

# KIC 006127239

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006127239-01	OBS	No	1.180114	132.491775	162.4	4.596	8.7	7.6	2.23	7783	2.96	22924.83
006127239-02	OBS	No	446.858687	197.798047	2603.8	4.816	7.3	7.5	2.23	7783	12.29	8.37

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006127239-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006127239-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—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.

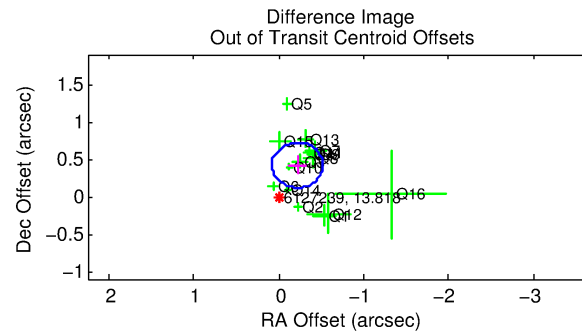
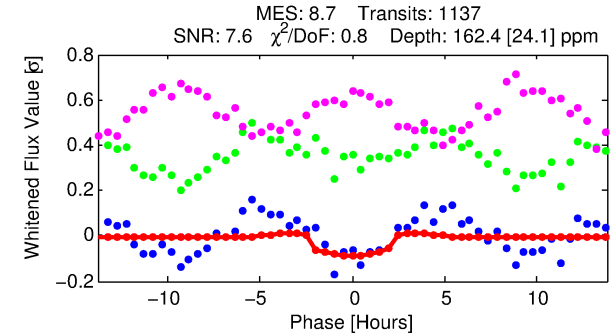
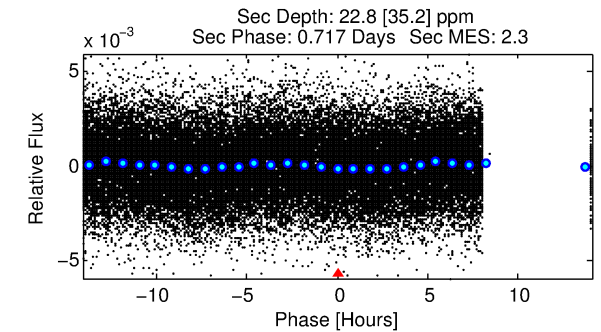
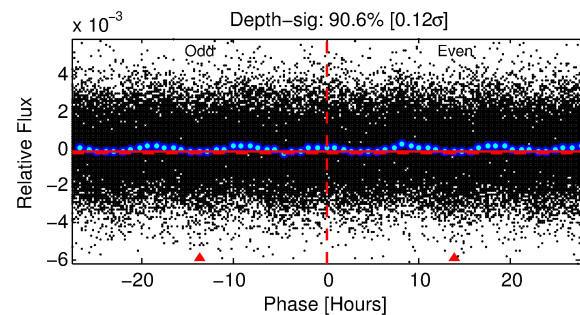
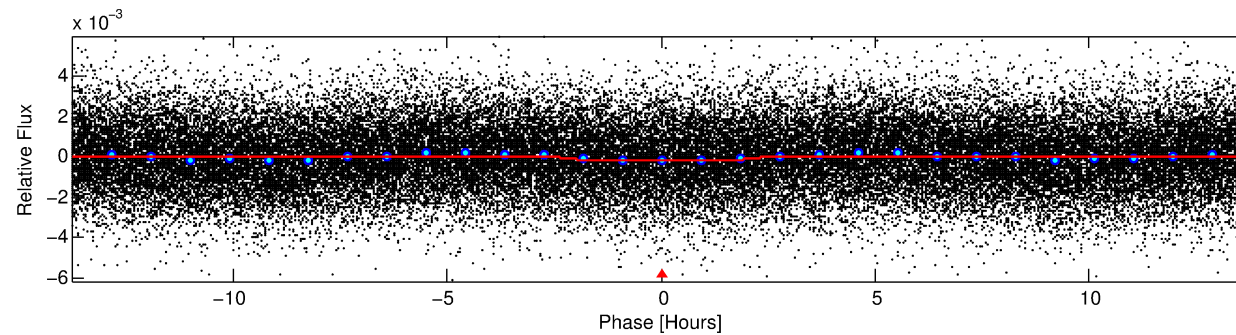
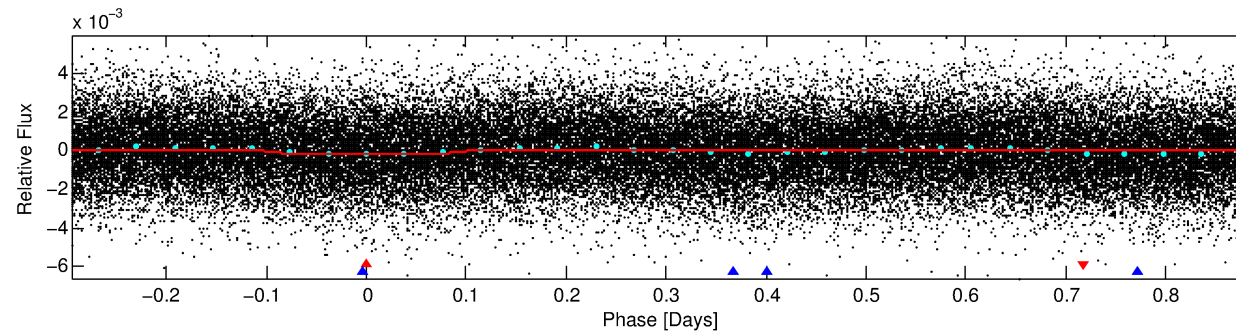
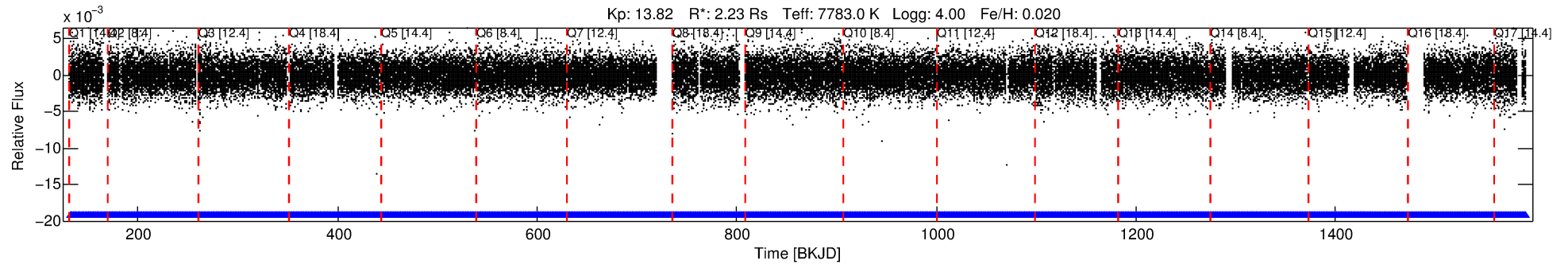
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006127239-01

No Significant Match Found

# DV One-Page Summary

KIC: 6127239 Candidate: 1 of 2 Period: 1.180 d



## DV Fit Results:

Period = 1.18011 [0.00002] d  
Epoch = 132.4918 [0.0055] BKJD  
Rp/R\* = 0.0121 [0.0126]  
a/R\* = 1.87 [8.41]  
b = 0.50 [9.51]  
Seff = 22924.83 [5648.34]  
Teq = 3138 [193] K  
Rp = 2.96 [3.13] Re  
a = 0.0268 [0.0044] AU  
Ag = 1.03 [2.67] [0.01σ]  
Teffp = 4886 [3160] K [0.55σ]

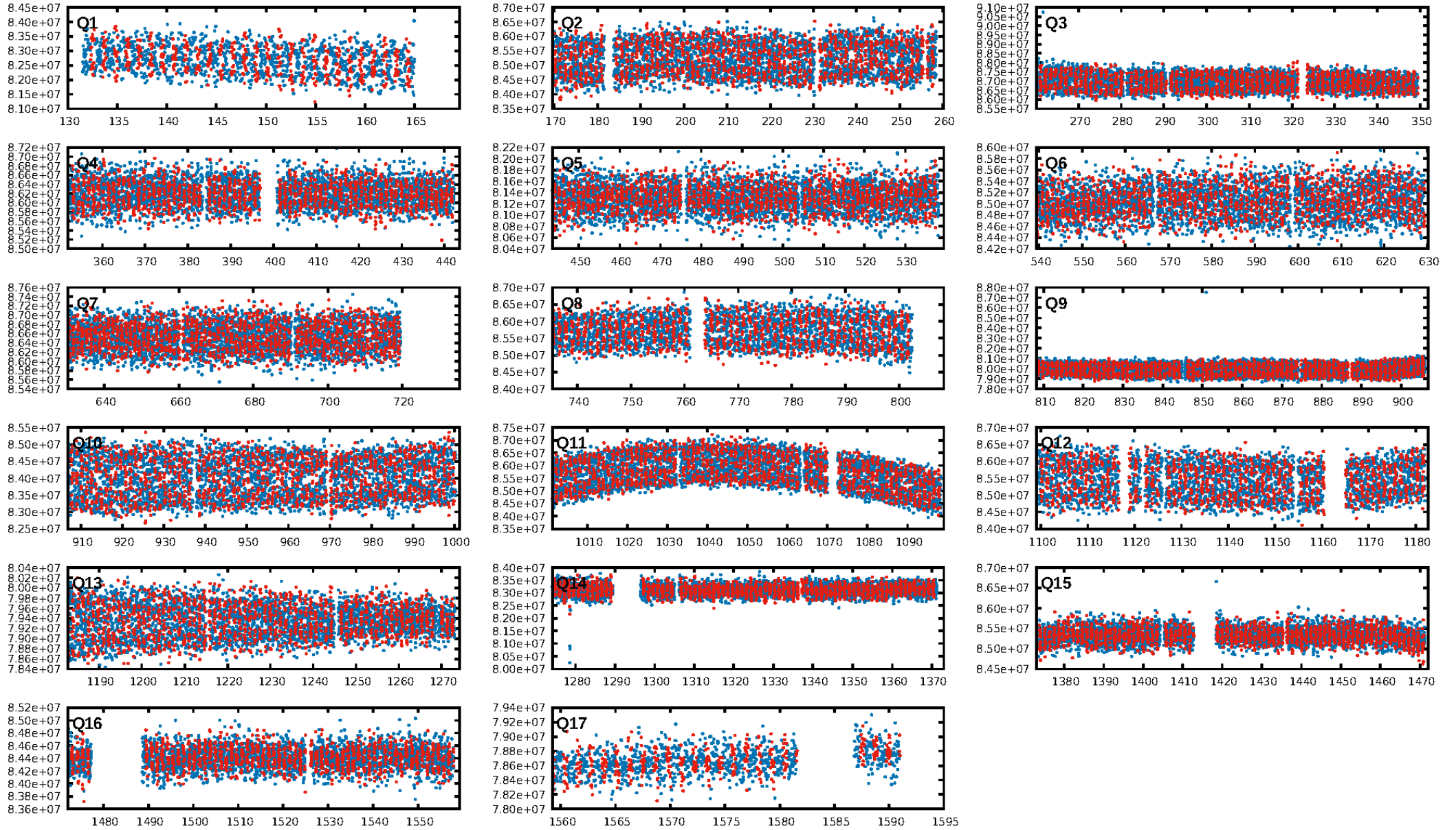
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [1606.78σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 1.24e-12**  
RollingBand-fgt: 1.00 [1086/1086]  
GhostDiagnostic-chr: 2.44  
**Centroid-sig: 0.0%**  
Centroid-so: 0.293 arcsec [1.47σ]  
**OotOffset-rm: 0.474 arcsec [4.72σ]**  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-rm: 0.081 arcsec [0.90σ]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.81 [13/16]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 03:51:45 Z

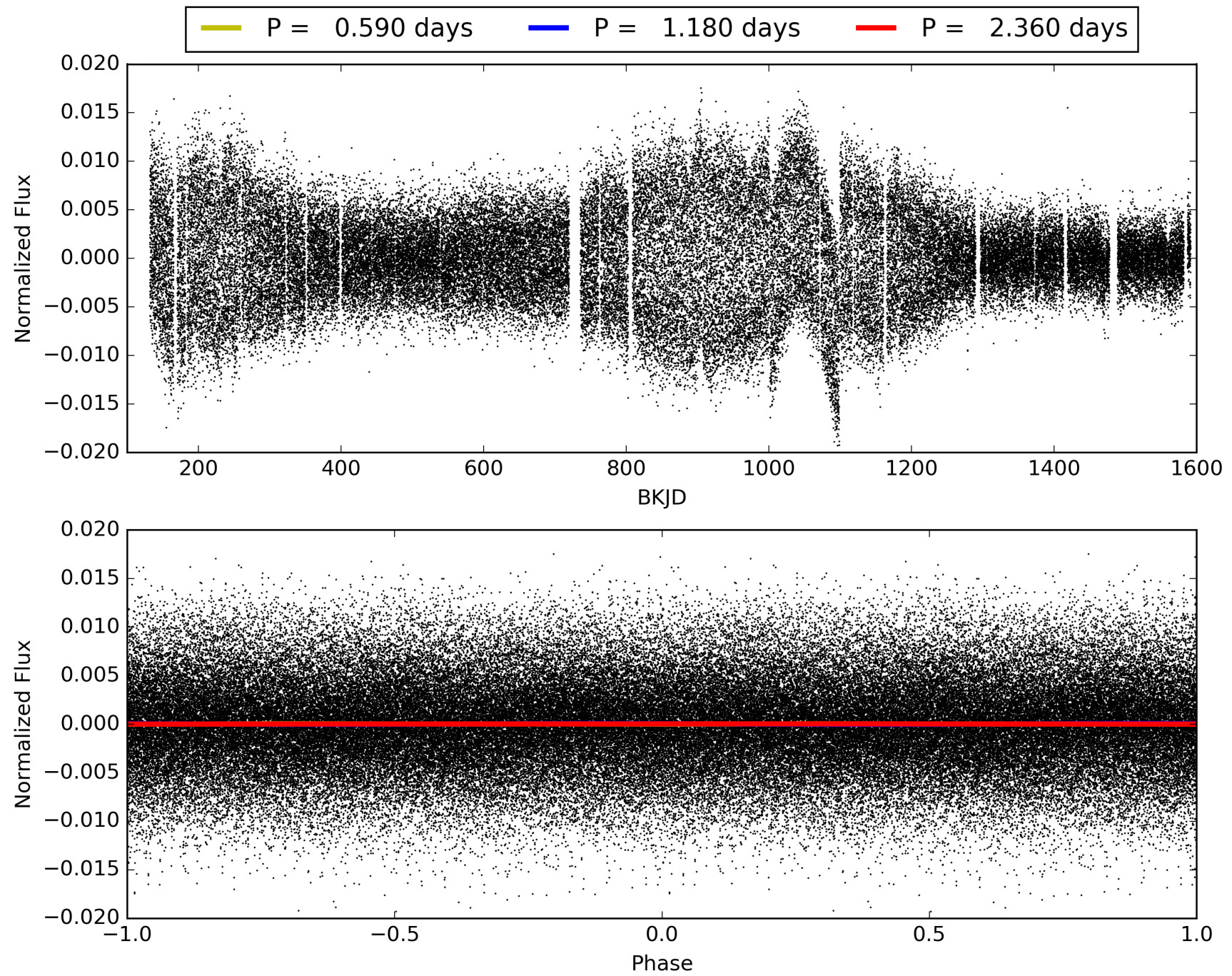
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 006127239-01, PDC Light Curves



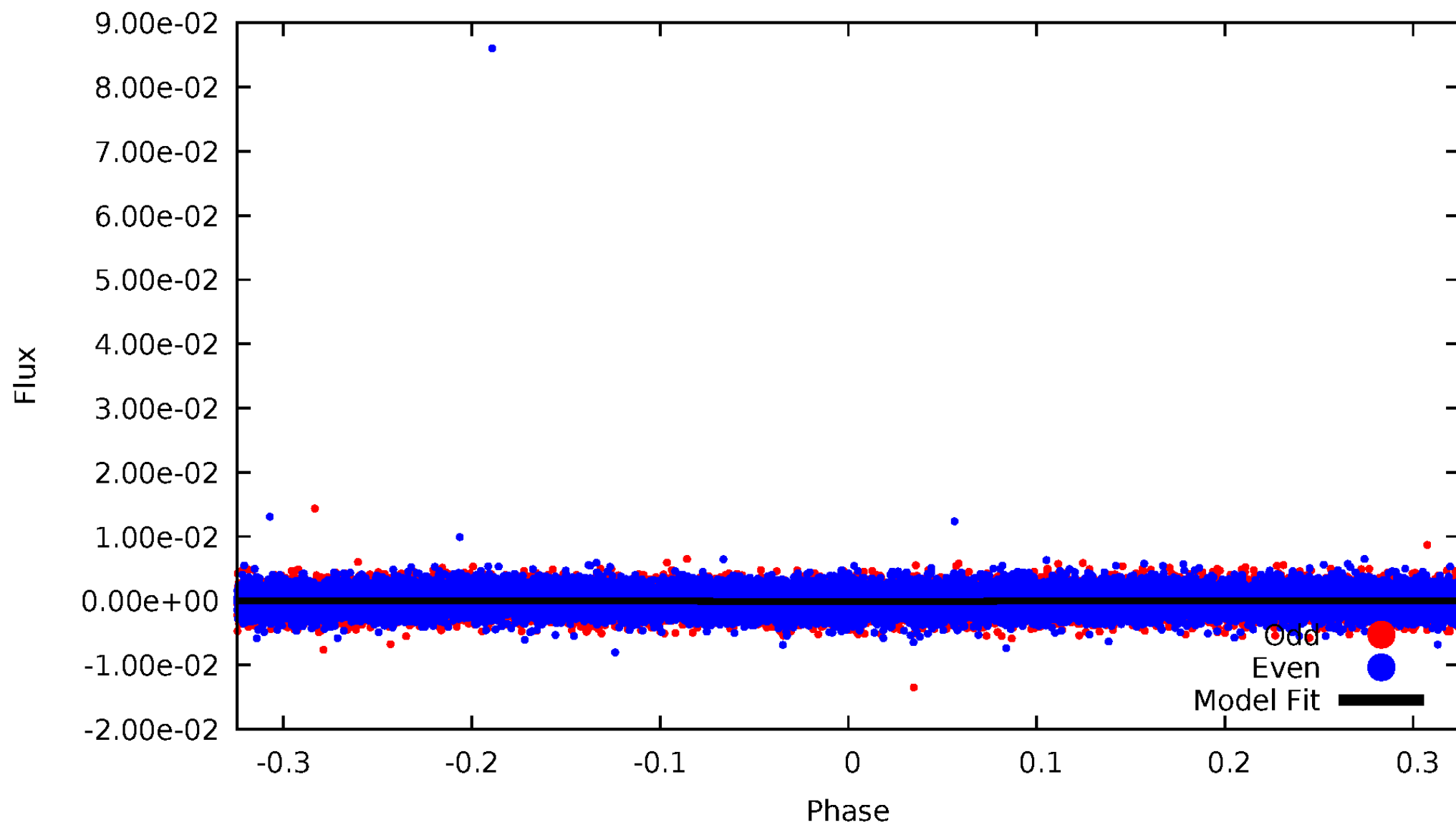


TCE 006127239-01



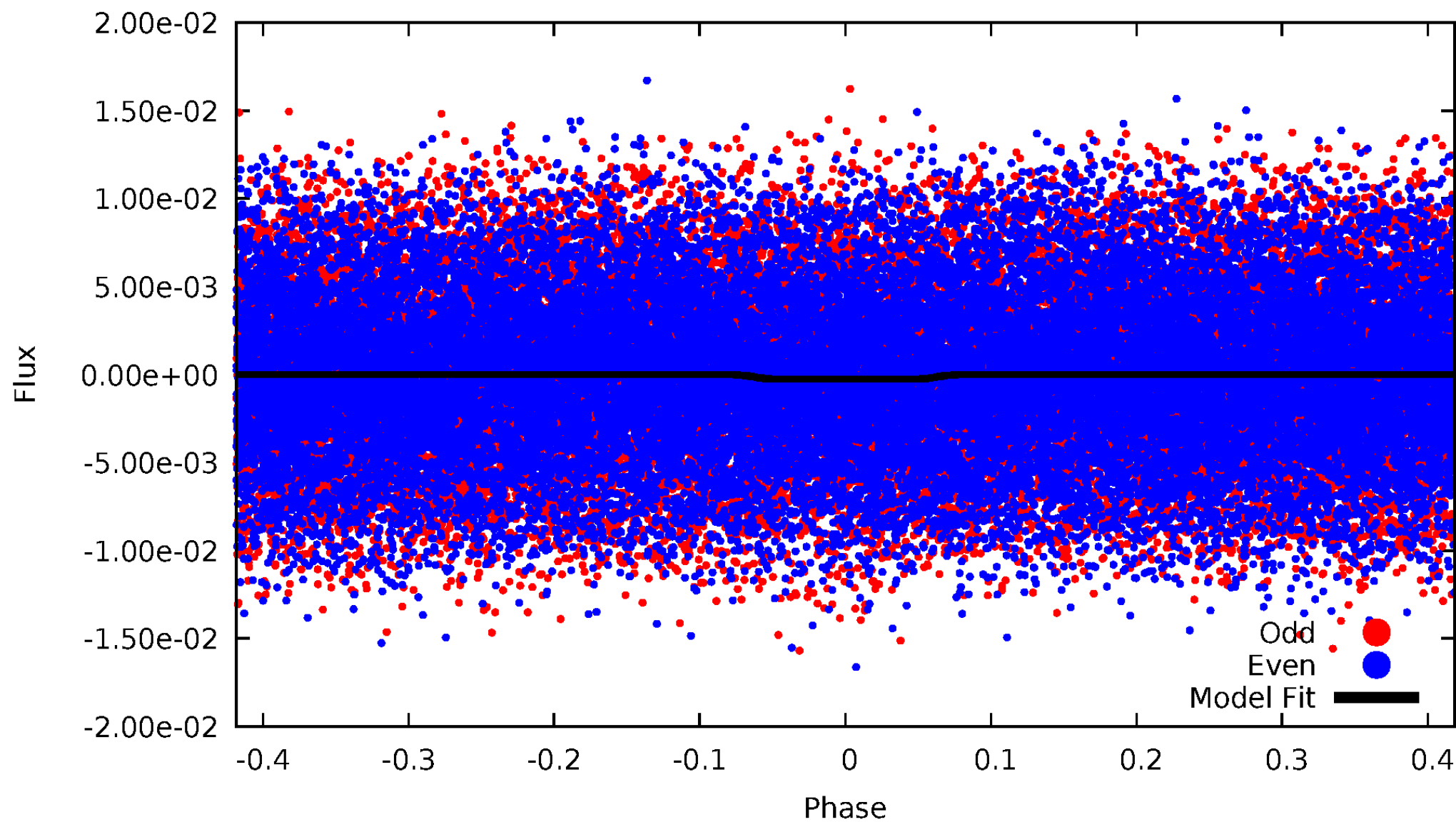
# DV Odd/Even

TCE 006127239-01



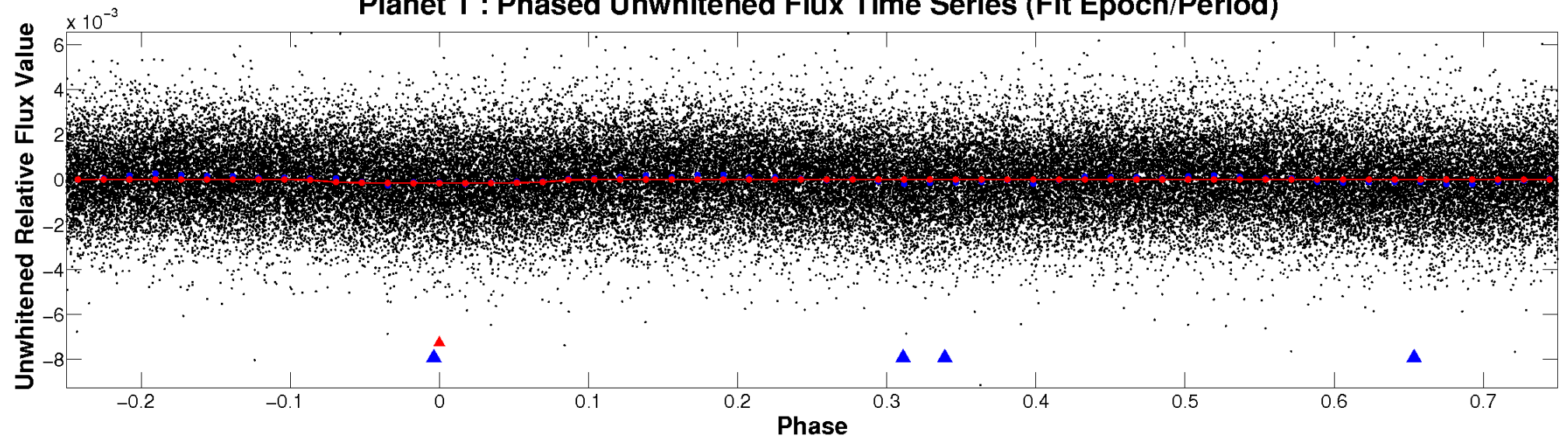
# ALT Odd/Even

TCE 006127239-01

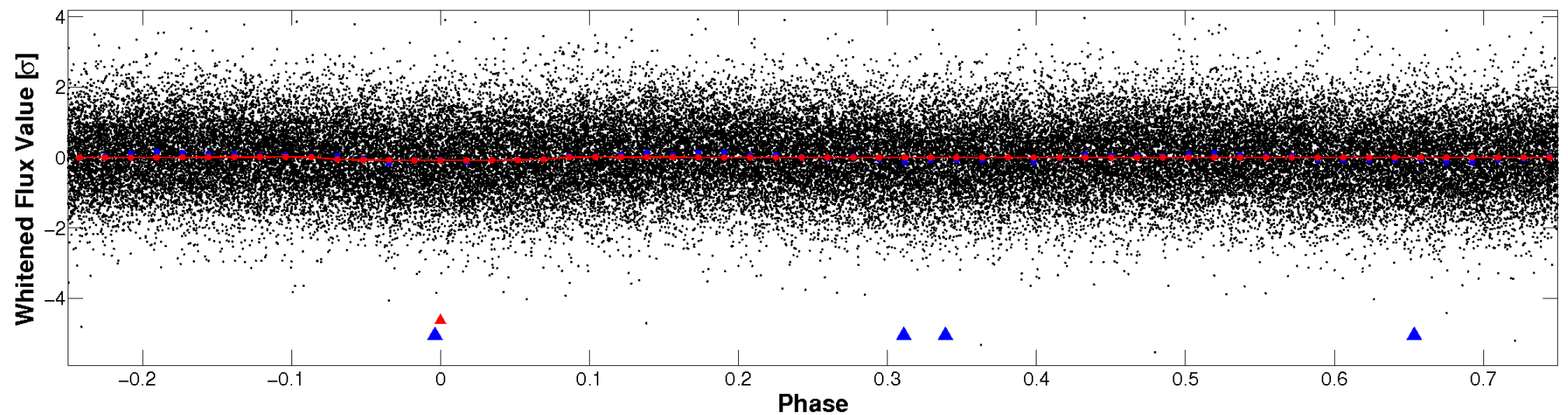


# Non-Whitened Vs. Whitened Light Curve

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



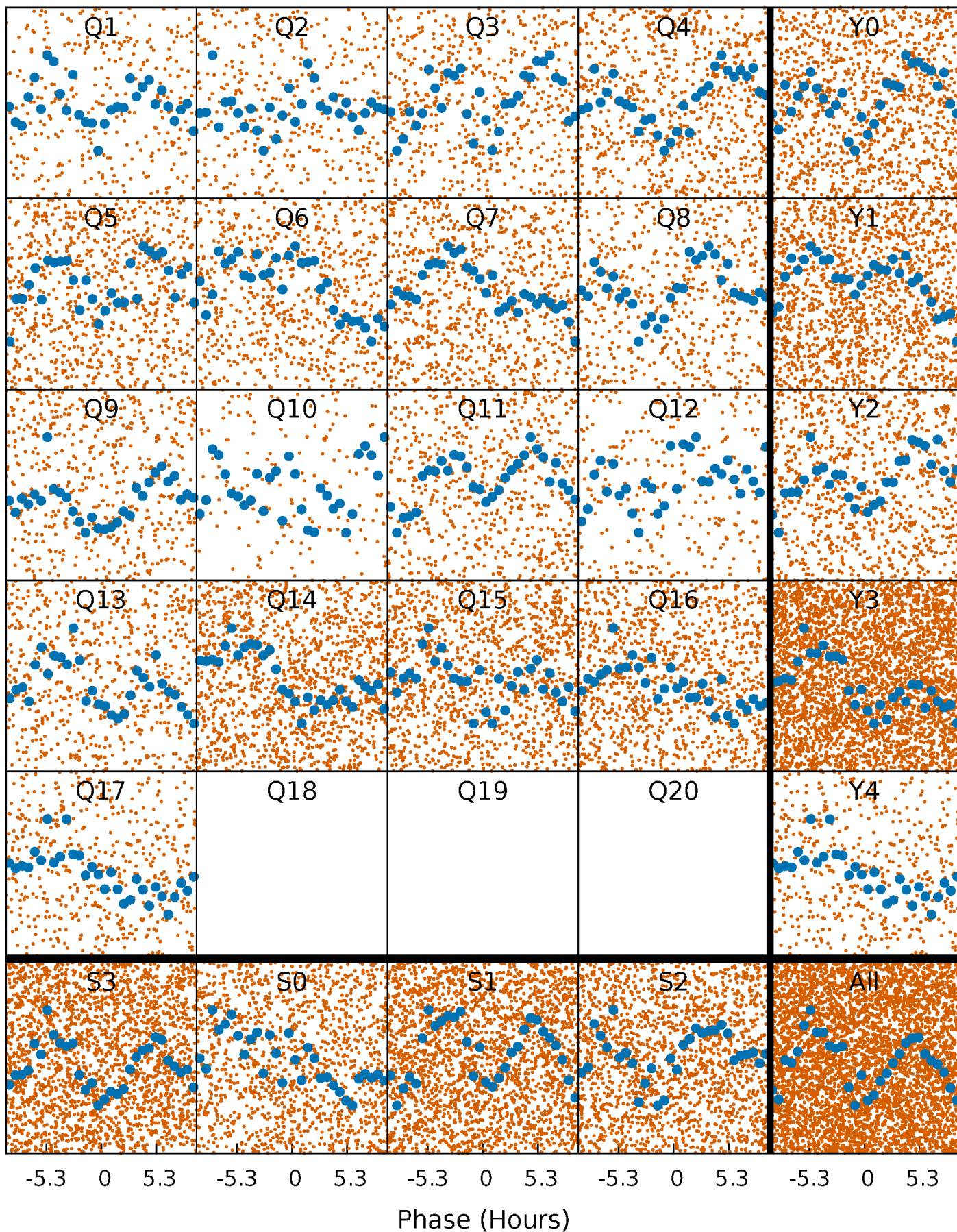
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

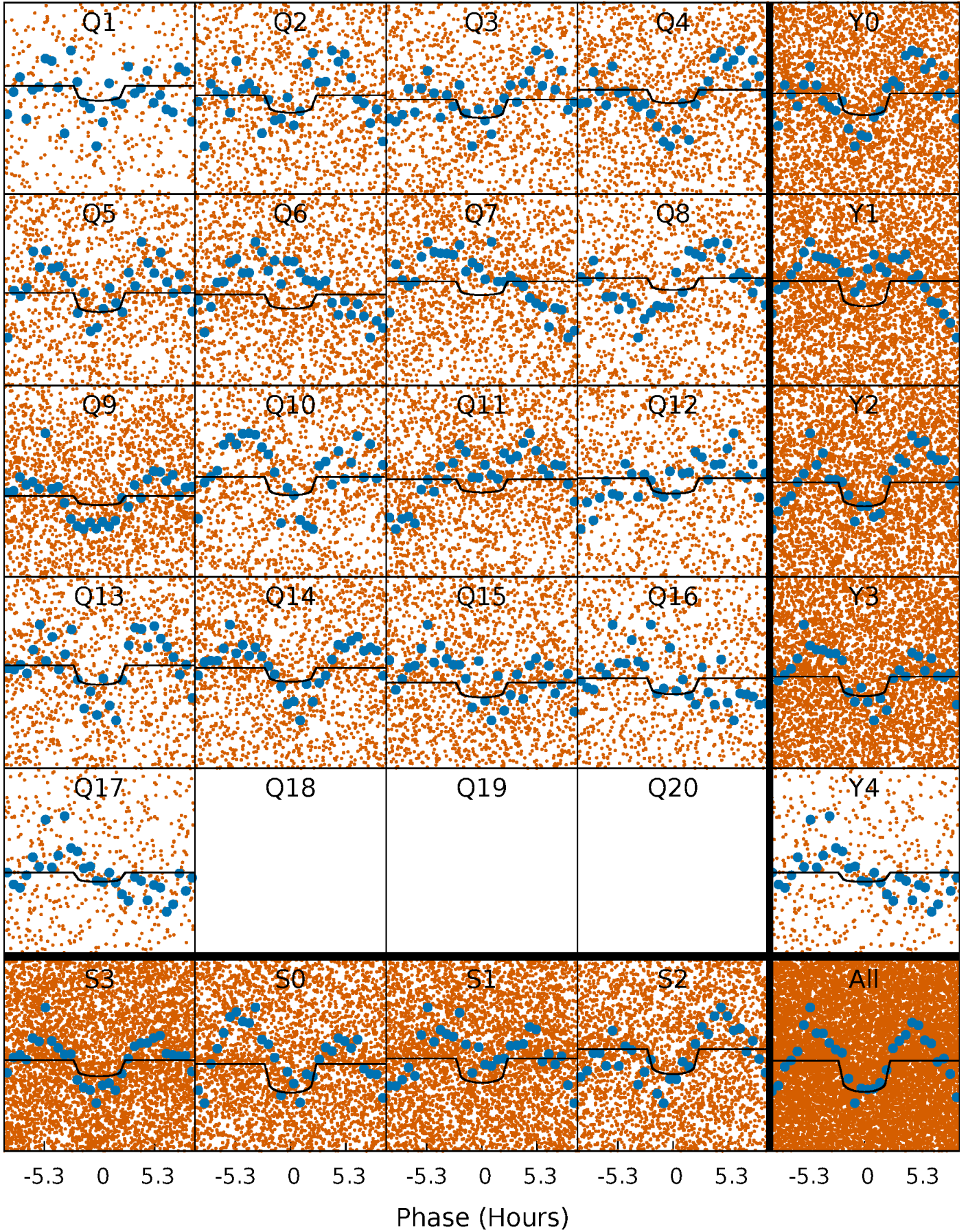
TCE 006127239-01 P= 1.180114 Days  $T_0=132.491775$  (BKJD)





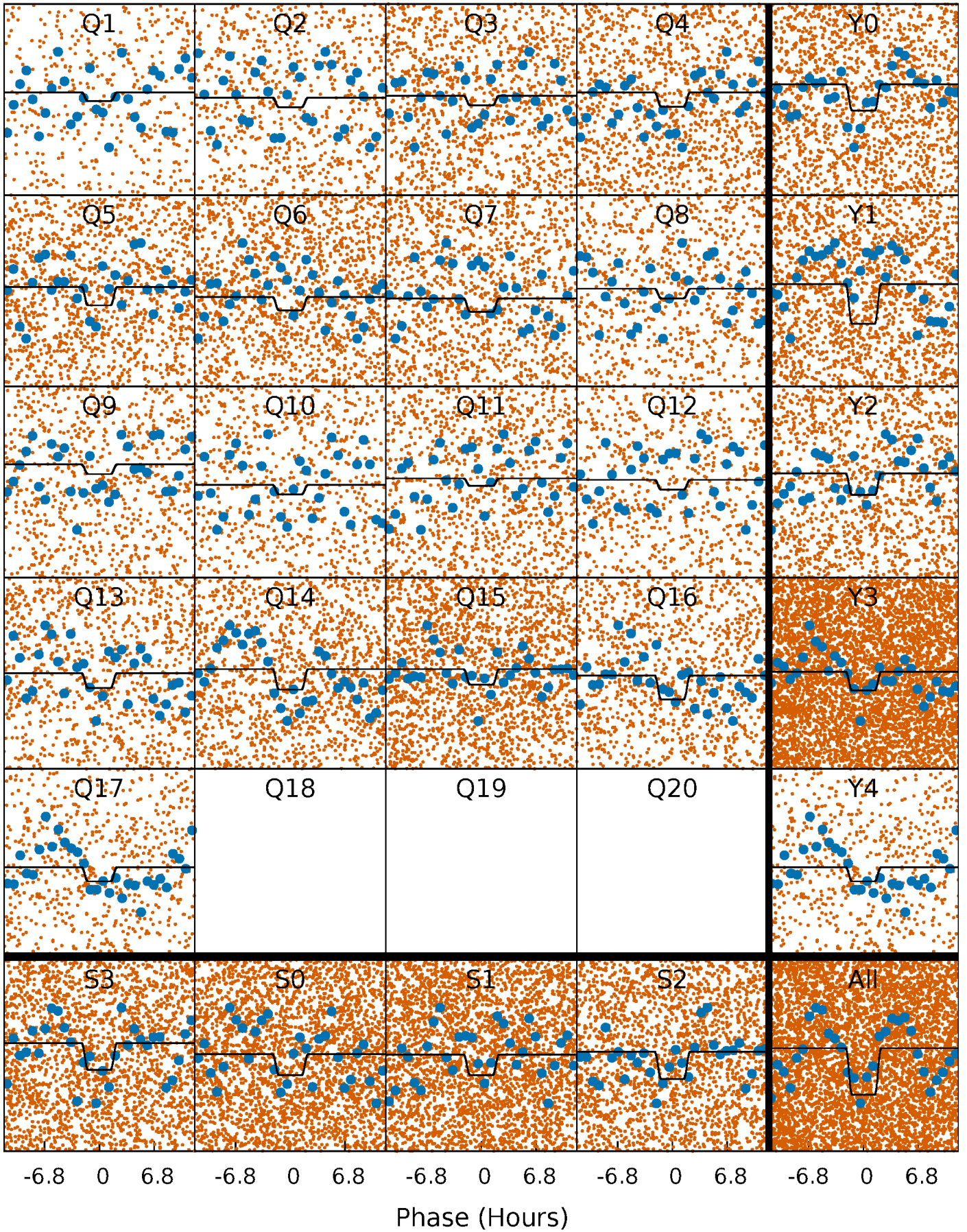
# DV Quarter-Phased Transit Curves

TCE 006127239-01 P= 1.180114 Days  $T_0=132.491775$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006127239-01 P= 1.180151 Days  $T_0=132.498798$  (BKJD)

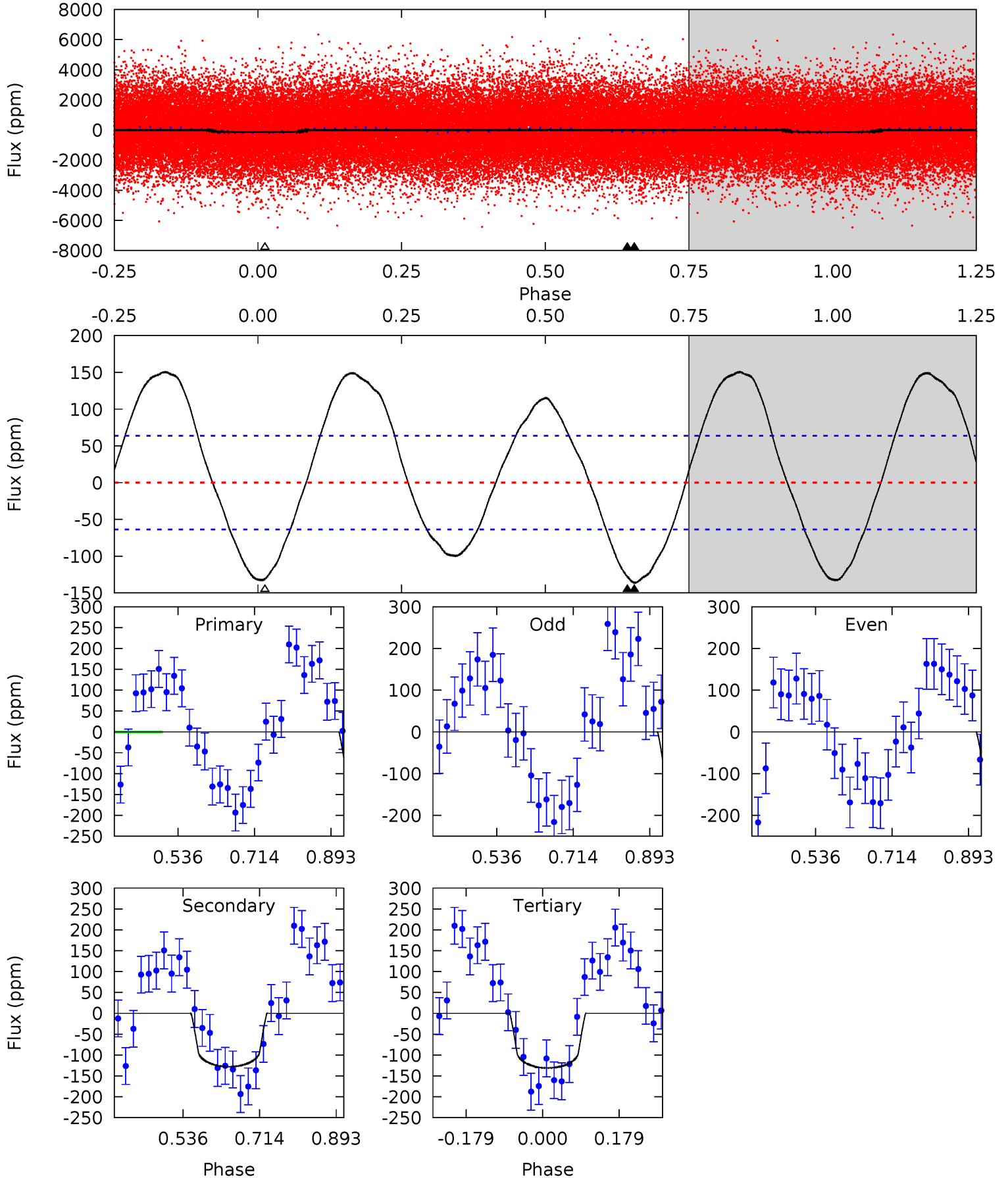




# DV Model-Shift Uniqueness Test

006127239-01, P = 1.180114 Days, E = 131.311661 Days

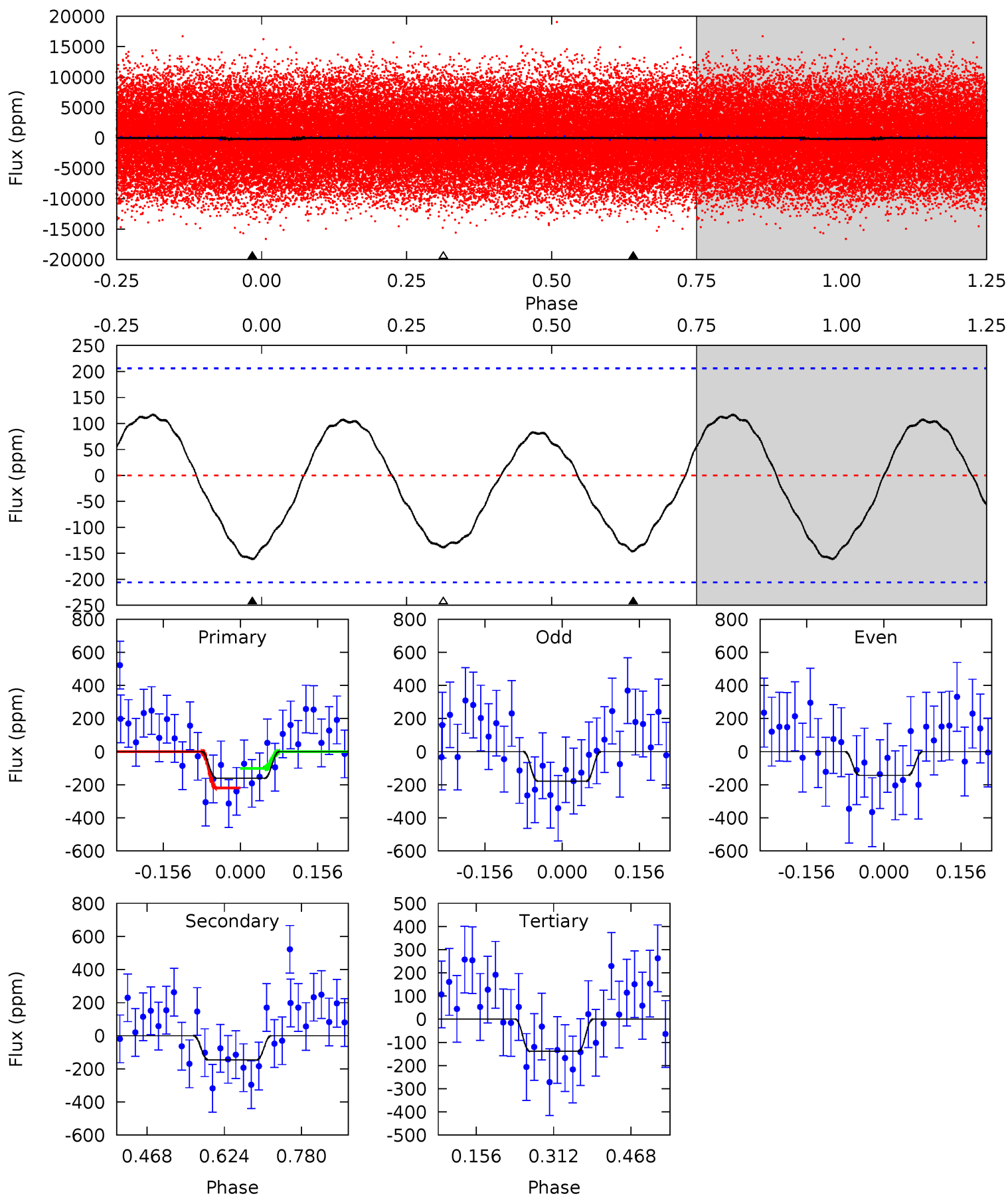
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.49	8.91	9.12	0	4.44	1.35	6.37	0.36	9.49	-0.21	8.91	0.51	0.90	0.52	0.12



# Alt Model-Shift Uniqueness Test

006127239-01, P = 1.180151 Days, E = 131.318647 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
3.50	3.18	3.01	0	4.47	1.42	1.91	0.49	3.50	0.17	3.18	0.38	0.92	0.42	1.28





### Stellar Parameters For KIC 006127239

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7783^{+62}_{-100}$	$4.003^{+0.132}_{-0.096}$	$0.020^{+0.050}_{-0.250}$	$2.234^{+0.357}_{-0.437}$	$1.830^{+0.083}_{-0.232}$	$0.231^{+0.166}_{-0.070}$
	+1%/-1%	+3%/-2%	+250%/-1250%	+16%/-20%	+5%/-13%	+72%/-30%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 006127239-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-128 \pm 14$	$3.75^{+2.78}_{-2.36}$	$4374^{+174}_{-198}$	$6375^{+5963}_{-1675}$	$3.636^{+22.709}_{-2.456}$
Alt.	$-146 \pm 46$	$3.97^{+2.90}_{-2.36}$	$4376^{+175}_{-205}$	$6335^{+5136}_{-1708}$	$3.472^{+17.263}_{-2.391}$

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

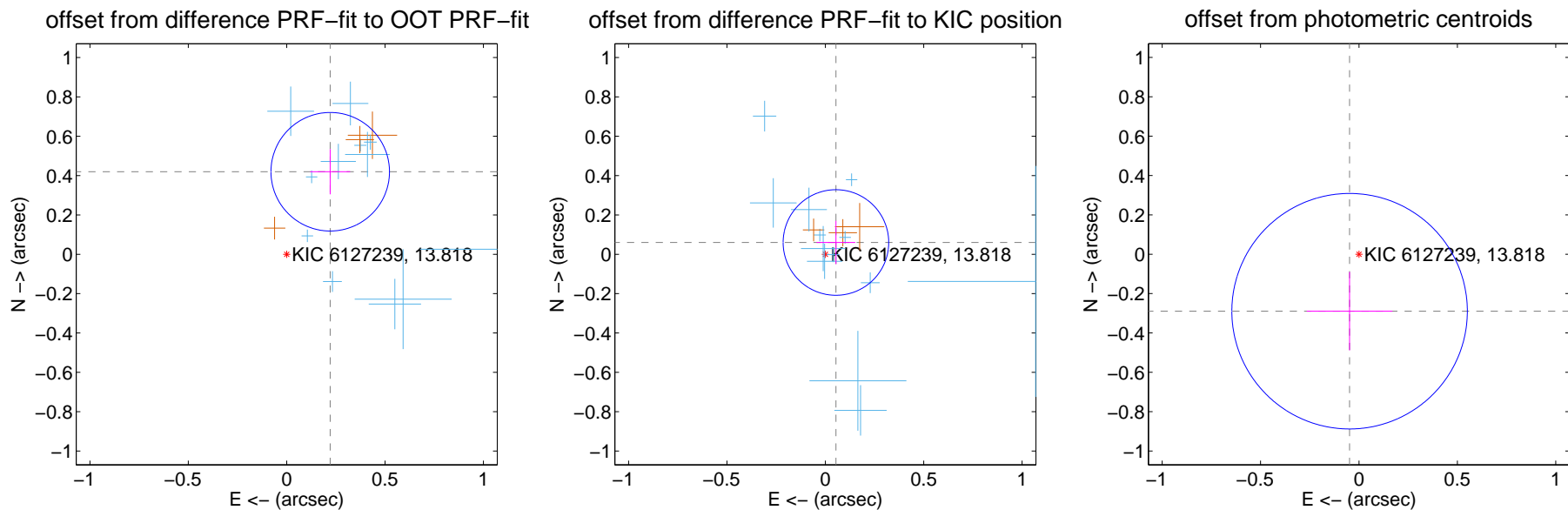
## DV Centroid Data

Supplemental centroid analysis for 006127239-01. Kepler magnitude: 13.82. Transit SNR 7.58

There are 13 quarters with good PRF difference image offsets

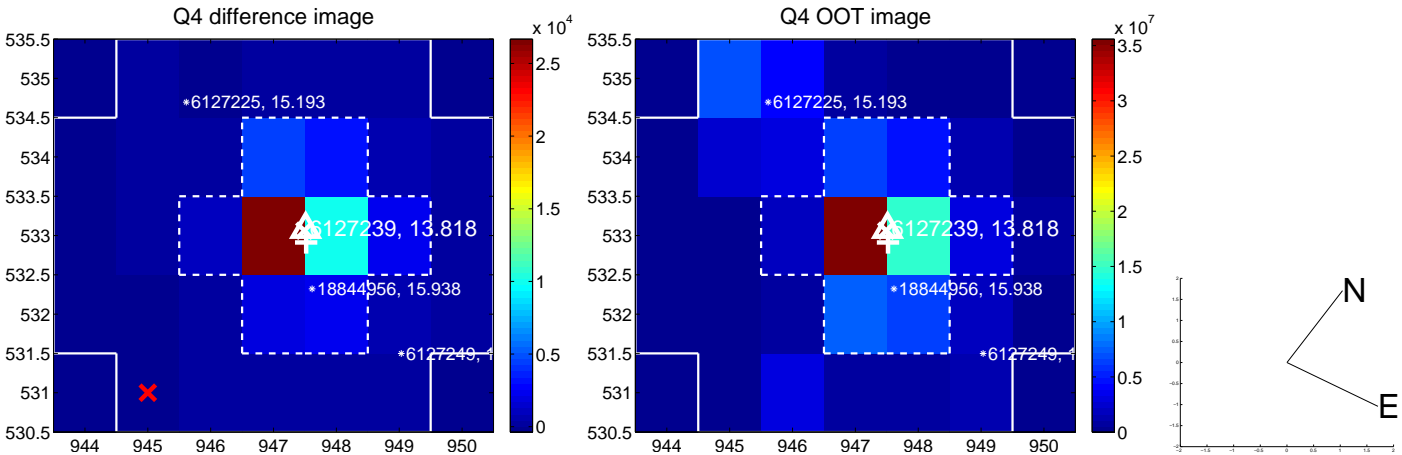
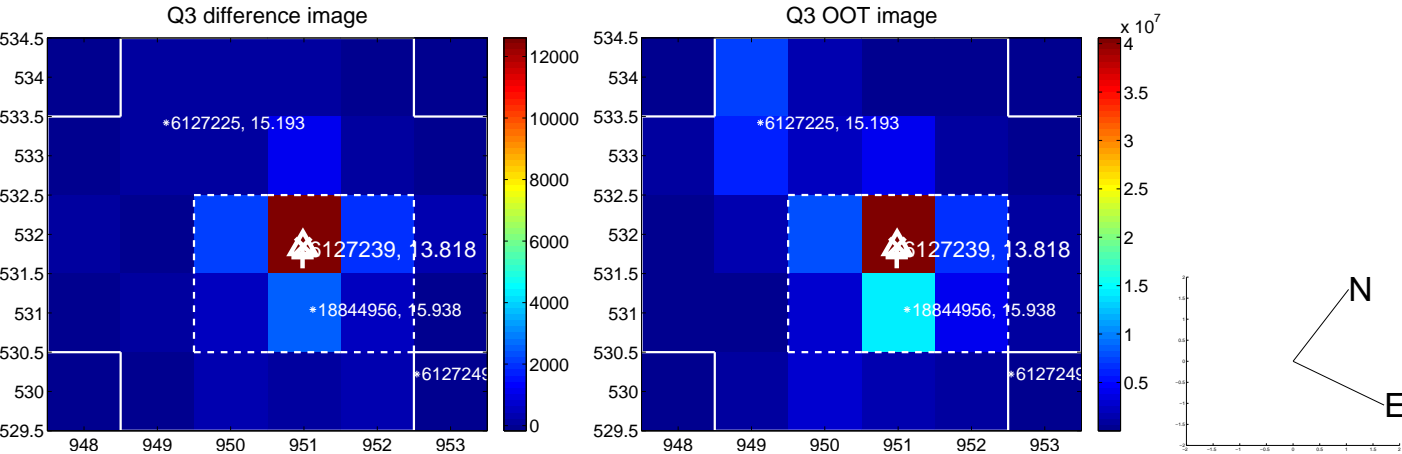
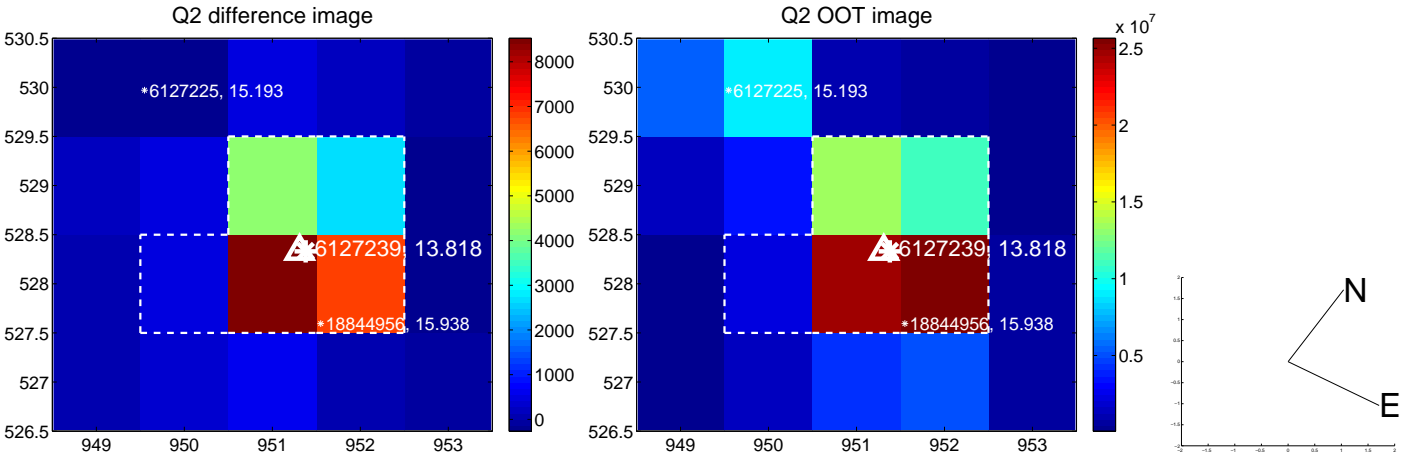
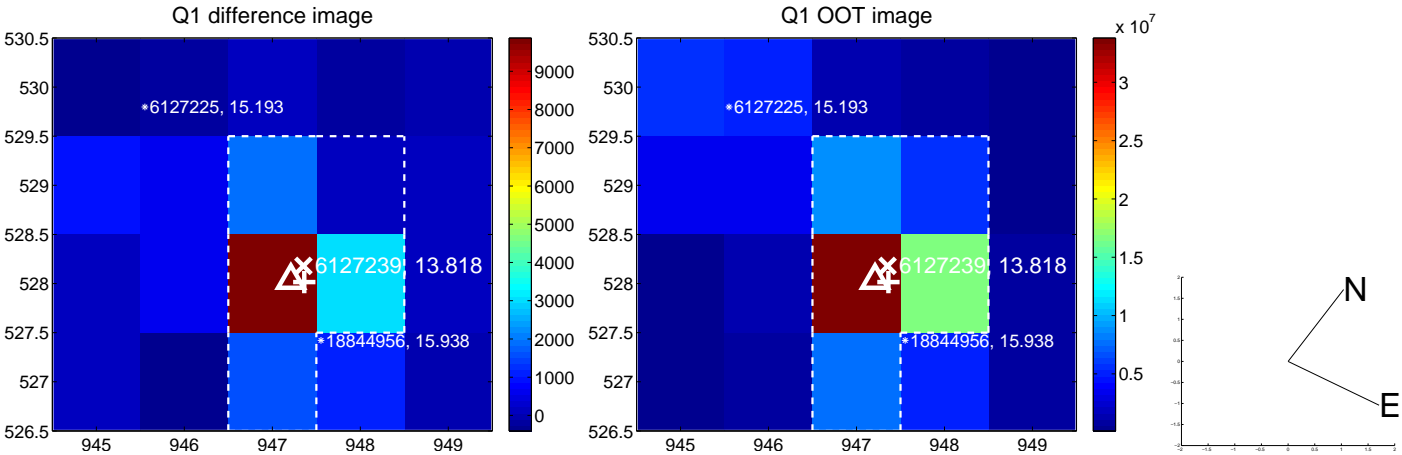
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>0.474 \pm 0.100</math></b>	<b>4.72</b>	$-0.221 \pm 0.101$	$0.420 \pm 0.115$
PRF-fit source offset from KIC position	$0.081 \pm 0.089$	0.90	$-0.054 \pm 0.099$	$0.060 \pm 0.110$
photometric centroid source offset	$0.29 \pm 0.20$	1.47	$0.05 \pm 0.22$	$-0.29 \pm 0.20$

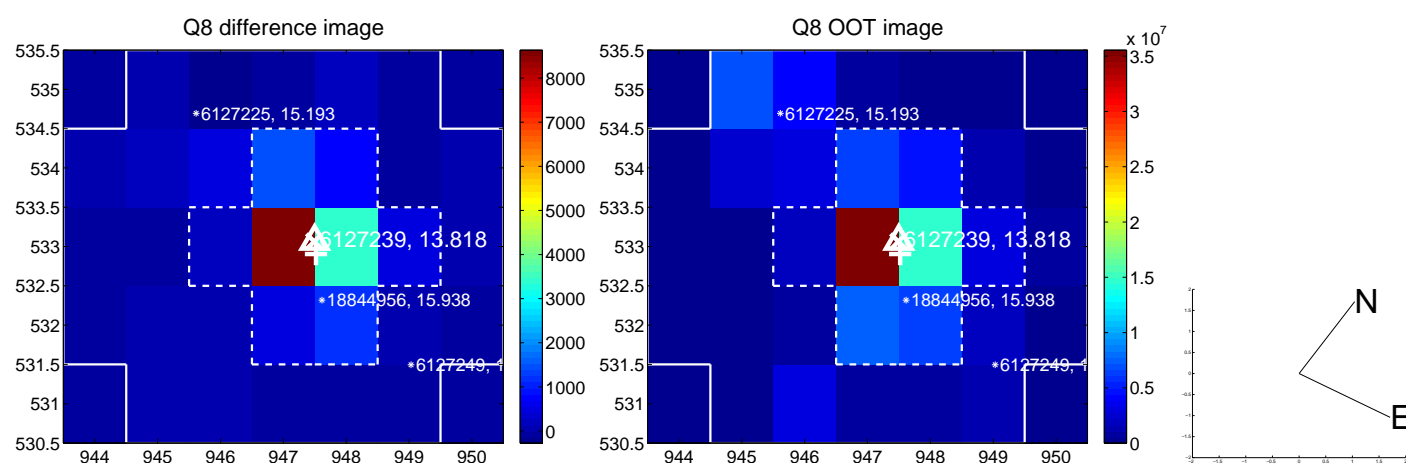
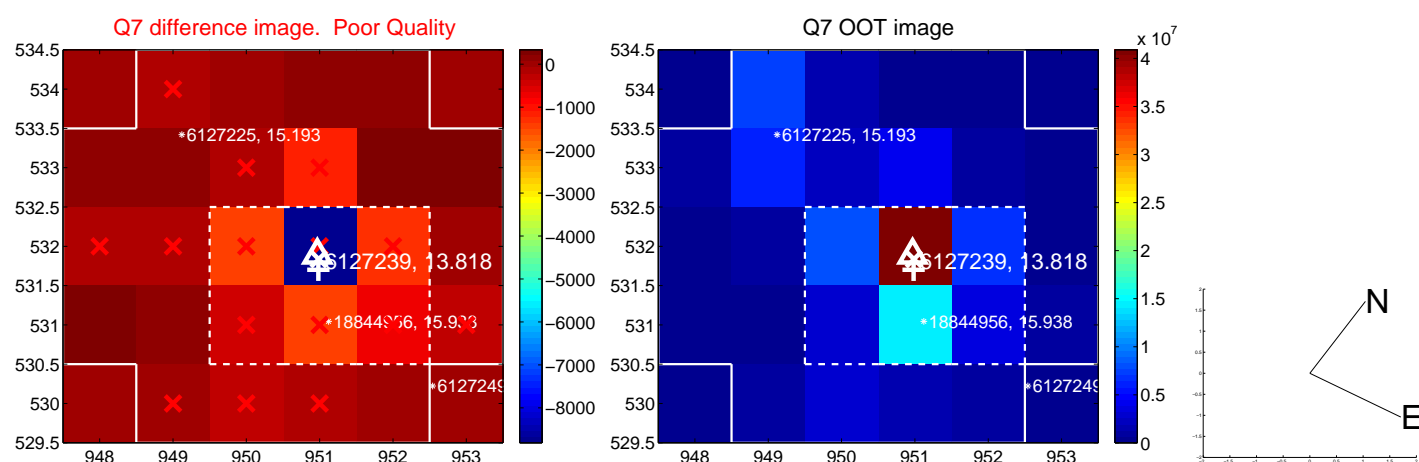
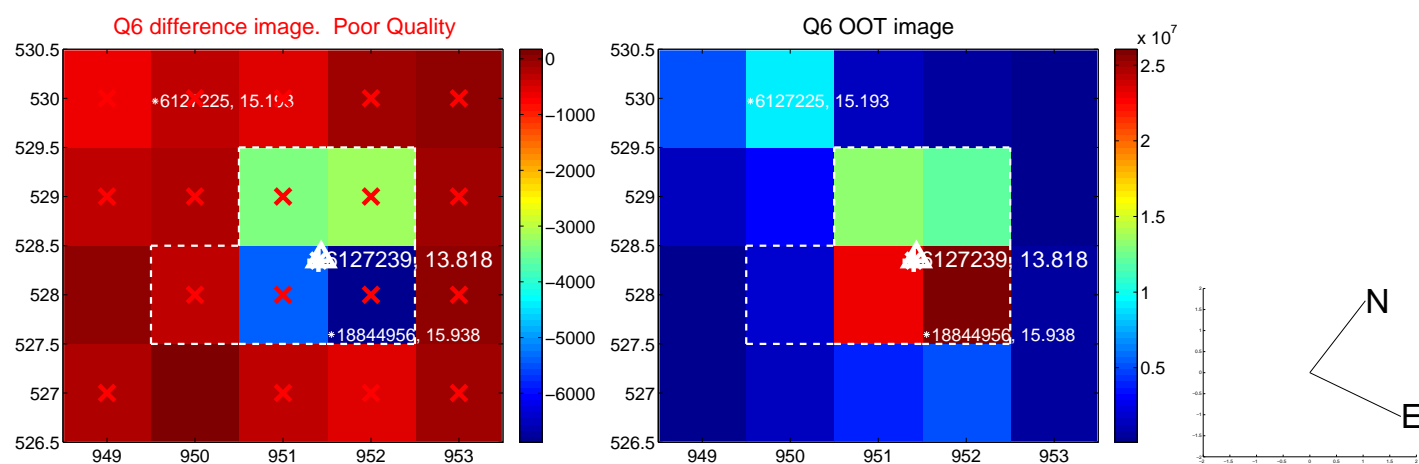
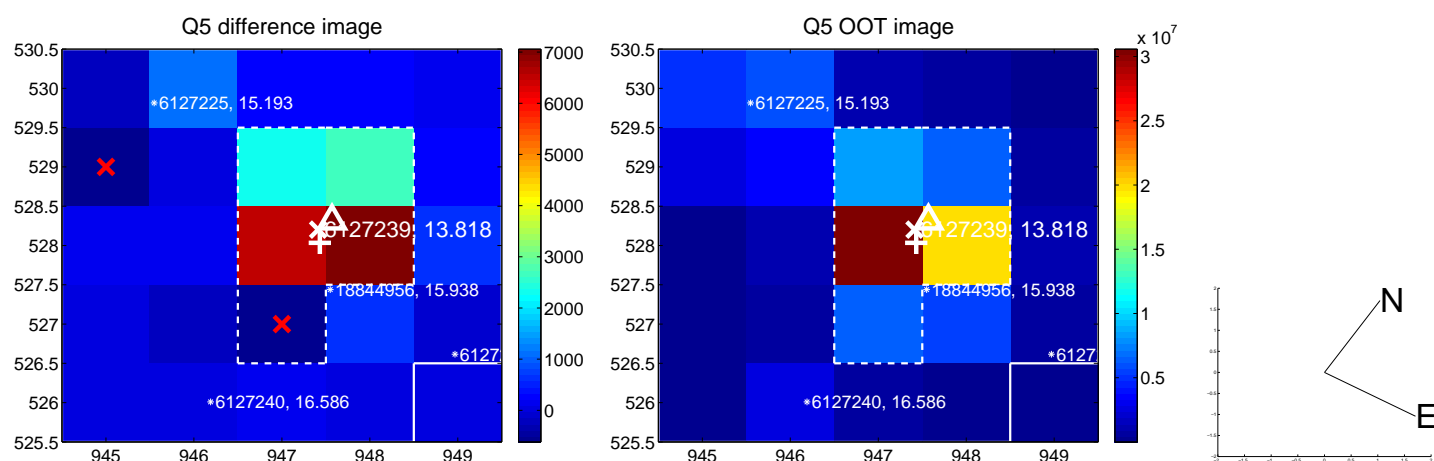


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



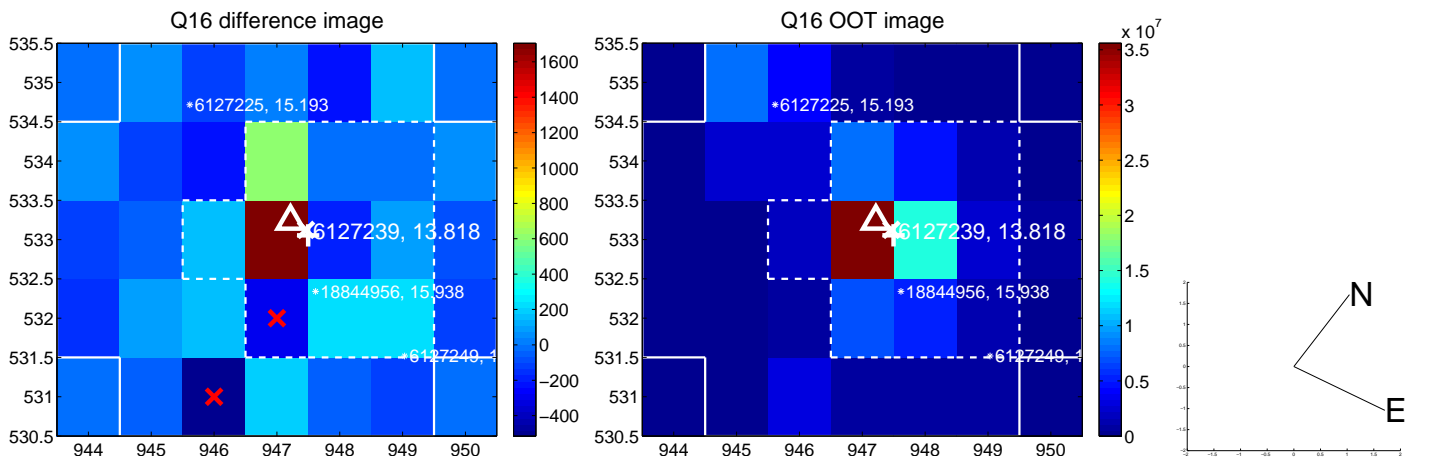
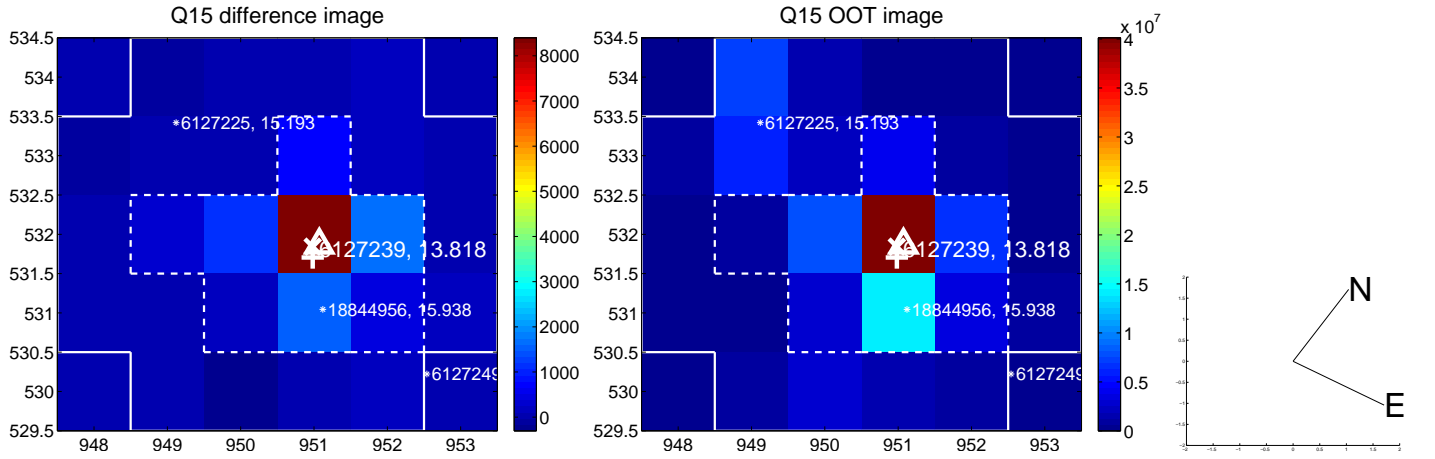
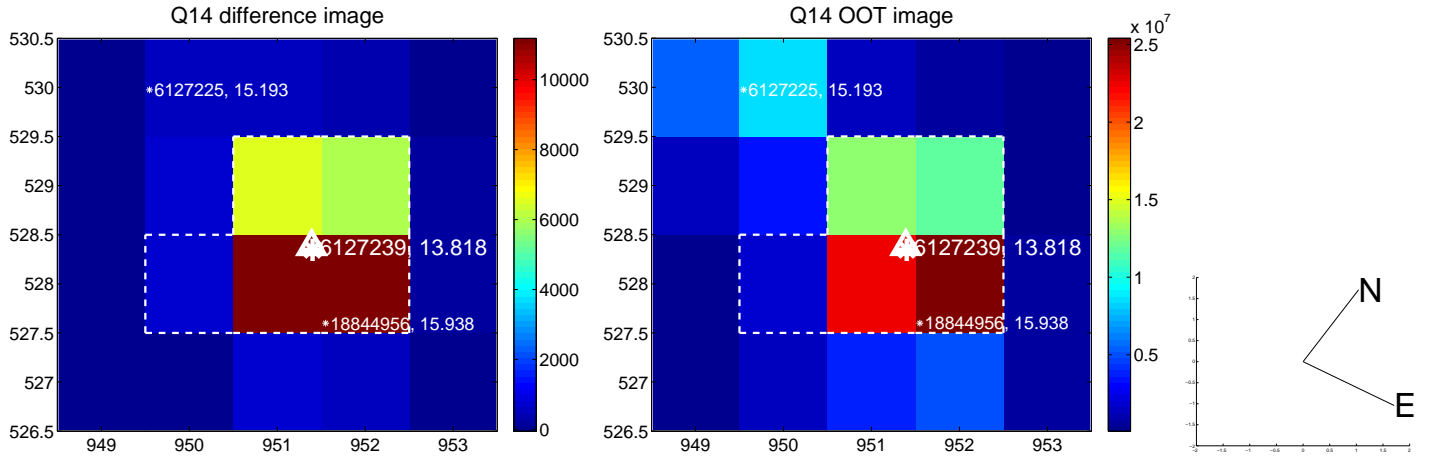
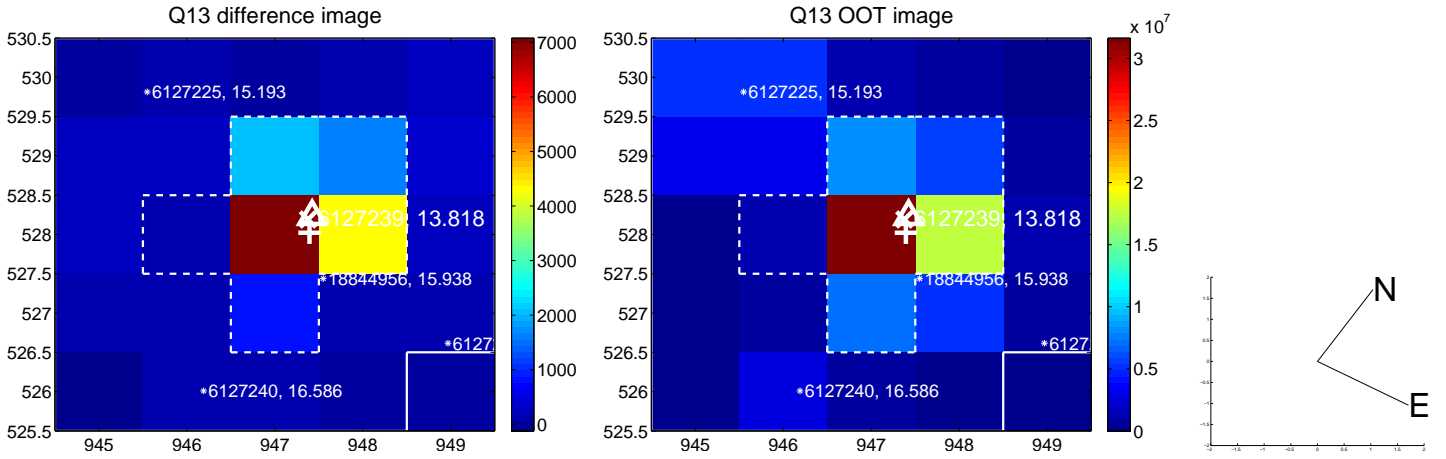
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



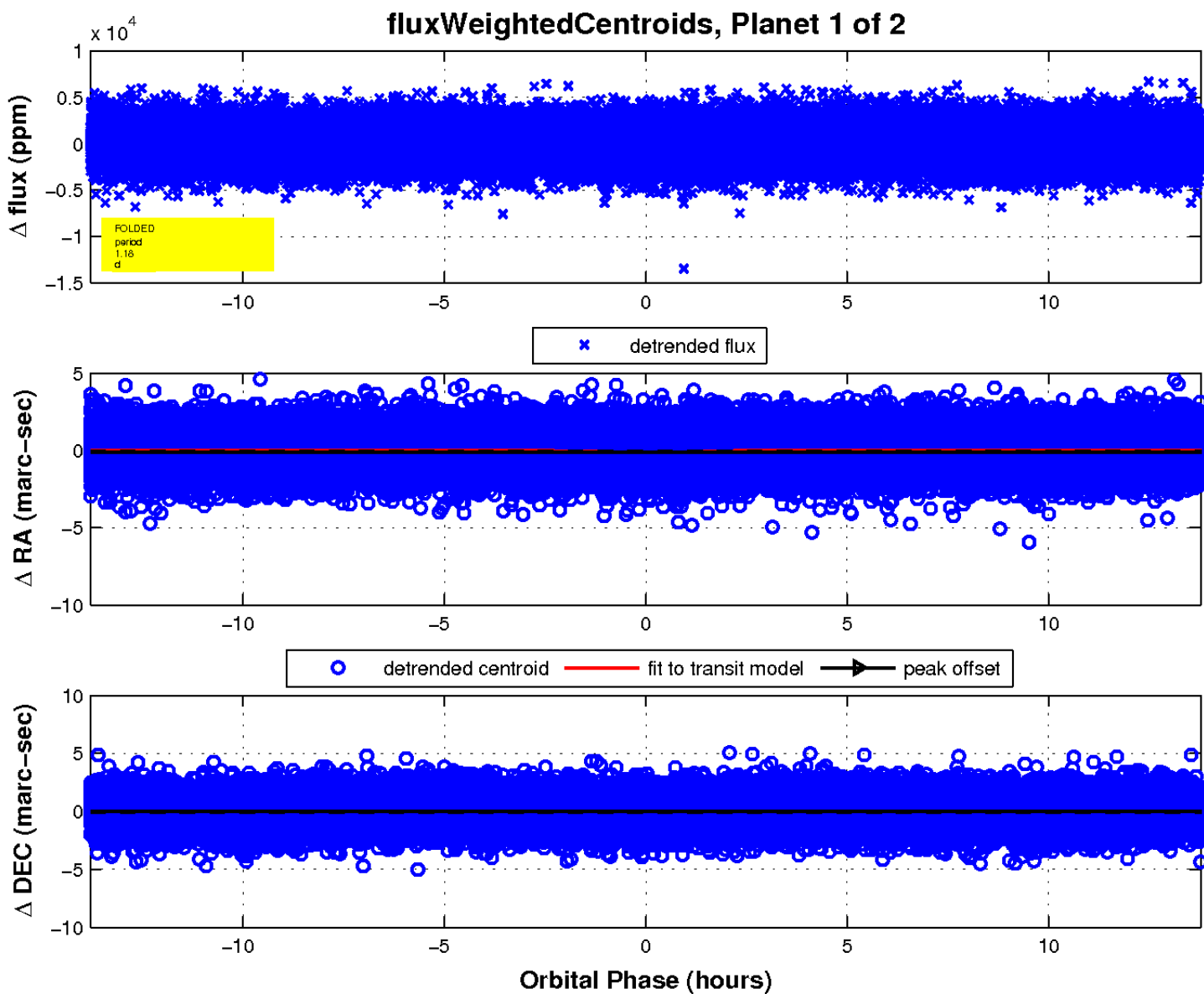
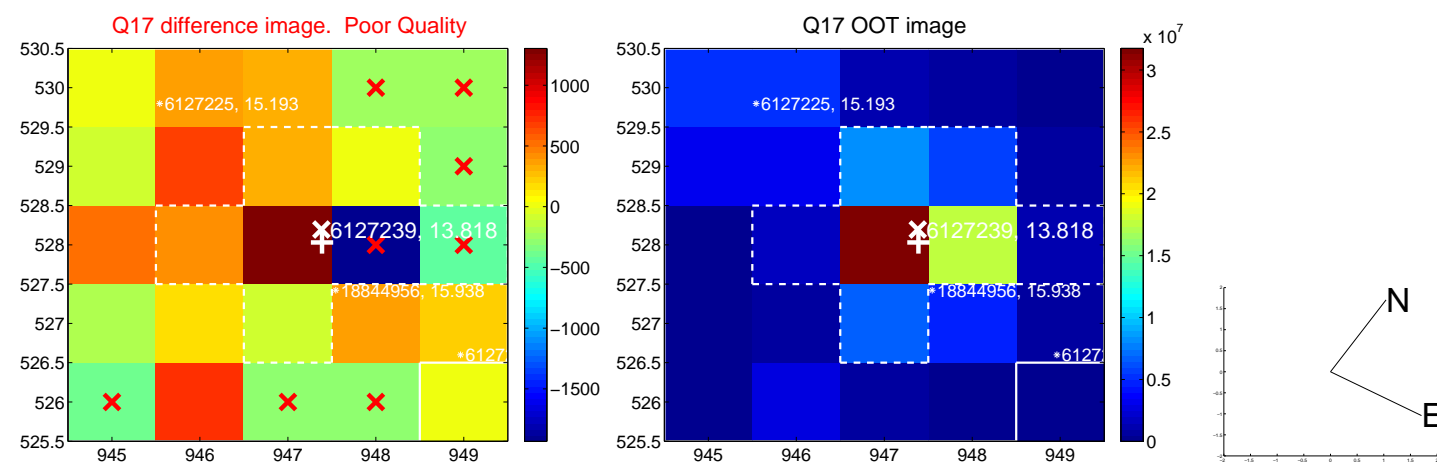




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

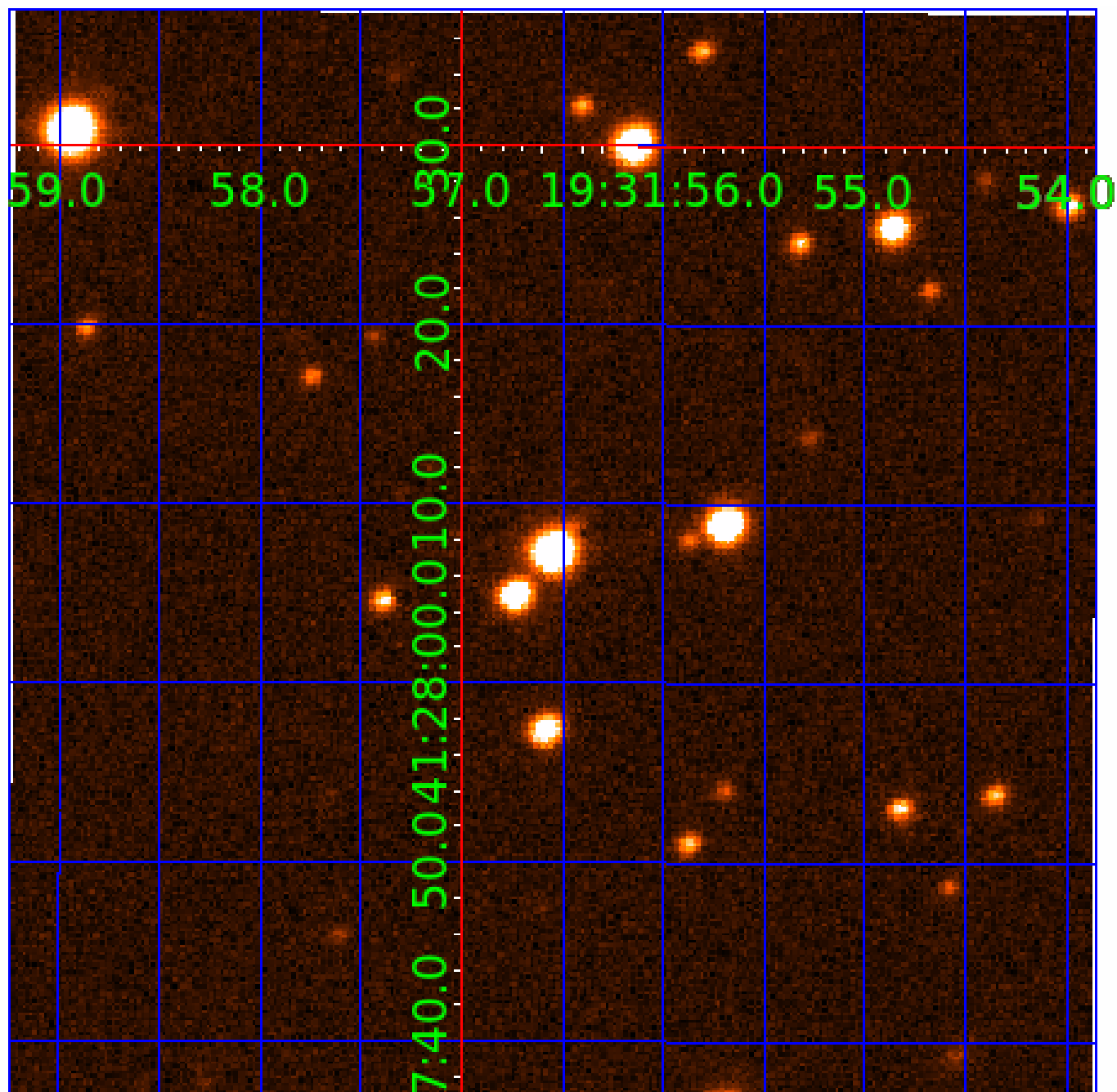


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 006127239

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006127239-01	OBS	No	1.180114	132.491775	162.4	4.596	8.7	7.6	2.23	7783	2.96	22924.83
006127239-02	OBS	No	446.858687	197.798047	2603.8	4.816	7.3	7.5	2.23	7783	12.29	8.37

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006127239-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
006127239-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—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.

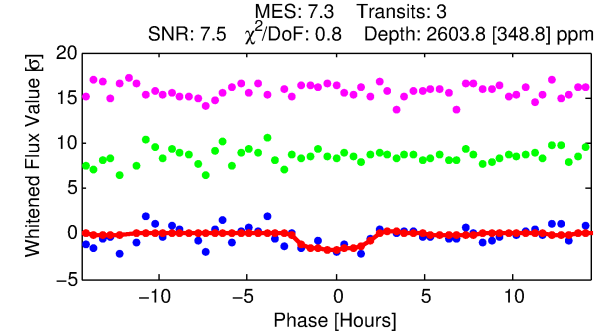
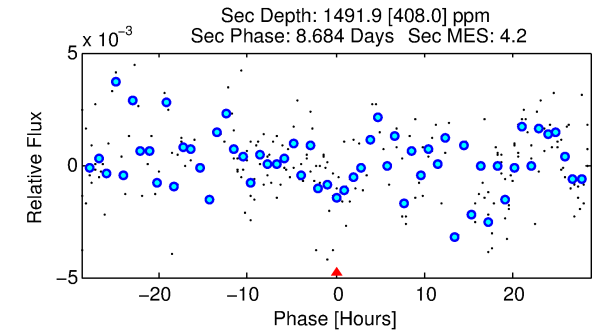
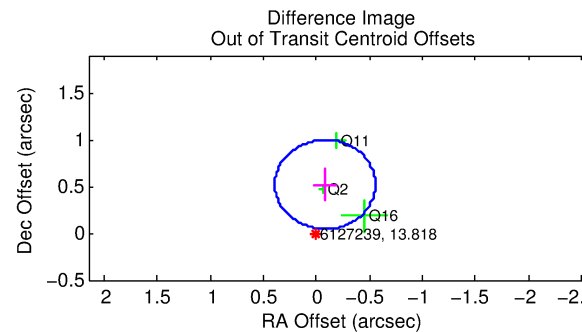
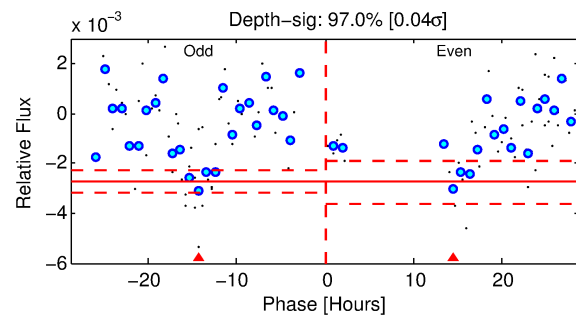
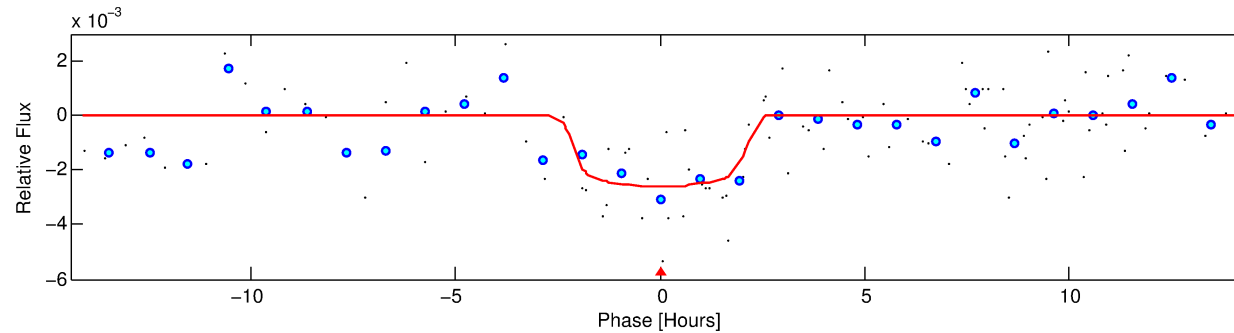
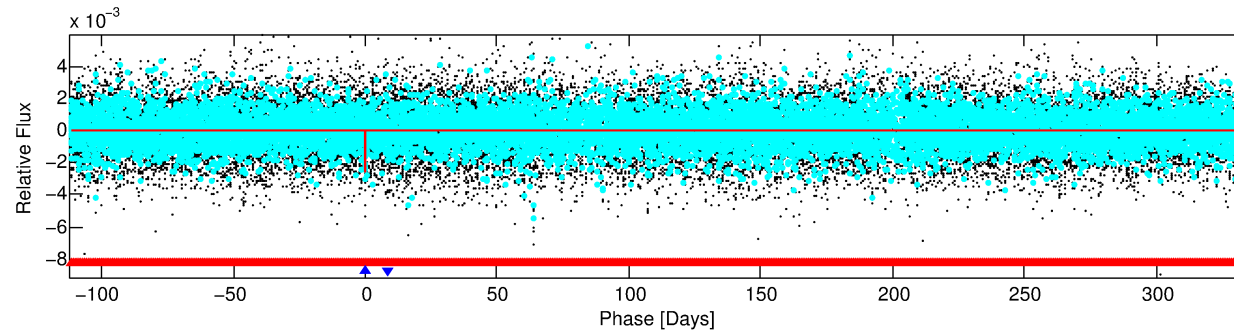
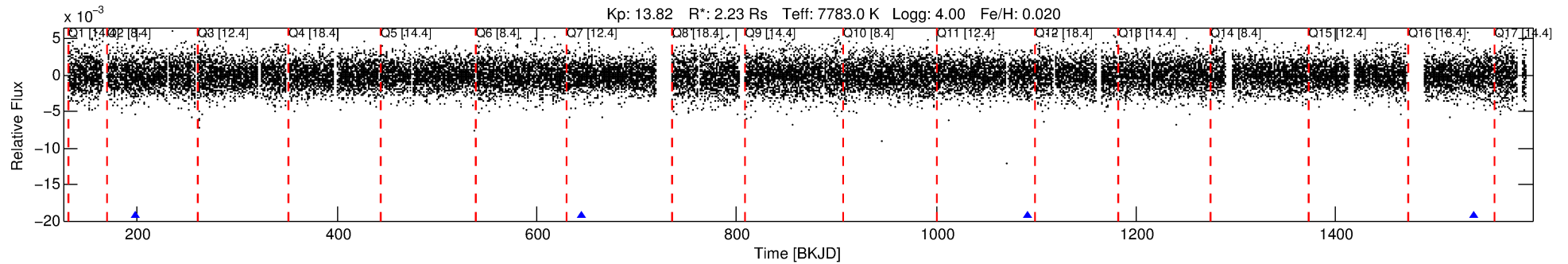
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006127239-02

No Significant Match Found

# DV One-Page Summary

KIC: 6127239 Candidate: 2 of 2 Period: 446.859 d



## DV Fit Results:

Period = 446.85869 [0.00619] d  
Epoch = 197.7980 [0.0121] BKJD  
Rp/R\* = 0.0504 [0.0162]  
a/R\* = 541.71 [1006.72]  
b = 0.72 [1.25]  
Seff = 8.37 [2.06]  
Teq = 434 [27] K  
Rp = 12.28 [4.63] Re  
a = 1.4002 [0.2312] AU  
Ag = 10663.74 [7899.26] [1.35 $\sigma$ ]  
Teffp = 6814 [1196] K [5.33 $\sigma$ ]

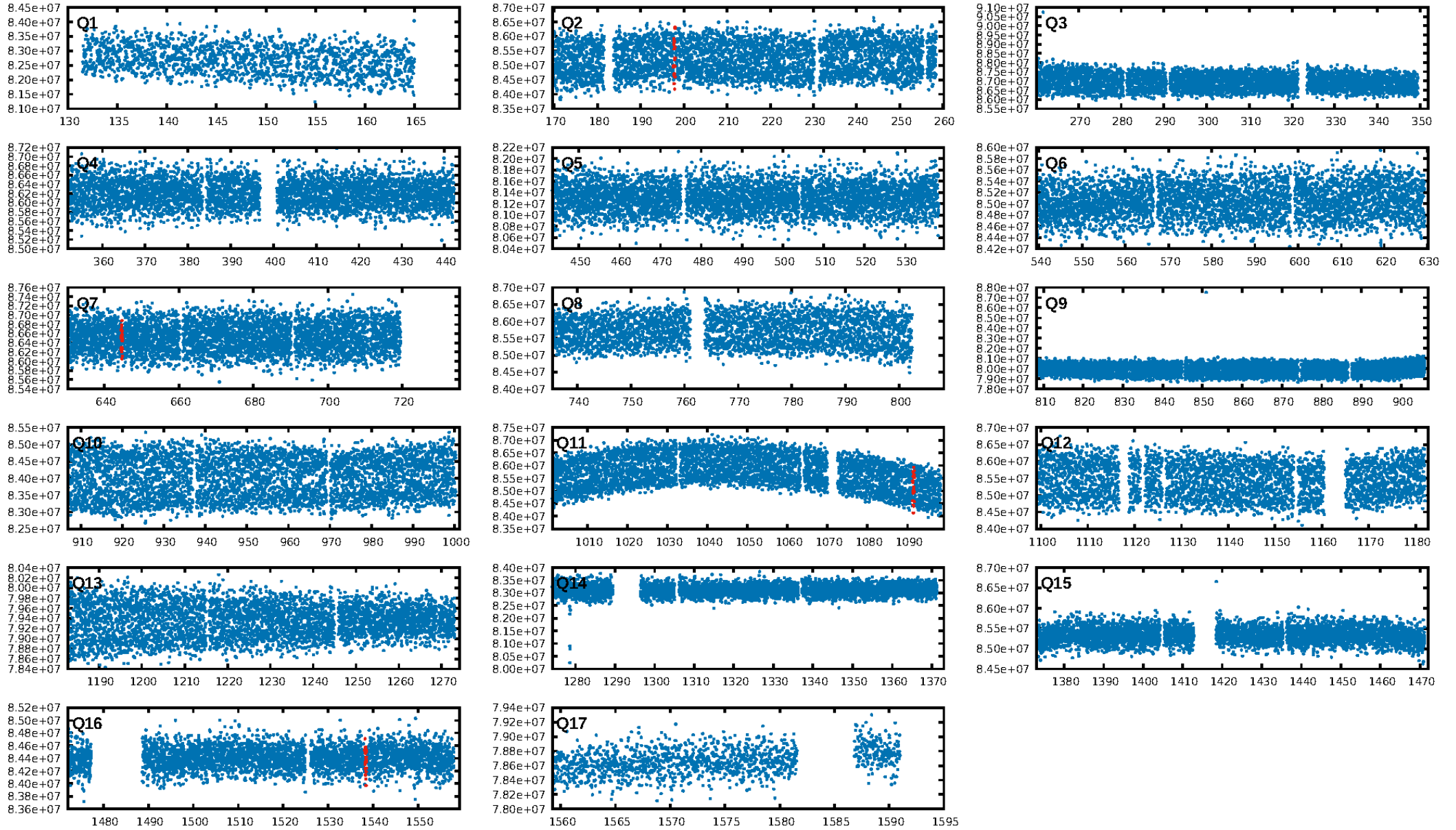
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1606.78 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 24.4%  
ModelChiSquareGof-sig: 99.9%  
**Bootstrap-pfa: 7.96e-10**  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.4735**  
**Centroid-sig: 0.2%**  
Centroid-so: 0.414 arcsec [1.78 $\sigma$ ]  
**OotOffset-rm: 0.526 arcsec [3.32 $\sigma$ ]**  
**KicOffset-rm: 0.447 arcsec [4.05 $\sigma$ ]**  
OotOffset-st: 1/1/1/0 [3]  
KicOffset-st: 1/1/1/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 0.00 [0/3]

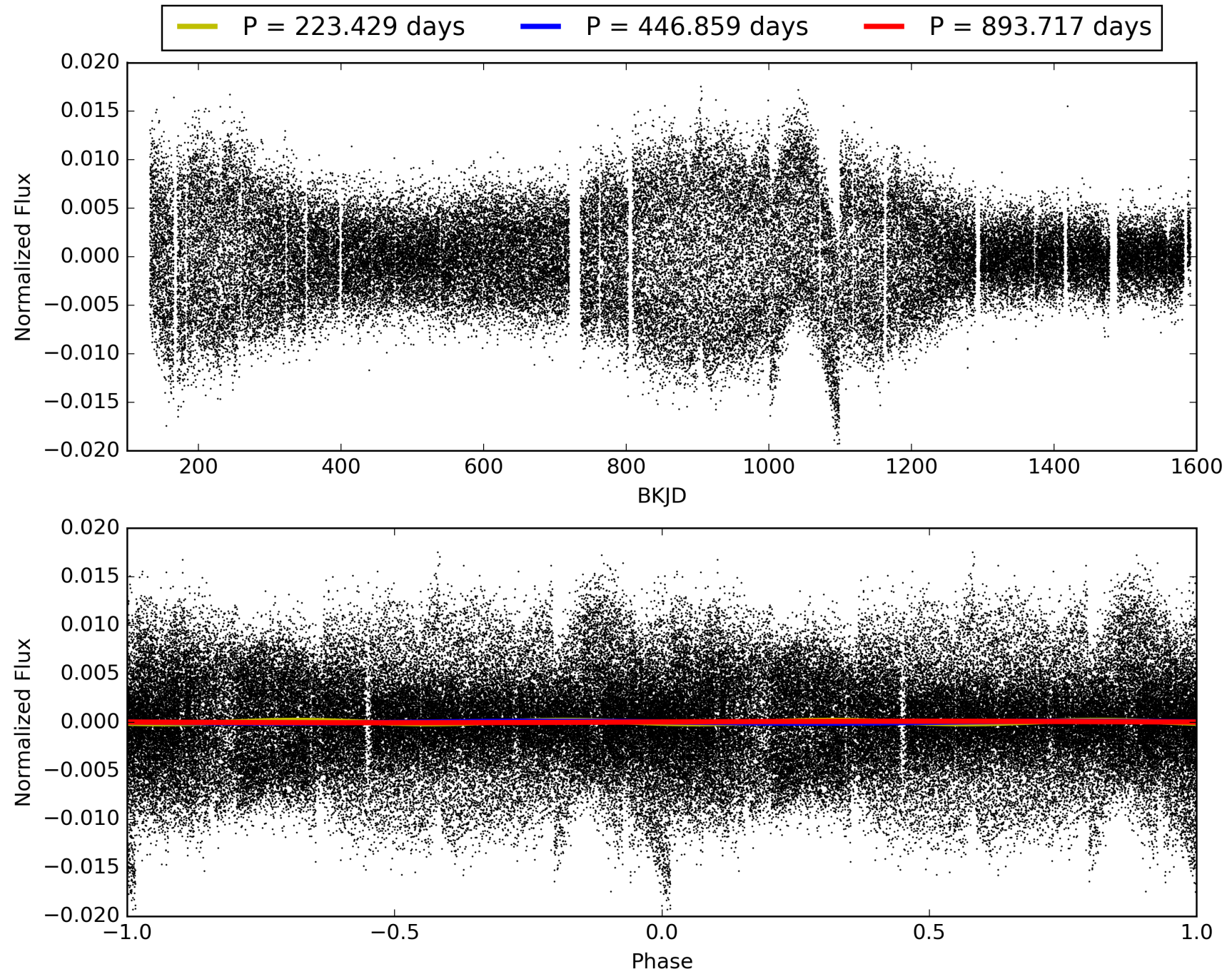
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 03:52:00 Z

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

# TCE 006127239-02, PDC Light Curves



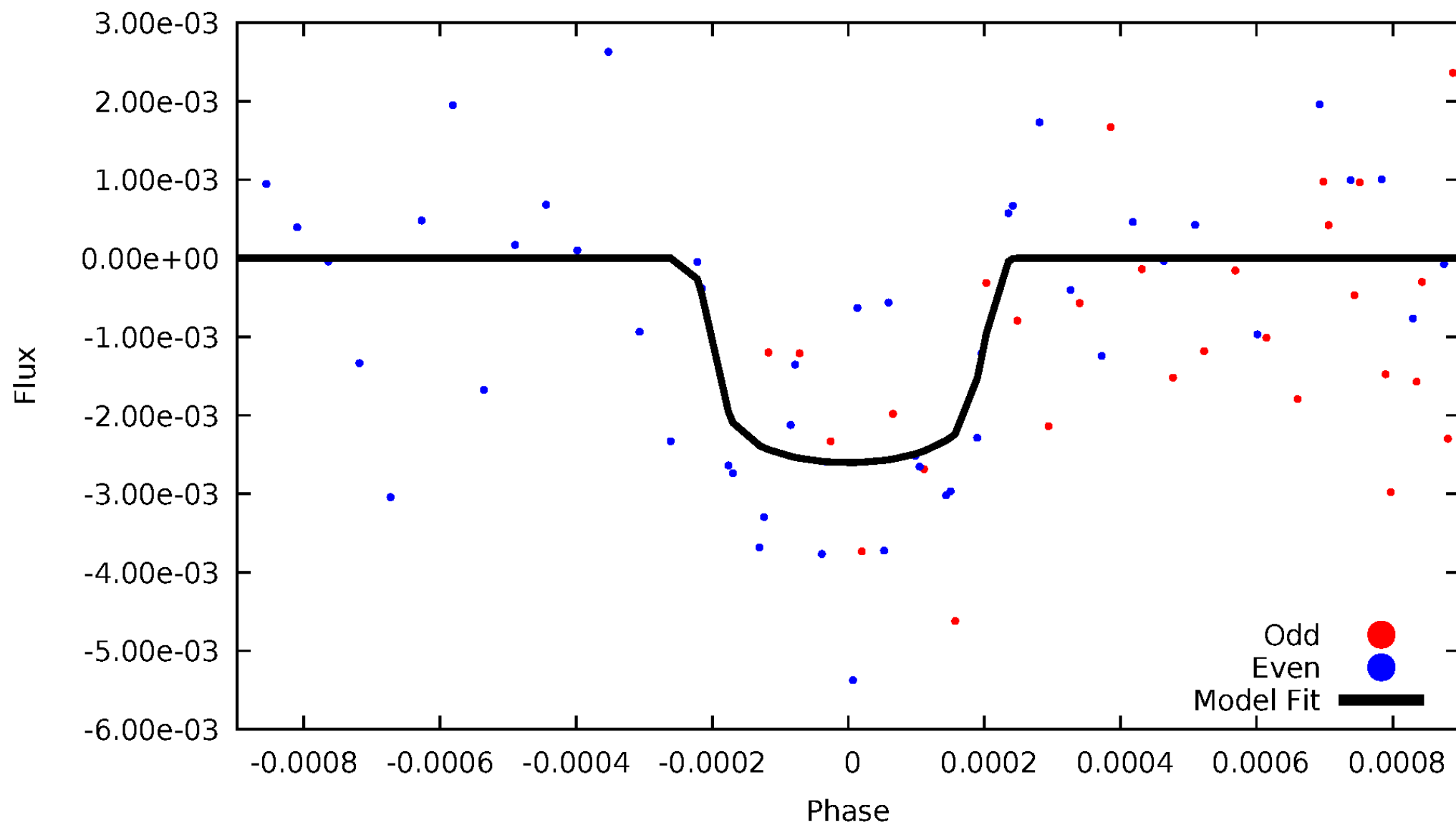
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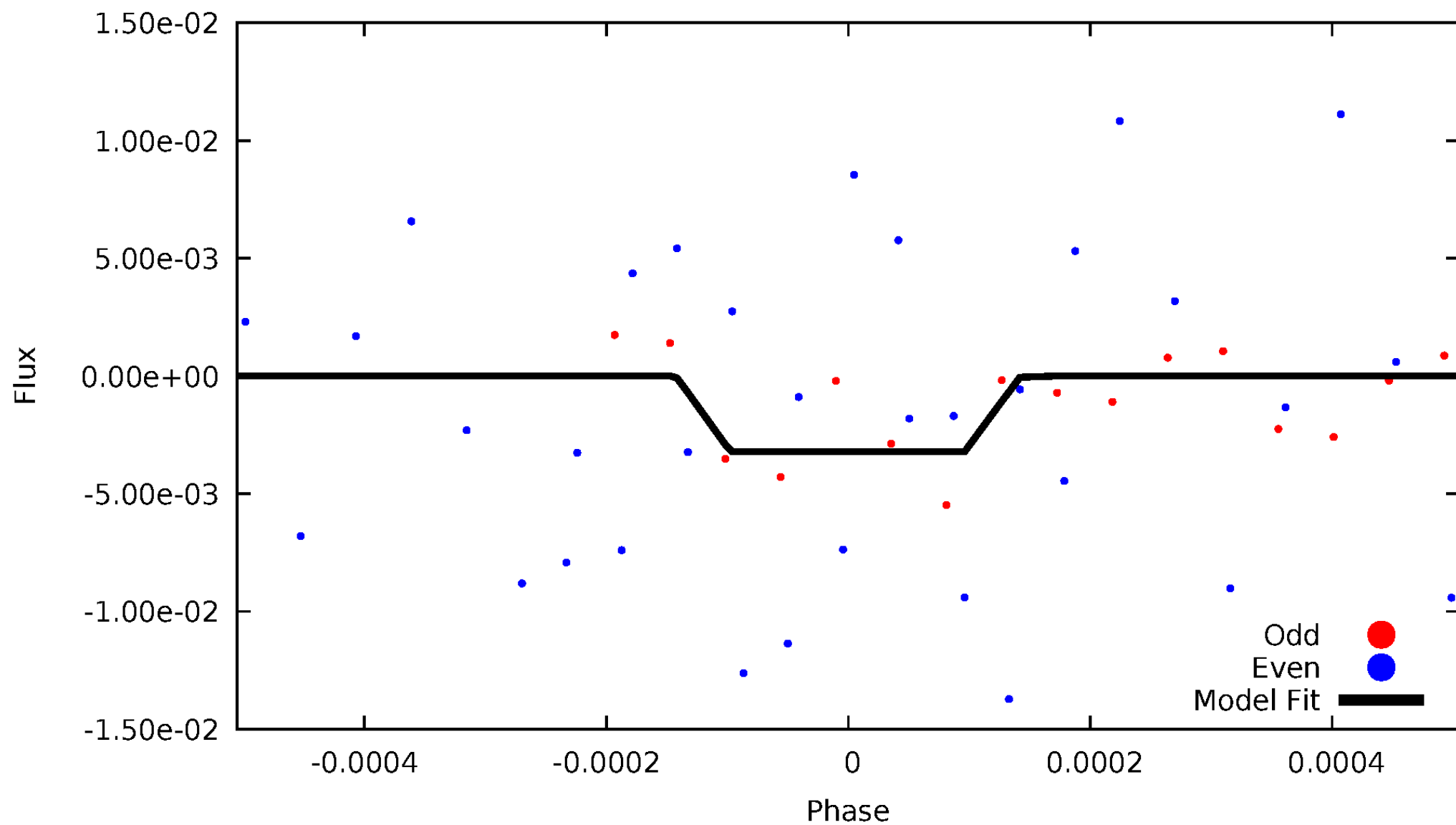
# DV Odd/Even

TCE 006127239-02



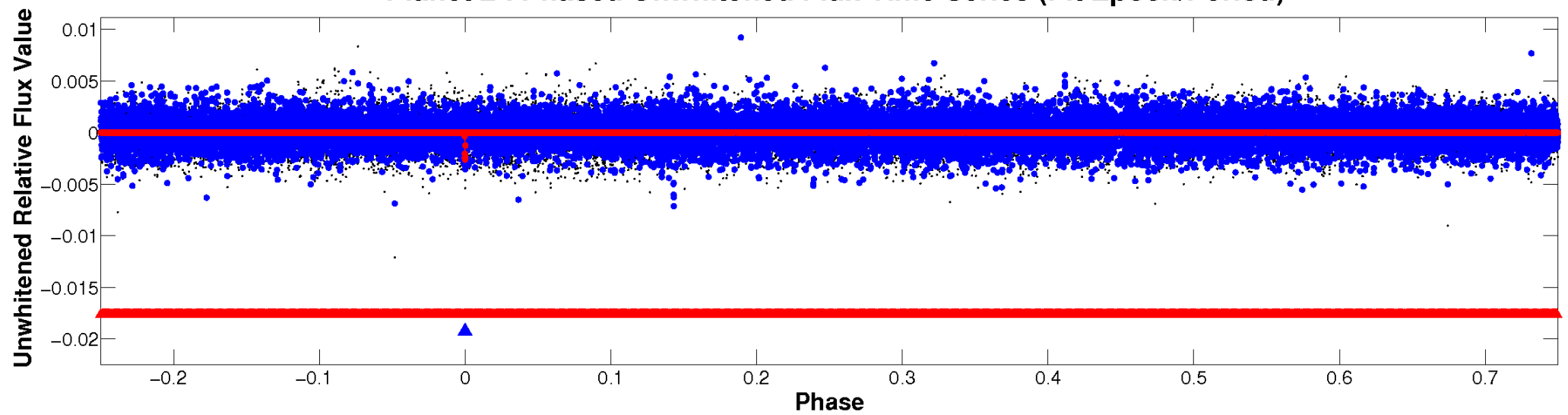
# ALT Odd/Even

TCE 006127239-02

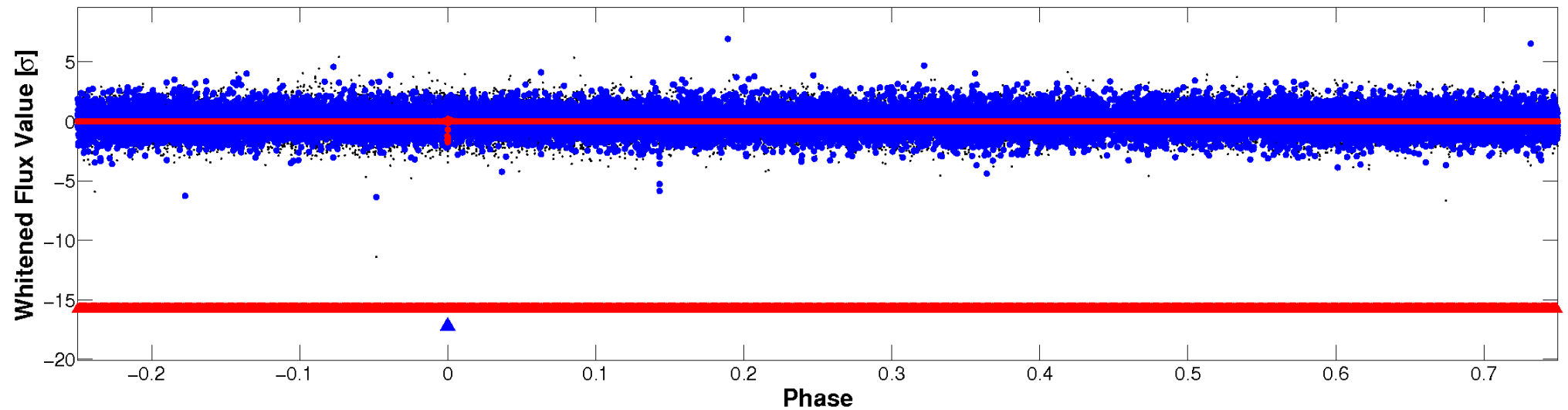


# Non-Whitened Vs. Whitened Light Curve

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

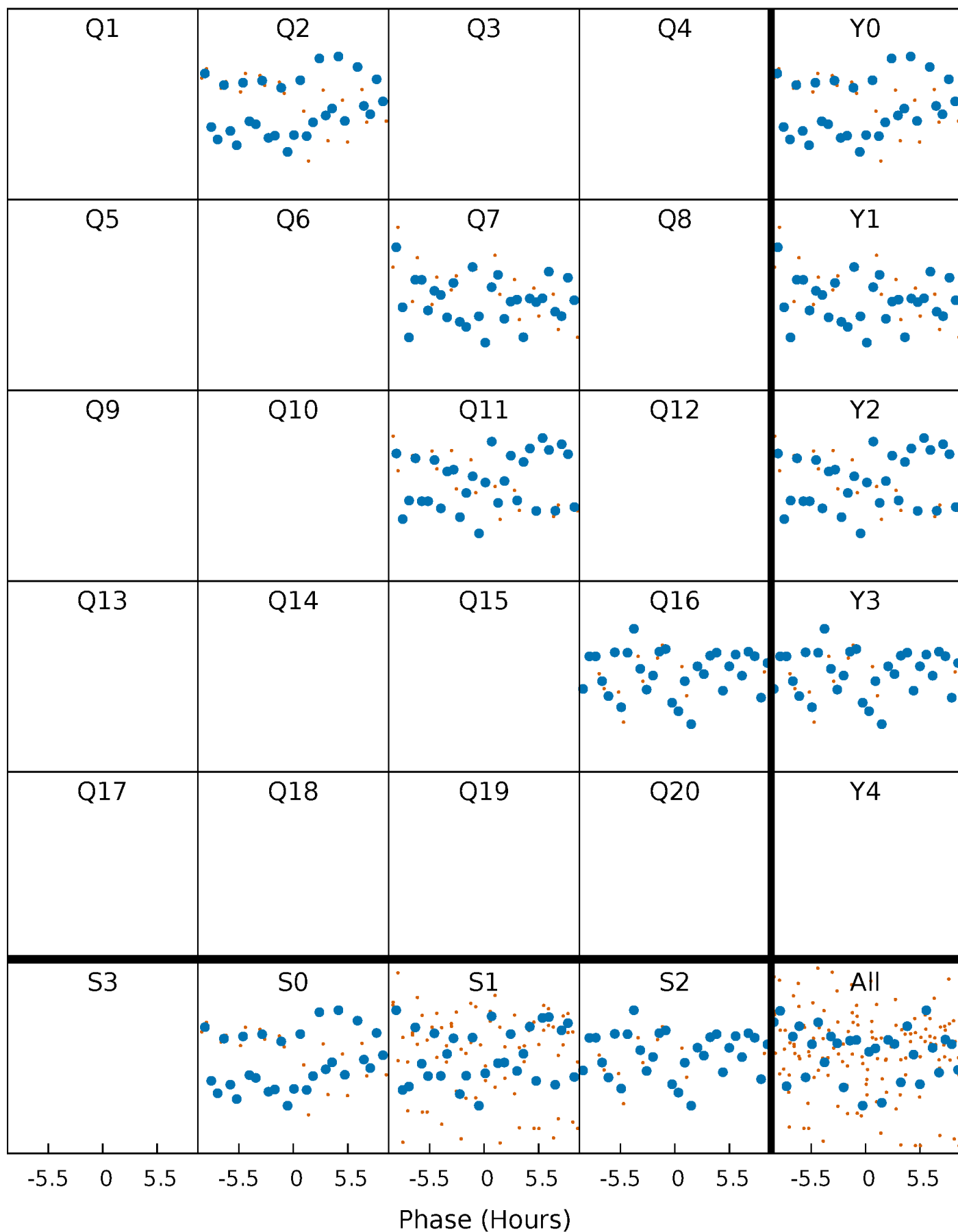


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



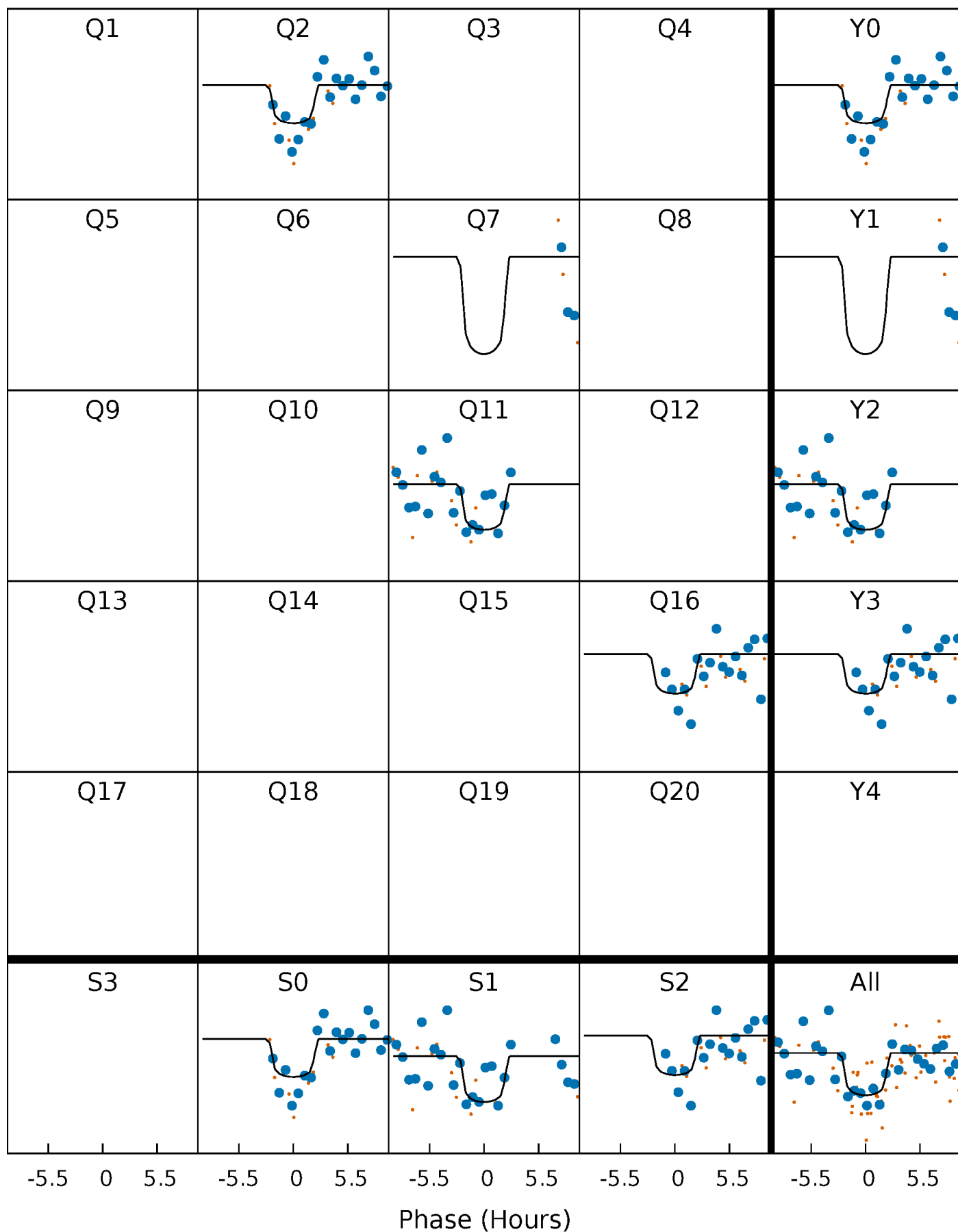
# PDC Quarter-Phased Transit Curves

TCE 006127239-02 P=446.858687 Days  $T_0=197.798047$  (BKJD)



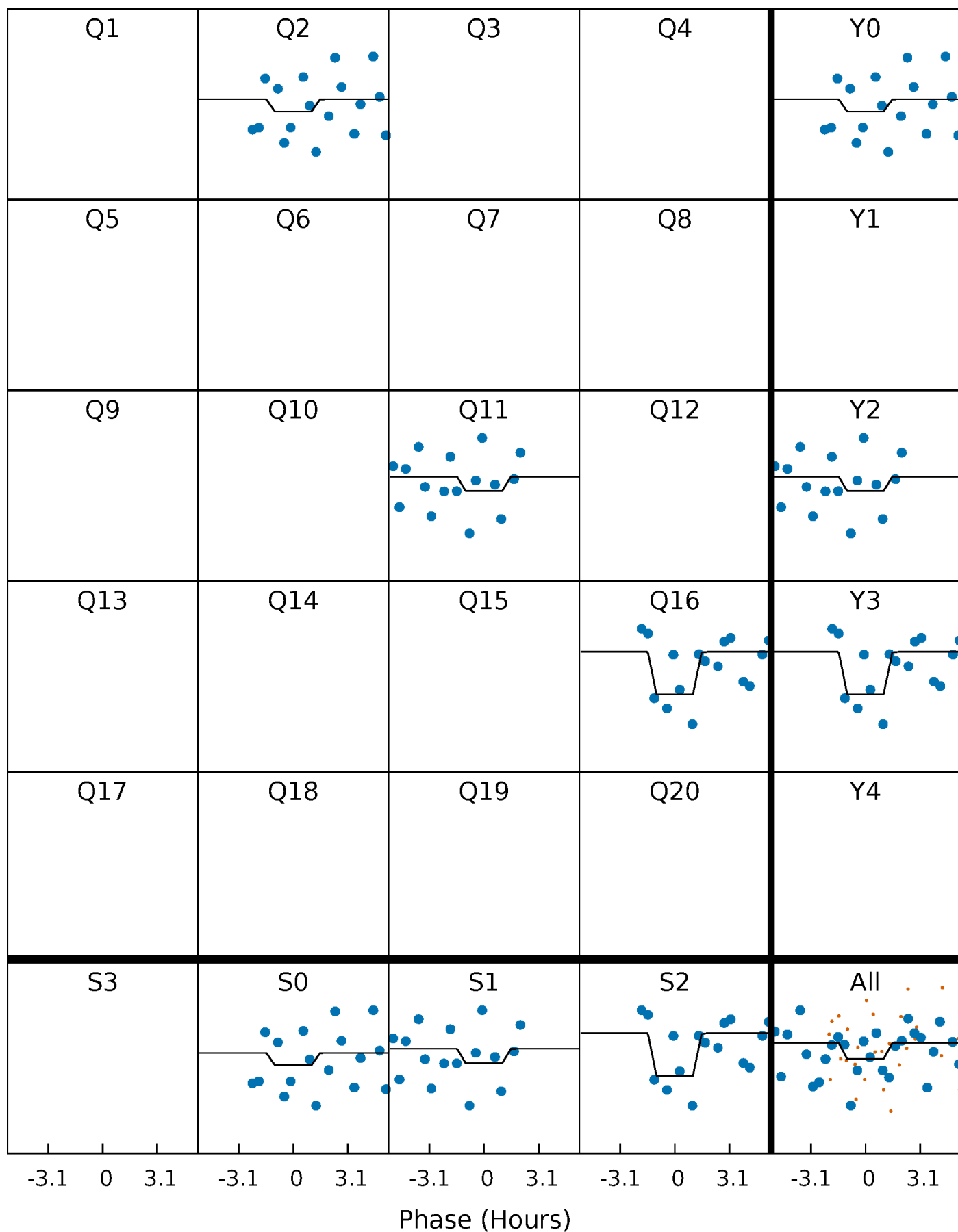
# DV Quarter-Phased Transit Curves

TCE 006127239-02 P=446.858687 Days  $T_0=197.798047$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 006127239-02 P=446.868335 Days  $T_0=197.803005$  (BKJD)

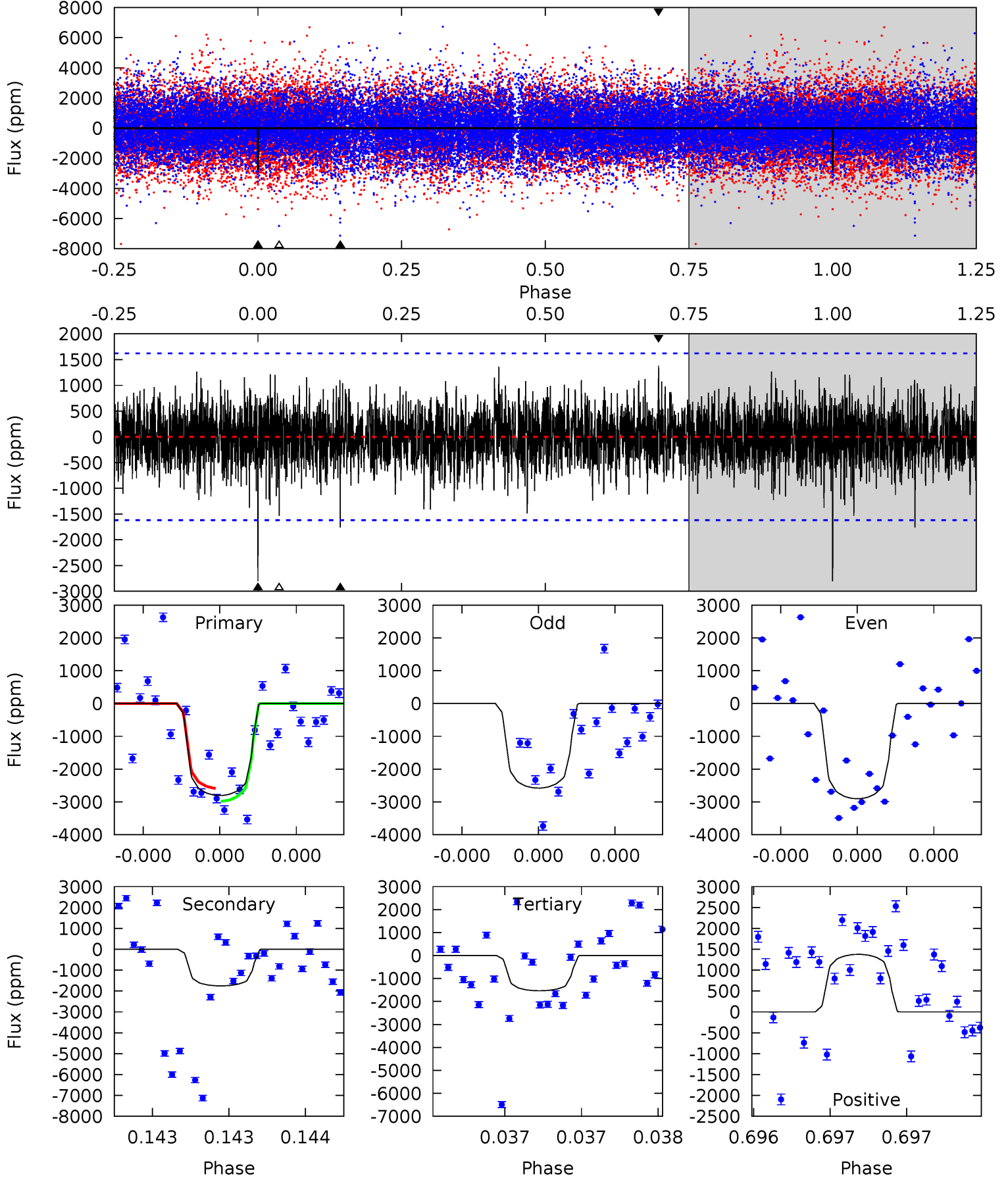




# DV Model-Shift Uniqueness Test

006127239-02, P = 446.858687 Days, E = 197.798047 Days

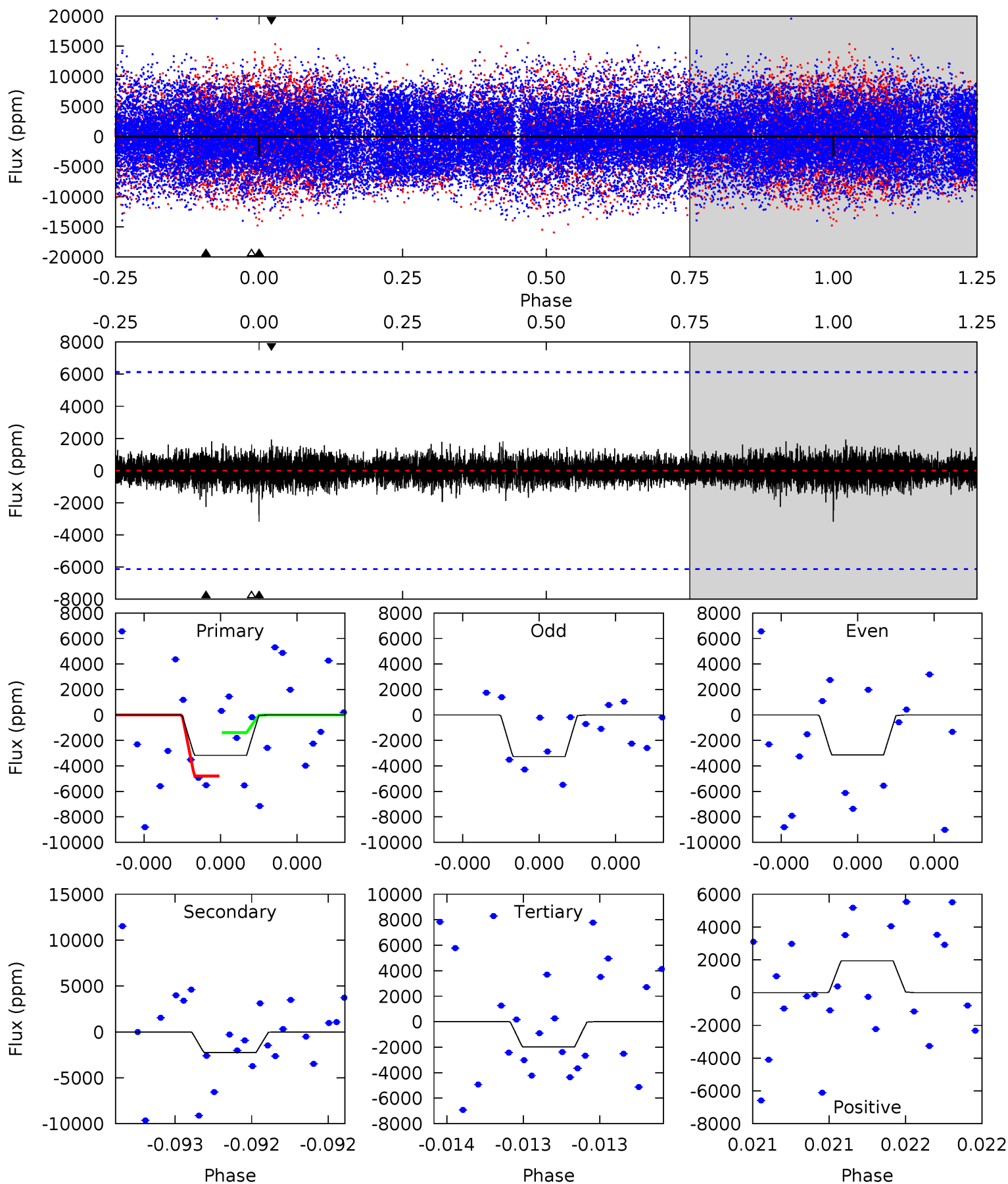
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.68	6.06	5.29	4.76	5.59	3.50	1.36	4.39	4.92	0.76	1.30	0.51	1.08	0.33	0.67



# Alt Model-Shift Uniqueness Test

006127239-02, P = 446.868335 Days, E = 197.803005 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
2.94	2.08	1.83	1.79	5.67	3.63	0.43	1.10	1.14	0.25	0.28	0.06	0.97	0.38	1.58



### Stellar Parameters For KIC 006127239

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7783^{+62}_{-100}$	$4.003^{+0.132}_{-0.096}$	$0.020^{+0.050}_{-0.250}$	$2.234^{+0.357}_{-0.437}$	$1.830^{+0.083}_{-0.232}$	$0.231^{+0.166}_{-0.070}$
	+1%/-1%	+3%/-2%	+250%/-1250%	+16%/-20%	+5%/-13%	+72%/-30%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 006127239-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-1755 \pm 290$	$12.00^{+4.27}_{-4.09}$	$603^{+27}_{-28}$	$6975^{+2069}_{-975}$	$13006^{+17324}_{-5950}$
Alt.	$-2247 \pm 1081$	$13.64^{+4.26}_{-3.88}$	$604^{+24}_{-27}$	$6908^{+1934}_{-1268}$	$12418^{+16060}_{-7050}$

$T_{\text{max}}$  = 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

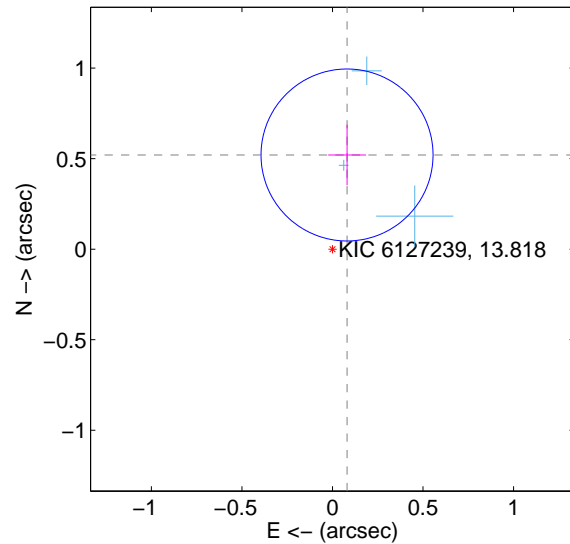
Supplemental centroid analysis for 006127239-02. Kepler magnitude: 13.82. Transit SNR 7.50

There are 3 quarters with good PRF difference image offsets

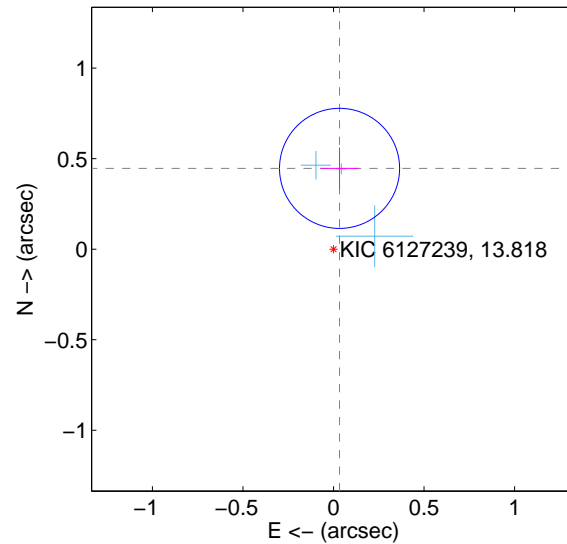
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.526 \pm 0.158$	3.32	$-0.080 \pm 0.104$	$0.520 \pm 0.167$
PRF-fit source offset from KIC position	$0.447 \pm 0.110$	4.05	$-0.033 \pm 0.103$	$0.446 \pm 0.115$
photometric centroid source offset	$0.41 \pm 0.23$	1.78	$-0.41 \pm 0.23$	$-0.08 \pm 0.23$

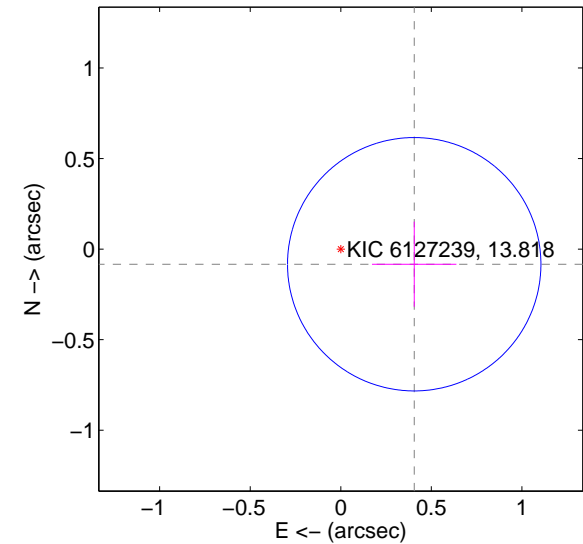
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

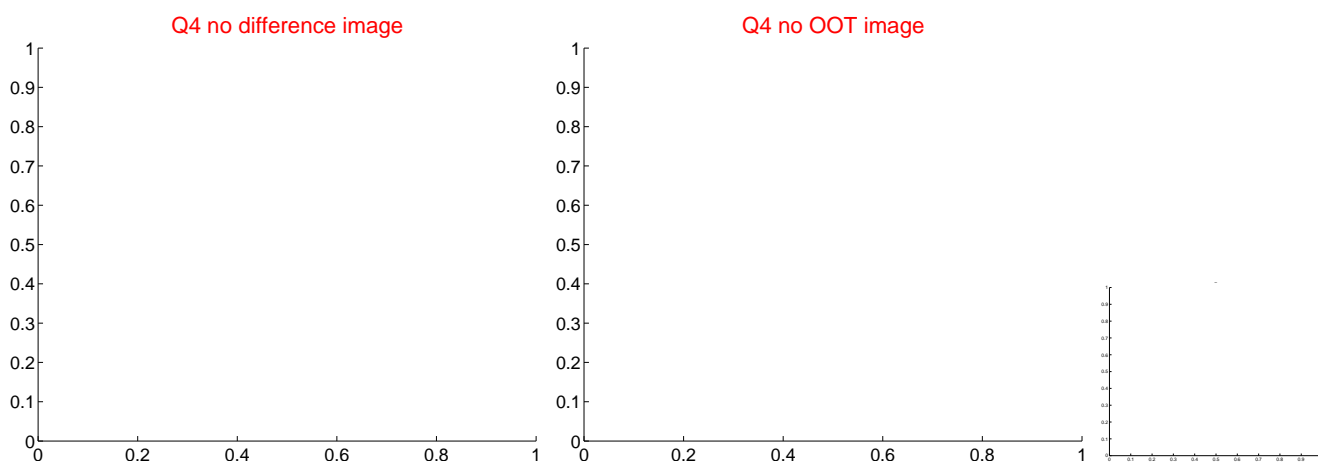
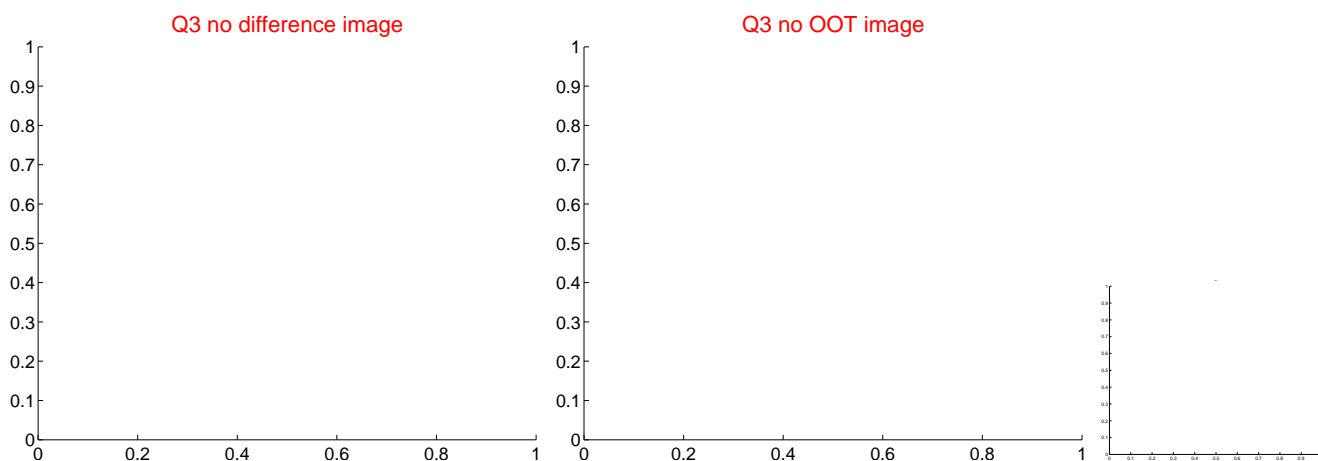
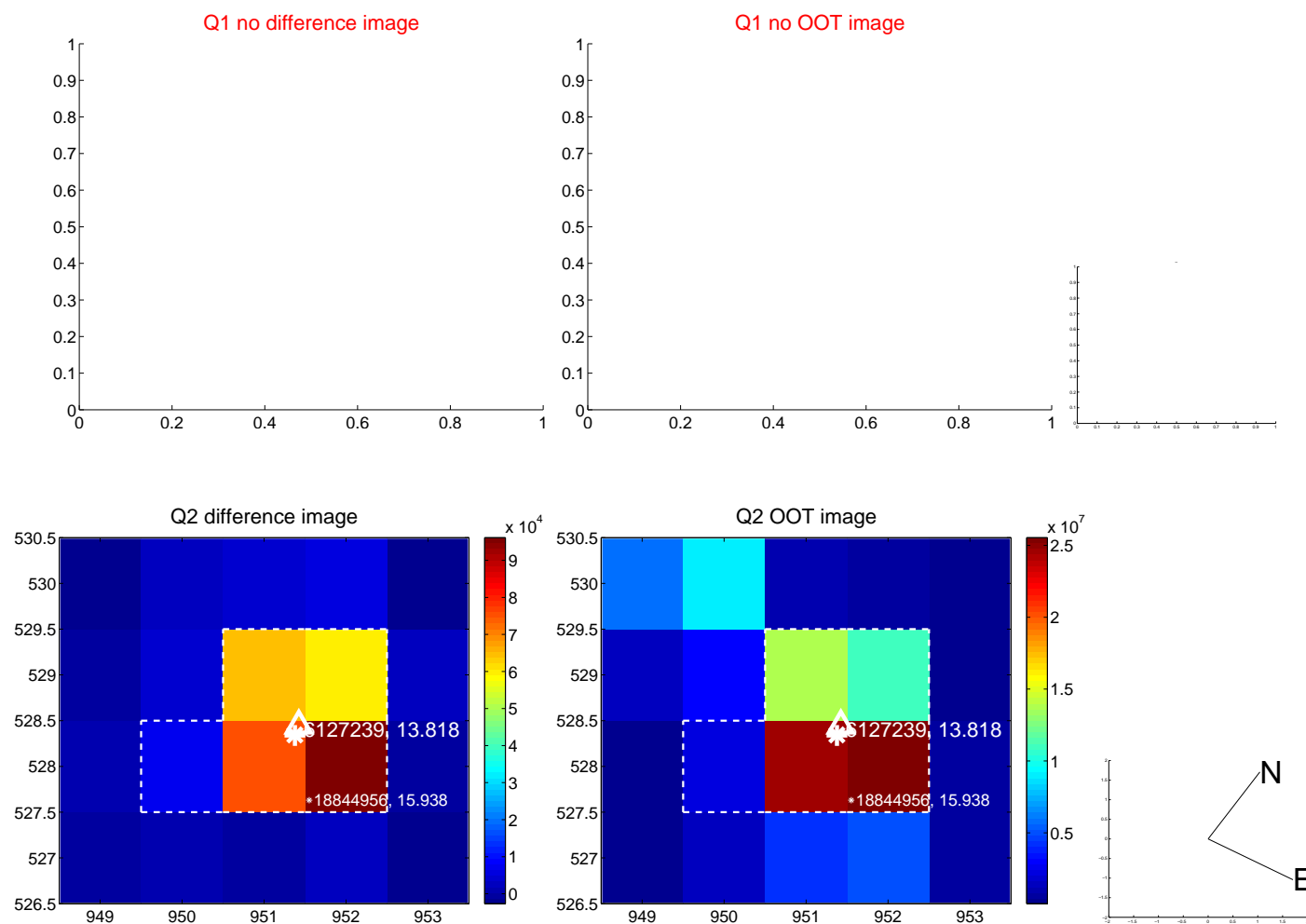


offset from photometric centroids



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

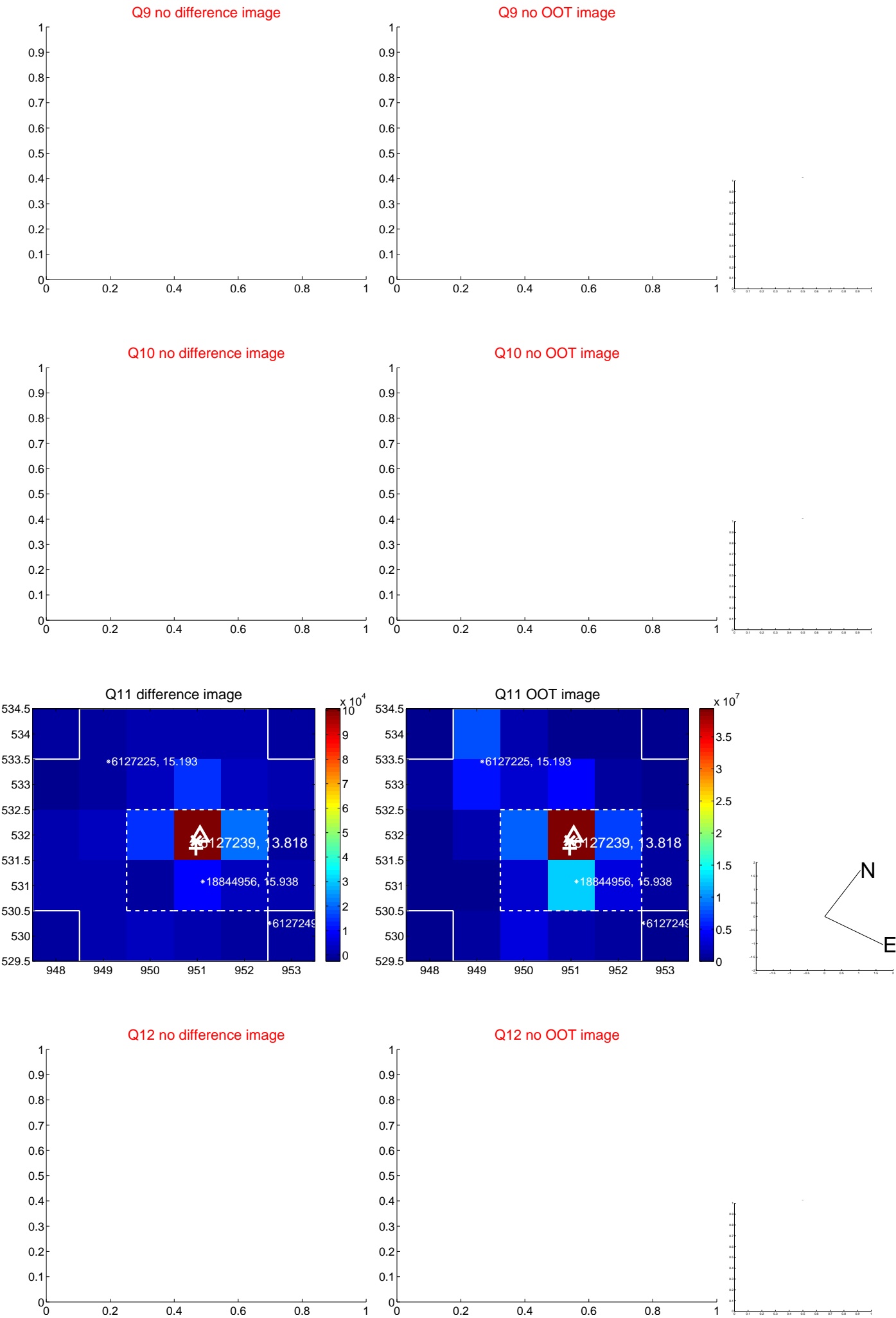


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

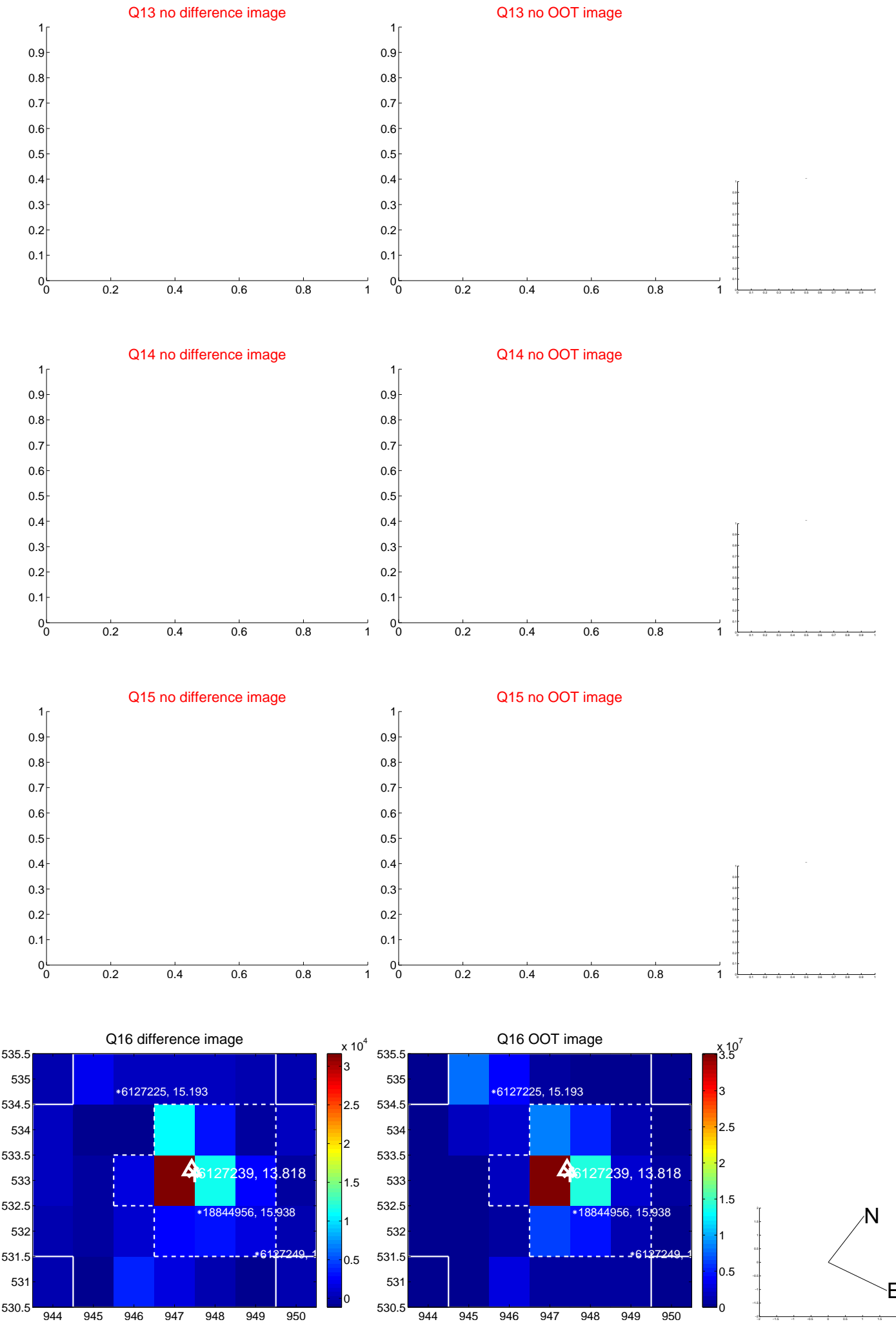




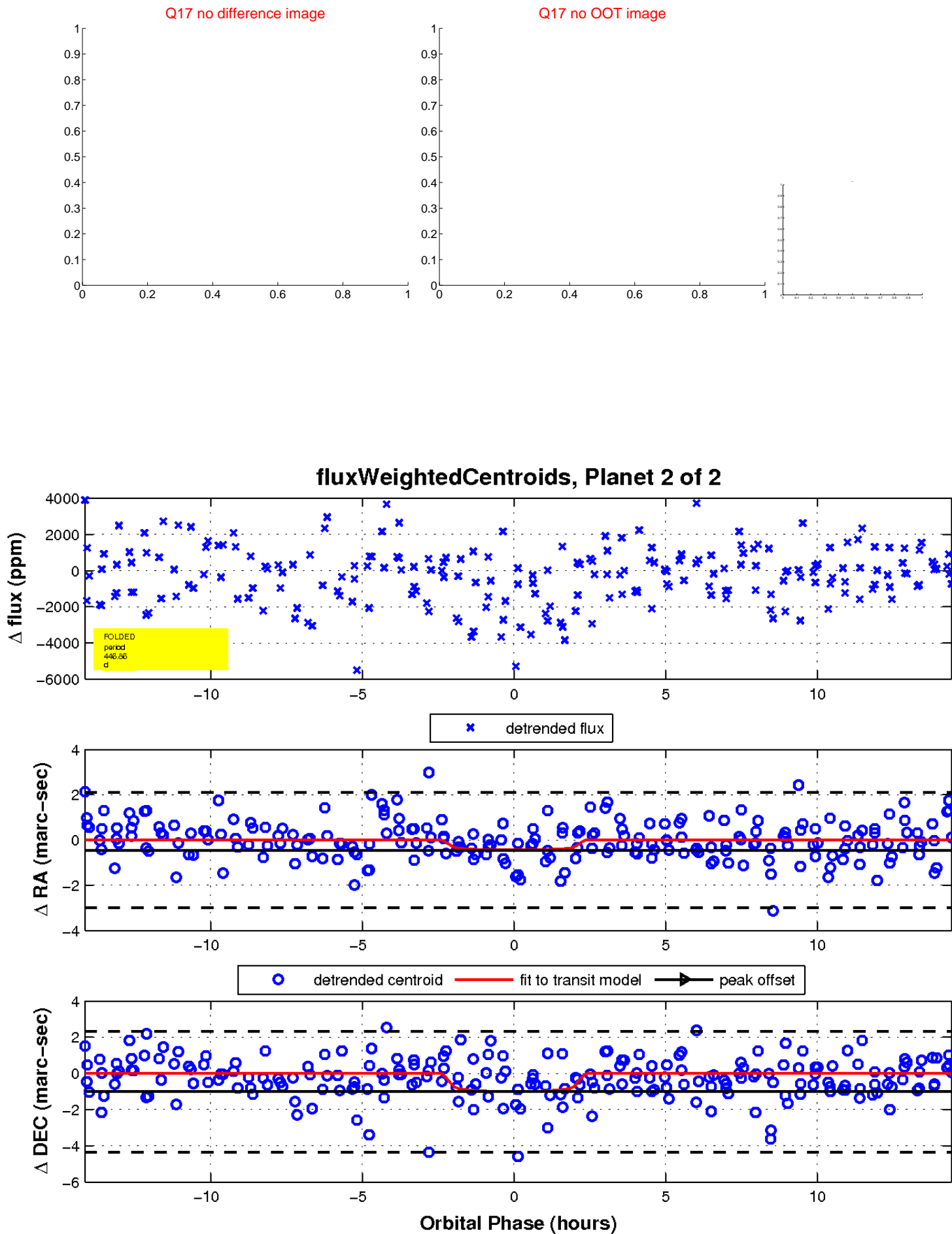
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

