

# KIC 004073730

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004073730-01	OBS	3785.01	3.140983	131.898970	74.9	21.989	197.1	21.8	3.80	6635	4.16	9951.16

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004073730-01	OBS	FP	0.00	1	0	0	0	LPP_DV—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](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

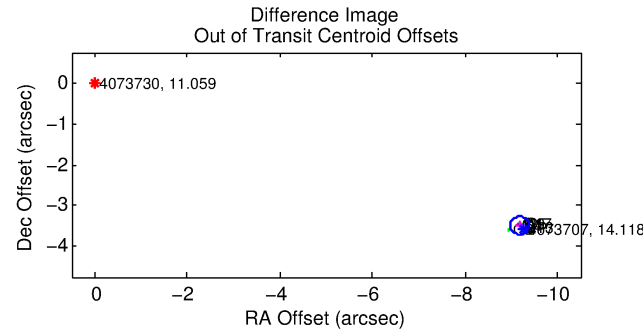
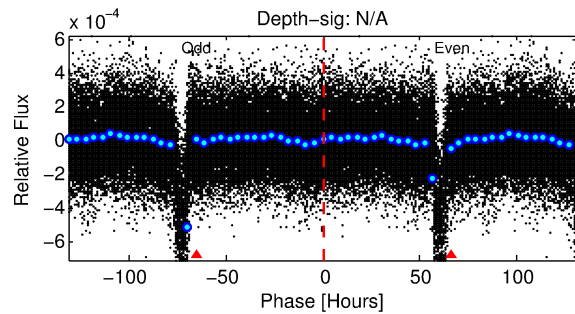
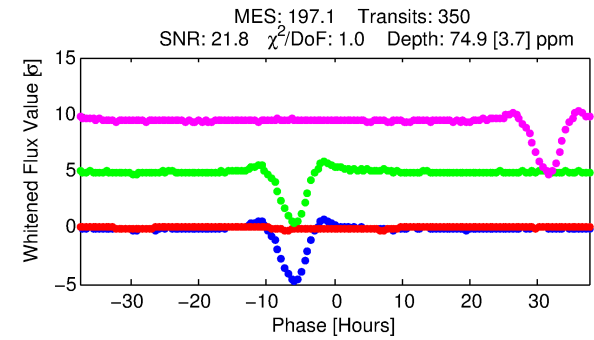
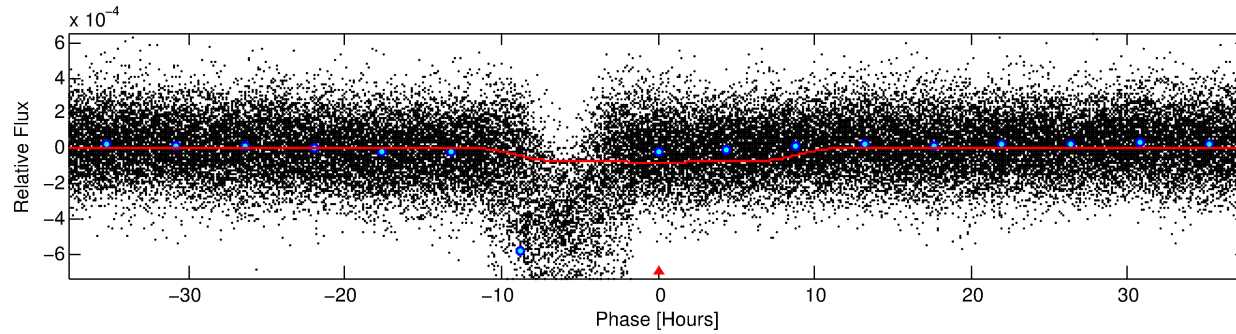
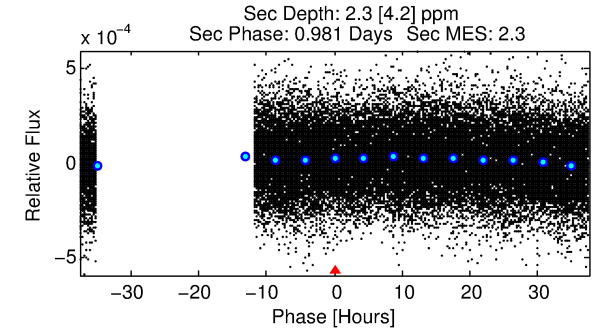
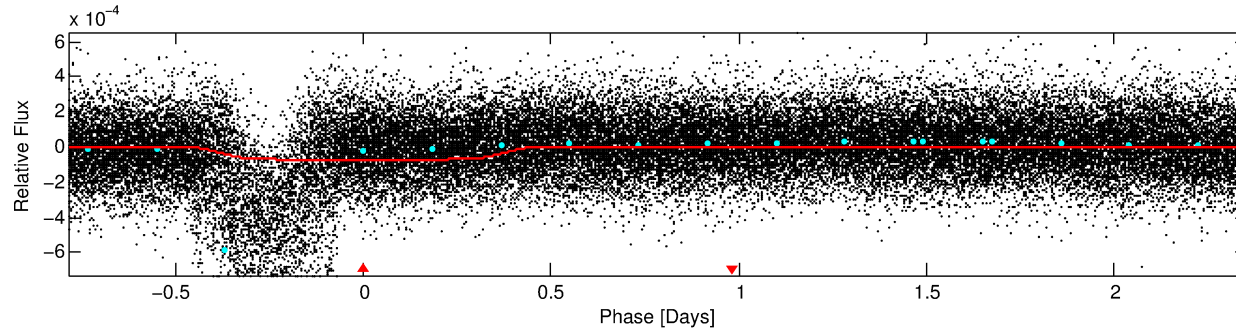
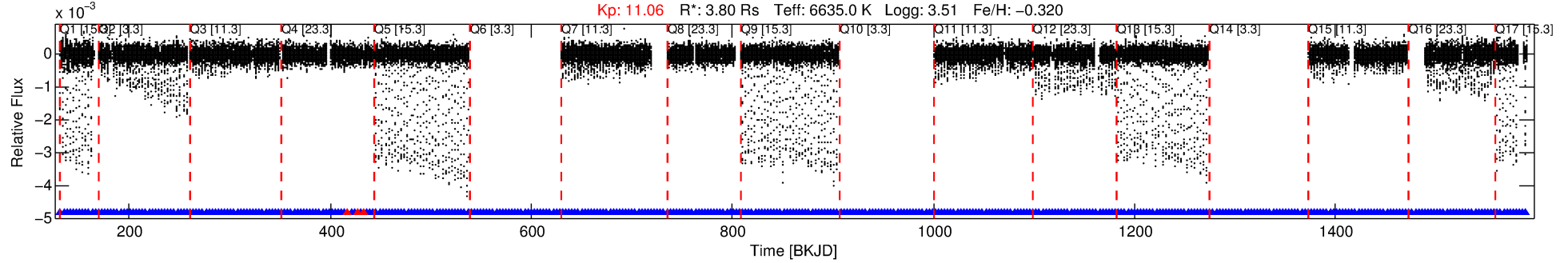
## Ephemeris Match Information For 004073730-01

No Significant Match Found

# DV One-Page Summary

KIC: 4073730 Candidate: 1 of 1 Period: 3.141 d  
KOI: K03785 Corr: No Ephemeris Match

Kp: 11.06 R\*: 3.80 Rs Teff: 6635.0 K Logg: 3.51 Fe/H: -0.320



## DV Fit Results:

Period = 3.14098 [0.00006] d  
Epoch = 131.8990 [0.0144] BKJD  
Rp/R\* = 0.0100 [0.0003]  
a/R\* = 1.04 [0.01]  
b = 0.97 [0.01]  
Seff = 9951.16 [6343.53]  
Teq = 2547 [406] K  
Rp = 4.16 [1.71] Re  
a = 0.0502 [0.0197] AU  
Ag = 0.18 [0.36] [-2.29σ]  
Teff = 2570 [1199] K [0.02σ]

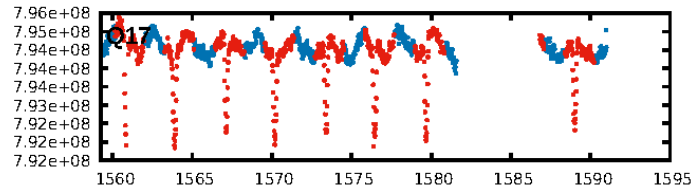
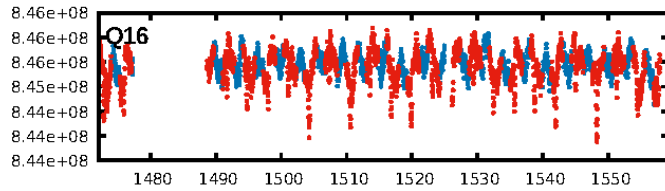
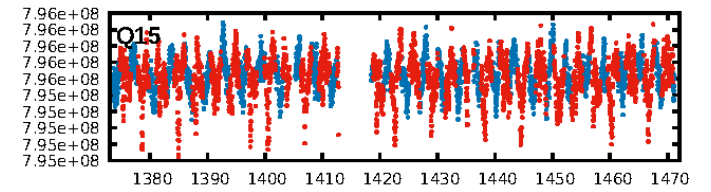
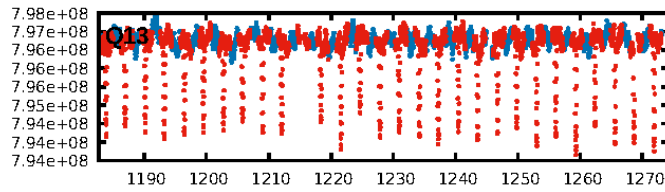
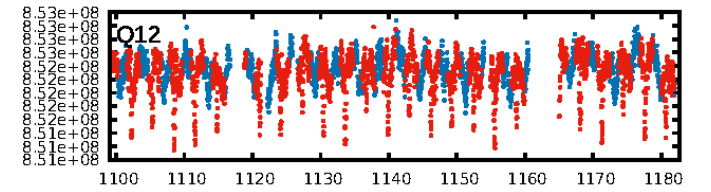
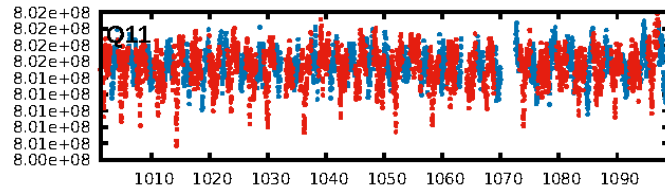
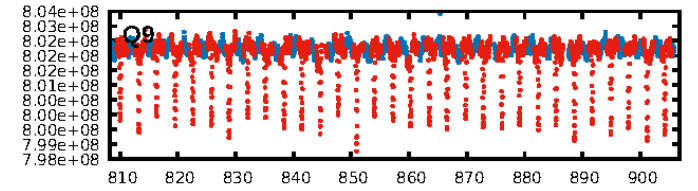
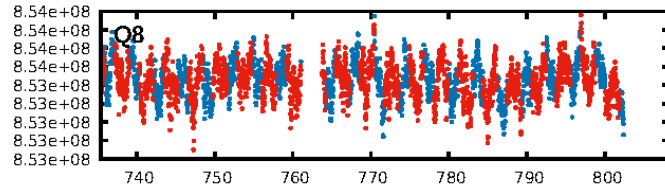
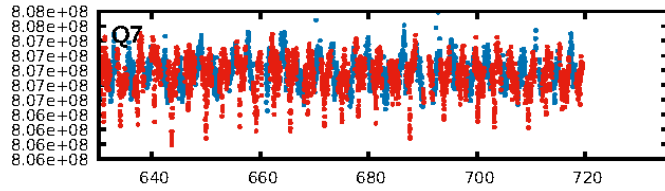
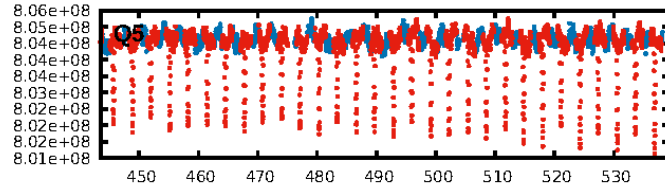
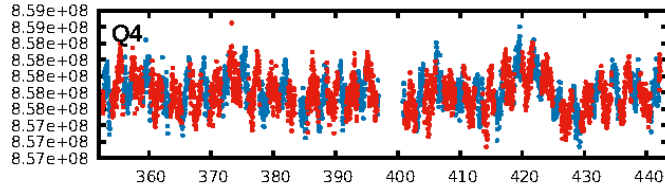
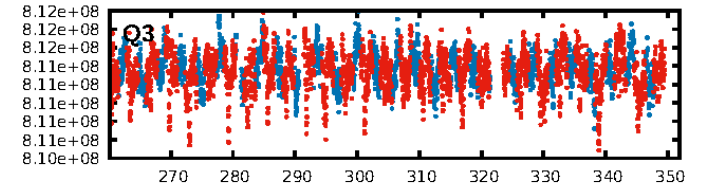
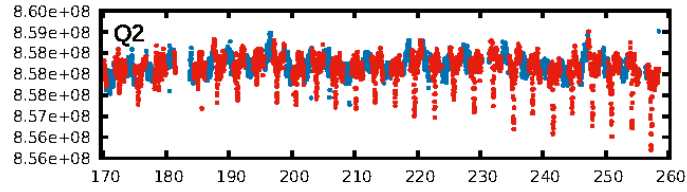
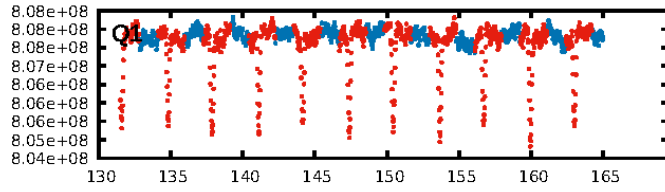
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.99 [328/331]  
GhostDiagnostic-chr: -0.5541  
Centroid-sig: N/A  
Centroid-so: 48.955 arcsec [40.79σ]  
OotOffset-rm: 9.818 arcsec [137.99σ]  
KicOffset-rm: 9.893 arcsec [146.29σ]  
OotOffset-st: 1/0/0/5 [6]  
KicOffset-st: 1/0/0/5 [6]  
DiffImageQuality-fgm: 1.00 [6/6]  
DiffImageOverlap-fno: 1.00 [14/14]

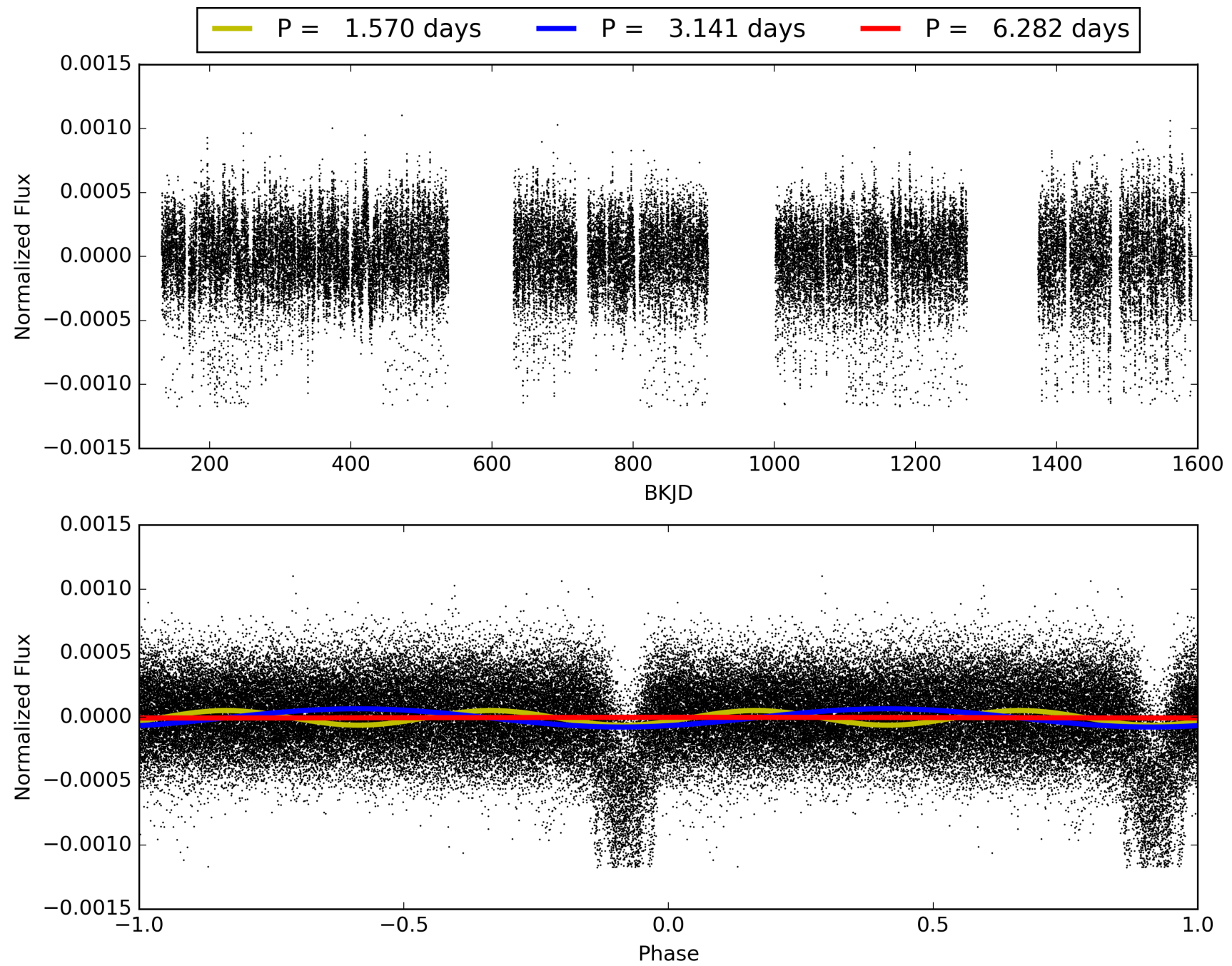
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:33:17 Z

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

# TCE 004073730-01, PDC Light Curves

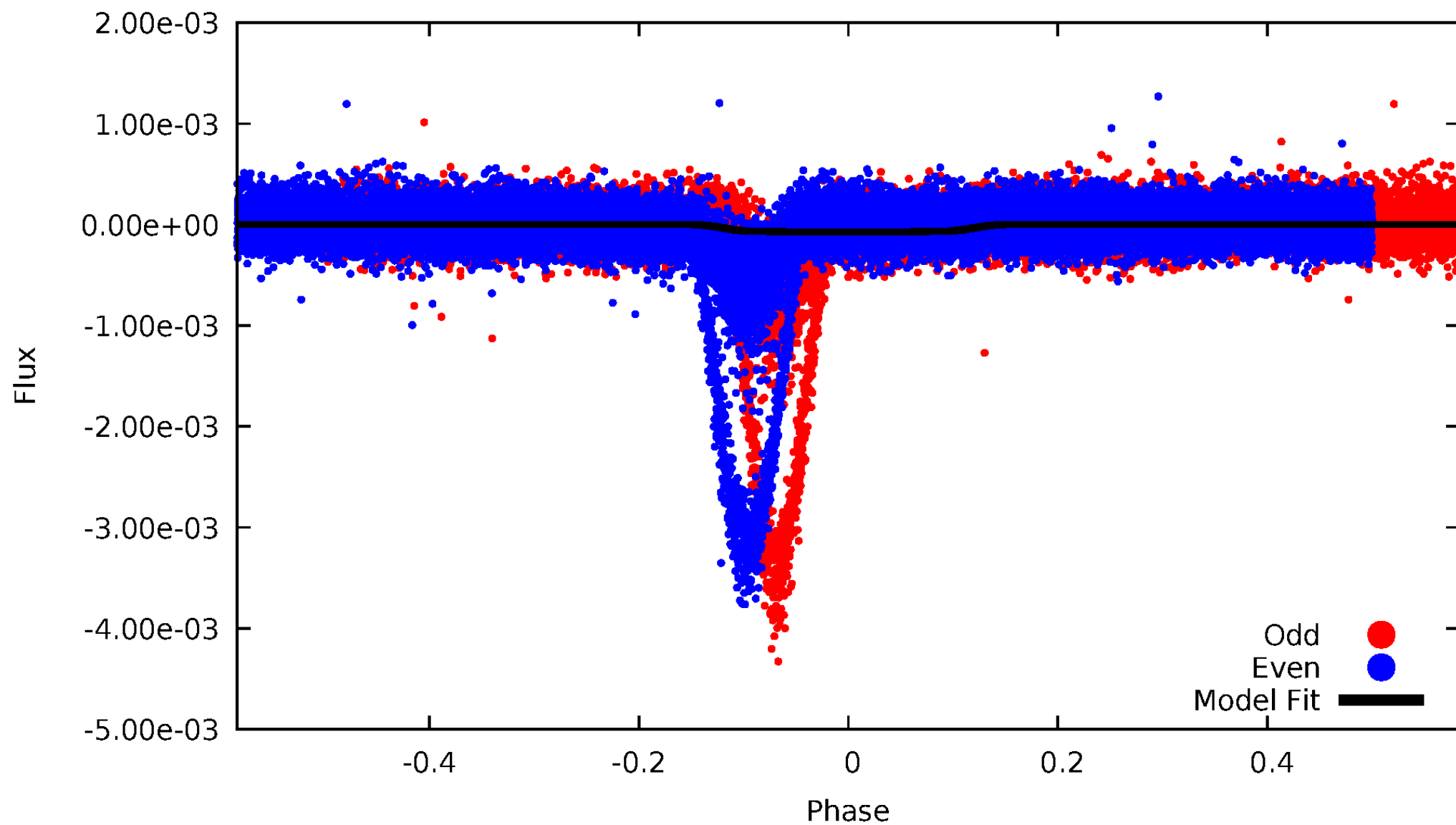


TCE 004073730-01



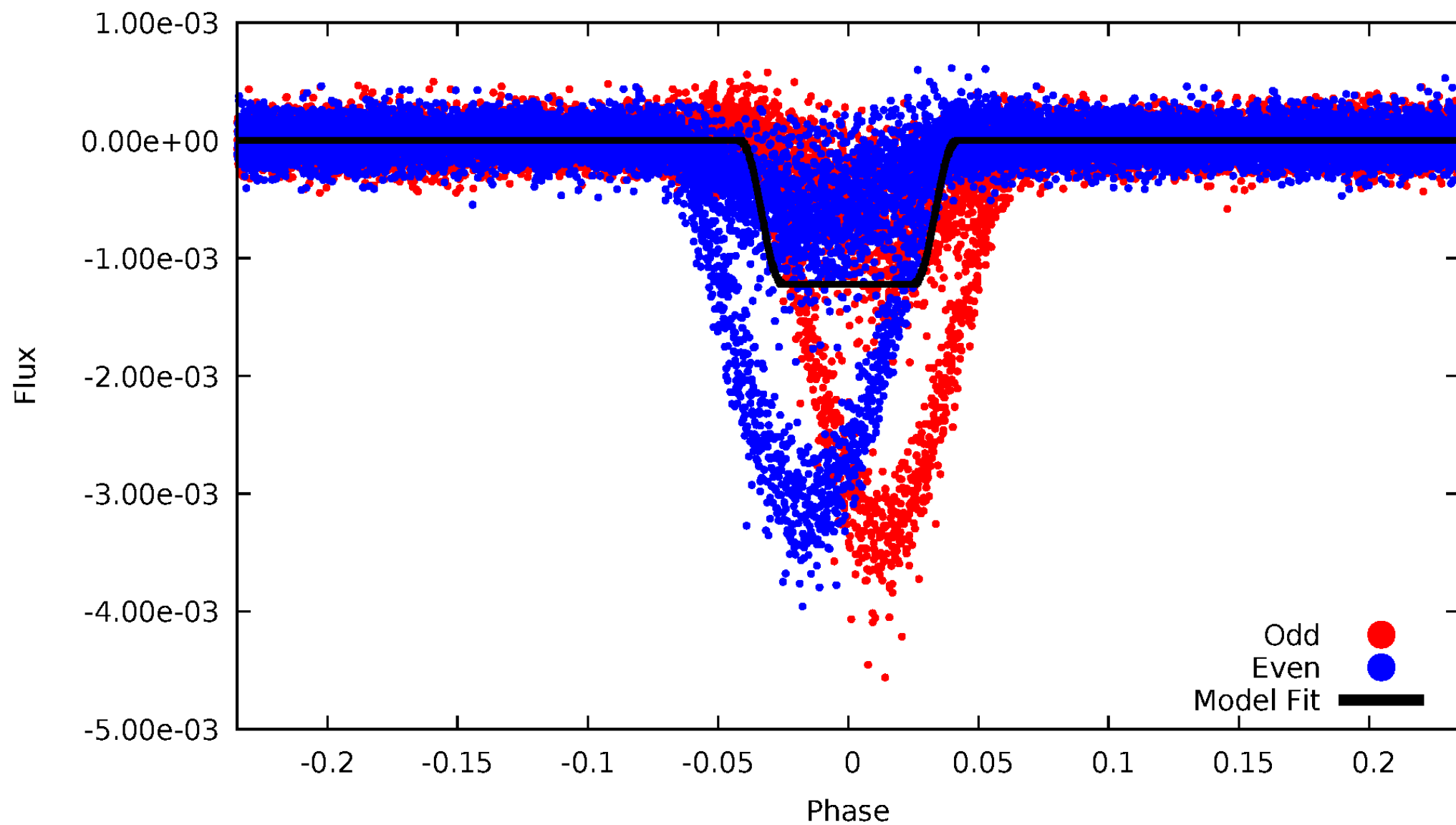
# DV Odd/Even

TCE 004073730-01



# ALT Odd/Even

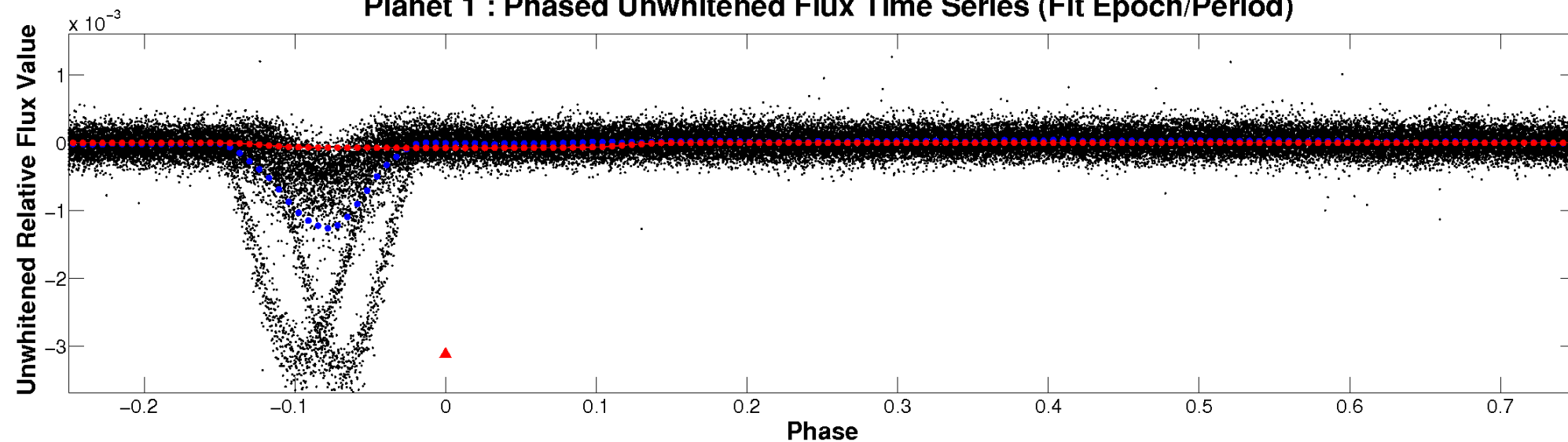
TCE 004073730-01



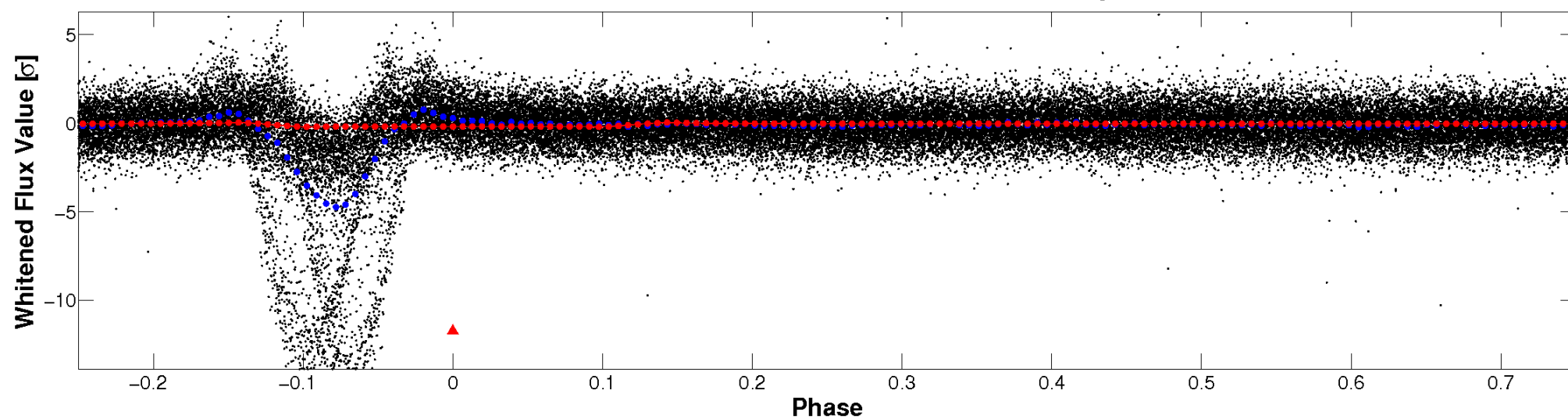


# Non-Whitened Vs. Whitened Light Curve

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

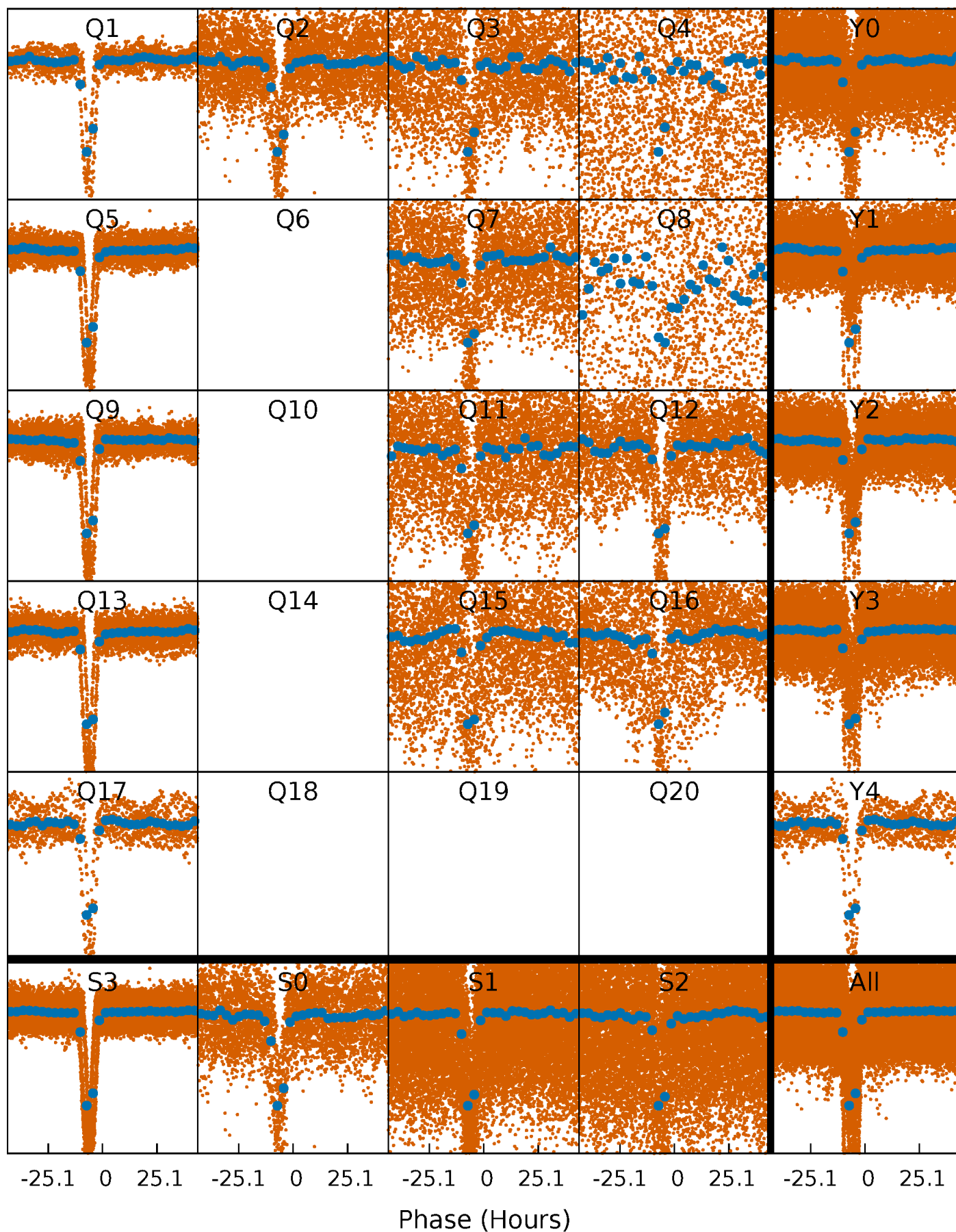


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

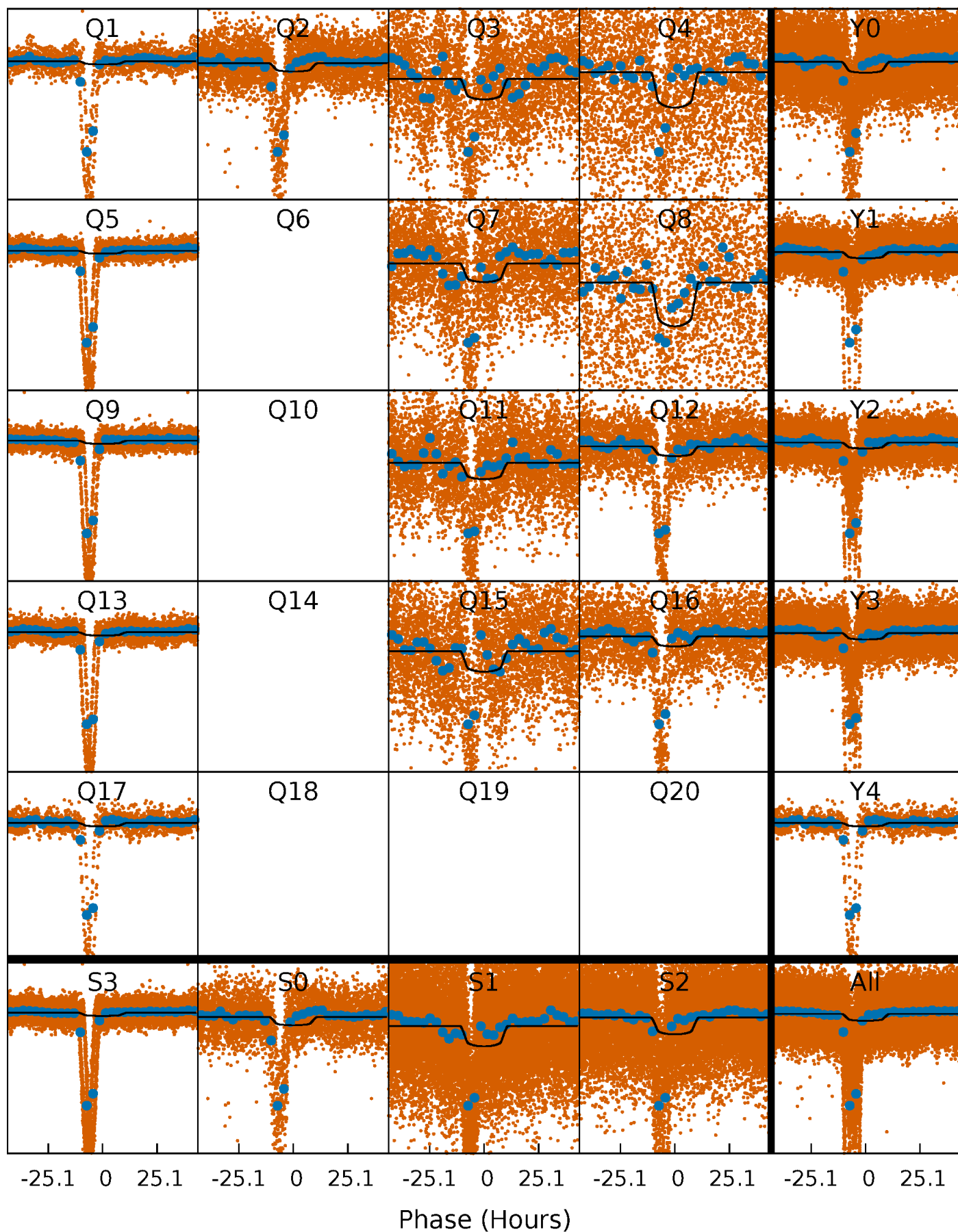
TCE 004073730-01 P= 3.140983 Days  $T_0=131.898970$  (BKJD)





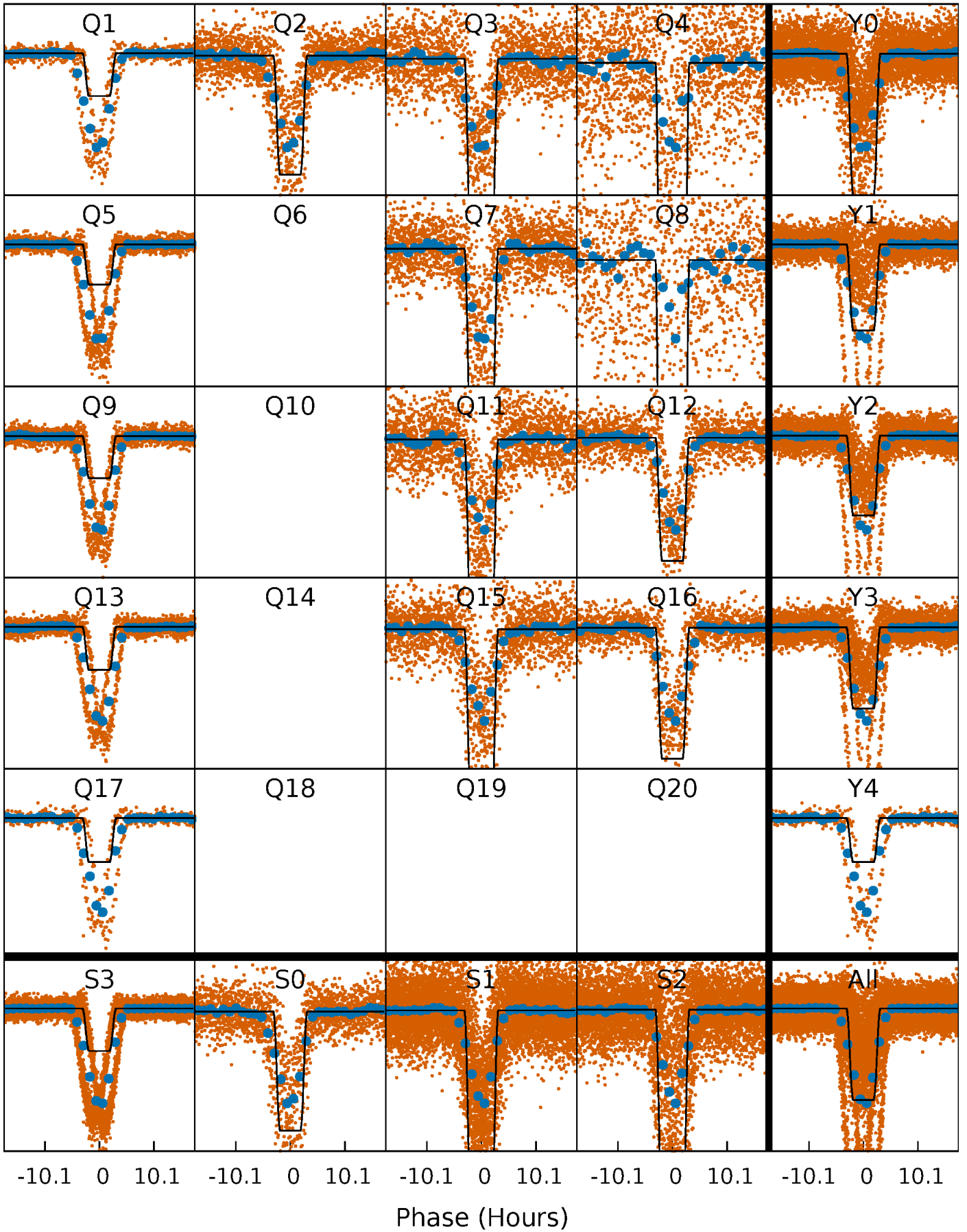
# DV Quarter-Phased Transit Curves

TCE 004073730-01   P= 3.140983 Days    $T_0=131.898970$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

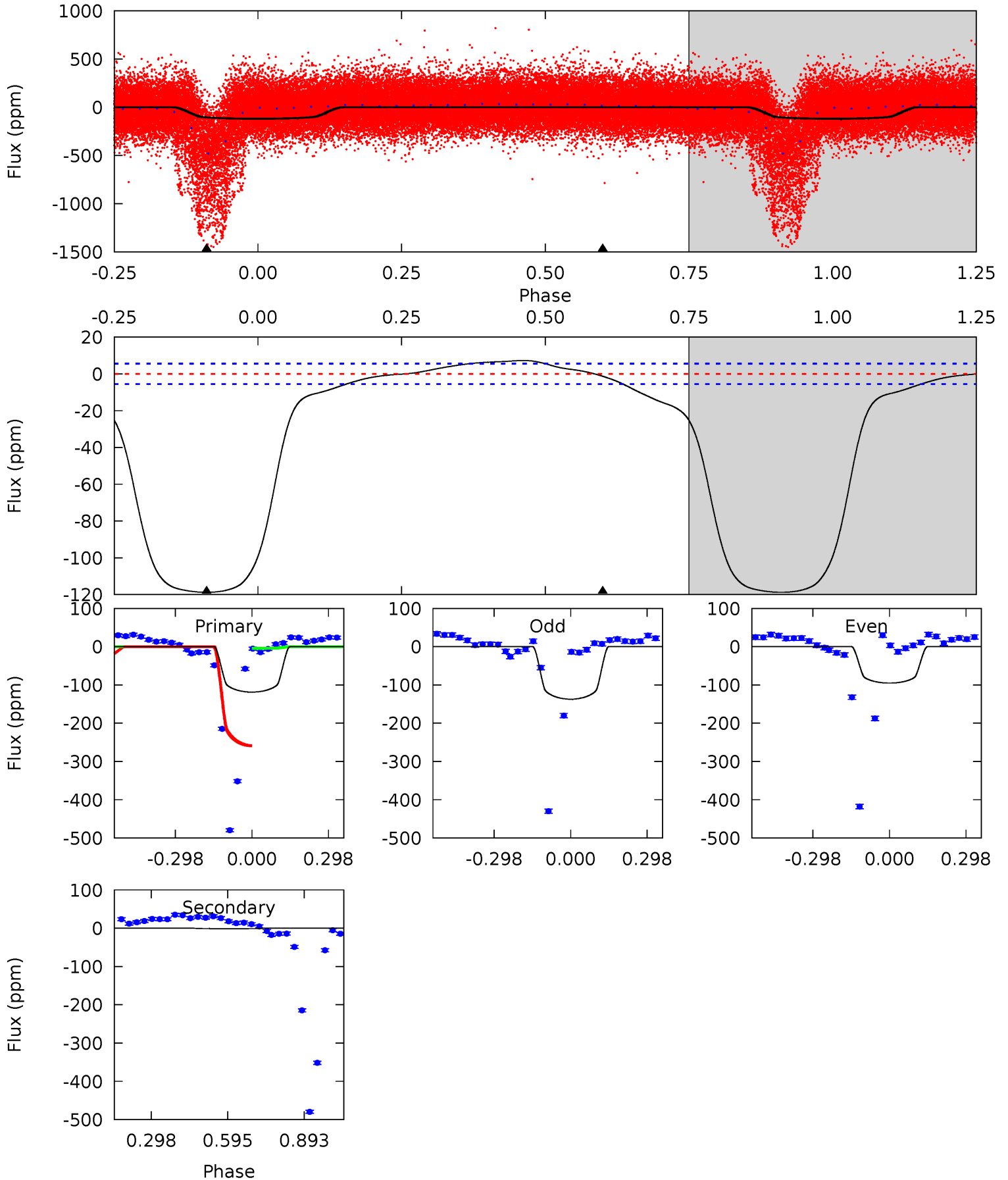
TCE 004073730-01 P= 3.140971 Days  $T_0=131.645940$  (BKJD)



# DV Model-Shift Uniqueness Test

004073730-01, P = 3.140983 Days, E = 128.757987 Days

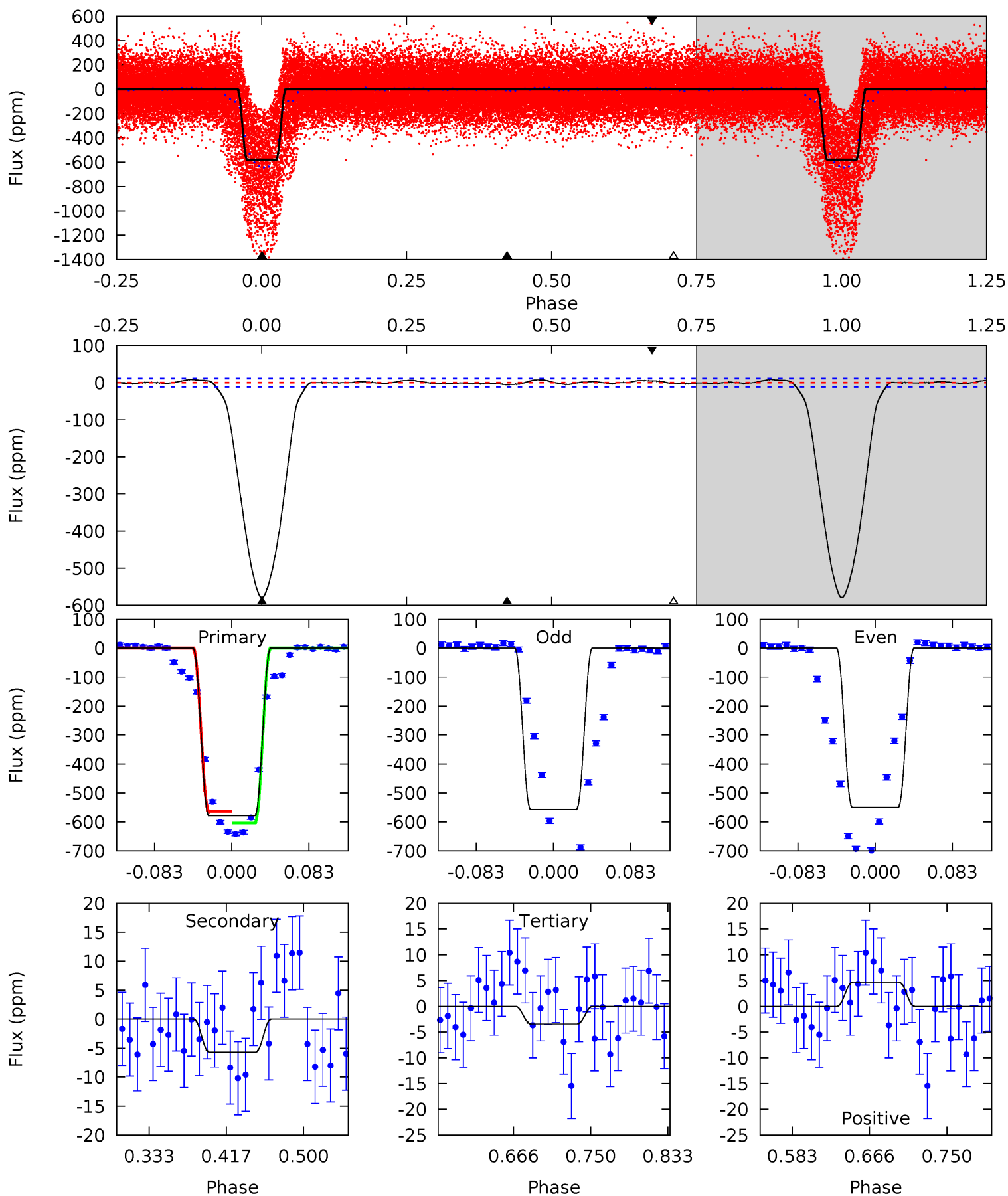
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
92.6	1.01	0	0	4.33	1.04	0.76	92.6	92.6	1.01	1.01	16.4	1.81	0.06	99.6



# Alt Model-Shift Uniqueness Test

004073730-01, P = 3.140971 Days, E = 128.504969 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
236.5	2.32	1.41	1.91	4.60	1.73	1.24	235.1	234.6	0.92	0.41	1.51	1.62	0.01	0



### Stellar Parameters For KIC 004073730

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6635^{+167}_{-183}$	$3.511^{+0.368}_{-0.092}$	$-0.320^{+0.350}_{-0.250}$	$3.798^{+0.390}_{-1.561}$	$1.705^{+0.213}_{-0.396}$	$0.044^{+0.133}_{-0.013}$
	+3%/-3%	+10%/-3%	+109%/-78%	+10%/-41%	+12%/-23%	+302%/-30%
Source	PHO1	FLK73	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 004073730-01 / KOI 3785.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1\pm1$	$4.12^{+0.37}_{-0.93}$	$3511^{+177}_{-345}$	$-3126^{+602}_{-285}$	$0.122^{+0.127}_{-0.124}$
Alt.	$-6\pm2$	$14.56^{+1.08}_{-3.27}$	$3511^{+192}_{-341}$	$-3321^{+227}_{-129}$	$0.041^{+0.024}_{-0.018}$

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



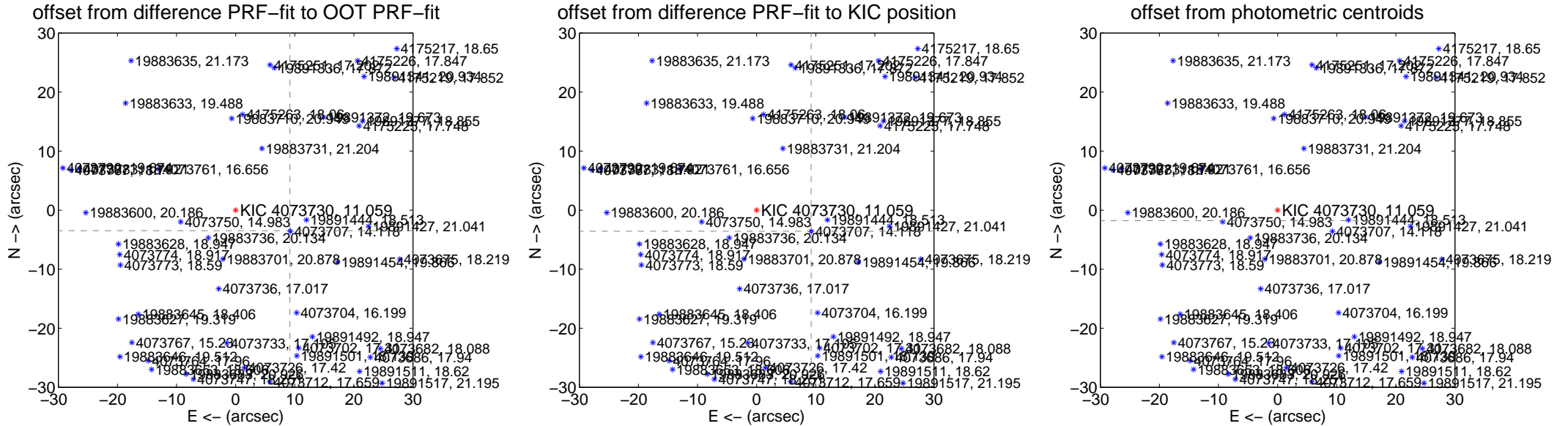
# DV Centroid Data

Supplemental centroid analysis for 004073730-01. **Kepler magnitude: 11.06.** Transit SNR 21.78

There are 6 quarters with good PRF difference image offsets

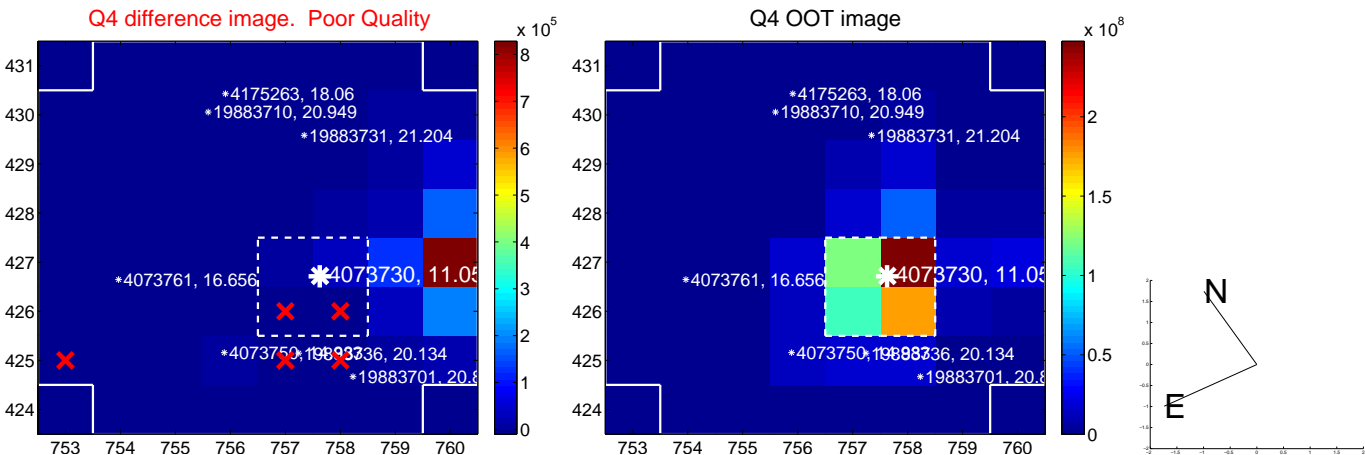
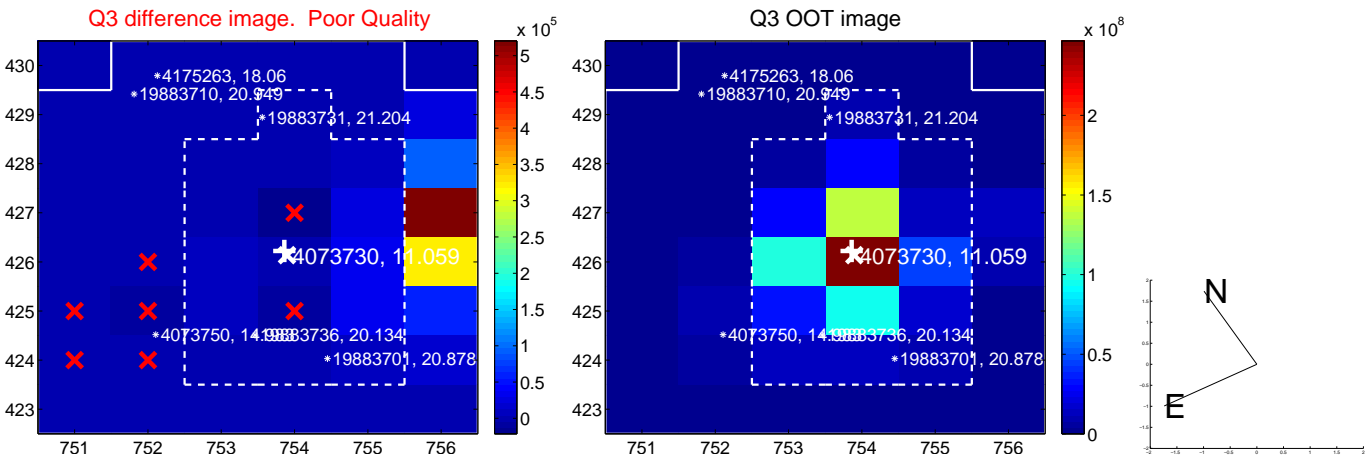
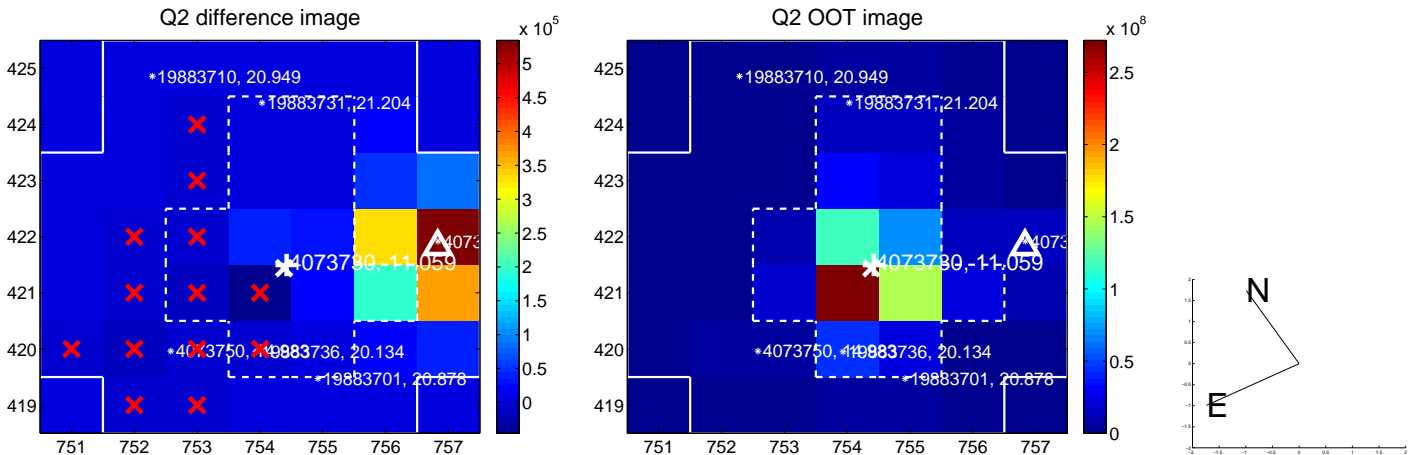
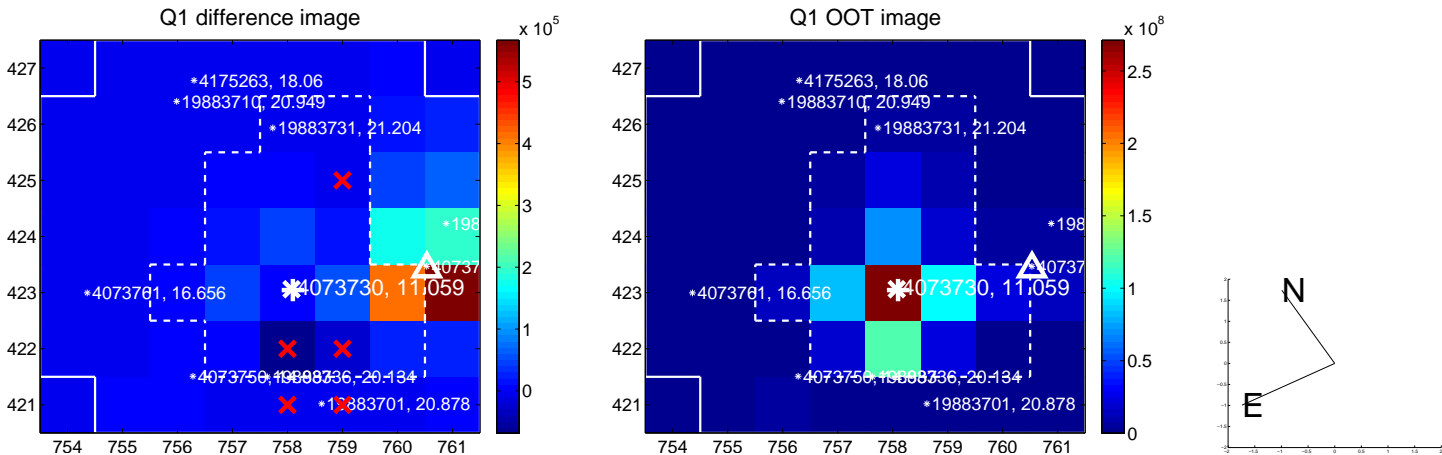
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	9.818 $\pm$ 0.071	137.99	-9.177 $\pm$ 0.075	-3.490 $\pm$ 0.071
PRF-fit source offset from KIC position	9.893 $\pm$ 0.068	146.29	-9.228 $\pm$ 0.067	-3.565 $\pm$ 0.070
photometric centroid source offset	48.96 $\pm$ 1.20	40.79	-48.92 $\pm$ 1.20	-1.78 $\pm$ 0.39

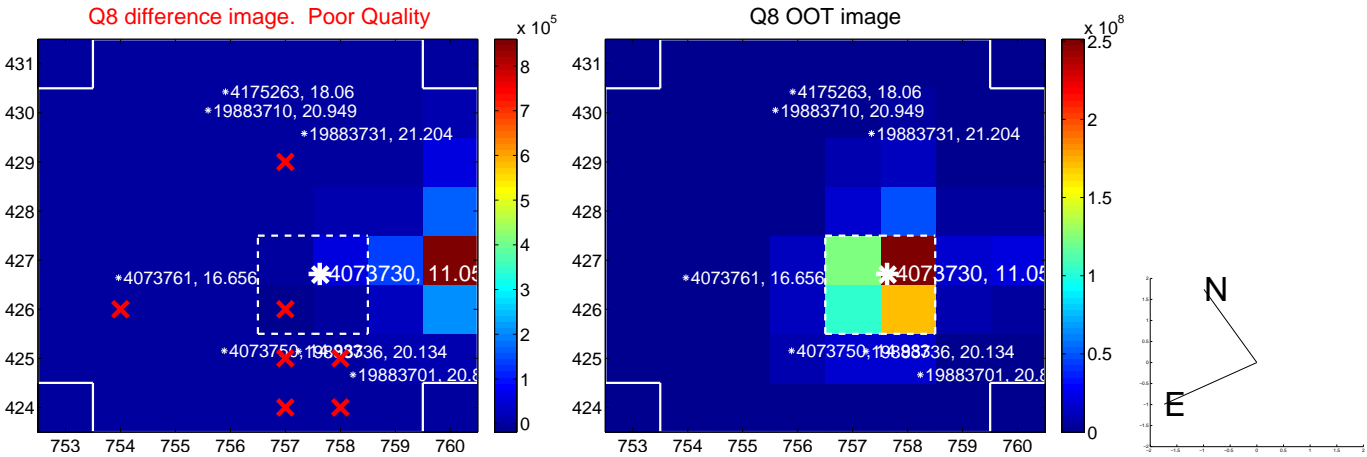
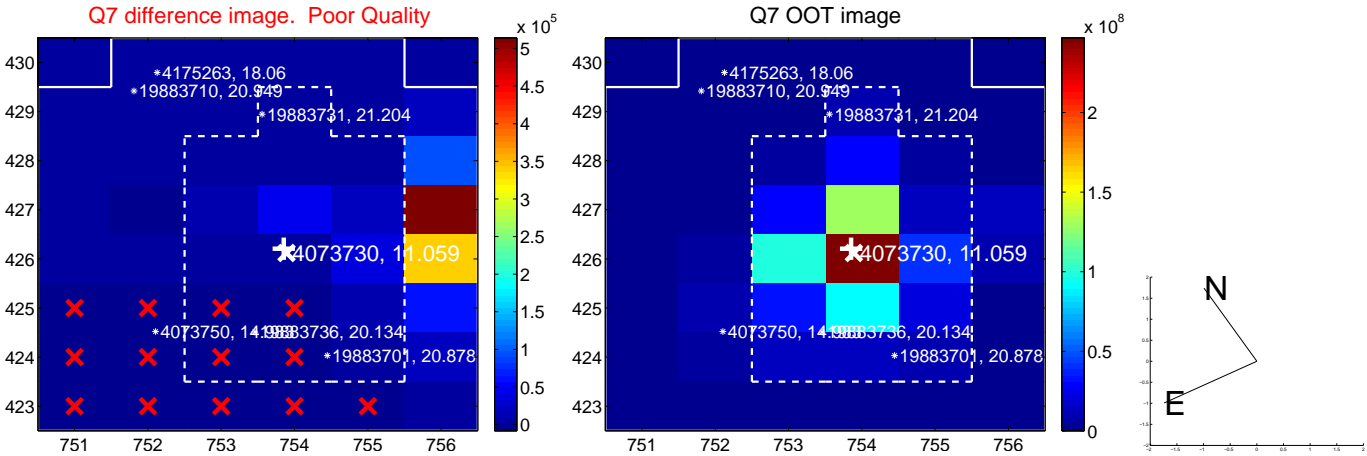
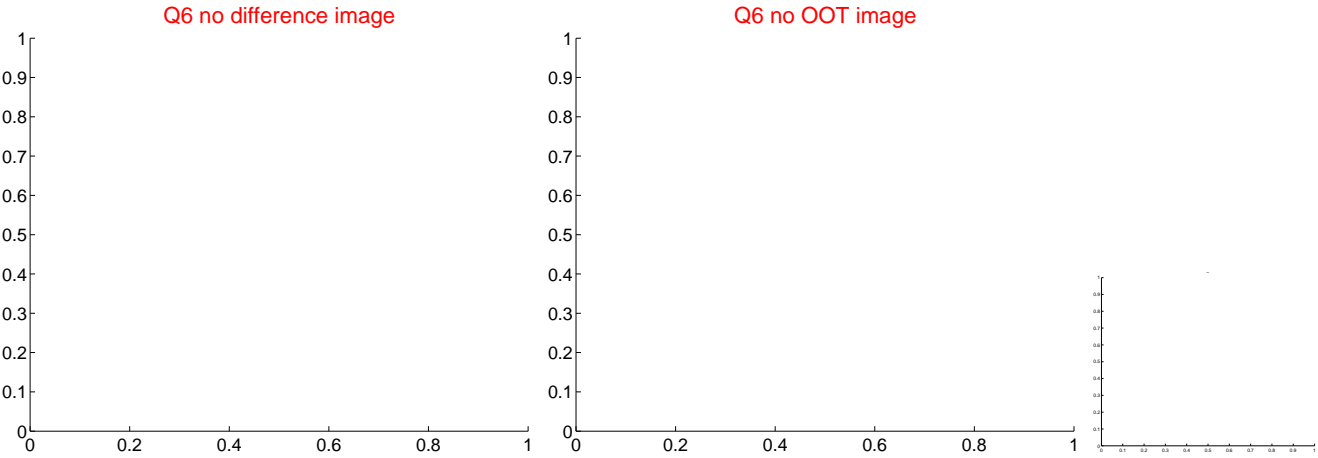
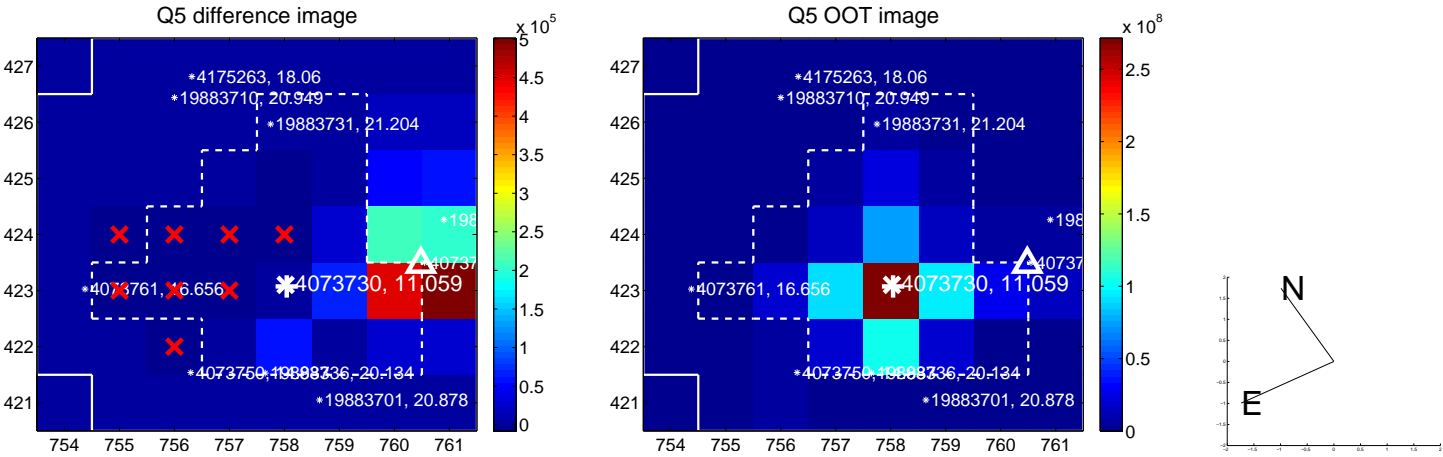


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

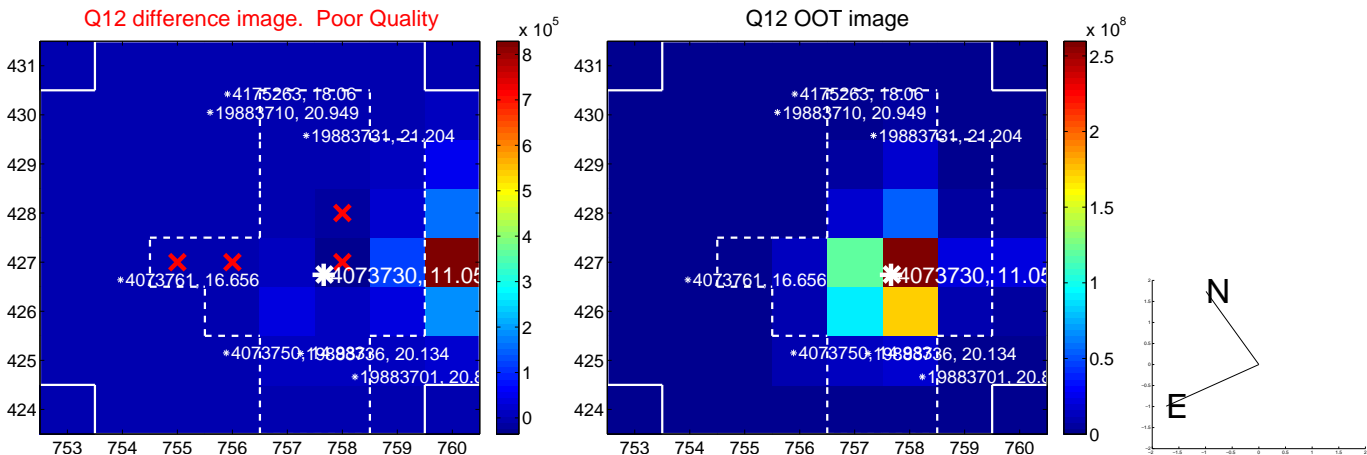
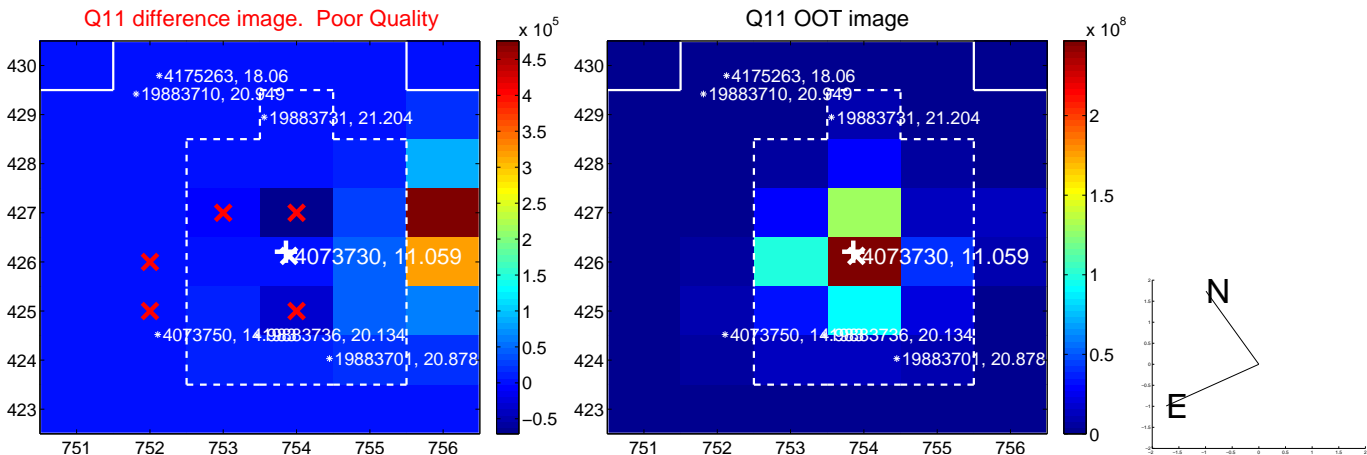
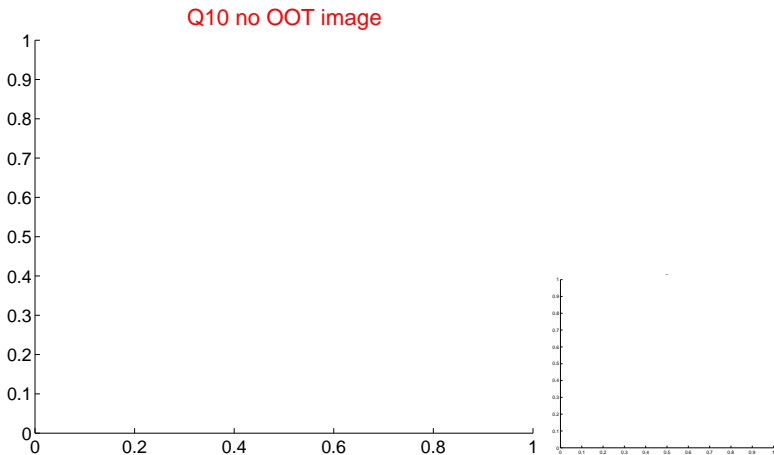
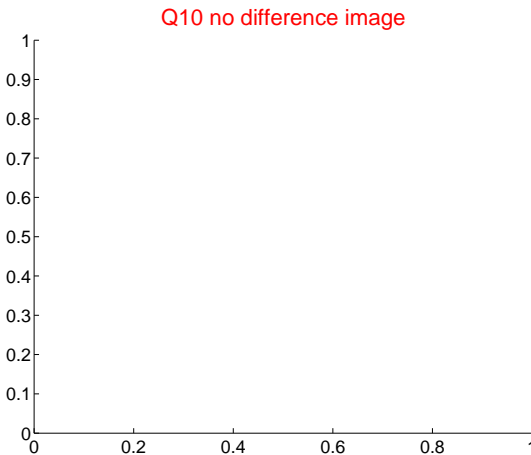
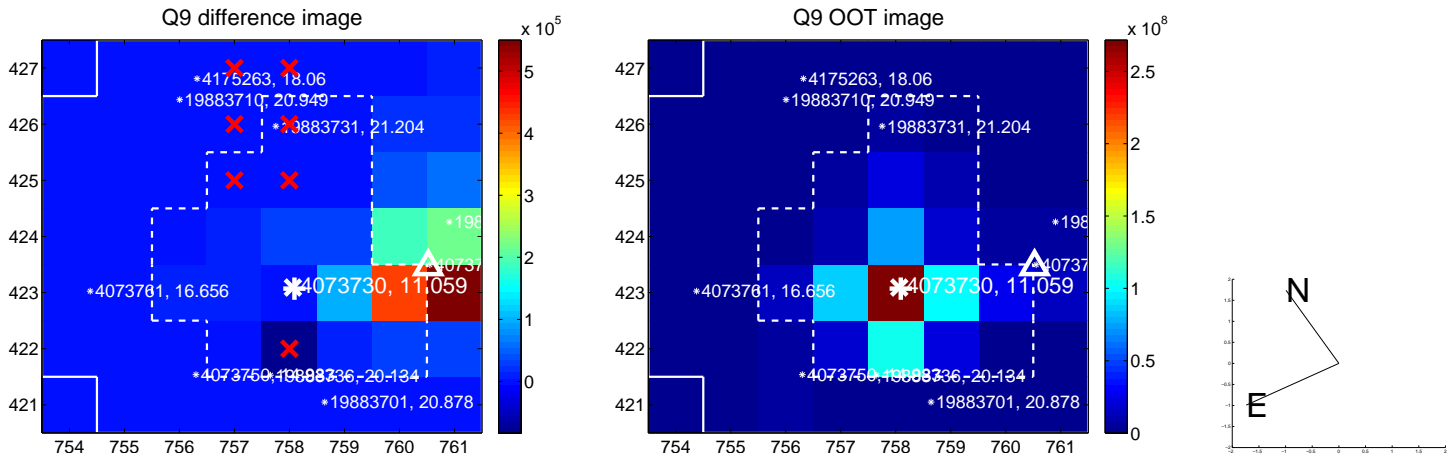
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



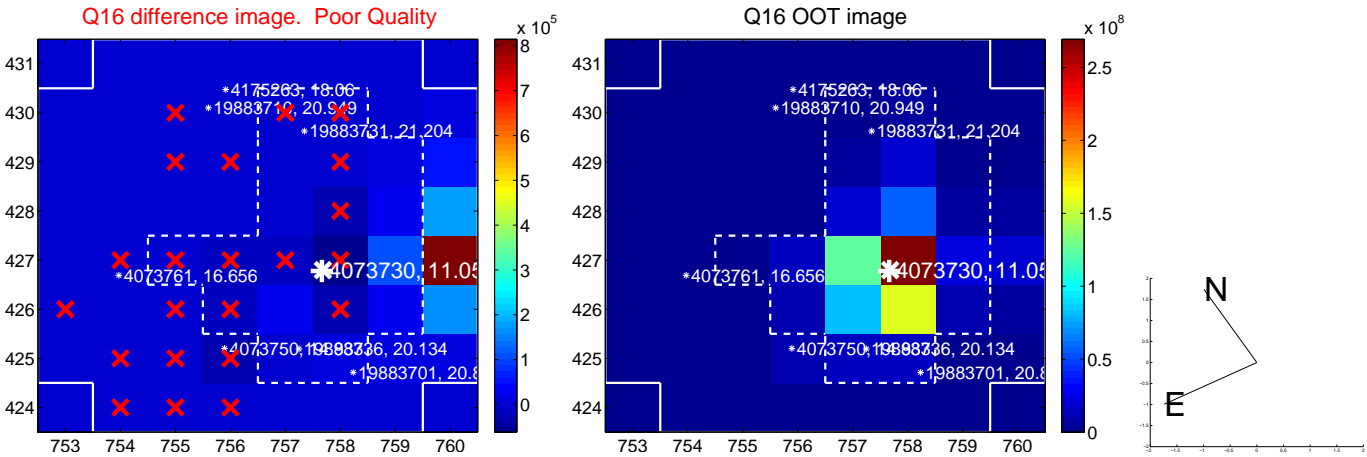
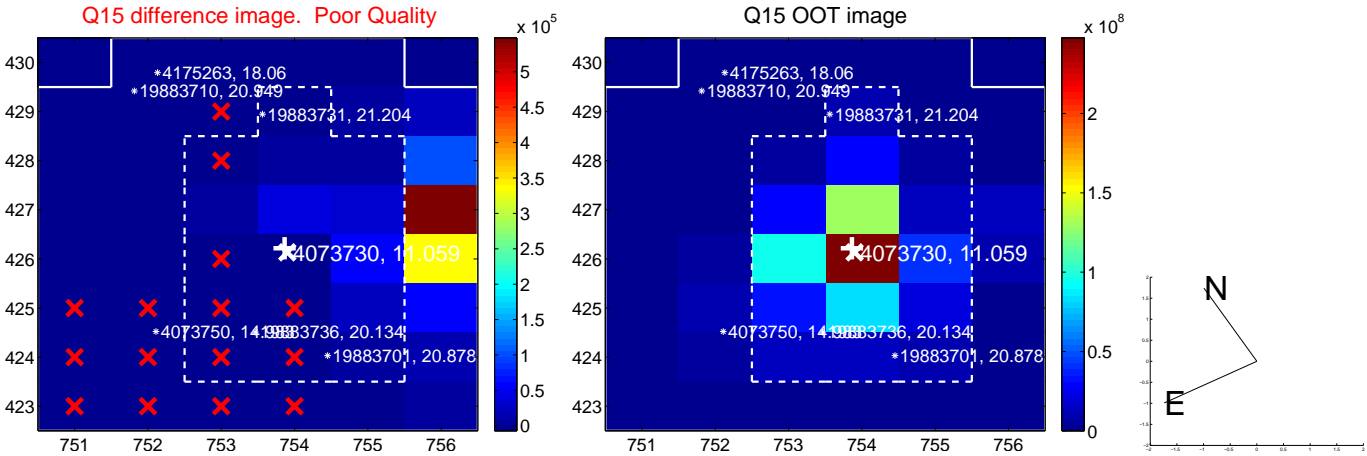
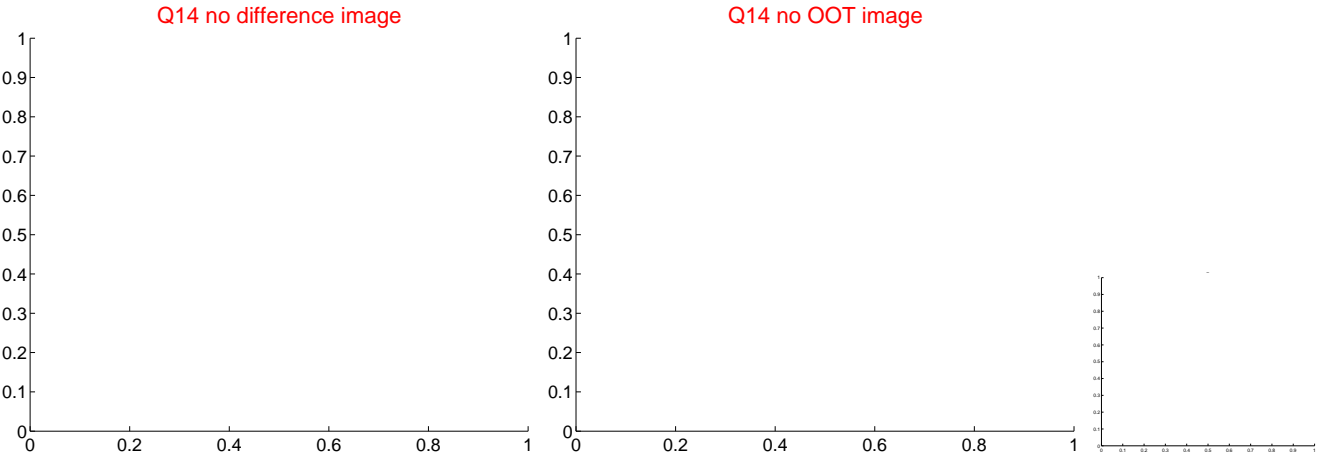
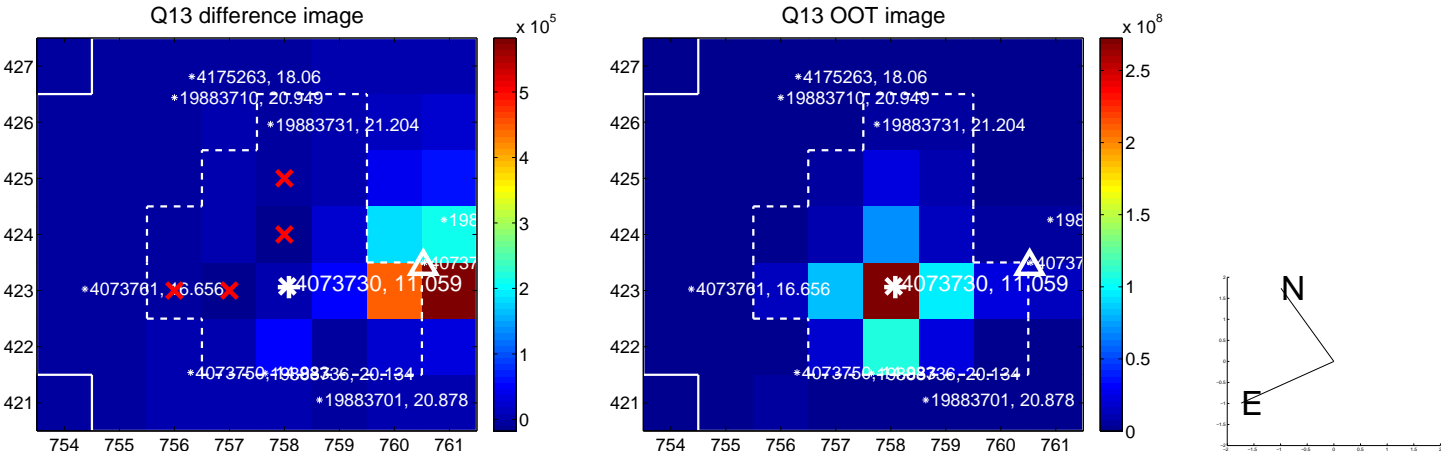
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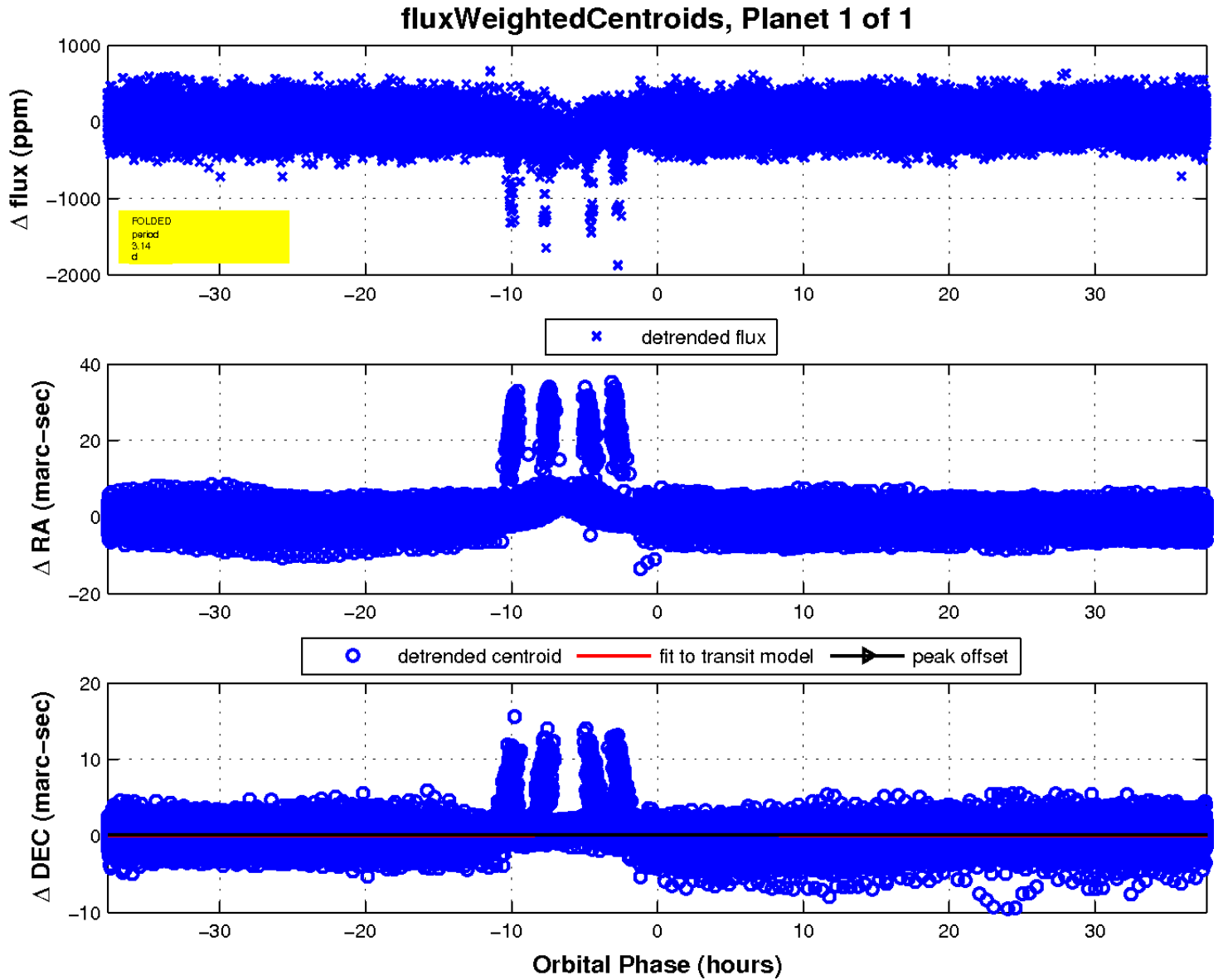
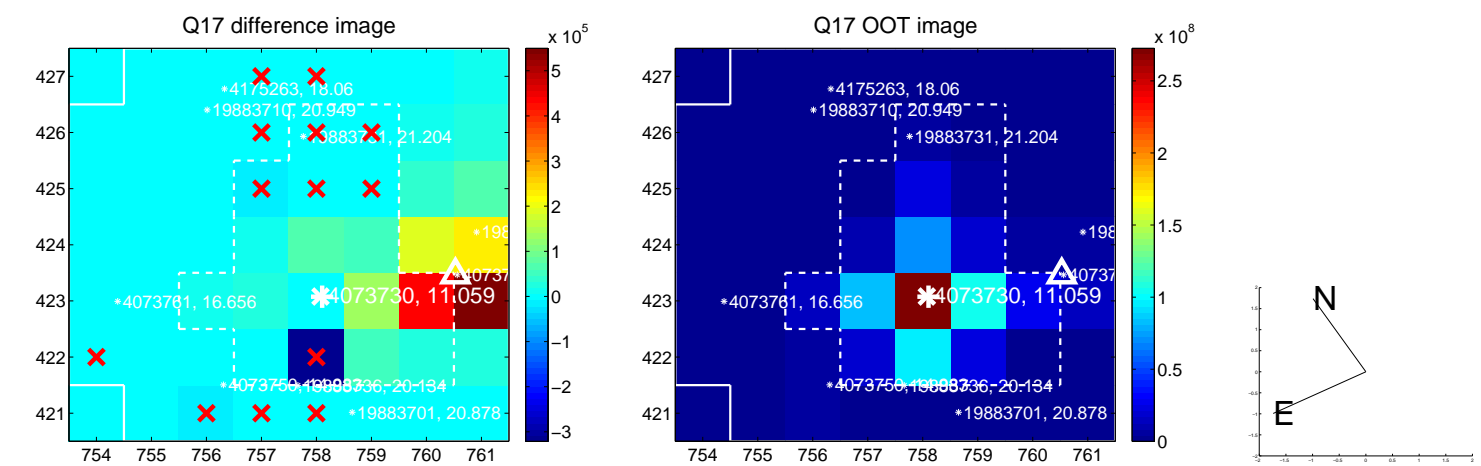


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

