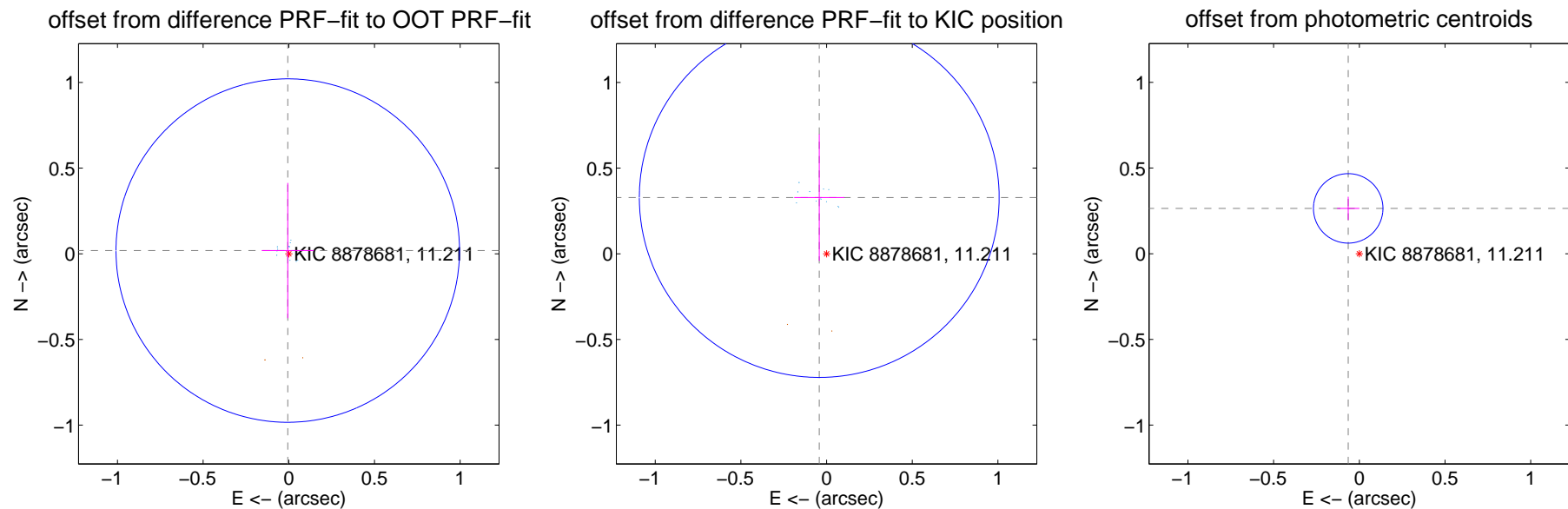
## DV Centroid Data

Supplemental centroid analysis for 008878681-03. **Kepler magnitude: 11.21.** Transit SNR -1.00

There are 14 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

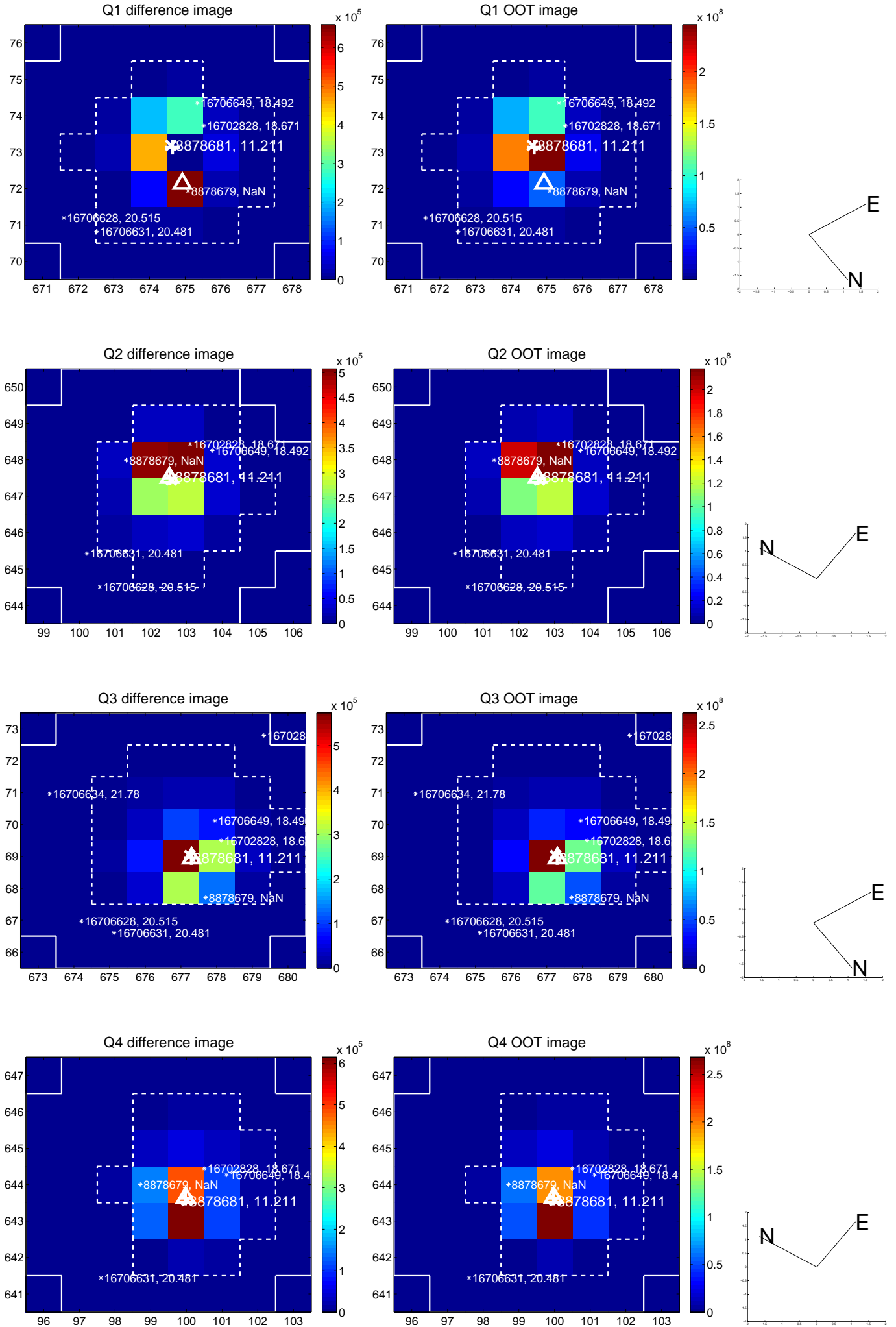
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.020 \pm 0.334$	0.06	$0.006 \pm 0.152$	$0.019 \pm 0.395$
PRF-fit source offset from KIC position	$0.331 \pm 0.350$	0.95	$0.043 \pm 0.146$	$0.328 \pm 0.369$
photometric centroid source offset	<b><math>0.27 \pm 0.07</math></b>	<b>4.03</b>	$0.06 \pm 0.06$	$0.26 \pm 0.07$



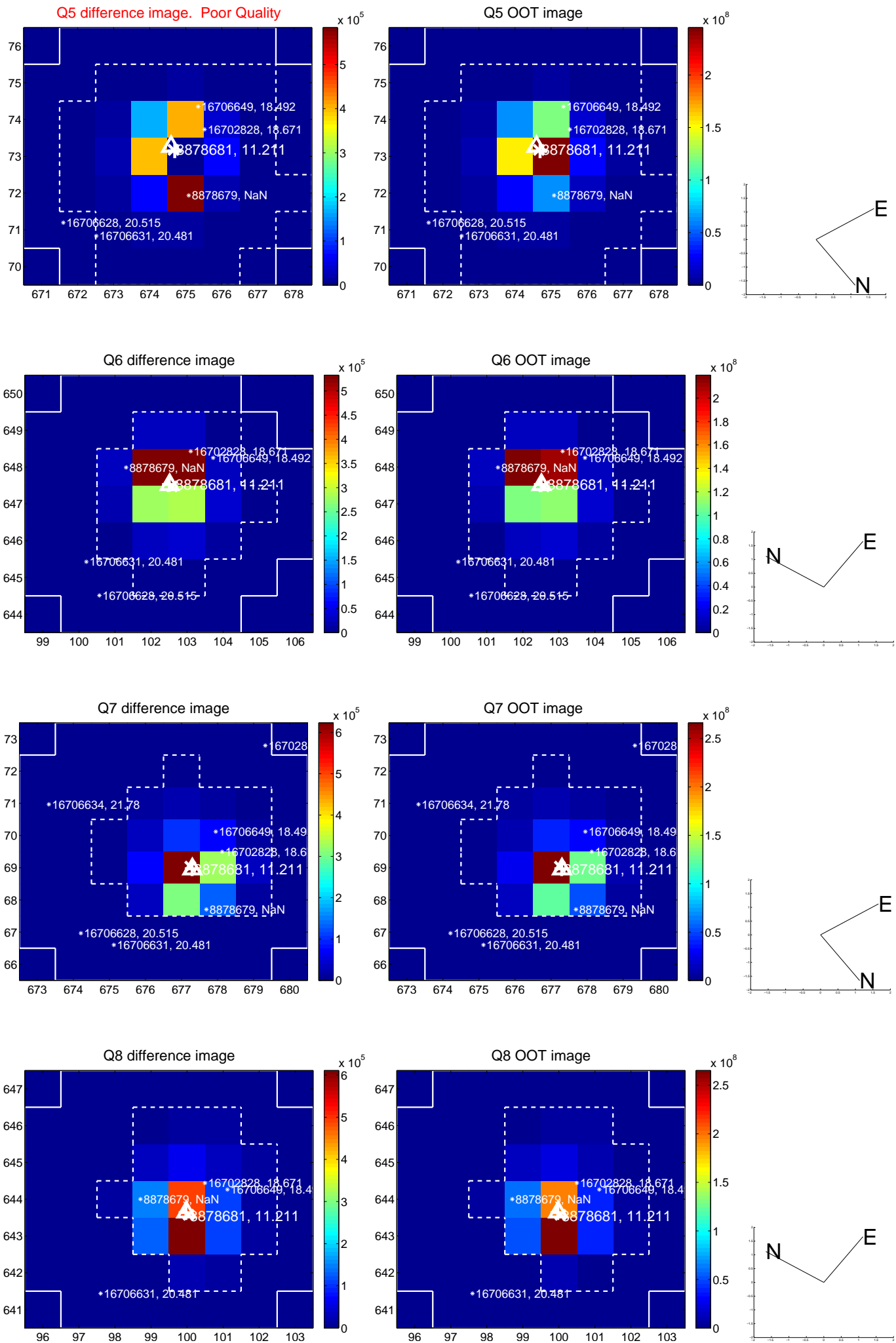
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



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

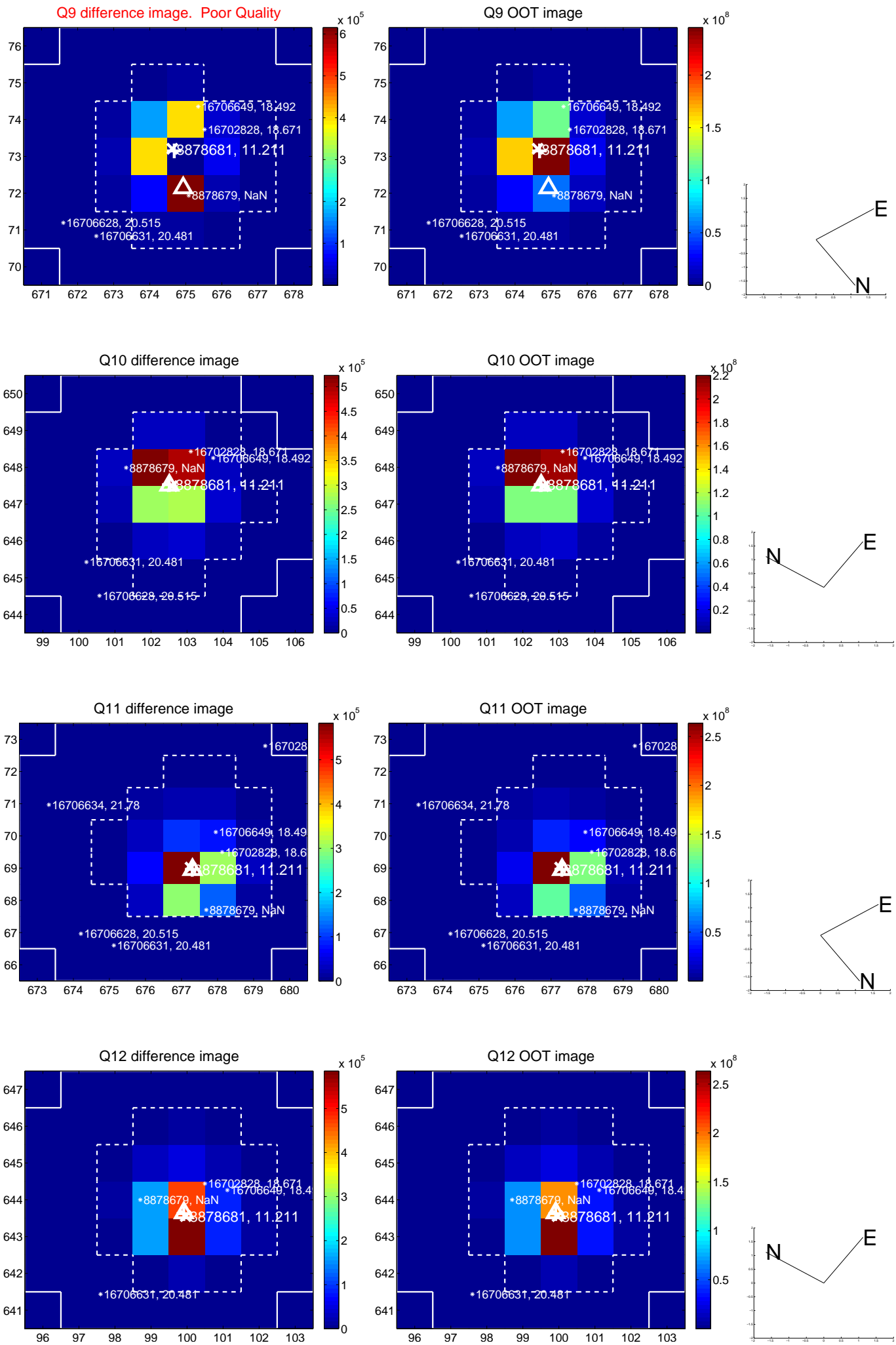


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

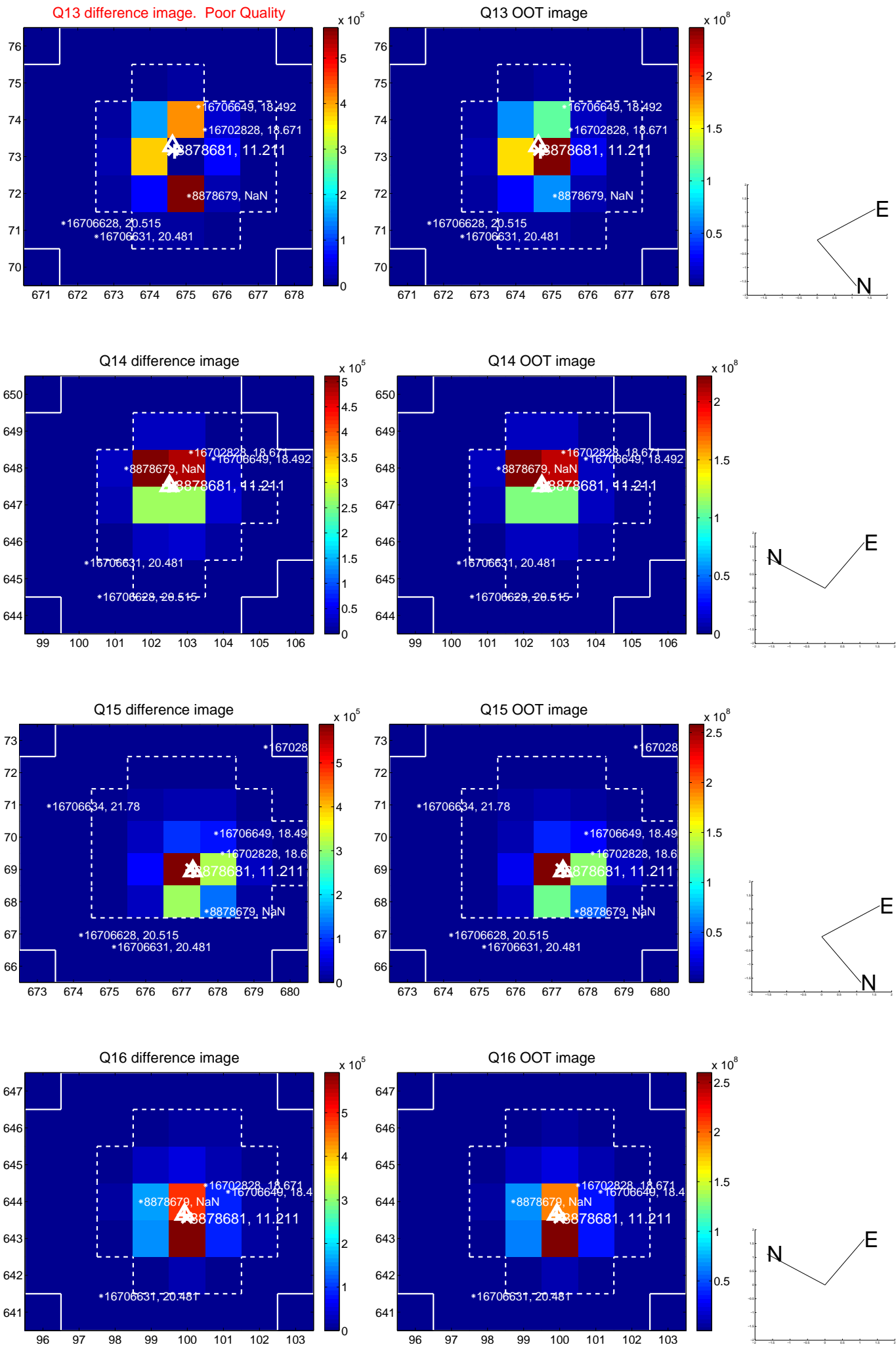




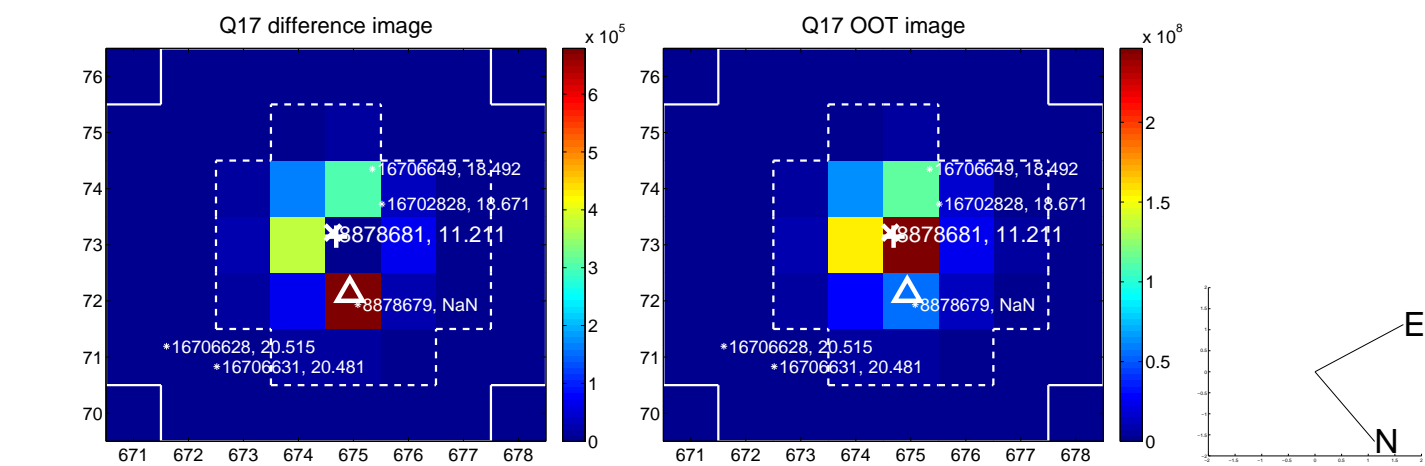
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



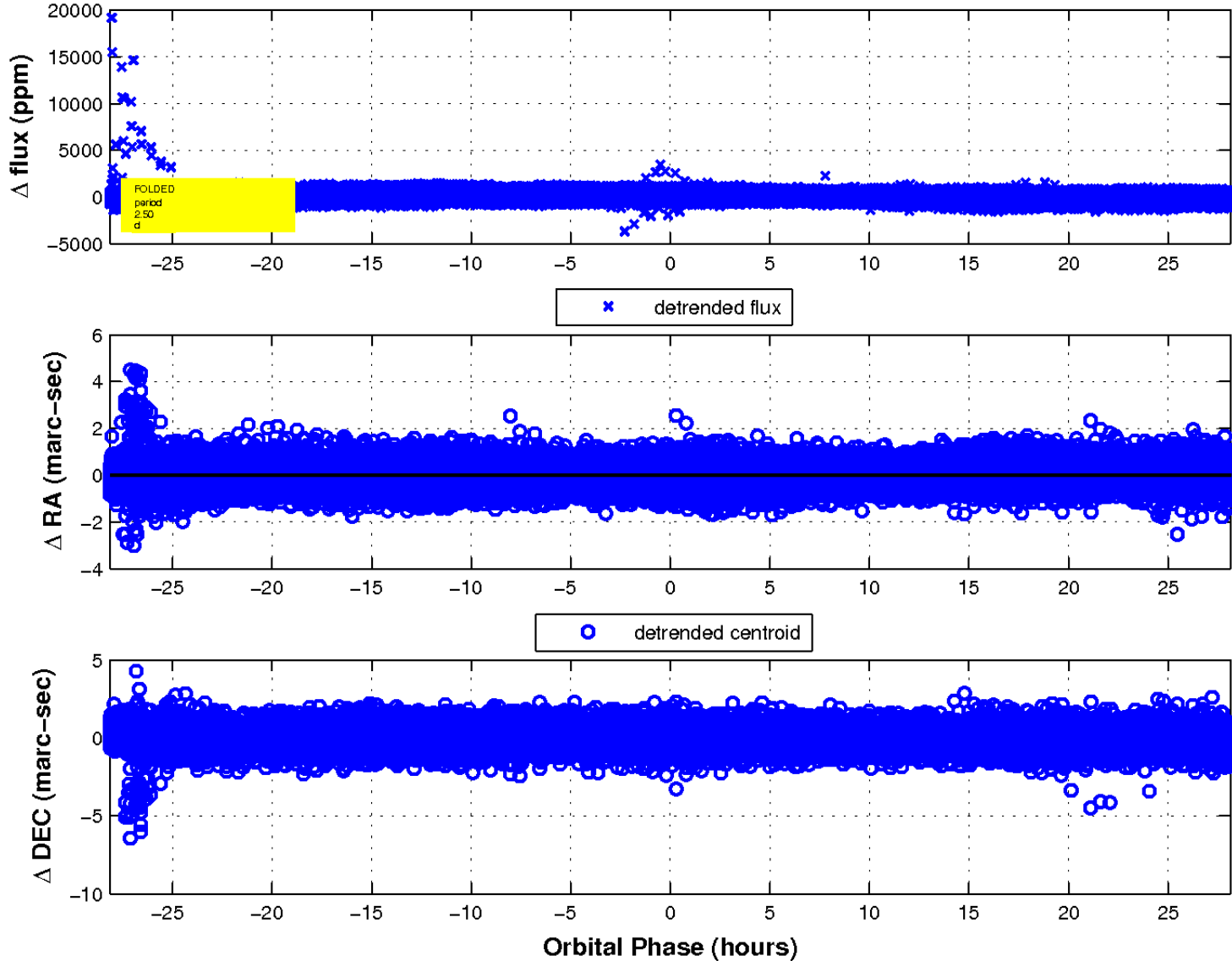
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

