

KIC 012021387

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})
012021387-01	OBS	3522.01	241.070769	223.993218	70595.1	9.882	2746.6	2421.4	2.78	9414	76.75	56.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012021387-01	OBS	PC	0.99	0	0	0	0	CENT_SATURATED

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.

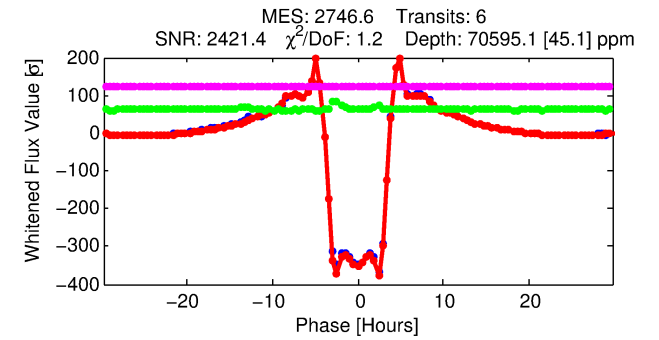
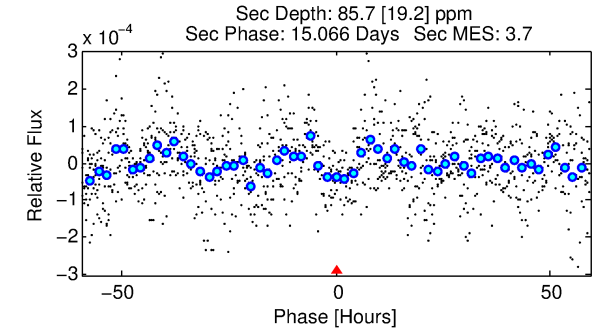
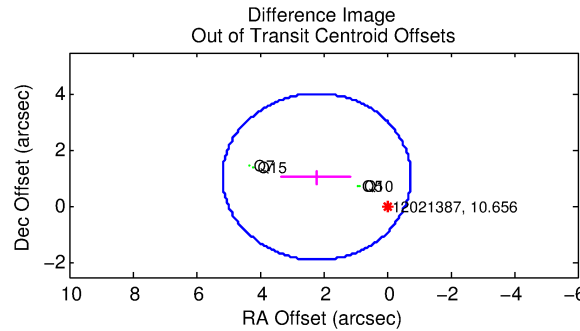
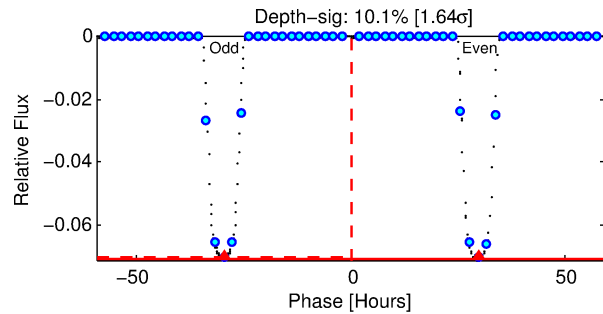
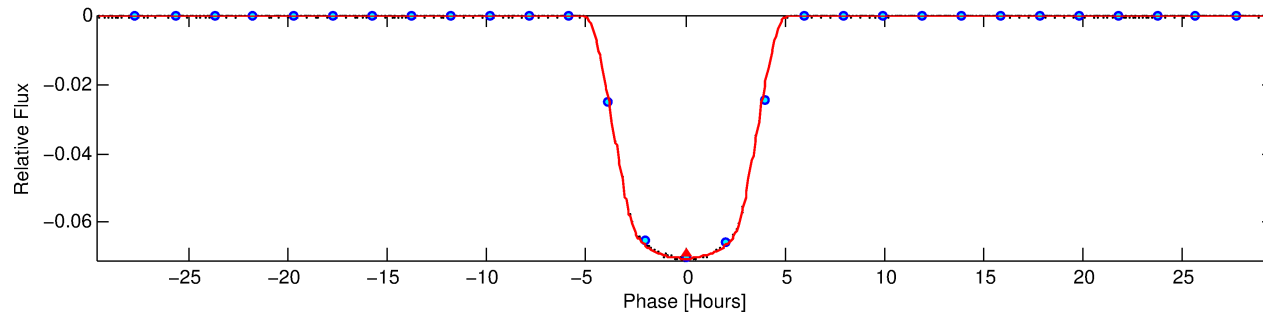
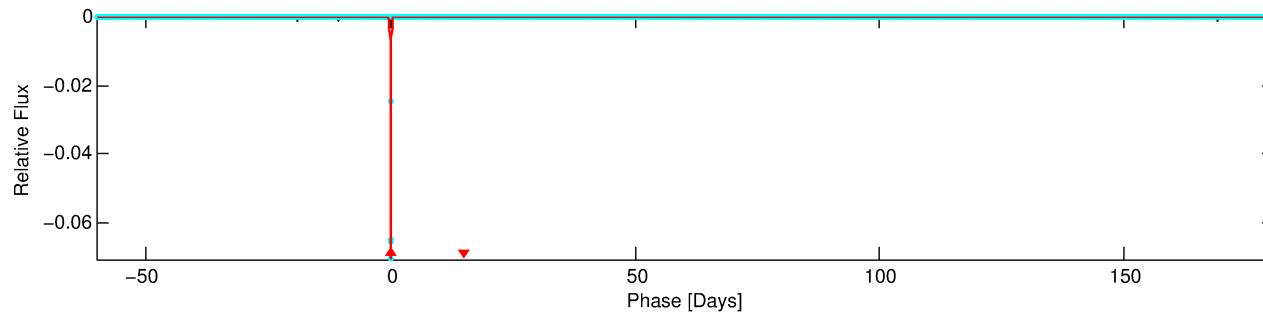
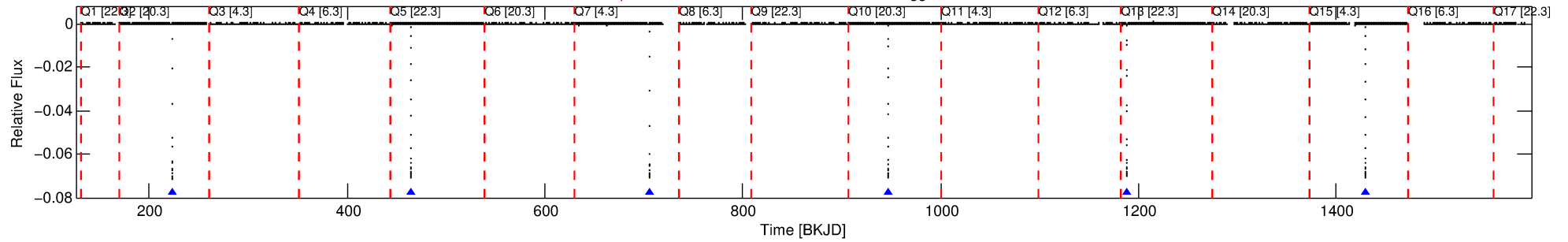
Ephemeris Match Information For 012021387-01

No Significant Match Found

DV One-Page Summary

KIC: 12021387 Candidate: 1 of 1 Period: 241.071 d
KOI: K03522.01 Corr: 0.947

Kp: 10.66 R*: 2.78 Rs Teff: 9414.0 K Logg: 3.88 Fe/H: -0.500



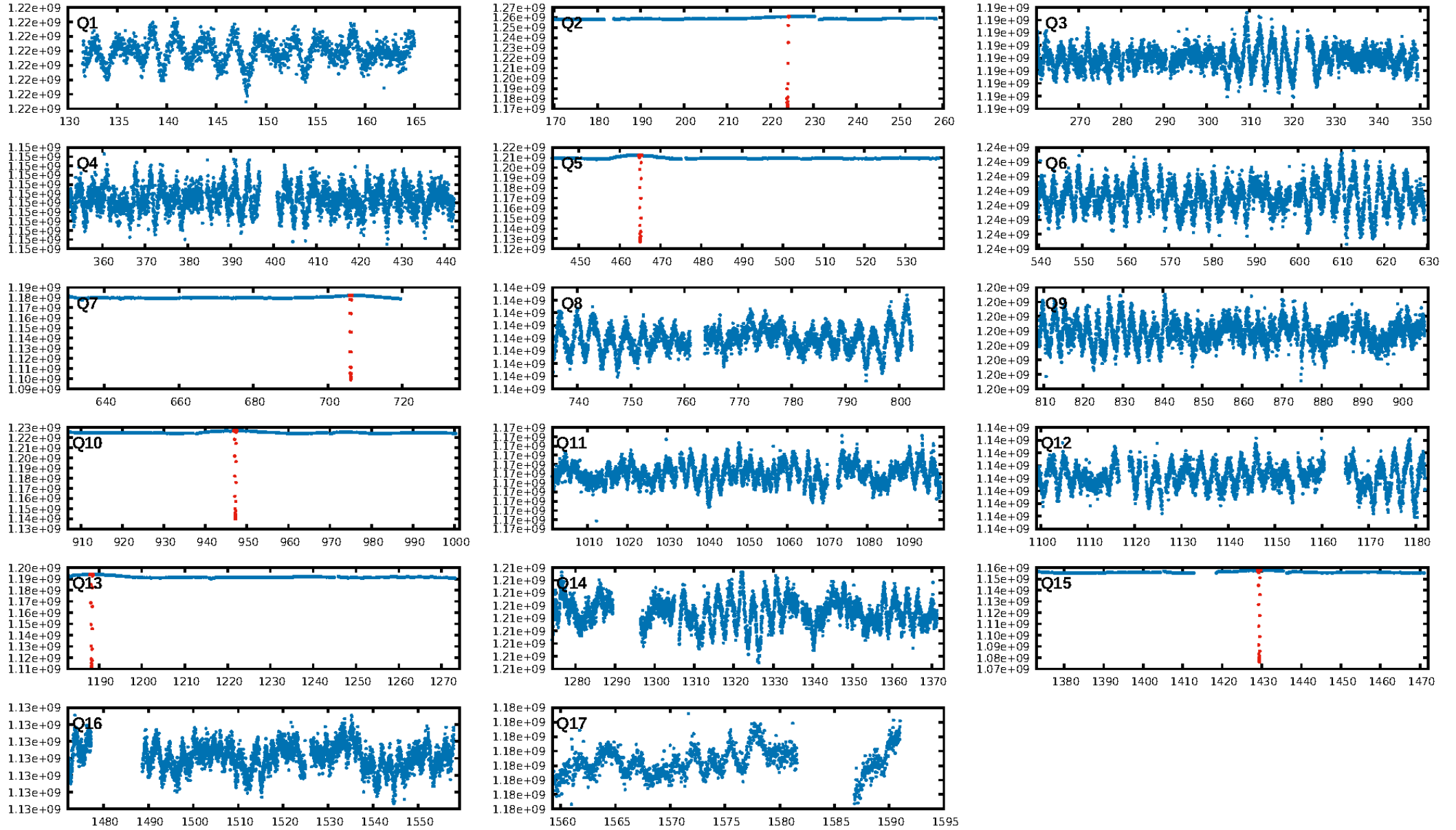
DV Fit Results:

Period = 241.07077 [0.00002] d
Epoch = 223.9932 [0.0001] BKJD
Rp/R* = 0.2533 [0.0001]
a/R* = 220.16 [0.13]
b = 0.42 [0.00]
Seff = 56.69 [42.47]
Teq = 700 [131] K
Rp = 76.75 [35.68] Re
a = 0.9784 [0.4062] AU
Ag = 7.66 [5.15] [1.29σ]
Teffp = 1800 [206] K [4.50σ]

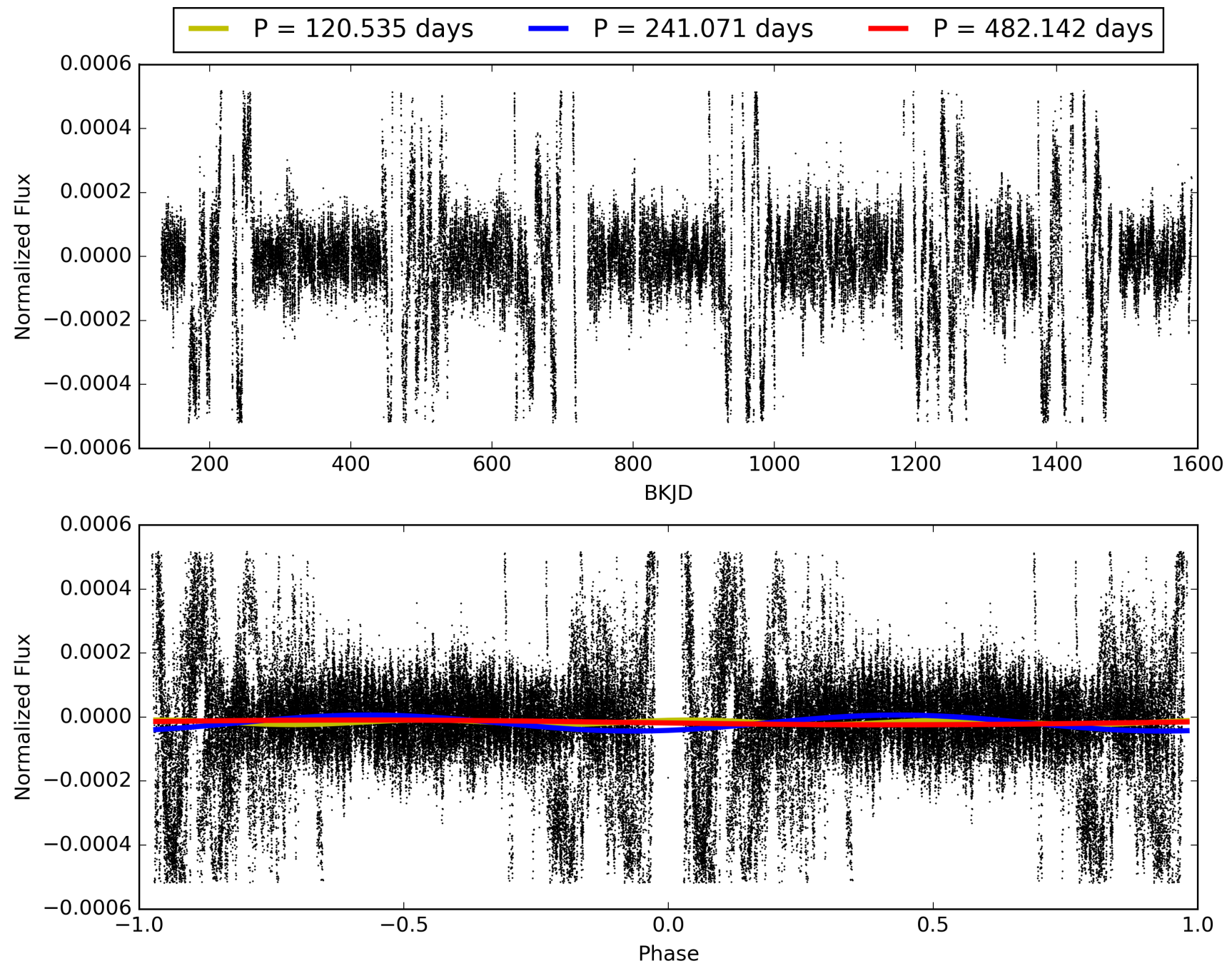
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 85.4%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: N/A
Centroid-sig: 0.0%
Centroid-so: 0.830 arcsec [421.79σ]
OotOffset-rm: 2.453 arcsec [2.48σ]
KicOffset-rm: 2.627 arcsec [2.90σ]
OotOffset-st: 1/2/0/1 [4]
KicOffset-st: 1/2/0/1 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 1.00 [4/4]

TCE 012021387-01, PDC Light Curves

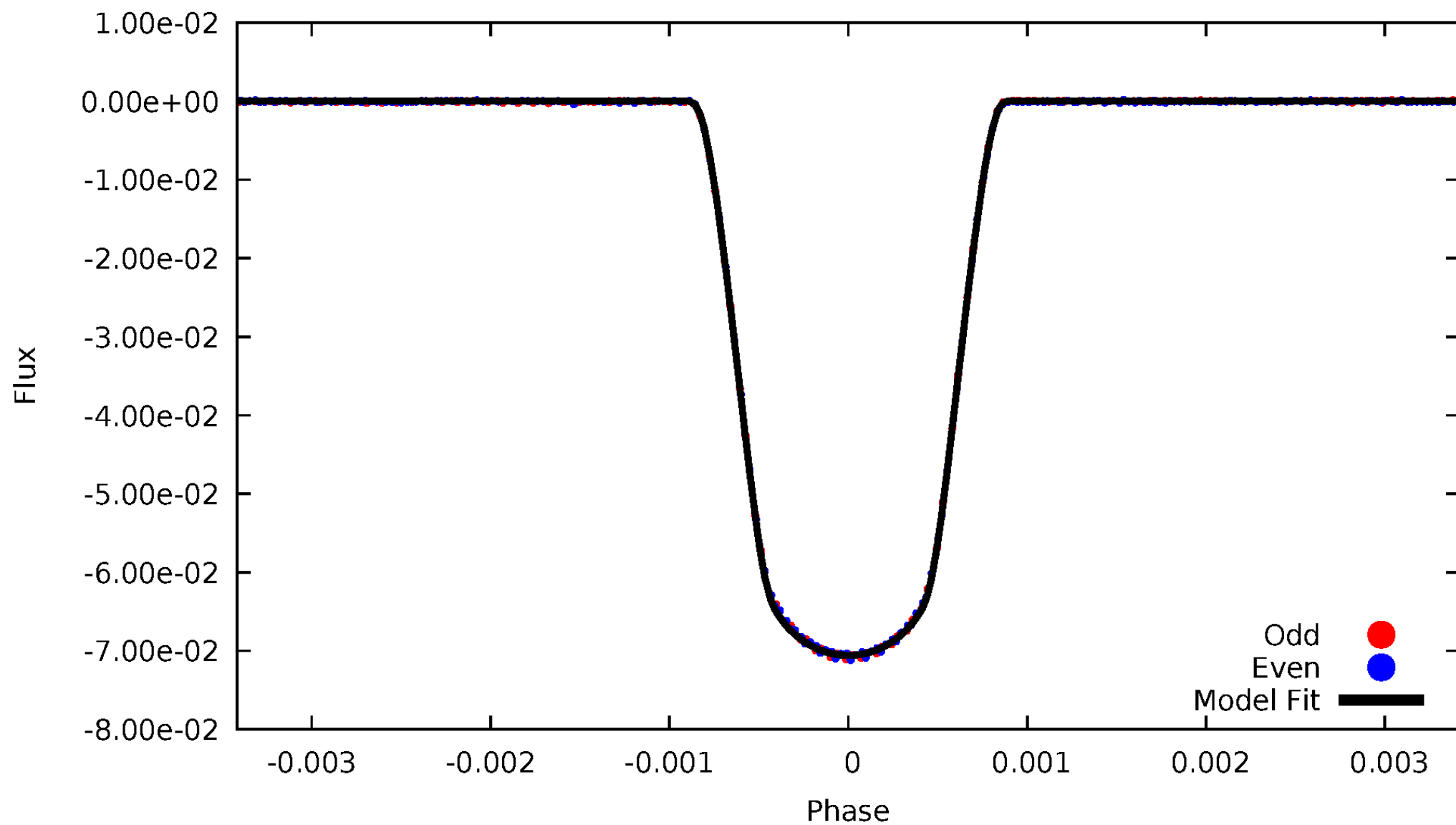


TCE 012021387-01



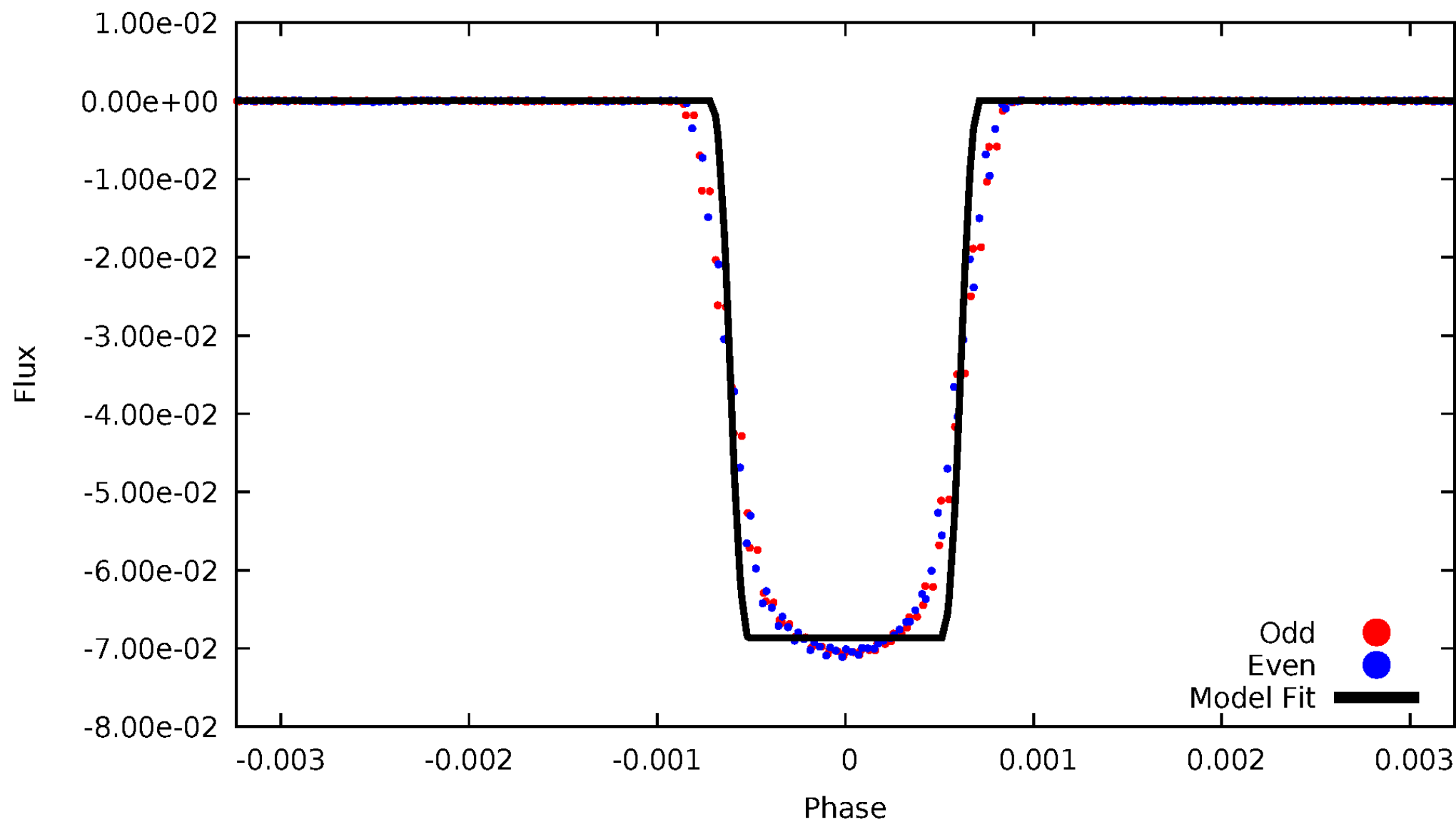
DV Odd/Even

TCE 012021387-01



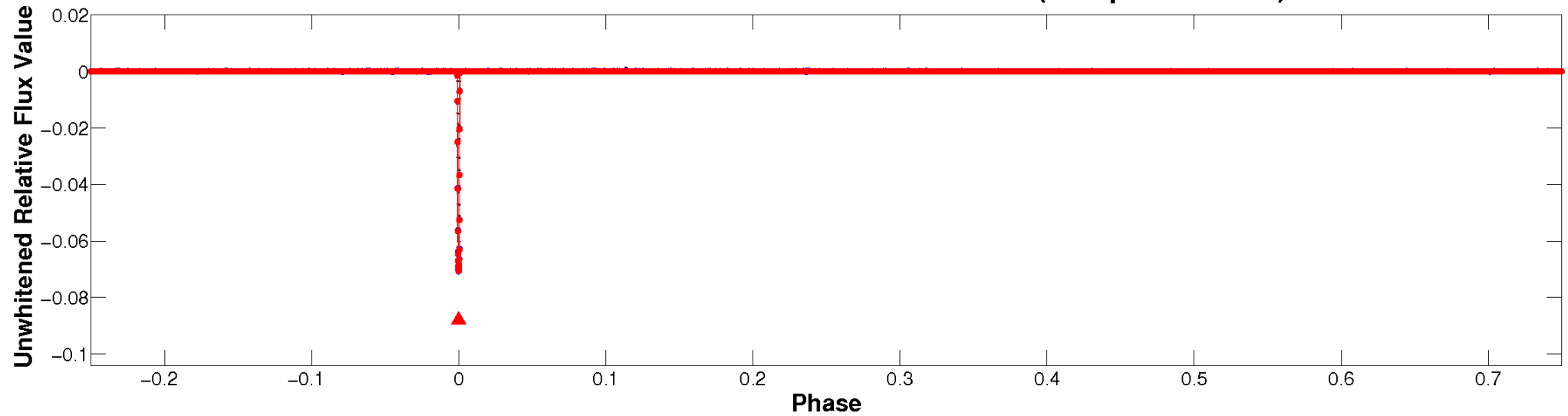
ALT Odd/Even

TCE 012021387-01

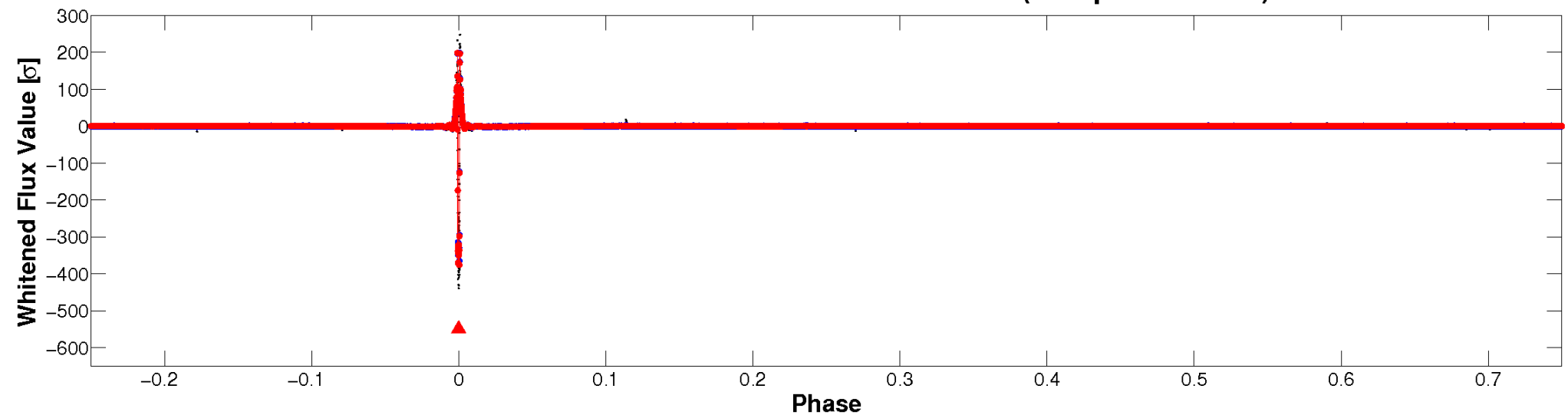


Non-Whitened Vs. Whitened Light Curve

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

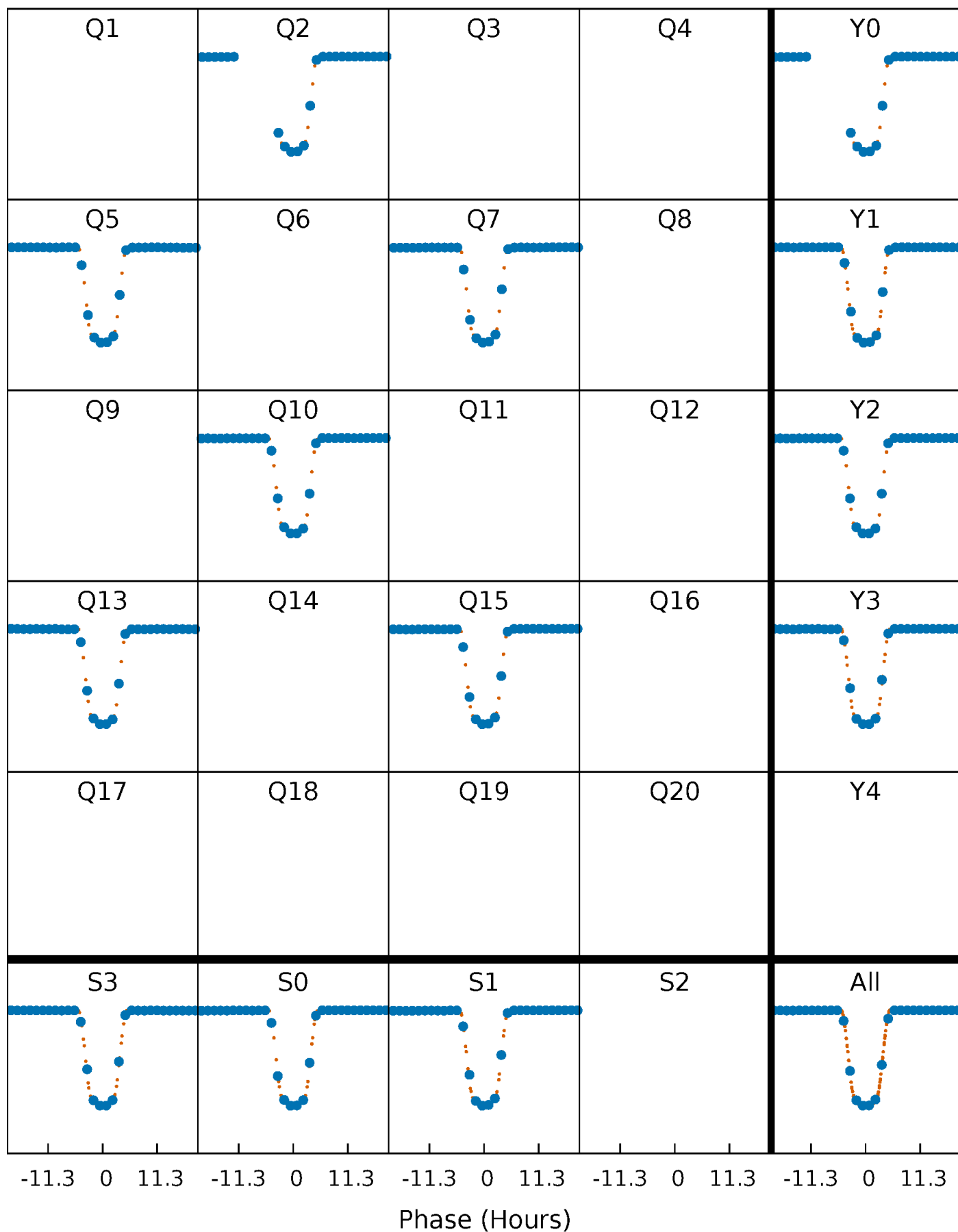


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



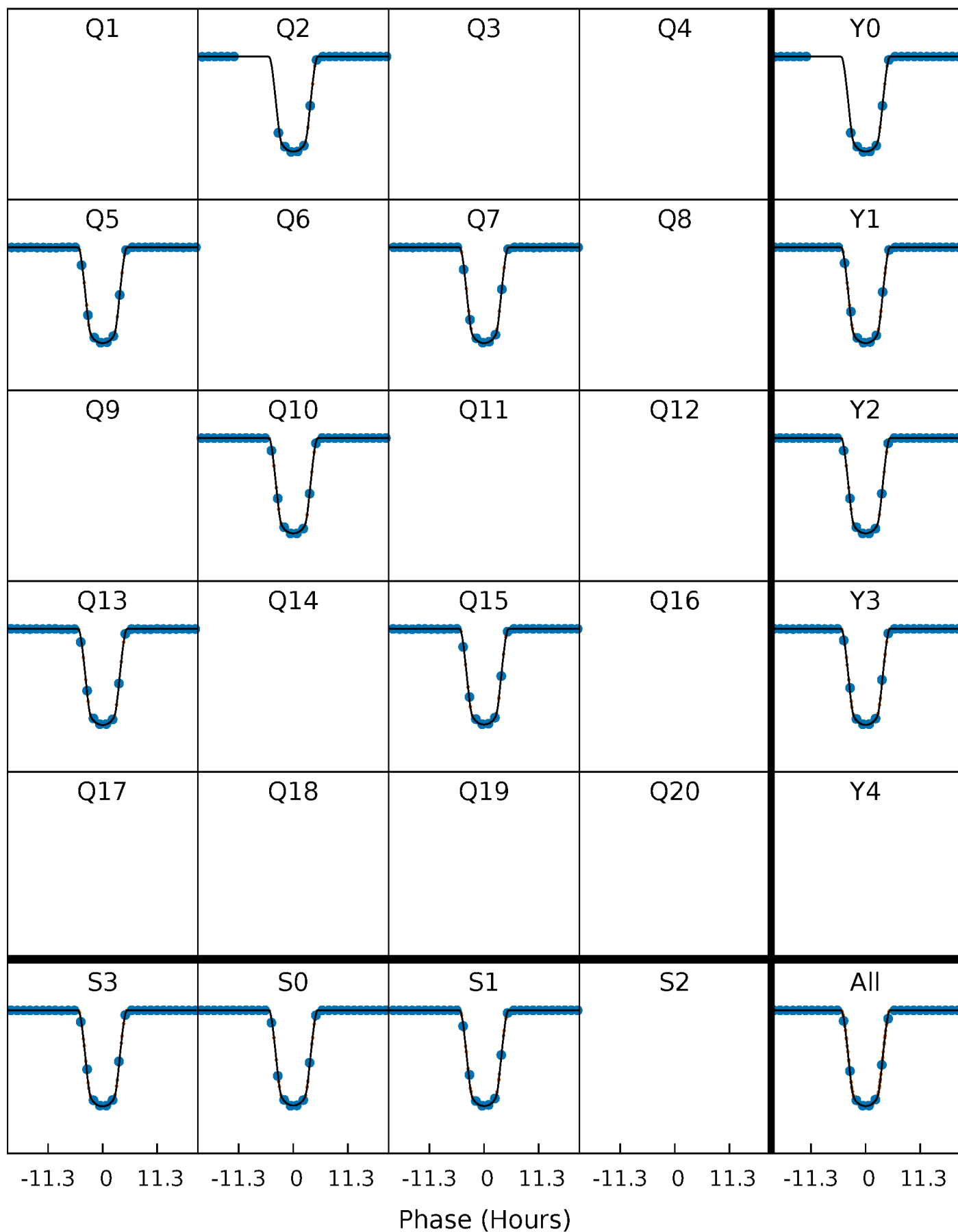
PDC Quarter-Phased Transit Curves

TCE 012021387-01 P=241.070769 Days $T_0=223.993218$ (BKJD)



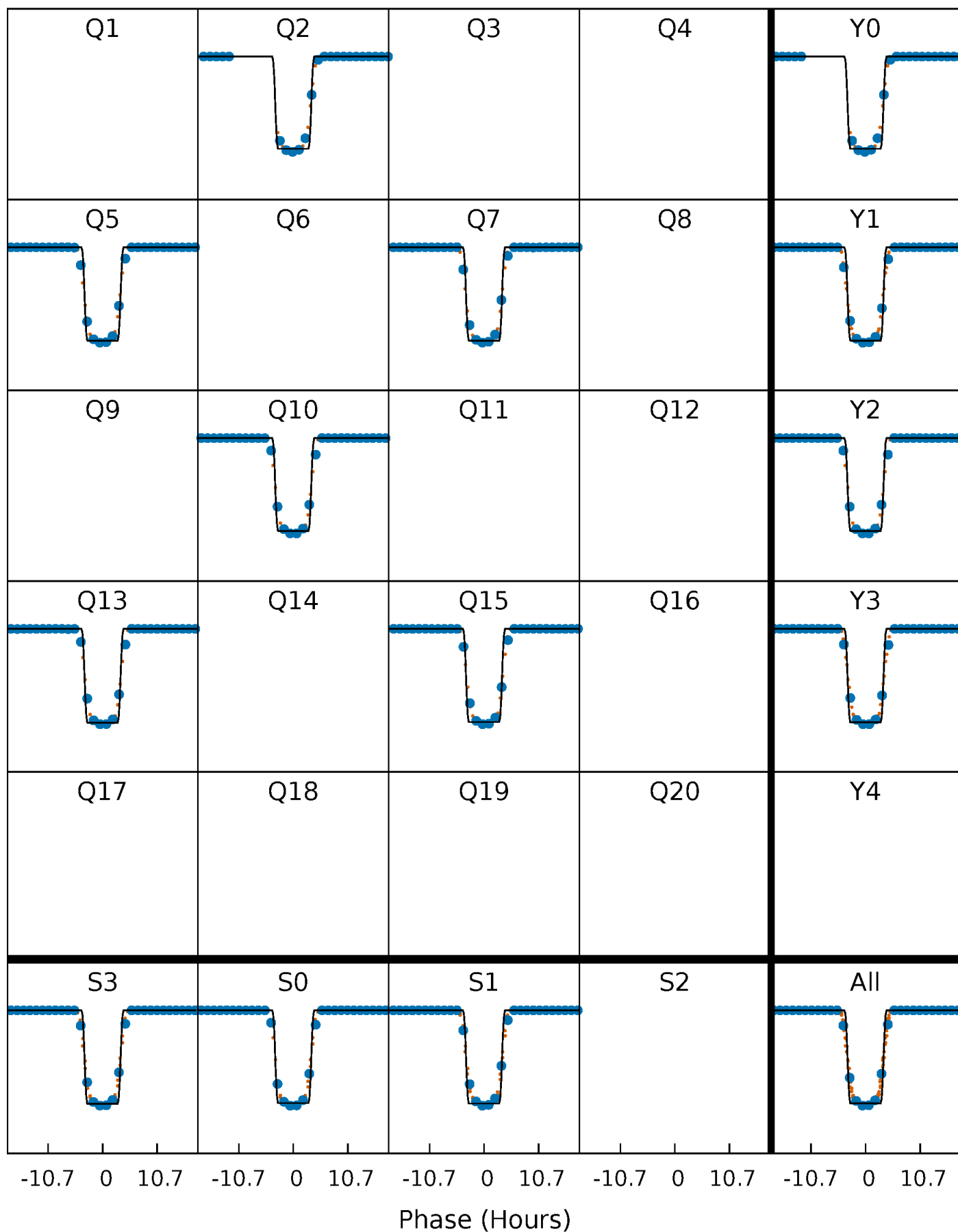
DV Quarter-Phased Transit Curves

TCE 012021387-01 P=241.070769 Days $T_0=223.993218$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

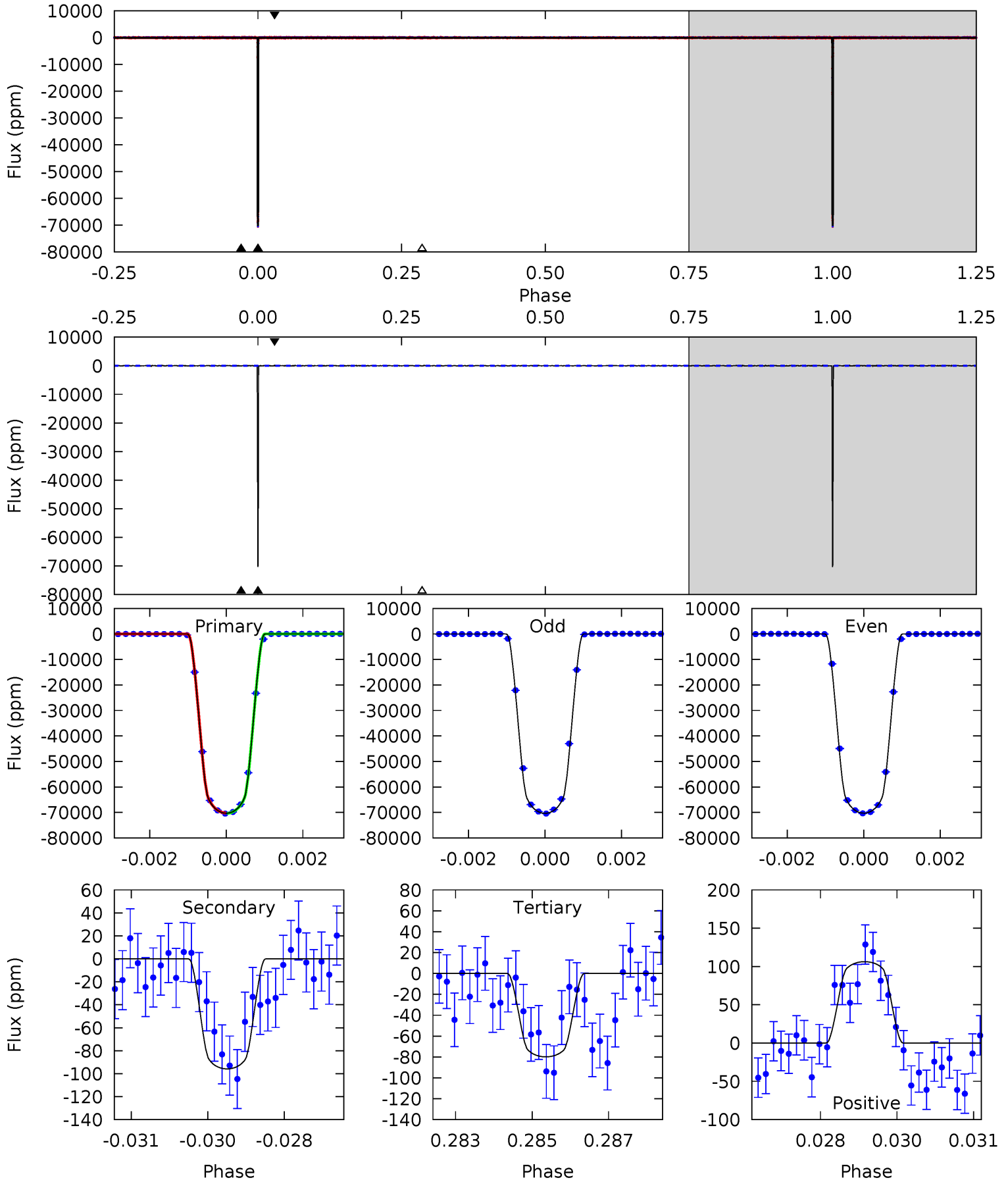
TCE 012021387-01 P=241.068330 Days $T_0=224.000215$ (BKJD)



DV Model-Shift Uniqueness Test

012021387-01, P = 241.070769 Days, E = 223.993218 Days

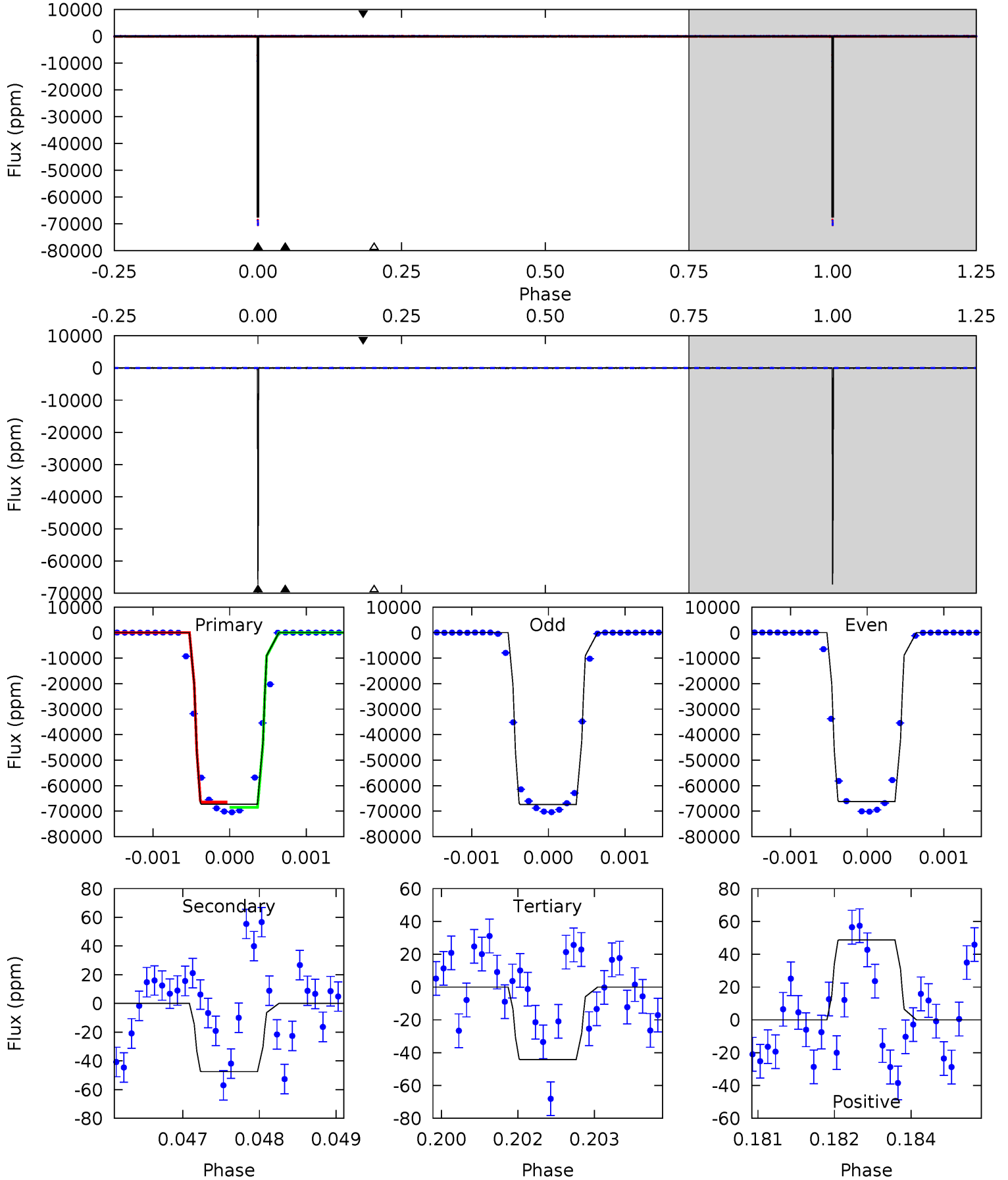
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10198	13.9	11.6	15.4	5.35	3.13	3.23	10187	10183	2.31	-1.52	3.87	1.00	0.00	10.1



Alt Model-Shift Uniqueness Test

012021387-01, P = 241.068330 Days, E = 224.000215 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8459	5.98	5.55	6.12	5.39	3.20	1.32	8453	8453	0.42	-0.15	101.1	1.00	0.00	0



Stellar Parameters For KIC 012021387

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9414^{+470}_{-941}	$3.883^{+0.360}_{-0.096}$	$-0.500^{+0.050}_{-0.200}$	$2.777^{+0.430}_{-1.291}$	$2.148^{+0.229}_{-0.573}$	$0.141^{+0.483}_{-0.045}$
	+5%/-10%	+9%/-2%	+10%/-40%	+15%/-46%	+11%/-27%	+342%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 012021387-01 / KOI 3522.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-96 ± 7	$75.73^{+7.44}_{-17.03}$	936^{+94}_{-121}	2550^{+60}_{-87}	$8.989^{+5.324}_{-1.658}$
Alt.	-48 ± 8	$78.88^{+6.85}_{-18.36}$	933^{+94}_{-116}	2305^{+77}_{-89}	$4.292^{+2.456}_{-1.122}$

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

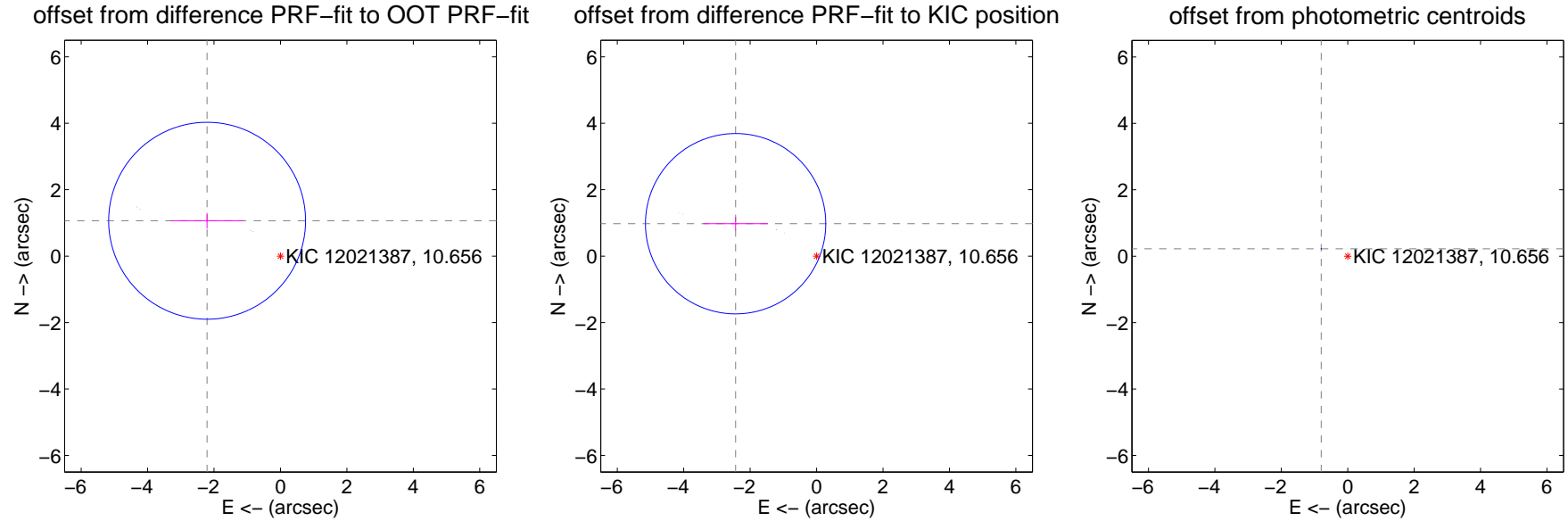
DV Centroid Data

Supplemental centroid analysis for 012021387-01. **Kepler magnitude: 10.66.** Transit SNR 2421.45

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.453 ± 0.988	2.48	2.209 ± 1.091	1.065 ± 0.234
PRF-fit source offset from KIC position	2.627 ± 0.905	2.90	2.438 ± 0.972	0.976 ± 0.197
photometric centroid source offset	0.83 ± 0.00	421.79	0.80 ± 0.00	0.22 ± 0.00

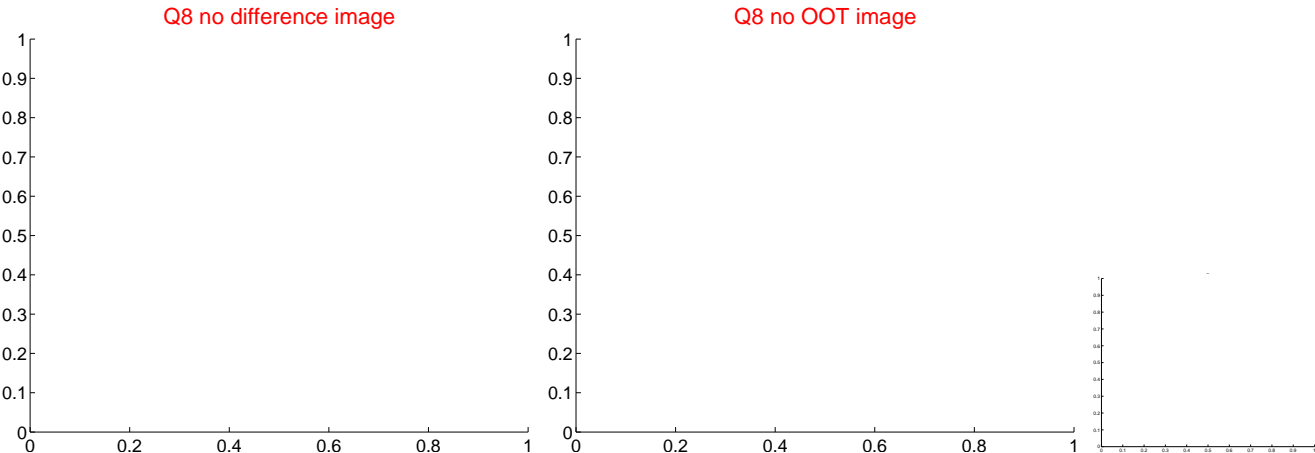
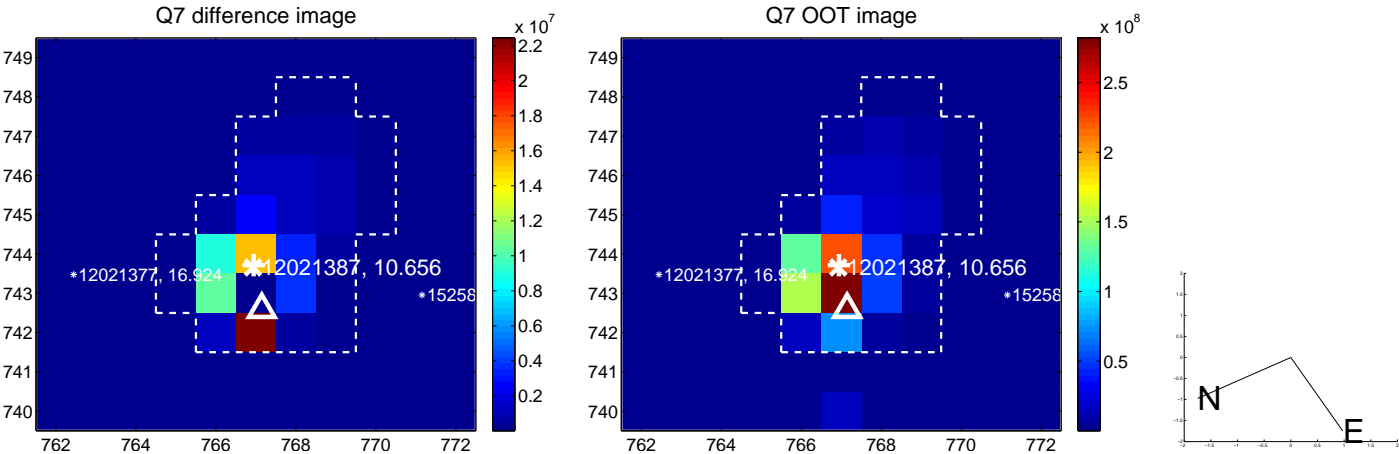
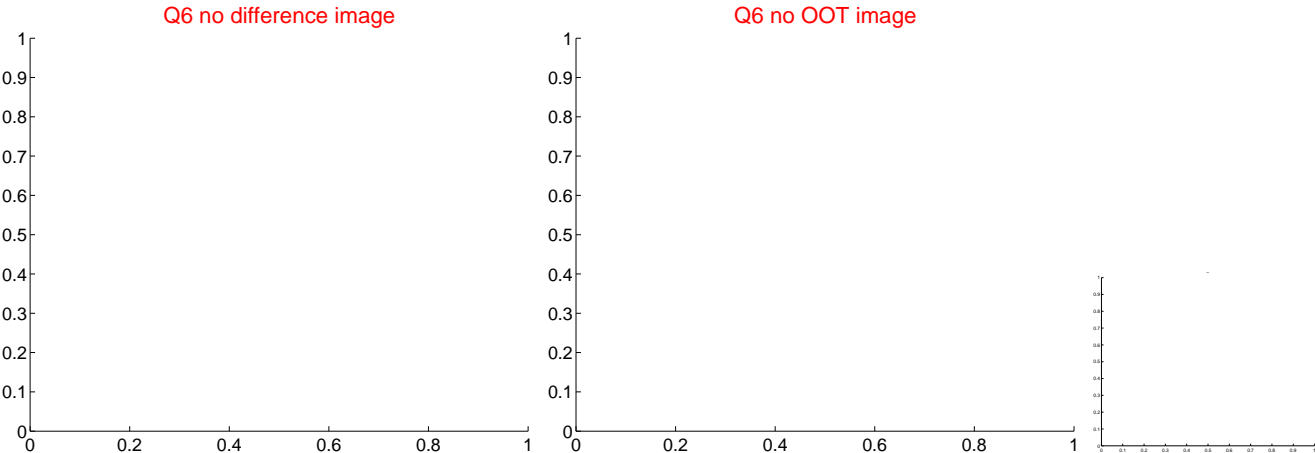
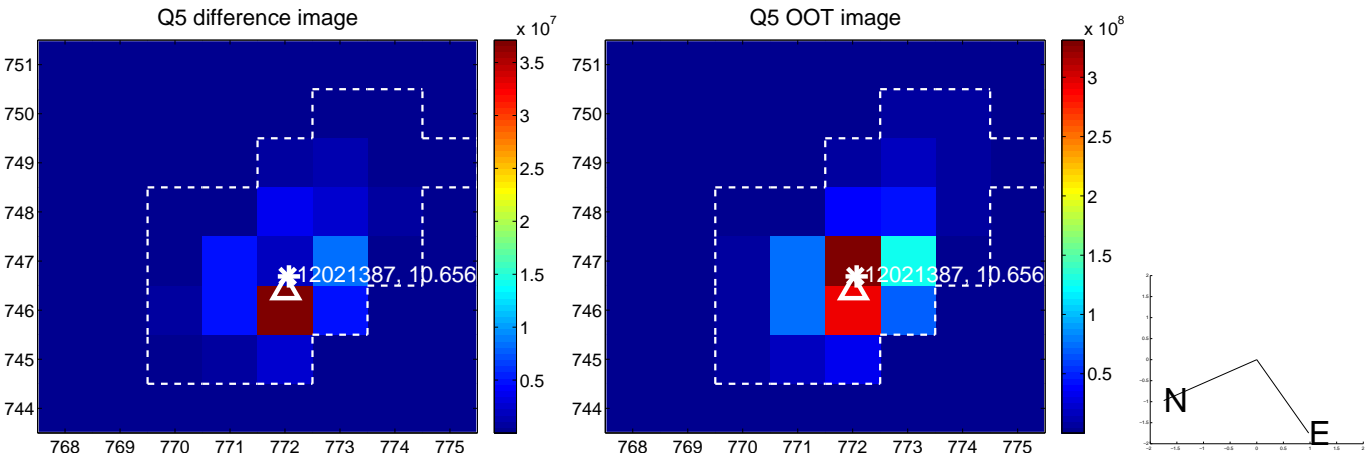


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

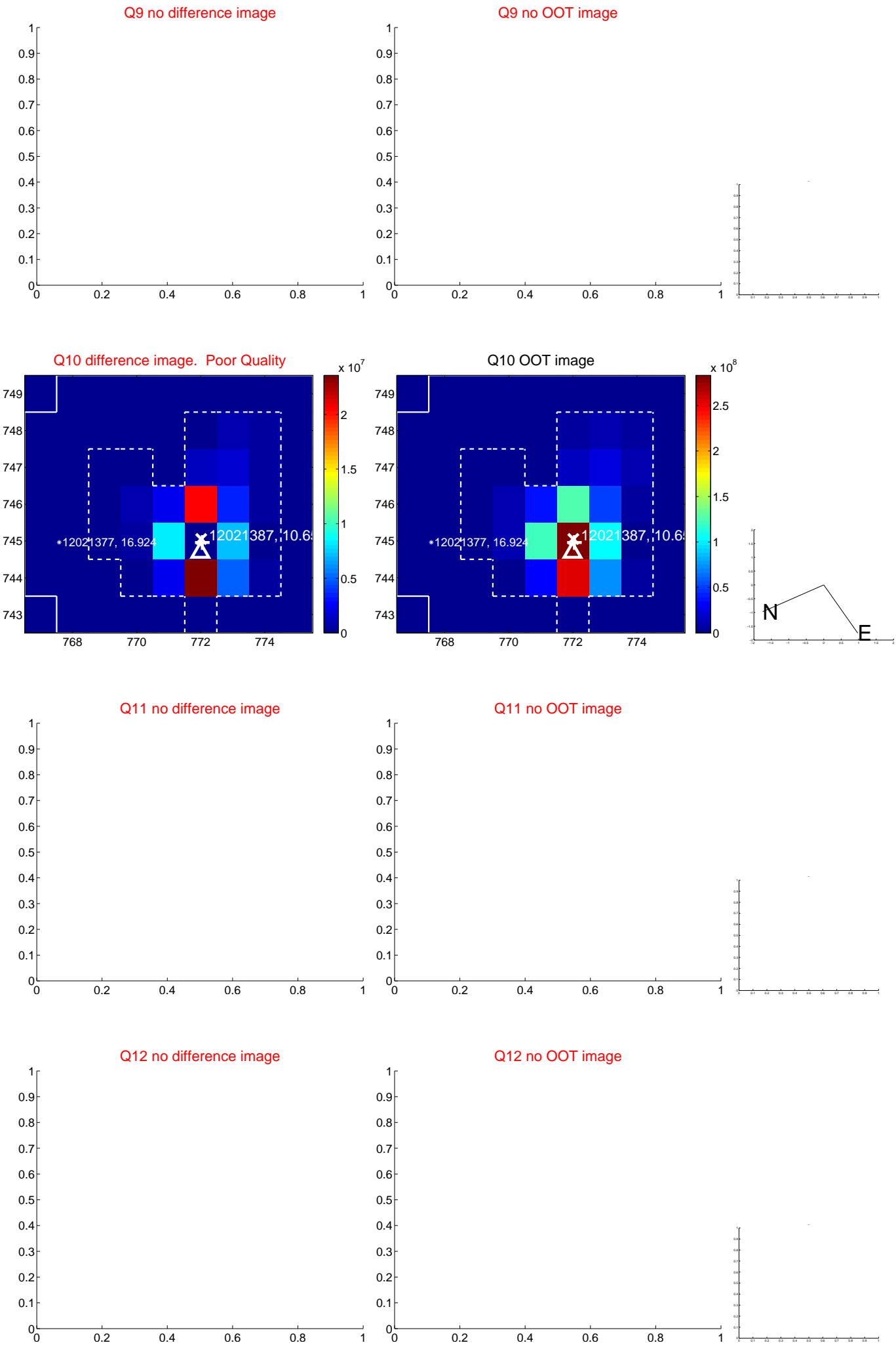
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



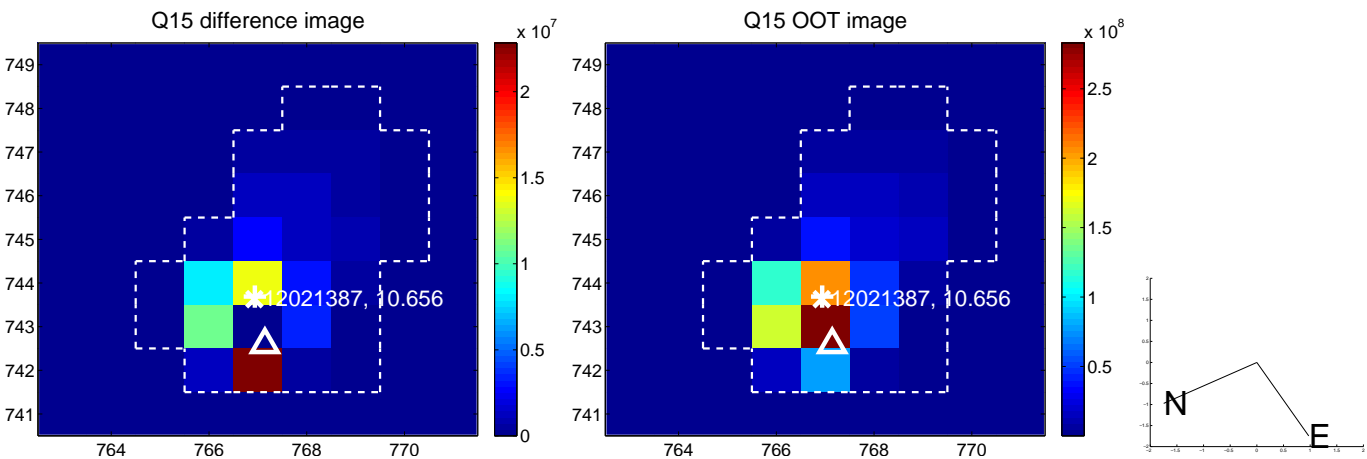
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



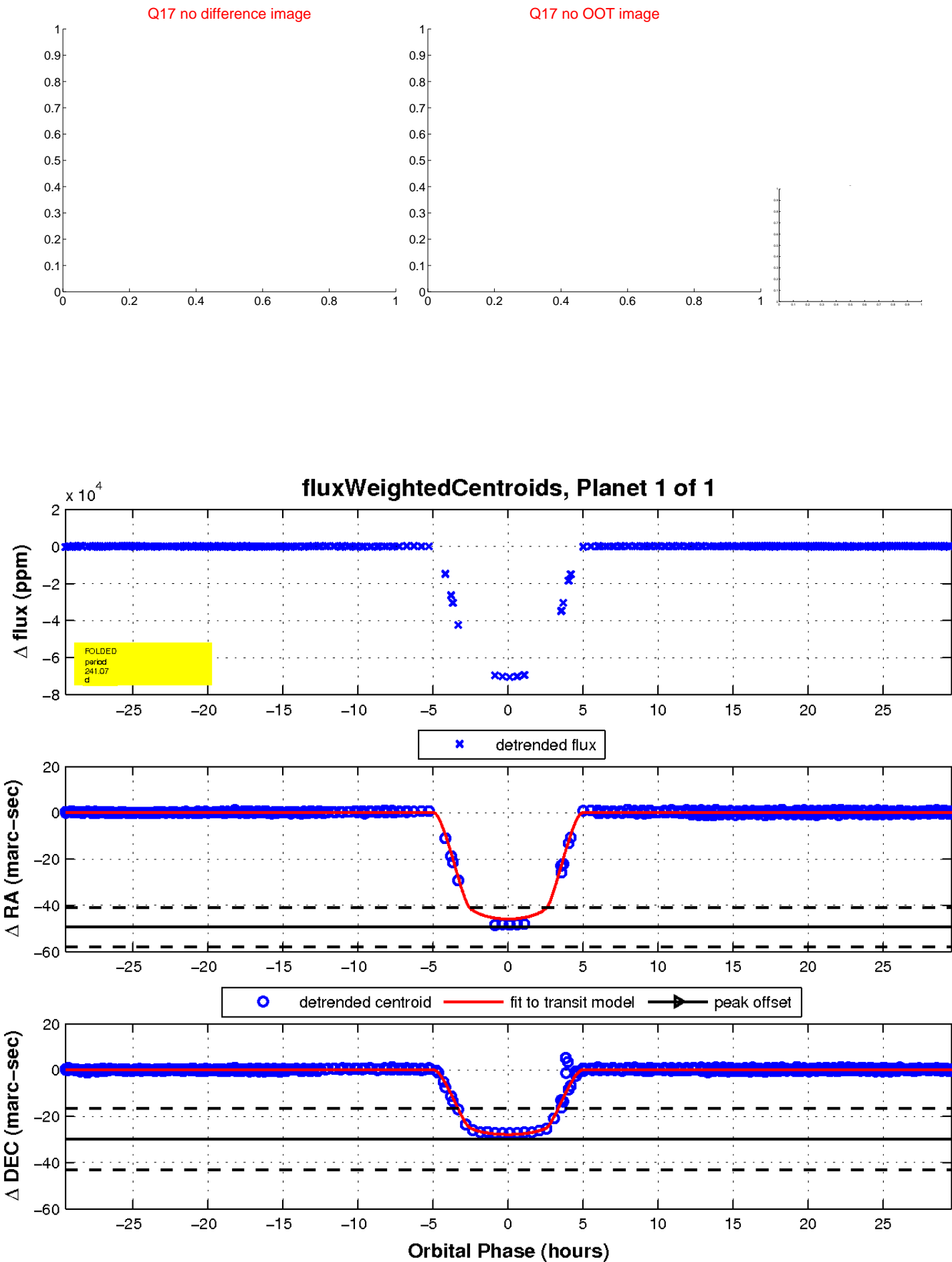
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

