

# KIC 010226451

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010226451-01	OBS	No	0.660630	131.722655	35.0	2.804	7.8	7.1	0.95	5819	0.67	4355.24

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010226451-01	OBS	FP	0.00	1	0	1	1	LPP_DV—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.

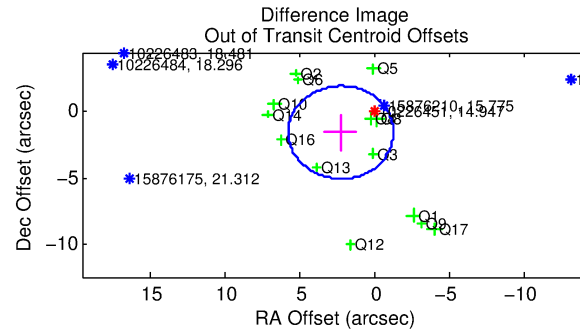
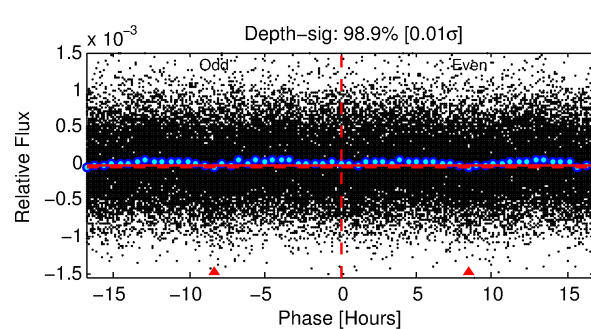
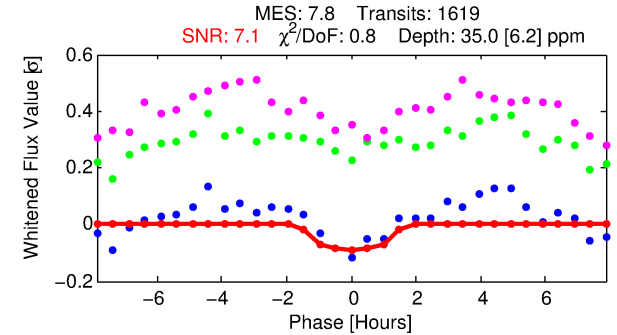
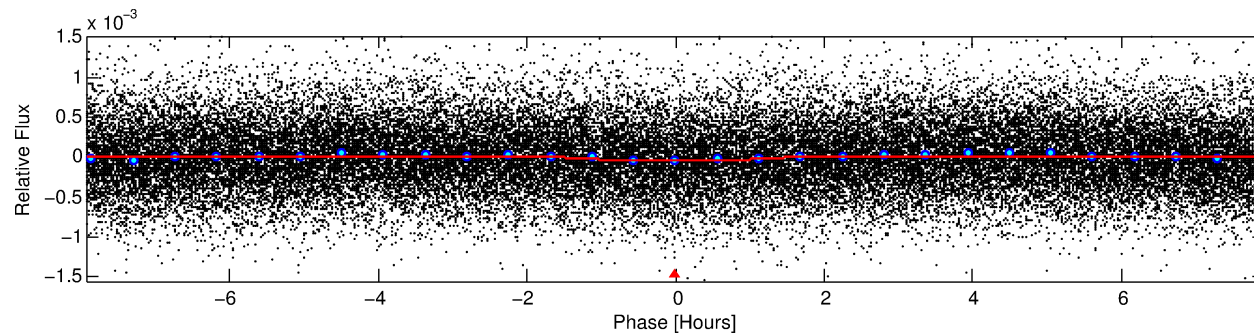
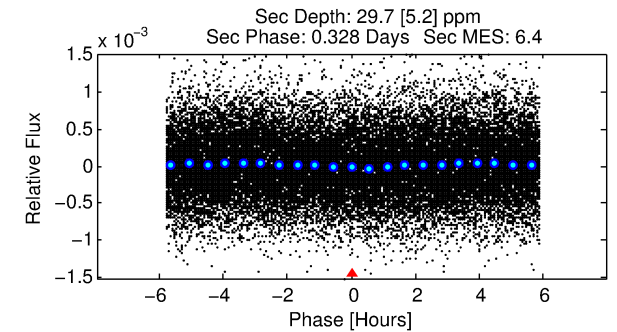
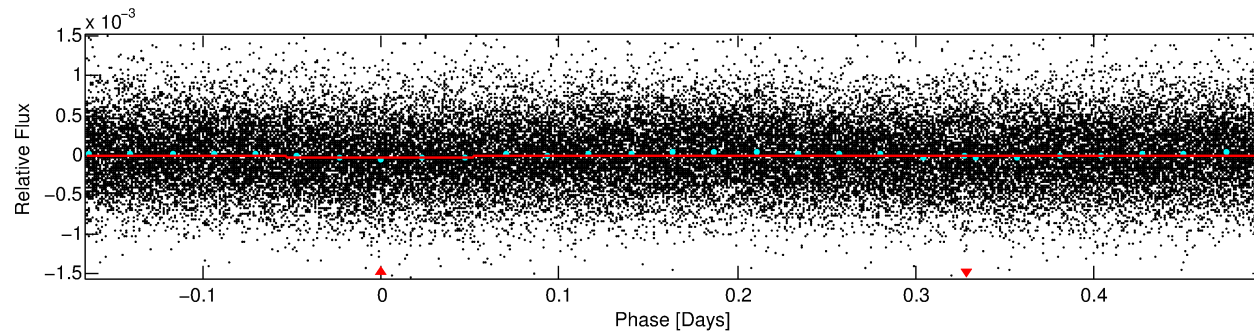
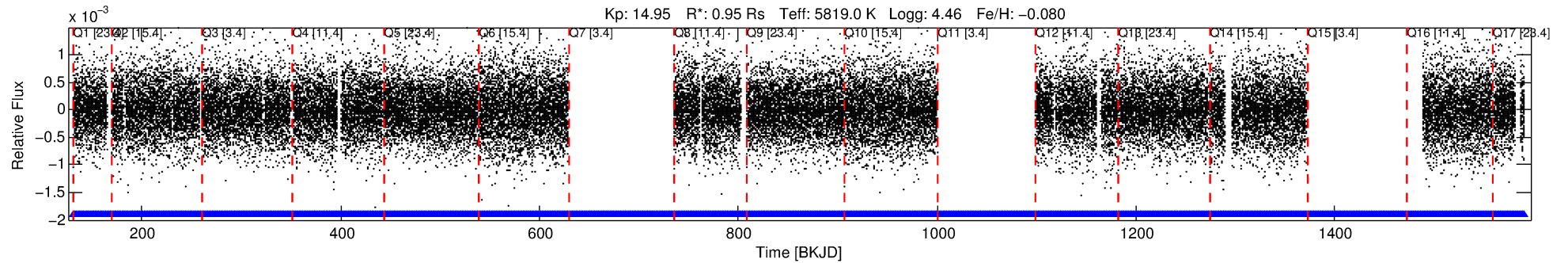
## Ephemeris Match Information For 010226451-01

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	$\sigma_P$	$\sigma_T$
010226451-01	10226451	010226388-pri	10226388	1:1	66.5	-15	8	10.77	14.94	7300.00	Direct-PRF	0	4.52	3.05

**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: 10226451 Candidate: 1 of 1 Period: 0.661 d



## DV Fit Results:

Period = 0.66063 [0.00001] d  
Epoch = 131.7227 [0.0052] BKJD  
Rp/R\* = 0.0064 [0.0070]  
a/R\* = 1.24 [2.35]  
b = 0.90 [1.17]  
Seff = 4355.24 [1682.37]  
Teff = 2071 [200] K  
Rp = 0.67 [0.76] Re  
a = 0.0147 [0.0036] AU  
Ag = 7.81 [17.34] [0.39σ]  
Teffp = 5354 [2939] K [1.11σ]

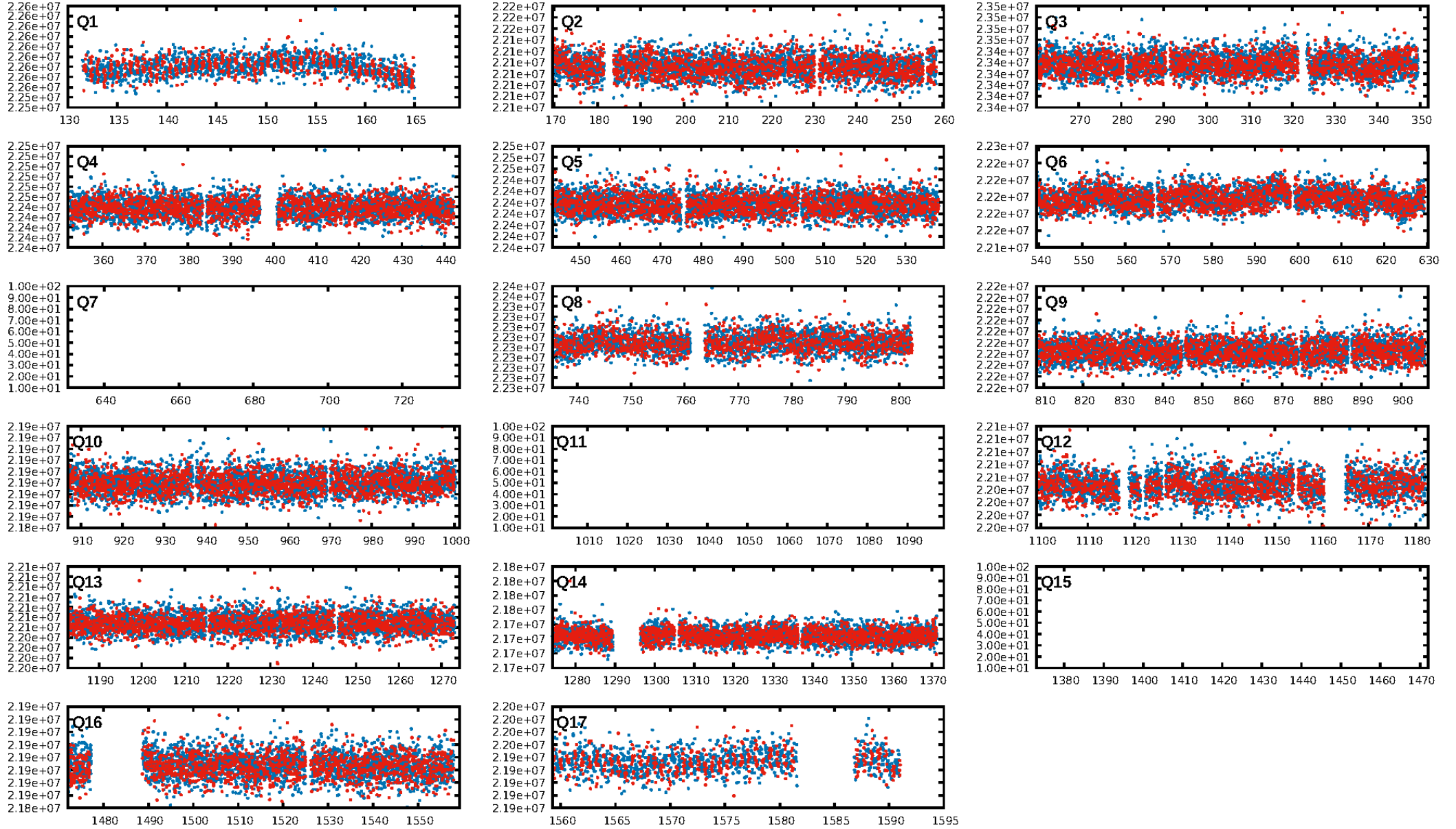
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 6.71e-14  
RollingBand-fgt: 1.00 [1527/1527]  
GhostDiagnostic-chr: -0.1985  
Centroid-sig: 0.0%  
Centroid-so: 6.590 arcsec [3.22σ]  
OotOffset-rm: 2.709 arcsec [2.31σ]  
KicOffset-rm: 2.524 arcsec [2.16σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 0.07 [1/14]  
DiffImageOverlap-fno: 1.00 [14/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:23:39 Z

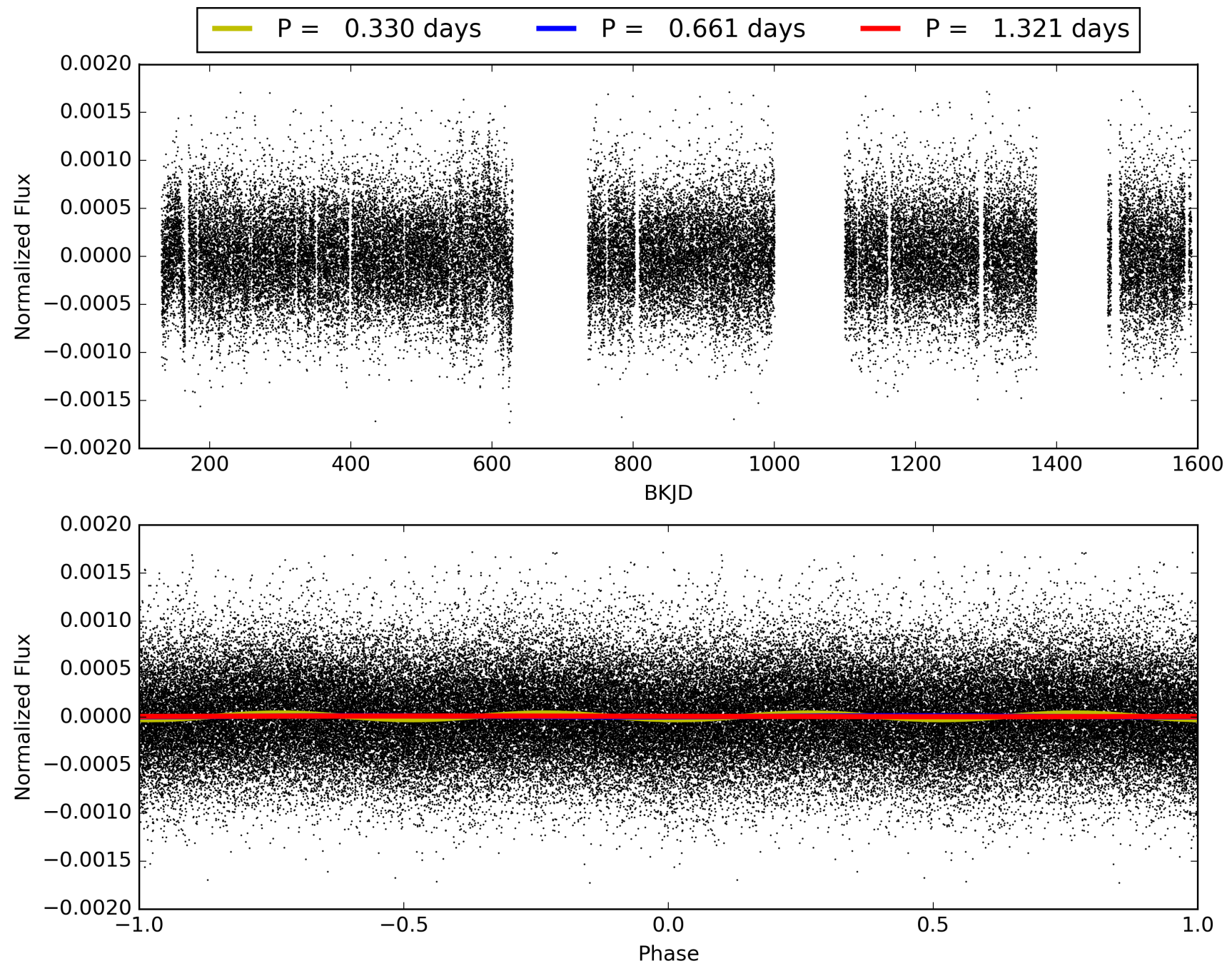
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010226451-01, PDC Light Curves



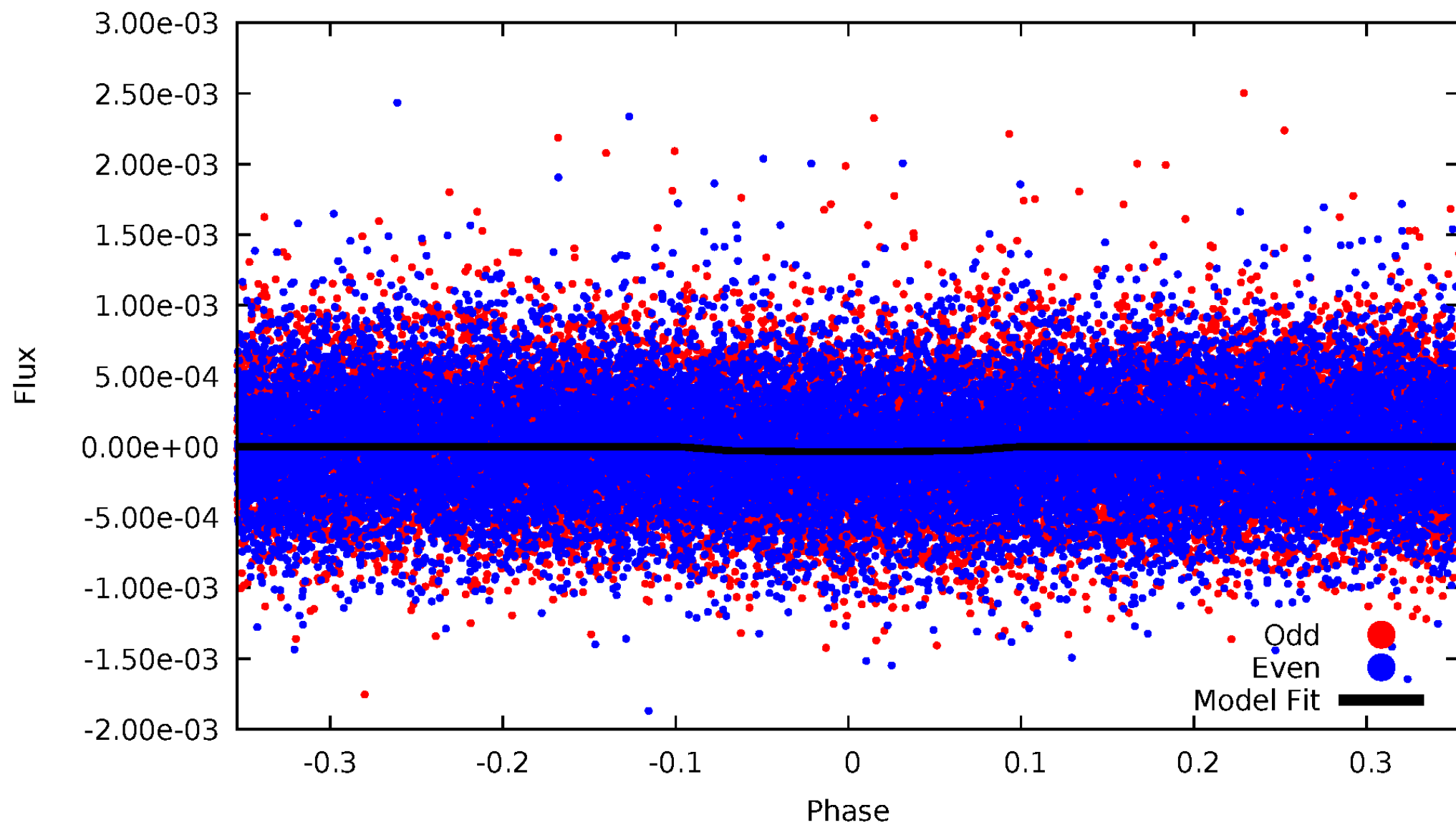


TCE 010226451-01



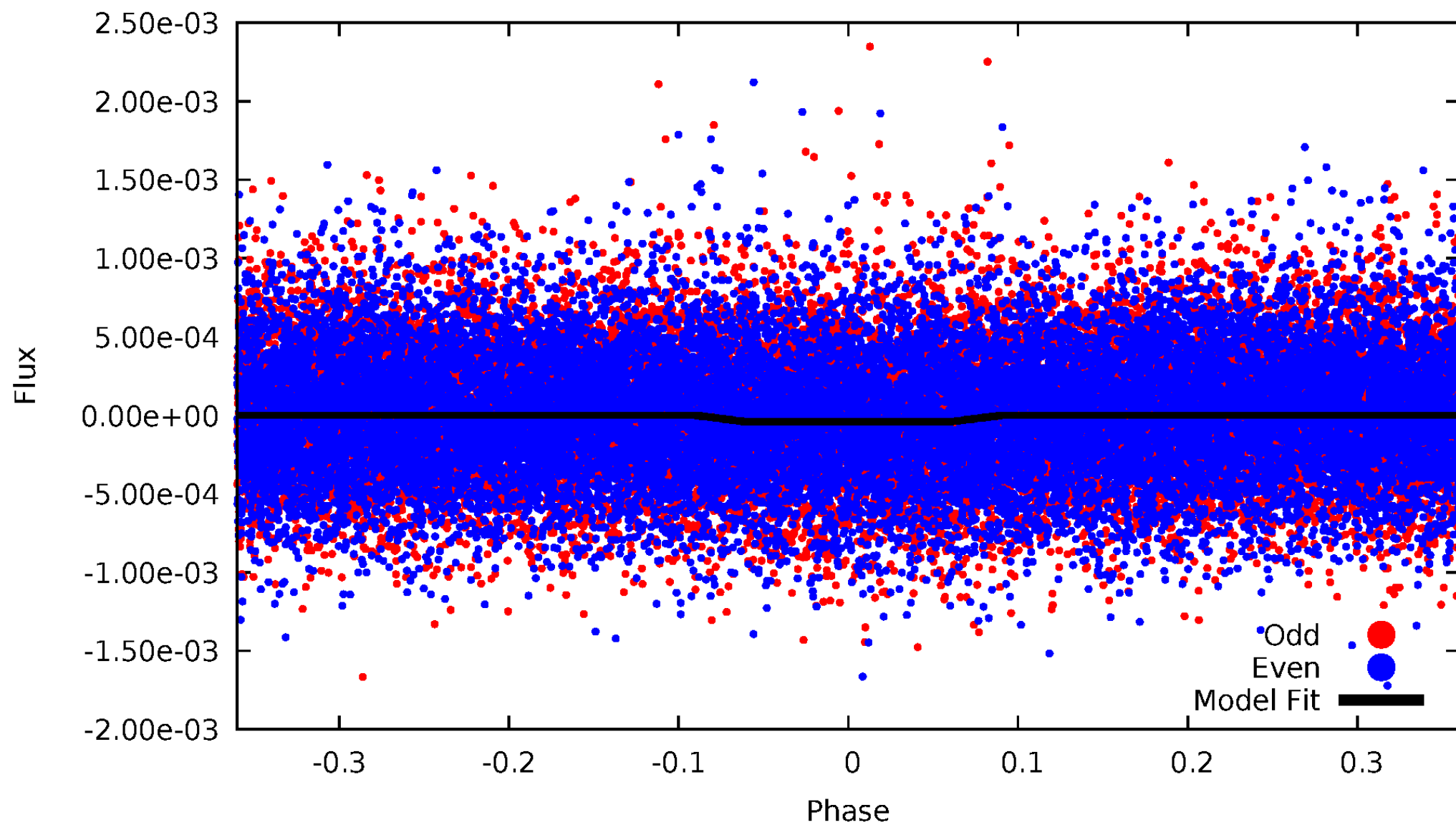
# DV Odd/Even

TCE 010226451-01

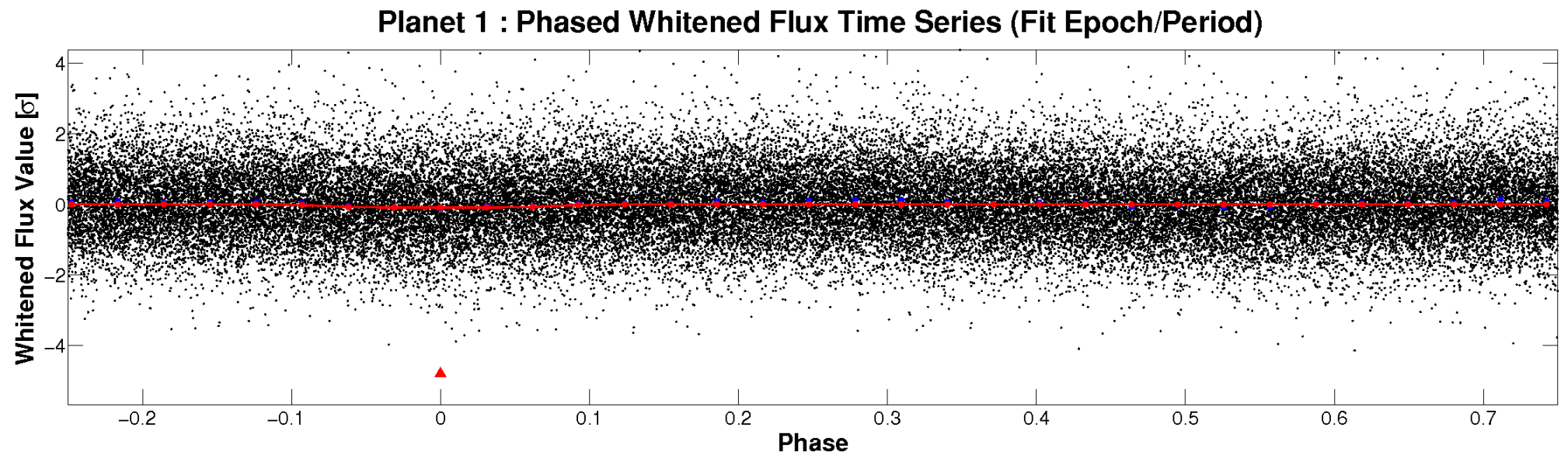
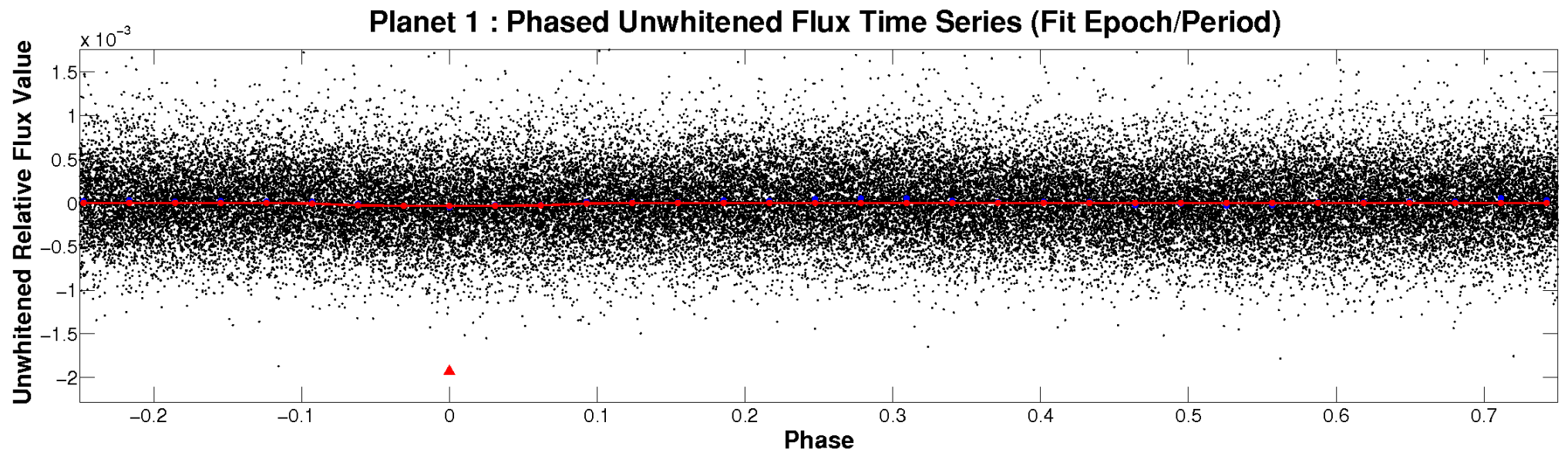


# ALT Odd/Even

TCE 010226451-01



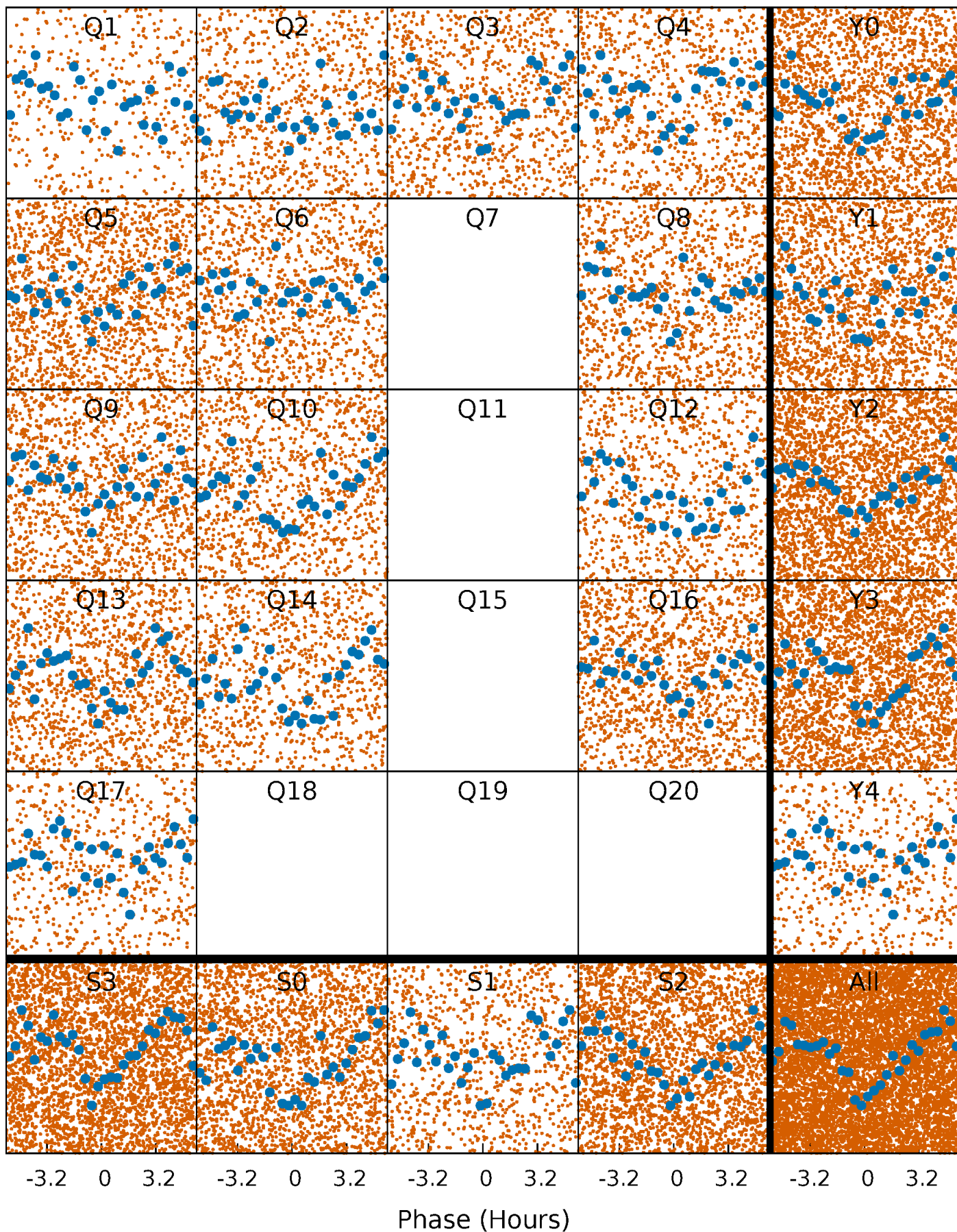
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

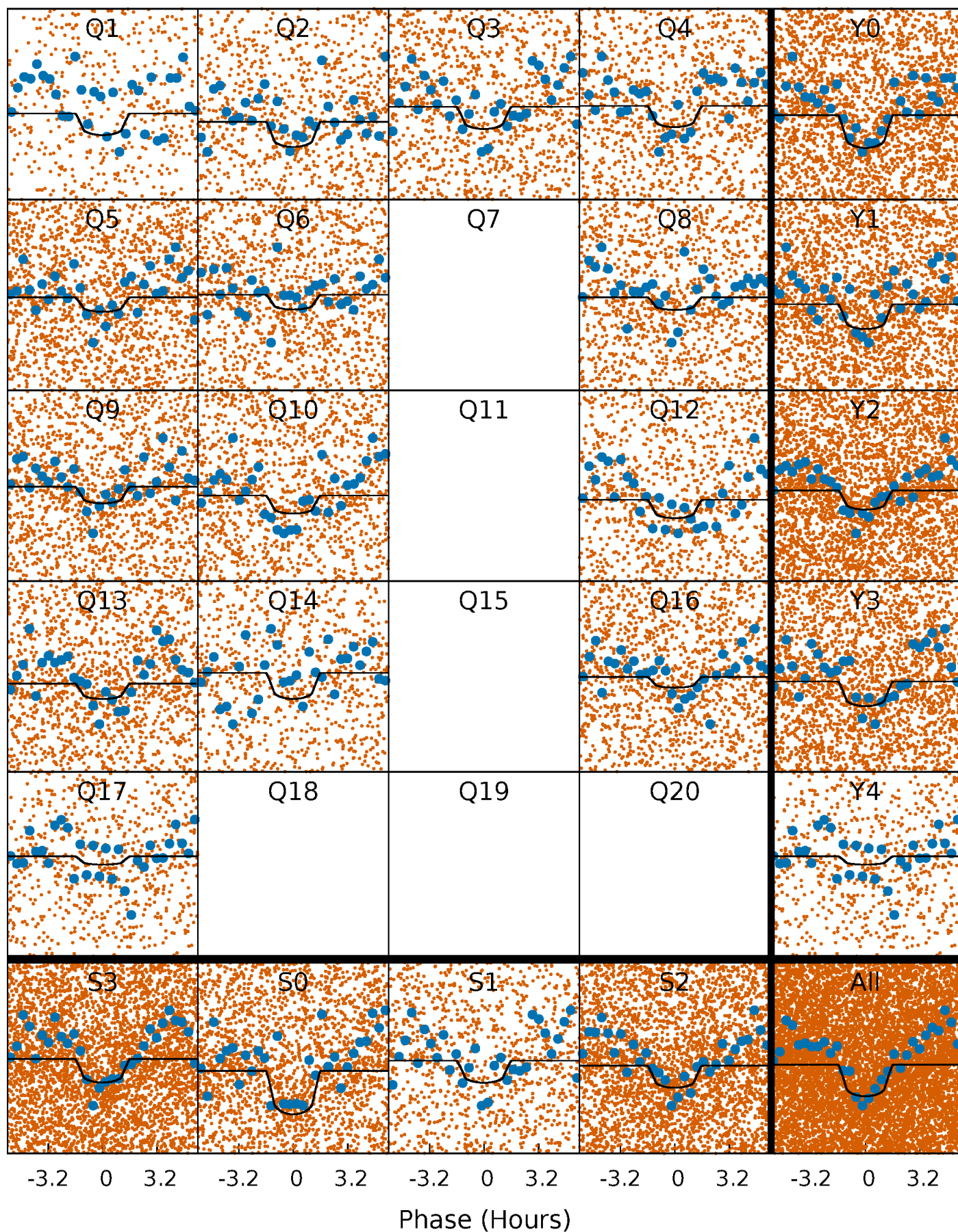
TCE 010226451-01 P= 0.660630 Days  $T_0=131.722655$  (BKJD)





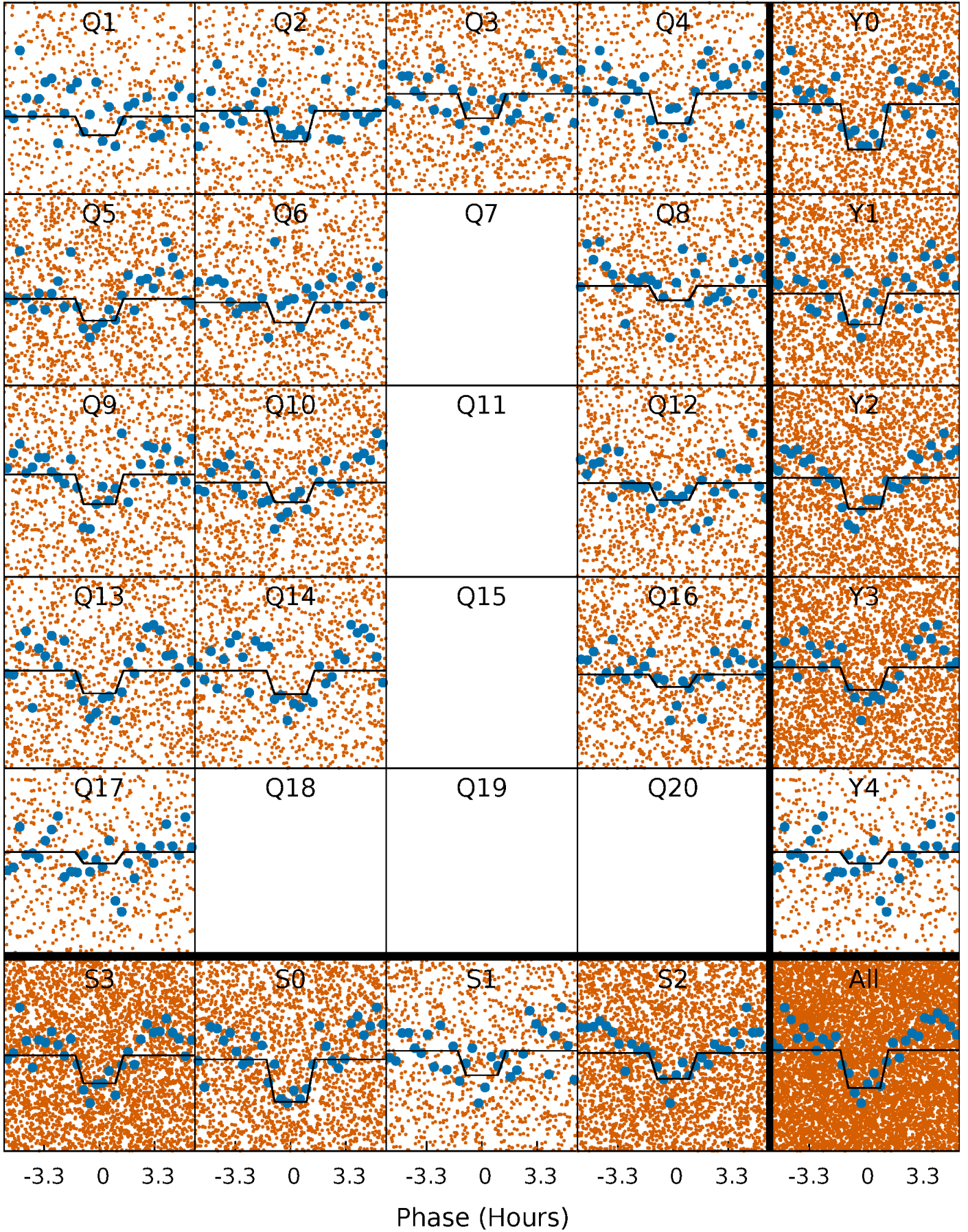
# DV Quarter-Phased Transit Curves

TCE 010226451-01 P= 0.660630 Days  $T_0=131.722655$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010226451-01 P= 0.660635 Days  $T_0=131.723436$  (BKJD)

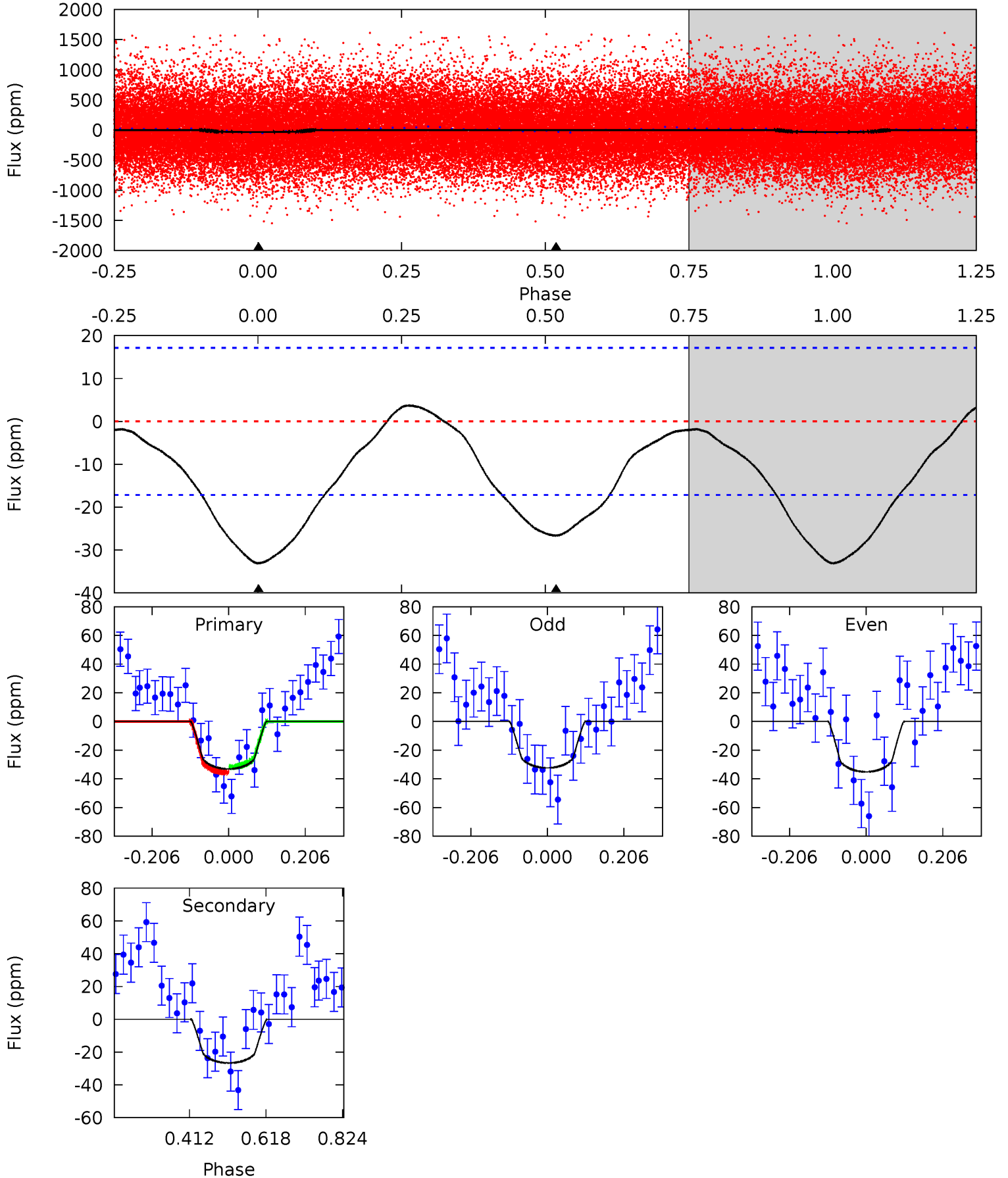




# DV Model-Shift Uniqueness Test

010226451-01, P = 0.660630 Days, E = 131.062025 Days

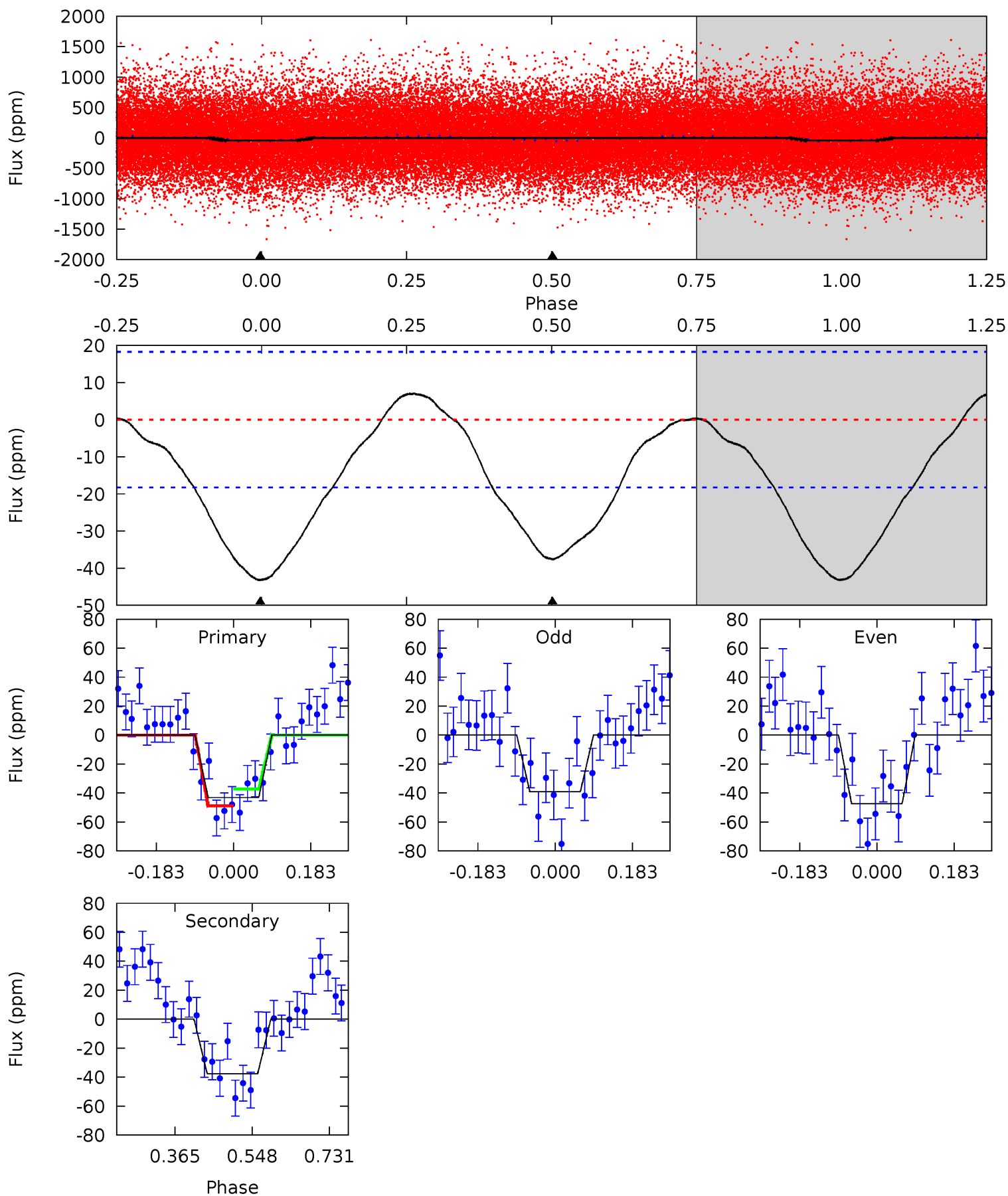
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.51	6.86	0	0	4.41	1.26	0.64	8.51	8.51	6.86	6.86	0.35	0.76	0.10	0.48



# Alt Model-Shift Uniqueness Test

010226451-01, P = 0.660635 Days, E = 131.062801 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
10.5	9.14	0	0	4.44	1.33	0.97	10.5	10.5	9.14	9.14	1.01	0.86	0.14	1.42





### Stellar Parameters For KIC 010226451

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5819^{+163}_{-204}$	$4.462^{+0.070}_{-0.196}$	$-0.080^{+0.300}_{-0.300}$	$0.955^{+0.283}_{-0.121}$	$0.964^{+0.127}_{-0.104}$	$1.557^{+0.553}_{-0.792}$
	+3%/-4%	+2%/-4%	+375%/-375%	+30%/-13%	+13%/-11%	+36%/-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 010226451-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-27 \pm 4$	$0.90^{+0.68}_{-0.57}$	$2942^{+203}_{-142}$	$4680^{+3009}_{-1009}$	$3.996^{+24.672}_{-2.752}$
Alt.	$-38 \pm 4$	$0.88^{+0.75}_{-0.55}$	$2941^{+224}_{-157}$	$5102^{+3508}_{-1201}$	$5.694^{+35.690}_{-4.004}$

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

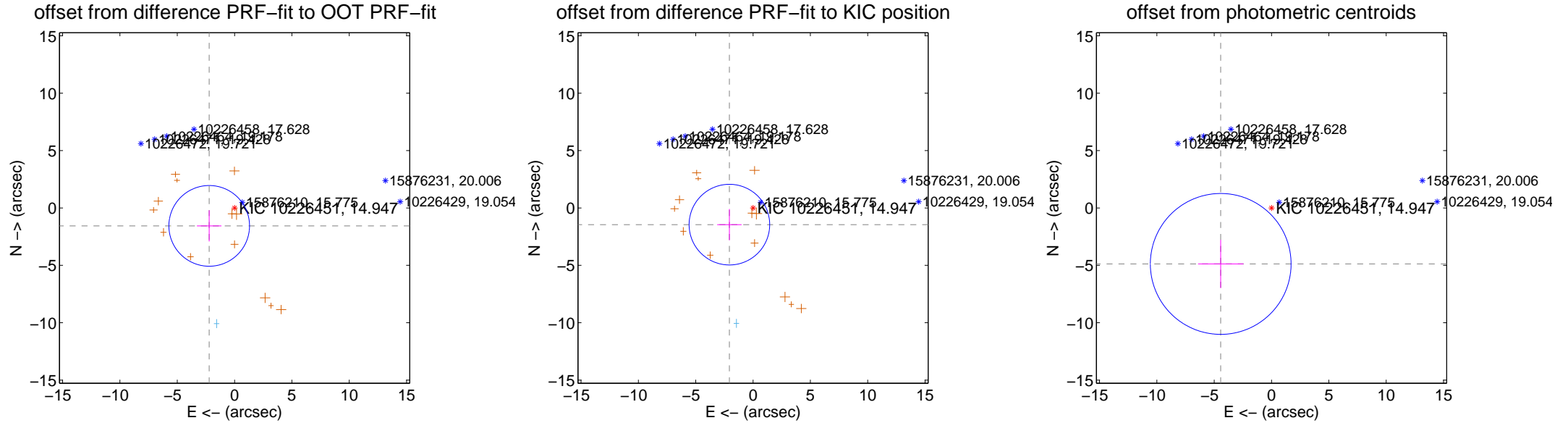
## DV Centroid Data

Supplemental centroid analysis for 010226451-01. Kepler magnitude: 14.95. Transit SNR 7.08

There are 1 quarters with good PRF difference image offsets

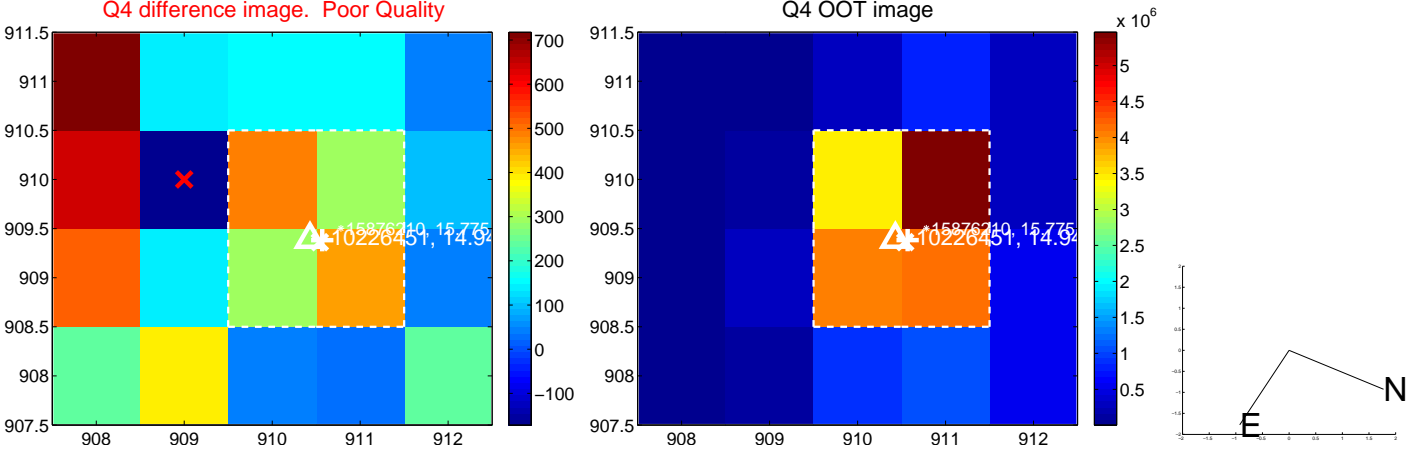
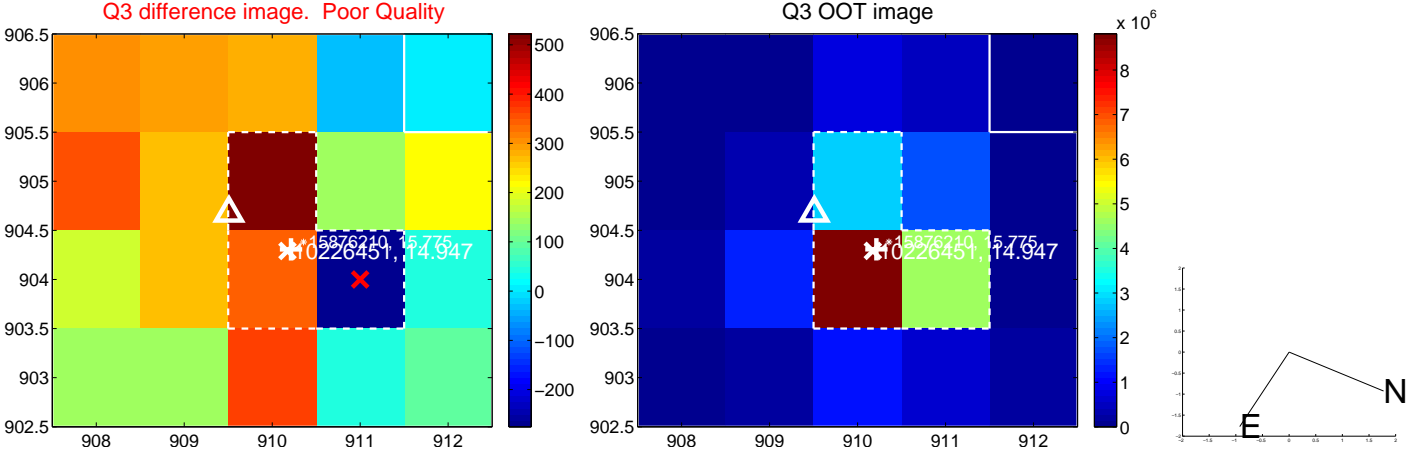
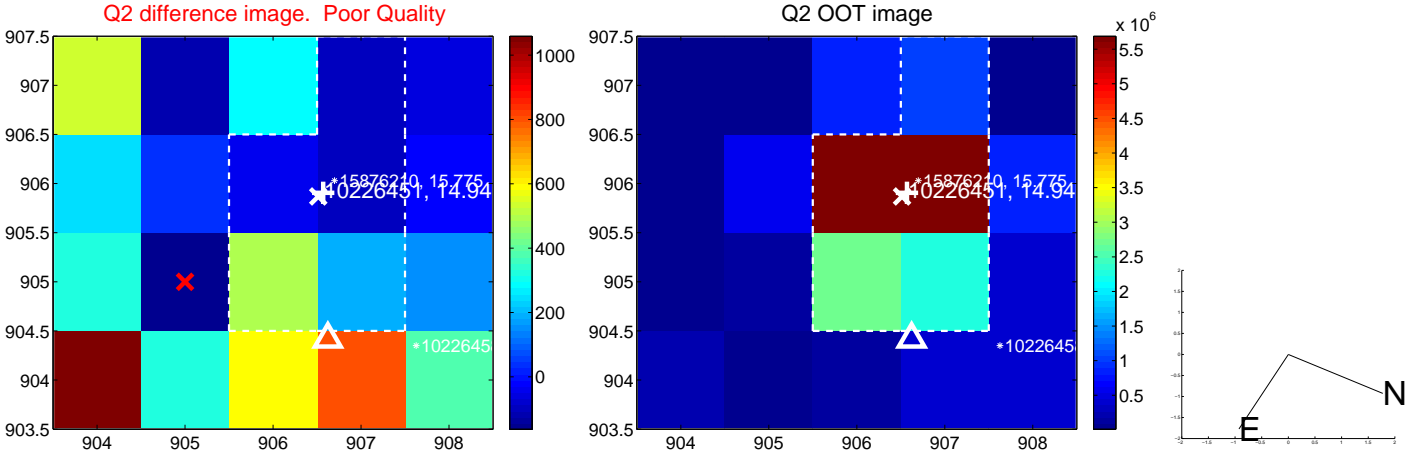
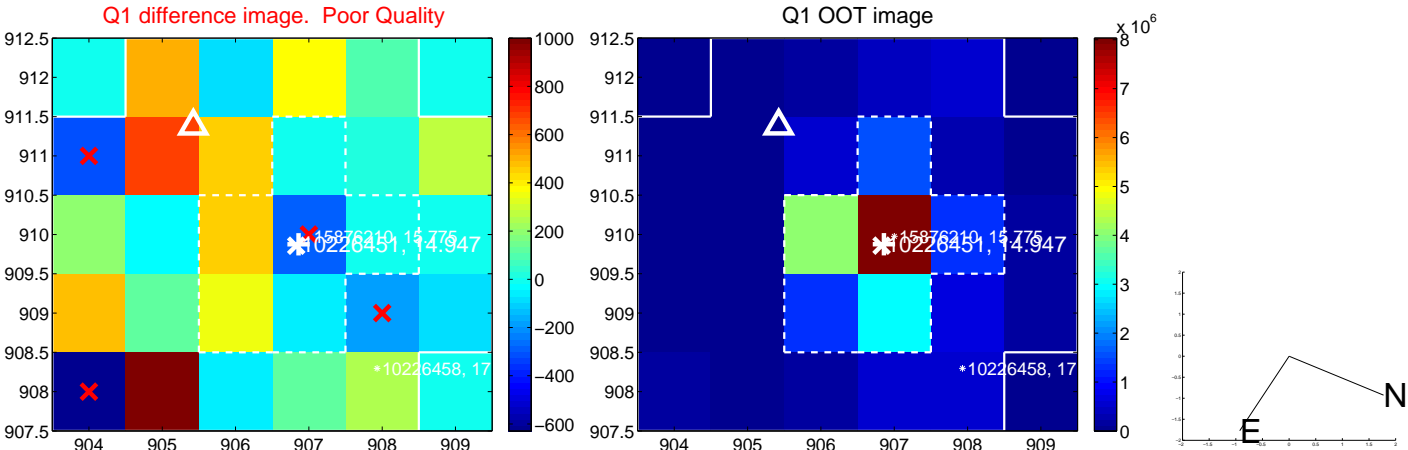
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.709 \pm 1.172$	2.31	$2.213 \pm 1.071$	$-1.562 \pm 1.354$
PRF-fit source offset from KIC position	$2.524 \pm 1.171$	2.16	$2.063 \pm 1.064$	$-1.454 \pm 1.362$
photometric centroid source offset	$6.59 \pm 2.05$	3.22	$4.43 \pm 1.98$	$-4.88 \pm 2.10$

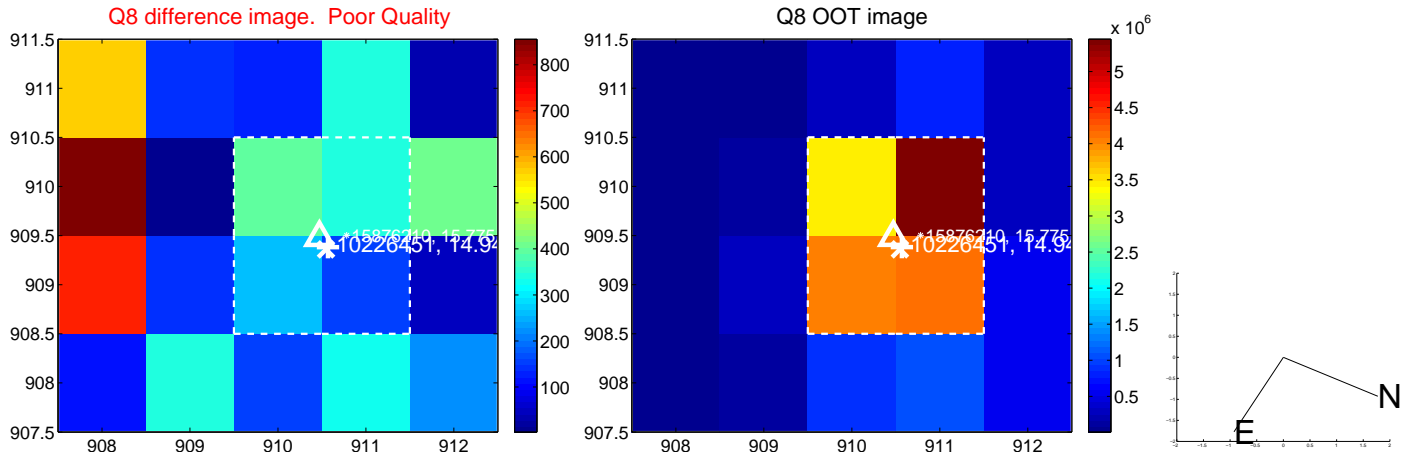
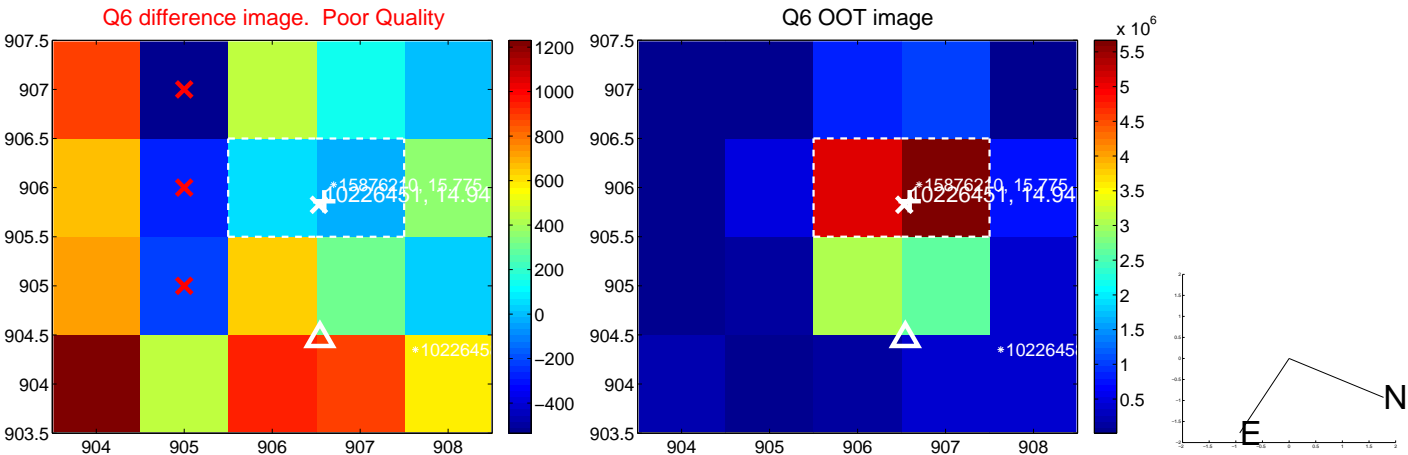
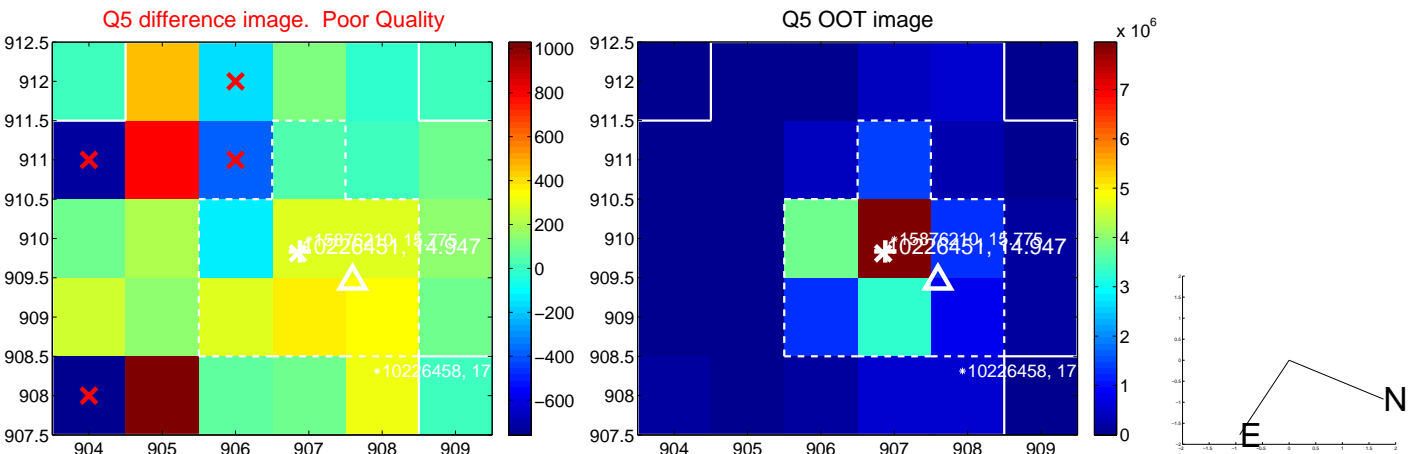


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

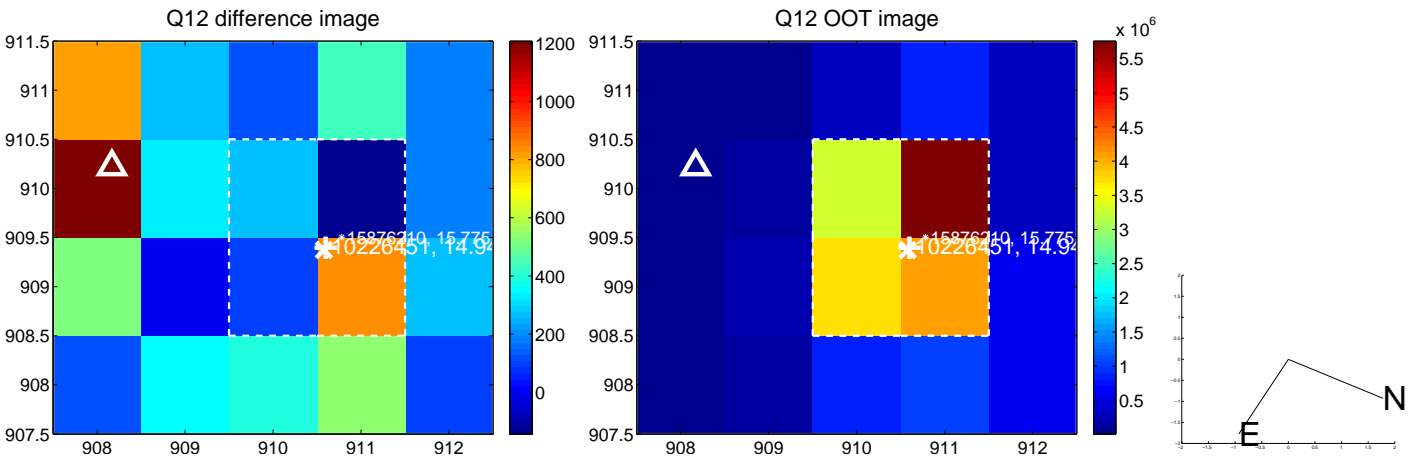
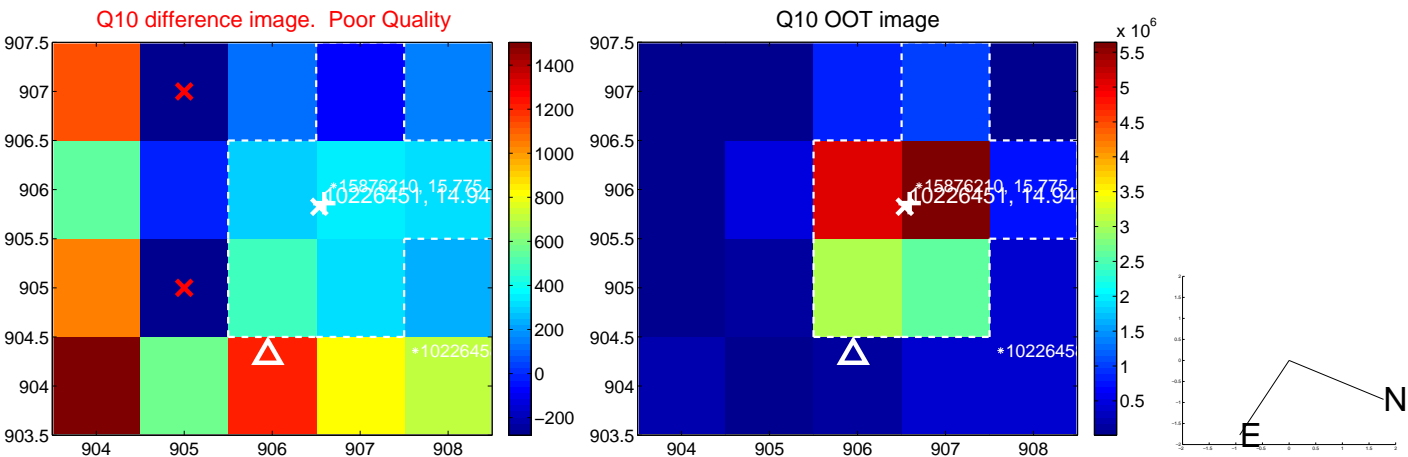
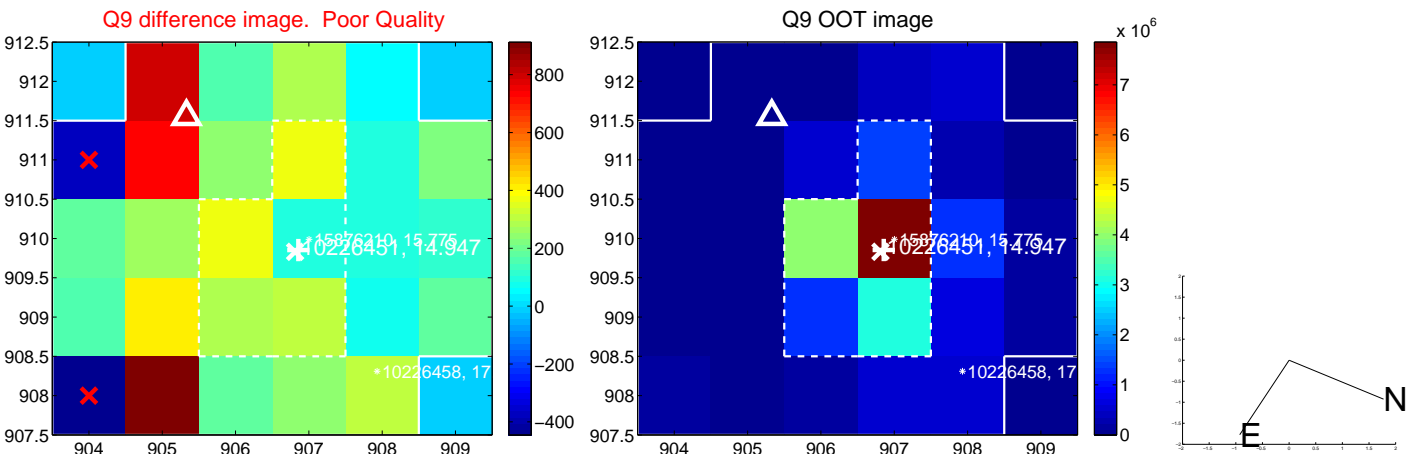


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

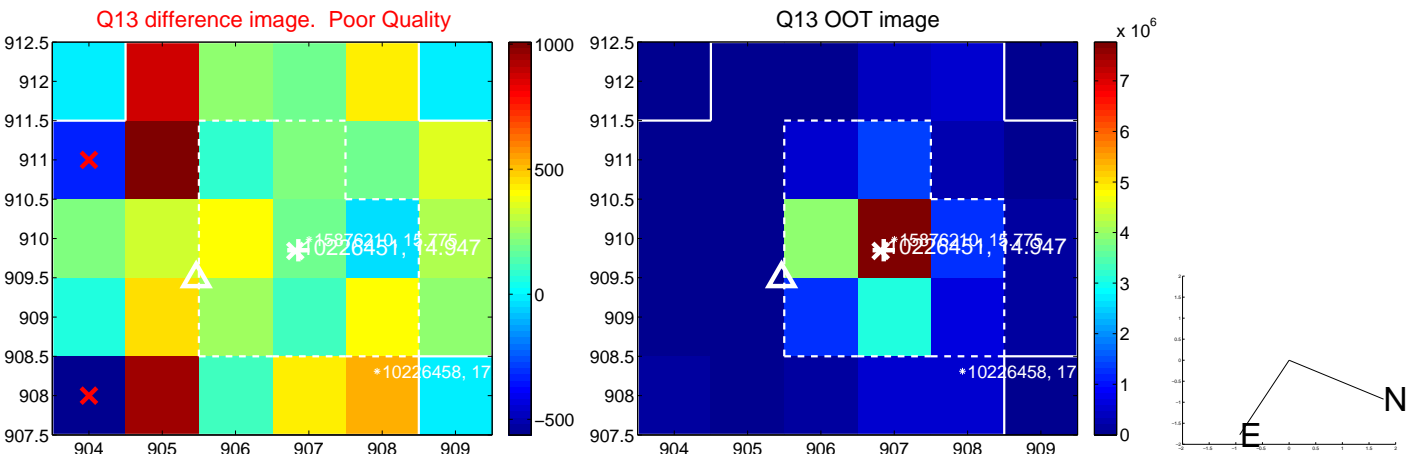




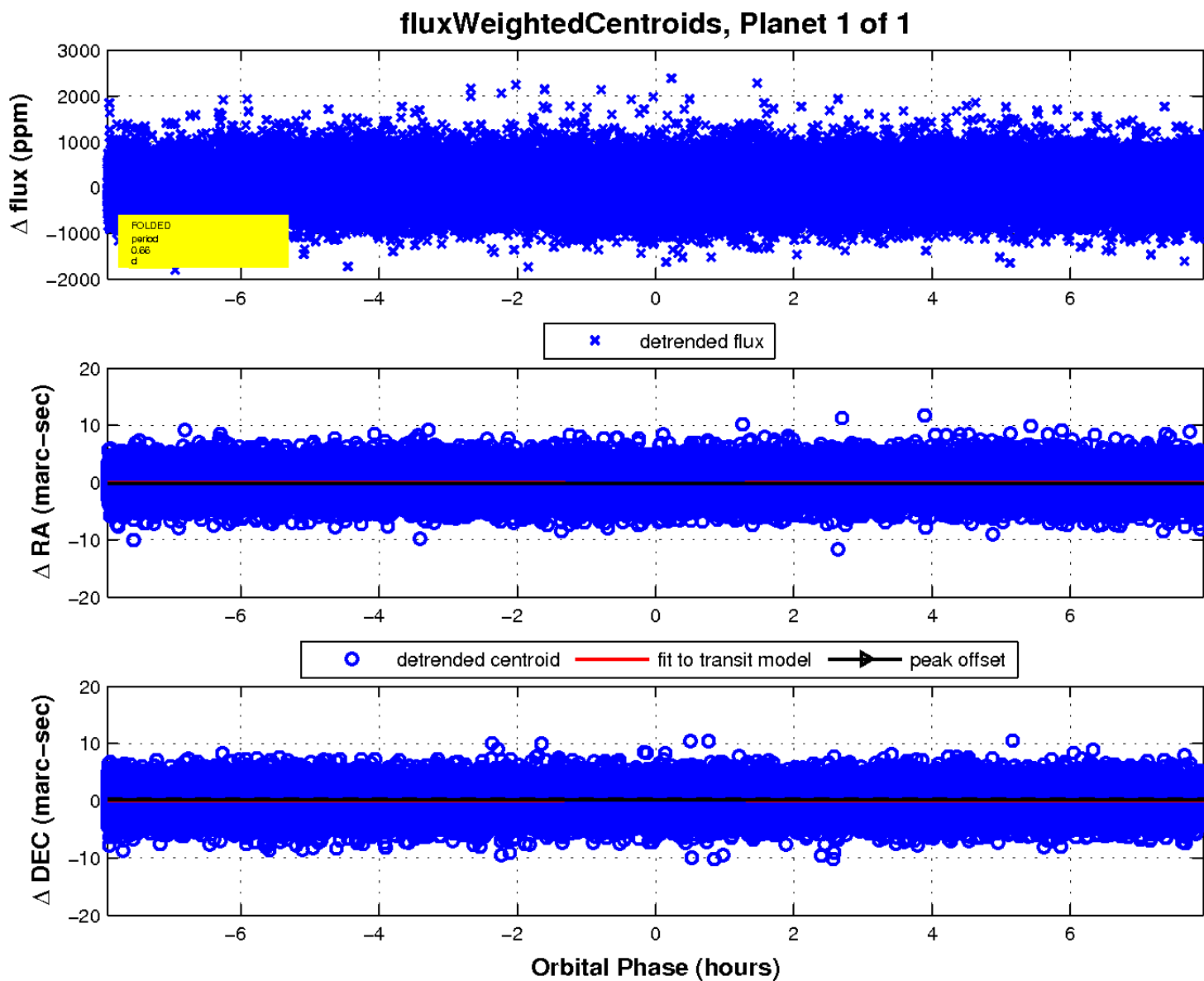
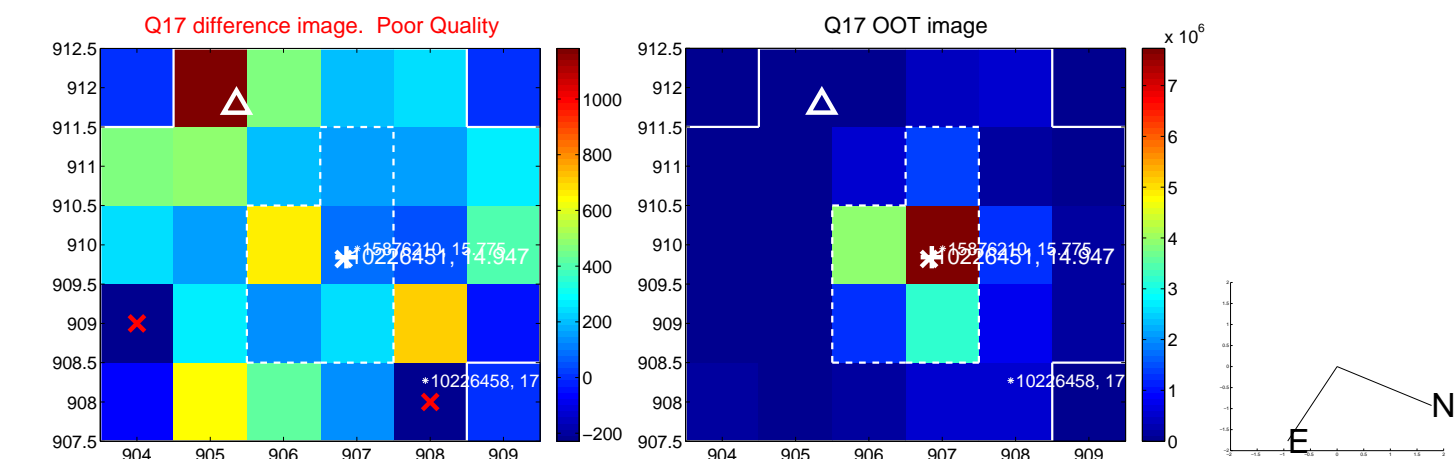
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination

