

KIC 004160876

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})
004160876-01	OBS	No	360.215063	464.554448	56.1	5.206	8.3	7.1	3.72	8511	3.04	37.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004160876-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS— CENT_SATURATED—HALO_GHOST

Notes: OBS = Observed. INJ = Injected. INV = Inverted. SCR = Scrambled.

N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

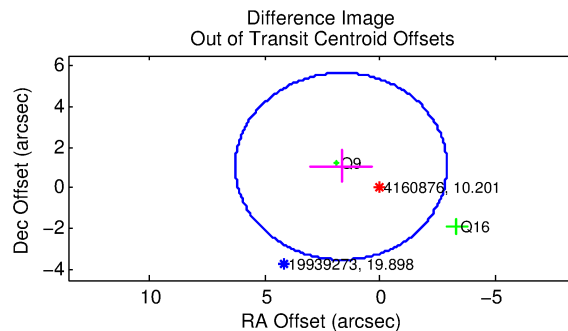
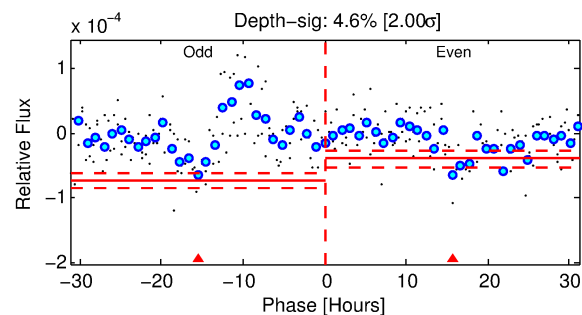
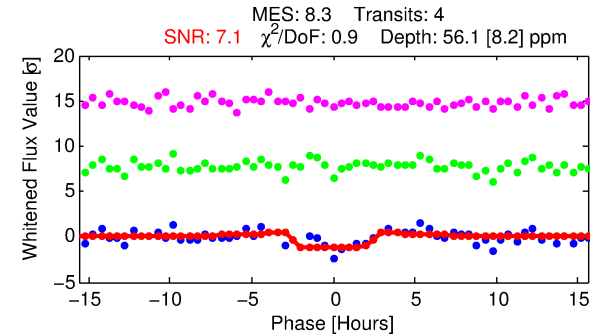
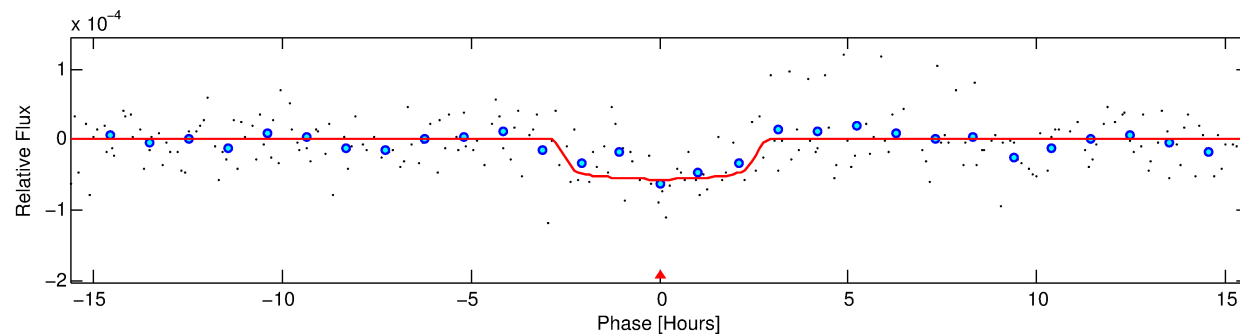
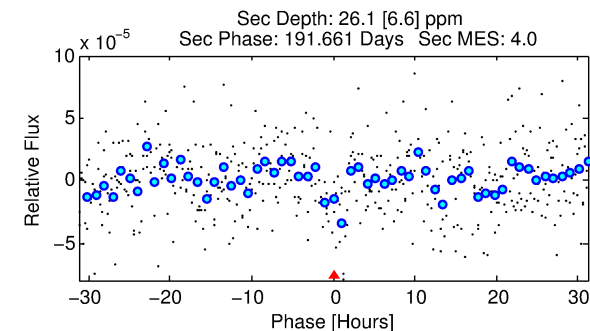
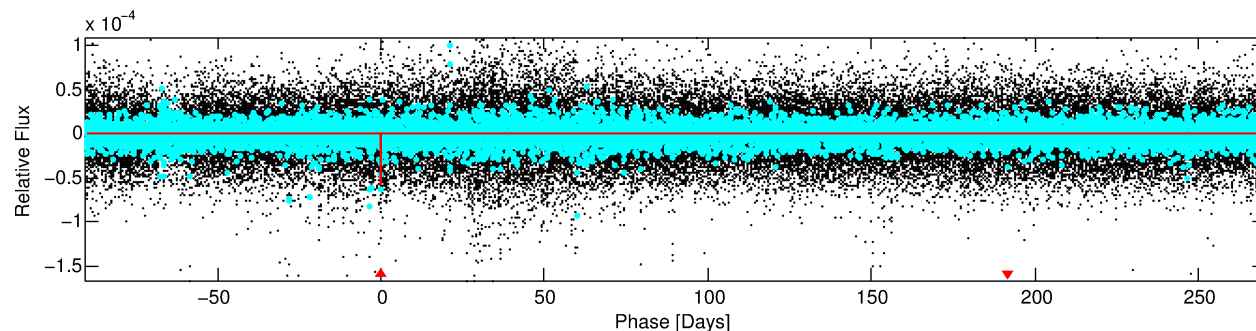
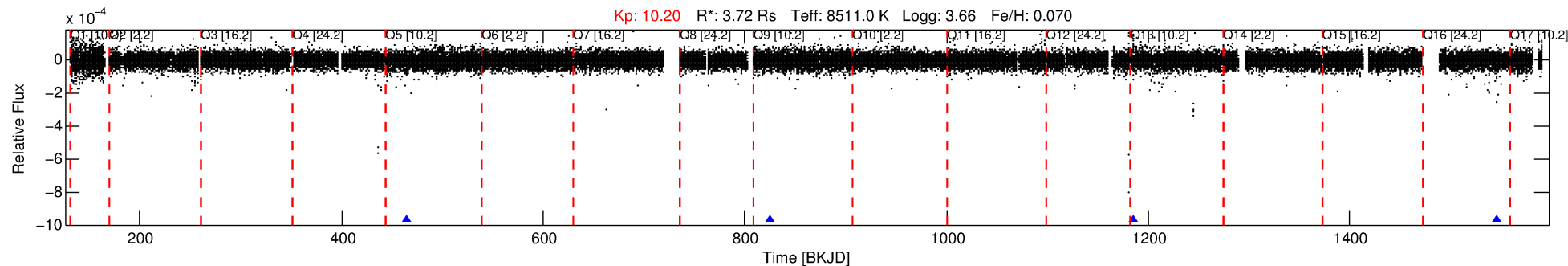
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004160876-01

No Significant Match Found

DV One-Page Summary

KIC: 4160876 Candidate: 1 of 1 Period: 360.215 d



DV Fit Results:

Period = 360.21506 [0.00493] d
Epoch = 464.5544 [0.0087] BKJD
 $R_p/R^* = 0.0075$ [0.0034]
 $a/R^* = 343.38$ [979.84]
 $b = 0.77$ [1.53]
 $T_{\text{eff}} = 37.69$ [31.56]
 $T_{\text{eq}} = 632$ [132] K
 $R_p = 3.04$ [2.12] R_{e}
 $a = 1.3128$ [0.6674] AU
 $A_g = 2674.52$ [3347.71] [0.80σ]
 $T_{\text{eff}} = 7025$ [1700] K [3.75σ]

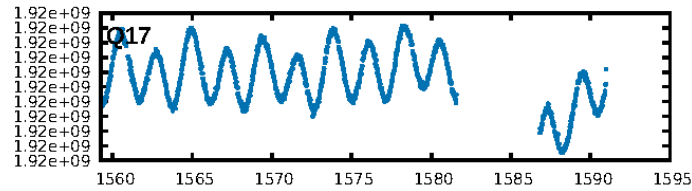
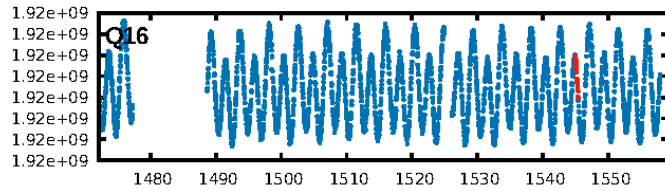
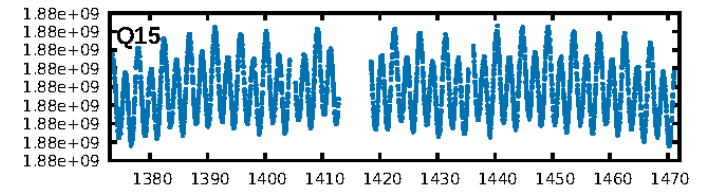
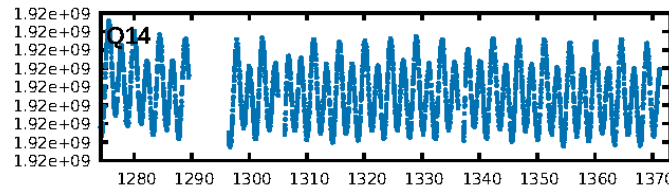
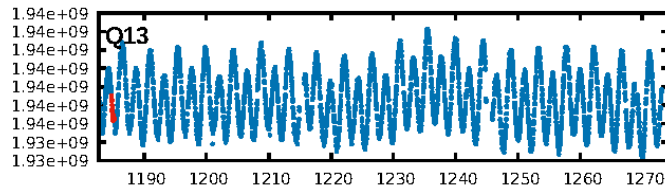
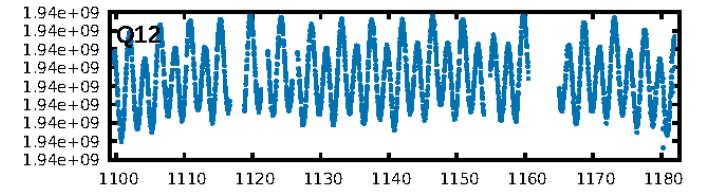
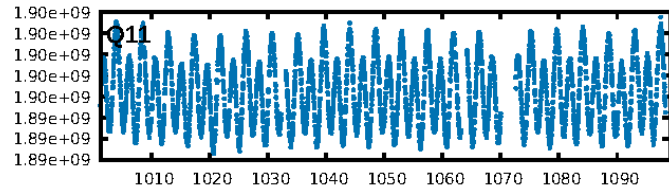
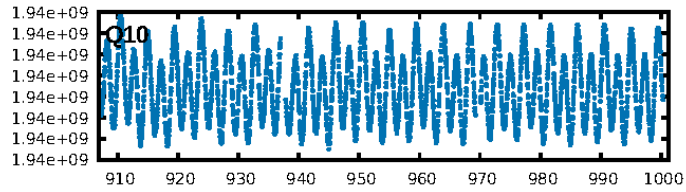
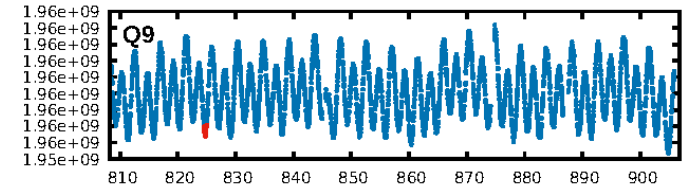
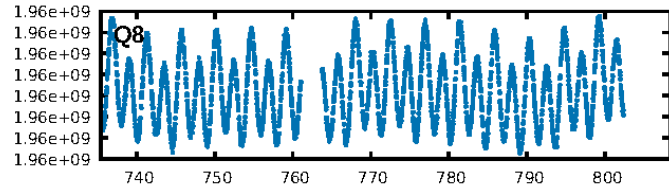
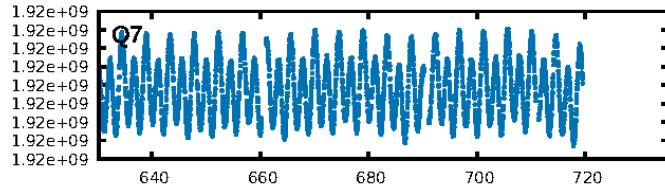
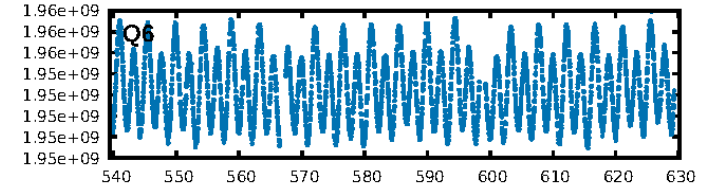
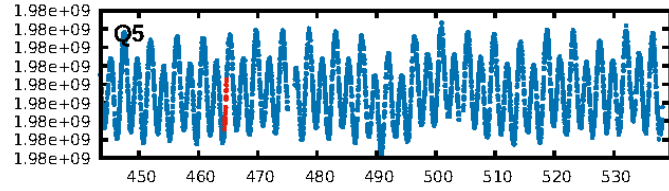
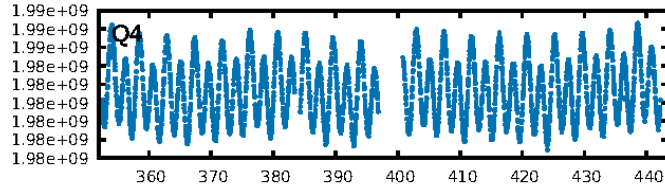
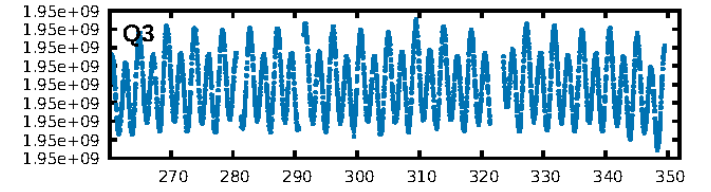
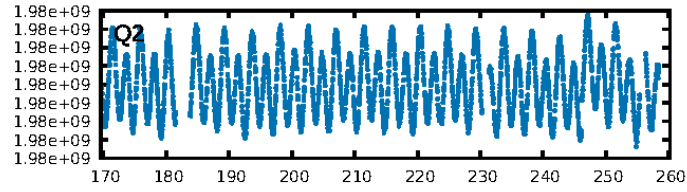
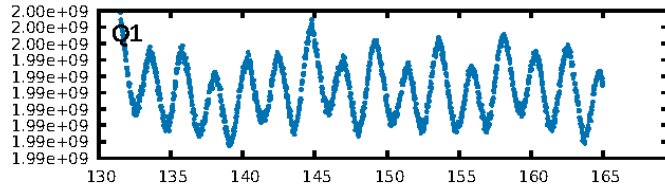
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 67.7%
ModelChiSquareGof-sig: 99.4%
Bootstrap-pfa: 2.55e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.1322
Centroid-sig: 1.8%
Centroid-so: 5.403 arcsec [1.48σ]
OotOffset-rm: 1.991 arcsec [1.31σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-rm: 2.438 arcsec [1.03σ]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [3/3]

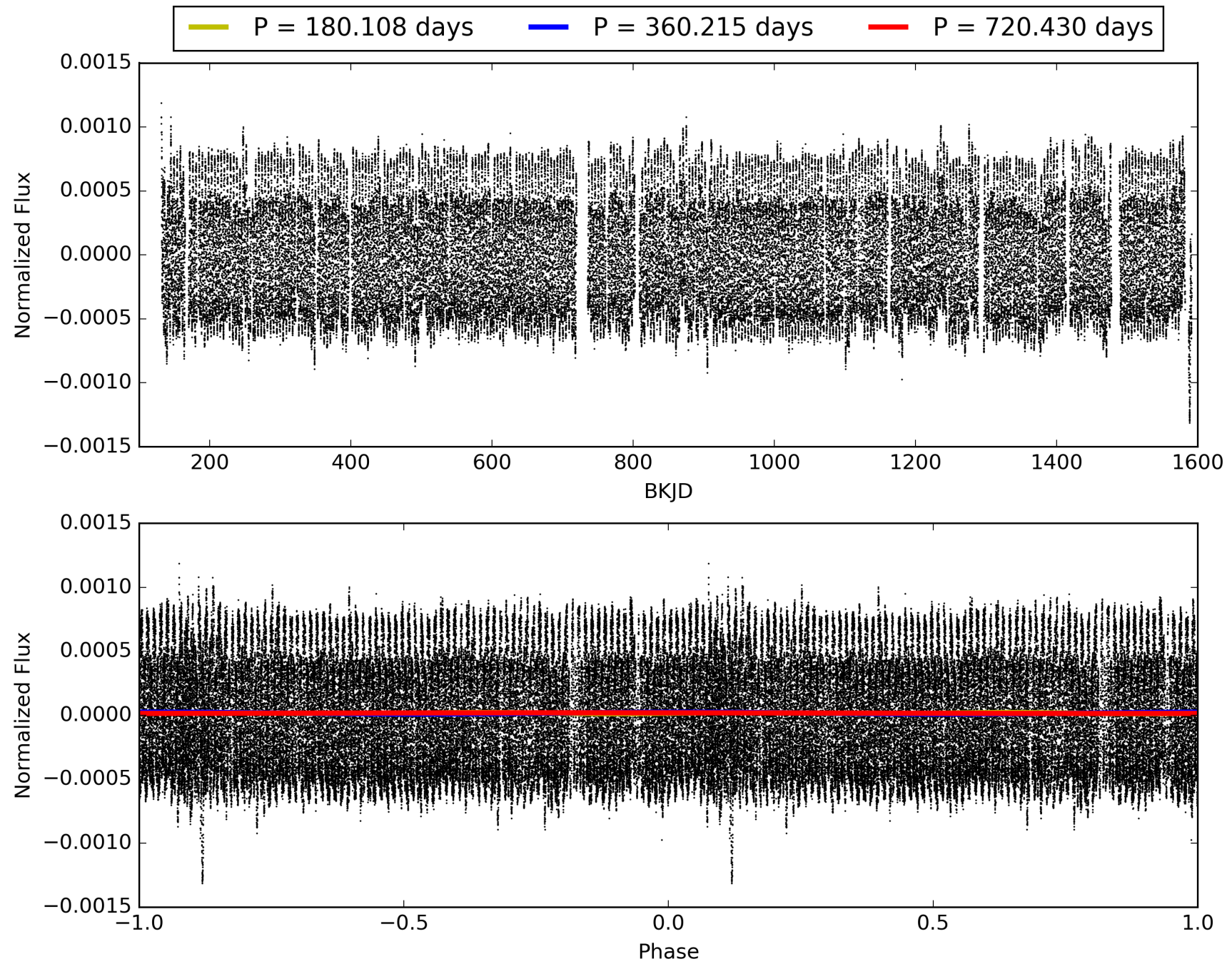
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:23:15 Z

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

TCE 004160876-01, PDC Light Curves

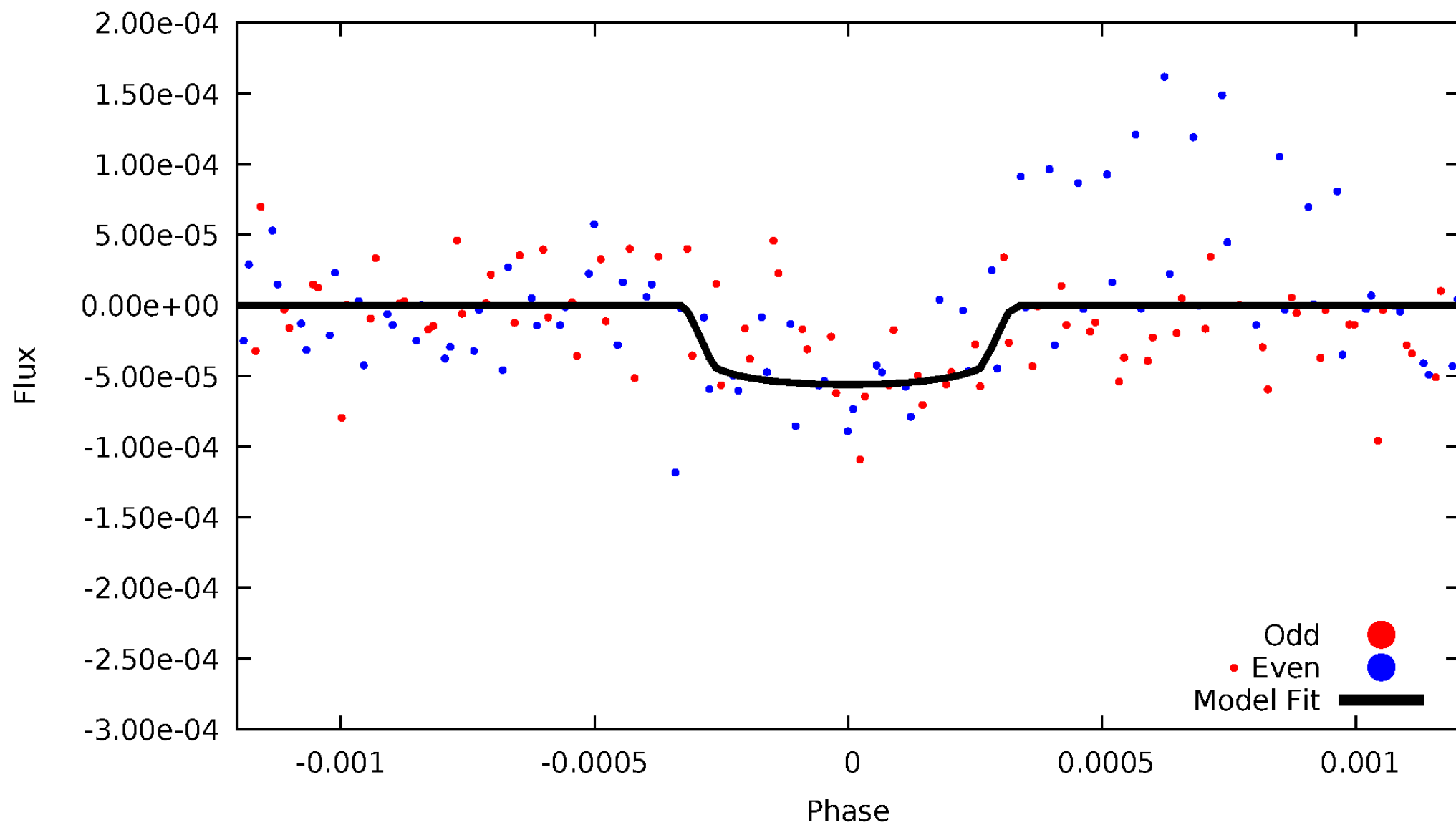


TCE 004160876-01



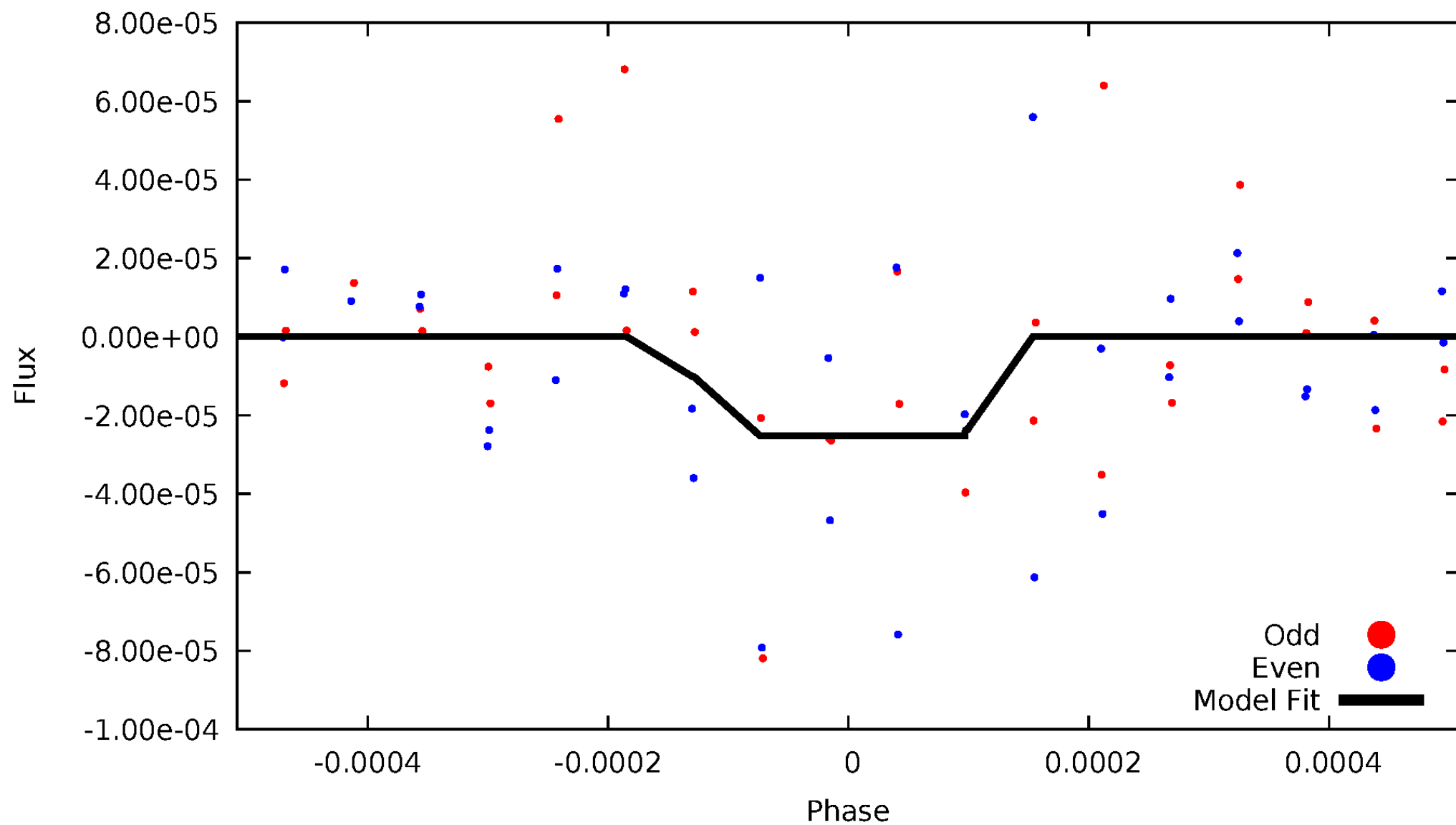
DV Odd/Even

TCE 004160876-01



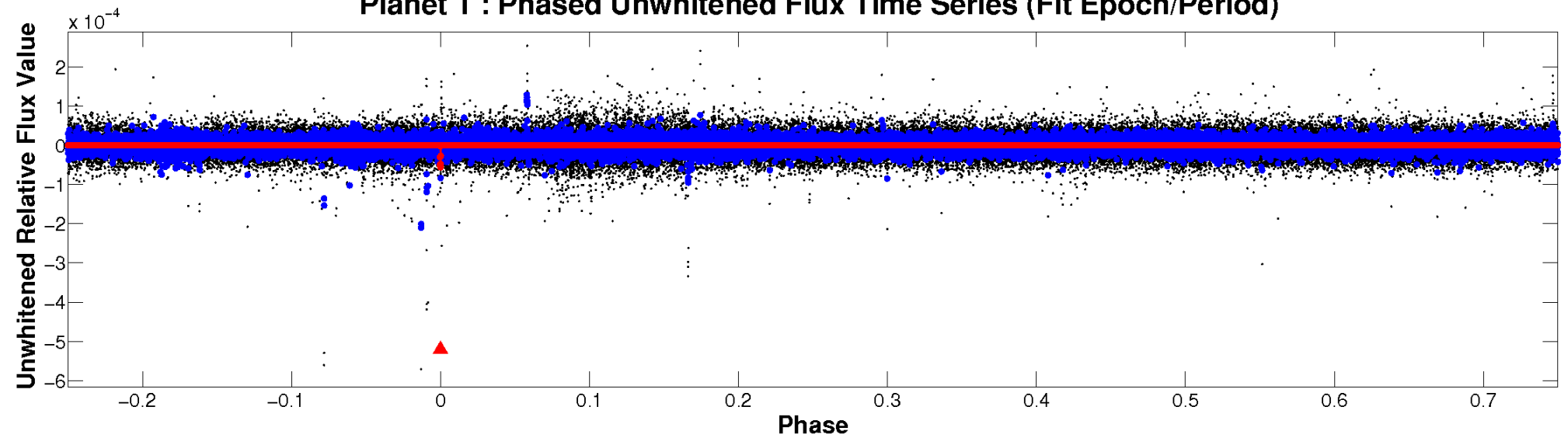
ALT Odd/Even

TCE 004160876-01

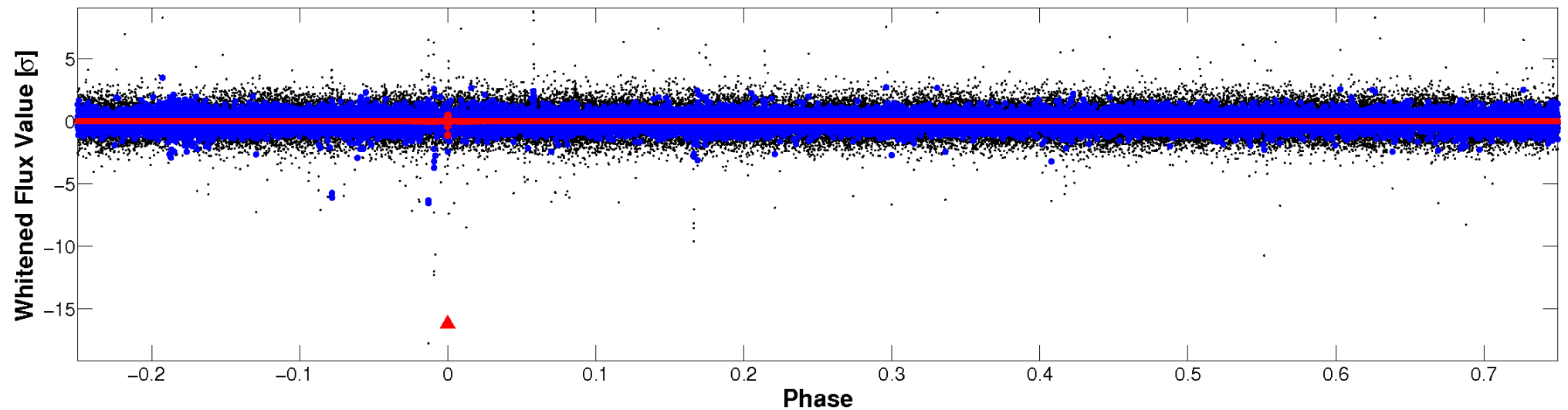


Non-Whitened Vs. Whitened Light Curve

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

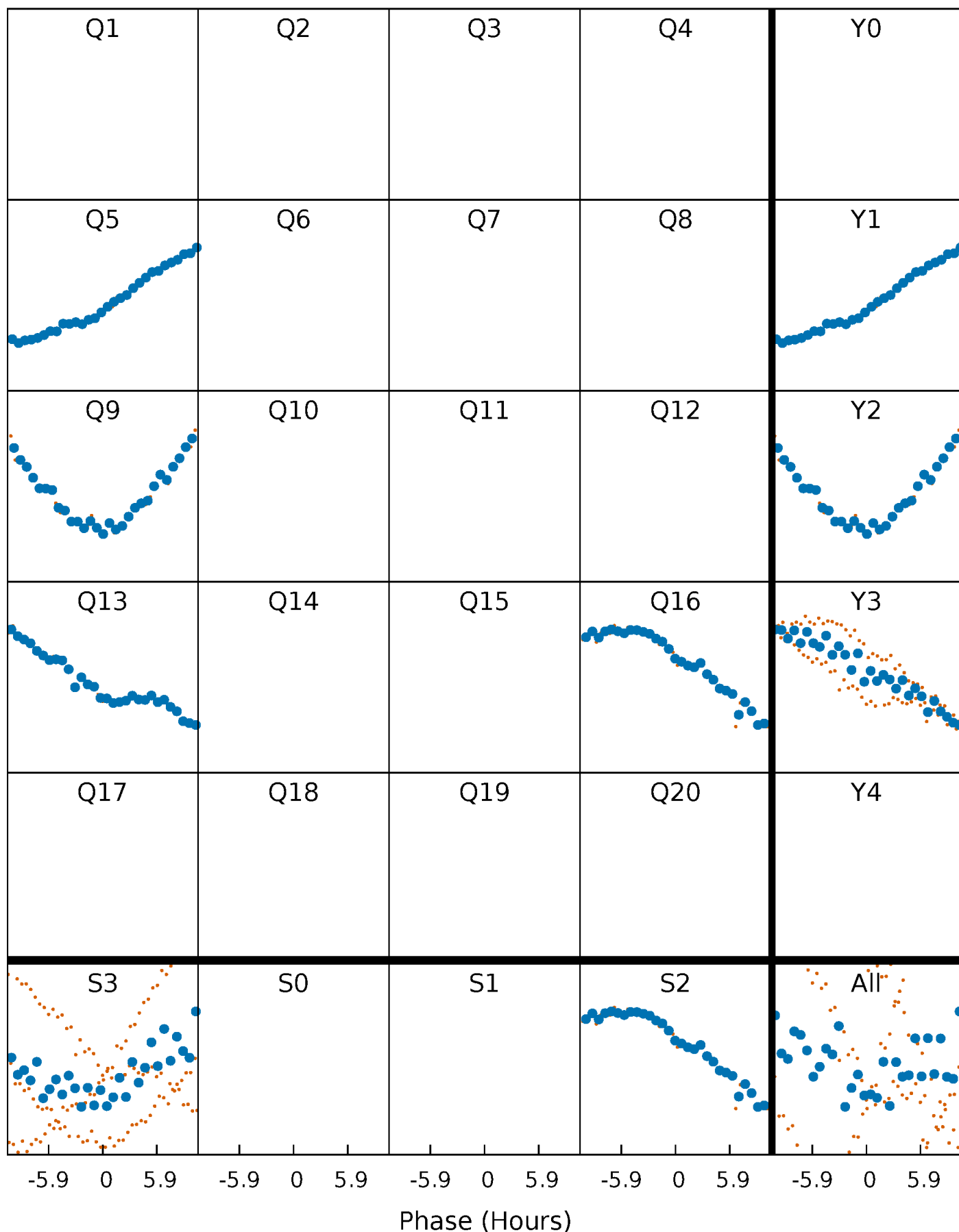


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



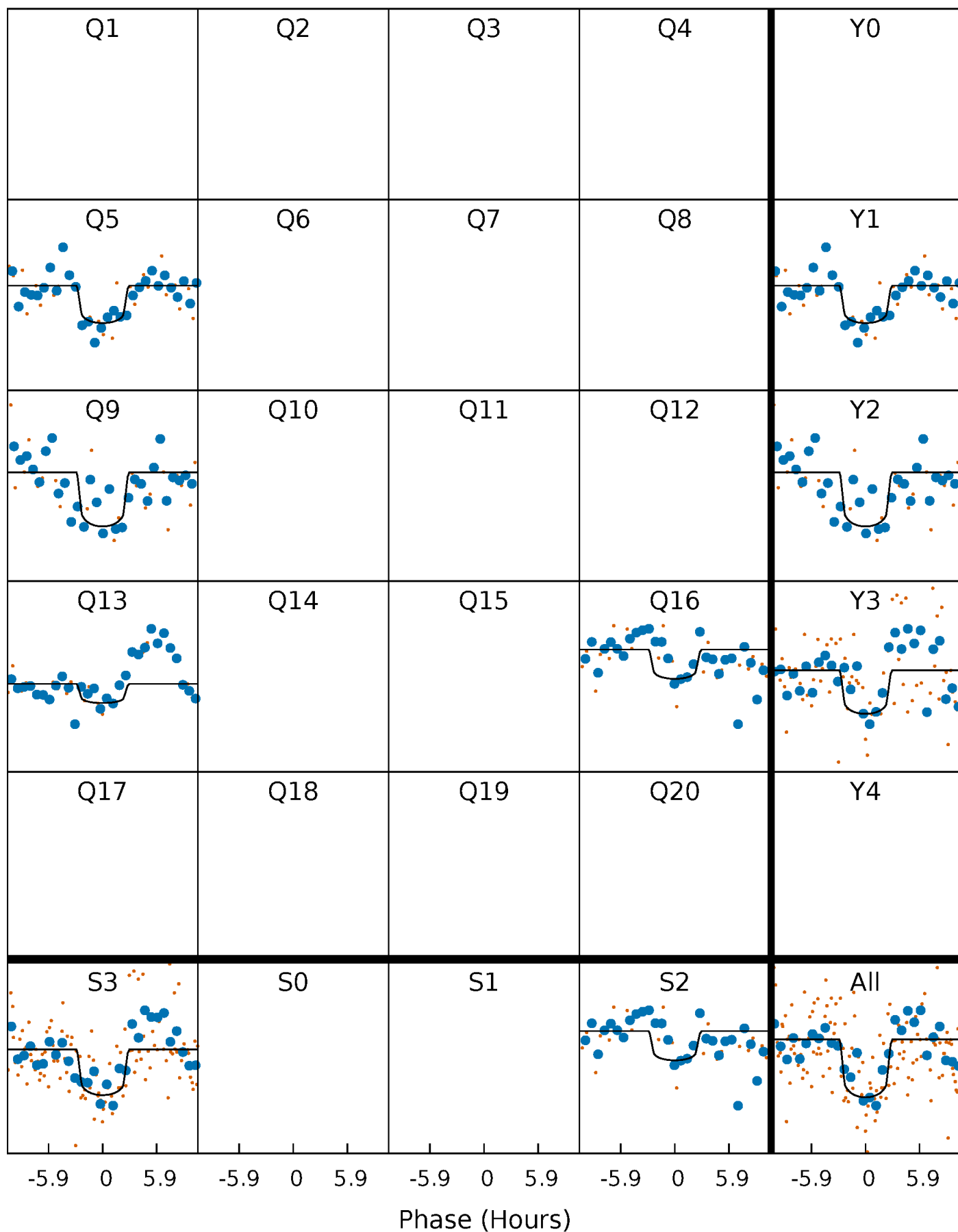
PDC Quarter-Phased Transit Curves

TCE 004160876-01 P=360.215063 Days $T_0=464.554448$ (BKJD)



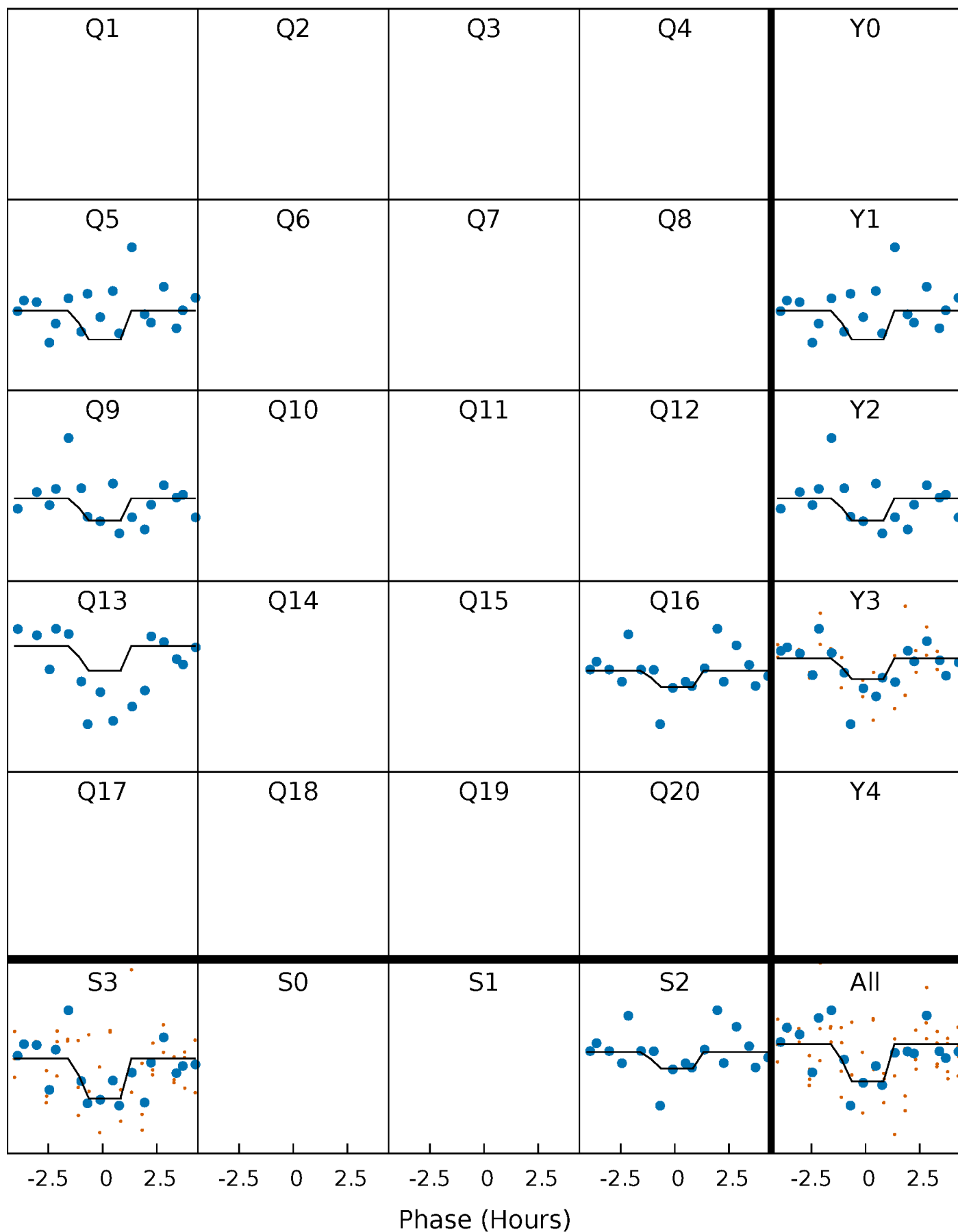
DV Quarter-Phased Transit Curves

TCE 004160876-01 P=360.215063 Days $T_0=464.554448$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

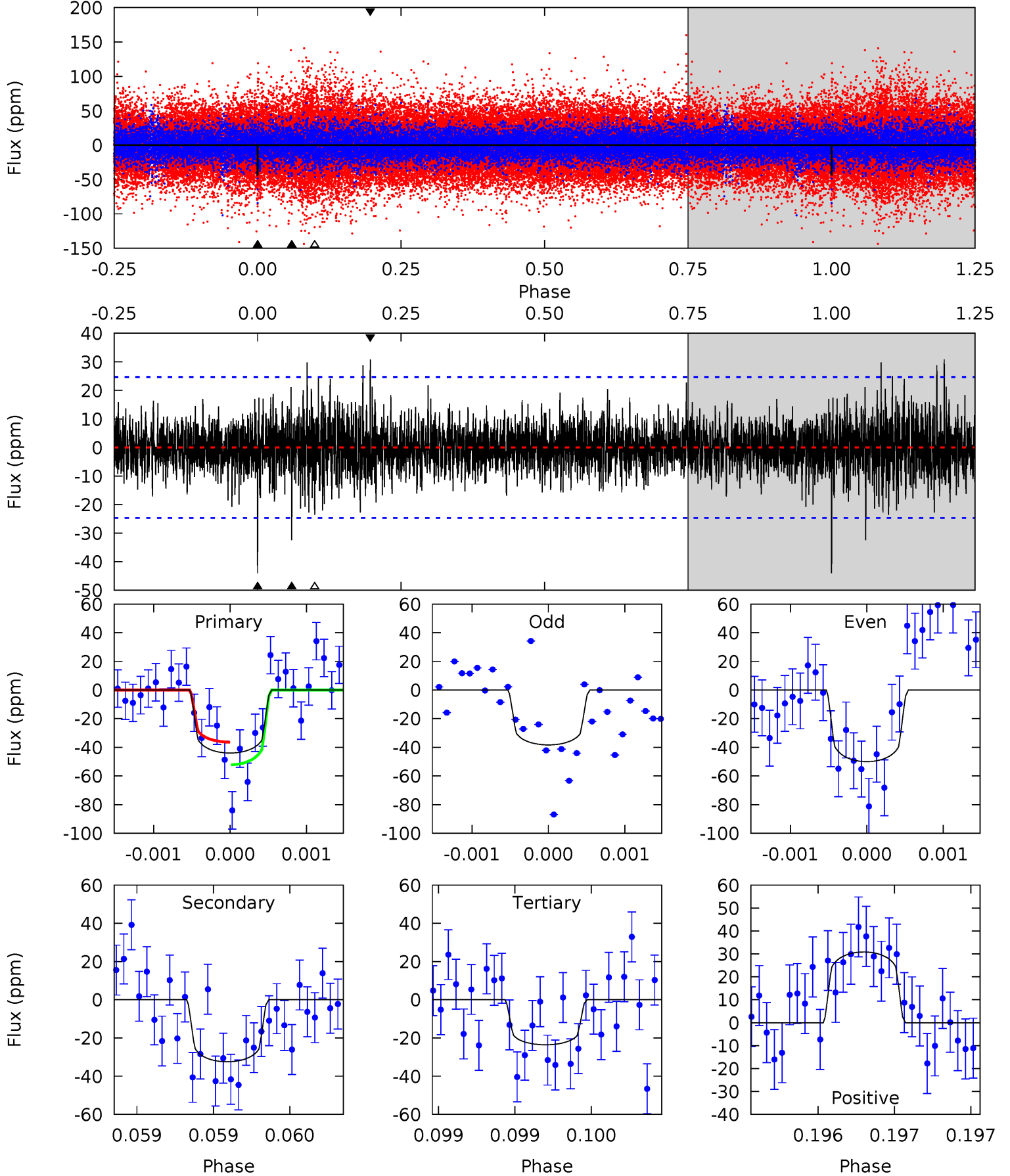
TCE 004160876-01 P=360.223186 Days $T_0=464.563883$ (BKJD)



DV Model-Shift Uniqueness Test

004160876-01, P = 360.215063 Days, E = 104.339385 Days

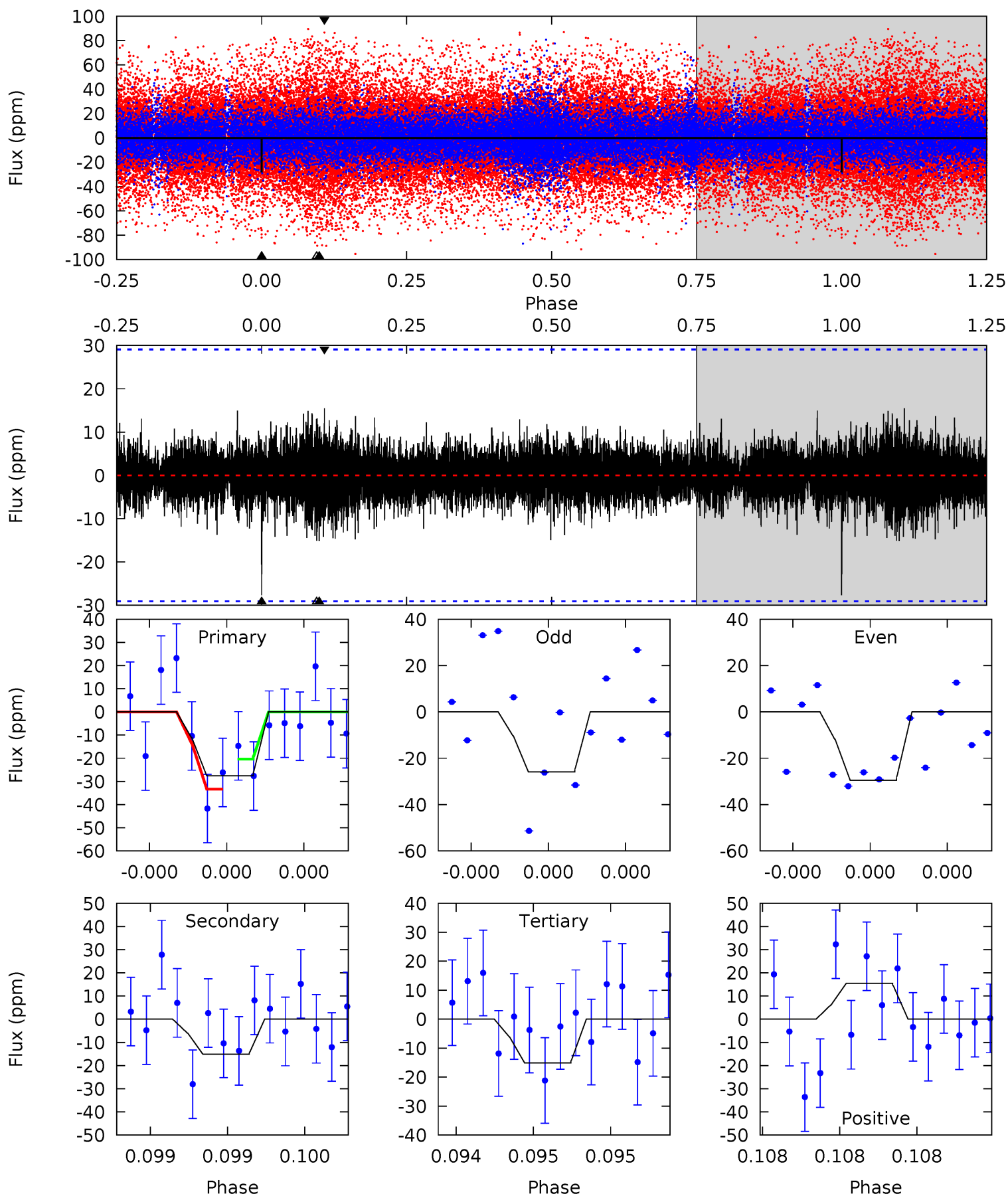
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.87	7.28	5.28	6.92	5.53	3.42	1.43	4.59	2.95	2.00	0.36	1.29	1.04	0.41	1.78



Alt Model-Shift Uniqueness Test

004160876-01, P = 360.223186 Days, E = 104.340697 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.39	2.95	2.94	3.02	5.67	3.63	0.65	2.45	2.37	0.01	-0.07	0.36	1.16	0.36	1.22



Stellar Parameters For KIC 004160876

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	8511^{+233}_{-401}	$3.664^{+0.480}_{-0.120}$	$0.070^{+0.300}_{-0.500}$	$3.717^{+0.976}_{-1.953}$	$2.327^{+0.372}_{-0.691}$	$0.064^{+0.304}_{-0.029}$
	+3%/-5%	+13%/-3%	+429%/-714%	+26%/-53%	+16%/-30%	+477%/-45%
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 004160876-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-32 ± 4	$2.65^{+1.72}_{-1.23}$	848^{+71}_{-109}	7122^{+3170}_{-1361}	4144^{+10442}_{-2481}
Alt.	-15 ± 5	$1.94^{+1.33}_{-1.13}$	846^{+75}_{-110}	6841^{+5087}_{-1525}	3785^{+18135}_{-2588}

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

DV Centroid Data

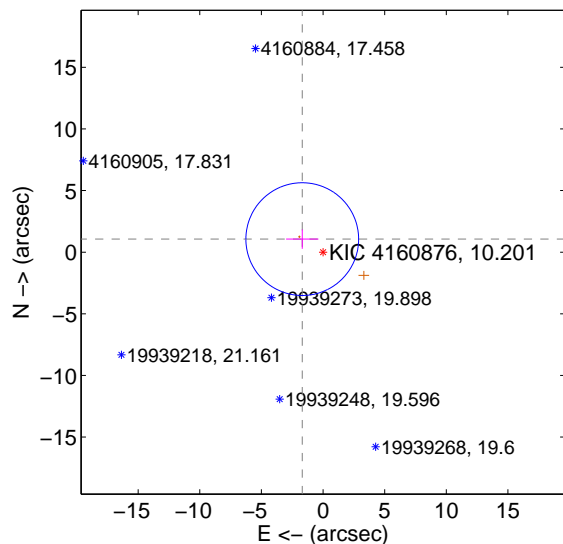
Supplemental centroid analysis for 004160876-01. **Kepler magnitude: 10.20.** Transit SNR 7.10

There are 0 quarters with good PRF difference image offsets

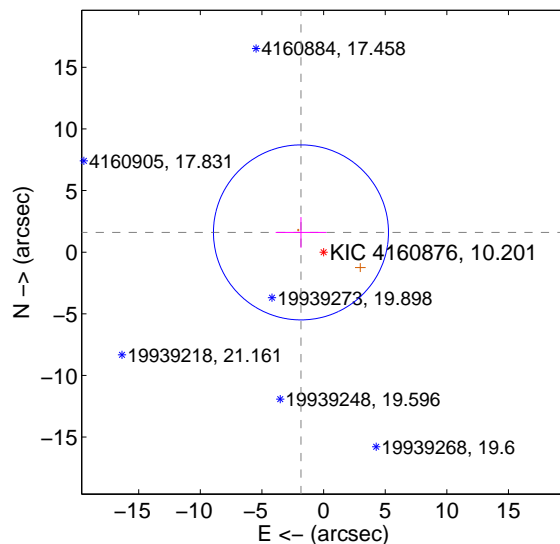
The direct PRF centroid is offset from the target star catalog position by about 0.71 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.991 ± 1.525	1.31	1.686 ± 1.309	1.060 ± 0.786
PRF-fit source offset from KIC position	2.438 ± 2.367	1.03	1.835 ± 2.058	1.605 ± 1.244
photometric centroid source offset	5.40 ± 3.65	1.48	-2.00 ± 1.92	-5.02 ± 3.86

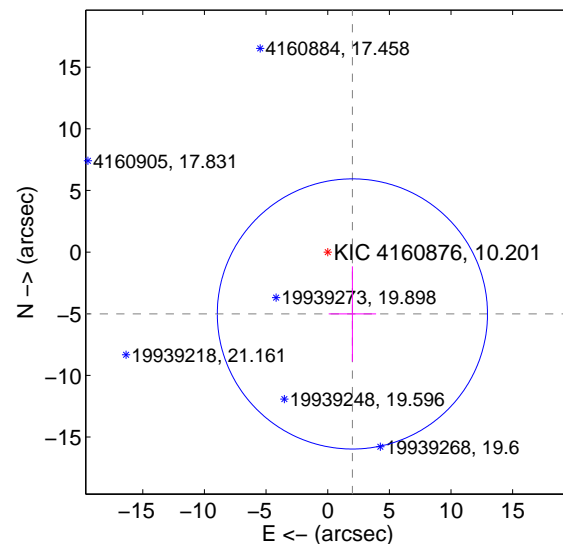
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

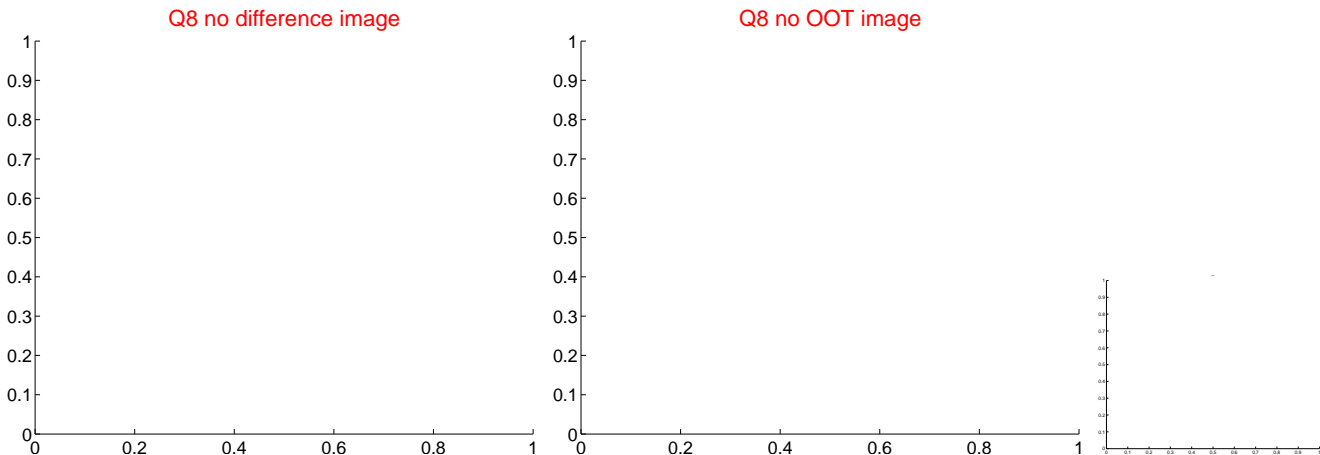
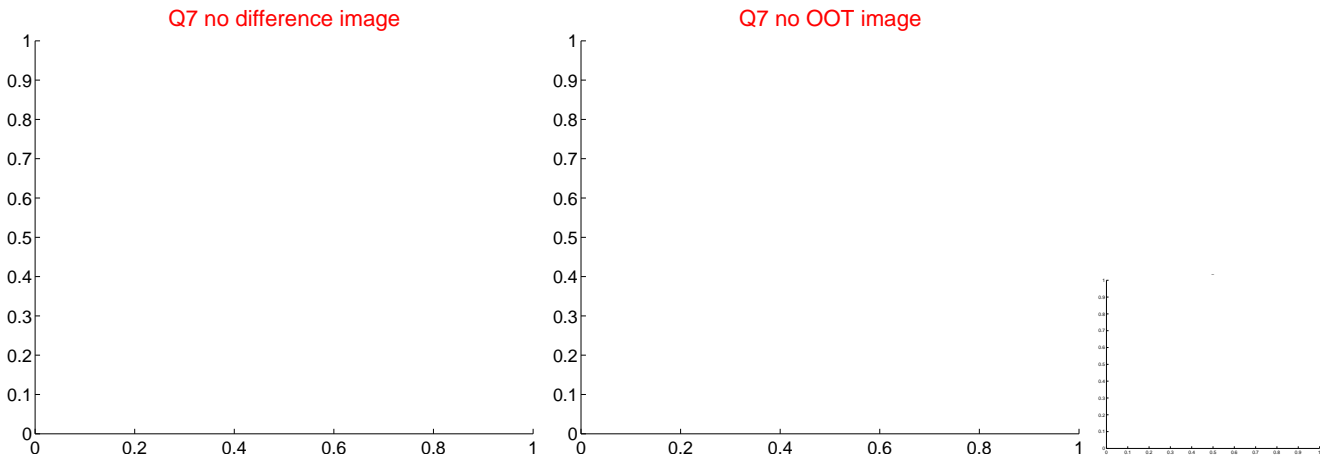
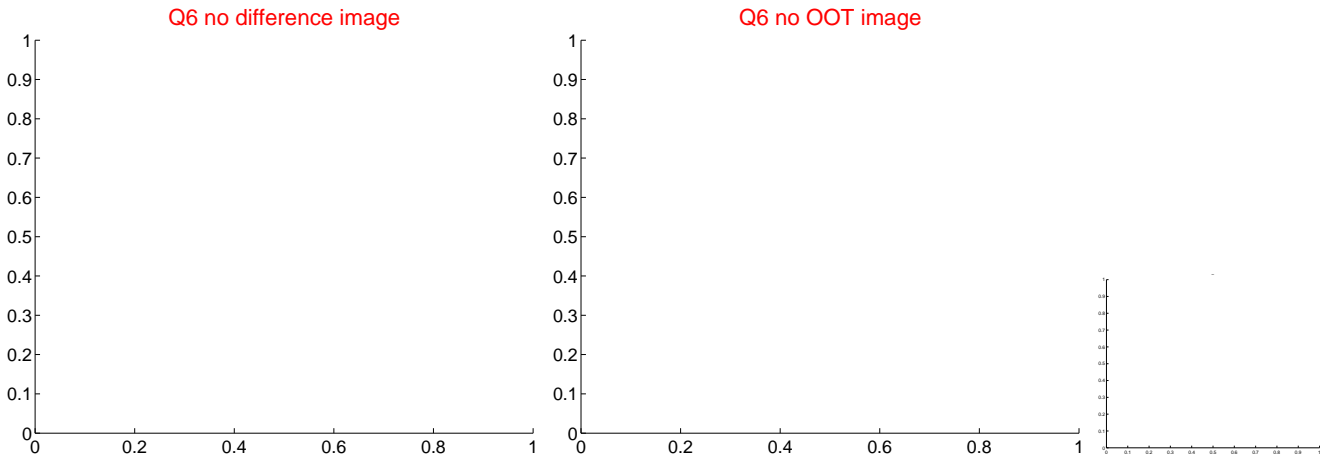
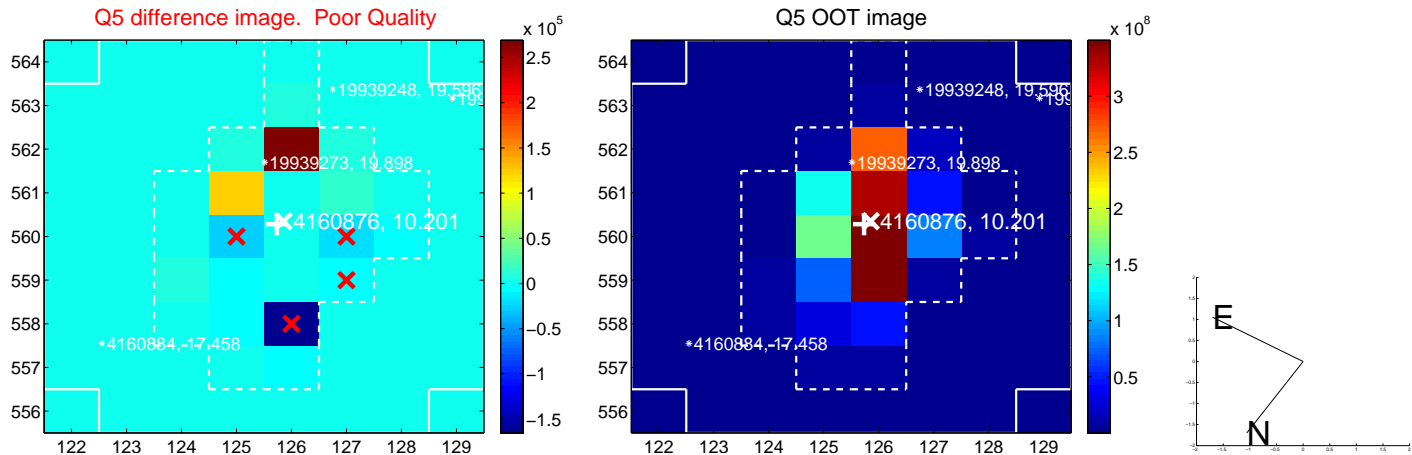


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

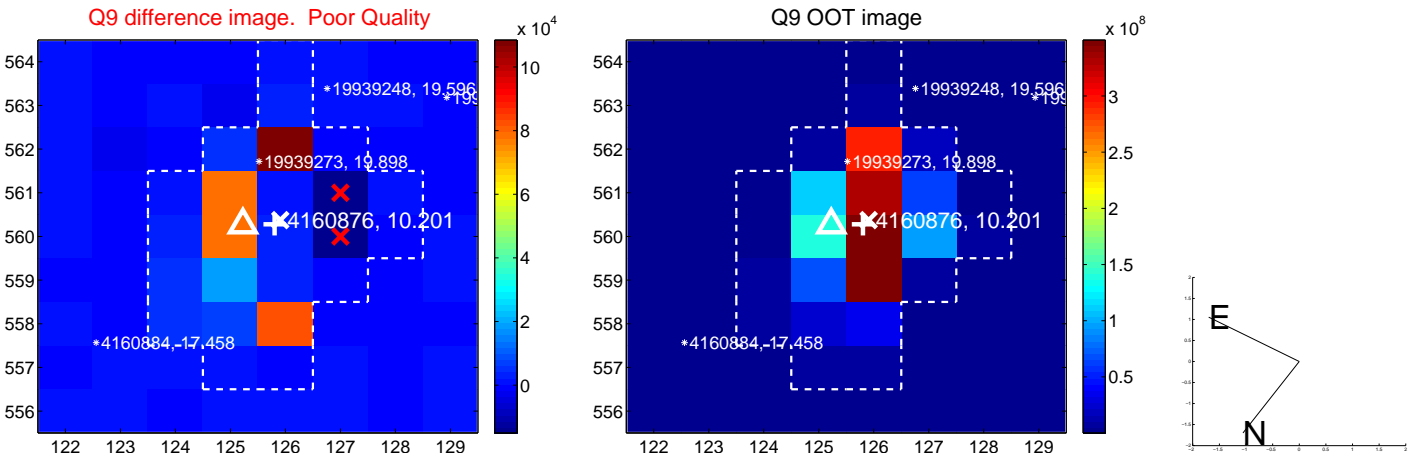
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



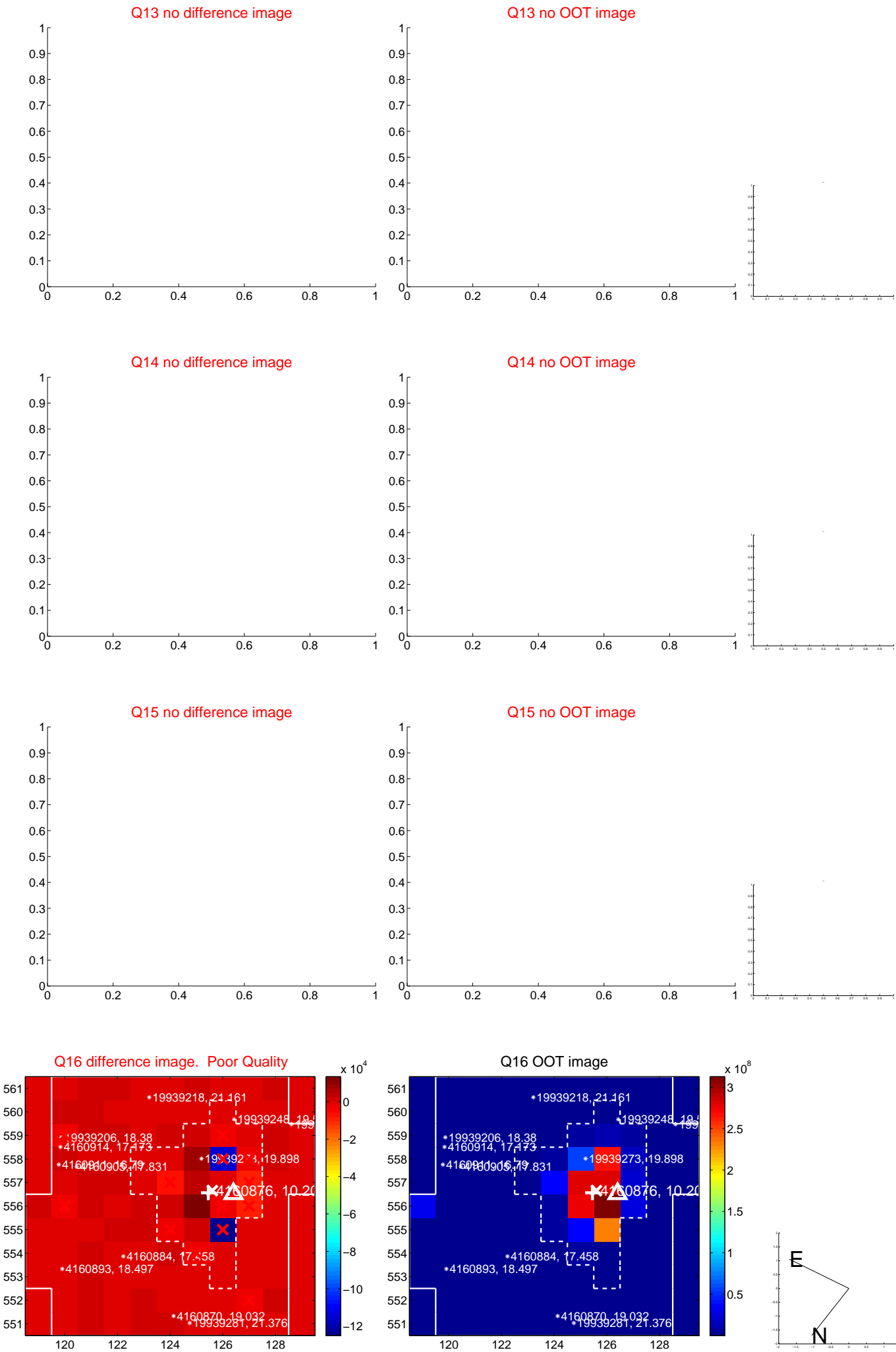
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



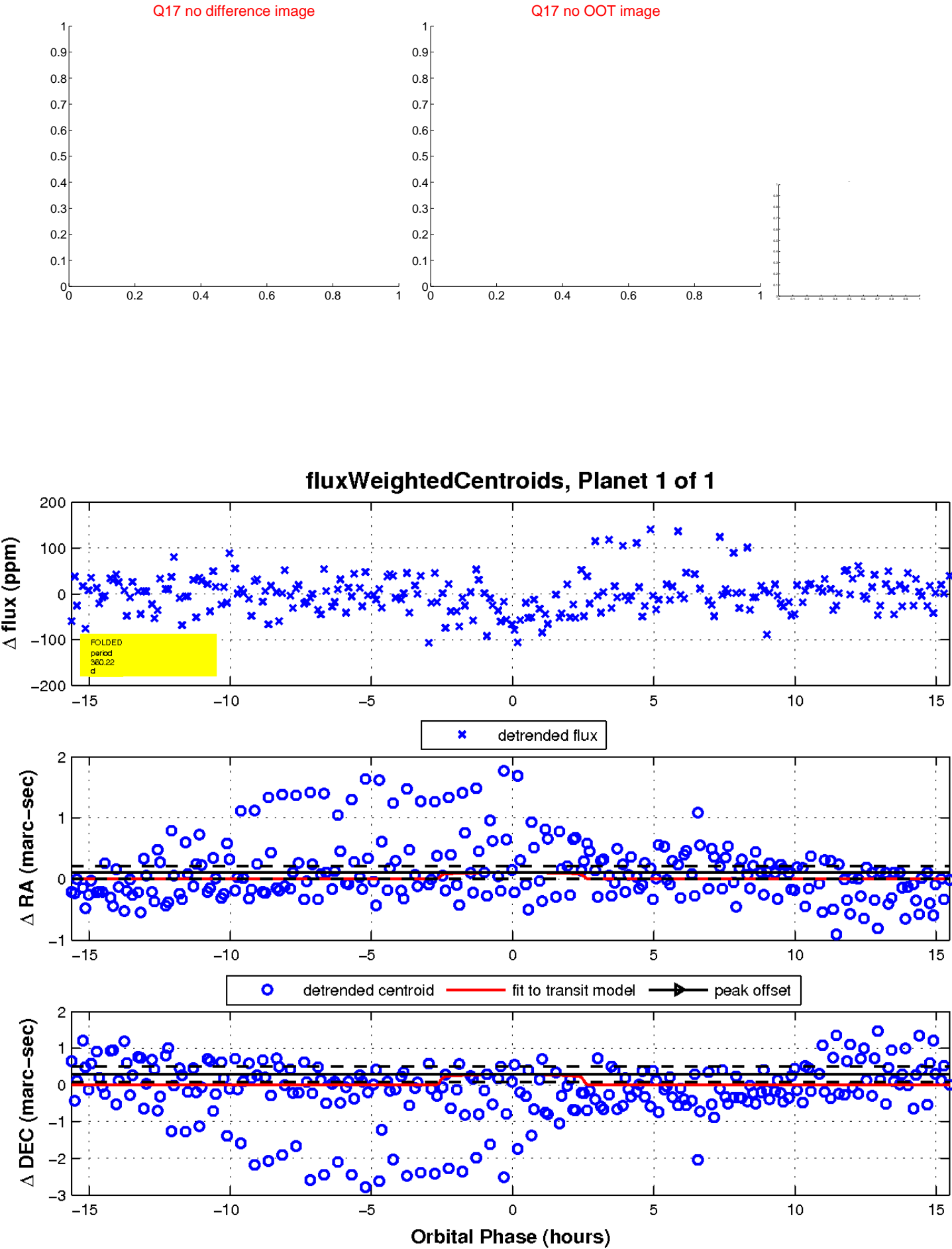
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

