

# KIC 010226420

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010226420-01	OBS	8288.01	0.660675	131.685922	40.7	2.912	8.6	7.0	1.13	6353	0.76	7665.99

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010226420-01	OBS	FP	0.00	0	1	1	1	MOD_SEC_DV—MOD_SEC_ALT—CENT_RESOLVED_OFFSET—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.

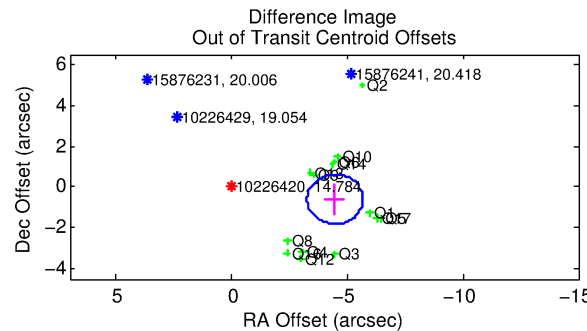
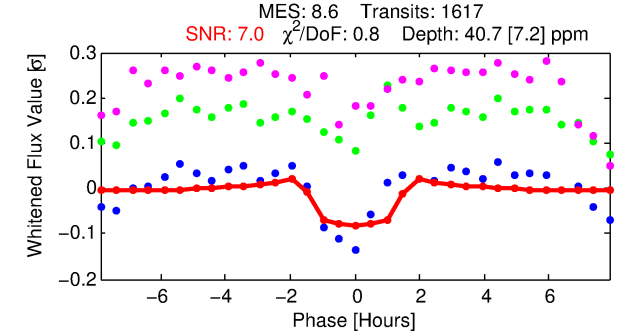
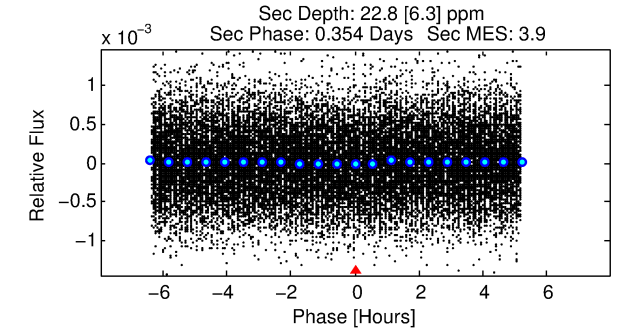
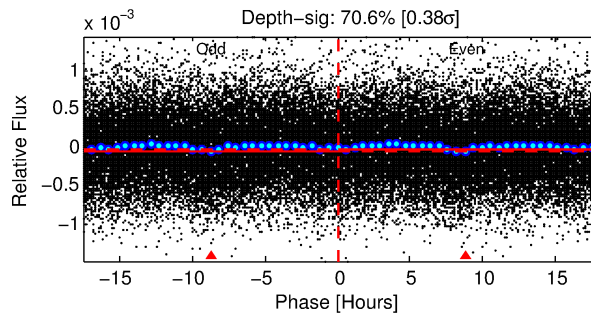
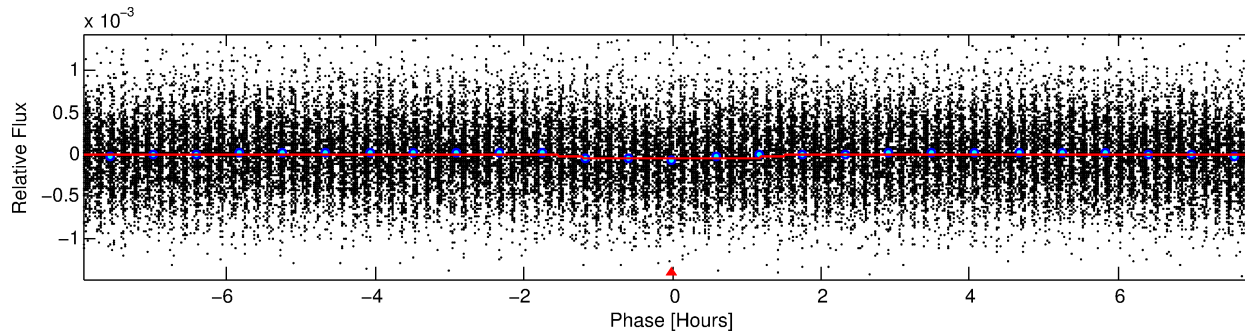
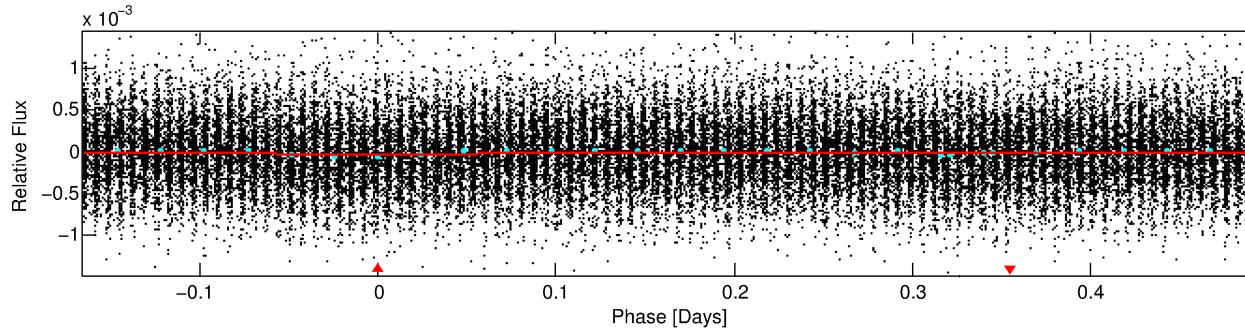
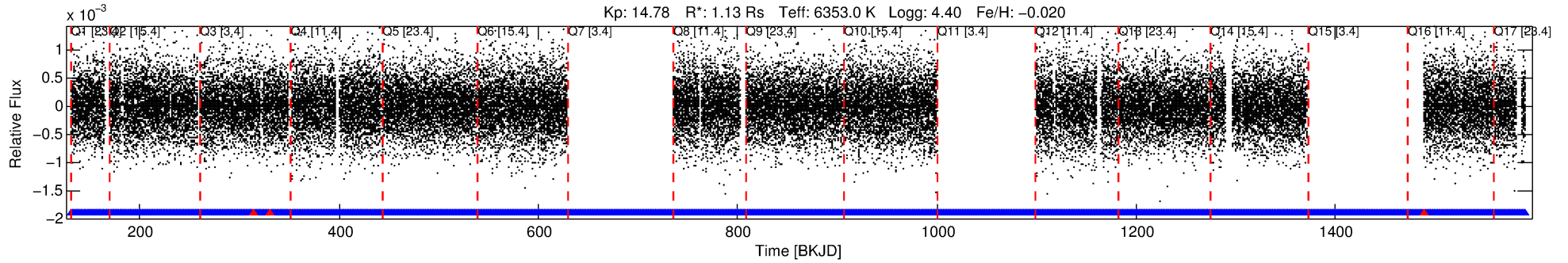
## Ephemeris Match Information For 010226420-01

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	$\sigma_P$	$\sigma_T$
010226420-01	10226420	010226388-pri	10226388	1:1	56.0	-11	9	10.77	14.78	6231.70	Direct-PRF	0	2.84	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: 10226420 Candidate: 1 of 1 Period: 0.661 d



## DV Fit Results:

Period = 0.66067 [0.00001] d  
Epoch = 131.6859 [0.0041] BKJD  
Rp/R\* = 0.0061 [0.0034]  
a/R\* = 1.60 [2.77]  
b = 0.60 [3.08]  
Seff = 7665.99 [2925.95]  
Teq = 2386 [228] K  
Rp = 0.76 [0.48] Re  
a = 0.0156 [0.0038] AU  
Ag = 5.36 [6.44] [0.68 $\sigma$ ]  
Teffp = 5614 [1622] K [1.97 $\sigma$ ]

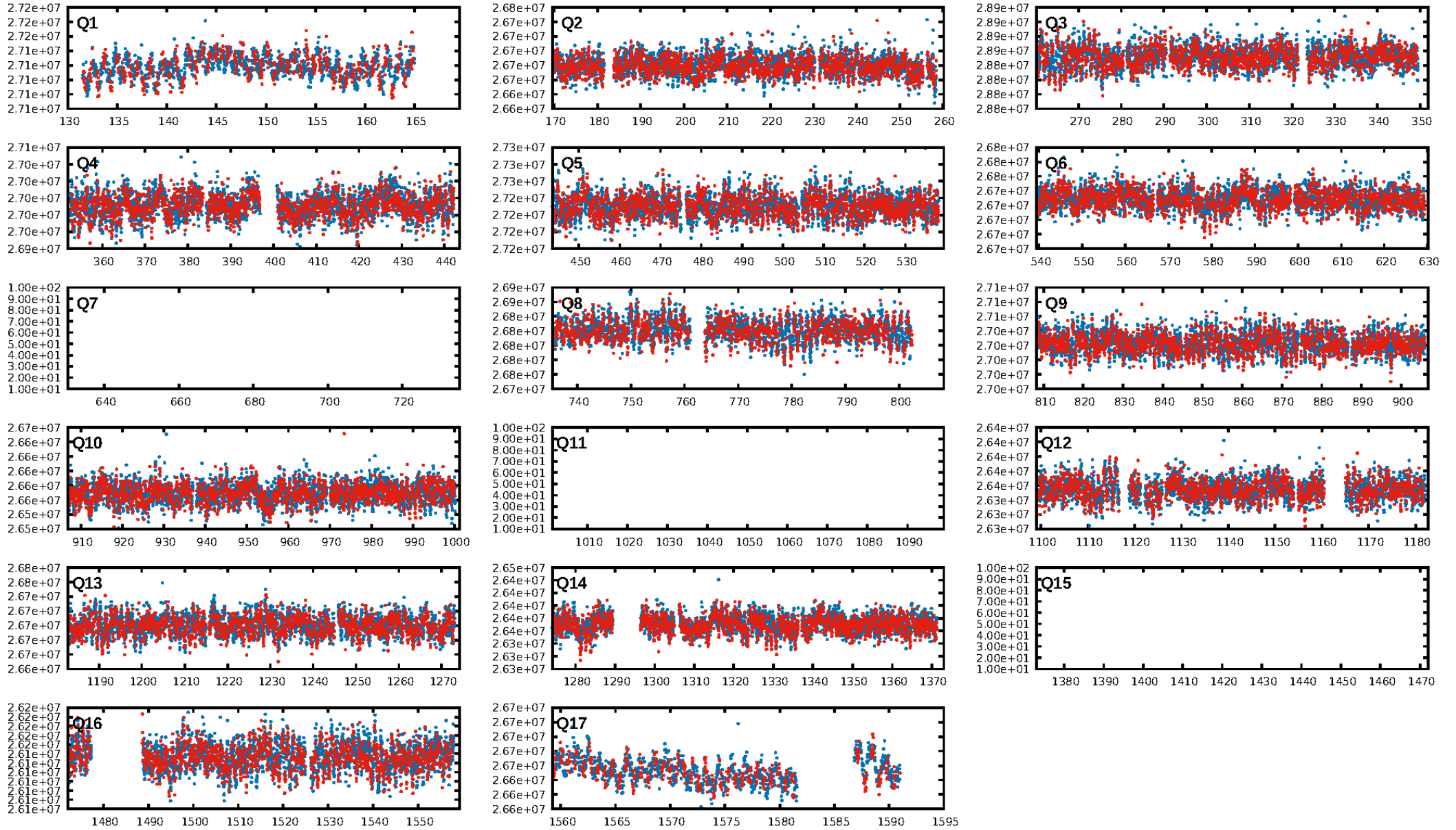
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.67e-15  
RollingBand-fgt: 1.00 [1523/1526]  
GhostDiagnostic-chr: -0.4777  
Centroid-sig: 0.2%  
Centroid-so: 4.345 arcsec [2.79 $\sigma$ ]  
OotOffset-rm: 4.508 arcsec [11.19 $\sigma$ ]  
KicOffset-rm: 4.667 arcsec [11.53 $\sigma$ ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 0.14 [2/14]  
DiffImageOverlap-fno: 1.00 [14/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:48:52 Z

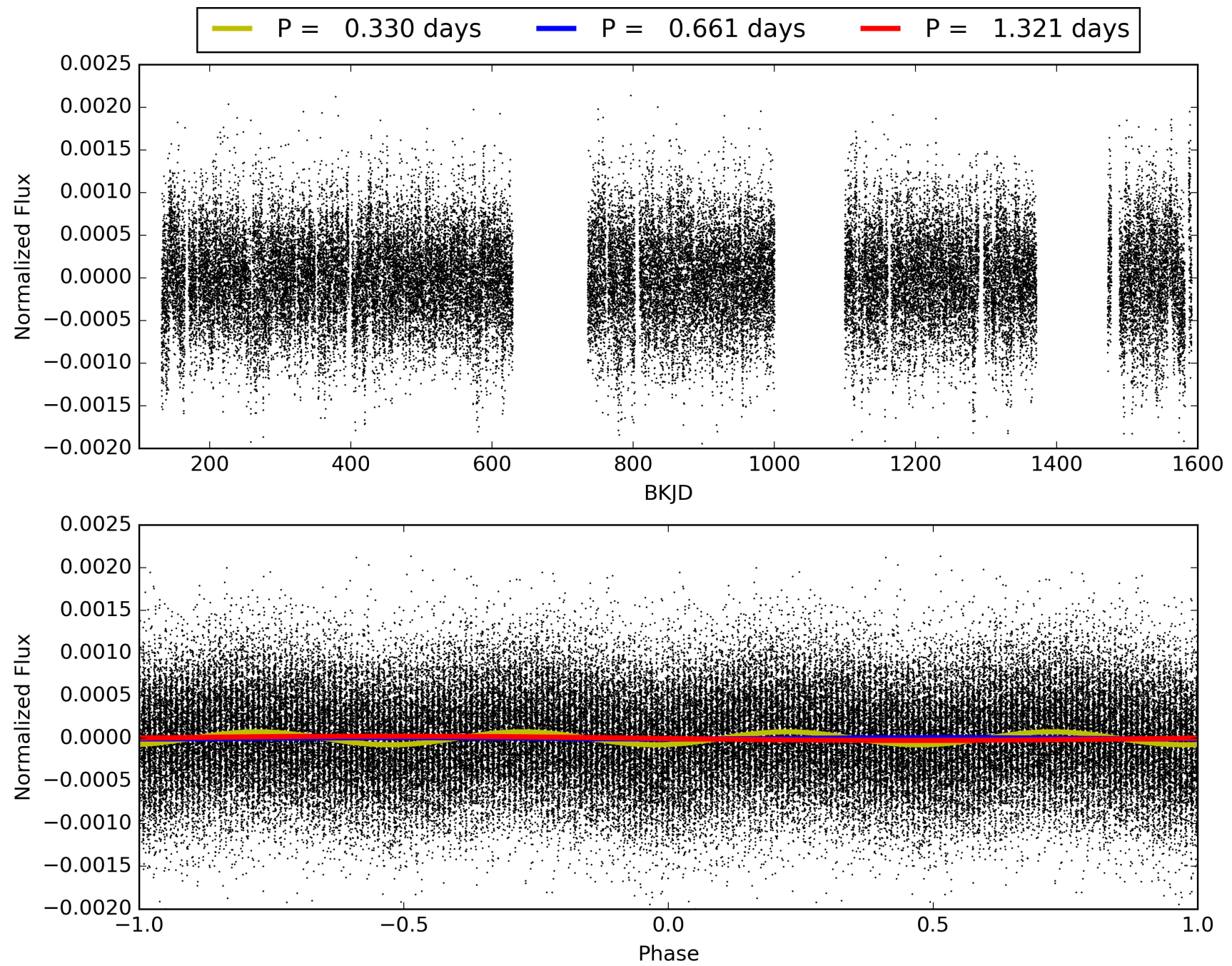
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010226420-01, PDC Light Curves



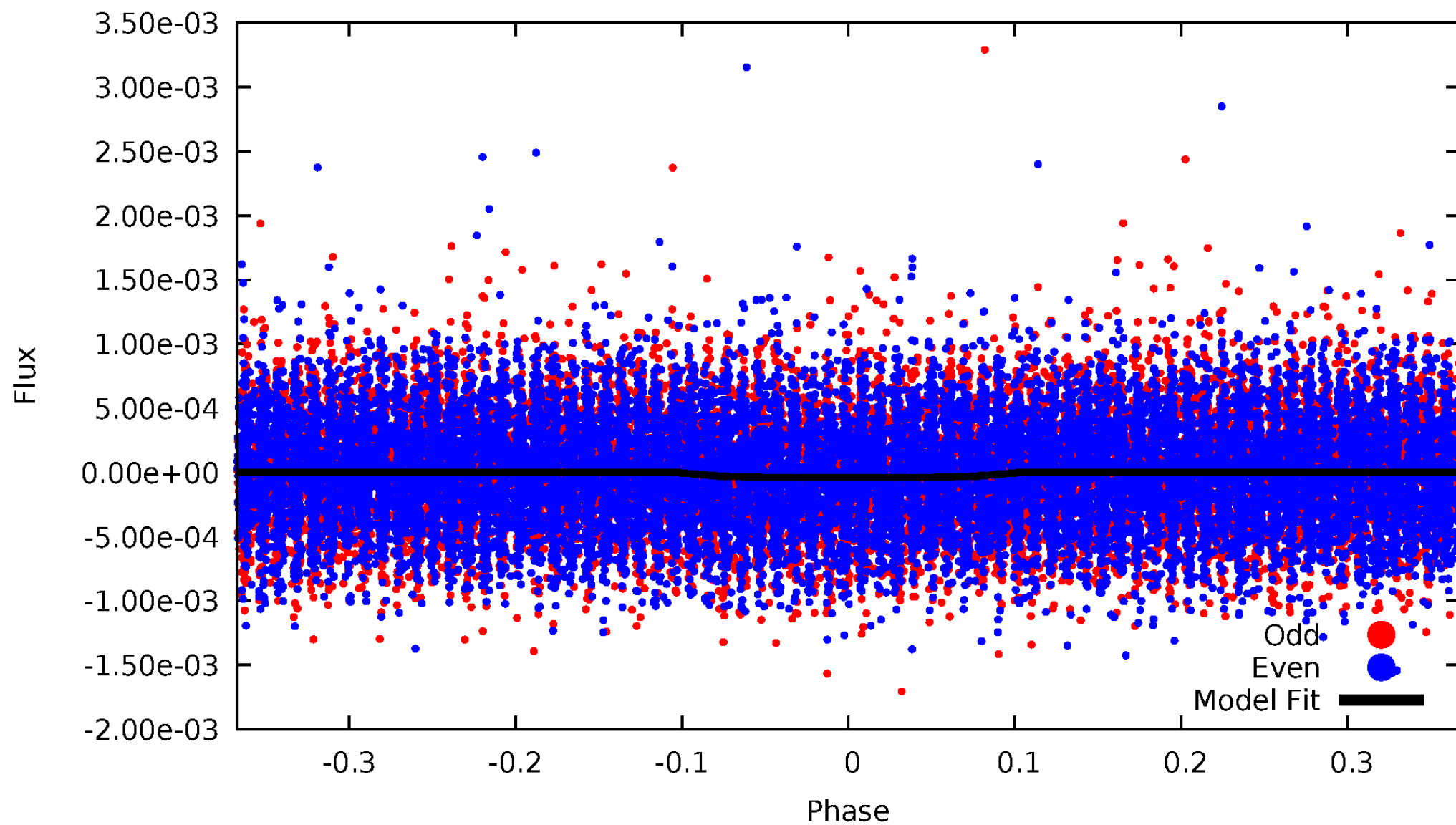


TCE 010226420-01



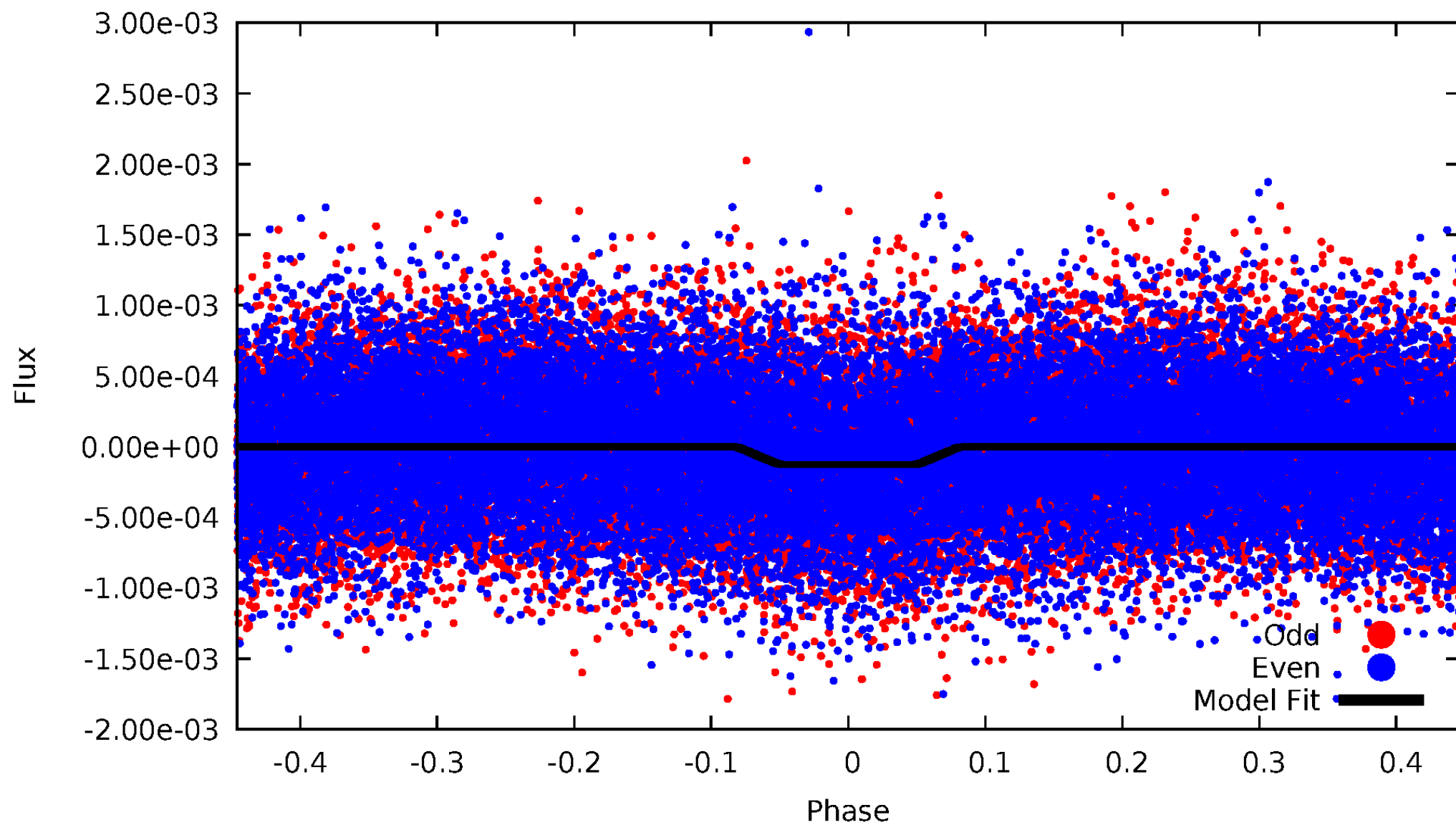
# DV Odd/Even

TCE 010226420-01



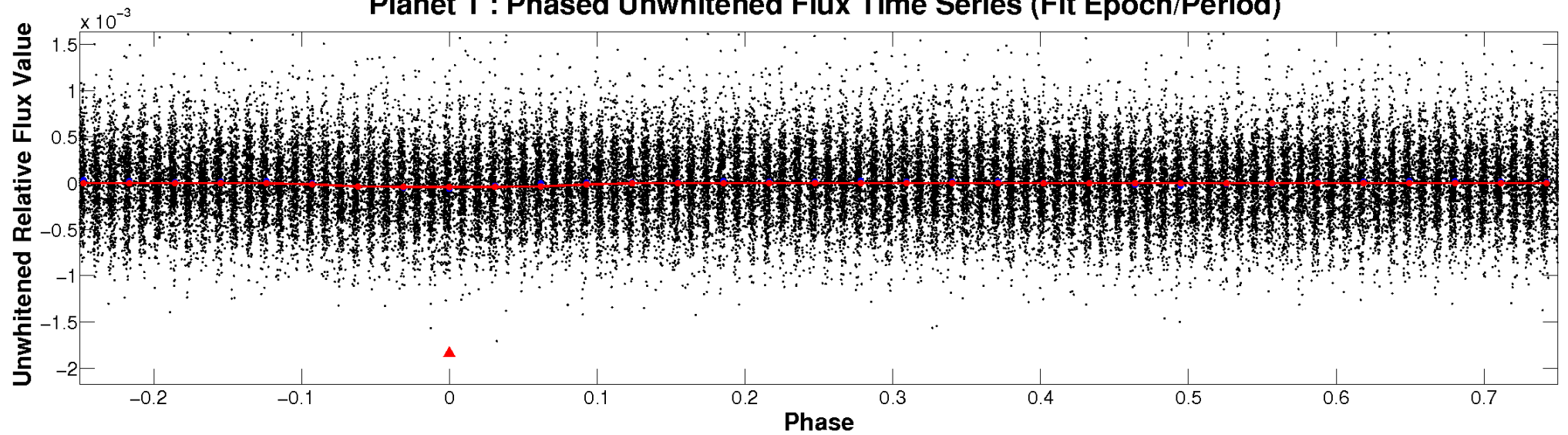
# ALT Odd/Even

TCE 010226420-01

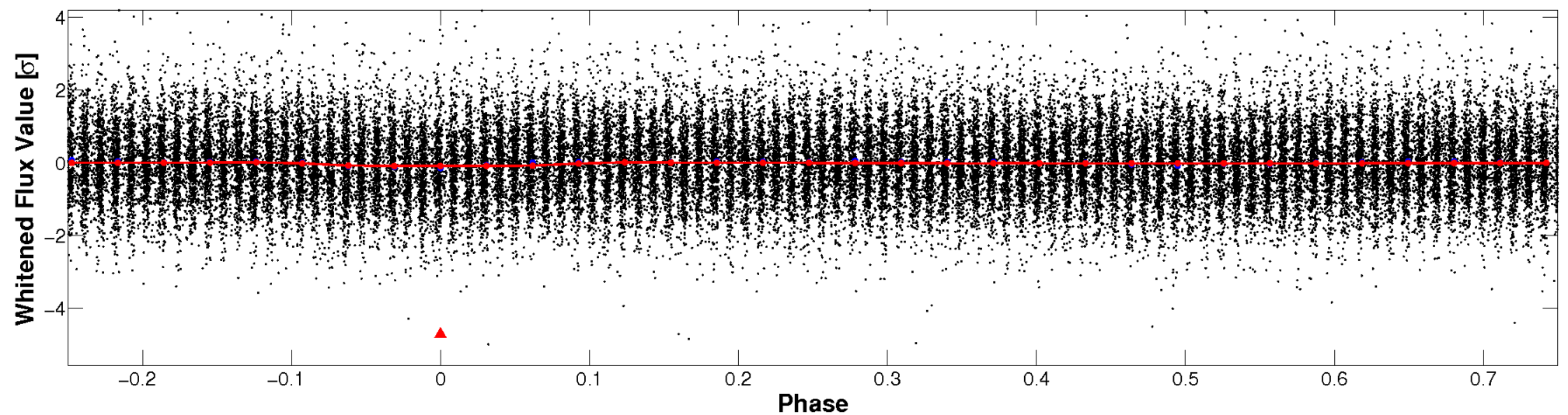


# Non-Whitened Vs. Whitened Light Curve

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



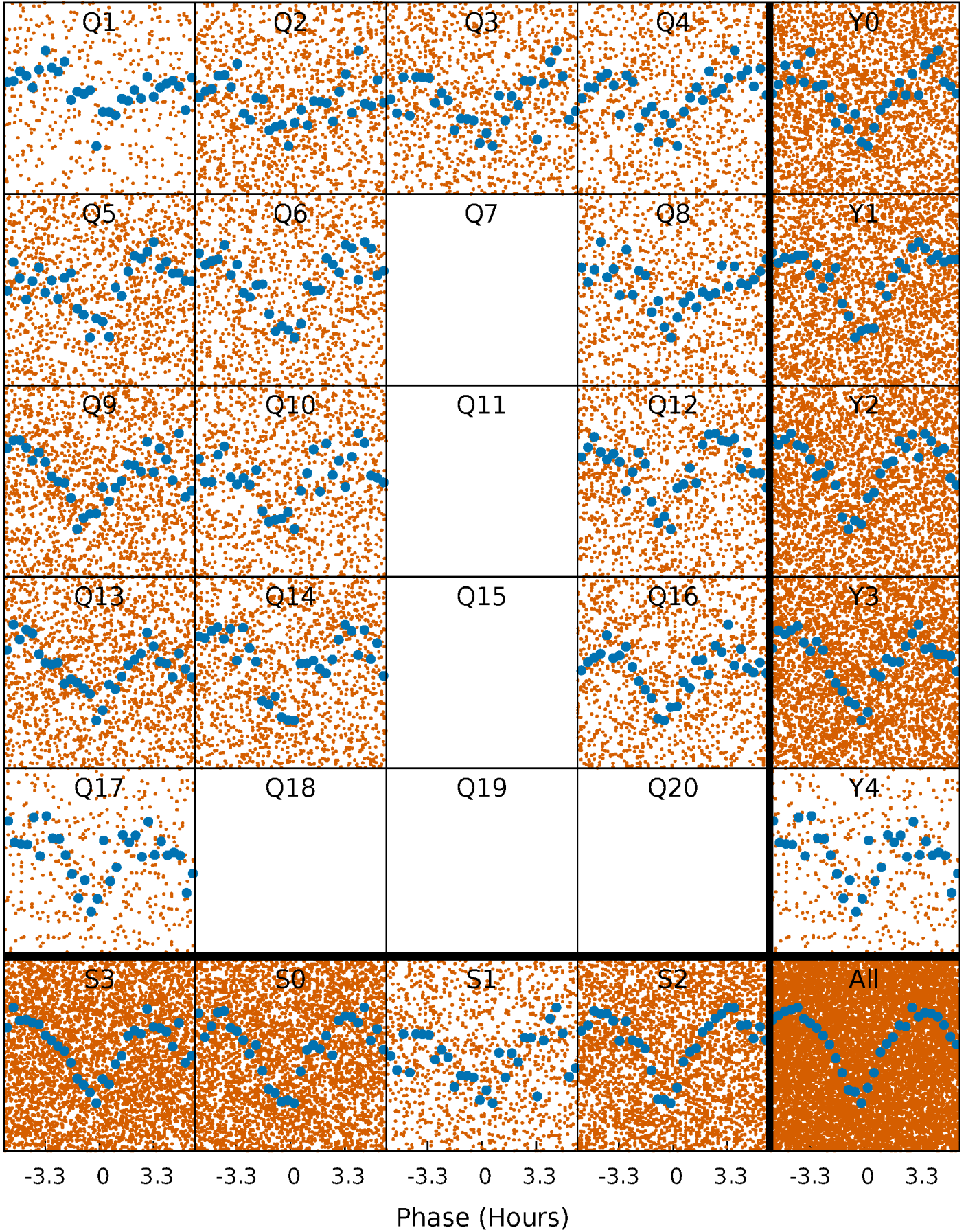
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

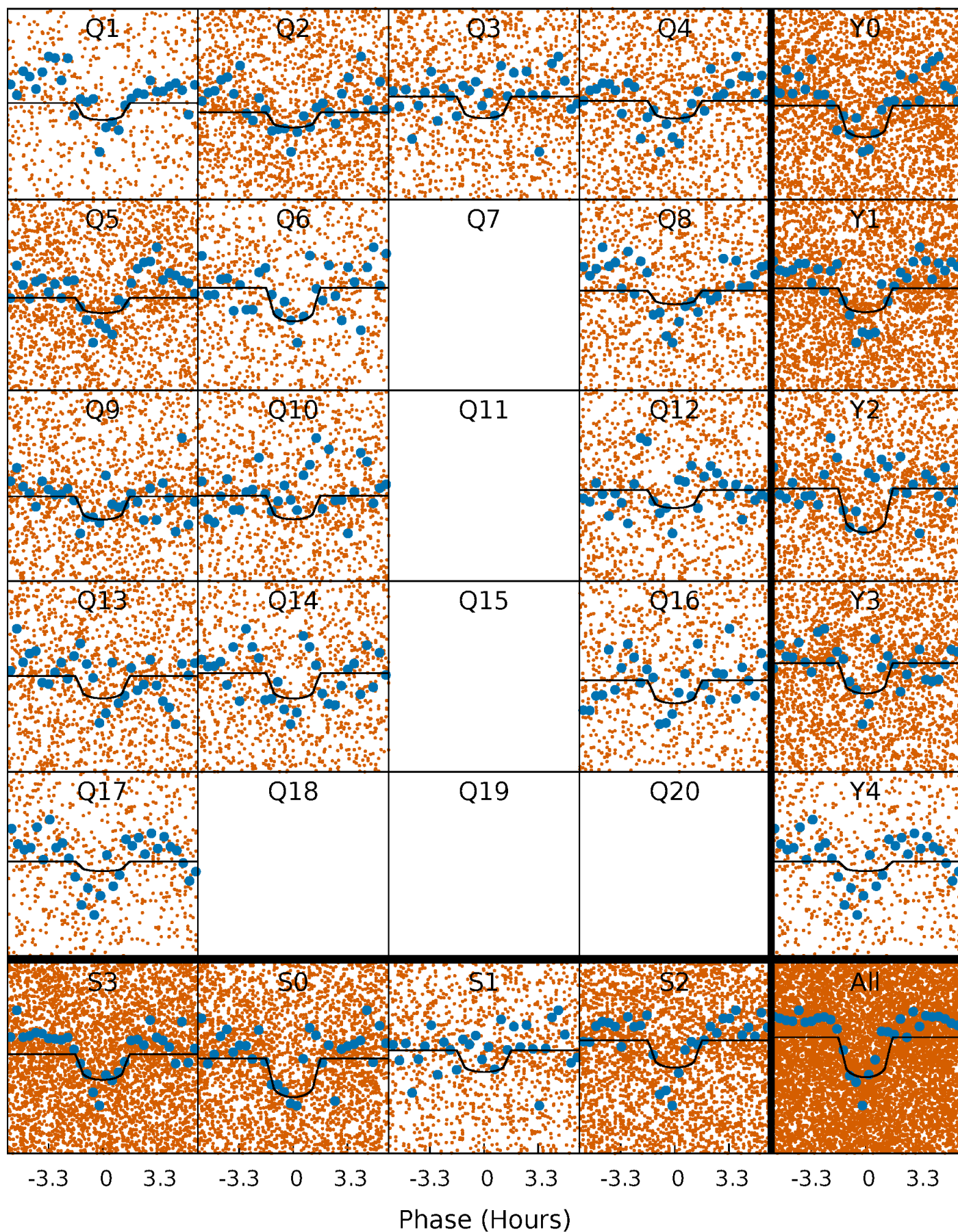
TCE 010226420-01 P= 0.660675 Days  $T_0=131.685922$  (BKJD)





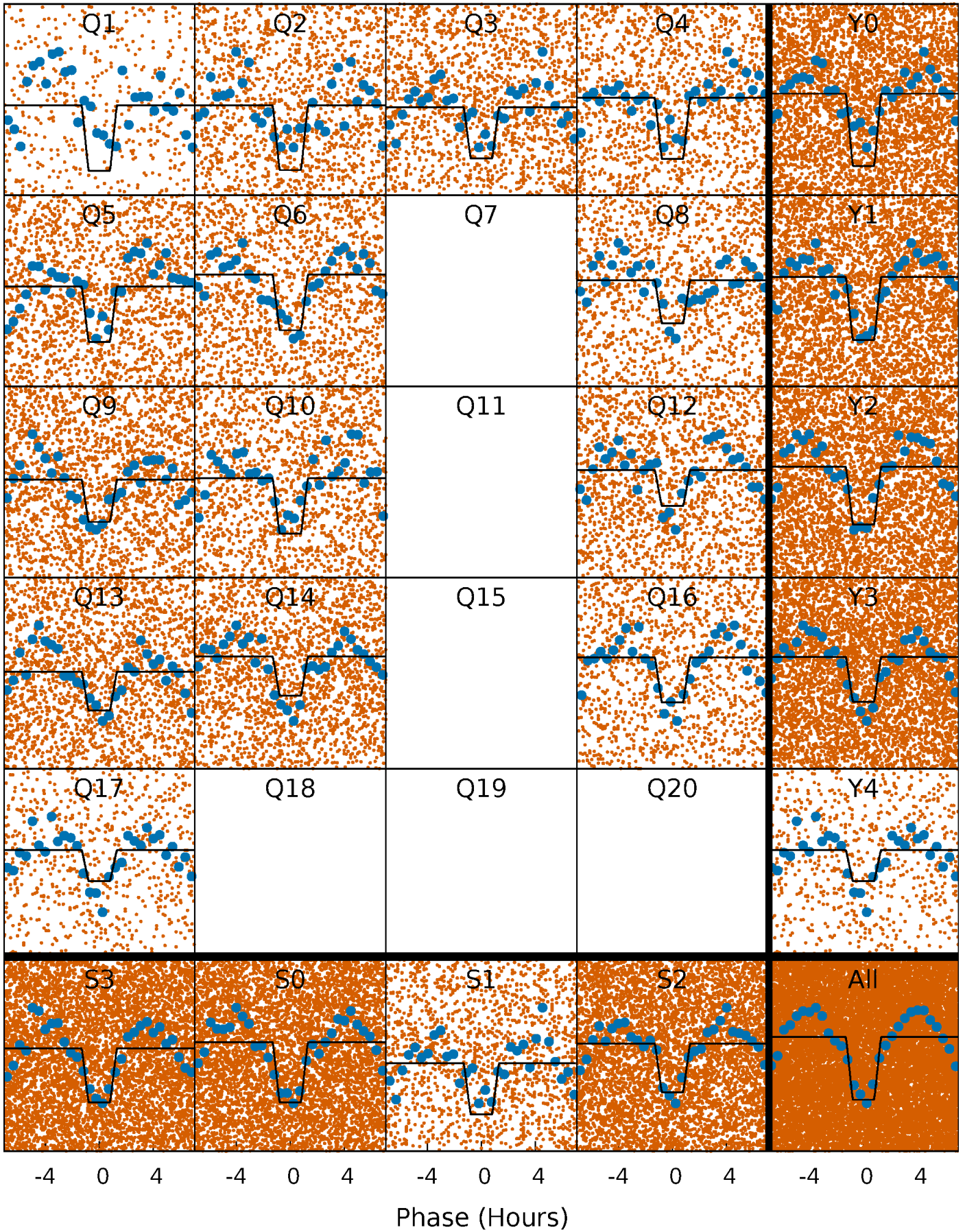
# DV Quarter-Phased Transit Curves

TCE 010226420-01 P= 0.660675 Days  $T_0=131.685922$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010226420-01 P= 0.660665 Days  $T_0=131.681116$  (BKJD)

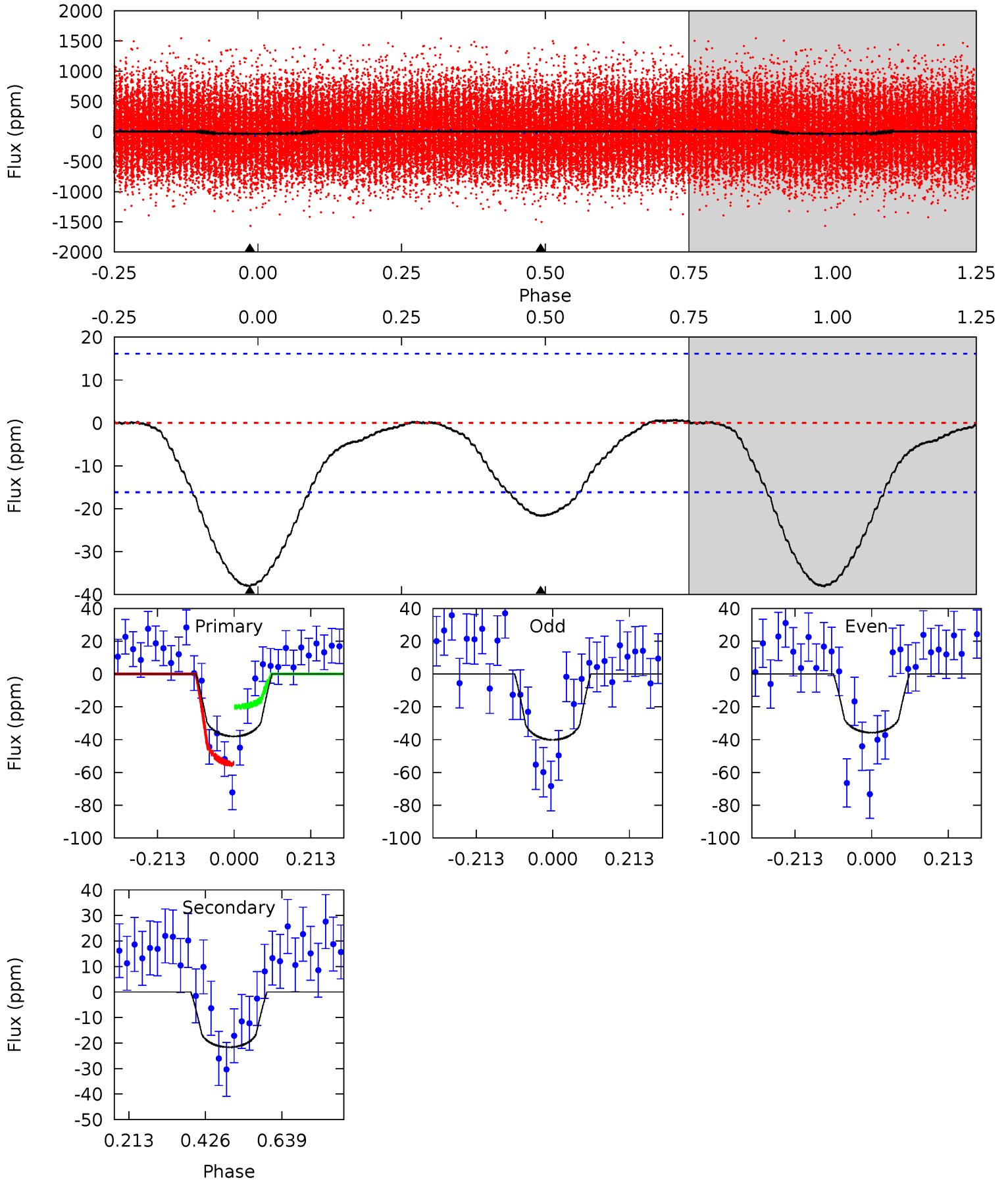




# DV Model-Shift Uniqueness Test

010226420-01, P = 0.660675 Days, E = 131.025247 Days

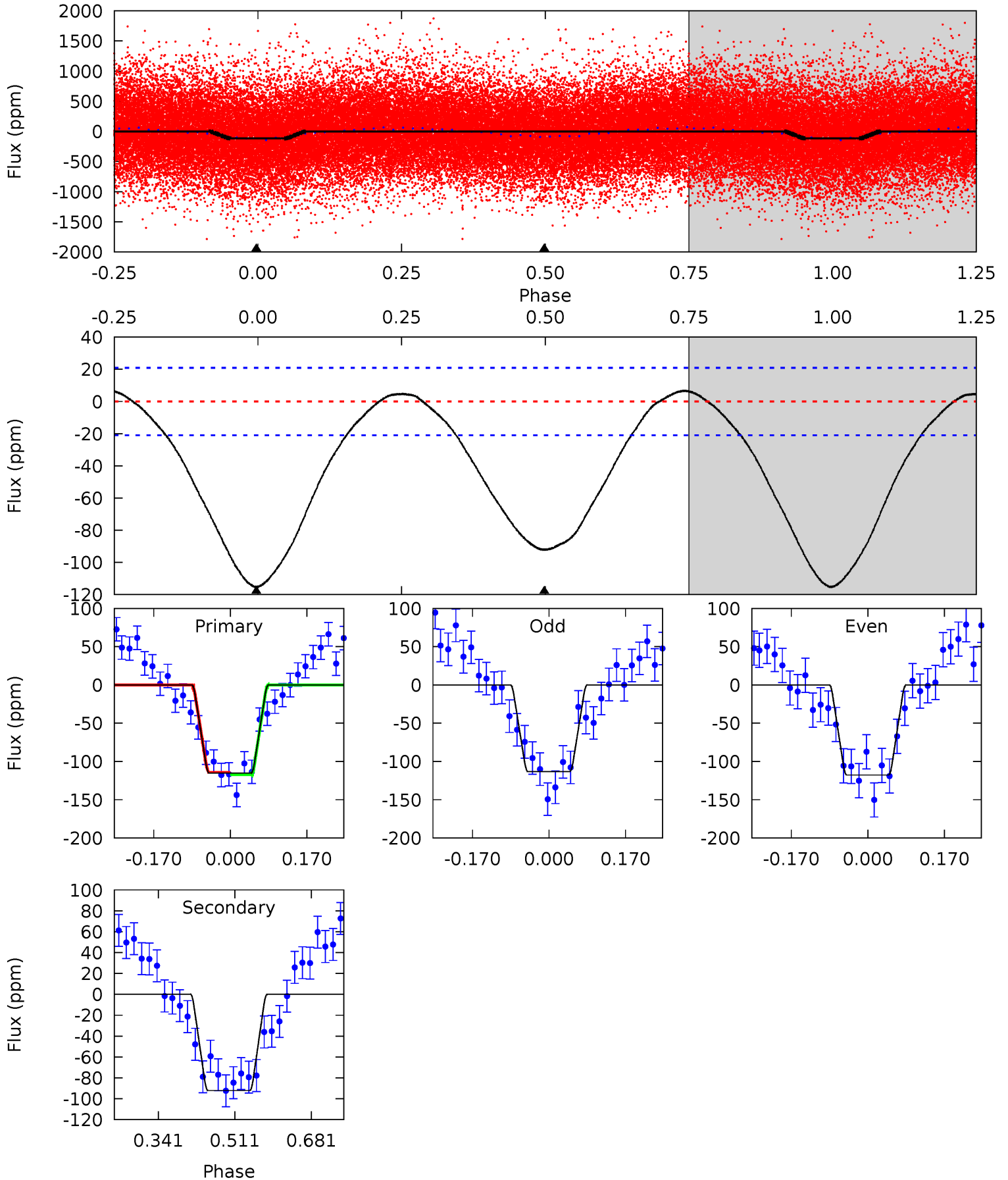
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	5.90	0	0	4.40	1.25	0.25	10.4	10.4	5.90	5.90	0.60	0.96	0.02	4.75



# Alt Model-Shift Uniqueness Test

010226420-01, P = 0.660665 Days, E = 131.020451 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
24.5	19.6	0	0	4.45	1.37	1.27	24.5	24.5	19.6	19.6	0.49	1.11	0.05	0.32





### Stellar Parameters For KIC 010226420

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6353^{+174}_{-217}$	$4.397^{+0.065}_{-0.195}$	$-0.020^{+0.250}_{-0.300}$	$1.134^{+0.329}_{-0.141}$	$1.174^{+0.157}_{-0.157}$	$1.133^{+0.320}_{-0.570}$
	+3%/-3%	+1%/-4%	+1250%/-1500%	+29%/-12%	+13%/-13%	+28%/-50%
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 010226420-01 / KOI 8288.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-22 \pm 4$	$0.79^{+0.45}_{-0.38}$	$3393^{+234}_{-179}$	$5465^{+2288}_{-1033}$	$4.642^{+12.492}_{-2.802}$
Alt.	$-92 \pm 5$	$1.46^{+0.48}_{-0.47}$	$3386^{+234}_{-167}$	$5753^{+1308}_{-703}$	$5.760^{+6.726}_{-2.501}$

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

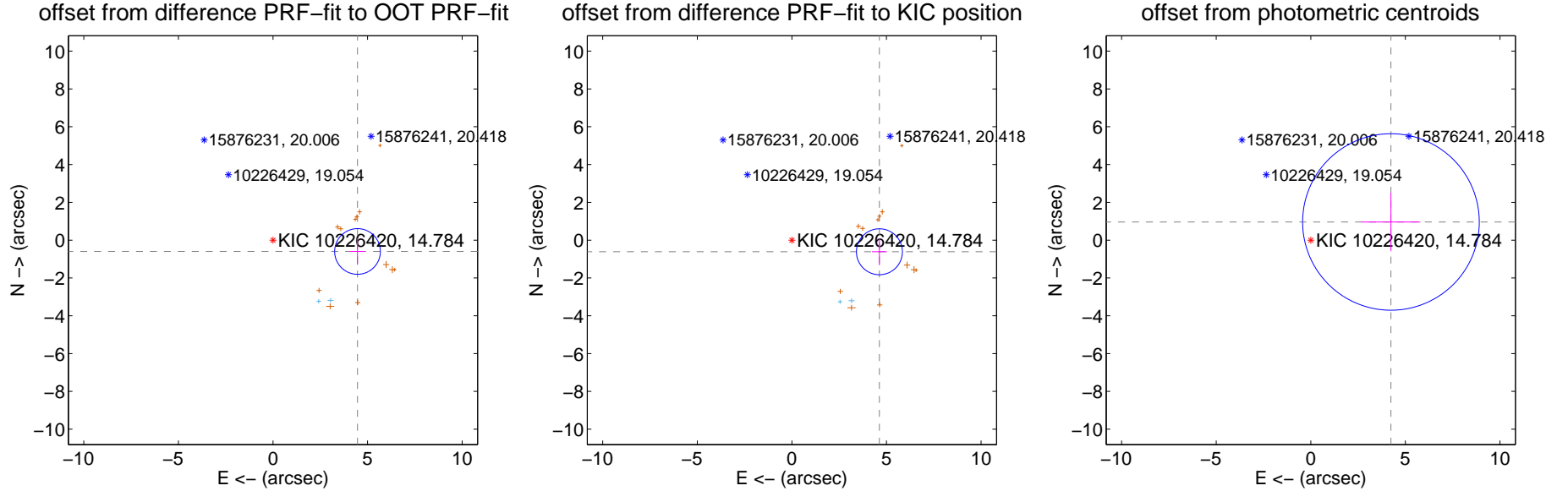
## DV Centroid Data

Supplemental centroid analysis for 010226420-01. Kepler magnitude: 14.78. Transit SNR 6.96

There are 2 quarters with good PRF difference image offsets

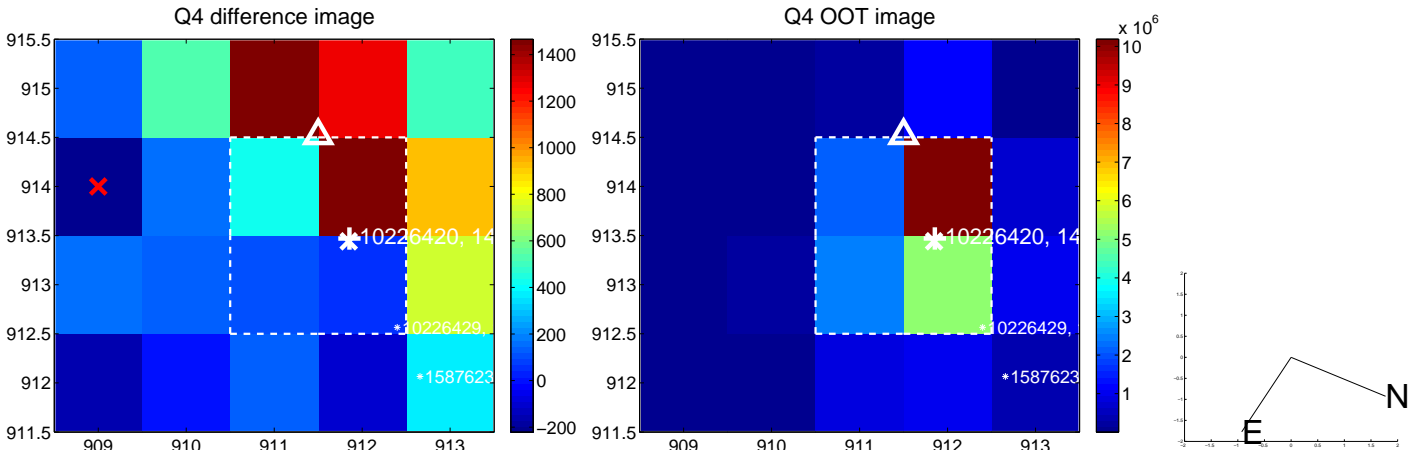
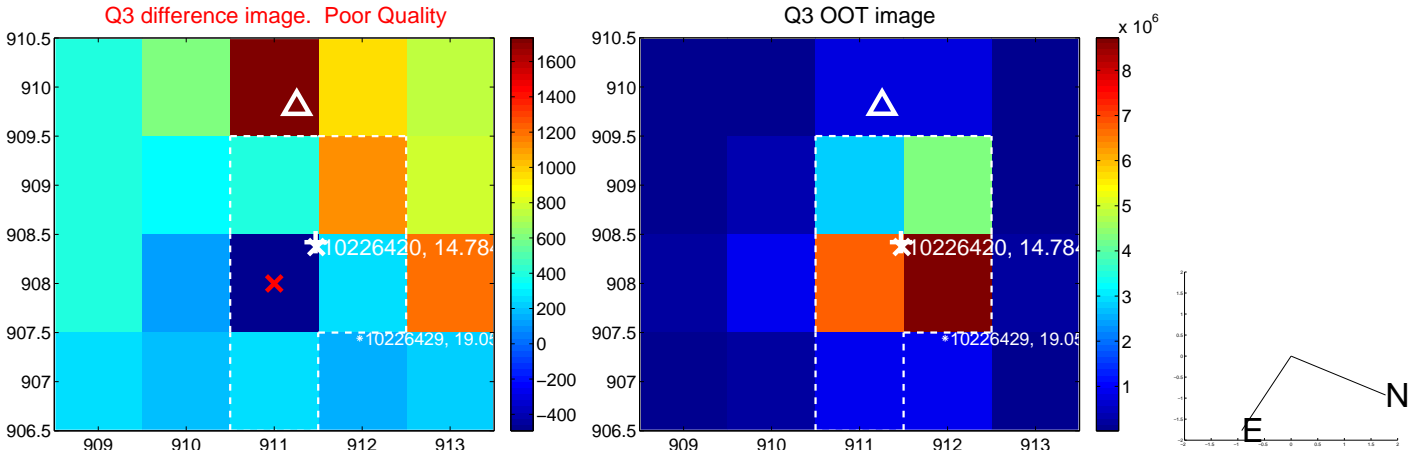
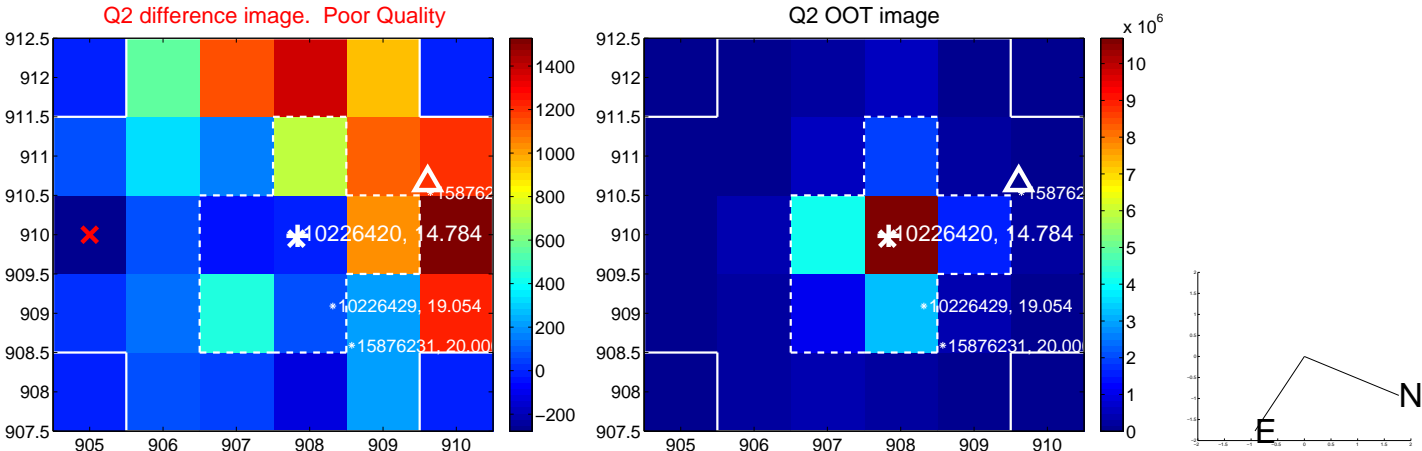
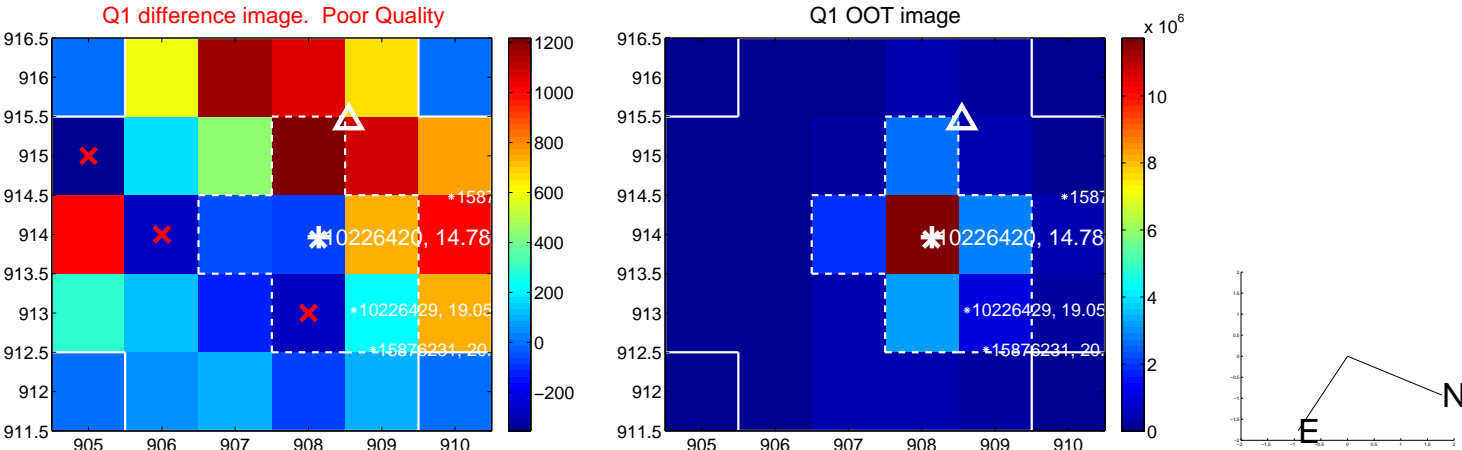
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.508 \pm 0.403$	11.19	$-4.468 \pm 0.395$	$-0.598 \pm 0.703$
PRF-fit source offset from KIC position	$4.667 \pm 0.405$	11.53	$-4.627 \pm 0.397$	$-0.614 \pm 0.713$
photometric centroid source offset	$4.35 \pm 1.56$	2.79	$-4.24 \pm 1.56$	$0.96 \pm 1.54$

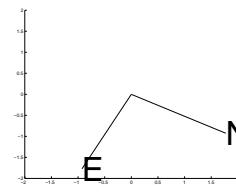
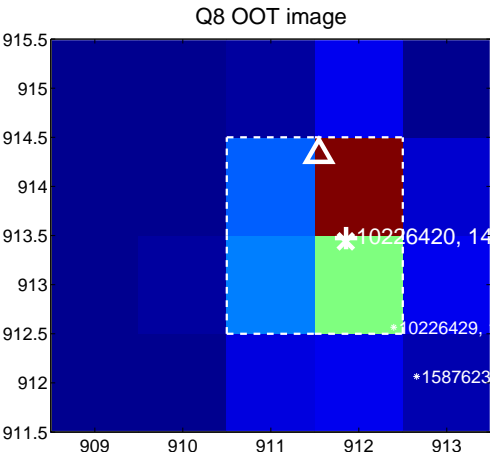
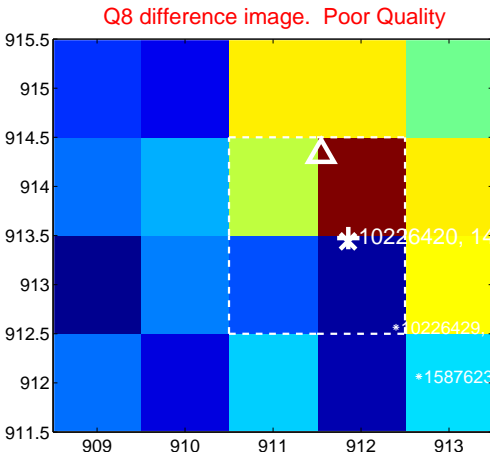
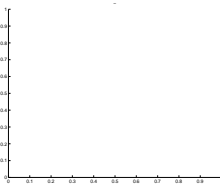
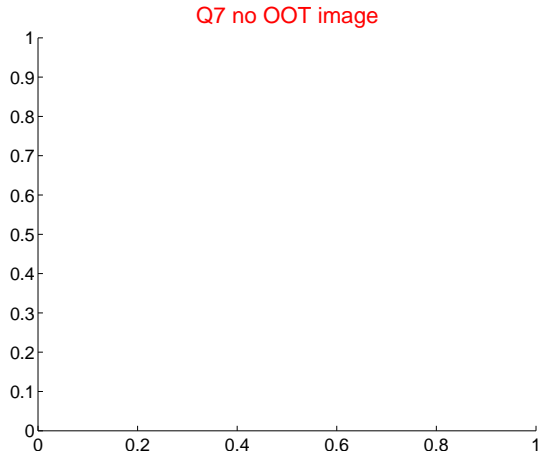
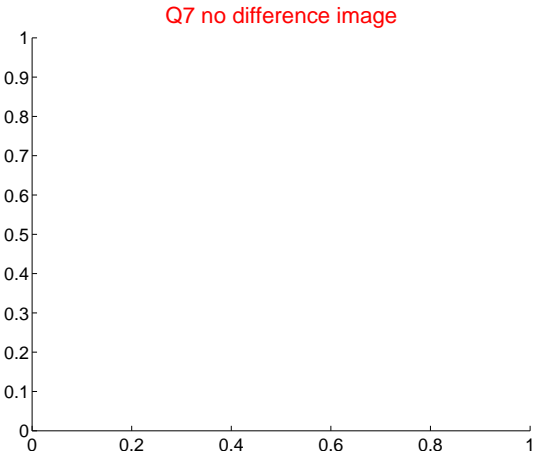
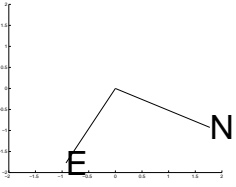
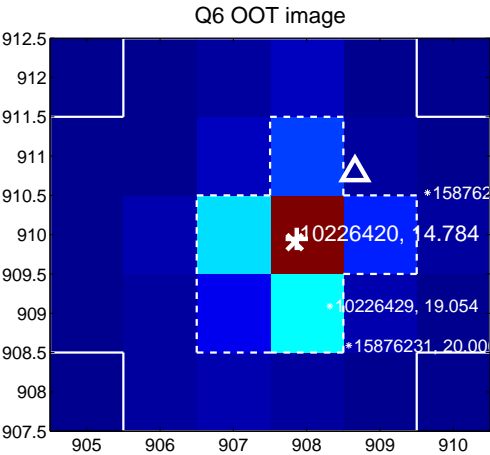
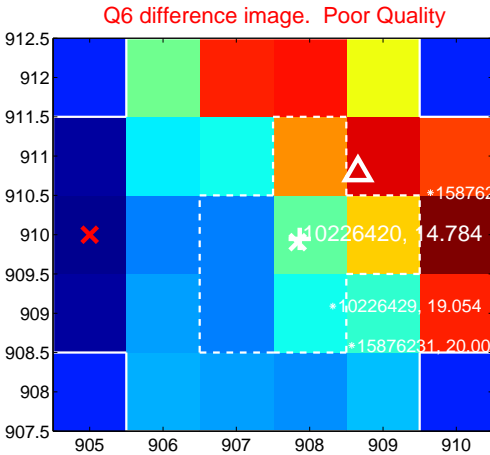
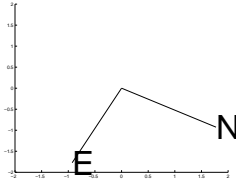
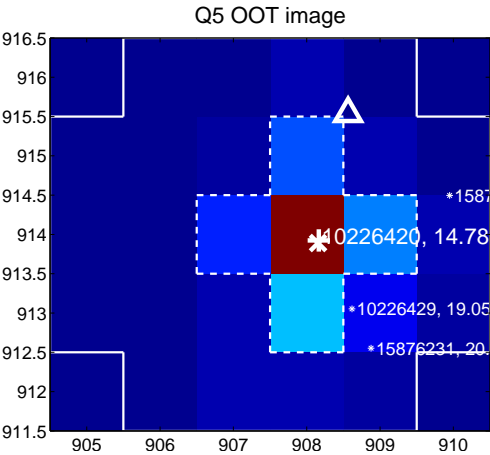
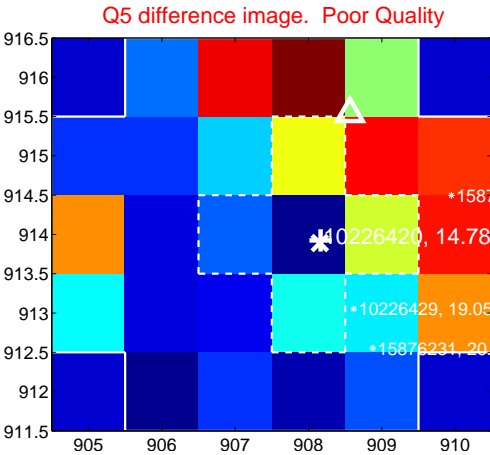


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

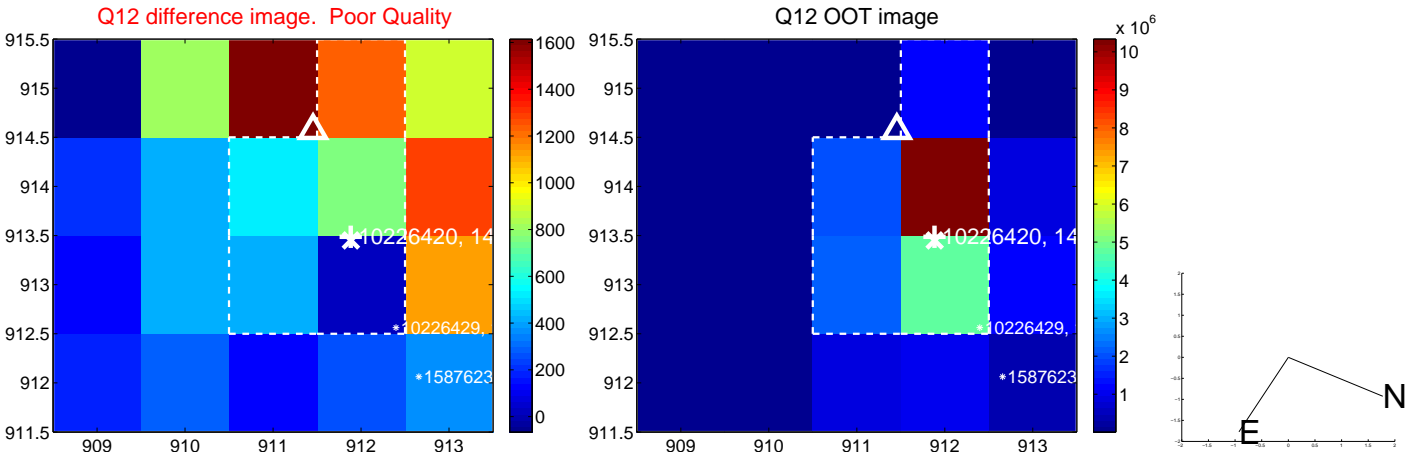
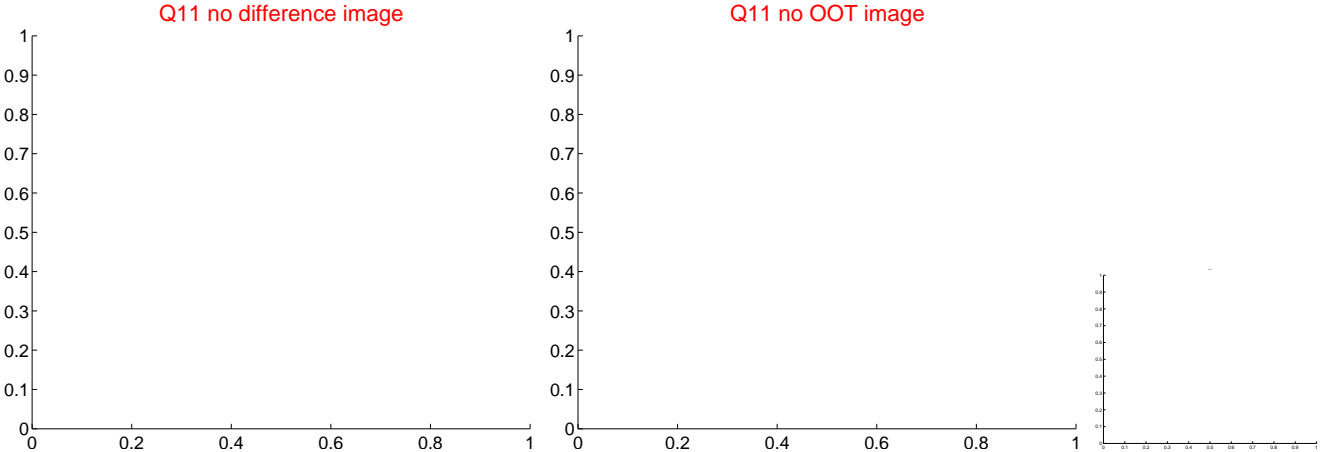
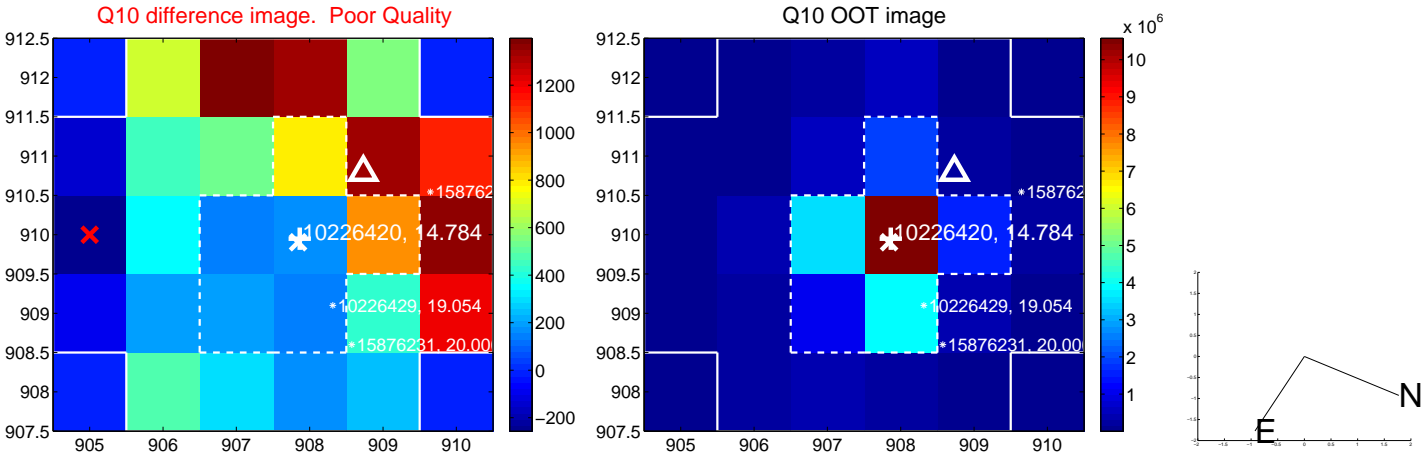
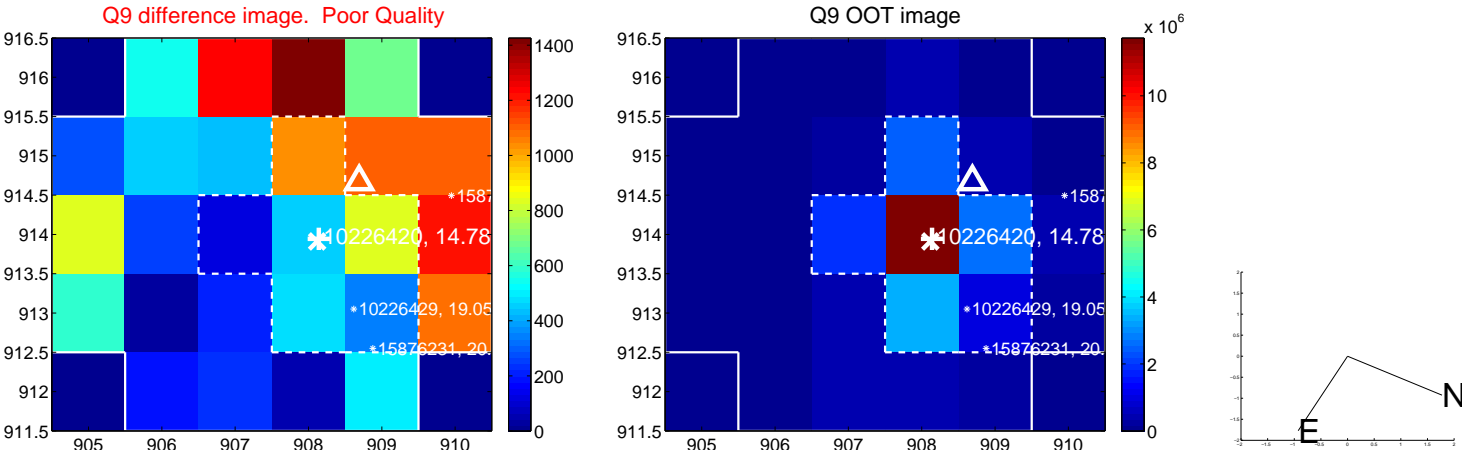


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

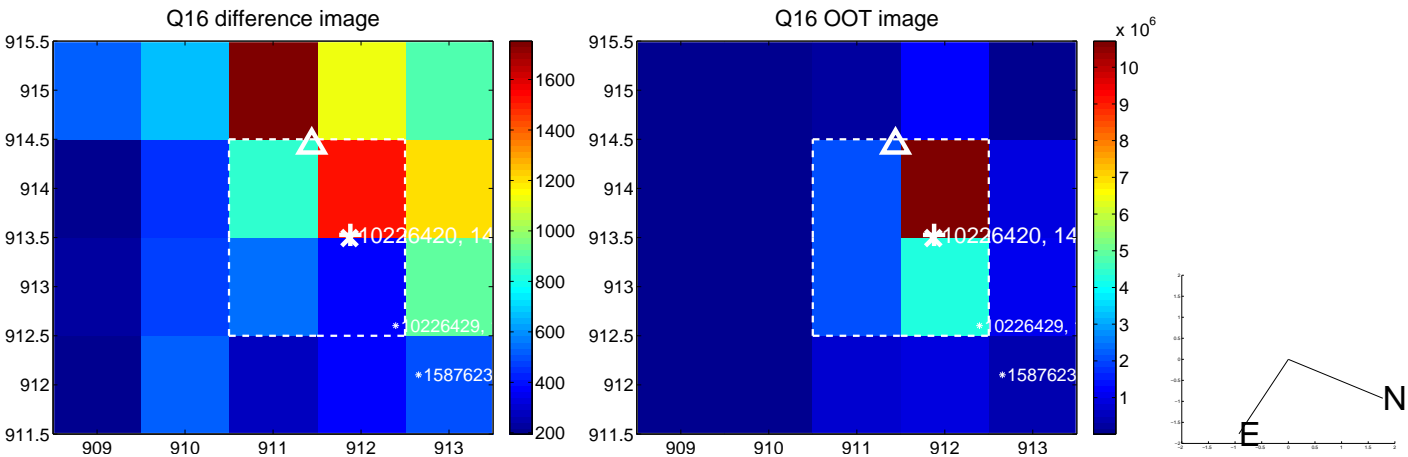
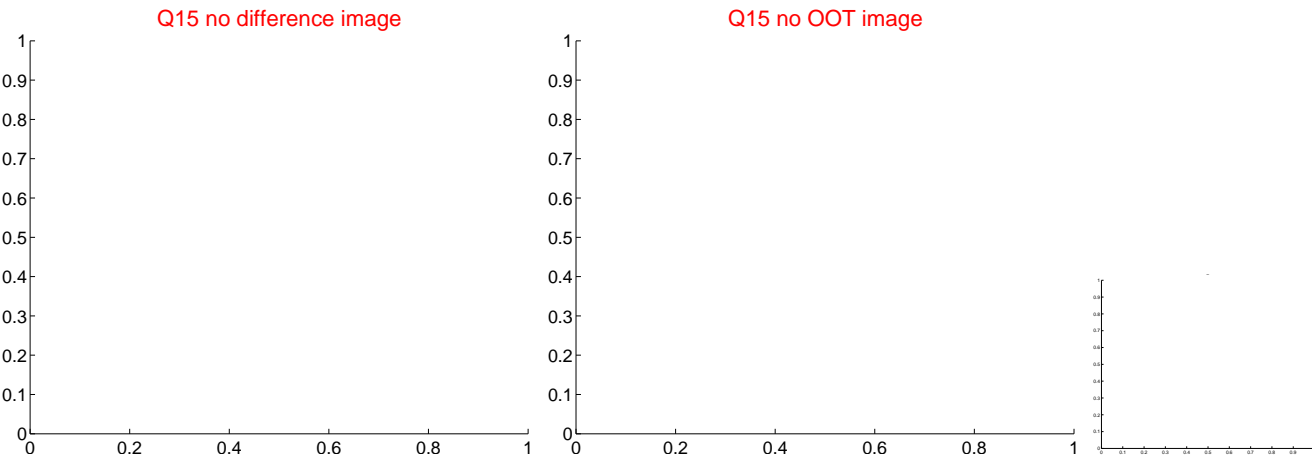
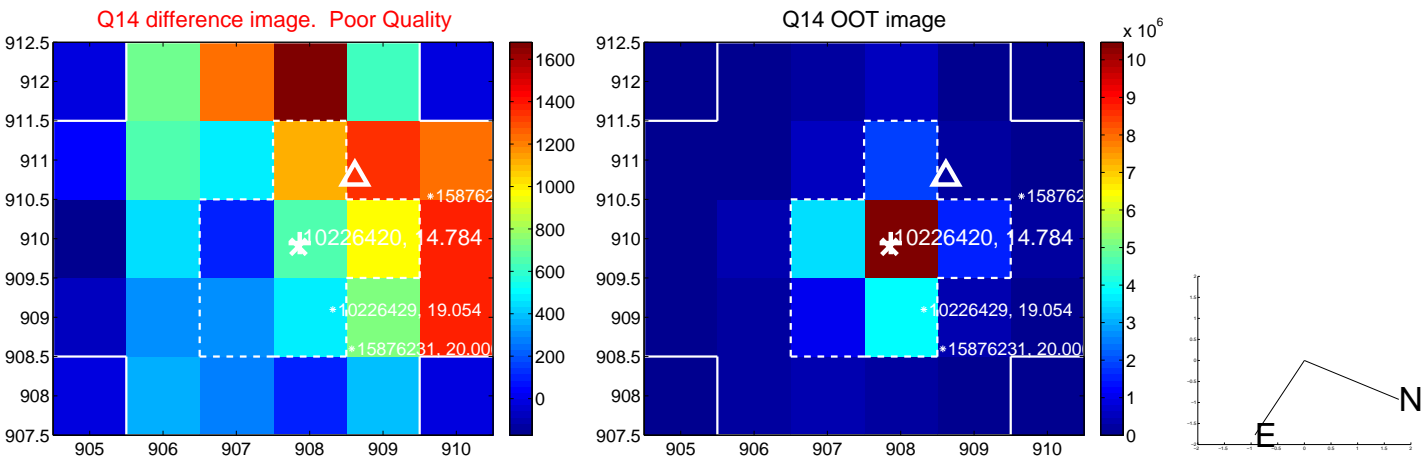
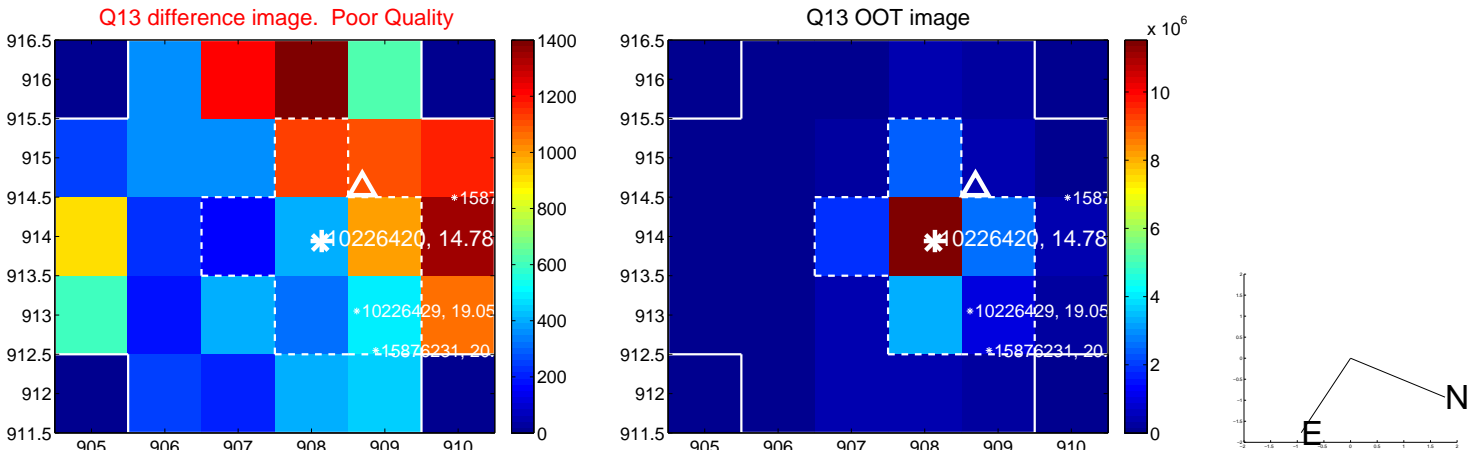




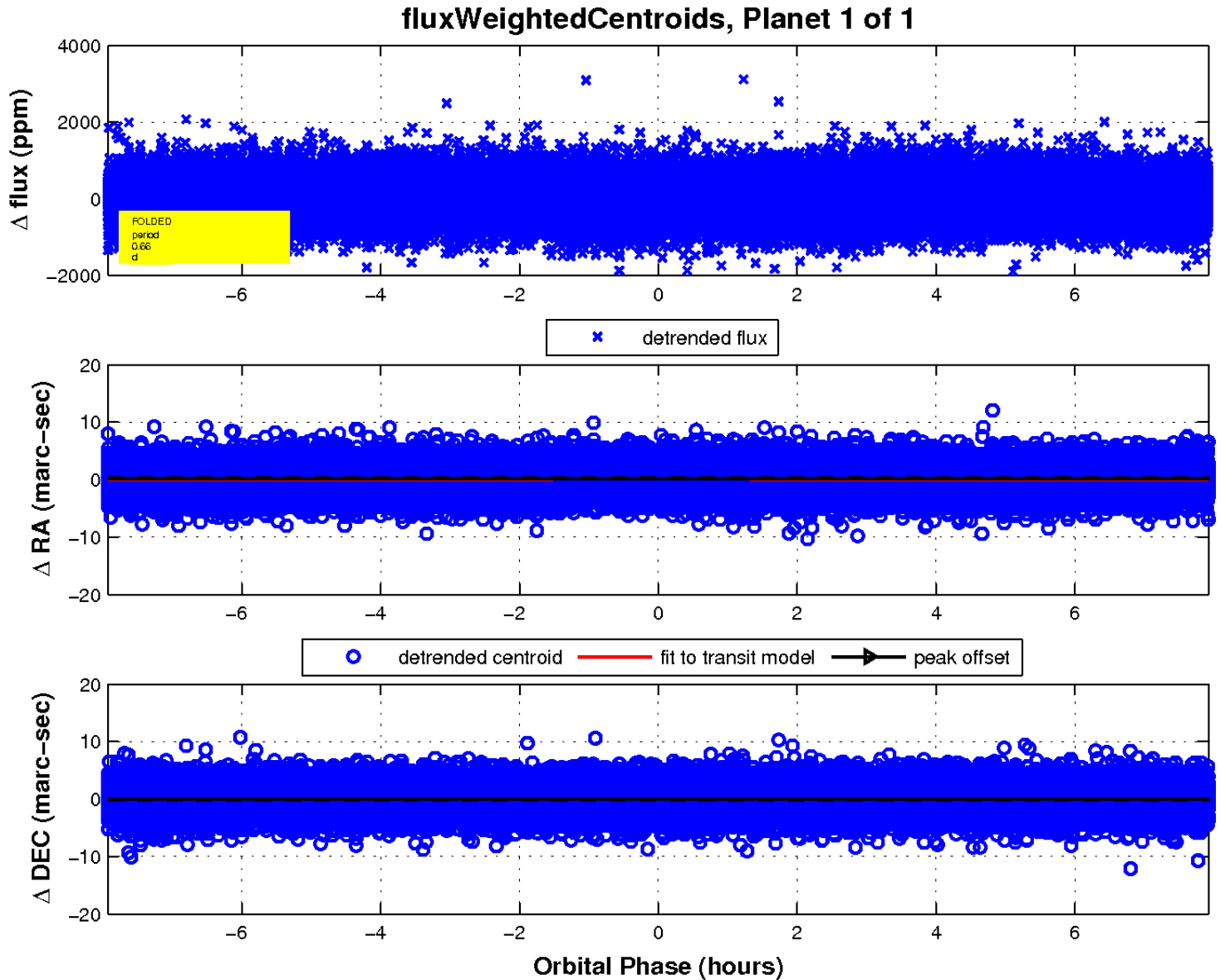
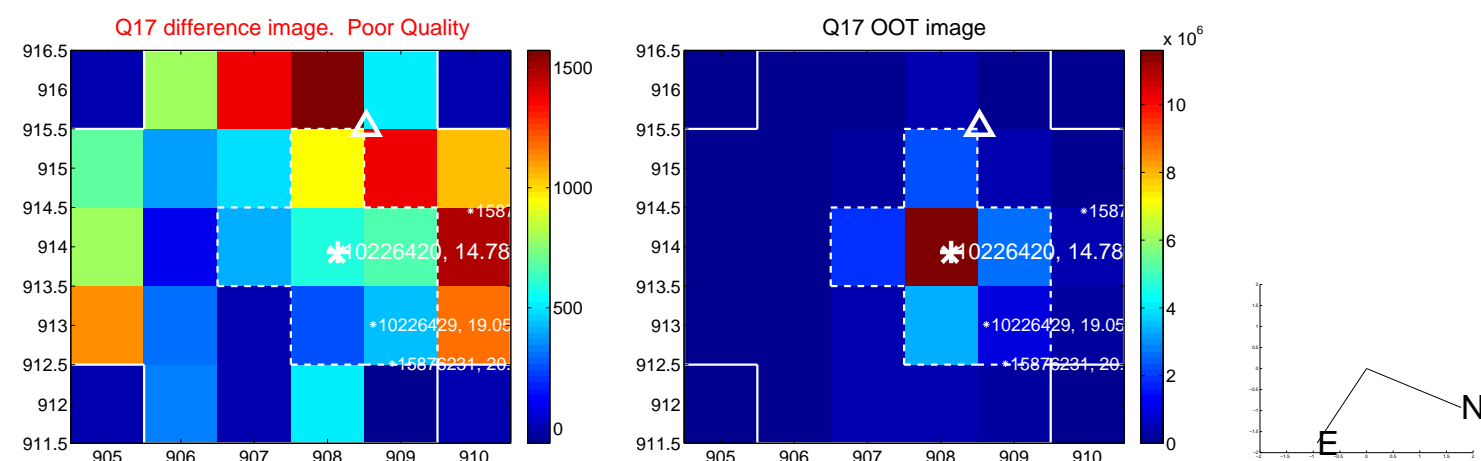
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UKIRT Image

