

KIC 006023859

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})
006023859-01	OBS	3414.01	27.009805	141.289793	67173.7	1.972	734.8	607.3	0.53	3900	20.35	2.82

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006023859-01	OBS	FP	0.00	0	1	0	0	MOD_ODDEVEN_ALT—DEEP_V_SHAPED

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.

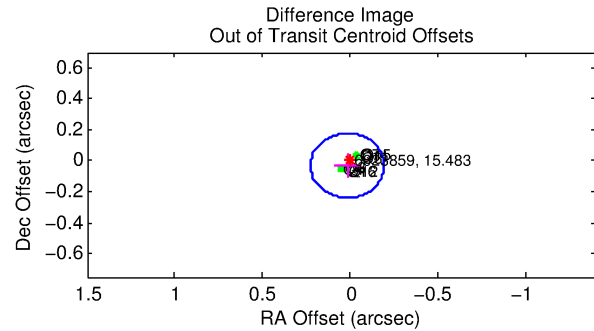
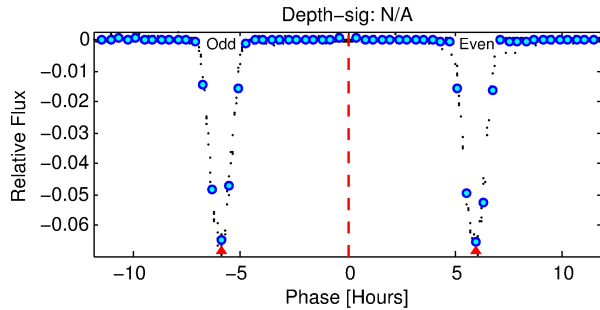
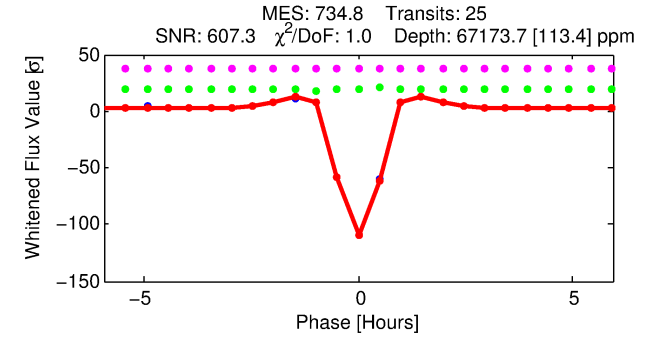
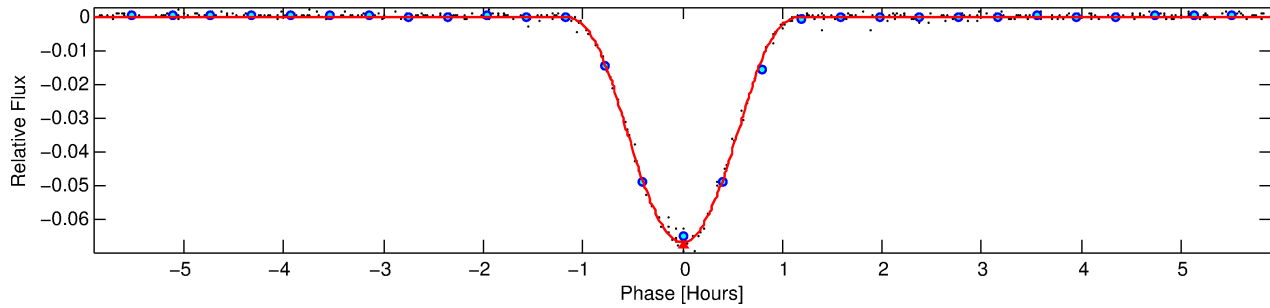
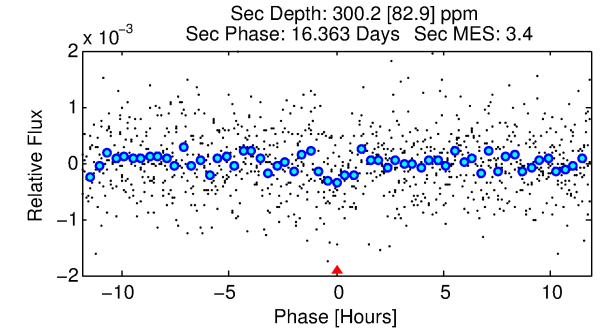
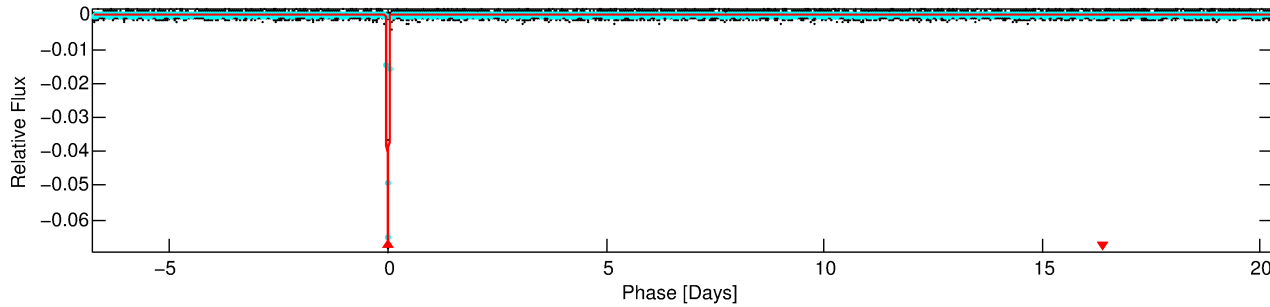
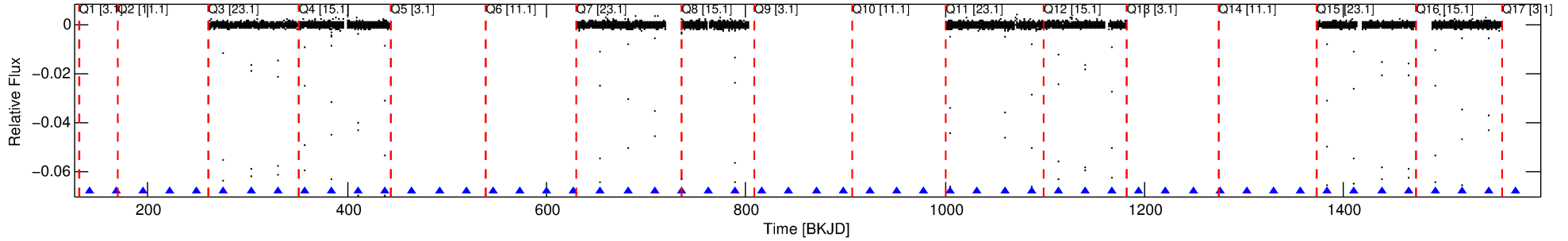
Ephemeris Match Information For 006023859-01

No Significant Match Found

DV One-Page Summary

KIC: 6023859 Candidate: 1 of 1 Period: 27.010 d
KOI: K03414.01 Corr: 0.997

Kp: 15.48 R*: 0.53 Rs Teff: 3900.0 K Logg: 4.73 Fe/H: -0.100



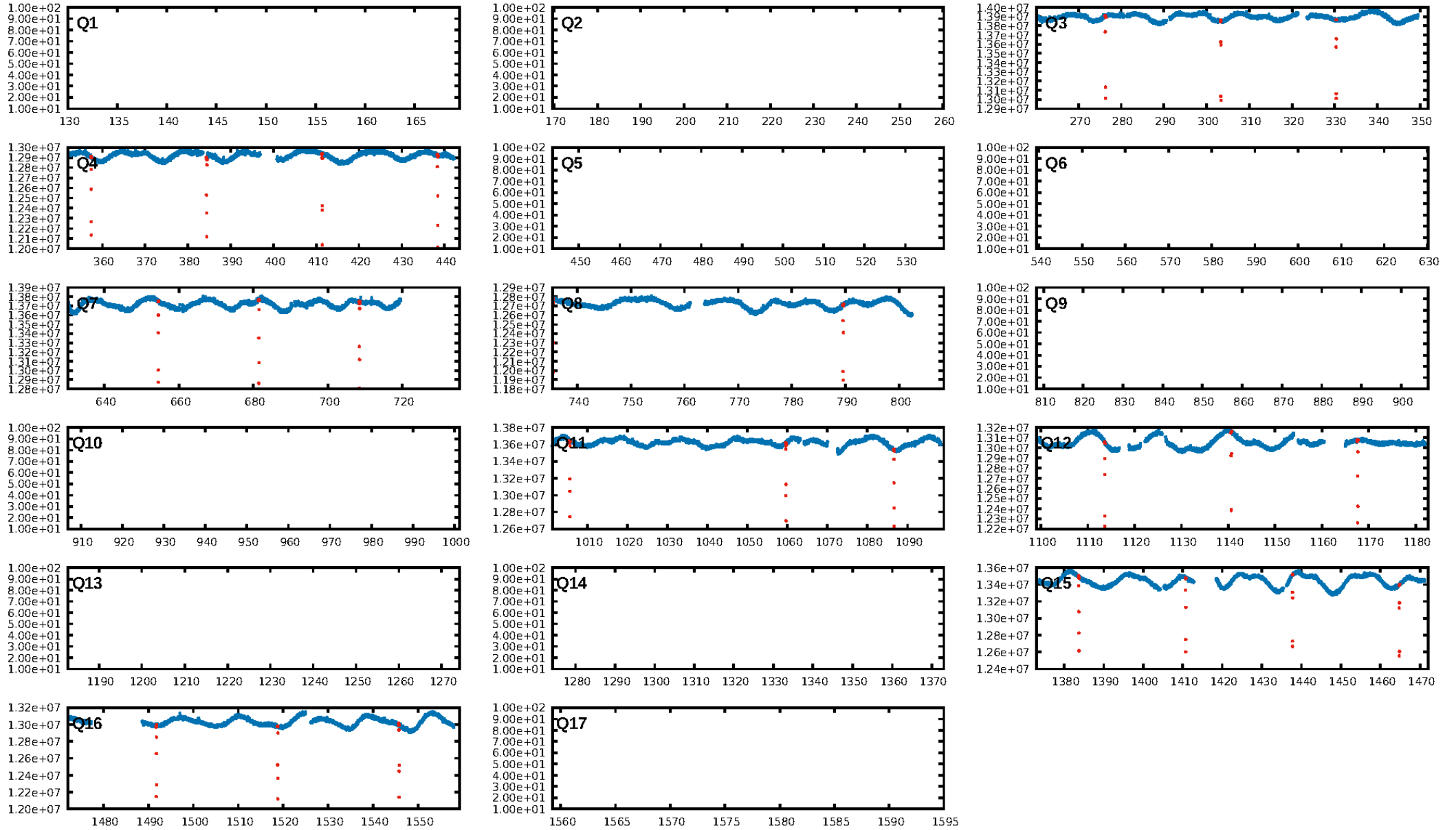
DV Fit Results:

Period = 27.00981 [0.00000] d
Epoch = 141.2898 [0.0001] BKJD
Rp/R* = 0.3492 [0.0447]
a/R* = 104.55 [0.53]
b = 0.91 [0.07]
Seff = 2.82 [0.50]
Teq = 330 [15] K
Rp = 20.35 [3.32] Re
a = 0.1448 [0.0112] AU
Ag = 8.37 [3.26] [2.26σ]
Teffp = 869 [88] K [6.07σ]

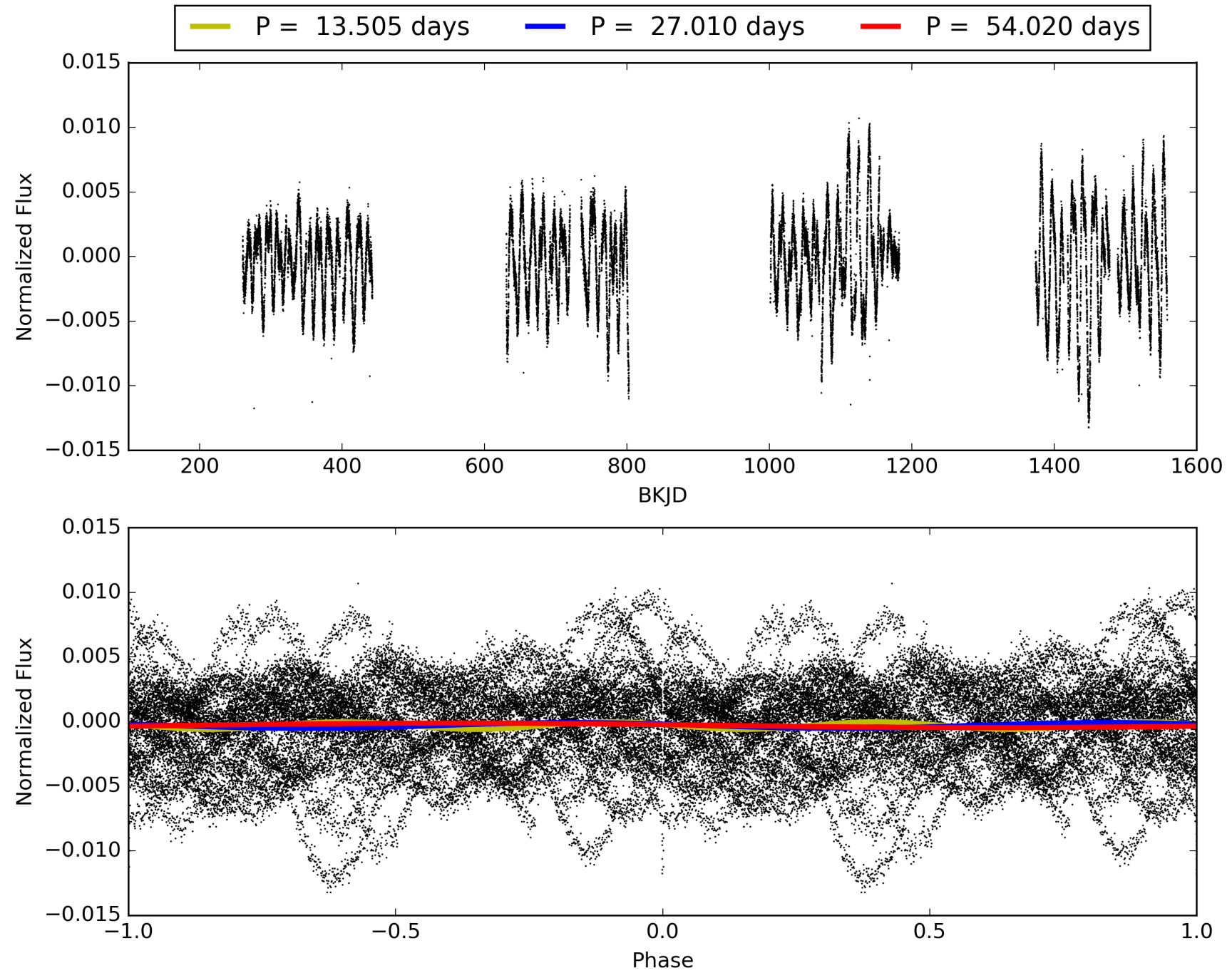
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [25/25]
GhostDiagnostic-chr: 3.438
Centroid-sig: 1.3%
Centroid-so: 0.348 arcsec [19.15σ]
OotOffset-rm: 0.035 arcsec [0.51σ]
KicOffset-rm: 0.176 arcsec [1.75σ]
OotOffset-st: 0/4/4/0 [8]
KicOffset-st: 0/4/4/0 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 1.00 [8/8]

TCE 006023859-01, PDC Light Curves

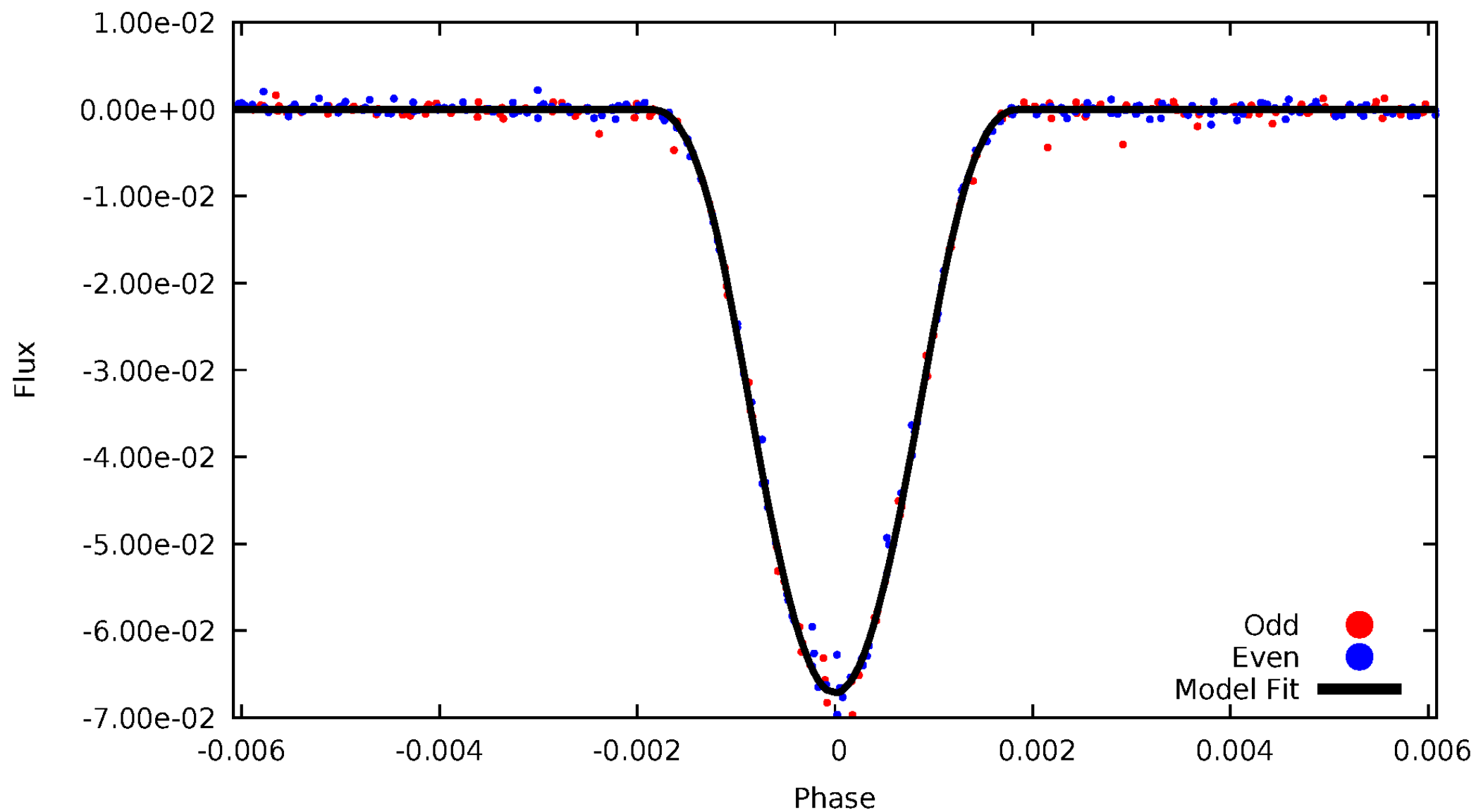


TCE 006023859-01



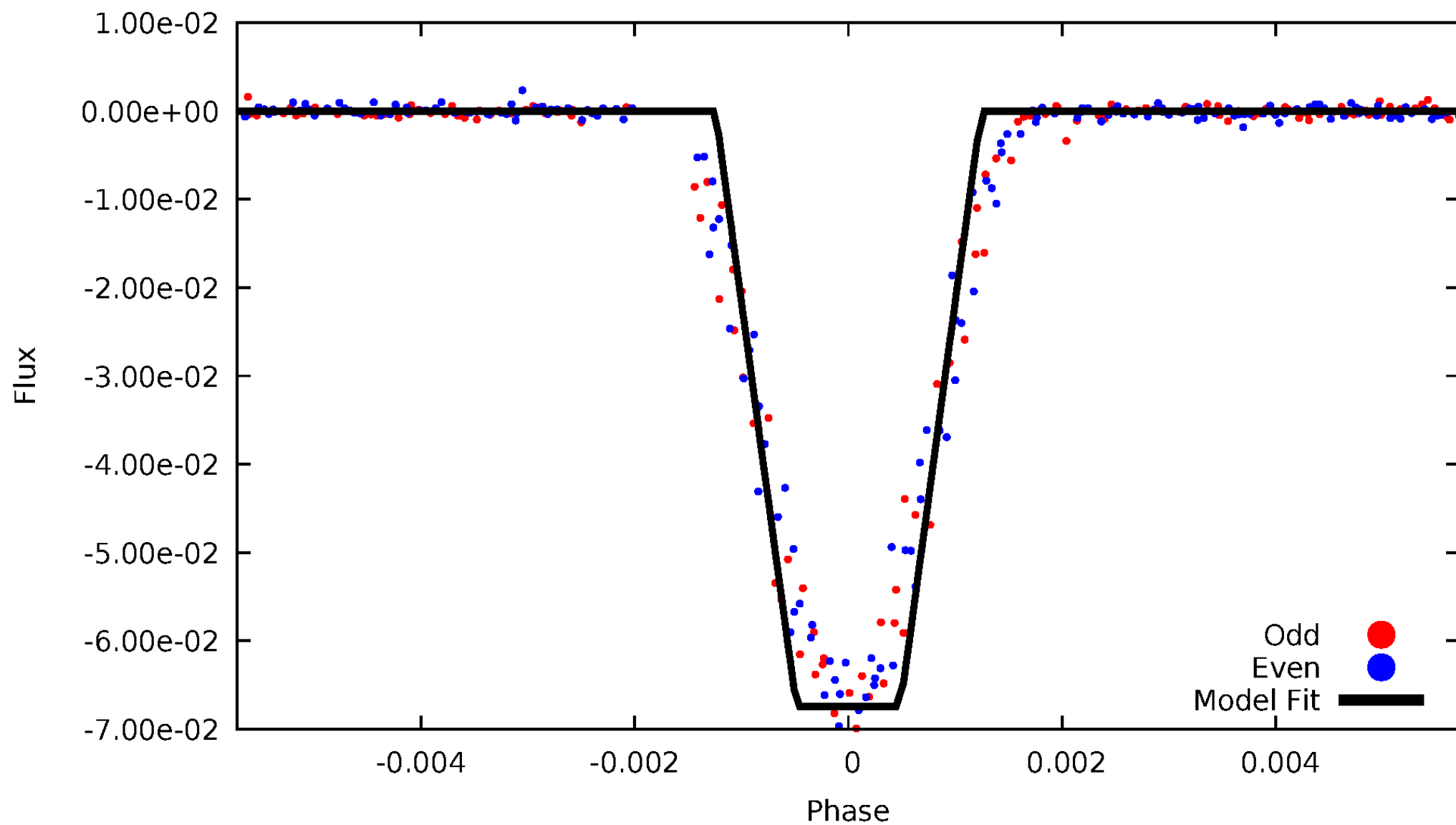
DV Odd/Even

TCE 006023859-01



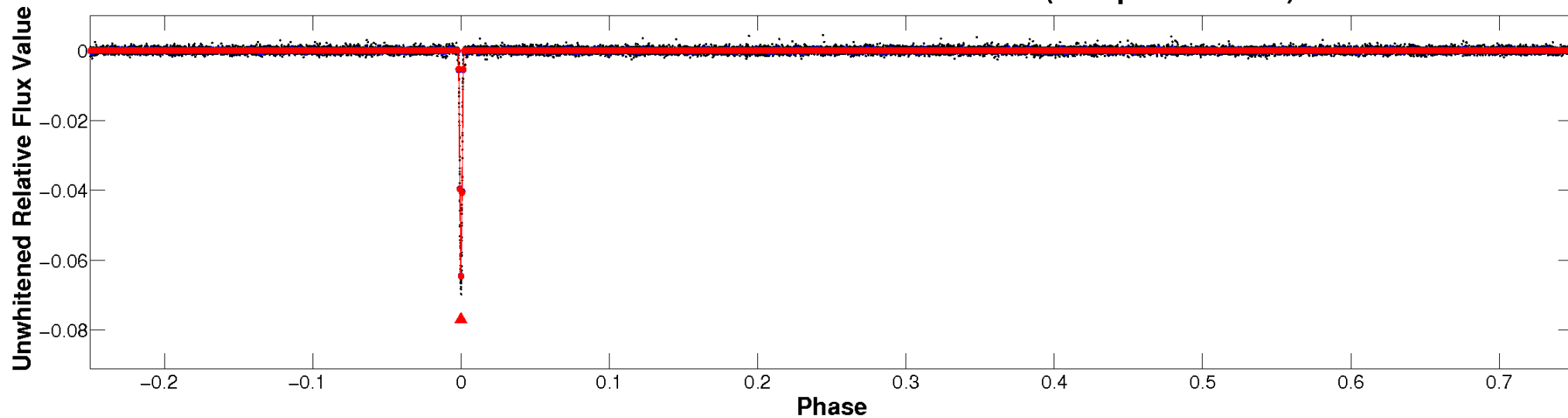
ALT Odd/Even

TCE 006023859-01

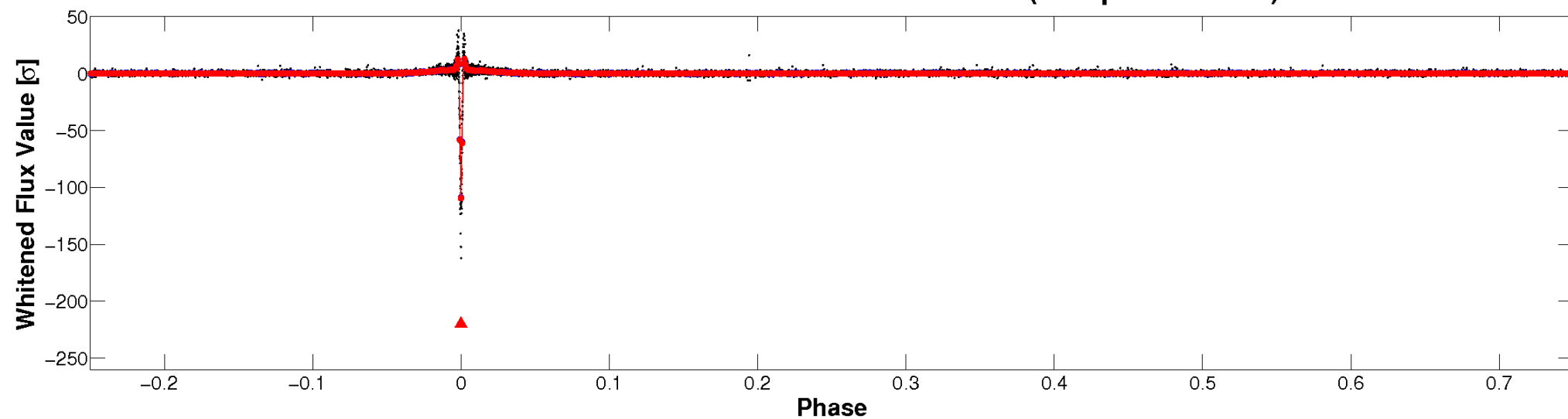


Non-Whitened Vs. Whitened Light Curve

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

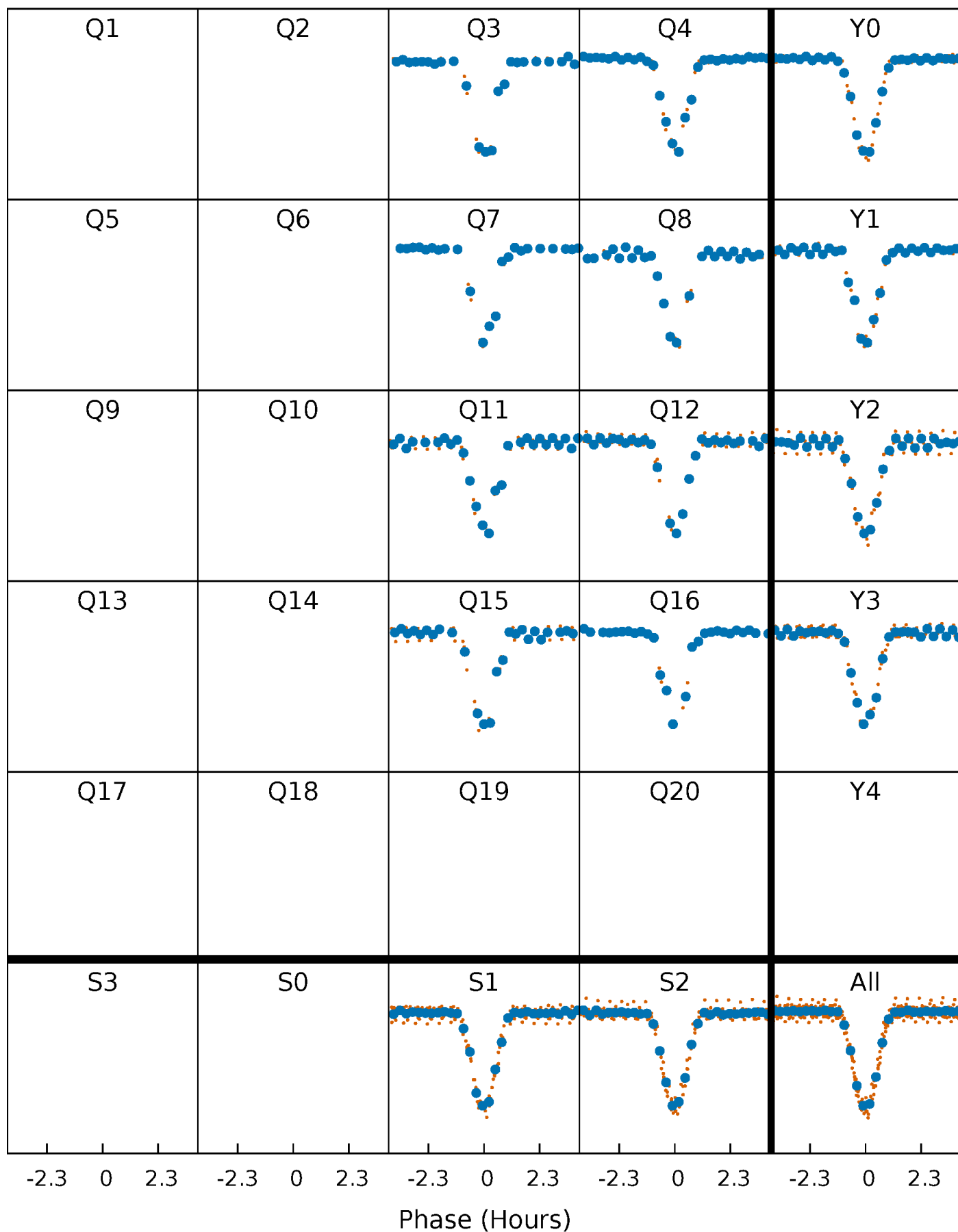


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



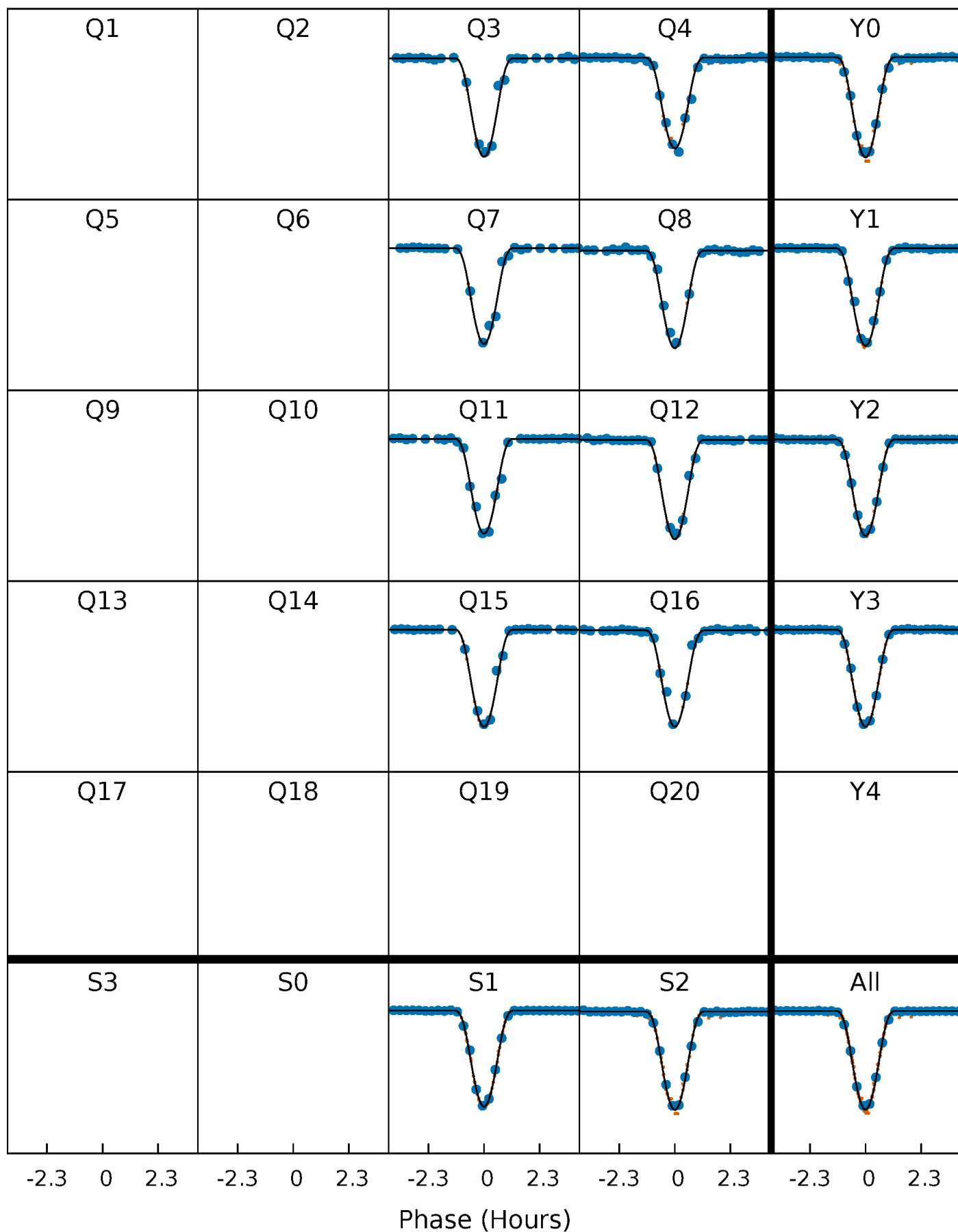
PDC Quarter-Phased Transit Curves

TCE 006023859-01 P= 27.009805 Days $T_0=141.289793$ (BKJD)



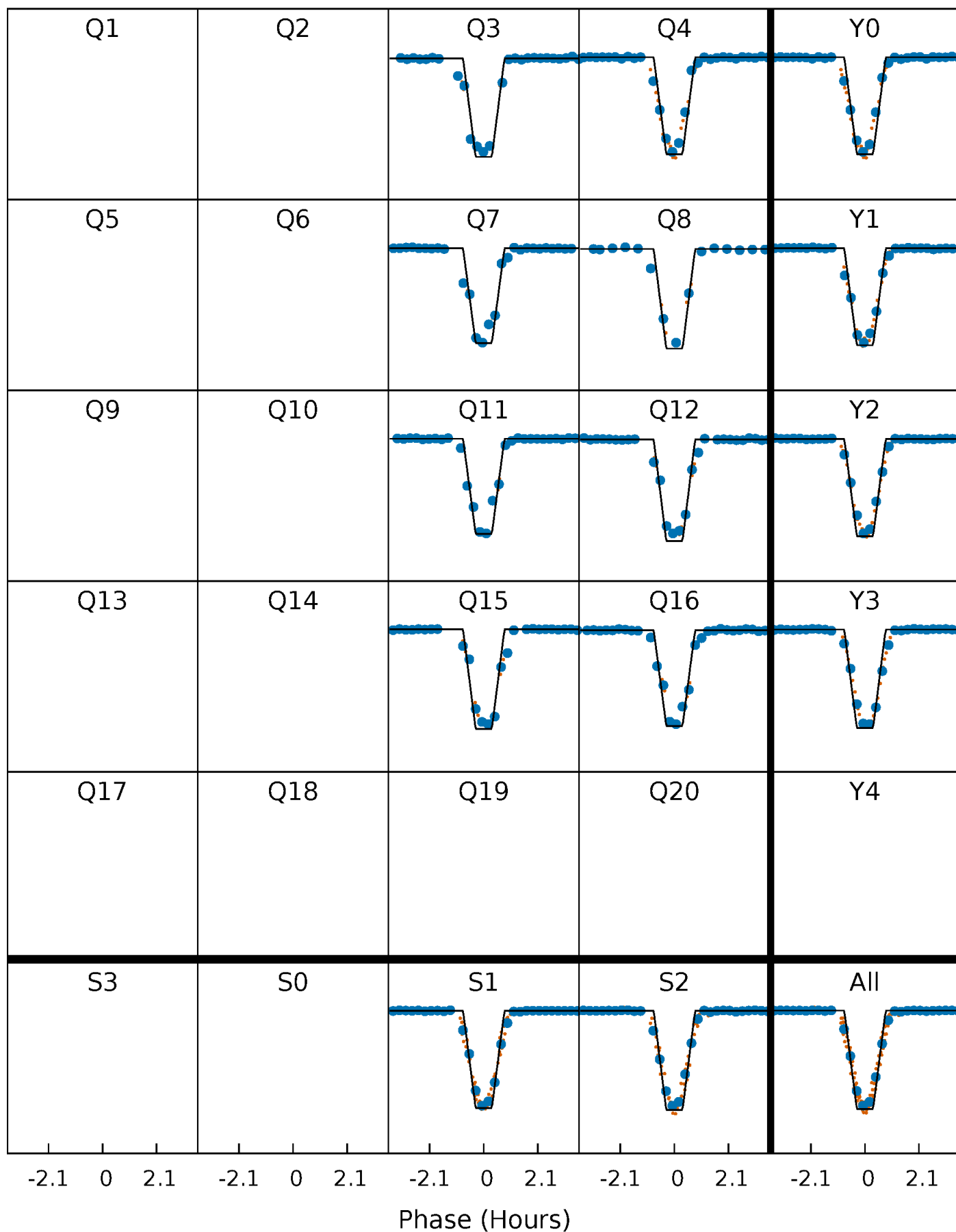
DV Quarter-Phased Transit Curves

TCE 006023859-01 P= 27.009805 Days $T_0=141.289793$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

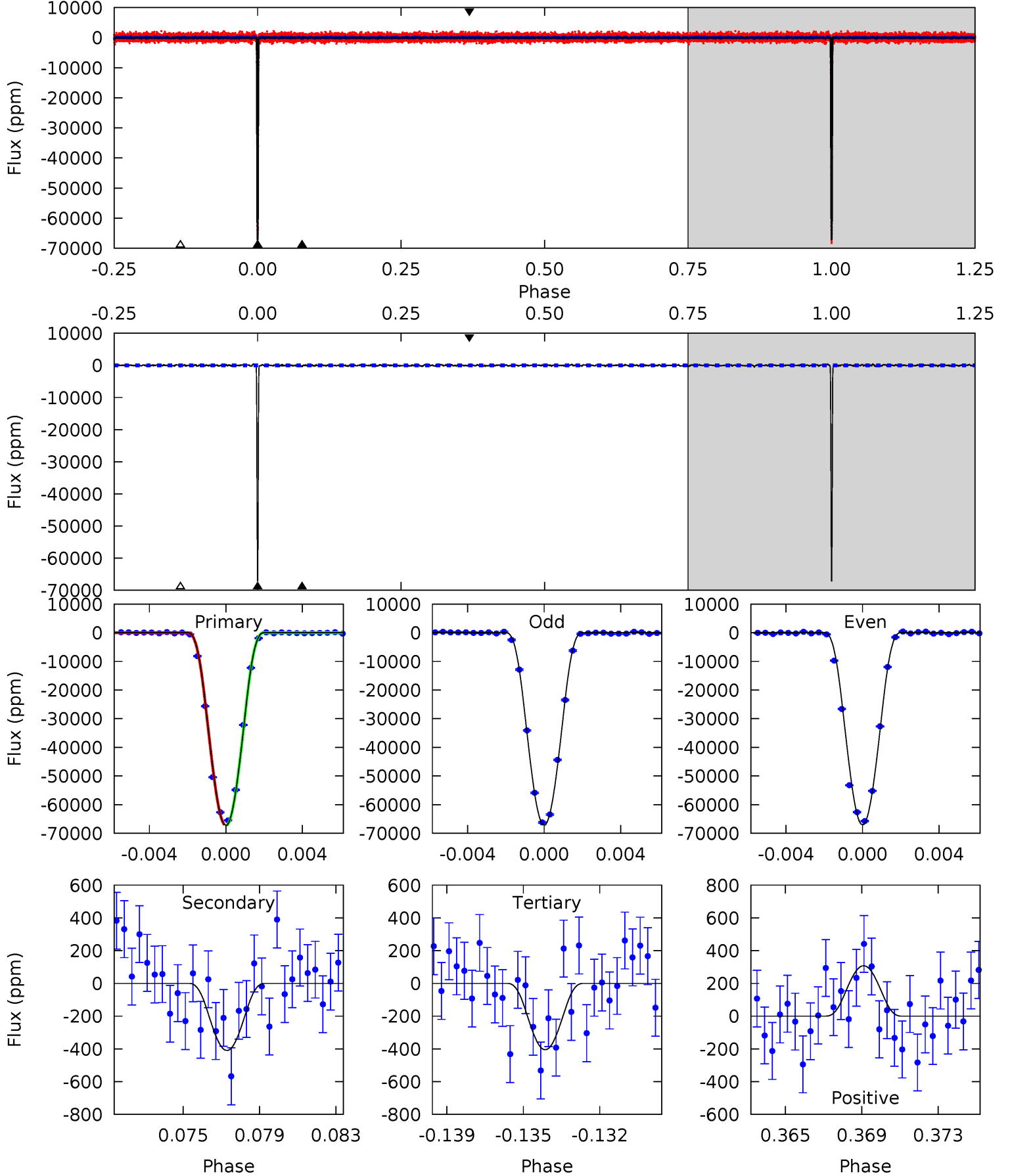
TCE 006023859-01 P= 27.009662 Days $T_0=141.294176$ (BKJD)



DV Model-Shift Uniqueness Test

006023859-01, P = 27.009805 Days, E = 141.289793 Days

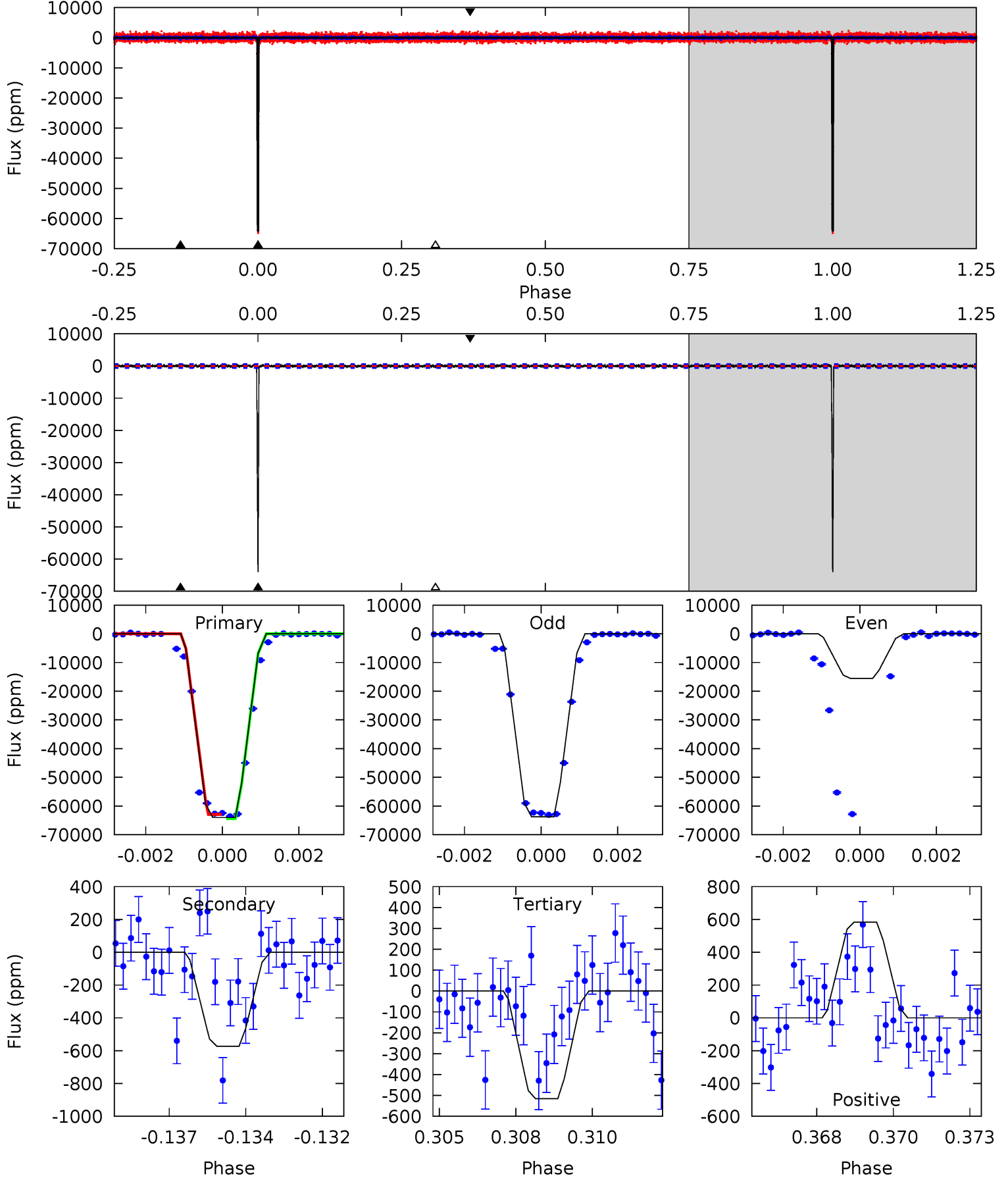
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1250	7.62	7.53	5.72	5.21	2.90	2.00	1243	1245	0.09	1.90	0.94	0.99	0.01	2.69



Alt Model-Shift Uniqueness Test

006023859-01, P = 27.009662 Days, E = 141.294176 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
565.3	5.05	4.55	5.15	5.29	3.03	1.24	560.8	560.2	0.51	-0.10	201.3	1.00	0.01	6.46



Stellar Parameters For KIC 006023859

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3900^{+117}_{-140}	$4.727^{+0.050}_{-0.041}$	$-0.100^{+0.200}_{-0.200}$	$0.534^{+0.044}_{-0.054}$	$0.555^{+0.041}_{-0.056}$	$5.136^{+1.226}_{-0.824}$
	+3%/-4%	+1%/-1%	+200%/-200%	+8%/-10%	+7%/-10%	+24%/-16%
Source	PHO2	PHO2	PHO2	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 006023859-01 / KOI 3414.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-409 ± 54	$20.35^{+2.79}_{-2.79}$	460^{+16}_{-17}	1875^{+62}_{-61}	11^{+4}_{-3}
Alt.	-572 ± 113	$15.21^{+2.63}_{-2.51}$	461^{+17}_{-18}	2062^{+90}_{-93}	28^{+13}_{-9}

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 $A_{\text{obs}} \gg 1.0$

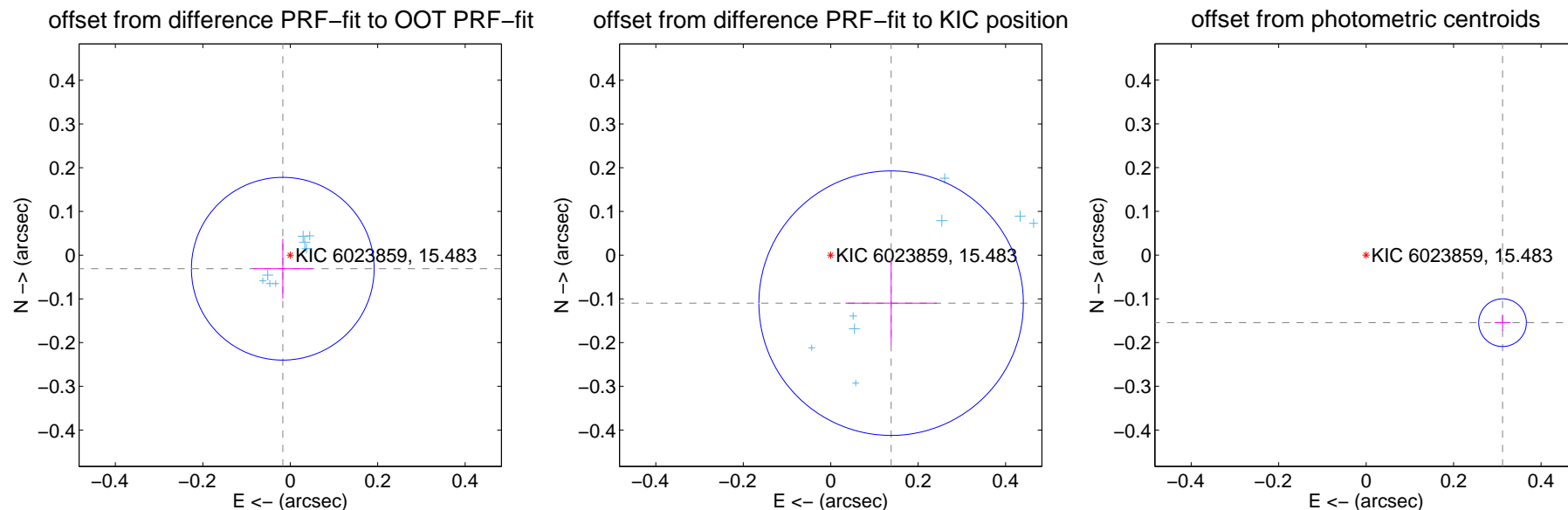
DV Centroid Data

Supplemental centroid analysis for 006023859-01. Kepler magnitude: 15.48. Transit SNR 607.30

There are 8 quarters with good PRF difference image offsets

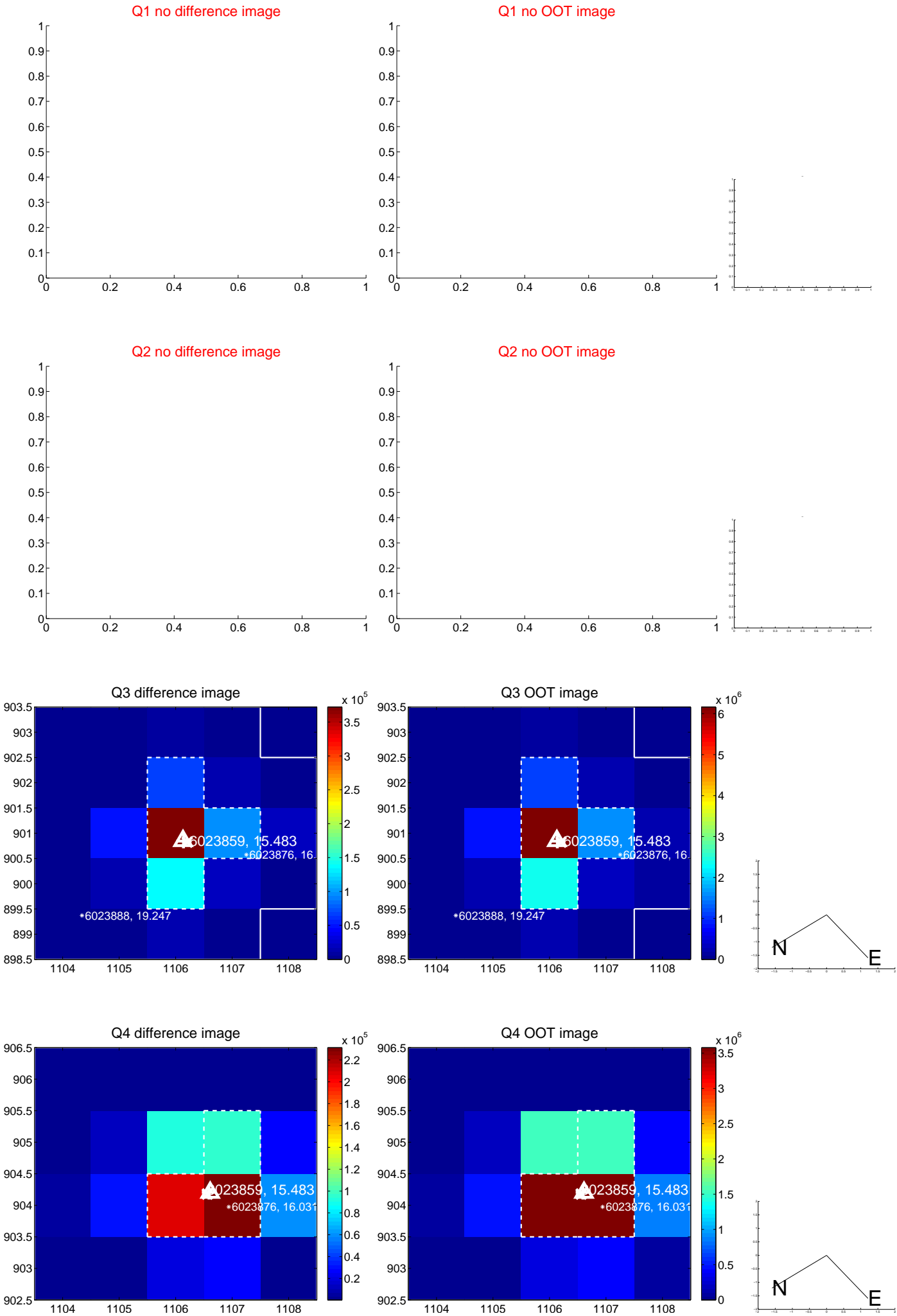
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.035 ± 0.070	0.51	0.017 ± 0.068	-0.031 ± 0.068
PRF-fit source offset from KIC position	0.176 ± 0.101	1.75	-0.138 ± 0.105	-0.110 ± 0.094
photometric centroid source offset	0.35 ± 0.02	19.15	-0.31 ± 0.02	-0.15 ± 0.02



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.

Q5 no difference image



Q5 no OOT image



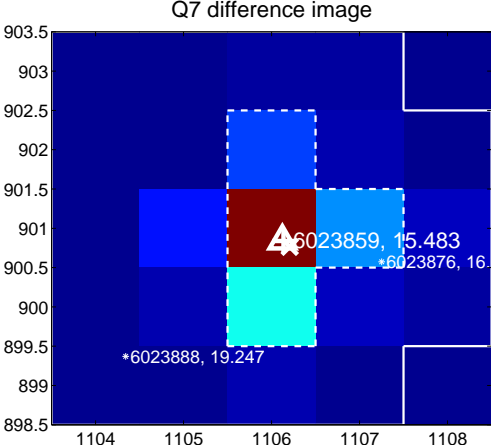
Q6 no difference image



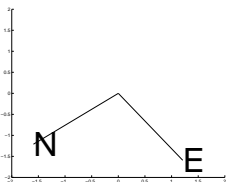
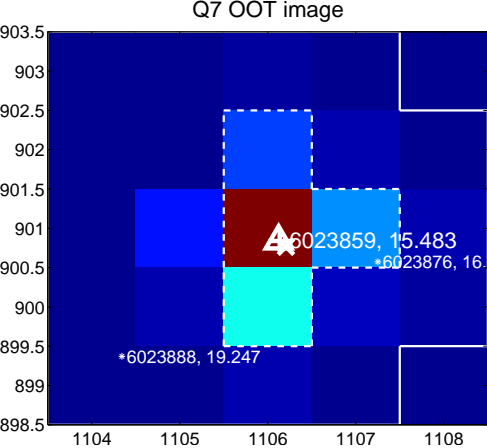
Q6 no OOT image



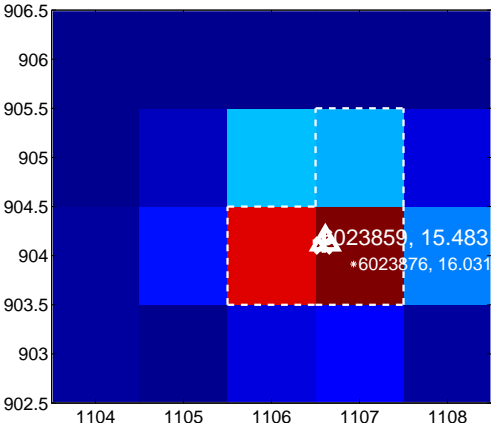
Q7 difference image



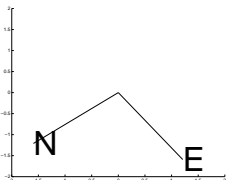
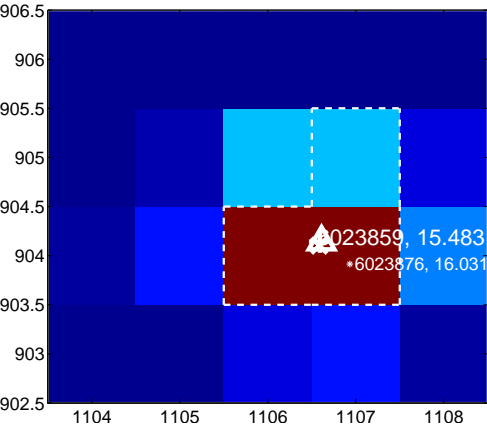
Q7 OOT image



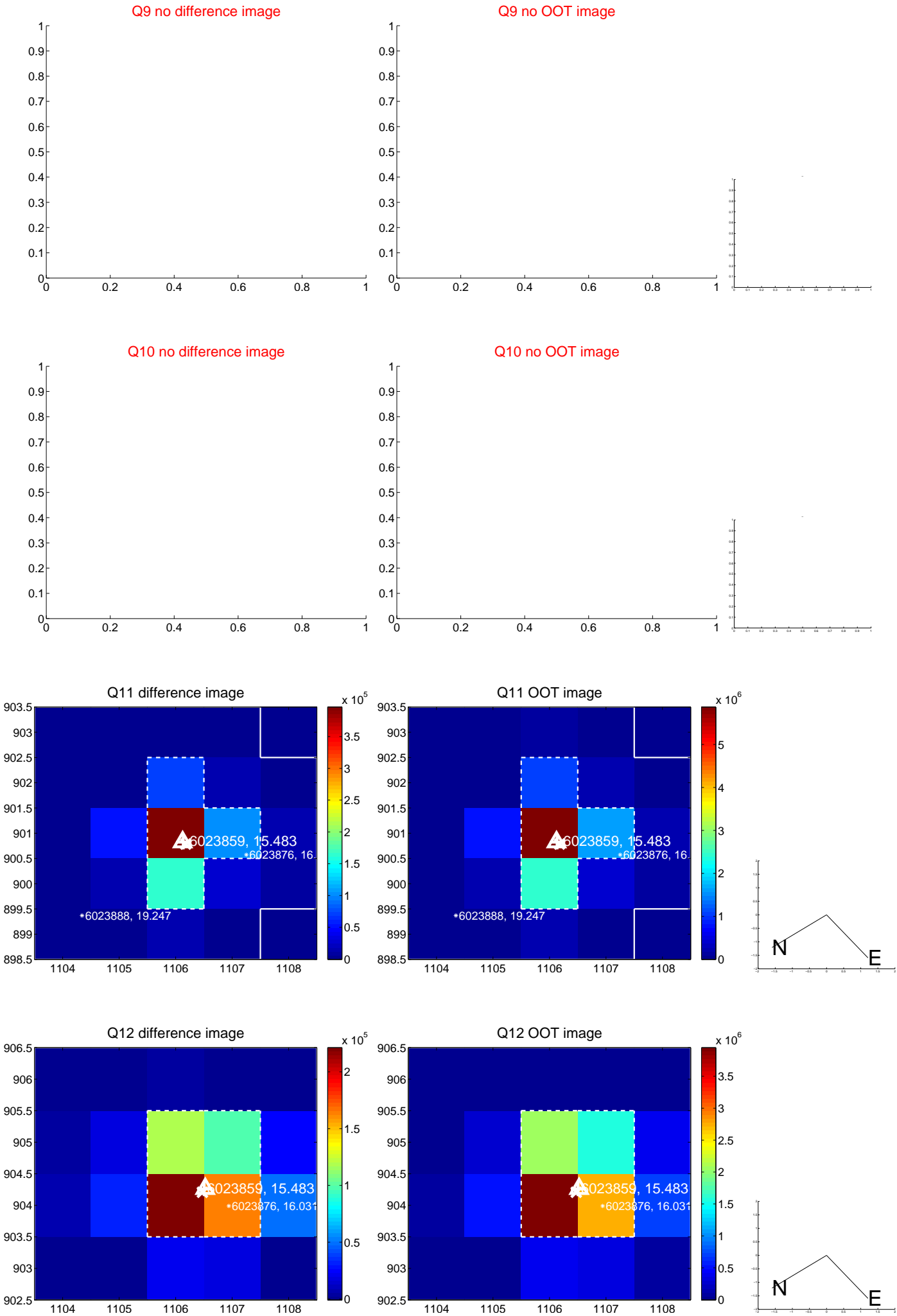
Q8 difference image



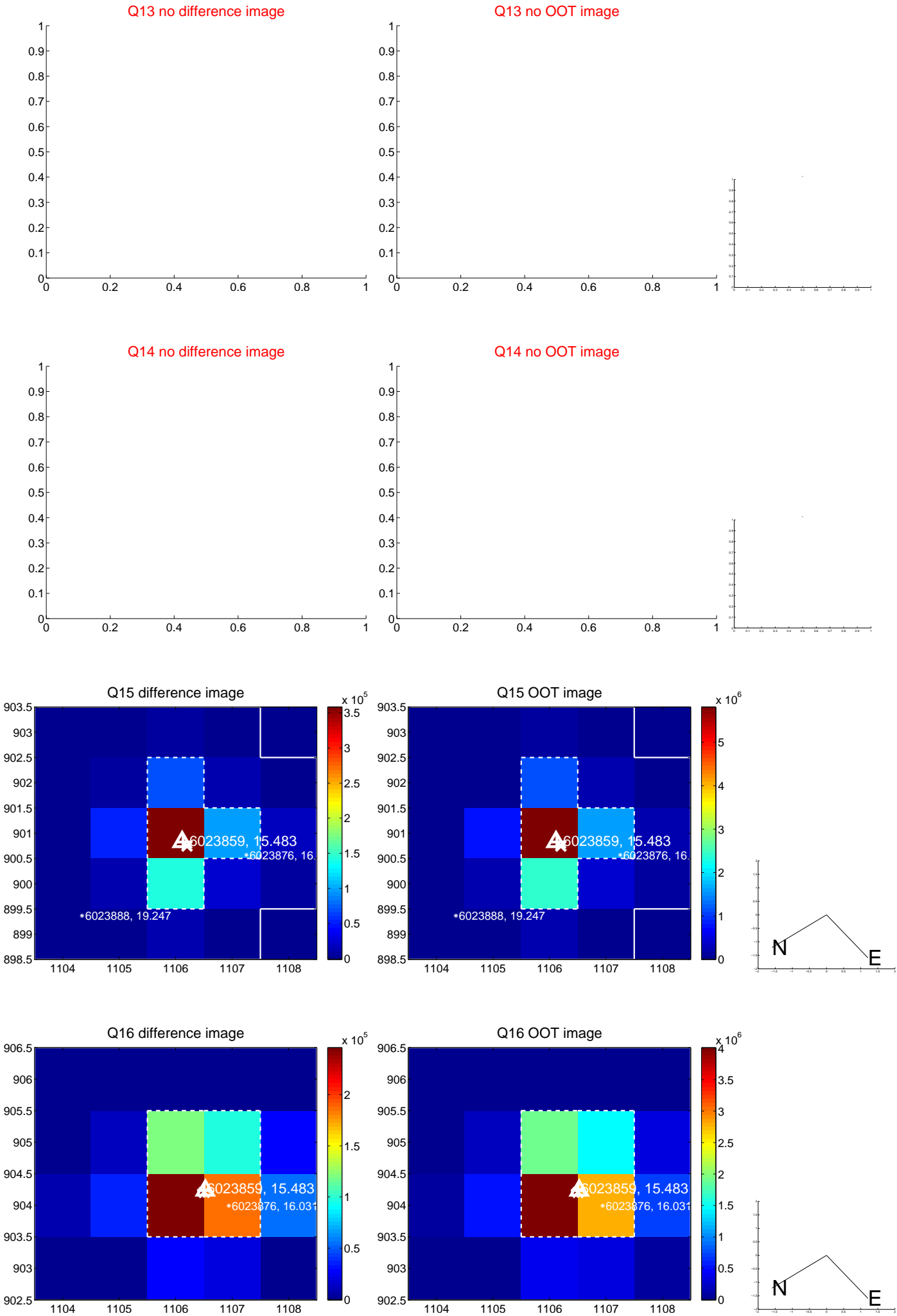
Q8 OOT image



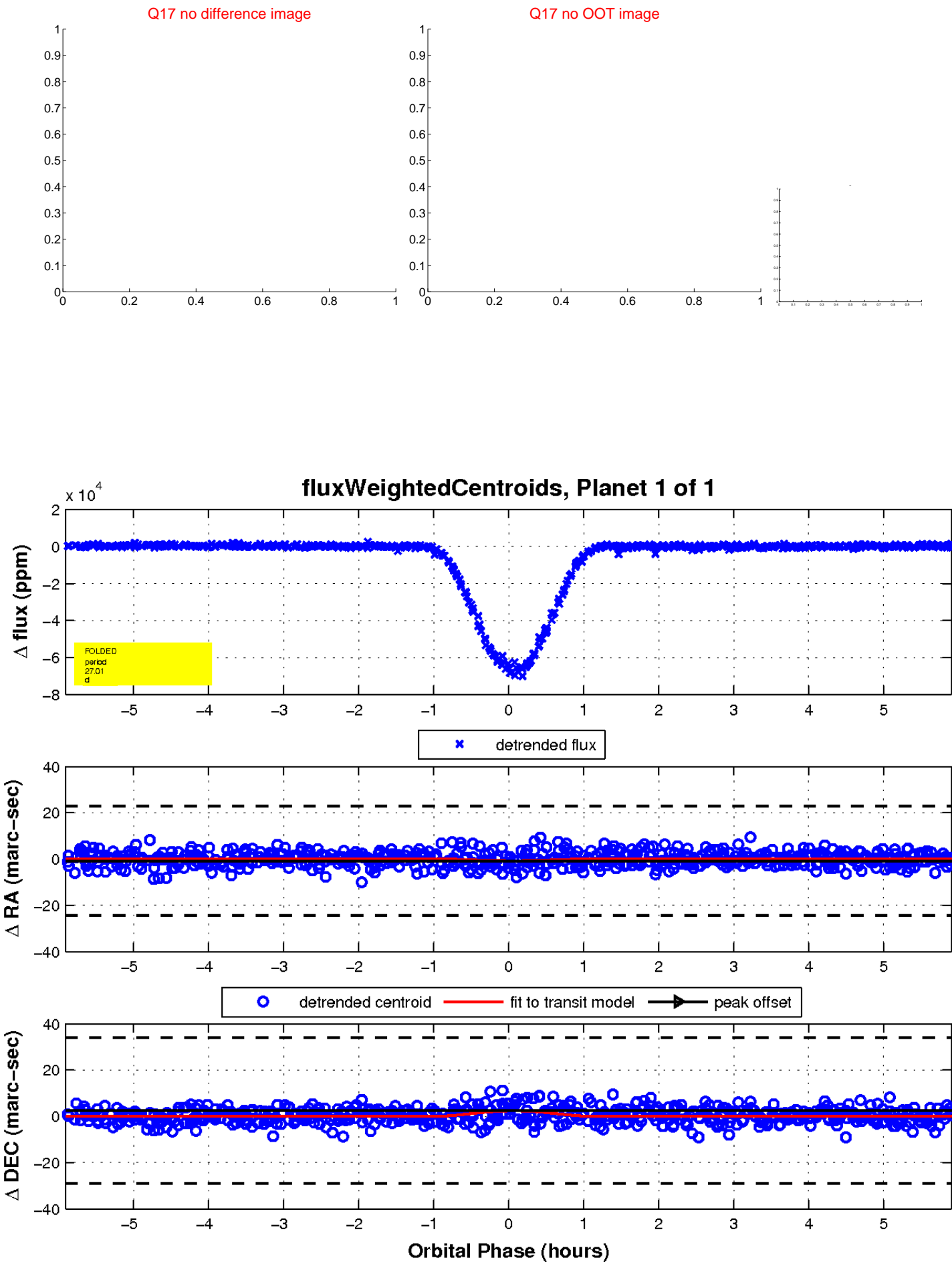
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

