

# KIC 011229003

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011229003-01	OBS	No	272.110527	355.550285	828.8	17.559	13.1	8.5	155.19	3266	629.77	3424.01
011229003-02	OBS	No	415.482387	451.241718	241.5	7.500	19.1	-1.0	155.19	3266	221.39	1947.42
011229003-03	OBS	No	330.381369	461.501989	337.2	8.596	18.6	2.4	155.19	3266	340.33	2643.47
011229003-04	OBS	No	110.491945	188.944851	578.8	1.663	11.5	10.9	155.19	3266	413.89	0.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011229003-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED
011229003-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011229003-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011229003-04	OBS	FP	0.00	1	0	0	0	MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

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

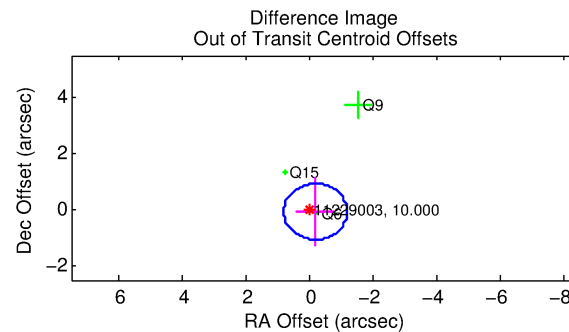
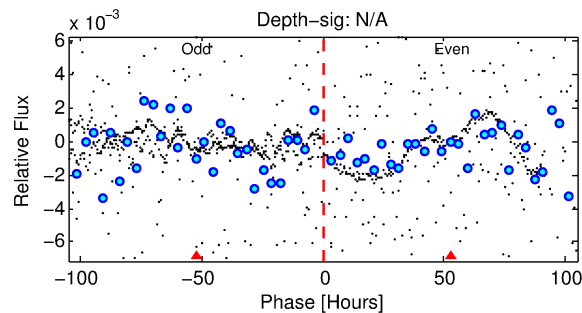
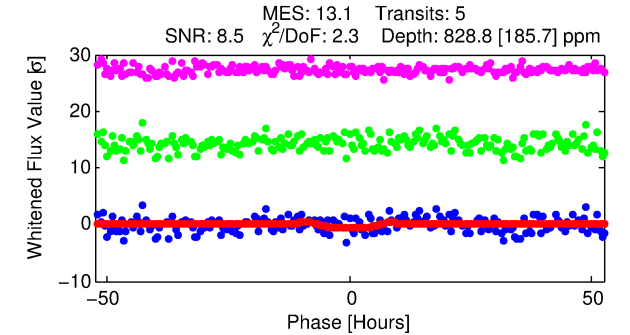
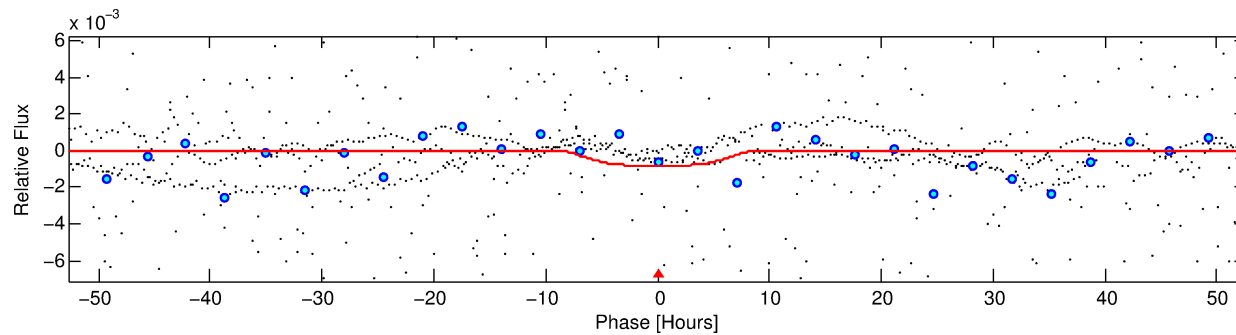
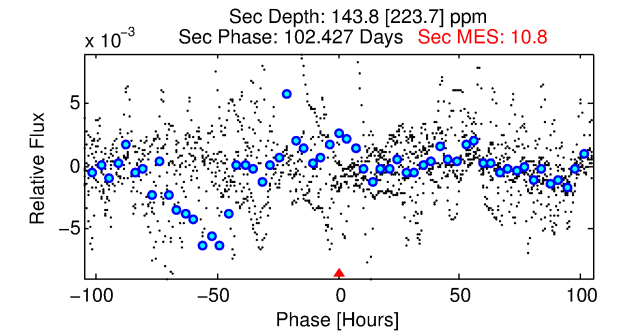
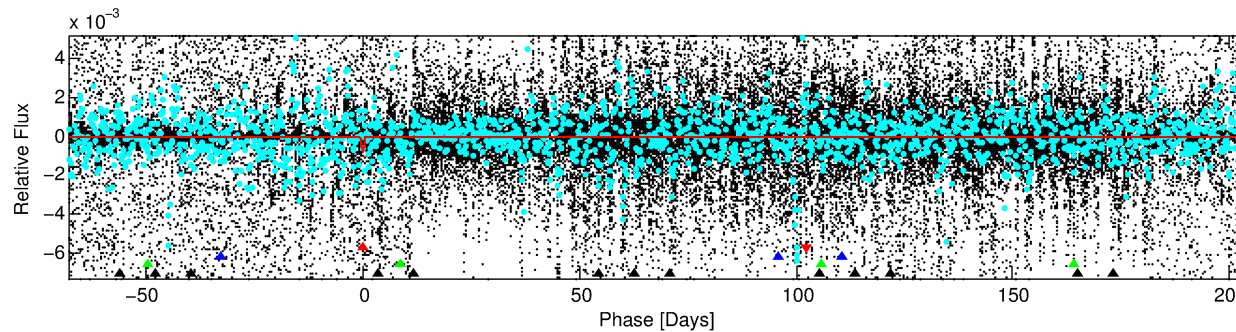
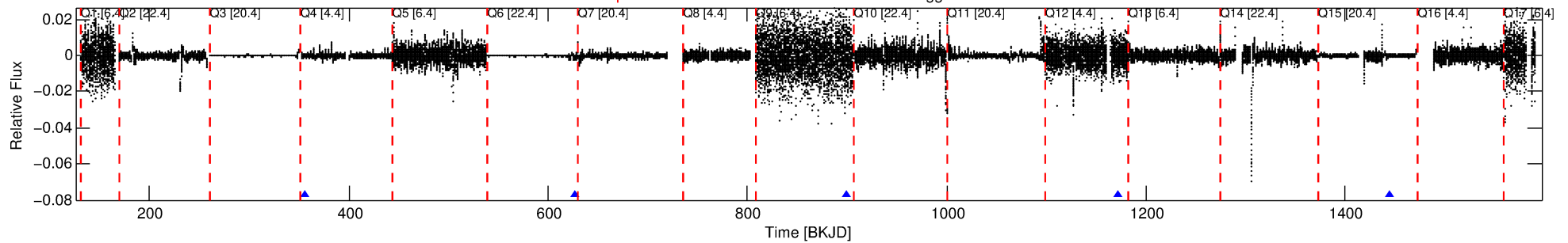
## Ephemeris Match Information For 011229003-01

No Significant Match Found

# DV One-Page Summary

KIC: 11229003 Candidate: 1 of 4 Period: 272.111 d

Kp: 10.00 R\*: 155.19 Rs Teff: 3266.0 K Logg: 0.10 Fe/H: -0.080



## DV Fit Results:

Period = 272.11053 [0.02553] d  
Epoch = 355.5503 [0.0430] BKJD  
Rp/R\* = 0.0372 [0.0054]  
a/R\* = 50.21 [10.82]  
b = 0.95 [0.03]  
Seff = 3424.01 [1265.10]  
Teff = 1951 [180] K  
Rp = 629.77 [144.13] Re  
a = 0.8468 [0.1683] AU  
Ag = 0.14 [0.23] [-3.70σ]  
Teffp = 1855 [737] K [-0.13σ]

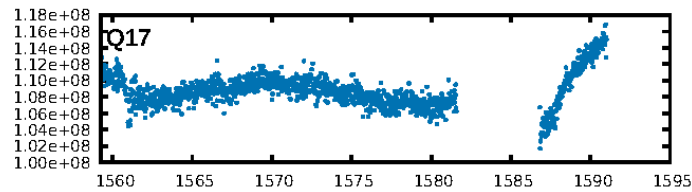
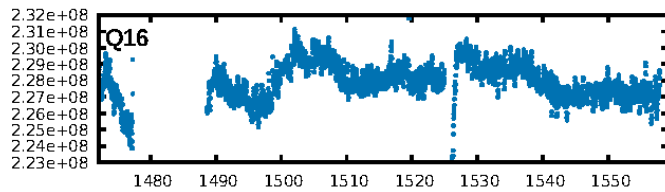
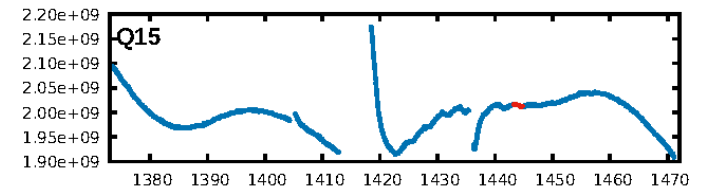
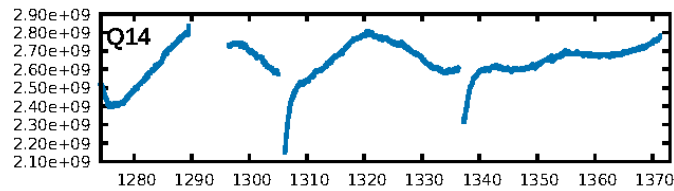
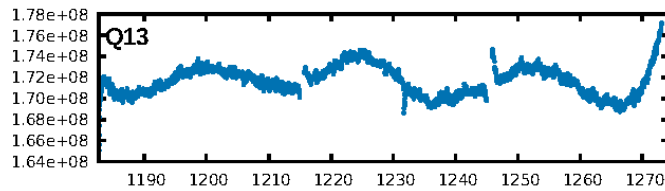
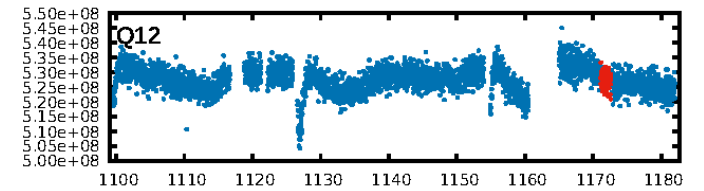
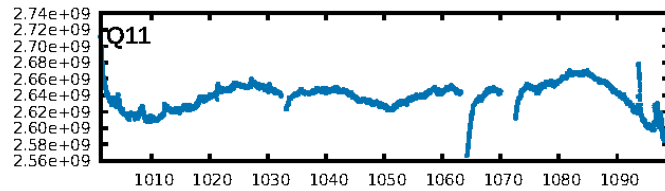
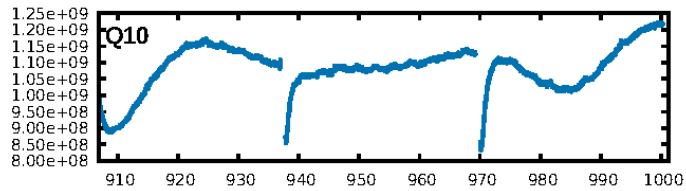
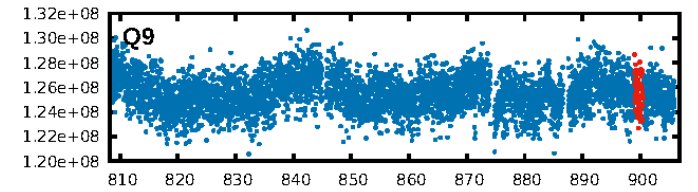
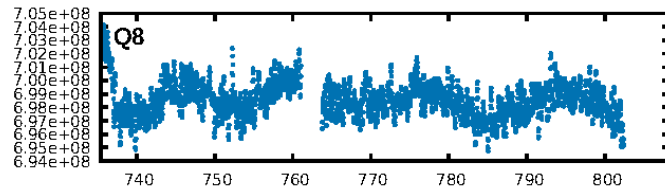
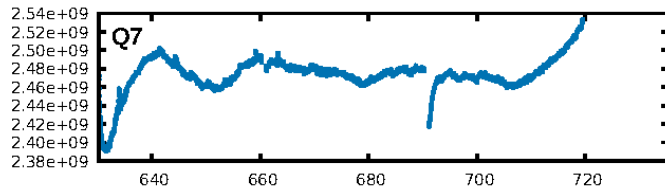
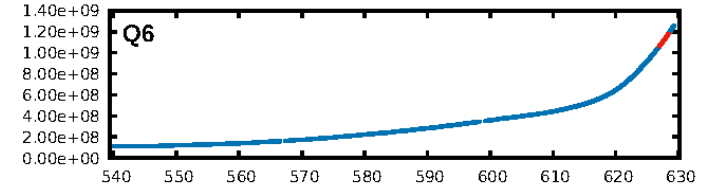
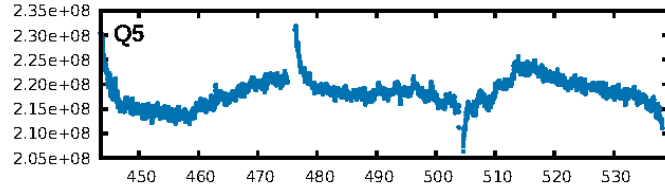
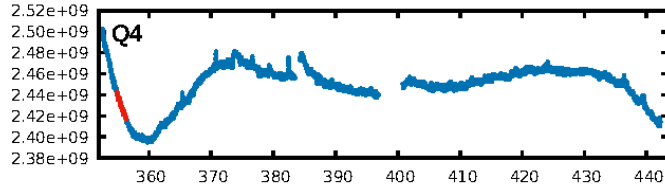
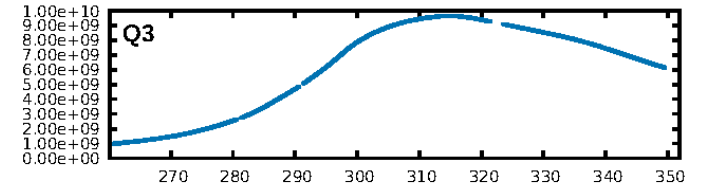
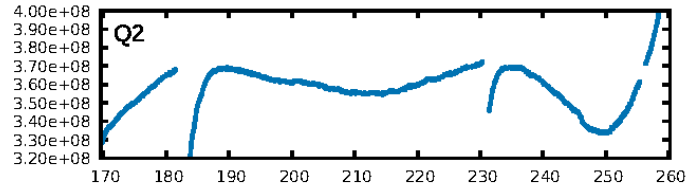
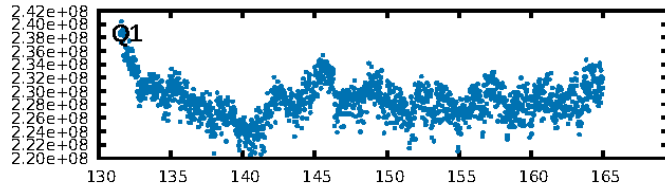
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [219.92σ]  
LongPeriod-sig: 100.0% [71.53σ]  
ModelChiSquare2-sig: 86.7%  
ModelChiSquareGof-sig: 6.3%  
Bootstrap-pfa: 6.99e-09  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: 0.838 arcsec [1.33σ]  
OotOffset-rm: 0.195 arcsec [0.59σ]  
KicOffset-rm: 0.449 arcsec [0.39σ]  
OotOffset-st: 1/1/0/1 [3]  
KicOffset-st: 1/1/0/1 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [4/4]

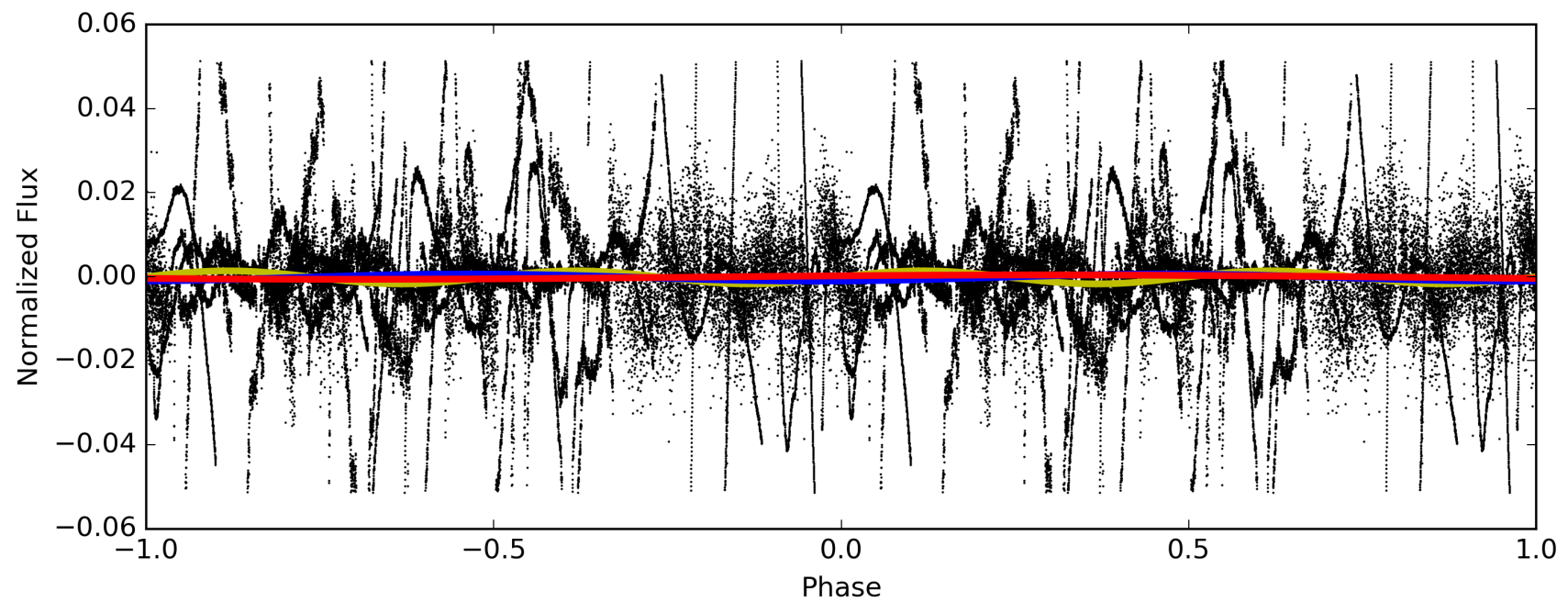
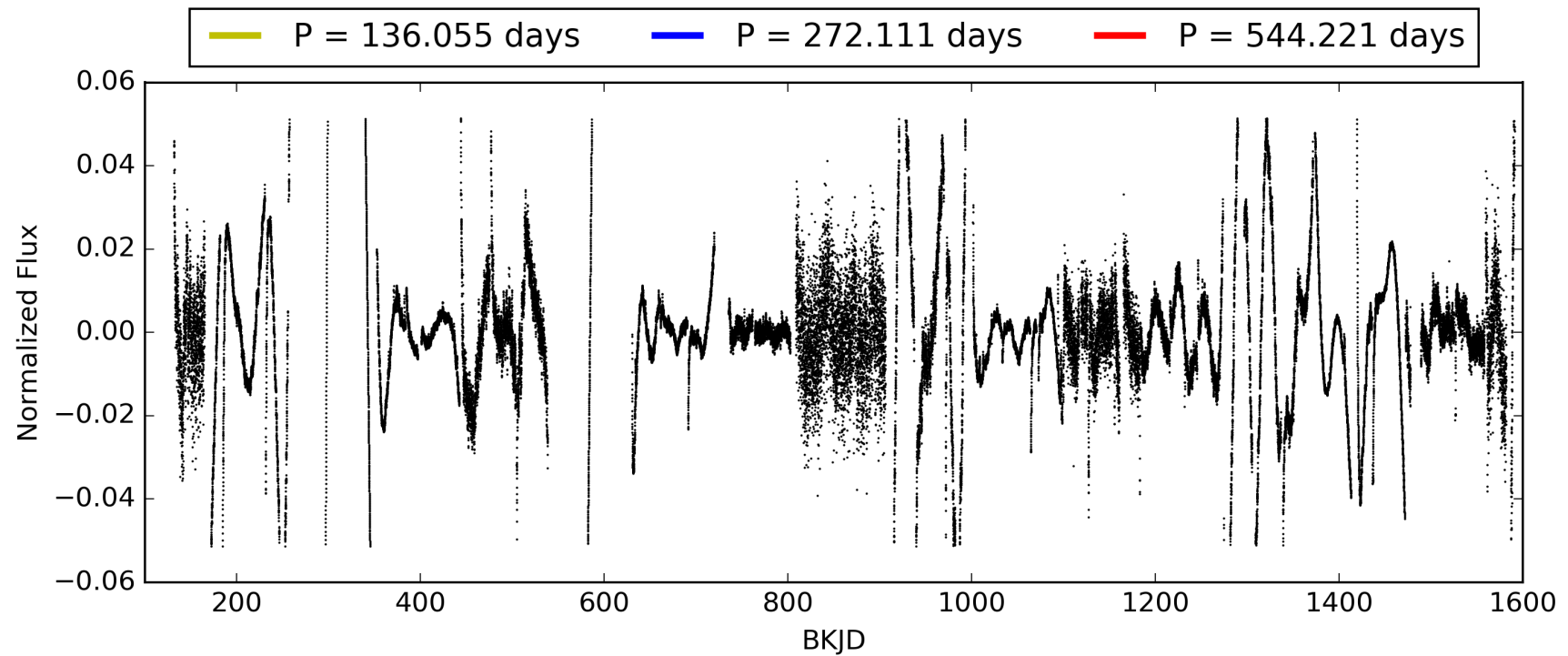
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:58:40 Z

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

# TCE 011229003-01, PDC Light Curves

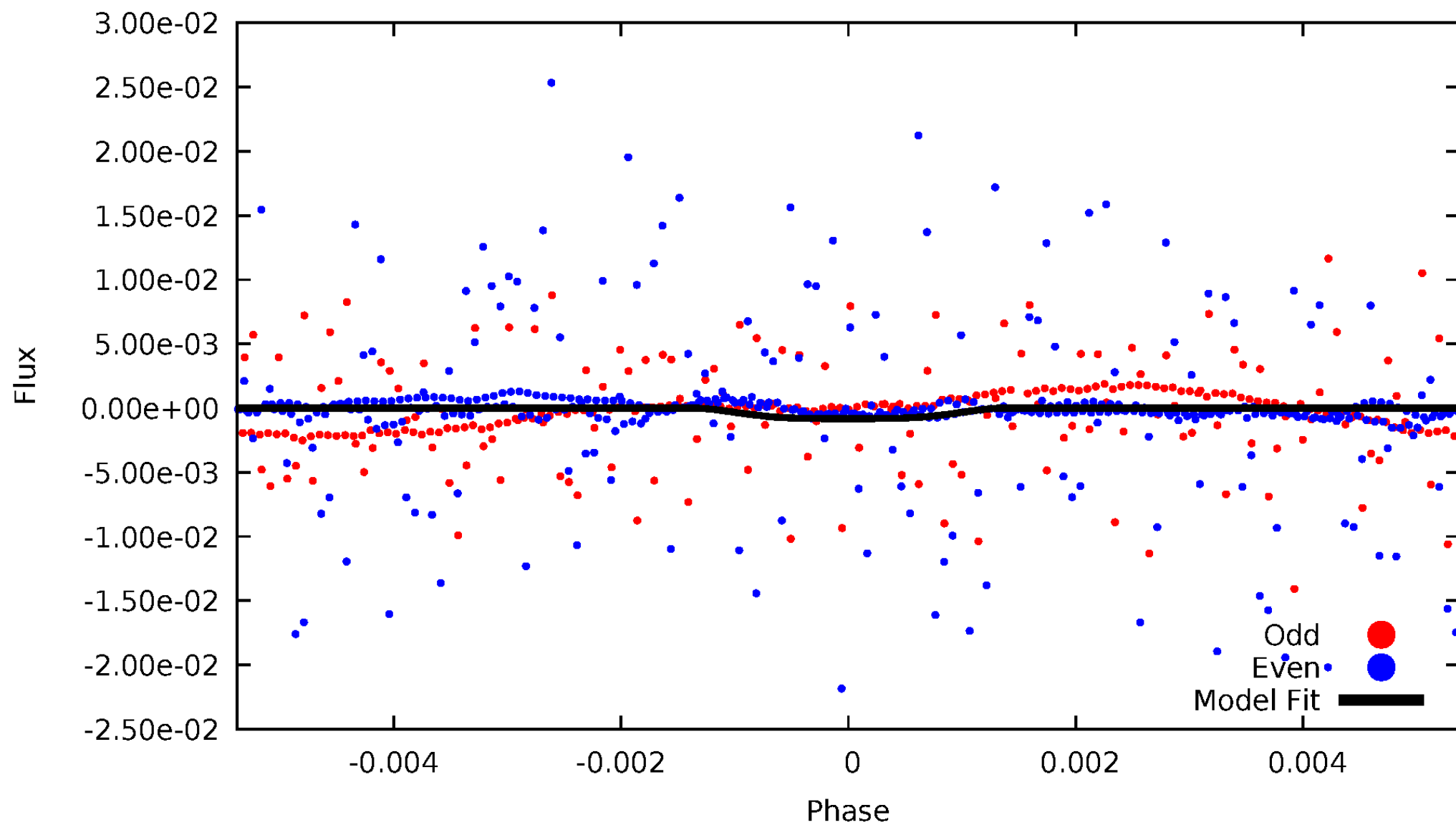


TCE 011229003-01



# DV Odd/Even

TCE 011229003-01



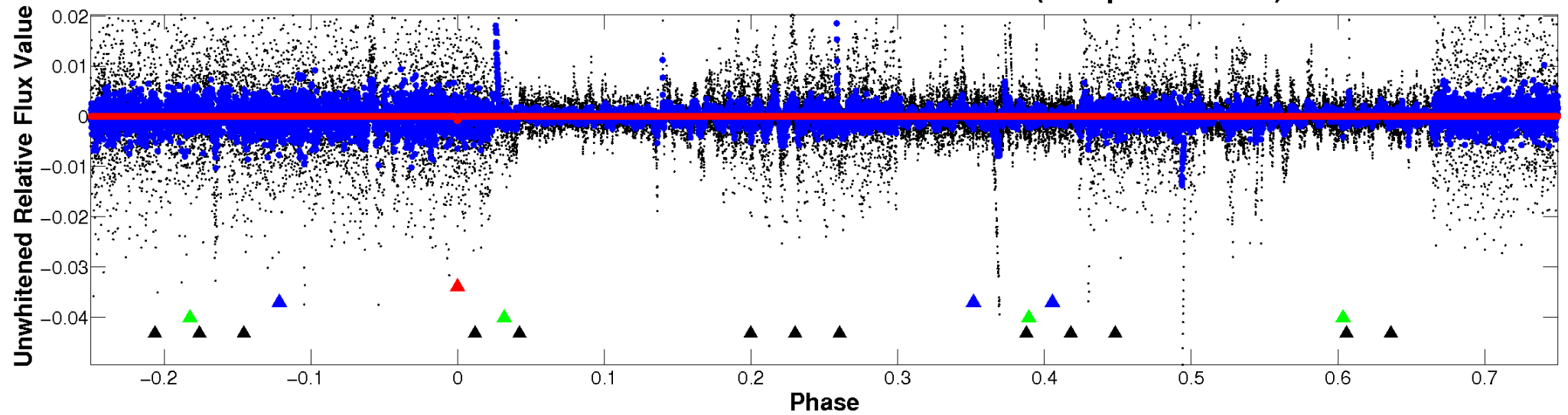


ALT Odd/Even

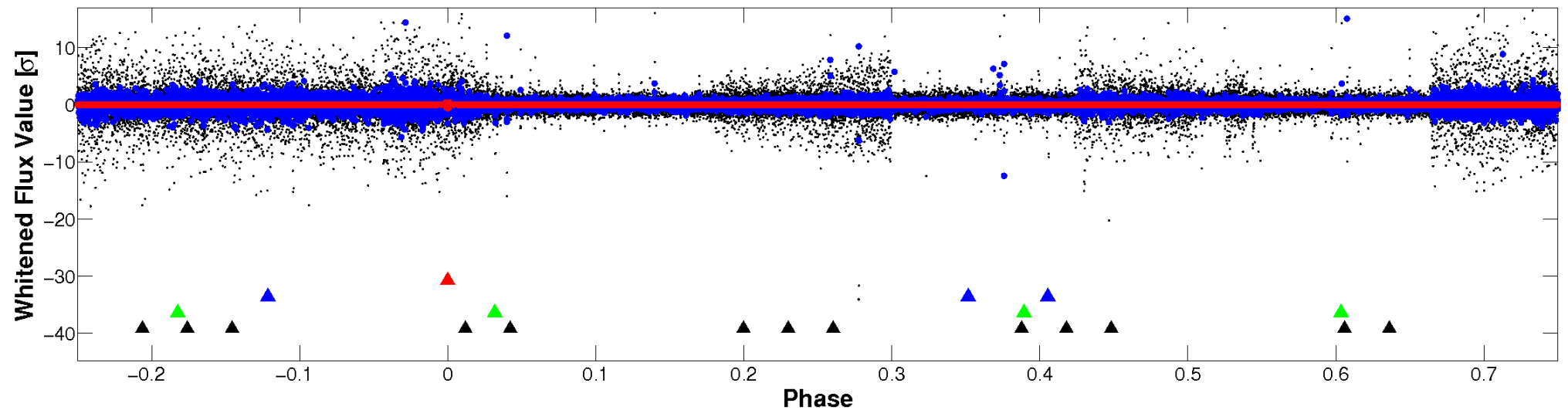
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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



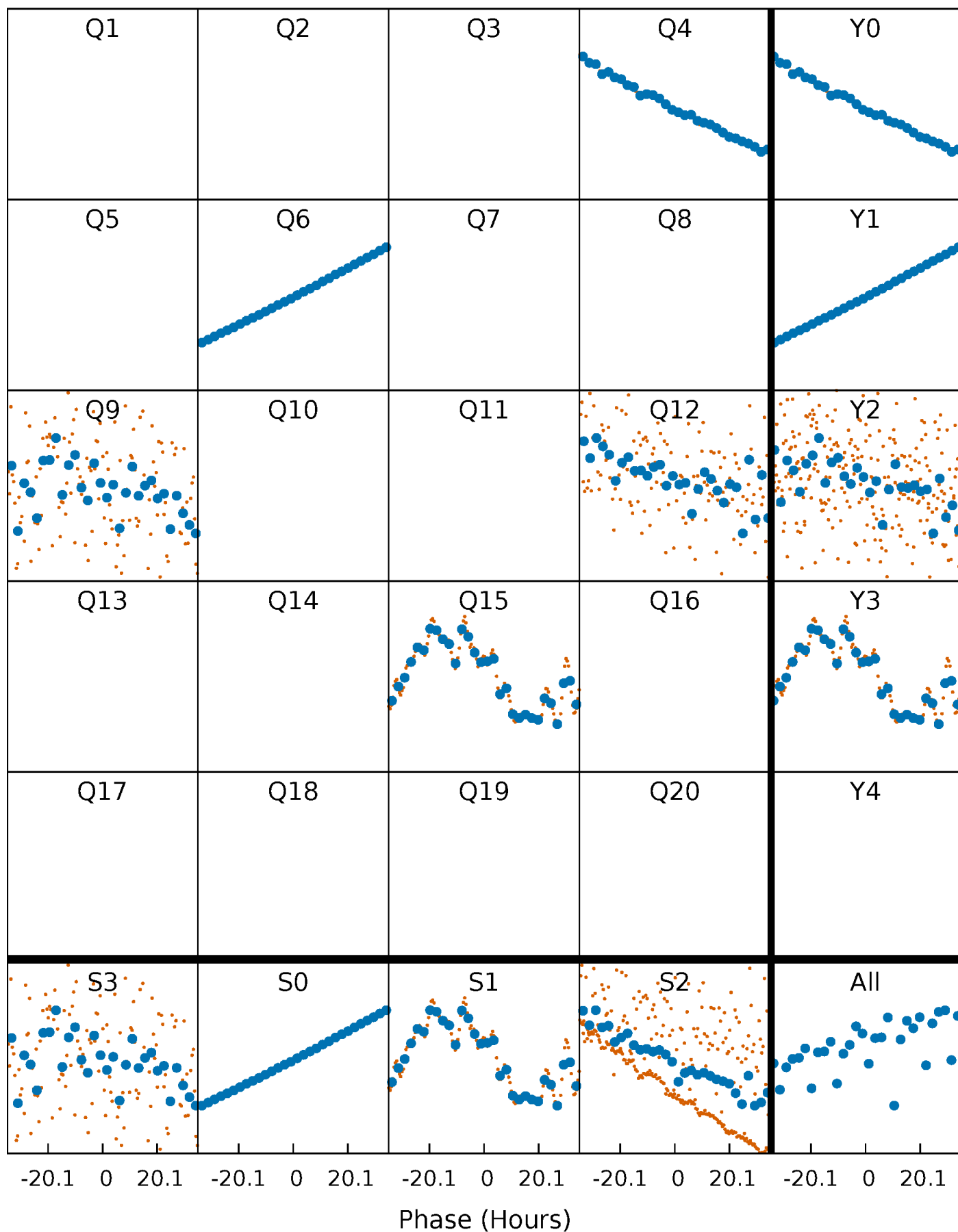
Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





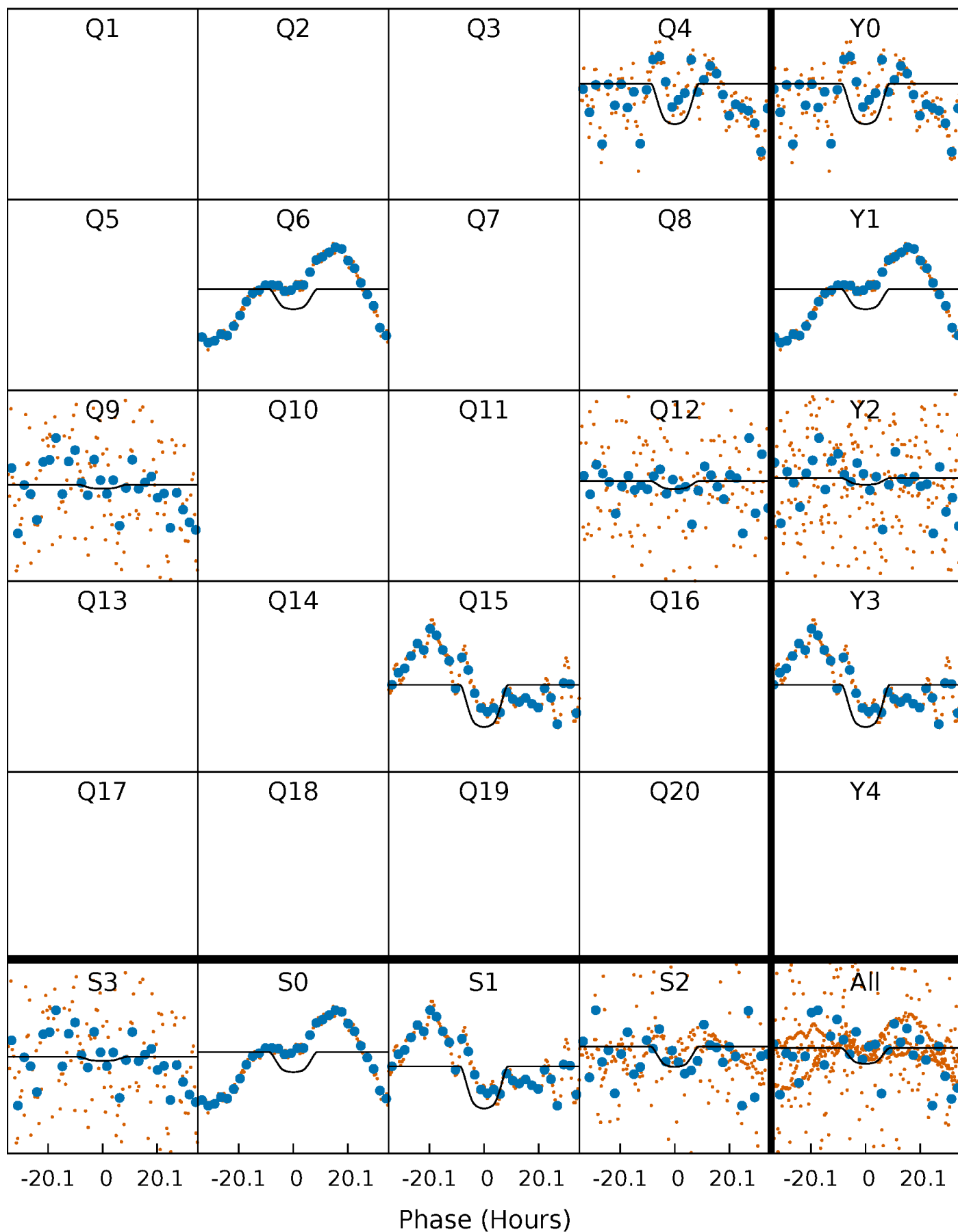
# PDC Quarter-Phased Transit Curves

TCE 011229003-01 P=272.110527 Days  $T_0=355.550285$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 011229003-01 P=272.110527 Days  $T_0=355.550285$  (BKJD)

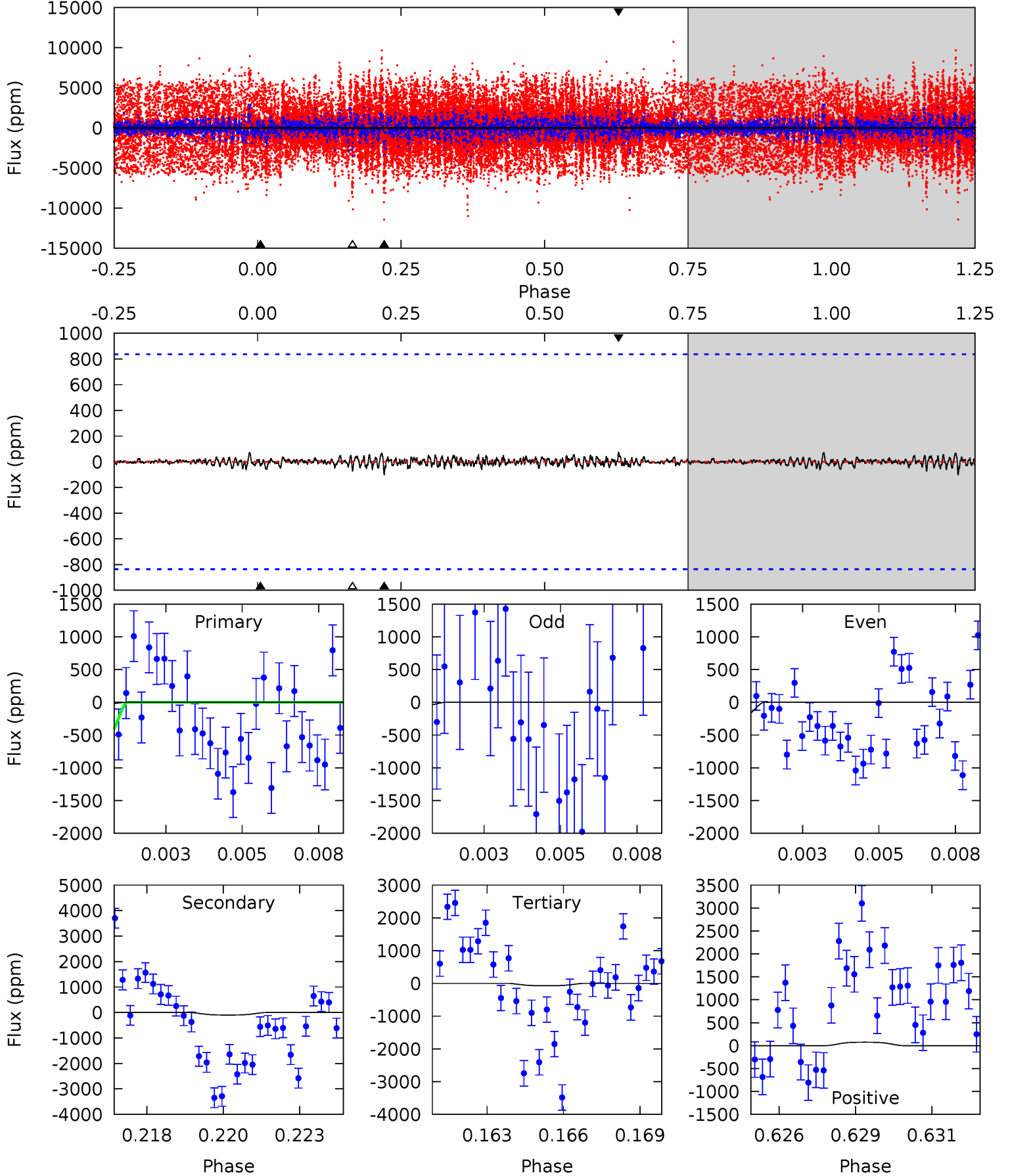


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

011229003-01,  $P = 272.110527$  Days,  $E = 83.439758$  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
0.21	0.63	0.44	0.47	5.27	3.00	0.13	-0.24	-0.26	0.18	0.16	0.55	1.77	0.43	1.76



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 011229003

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3266^{+117}_{-78}$	$0.095^{+0.208}_{-0.065}$	$-0.080^{+0.250}_{-0.100}$	$155.187^{+9.192}_{-27.576}$	$1.095^{+0.206}_{-0.120}$	$0.000^{+0.000}_{-0.000}$
	+4%/-2%	+219%/-68%	+312%/-125%	+6%/-18%	+19%/-11%	+85%/-15%
Source	KIC0	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 011229003-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-100 \pm 159$	$612.36^{+112.66}_{-102.87}$	$2691^{+128}_{-145}$	$-2495^{+631}_{-216}$	$0.095^{+0.194}_{-0.149}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

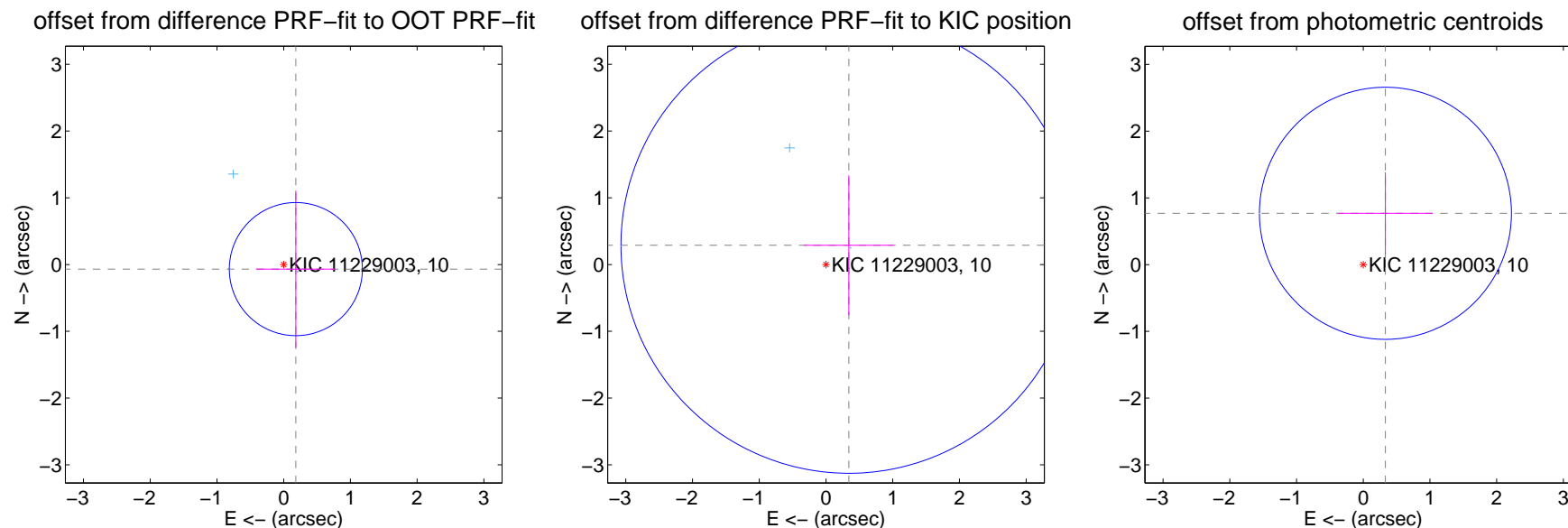
## DV Centroid Data

Supplemental centroid analysis for 011229003-01. **Kepler magnitude: 10.00.** Transit SNR 8.47

**There are 2 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	$0.195 \pm 0.332$	0.59	$-0.182 \pm 0.595$	$-0.068 \pm 1.176$
PRF-fit source offset from KIC position	$0.449 \pm 1.139$	0.39	$-0.343 \pm 0.671$	$0.289 \pm 1.047$
photometric centroid source offset	$0.84 \pm 0.63$	1.33	$-0.33 \pm 0.71$	$0.77 \pm 0.61$



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.

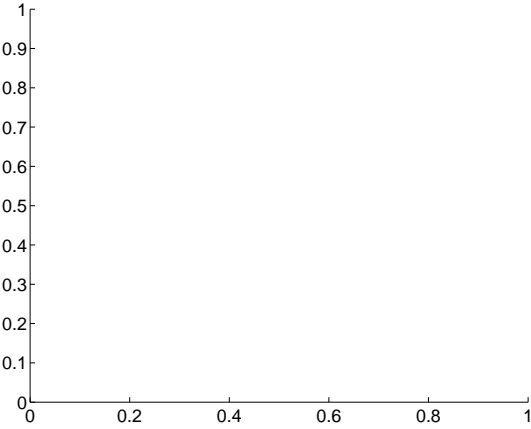
Q1 no difference image



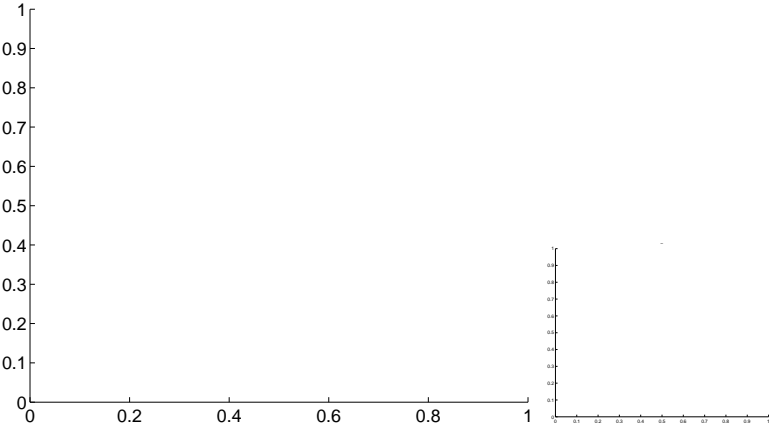
Q1 no OOT image



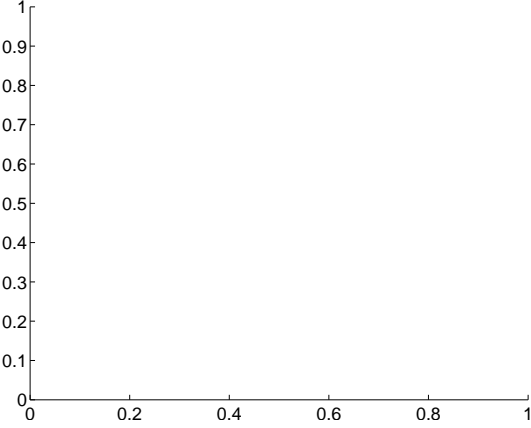
Q2 no difference image



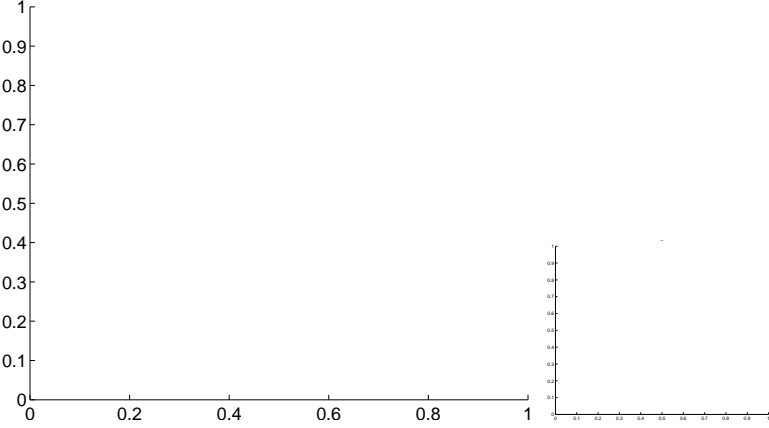
Q2 no OOT image



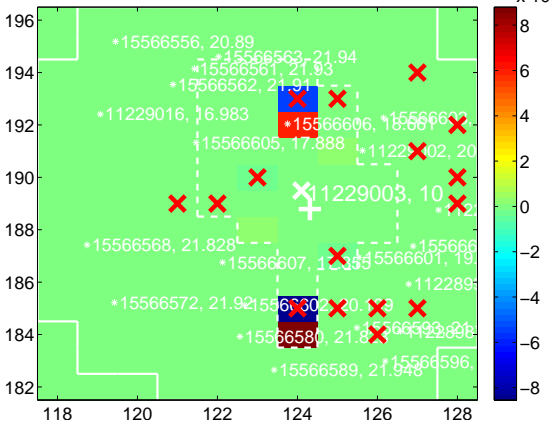
Q3 no difference image



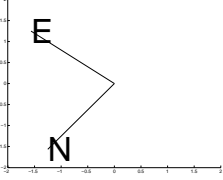
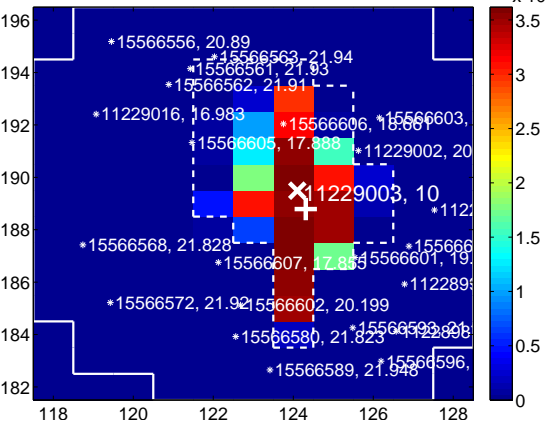
Q3 no OOT image



Q4 difference image. Poor Quality



Q4 OOT image





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

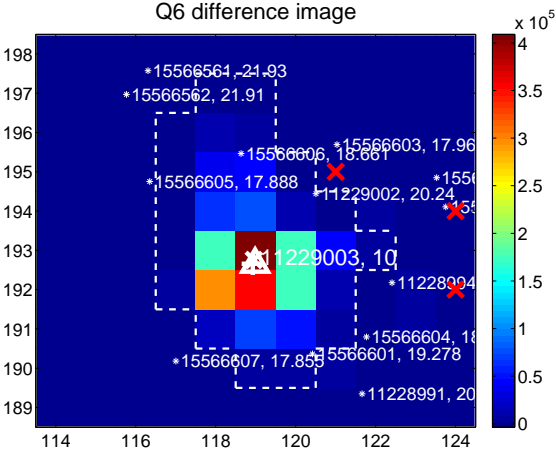
Q5 no difference image



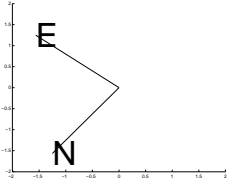
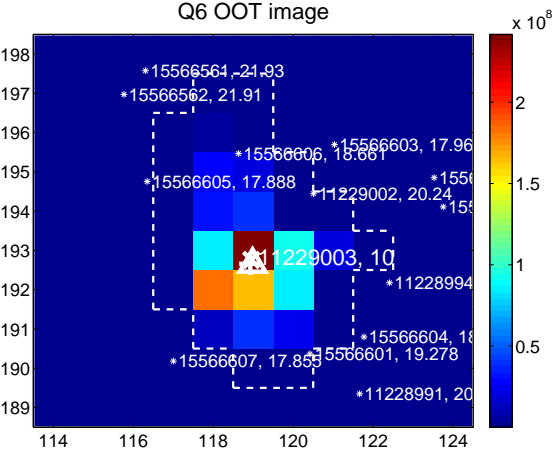
Q5 no OOT image



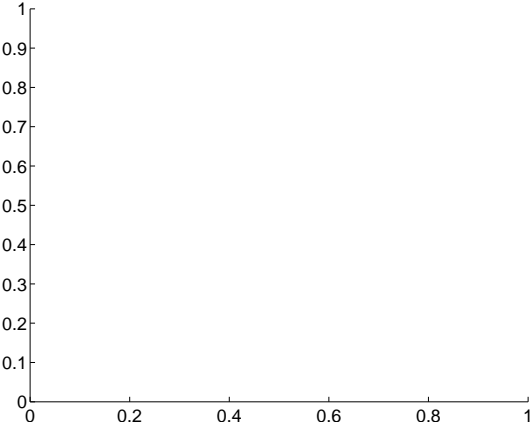
Q6 difference image



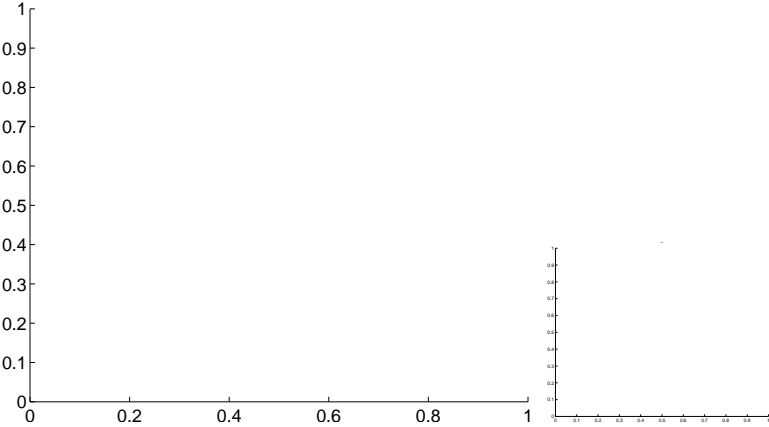
Q6 OOT image



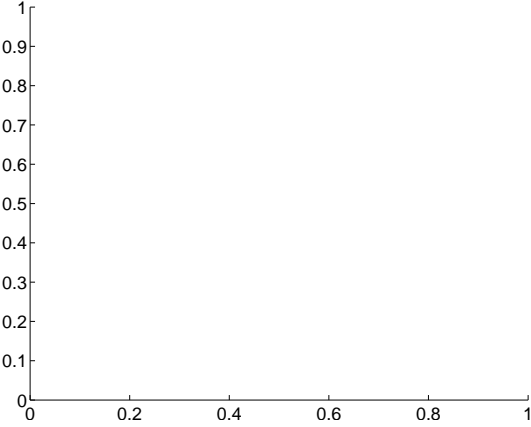
Q7 no difference image



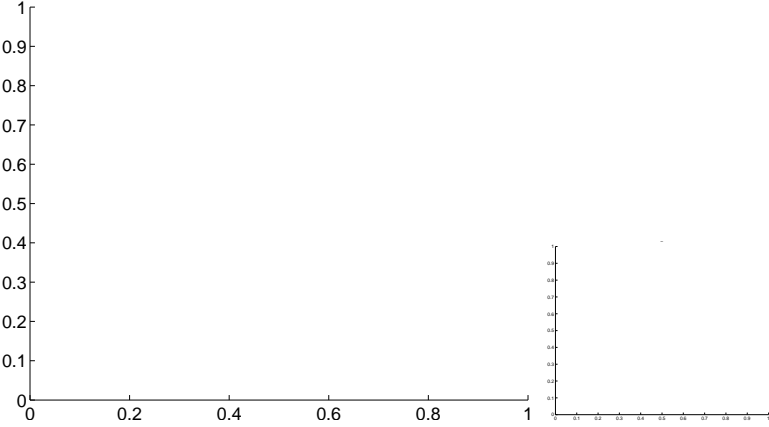
Q7 no OOT image



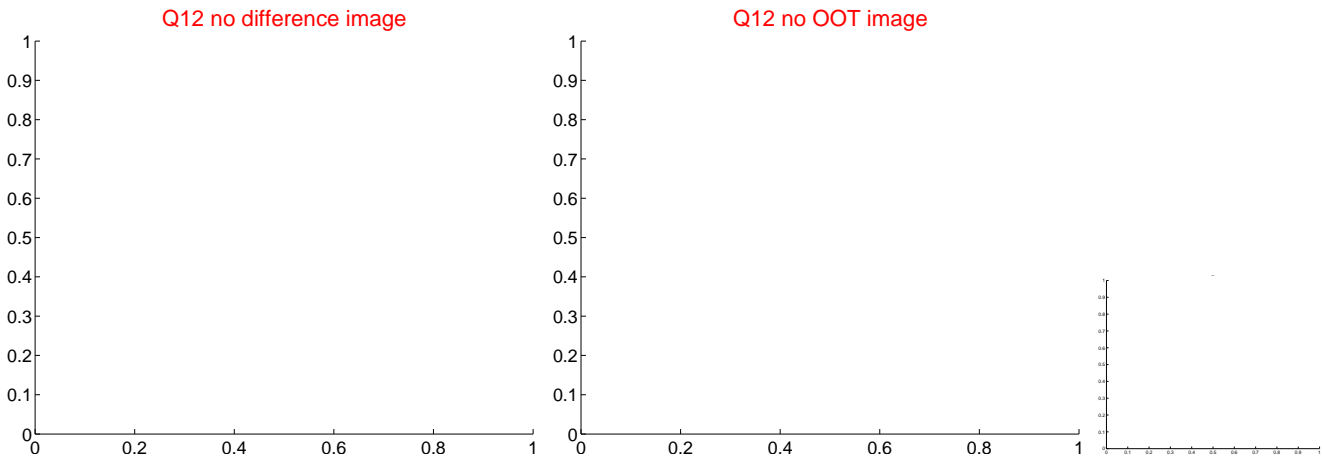
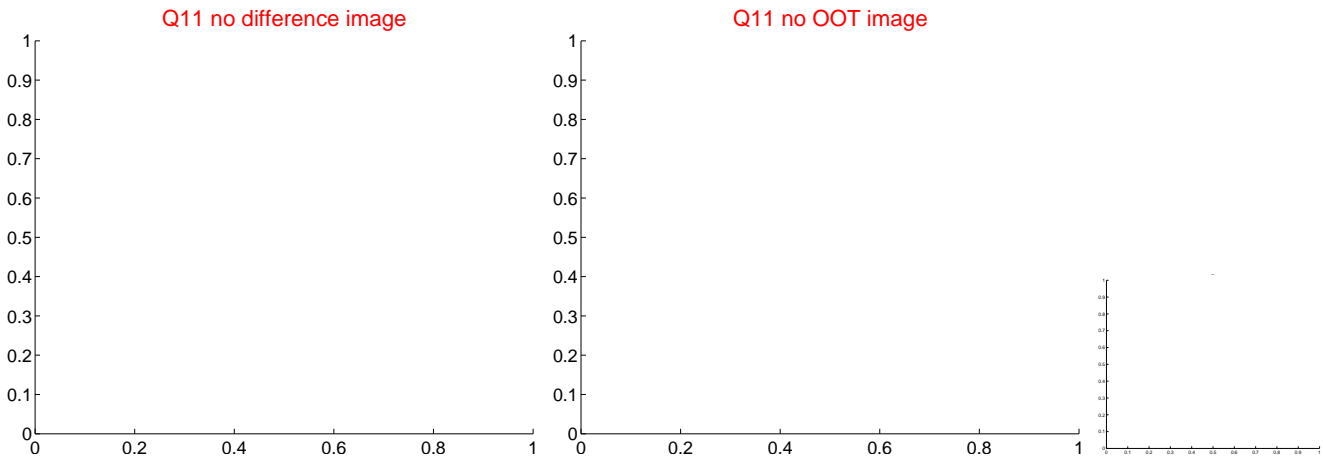
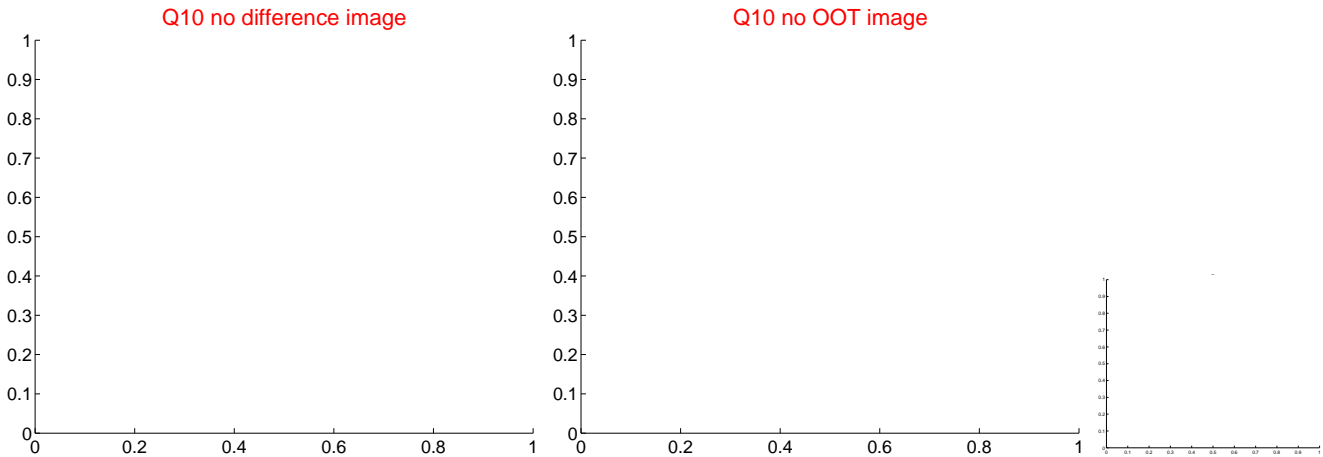
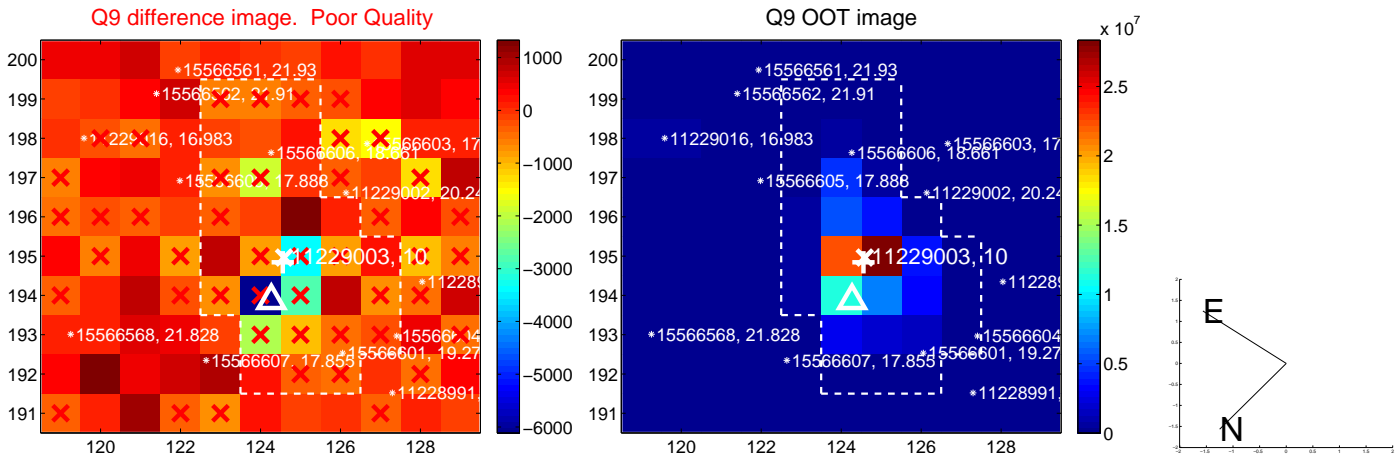
Q8 no difference image



Q8 no 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



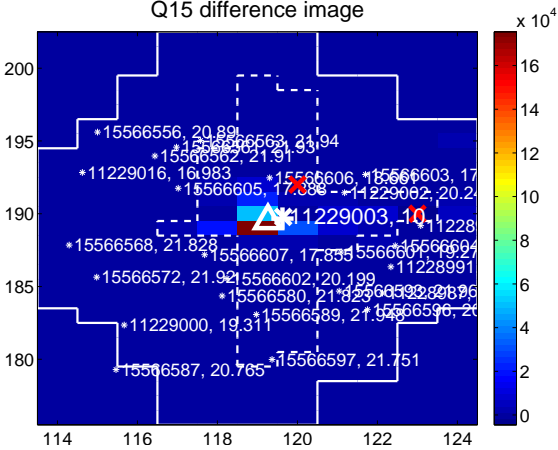
Q14 no difference image



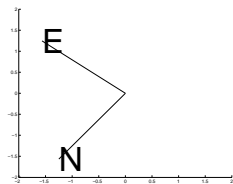
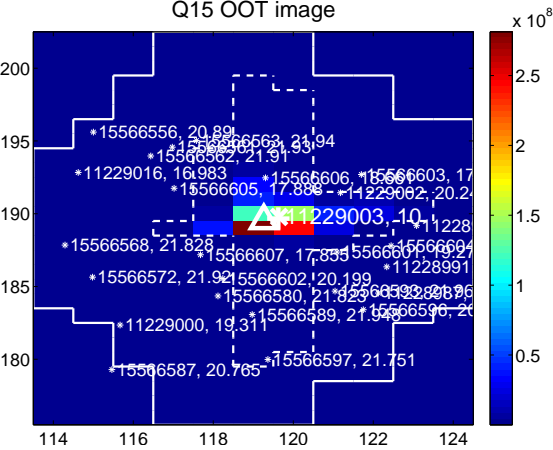
Q14 no OOT image



Q15 difference image



Q15 OOT image



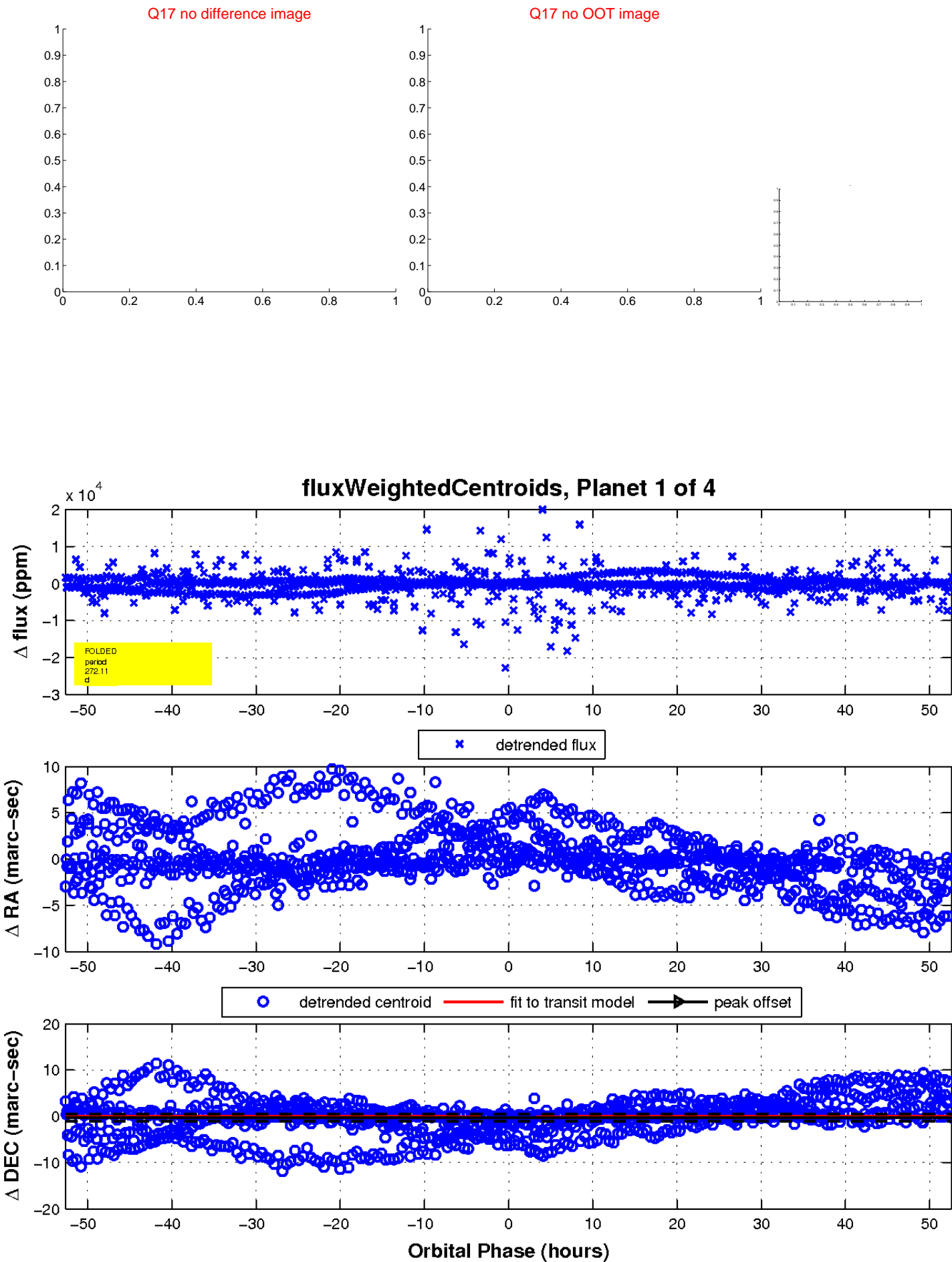
Q16 no difference image



Q16 no OOT image

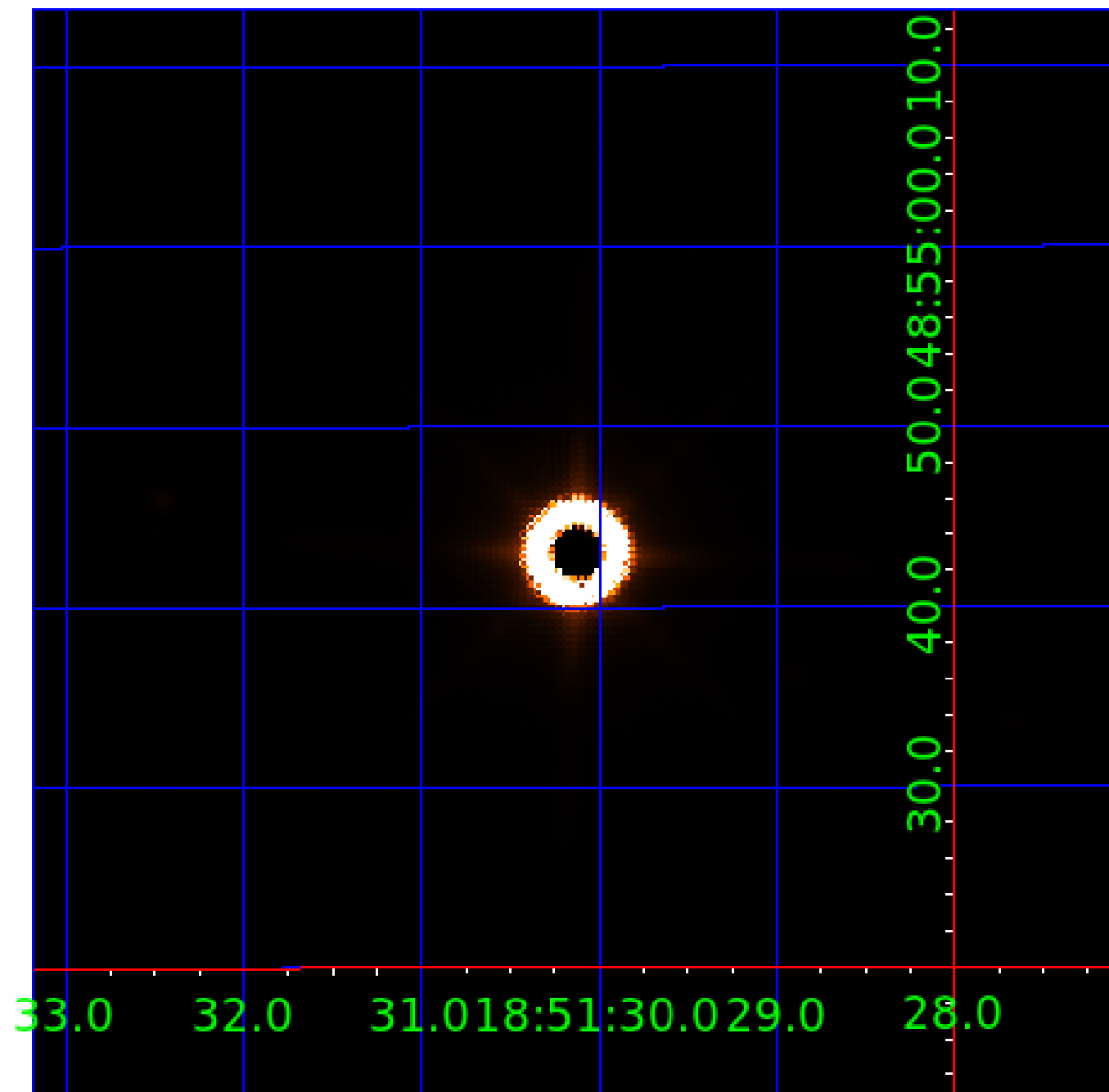


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011229003

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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011229003-02	OBS	No	415.482387	451.241718	241.5	7.500	19.1	-1.0	155.19	3266	221.39	1947.42
011229003-03	OBS	No	330.381369	461.501989	337.2	8.596	18.6	2.4	155.19	3266	340.33	2643.47
011229003-04	OBS	No	110.491945	188.944851	578.8	1.663	11.5	10.9	155.19	3266	413.89	0.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011229003-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED
011229003-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011229003-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011229003-04	OBS	FP	0.00	1	0	0	0	MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

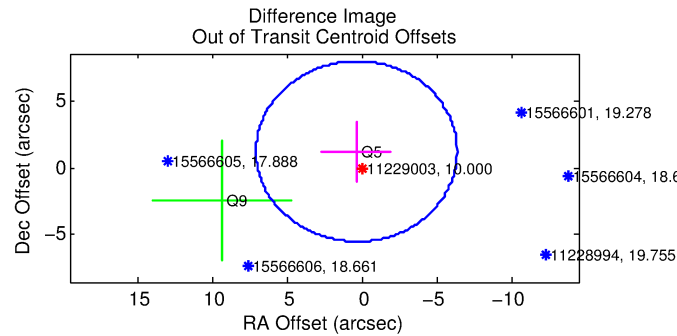
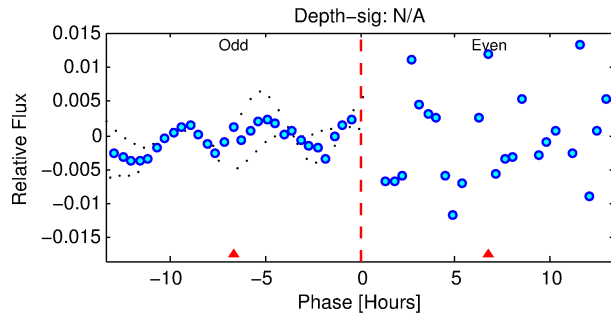
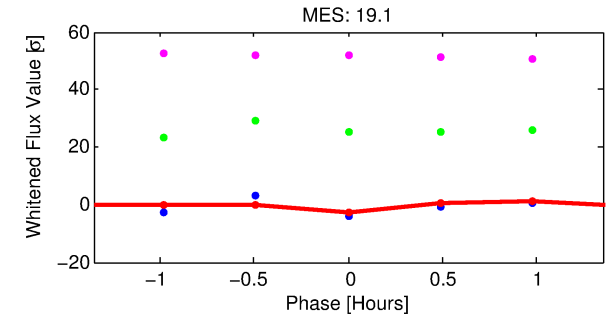
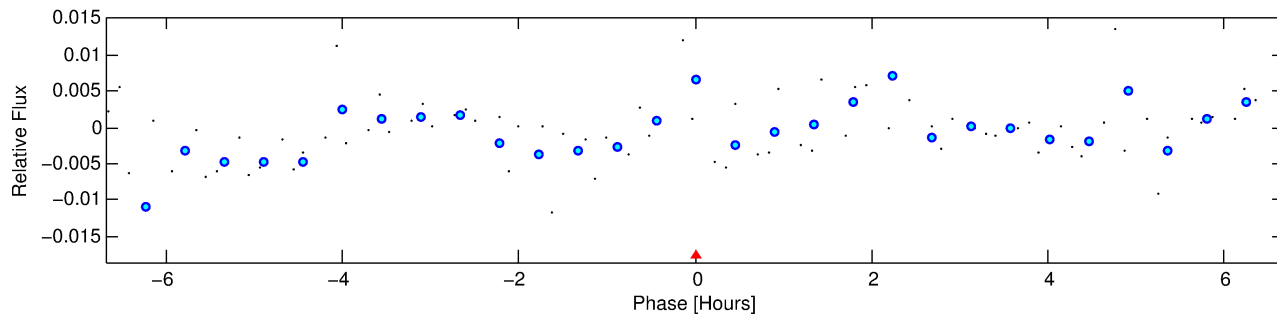
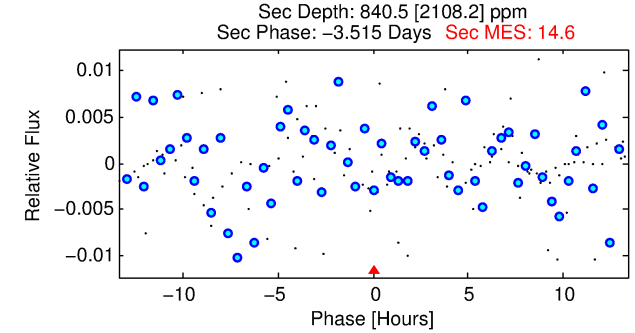
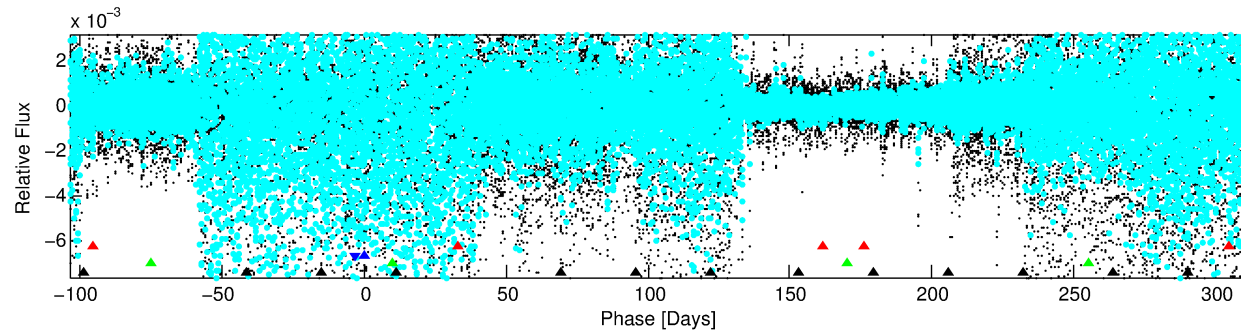
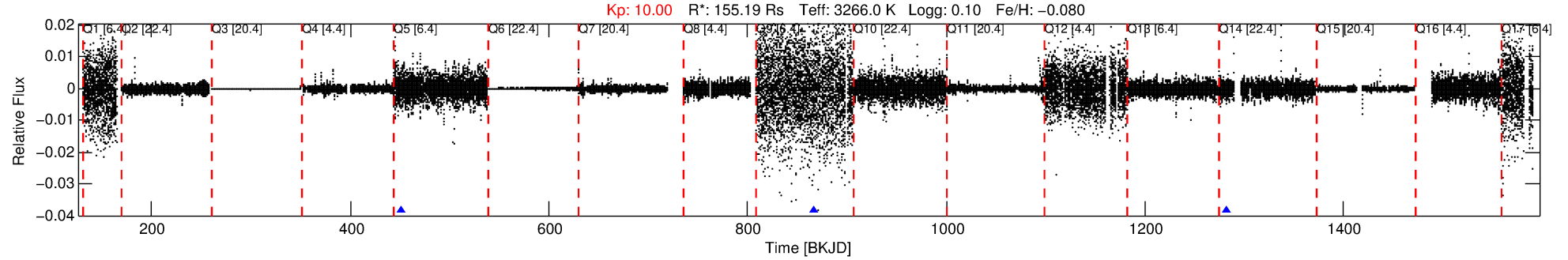
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011229003-02

No Significant Match Found

# DV One-Page Summary

KIC: 11229003 Candidate: 2 of 4 Period: 415.482 d



## TPS TCE Results:

Period = 415.48239 d  
Epoch = 451.2417 BKJD

DV fit results are unavailable

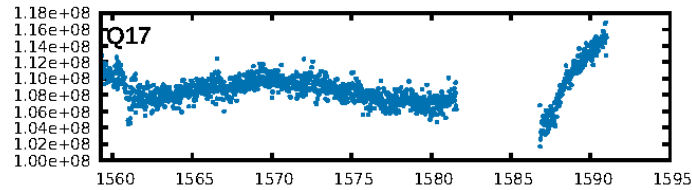
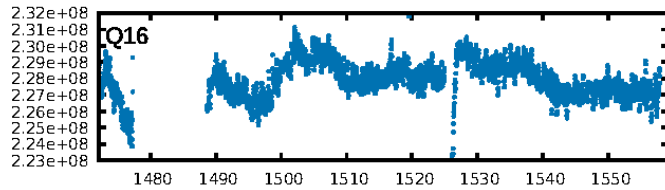
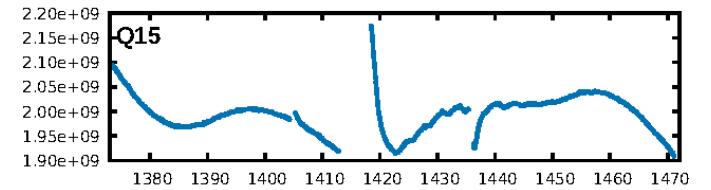
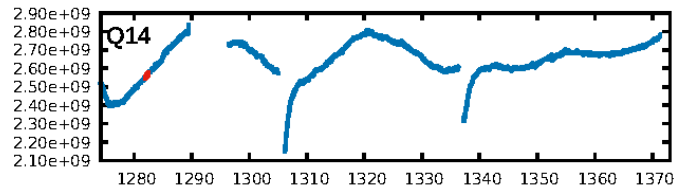
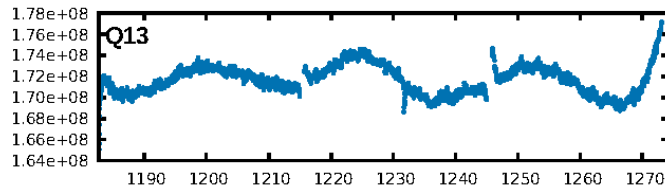
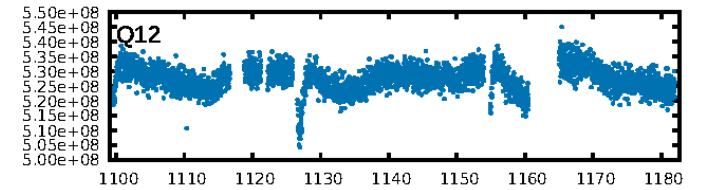
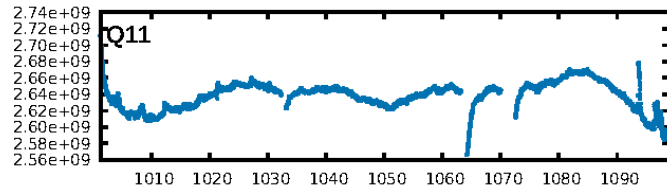
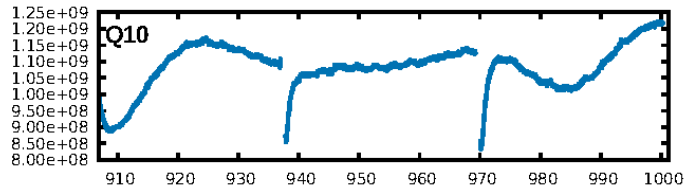
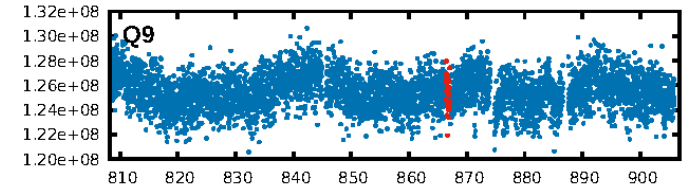
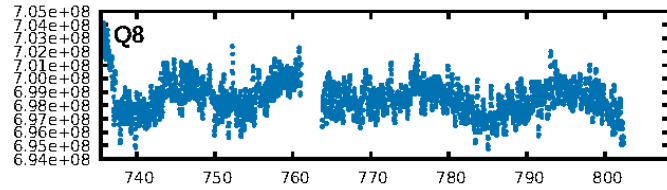
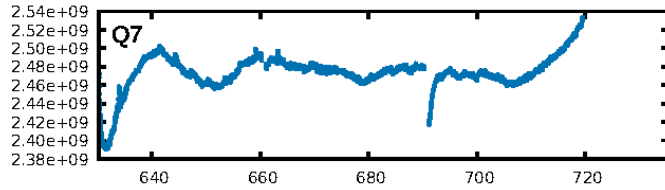
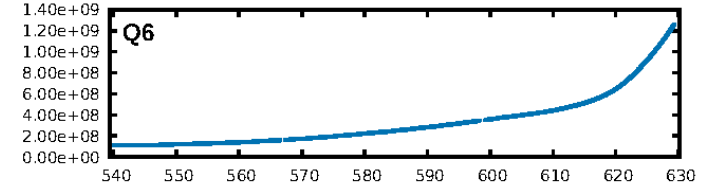
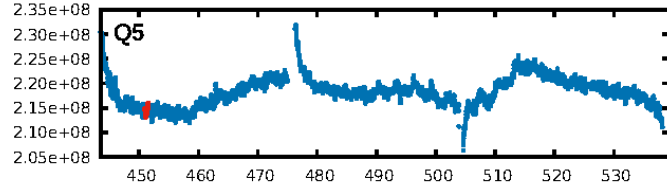
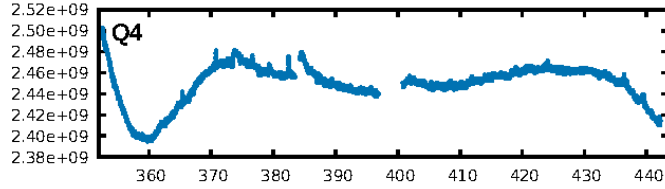
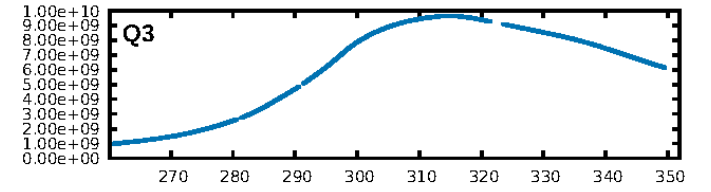
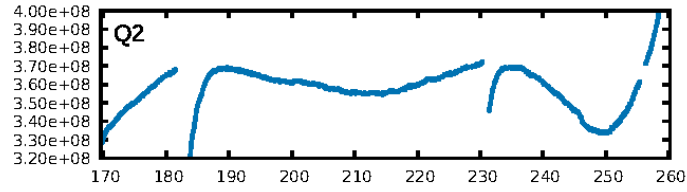
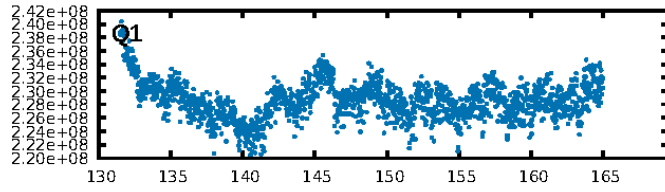
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [179.03σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.11e-13  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: 0.521 arcsec [2.82σ]  
OotOffset-rm: 1.264 arcsec [0.56σ]  
KicOffset-rm: 1.659 arcsec [0.74σ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:59:03 Z

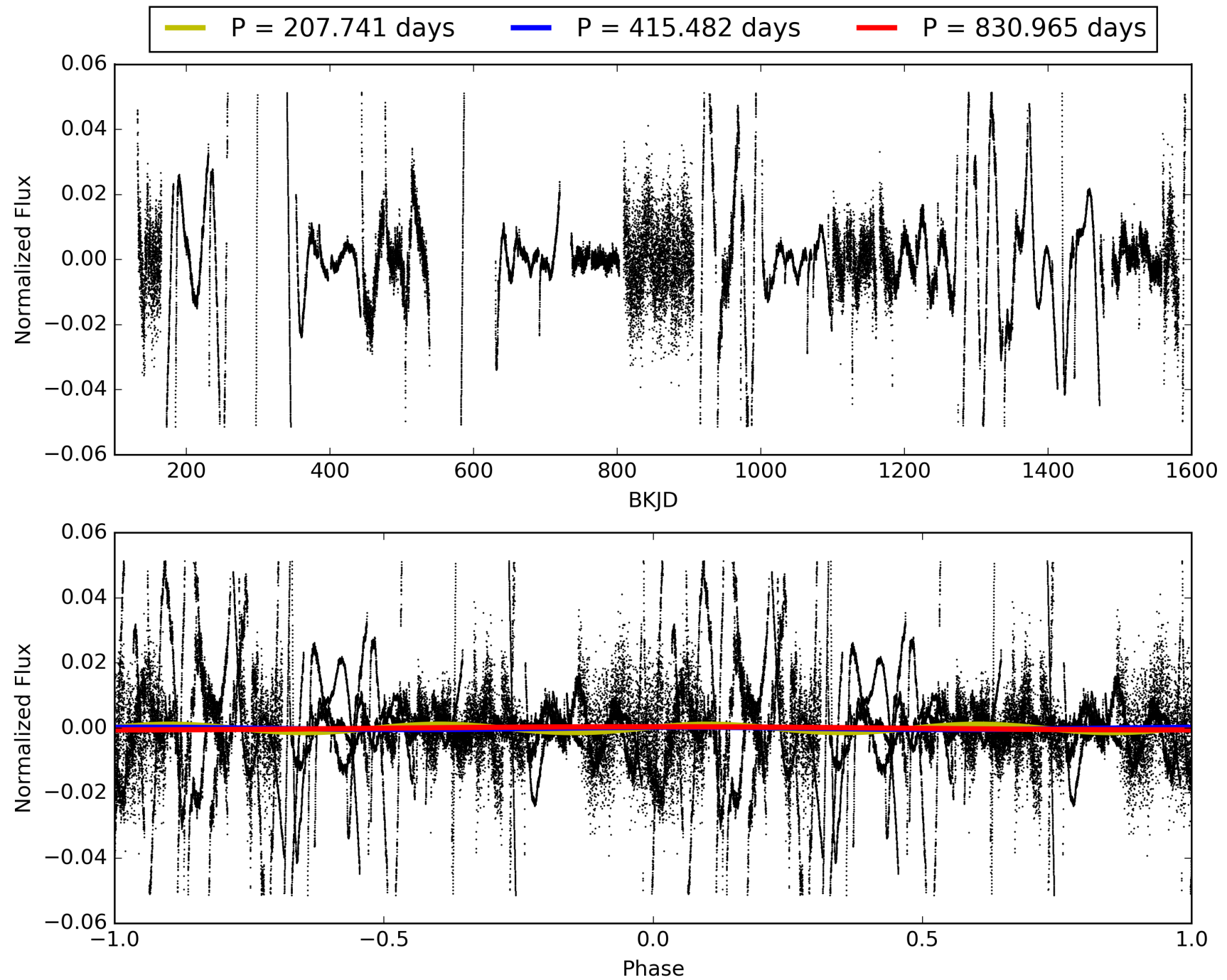
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011229003-02, PDC Light Curves



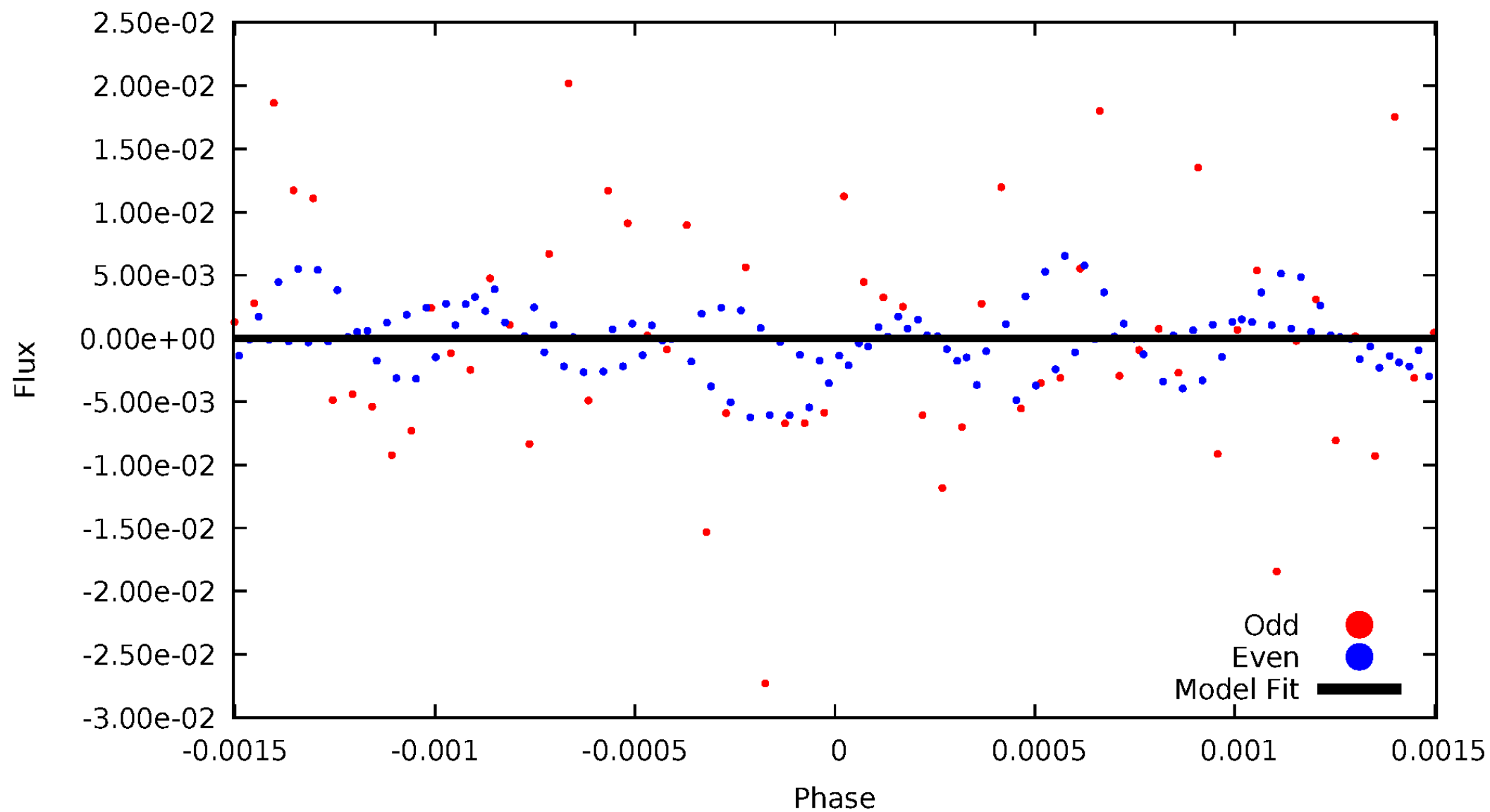


TCE 011229003-02



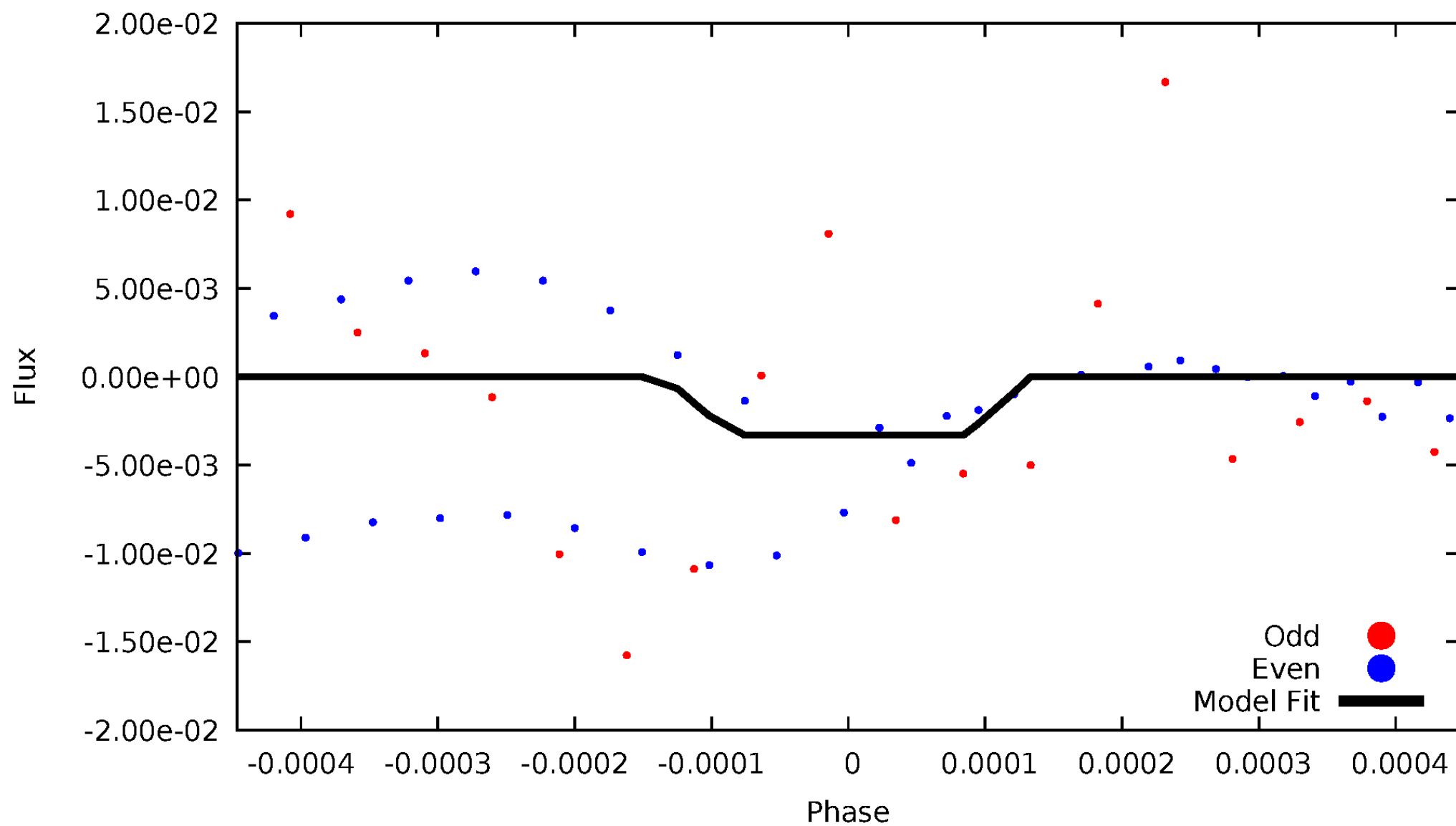
# DV Odd/Even

TCE 011229003-02



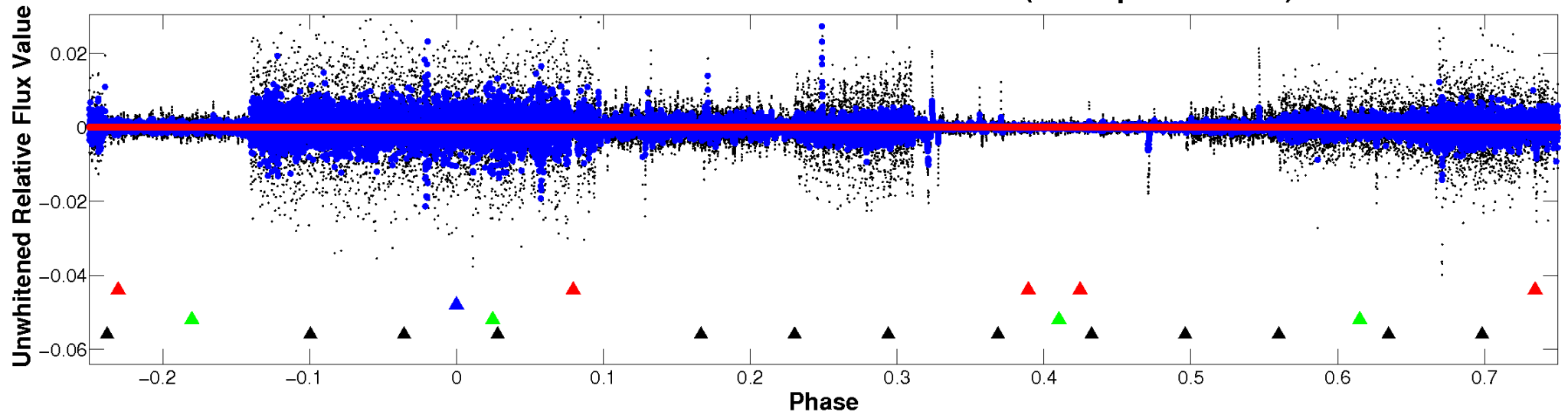
# ALT Odd/Even

TCE 011229003-02

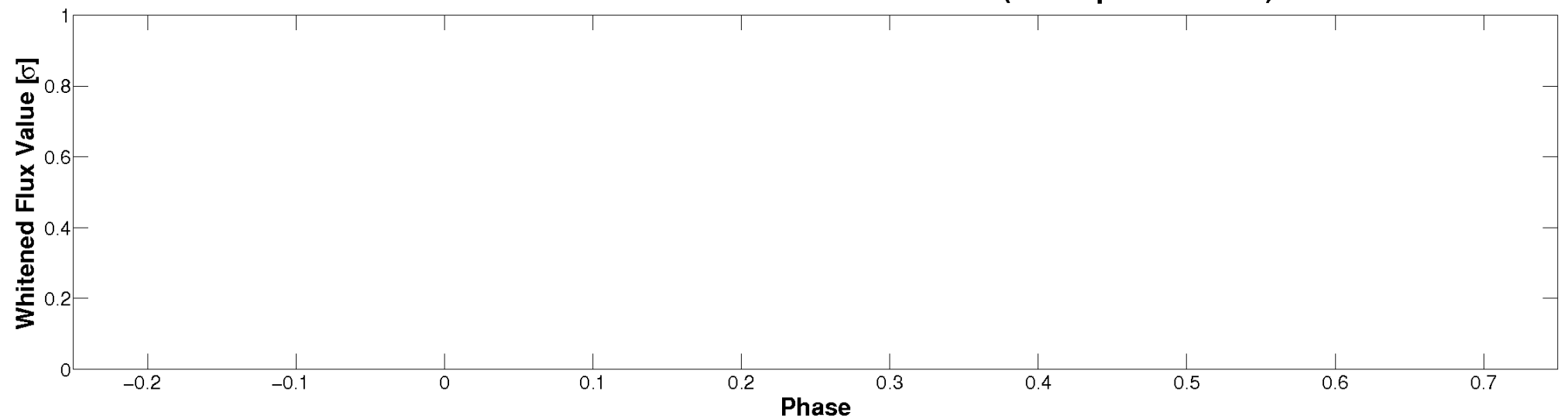


# Non-Whitened Vs. Whitened Light Curve

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

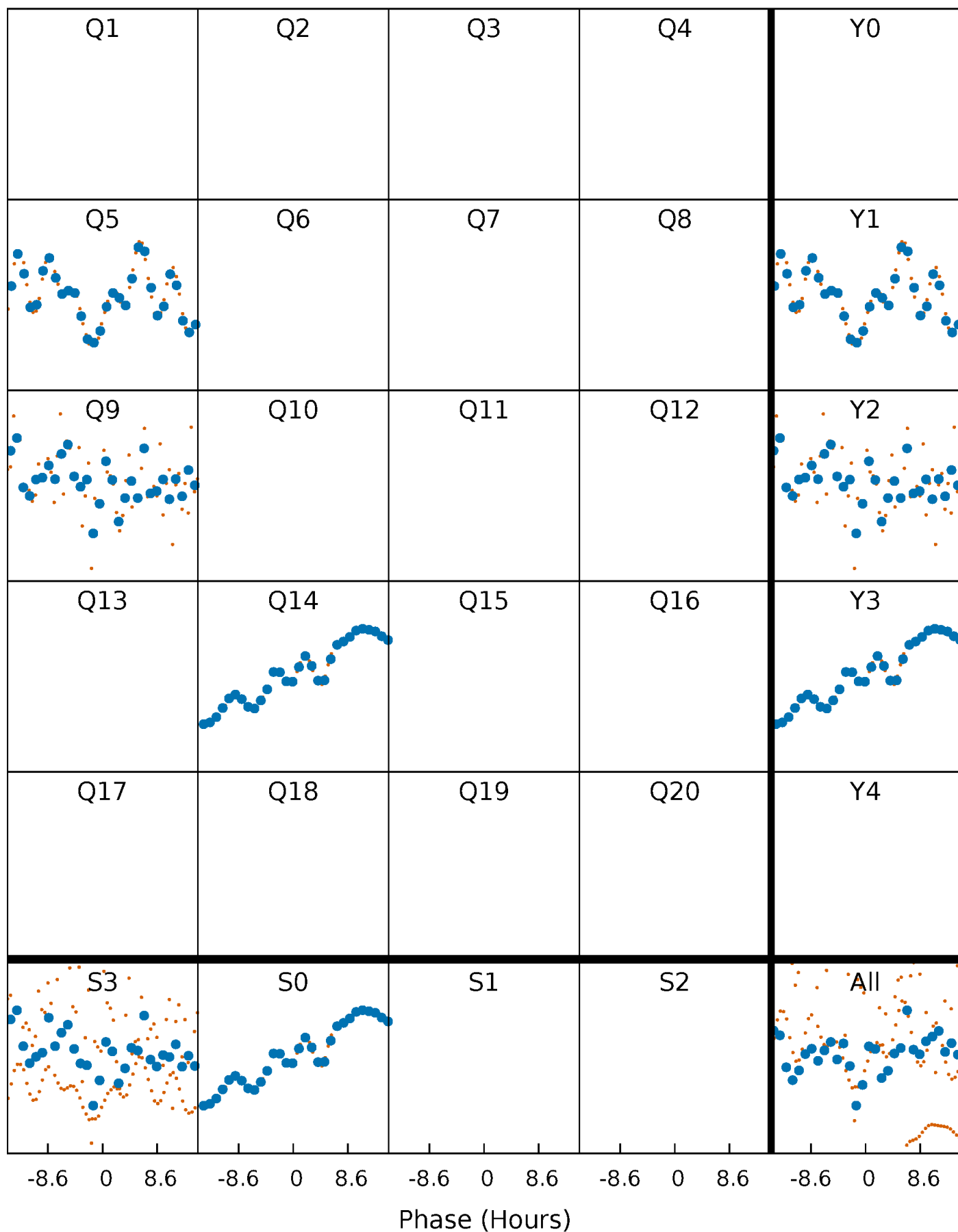


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



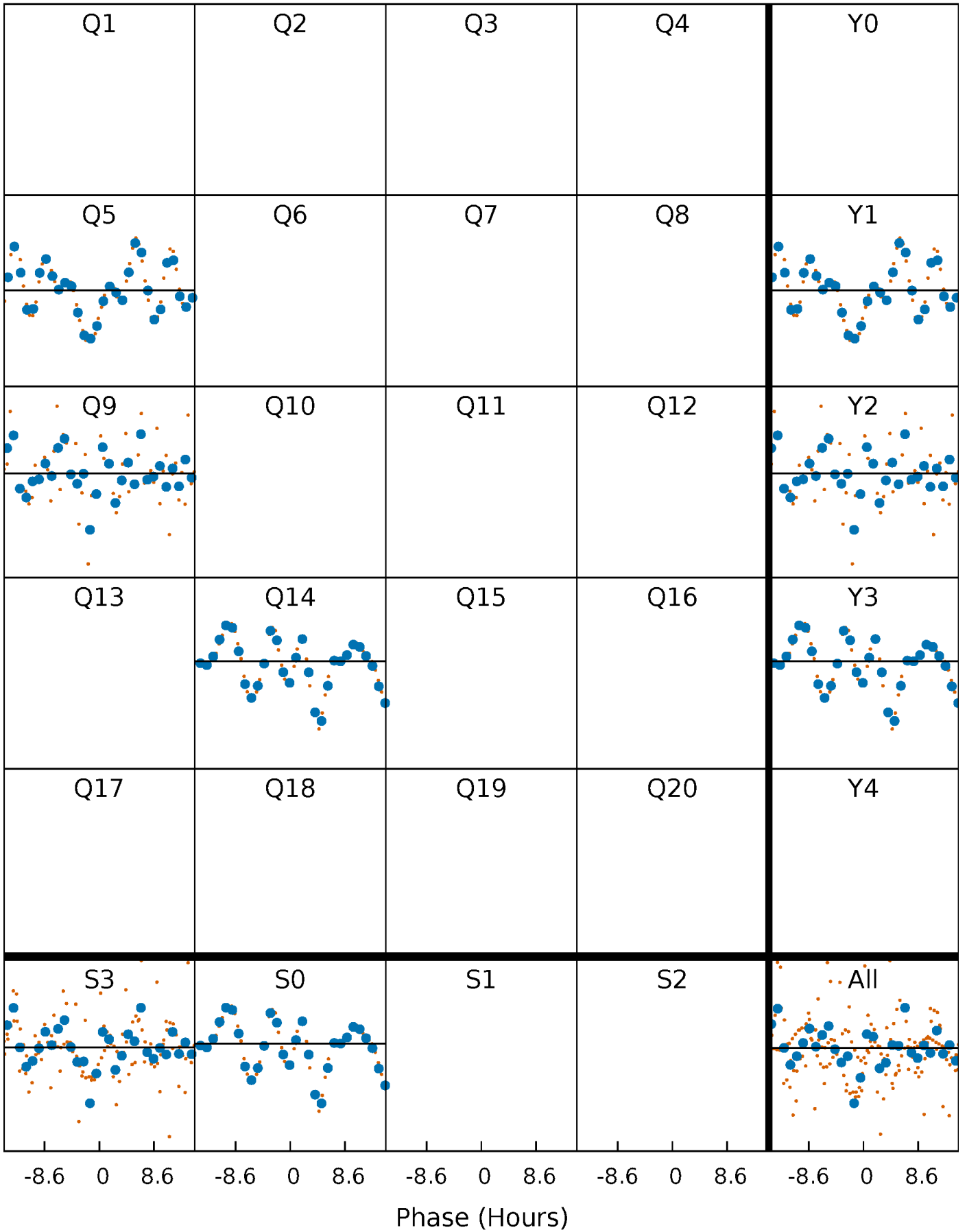
# PDC Quarter-Phased Transit Curves

TCE 011229003-02   P=415.482387 Days    $T_0=451.241718$  (BKJD)



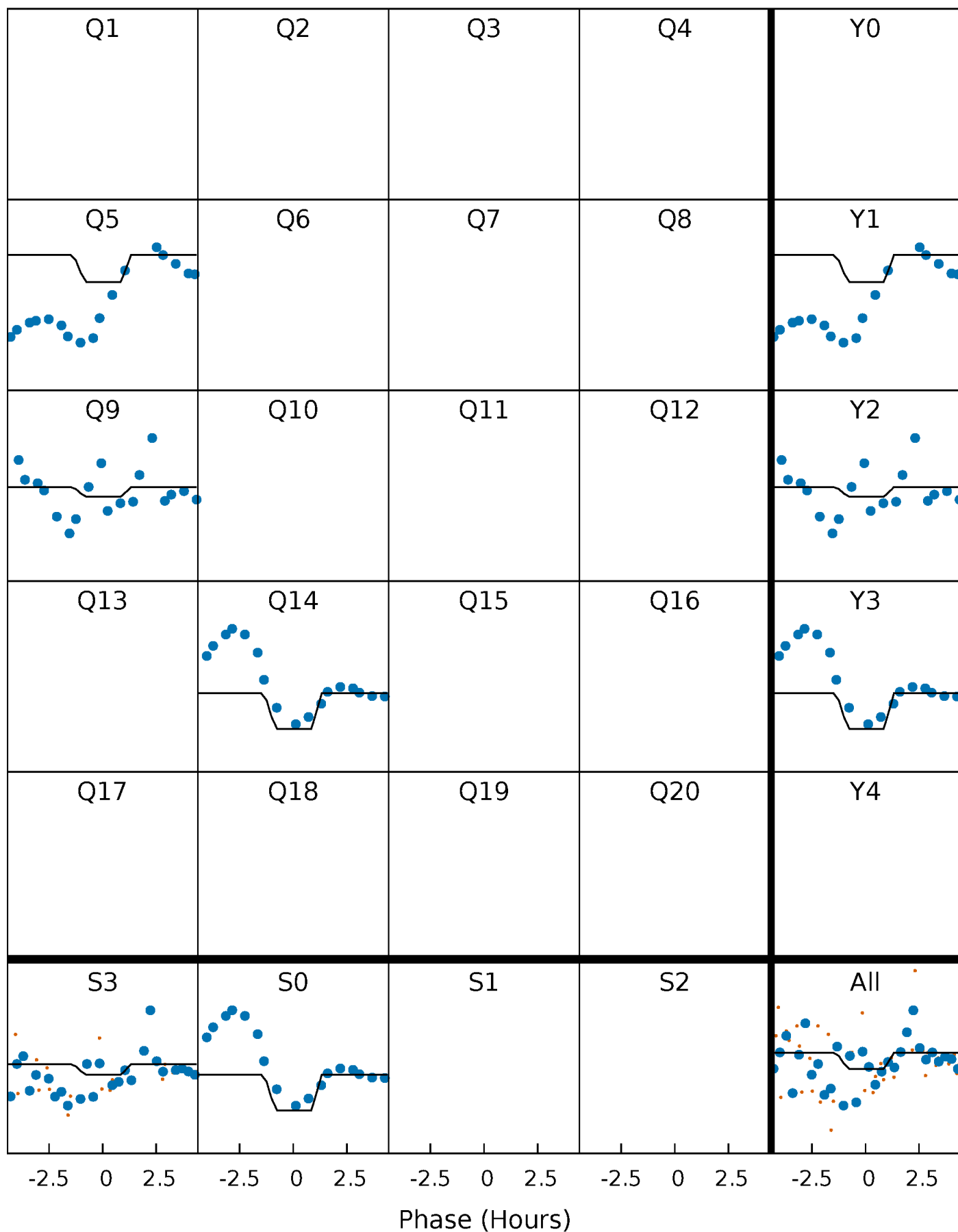
# DV Quarter-Phased Transit Curves

TCE 011229003-02 P=415.482387 Days  $T_0=451.241718$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

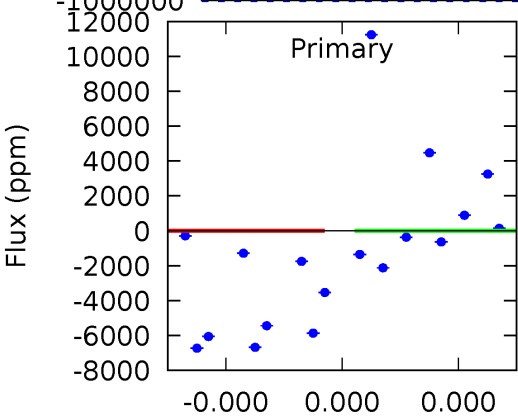
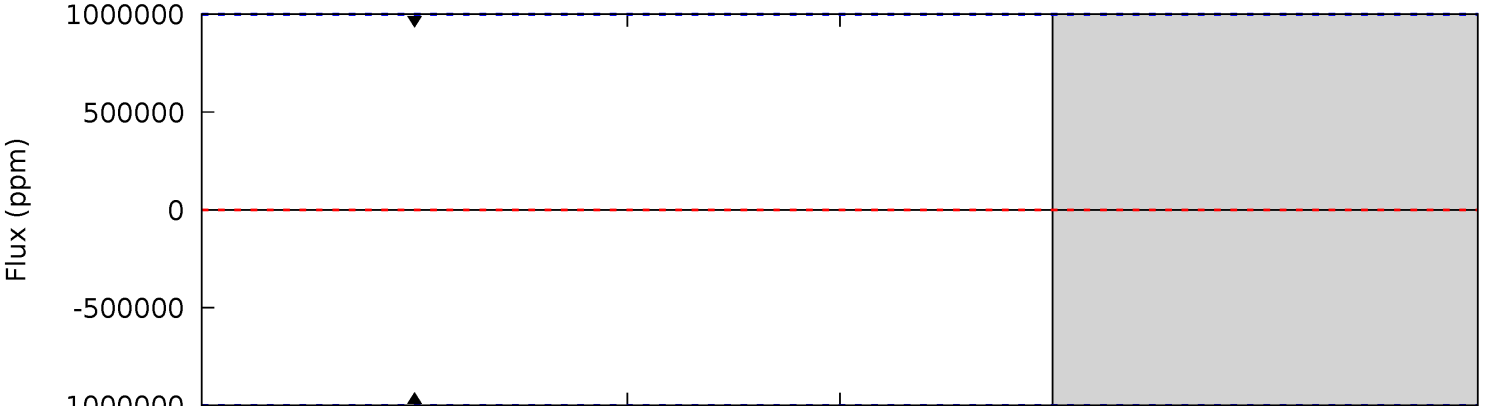
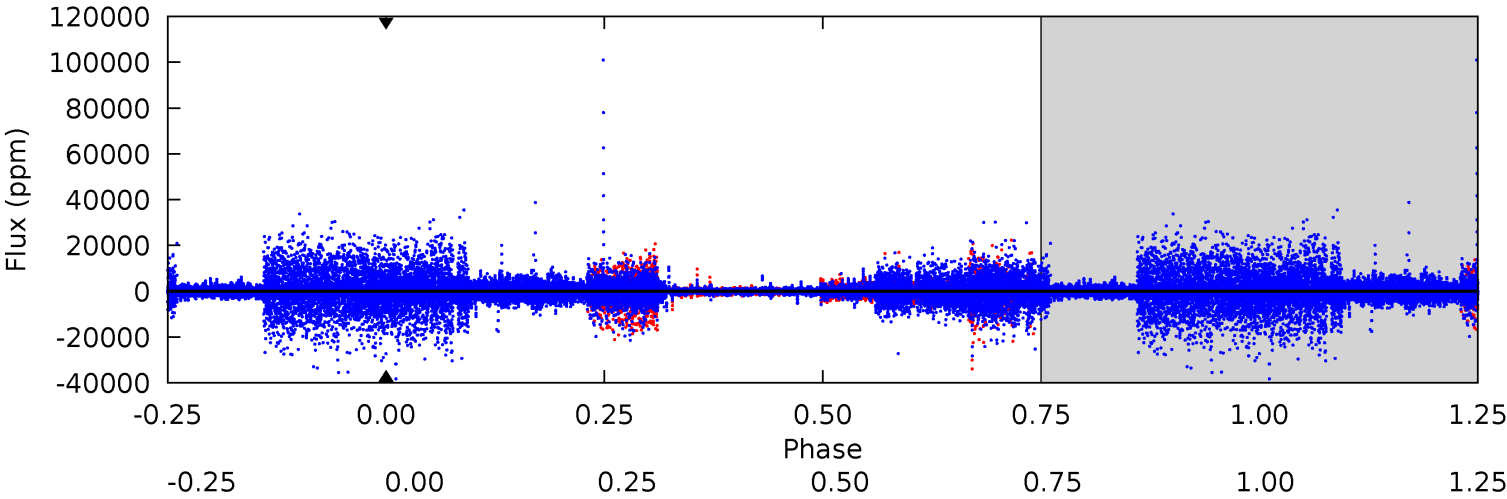
TCE 011229003-02 P=415.482387 Days  $T_0=451.420717$  (BKJD)



# DV Model-Shift Uniqueness Test

011229003-02, P = 415.482387 Days, E = 35.759331 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

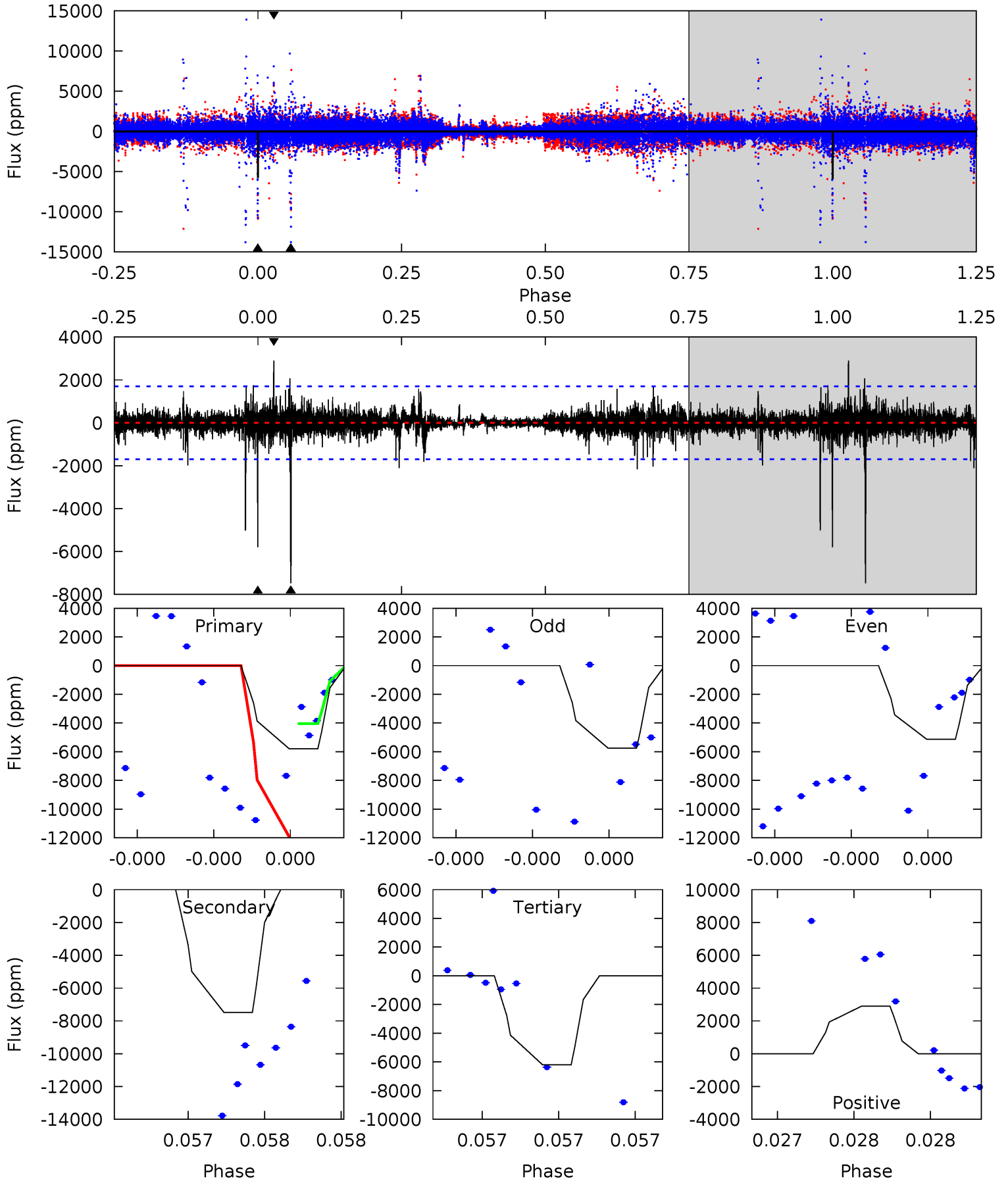




# Alt Model-Shift Uniqueness Test

011229003-02, P = 415.482387 Days, E = 35.938330 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
19.5	25.1	20.8	9.72	5.70	3.68	0.98	-1.36	9.75	4.27	15.4	0.04	1.66	0.28	11.5



### Stellar Parameters For KIC 011229003

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3266^{+117}_{-78}$	$0.095^{+0.208}_{-0.065}$	$-0.080^{+0.250}_{-0.100}$	$155.187^{+9.192}_{-27.576}$	$1.095^{+0.206}_{-0.120}$	$0.000^{+0.000}_{-0.000}$
	+4%/-2%	+219%/-68%	+312%/-125%	+6%/-18%	+19%/-11%	+85%/-15%
Source	KIC0	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 011229003-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$1185.93^{+1322.08}_{-862.50}$	$2344^{+97}_{-121}$	$2609^{+4239}_{-9201}$	$0.790^{+104.174}_{-89.165}$
Alt.	$-7476 \pm 298$	$1521.97^{+1414.52}_{-996.38}$	$2332^{+101}_{-127}$	$3110^{+1519}_{-663}$	$2.278^{+17.307}_{-1.682}$

$T_{max}$  = 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

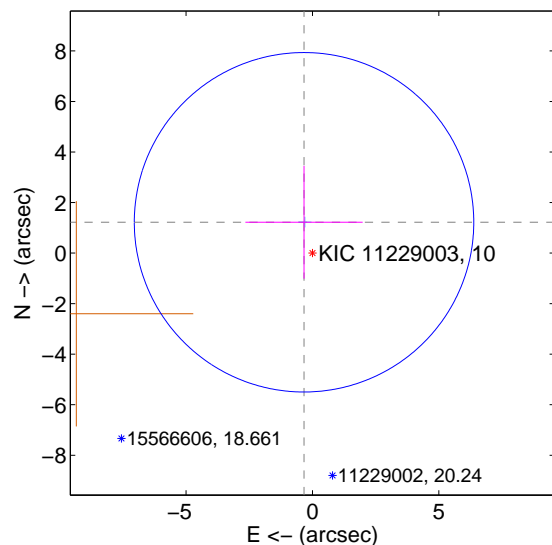
Supplemental centroid analysis for 011229003-02. **Kepler magnitude: 10.00.** Transit SNR -1.00

**There are 1 quarters with good PRF difference image offsets**

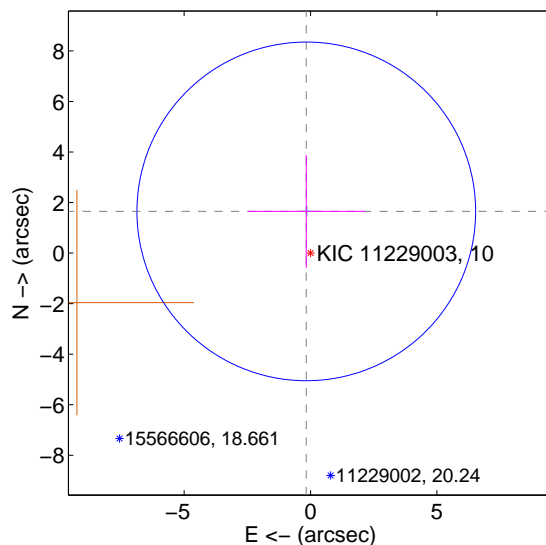
The direct PRF centroid is offset from the target star catalog position by about 0.45 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.264 \pm 2.239$	0.56	$0.333 \pm 2.320$	$1.220 \pm 2.233$
PRF-fit source offset from KIC position	$1.659 \pm 2.234$	0.74	$0.168 \pm 2.320$	$1.650 \pm 2.233$
photometric centroid source offset	$0.52 \pm 0.18$	2.82	$-0.20 \pm 0.20$	$0.48 \pm 0.18$

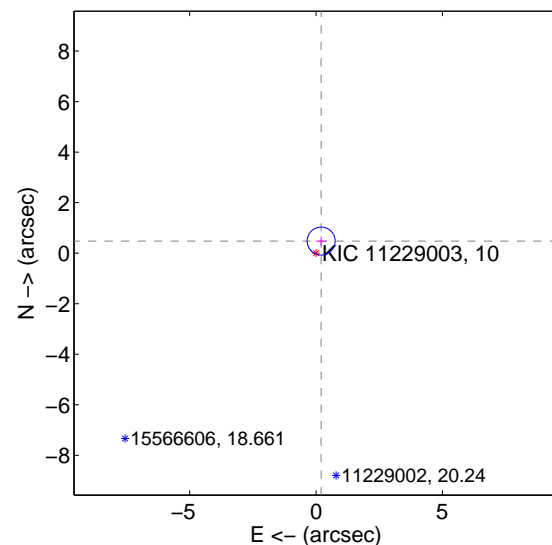
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

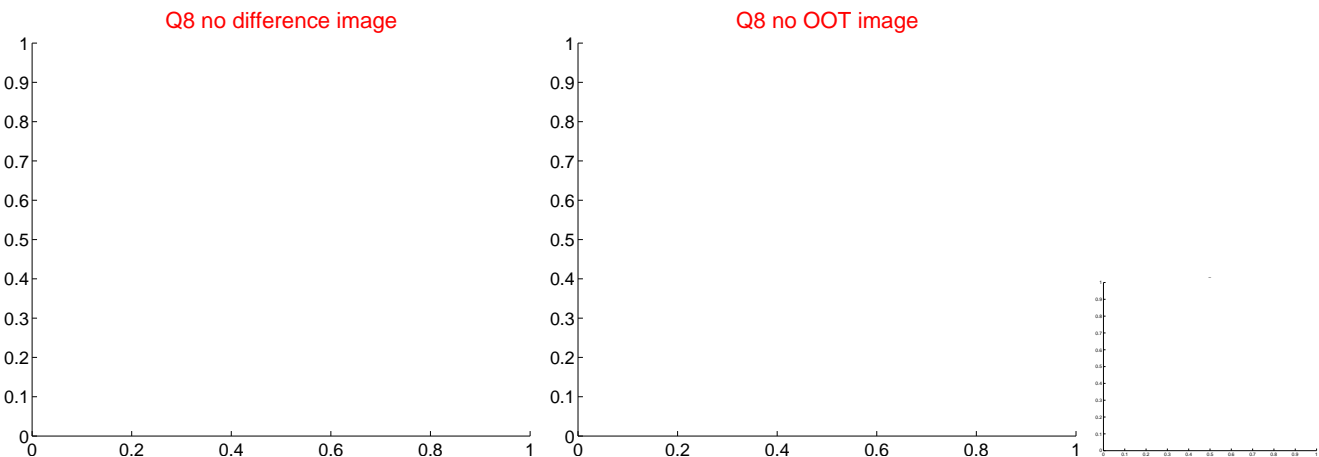
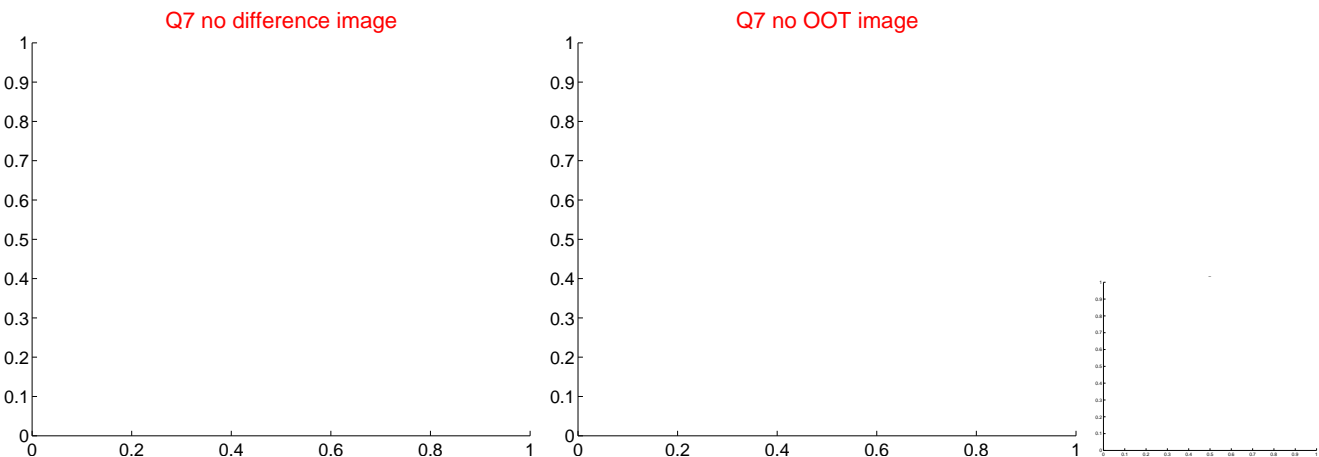
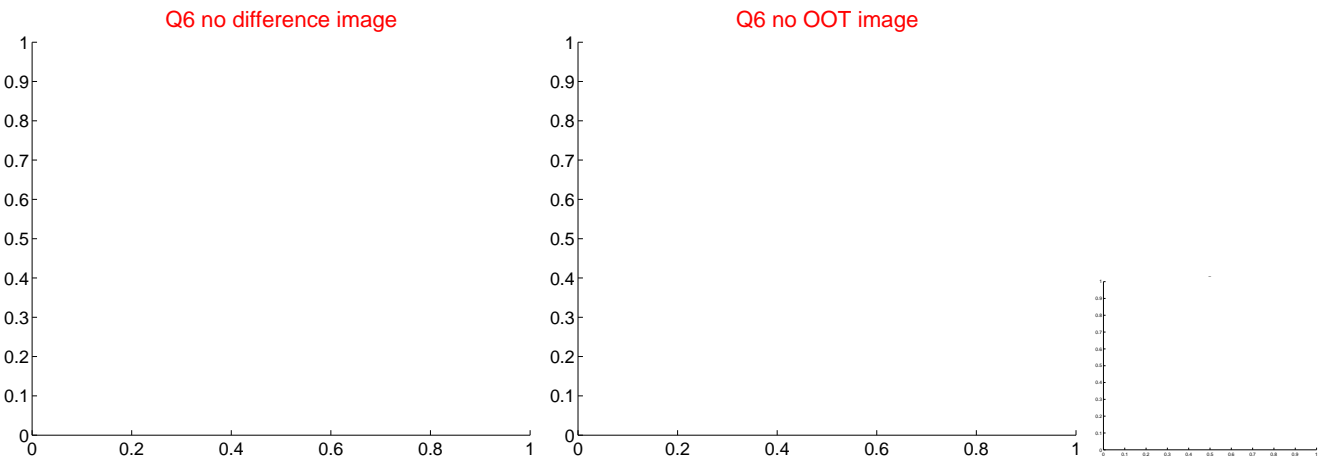
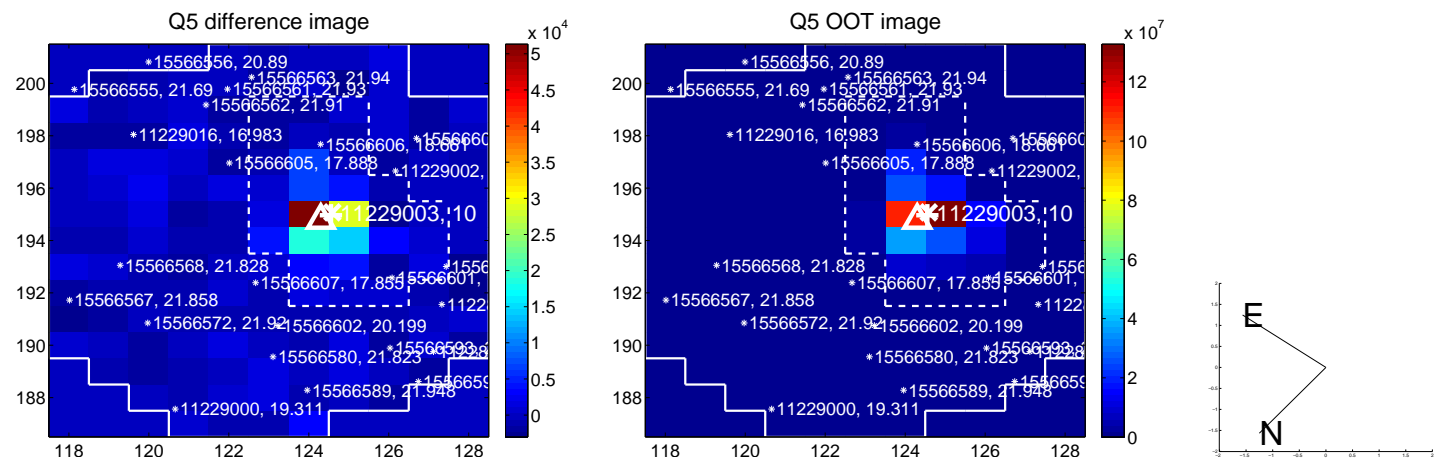


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

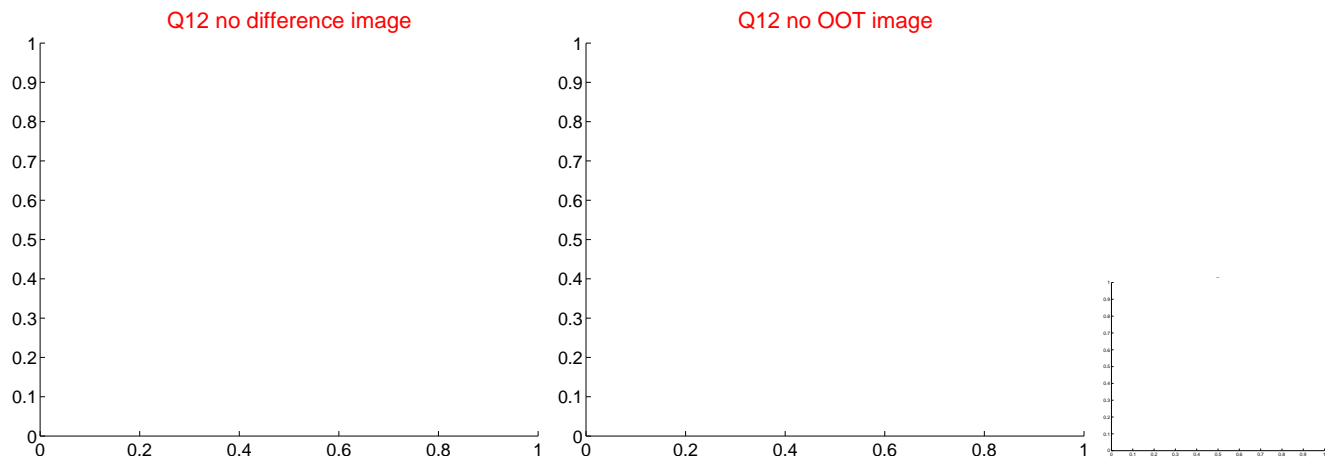
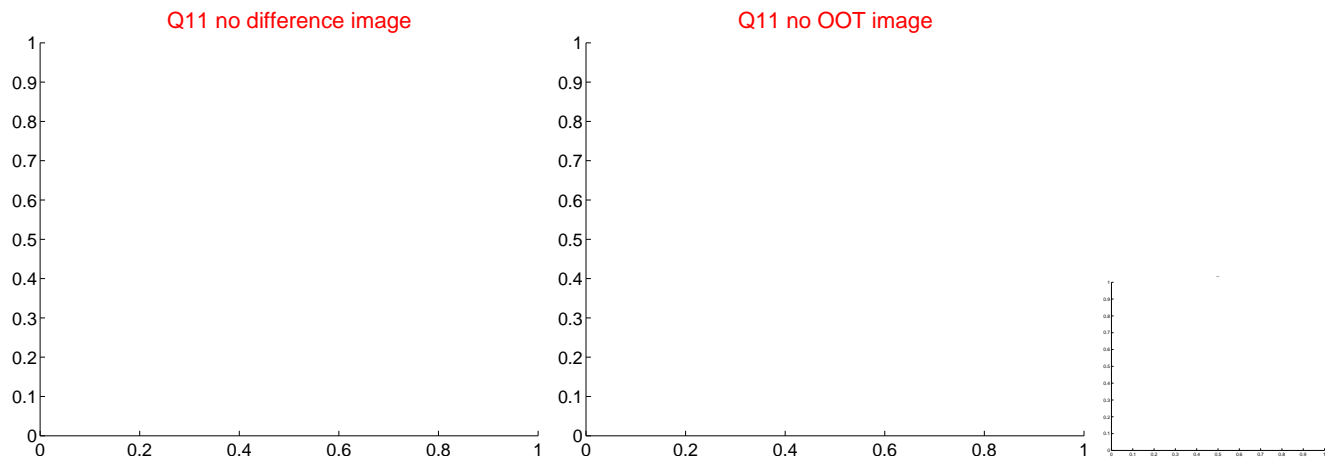
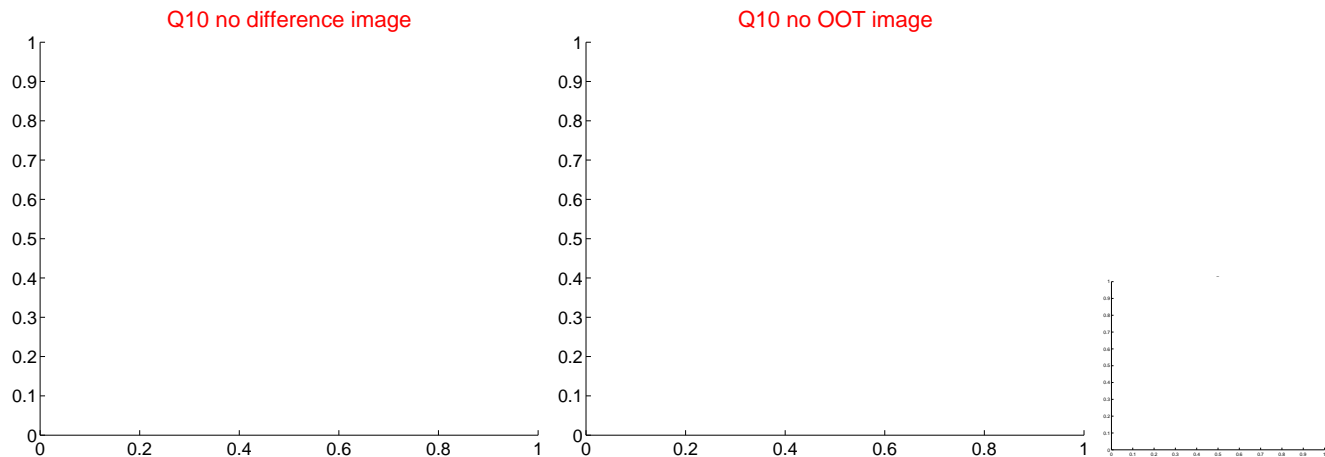
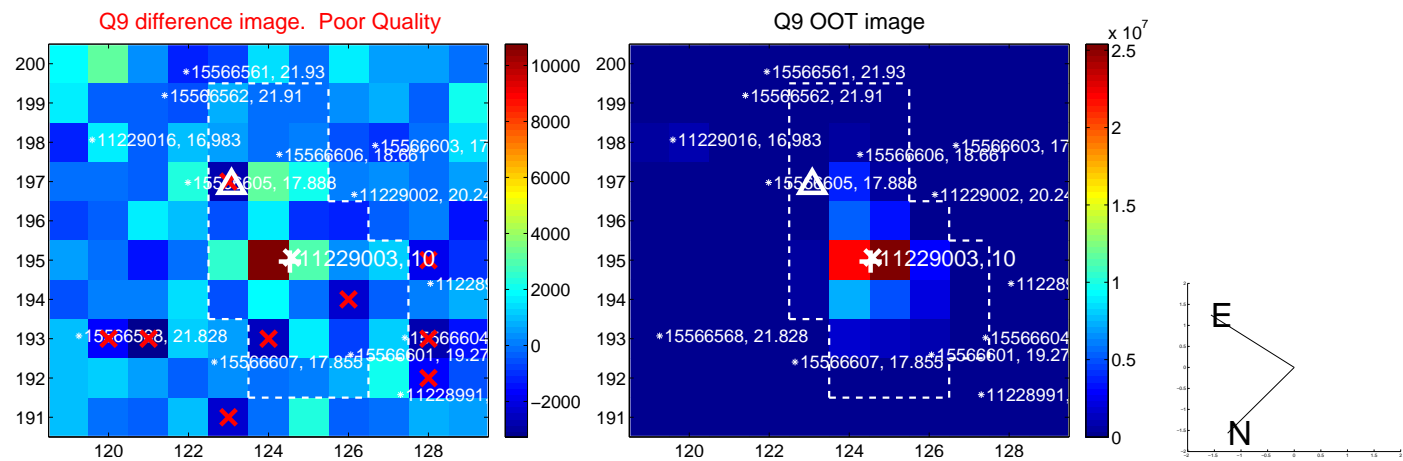
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



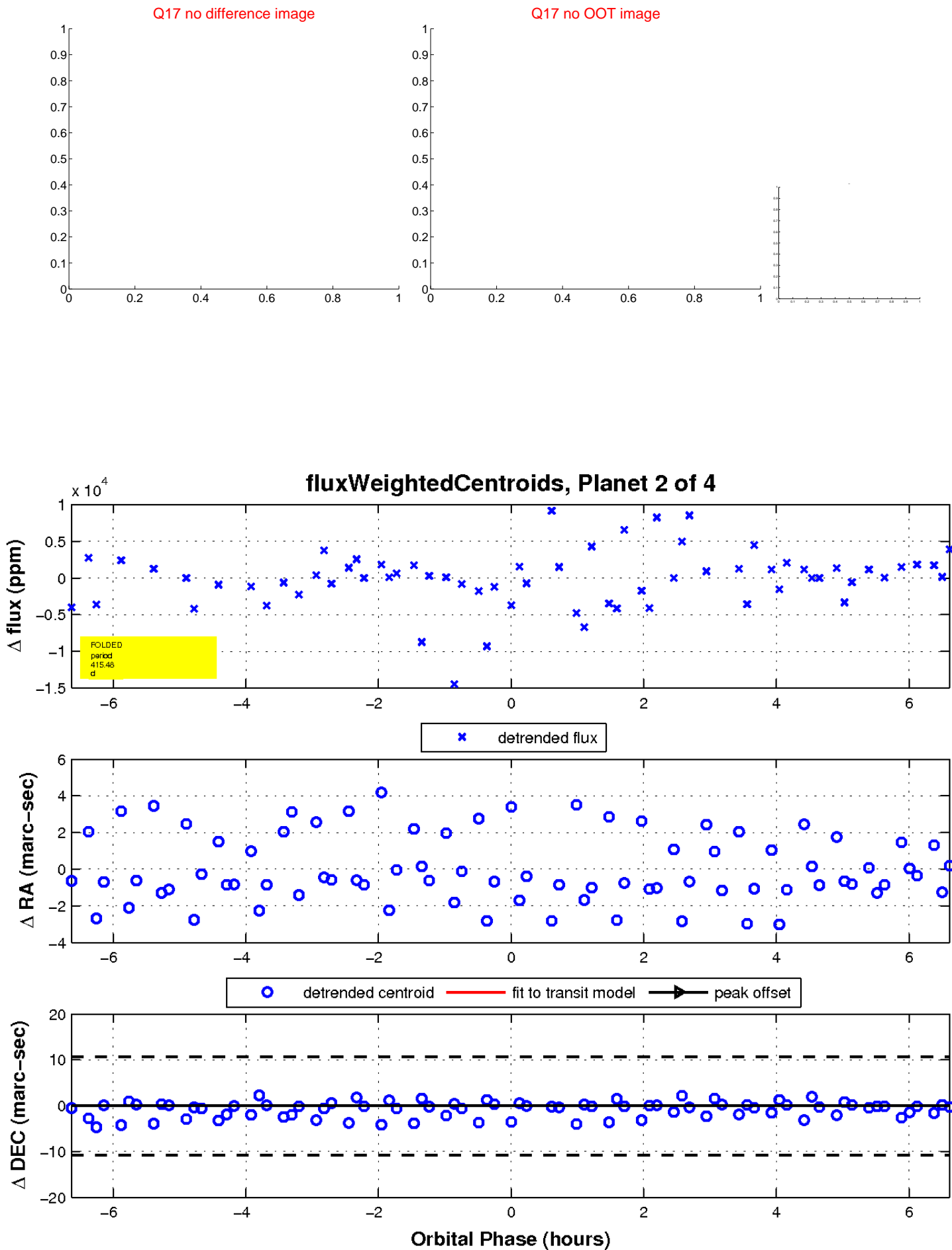
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



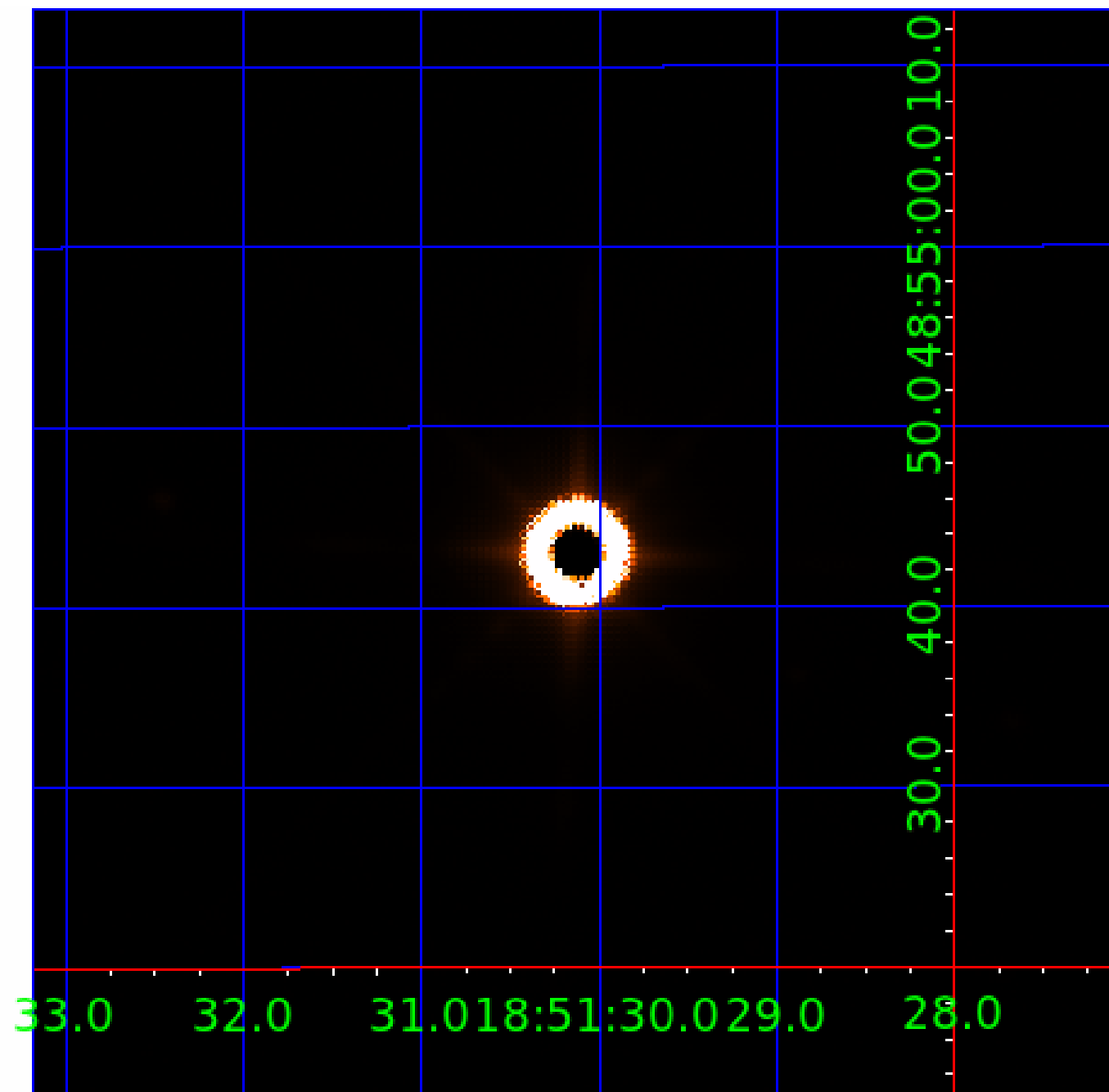
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 011229003

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011229003-01	OBS	No	272.110527	355.550285	828.8	17.559	13.1	8.5	155.19	3266	629.77	3424.01
011229003-02	OBS	No	415.482387	451.241718	241.5	7.500	19.1	-1.0	155.19	3266	221.39	1947.42
011229003-03	OBS	No	330.381369	461.501989	337.2	8.596	18.6	2.4	155.19	3266	340.33	2643.47
011229003-04	OBS	No	110.491945	188.944851	578.8	1.663	11.5	10.9	155.19	3266	413.89	0.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011229003-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED
011229003-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011229003-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011229003-04	OBS	FP	0.00	1	0	0	0	MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

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

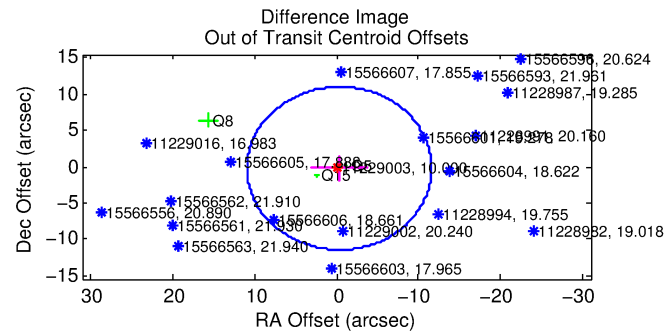
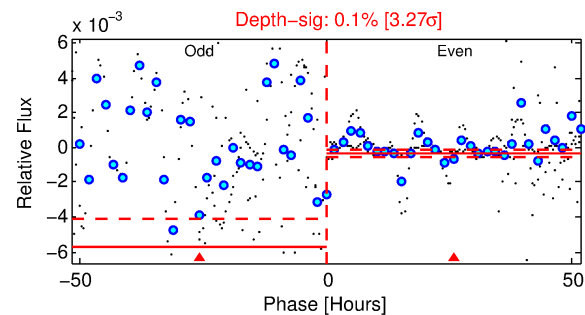
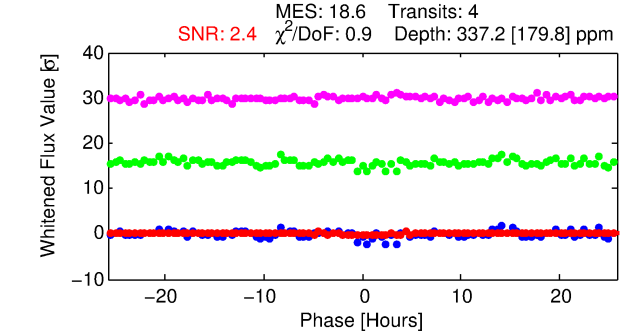
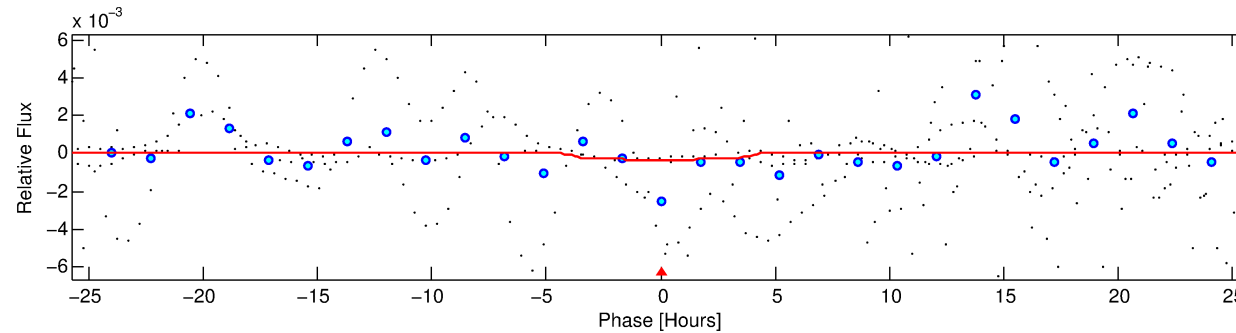
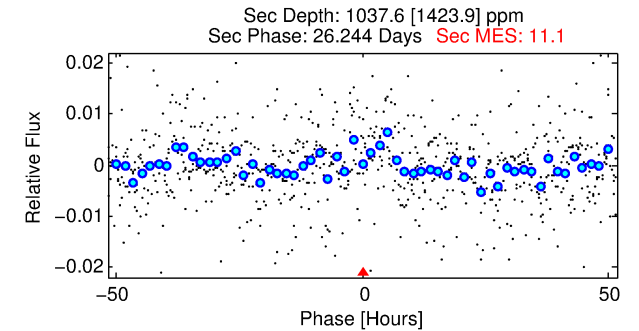
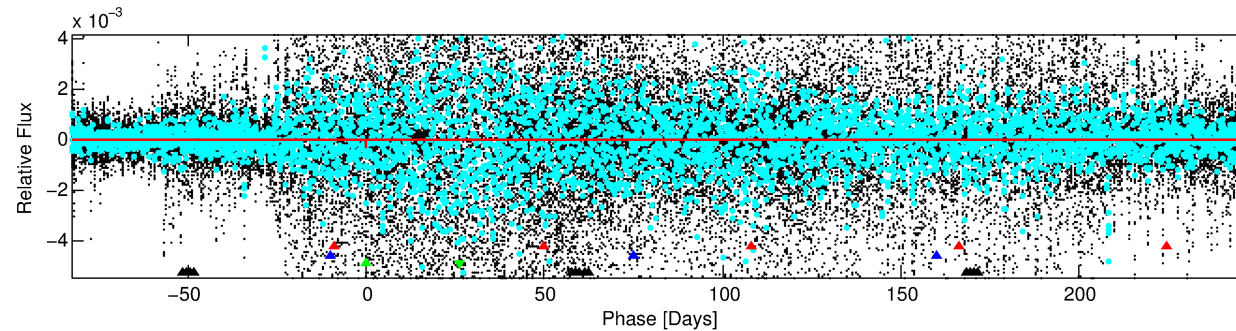
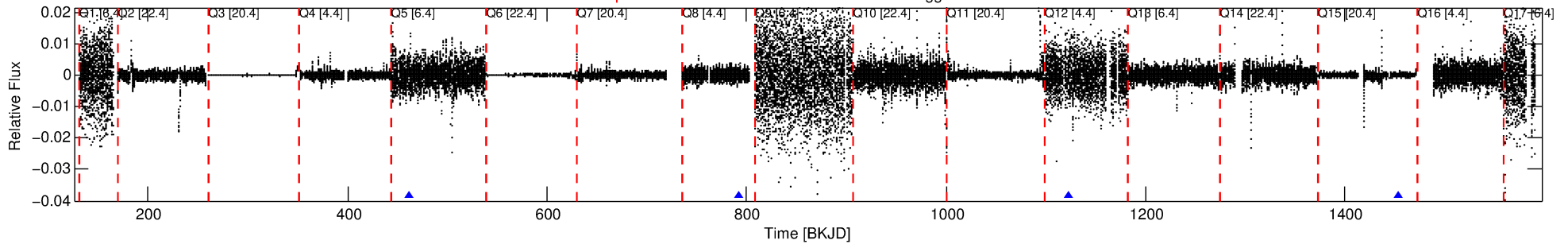
## Ephemeris Match Information For 011229003-03

No Significant Match Found

# DV One-Page Summary

KIC: 11229003 Candidate: 3 of 4 Period: 330.381 d

Kp: 10.00 R\*: 155.19 Rs Teff: 3266.0 K Logg: 0.10 Fe/H: -0.080



## DV Fit Results:

Period = 330.38137 [0.00637] d  
Epoch = 461.5020 [0.0189] BKJD  
Rp/R\* = 0.0201 [0.0108]  
a/R\* = 169.05 [178.57]  
b = 0.84 [0.36]  
Seff = 2643.48 [976.71]  
Teq = 1828 [169] K  
Rp = 340.33 [192.21] Re  
a = 0.9637 [0.1916] AU  
Ag = 4.58 [8.12] [0.44σ]  
Teffp = 4135 [1806] K [1.27σ]

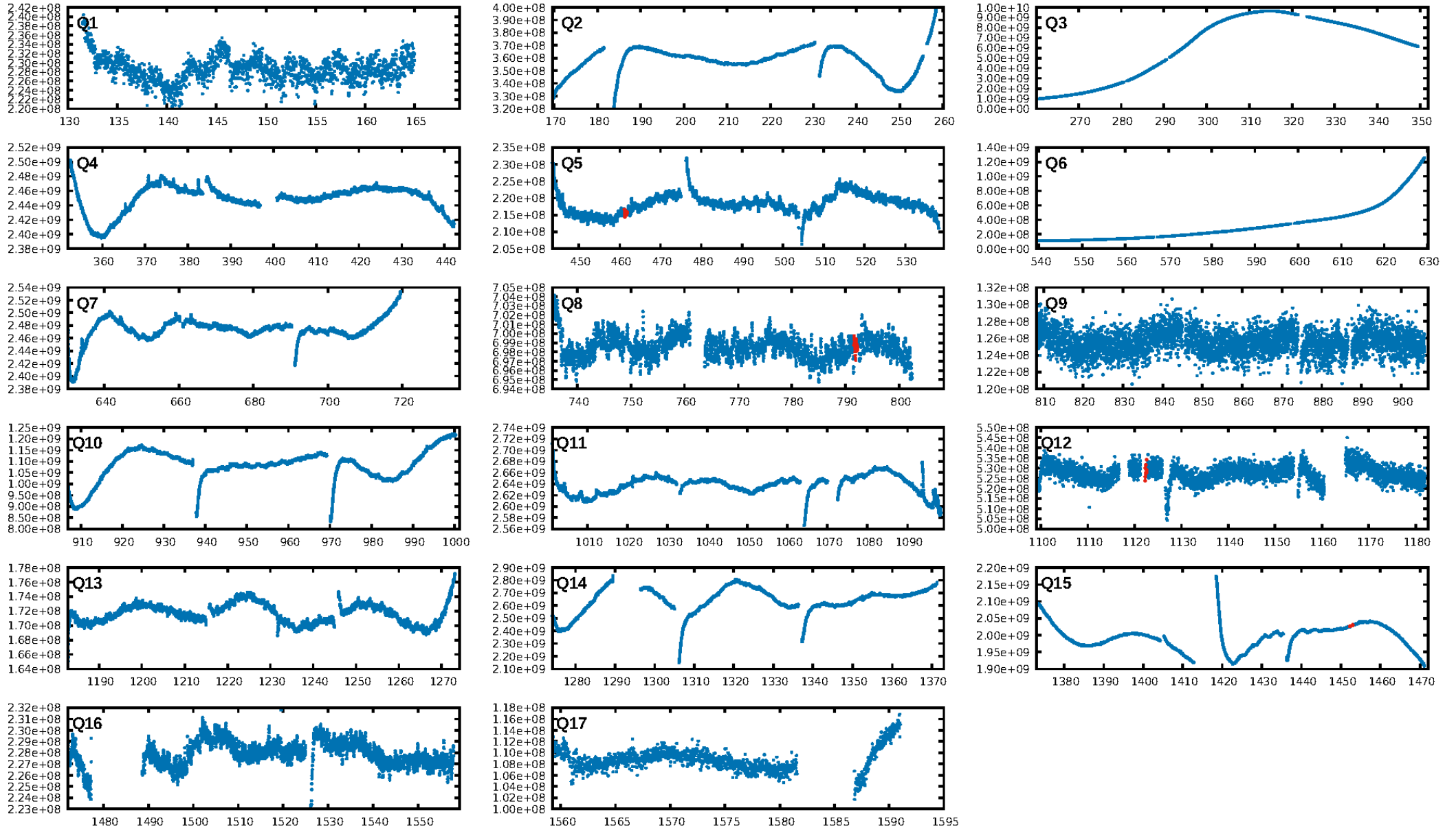
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [71.53σ]  
LongPeriod-sig: 100.0% [179.03σ]  
ModelChiSquare2-sig: 52.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.80e-16  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: 0.805 arcsec [0.42σ]  
OotOffset-rm: 0.399 arcsec [0.11σ]  
KicOffset-rm: 0.548 arcsec [0.15σ]  
OotOffset-st: 0/1/1/1 [3]  
KicOffset-st: 0/1/1/1 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [3/3]

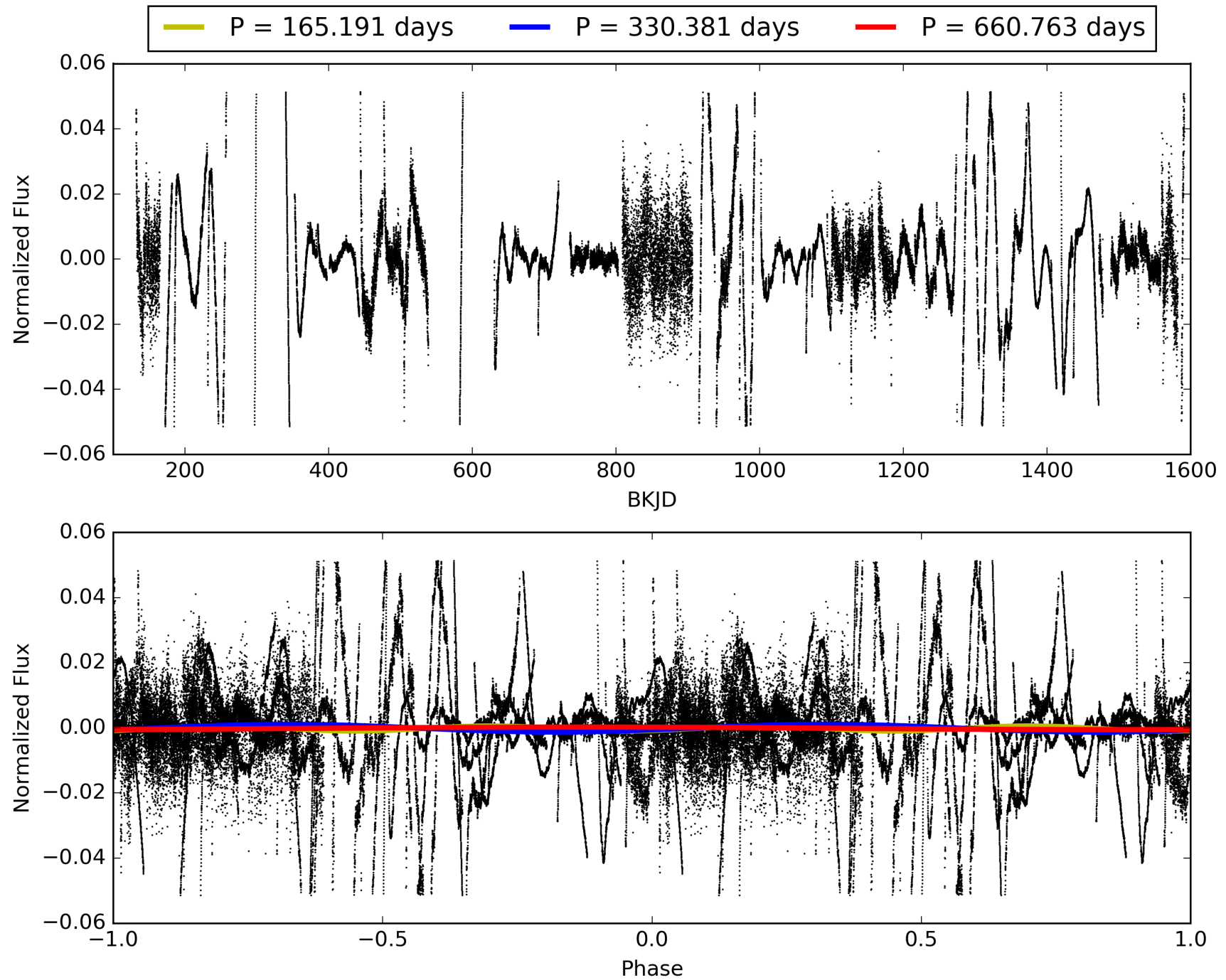
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:59:13 Z

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

# TCE 011229003-03, PDC Light Curves

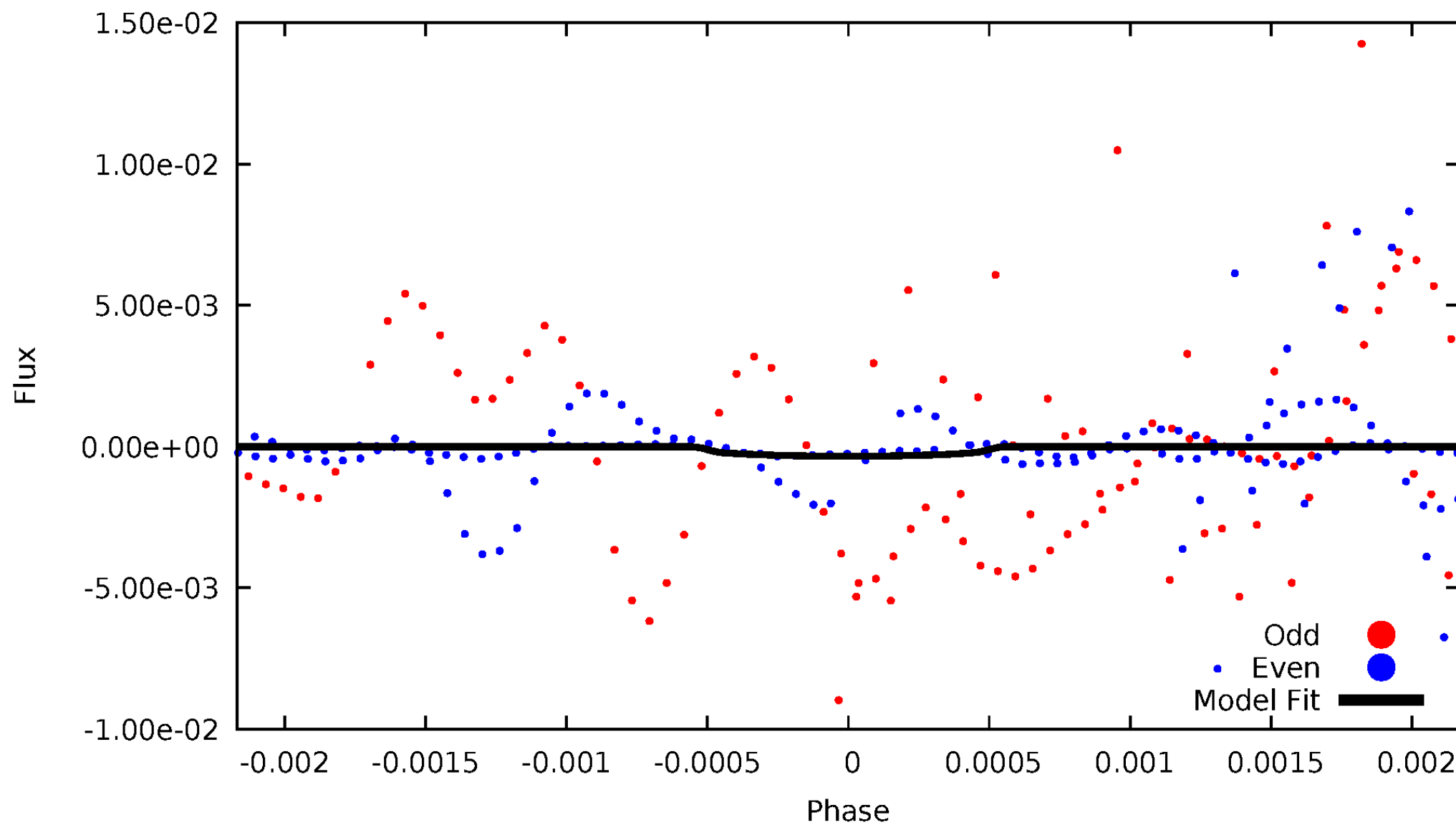


# TCE 011229003-03



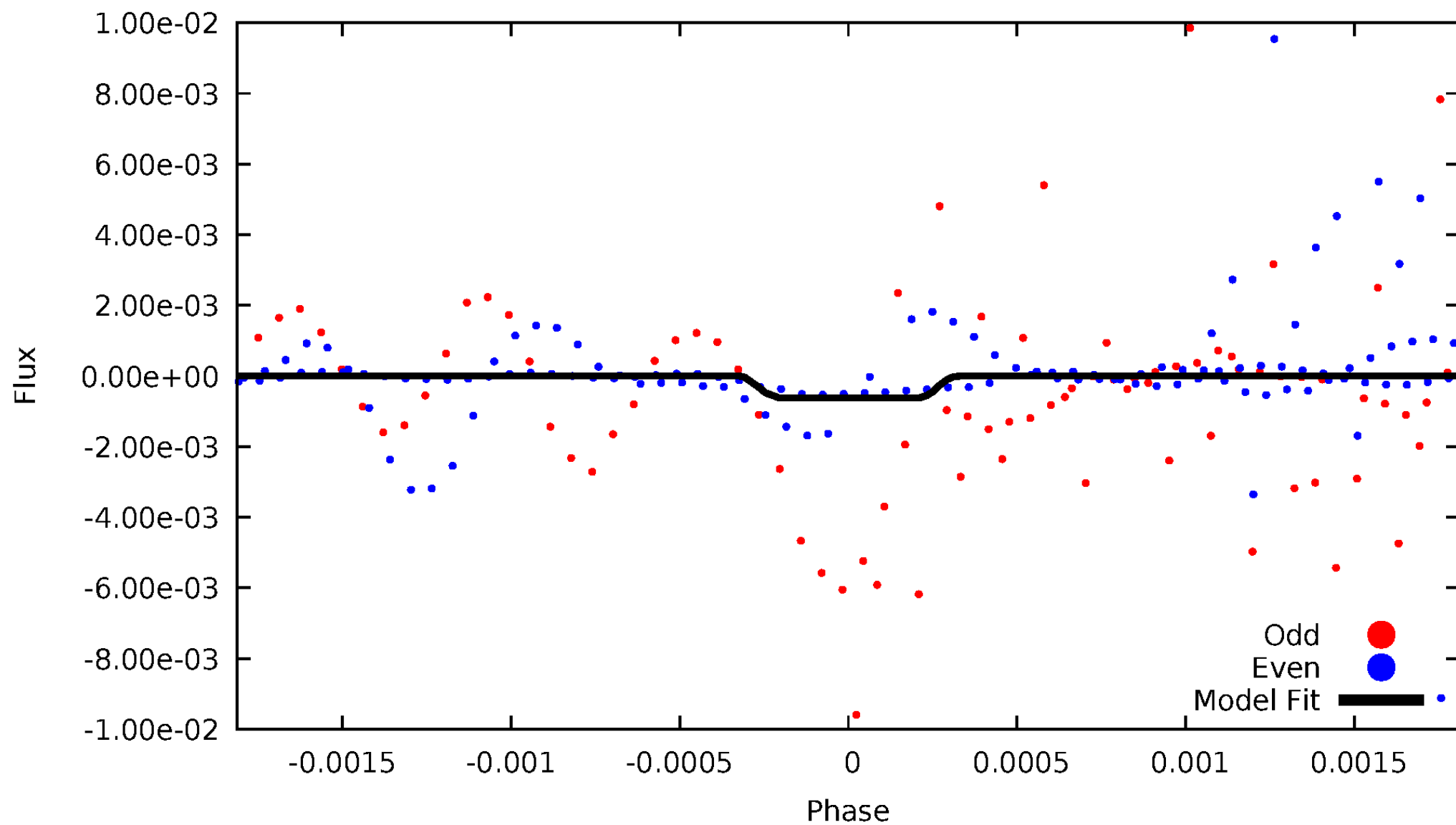
# DV Odd/Even

TCE 011229003-03



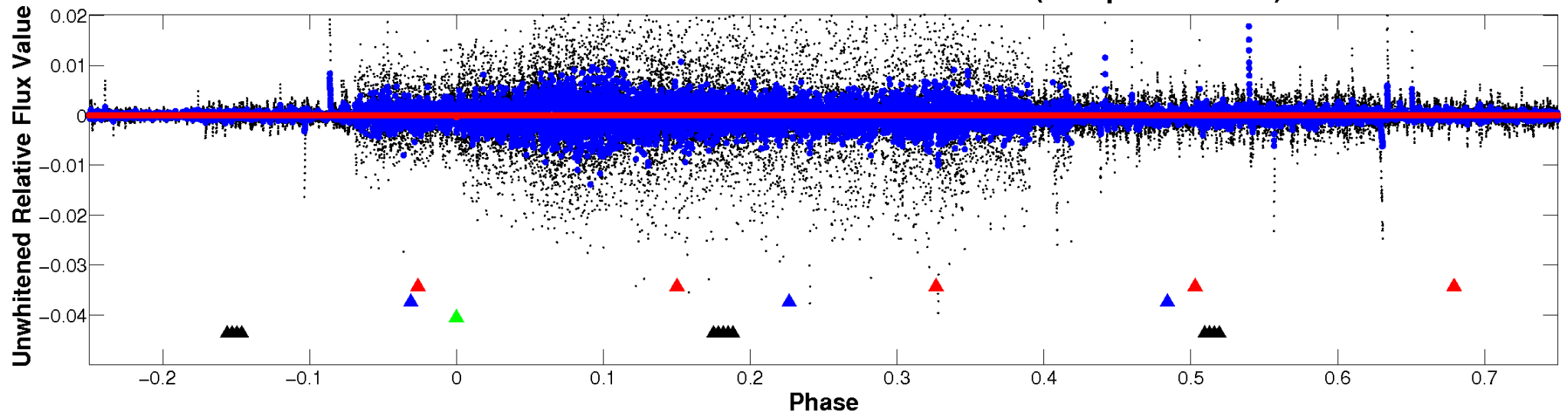
# ALT Odd/Even

TCE 011229003-03

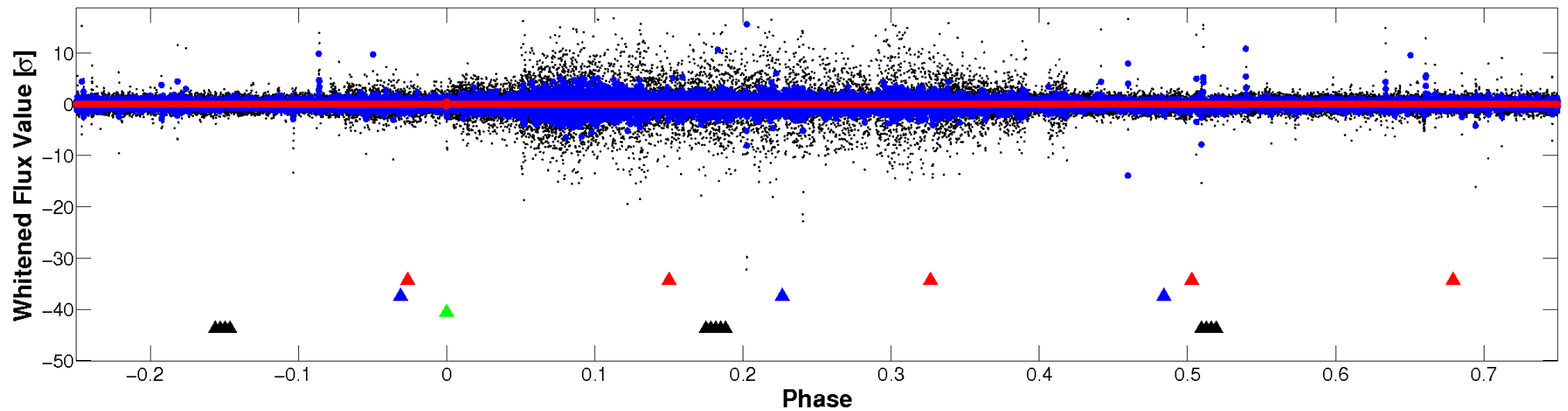


# Non-Whitened Vs. Whitened Light Curve

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



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





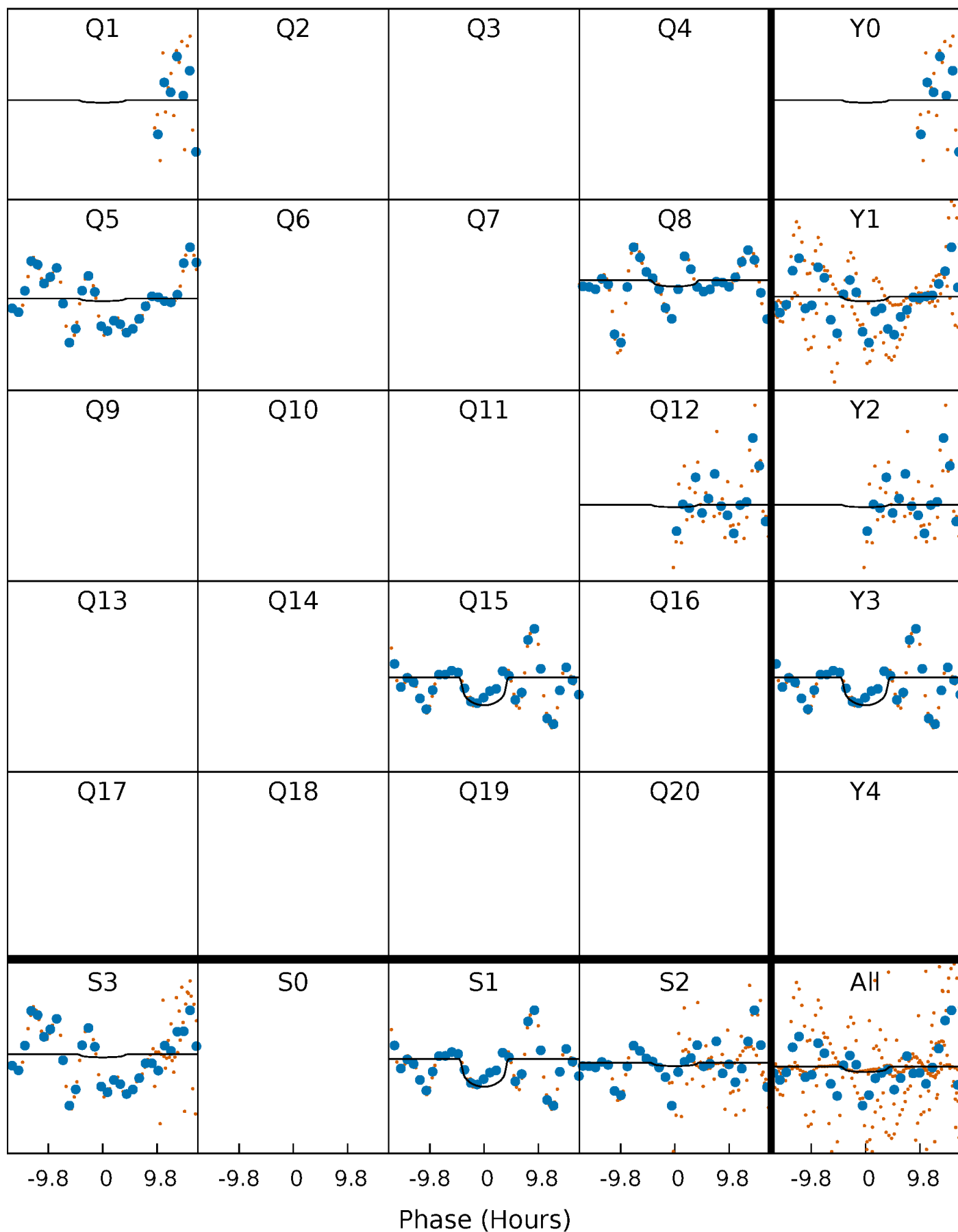
# PDC Quarter-Phased Transit Curves

TCE 011229003-03 P=330.381369 Days  $T_0=461.501989$  (BKJD)



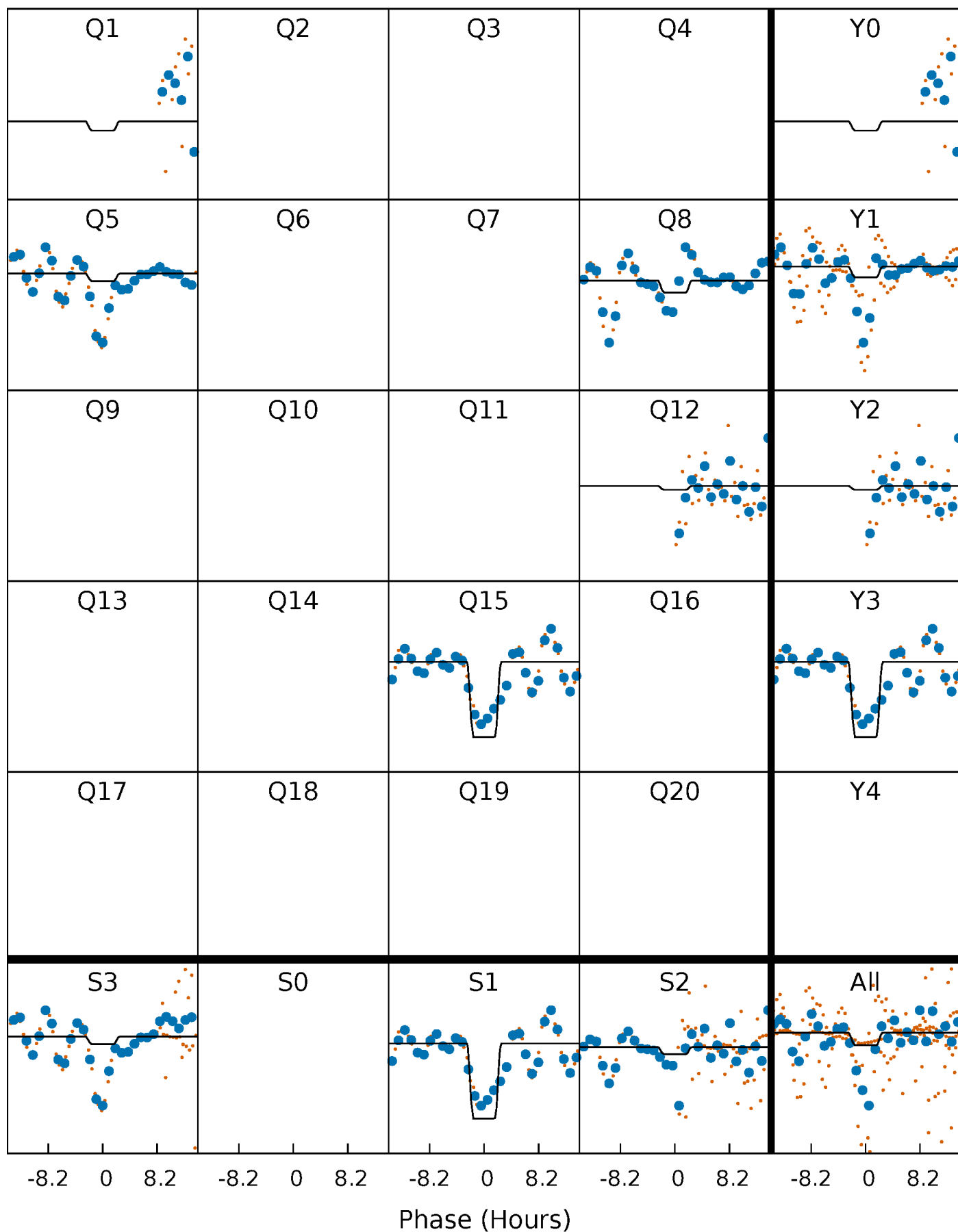
# DV Quarter-Phased Transit Curves

TCE 011229003-03     $P=330.381369$  Days     $T_0=461.501989$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

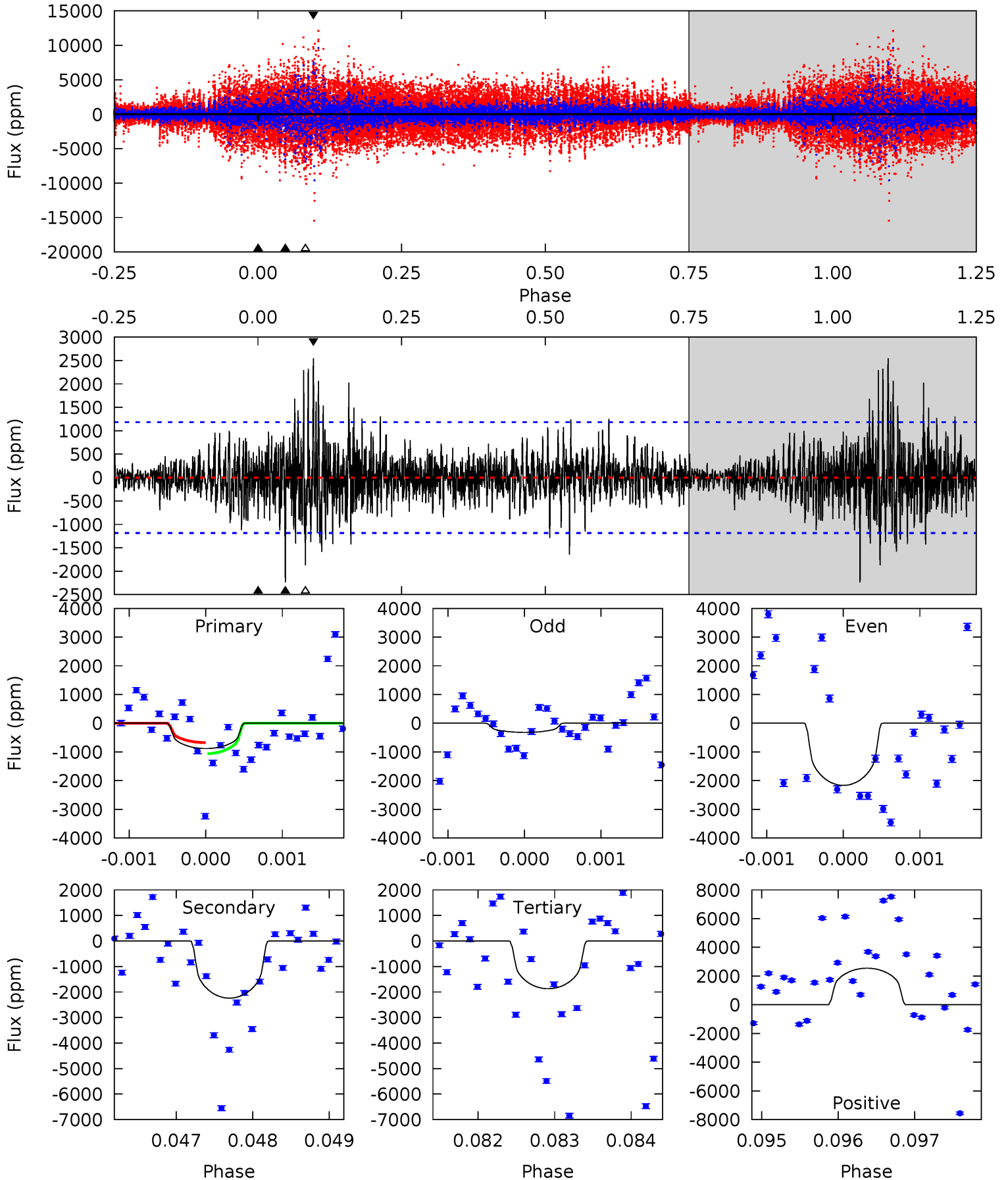
TCE 011229003-03     $P=330.362987$  Days     $T_0=461.519640$  (BKJD)



# DV Model-Shift Uniqueness Test

011229003-03, P = 330.381369 Days, E = 131.120620 Days

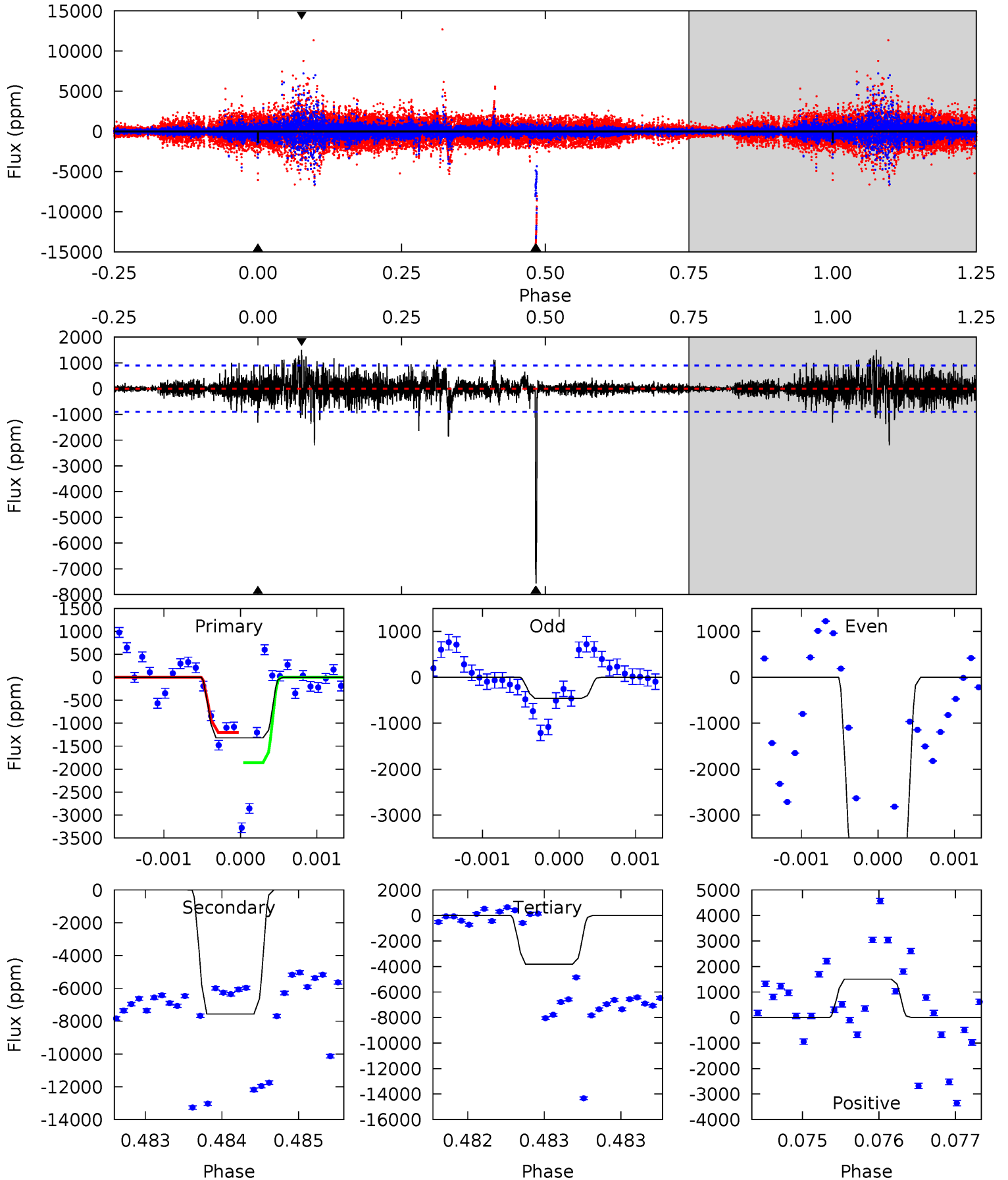
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.05	10.3	8.58	11.7	5.43	3.26	1.69	-4.53	-7.64	1.70	-1.41	3.38	1.01	0.53	0.80



# Alt Model-Shift Uniqueness Test

011229003-03, P = 330.362987 Days, E = 131.156653 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
8.12	46.6	23.5	9.24	5.53	3.42	1.72	-15.4	-1.12	23.1	37.4	0.92	1.00	0.17	1.64



### Stellar Parameters For KIC 011229003

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3266^{+117}_{-78}$	$0.095^{+0.208}_{-0.065}$	$-0.080^{+0.250}_{-0.100}$	$155.187^{+9.192}_{-27.576}$	$1.095^{+0.206}_{-0.120}$	$0.000^{+0.000}_{-0.000}$
	+4%/-2%	+219%/-68%	+312%/-125%	+6%/-18%	+19%/-11%	+85%/-15%
Source	KIC0	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 011229003-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-2242 \pm 218$	$332.13^{+183.31}_{-160.81}$	$2522^{+109}_{-130}$	$4336^{+1386}_{-643}$	$10^{+30}_{-6}$
Alt.	$-7565 \pm 162$	$408.78^{+184.53}_{-169.51}$	$2522^{+123}_{-132}$	$5183^{+1516}_{-791}$	$24^{+47}_{-13}$

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

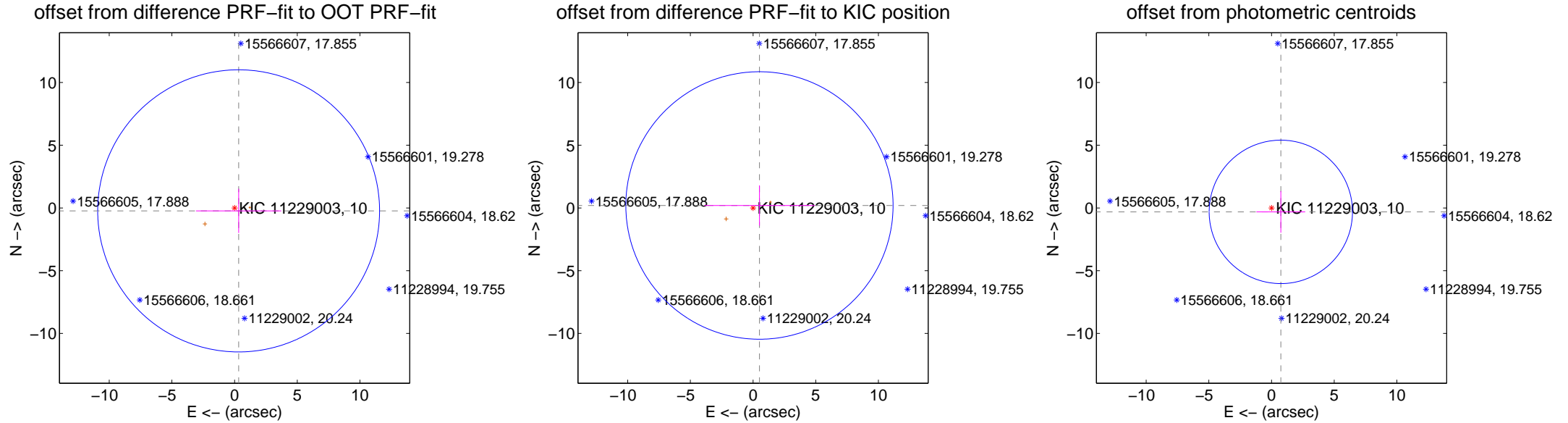
## DV Centroid Data

Supplemental centroid analysis for 011229003-03. **Kepler magnitude: 10.00.** Transit SNR 2.39

**There are 0 quarters with good PRF difference image offsets**

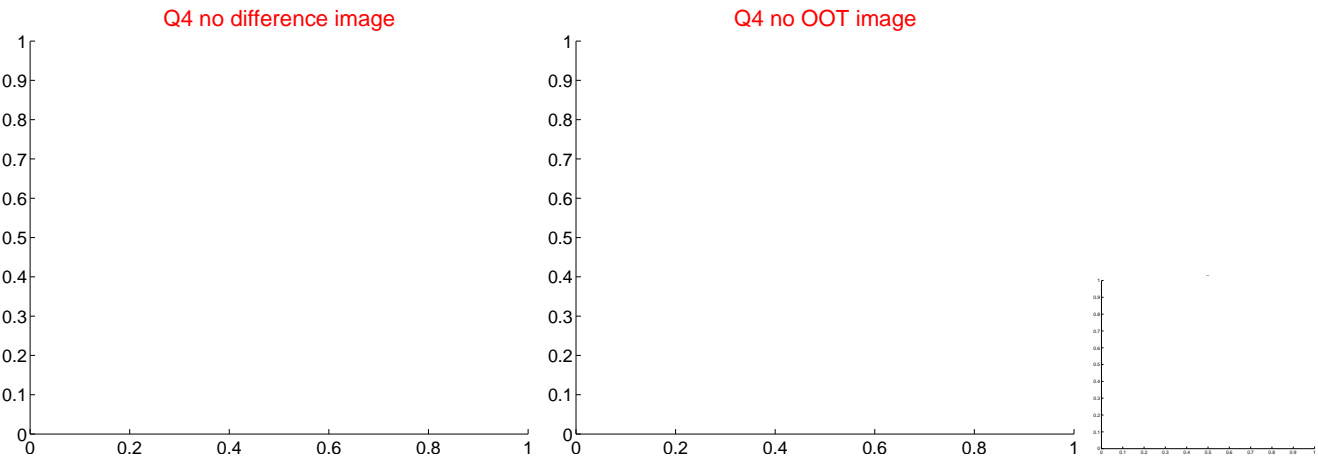
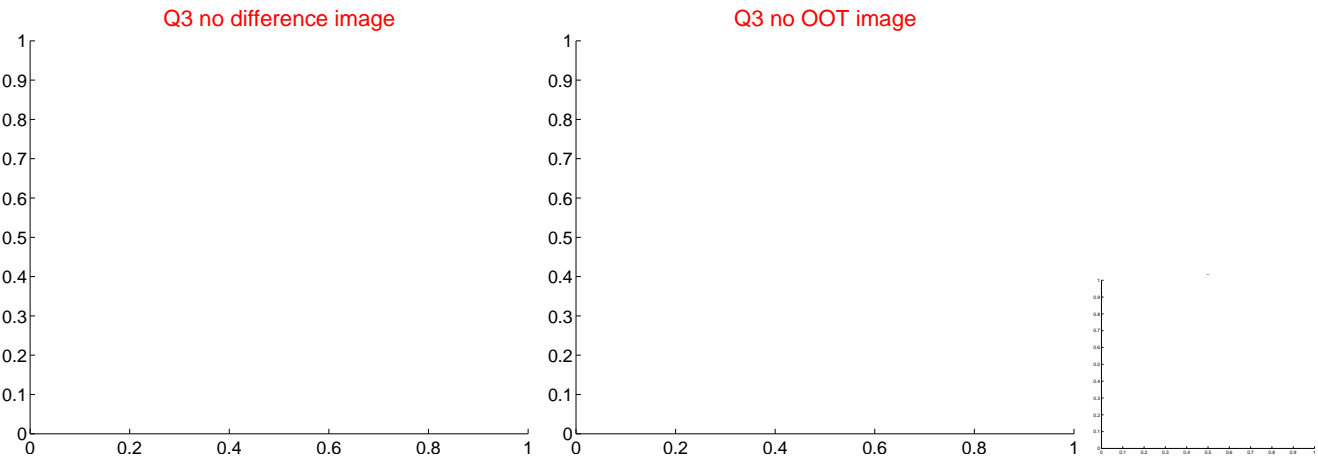
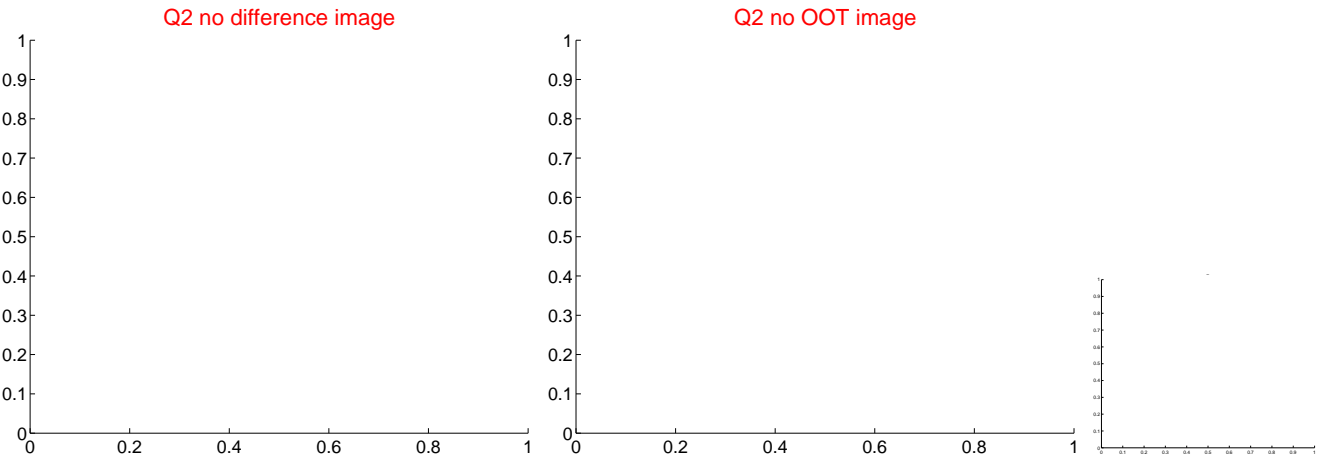
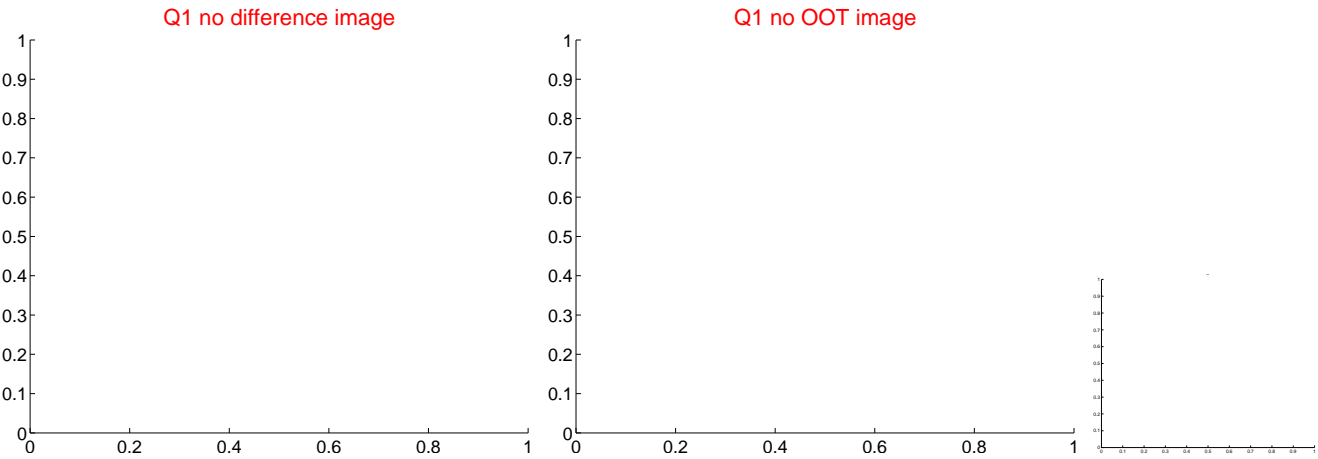
The direct PRF centroid is offset from the target star catalog position by about 0.46 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.399 \pm 3.748$	0.11	$-0.324 \pm 3.403$	$-0.233 \pm 1.764$
PRF-fit source offset from KIC position	$0.548 \pm 3.554$	0.15	$-0.511 \pm 4.409$	$0.198 \pm 1.603$
photometric centroid source offset	$0.81 \pm 1.91$	0.42	$-0.74 \pm 1.95$	$-0.31 \pm 1.66$



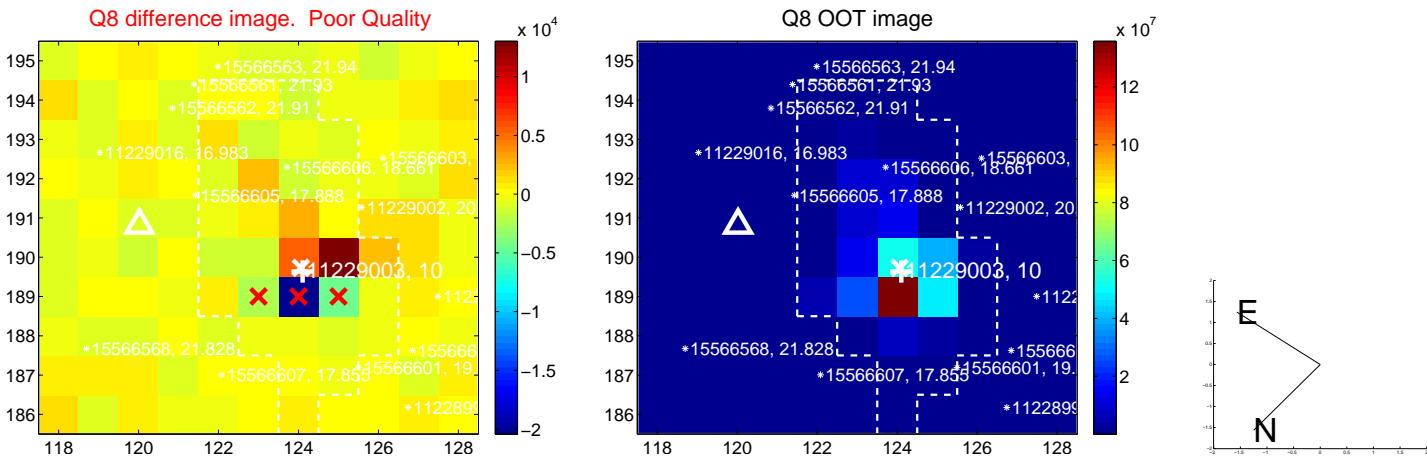
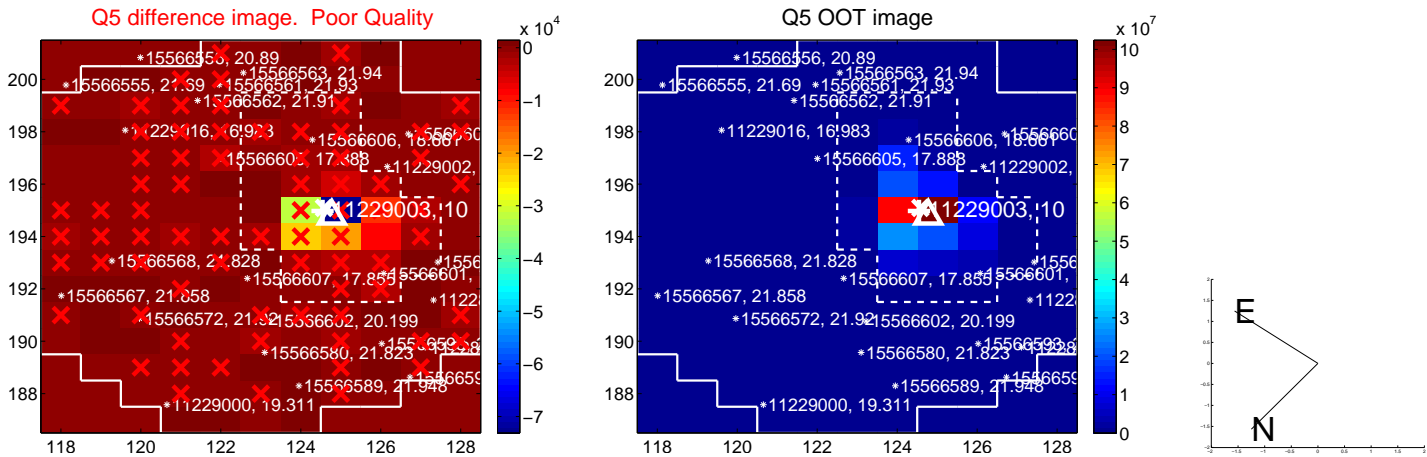
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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





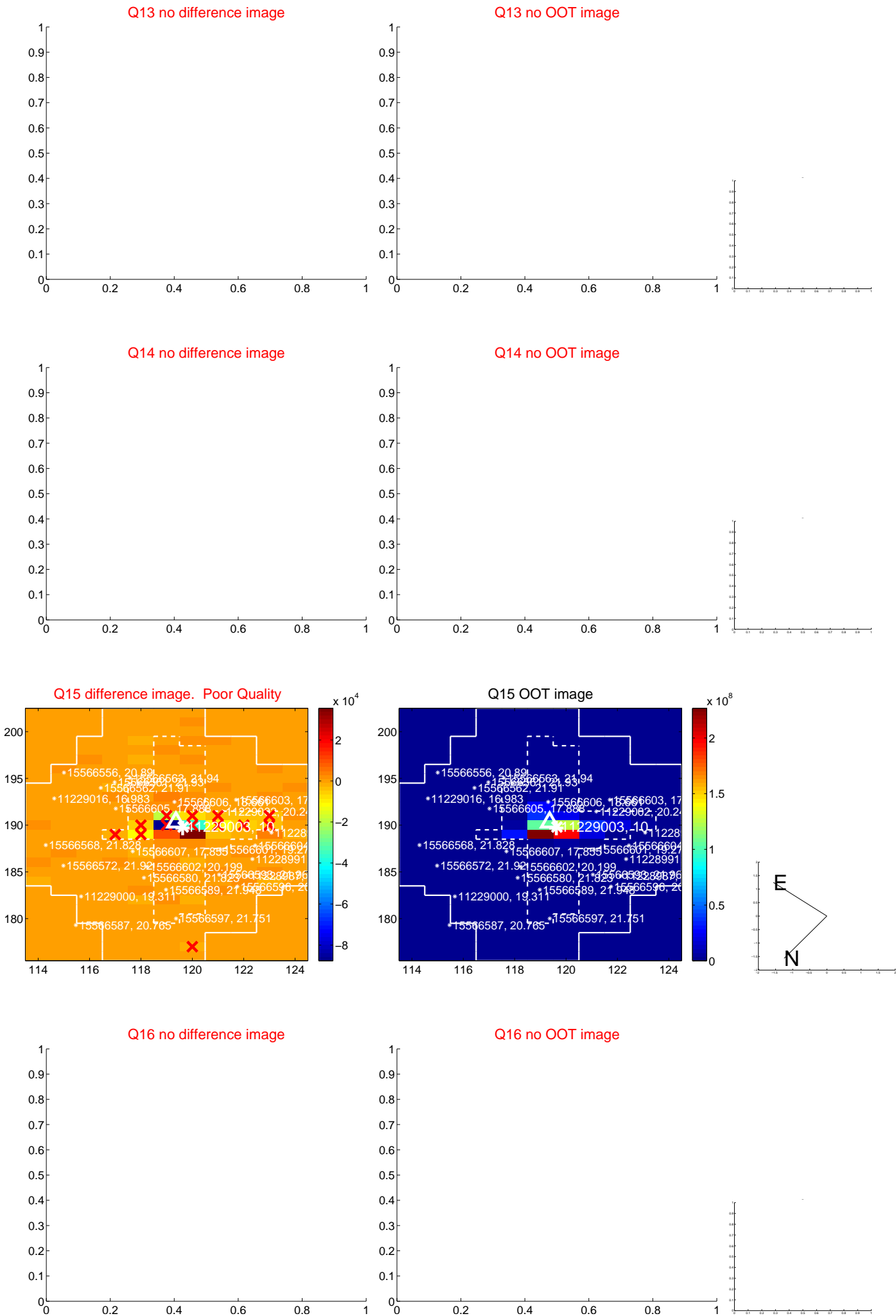
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



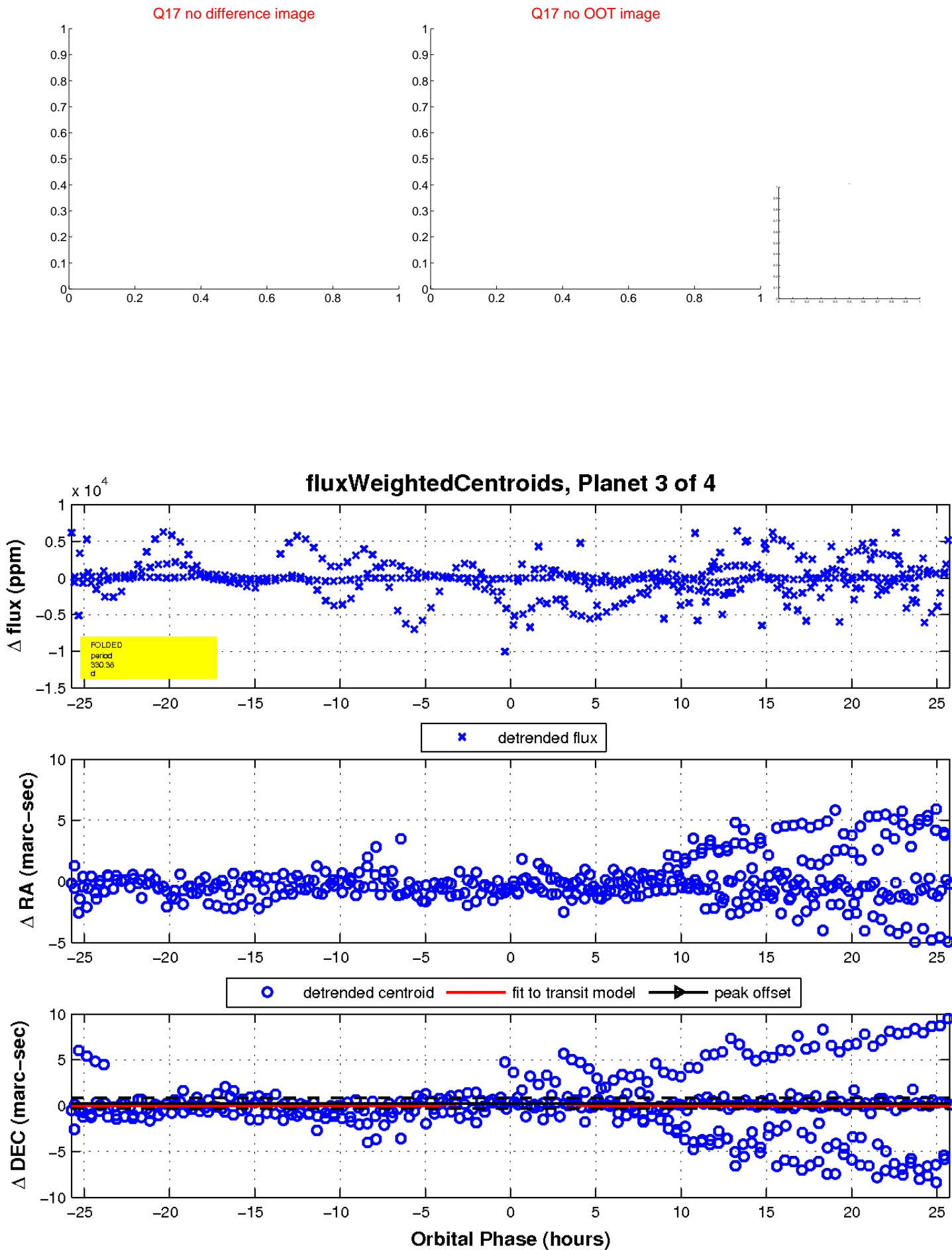
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

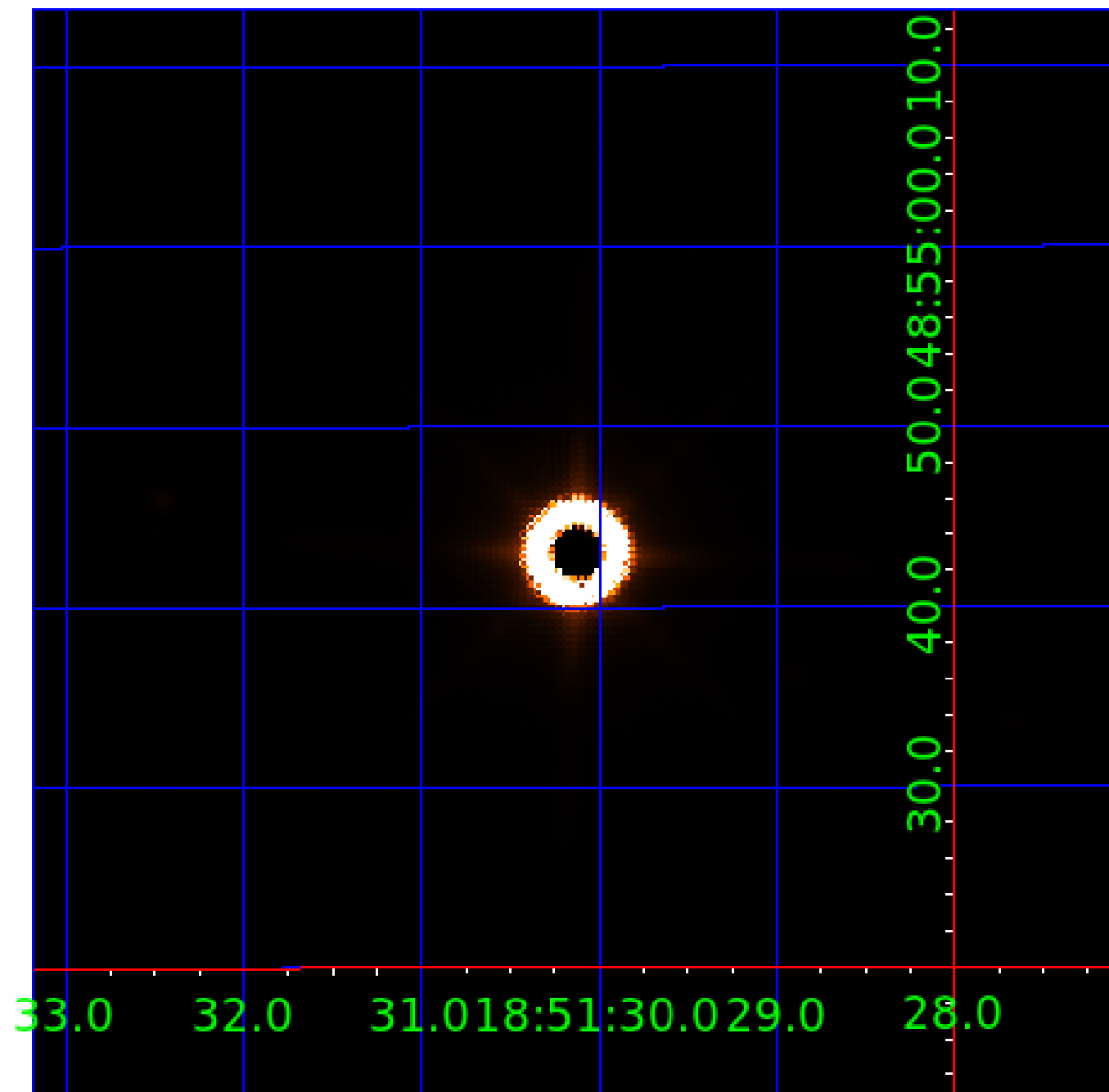


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011229003

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011229003-01	OBS	No	272.110527	355.550285	828.8	17.559	13.1	8.5	155.19	3266	629.77	3424.01
011229003-02	OBS	No	415.482387	451.241718	241.5	7.500	19.1	-1.0	155.19	3266	221.39	1947.42
011229003-03	OBS	No	330.381369	461.501989	337.2	8.596	18.6	2.4	155.19	3266	340.33	2643.47
011229003-04	OBS	No	110.491945	188.944851	578.8	1.663	11.5	10.9	155.19	3266	413.89	0.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011229003-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED
011229003-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011229003-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
011229003-04	OBS	FP	0.00	1	0	0	0	MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

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

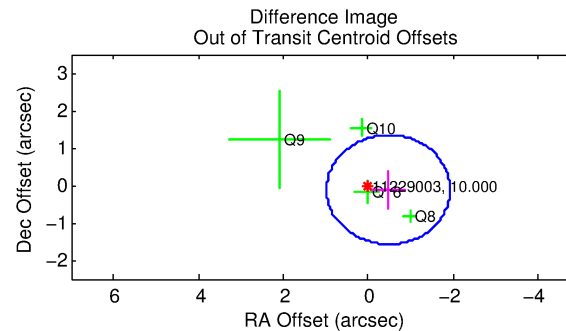
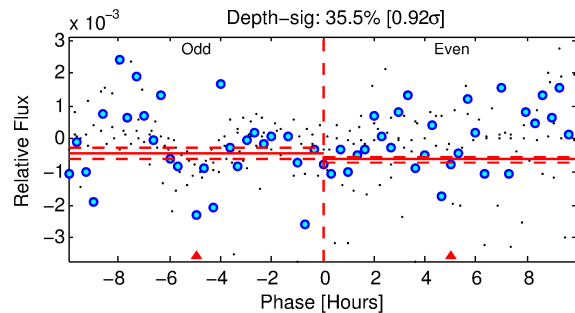
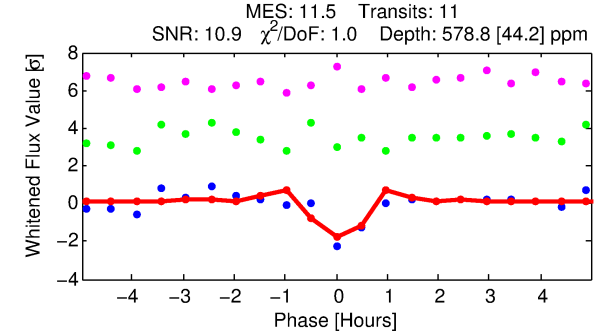
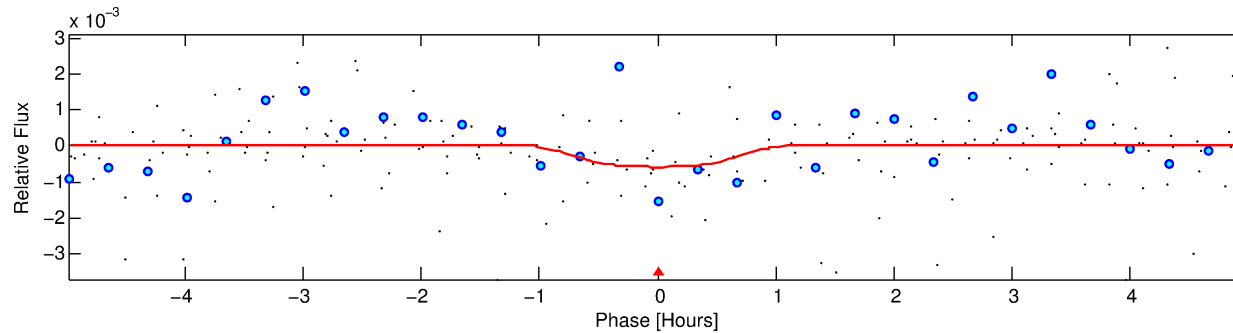
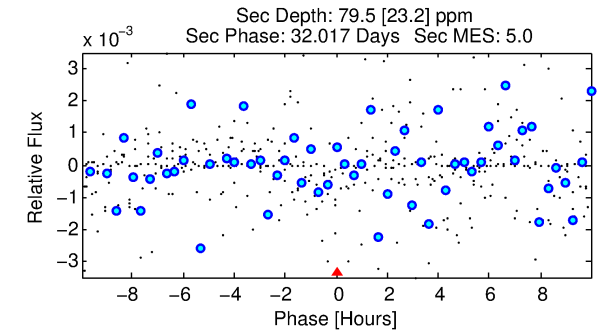
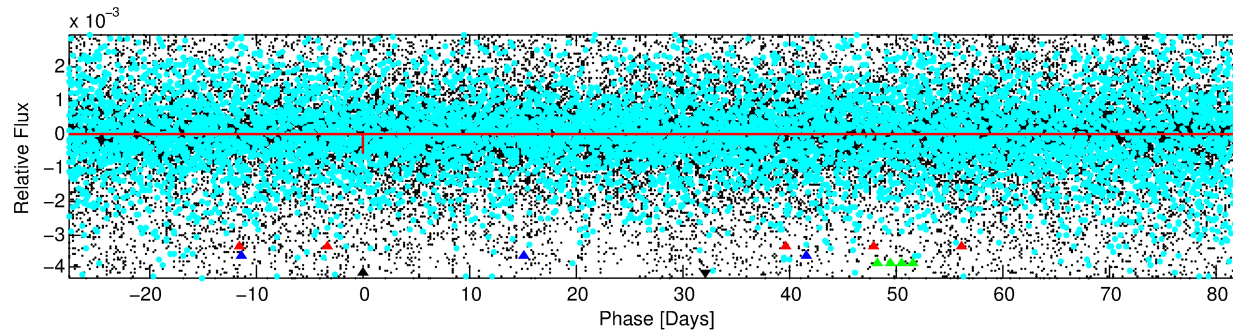
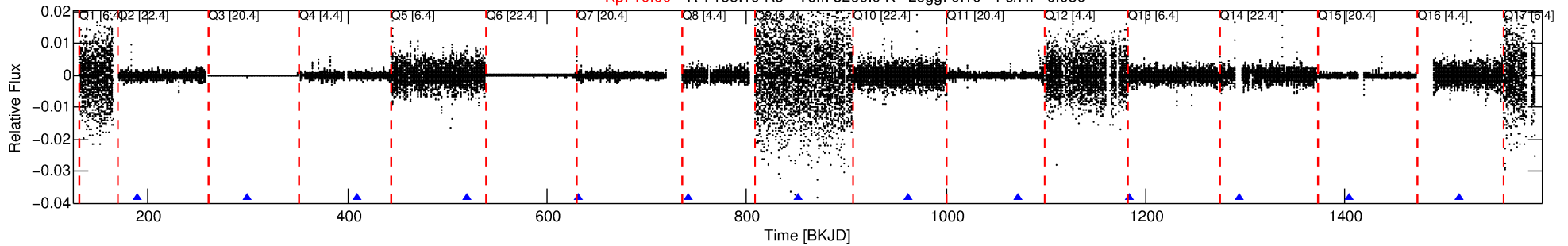
## Ephemeris Match Information For 011229003-04

No Significant Match Found

# DV One-Page Summary

KIC: 11229003 Candidate: 4 of 4 Period: 110.492 d

Kp: 10.00 R\*: 155.19 Rs Teff: 3266.0 K Logg: 0.10 Fe/H: -0.080



## DV Fit Results:

Period = 110.49195 [0.00051] d  
Epoch = 188.9449 [0.0027] BKJD  
Rp/R\* = 0.0244 [0.0130]  
a/R\* = 356.62 [456.13]  
b = 0.75 [0.81]  
Seff = N/A  
Teq = N/A  
Ag = N/A  
Teffp = N/A

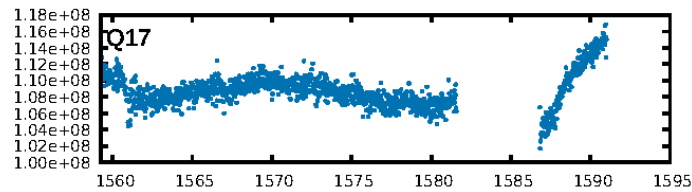
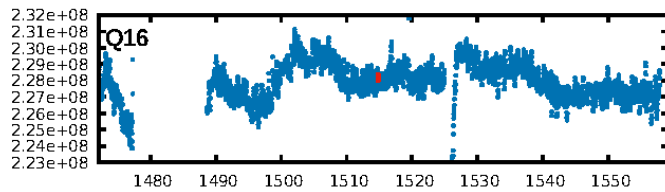
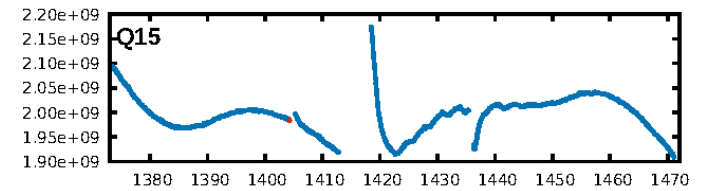
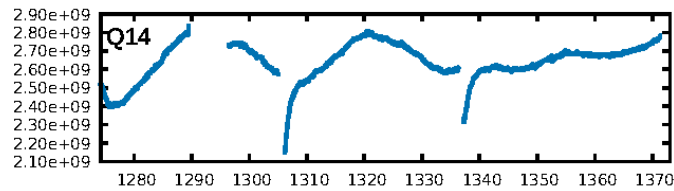
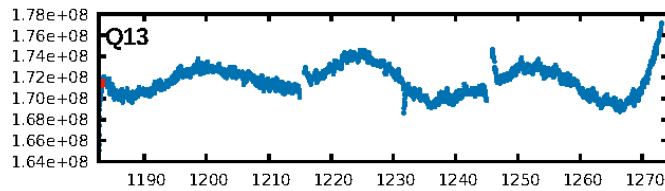
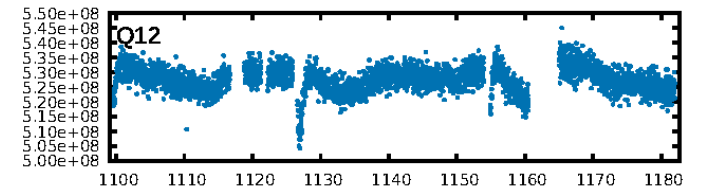
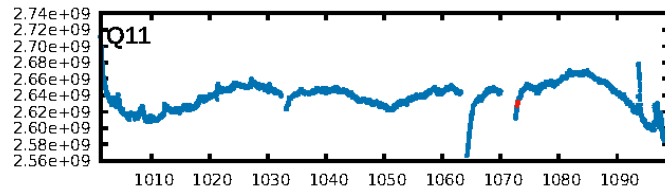
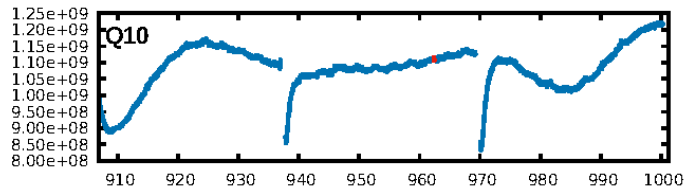
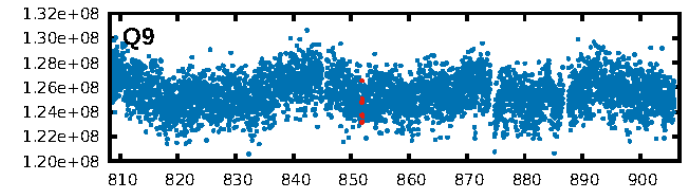
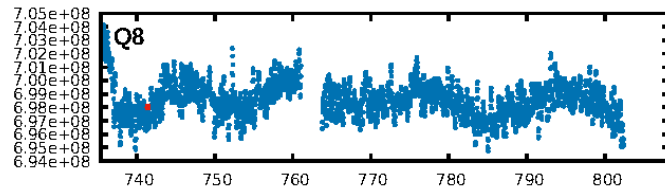
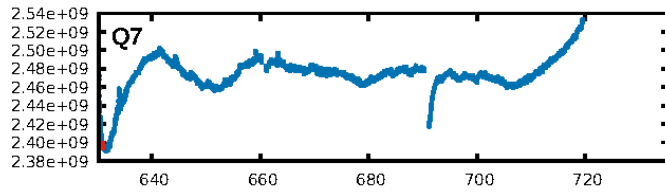
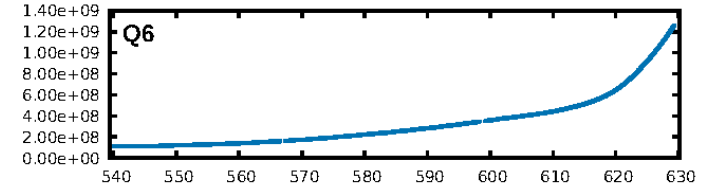
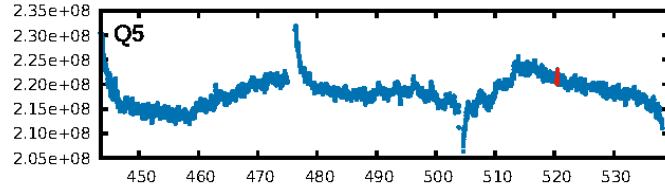
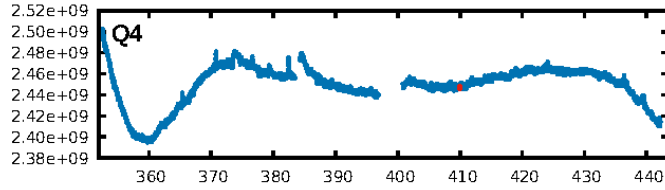
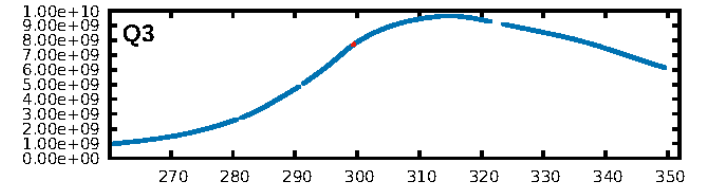
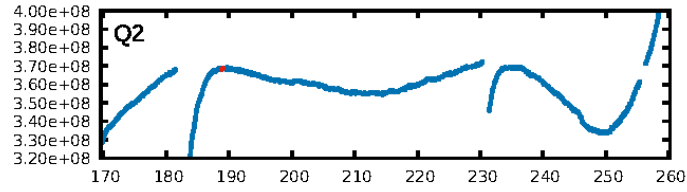
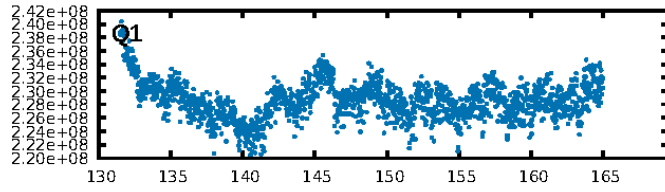
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [219.92σ]  
ModelChiSquare2-sig: 93.5%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 1.28e-10**  
RollingBand-fgt: 1.00 [11/11]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: 1.031 arcsec [0.91σ]  
OotOffset-rm: 0.493 arcsec [1.01σ]  
KicOffset-rm: 0.704 arcsec [1.16σ]  
OotOffset-st: 1/0/2/1 [4]  
KicOffset-st: 1/0/2/1 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 1.00 [8/8]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:59:25 Z

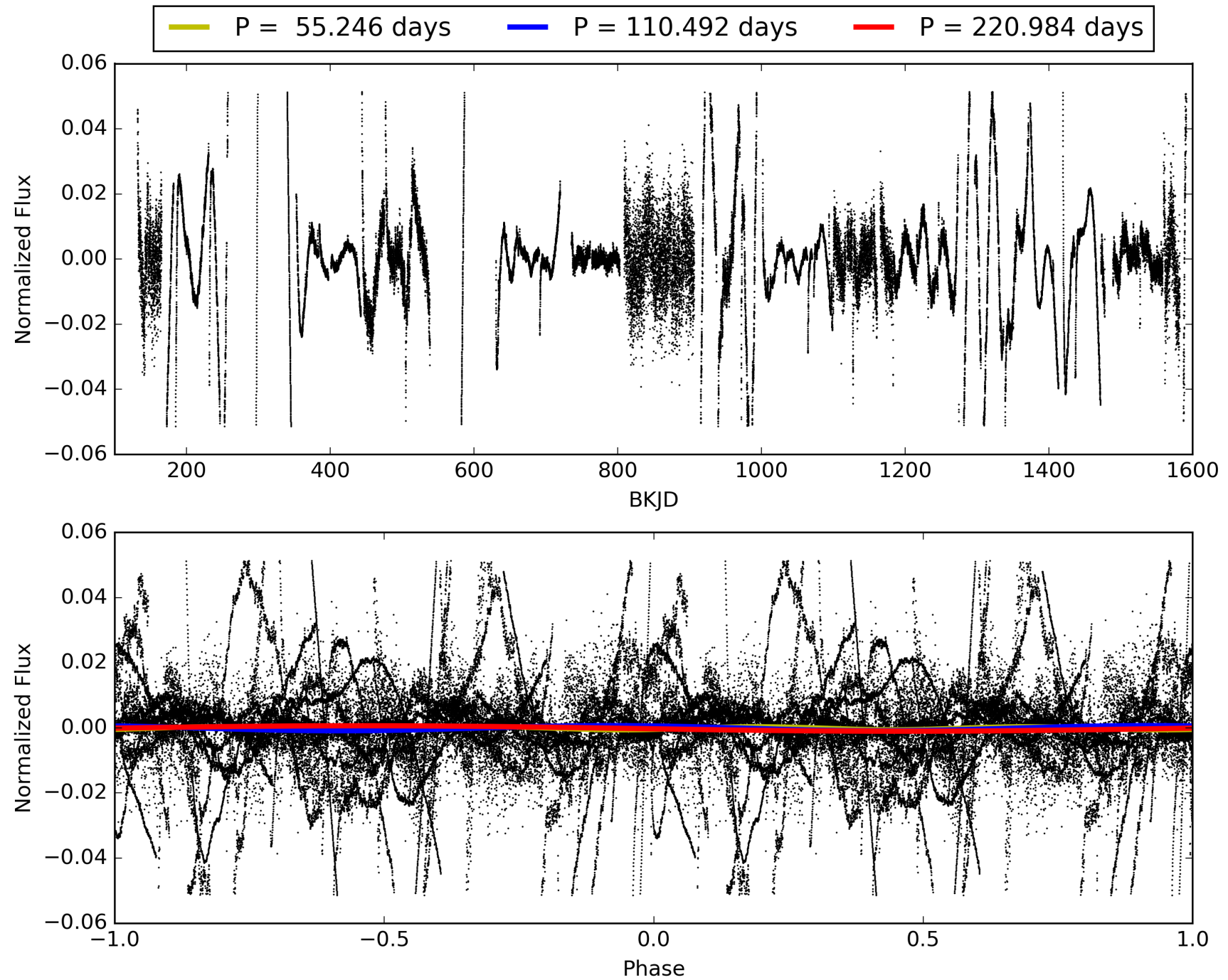
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011229003-04, PDC Light Curves



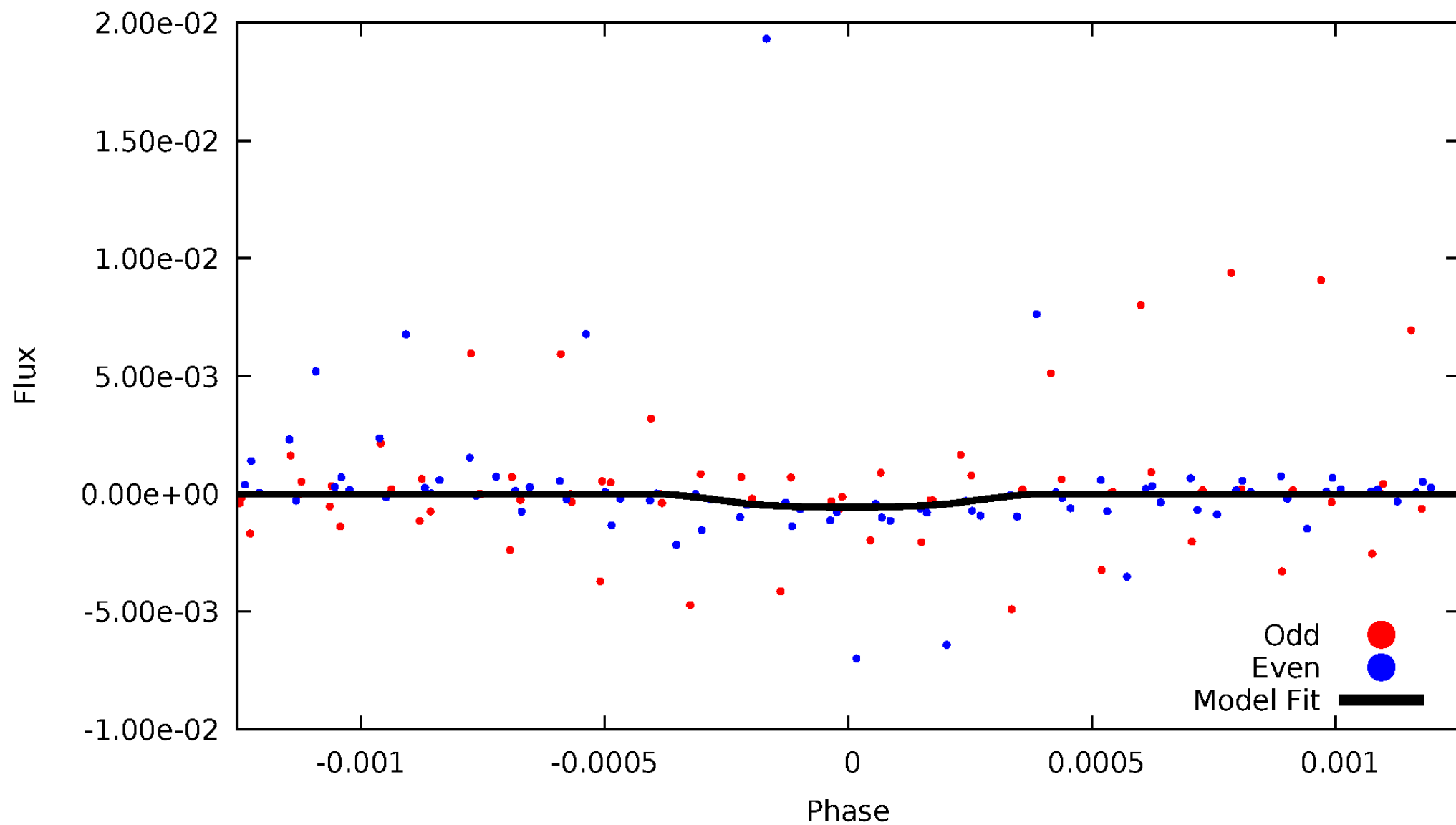


TCE 011229003-04



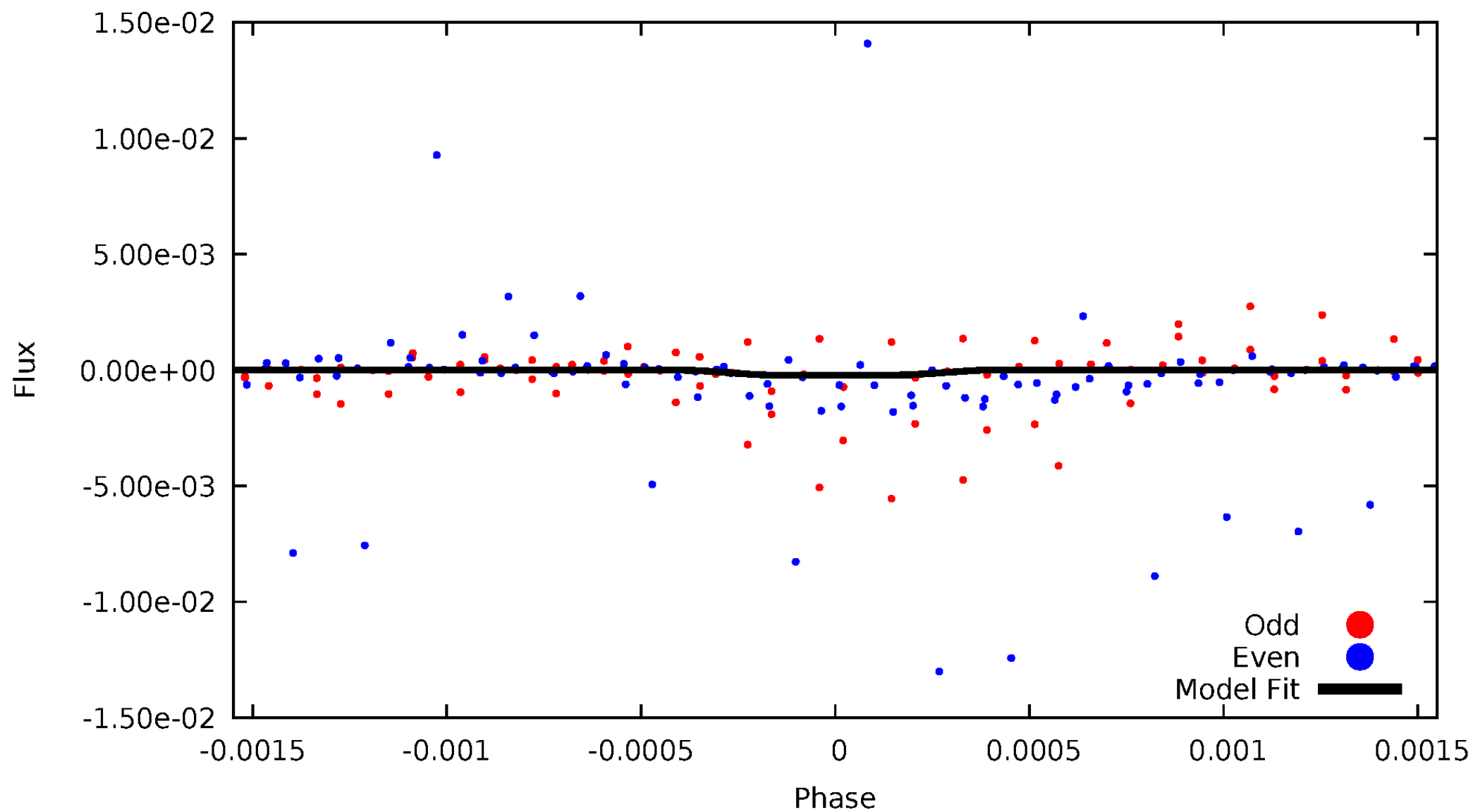
# DV Odd/Even

TCE 011229003-04



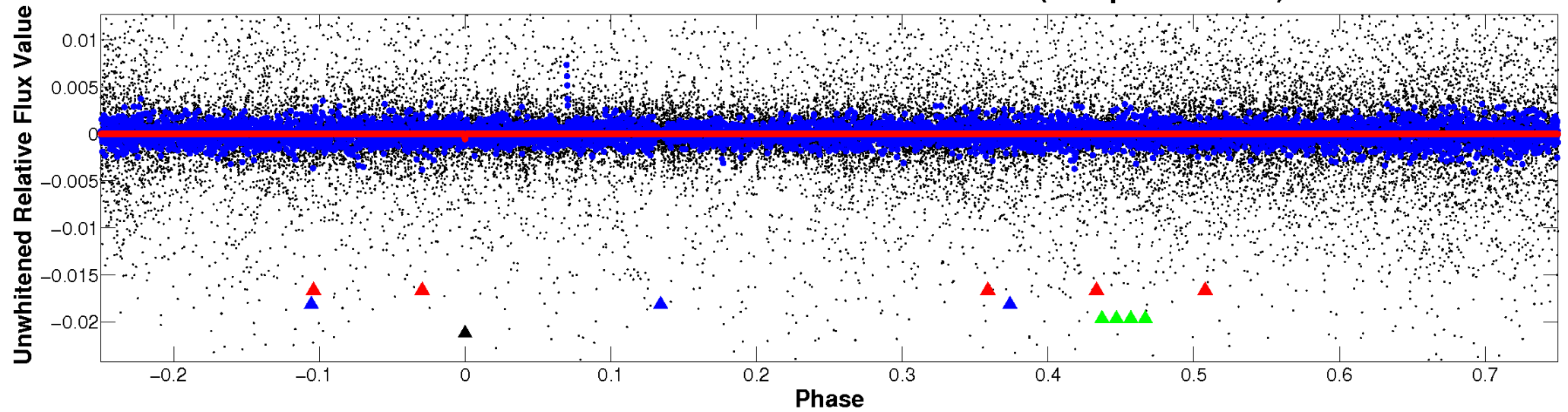
# ALT Odd/Even

TCE 011229003-04

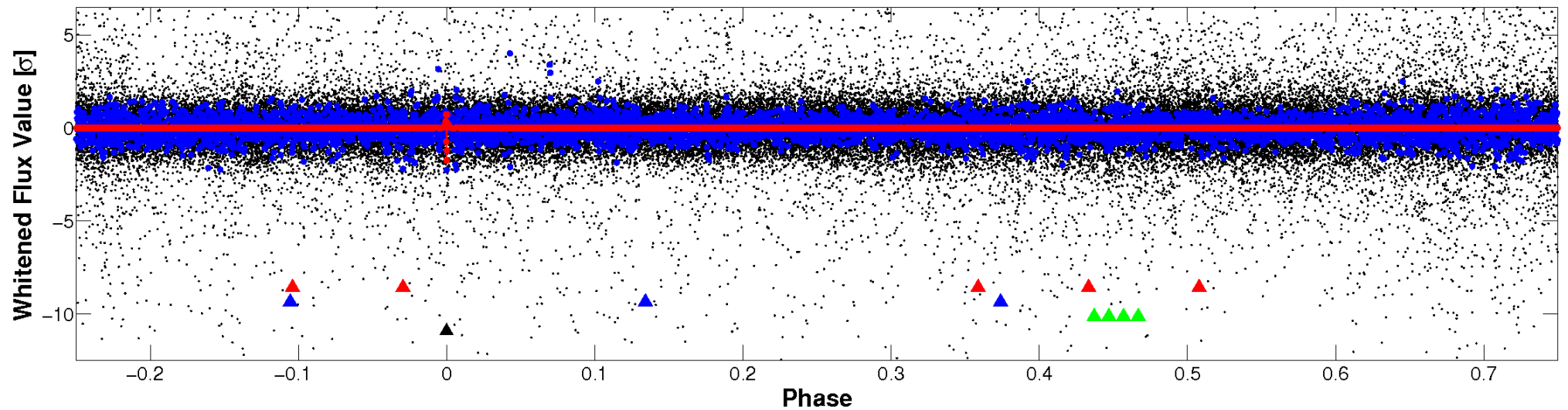


# Non-Whitened Vs. Whitened Light Curve

**Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)**

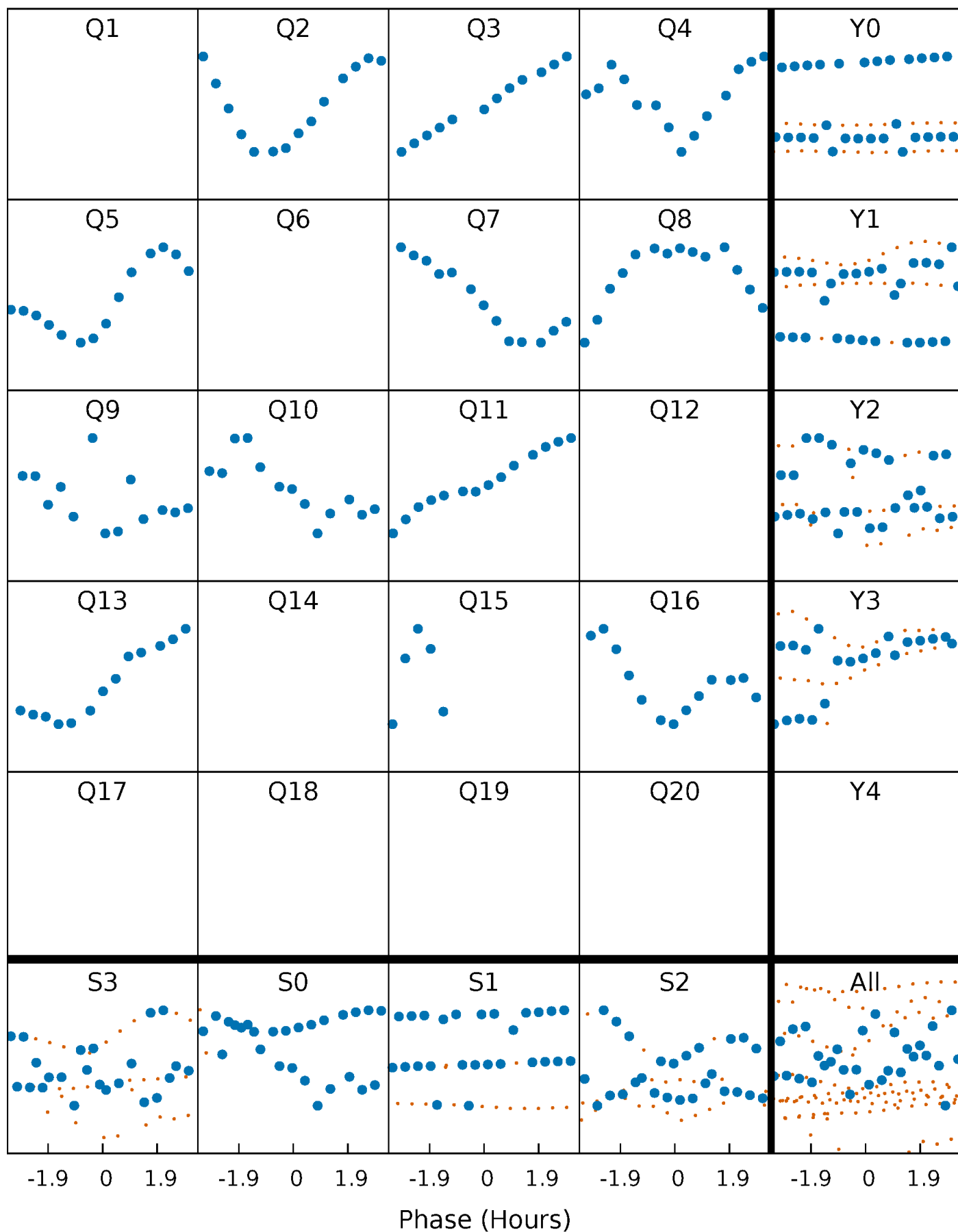


**Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



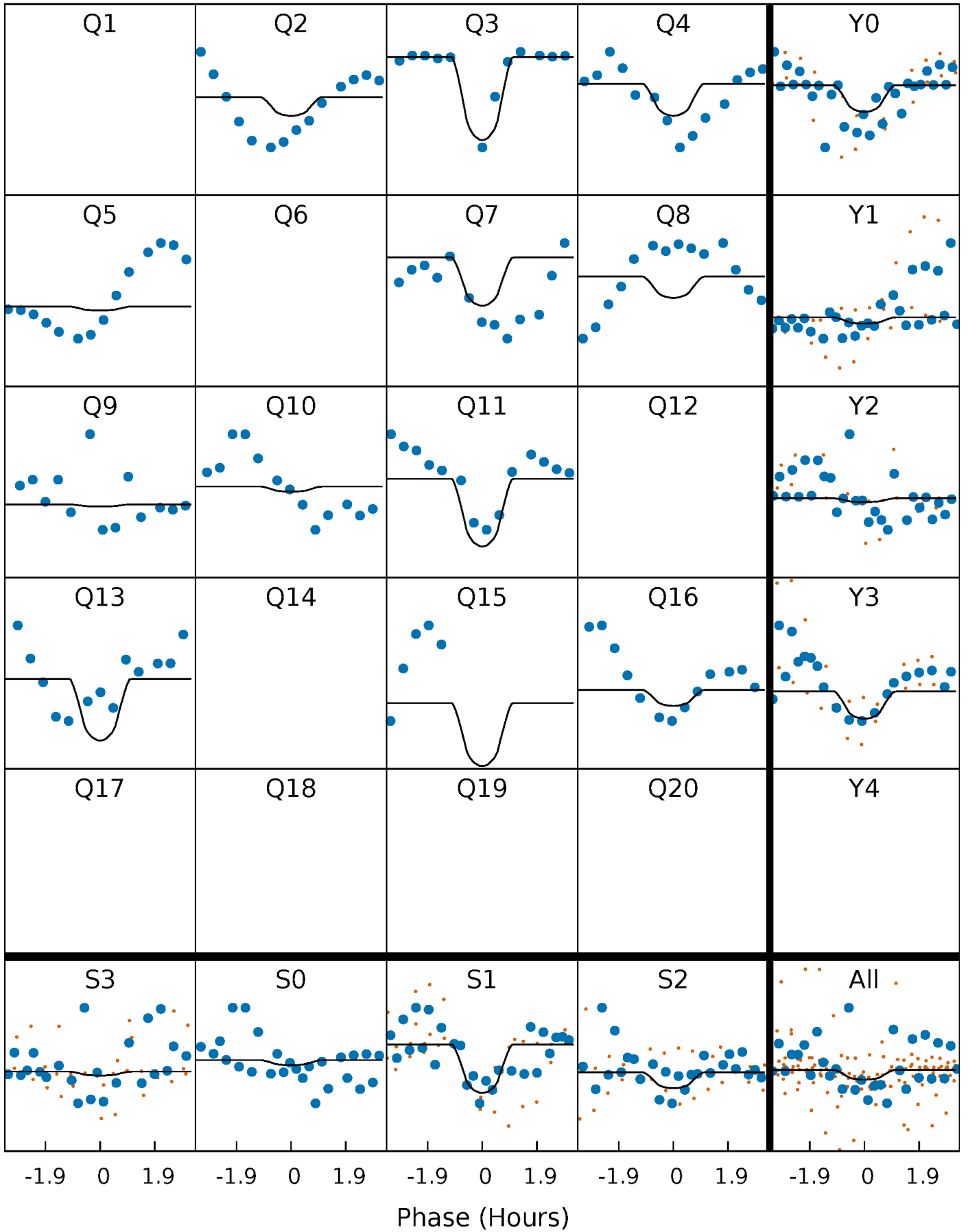
# PDC Quarter-Phased Transit Curves

TCE 011229003-04 P=110.491945 Days  $T_0=188.944851$  (BKJD)



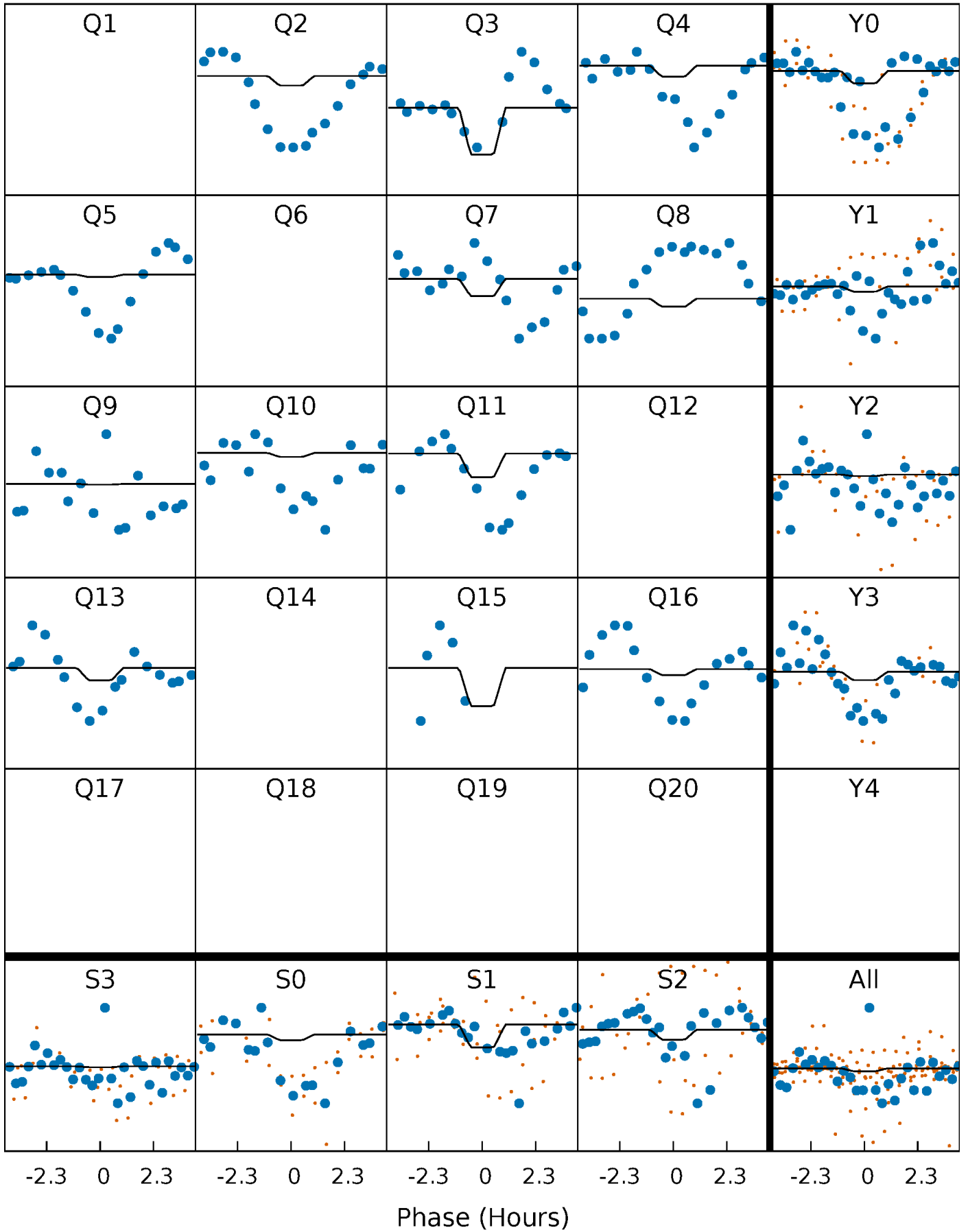
# DV Quarter-Phased Transit Curves

TCE 011229003-04 P=110.491945 Days  $T_0=188.944851$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

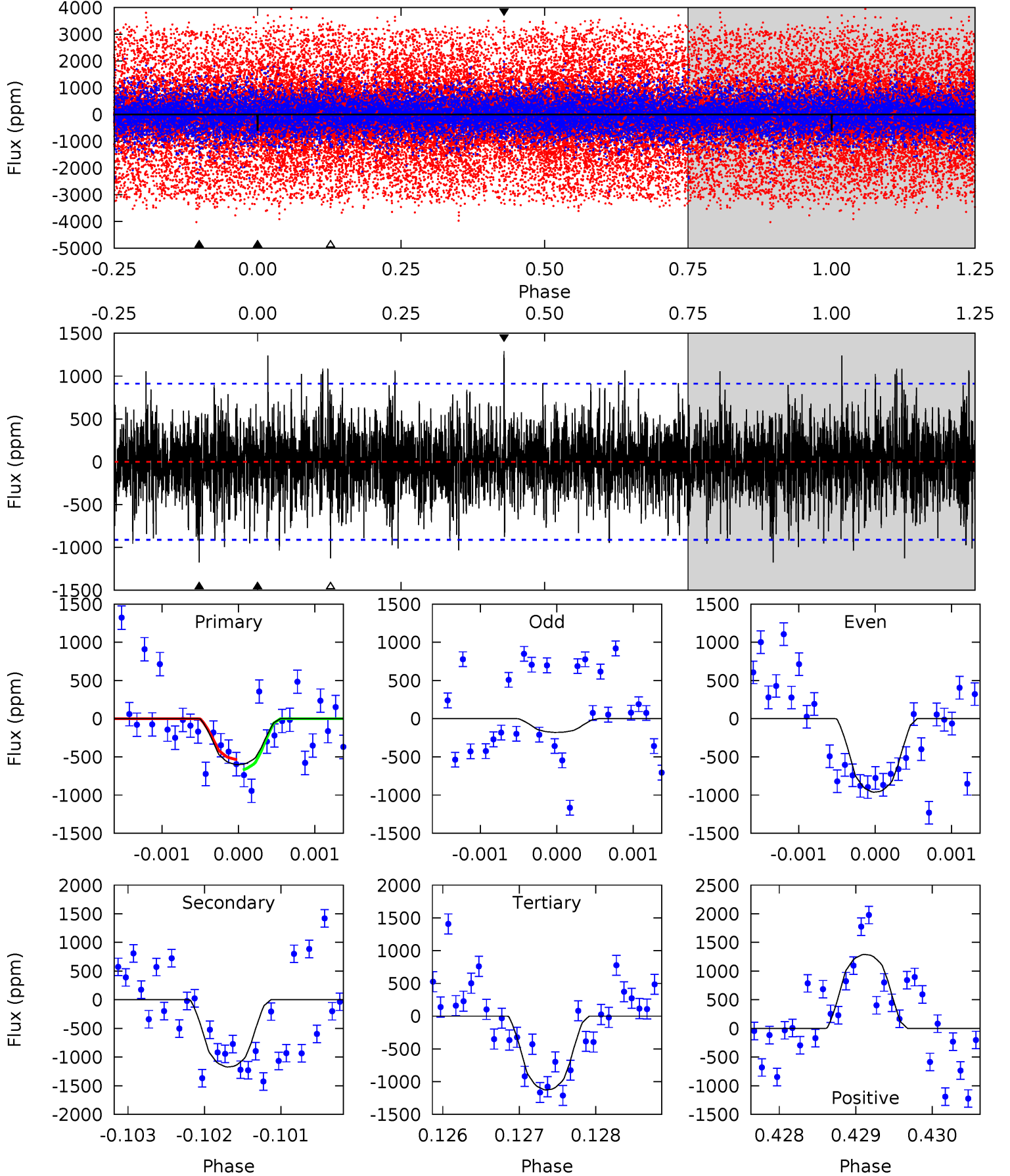
TCE 011229003-04     $P=110.493140$  Days     $T_0=188.909917$  (BKJD)



# DV Model-Shift Uniqueness Test

011229003-04, P = 110.491945 Days, E = 78.452906 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
3.63	7.07	6.80	7.79	5.50	3.36	1.86	-3.16	-4.16	0.28	-0.71	2.37	0.67	0.52	0.41

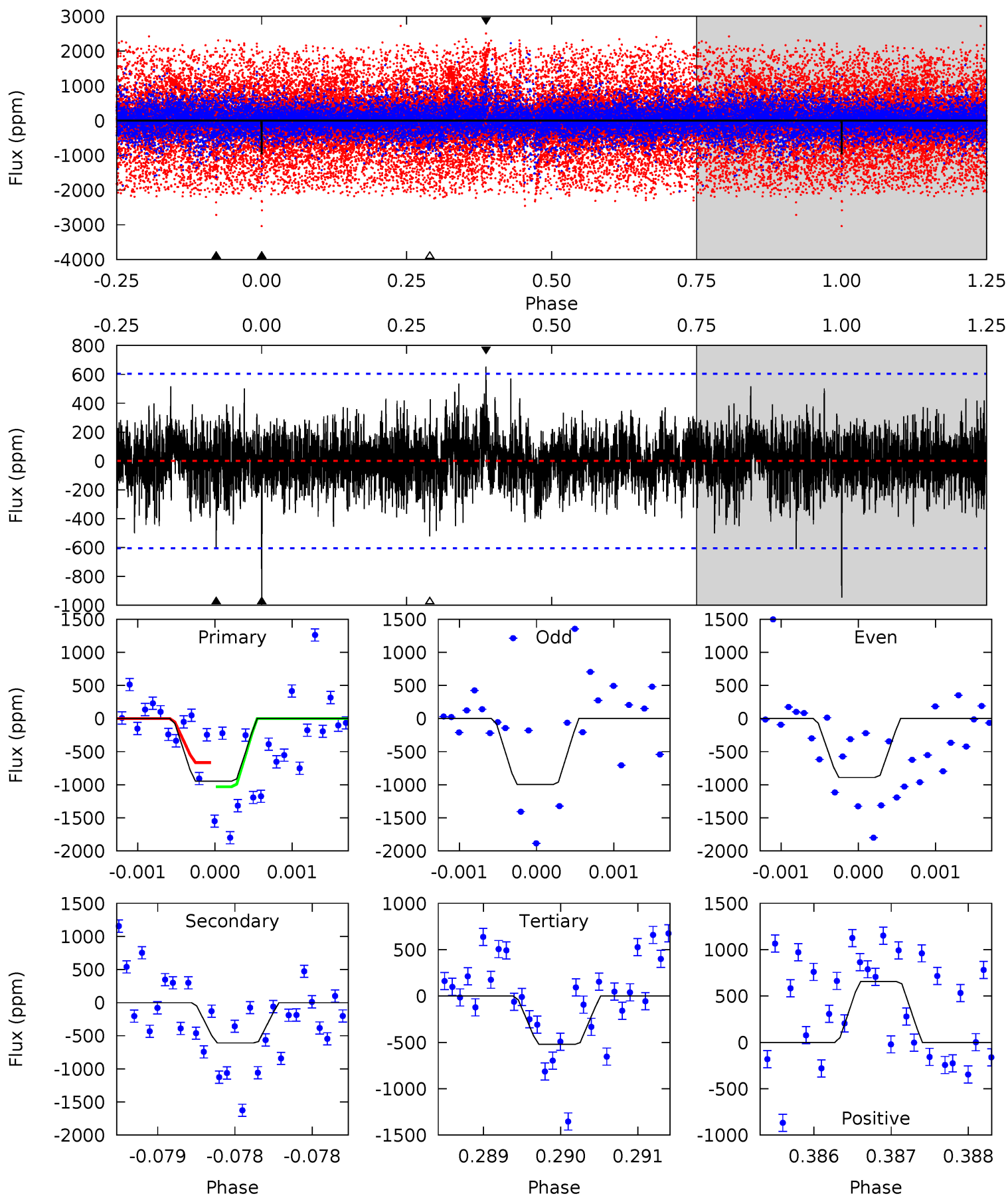




# Alt Model-Shift Uniqueness Test

011229003-04, P = 110.493140 Days, E = 78.416777 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
8.63	5.56	4.76	5.97	5.52	3.39	1.33	3.87	2.66	0.80	-0.42	0.50	1.55	0.41	1.65



### Stellar Parameters For KIC 011229003

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3266^{+117}_{-78}$	$0.095^{+0.208}_{-0.065}$	$-0.080^{+0.250}_{-0.100}$	$155.187^{+9.192}_{-27.576}$	$1.095^{+0.206}_{-0.120}$	$0.000^{+0.000}_{-0.000}$
	+4%/-2%	+219%/-68%	+312%/-125%	+6%/-18%	+19%/-11%	+85%/-15%
Source	KIC0	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 011229003-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1173 \pm 166$	$403.01^{+218.90}_{-200.33}$	$3635^{+158}_{-190}$	$3390^{+1208}_{-913}$	$0.884^{+2.476}_{-0.528}$
Alt.	$-609 \pm 110$	$263.33^{+202.20}_{-163.51}$	$3632^{+169}_{-198}$	$3556^{+1897}_{-1264}$	$1.077^{+6.324}_{-0.747}$

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

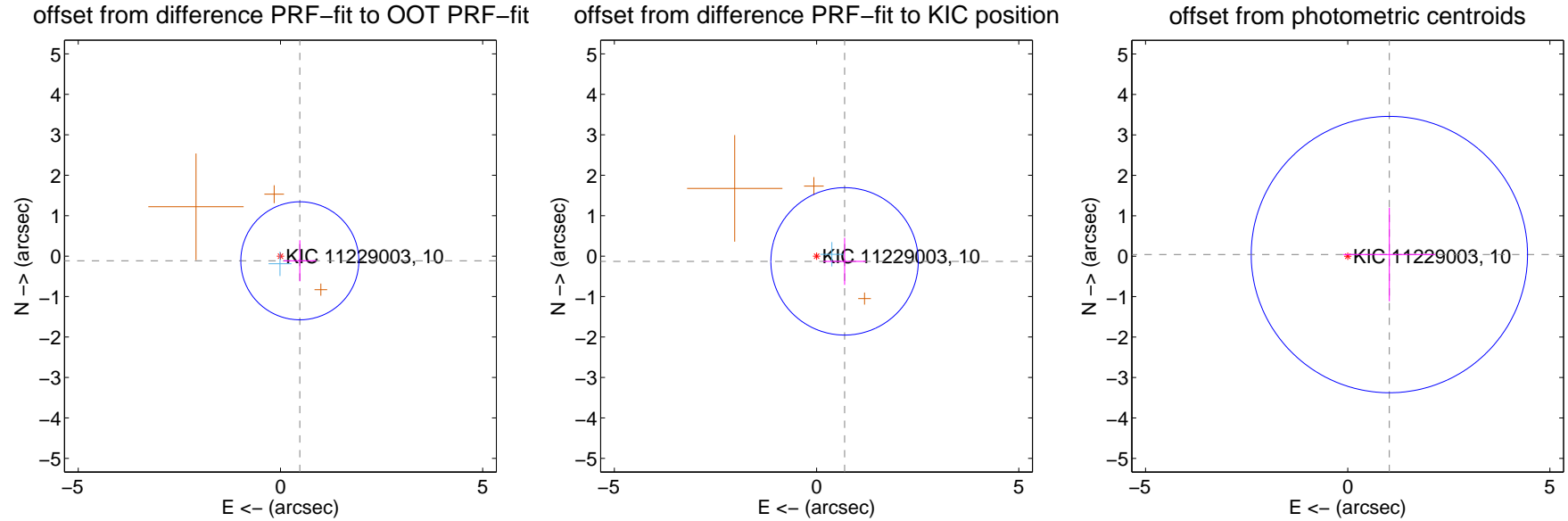
## DV Centroid Data

Supplemental centroid analysis for 011229003-04. **Kepler magnitude: 10.00.** Transit SNR 10.91

**There are 1 quarters with good PRF difference image offsets**

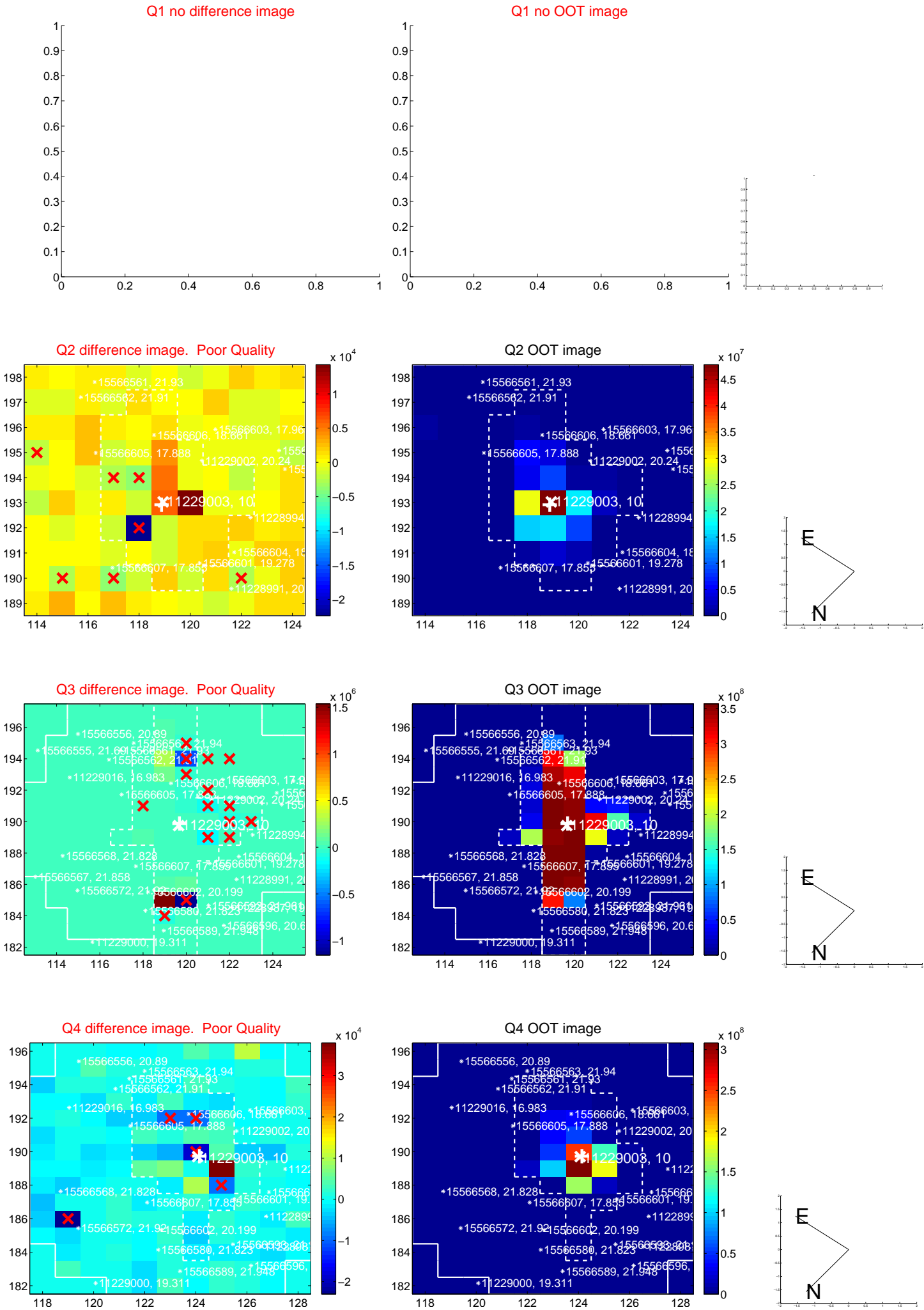
The direct PRF centroid is offset from the target star catalog position by about 0.45 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.493 \pm 0.486$	1.01	$-0.479 \pm 0.401$	$-0.115 \pm 0.508$
PRF-fit source offset from KIC position	$0.704 \pm 0.607$	1.16	$-0.692 \pm 0.527$	$-0.129 \pm 0.581$
photometric centroid source offset	$1.03 \pm 1.14$	0.91	$-1.03 \pm 1.14$	$0.04 \pm 1.16$

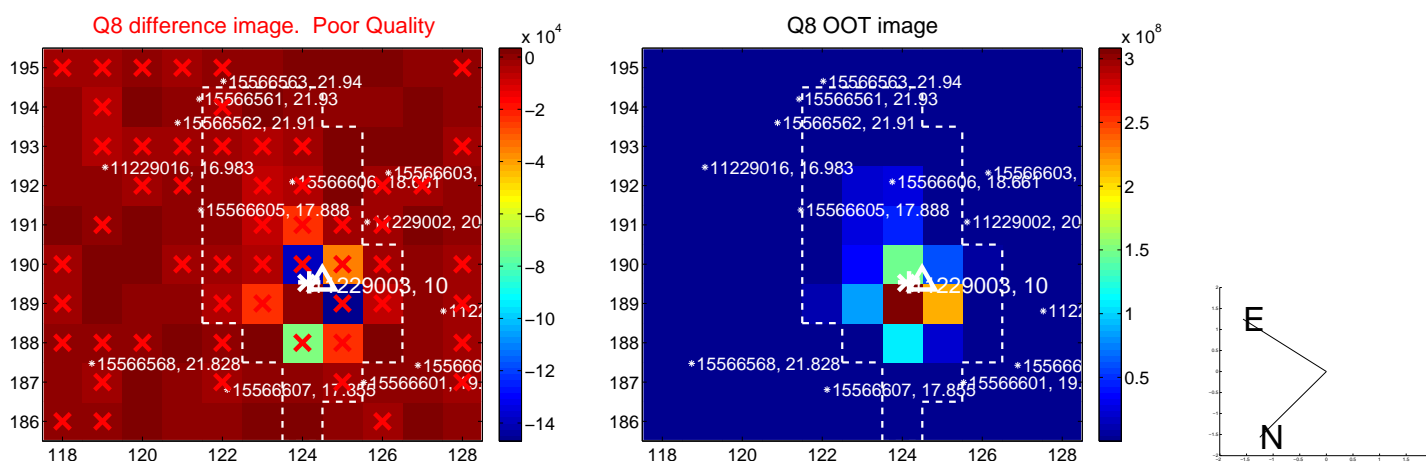
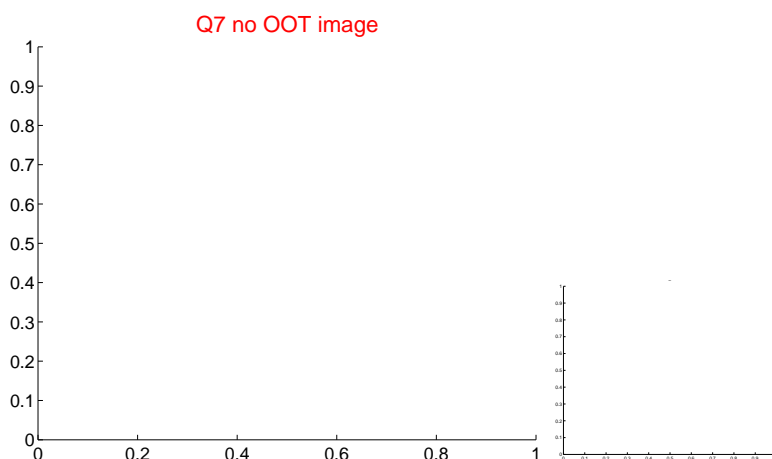
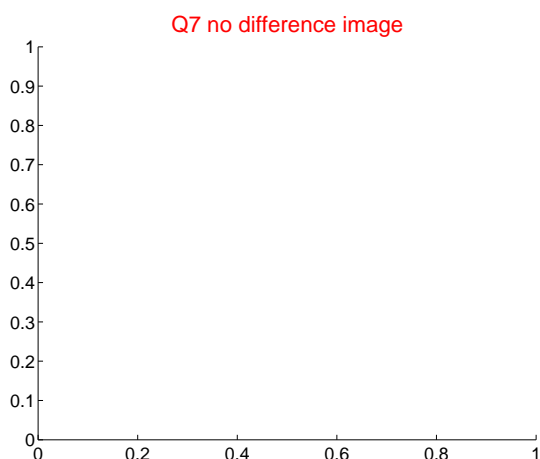
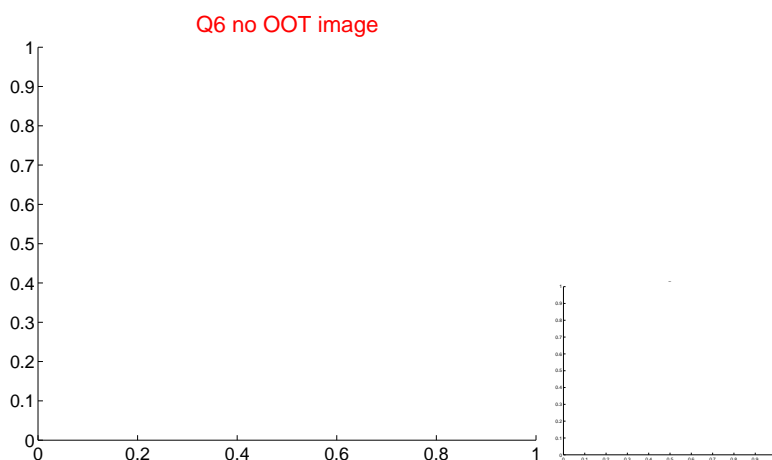
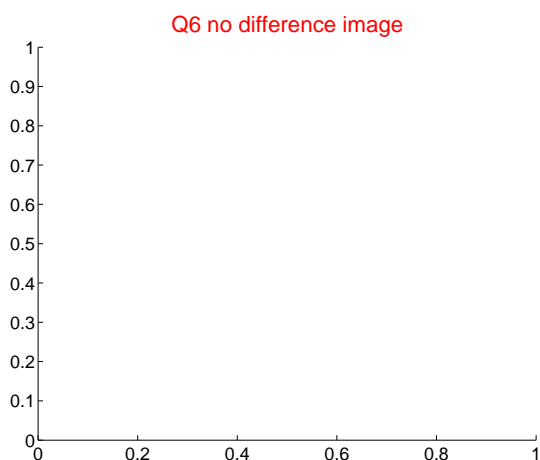
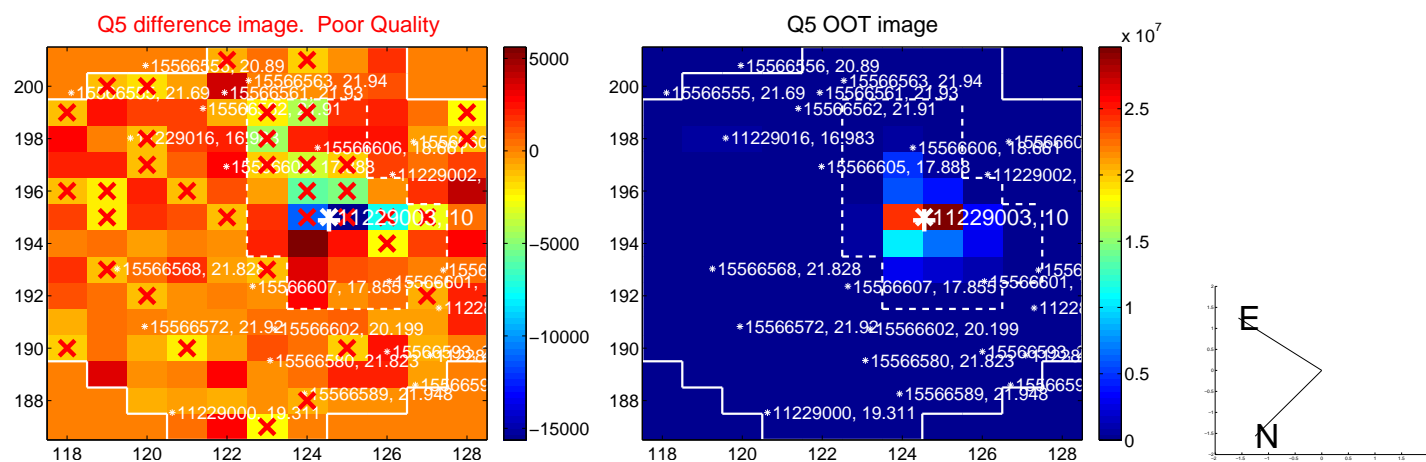


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

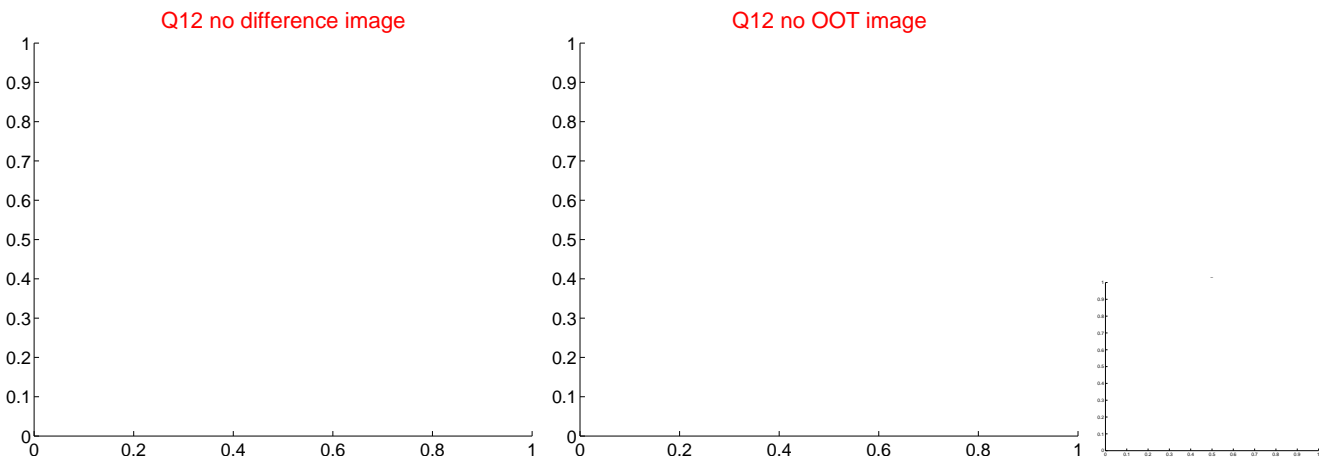
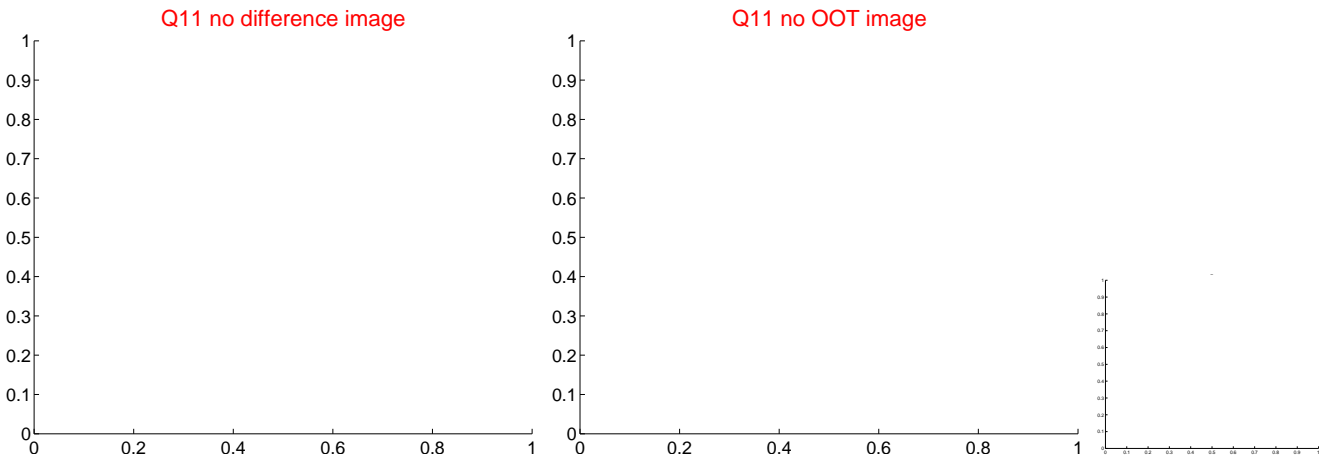
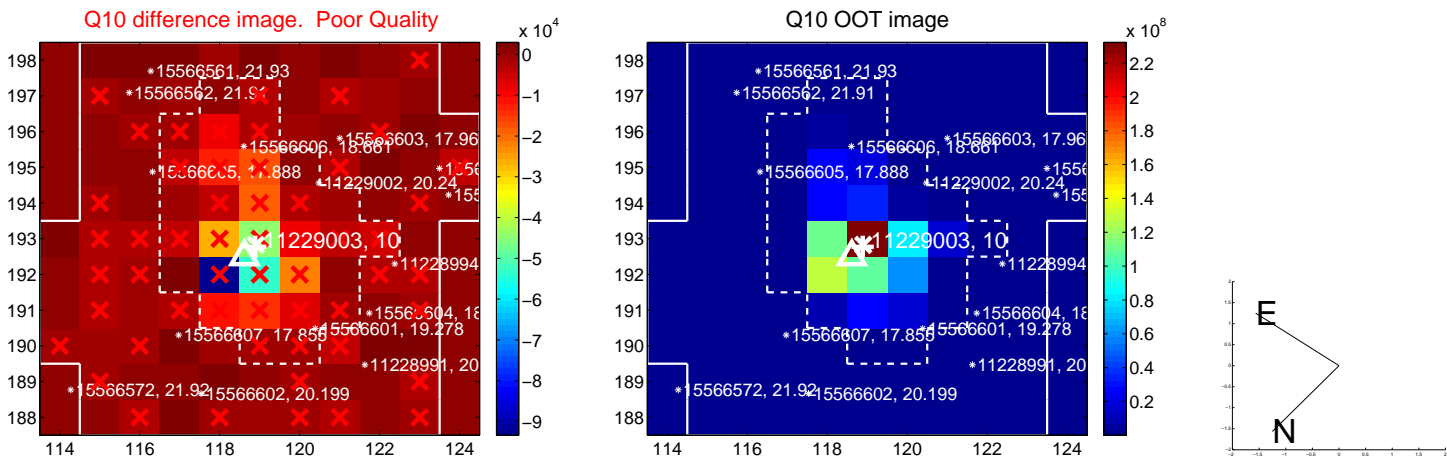
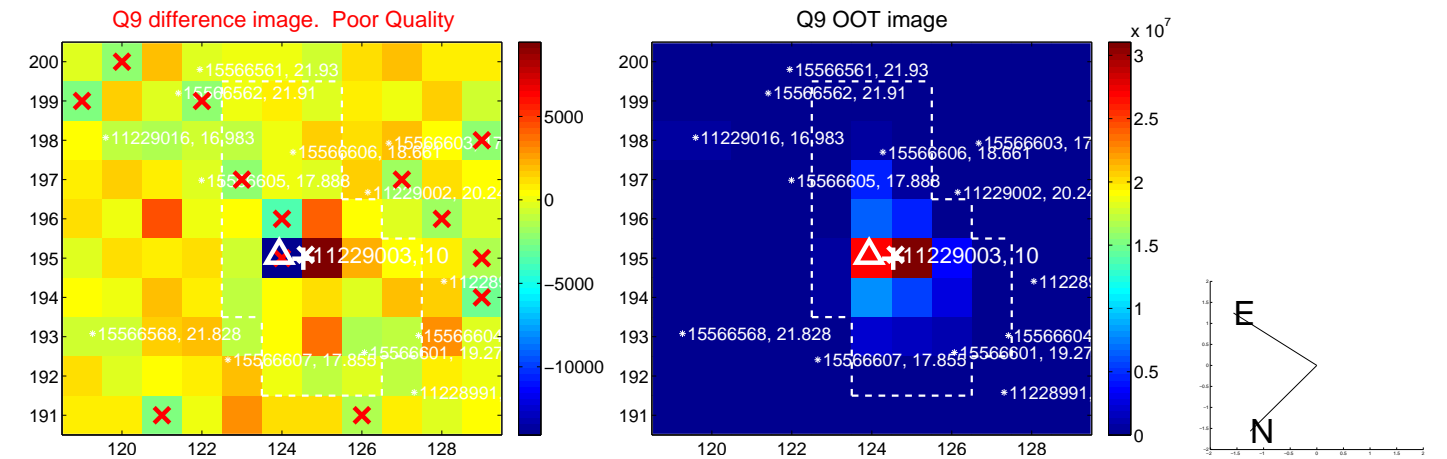
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

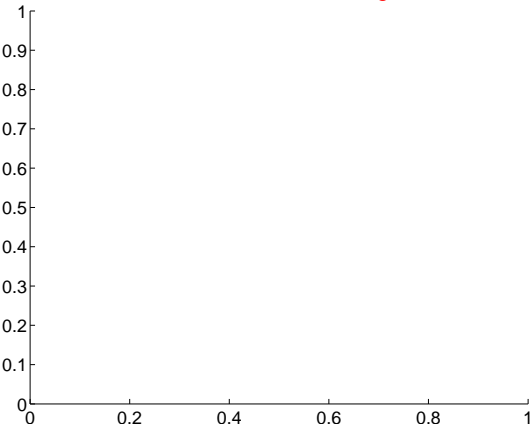


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

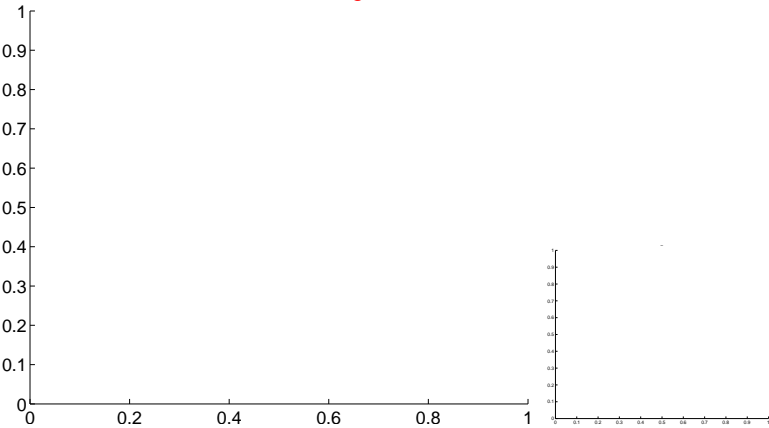


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

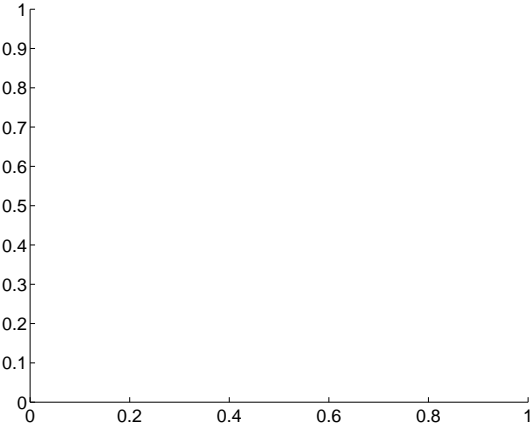
Q13 no difference image



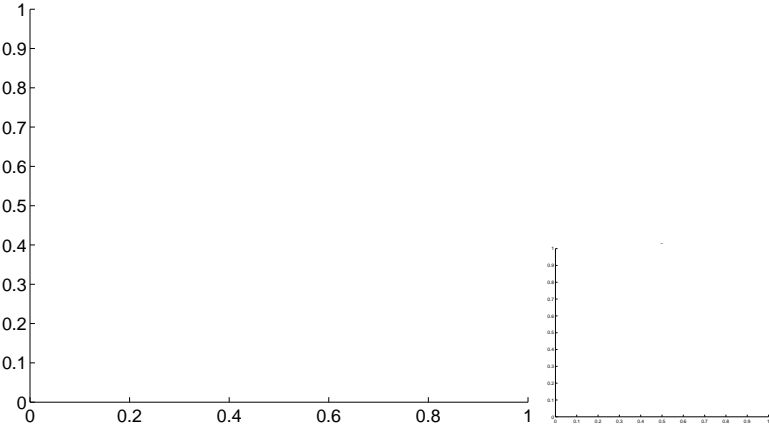
Q13 no OOT image



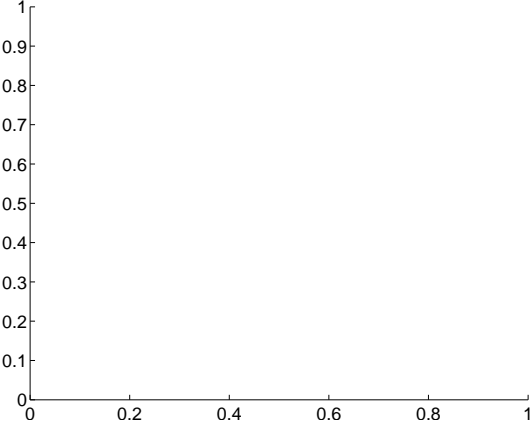
Q14 no difference image



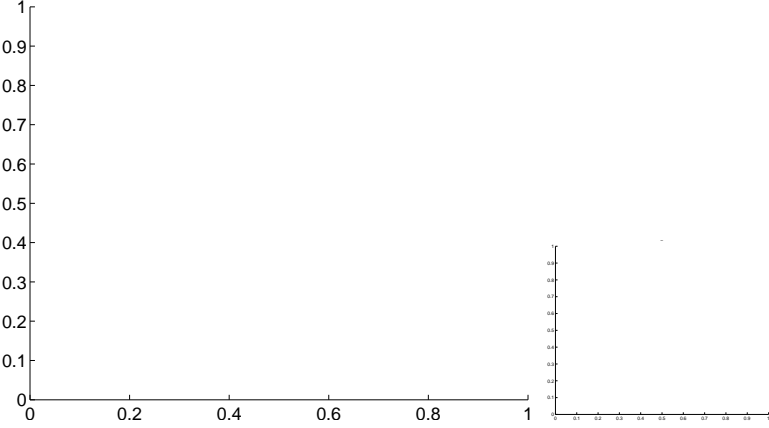
Q14 no OOT image



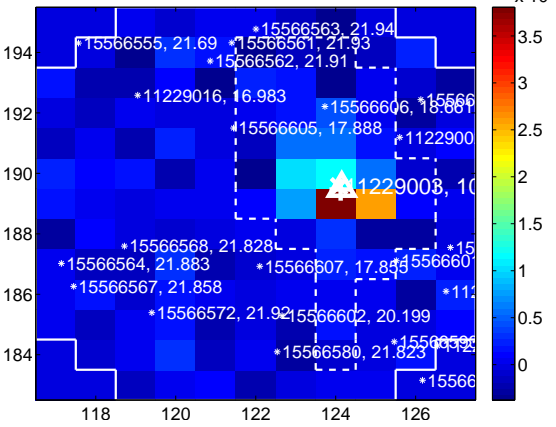
Q15 no difference image



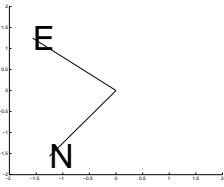
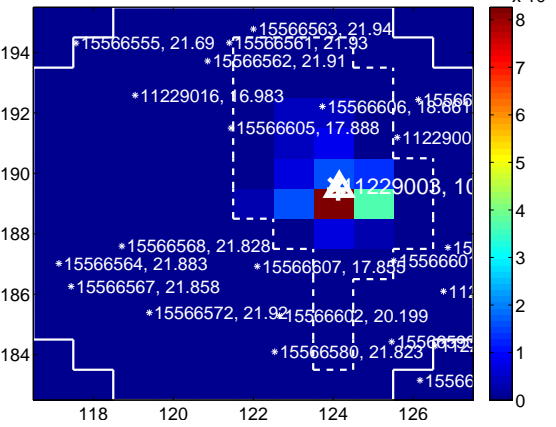
Q15 no OOT image



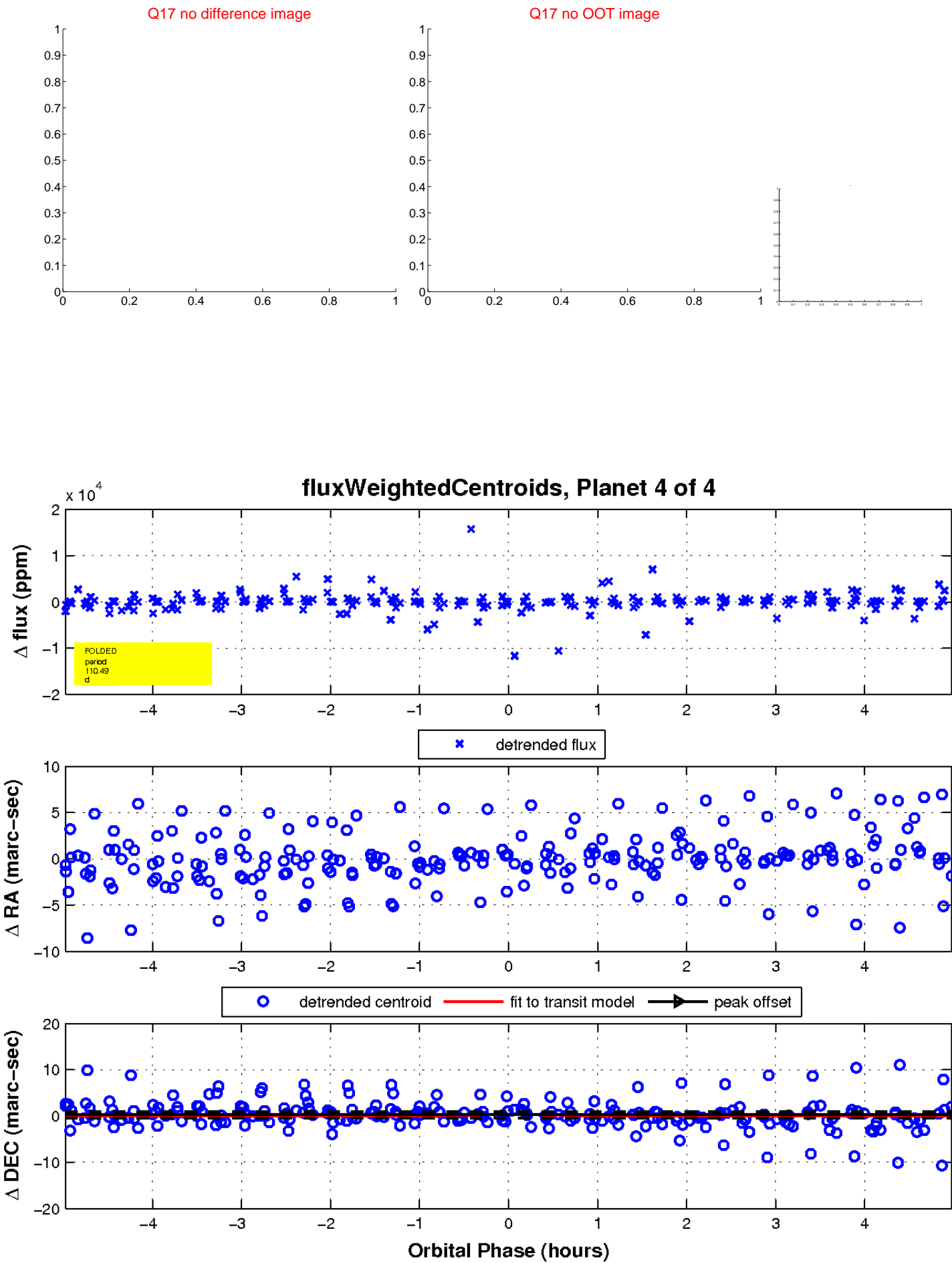
Q16 difference image



Q16 OOT image



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





UKIRT Image

Declination

