

# KIC 011667100

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011667100-01	OBS	No	0.691942	131.827137	50.3	2.392	9.5	8.2	2.13	7353	1.76	36686.34
011667100-02	OBS	No	249.002335	149.174664	2056.6	7.780	7.7	7.7	2.13	7353	11.54	14.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011667100-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011667100-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES

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

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

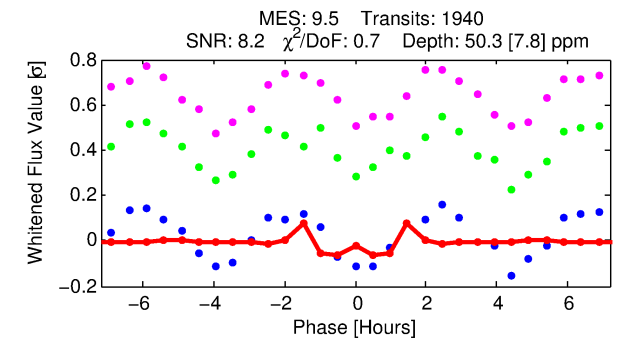
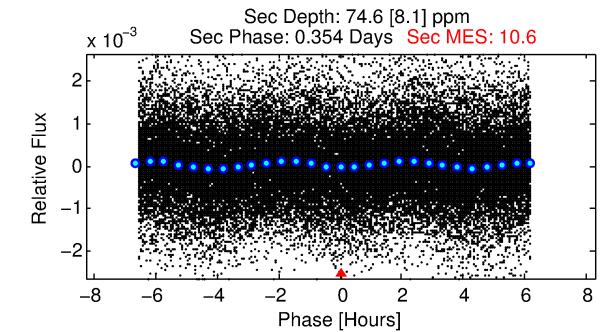
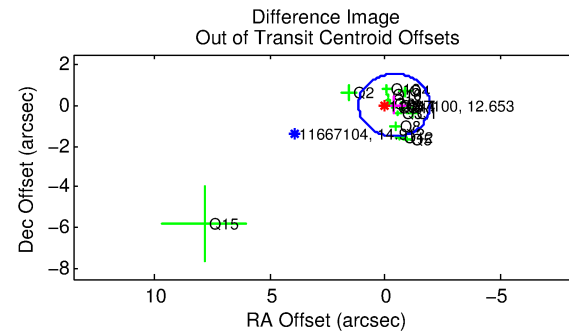
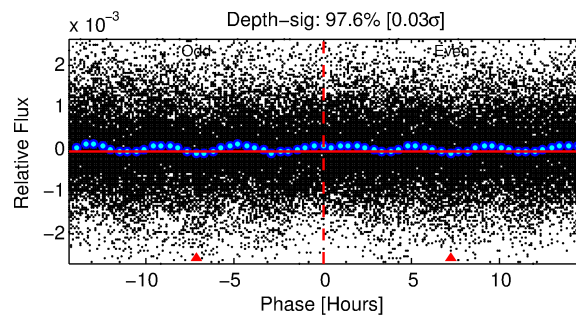
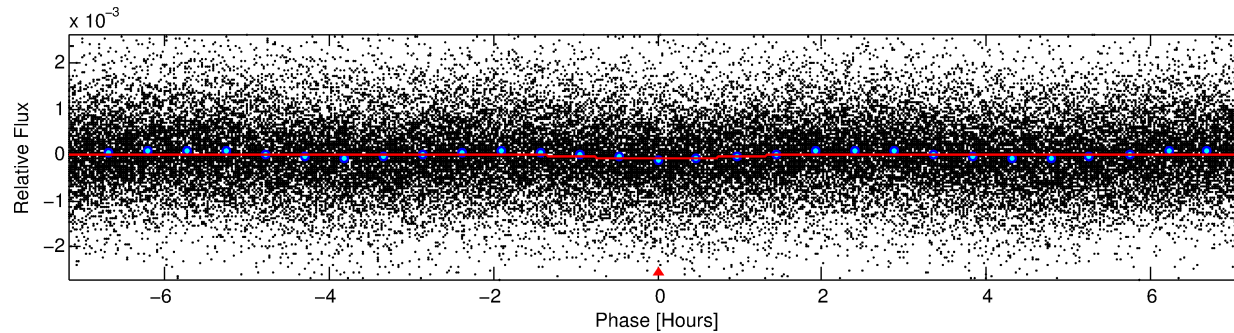
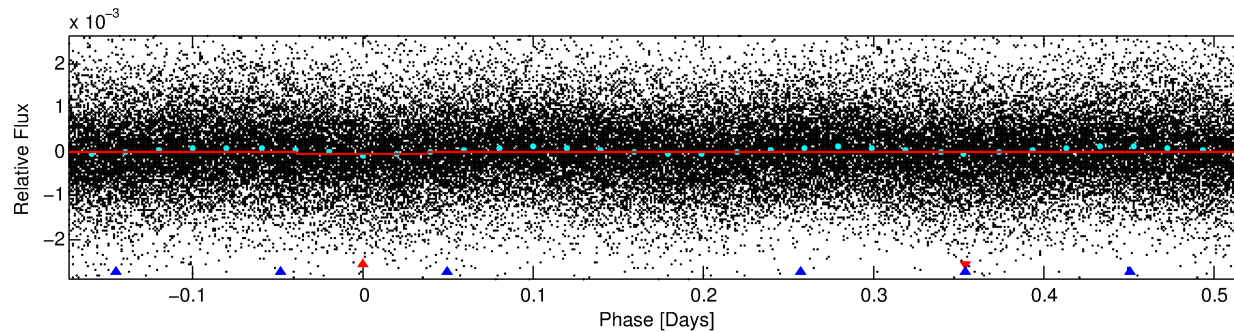
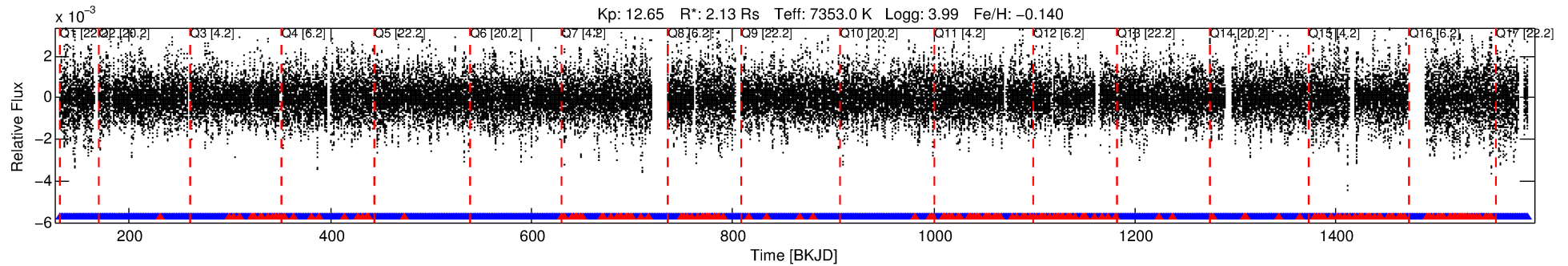
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011667100-01

No Significant Match Found

# DV One-Page Summary

KIC: 11667100 Candidate: 1 of 2 Period: 0.692 d



## DV Fit Results:

Period = 0.69194 [0.00001] d  
Epoch = 131.8271 [0.0012] BKJD  
Rp/R\* = 0.0076 [0.0015]  
a/R\* = 1.37 [0.73]  
b = 0.90 [0.24]  
Seff = 36686.34 [16809.50]  
Teq = 3529 [404] K  
Rp = 1.76 [0.68] Re  
a = 0.0180 [0.0051] AU  
Ag = 4.28 [2.54] [1.29 $\sigma$ ]  
Teffp = 7850 [892] K [4.41 $\sigma$ ]

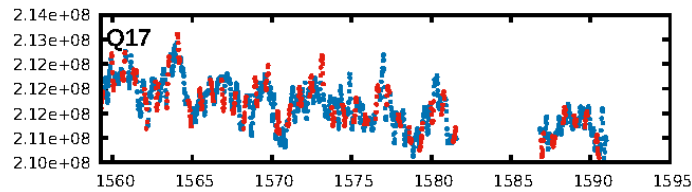
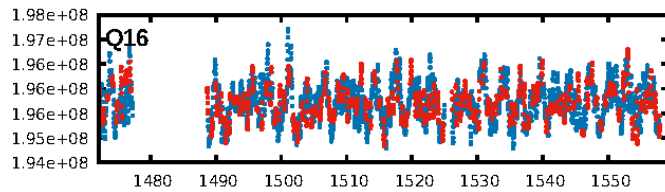
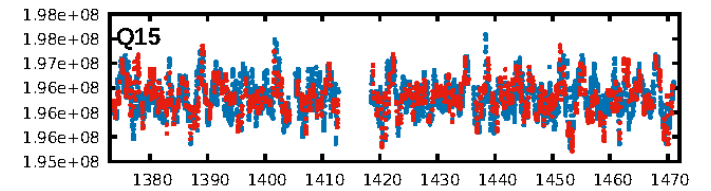
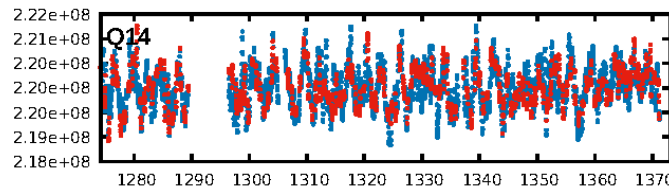
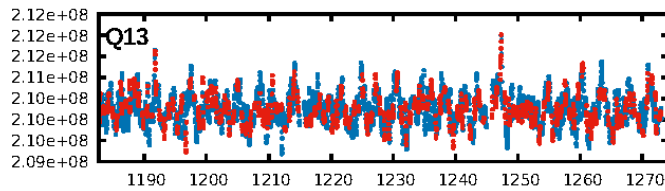
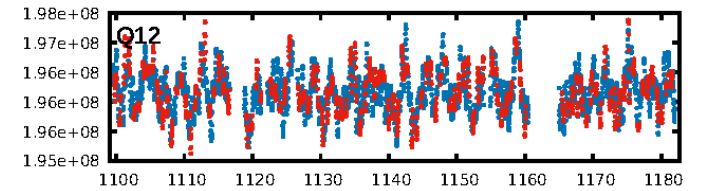
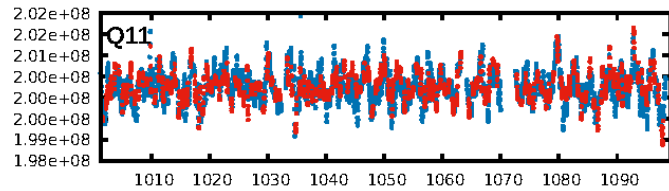
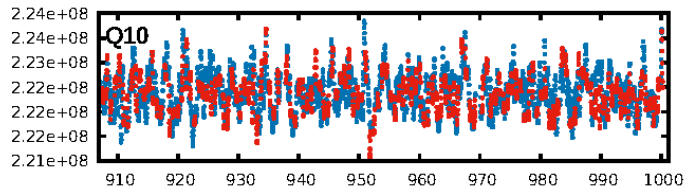
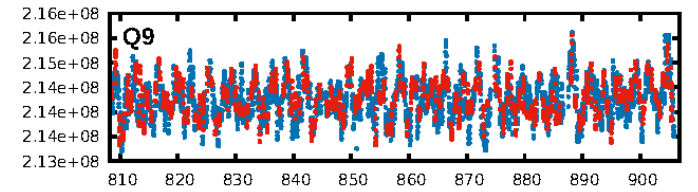
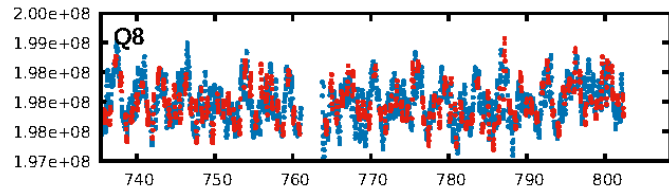
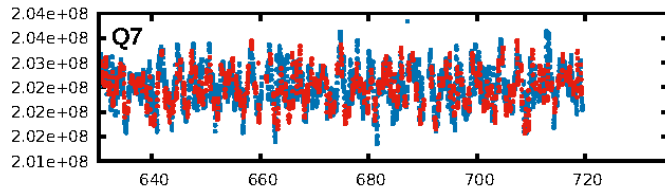
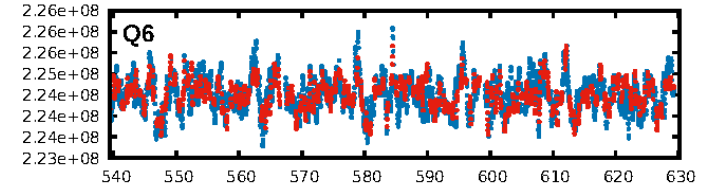
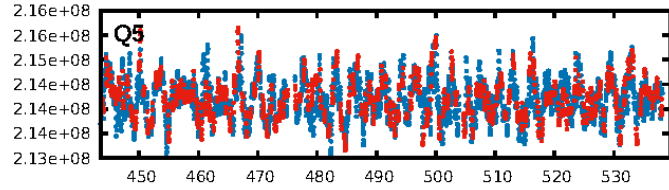
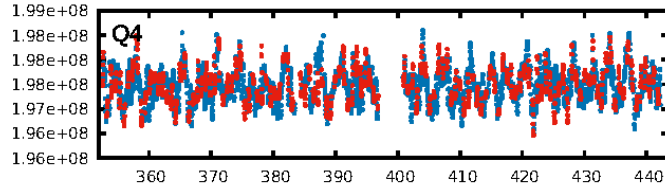
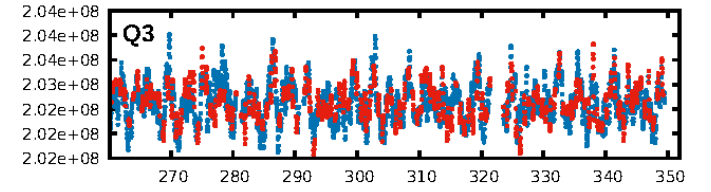
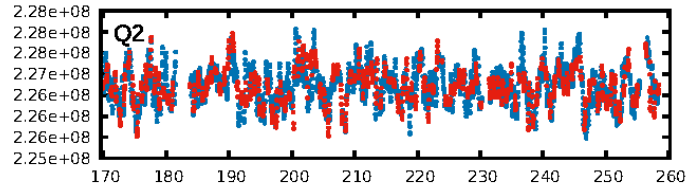
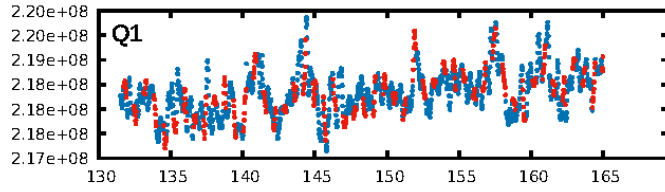
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [732.20 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.95e-20  
RollingBand-fgt: 0.90 [1660/1852]  
GhostDiagnostic-chr: 1.058  
Centroid-sig: 9.4%  
Centroid-so: 0.634 arcsec [1.43 $\sigma$ ]  
OotOffset-rm: 0.382 arcsec [0.74 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 0.211 arcsec [0.88 $\sigma$ ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.59 [10/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 12:35:27 Z

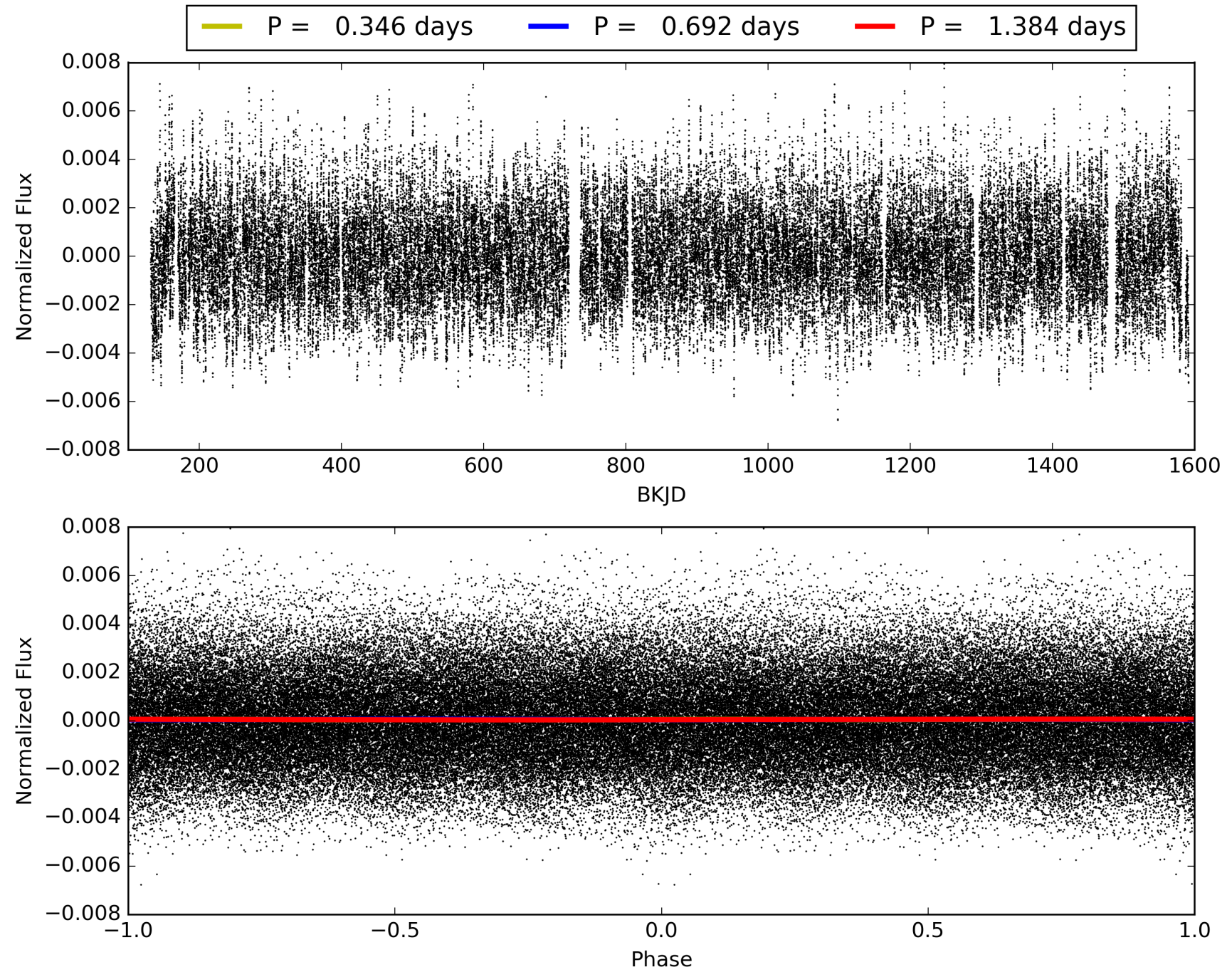
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011667100-01, PDC Light Curves



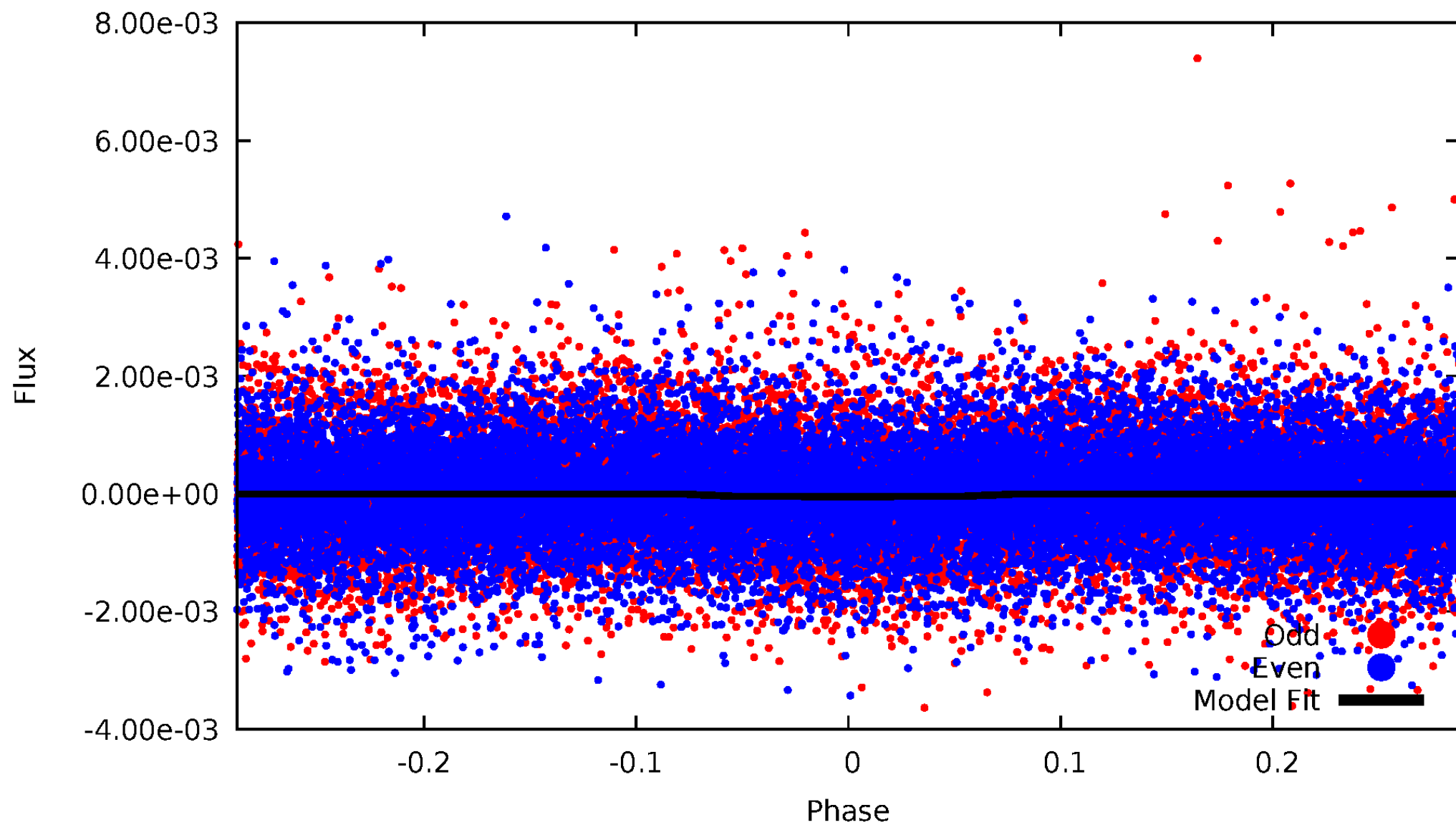


# TCE 011667100-01



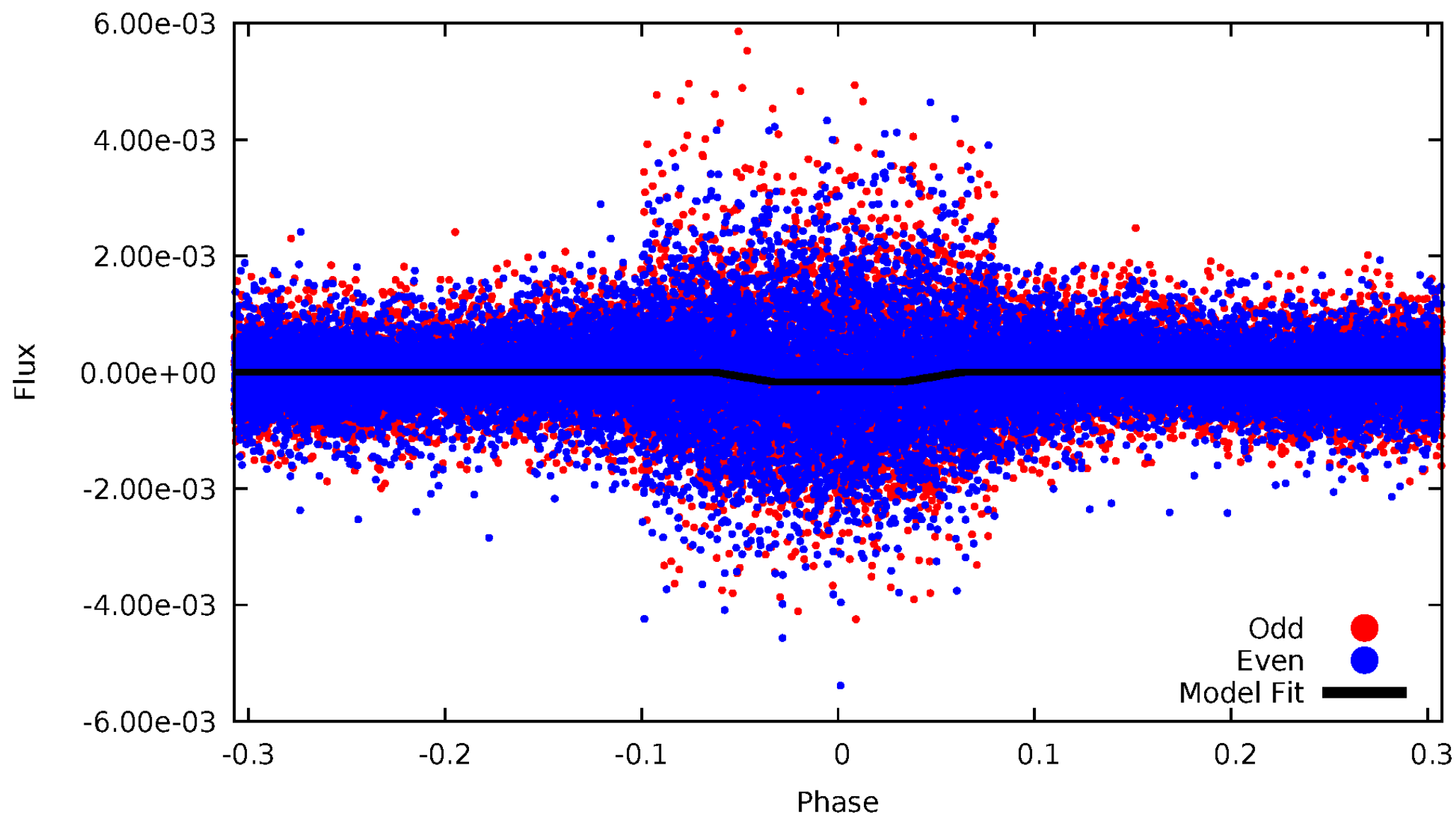
# DV Odd/Even

TCE 011667100-01



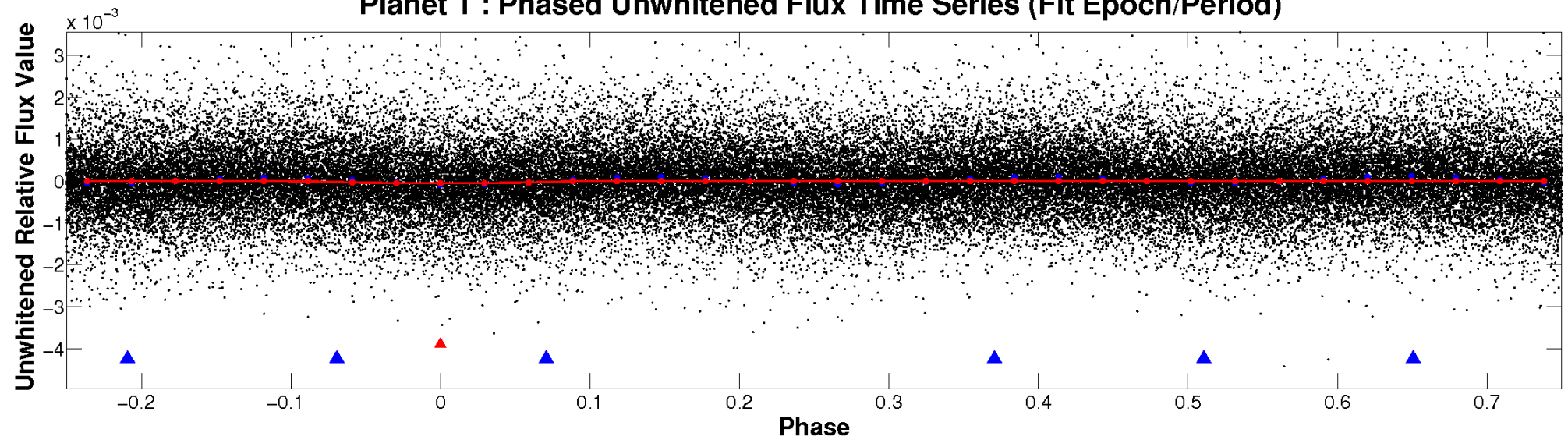
# ALT Odd/Even

TCE 011667100-01

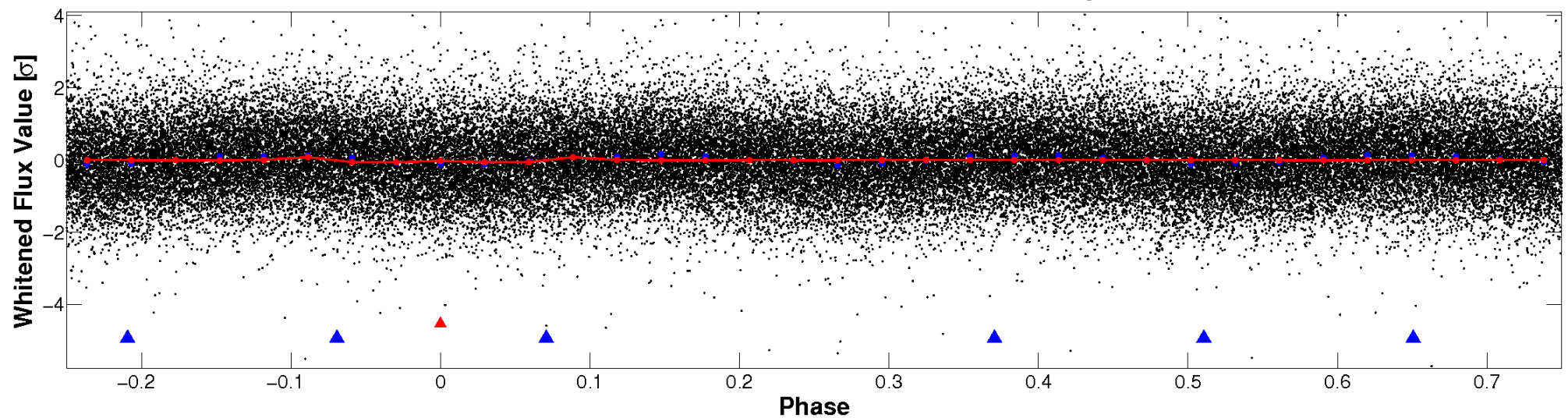


# Non-Whitened Vs. Whitened Light Curve

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



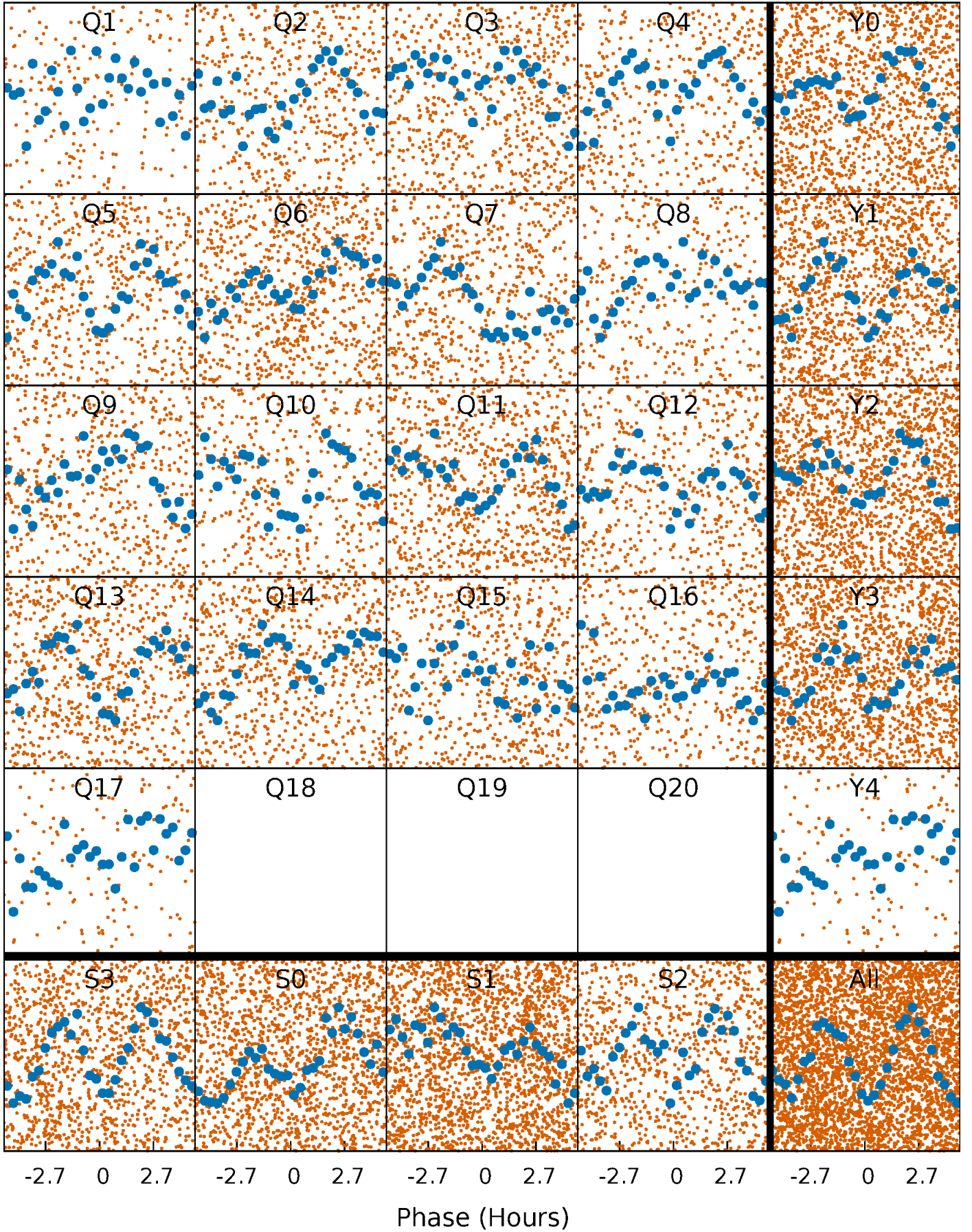
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

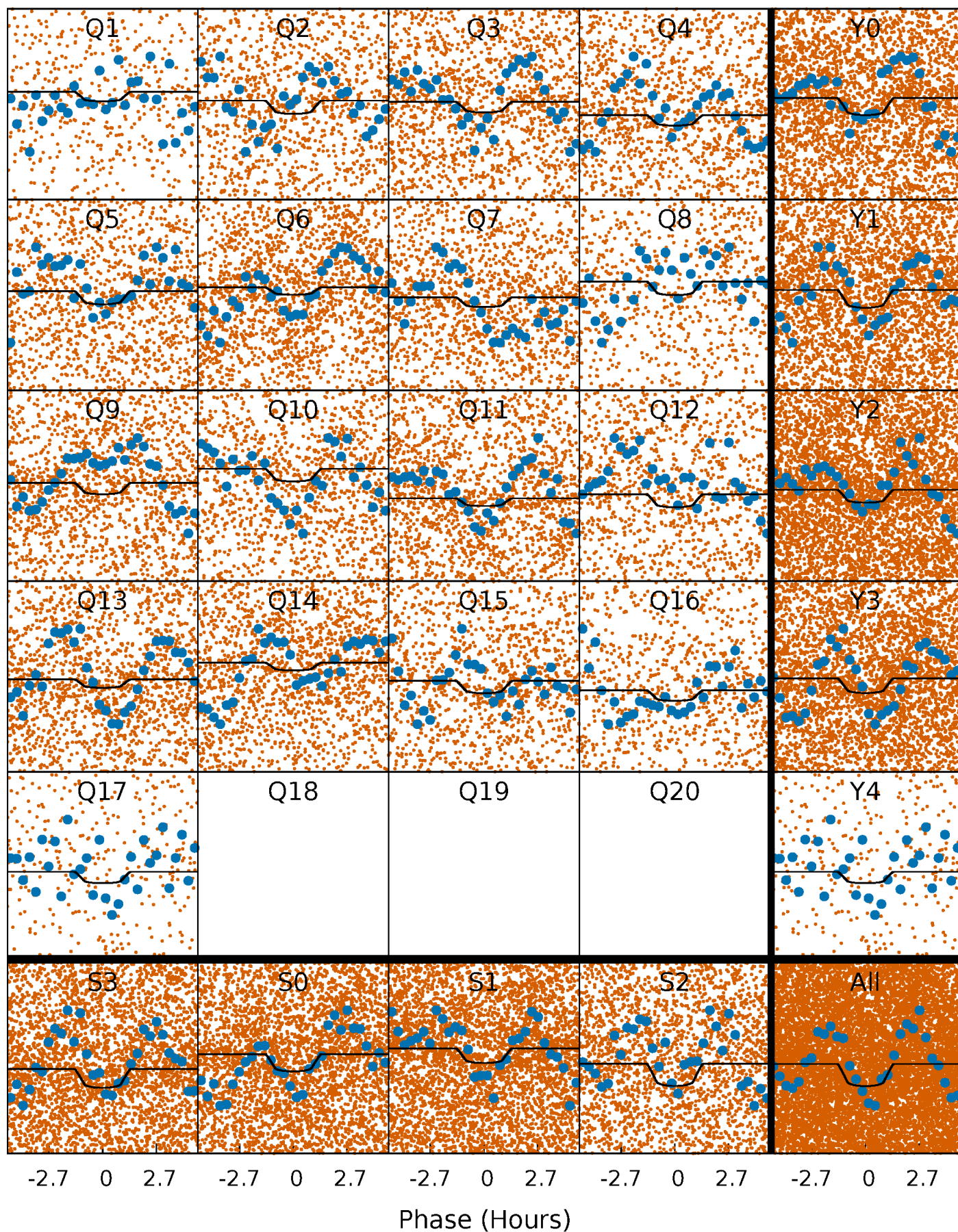
TCE 011667100-01 P= 0.691942 Days  $T_0=131.827137$  (BKJD)





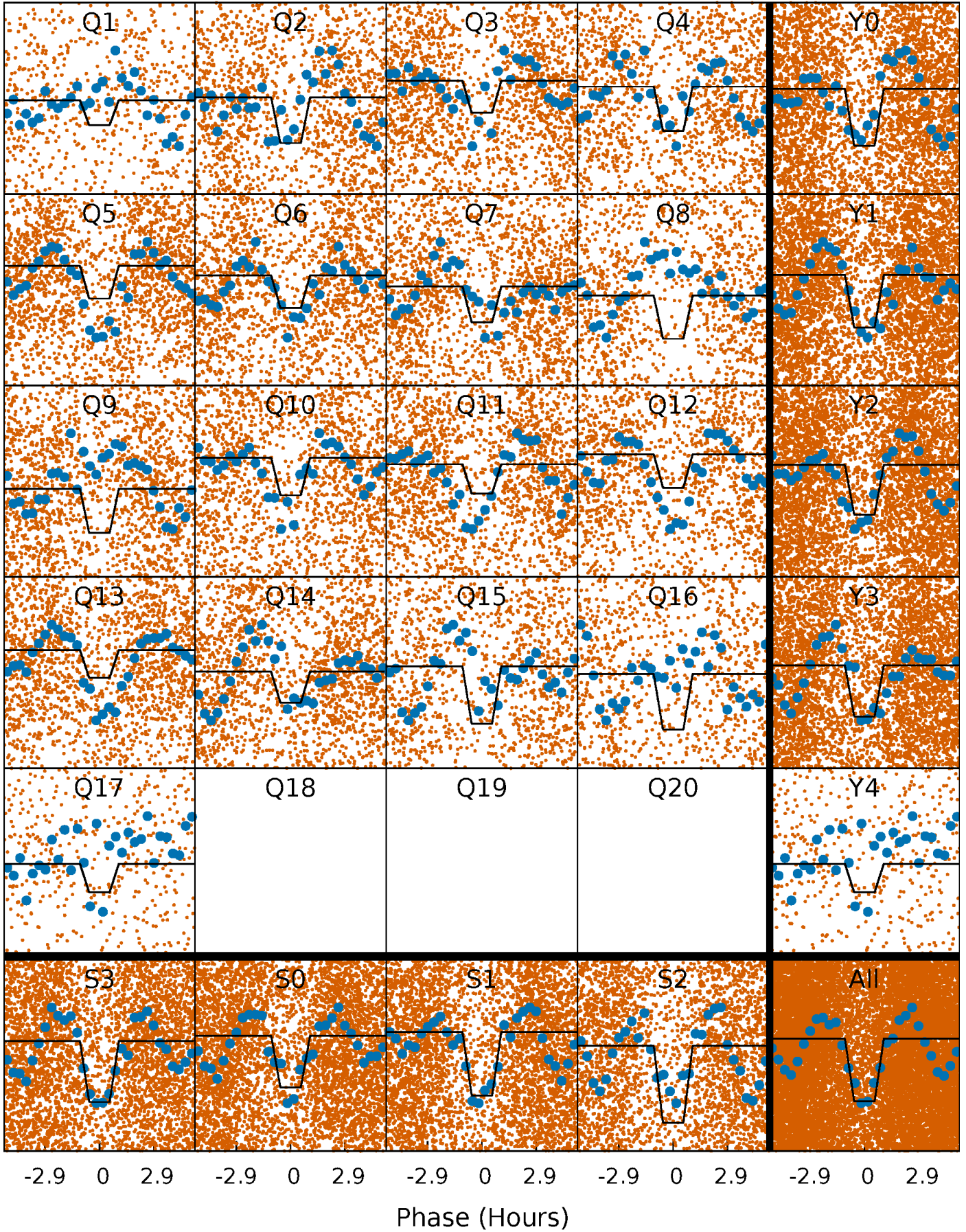
# DV Quarter-Phased Transit Curves

TCE 011667100-01 P= 0.691942 Days  $T_0=131.827137$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011667100-01 P= 0.691953 Days  $T_0=131.825501$  (BKJD)

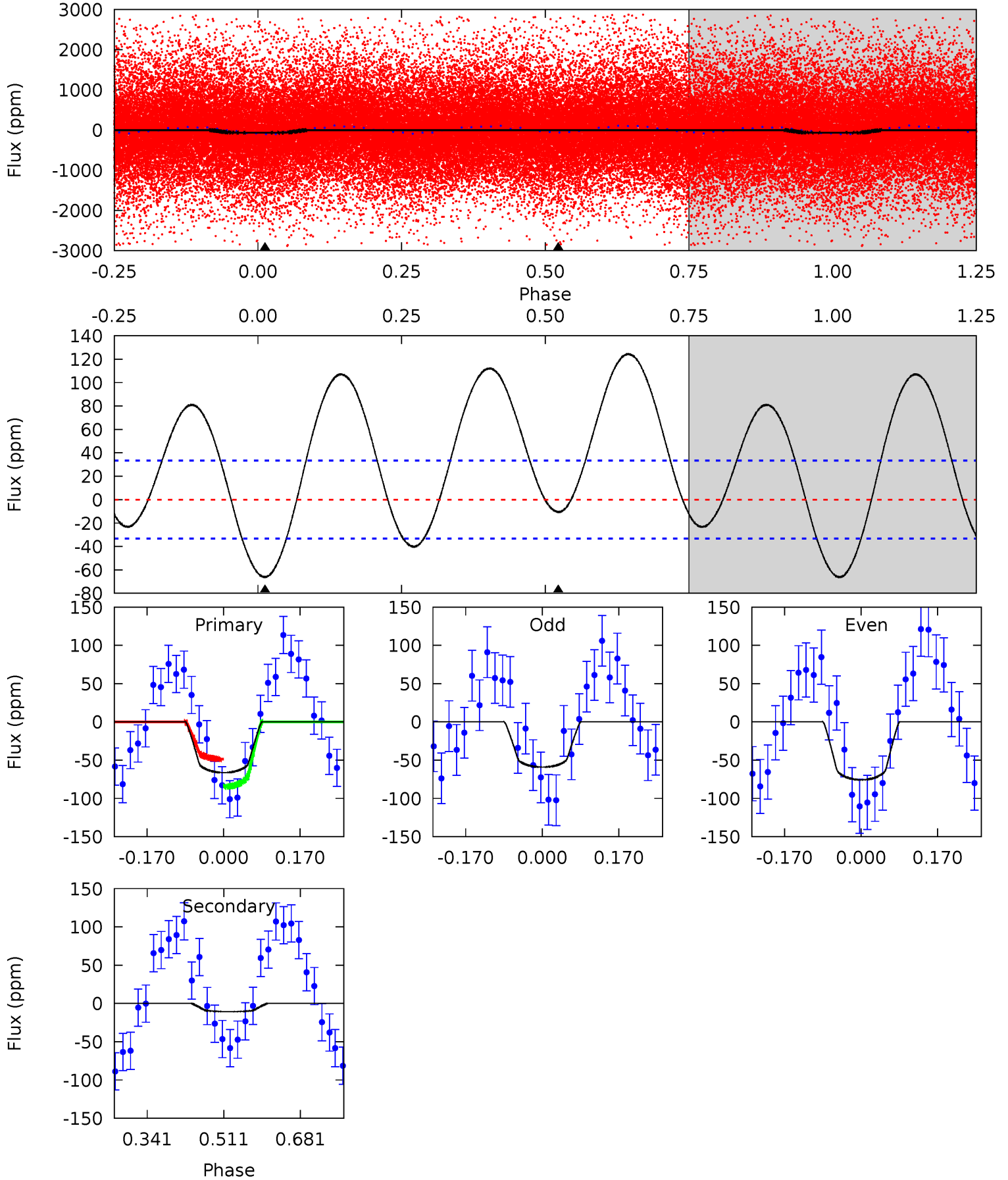




# DV Model-Shift Uniqueness Test

011667100-01, P = 0.691942 Days, E = 131.135195 Days

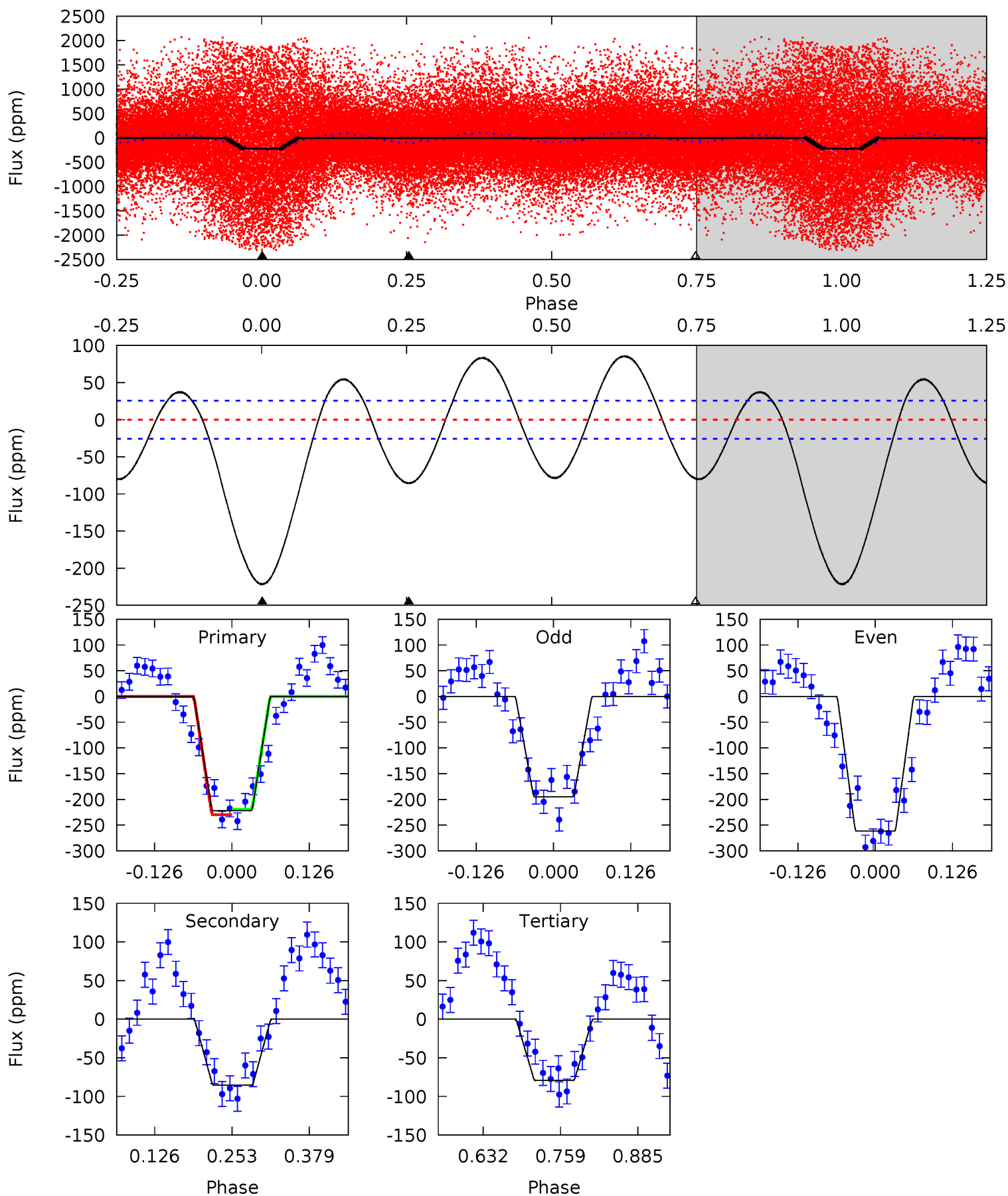
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.86	1.43	0	0	4.45	1.37	4.35	8.86	8.86	1.43	1.43	1.12	0.83	0.65	2.43



# Alt Model-Shift Uniqueness Test

011667100-01, P = 0.691953 Days, E = 131.133548 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
38.9	15.0	13.9	0	4.52	1.53	9.69	25.0	38.9	1.09	15.0	5.90	0.69	0.28	0.95





### Stellar Parameters For KIC 011667100

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7353^{+203}_{-330}$	$3.991^{+0.234}_{-0.156}$	$-0.140^{+0.200}_{-0.350}$	$2.127^{+0.528}_{-0.704}$	$1.616^{+0.174}_{-0.323}$	$0.236^{+0.337}_{-0.106}$
	+3%/-4%	+6%/-4%	+143%/-250%	+25%/-33%	+11%/-20%	+143%/-45%
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 011667100-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-11 \pm 7$	$1.72^{+0.51}_{-0.45}$	$4901^{+373}_{-438}$	$4250^{+998}_{-7989}$	$0.620^{+0.674}_{-0.464}$
Alt.	$-85 \pm 6$	$2.92^{+0.59}_{-0.53}$	$4862^{+352}_{-451}$	$5810^{+500}_{-444}$	$1.766^{+0.794}_{-0.553}$

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

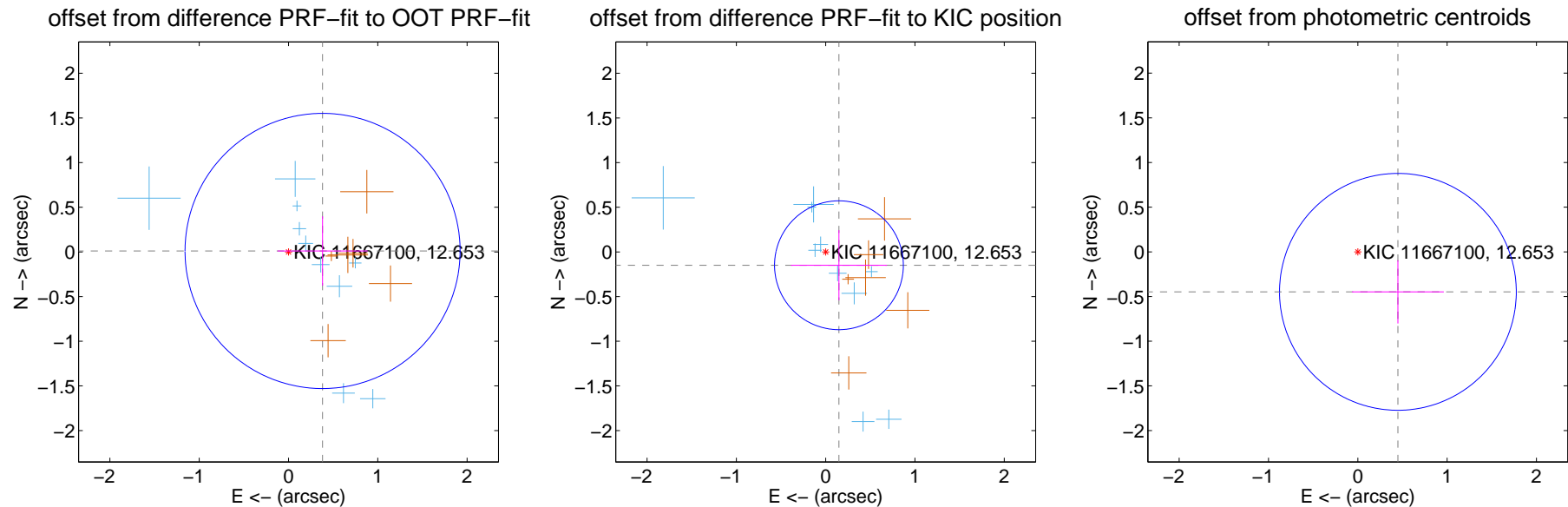
## DV Centroid Data

Supplemental centroid analysis for 011667100-01. Kepler magnitude: 12.65. Transit SNR 8.15

There are 10 quarters with good PRF difference image offsets

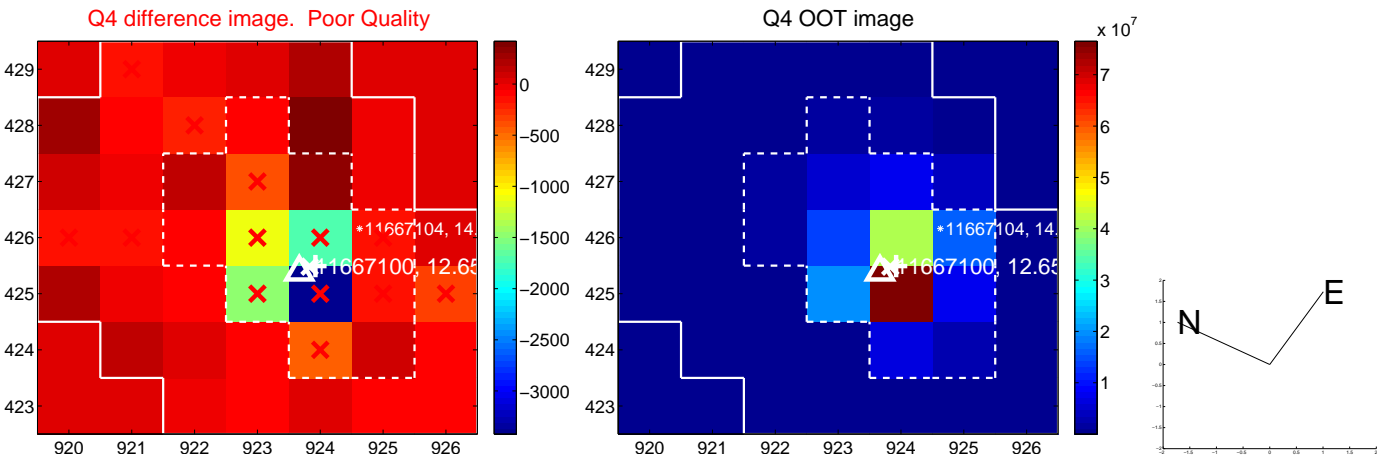
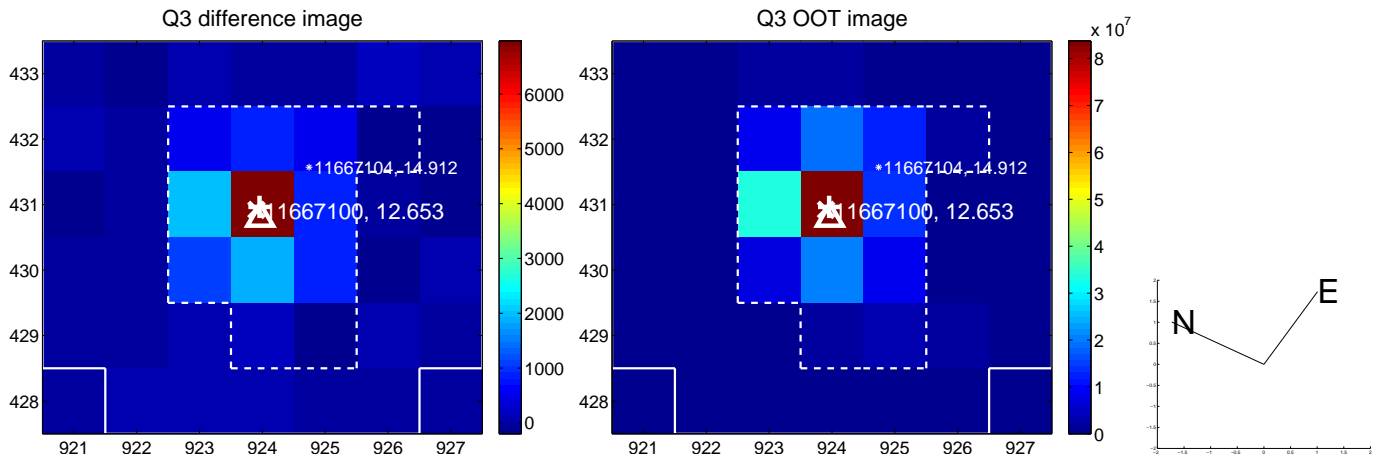
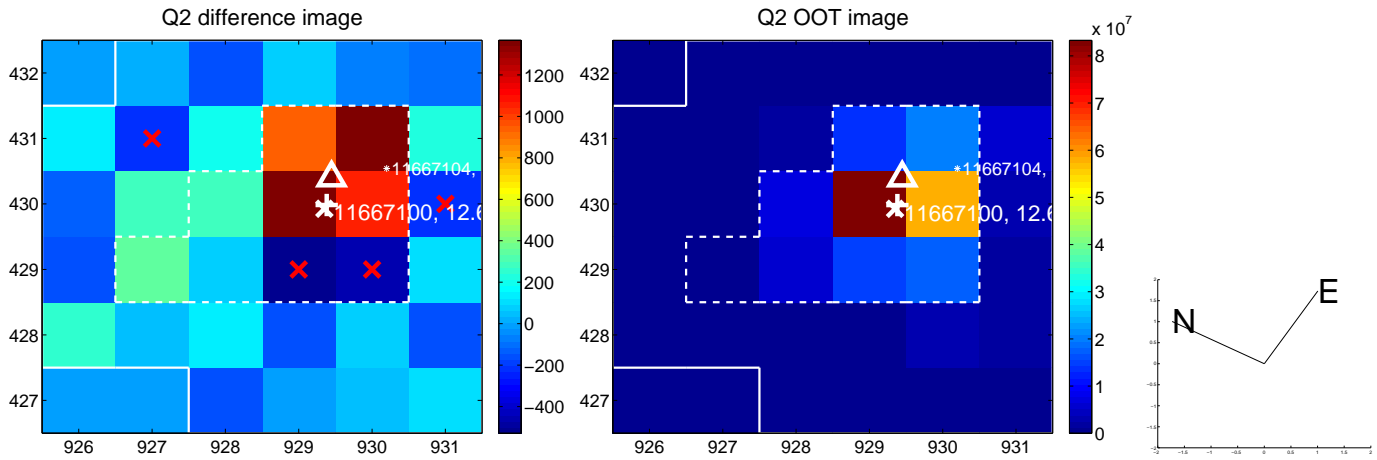
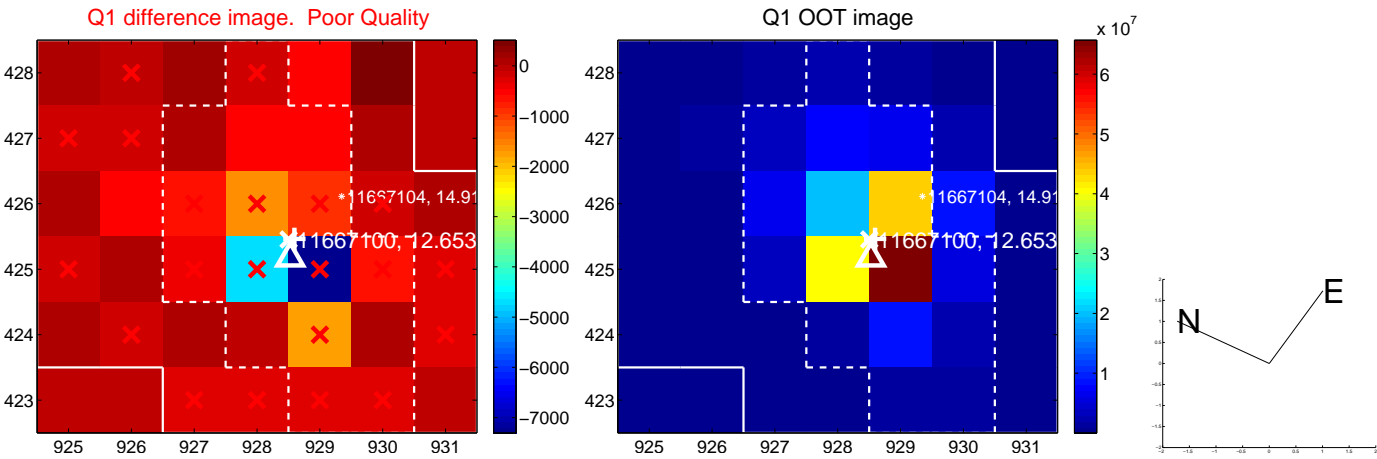
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.382 \pm 0.513$	0.74	$-0.382 \pm 0.505$	$0.011 \pm 0.388$
PRF-fit source offset from KIC position	$0.211 \pm 0.240$	0.88	$-0.149 \pm 0.537$	$-0.149 \pm 0.392$
photometric centroid source offset	$0.63 \pm 0.44$	1.43	$-0.45 \pm 0.51$	$-0.45 \pm 0.35$

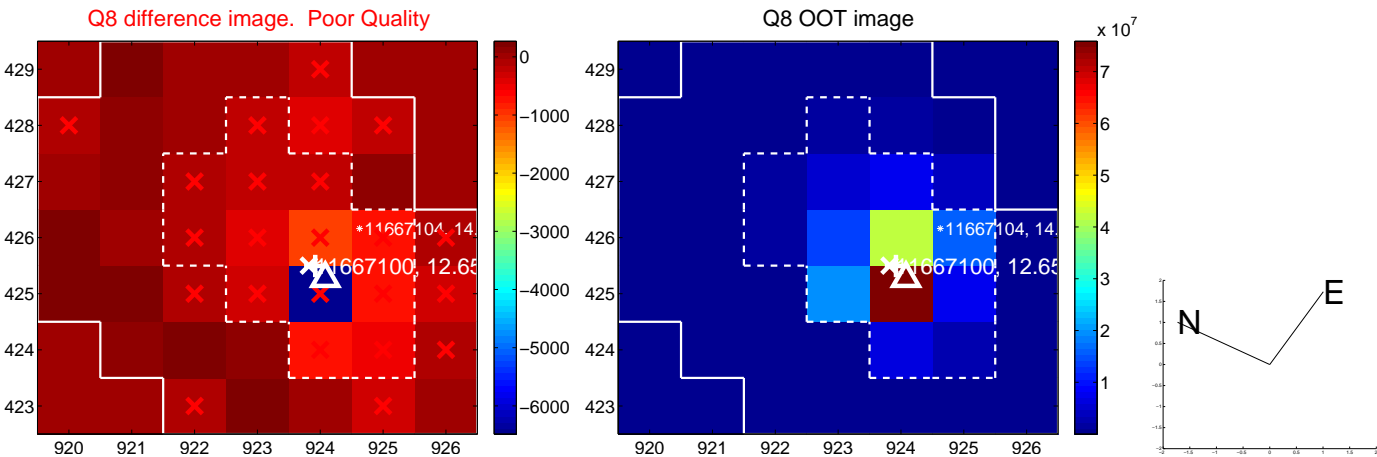
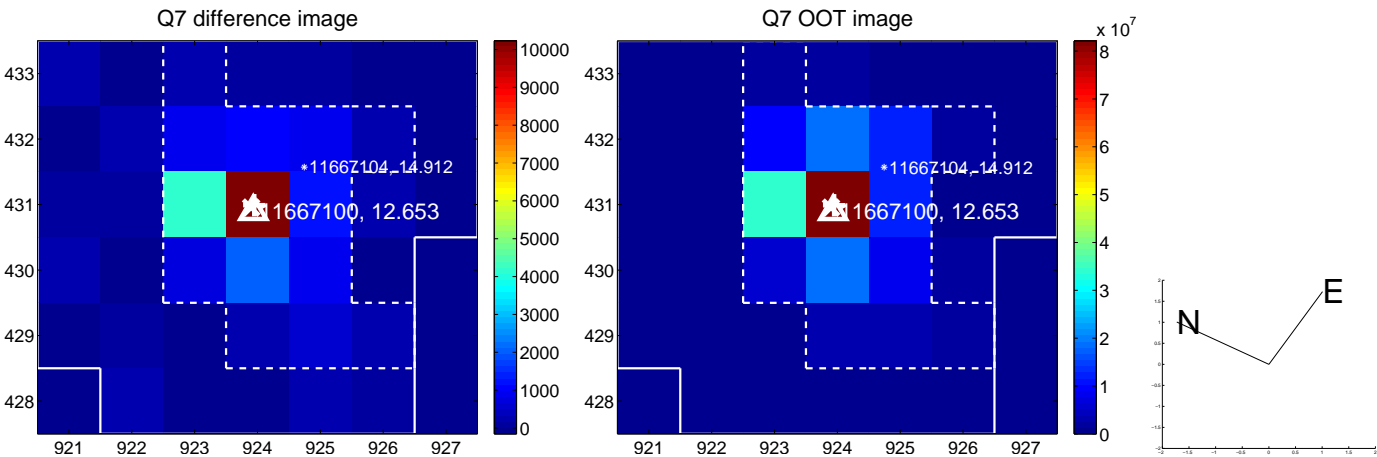
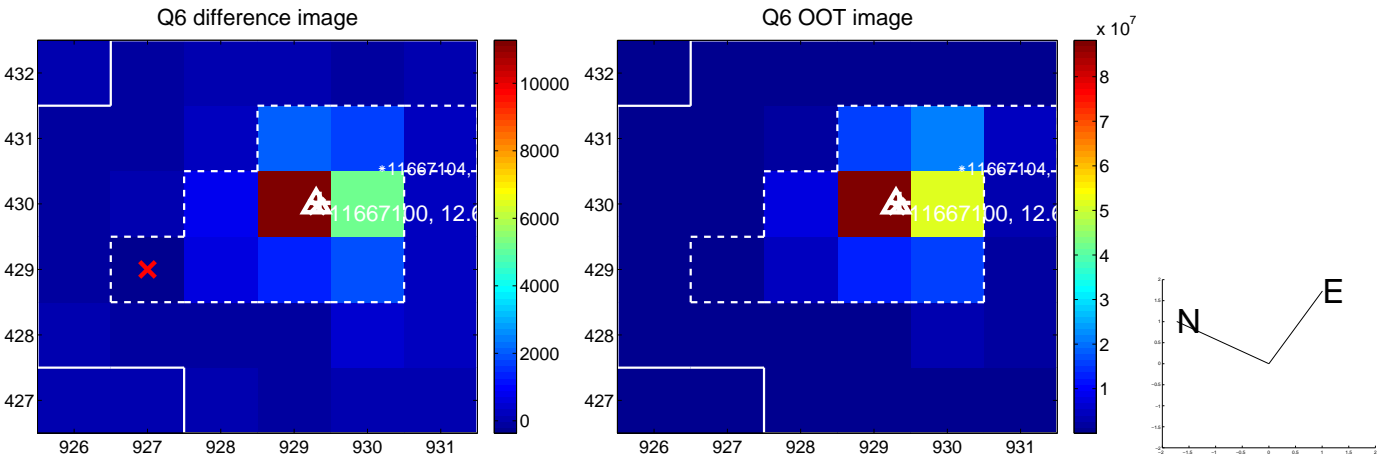
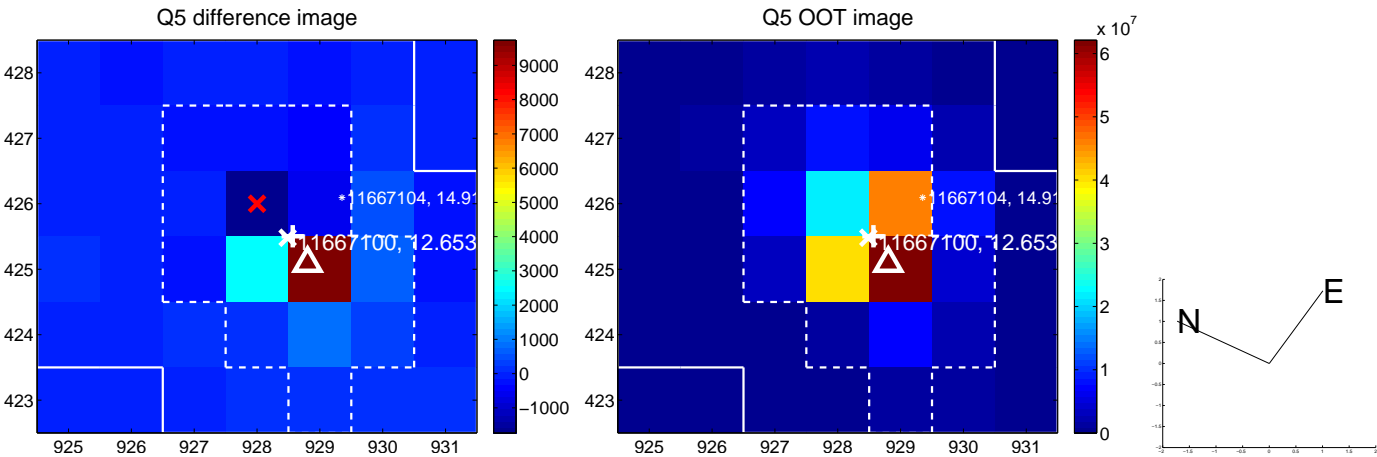


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

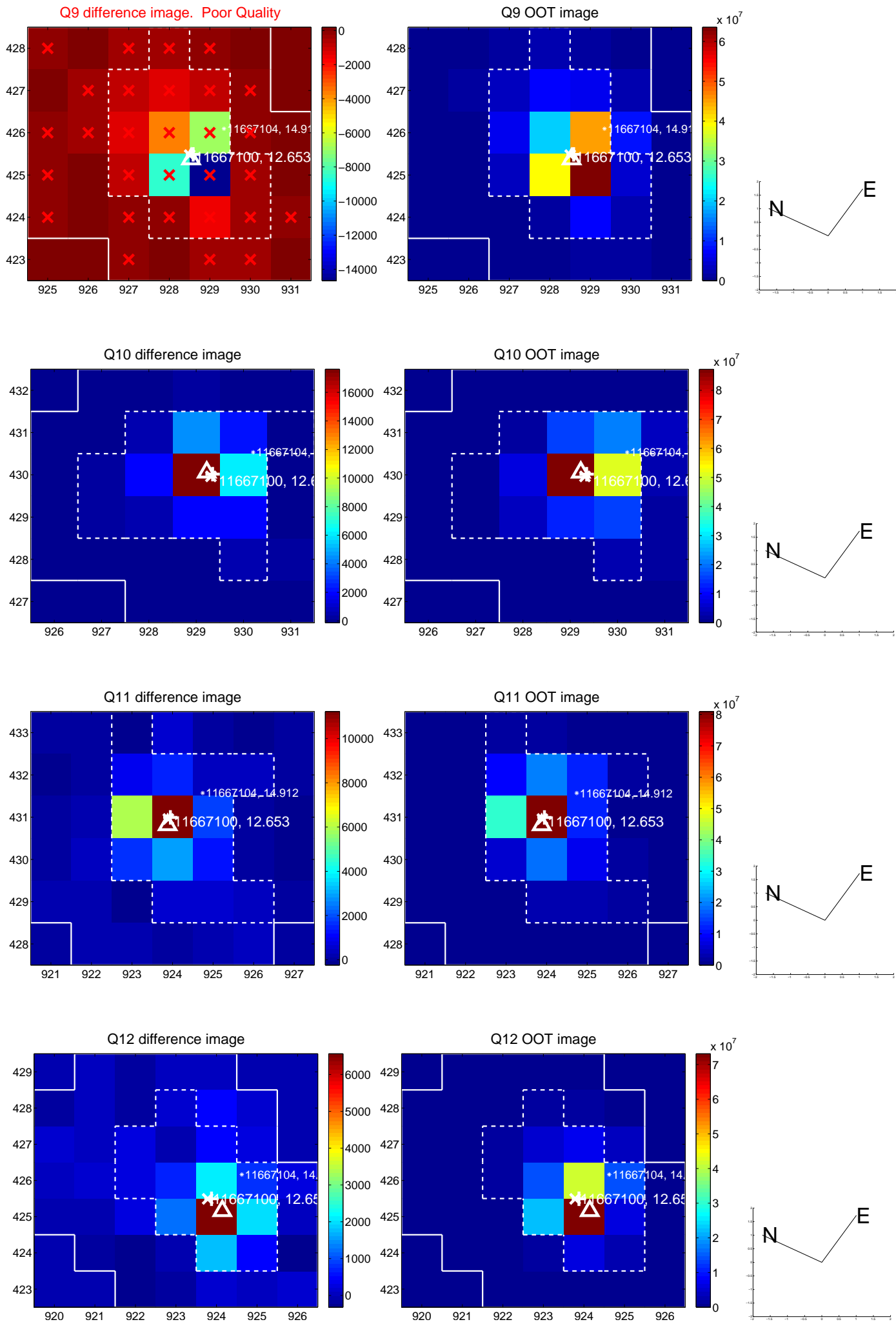


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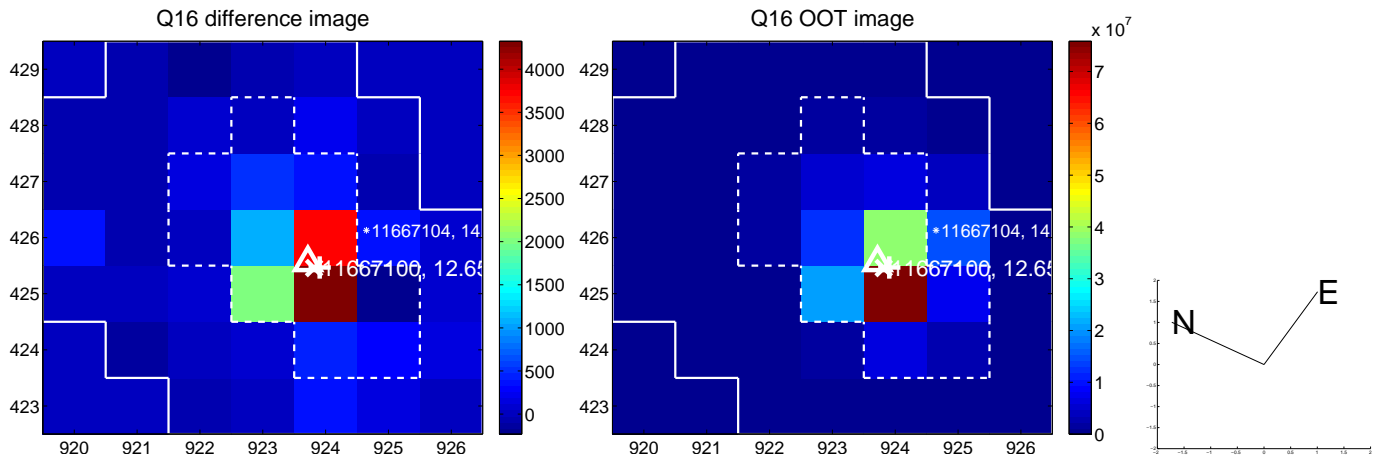
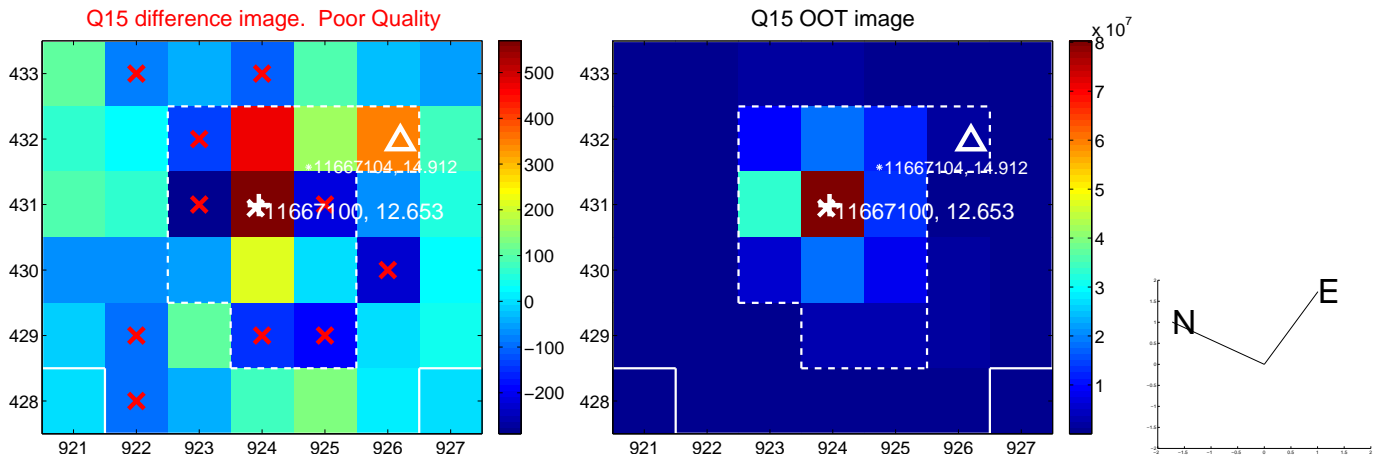
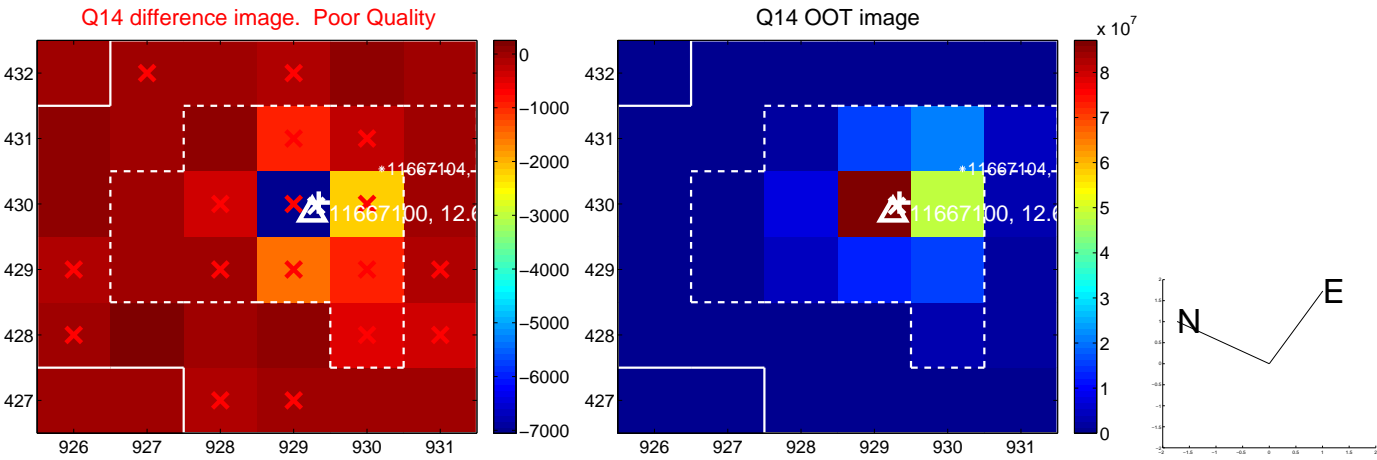
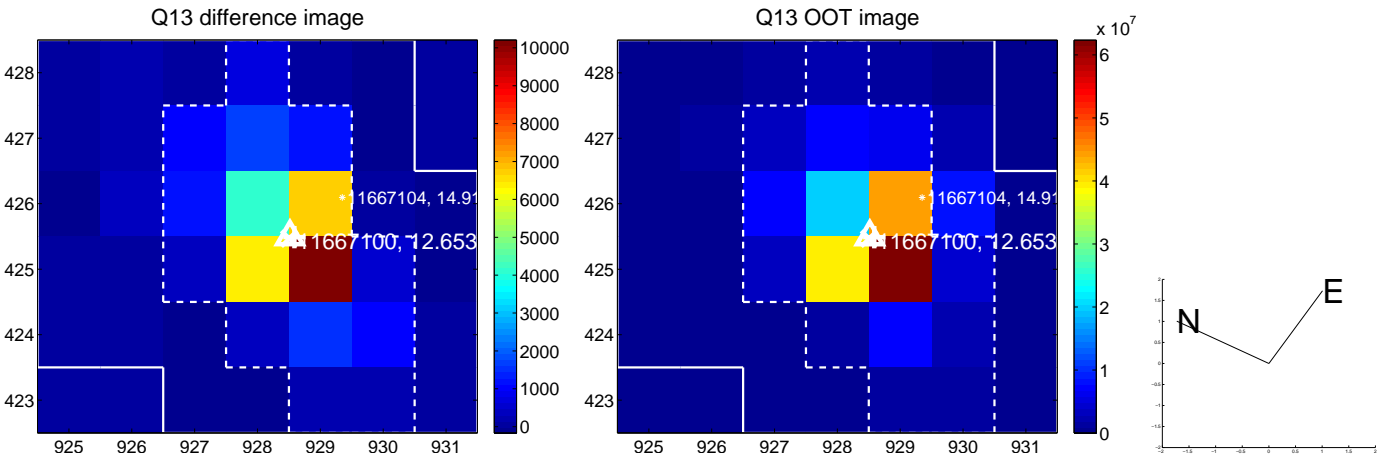




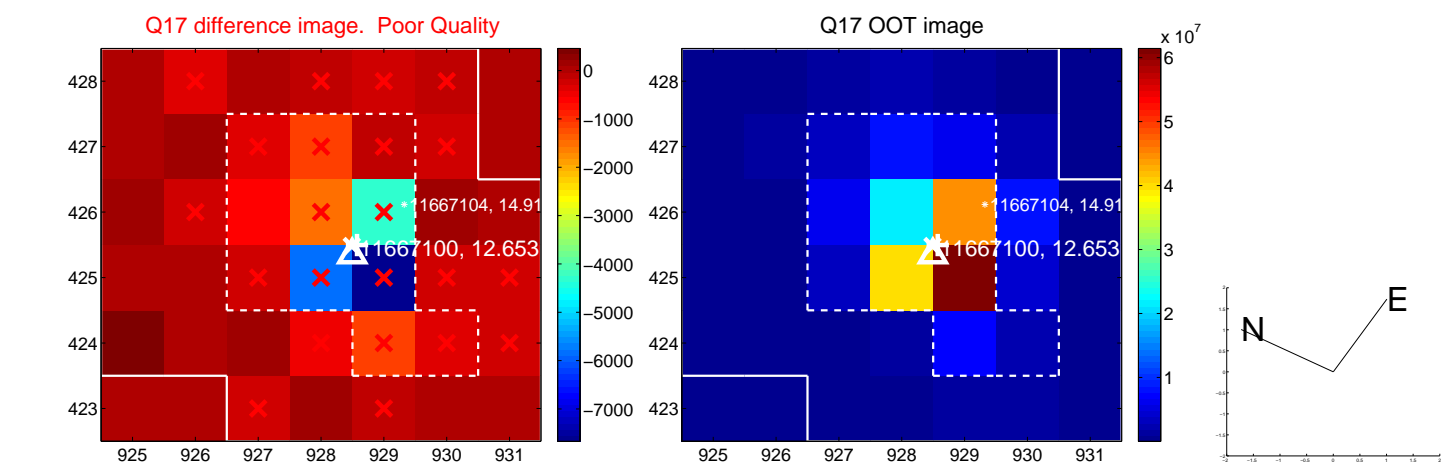
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



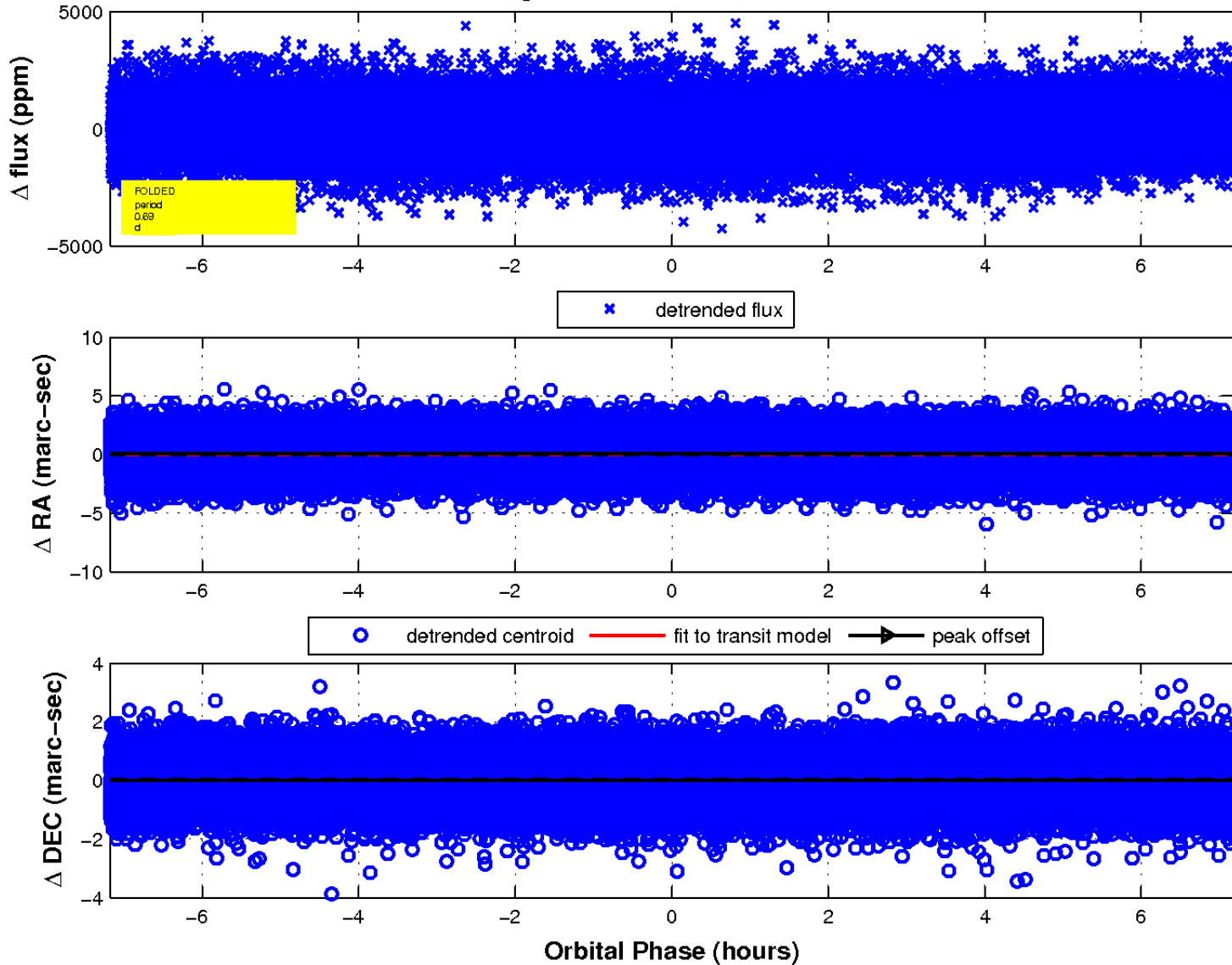
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

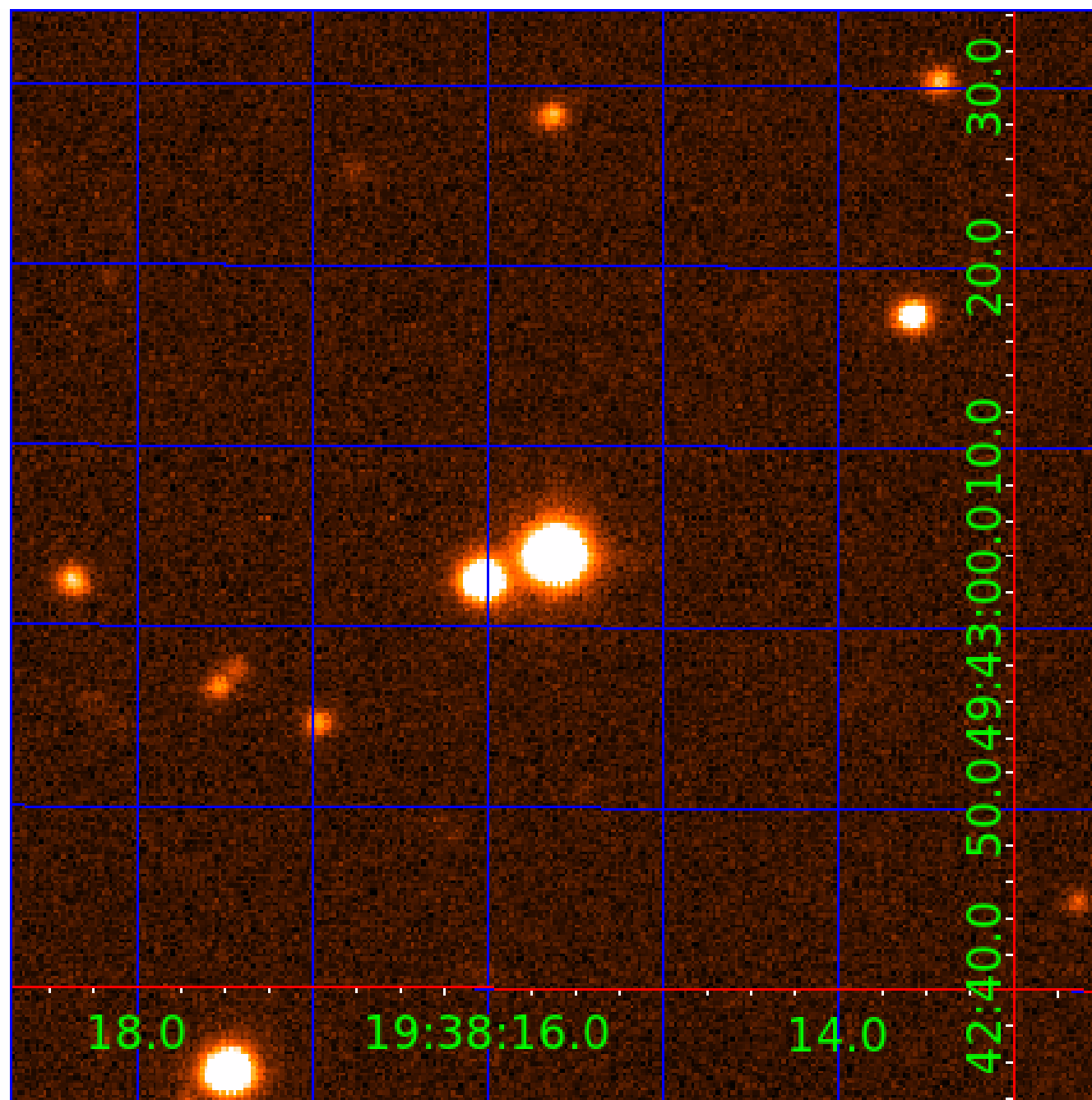


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 011667100

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011667100-01	OBS	No	0.691942	131.827137	50.3	2.392	9.5	8.2	2.13	7353	1.76	36686.34
011667100-02	OBS	No	249.002335	149.174664	2056.6	7.780	7.7	7.7	2.13	7353	11.54	14.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011667100-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
011667100-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—ALL_TRANS_CHASES

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

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

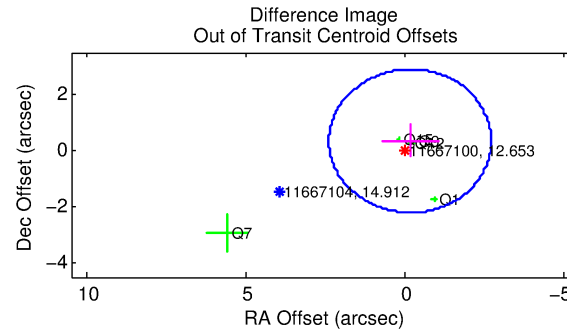
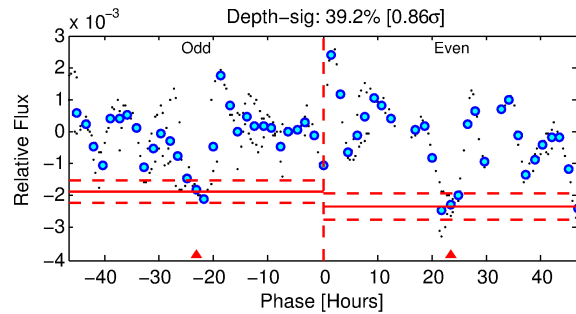
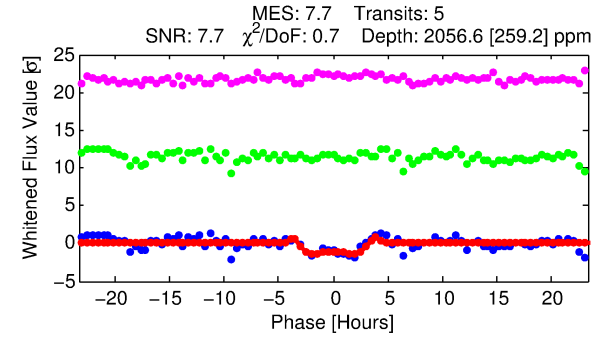
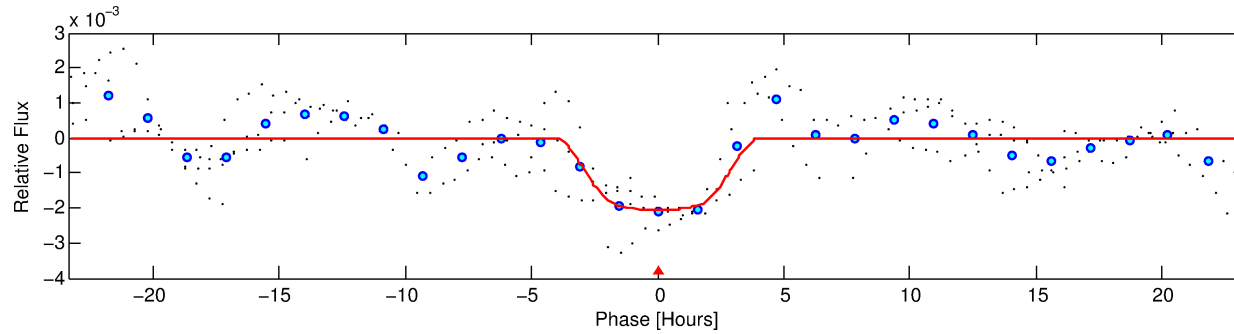
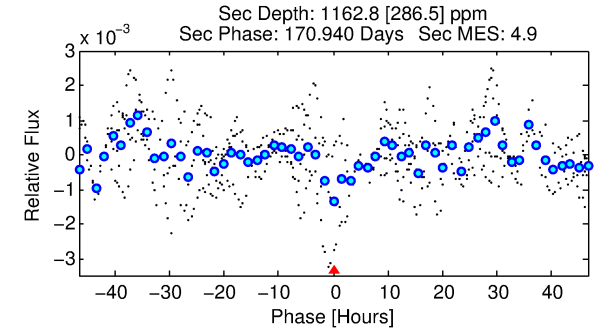
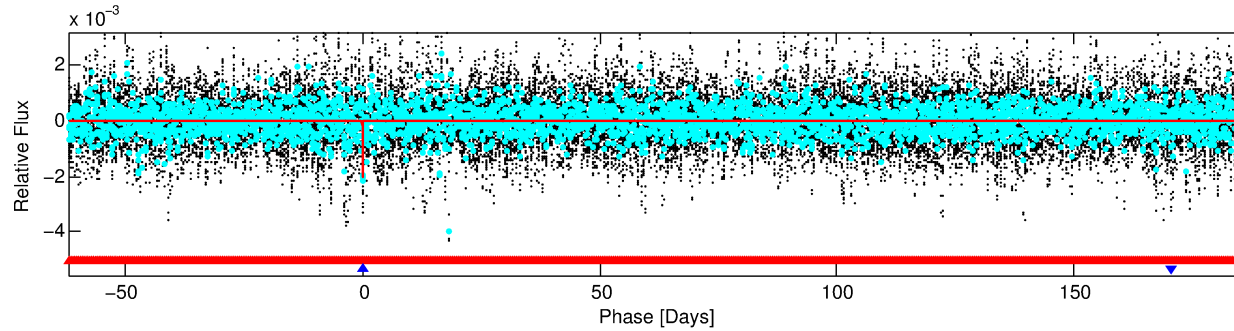
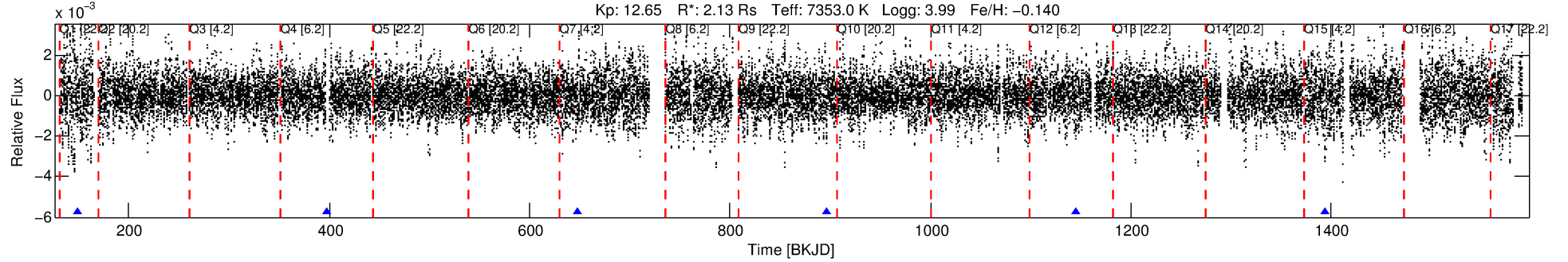
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011667100-02

No Significant Match Found

# DV One-Page Summary

KIC: 11667100 Candidate: 2 of 2 Period: 249.002 d



## DV Fit Results:

Period = 249.00233 [0.00411] d  
Epoch = 149.1747 [0.0148] BKJD  
Rp/R\* = 0.0497 [0.0033]  
a/R\* = 121.35 [8.75]  
b = 0.92 [0.01]  
Seff = 14.33 [6.57]  
Teq = 496 [57] K  
Rp = 11.54 [3.89] Re  
a = 0.9092 [0.2587] AU  
Ag = 3973.29 [2008.97] [1.98σ]  
Teffp = 6090 [505] K [11.00σ]

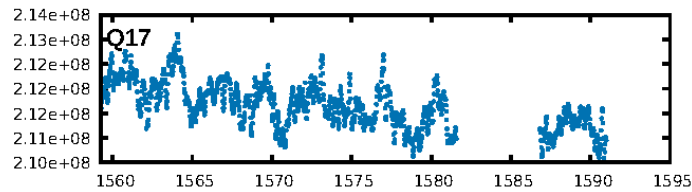
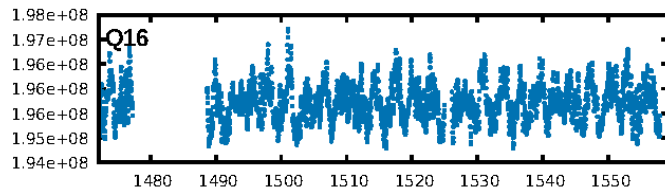
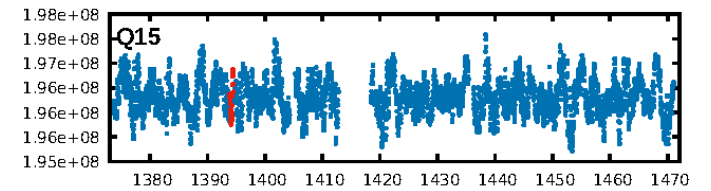
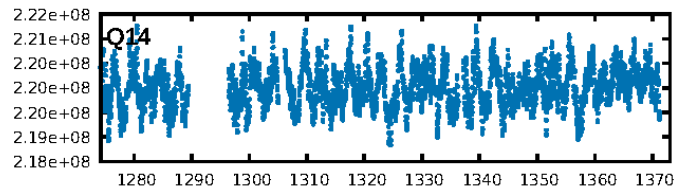
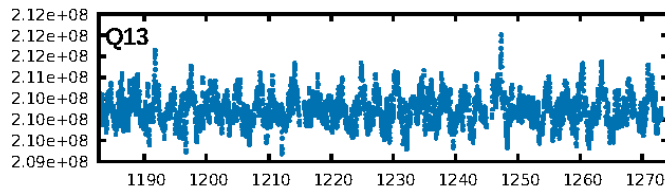
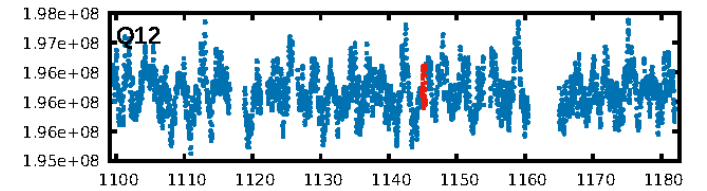
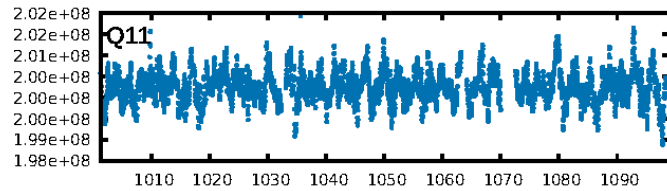
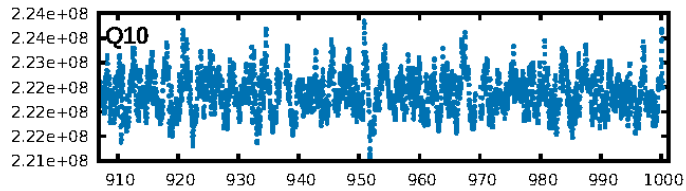
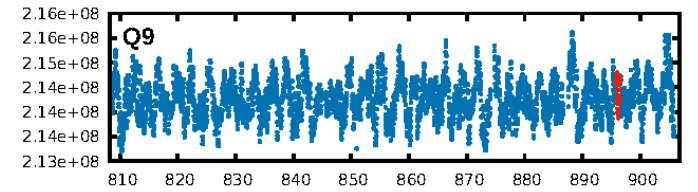
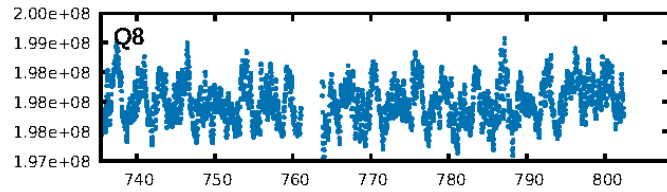
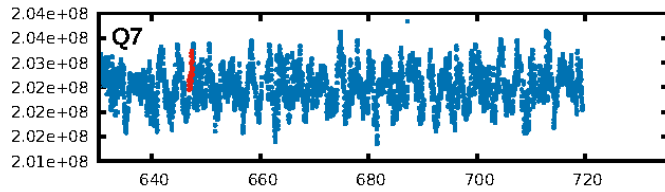
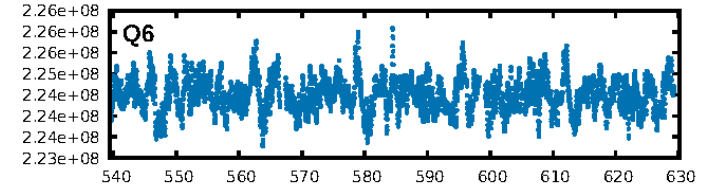
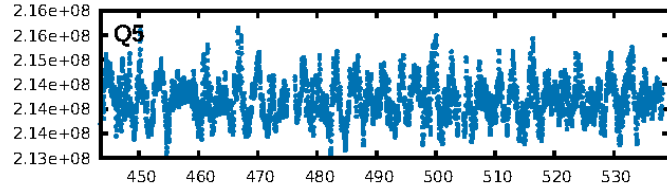
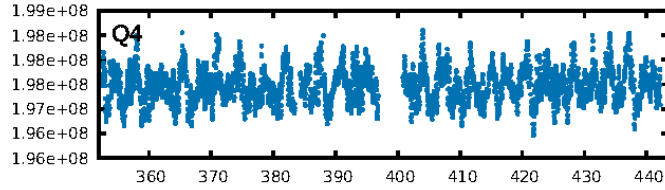
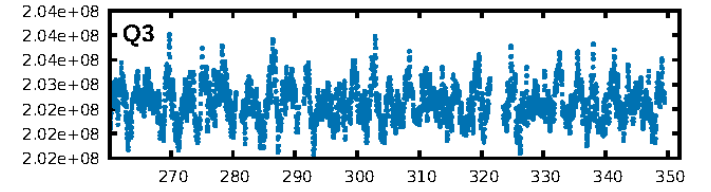
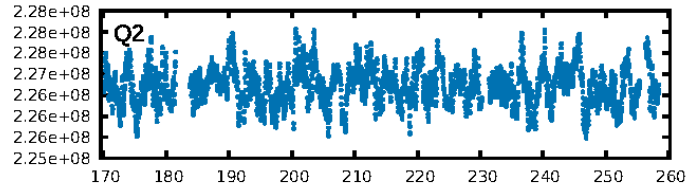
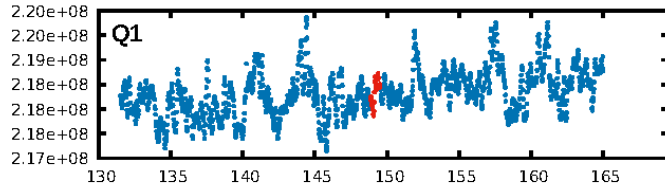
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [732.20σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 55.1%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 4.18e-10**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 1.246  
**Centroid-sig: 0.1%**  
Centroid-so: 0.115 arcsec [0.41σ]  
OotOffset-rm: 0.378 arcsec [0.44σ]  
KicOffset-rm: 0.170 arcsec [0.36σ]  
OotOffset-st: 0/2/1/2 [5]  
KicOffset-st: 0/2/1/2 [5]  
DiffImageQuality-fgm: 0.60 [3/5]  
DiffImageOverlap-fno: 0.00 [0/5]

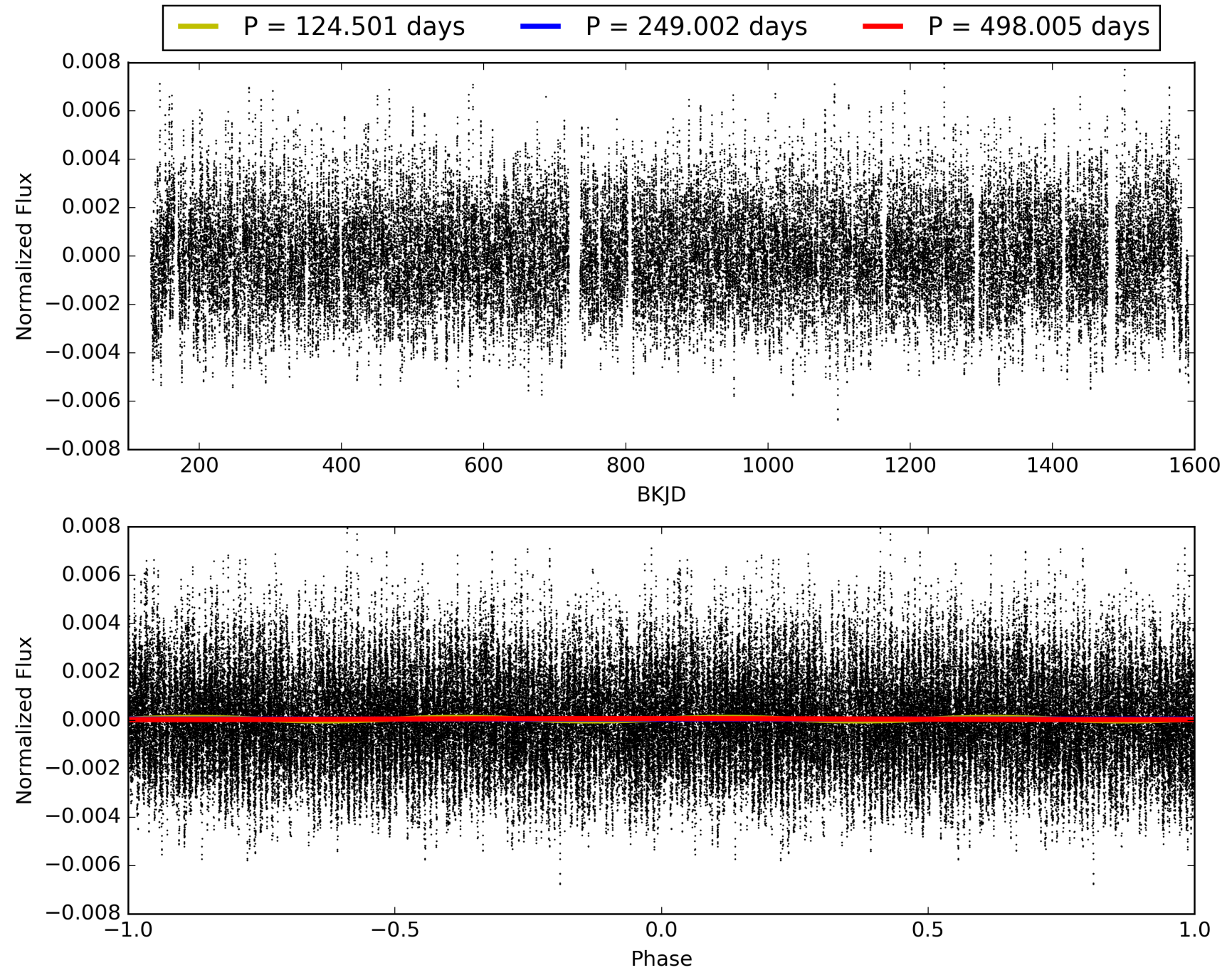
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 12:35:38 Z

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

# TCE 011667100-02, PDC Light Curves

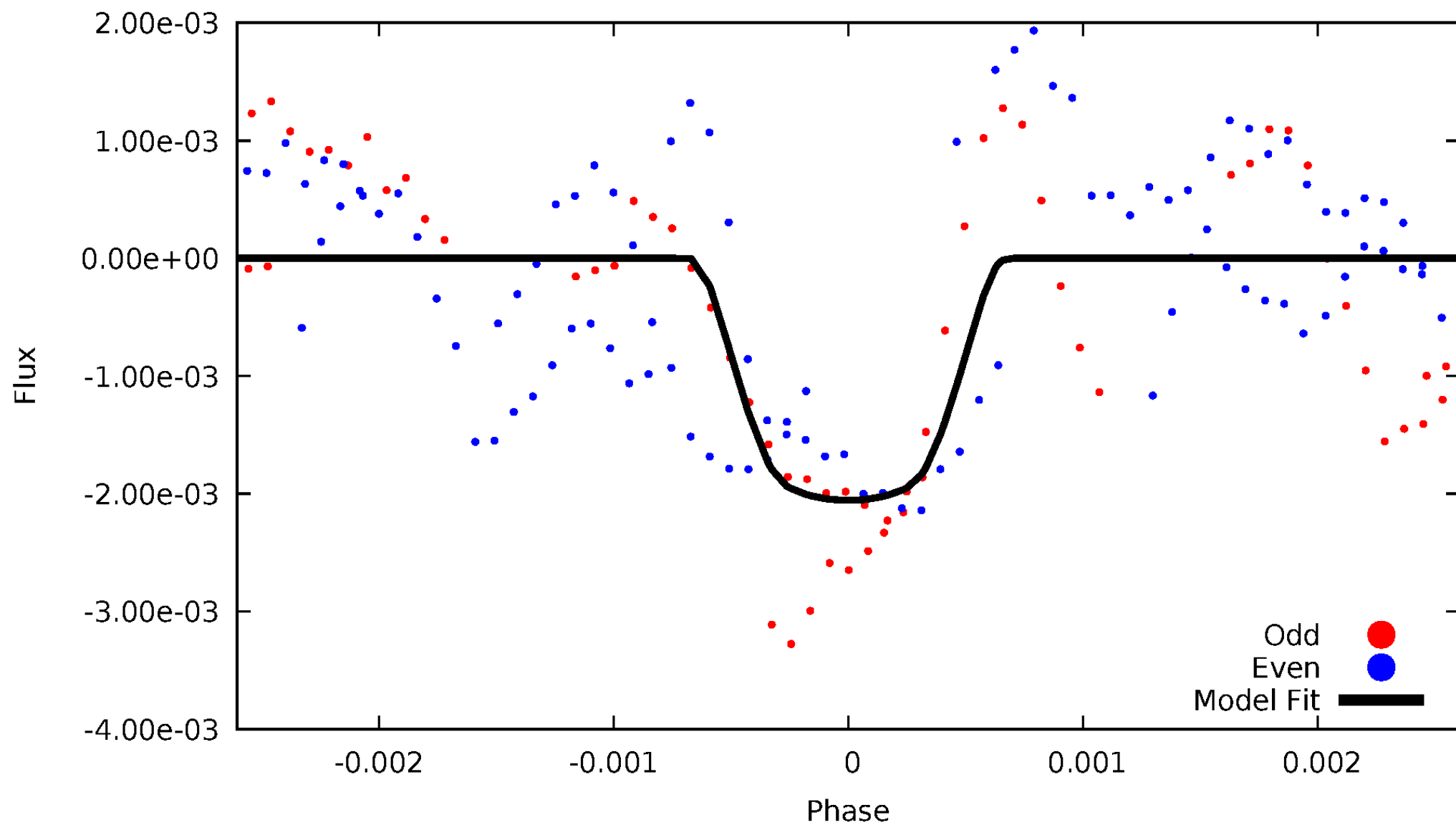


# TCE 011667100-02



# DV Odd/Even

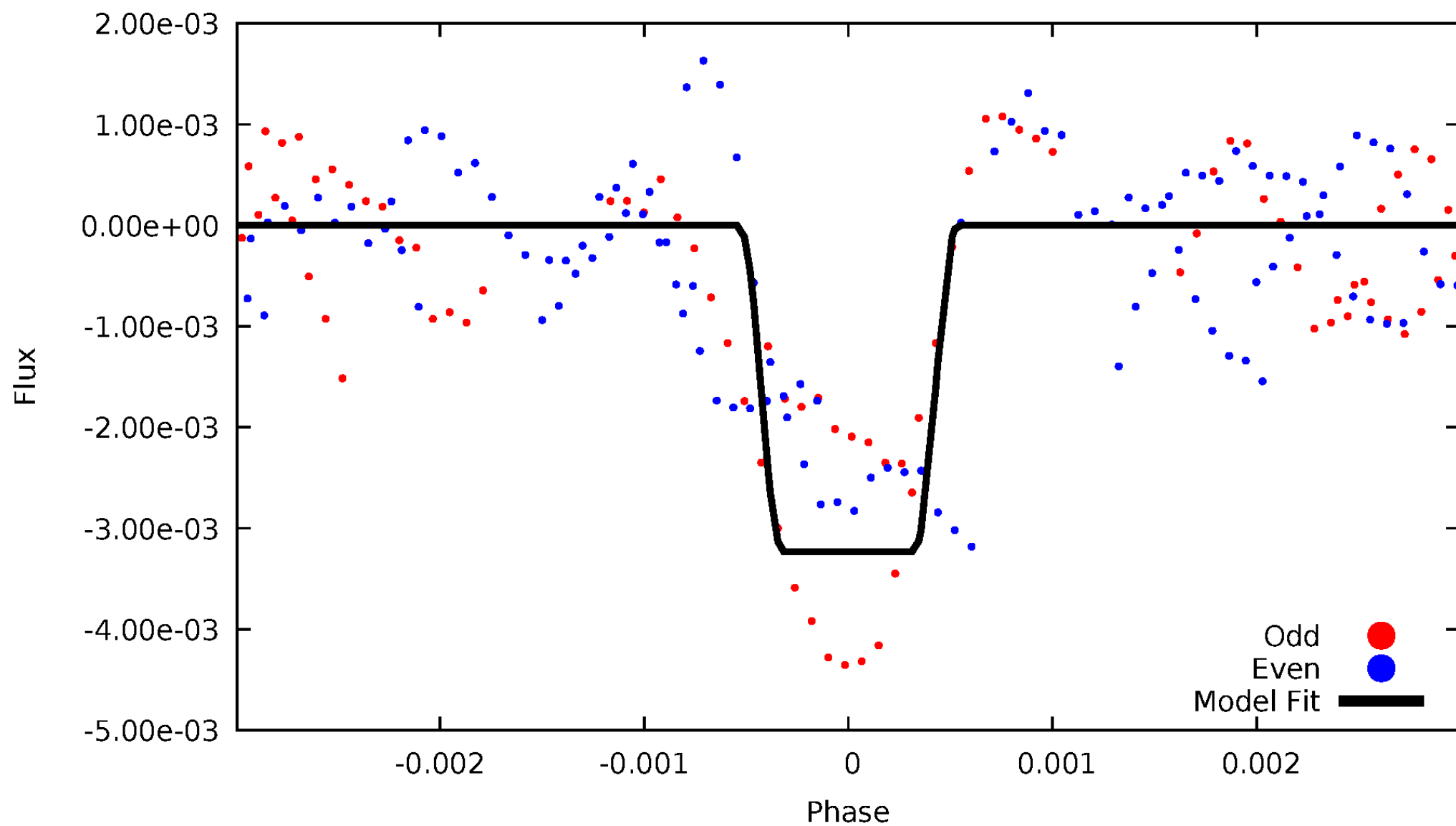
TCE 011667100-02





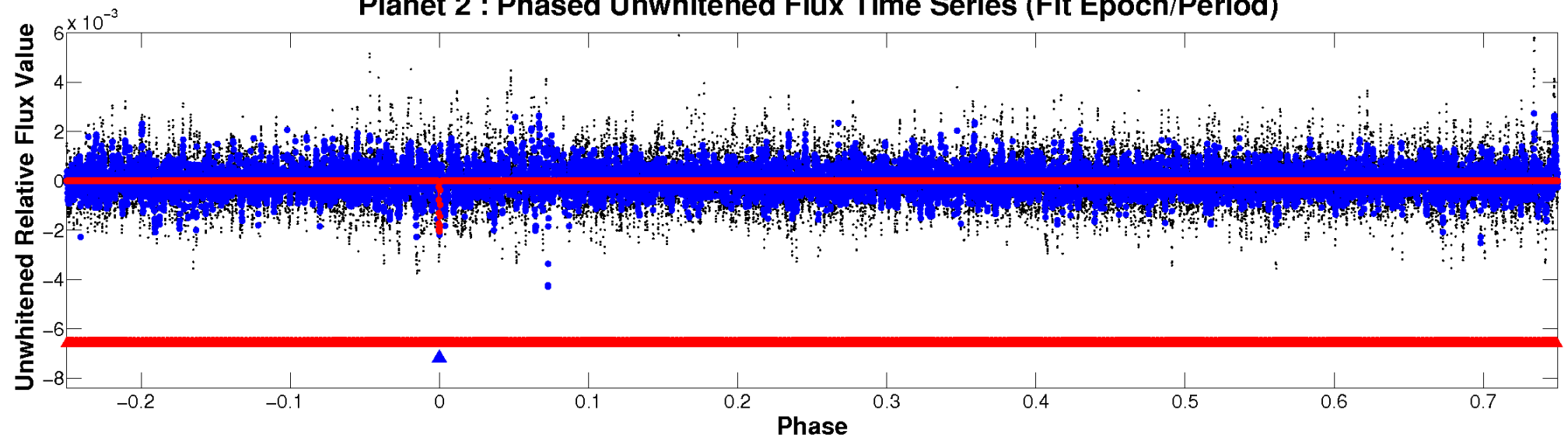
# ALT Odd/Even

TCE 011667100-02

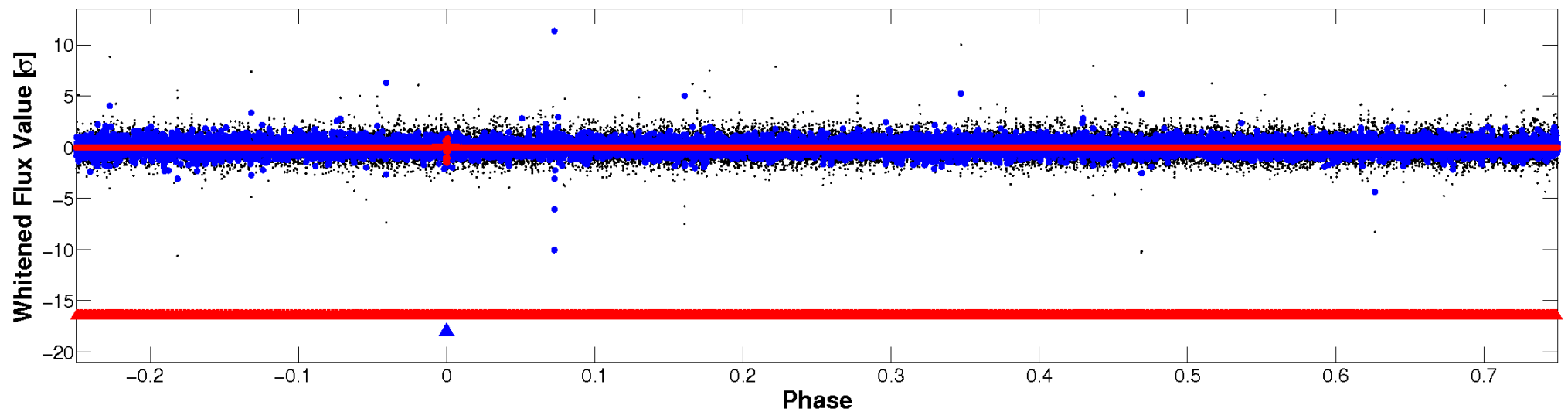


# Non-Whitened Vs. Whitened Light Curve

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

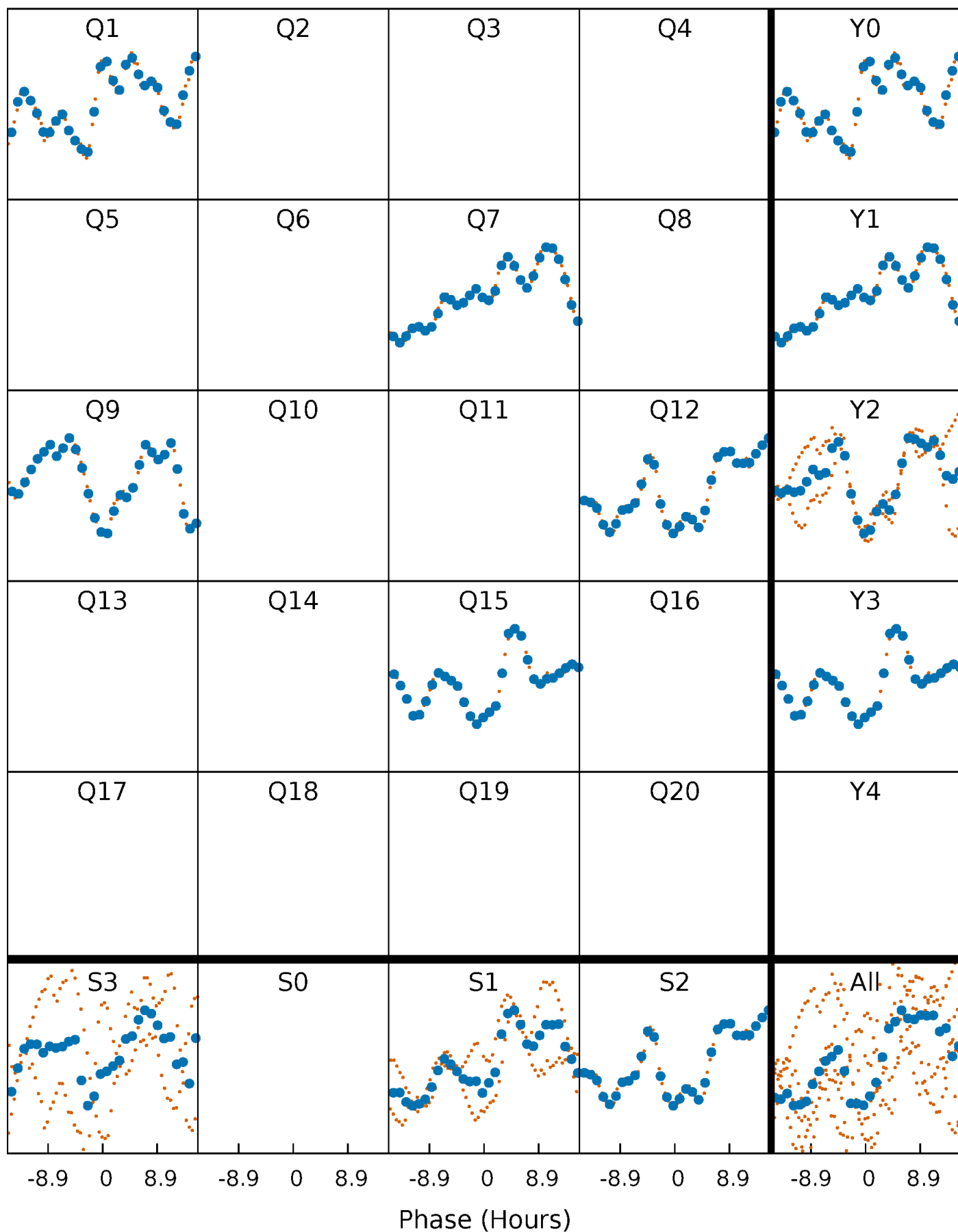


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



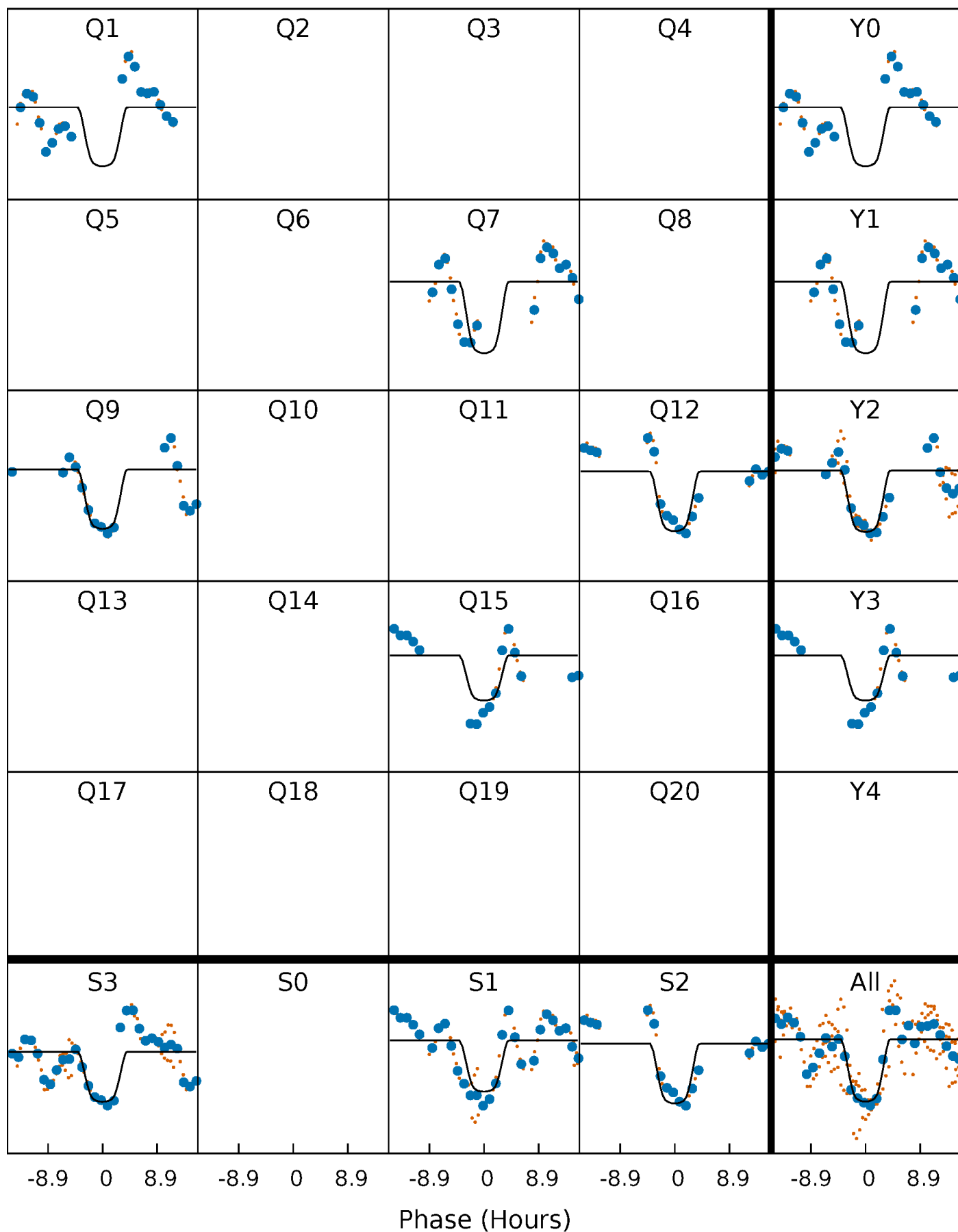
# PDC Quarter-Phased Transit Curves

TCE 011667100-02 P=249.002335 Days  $T_0=149.174664$  (BKJD)



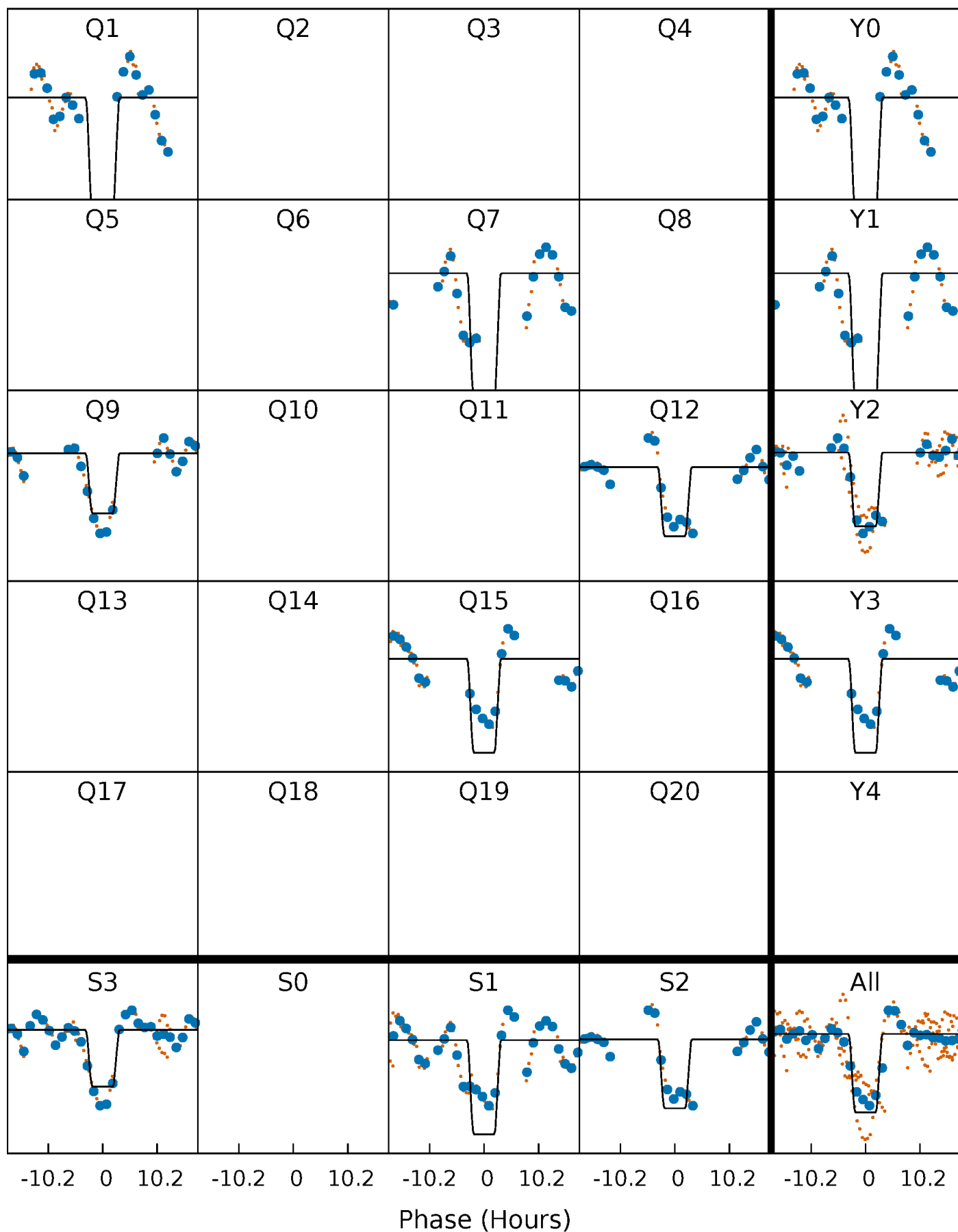
# DV Quarter-Phased Transit Curves

TCE 011667100-02     $P=249.002335$  Days     $T_0=149.174664$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011667100-02     $P=249.010173$  Days     $T_0=149.152255$  (BKJD)

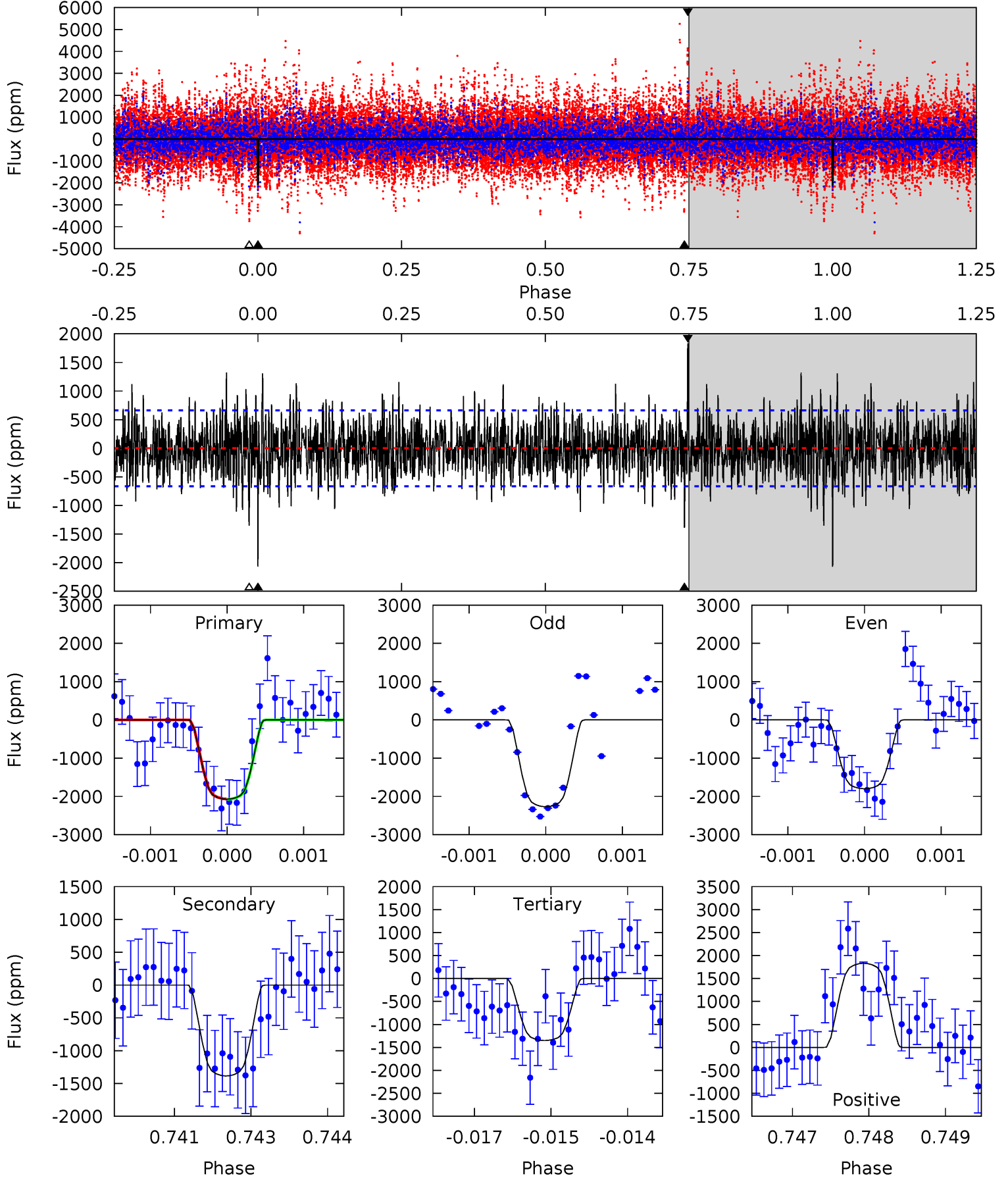




# DV Model-Shift Uniqueness Test

011667100-02, P = 249.002335 Days, E = 149.174664 Days

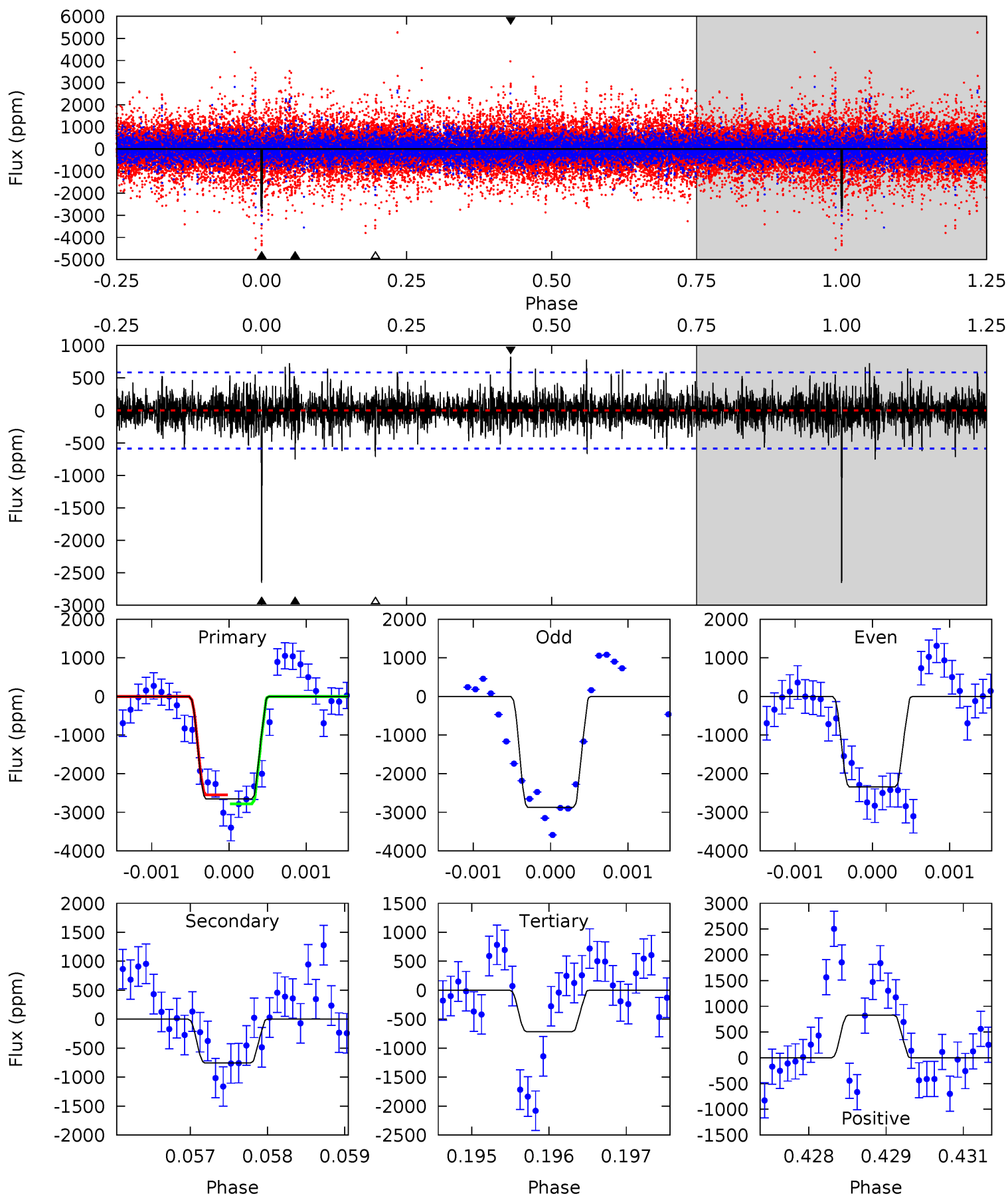
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	11.3	11.0	14.9	5.39	3.20	2.90	5.87	1.96	0.29	-3.62	1.94	0.66	0.47	0.03



# Alt Model-Shift Uniqueness Test

011667100-02, P = 249.010173 Days, E = 149.152255 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
24.6	7.00	6.63	7.67	5.44	3.27	1.55	18.0	16.9	0.37	-0.67	2.35	1.12	0.24	1.07



### Stellar Parameters For KIC 011667100

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7353^{+203}_{-330}$	$3.991^{+0.234}_{-0.156}$	$-0.140^{+0.200}_{-0.350}$	$2.127^{+0.528}_{-0.704}$	$1.616^{+0.174}_{-0.323}$	$0.236^{+0.337}_{-0.106}$
	+3%/-4%	+6%/-4%	+143%/-250%	+25%/-33%	+11%/-20%	+143%/-45%
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 011667100-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1385 \pm 123$	$11.43^{+1.77}_{-1.99}$	$688^{+52}_{-62}$	$6250^{+308}_{-315}$	$4819^{+2105}_{-1290}$
Alt.	$-755 \pm 108$	$13.28^{+1.96}_{-2.45}$	$692^{+48}_{-60}$	$5101^{+246}_{-253}$	$1950^{+869}_{-516}$

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

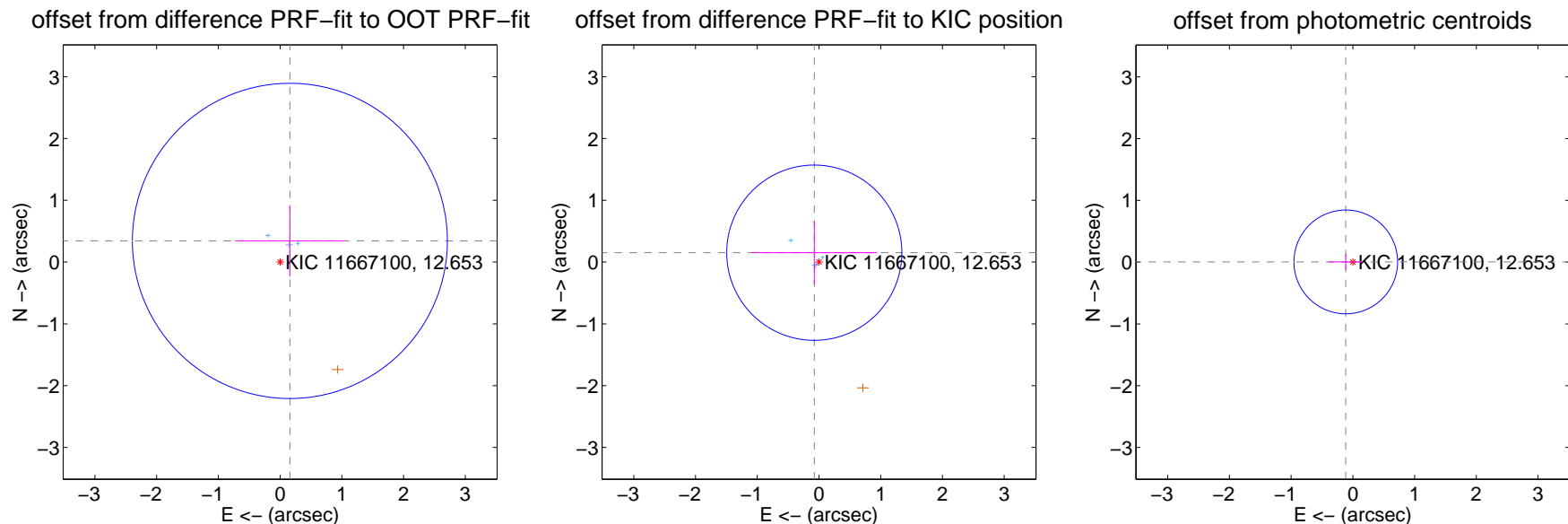
## DV Centroid Data

Supplemental centroid analysis for 011667100-02. Kepler magnitude: 12.65. Transit SNR 7.67

There are 3 quarters with good PRF difference image offsets

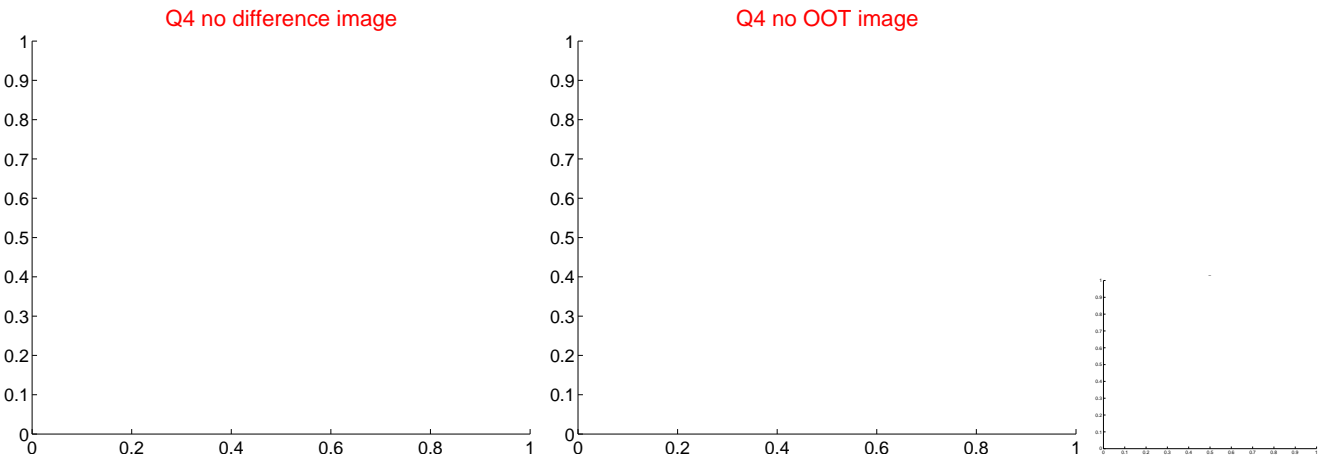
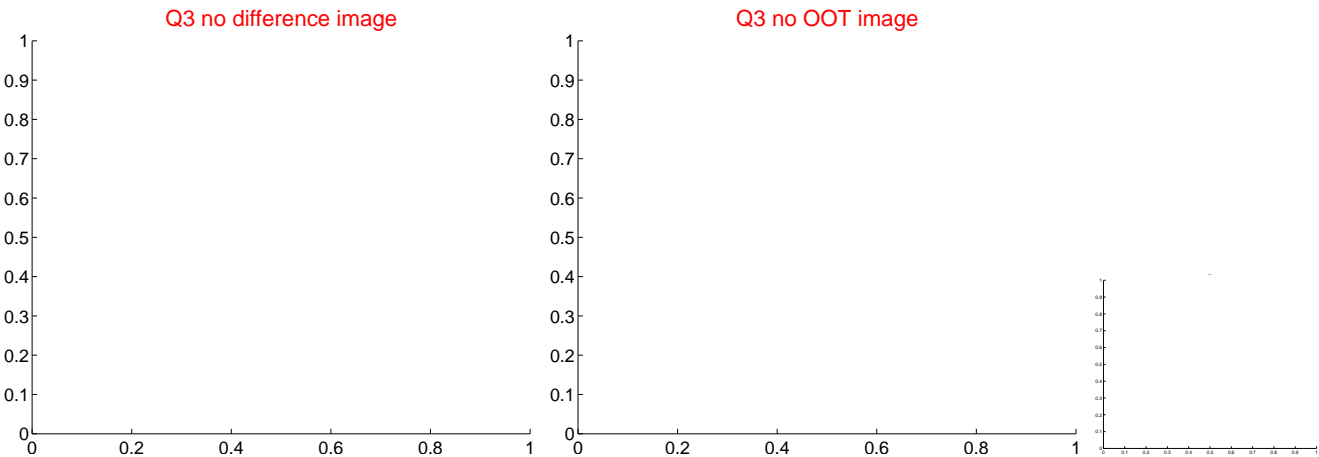
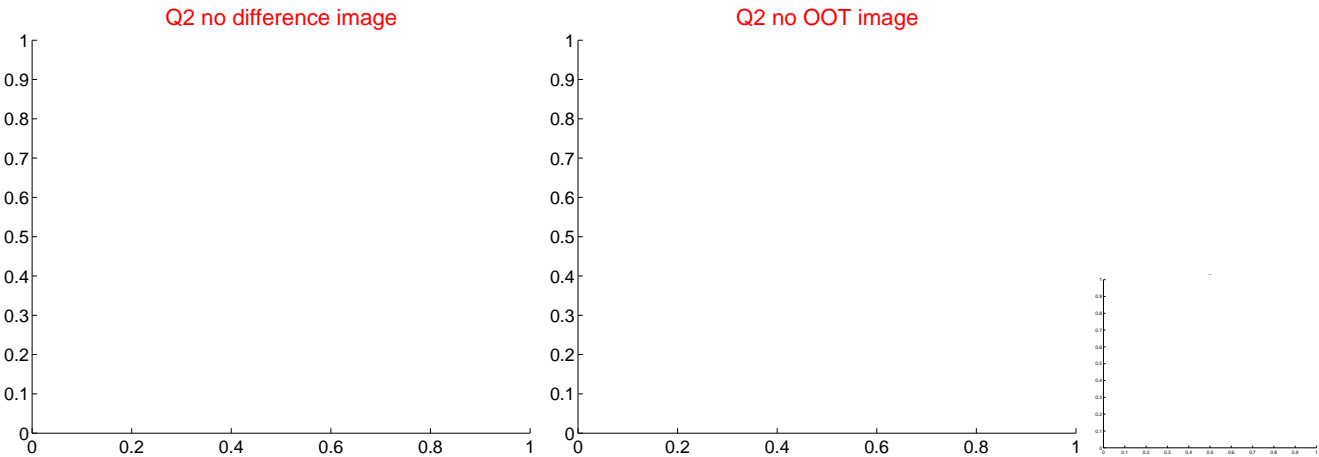
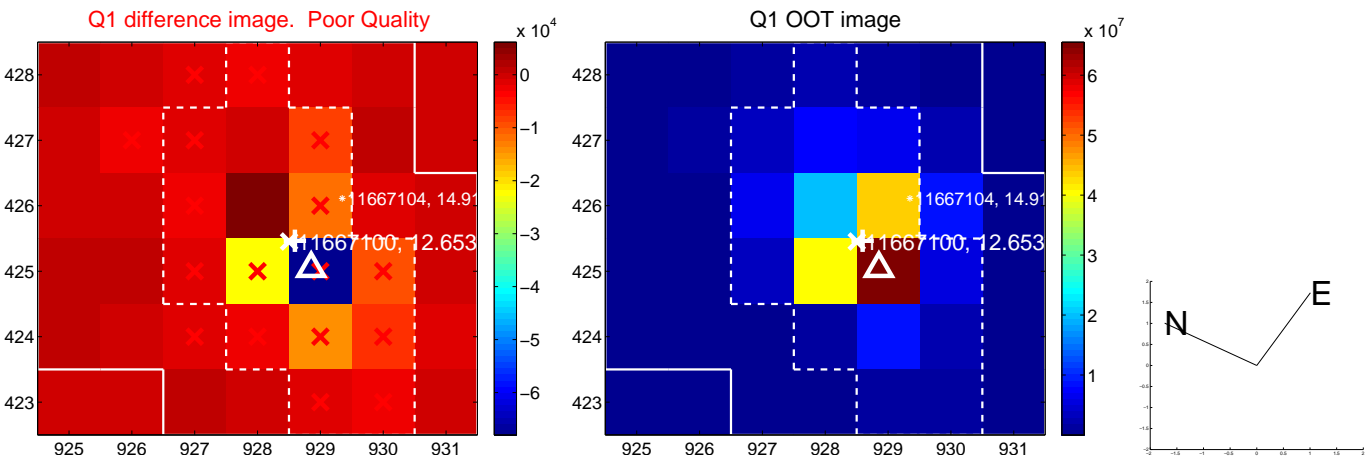
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.378 \pm 0.851$	0.44	$-0.158 \pm 0.889$	$0.343 \pm 0.575$
PRF-fit source offset from KIC position	$0.170 \pm 0.473$	0.36	$0.076 \pm 1.019$	$0.152 \pm 0.515$
photometric centroid source offset	$0.11 \pm 0.28$	0.41	$0.11 \pm 0.28$	$0.00 \pm 0.13$



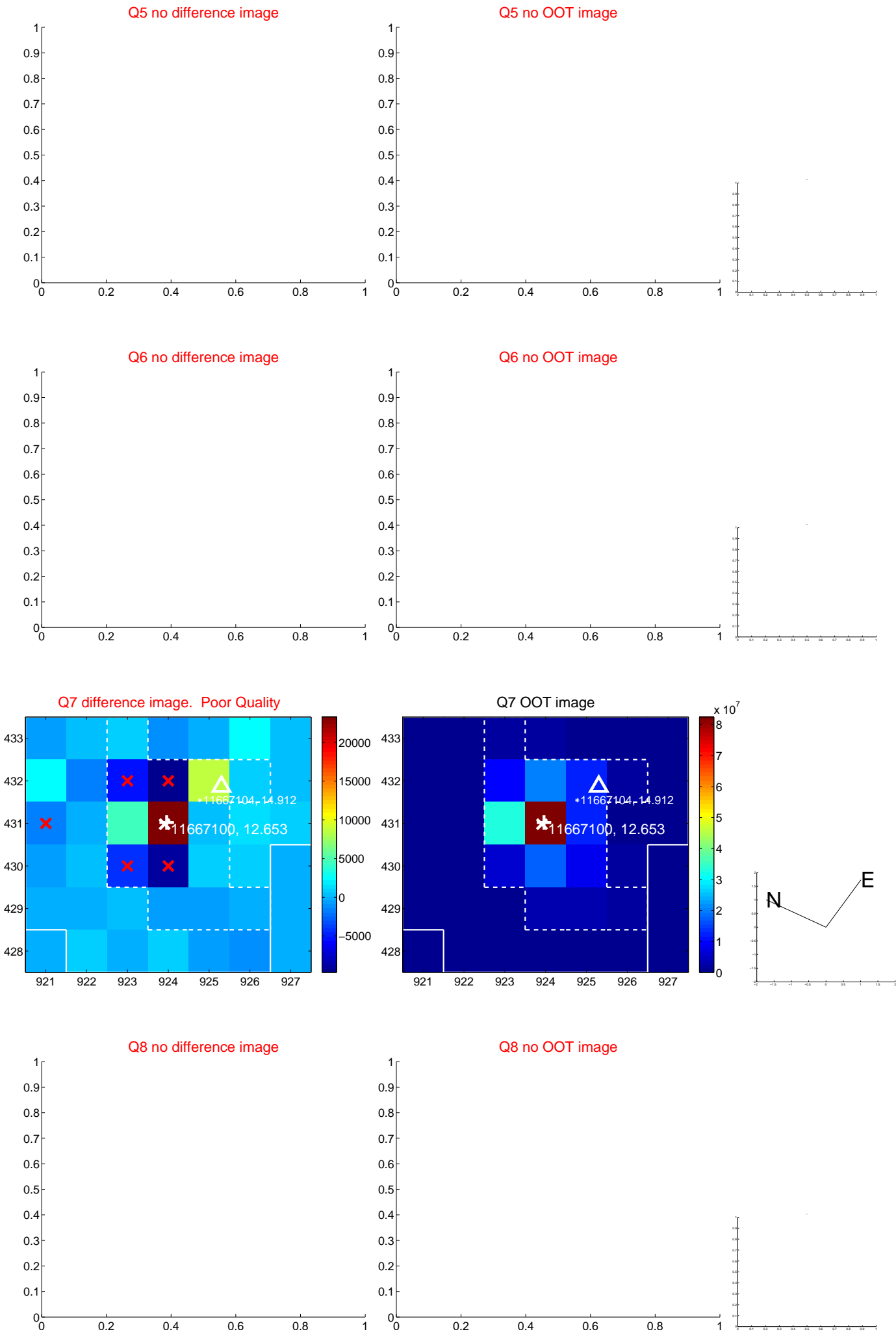
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

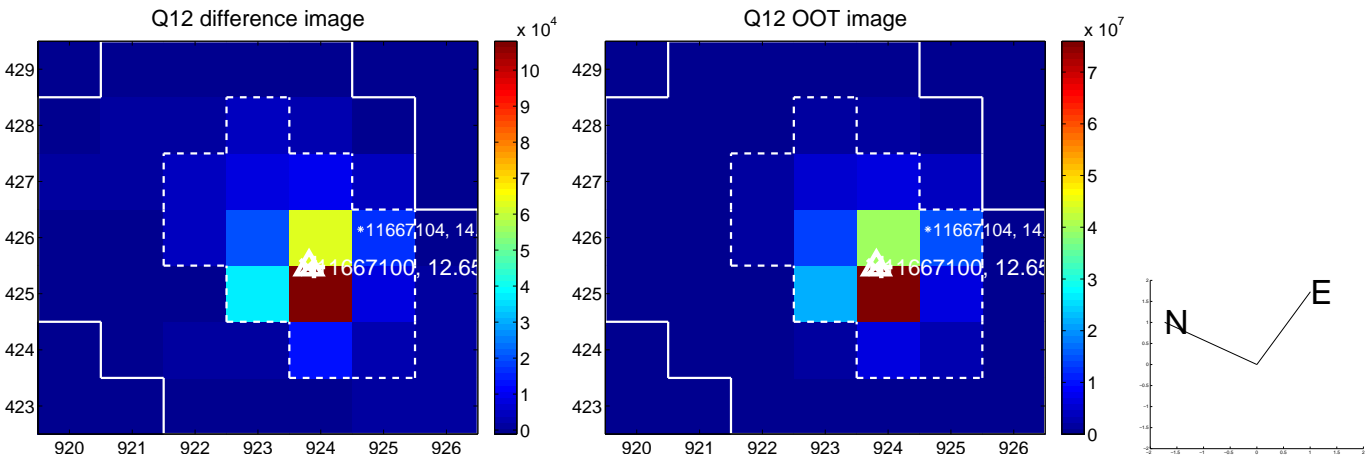
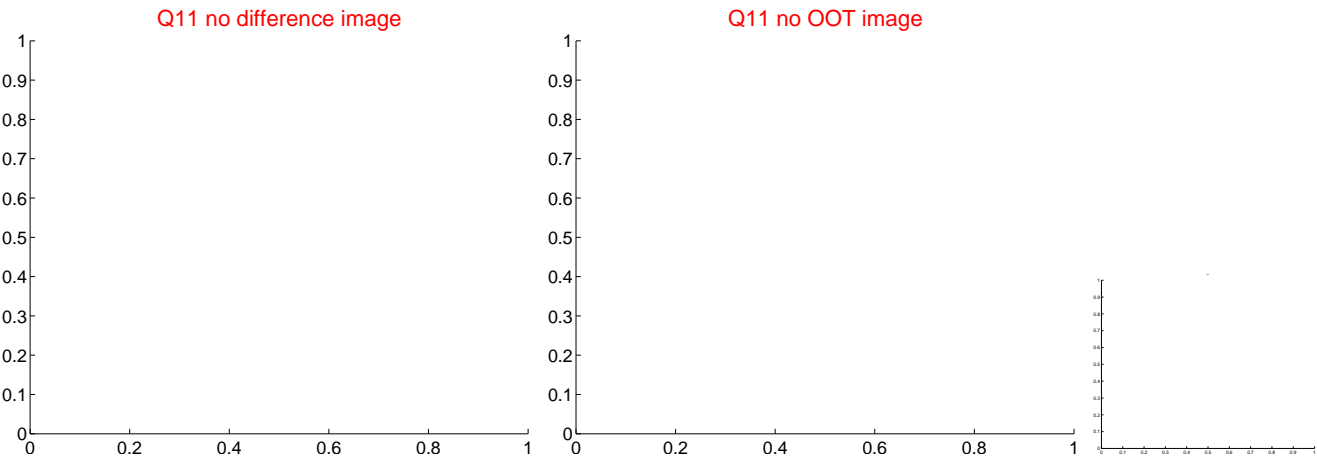
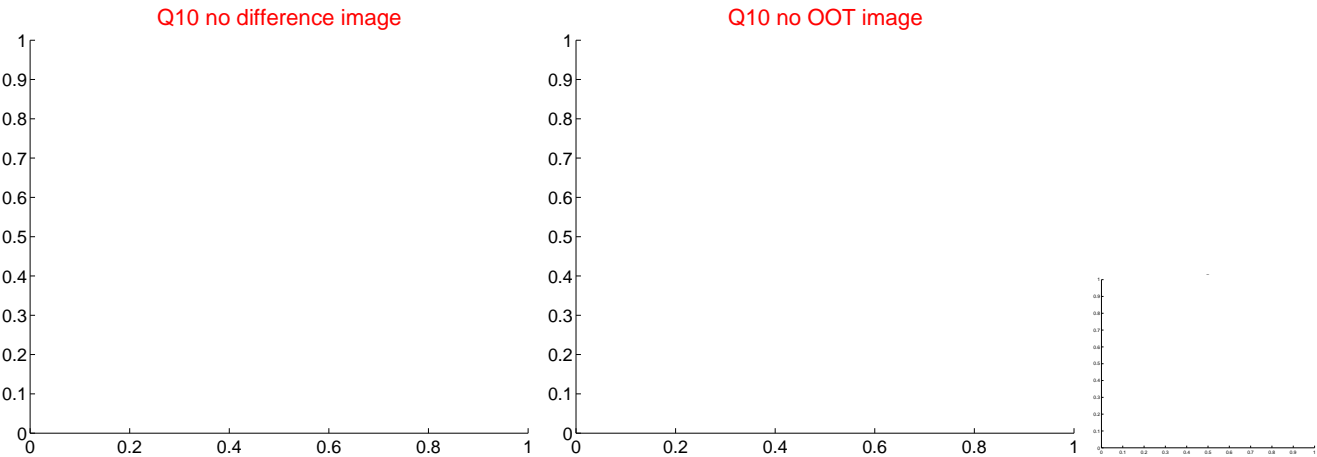
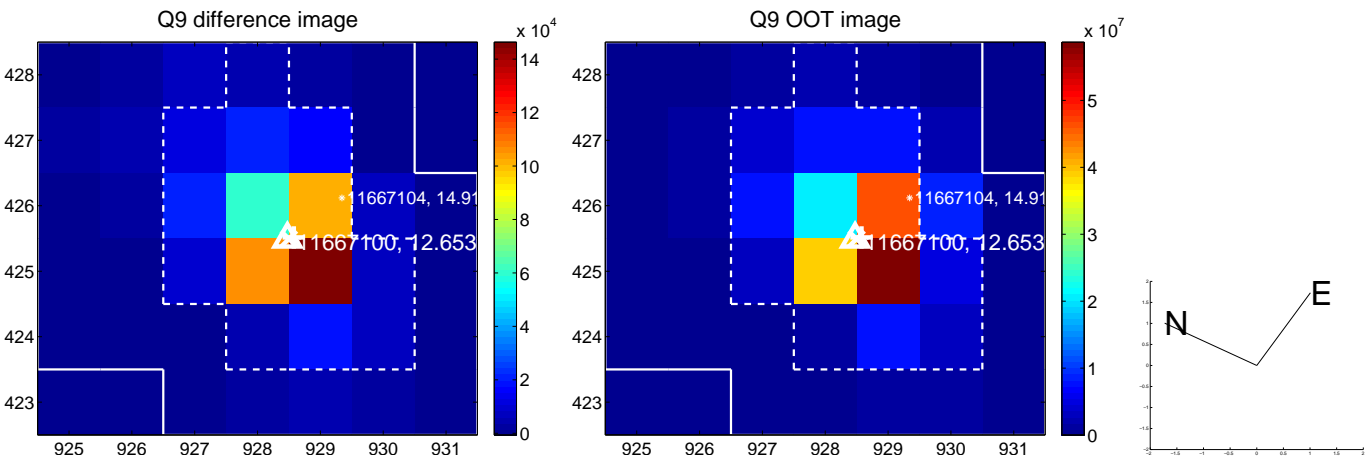




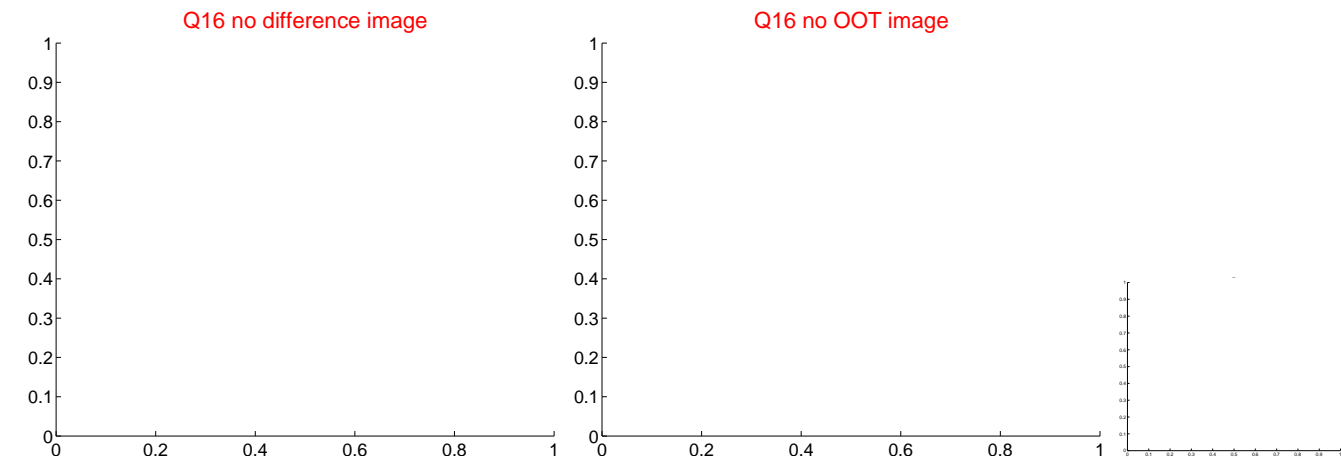
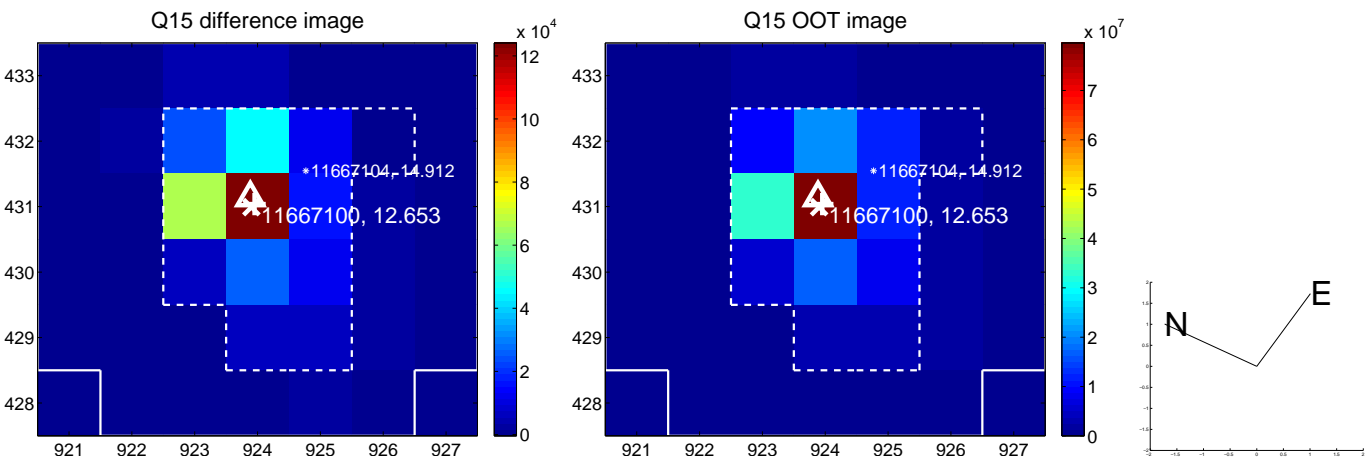
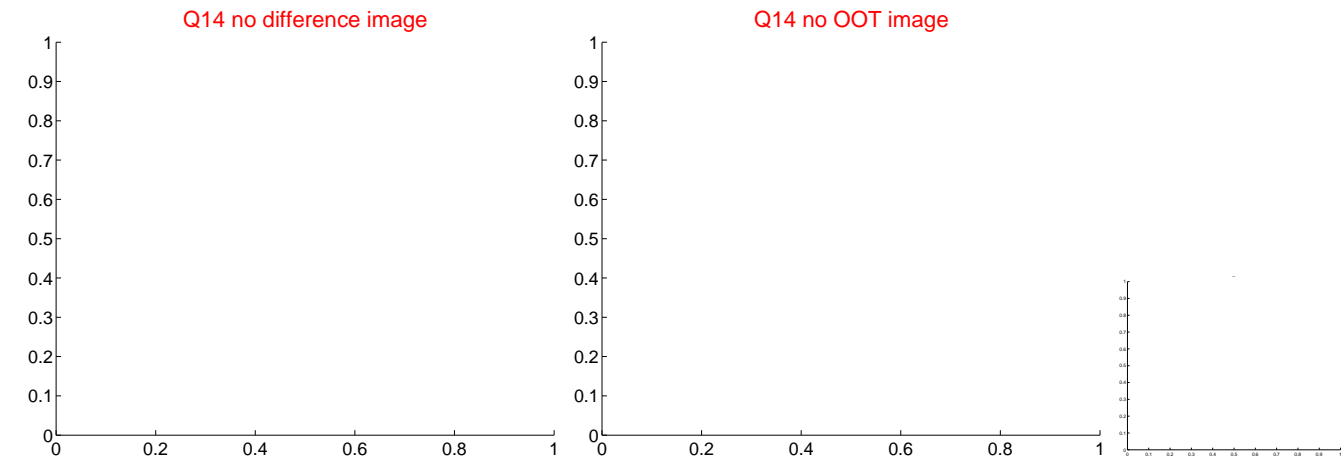
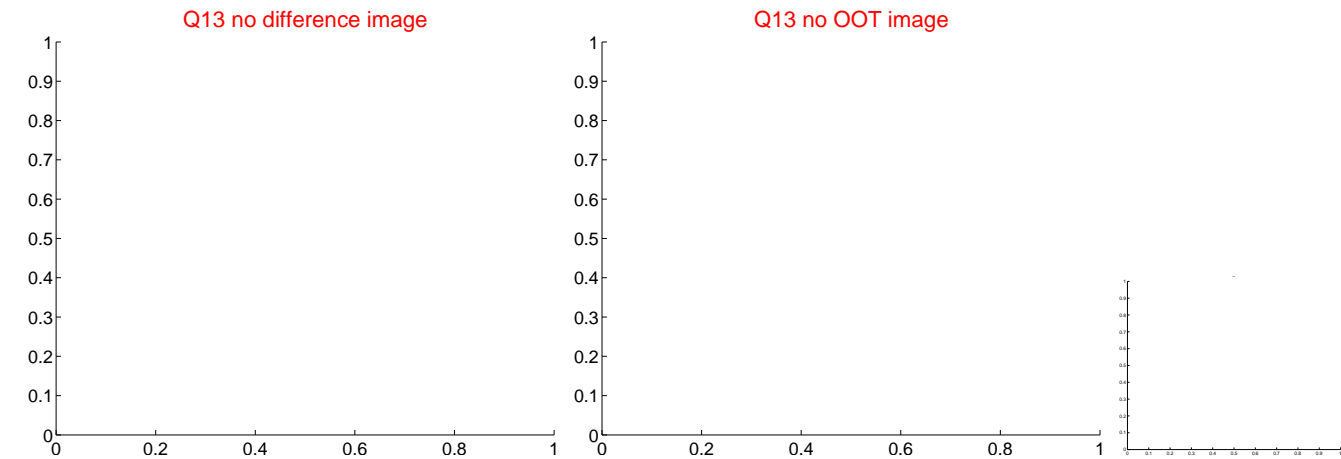
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



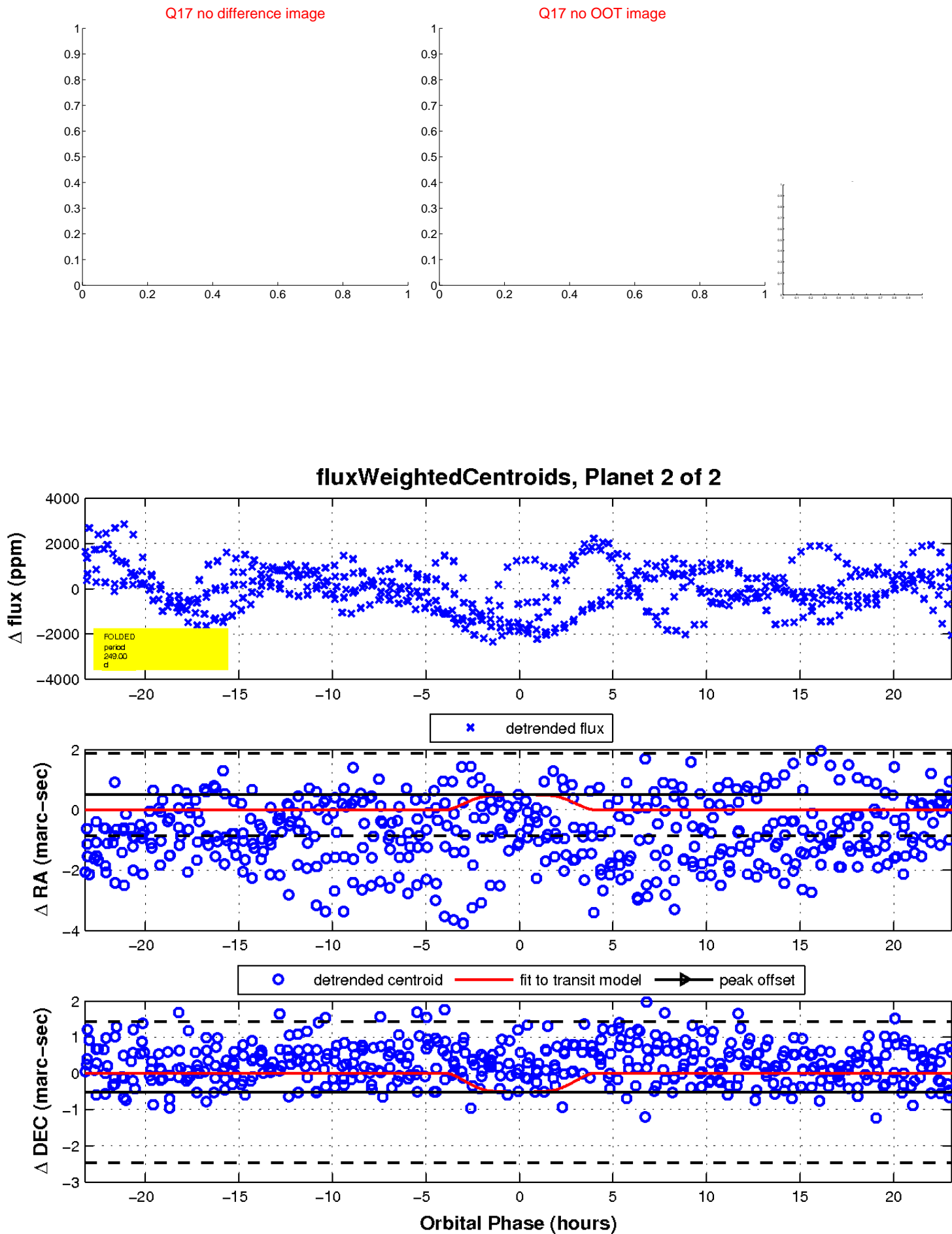
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

