

# KIC 007024222

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007024222-01	OBS	0309.01	1.633090	132.642141	48.5	1.675	18.2	18.5	0.68	4579	0.59	325.59

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007024222-01	OBS	FP	0.00	0	0	1	0	CENT_RESOLVED_OFFSET

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

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

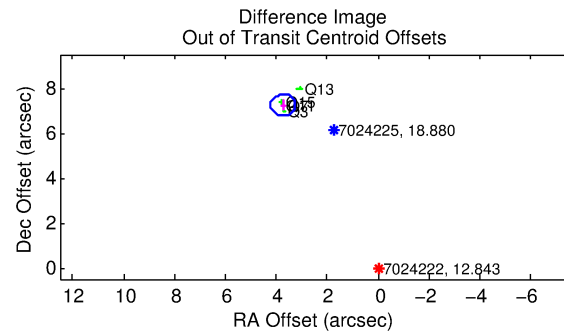
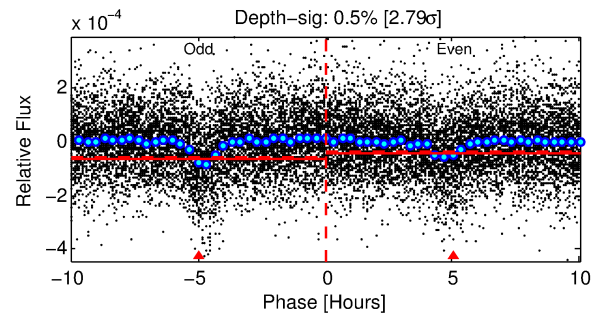
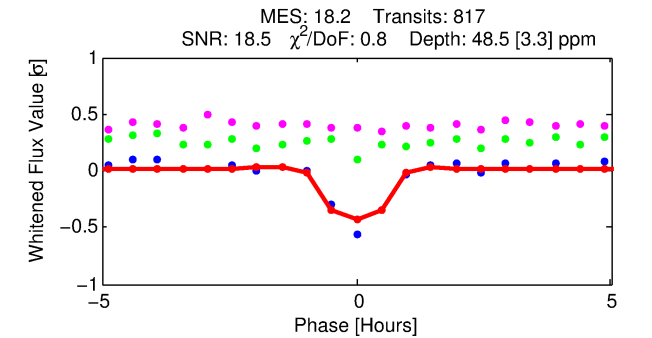
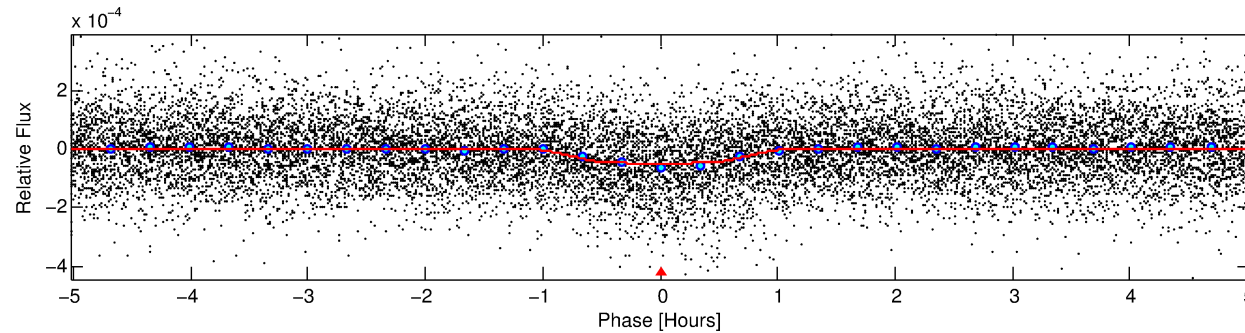
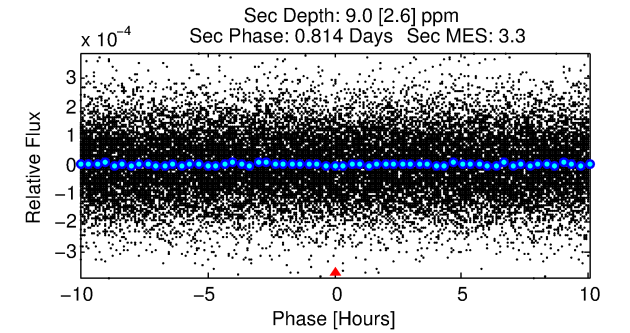
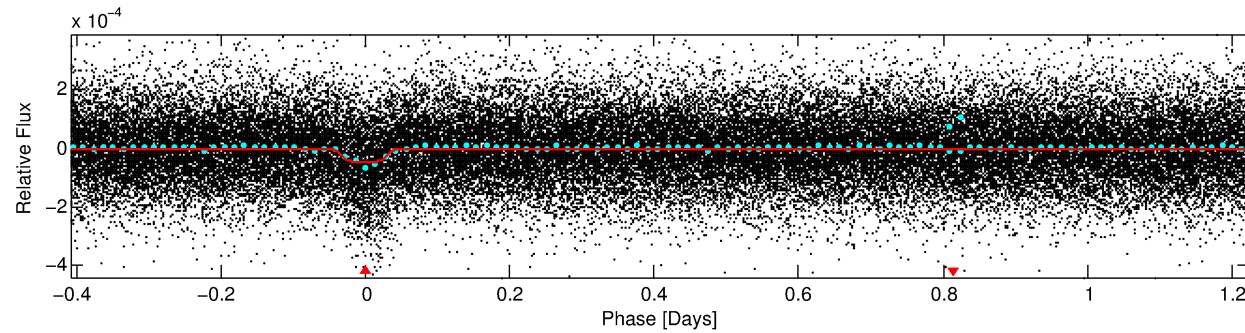
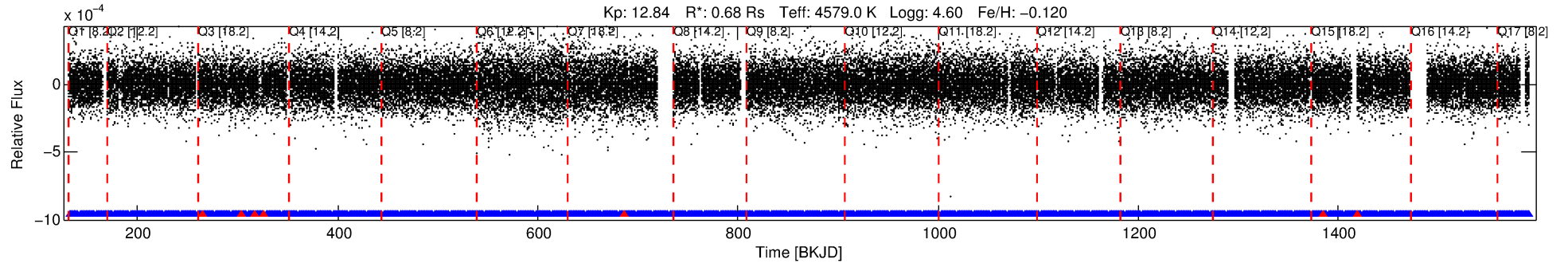
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007024222-01

No Significant Match Found

# DV One-Page Summary

KIC: 7024222 Candidate: 1 of 1 Period: 1.633 d  
KOI: K00309.01 Corr: 0.909



## DV Fit Results:

Period = 1.63309 [0.00001] d  
Epoch = 132.6421 [0.0013] BKJD  
Rp/R\* = 0.0079 [0.0031]  
a/R\* = 3.48 [4.76]  
b = 0.90 [0.32]  
Seff = 325.59 [48.76]  
Teq = 1083 [41] K  
Rp = 0.59 [0.24] Re  
a = 0.0238 [0.0017] AU  
Ag = 8.06 [6.82] [1.04σ]  
Teffp = 2822 [597] K [2.91σ]

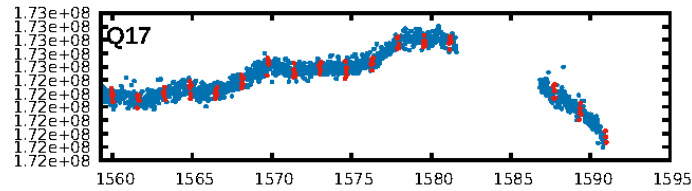
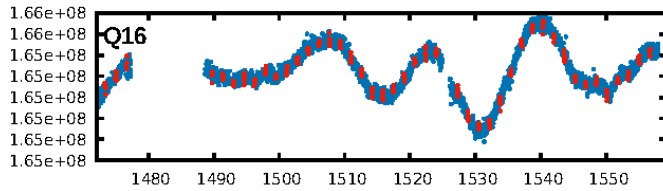
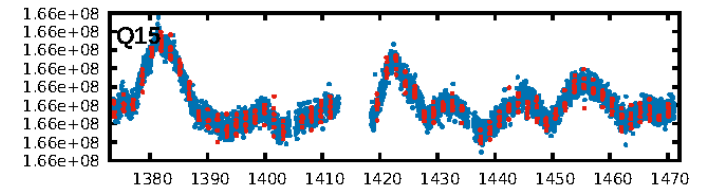
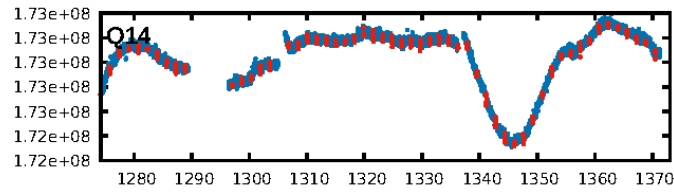
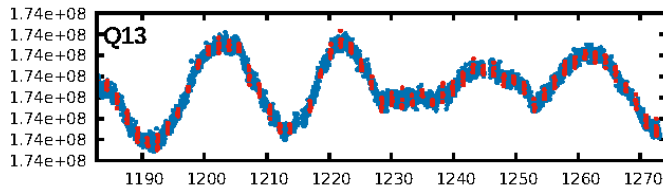
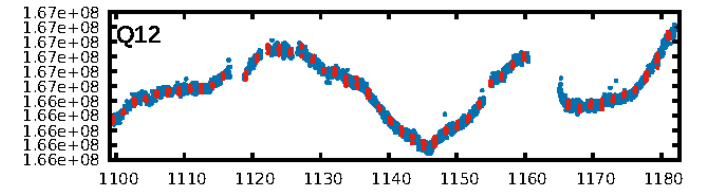
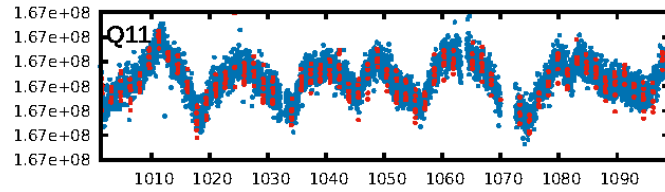
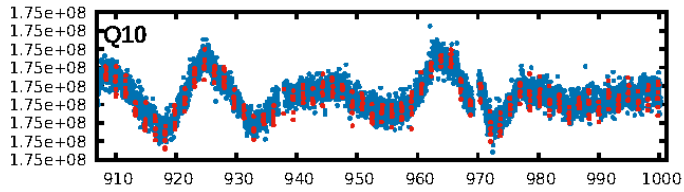
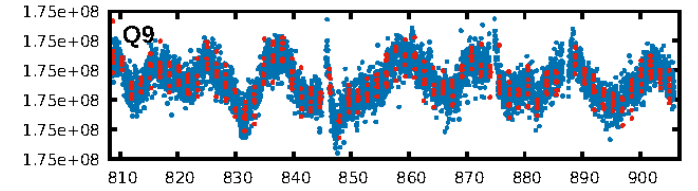
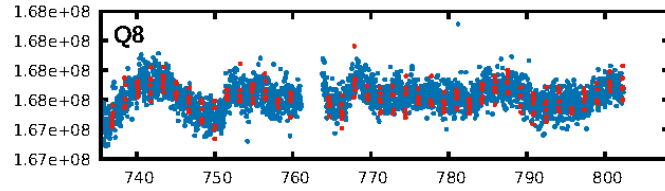
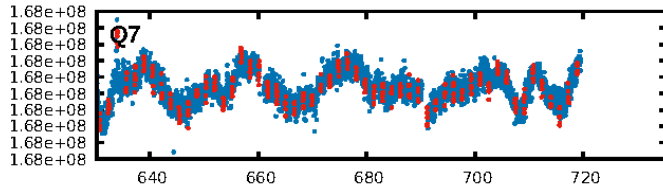
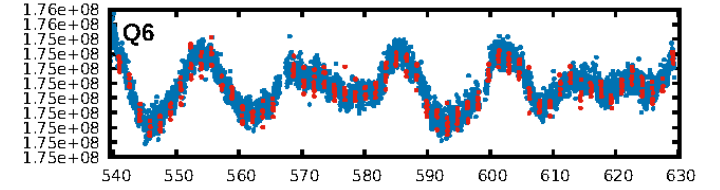
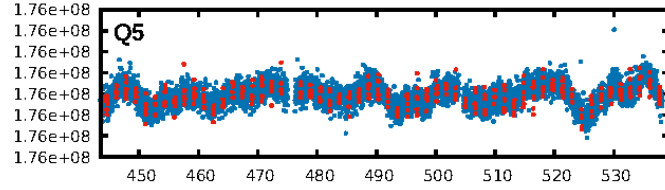
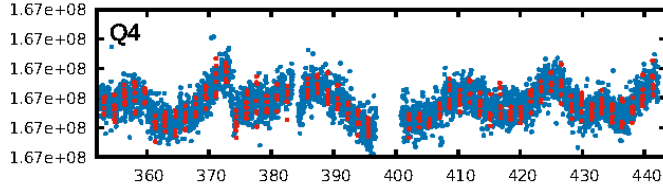
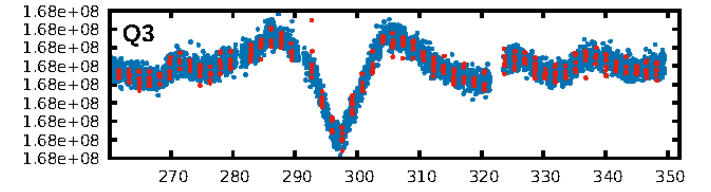
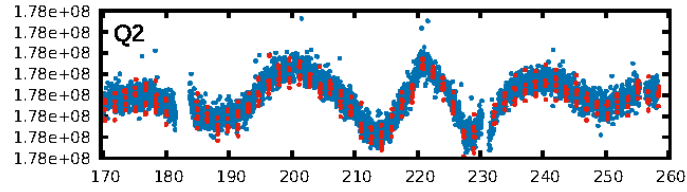
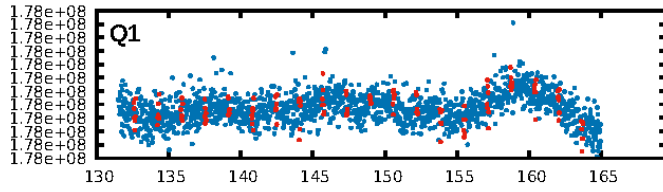
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.05e-69  
RollingBand-fgt: 0.99 [773/780]  
GhostDiagnostic-chr: -0.4331  
Centroid-sig: 0.0%  
Centroid-so: 51.828 arcsec [74.03σ]  
OotOffset-rm: 8.153 arcsec [51.35σ]  
KicOffset-rm: 8.044 arcsec [57.02σ]  
OotOffset-st: 0/4/0/1 [5]  
KicOffset-st: 0/4/0/1 [5]  
DiffImageQuality-fgm: 1.00 [5/5]  
DiffImageOverlap-fno: 1.00 [17/17]

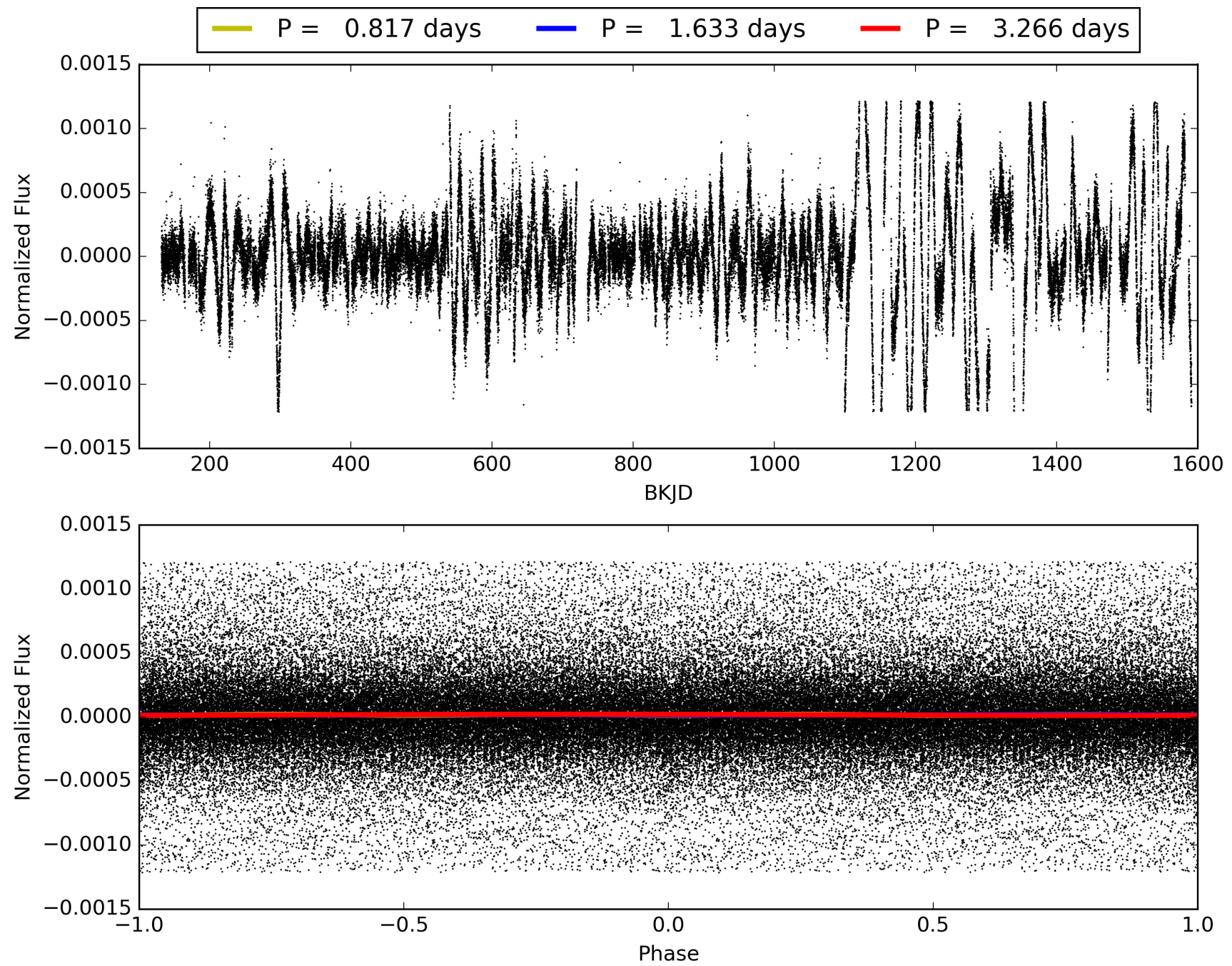
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 17:27:49 Z

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

# TCE 007024222-01, PDC Light Curves

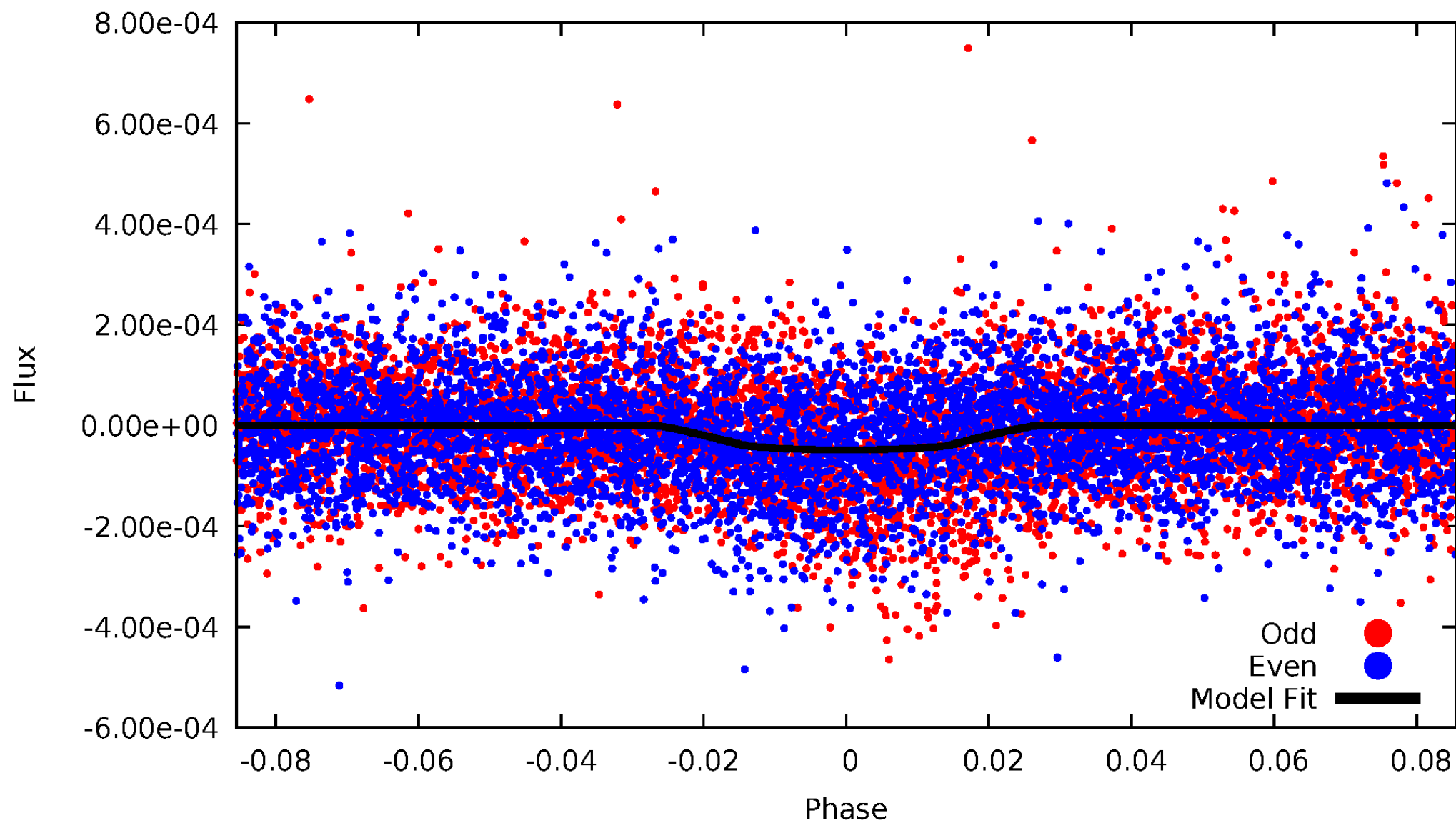


TCE 007024222-01



# DV Odd/Even

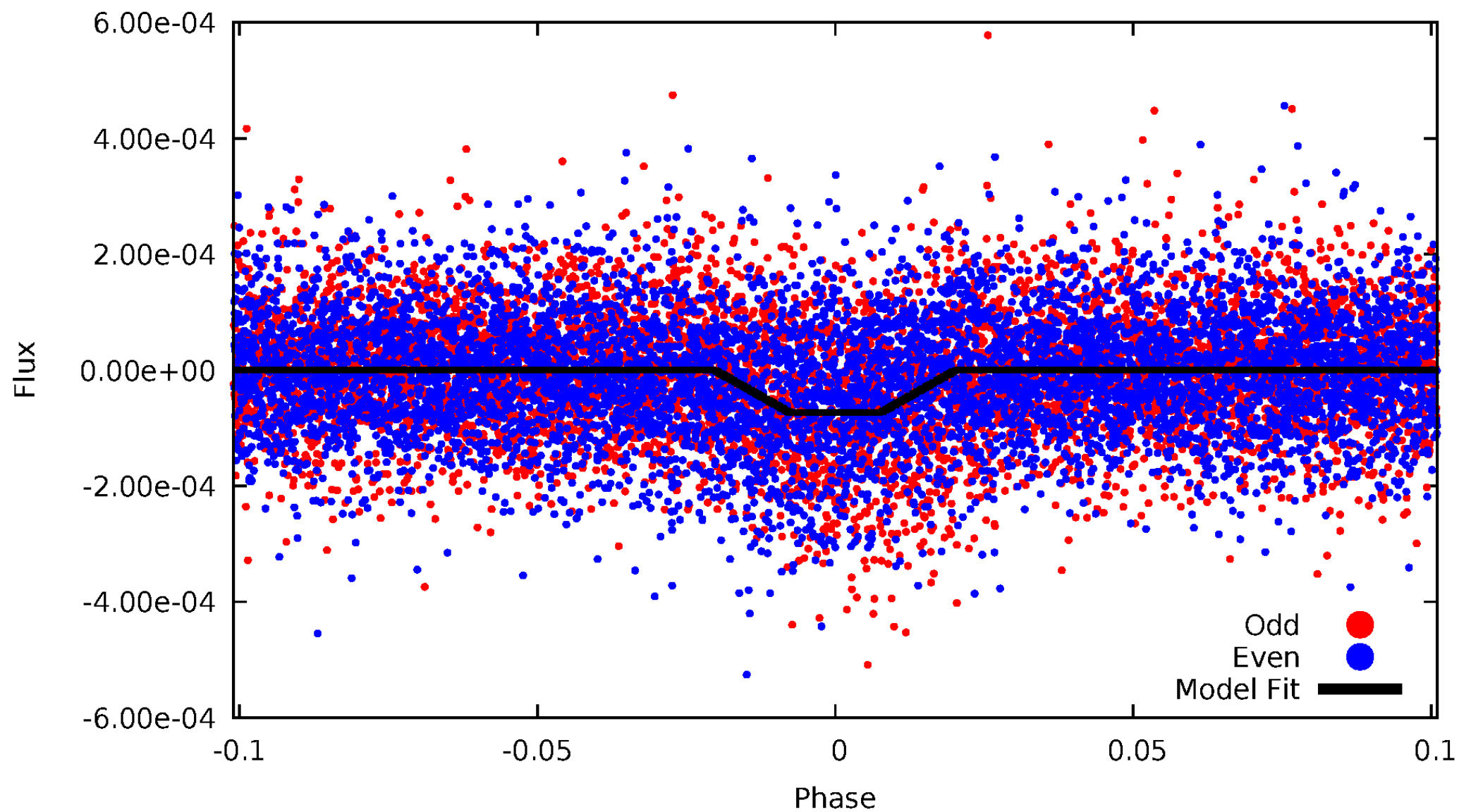
TCE 007024222-01





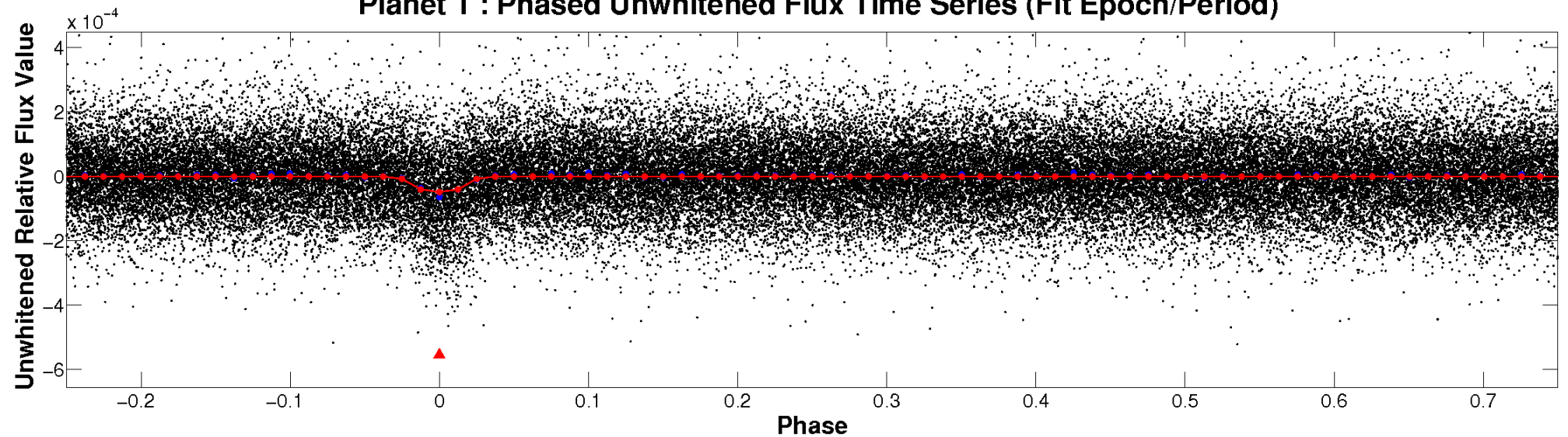
# ALT Odd/Even

TCE 007024222-01

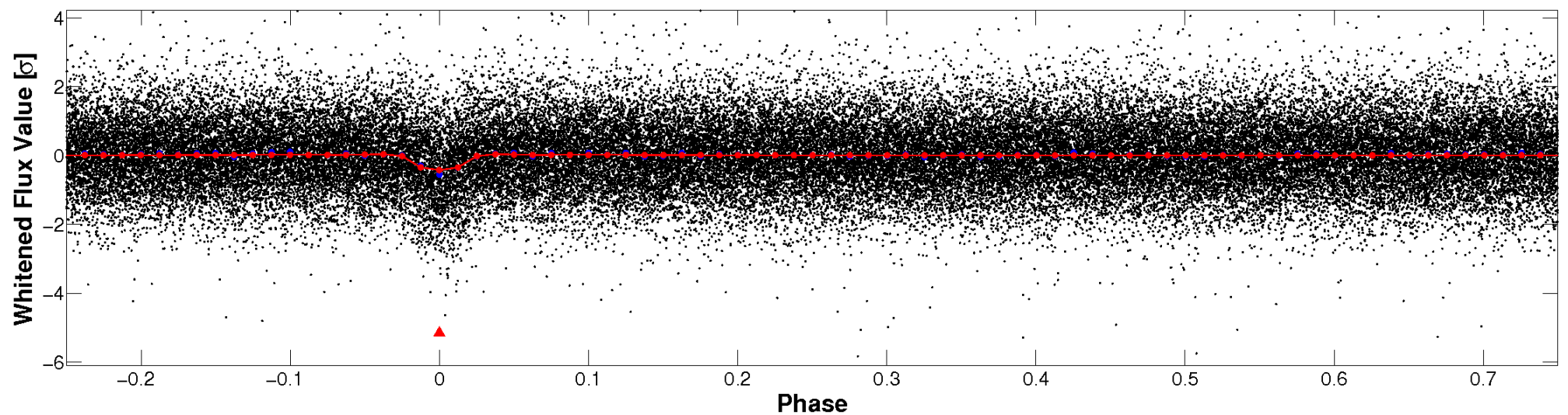


# Non-Whitened Vs. Whitened Light Curve

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

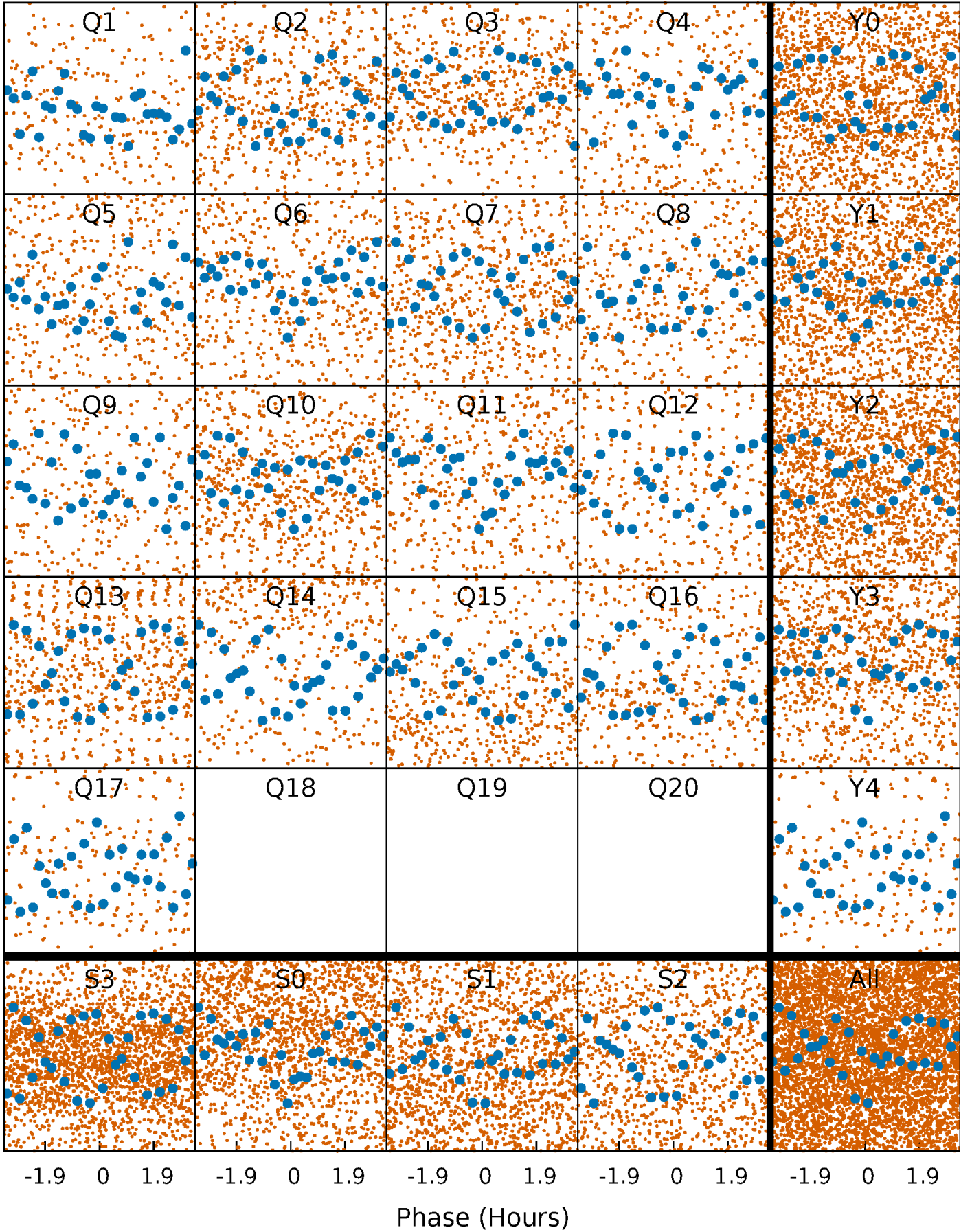


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

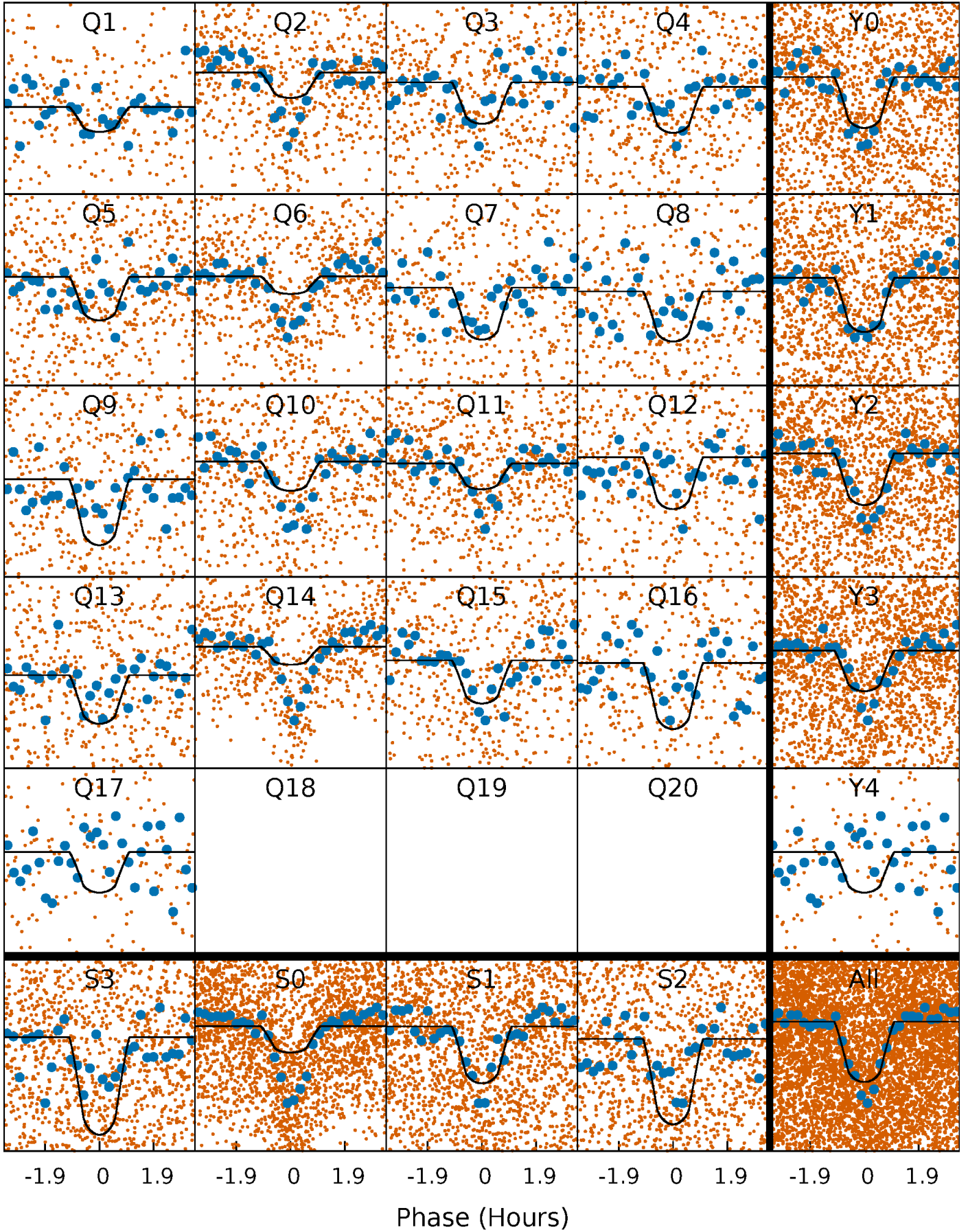
TCE 007024222-01 P= 1.633090 Days  $T_0=132.642141$  (BKJD)





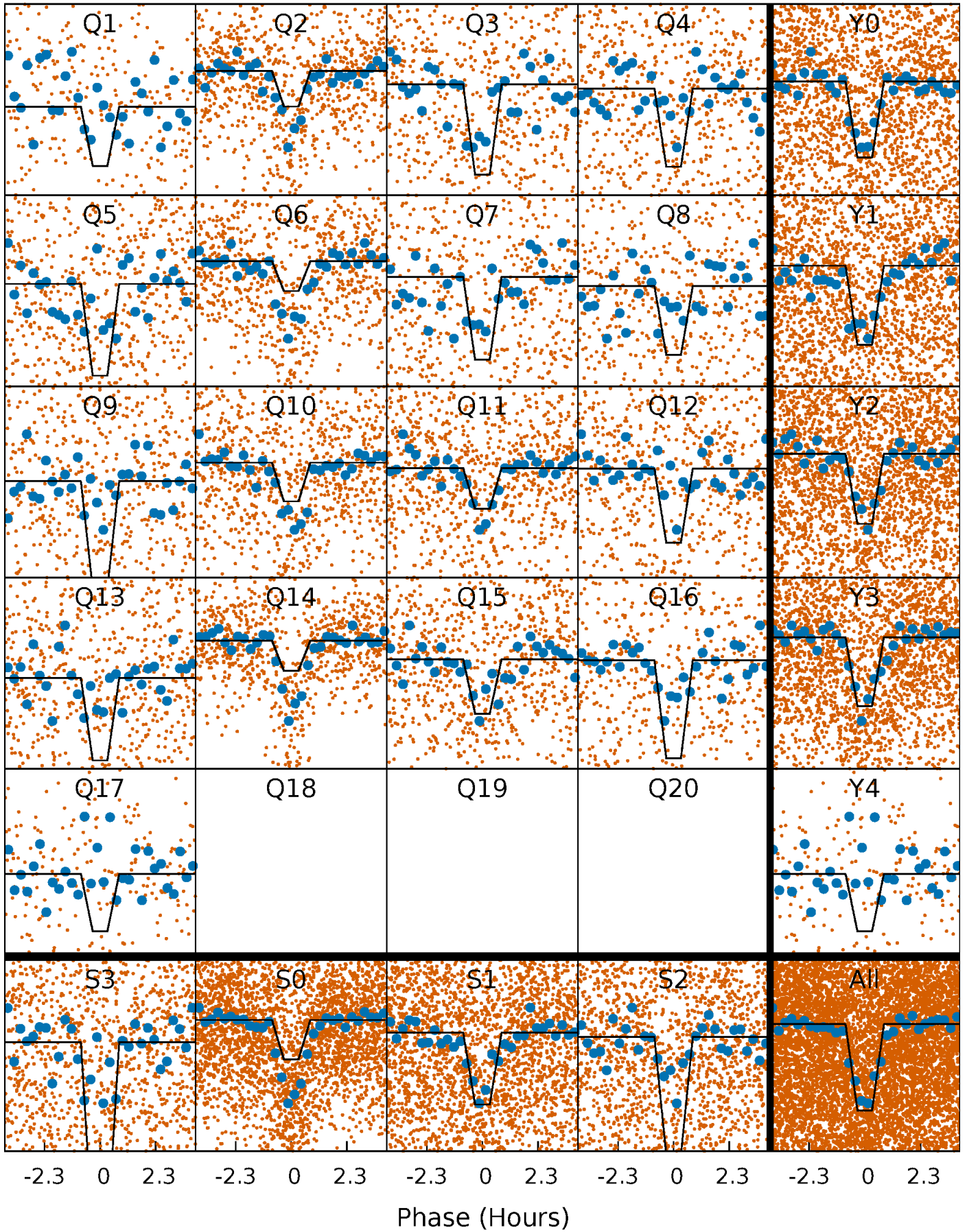
# DV Quarter-Phased Transit Curves

TCE 007024222-01 P= 1.633090 Days  $T_0=132.642141$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

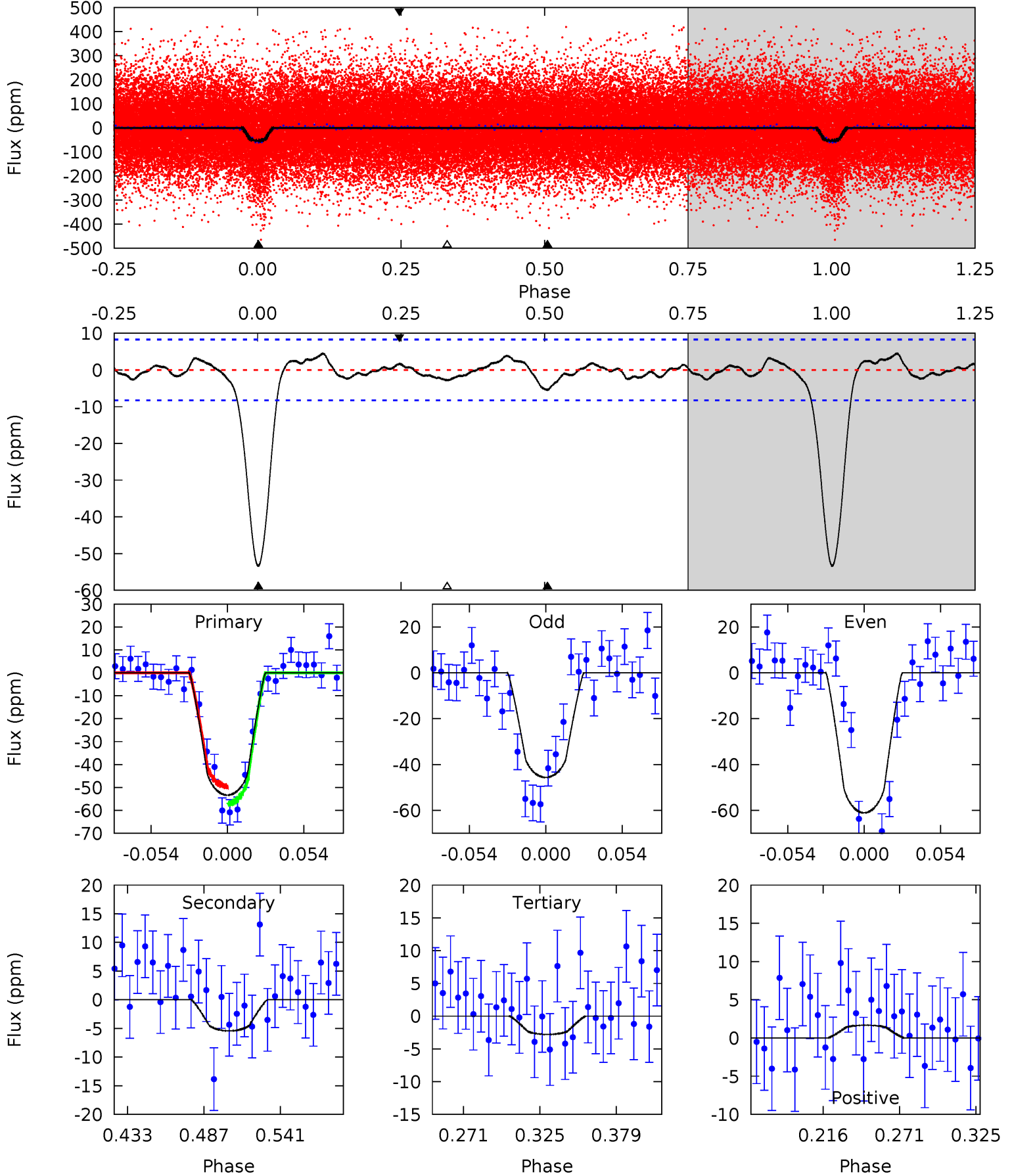
TCE 007024222-01 P= 1.633101 Days  $T_0=132.639844$  (BKJD)



# DV Model-Shift Uniqueness Test

007024222-01, P = 1.633090 Days, E = 131.009051 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
30.3	3.07	1.59	0.95	4.69	1.93	0.97	28.7	29.3	1.49	2.13	4.40	1.07	0.08	2.18

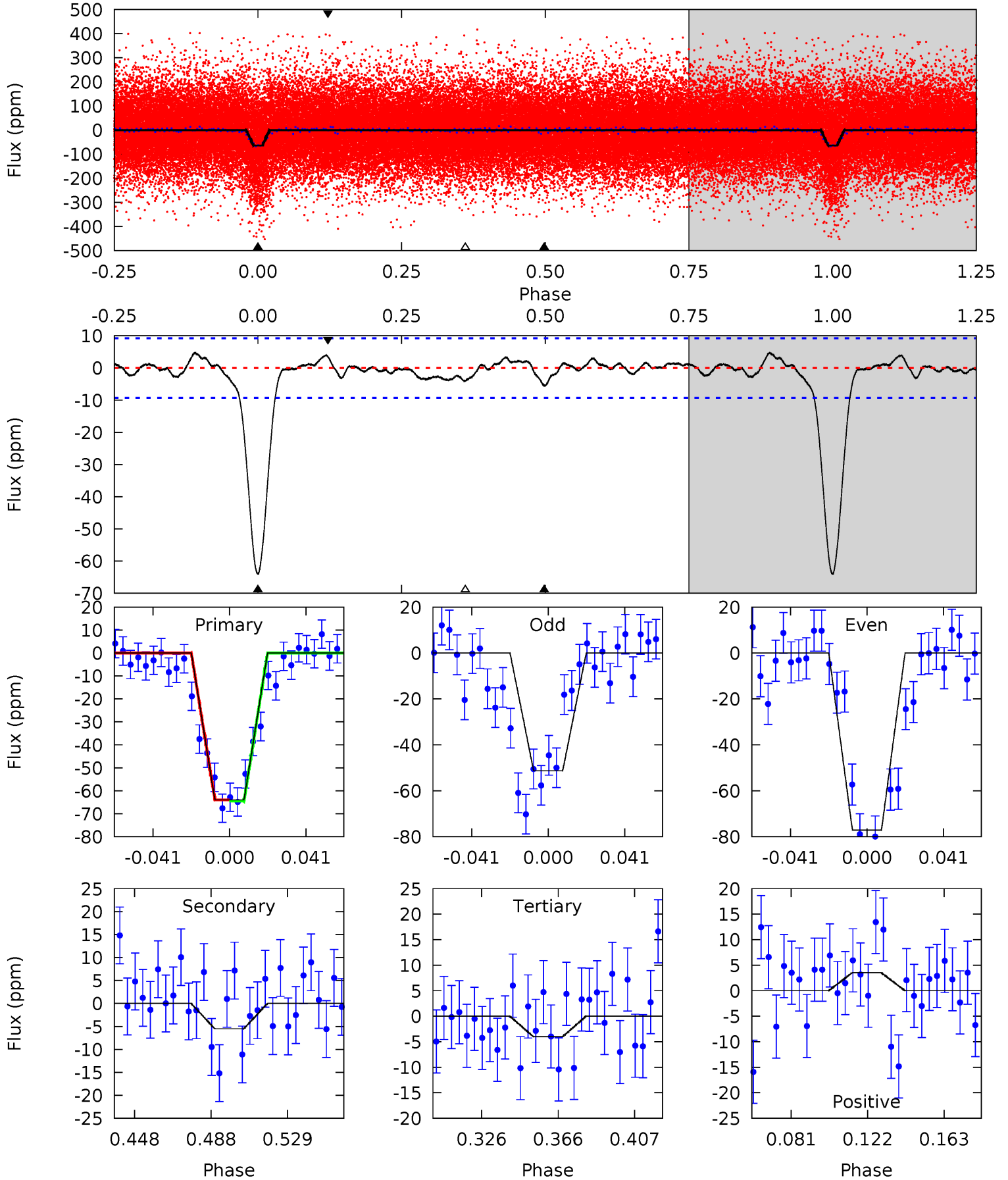




# Alt Model-Shift Uniqueness Test

007024222-01, P = 1.633101 Days, E = 131.006743 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
32.9	2.83	2.07	1.81	4.75	2.05	0.95	30.8	31.1	0.76	1.02	6.68	1.15	0.07	0.14





### Stellar Parameters For KIC 007024222

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$4579^{+124}_{-124}$	$4.596^{+0.056}_{-0.024}$	$-0.120^{+0.300}_{-0.300}$	$0.684^{+0.048}_{-0.059}$	$0.672^{+0.073}_{-0.049}$	$2.966^{+0.693}_{-0.317}$
	+3%/-3%	+1%/-1%	+250%/-250%	+7%/-9%	+11%/-7%	+23%/-11%
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 007024222-01 / KOI 0309.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-5 \pm 2$	$0.59^{+0.23}_{-0.22}$	$1505^{+50}_{-51}$	$3001^{+492}_{-327}$	$4.828^{+7.090}_{-2.560}$
Alt.	$-6 \pm 2$	$0.60^{+0.25}_{-0.21}$	$1503^{+47}_{-50}$	$2999^{+452}_{-356}$	$4.819^{+7.172}_{-2.731}$

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

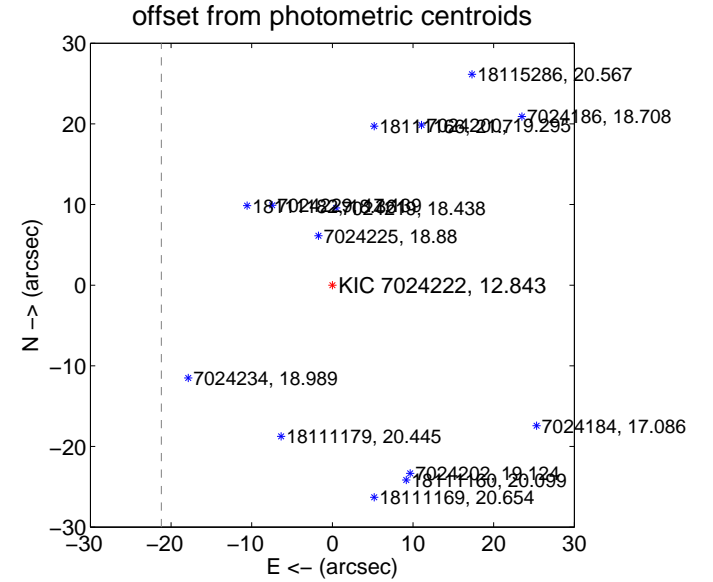
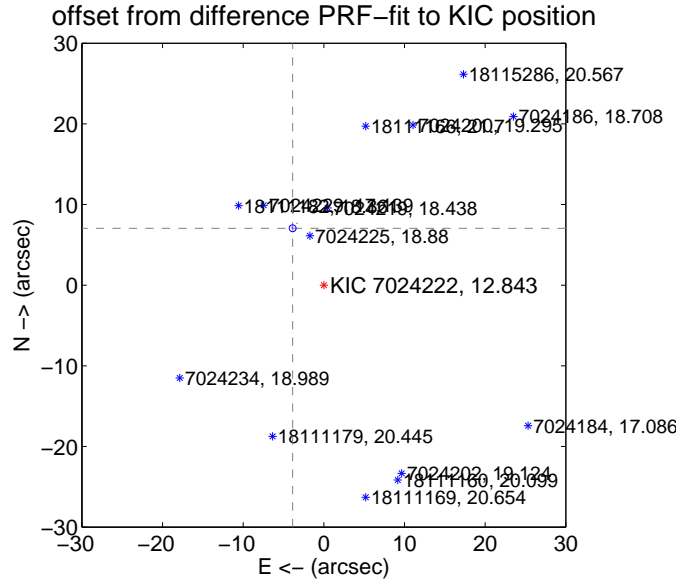
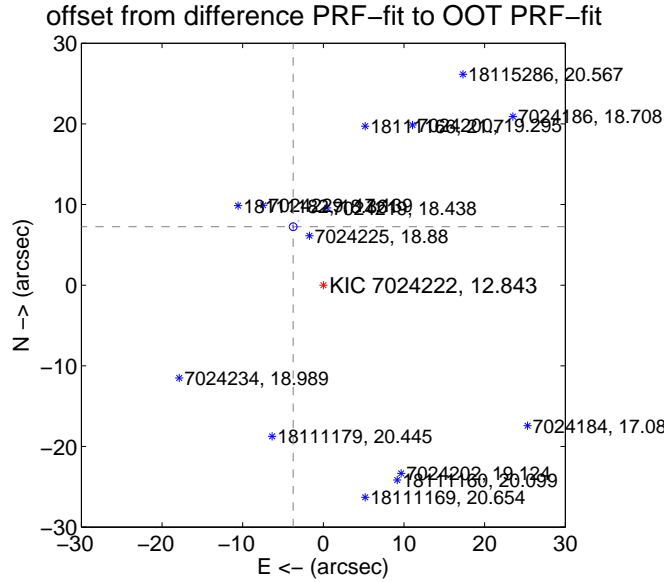
## DV Centroid Data

Supplemental centroid analysis for 007024222-01. Kepler magnitude: 12.84. Transit SNR 18.48

There are 5 quarters with good PRF difference image offsets

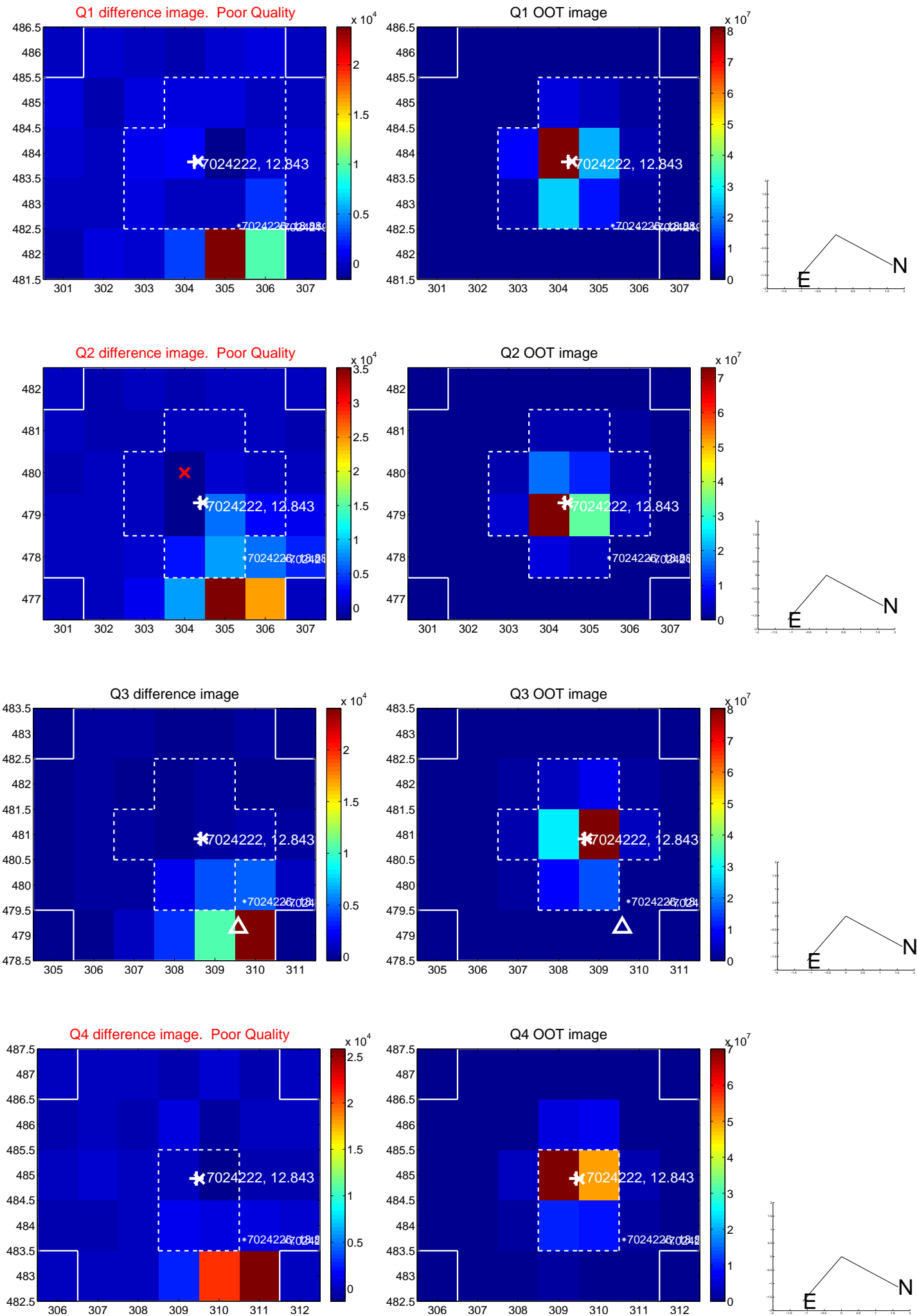
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>8.153 <math>\pm</math> 0.159</b>	<b>51.35</b>	3.741 $\pm$ 0.079	7.244 $\pm$ 0.174
PRF-fit source offset from KIC position	<b>8.044 <math>\pm</math> 0.141</b>	<b>57.02</b>	3.869 $\pm$ 0.100	7.052 $\pm$ 0.151
photometric centroid source offset	<b>51.83 <math>\pm</math> 0.70</b>	<b>74.03</b>	21.21 $\pm$ 0.61	47.29 $\pm$ 0.72

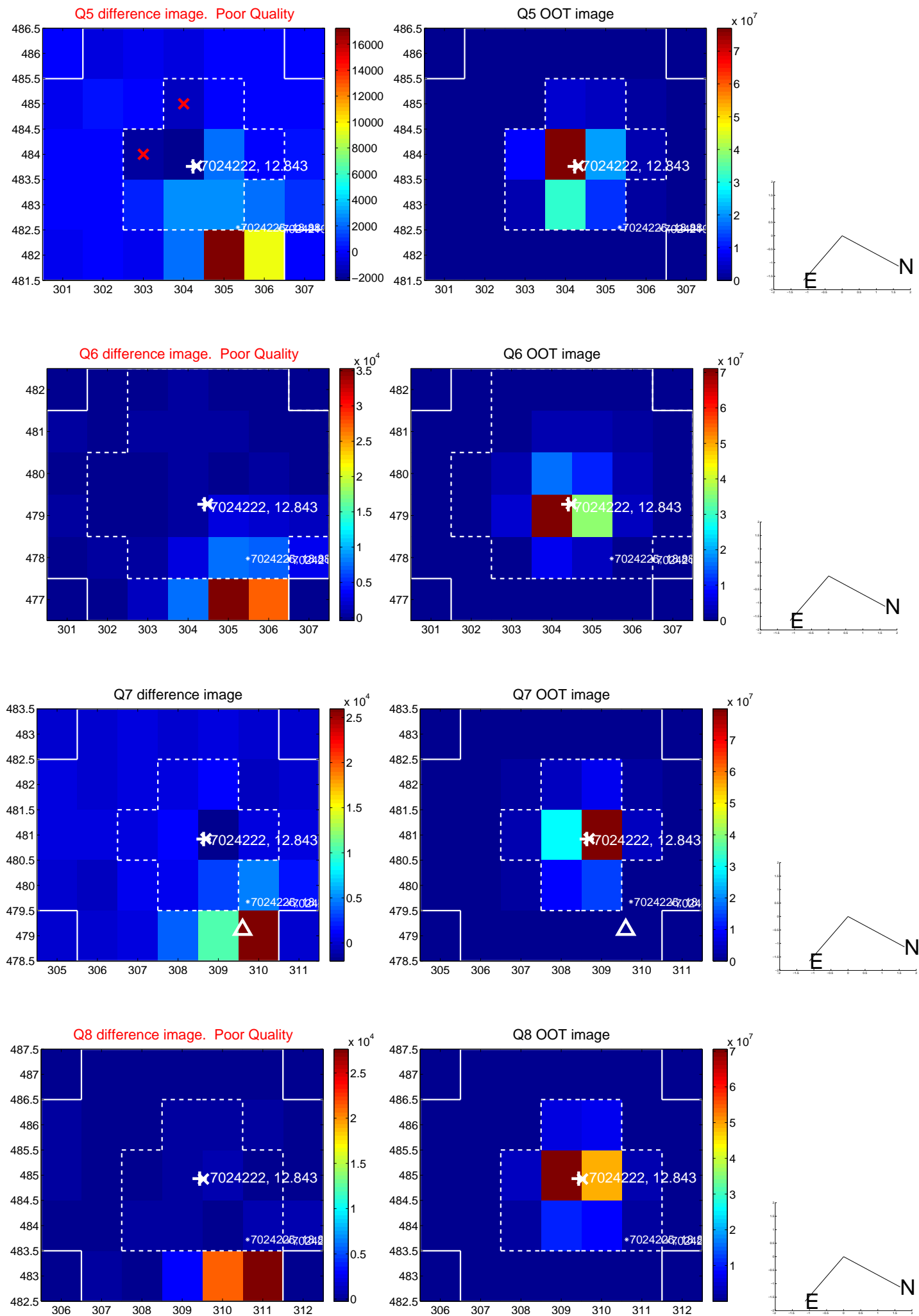


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

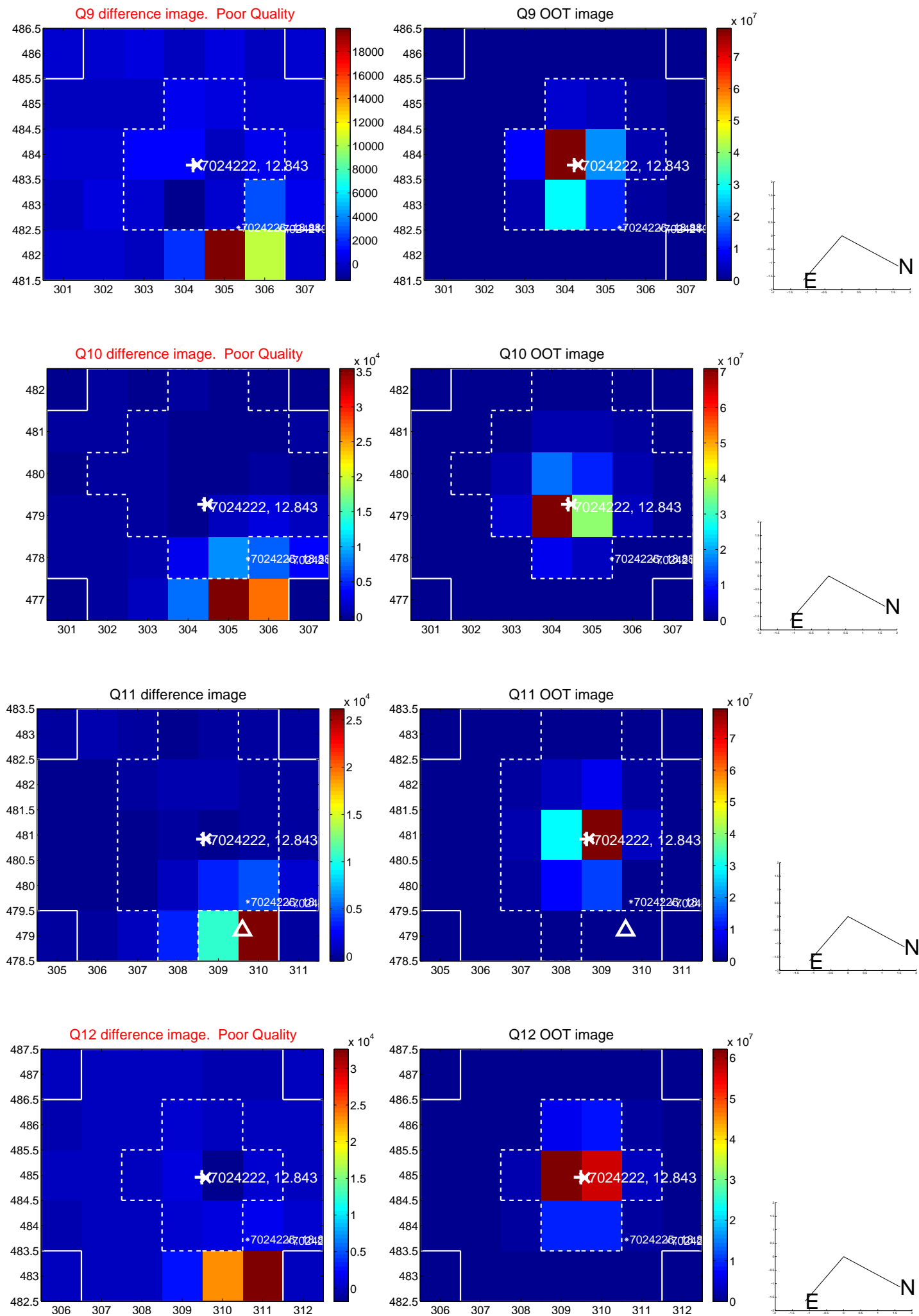


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

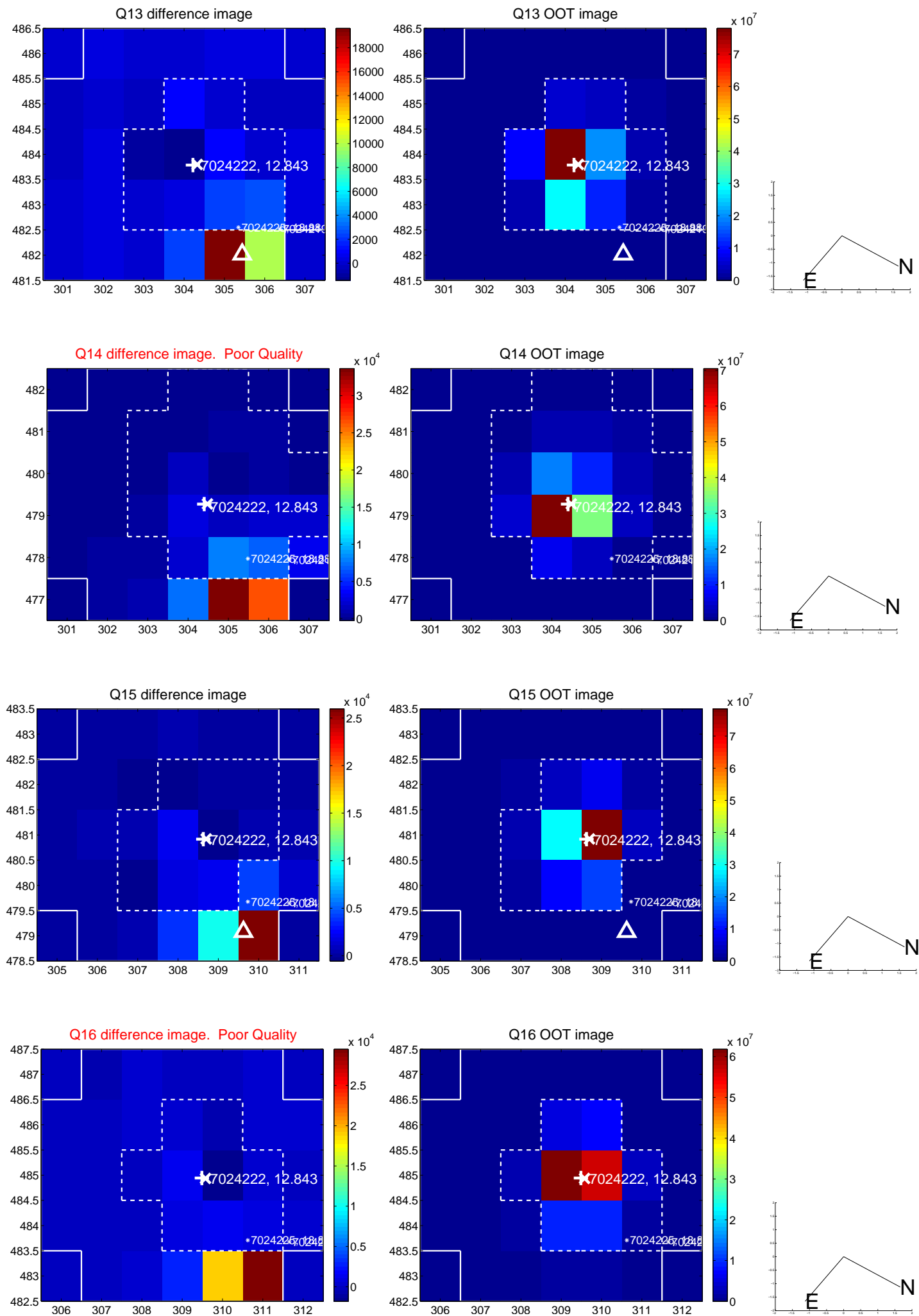




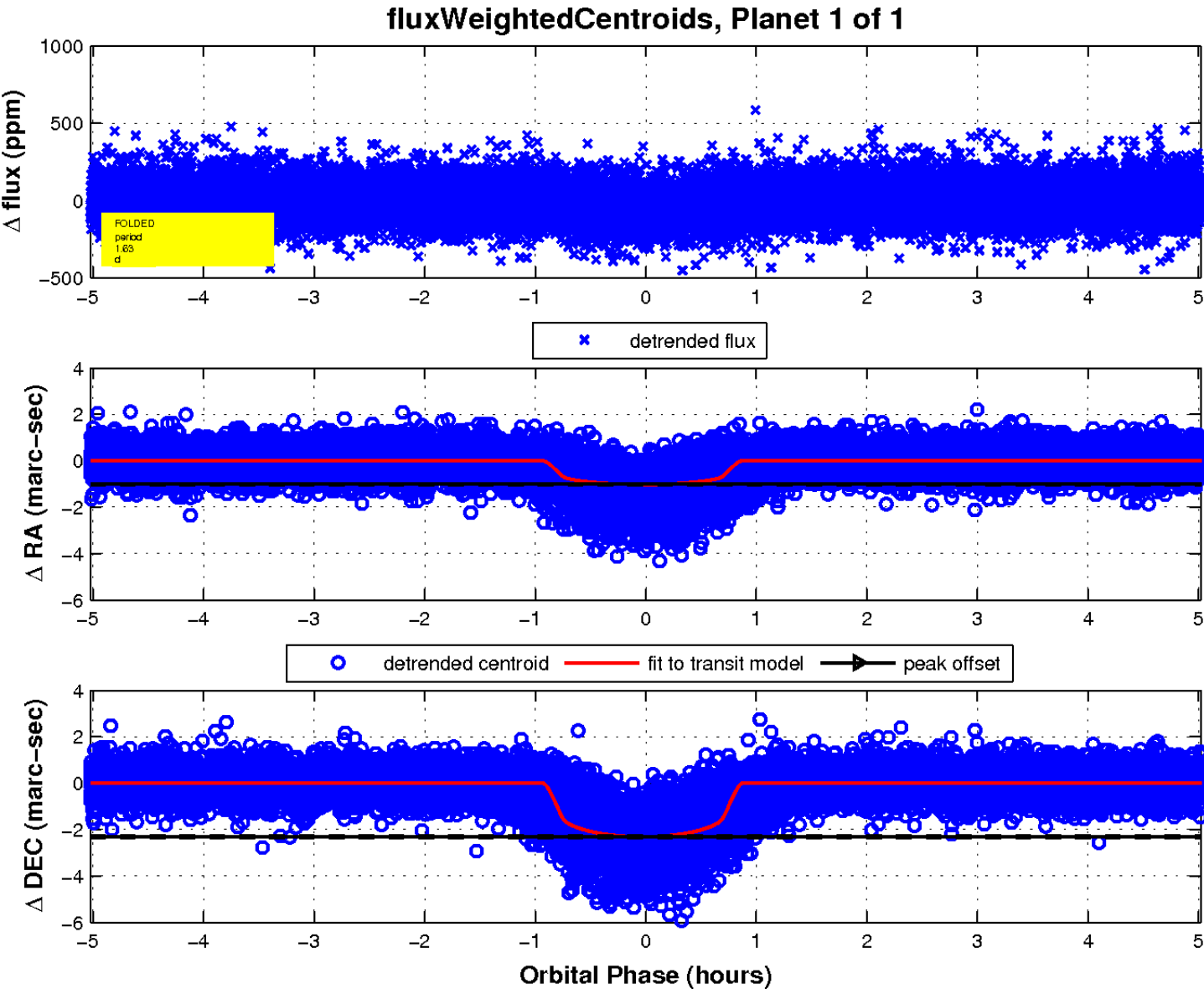
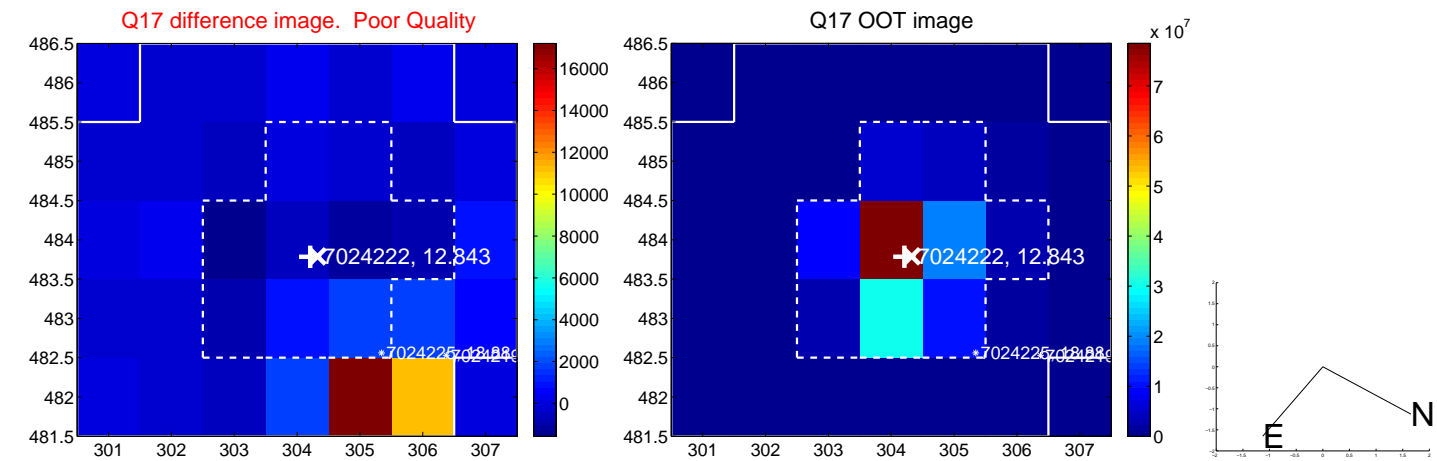
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

