

# KIC 004150703

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004150703-01	OBS	6389.01	8.653266	134.294476	114.6	3.385	7.2	7.3	0.85	5561	1.09	93.81

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004150703-01	OBS	FP	0.00	0	0	1	1	CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

**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.

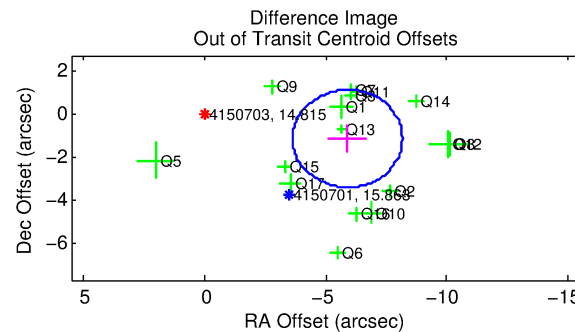
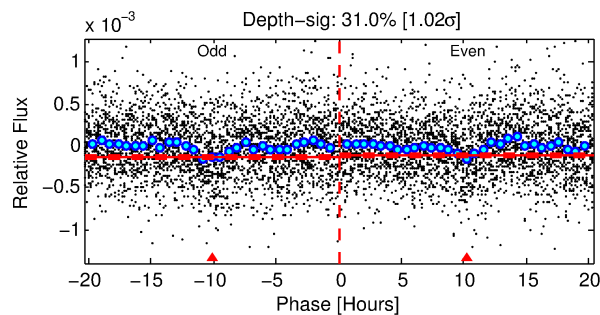
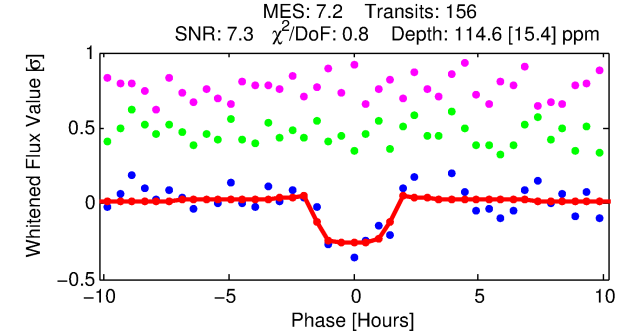
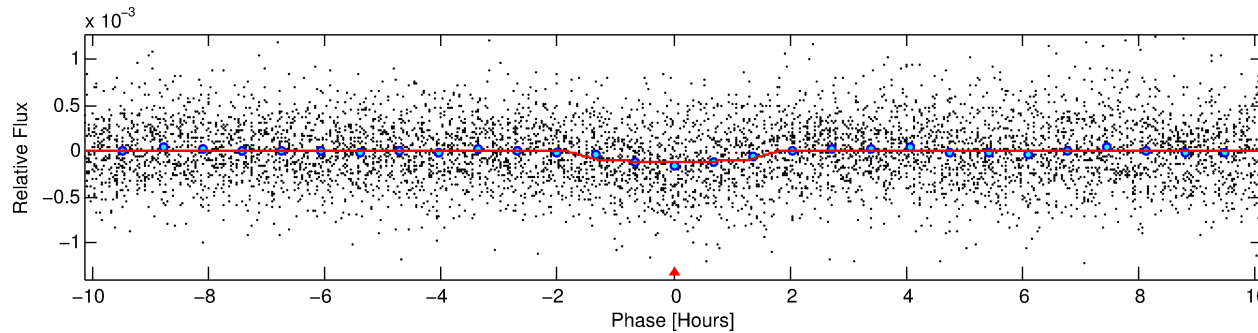
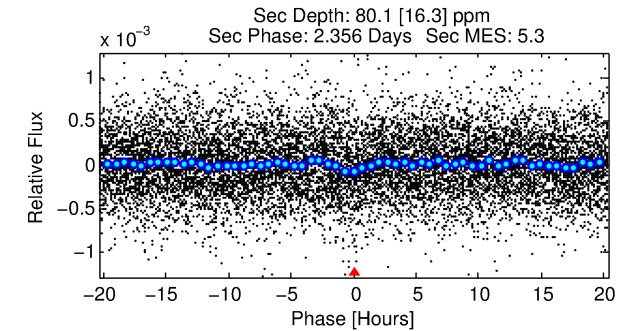
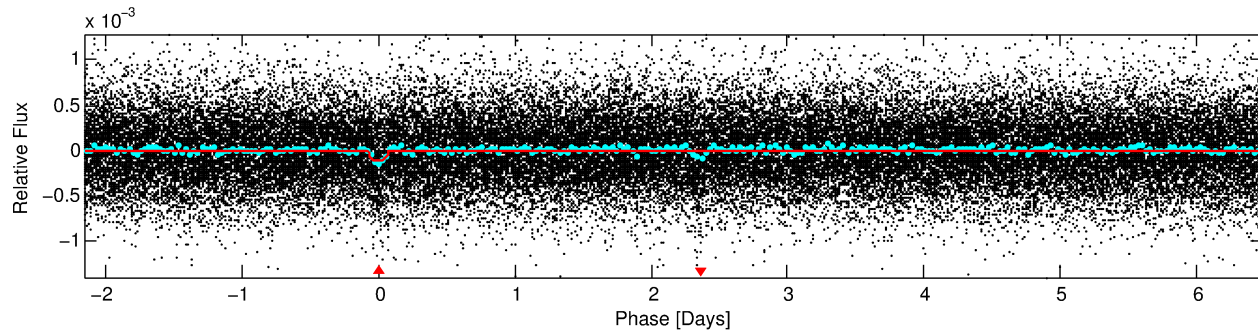
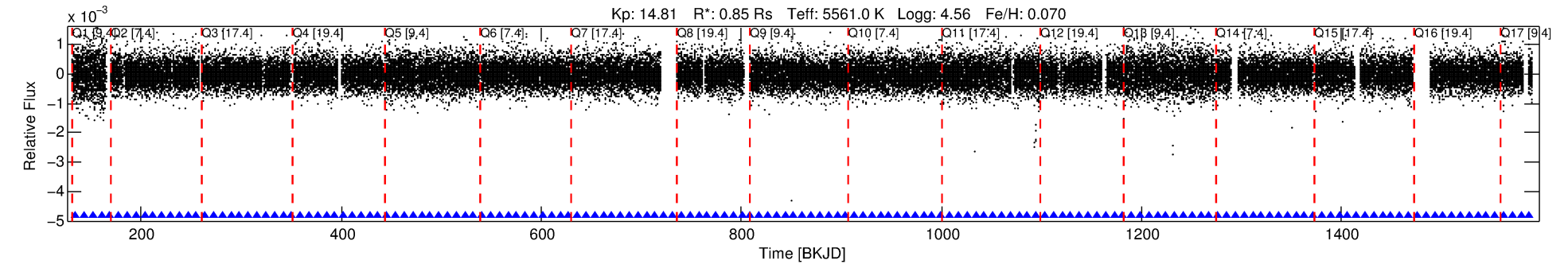
## Ephemeris Match Information For 004150703-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $\mu$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
004150703-01	4150703	004150611-02	4150611	1:1	96.6	-24	3	7.90	14.82	470.83	Direct-PRF	0	0.73	0.27

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 4150703 Candidate: 1 of 1 Period: 8.653 d  
KOI: K06389.01 Corr: 0.927



## DV Fit Results:

Period = 8.65327 [0.00008] d  
Epoch = 134.2945 [0.0076] BKJD  
Rp/R\* = 0.0117 [0.0084]  
a/R\* = 9.11 [29.30]  
b = 0.90 [0.71]  
Seff = 93.81 [18.39]  
Teq = 794 [39] K  
Rp = 1.09 [0.80] Re  
a = 0.0816 [0.0097] AU  
Ag = 245.35 [358.92] [0.68σ]  
Teffp = 4856 [1763] K [2.30σ]

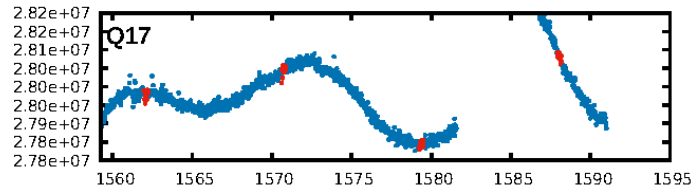
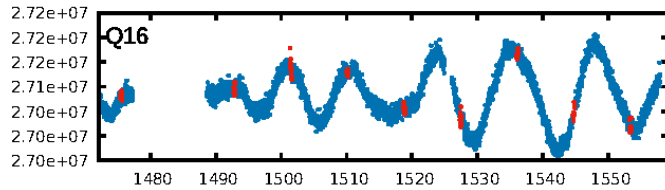
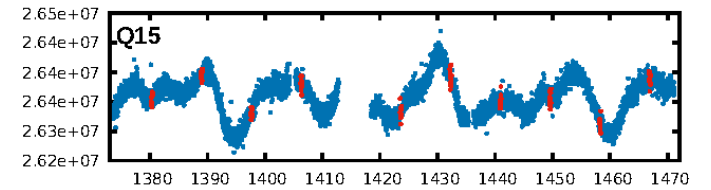
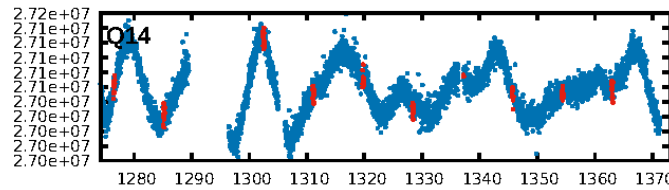
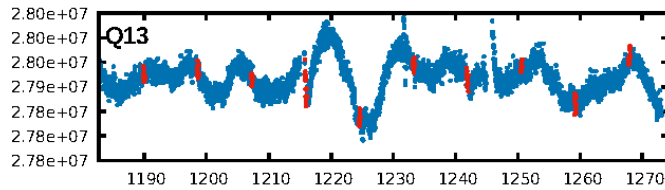
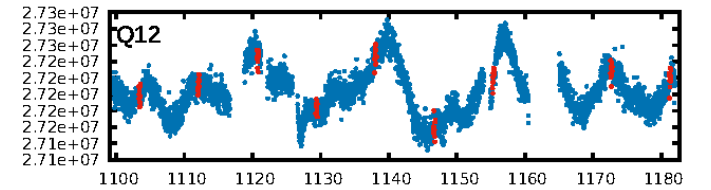
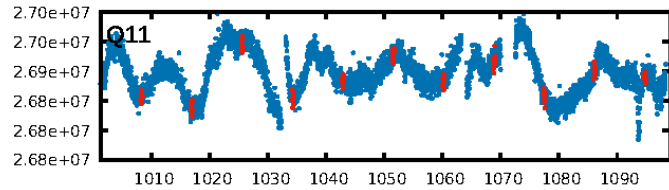
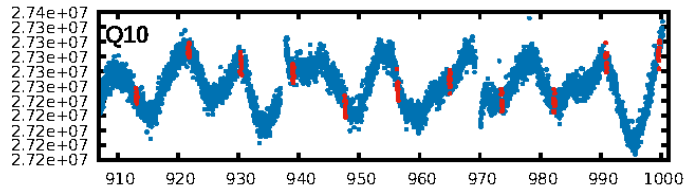
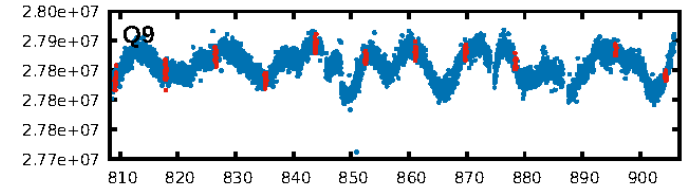
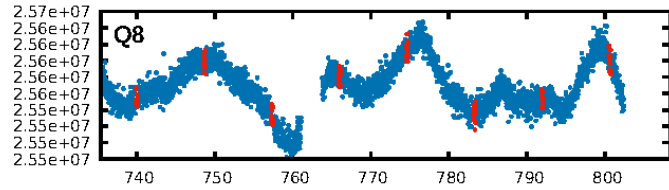
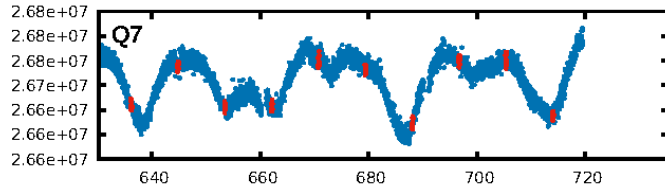
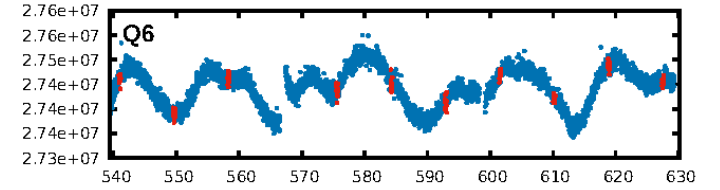
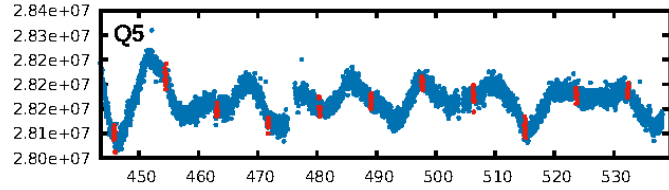
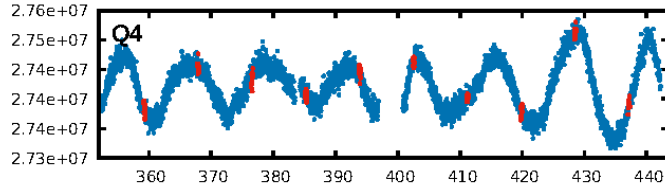
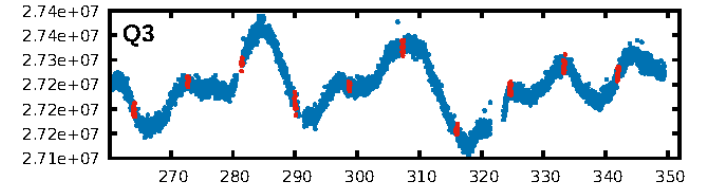
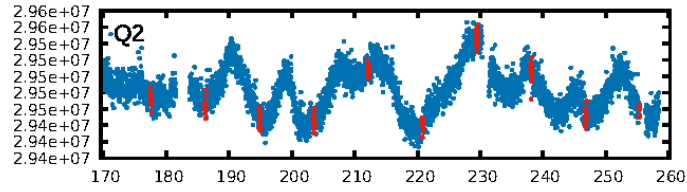
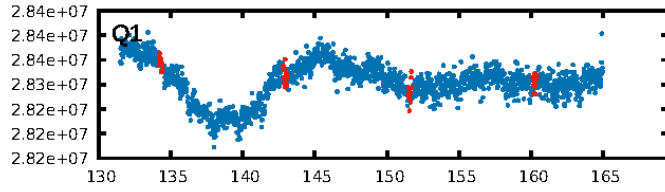
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.03e-12**  
RollingBand-fgt: 1.00 [148/148]  
**GhostDiagnostic-chr: -0.1852**  
Centroid-sig: 0.0%  
Centroid-so: 8.894 arcsec [7.40σ]  
OotOffset-rm: 6.007 arcsec [7.93σ]  
KicOffset-rm: 6.788 arcsec [10.76σ]  
OotOffset-st: 4/4/3/5 [16]  
KicOffset-st: 4/4/3/5 [16]  
DiffImageQuality-fgm: 0.12 [2/16]  
DiffImageOverlap-fno: 1.00 [17/17]

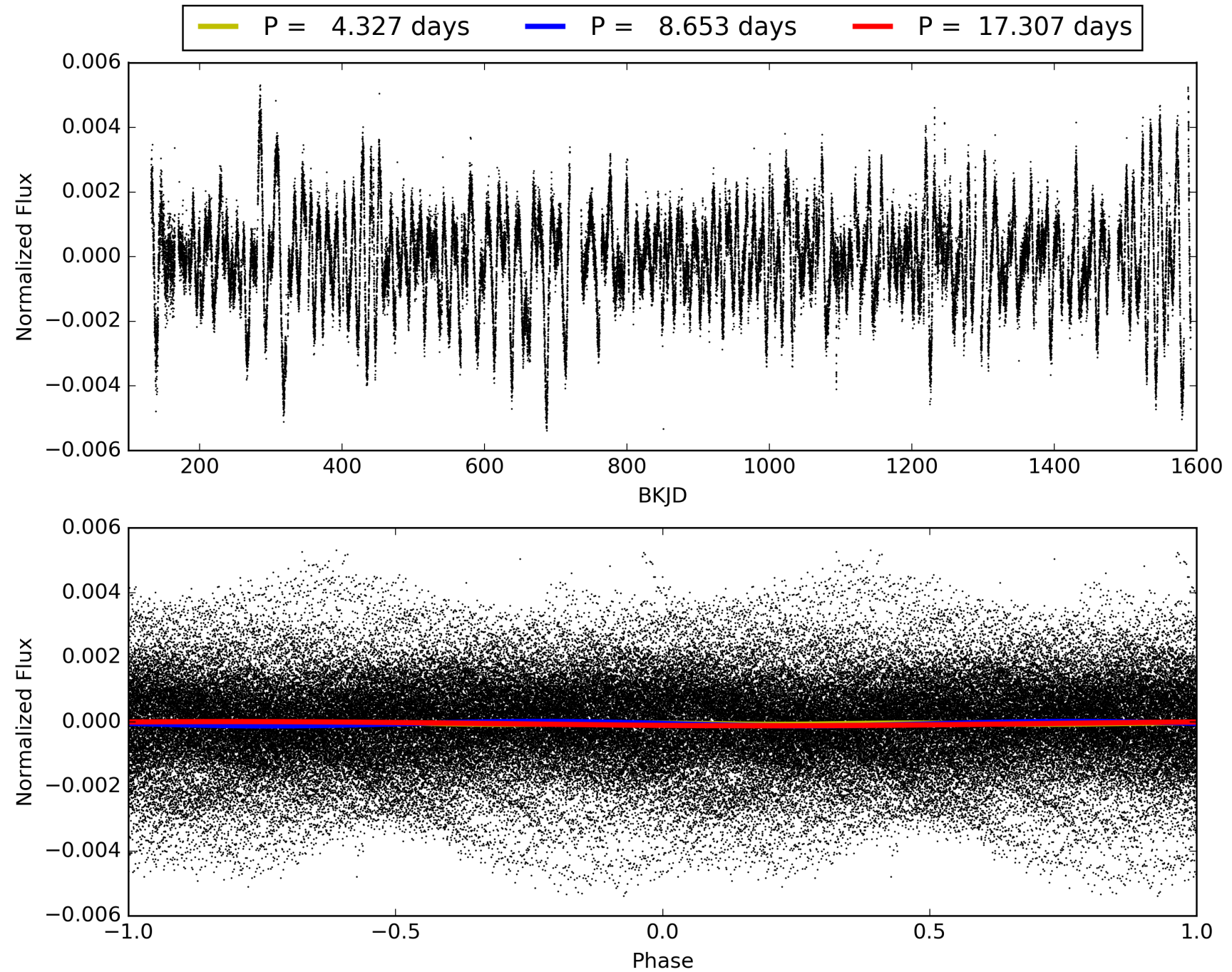
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:49:27 Z

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

# TCE 004150703-01, PDC Light Curves

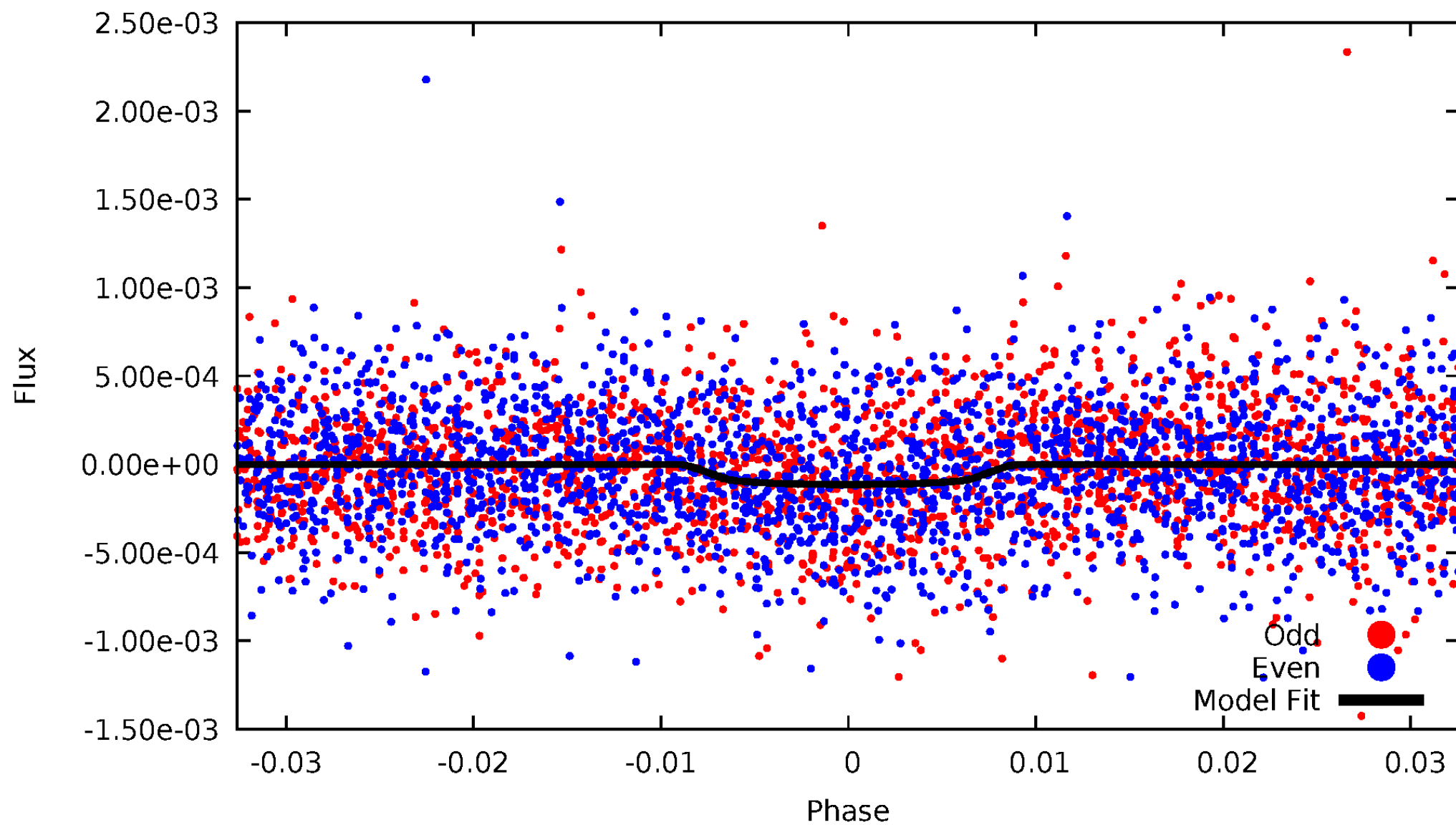


TCE 004150703-01



DV Odd/Even

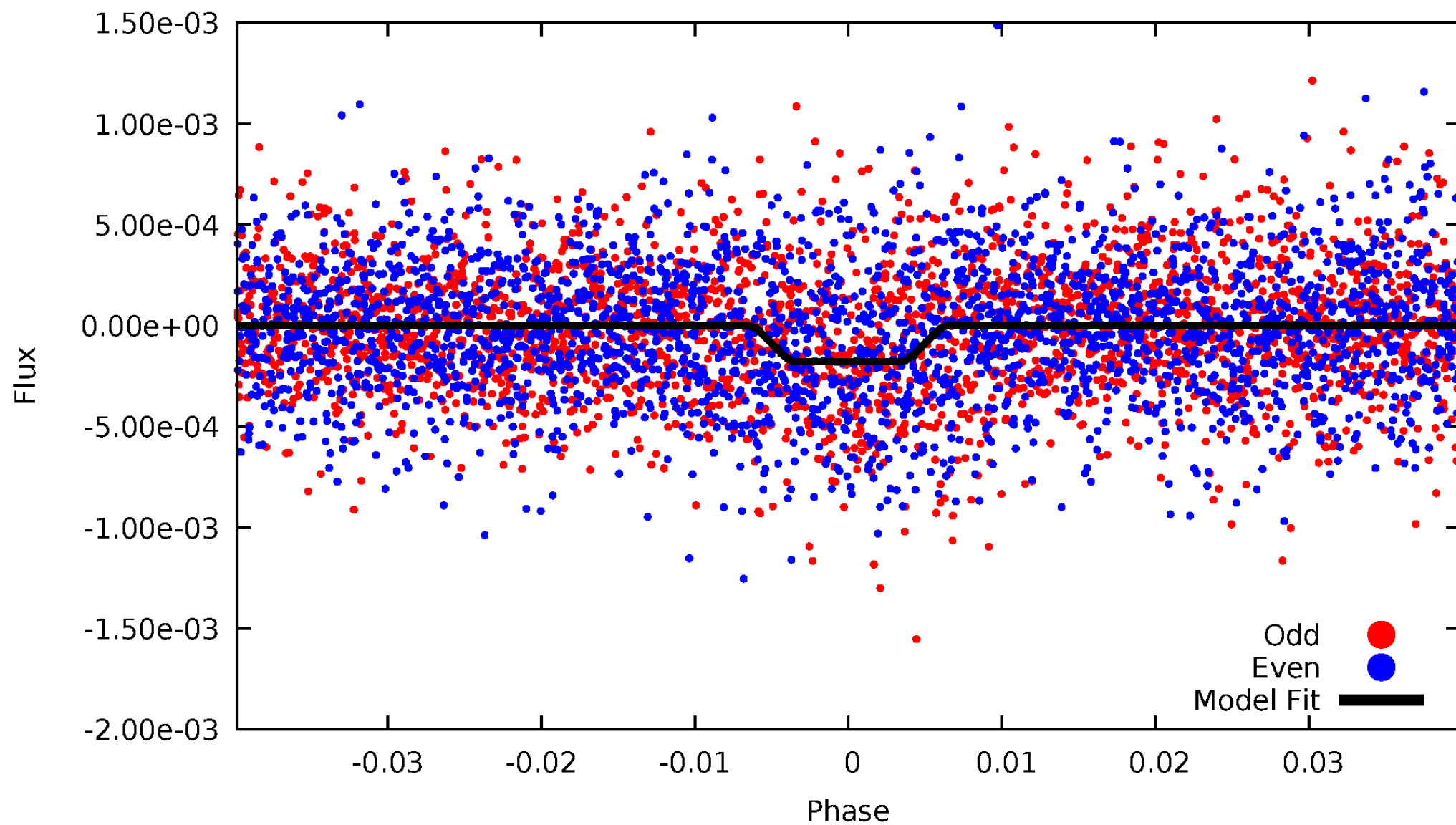
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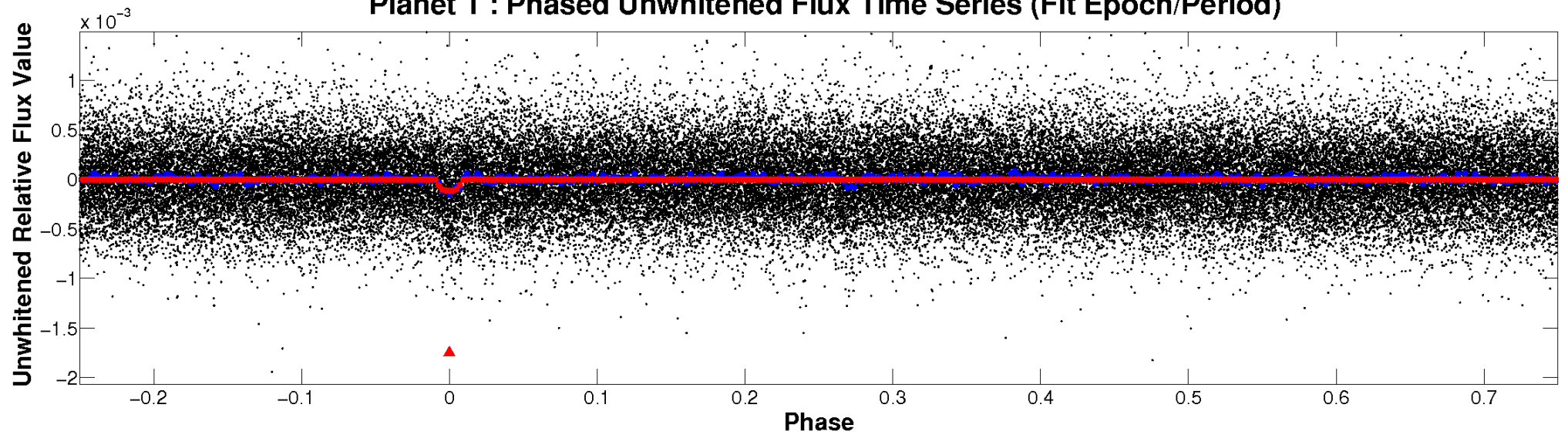
# ALT Odd/Even

TCE 004150703-01

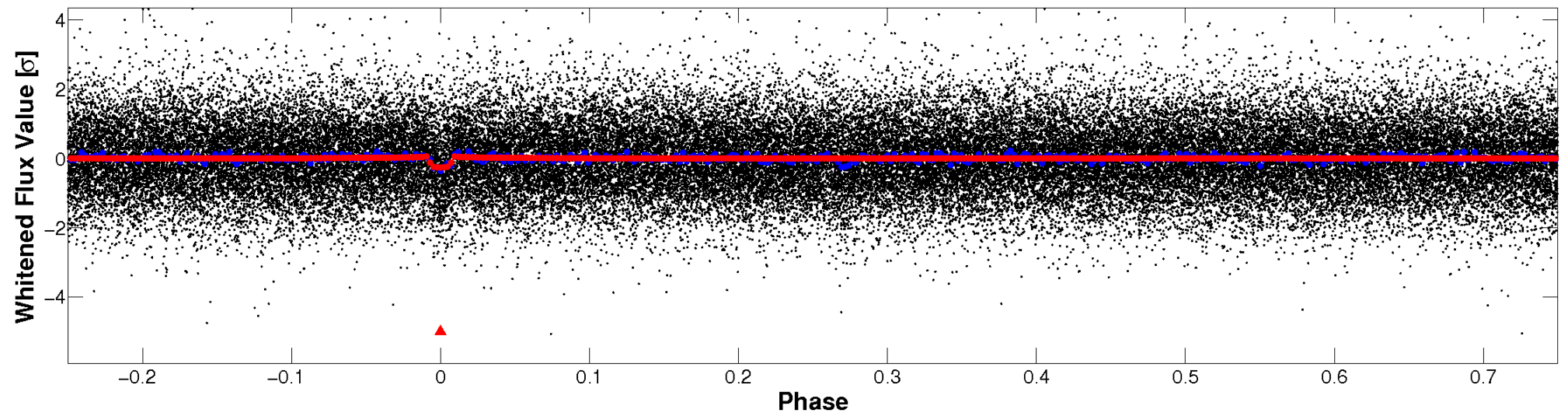


# Non-Whitened Vs. Whitened Light Curve

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

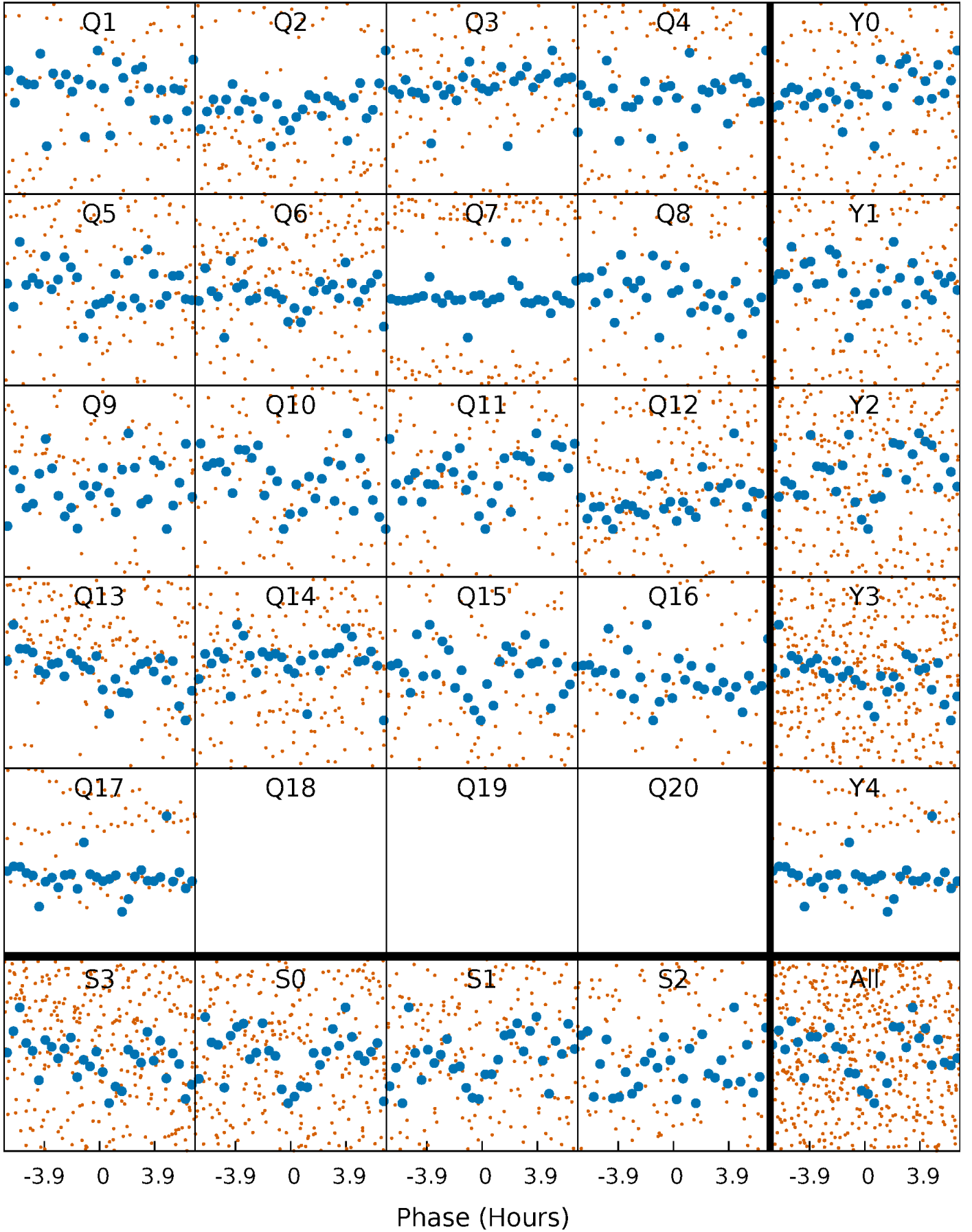


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

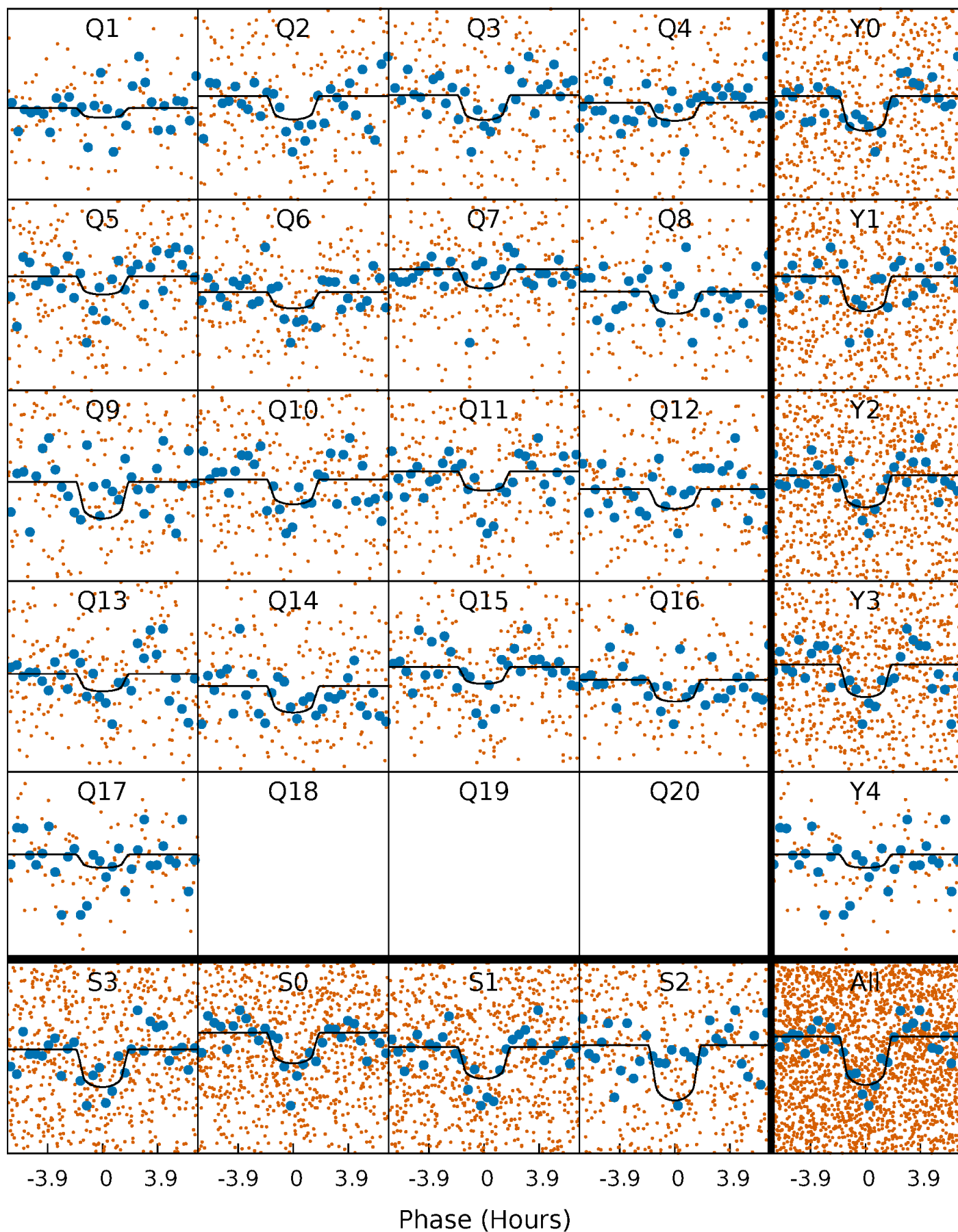
TCE 004150703-01   P= 8.653266 Days    $T_0=134.294476$  (BKJD)





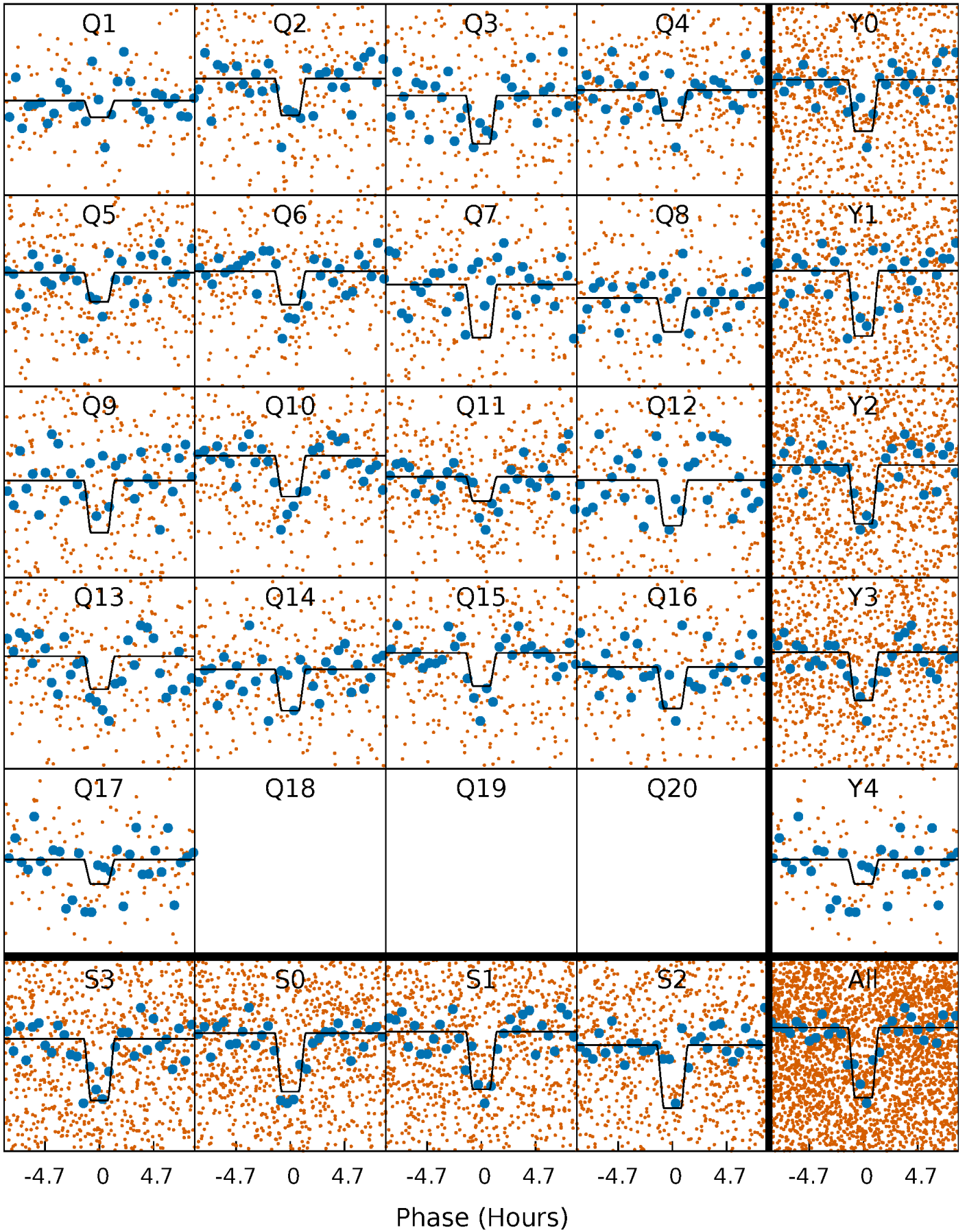
# DV Quarter-Phased Transit Curves

TCE 004150703-01 P= 8.653266 Days  $T_0=134.294476$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

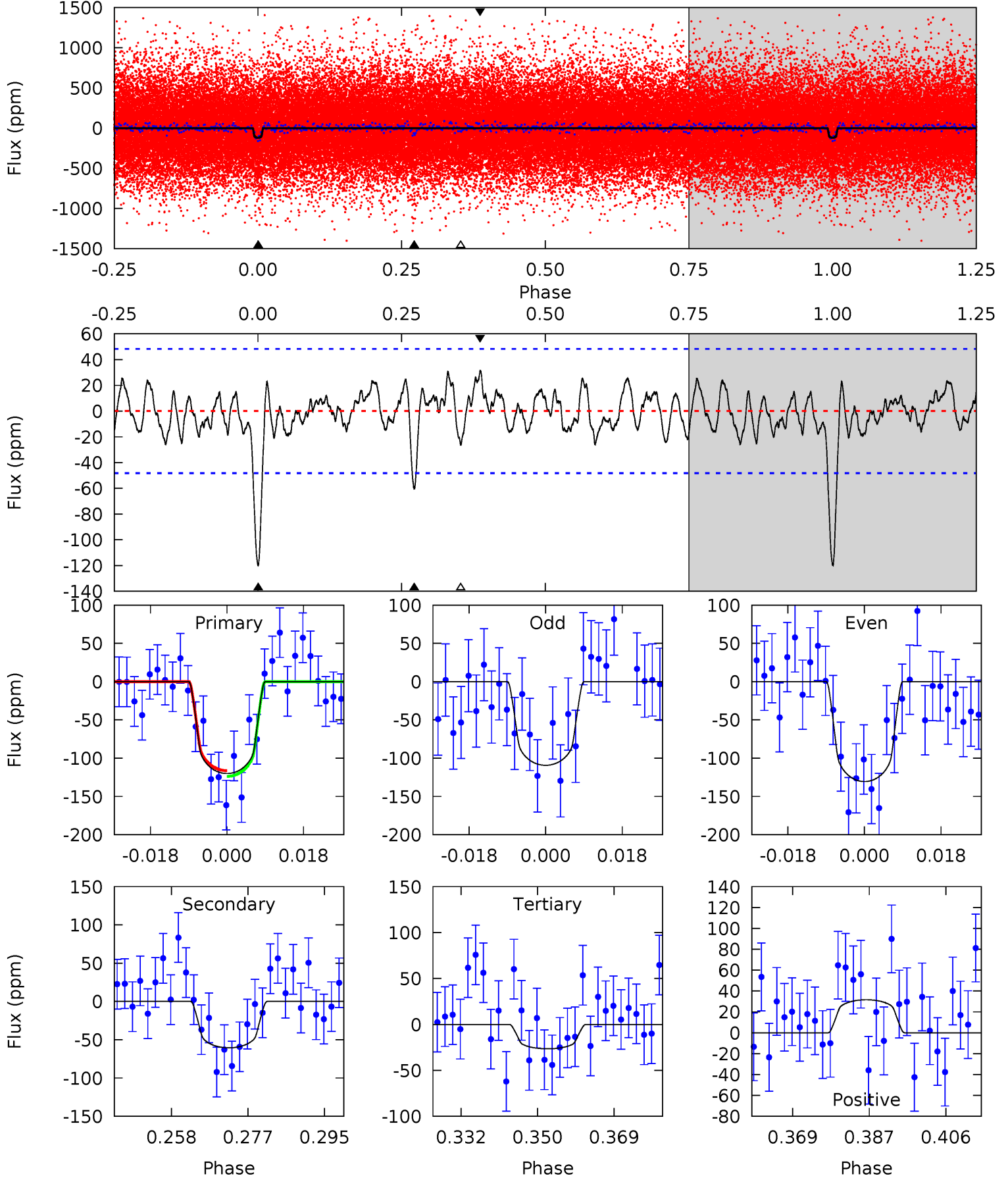
TCE 004150703-01 P= 8.653068 Days  $T_0=134.311730$  (BKJD)



# DV Model-Shift Uniqueness Test

004150703-01, P = 8.653266 Days, E = 125.641210 Days

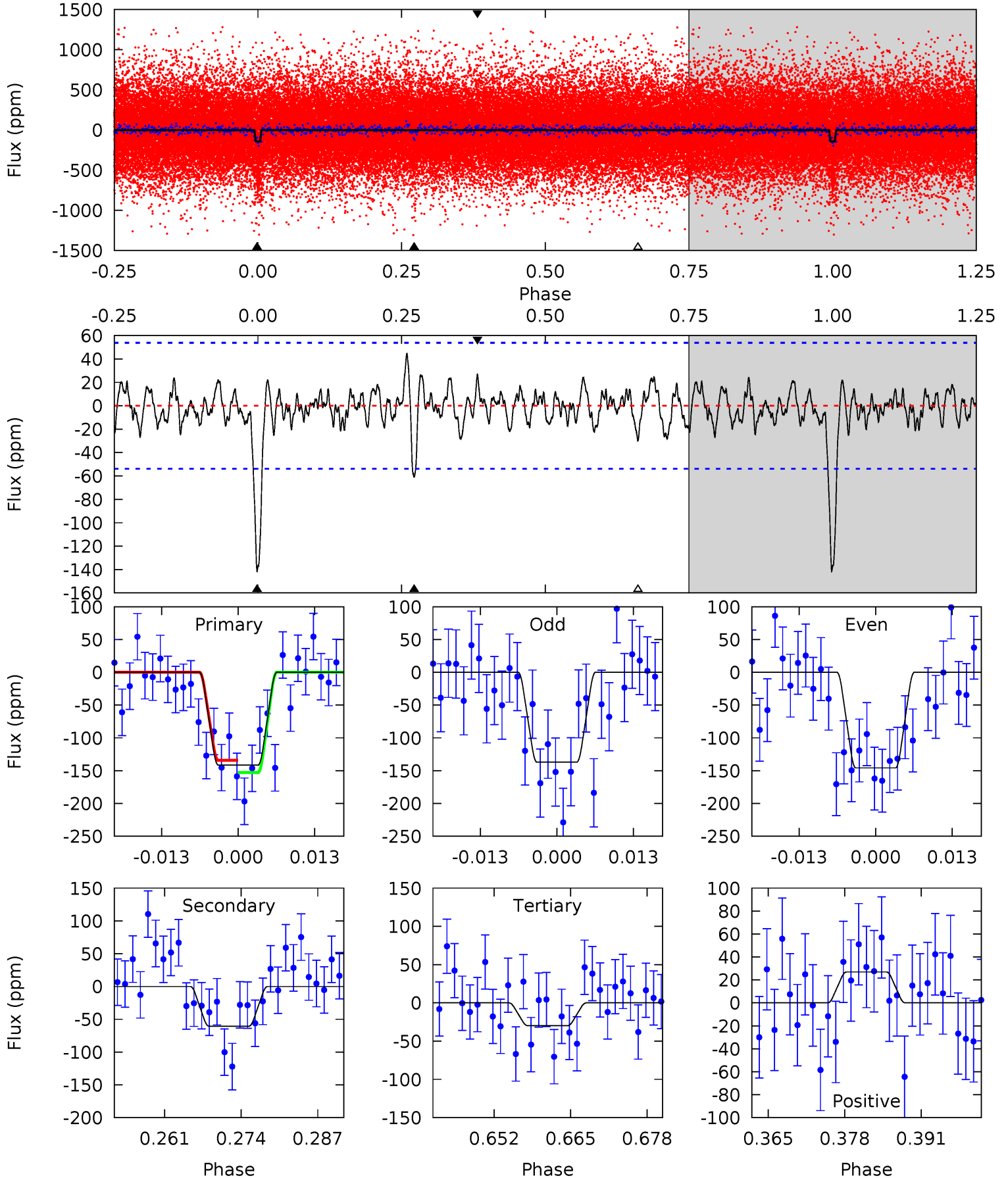
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	6.16	2.70	3.22	4.91	2.36	1.26	9.52	9.00	3.47	2.94	1.08	1.34	0.21	0.38



# Alt Model-Shift Uniqueness Test

004150703-01, P = 8.653068 Days, E = 125.658662 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
13.1	5.59	2.75	2.49	4.98	2.48	1.06	10.3	10.6	2.83	3.10	0.40	1.01	0.24	0.86



### Stellar Parameters For KIC 004150703

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5561^{+75}_{-83}$	$4.561^{+0.012}_{-0.108}$	$0.070^{+0.150}_{-0.150}$	$0.854^{+0.110}_{-0.034}$	$0.968^{+0.034}_{-0.080}$	$2.192^{+0.147}_{-0.640}$
	+1%/-1%	+0%/-2%	+214%/-214%	+13%/-4%	+4%/-8%	+7%/-29%
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 004150703-01 / KOI 6389.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-61 \pm 10$	$1.20^{+0.72}_{-0.66}$	$1125^{+39}_{-25}$	$4544^{+2032}_{-744}$	$150^{+638}_{-94}$
Alt.	$-60 \pm 11$	$1.33^{+0.81}_{-0.74}$	$1123^{+37}_{-23}$	$4343^{+1845}_{-666}$	$123^{+509}_{-77}$

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



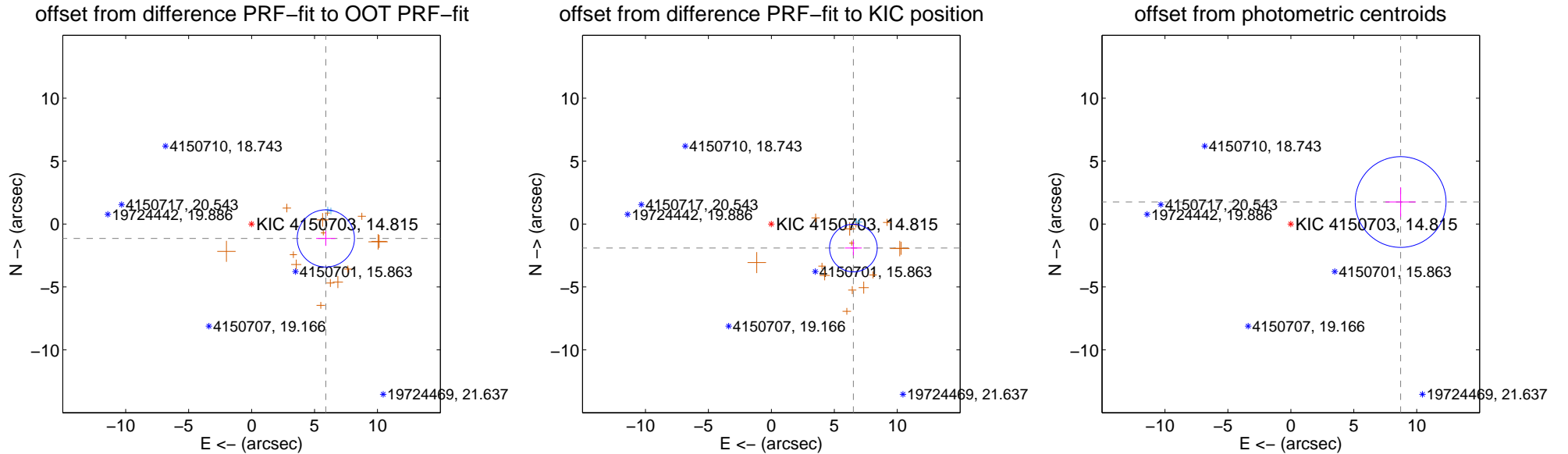
## DV Centroid Data

Supplemental centroid analysis for 004150703-01. Kepler magnitude: 14.81. Transit SNR 7.33

There are 2 quarters with good PRF difference image offsets

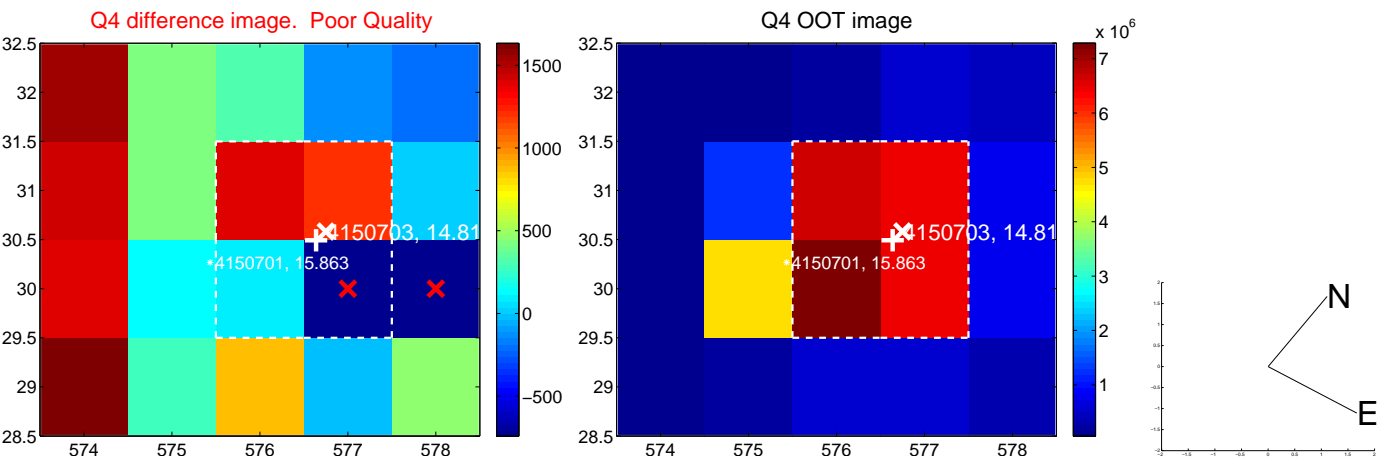
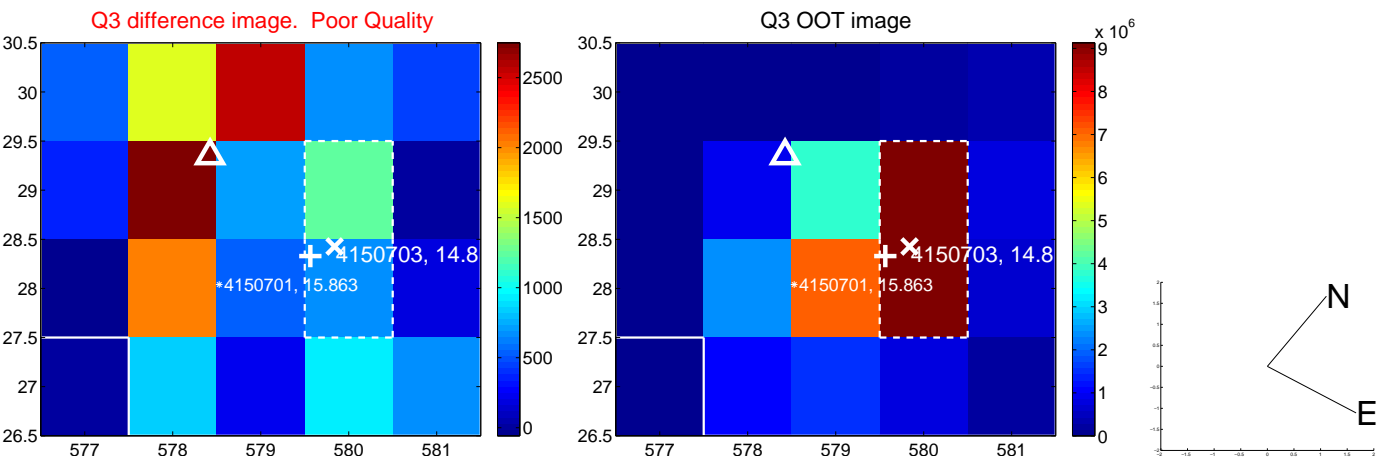
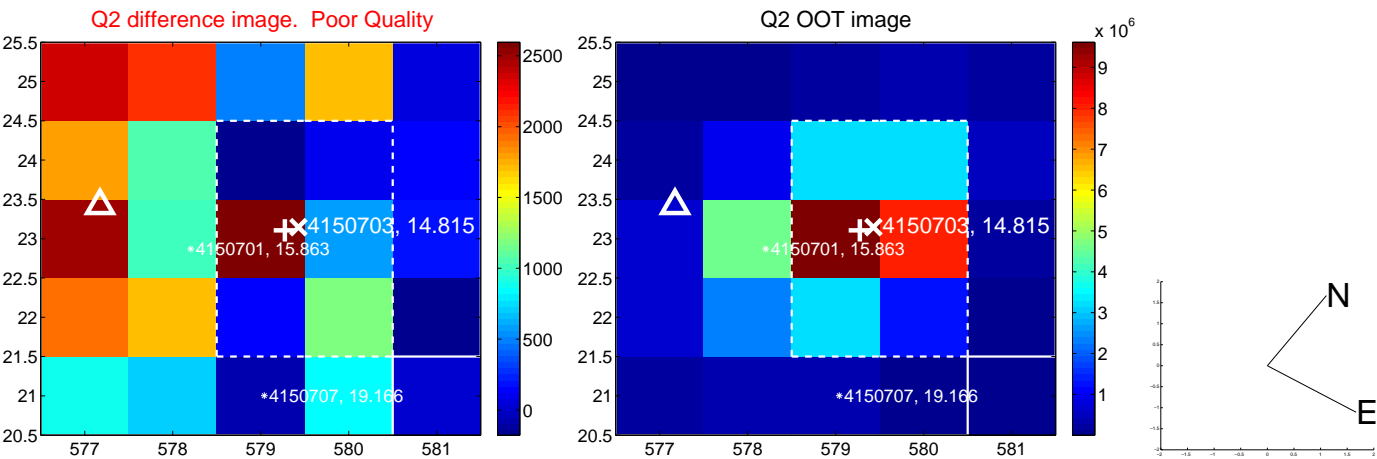
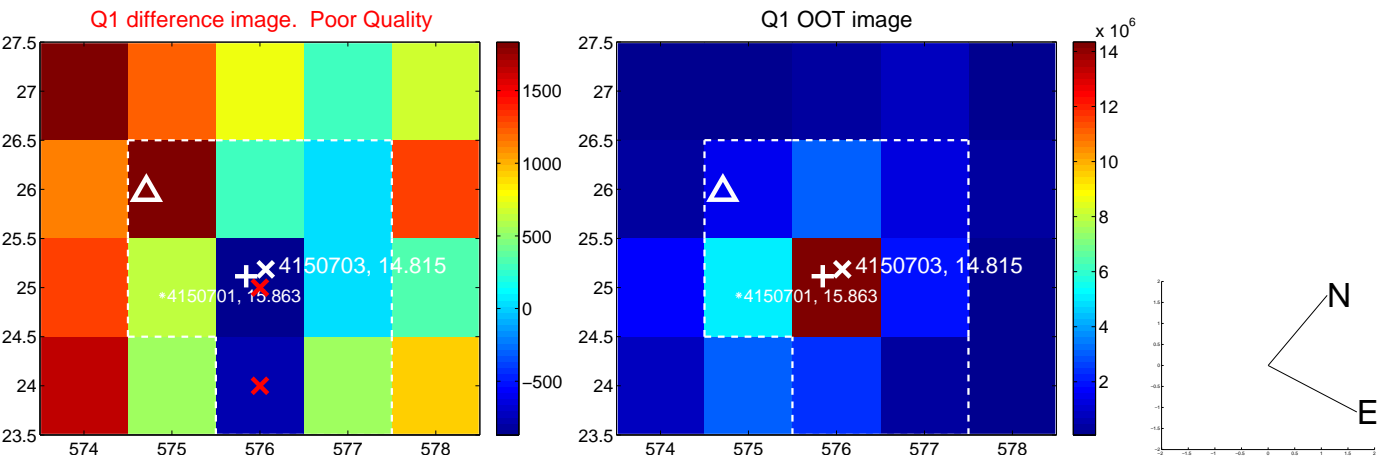
The direct PRF centroid is offset from the target star catalog position by about 1.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$6.007 \pm 0.758$	7.93	$-5.897 \pm 0.765$	$-1.144 \pm 0.595$
PRF-fit source offset from KIC position	$6.788 \pm 0.631$	10.76	$-6.514 \pm 0.670$	$-1.909 \pm 0.574$
photometric centroid source offset	$8.89 \pm 1.20$	7.40	$-8.72 \pm 1.20$	$1.75 \pm 1.17$



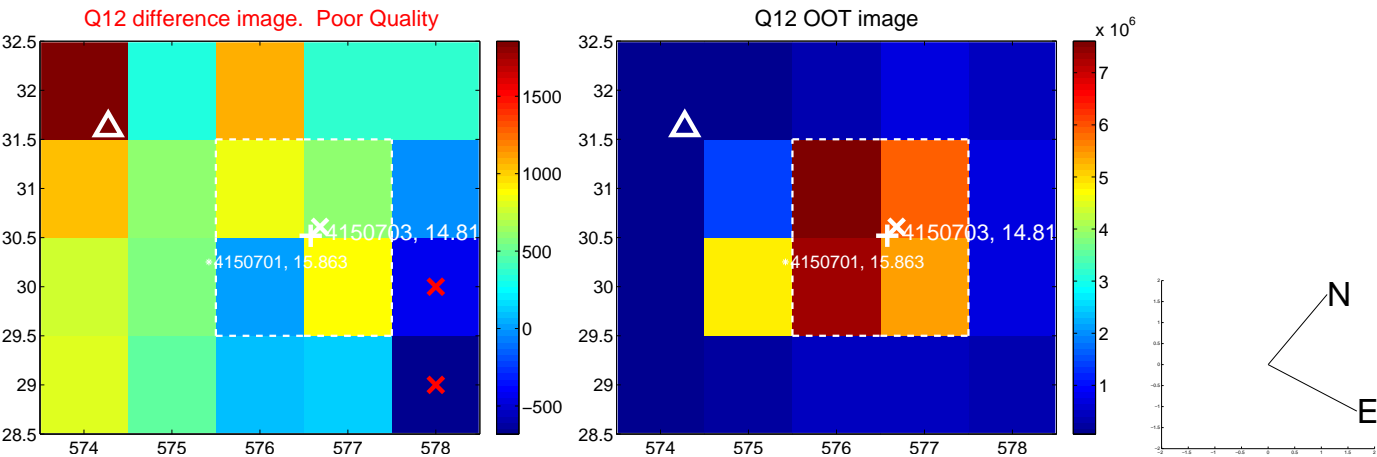
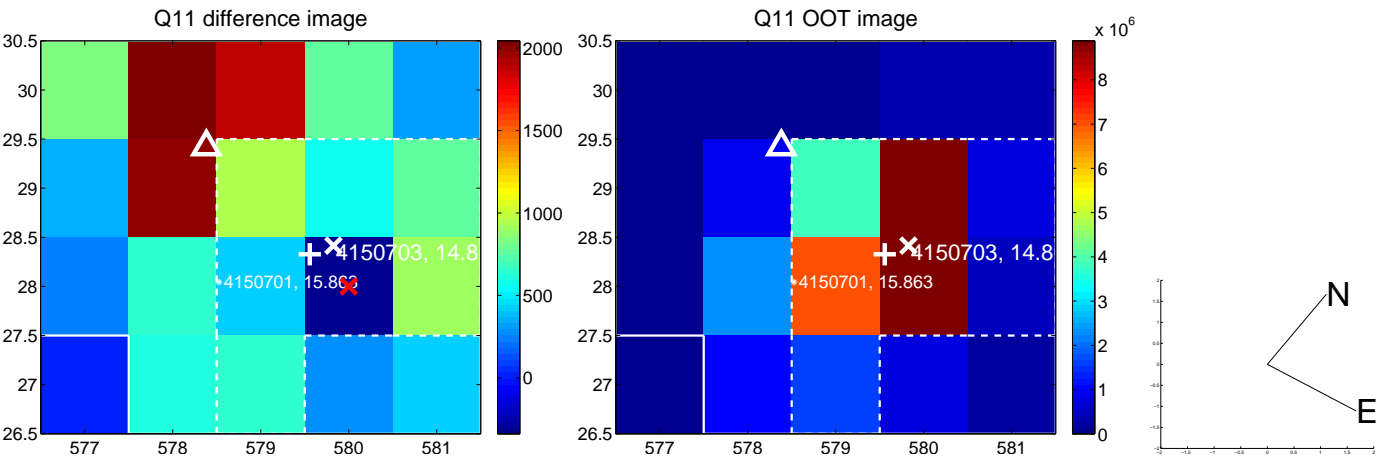
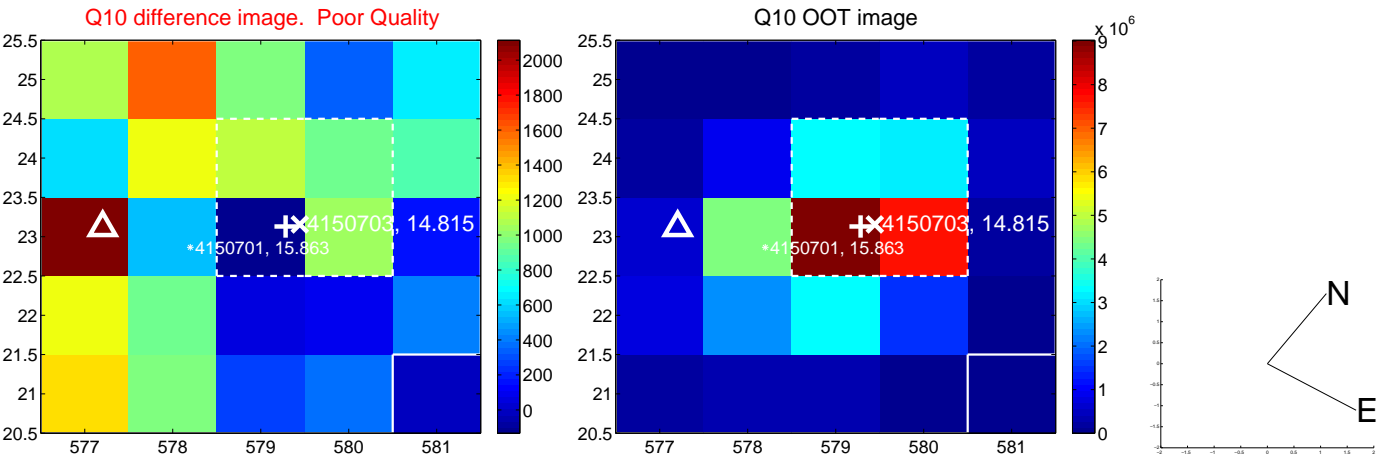
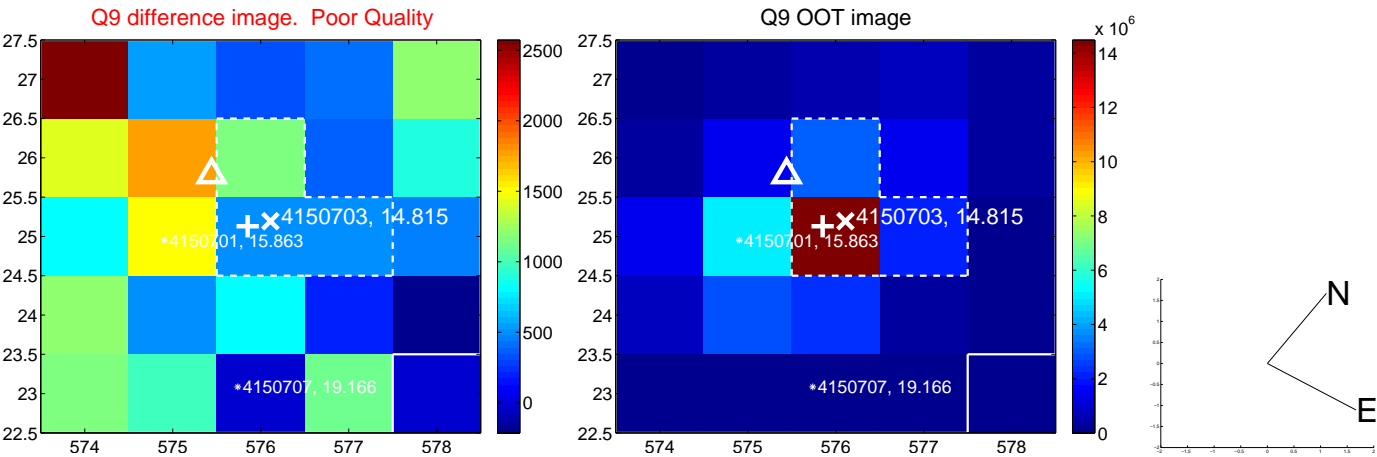
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

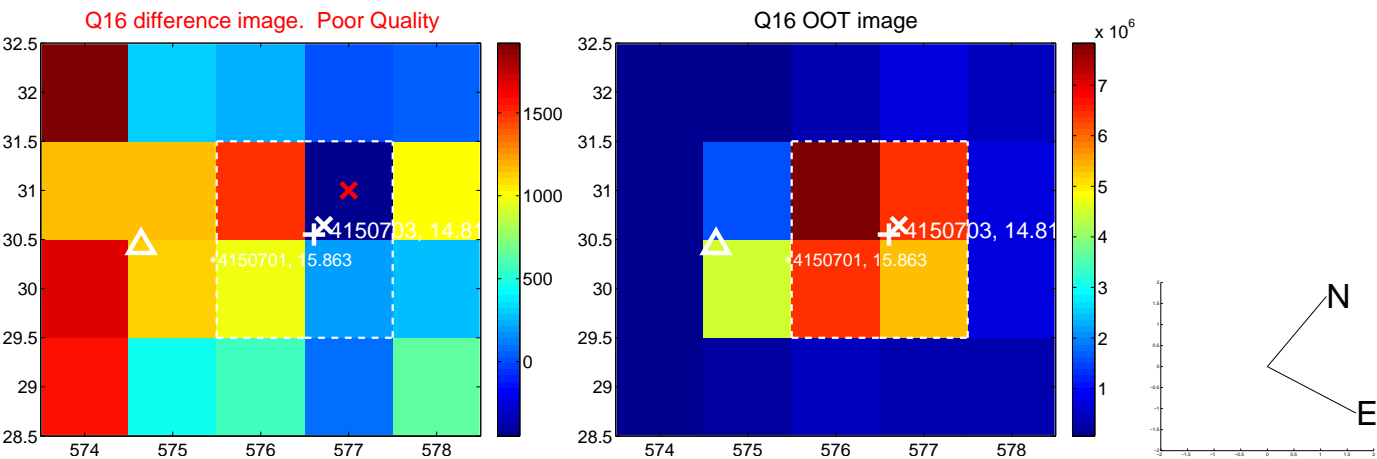
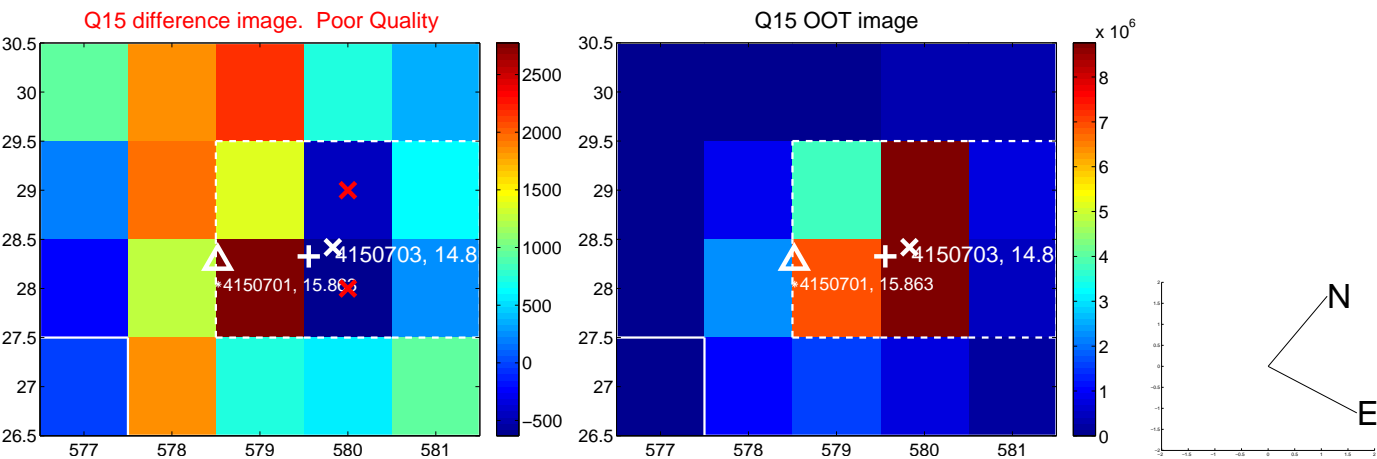
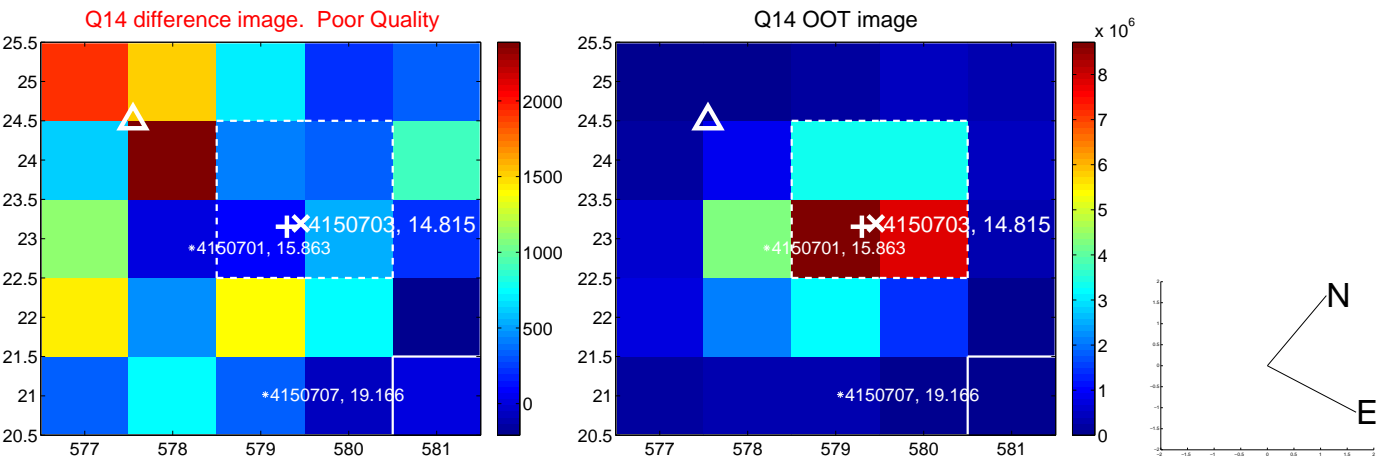
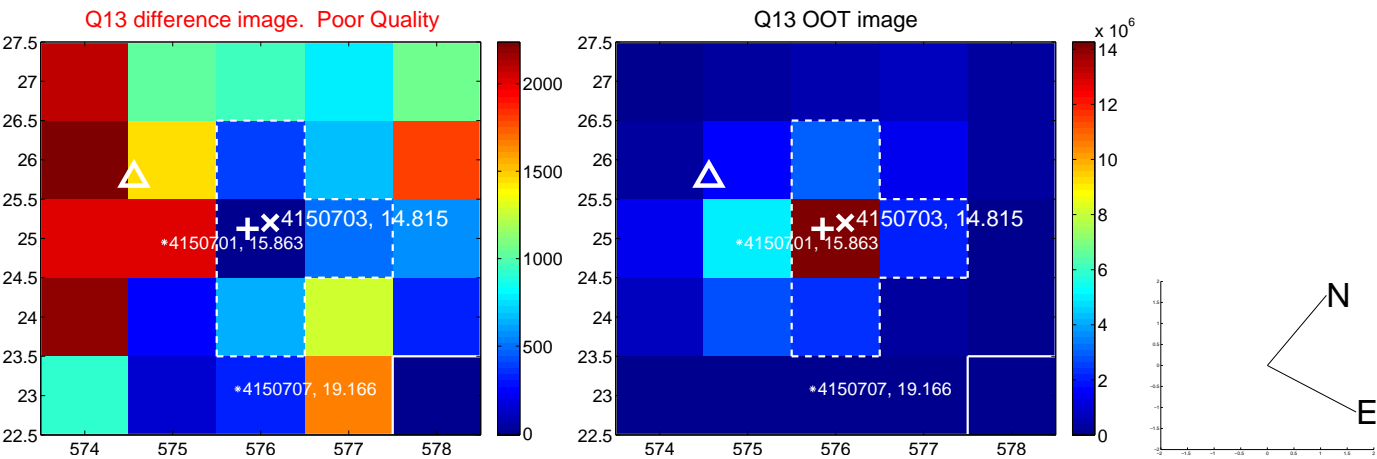




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

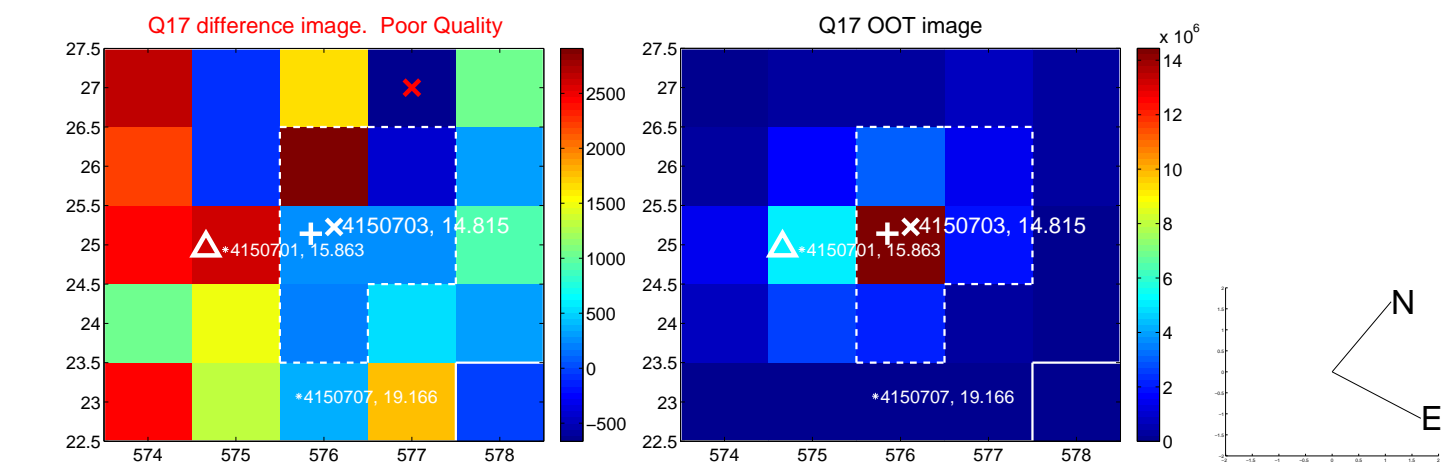


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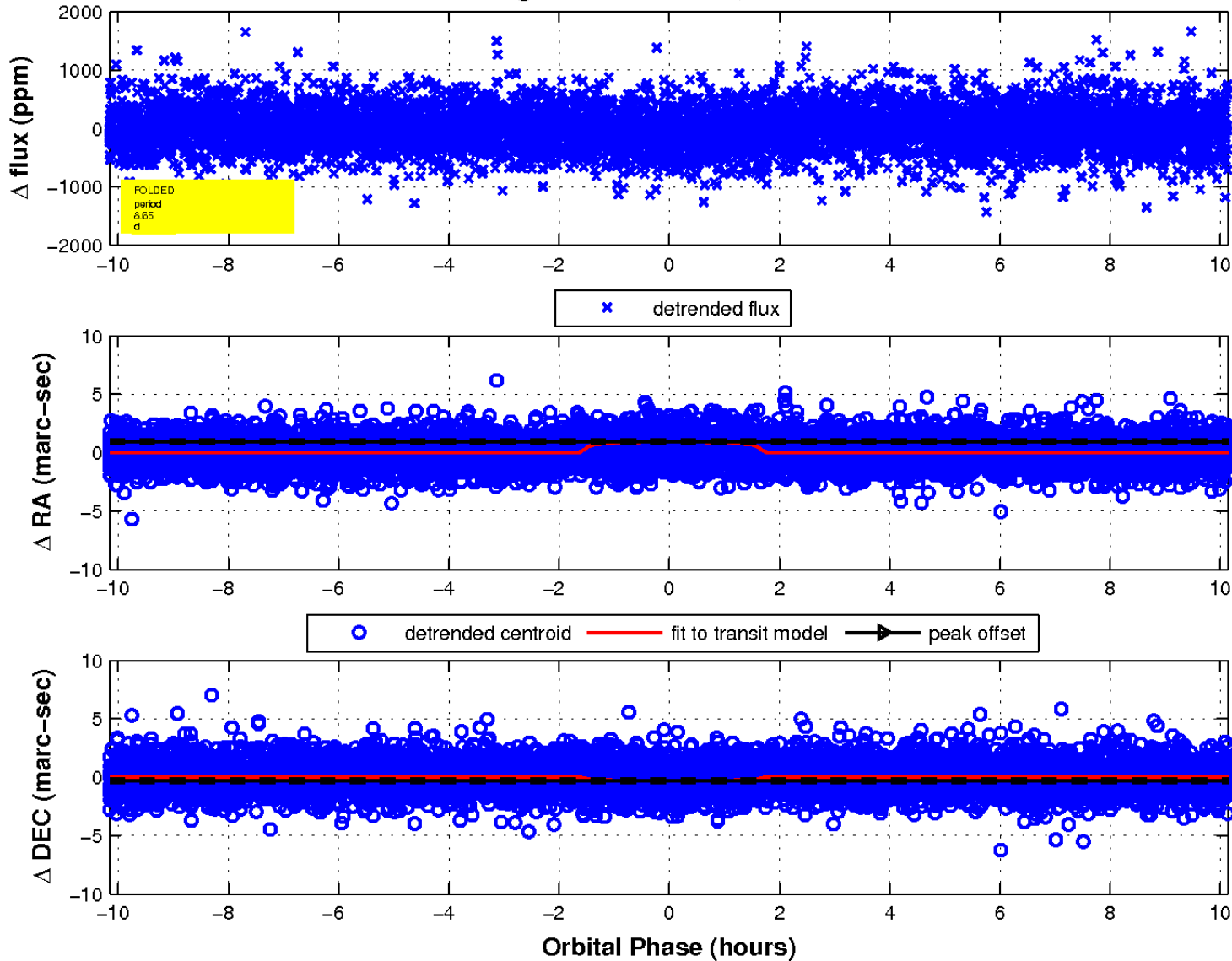




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

