

# KIC 008960985

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008960985-01	OBS	No	3.562596	134.342435	29.0	13.460	11.4	8.8	2.55	6894	1.73	5132.68
008960985-02	OBS	No	3.562492	133.333163	0.0	0.541	13.2	0.0	2.55	6894	0.06	5132.88
008960985-03	OBS	No	3.562871	132.653109	53.2	22.952	13.1	16.0	2.55	6894	2.80	5132.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008960985-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
008960985-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED
008960985-03	OBS	FP	0.00	1	0	0	0	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.

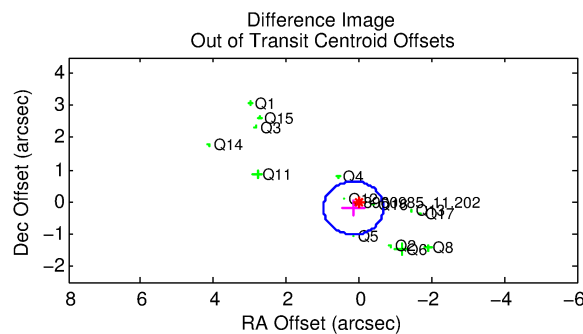
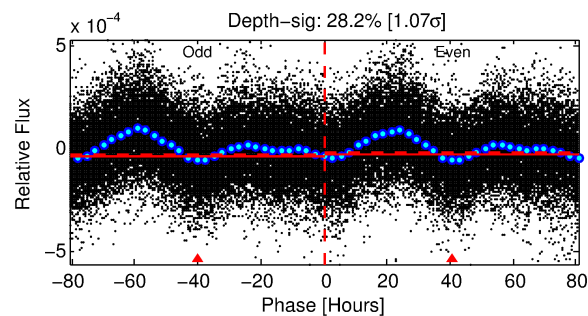
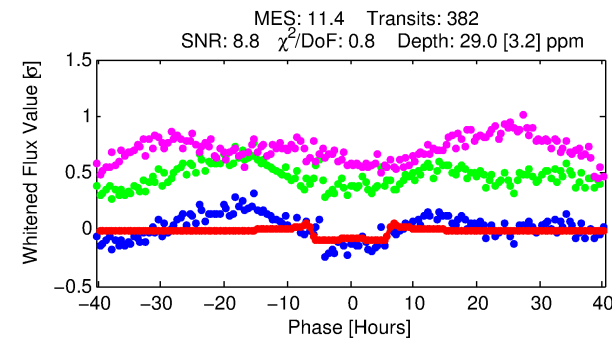
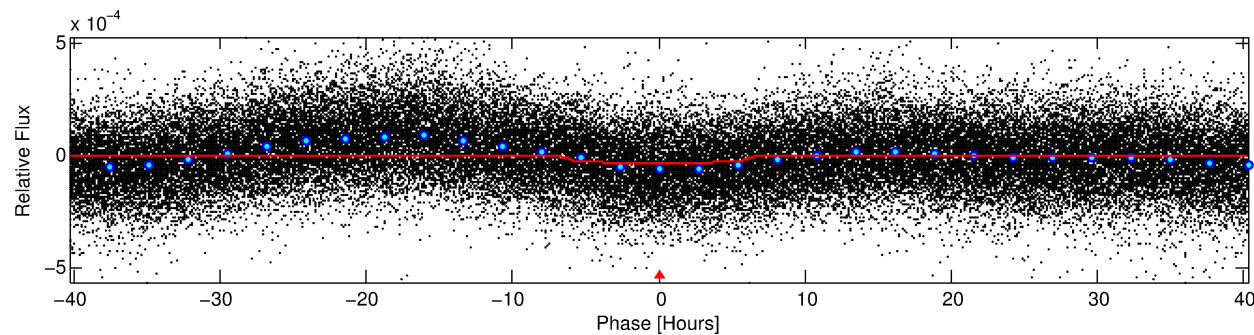
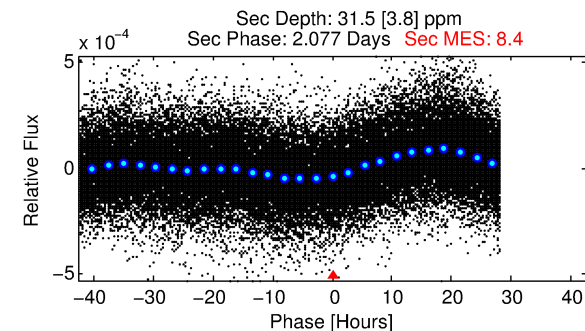
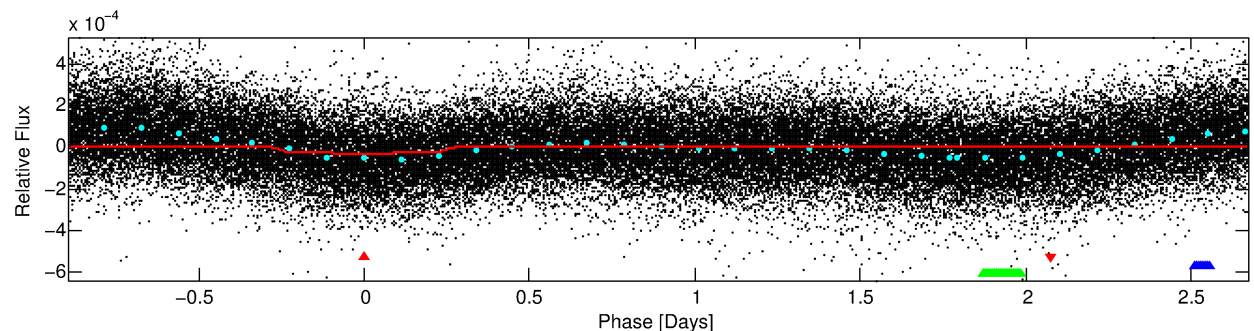
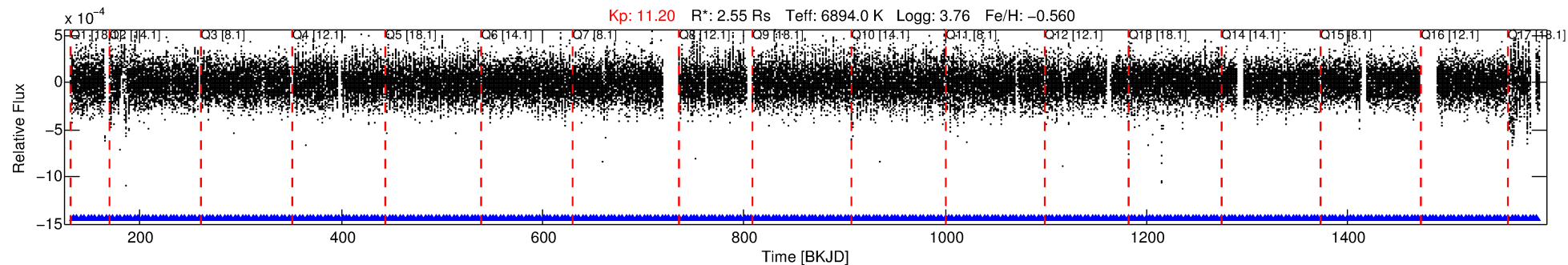
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008960985-01

No Significant Match Found

# DV One-Page Summary

KIC: 8960985 Candidate: 1 of 3 Period: 3.563 d



## DV Fit Results:

Period = 3.56260 [0.00005] d  
Epoch = 134.3424 [0.0097] BKJD  
 $R_p/R^* = 0.0062$  [0.0004]  
 $a/R^* = 1.13$  [0.06]  
 $b = 0.97$  [0.02]  
 $S_{\text{eff}} = 5132.68$  [2953.65]  
 $T_{\text{eq}} = 2158$  [311] K  
 $R_p = 1.73$  [0.65]  $R_e$   
 $a = 0.0507$  [0.0179] AU  
 $A_g = 14.91$  [8.78] [1.58σ]  
 **$T_{\text{eff}} = 6557$  [361] K [9.23σ]**

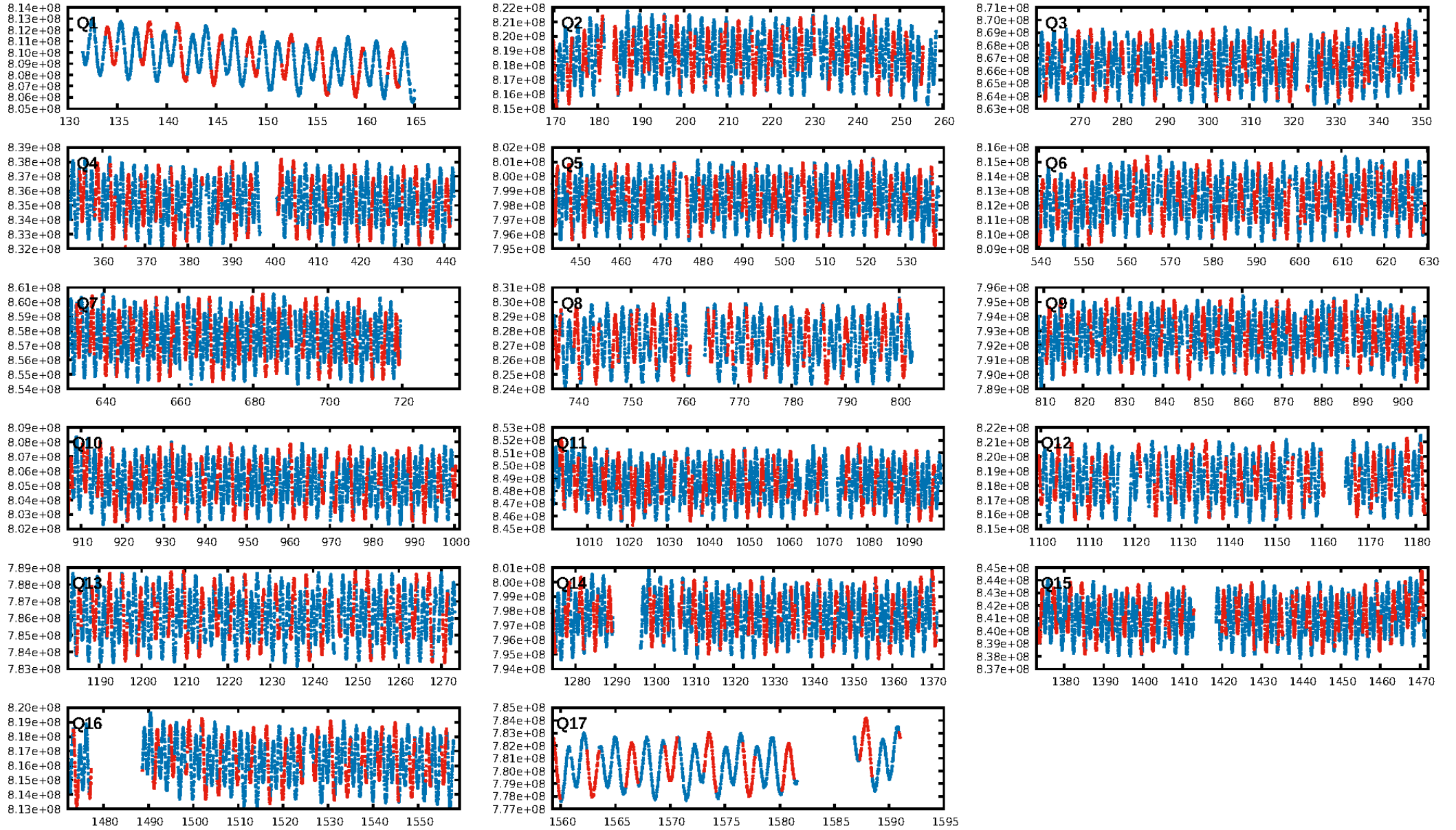
## DV Diagnostic Results:

**ShortPeriod-sig: 0.0% [0.00σ]**  
**LongPeriod-sig: 0.0% [0.00σ]**  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [365/365]  
GhostDiagnostic-chr: 1.988  
Centroid-sig: 38.7%  
Centroid-so: 0.527 arcsec [0.96σ]  
OotOffset-rm: 0.255 arcsec [0.92σ]  
KicOffset-rm: 0.264 arcsec [0.68σ]  
OotOffset-st: 3/3/4/4 [14]  
KicOffset-st: 3/3/4/4 [14]  
DiffImageQuality-fgm: 0.71 [10/14]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:54:20 Z

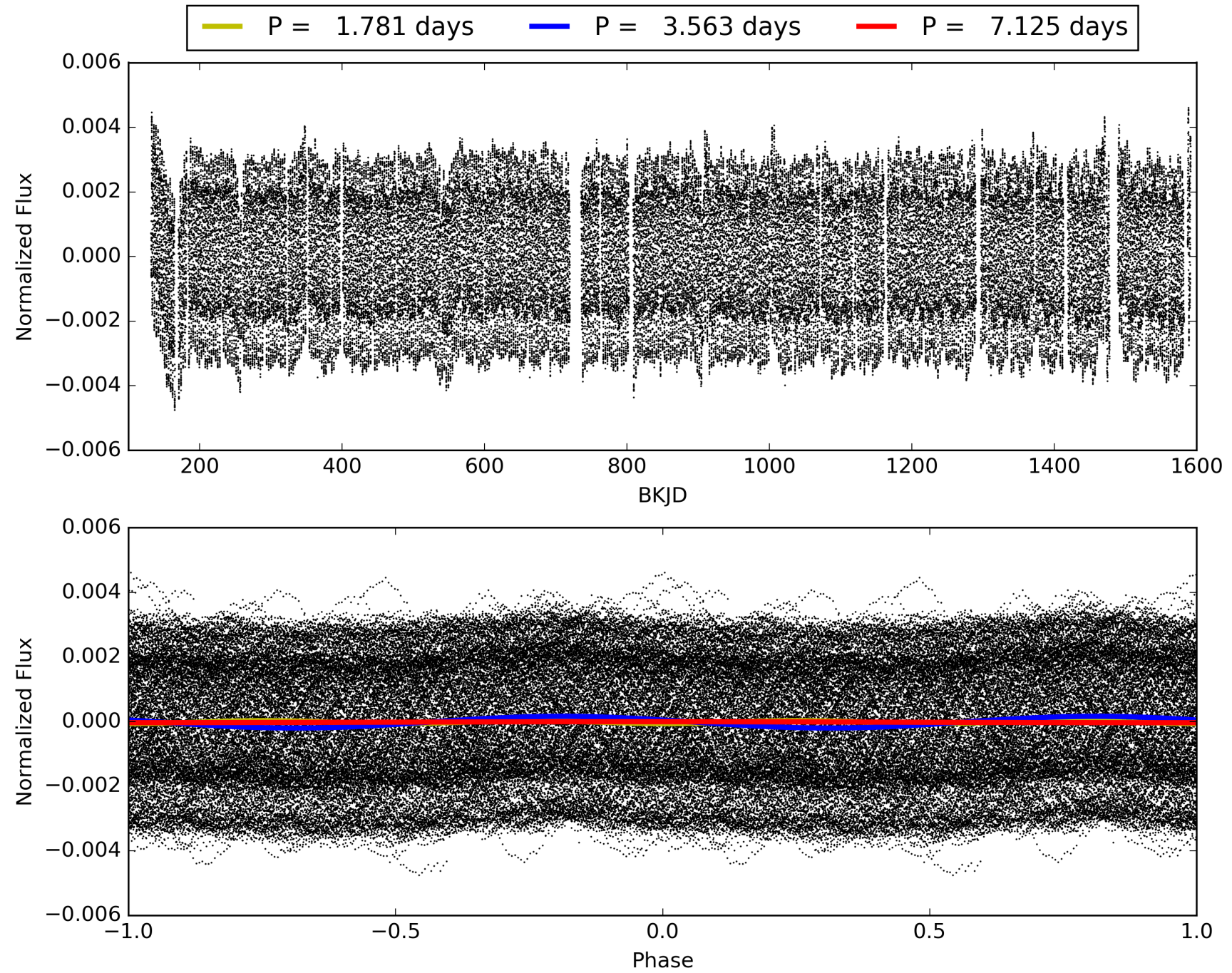
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008960985-01, PDC Light Curves





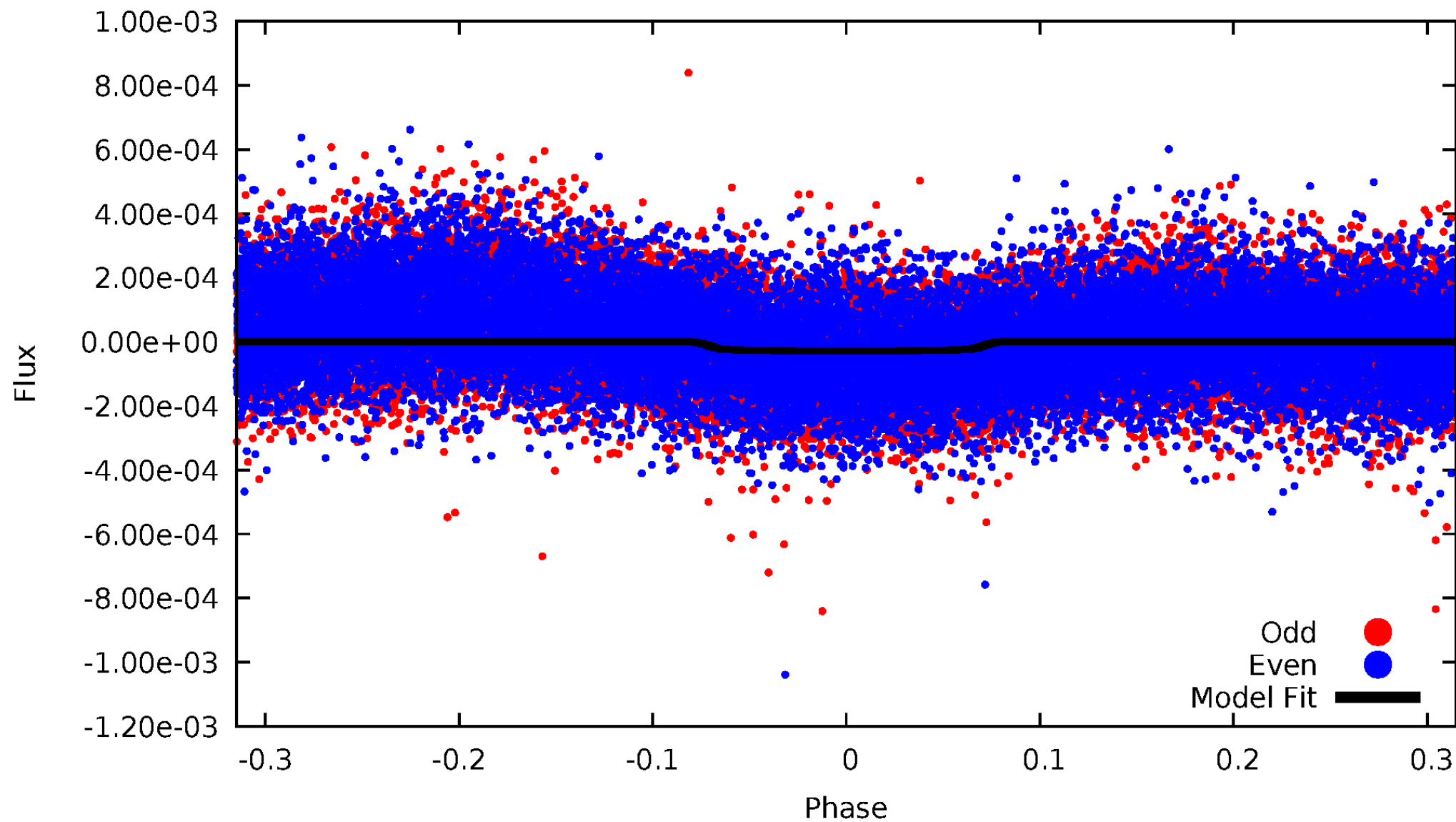
TCE 008960985-01





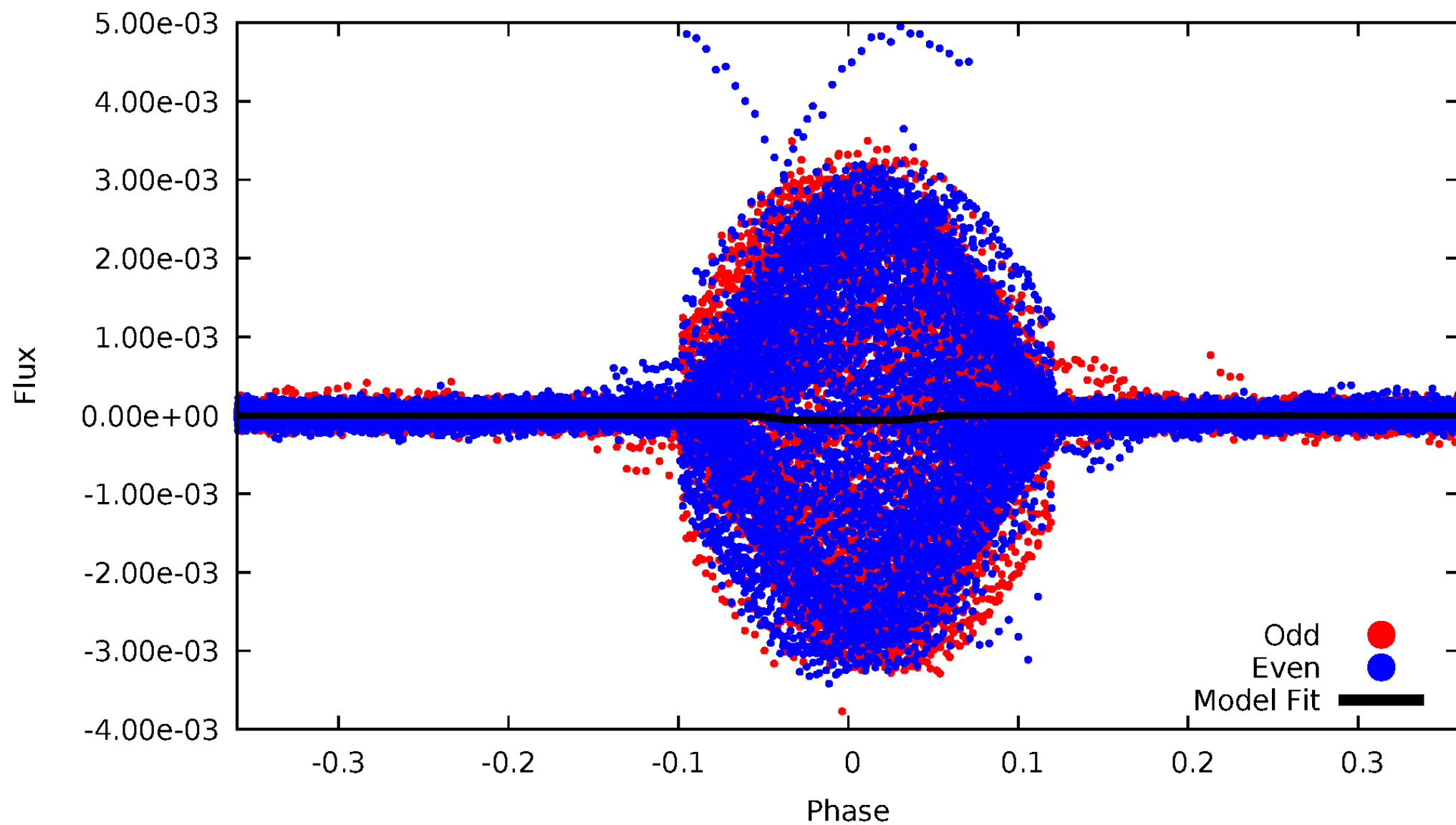
# DV Odd/Even

TCE 008960985-01



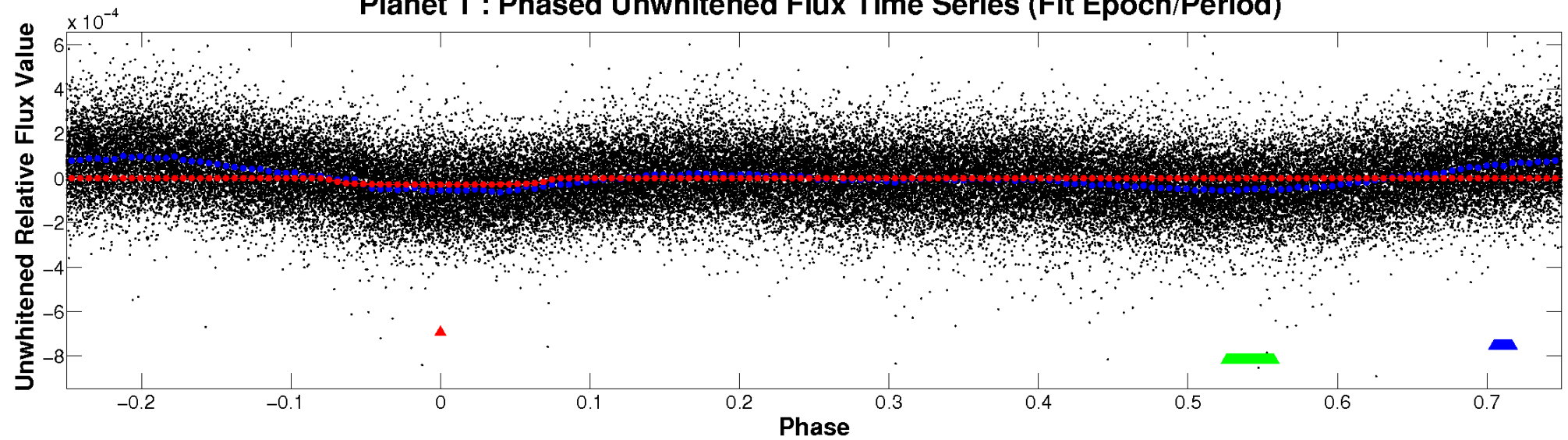
# ALT Odd/Even

TCE 008960985-01

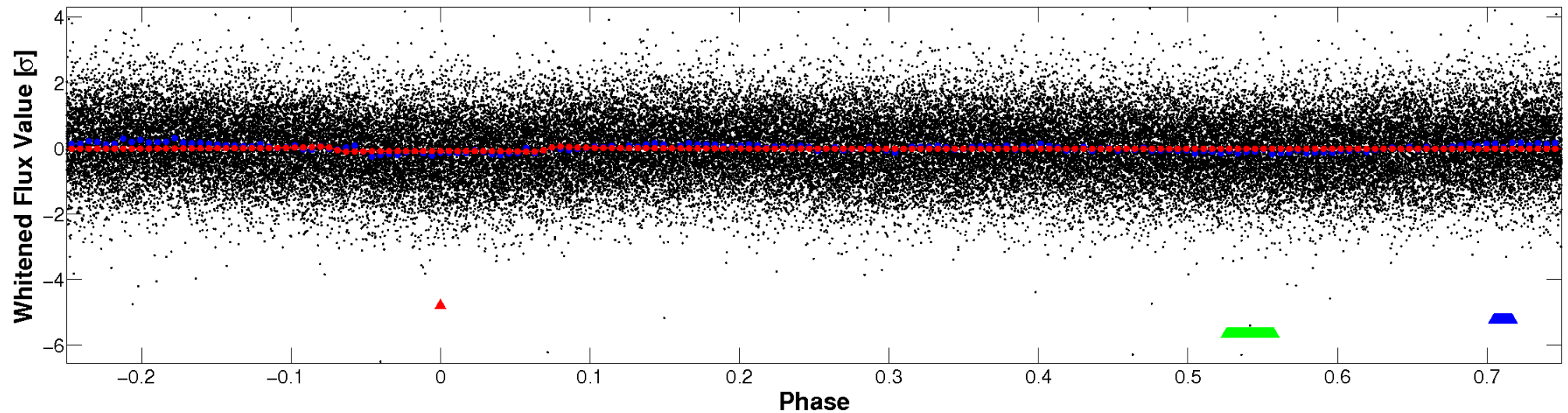


# Non-Whitened Vs. Whitened Light Curve

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



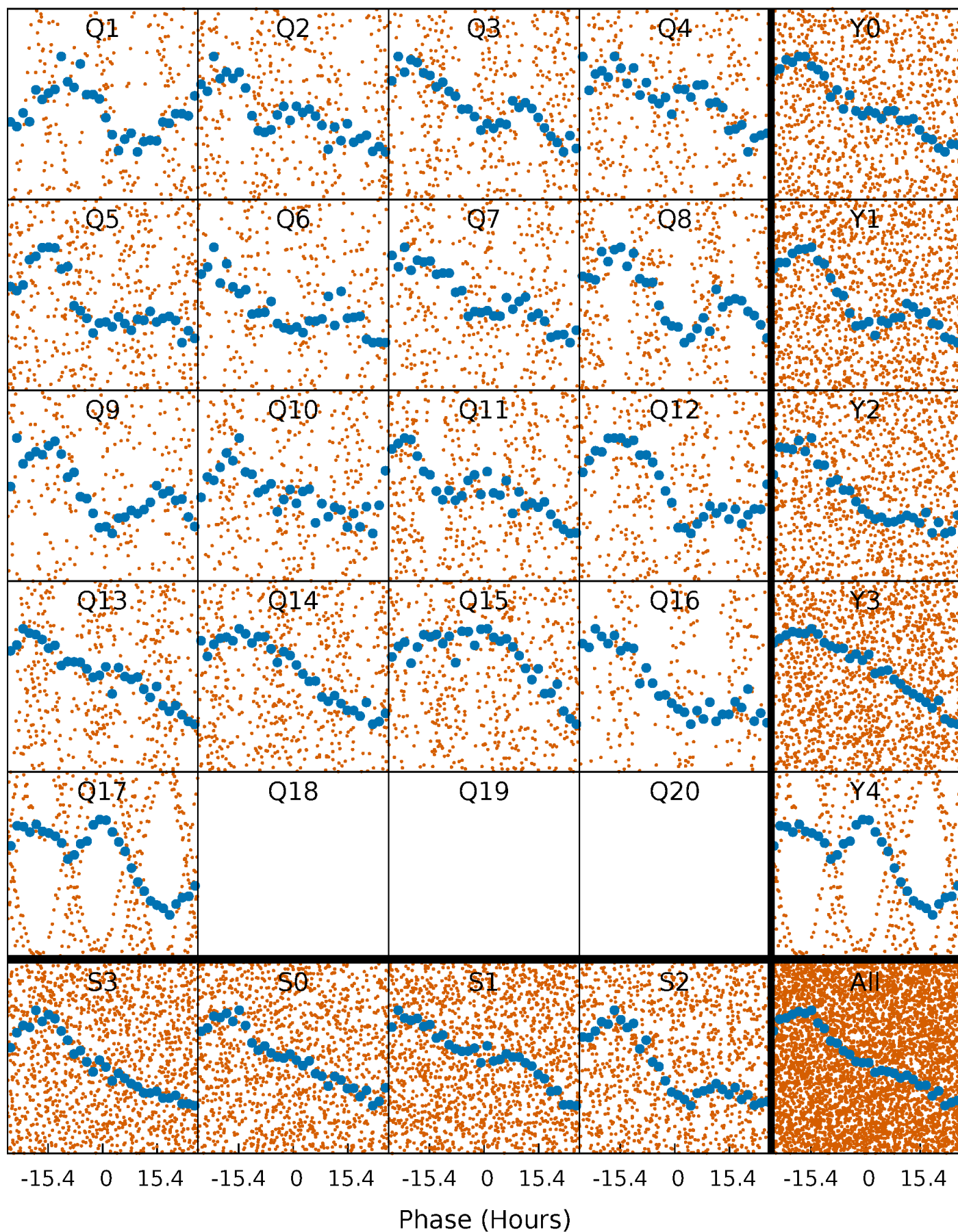
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





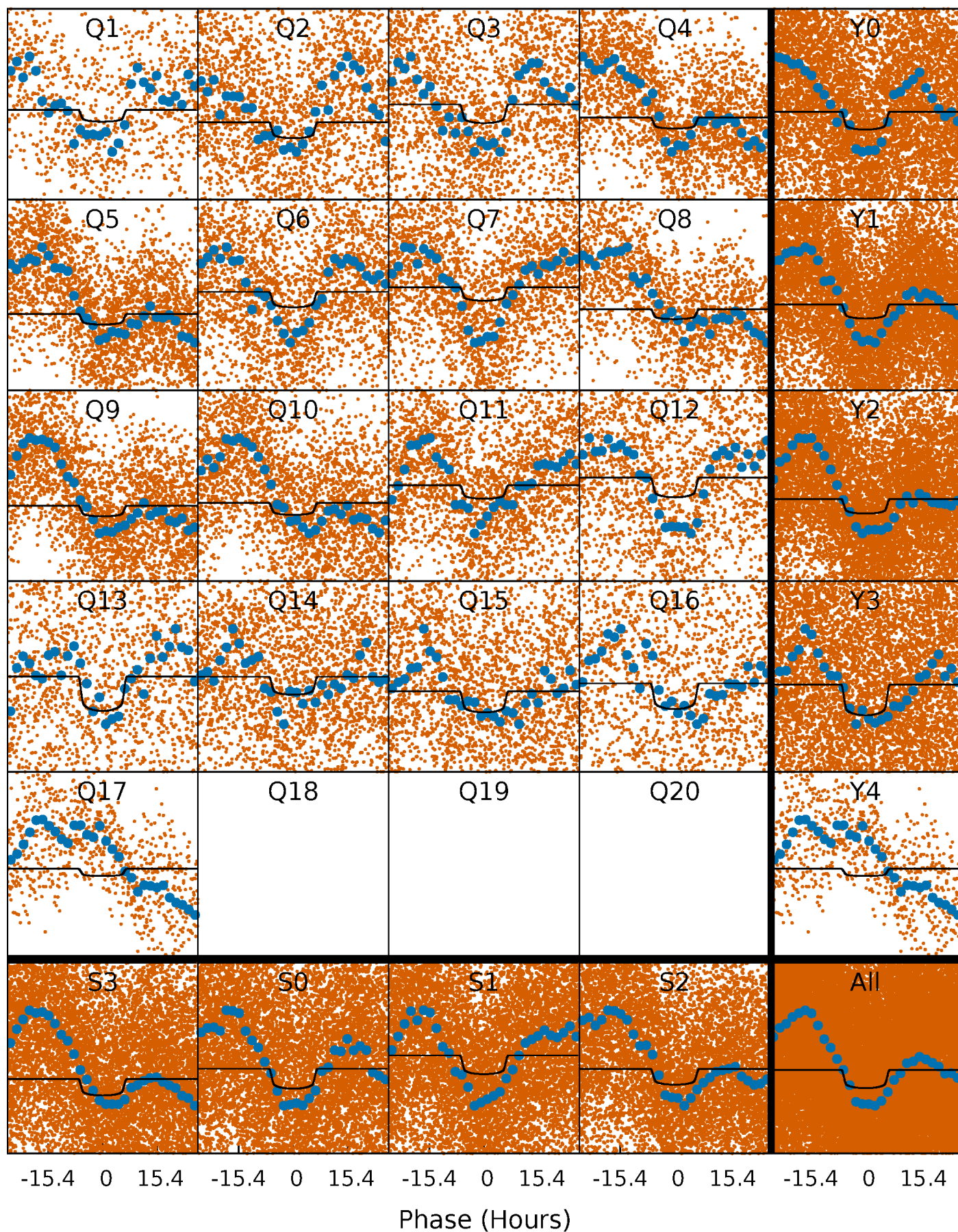
# PDC Quarter-Phased Transit Curves

TCE 008960985-01   P= 3.562596 Days    $T_0=134.342435$  (BKJD)



# DV Quarter-Phased Transit Curves

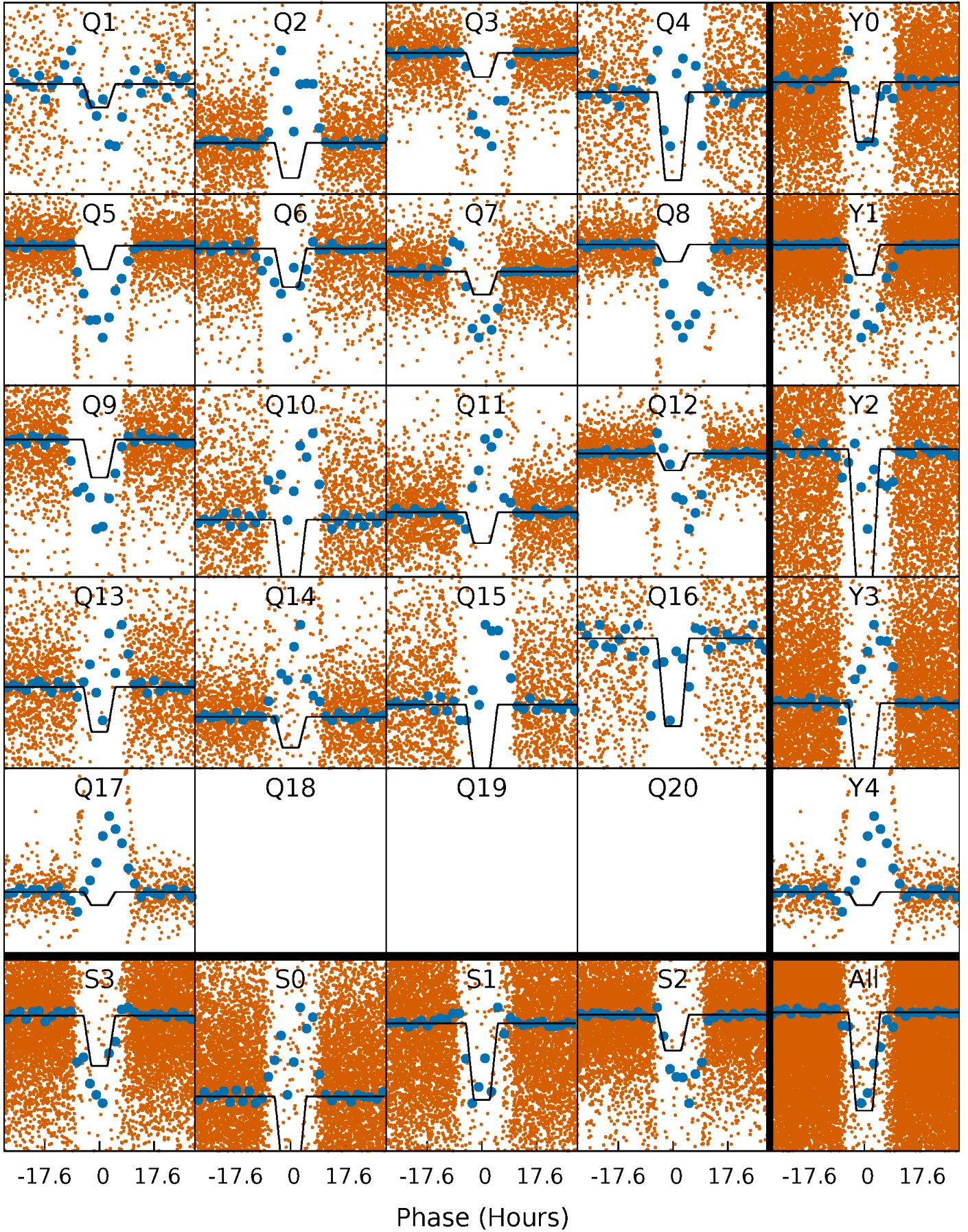
TCE 008960985-01   P= 3.562596 Days    $T_0=134.342435$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008960985-01   P= 3.562138 Days    $T_0=134.355369$  (BKJD)

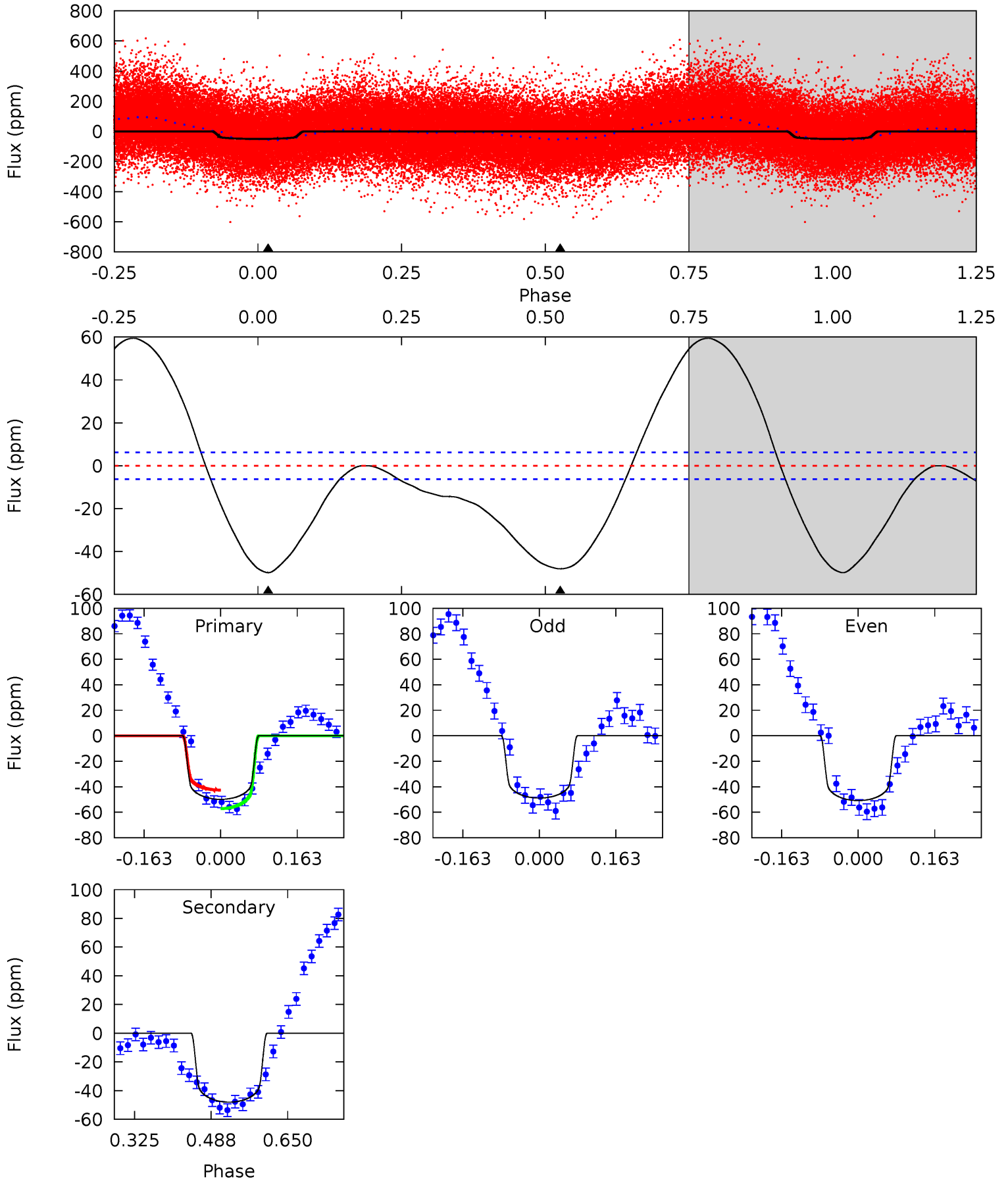




# DV Model-Shift Uniqueness Test

008960985-01, P = 3.562596 Days, E = 130.779839 Days

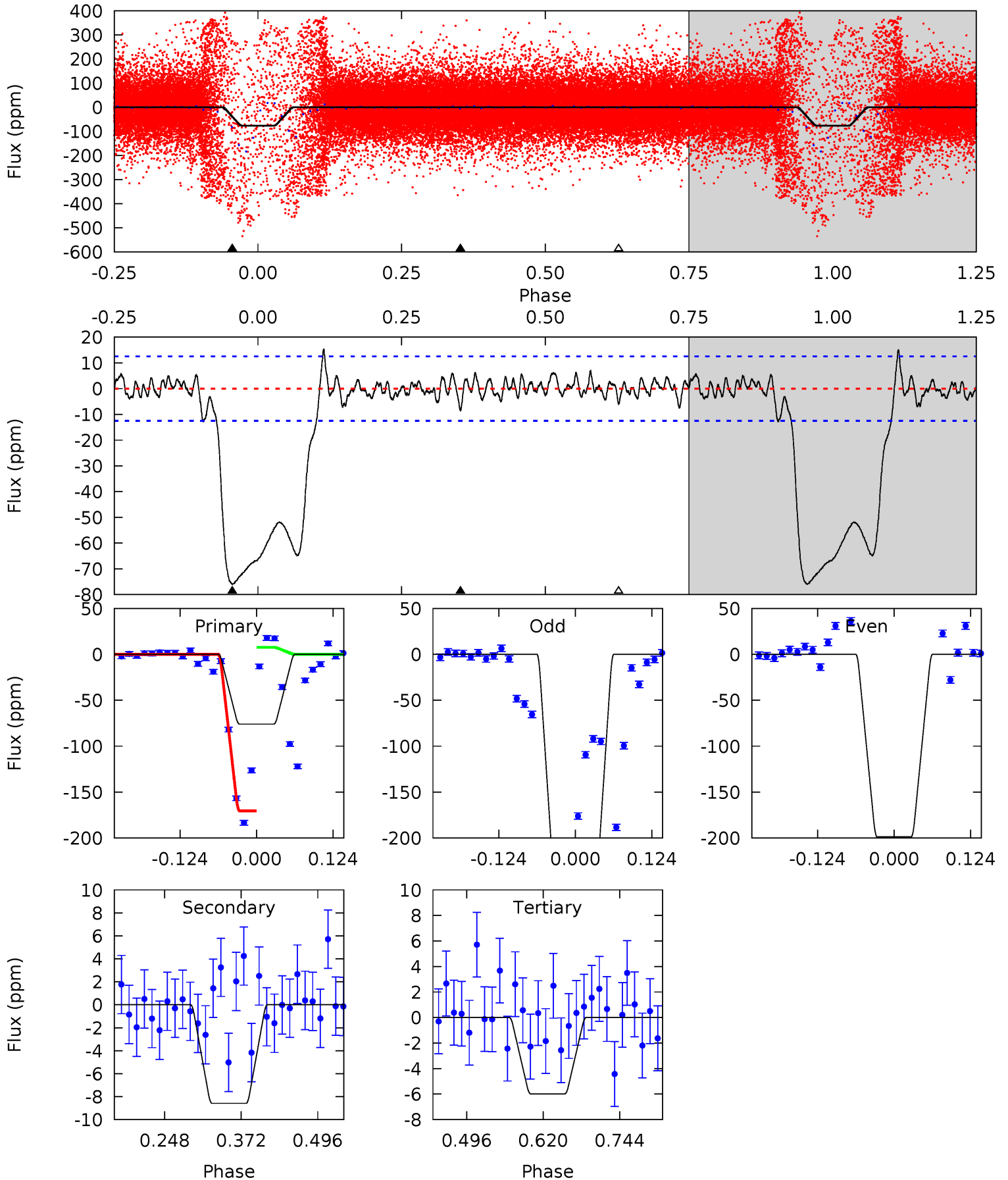
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.7	34.4	0	0	4.46	1.40	21.4	35.7	35.7	34.4	34.4	0.71	1.05	0.54	5.12



# Alt Model-Shift Uniqueness Test

008960985-01, P = 3.562138 Days, E = 130.793231 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
27.4	3.09	2.16	0	4.52	1.54	1.64	25.2	27.4	0.94	3.09	17.7	1.09	0.17	0



### Stellar Parameters For KIC 008960985

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6894^{+170}_{-221}$	$3.760^{+0.328}_{-0.082}$	$-0.560^{+0.300}_{-0.250}$	$2.552^{+0.406}_{-0.947}$	$1.367^{+0.219}_{-0.267}$	$0.116^{+0.289}_{-0.031}$
	+2%/-3%	+9%/-2%	+54%/-45%	+16%/-37%	+16%/-20%	+250%/-27%
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 008960985-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-48 \pm 1$	$1.67^{+0.25}_{-0.31}$	$2932^{+175}_{-251}$	$7290^{+350}_{-379}$	$25^{+10}_{-5}$
Alt.	$-9 \pm 3$	$2.11^{+0.30}_{-0.44}$	$2934^{+173}_{-282}$	$4281^{+307}_{-350}$	$2.796^{+1.744}_{-1.012}$

$T_{\text{max}}$  = 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

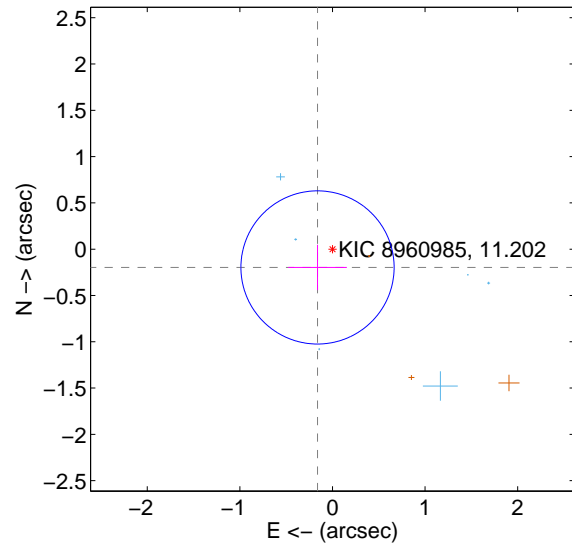
Supplemental centroid analysis for 008960985-01. **Kepler magnitude: 11.20.** Transit SNR 8.81

There are 10 quarters with good PRF difference image offsets

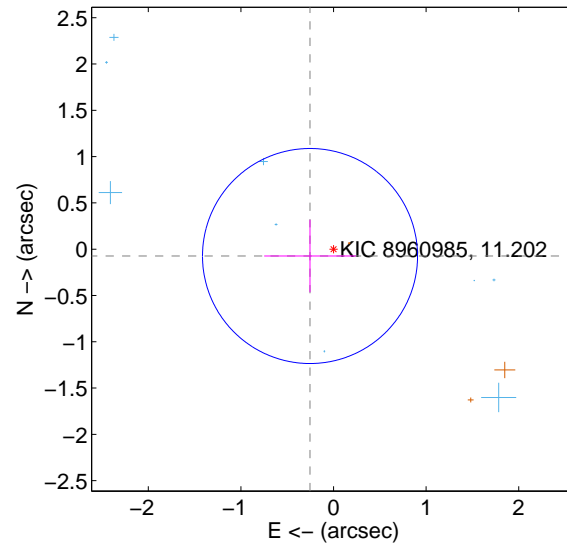
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.255 \pm 0.276$	0.92	$0.162 \pm 0.317$	$-0.197 \pm 0.245$
PRF-fit source offset from KIC position	$0.264 \pm 0.387$	0.68	$0.254 \pm 0.496$	$-0.074 \pm 0.391$
photometric centroid source offset	$0.53 \pm 0.55$	0.96	$0.02 \pm 0.69$	$0.53 \pm 0.55$

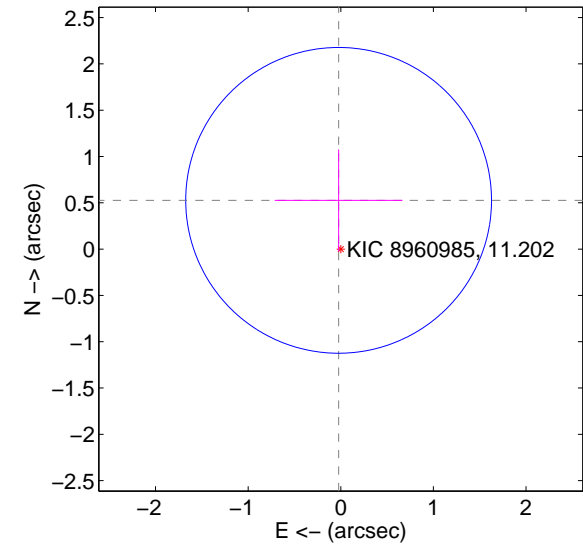
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

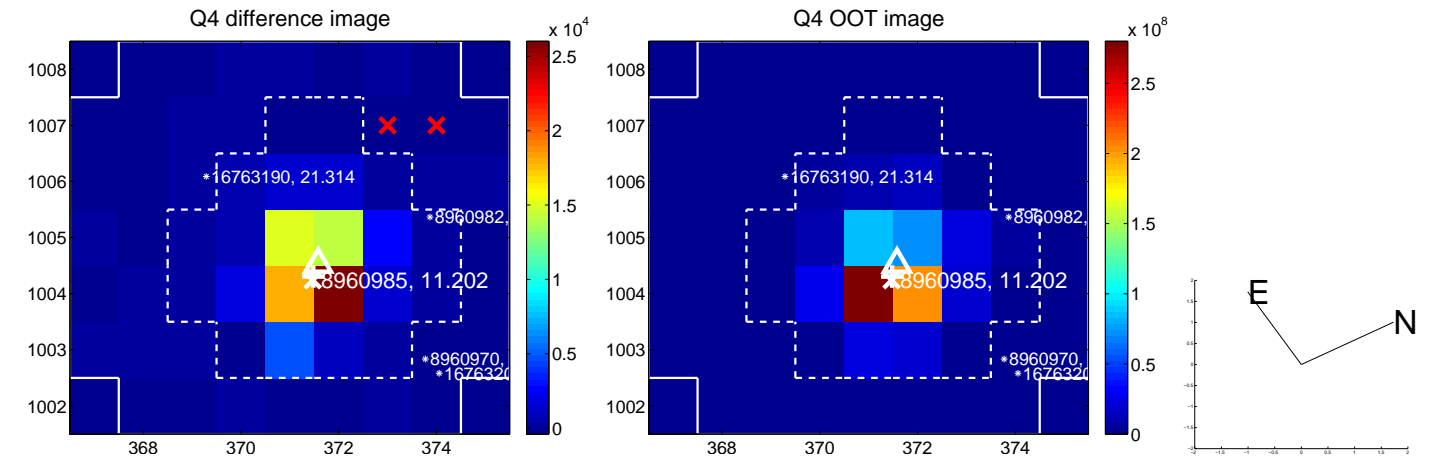
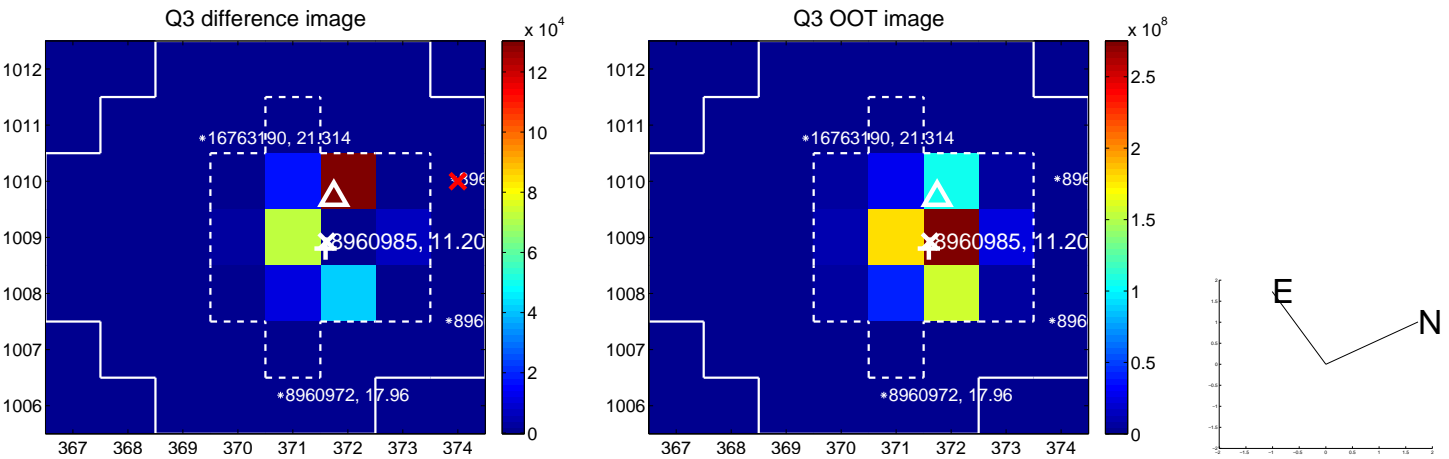
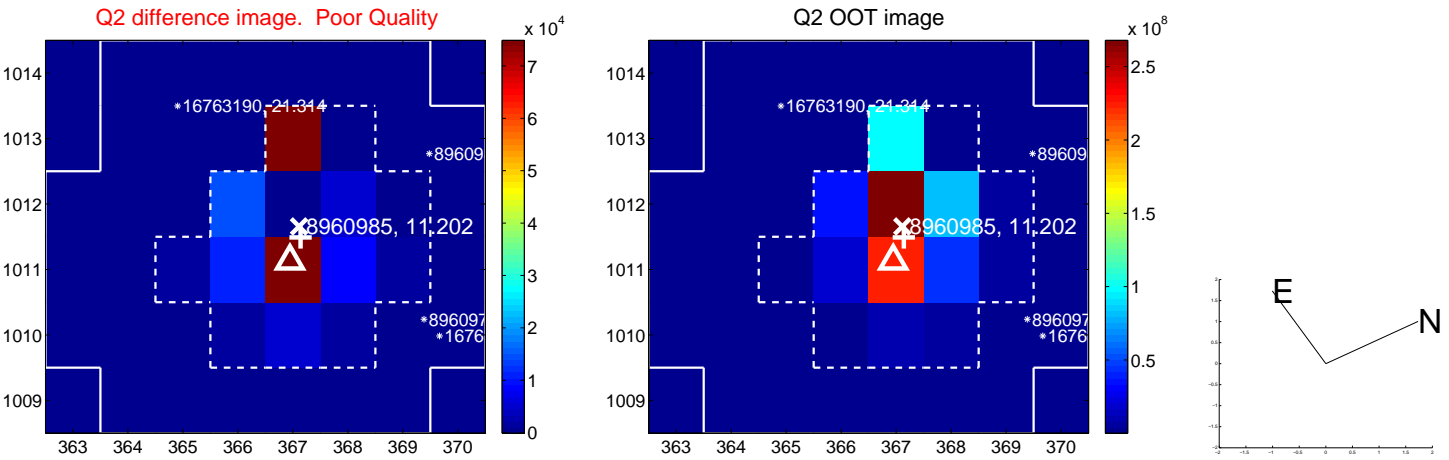
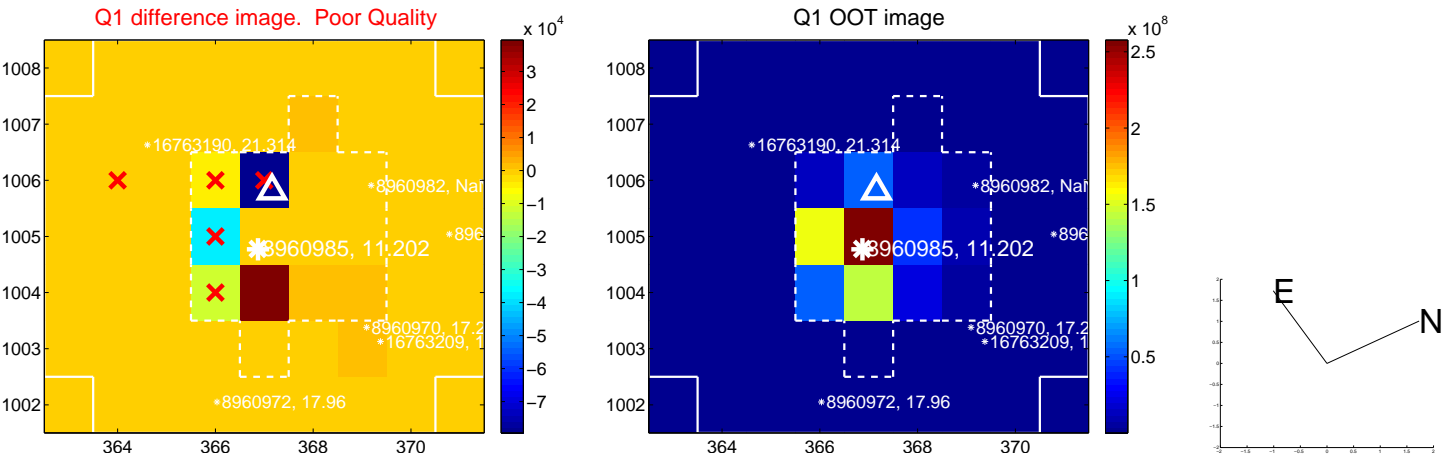


offset from photometric centroids

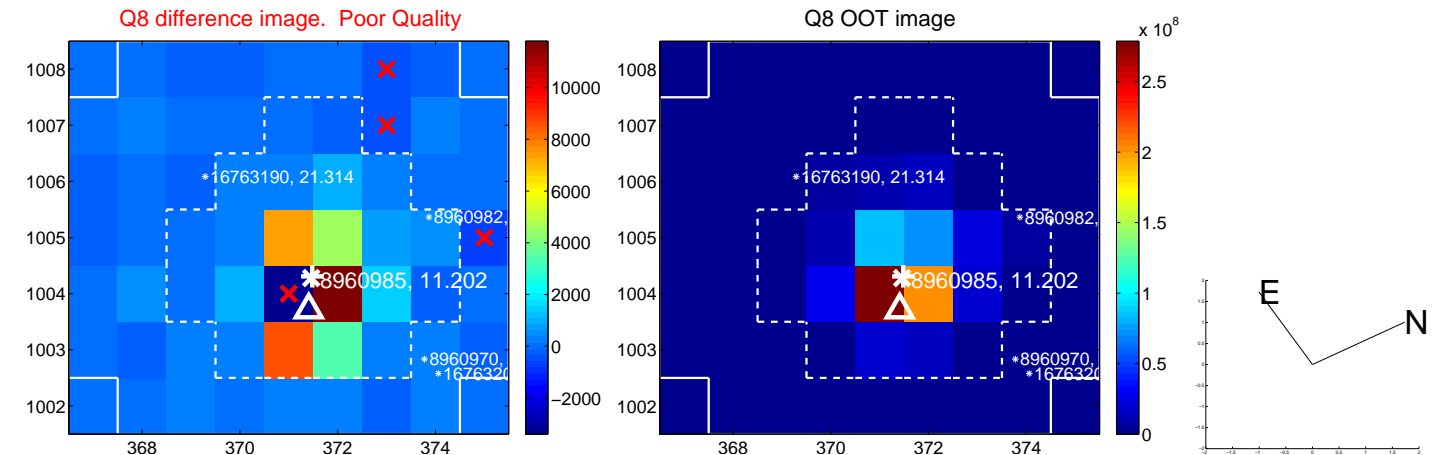
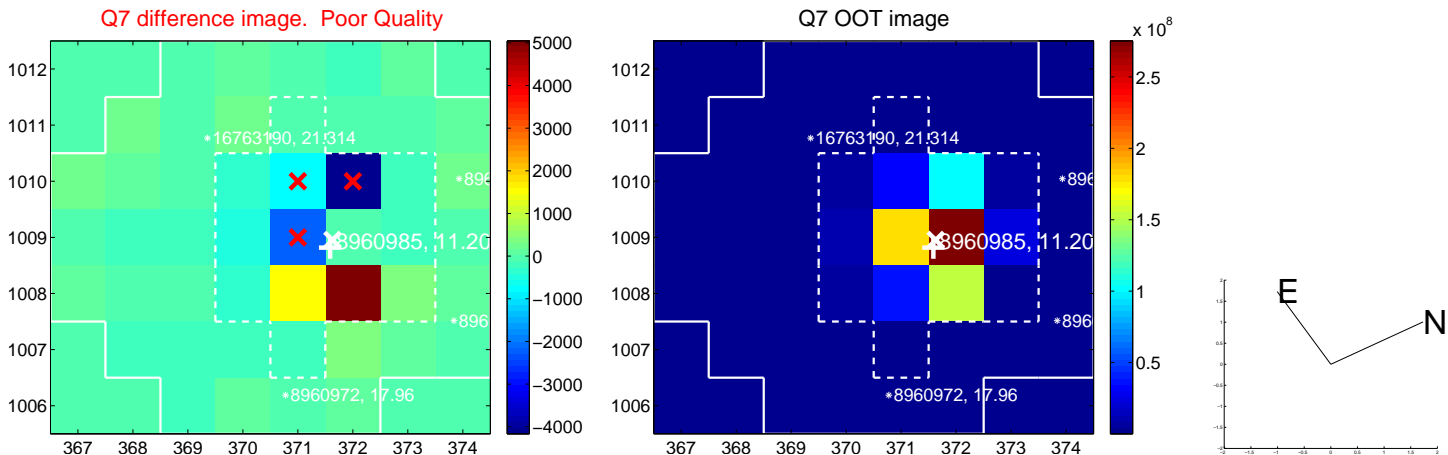
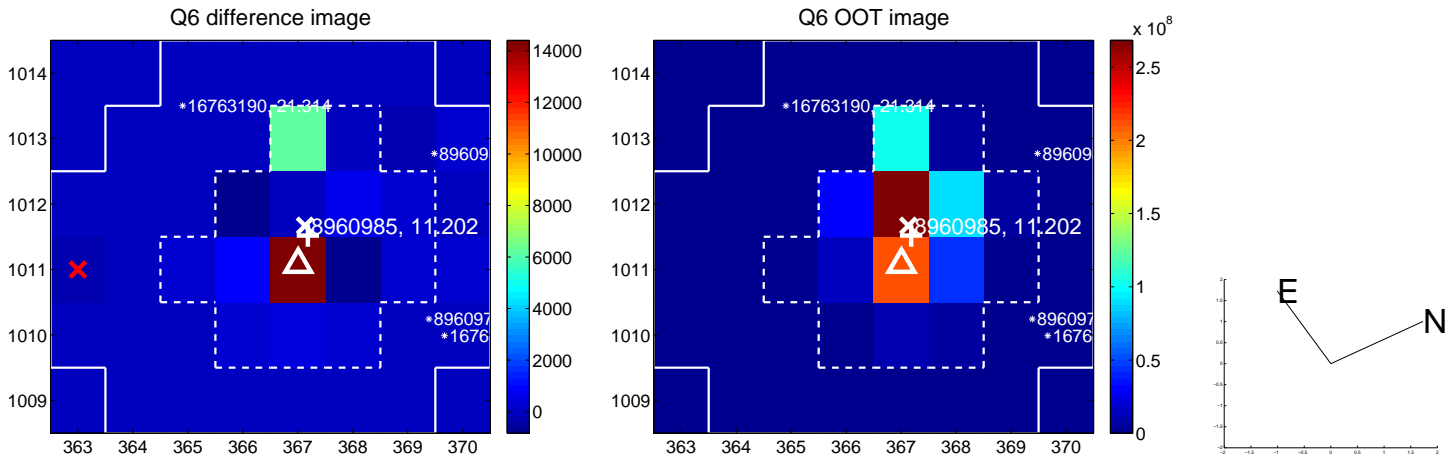
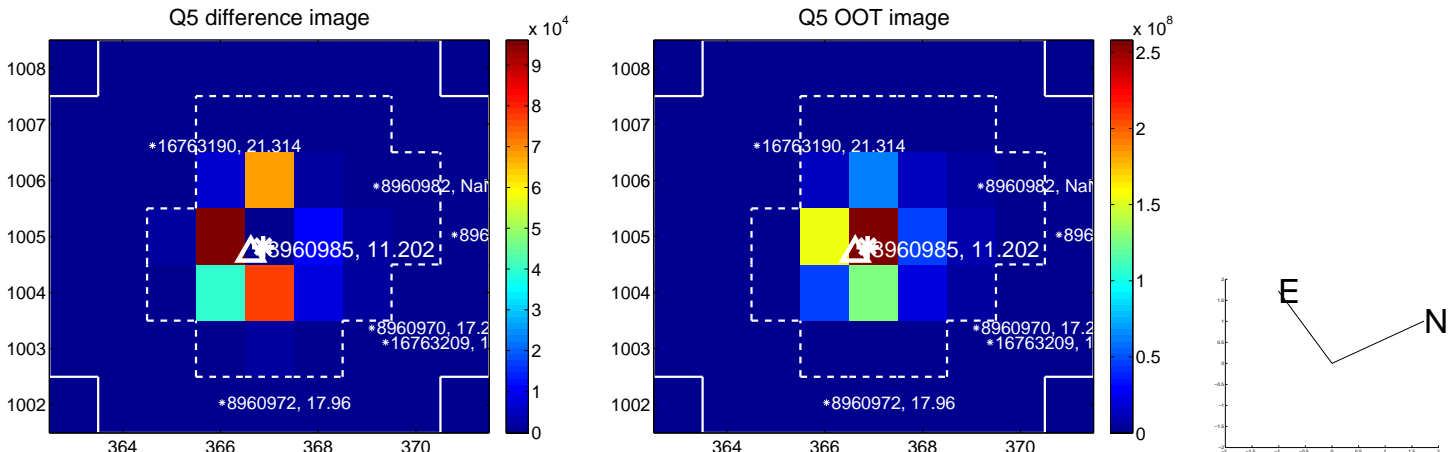


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

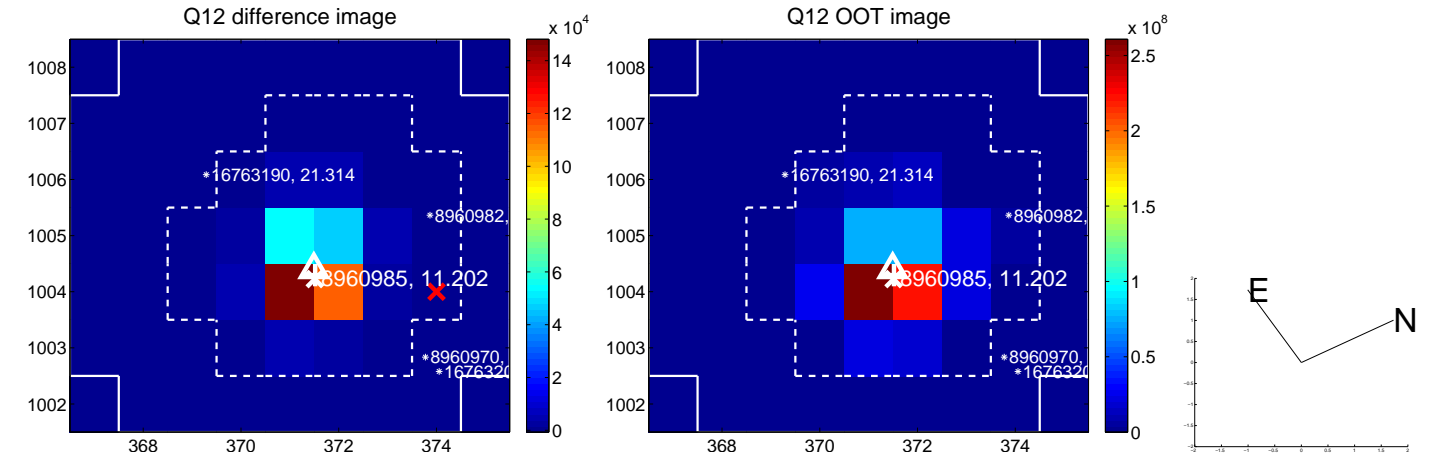
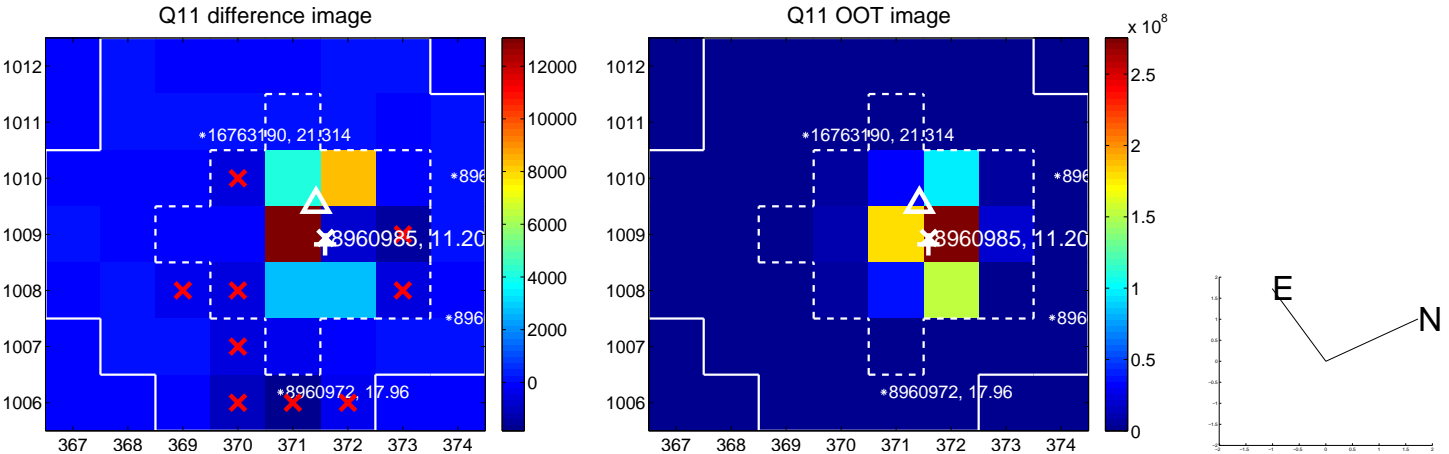
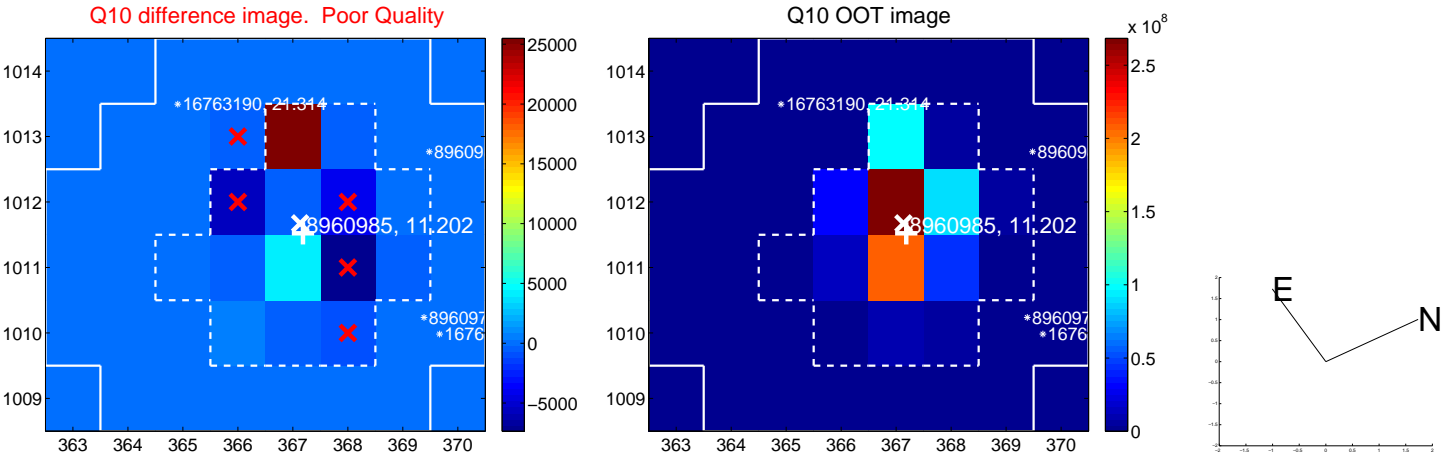
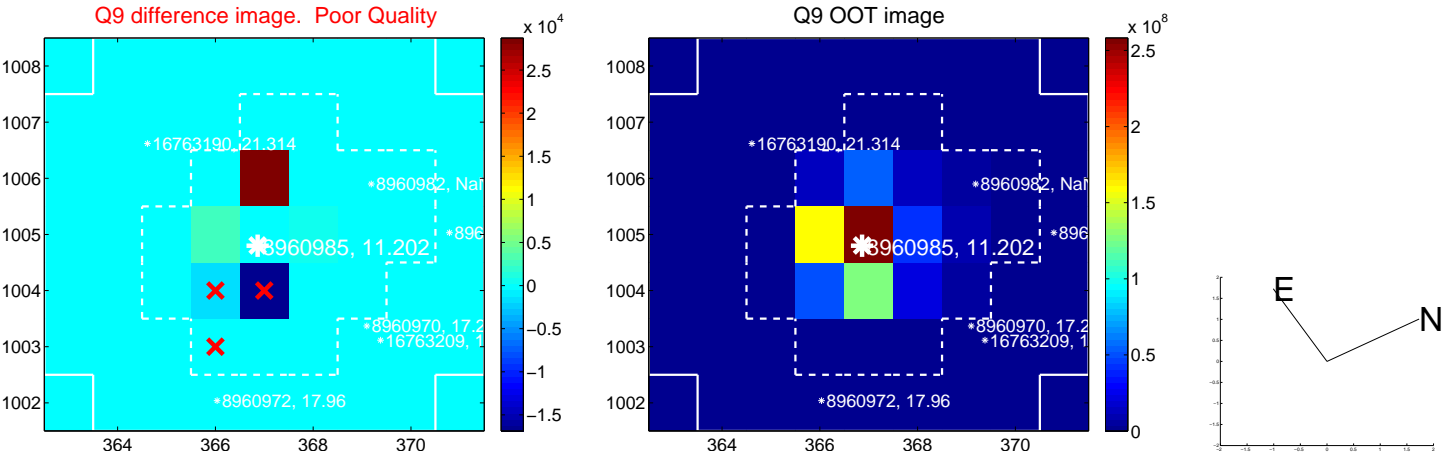
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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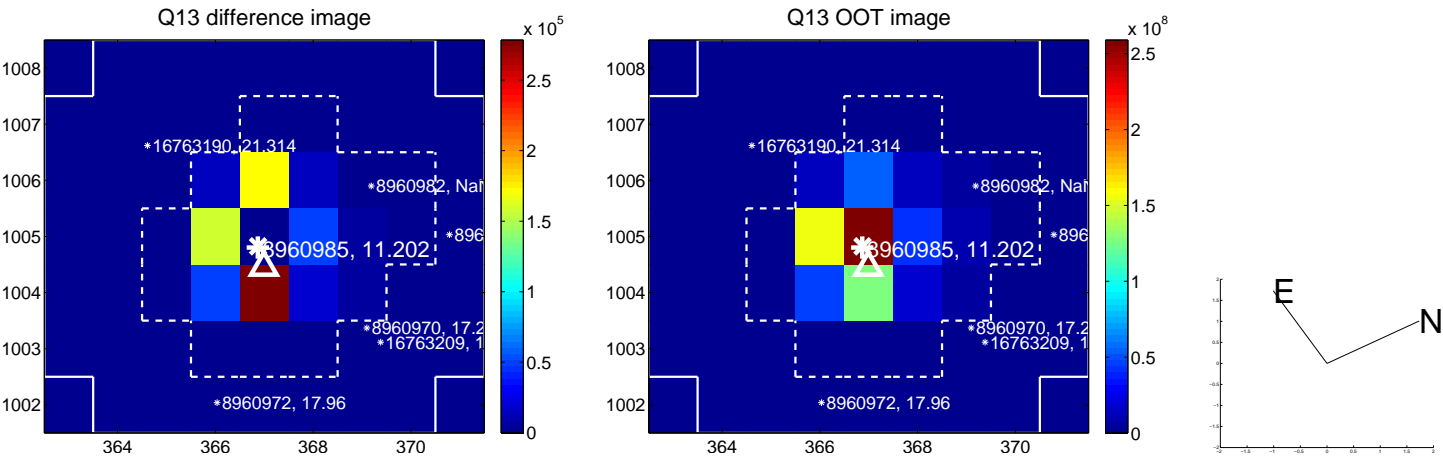


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

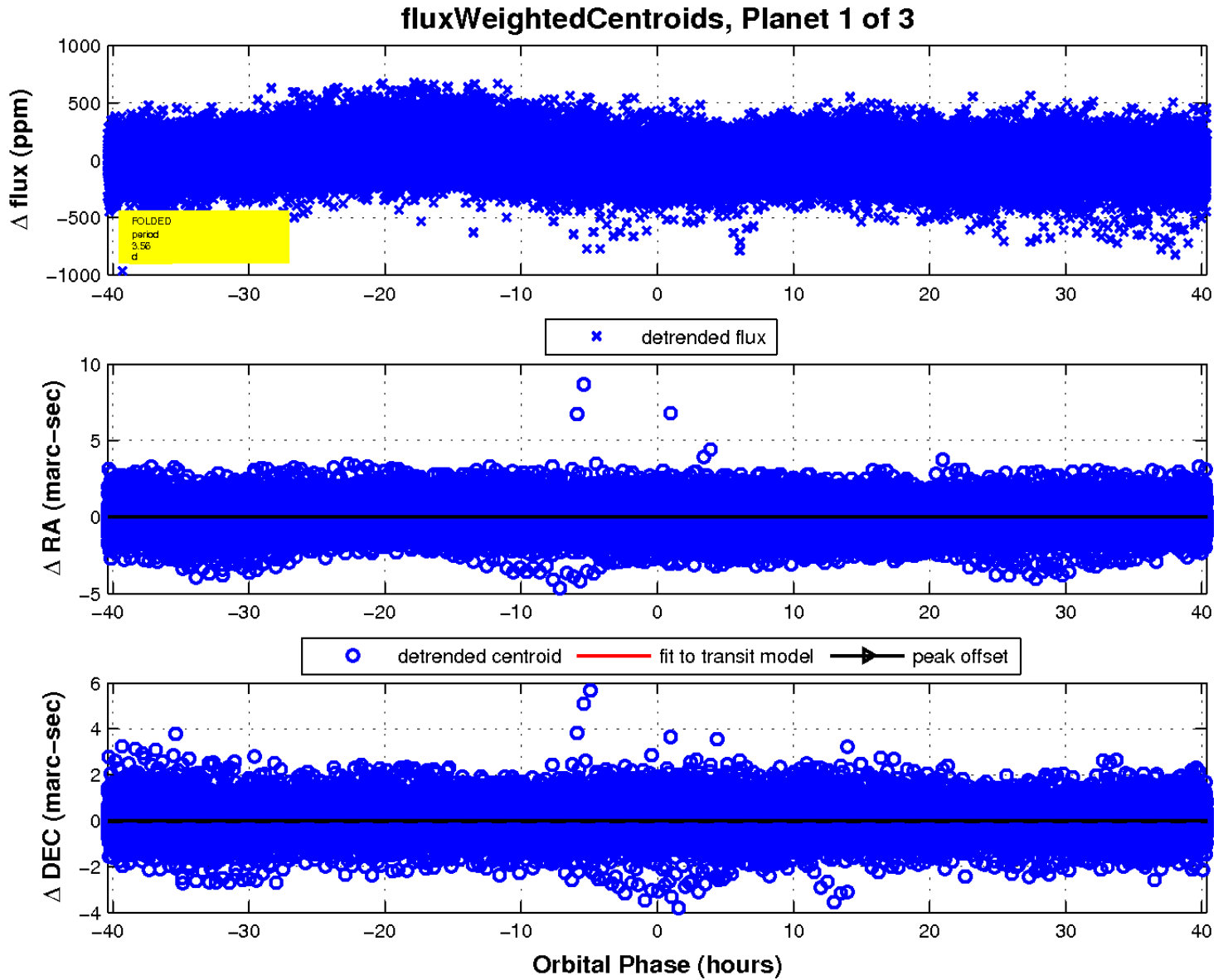
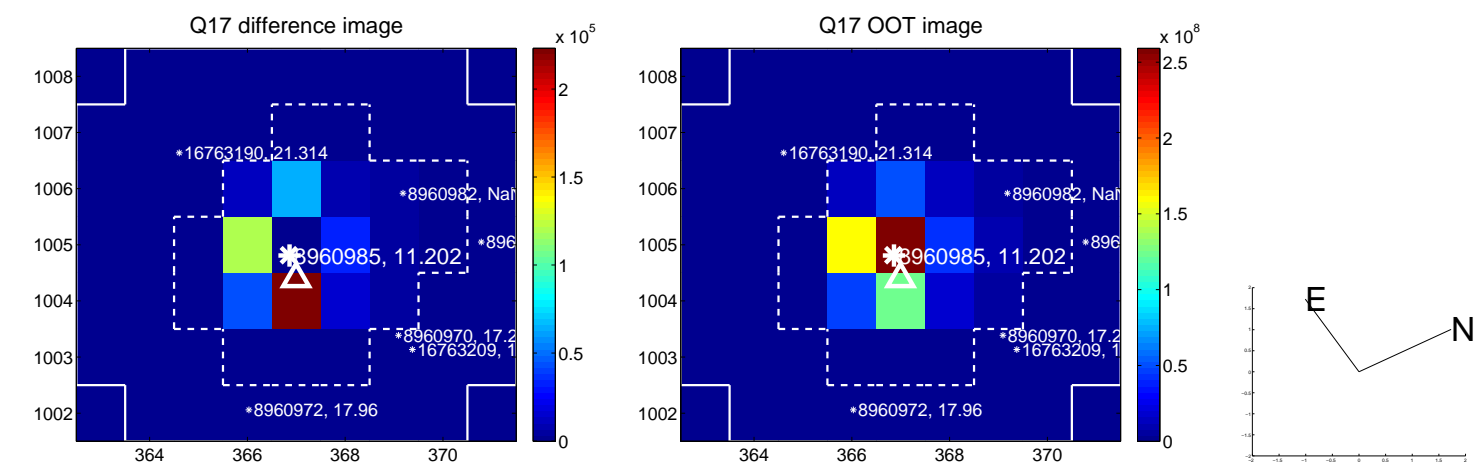




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

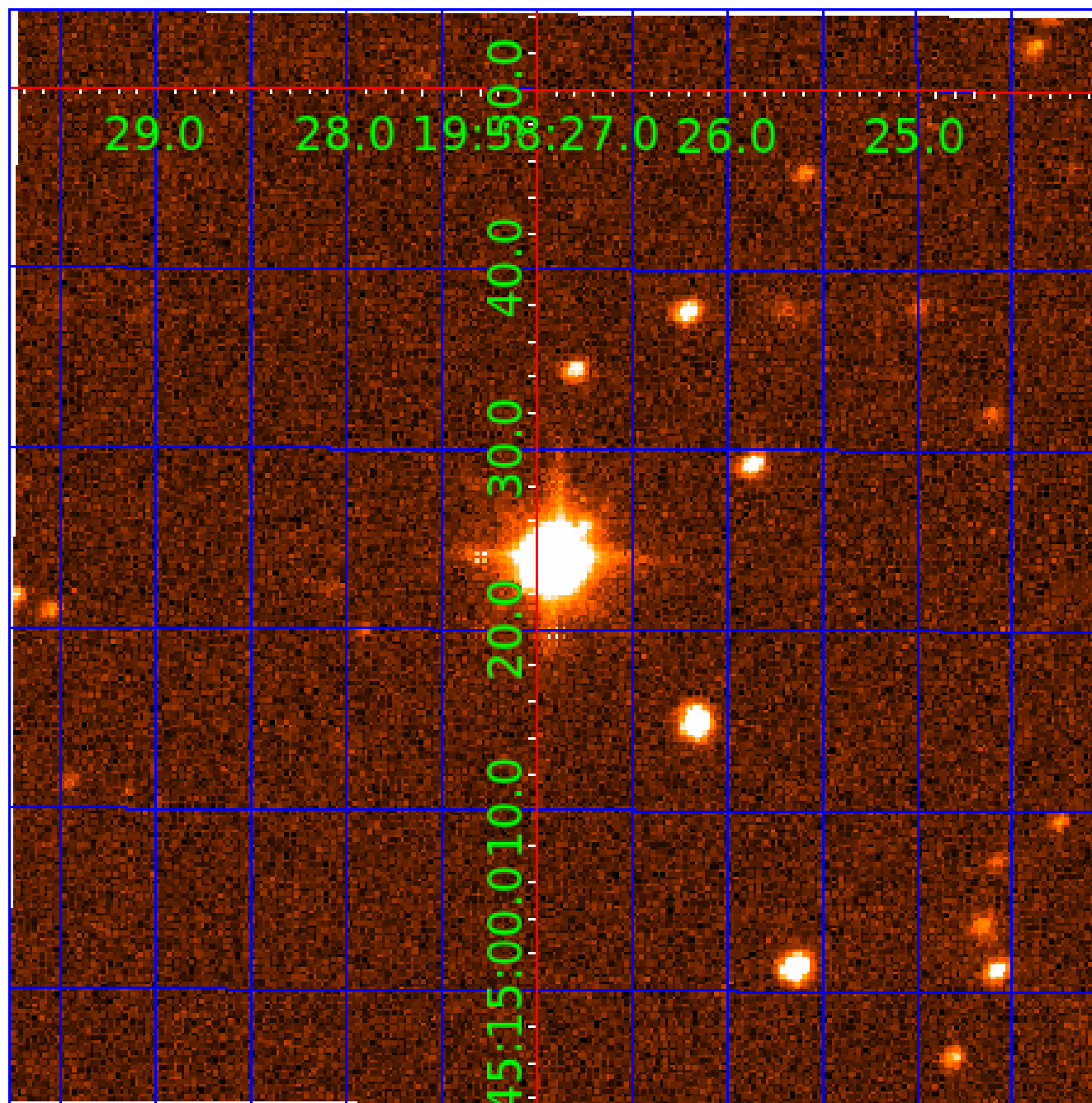


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008960985

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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008960985-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED
008960985-03	OBS	FP	0.00	1	0	0	0	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.

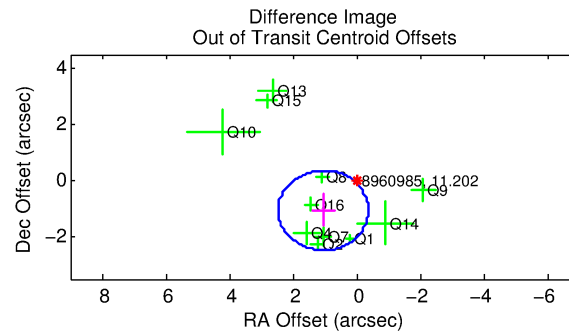
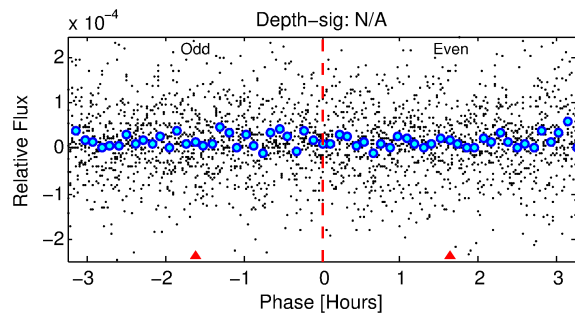
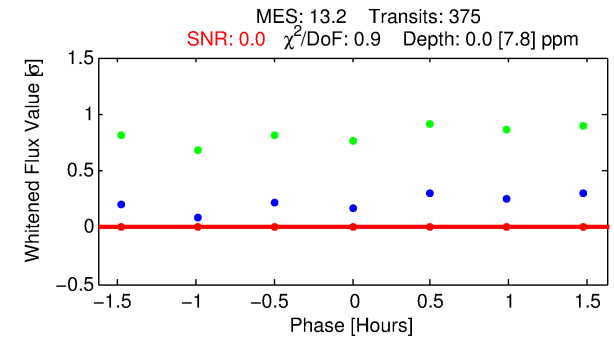
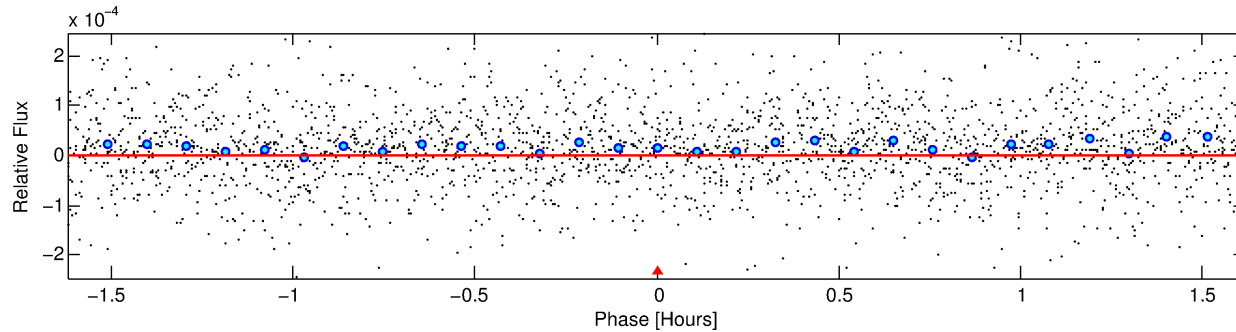
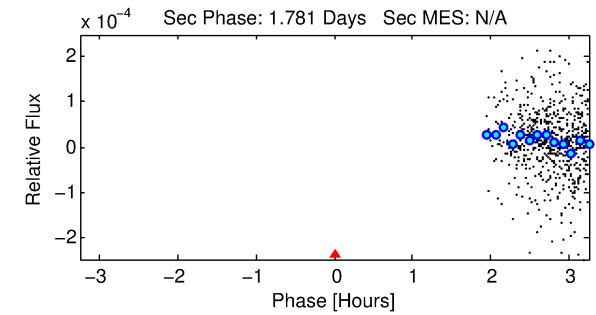
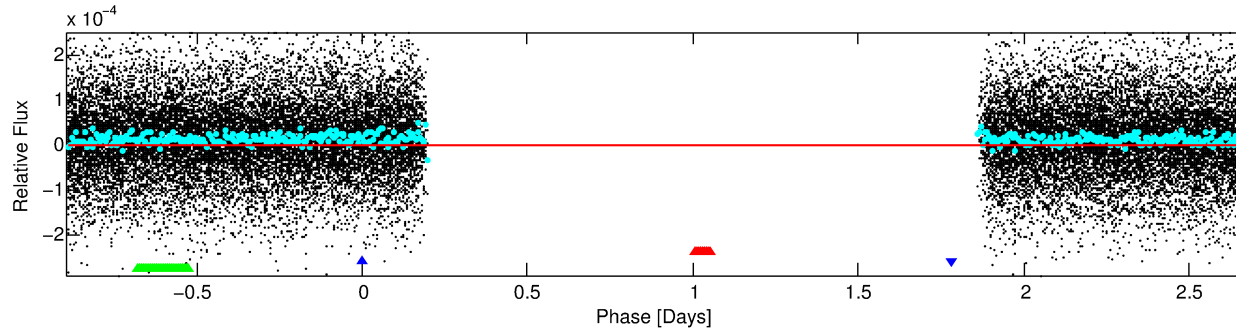
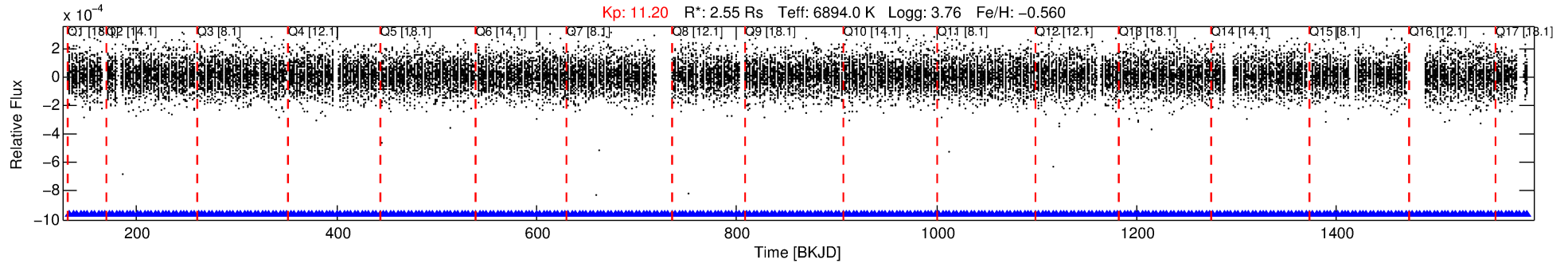
## Ephemeris Match Information For 008960985-02

No Significant Match Found



# DV One-Page Summary

KIC: 8960985 Candidate: 2 of 3 Period: 3.562 d



## DV Fit Results:

Period = 3.56249 [0.01752] d  
Epoch = 133.3332 [1.9069] BKJD  
Rp/R\* = 0.0002 [0.0200]  
a/R\* = 40.23 [1407.89]  
b = 0.60 [57.95]  
Seff = 5132.88 [2953.96]  
Teq = 2158 [311] K  
Rp = 0.05 [5.58] Re  
a = 0.0507 [0.0179] AU

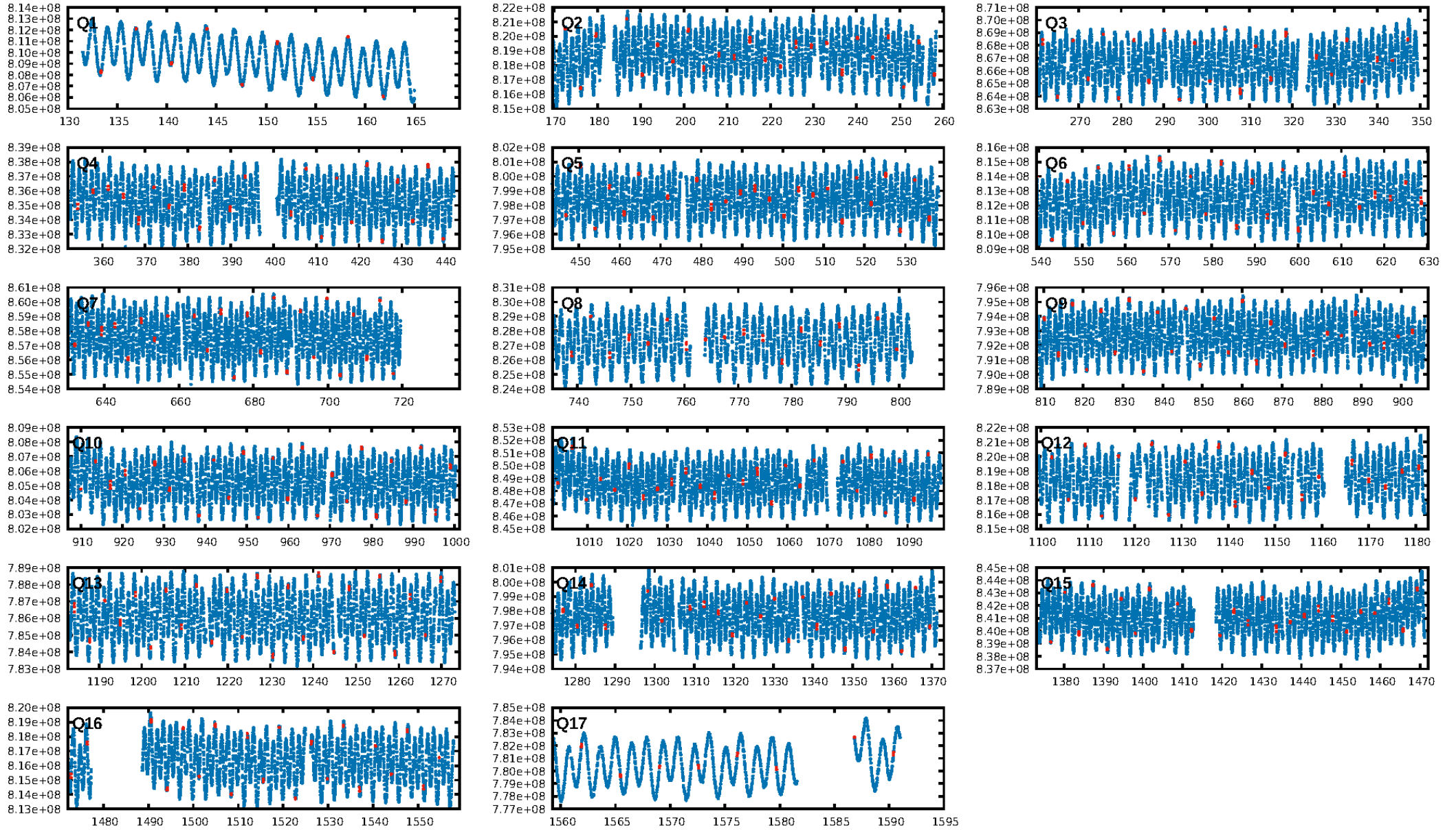
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [358/358]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 1.487 arcsec [3.15σ]  
KicOffset-rm: 1.112 arcsec [2.28σ]  
OotOffset-st: 3/2/3/3 [11]  
KicOffset-st: 3/2/3/3 [11]  
DiffImageQuality-fgm: 0.45 [5/11]  
DiffImageOverlap-fno: 0.00 [0/17]

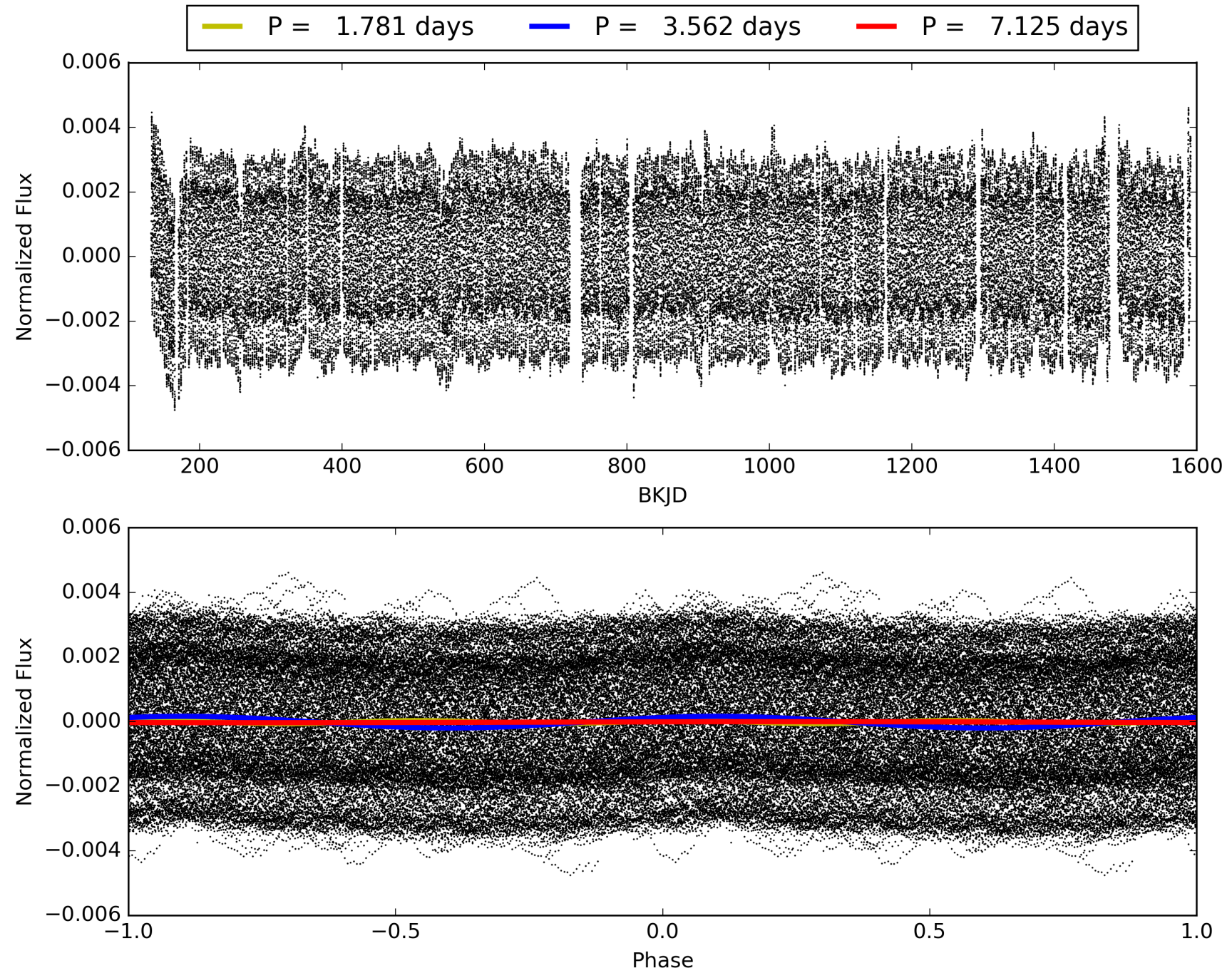
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:54:31 Z

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

# TCE 008960985-02, PDC Light Curves



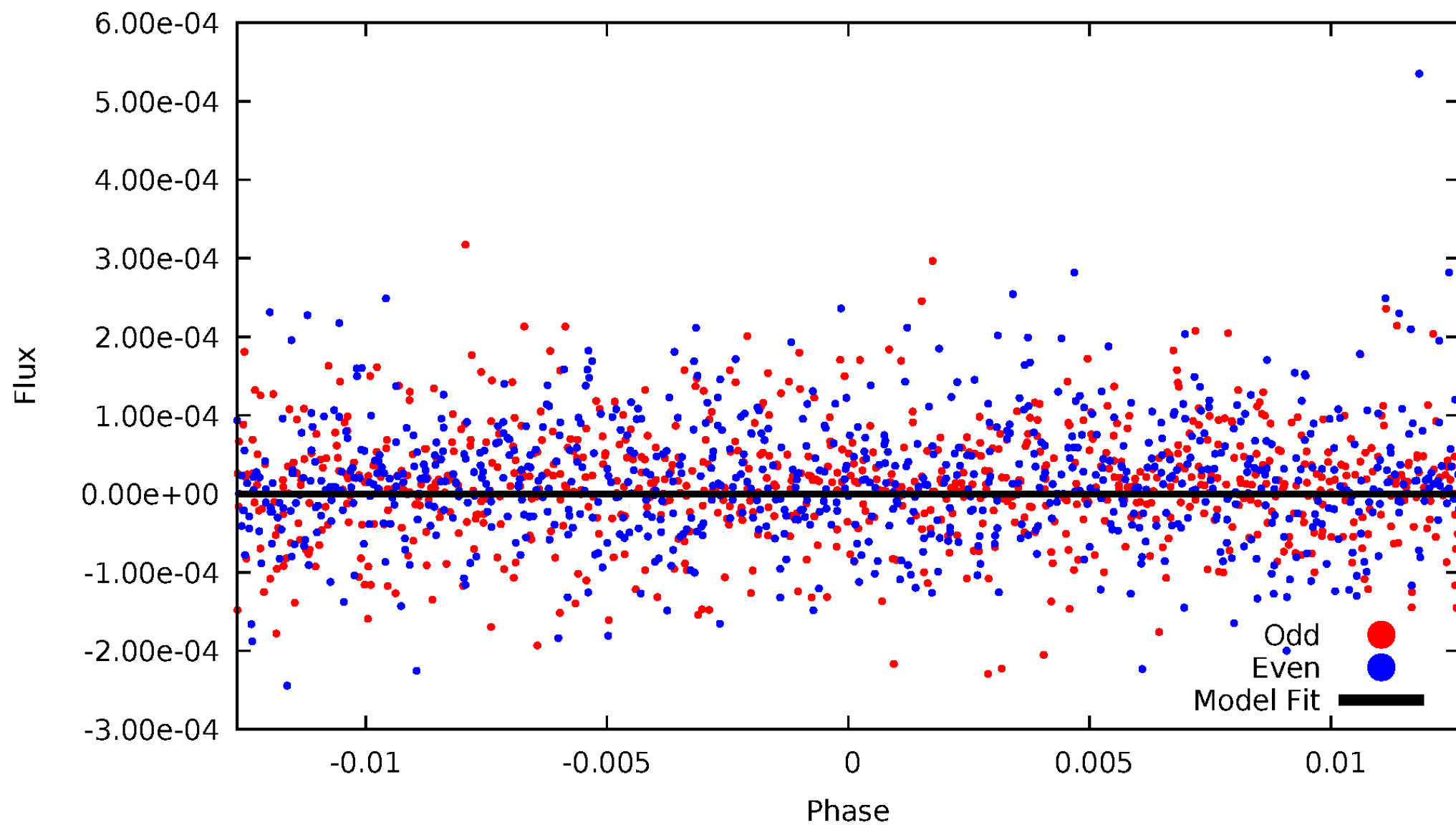
TCE 008960985-02





# DV Odd/Even

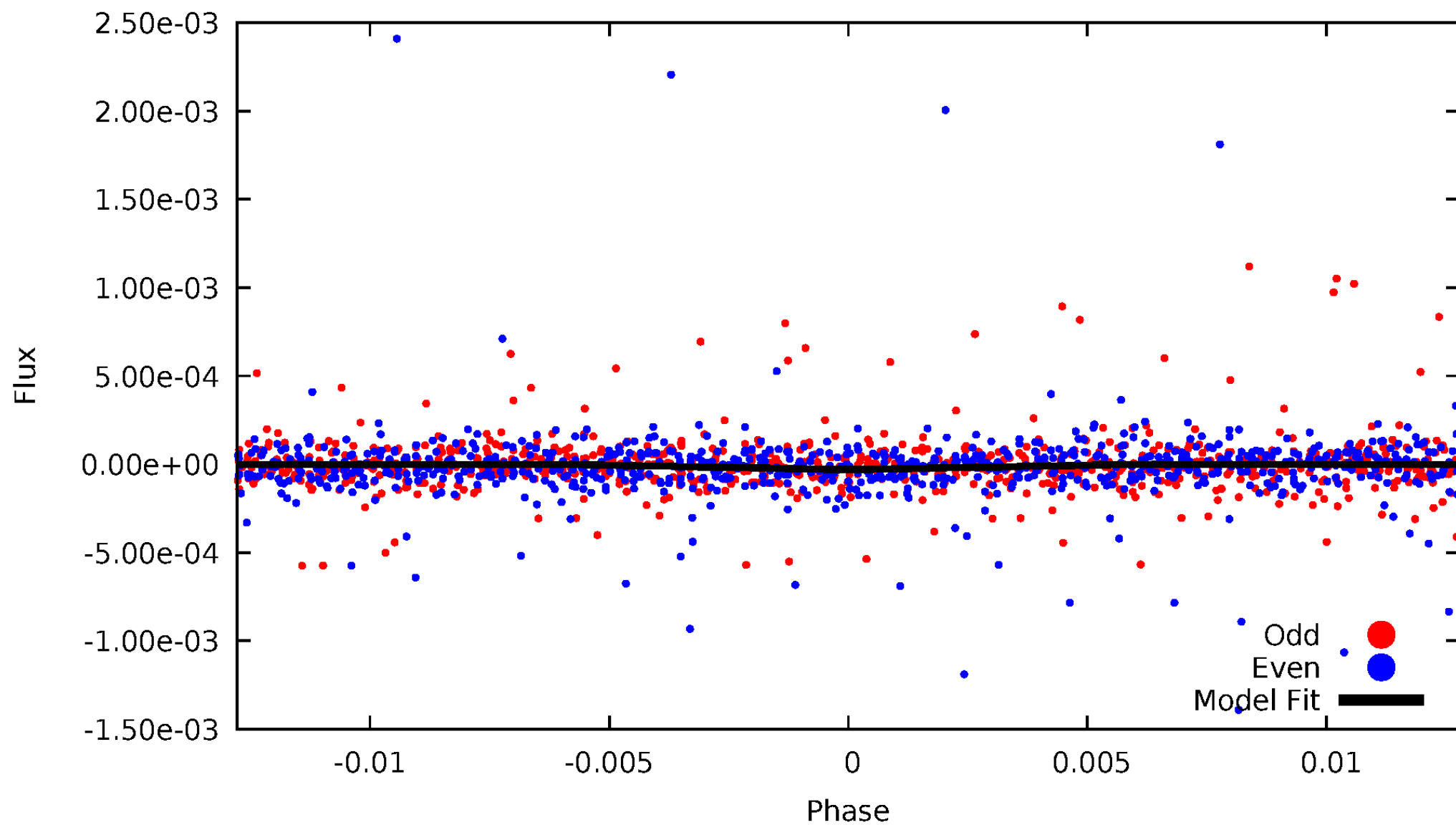
TCE 008960985-02





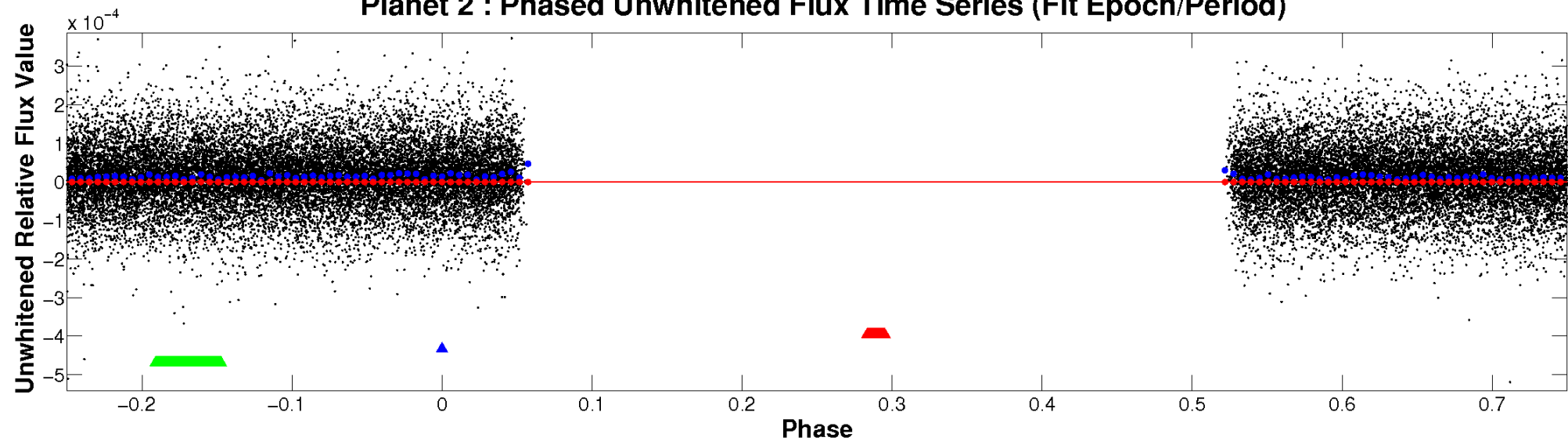
# ALT Odd/Even

TCE 008960985-02

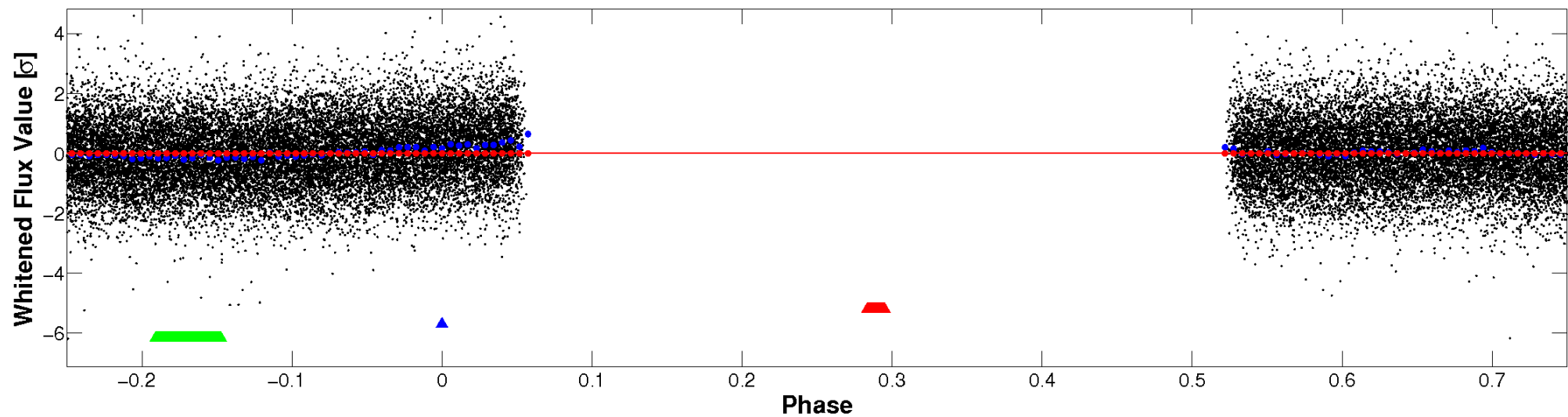


# Non-Whitened Vs. Whitened Light Curve

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

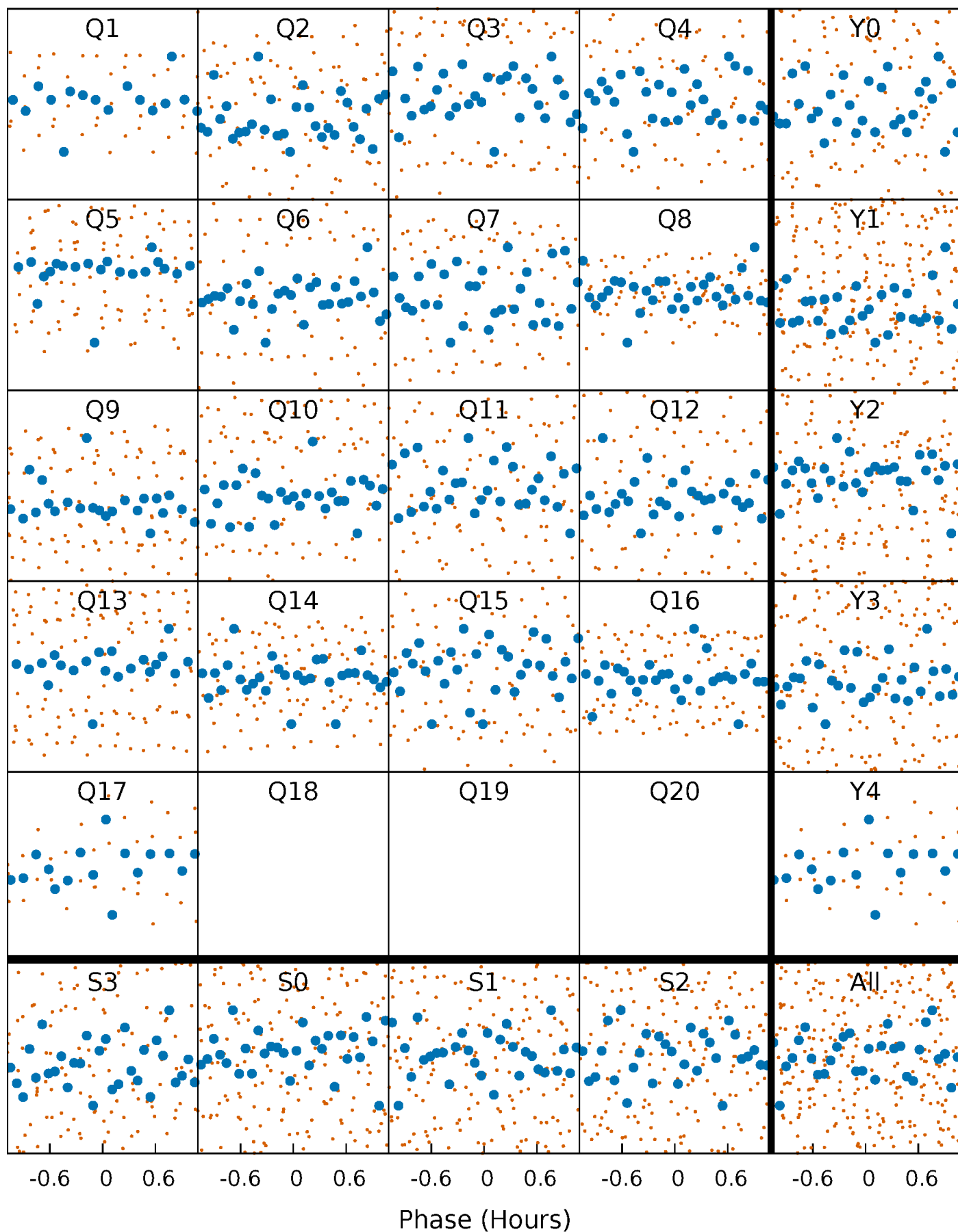


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



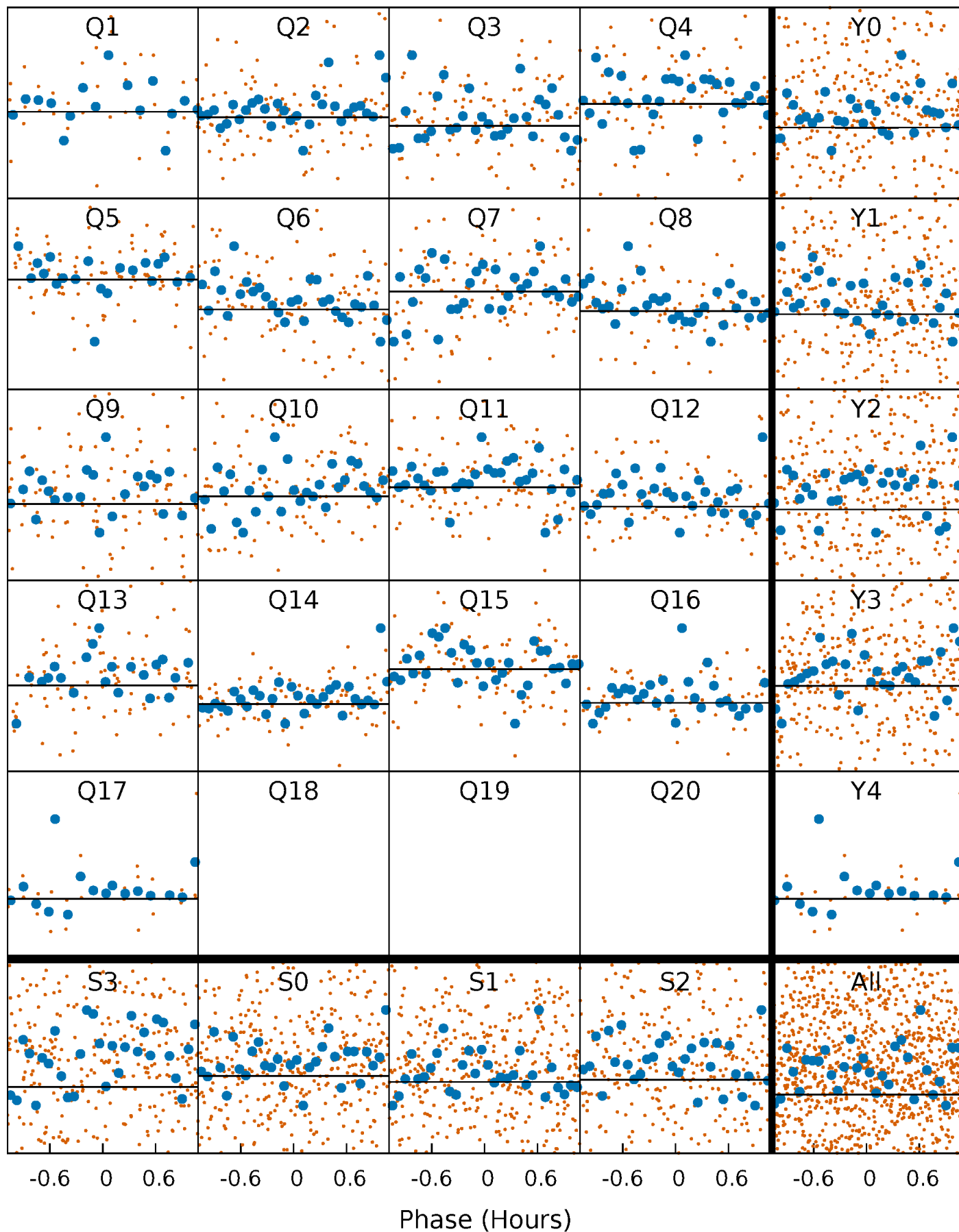
# PDC Quarter-Phased Transit Curves

TCE 008960985-02   P= 3.562492 Days    $T_0=133.333163$  (BKJD)



# DV Quarter-Phased Transit Curves

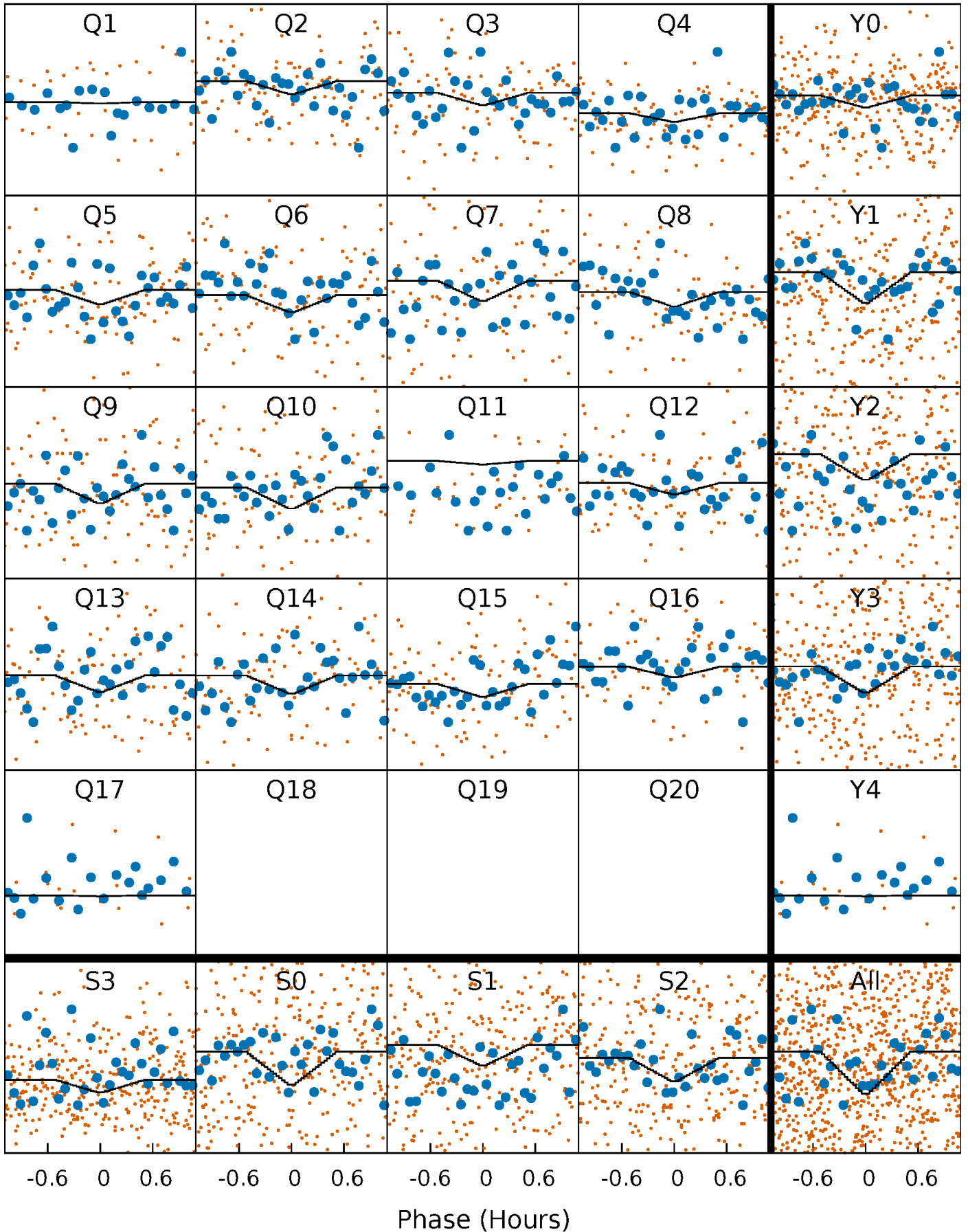
TCE 008960985-02   P= 3.562492 Days    $T_0=133.333163$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

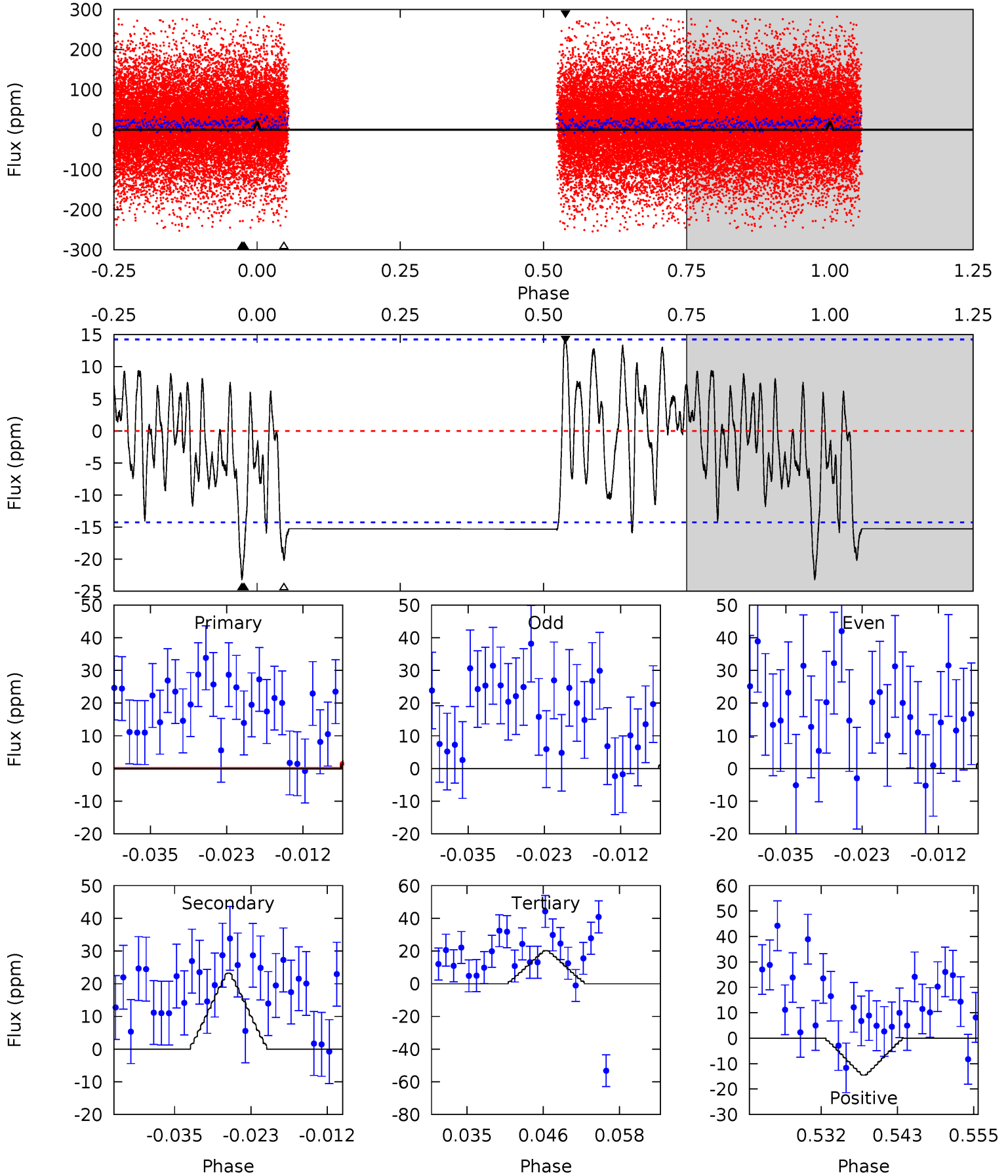
TCE 008960985-02   P= 3.562646 Days    $T_0=133.306425$  (BKJD)



# DV Model-Shift Uniqueness Test

008960985-02, P = 3.562492 Days, E = 129.770671 Days

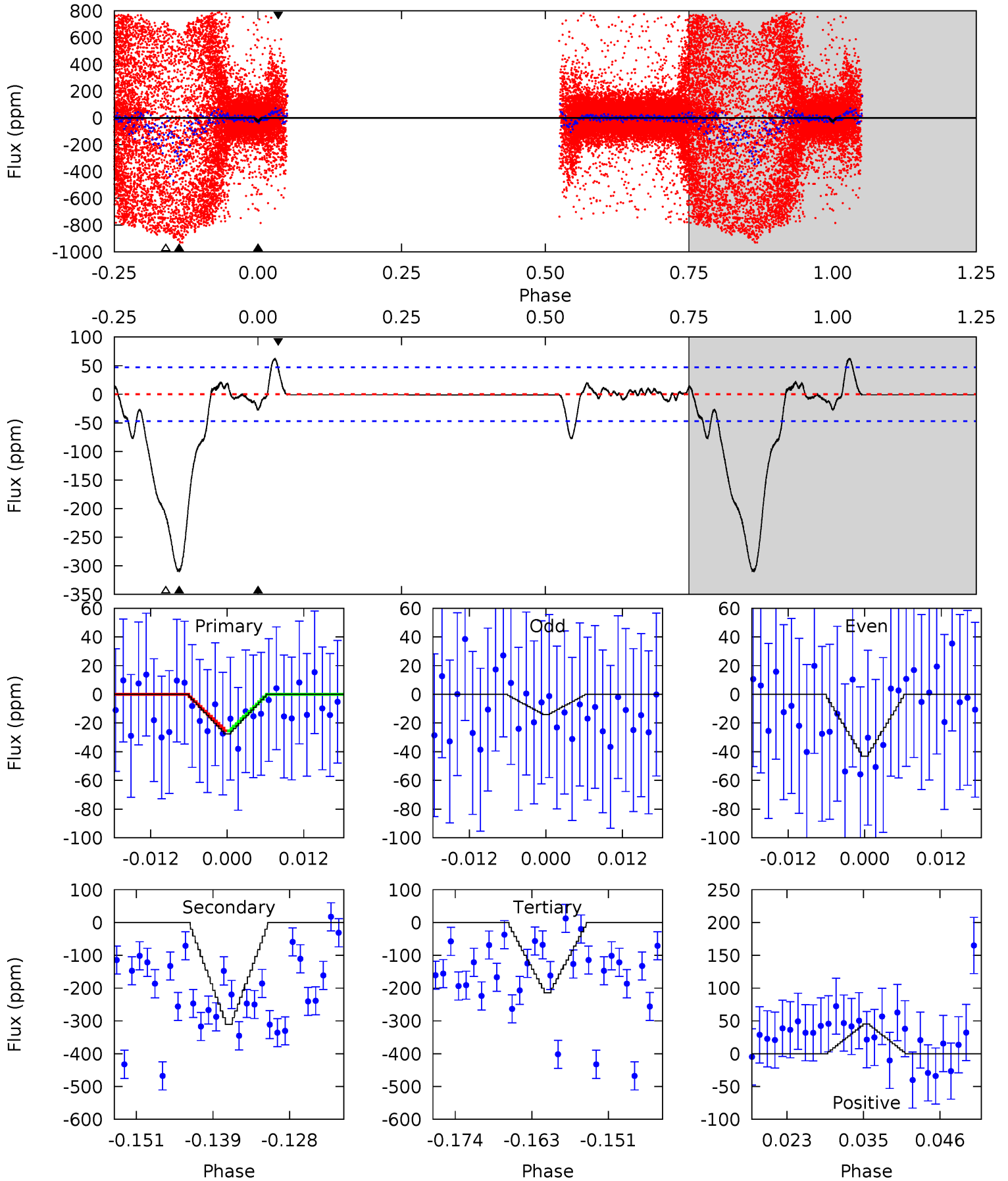
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.95	8.15	7.10	5.10	5.00	2.53	2.40	-0.14	1.86	1.06	3.06	1.15	0.99	0.38	1.91



# Alt Model-Shift Uniqueness Test

008960985-02, P = 3.562646 Days, E = 129.743779 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
2.92	33.0	22.8	4.79	5.00	2.52	4.90	-19.8	-1.87	10.2	28.2	1.48	0.72	0.17	0.01



### Stellar Parameters For KIC 008960985

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6894^{+170}_{-221}$	$3.760^{+0.328}_{-0.082}$	$-0.560^{+0.300}_{-0.250}$	$2.552^{+0.406}_{-0.947}$	$1.367^{+0.219}_{-0.267}$	$0.116^{+0.289}_{-0.031}$
	+2%/-3%	+9%/-2%	+54%/-45%	+16%/-37%	+16%/-20%	+250%/-27%
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 008960985-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-23 \pm 3$	$3.51^{+3.95}_{-2.55}$	$2932^{+176}_{-293}$	$4145^{+3529}_{-1084}$	$2.766^{+32.744}_{-2.158}$
Alt.	$-311 \pm 9$	$4.27^{+4.17}_{-2.86}$	$2943^{+168}_{-252}$	$7143^{+9566}_{-2073}$	$24^{+208}_{-18}$

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

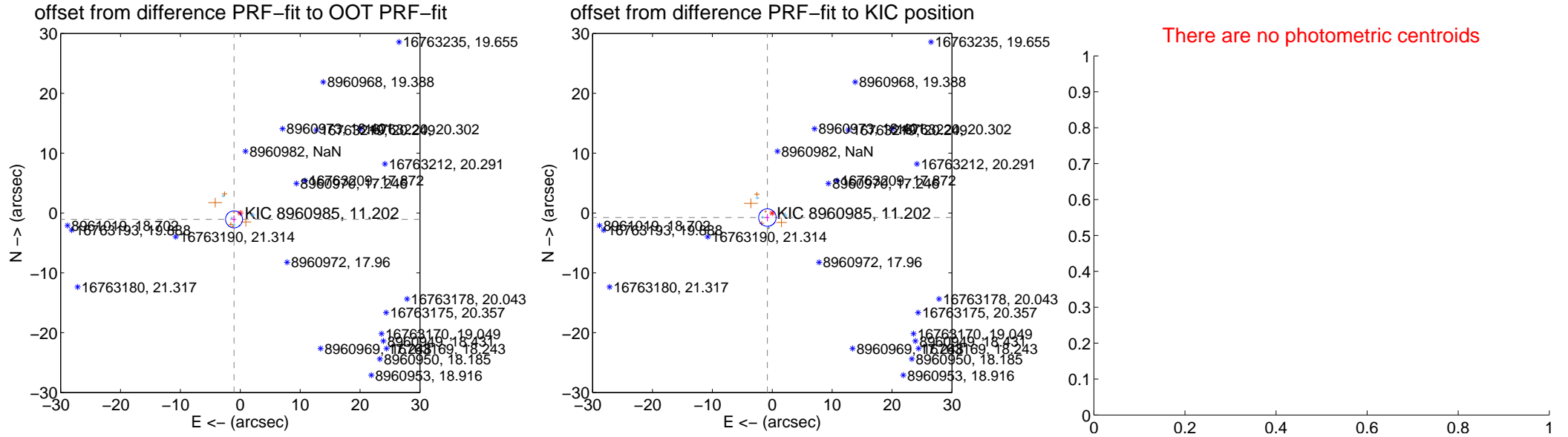
## DV Centroid Data

Supplemental centroid analysis for 008960985-02. **Kepler magnitude: 11.20.** Transit SNR 0.01

There are 5 quarters with good PRF difference image offsets

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

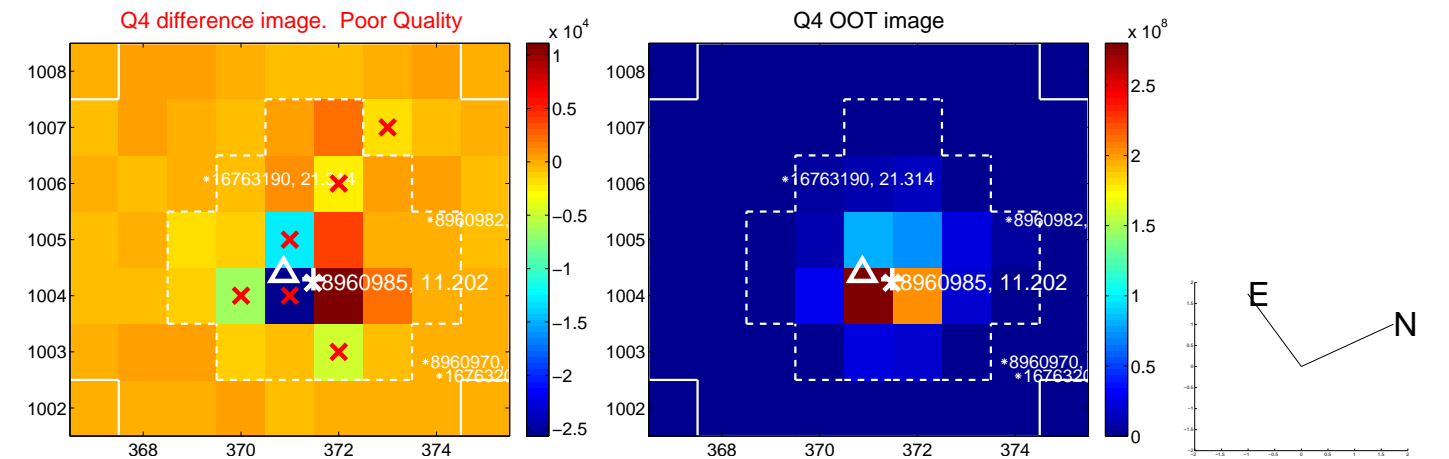
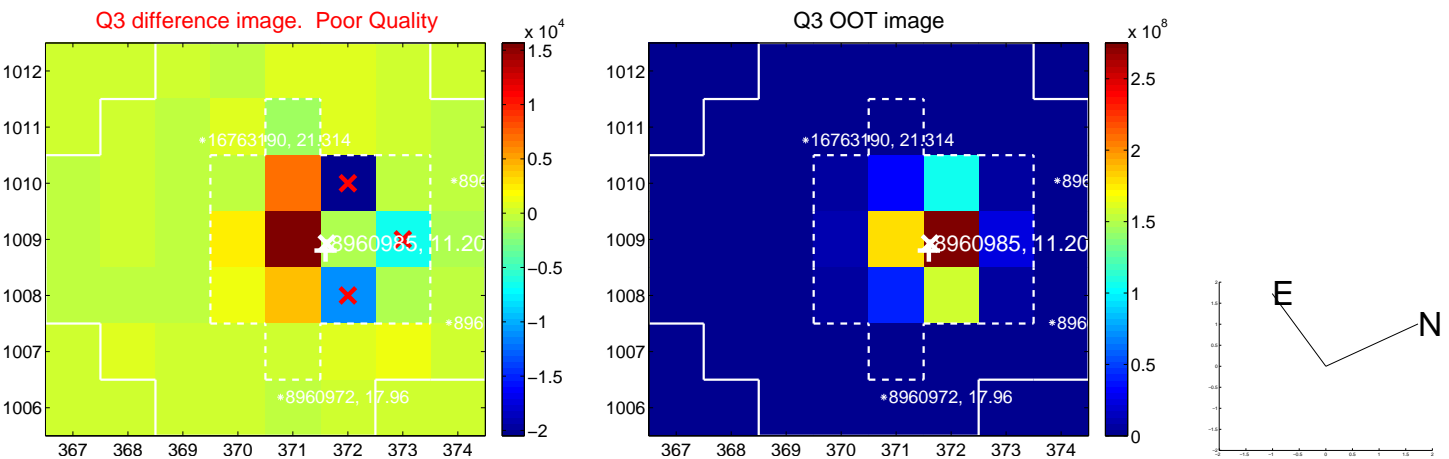
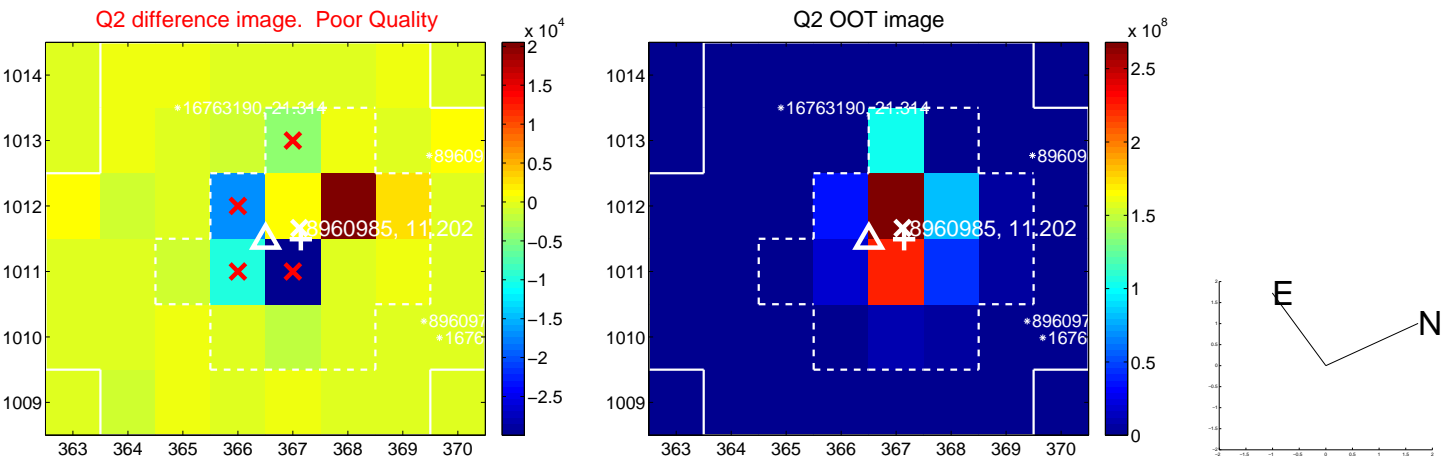
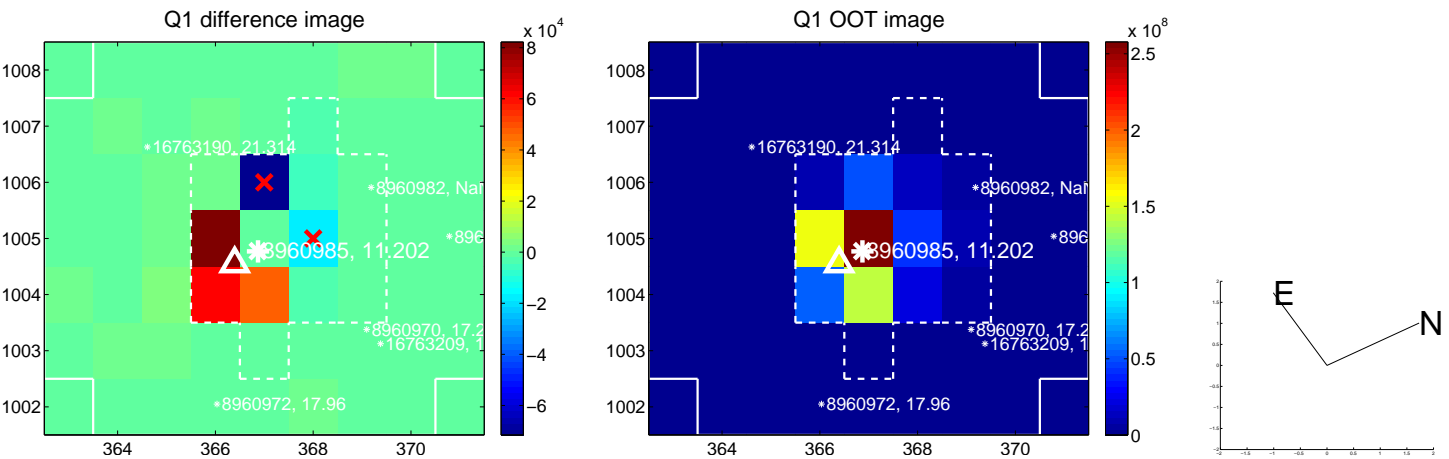
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>1.487 <math>\pm</math> 0.472</b>	<b>3.15</b>	1.044 $\pm$ 0.344	-1.059 $\pm$ 0.570
PRF-fit source offset from KIC position	1.112 $\pm$ 0.487	2.28	0.810 $\pm$ 0.354	-0.761 $\pm$ 0.603
photometric centroid source offset	—	—	—	—



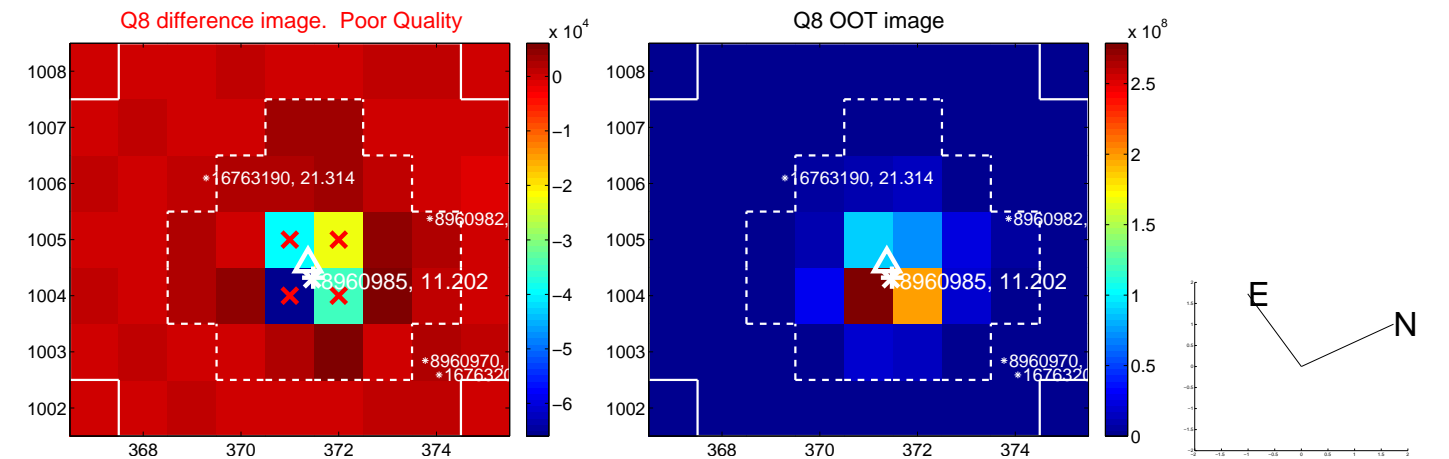
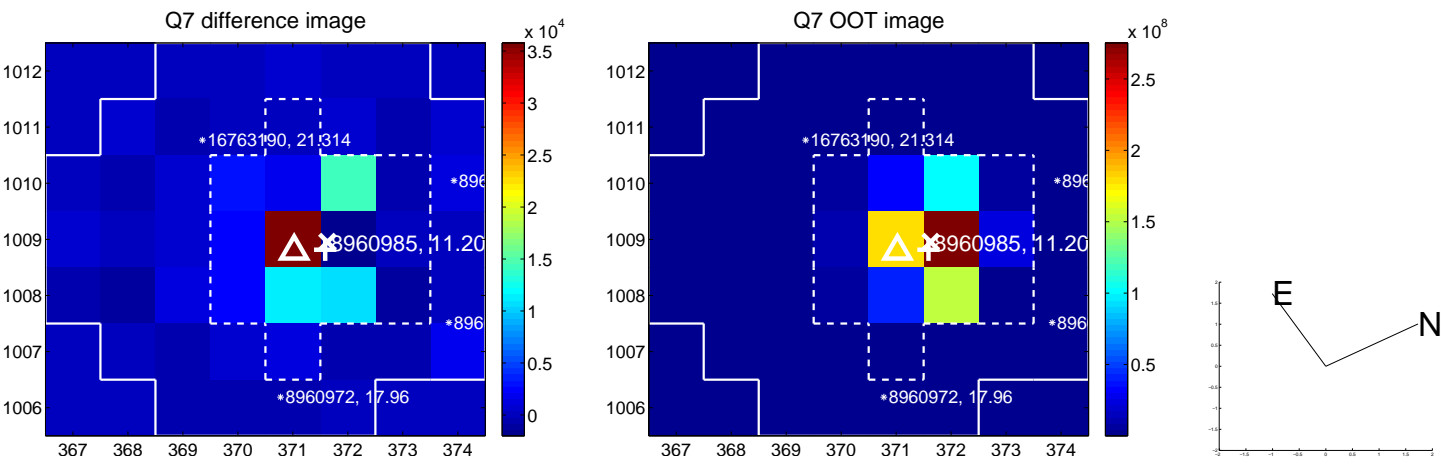
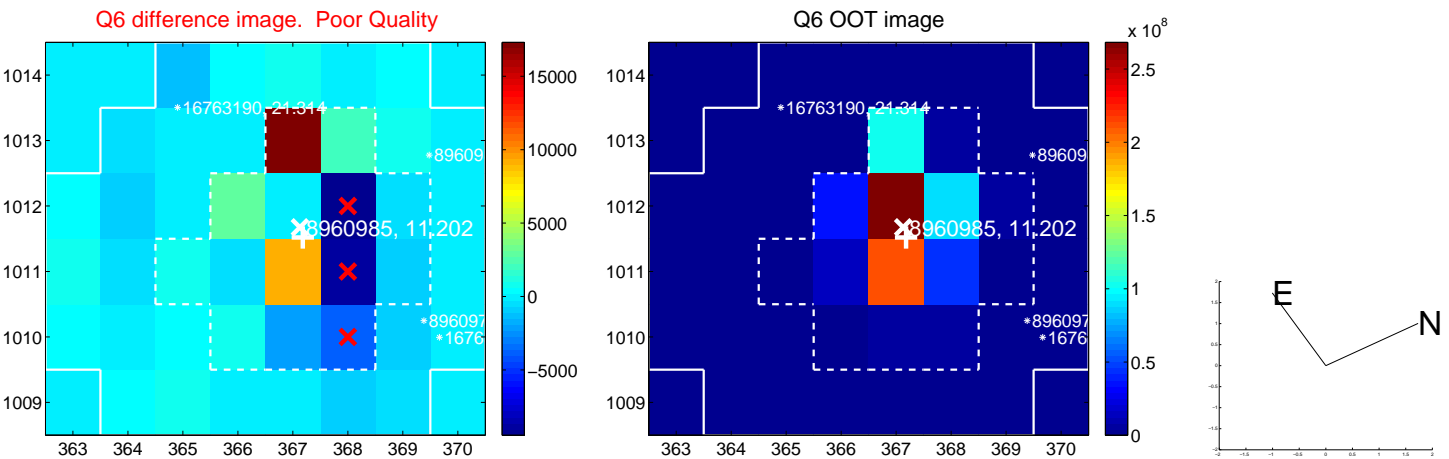
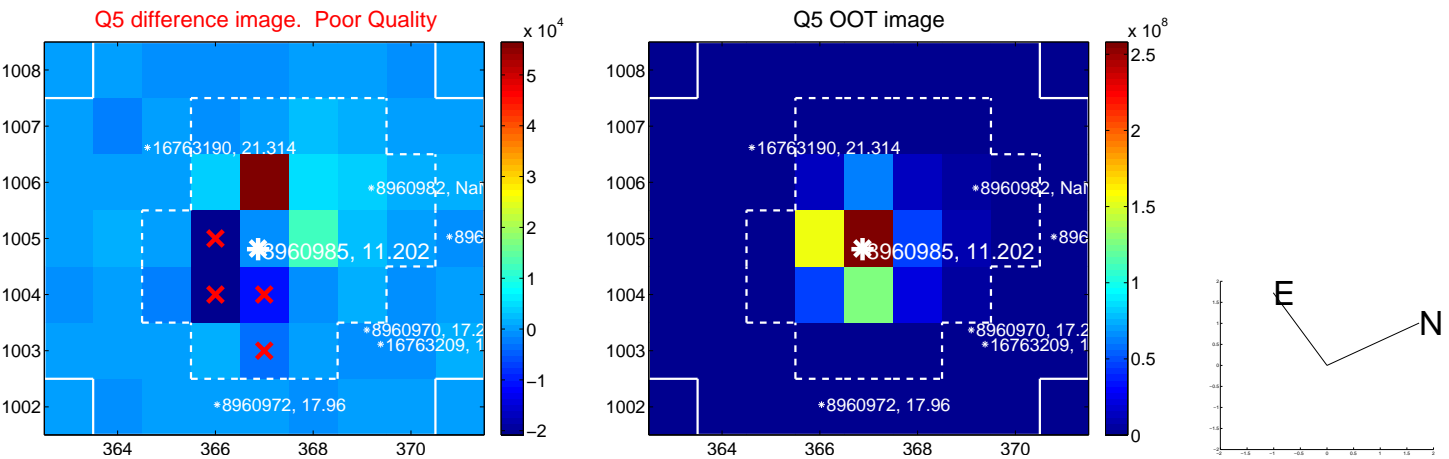
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



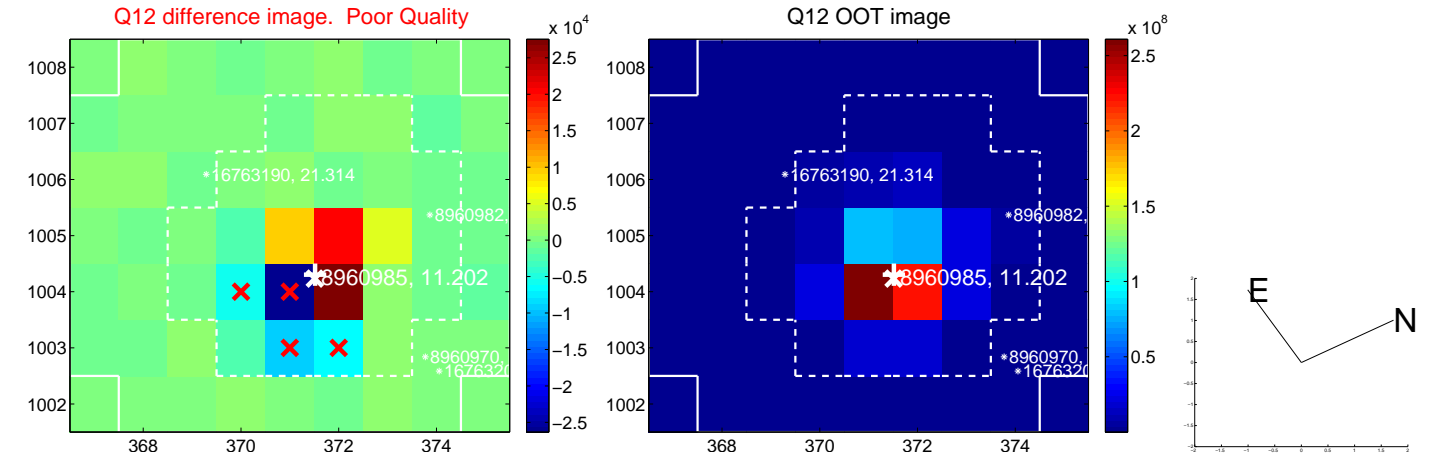
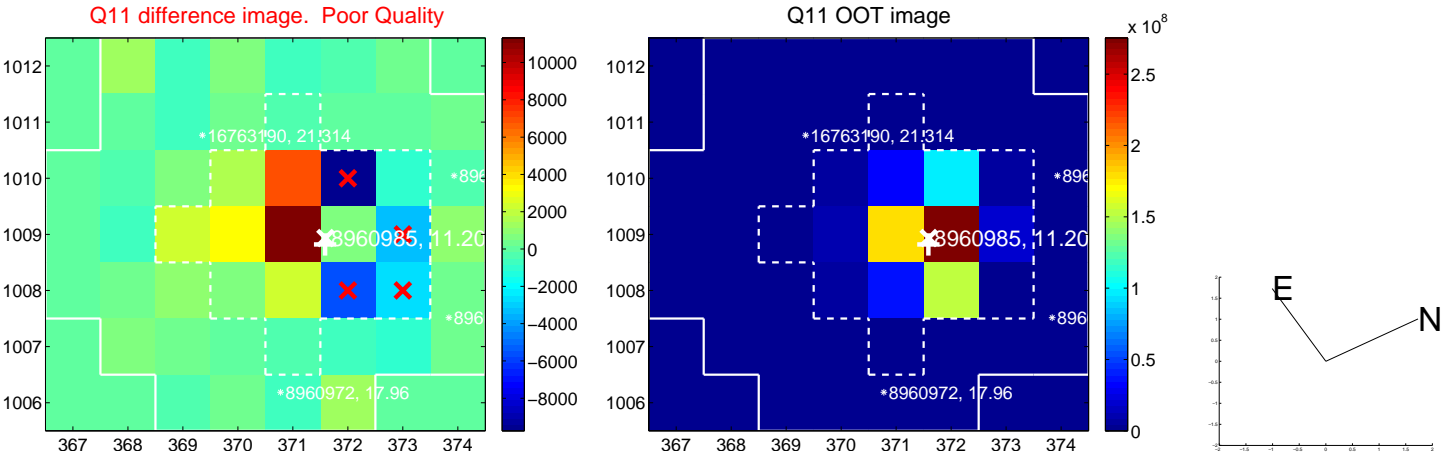
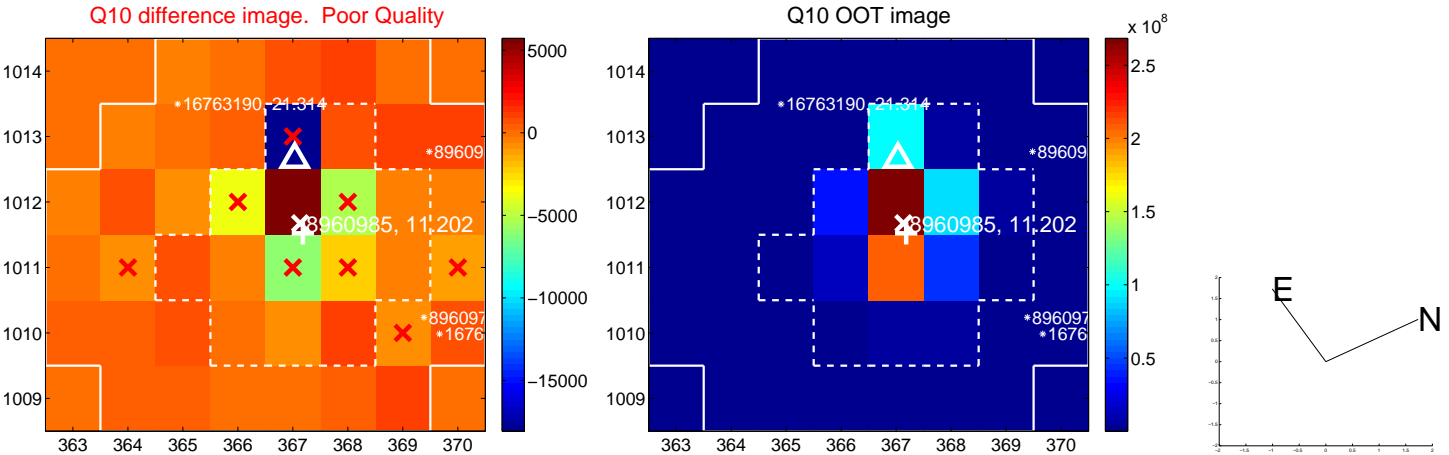
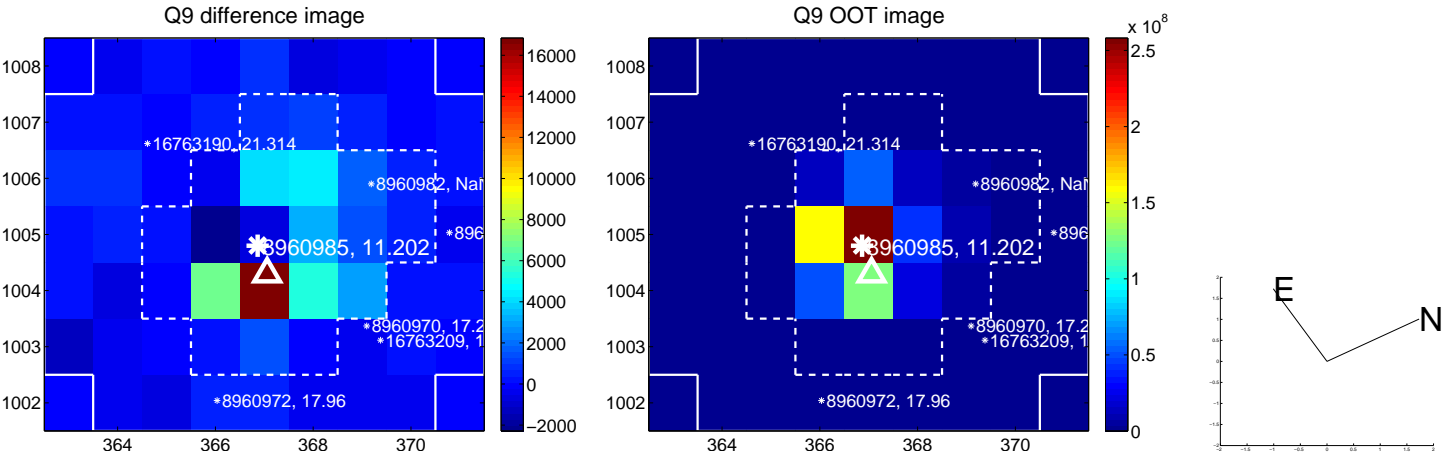
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



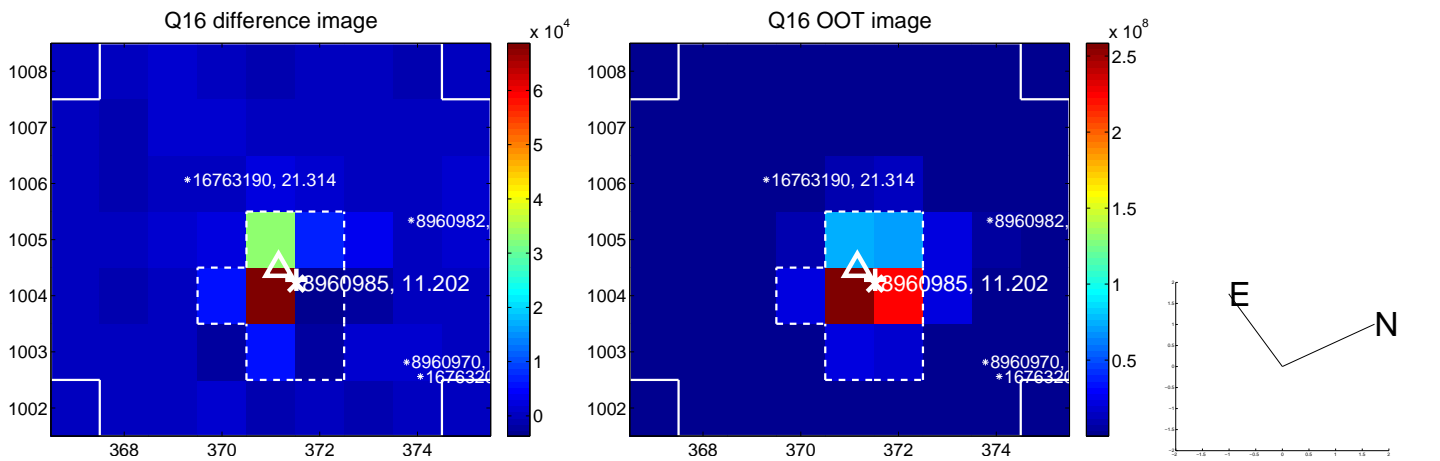
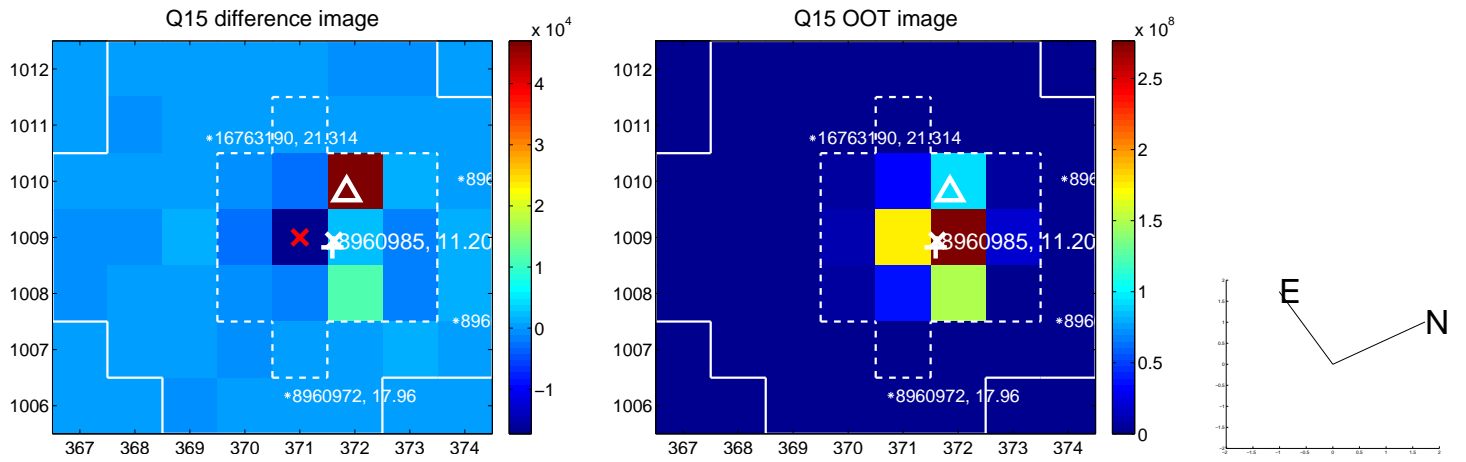
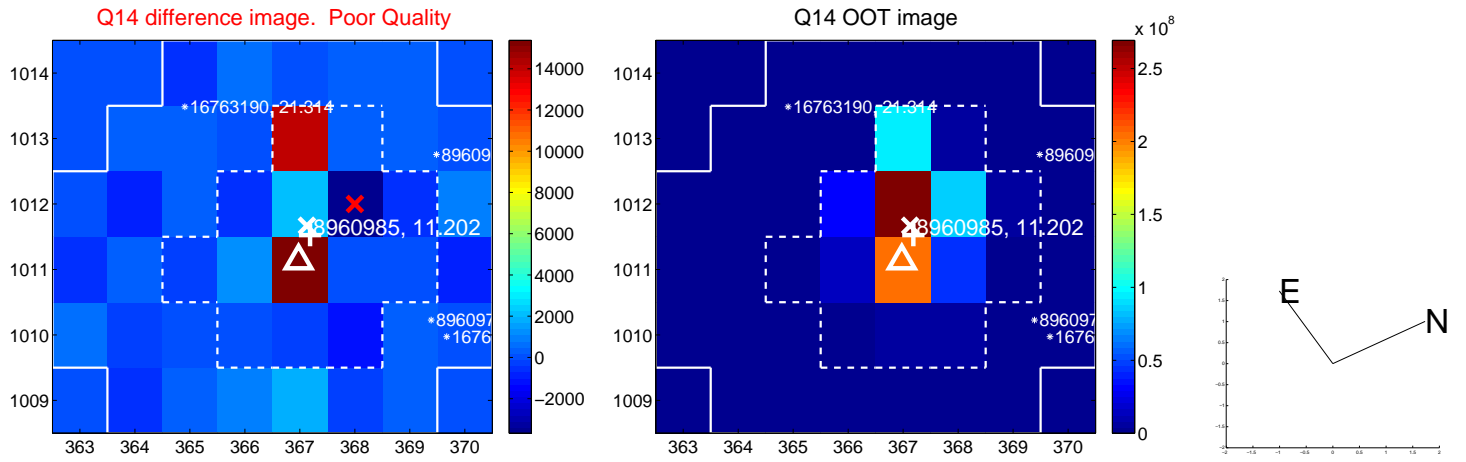
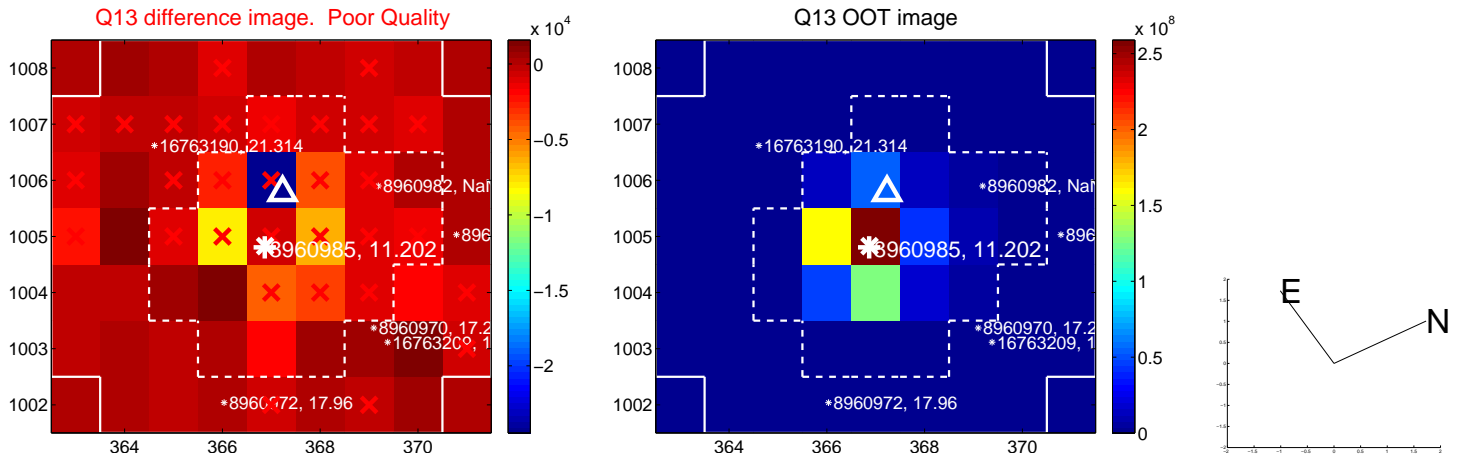
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



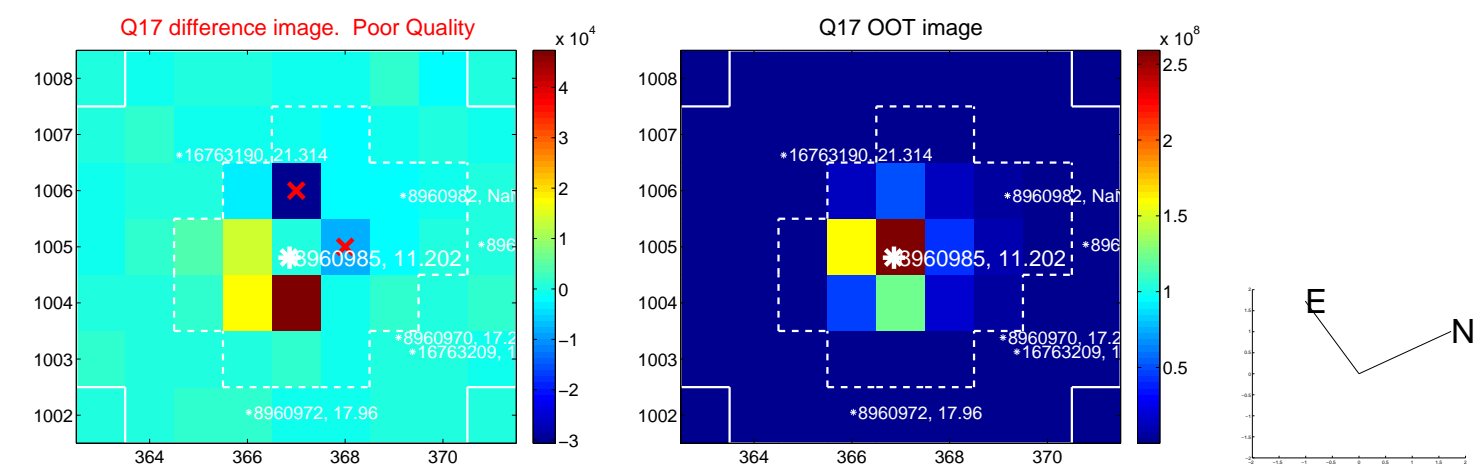
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



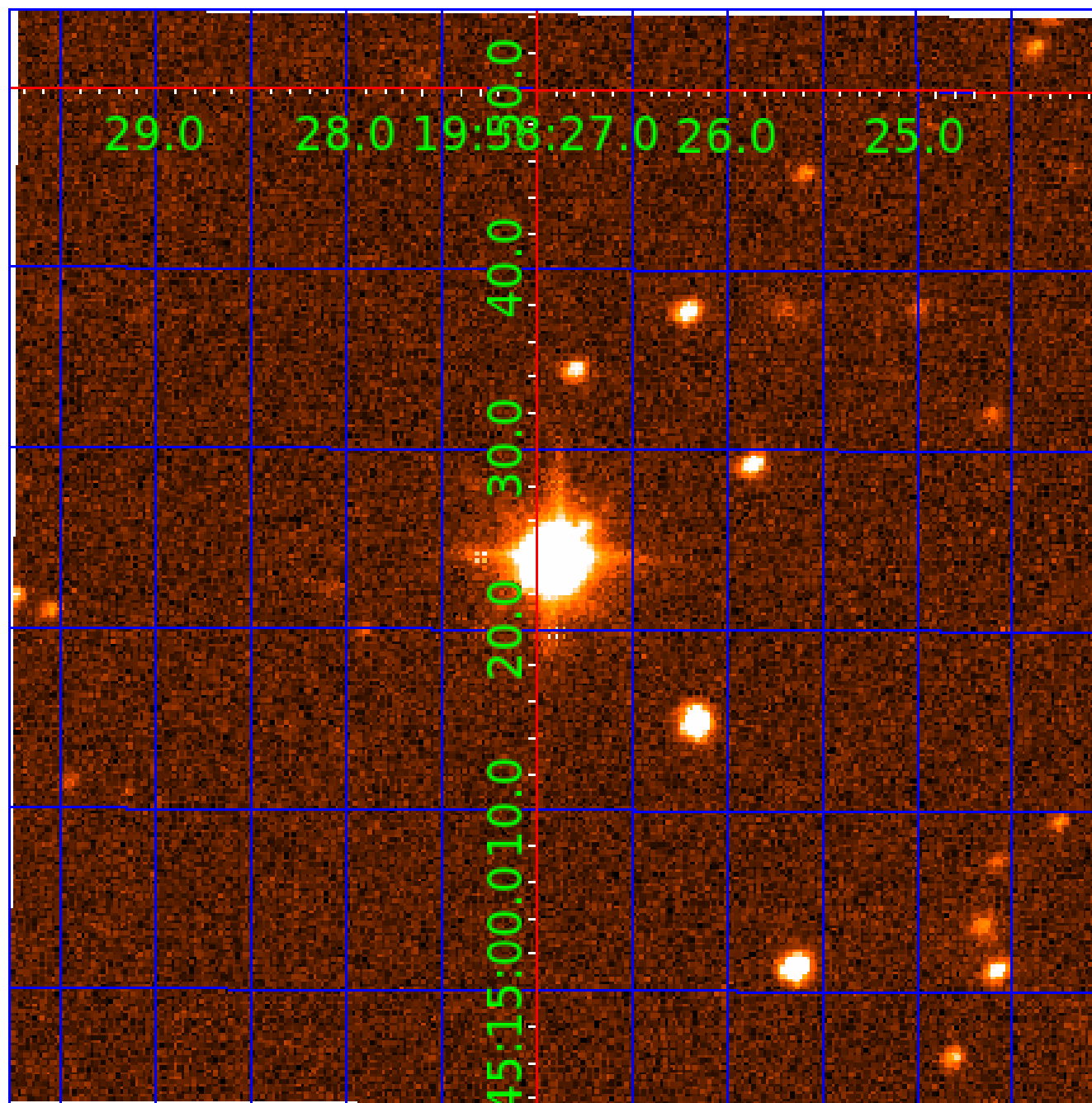
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination





# KIC 008960985

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008960985-01	OBS	No	3.562596	134.342435	29.0	13.460	11.4	8.8	2.55	6894	1.73	5132.68
008960985-02	OBS	No	3.562492	133.333163	0.0	0.541	13.2	0.0	2.55	6894	0.06	5132.88
008960985-03	OBS	No	3.562871	132.653109	53.2	22.952	13.1	16.0	2.55	6894	2.80	5132.15

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008960985-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
008960985-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—SAME_NTL_PERIOD—CENT_SATURATED
008960985-03	OBS	FP	0.00	1	0	0	0	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.

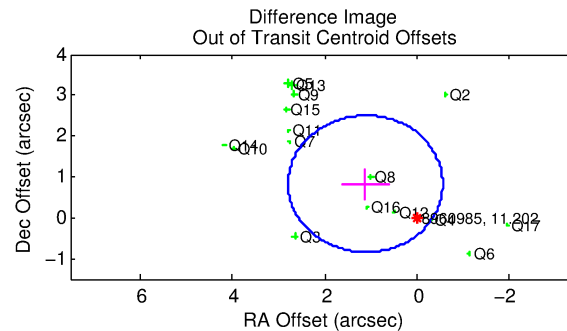
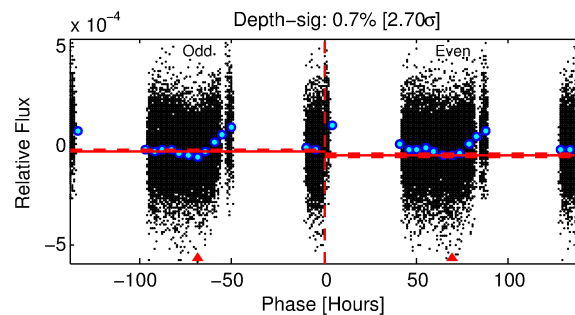
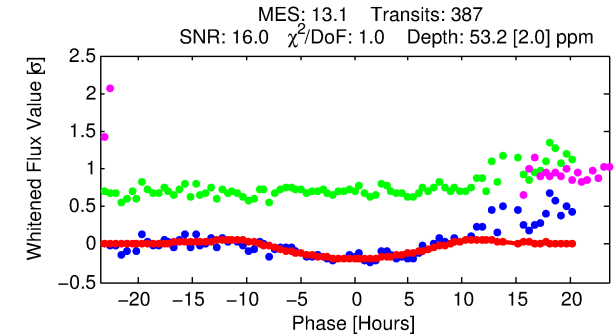
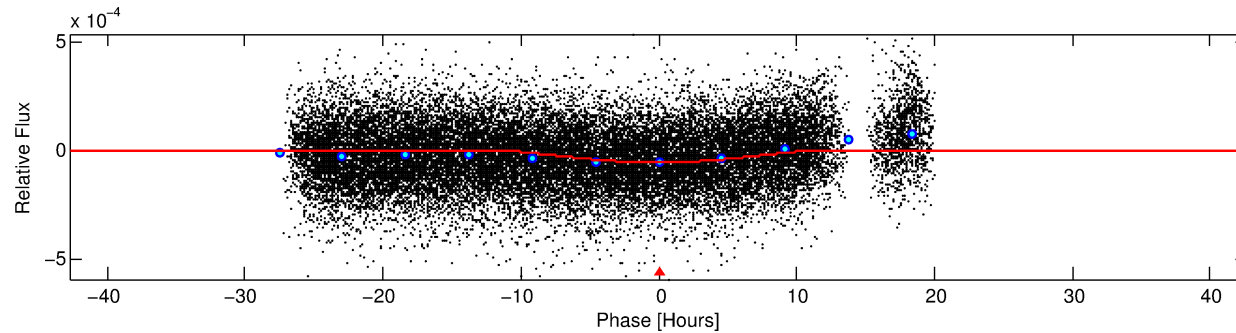
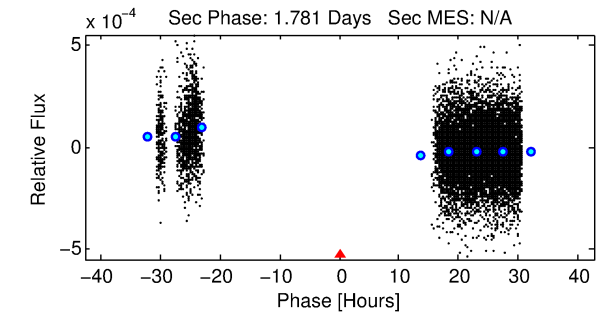
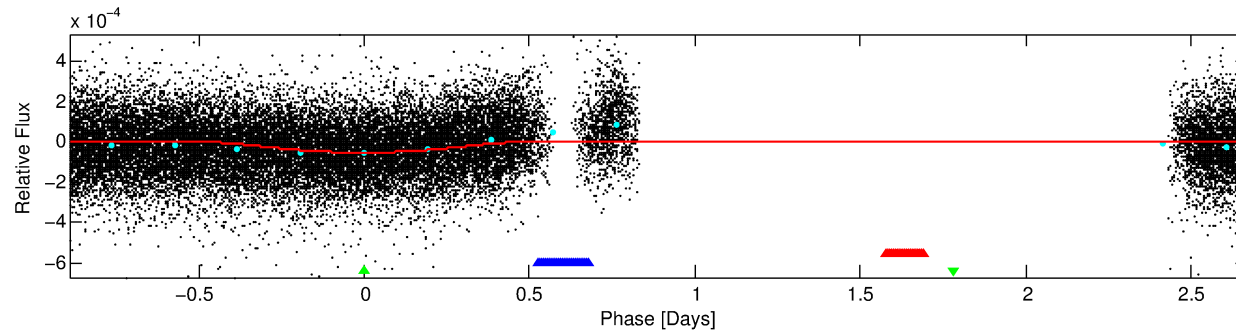
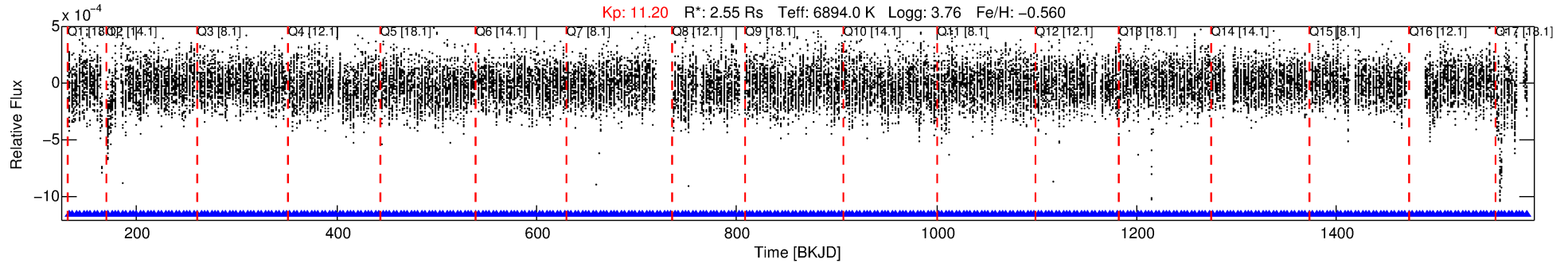
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008960985-03

No Significant Match Found

# DV One-Page Summary

KIC: 8960985 Candidate: 3 of 3 Period: 3.563 d



## DV Fit Results:

Period = 3.56287 [0.00012] d  
Epoch = 132.6531 [0.0273] BKJD  
Rp/R\* = 0.0100 [0.0024]  
a/R\* = 1.02 [0.00]  
b = 0.99 [0.01]  
Seff = 5132.16 [2953.35]  
Teq = 2158 [310] K  
Rp = 2.80 [1.24] Re  
a = 0.0507 [0.0179] AU

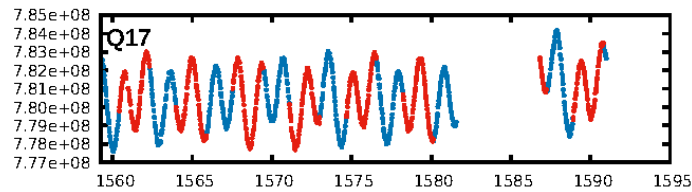
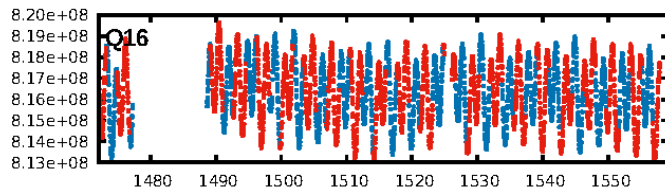
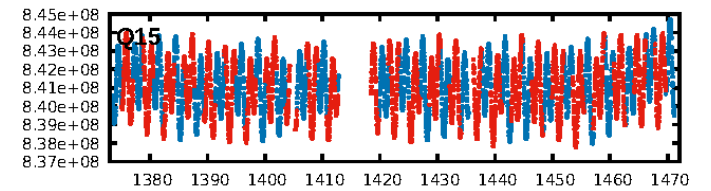
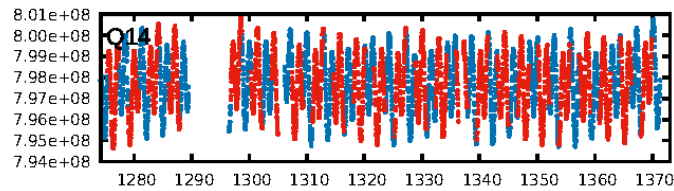
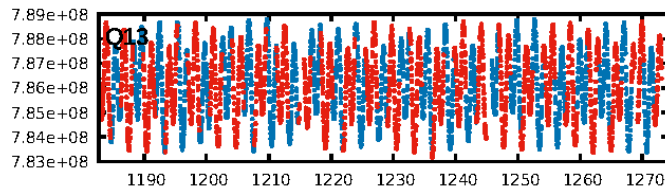
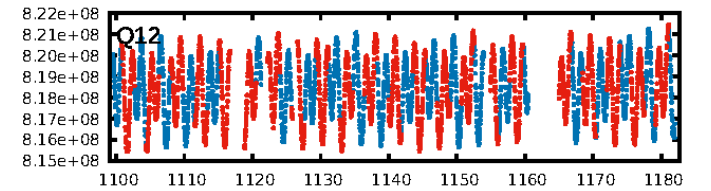
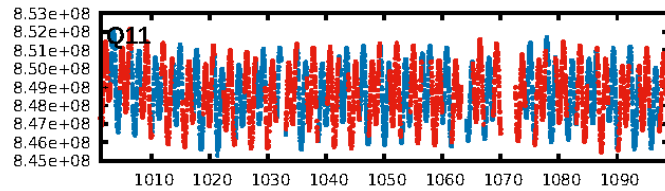
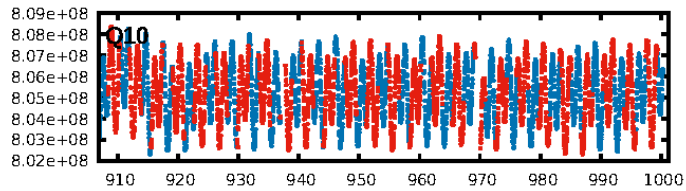
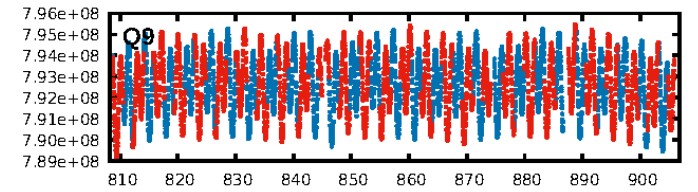
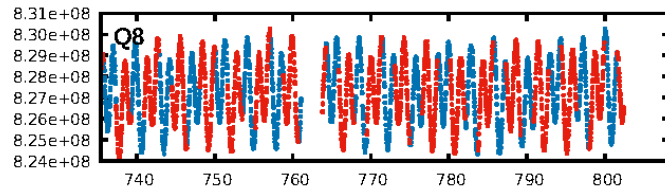
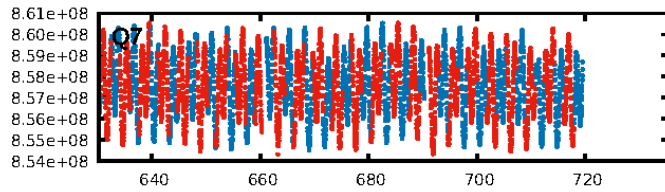
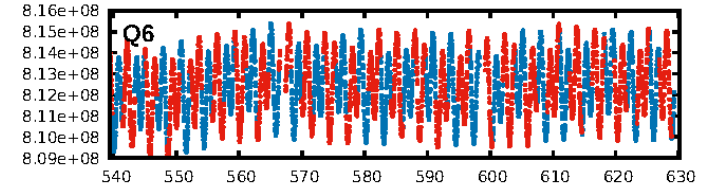
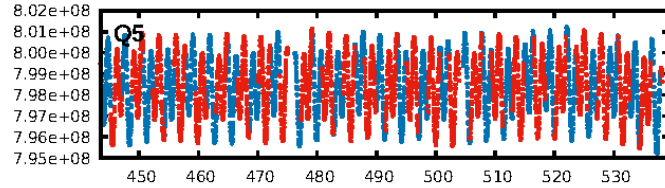
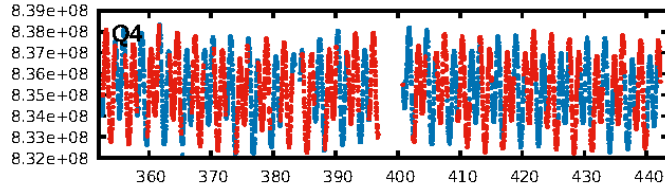
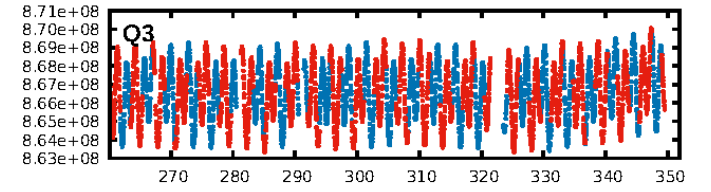
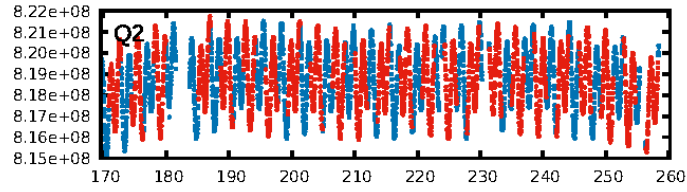
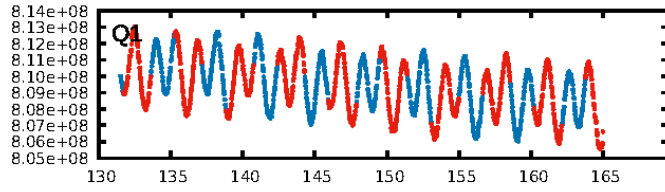
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [370/370]  
GhostDiagnostic-chr: 0.6035  
Centroid-sig: 1.7%  
Centroid-so: 0.642 arcsec [1.84σ]  
OotOffset-rm: 1.391 arcsec [2.49σ]  
KicOffset-rm: 1.327 arcsec [2.73σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.31 [5/16]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:54:39 Z

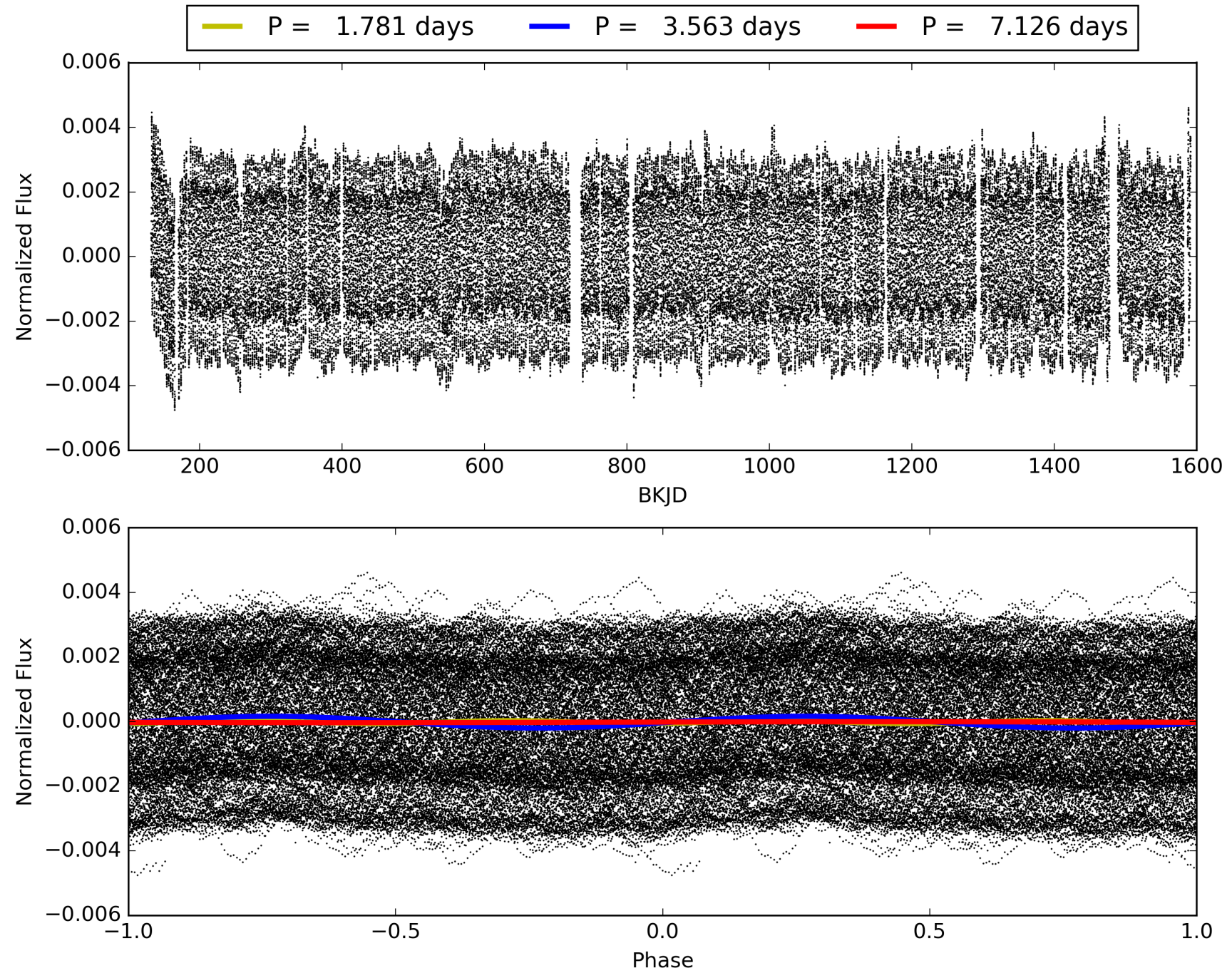
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008960985-03, PDC Light Curves



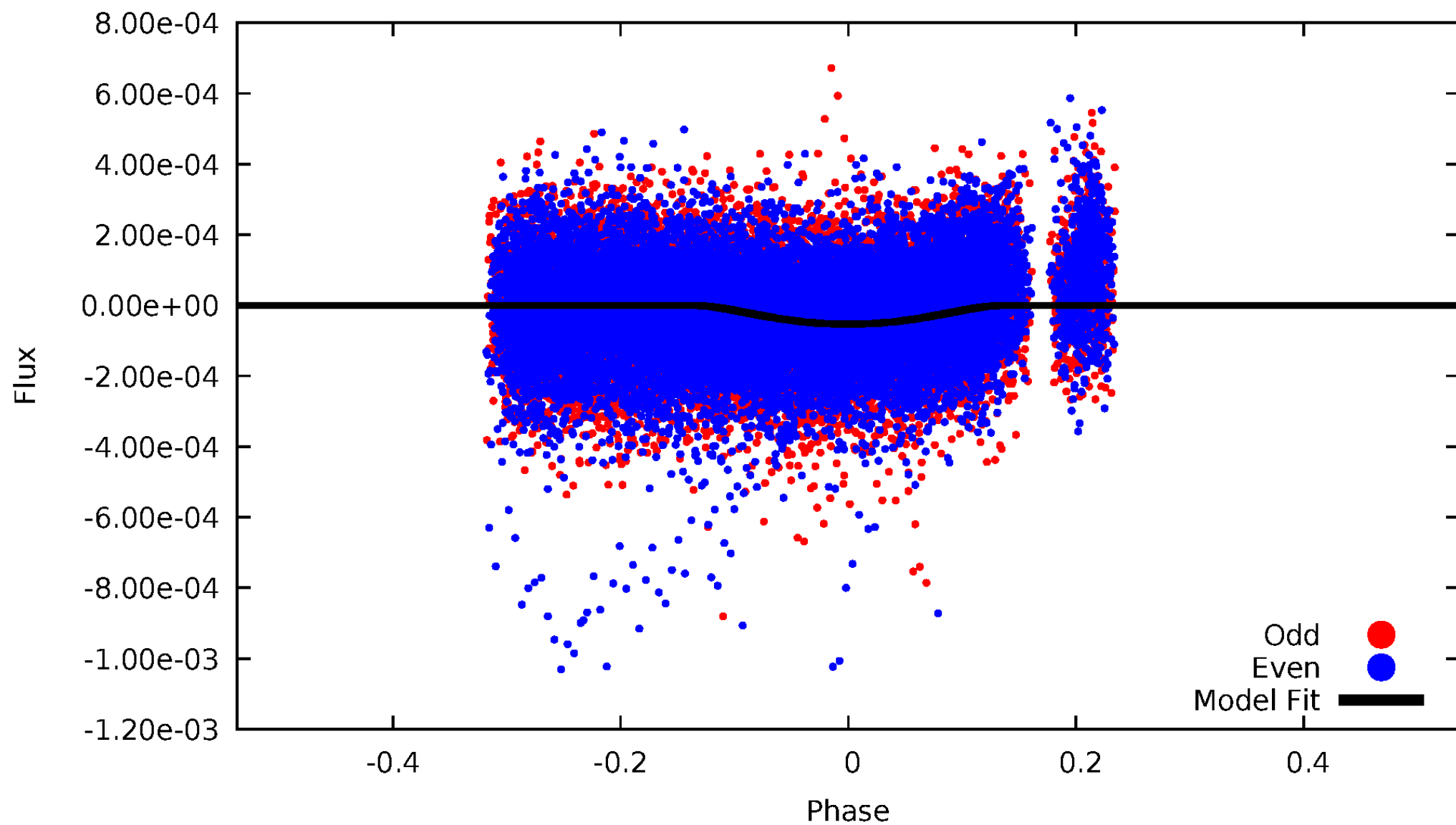


TCE 008960985-03



DV Odd/Even

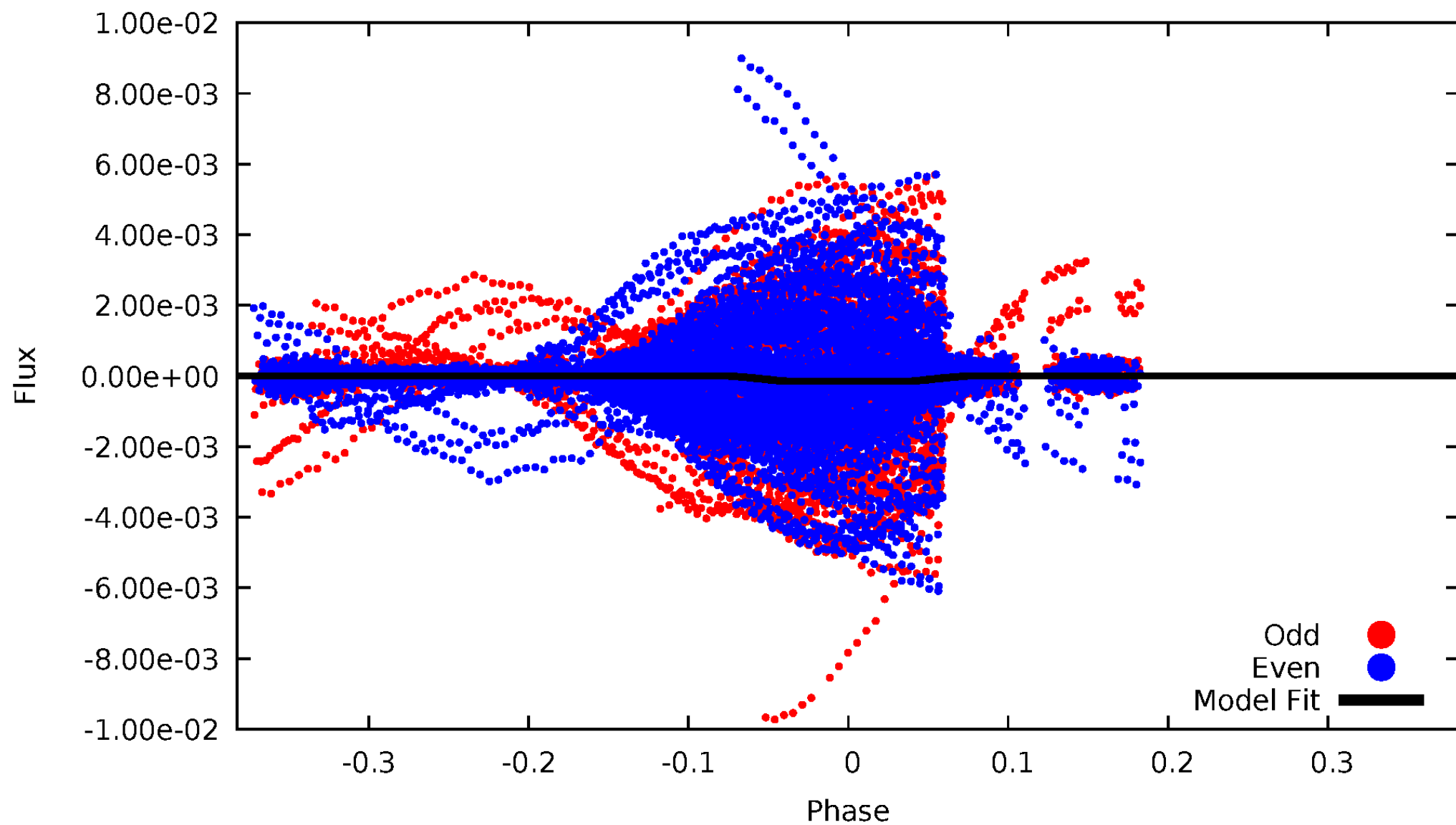
TCE 008960985-03





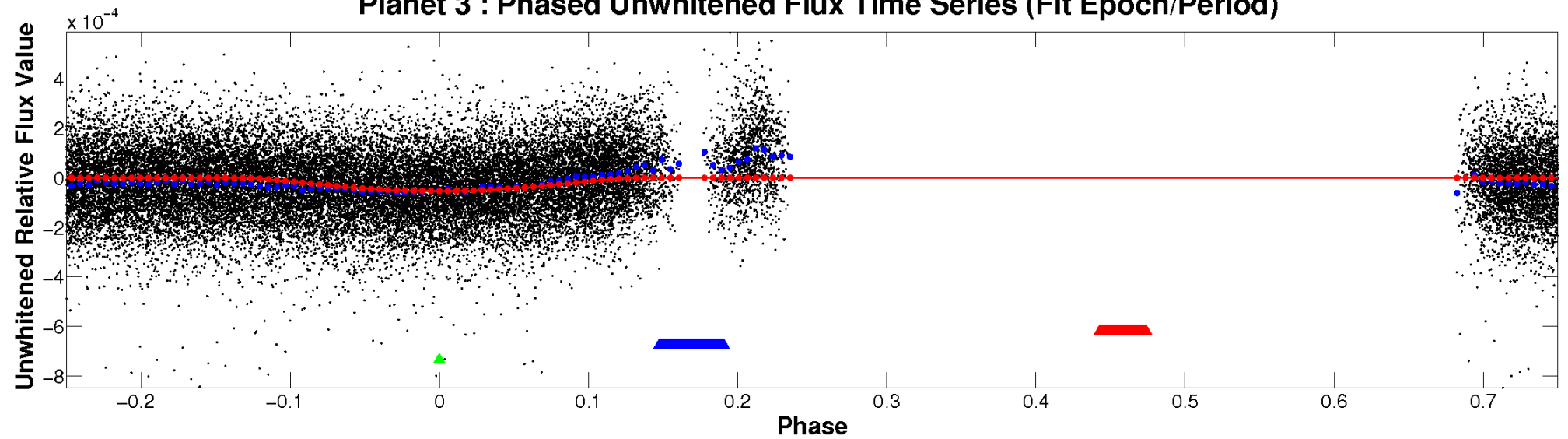
# ALT Odd/Even

TCE 008960985-03

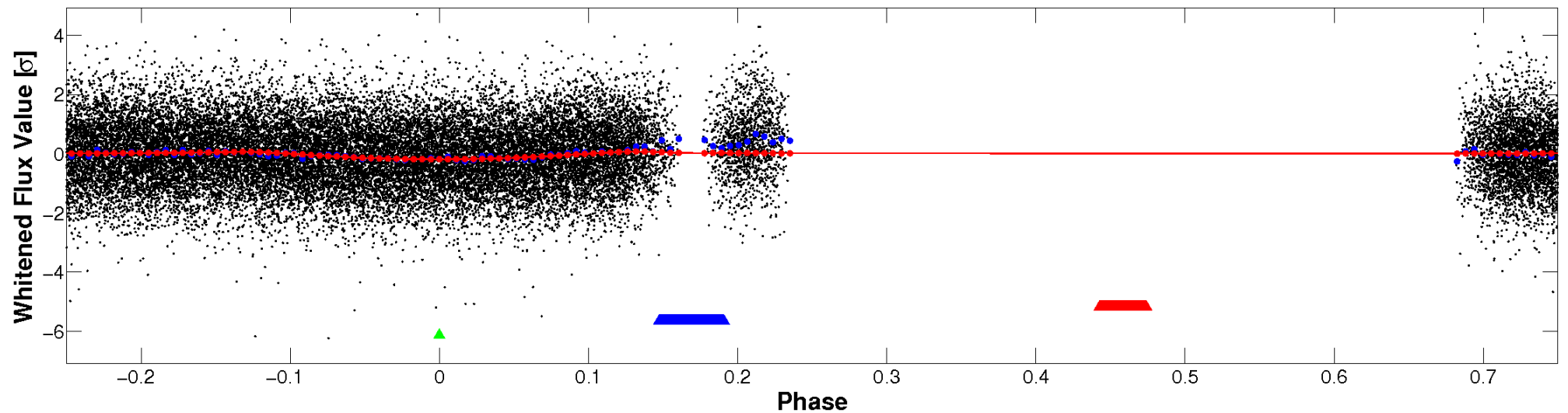


# Non-Whitened Vs. Whitened Light Curve

**Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

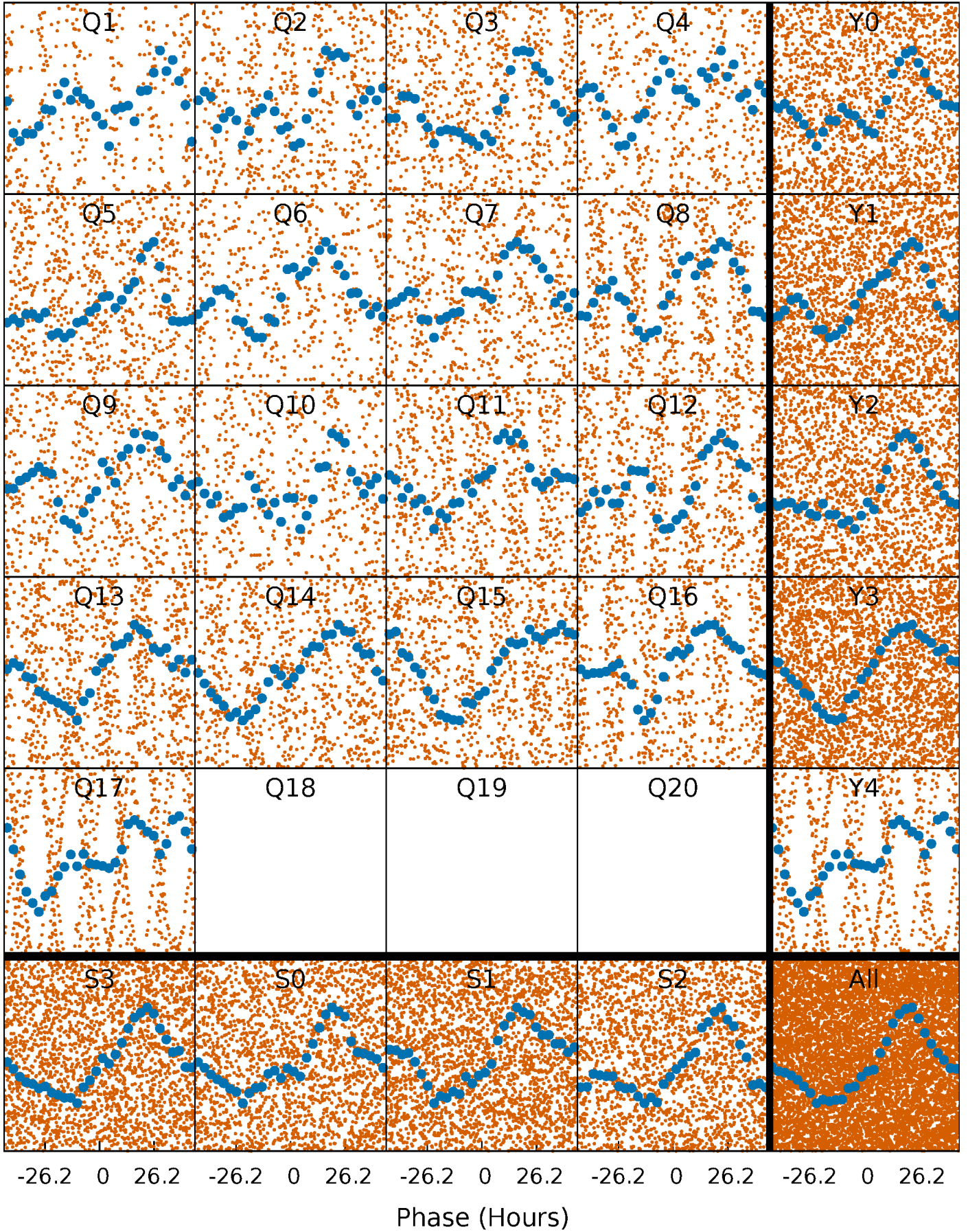


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



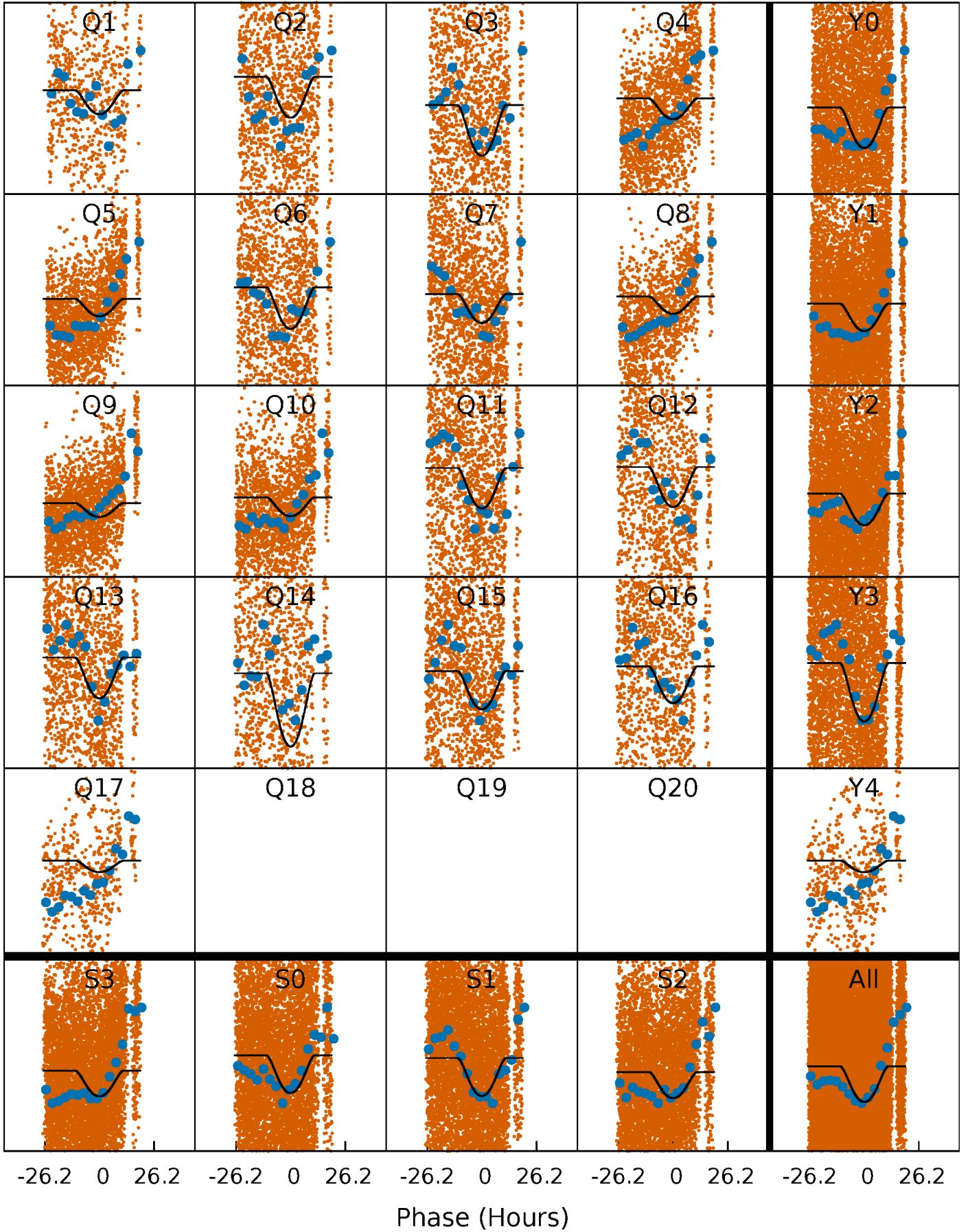
# PDC Quarter-Phased Transit Curves

TCE 008960985-03    P= 3.562871 Days     $T_0=132.653109$  (BKJD)



# DV Quarter-Phased Transit Curves

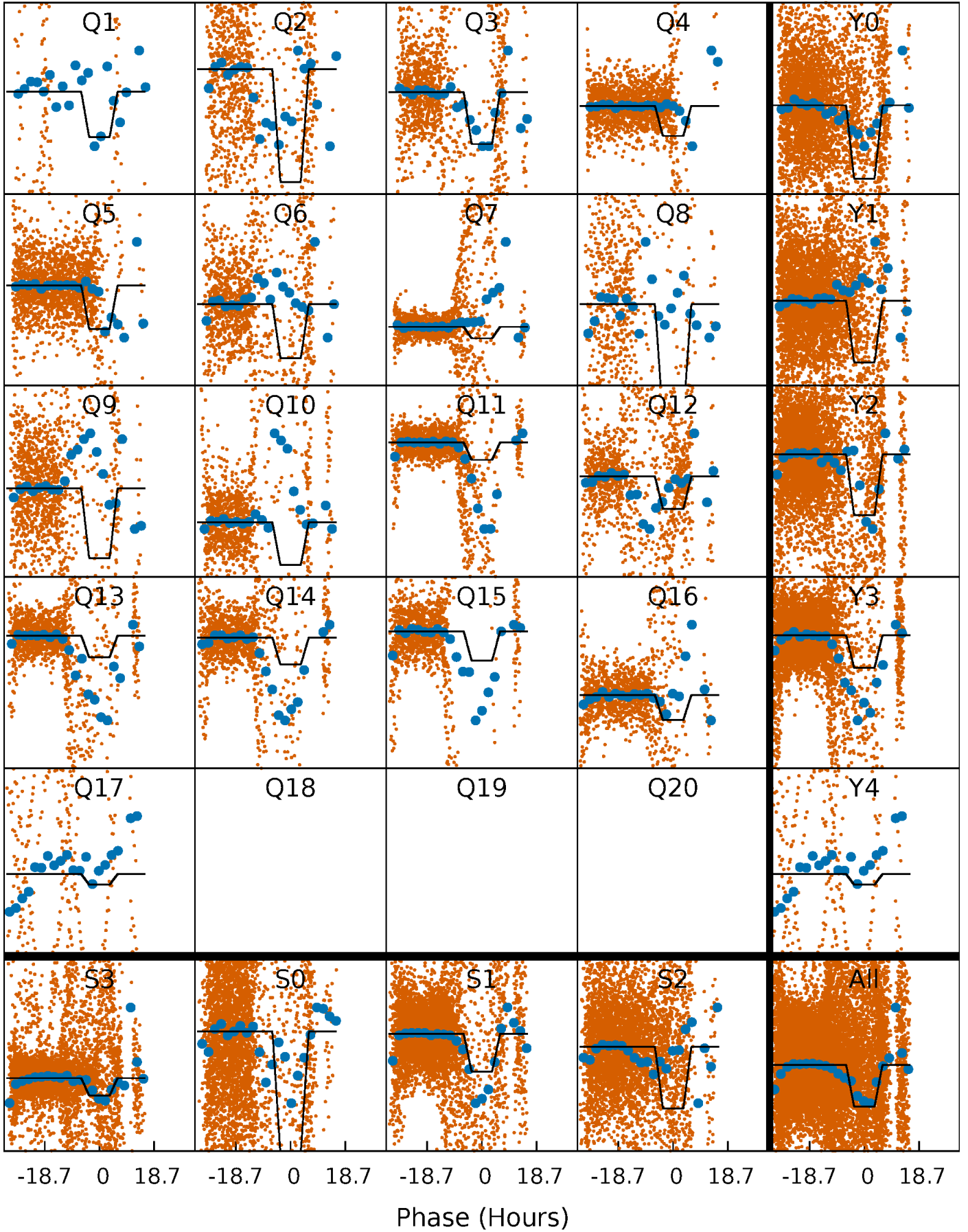
TCE 008960985-03     $P = 3.562871$  Days     $T_0 = 132.653109$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008960985-03   P= 3.562900 Days    $T_0=132.834090$  (BKJD)

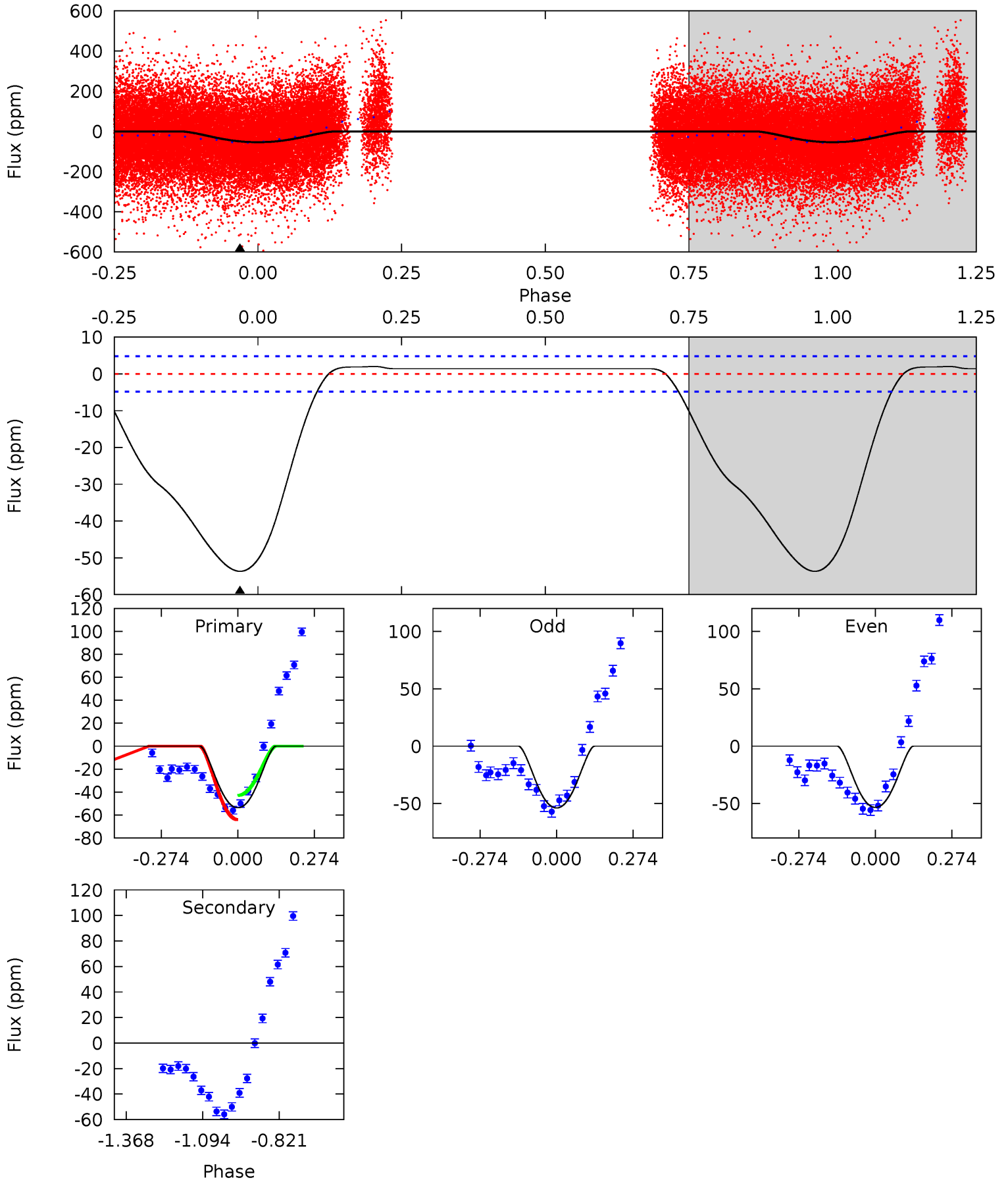




# DV Model-Shift Uniqueness Test

008960985-03, P = 3.562871 Days, E = 129.090238 Days

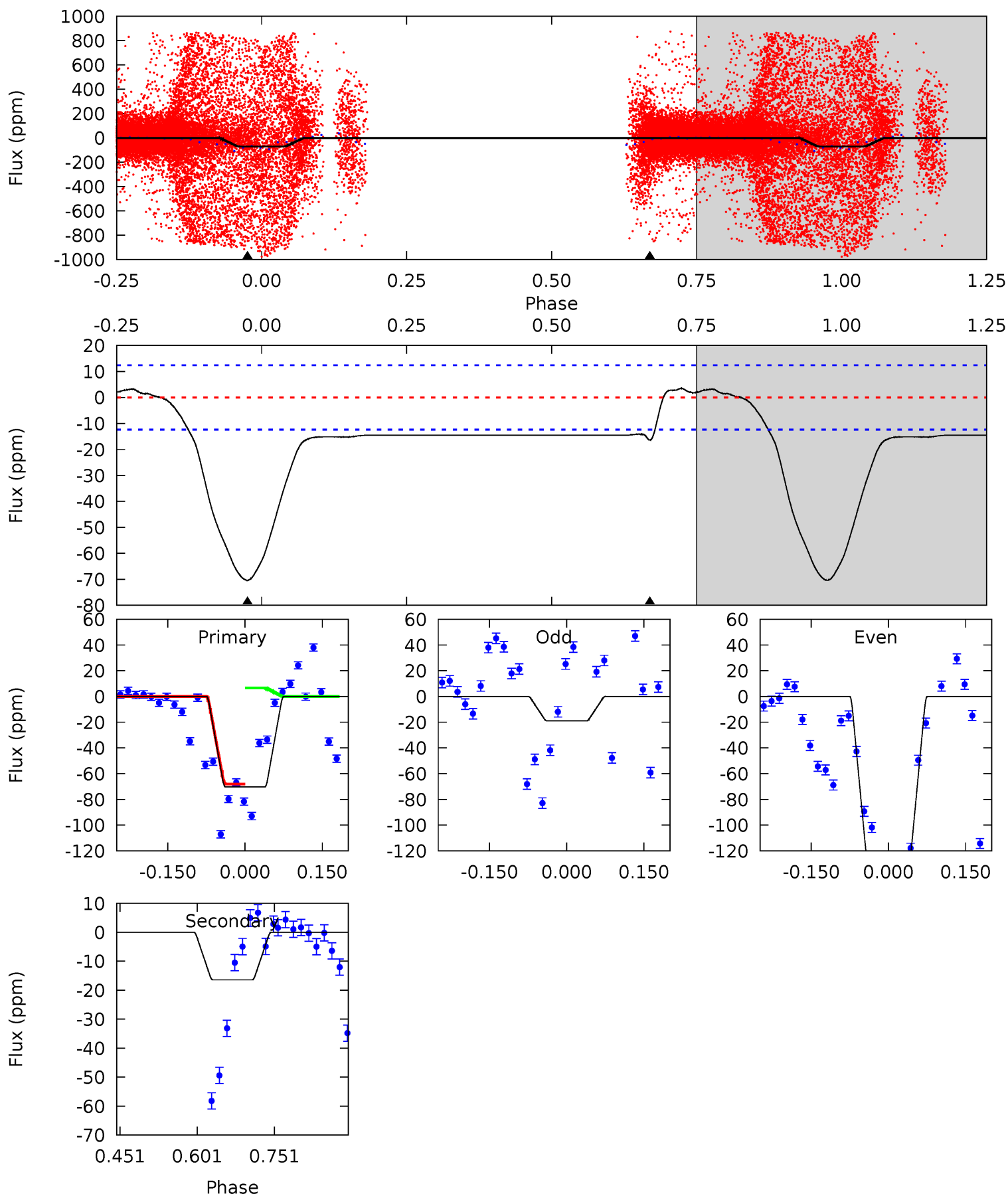
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.5	0	0	0	4.35	1.09	1.98	48.5	48.5	0	0	0.23	1.06	0.04	9.36



# Alt Model-Shift Uniqueness Test

008960985-03, P = 3.562900 Days, E = 129.271190 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
25.5	5.95	0	0	4.48	1.44	2.35	25.5	25.5	5.95	5.95	13.5	0.73	0.05	6.01



### Stellar Parameters For KIC 008960985

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6894^{+170}_{-221}$	$3.760^{+0.328}_{-0.082}$	$-0.560^{+0.300}_{-0.250}$	$2.552^{+0.406}_{-0.947}$	$1.367^{+0.219}_{-0.267}$	$0.116^{+0.289}_{-0.031}$
	+2%/-3%	+9%/-2%	+54%/-45%	+16%/-37%	+16%/-20%	+250%/-27%
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 008960985-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0\pm1$	$2.56^{+0.85}_{-0.73}$	$2932^{+179}_{-268}$	$-3065^{+809}_{-273}$	$-0.012^{+0.273}_{-0.259}$
Alt.	$-16\pm3$	$3.13^{+0.81}_{-0.82}$	$2943^{+166}_{-267}$	$4130^{+406}_{-337}$	$2.369^{+1.867}_{-0.919}$

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

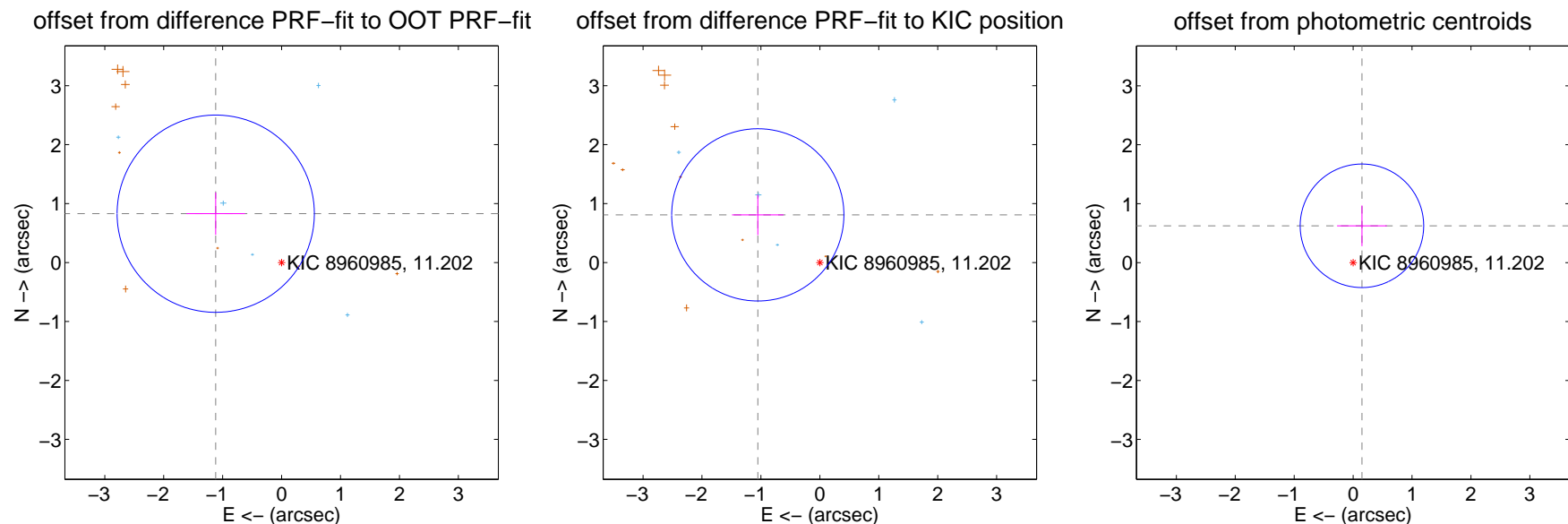
## DV Centroid Data

Supplemental centroid analysis for 008960985-03. **Kepler magnitude: 11.20.** Transit SNR 15.99

There are 5 quarters with good PRF difference image offsets

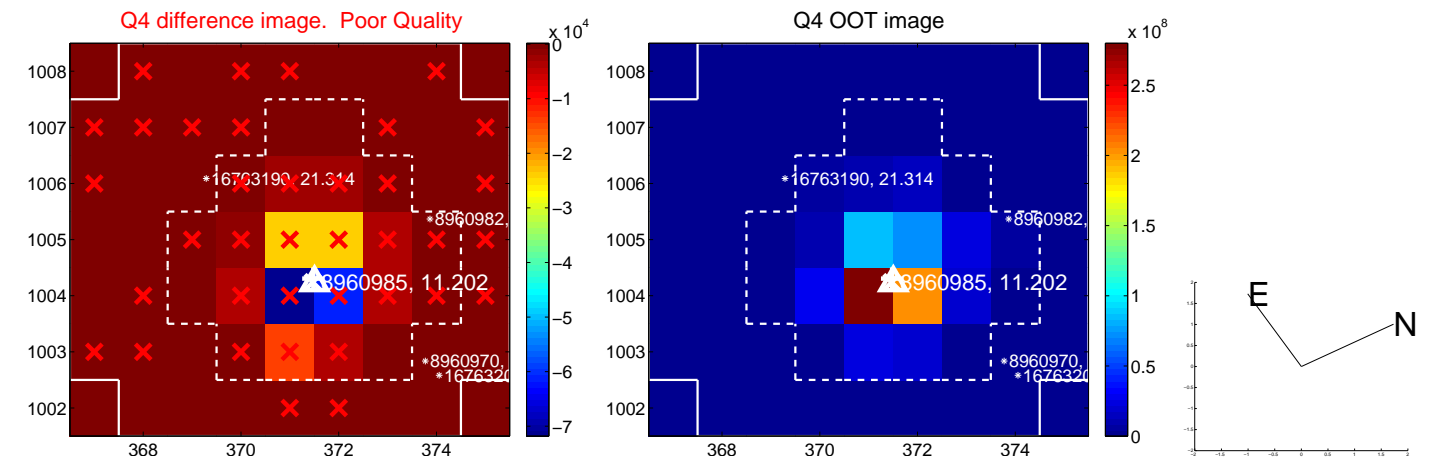
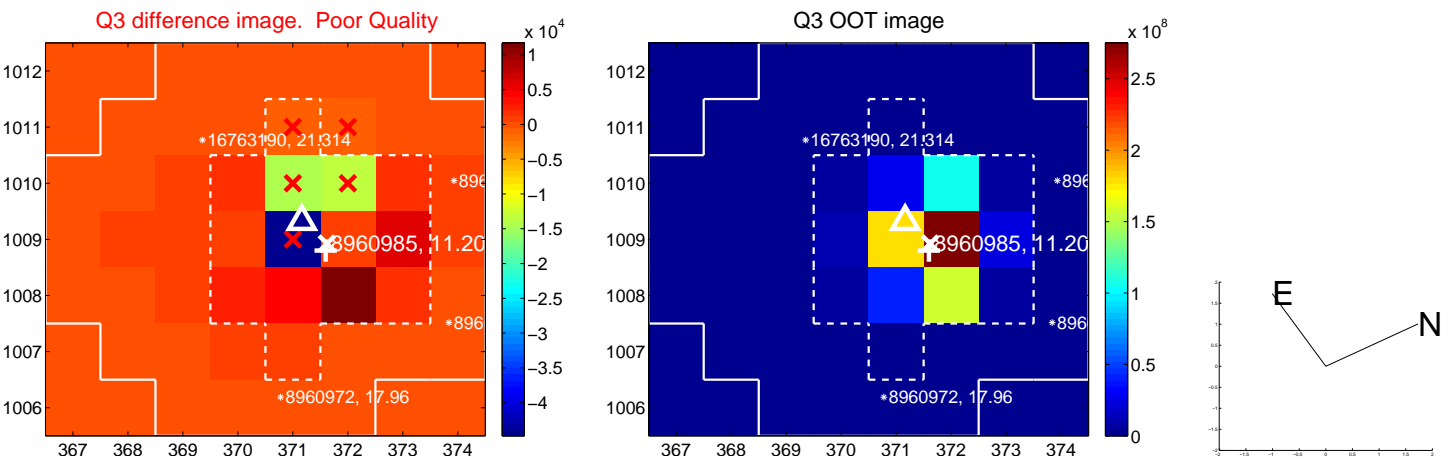
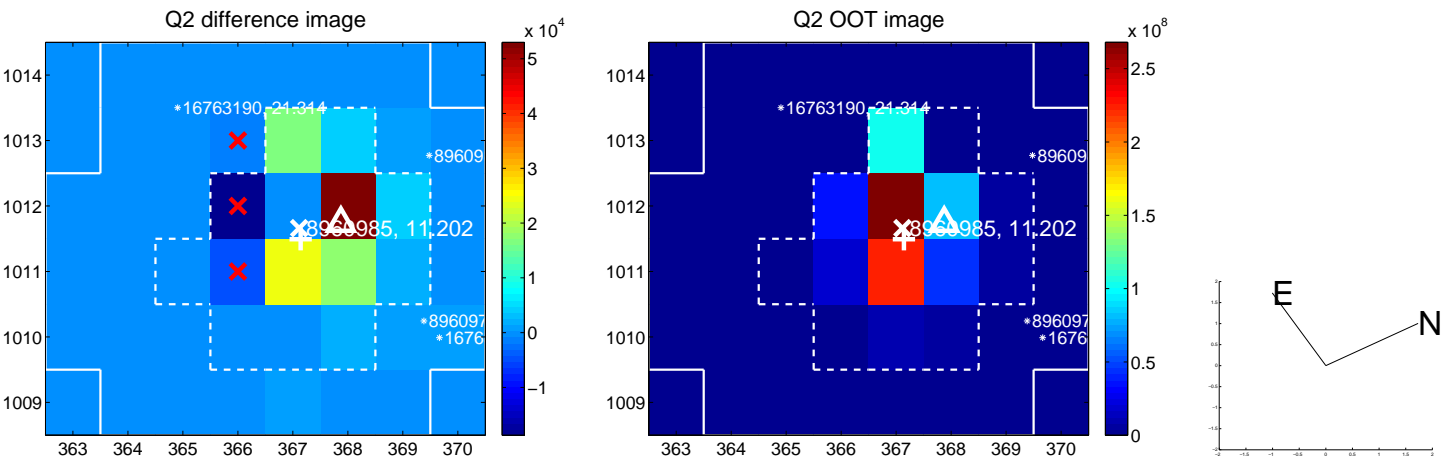
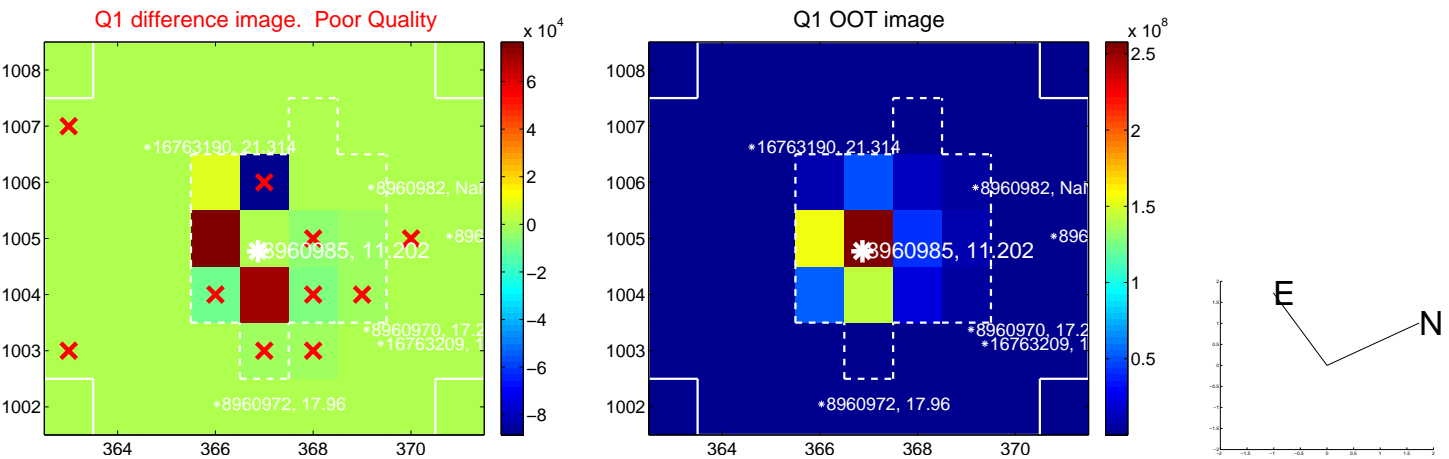
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.391 \pm 0.558$	2.49	$1.117 \pm 0.495$	$0.829 \pm 0.360$
PRF-fit source offset from KIC position	$1.327 \pm 0.487$	2.73	$1.053 \pm 0.437$	$0.809 \pm 0.343$
photometric centroid source offset	$0.64 \pm 0.35$	1.84	$-0.15 \pm 0.42$	$0.62 \pm 0.34$

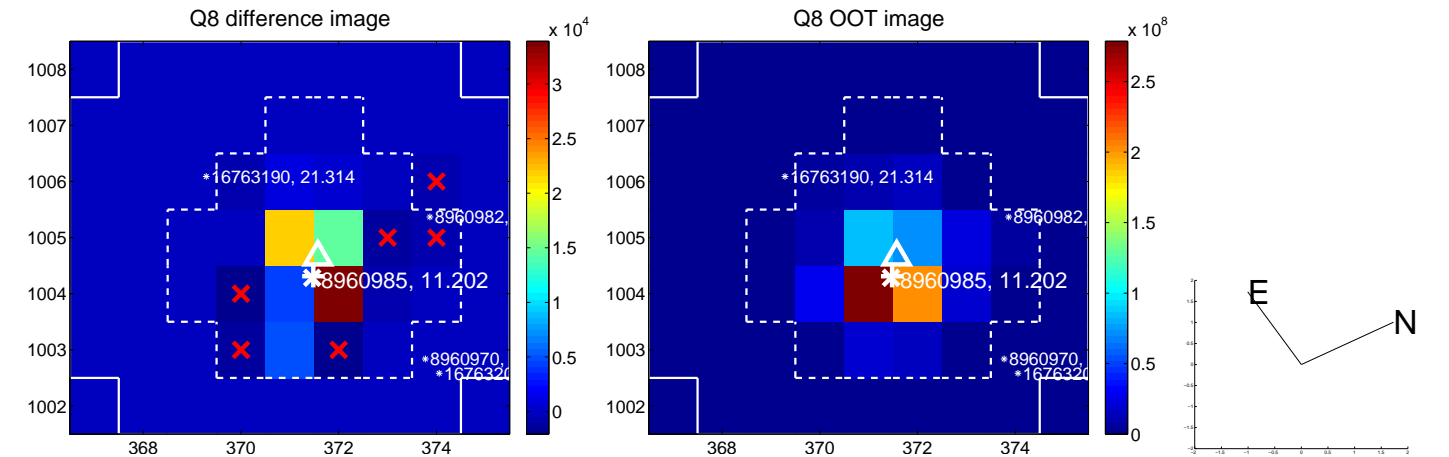
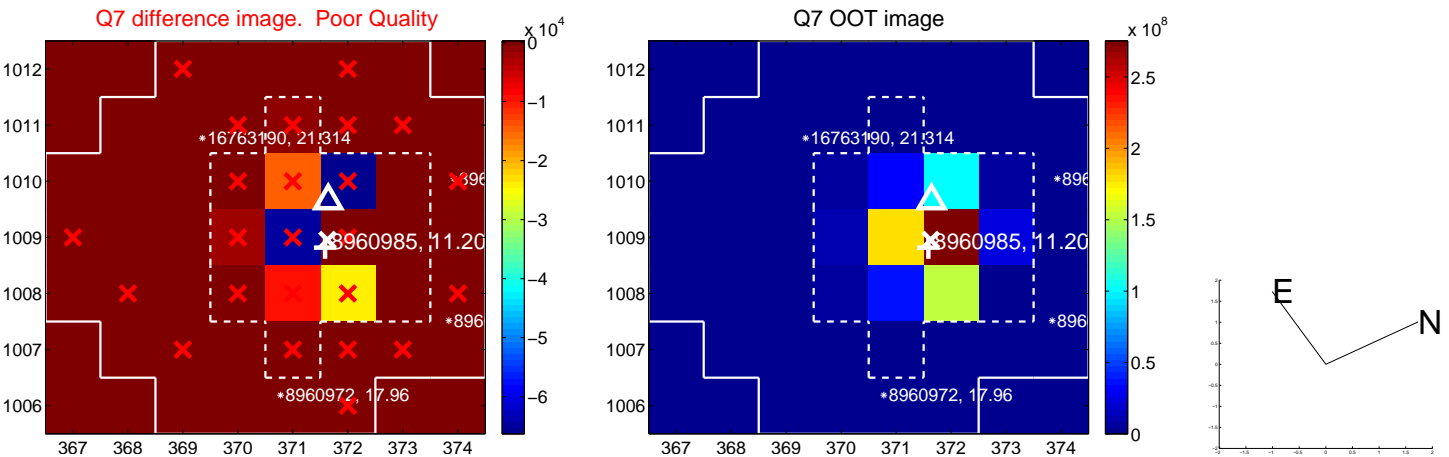
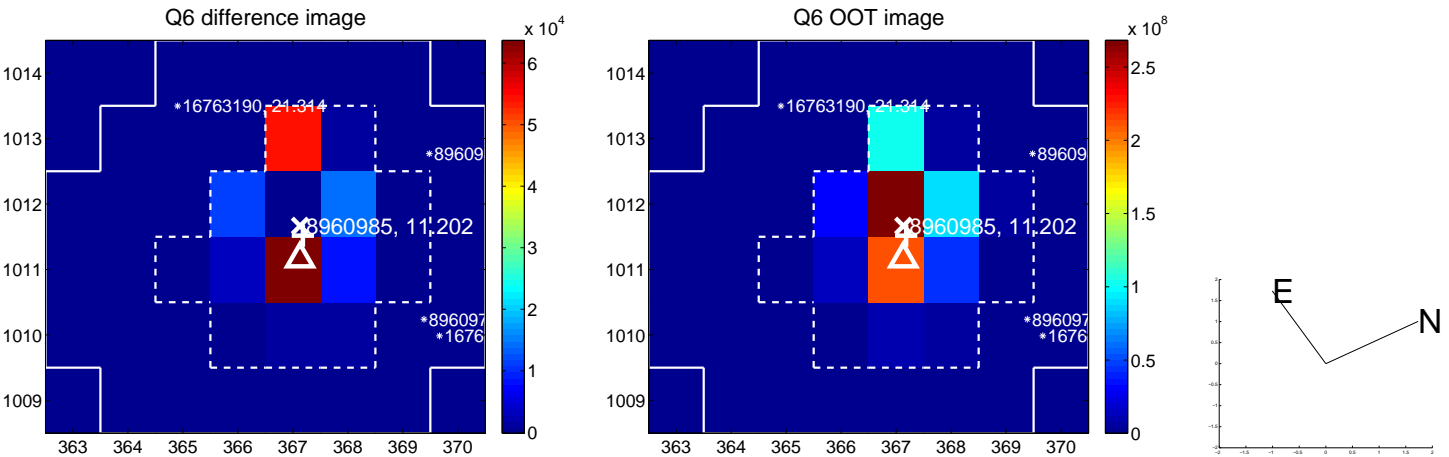
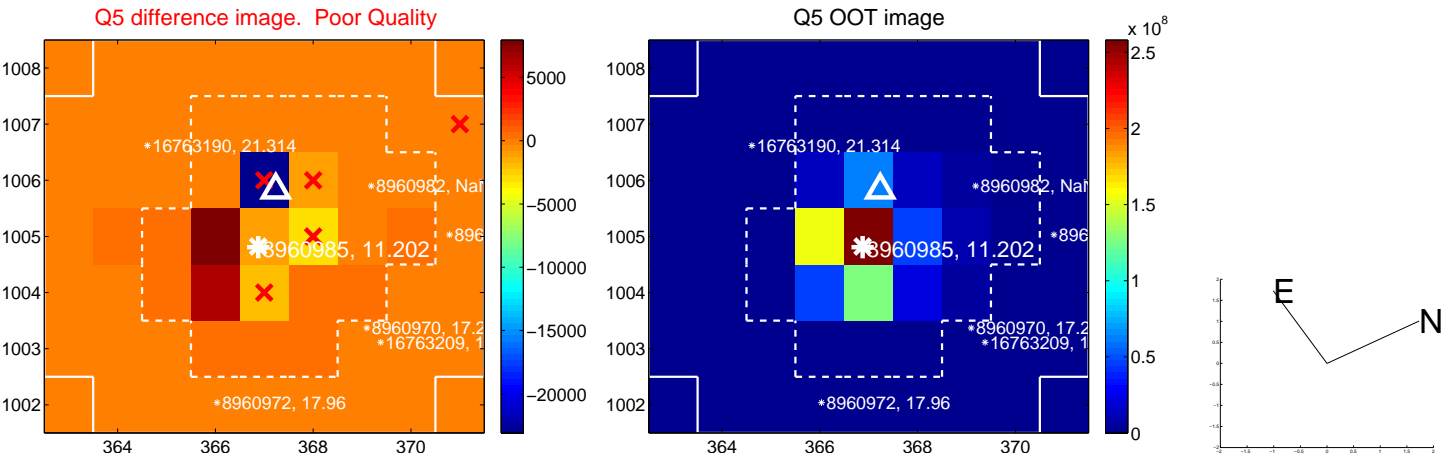


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



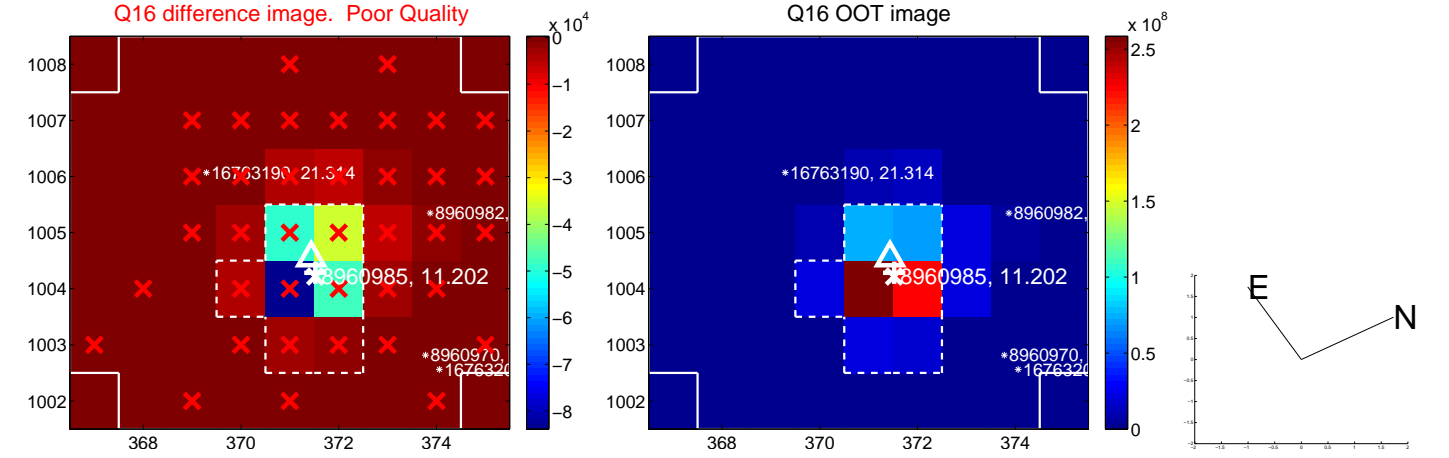
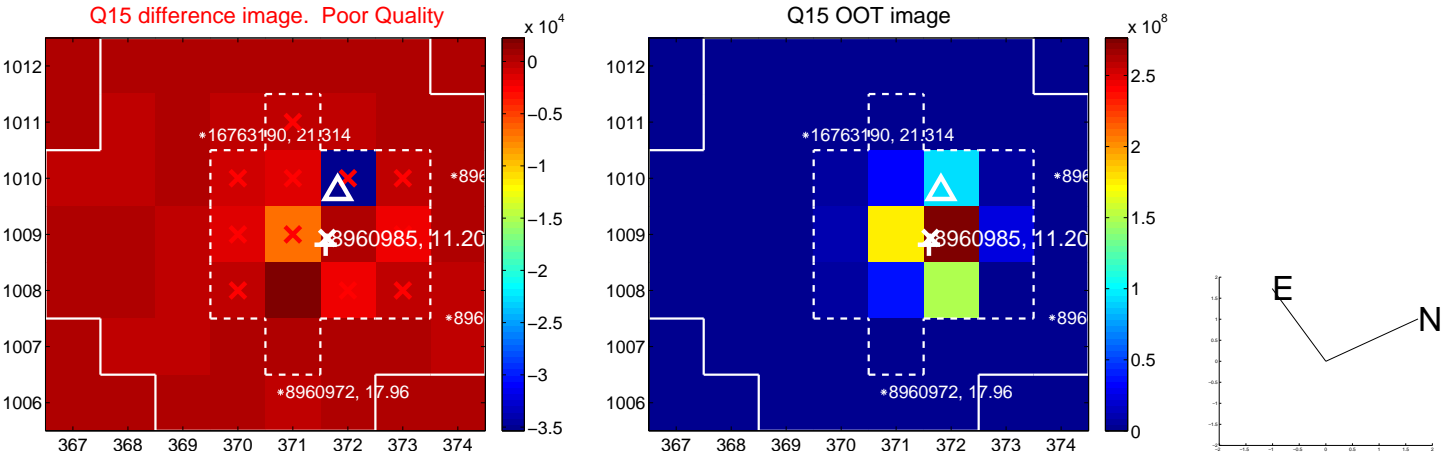
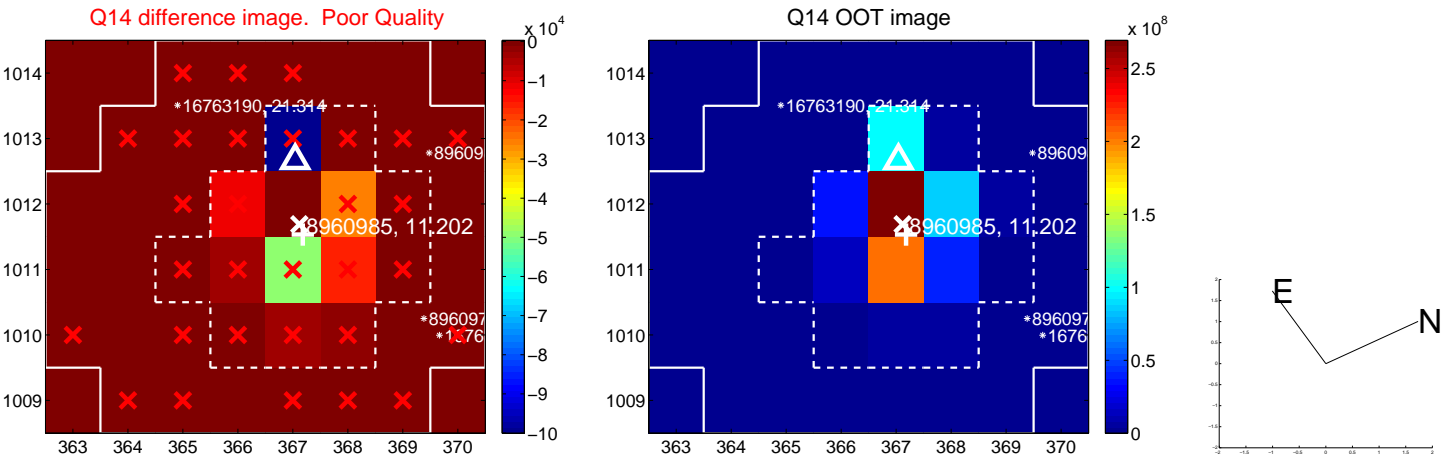
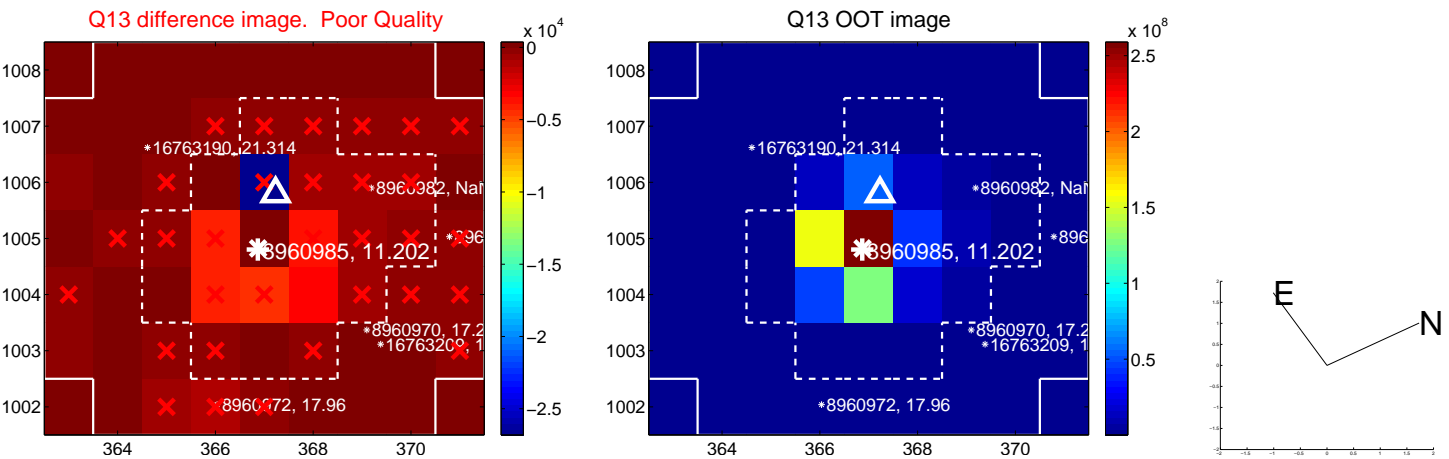
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



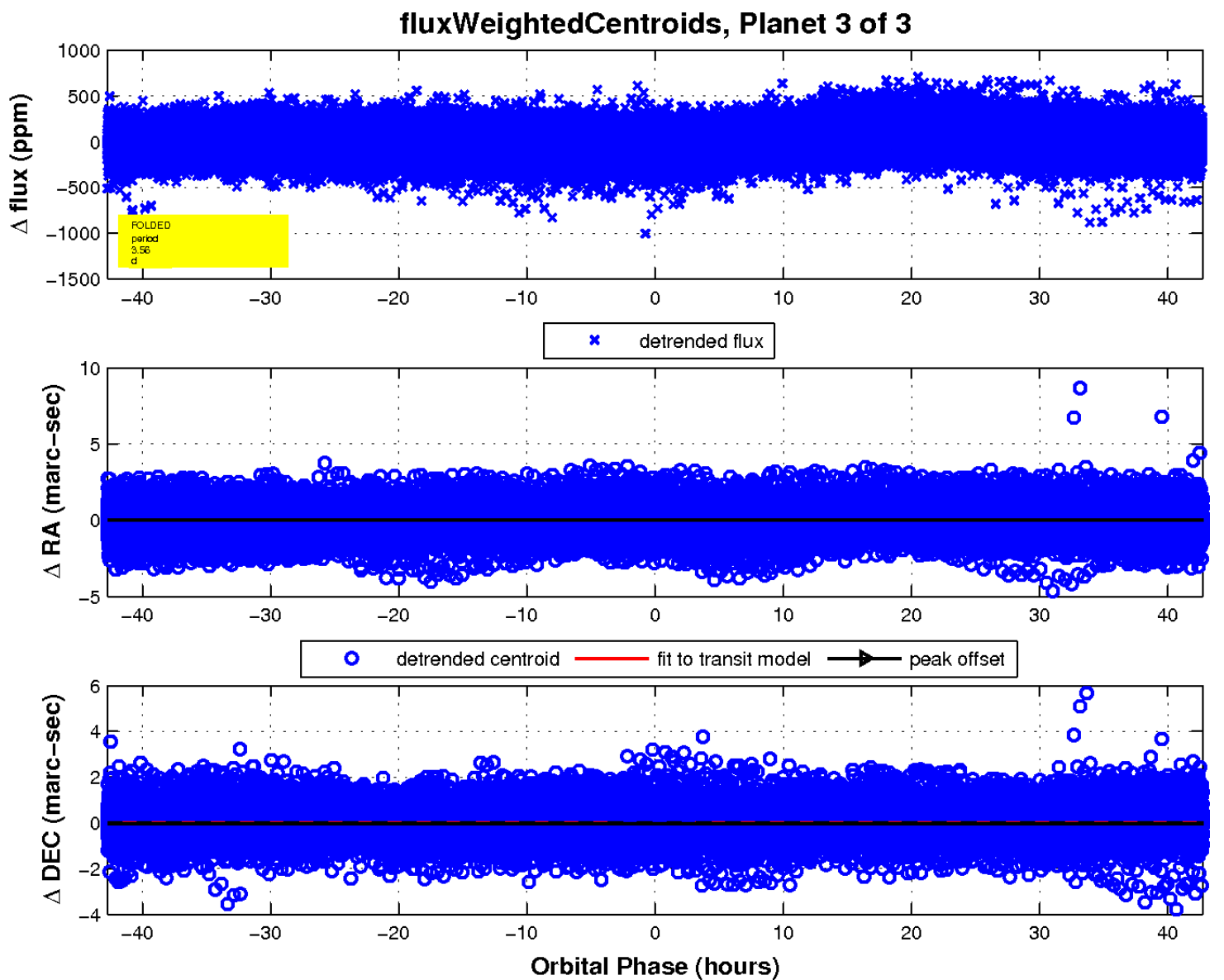
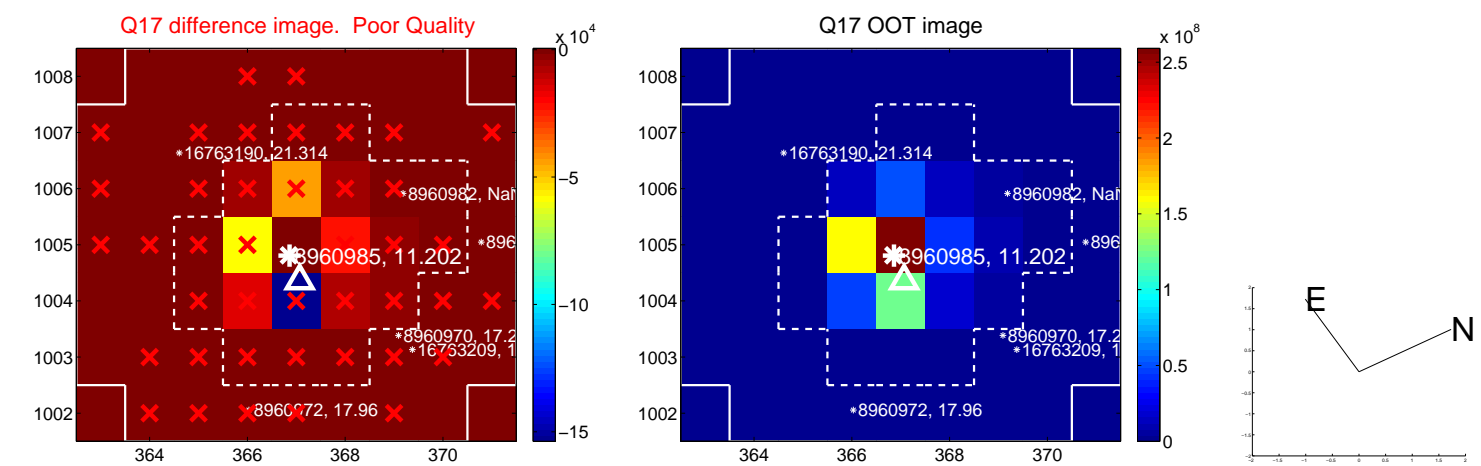




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

