

# KIC 009283821

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009283821-01	OBS	No	0.713055	131.849455	27.4	1.473	7.4	7.7	1.09	6323	0.67	6419.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009283821-01	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—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.

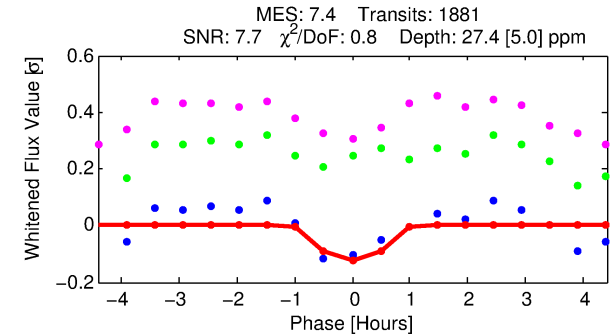
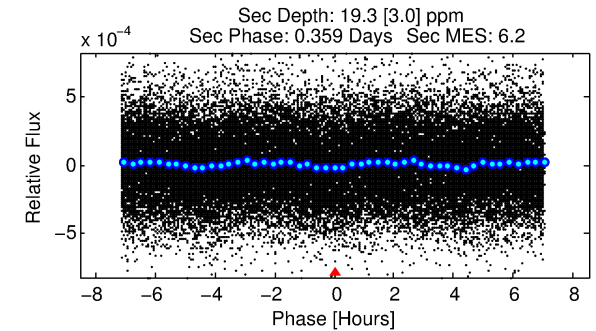
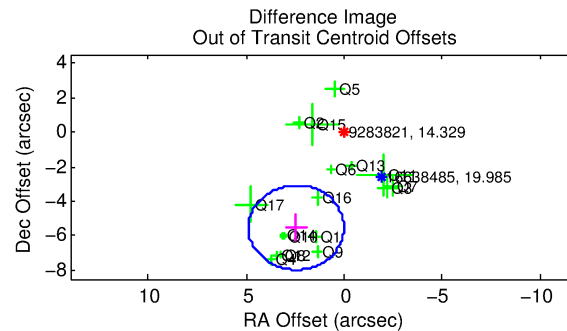
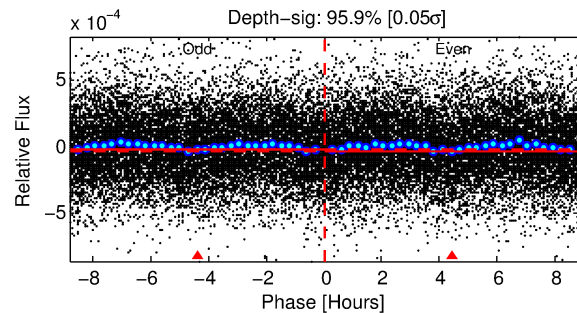
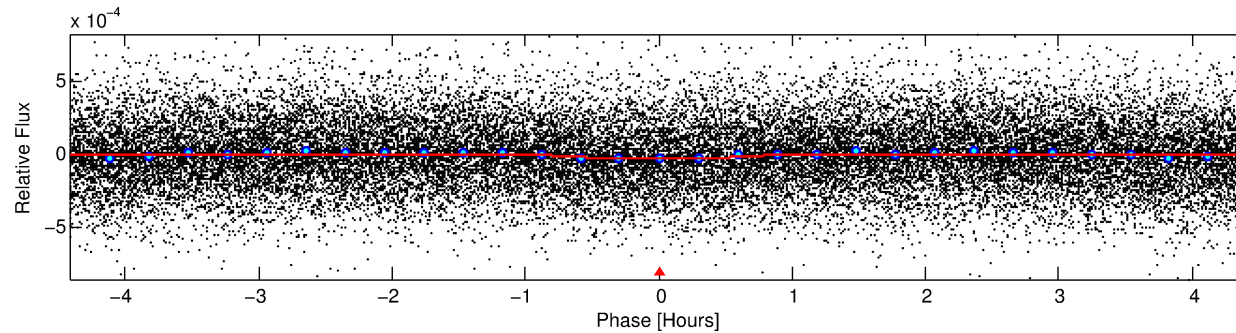
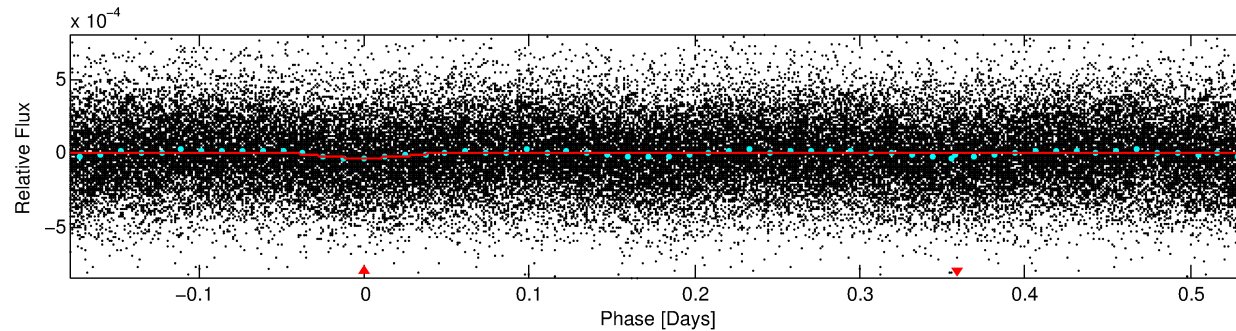
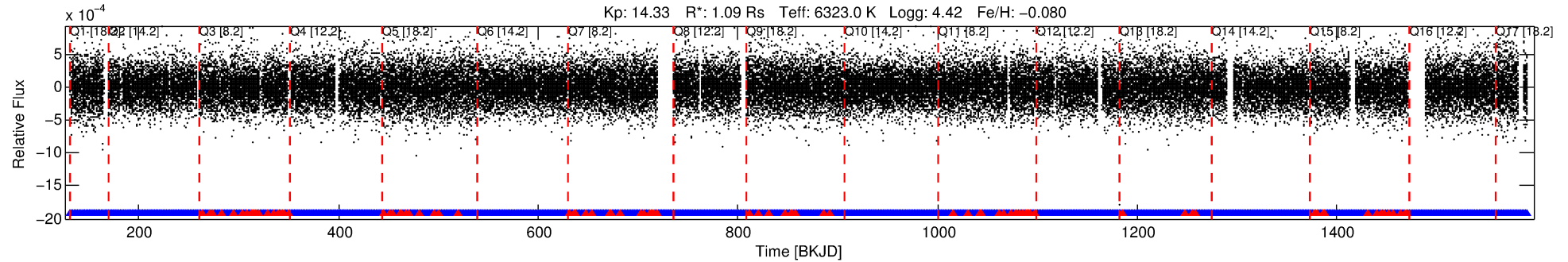
## Ephemeris Match Information For 009283821-01

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	$\sigma_P$	$\sigma_T$
009283821-01	9283821	009283826-pri	9283826	2:1	30.2	3	-7	13.09	14.33	13900.00	Direct-PRF	0	2.95	0.10

**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: 9283821 Candidate: 1 of 1 Period: 0.713 d



## DV Fit Results:

Period = 0.71306 [0.00001] d  
Epoch = 131.8495 [0.0030] BKJD  
Rp/R\* = 0.0056 [0.0019]  
a/R\* = 1.95 [2.61]  
b = 0.89 [0.42]  
Seff = 6419.52 [2778.74]  
Teq = 2282 [247] K  
Rp = 0.67 [0.32] Re  
a = 0.0163 [0.0046] AU  
Ag = 6.33 [5.14] [1.04 $\sigma$ ]  
Teffp = 5598 [996] K [3.23 $\sigma$ ]

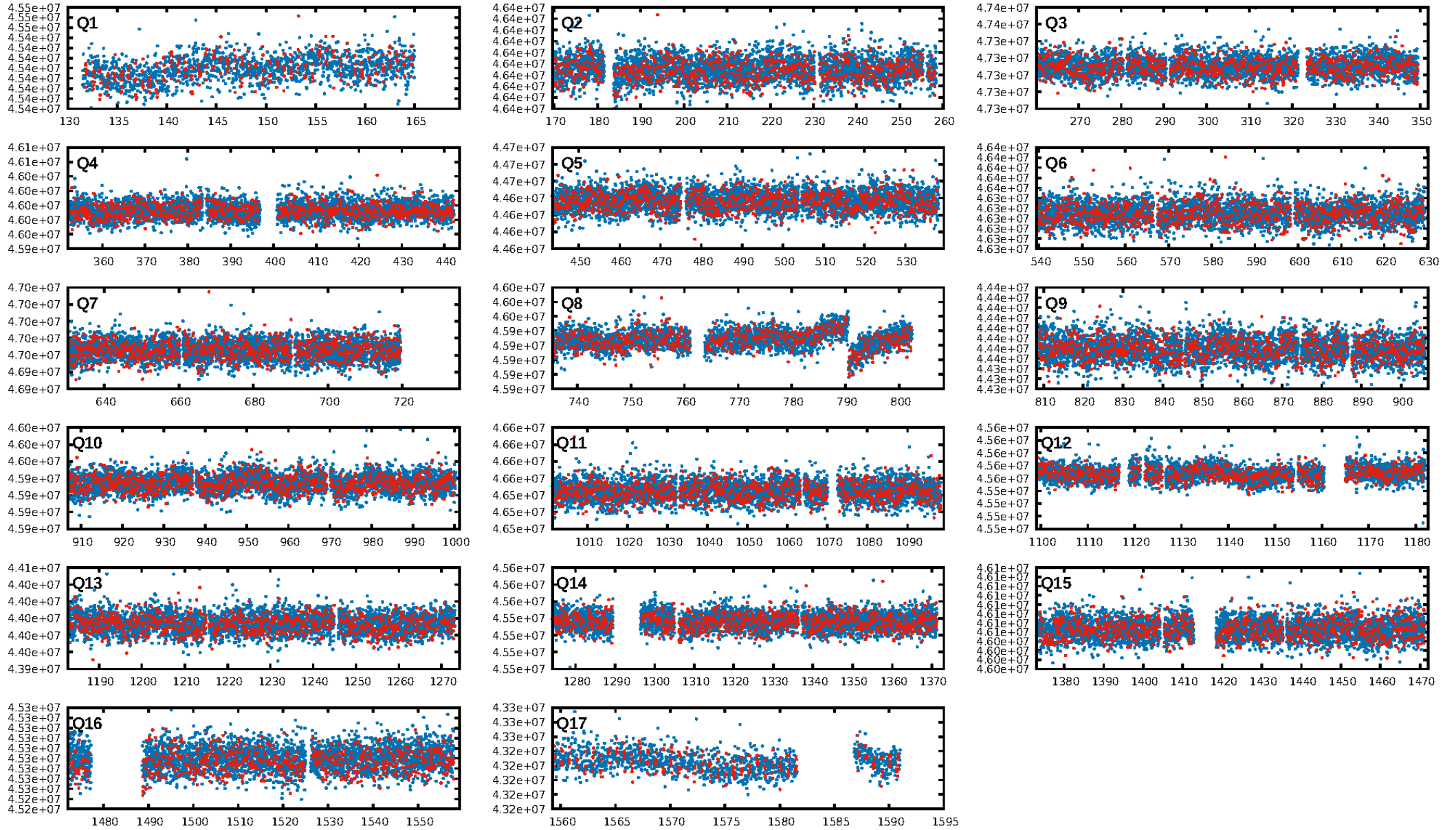
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 6.16e-12**  
RollingBand-fgt: 0.95 [1703/1796]  
**GhostDiagnostic-chr: -0.17**  
Centroid-sig: 0.0%  
Centroid-so: 7.042 arcsec [3.94 $\sigma$ ]  
OotOffset-rm: 6.051 arcsec [7.43 $\sigma$ ]  
KicOffset-rm: 5.991 arcsec [7.52 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.18 [3/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 18:12:58 Z

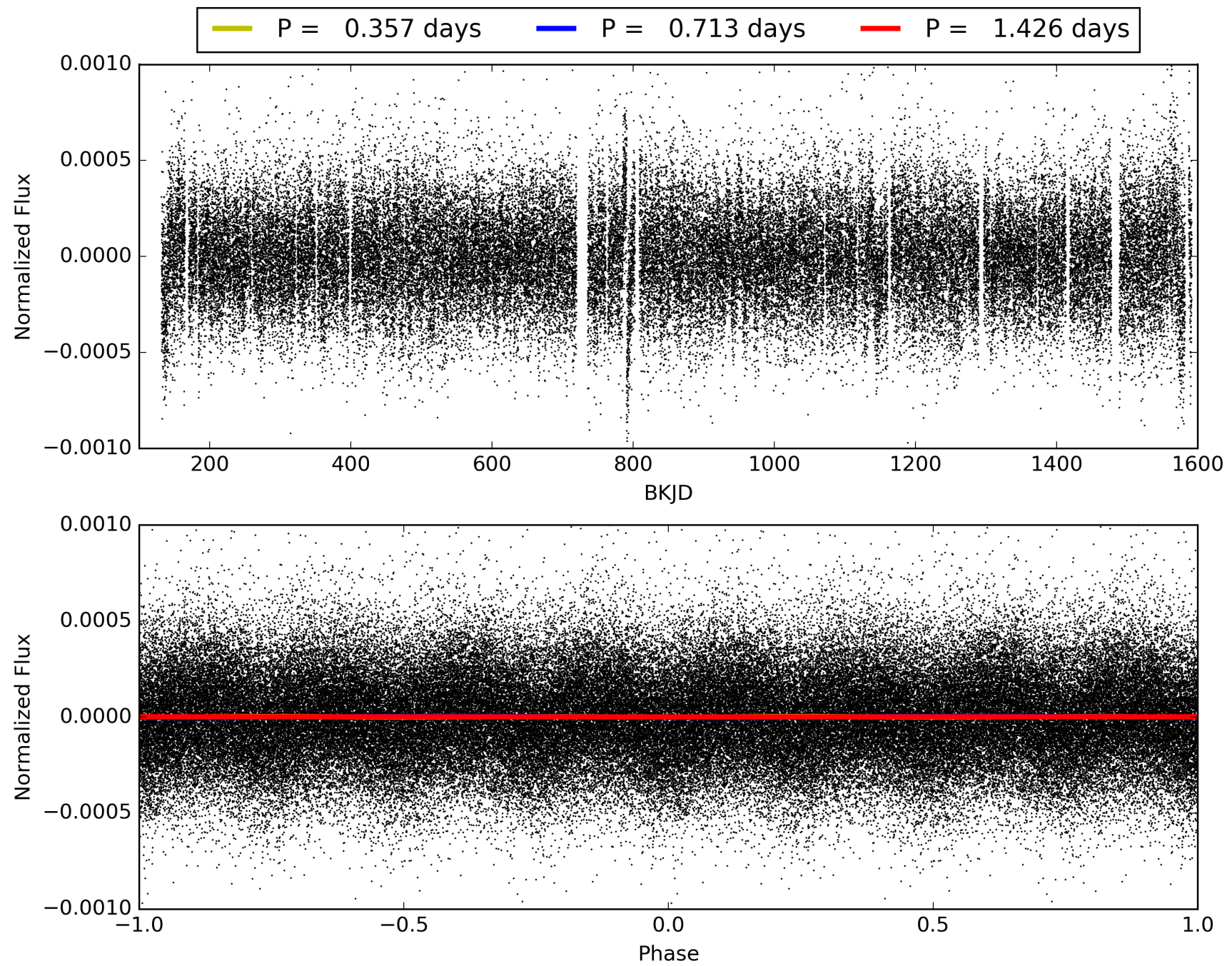
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009283821-01, PDC Light Curves



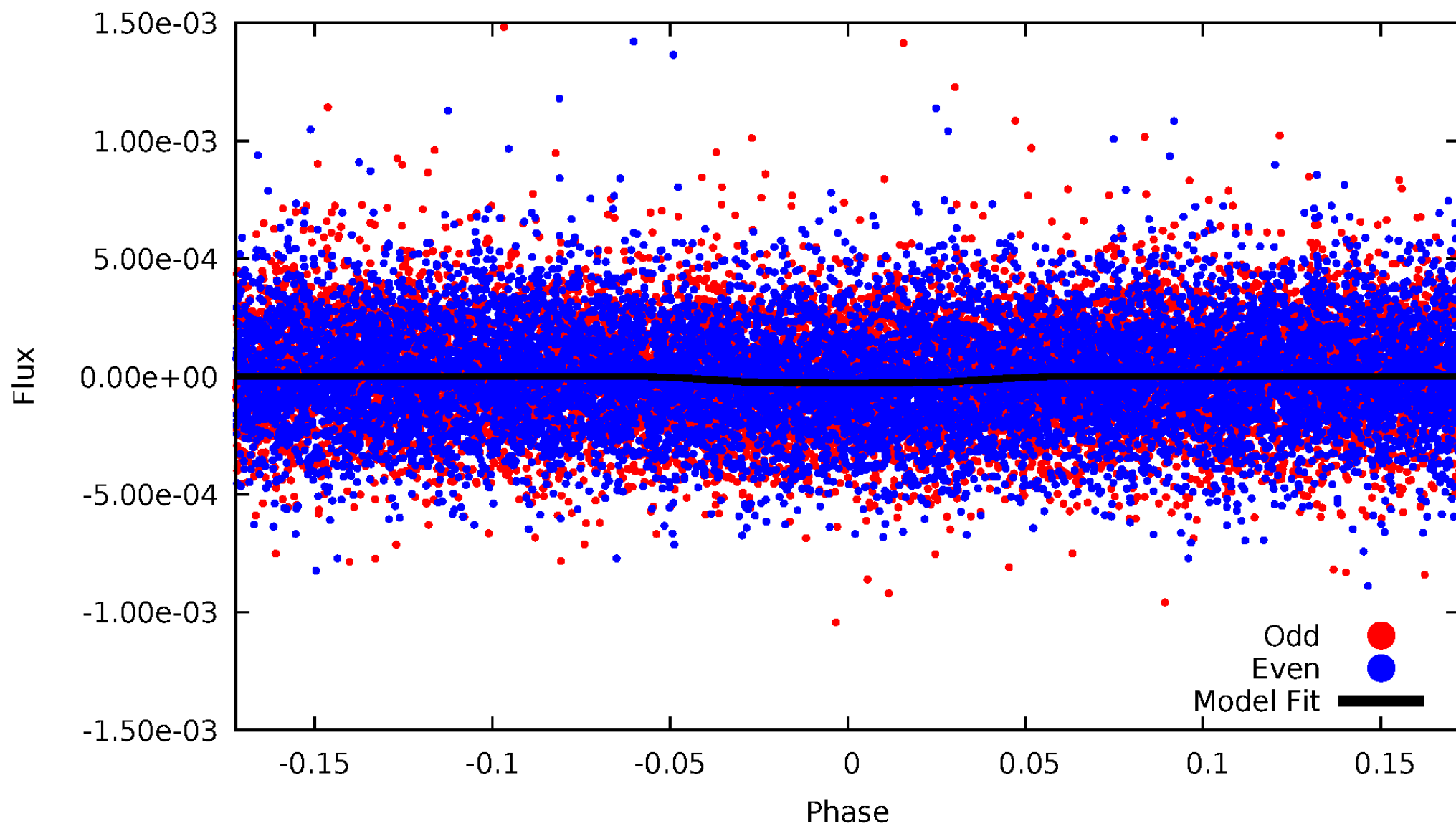


TCE 009283821-01



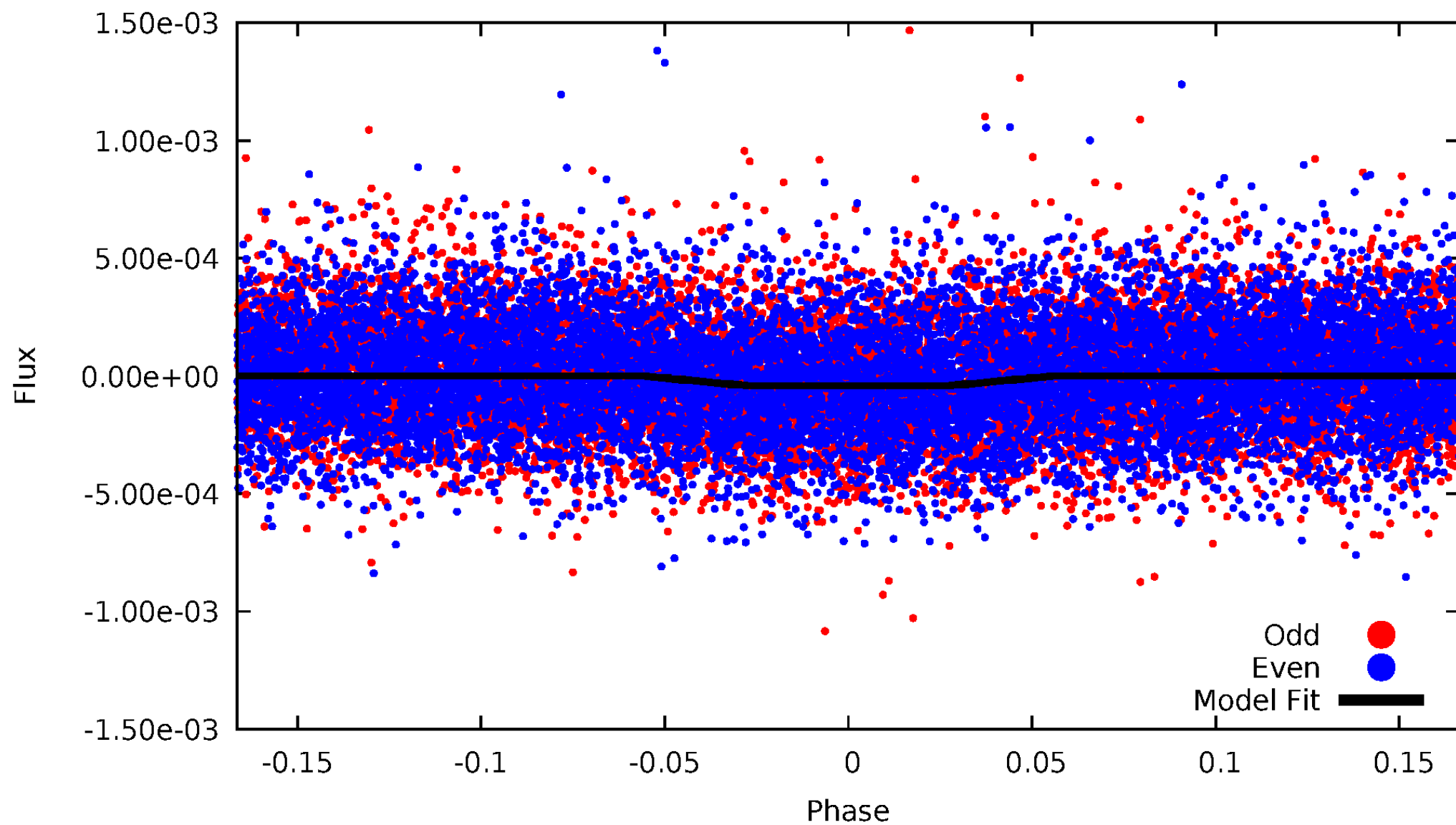
# DV Odd/Even

TCE 009283821-01

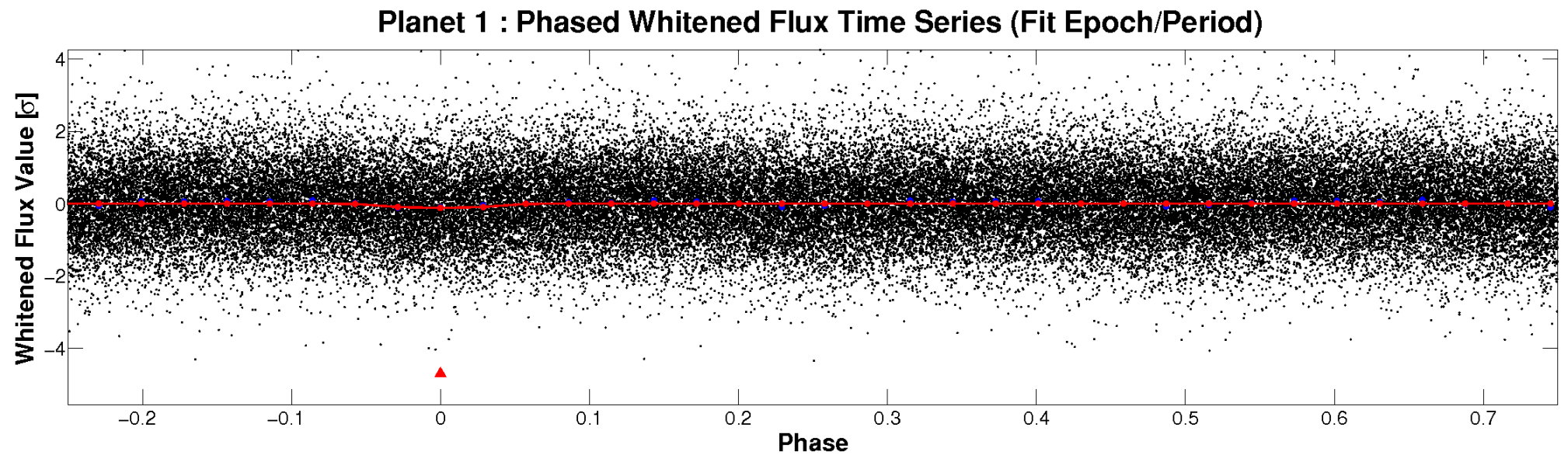
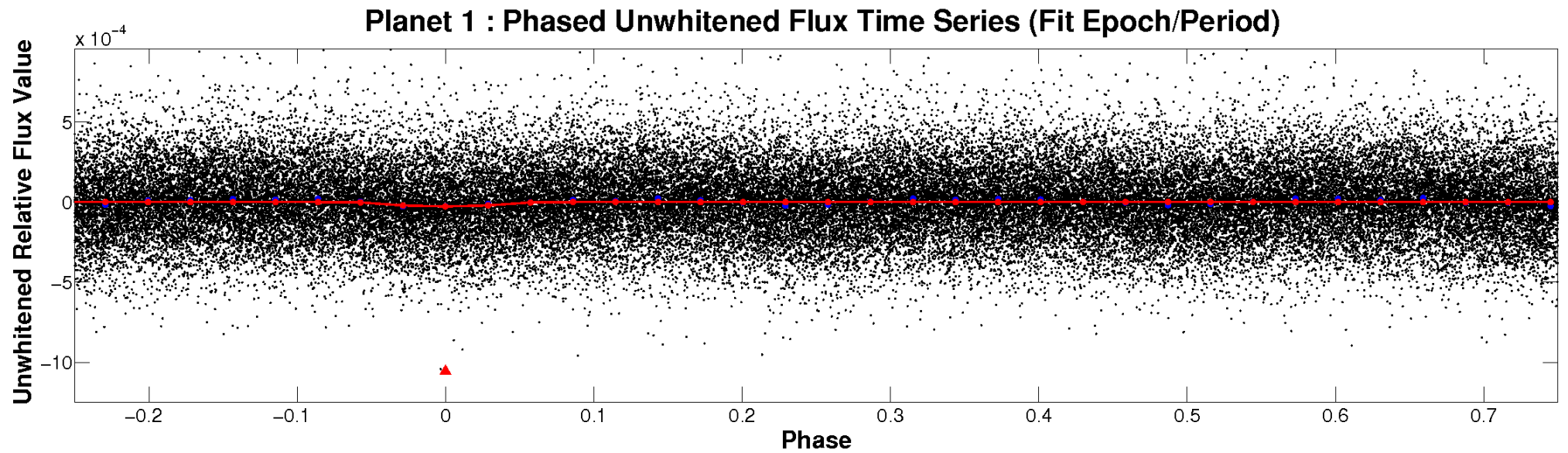


# ALT Odd/Even

TCE 009283821-01



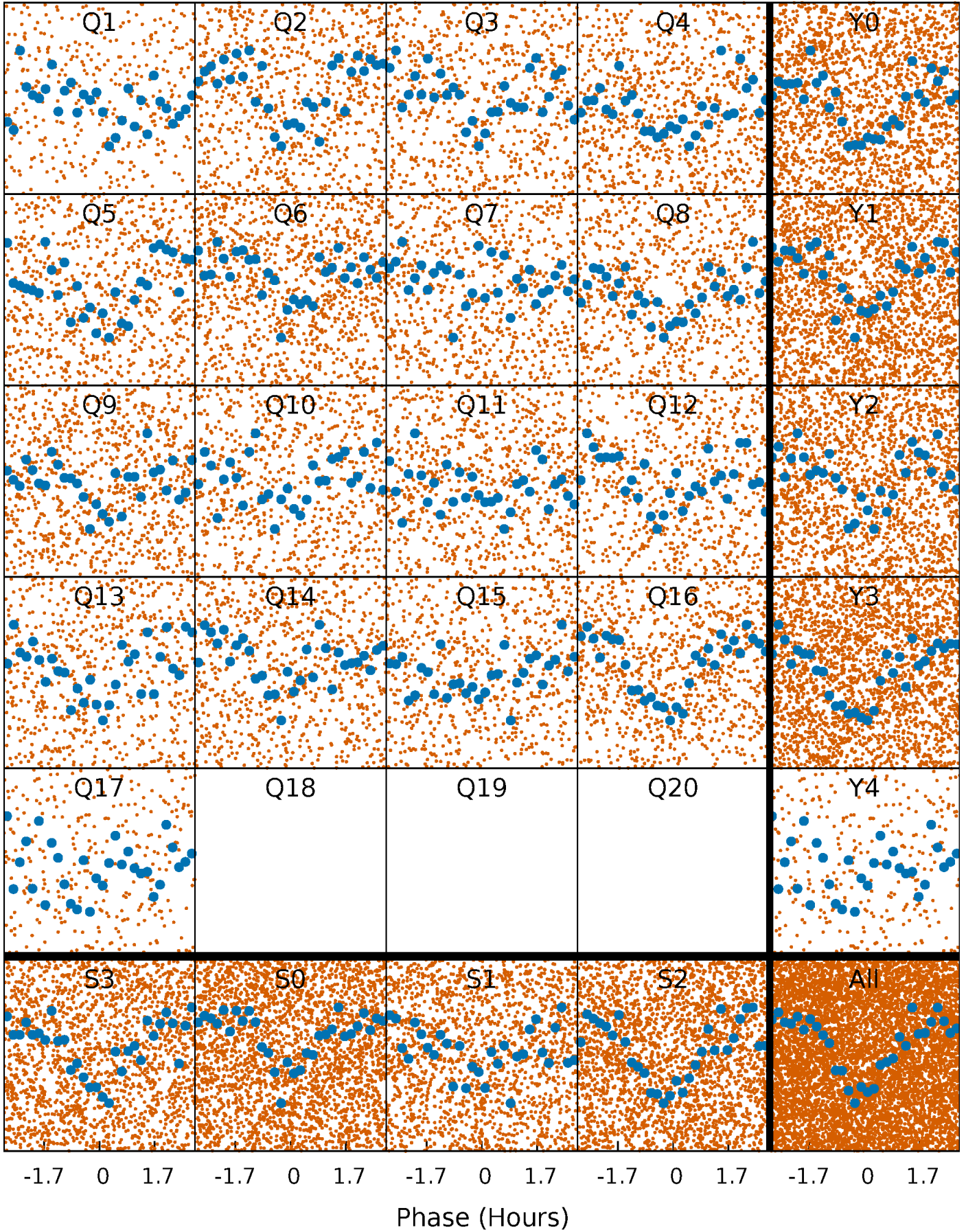
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

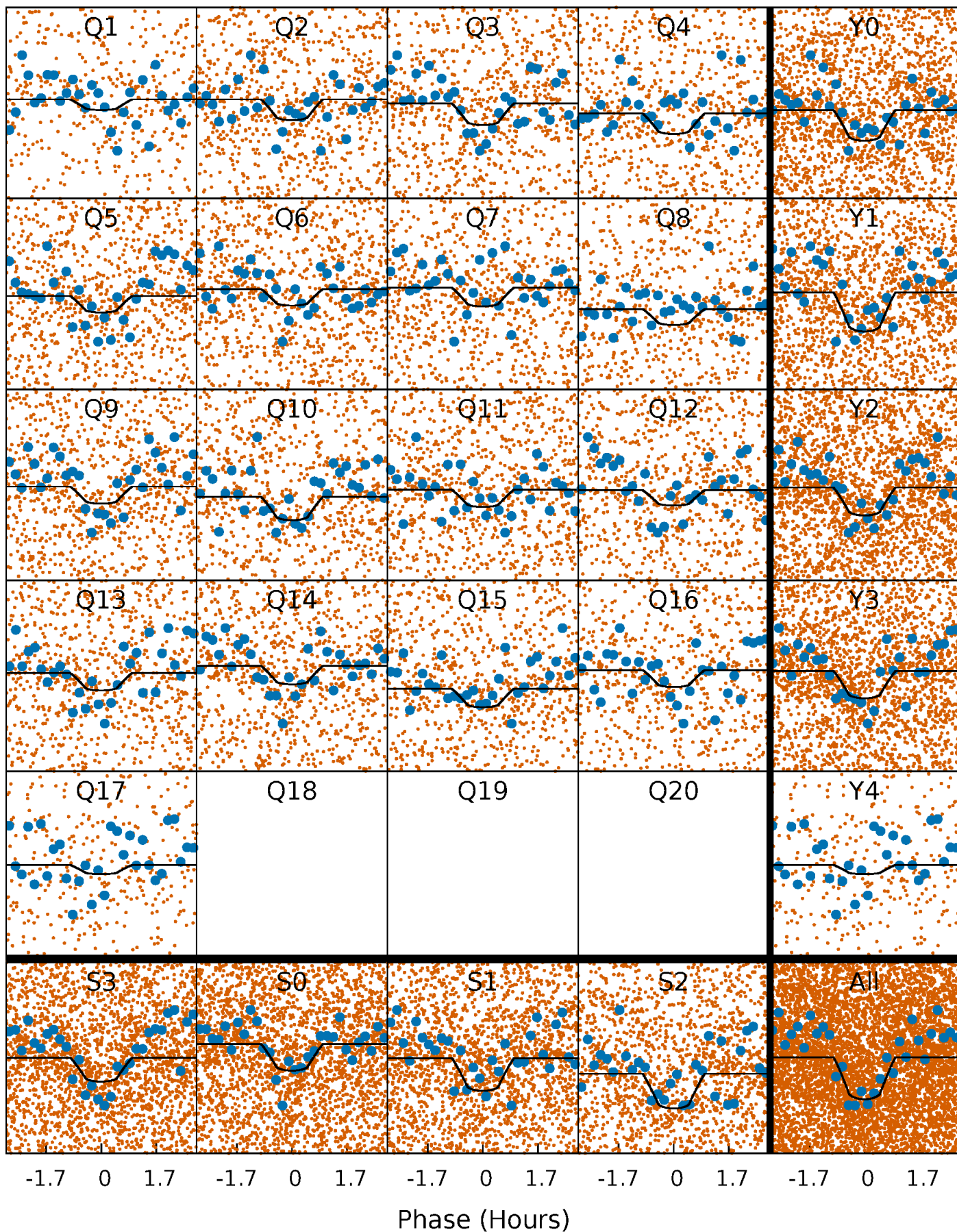
TCE 009283821-01 P= 0.713055 Days  $T_0=131.849455$  (BKJD)





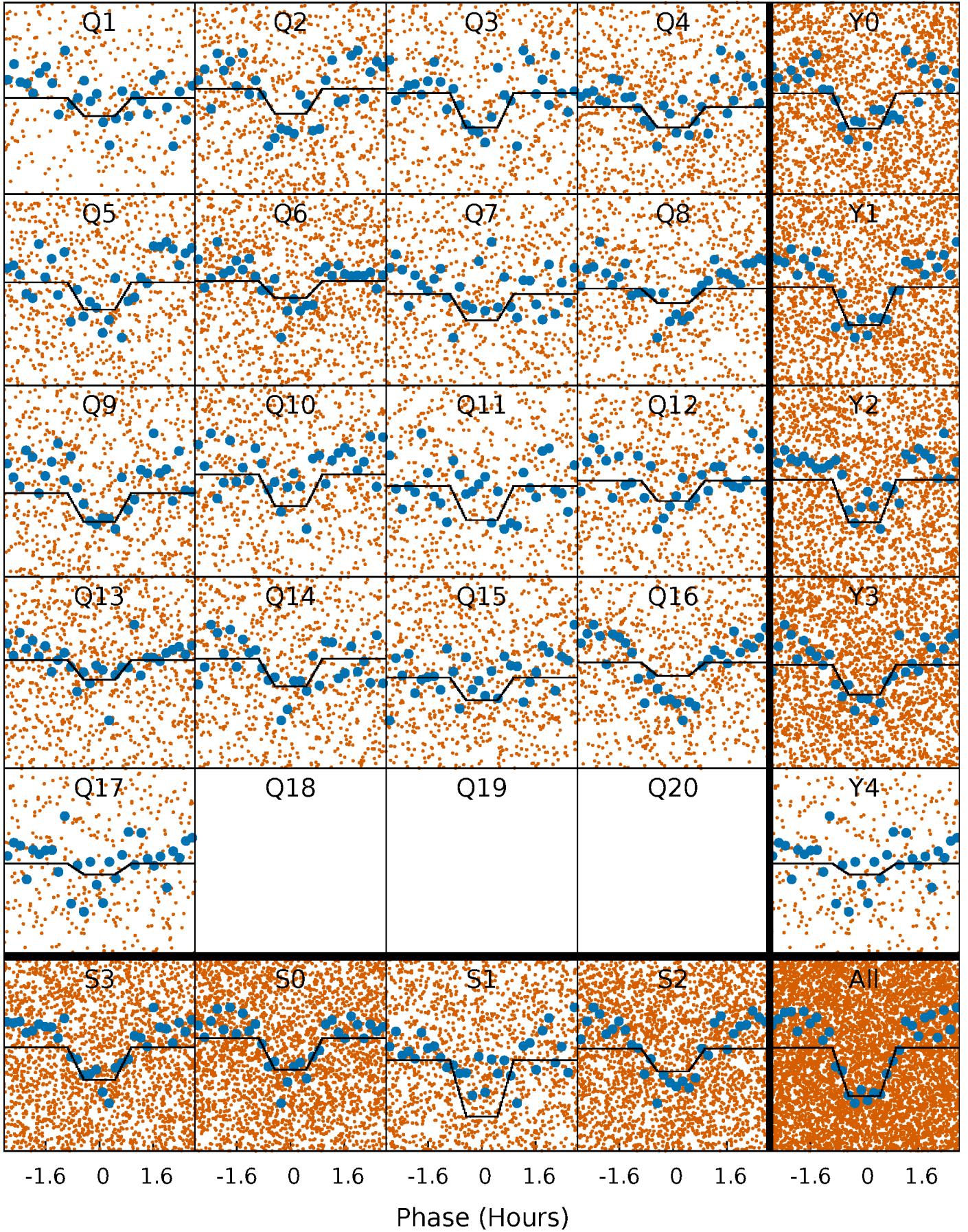
# DV Quarter-Phased Transit Curves

TCE 009283821-01 P= 0.713055 Days  $T_0=131.849455$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009283821-01 P= 0.713044 Days  $T_0=131.856877$  (BKJD)

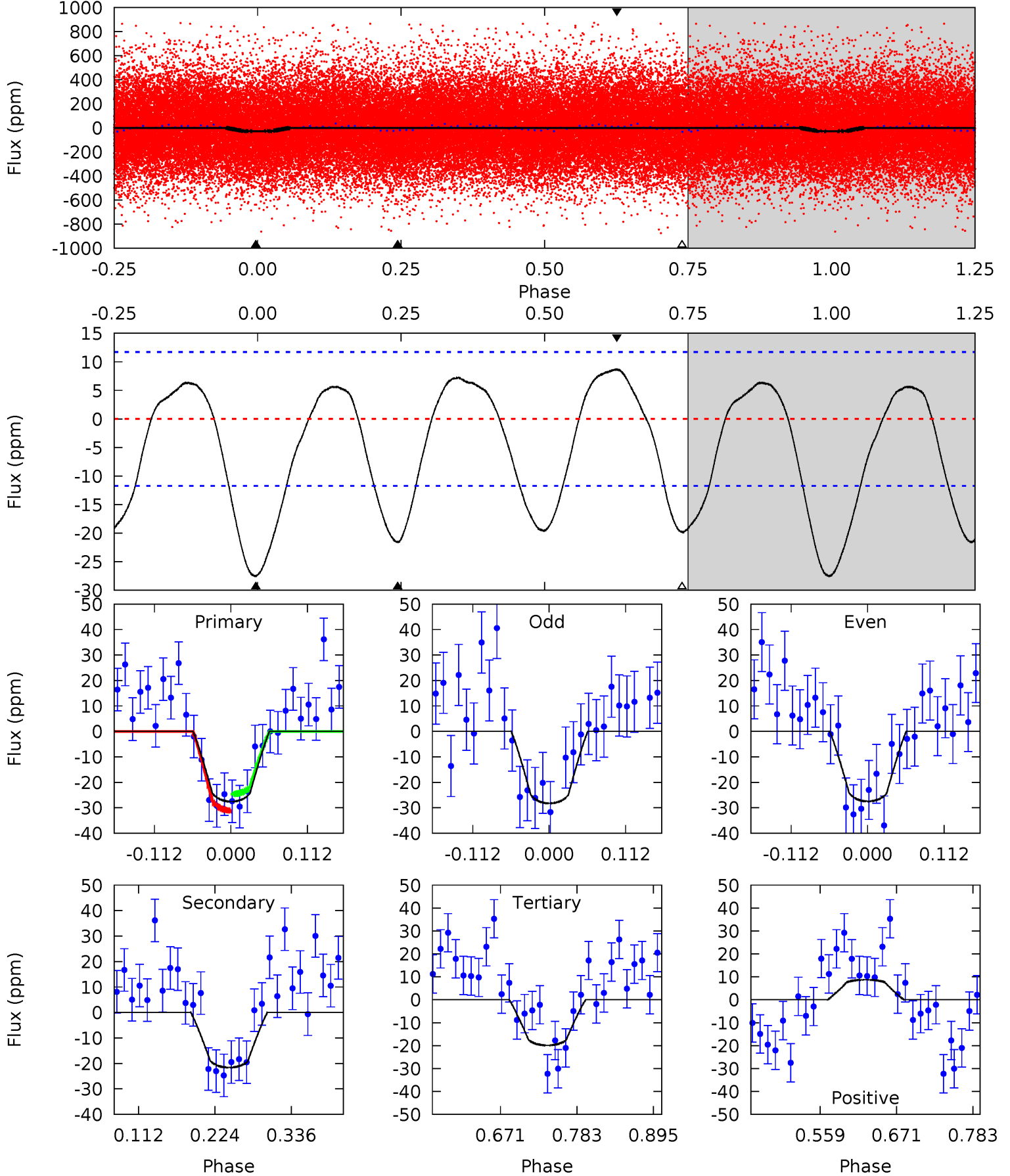




# DV Model-Shift Uniqueness Test

009283821-01, P = 0.713055 Days, E = 131.136400 Days

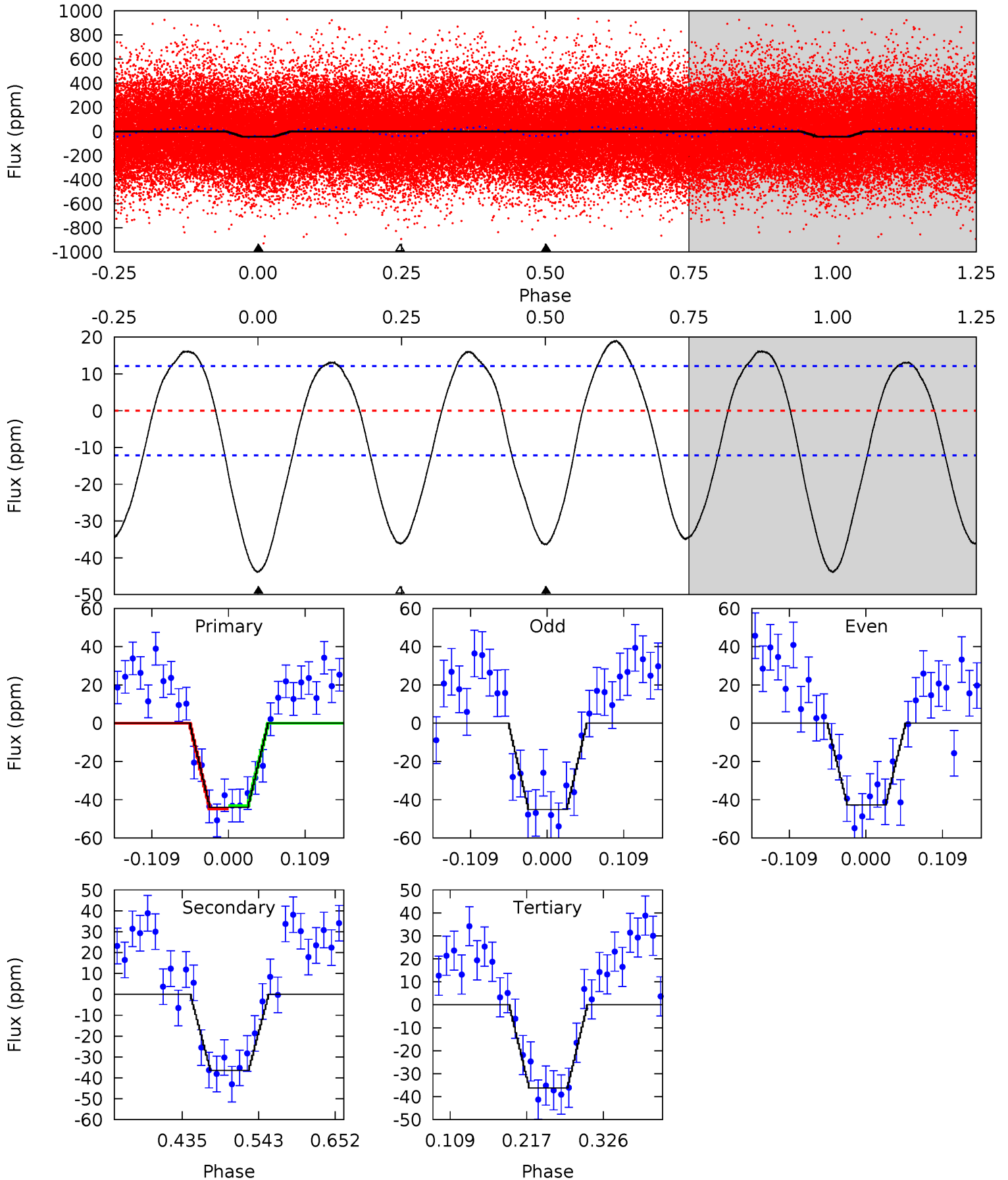
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	8.36	7.70	3.37	4.54	1.59	3.76	2.98	7.30	0.66	4.99	0.15	0.87	0.24	1.24



# Alt Model-Shift Uniqueness Test

009283821-01, P = 0.713044 Days, E = 131.143833 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
16.4	13.6	13.6	0	4.55	1.60	6.93	2.88	16.4	0.08	13.6	0.45	0.95	0.30	0.32





### Stellar Parameters For KIC 009283821

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6323^{+172}_{-210}$	$4.418^{+0.056}_{-0.224}$	$-0.080^{+0.250}_{-0.300}$	$1.093^{+0.372}_{-0.124}$	$1.140^{+0.166}_{-0.149}$	$1.230^{+0.368}_{-0.666}$
	+3%/-3%	+1%/-5%	+312%/-375%	+34%/-11%	+15%/-13%	+30%/-54%
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 009283821-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-22 \pm 3$	$0.70^{+0.28}_{-0.25}$	$3272^{+252}_{-178}$	$5683^{+1571}_{-785}$	$6.169^{+8.607}_{-2.919}$
Alt.	$-36 \pm 3$	$0.82^{+0.30}_{-0.24}$	$3255^{+263}_{-168}$	$5974^{+1151}_{-712}$	$7.740^{+7.186}_{-3.452}$

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

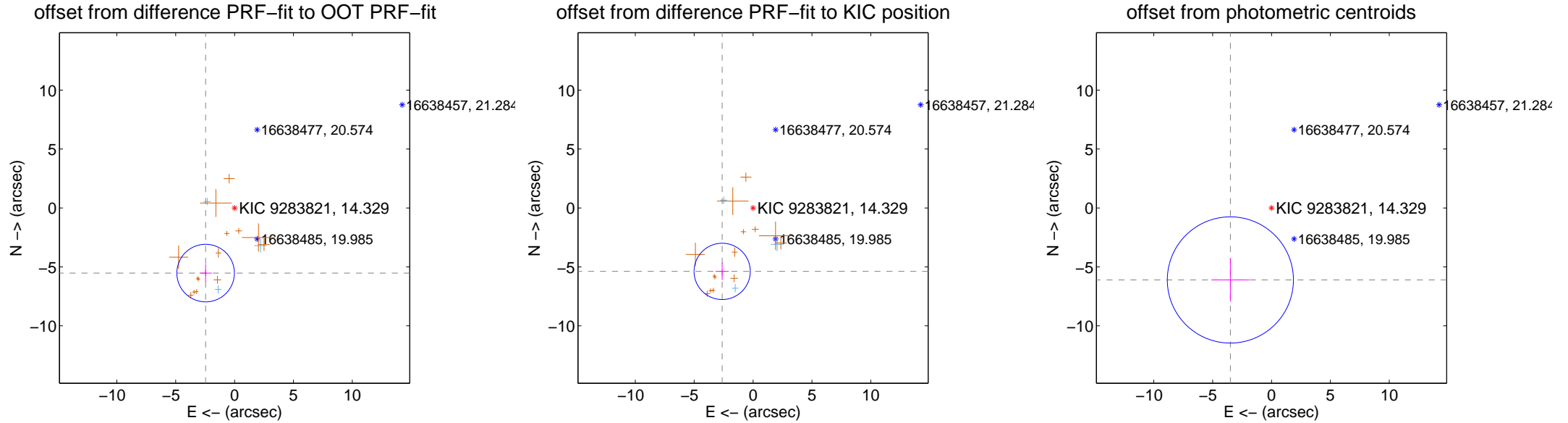
## DV Centroid Data

Supplemental centroid analysis for 009283821-01. Kepler magnitude: 14.33. Transit SNR 7.72

There are 3 quarters with good PRF difference image offsets

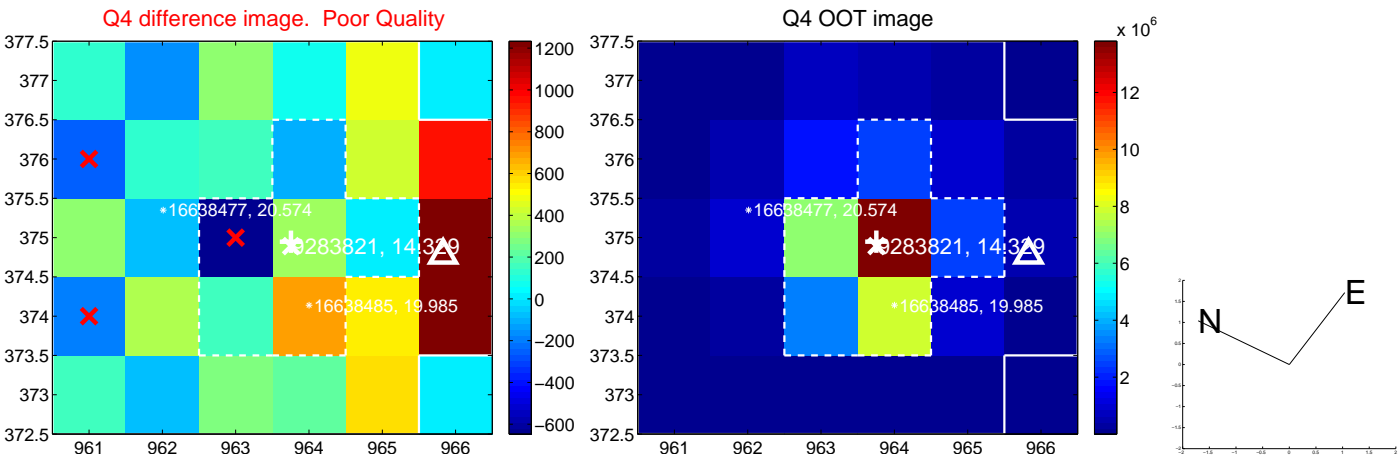
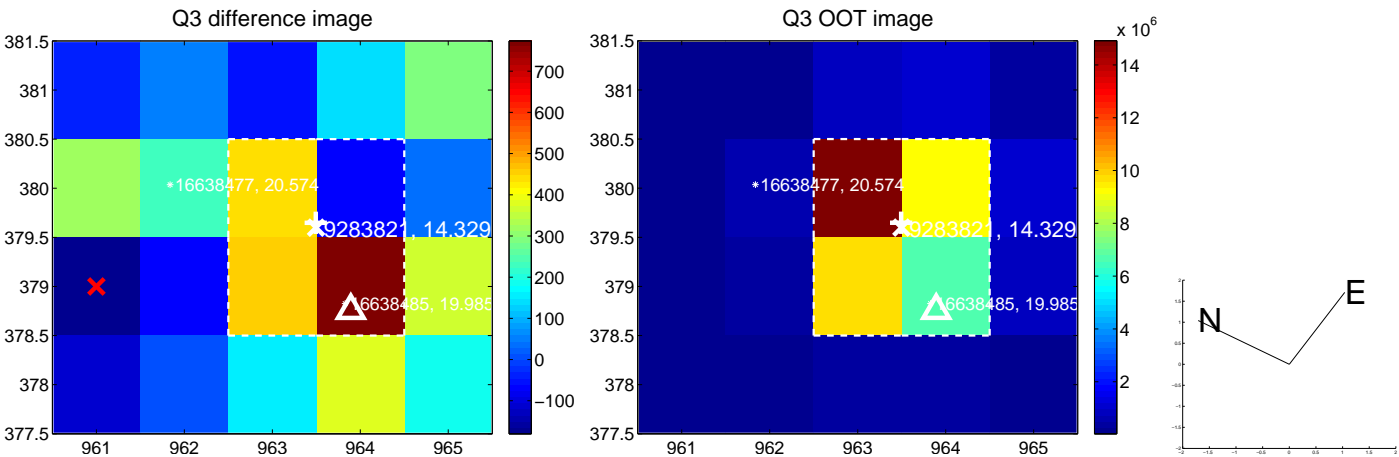
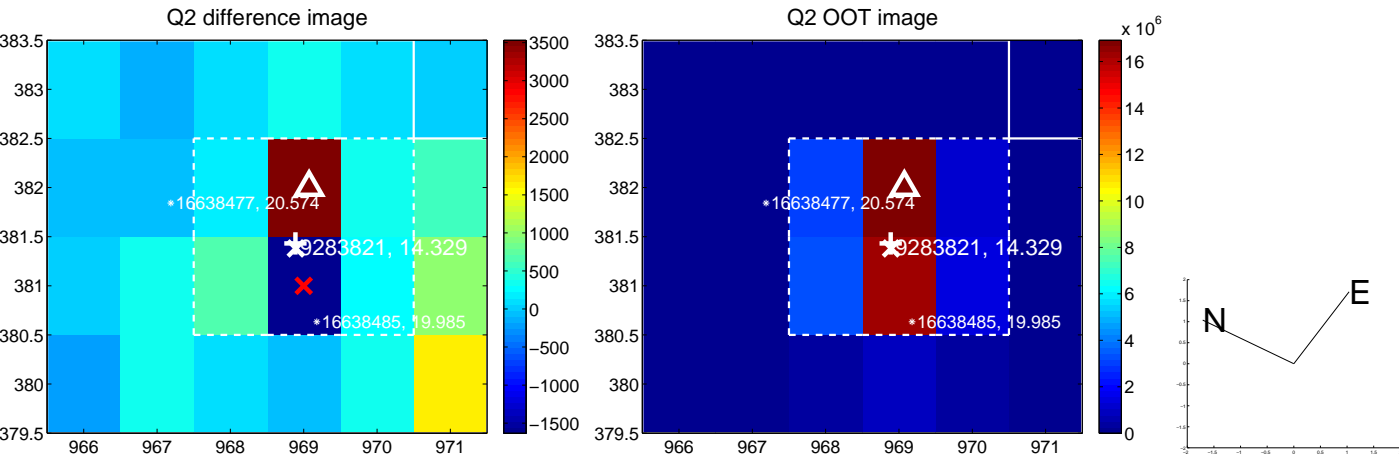
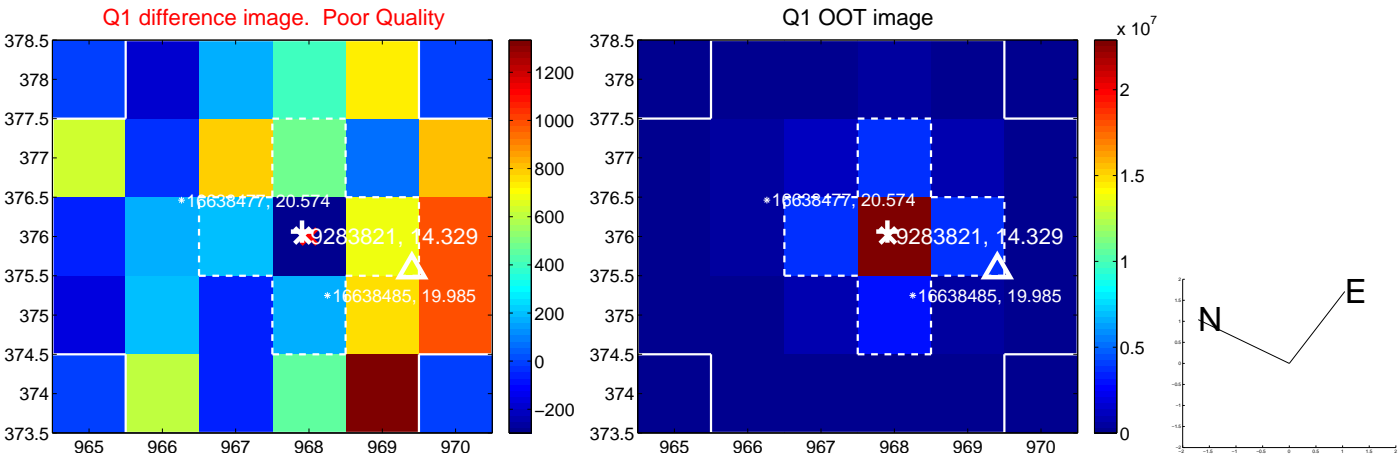
The direct PRF centroid is offset from the target star catalog position by about 0.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$6.051 \pm 0.815$	7.43	$2.460 \pm 0.524$	$-5.529 \pm 0.752$
PRF-fit source offset from KIC position	$5.991 \pm 0.796$	7.52	$2.625 \pm 0.565$	$-5.385 \pm 0.722$
photometric centroid source offset	$7.04 \pm 1.79$	3.94	$3.50 \pm 1.61$	$-6.11 \pm 1.84$

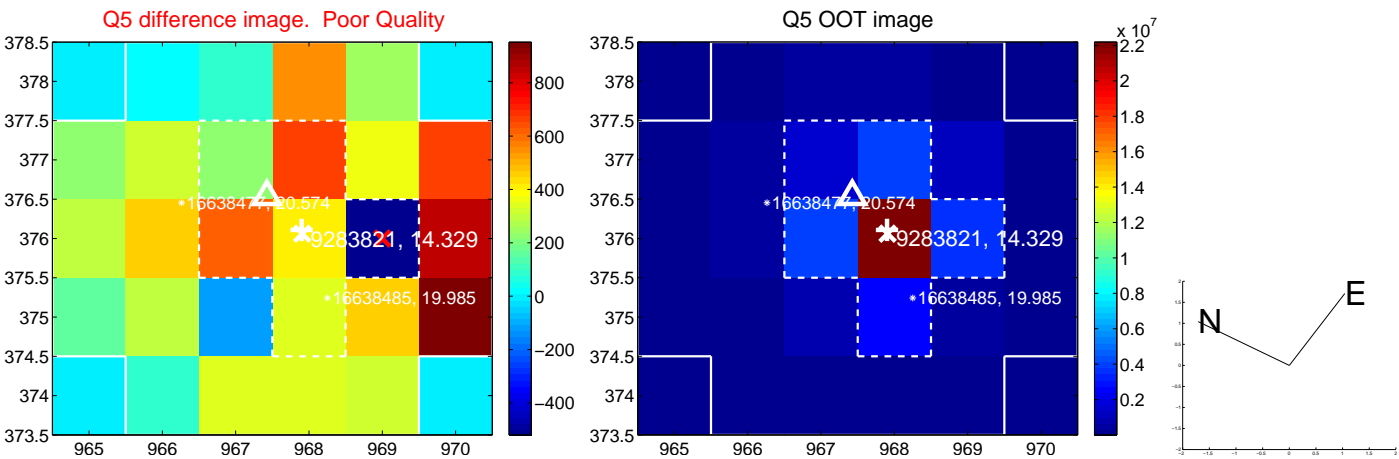


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

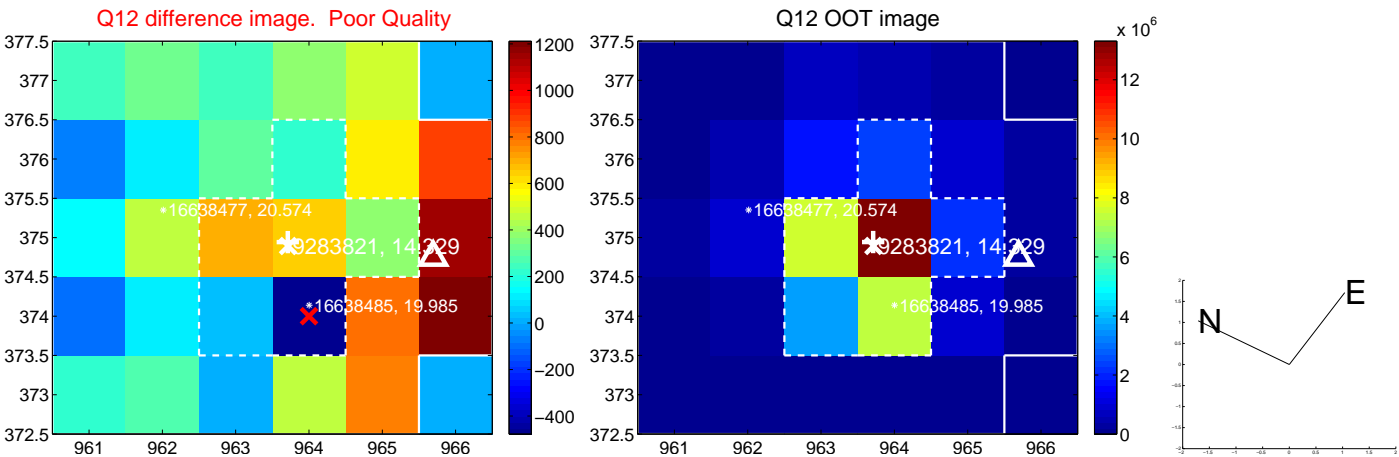
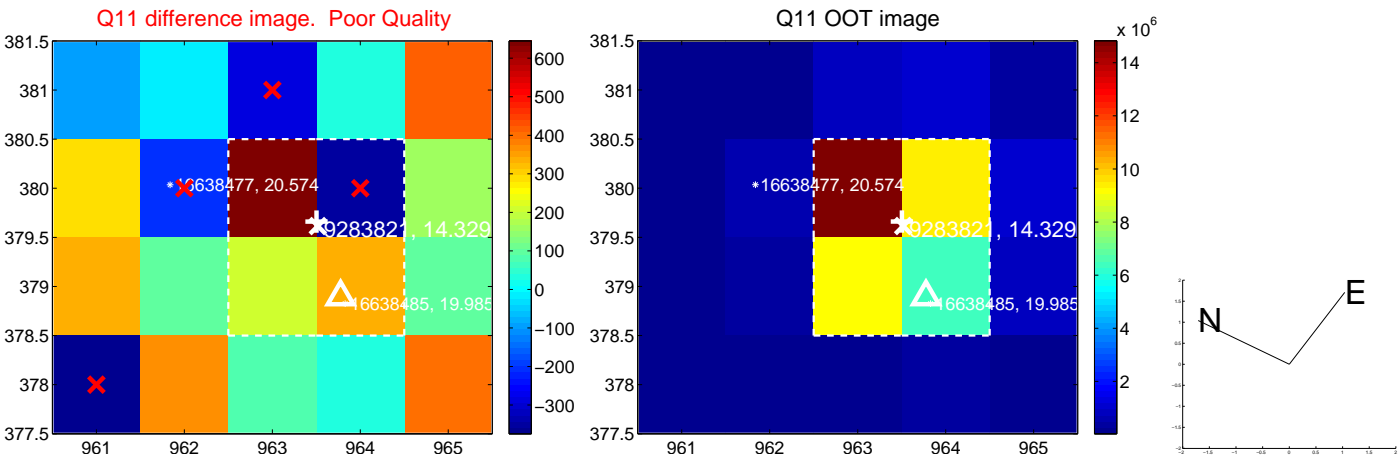
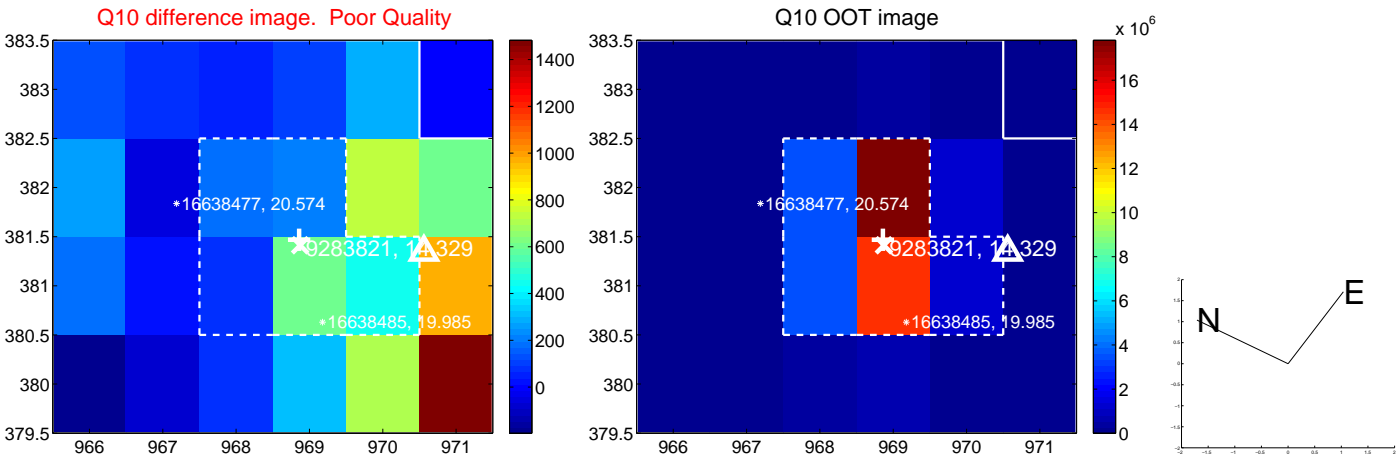
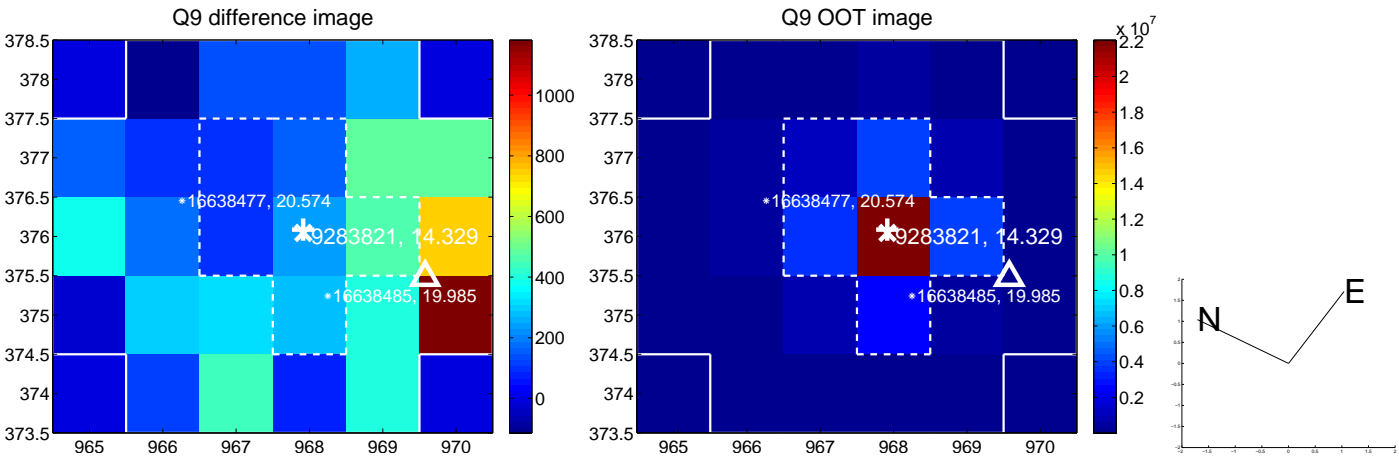


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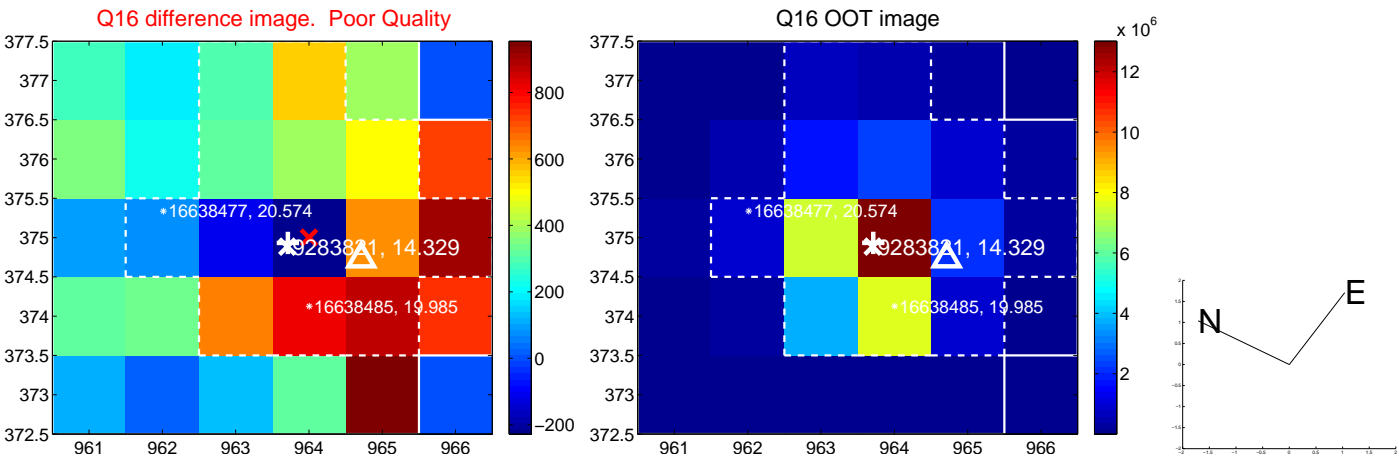
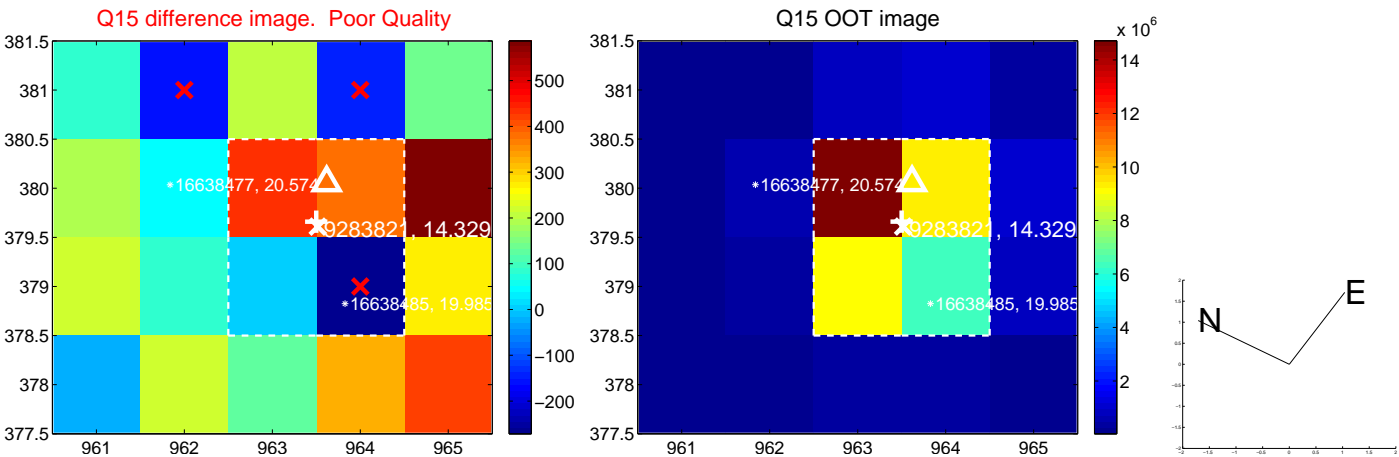
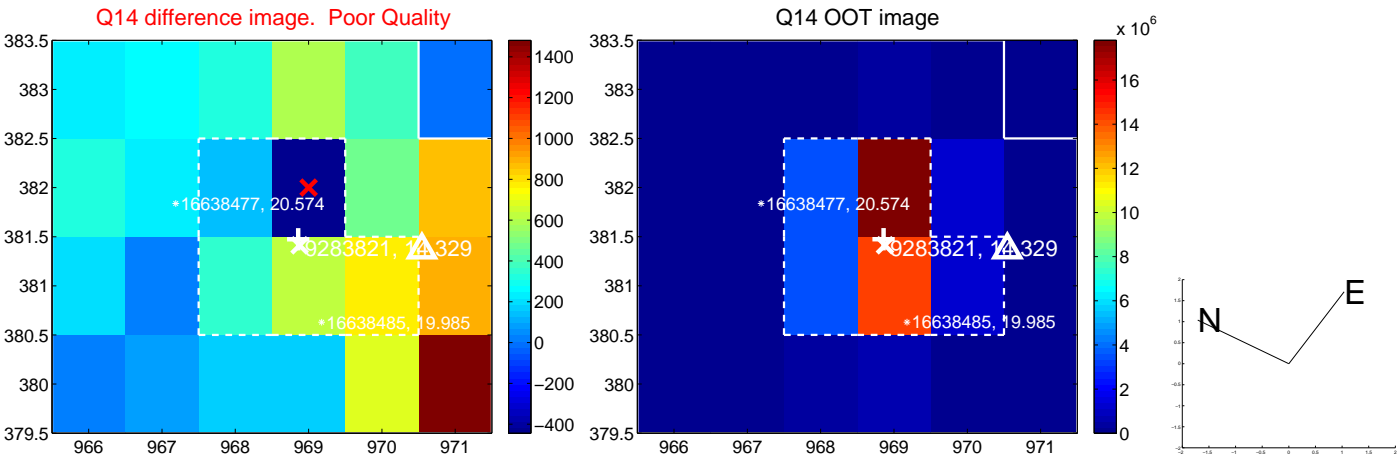
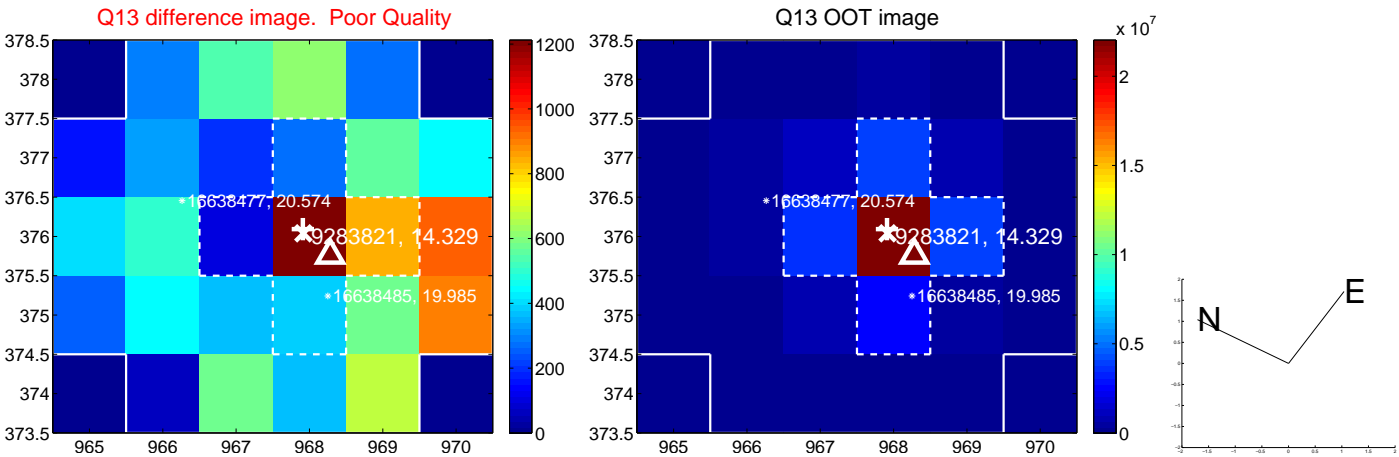




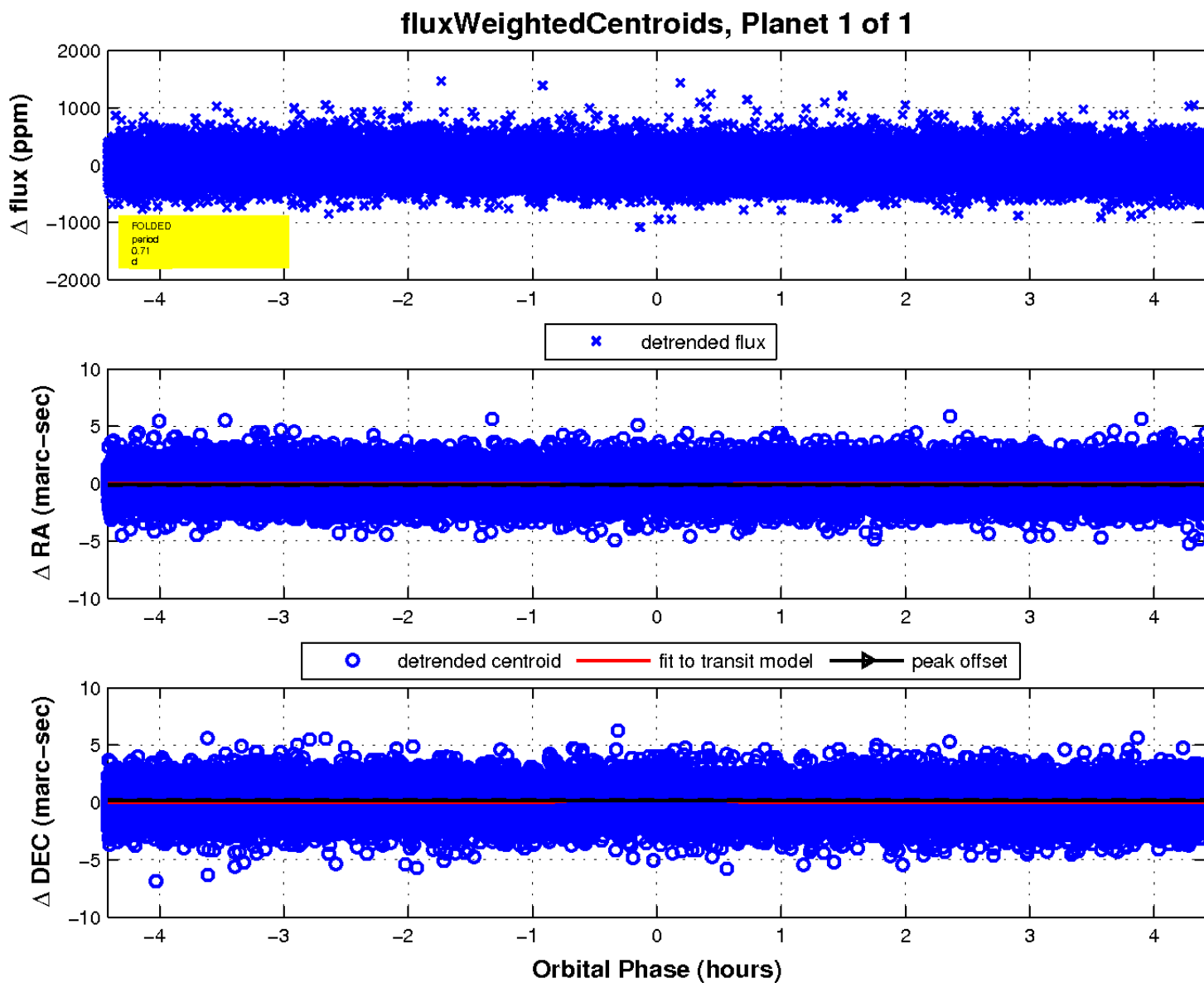
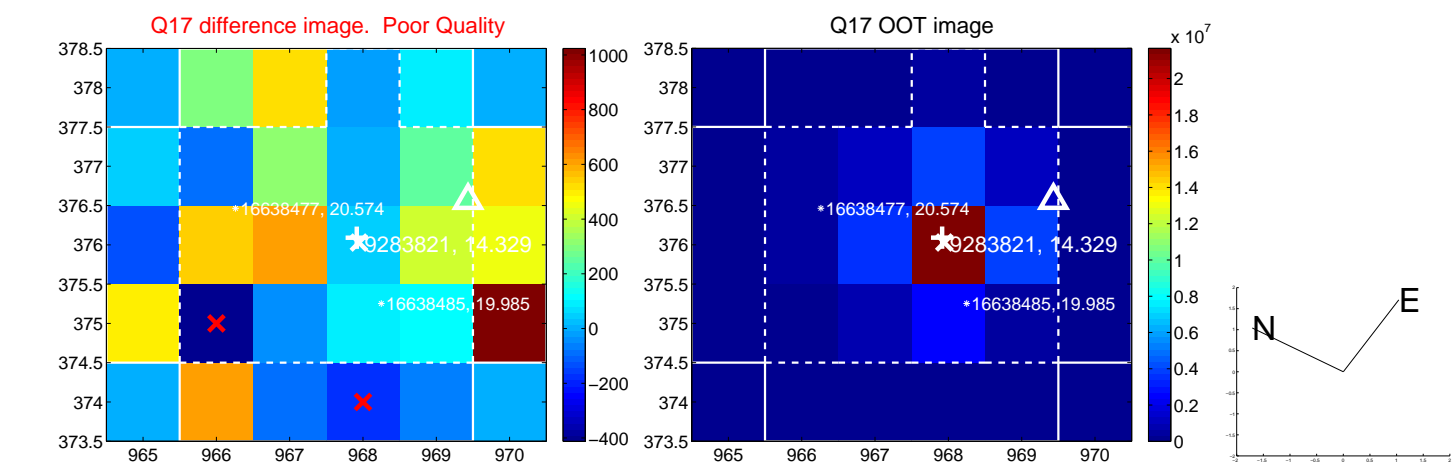
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

