

# KIC 008129005

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008129005-01	OBS	4741.01	3.570179	134.440591	83.6	5.206	10.7	10.8	1.02	6354	1.11	688.80

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008129005-01	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 008129005-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
008129005-01	8129005	008128965-pri	8128965	1:2	27.9	-7	-3	13.23	14.74	2509.50	Direct-PRF	0	0.32	0.18

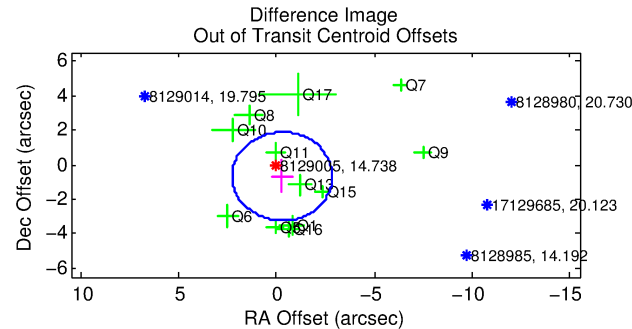
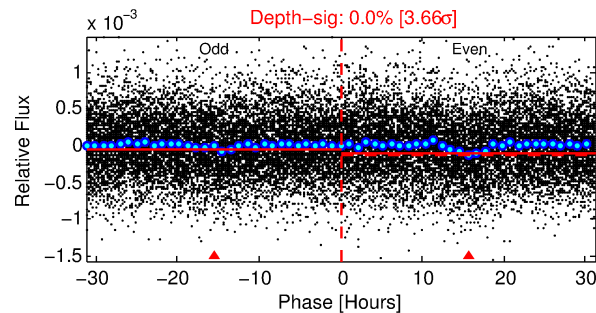
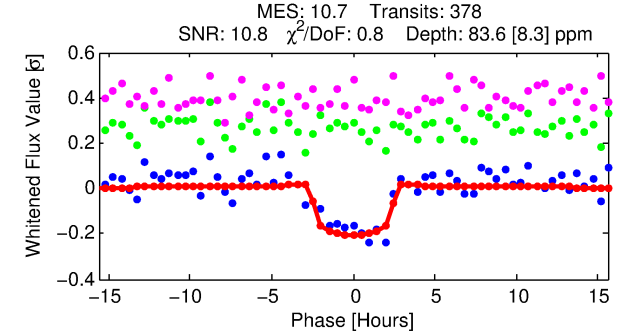
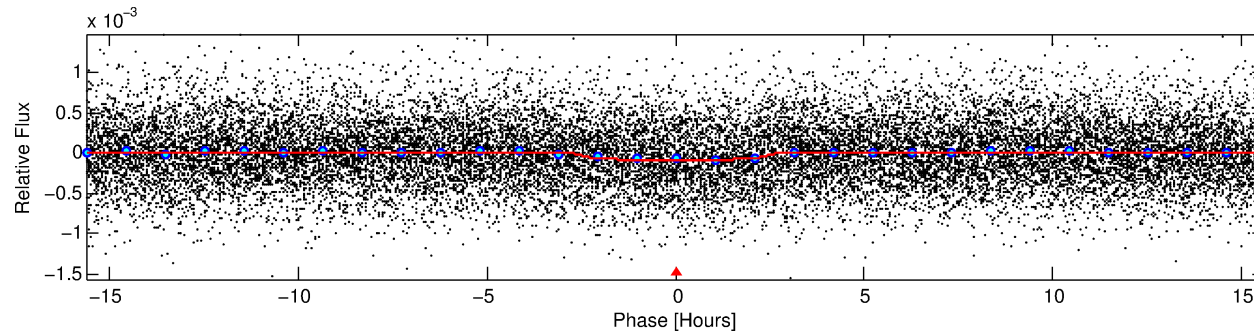
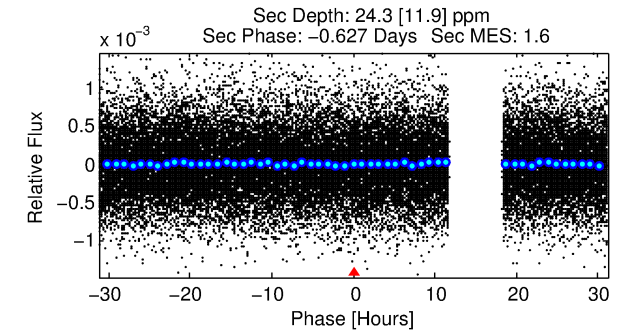
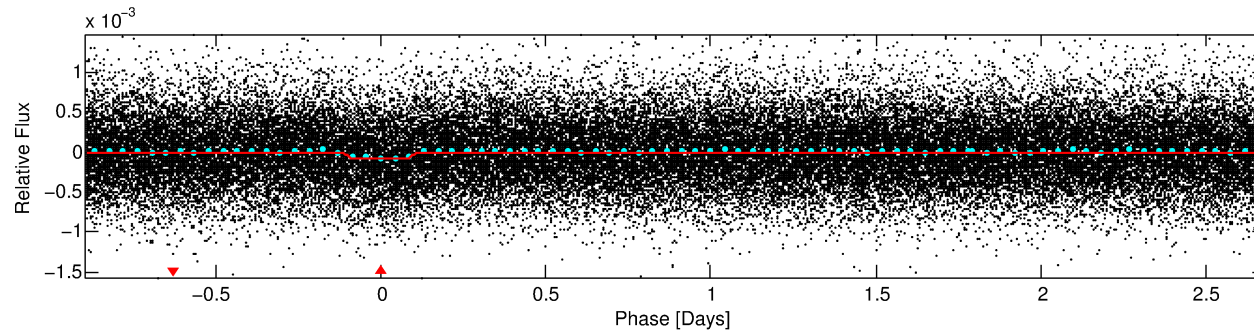
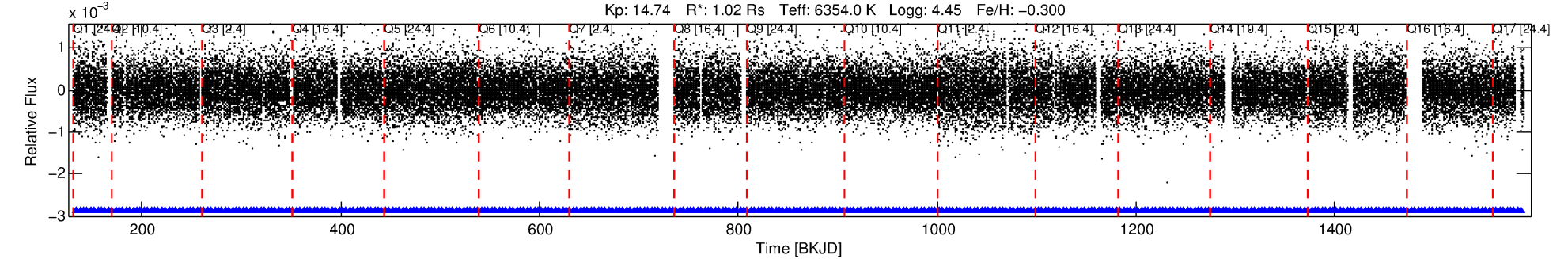
**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  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: 8129005 Candidate: 1 of 1 Period: 3.570 d

KOI: K04741 Corr: No Ephemeris Match

Kp: 14.74 R\*: 1.02 Rs Teff: 6354.0 K Logg: 4.45 Fe/H: -0.300



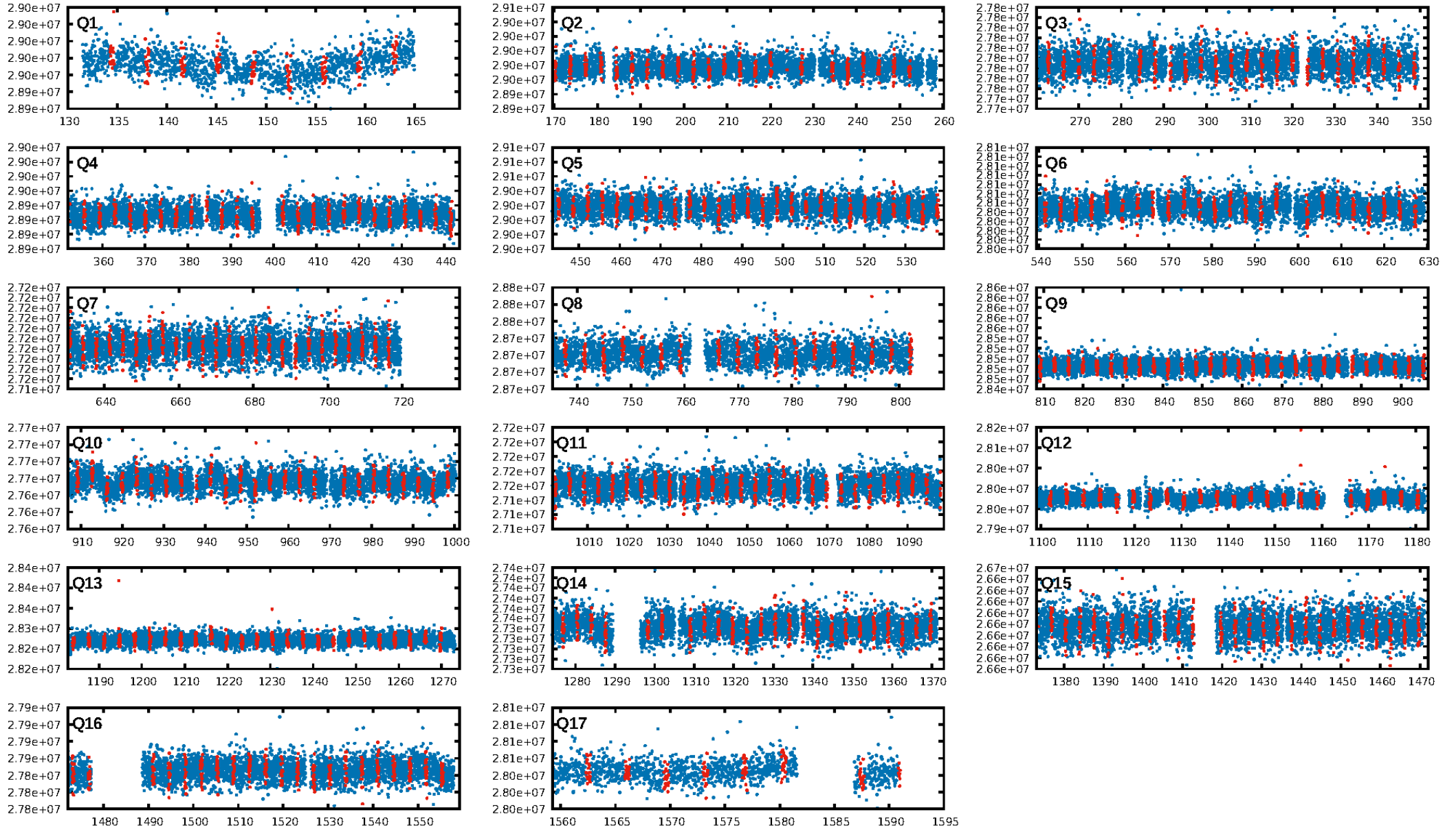
## DV Fit Results:

Period = 3.57018 [0.00004] d  
Epoch = 134.4406 [0.0066] BKJD  
Rp/R\* = 0.0100 [0.0027]  
a/R\* = 2.33 [2.91]  
b = 0.92 [0.24]  
Seff = 688.80 [265.06]  
Teff = 1306 [126] K  
Rp = 1.11 [0.44] Re  
a = 0.0468 [0.0115] AU  
Ag = 23.62 [19.06] [1.19σ]  
Teffp = 4453 [821] K [3.79σ]

## DV Diagnostic Results:

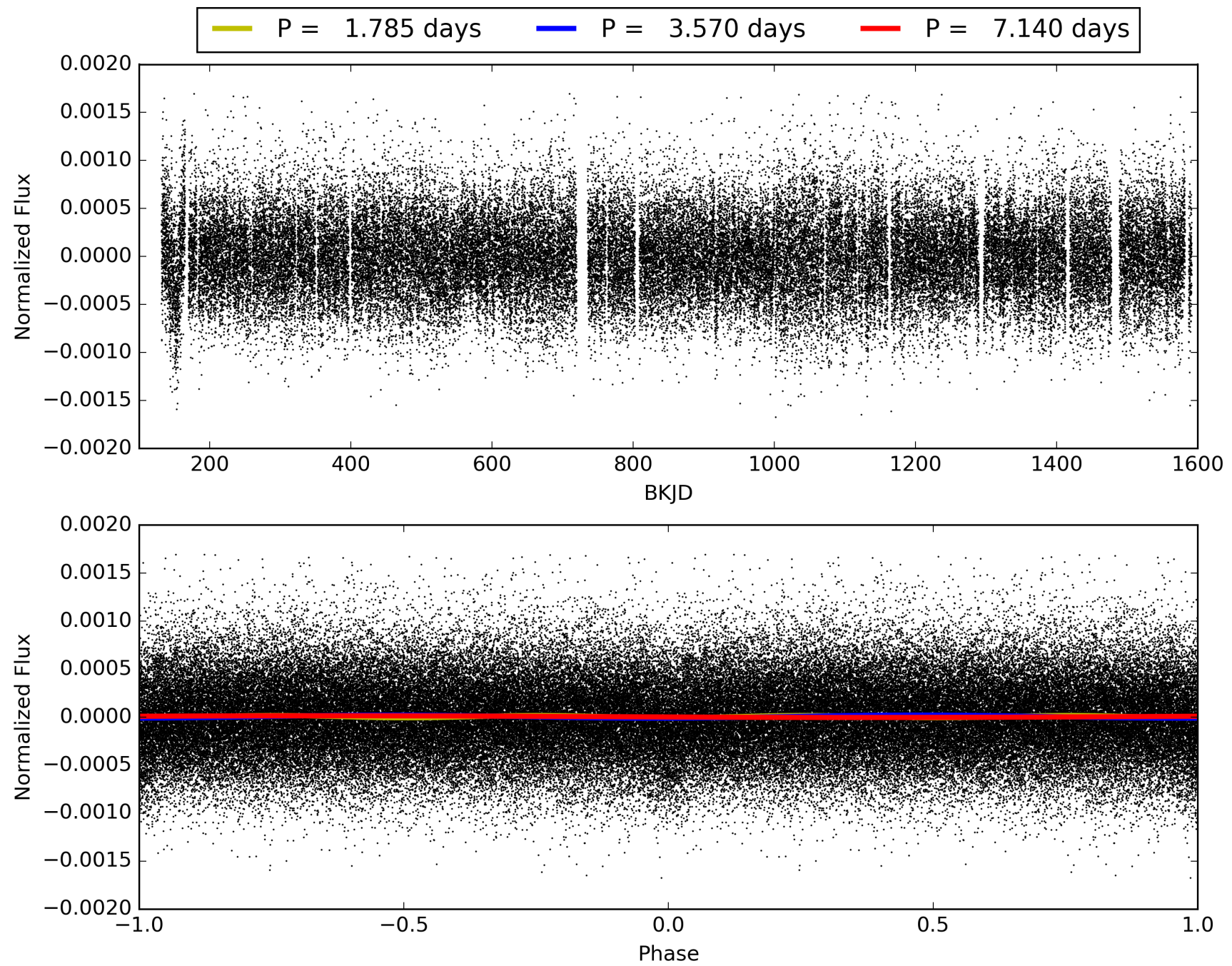
ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.60e-27  
RollingBand-fgt: 1.00 [361/361]  
GhostDiagnostic-chr: 0.04314  
Centroid-sig: 0.1%  
Centroid-so: 2.773 arcsec [2.29σ]  
OotOffset-rm: 0.739 arcsec [0.87σ]  
KicOffset-rm: 1.048 arcsec [1.30σ]  
OotOffset-st: 2/3/2/5 [12]  
KicOffset-st: 2/3/2/5 [12]  
DiffImageQuality-fgm: 0.17 [2/12]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 008129005-01, PDC Light Curves



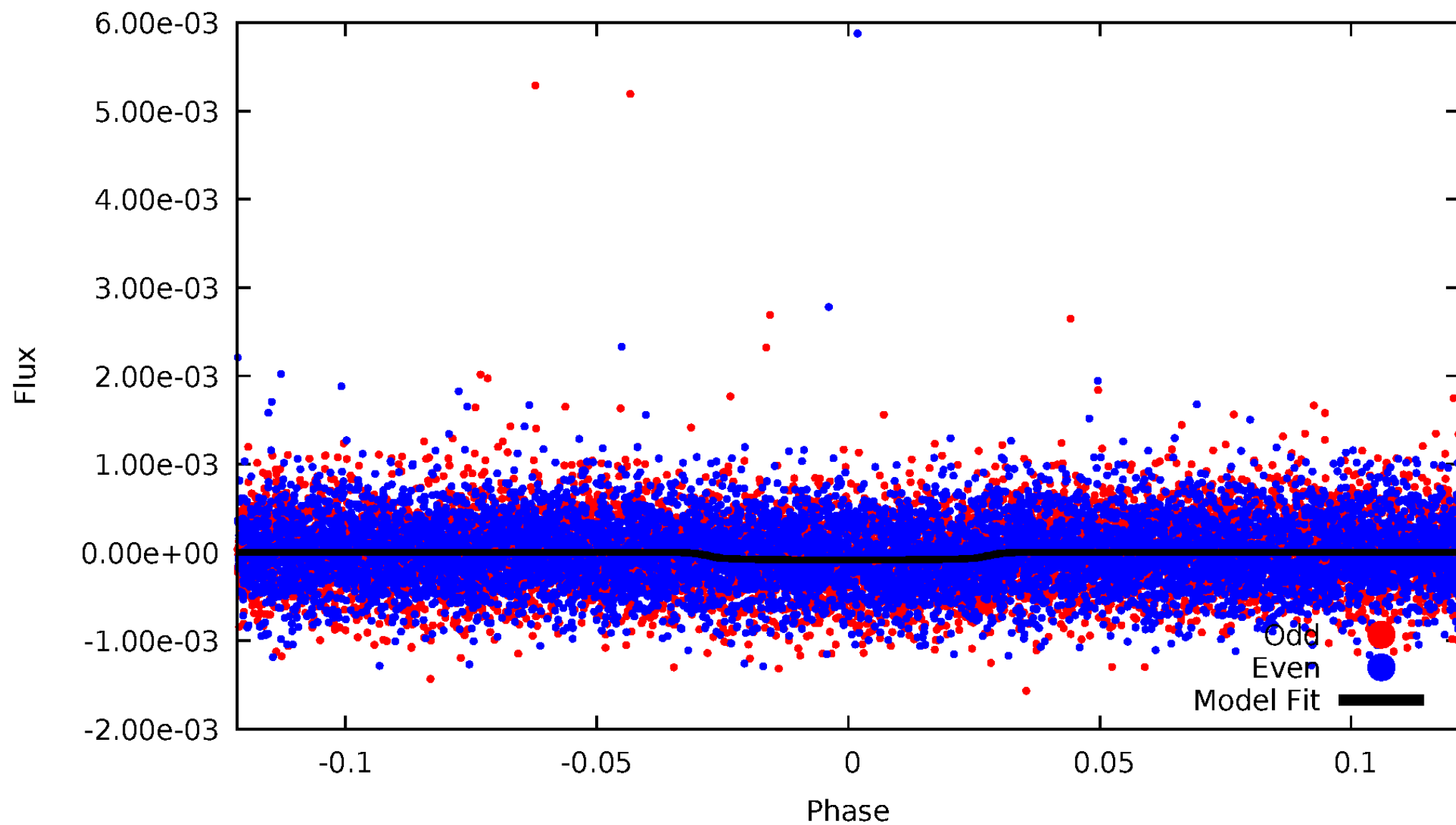


TCE 008129005-01



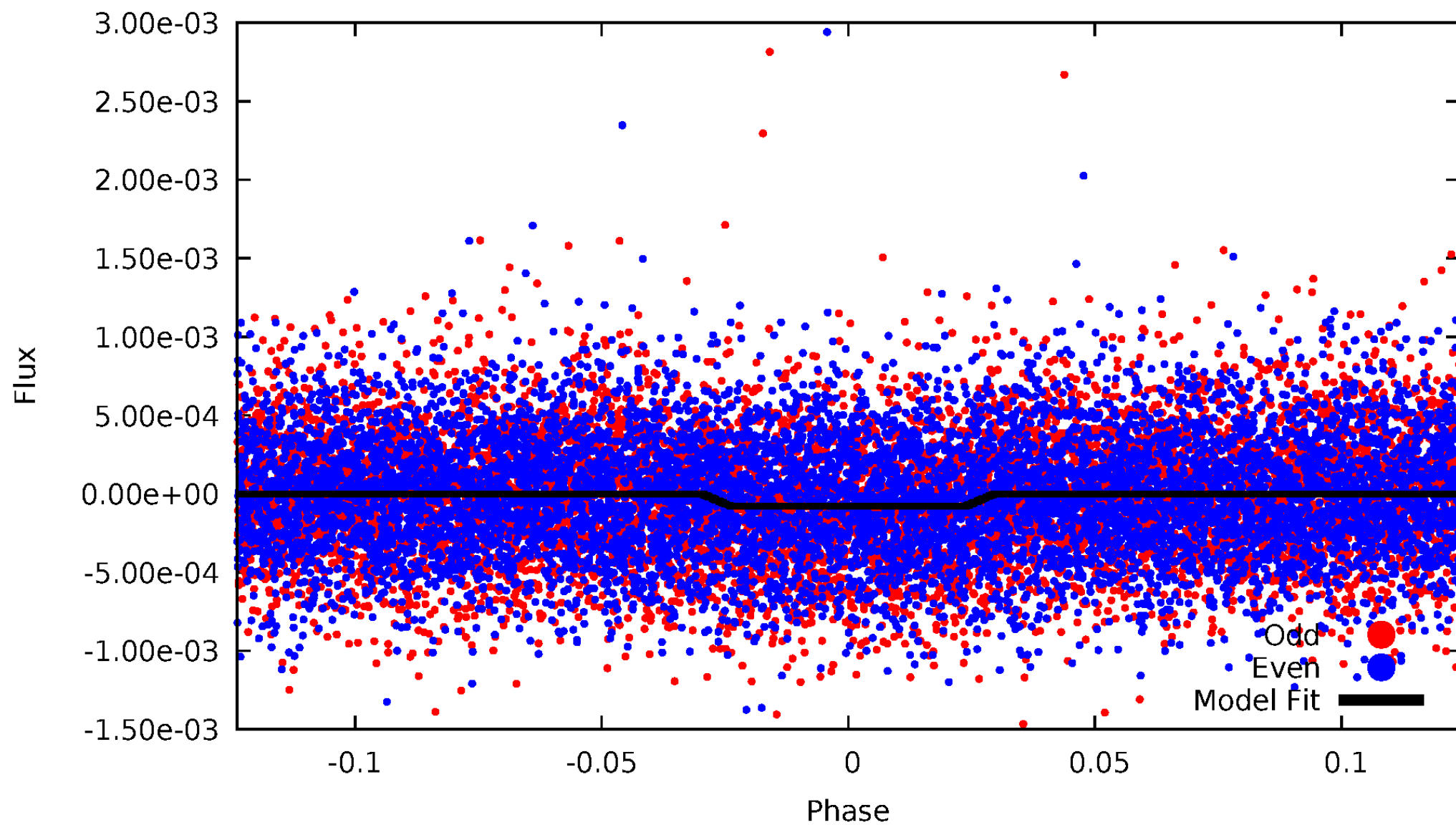
# DV Odd/Even

TCE 008129005-01



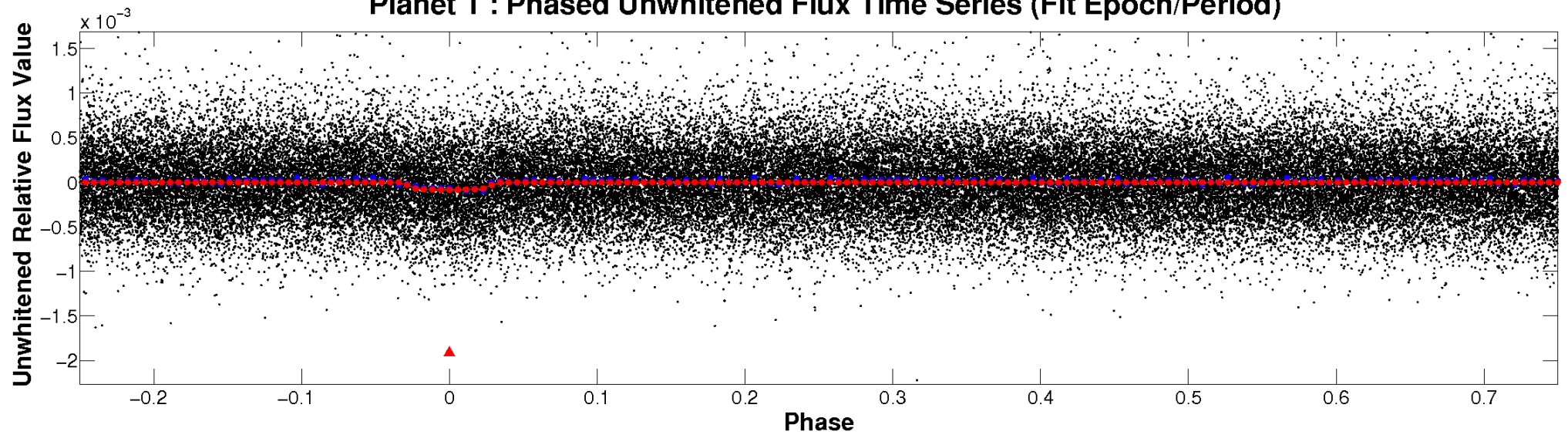
# ALT Odd/Even

TCE 008129005-01

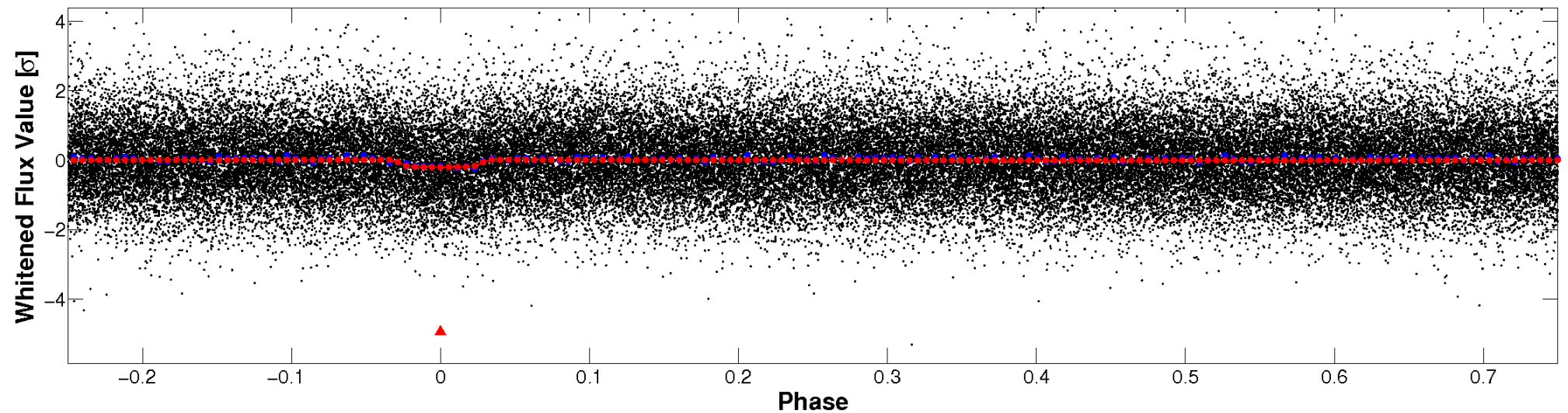


# Non-Whitened Vs. Whitened Light Curve

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



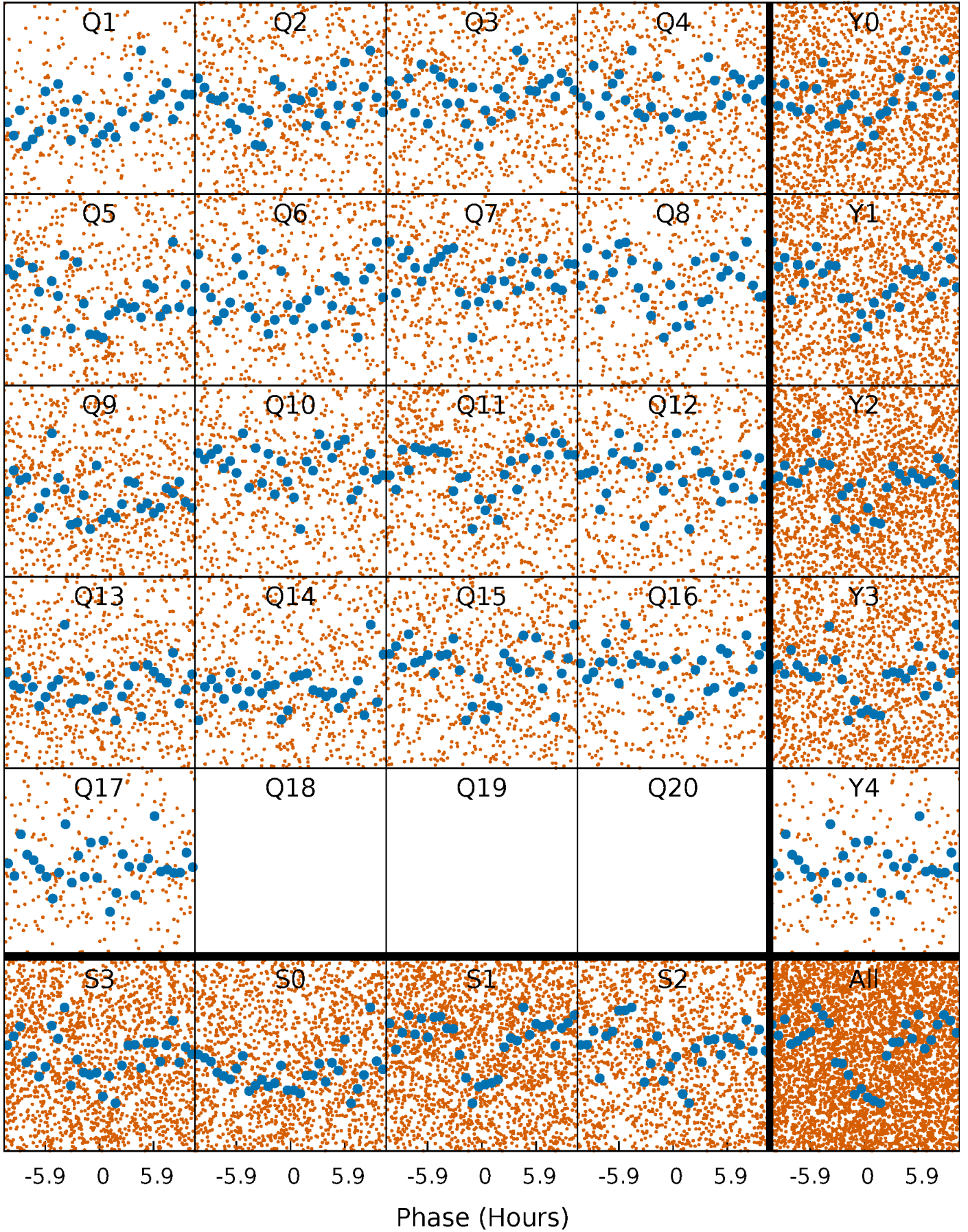
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

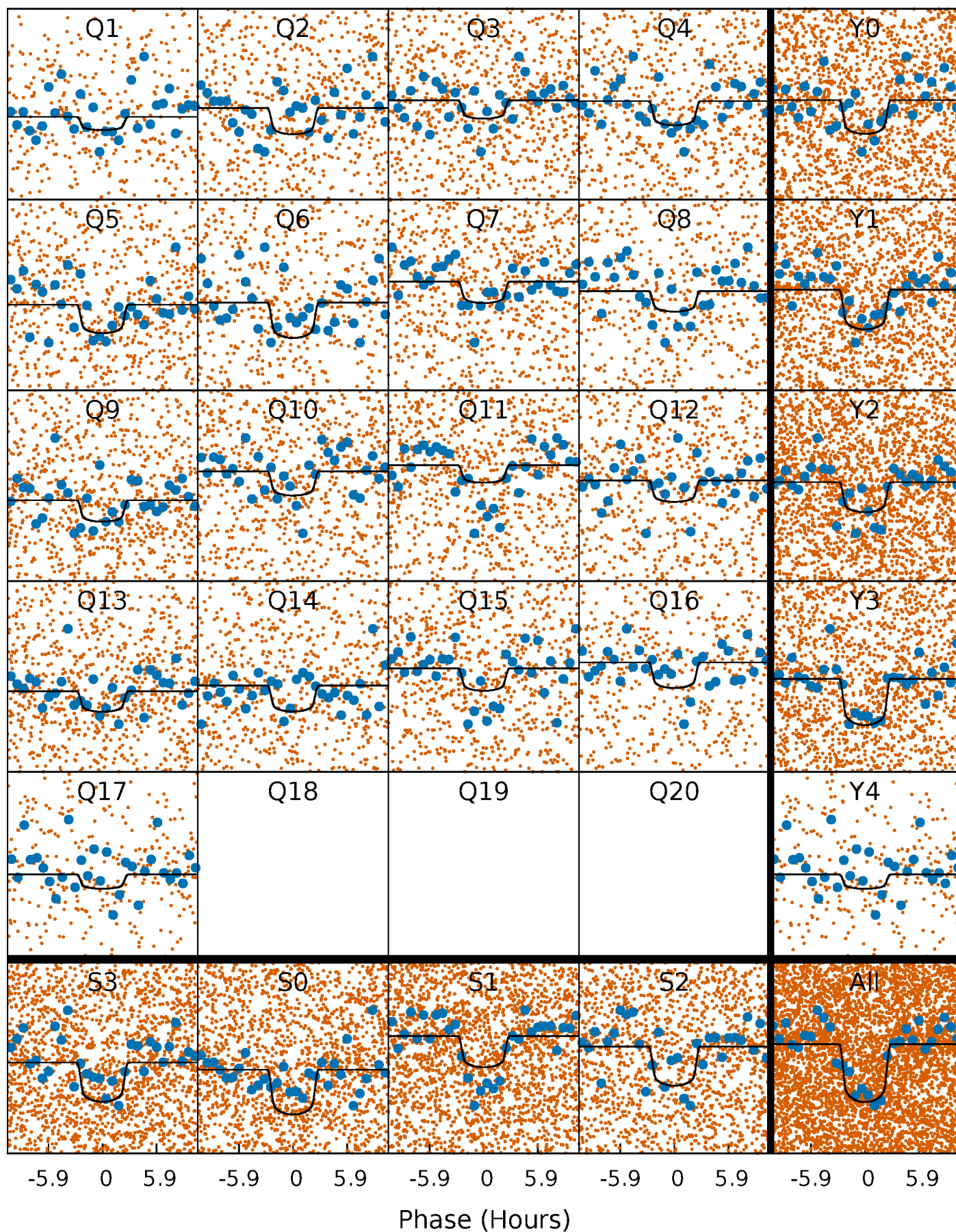
TCE 008129005-01 P= 3.570179 Days  $T_0=134.440591$  (BKJD)





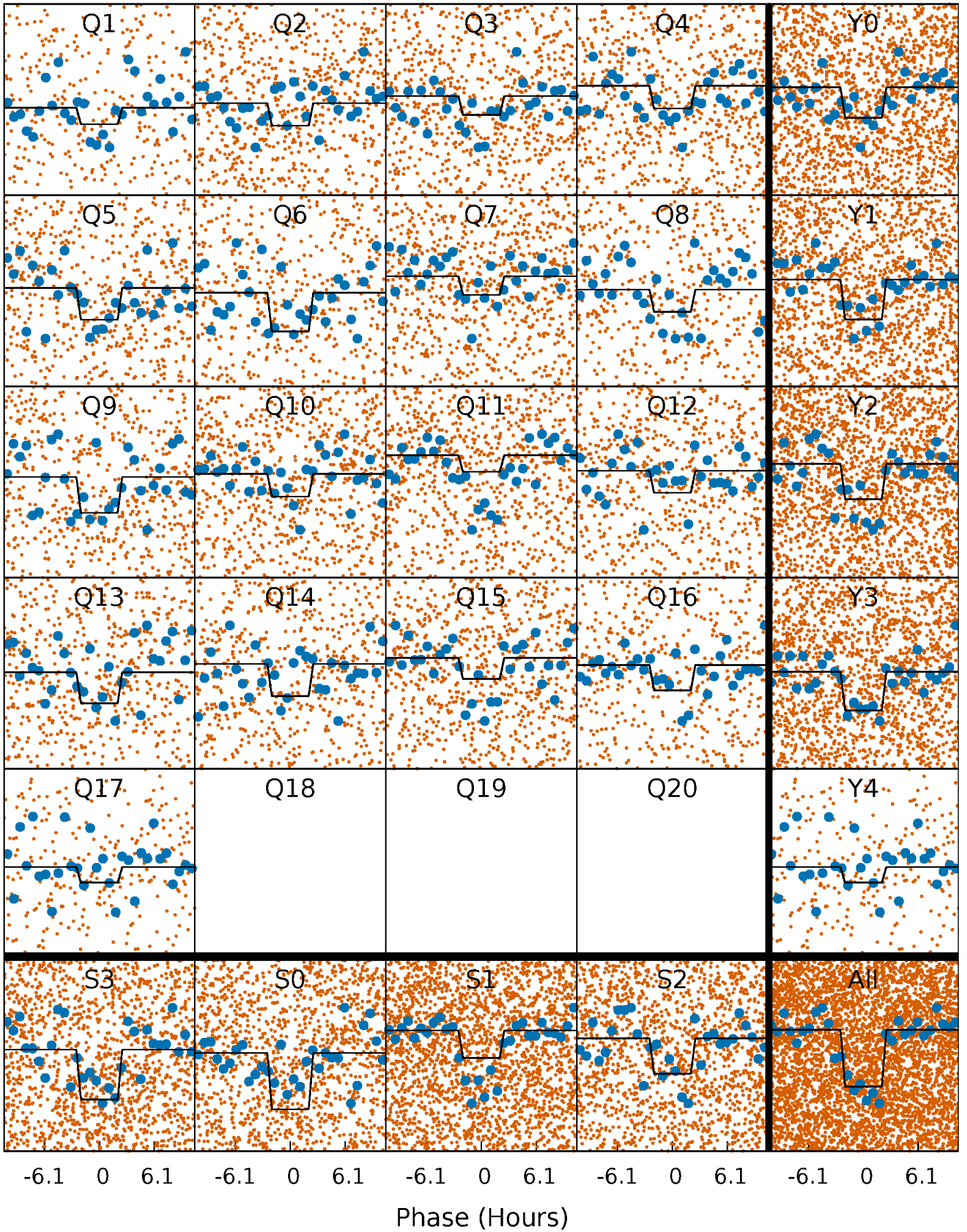
## DV Quarter-Phased Transit Curves

TCE 008129005-01    P= 3.570179 Days     $T_0=134.440591$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

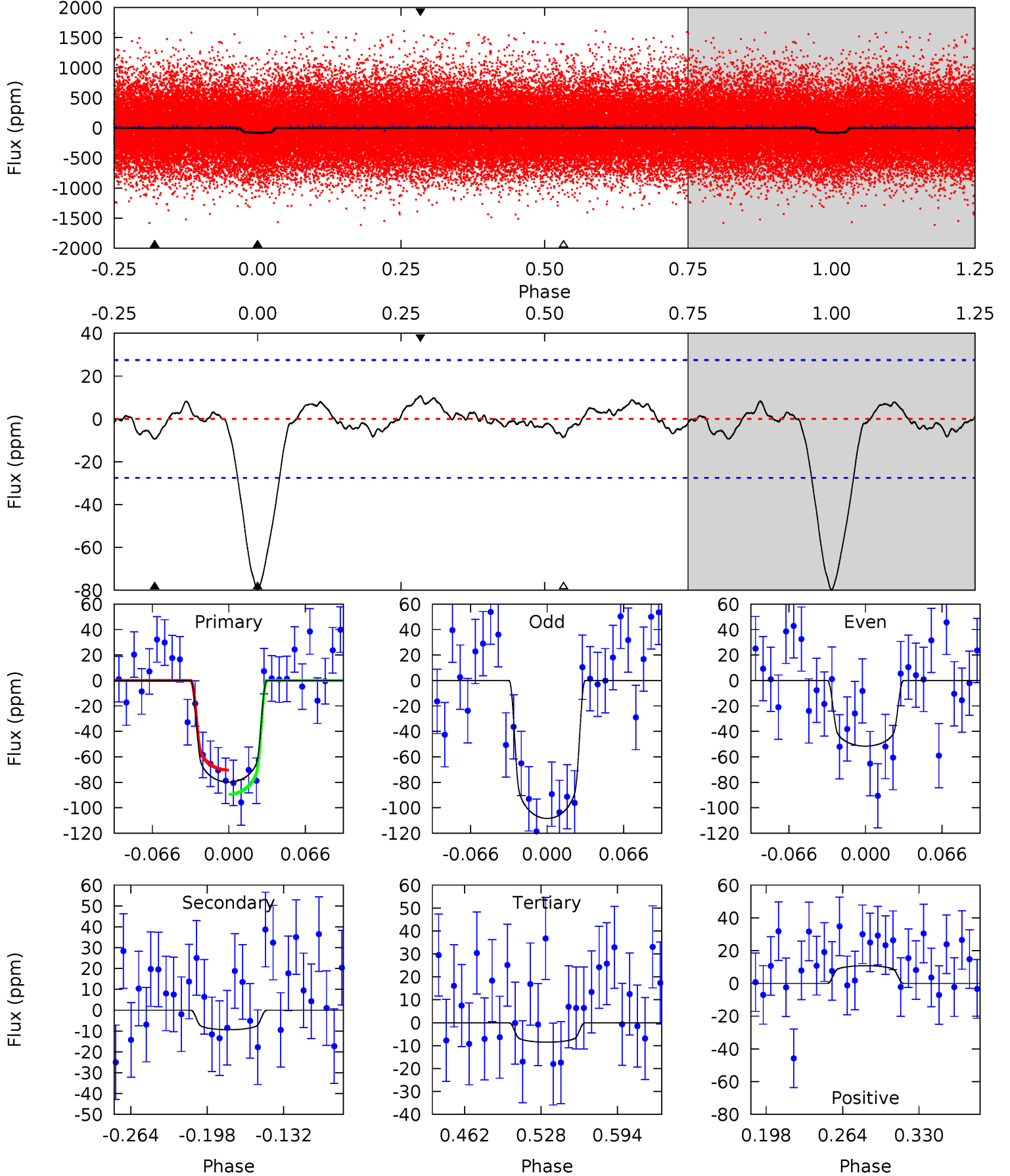
TCE 008129005-01 P= 3.570161 Days  $T_0=134.447459$  (BKJD)



# DV Model-Shift Uniqueness Test

008129005-01, P = 3.570179 Days, E = 130.870412 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
13.5	1.58	1.44	1.82	4.65	1.84	0.75	12.1	11.7	0.15	-0.24	4.82	1.08	0.12	1.61

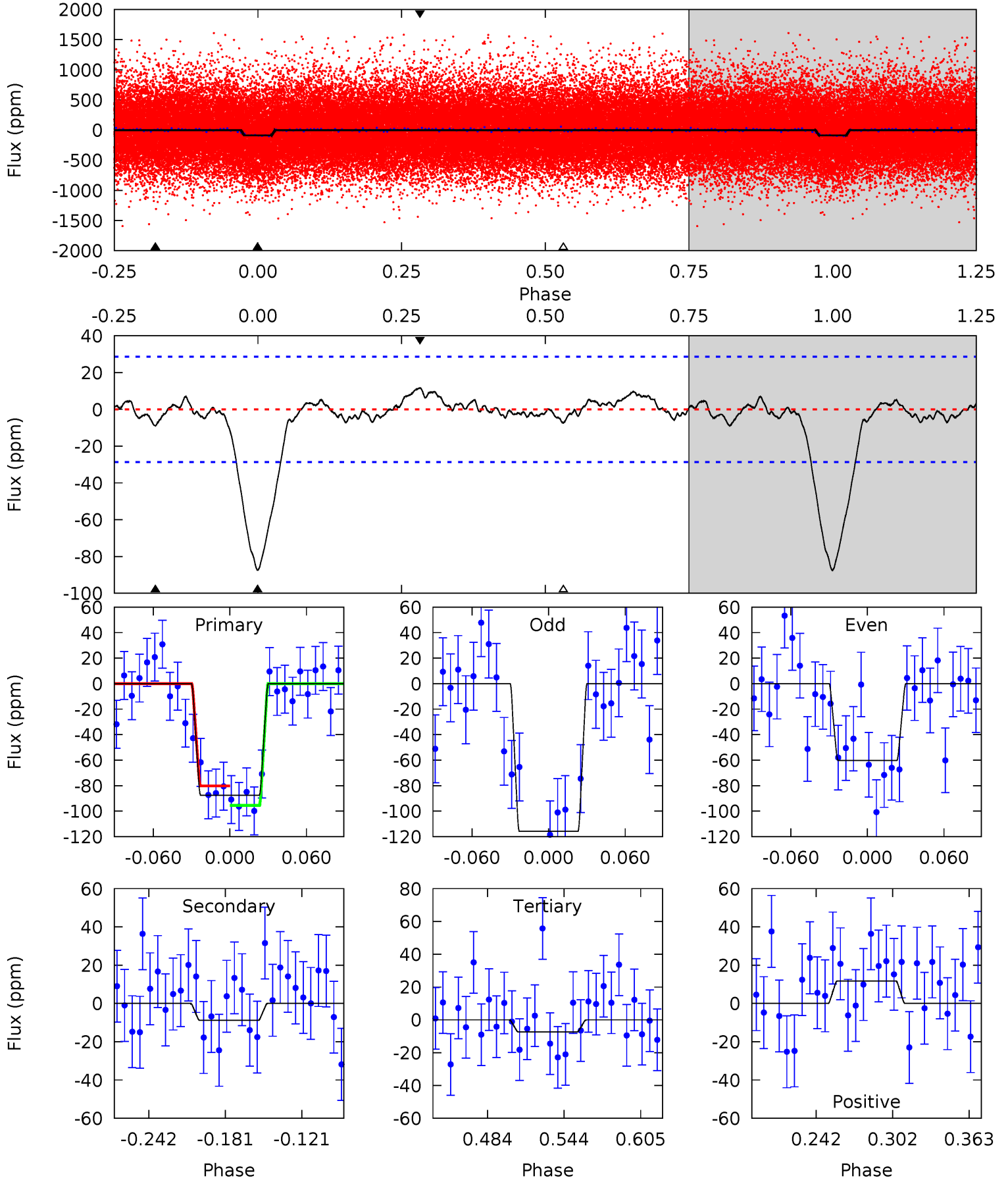




# Alt Model-Shift Uniqueness Test

008129005-01, P = 3.570161 Days, E = 130.877298 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
14.2	1.44	1.20	1.91	4.67	1.88	0.70	13.0	12.3	0.24	-0.48	4.55	1.02	0.12	1.24





### Stellar Parameters For KIC 008129005

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6354^{+170}_{-226}$	$4.454^{+0.052}_{-0.195}$	$-0.300^{+0.300}_{-0.300}$	$1.016^{+0.298}_{-0.106}$	$1.067^{+0.143}_{-0.143}$	$1.433^{+0.390}_{-0.736}$
	+3%/-4%	+1%/-4%	+100%/-100%	+29%/-10%	+13%/-13%	+27%/-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 008129005-01 / KOI 4741.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-9 \pm 6$	$1.17^{+0.32}_{-0.34}$	$1863^{+123}_{-93}$	$3839^{+562}_{-632}$	$8.104^{+9.705}_{-5.448}$
Alt.	$-9 \pm 6$	$1.03^{+0.35}_{-0.33}$	$1860^{+111}_{-85}$	$3919^{+740}_{-814}$	$9.256^{+13.892}_{-7.033}$

$T_{\text{max}}$  = 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

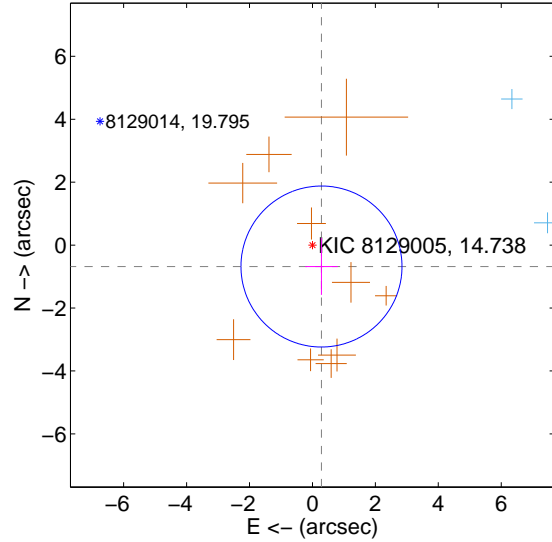
Supplemental centroid analysis for 008129005-01. Kepler magnitude: 14.74. Transit SNR 10.84

There are 2 quarters with good PRF difference image offsets

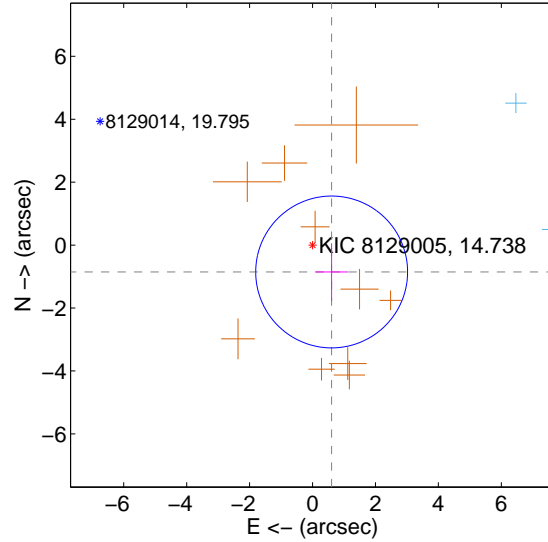
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.739 \pm 0.853$	0.87	$-0.287 \pm 0.515$	$-0.681 \pm 0.900$
PRF-fit source offset from KIC position	$1.048 \pm 0.804$	1.30	$-0.608 \pm 0.520$	$-0.854 \pm 0.915$
photometric centroid source offset	$2.77 \pm 1.21$	2.29	$-2.67 \pm 1.22$	$0.73 \pm 1.16$

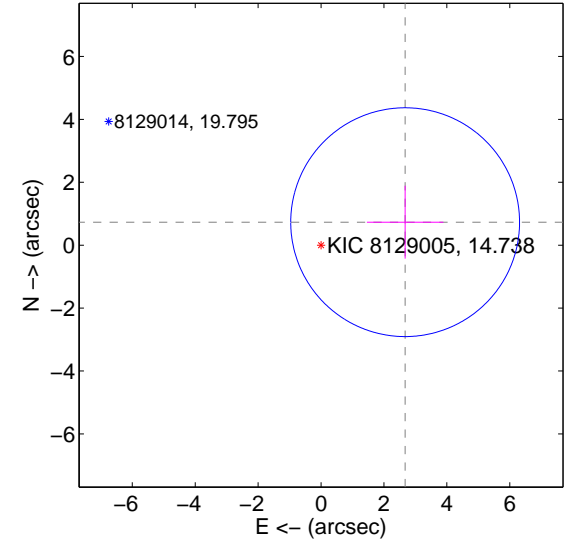
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

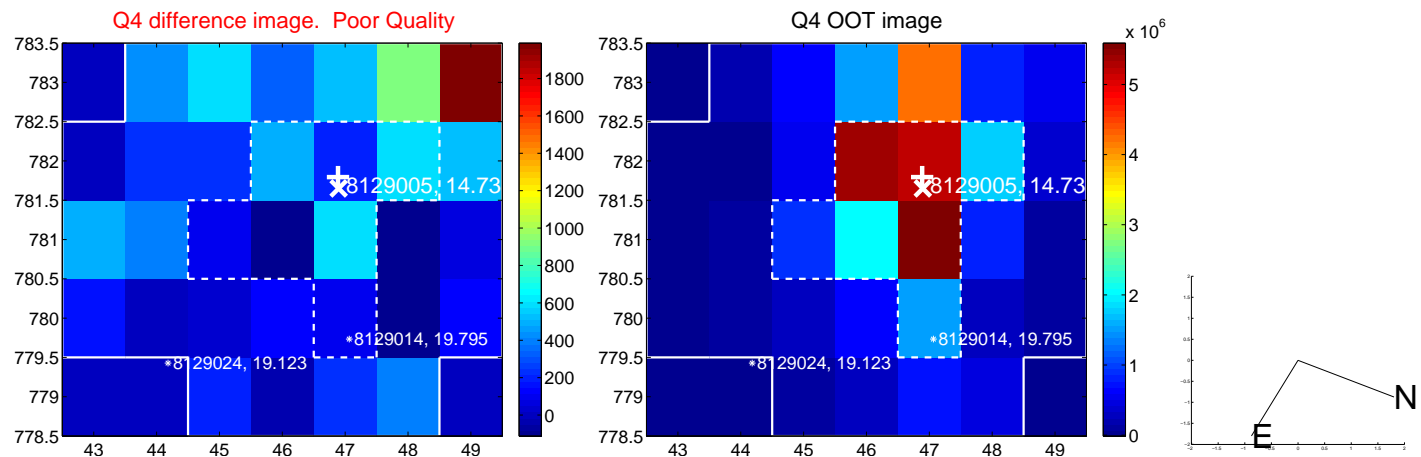
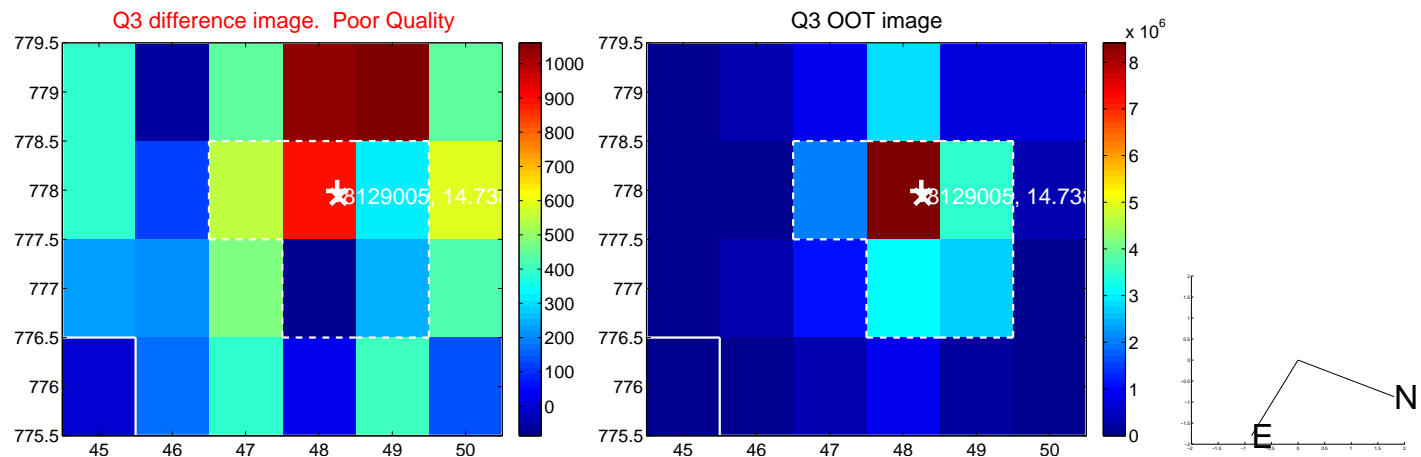
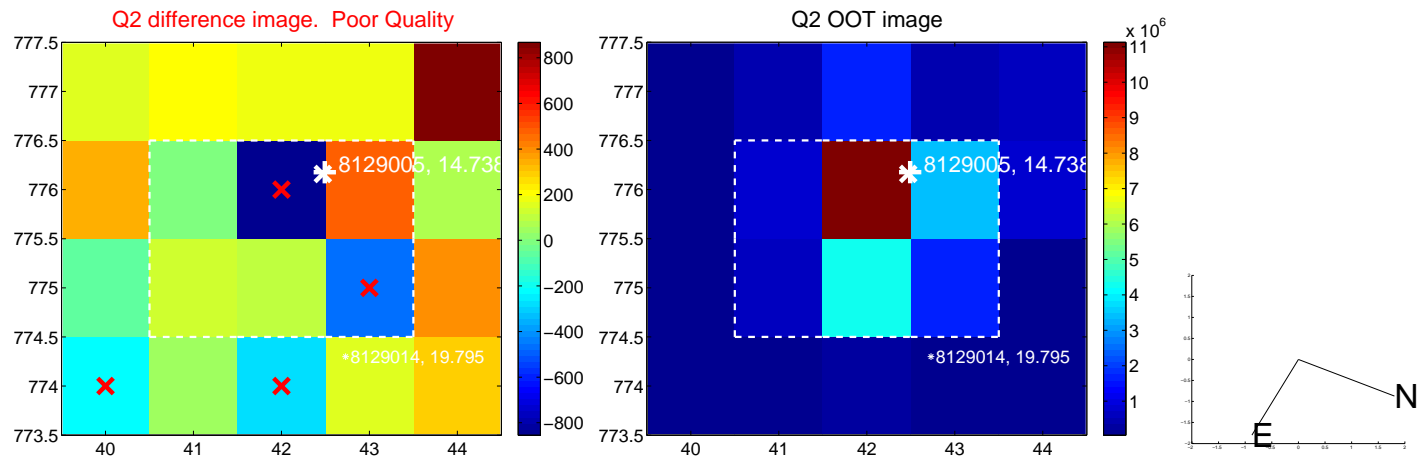
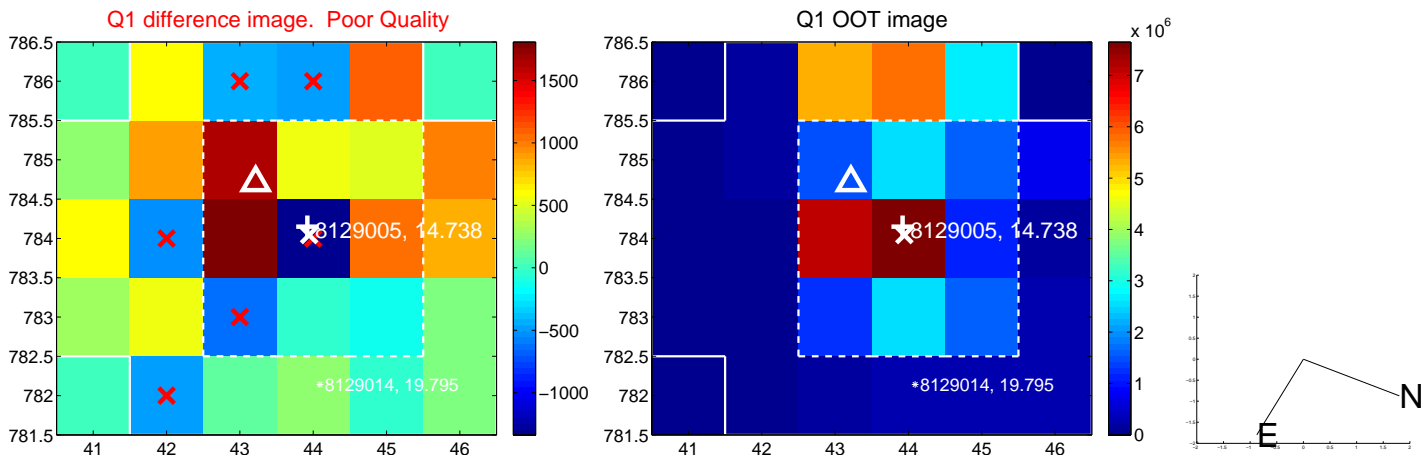


offset from photometric centroids

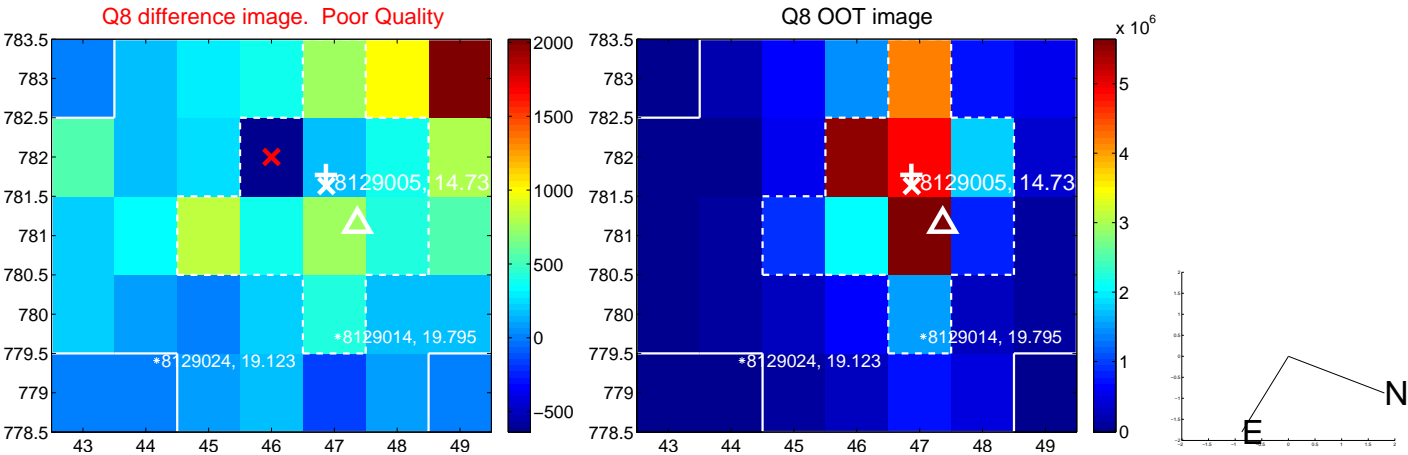
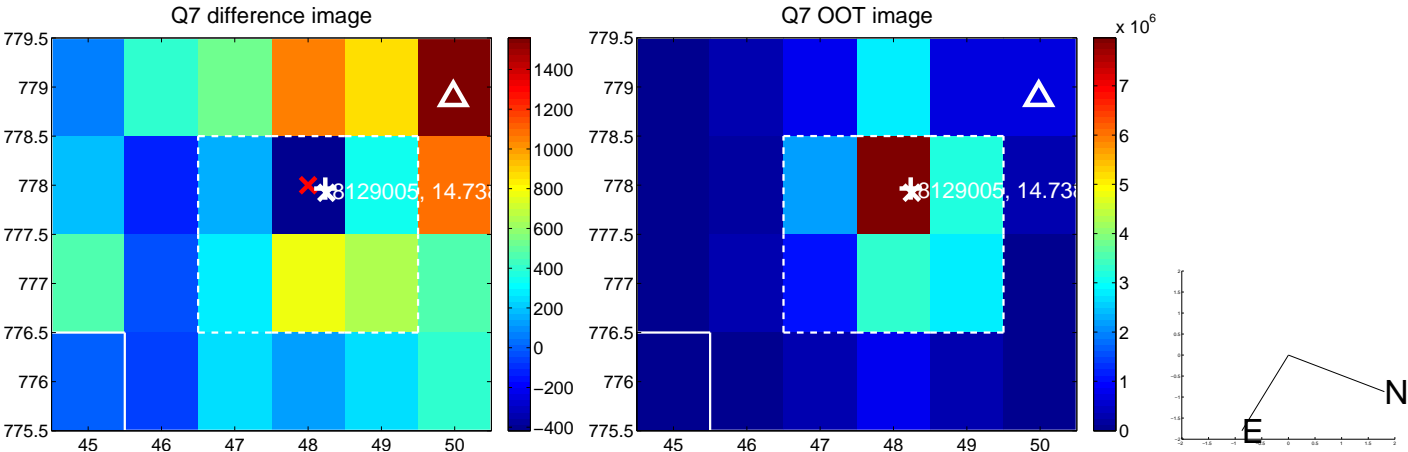
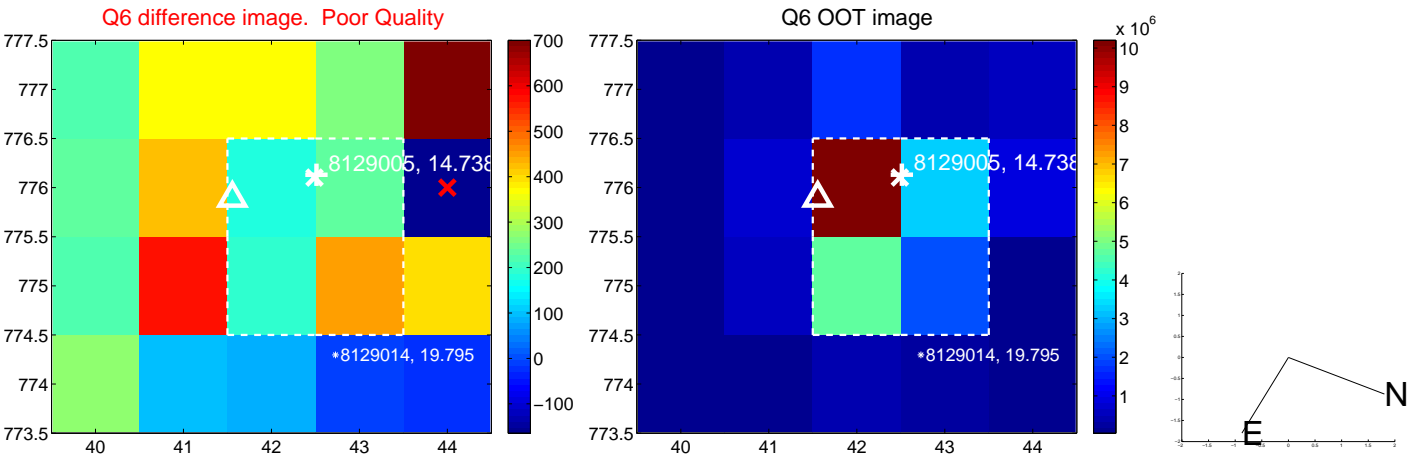
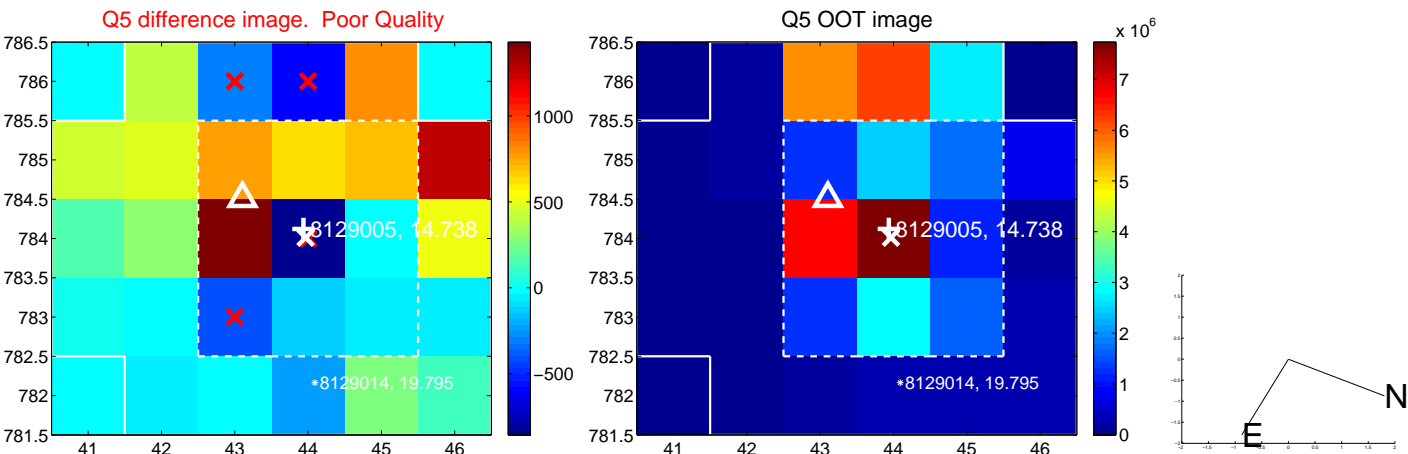


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

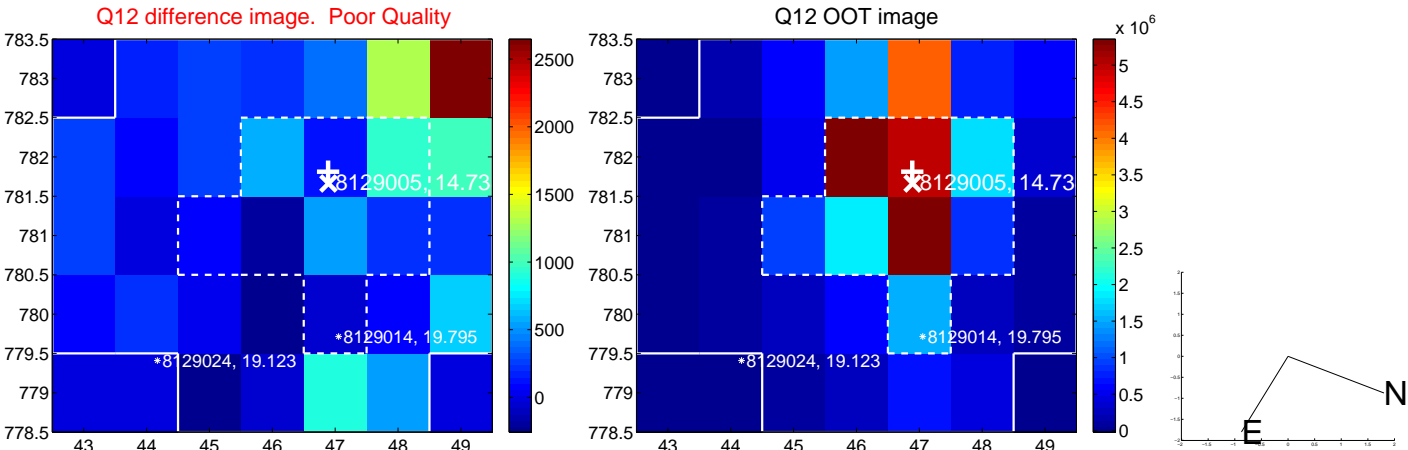
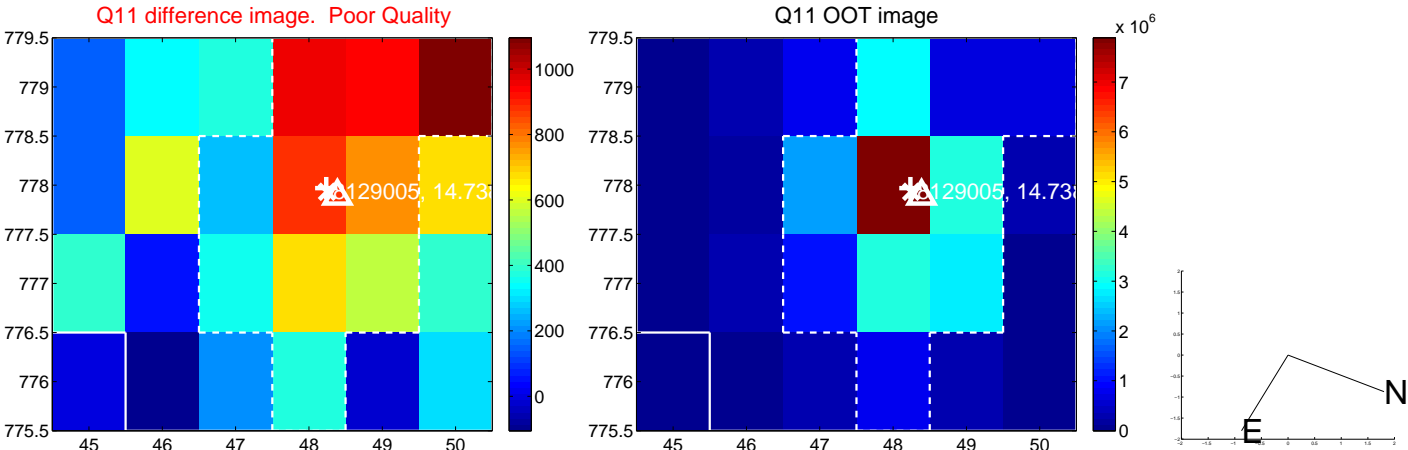
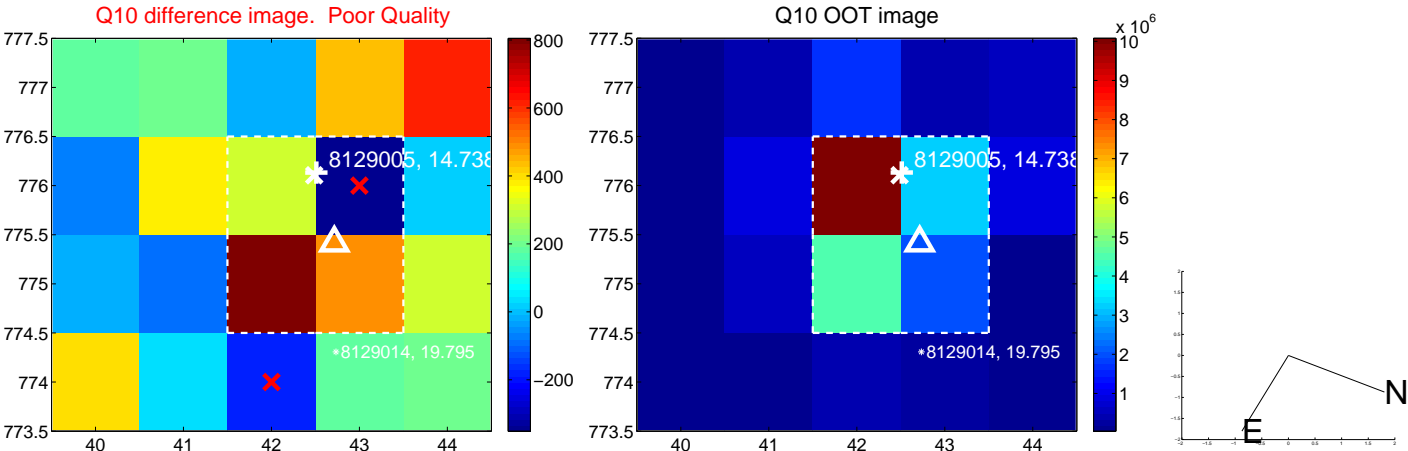
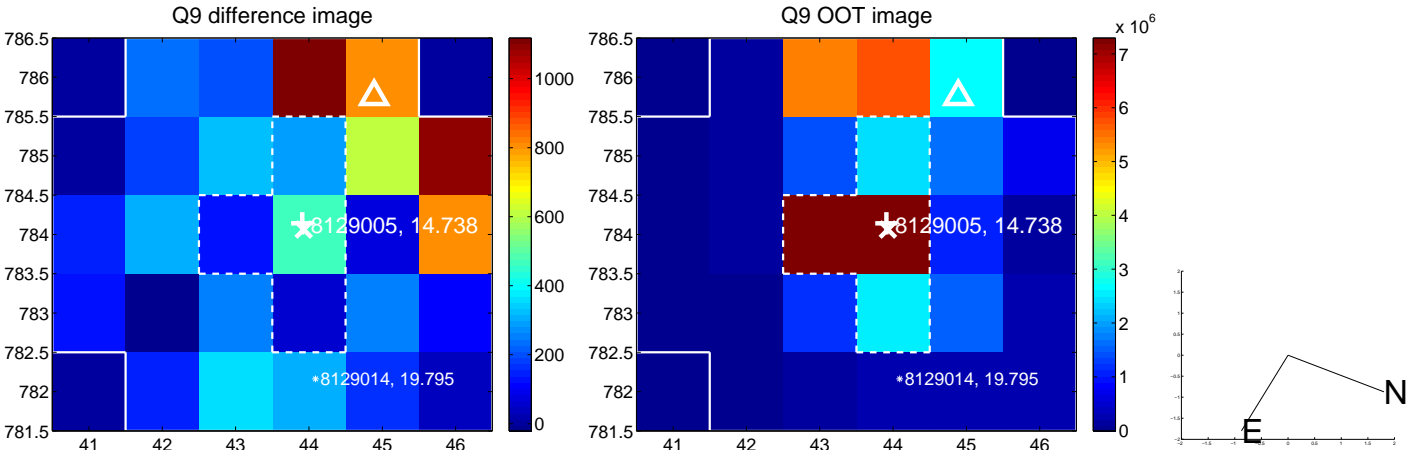


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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







UKIRT Image

Declination

