

# KIC 011445111

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011445111-01	OBS	No	1.316344	131.826212	0.0	5.356	9.1	0.0	2.91	7125	0.00	24744.00
011445111-02	OBS	No	82.280119	143.795017	181.7	2.825	8.0	8.0	2.91	7125	4.51	99.75

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011445111-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT
011445111-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

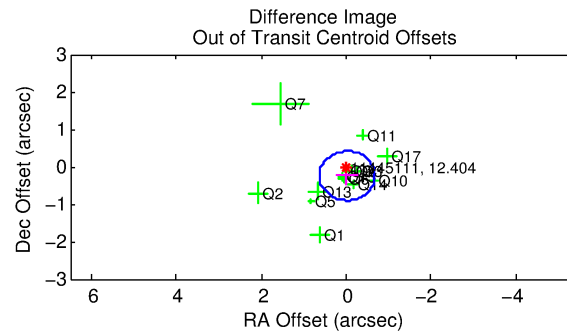
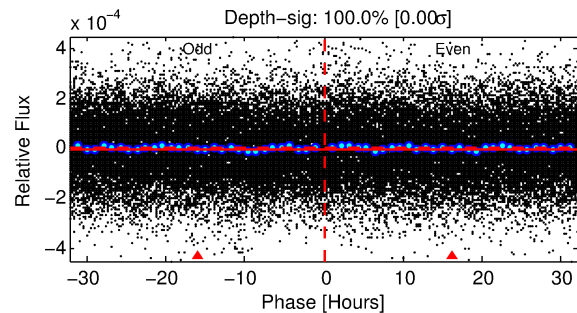
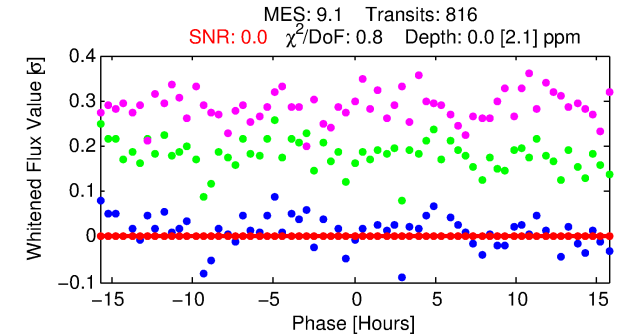
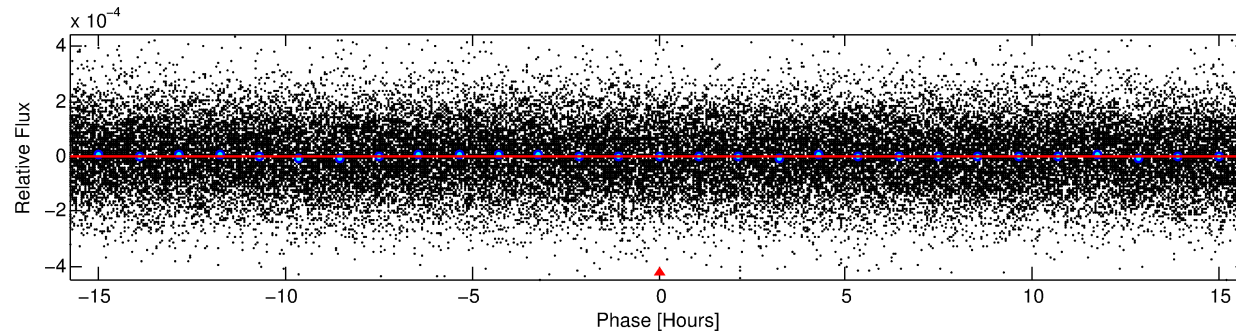
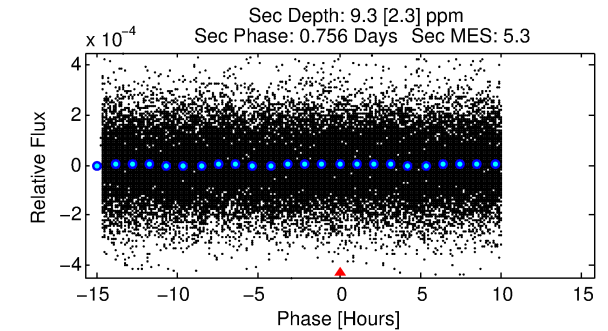
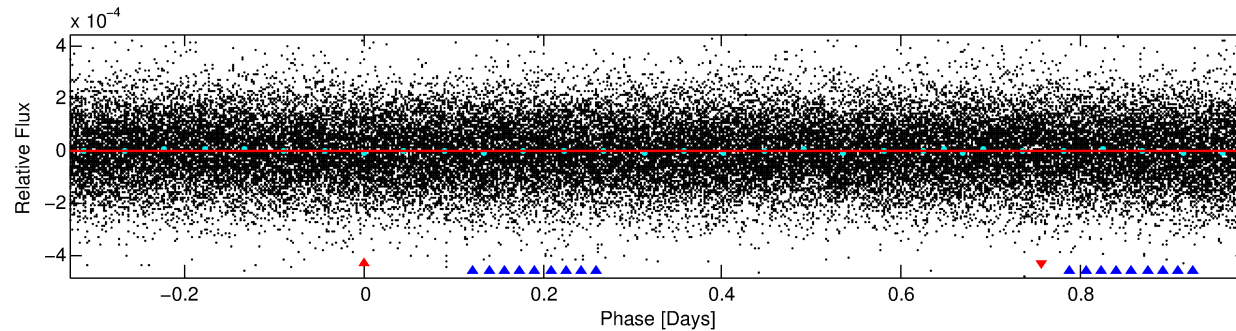
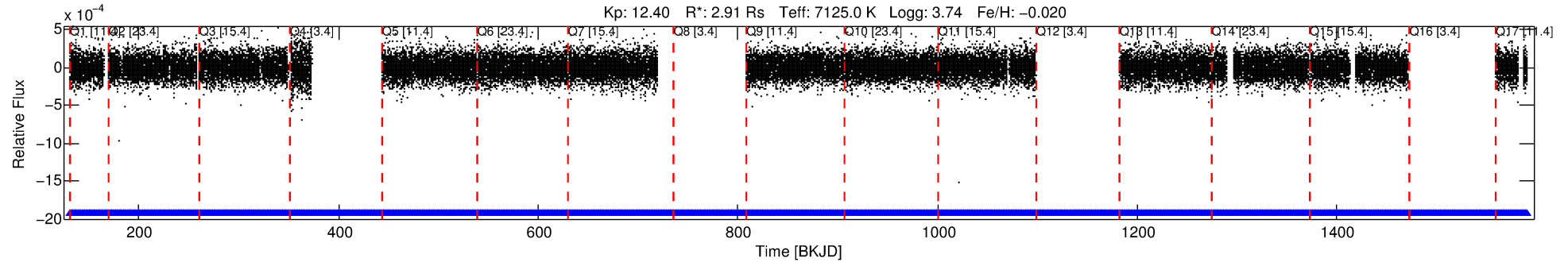
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011445111-01

No Significant Match Found

# DV One-Page Summary

KIC: 11445111 Candidate: 1 of 2 Period: 1.316 d



## DV Fit Results:

Period = 1.31634 [6574.48838] d  
Epoch = 131.8262 [1807937.9196] BKJD  
Rp/R\* = 0.0000 [4.5534]  
a/R\* = 1.75 [909423.05]  
b = 0.53 [5763432.38]  
Seff = 24744.00 [164778789.25]  
Teq = 3198 [5324330] K  
Rp = 0.00 [1445.93] Re  
a = 0.0281 [93.5995] AU  
Ag = 931715701.43 [40974132360963.16000] K  
Teffp = 863883 [9498245646082] K

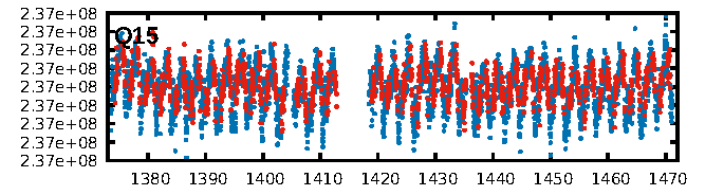
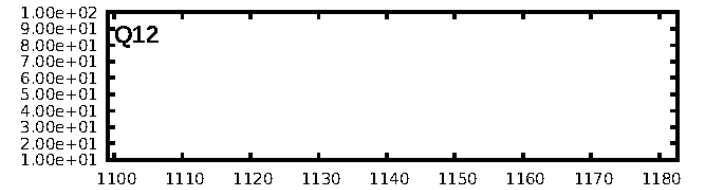
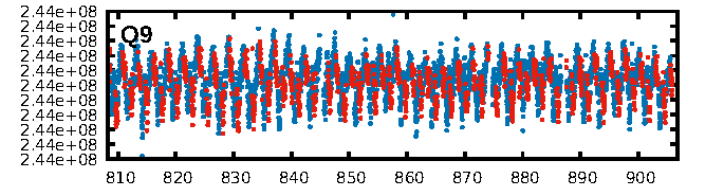
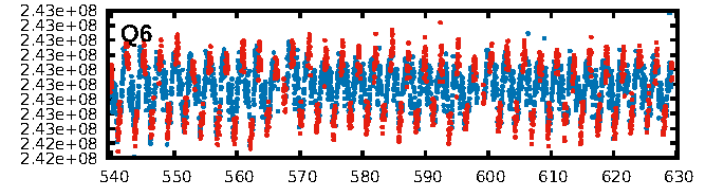
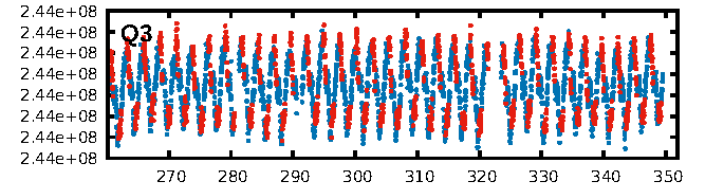
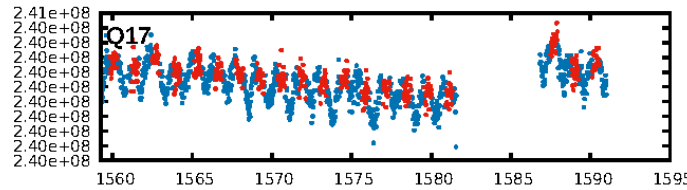
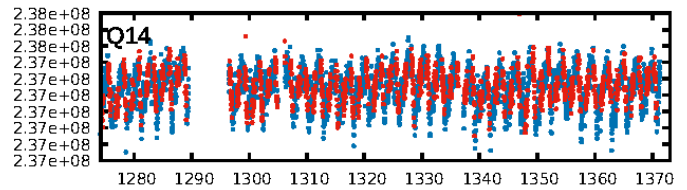
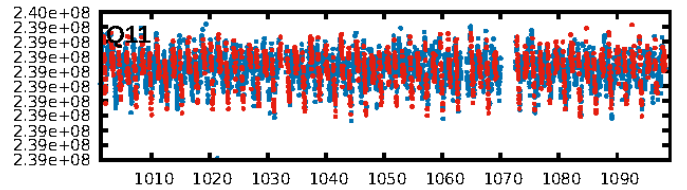
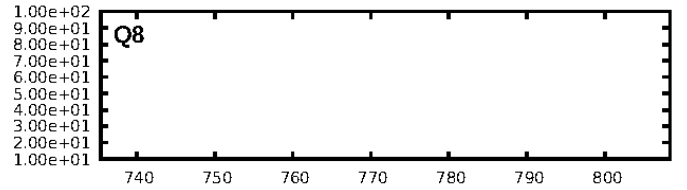
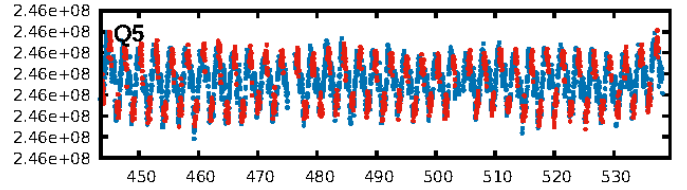
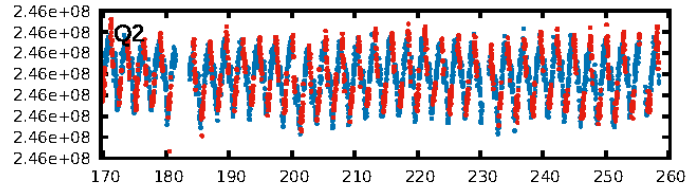
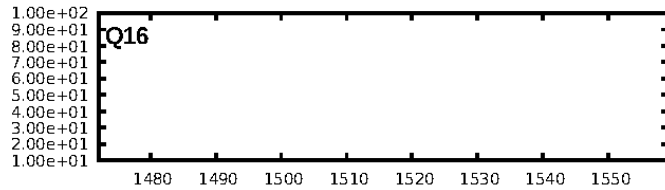
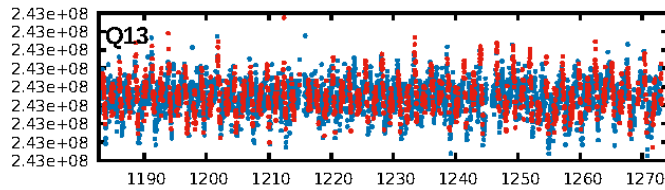
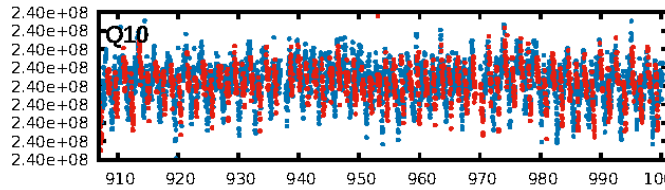
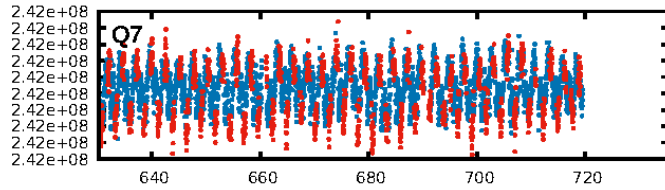
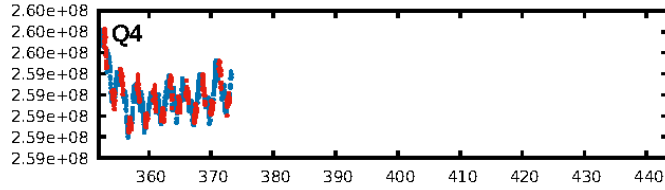
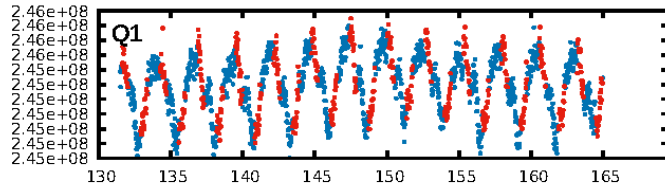
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.46e-14  
RollingBand-fgt: 1.00 [754/754]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.249 arcsec [1.14σ]  
OotOffset-rm: 0.285 arcsec [1.33σ]  
OotOffset-st: 4/4/1/5 [14]  
KicOffset-st: 4/4/1/5 [14]  
DiffImageQuality-fgm: 0.29 [4/14]  
DiffImageOverlap-fno: 1.00 [14/14]

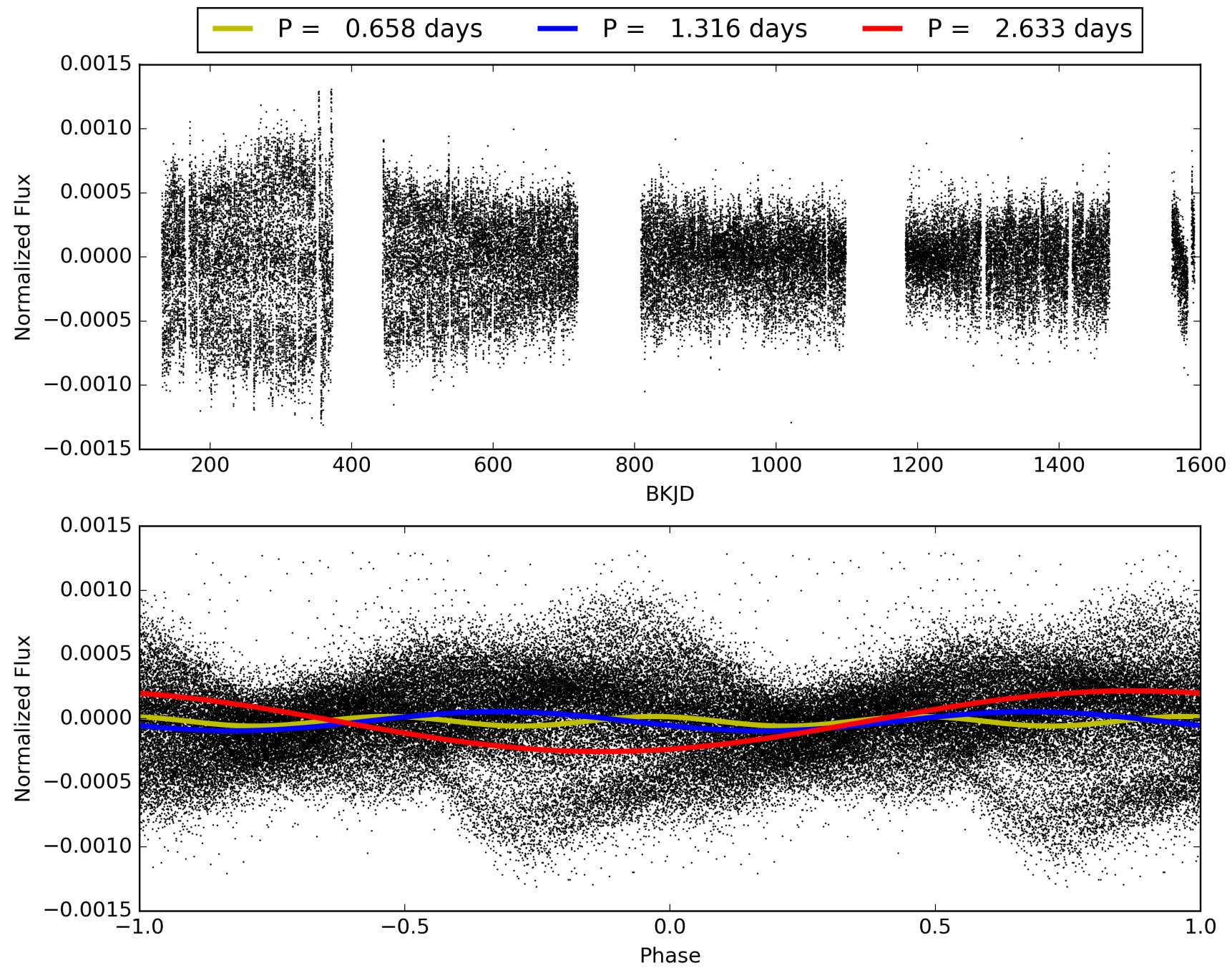
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

## TCE 011445111-01, PDC Light Curves

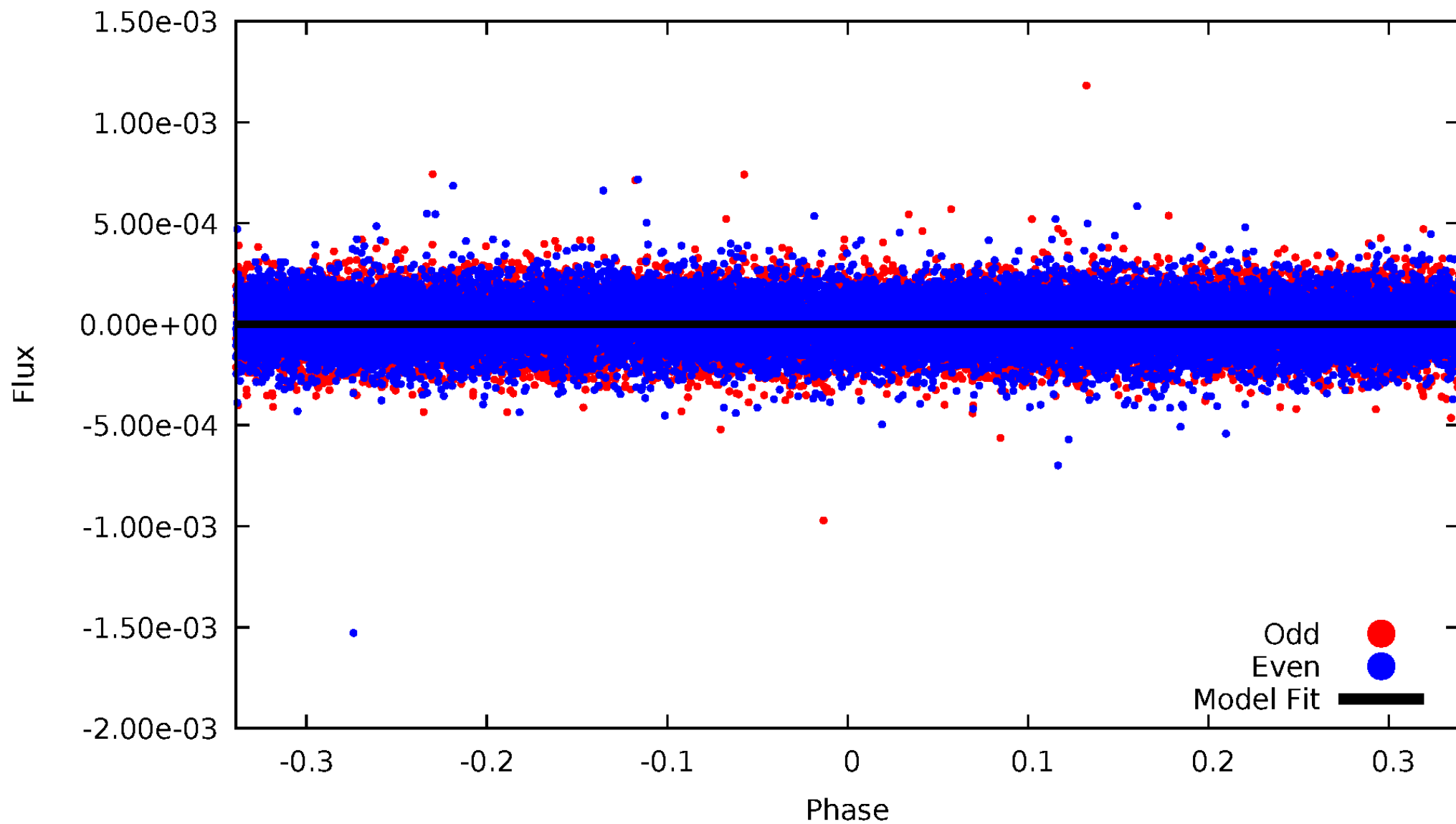


TCE 011445111-01



# DV Odd/Even

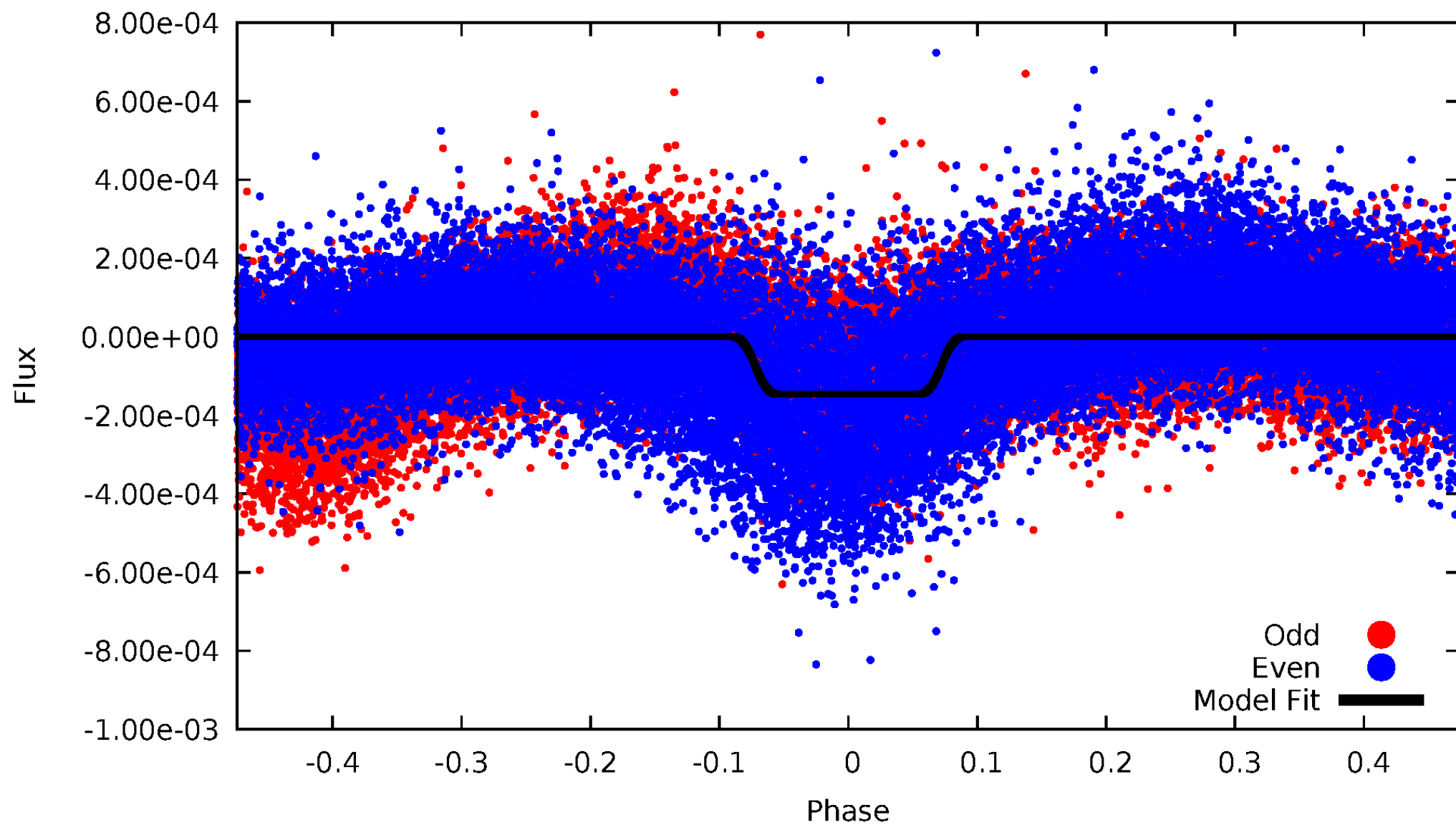
TCE 011445111-01



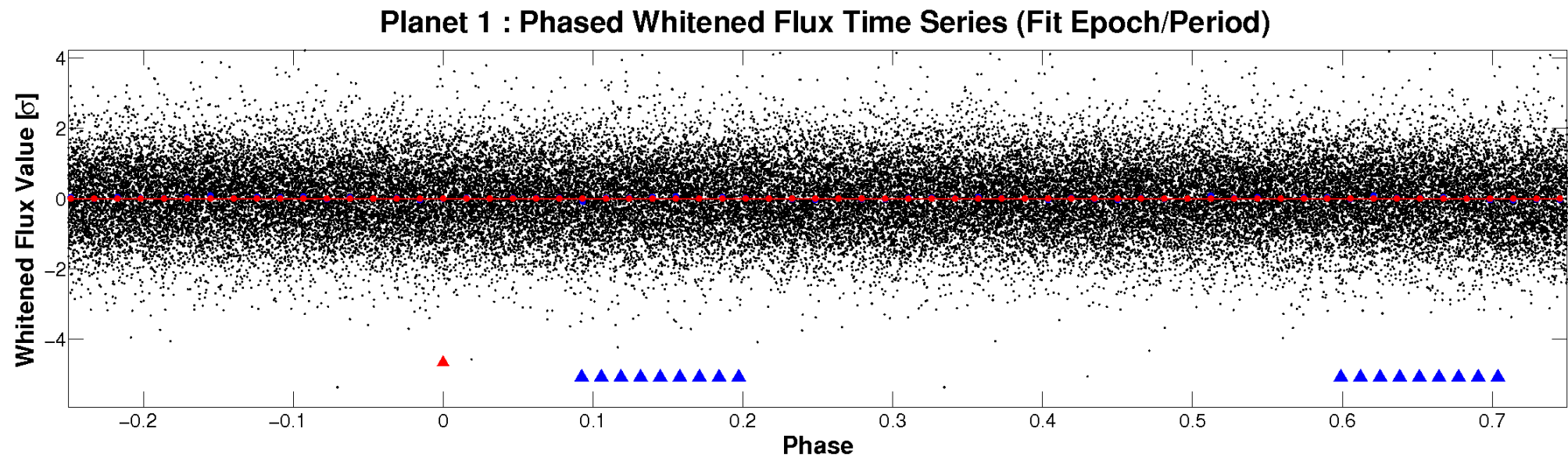
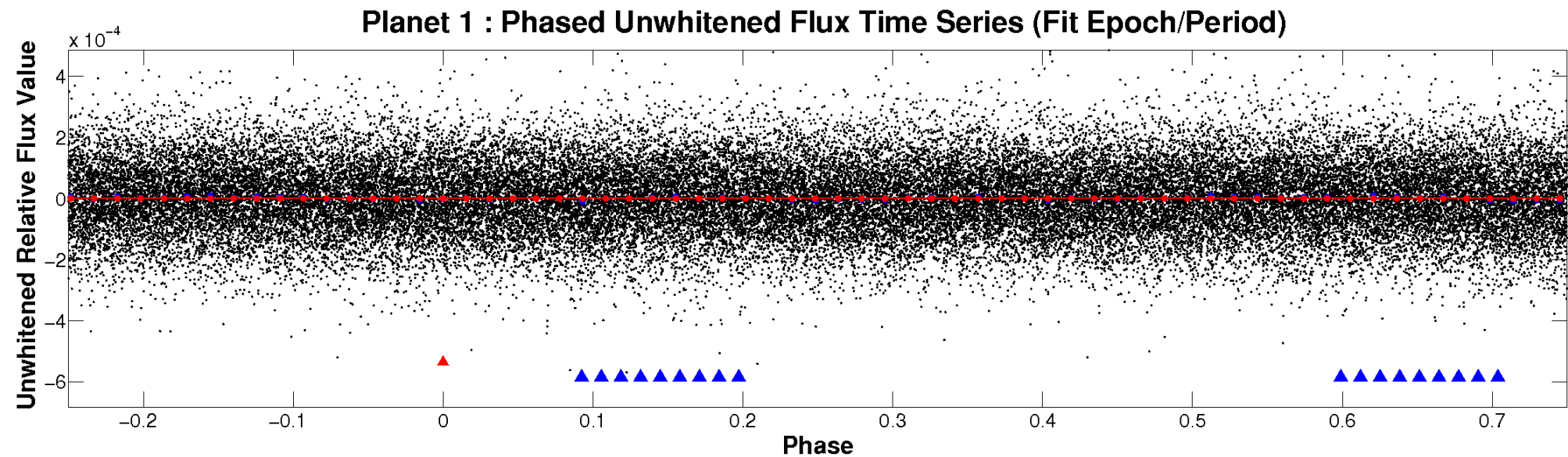


# ALT Odd/Even

TCE 011445111-01

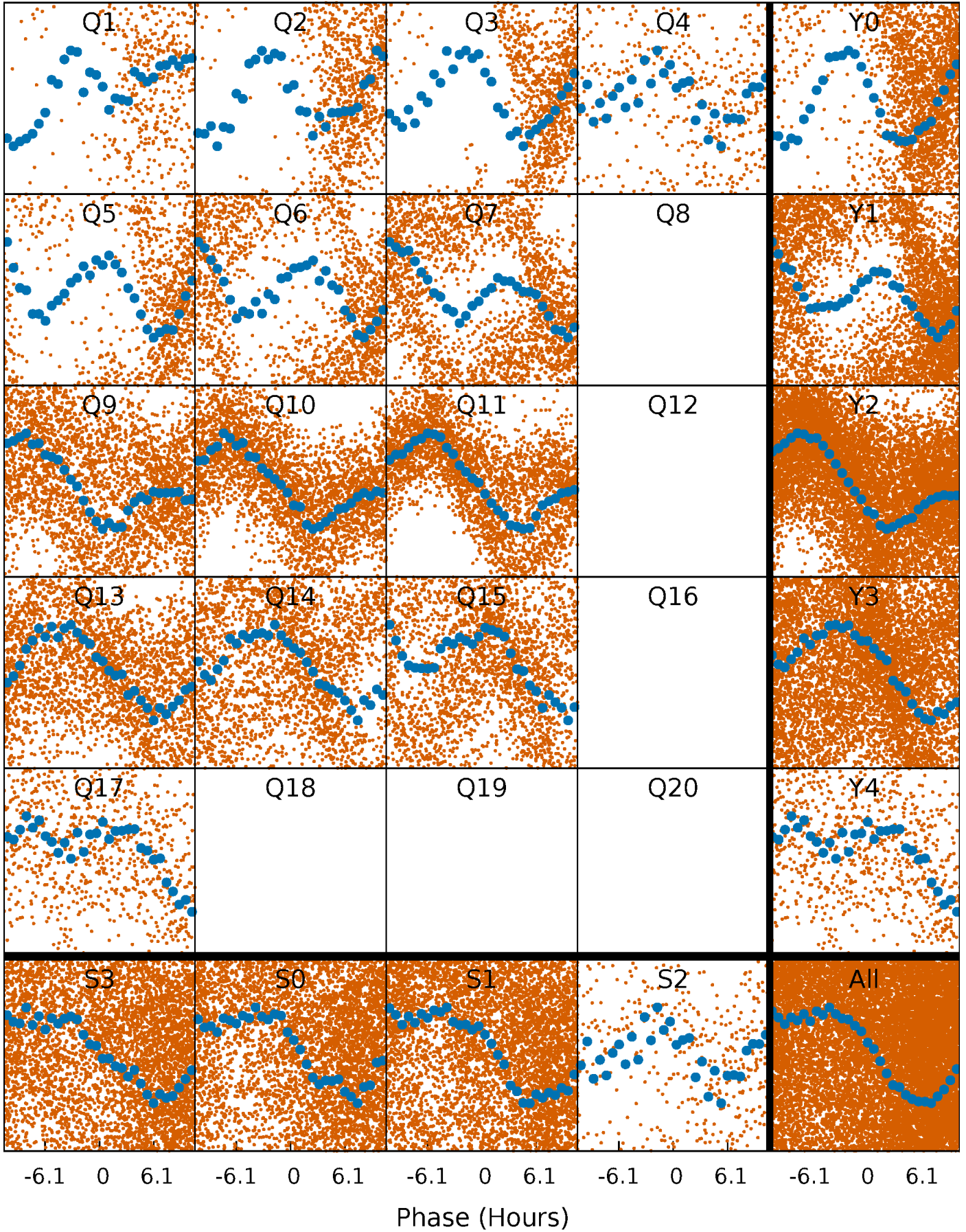


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

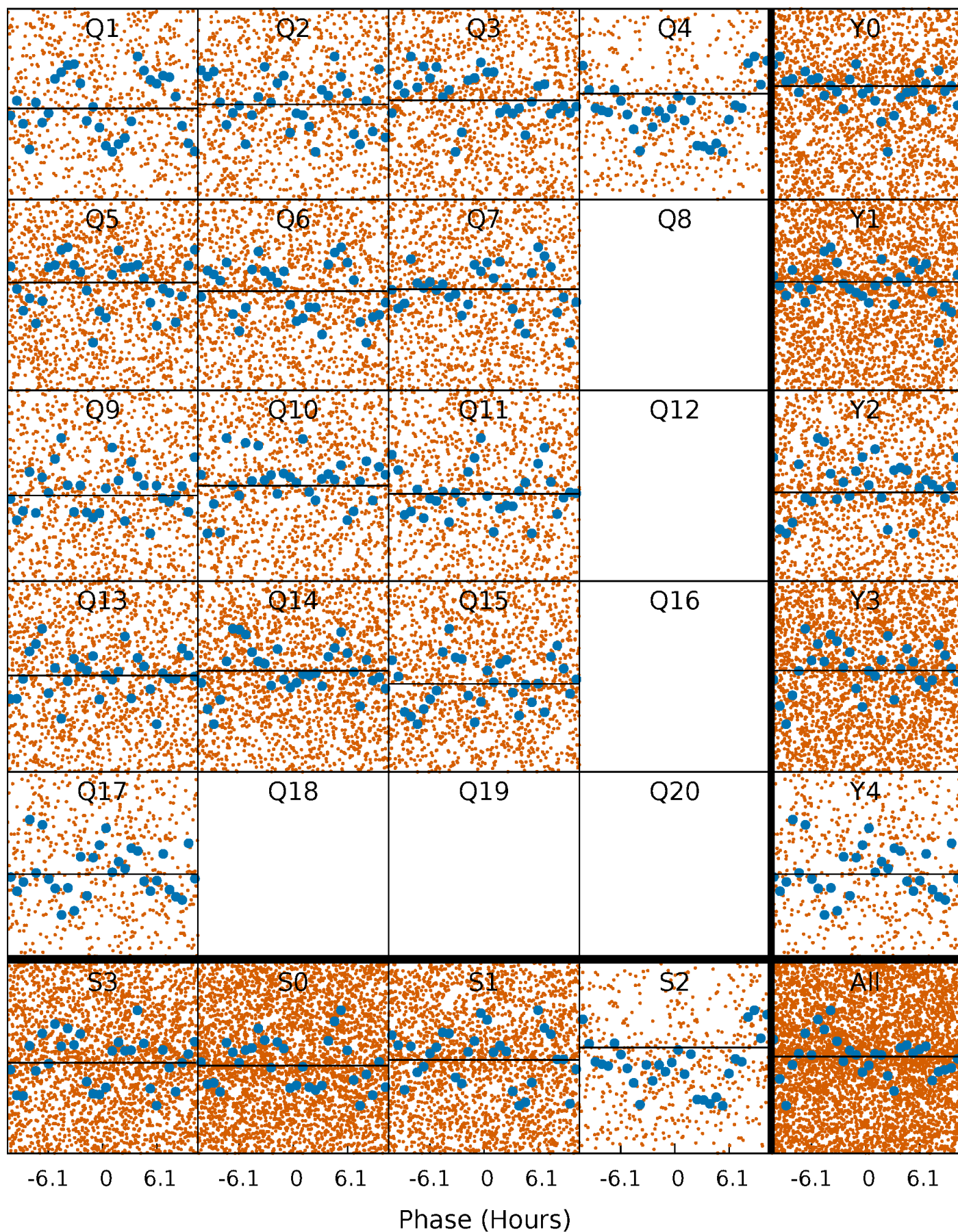
TCE 011445111-01 P= 1.316344 Days  $T_0=131.826212$  (BKJD)





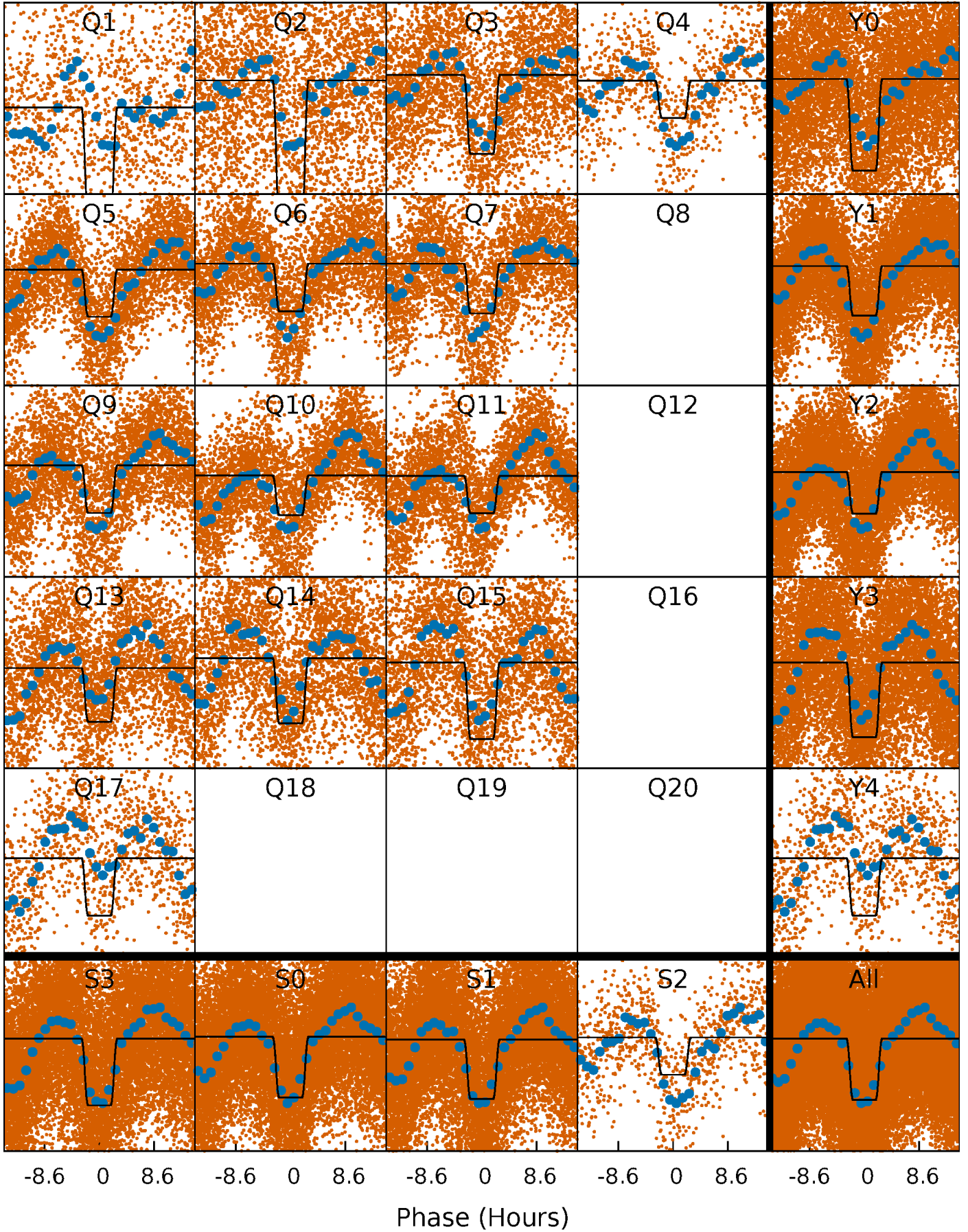
# DV Quarter-Phased Transit Curves

TCE 011445111-01 P= 1.316344 Days  $T_0=131.826212$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

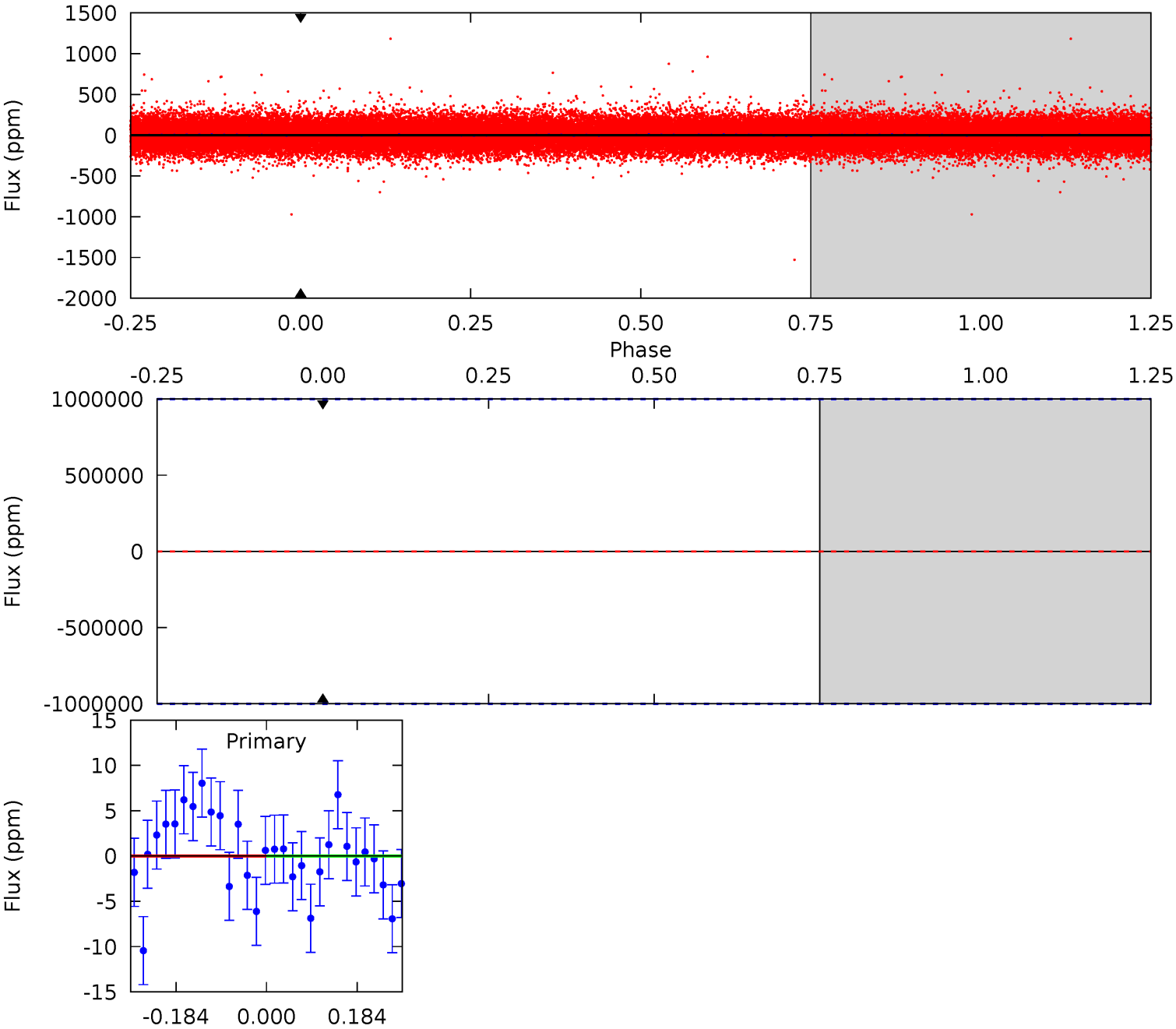
TCE 011445111-01   P= 1.317388 Days    $T_0=131.828706$  (BKJD)



# DV Model-Shift Uniqueness Test

011445111-01, P = 1.316344 Days, E = 130.509868 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

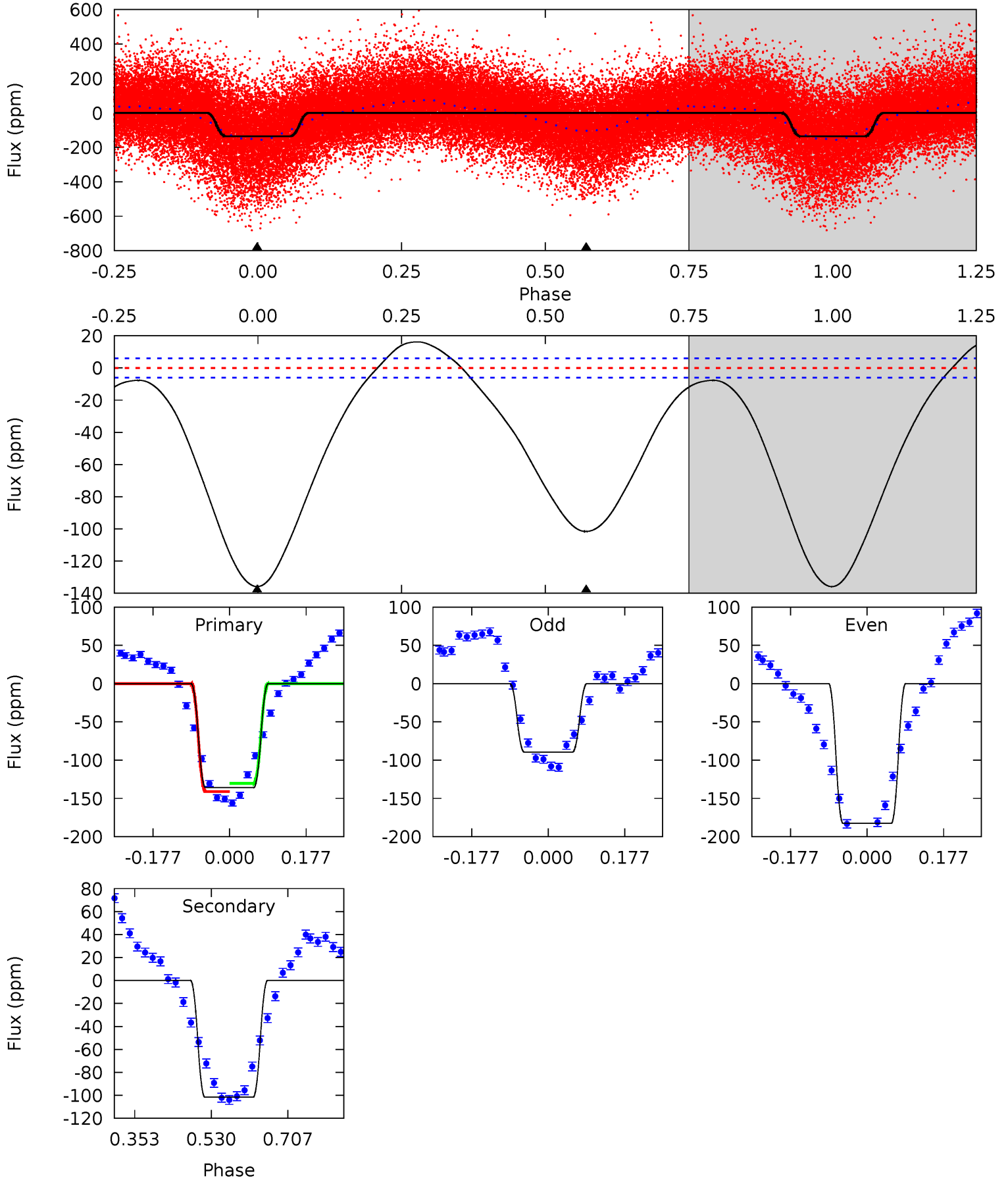




# Alt Model-Shift Uniqueness Test

011445111-01, P = 1.317388 Days, E = 130.511318 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
100.6	75.3	0	0	4.44	1.35	7.62	100.6	100.6	75.3	75.3	34.5	1.18	0.11	4.04





### Stellar Parameters For KIC 011445111

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7125^{+170}_{-234}$	$3.743^{+0.288}_{-0.090}$	$-0.020^{+0.250}_{-0.300}$	$2.910^{+0.427}_{-0.925}$	$1.711^{+0.211}_{-0.258}$	$0.098^{+0.180}_{-0.029}$
	+2%/-3%	+8%/-2%	+1250%/-1500%	+15%/-32%	+12%/-15%	+184%/-30%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011445111-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$870.49^{+1015.61}_{-624.82}$	$288^{+142}_{-64}$	$1775^{+1536}_{-5028}$	$13^{+5893}_{-4640}$
Alt.	$-102 \pm 1$	$898.32^{+1032.95}_{-637.65}$	$294^{+139}_{-71}$	$1411^{+389}_{-2537}$	$2.391^{+30.239}_{-2.122}$

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

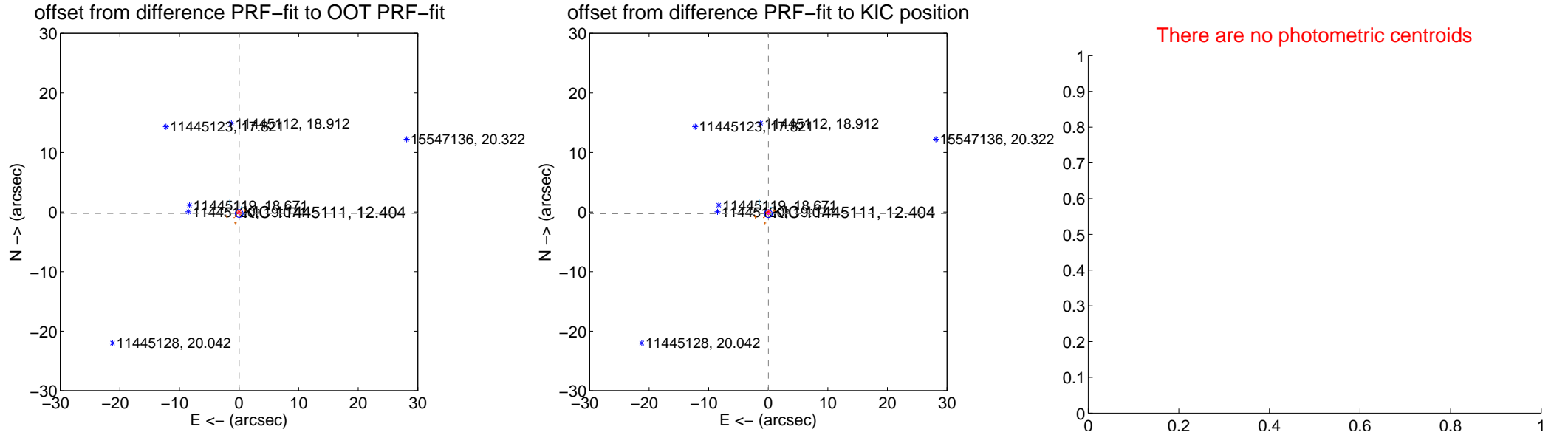
## DV Centroid Data

Supplemental centroid analysis for 011445111-01. Kepler magnitude: 12.40. Transit SNR 0.00

There are 4 quarters with good PRF difference image offsets

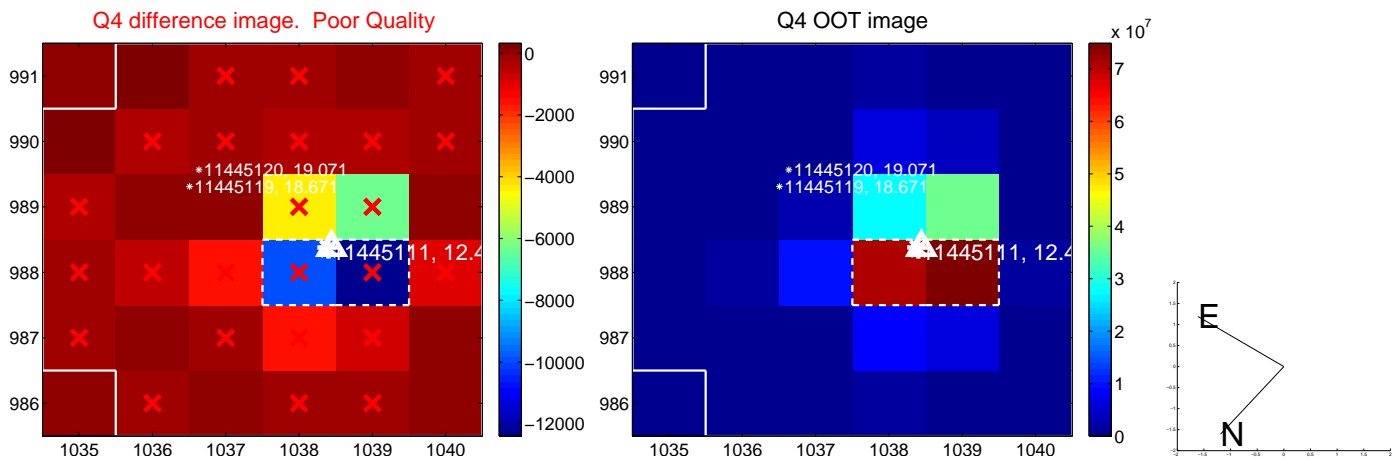
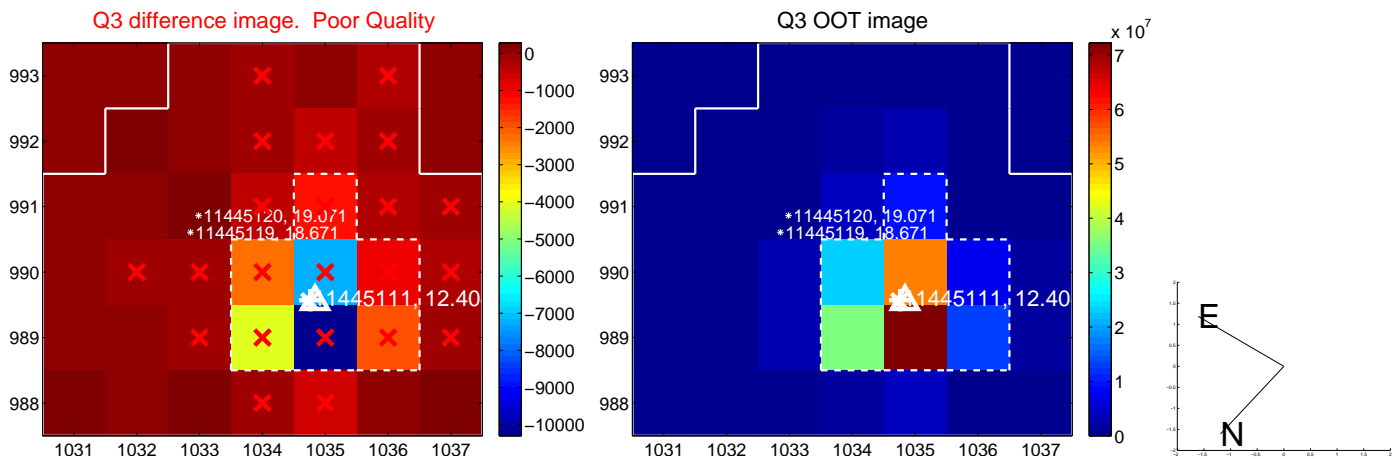
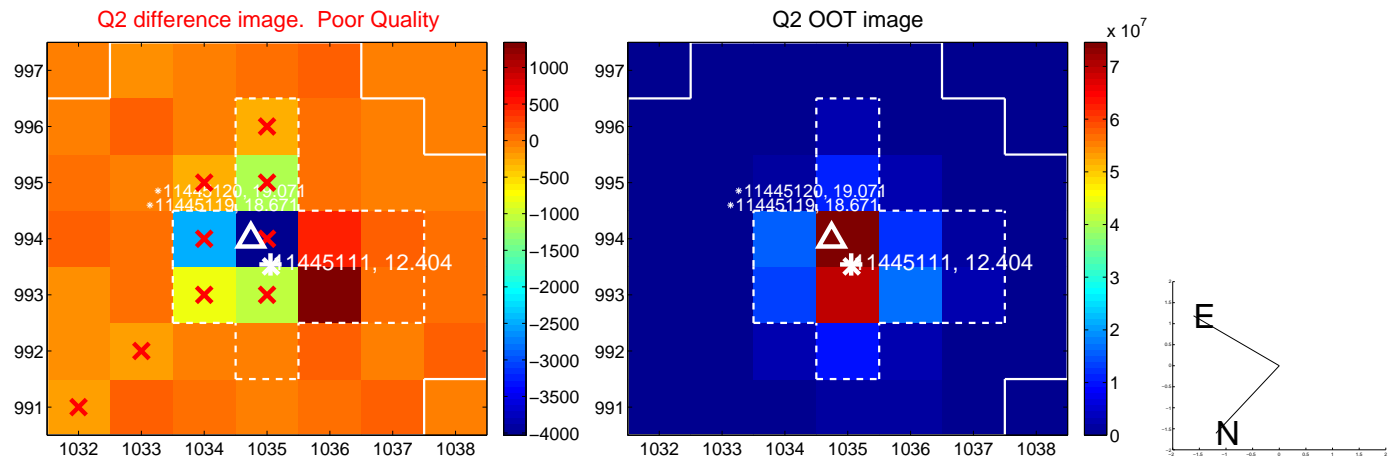
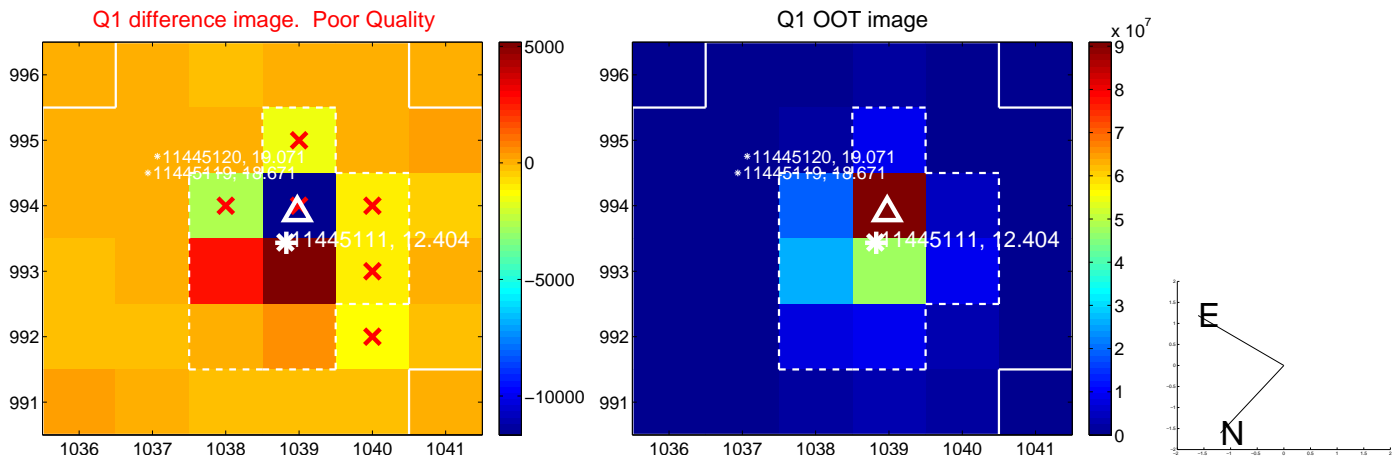
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.249 \pm 0.219$	1.14	$-0.025 \pm 0.231$	$-0.247 \pm 0.219$
PRF-fit source offset from KIC position	$0.285 \pm 0.215$	1.33	$-0.021 \pm 0.225$	$-0.284 \pm 0.216$
photometric centroid source offset	—	—	—	—

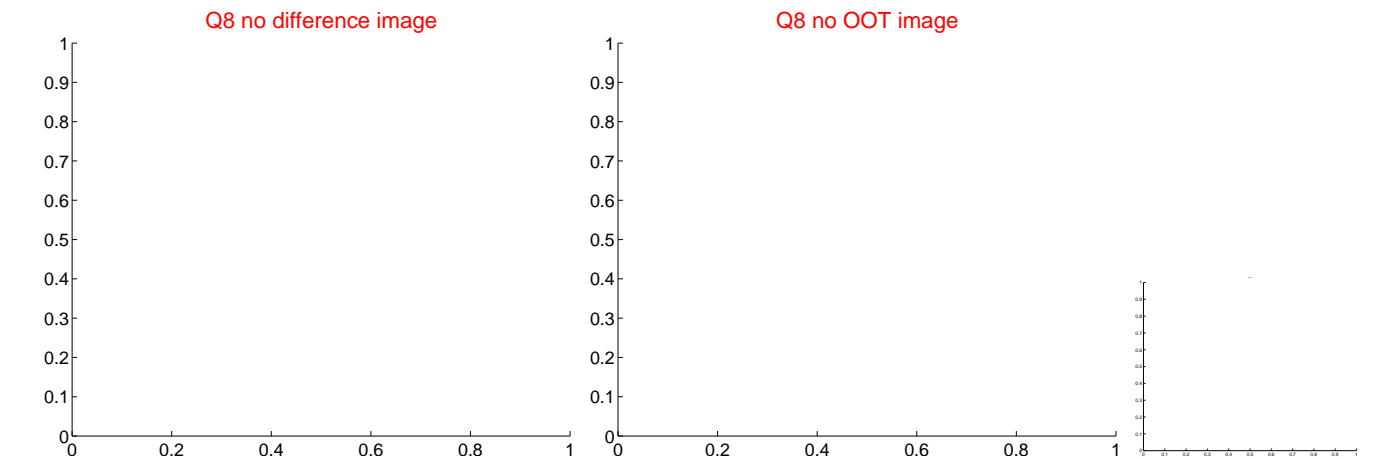
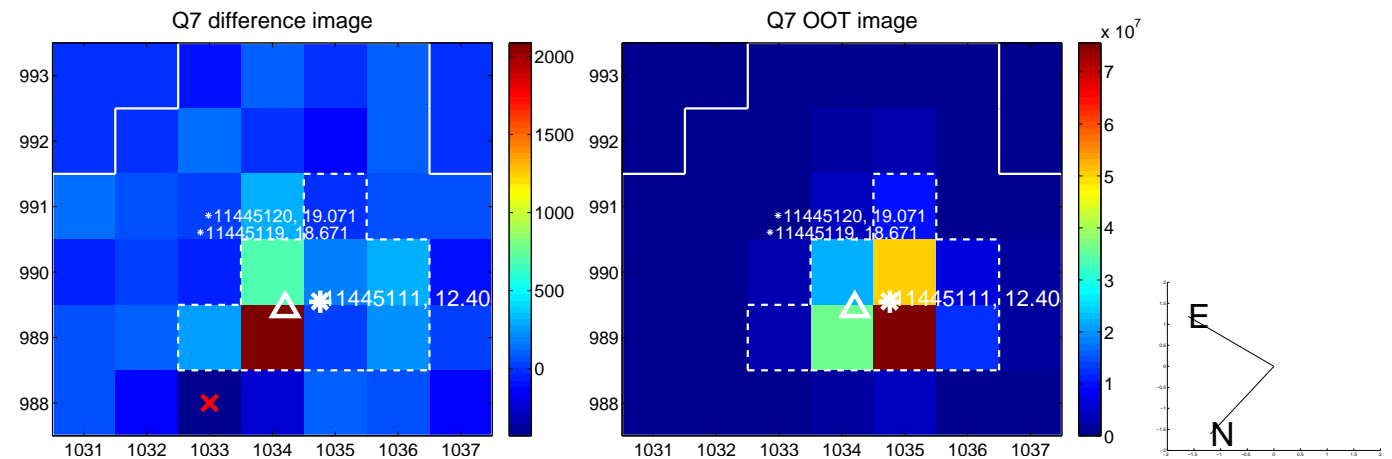
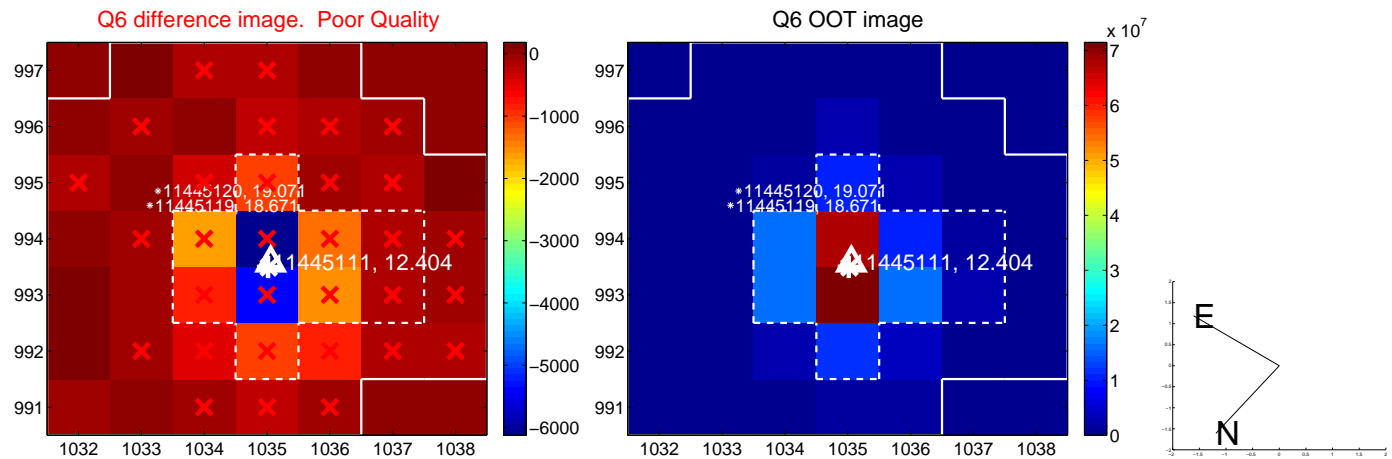
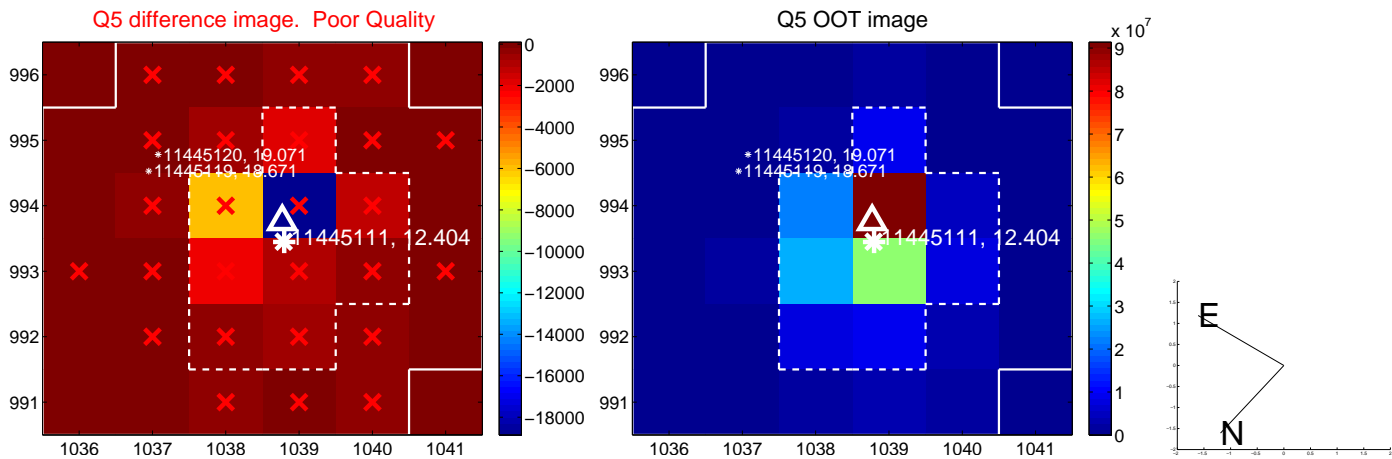


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

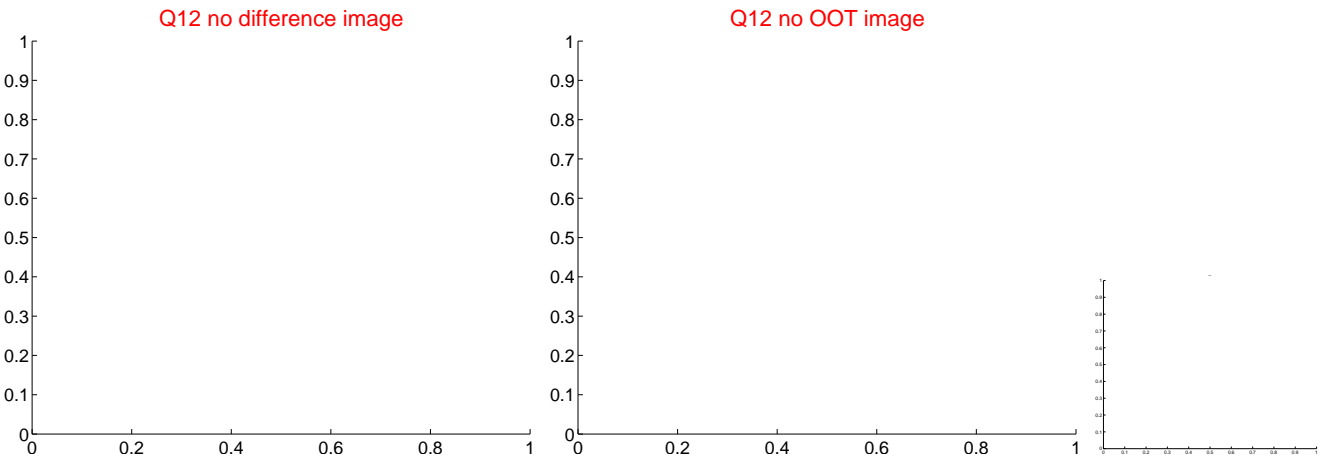
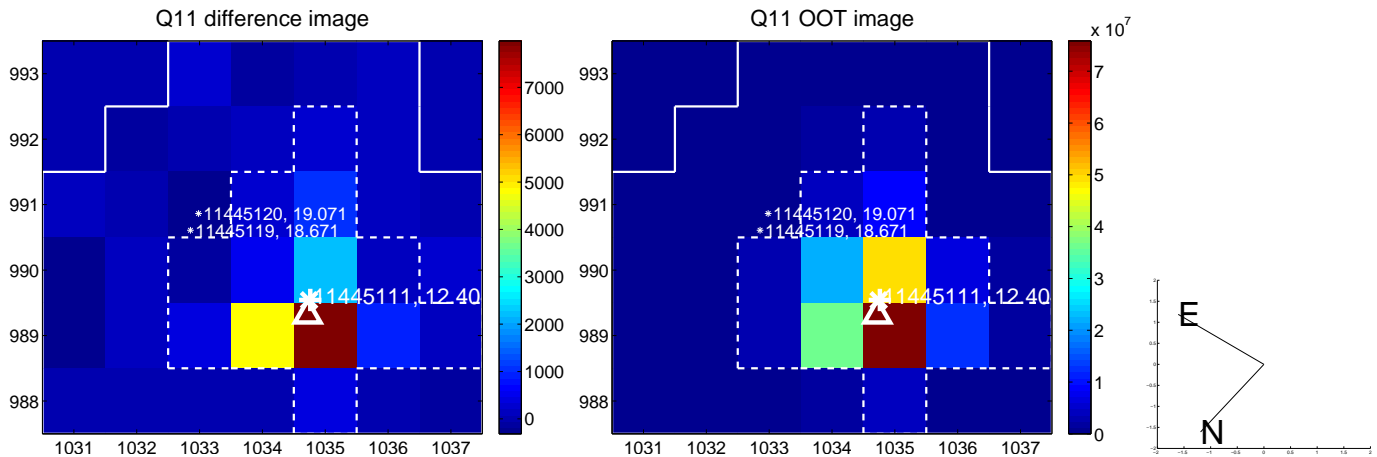
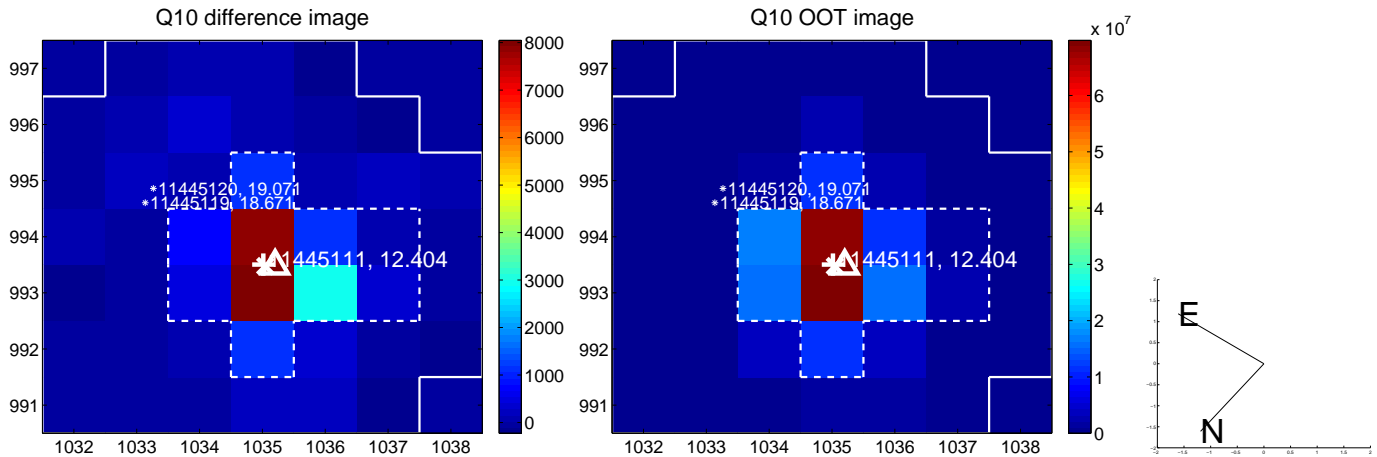
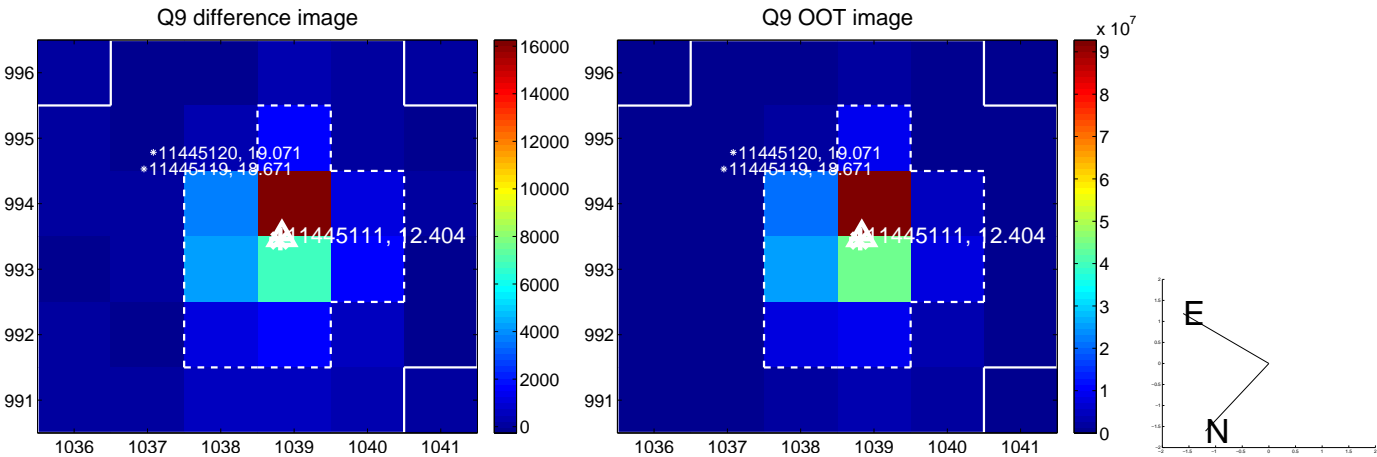


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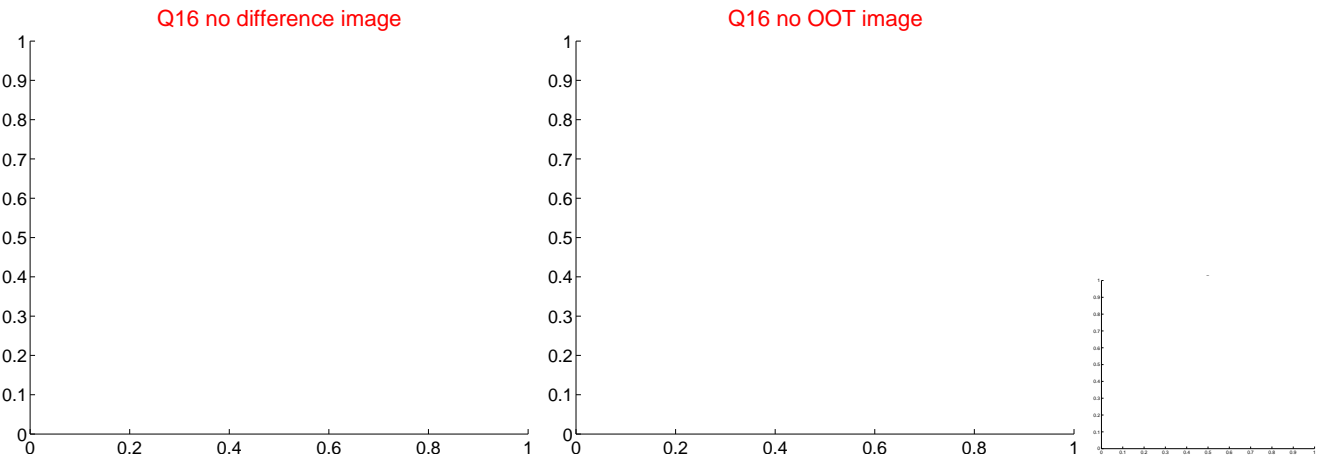
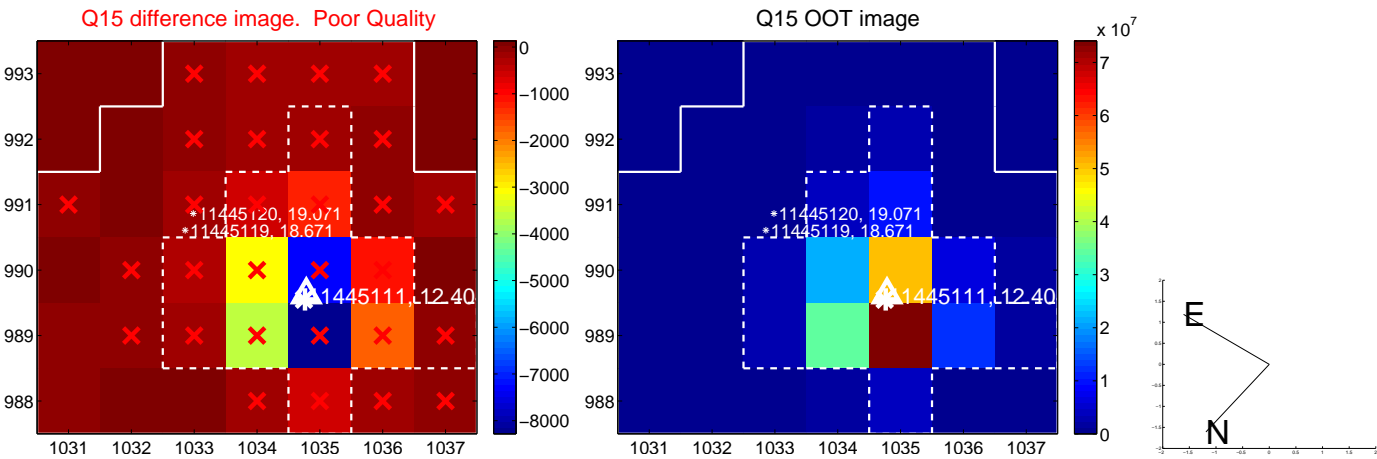
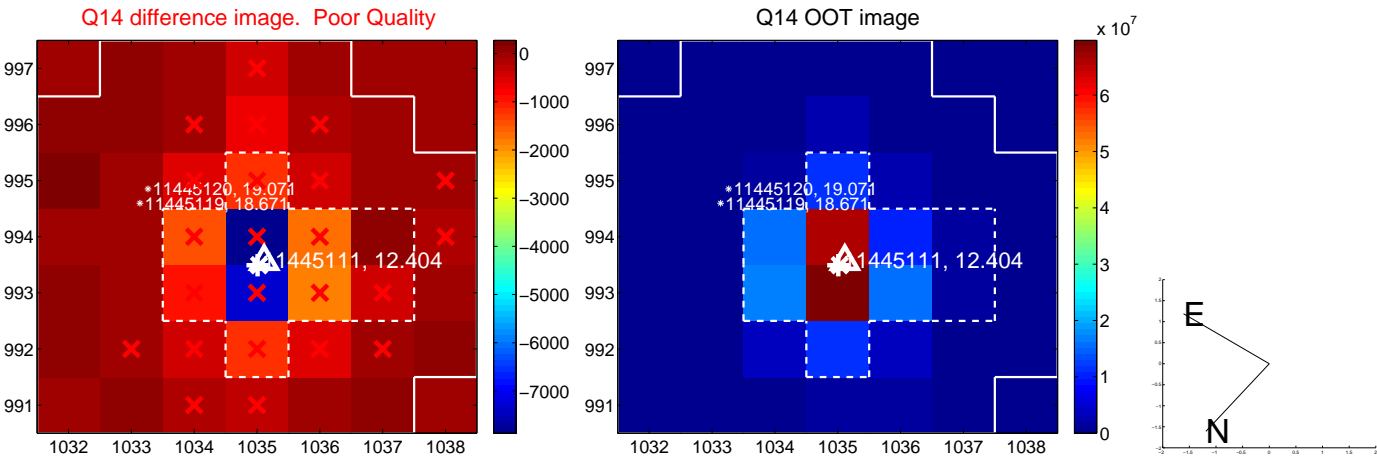
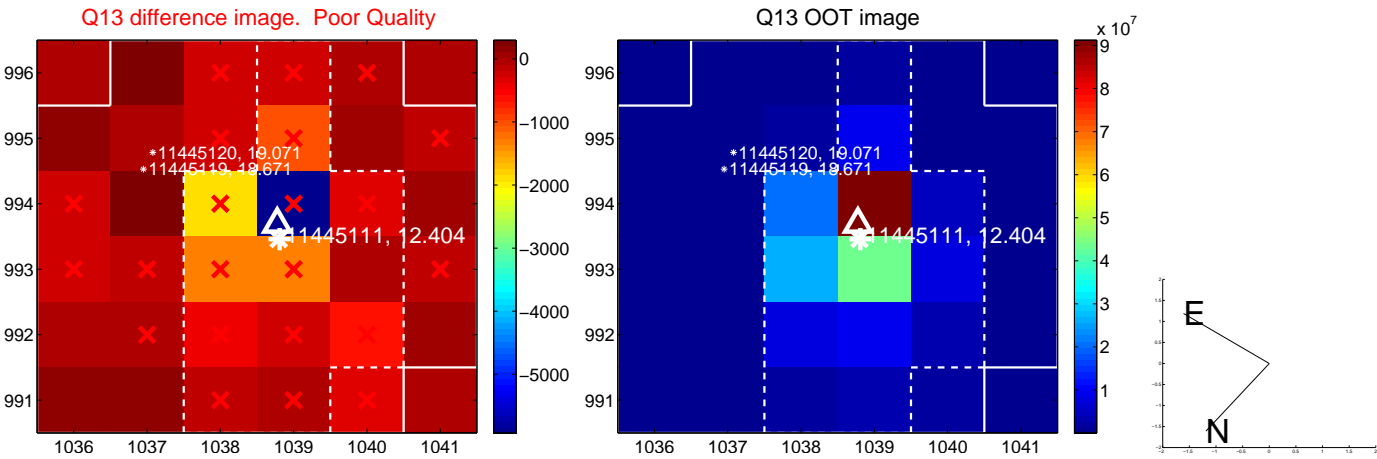




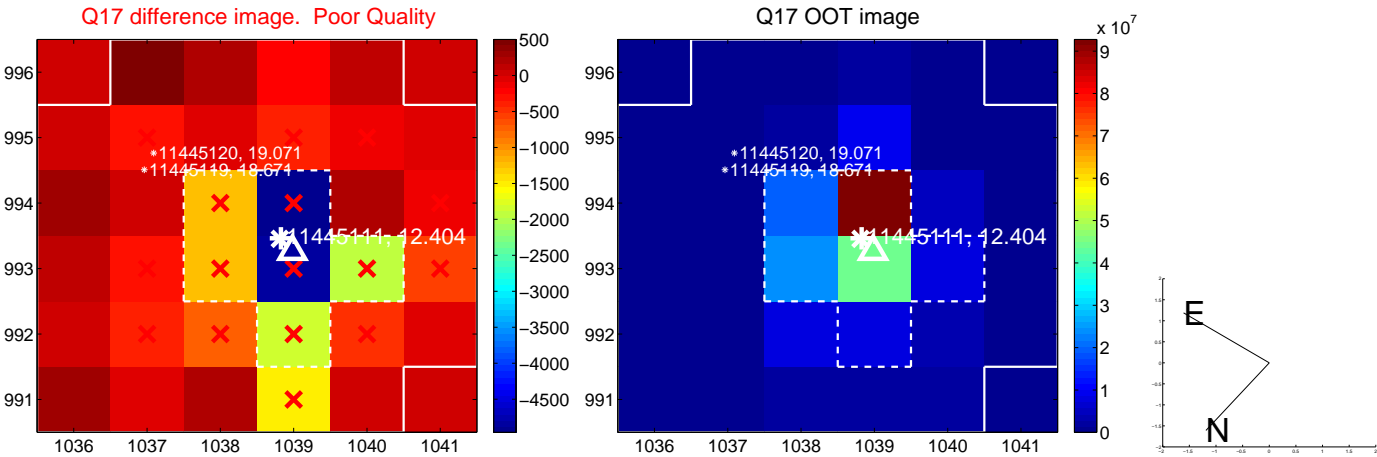
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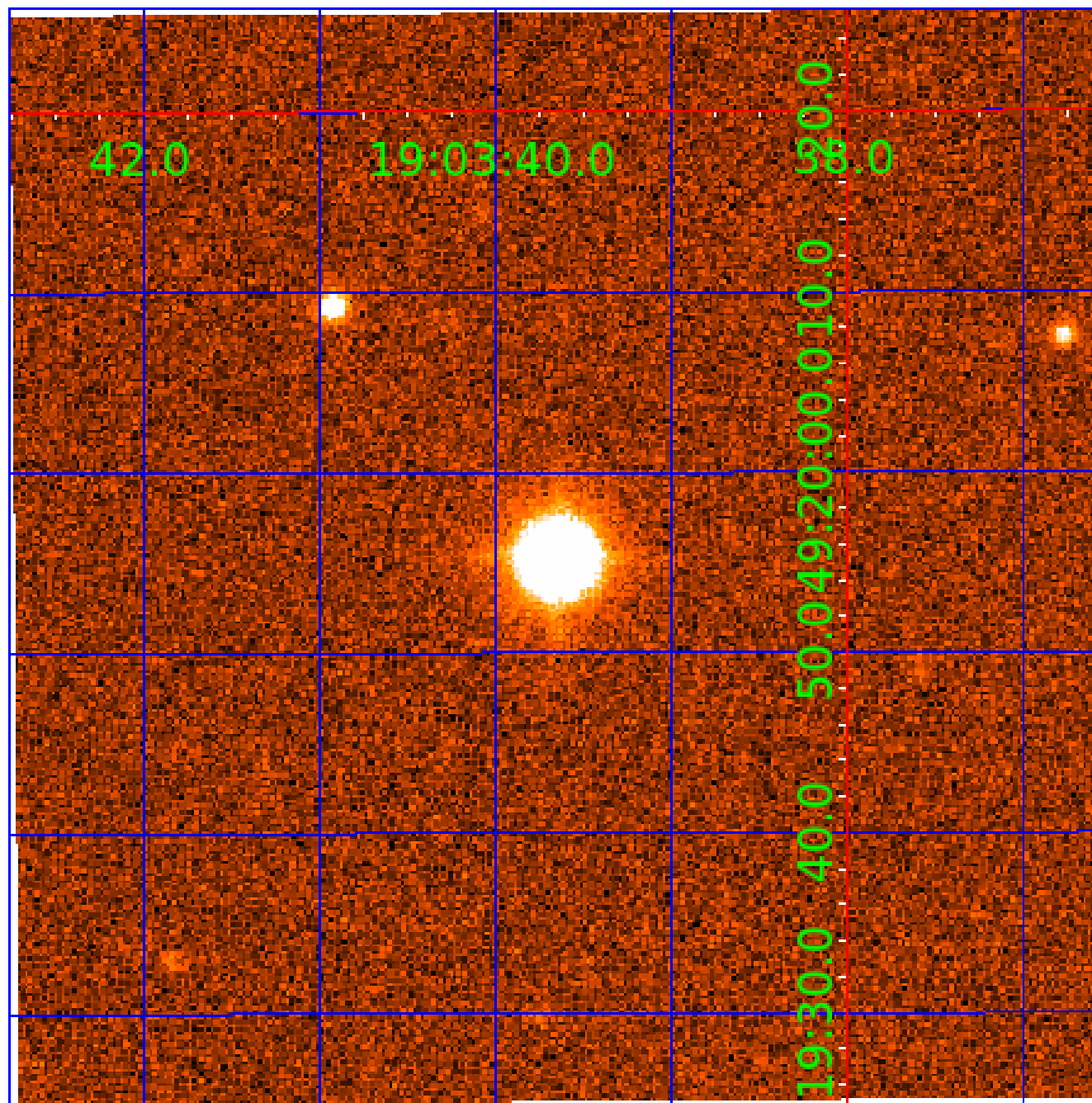
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination





# KIC 011445111

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011445111-01	OBS	No	1.316344	131.826212	0.0	5.356	9.1	0.0	2.91	7125	0.00	24744.00
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011445111-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT
011445111-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

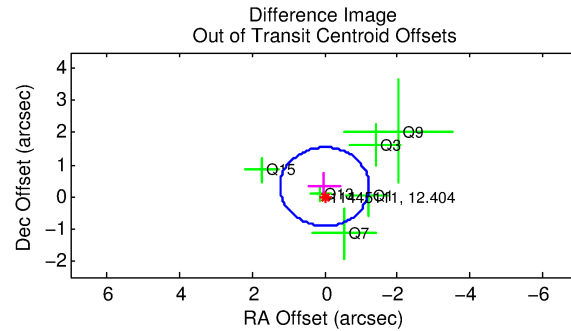
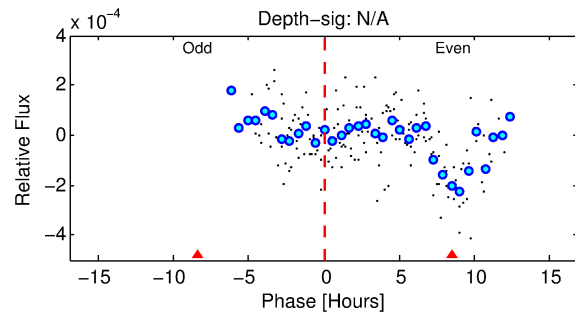
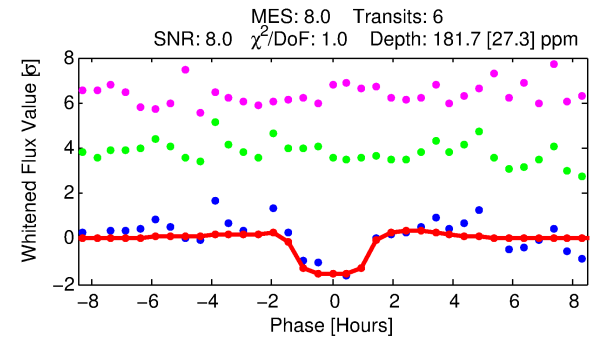
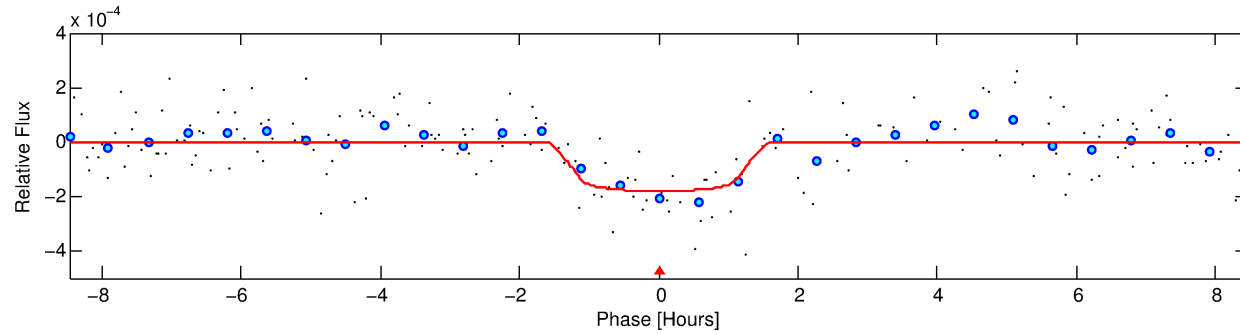
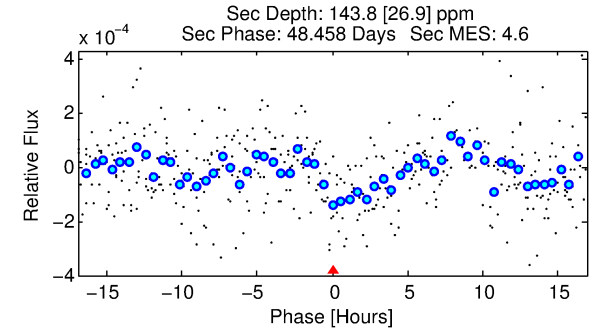
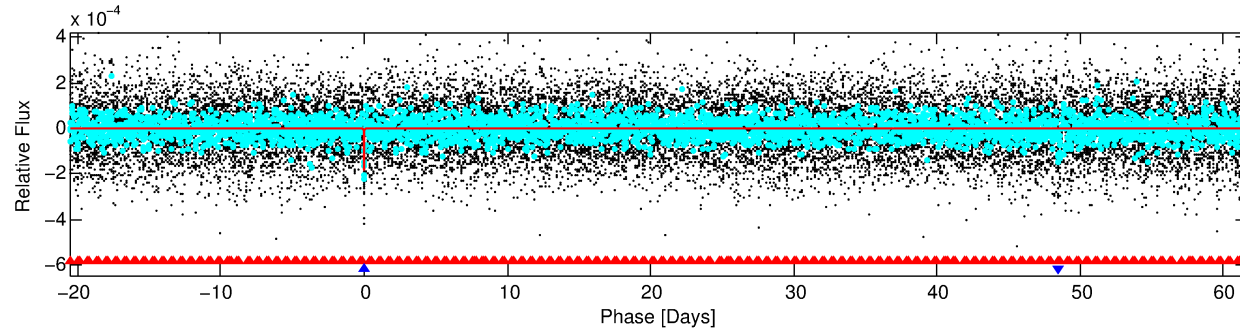
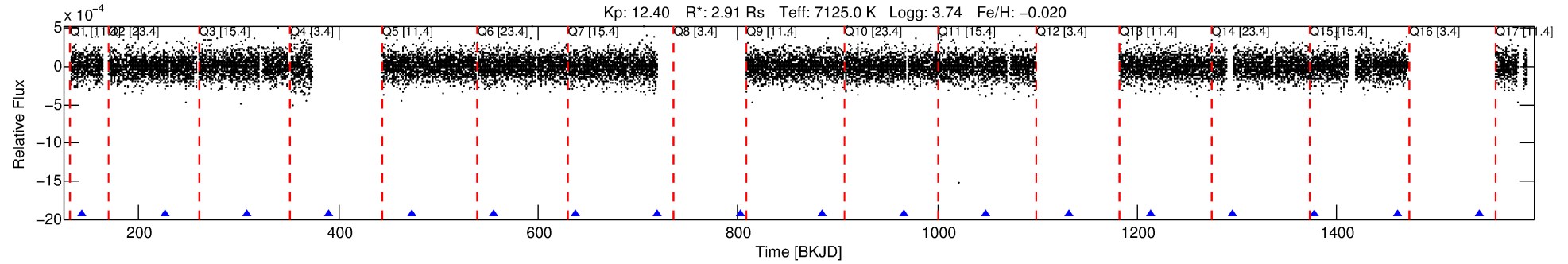
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011445111-02

No Significant Match Found

# DV One-Page Summary

KIC: 11445111 Candidate: 2 of 2 Period: 82.280 d



## DV Fit Results:

Period = 82.28012 [0.00078] d  
Epoch = 143.7950 [0.0086] BKJD  
Rp/R\* = 0.0142 [0.0103]  
a/R\* = 110.29 [493.40]  
b = 0.88 [1.11]  
Seff = 99.75 [50.63]  
Teq = 806 [102] K  
Rp = 4.51 [3.56] Re  
a = 0.4427 [0.1356] AU  
Ag = 763.41 [1173.24] [0.65σ]  
Teffp = 6549 [2394] K [2.40σ]

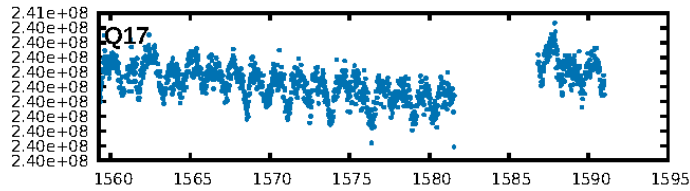
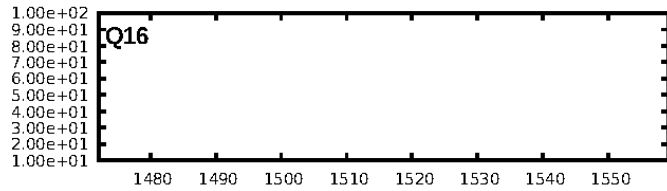
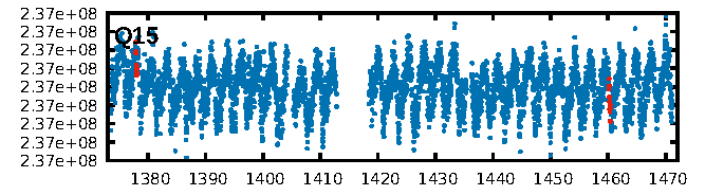
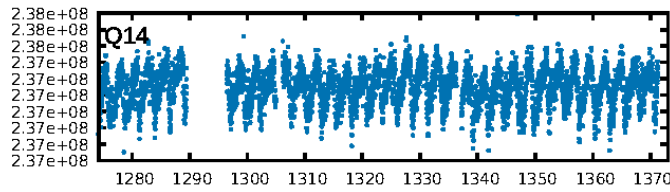
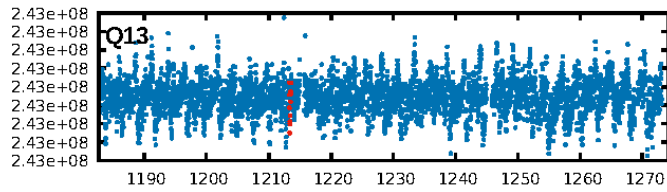
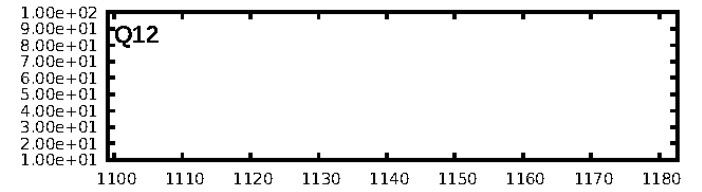
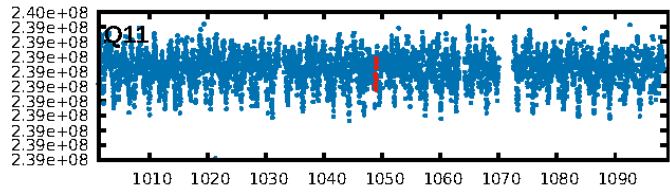
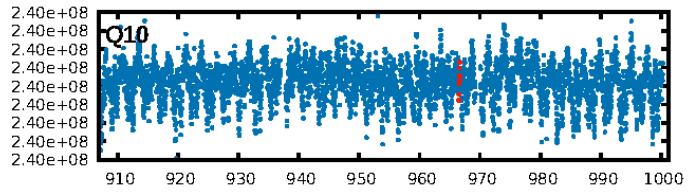
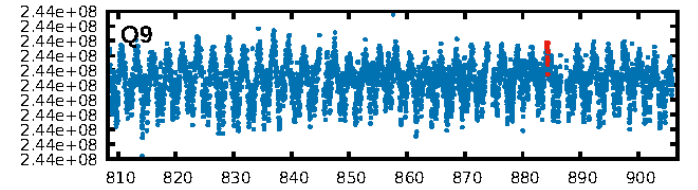
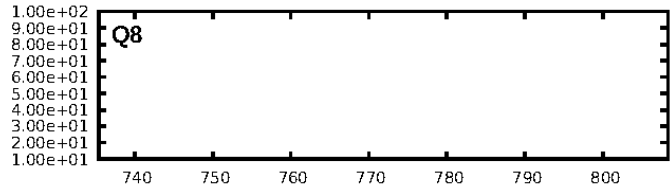
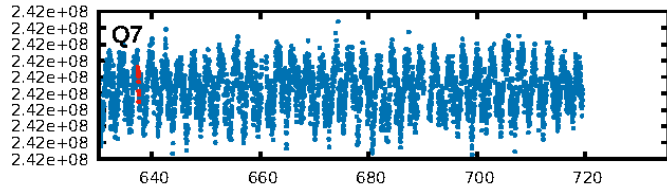
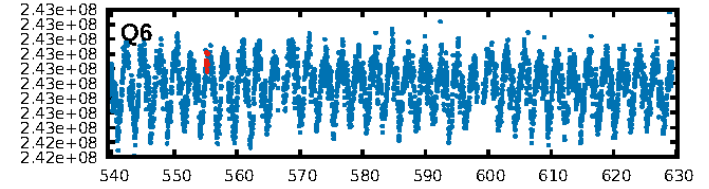
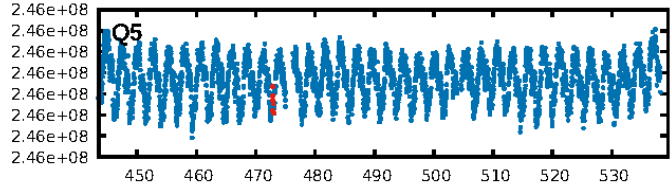
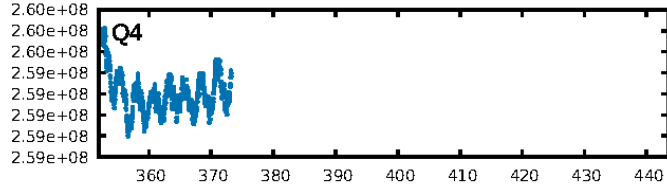
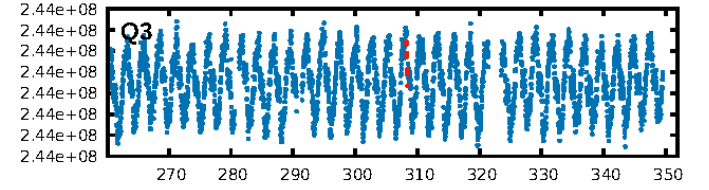
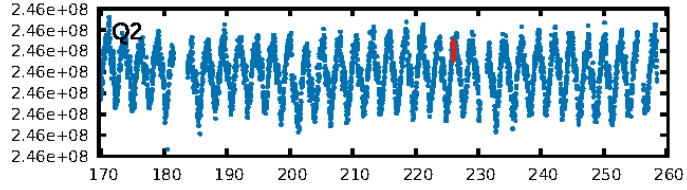
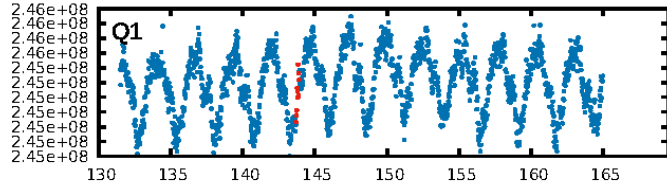
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [320.91σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 61.2%  
ModelChiSquareGof-sig: 99.1%  
**Bootstrap-pfa: 2.29e-11**  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: -4.726  
Centroid-sig: 63.1%  
Centroid-so: 0.599 arcsec [0.63σ]  
OotOffset-rm: 0.311 arcsec [0.76σ]  
OotOffset-st: 0/3/0/3 [6]  
KicOffset-rm: 0.280 arcsec [0.61σ]  
KicOffset-st: 0/3/0/3 [6]  
DiffImageQuality-fgm: 0.67 [4/6]  
DiffImageOverlap-fno: 0.50 [5/10]

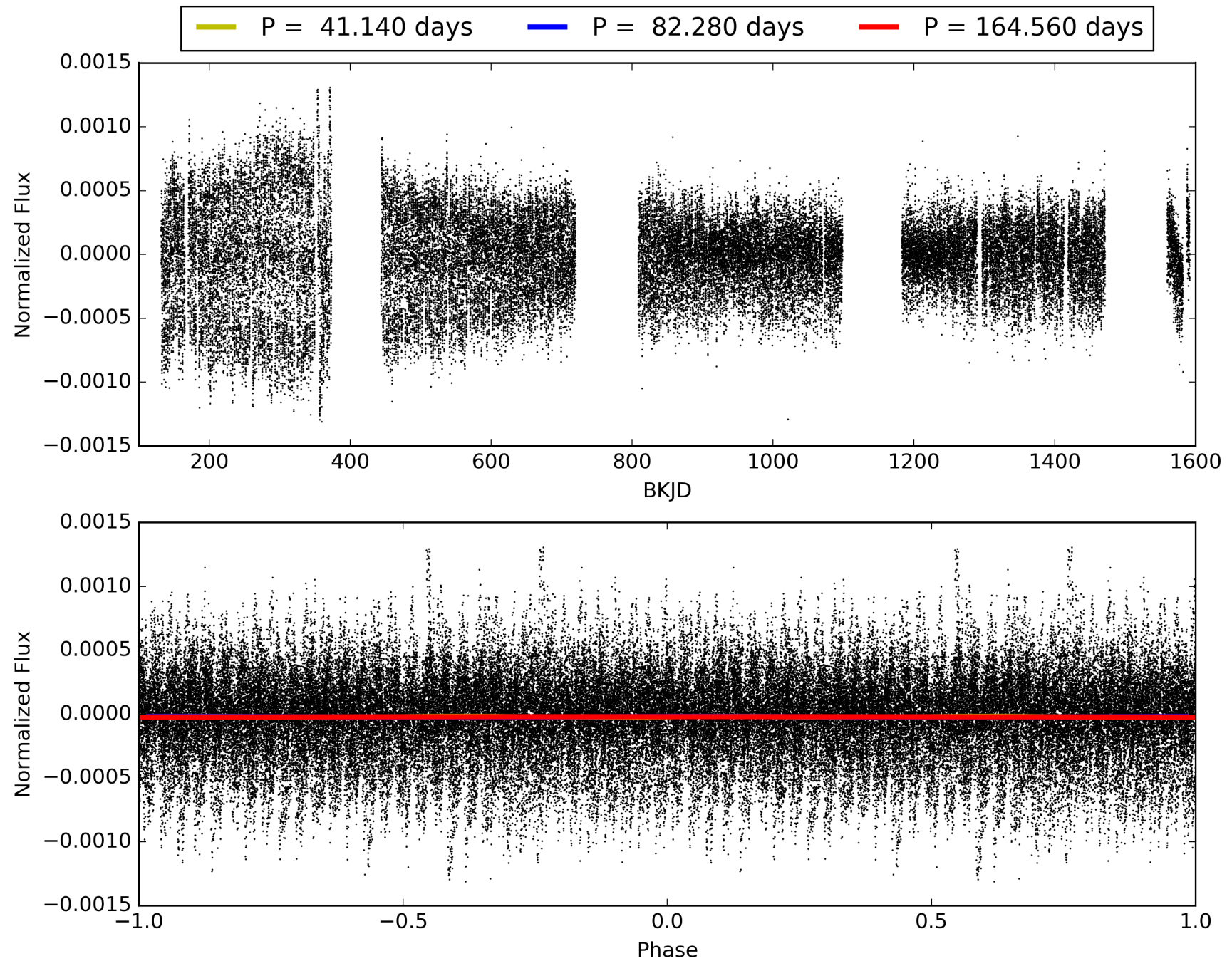
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:02:48 Z

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

## TCE 011445111-02, PDC Light Curves



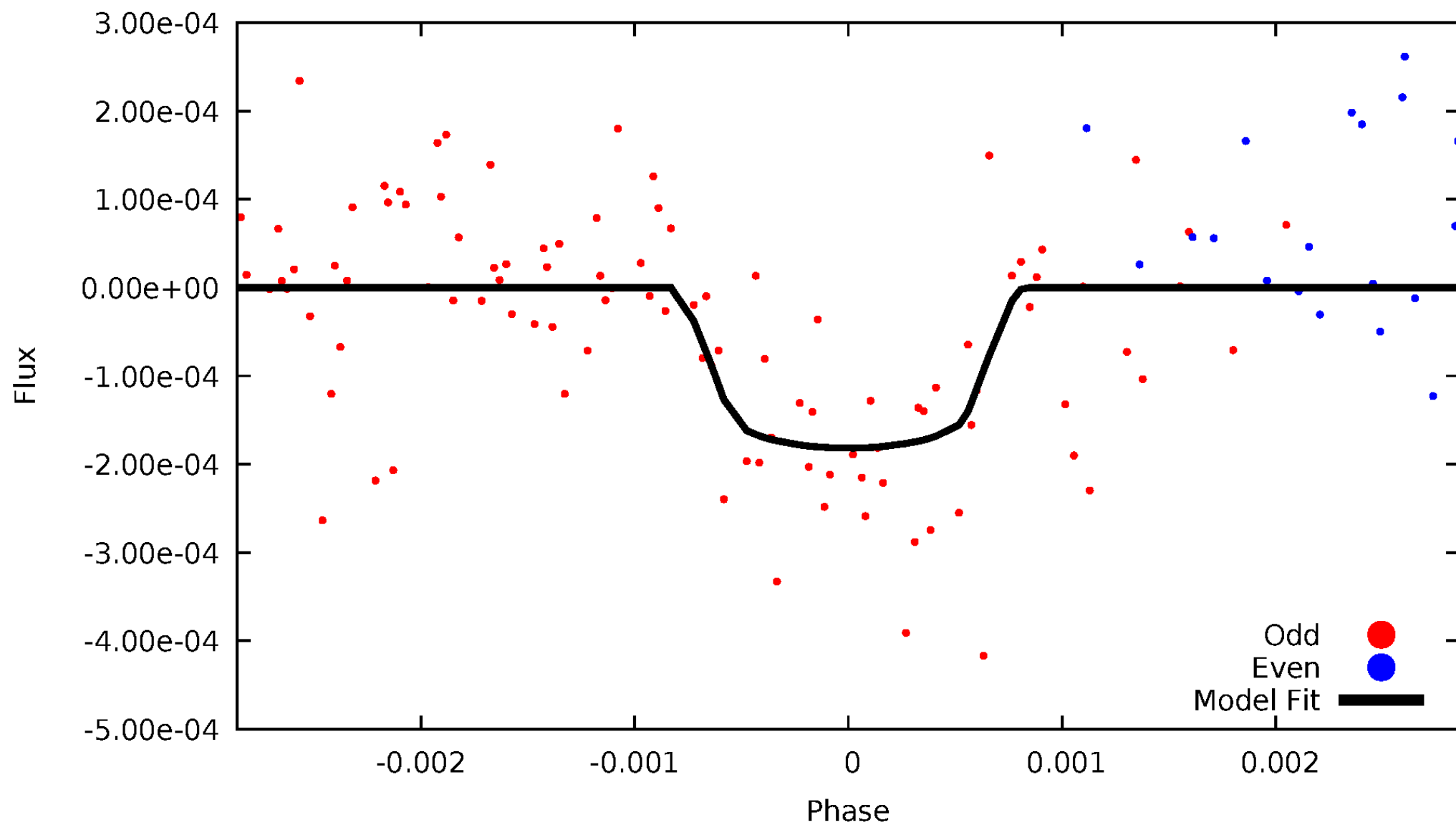
# TCE 011445111-02





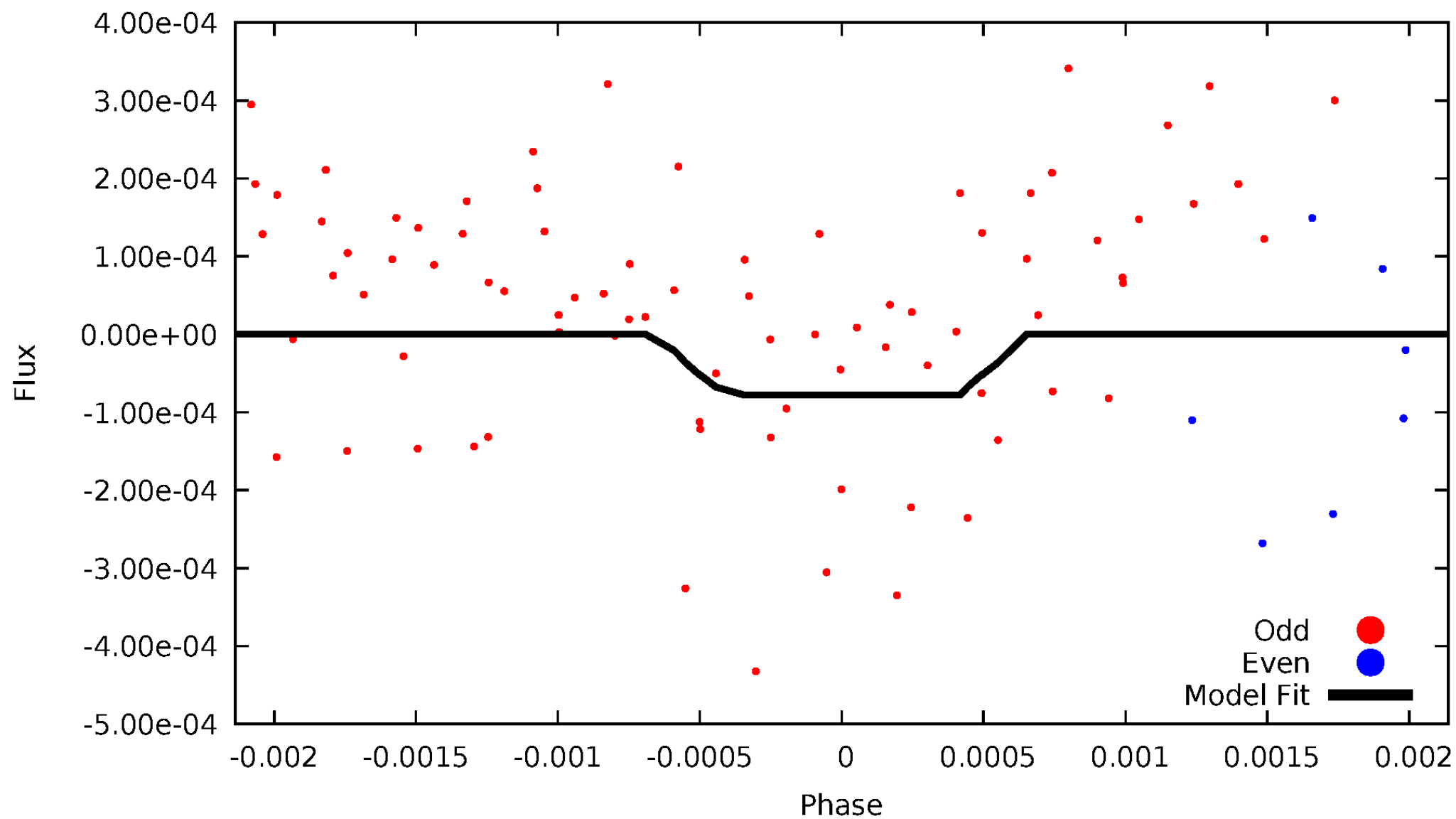
# DV Odd/Even

TCE 011445111-02



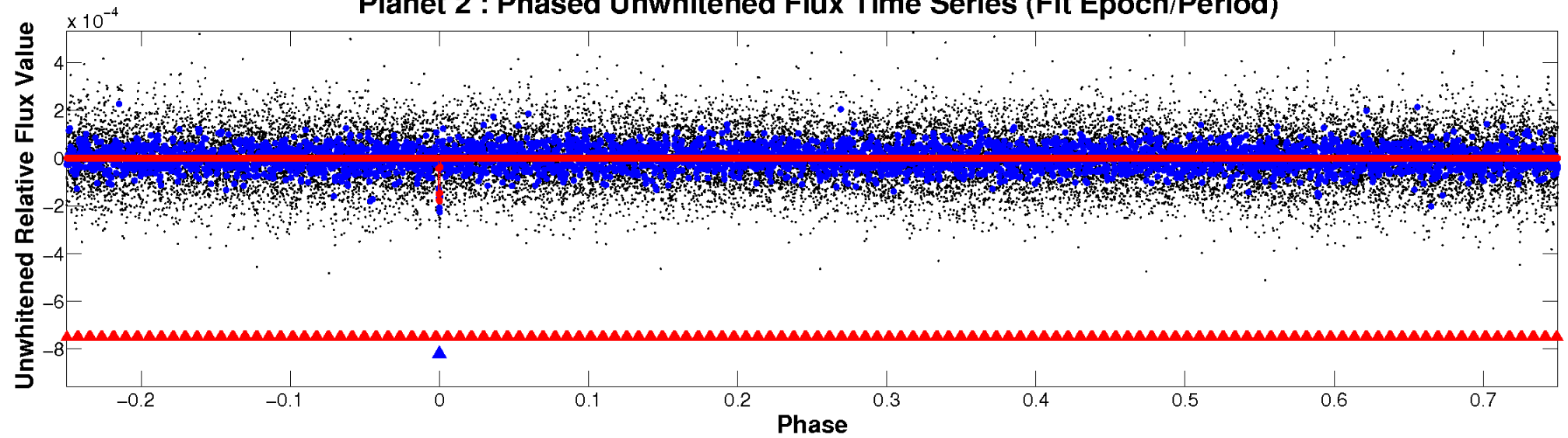
# ALT Odd/Even

TCE 011445111-02

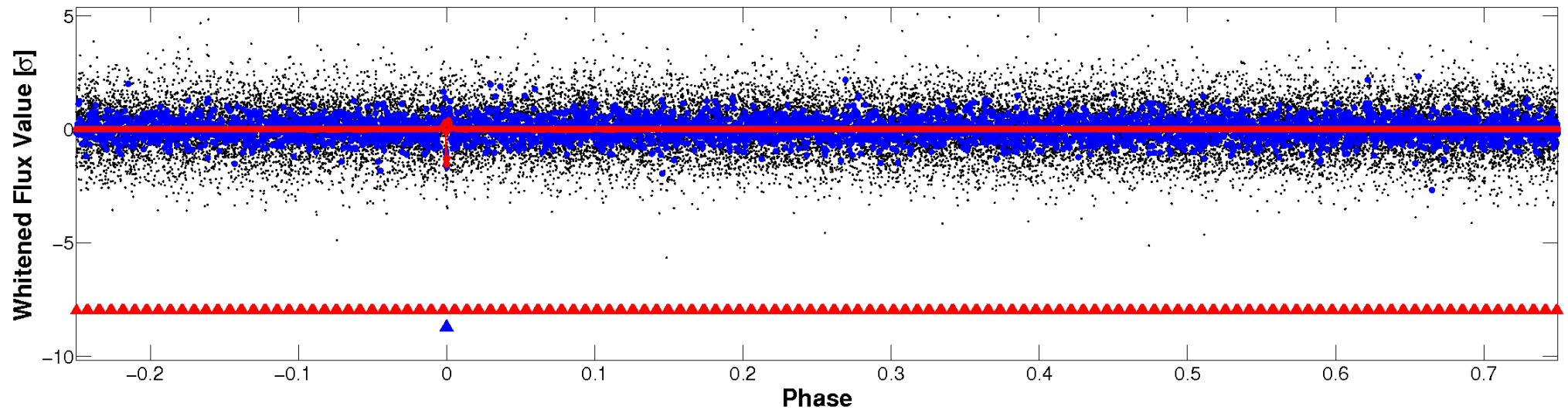


# Non-Whitened Vs. Whitened Light Curve

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

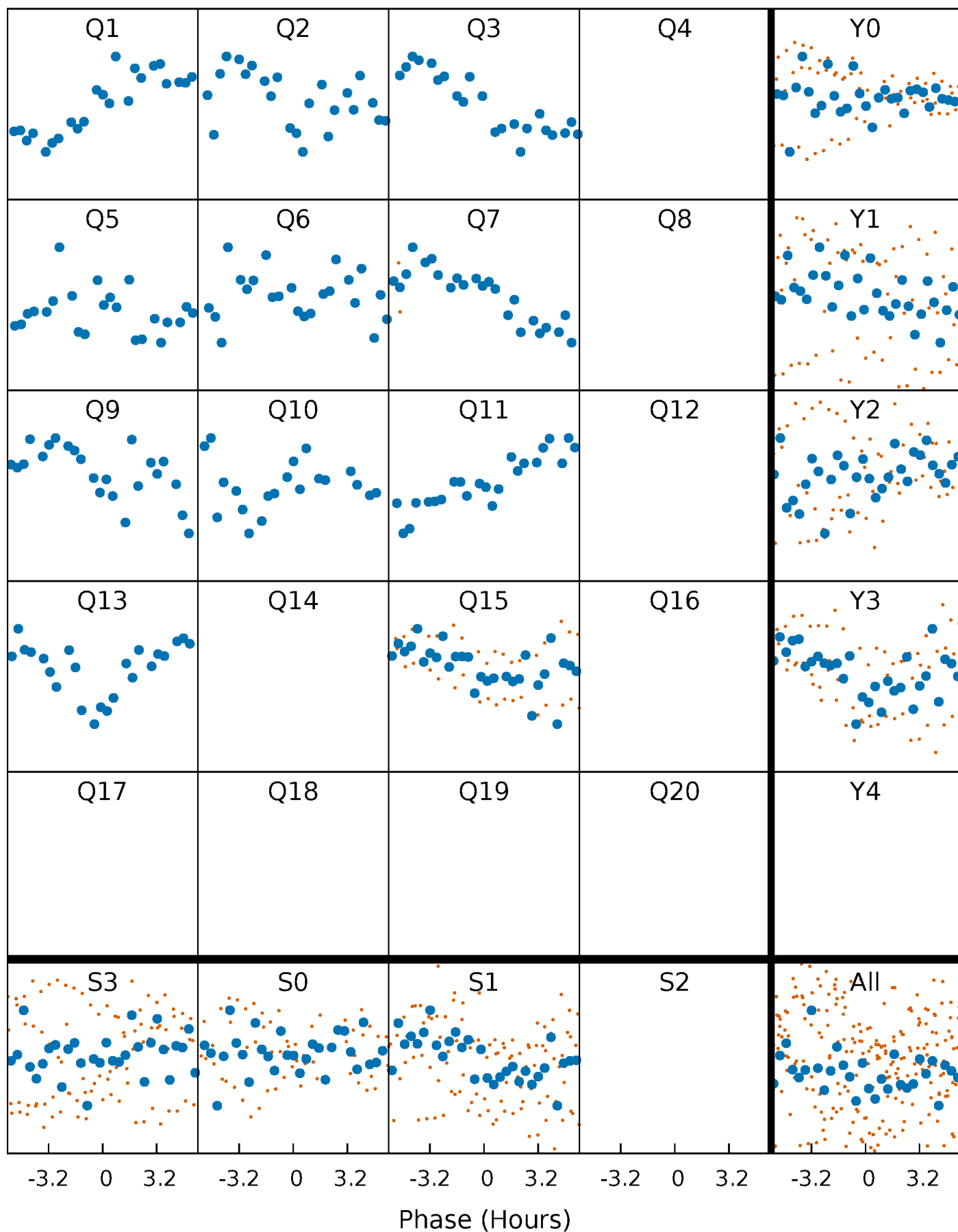


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



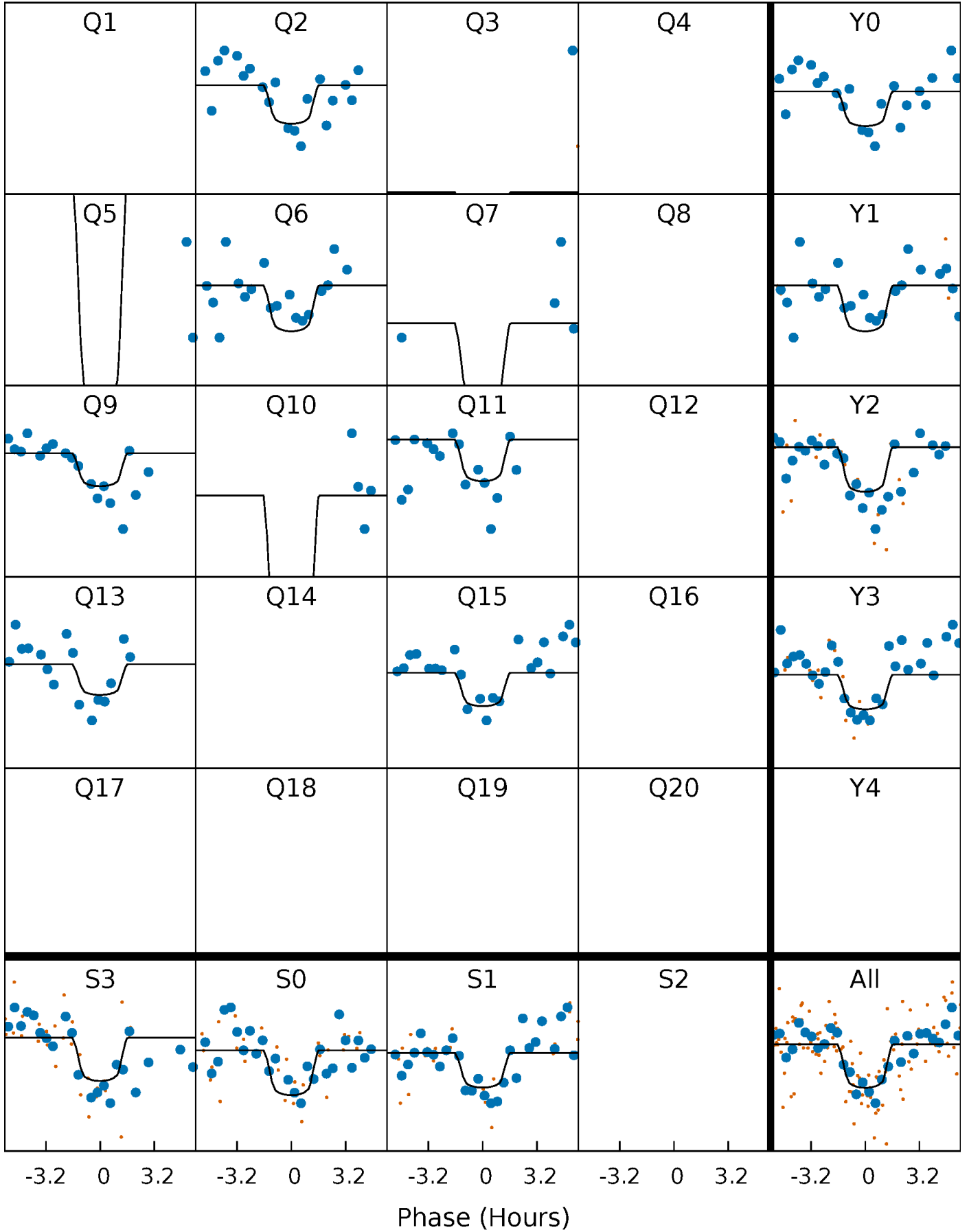
# PDC Quarter-Phased Transit Curves

TCE 011445111-02   P= 82.280119 Days    $T_0=143.795017$  (BKJD)



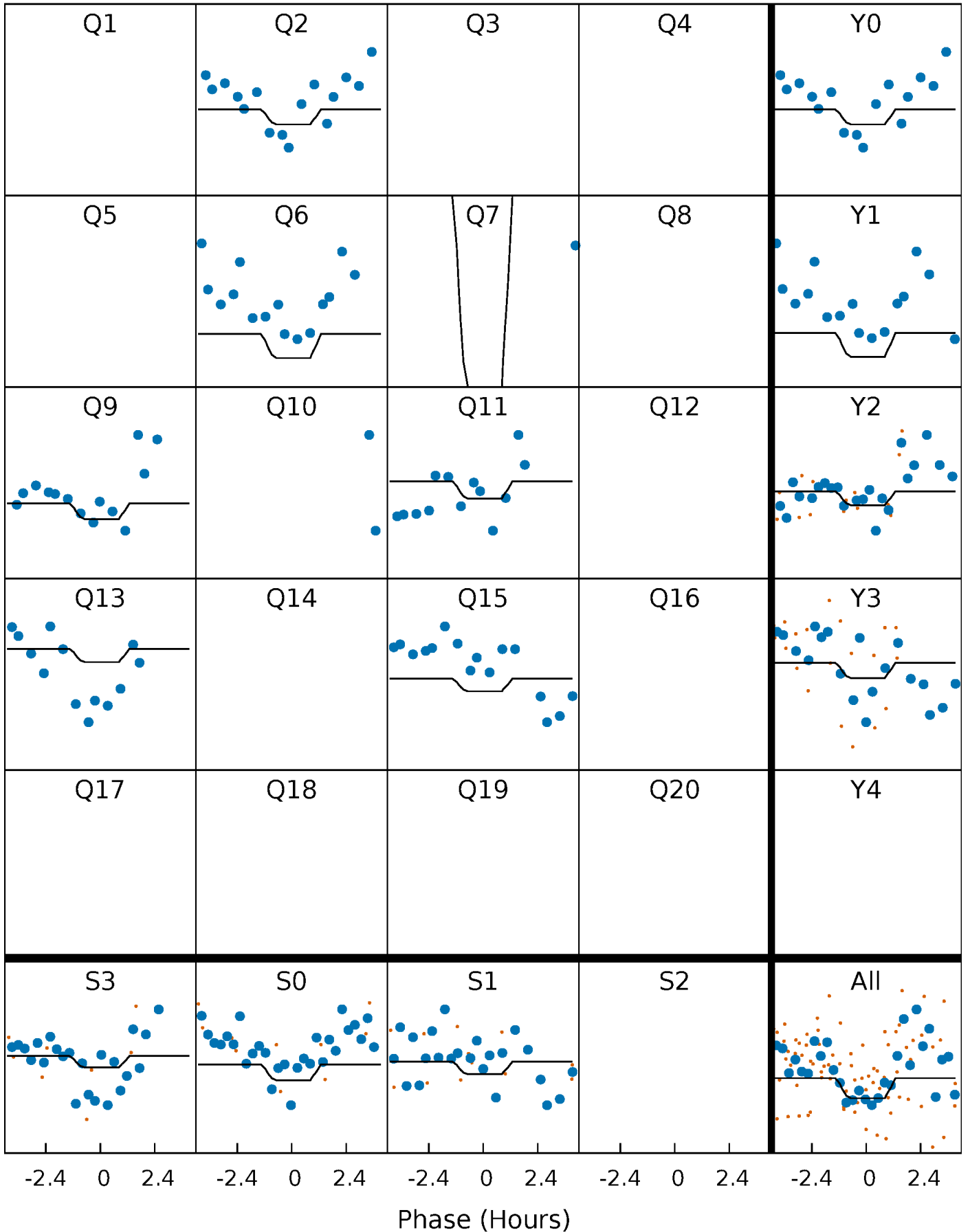
# DV Quarter-Phased Transit Curves

TCE 011445111-02 P= 82.280119 Days  $T_0=143.795017$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

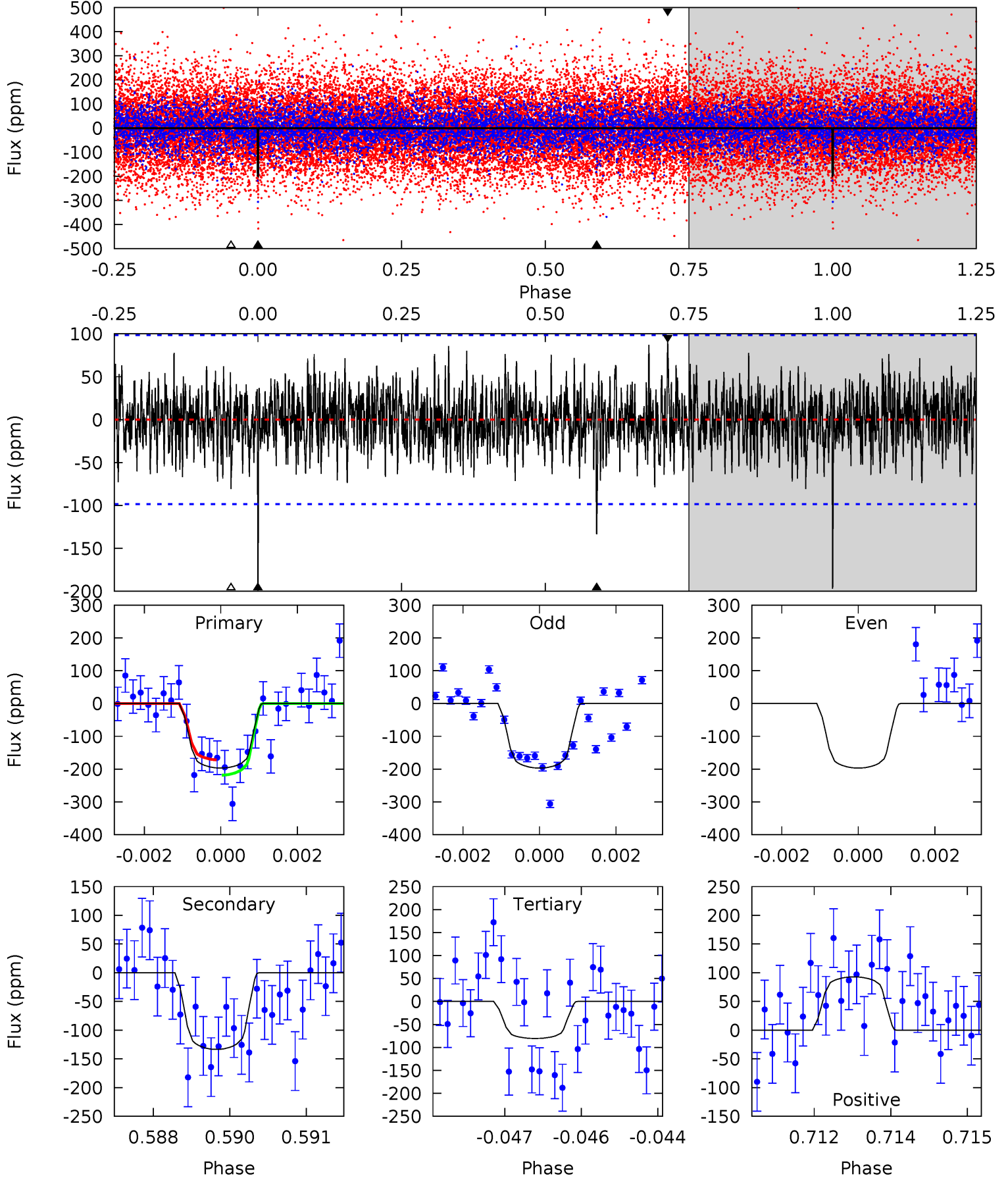
TCE 011445111-02 P= 82.277750 Days  $T_0=143.823155$  (BKJD)



# DV Model-Shift Uniqueness Test

011445111-02, P = 82.280119 Days, E = 61.514898 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	7.29	4.40	5.07	5.37	3.17	1.46	6.35	5.68	2.89	2.22	0	0.97	0.32	1.26

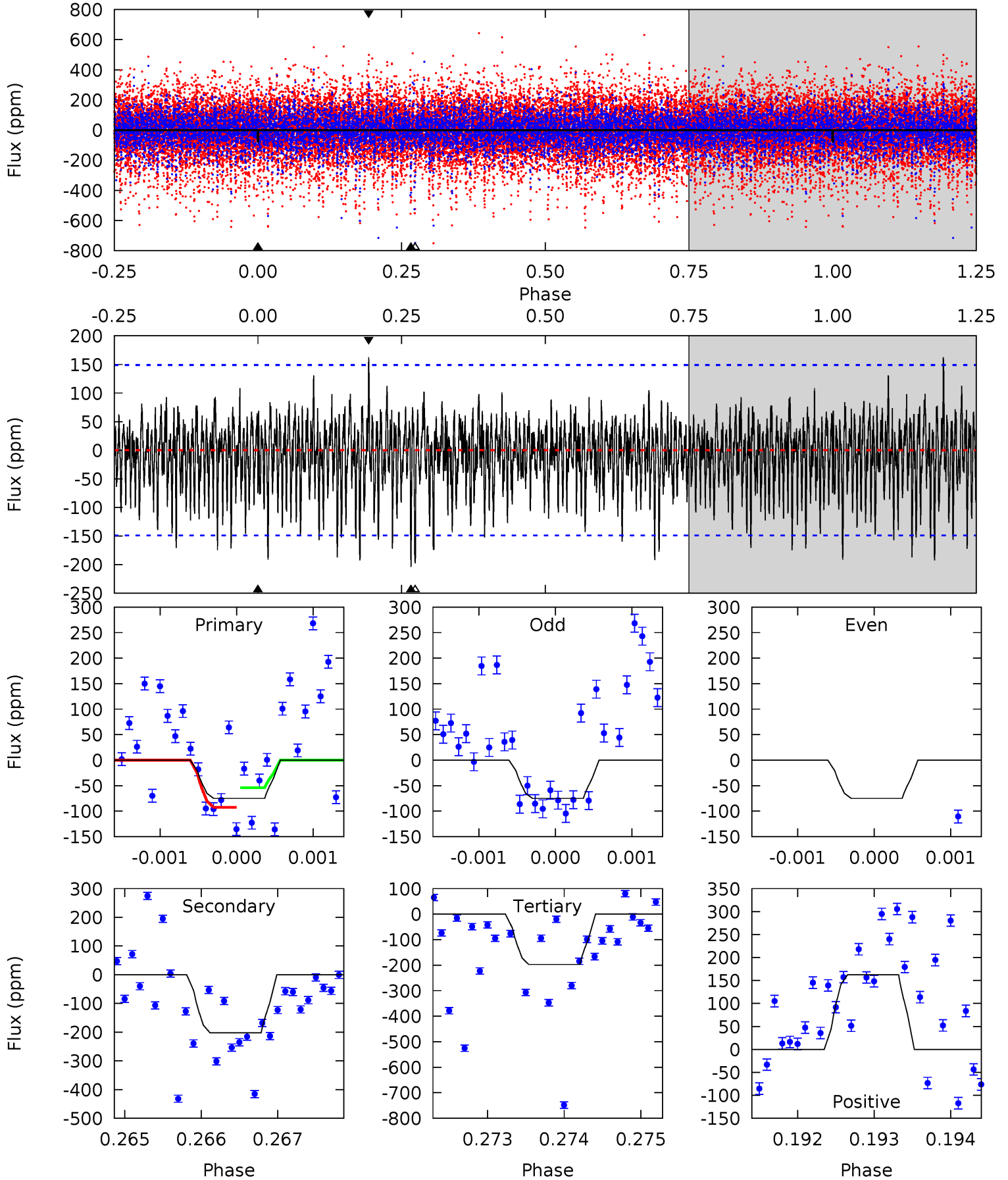




# Alt Model-Shift Uniqueness Test

011445111-02, P = 82.277750 Days, E = 61.545405 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
2.73	7.38	7.20	5.93	5.43	3.25	1.79	-4.46	-3.19	0.18	1.46	0	1.13	0.45	0.70



### Stellar Parameters For KIC 011445111

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7125^{+170}_{-234}$	$3.743^{+0.288}_{-0.090}$	$-0.020^{+0.250}_{-0.300}$	$2.910^{+0.427}_{-0.925}$	$1.711^{+0.211}_{-0.258}$	$0.098^{+0.180}_{-0.029}$
	+2%/-3%	+8%/-2%	+1250%/-1500%	+15%/-32%	+12%/-15%	+184%/-30%
Source	PHO1	FLK73	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 011445111-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-133 \pm 18$	$4.20^{+3.20}_{-2.46}$	$1099^{+65}_{-93}$	$6295^{+4988}_{-1360}$	$783^{+4209}_{-522}$
Alt.	$-203 \pm 27$	$3.27^{+2.94}_{-2.13}$	$1107^{+62}_{-98}$	$8290^{+11730}_{-2399}$	$2042^{+13806}_{-1479}$

$T_{max}$  = 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

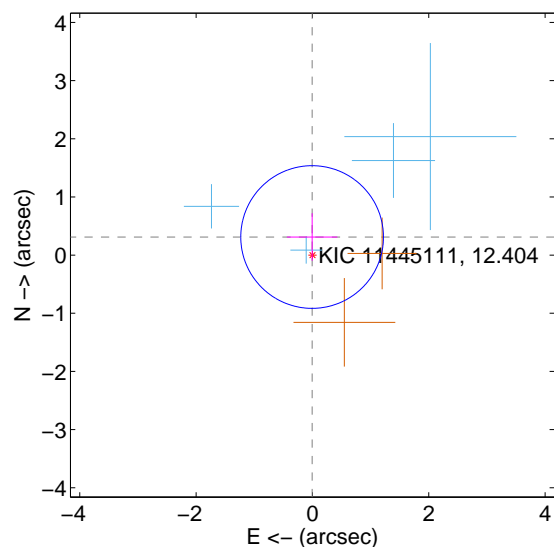
Supplemental centroid analysis for 011445111-02. Kepler magnitude: 12.40. Transit SNR 8.04

There are 4 quarters with good PRF difference image offsets

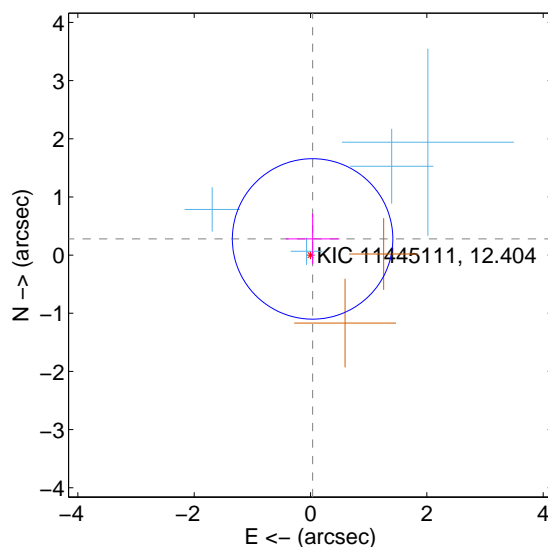
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.311 \pm 0.409$	0.76	$0.006 \pm 0.435$	$0.311 \pm 0.409$
PRF-fit source offset from KIC position	$0.280 \pm 0.460$	0.61	$-0.036 \pm 0.462$	$0.278 \pm 0.434$
photometric centroid source offset	$0.60 \pm 0.96$	0.63	$0.58 \pm 0.96$	$-0.13 \pm 0.95$

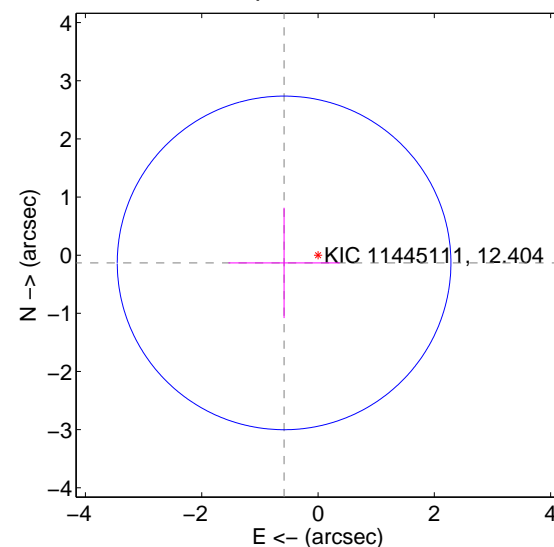
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

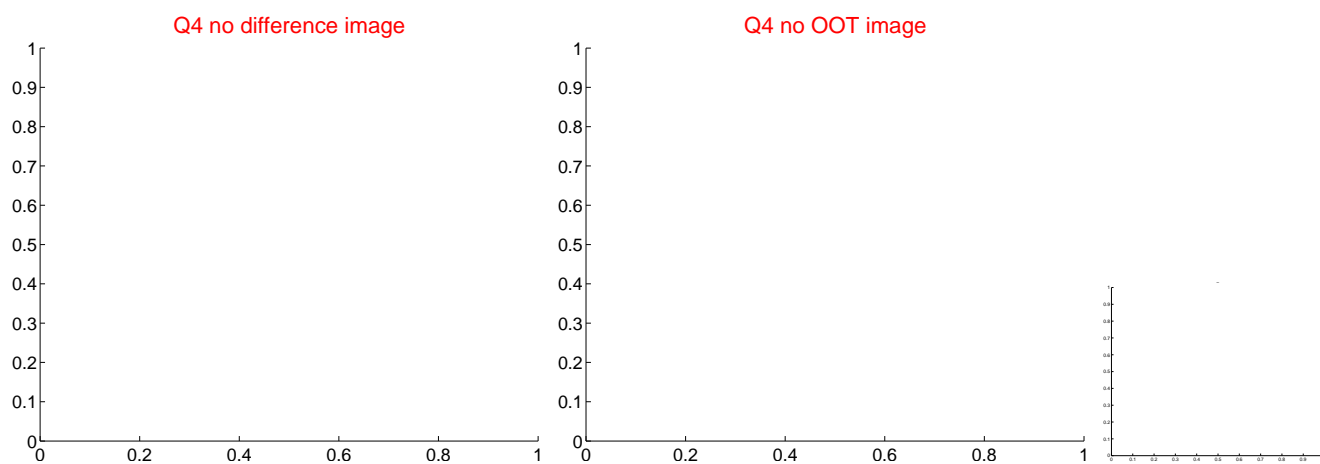
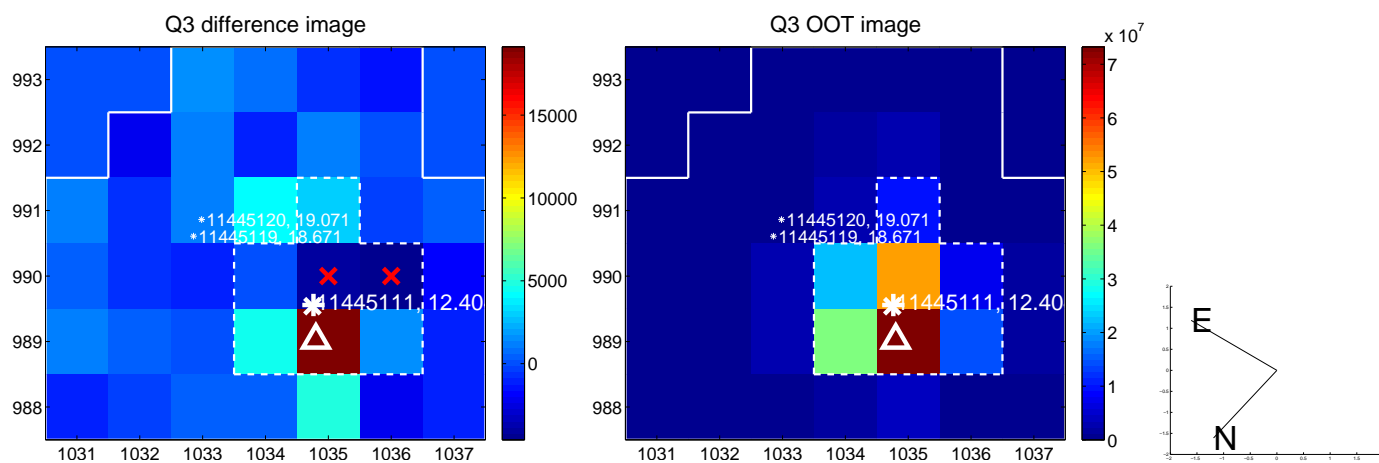
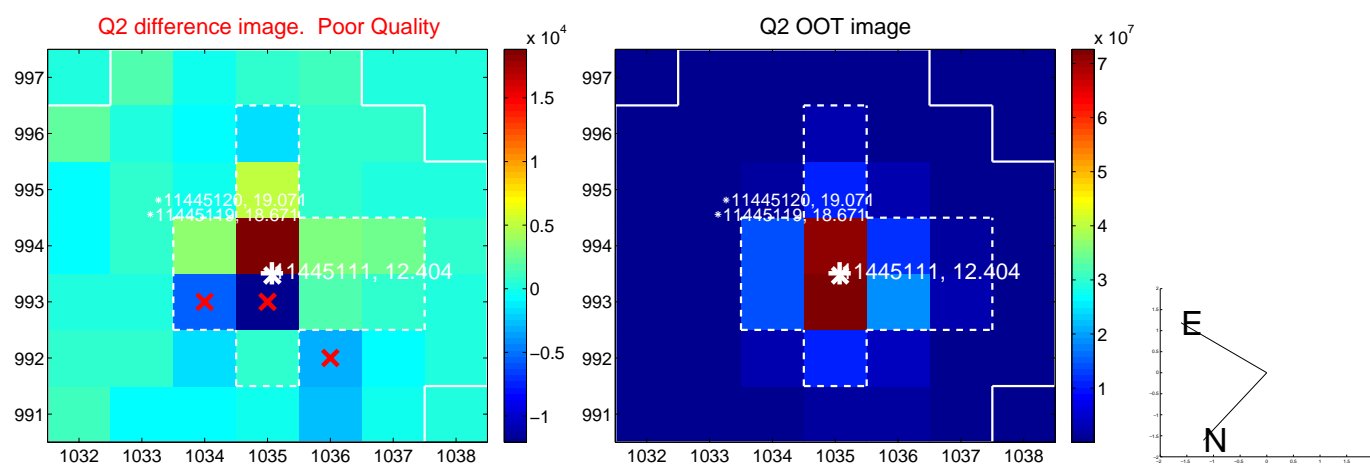
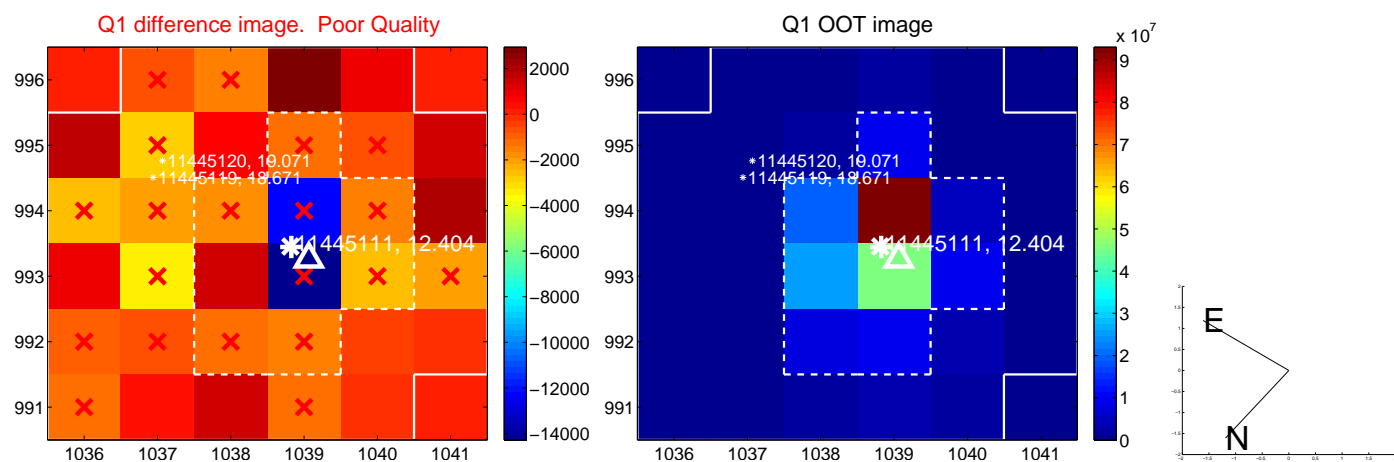


offset from photometric centroids

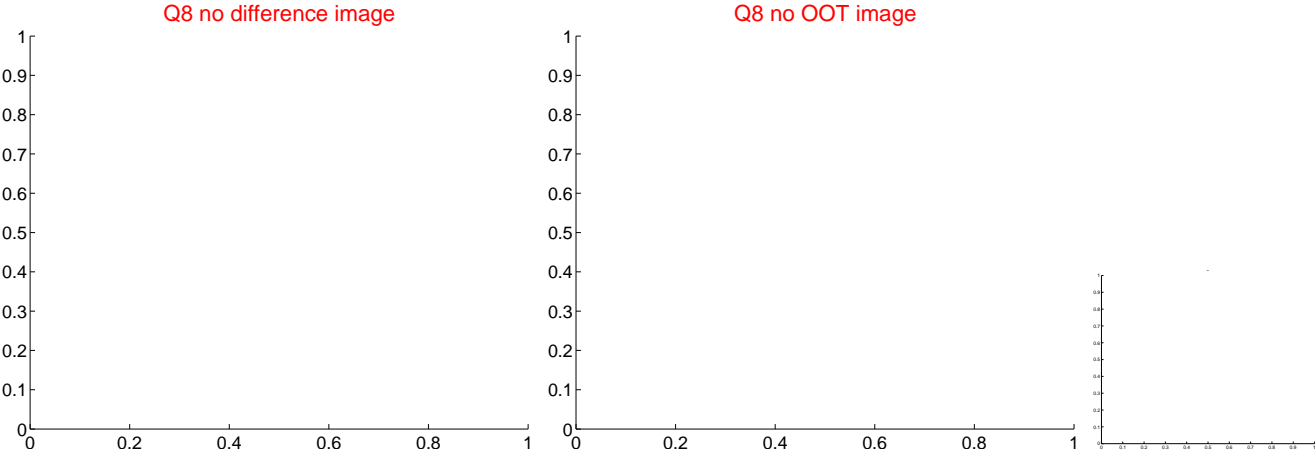
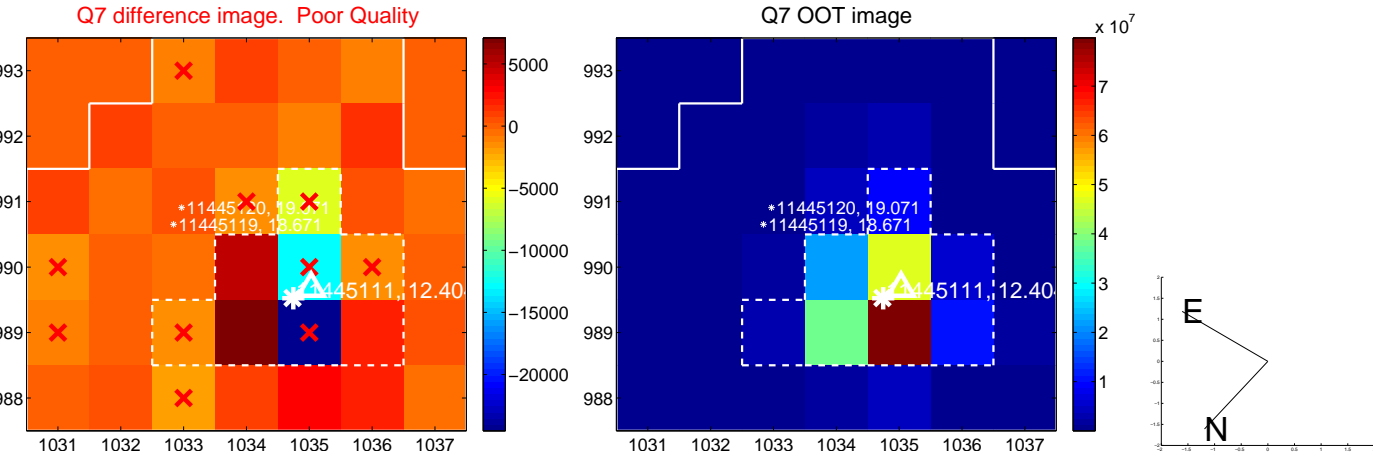
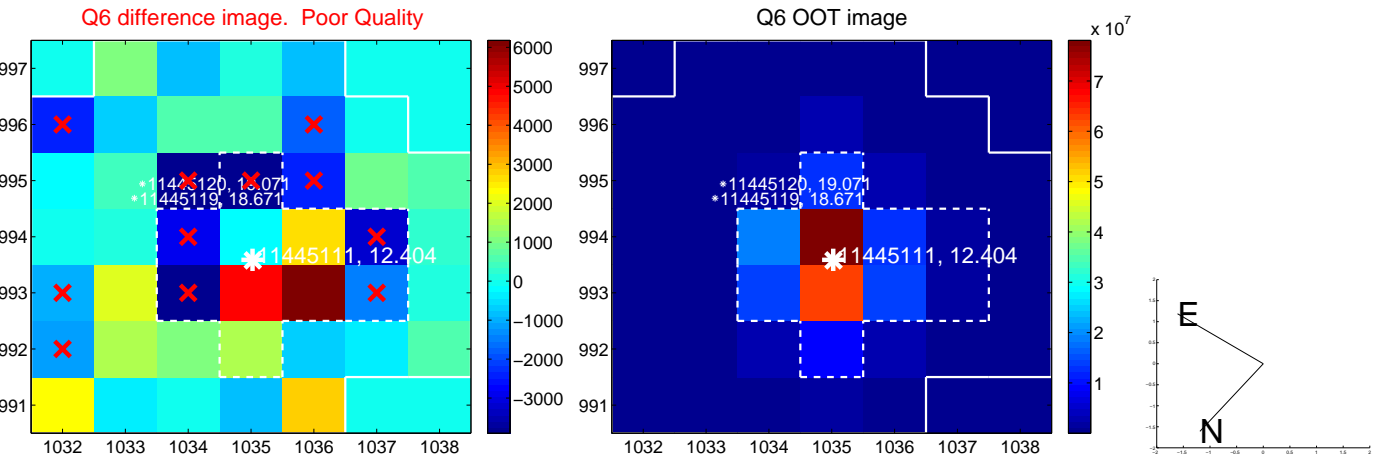
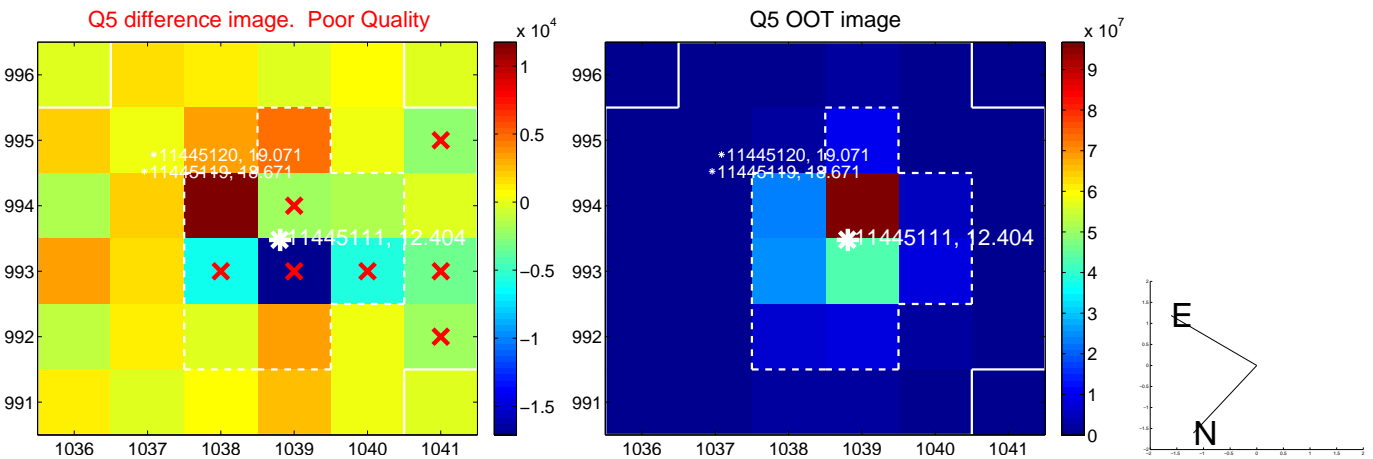


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

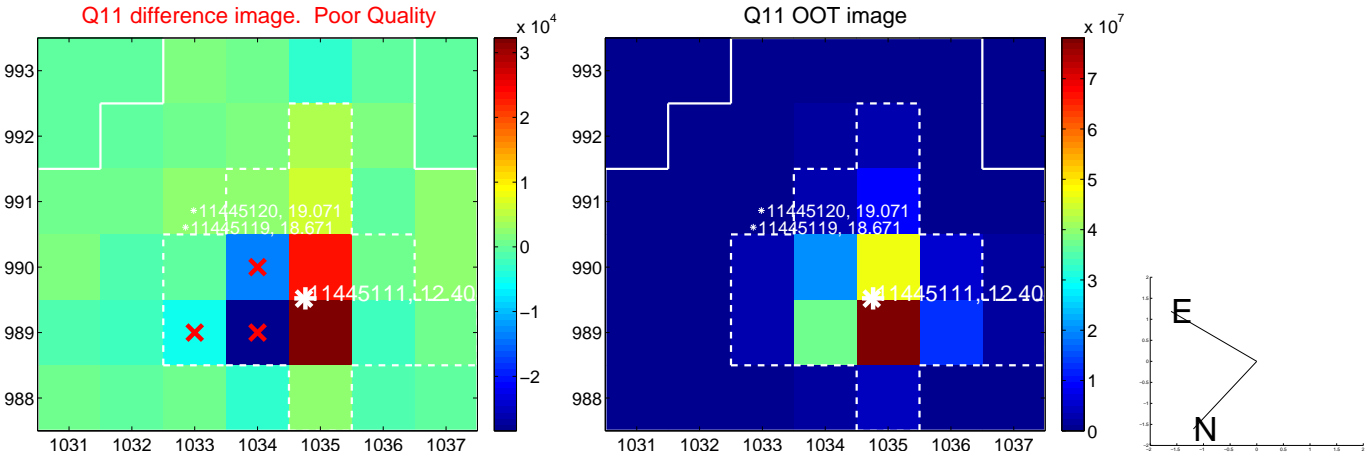
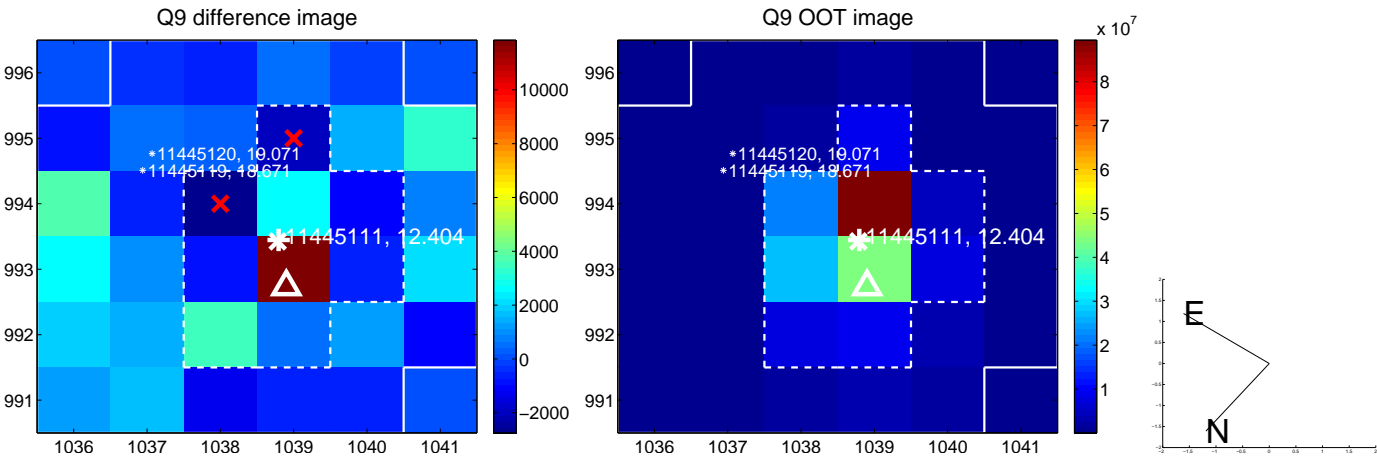
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



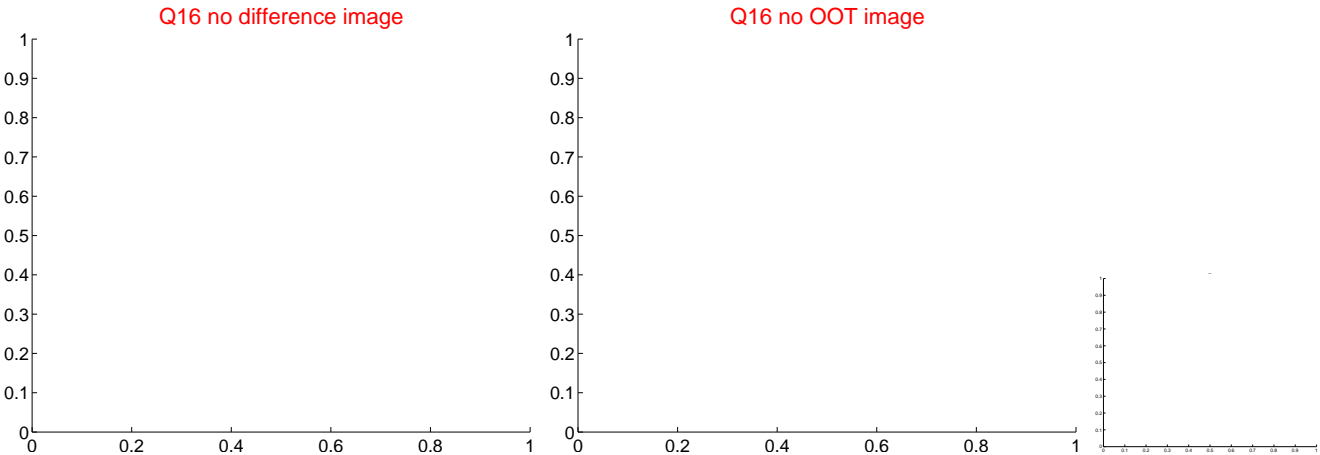
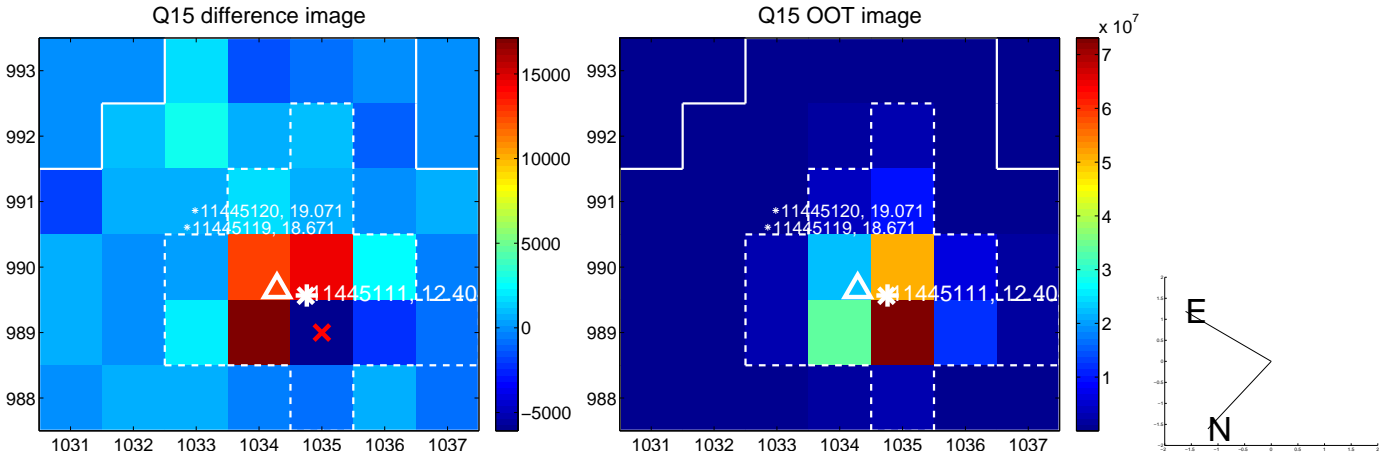
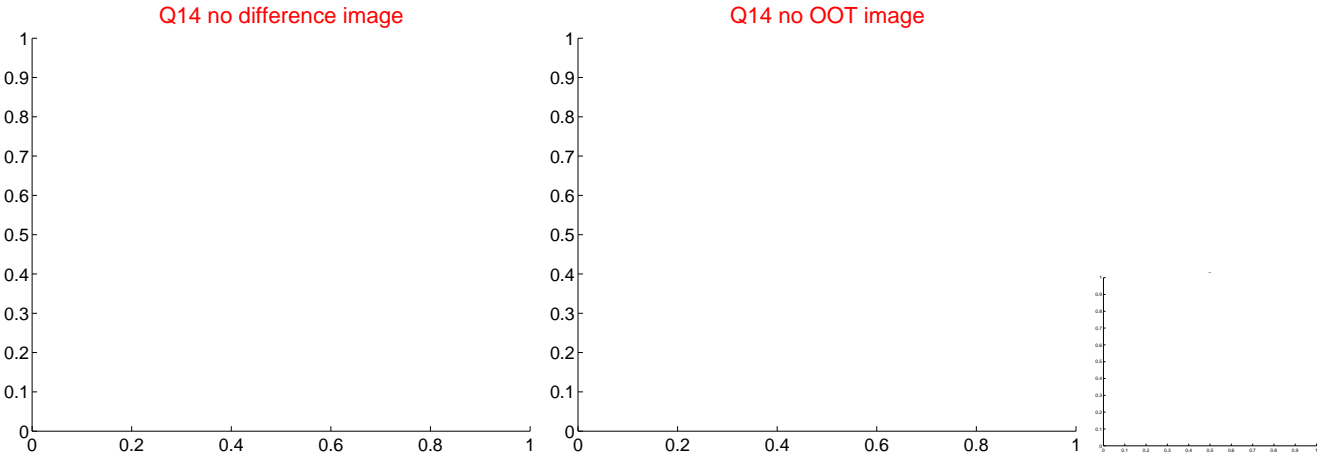
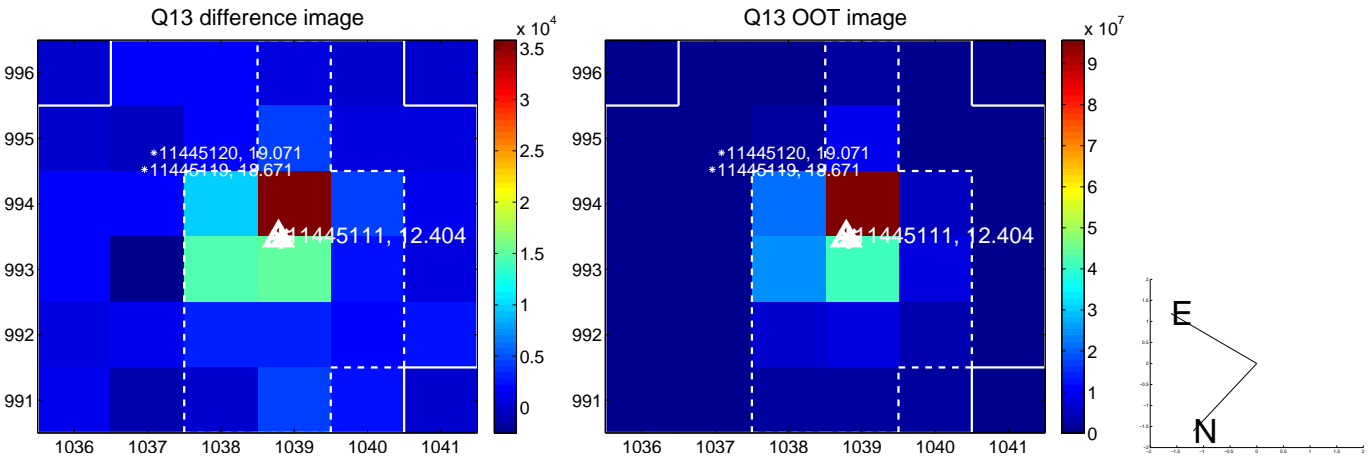
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

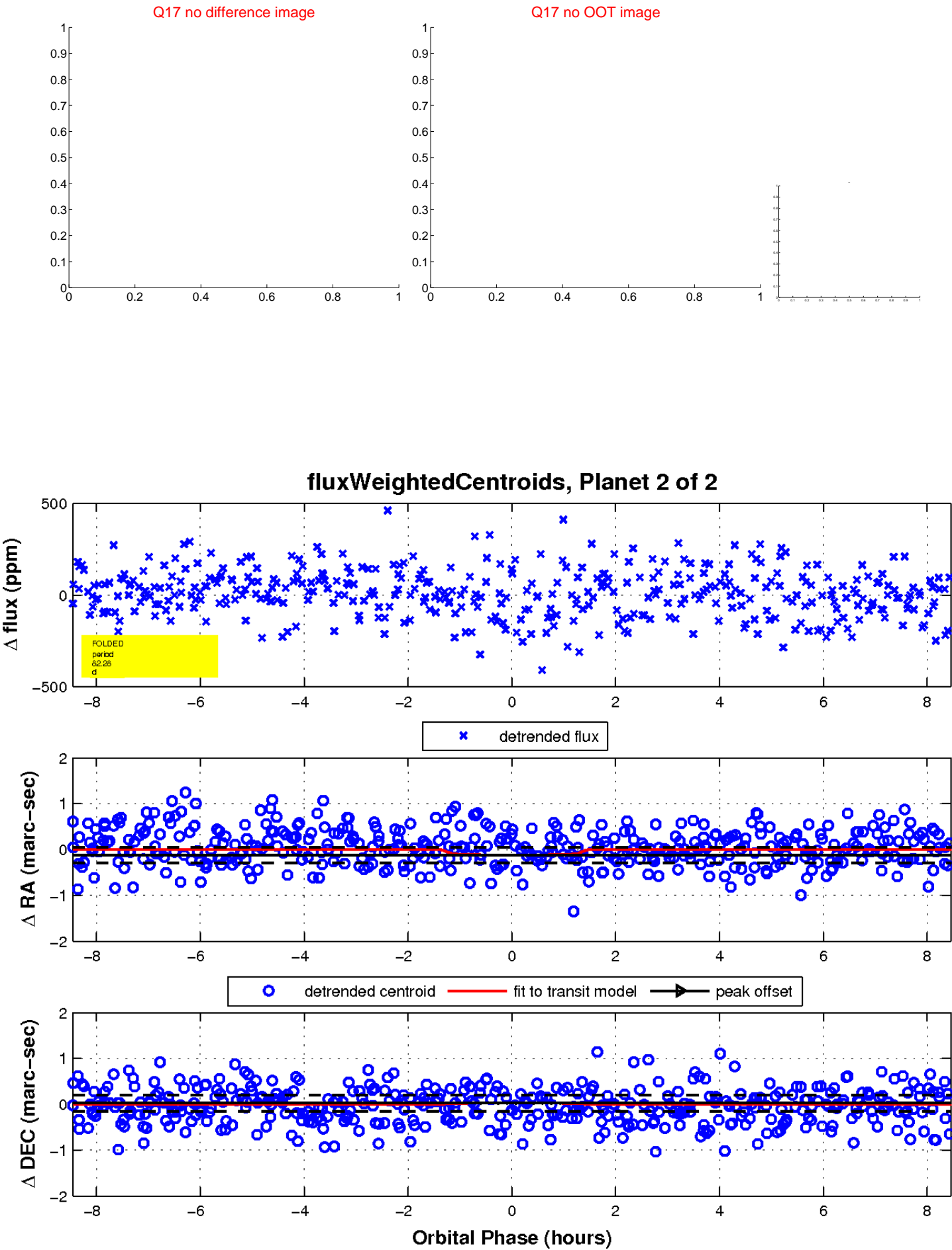


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

