

# KIC 006421188

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006421188-01	OBS	6702.01	16.434353	136.288491	45465.9	5.177	2927.8	2484.9	1.13	5963	25.29	91.94
006421188-02	OBS	No	16.434355	142.482970	2150.8	6.367	165.8	163.7	1.13	5963	6.27	91.94
006421188-03	OBS	No	454.813686	220.101493	757.0	14.326	14.2	13.3	1.13	5963	3.37	1.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006421188-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_KIC_POS
006421188-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_KIC_POS
006421188-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—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 006421188-01

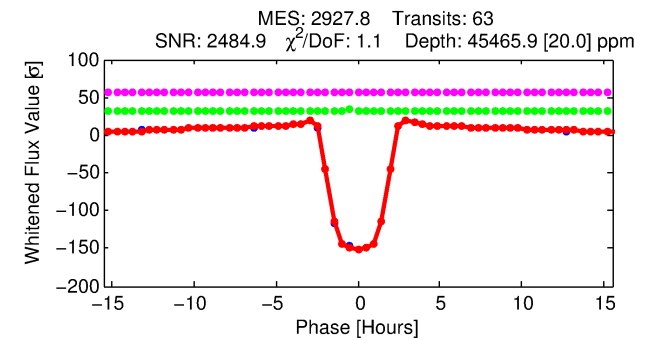
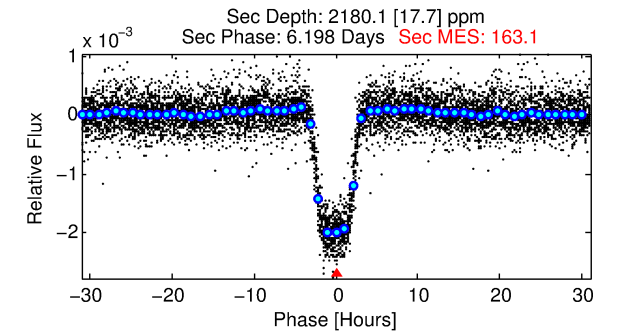
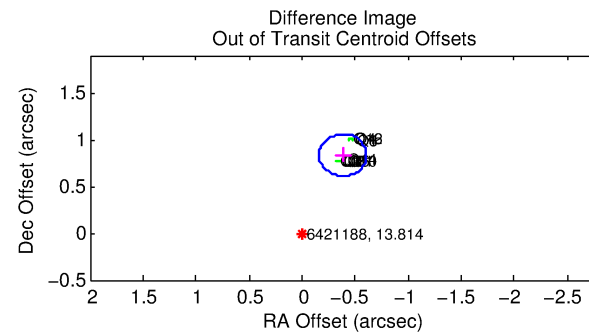
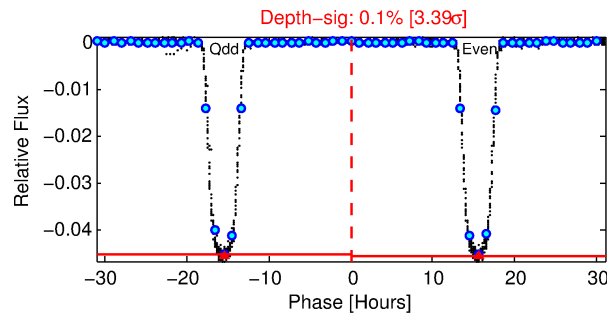
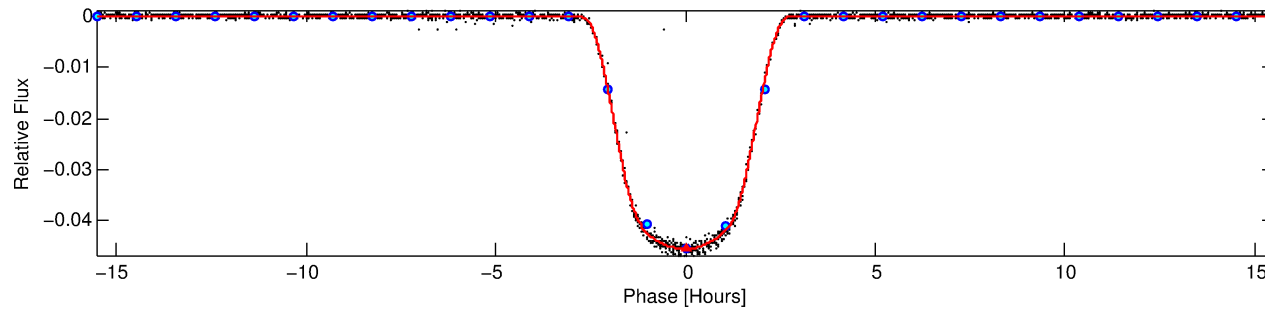
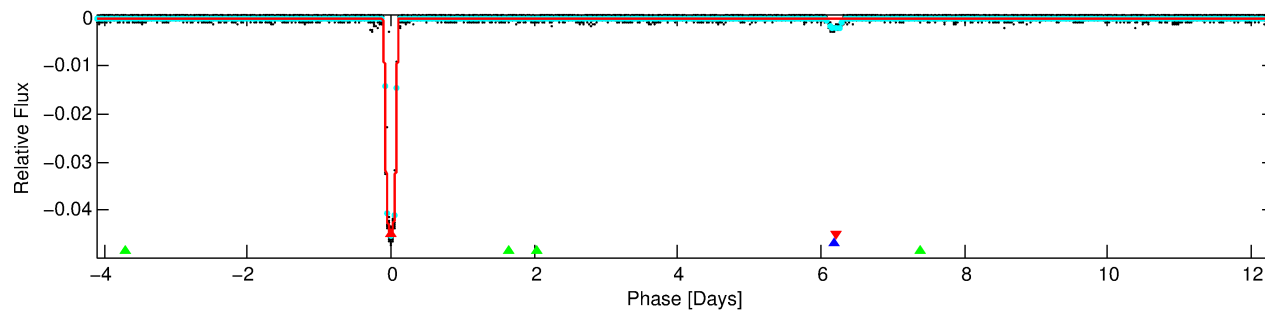
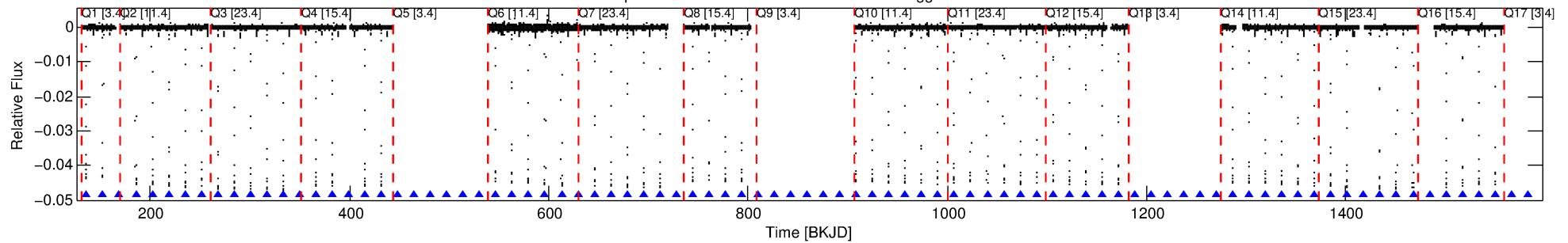
No Significant Match Found

# DV One-Page Summary

KIC: 6421188 Candidate: 1 of 3 Period: 16.434 d

KOI: K06702.01 Corr: 1.000

Kp: 13.81 R\*: 1.13 Rs Teff: 5963.0 K Logg: 4.32 Fe/H: -0.120



## DV Fit Results:

Period = 16.43435 [0.00000] d  
Epoch = 136.2885 [0.0000] BKJD  
Rp/R\* = 0.2044 [0.0001]  
a/R\* = 25.54 [0.03]  
b = 0.59 [0.00]  
Seff = 91.94 [48.36]  
Teff = 790 [104] K  
Rp = 25.29 [8.59] Re  
a = 0.1259 [0.0347] AU  
Ag = 29.72 [11.52] [2.49σ]  
Teffp = 2850 [253] K [7.52σ]

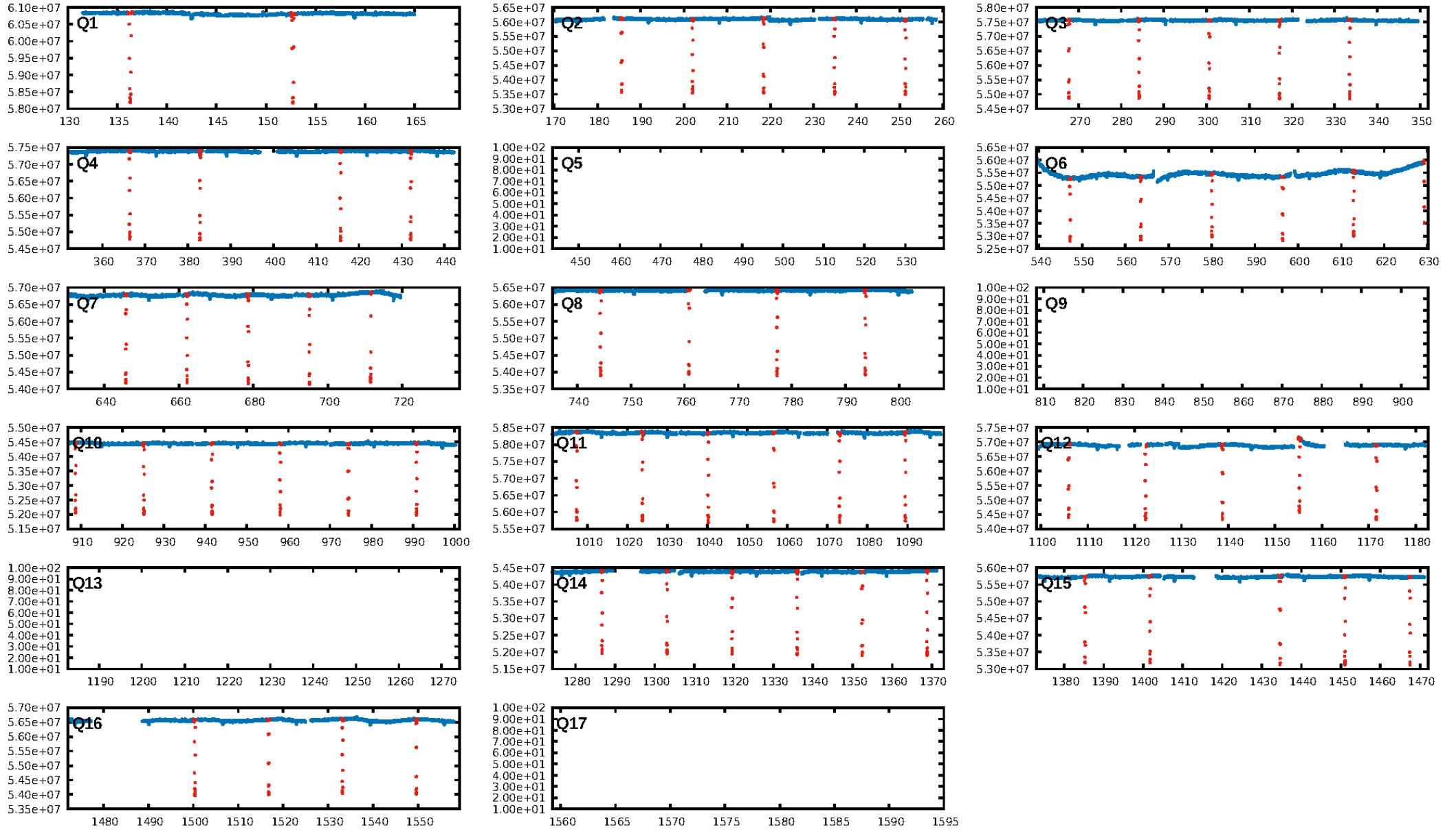
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 96.1%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [61/61]  
GhostDiagnostic-chr: 5.053  
Centroid-sig: 0.0%  
Centroid-so: 0.330 arcsec [78.17σ]  
OotOffset-rm: 0.920 arcsec [12.31σ]  
KicOffset-rm: 0.302 arcsec [4.29σ]  
OotOffset-st: 4/4/4/1 [13]  
KicOffset-st: 4/4/4/1 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 1.00 [13/13]

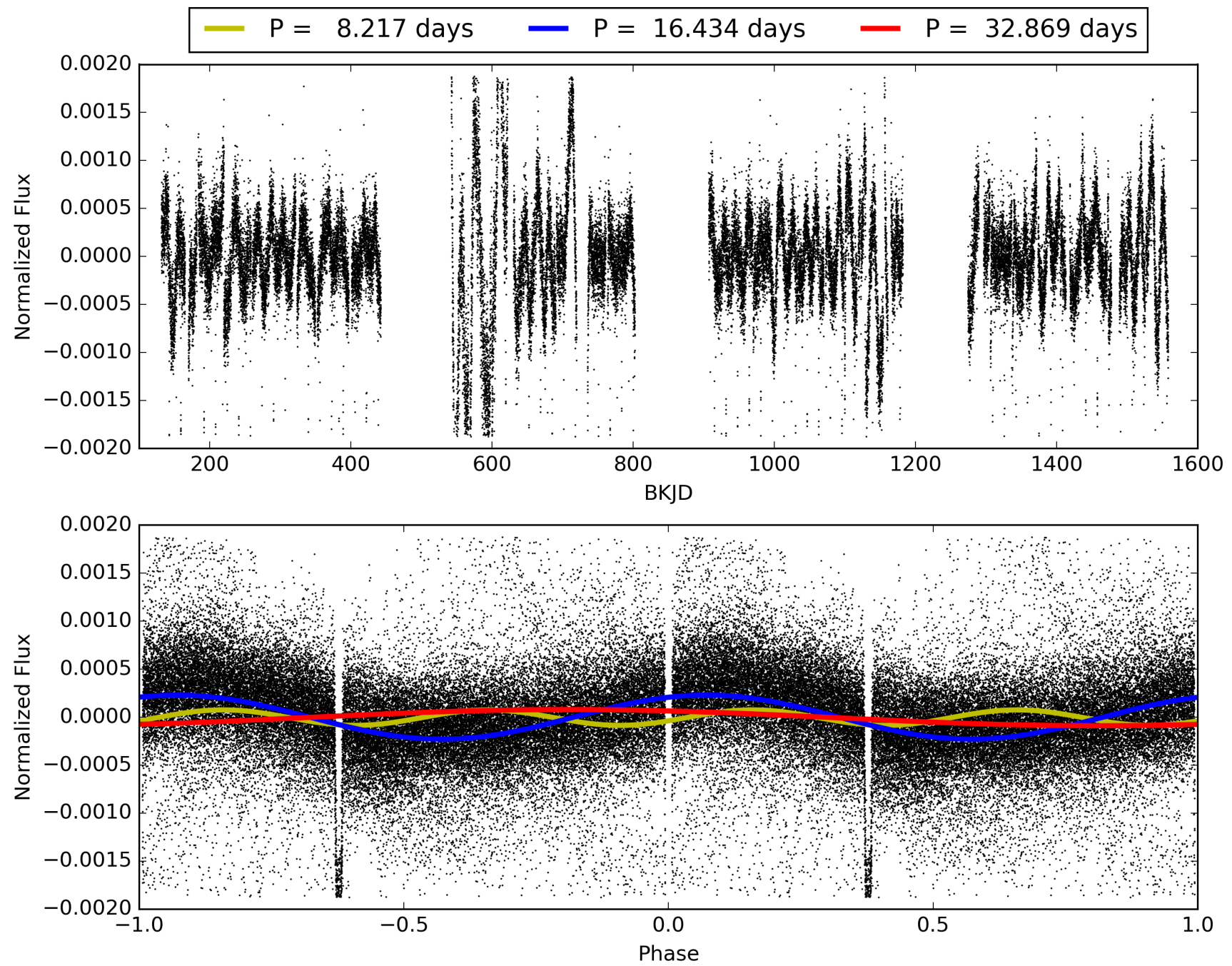
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:48:08 Z

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

# TCE 006421188-01, PDC Light Curves

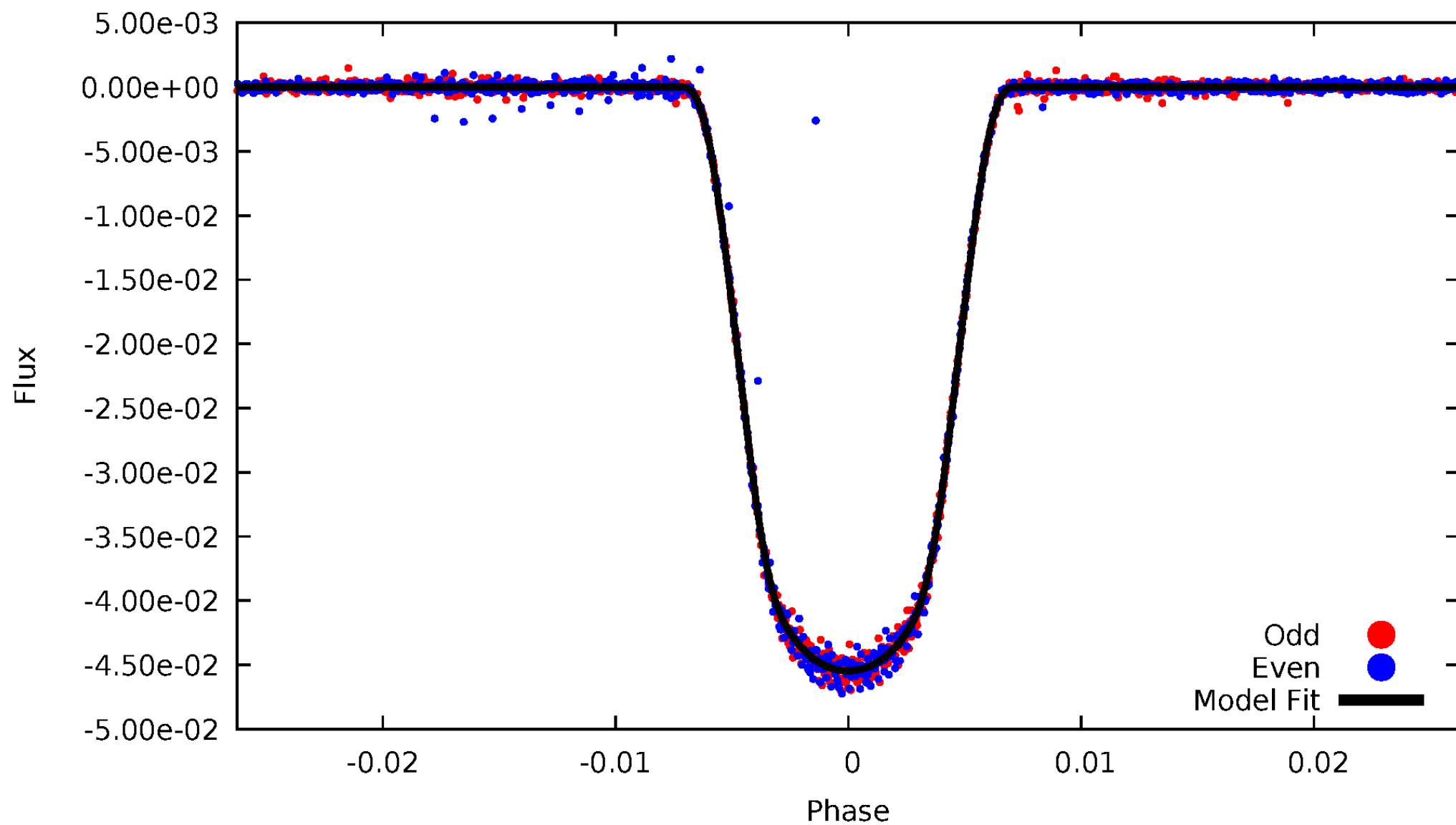


TCE 006421188-01



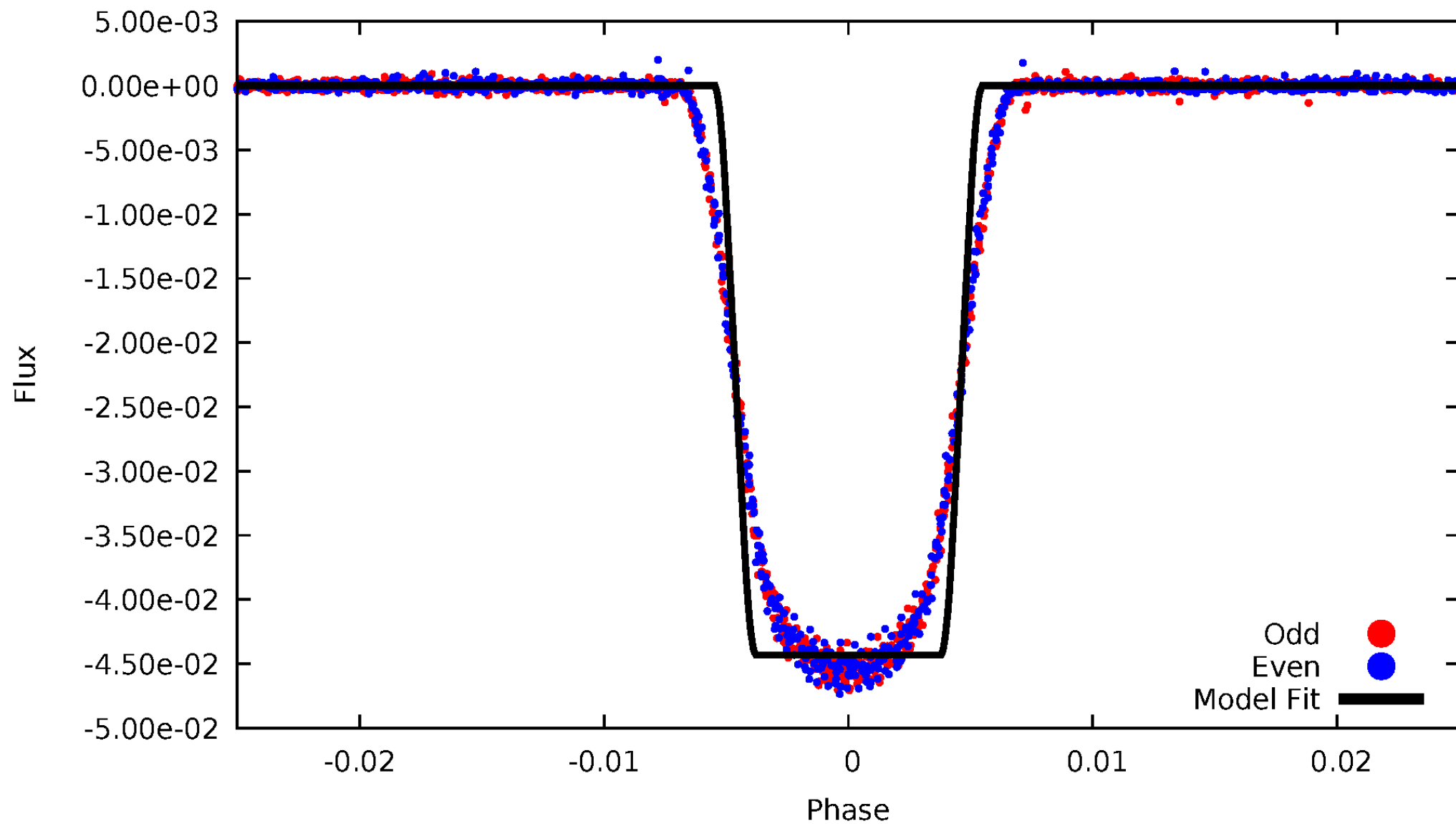
# DV Odd/Even

TCE 006421188-01



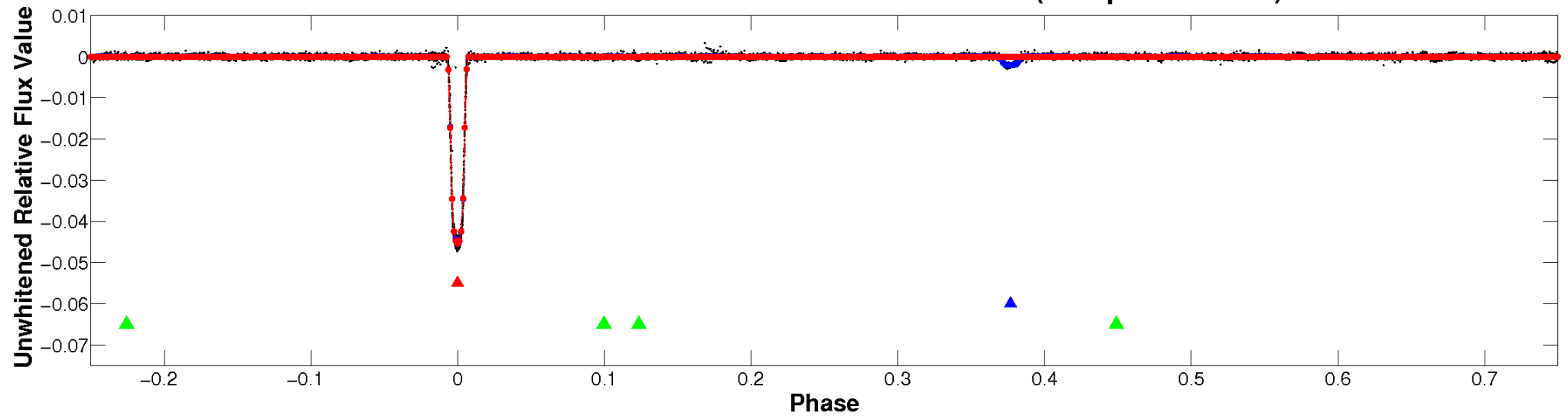
# ALT Odd/Even

TCE 006421188-01

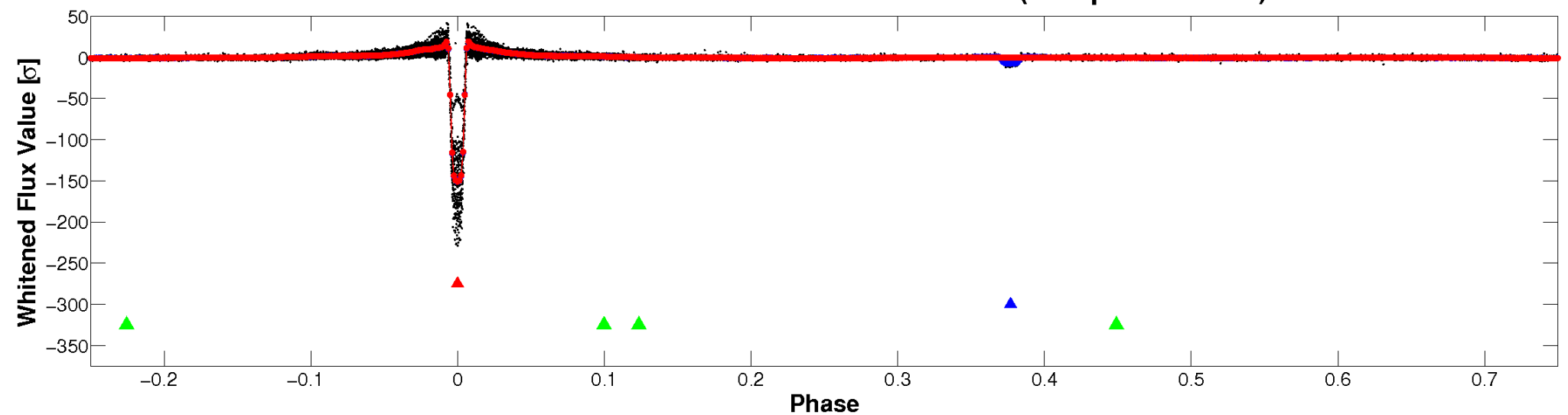


# Non-Whitened Vs. Whitened Light Curve

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

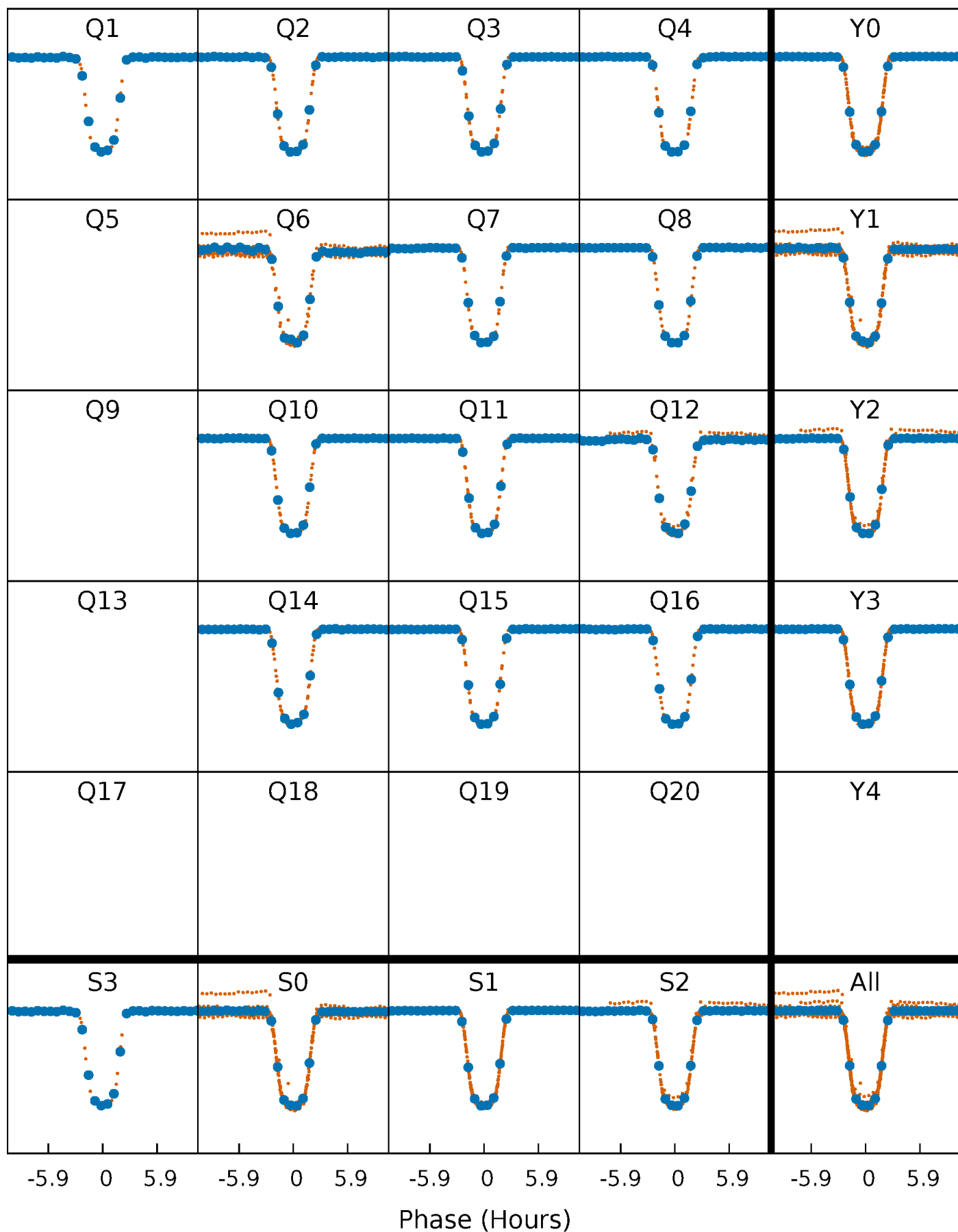


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

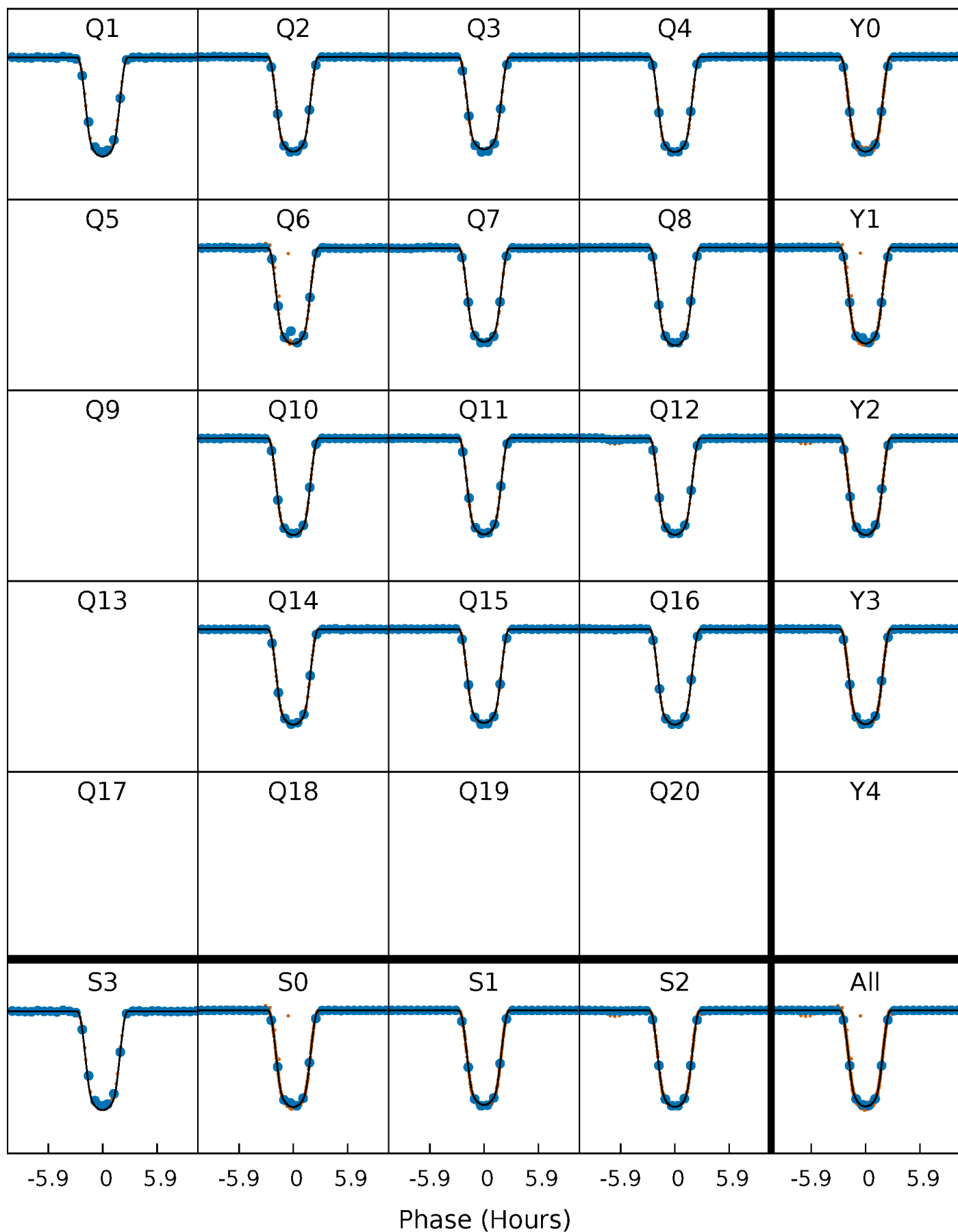
TCE 006421188-01 P= 16.434353 Days  $T_0=136.288491$  (BKJD)





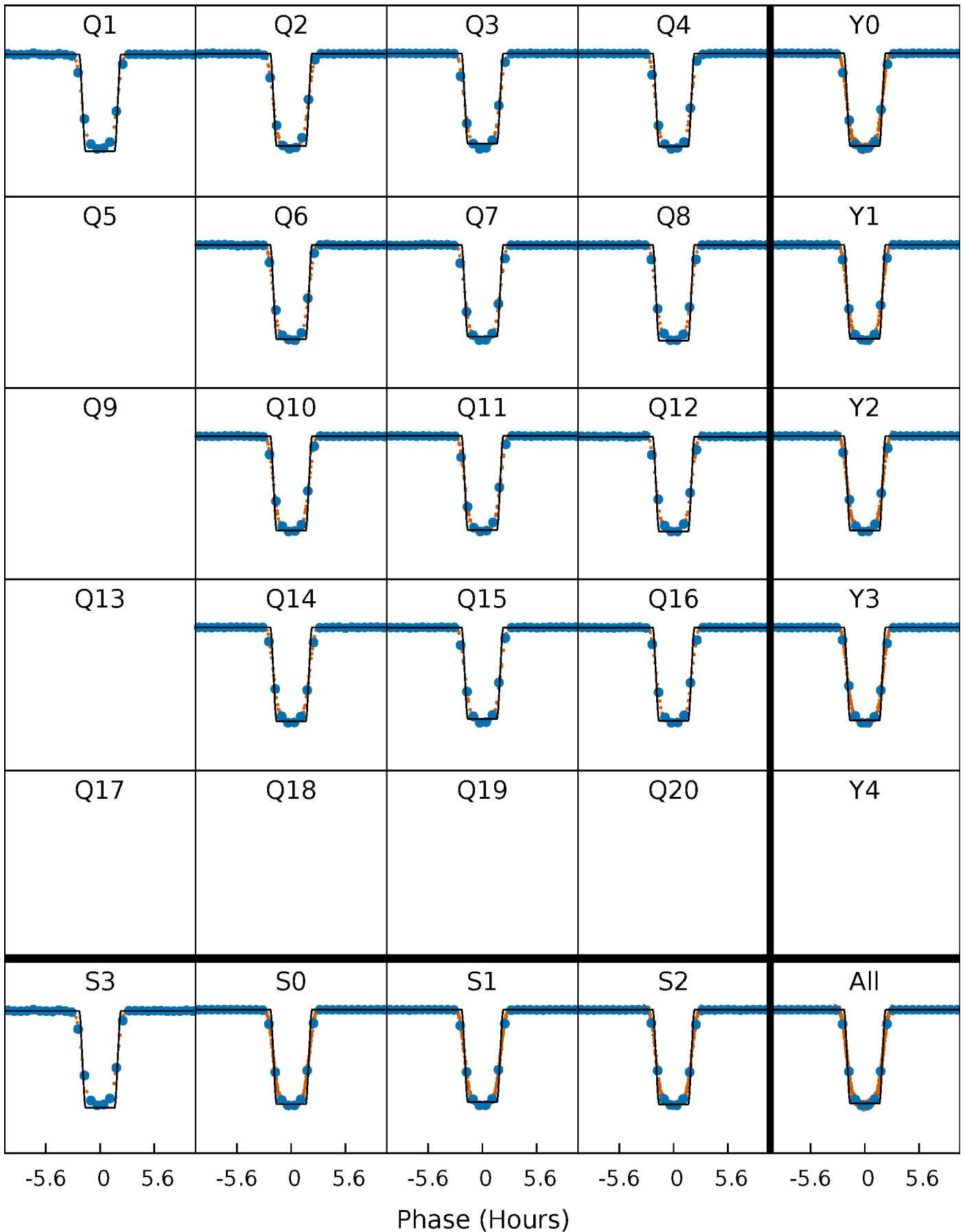
# DV Quarter-Phased Transit Curves

TCE 006421188-01 P= 16.434353 Days  $T_0=136.288491$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

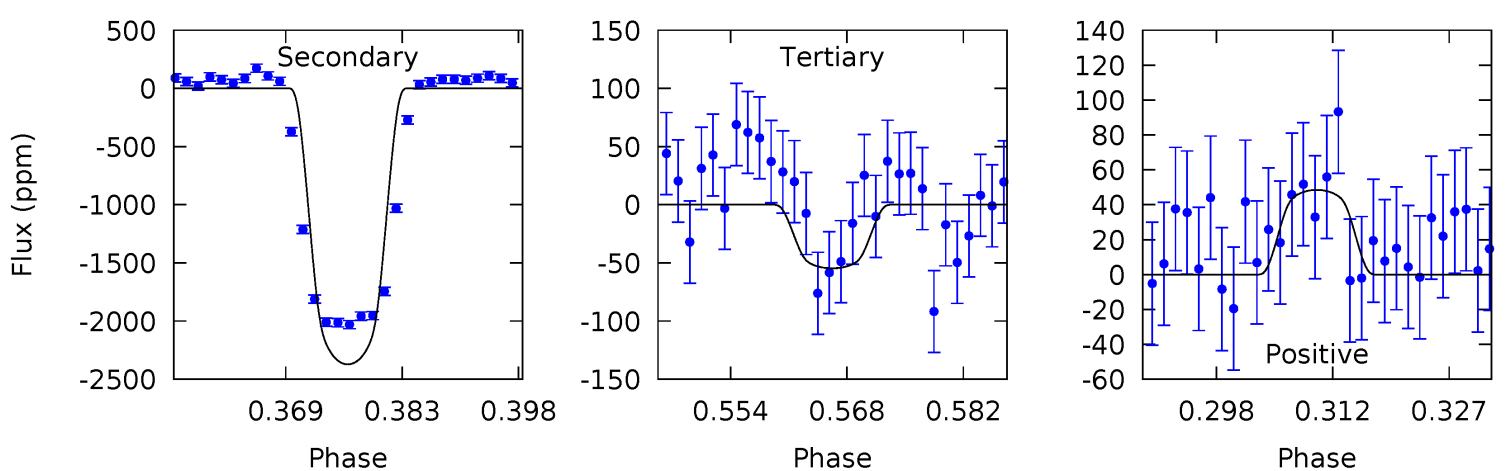
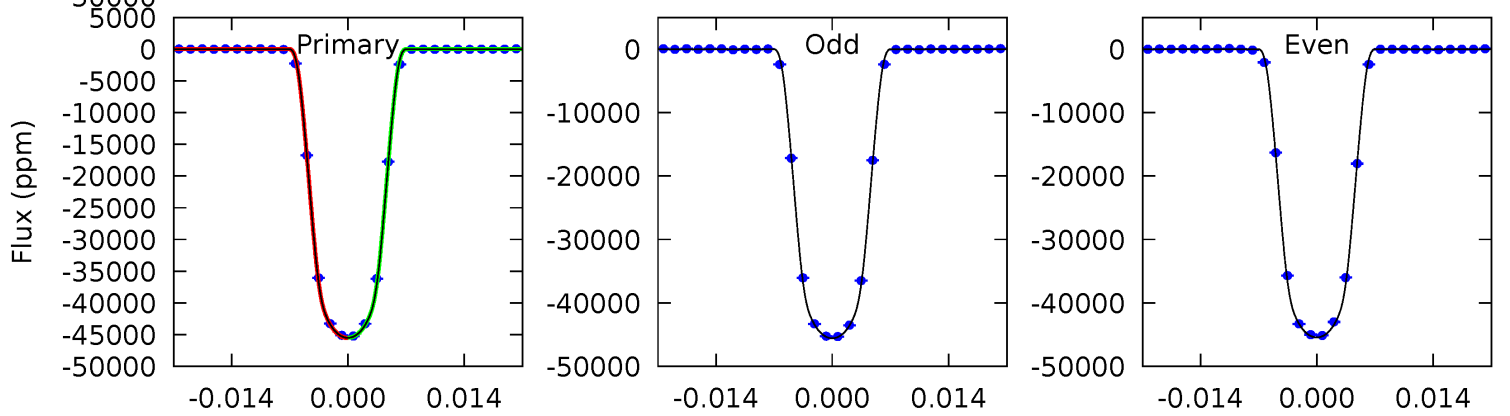
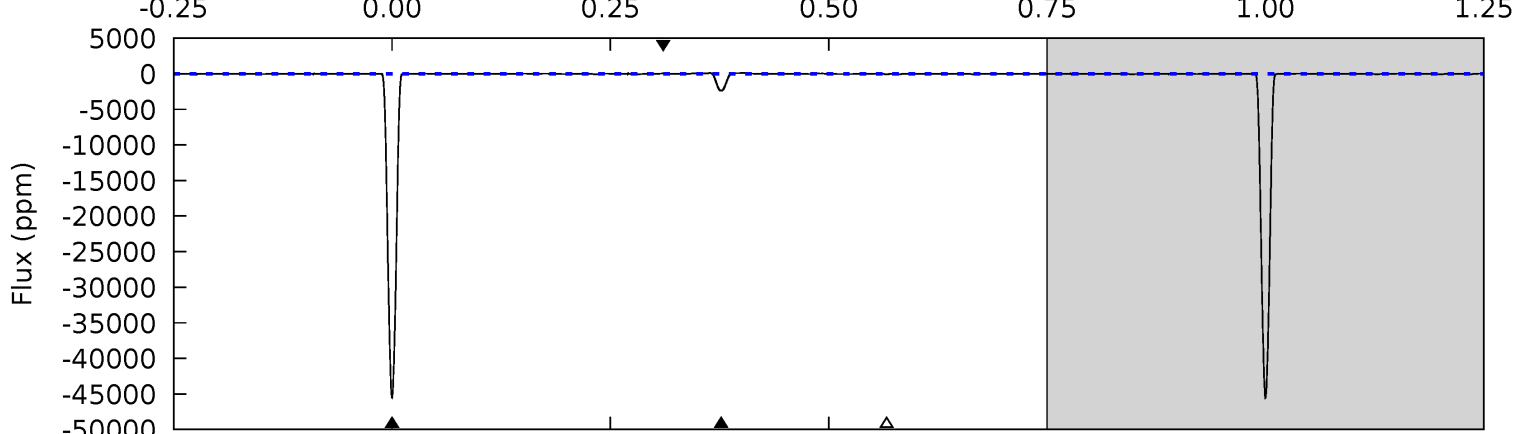
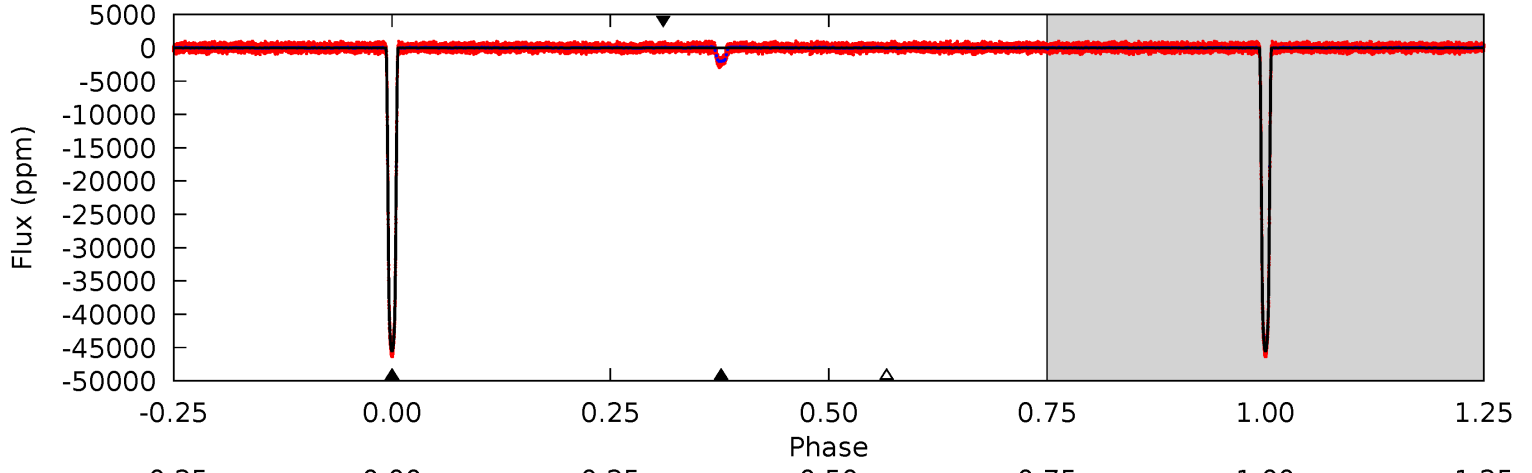
TCE 006421188-01 P= 16.434314 Days  $T_0=136.290260$  (BKJD)



# DV Model-Shift Uniqueness Test

006421188-01, P = 16.434353 Days, E = 119.854138 Days

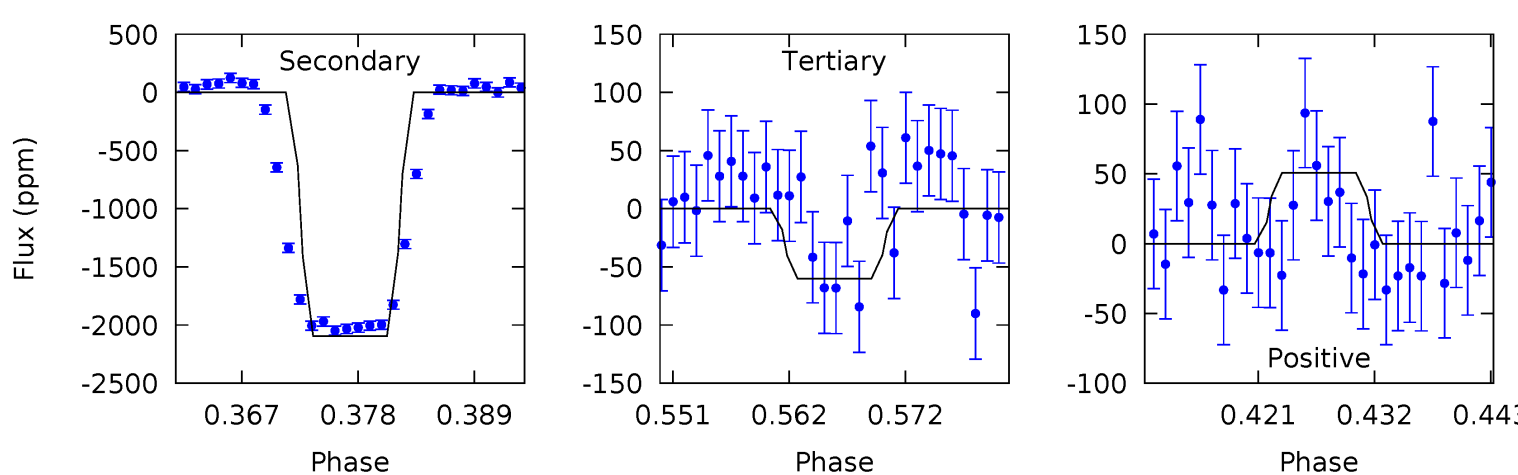
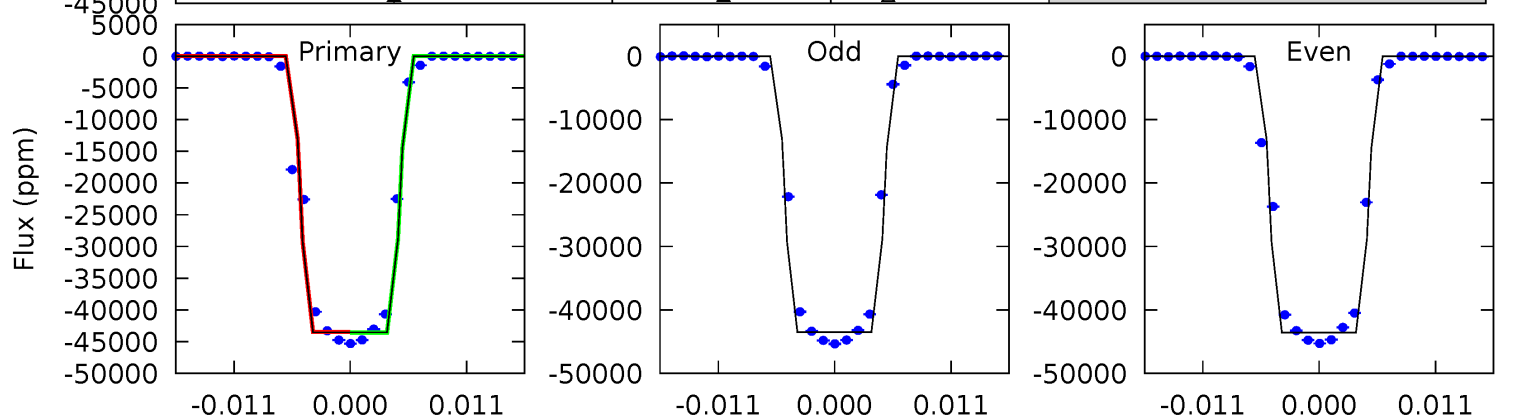
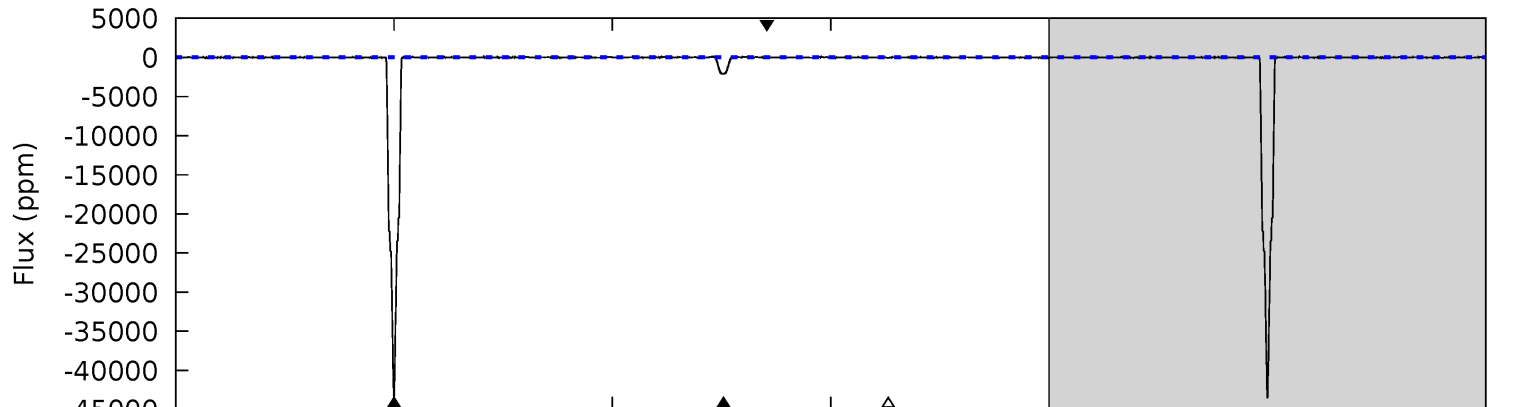
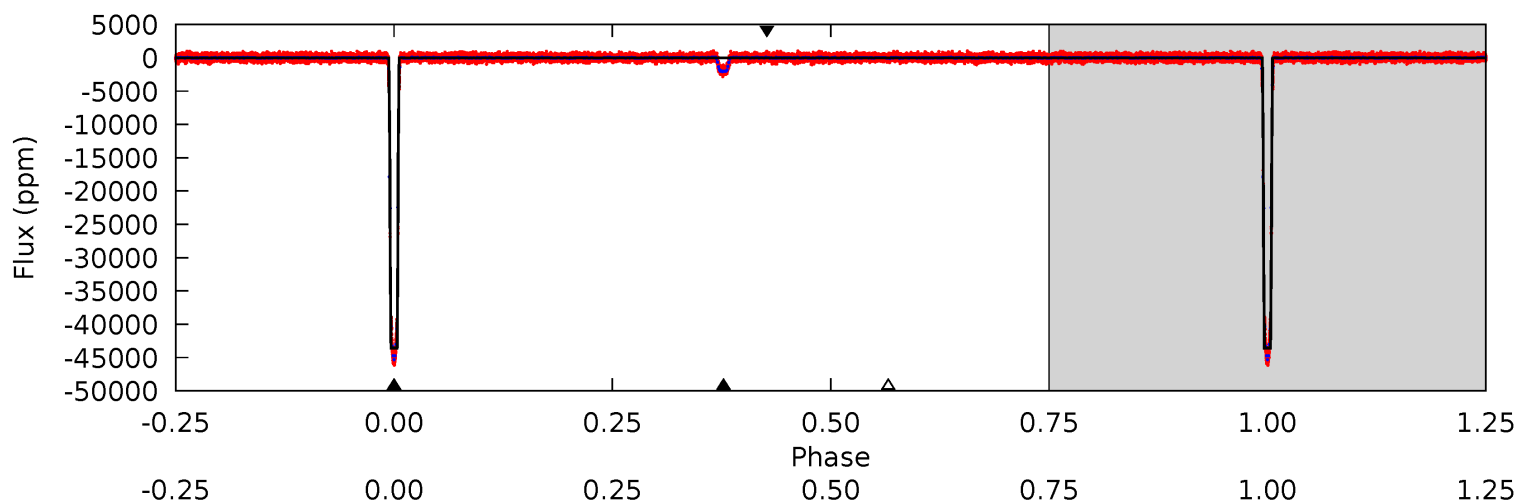
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4599	239.7	5.52	4.90	4.96	2.45	2.59	4593	4594	234.2	234.8	6.44	0.99	0.00	1.21



# Alt Model-Shift Uniqueness Test

006421188-01, P = 16.434314 Days, E = 119.855946 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
3000	144.3	4.14	3.50	5.01	2.55	1.32	2996	2996	140.1	140.8	3.70	1.00	0.00	2.72



### Stellar Parameters For KIC 006421188

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5963^{+434}_{-530}$	$4.322^{+0.205}_{-0.205}$	$-0.120^{+0.300}_{-0.300}$	$1.134^{+0.385}_{-0.315}$	$0.986^{+0.201}_{-0.164}$	$0.951^{+1.168}_{-0.534}$
	+7%/-9%	+5%/-5%	+250%/-250%	+34%/-28%	+20%/-17%	+123%/-56%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 006421188-01 / KOI 6702.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-2372 \pm 10$	$25.55^{+4.93}_{-3.91}$	$1103^{+120}_{-113}$	$3420^{+158}_{-201}$	$32^{+11}_{-8}$
Alt.	$-2094 \pm 15$	$26.37^{+4.80}_{-3.76}$	$1103^{+124}_{-117}$	$3326^{+140}_{-194}$	$26^{+9}_{-7}$

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

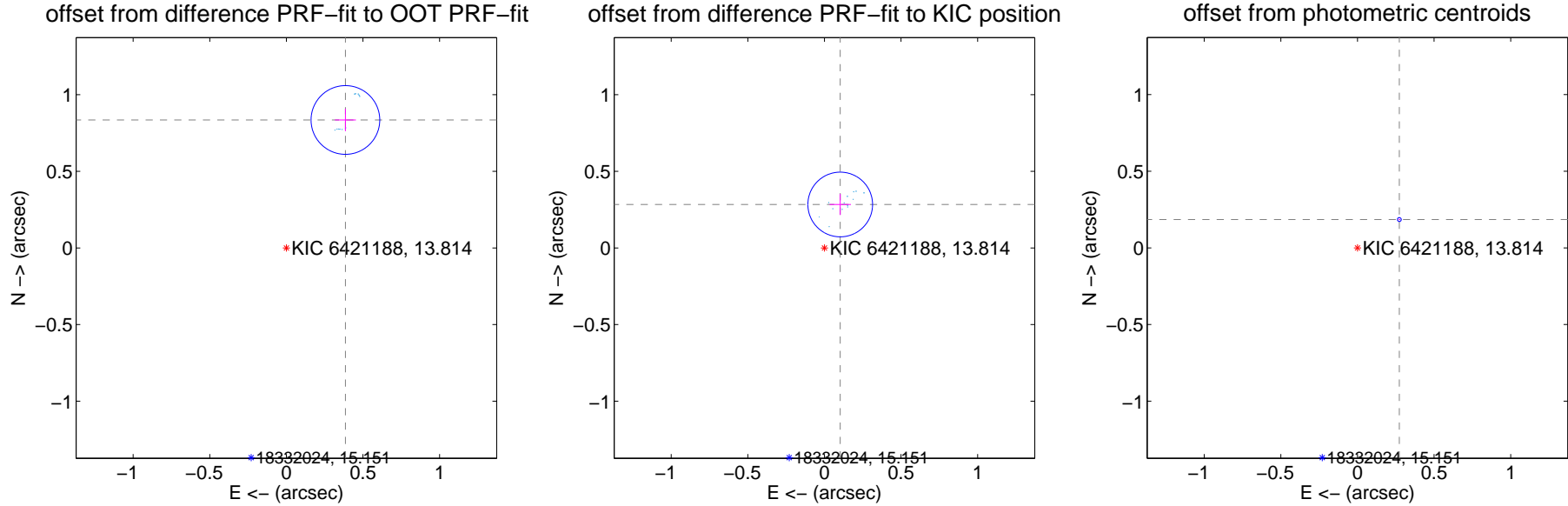
## DV Centroid Data

Supplemental centroid analysis for 006421188-01. Kepler magnitude: 13.81. Transit SNR 2484.95

There are 13 quarters with good PRF difference image offsets

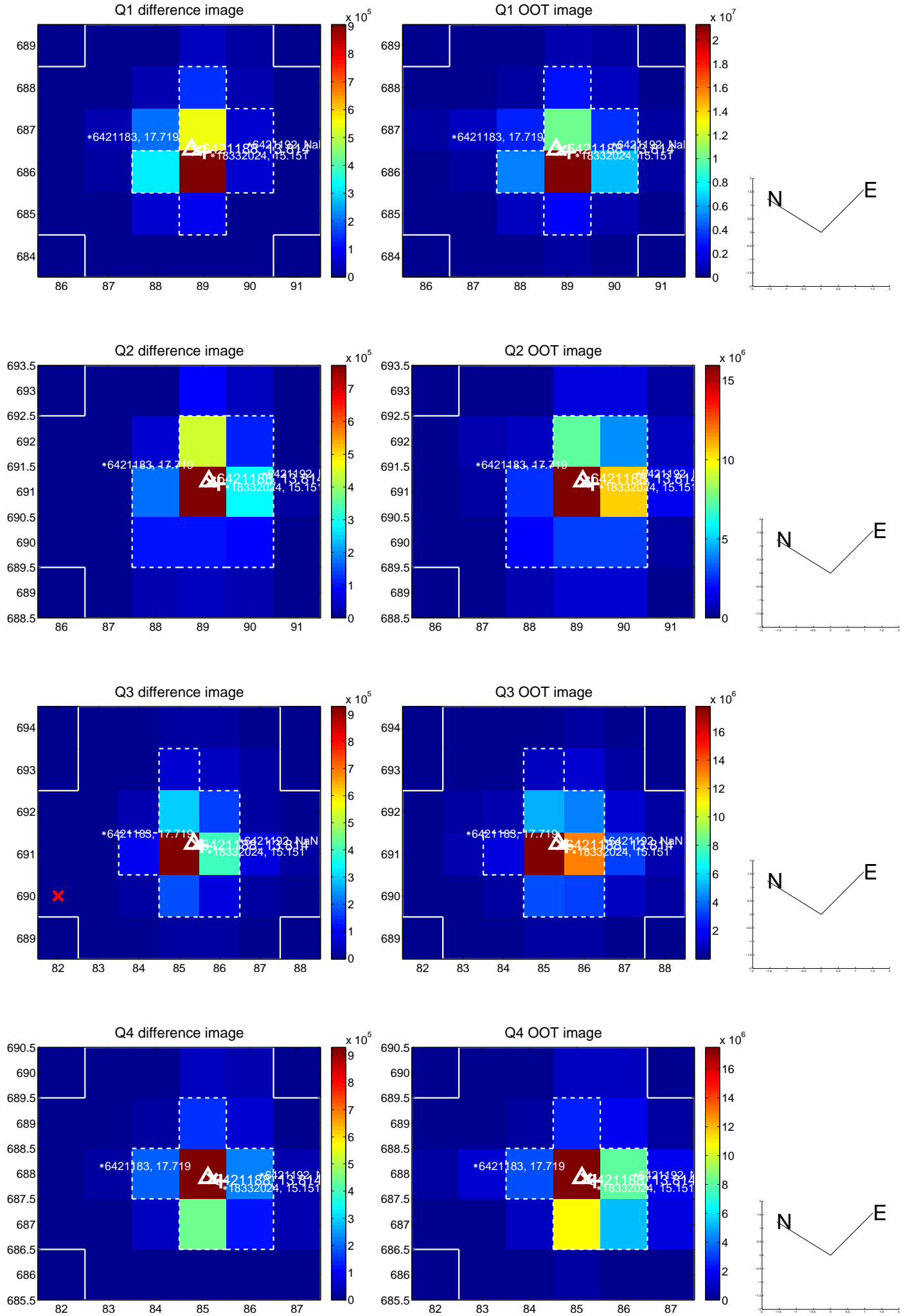
The direct PRF centroid is offset from the target star catalog position by about 0.68 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.920 \pm 0.075$	12.31	$-0.385 \pm 0.069$	$0.835 \pm 0.073$
PRF-fit source offset from KIC position	$0.302 \pm 0.070$	4.29	$-0.103 \pm 0.070$	$0.284 \pm 0.069$
photometric centroid source offset	$0.33 \pm 0.00$	78.17	$-0.27 \pm 0.00$	$0.18 \pm 0.00$

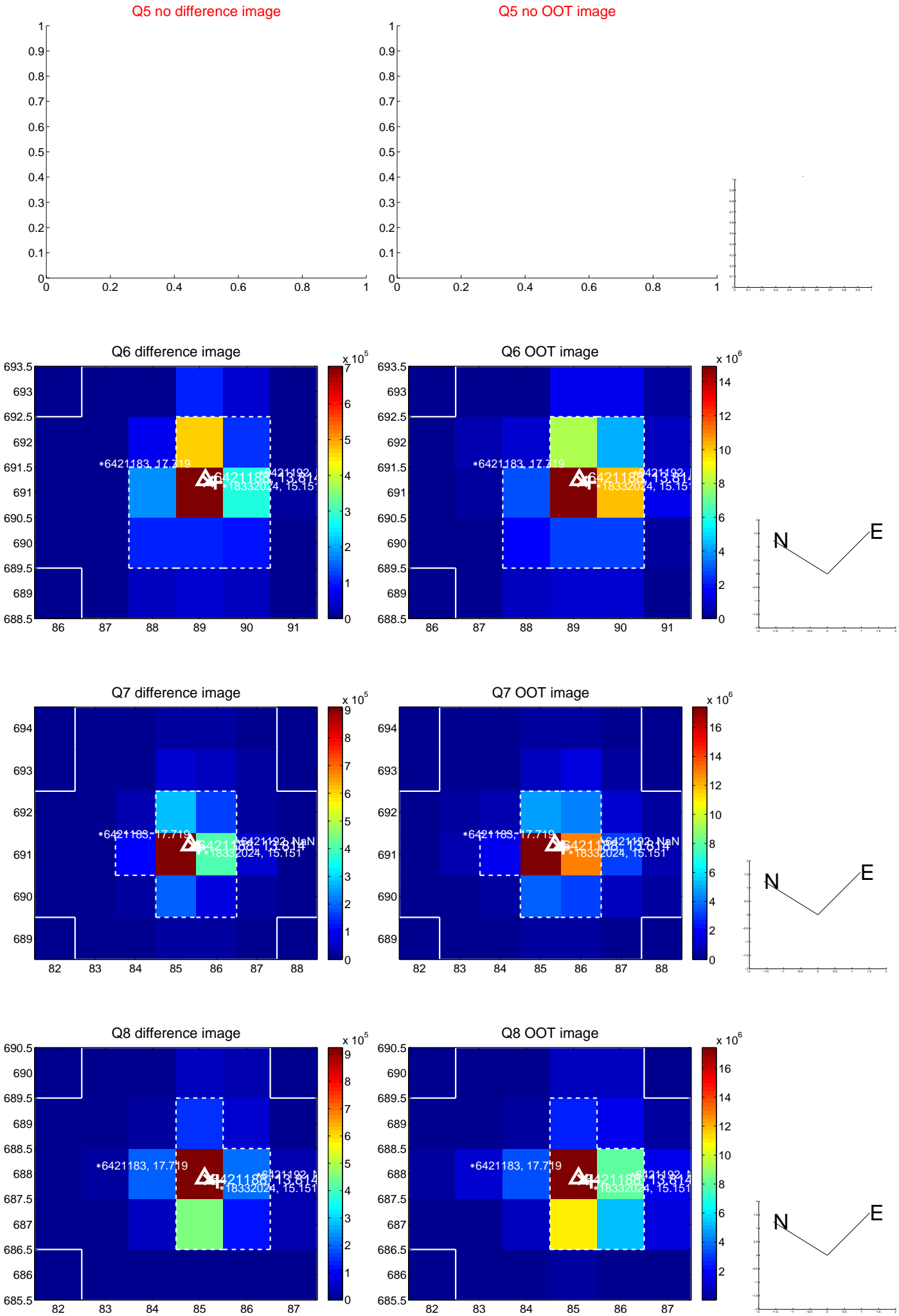


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

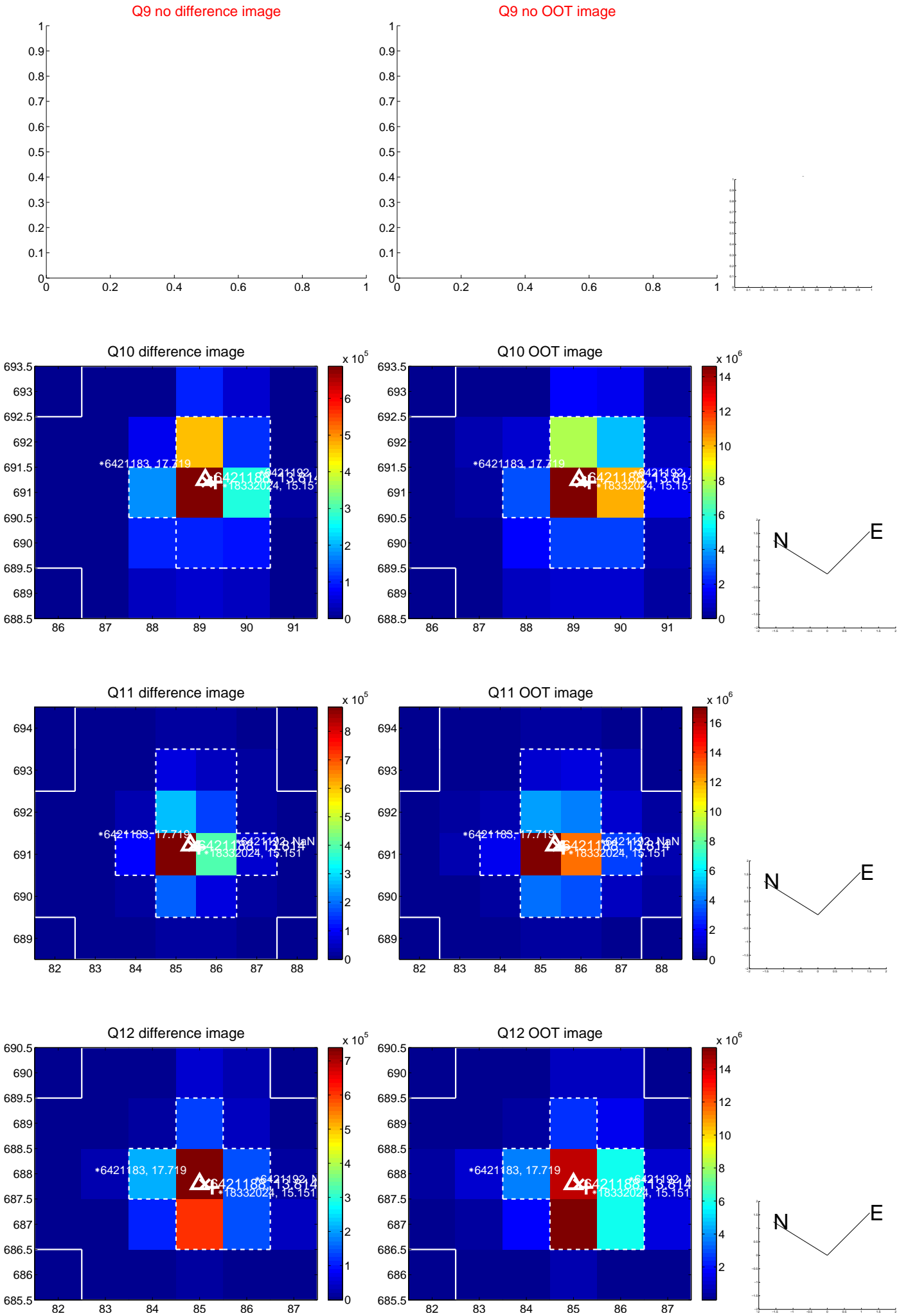


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

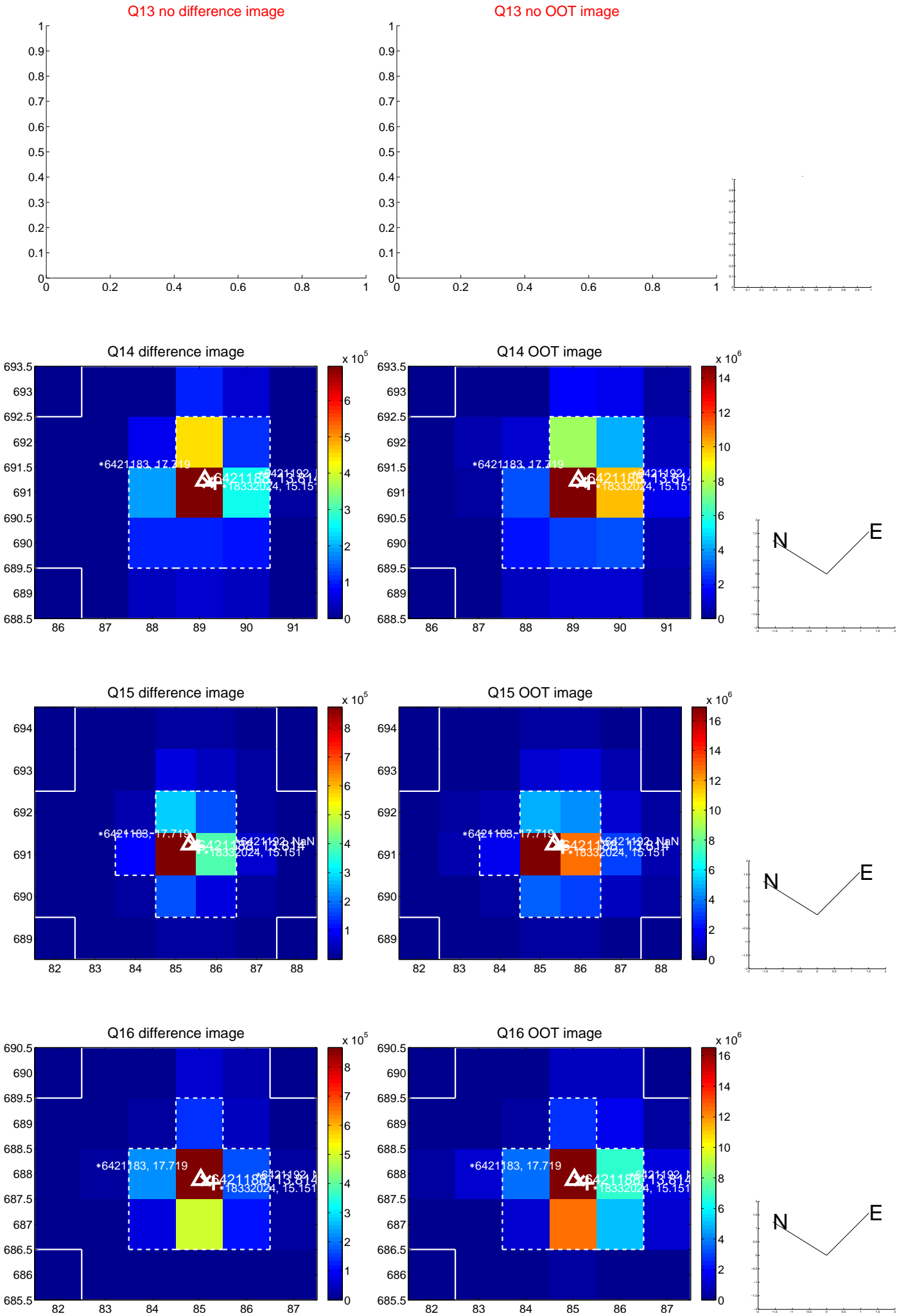




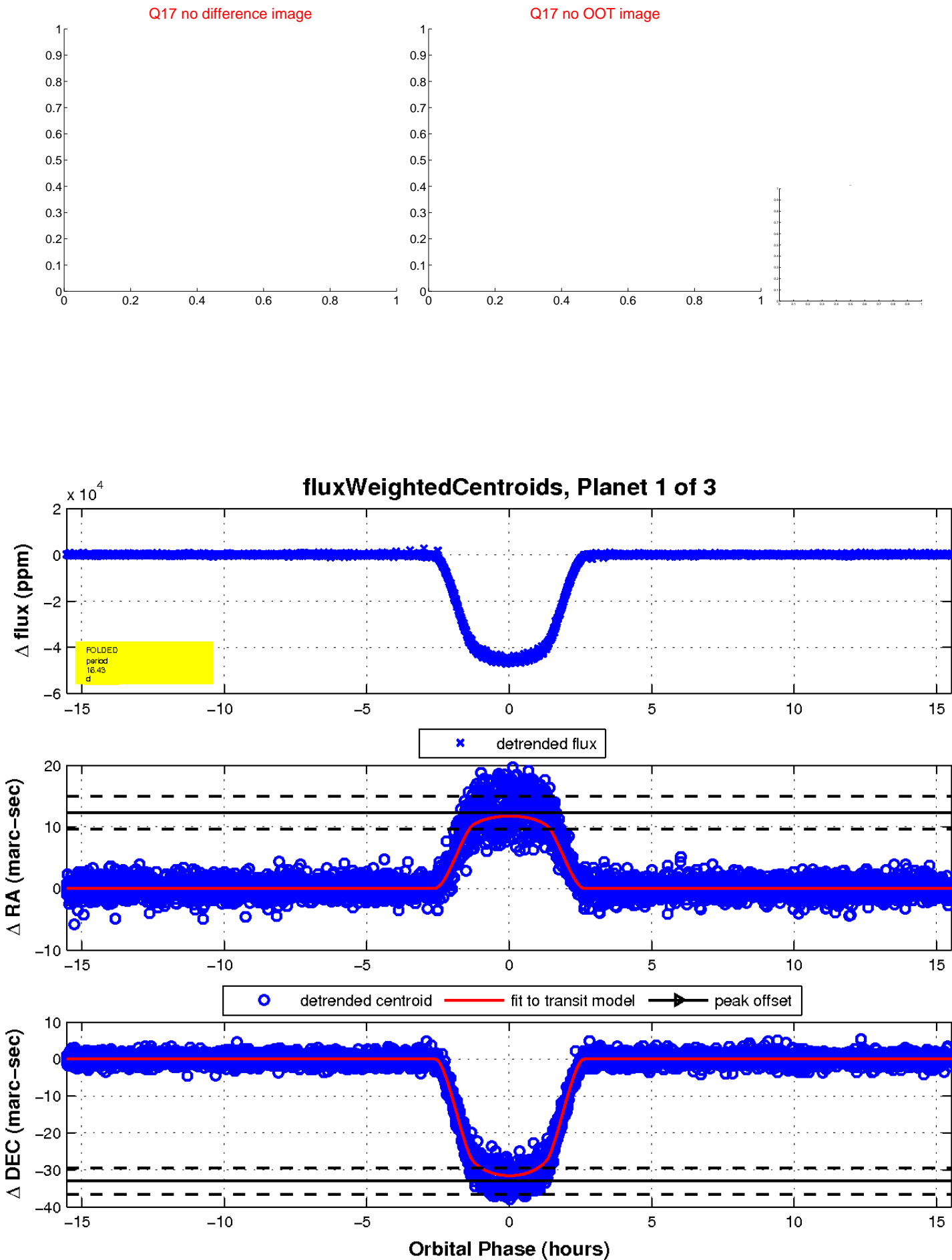
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

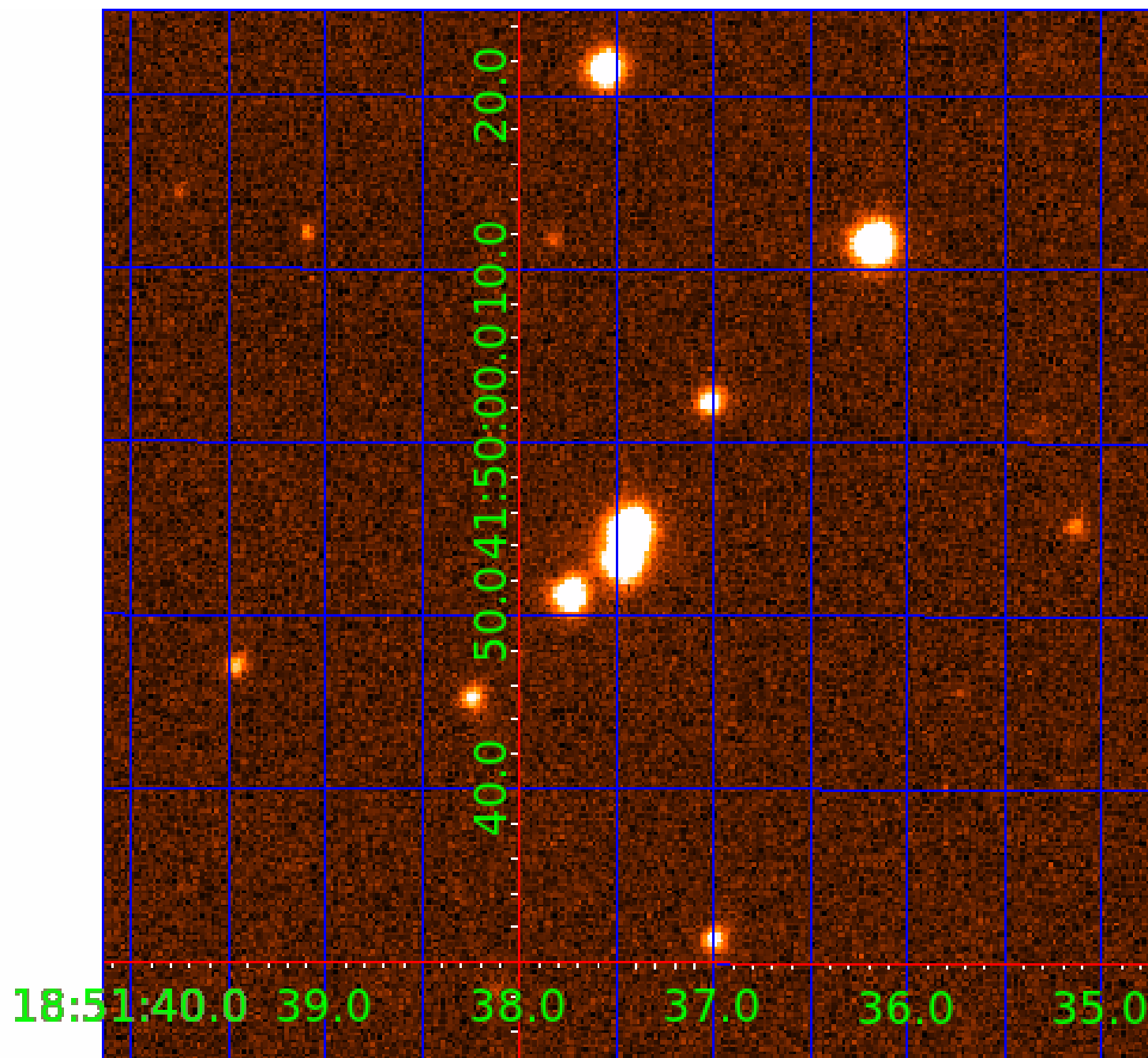


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006421188

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006421188-01	OBS	6702.01	16.434353	136.288491	45465.9	5.177	2927.8	2484.9	1.13	5963	25.29	91.94
006421188-02	OBS	No	16.434355	142.482970	2150.8	6.367	165.8	163.7	1.13	5963	6.27	91.94
006421188-03	OBS	No	454.813686	220.101493	757.0	14.326	14.2	13.3	1.13	5963	3.37	1.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006421188-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_KIC_POS
006421188-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_KIC_POS
006421188-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—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.

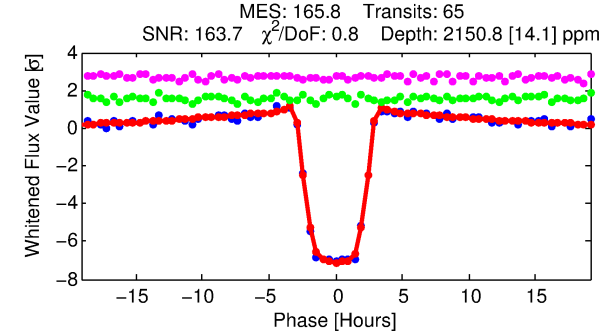
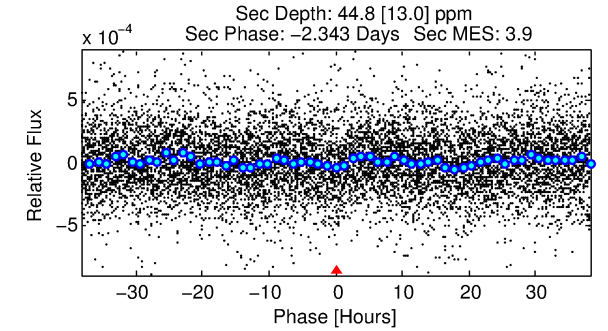
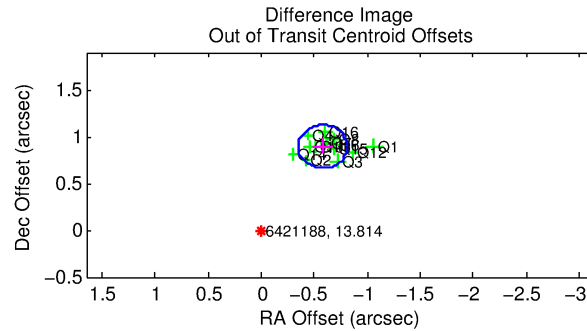
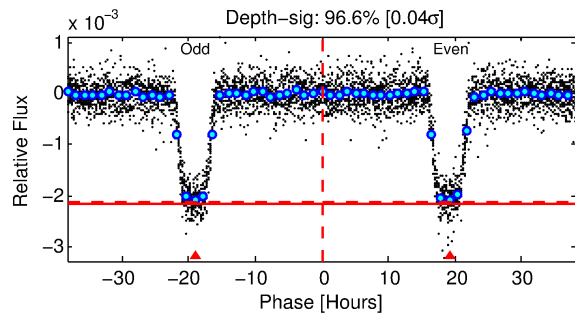
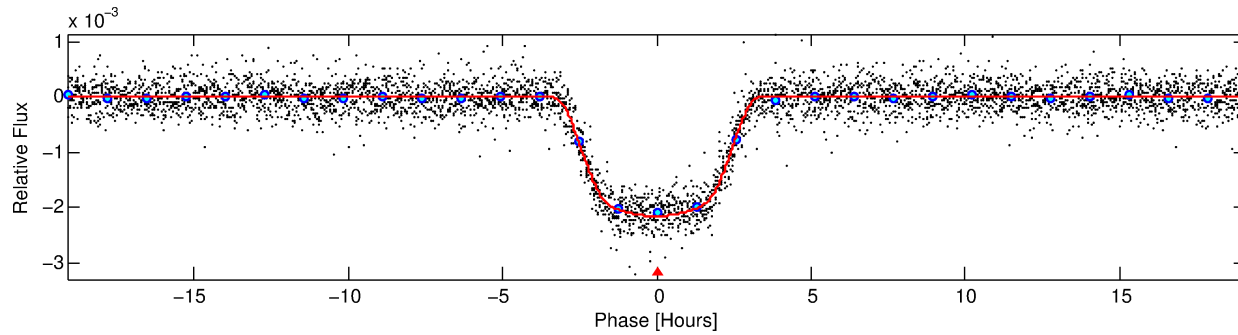
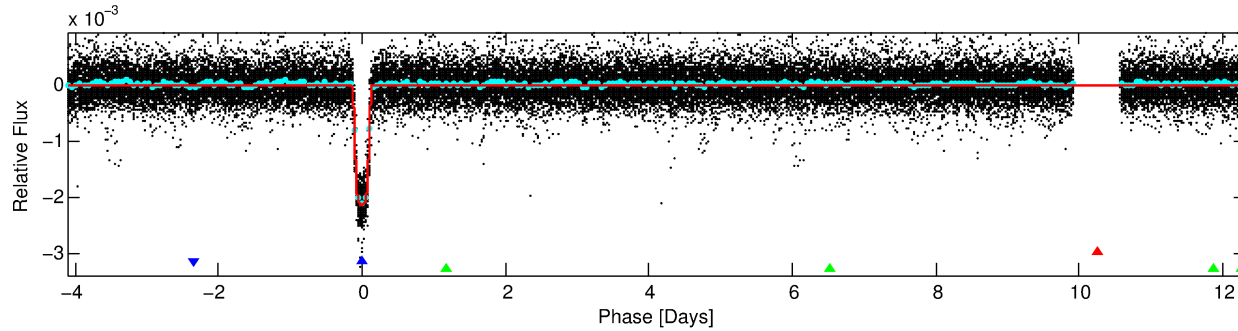
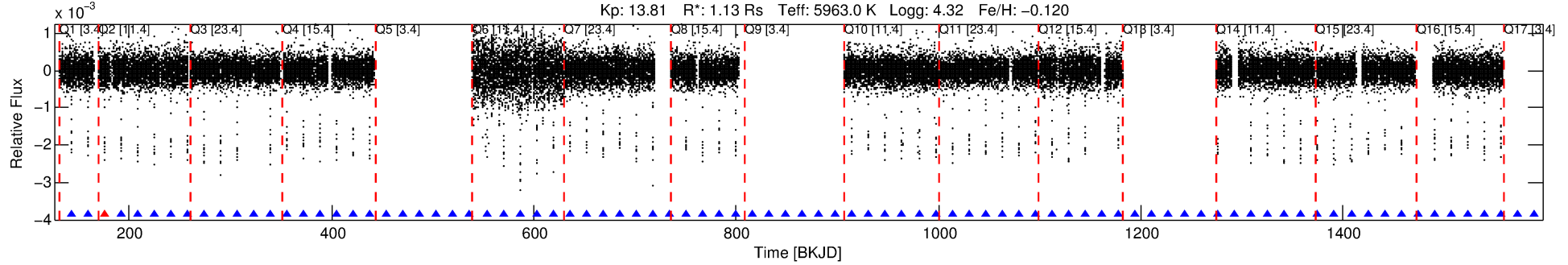
## Ephemeris Match Information For 006421188-02

No Significant Match Found

# DV One-Page Summary

KIC: 6421188 Candidate: 2 of 3 Period: 16.434 d  
KOI: K06702 Corr: No Ephemeris Match

Kp: 13.81 R\*: 1.13 Rs Teff: 5963.0 K Logg: 4.32 Fe/H: -0.120



## DV Fit Results:

Period = 16.43435 [0.00001] d  
Epoch = 142.4830 [0.0008] BKJD  
Rp/R\* = 0.0507 [0.0003]  
a/R\* = 10.47 [0.17]  
b = 0.91 [0.00]  
Seff = 91.94 [48.36]  
Teff = 790 [104] K  
Rp = 6.27 [2.13] Re  
a = 0.1259 [0.0347] AU  
Ag = 9.92 [4.81] [1.86σ]  
Teffp = 2167 [249] K [5.11σ]

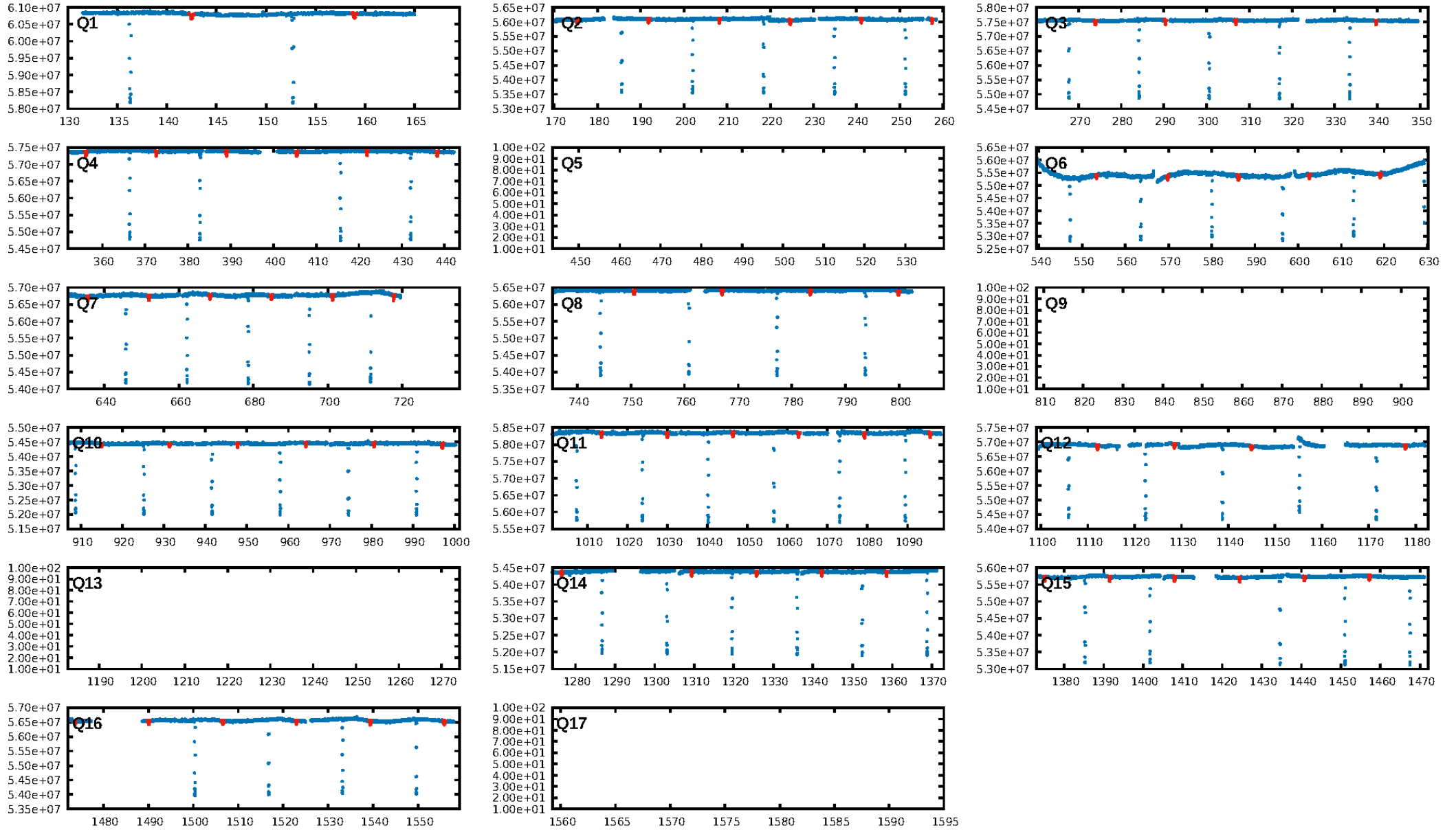
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [671.12σ]  
ModelChiSquare2-sig: 97.2%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.98 [62/63]  
GhostDiagnostic-chr: 4.628  
Centroid-sig: 0.0%  
Centroid-so: 0.468 arcsec [6.08σ]  
OotOffset-rm: 1.065 arcsec [13.85σ]  
KicOffset-rm: 0.448 arcsec [5.36σ]  
OotOffset-st: 4/4/4/1 [13]  
KicOffset-st: 4/4/4/1 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 1.00 [13/13]

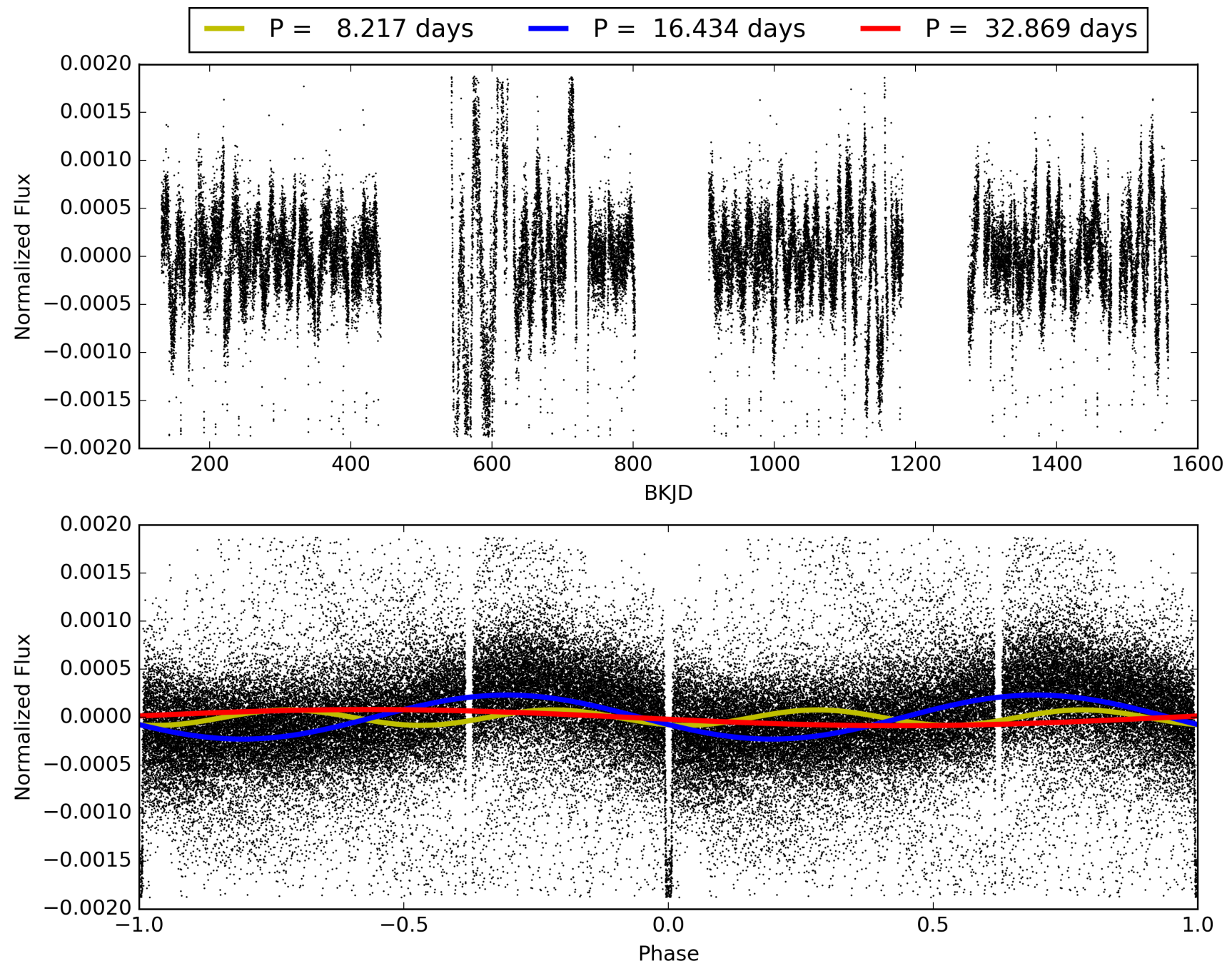
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 14:48:13 Z

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

# TCE 006421188-02, PDC Light Curves



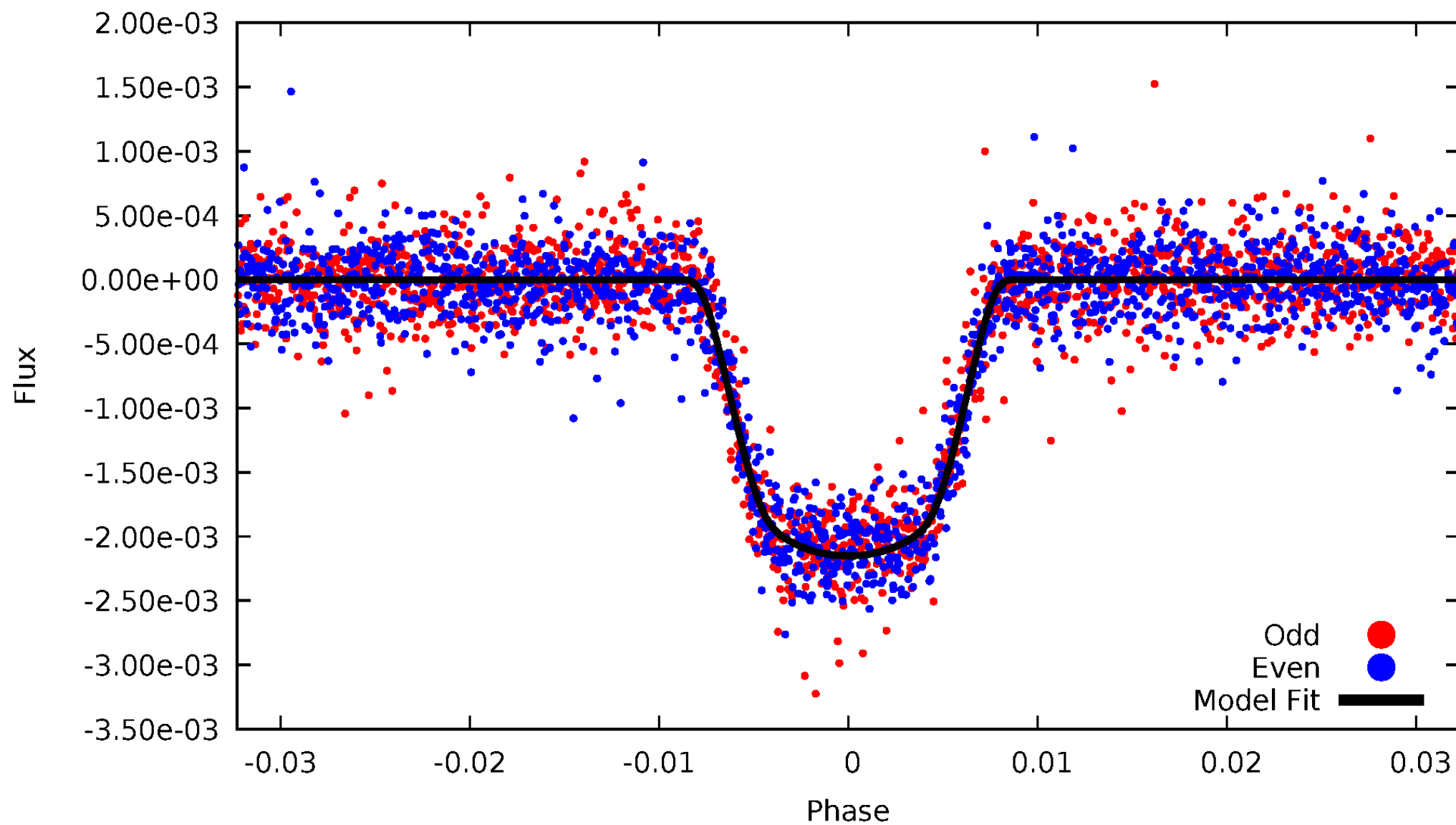
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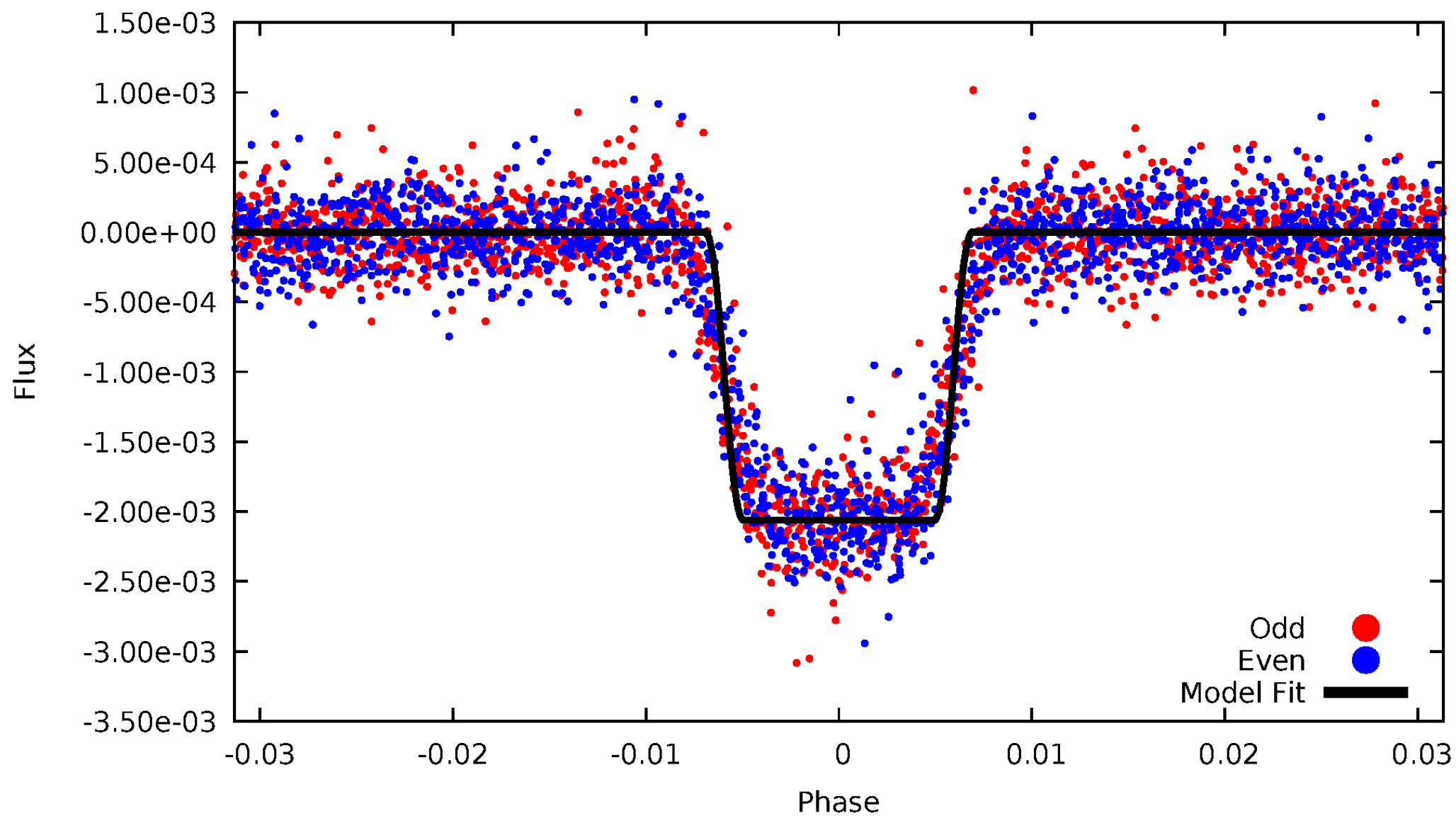
# DV Odd/Even

TCE 006421188-02



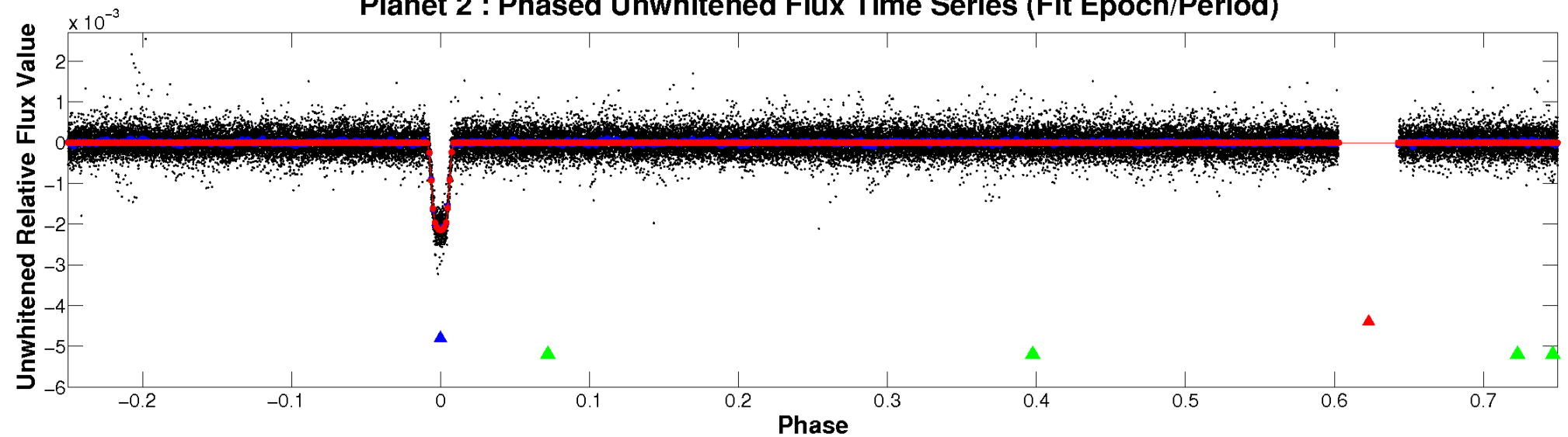
# ALT Odd/Even

TCE 006421188-02

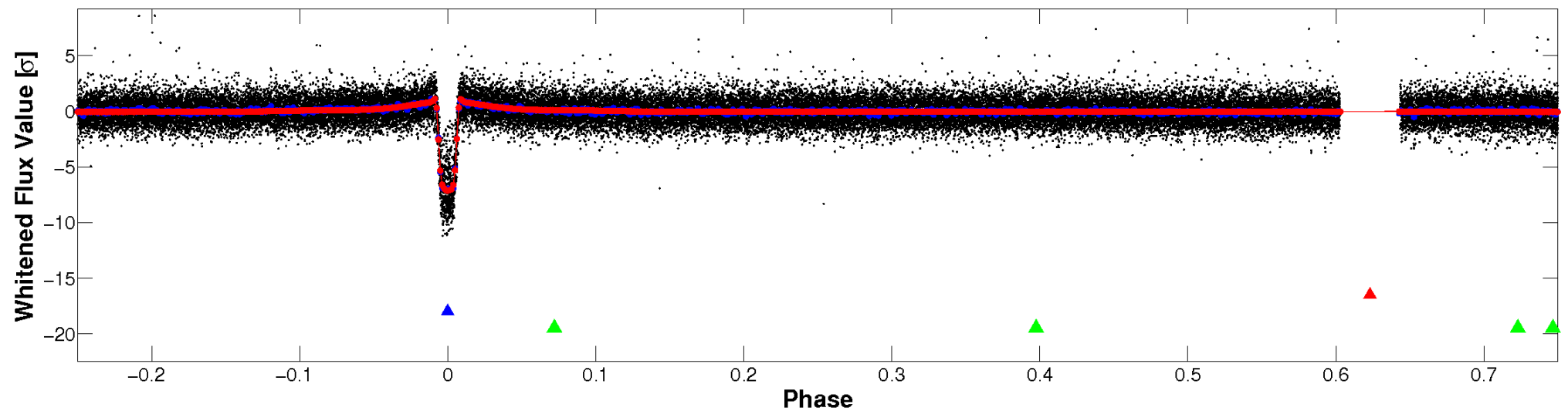


# Non-Whitened Vs. Whitened Light Curve

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

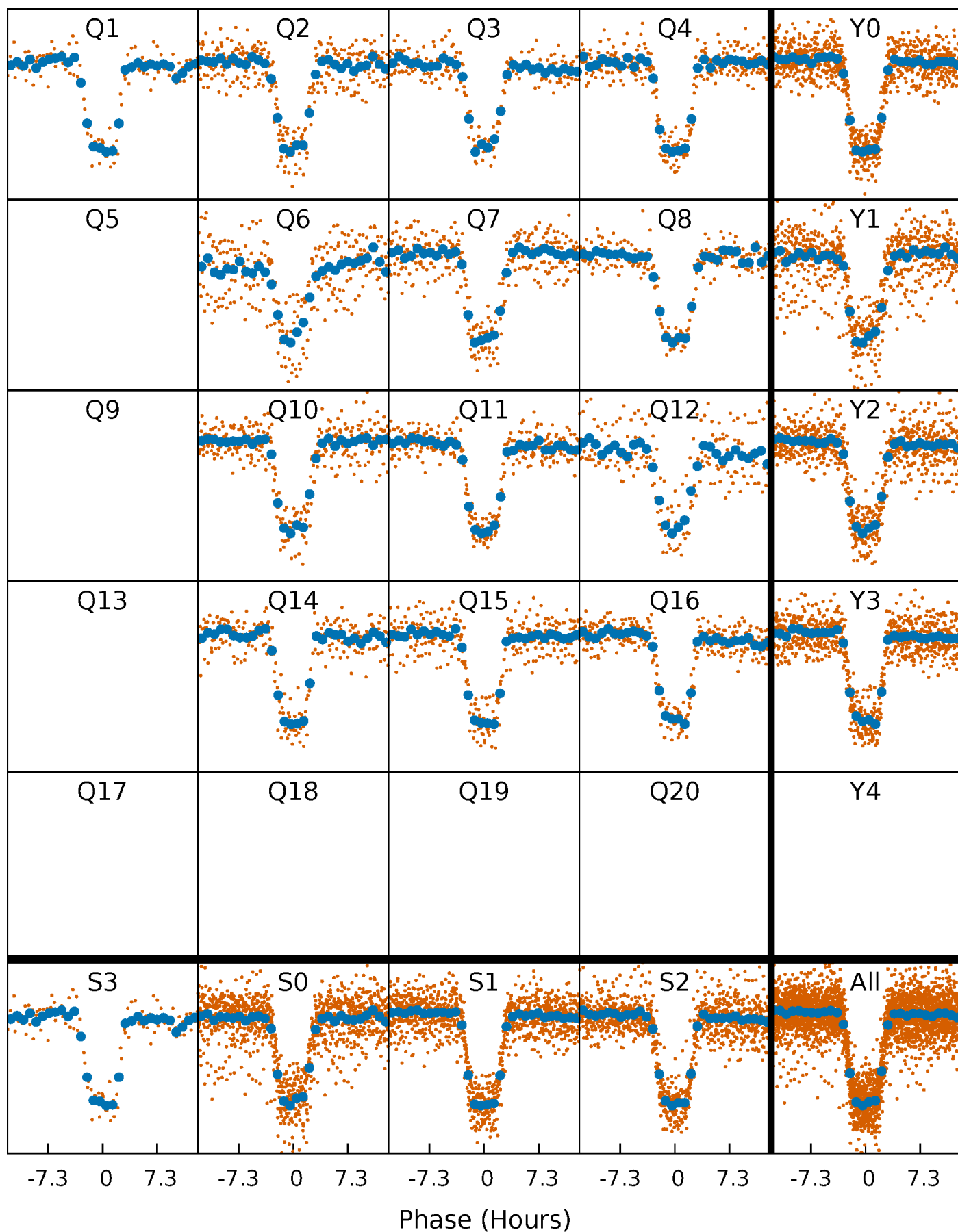


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



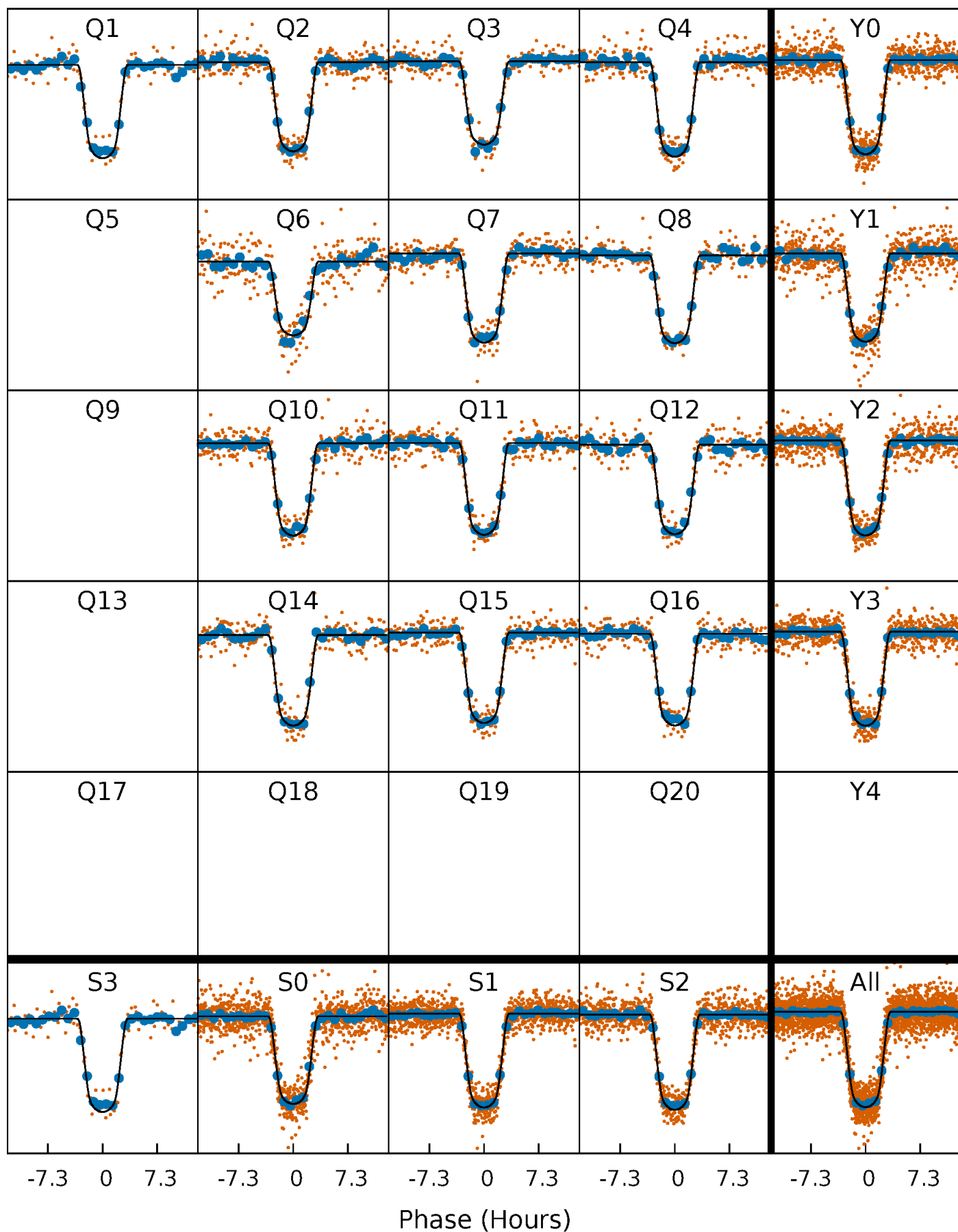
# PDC Quarter-Phased Transit Curves

TCE 006421188-02 P= 16.434355 Days  $T_0=142.482970$  (BKJD)



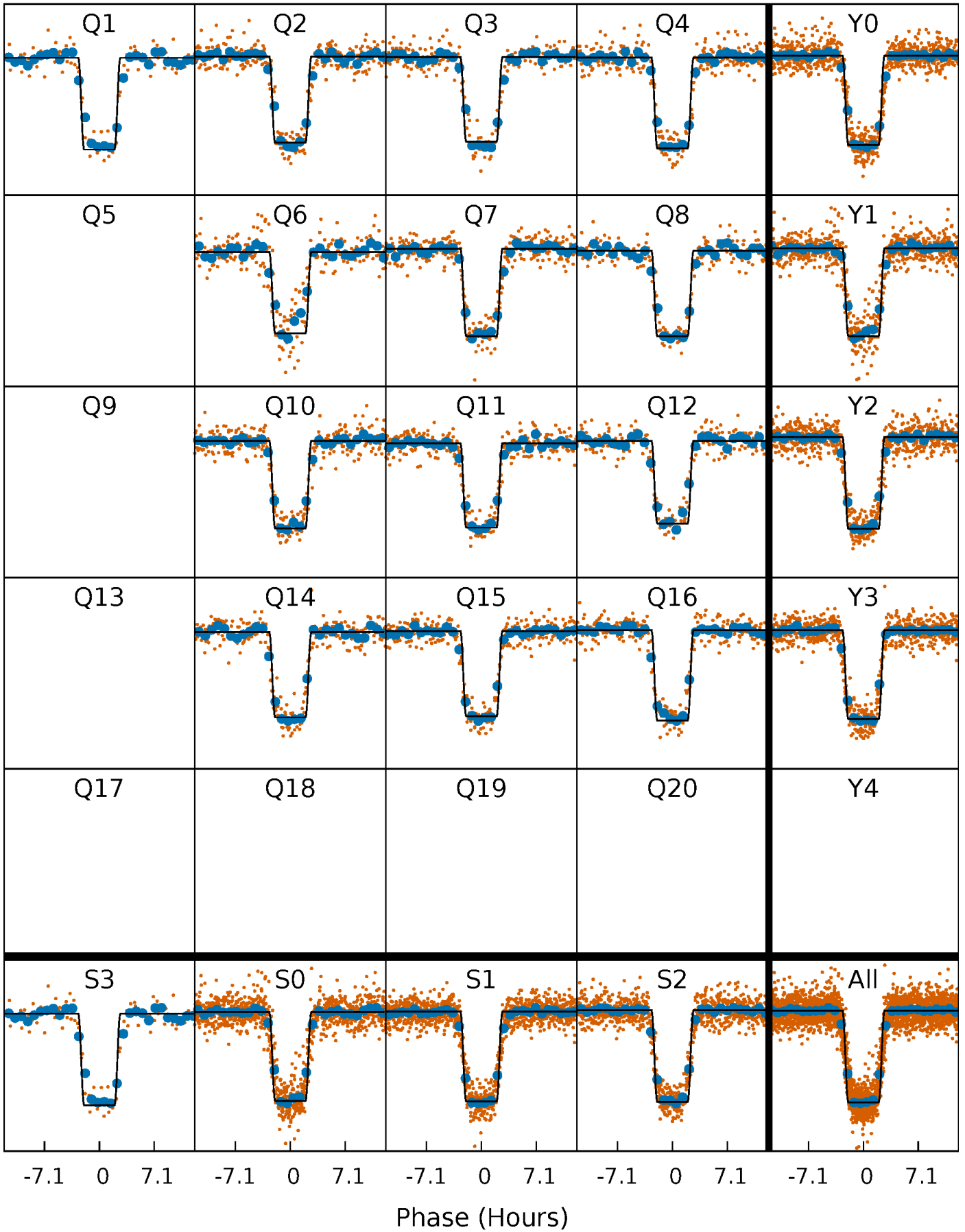
# DV Quarter-Phased Transit Curves

TCE 006421188-02 P= 16.434355 Days  $T_0=142.482970$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

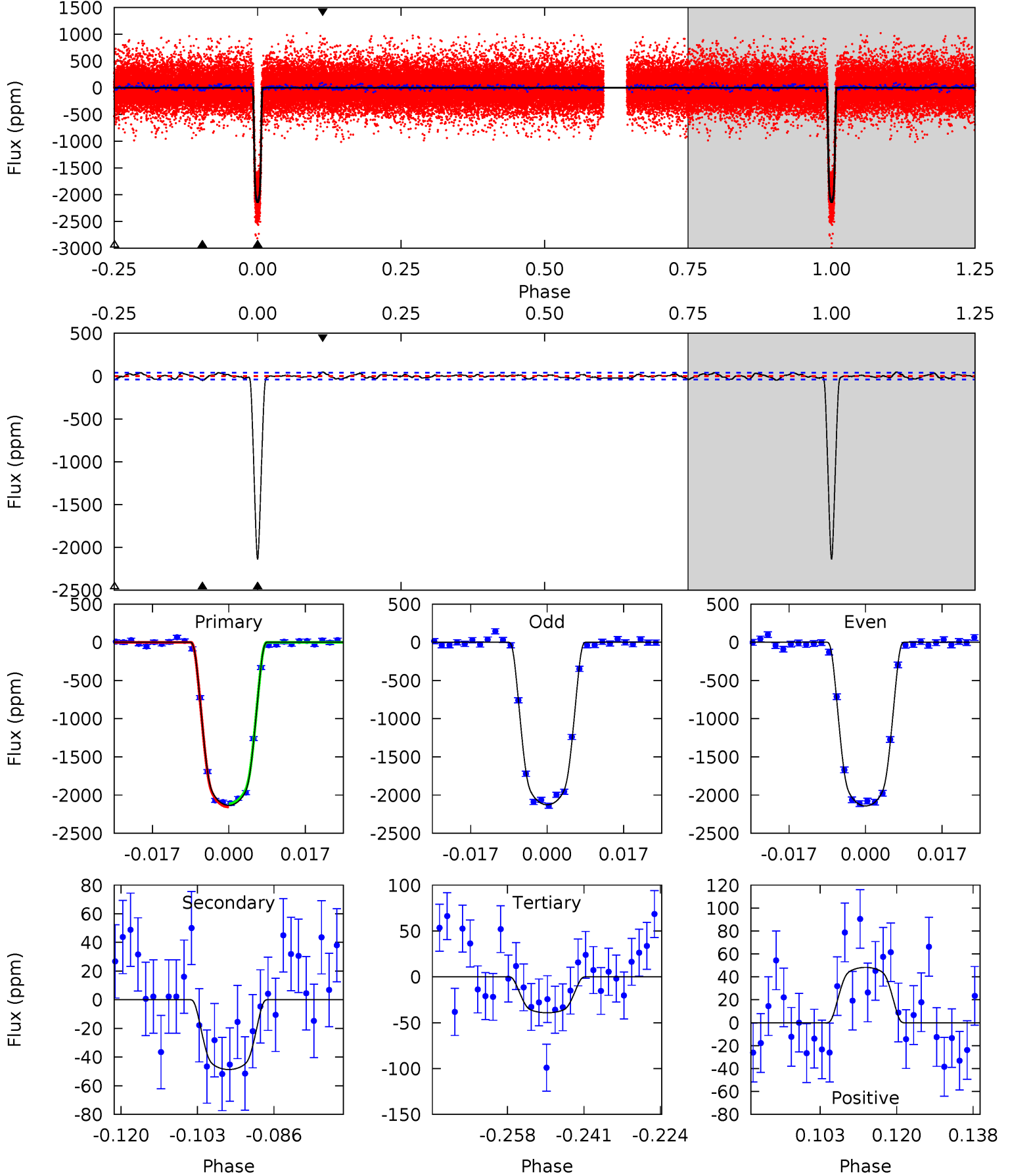
TCE 006421188-02 P= 16.434525 Days  $T_0=142.475070$  (BKJD)



# DV Model-Shift Uniqueness Test

006421188-02, P = 16.434355 Days, E = 126.048615 Days

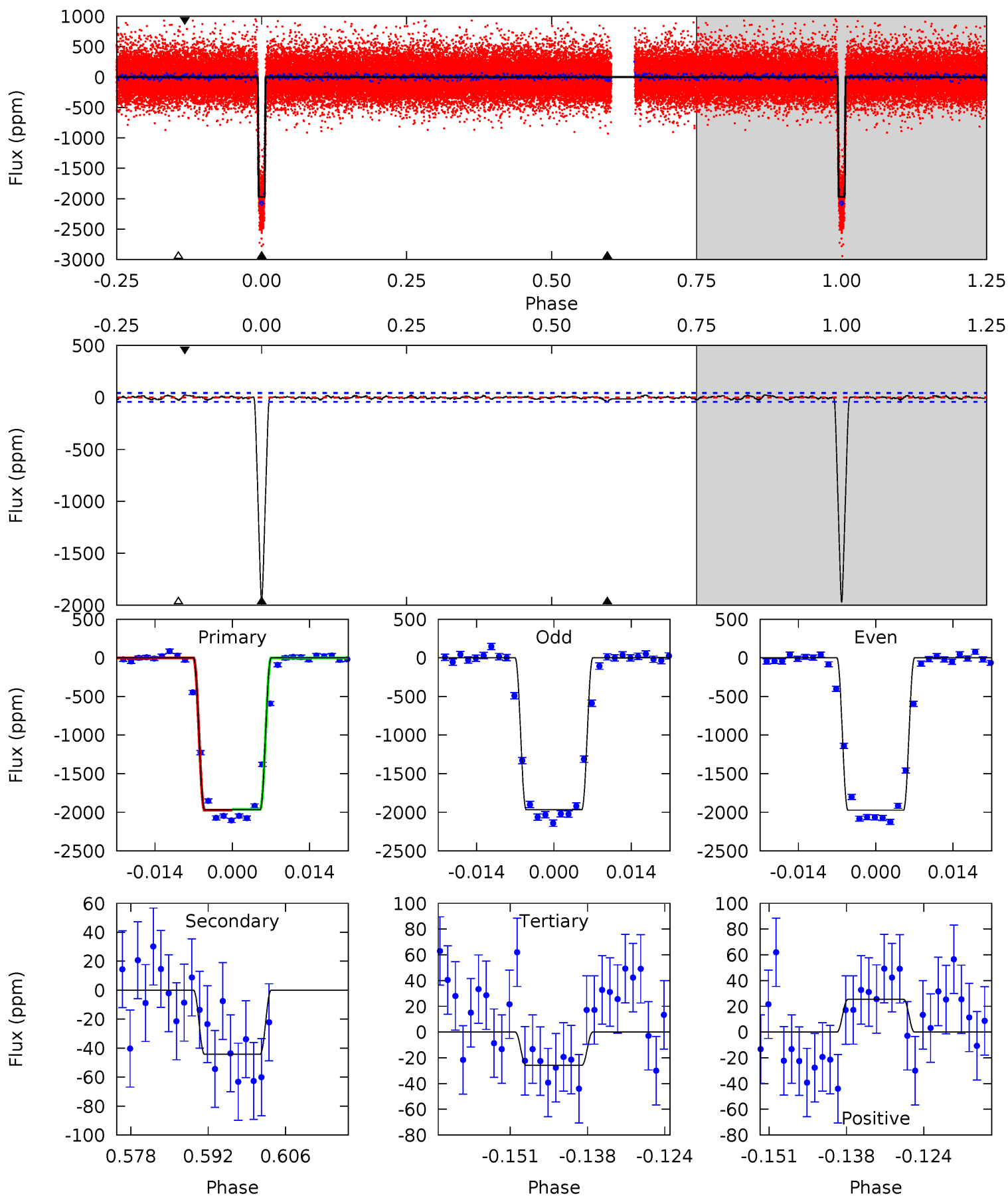
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
258.9	5.91	4.75	5.85	4.92	2.38	1.95	254.1	253.0	1.15	0.06	0.96	1.01	0.02	2.44



# Alt Model-Shift Uniqueness Test

006421188-02, P = 16.434525 Days, E = 126.040545 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
231.1	5.20	3.04	2.99	4.96	2.46	1.03	228.1	228.1	2.16	2.21	0.41	0.99	0.01	0.81





### Stellar Parameters For KIC 006421188

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5963^{+434}_{-530}$	$4.322^{+0.205}_{-0.205}$	$-0.120^{+0.300}_{-0.300}$	$1.134^{+0.385}_{-0.315}$	$0.986^{+0.201}_{-0.164}$	$0.951^{+1.168}_{-0.534}$
	+7%/-9%	+5%/-5%	+250%/-250%	+34%/-28%	+20%/-17%	+123%/-56%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 006421188-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-49 \pm 8$	$6.32^{+1.20}_{-0.86}$	$1102^{+117}_{-128}$	$2894^{+145}_{-175}$	$11^{+4}_{-3}$
Alt.	$-44 \pm 9$	$5.62^{+1.05}_{-0.82}$	$1099^{+129}_{-125}$	$2949^{+153}_{-181}$	$12^{+5}_{-4}$

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

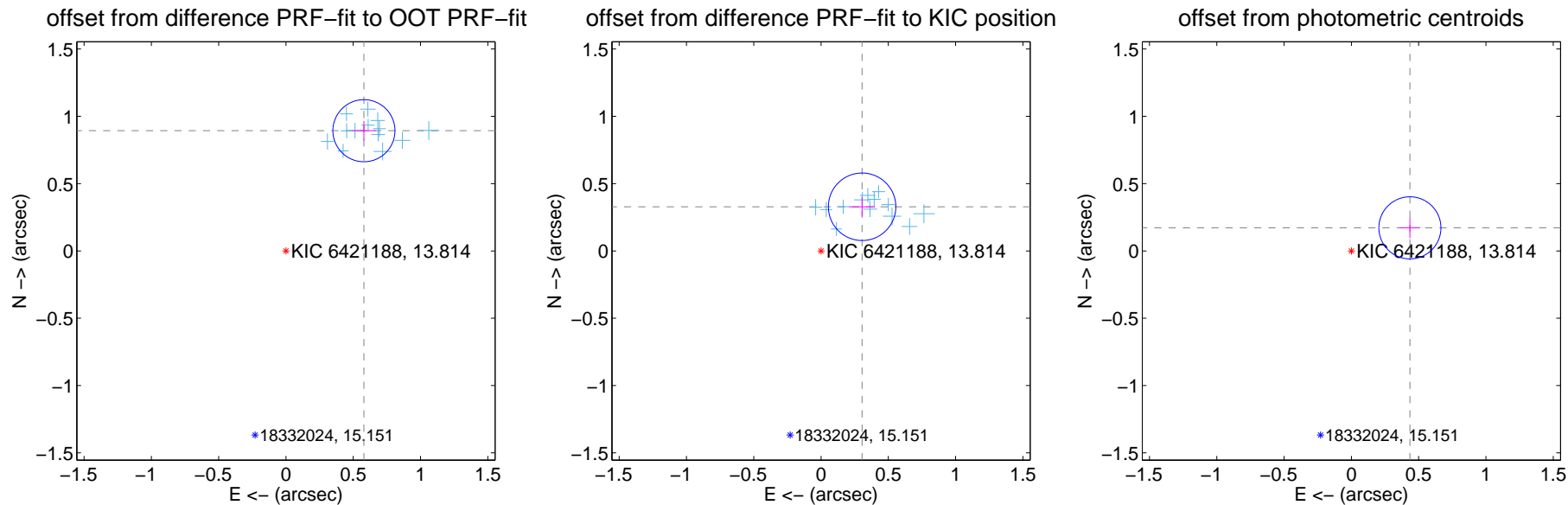
## DV Centroid Data

Supplemental centroid analysis for 006421188-02. Kepler magnitude: 13.81. Transit SNR 163.73

There are 13 quarters with good PRF difference image offsets

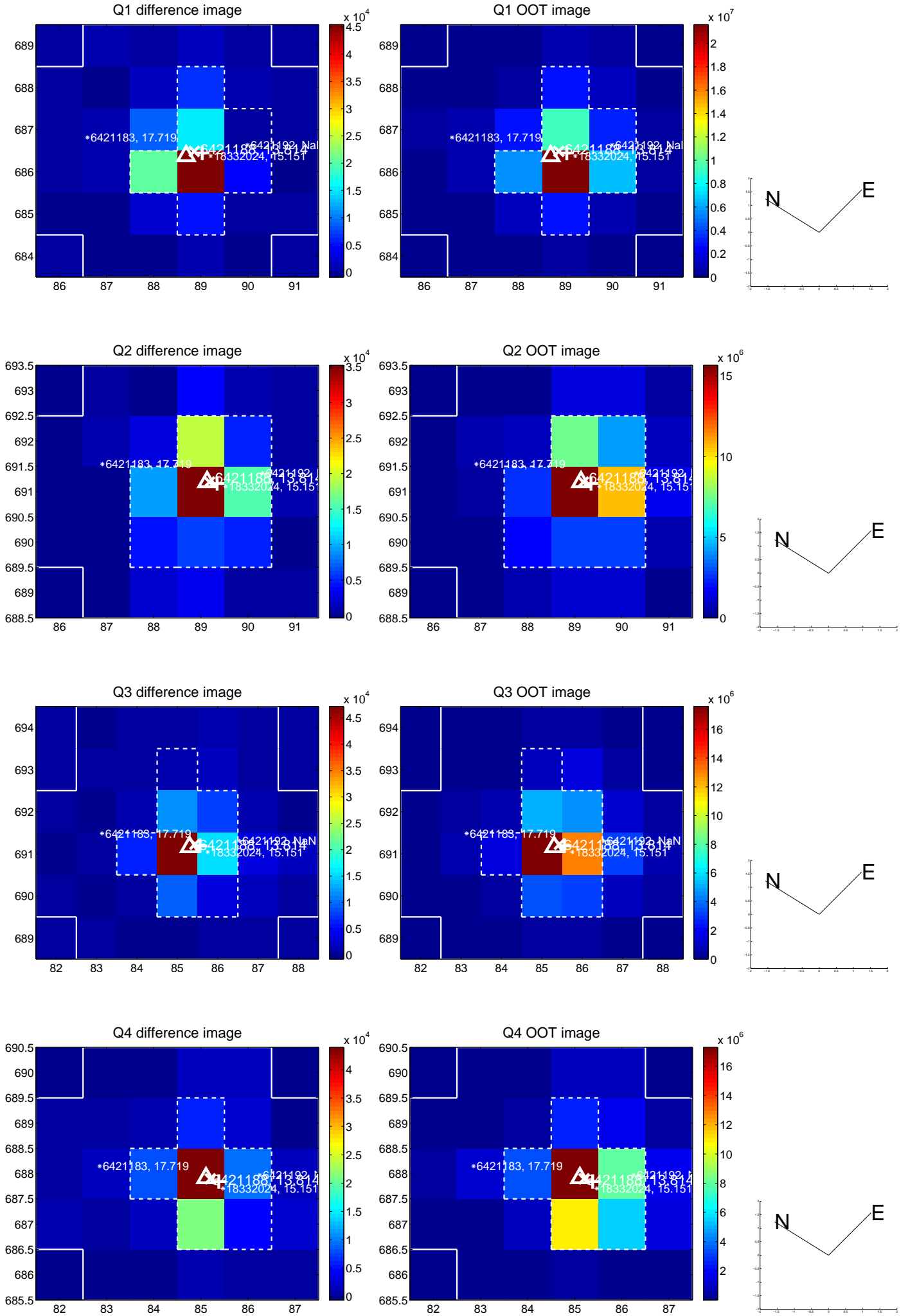
The direct PRF centroid is offset from the target star catalog position by about 0.69 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.065 \pm 0.077$	13.85	$-0.579 \pm 0.086$	$0.893 \pm 0.073$
PRF-fit source offset from KIC position	$0.448 \pm 0.084$	5.36	$-0.305 \pm 0.096$	$0.328 \pm 0.071$
photometric centroid source offset	$0.47 \pm 0.08$	6.08	$-0.43 \pm 0.08$	$0.17 \pm 0.08$

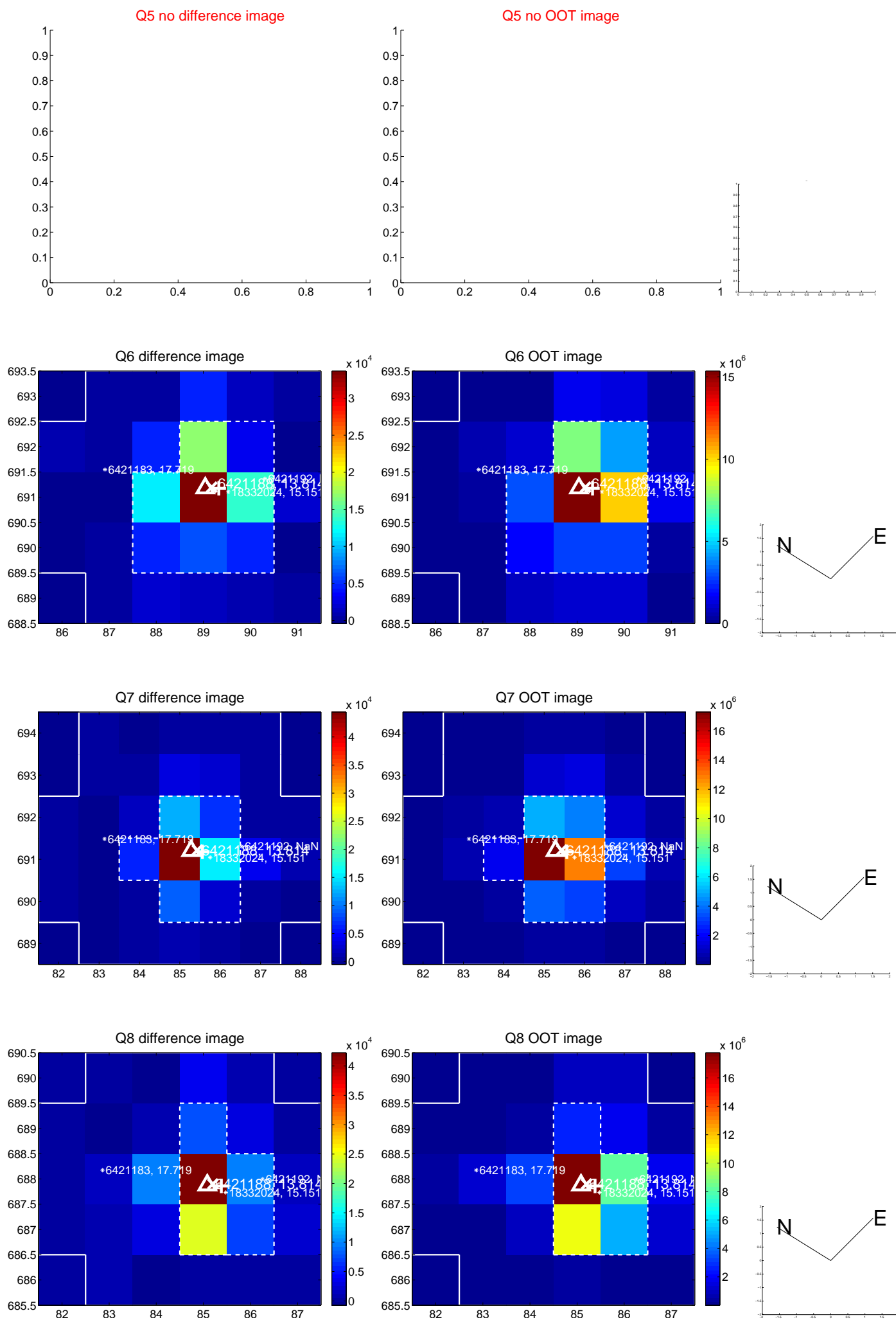


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

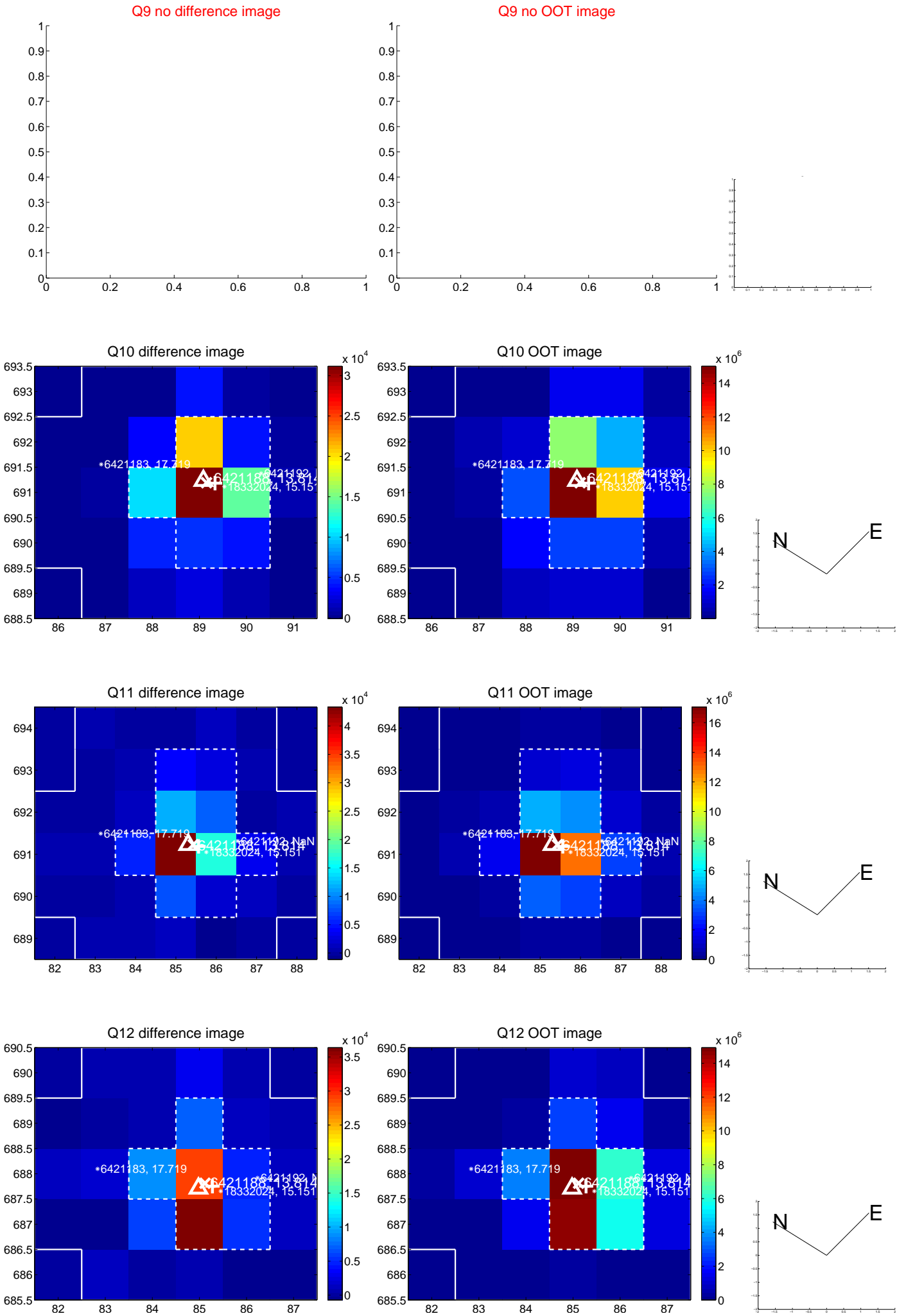
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



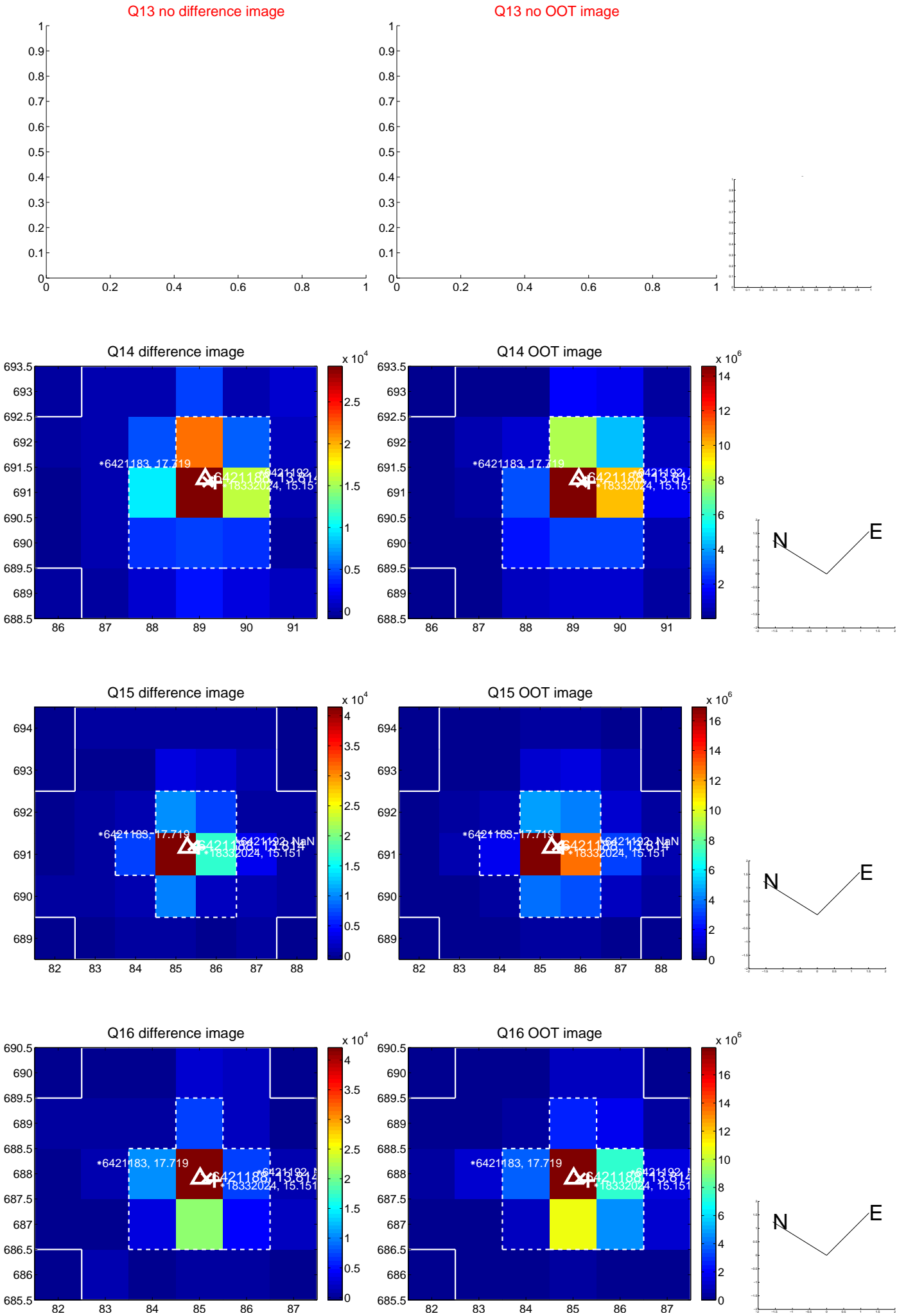
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



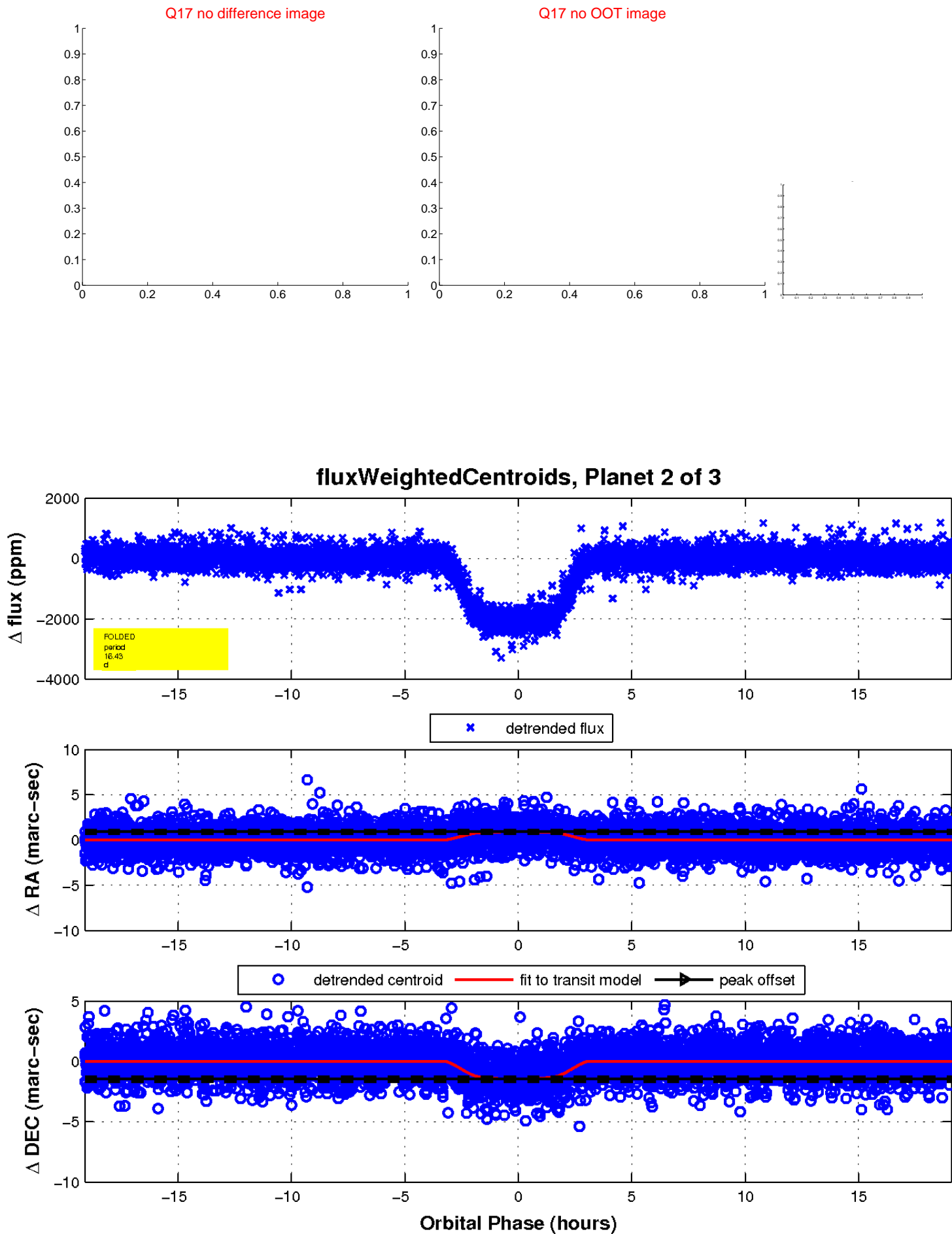
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

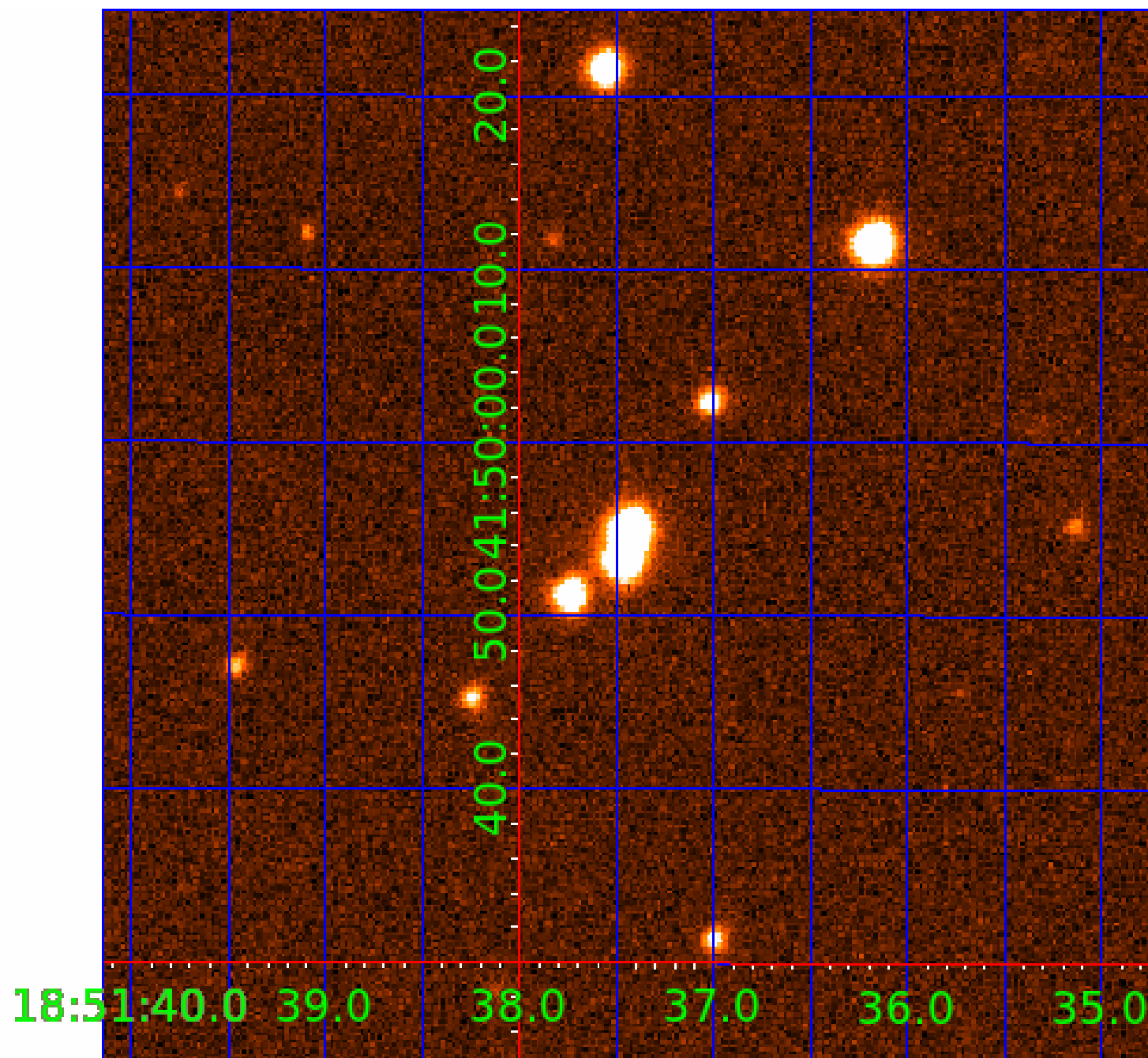


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 006421188

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006421188-01	OBS	6702.01	16.434353	136.288491	45465.9	5.177	2927.8	2484.9	1.13	5963	25.29	91.94
006421188-02	OBS	No	16.434355	142.482970	2150.8	6.367	165.8	163.7	1.13	5963	6.27	91.94
006421188-03	OBS	No	454.813686	220.101493	757.0	14.326	14.2	13.3	1.13	5963	3.37	1.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006421188-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_KIC_POS
006421188-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_KIC_POS
006421188-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—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.

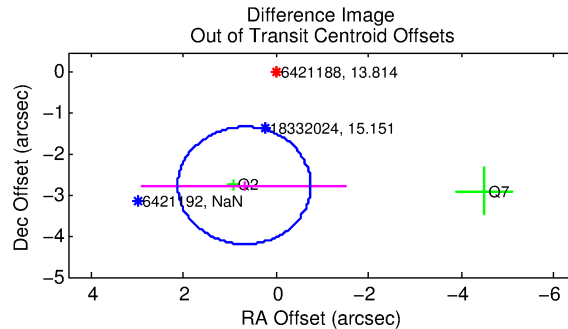
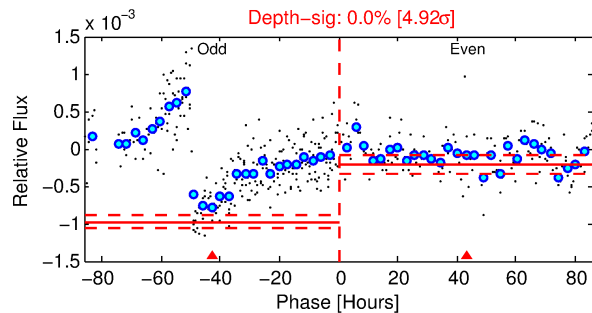
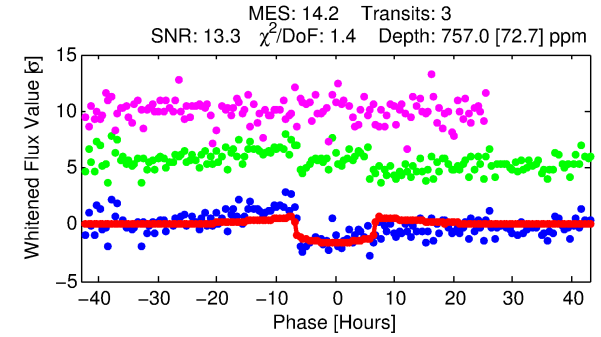
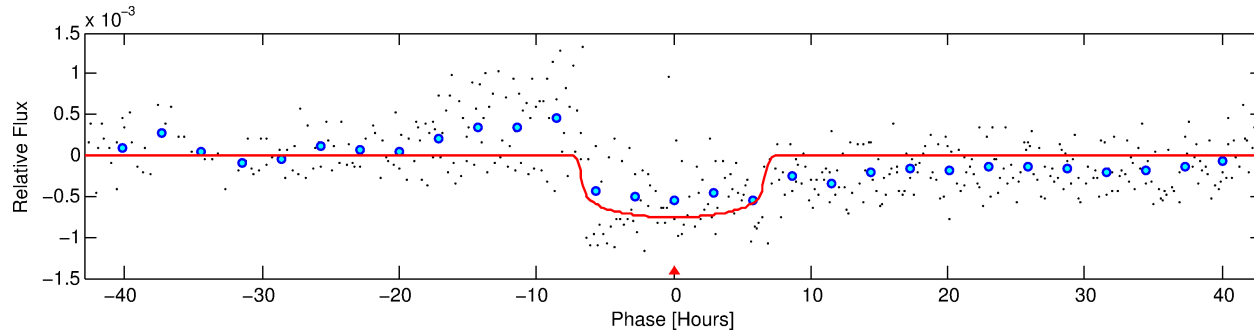
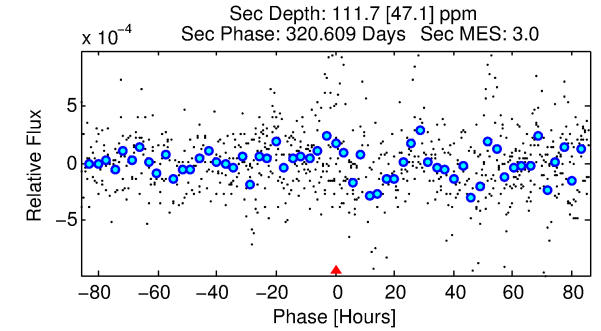
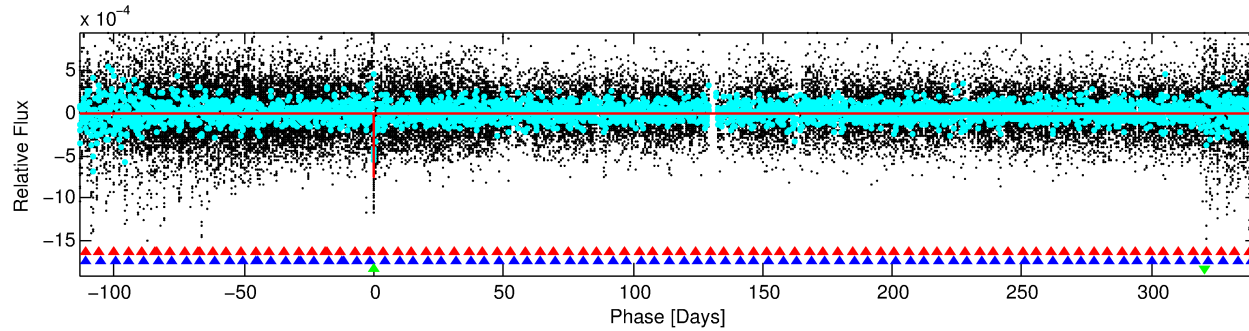
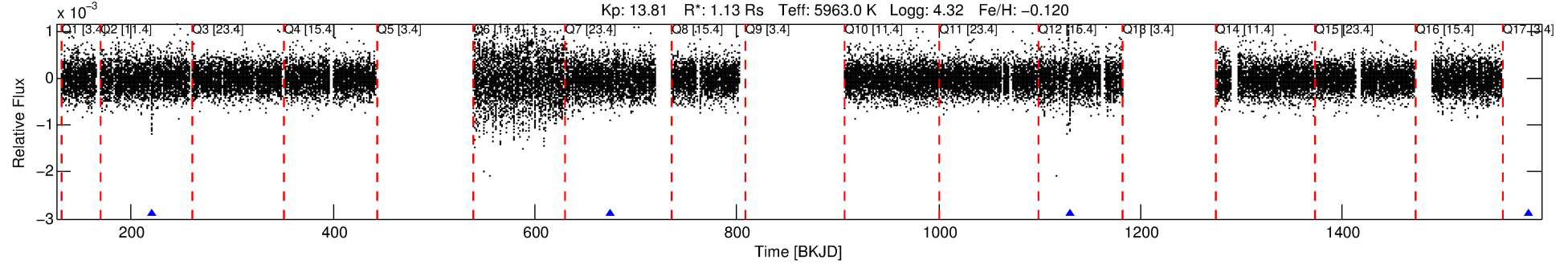
## Ephemeris Match Information For 006421188-03

No Significant Match Found

# DV One-Page Summary

KIC: 6421188 Candidate: 3 of 3 Period: 454.814 d  
KOI: K06702 Corr: No Ephemeris Match

Kp: 13.81 R\*: 1.13 Rs Teff: 5963.0 K Logg: 4.32 Fe/H: -0.120



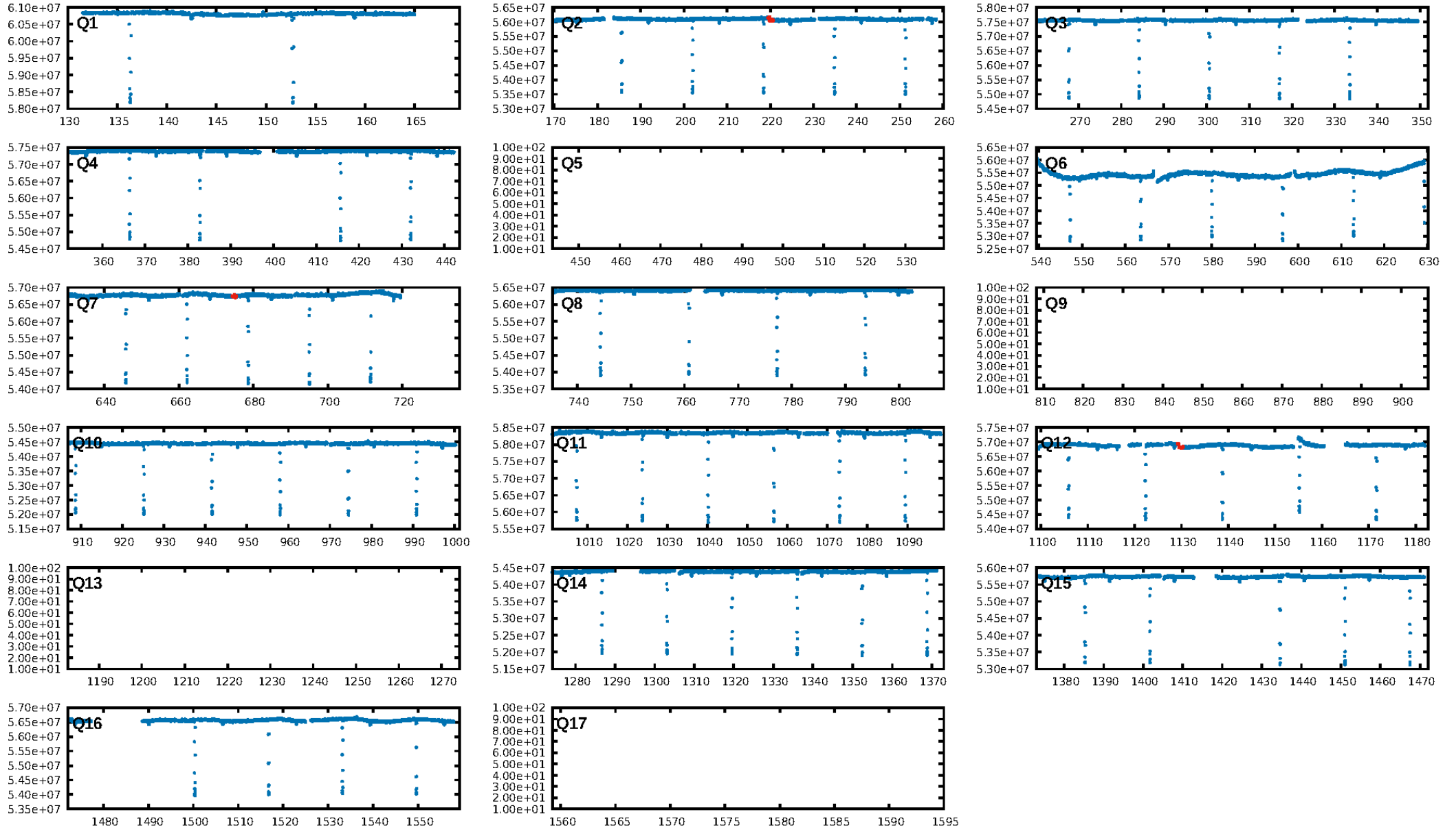
## DV Fit Results:

Period = 454.81369 [0.00964] d  
Epoch = 220.1015 [0.0122] BKJD  
Rp/R\* = 0.0272 [0.0038]  
a/R\* = 173.92 [106.43]  
b = 0.74 [0.38]  
Seff = 1.10 [0.58]  
Teq = 261 [34] K  
Rp = 3.37 [1.24] Re  
a = 1.1517 [0.3175] AU  
Ag = 7178.07 [4576.88] [1.57σ]  
Teffp = 3715 [575] K [6.00σ]

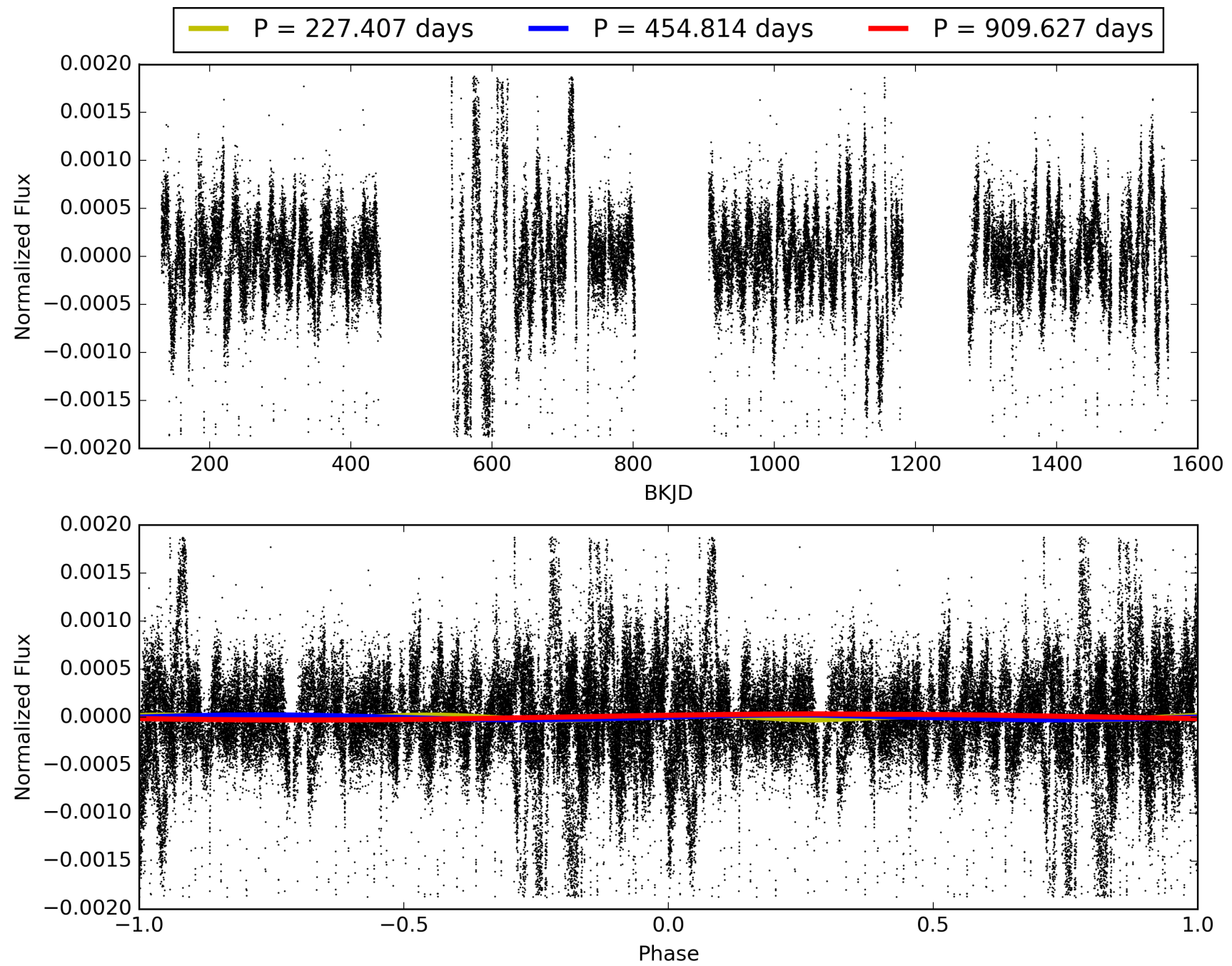
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [671.12σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 53.7%  
Bootstrap-pfa: 8.85e-19  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -18.46  
Centroid-sig: 0.1%  
Centroid-so: 1.915 arcsec [2.74σ]  
OotOffset-rm: 2.846 arcsec [5.94σ]  
KicOffset-rm: 3.616 arcsec [4.78σ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]

# TCE 006421188-03, PDC Light Curves

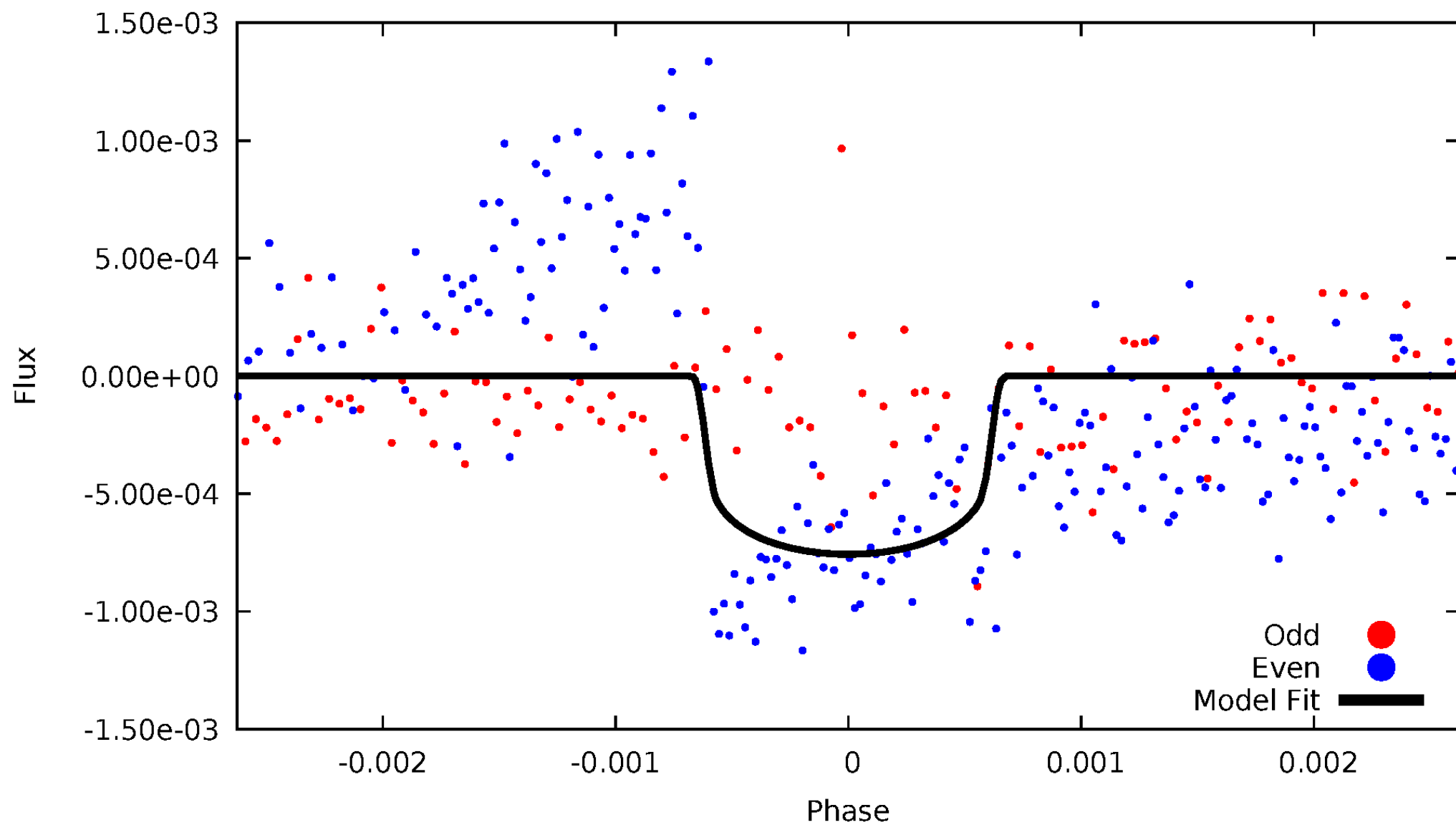


TCE 006421188-03



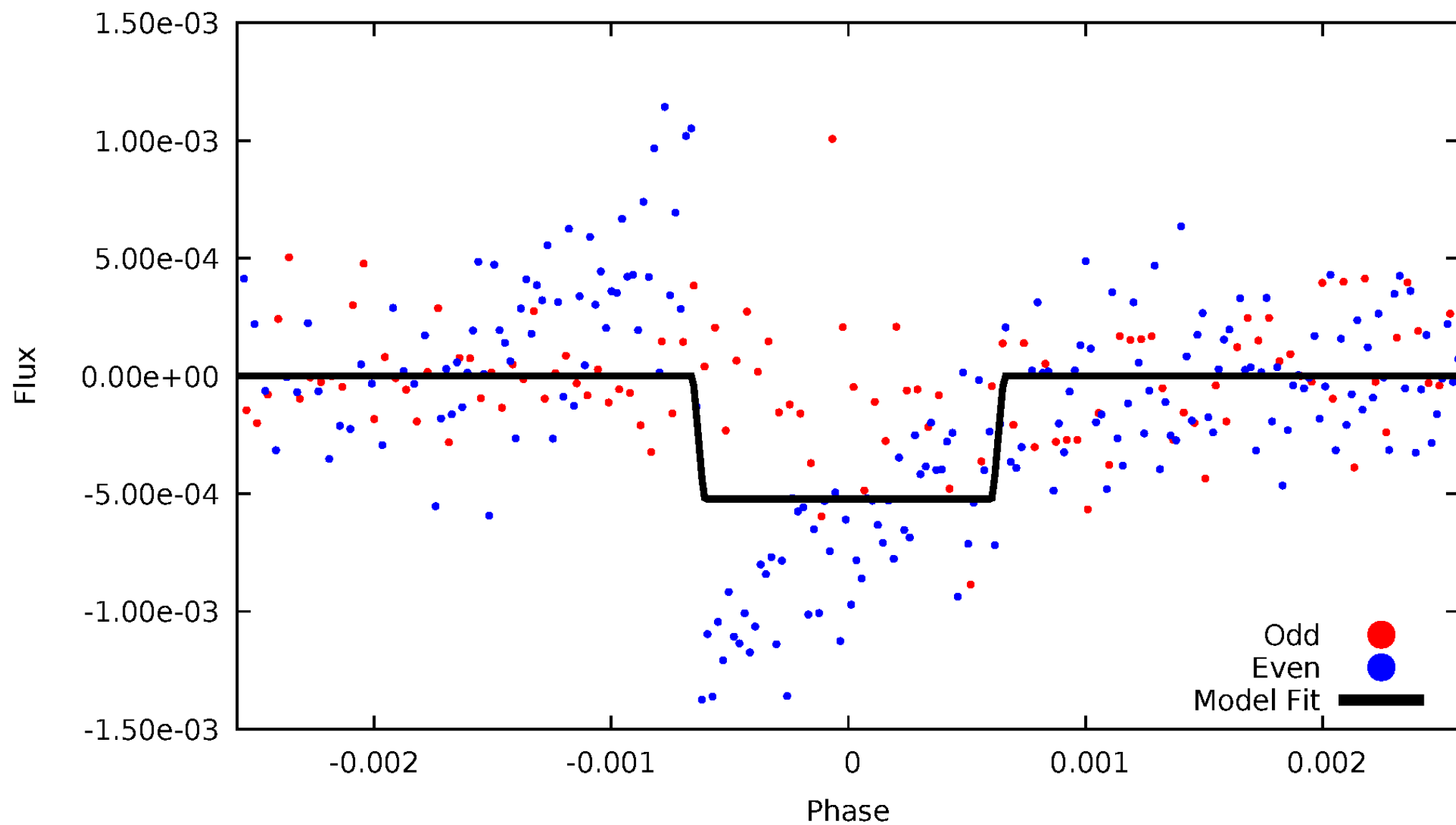
# DV Odd/Even

TCE 006421188-03



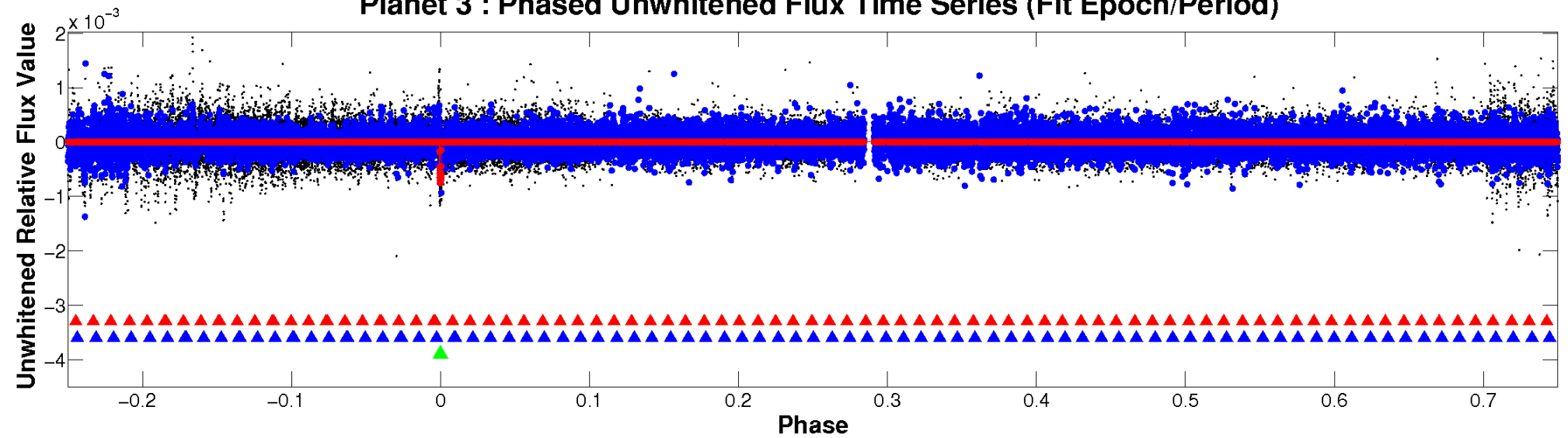
# ALT Odd/Even

TCE 006421188-03

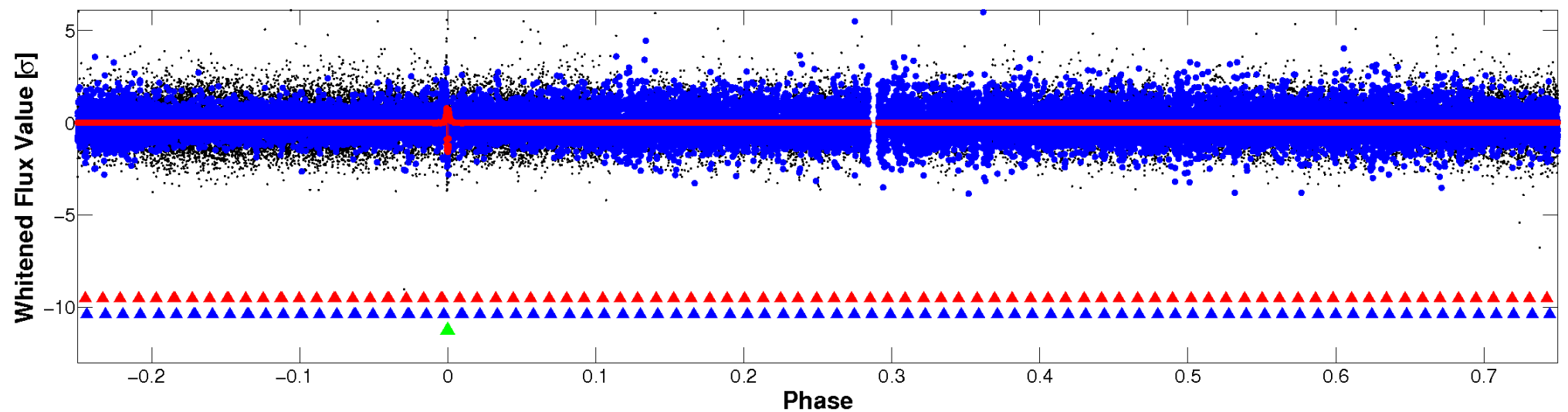


# Non-Whitened Vs. Whitened Light Curve

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

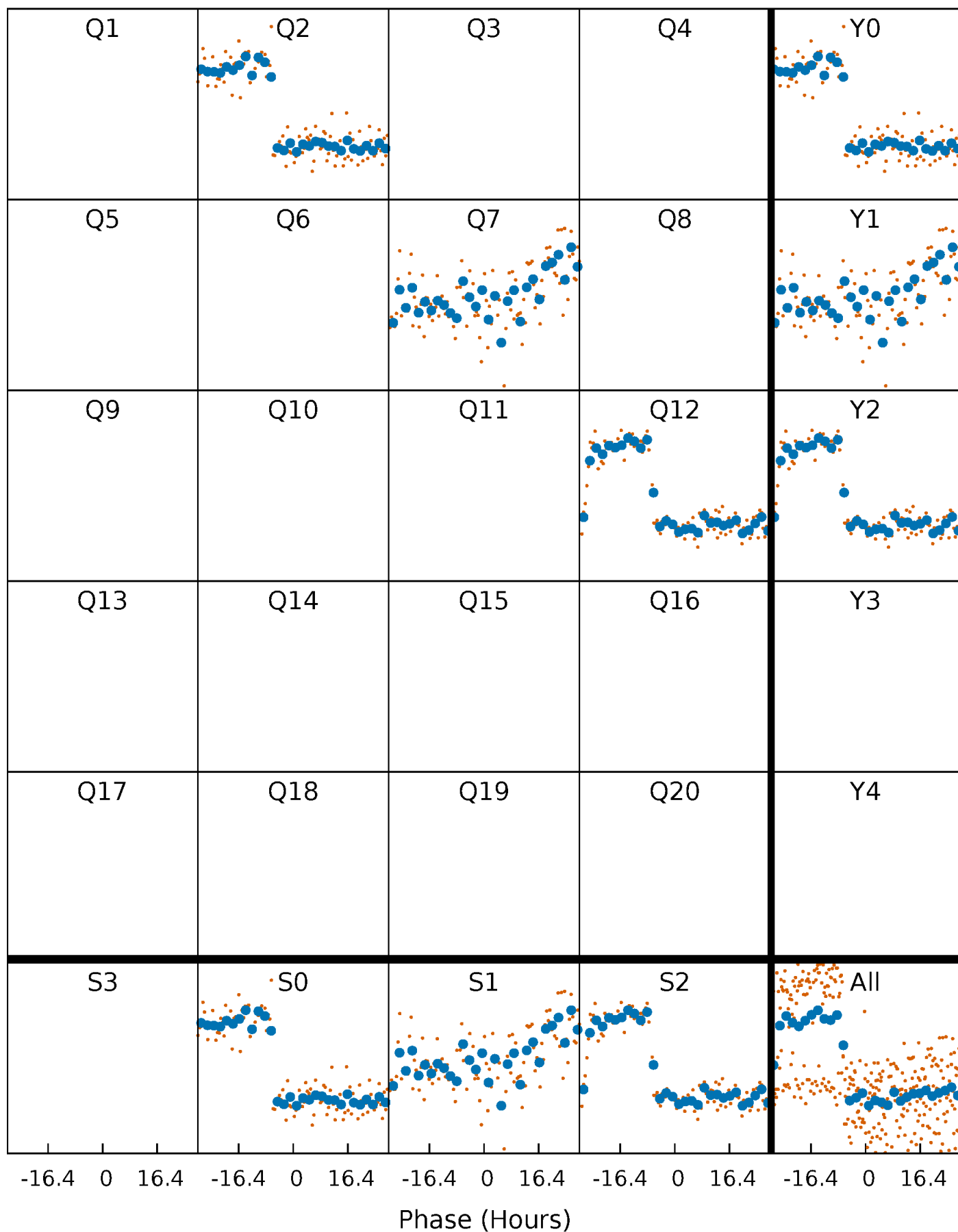


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

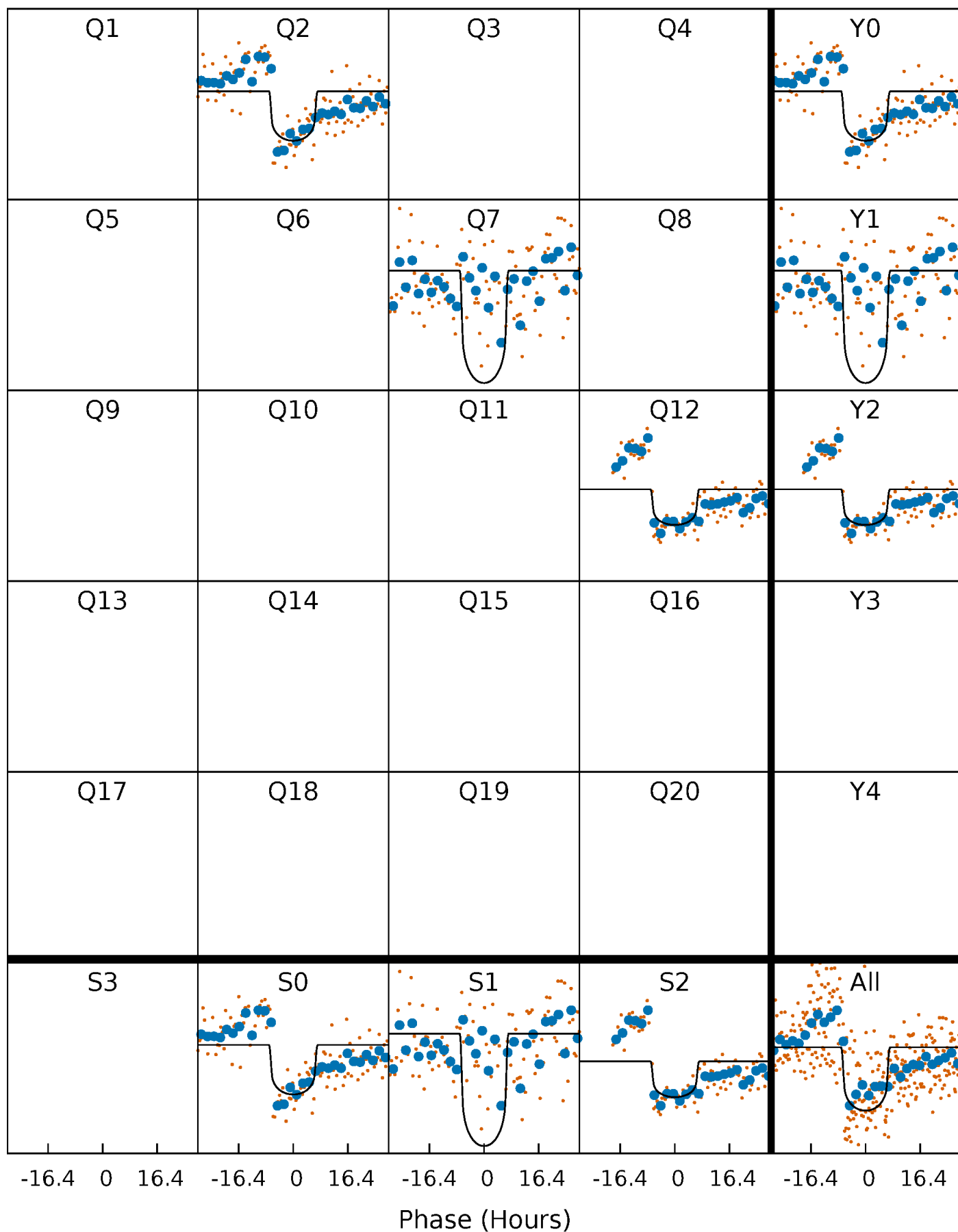
TCE 006421188-03 P=454.813686 Days  $T_0=220.101493$  (BKJD)





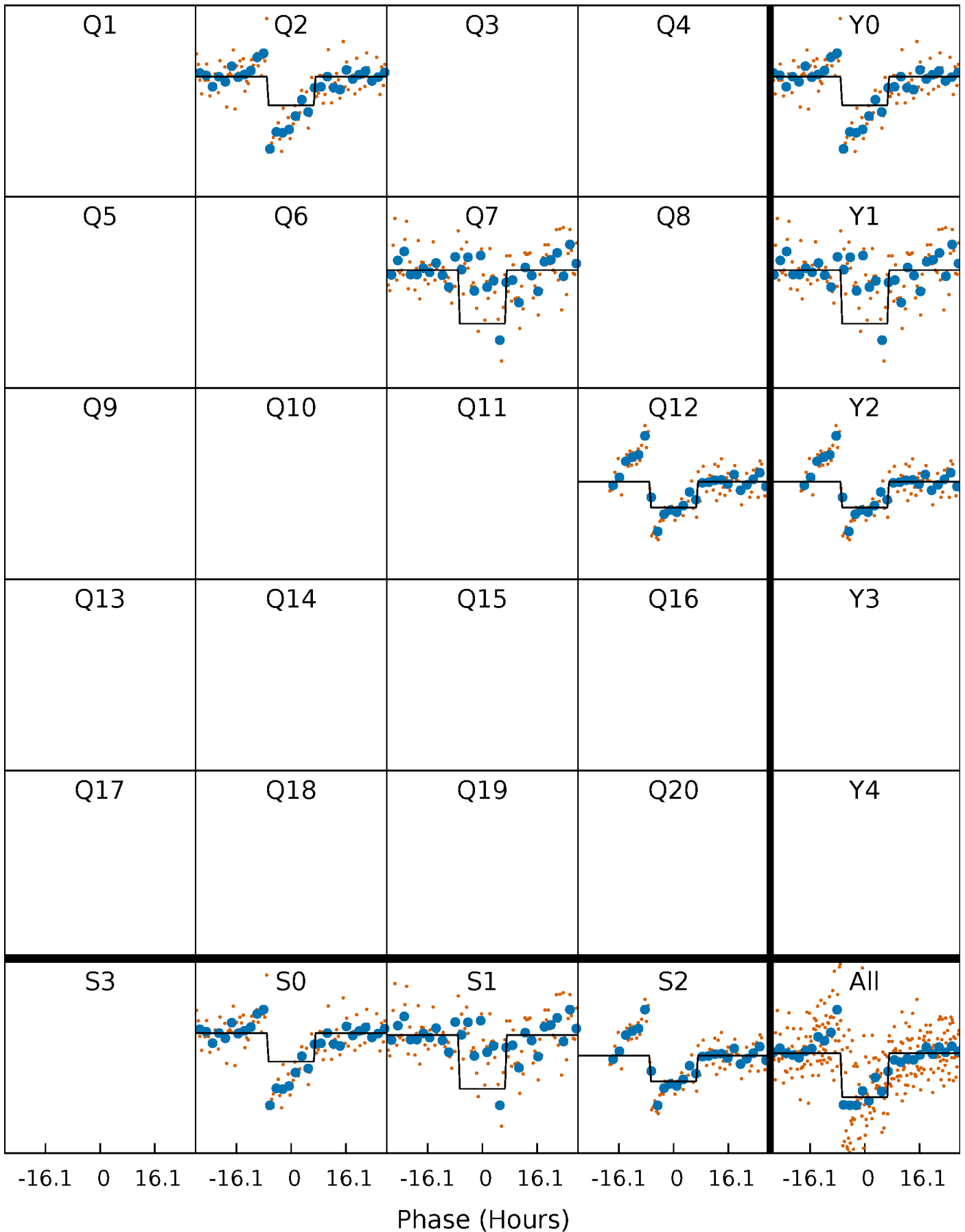
# DV Quarter-Phased Transit Curves

TCE 006421188-03     $P=454.813686$  Days     $T_0=220.101493$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

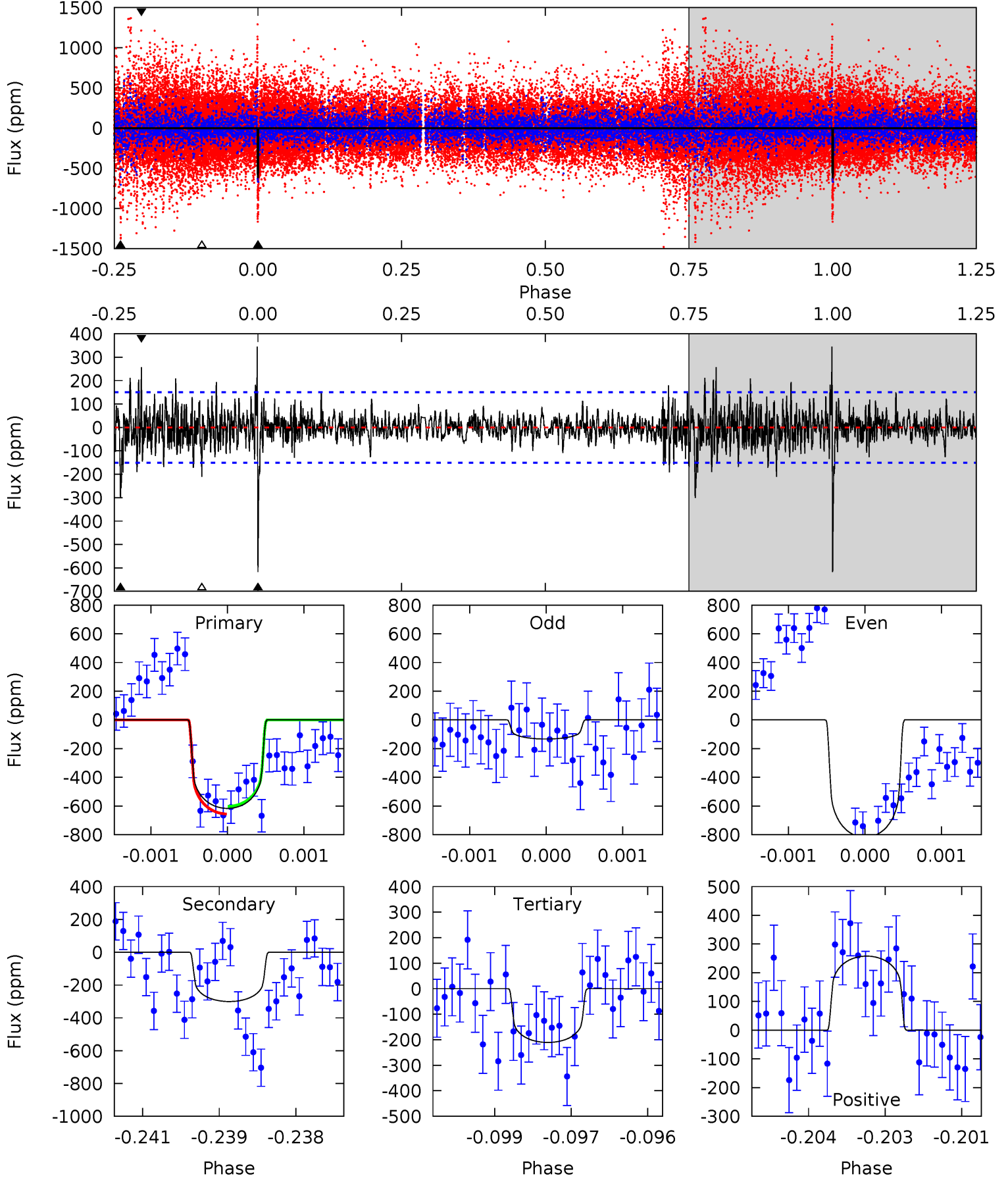
TCE 006421188-03     $P=454.803367$  Days     $T_0=220.129424$  (BKJD)



# DV Model-Shift Uniqueness Test

006421188-03, P = 454.813686 Days, E = 220.101493 Days

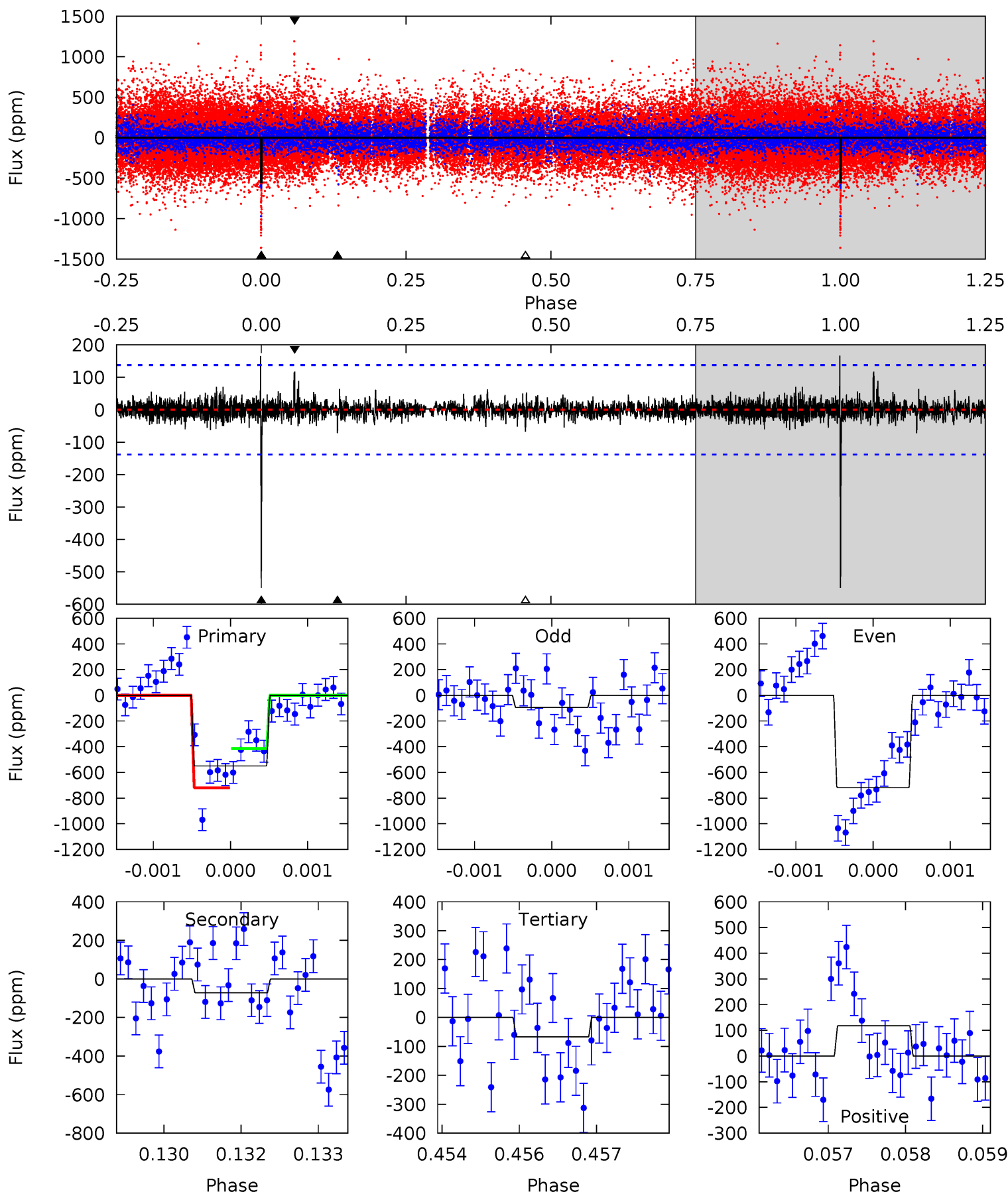
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.1	10.8	7.56	9.25	5.40	3.21	1.88	14.6	12.9	3.22	1.53	10.8	0.76	0.36	0.95



# Alt Model-Shift Uniqueness Test

006421188-03, P = 454.803367 Days, E = 220.129424 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
21.5	2.82	2.63	4.60	5.41	3.22	0.66	18.9	16.9	0.19	-1.78	11.5	0.81	0.23	5.94



### Stellar Parameters For KIC 006421188

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5963^{+434}_{-530}$	$4.322^{+0.205}_{-0.205}$	$-0.120^{+0.300}_{-0.300}$	$1.134^{+0.385}_{-0.315}$	$0.986^{+0.201}_{-0.164}$	$0.951^{+1.168}_{-0.534}$
	+7%/-9%	+5%/-5%	+250%/-250%	+34%/-28%	+20%/-17%	+123%/-56%
Source	PHO1	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 006421188-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-301 \pm 28$	$3.40^{+0.85}_{-0.68}$	$367^{+44}_{-40}$	$4830^{+492}_{-384}$	$18599^{+10463}_{-6426}$
Alt.	$-72 \pm 26$	$2.80^{+0.74}_{-0.56}$	$362^{+42}_{-40}$	$3927^{+435}_{-441}$	$6521^{+4712}_{-3102}$

$T_{\text{max}}$  = 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

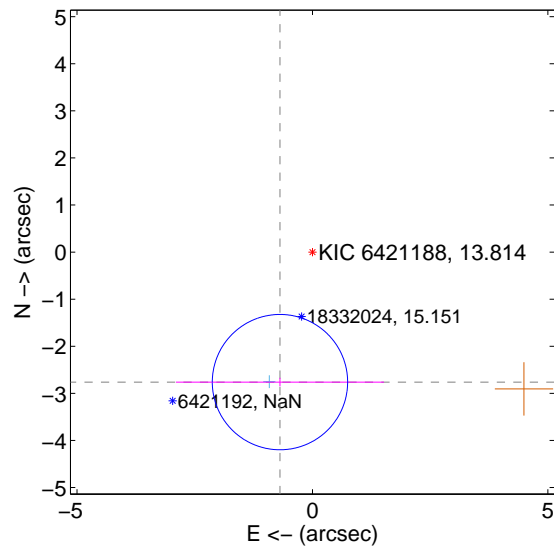
Supplemental centroid analysis for 006421188-03. Kepler magnitude: 13.81. Transit SNR 13.35

There are 1 quarters with good PRF difference image offsets

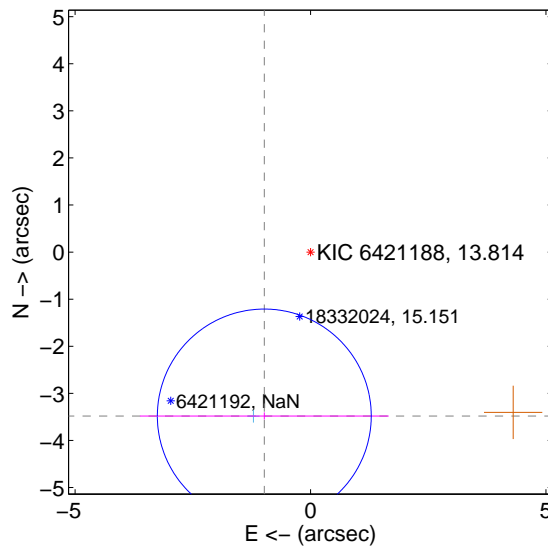
The direct PRF centroid is offset from the target star catalog position by about 0.53 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.846 \pm 0.479$	5.94	$0.690 \pm 2.208$	$-2.761 \pm 0.091$
PRF-fit source offset from KIC position	$3.616 \pm 0.757$	4.78	$0.981 \pm 2.641$	$-3.480 \pm 0.077$
photometric centroid source offset	$1.91 \pm 0.70$	2.74	$-0.27 \pm 0.71$	$-1.90 \pm 0.70$

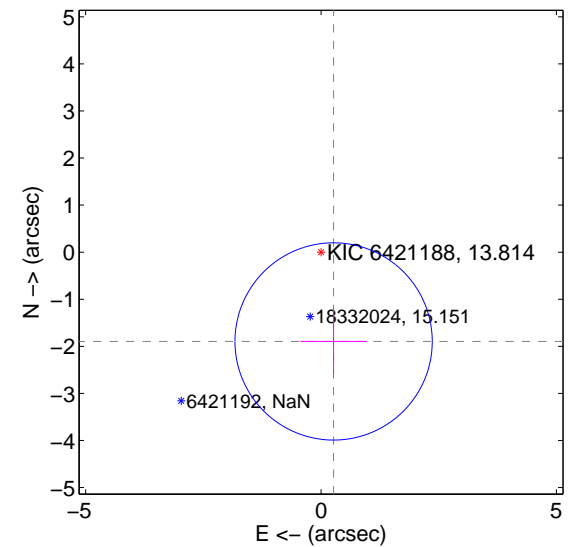
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

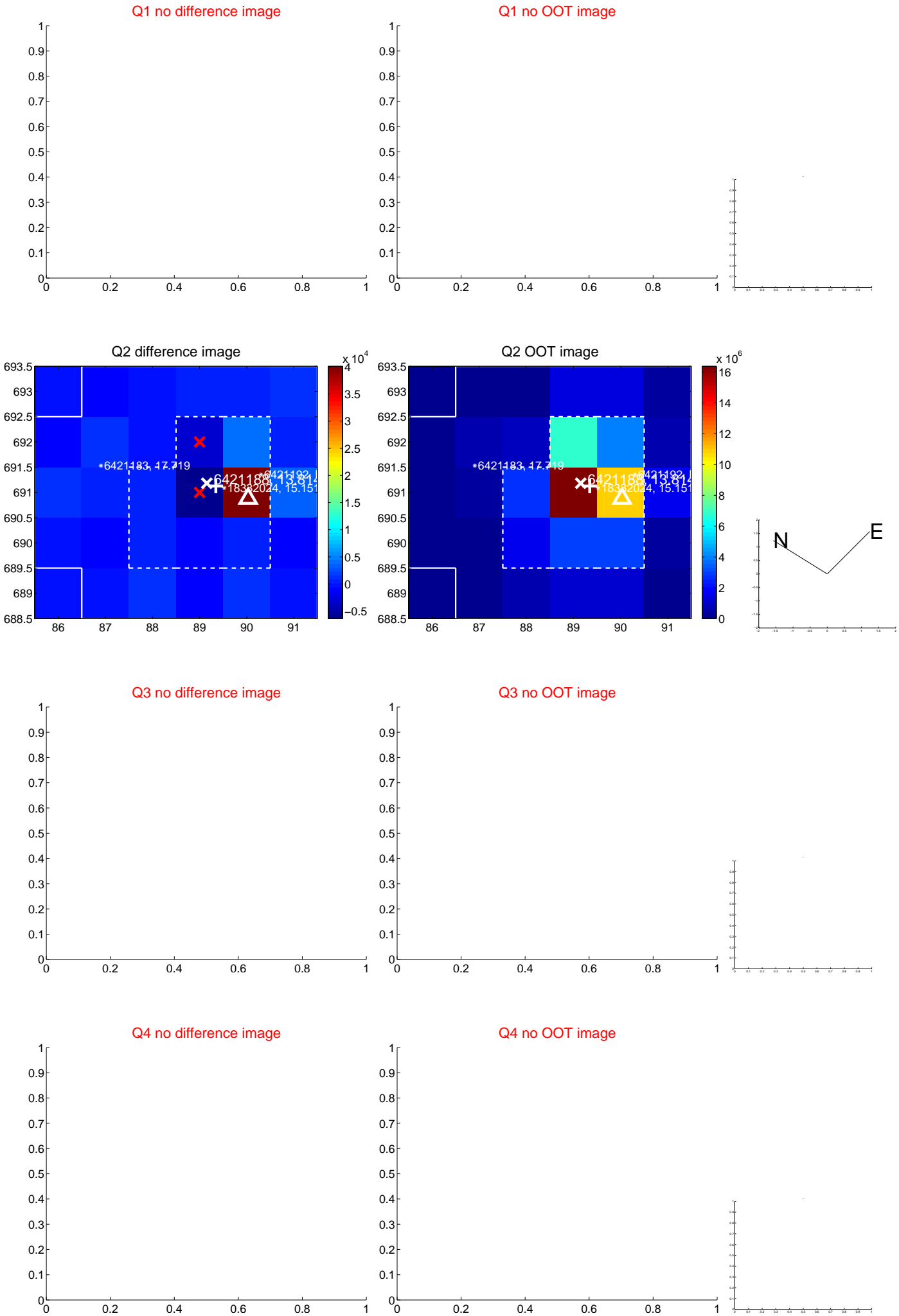


offset from photometric centroids

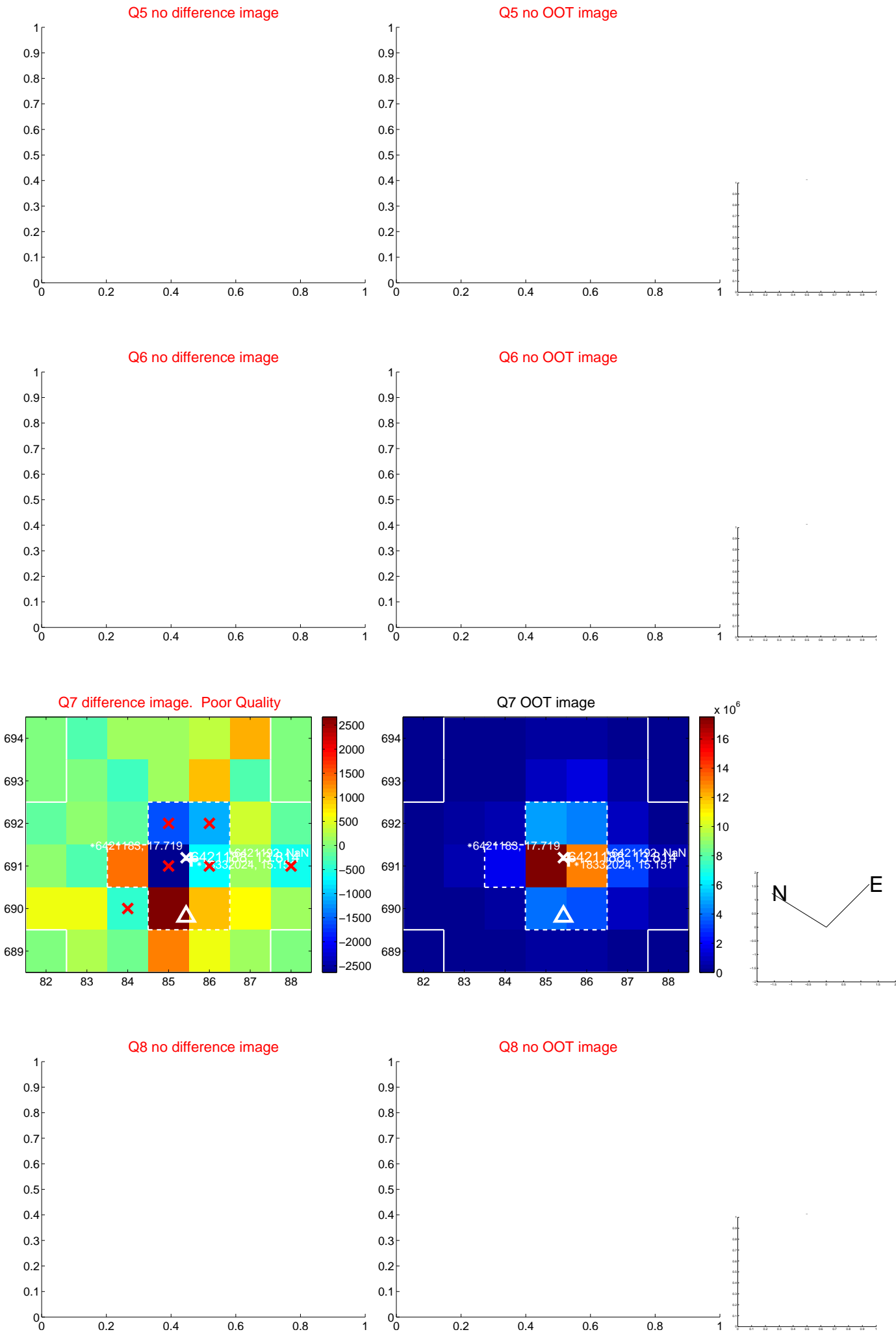


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.





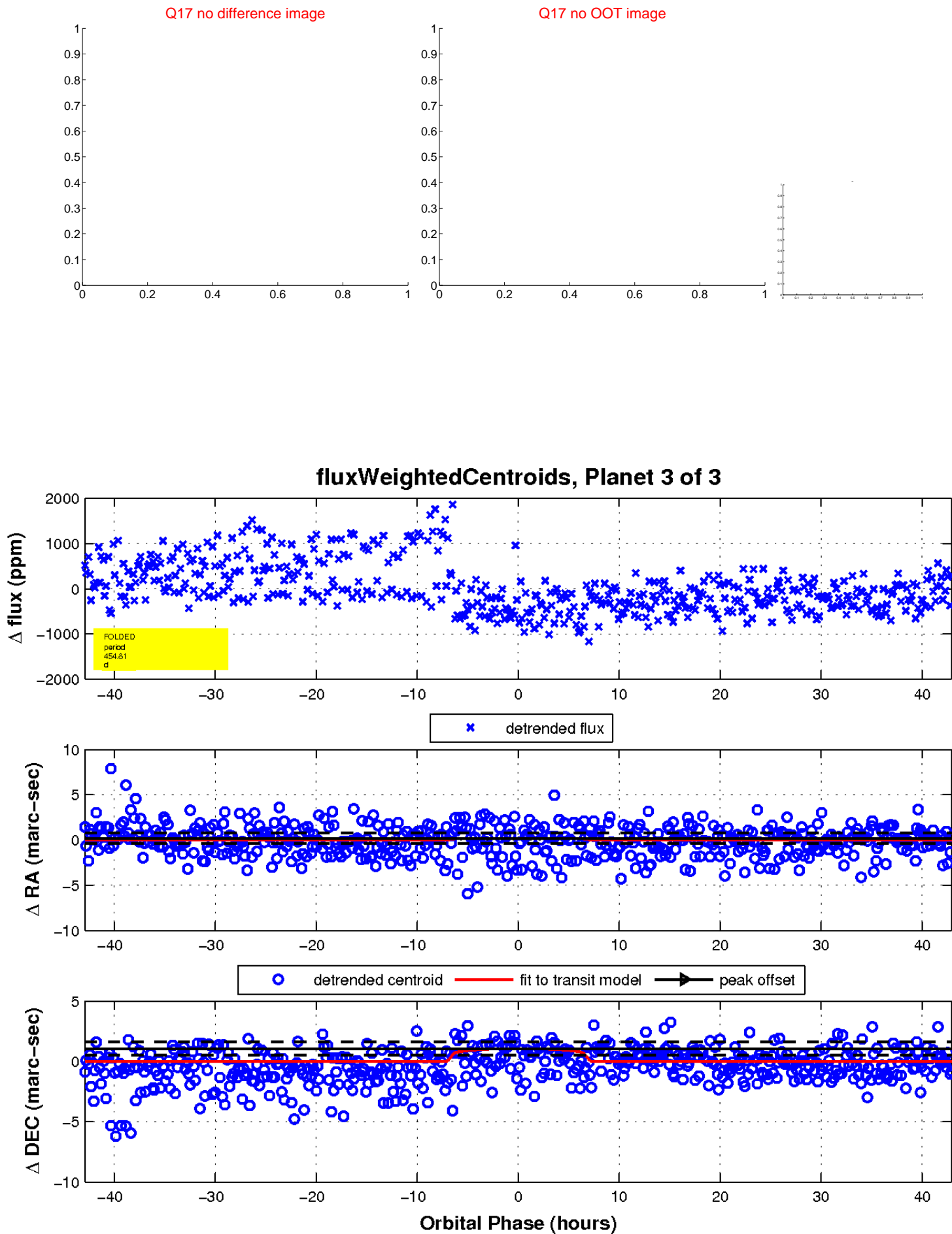
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

