

# KIC 010685653

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010685653-01	OBS	No	0.542275	131.588134	20.5	4.048	8.2	6.8	2.10	7996	0.99	64419.89

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010685653-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_SATURATED

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

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

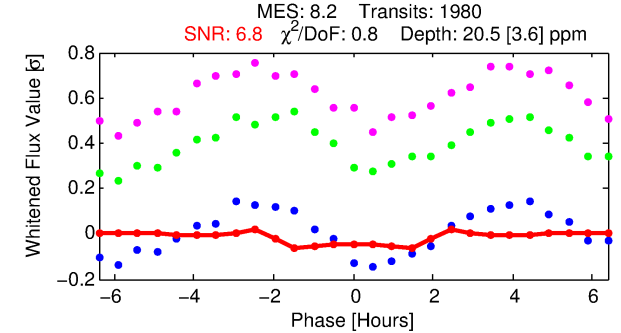
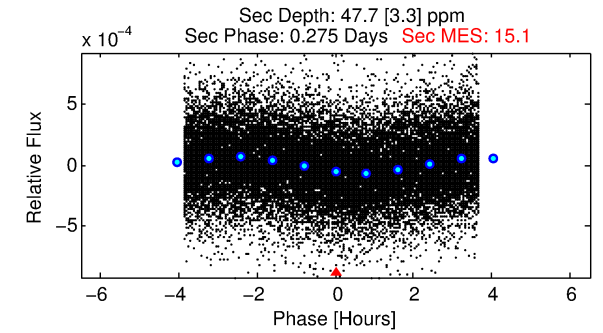
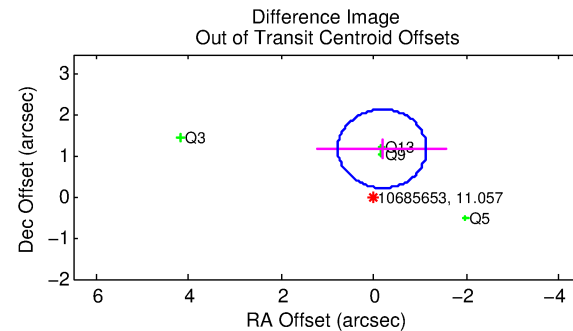
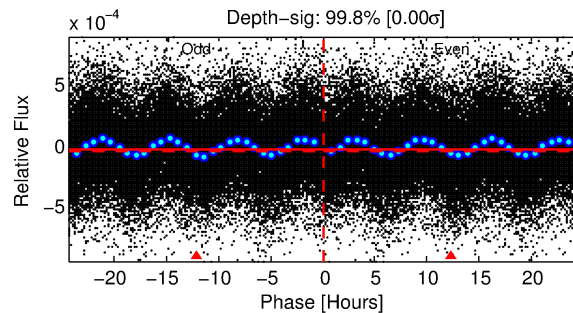
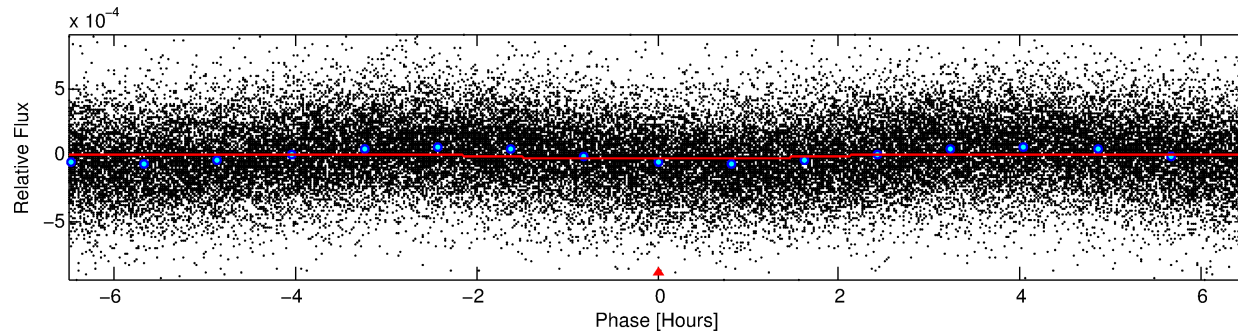
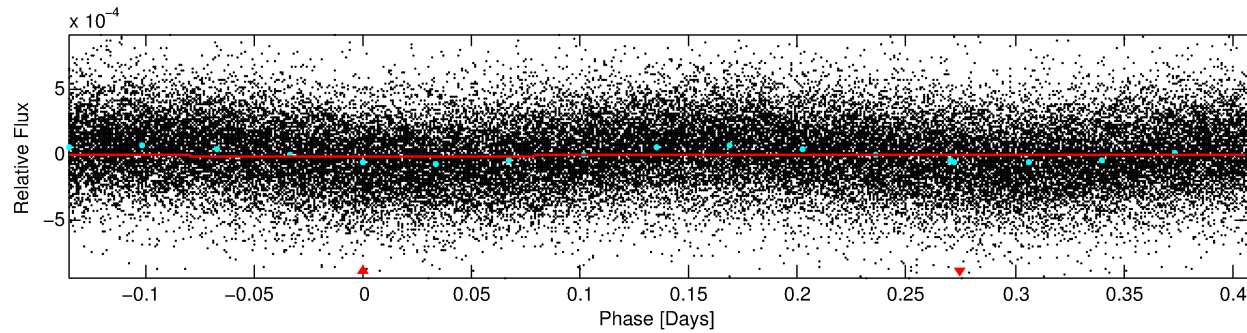
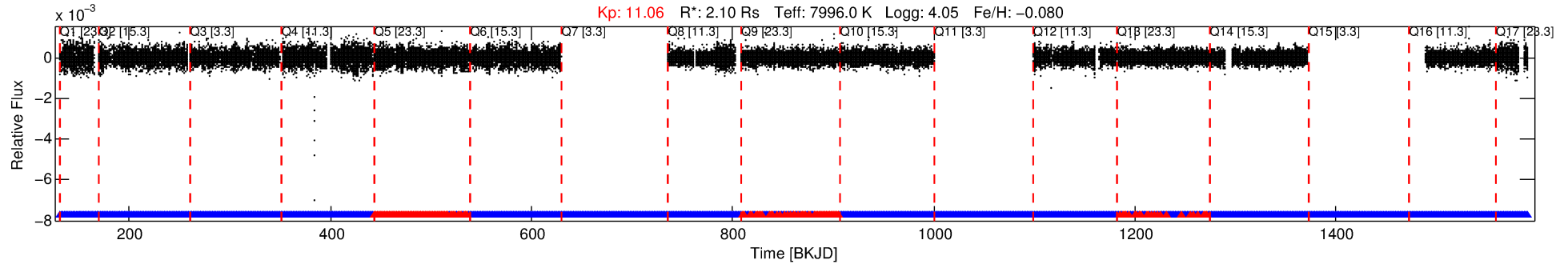
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010685653-01

No Significant Match Found

# DV One-Page Summary

KIC: 10685653 Candidate: 1 of 1 Period: 0.542 d



## DV Fit Results:

Period = 0.54228 [0.00001] d  
Epoch = 131.5881 [0.0037] BKJD  
Rp/R\* = 0.0043 [0.0024]  
a/R\* = 1.16 [0.97]  
b = 0.53 [4.54]  
Seff = 64419.89 [14375.64]  
Teq = 4062 [227] K  
Rp = 0.99 [0.58] Re  
a = 0.0158 [0.0023] AU  
Ag = 6.71 [7.62] [0.75 $\sigma$ ]  
Teffp = 10110 [2817] K [2.14 $\sigma$ ]

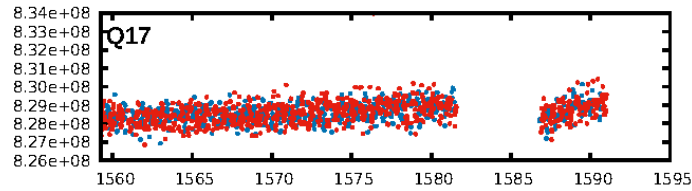
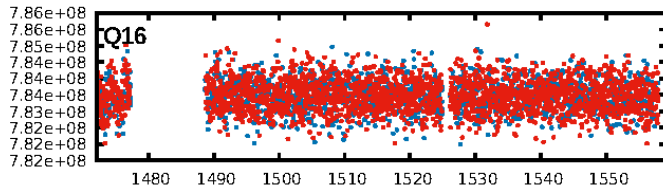
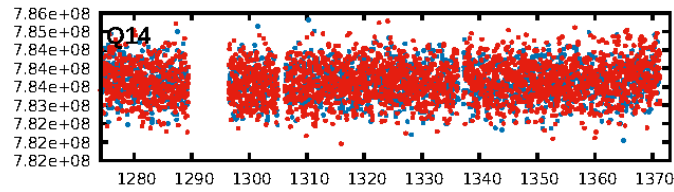
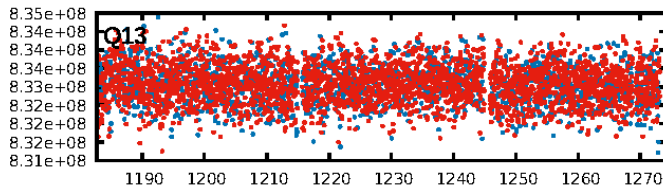
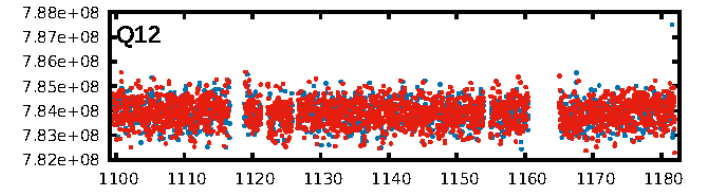
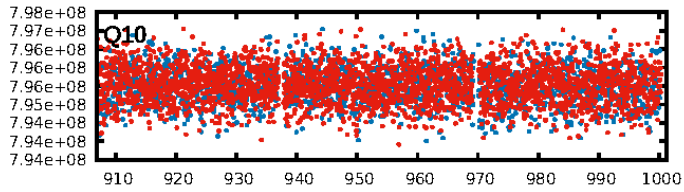
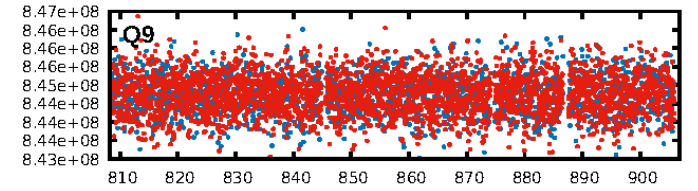
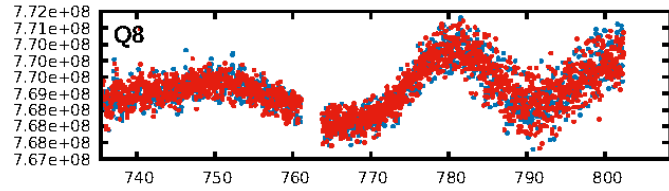
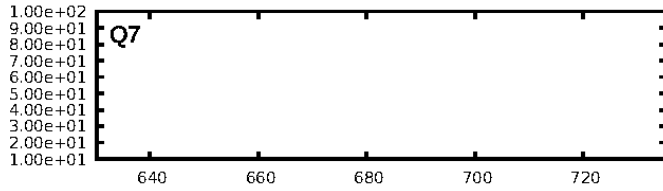
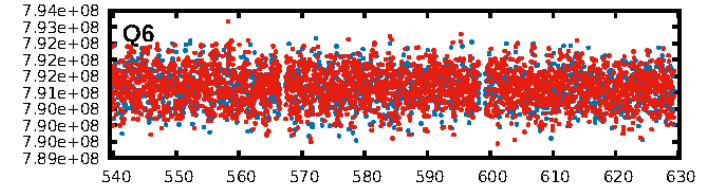
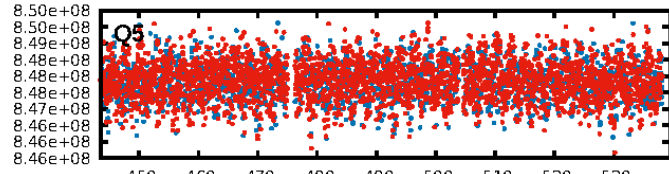
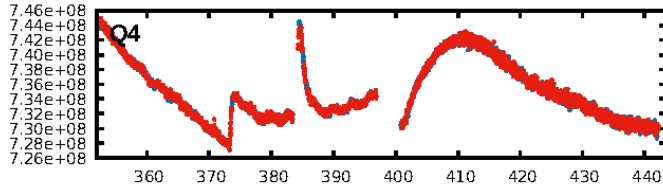
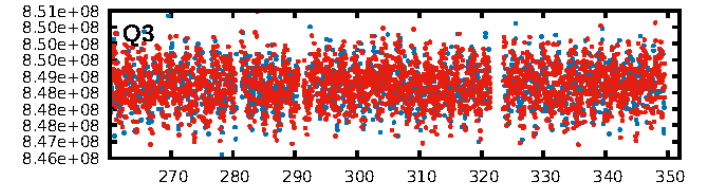
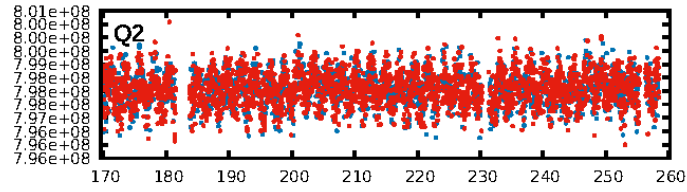
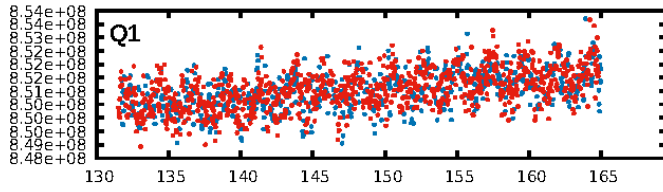
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.54e-01  
RollingBand-fgt: 0.87 [1620/1868]  
GhostDiagnostic-chr: 0.4829  
Centroid-sig: 2.2%  
Centroid-so: 0.817 arcsec [1.91 $\sigma$ ]  
OotOffset-rm: 1.202 arcsec [3.76 $\sigma$ ]  
KicOffset-rm: 1.196 arcsec [3.53 $\sigma$ ]  
OotOffset-st: 0/1/0/3 [4]  
KicOffset-st: 0/1/0/3 [4]  
DiffImageQuality-fgm: 0.75 [3/4]  
DiffImageOverlap-fno: 1.00 [14/14]

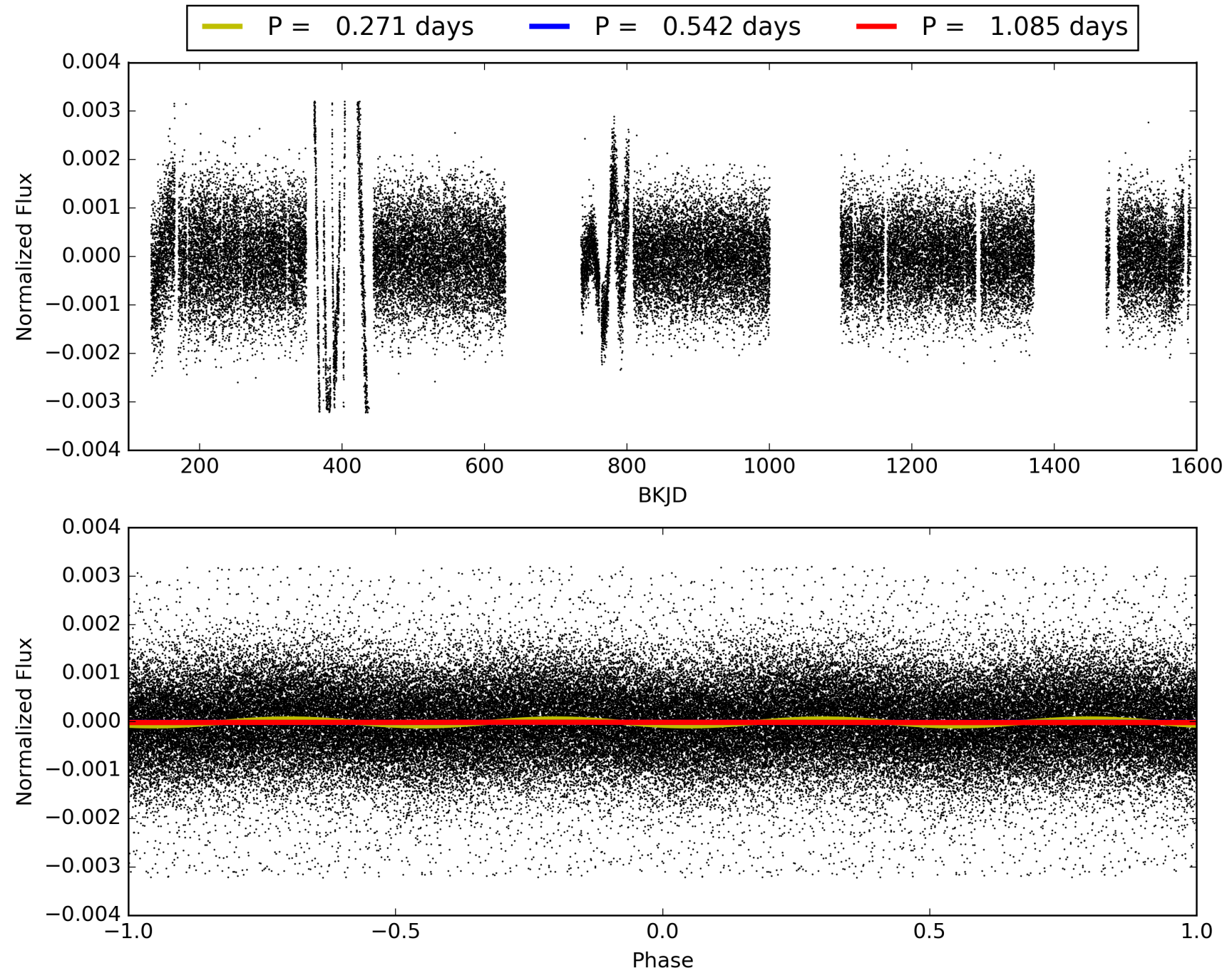
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:14:10 Z

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

# TCE 010685653-01, PDC Light Curves

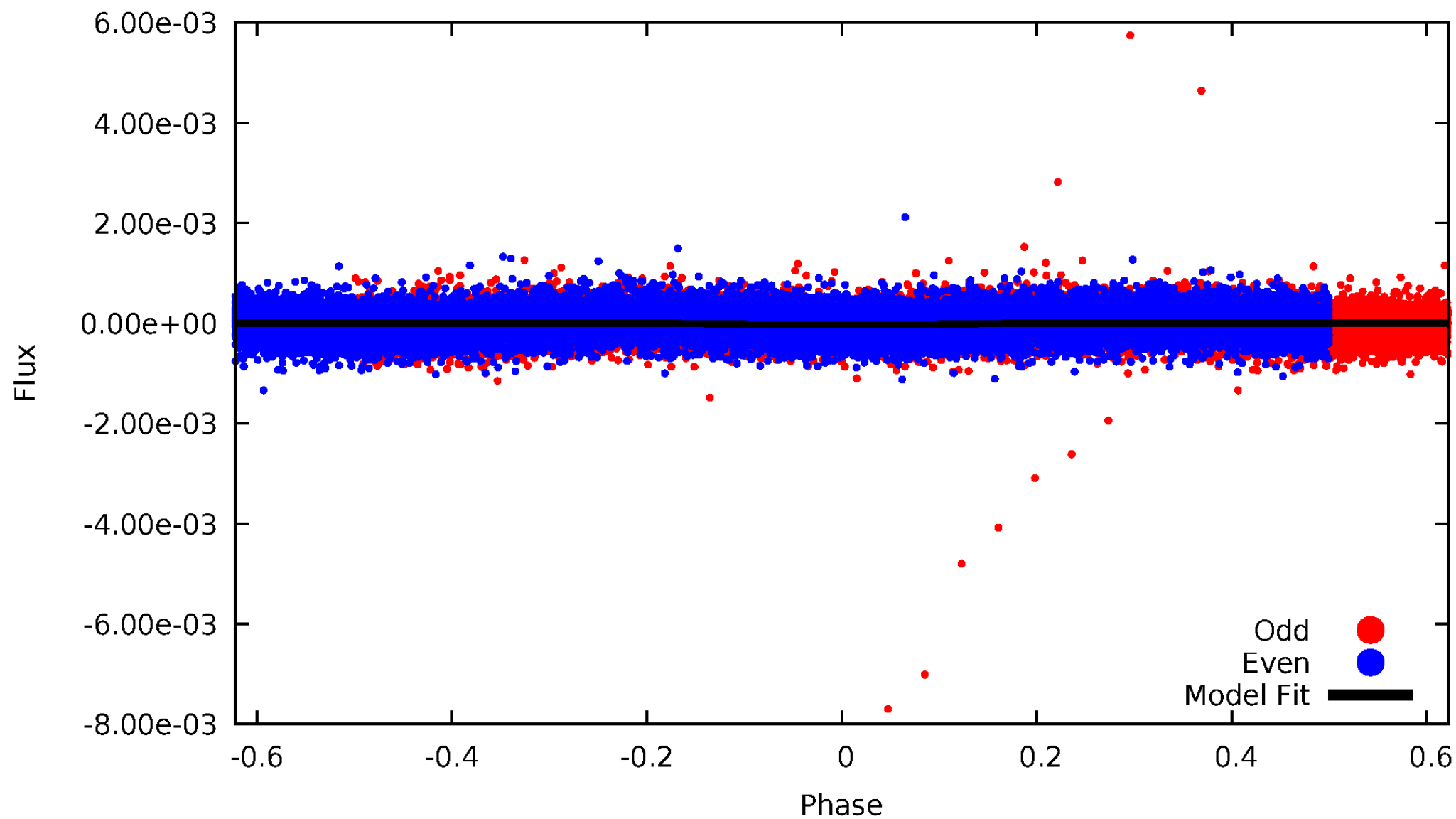


# TCE 010685653-01



# DV Odd/Even

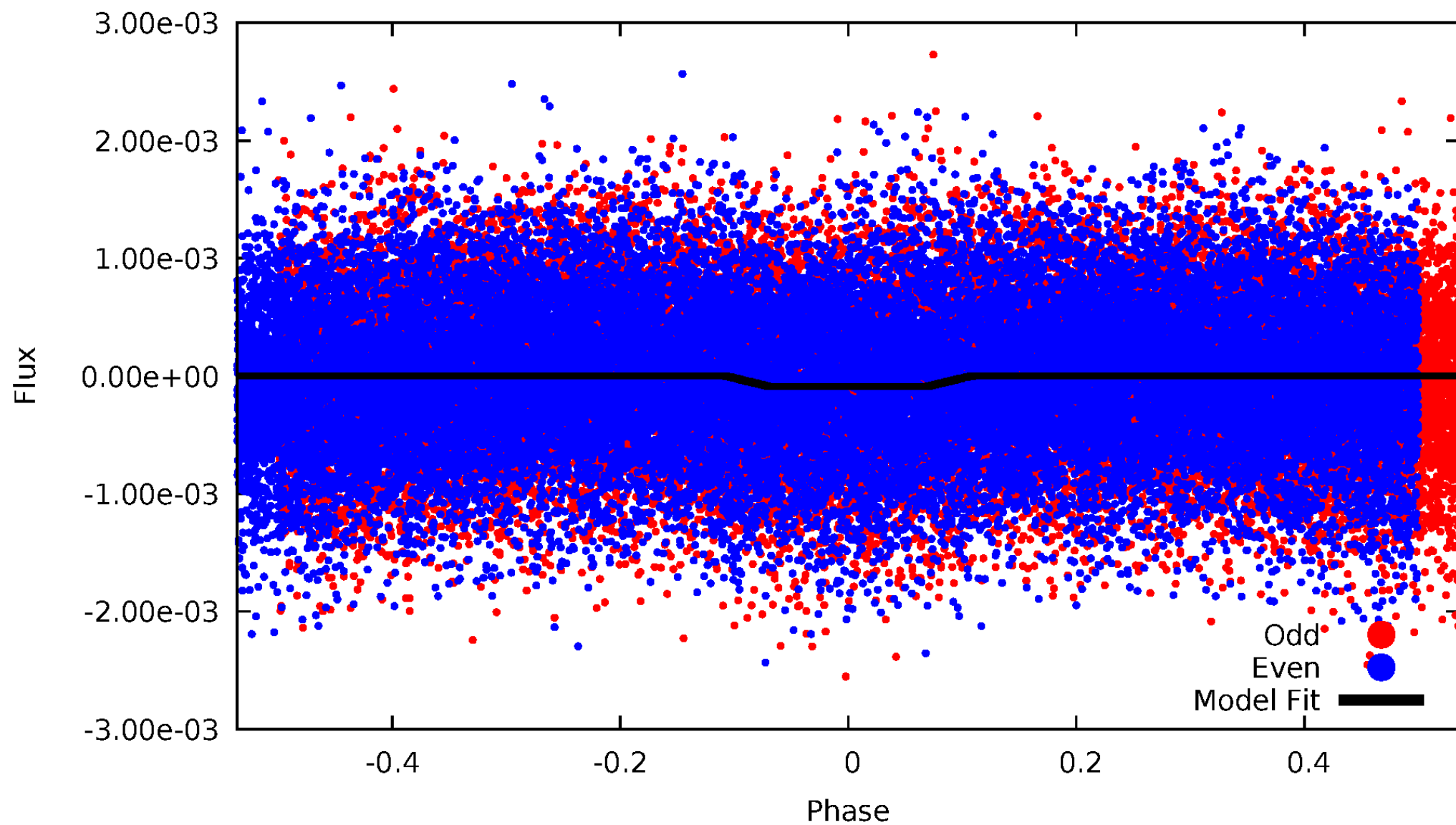
TCE 010685653-01





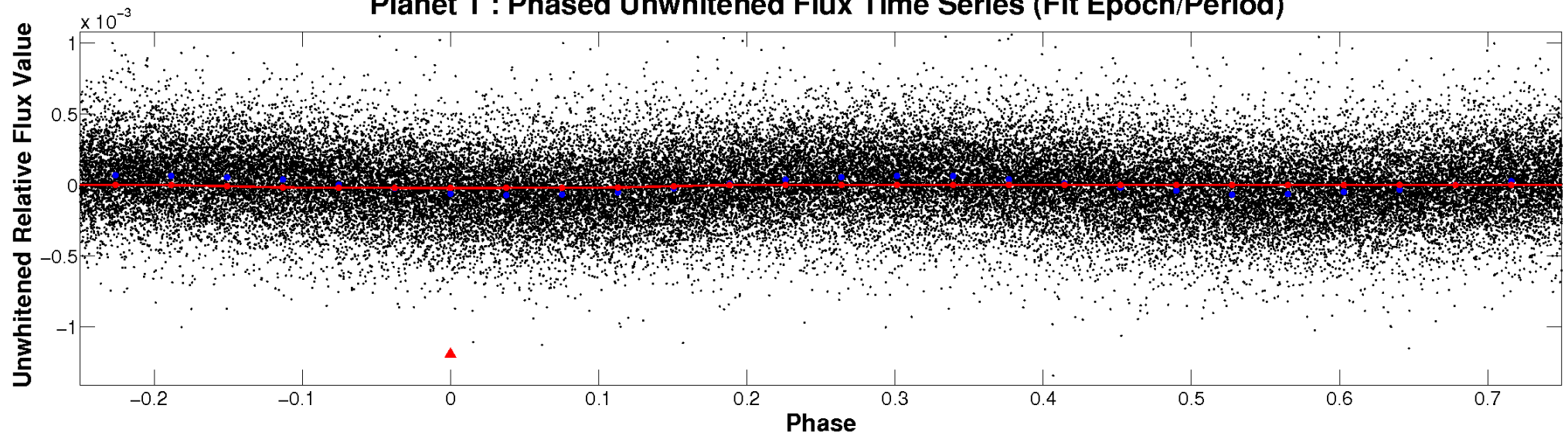
# ALT Odd/Even

TCE 010685653-01

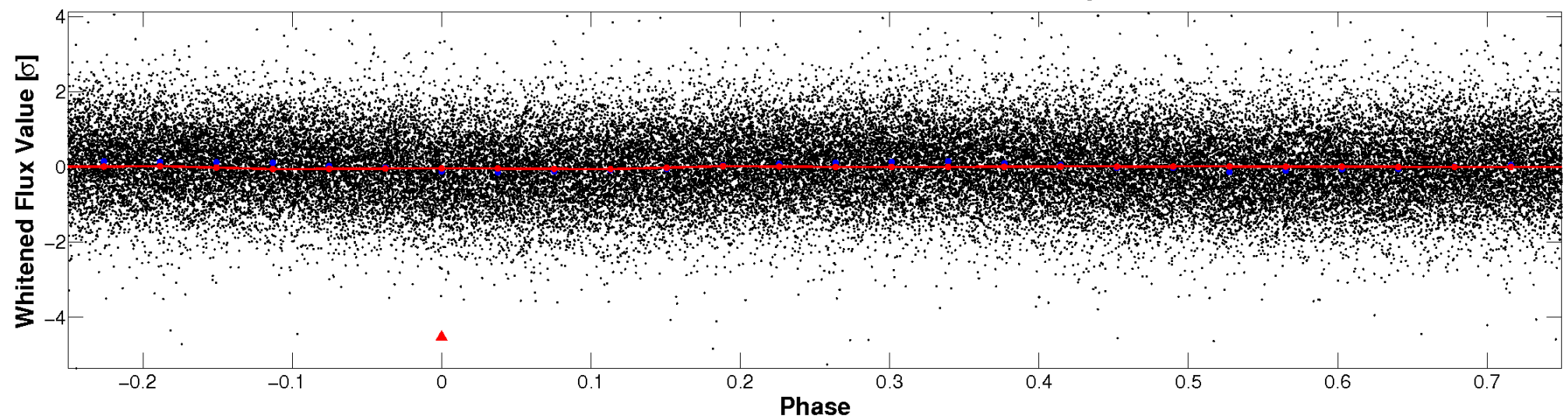


# Non-Whitened Vs. Whitened Light Curve

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

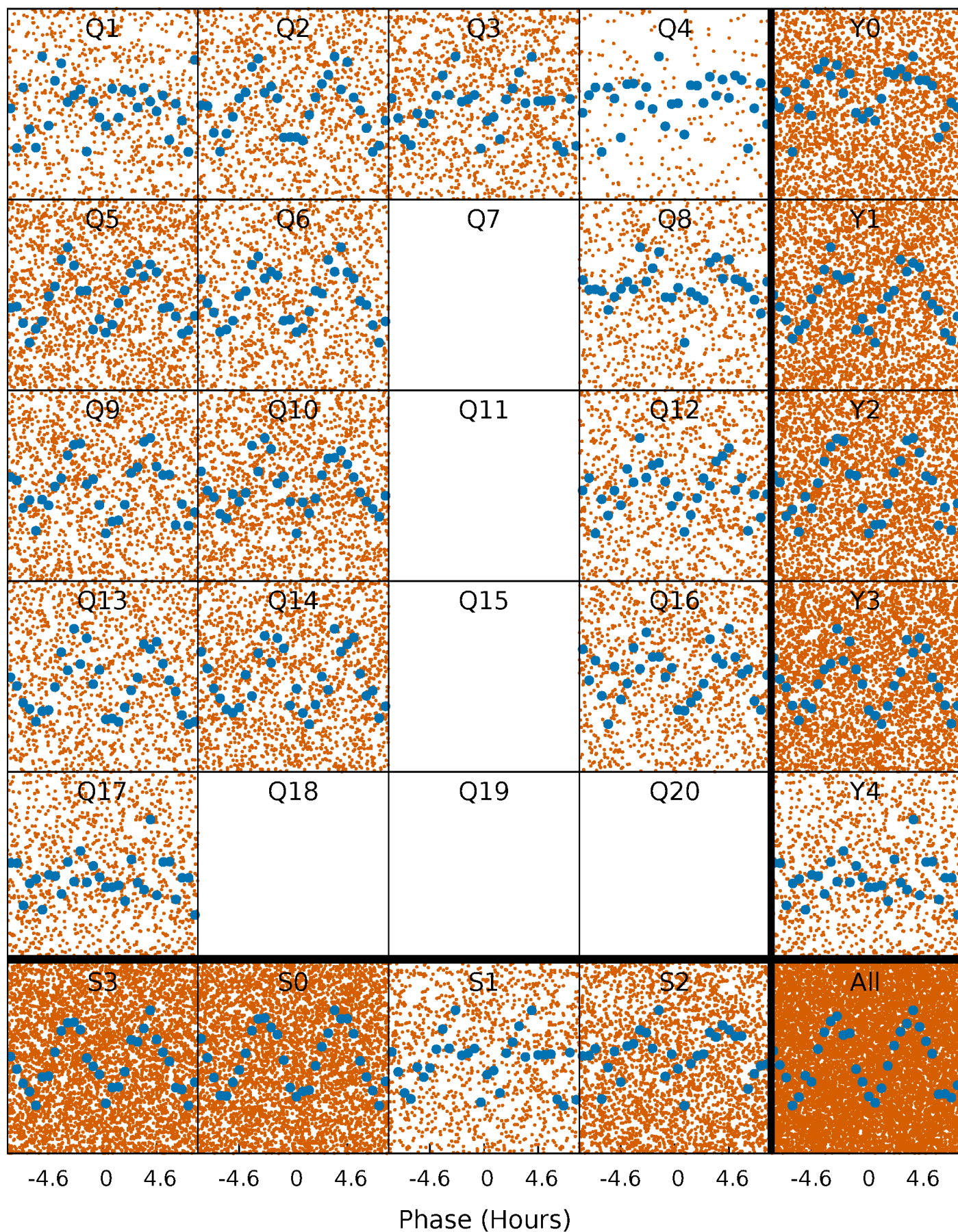


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

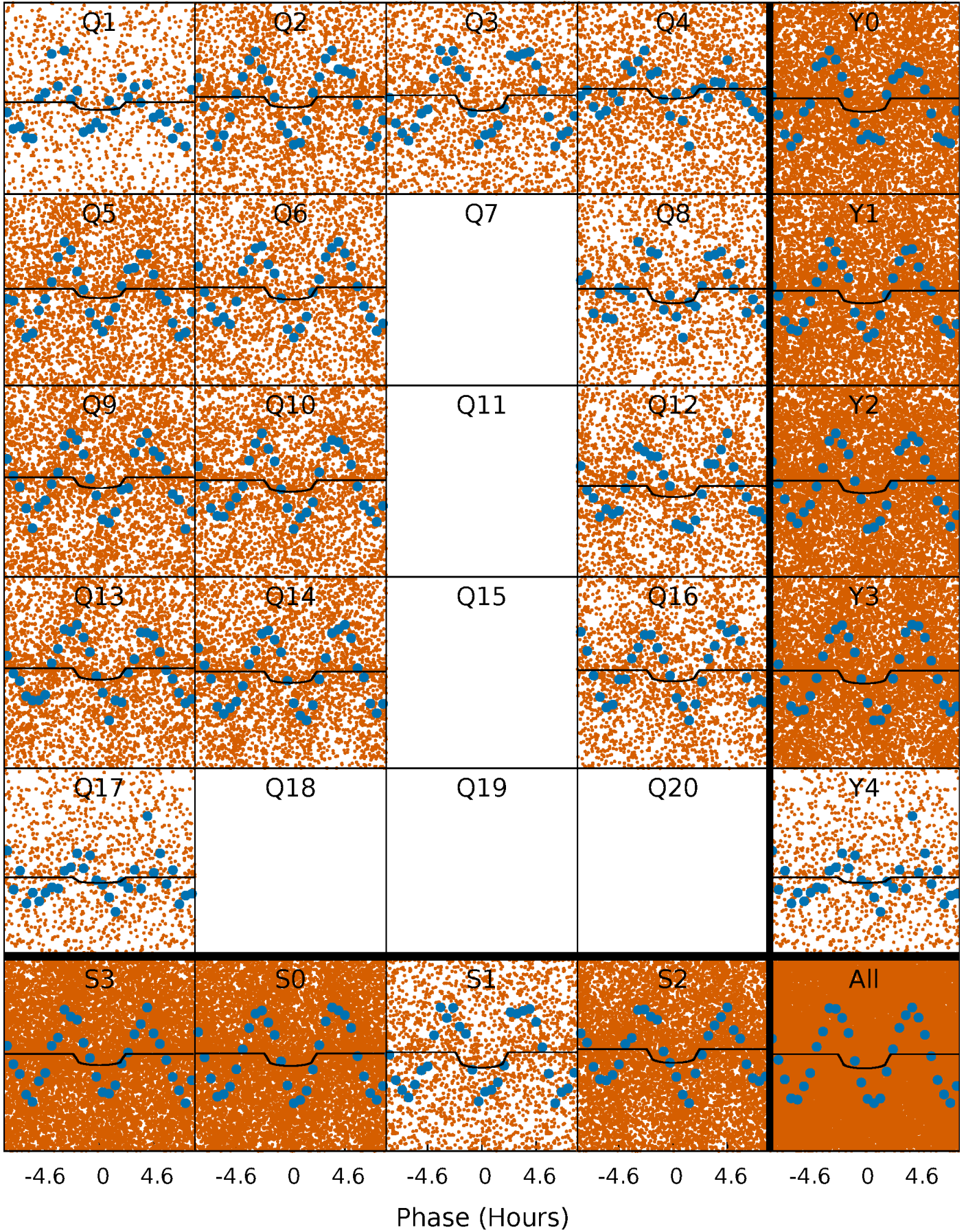
TCE 010685653-01 P= 0.542275 Days  $T_0=131.588134$  (BKJD)





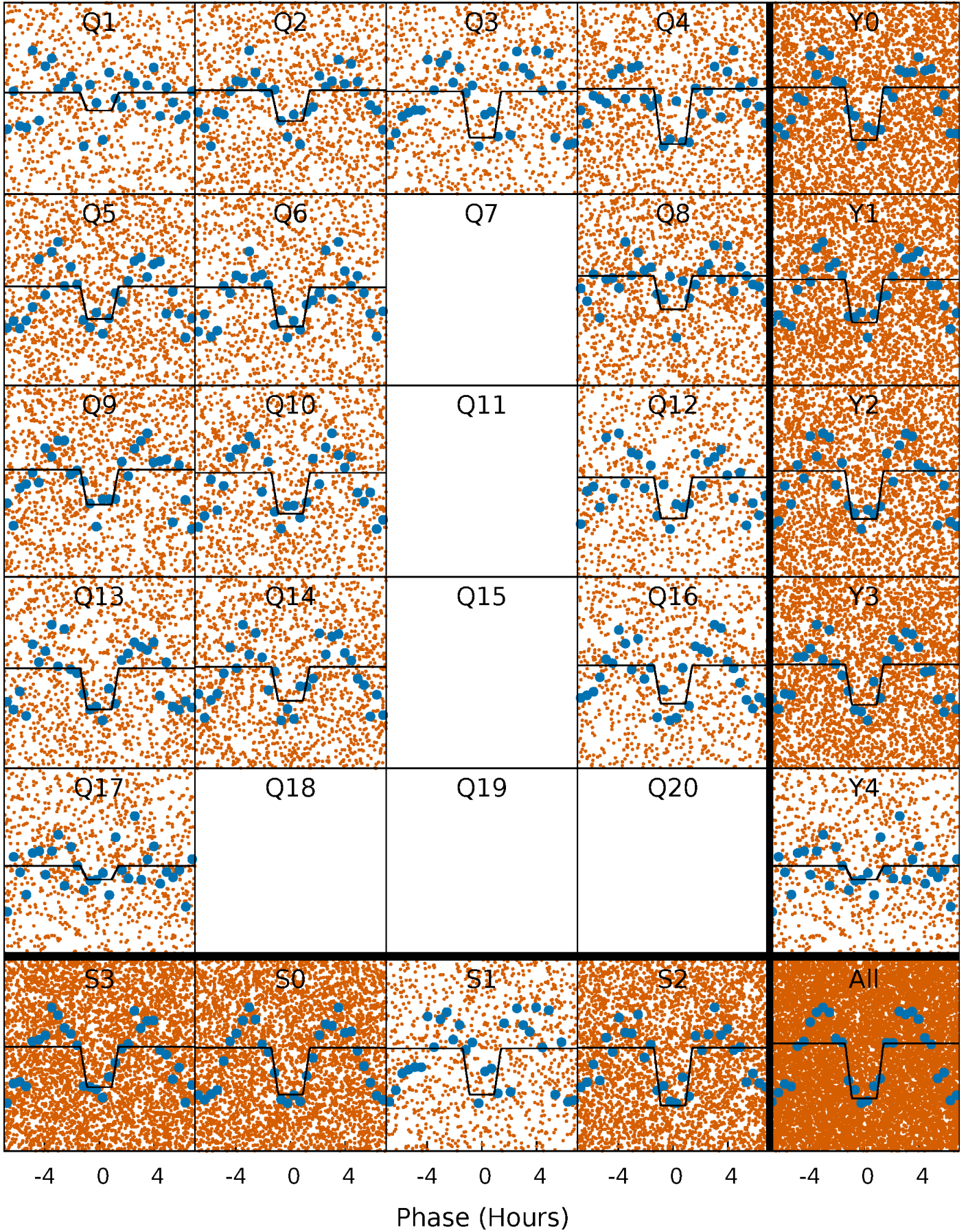
# DV Quarter-Phased Transit Curves

TCE 010685653-01 P= 0.542275 Days  $T_0=131.588134$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010685653-01 P= 0.542303 Days  $T_0=131.578413$  (BKJD)

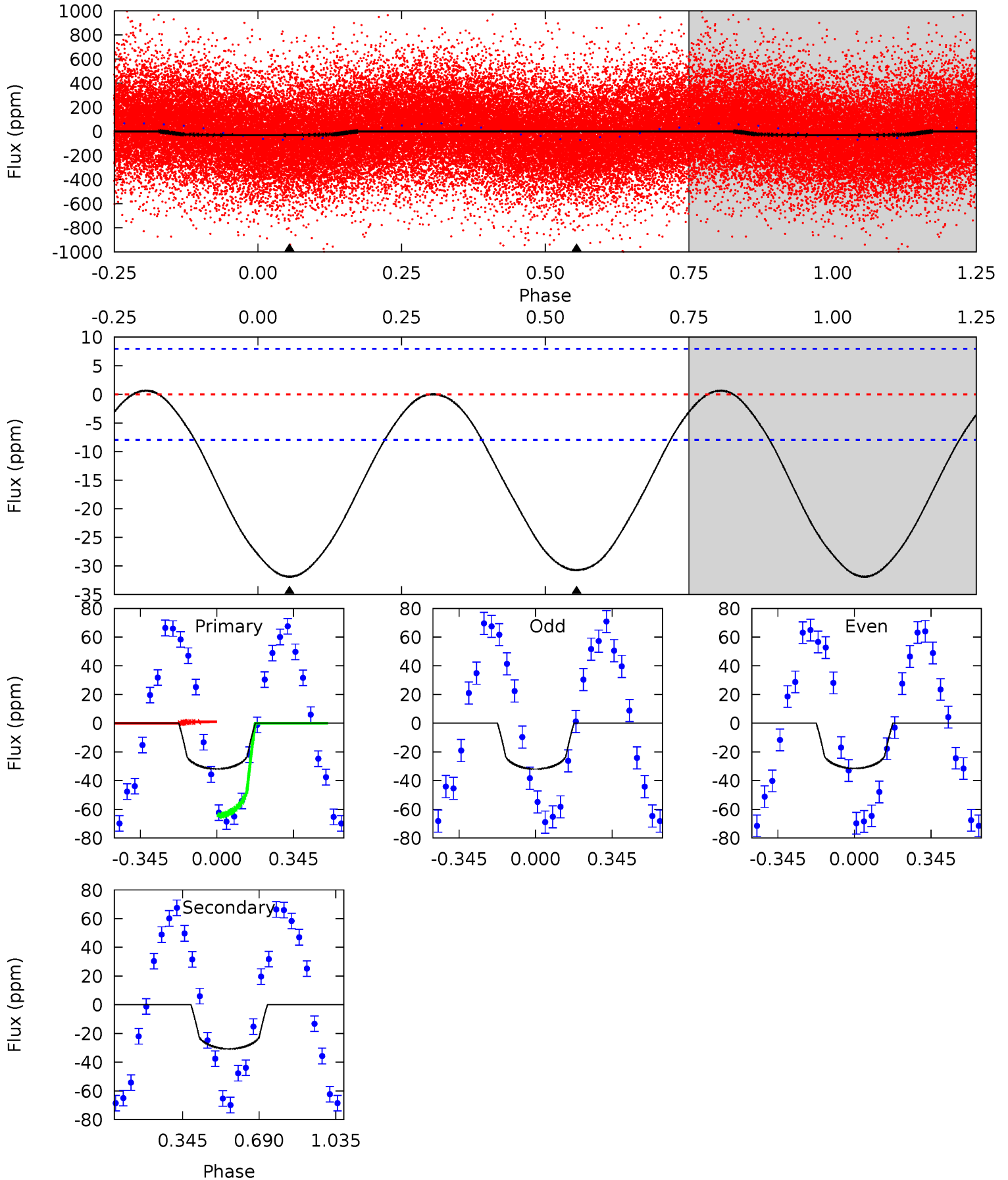




# DV Model-Shift Uniqueness Test

010685653-01, P = 0.542275 Days, E = 131.045859 Days

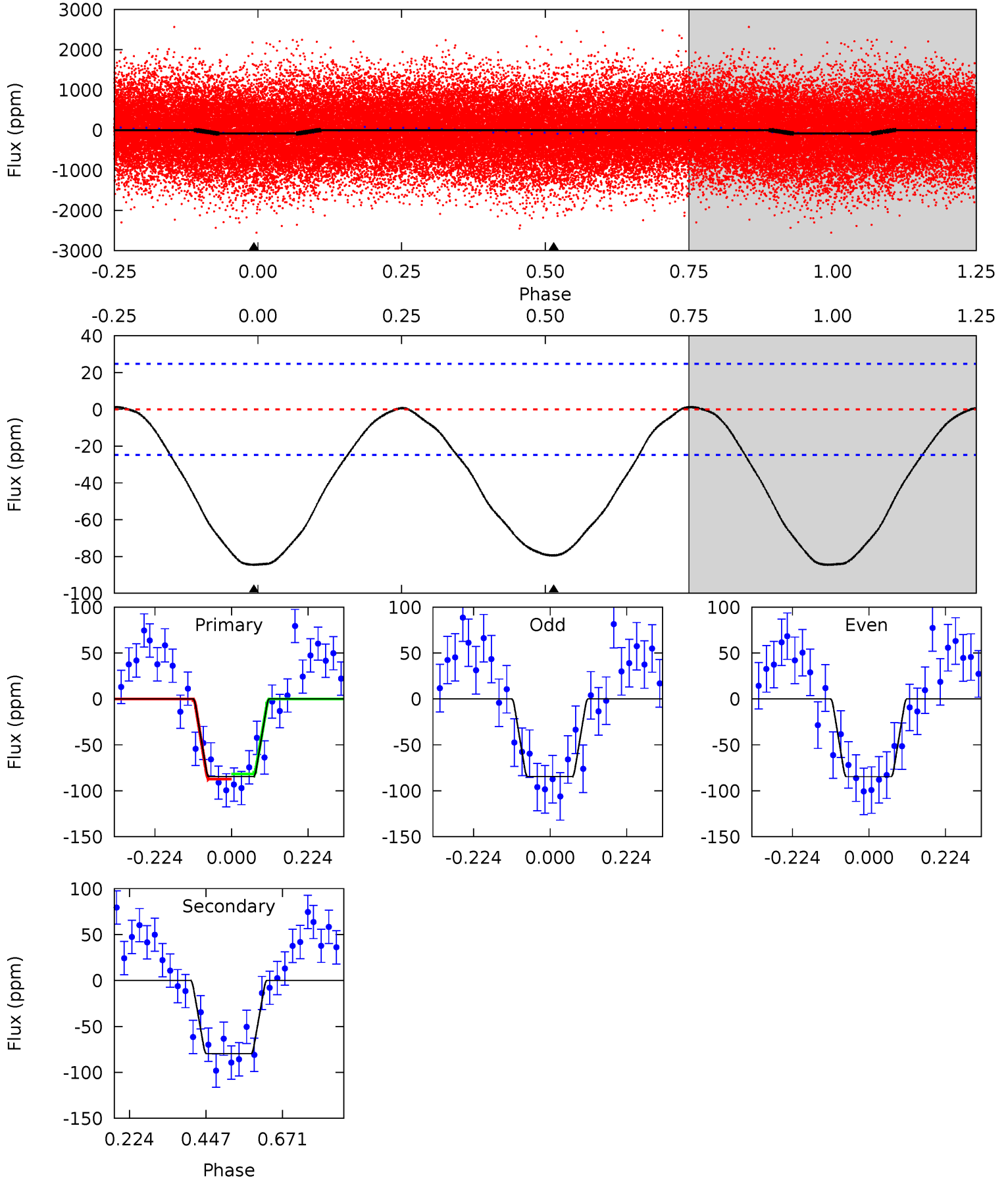
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.2	16.6	0	0	4.30	0.94	0.20	17.2	17.2	16.6	16.6	0.12	1.20	0.02	17.7



# Alt Model-Shift Uniqueness Test

010685653-01, P = 0.542303 Days, E = 131.036110 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
15.0	14.1	0	0	4.39	1.22	0.35	15.0	15.0	14.1	14.1	0.01	0.98	0.02	0.46





### Stellar Parameters For KIC 010685653

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$7996^{+71}_{-87}$	$4.048^{+0.121}_{-0.099}$	$-0.080^{+0.050}_{-0.200}$	$2.096^{+0.298}_{-0.364}$	$1.789^{+0.096}_{-0.192}$	$0.274^{+0.160}_{-0.086}$
	+1%/-1%	+3%/-2%	+62%/-250%	+14%/-17%	+5%/-11%	+58%/-31%
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 010685653-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-31 \pm 2$	$1.01^{+0.60}_{-0.52}$	$5674^{+222}_{-228}$	$8971^{+7703}_{-2366}$	$4.081^{+14.015}_{-2.439}$
Alt.	$-80 \pm 6$	$2.12^{+0.64}_{-0.56}$	$5682^{+215}_{-237}$	$7498^{+1646}_{-1109}$	$2.435^{+1.907}_{-0.985}$

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

## DV Centroid Data

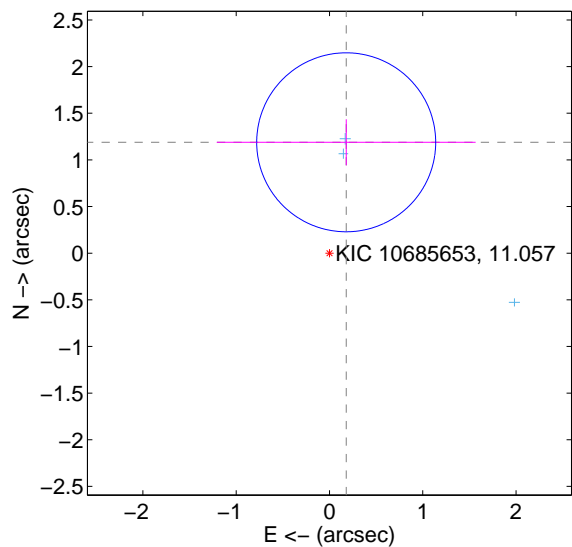
Supplemental centroid analysis for 010685653-01. **Kepler magnitude: 11.06.** Transit SNR 6.84

**There are 3 quarters with good PRF difference image offsets**

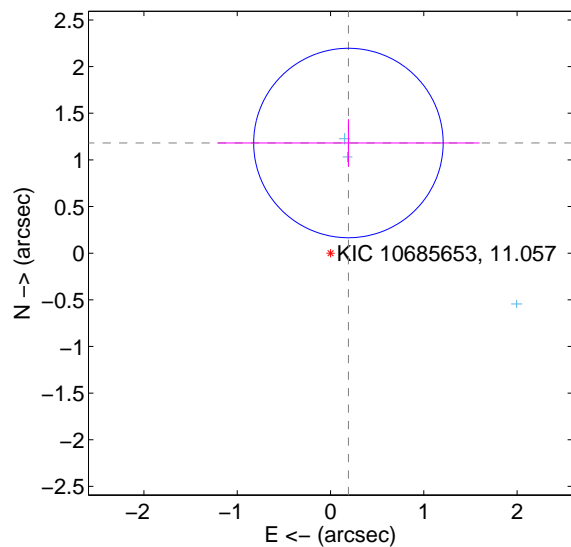
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>1.202 \pm 0.320</math></b>	<b>3.76</b>	$-0.179 \pm 1.388$	$1.189 \pm 0.246$
PRF-fit source offset from KIC position	<b><math>1.196 \pm 0.338</math></b>	<b>3.53</b>	$-0.192 \pm 1.406$	$1.181 \pm 0.256$
photometric centroid source offset	$0.82 \pm 0.43$	1.91	$-0.80 \pm 0.43$	$-0.19 \pm 0.33$

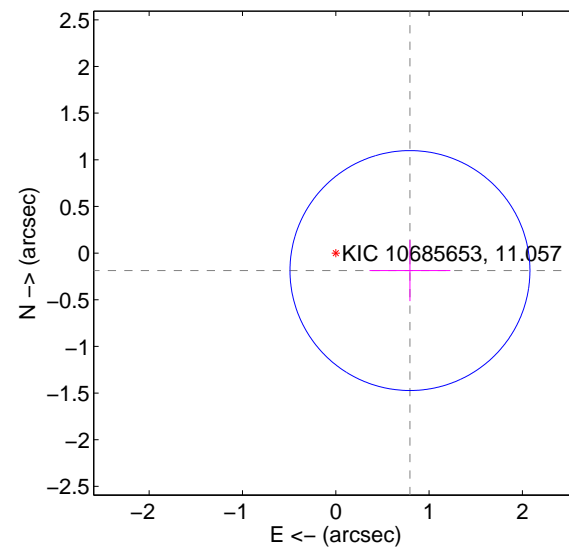
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

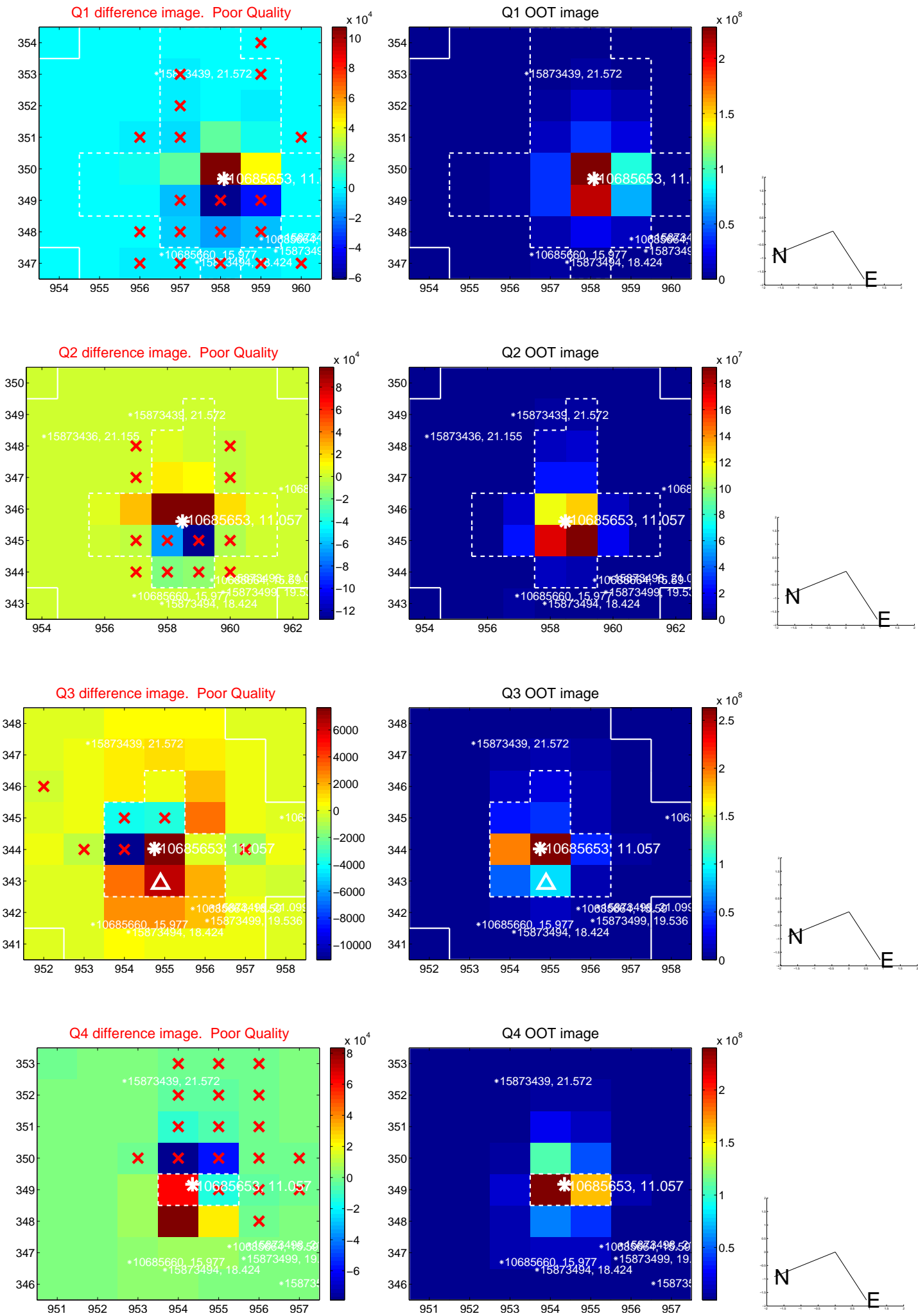


offset from photometric centroids

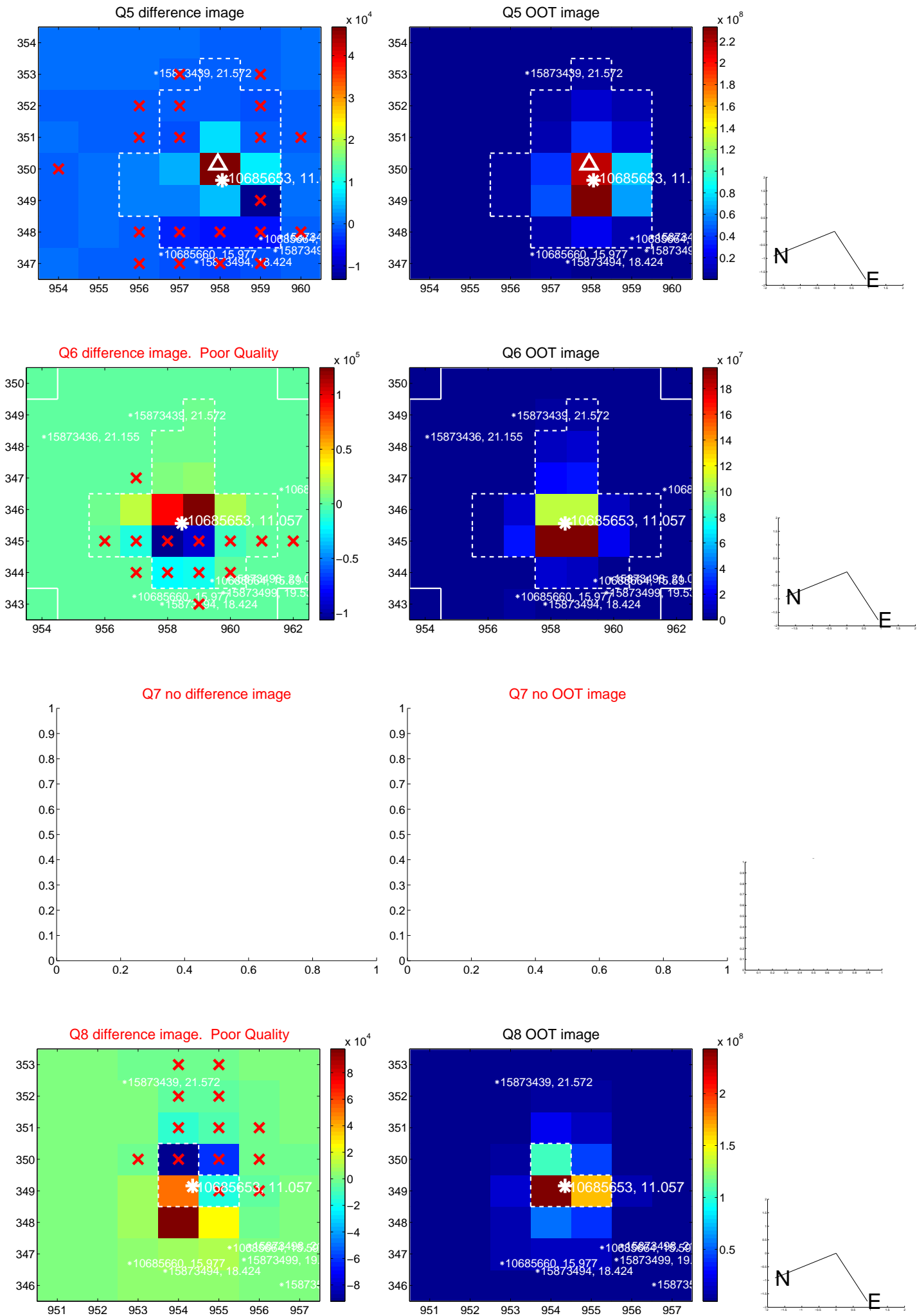


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

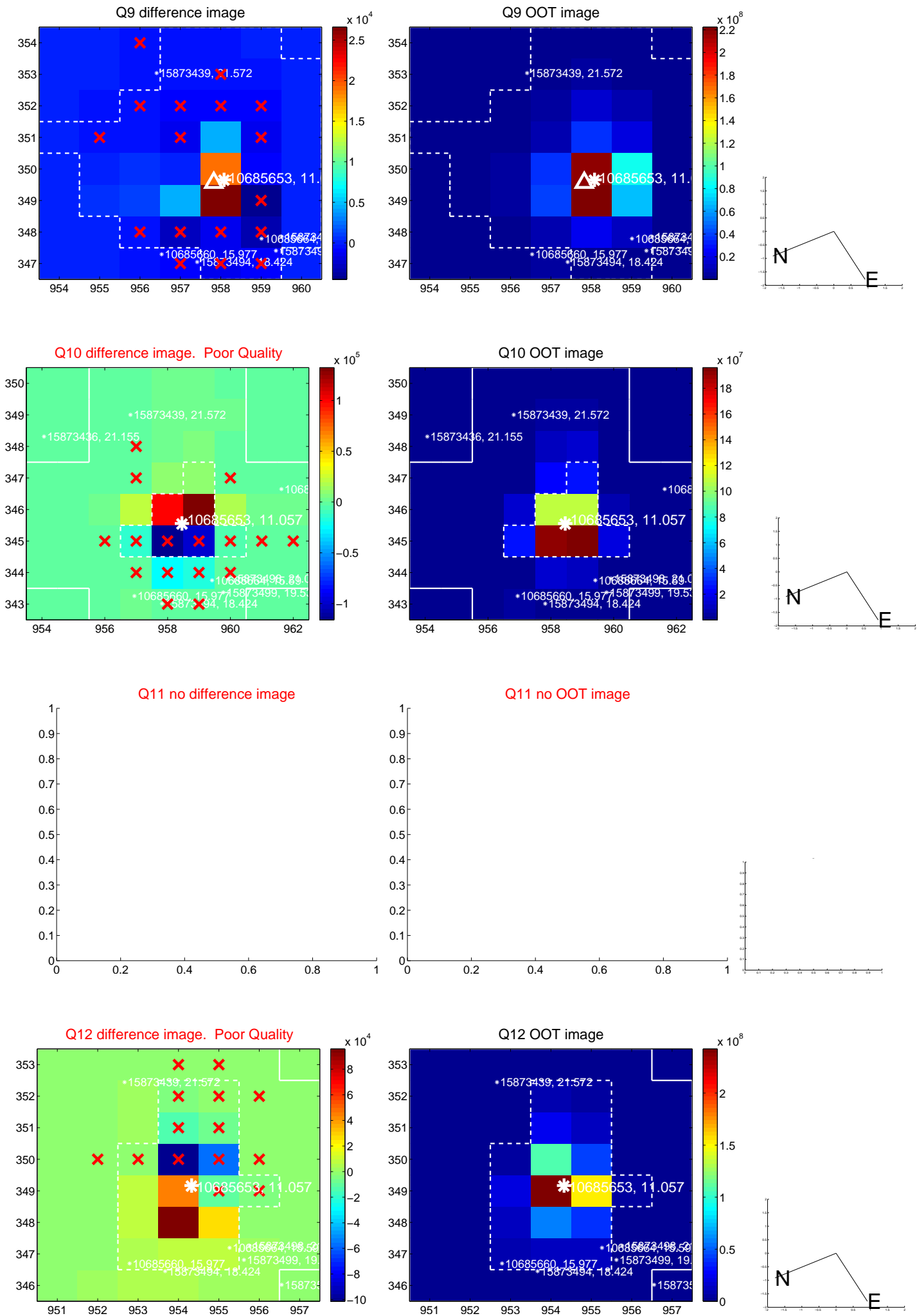


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

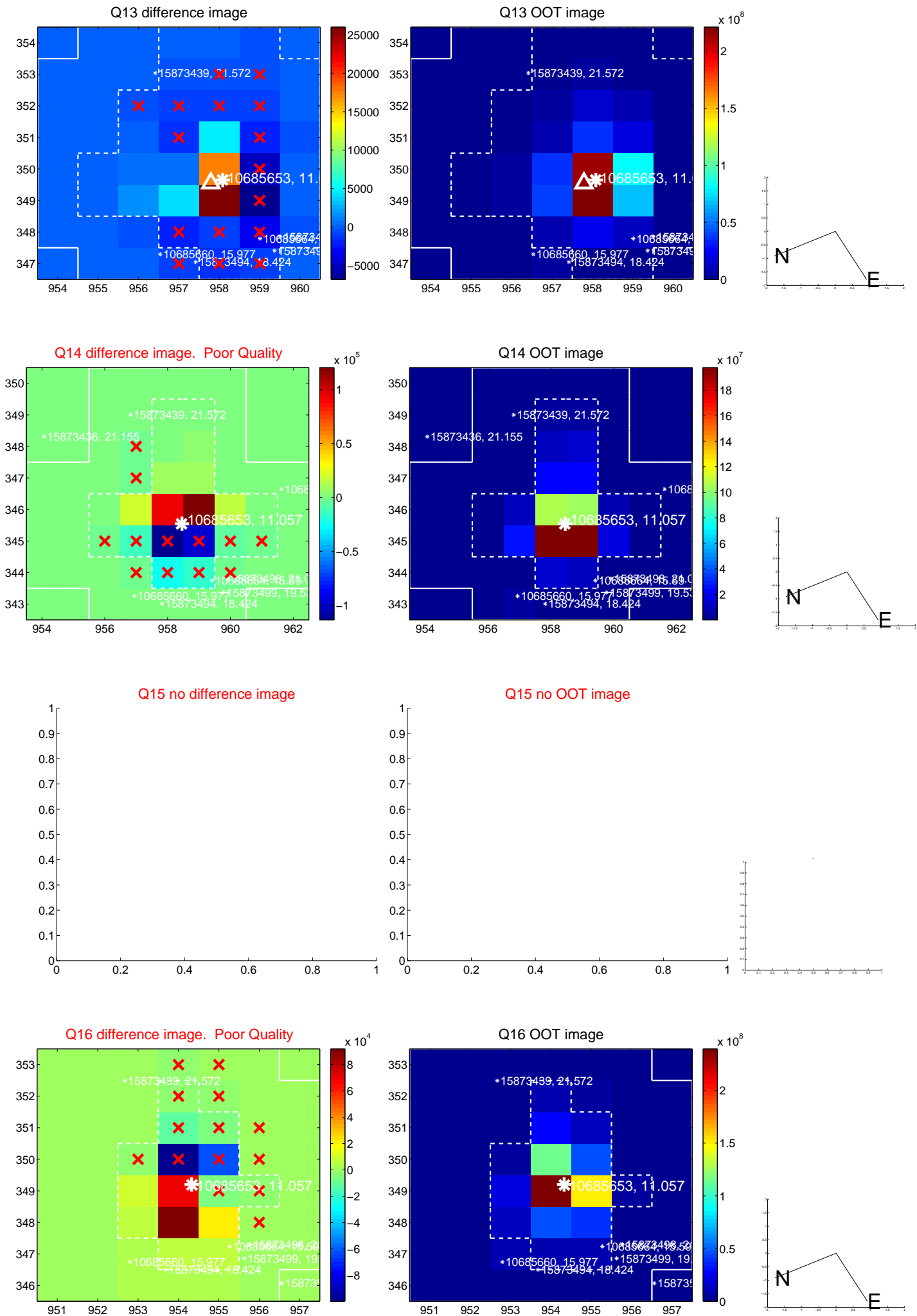




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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





UKIRT Image

Declination

