

# KIC 005721610

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005721610-01	OBS	No	507.978719	407.139426	496.9	6.357	12.3	6.1	1.25	6597	3.06	1.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005721610-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

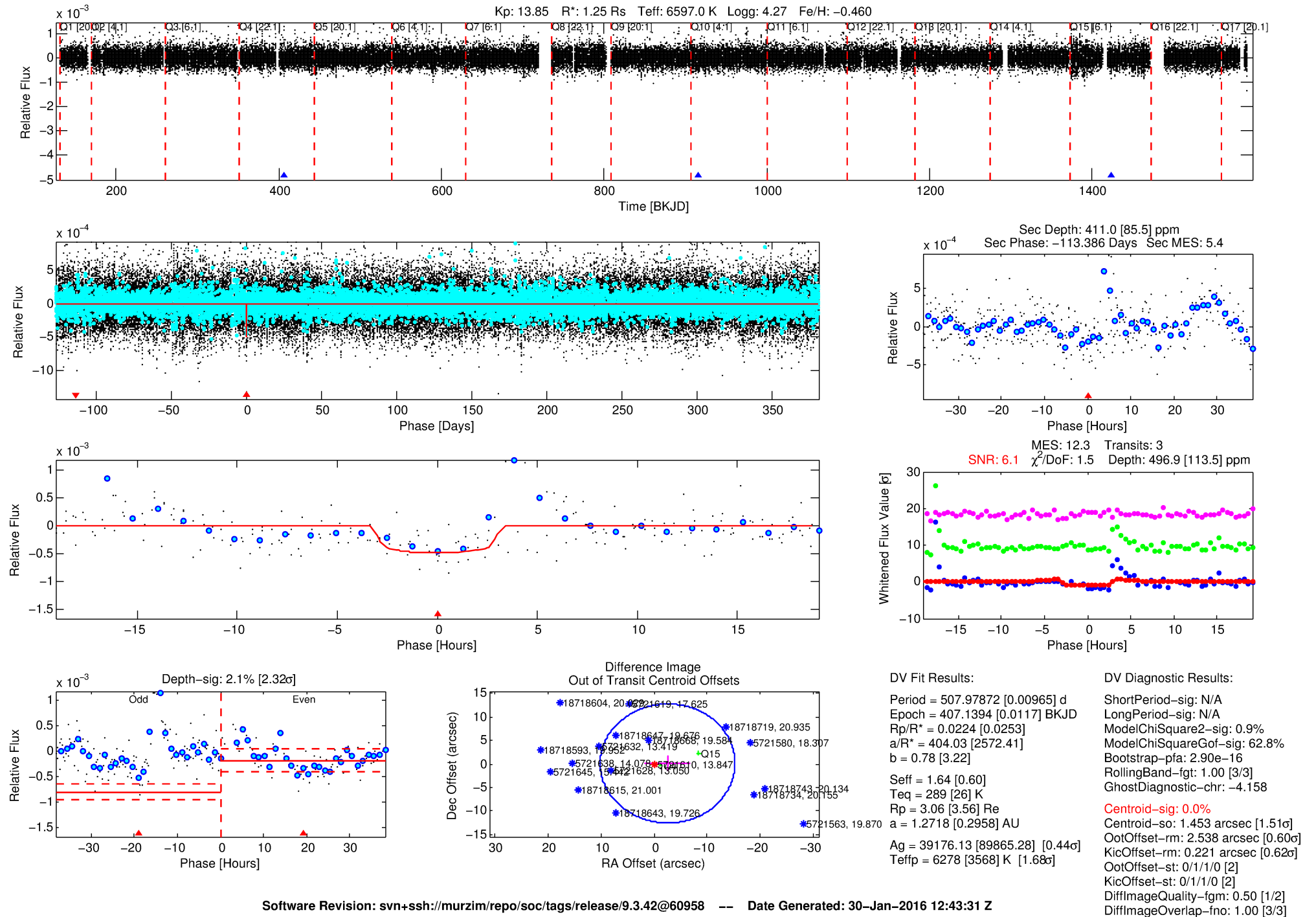
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005721610-01

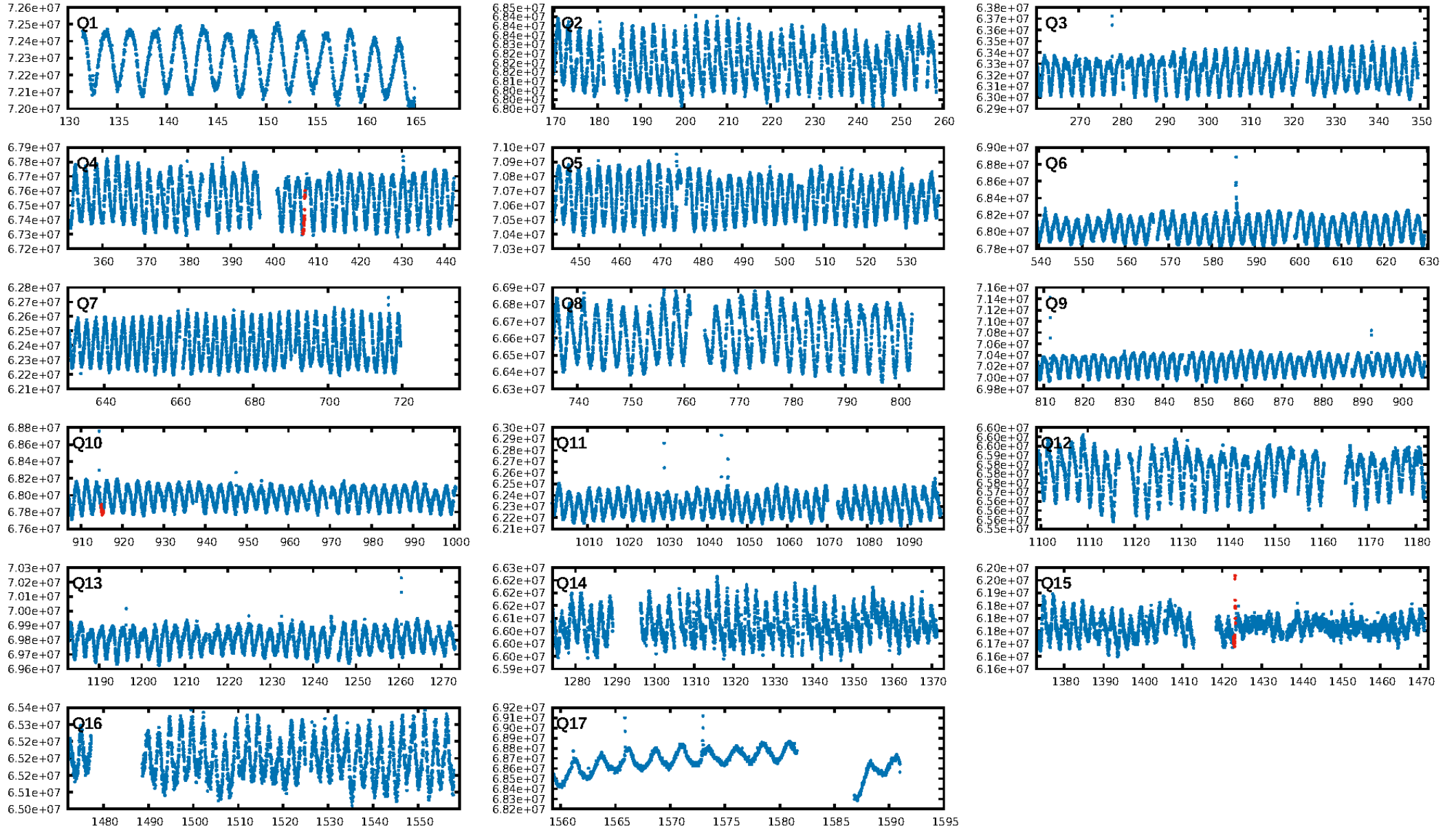
No Significant Match Found

# DV One-Page Summary

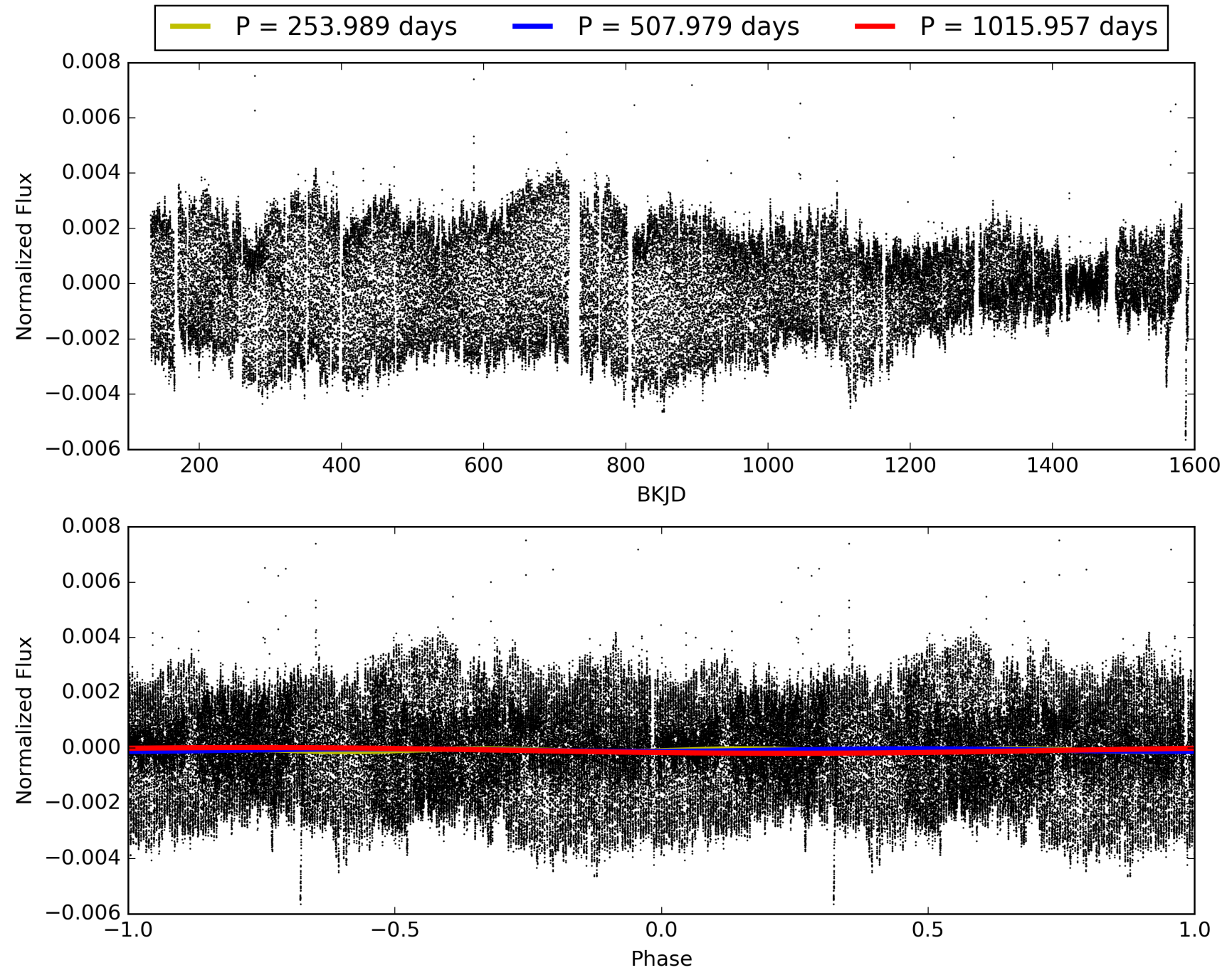
KIC: 5721610 Candidate: 1 of 1 Period: 507.979 d



# TCE 005721610-01, PDC Light Curves

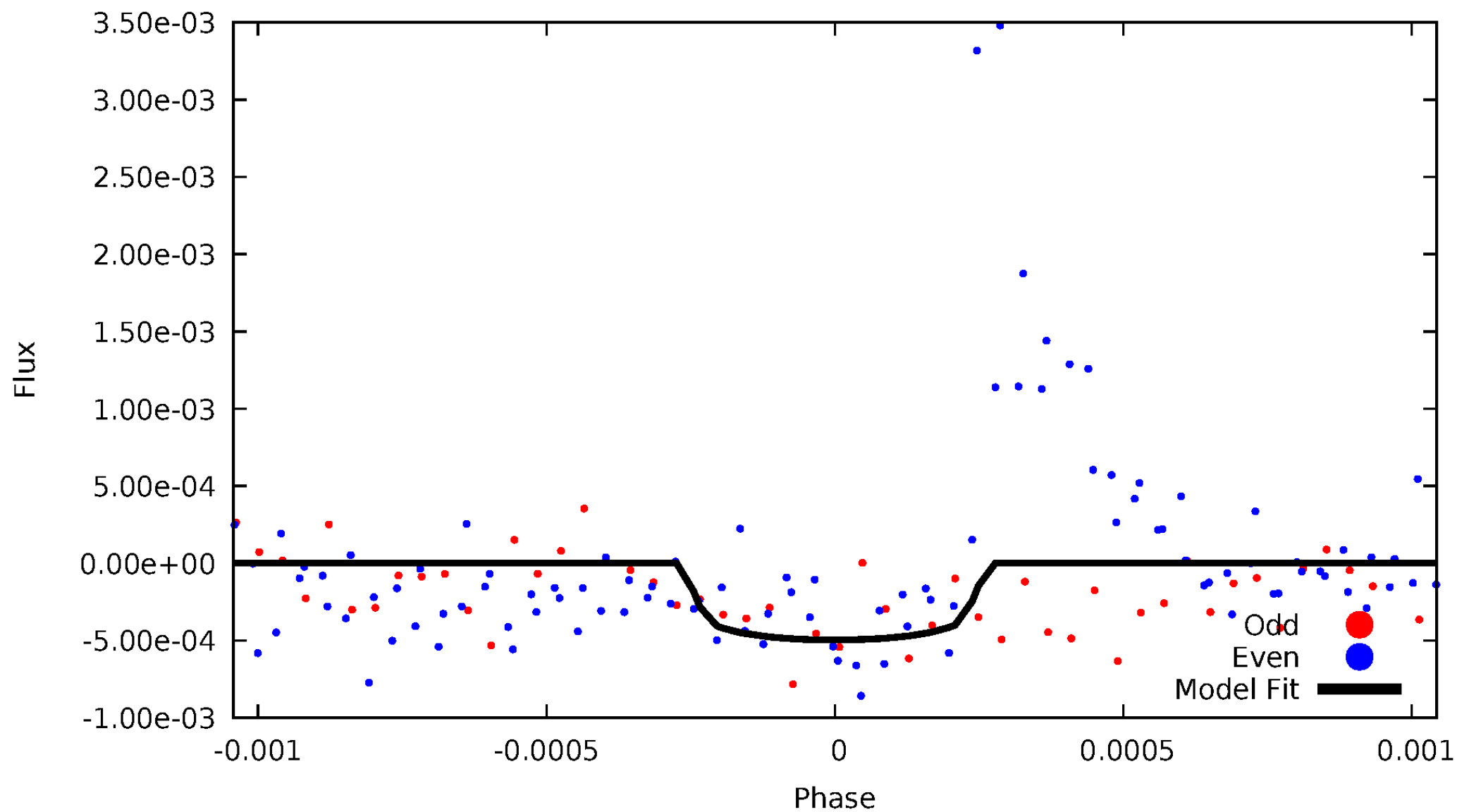


# TCE 005721610-01



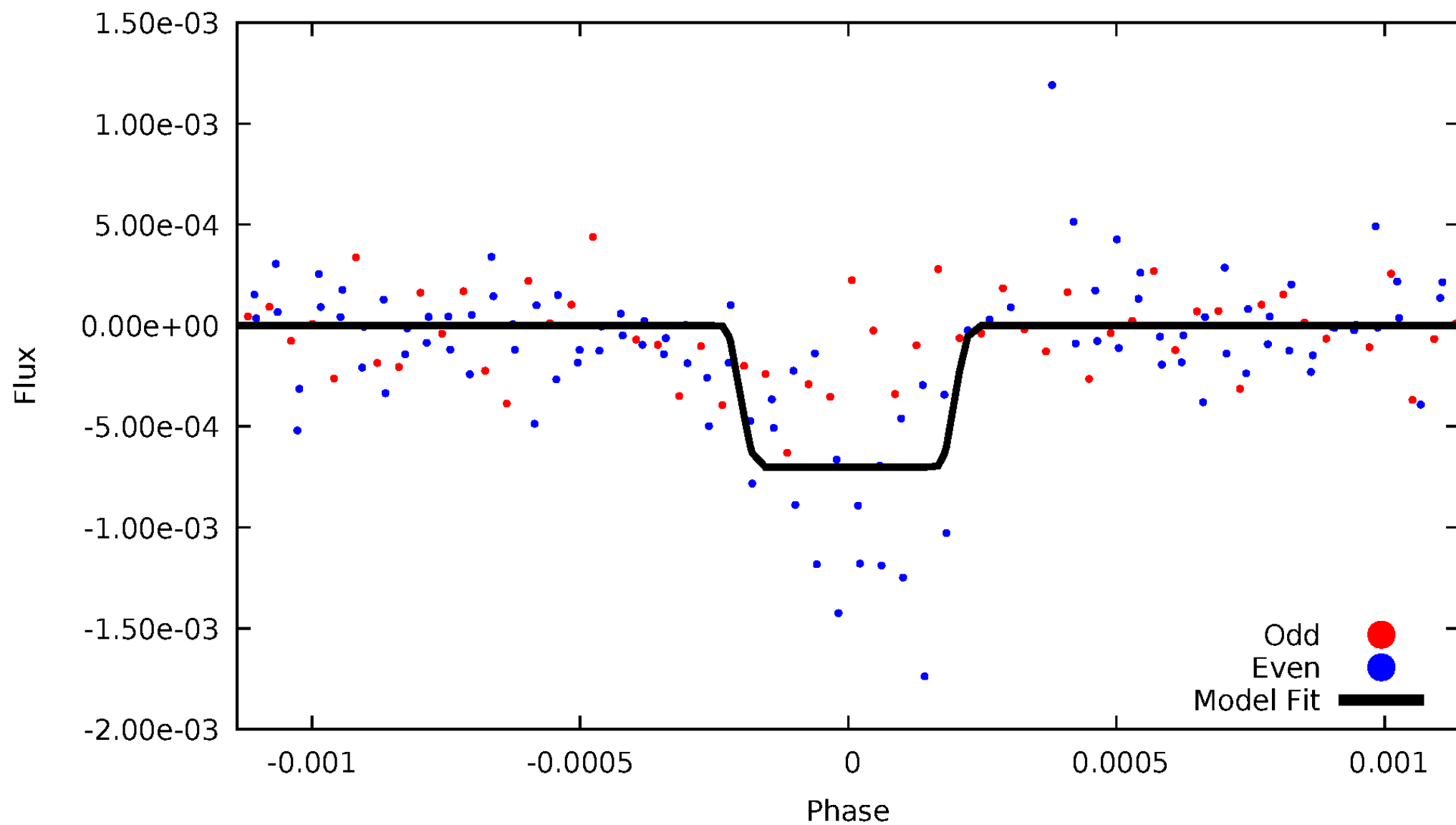
# DV Odd/Even

TCE 005721610-01



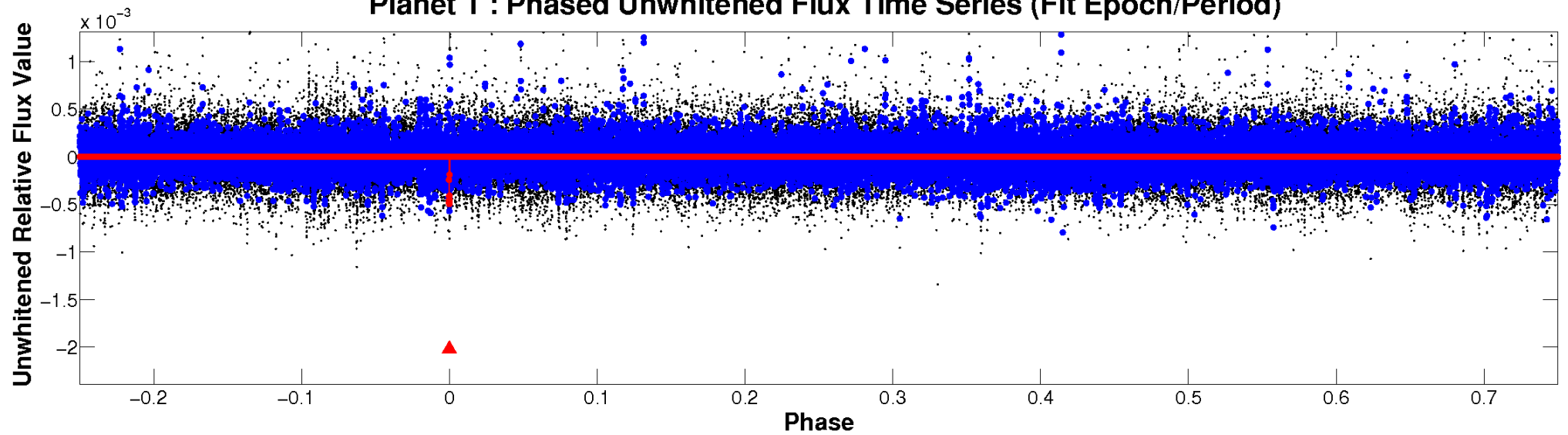
# ALT Odd/Even

TCE 005721610-01

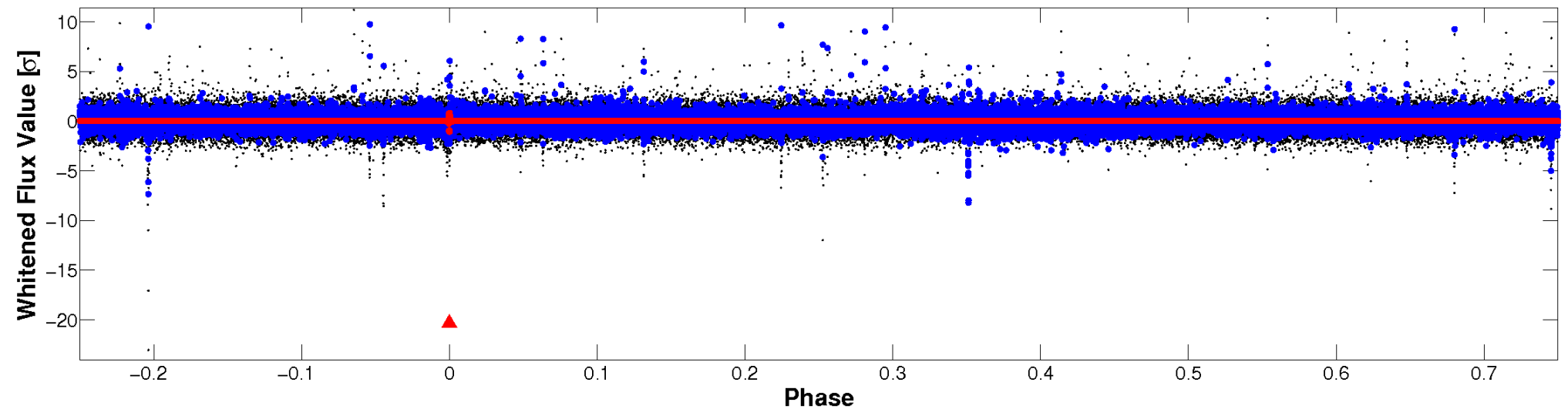


# Non-Whitened Vs. Whitened Light Curve

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



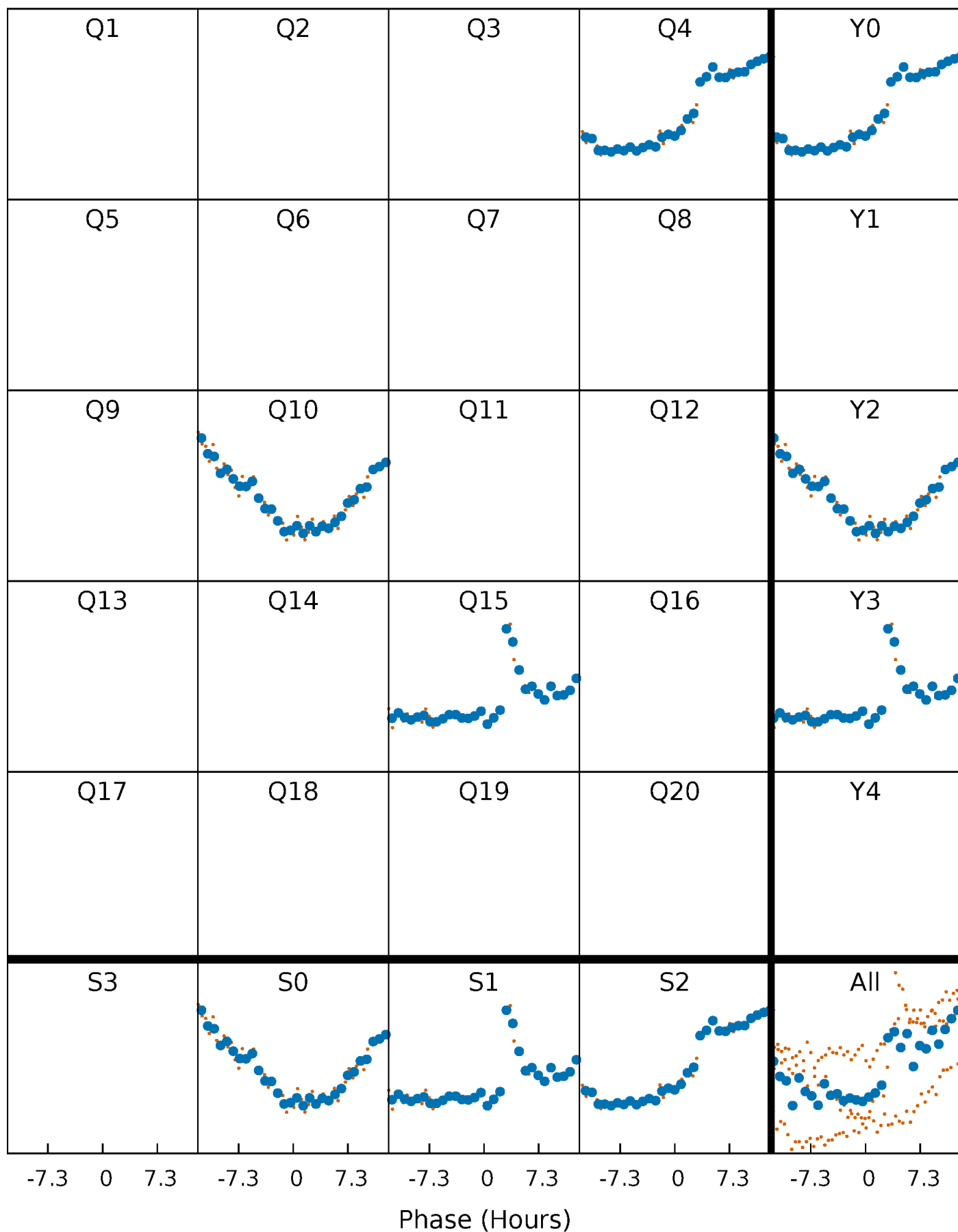
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

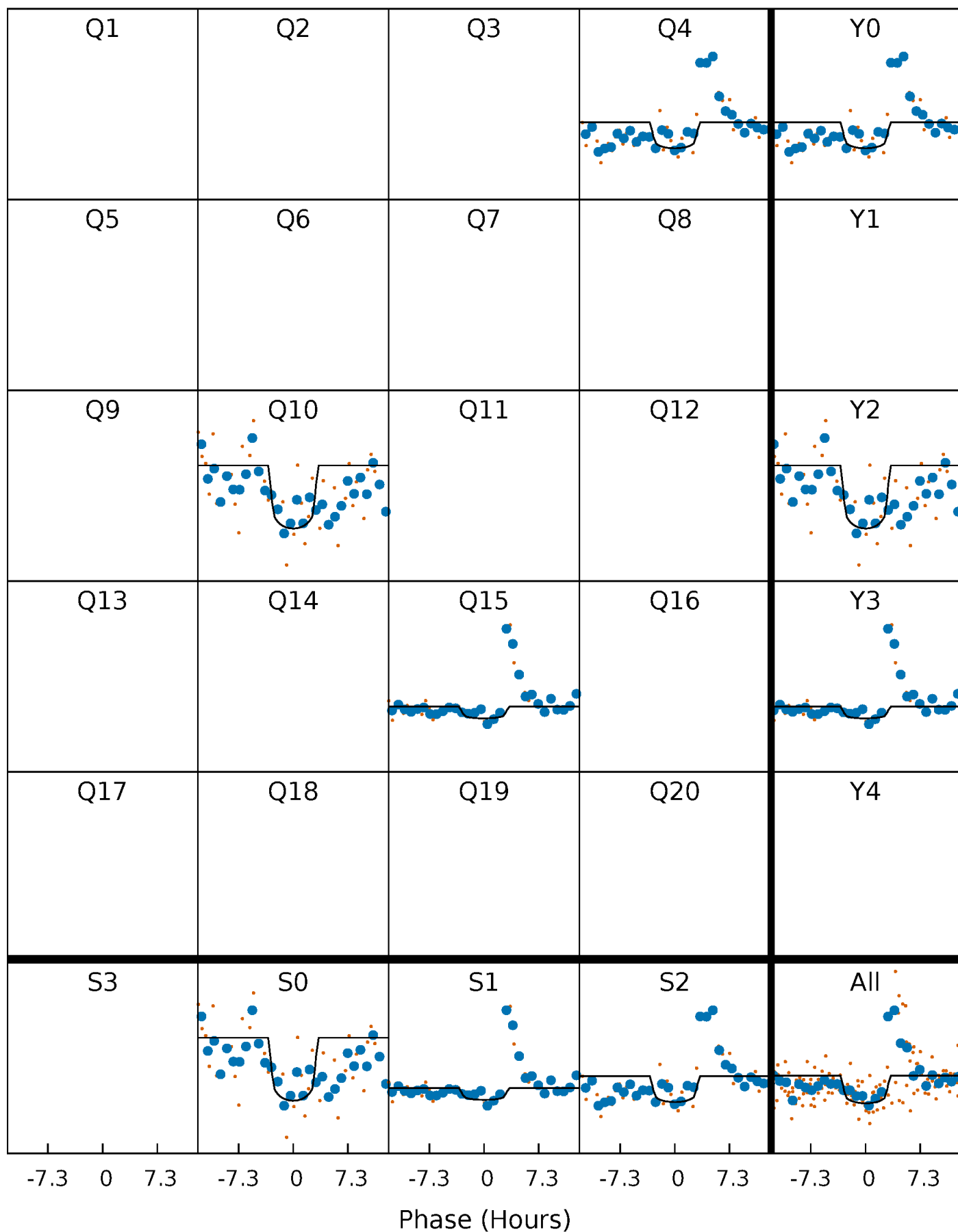
TCE 005721610-01 P=507.978719 Days  $T_0=407.139426$  (BKJD)





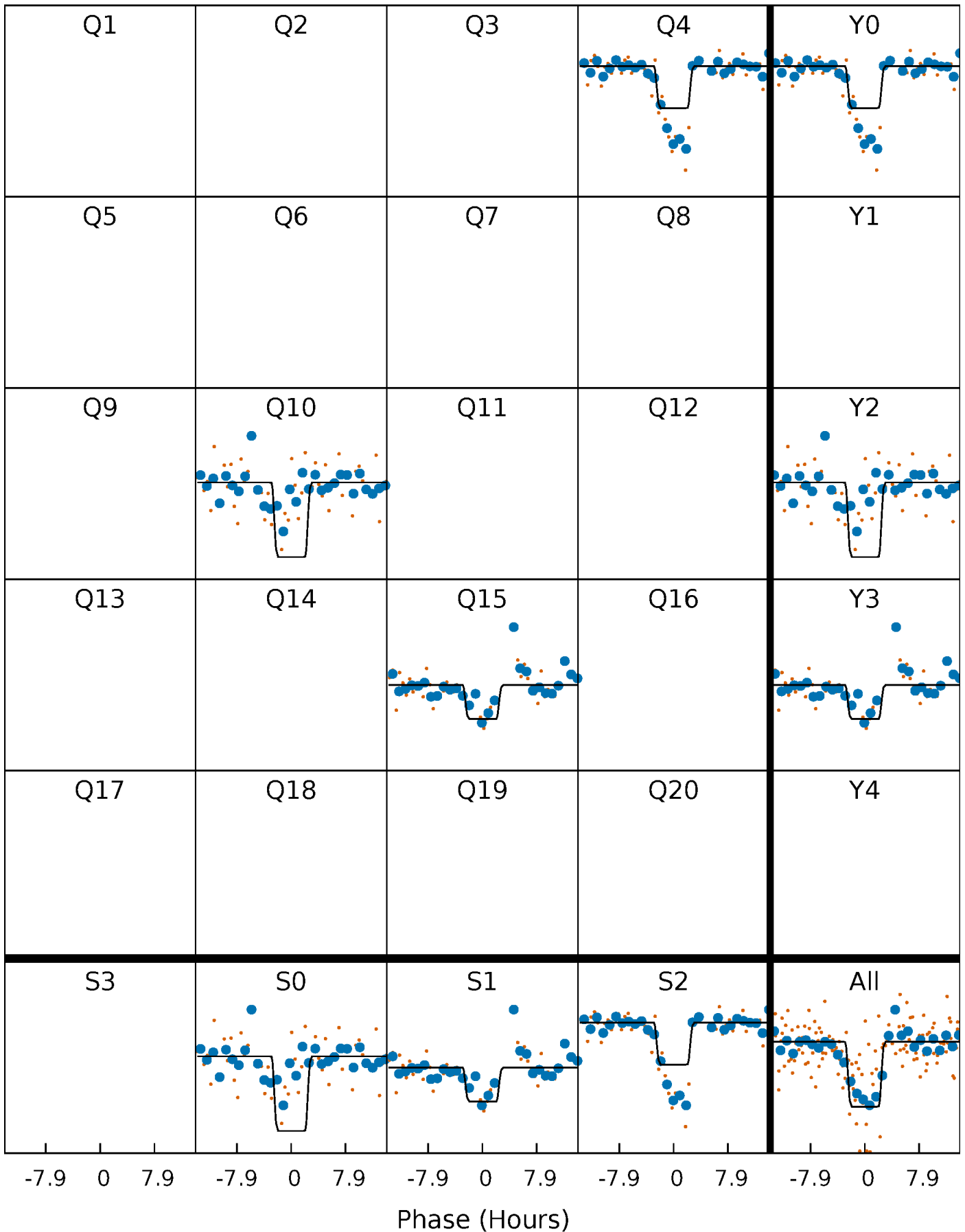
# DV Quarter-Phased Transit Curves

TCE 005721610-01 P=507.978719 Days  $T_0=407.139426$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

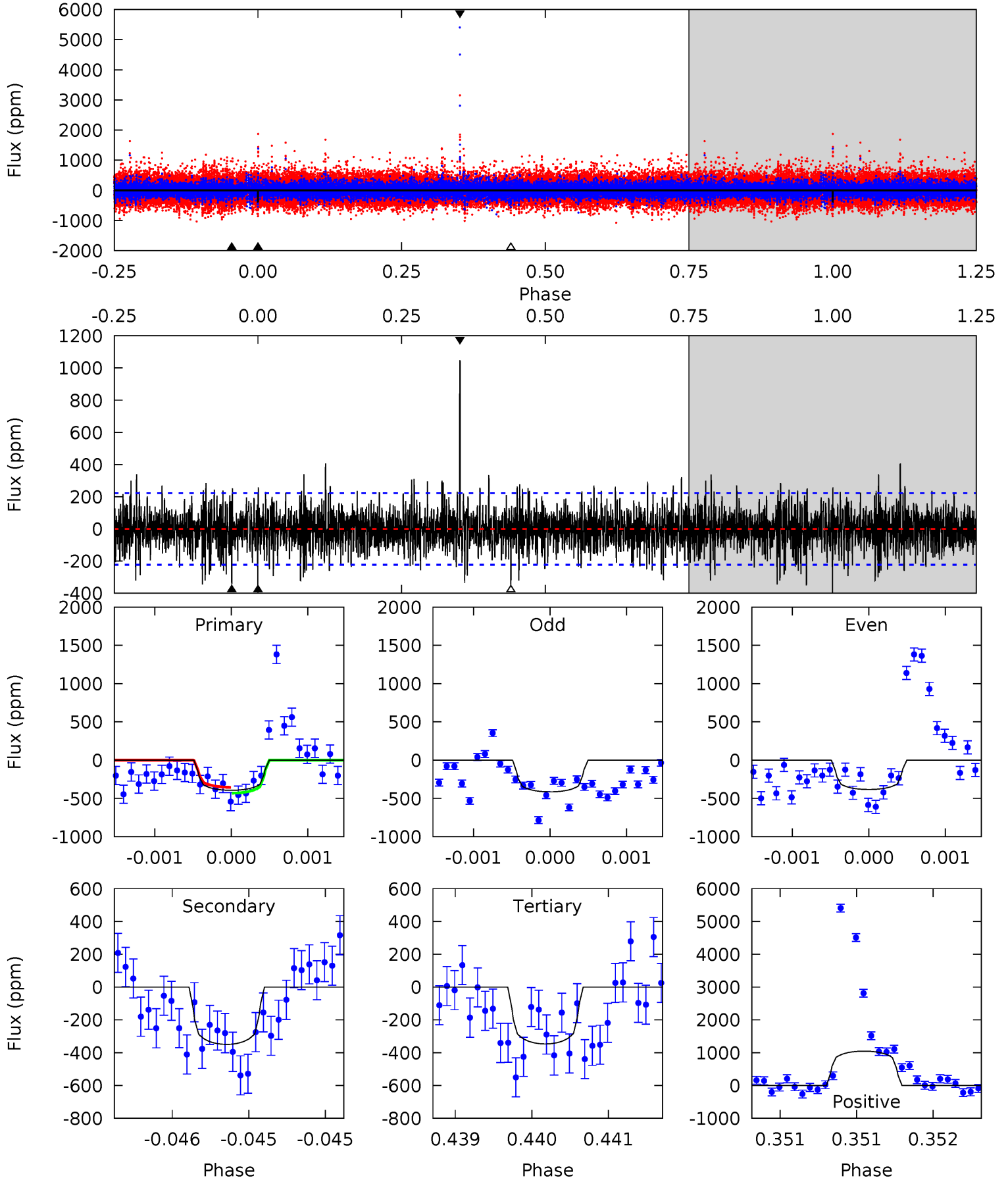
TCE 005721610-01 P=507.971490 Days  $T_0=407.167566$  (BKJD)



# DV Model-Shift Uniqueness Test

005721610-01, P = 507.978719 Days, E = 407.139426 Days

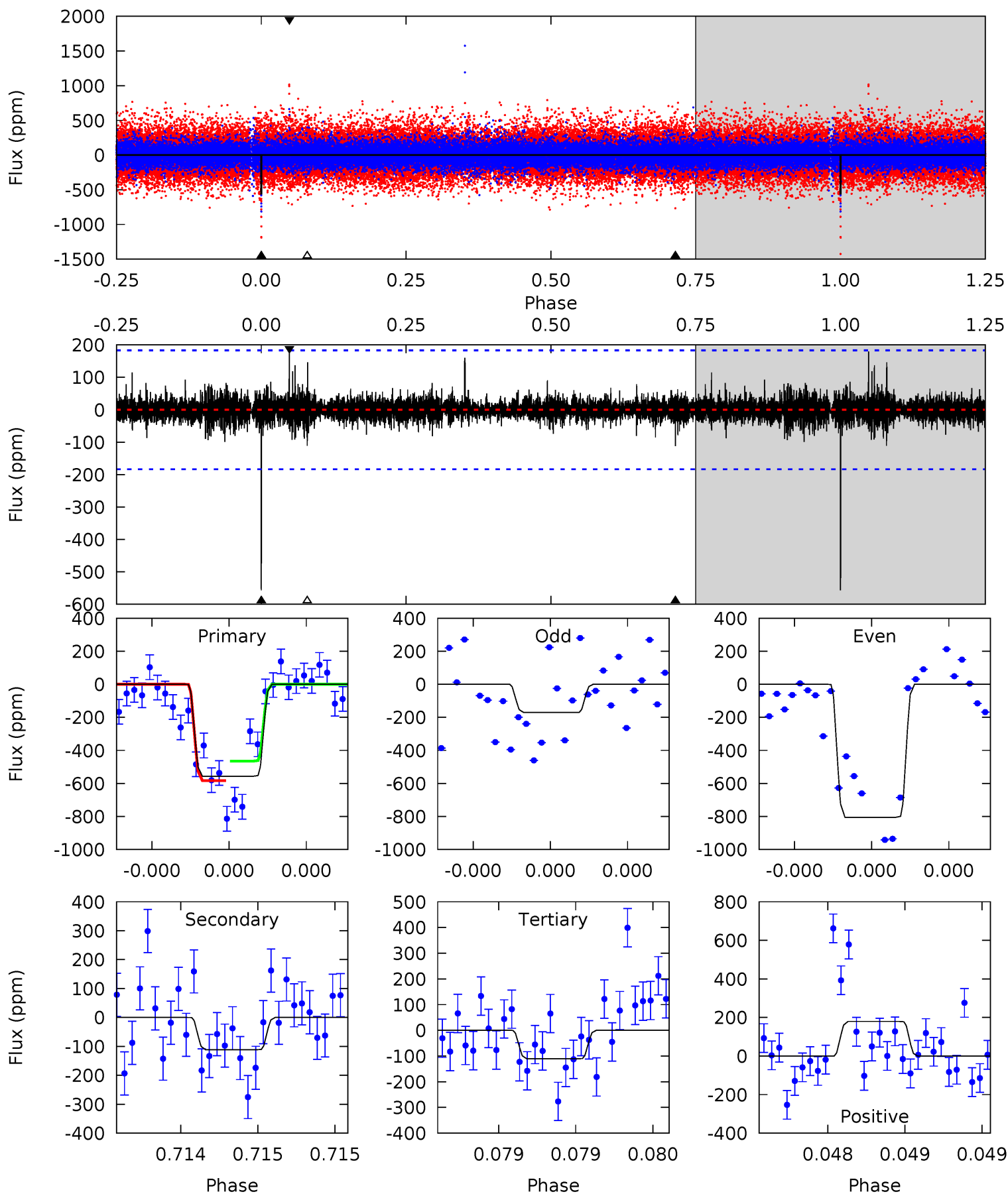
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.85	8.74	8.67	26.2	5.55	3.45	2.40	1.17	-16.3	0.07	-17.4	0.32	1.02	0.73	0.96



# Alt Model-Shift Uniqueness Test

005721610-01, P = 507.971490 Days, E = 407.167566 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
17.0	3.40	3.37	5.48	5.59	3.51	0.64	13.6	11.5	0.03	-2.07	9.68	1.27	0.24	1.83



### Stellar Parameters For KIC 005721610

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6597^{+160}_{-229}$	$4.270^{+0.149}_{-0.182}$	$-0.460^{+0.250}_{-0.300}$	$1.251^{+0.349}_{-0.233}$	$1.061^{+0.175}_{-0.116}$	$0.763^{+0.520}_{-0.356}$
	+2%/-3%	+3%/-4%	+54%/-65%	+28%/-19%	+16%/-11%	+68%/-47%
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 005721610-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-350 \pm 40$	$3.85^{+3.46}_{-2.47}$	$403^{+29}_{-24}$	$5464^{+4109}_{-1272}$	$21255^{+140126}_{-15325}$
Alt.	$-112 \pm 33$	$4.29^{+3.49}_{-2.73}$	$403^{+30}_{-25}$	$4107^{+2254}_{-728}$	$5250^{+36887}_{-3660}$

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

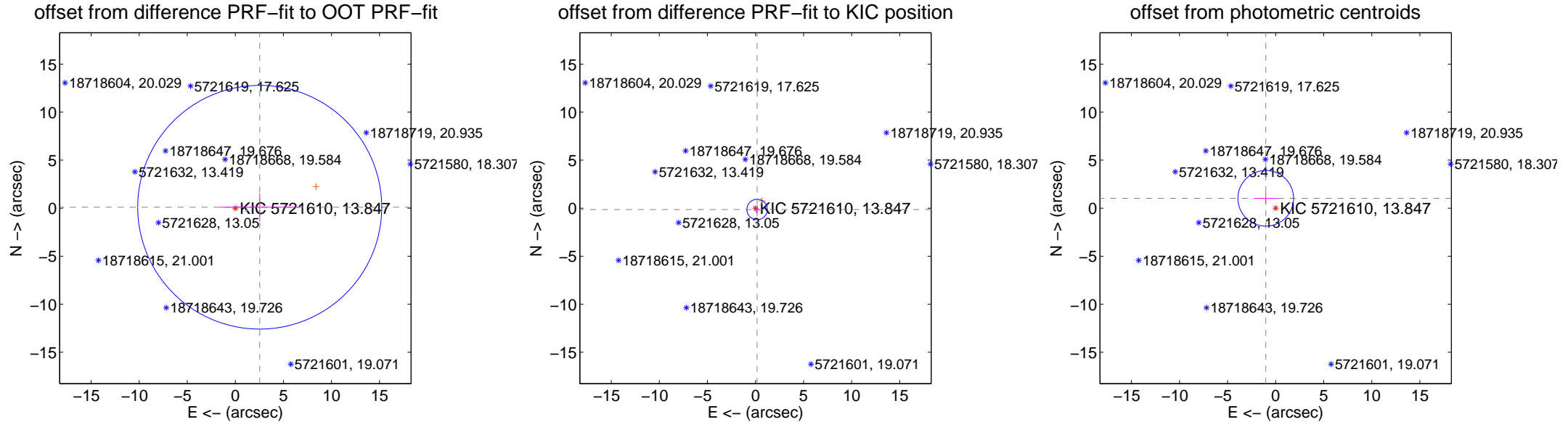
## DV Centroid Data

Supplemental centroid analysis for 005721610-01. Kepler magnitude: 13.85. Transit SNR 6.15

There are 1 quarters with good PRF difference image offsets

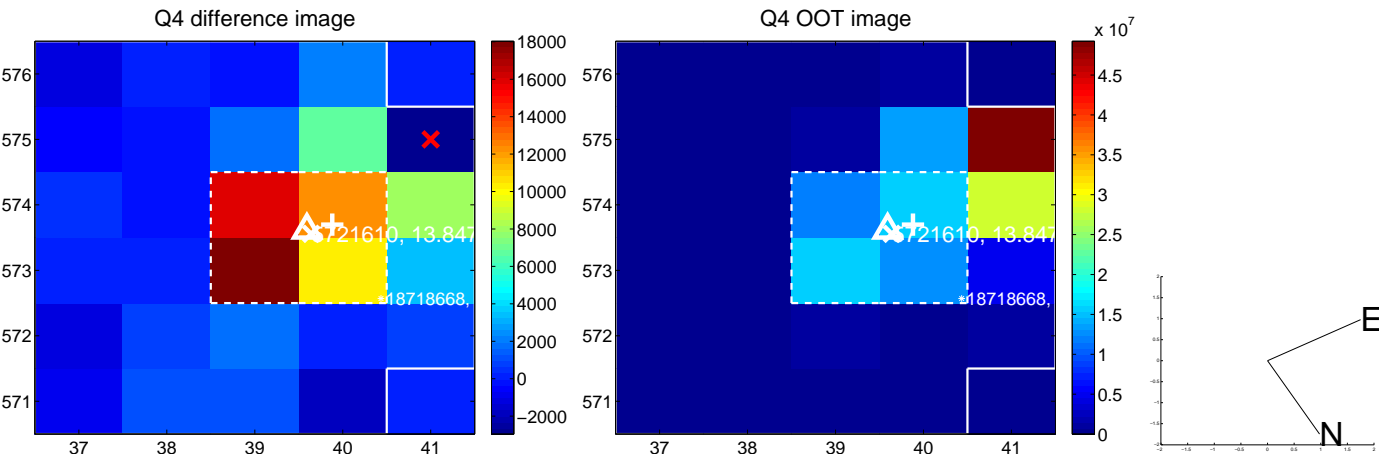
The OOT PRF centroid is offset from the target star catalog position by about 7.87 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.538 \pm 4.229$	0.60	$-2.536 \pm 4.176$	$0.098 \pm 1.455$
PRF-fit source offset from KIC position	$0.221 \pm 0.354$	0.62	$-0.172 \pm 0.287$	$-0.139 \pm 0.439$
photometric centroid source offset	$1.45 \pm 0.96$	1.51	$1.03 \pm 1.22$	$1.03 \pm 0.60$



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.

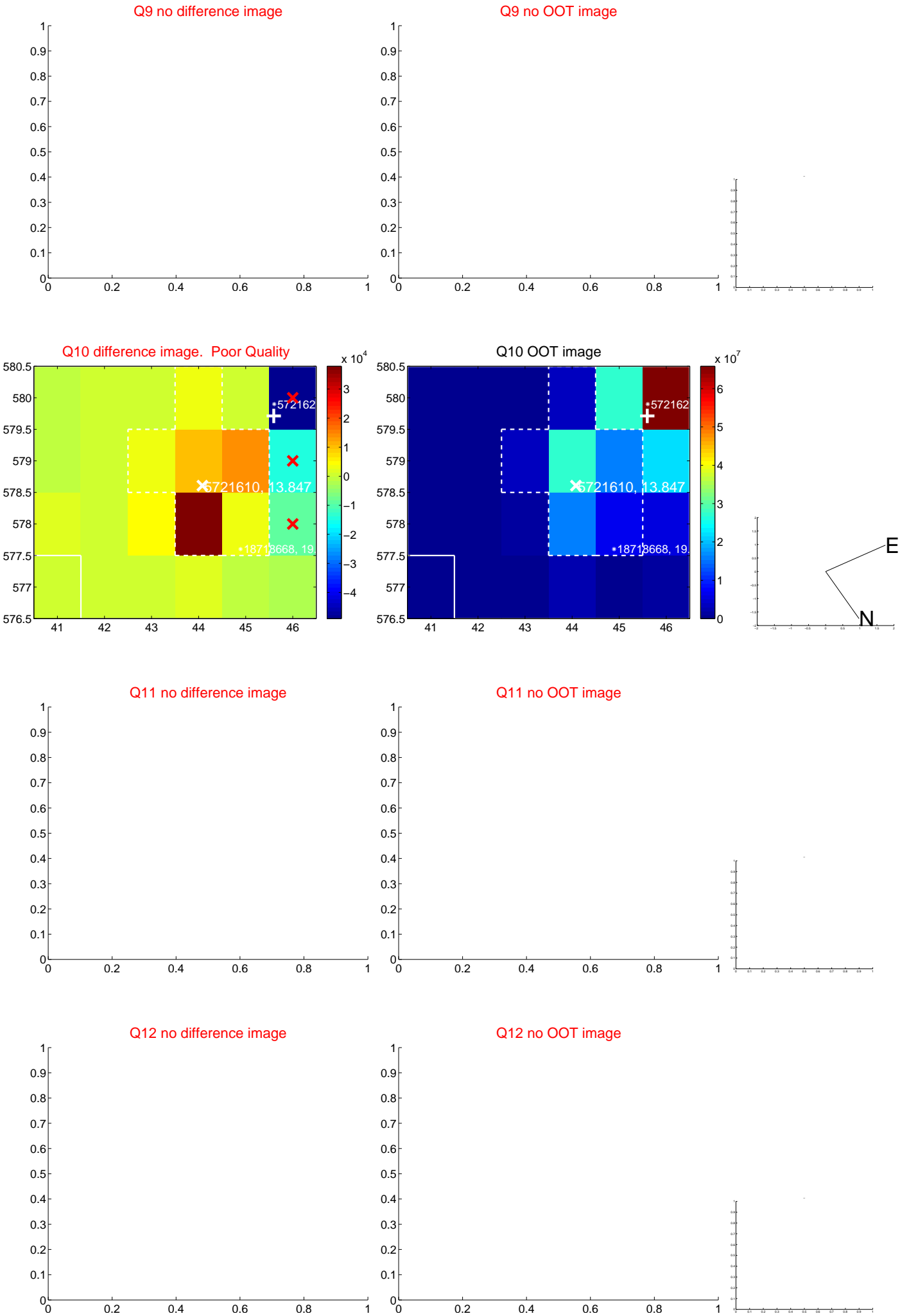




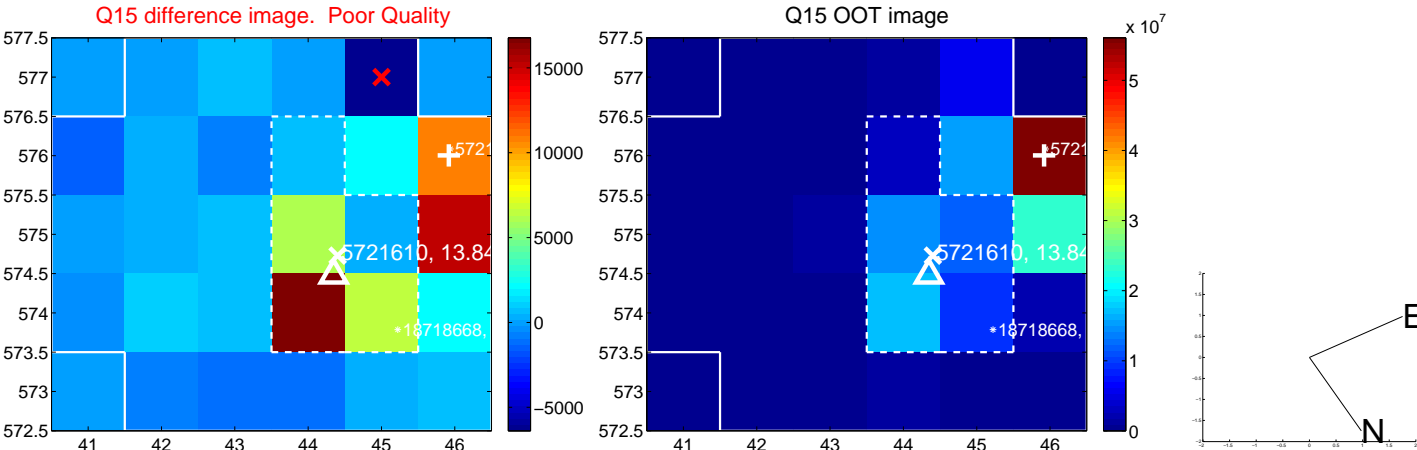
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



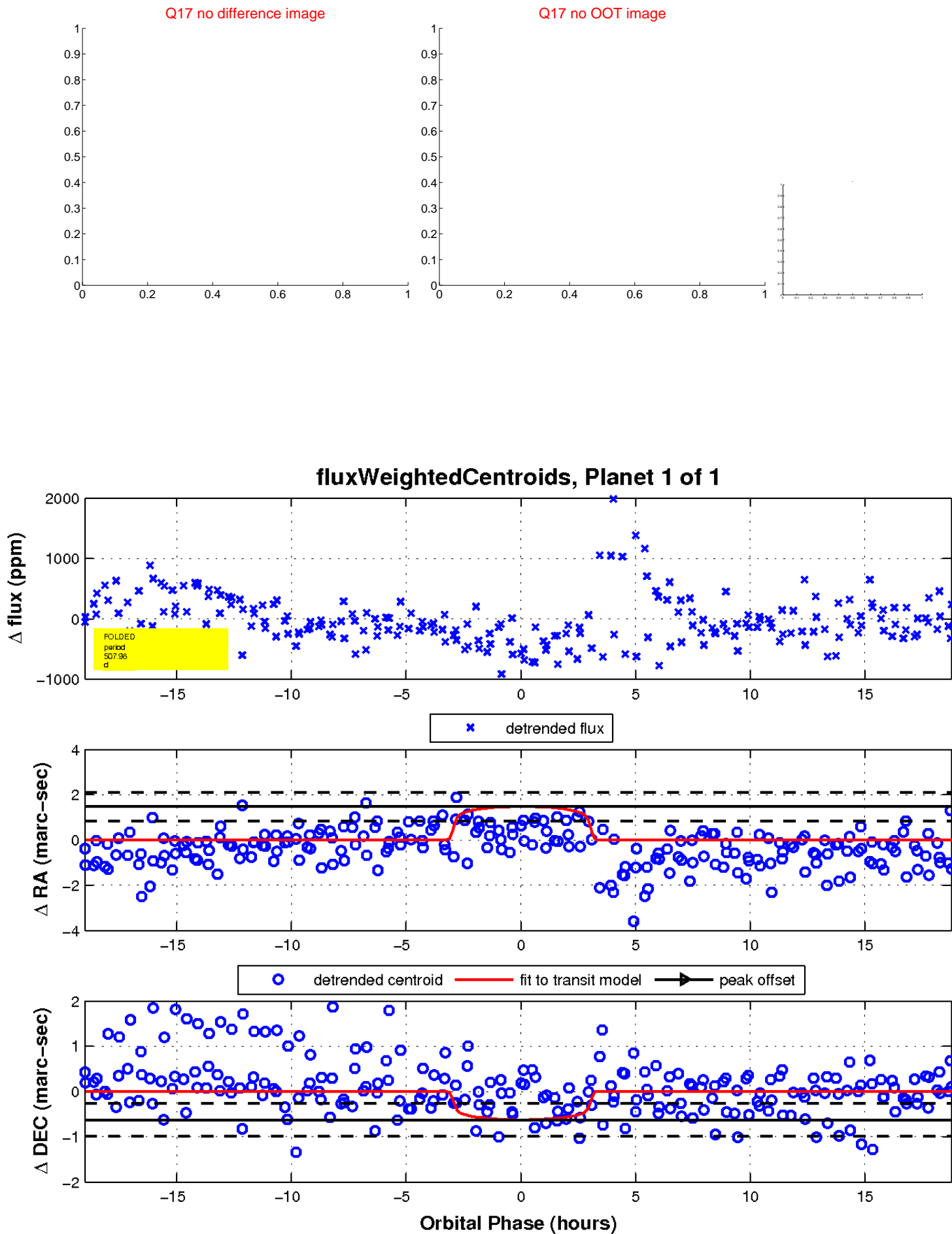
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

