

# KIC 006124137

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006124137-01	OBS	7764.01	227.824842	238.771743	159.5	20.247	8.8	8.9	2.19	6004	2.93	9.61

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006124137-01	OBS	PC	0.99	0	0	0	0	CENT_FEW_DIFFS

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

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

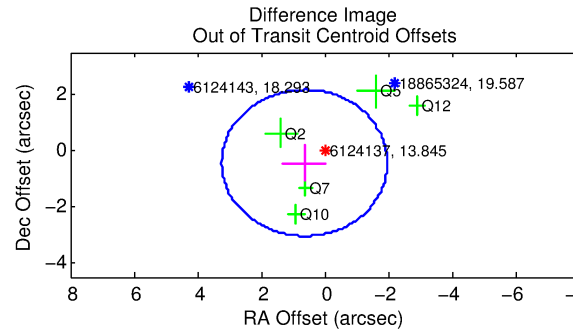
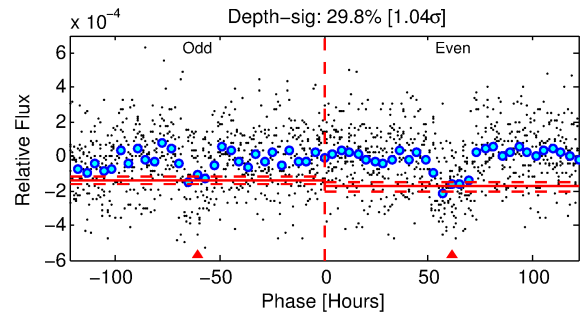
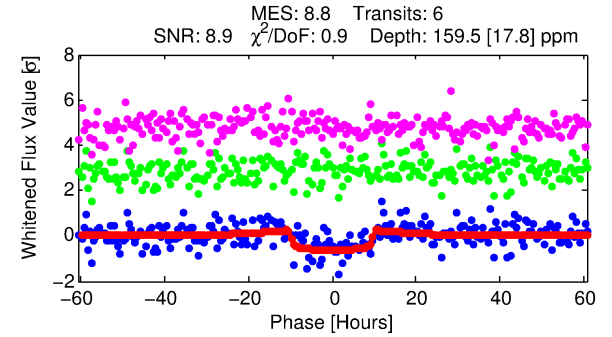
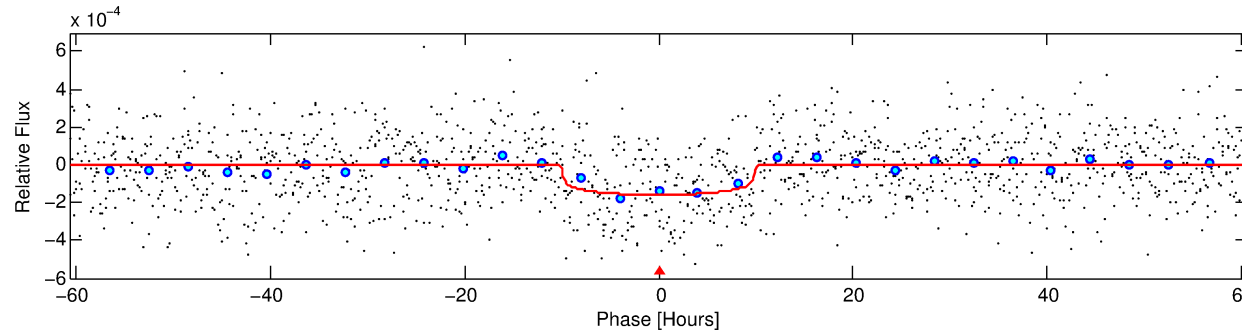
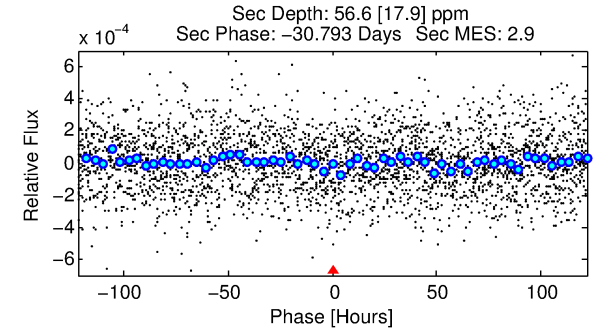
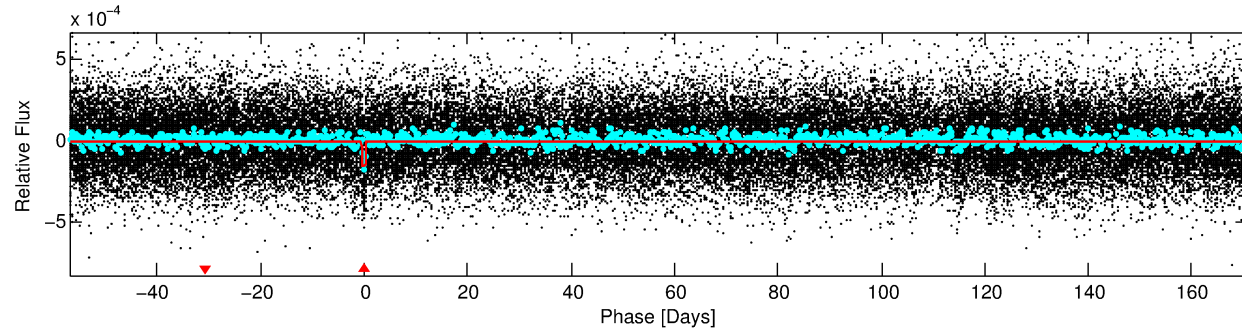
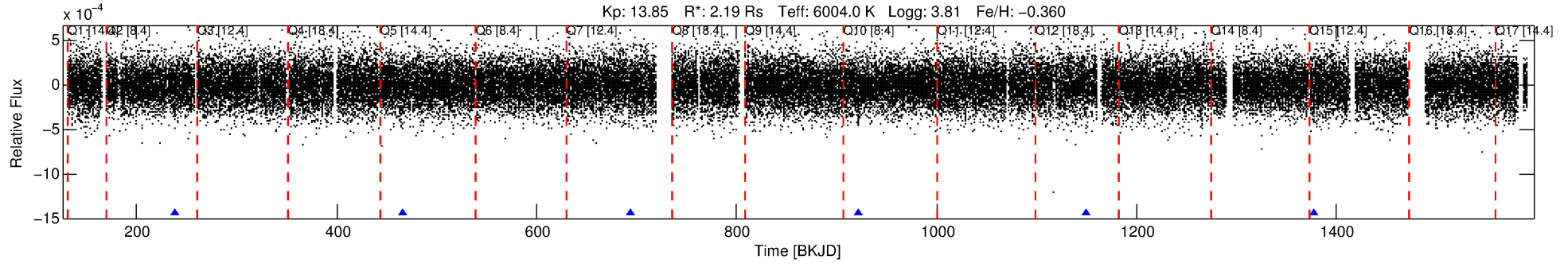
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006124137-01

No Significant Match Found

# DV One-Page Summary

KIC: 6124137 Candidate: 1 of 1 Period: 227.825 d



## DV Fit Results:

Period = 227.82484 [0.00670] d  
Epoch = 238.7717 [0.0196] BKJD  
Rp/R\* = 0.0123 [0.0042]  
a/R\* = 65.78 [110.98]  
b = 0.66 [1.44]  
Seff = 9.61 [3.84]  
Teq = 449 [45] K  
Rp = 2.93 [1.32] Re  
a = 0.7635 [0.1989] AU  
Ag = 2111.26 [1796.34] [1.17σ]  
Teffp = 4705 [888] K [4.79σ]

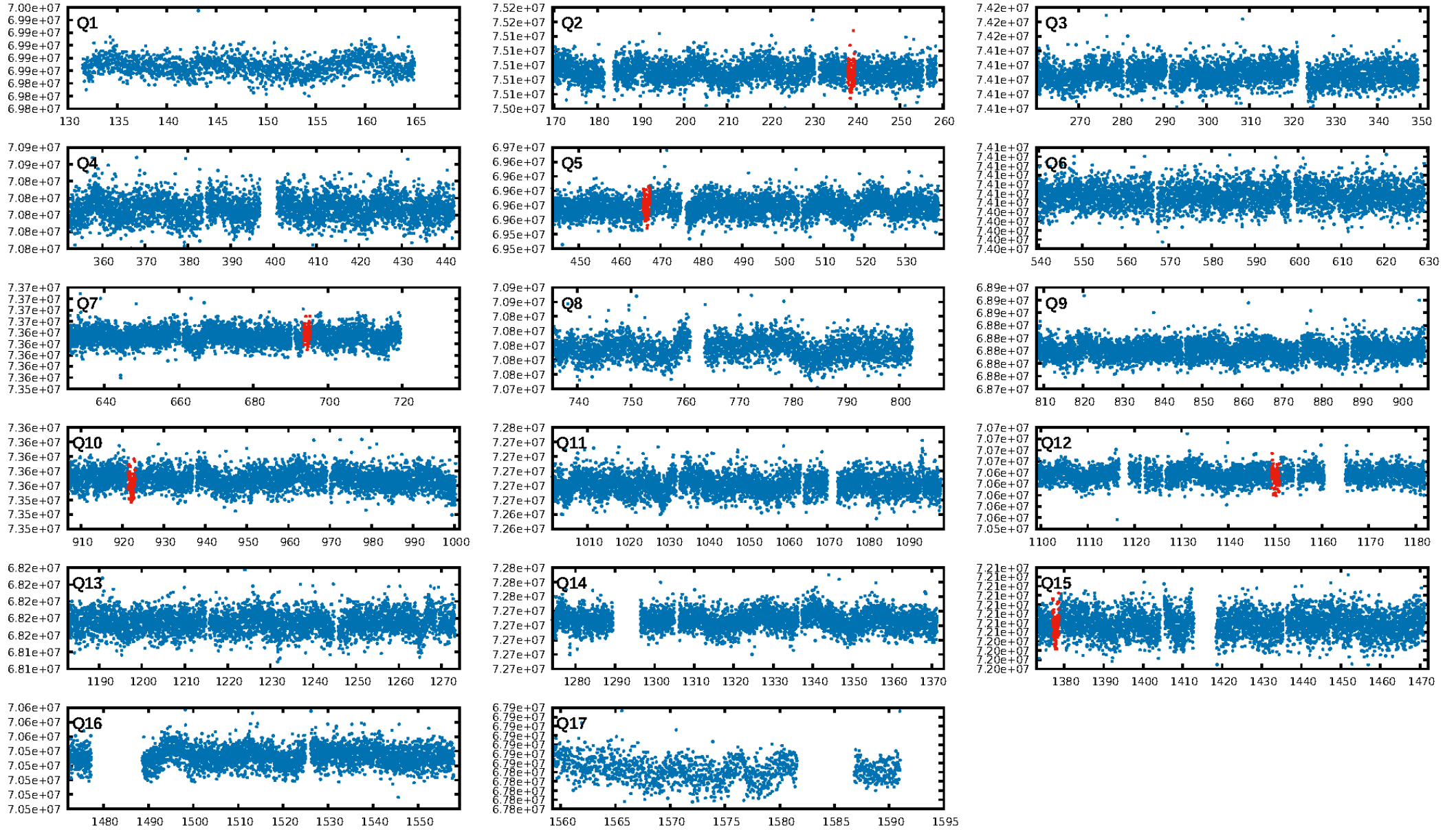
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 34.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.21e-20  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: 2.796  
Centroid-sig: 41.2%  
Centroid-so: 0.985 arcsec [0.89σ]  
OotOffset-rm: 0.769 arcsec [0.89σ]  
KicOffset-rm: 0.782 arcsec [0.72σ]  
OotOffset-st: 2/1/1/1 [5]  
KicOffset-st: 2/1/1/1 [5]  
DiffImageQuality-fgm: 0.40 [2/5]  
DiffImageOverlap-fno: 1.00 [6/6]

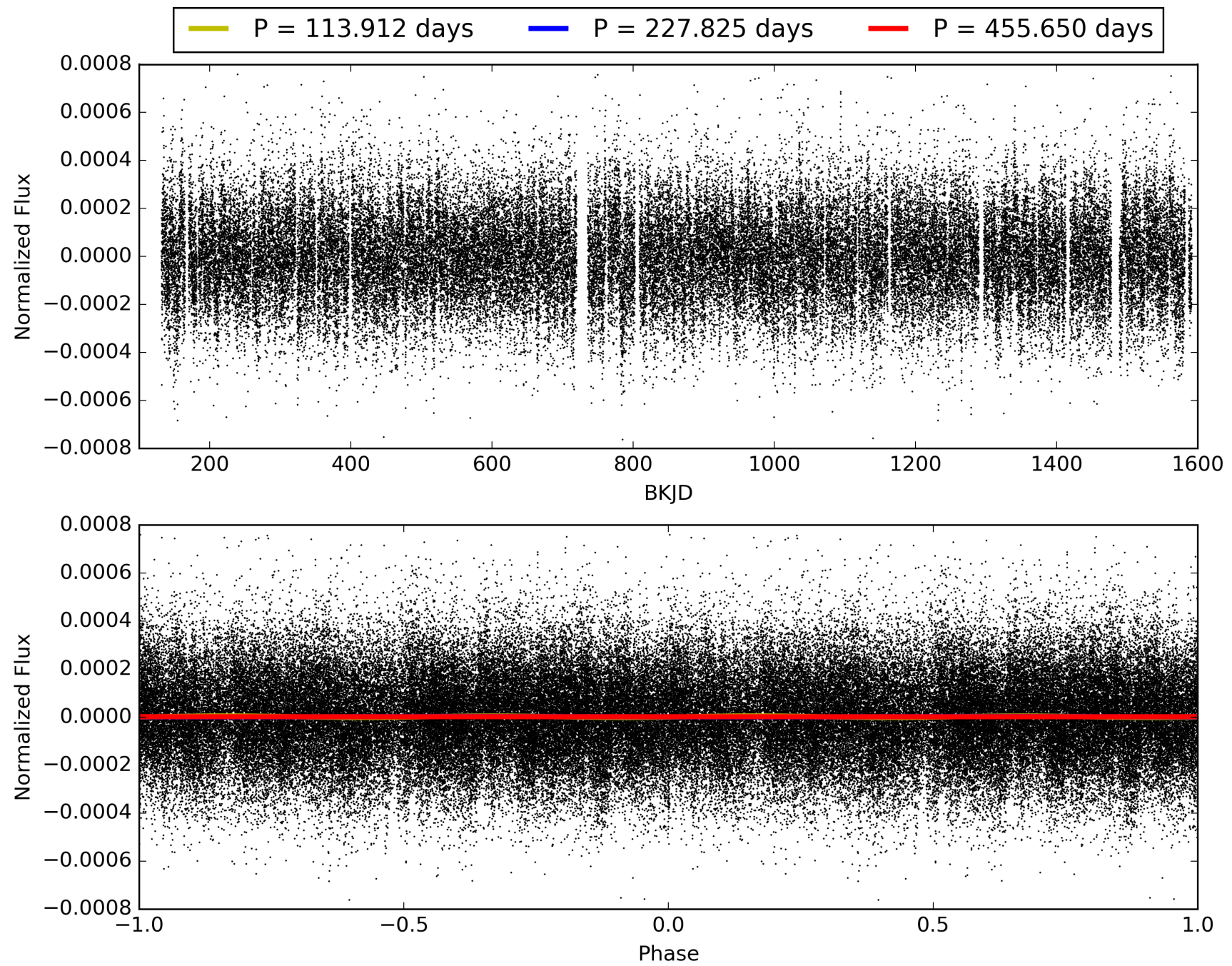
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:59:10 Z

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

# TCE 006124137-01, PDC Light Curves

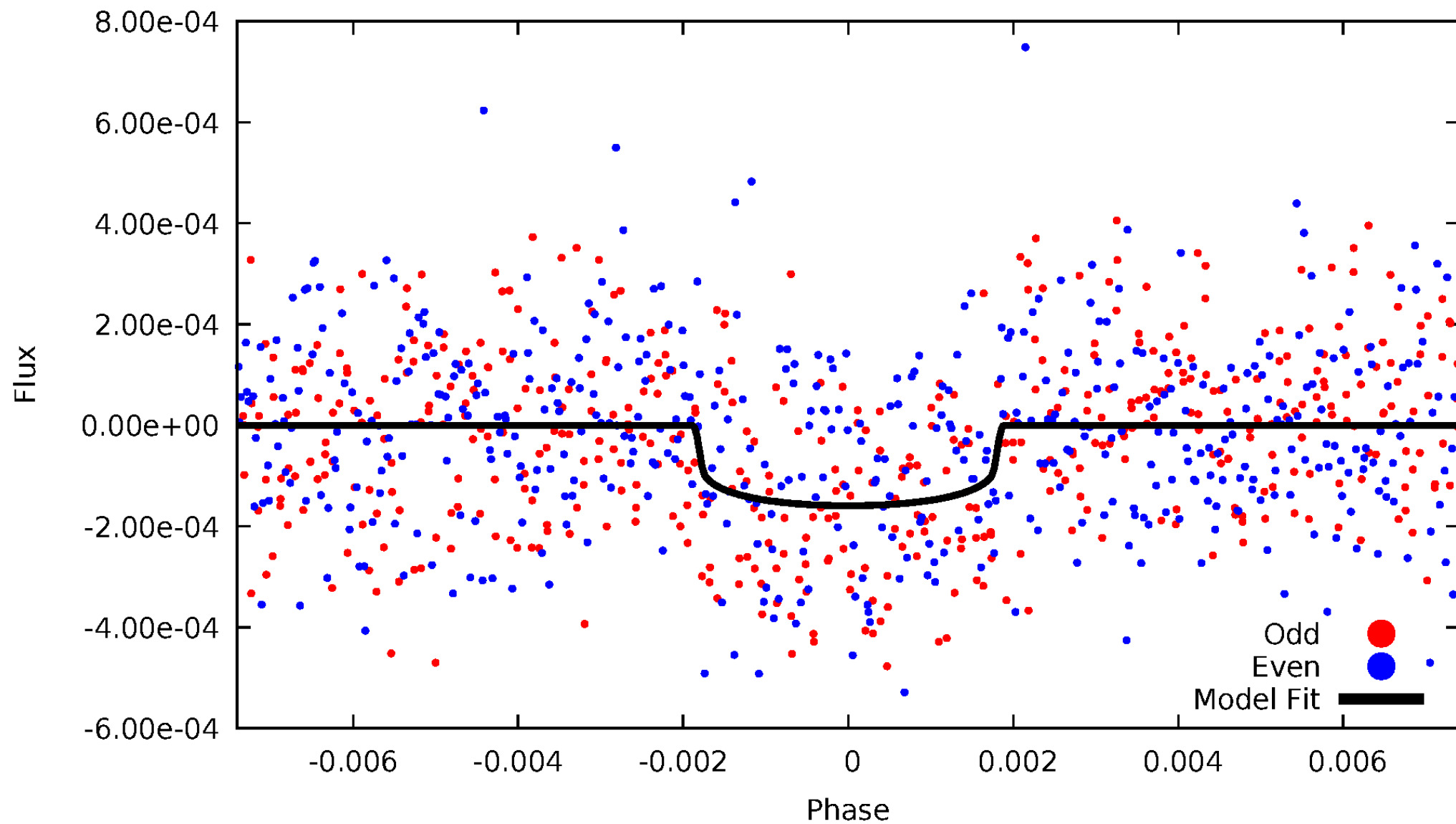


# TCE 006124137-01



# DV Odd/Even

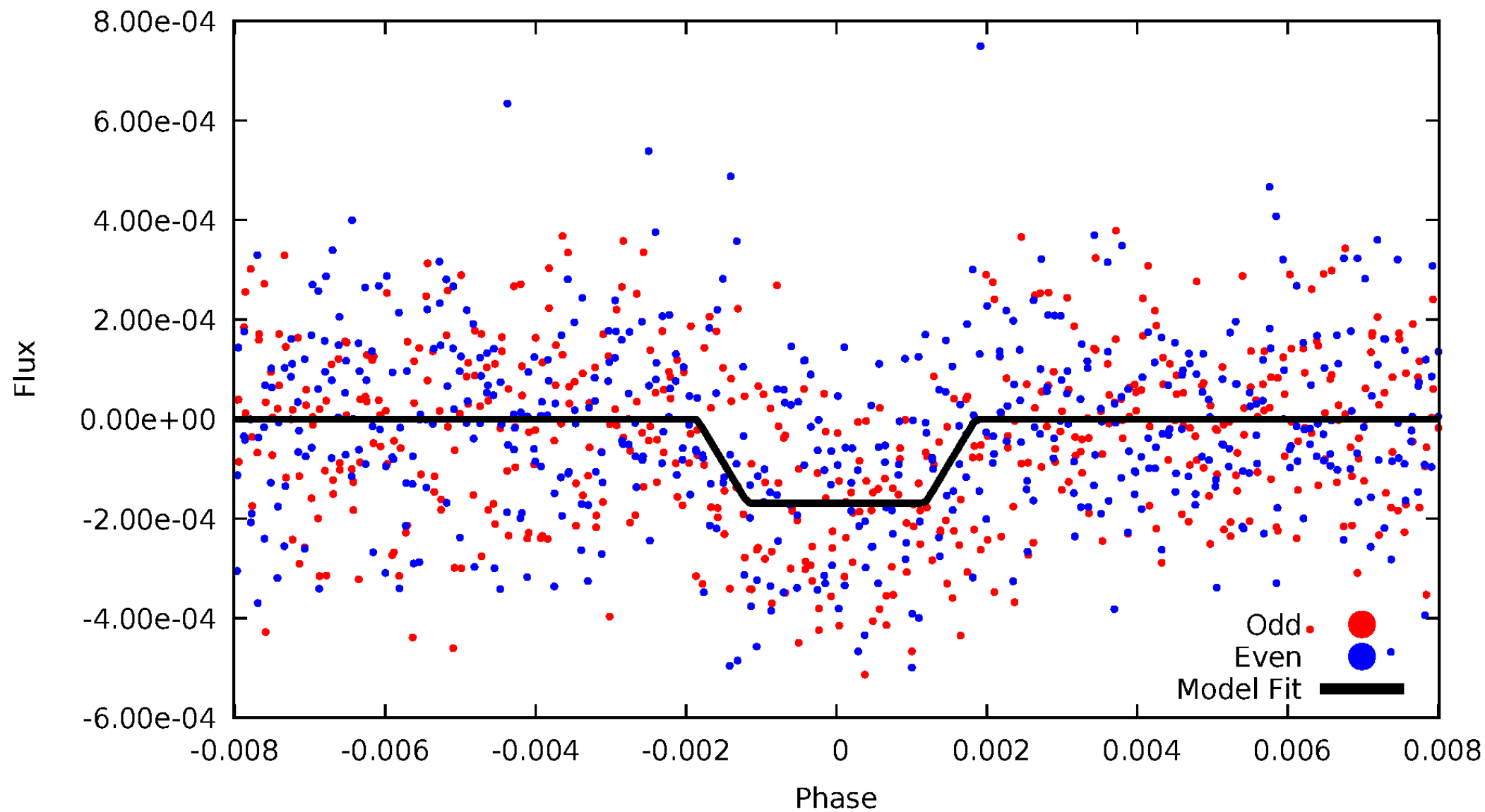
TCE 006124137-01



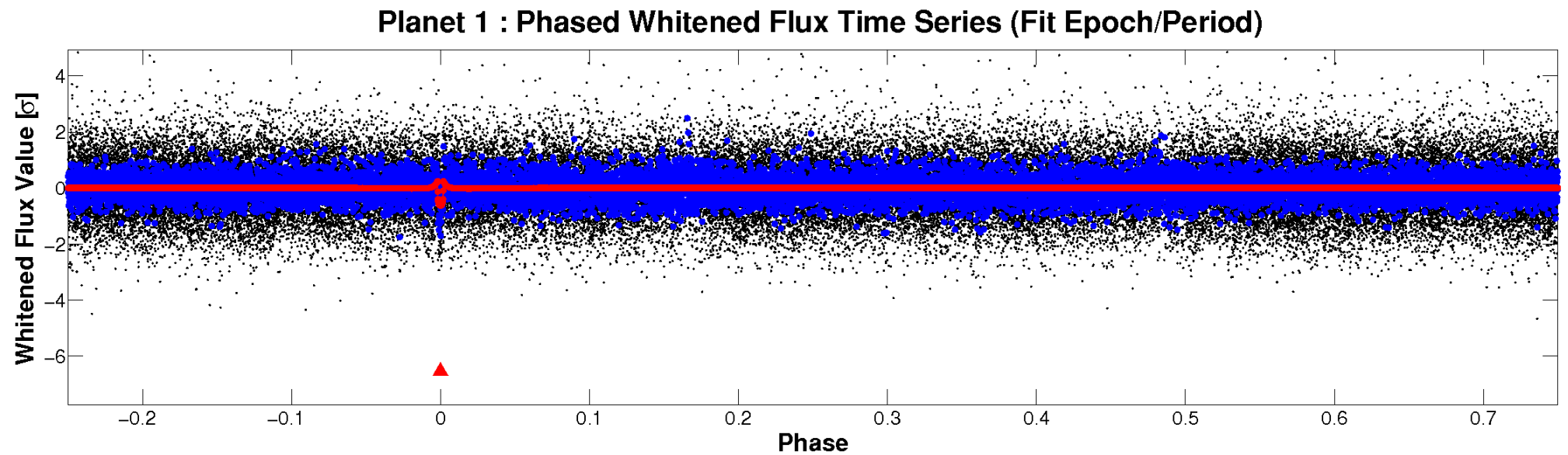
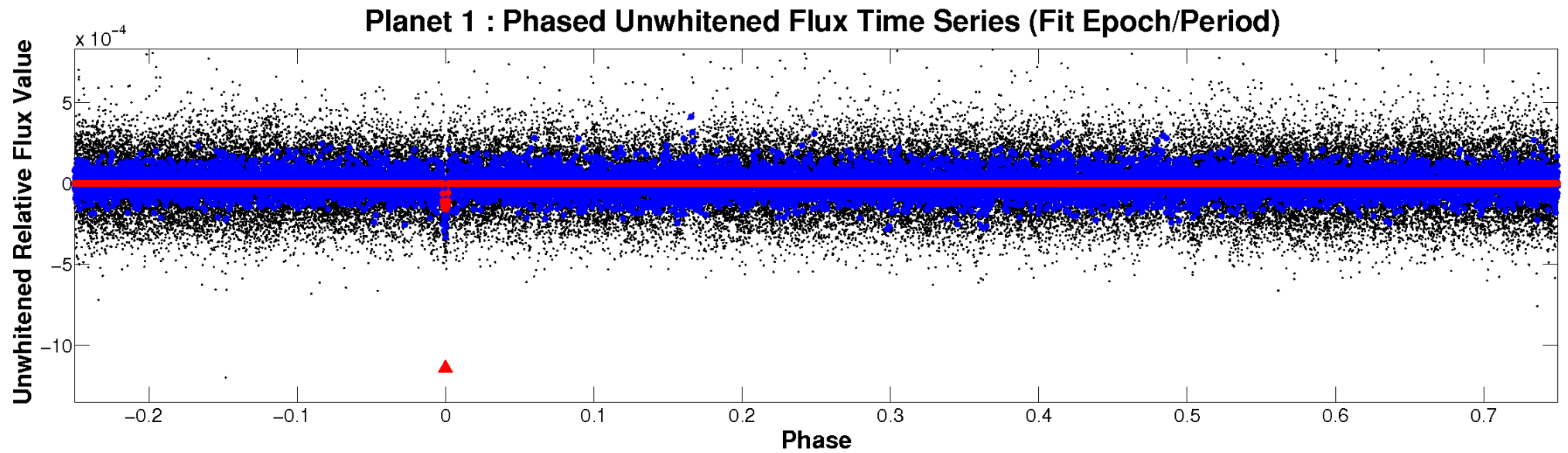


# ALT Odd/Even

TCE 006124137-01

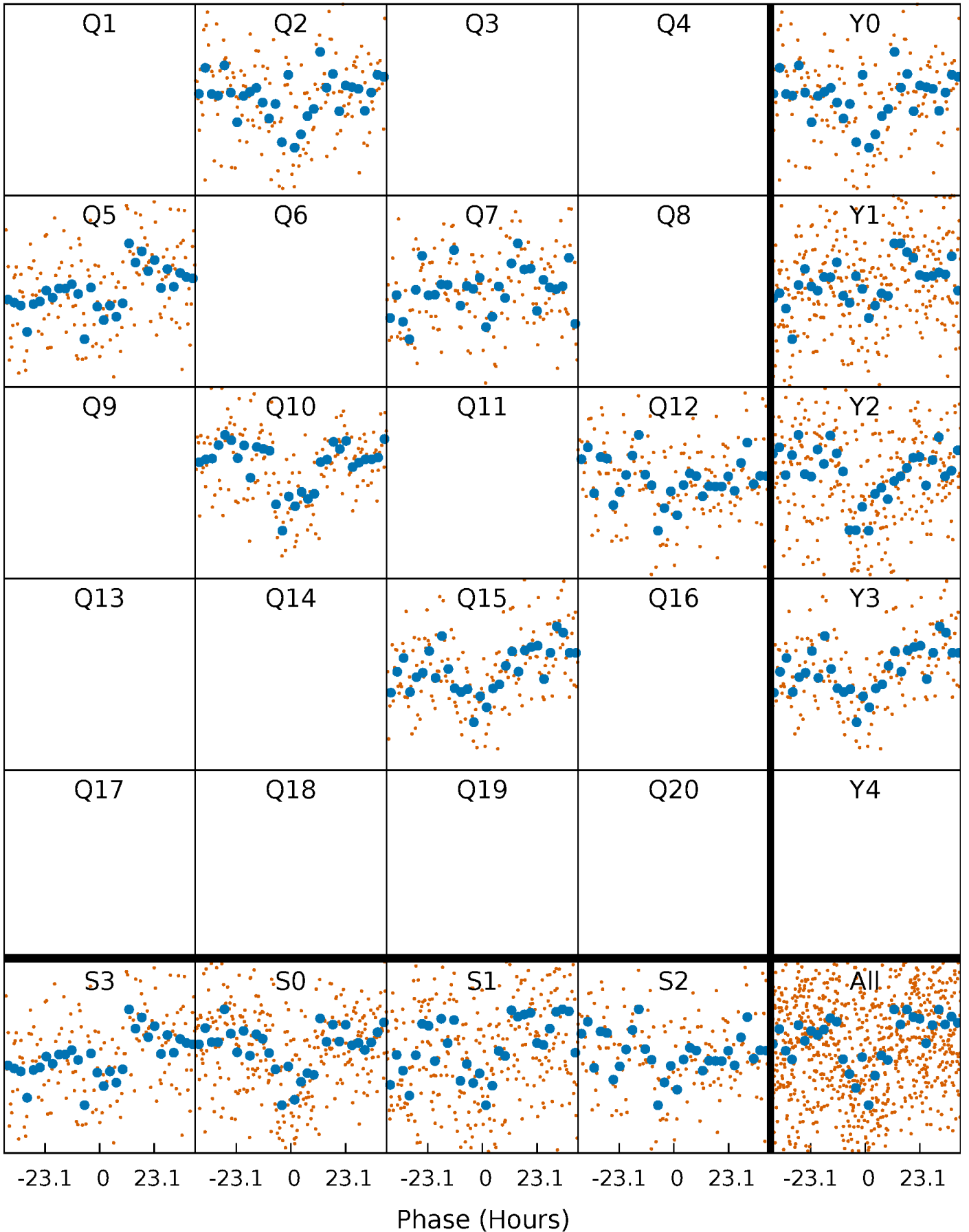


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

TCE 006124137-01 P=227.824842 Days  $T_0=238.771743$  (BKJD)





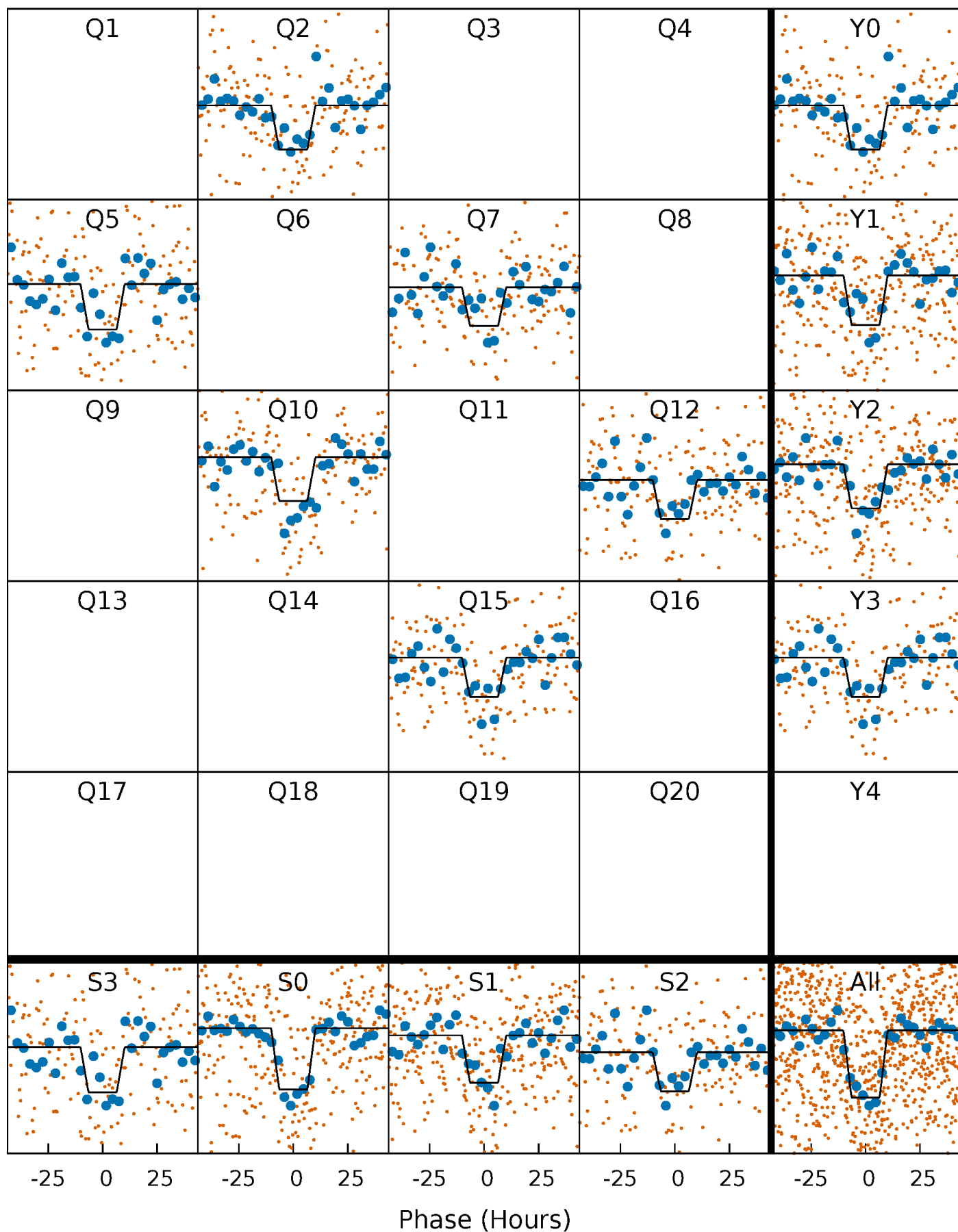
# DV Quarter-Phased Transit Curves

TCE 006124137-01 P=227.824842 Days  $T_0=238.771743$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

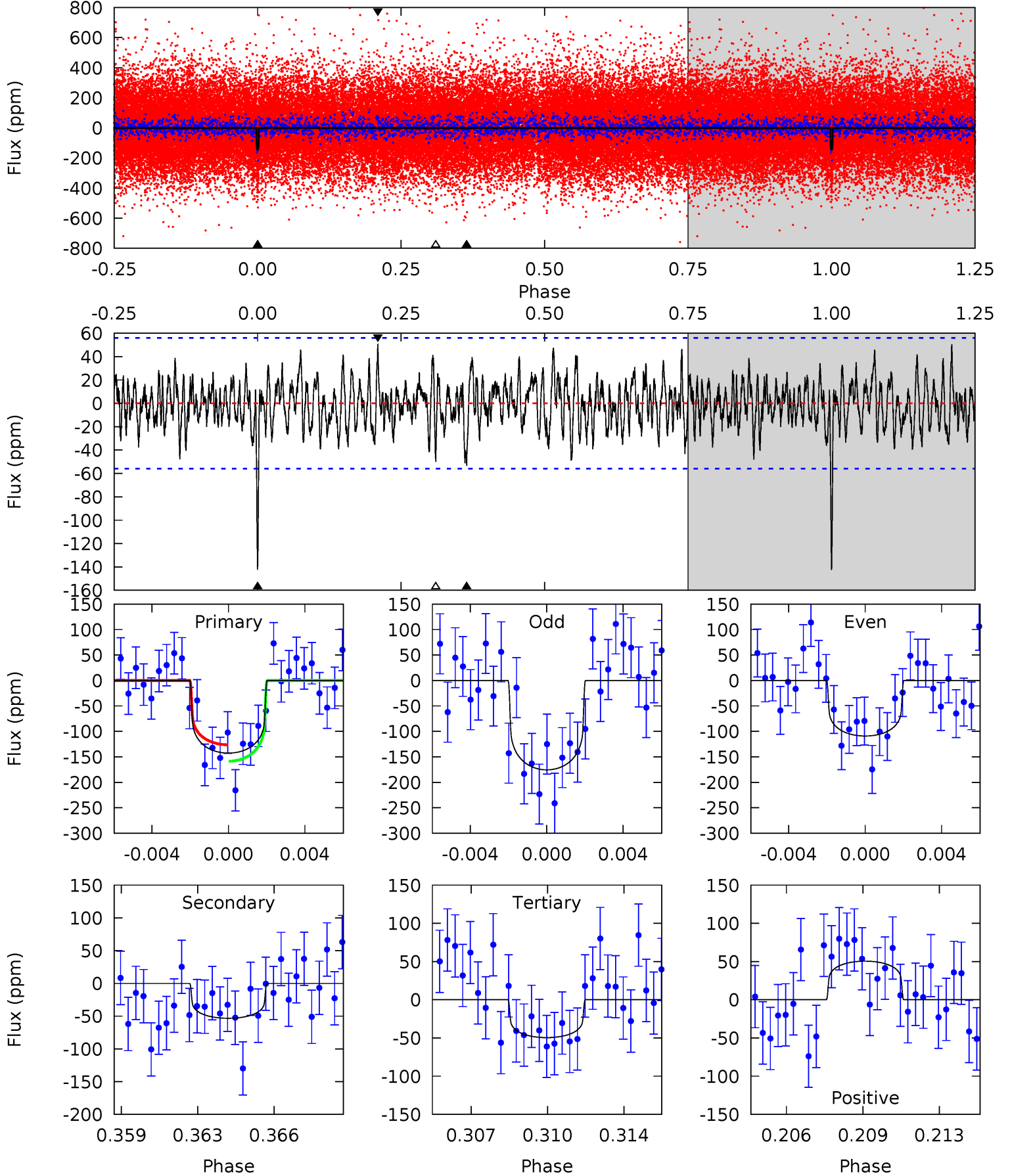
TCE 006124137-01 P=227.793327 Days  $T_0=238.824506$  (BKJD)



# DV Model-Shift Uniqueness Test

006124137-01,  $P = 227.824842$  Days,  $E = 10.946901$  Days

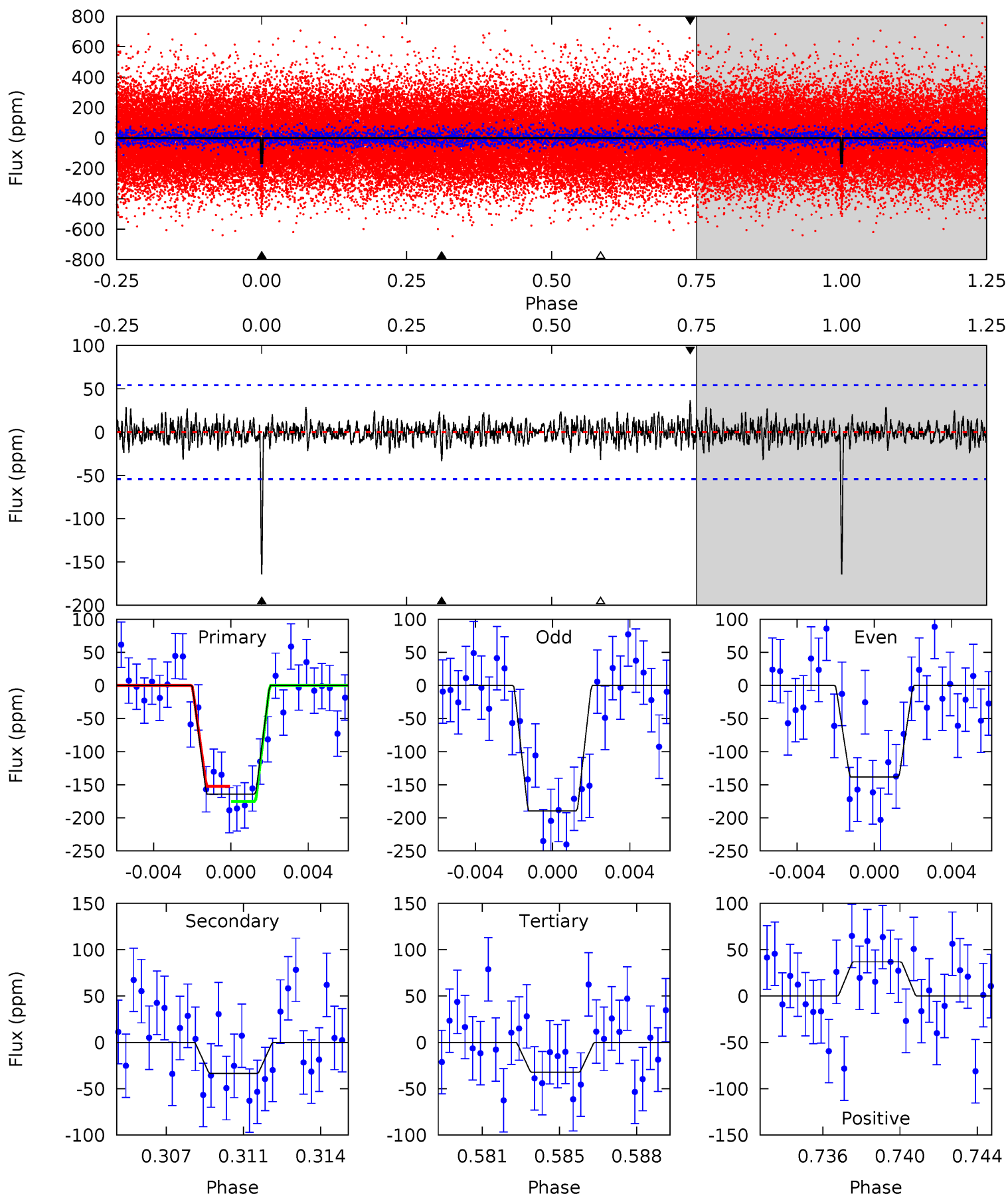
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	4.97	4.61	4.71	5.21	2.90	1.57	8.67	8.58	0.35	0.26	3.10	0.98	0.26	1.51



# Alt Model-Shift Uniqueness Test

006124137-01,  $P = 227.793327$  Days,  $E = 11.031179$  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
15.8	3.20	3.10	3.53	5.21	2.90	0.86	12.7	12.2	0.10	-0.33	2.47	1.07	0.18	1.10



### Stellar Parameters For KIC 006124137

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6004^{+80}_{-80}$	$3.814^{+0.224}_{-0.096}$	$-0.360^{+0.200}_{-0.150}$	$2.193^{+0.347}_{-0.644}$	$1.143^{+0.114}_{-0.171}$	$0.152^{+0.206}_{-0.046}$
	+1%/-1%	+6%/-3%	+56%/-42%	+16%/-29%	+10%/-15%	+135%/-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 006124137-01 / KOI 7764.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-53 \pm 11$	$2.76^{+1.13}_{-0.97}$	$622^{+30}_{-45}$	$4802^{+895}_{-596}$	$2228^{+3102}_{-1126}$
Alt.	$-33 \pm 10$	$2.95^{+1.06}_{-0.92}$	$621^{+27}_{-43}$	$4228^{+689}_{-464}$	$1178^{+1458}_{-574}$

$T_{max}$  = 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

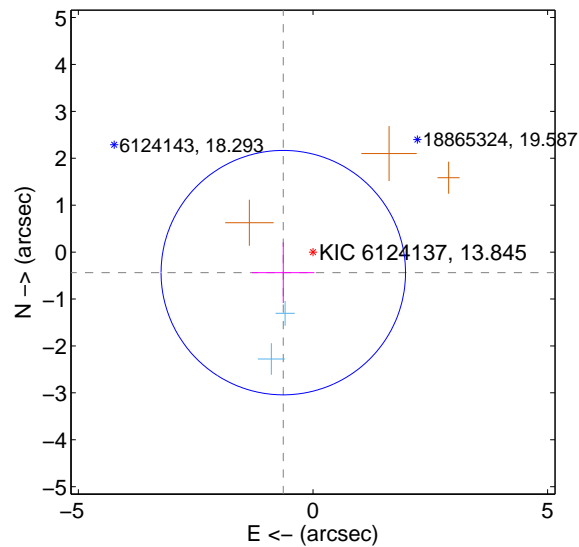
Supplemental centroid analysis for 006124137-01. Kepler magnitude: 13.85. Transit SNR 8.87

There are 2 quarters with good PRF difference image offsets

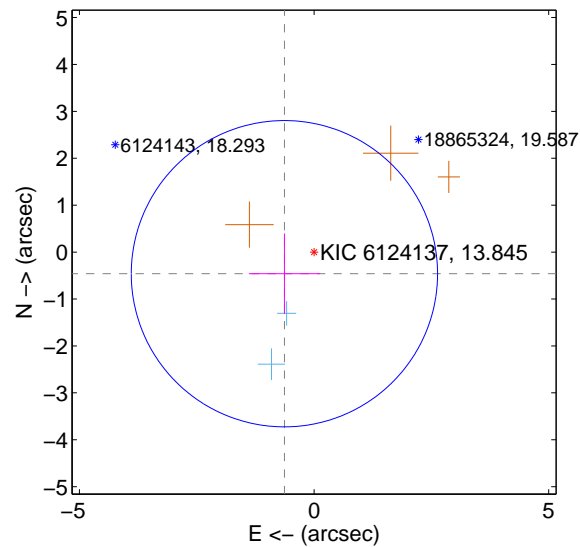
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.769 \pm 0.868$	0.89	$0.633 \pm 0.664$	$-0.438 \pm 0.647$
PRF-fit source offset from KIC position	$0.782 \pm 1.088$	0.72	$0.632 \pm 0.757$	$-0.461 \pm 0.858$
photometric centroid source offset	$0.98 \pm 1.10$	0.89	$-0.90 \pm 1.13$	$0.39 \pm 0.99$

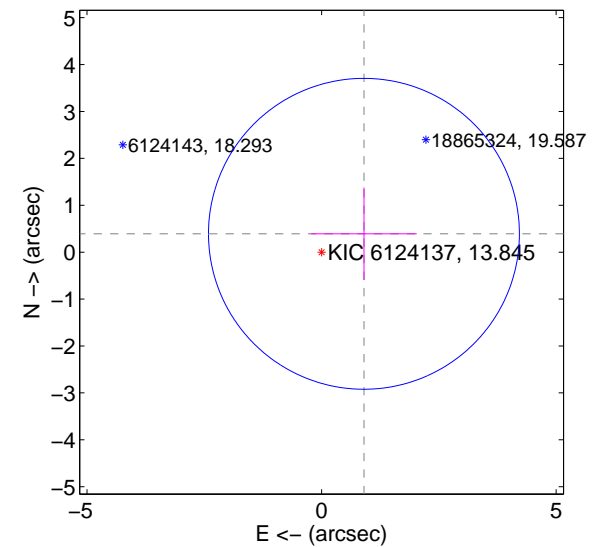
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



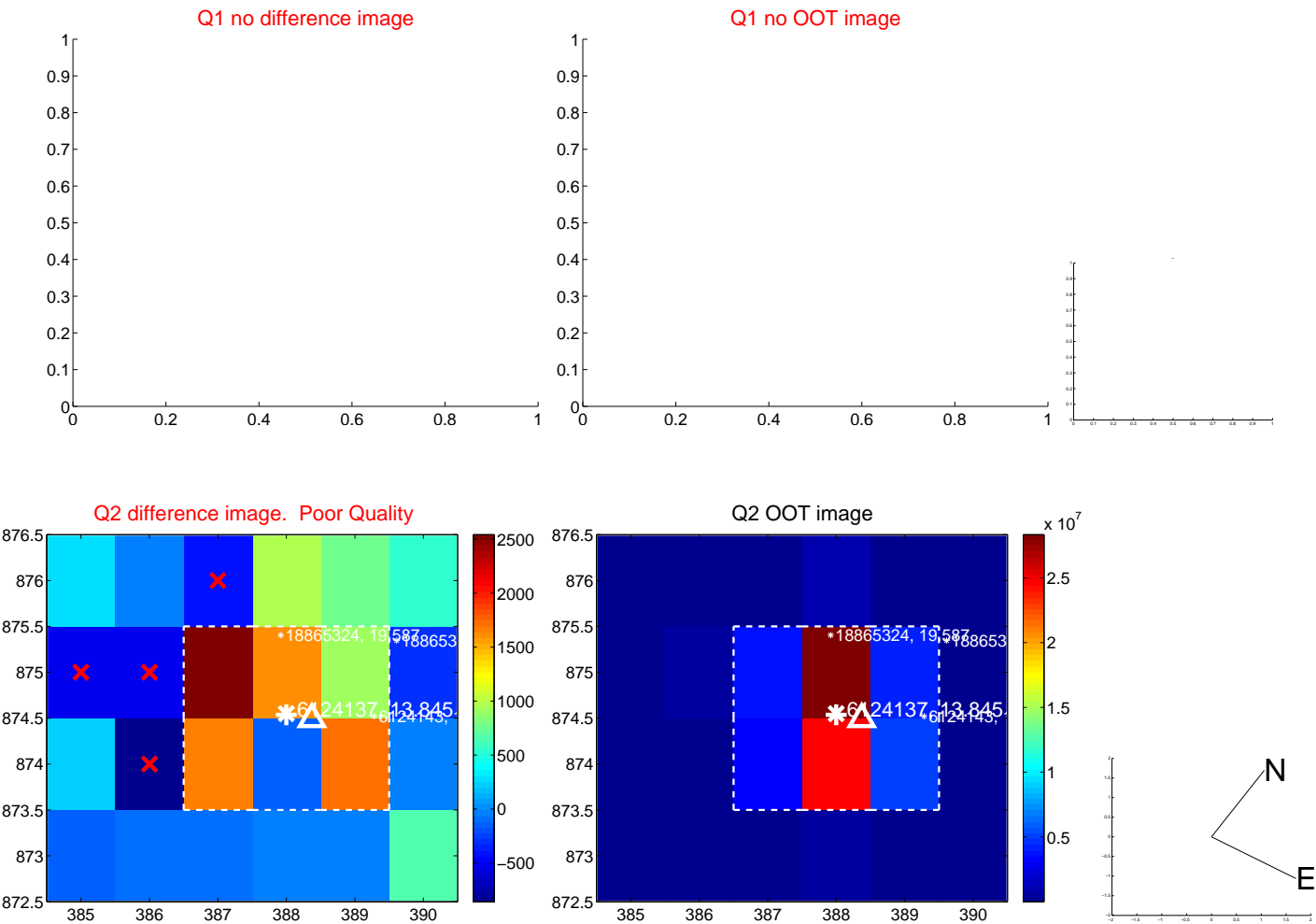
offset from photometric centroids



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.



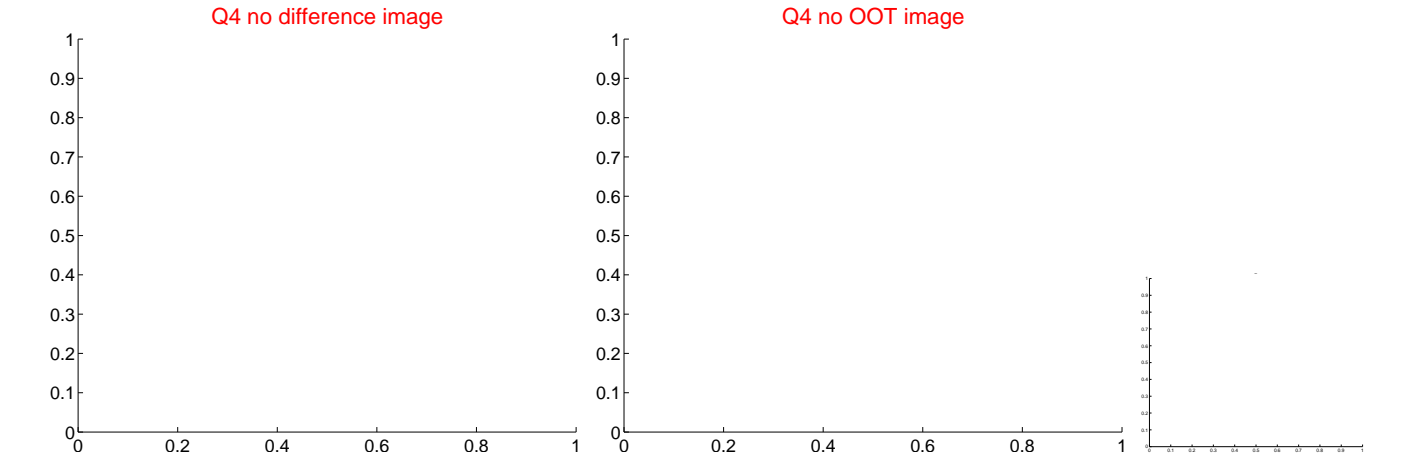
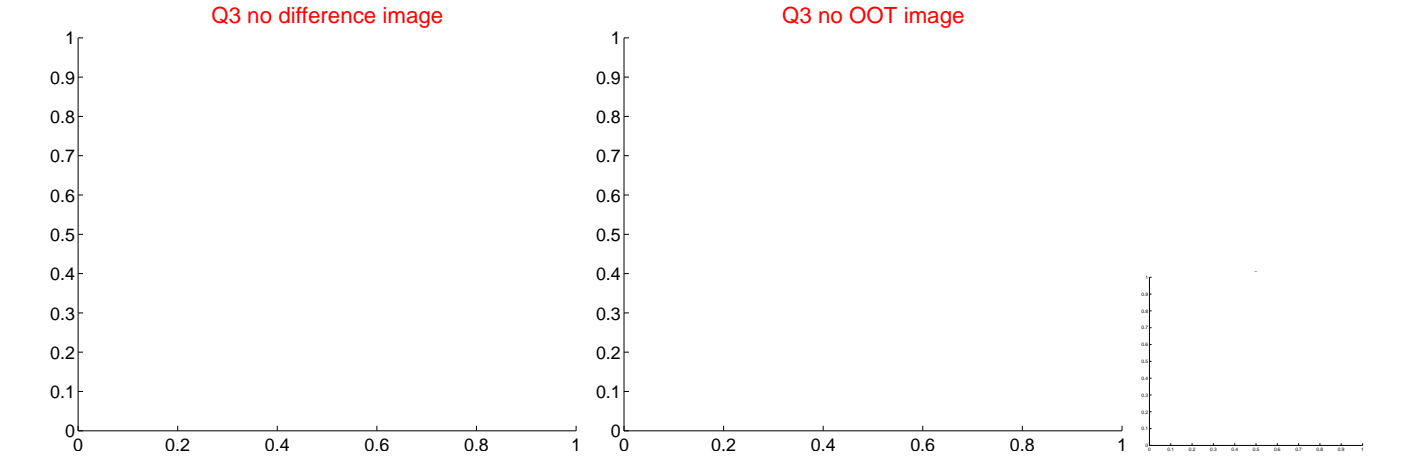
Q2 difference image. Poor Quality



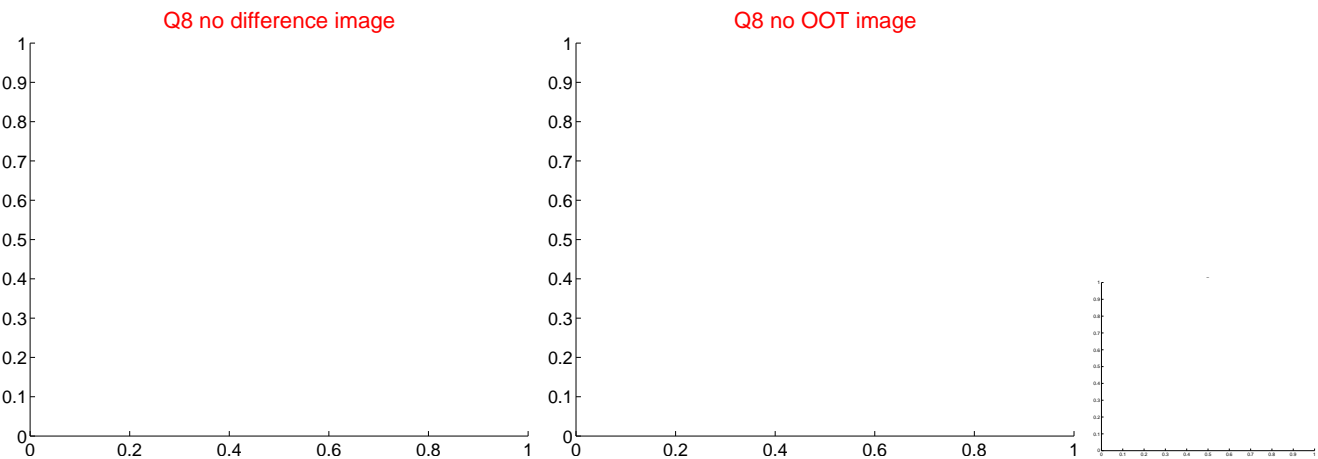
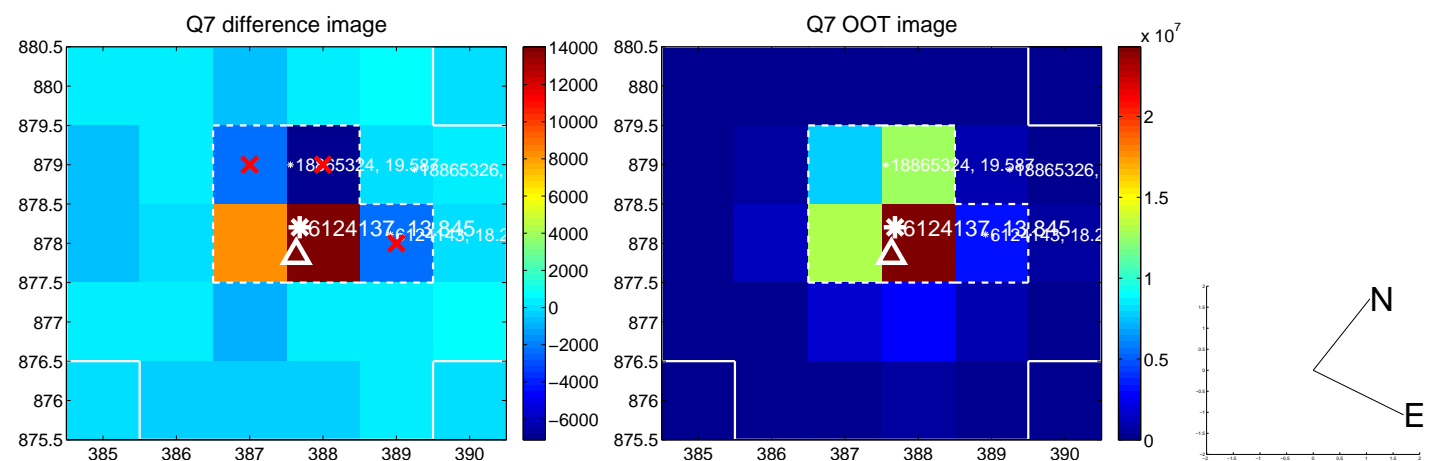
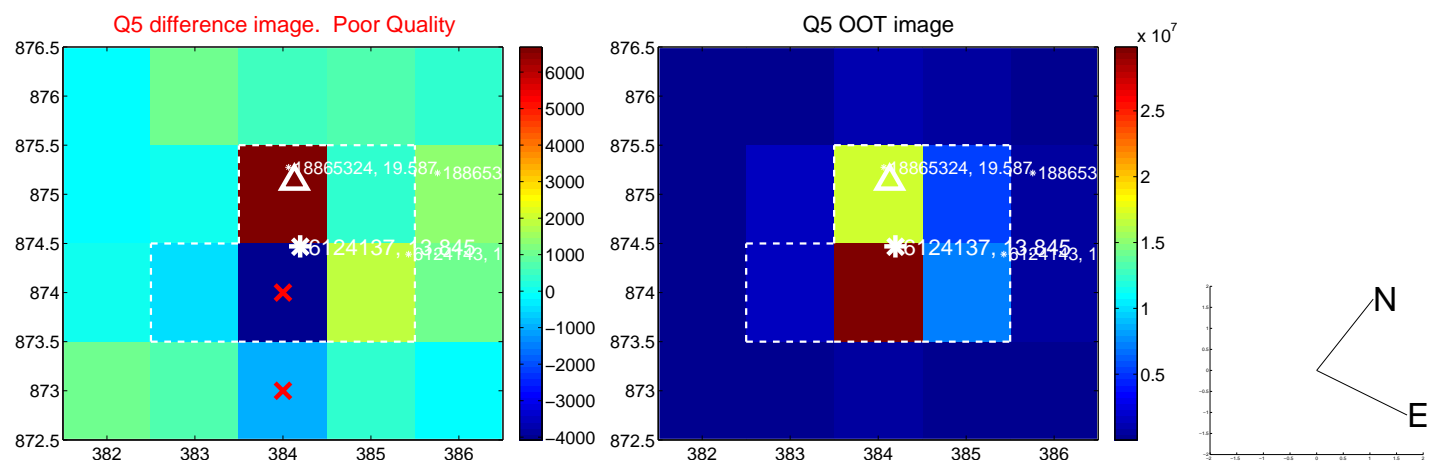
Q2 OOT image







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

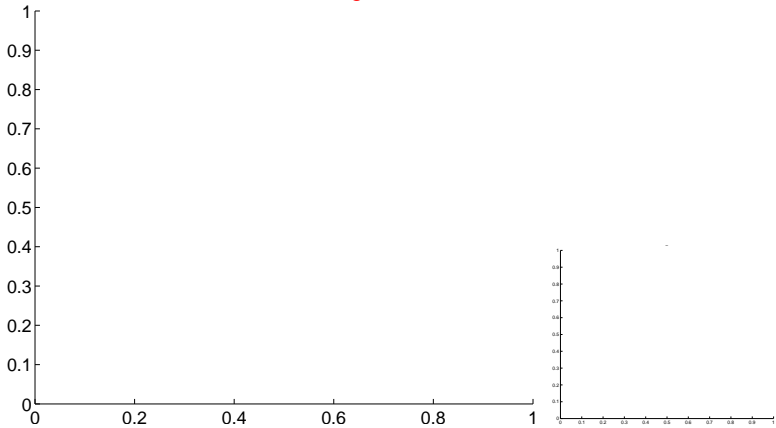


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

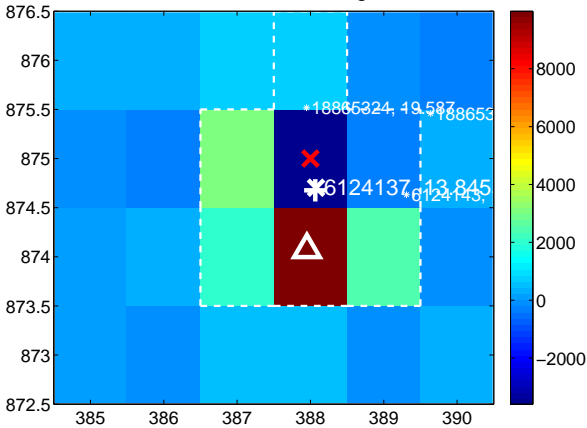
Q9 no difference image



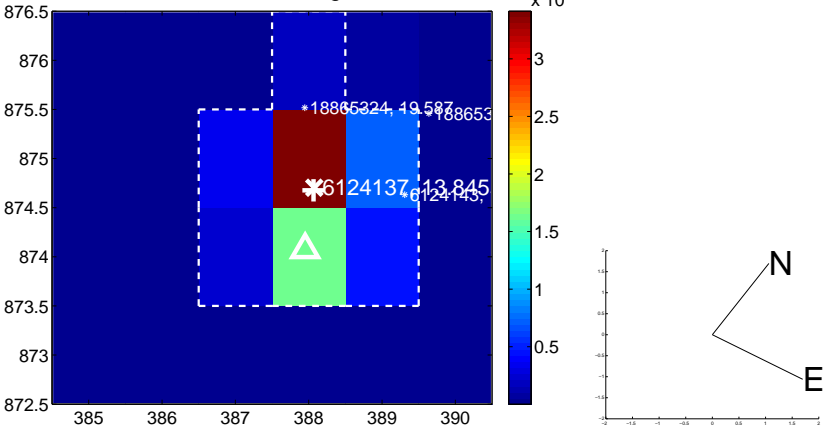
Q9 no OOT image



Q10 difference image



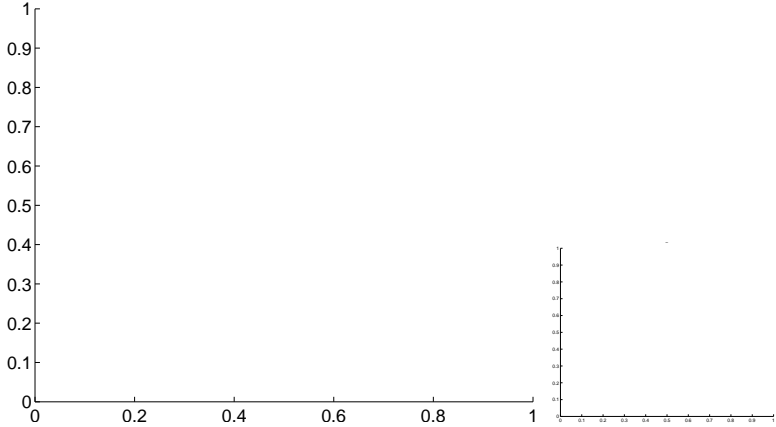
Q10 OOT image



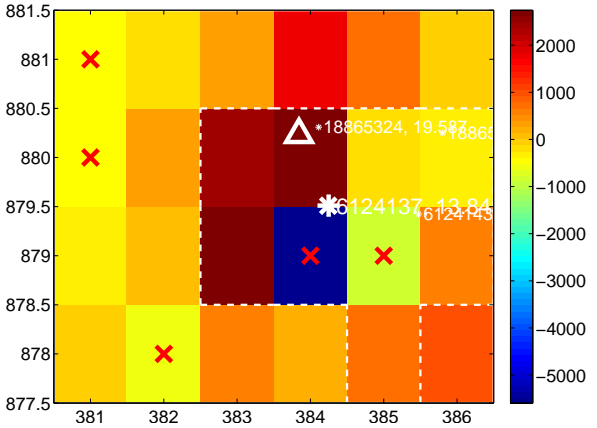
Q11 no difference image



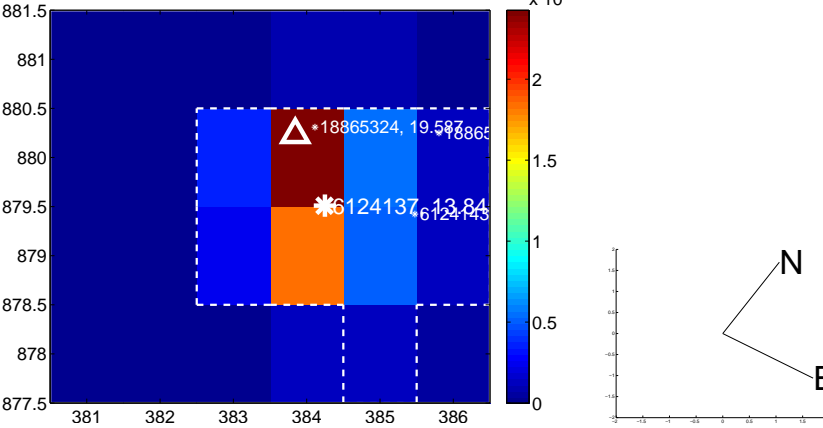
Q11 no OOT image



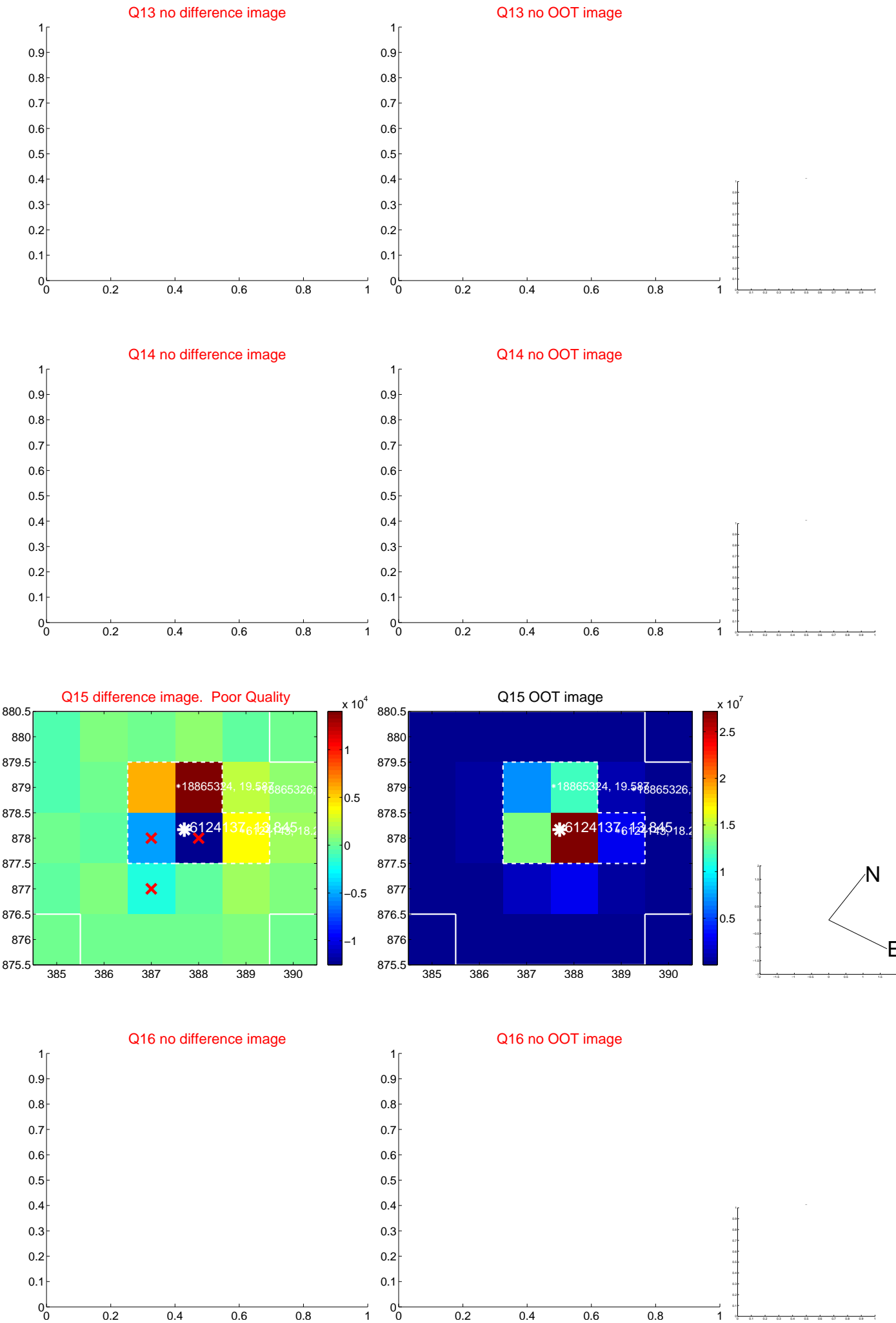
Q12 difference image. Poor Quality



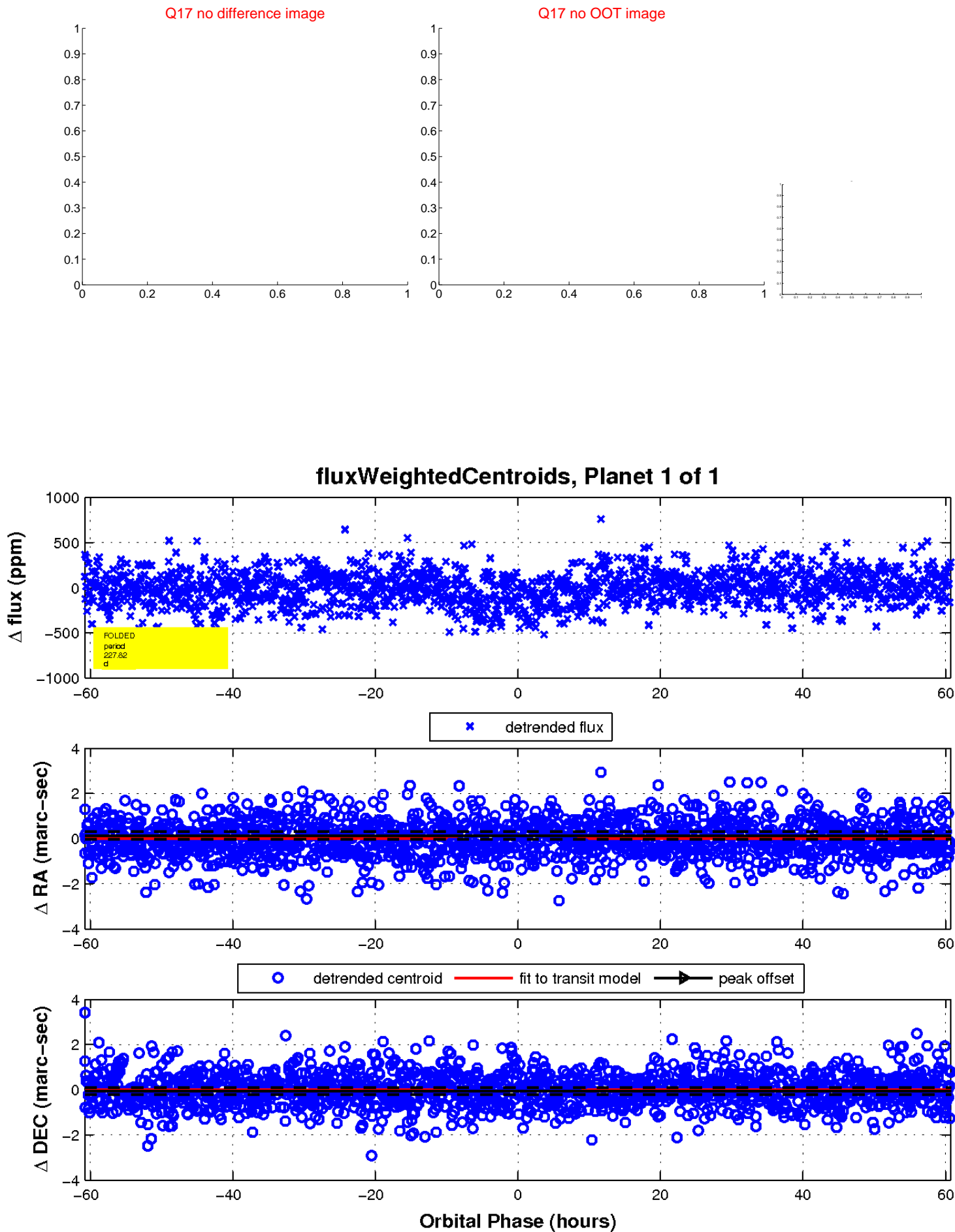
Q12 OOT image



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



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



UKIRT Image

Declination

