

# KIC 011348086

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011348086-01	OBS	8049.01	391.423234	470.436483	245.0	3.727	8.2	8.9	0.95	6032	1.74	1.01
011348086-02	OBS	No	393.056602	425.298684	180.5	6.736	7.7	7.4	0.95	6032	1.41	1.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011348086-01	OBS	FP	0.18	1	0	0	0	MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011348086-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—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.

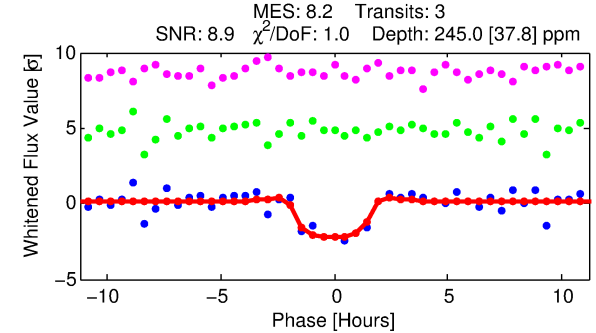
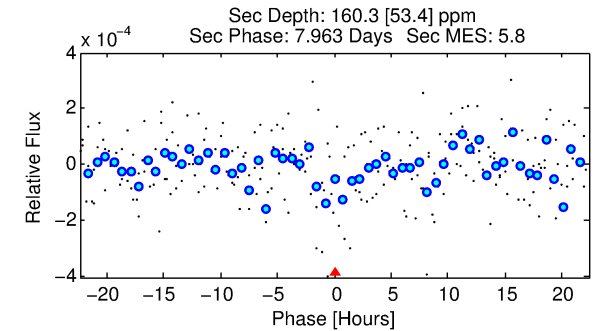
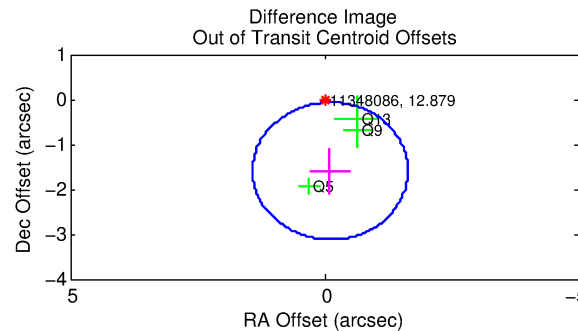
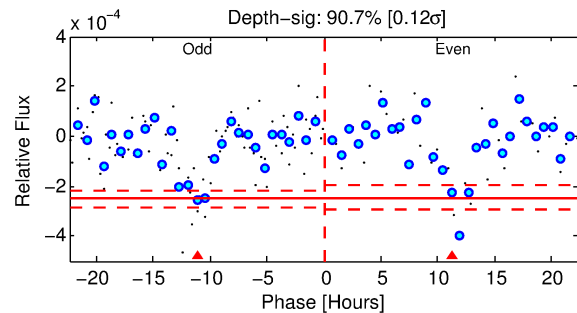
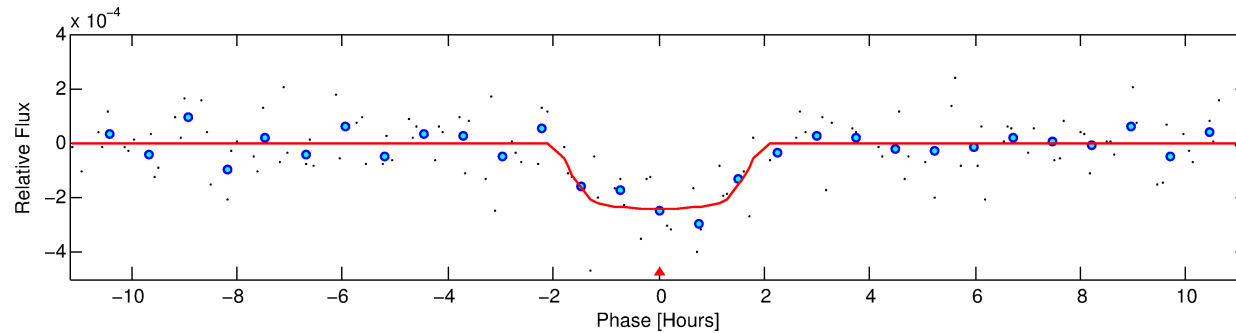
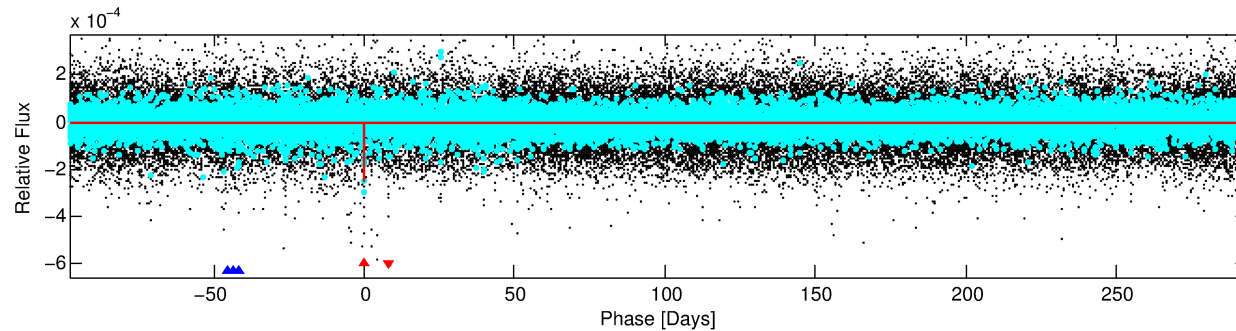
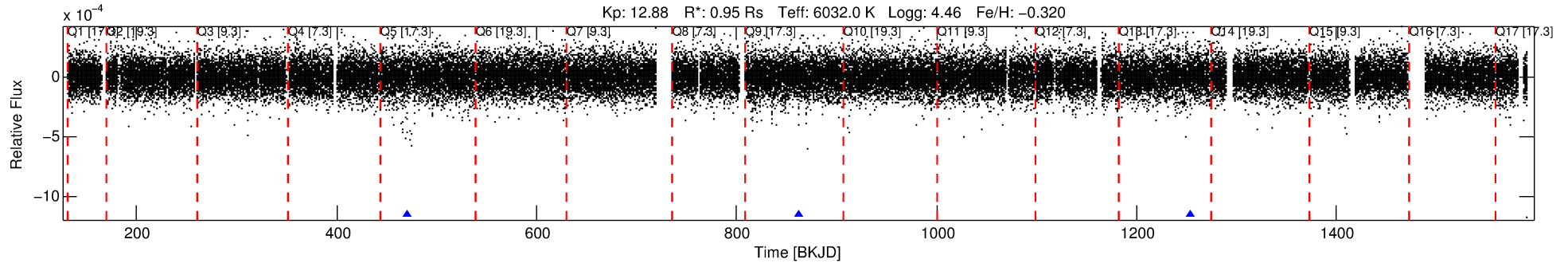
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011348086-01

No Significant Match Found

# DV One-Page Summary

KIC: 11348086 Candidate: 1 of 2 Period: 391.423 d



## DV Fit Results:

Period = 391.42323 [0.00707] d  
Epoch = 470.4365 [0.0077] BKJD  
Rp/R\* = 0.0168 [0.0543]  
a/R\* = 385.63 [6655.15]  
b = 0.90 [3.86]  
Seff = 1.01 [0.29]  
Teq = 256 [18] K  
Rp = 1.74 [5.63] Re  
a = 1.0287 [0.1803] AU  
Ag = 30745.27 [198711.79] [0.15 $\sigma$ ]  
Teffp = 5233 [8449] K [0.59 $\sigma$ ]

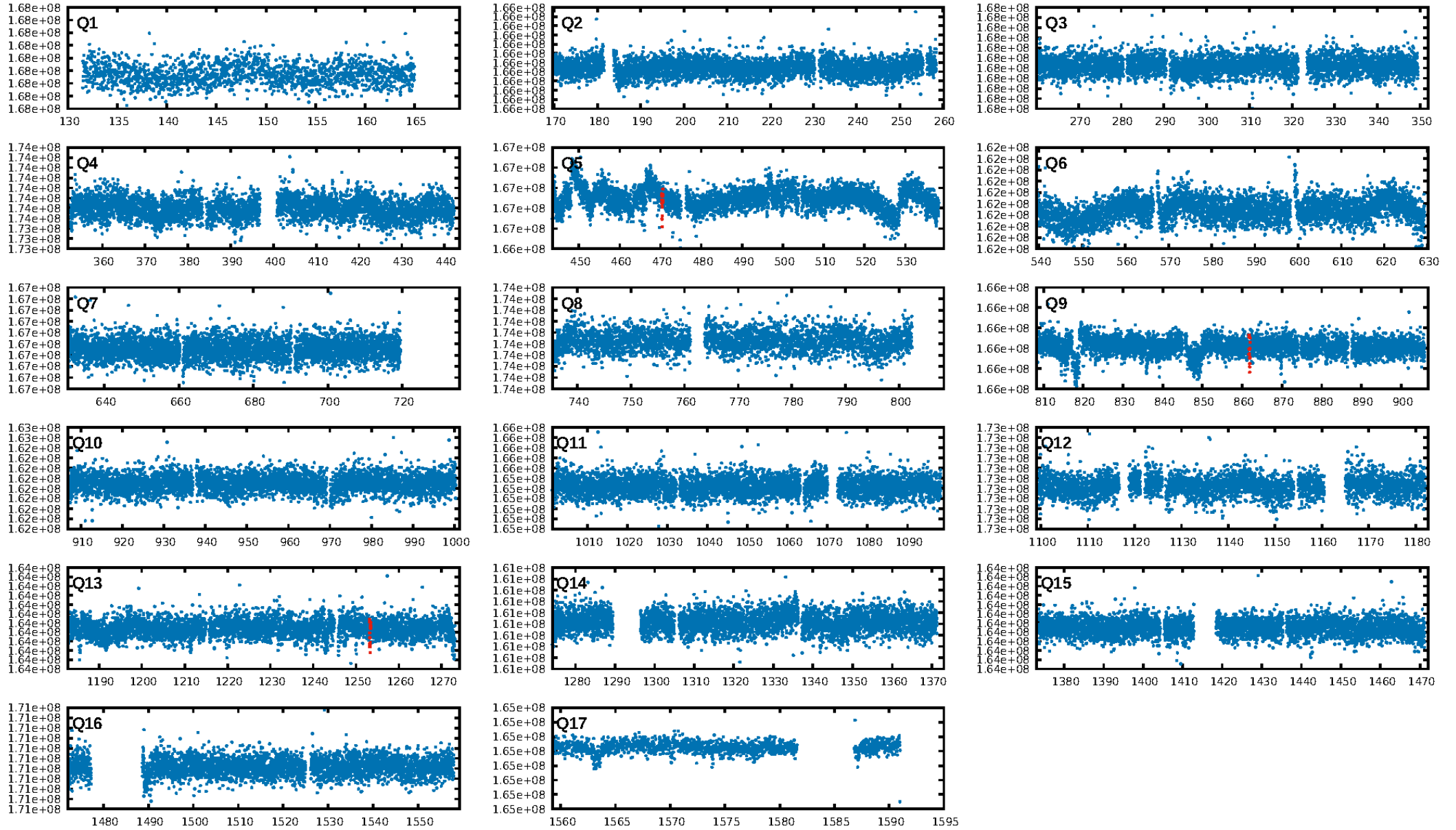
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [5.09 $\sigma$ ]  
ModelChiSquare2-sig: 97.6%  
ModelChiSquareGof-sig: 82.5%  
**Bootstrap-pfa: 5.93e-11**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 3.477  
Centroid-sig: 40.0%  
Centroid-so: 1.095 arcsec [0.89 $\sigma$ ]  
**OotOffset-rm: 1.601 arcsec [3.14 $\sigma$ ]**  
**KicOffset-rm: 1.582 arcsec [3.08 $\sigma$ ]**  
OotOffset-st: 0/0/0/3 [3]  
KicOffset-st: 0/0/0/3 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

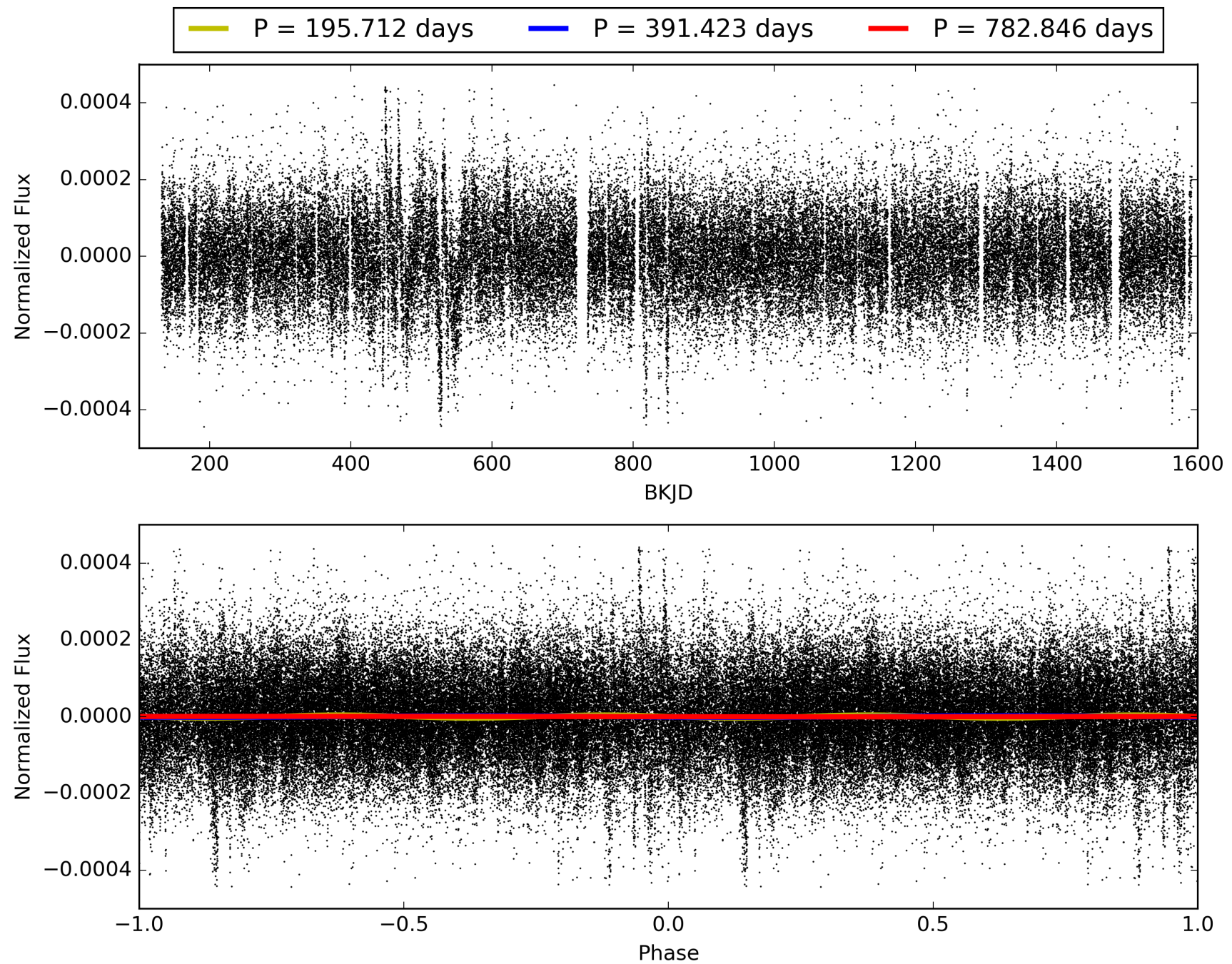
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 01:51:46 Z

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

# TCE 011348086-01, PDC Light Curves

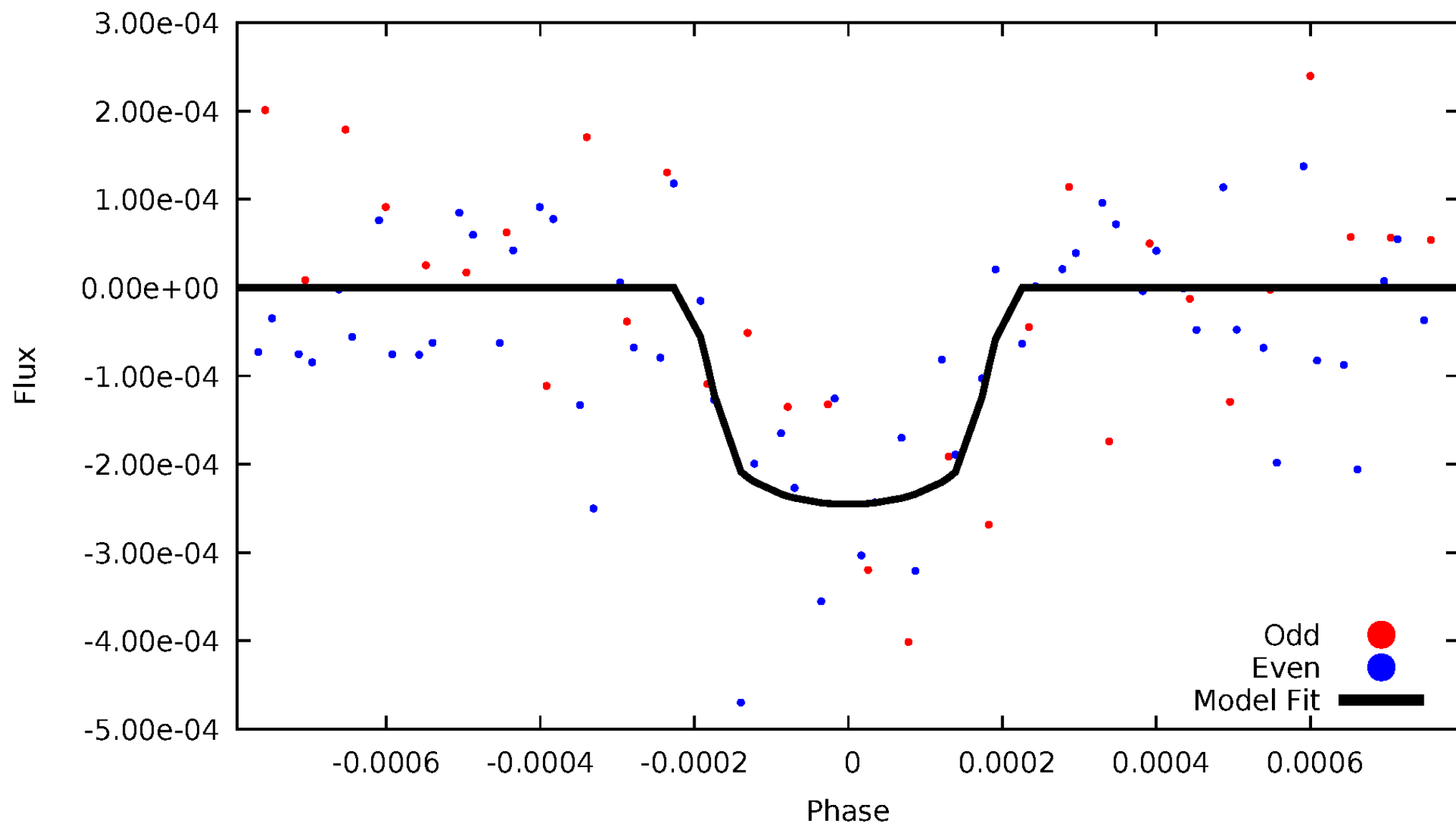


TCE 011348086-01



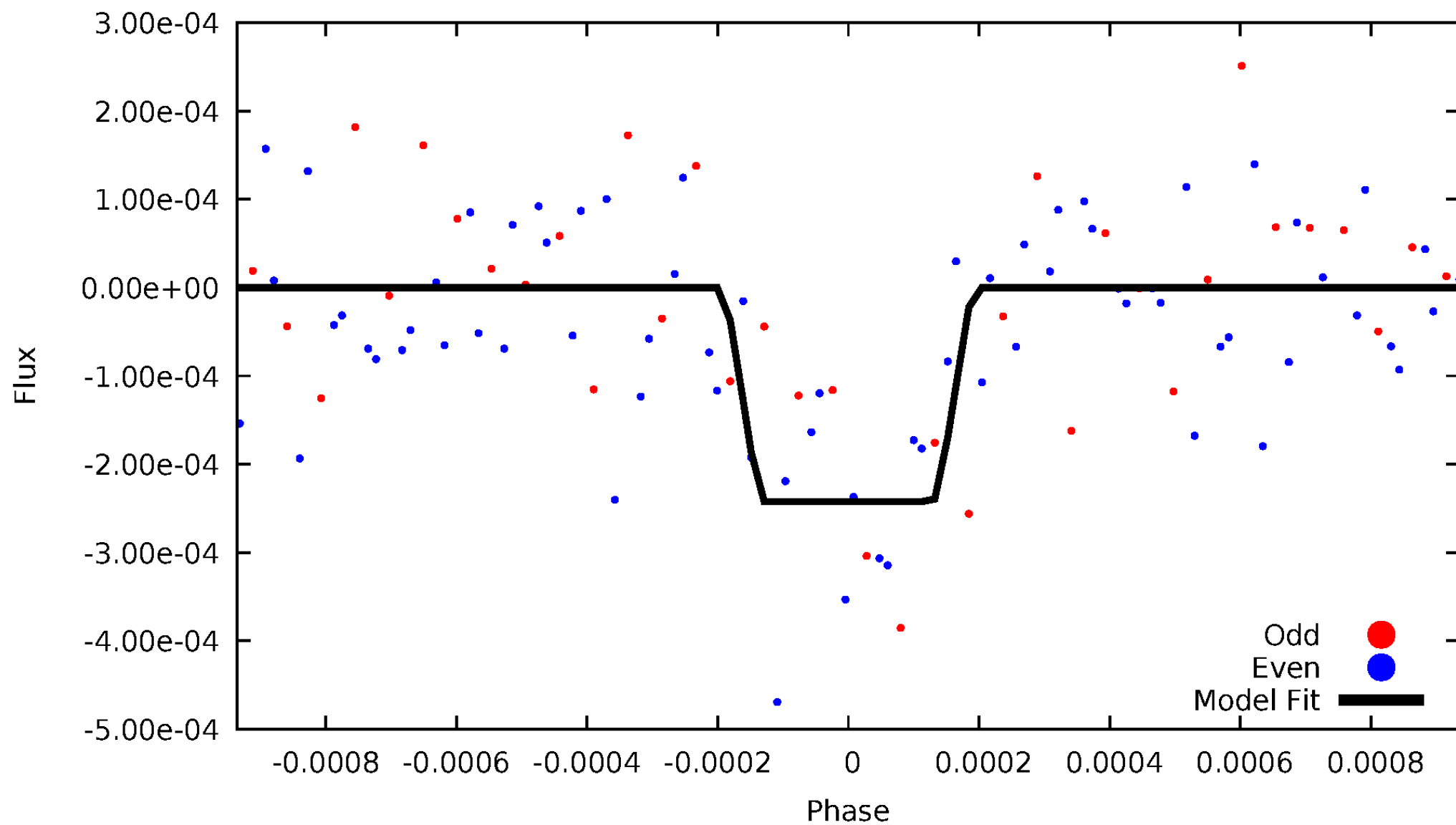
# DV Odd/Even

TCE 011348086-01



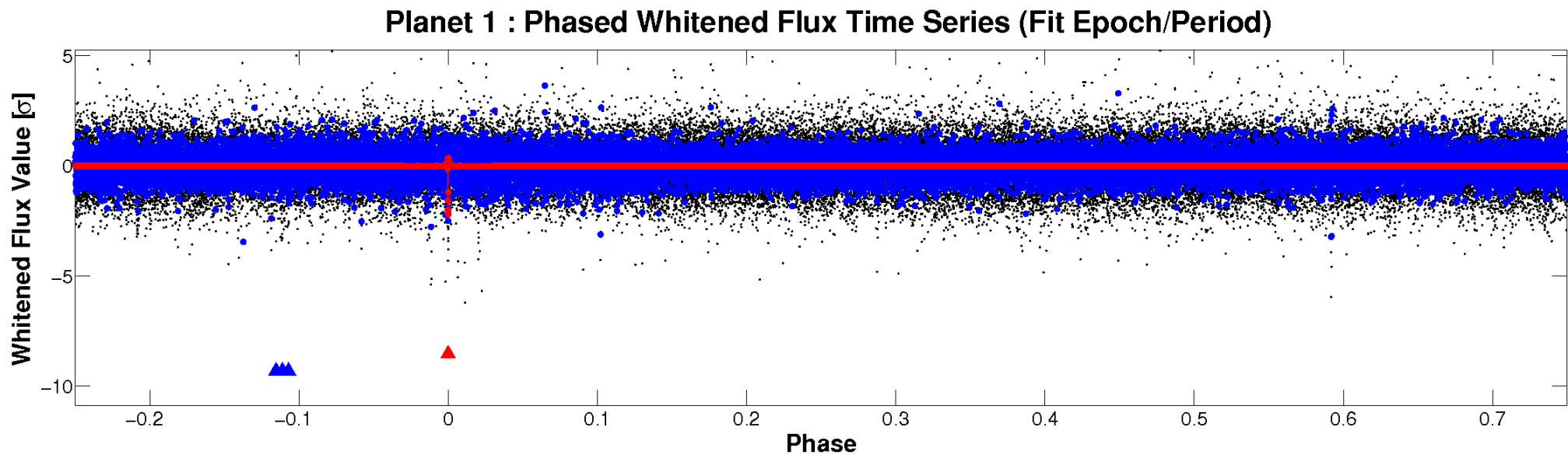
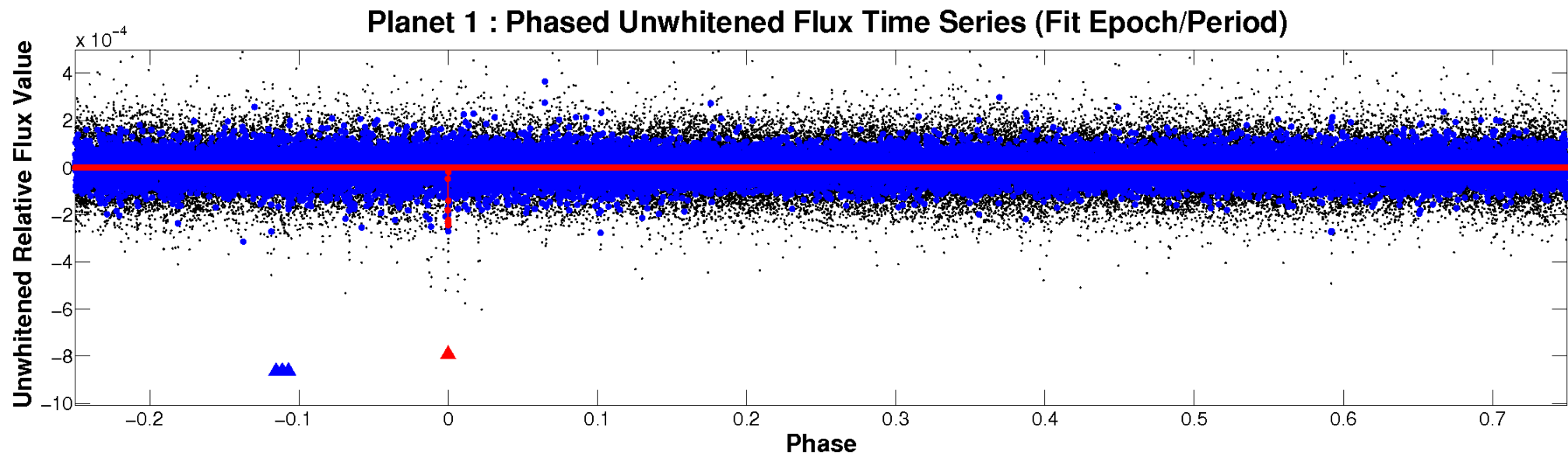
# ALT Odd/Even

TCE 011348086-01





# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

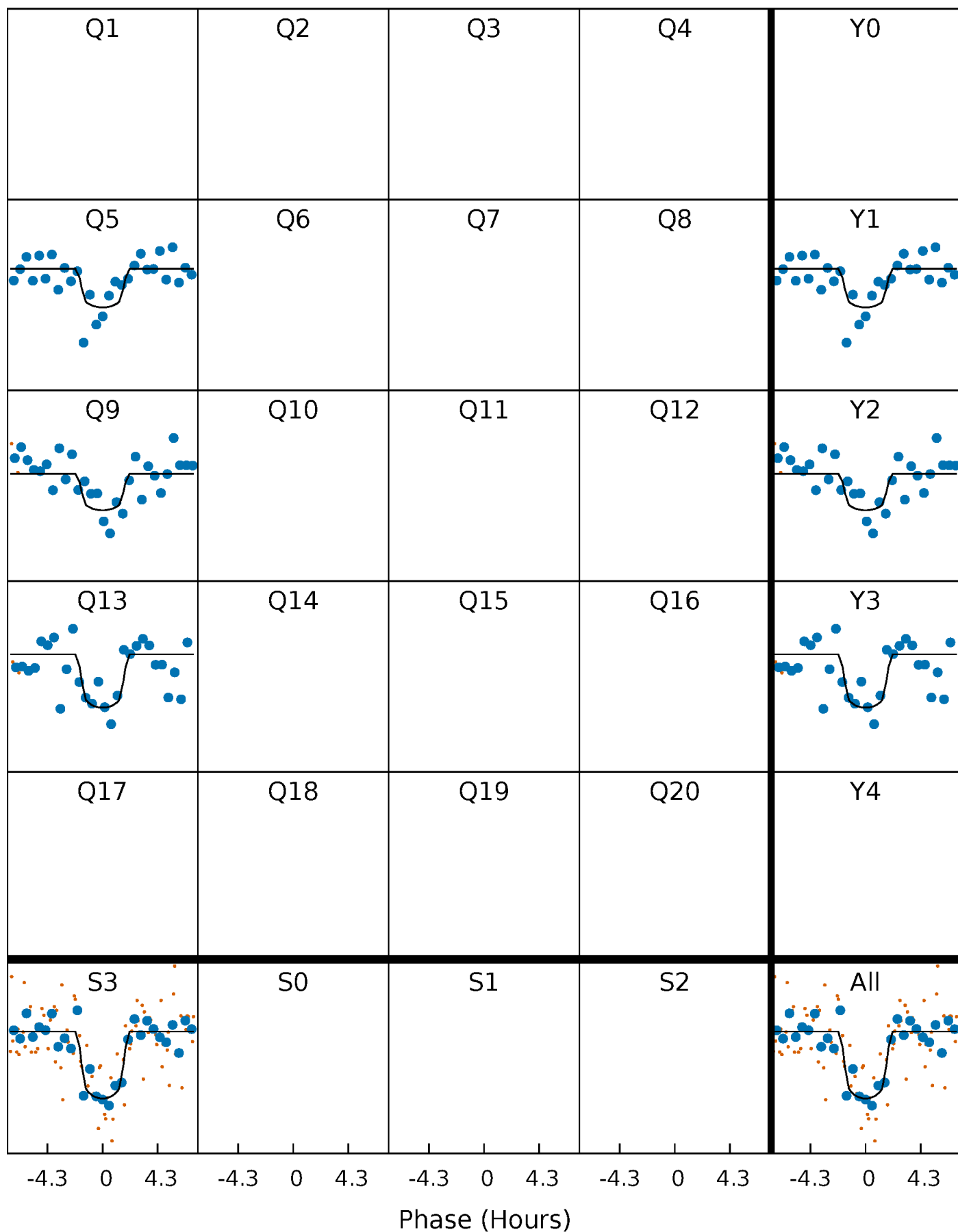
TCE 011348086-01     $P=391.423234$  Days     $T_0=470.436483$  (BKJD)





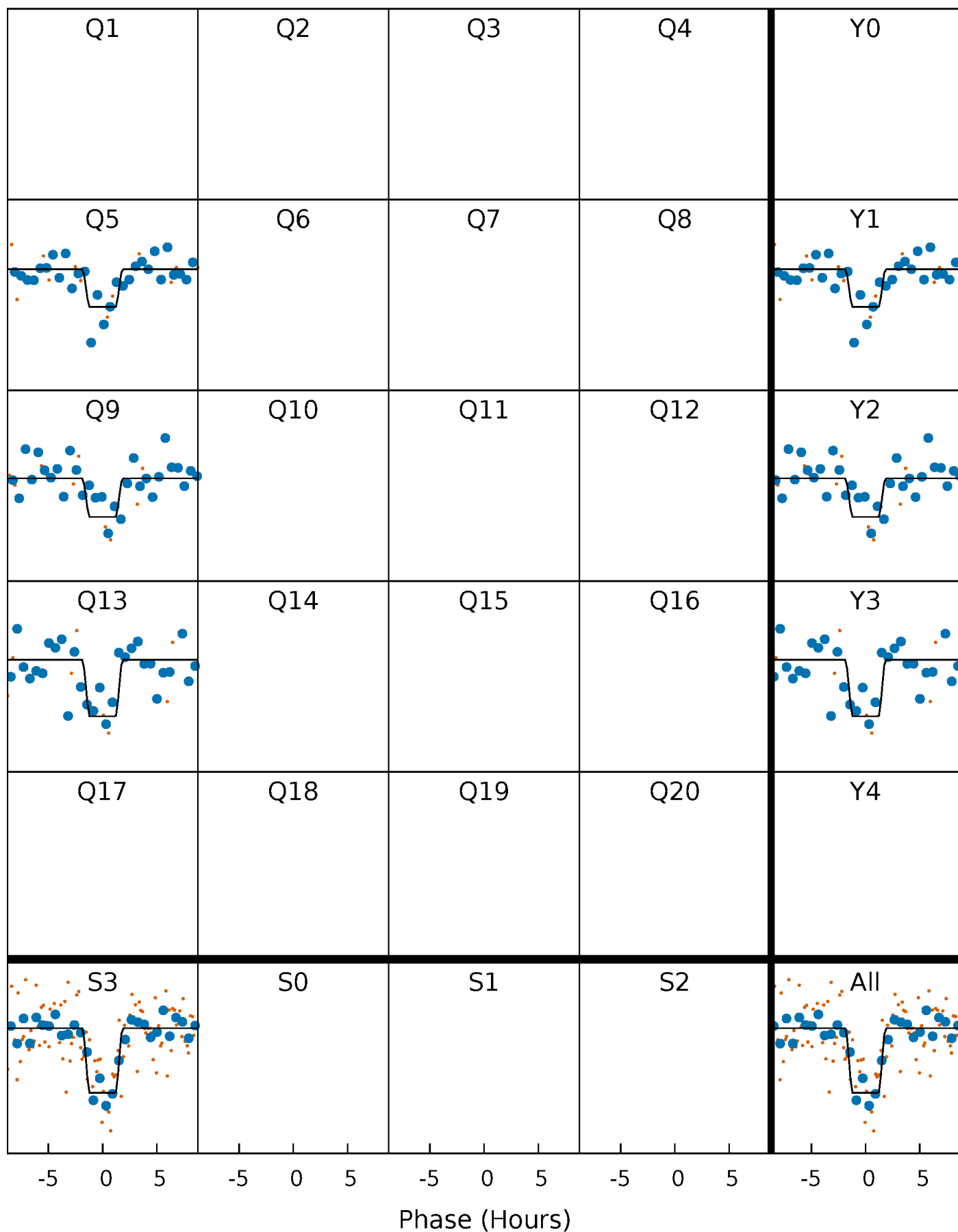
# DV Quarter-Phased Transit Curves

TCE 011348086-01     $P=391.423234$  Days     $T_0=470.436483$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

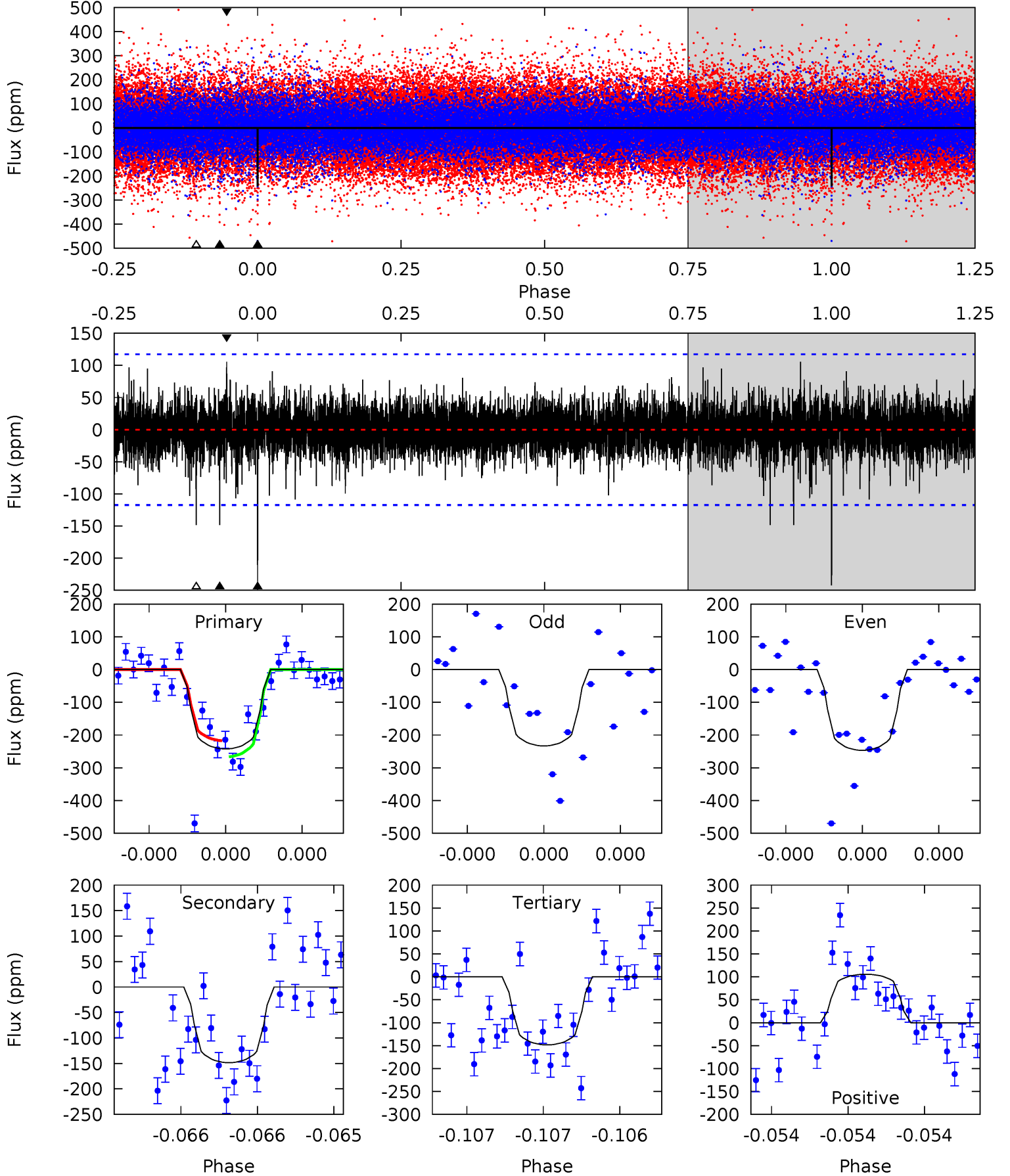
TCE 011348086-01     $P=391.434443$  Days     $T_0=470.424418$  (BKJD)



# DV Model-Shift Uniqueness Test

011348086-01,  $P = 391.423234$  Days,  $E = 79.013249$  Days

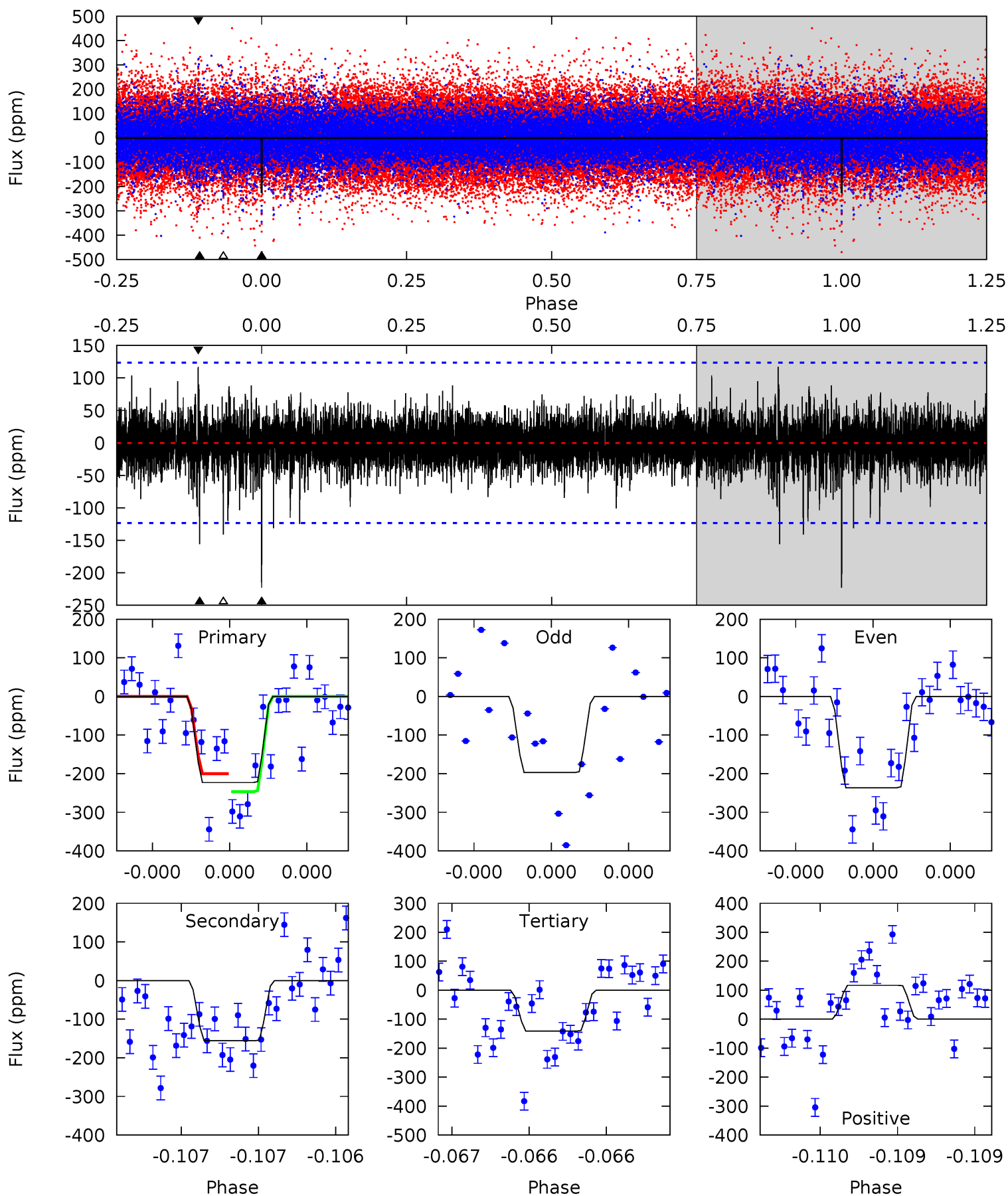
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	7.11	7.10	5.06	5.62	3.55	1.17	4.49	6.54	0.00	2.05	0.32	1.04	0.30	1.17



# Alt Model-Shift Uniqueness Test

011348086-01,  $P = 391.434443$  Days,  $E = 78.989975$  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
10.2	7.10	6.42	5.33	5.63	3.56	1.13	3.75	4.84	0.68	1.77	0.83	1.08	0.34	1.07



### Stellar Parameters For KIC 011348086

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6032^{+163}_{-163}$	$4.460^{+0.074}_{-0.147}$	$-0.320^{+0.300}_{-0.300}$	$0.949^{+0.191}_{-0.103}$	$0.948^{+0.109}_{-0.109}$	$1.561^{+0.489}_{-0.619}$
	+3%/-3%	+2%/-3%	+94%/-94%	+20%/-11%	+11%/-11%	+31%/-40%
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 011348086-01 / KOI 8049.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-148 \pm 21$	$4.70^{+4.73}_{-3.34}$	$360^{+20}_{-15}$	$3610^{+2261}_{-674}$	$3980^{+42059}_{-3033}$
Alt.	$-156 \pm 22$	$4.63^{+4.64}_{-2.97}$	$360^{+19}_{-17}$	$3655^{+1812}_{-707}$	$4069^{+28934}_{-3047}$

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

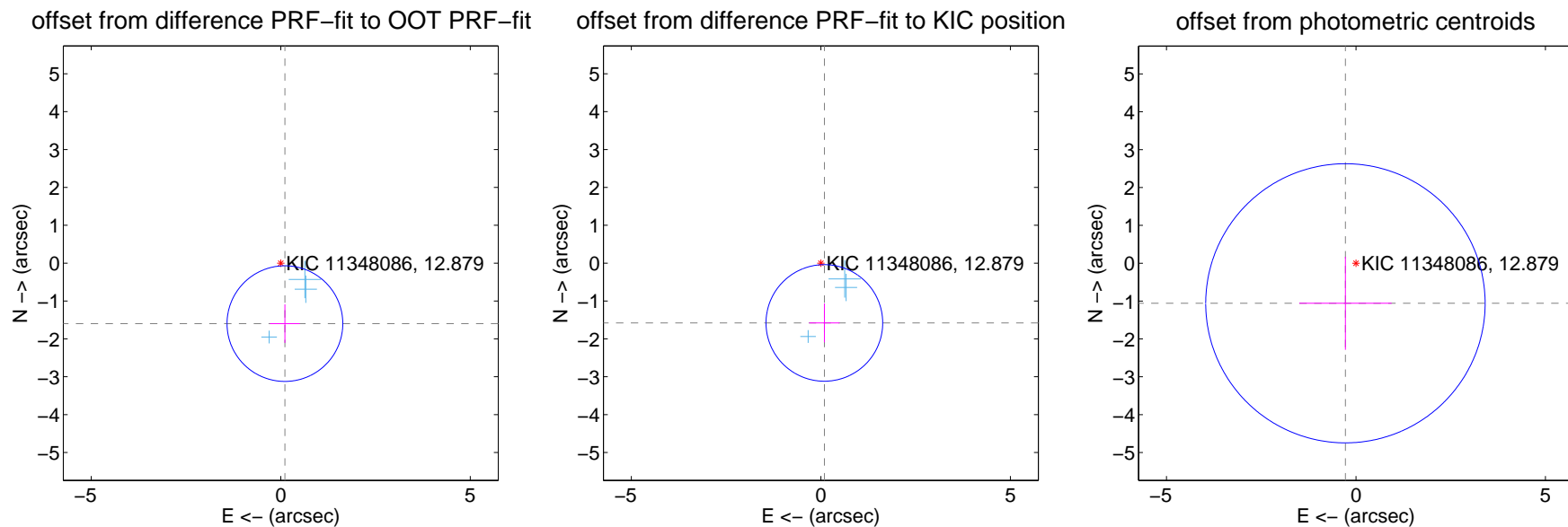
## DV Centroid Data

Supplemental centroid analysis for 011348086-01. Kepler magnitude: 12.88. Transit SNR 8.91

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.601 \pm 0.509$	3.14	$-0.110 \pm 0.391$	$-1.597 \pm 0.509$
PRF-fit source offset from KIC position	$1.582 \pm 0.513$	3.08	$-0.092 \pm 0.402$	$-1.579 \pm 0.513$
photometric centroid source offset	$1.09 \pm 1.23$	0.89	$0.28 \pm 1.22$	$-1.06 \pm 1.23$



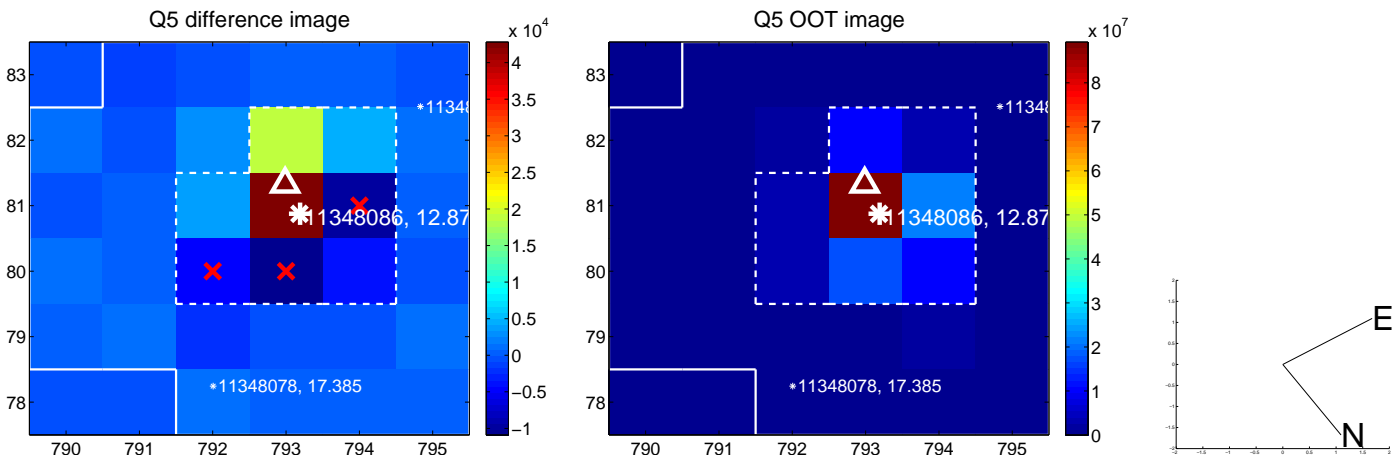
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

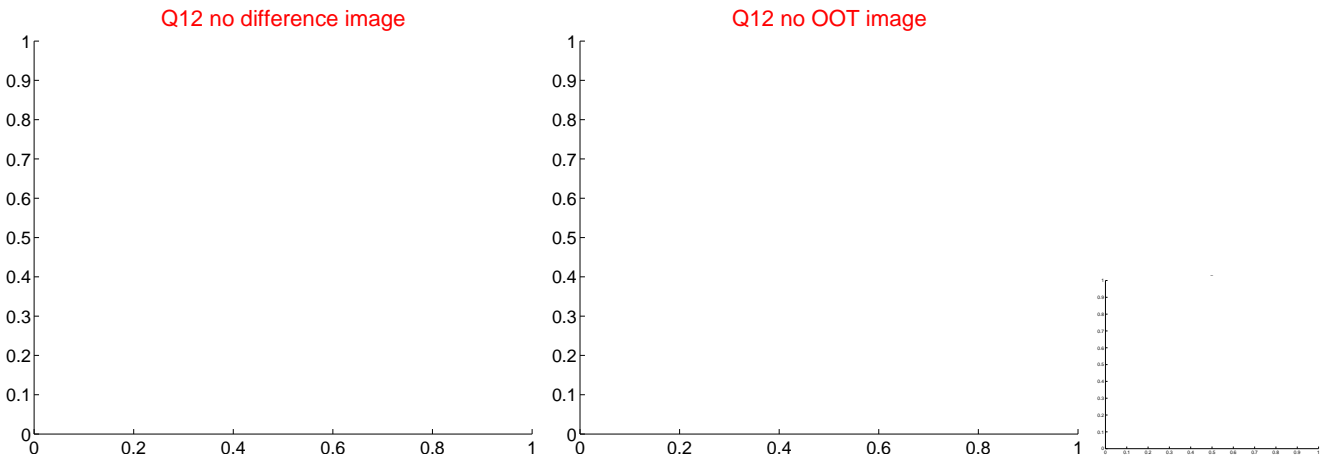
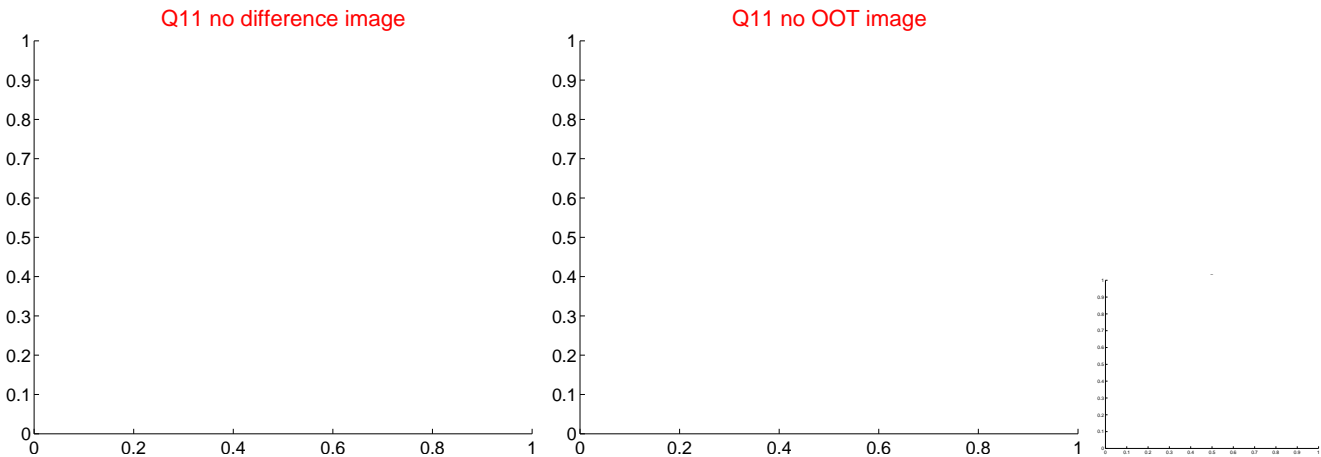
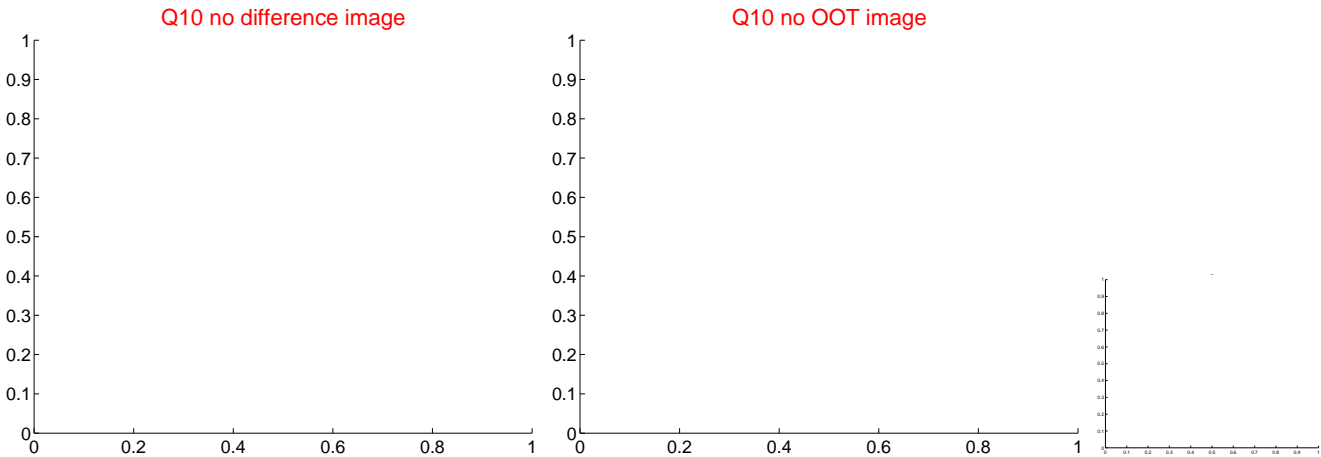
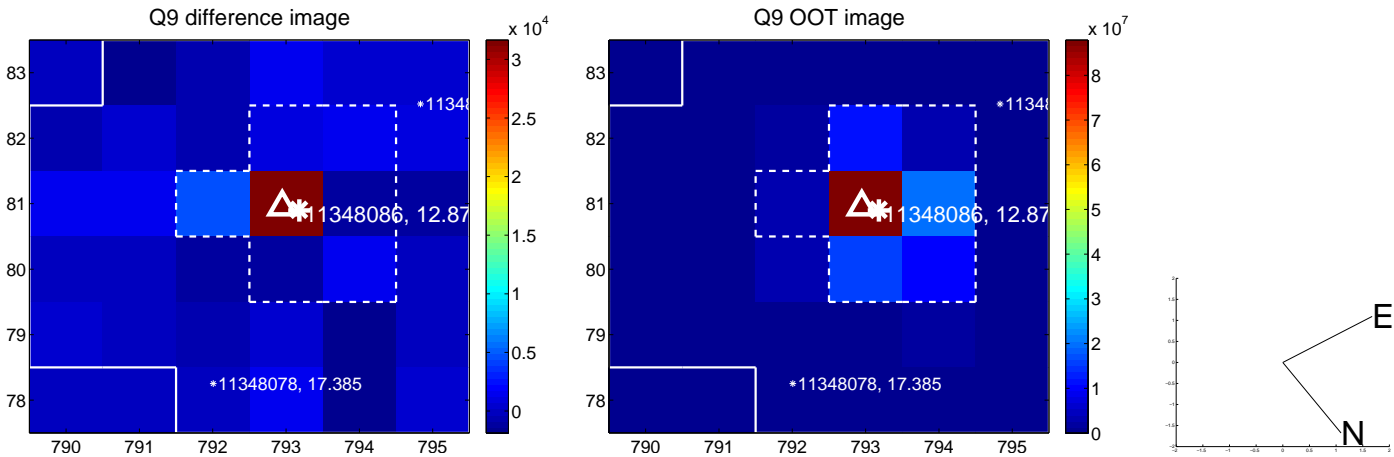




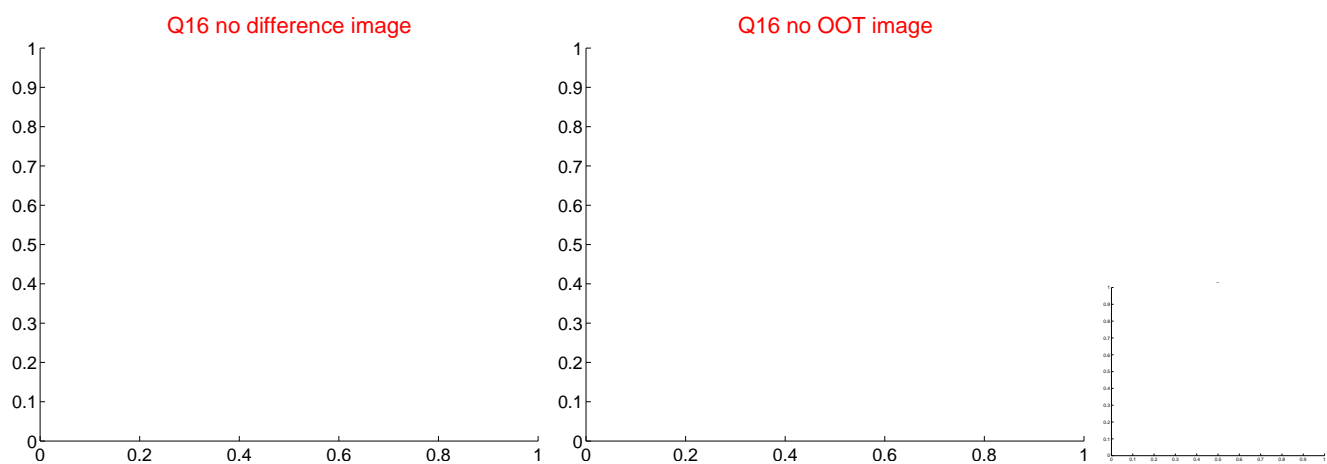
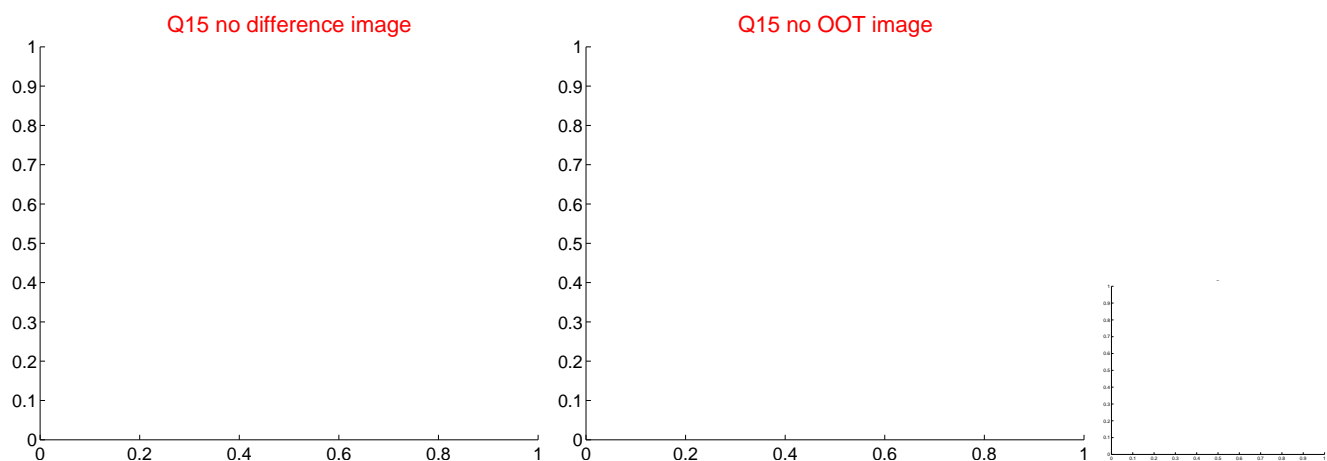
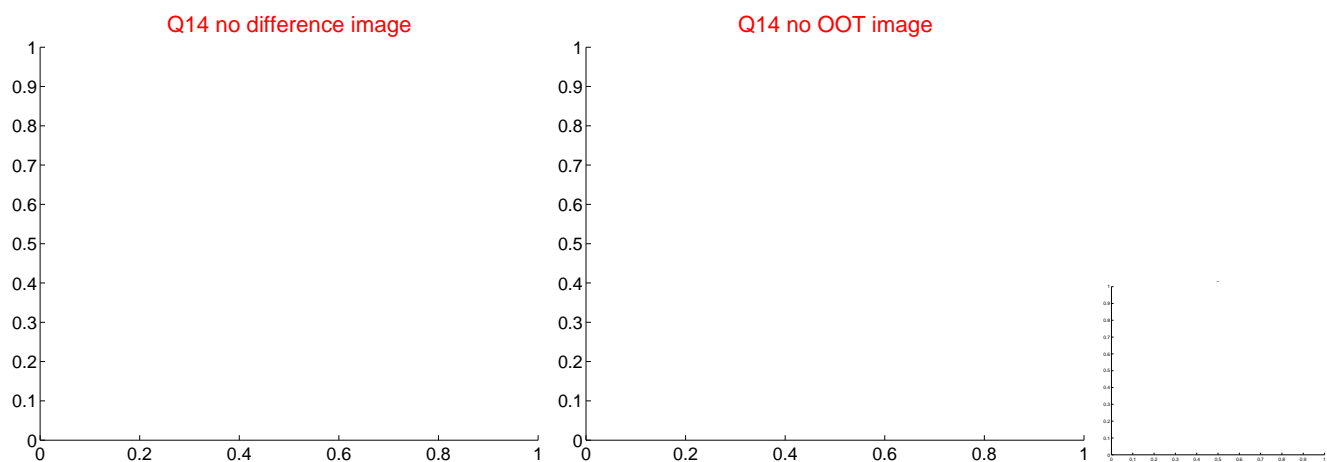
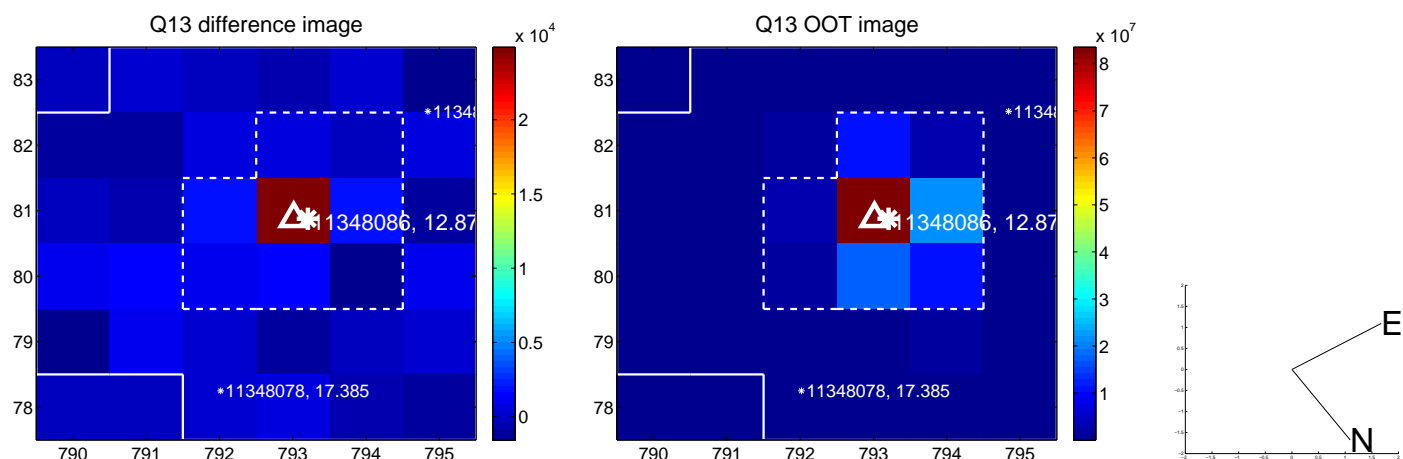
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



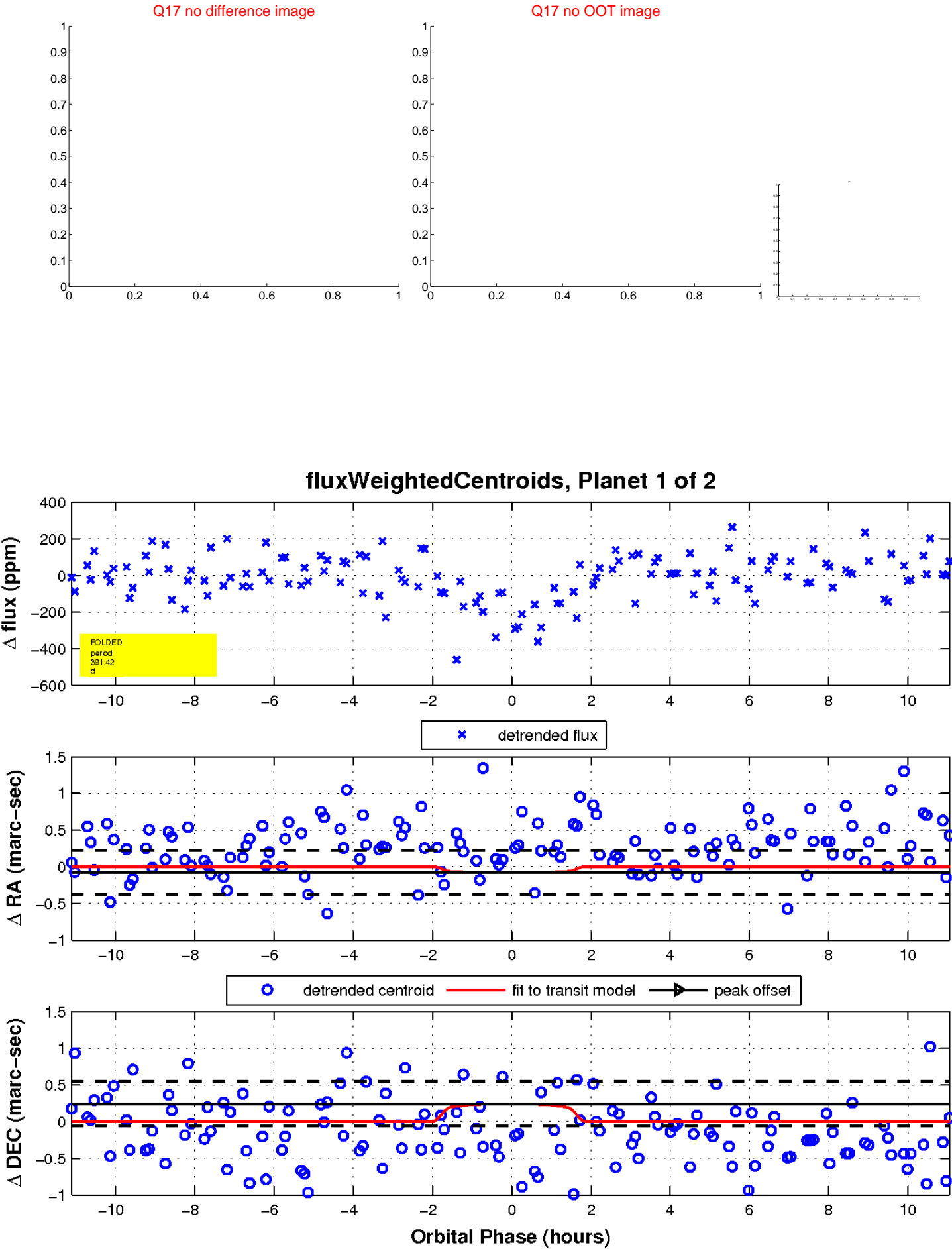
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

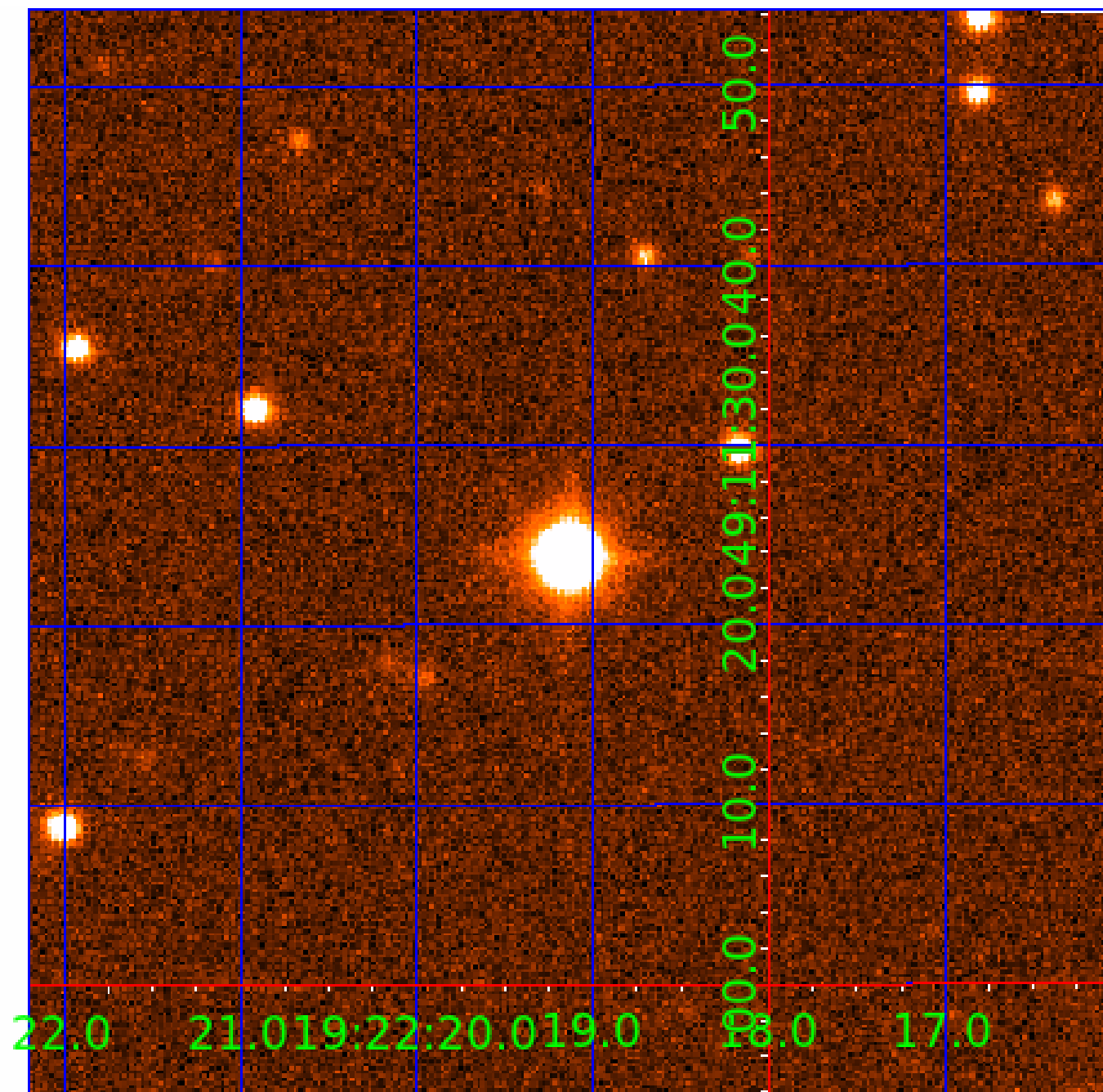


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011348086

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011348086-01	OBS	8049.01	391.423234	470.436483	245.0	3.727	8.2	8.9	0.95	6032	1.74	1.01
011348086-02	OBS	No	393.056602	425.298684	180.5	6.736	7.7	7.4	0.95	6032	1.41	1.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011348086-01	OBS	FP	0.18	1	0	0	0	MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011348086-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—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.

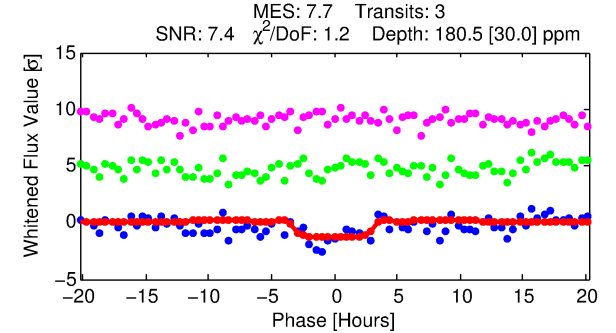
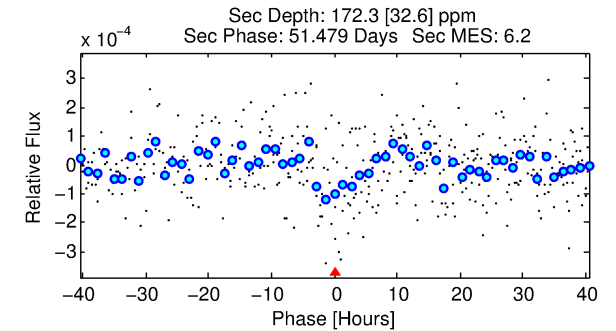
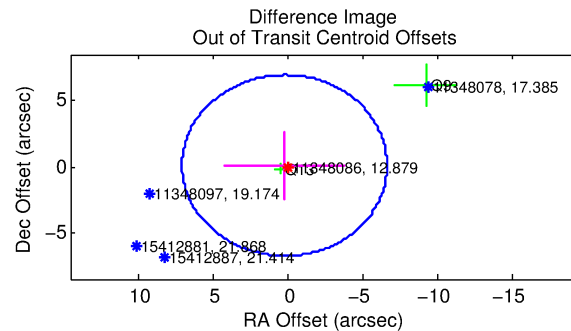
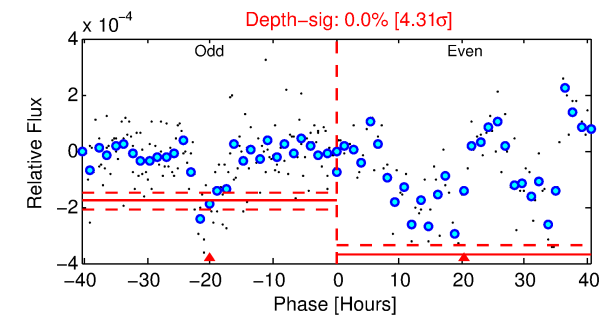
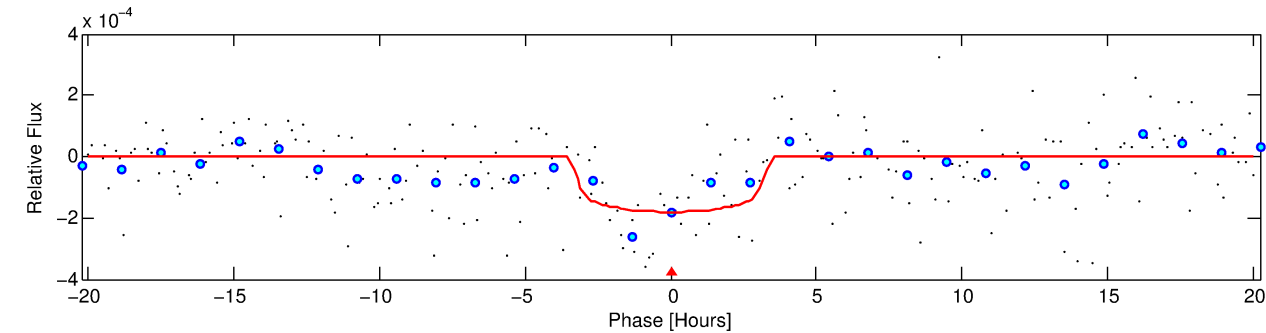
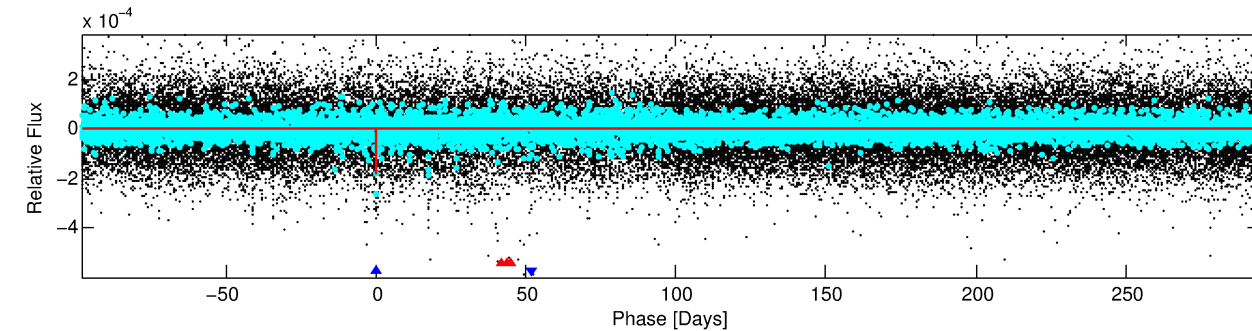
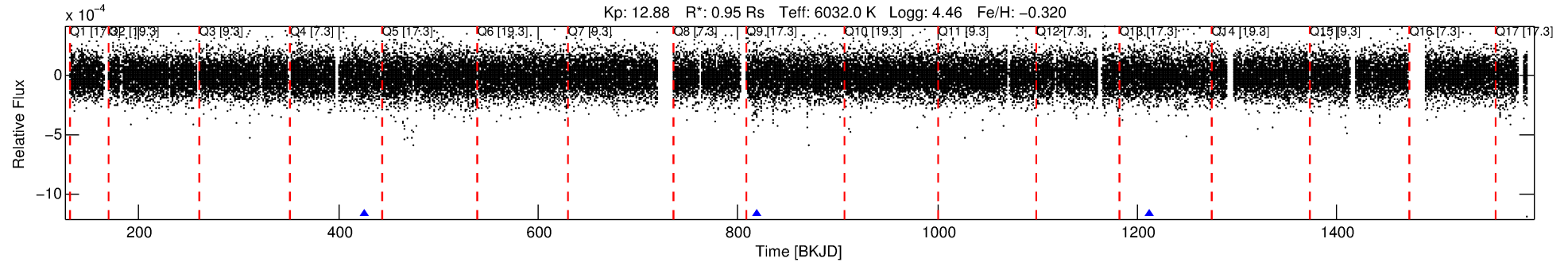
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011348086-02

No Significant Match Found

# DV One-Page Summary

KIC: 11348086 Candidate: 2 of 2 Period: 393.057 d



## DV Fit Results:

Period = 393.05660 [0.00997] d  
Epoch = 425.2987 [0.0134] BKJD  
Rp/R\* = 0.0136 [0.0139]  
a/R\* = 274.88 [1456.93]  
b = 0.80 [2.33]  
Seff = 1.00 [0.28]  
Teq = 255 [18] K  
Rp = 1.41 [1.46] Re  
a = 1.0316 [0.1808] AU  
Ag = 50494.72 [103959.62] [0.49 $\sigma$ ]  
Teffp = 5915 [3024] K [1.87 $\sigma$ ]

## DV Diagnostic Results:

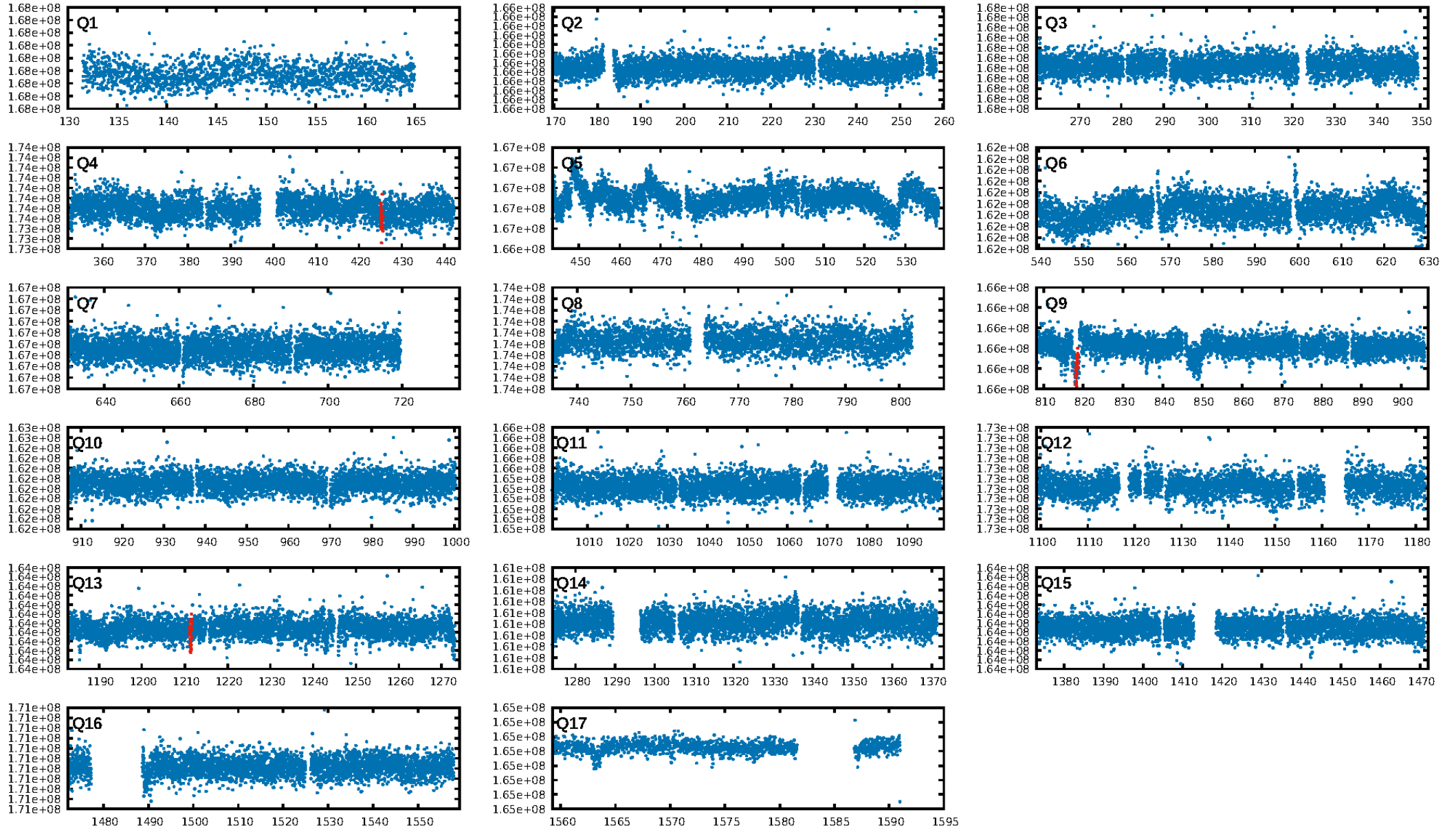
ShortPeriod-sig: 100.0% [5.09 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 8.3%  
ModelChiSquareGof-sig: 92.9%  
**Bootstrap-pfa: 3.51e-09**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -4.947  
Centroid-sig: 46.4%  
Centroid-so: 1.137 arcsec [0.84 $\sigma$ ]  
OotOffset-rm: 0.200 arcsec [0.09 $\sigma$ ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-rm: 0.183 arcsec [0.11 $\sigma$ ]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 01:51:58 Z

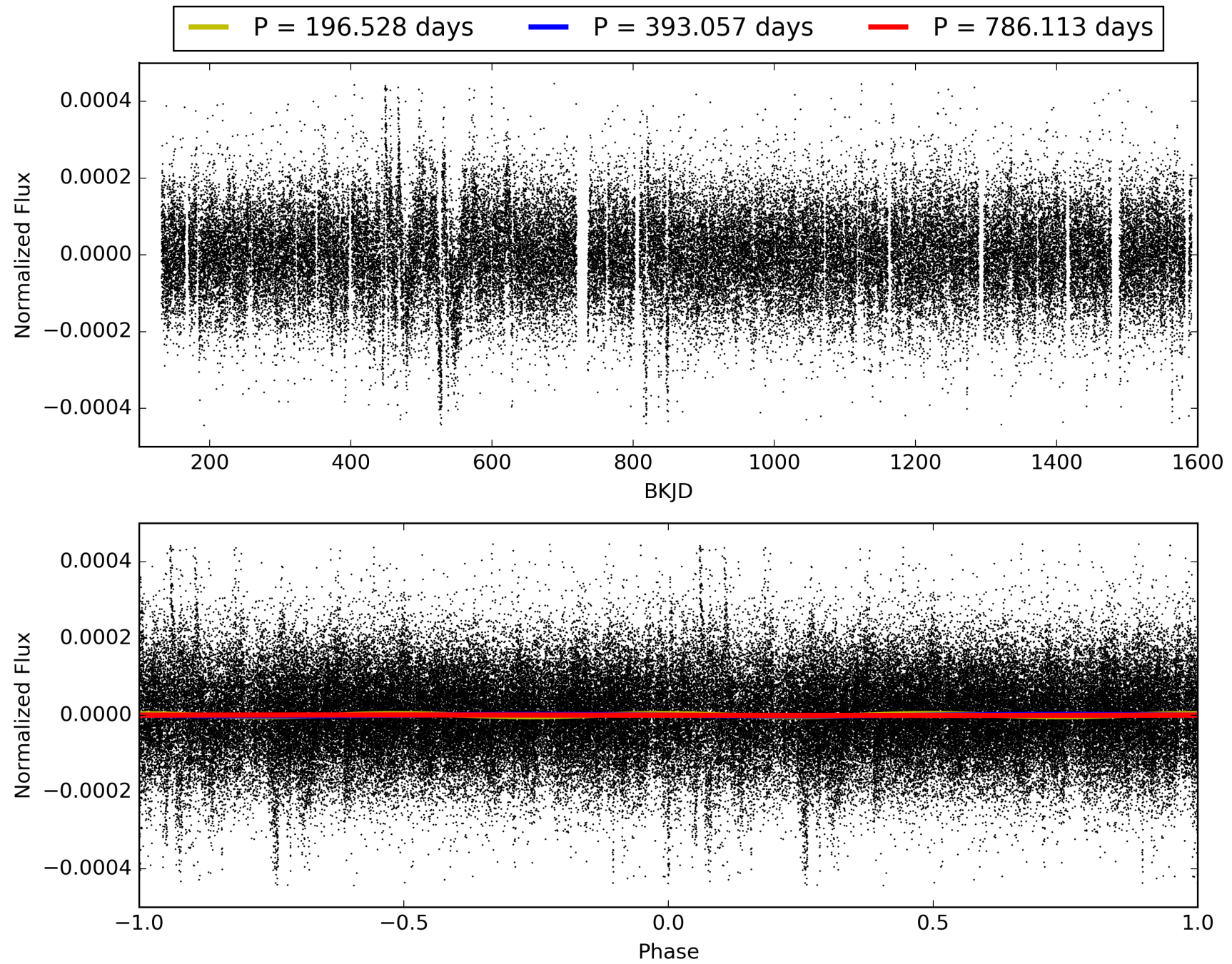
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 011348086-02, PDC Light Curves

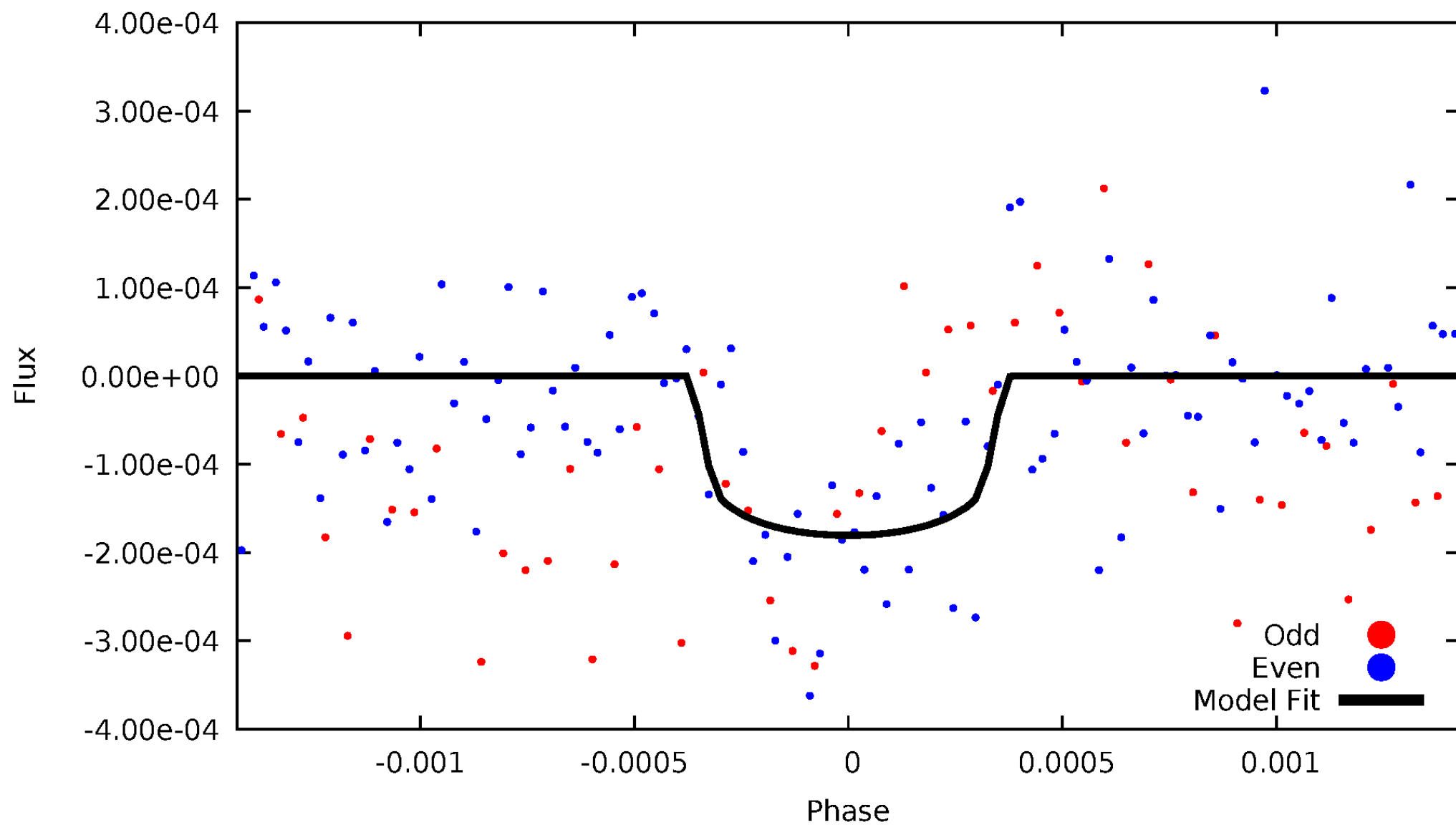


TCE 011348086-02



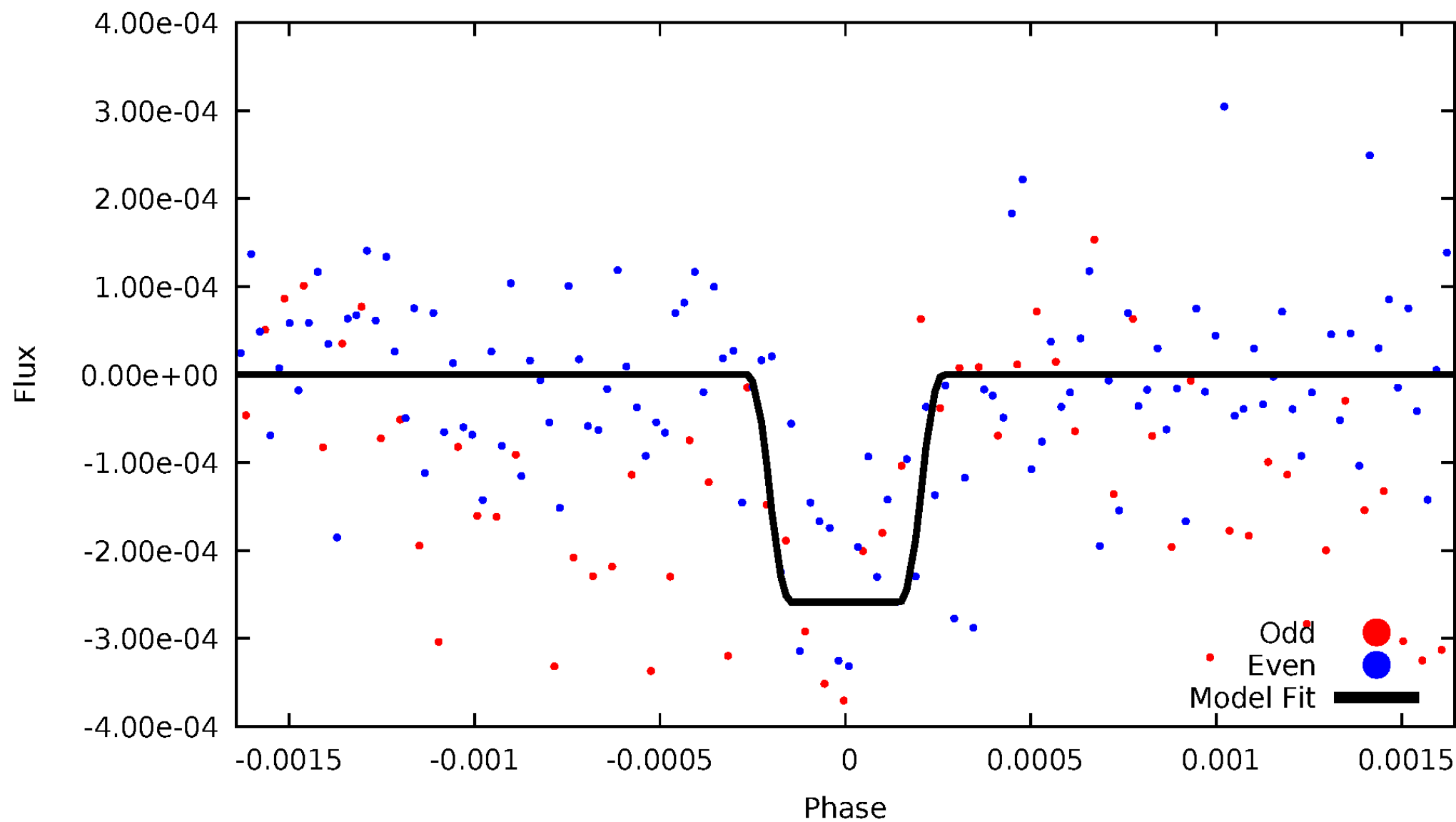
# DV Odd/Even

TCE 011348086-02



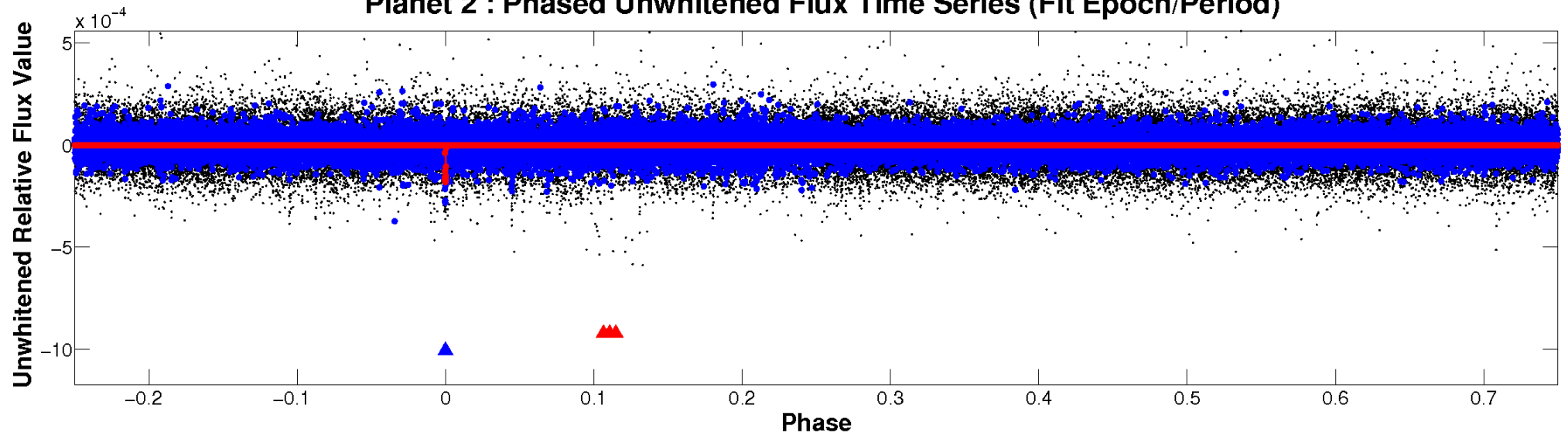
# ALT Odd/Even

TCE 011348086-02

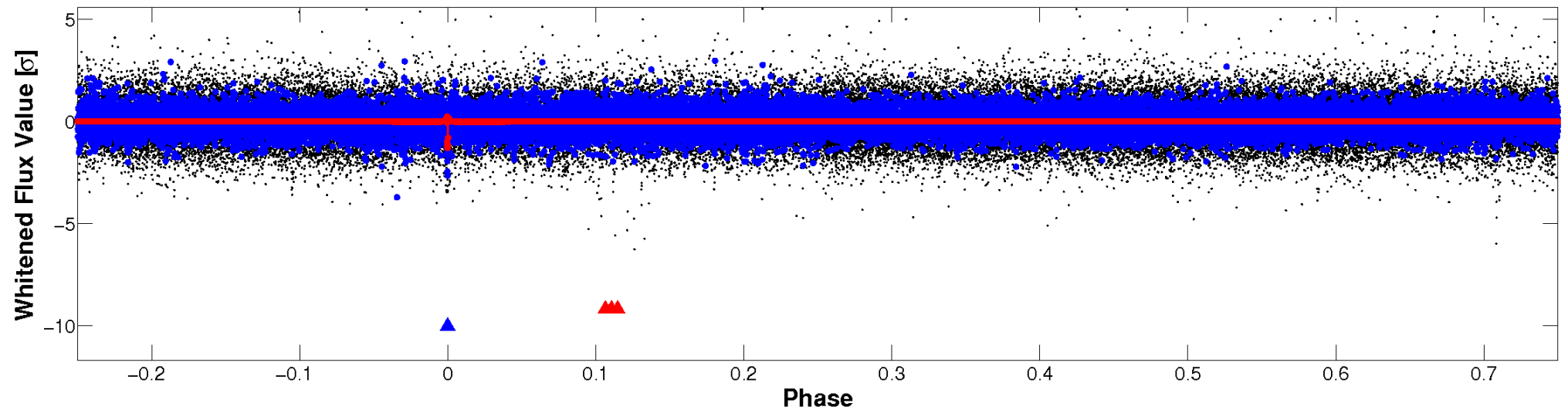


# Non-Whitened Vs. Whitened Light Curve

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

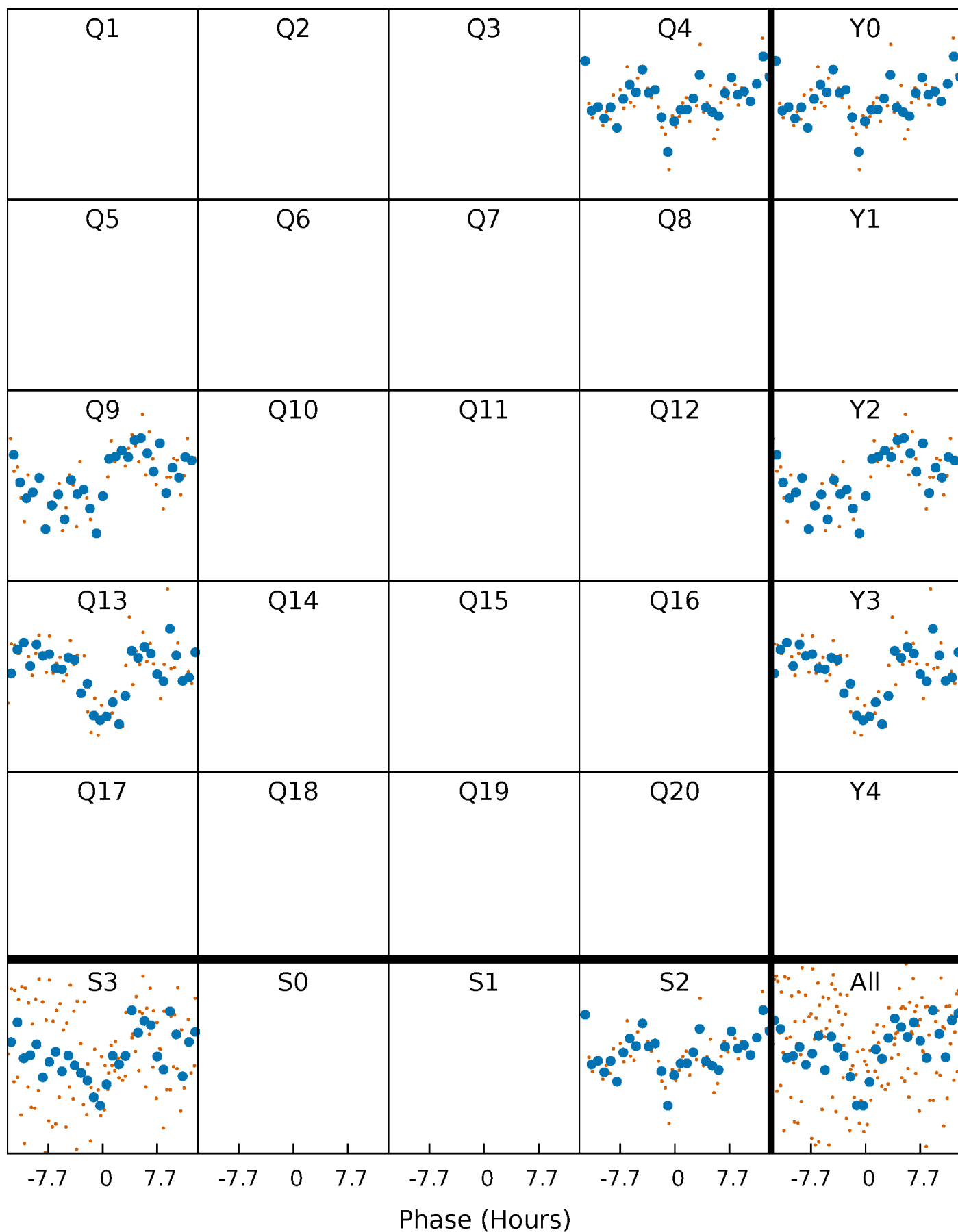


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



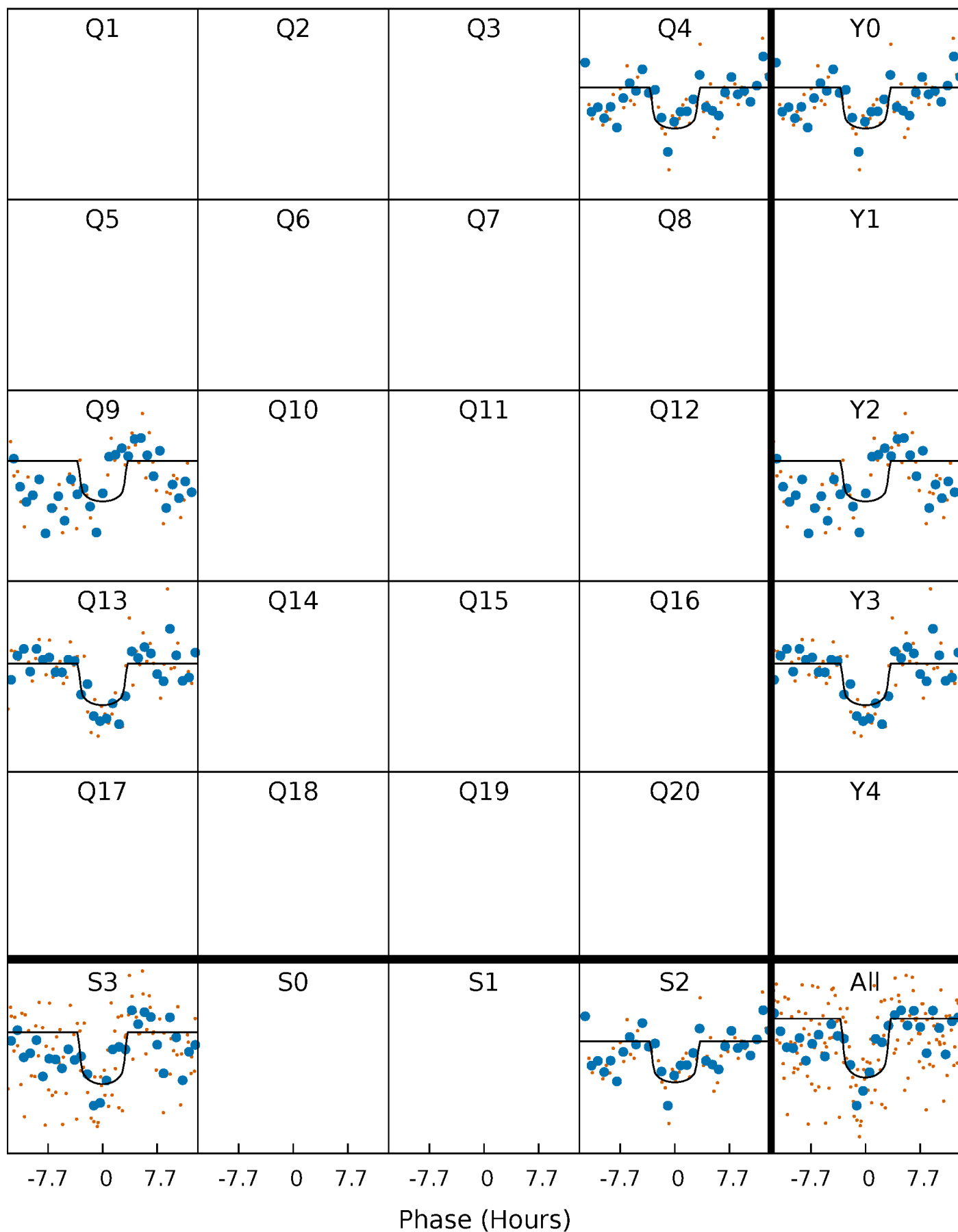
# PDC Quarter-Phased Transit Curves

TCE 011348086-02     $P=393.056602$  Days     $T_0=425.298684$  (BKJD)



# DV Quarter-Phased Transit Curves

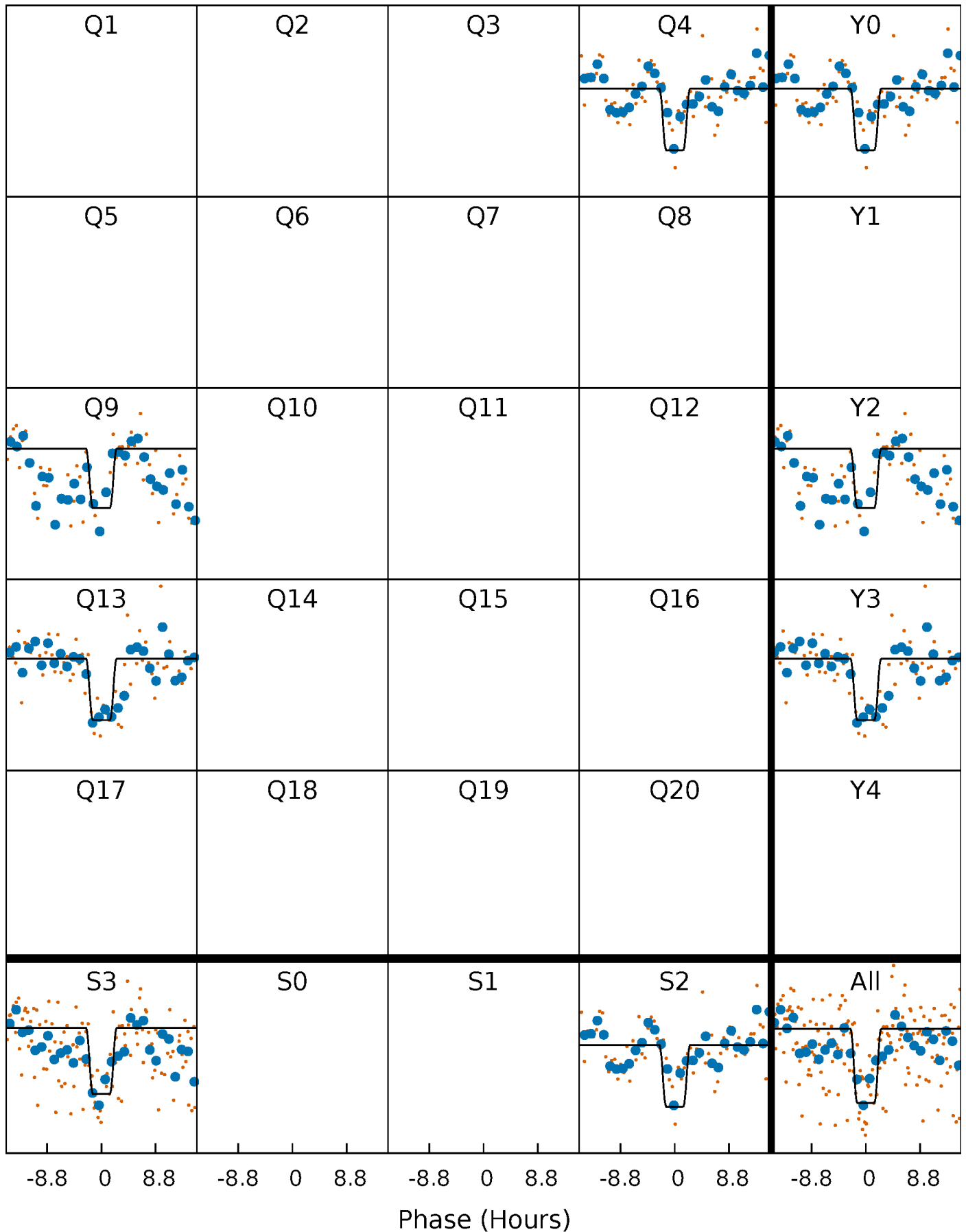
TCE 011348086-02     $P=393.056602$  Days     $T_0=425.298684$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

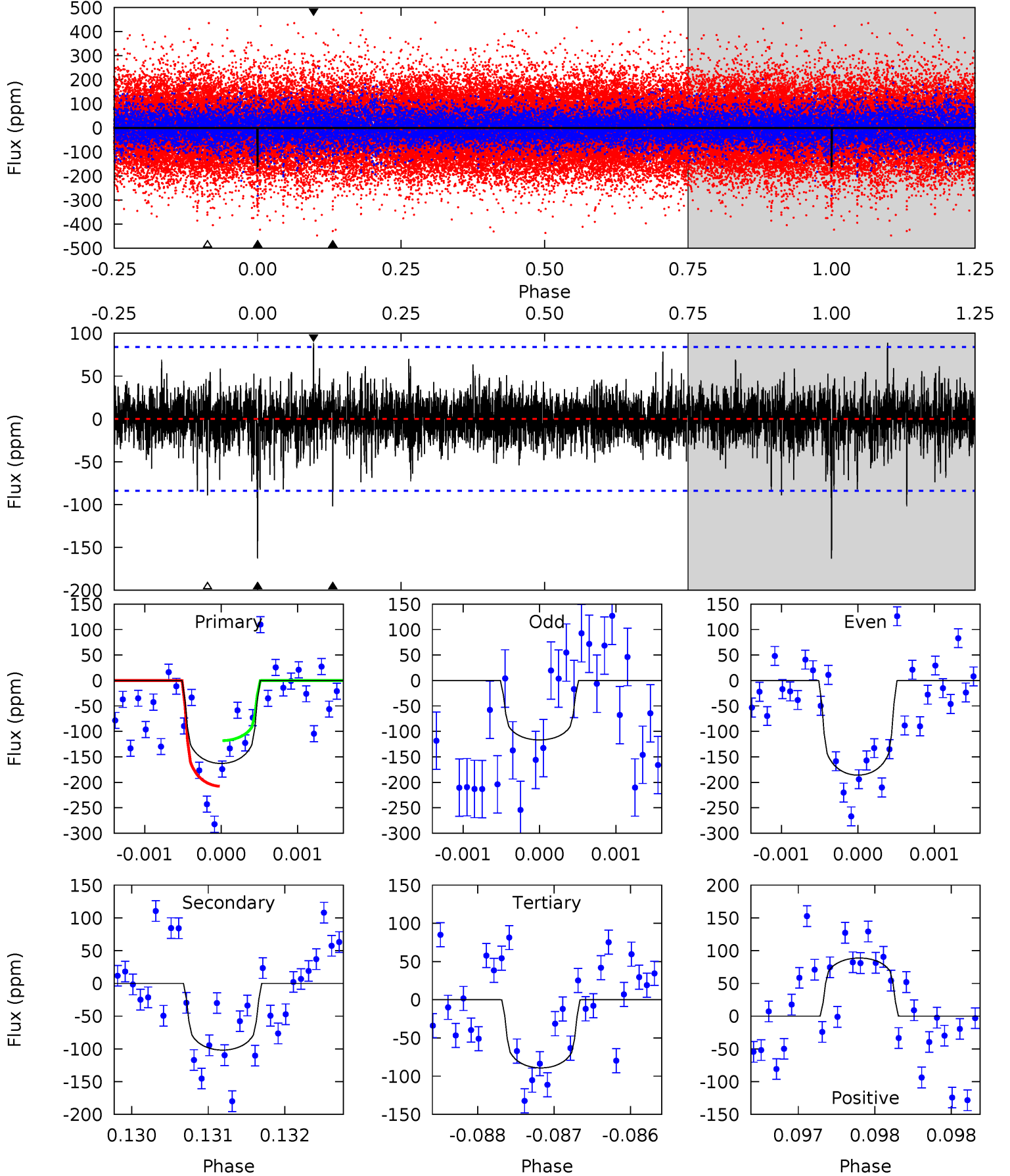
TCE 011348086-02     $P=393.066771$  Days     $T_0=425.259491$  (BKJD)



# DV Model-Shift Uniqueness Test

011348086-02, P = 393.056602 Days, E = 32.242082 Days

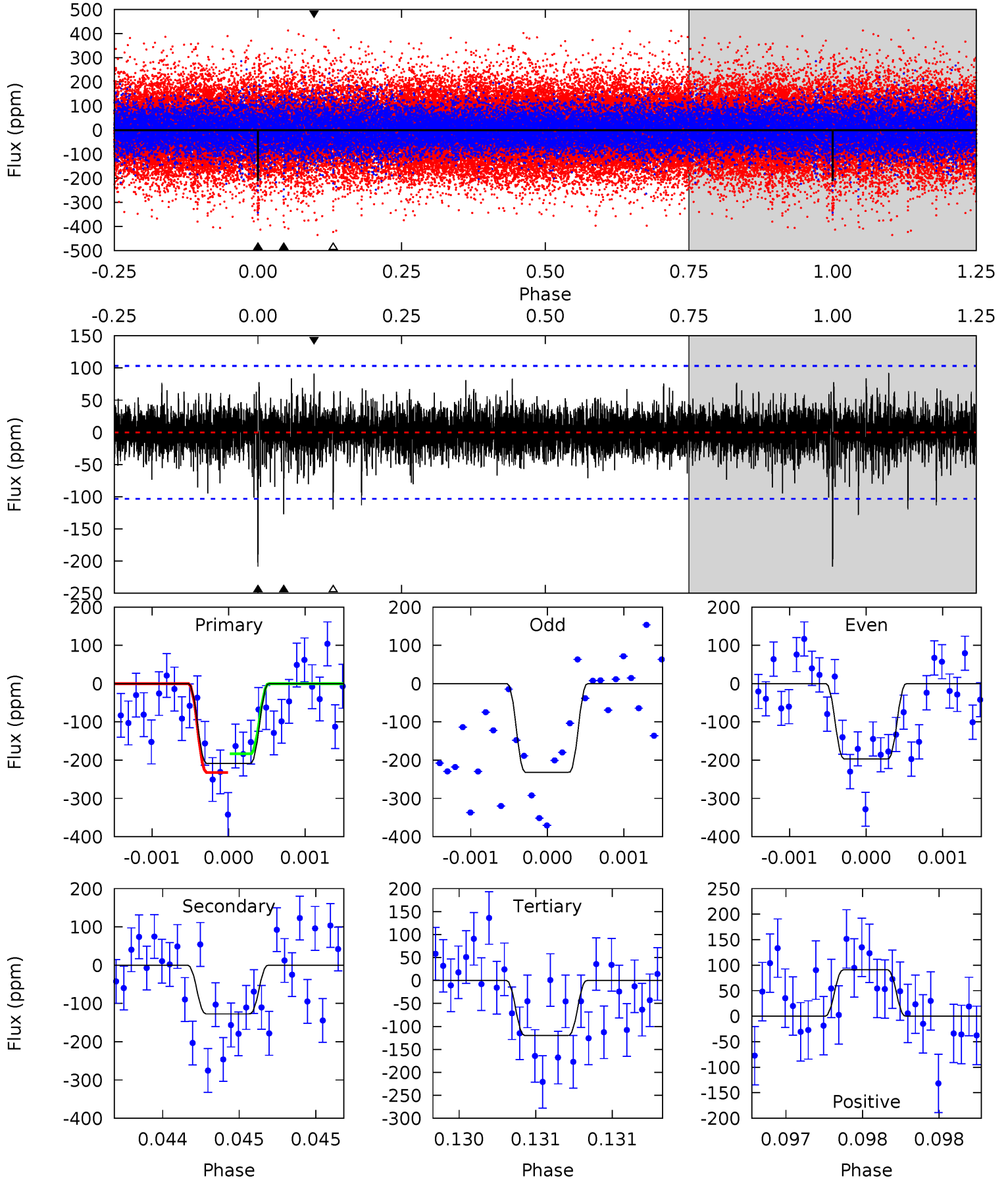
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	6.68	5.85	5.82	5.50	3.37	1.23	4.83	4.87	0.83	0.86	2.16	1.10	0.35	2.94



# Alt Model-Shift Uniqueness Test

011348086-02,  $P = 393.066771$  Days,  $E = 32.192720$  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
11.3	6.87	6.46	4.92	5.57	3.48	1.18	4.79	6.33	0.40	1.94	0.89	0.90	0.30	1.31



### Stellar Parameters For KIC 011348086

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6032^{+163}_{-163}$	$4.460^{+0.074}_{-0.147}$	$-0.320^{+0.300}_{-0.300}$	$0.949^{+0.191}_{-0.103}$	$0.948^{+0.109}_{-0.109}$	$1.561^{+0.489}_{-0.619}$
	+3%/-3%	+2%/-3%	+94%/-94%	+20%/-11%	+11%/-11%	+31%/-40%
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 011348086-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-102 \pm 15$	$1.69^{+1.47}_{-0.98}$	$361^{+22}_{-16}$	$4891^{+2808}_{-1026}$	$20100^{+100204}_{-14278}$
Alt.	$-127 \pm 19$	$1.94^{+1.36}_{-1.19}$	$361^{+20}_{-16}$	$4854^{+2728}_{-894}$	$19432^{+101943}_{-12803}$

$T_{max}$  = 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

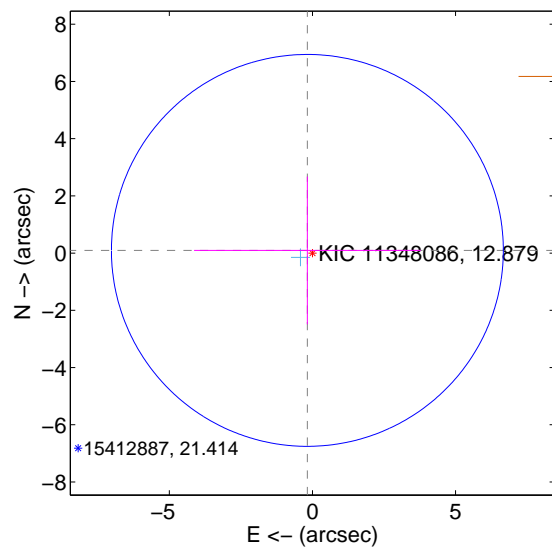
Supplemental centroid analysis for 011348086-02. Kepler magnitude: 12.88. Transit SNR 7.38

There are 1 quarters with good PRF difference image offsets

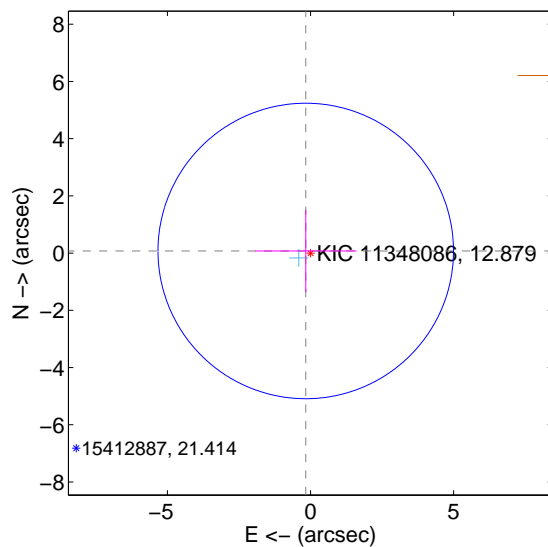
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.200 \pm 2.283$	0.09	$0.177 \pm 3.962$	$0.094 \pm 2.582$
PRF-fit source offset from KIC position	$0.183 \pm 1.721$	0.11	$0.167 \pm 1.773$	$0.074 \pm 1.434$
photometric centroid source offset	$1.14 \pm 1.36$	0.84	$1.12 \pm 1.36$	$0.17 \pm 1.38$

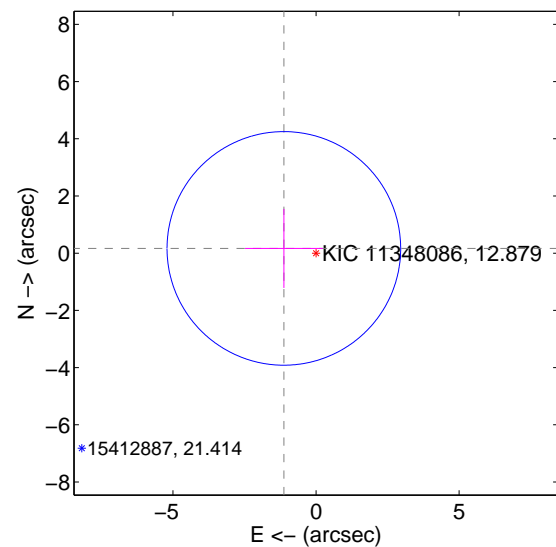
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

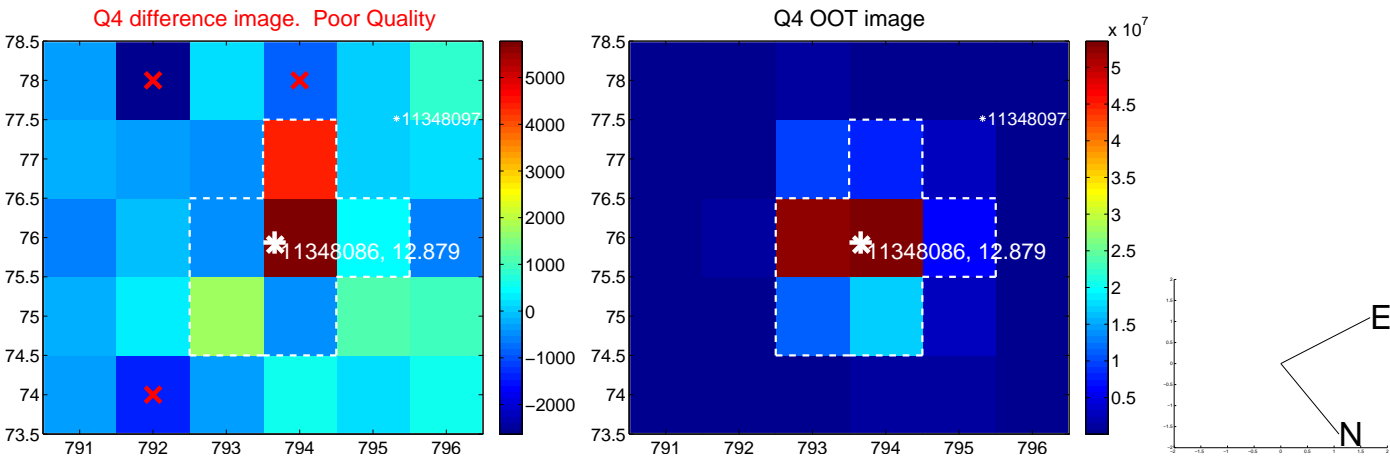
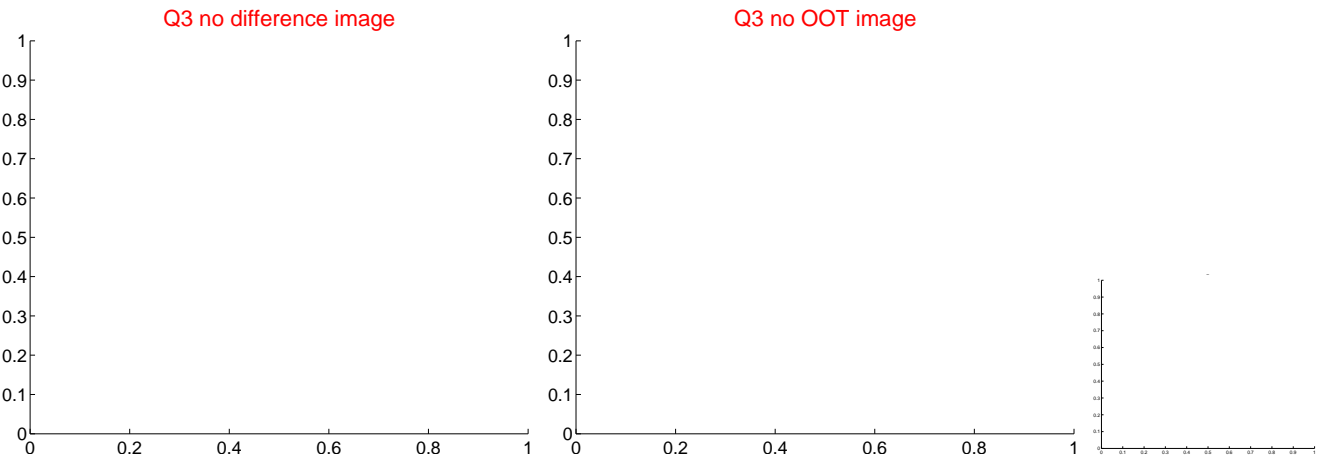
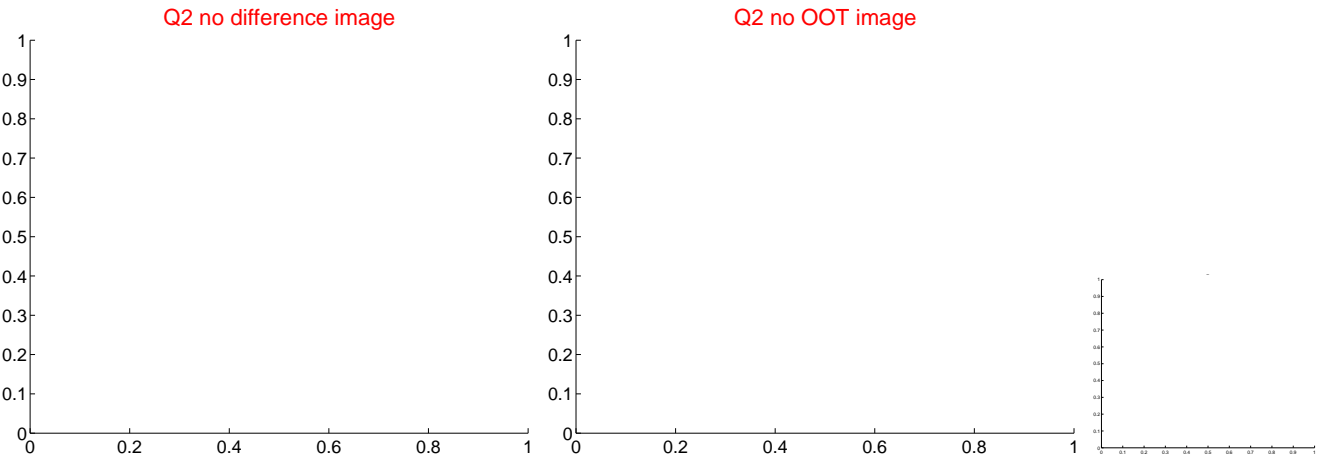
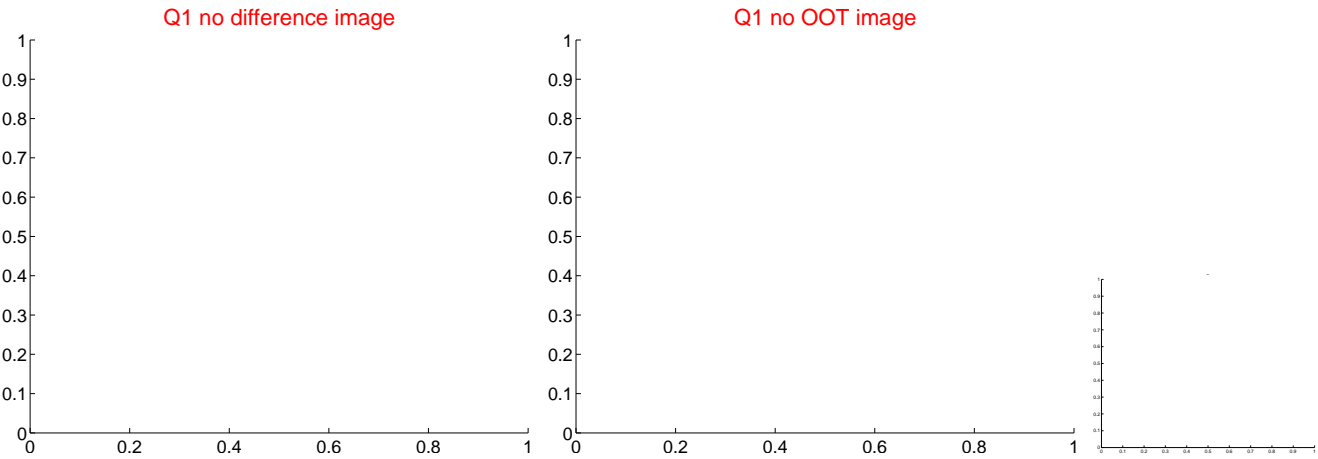


offset from photometric centroids



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.

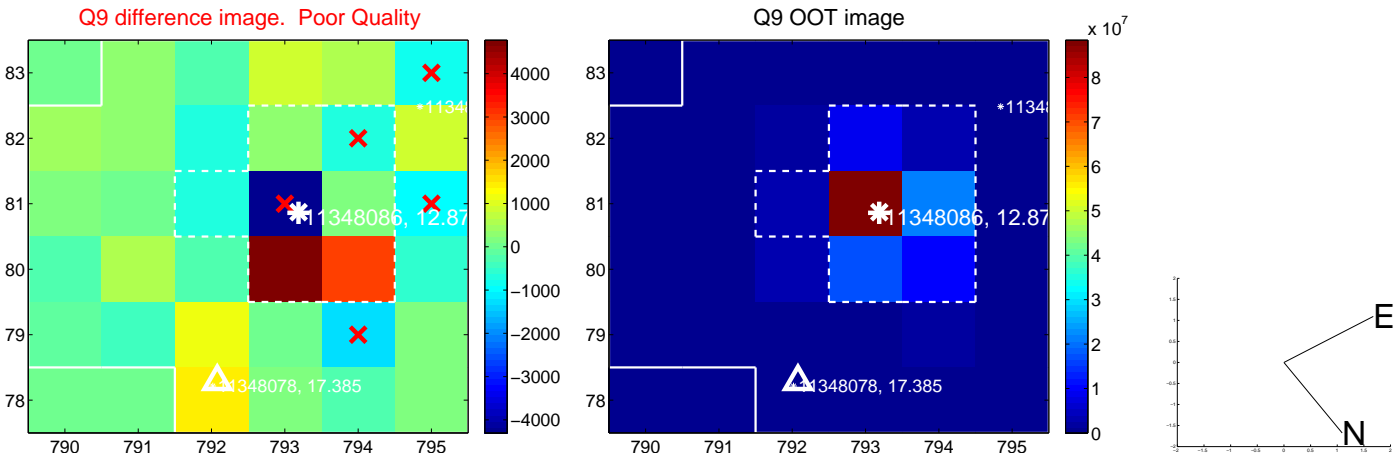


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

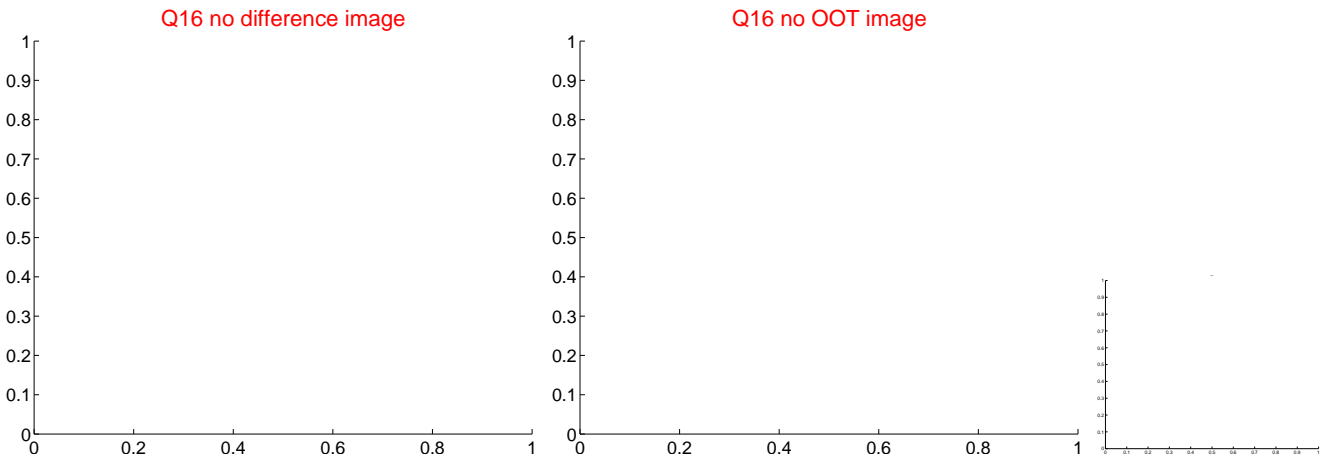
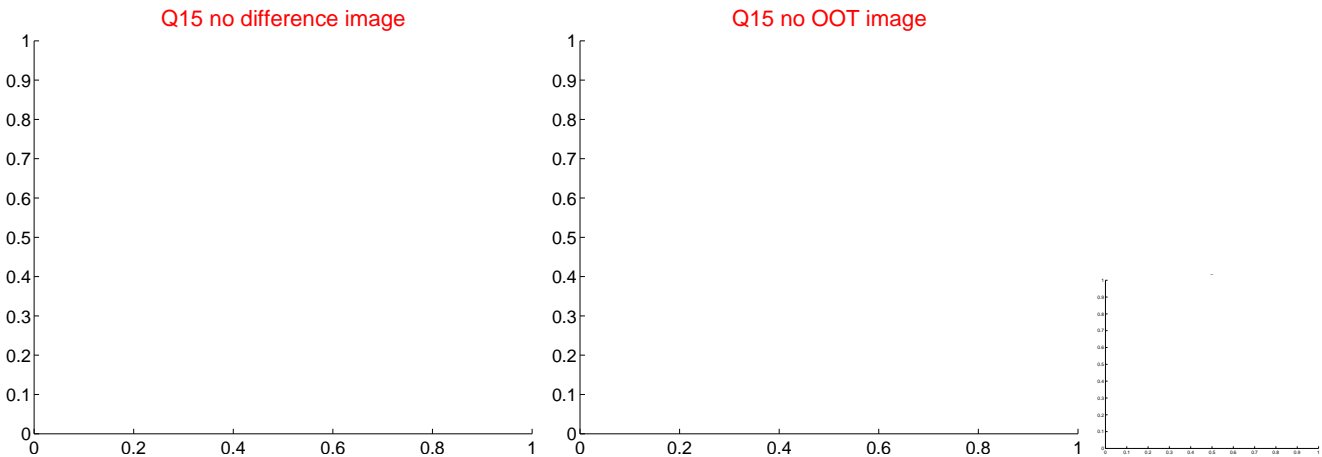
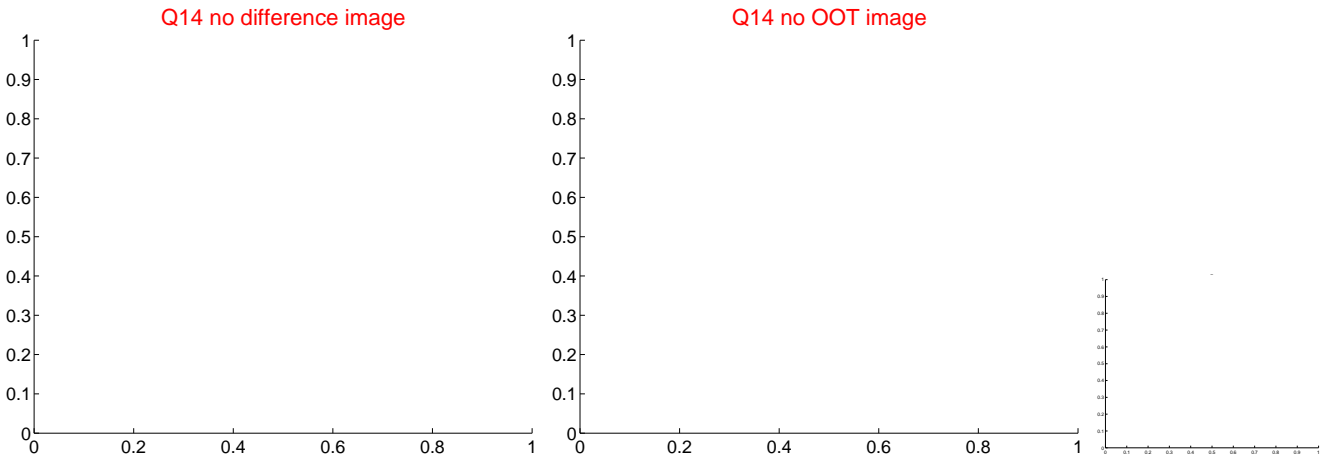
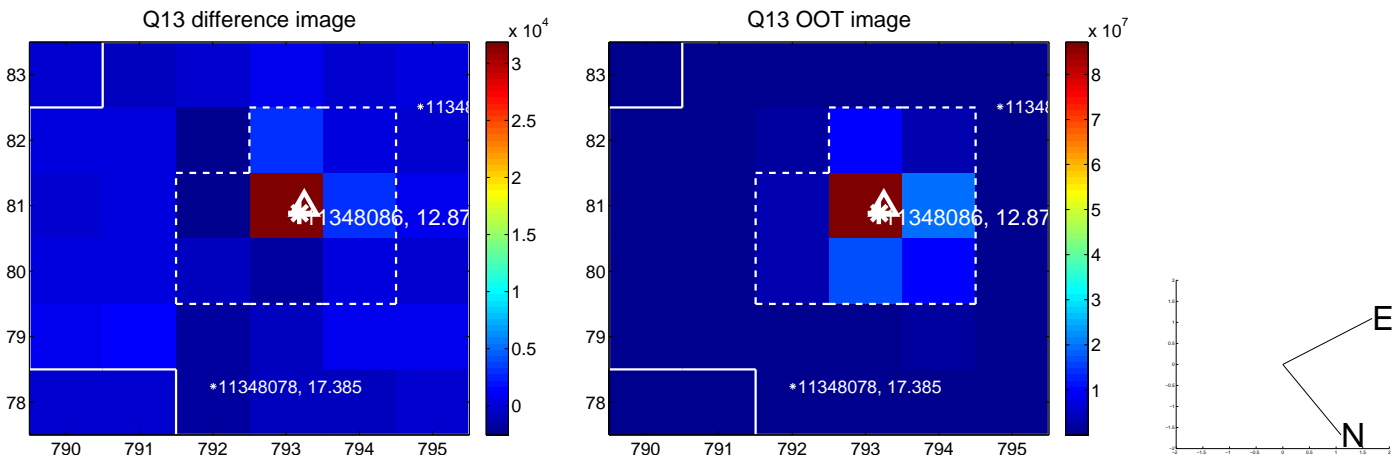




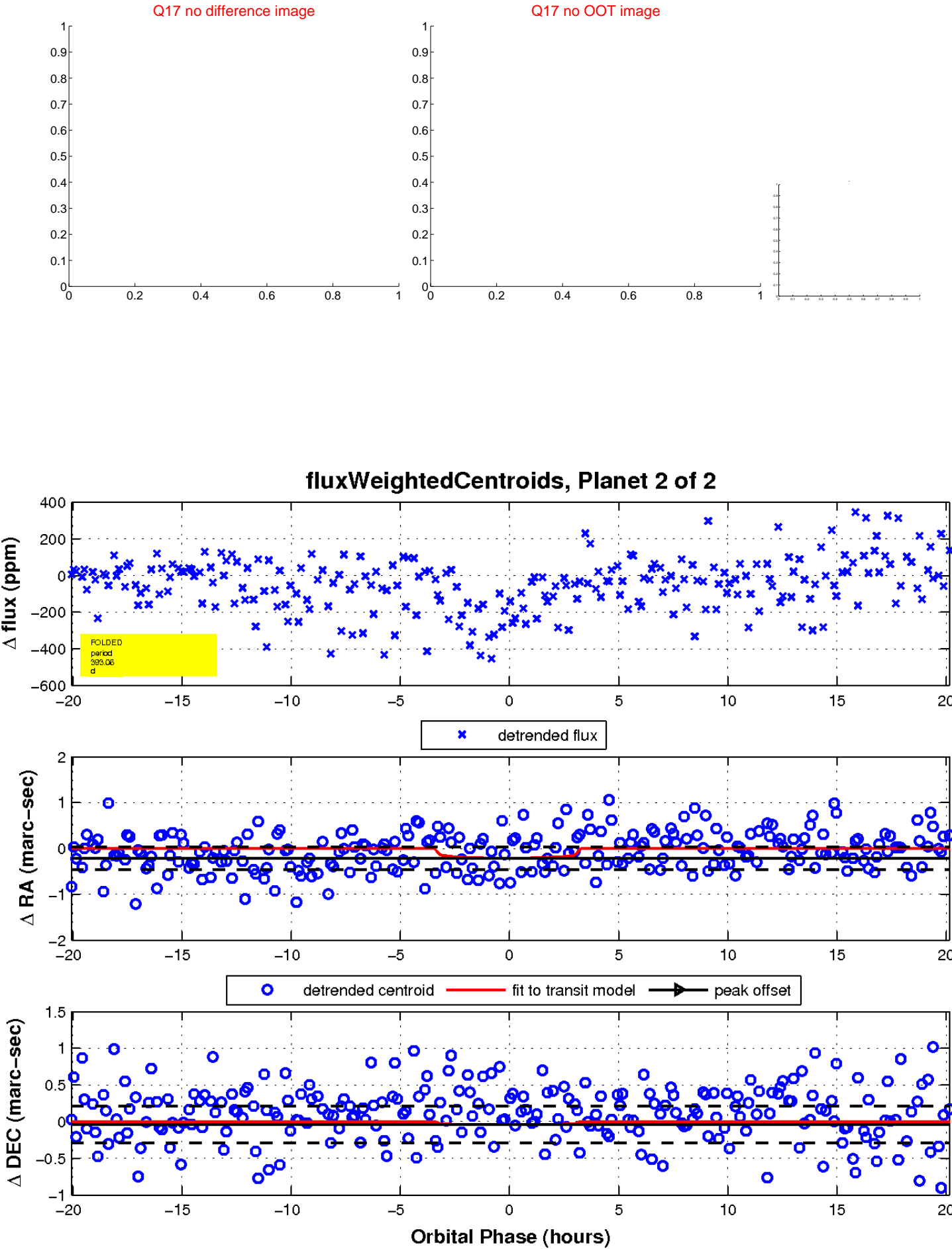
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UKIRT Image

Declination

