

# KIC 006672229

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006672229-01	OBS	6754.01	23.832706	143.209207	281229.8	5.000	5312.5	-1.0	1.00	5722	53.37	35.66
006672229-02	OBS	No	23.832371	132.202401	163858.3	10.223	4023.4	3214.3	1.00	5722	60.21	35.66
006672229-03	OBS	No	230.305622	286.744573	1143.7	3.542	8.6	7.5	1.00	5722	3.50	1.73

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006672229-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
006672229-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
006672229-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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 006672229-01

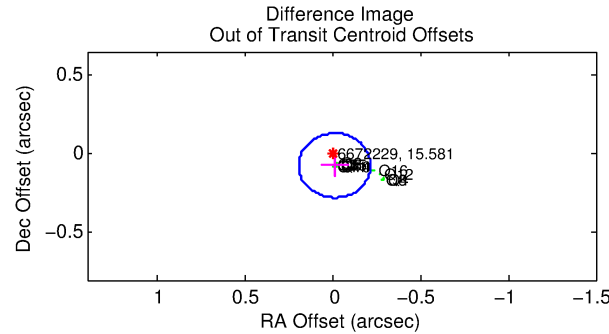
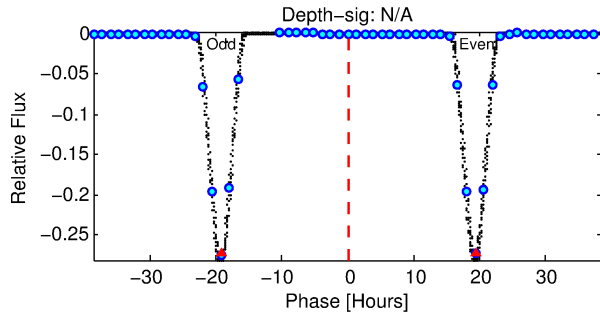
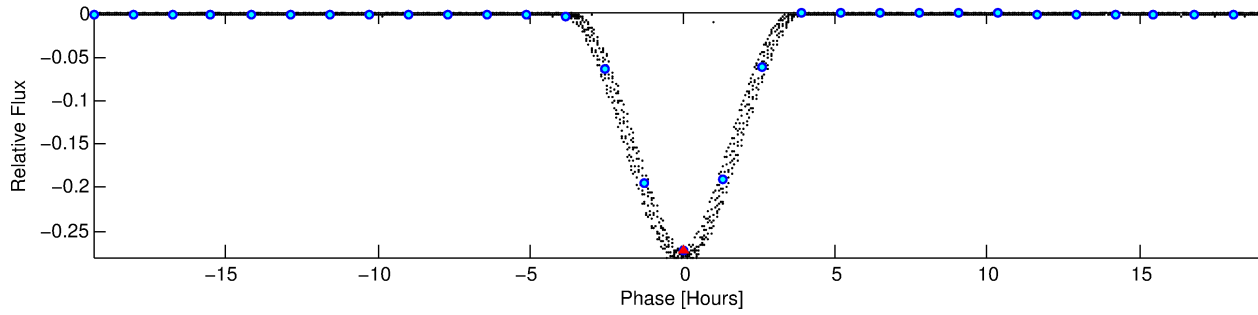
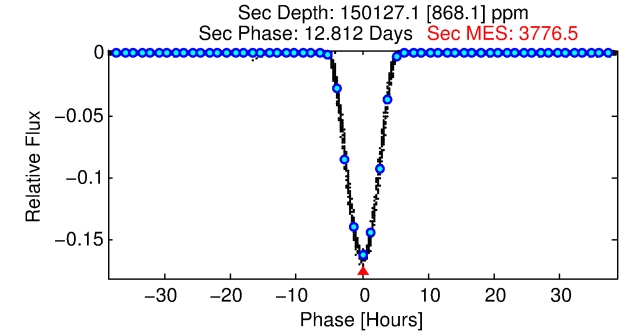
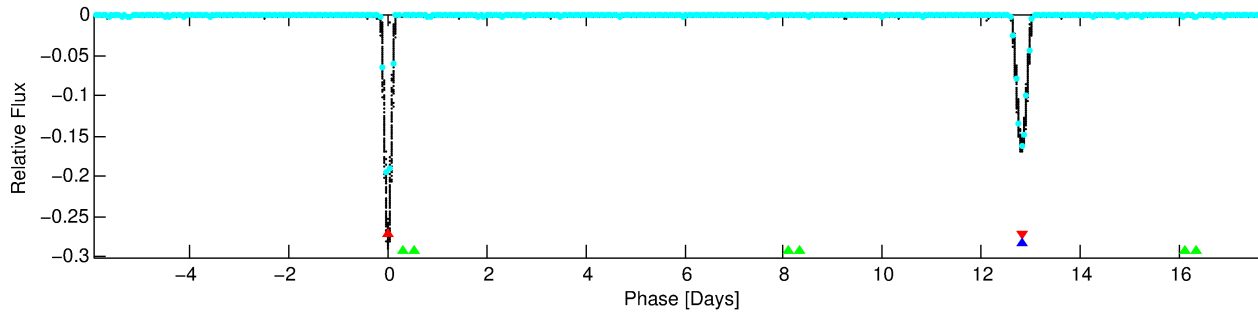
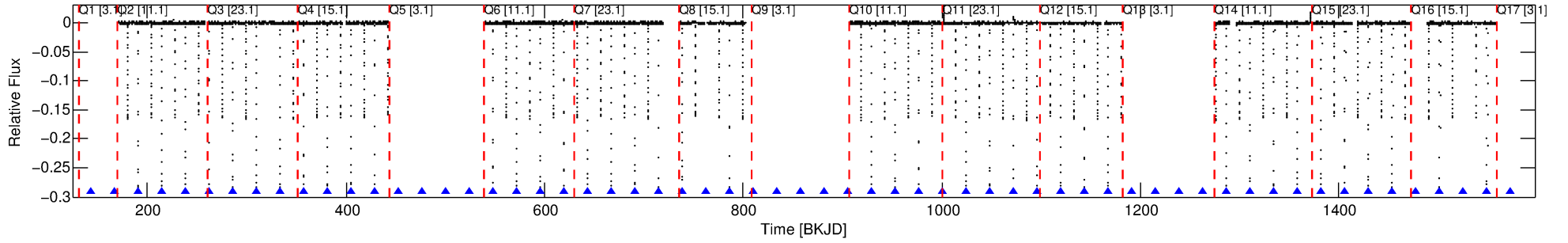
No Significant Match Found

# DV One-Page Summary

KIC: 6672229 Candidate: 1 of 3 Period: 23.833 d

KOI: K06754.01 Corr: 0.840

Kp: 15.58 R\*: 1.00 Rs Teff: 5722.0 K Logg: 4.45 Fe/H: 0.220



## TPS TCE Results:

Period = 23.83271 d  
Epoch = 143.2092 BKJD

DV fit results are unavailable

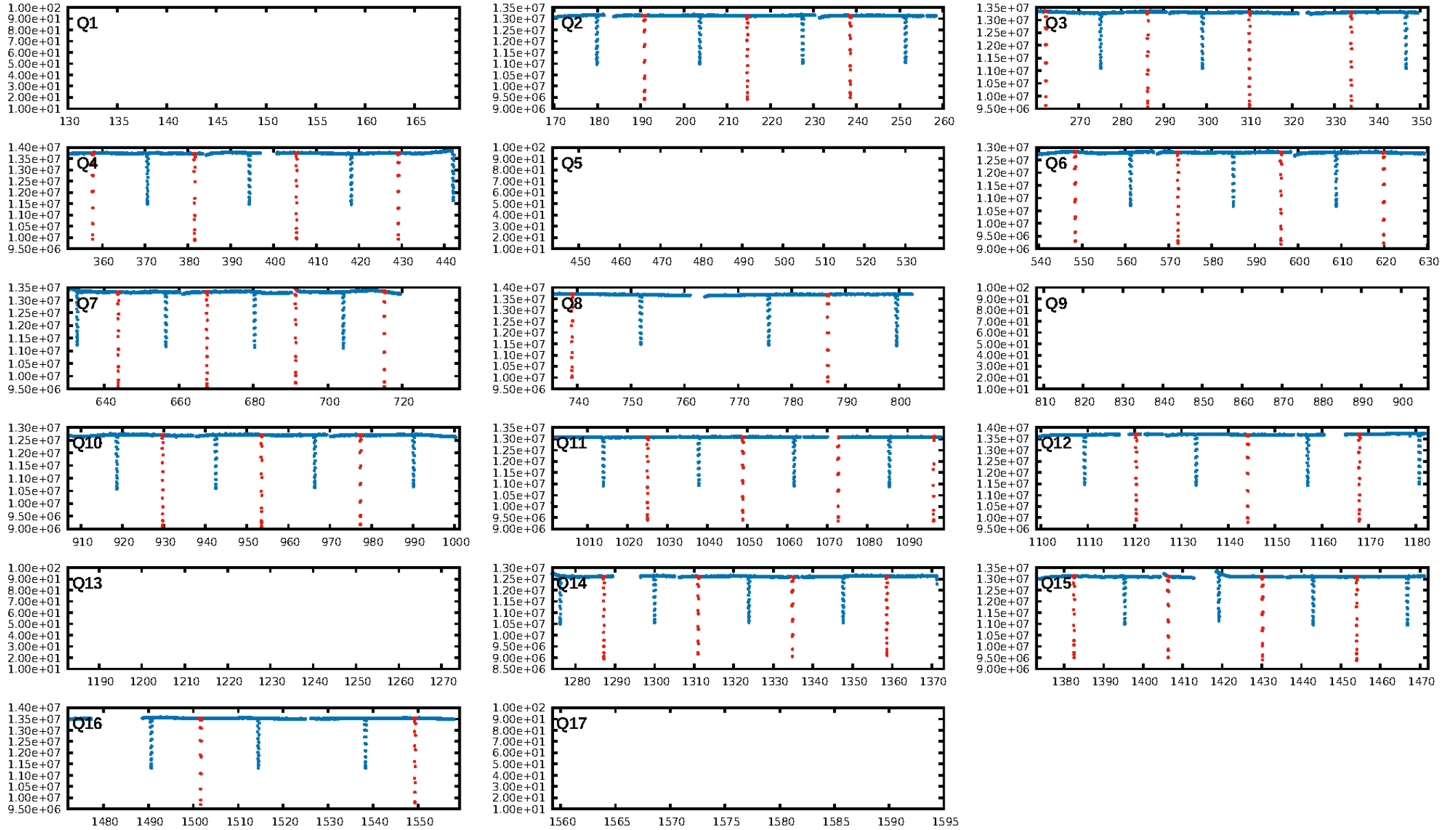
## DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00 $\sigma$ ]  
LongPeriod-sig: 100.0% [808.71 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [42/42]  
GhostDiagnostic-chr: 2.19  
Centroid-sig: N/A  
Centroid-so: 0.145 arcsec [92.62 $\sigma$ ]  
OotOffset-rm: 0.074 arcsec [1.08 $\sigma$ ]  
KicOffset-rm: 0.086 arcsec [1.18 $\sigma$ ]  
OotOffset-st: 4/4/4/0 [12]  
KicOffset-st: 4/4/4/0 [12]  
DiffImageQuality-fgm: 1.00 [12/12]  
DiffImageOverlap-fno: 1.00 [12/12]

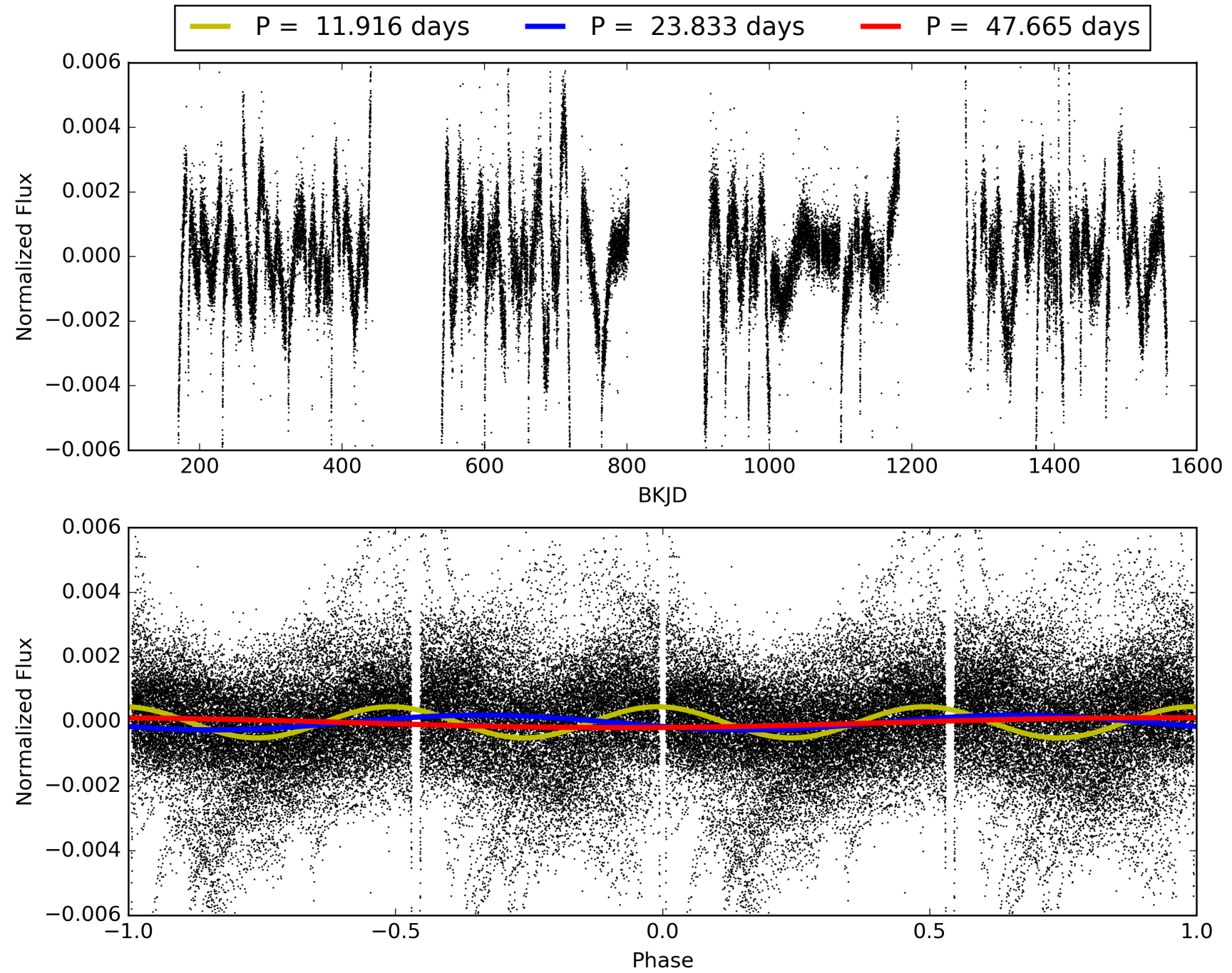
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 20:24:55 Z

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

# TCE 006672229-01, PDC Light Curves

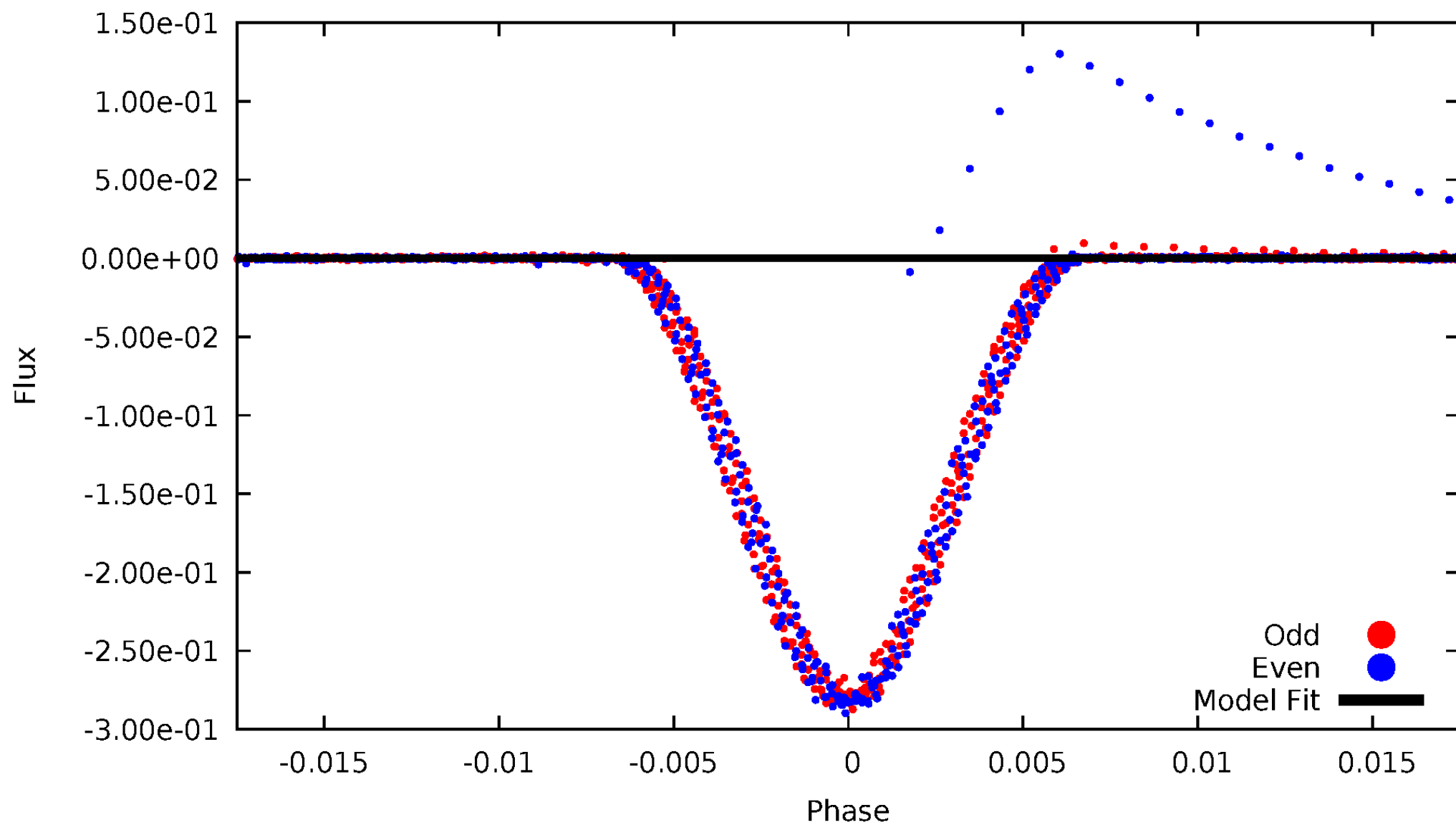


TCE 006672229-01



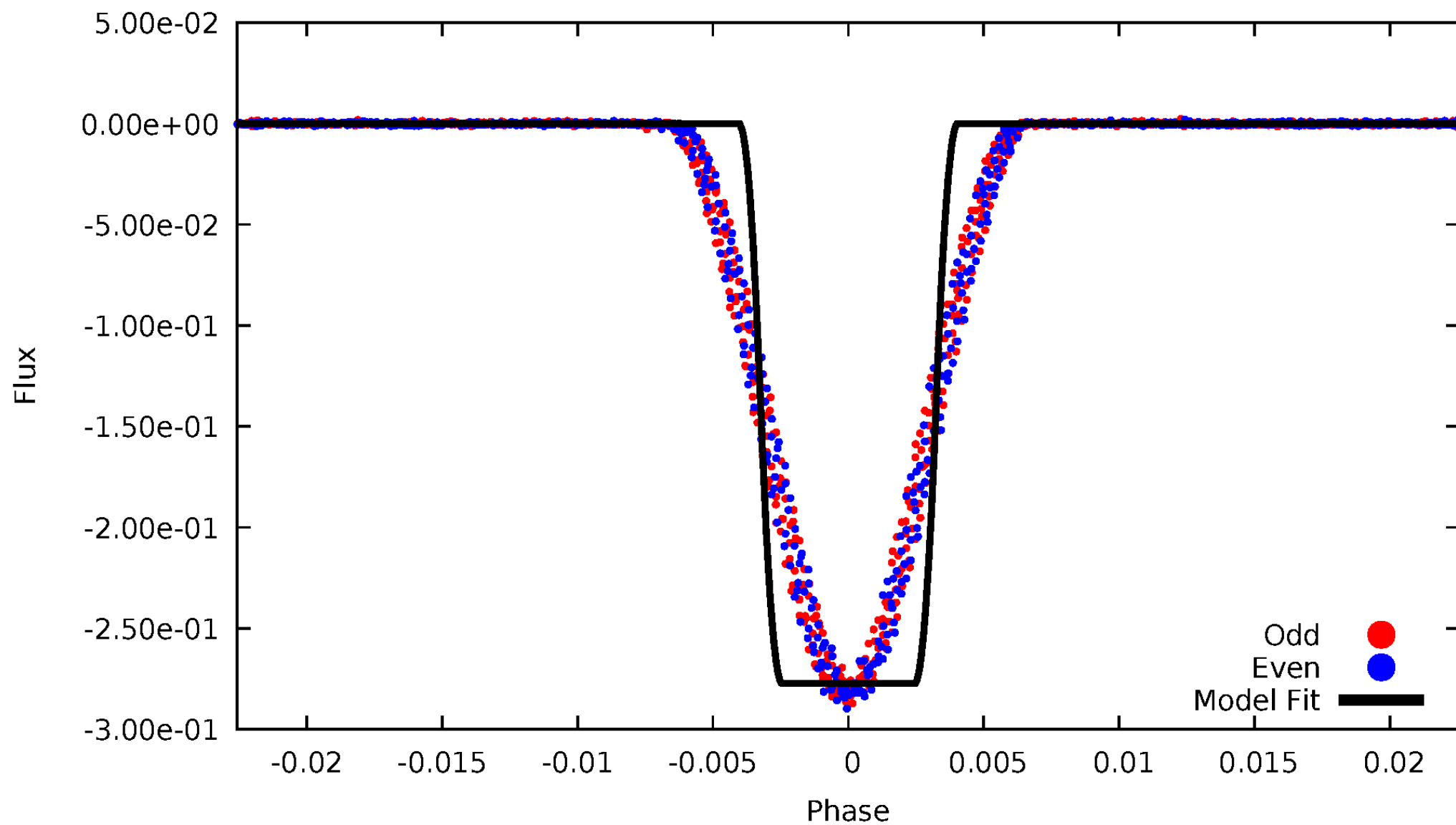
# DV Odd/Even

TCE 006672229-01



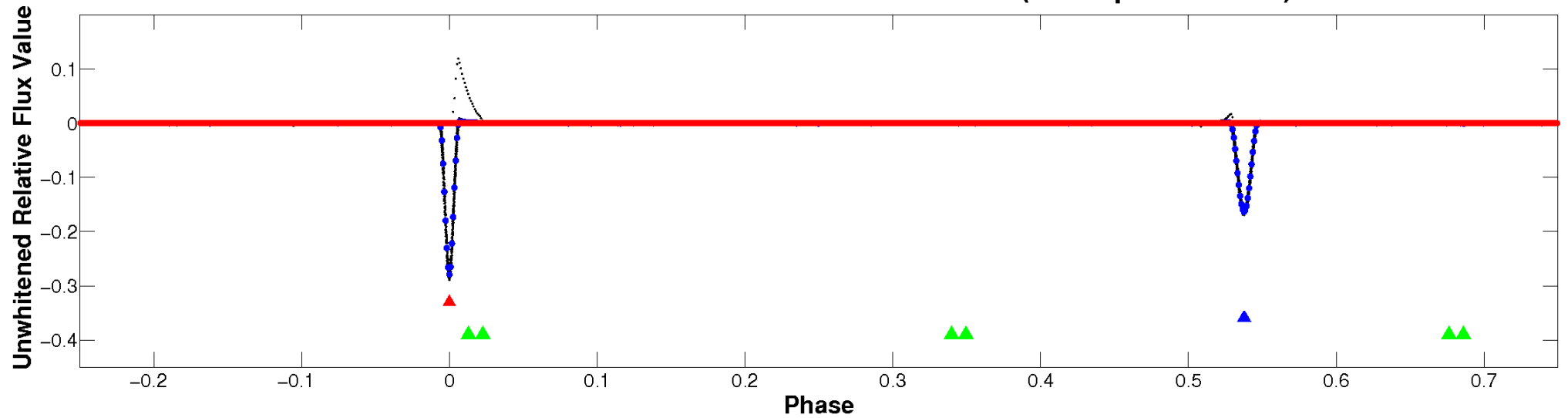
# ALT Odd/Even

TCE 006672229-01



# Non-Whitened Vs. Whitened Light Curve

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

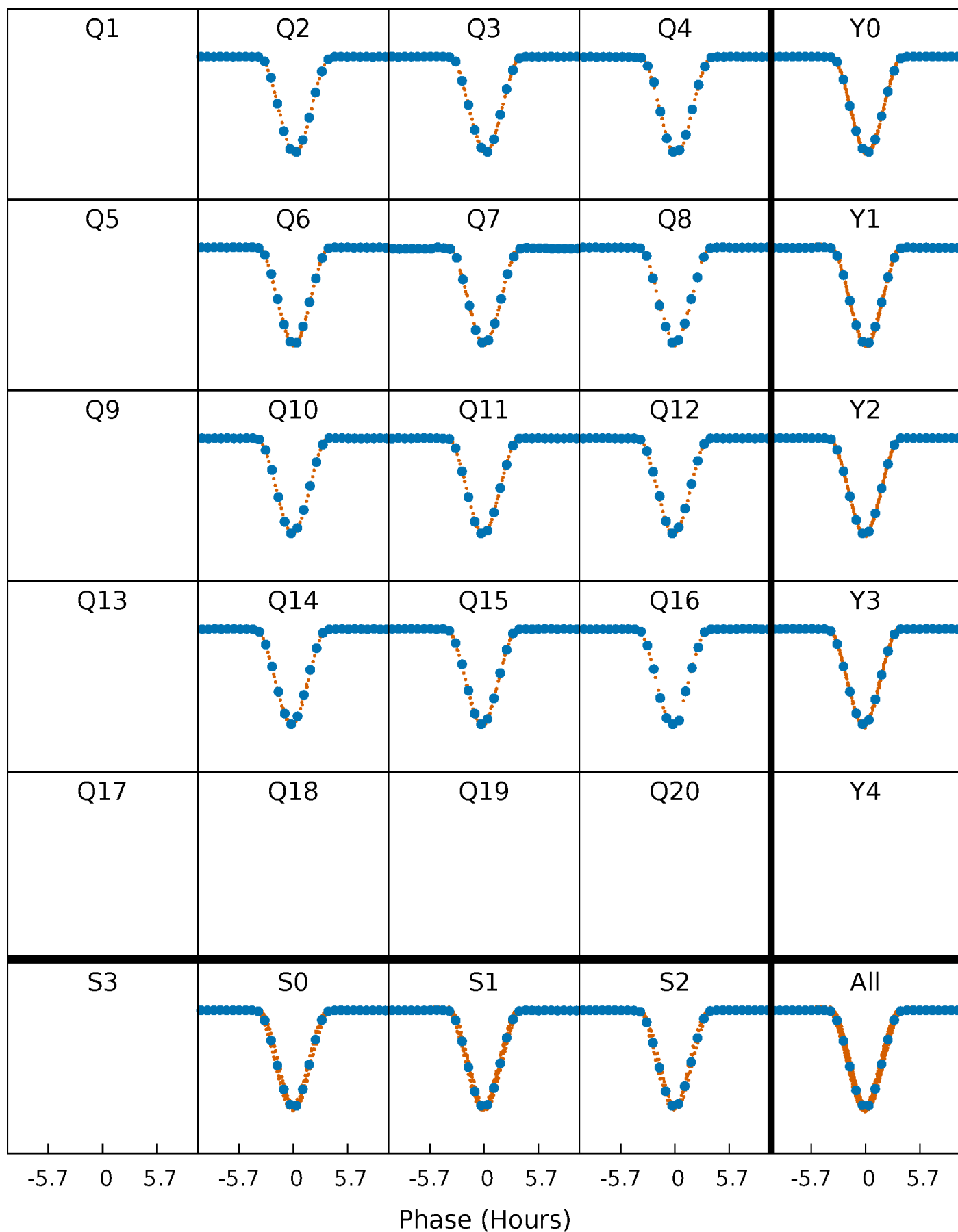


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



# PDC Quarter-Phased Transit Curves

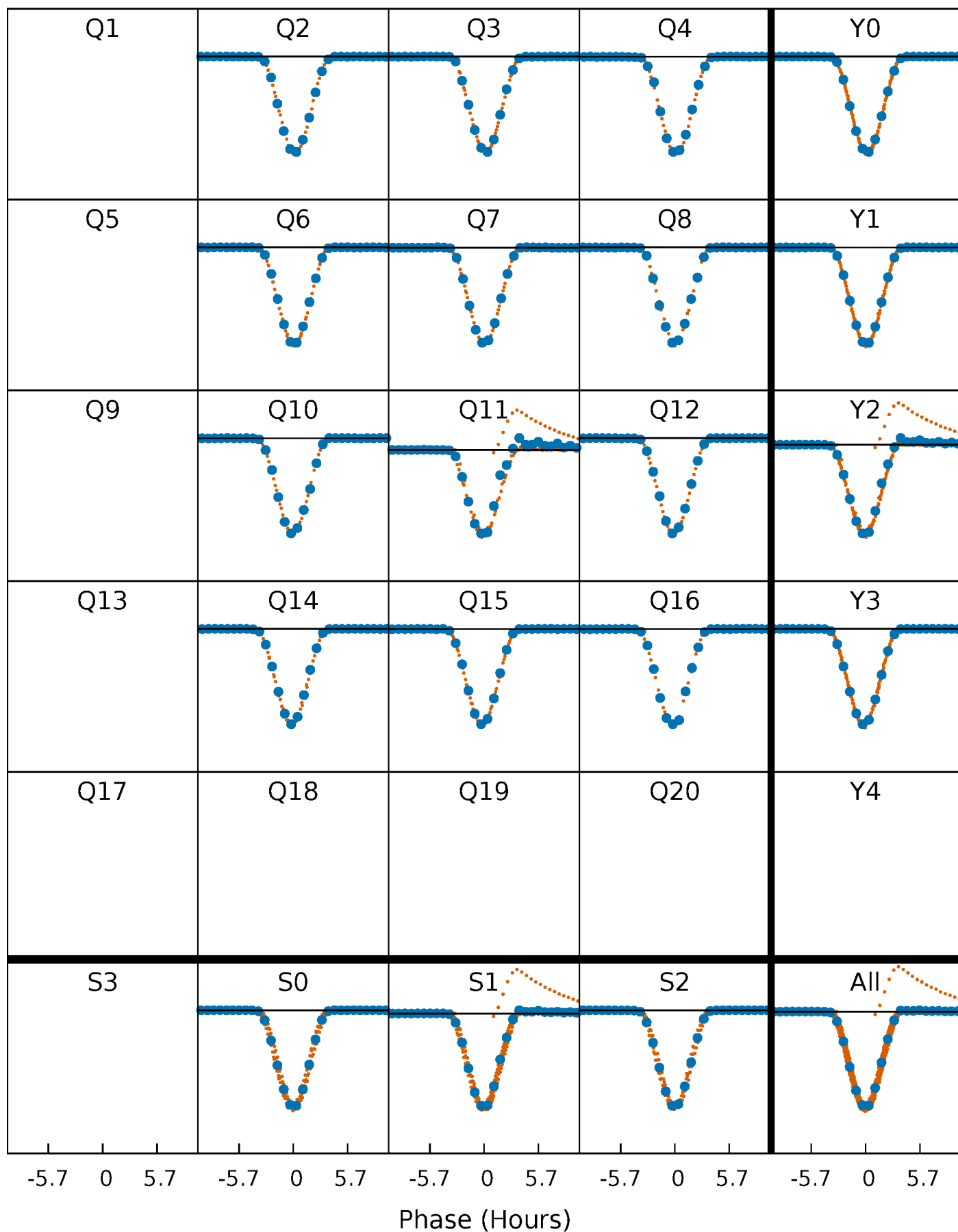
TCE 006672229-01 P= 23.832706 Days  $T_0=143.209207$  (BKJD)





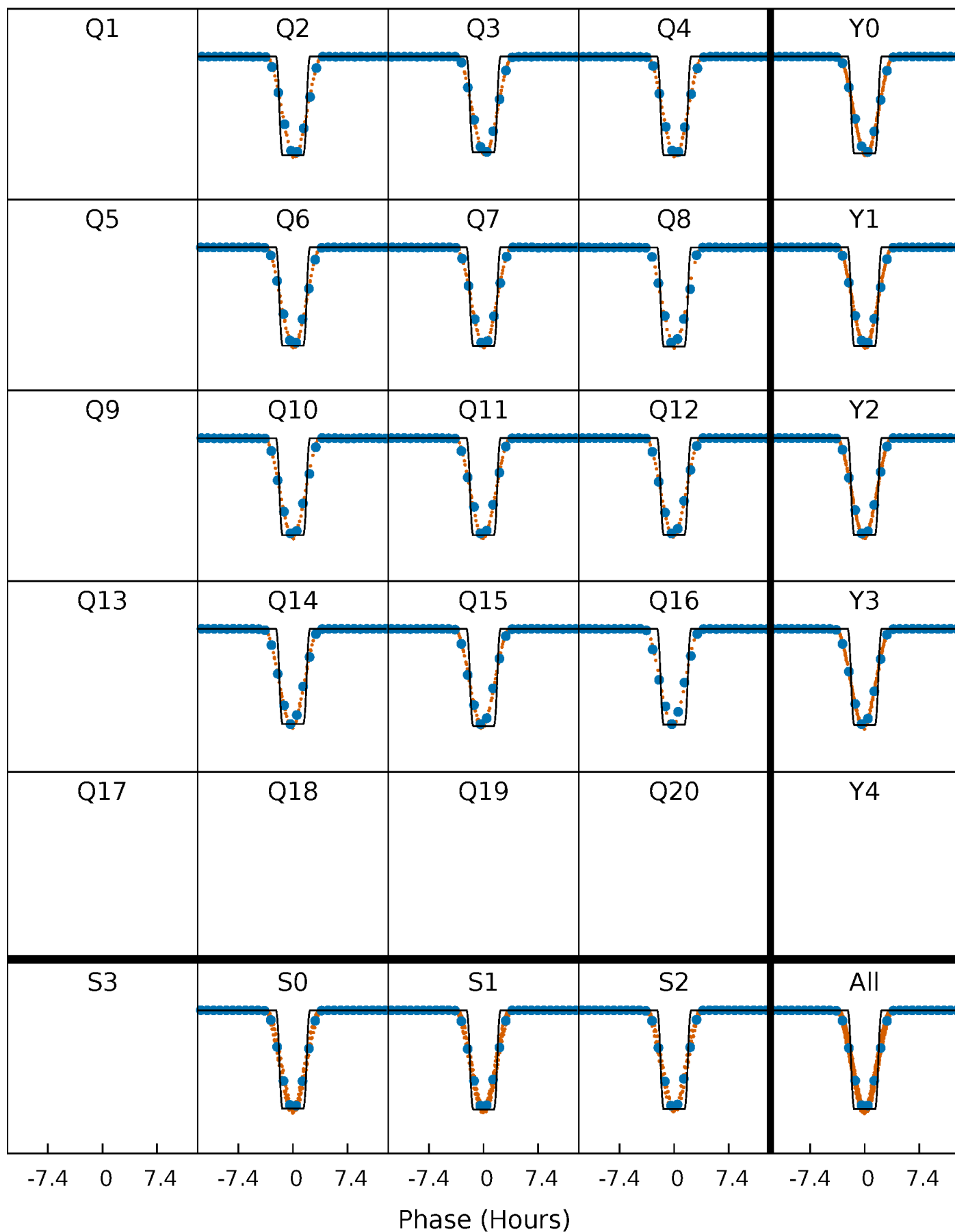
# DV Quarter-Phased Transit Curves

TCE 006672229-01 P= 23.832706 Days  $T_0=143.209207$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

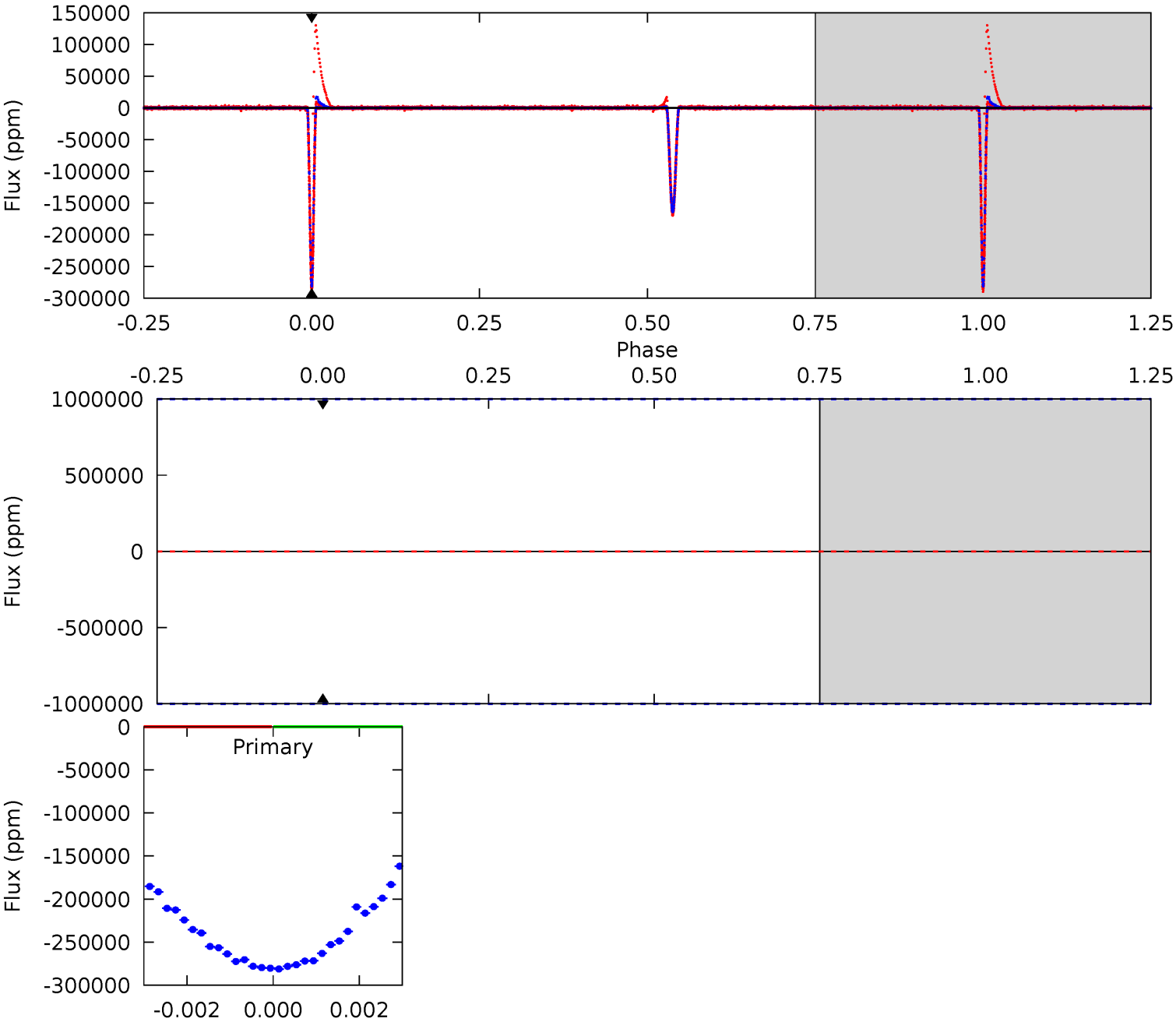
TCE 006672229-01 P= 23.832706 Days  $T_0=143.208538$  (BKJD)



# DV Model-Shift Uniqueness Test

006672229-01, P = 23.832706 Days, E = 143.209207 Days

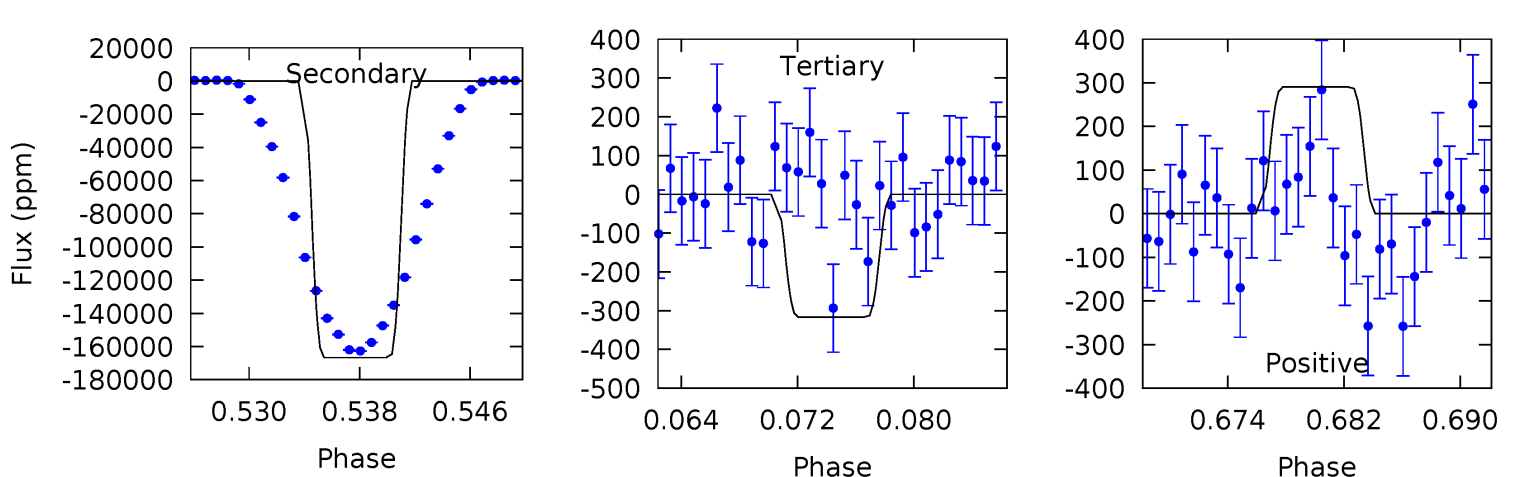
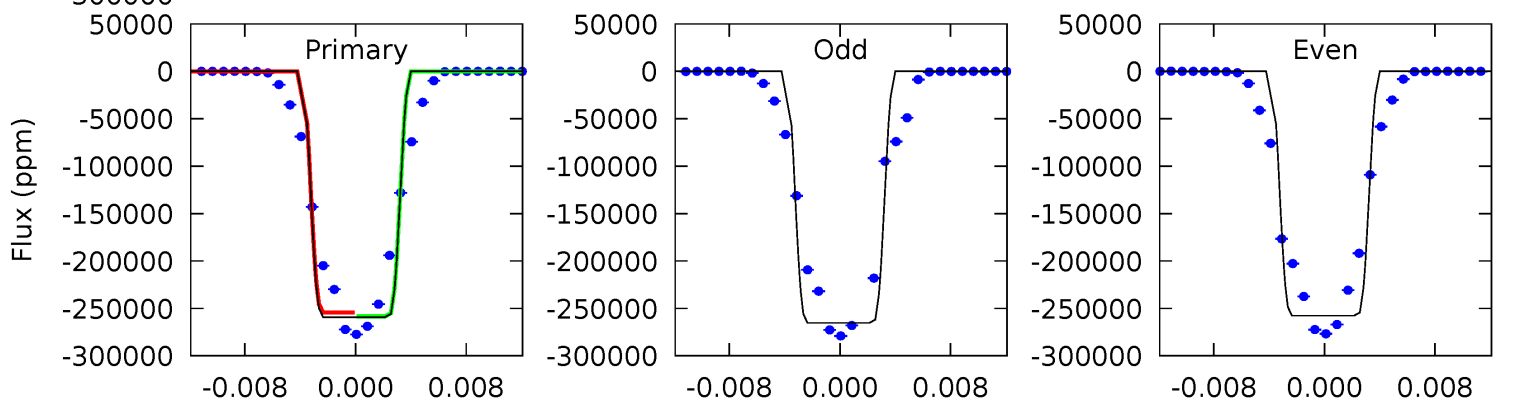
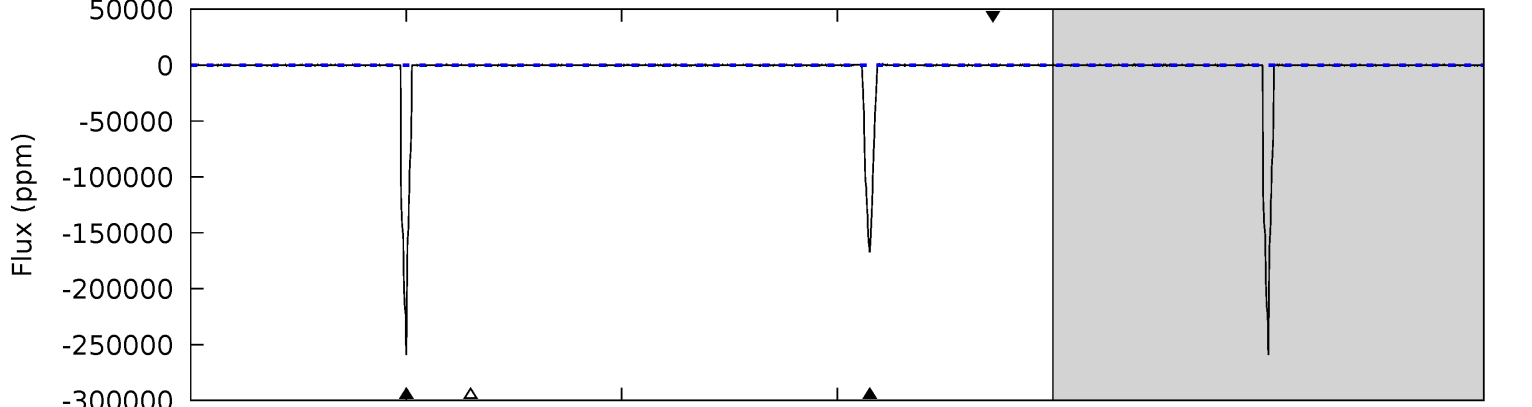
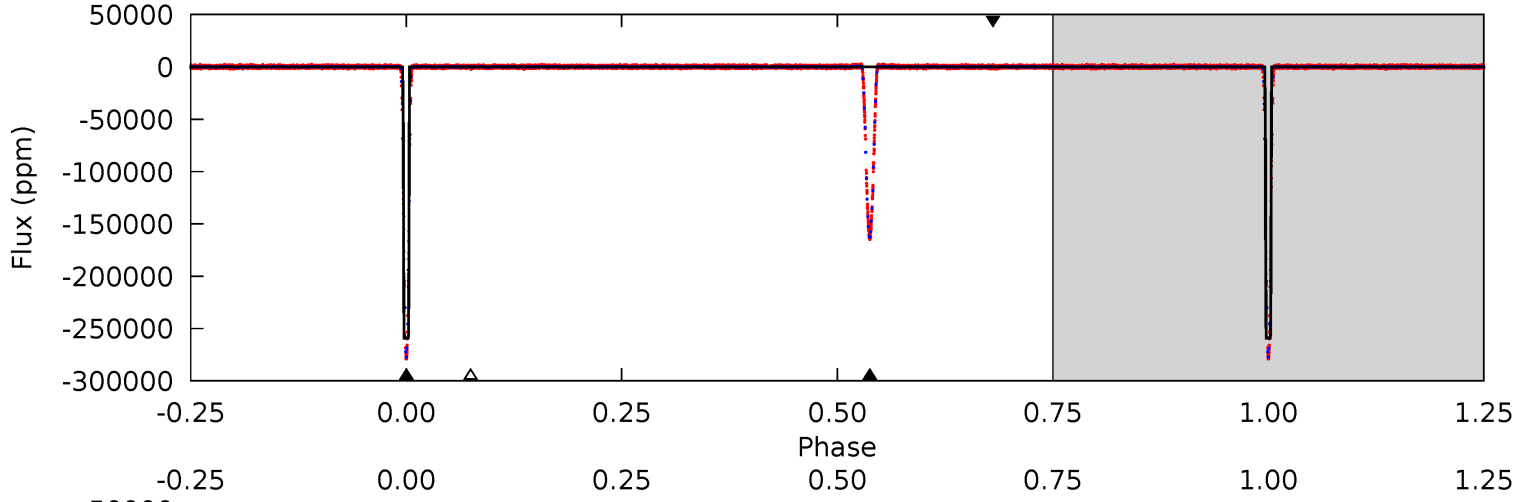
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

006672229-01, P = 23.832706 Days, E = 143.208538 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
3566	2294	4.36	4.00	5.07	2.65	3.92	3561	3562	2290	2290	49.5	1.00	0.00	0



### Stellar Parameters For KIC 006672229

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5722^{+154}_{-188}$	$4.454^{+0.067}_{-0.202}$	$0.220^{+0.200}_{-0.300}$	$1.000^{+0.295}_{-0.118}$	$1.037^{+0.111}_{-0.122}$	$1.462^{+0.410}_{-0.729}$
	+3%/-3%	+2%/-5%	+91%/-136%	+30%/-12%	+11%/-12%	+28%/-50%
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 006672229-01 / KOI 6754.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$56.23^{+12.89}_{-12.83}$	$885^{+65}_{-43}$	$-2541^{+7470}_{-2121}$	$-8.538^{+599.968}_{-443.330}$
Alt.	$-166698 \pm 73$	$59.02^{+14.74}_{-11.01}$	$882^{+69}_{-42}$	$5304^{+543}_{-417}$	$826^{+455}_{-275}$

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

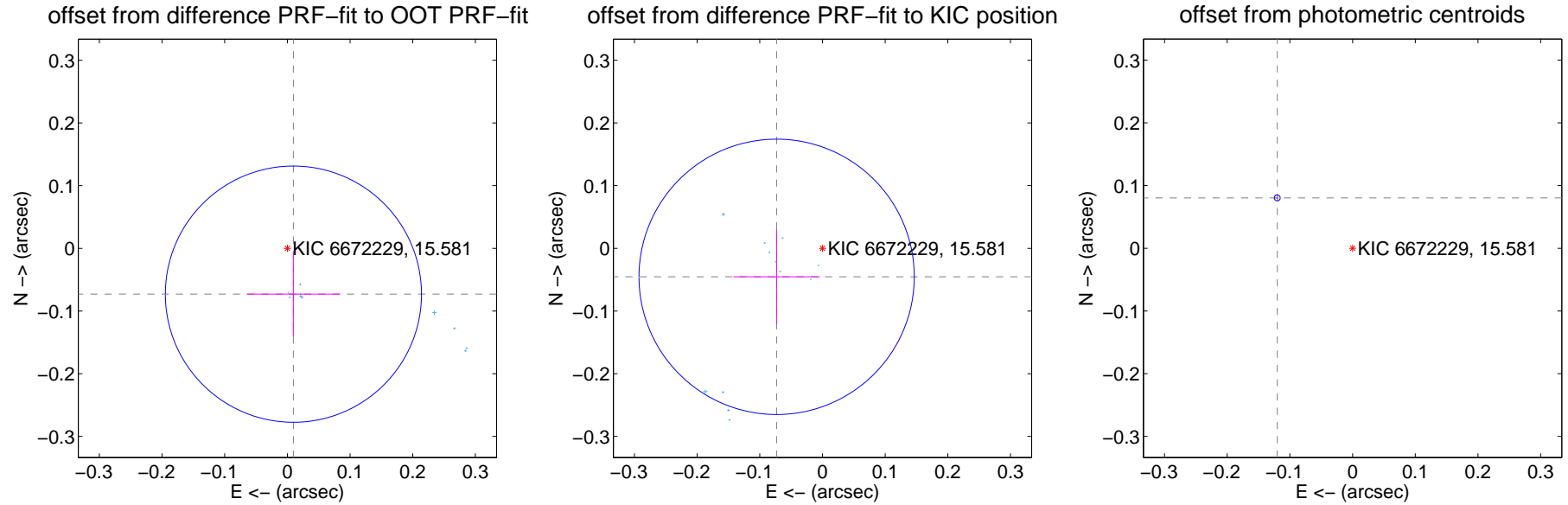
## DV Centroid Data

Supplemental centroid analysis for 006672229-01. Kepler magnitude: 15.58. Transit SNR -1.00

There are 12 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.44 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.074 \pm 0.068$	1.08	$-0.010 \pm 0.075$	$-0.073 \pm 0.067$
PRF-fit source offset from KIC position	$0.086 \pm 0.073$	1.18	$0.073 \pm 0.069$	$-0.045 \pm 0.076$
photometric centroid source offset	$0.14 \pm 0.00$	92.62	$0.12 \pm 0.00$	$0.08 \pm 0.00$



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.

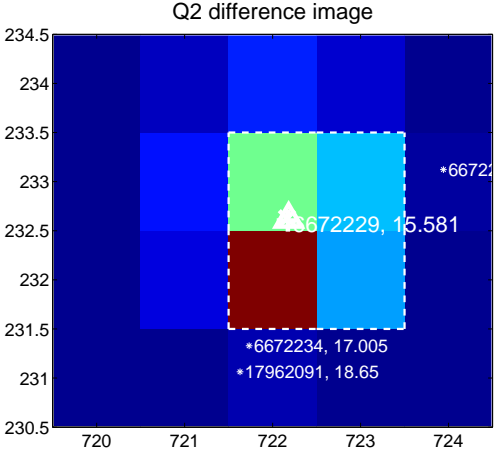
Q1 no difference image



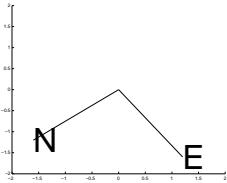
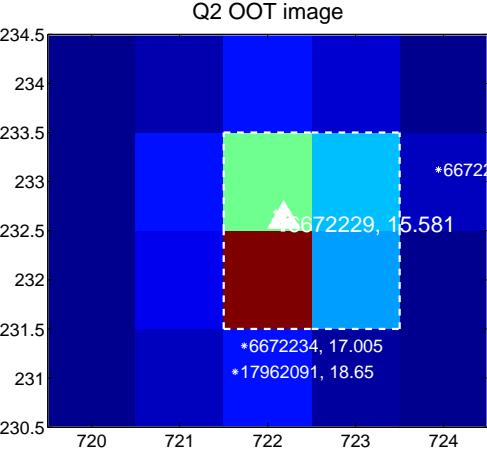
Q1 no OOT image



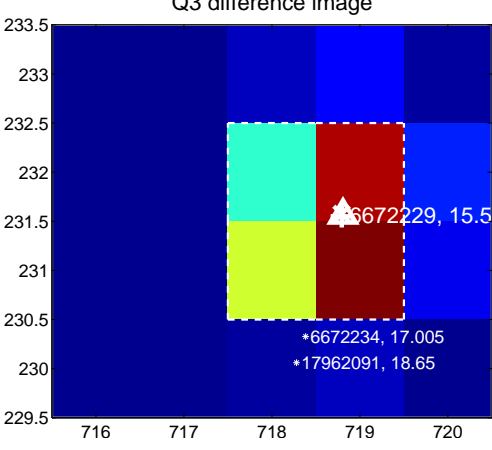
Q2 difference image



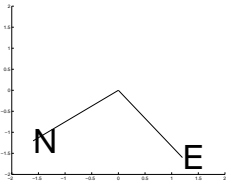
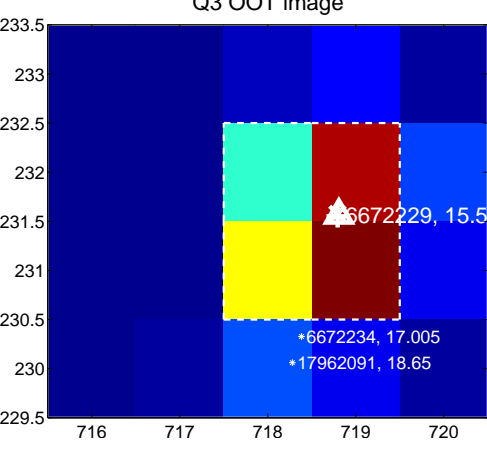
Q2 OOT image



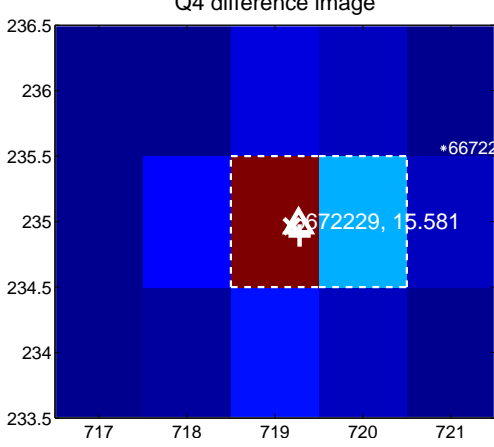
Q3 difference image



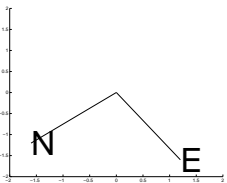
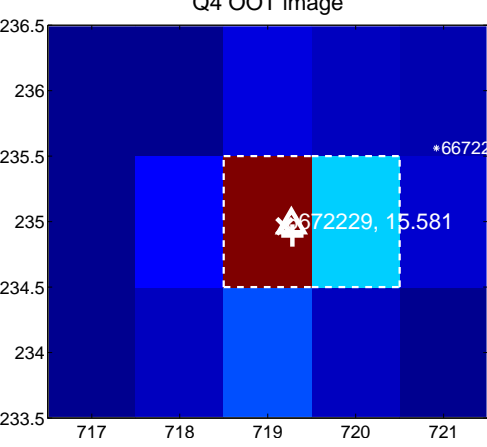
Q3 OOT image



Q4 difference image



Q4 OOT image



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

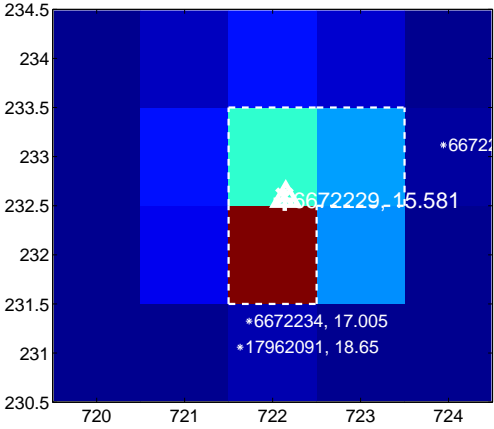
Q5 no difference image



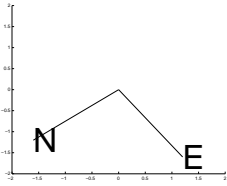
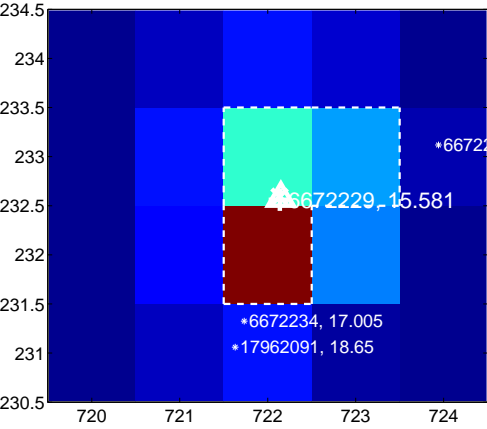
Q5 no OOT image



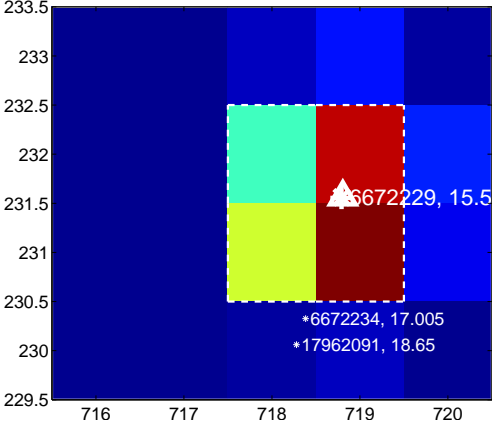
Q6 difference image



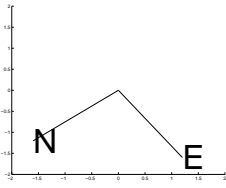
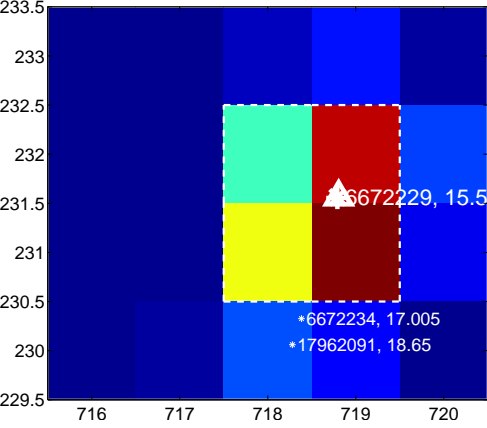
Q6 OOT image



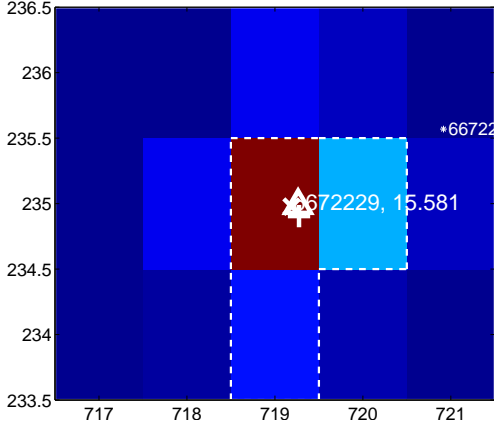
Q7 difference image



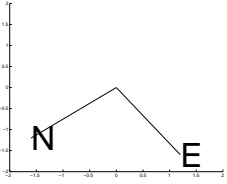
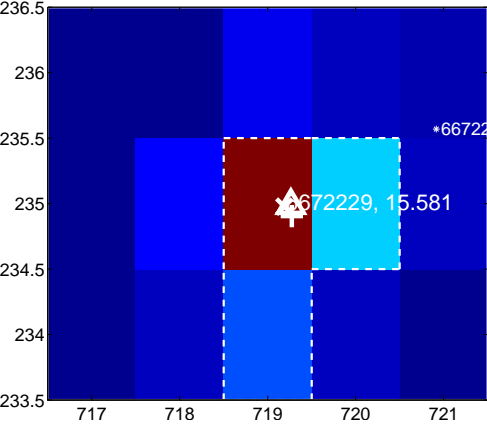
Q7 OOT image



Q8 difference image

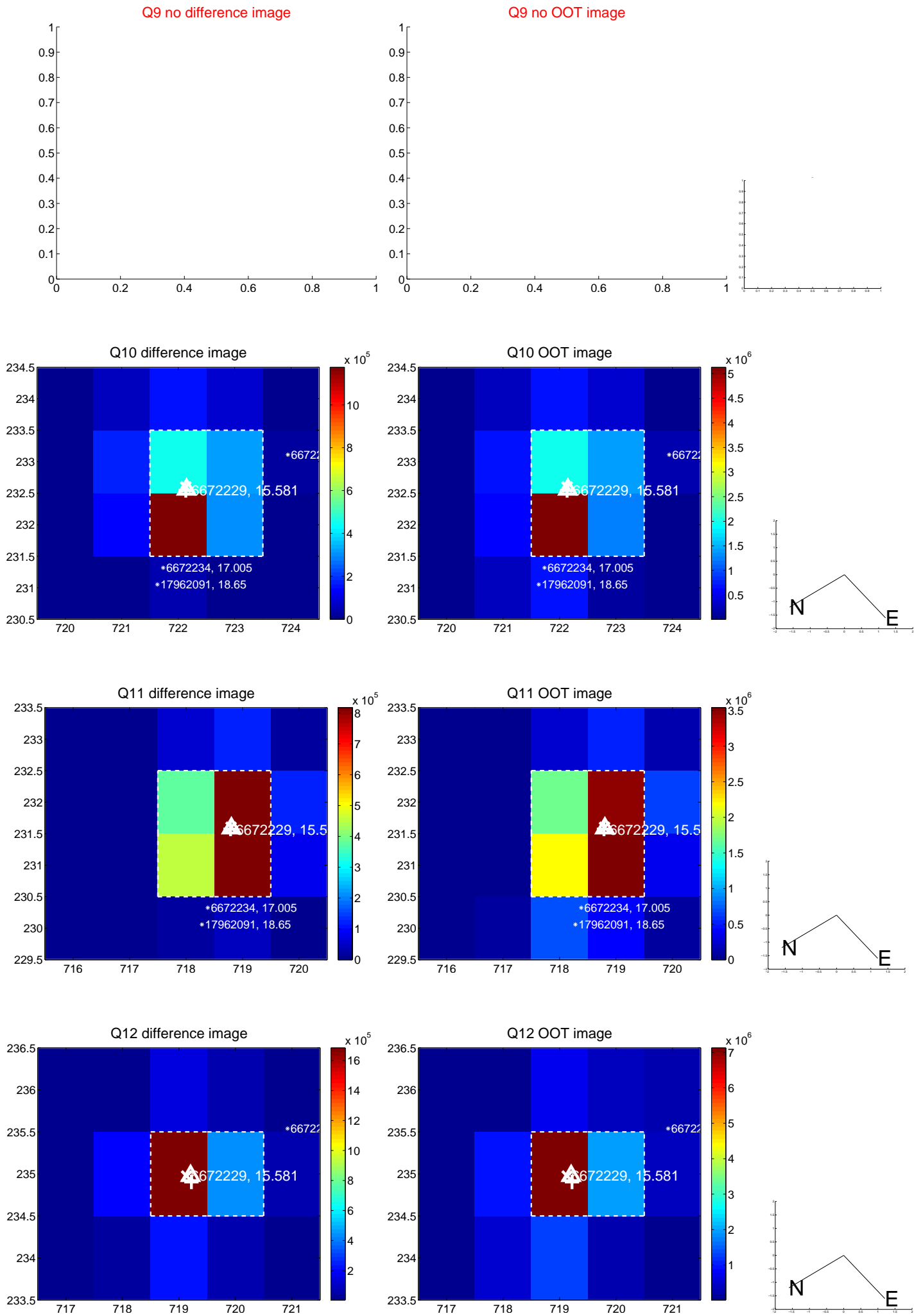


Q8 OOT image





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.

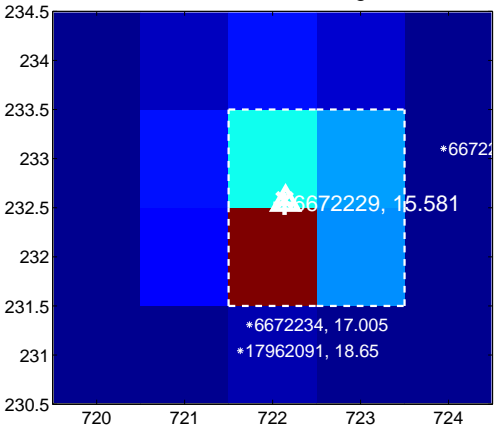
Q13 no difference image



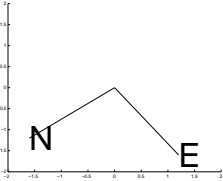
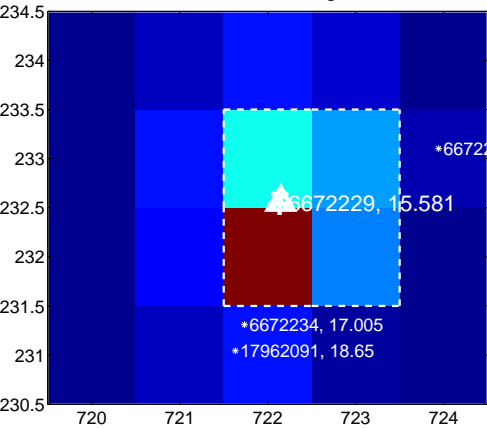
Q13 no OOT image



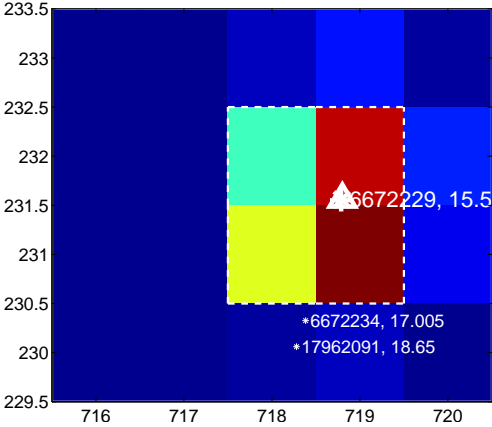
Q14 difference image



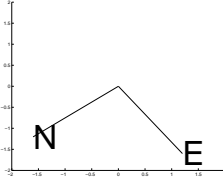
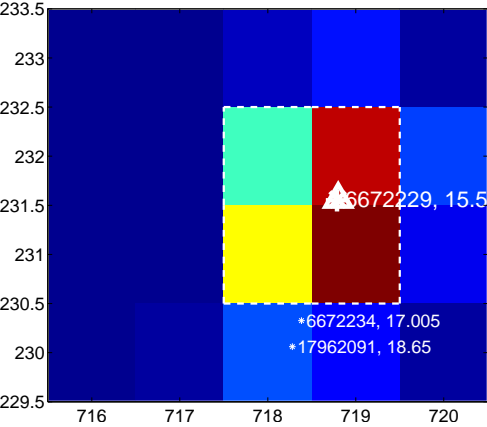
Q14 OOT image



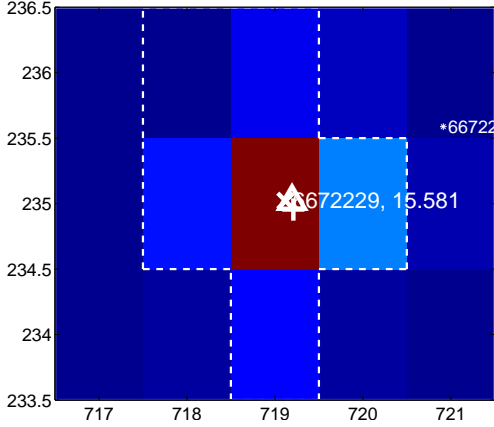
Q15 difference image



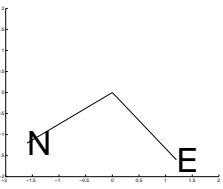
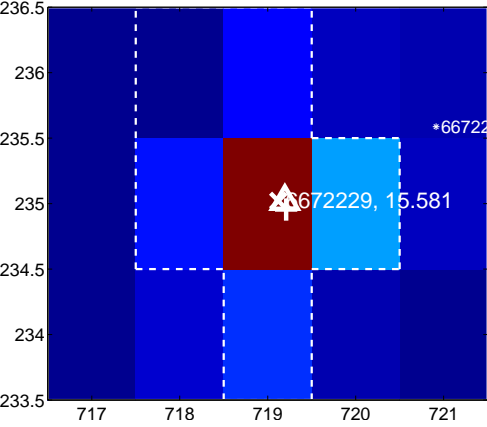
Q15 OOT image



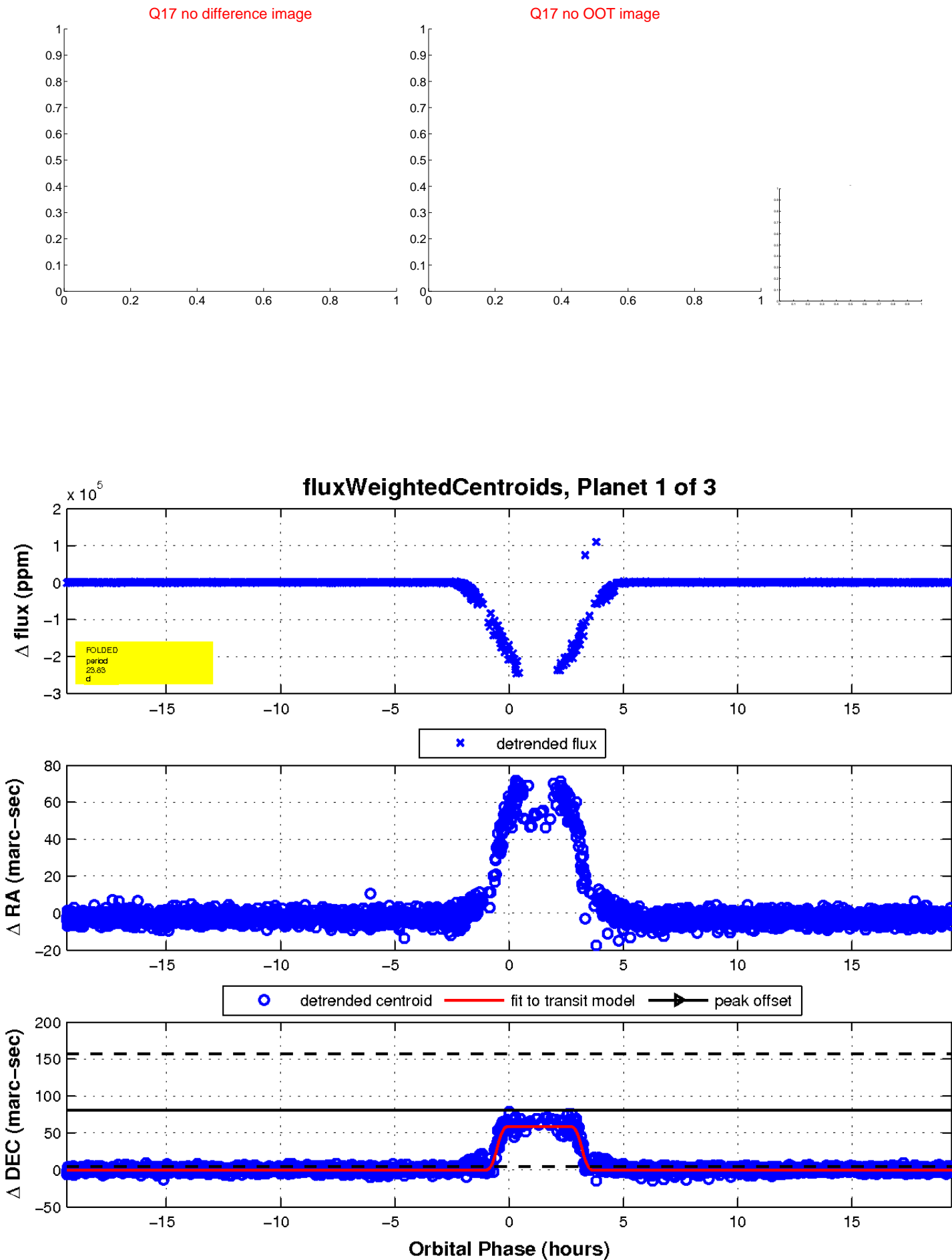
Q16 difference image



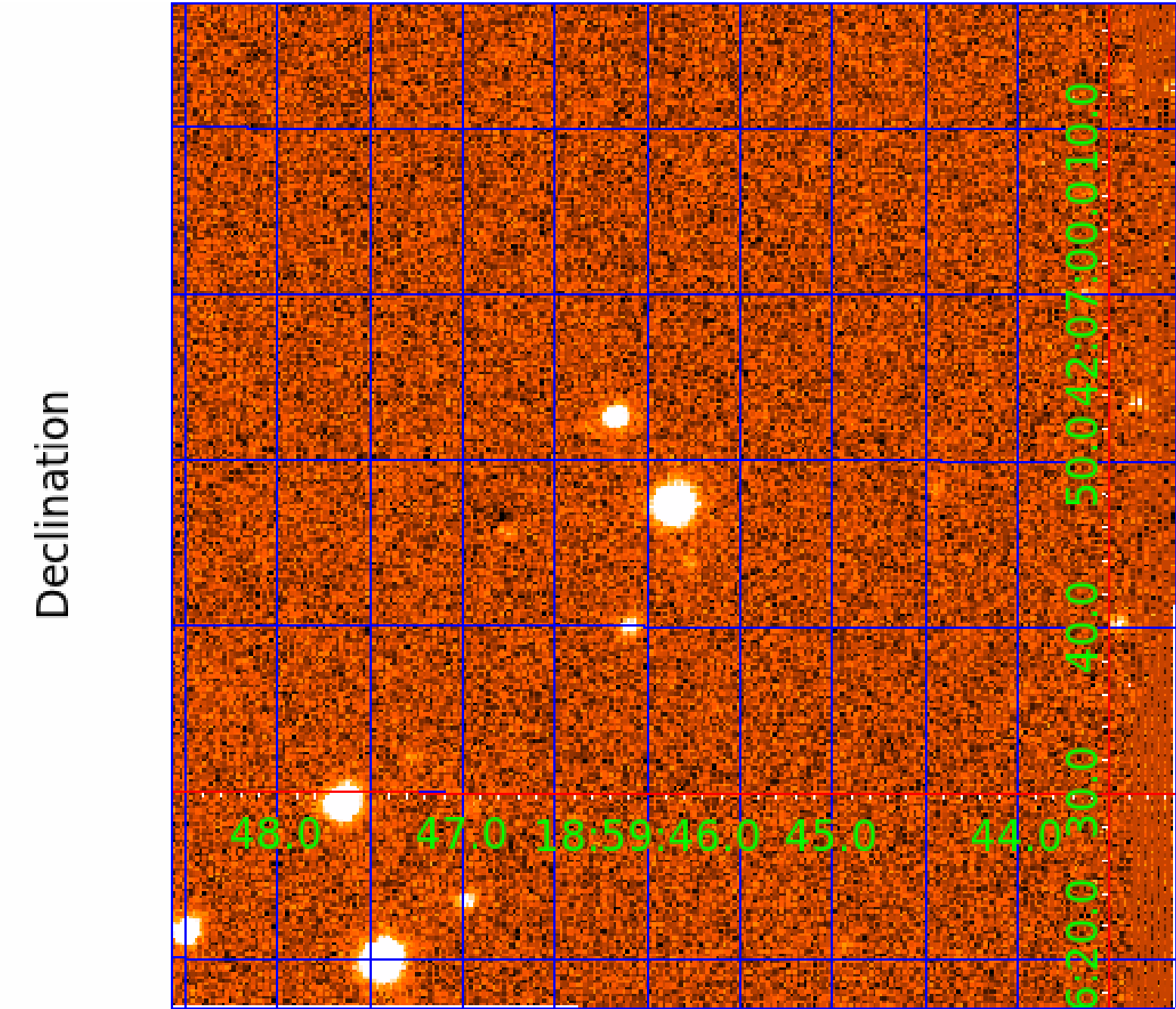
Q16 OOT image



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UKIRT Image



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006672229-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
006672229-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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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.

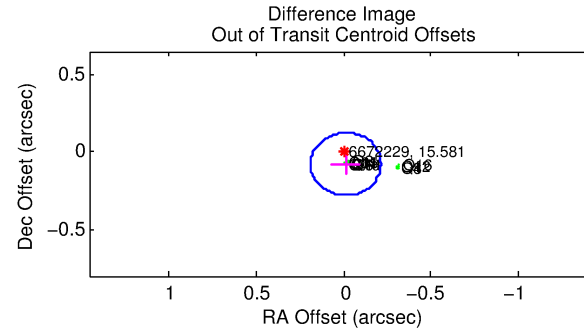
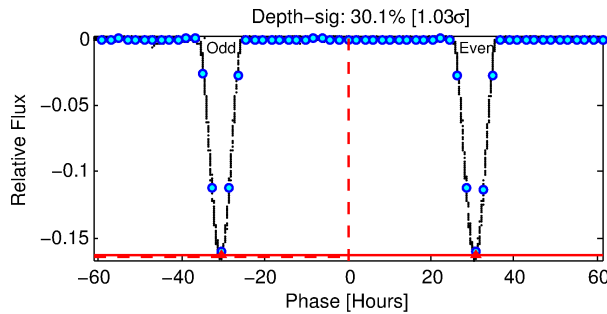
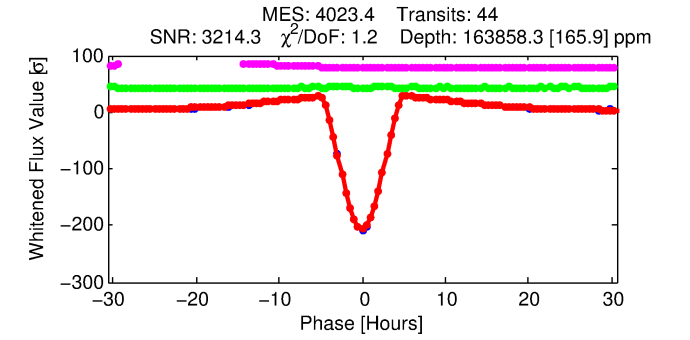
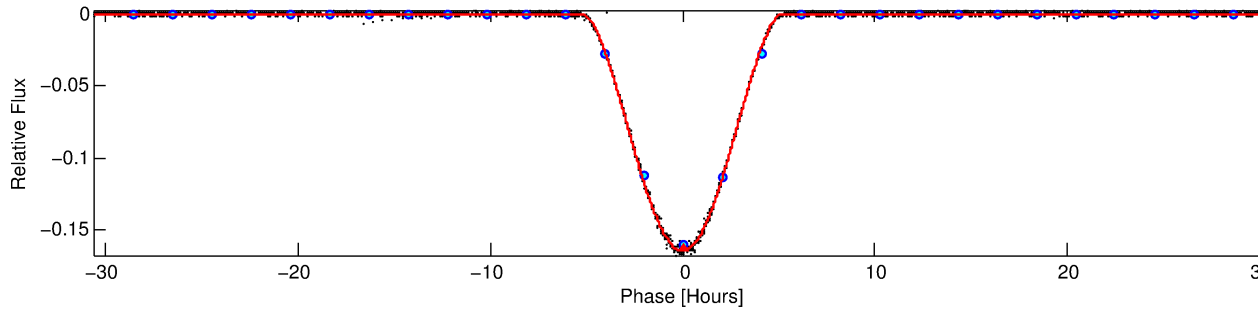
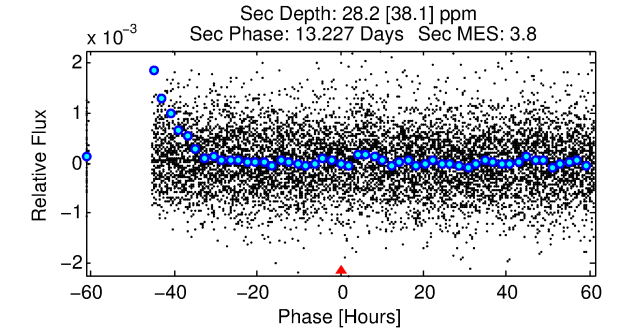
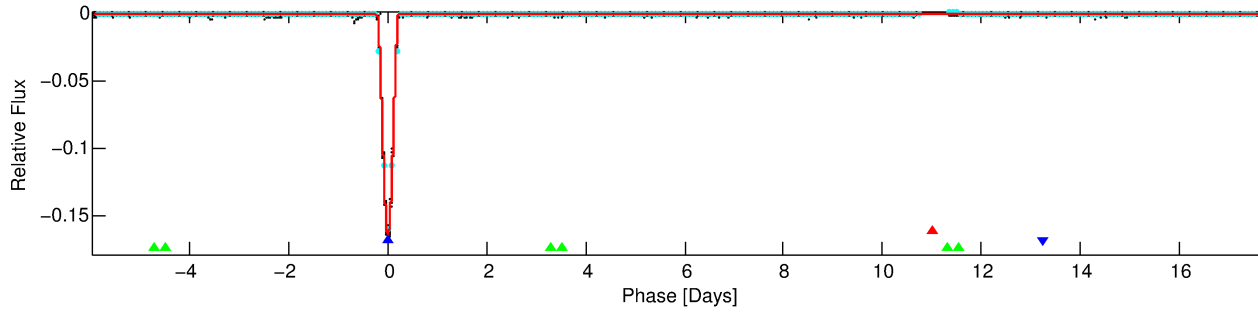
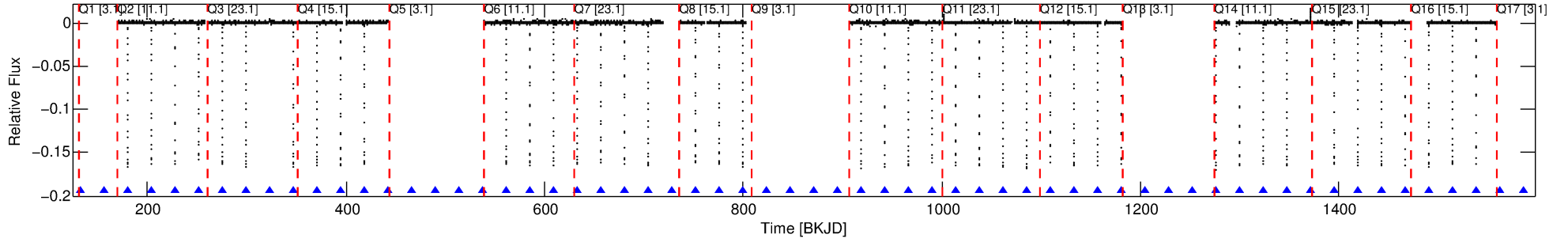
Ephemeris Match Information For 006672229-02

No Significant Match Found

# DV One-Page Summary

KIC: 6672229 Candidate: 2 of 3 Period: 23.832 d  
KOI: K06754 Corr: No Ephemeris Match

Kp: 15.58 R\*: 1.00 Rs Teff: 5722.0 K Logg: 4.45 Fe/H: 0.220



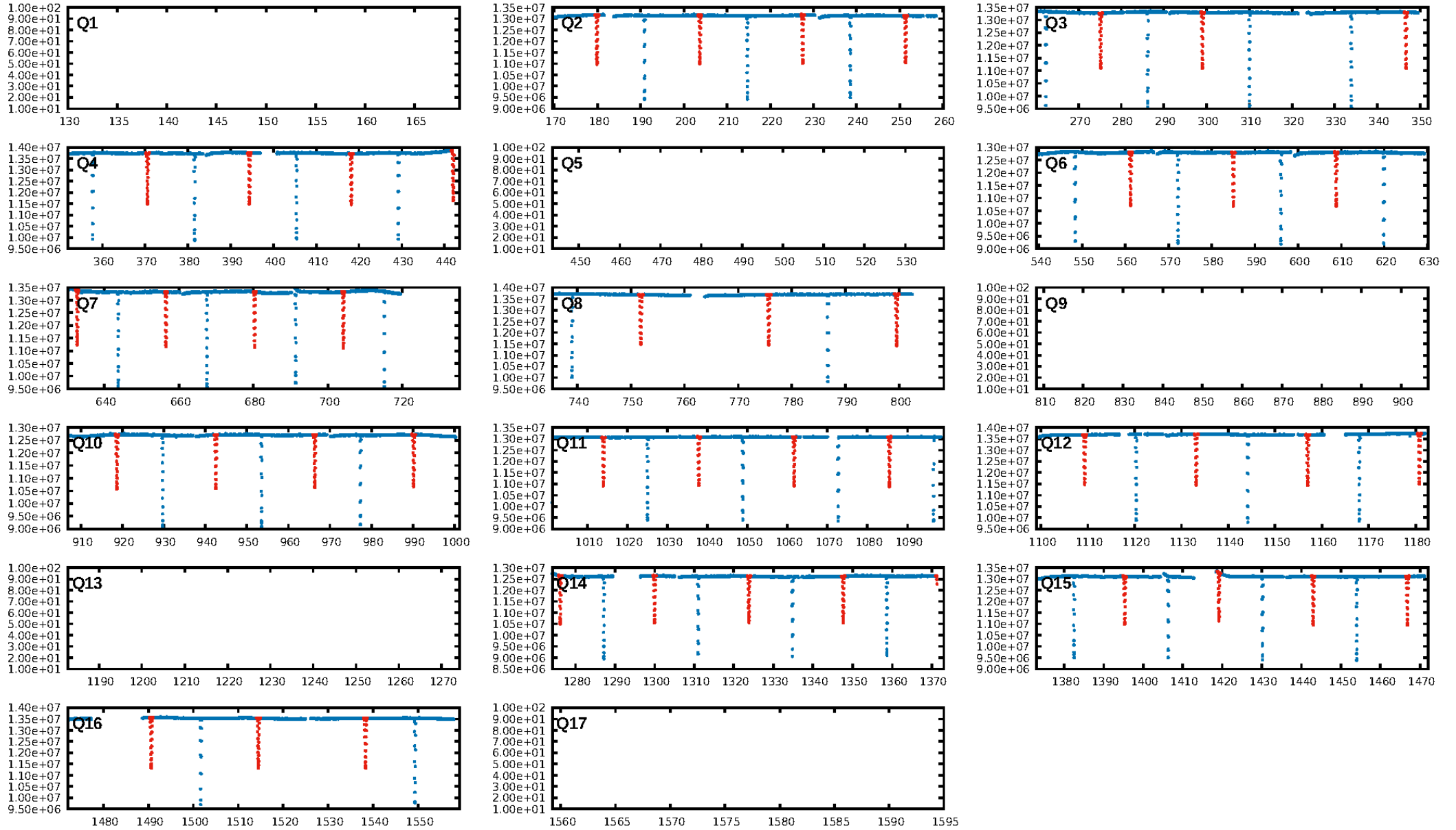
## DV Fit Results:

Period = 23.83237 [0.00000] d  
Epoch = 132.2024 [0.0001] BKJD  
Rp/R\* = 0.5517 [0.0339]  
a/R\* = 22.59 [0.17]  
b = 0.90 [0.05]  
Seff = 35.66 [13.91]  
Teq = 623 [61] K  
Rp = 60.21 [18.14] Re  
a = 0.1641 [0.0411] AU  
Ag = 0.12 [0.16] [-5.46σ]  
Teffp = 561 [191] K [-0.31σ]

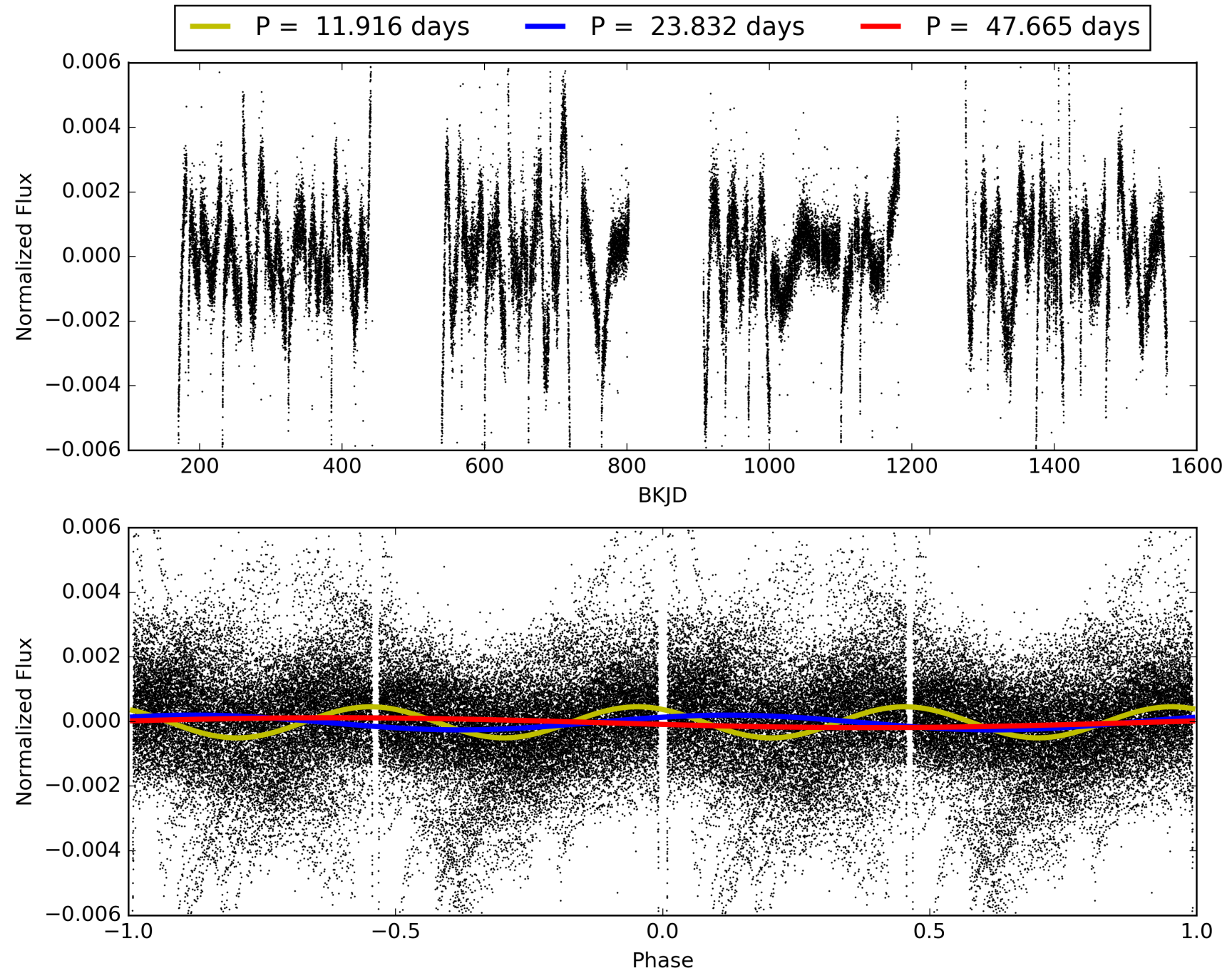
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 28.2%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [44/44]  
GhostDiagnostic-chr: 4.027  
Centroid-sig: N/A  
Centroid-so: 0.105 arcsec [43.67σ]  
OotOffset-rm: 0.078 arcsec [1.16σ]  
KicOffset-rm: 0.089 arcsec [1.27σ]  
OotOffset-st: 4/4/4/0 [12]  
KicOffset-st: 4/4/4/0 [12]  
DiffImageQuality-fgm: 1.00 [12/12]  
DiffImageOverlap-fno: 1.00 [12/12]

# TCE 006672229-02, PDC Light Curves



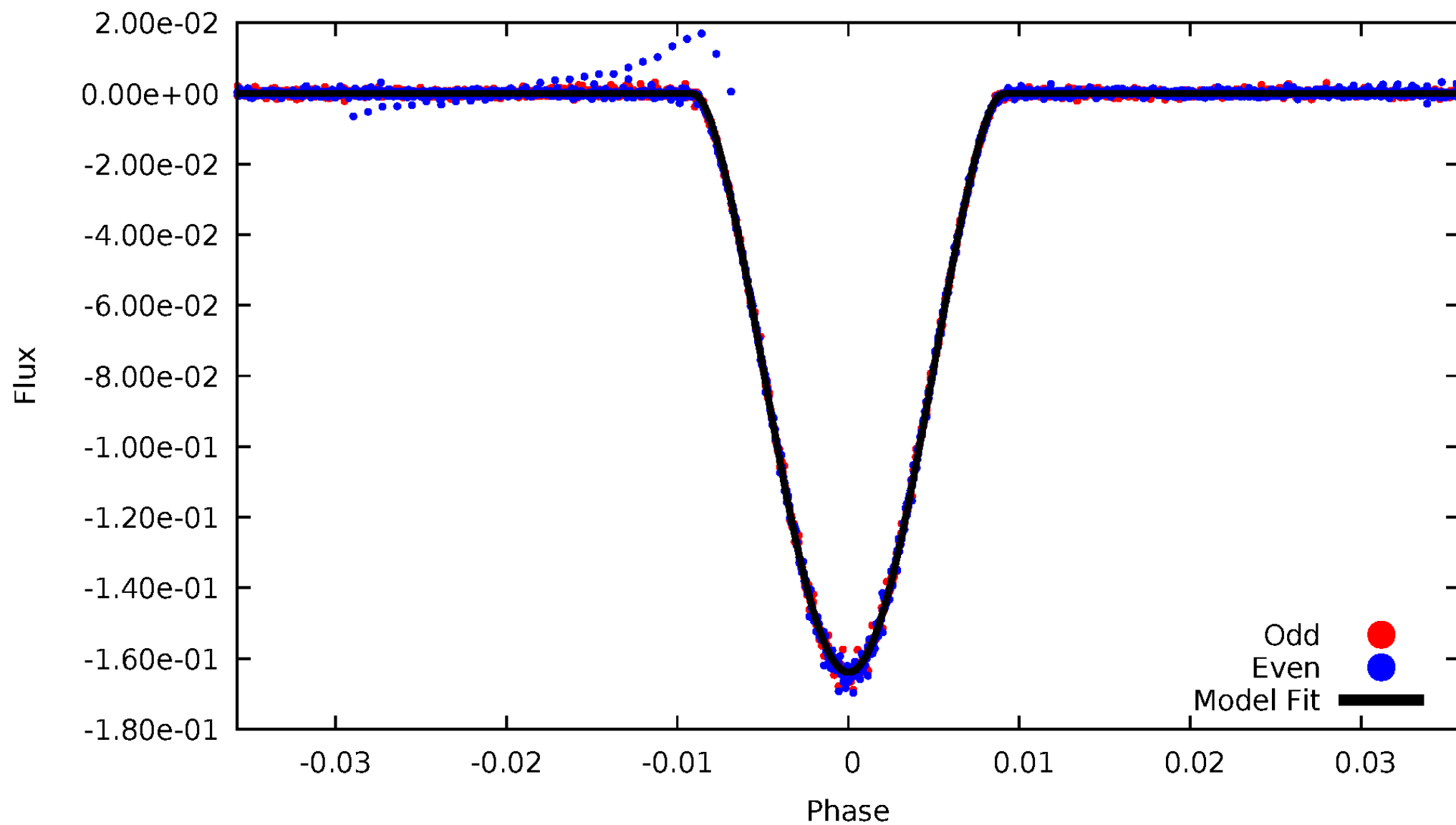
TCE 006672229-02





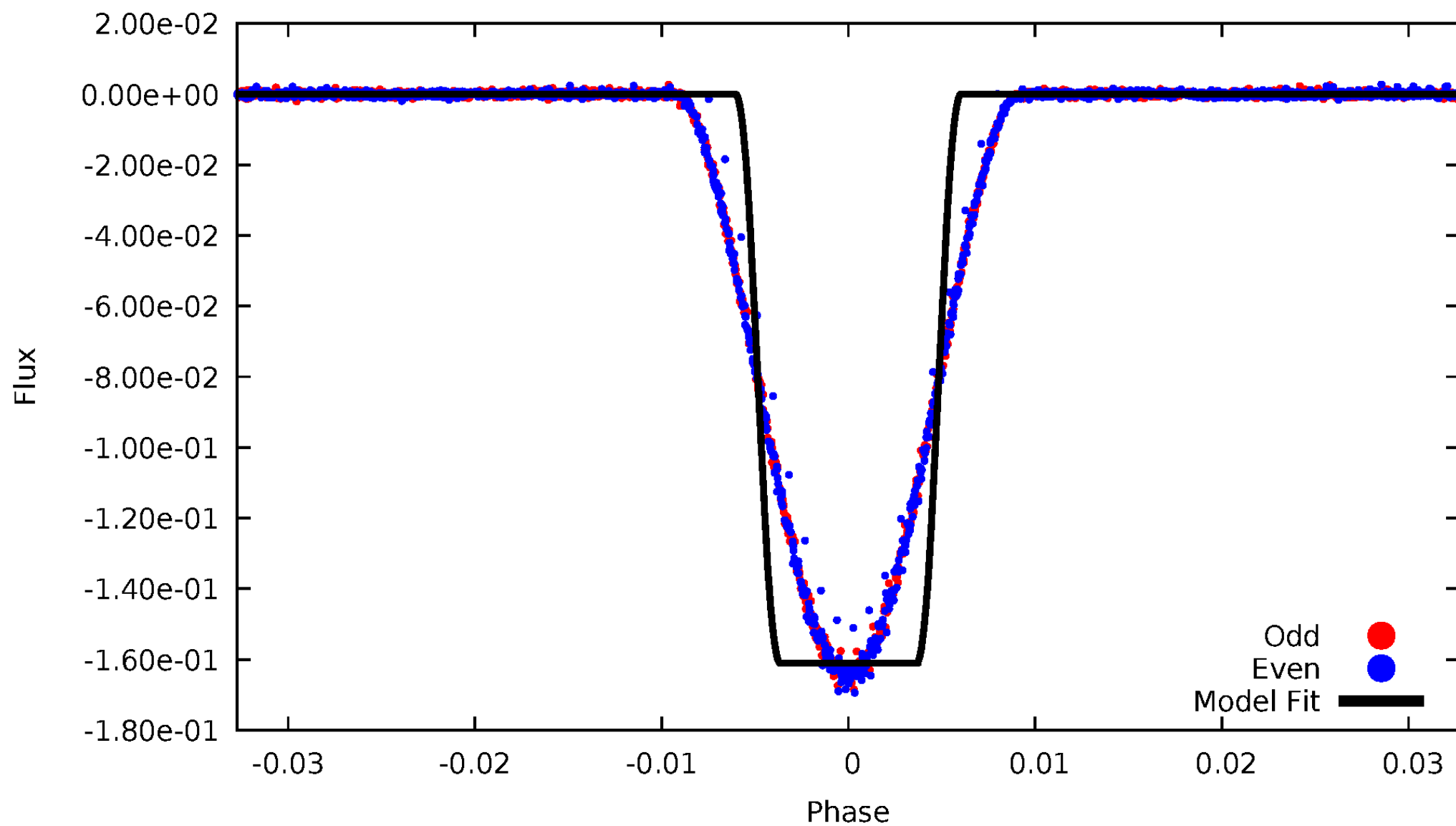
# DV Odd/Even

TCE 006672229-02



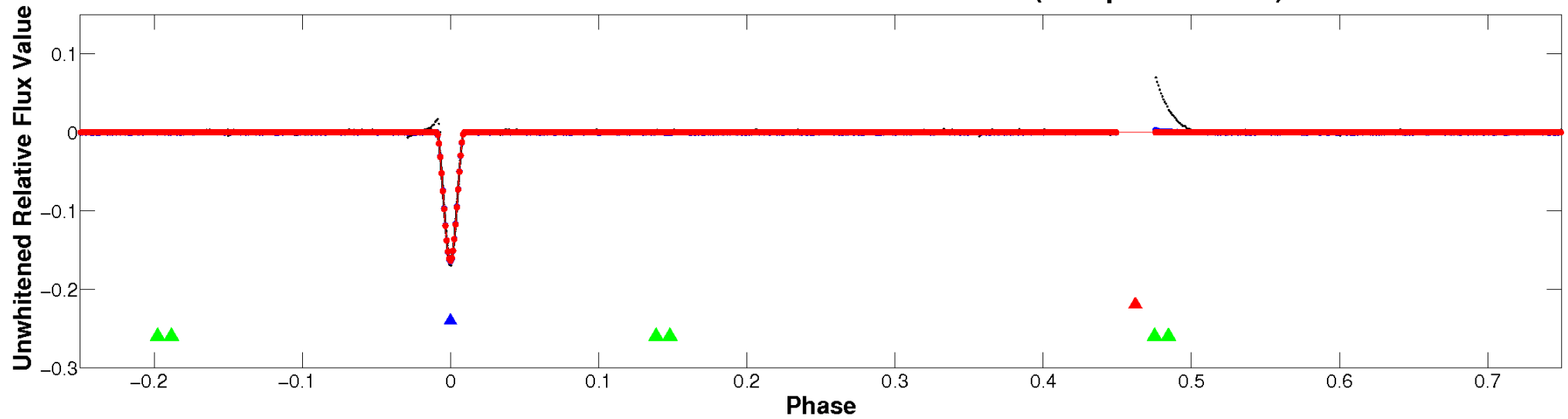
# ALT Odd/Even

TCE 006672229-02

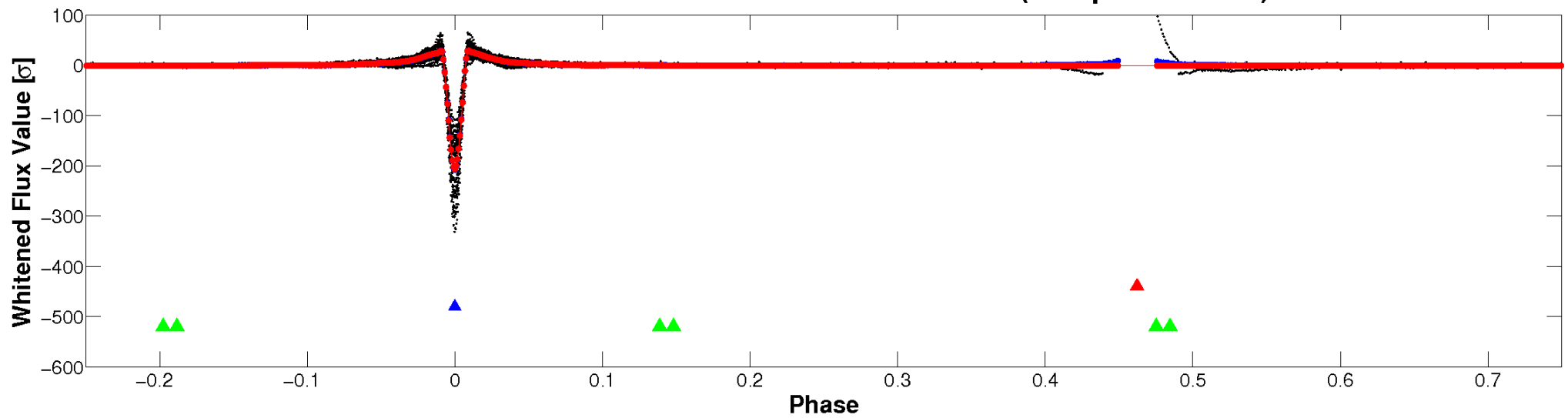


# Non-Whitened Vs. Whitened Light Curve

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

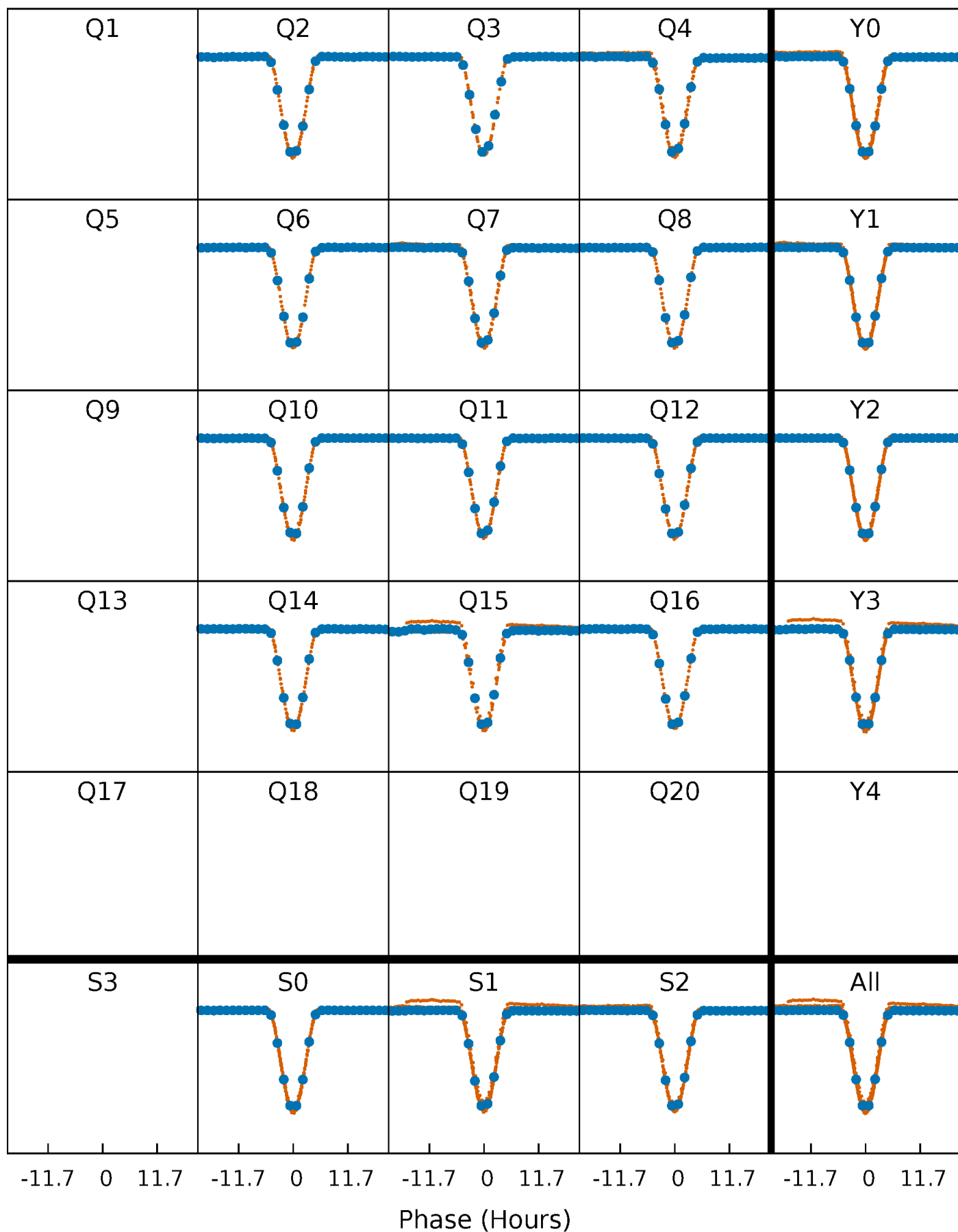


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



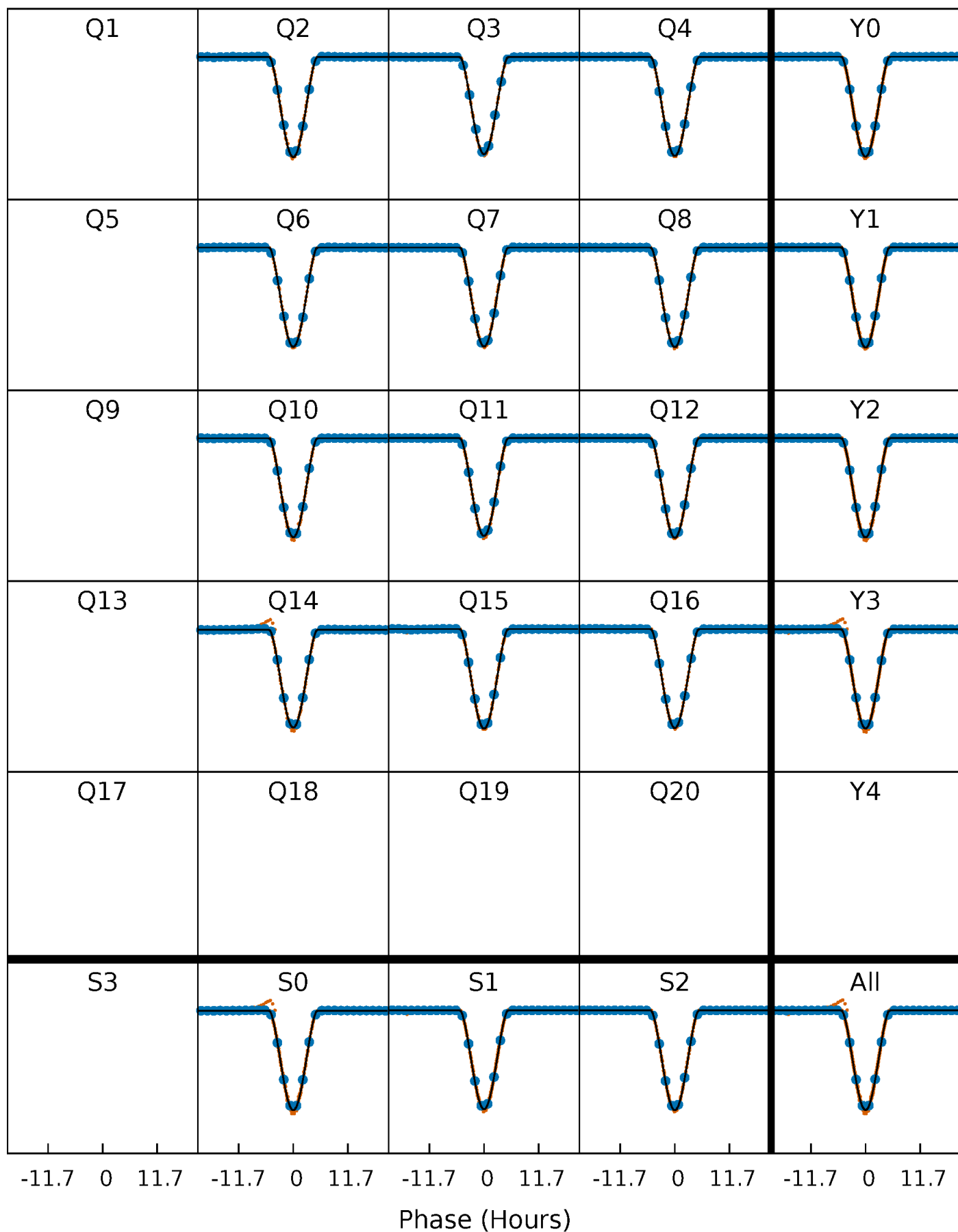
# PDC Quarter-Phased Transit Curves

TCE 006672229-02 P= 23.832371 Days  $T_0=132.202401$  (BKJD)



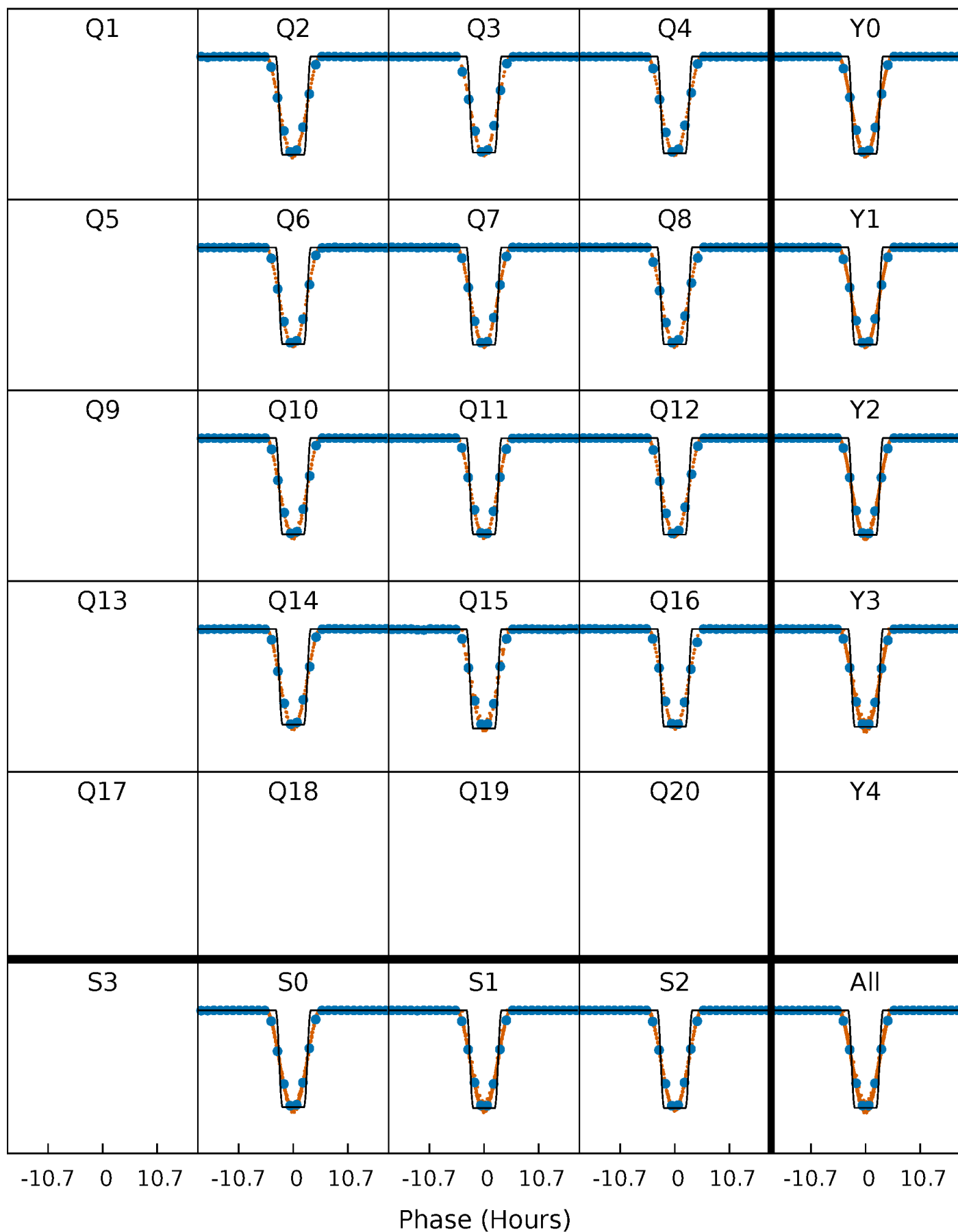
# DV Quarter-Phased Transit Curves

TCE 006672229-02 P= 23.832371 Days  $T_0=132.202401$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

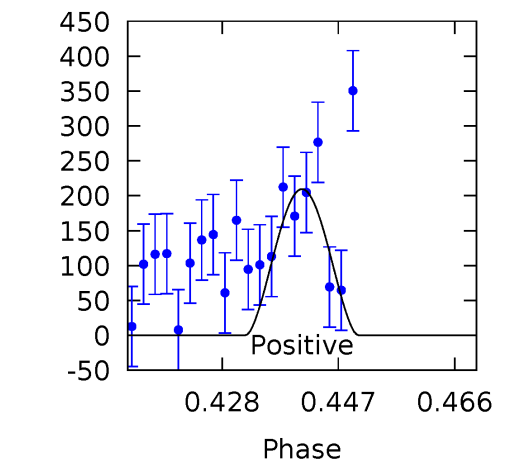
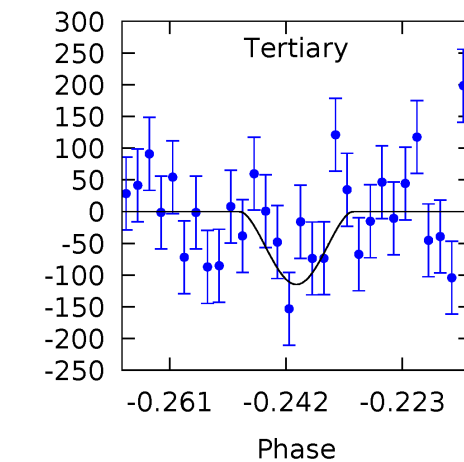
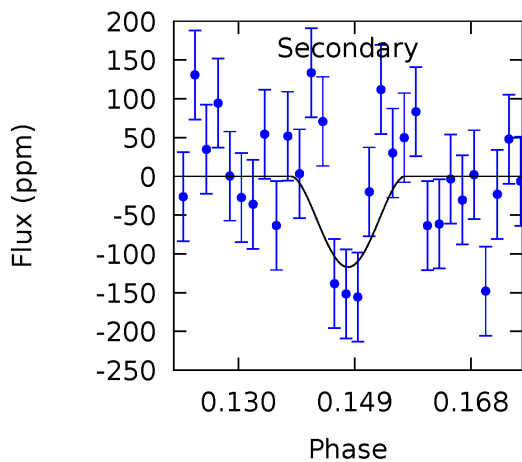
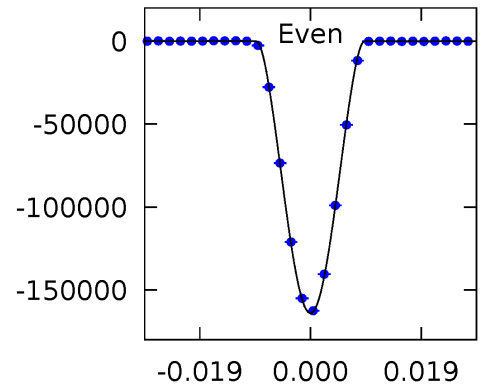
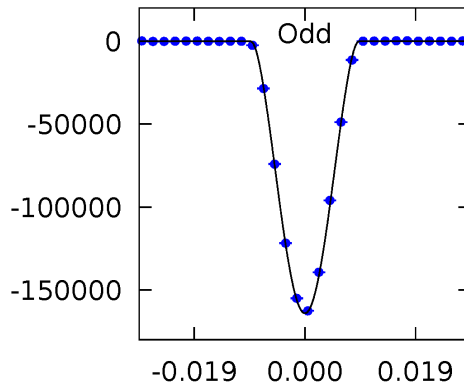
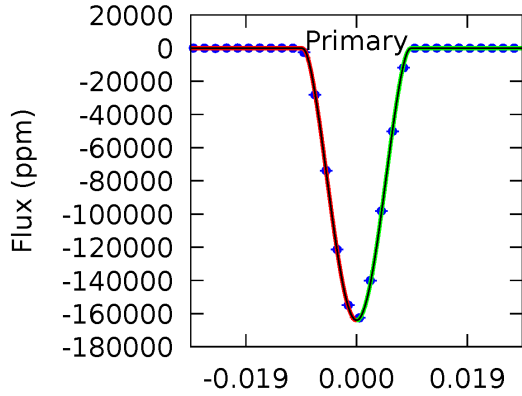
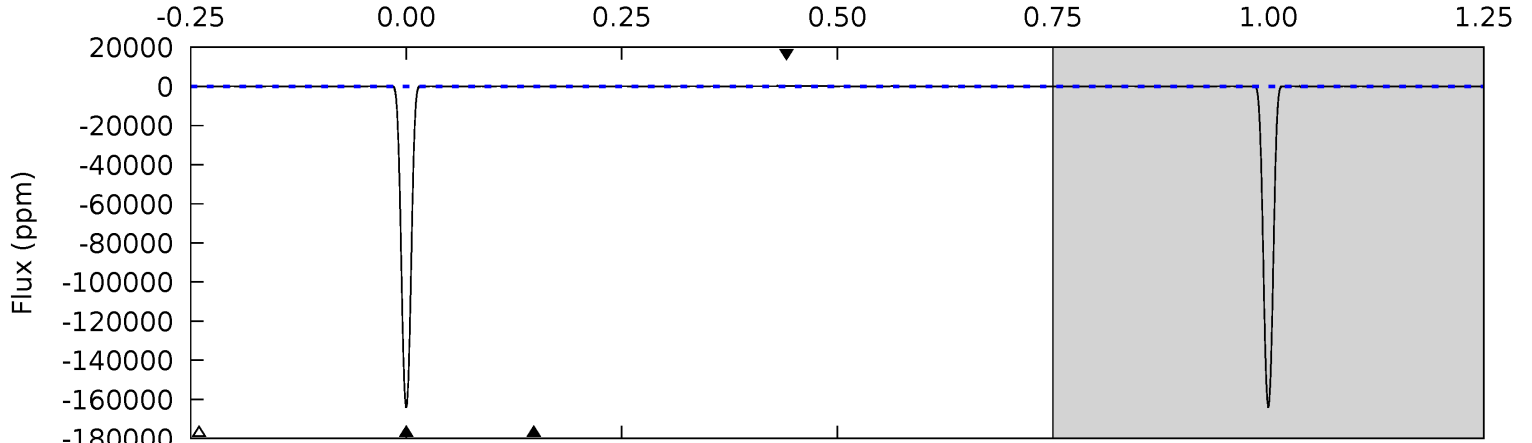
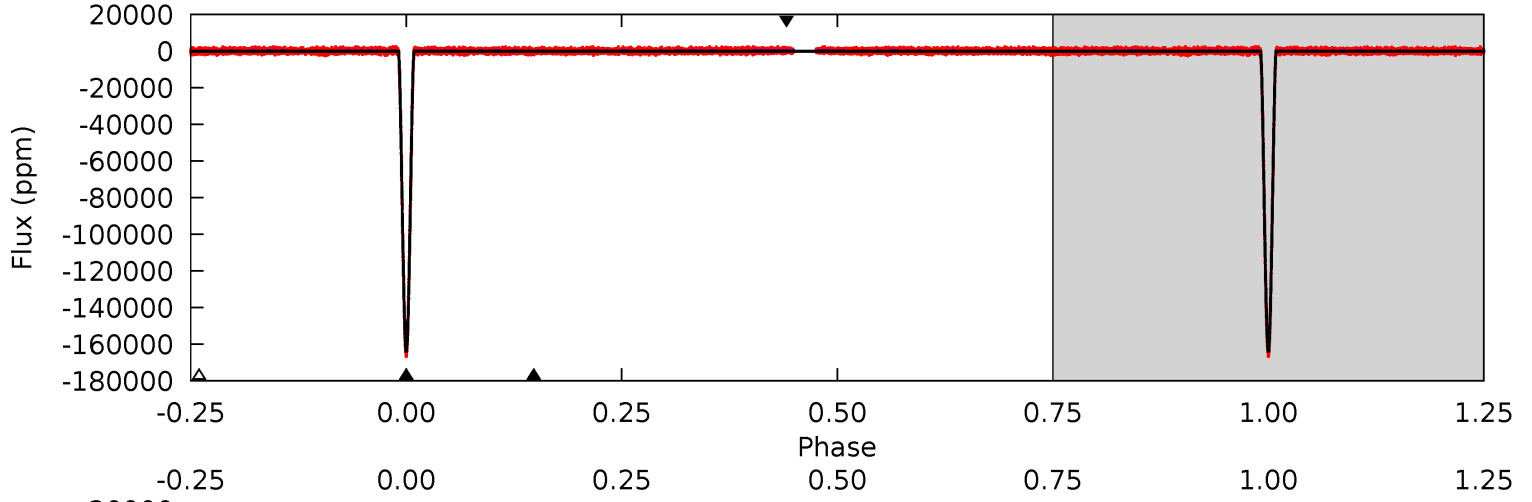
TCE 006672229-02 P= 23.832303 Days  $T_0=132.204673$  (BKJD)



# DV Model-Shift Uniqueness Test

006672229-02, P = 23.832371 Days, E = 132.202401 Days

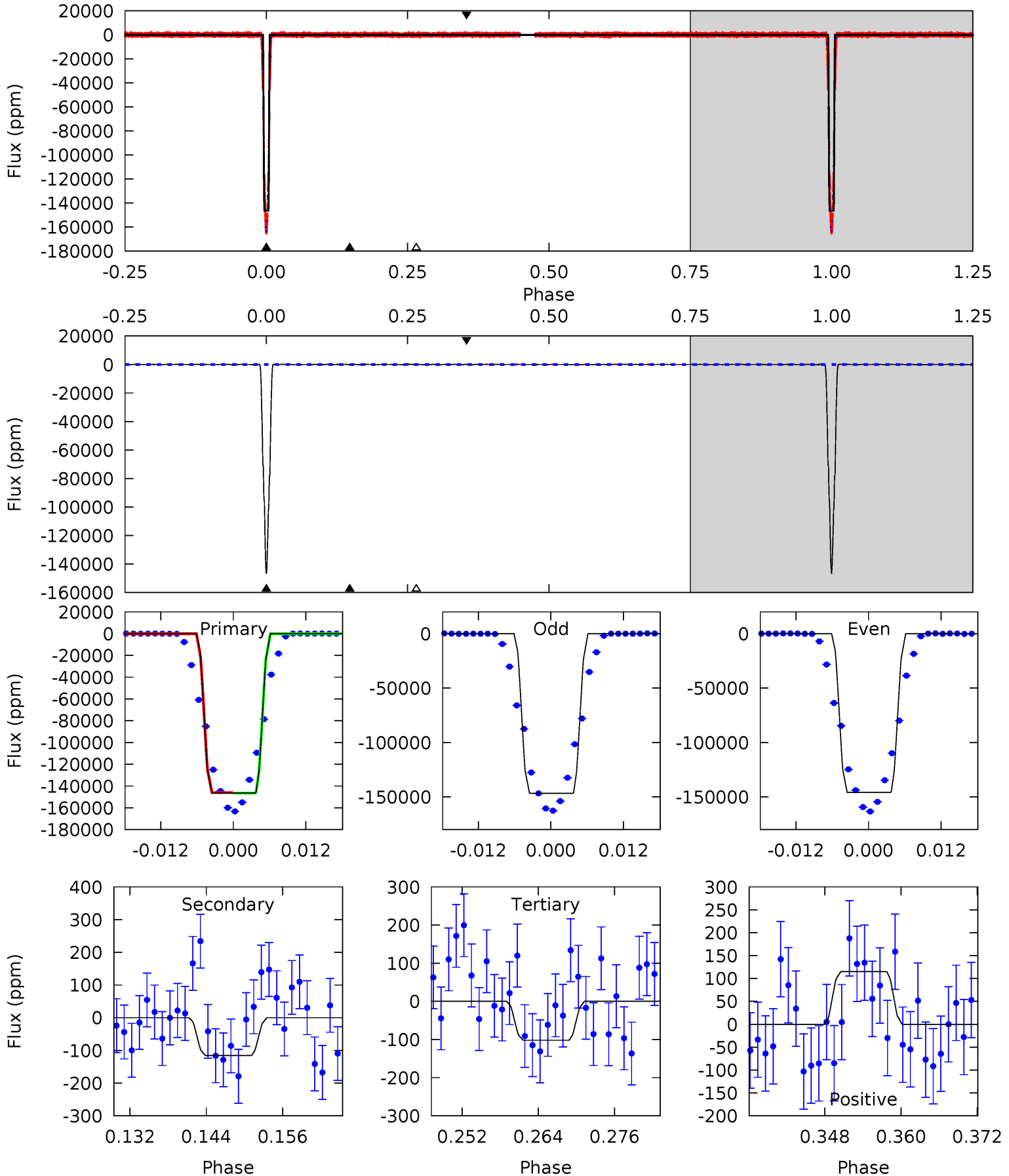
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8106	5.79	5.68	10.4	4.91	2.35	2.73	8100	8095	0.11	-4.57	1.52	0.97	0.00	0.81



# Alt Model-Shift Uniqueness Test

006672229-02, P = 23.832303 Days, E = 132.204673 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
5006	3.96	3.49	3.93	4.99	2.51	1.25	5002	5002	0.47	0.03	15.3	1.00	0.00	8.78





### Stellar Parameters For KIC 006672229

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5722^{+154}_{-188}$	$4.454^{+0.067}_{-0.202}$	$0.220^{+0.200}_{-0.300}$	$1.000^{+0.295}_{-0.118}$	$1.037^{+0.111}_{-0.122}$	$1.462^{+0.410}_{-0.729}$
	+3%/-3%	+2%/-5%	+91%/-136%	+30%/-12%	+11%/-12%	+28%/-50%
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 006672229-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-117 \pm 20$	$62.26^{+10.82}_{-6.43}$	$883^{+74}_{-40}$	$1642^{+99}_{-378}$	$0.433^{+0.144}_{-0.128}$
Alt.	$-116 \pm 29$	$44.95^{+7.52}_{-5.49}$	$885^{+59}_{-43}$	$1855^{+88}_{-108}$	$0.805^{+0.358}_{-0.277}$

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

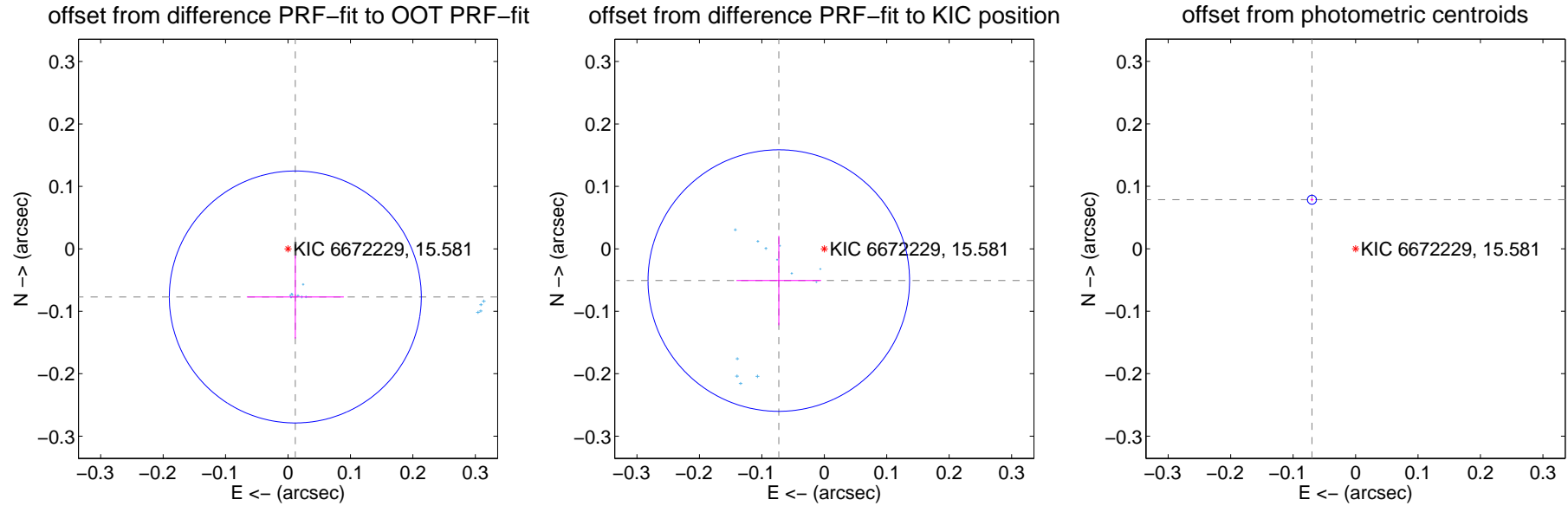
## DV Centroid Data

Supplemental centroid analysis for 006672229-02. Kepler magnitude: 15.58. Transit SNR 3214.33

There are 12 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.44 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.078 \pm 0.067$	1.16	$-0.012 \pm 0.078$	$-0.077 \pm 0.067$
PRF-fit source offset from KIC position	$0.089 \pm 0.070$	1.27	$0.073 \pm 0.068$	$-0.051 \pm 0.072$
photometric centroid source offset	$0.11 \pm 0.00$	43.67	$0.07 \pm 0.00$	$0.08 \pm 0.00$



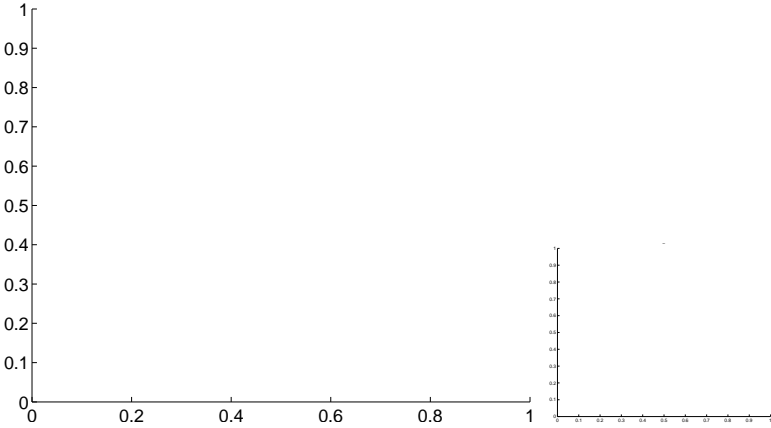
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

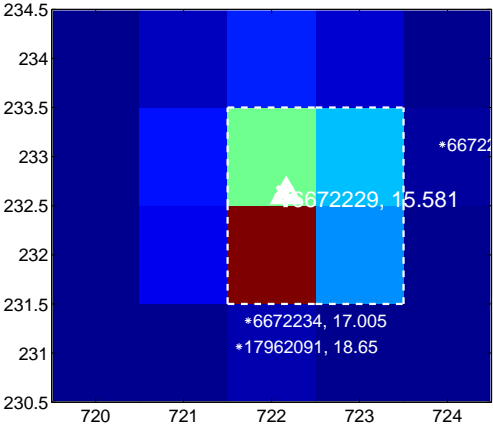
Q1 no difference image



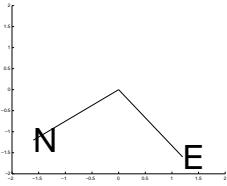
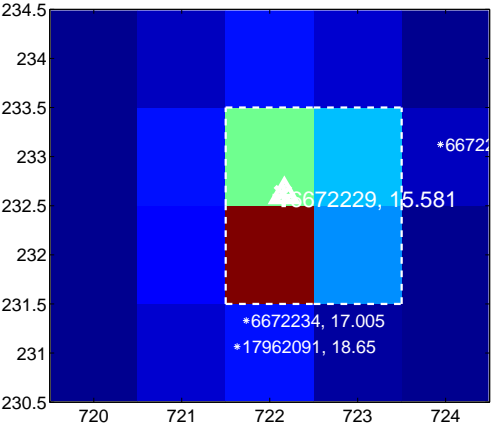
Q1 no OOT image



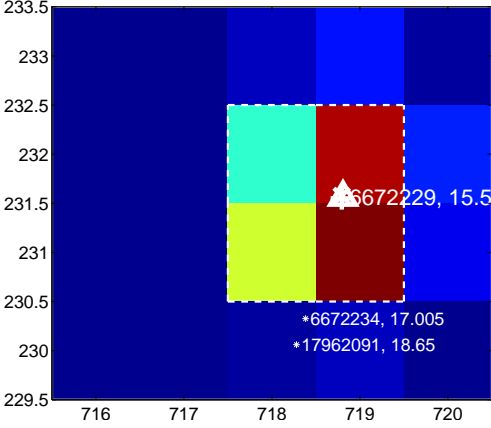
Q2 difference image



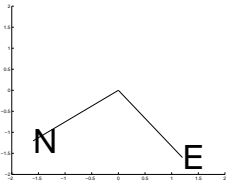
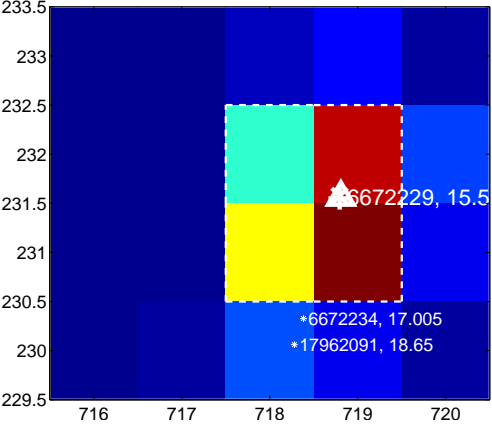
Q2 OOT image



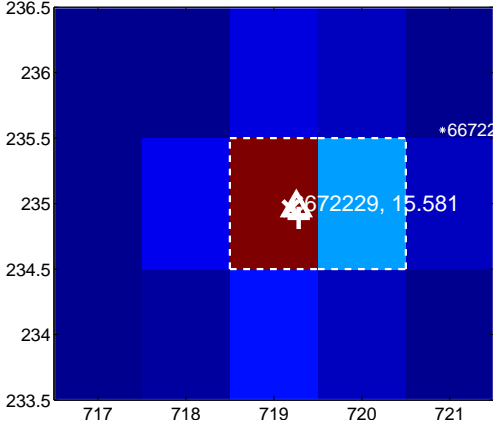
Q3 difference image



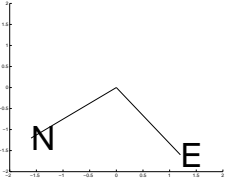
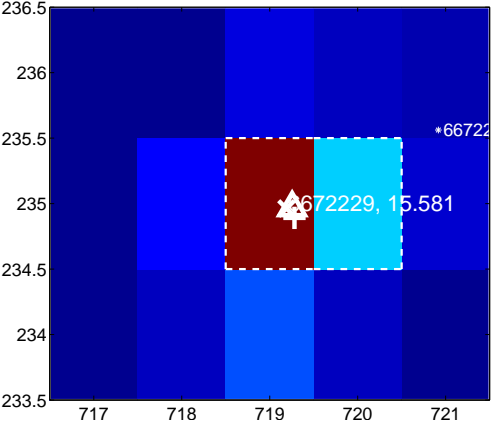
Q3 OOT image



Q4 difference image



Q4 OOT image



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

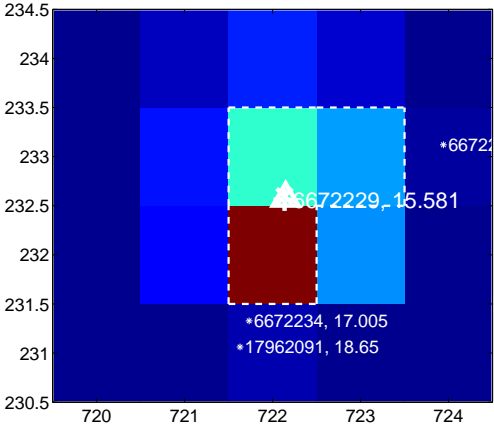
Q5 no difference image



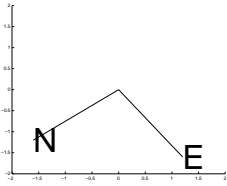
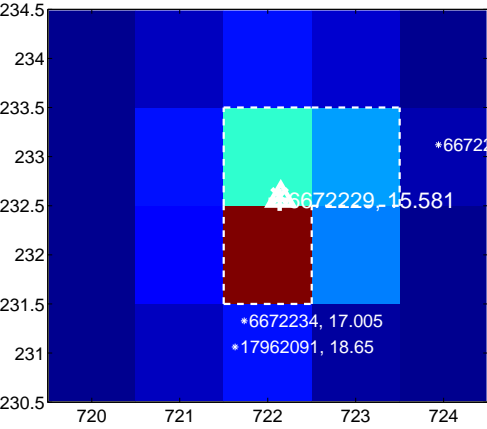
Q5 no OOT image



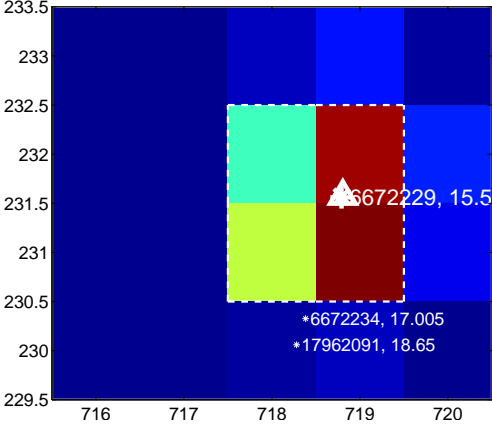
Q6 difference image



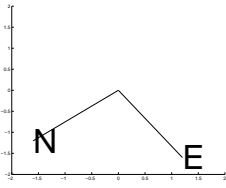
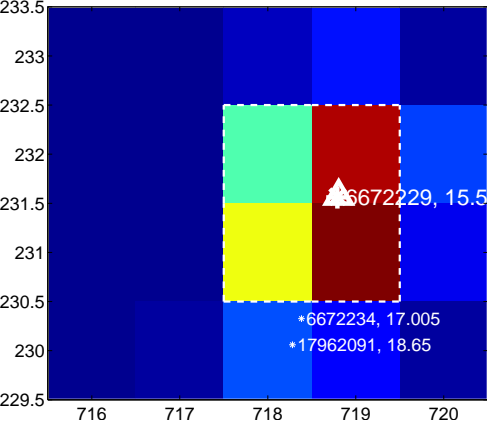
Q6 OOT image



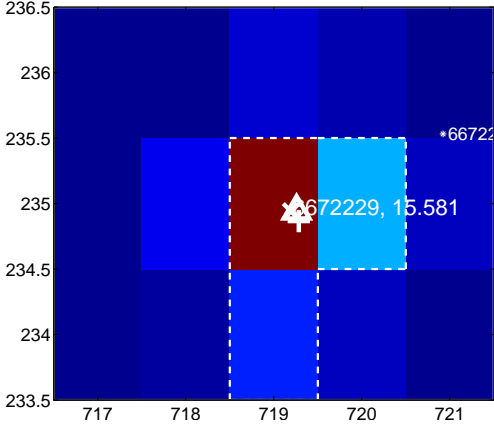
Q7 difference image



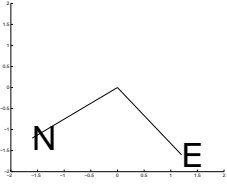
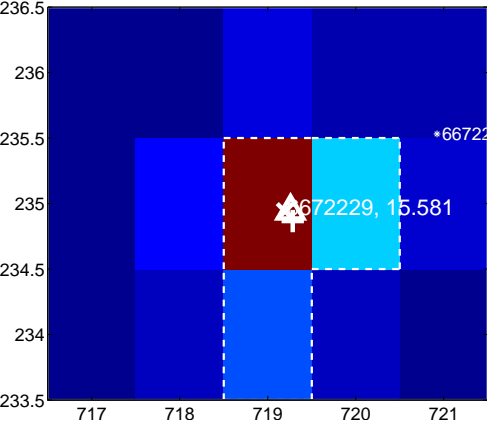
Q7 OOT image



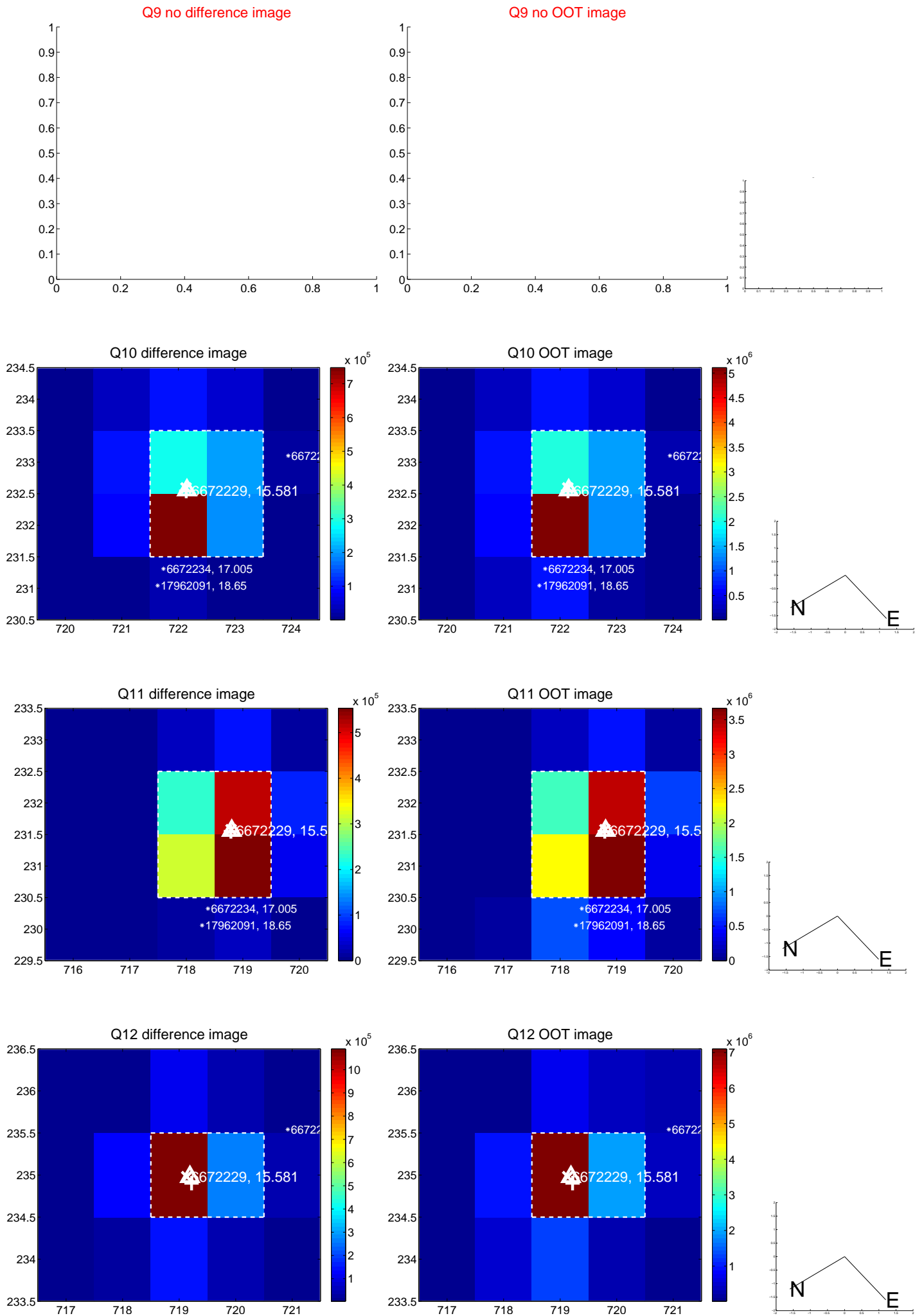
Q8 difference image



Q8 OOT image



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.

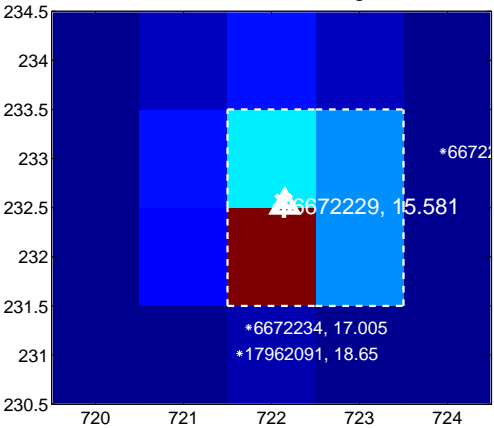
Q13 no difference image



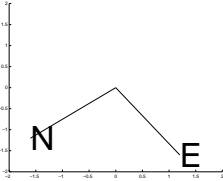
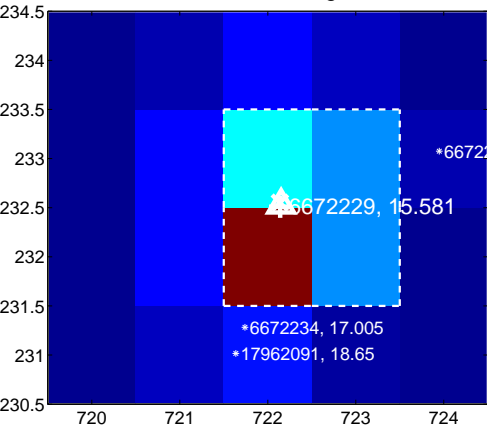
Q13 no OOT image



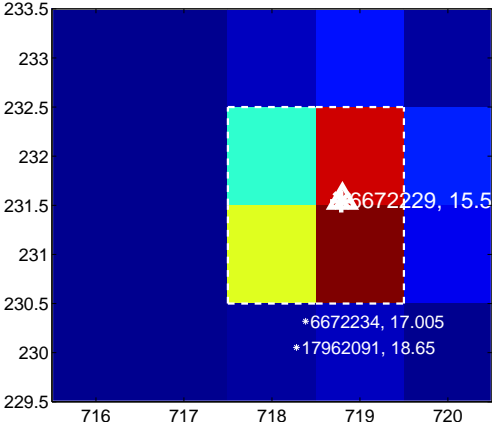
Q14 difference image



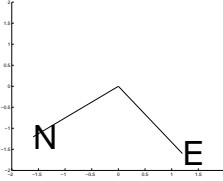
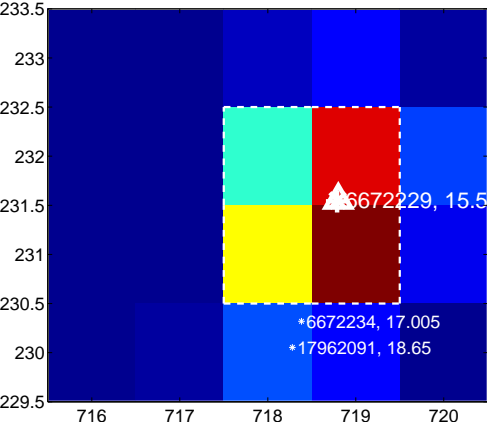
Q14 OOT image



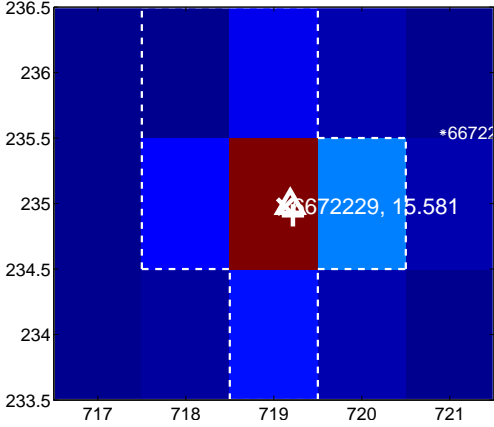
Q15 difference image



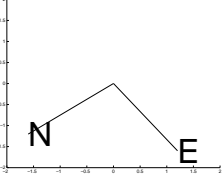
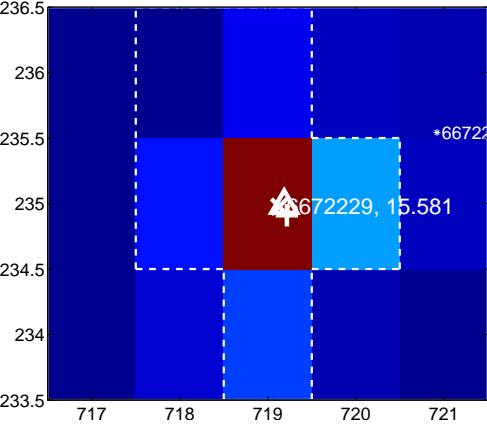
Q15 OOT image



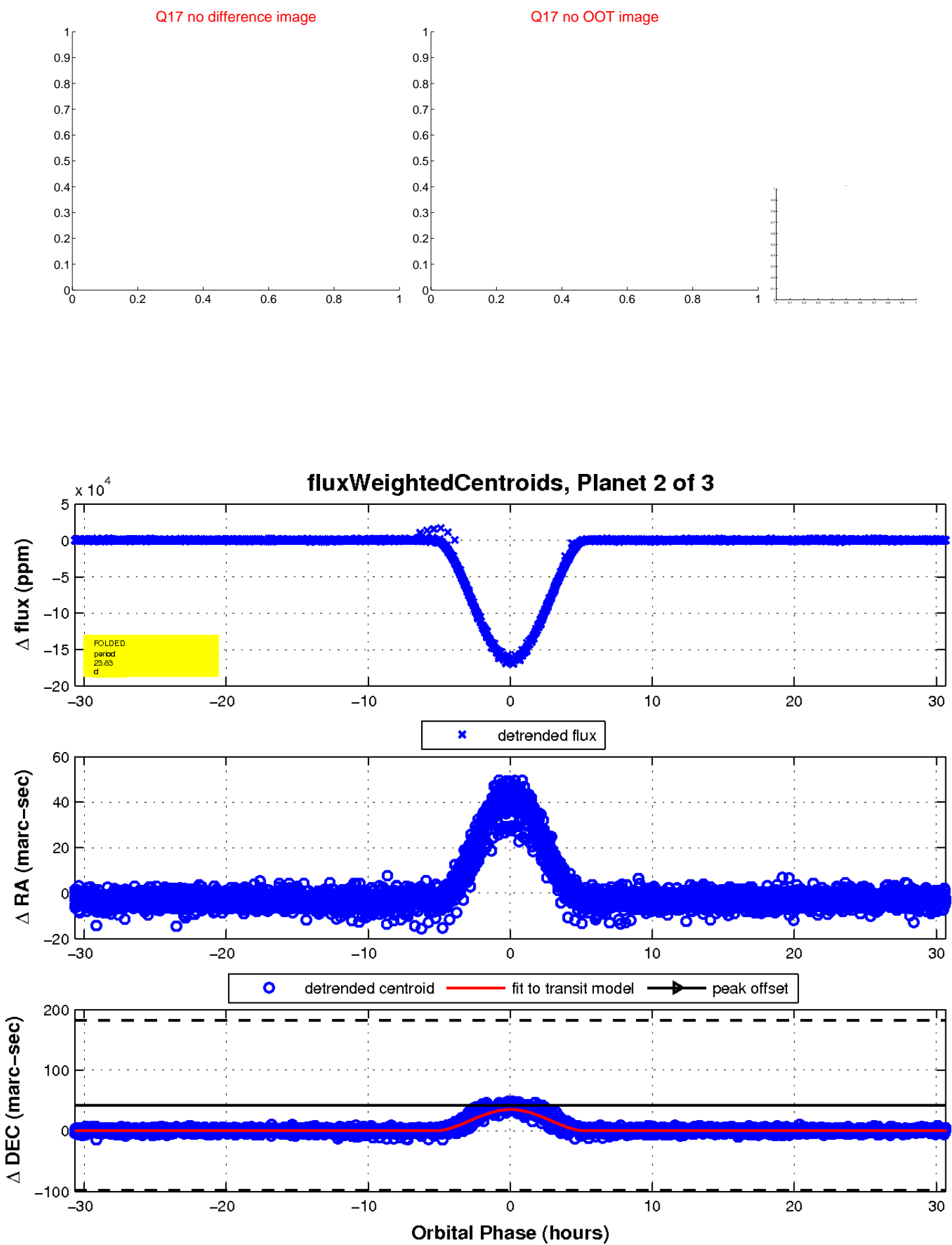
Q16 difference image



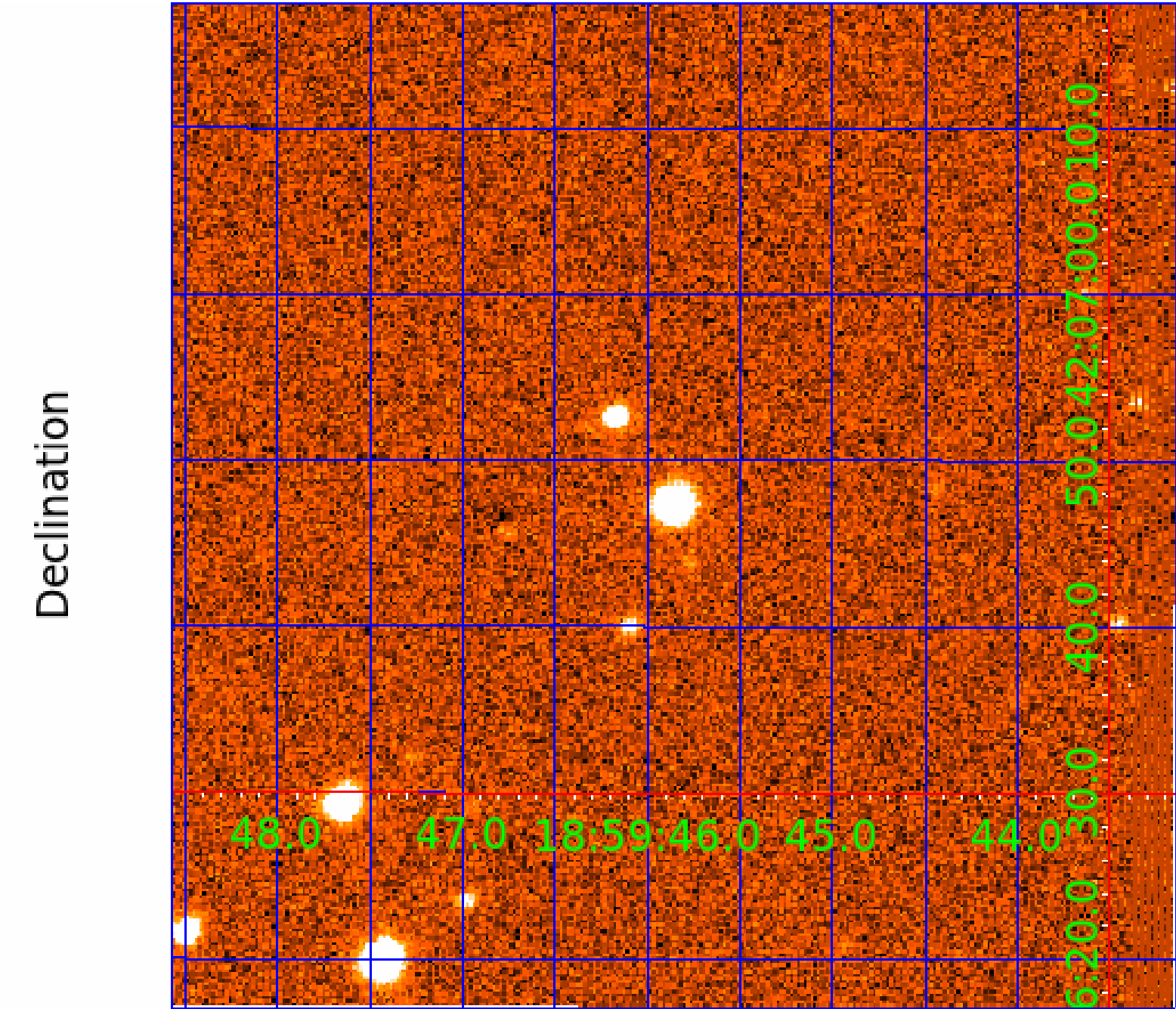
Q16 OOT image



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



UKIRT Image





# KIC 006672229

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006672229-01	OBS	6754.01	23.832706	143.209207	281229.8	5.000	5312.5	-1.0	1.00	5722	53.37	35.66
006672229-02	OBS	No	23.832371	132.202401	163858.3	10.223	4023.4	3214.3	1.00	5722	60.21	35.66
006672229-03	OBS	No	230.305622	286.744573	1143.7	3.542	8.6	7.5	1.00	5722	3.50	1.73

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006672229-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
006672229-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
006672229-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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 006672229-03

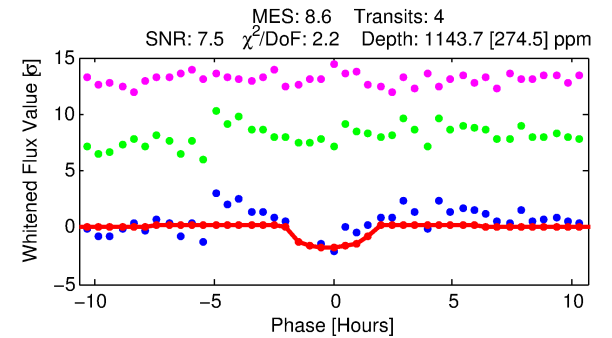
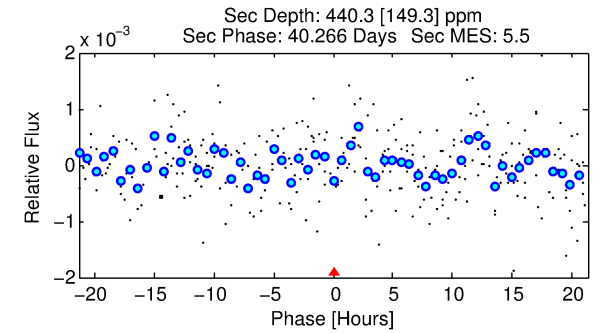
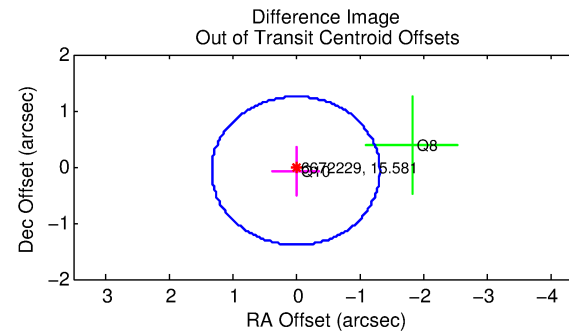
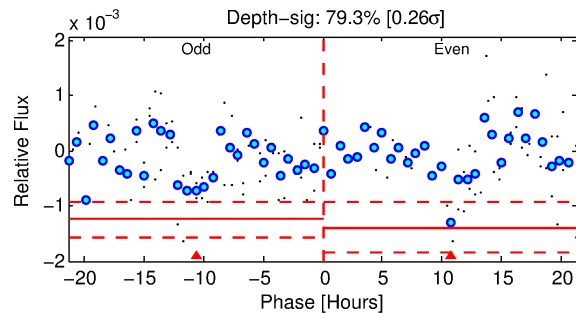
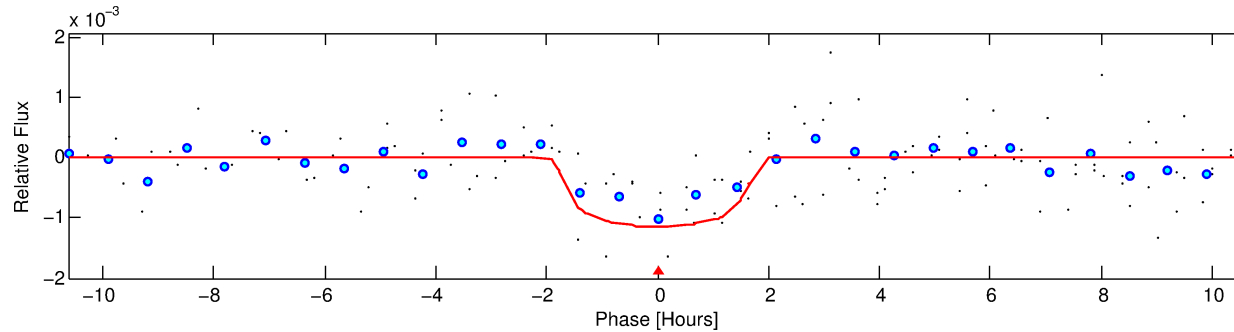
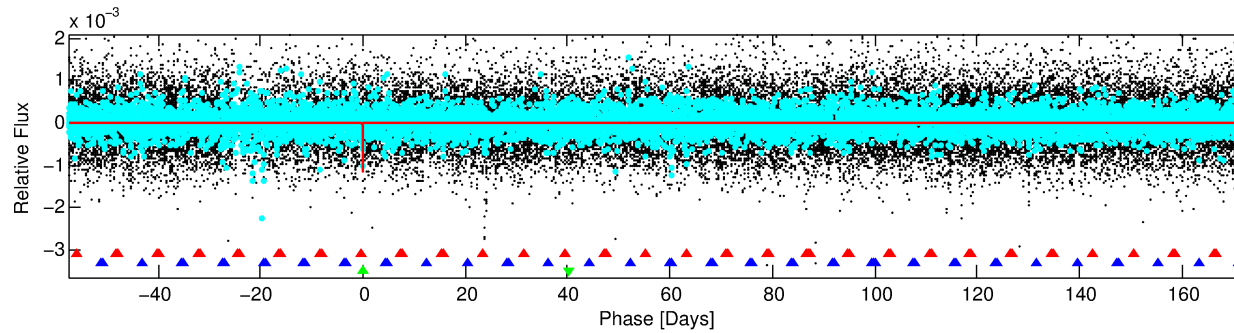
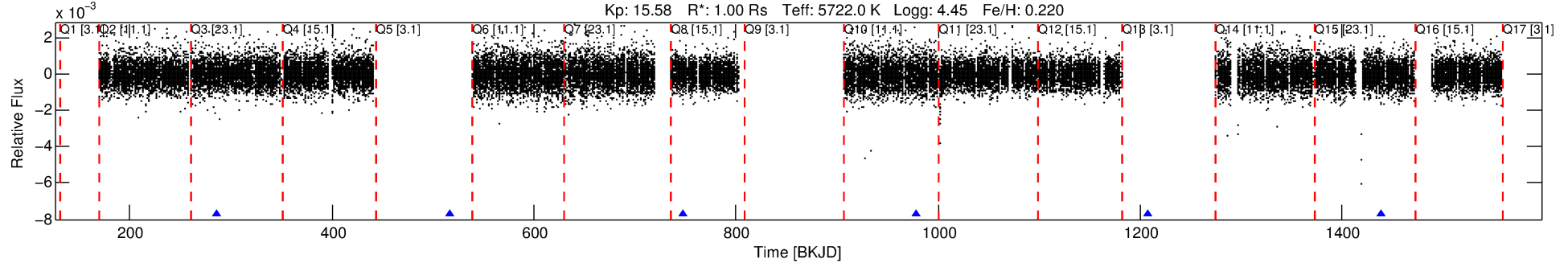
No Significant Match Found

# DV One-Page Summary

KIC: 6672229 Candidate: 3 of 3 Period: 230.306 d

KOI: K06754 Corr: No Ephemeris Match

Kp: 15.58 R\*: 1.00 Rs Teff: 5722.0 K Logg: 4.45 Fe/H: 0.220



## DV Fit Results:

Period = 230.30562 [0.00506] d  
Epoch = 286.7446 [0.0174] BKJD  
Rp/R\* = 0.0320 [0.0988]  
a/R\* = 426.20 [5406.97]  
b = 0.57 [15.04]  
Seff = 1.73 [0.68]  
Teq = 293 [29] K  
Rp = 3.50 [10.83] Re  
a = 0.7446 [0.1865] AU  
Ag = 10993.39 [68042.53] [0.16σ]  
Teffp = 4631 [7156] K [0.61σ]

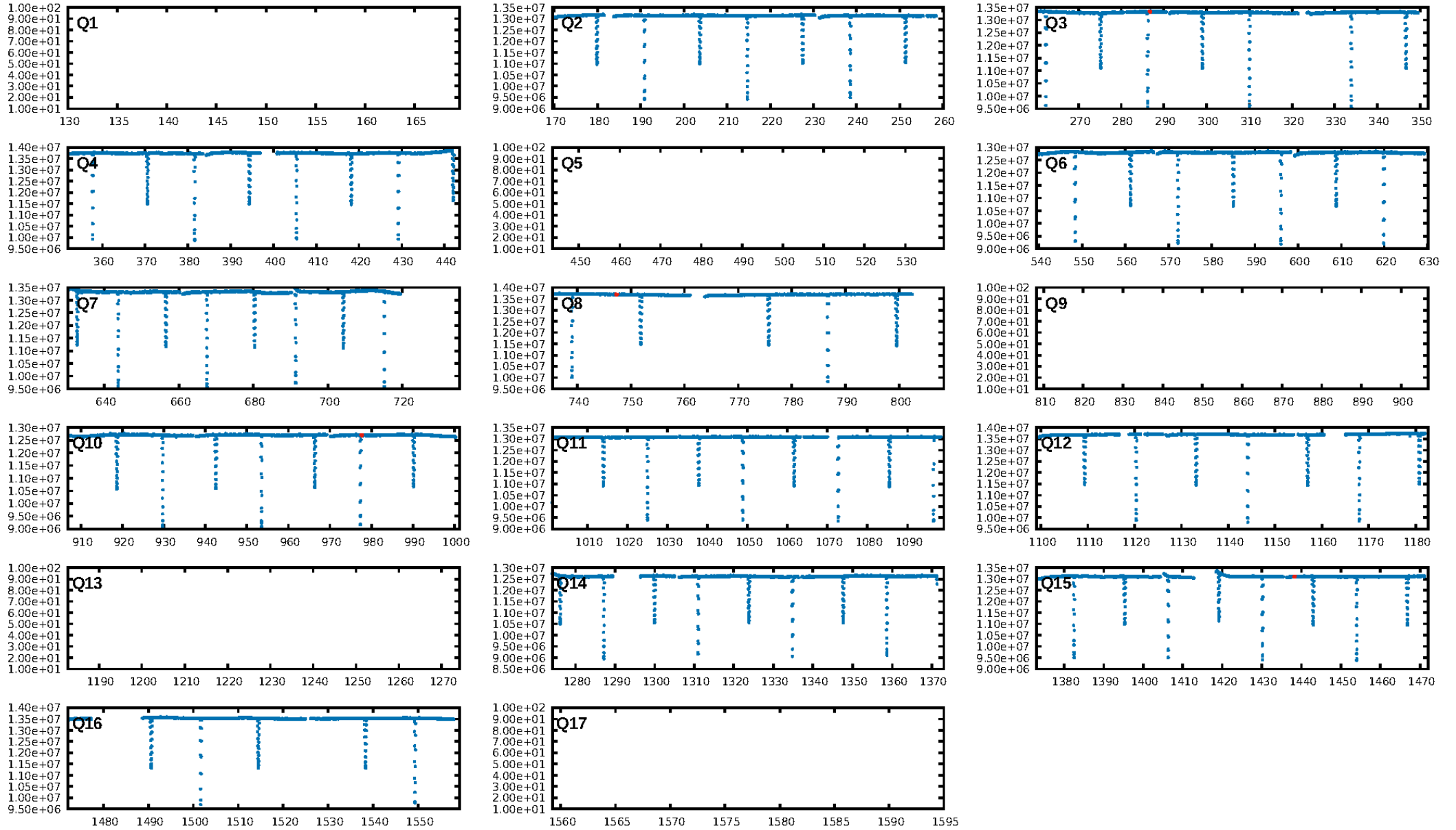
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [808.71σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.6%  
ModelChiSquareGof-sig: 99.3%  
**Bootstrap-pfa: 3.91e-12**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -1.332  
Centroid-sig: N/A  
Centroid-so: 0.690 arcsec [0.53σ]  
OotOffset-rm: 0.077 arcsec [0.17σ]  
OotOffset-st: 1/0/1/0 [2]  
KicOffset-rm: 0.162 arcsec [0.38σ]  
KicOffset-st: 1/0/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.75 [3/4]

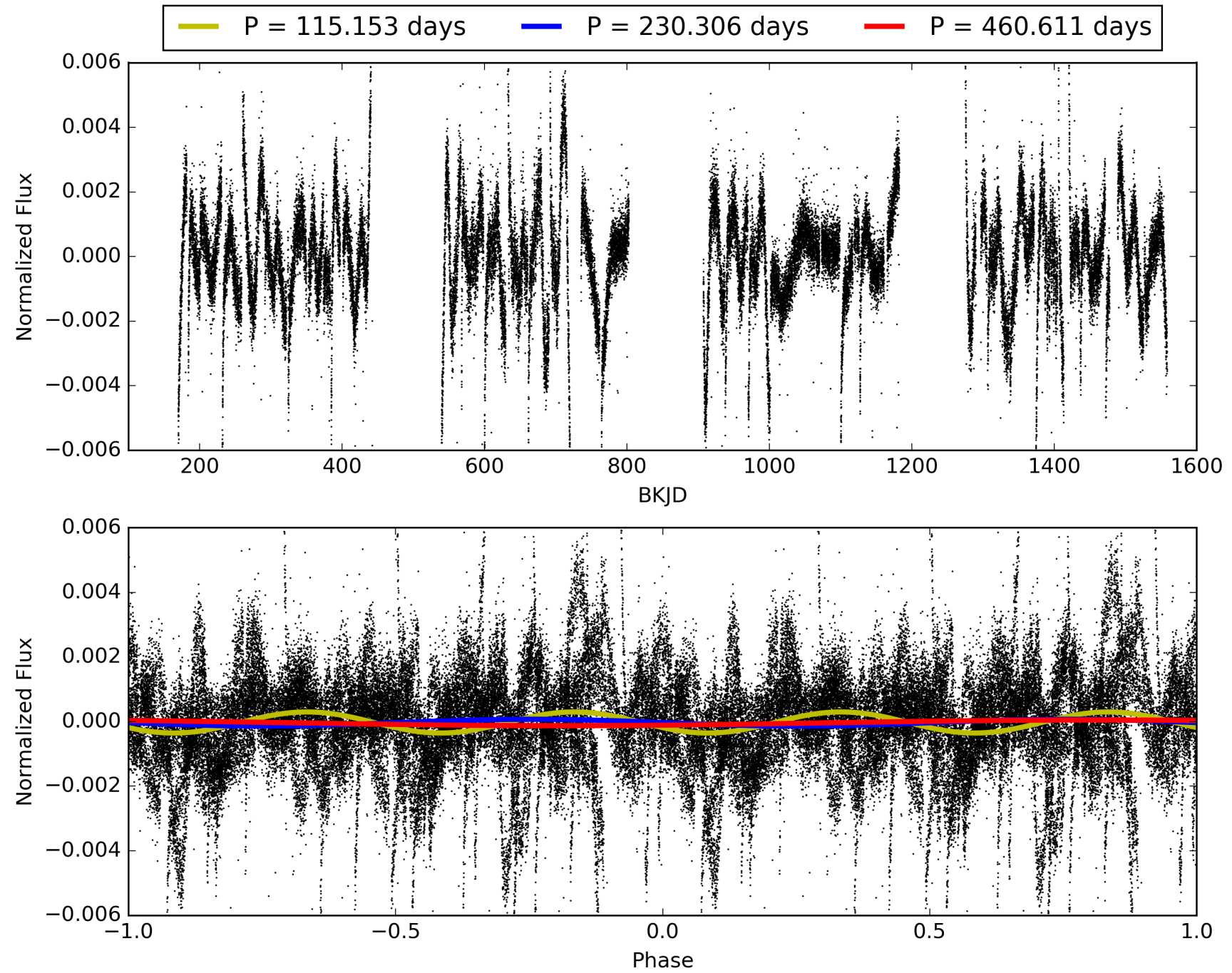
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 20:25:08 Z

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

# TCE 006672229-03, PDC Light Curves

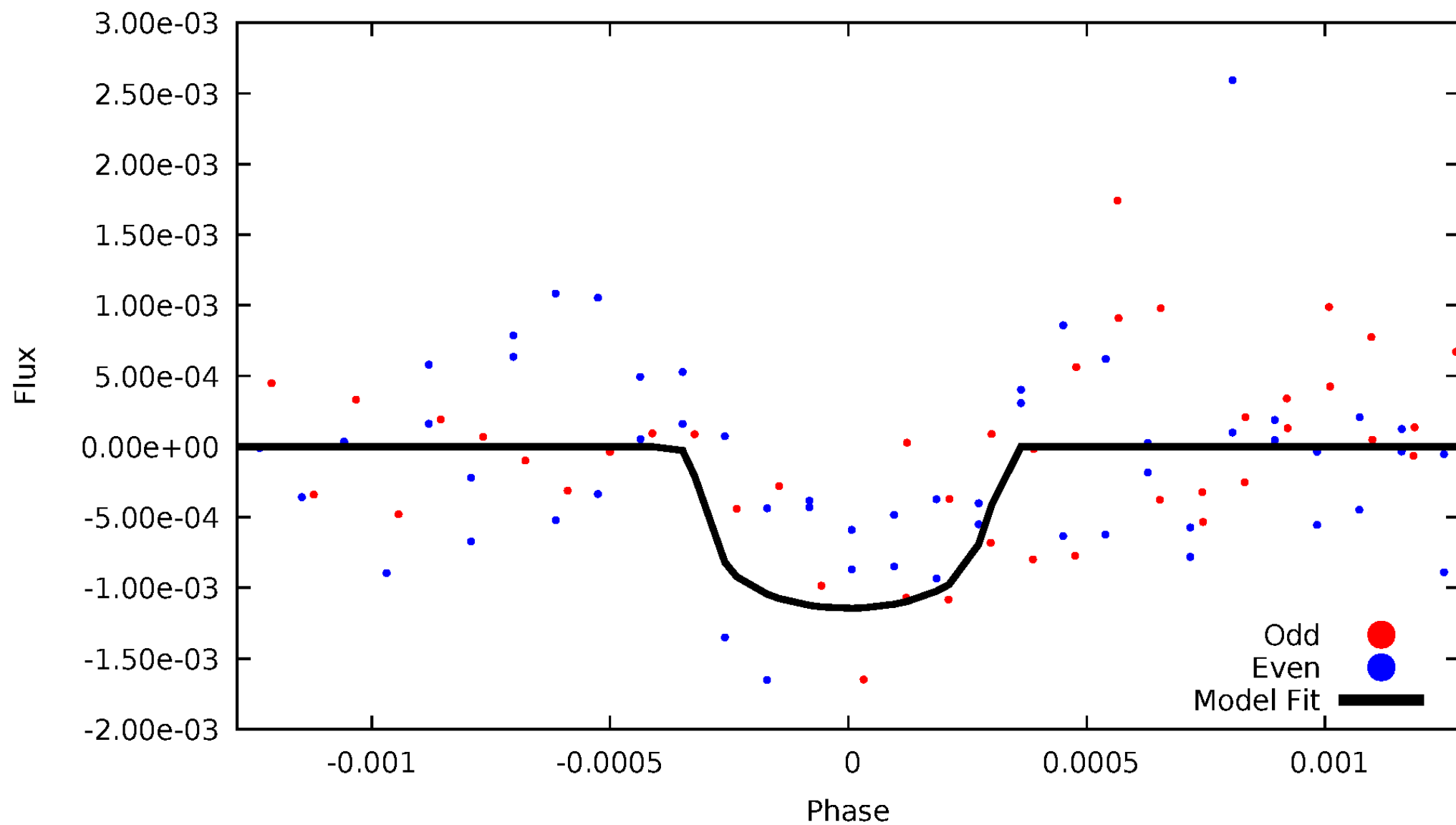


TCE 006672229-03



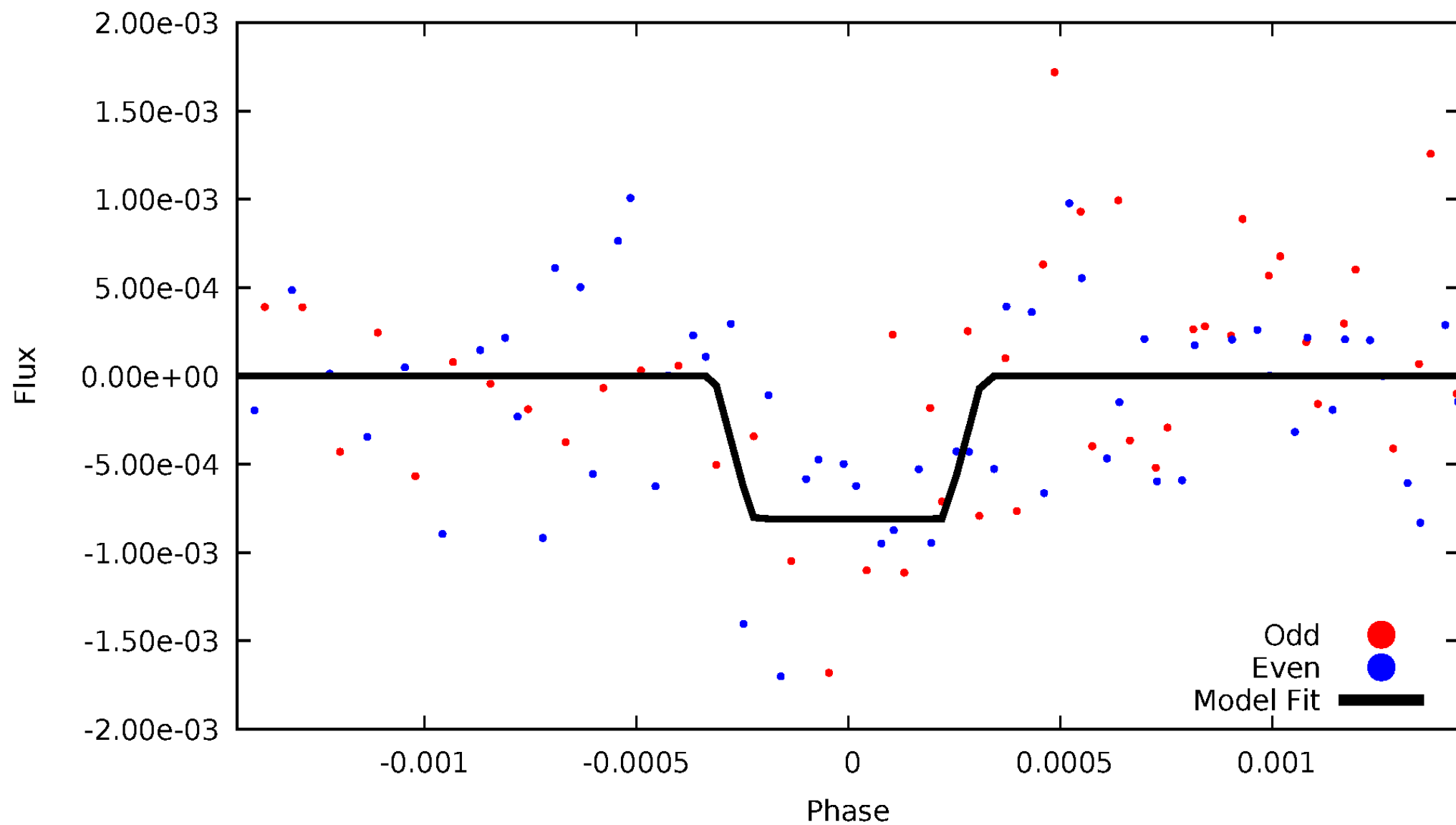
# DV Odd/Even

TCE 006672229-03



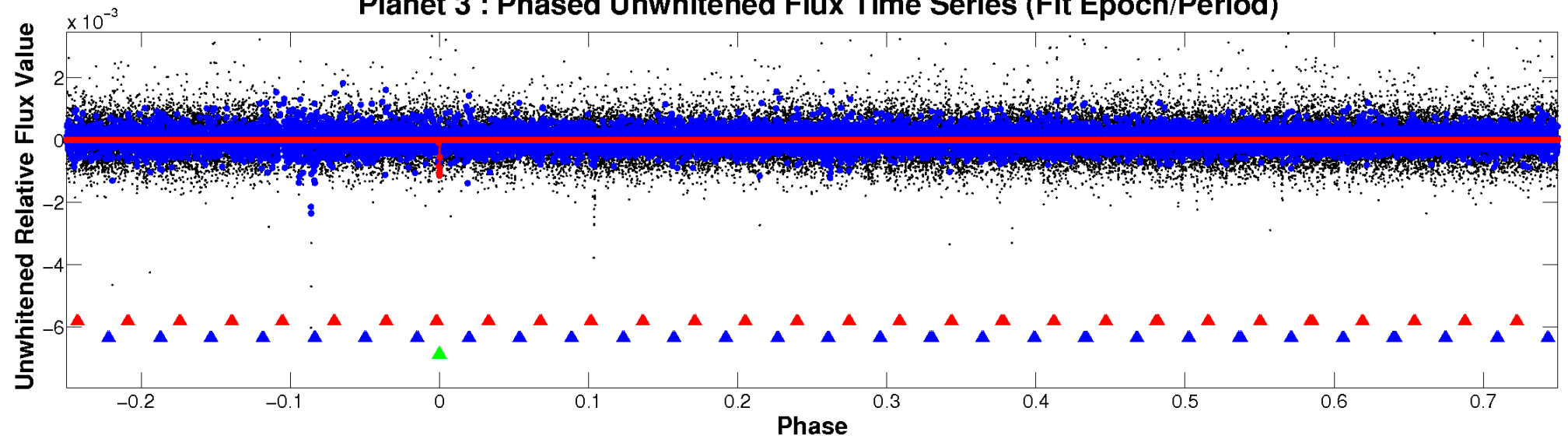
# ALT Odd/Even

TCE 006672229-03

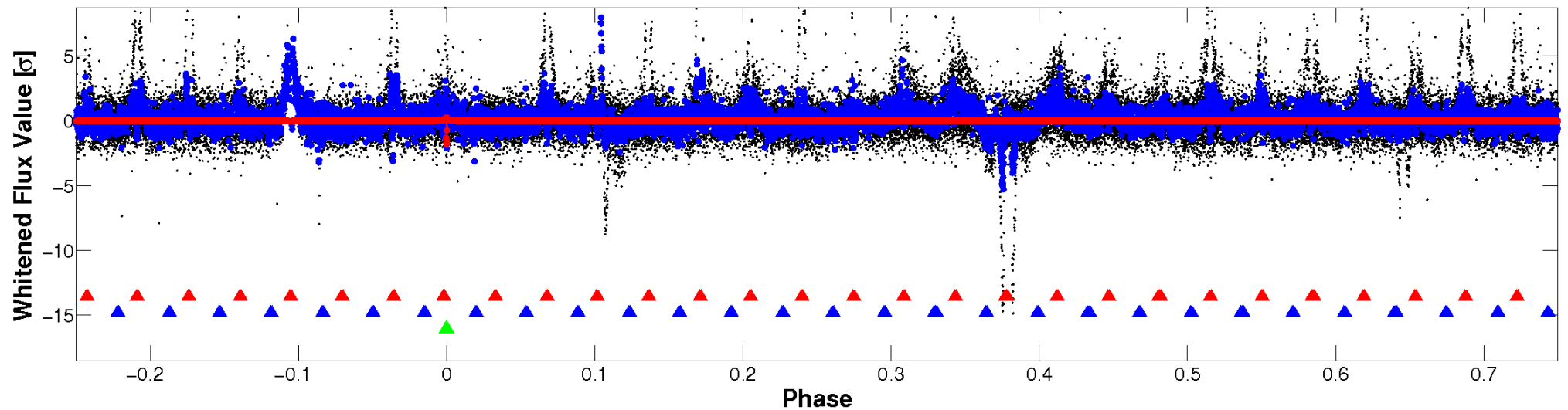


# Non-Whitened Vs. Whitened Light Curve

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

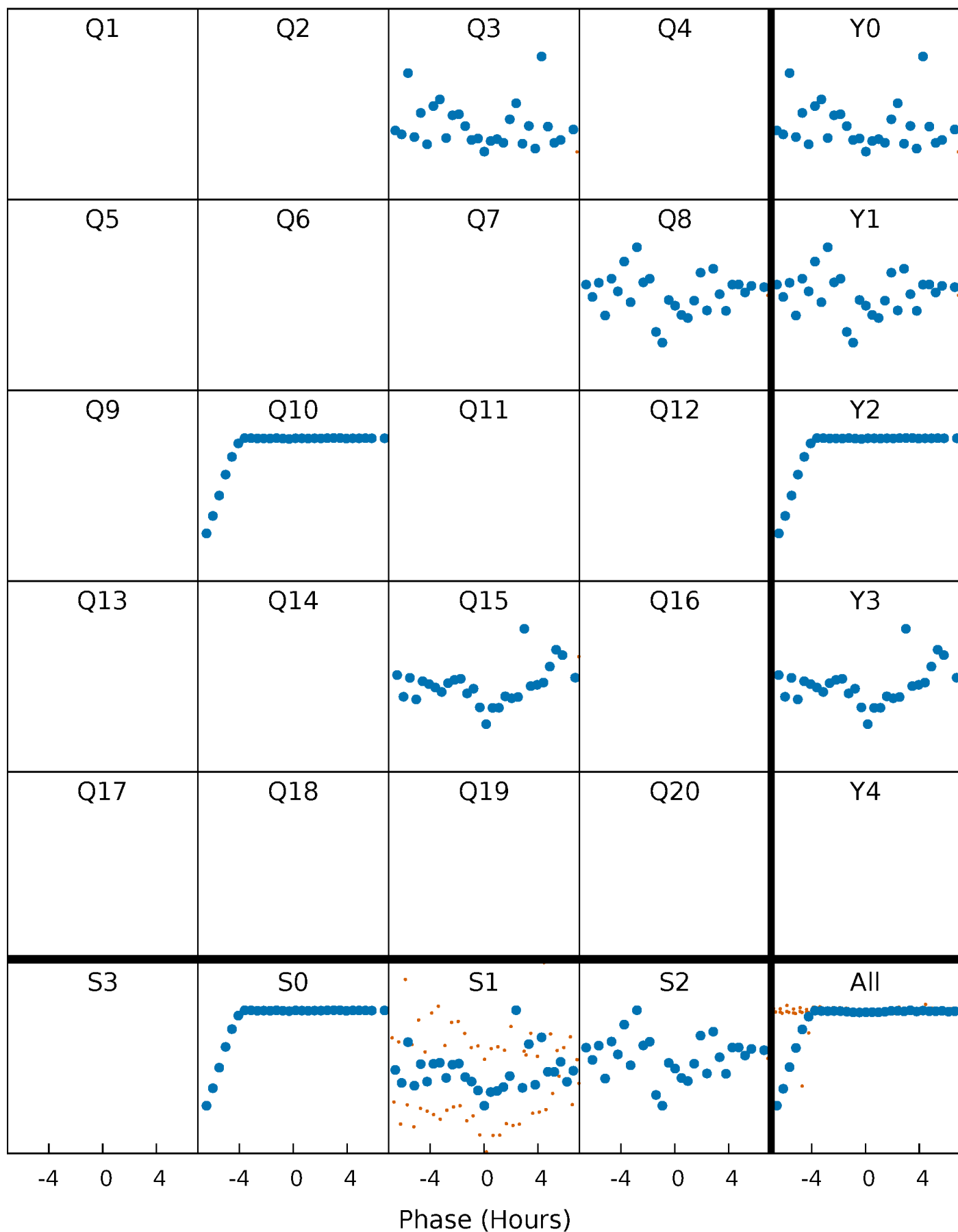


**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

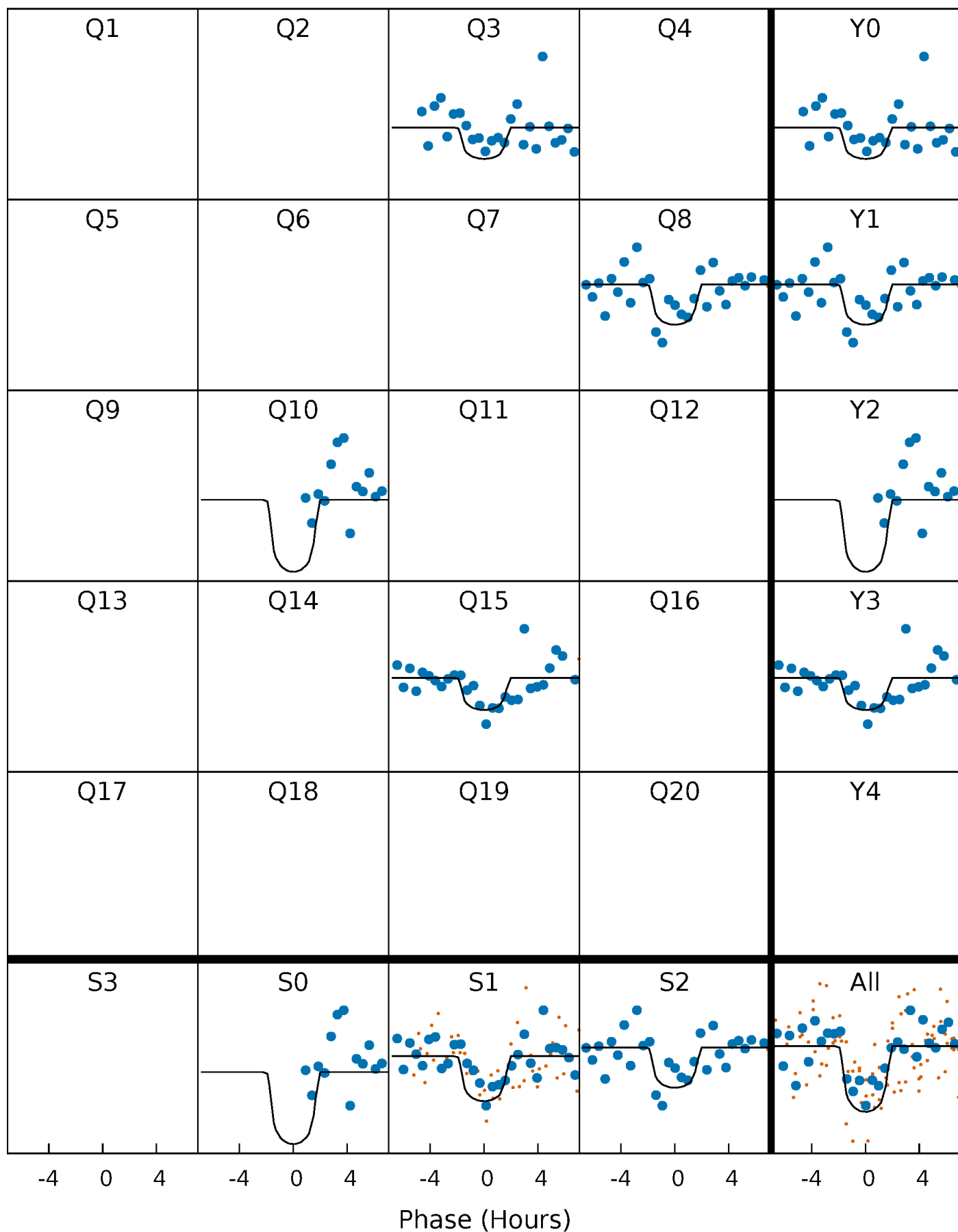
TCE 006672229-03     $P=230.305622$  Days     $T_0=286.744573$  (BKJD)





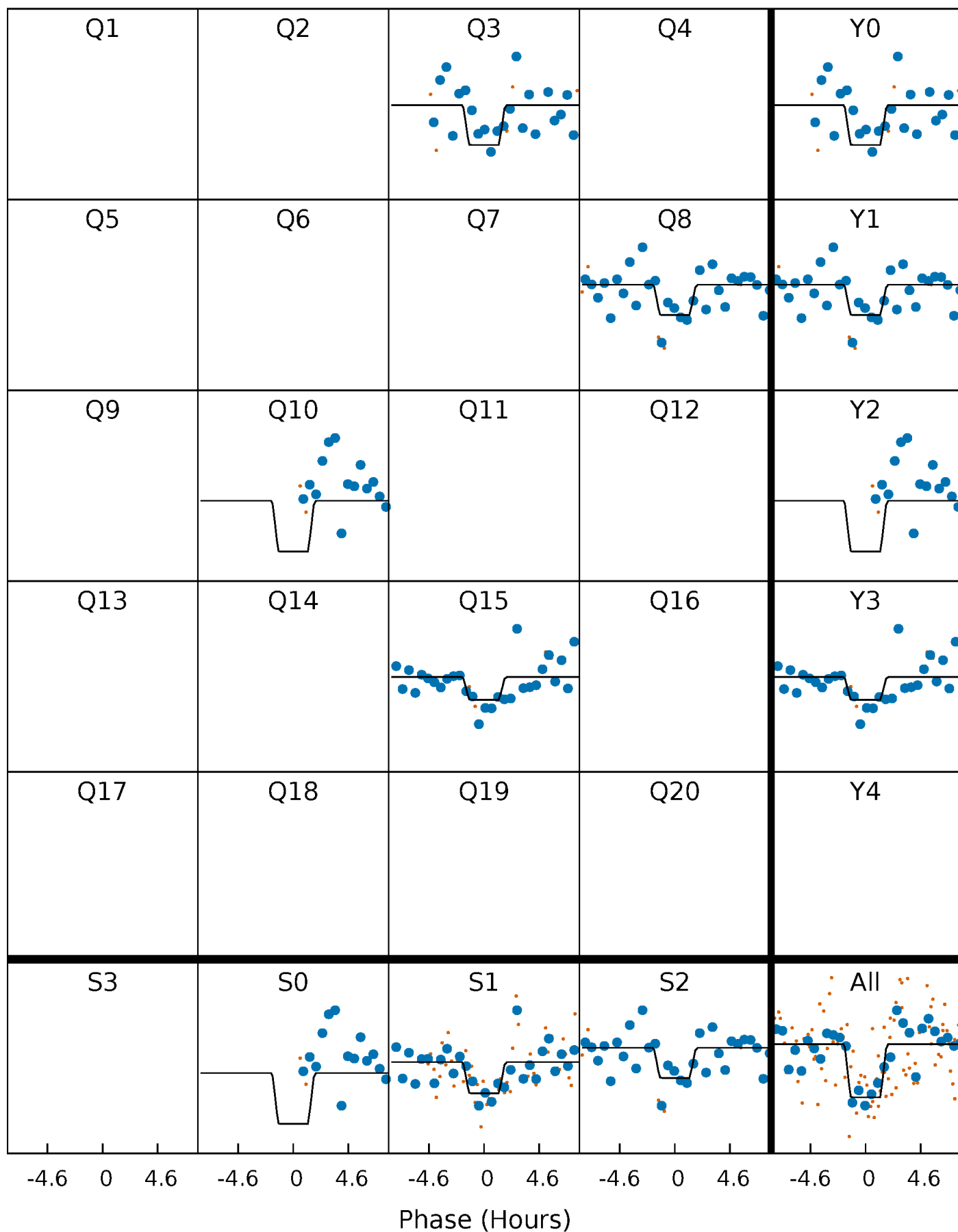
# DV Quarter-Phased Transit Curves

TCE 006672229-03     $P=230.305622$  Days     $T_0=286.744573$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

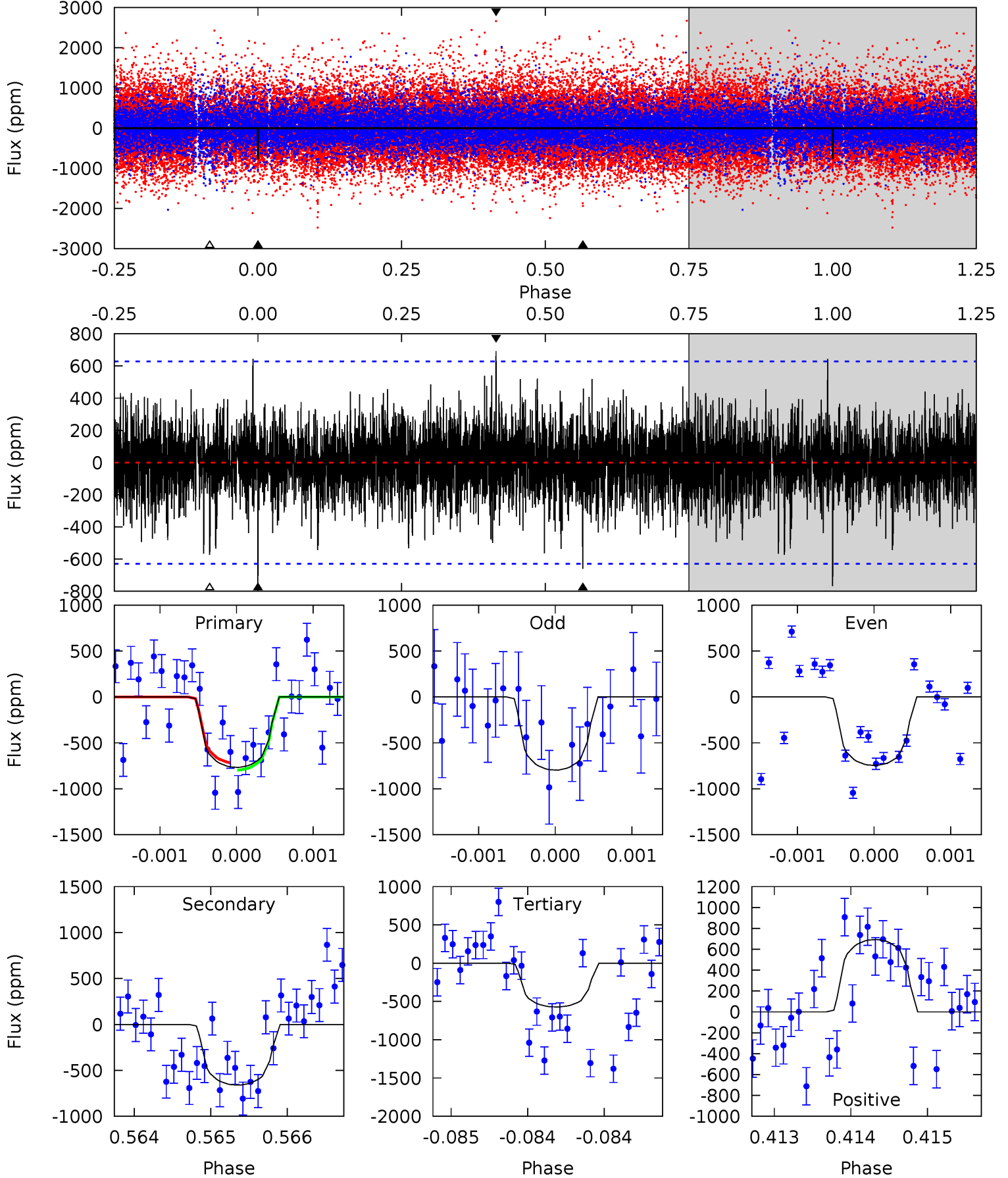
TCE 006672229-03 P=230.312460 Days  $T_0=286.728339$  (BKJD)



# DV Model-Shift Uniqueness Test

006672229-03, P = 230.305622 Days, E = 56.438951 Days

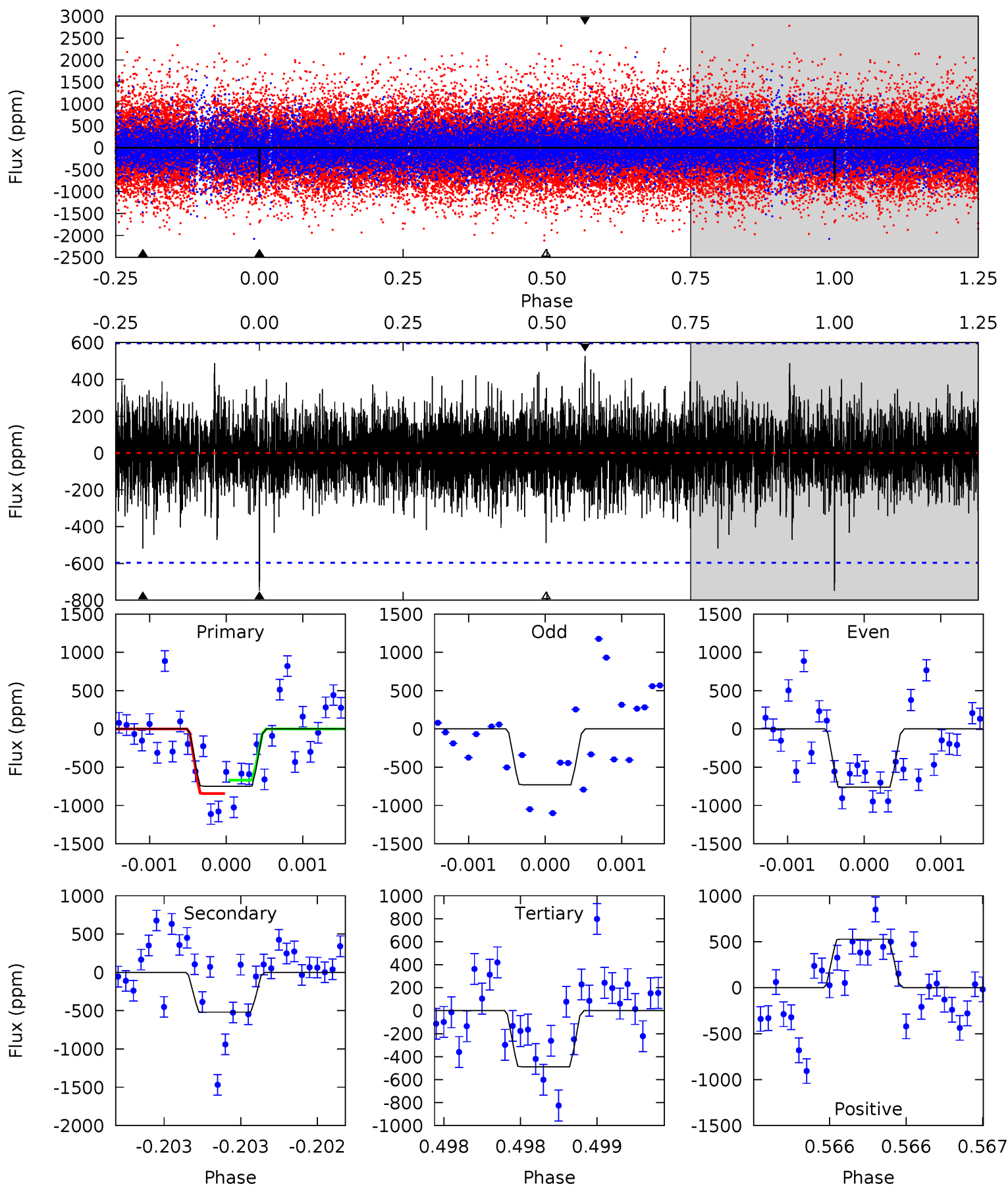
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.74	5.80	5.03	6.09	5.53	3.41	1.38	1.71	0.65	0.77	-0.29	0.22	0.89	0.47	0.35



# Alt Model-Shift Uniqueness Test

006672229-03, P = 230.312460 Days, E = 56.415879 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
6.93	4.81	4.53	4.89	5.53	3.41	1.17	2.41	2.04	0.29	-0.08	0.14	0.81	0.41	0.80



### Stellar Parameters For KIC 006672229

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5722^{+154}_{-188}$	$4.454^{+0.067}_{-0.202}$	$0.220^{+0.200}_{-0.300}$	$1.000^{+0.295}_{-0.118}$	$1.037^{+0.111}_{-0.122}$	$1.462^{+0.410}_{-0.729}$
	+3%/-3%	+2%/-5%	+91%/-136%	+30%/-12%	+11%/-12%	+28%/-50%
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 006672229-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-660 \pm 114$	$9.09^{+8.36}_{-6.24}$	$415^{+27}_{-21}$	$3644^{+2269}_{-661}$	$2374^{+22553}_{-1741}$
Alt.	$-519 \pm 108$	$8.65^{+8.42}_{-5.76}$	$414^{+29}_{-20}$	$3607^{+1785}_{-694}$	$2205^{+16608}_{-1687}$

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

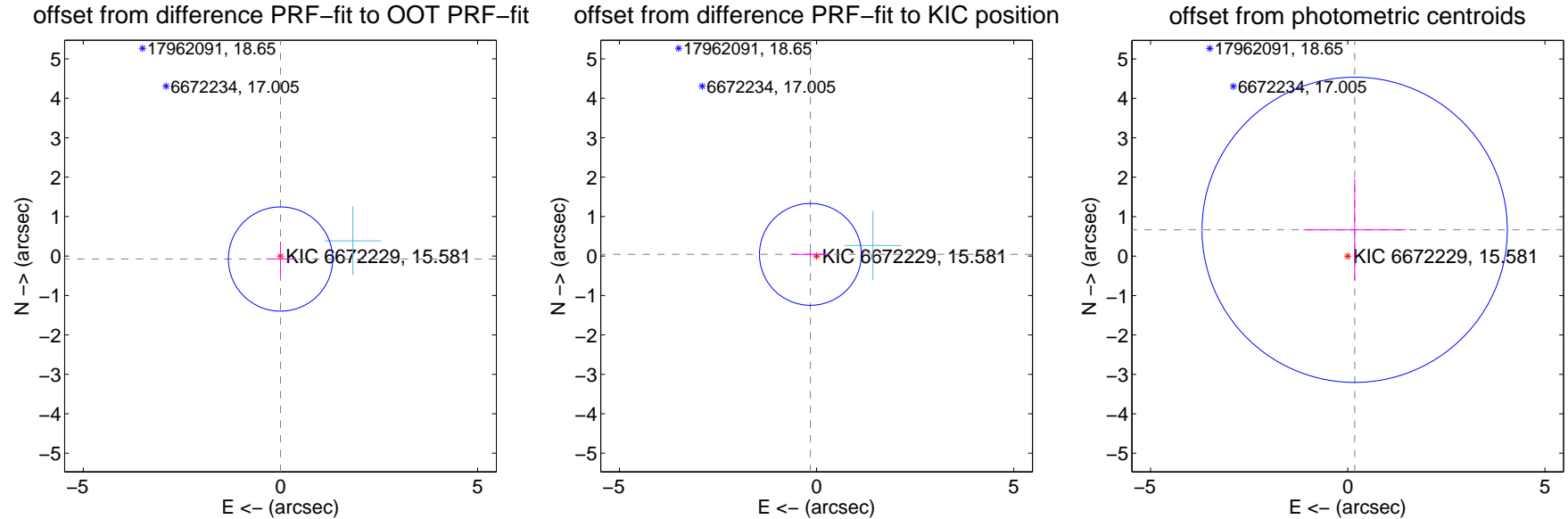
## DV Centroid Data

Supplemental centroid analysis for 006672229-03. Kepler magnitude: 15.58. Transit SNR 7.46

There are 1 quarters with good PRF difference image offsets

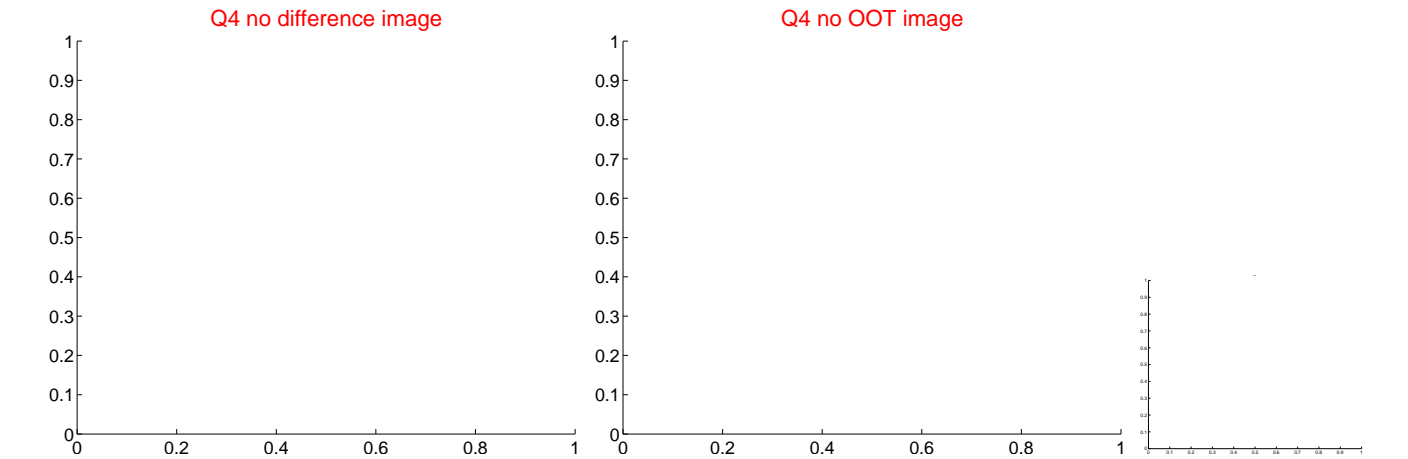
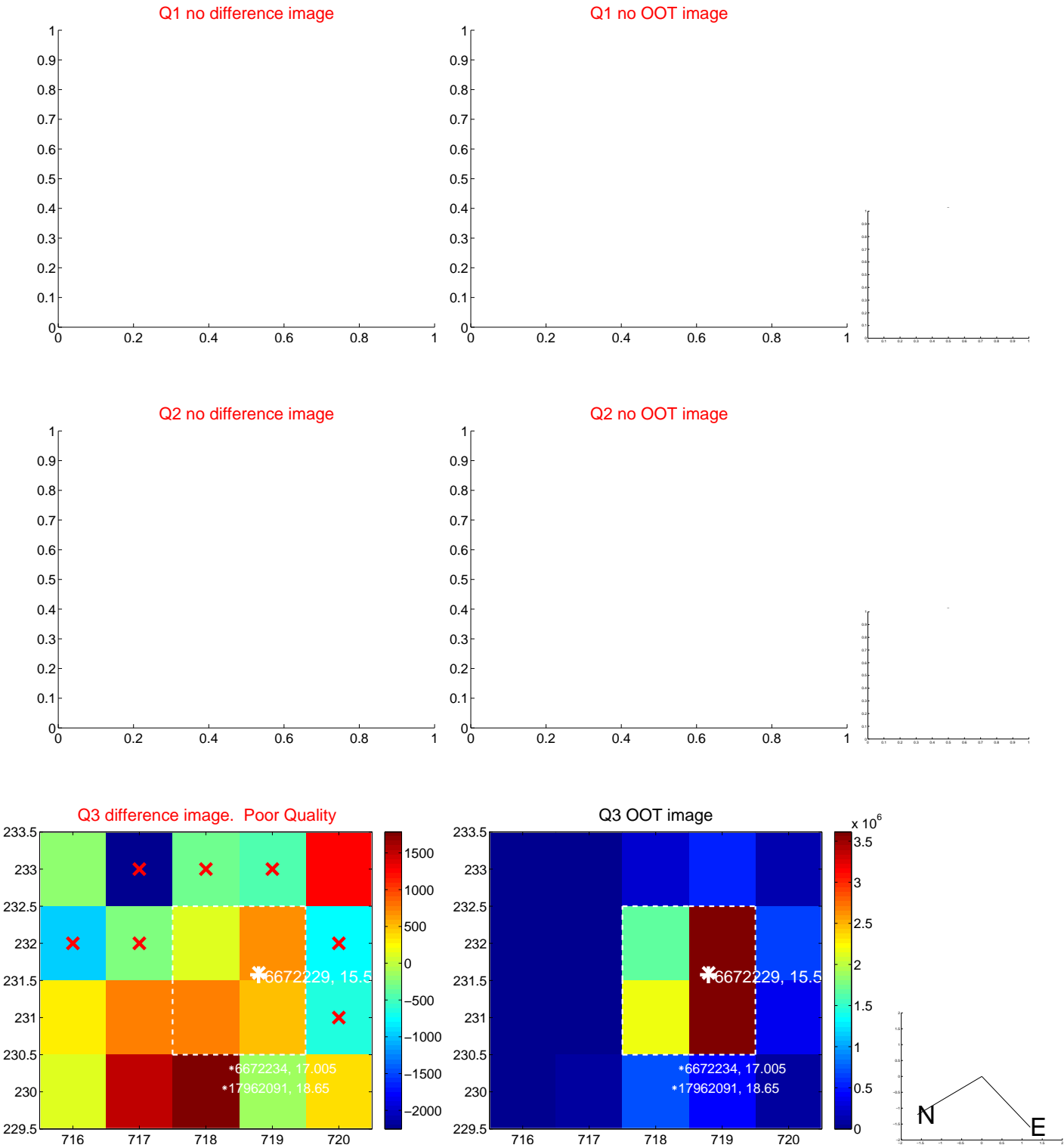
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.077 \pm 0.441$	0.17	$-0.002 \pm 0.366$	$-0.077 \pm 0.441$
PRF-fit source offset from KIC position	$0.162 \pm 0.431$	0.38	$0.156 \pm 0.462$	$0.042 \pm 0.093$
photometric centroid source offset	$0.69 \pm 1.29$	0.53	$-0.18 \pm 1.30$	$0.67 \pm 1.29$



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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



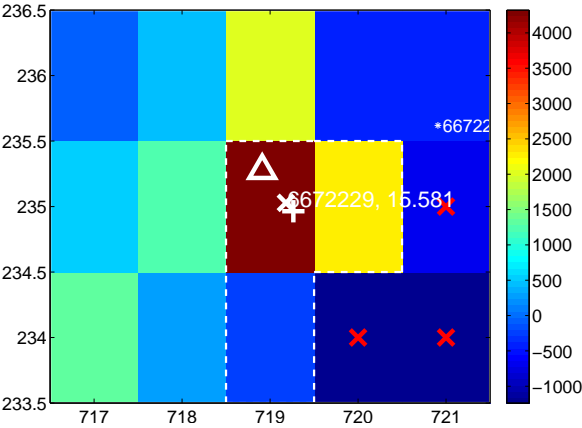
Q7 no difference image



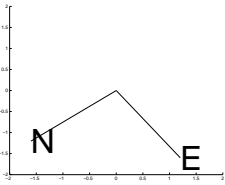
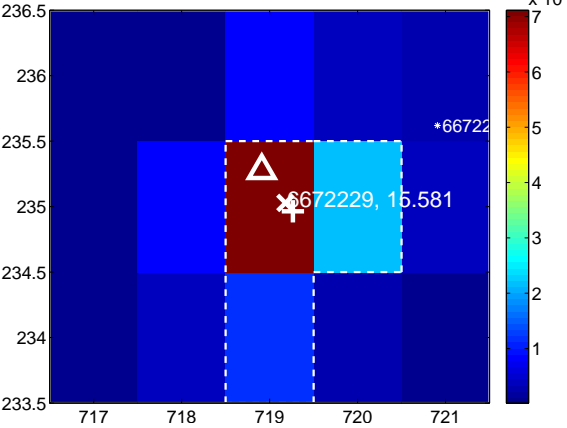
Q7 no OOT image



Q8 difference image



Q8 OOT image





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

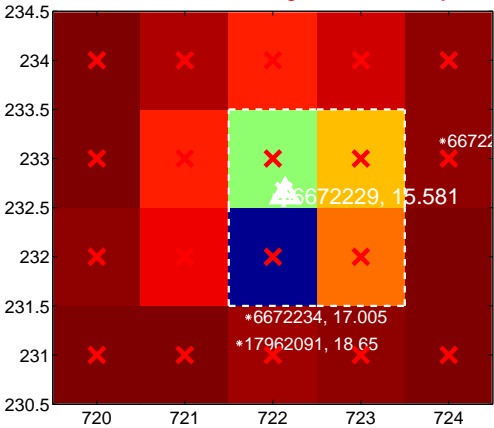
Q9 no difference image



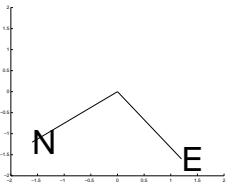
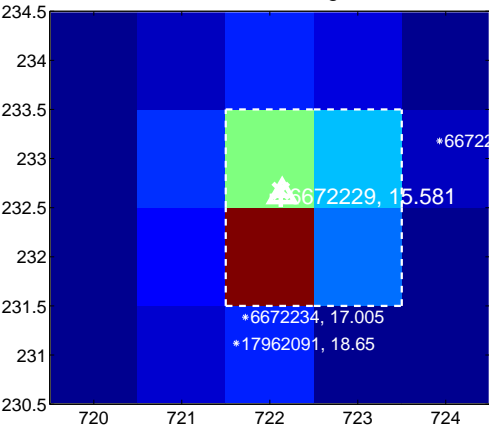
Q9 no OOT image



Q10 difference image. Poor Quality



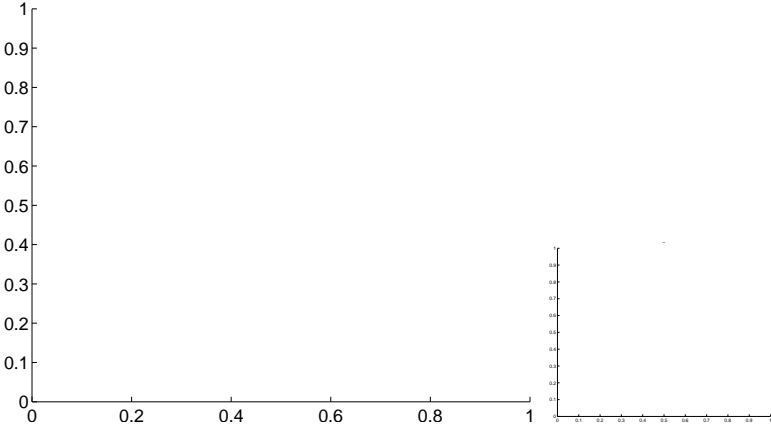
Q10 OOT image



Q11 no difference image



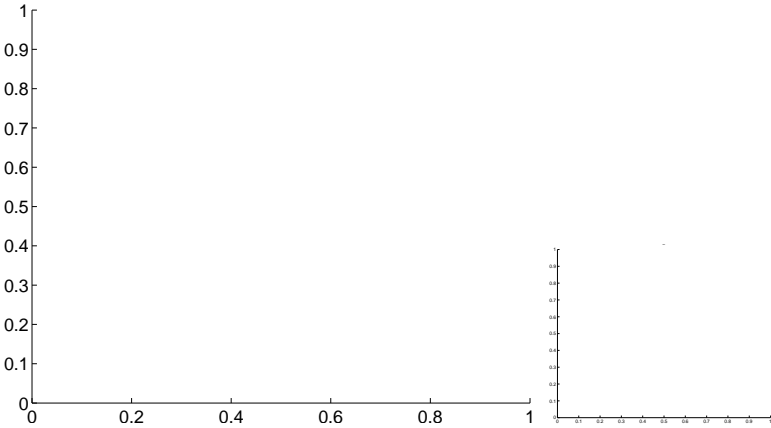
Q11 no OOT image



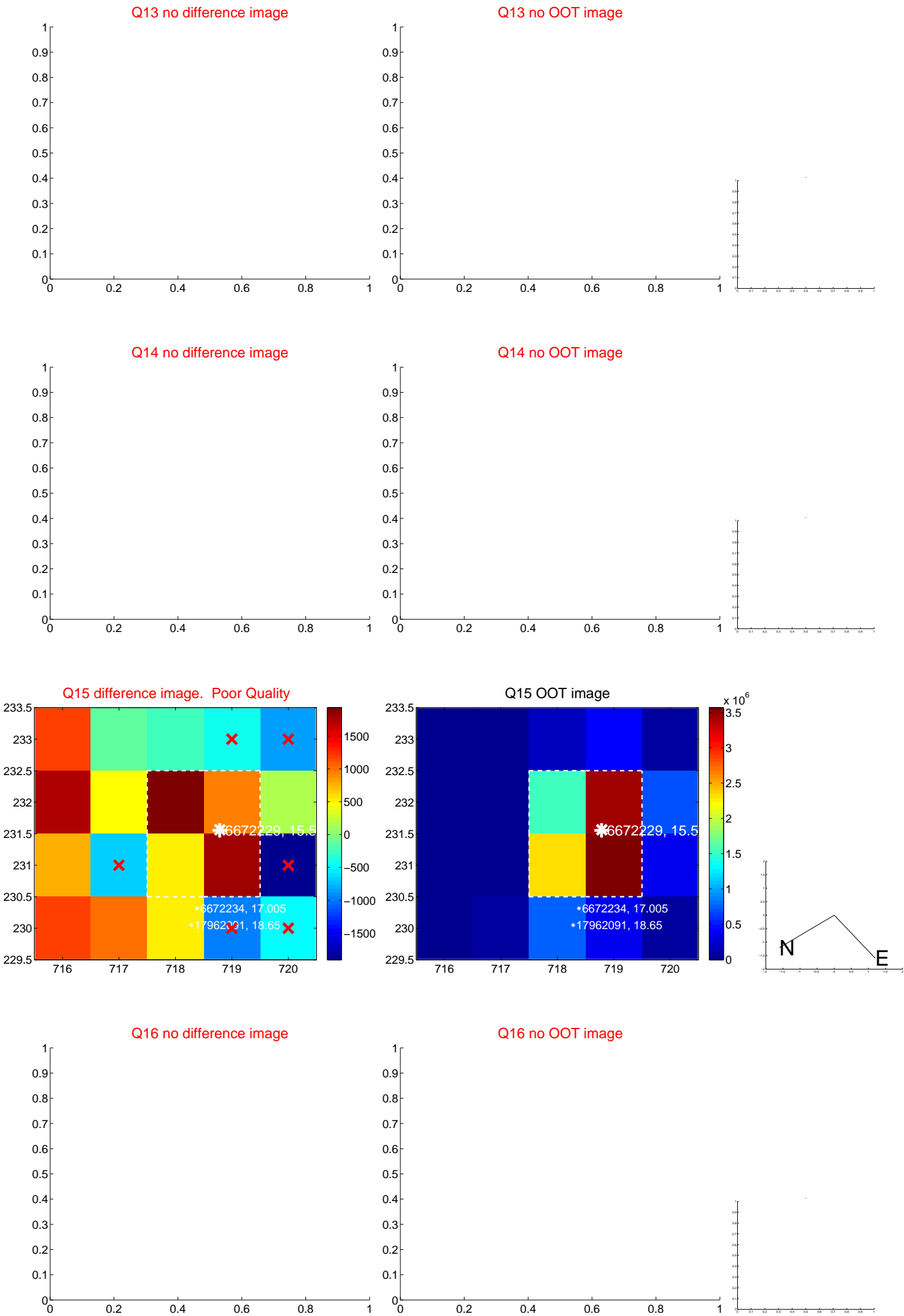
Q12 no difference image



Q12 no OOT image

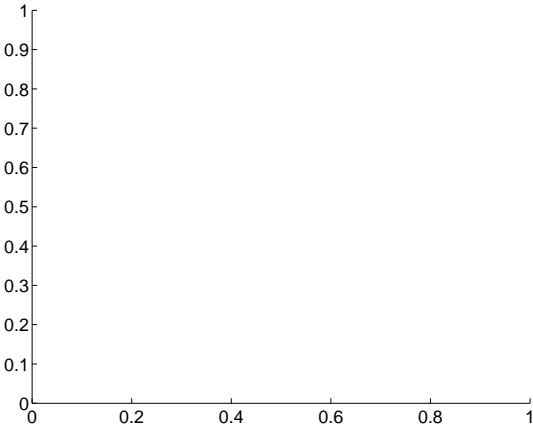


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

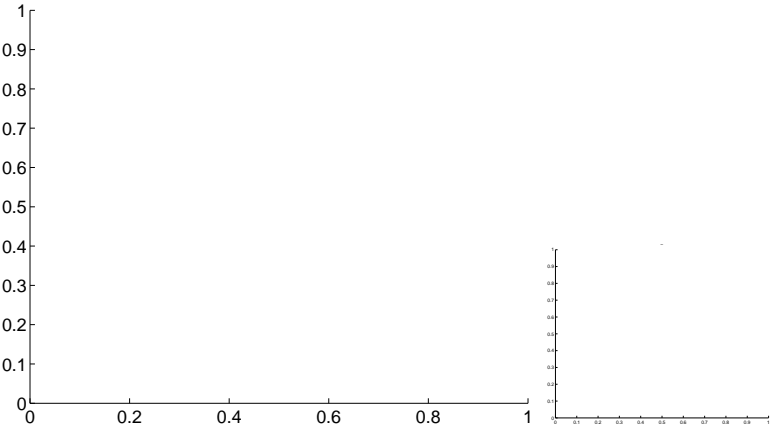


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

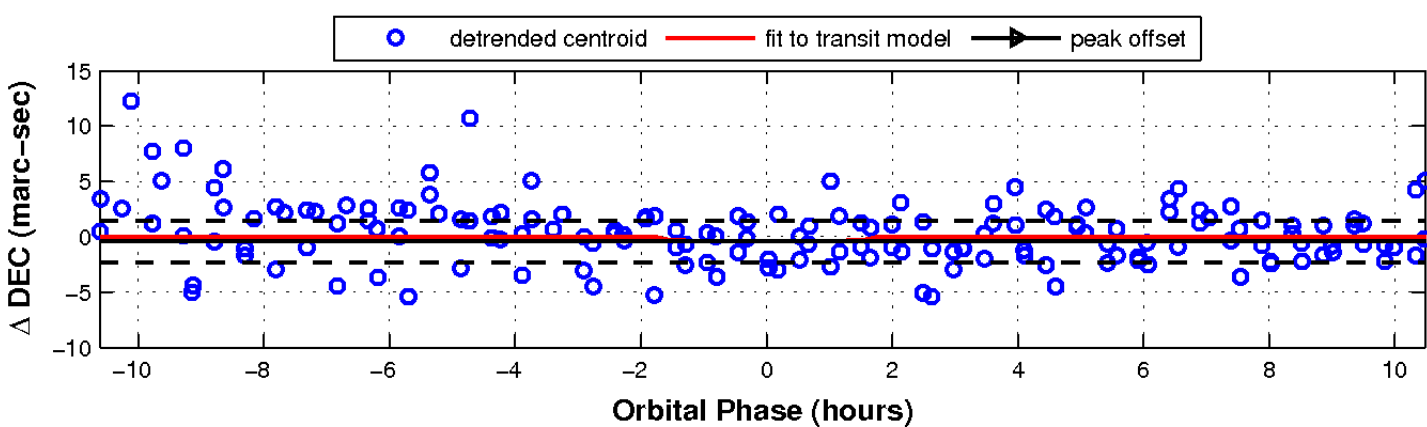
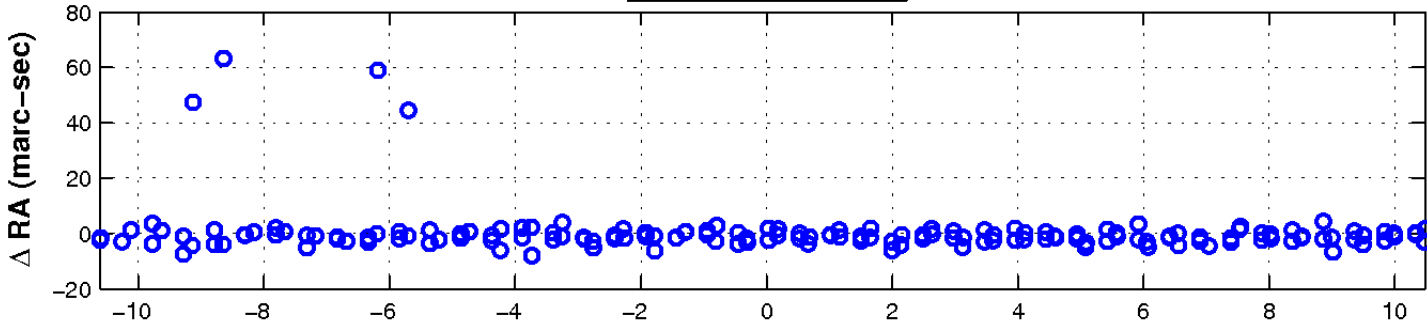
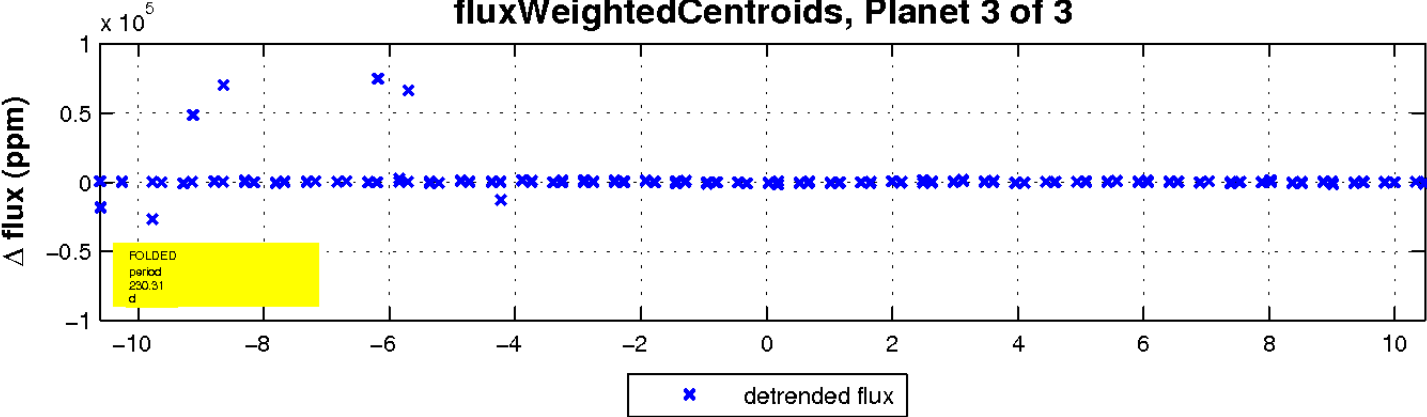
Q17 no difference image



Q17 no OOT image



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

