

# KIC 008520456

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008520456-01	OBS	No	2.092939	131.963002	5.2	16.904	9.0	10.3	3.32	7948	0.79	23687.36

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008520456-01	OBS	FP	0.00	1	0	0	0	LPP_DV—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.

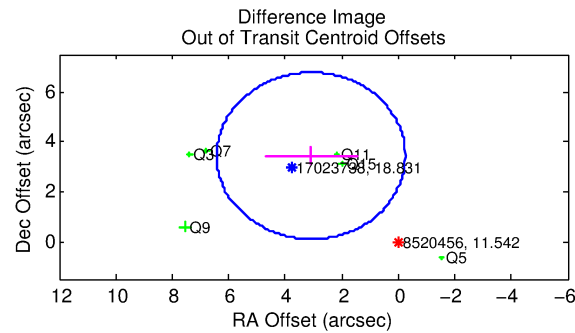
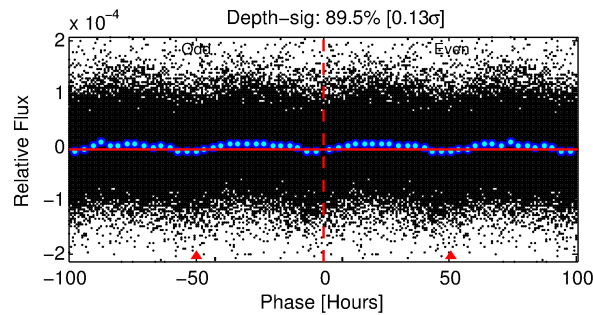
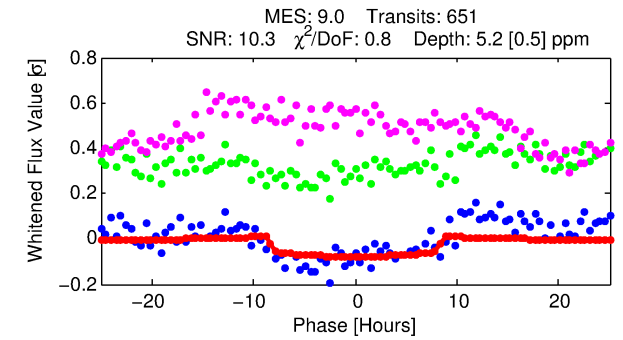
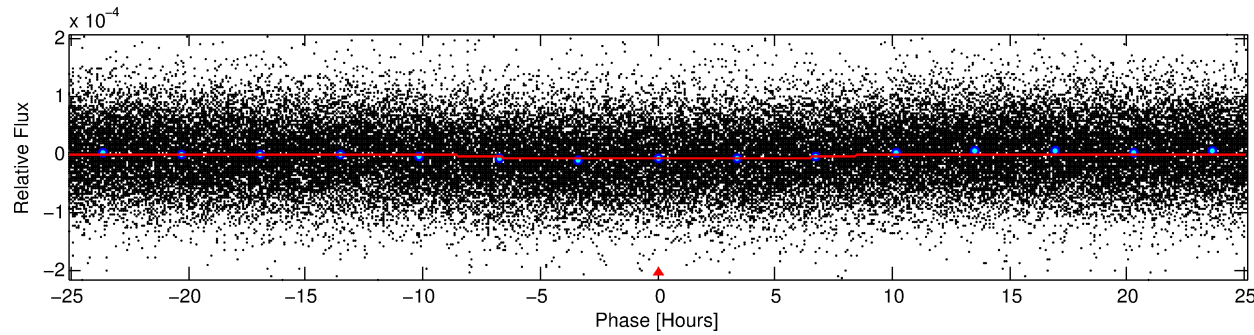
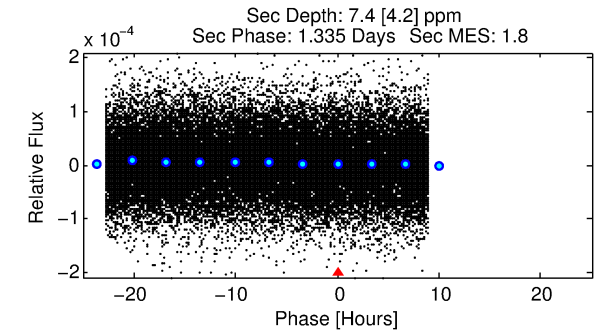
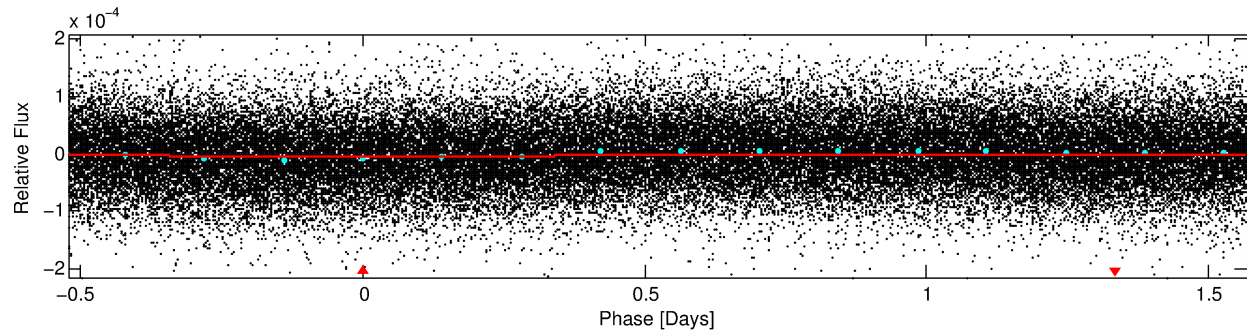
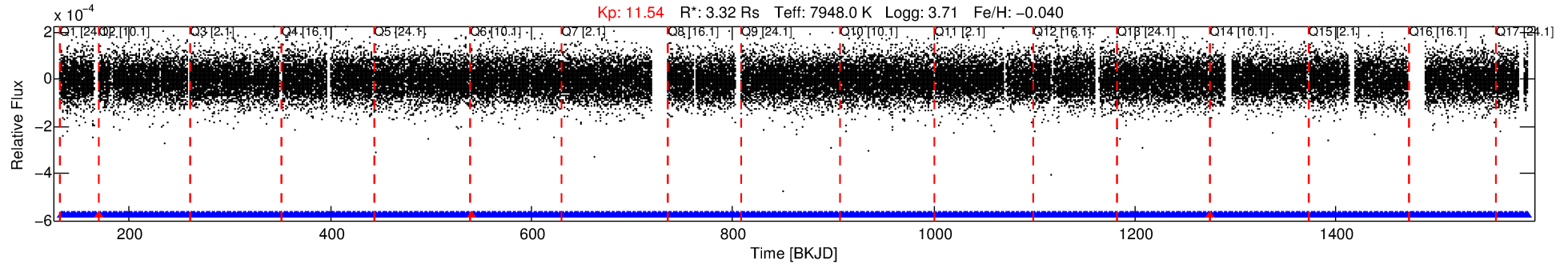
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008520456-01

No Significant Match Found

# DV One-Page Summary

KIC: 8520456 Candidate: 1 of 1 Period: 2.093 d



## DV Fit Results:

Period = 2.09294 [0.00004] d  
Epoch = 131.9630 [0.0119] BKJD  
Rp/R\* = 0.0022 [0.0015]  
a/R\* = 1.12 [0.84]  
b = 0.50 [5.80]  
Seff = 23687.36 [18773.65]  
Teq = 3163 [627] K  
Rp = 0.79 [0.65] Re  
a = 0.0408 [0.0195] AU  
Ag = 11.01 [18.13] [0.55σ]  
Teffp = 8909 [3259] K [1.73σ]

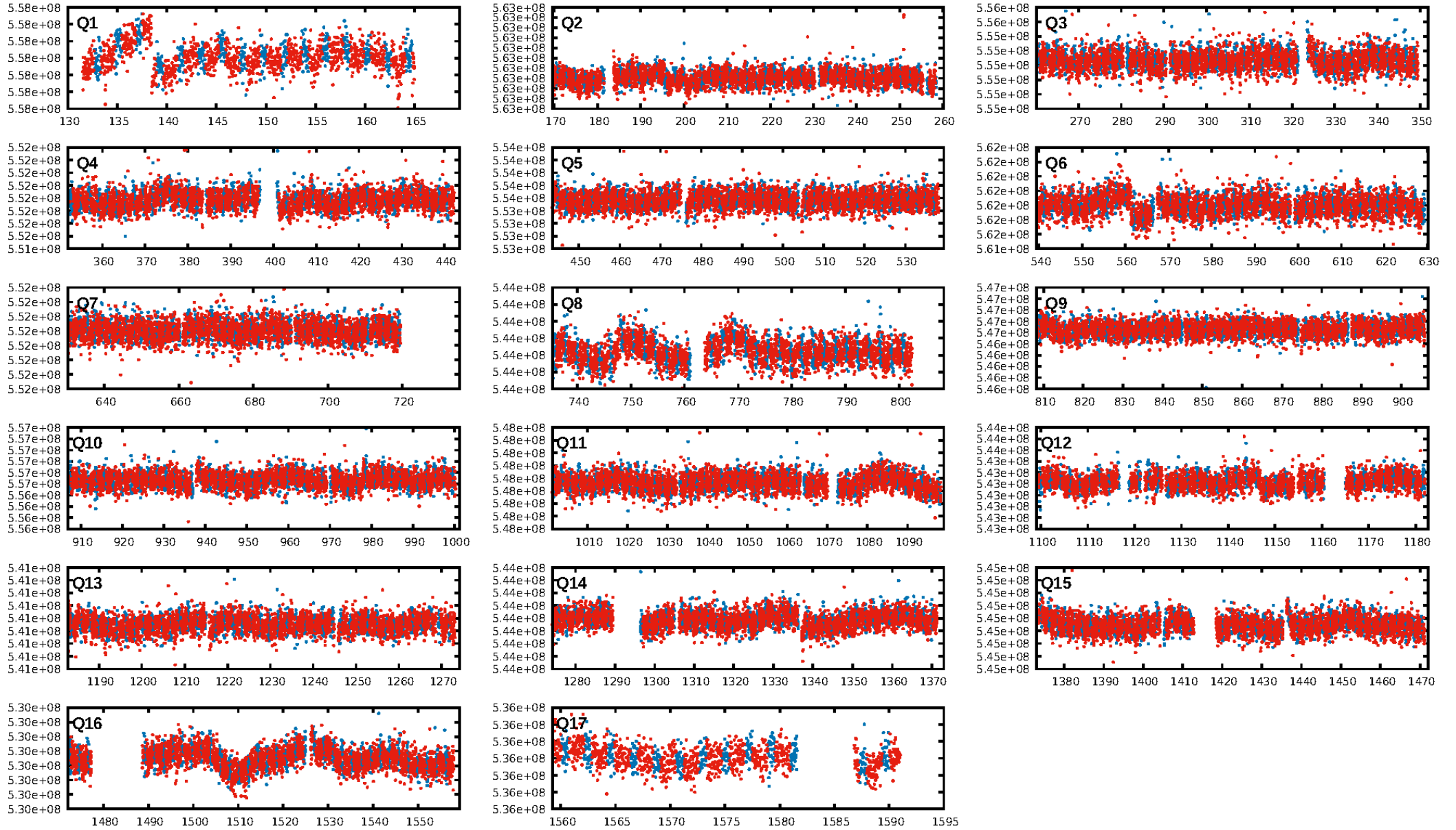
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [618/621]  
GhostDiagnostic-chr: 4.046  
Centroid-sig: 54.6%  
Centroid-so: 1.389 arcsec [0.75σ]  
OotOffset-rm: 4.619 arcsec [4.15σ]  
KicOffset-rm: 4.566 arcsec [2.96σ]  
OotOffset-st: 0/4/0/2 [6]  
KicOffset-st: 0/4/0/2 [6]  
DiffImageQuality-fgm: 0.00 [0/6]  
DiffImageOverlap-fno: 1.00 [17/17]

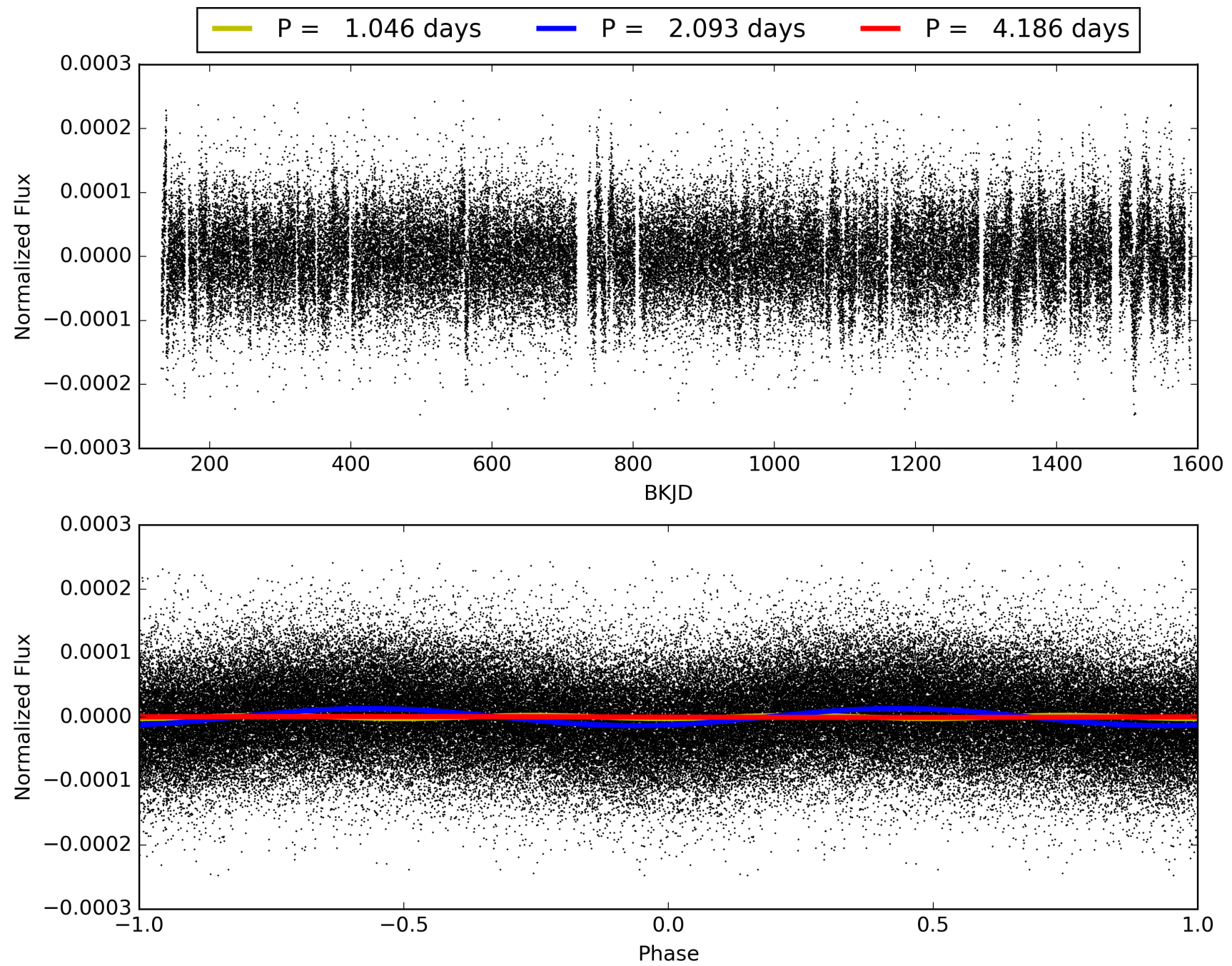
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 13:57:32 Z

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

# TCE 008520456-01, PDC Light Curves

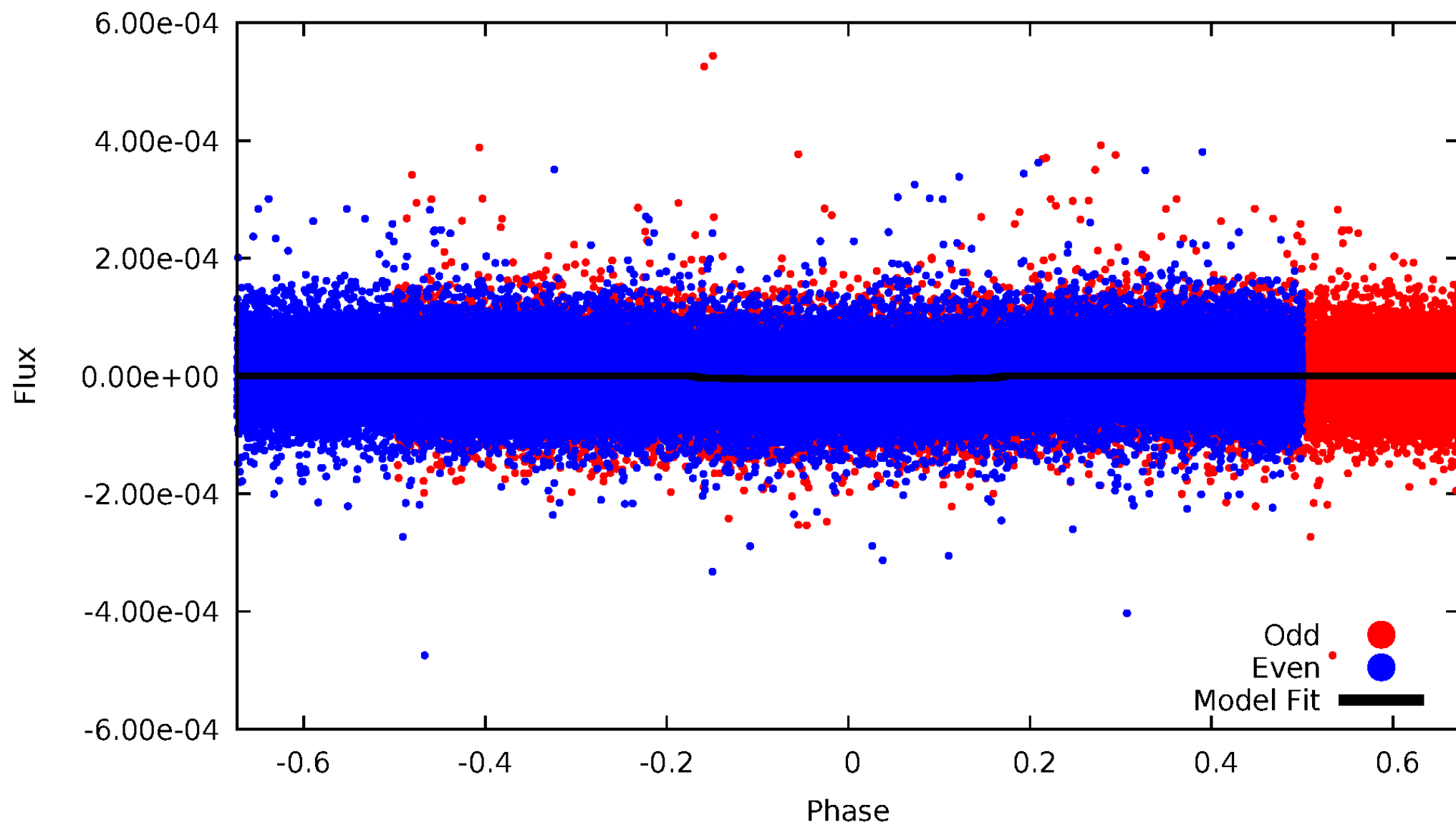


TCE 008520456-01



# DV Odd/Even

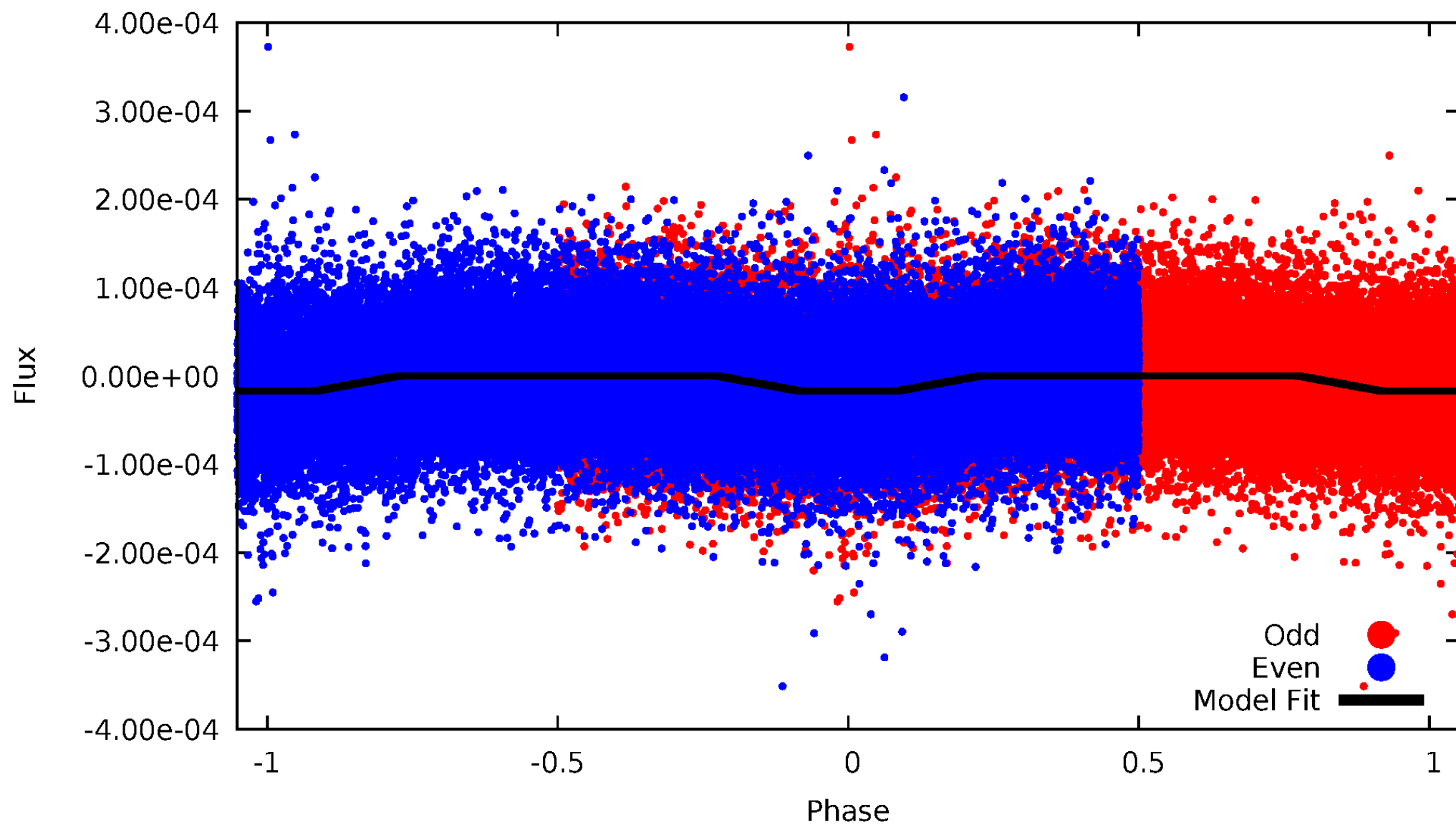
TCE 008520456-01



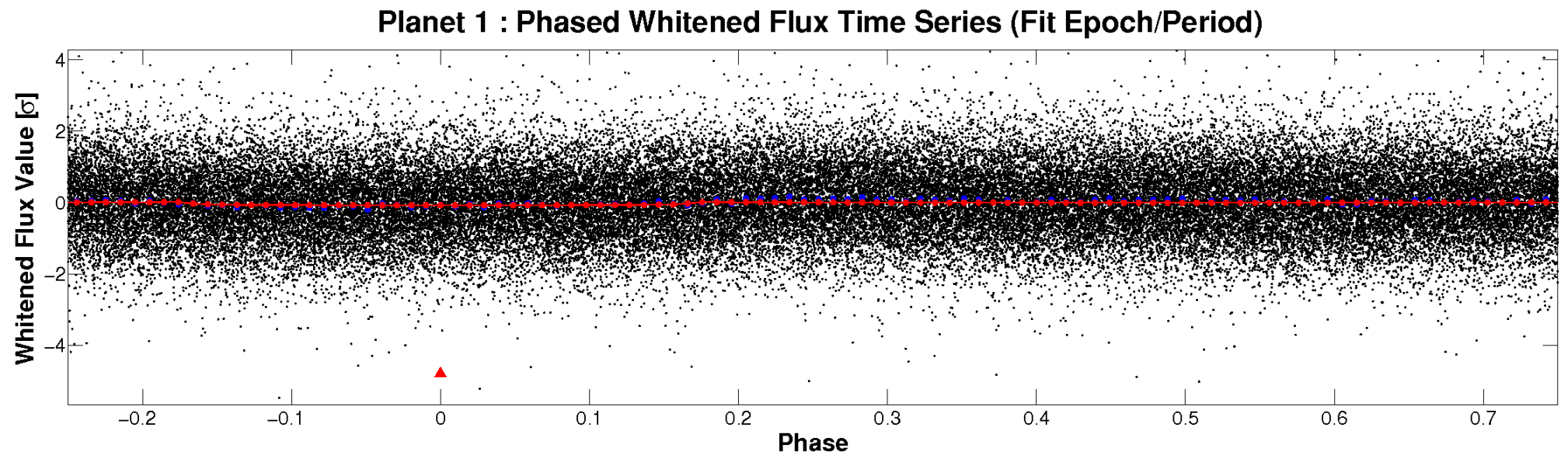
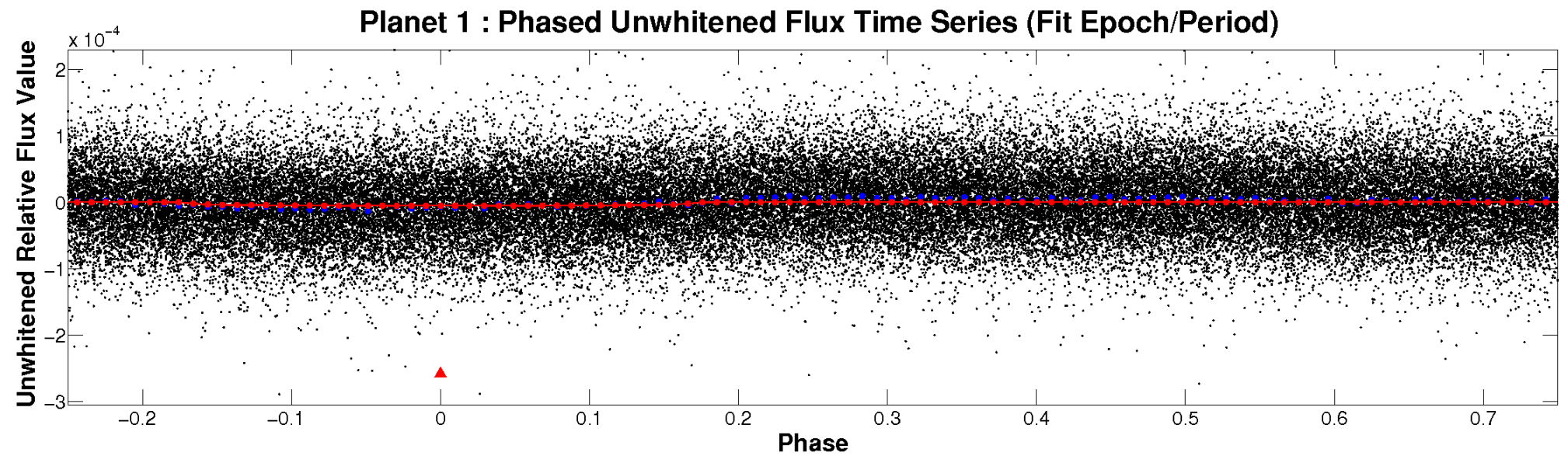


# ALT Odd/Even

TCE 008520456-01

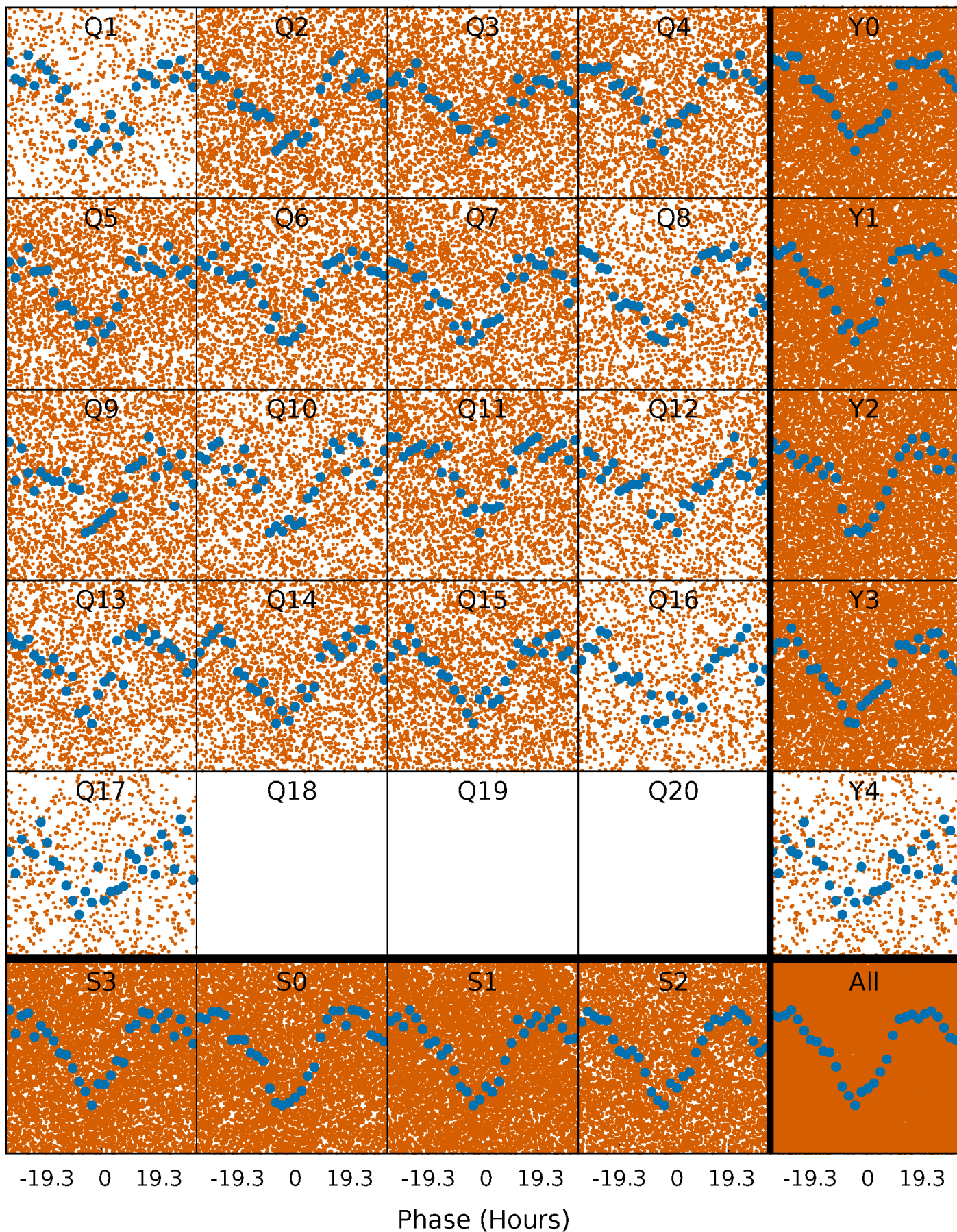


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

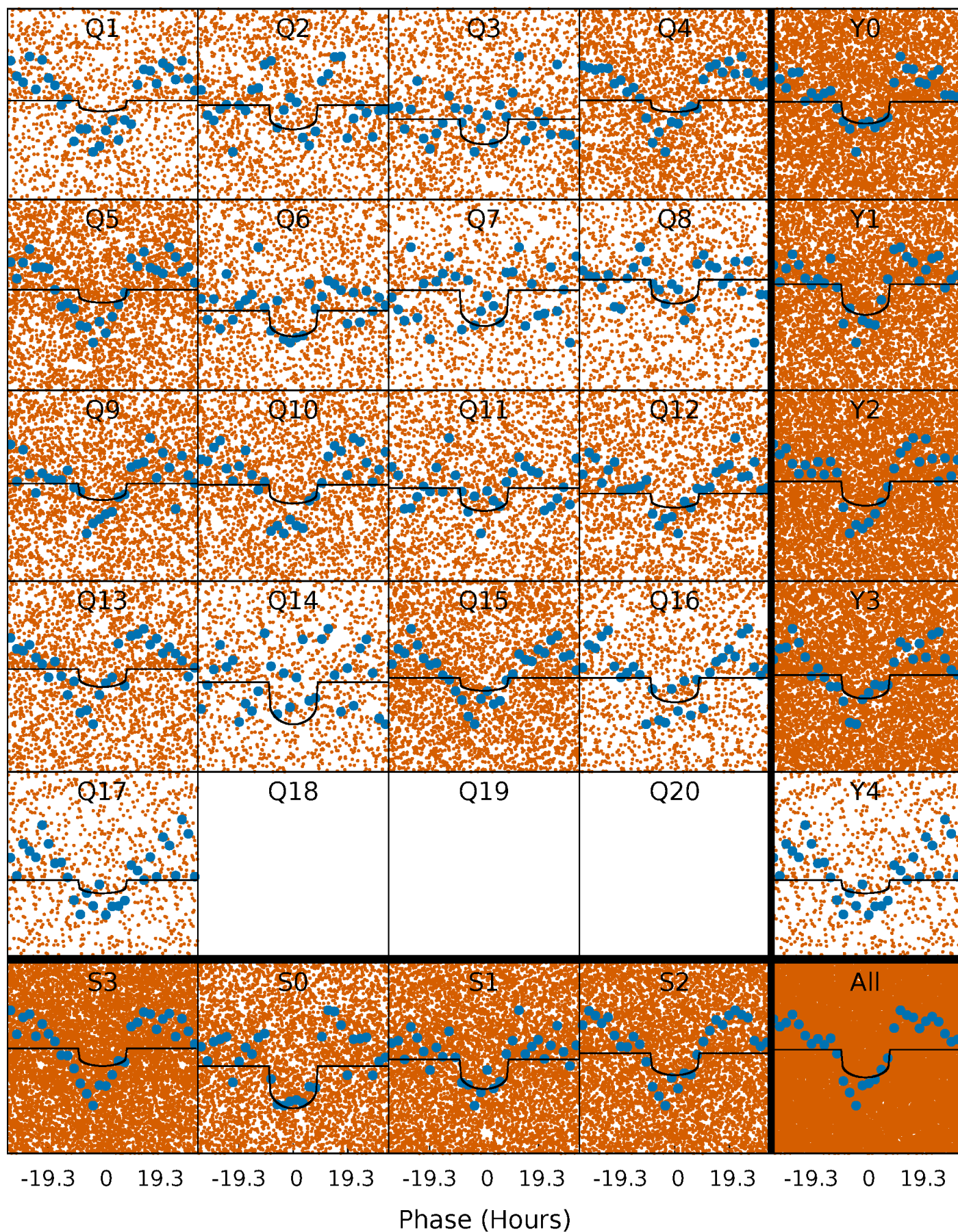
TCE 008520456-01 P= 2.092939 Days  $T_0=131.963002$  (BKJD)





# DV Quarter-Phased Transit Curves

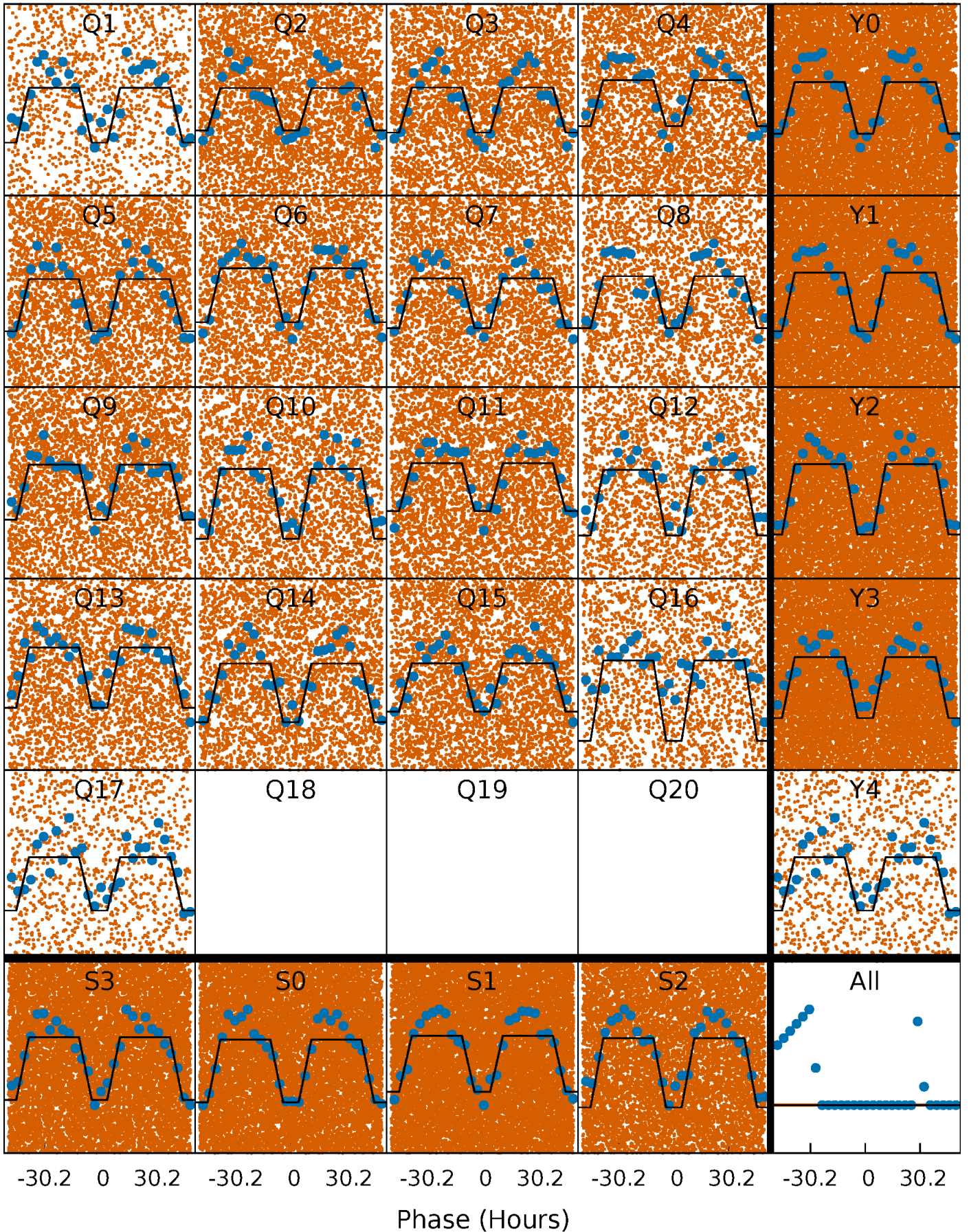
TCE 008520456-01 P= 2.092939 Days  $T_0=131.963002$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

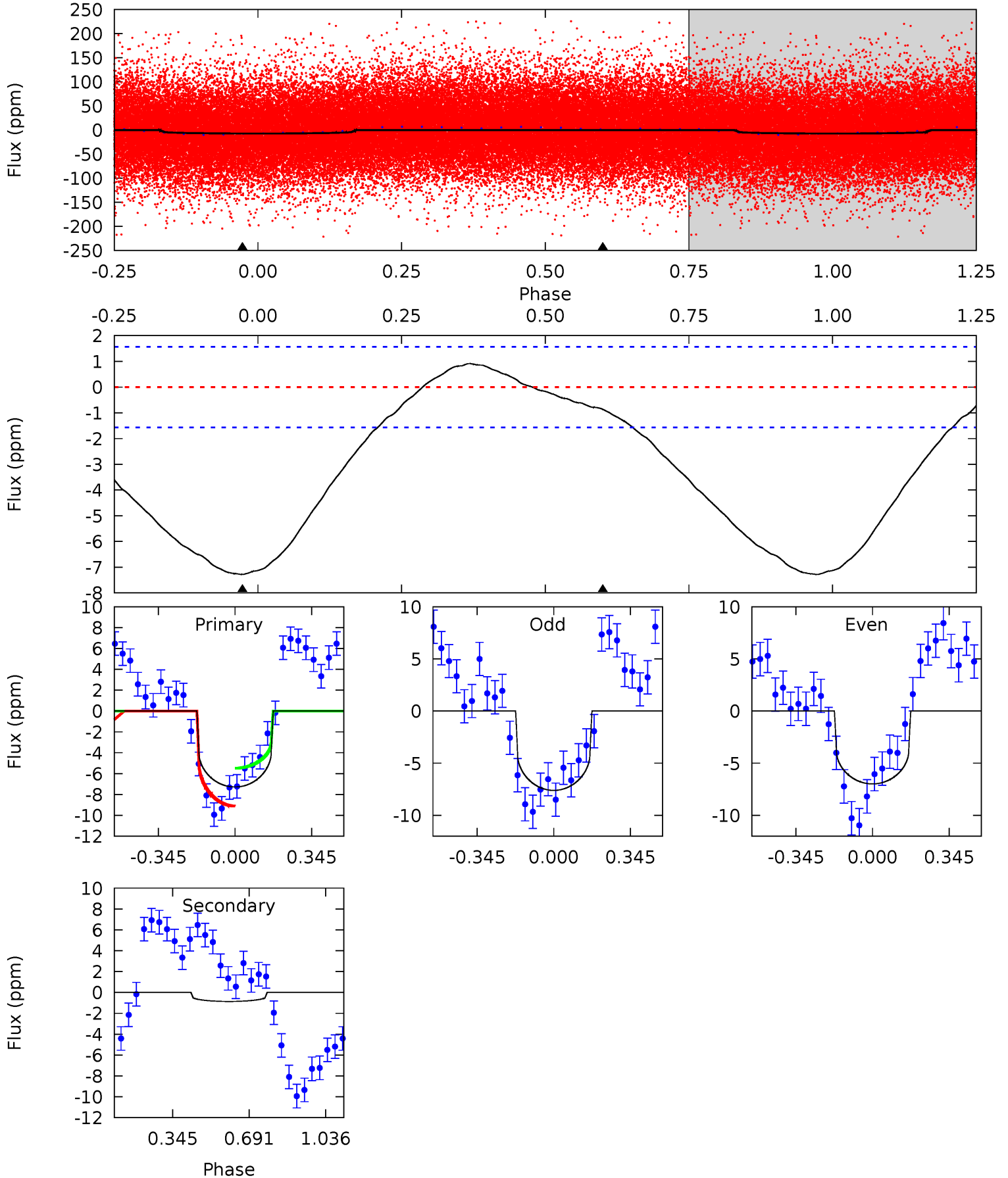
TCE 008520456-01 P= 2.092699 Days  $T_0=131.948032$  (BKJD)



# DV Model-Shift Uniqueness Test

008520456-01, P = 2.092939 Days, E = 129.870063 Days

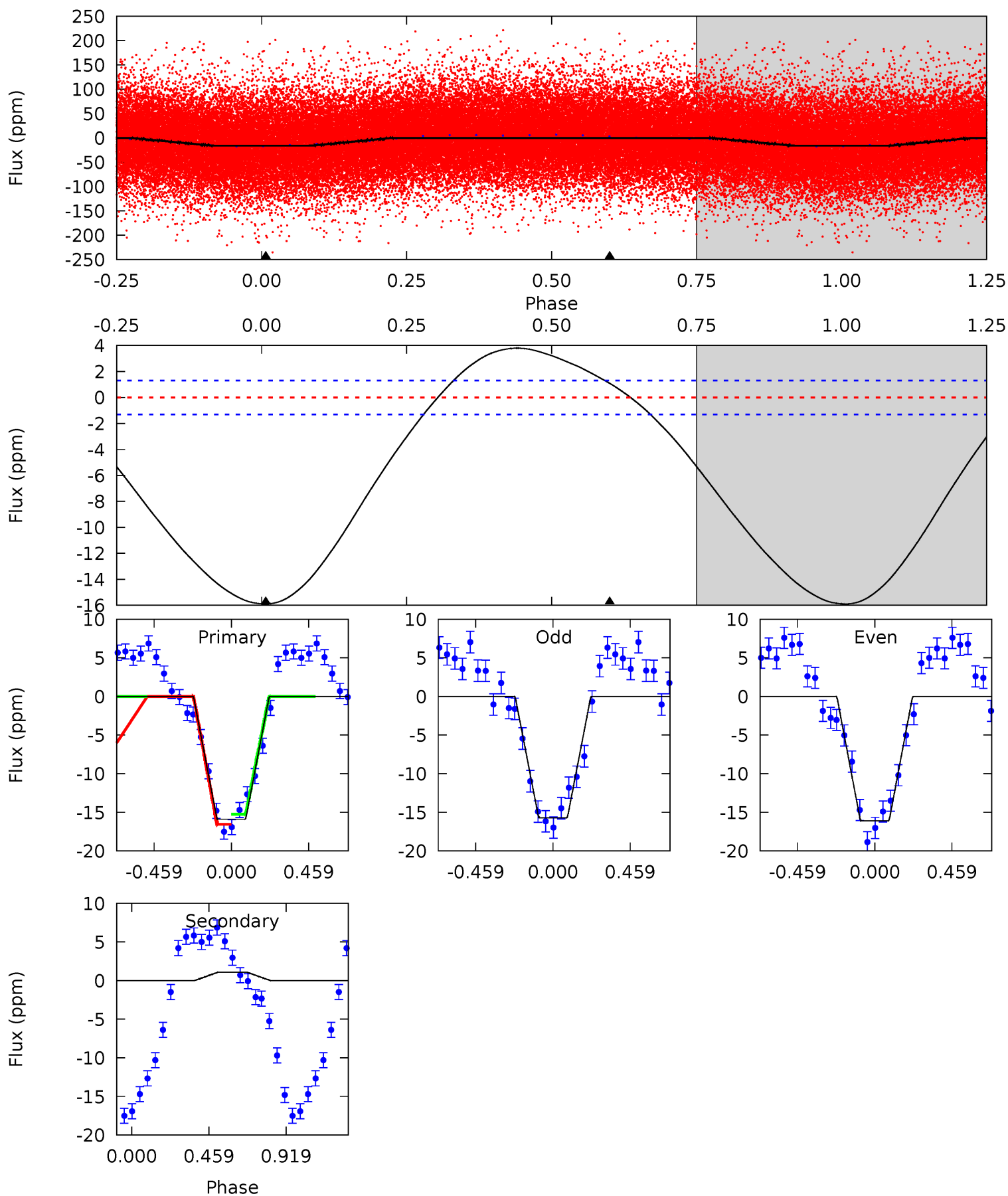
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.0	2.37	0	0	4.30	0.94	1.42	20.0	20.0	2.37	2.37	0.85	1.09	0.11	5.04



# Alt Model-Shift Uniqueness Test

008520456-01, P = 2.092699 Days, E = 129.855333 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
51.6	-3.53	0	0	4.23	0.74	4.83	51.6	51.6	-3.53	-3.53	0.64	0.86	0.19	2.04





### Stellar Parameters For KIC 008520456

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7948^{+222}_{-333}$	$3.711^{+0.459}_{-0.108}$	$-0.040^{+0.200}_{-0.350}$	$3.322^{+0.688}_{-1.604}$	$2.068^{+0.293}_{-0.545}$	$0.079^{+0.350}_{-0.028}$
	+3%/-4%	+12%/-3%	+500%/-875%	+21%/-48%	+14%/-26%	+441%/-35%
Source	KIC0	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 008520456-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1 \pm 0$	$0.74^{+0.50}_{-0.44}$	$4235^{+374}_{-536}$	$4621^{+2591}_{-1353}$	$1.339^{+6.961}_{-0.926}$
Alt.	$1 \pm 0$	$1.31^{+0.61}_{-0.53}$	$4247^{+357}_{-520}$	$-4552^{+361}_{-656}$	$-0.558^{+0.307}_{-0.992}$

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

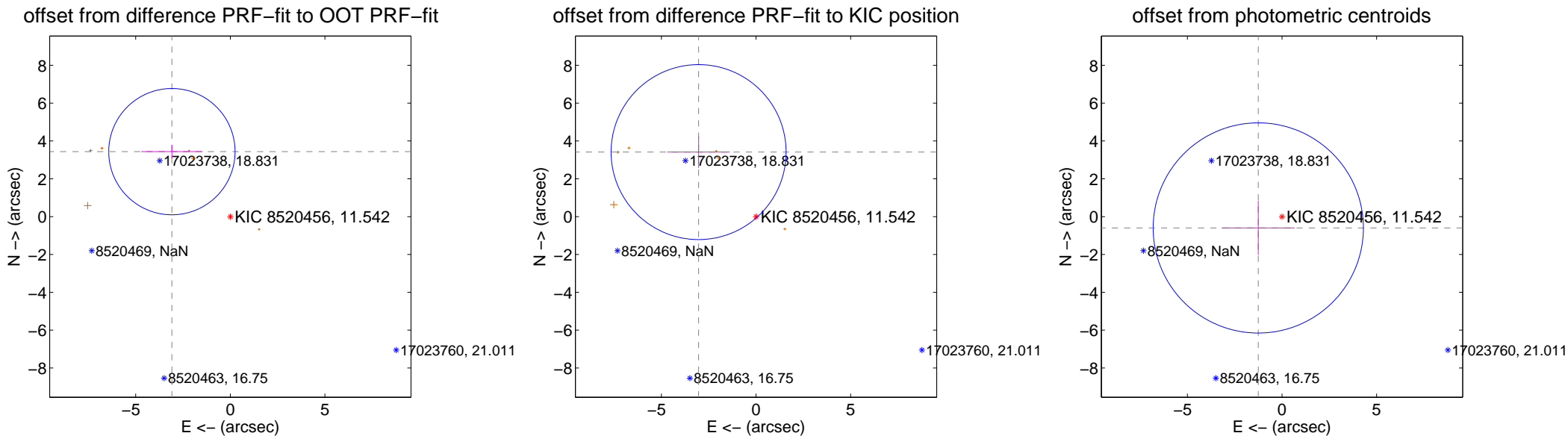
## DV Centroid Data

Supplemental centroid analysis for 008520456-01. **Kepler magnitude: 11.54.** Transit SNR 10.27

**There are 0 quarters with good PRF difference image offsets**

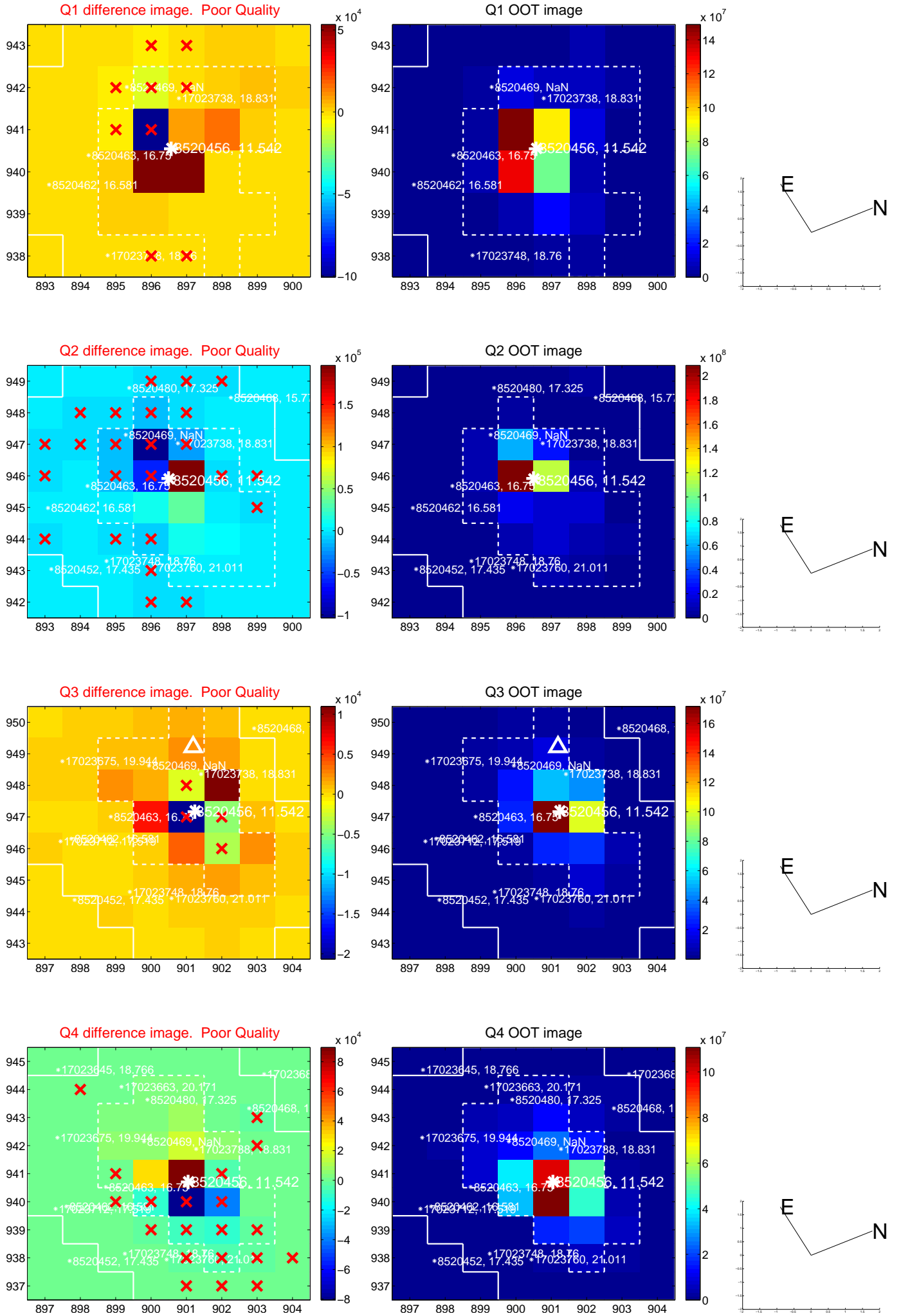
The direct PRF centroid is offset from the target star catalog position by about 0.01 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>4.619 \pm 1.113</math></b>	<b>4.15</b>	$3.088 \pm 1.618$	$3.436 \pm 0.352$
PRF-fit source offset from KIC position	$4.566 \pm 1.541$	2.96	$3.034 \pm 1.659$	$3.412 \pm 0.835$
photometric centroid source offset	$1.39 \pm 1.85$	0.75	$1.25 \pm 1.93$	$-0.60 \pm 1.43$

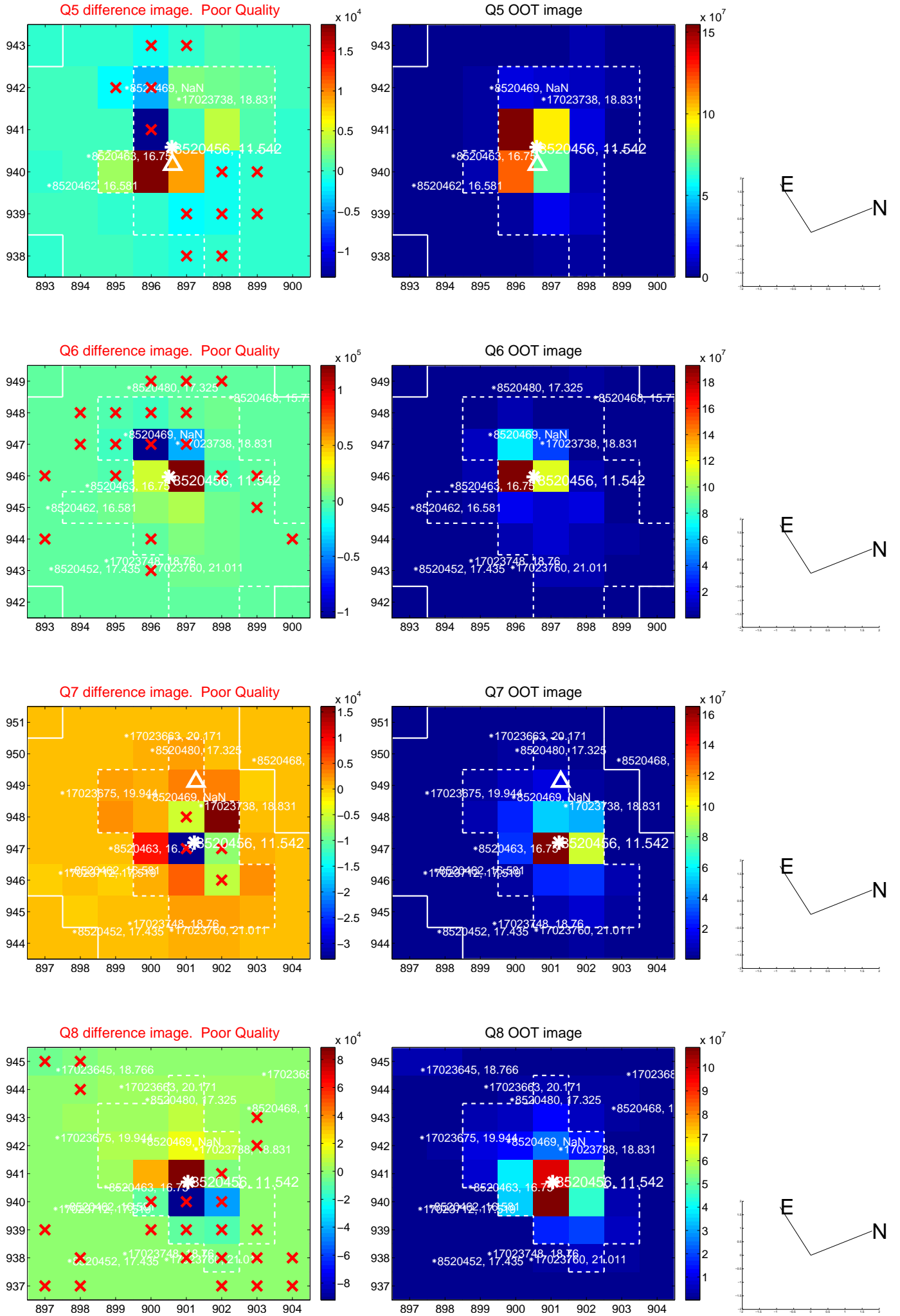


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

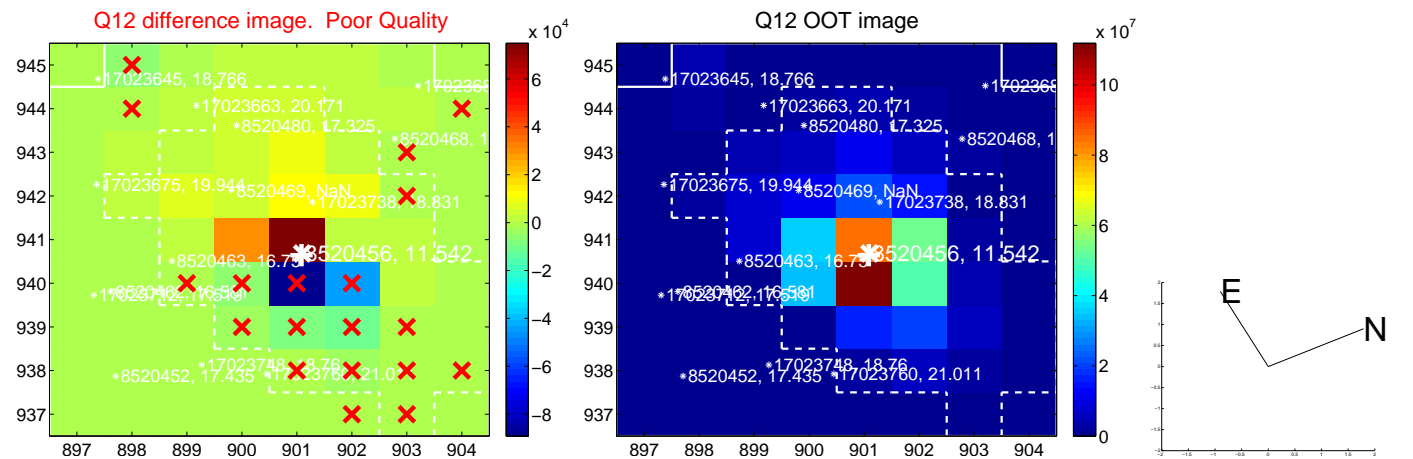
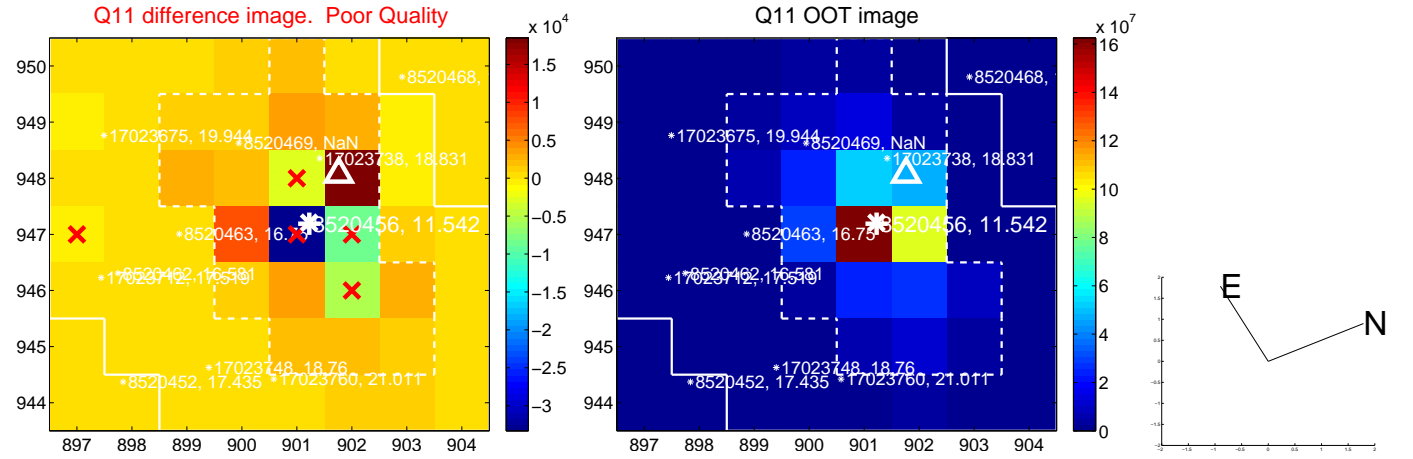
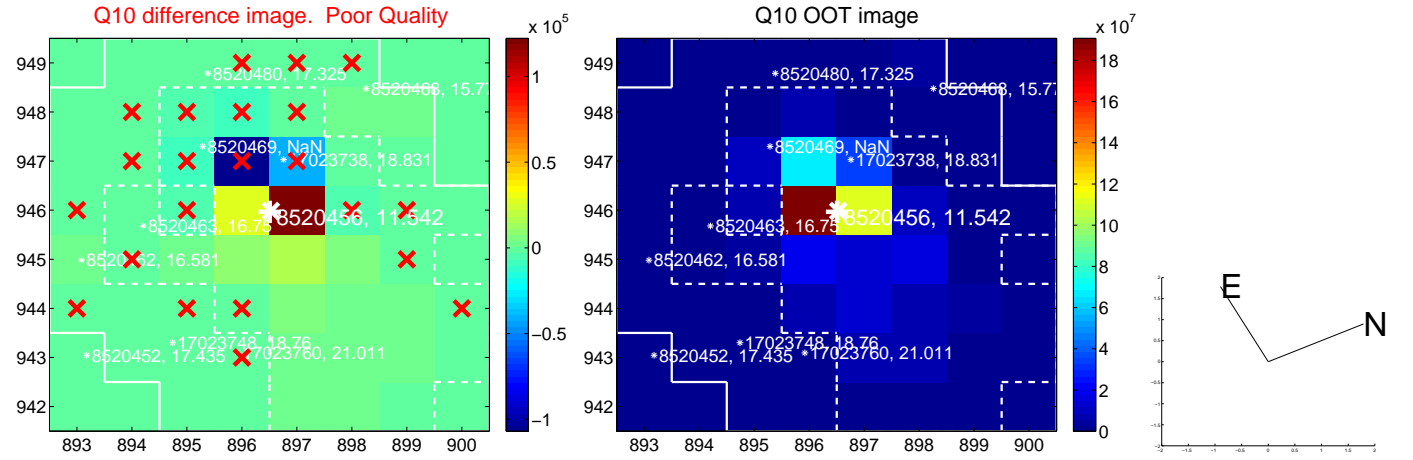
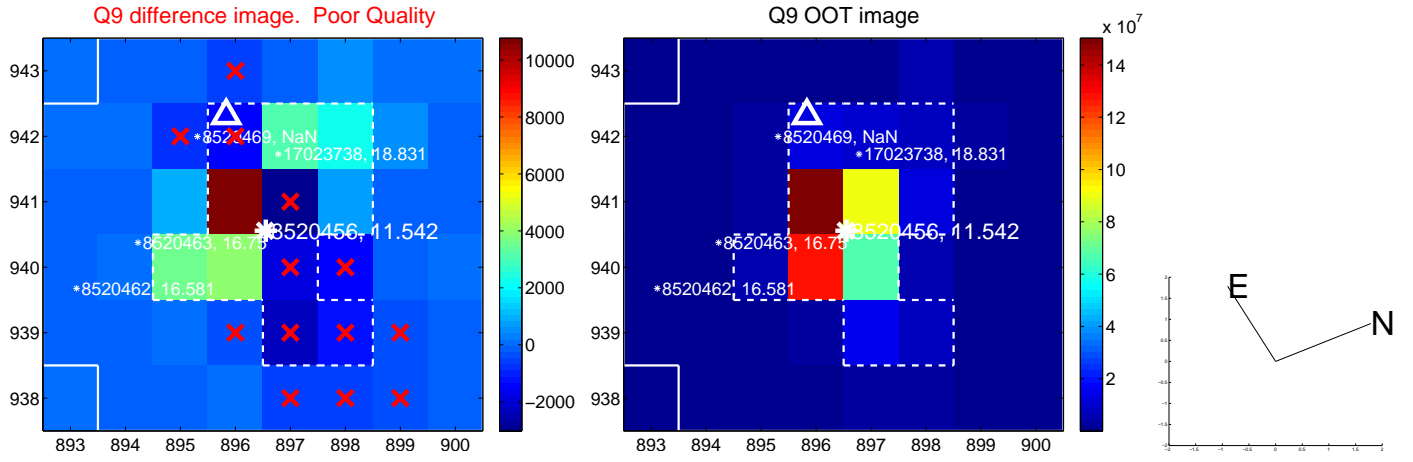


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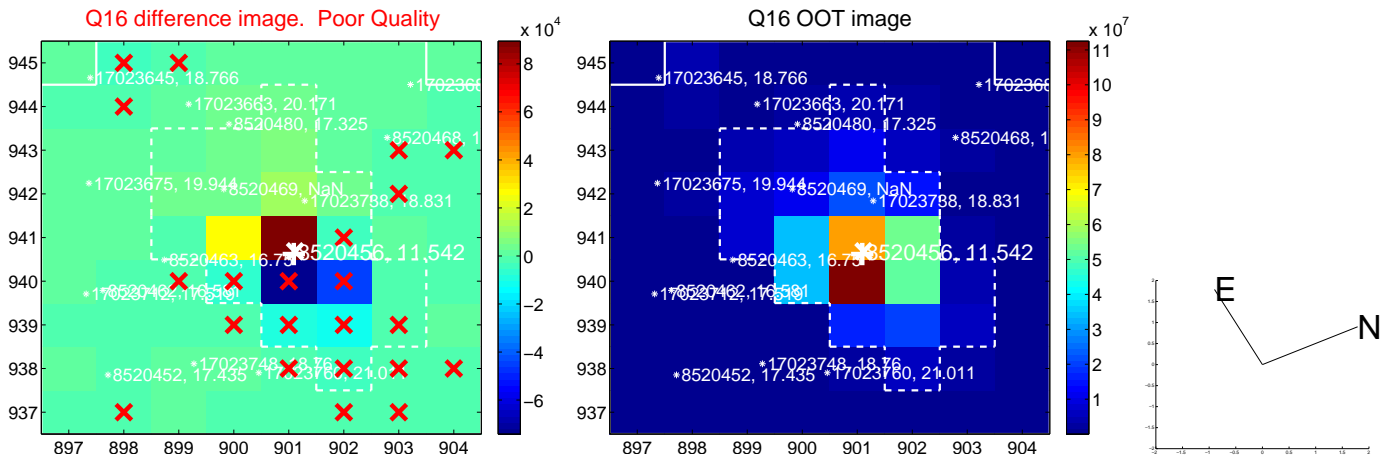
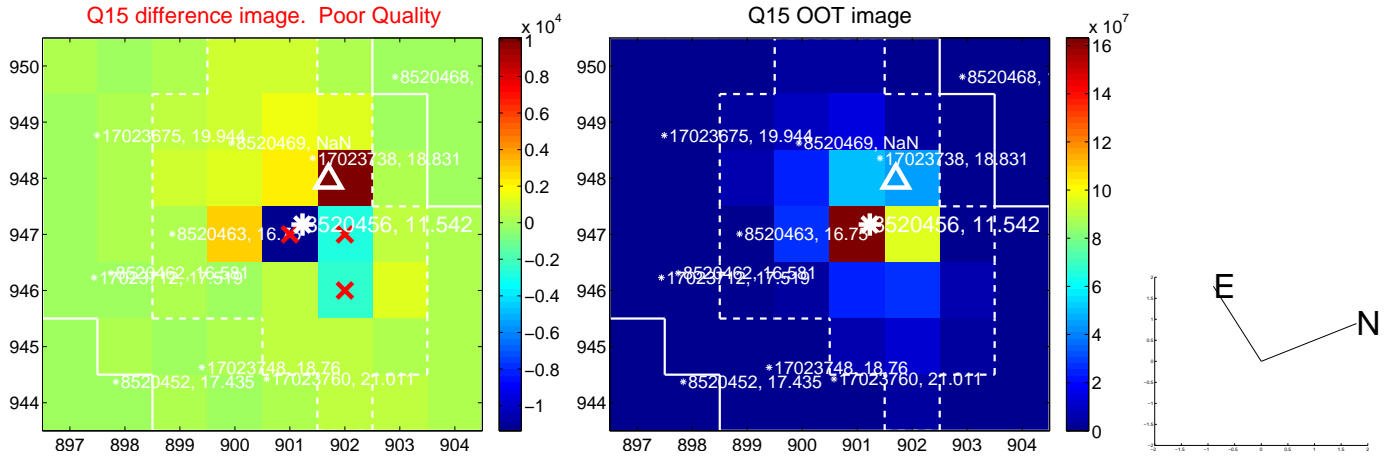
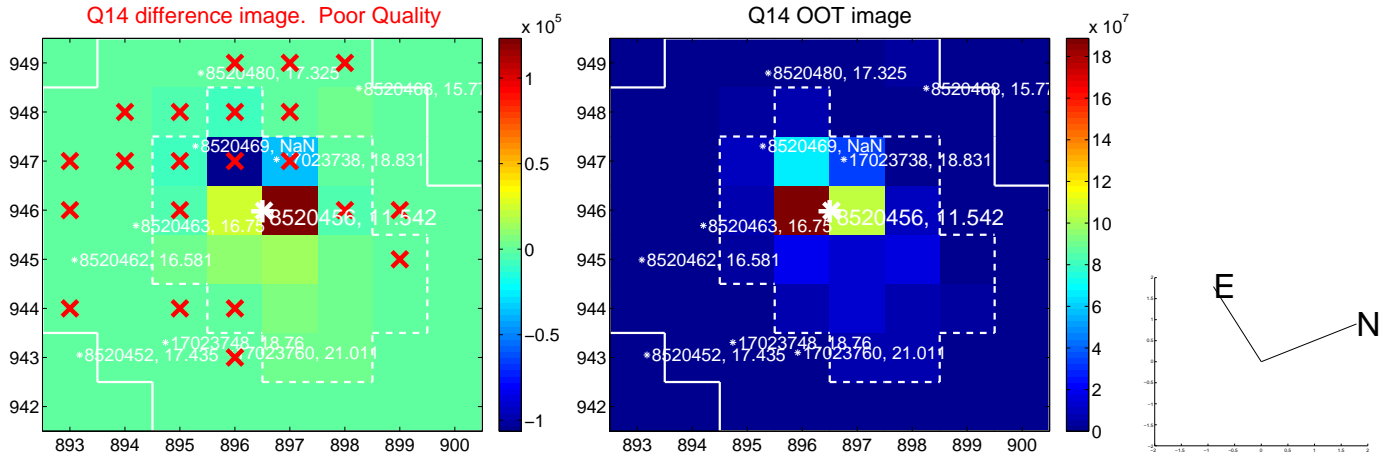
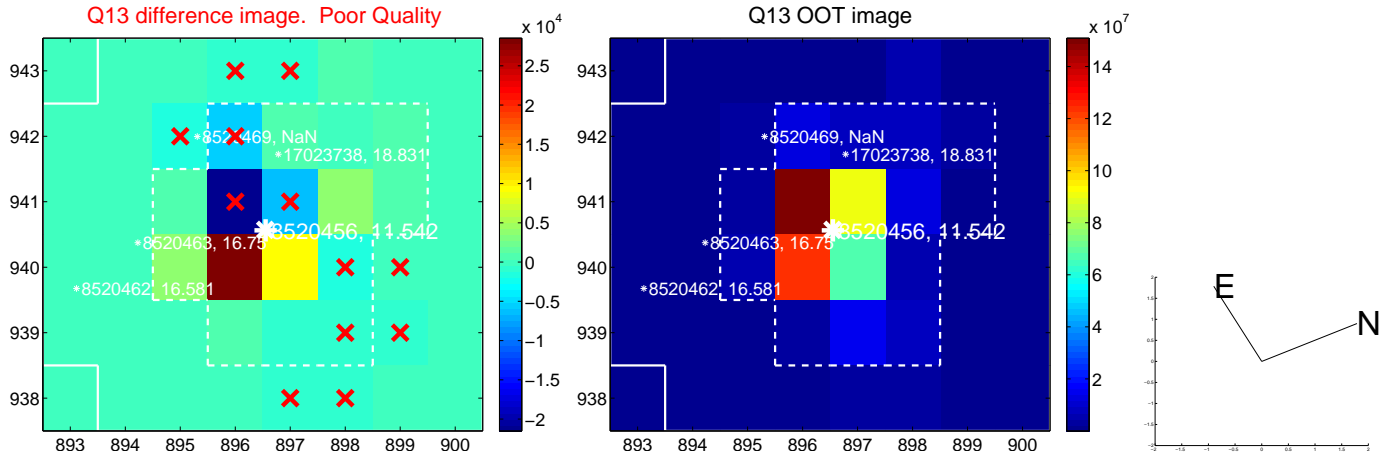




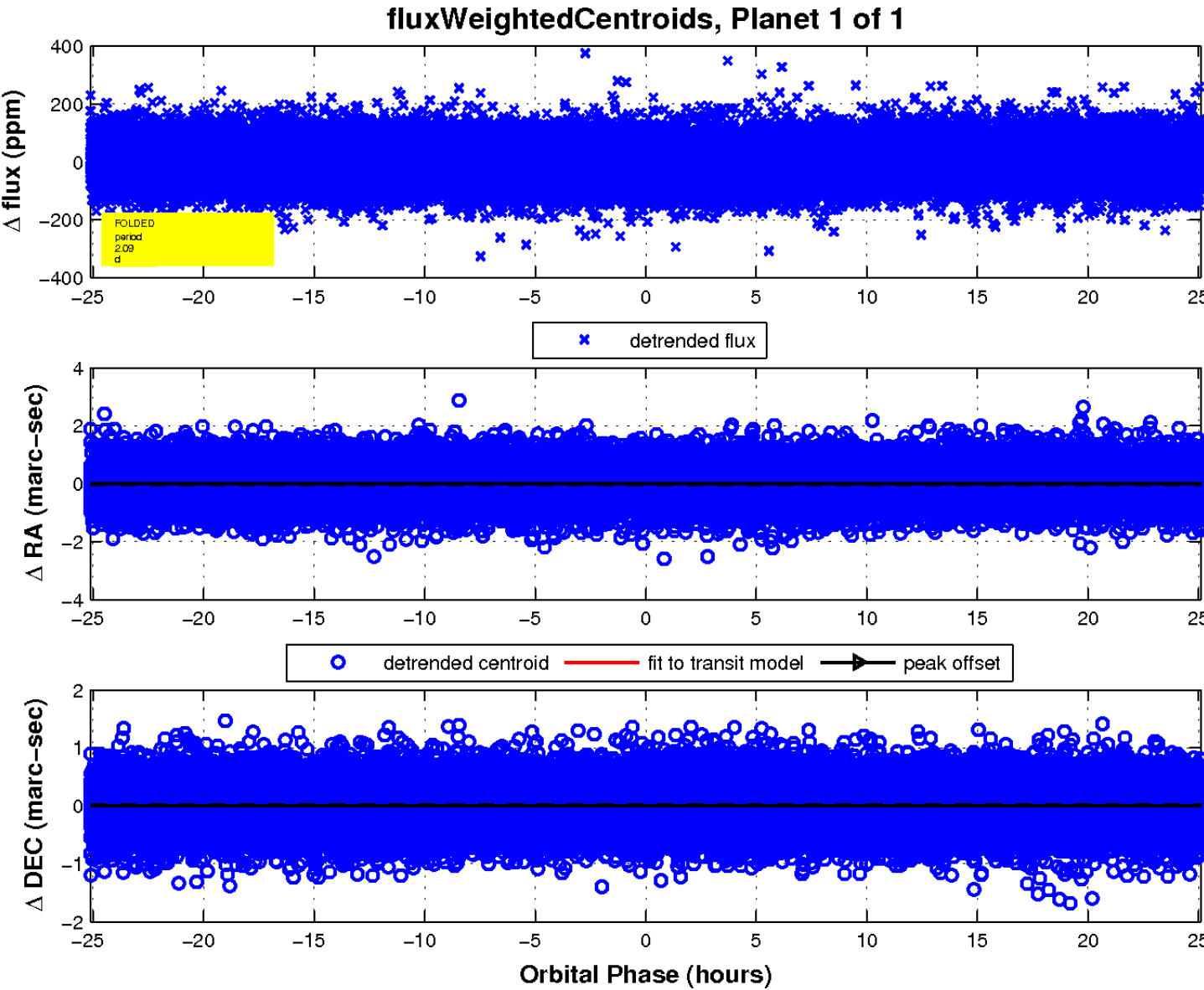
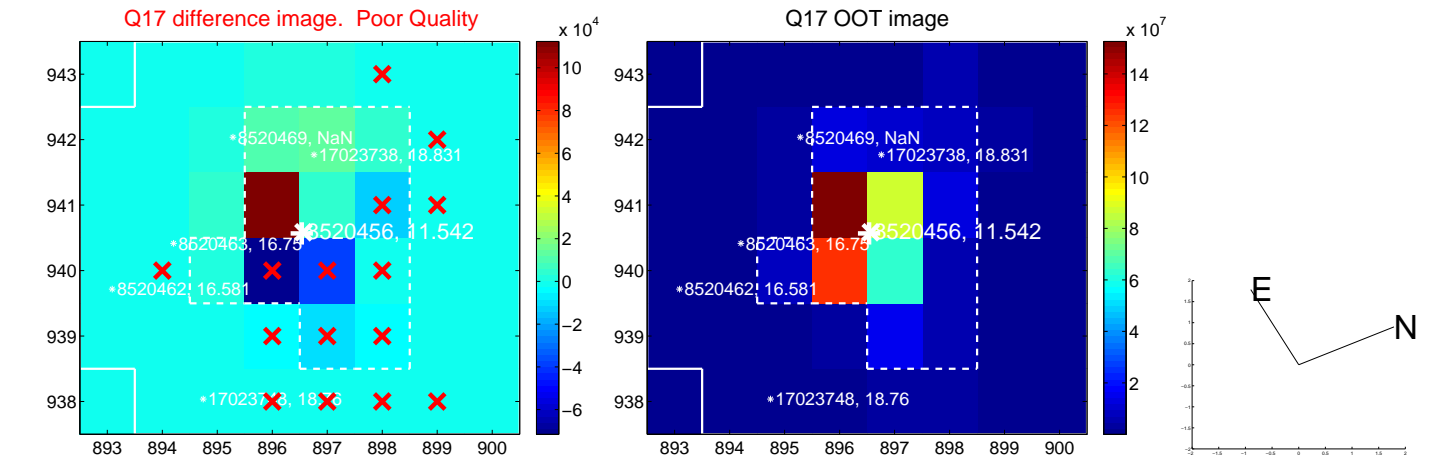
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

