

# KIC 008302473

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008302473-01	OBS	7015.01	2.441981	132.132459	119.4	3.557	8.6	9.3	0.85	5587	1.11	519.09

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008302473-01	OBS	FP	0.00	0	0	1	1	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.

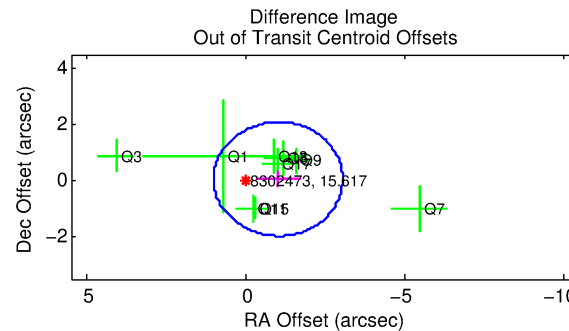
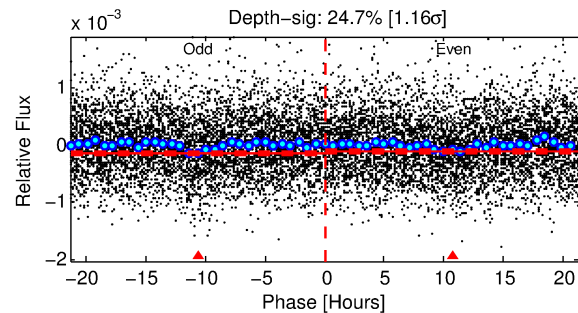
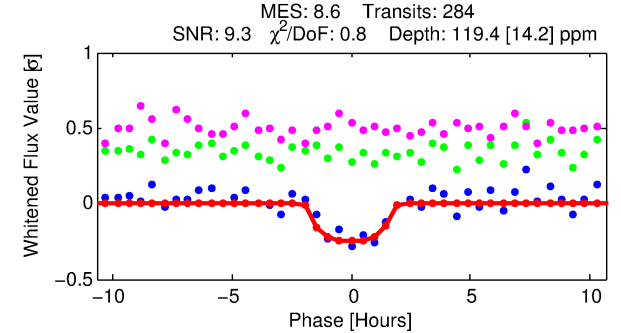
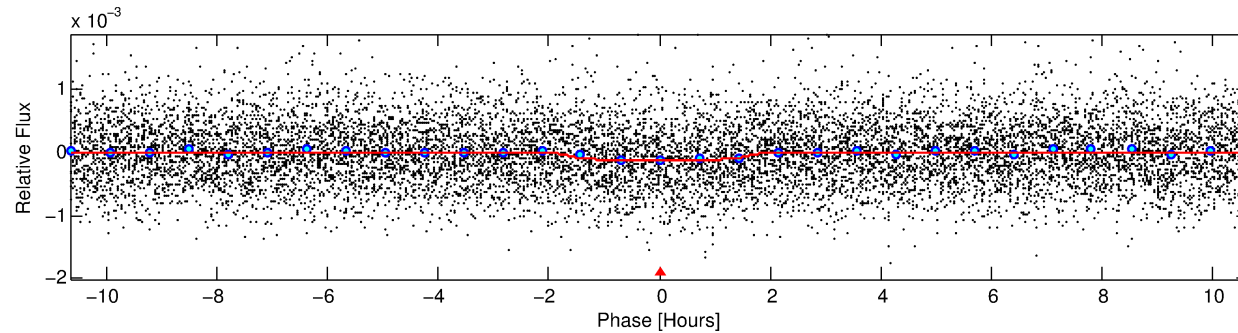
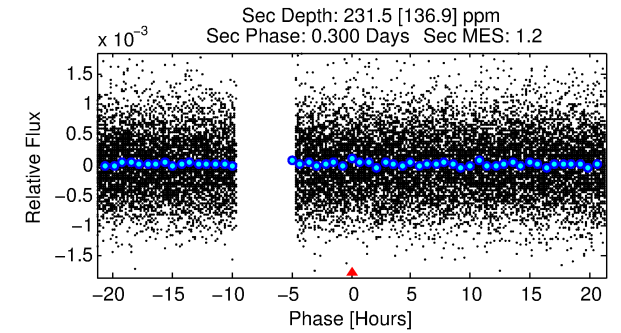
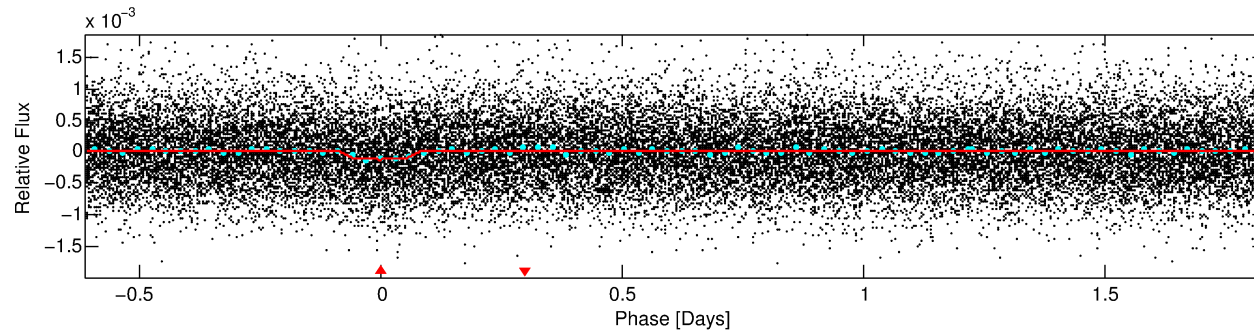
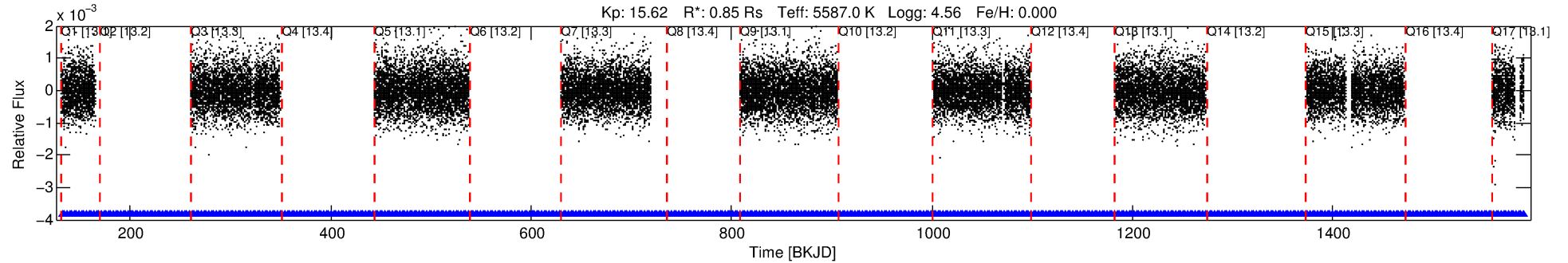
## Ephemeris Match Information For 008302473-01

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	$\sigma_P$	$\sigma_T$
008302473-01	8302473	008302455-01	8302455	1:1	56.4	-10	9	11.54	15.62	803.84	Direct-PRF	0	0.22	0.02

**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: 8302473 Candidate: 1 of 1 Period: 2.442 d  
KOI: K07015.01 Corr: 0.953



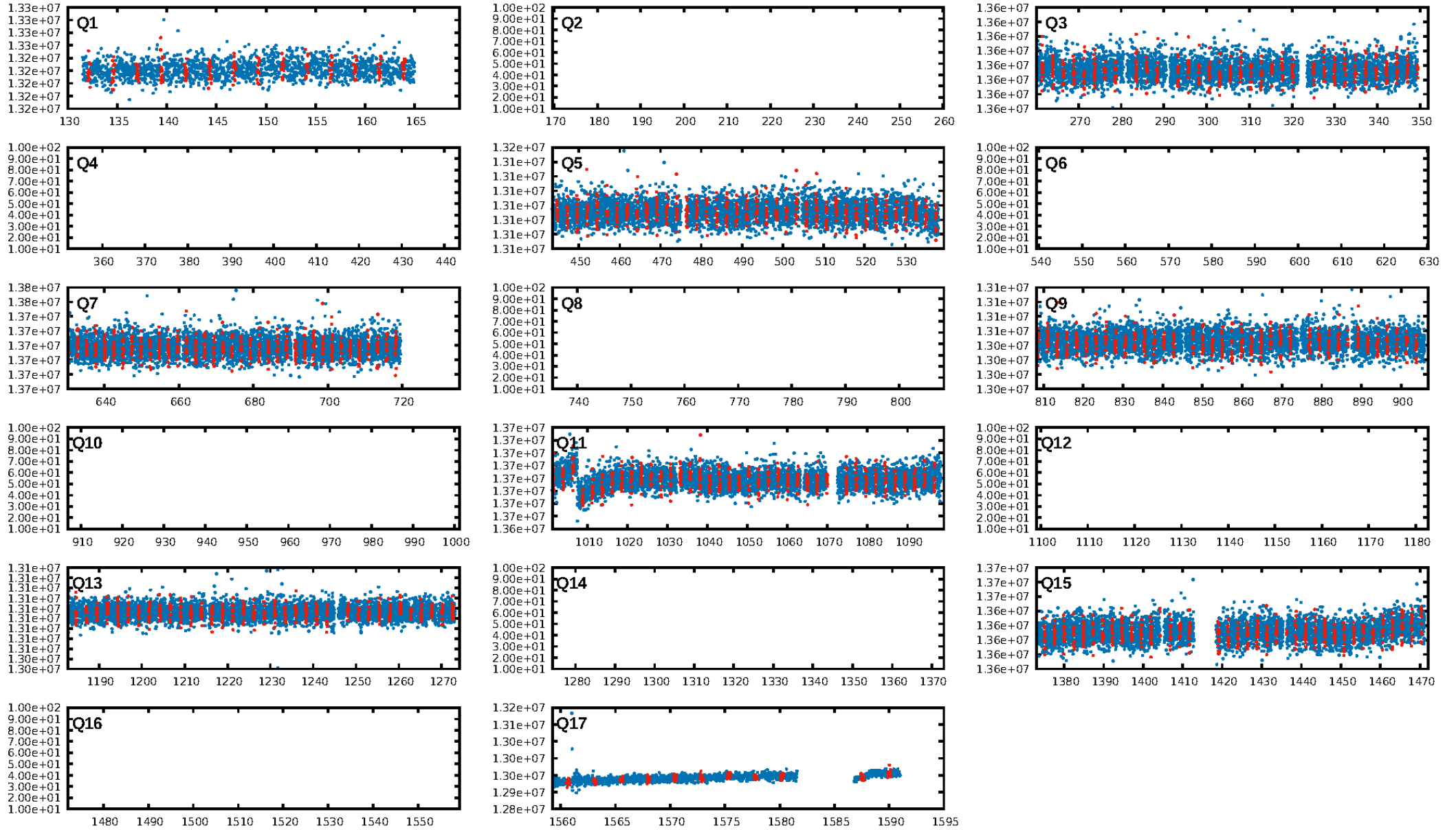
## DV Fit Results:

Period = 2.44198 [0.00002] d  
Epoch = 132.1325 [0.0058] BKJD  
Rp/R\* = 0.0119 [0.0087]  
a/R\* = 2.62 [7.50]  
b = 0.90 [0.74]  
Seff = 519.09 [181.21]  
Teff = 1217 [106] K  
Rp = 1.11 [0.86] Re  
a = 0.0349 [0.0078] AU  
Ag = 126.02 [202.25] [0.62σ]  
Teffp = 6305 [2486] K [2.04σ]

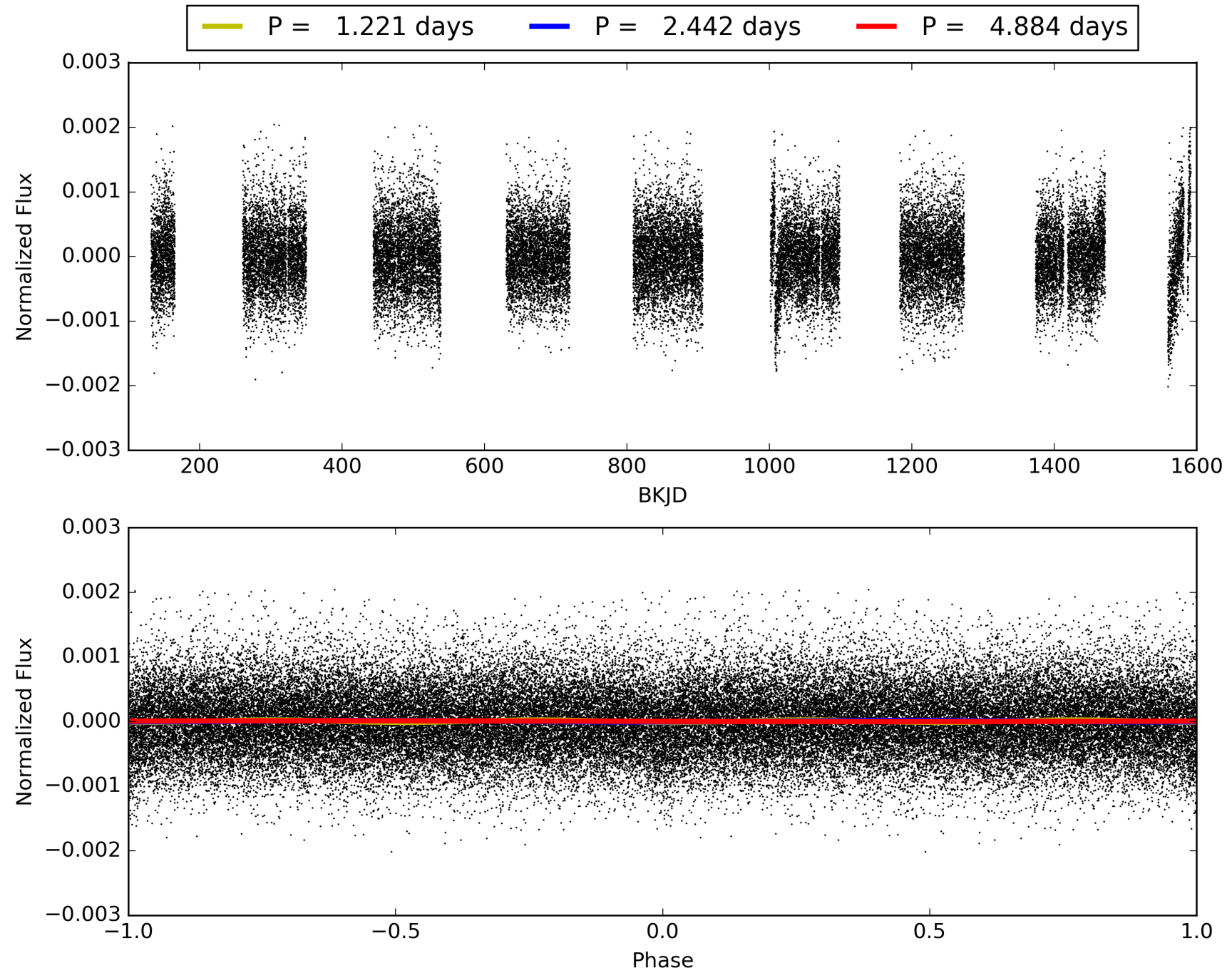
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.18e-19  
RollingBand-fgt: 1.00 [259/259]  
GhostDiagnostic-chr: 0.07047  
Centroid-sig: 1.9%  
Centroid-so: 3.017 arcsec [1.82σ]  
OotOffset-rm: 1.015 arcsec [1.50σ]  
KicOffset-rm: 0.843 arcsec [1.28σ]  
OotOffset-st: 0/4/0/5 [9]  
KicOffset-st: 0/4/0/5 [9]  
DiffImageQuality-fgm: 0.00 [0/9]  
DiffImageOverlap-fno: 1.00 [9/9]

# TCE 008302473-01, PDC Light Curves

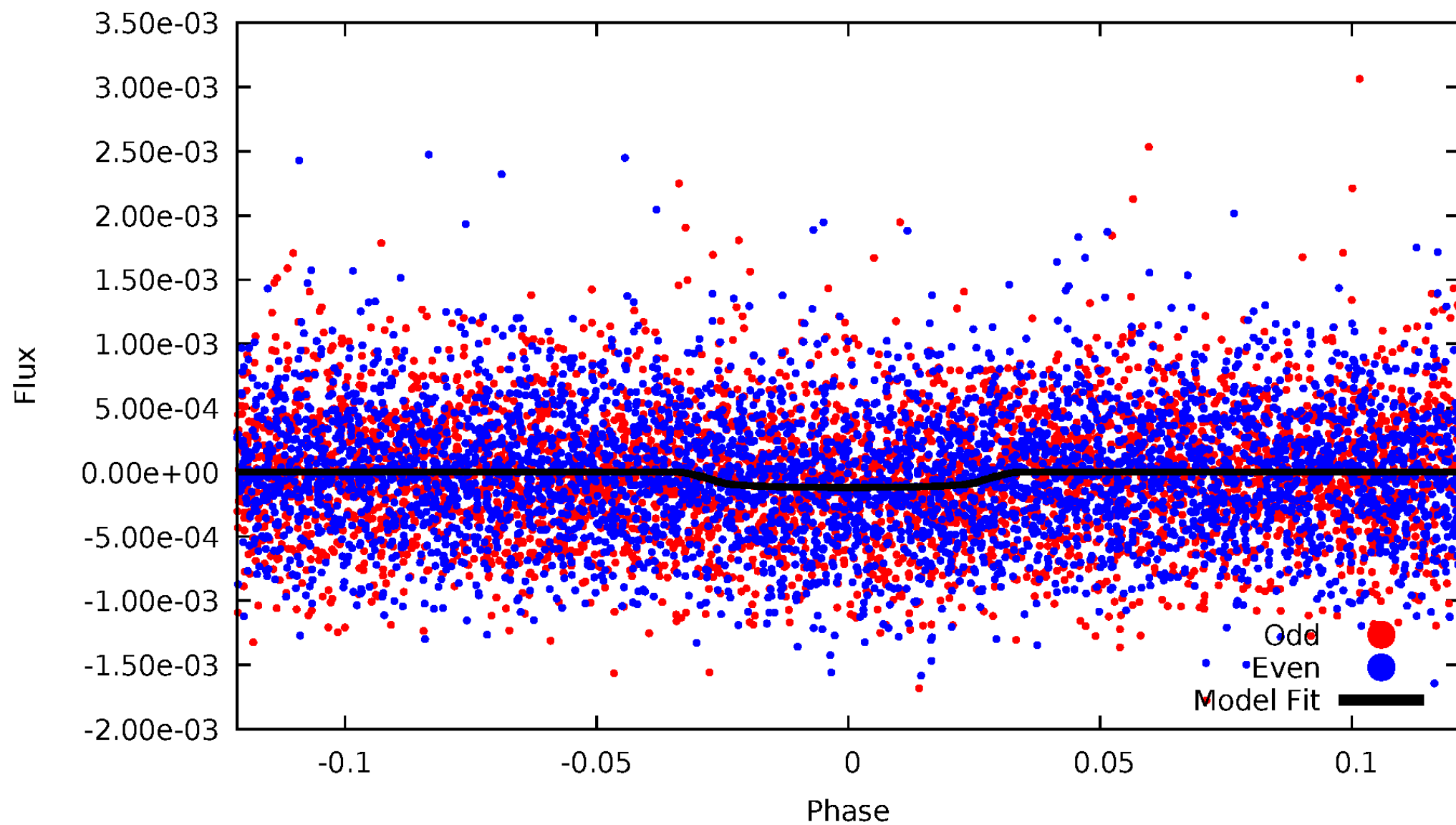


TCE 008302473-01



# DV Odd/Even

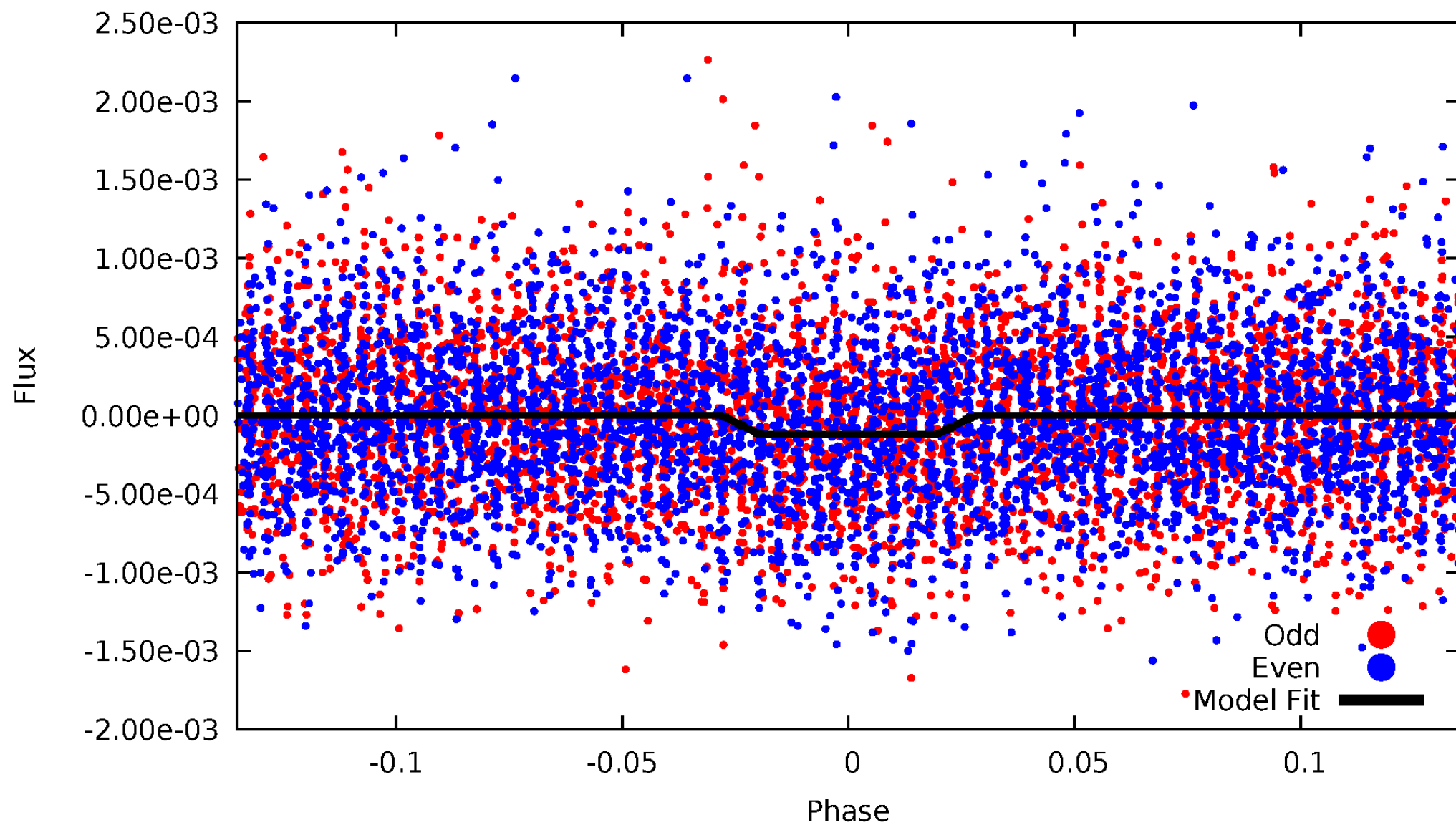
TCE 008302473-01





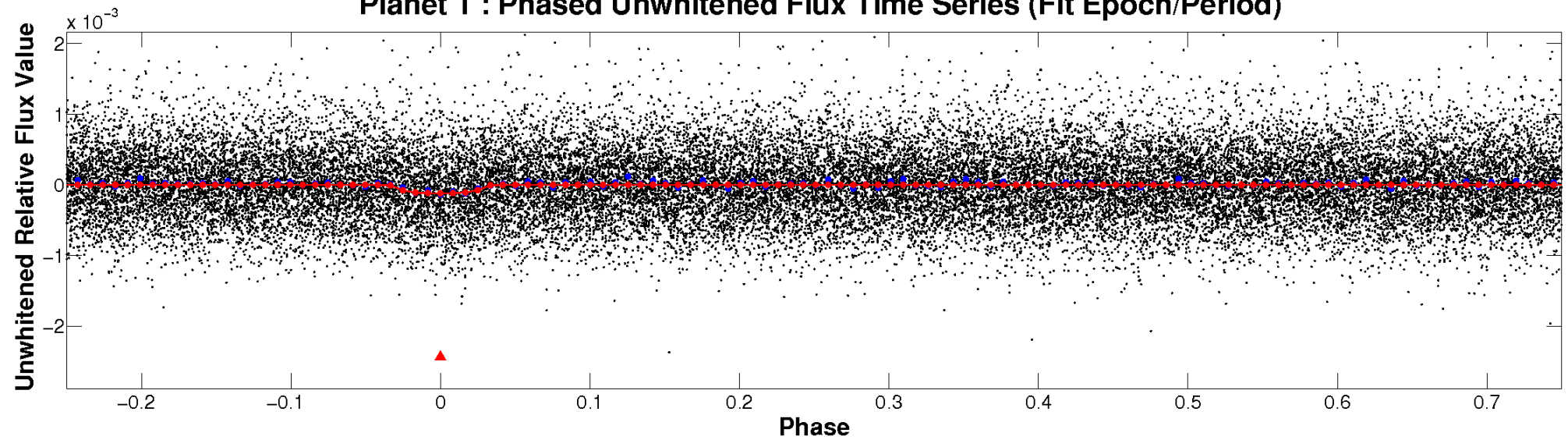
# ALT Odd/Even

TCE 008302473-01

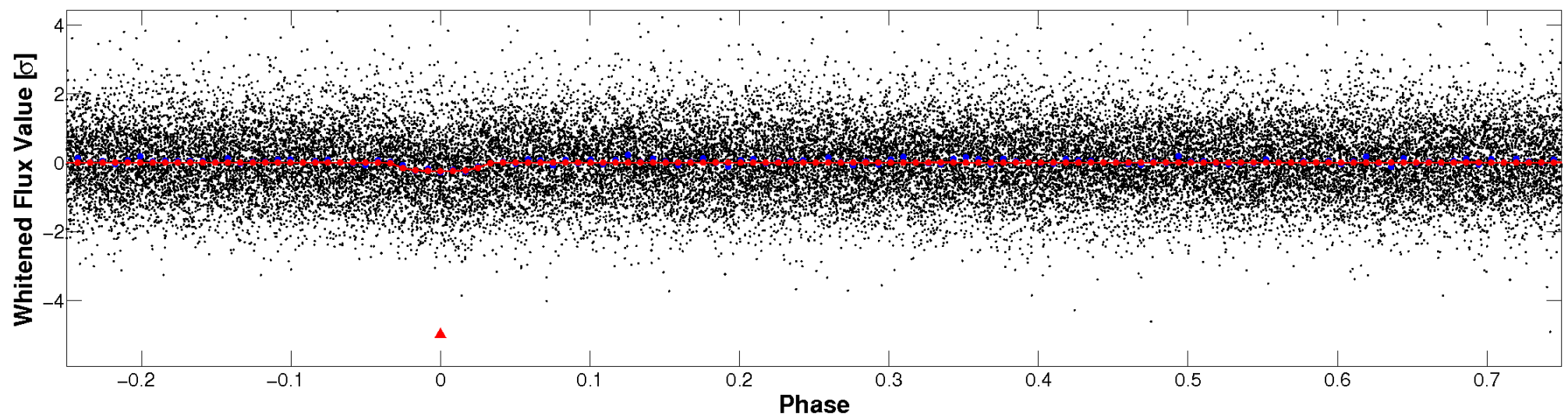


# Non-Whitened Vs. Whitened Light Curve

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

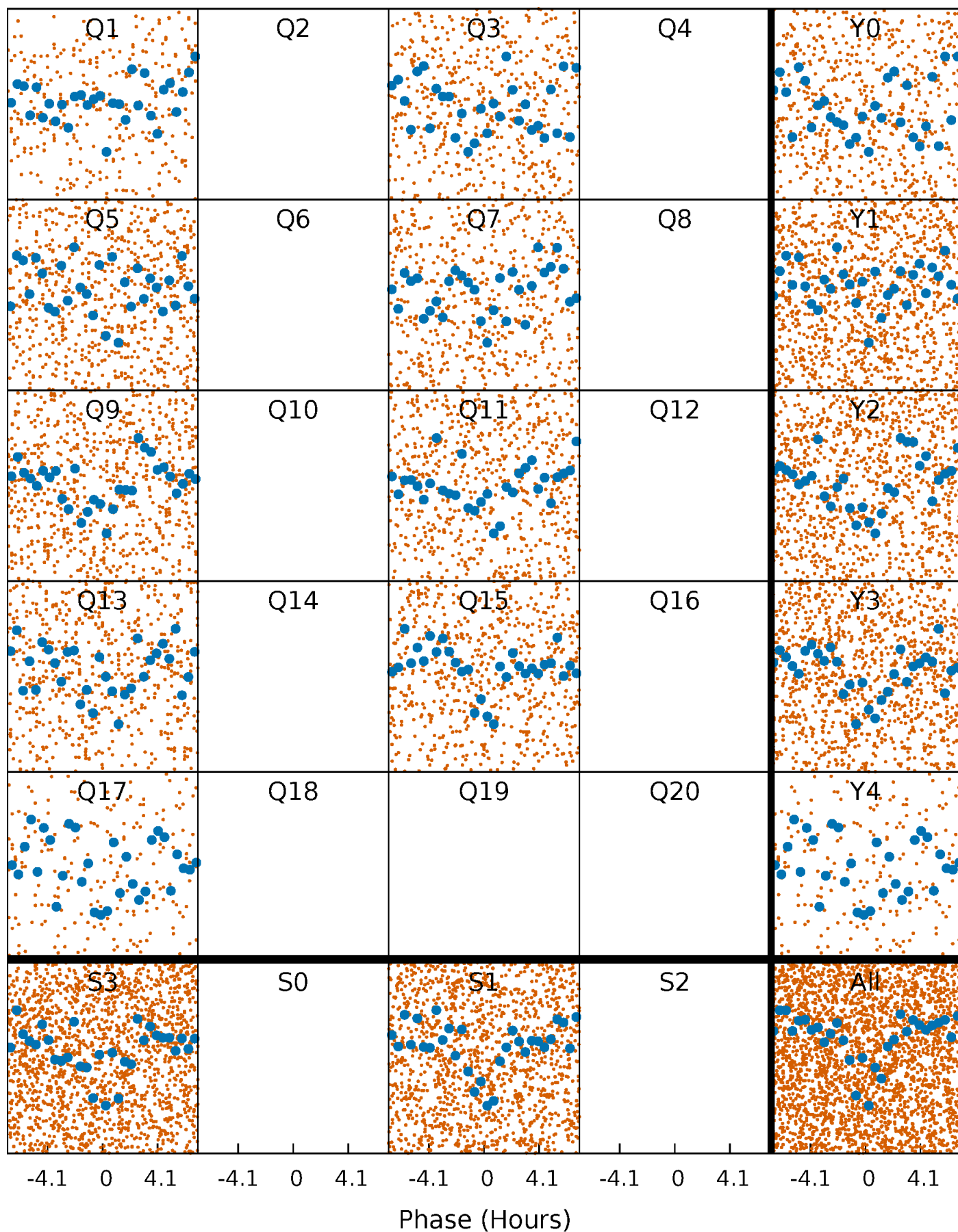


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

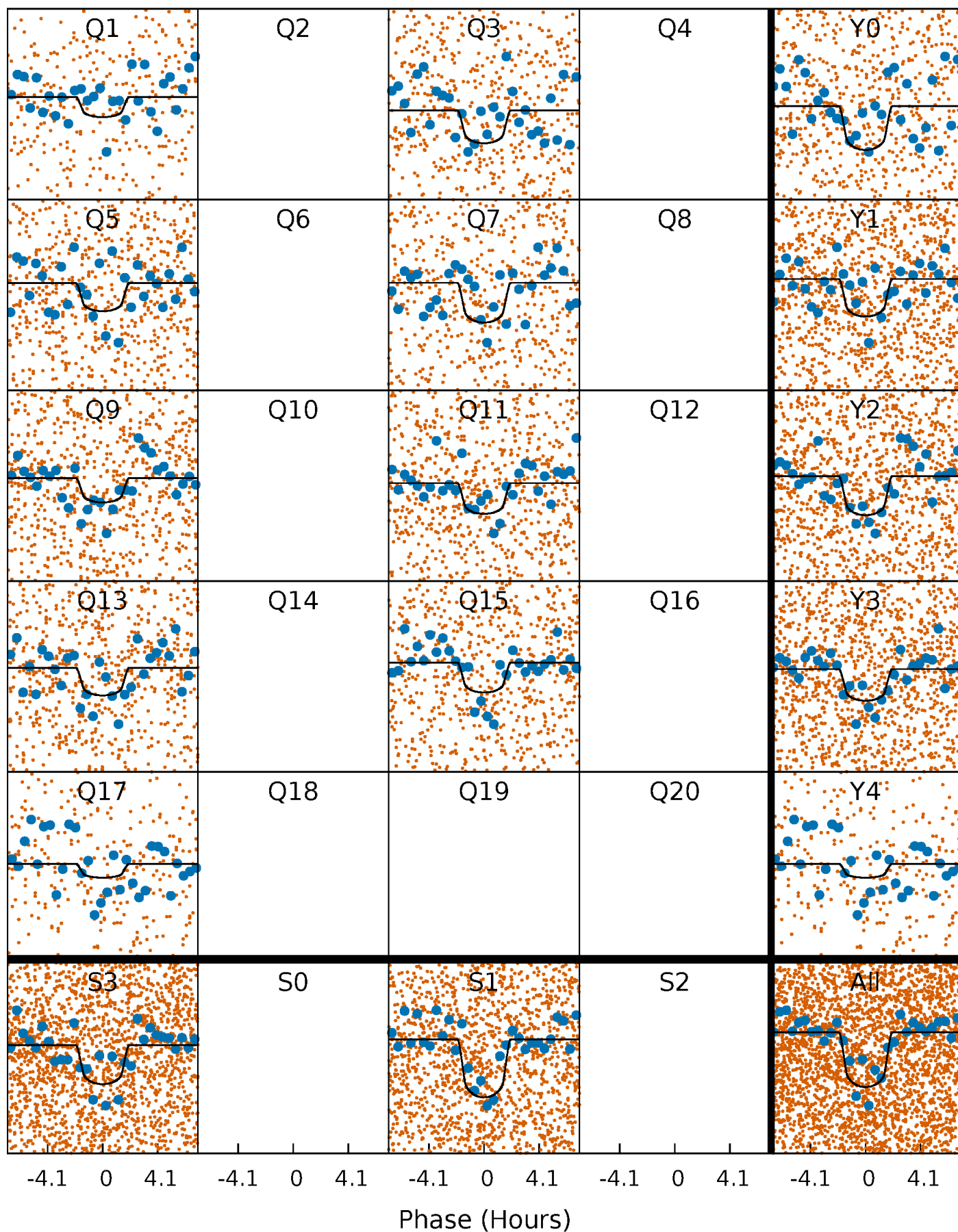
TCE 008302473-01   P= 2.441981 Days    $T_0=132.132459$  (BKJD)





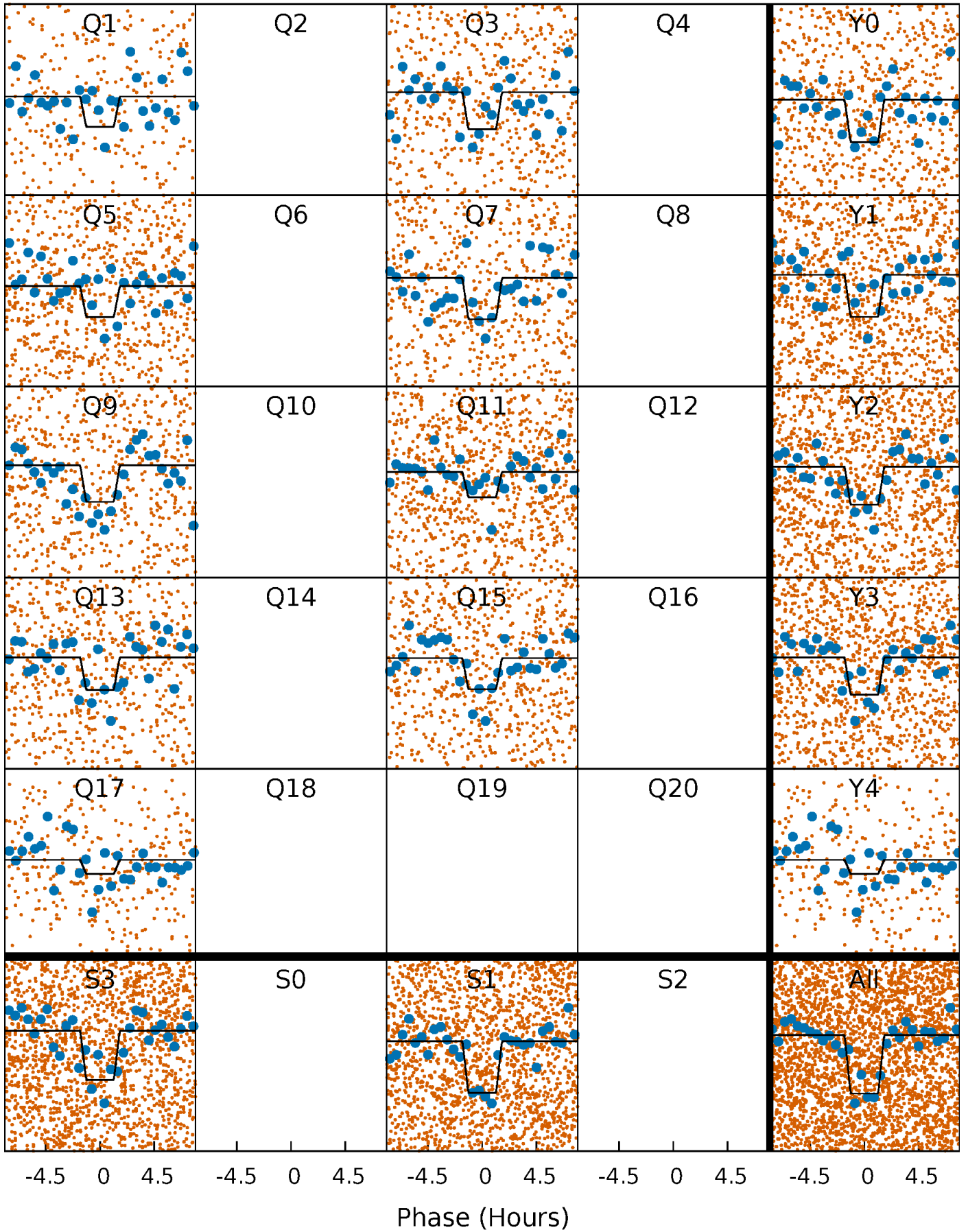
# DV Quarter-Phased Transit Curves

TCE 008302473-01   P= 2.441981 Days    $T_0=132.132459$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

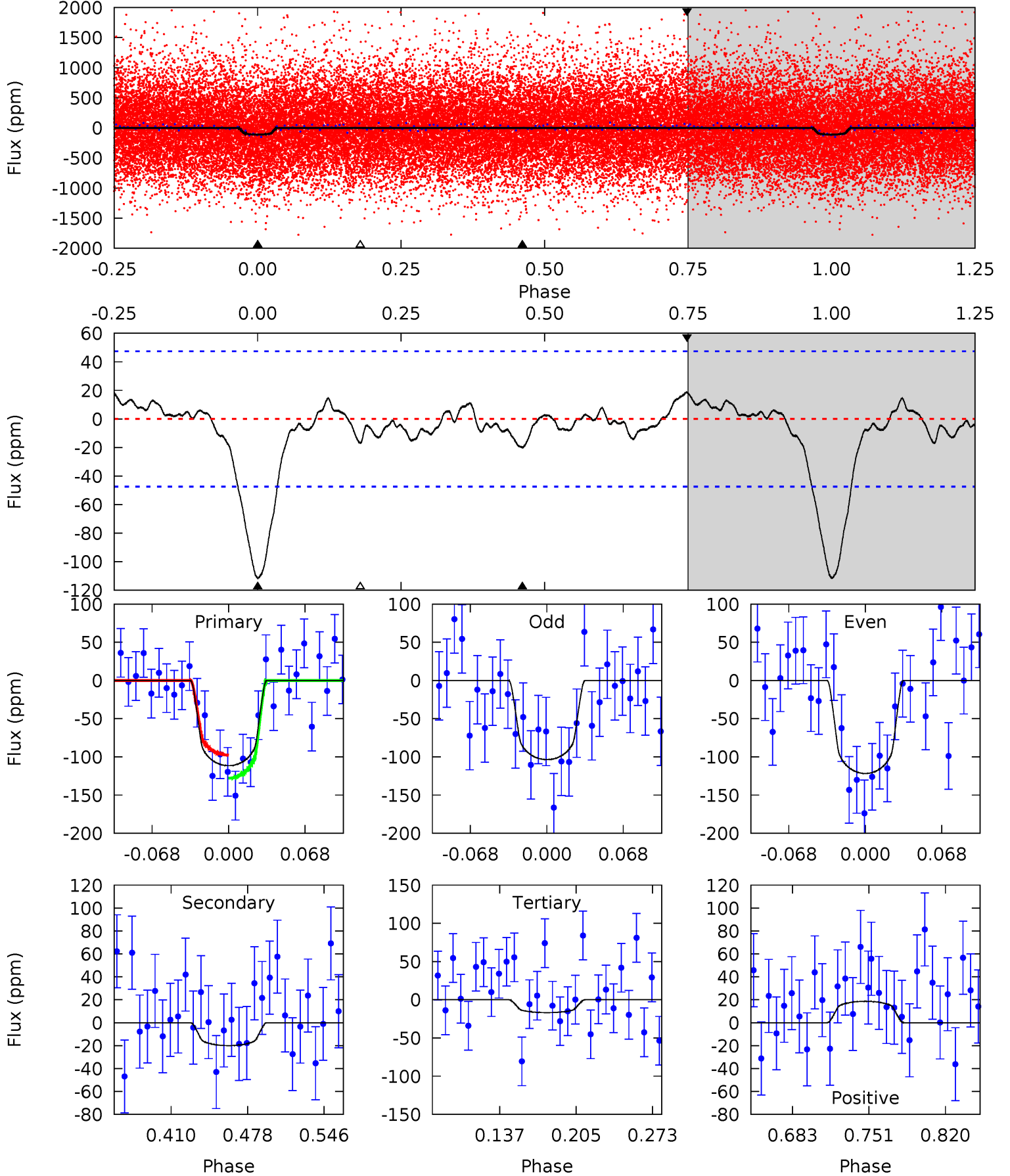
TCE 008302473-01 P= 2.442021 Days  $T_0=132.121067$  (BKJD)



# DV Model-Shift Uniqueness Test

008302473-01, P = 2.441981 Days, E = 129.690478 Days

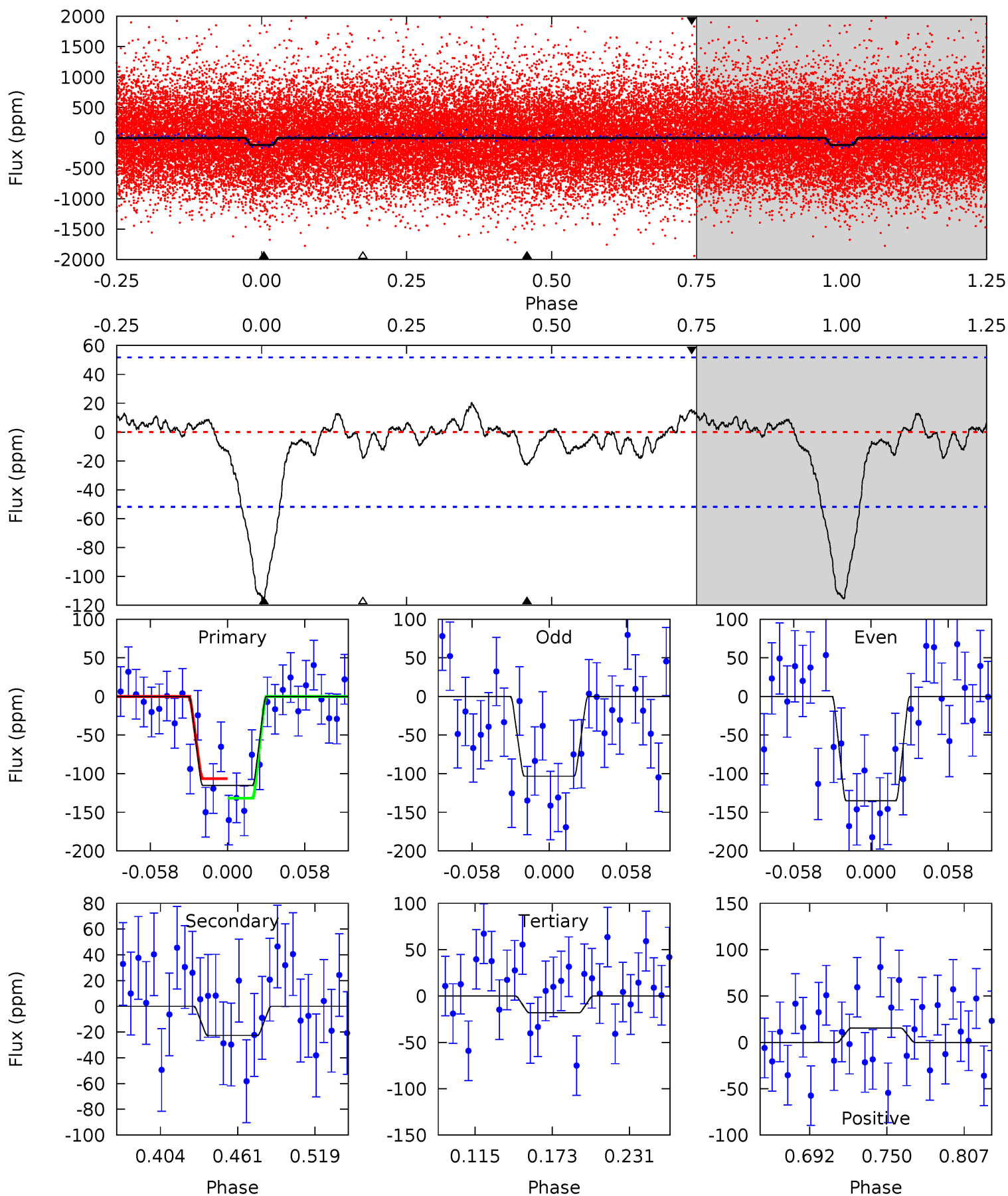
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	1.96	1.65	1.82	4.64	1.82	0.78	9.28	9.10	0.31	0.14	0.89	0.96	0.14	1.48



# Alt Model-Shift Uniqueness Test

008302473-01, P = 2.442021 Days, E = 129.679046 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	2.05	1.63	1.39	4.68	1.90	0.73	8.80	9.04	0.41	0.65	1.44	1.09	0.15	1.14



### Stellar Parameters For KIC 008302473

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5587^{+182}_{-182}$	$4.556^{+0.033}_{-0.176}$	$0.000^{+0.250}_{-0.300}$	$0.851^{+0.228}_{-0.071}$	$0.952^{+0.091}_{-0.112}$	$2.174^{+0.379}_{-1.031}$
	+3%/-3%	+1%/-4%	+inf%/-inf%	+27%/-8%	+10%/-12%	+17%/-47%
Source	KIC0	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 008302473-01 / KOI 7015.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-20 \pm 10$	$1.32^{+0.82}_{-0.77}$	$1744^{+111}_{-82}$	$3557^{+1319}_{-653}$	$6.600^{+31.646}_{-4.596}$
Alt.	$-23 \pm 11$	$1.21^{+0.87}_{-0.69}$	$1738^{+109}_{-80}$	$3749^{+1489}_{-708}$	$9.604^{+46.797}_{-7.044}$

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



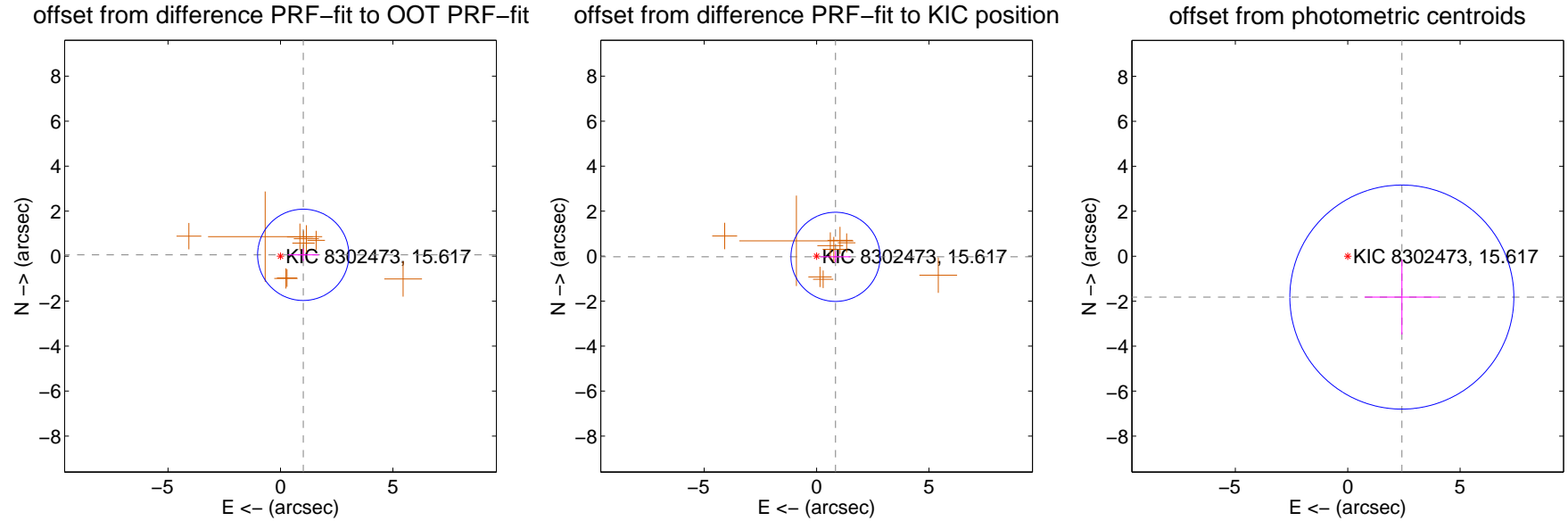
## DV Centroid Data

Supplemental centroid analysis for 008302473-01. Kepler magnitude: 15.62. Transit SNR 9.32

There are 0 quarters with good PRF difference image offsets

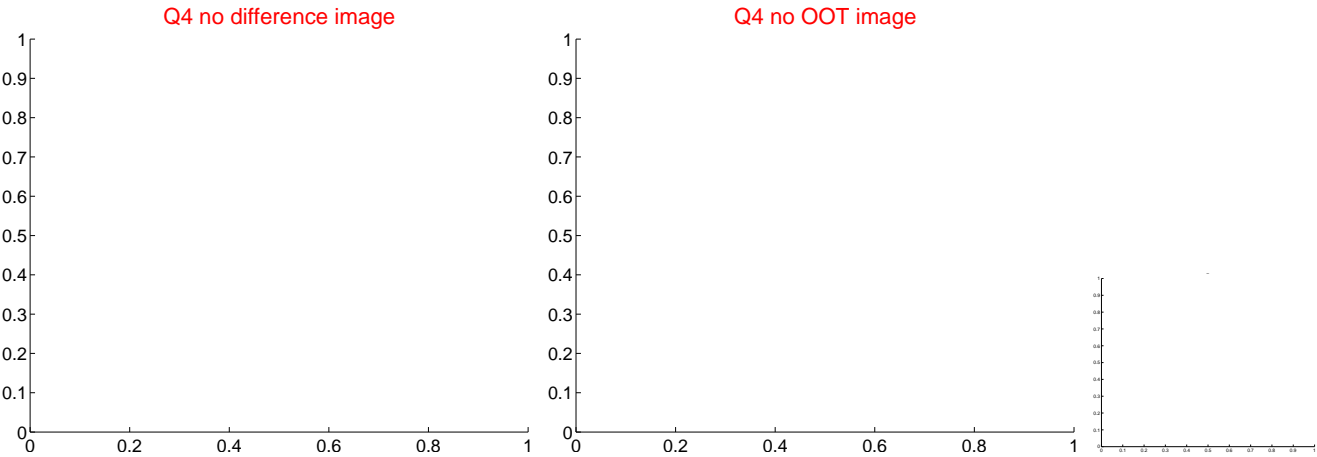
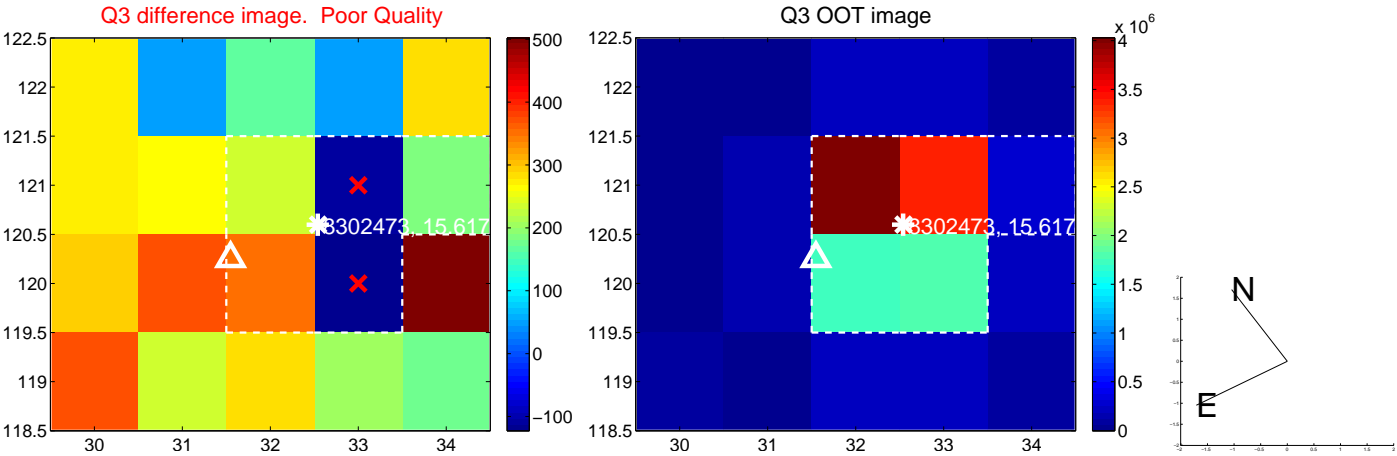
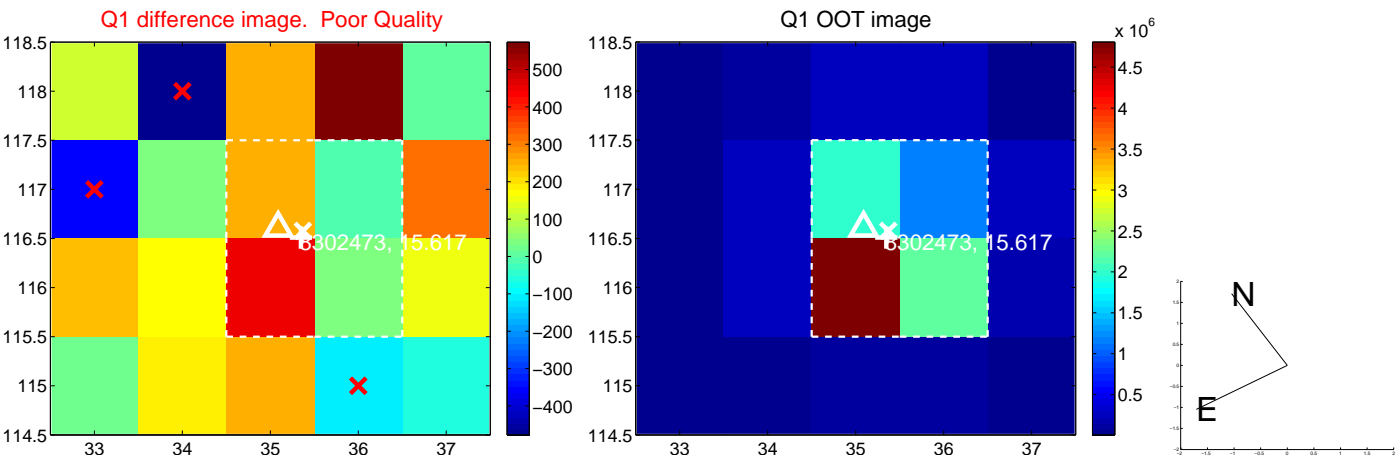
The direct PRF centroid is offset from the target star catalog position by about 0.38 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.015 \pm 0.676$	1.50	$-1.013 \pm 0.683$	$0.057 \pm 0.273$
PRF-fit source offset from KIC position	$0.843 \pm 0.661$	1.28	$-0.842 \pm 0.657$	$-0.032 \pm 0.251$
photometric centroid source offset	$3.02 \pm 1.66$	1.82	$-2.41 \pm 1.66$	$-1.82 \pm 1.66$

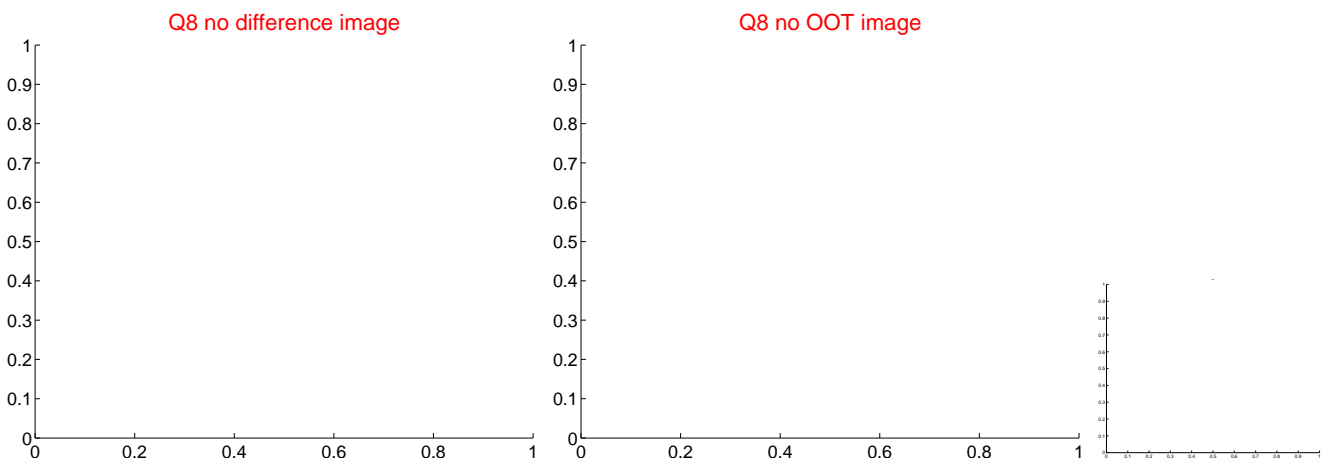
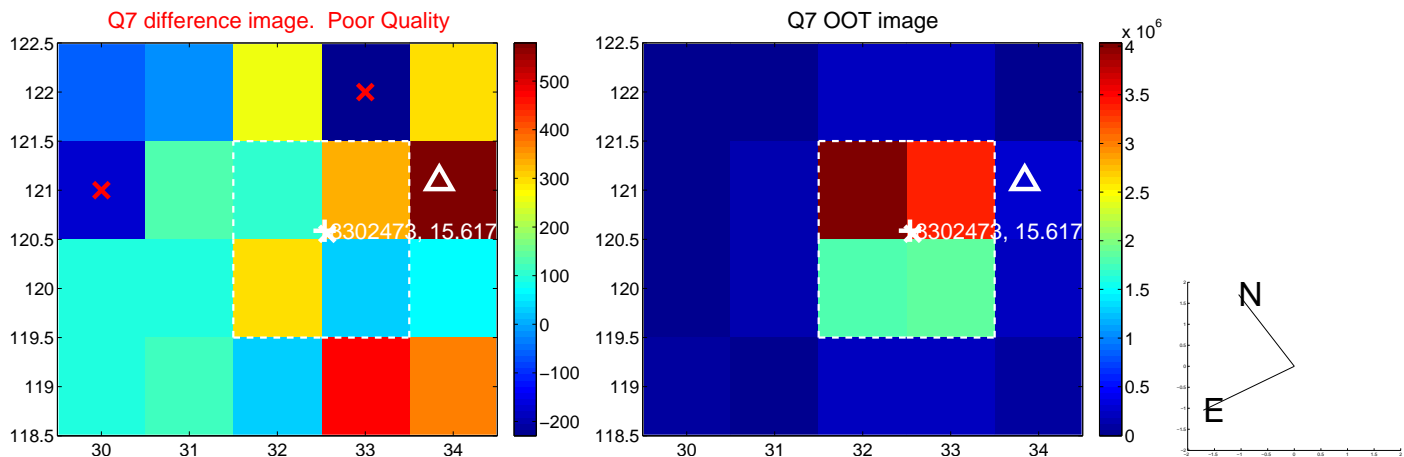
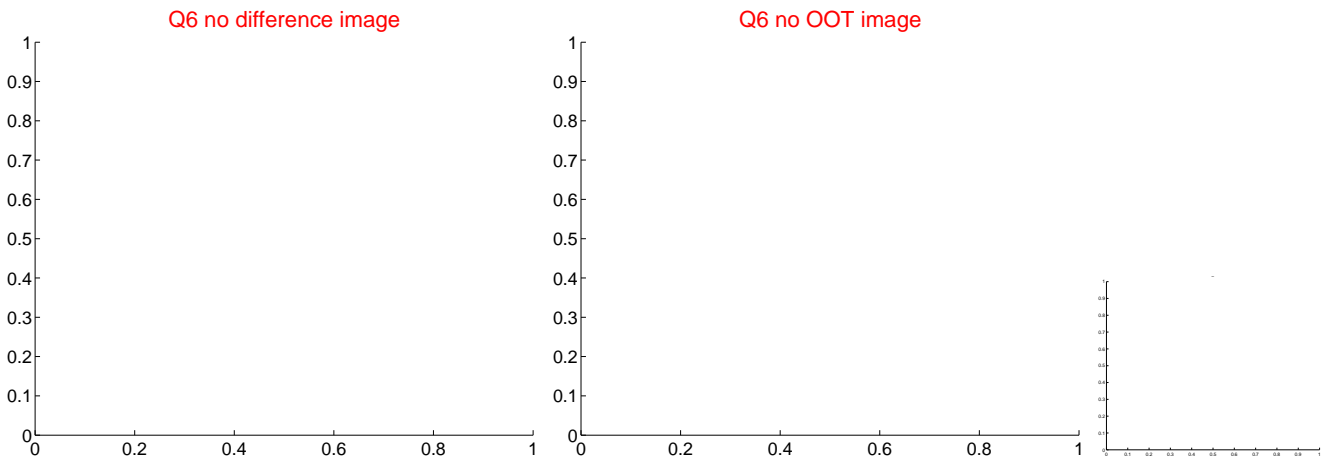
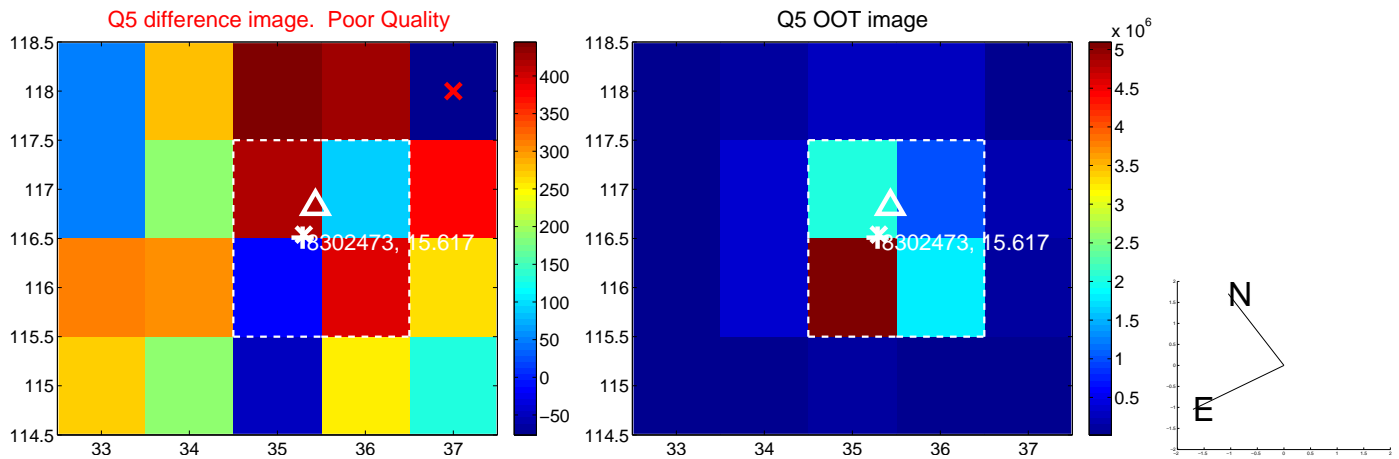


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

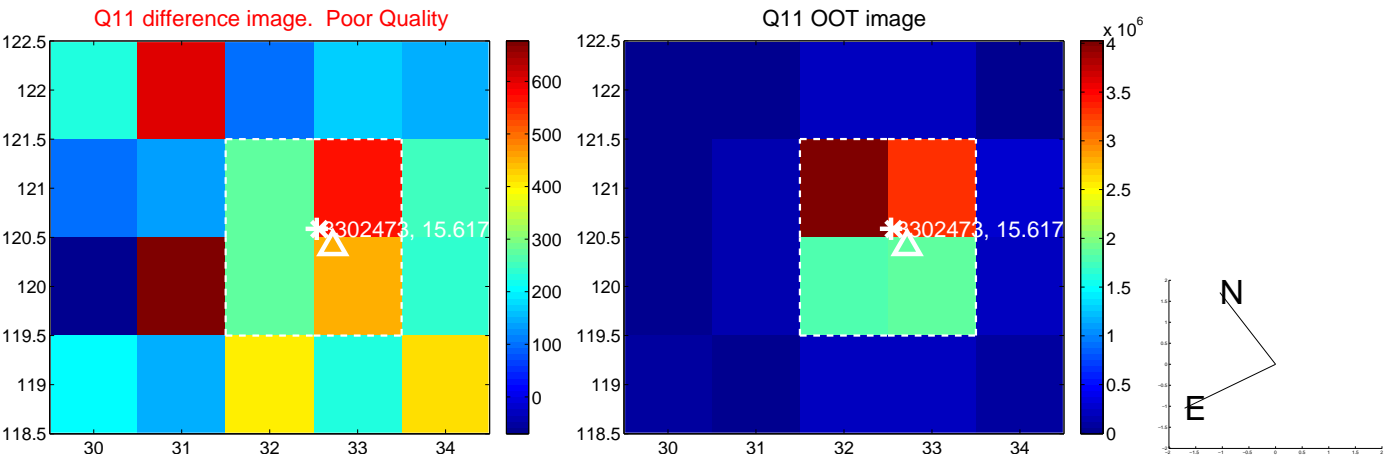
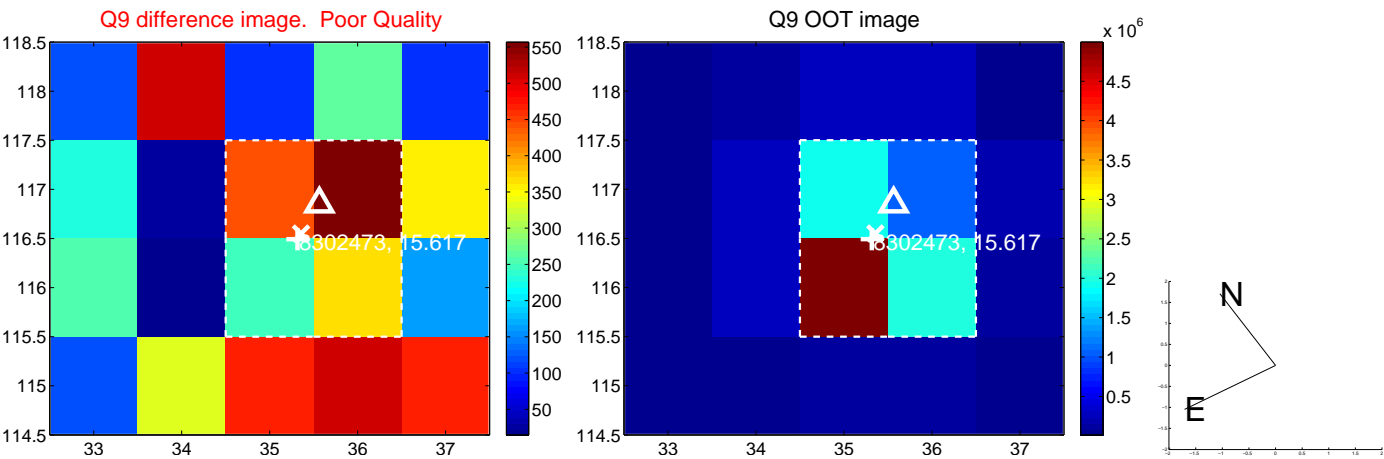
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



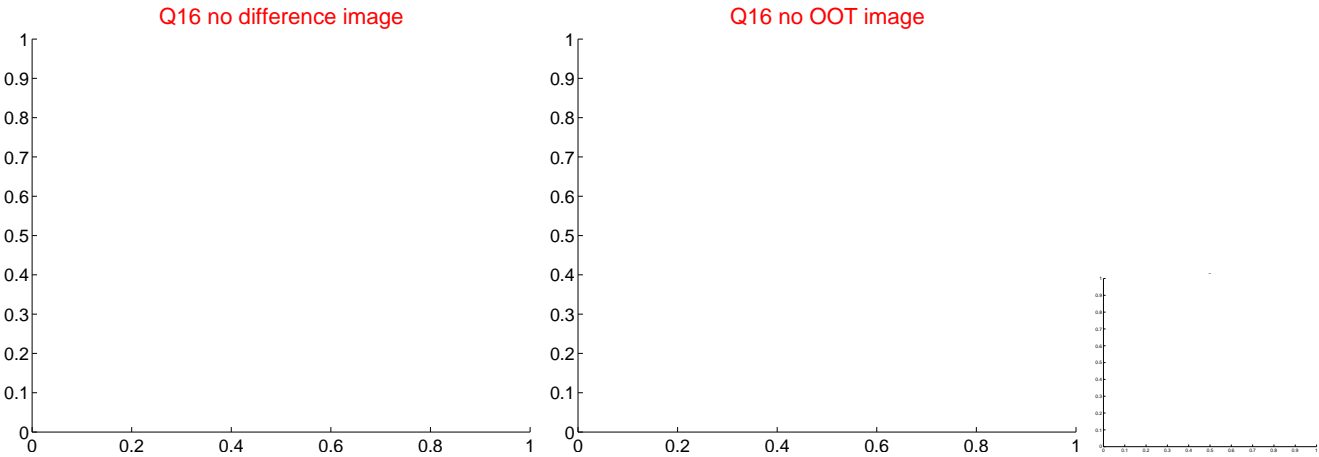
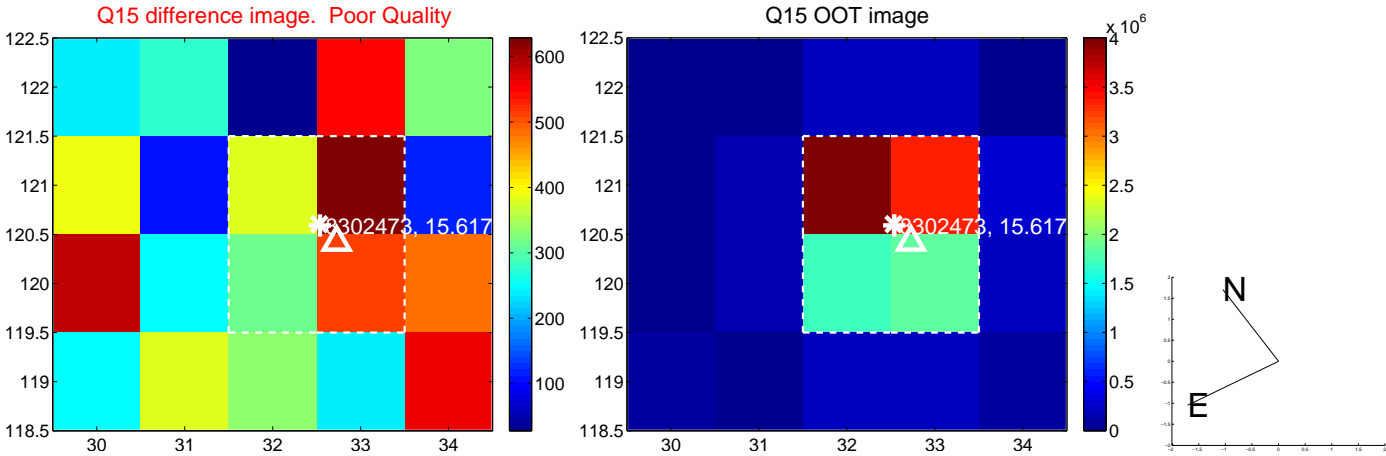
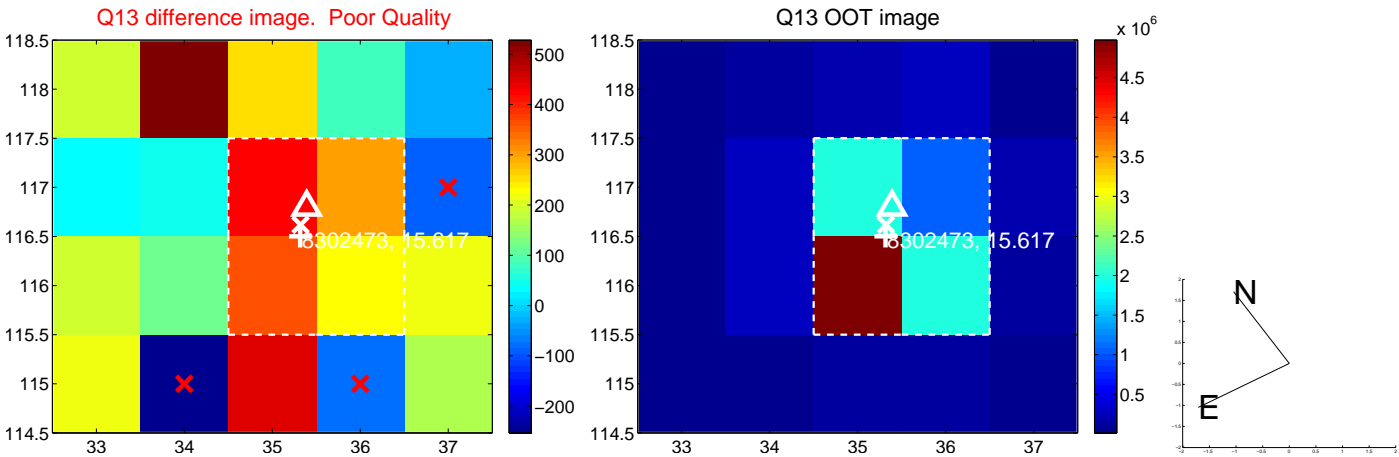
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white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

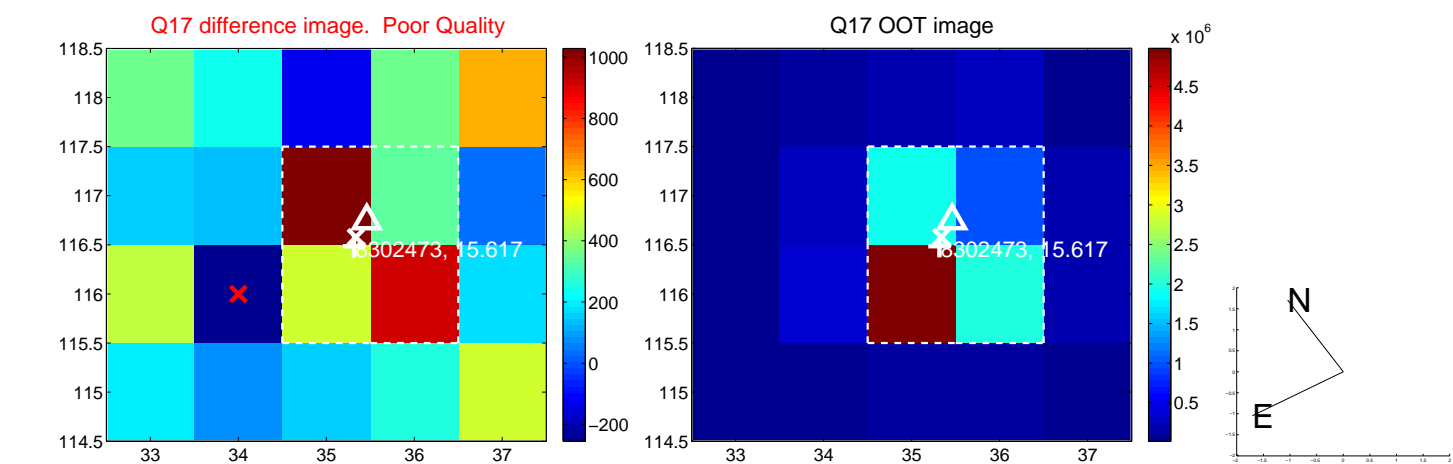


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

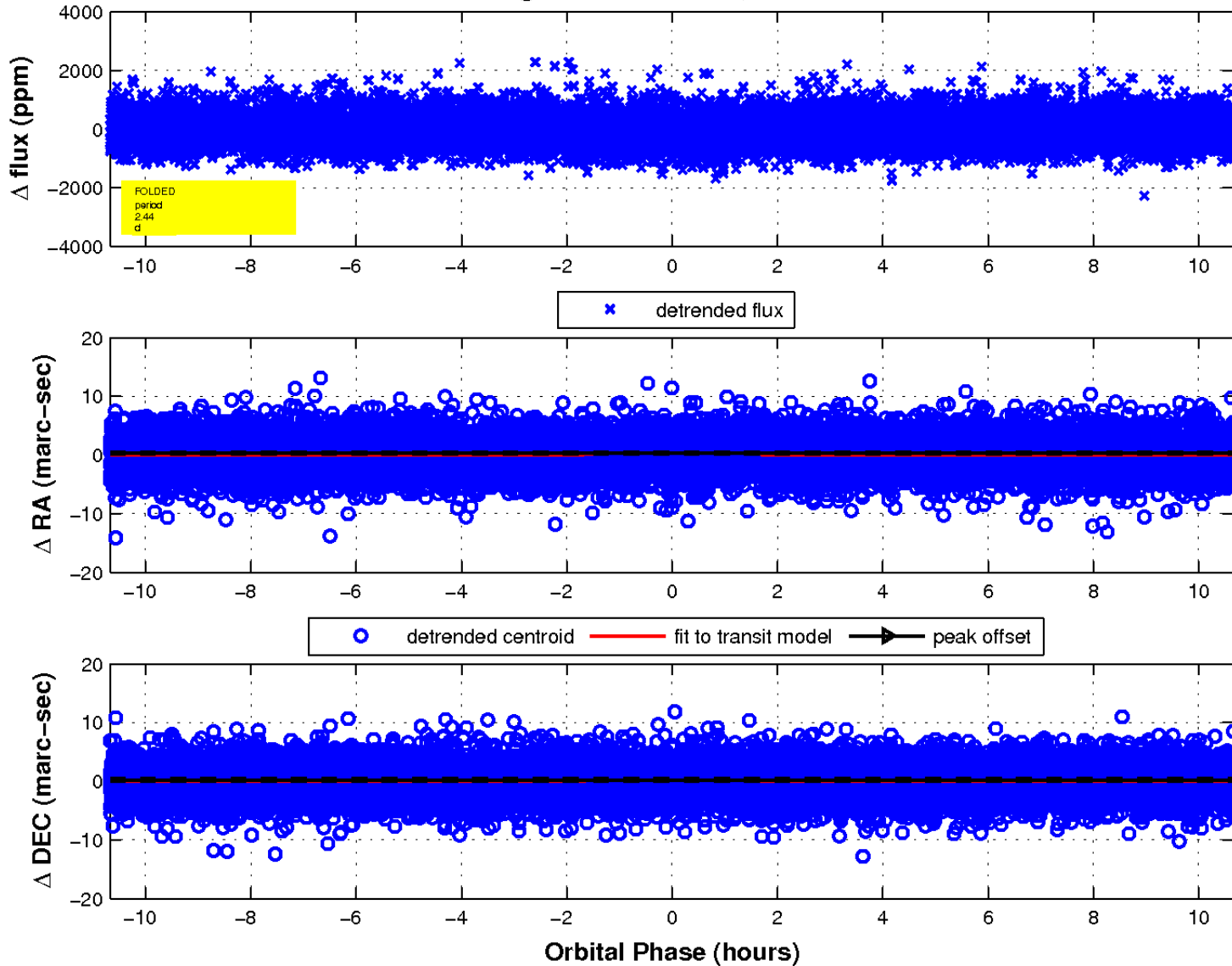




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

