

# KIC 009150827

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009150827-01	OBS	1408.01	14.534134	145.423335	507.9	3.338	25.6	27.4	0.55	3957	1.40	7.36

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009150827-01	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.

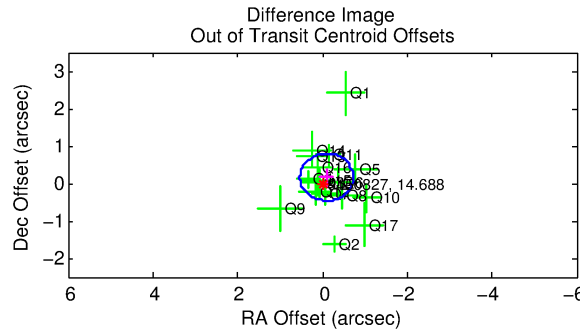
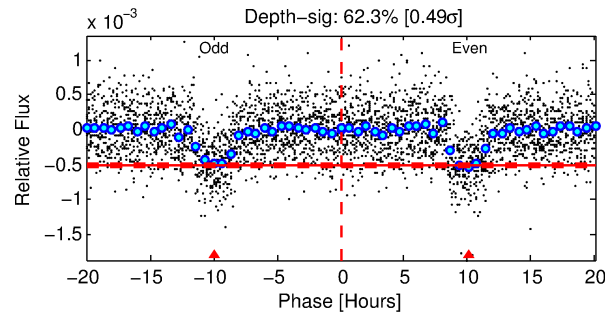
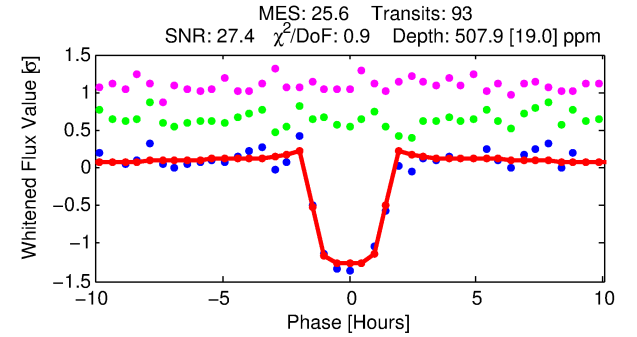
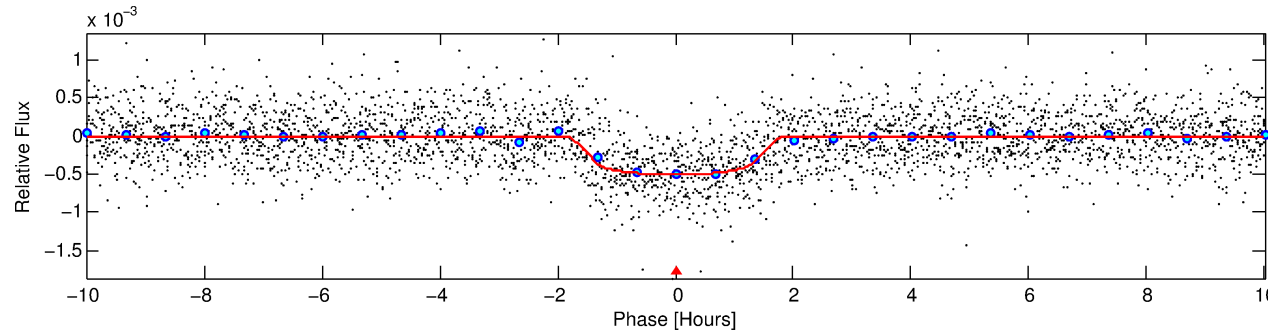
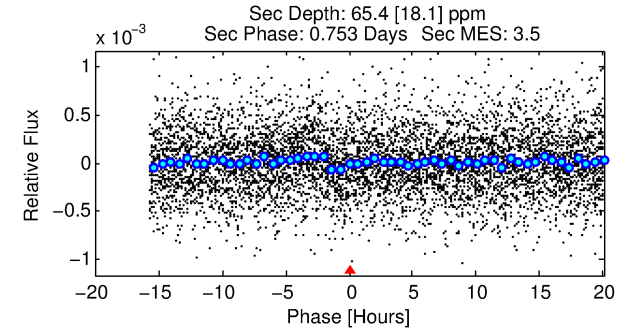
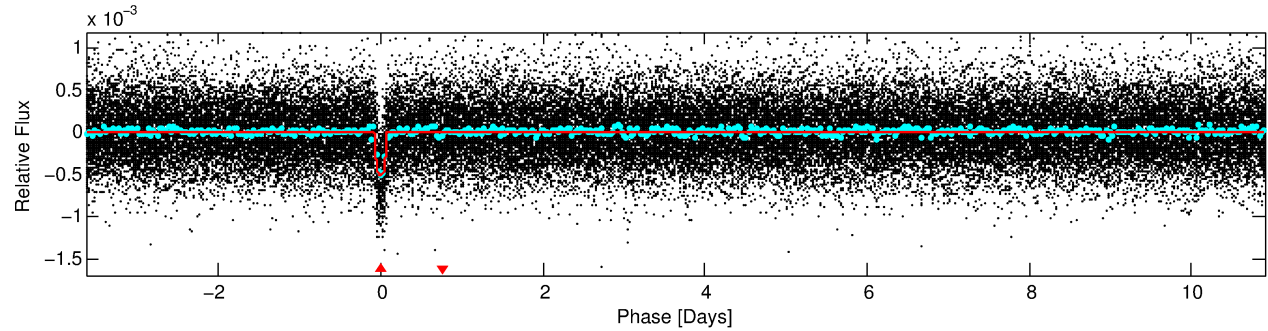
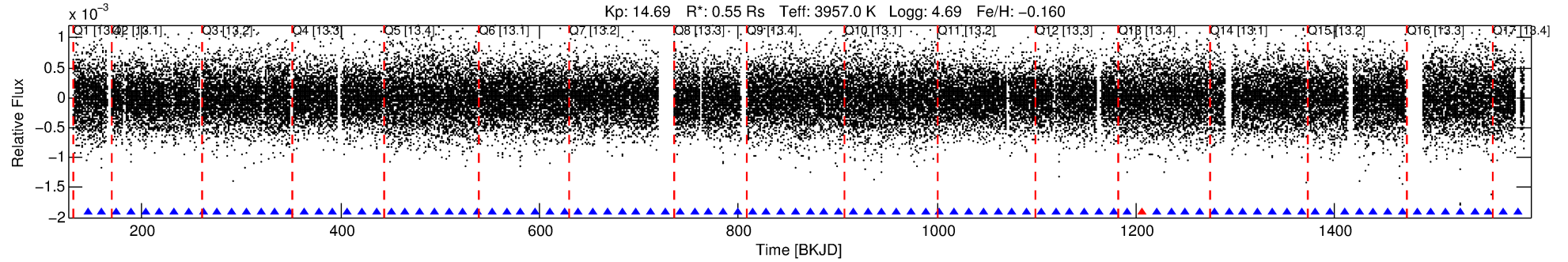
## Ephemeris Match Information For 009150827-01

No Significant Match Found

# DV One-Page Summary

KIC: 9150827 Candidate: 1 of 1 Period: 14.534 d

KOI: K01408.01 Corr: 0.982



## DV Fit Results:

Period = 14.53413 [0.00004] d  
Epoch = 145.4233 [0.0024] BKJD  
Rp/R\* = 0.0232 [0.0053]  
a/R\* = 20.39 [20.06]  
b = 0.82 [0.40]  
Seff = 7.36 [0.87]  
Teq = 420 [12] K  
Rp = 1.40 [0.33] Re  
a = 0.0955 [0.0054] AU  
Ag = 167.63 [90.18] [1.85σ]  
Teffp = 2337 [315] K [6.08σ]

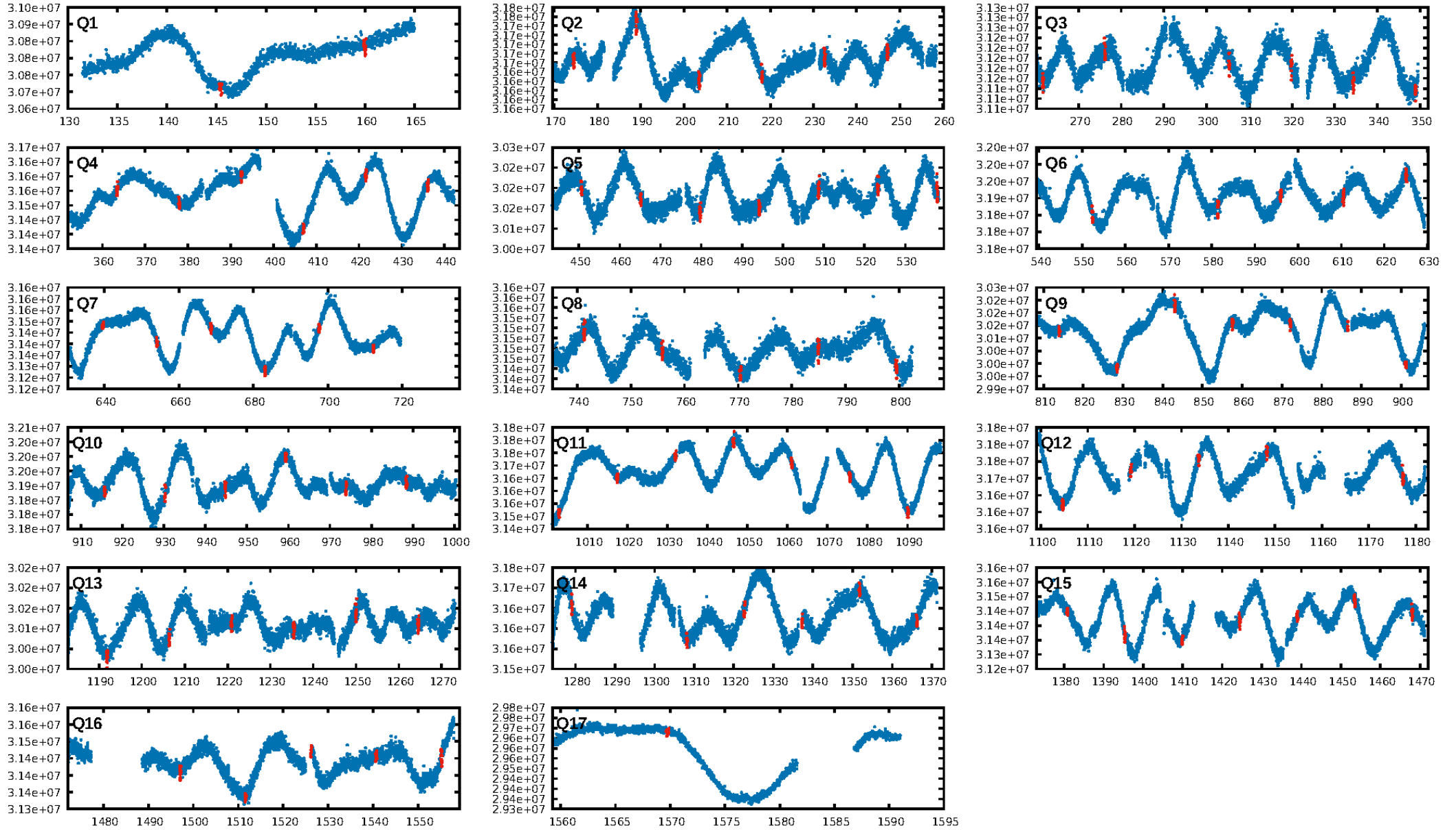
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 97.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.27e-132  
RollingBand-fgt: 0.99 [89/90]  
GhostDiagnostic-chr: 3.087  
Centroid-sig: 58.8%  
Centroid-so: 0.150 arcsec [0.38σ]  
OotOffset-rm: 0.190 arcsec [0.91σ]  
KicOffset-rm: 0.083 arcsec [0.63σ]  
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]

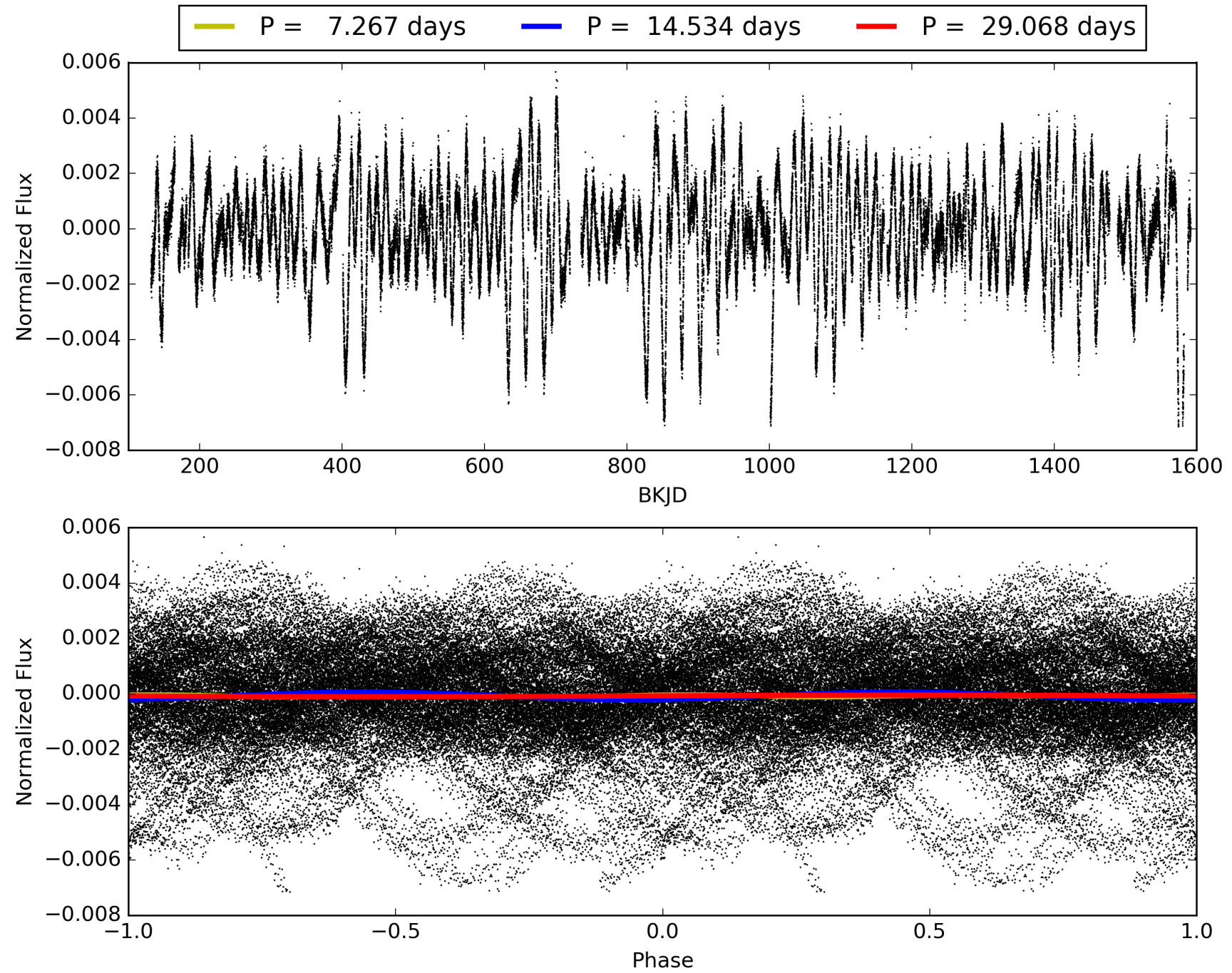
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:41:43 Z

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

# TCE 009150827-01, PDC Light Curves

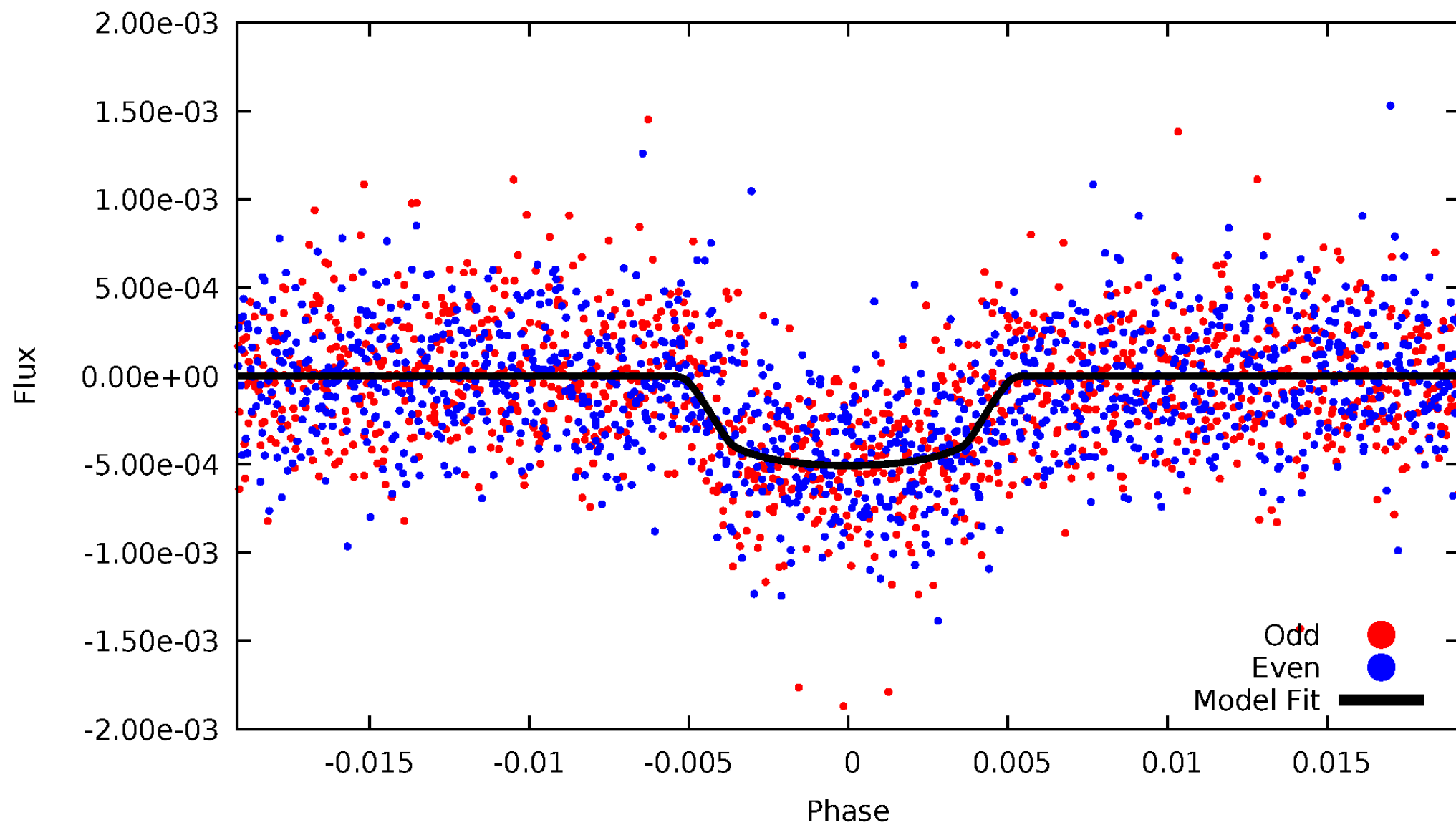


TCE 009150827-01



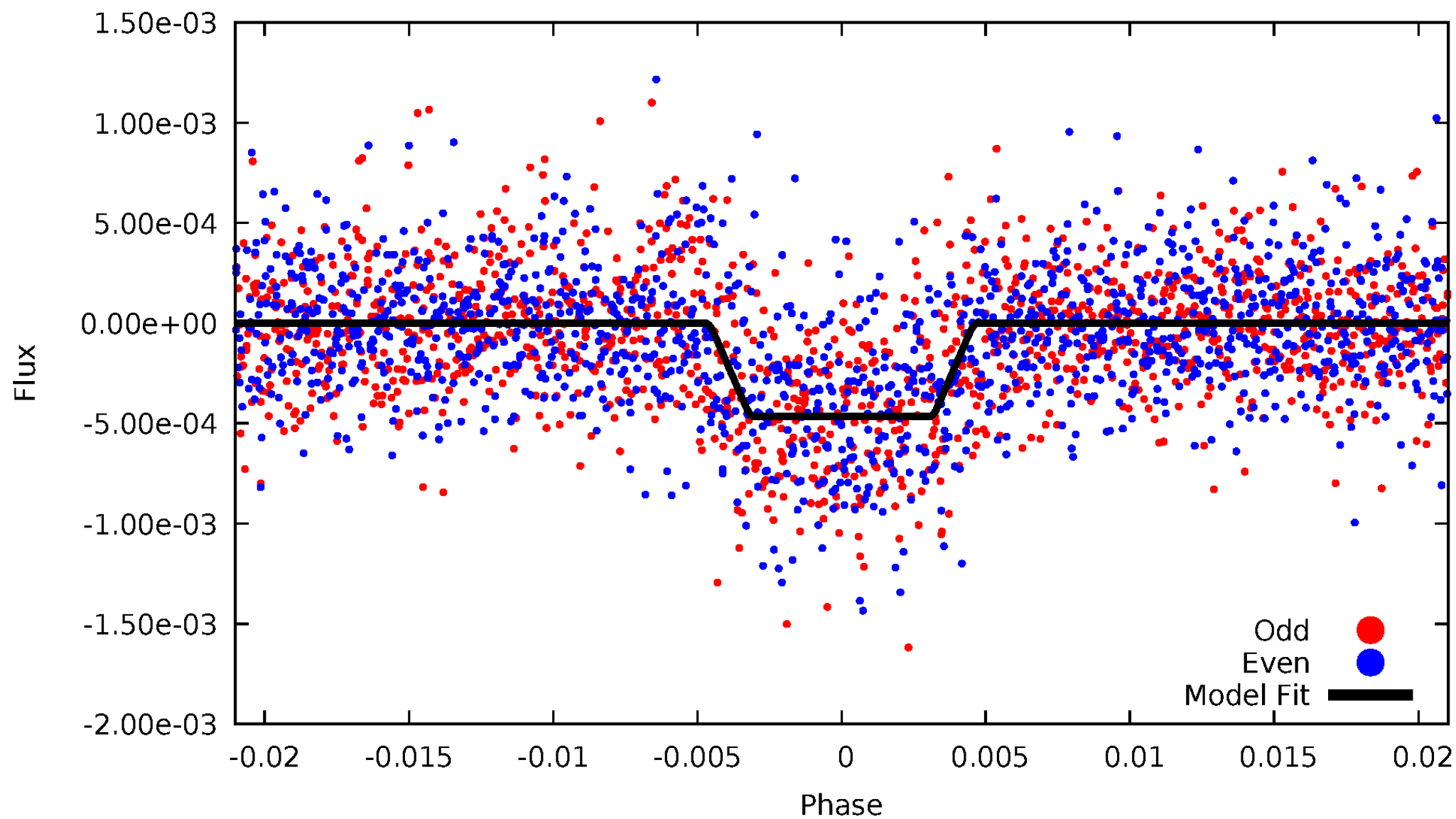
# DV Odd/Even

TCE 009150827-01



# ALT Odd/Even

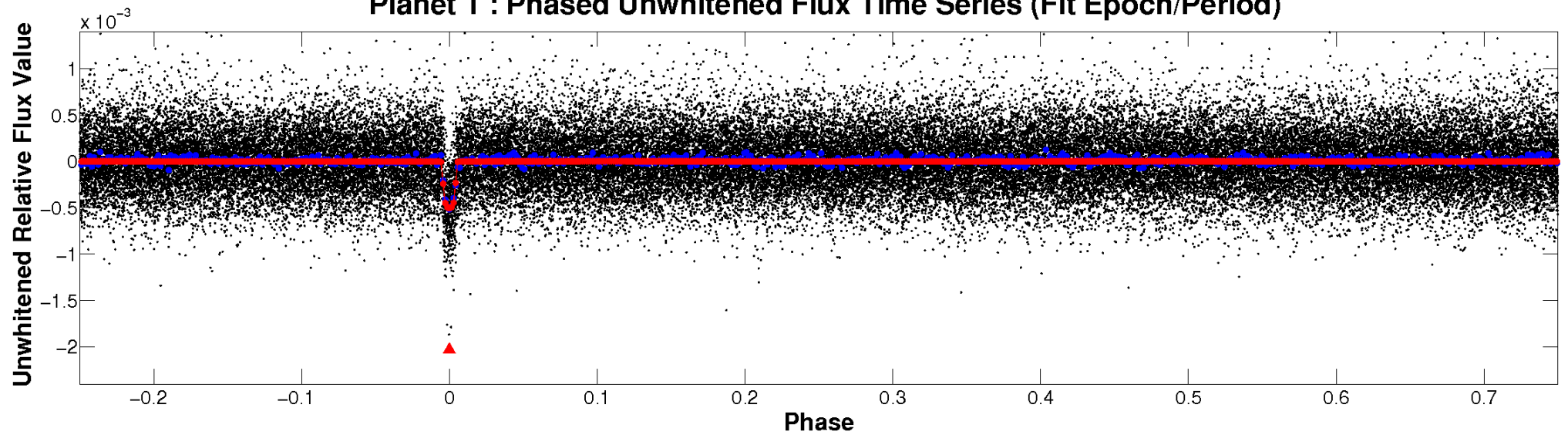
TCE 009150827-01



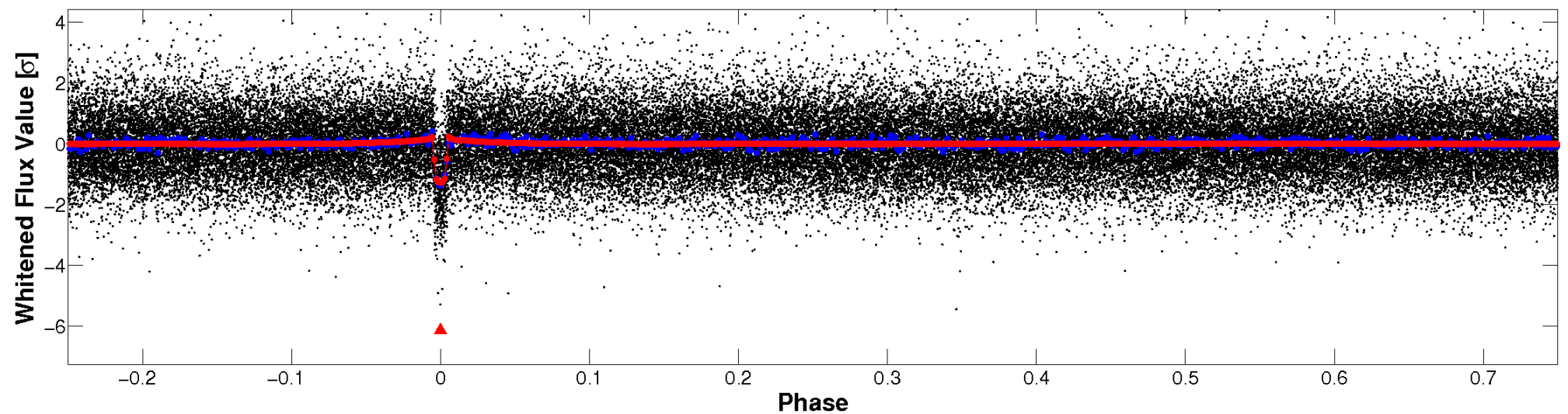


# Non-Whitened Vs. Whitened Light Curve

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

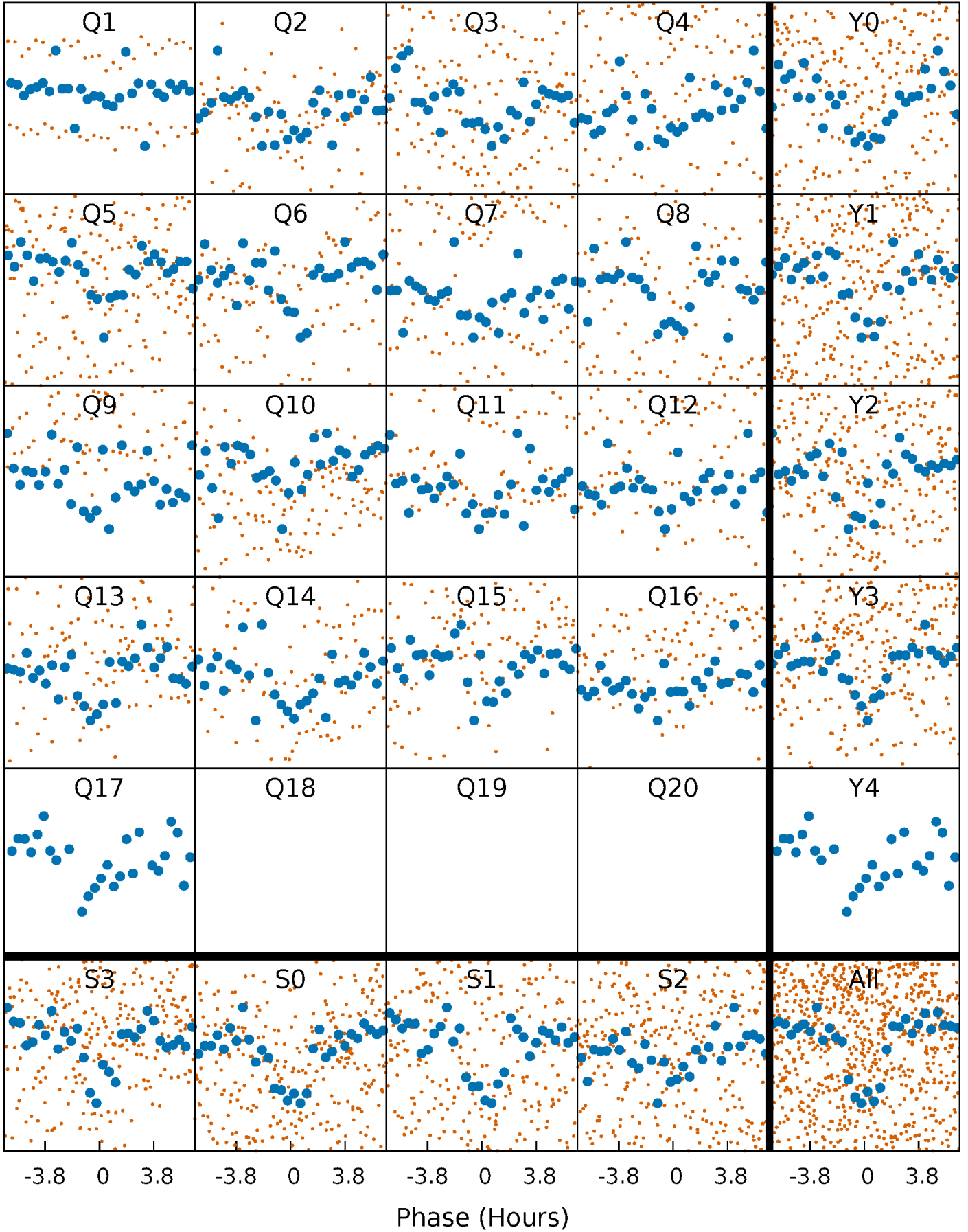


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

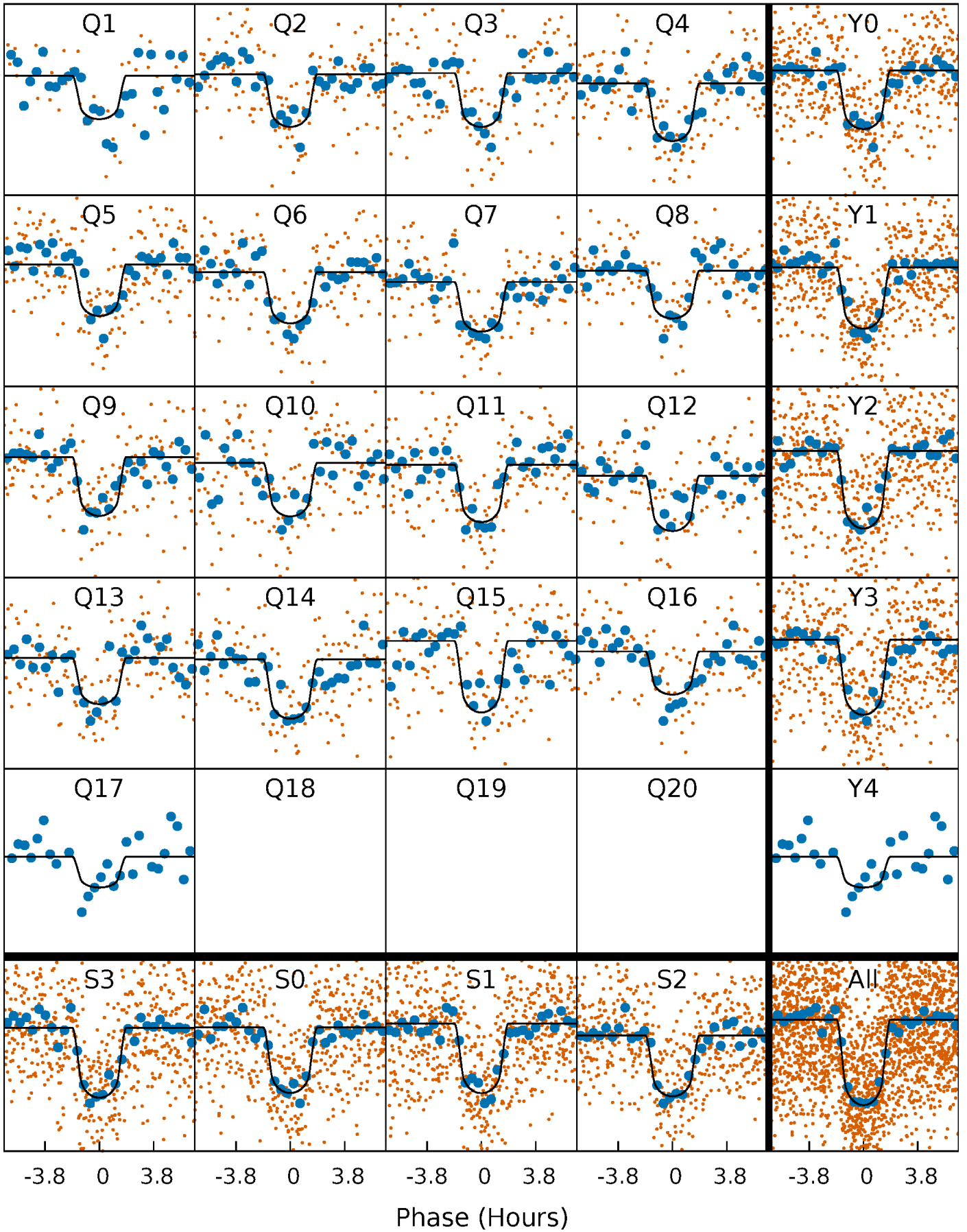
TCE 009150827-01 P= 14.534134 Days  $T_0=145.423335$  (BKJD)





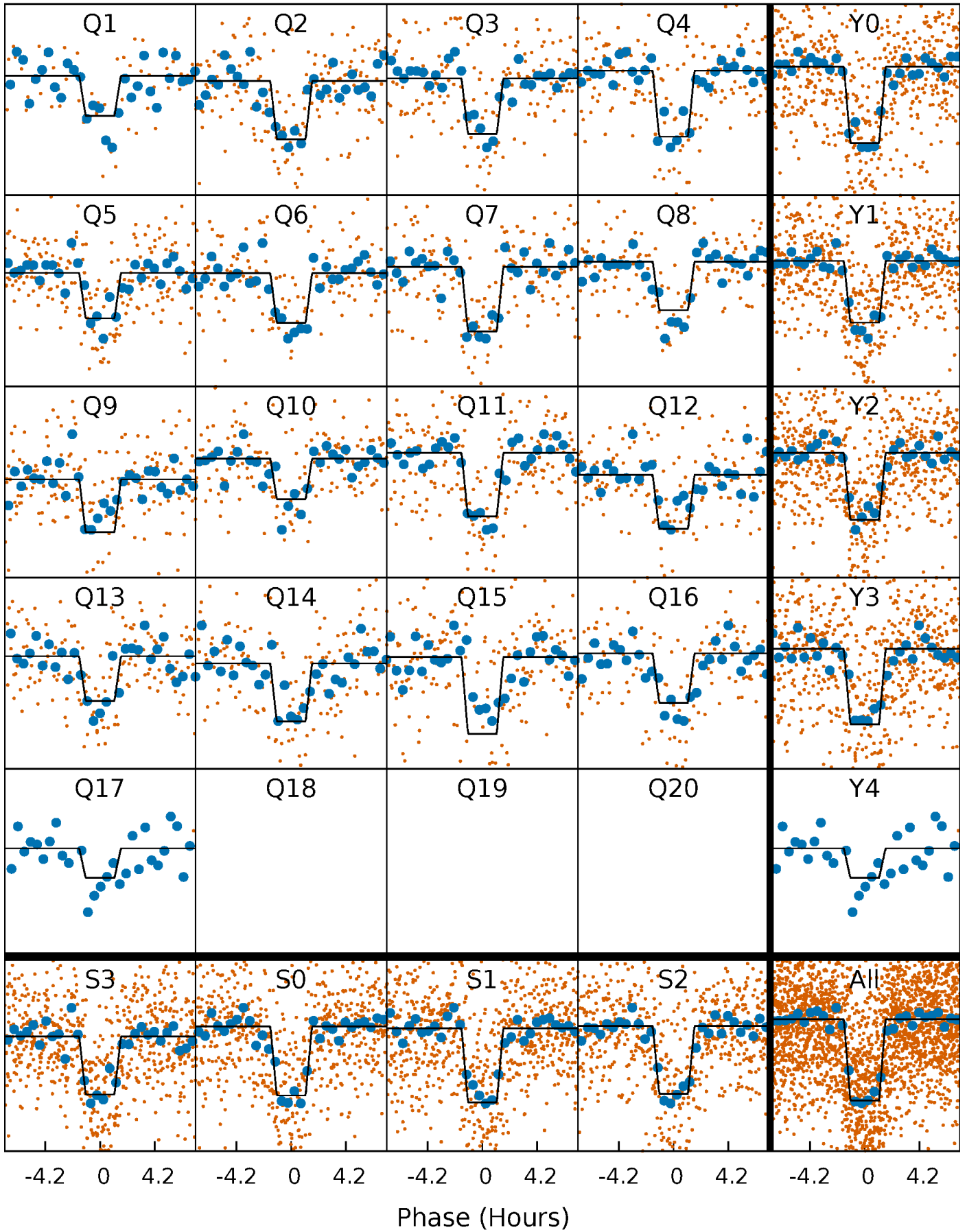
# DV Quarter-Phased Transit Curves

TCE 009150827-01 P= 14.534134 Days  $T_0=145.423335$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

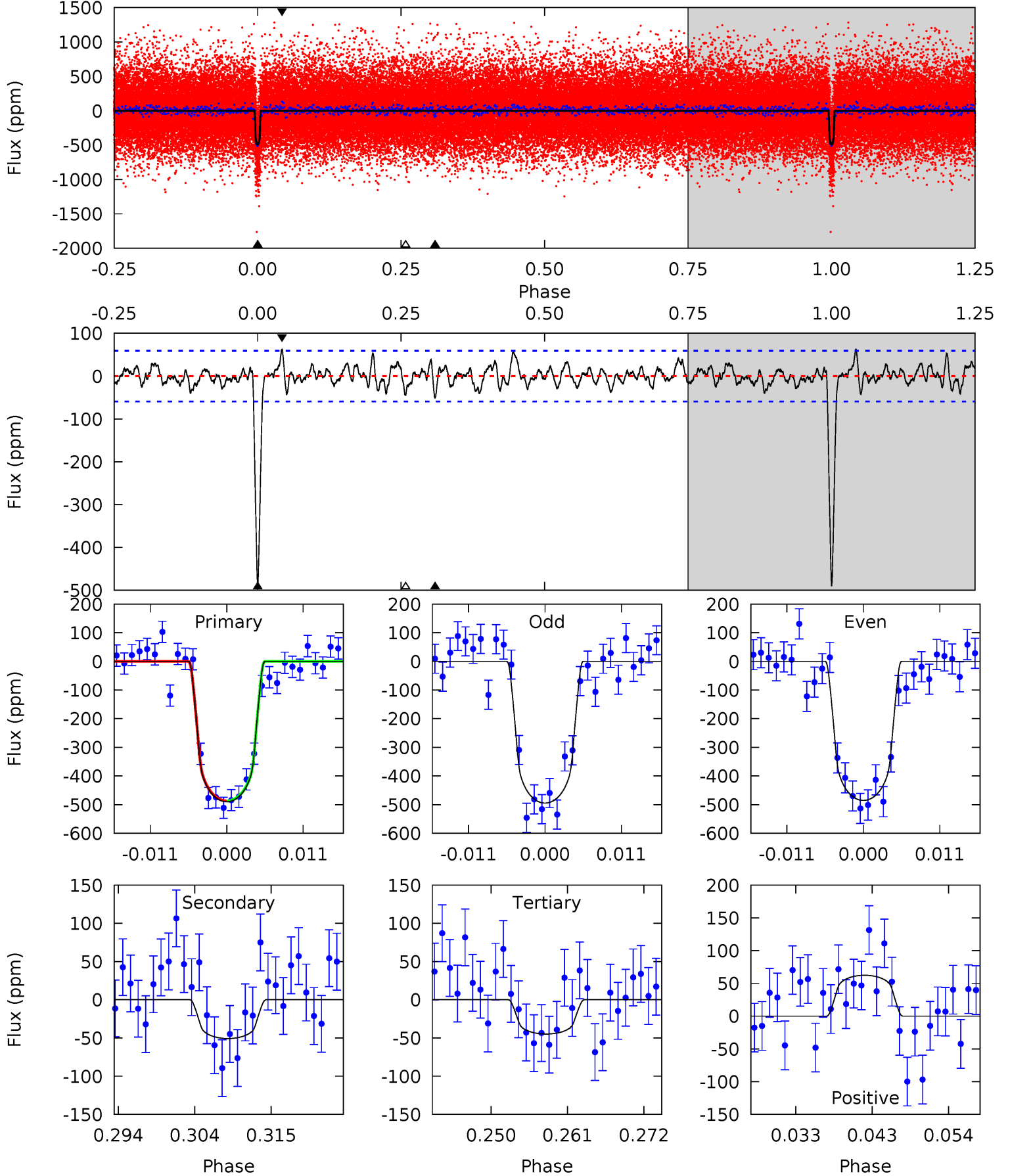
TCE 009150827-01 P= 14.533907 Days  $T_0=145.434086$  (BKJD)



# DV Model-Shift Uniqueness Test

009150827-01,  $P = 14.534134$  Days,  $E = 130.889201$  Days

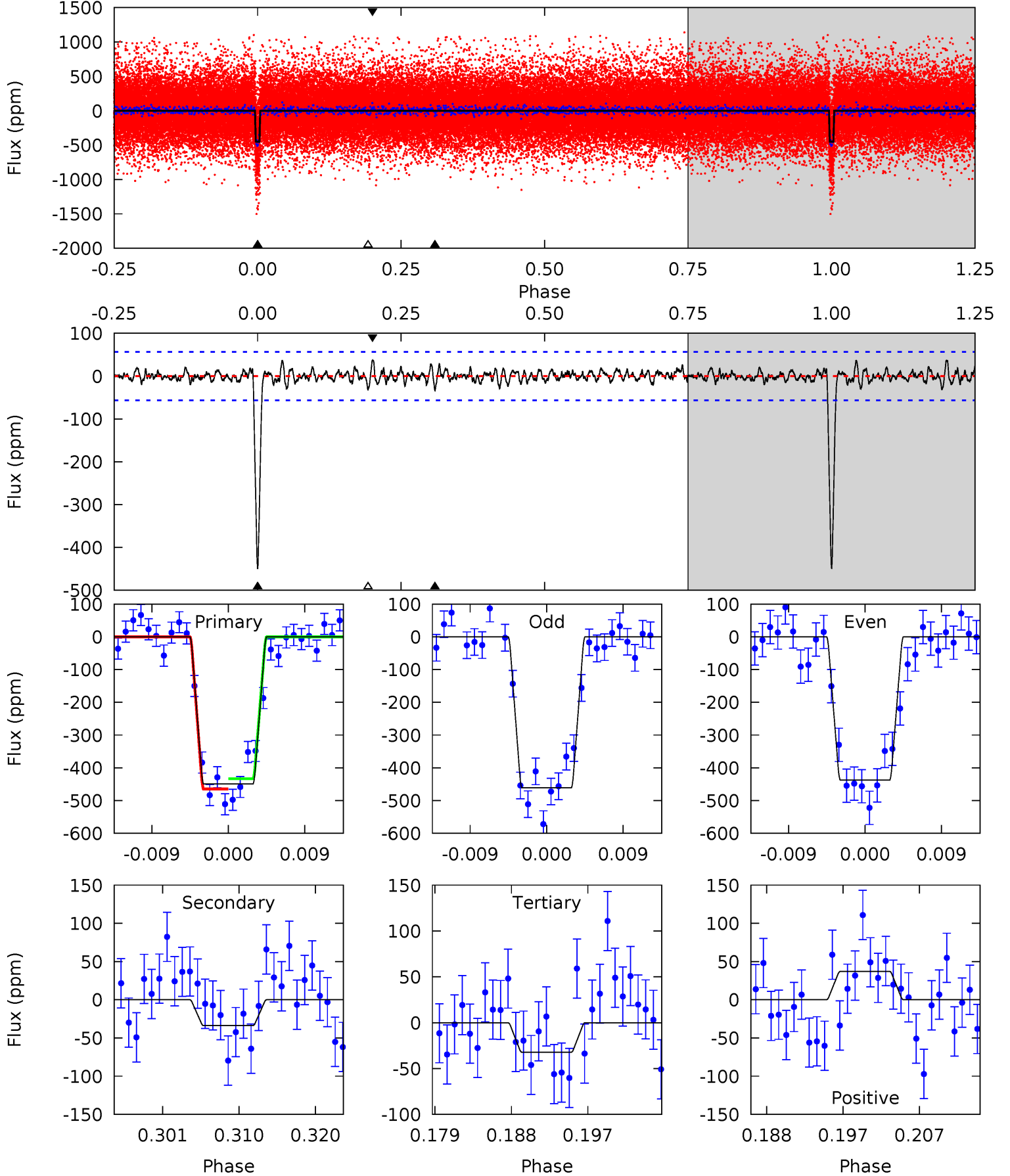
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
41.5	4.30	3.80	5.29	5.01	2.55	1.47	37.7	36.2	0.50	-0.99	0.39	1.02	0.11	0.01



# Alt Model-Shift Uniqueness Test

009150827-01,  $P = 14.533907$  Days,  $E = 130.900179$  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
39.9	3.01	2.87	3.30	5.04	2.60	0.86	37.0	36.6	0.14	-0.30	1.05	1.01	0.08	1.38



### Stellar Parameters For KIC 009150827

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3957^{+71}_{-87}$	$4.693^{+0.042}_{-0.018}$	$-0.160^{+0.150}_{-0.150}$	$0.553^{+0.027}_{-0.039}$	$0.551^{+0.035}_{-0.035}$	$4.579^{+0.888}_{-0.388}$
	+2%/-2%	+1%/-0%	+94%/-94%	+5%/-7%	+6%/-6%	+19%/-8%
Source	SPE70	SPE60	SPE70	DSEP		

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

### Secondary Eclipse Parameters for KIC 009150827-01 / KOI 1408.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-51 \pm 12$	$1.39^{+0.34}_{-0.31}$	$583^{+13}_{-15}$	$2760^{+222}_{-174}$	$131^{+102}_{-51}$
Alt.	$-34 \pm 11$	$1.29^{+0.34}_{-0.30}$	$583^{+13}_{-14}$	$2661^{+235}_{-219}$	$100^{+87}_{-49}$

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



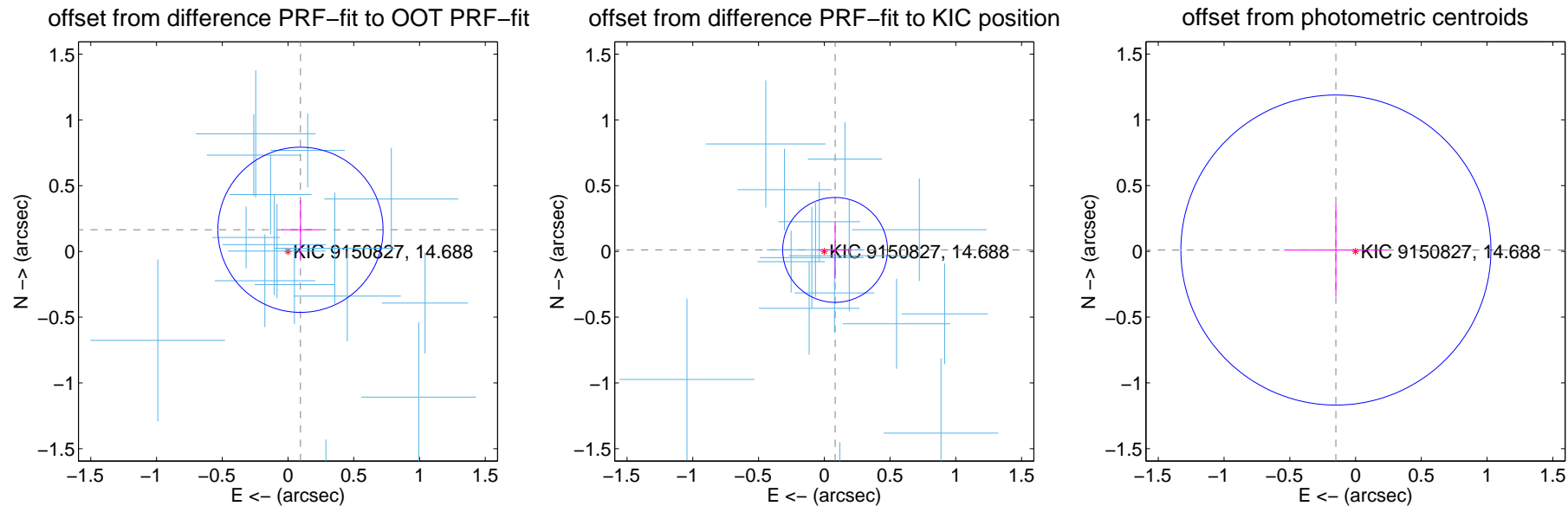
## DV Centroid Data

Supplemental centroid analysis for 009150827-01. Kepler magnitude: 14.69. Transit SNR 27.42

There are 17 quarters with good PRF difference image offsets

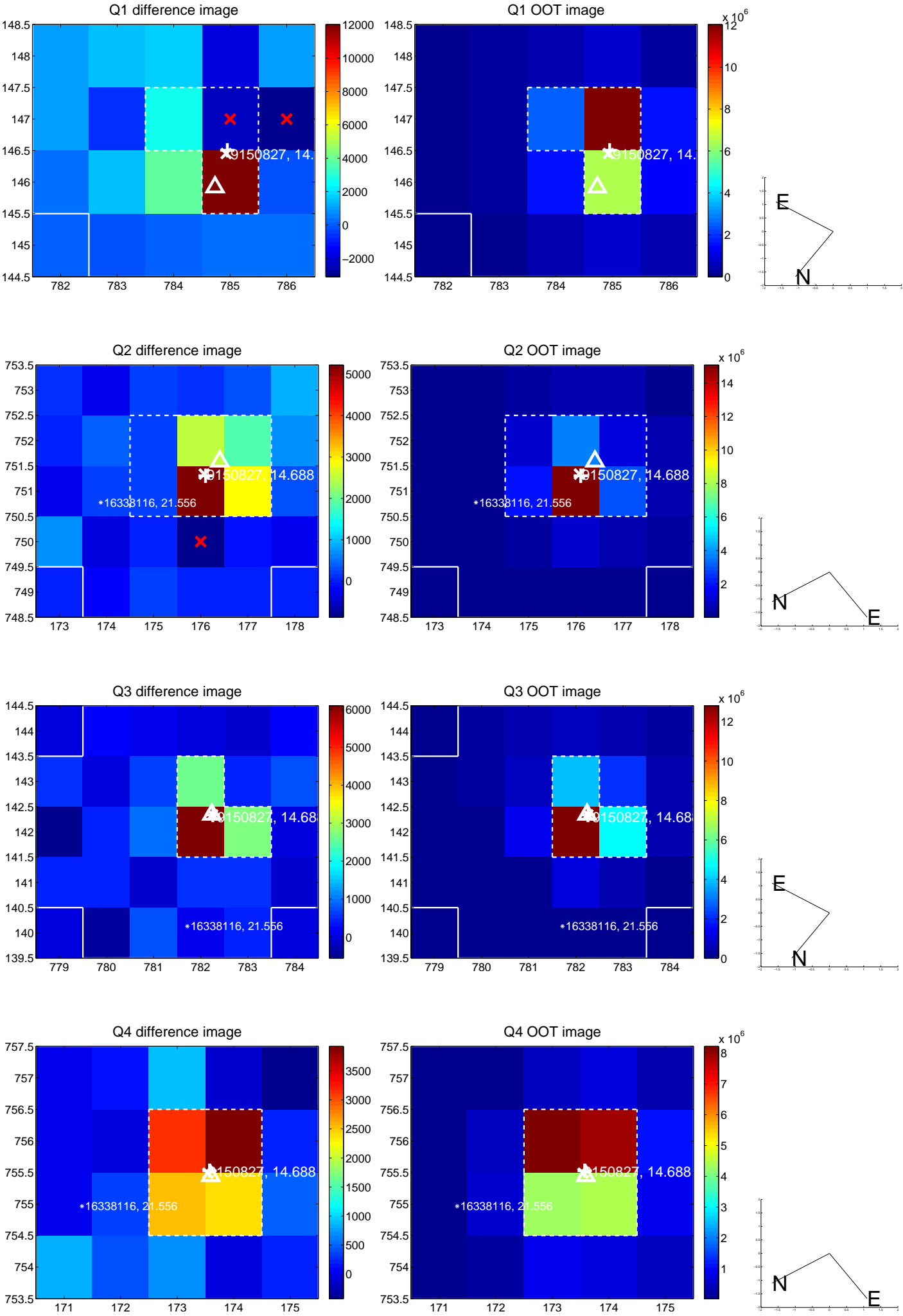
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.190 \pm 0.209$	0.91	$-0.095 \pm 0.142$	$0.164 \pm 0.225$
PRF-fit source offset from KIC position	$0.083 \pm 0.133$	0.63	$-0.082 \pm 0.130$	$0.011 \pm 0.219$
photometric centroid source offset	$0.15 \pm 0.39$	0.38	$0.15 \pm 0.39$	$0.01 \pm 0.35$

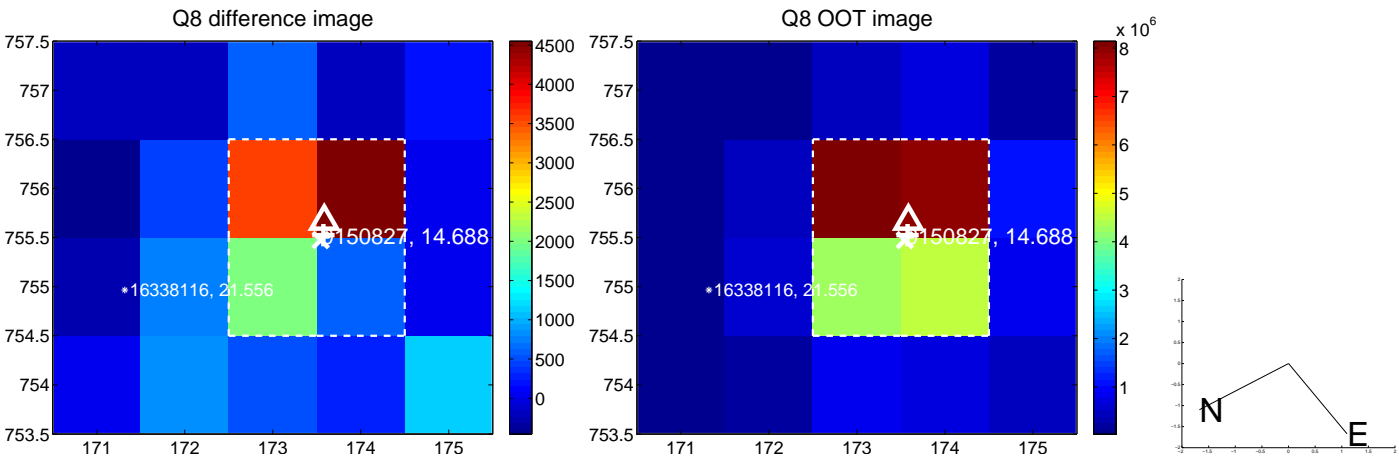
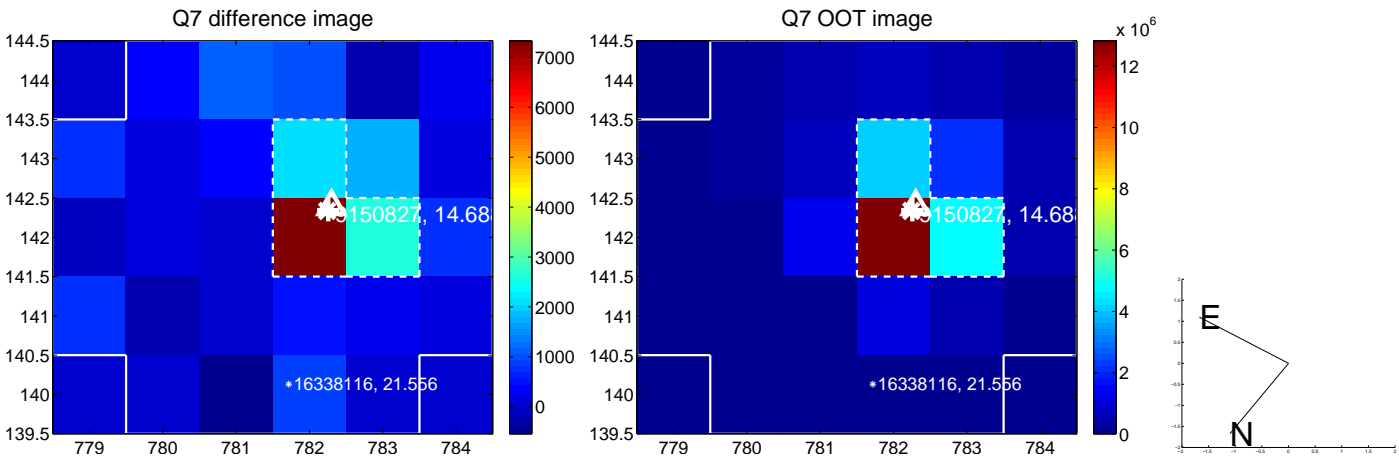
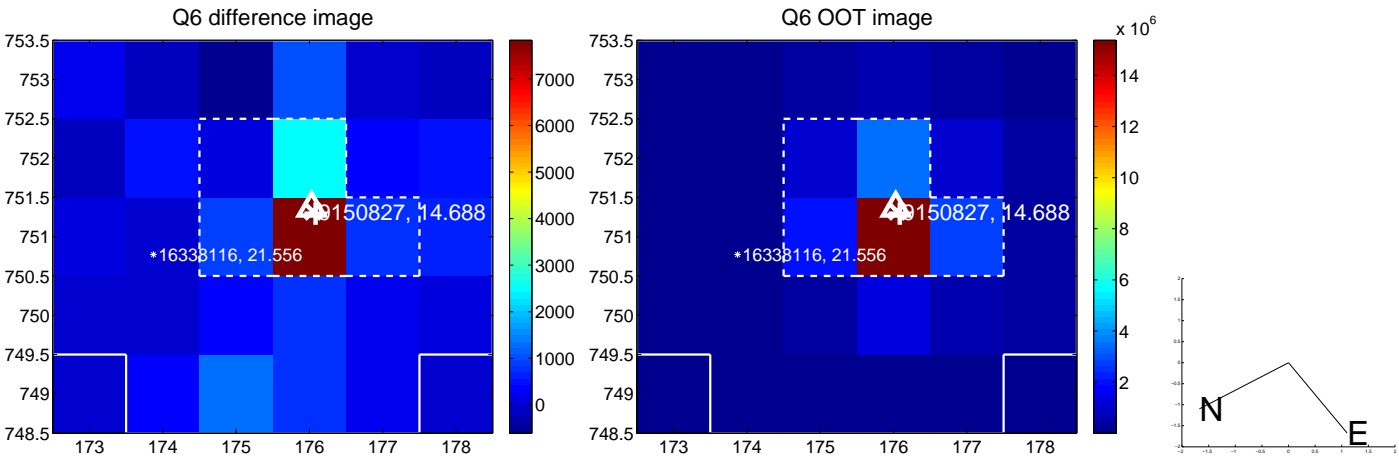
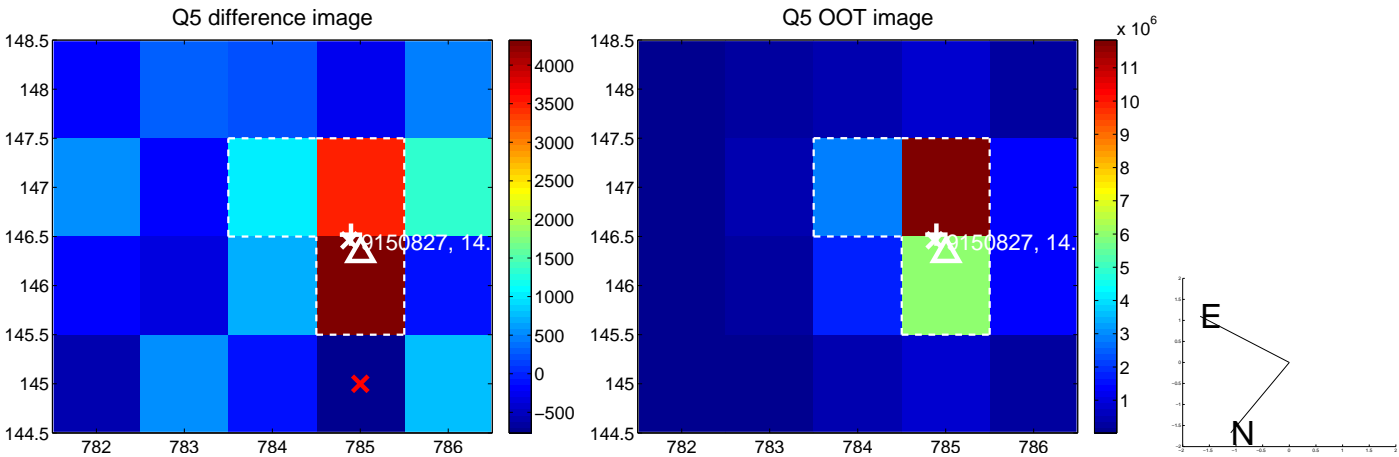


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

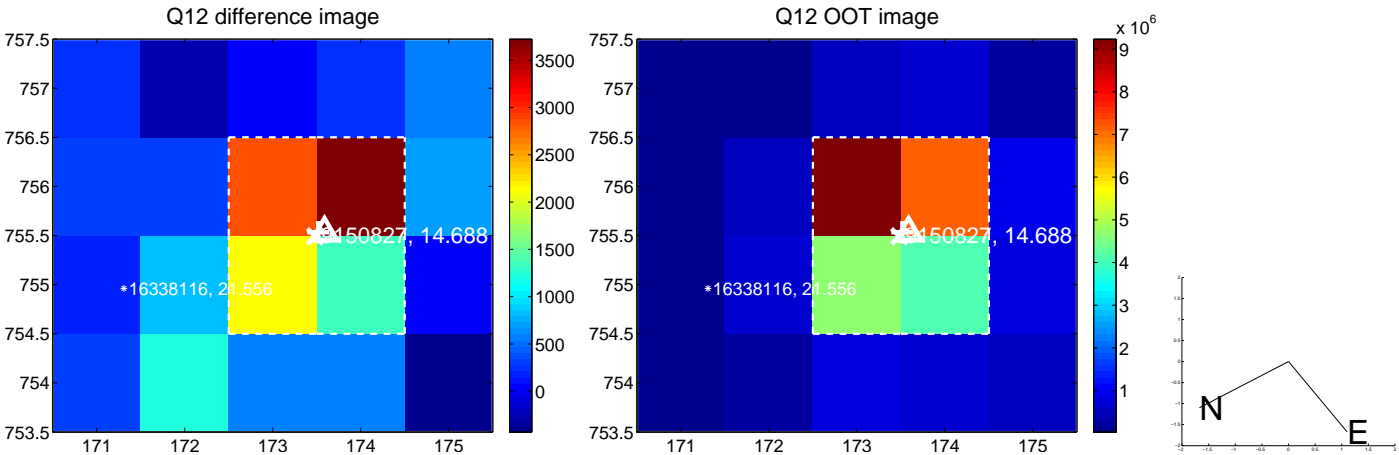
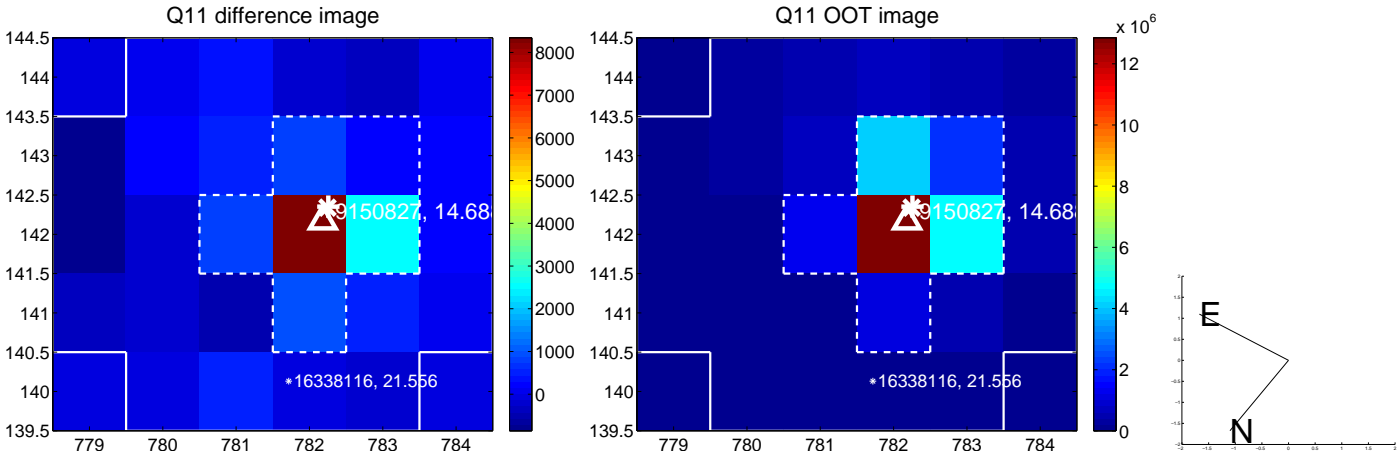
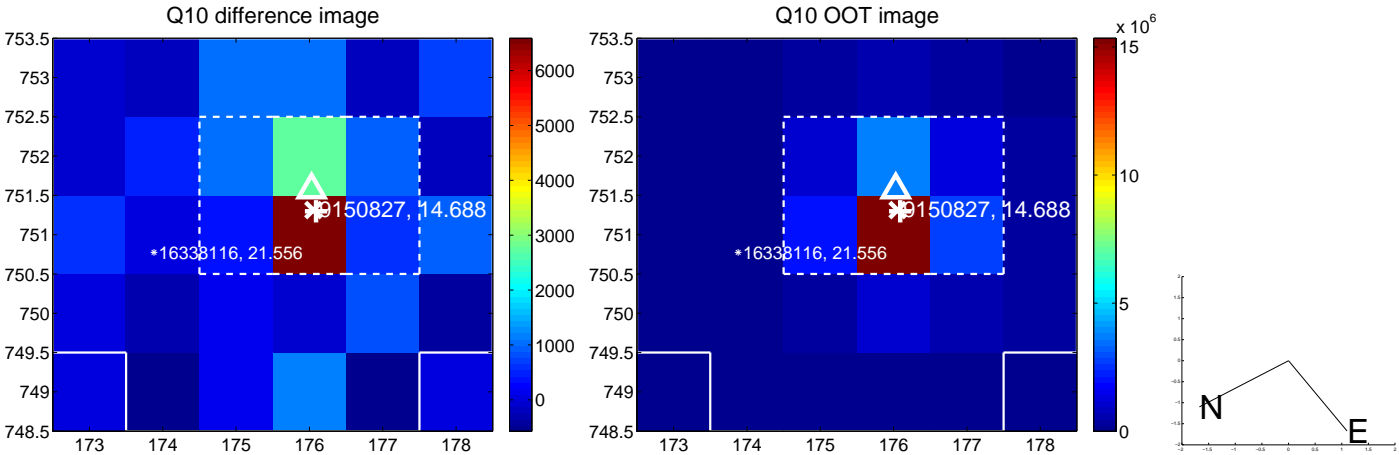
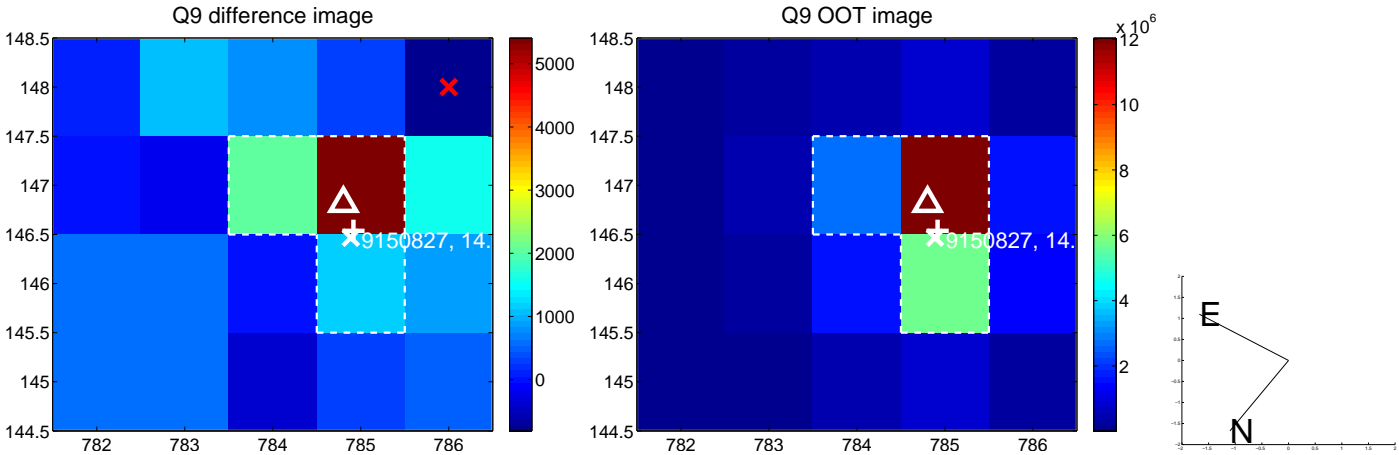
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



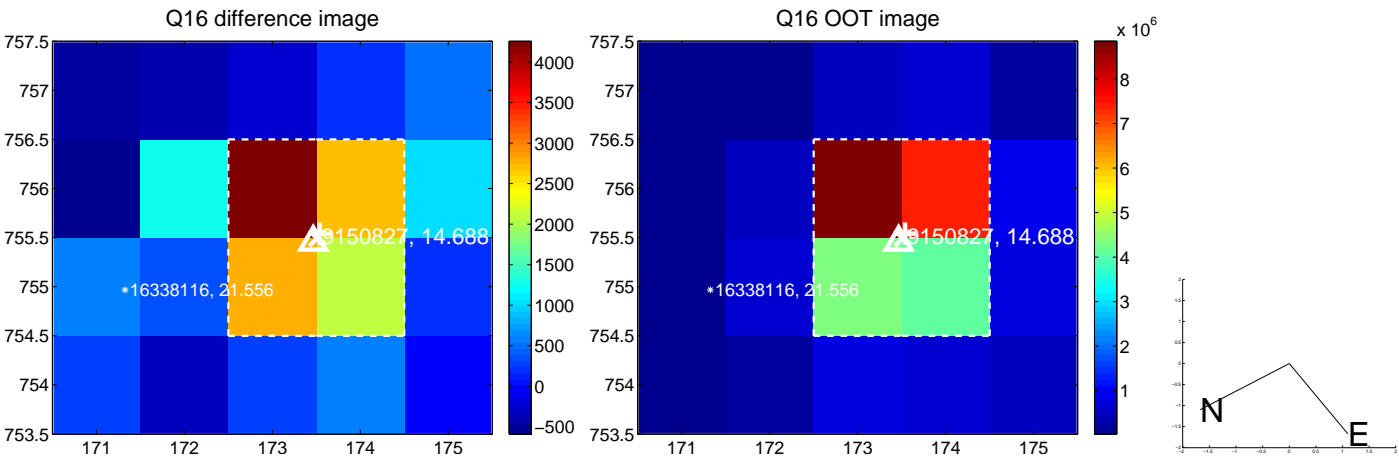
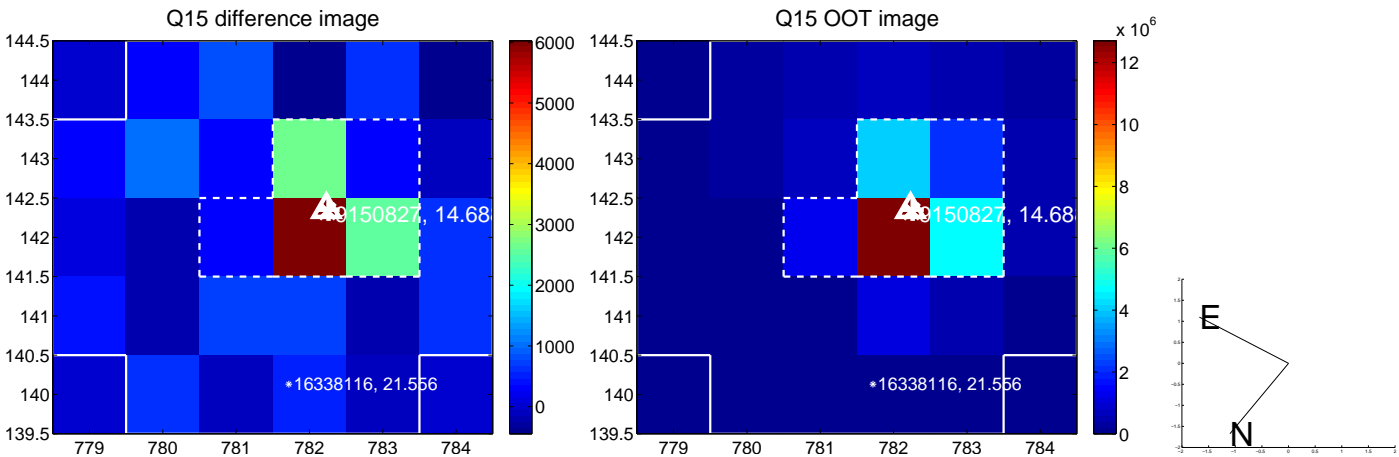
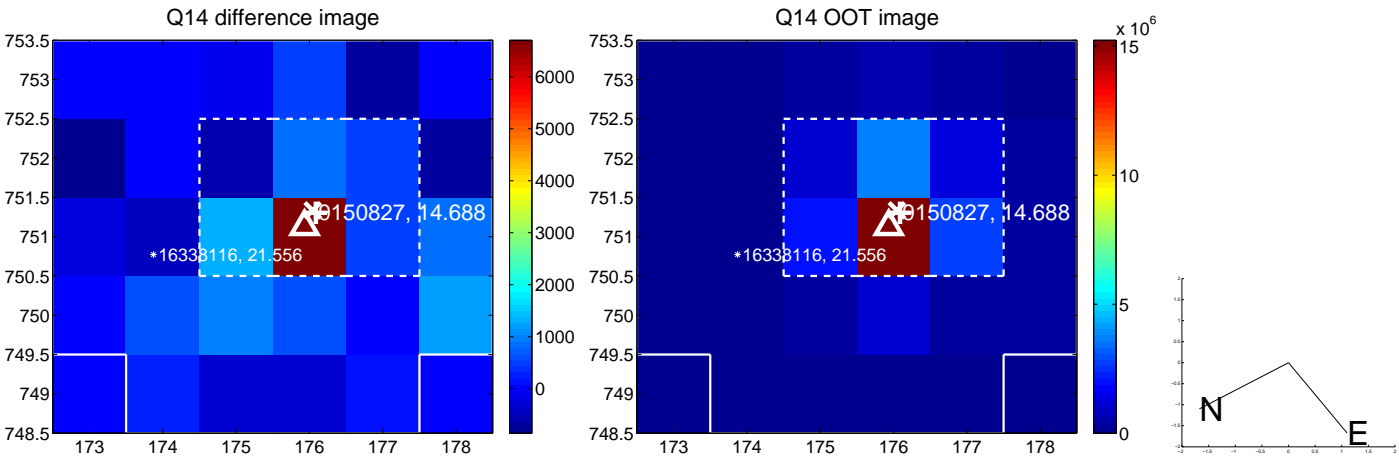
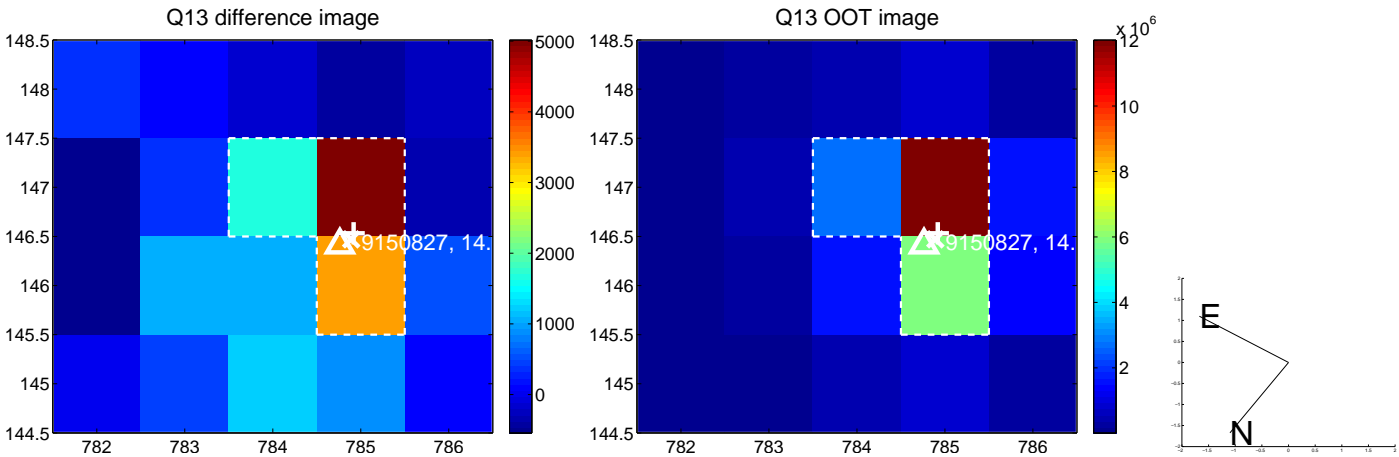
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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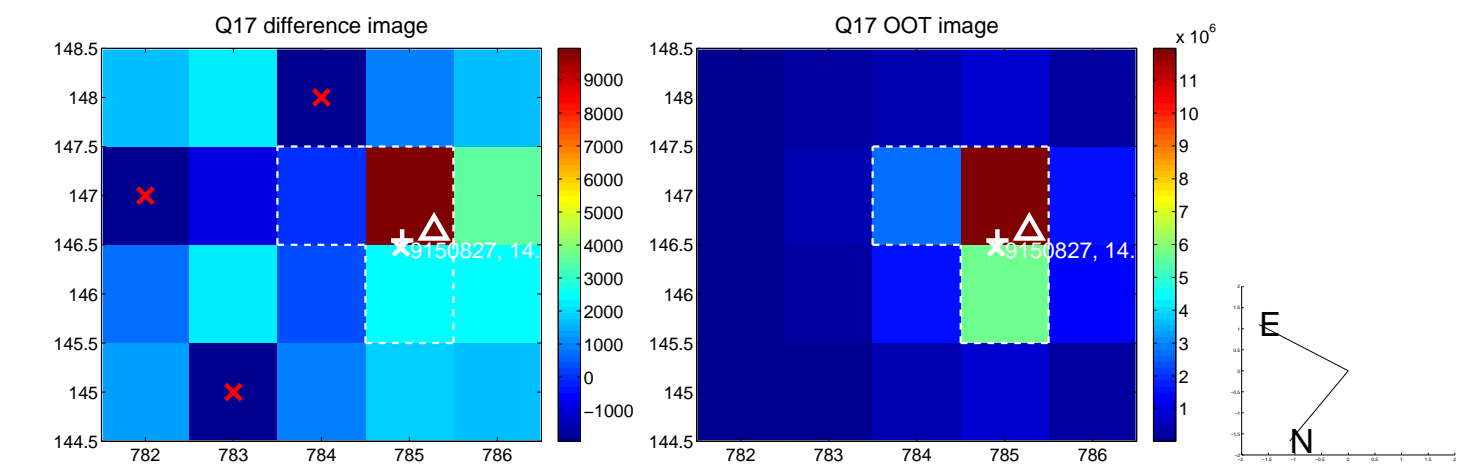


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

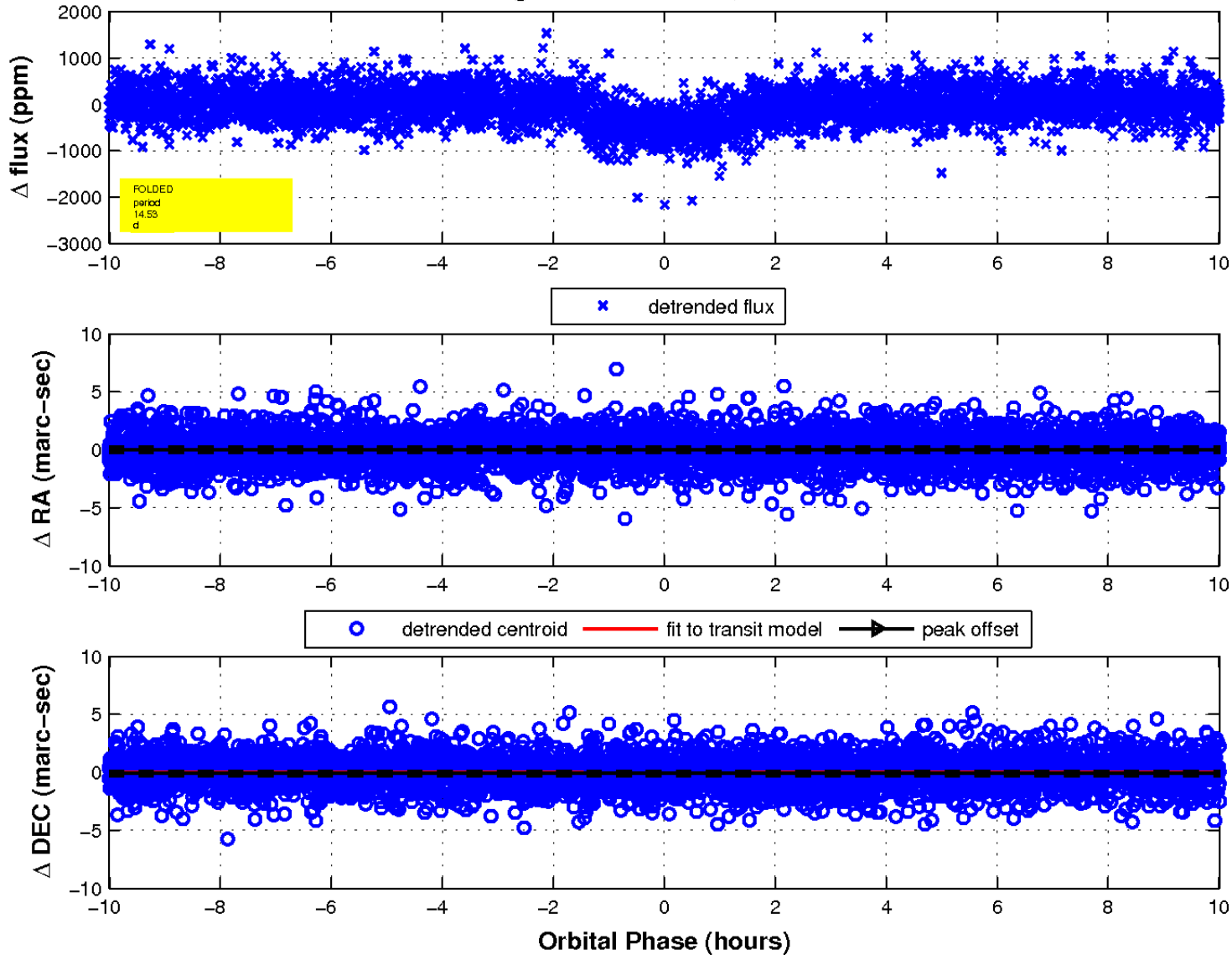




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

