

# KIC 009115800

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009115800-01	OBS	0421.01	4.454193	132.732736	16048.8	2.399	1030.4	985.5	0.92	5359	12.21	253.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009115800-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

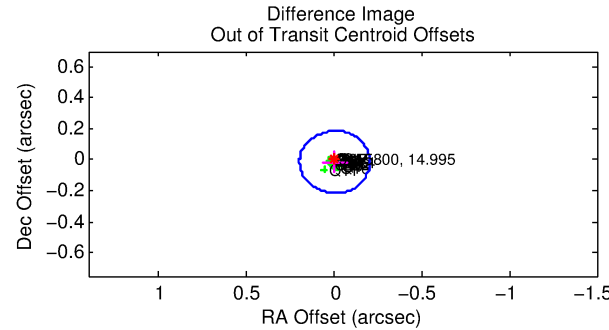
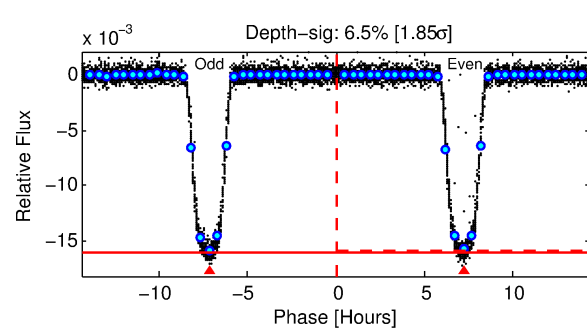
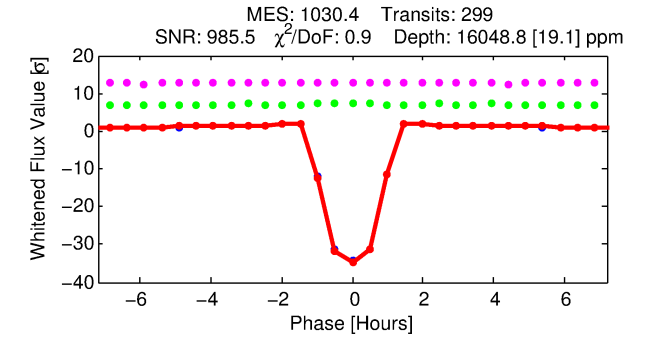
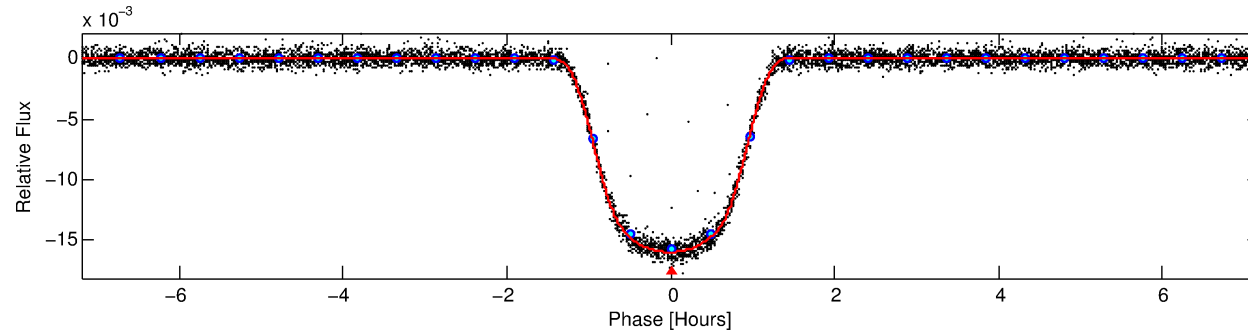
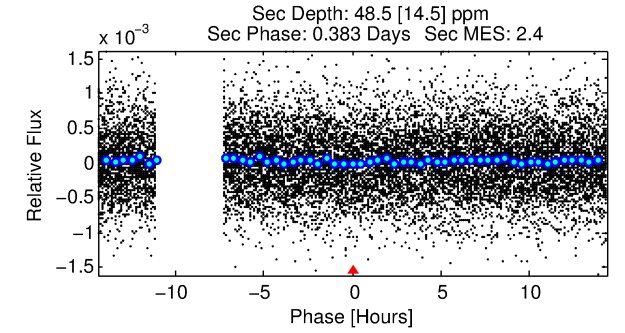
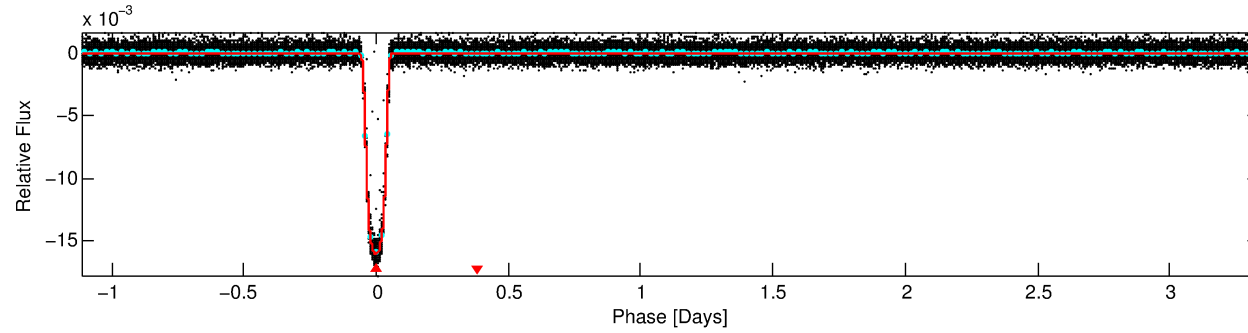
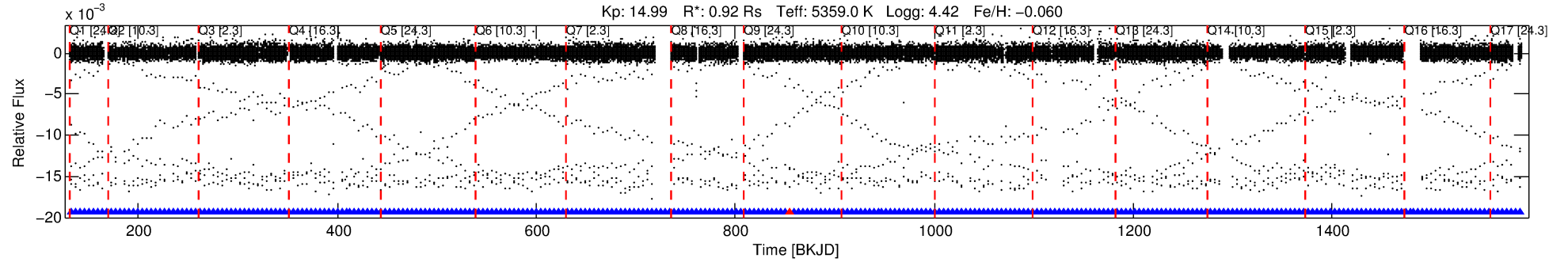
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009115800-01

No Significant Match Found

# DV One-Page Summary

KIC: 9115800 Candidate: 1 of 1 Period: 4.454 d  
KOI: K00421.01 Corr: 0.983



## DV Fit Results:

Period = 4.45419 [0.00000] d  
Epoch = 132.7327 [0.0000] BKJD  
Rp/R\* = 0.1223 [0.0004]  
a/R\* = 13.07 [0.13]  
b = 0.64 [0.01]  
Seff = 253.02 [102.23]  
Teff = 1017 [103] K  
Rp = 12.21 [3.23] Re  
a = 0.0494 [0.0121] AU  
Ag = 0.44 [0.21] [-2.64 $\sigma$ ]  
Teffp = 1279 [104] K [1.79 $\sigma$ ]

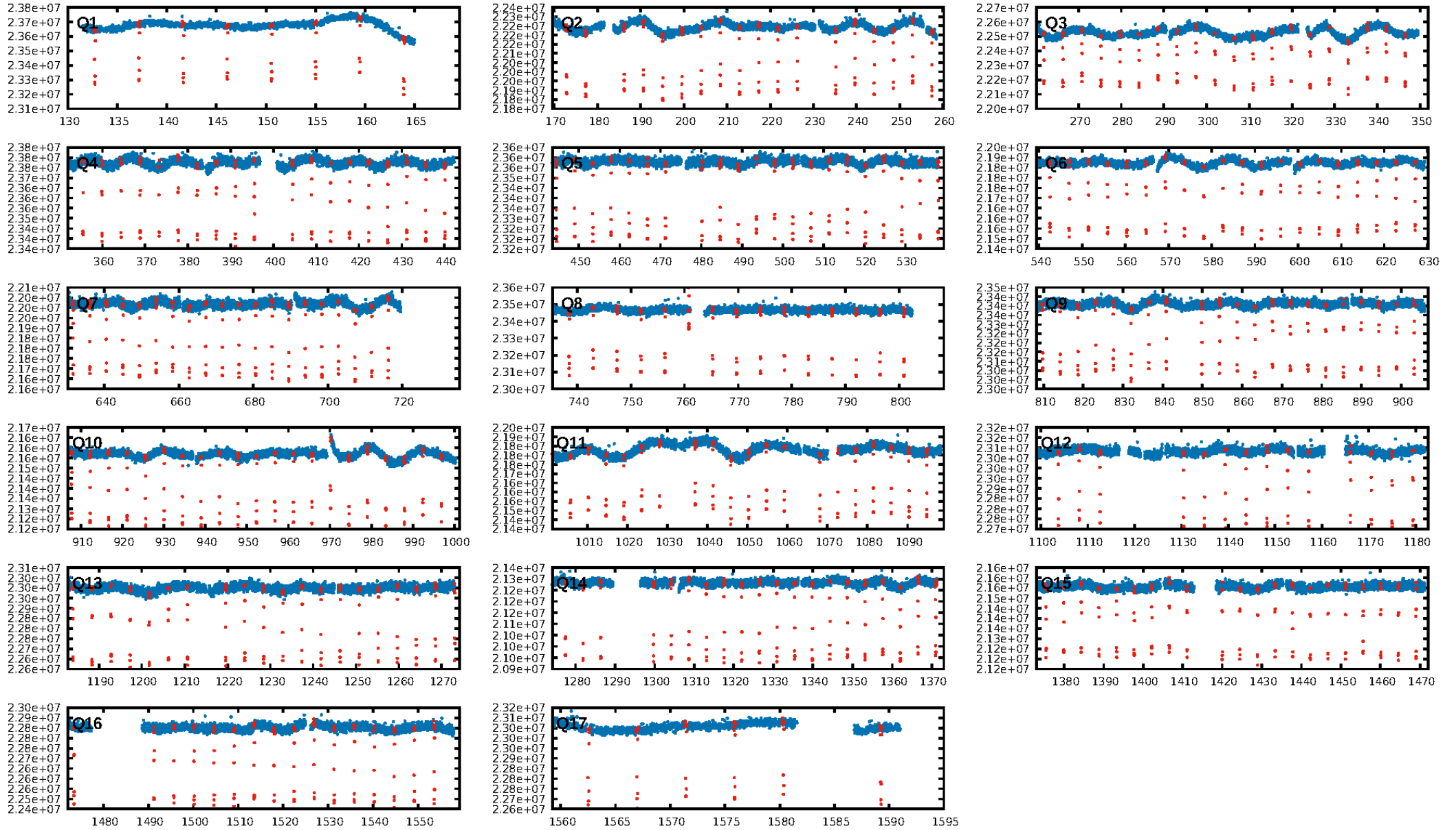
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [284/285]  
GhostDiagnostic-chr: 3.205  
Centroid-sig: 0.0%  
Centroid-so: 0.454 arcsec [37.25 $\sigma$ ]  
OotOffset-rm: 0.016 arcsec [0.23 $\sigma$ ]  
KicOffset-rm: 0.206 arcsec [2.93 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

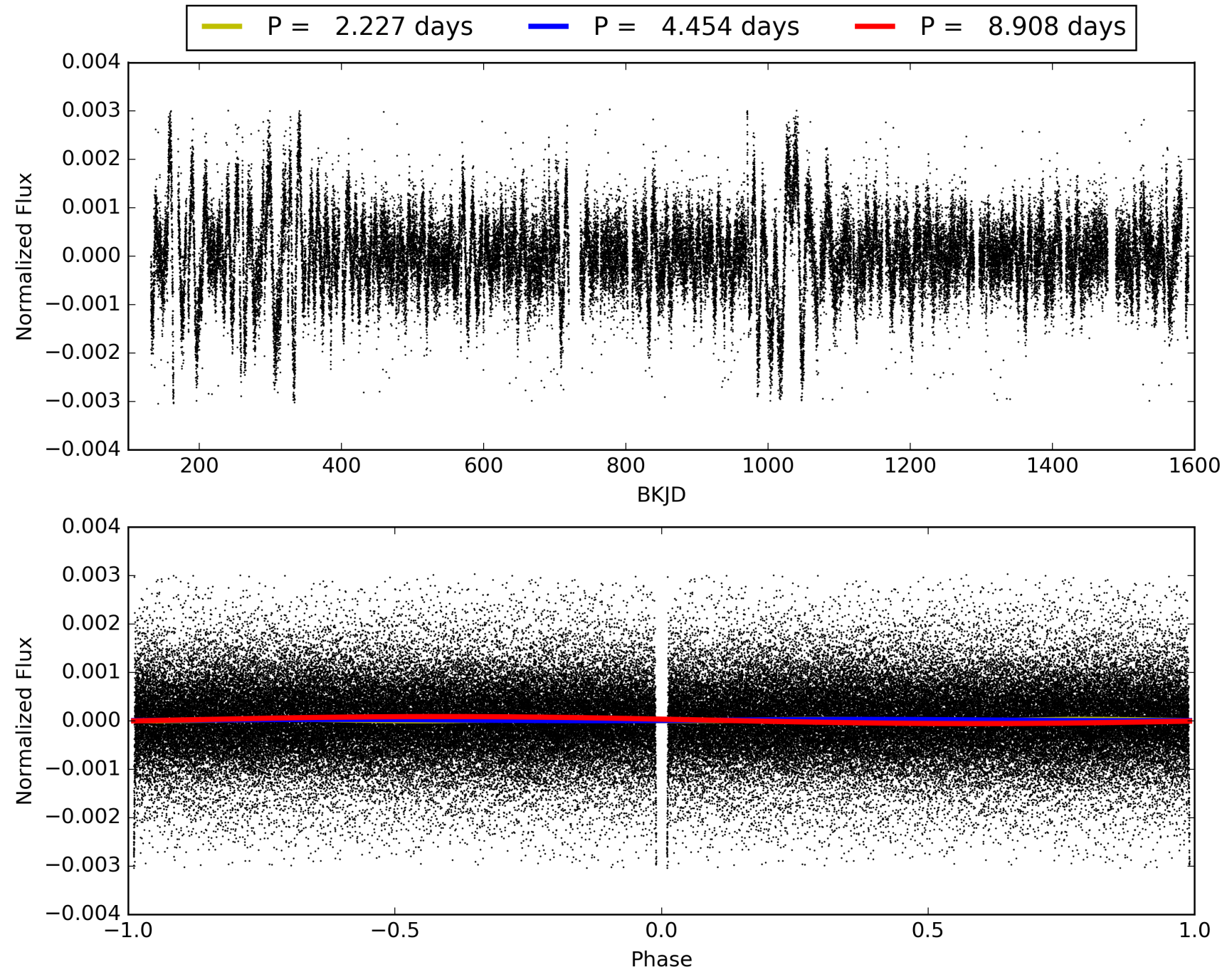
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 09:33:56 Z

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

# TCE 009115800-01, PDC Light Curves

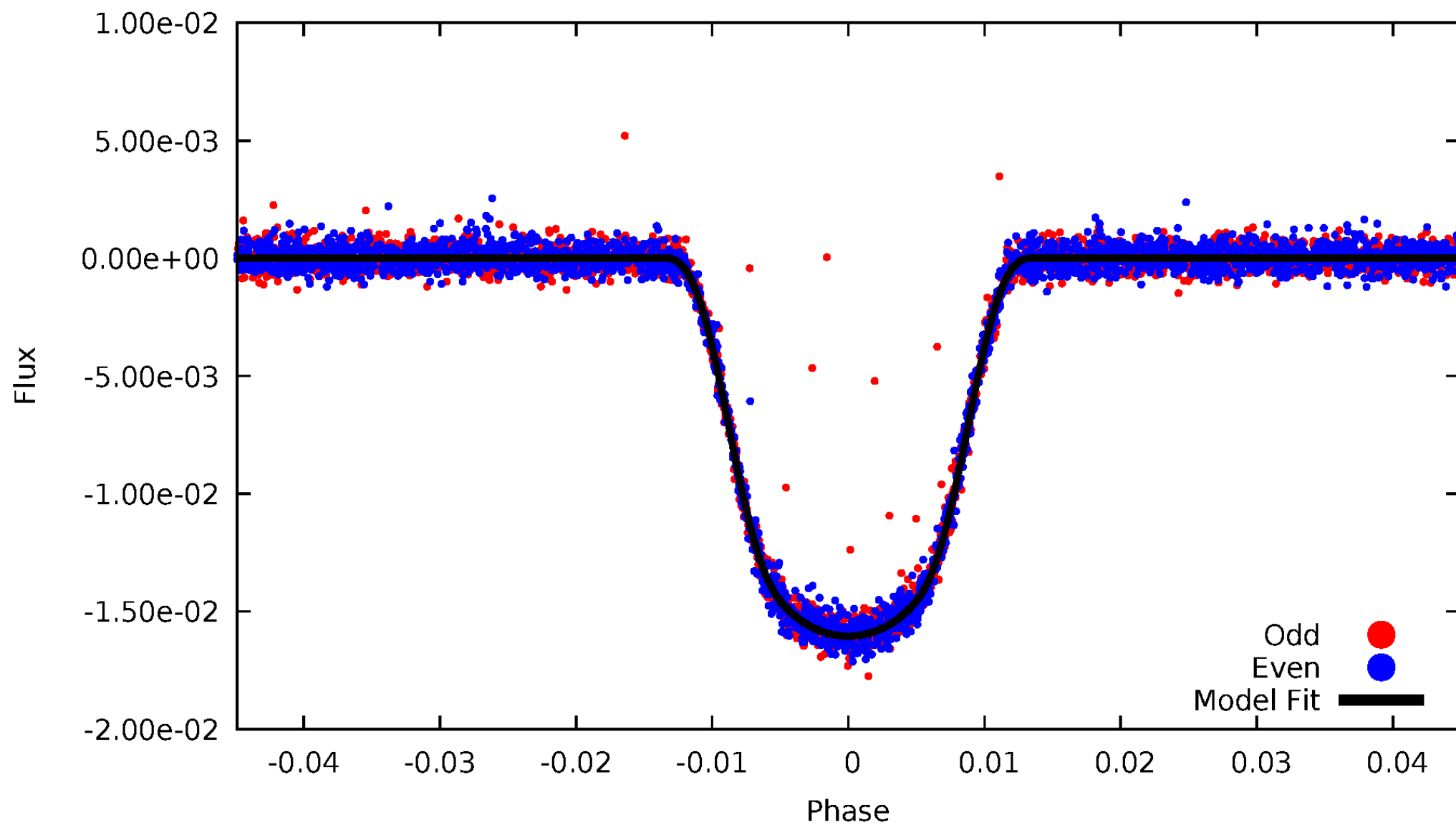


# TCE 009115800-01



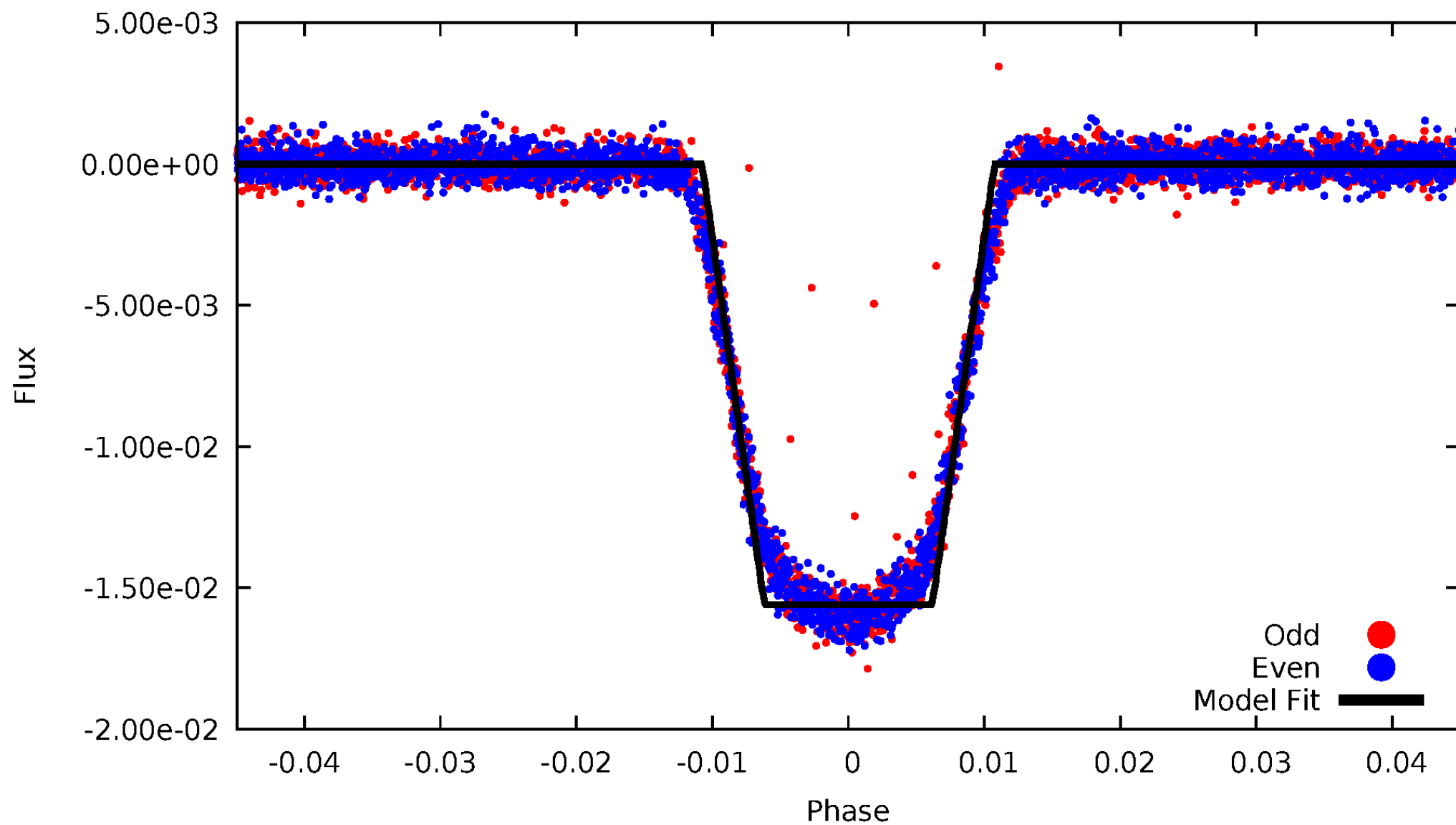
# DV Odd/Even

TCE 009115800-01



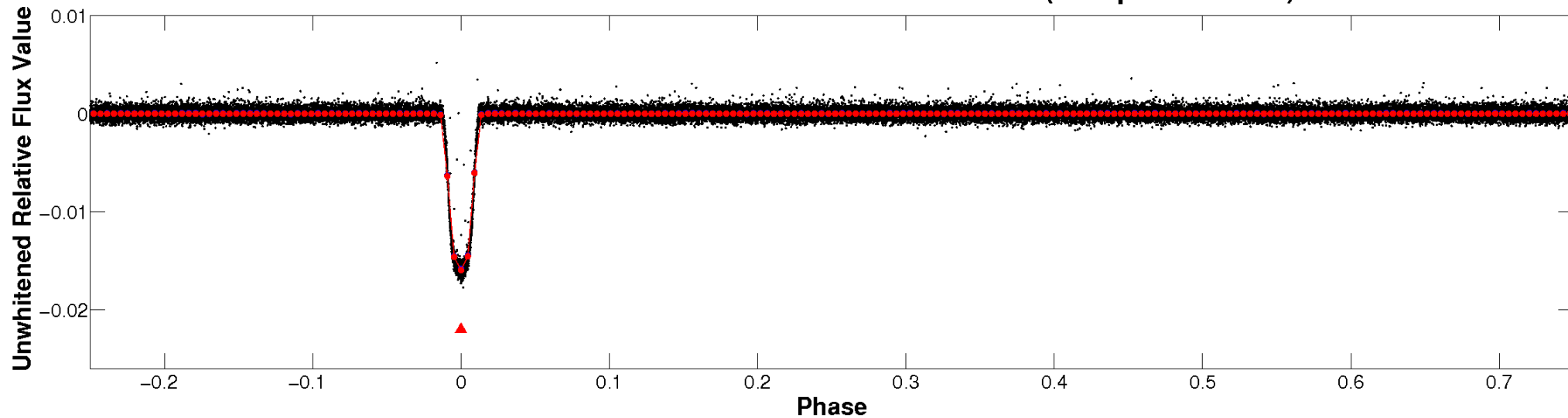
# ALT Odd/Even

TCE 009115800-01

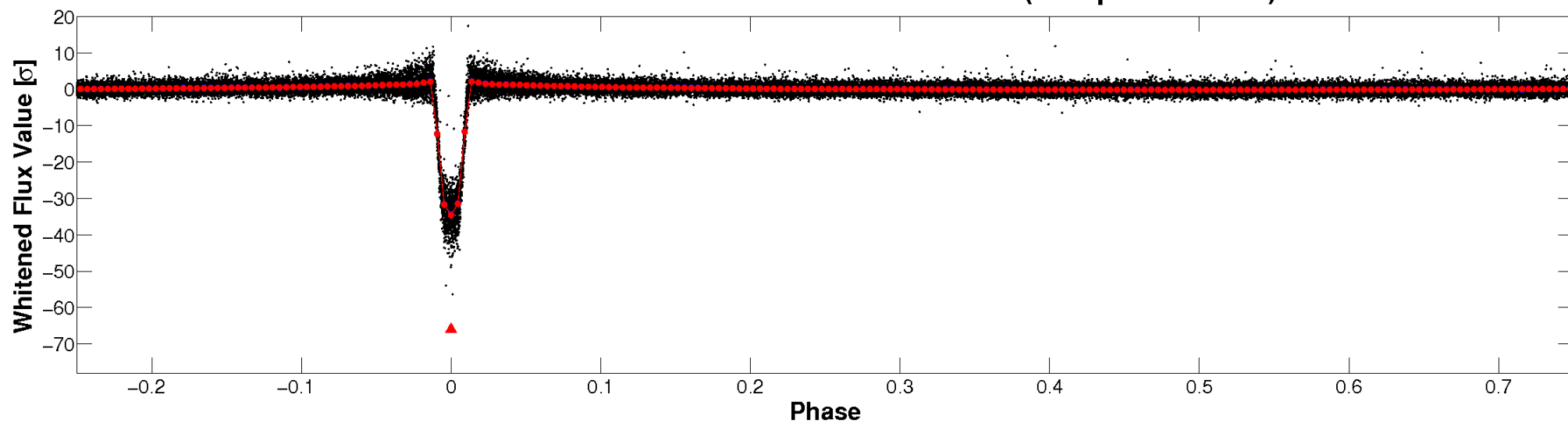


# Non-Whitened Vs. Whitened Light Curve

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

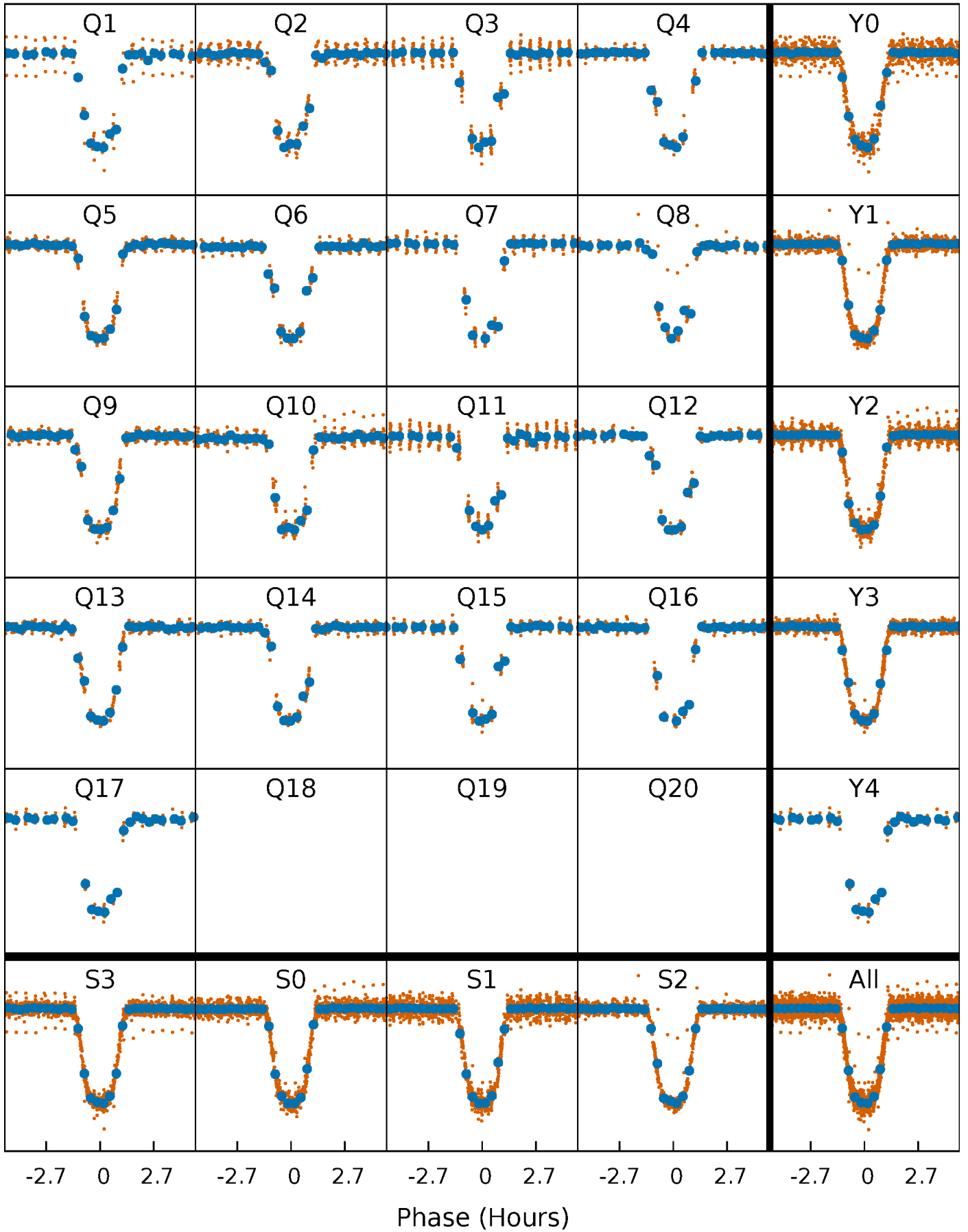


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

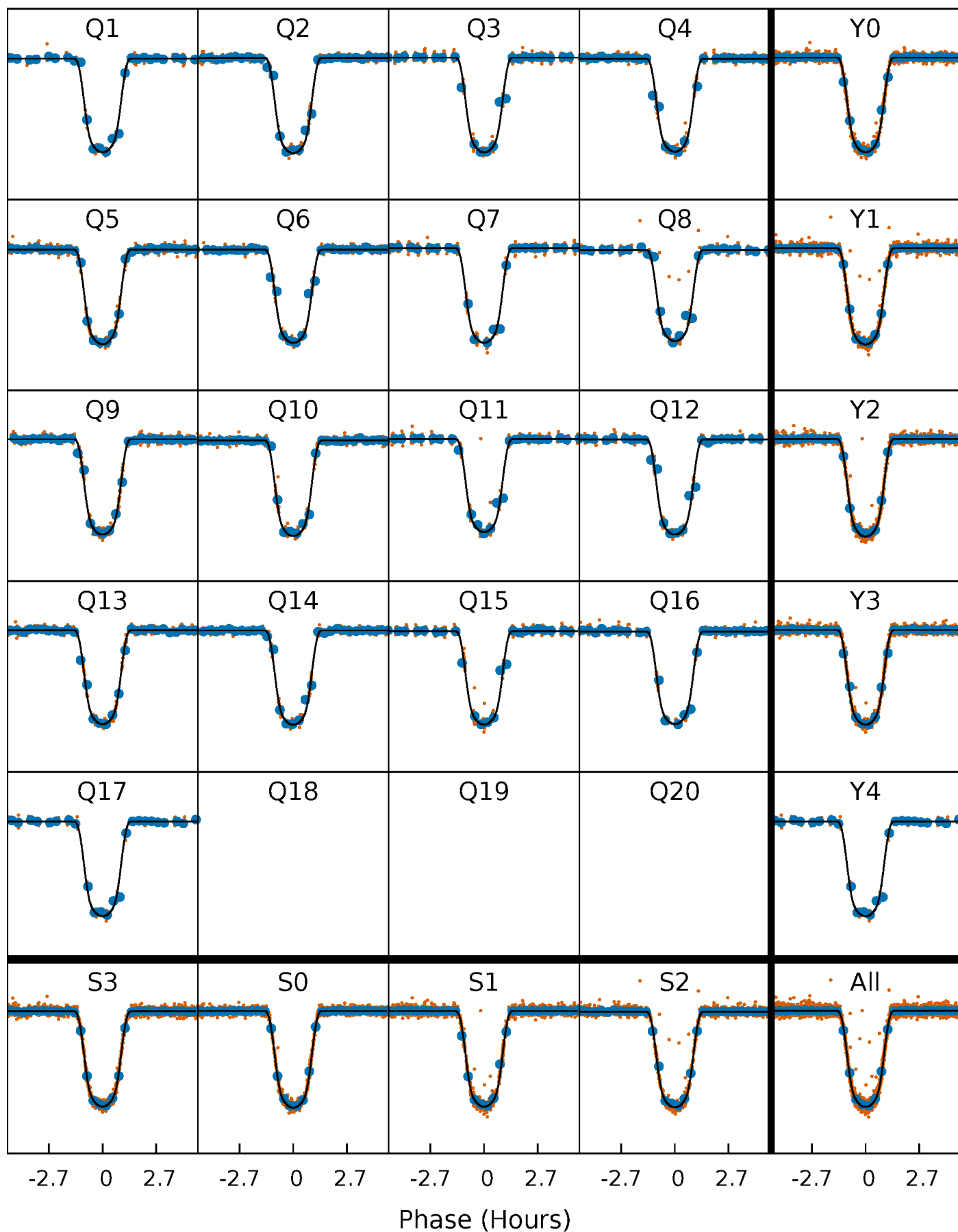
TCE 009115800-01   P= 4.454193 Days    $T_0=132.732736$  (BKJD)





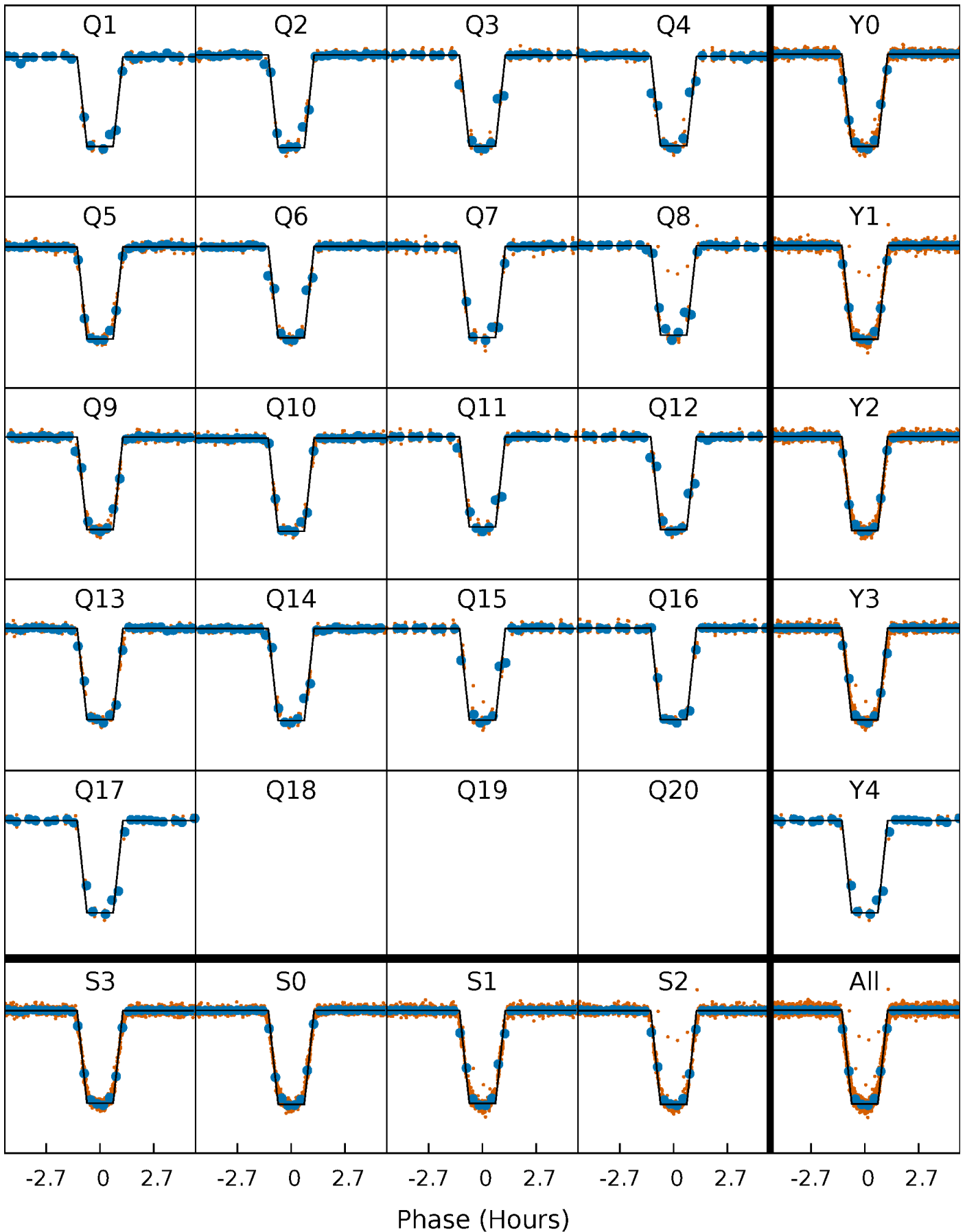
# DV Quarter-Phased Transit Curves

TCE 009115800-01   P= 4.454193 Days    $T_0=132.732736$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

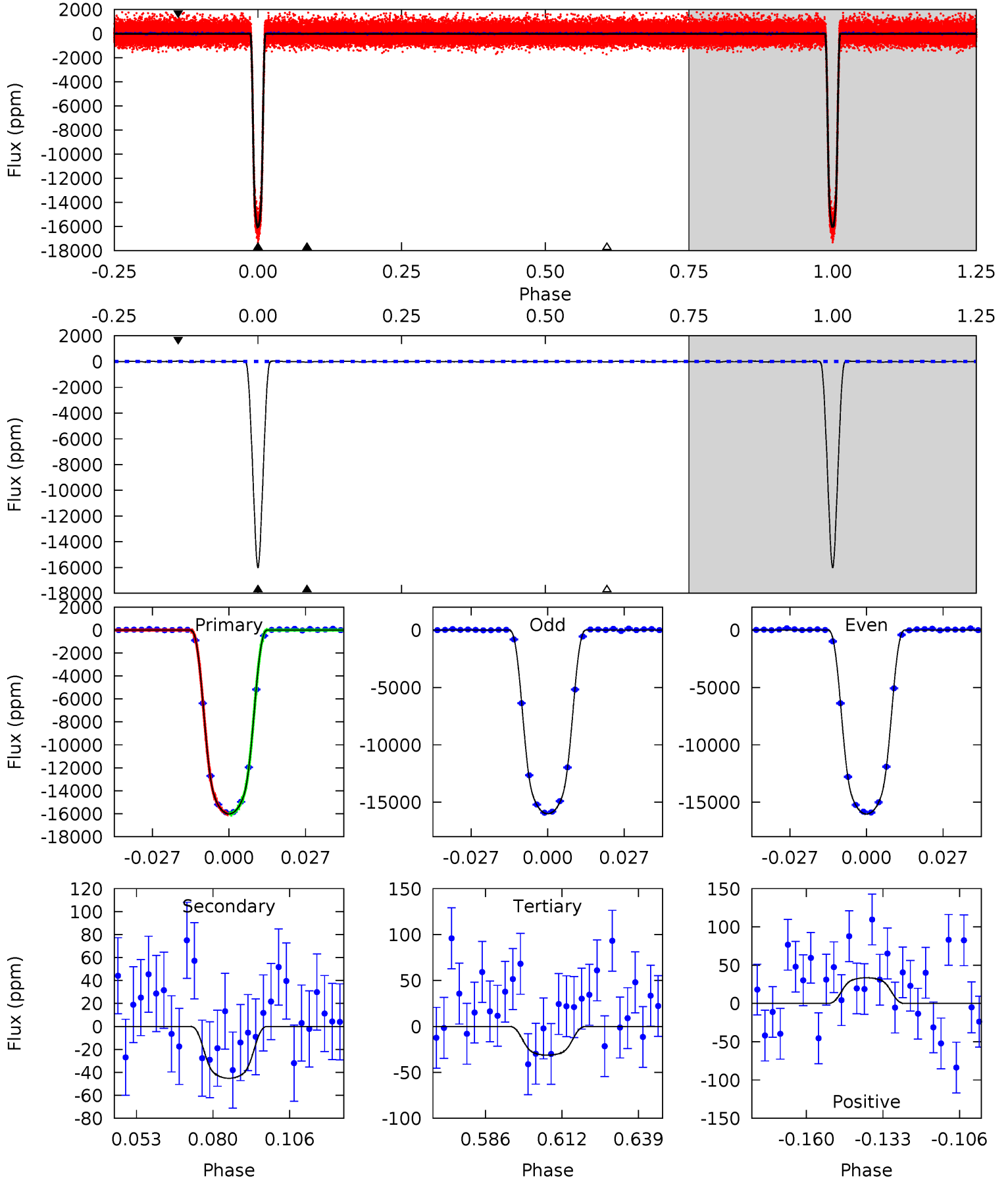
TCE 009115800-01   P= 4.454182 Days    $T_0=132.734451$  (BKJD)



# DV Model-Shift Uniqueness Test

009115800-01, P = 4.454193 Days, E = 128.278543 Days

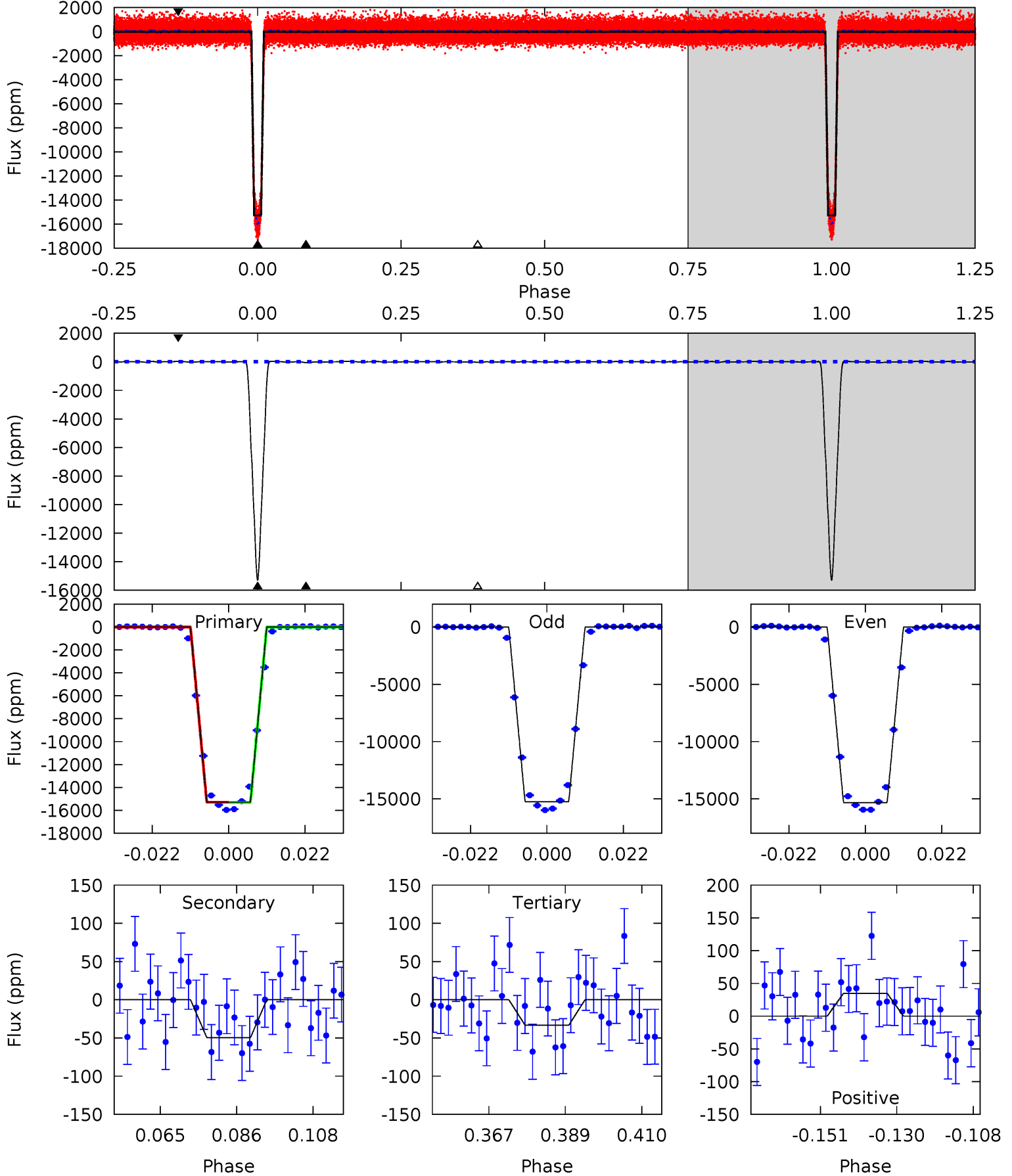
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1509	4.26	2.95	3.16	4.84	2.22	1.16	1506	1506	1.30	1.09	0.64	0.99	0.00	1.46



# Alt Model-Shift Uniqueness Test

009115800-01, P = 4.454182 Days, E = 128.280269 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
1253	4.06	2.73	2.85	4.88	2.30	1.05	1251	1250	1.33	1.21	2.88	1.00	0.00	0.97



### Stellar Parameters For KIC 009115800

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5359^{+175}_{-159}$	$4.425^{+0.136}_{-0.221}$	$-0.060^{+0.300}_{-0.300}$	$0.915^{+0.242}_{-0.138}$	$0.812^{+0.113}_{-0.061}$	$1.493^{+0.896}_{-0.756}$
	+3%/-3%	+3%/-5%	+500%/-500%	+26%/-15%	+14%/-8%	+60%/-51%
Source	PHO1	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 009115800-01 / KOI 0421.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-45 \pm 11$	$12.34^{+1.92}_{-1.15}$	$1433^{+108}_{-84}$	$1883^{+168}_{-3631}$	$0.386^{+0.151}_{-0.120}$
Alt.	$-50 \pm 12$	$12.60^{+2.14}_{-1.24}$	$1436^{+112}_{-87}$	$1918^{+164}_{-3622}$	$0.405^{+0.169}_{-0.130}$

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

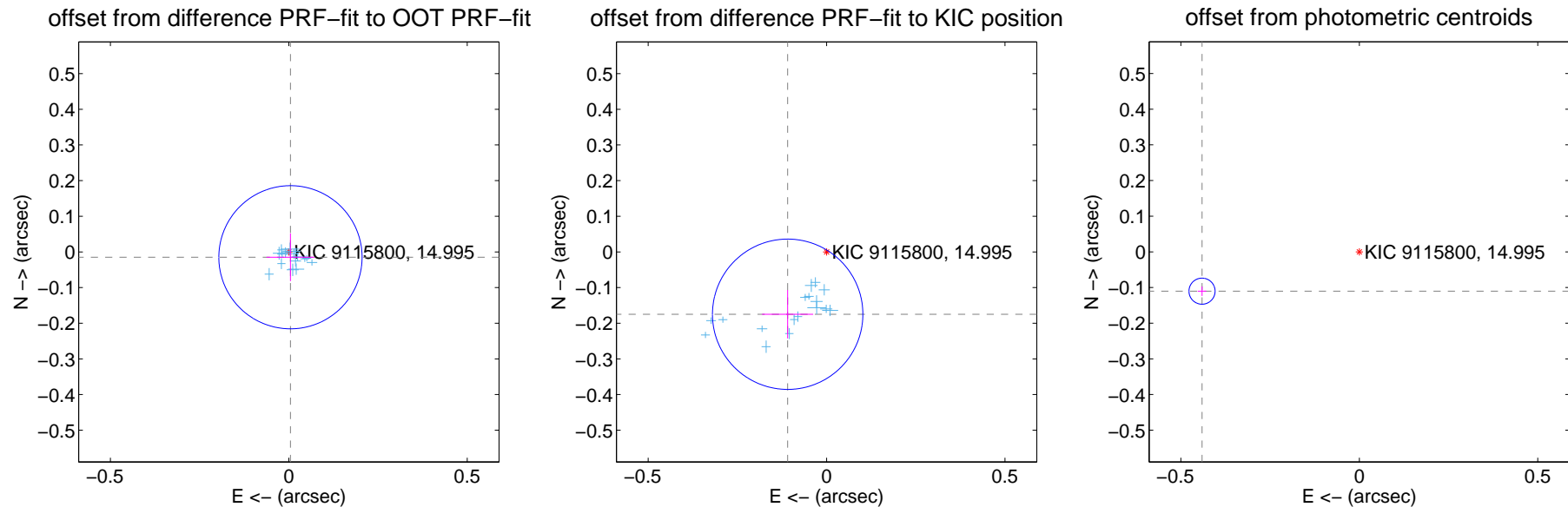
## DV Centroid Data

Supplemental centroid analysis for 009115800-01. Kepler magnitude: 14.99. Transit SNR 985.48

There are 17 quarters with good PRF difference image offsets

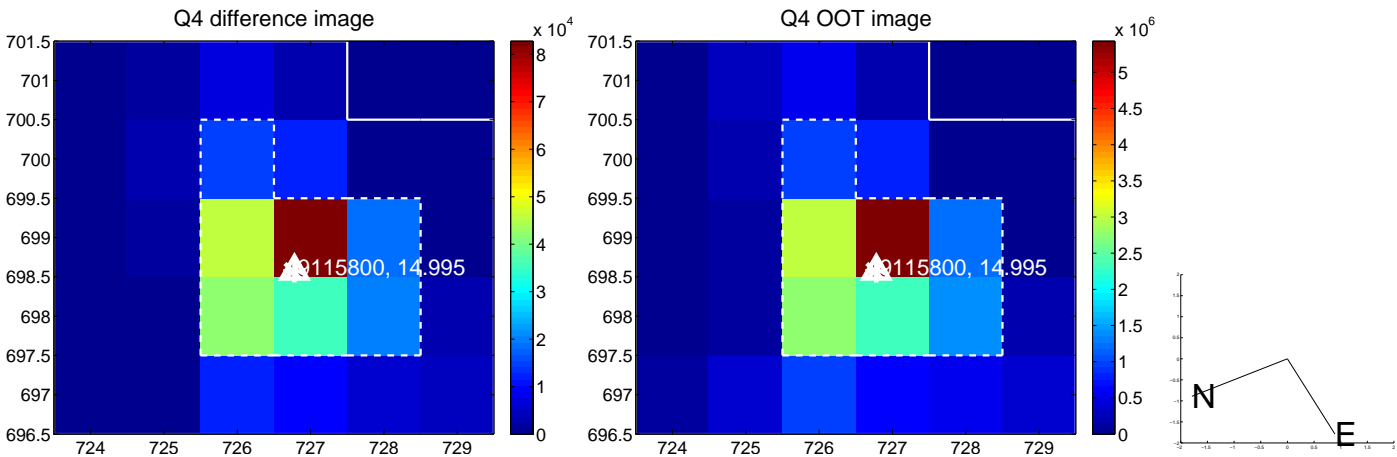
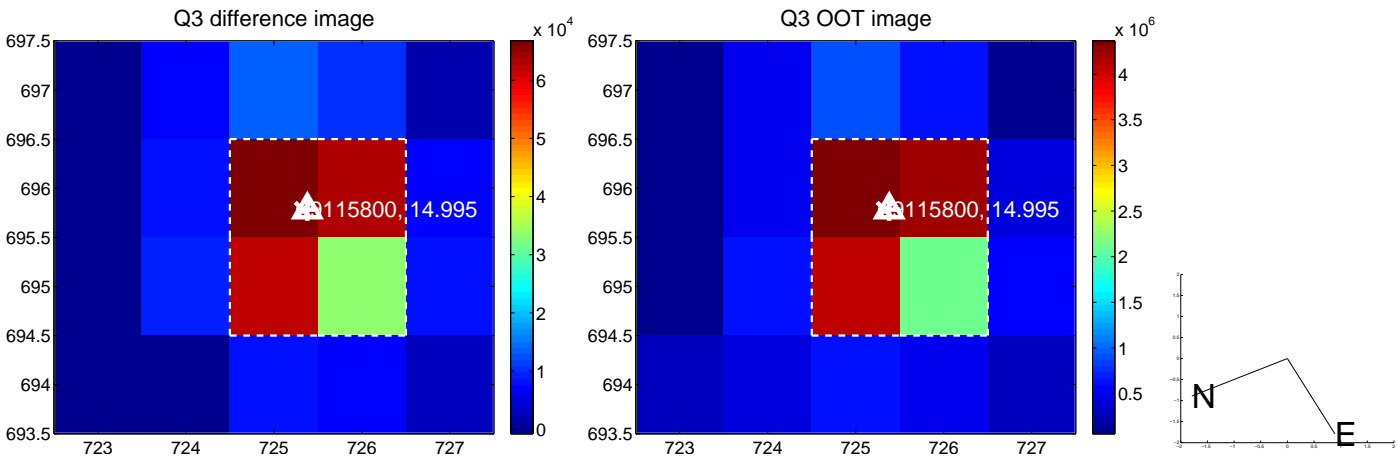
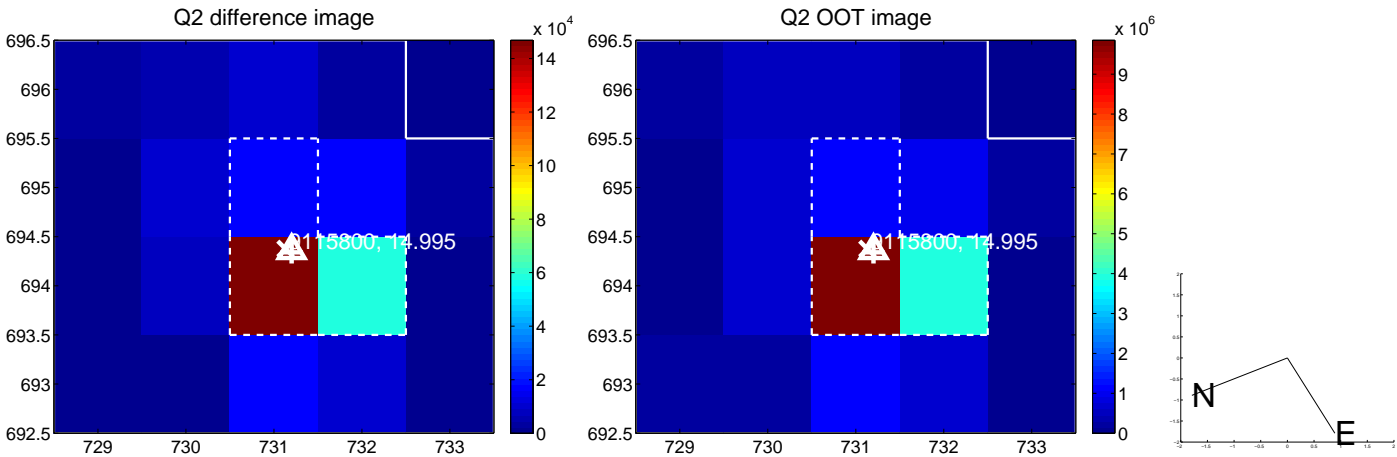
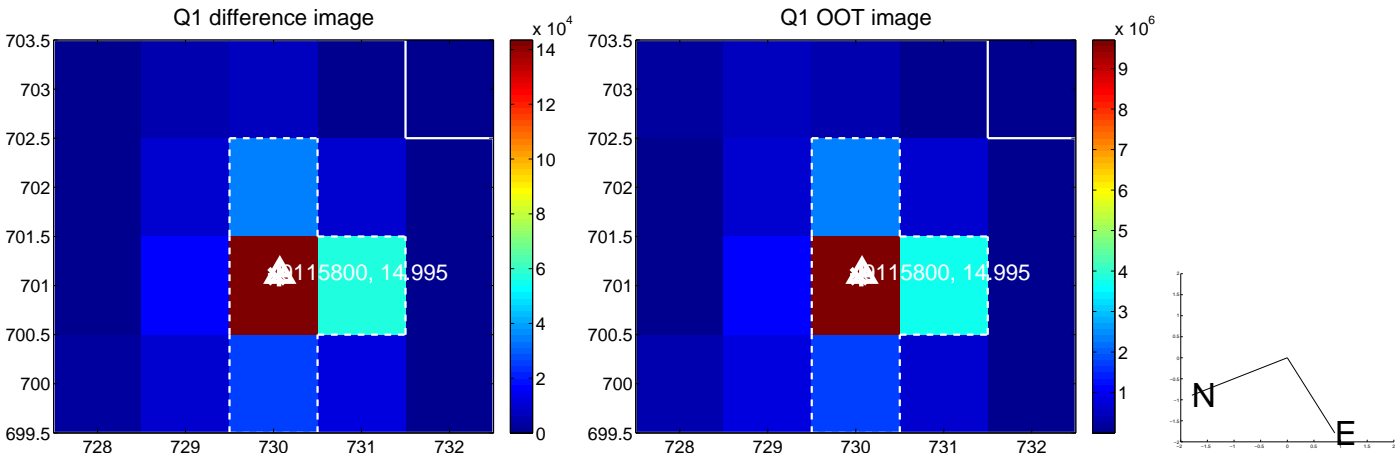
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.016 \pm 0.067$	0.23	$-0.005 \pm 0.067$	$-0.015 \pm 0.067$
PRF-fit source offset from KIC position	$0.206 \pm 0.070$	2.93	$0.109 \pm 0.072$	$-0.175 \pm 0.068$
photometric centroid source offset	$0.45 \pm 0.01$	37.25	$0.44 \pm 0.01$	$-0.11 \pm 0.01$

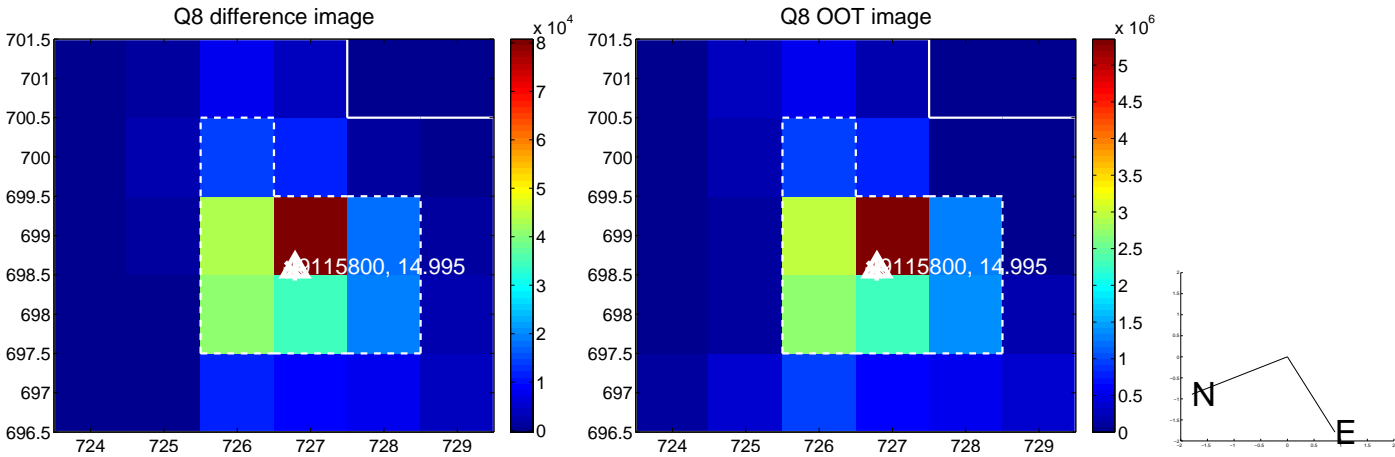
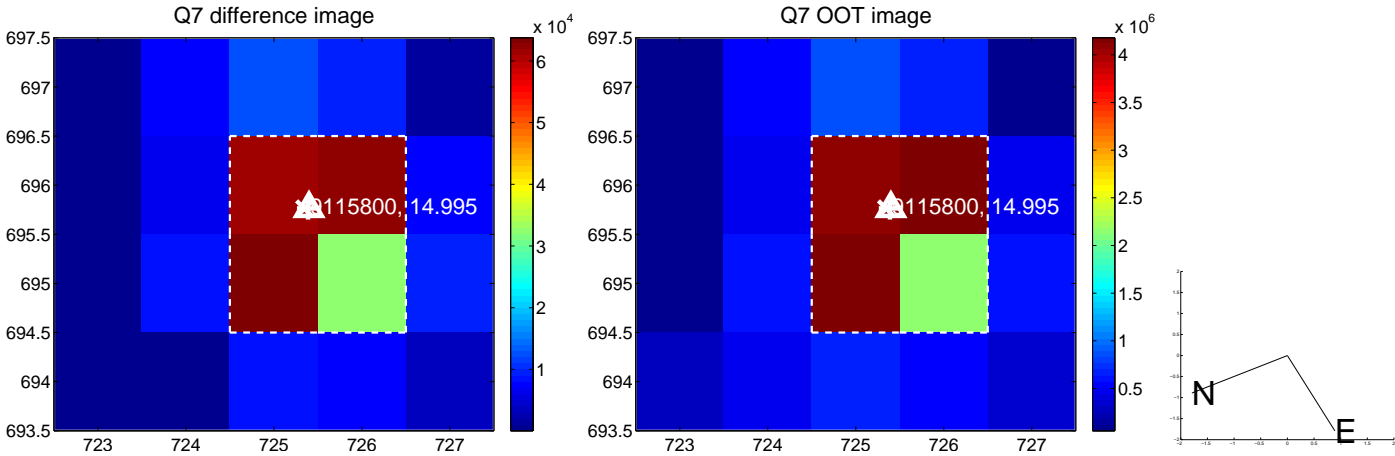
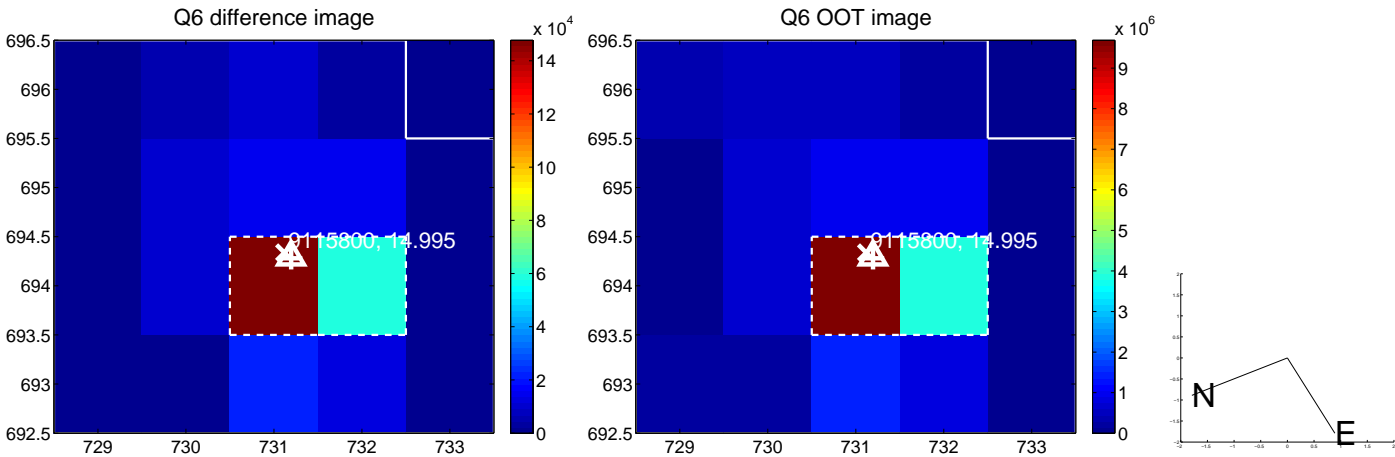
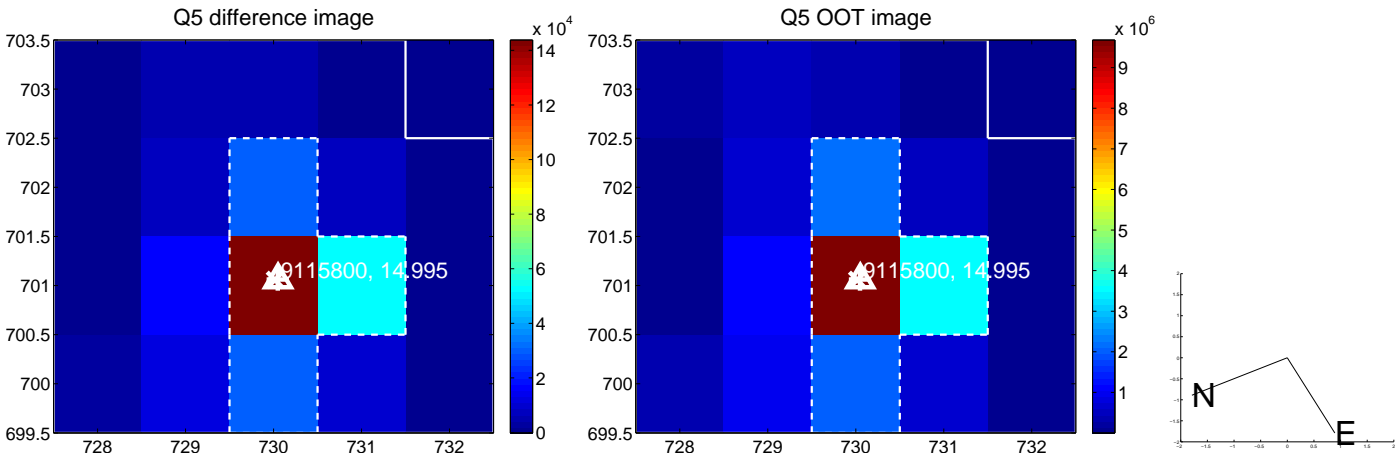


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

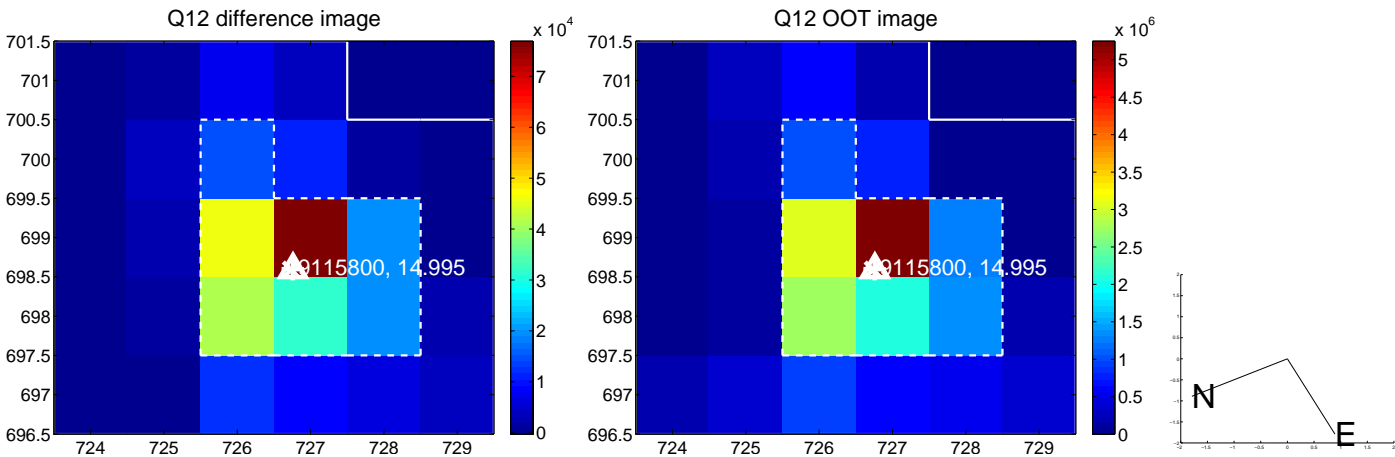
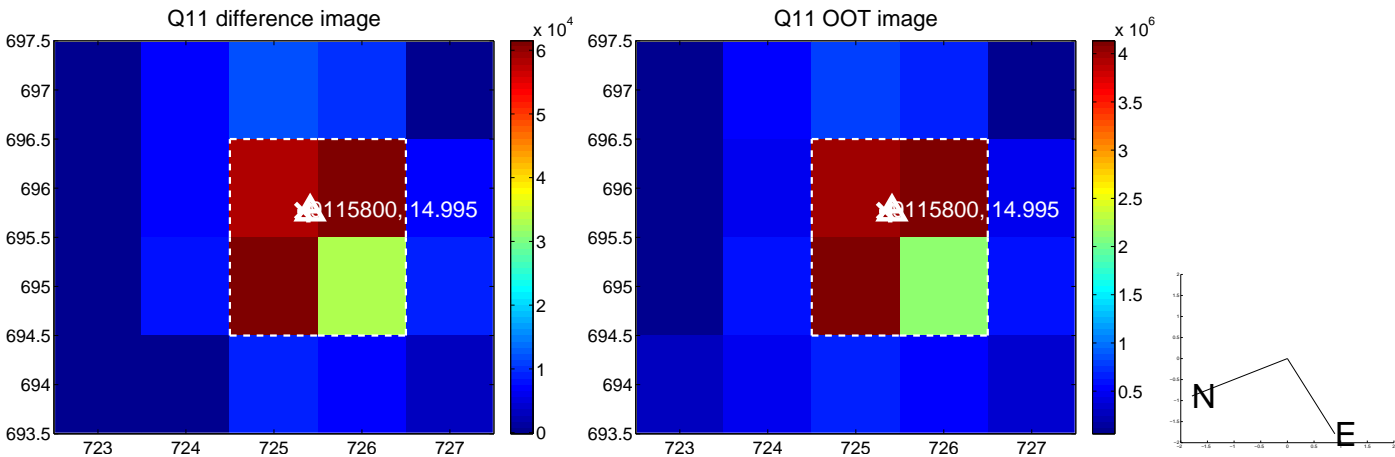
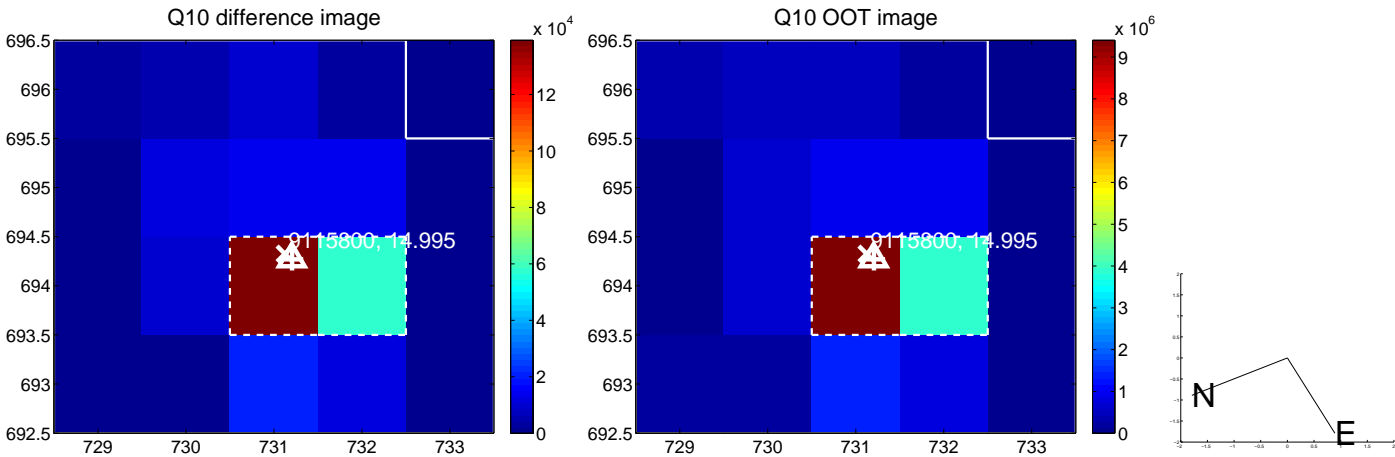
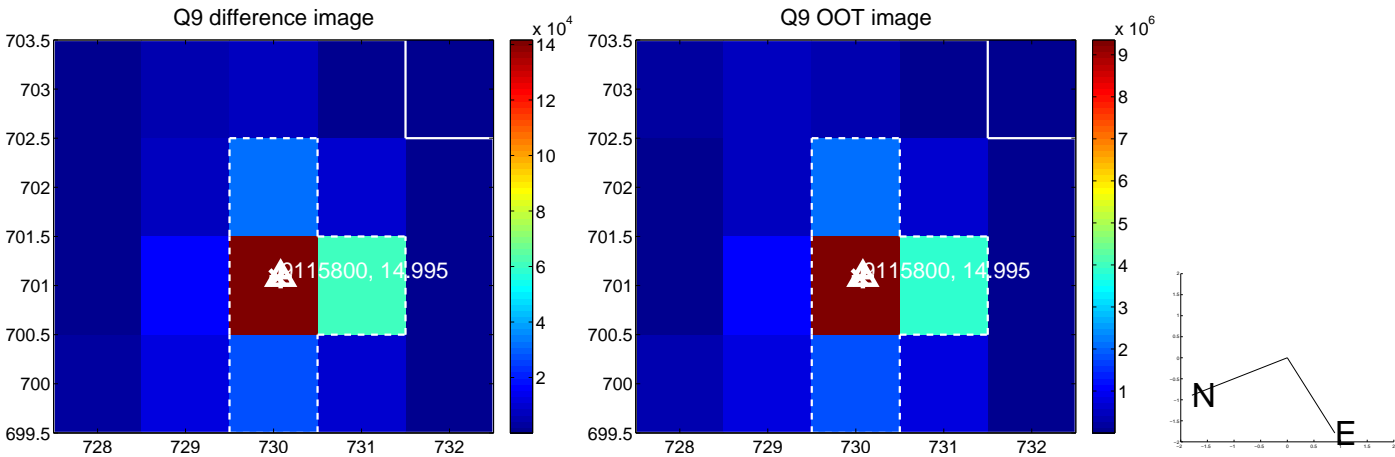


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

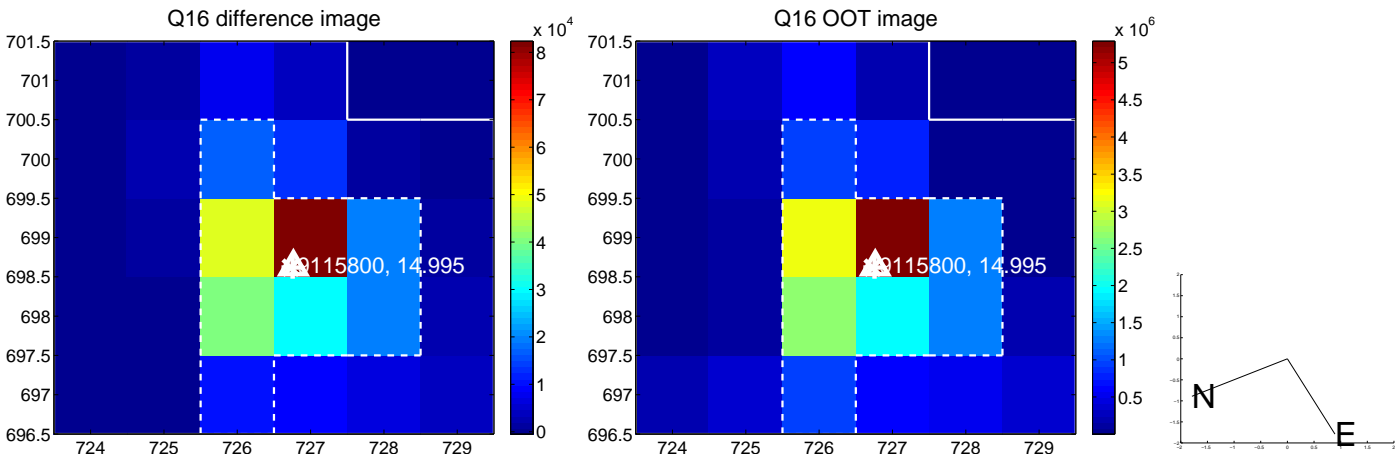
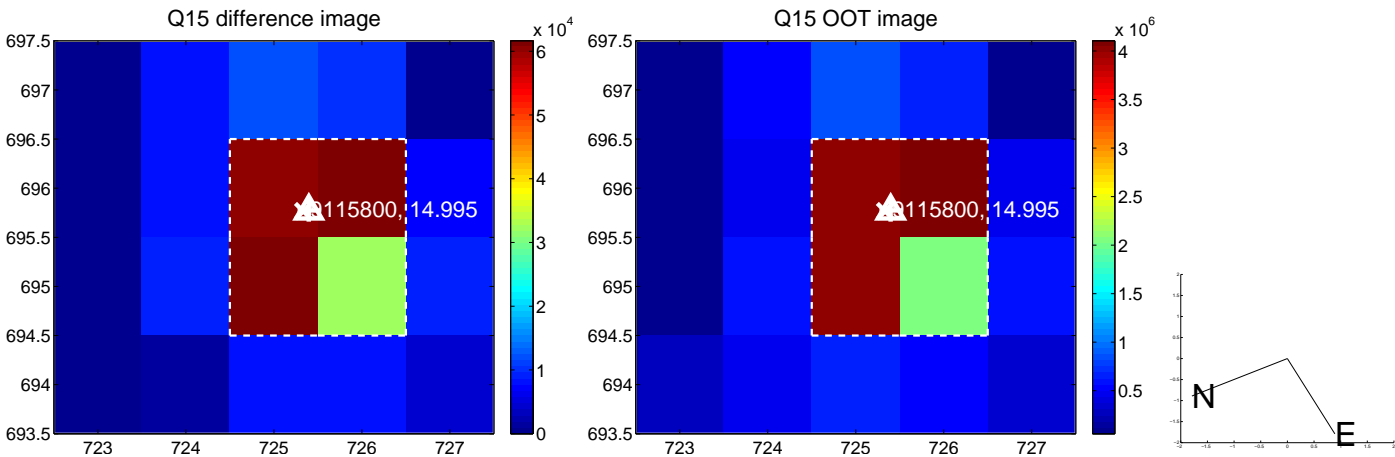
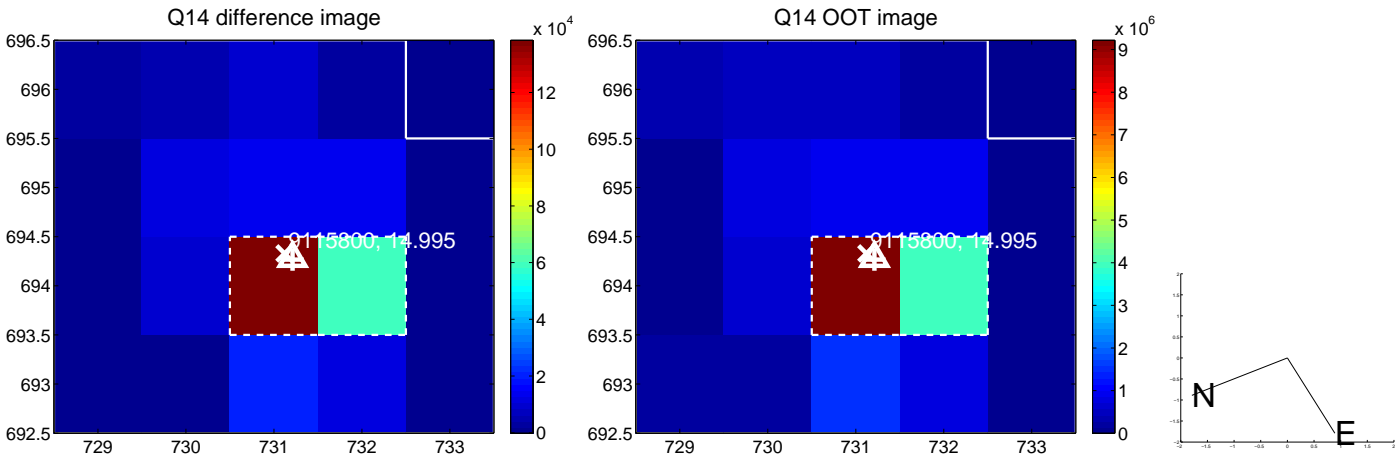
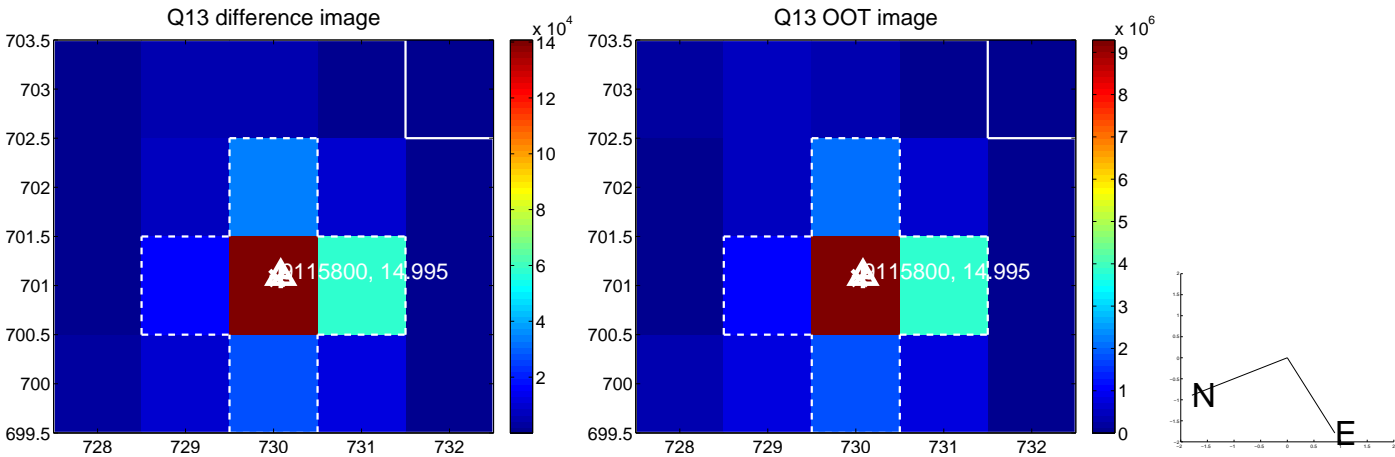




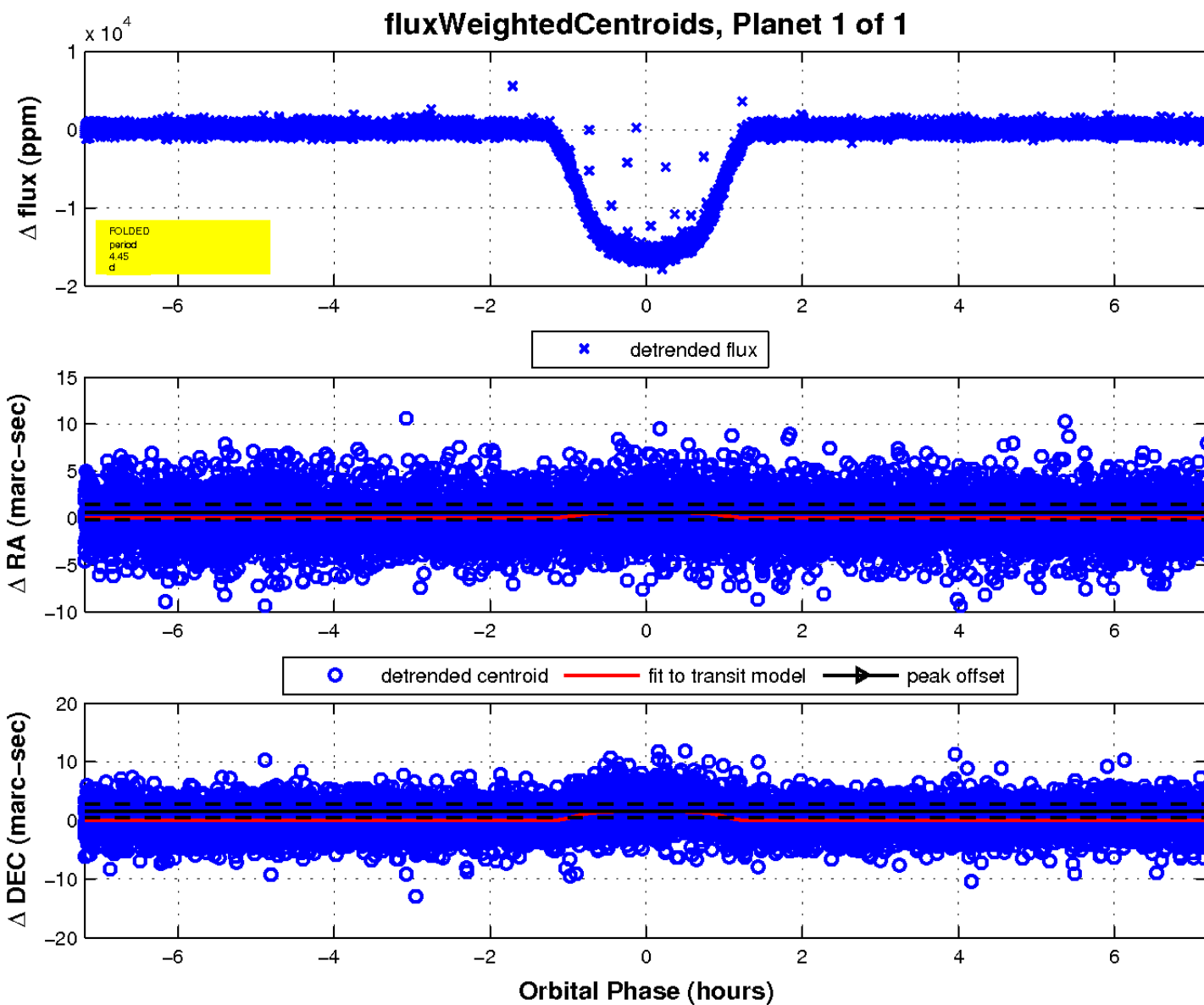
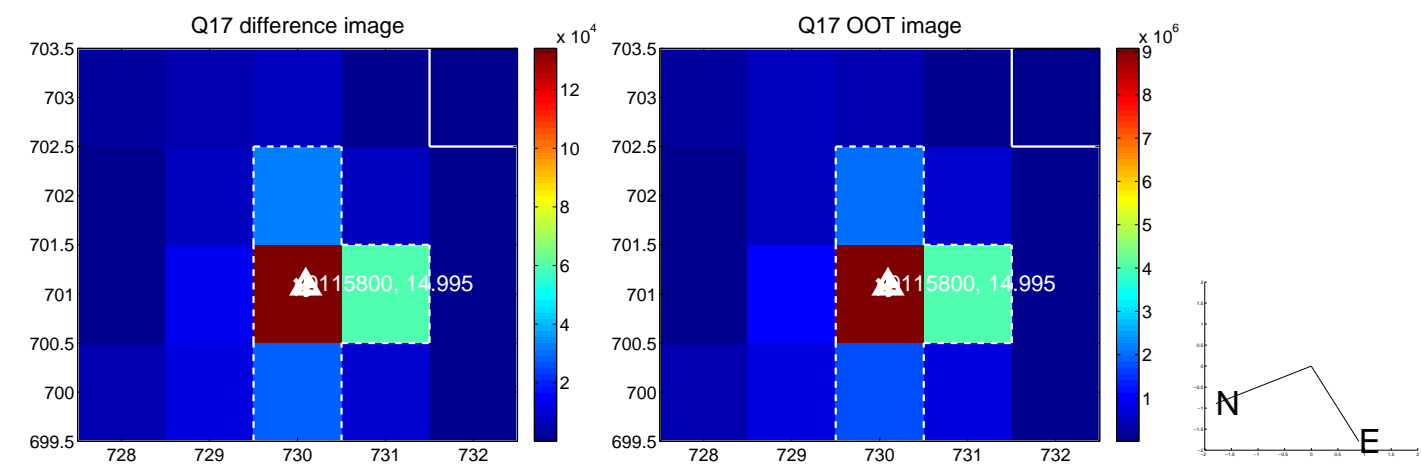
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

