

# KIC 004949825

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004949825-01	OBS	No	1.564067	133.056490	36.8	10.395	12.3	8.5	0.95	6045	0.58	1530.41

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004949825-01	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST—EPHEM_MATCH

**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.

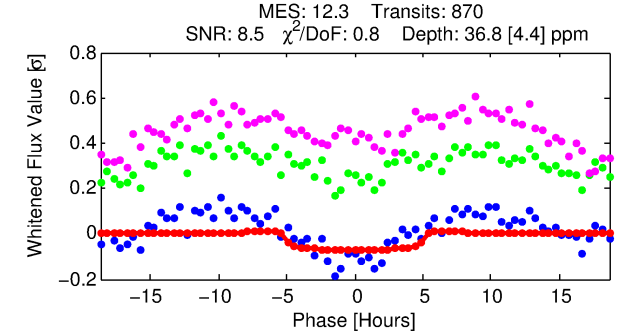
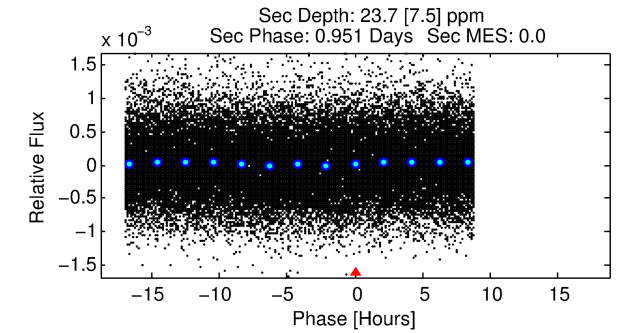
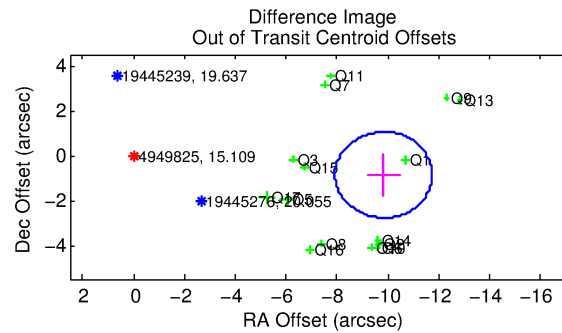
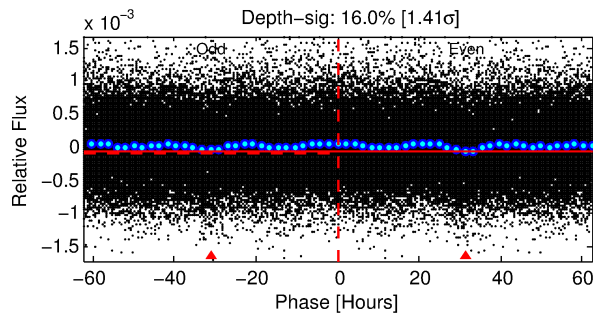
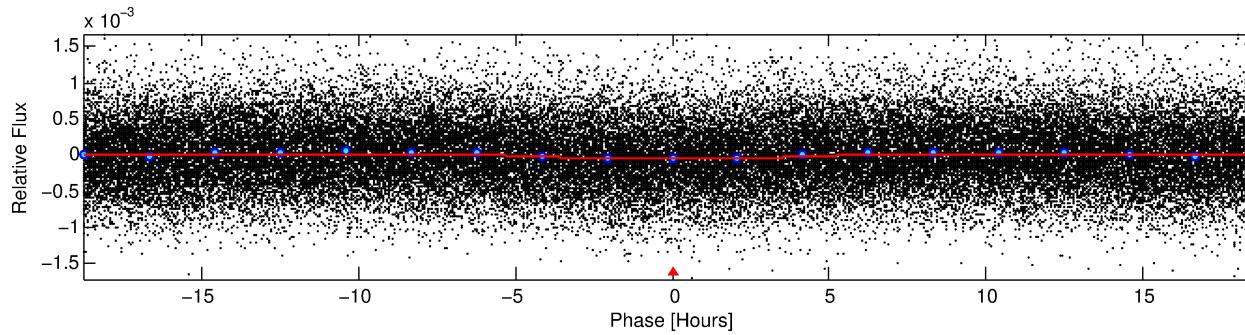
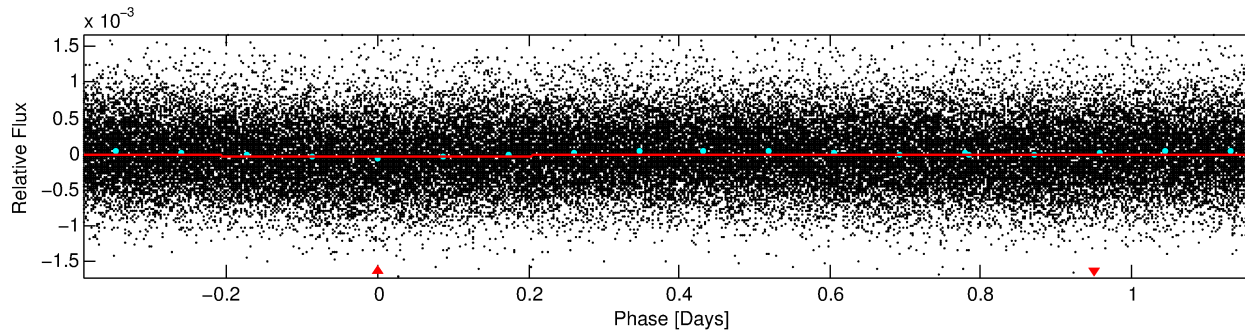
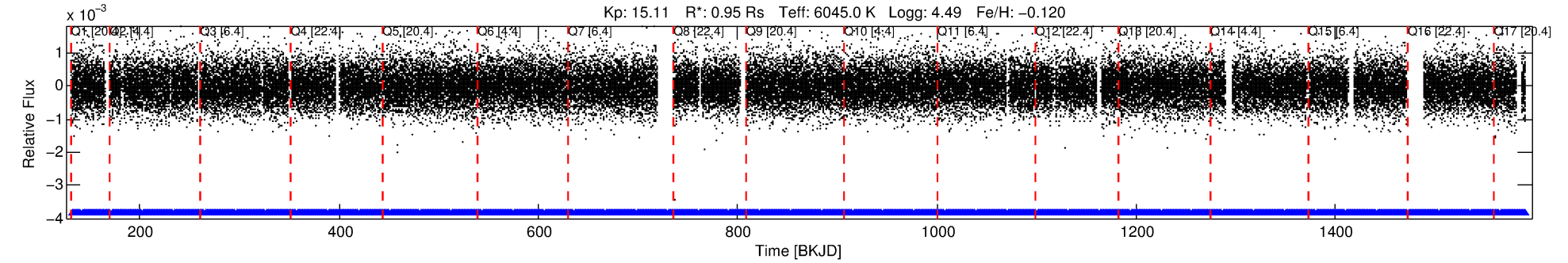
## Ephemeris Match Information For 004949825-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist ( $''$ )	$\Delta$ Row	$\Delta$ Col	$m_2$	$m_1$	$D_2/D_1$	Mechanism	Flag	$\sigma_P$	$\sigma_T$
004949825-01	4949825	004949770-pri	4949770	1:1	30.0	-4	7	12.57	15.11	3659.50	Direct-PRF	0	1.22	1.68

**Notes:**  $P_1:P_2$  is the period ratio. Dist is the distance in arcseconds.  $\Delta$ Row and  $\Delta$ Col are the number of pixels apart in row and column.  $m_2$  and  $m_1$  are the magnitudes of the parent and child.  $D_2/D_1$  is the parent's transit depth divided by the child's.  $\sigma_P$  and  $\sigma_T$  are the significance of the match in period and epoch. For a match to be considered significant  $\sigma_P < 5.0$  and  $\sigma_T < 5.0$ . Matches which have  $\sigma_P$  and  $\sigma_T$  very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

# DV One-Page Summary

KIC: 4949825 Candidate: 1 of 1 Period: 1.564 d



## DV Fit Results:

Period = 1.56407 [0.00003] d  
Epoch = 133.0565 [0.0112] BKJD  
Rp/R\* = 0.0055 [0.0090]  
a/R\* = 1.32 [4.33]  
b = 0.01 [1377.61]  
Seff = 1530.41 [528.77]  
Teq = 1595 [138] K  
Rp = 0.58 [0.95] Re  
a = 0.0267 [0.0059] AU  
Ag = 27.89 [91.39] [0.29 $\sigma$ ]  
Teffp = 5667 [4624] K [0.88 $\sigma$ ]

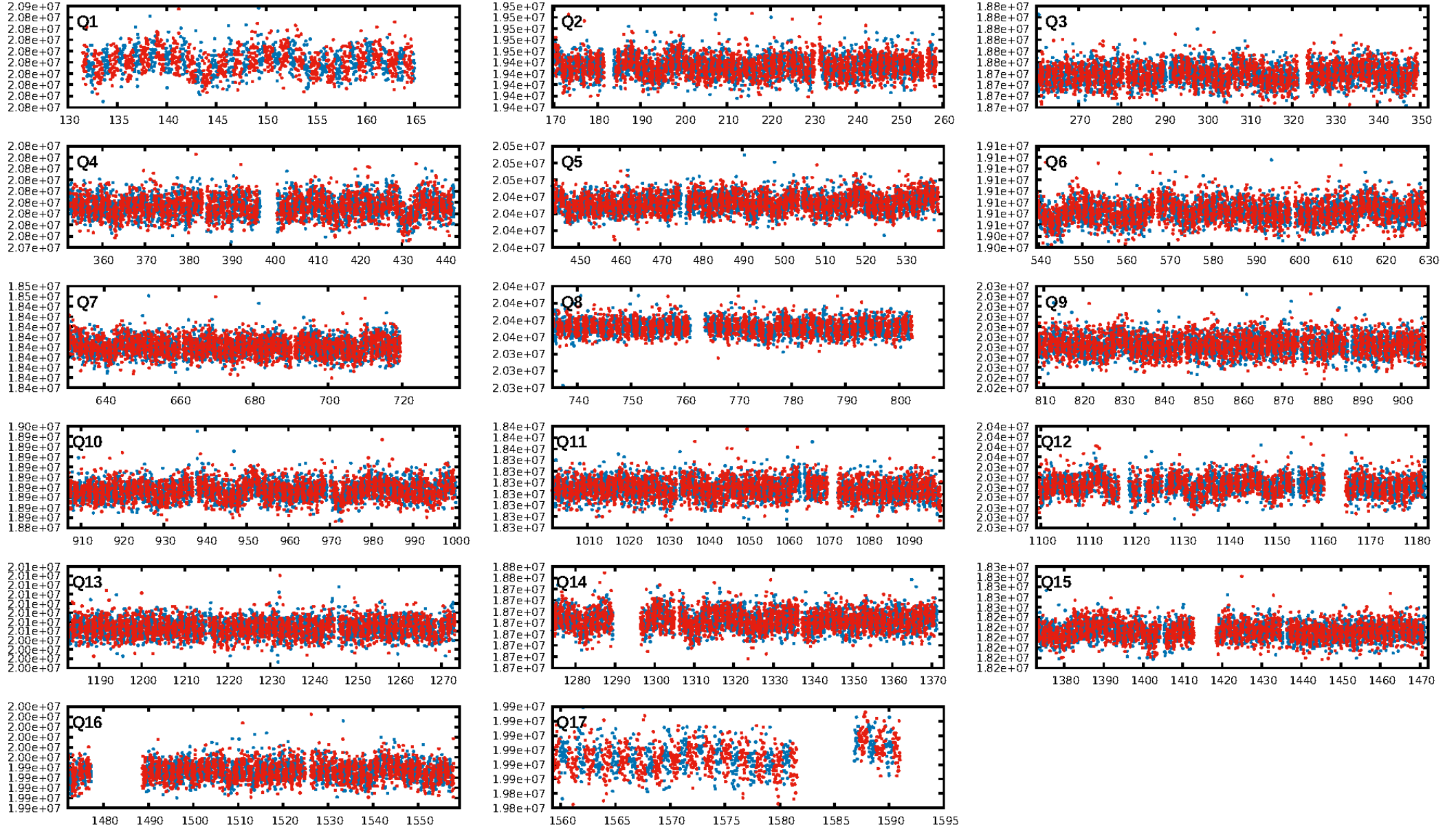
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.53e-26  
RollingBand-fgt: 1.00 [830/830]  
GhostDiagnostic-chr: -0.0756  
Centroid-sig: 0.0%  
Centroid-so: 15.255 arcsec [9.25 $\sigma$ ]  
OotOffset-rm: 9.874 arcsec [15.49 $\sigma$ ]  
KicOffset-rm: 9.845 arcsec [15.53 $\sigma$ ]  
OotOffset-st: 4/4/2/5 [15]  
KicOffset-st: 4/4/2/5 [15]  
DiffImageQuality-fgm: 0.33 [5/15]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 09:52:53 Z

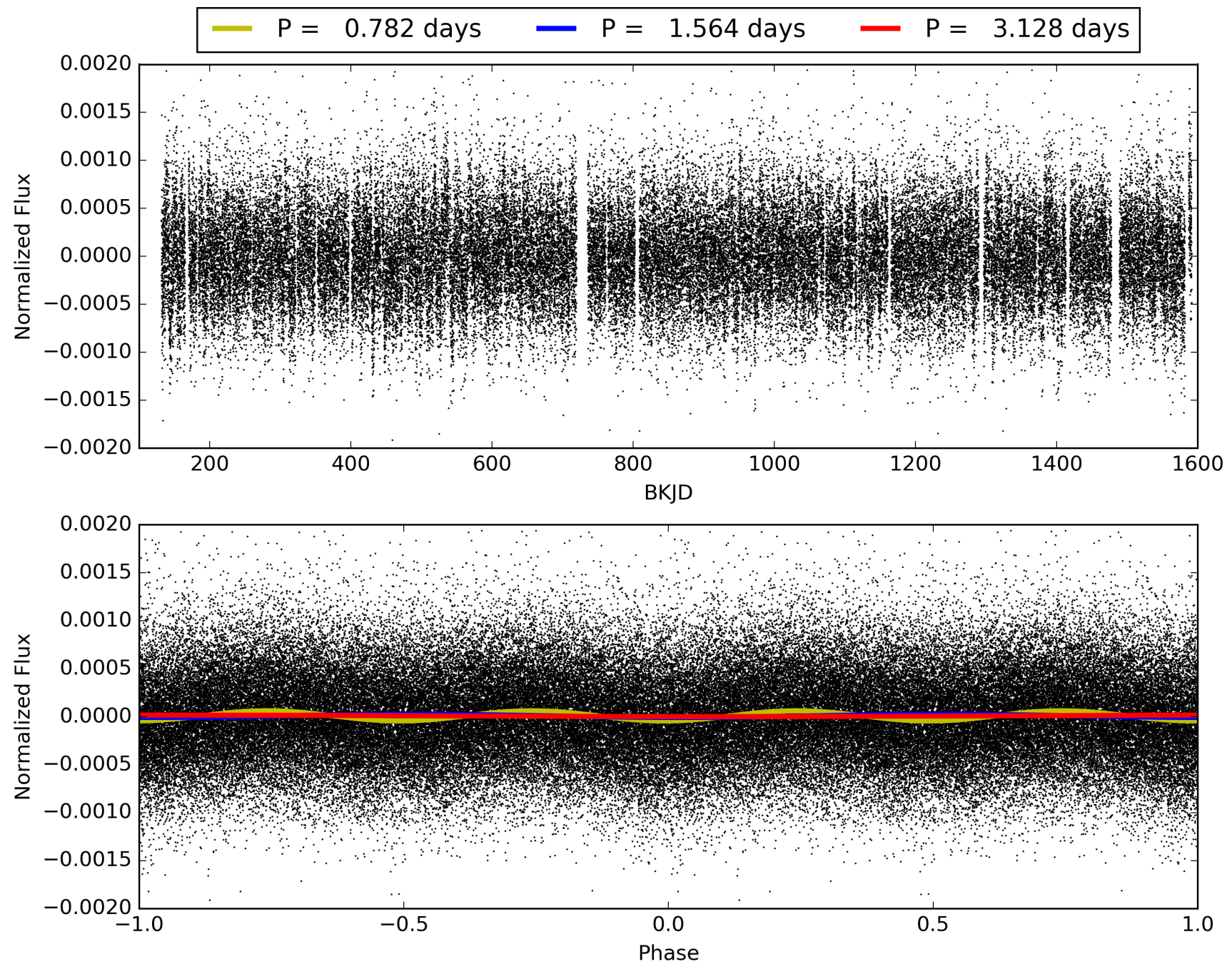
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 004949825-01, PDC Light Curves



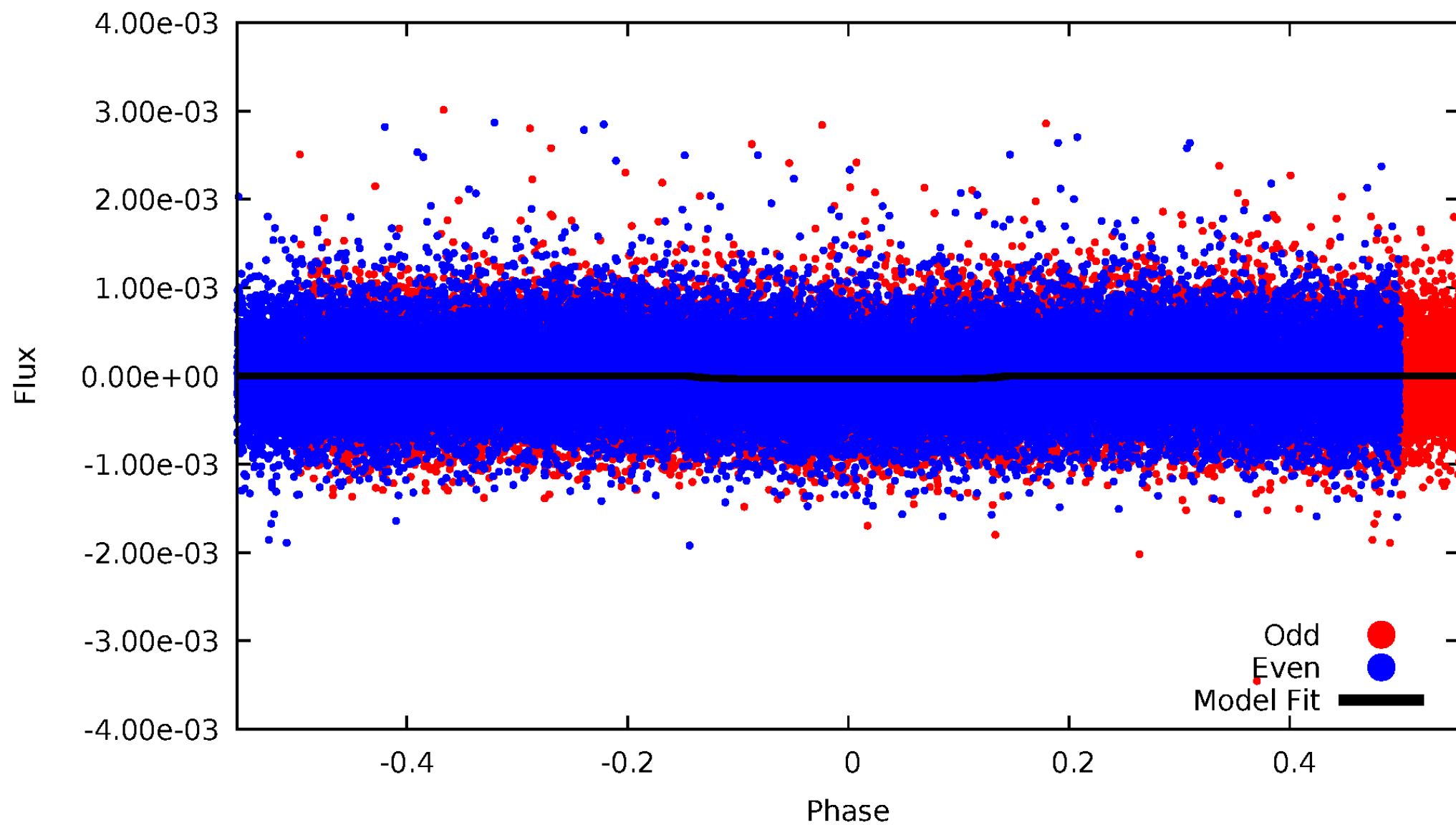


TCE 004949825-01



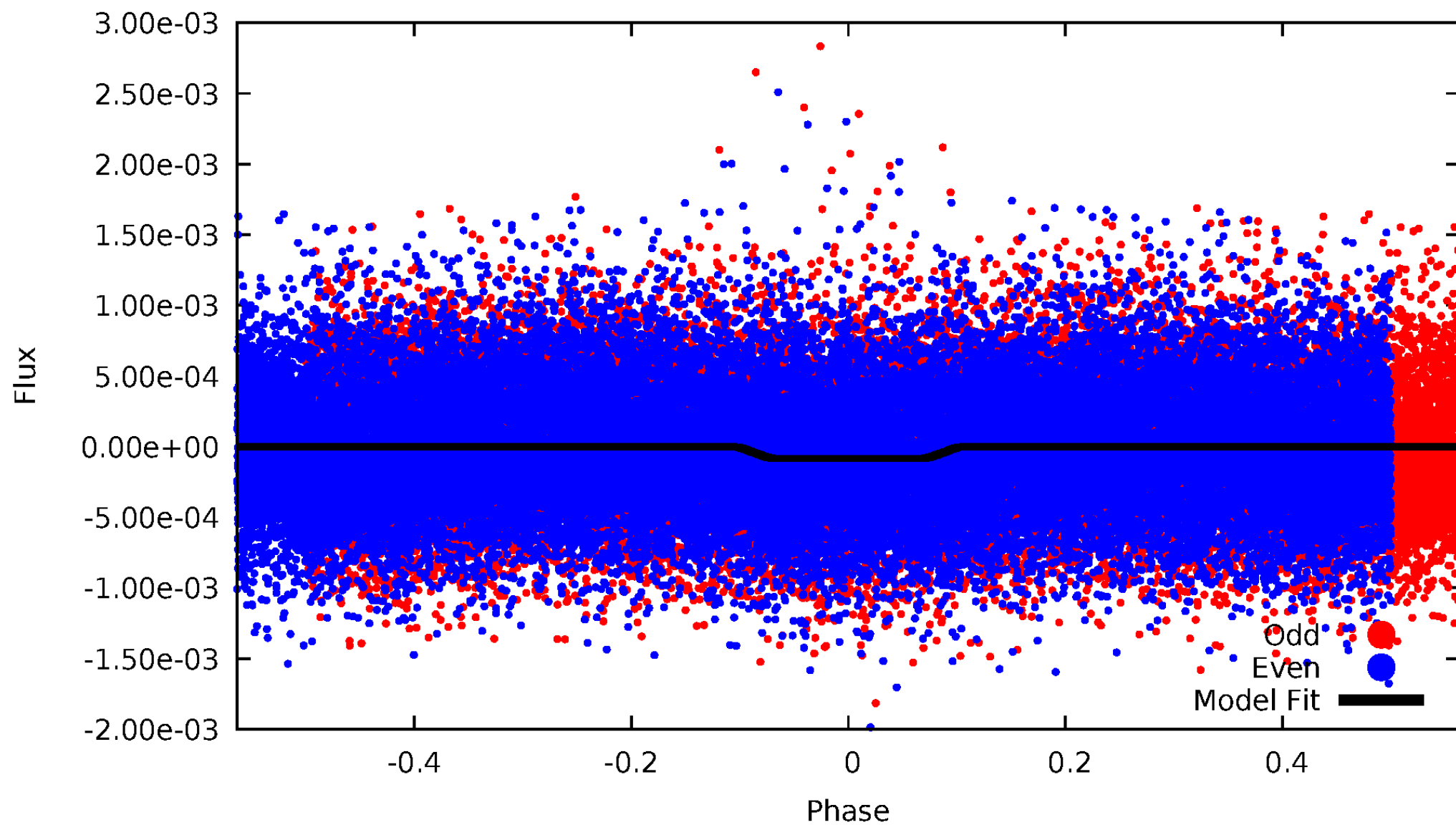
# DV Odd/Even

TCE 004949825-01



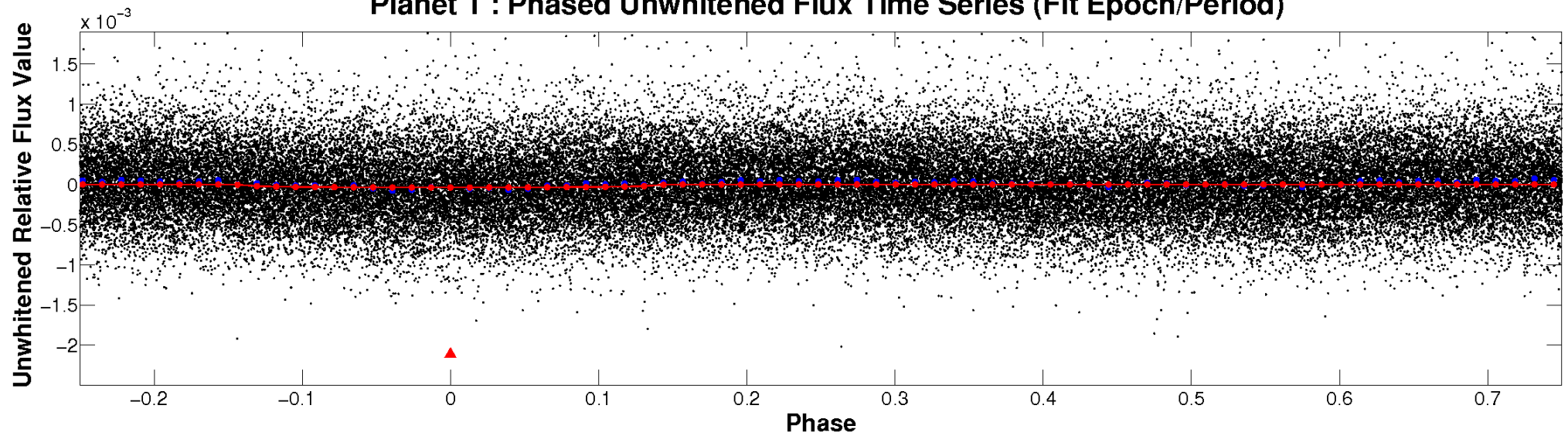
# ALT Odd/Even

TCE 004949825-01

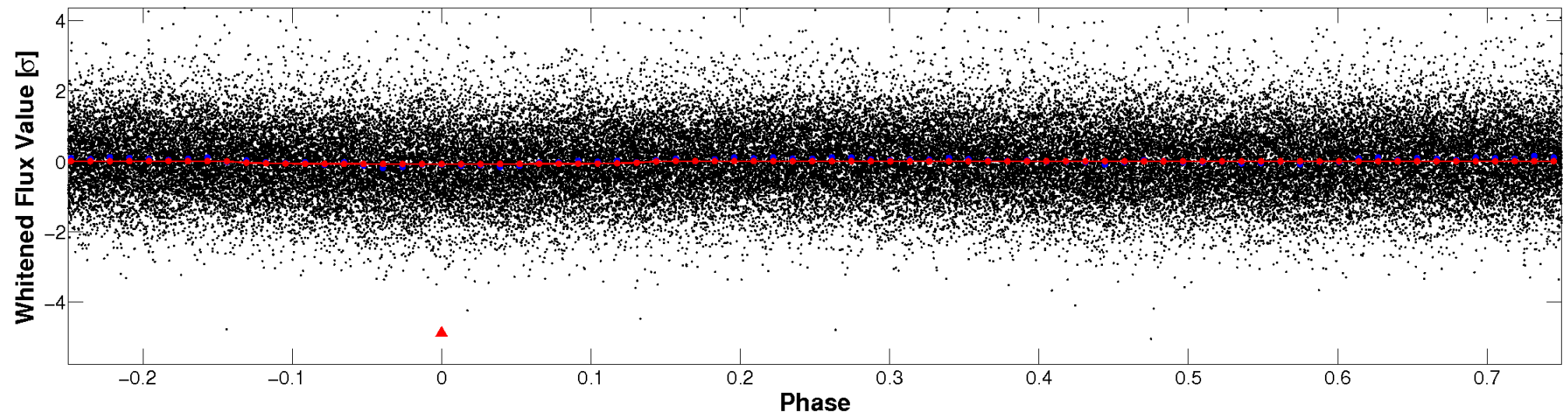


# Non-Whitened Vs. Whitened Light Curve

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



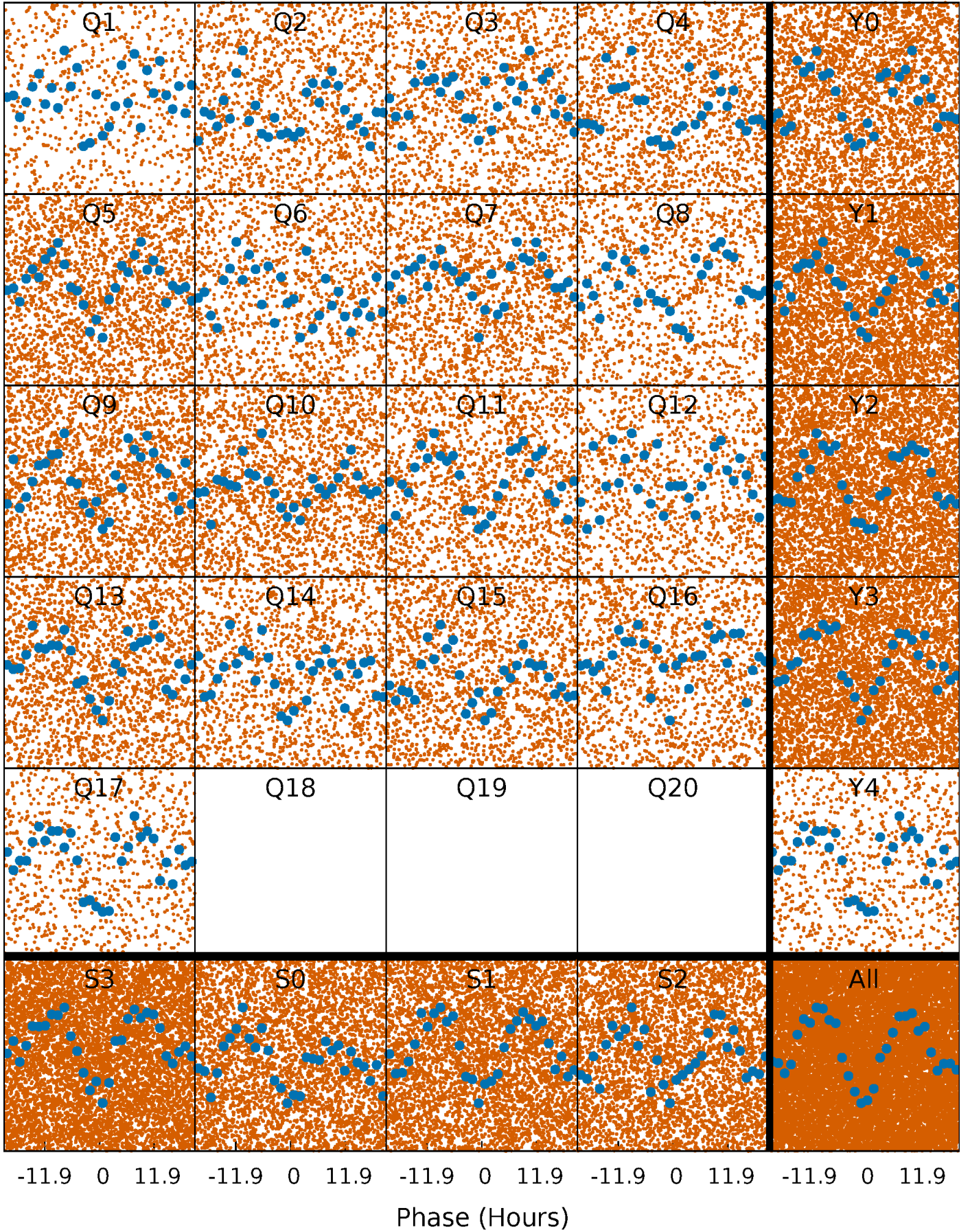
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

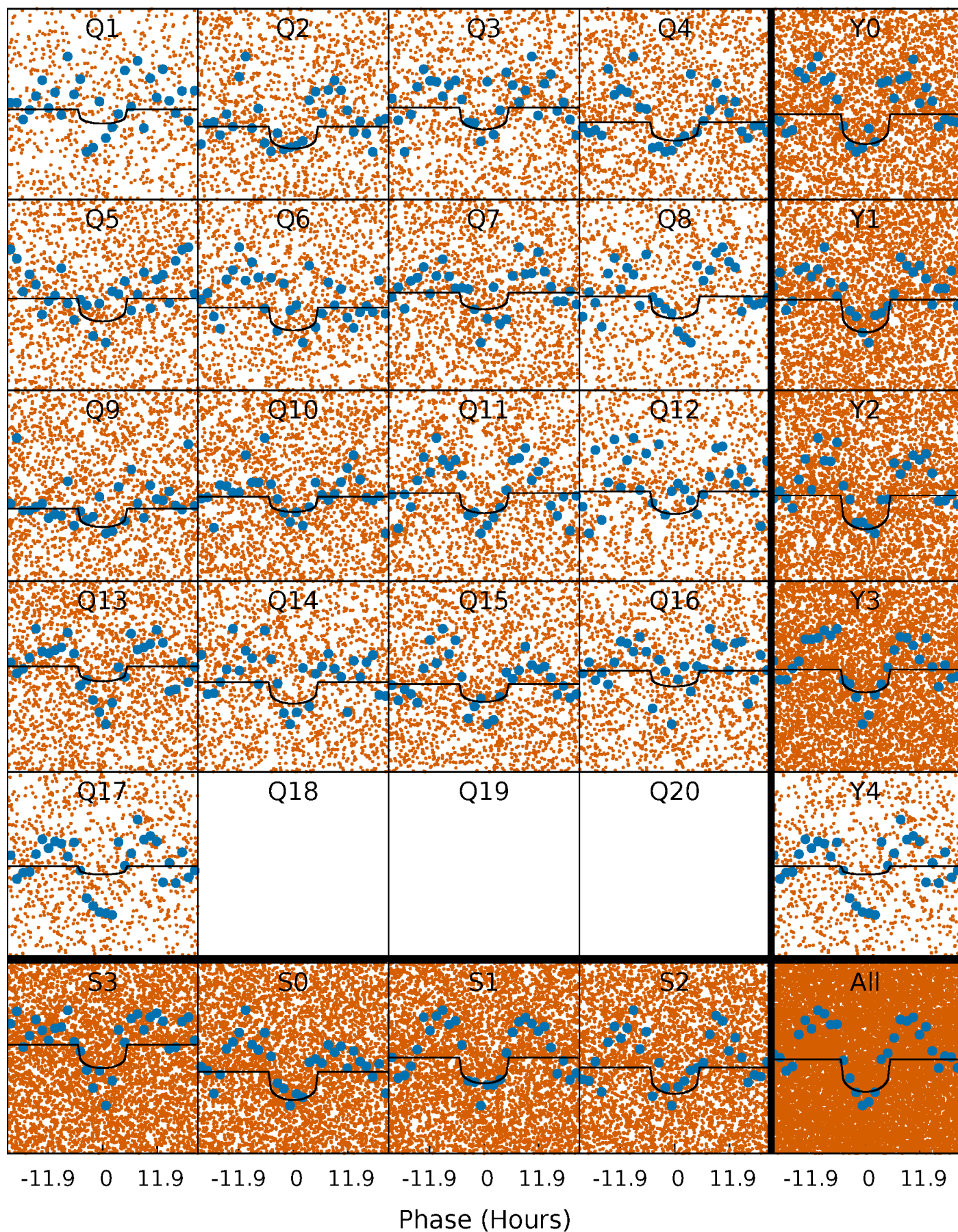
TCE 004949825-01 P= 1.564067 Days  $T_0=133.056490$  (BKJD)





# DV Quarter-Phased Transit Curves

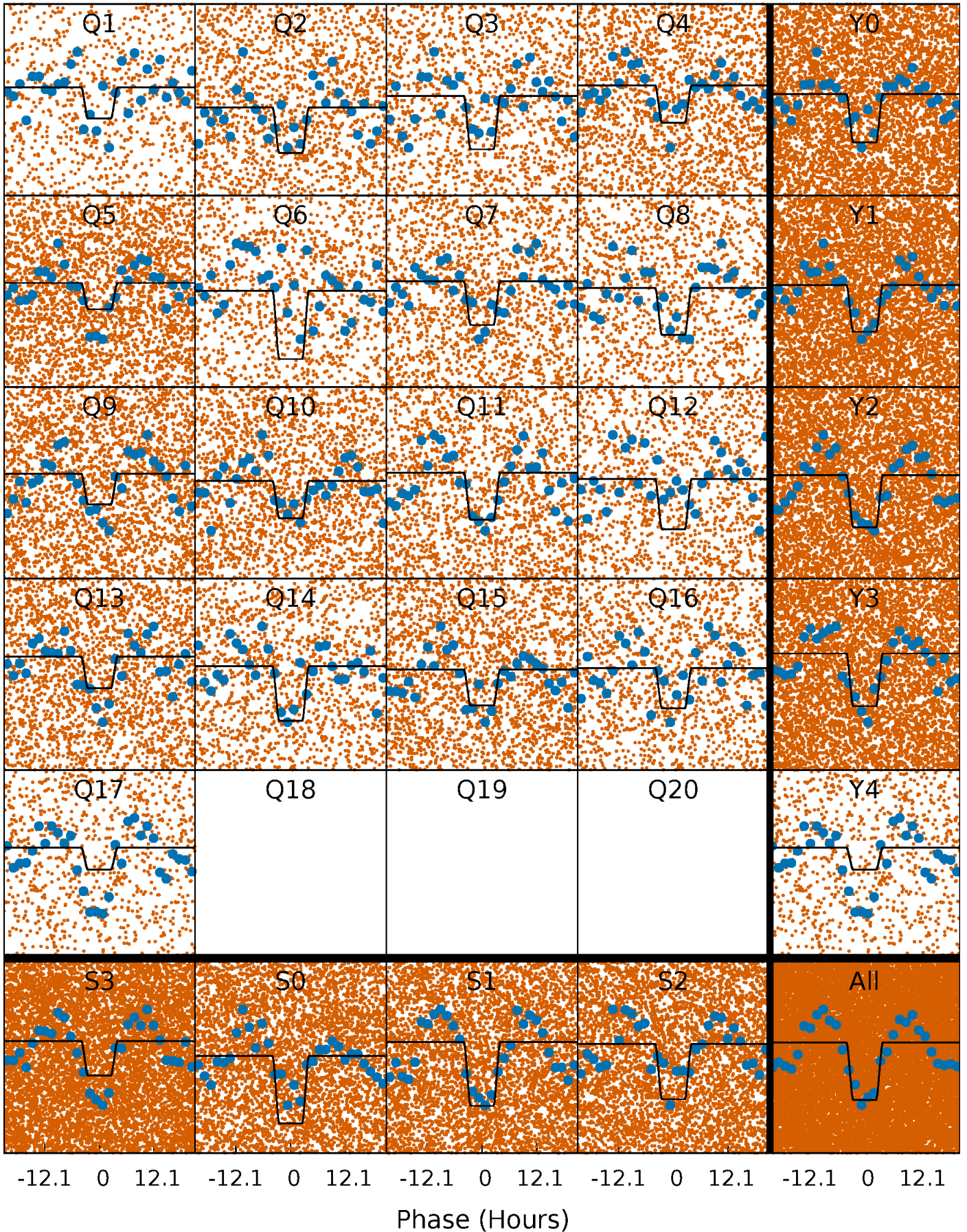
TCE 004949825-01 P= 1.564067 Days  $T_0=133.056490$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

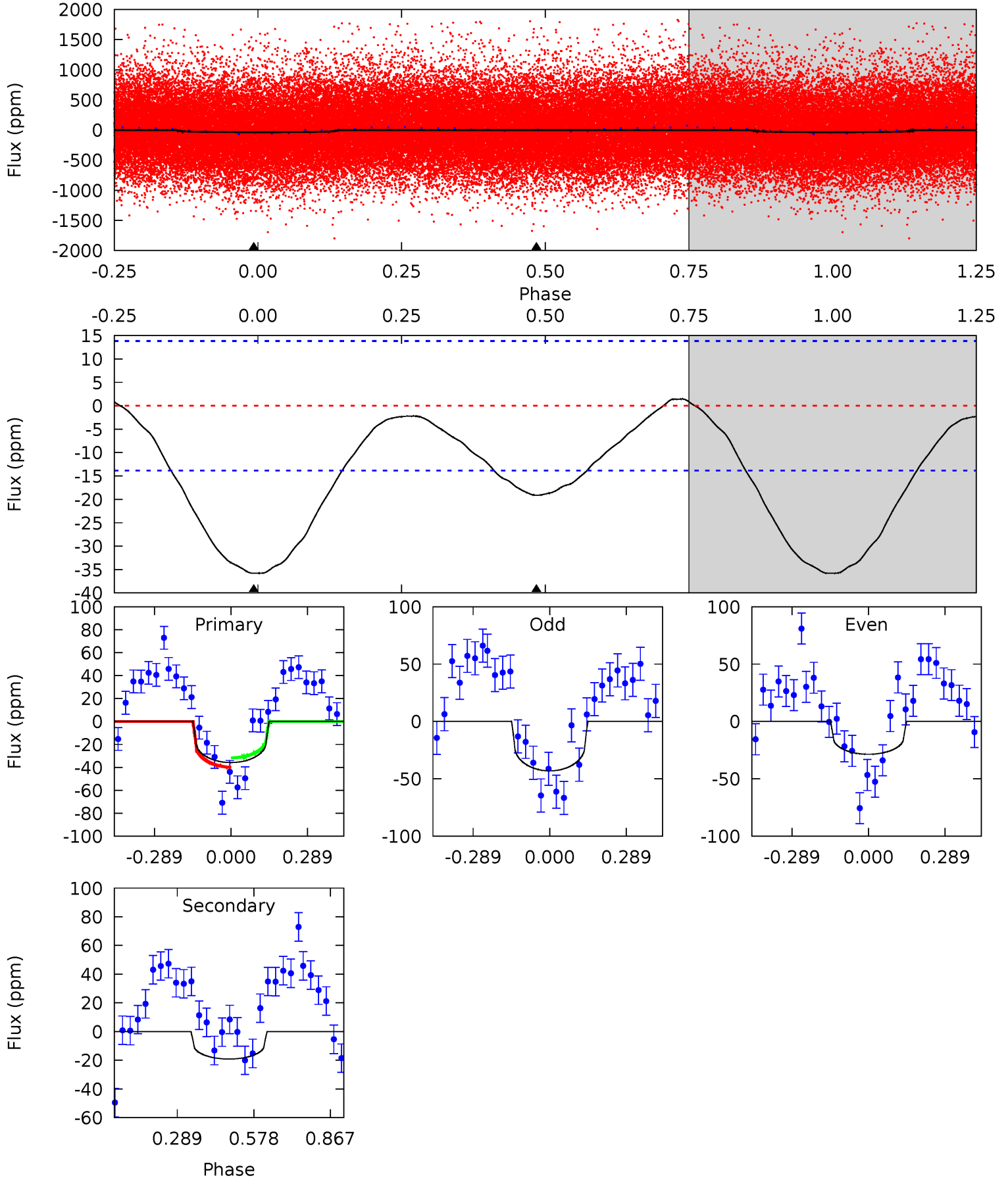
TCE 004949825-01 P= 1.564106 Days  $T_0=133.027367$  (BKJD)



# DV Model-Shift Uniqueness Test

004949825-01, P = 1.564067 Days, E = 131.492423 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
11.2	6.00	0	0	4.34	1.06	0.56	11.2	11.2	6.00	6.00	2.28	0.91	0.04	1.29

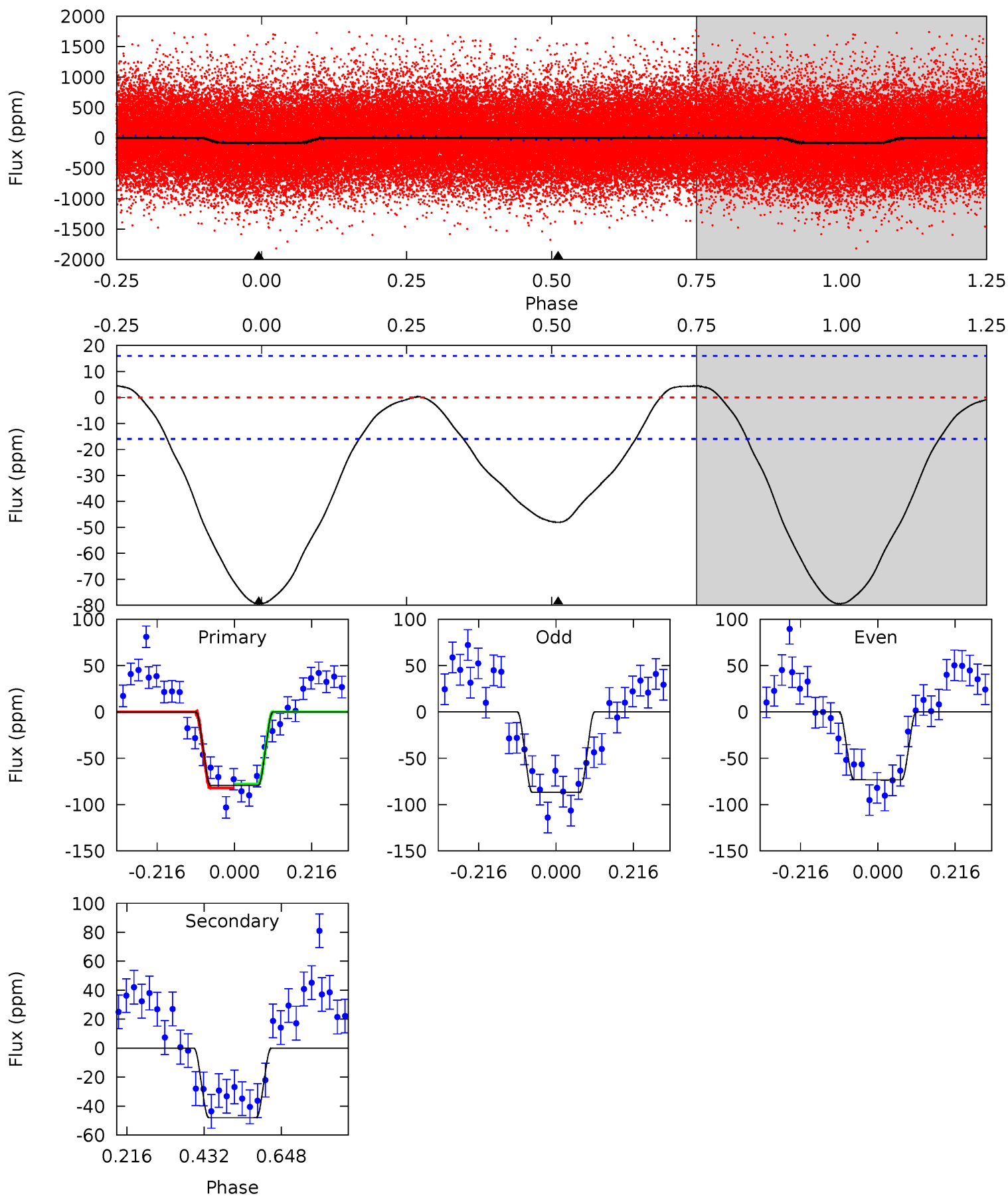




# Alt Model-Shift Uniqueness Test

004949825-01, P = 1.564106 Days, E = 131.463261 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
21.9	13.2	0	0	4.40	1.24	0.78	21.9	21.9	13.2	13.2	1.85	1.08	0.05	0.59



### Stellar Parameters For KIC 004949825

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6045^{+180}_{-198}$	$4.494^{+0.046}_{-0.173}$	$-0.120^{+0.250}_{-0.350}$	$0.955^{+0.255}_{-0.102}$	$1.038^{+0.126}_{-0.139}$	$1.679^{+0.389}_{-0.782}$
	+3%/-3%	+1%/-4%	+208%/-292%	+27%/-11%	+12%/-13%	+23%/-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 004949825-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-19 \pm 3$	$1.02^{+0.83}_{-0.67}$	$2269^{+129}_{-104}$	$4315^{+2586}_{-893}$	$7.137^{+50.432}_{-5.055}$
Alt.	$-48 \pm 4$	$1.19^{+0.89}_{-0.75}$	$2279^{+140}_{-111}$	$4861^{+3226}_{-961}$	$13^{+83}_{-9}$

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

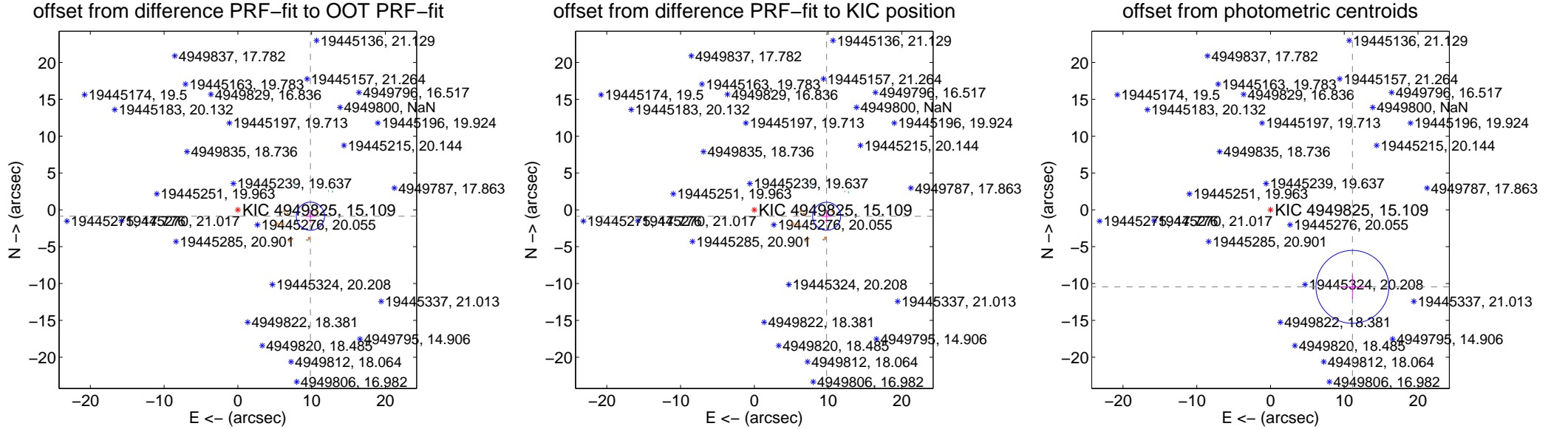
## DV Centroid Data

Supplemental centroid analysis for 004949825-01. Kepler magnitude: 15.11. Transit SNR 8.54

There are 5 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

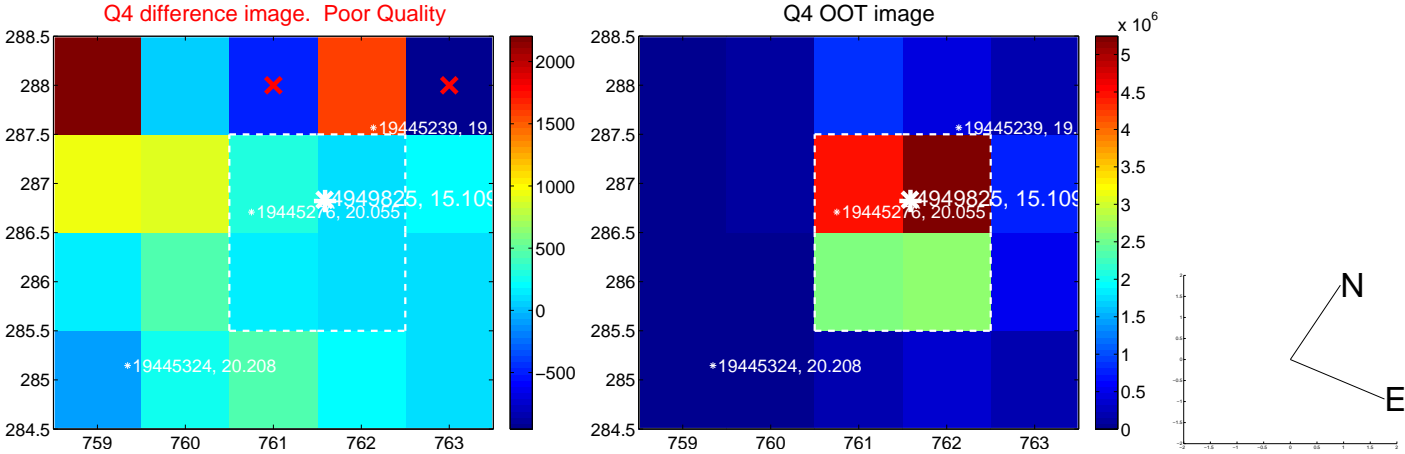
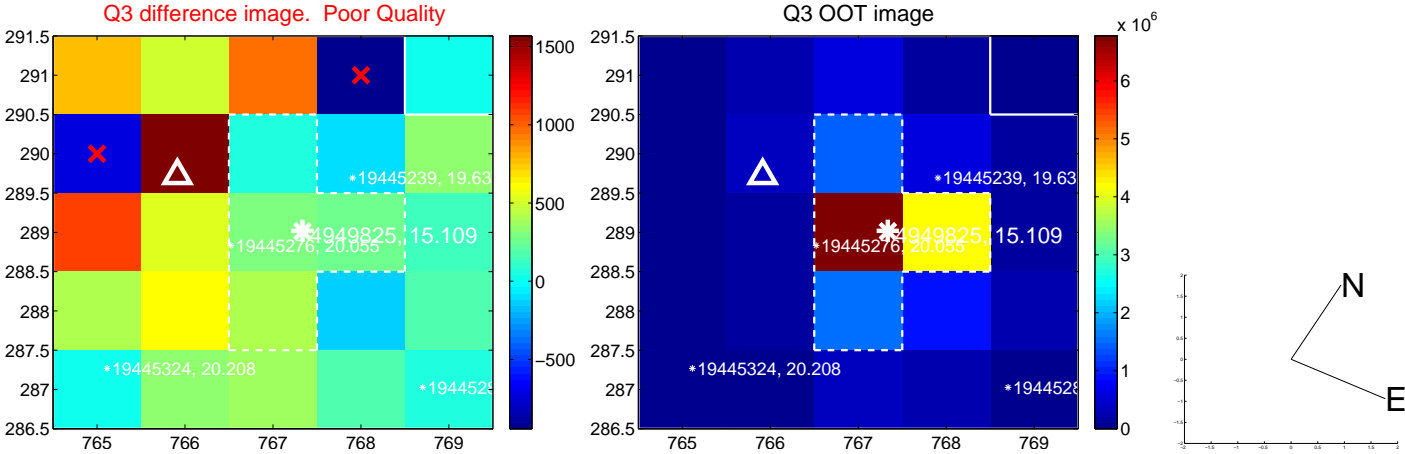
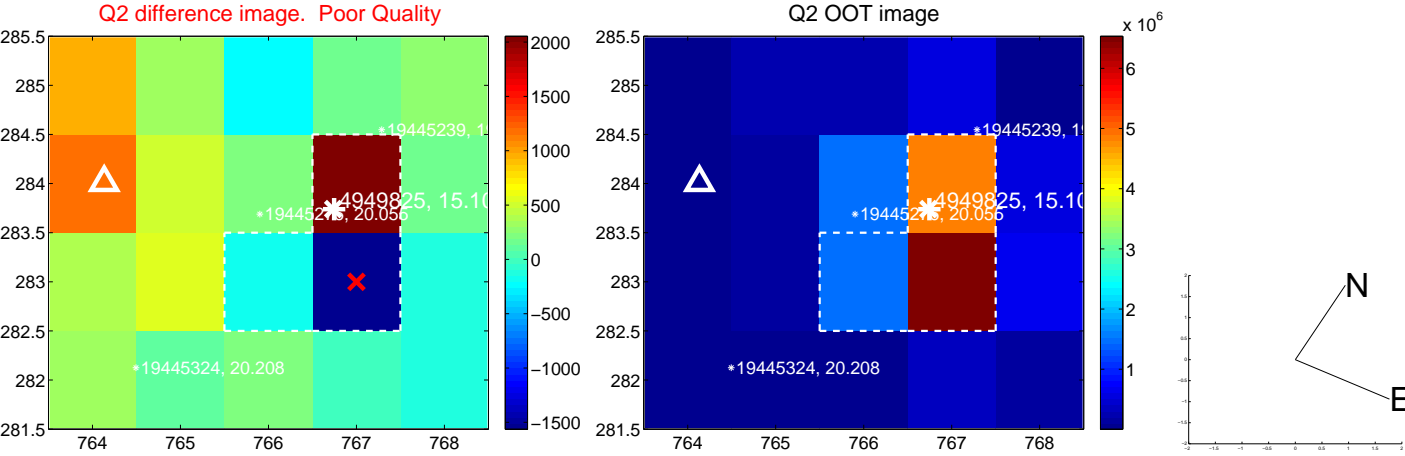
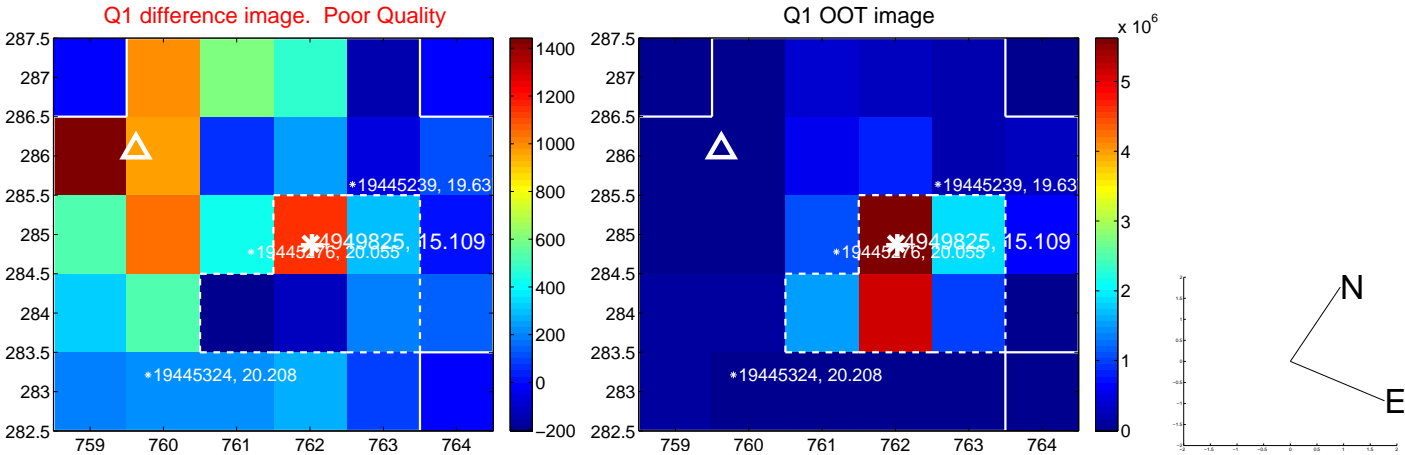
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$9.874 \pm 0.637$	15.49	$-9.836 \pm 0.635$	$-0.867 \pm 0.900$
PRF-fit source offset from KIC position	$9.845 \pm 0.634$	15.53	$-9.806 \pm 0.632$	$-0.874 \pm 0.891$
photometric centroid source offset	$15.25 \pm 1.65$	9.25	$-11.11 \pm 1.67$	$-10.45 \pm 1.62$



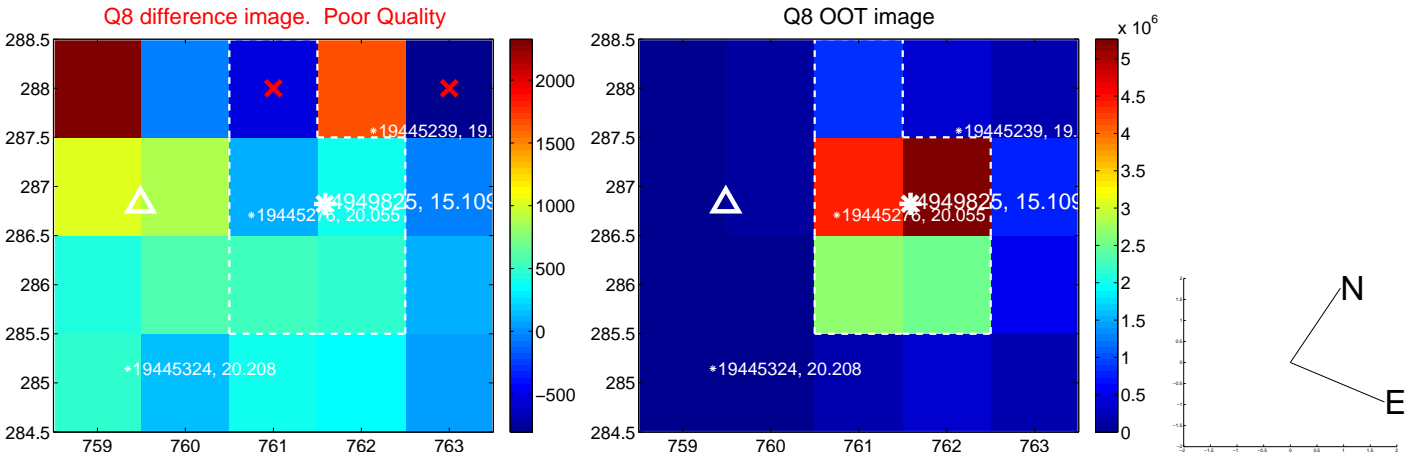
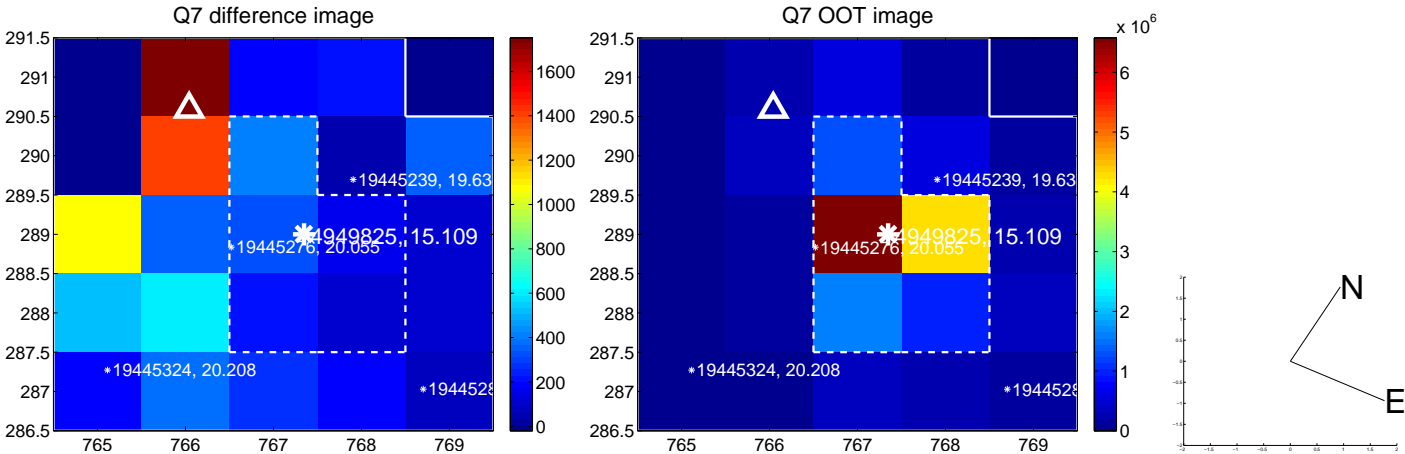
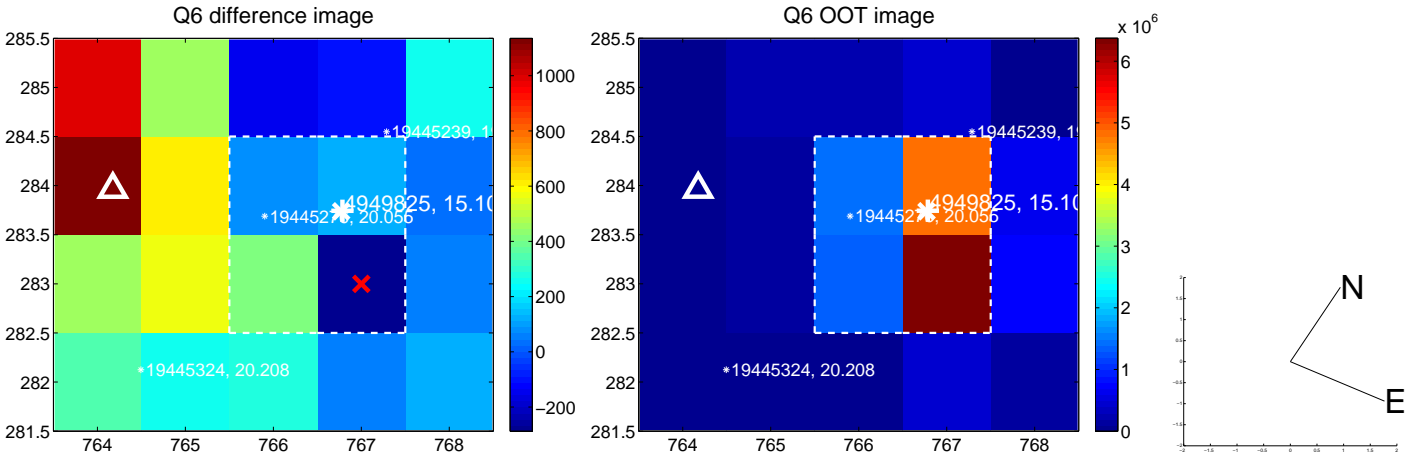
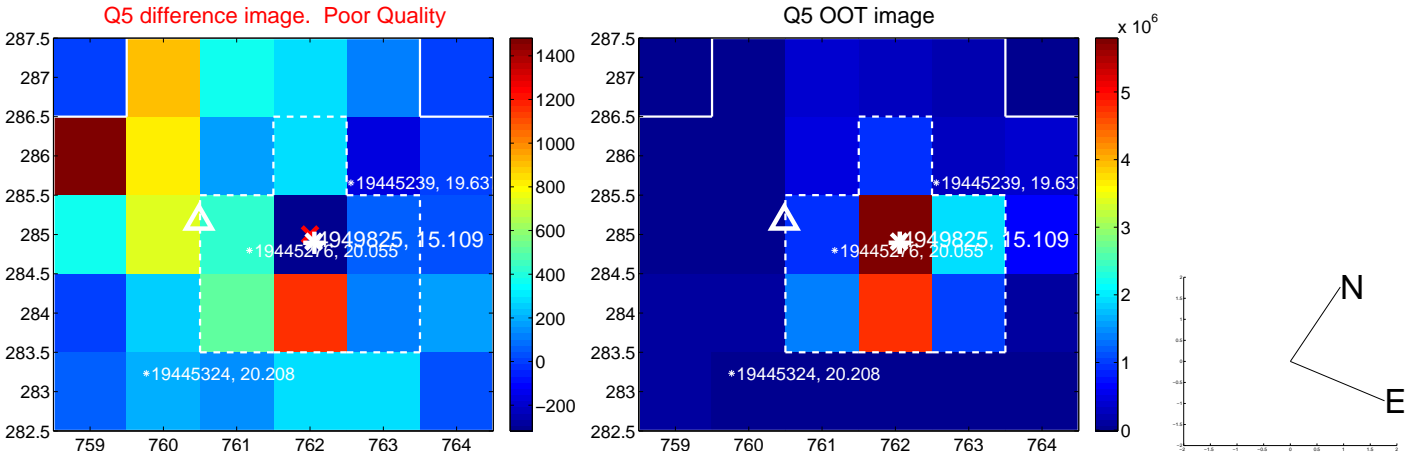
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



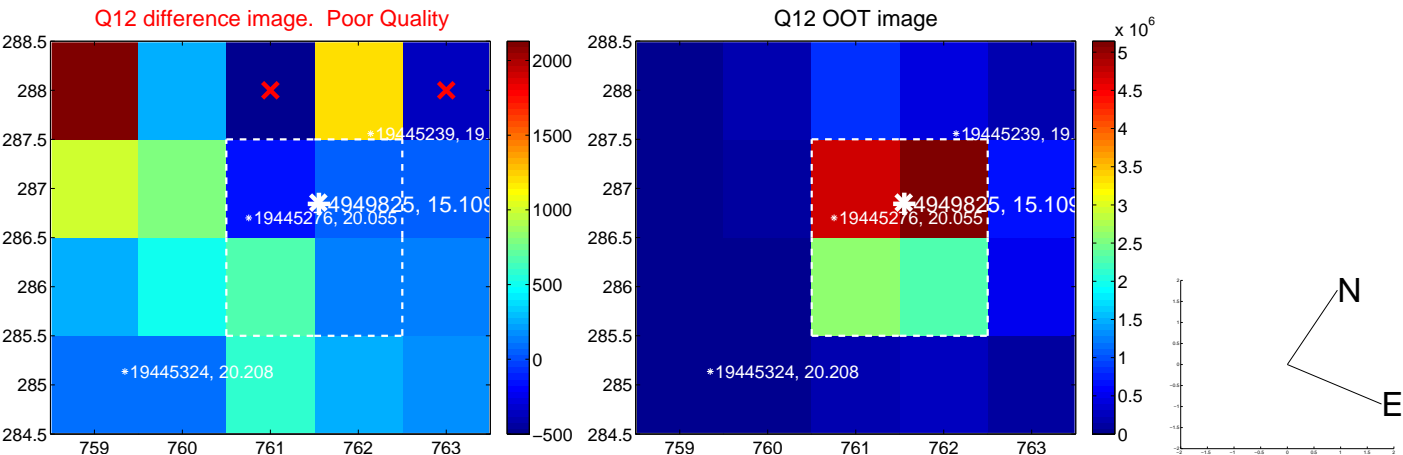
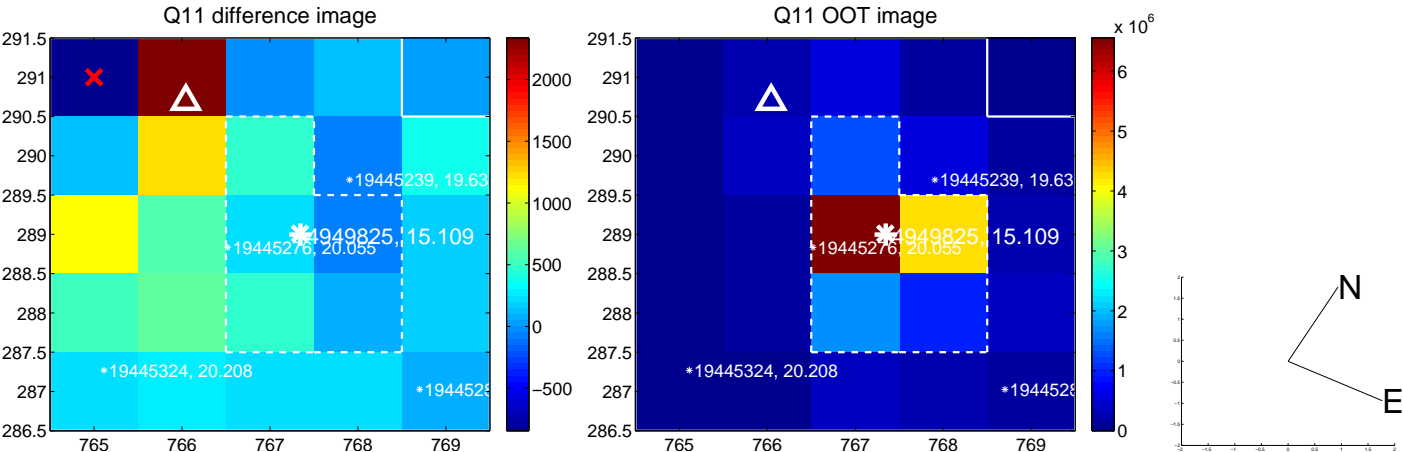
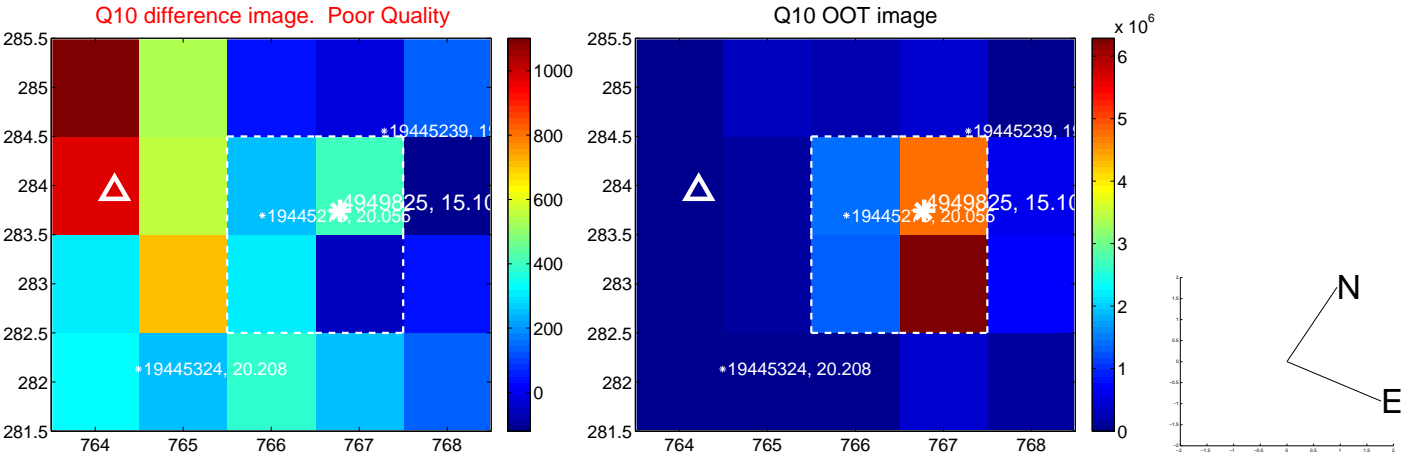
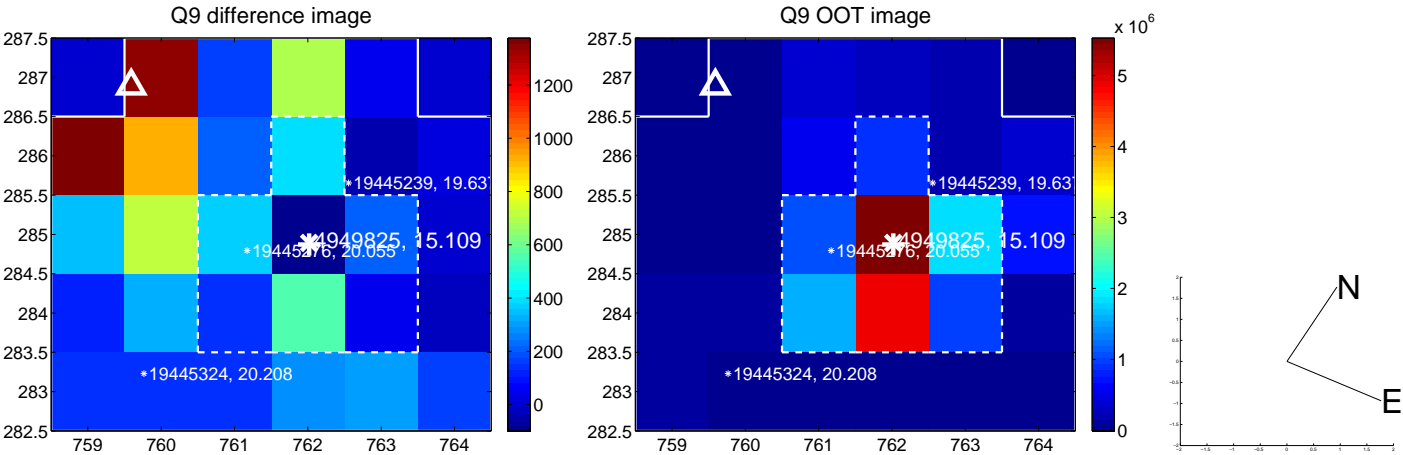
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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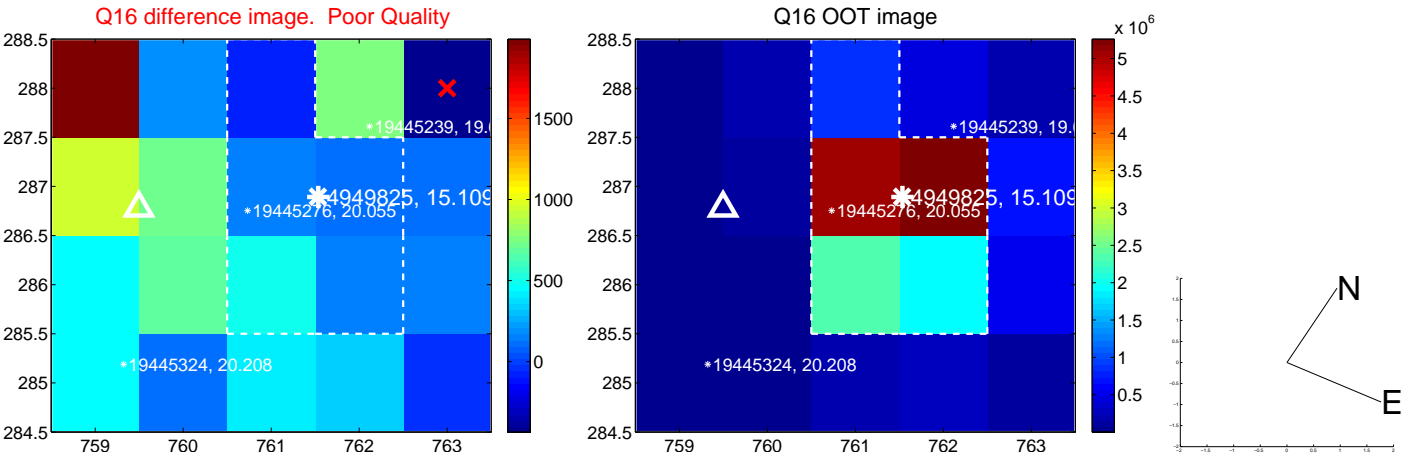
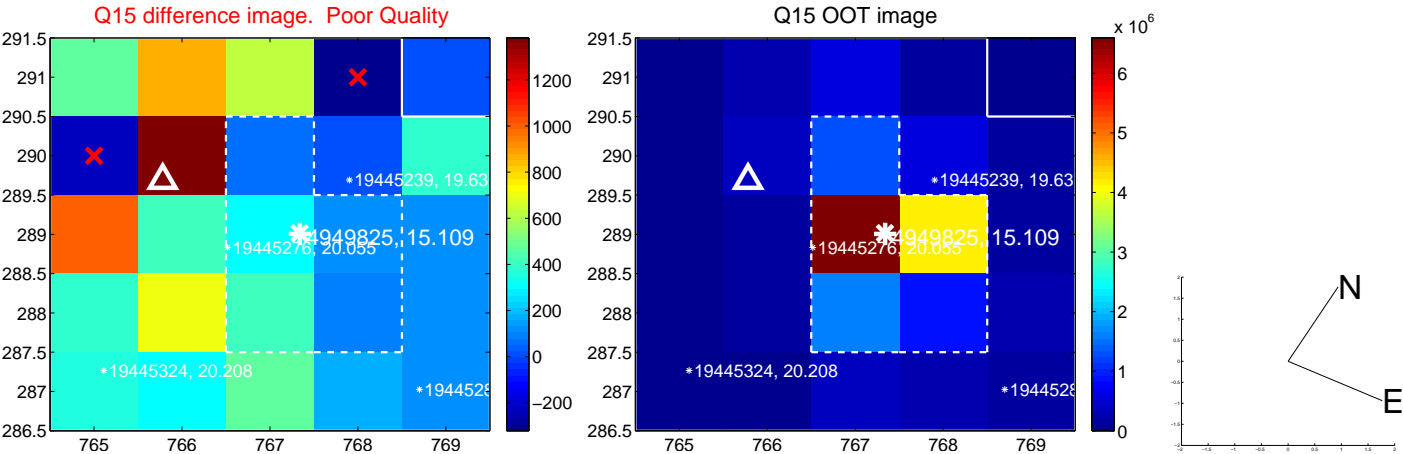
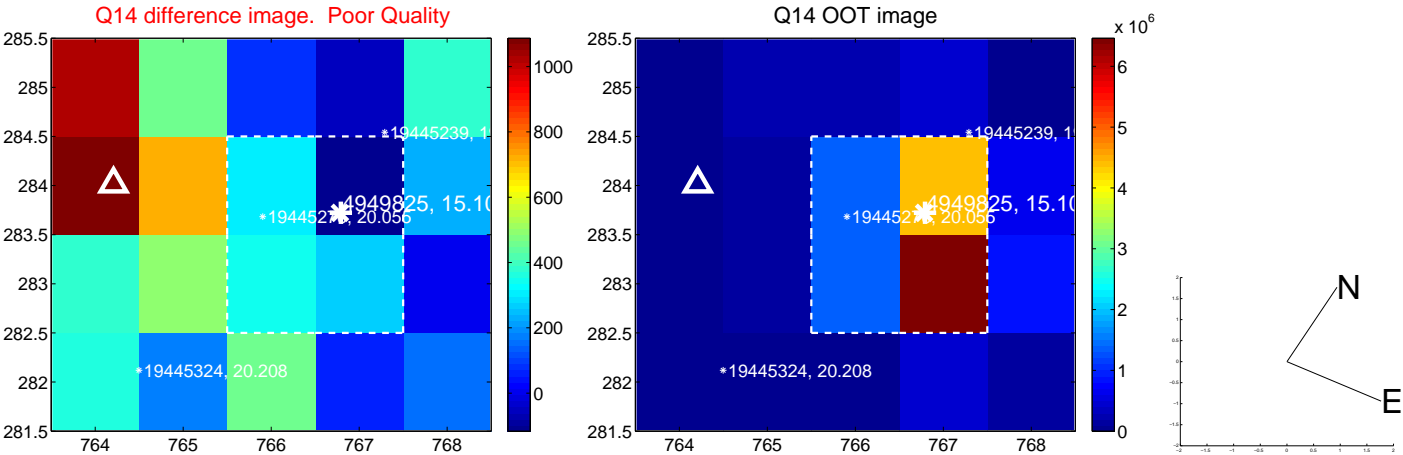
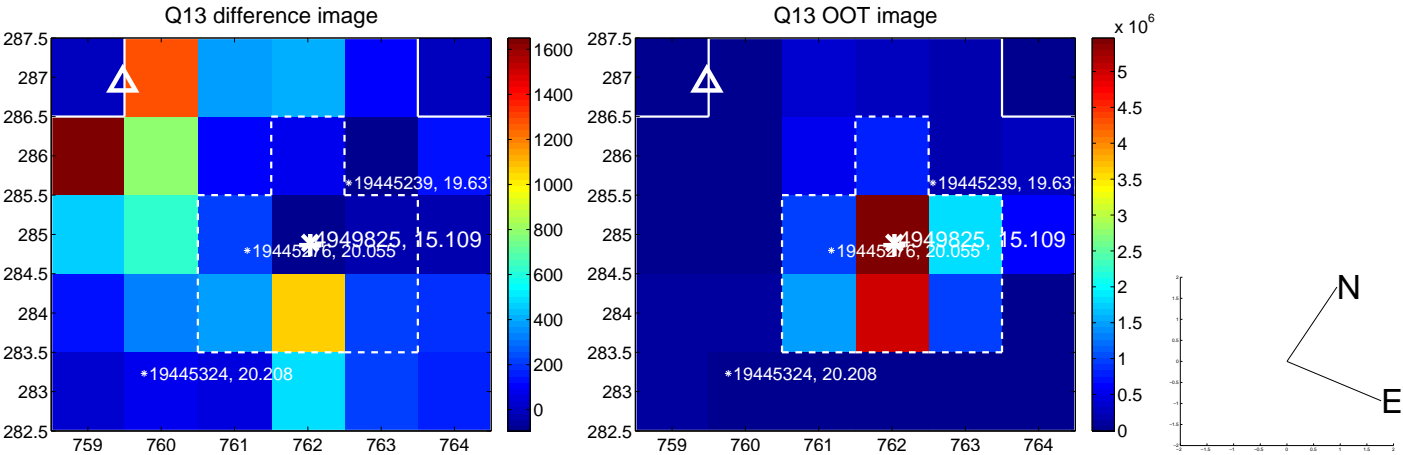


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

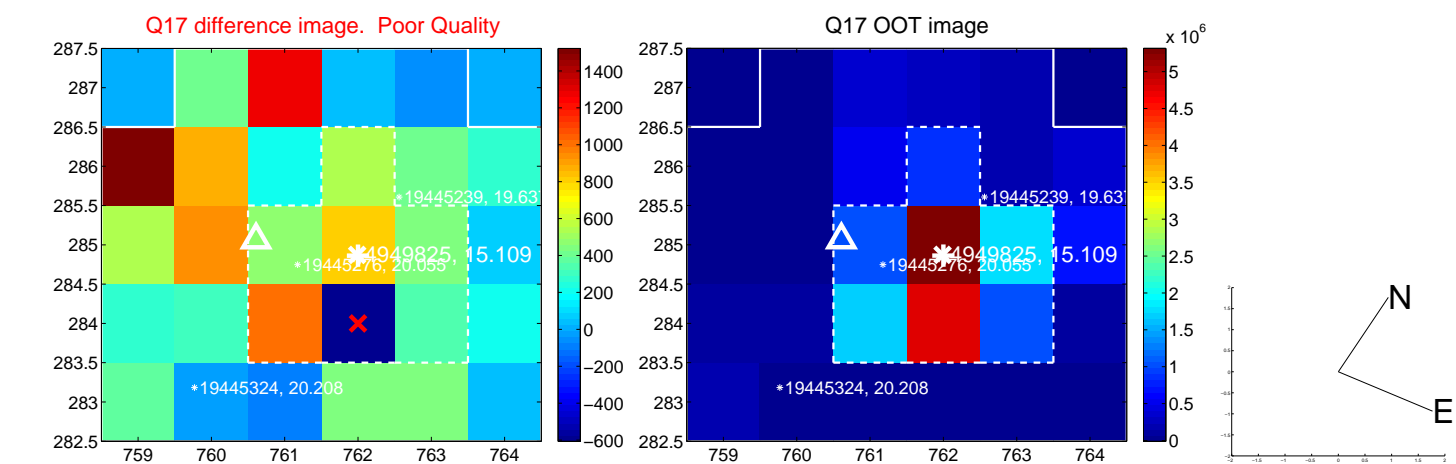




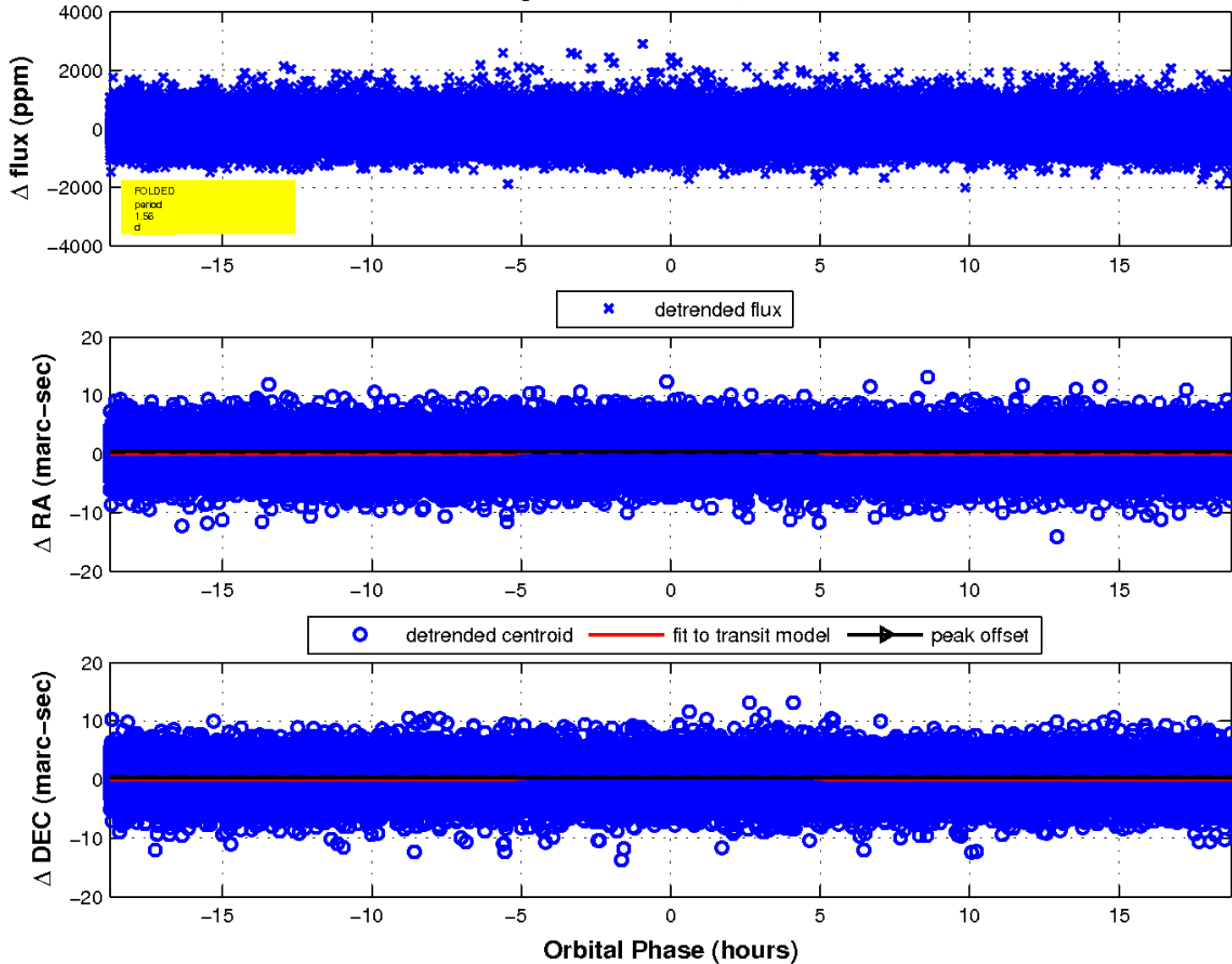
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fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

