

# KIC 006802081

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006802081-01	OBS	No	1.335792	132.136588	13.4	5.696	10.1	9.9	1.88	6156	0.81	7896.11
006802081-02	OBS	No	391.194574	158.831900	172.5	25.995	10.0	7.9	1.88	6156	2.61	4.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006802081-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
006802081-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS

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

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

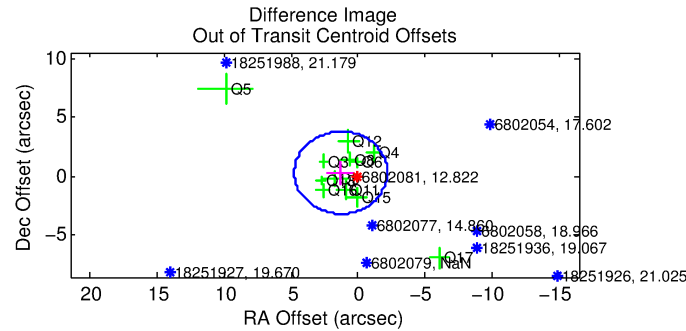
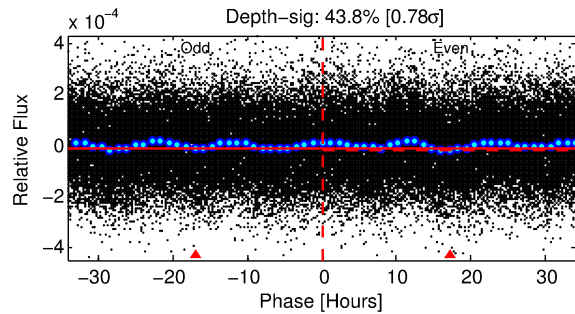
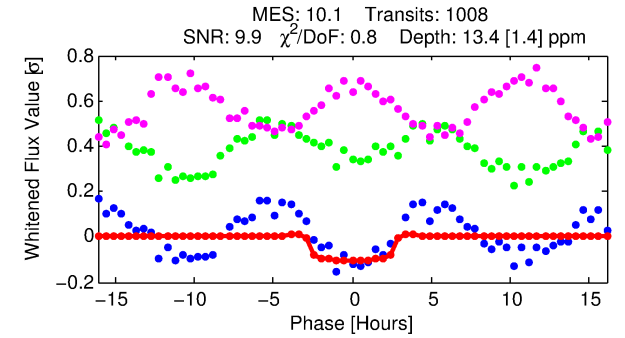
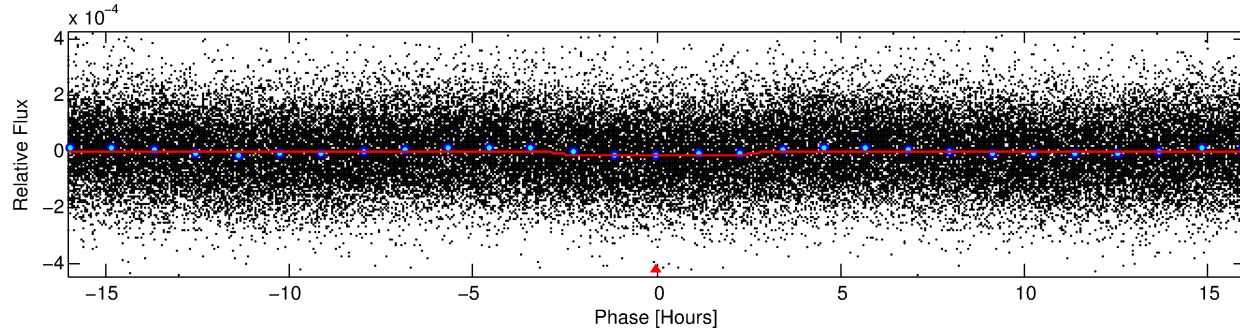
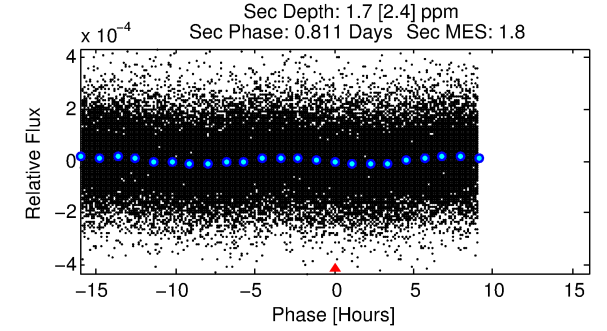
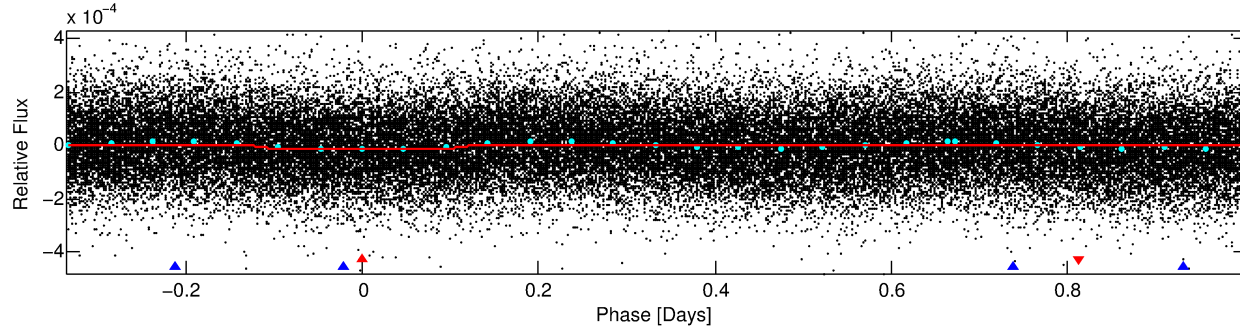
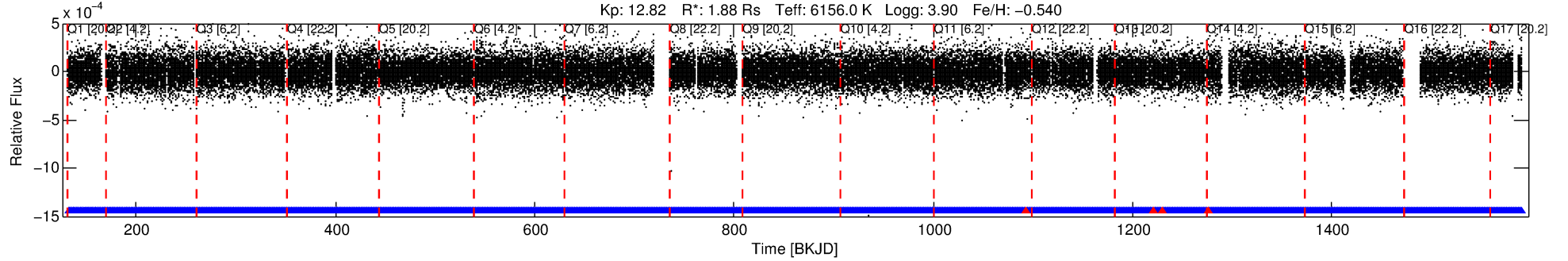
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006802081-01

No Significant Match Found

# DV One-Page Summary

KIC: 6802081 Candidate: 1 of 2 Period: 1.336 d



## DV Fit Results:

Period = 1.33579 [0.00002] d  
Epoch = 132.1366 [0.0059] BKJD  
Rp/R\* = 0.0039 [0.0013]  
a/R\* = 1.22 [0.76]  
b = 0.90 [0.38]  
Seff = 7896.11 [4291.28]  
Teq = 2404 [327] K  
Rp = 0.81 [0.37] Re  
a = 0.0240 [0.0078] AU  
Ag = 0.84 [1.36] [-0.12σ]  
Teffp = 3553 [1375] K [0.81σ]

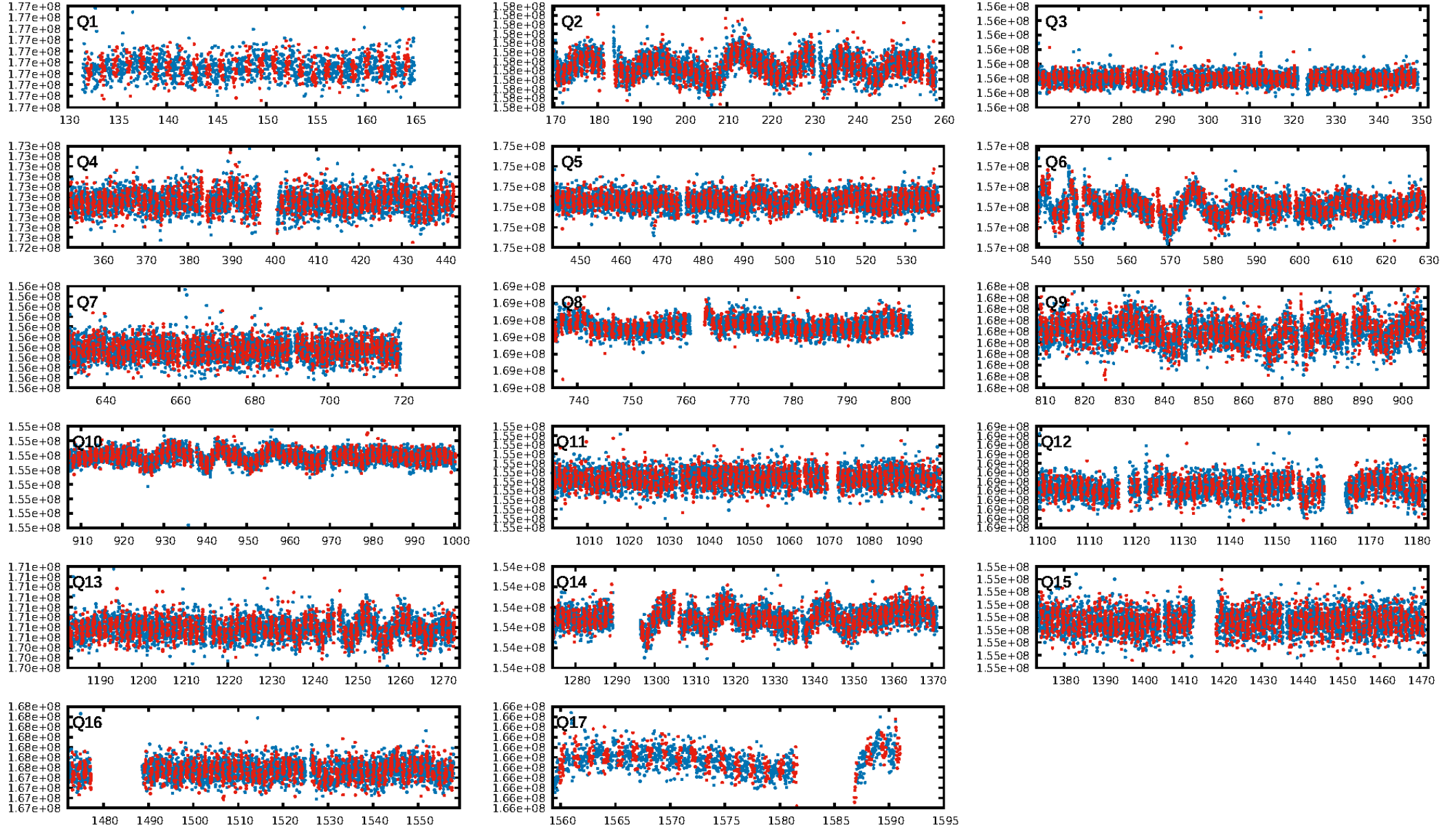
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [351.60σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.59e-19  
RollingBand-fgt: 1.00 [958/962]  
GhostDiagnostic-chr: 4.158  
Centroid-sig: 0.1%  
Centroid-so: 3.641 arcsec [2.75σ]  
OotOffset-rm: 1.333 arcsec [1.15σ]  
KicOffset-rm: 1.662 arcsec [1.45σ]  
OotOffset-st: 1/3/4/4 [12]  
KicOffset-st: 1/3/4/4 [12]  
DiffImageQuality-fgm: 0.58 [7/12]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:11:48 Z

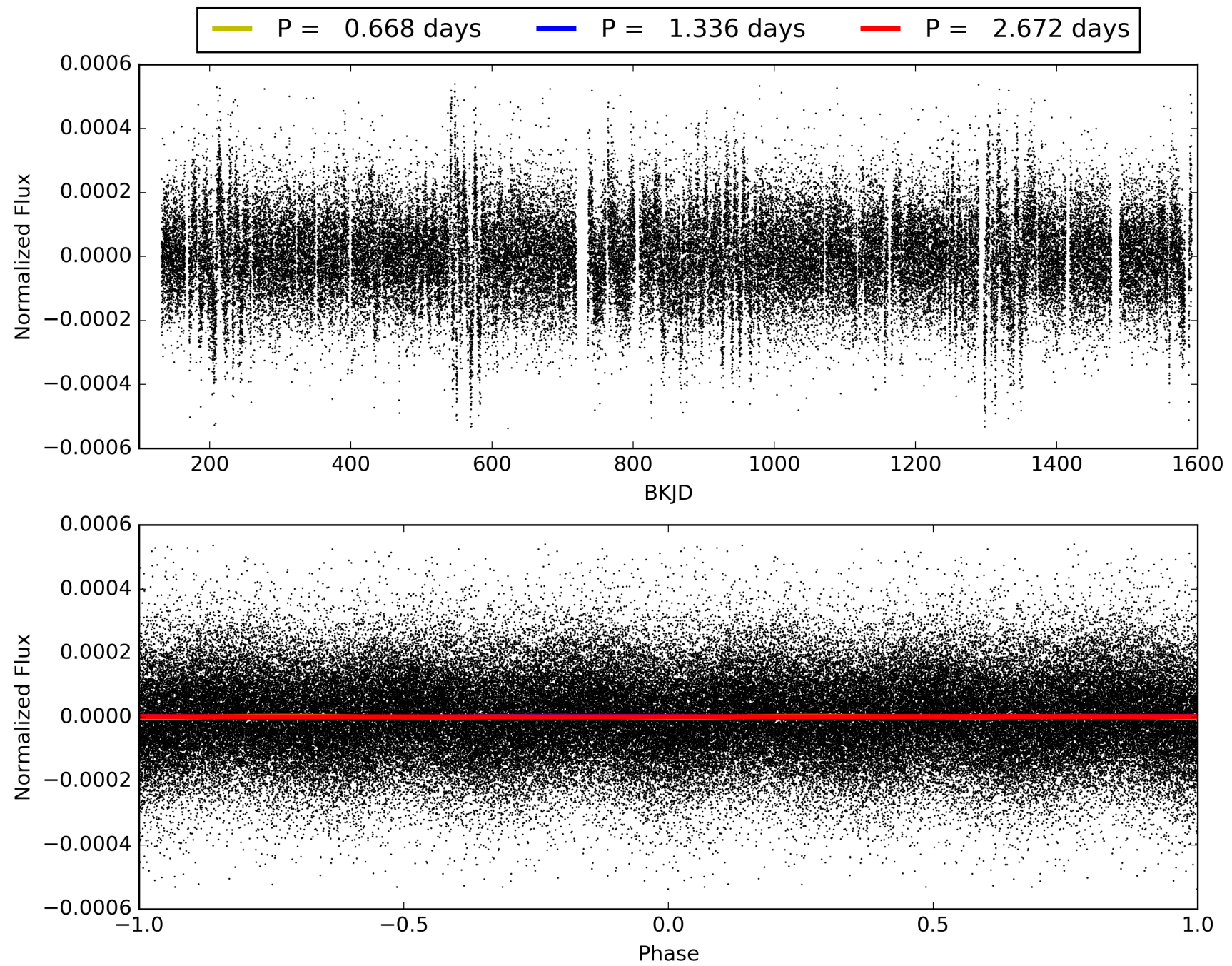
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 006802081-01, PDC Light Curves



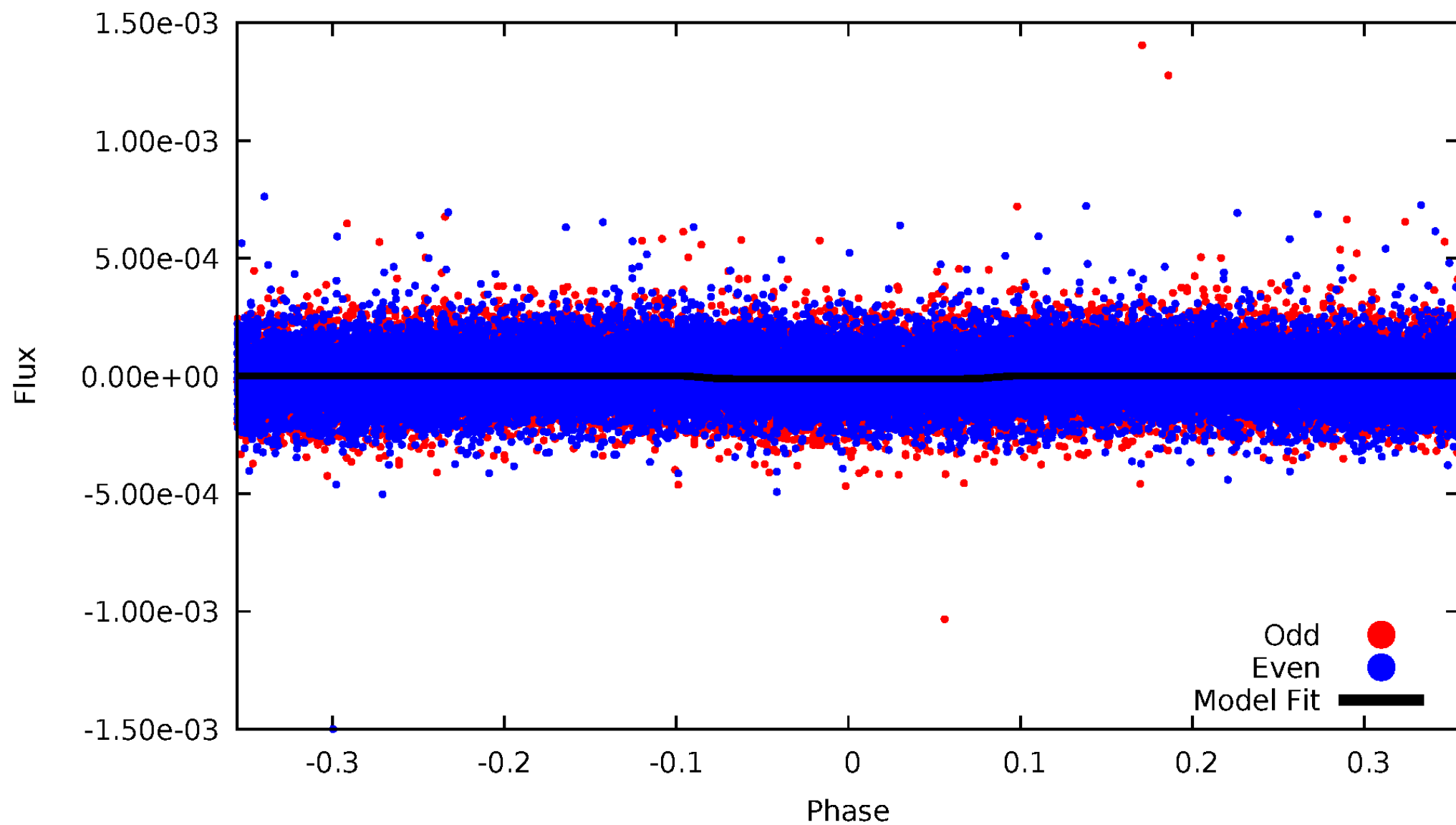


TCE 006802081-01



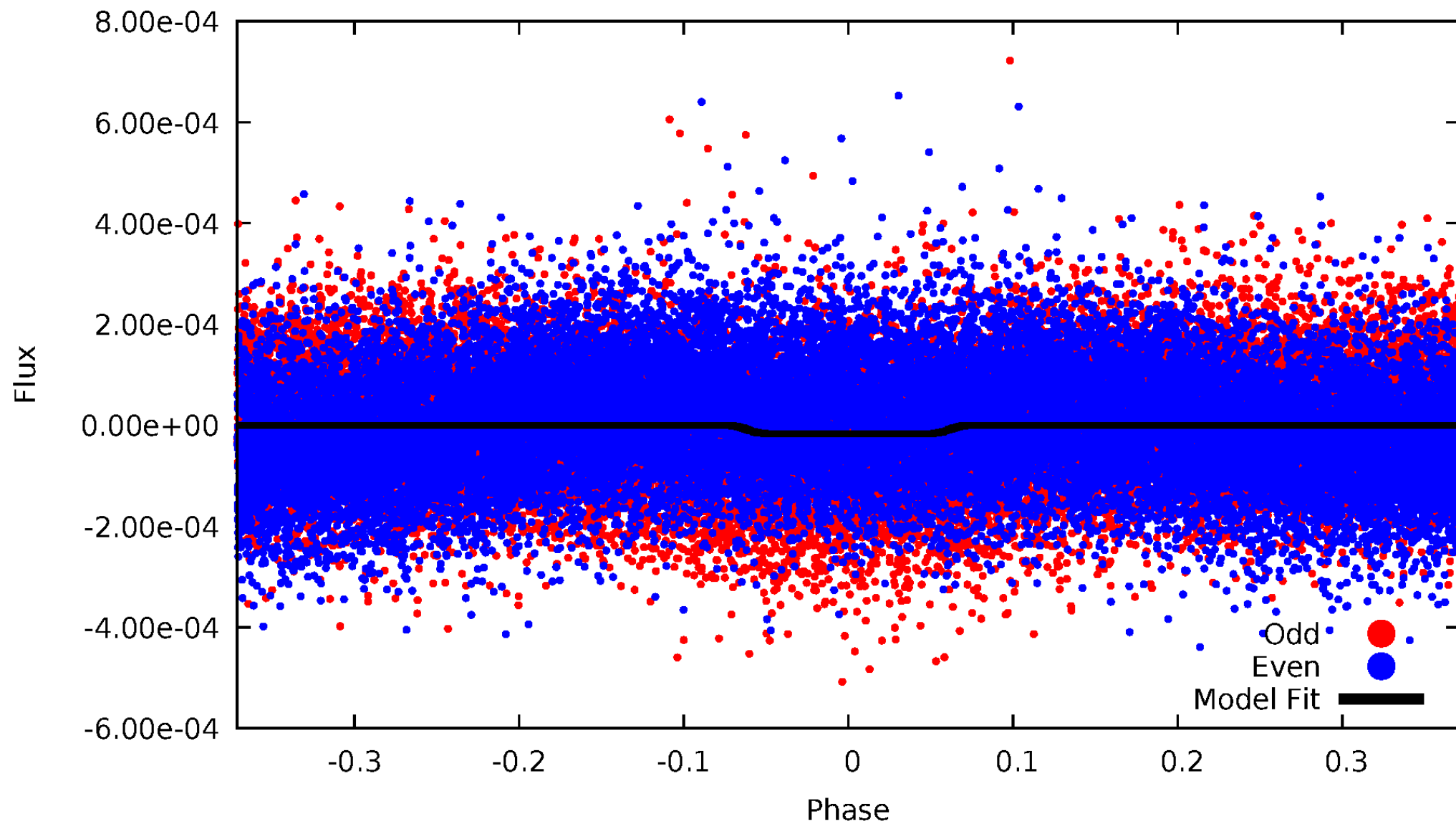
# DV Odd/Even

TCE 006802081-01



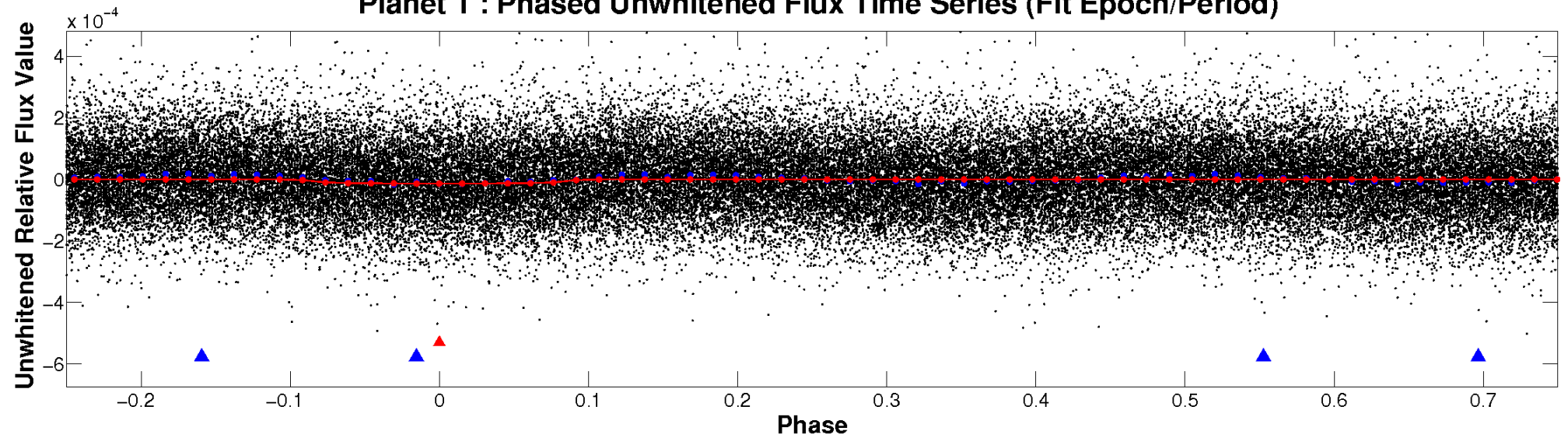
# ALT Odd/Even

TCE 006802081-01

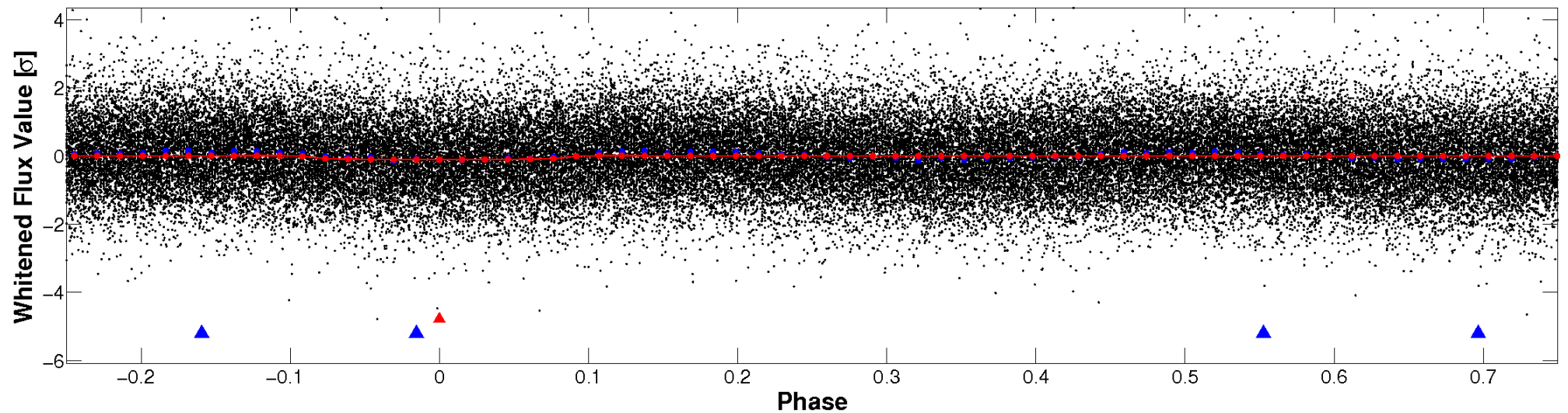


# Non-Whitened Vs. Whitened Light Curve

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



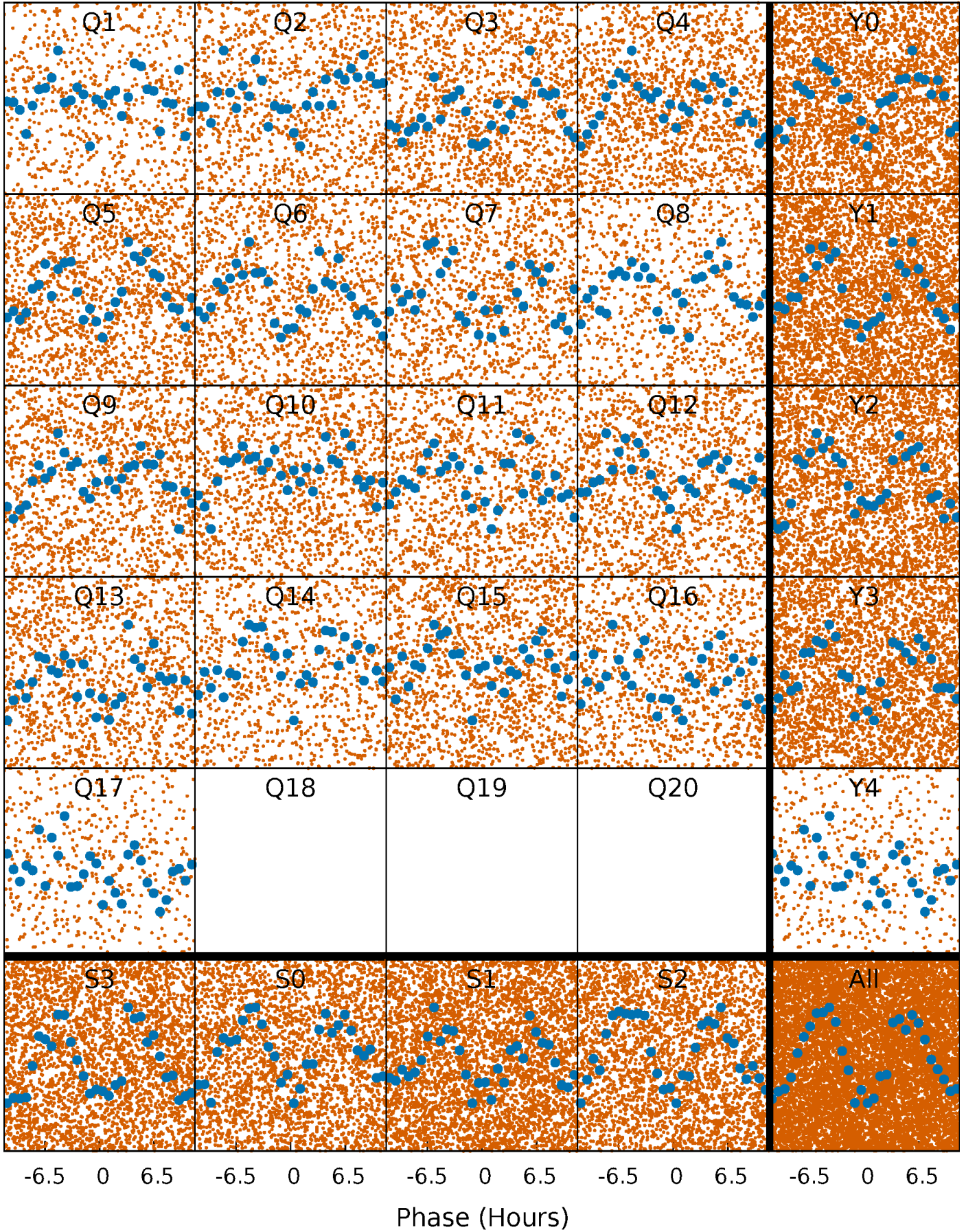
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

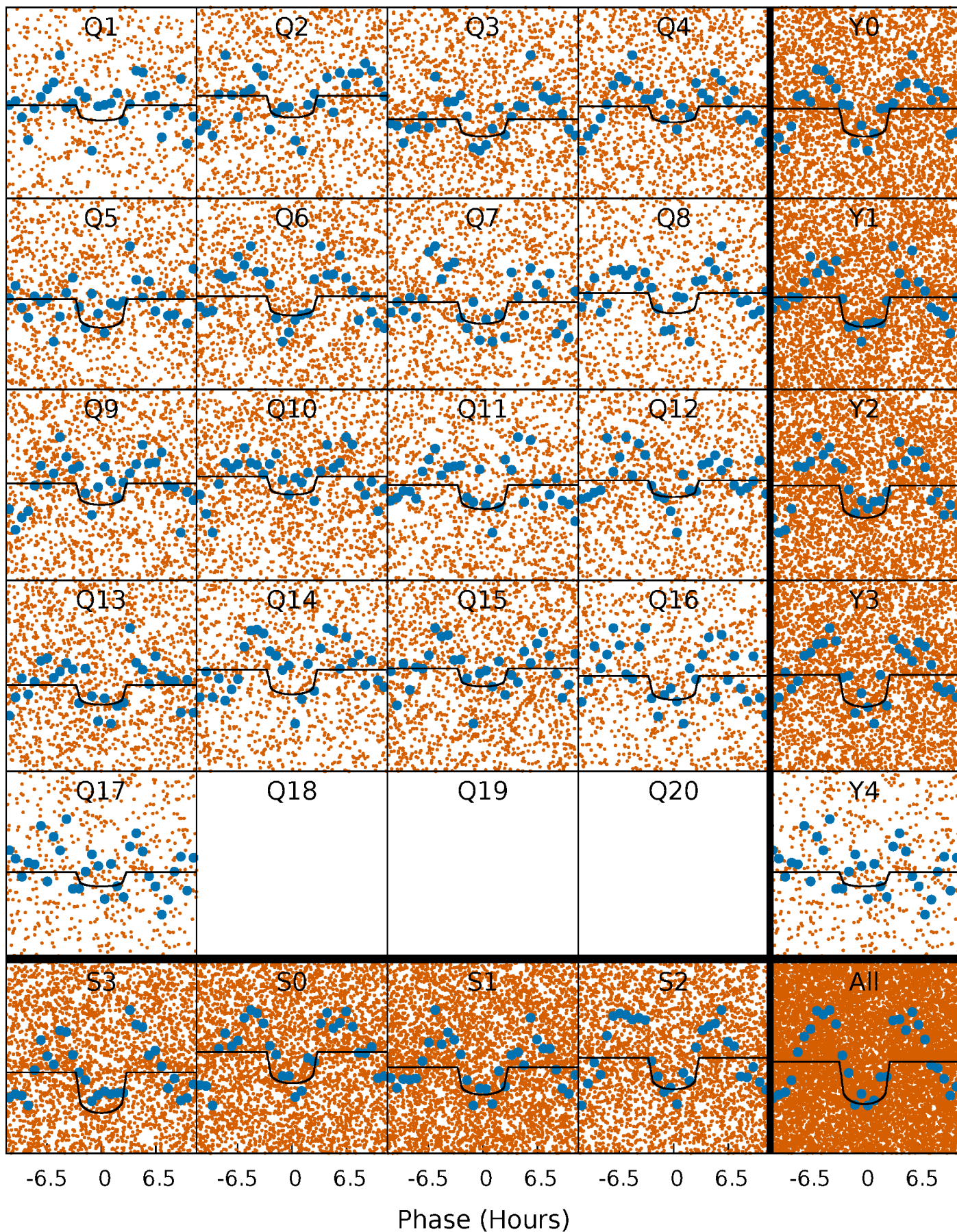
TCE 006802081-01 P= 1.335792 Days  $T_0=132.136587$  (BKJD)





# DV Quarter-Phased Transit Curves

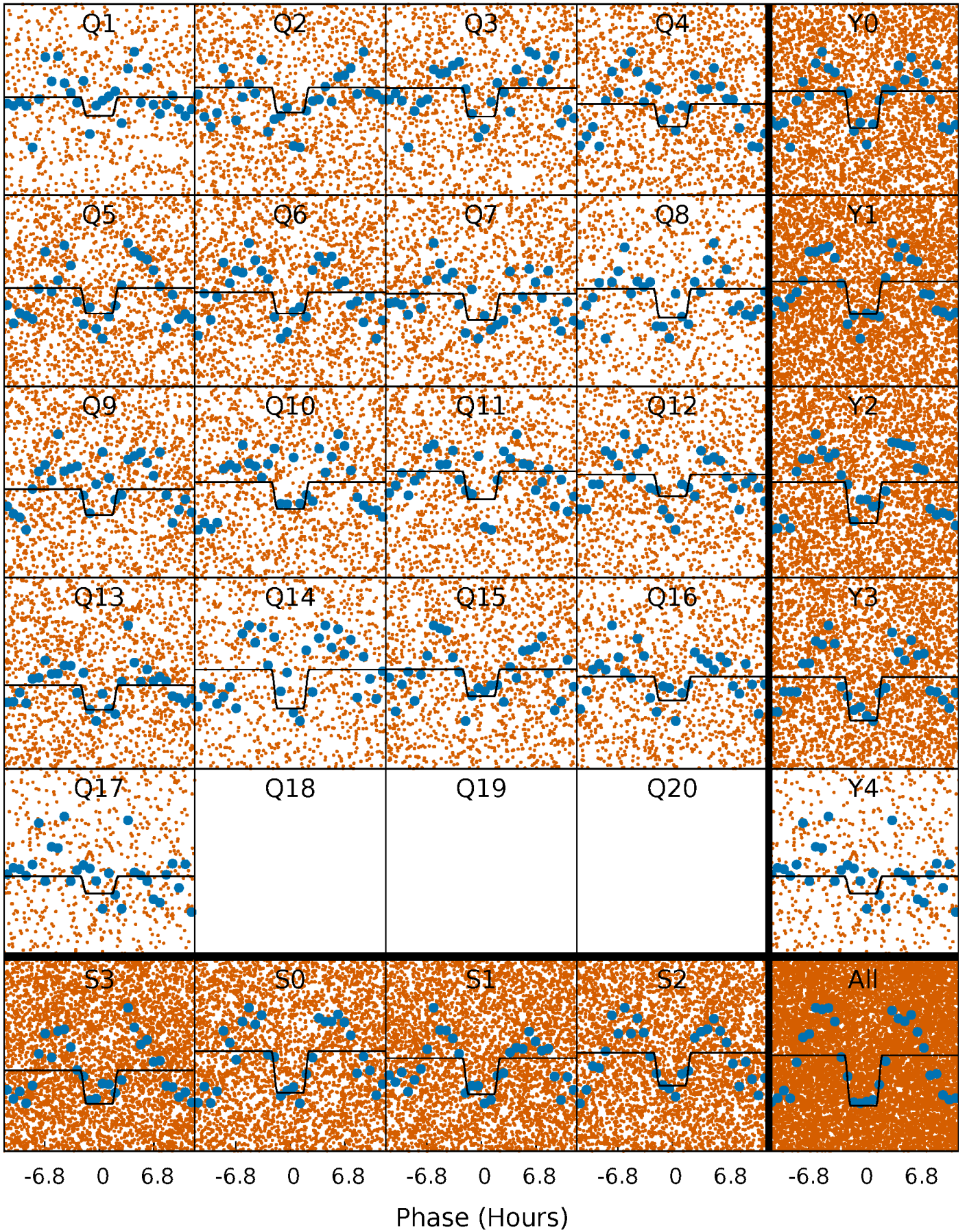
TCE 006802081-01 P= 1.335792 Days  $T_0=132.136587$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

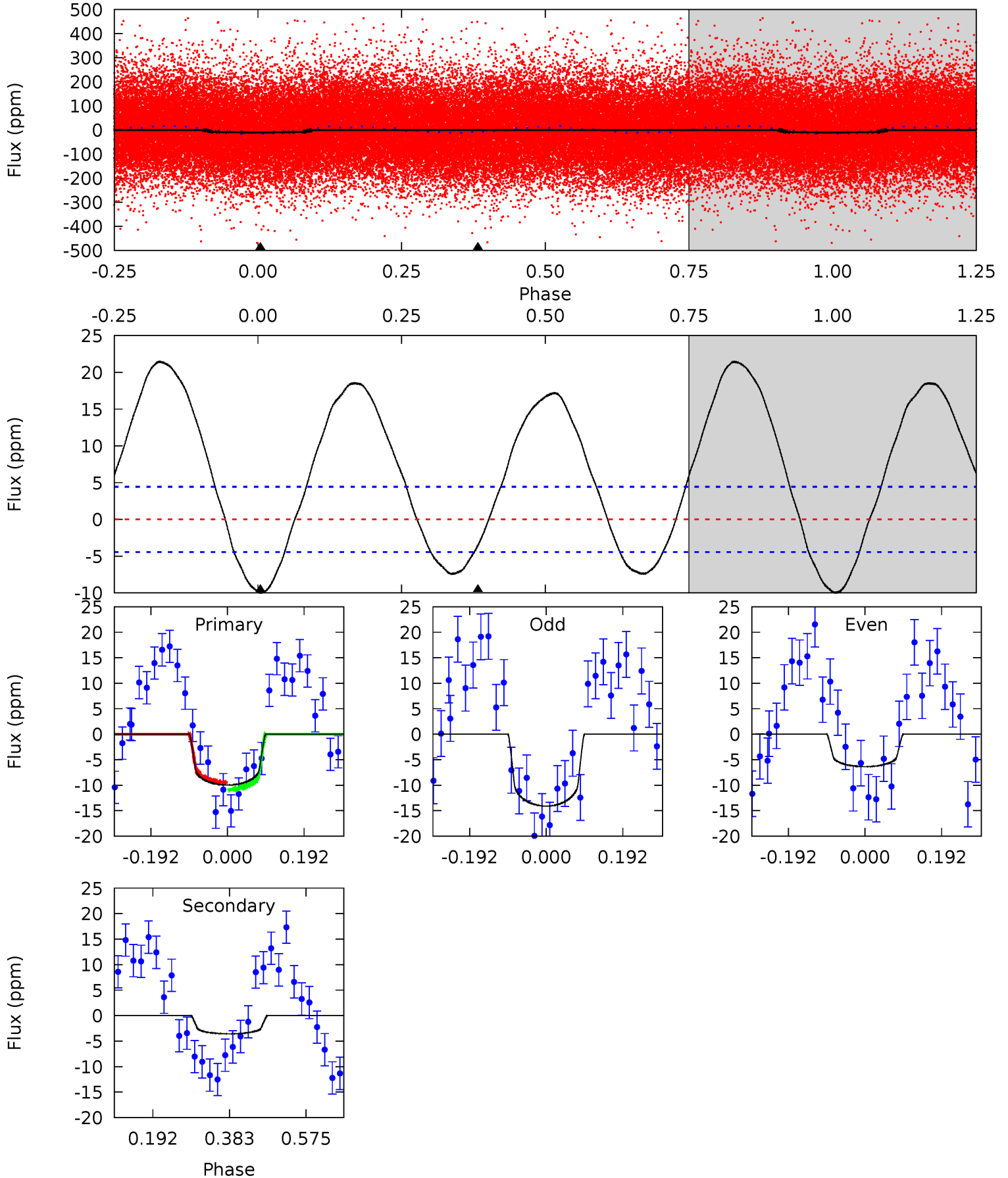
TCE 006802081-01   P= 1.335804 Days    $T_0=132.135205$  (BKJD)



# DV Model-Shift Uniqueness Test

006802081-01, P = 1.335792 Days, E = 130.800795 Days

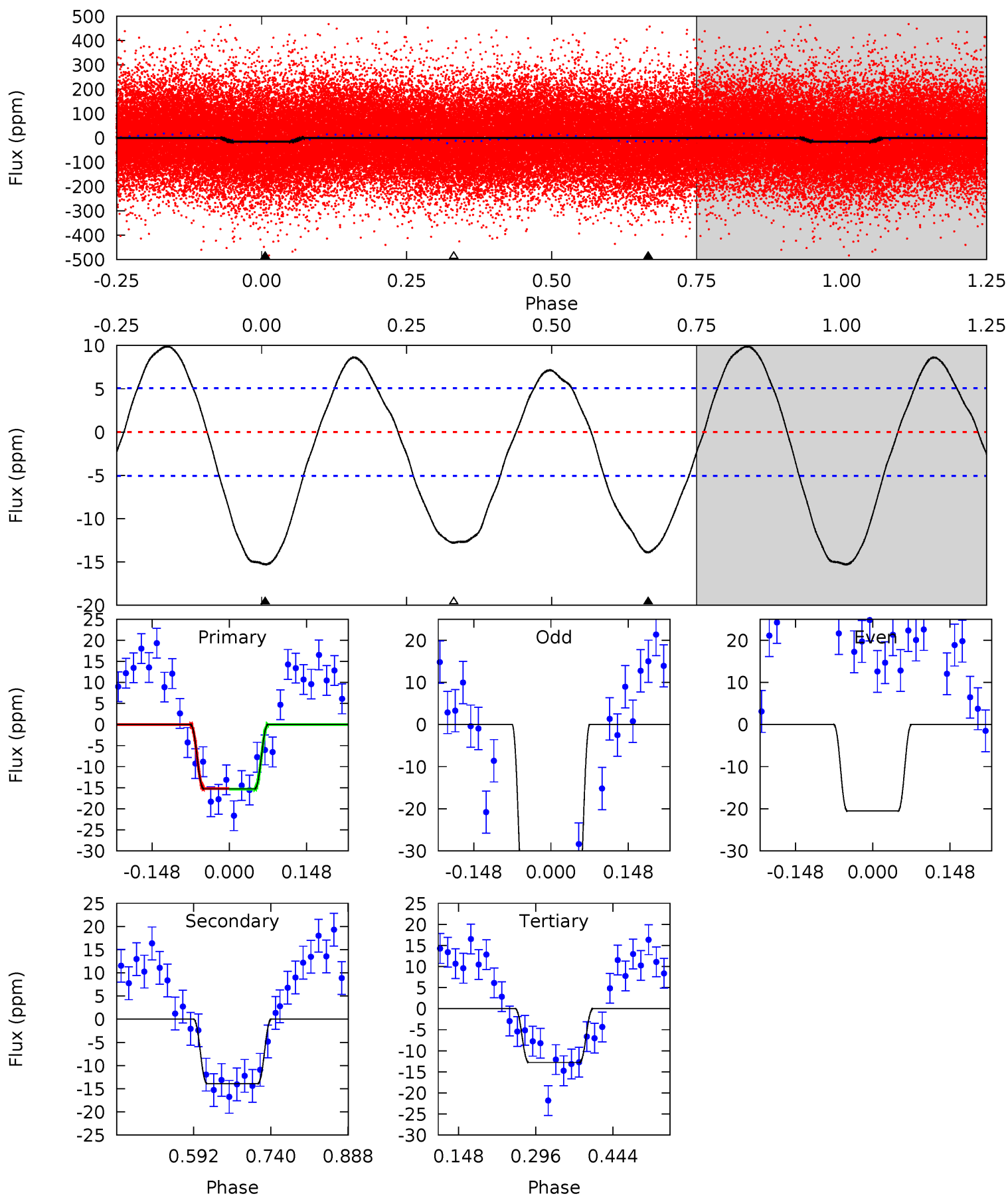
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.93	3.55	0	0	4.43	1.31	8.13	9.93	9.93	3.55	3.55	3.87	0.91	0.68	0.68



# Alt Model-Shift Uniqueness Test

006802081-01, P = 1.335804 Days, E = 130.799401 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
13.5	12.3	11.3	0	4.48	1.45	7.04	2.21	13.5	0.99	12.3	13.5	0.93	0.39	0.06





### Stellar Parameters For KIC 006802081

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6156^{+184}_{-166}$	$3.903^{+0.315}_{-0.105}$	$-0.540^{+0.350}_{-0.250}$	$1.877^{+0.408}_{-0.612}$	$1.027^{+0.180}_{-0.163}$	$0.219^{+0.441}_{-0.084}$
	+3%/-3%	+8%/-3%	+65%/-46%	+22%/-33%	+18%/-16%	+201%/-38%
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 006802081-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-4 \pm 1$	$0.77^{+0.29}_{-0.28}$	$3286^{+233}_{-302}$	$4314^{+895}_{-636}$	$1.891^{+3.014}_{-0.968}$
Alt.	$-14 \pm 1$	$0.77^{+0.31}_{-0.27}$	$3294^{+208}_{-264}$	$5871^{+1332}_{-764}$	$7.427^{+9.917}_{-3.621}$

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

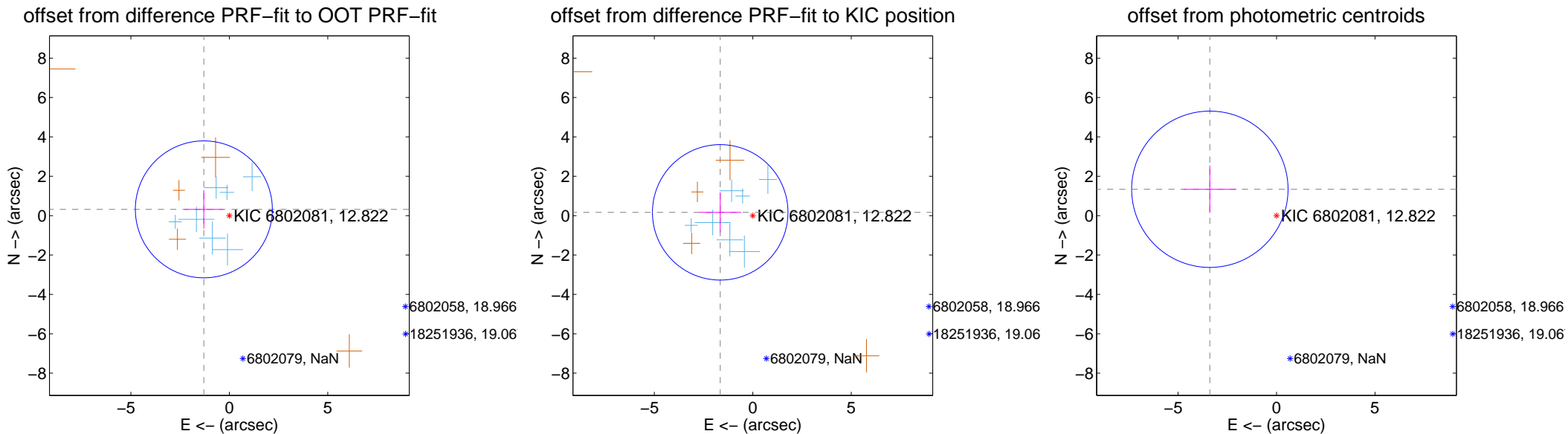
## DV Centroid Data

Supplemental centroid analysis for 006802081-01. Kepler magnitude: 12.82. Transit SNR 9.94

There are 7 quarters with good PRF difference image offsets

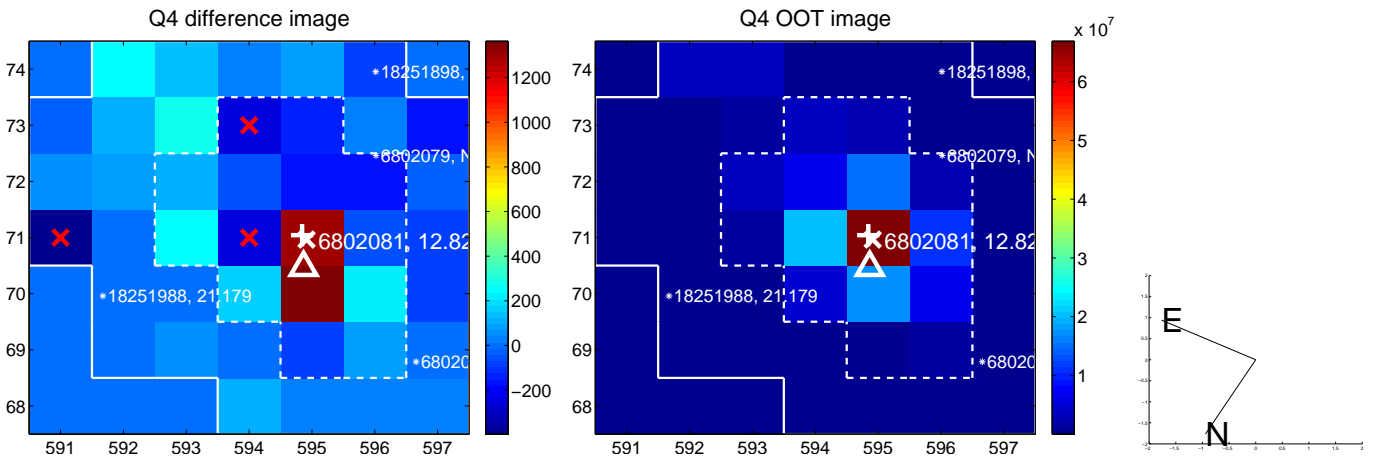
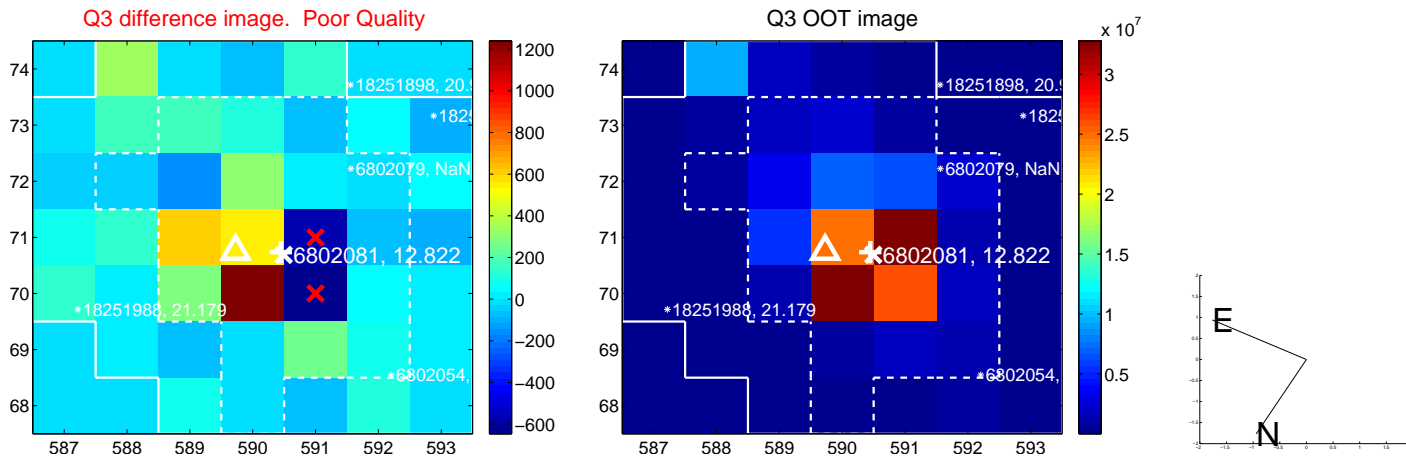
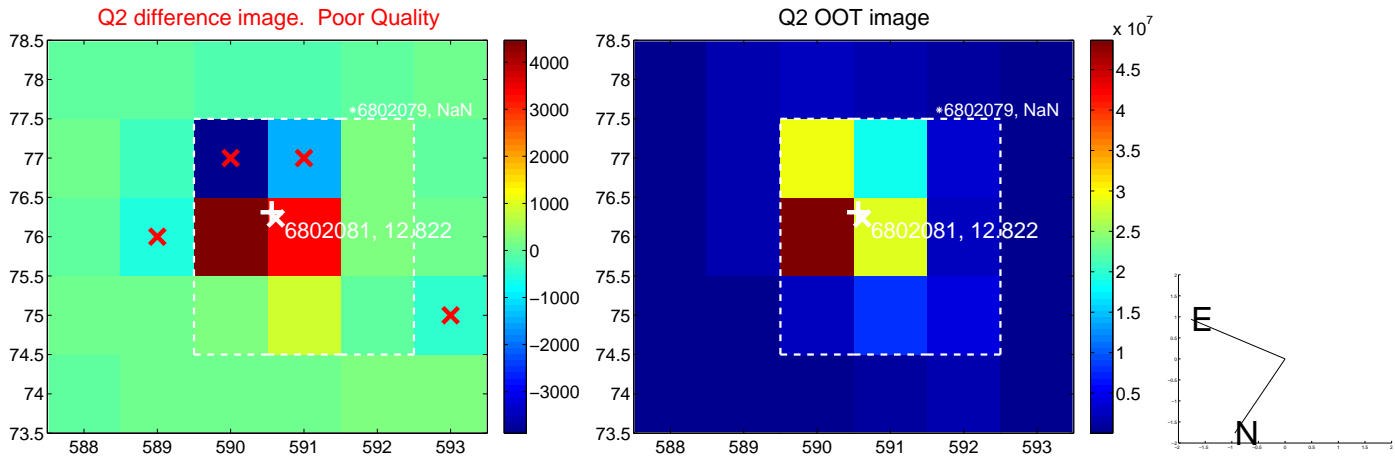
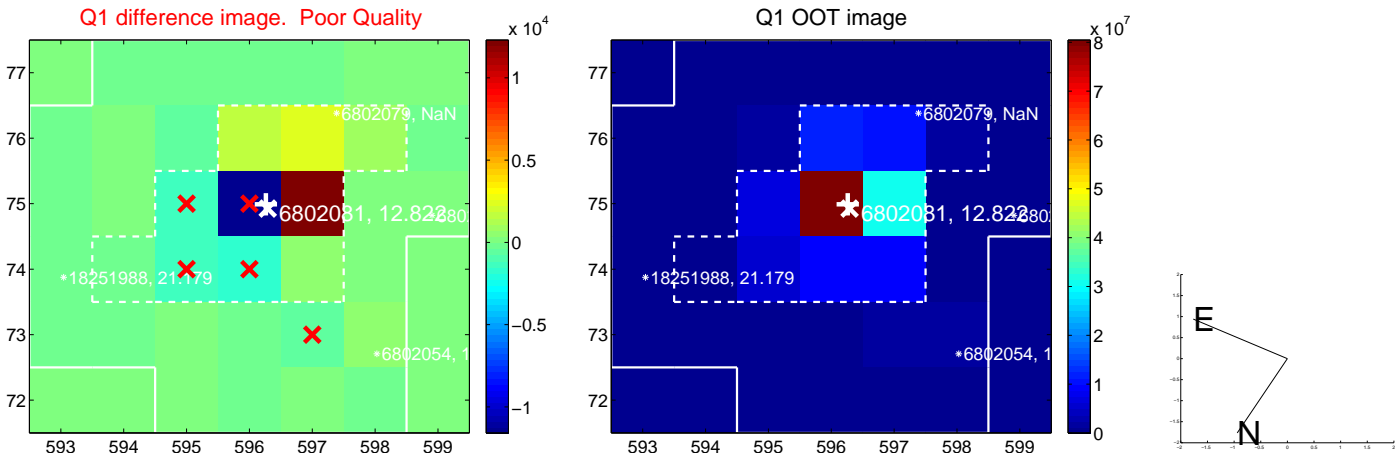
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.333 \pm 1.159$	1.15	$1.294 \pm 0.992$	$0.319 \pm 0.978$
PRF-fit source offset from KIC position	$1.662 \pm 1.147$	1.45	$1.654 \pm 1.065$	$0.167 \pm 1.012$
photometric centroid source offset	$3.64 \pm 1.32$	2.75	$3.39 \pm 1.34$	$1.34 \pm 1.20$

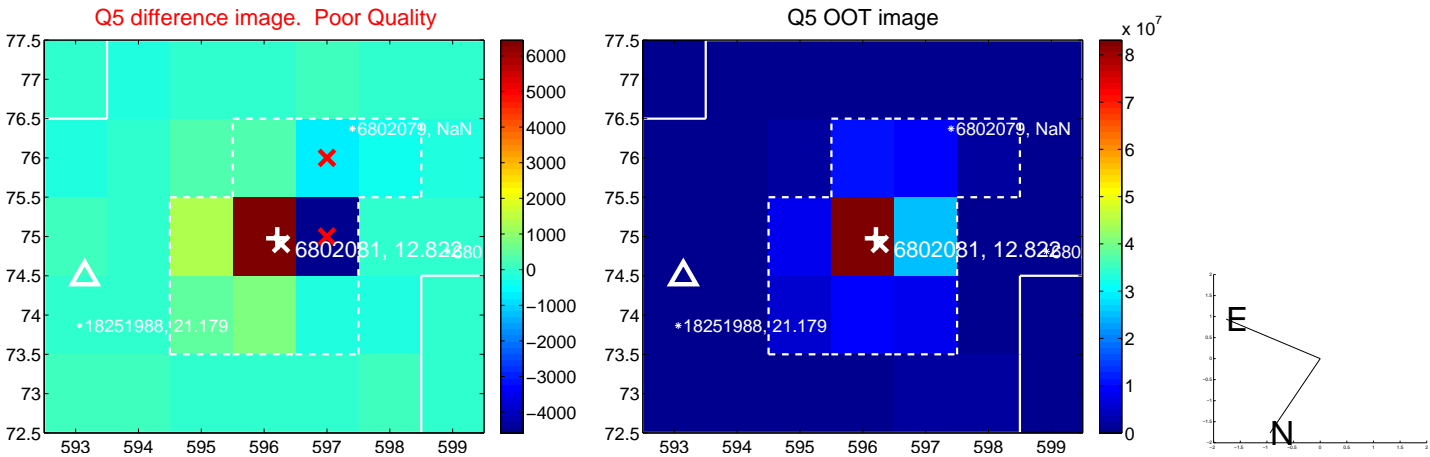


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

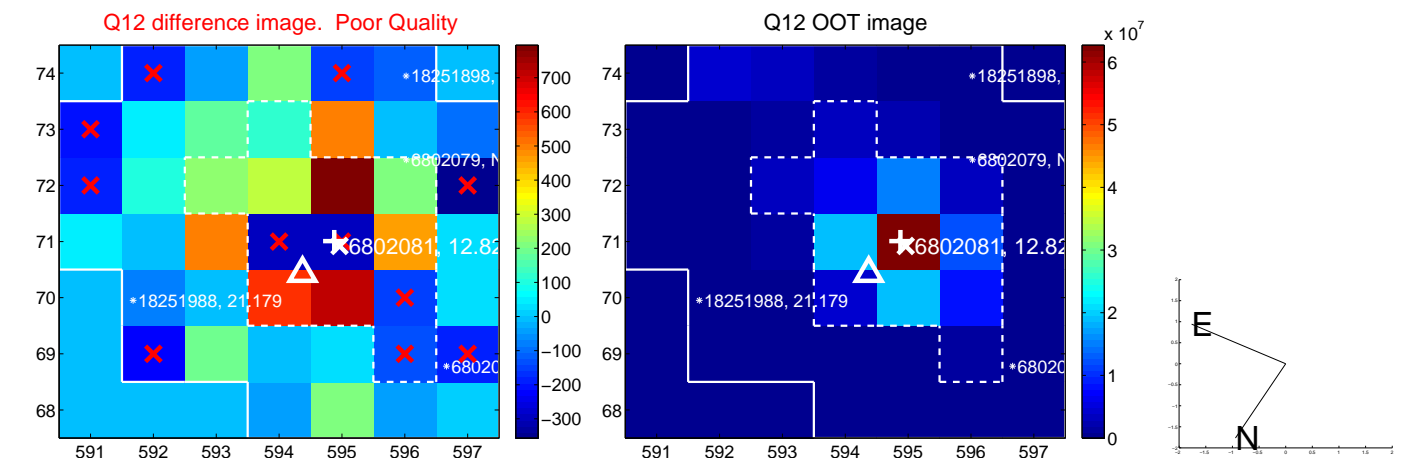
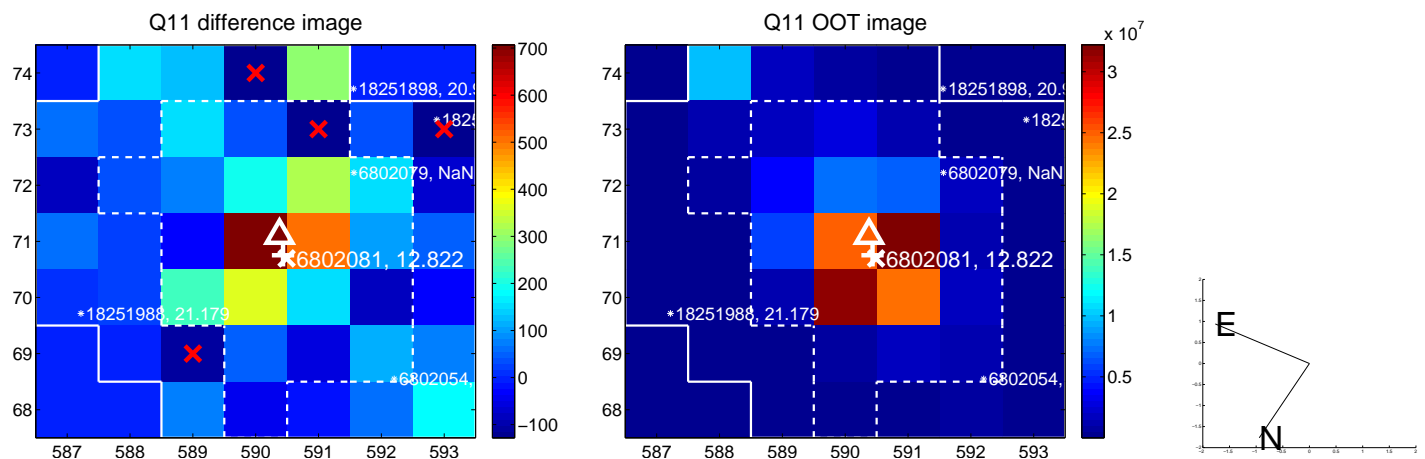
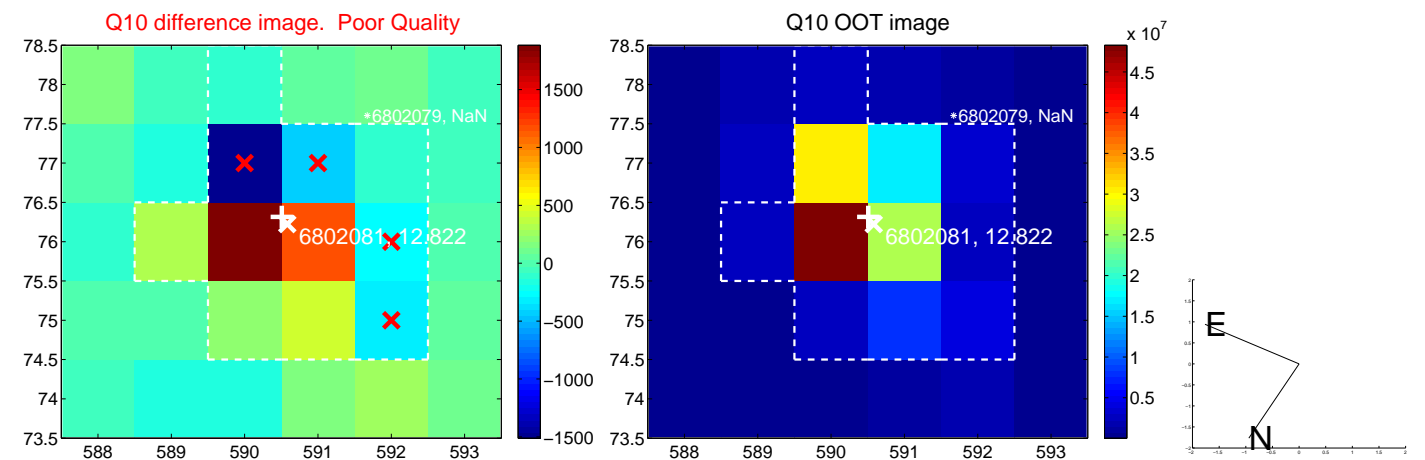
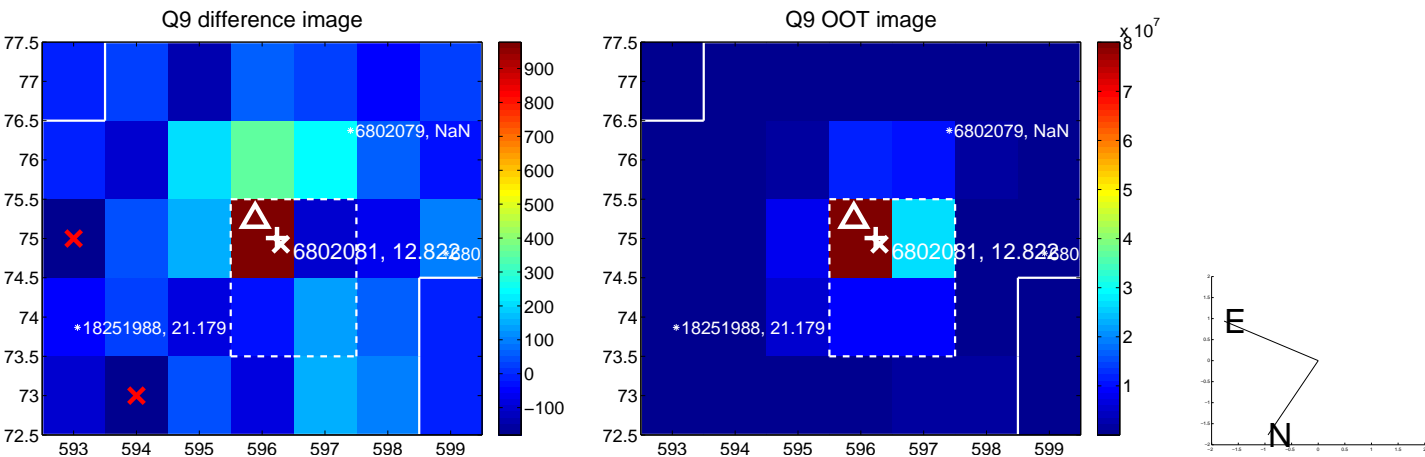


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

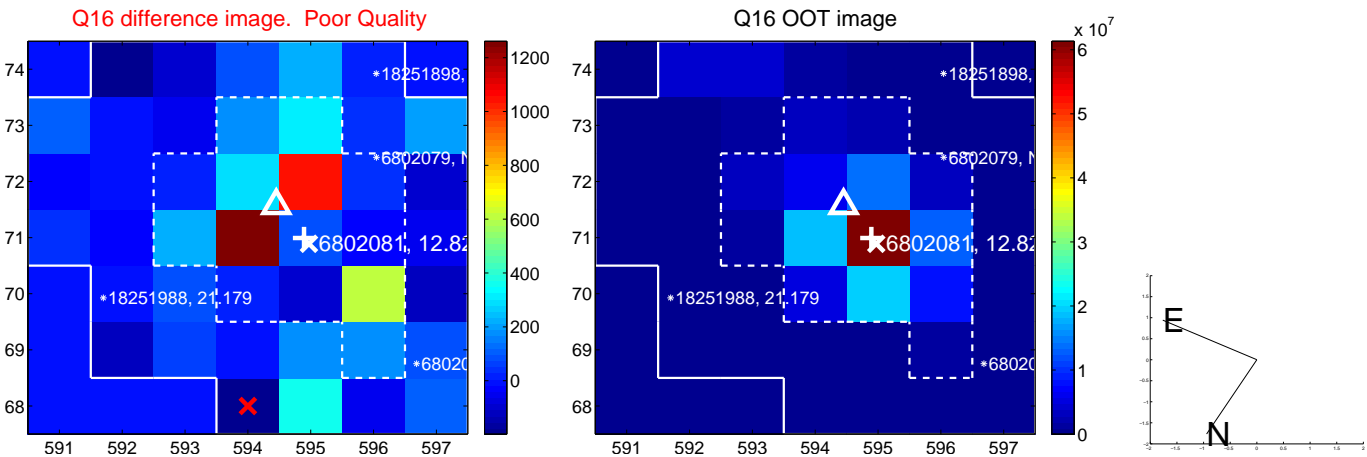
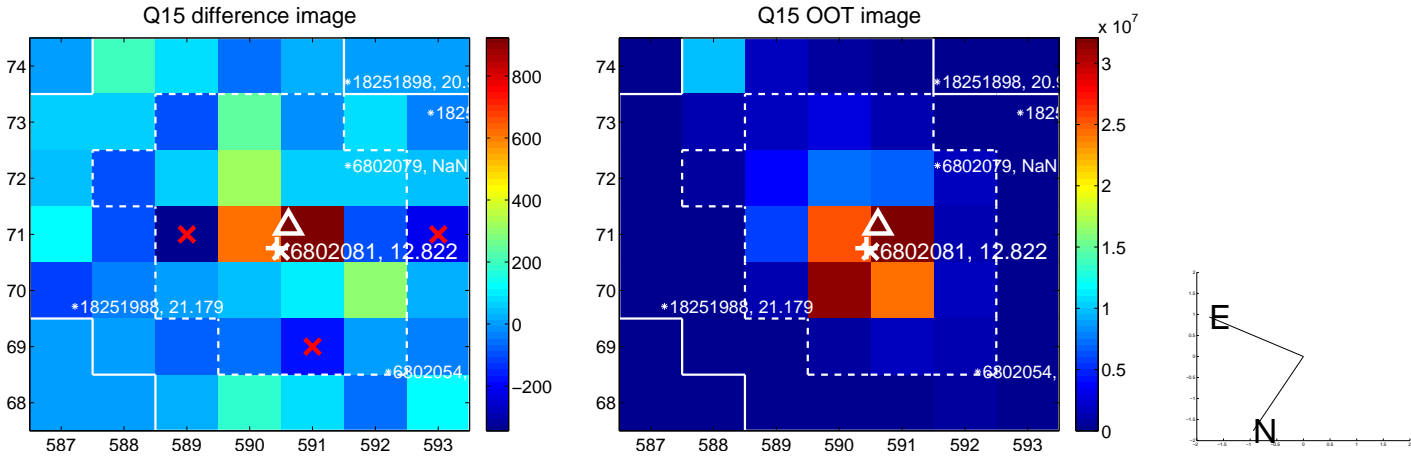
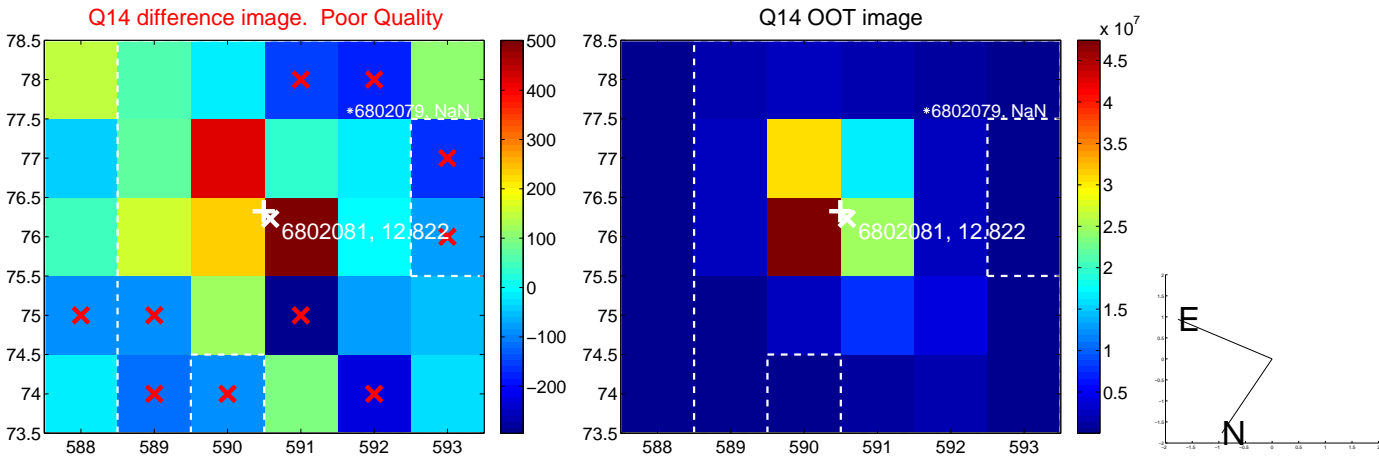
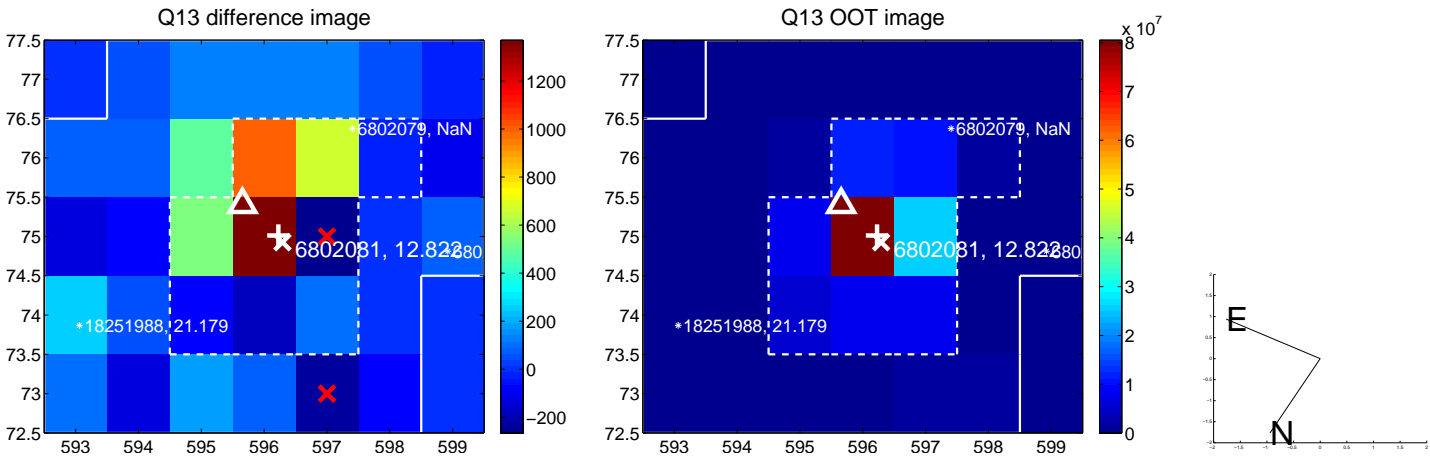




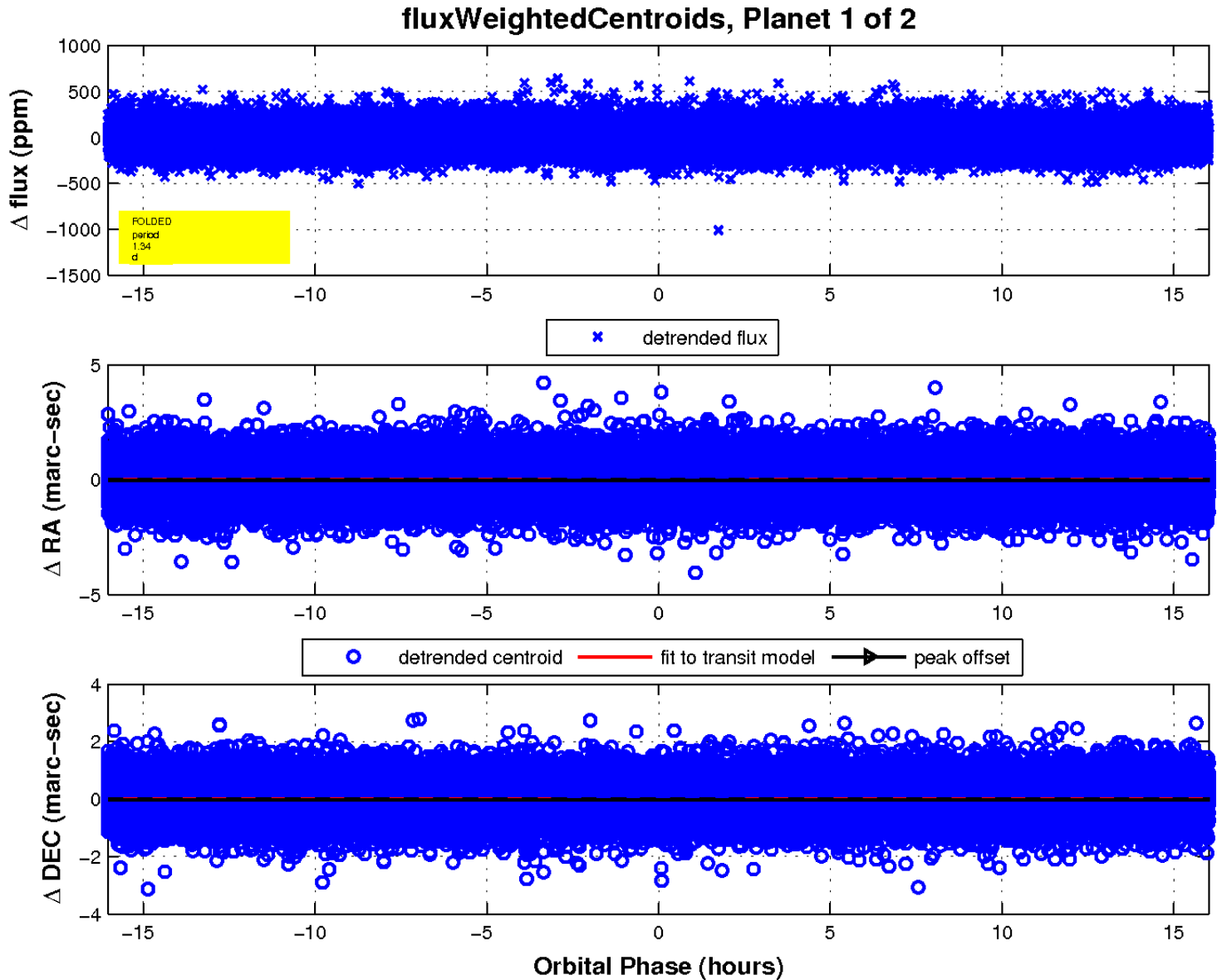
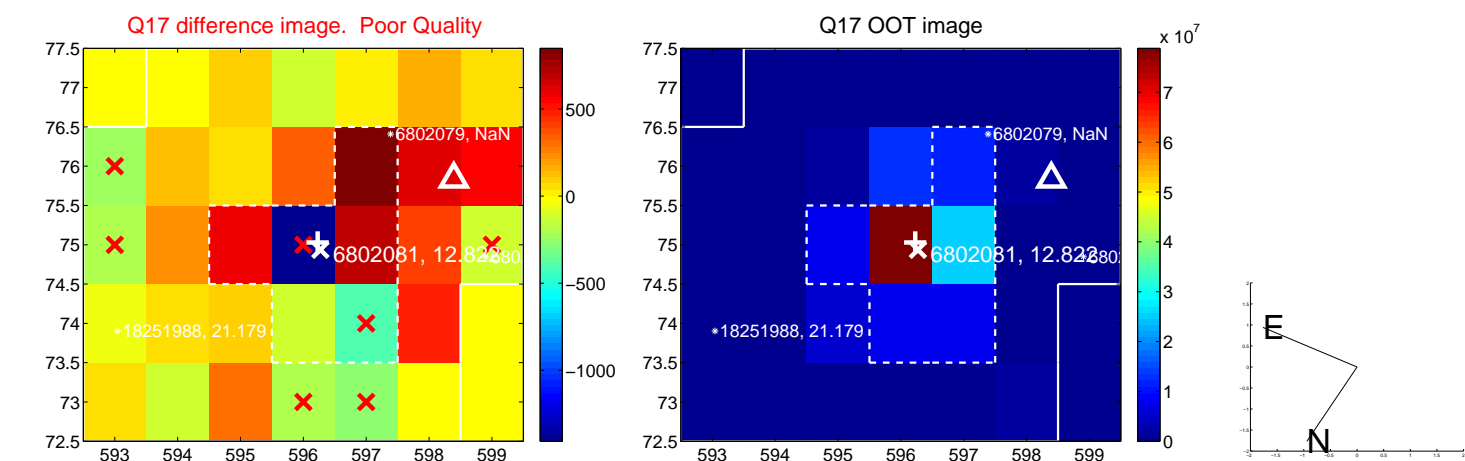
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

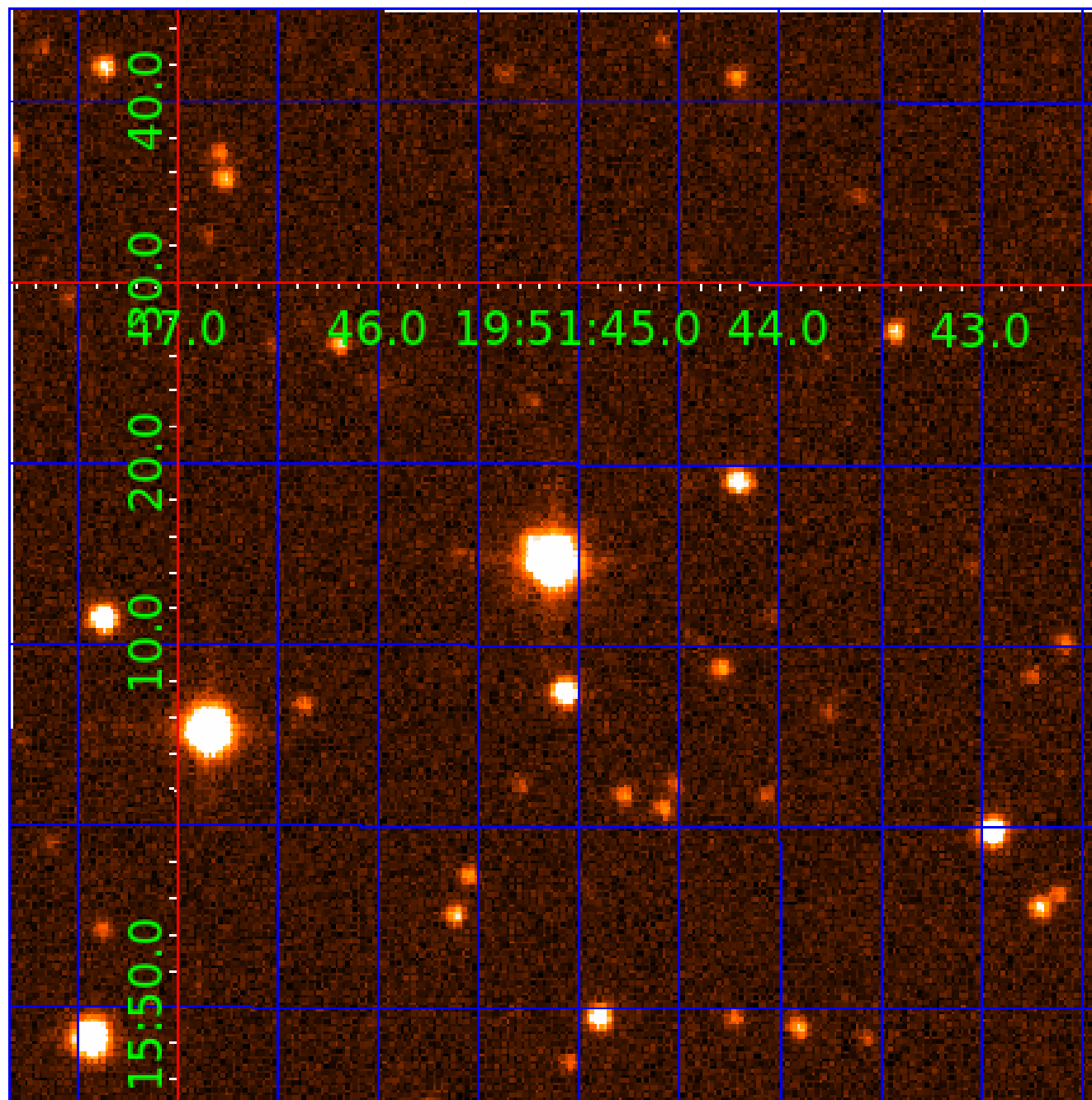


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 006802081

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006802081-01	OBS	No	1.335792	132.136588	13.4	5.696	10.1	9.9	1.88	6156	0.81	7896.11
006802081-02	OBS	No	391.194574	158.831900	172.5	25.995	10.0	7.9	1.88	6156	2.61	4.06

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006802081-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_KIC_POS
006802081-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS

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

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

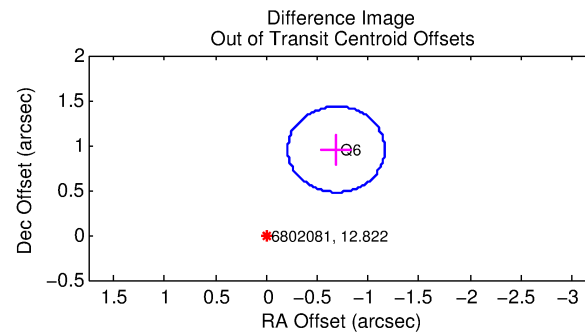
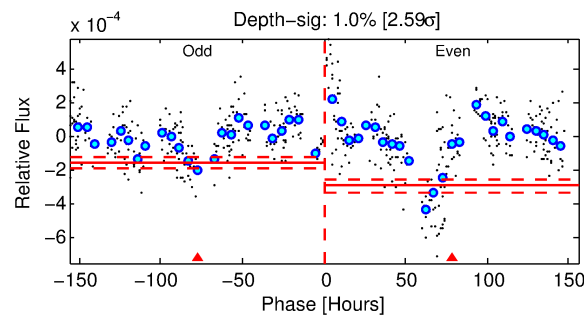
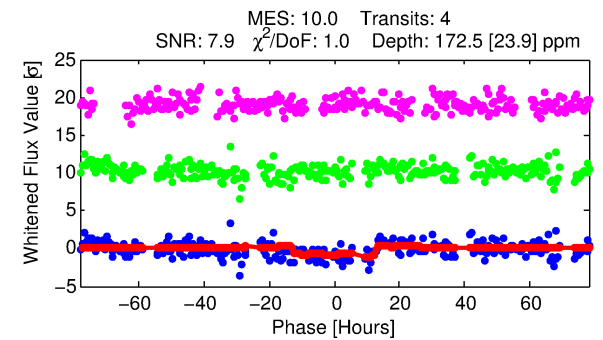
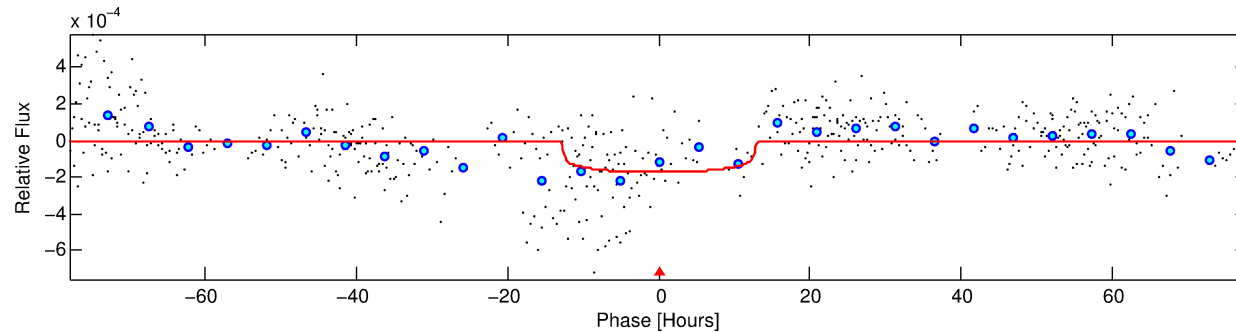
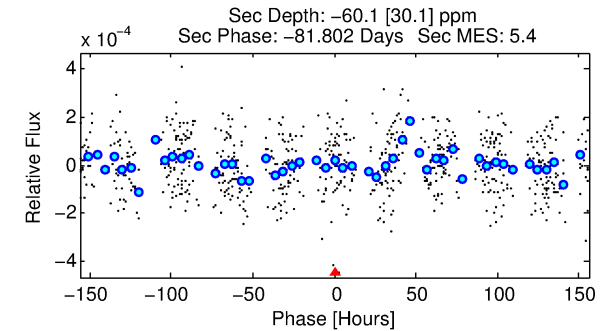
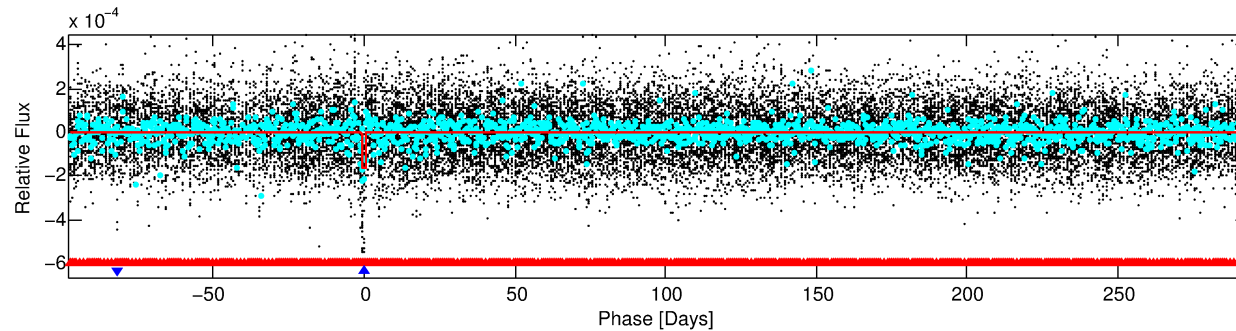
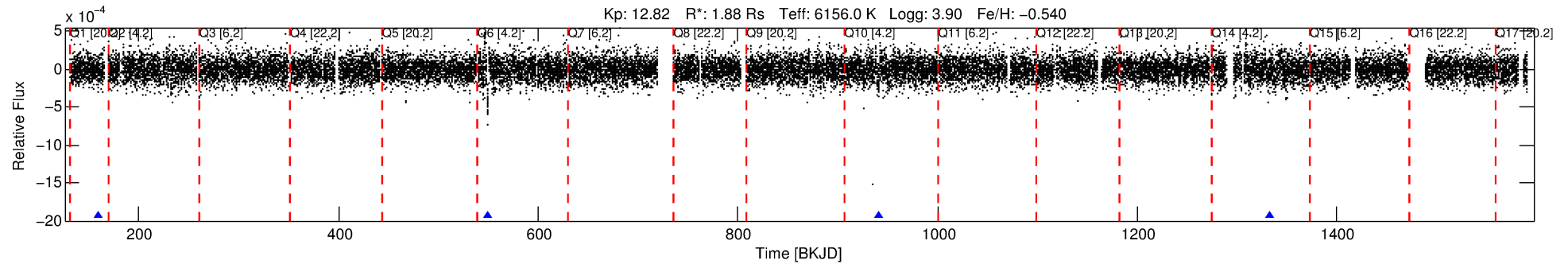
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006802081-02

No Significant Match Found

# DV One-Page Summary

KIC: 6802081 Candidate: 2 of 2 Period: 391.195 d



## DV Fit Results:

Period = 391.19457 [0.01839] d  
Epoch = 158.8319 [0.0167] BKJD  
Rp/R\* = 0.0128 [0.0028]  
a/R\* = 87.84 [94.35]  
b = 0.66 [0.91]  
Seff = 4.06 [2.21]  
Teq = 362 [49] K  
Rp = 2.61 [1.03] Re  
a = 1.0567 [0.3435] AU  
Ag = N/A  
Teffp = N/A

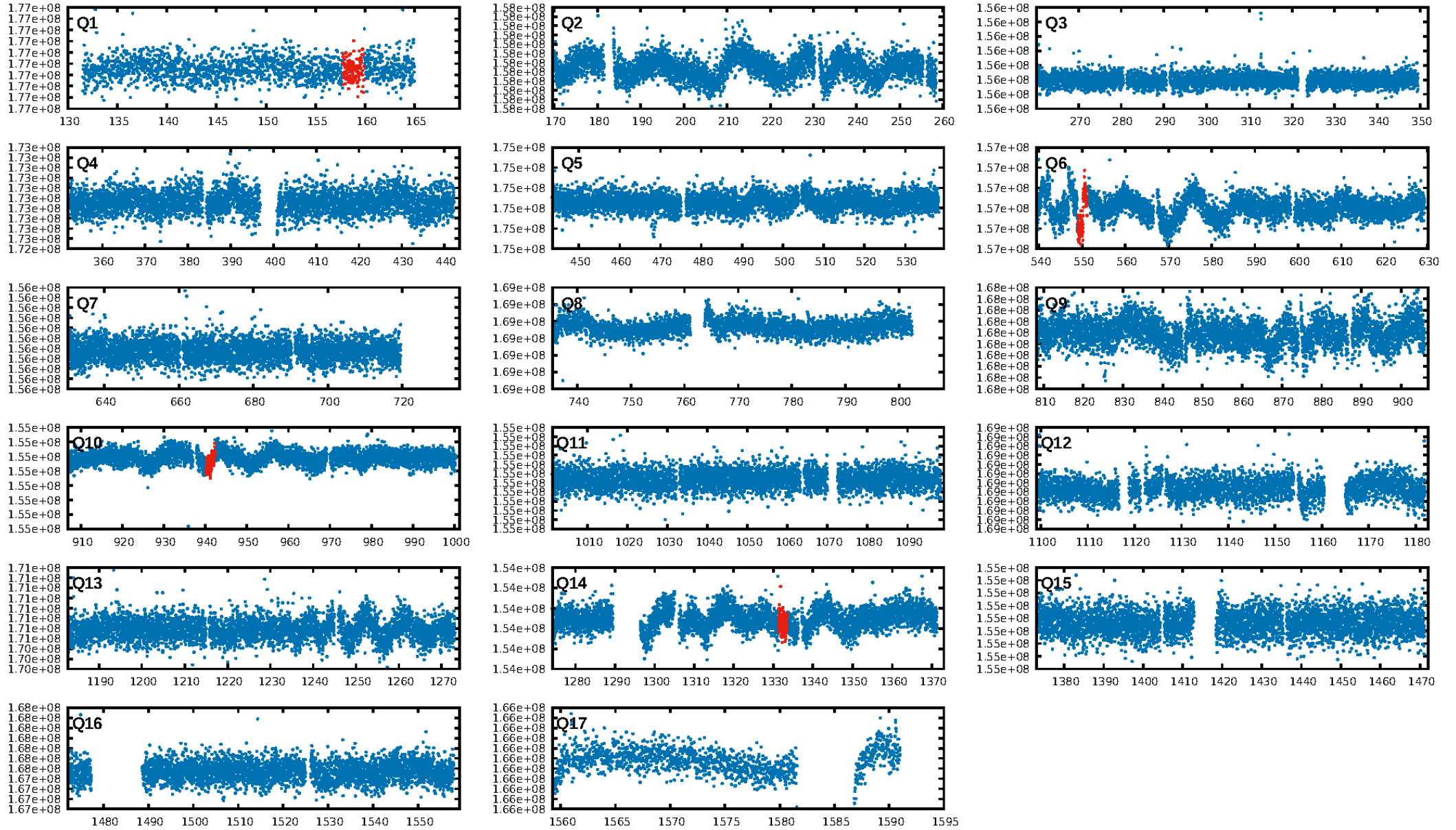
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [351.60σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.02e-12  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 5.539  
Centroid-sig: 21.8%  
Centroid-so: 1.872 arcsec [1.89σ]  
OotOffset-rm: 1.175 arcsec [7.39σ]  
KicOffset-rm: 0.784 arcsec [4.81σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.00 [0/4]

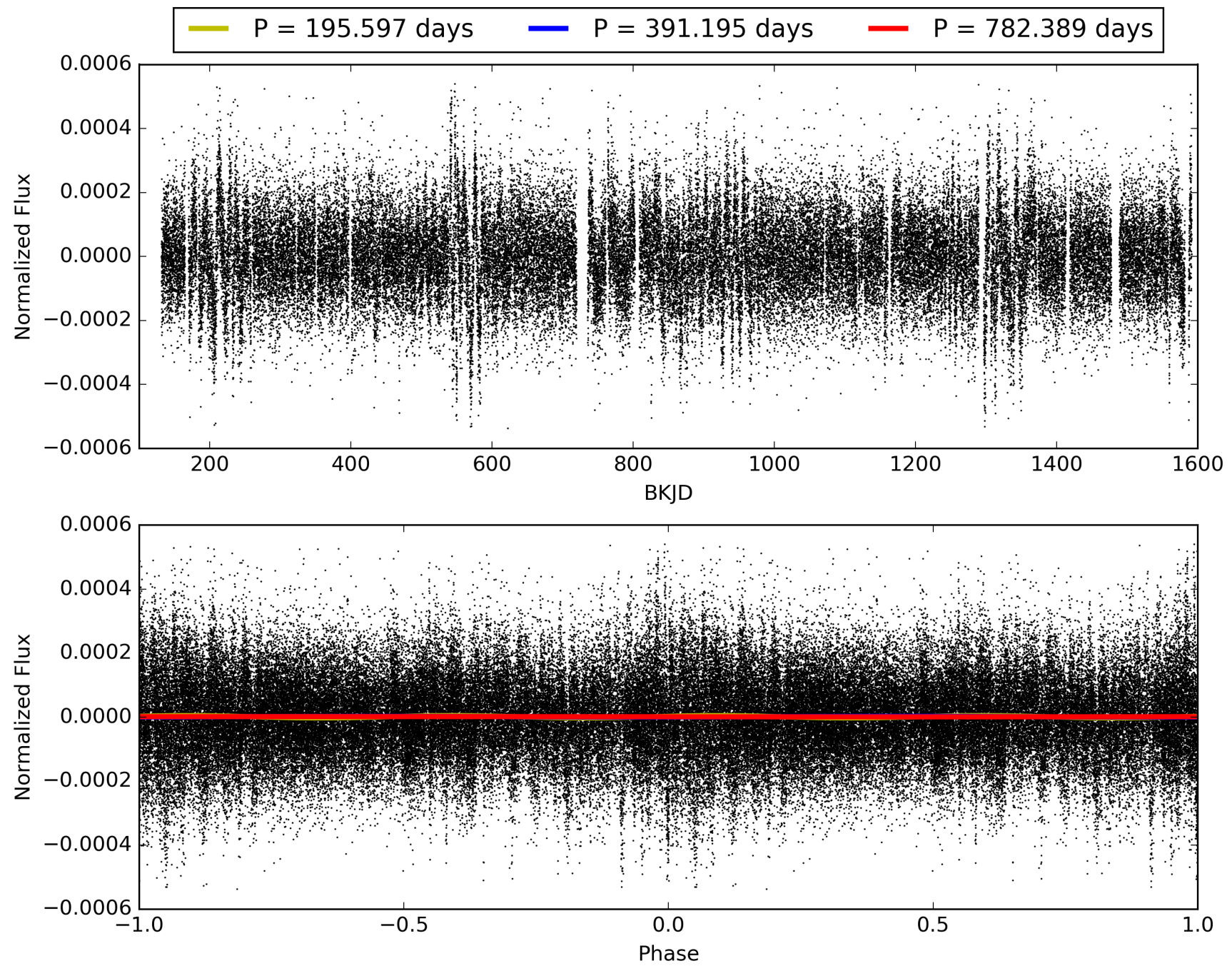
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:12:05 Z

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

# TCE 006802081-02, PDC Light Curves



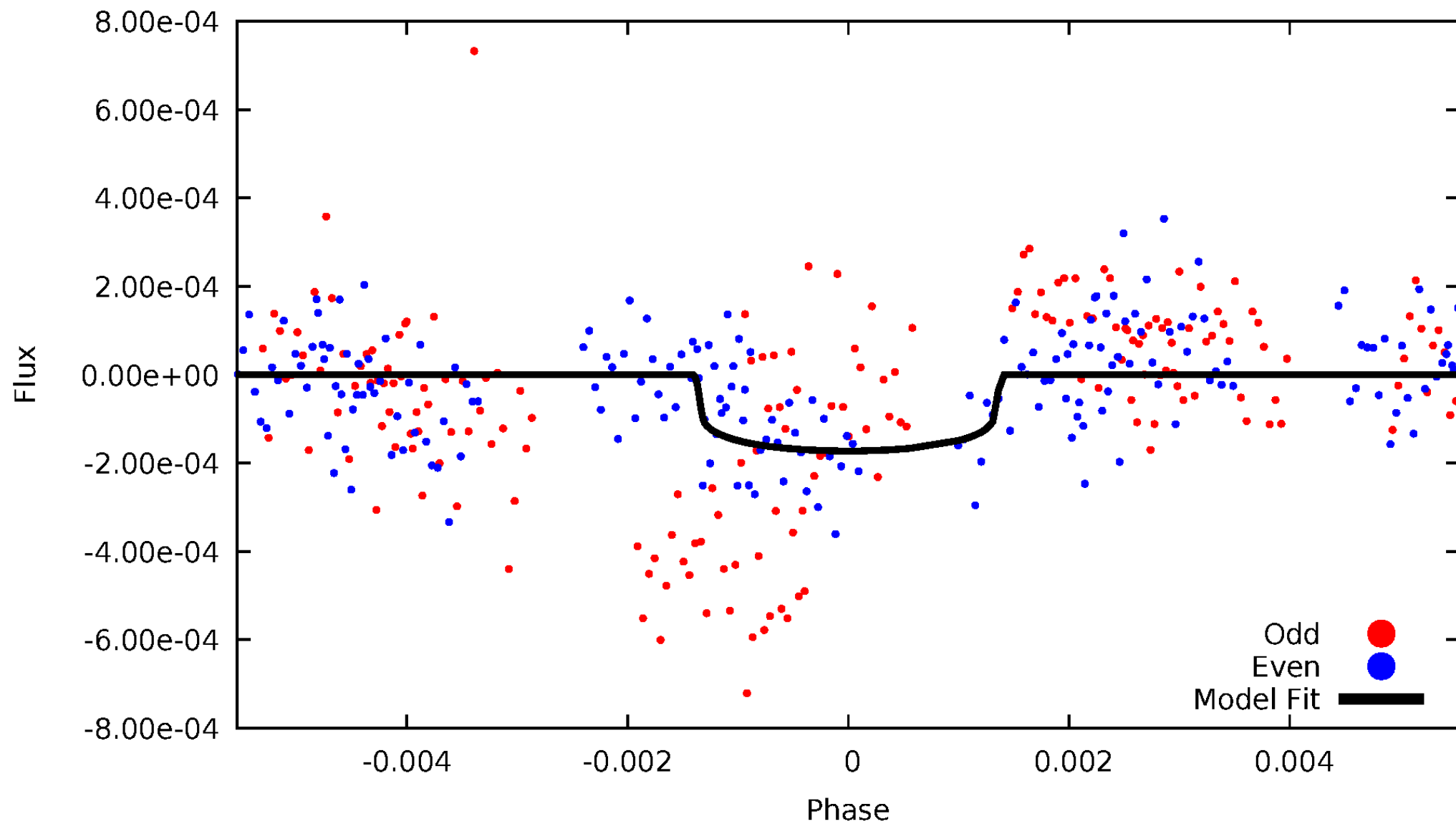
TCE 006802081-02





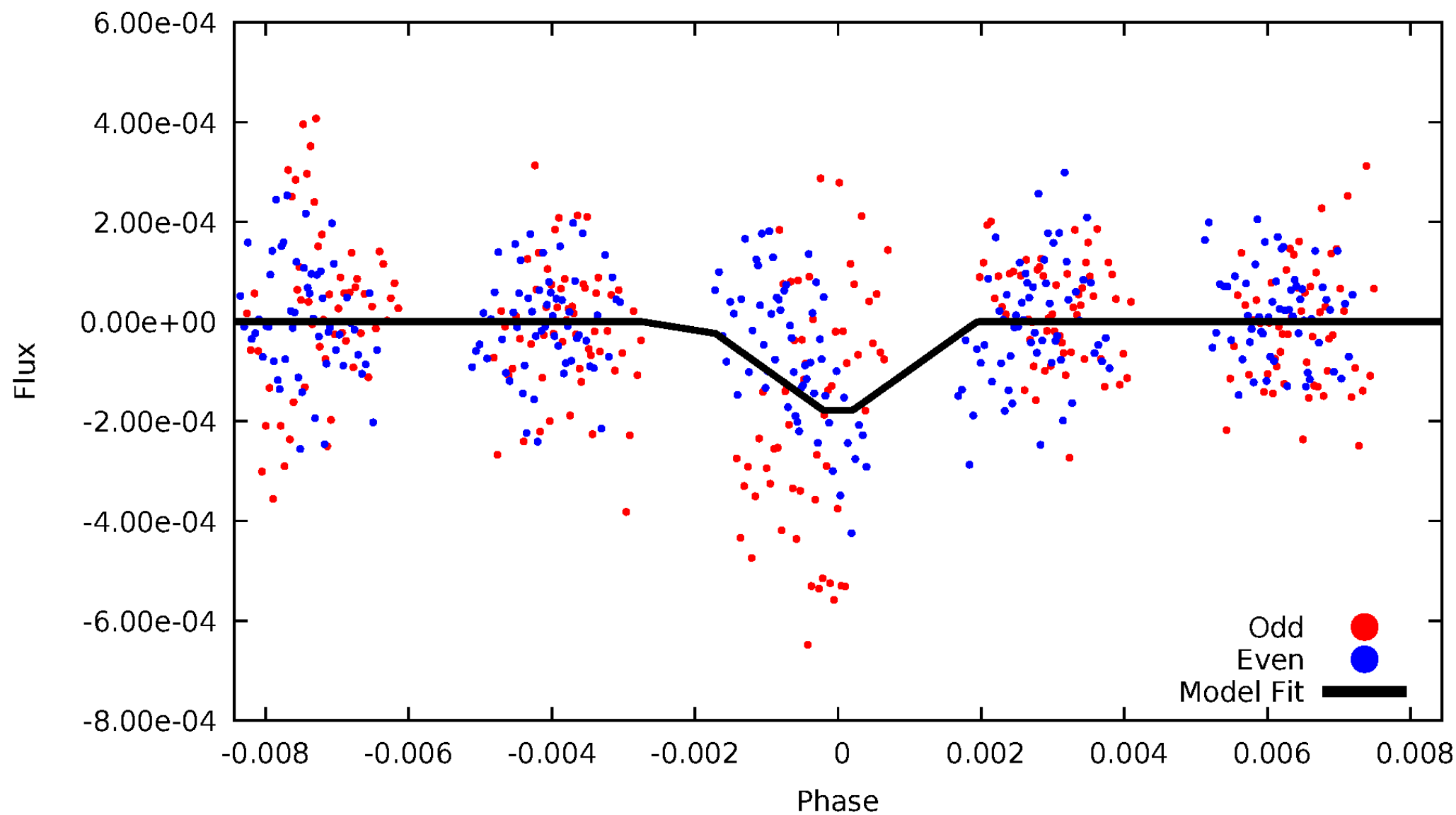
# DV Odd/Even

TCE 006802081-02



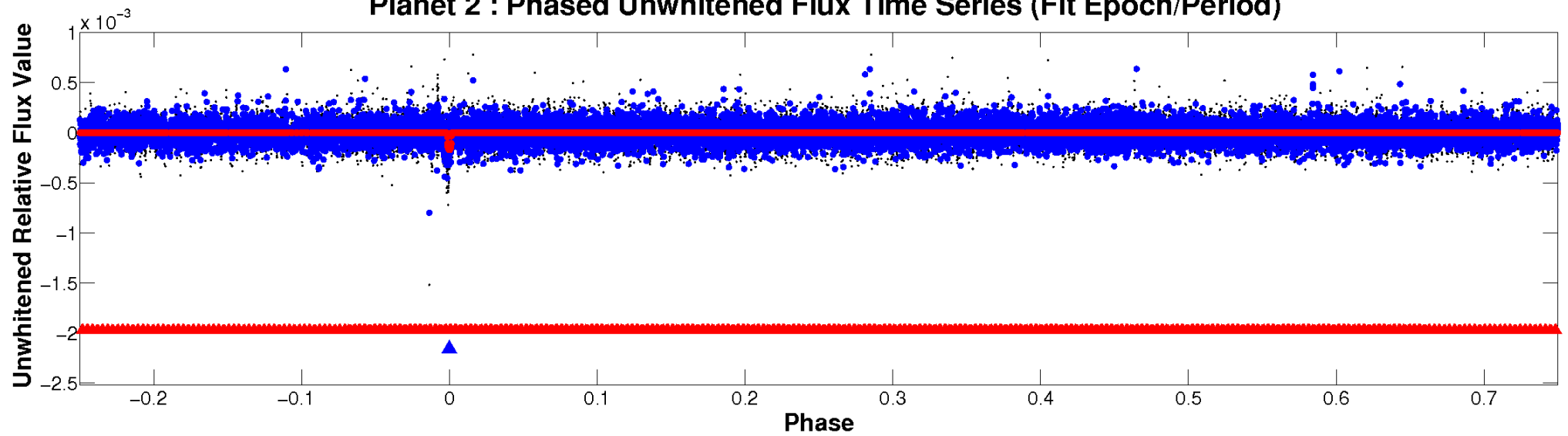
# ALT Odd/Even

TCE 006802081-02

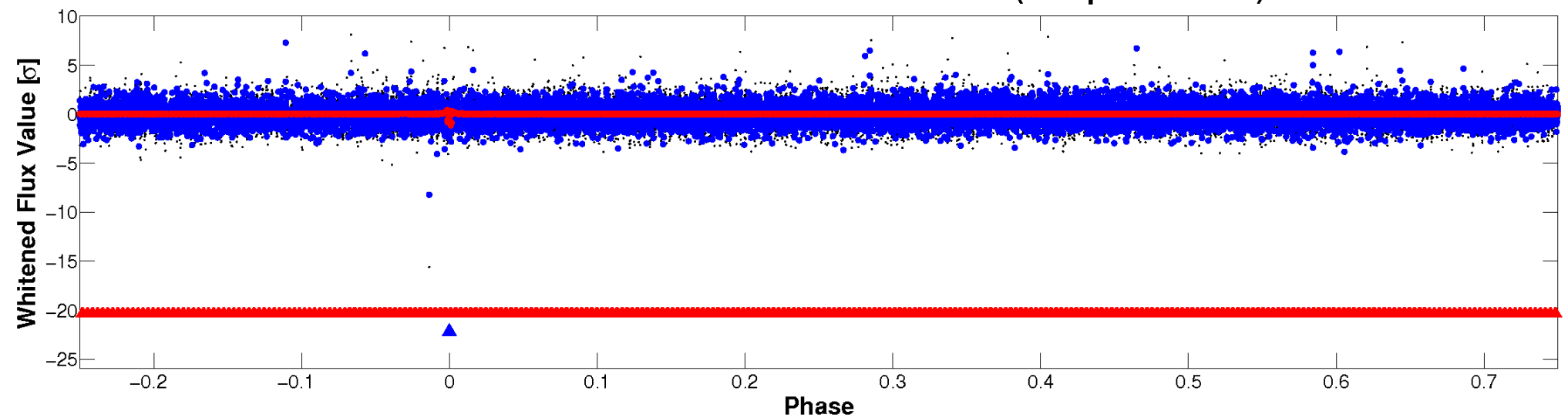


# Non-Whitened Vs. Whitened Light Curve

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

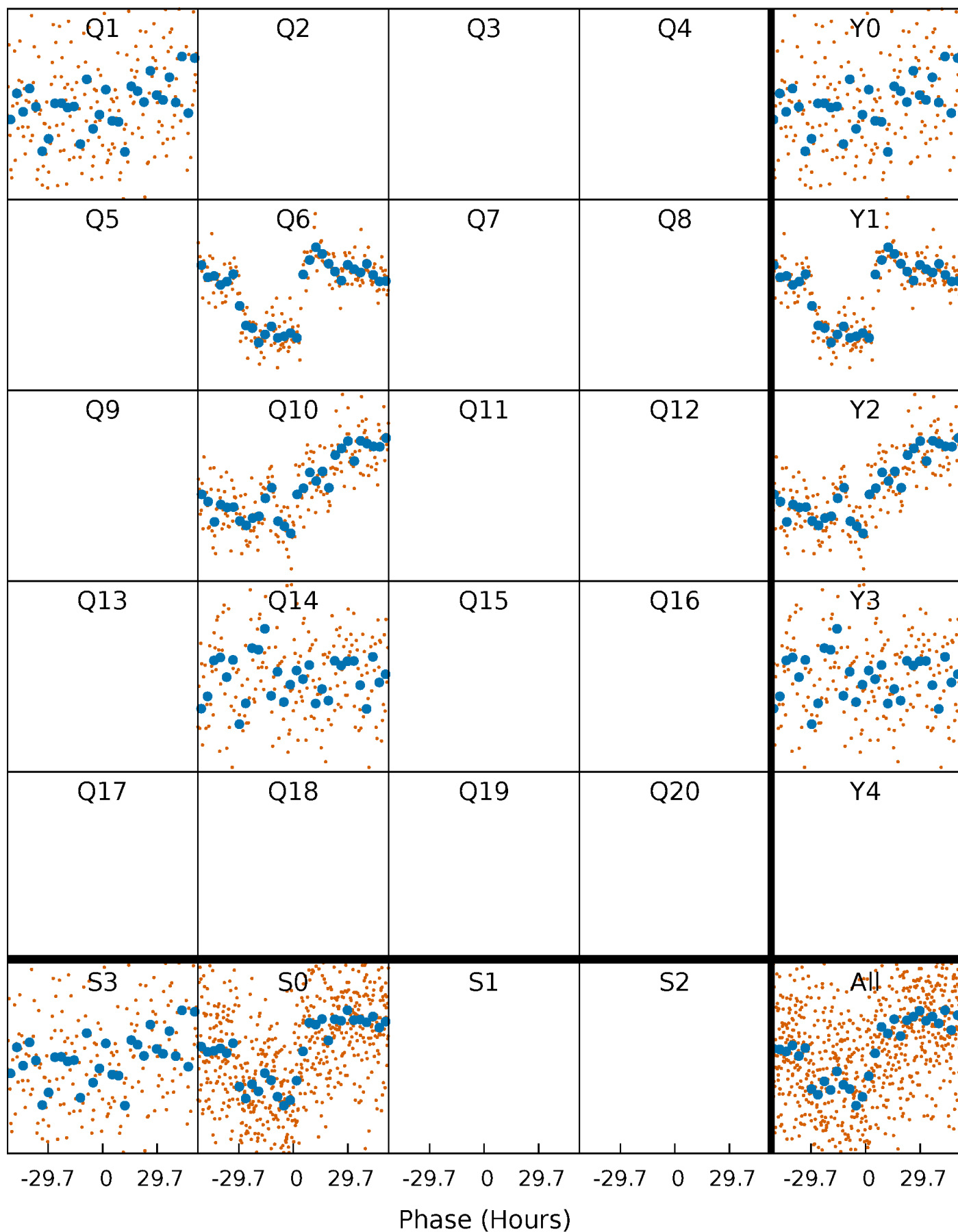


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



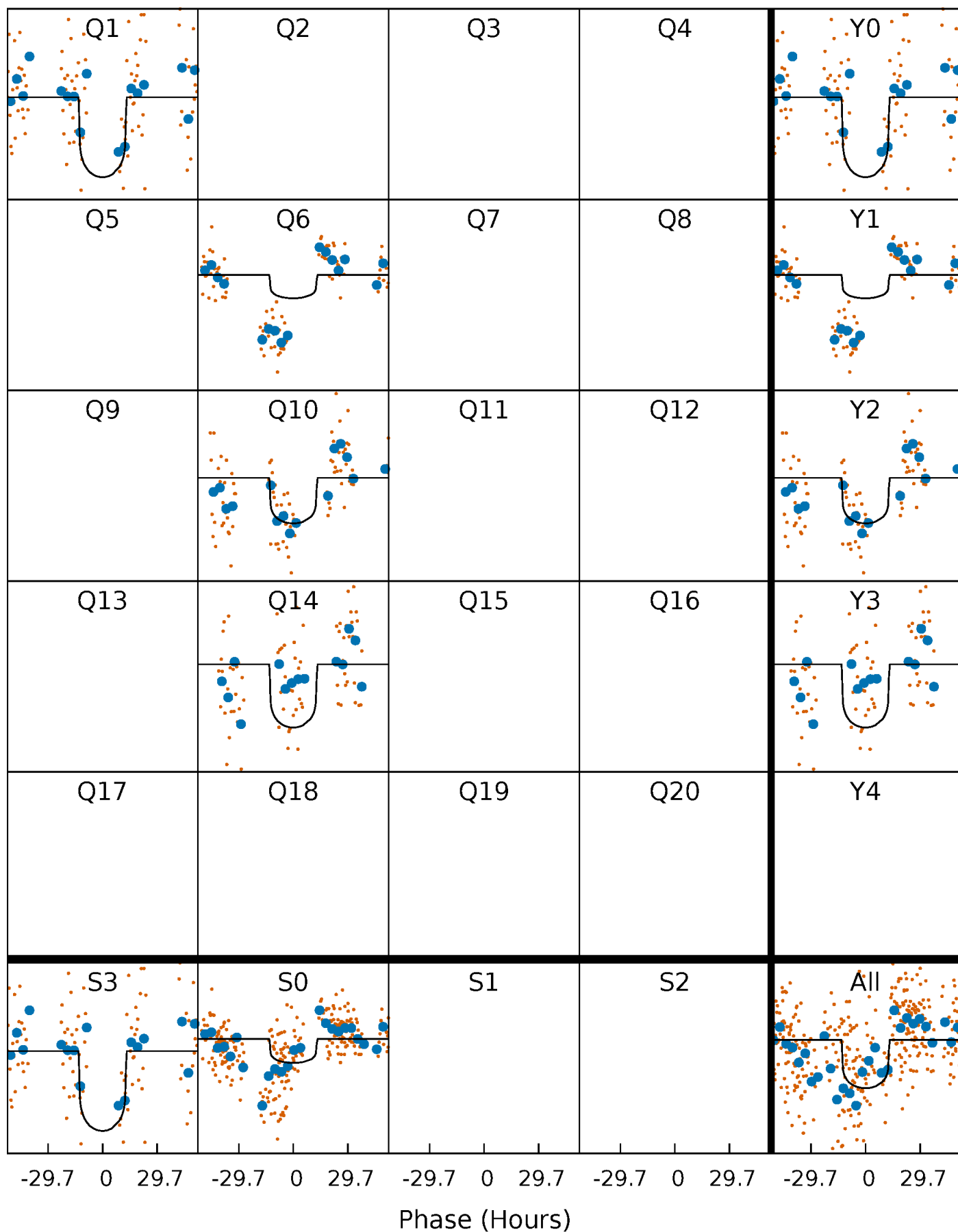
# PDC Quarter-Phased Transit Curves

TCE 006802081-02     $P=391.194574$  Days     $T_0=158.831900$  (BKJD)



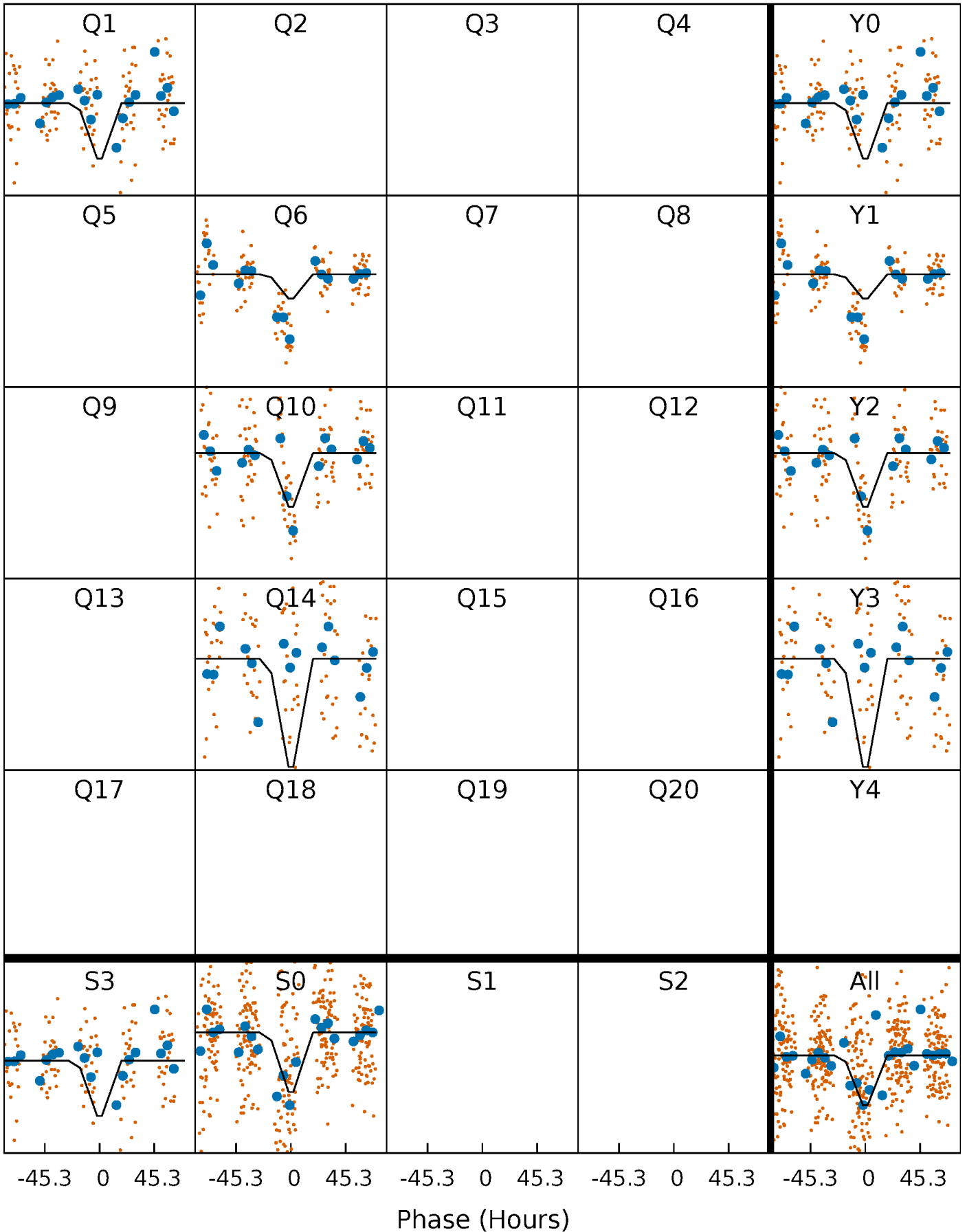
# DV Quarter-Phased Transit Curves

TCE 006802081-02     $P=391.194574$  Days     $T_0=158.831900$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006802081-02 P=391.268618 Days  $T_0=158.563899$  (BKJD)

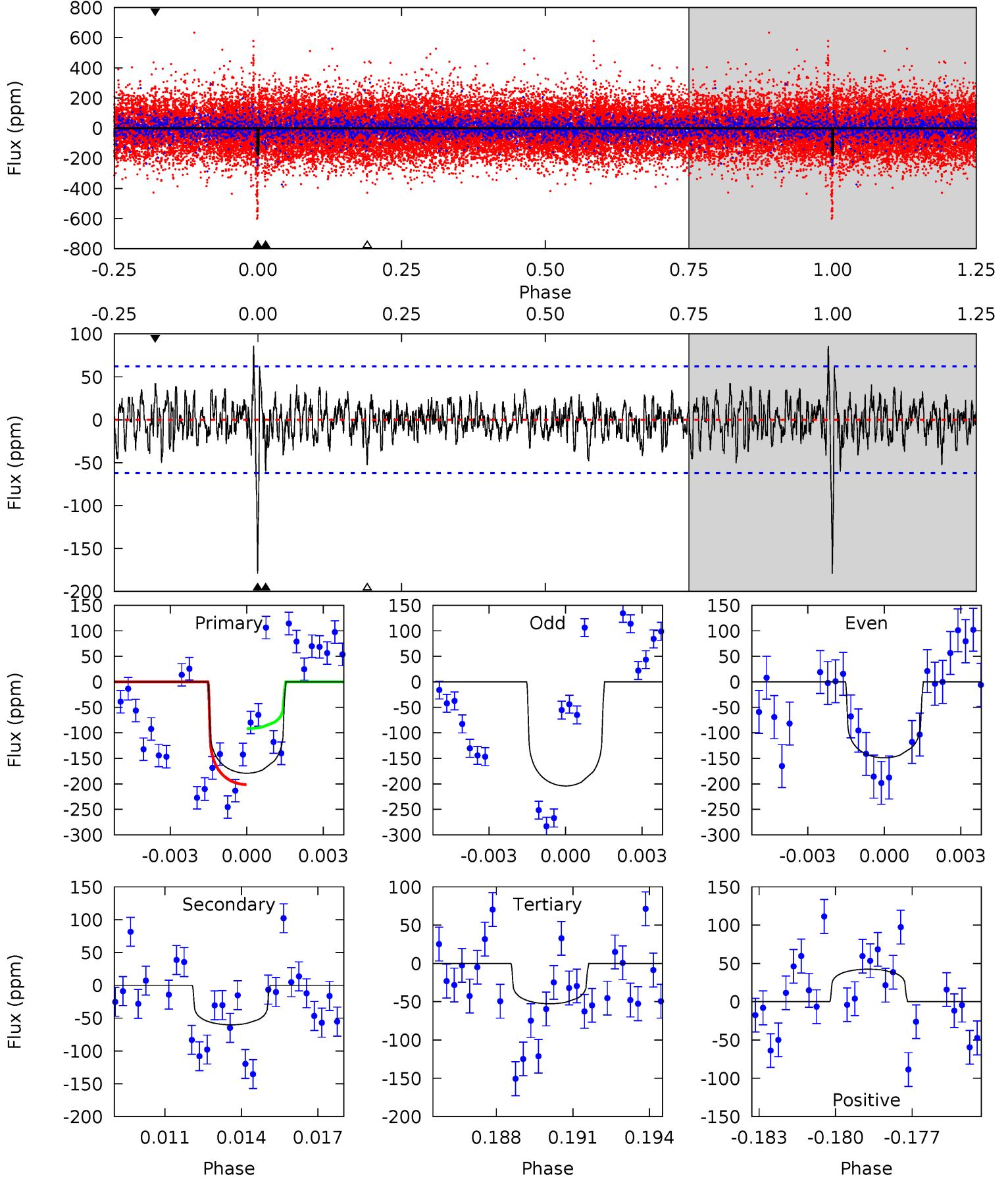




# DV Model-Shift Uniqueness Test

006802081-02, P = 391.194574 Days, E = 158.831900 Days

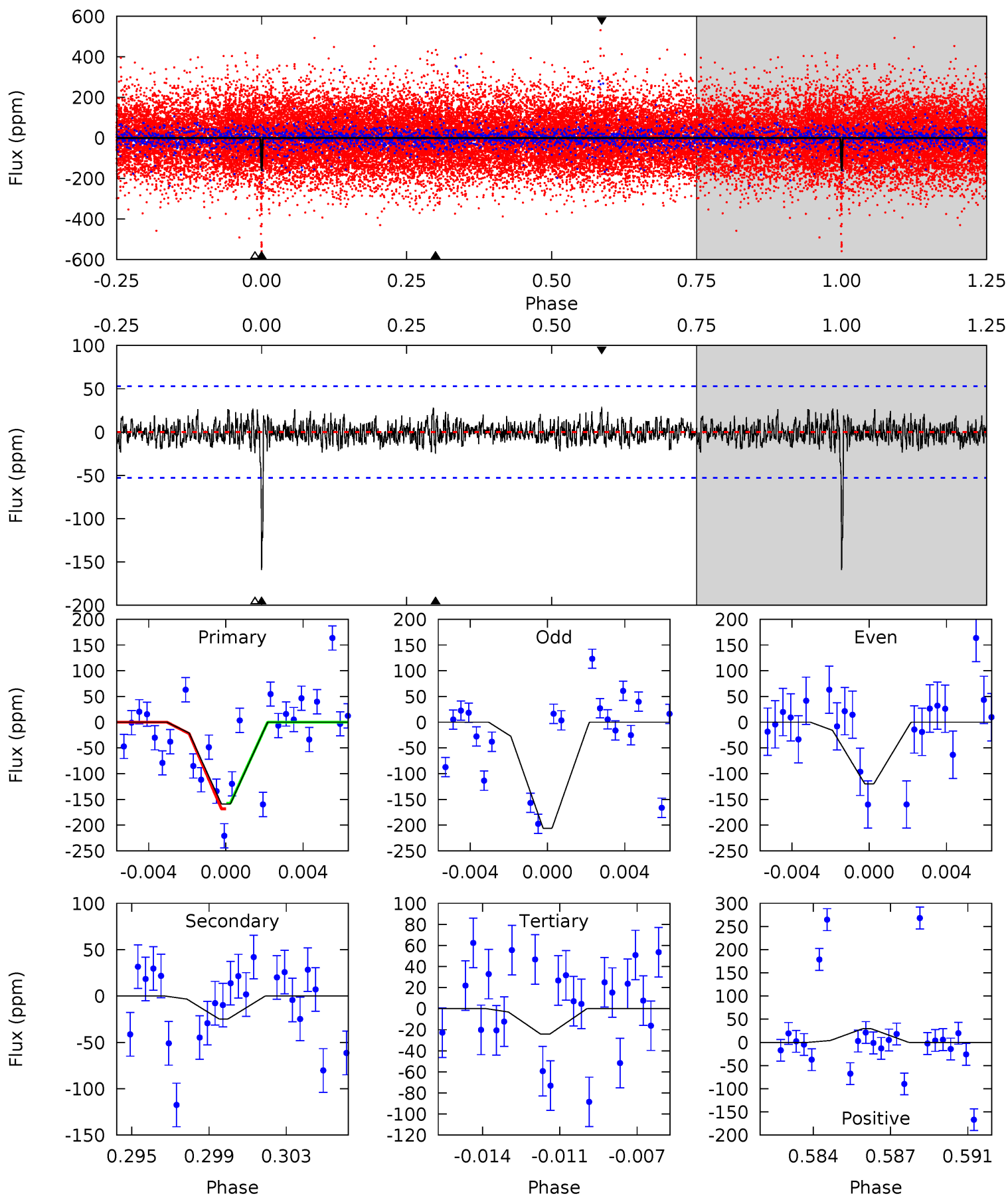
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	5.11	4.47	3.61	5.27	2.99	1.38	10.7	11.6	0.64	1.50	2.34	1.56	0.32	3.86



# Alt Model-Shift Uniqueness Test

006802081-02, P = 391.268618 Days, E = 158.563899 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
15.7	2.45	2.40	2.89	5.22	2.91	0.81	13.3	12.8	0.05	-0.45	4.30	1.76	0.16	0.45



### Stellar Parameters For KIC 006802081

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6156^{+184}_{-166}$	$3.903^{+0.315}_{-0.105}$	$-0.540^{+0.350}_{-0.250}$	$1.877^{+0.408}_{-0.612}$	$1.027^{+0.180}_{-0.163}$	$0.219^{+0.441}_{-0.084}$
	+3%/-3%	+8%/-3%	+65%/-46%	+22%/-33%	+18%/-16%	+201%/-38%
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 006802081-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-60 \pm 12$	$2.45^{+0.63}_{-0.62}$	$491^{+34}_{-45}$	$4907^{+547}_{-447}$	$6285^{+4890}_{-2582}$
Alt.	$-25 \pm 10$	$2.57^{+0.70}_{-0.65}$	$497^{+31}_{-46}$	$4053^{+456}_{-412}$	$2200^{+2215}_{-1079}$

$T_{max}$  = 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

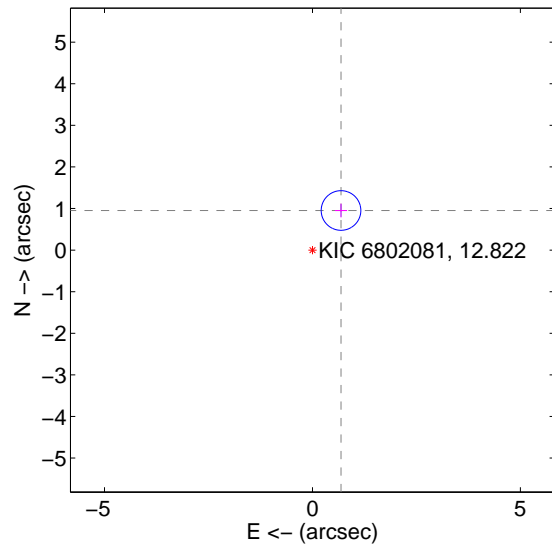
Supplemental centroid analysis for 006802081-02. Kepler magnitude: 12.82. Transit SNR 7.86

There are 1 quarters with good PRF difference image offsets

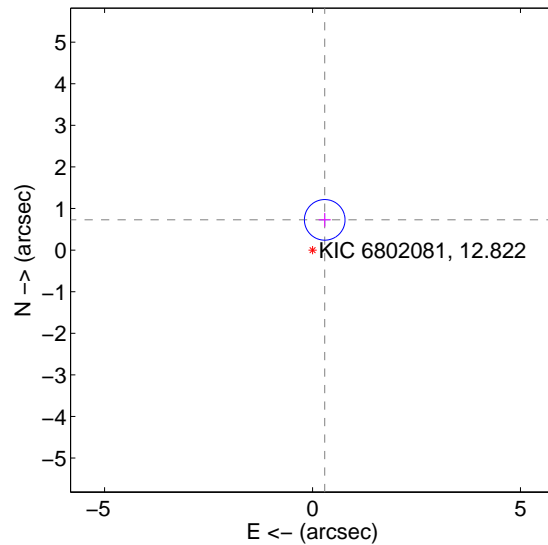
The direct PRF centroid is offset from the target star catalog position by about 0.45 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.175 \pm 0.159$	7.39	$-0.687 \pm 0.145$	$0.953 \pm 0.166$
PRF-fit source offset from KIC position	$0.784 \pm 0.163$	4.81	$-0.293 \pm 0.145$	$0.727 \pm 0.166$
photometric centroid source offset	$1.87 \pm 0.99$	1.89	$1.76 \pm 1.00$	$-0.65 \pm 0.90$

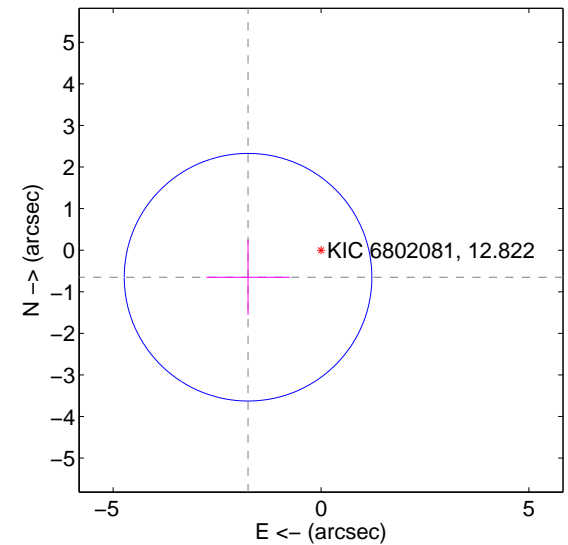
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

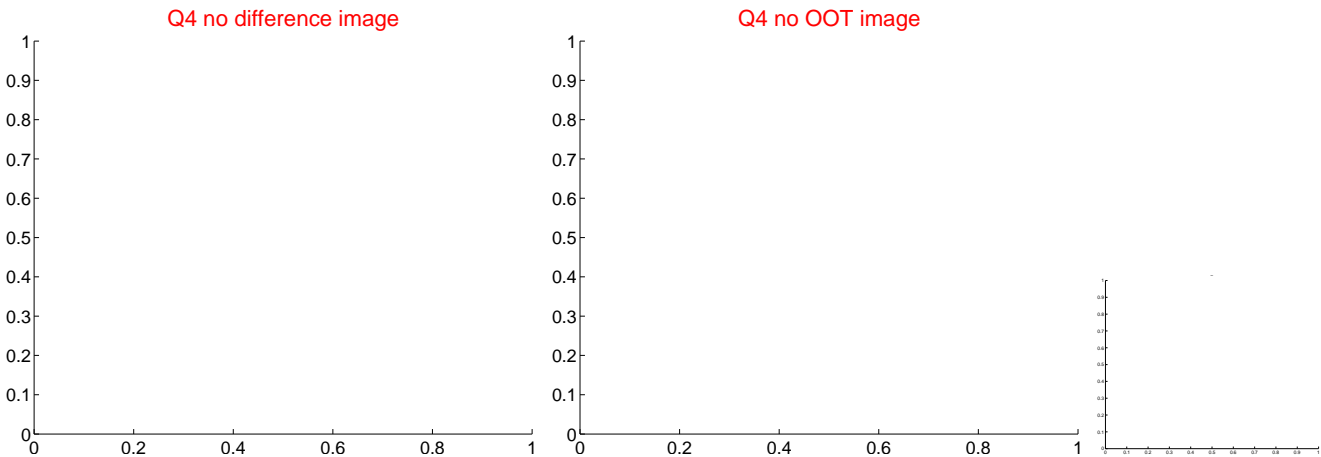
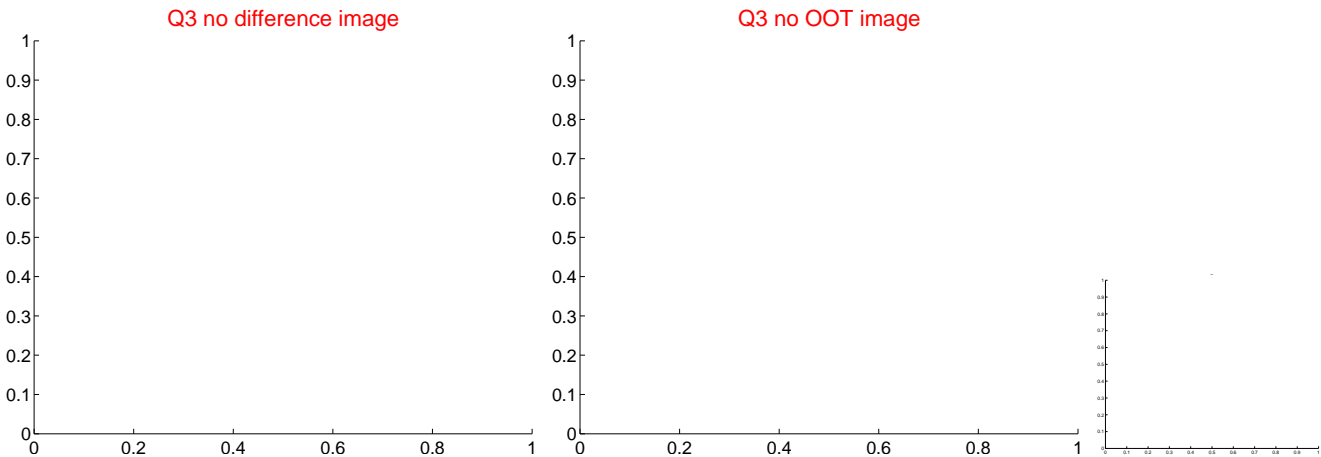
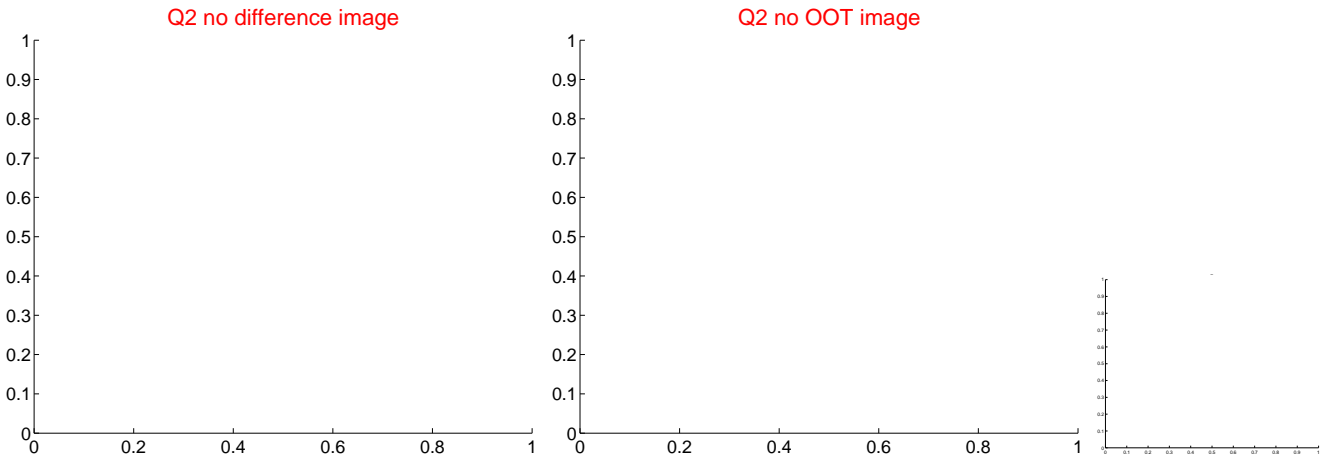
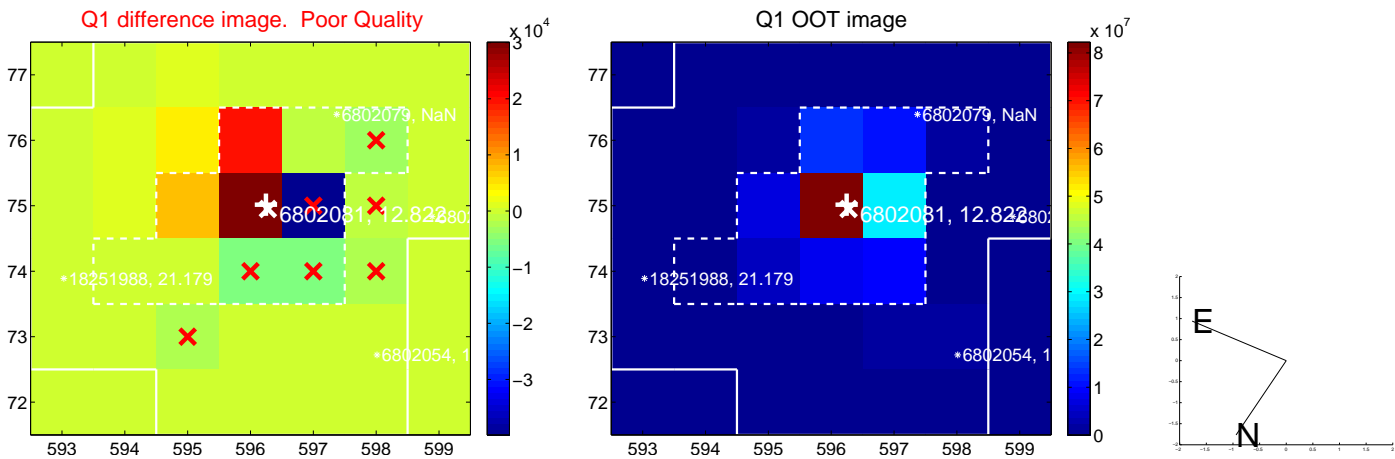


offset from photometric centroids

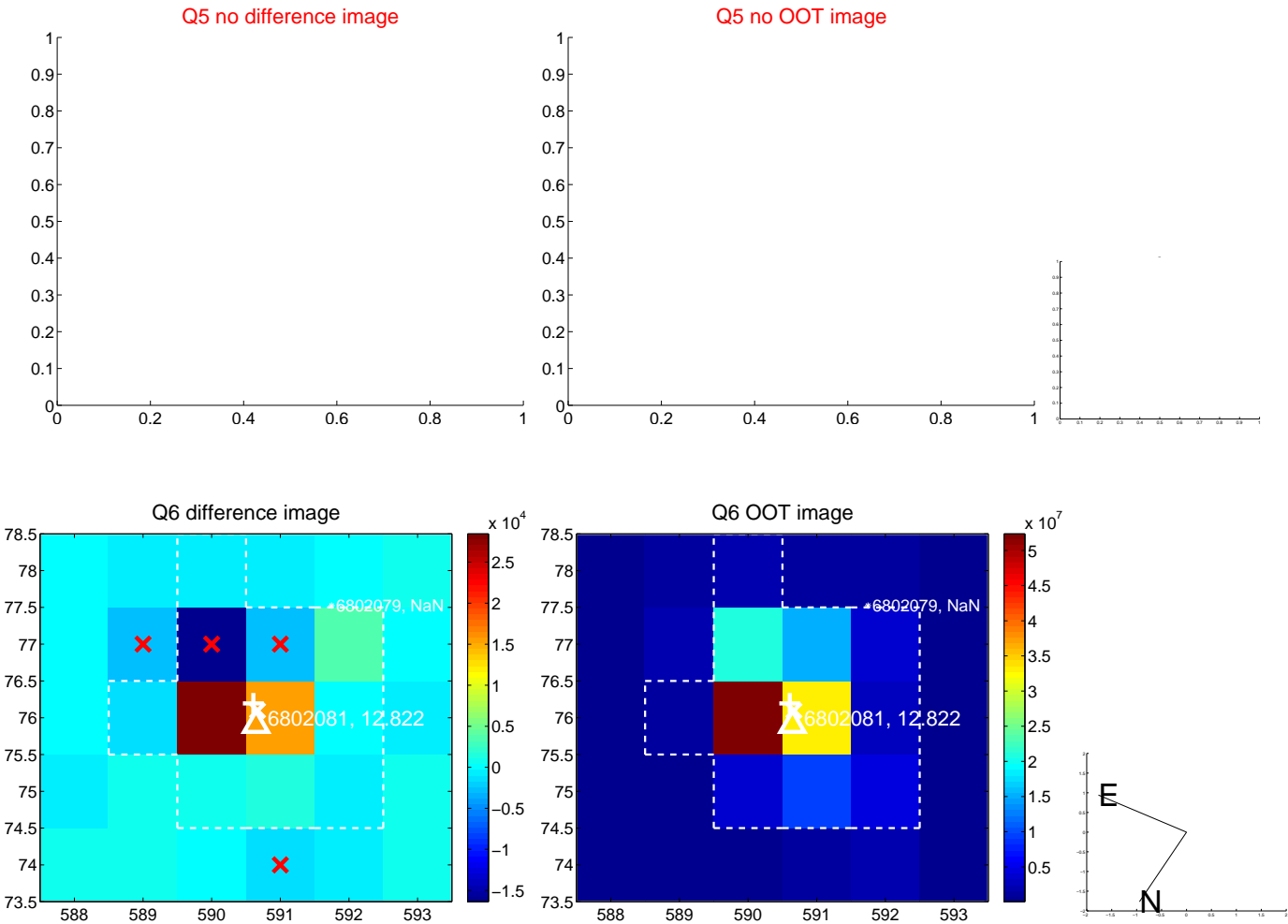


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

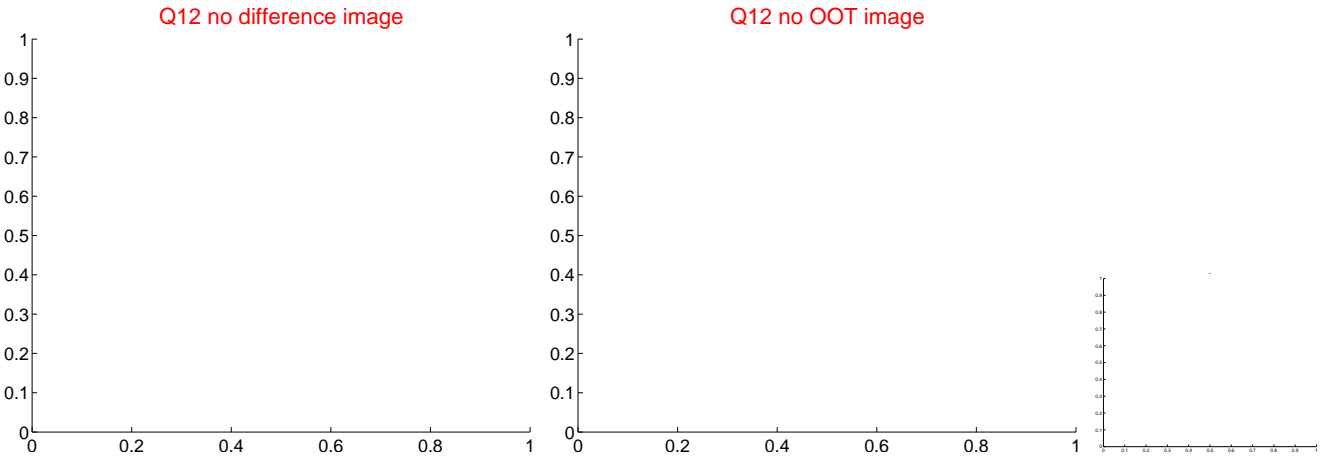
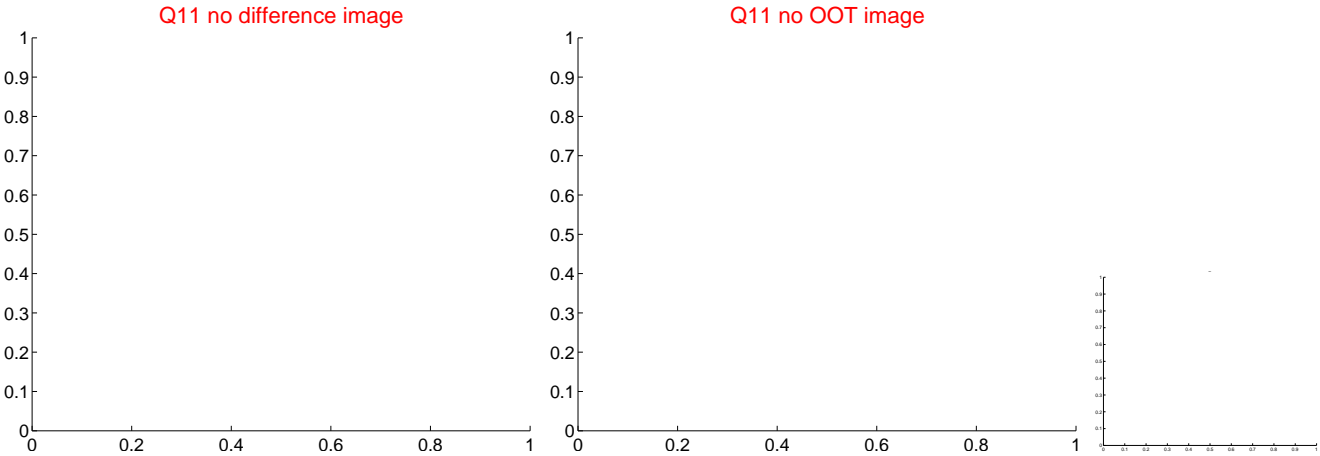
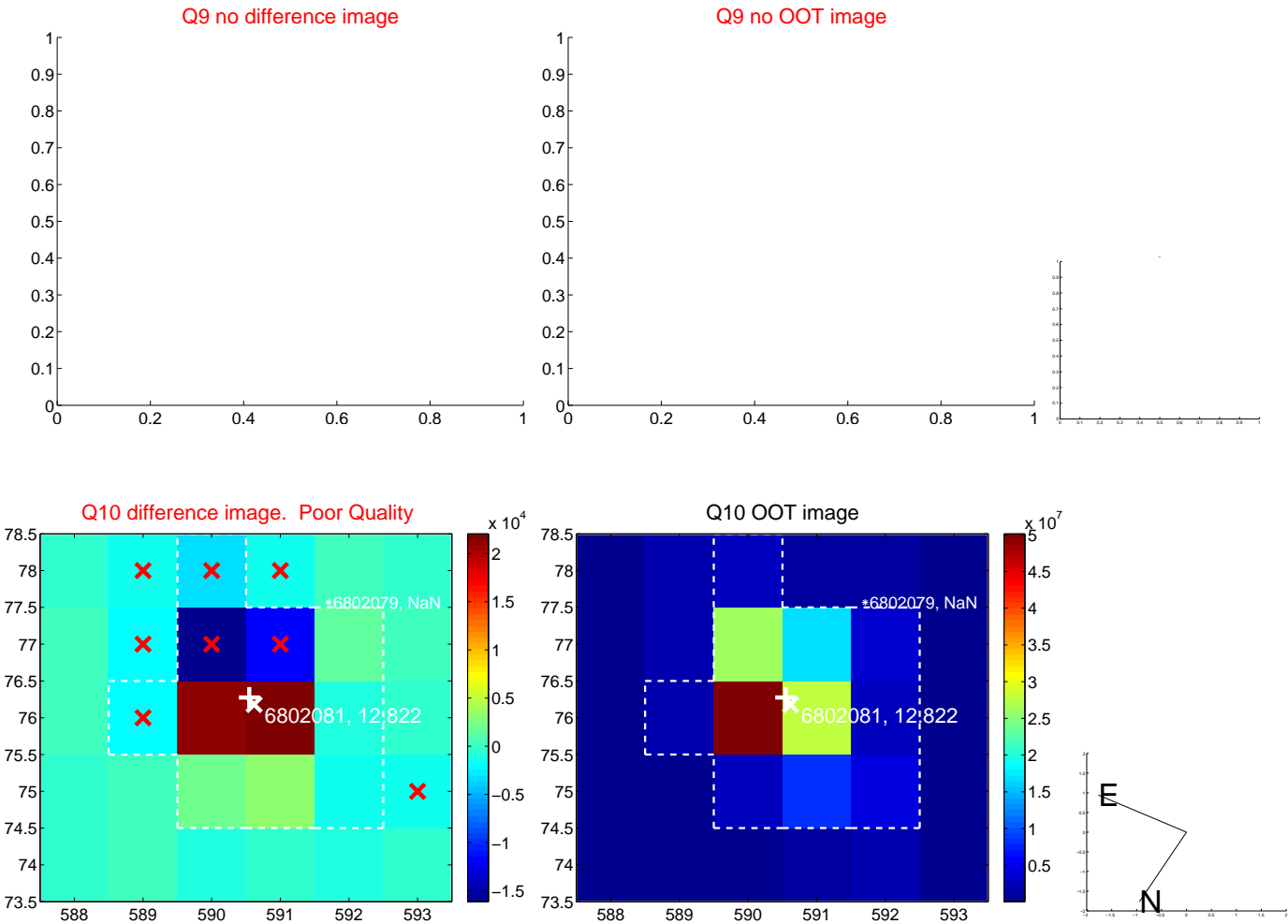


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

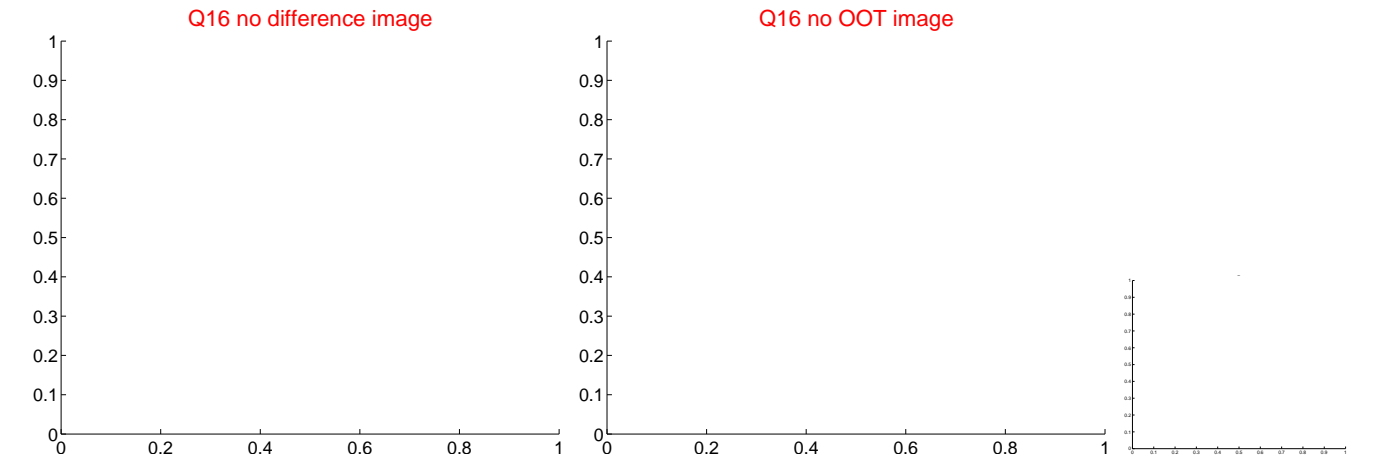
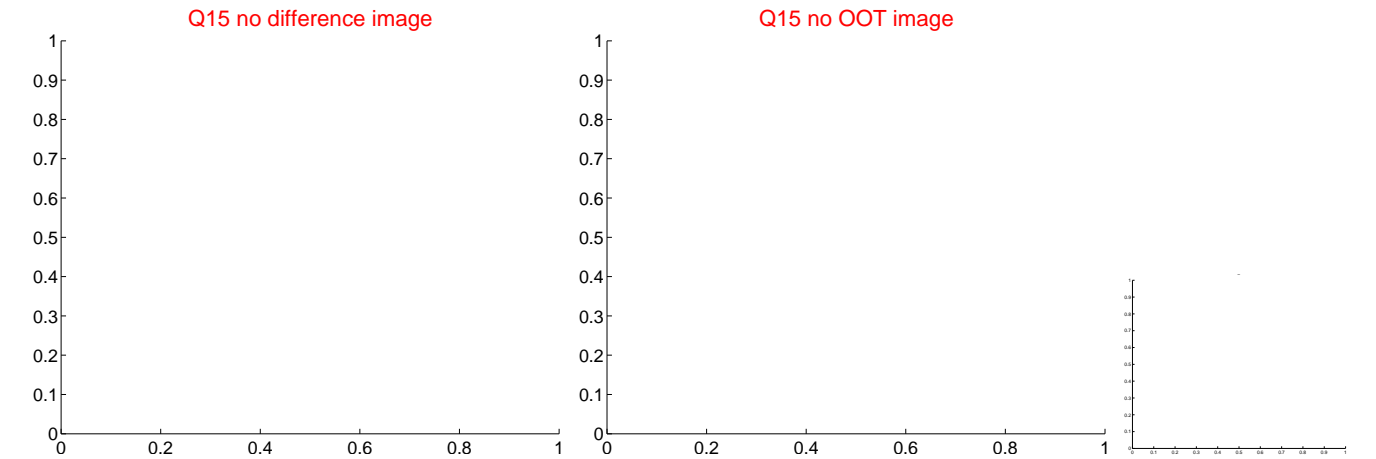
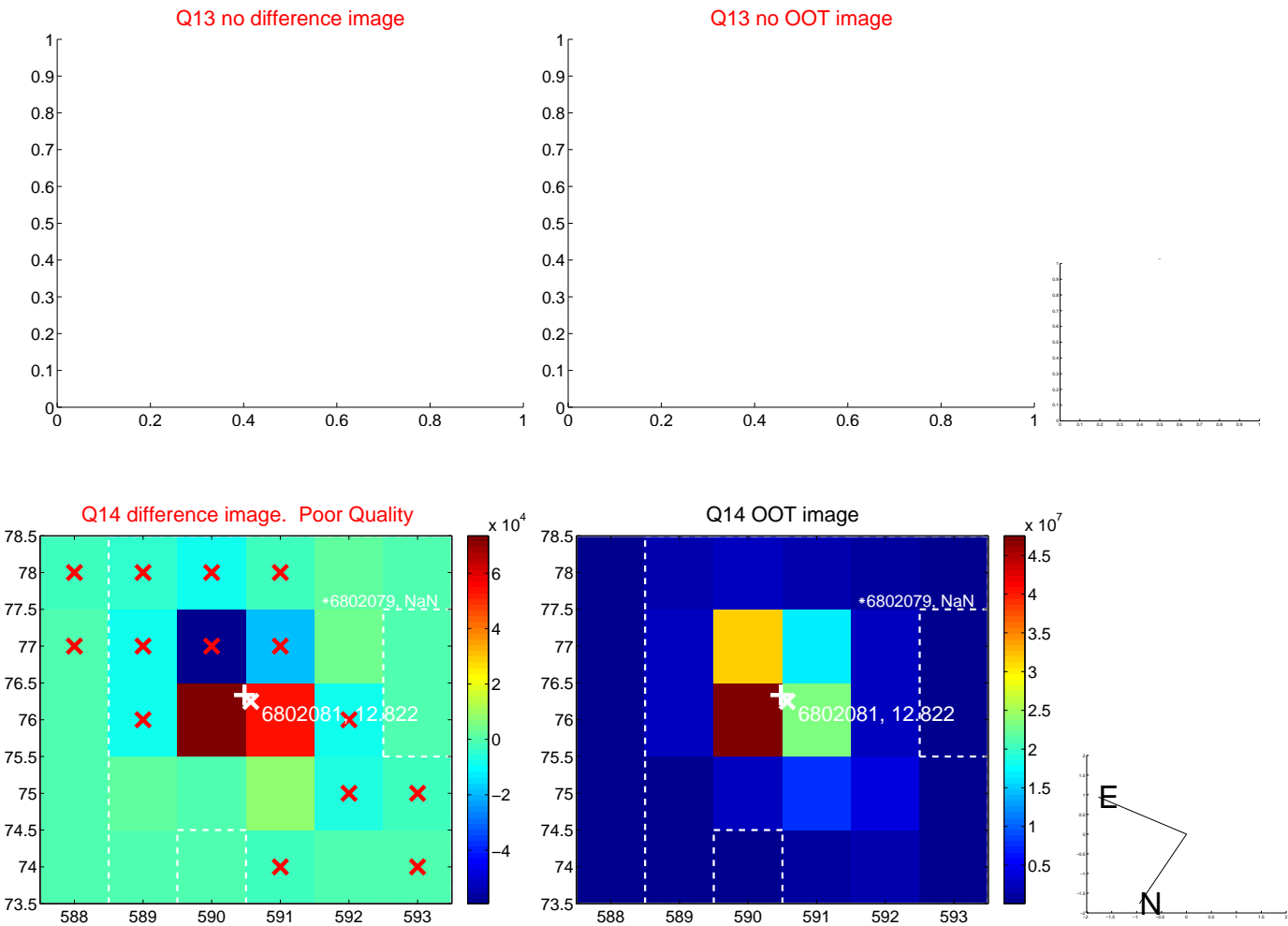




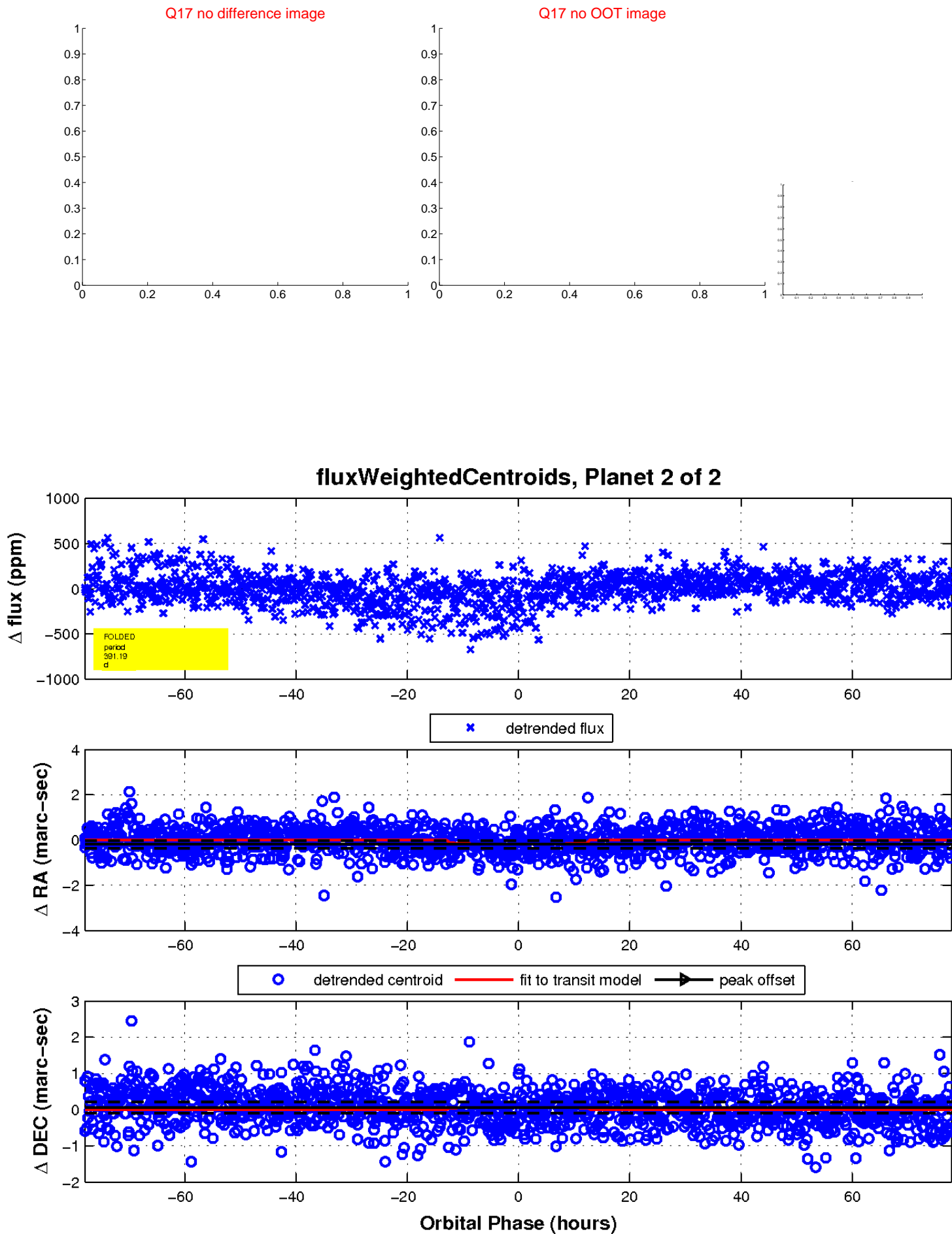
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

