

# KIC 009549513

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009549513-01	OBS	No	1.757431	131.975213	71.8	2.080	7.4	6.0	1.38	6705	1.36	3604.28

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009549513-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

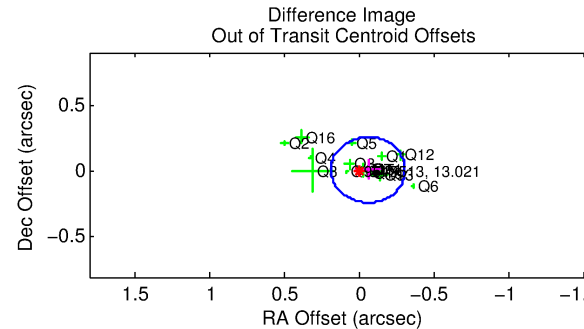
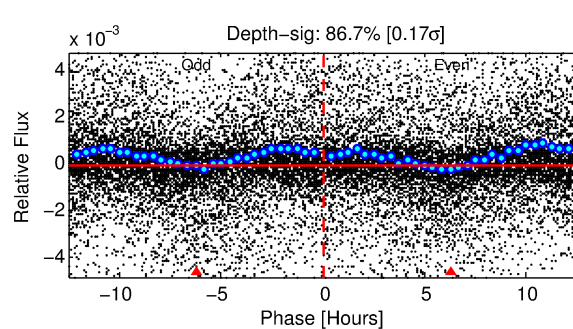
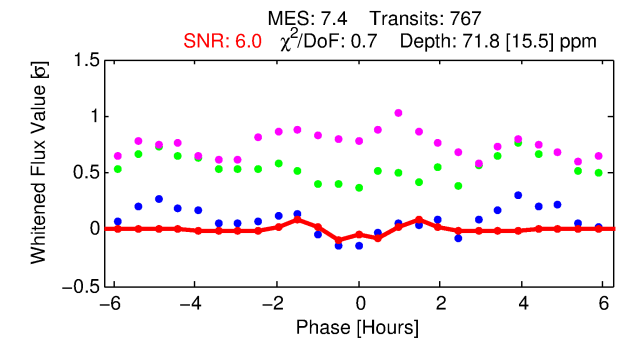
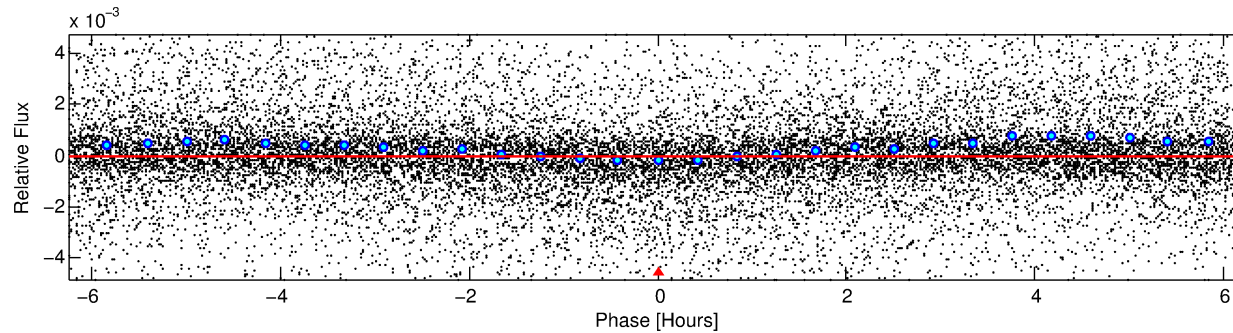
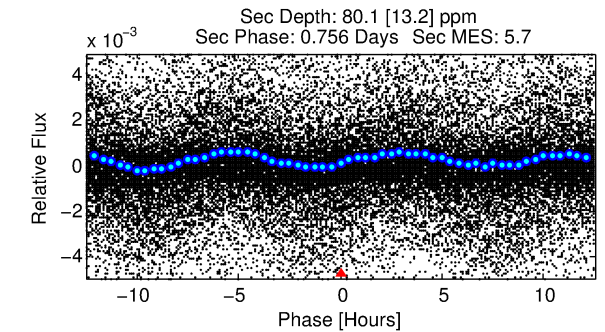
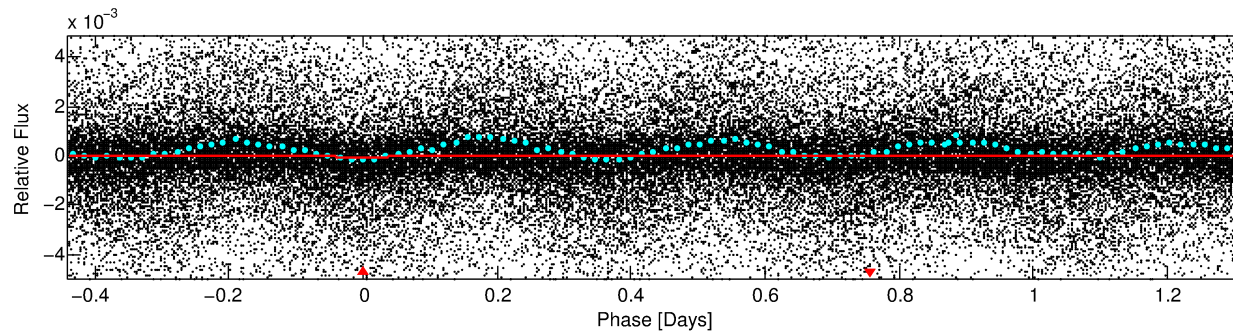
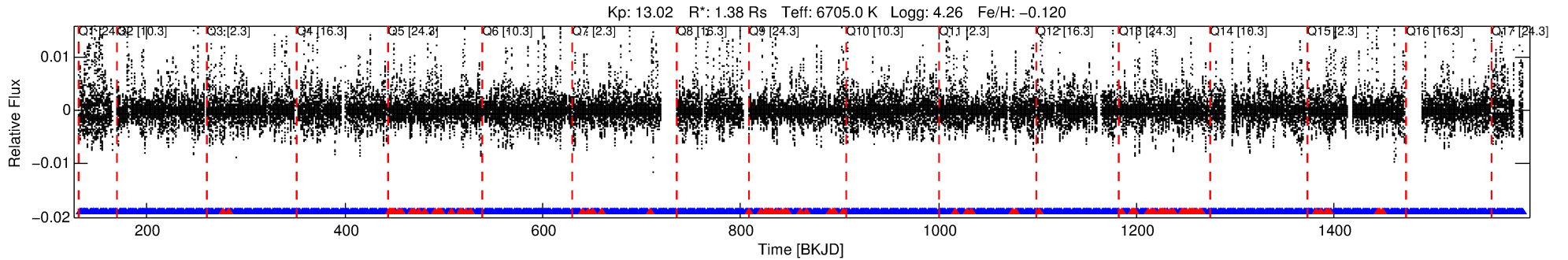
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009549513-01

No Significant Match Found

# DV One-Page Summary

KIC: 9549513 Candidate: 1 of 1 Period: 1.757 d



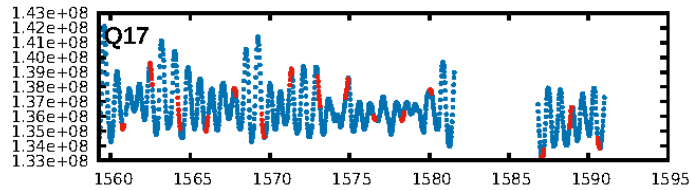
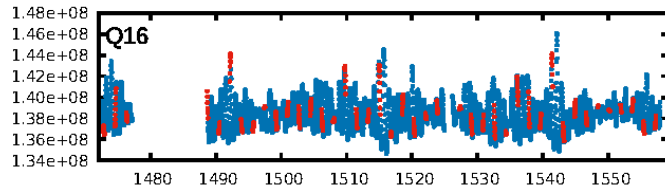
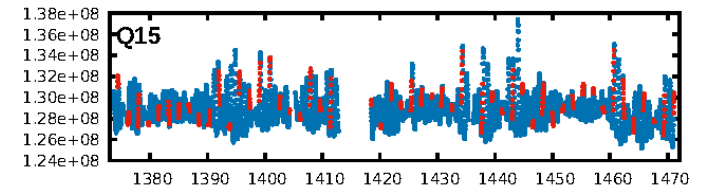
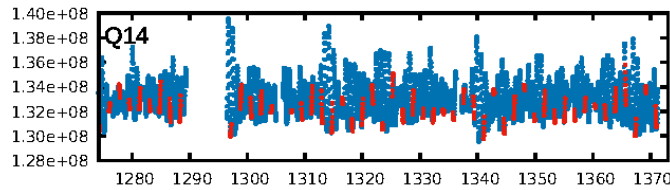
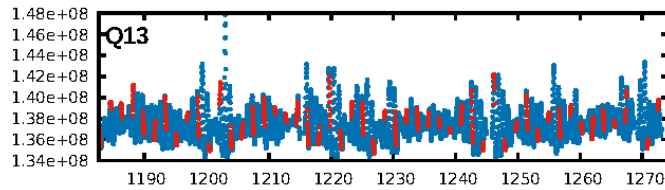
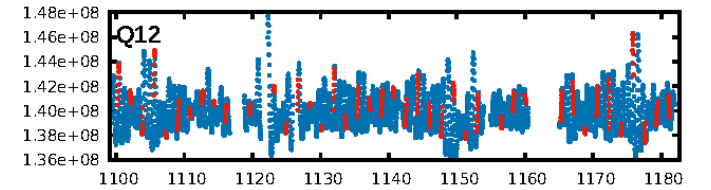
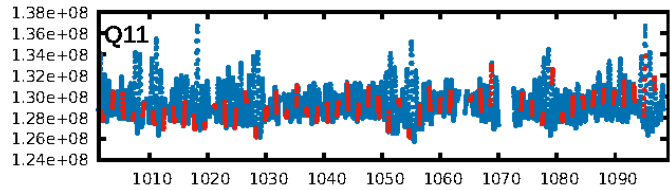
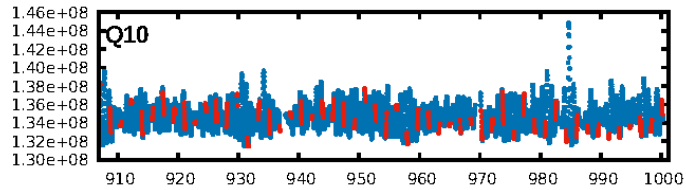
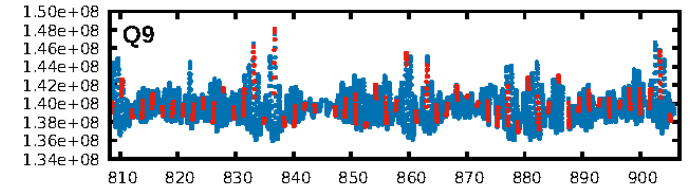
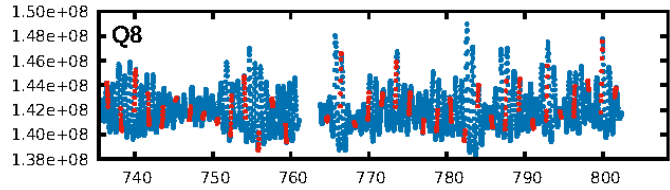
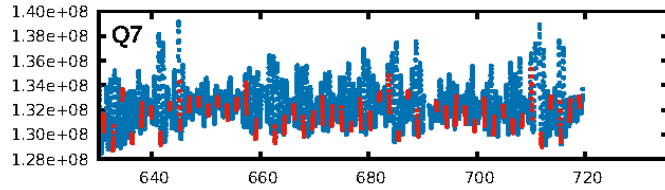
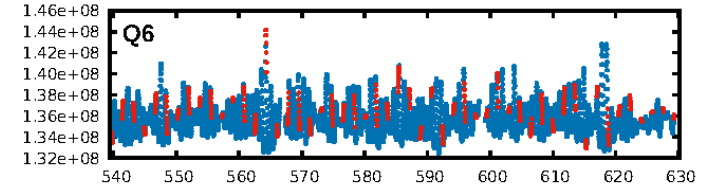
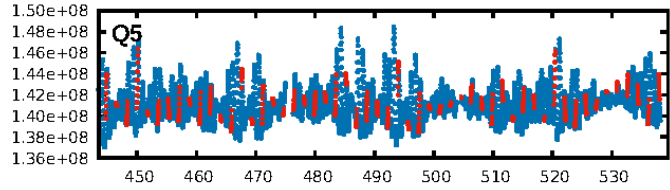
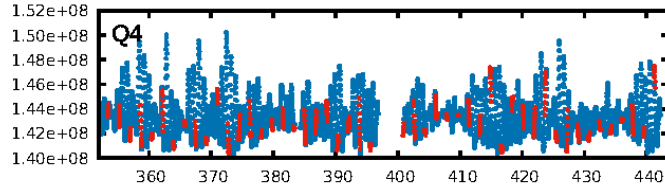
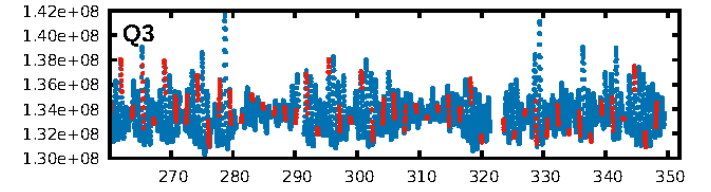
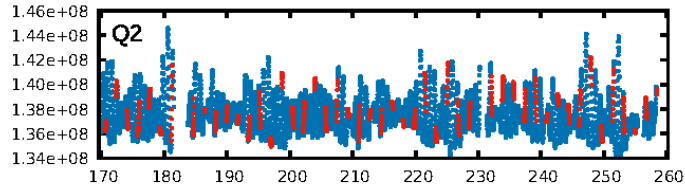
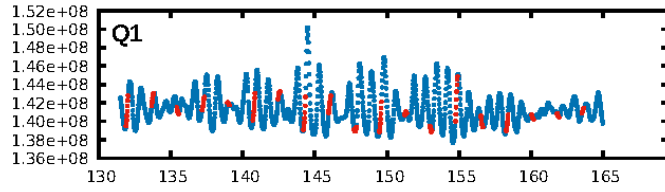
## DV Fit Results:

Period = 1.75743 [0.00001] d  
Epoch = 131.9752 [0.0017] BKJD  
Rp/R\* = 0.0091 [0.0028]  
a/R\* = 3.08 [4.58]  
b = 0.90 [0.35]  
Seff = 3604.28 [1455.56]  
Teff = 1976 [199] K  
Rp = 1.36 [0.60] Re  
a = 0.0309 [0.0081] AU  
Ag = 22.59 [16.66] [1.30σ]  
Teffp = 6660 [1082] K [4.26σ]

## DV Diagnostic Results:

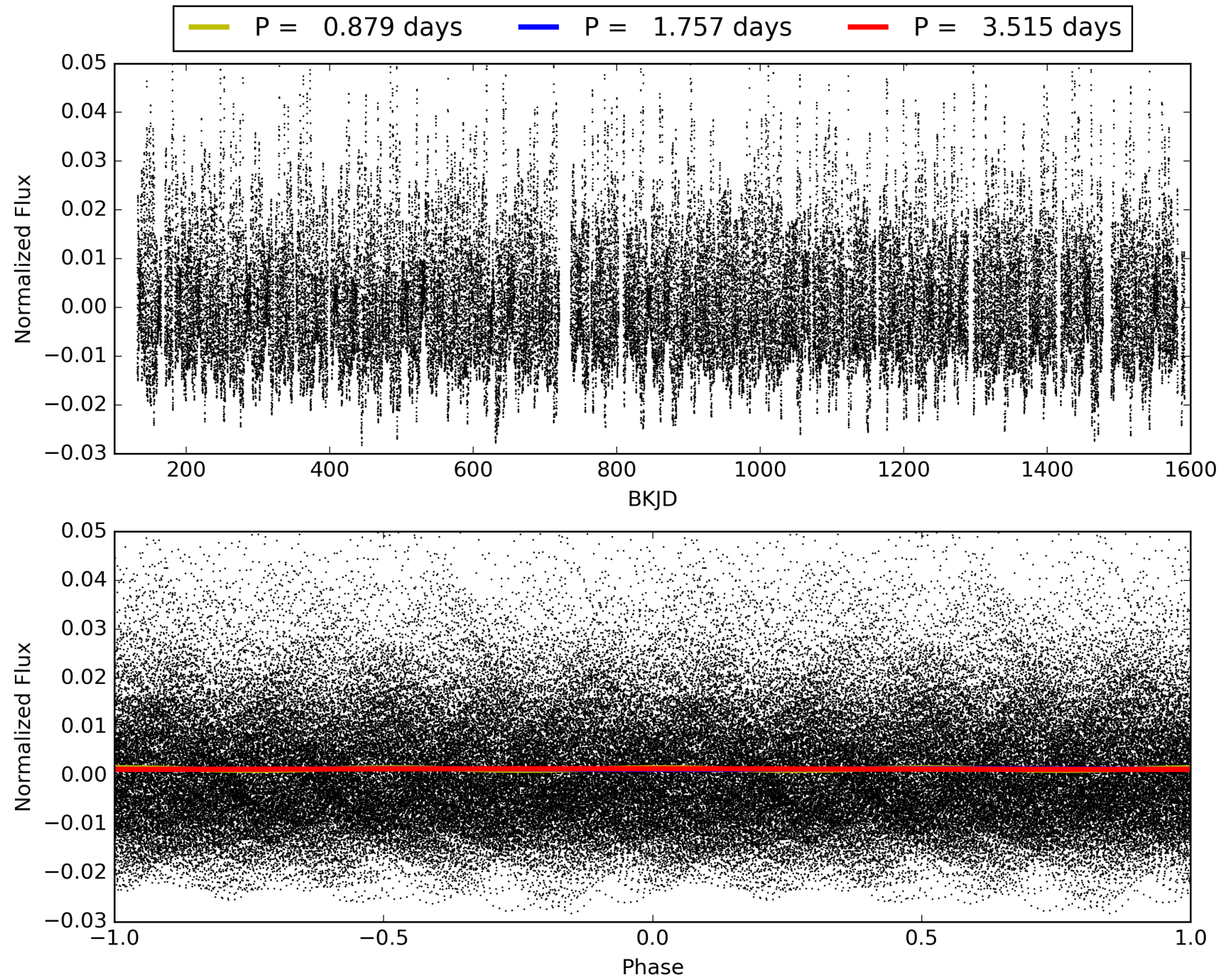
ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.44e-13  
RollingBand-fgt: 0.89 [654/733]  
GhostDiagnostic-chr: 1.372  
Centroid-sig: 16.6%  
Centroid-so: 0.980 arcsec [1.28σ]  
OotOffset-rm: 0.064 arcsec [0.77σ]  
KicOffset-rm: 0.189 arcsec [2.32σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.53 [9/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 009549513-01, PDC Light Curves



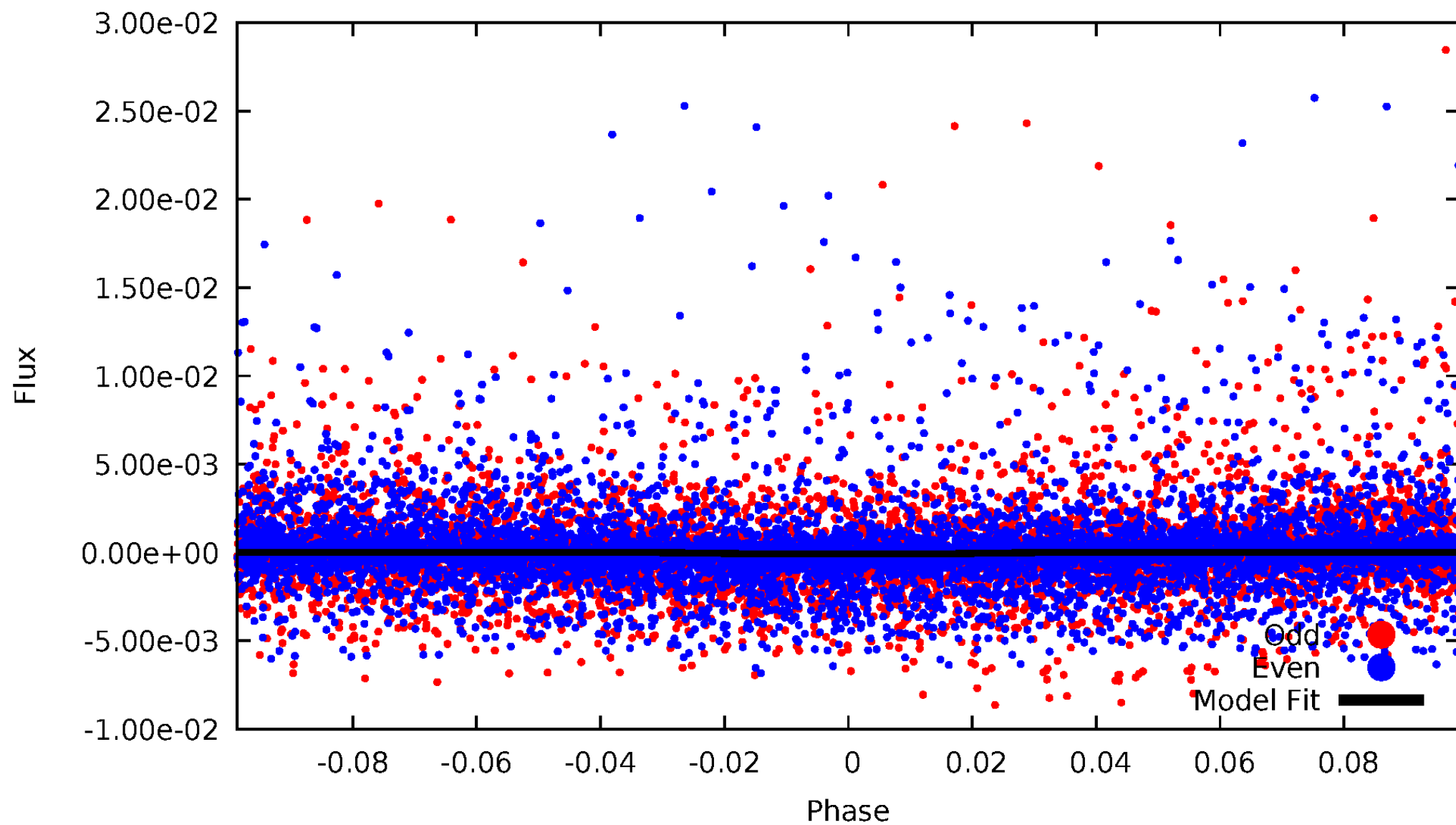


TCE 009549513-01



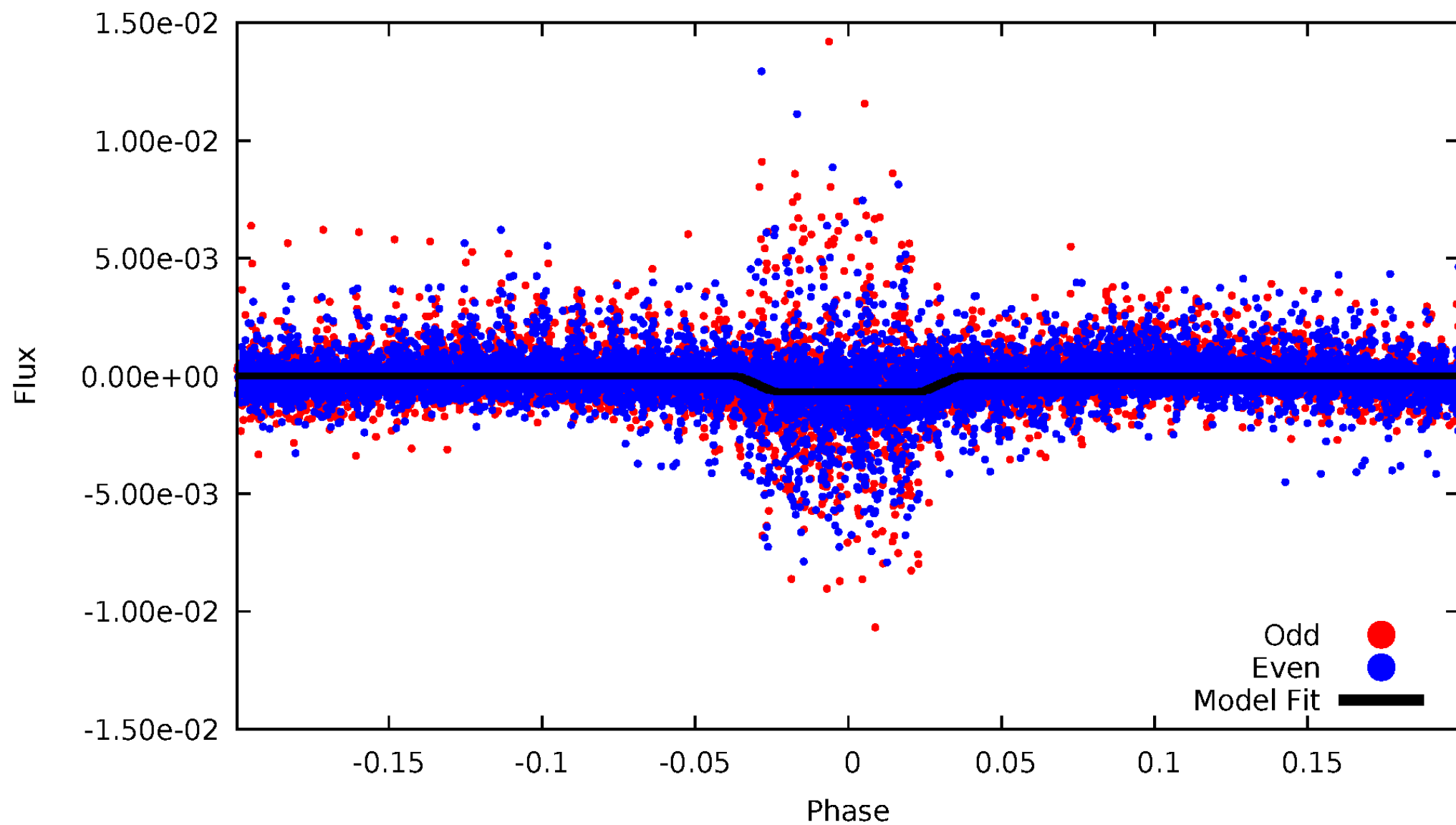
# DV Odd/Even

TCE 009549513-01



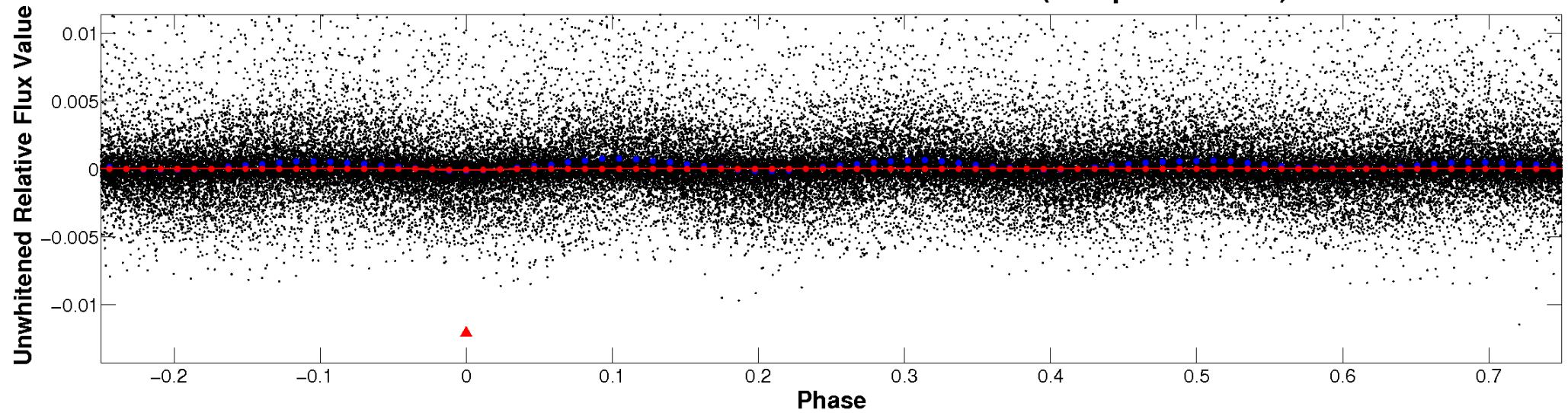
# ALT Odd/Even

TCE 009549513-01

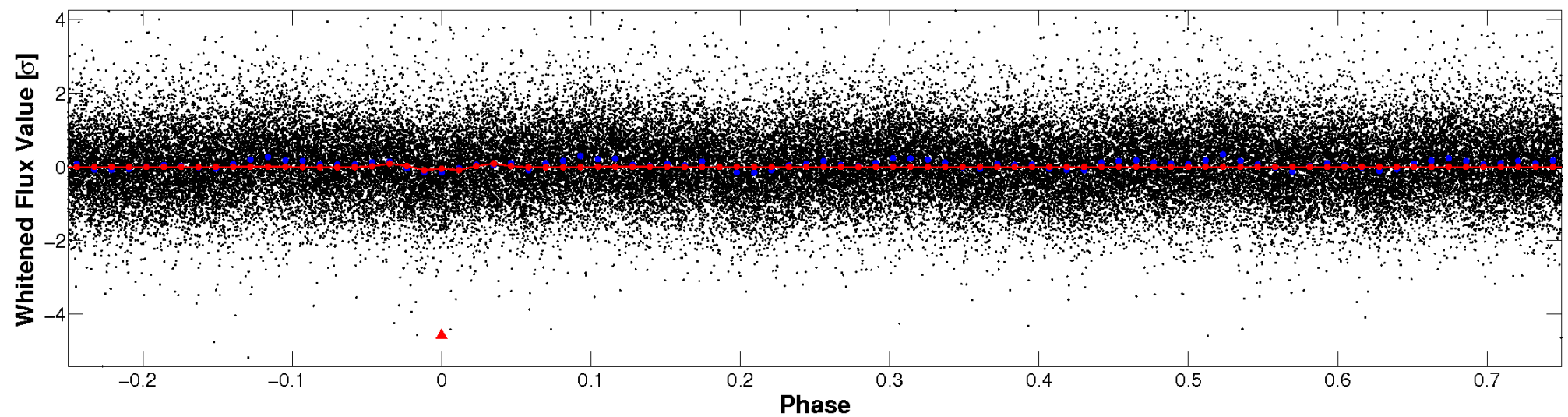


# Non-Whitened Vs. Whitened Light Curve

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



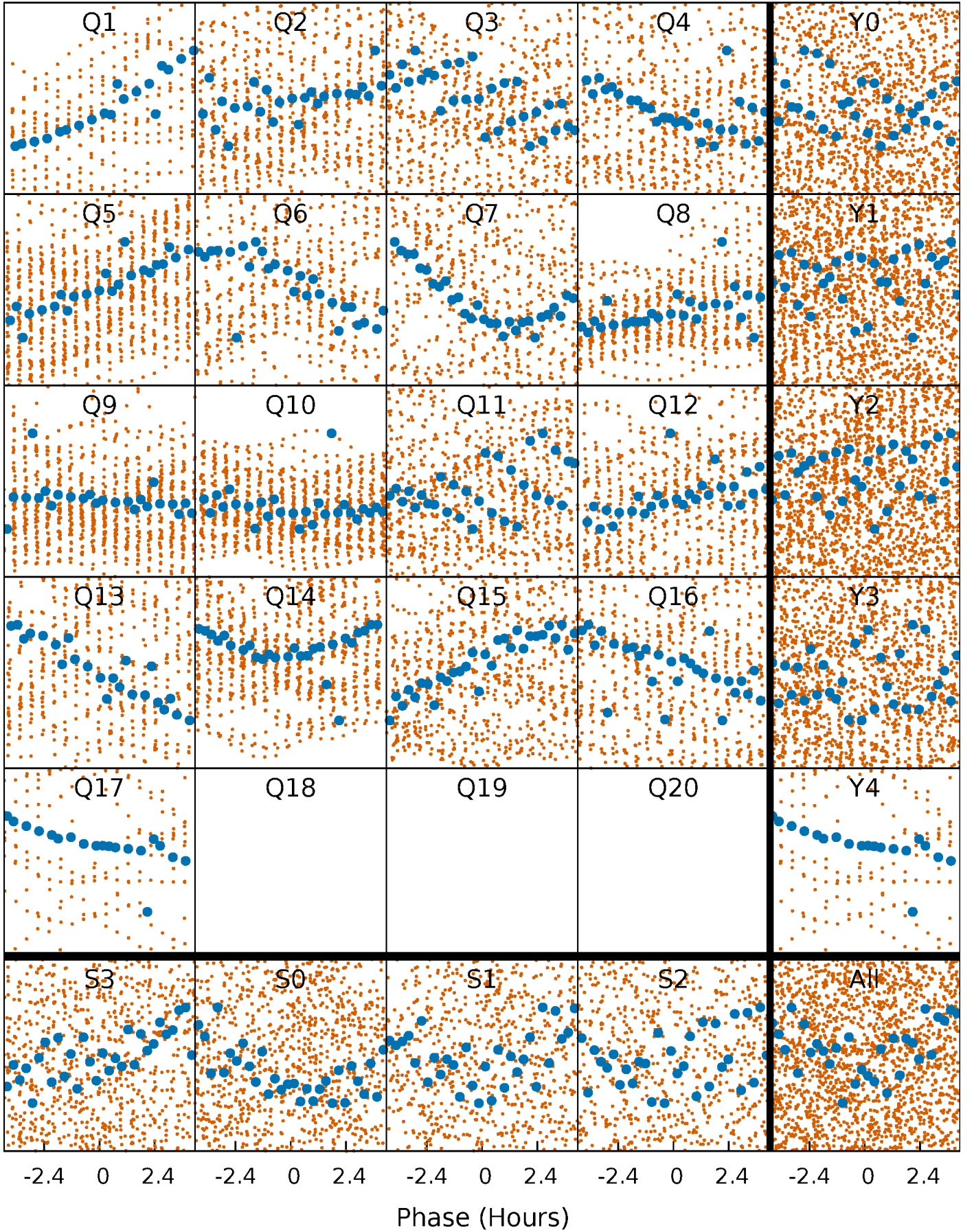
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

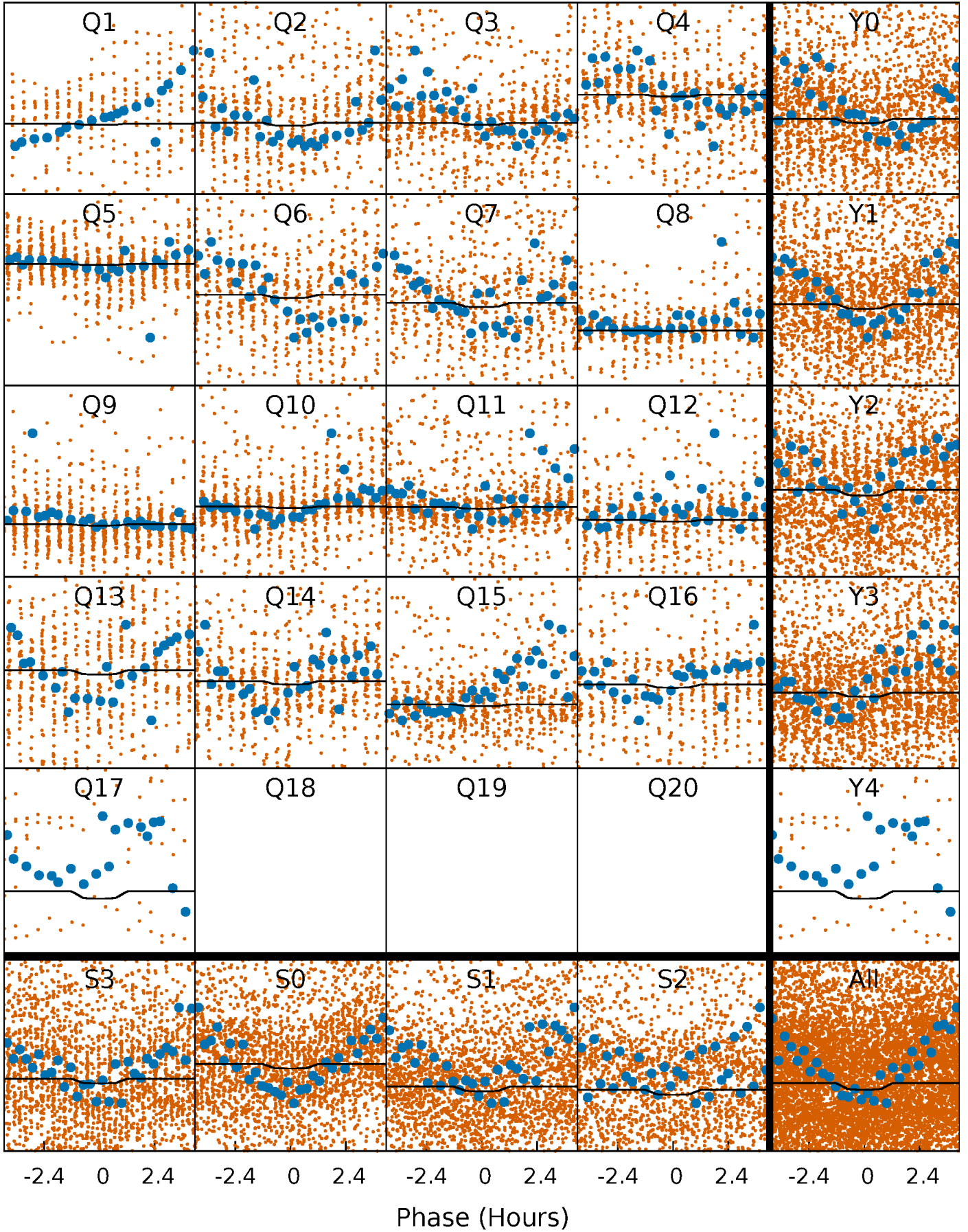
TCE 009549513-01 P= 1.757431 Days  $T_0=131.975212$  (BKJD)





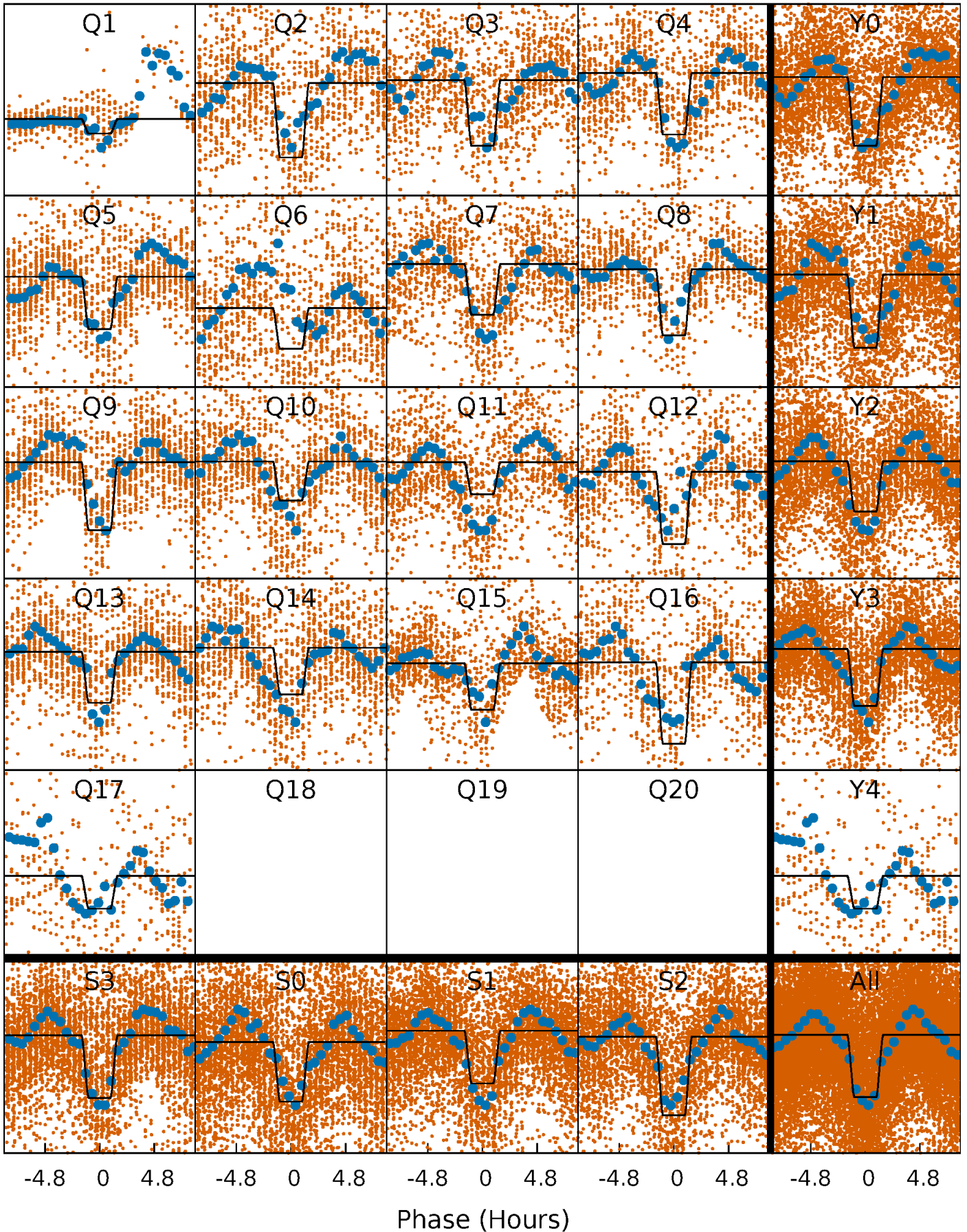
# DV Quarter-Phased Transit Curves

TCE 009549513-01   P= 1.757431 Days    $T_0=131.975212$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

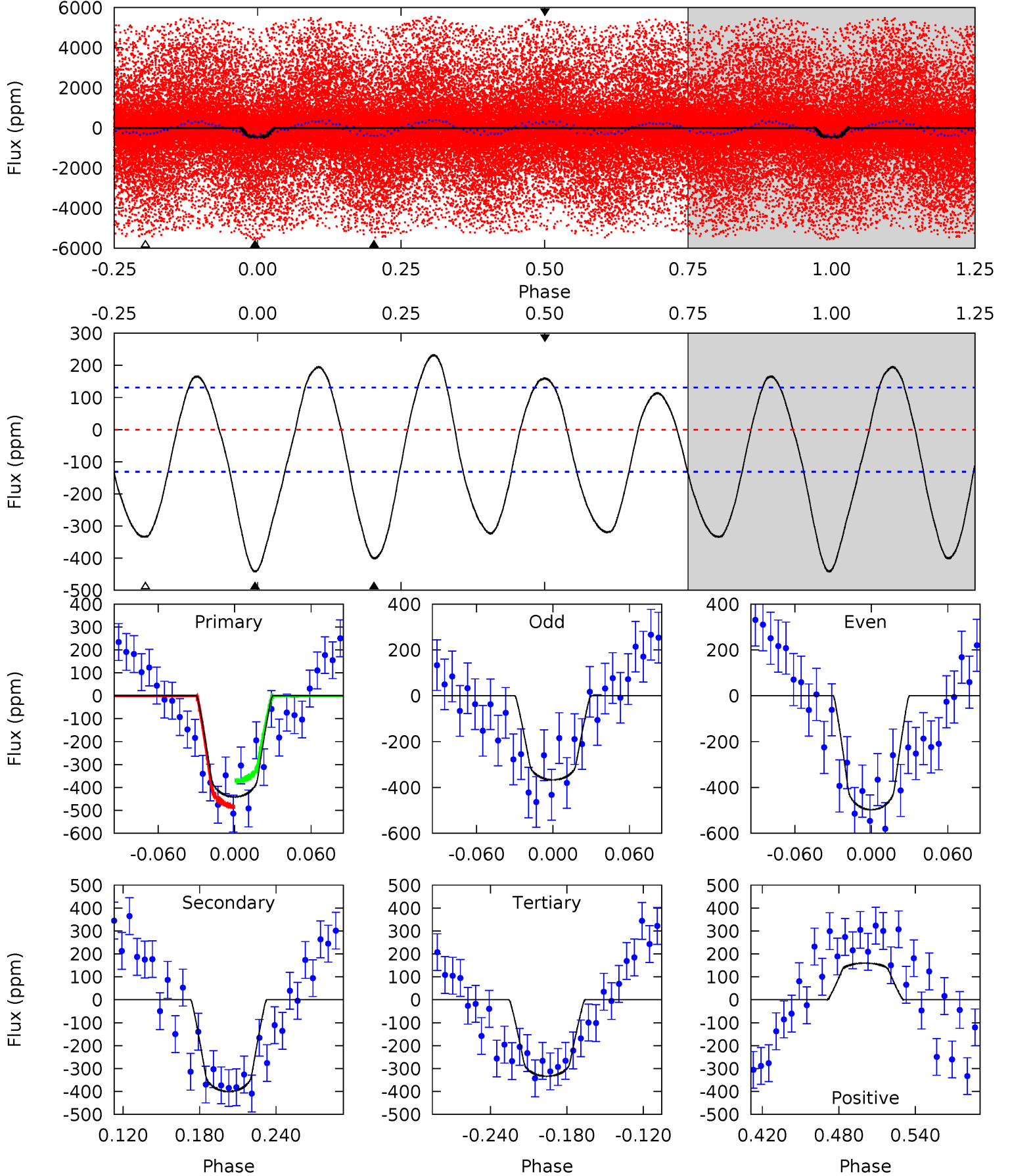
TCE 009549513-01 P= 1.757400 Days  $T_0=131.986126$  (BKJD)



# DV Model-Shift Uniqueness Test

009549513-01, P = 1.757431 Days, E = 130.217781 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
15.7	14.3	11.9	5.69	4.67	1.88	6.37	3.84	10.0	2.39	8.58	2.36	0.41	0.34	1.97

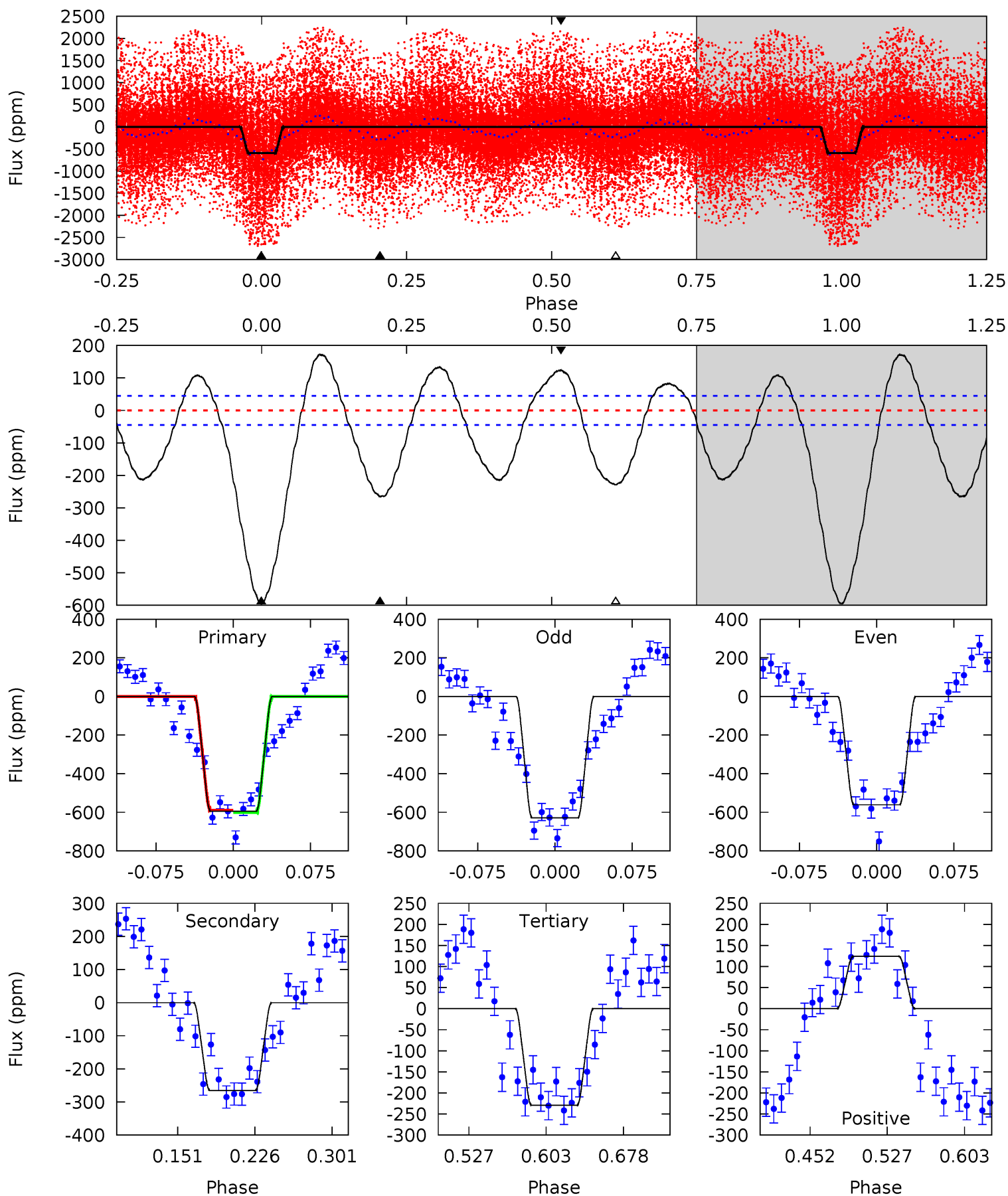




# Alt Model-Shift Uniqueness Test

009549513-01, P = 1.757400 Days, E = 130.228726 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
61.1	27.3	23.6	12.8	4.62	1.78	12.8	37.5	48.4	3.70	14.5	3.52	1.11	0.22	0.64





### Stellar Parameters For KIC 009549513

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6705^{+161}_{-241}$	$4.264^{+0.101}_{-0.203}$	$-0.120^{+0.250}_{-0.300}$	$1.378^{+0.440}_{-0.237}$	$1.277^{+0.187}_{-0.187}$	$0.688^{+0.336}_{-0.360}$
	+2%/-4%	+2%/-5%	+208%/-250%	+32%/-17%	+15%/-15%	+49%/-52%
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 009549513-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-401 \pm 28$	$1.43^{+0.48}_{-0.43}$	$2786^{+209}_{-155}$	$11061^{+3934}_{-2045}$	$103^{+112}_{-45}$
Alt.	$-265 \pm 10$	$3.97^{+0.78}_{-0.57}$	$2783^{+220}_{-172}$	$5287^{+301}_{-279}$	$8.615^{+3.200}_{-2.292}$

$T_{max}$  = 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

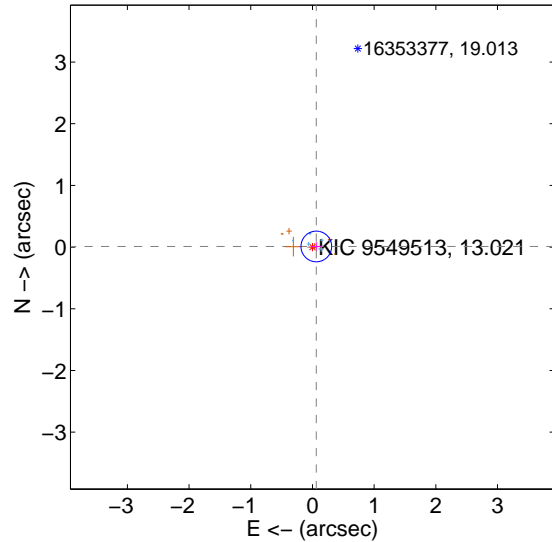
Supplemental centroid analysis for 009549513-01. Kepler magnitude: 13.02. Transit SNR 6.04

There are 9 quarters with good PRF difference image offsets

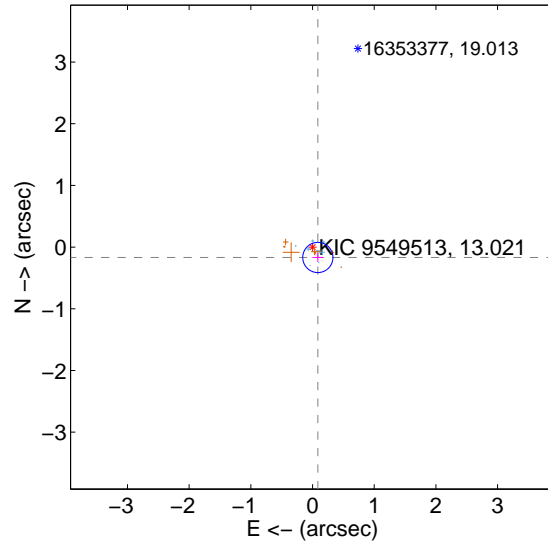
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.064 \pm 0.083$	0.77	$-0.063 \pm 0.085$	$0.010 \pm 0.071$
PRF-fit source offset from KIC position	$0.189 \pm 0.082$	2.32	$-0.086 \pm 0.090$	$-0.168 \pm 0.073$
photometric centroid source offset	$0.98 \pm 0.76$	1.28	$-0.98 \pm 0.76$	$-0.00 \pm 0.57$

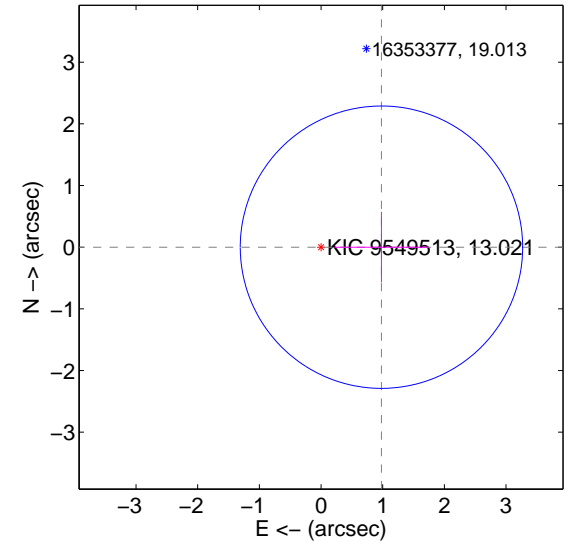
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

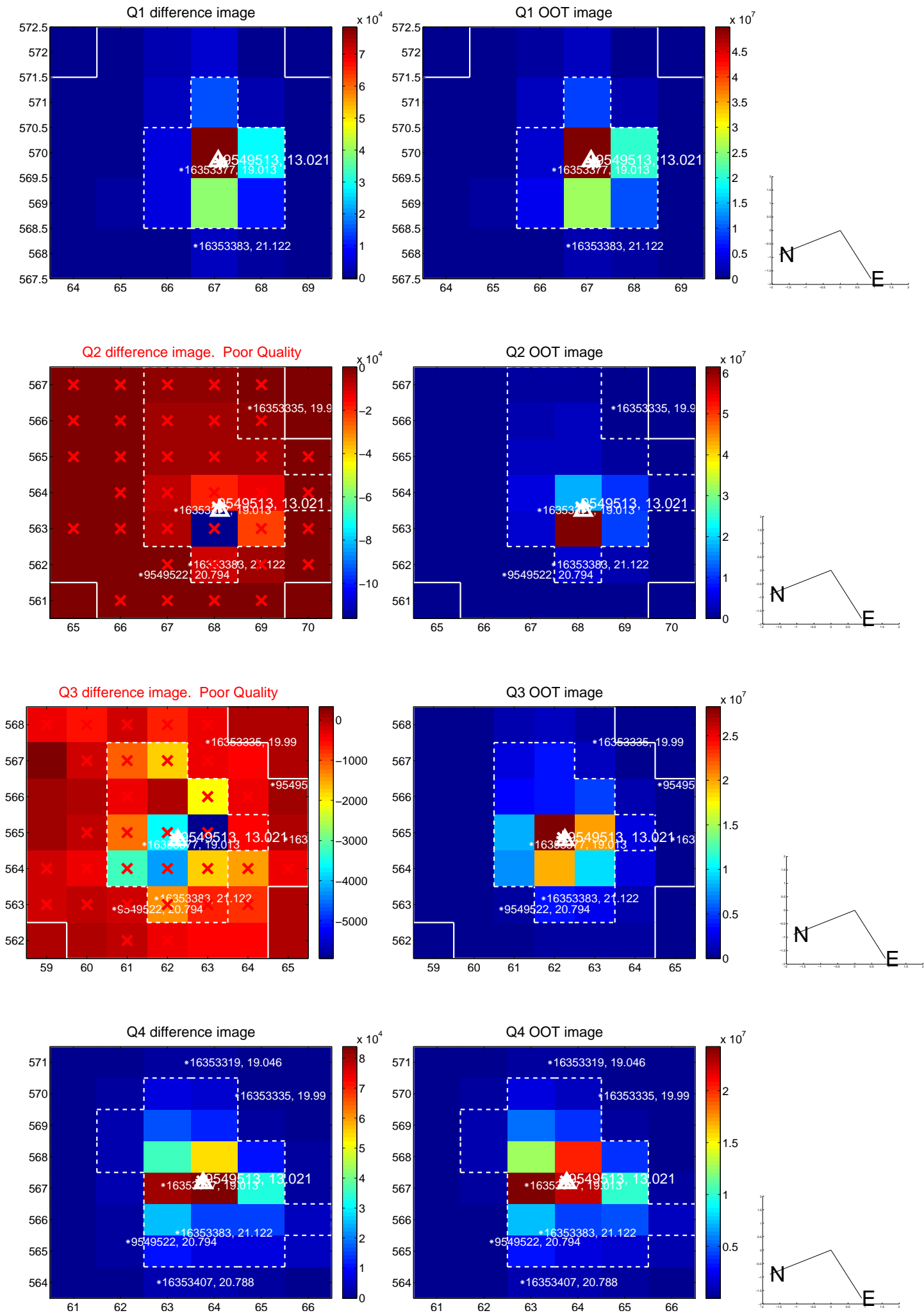


offset from photometric centroids

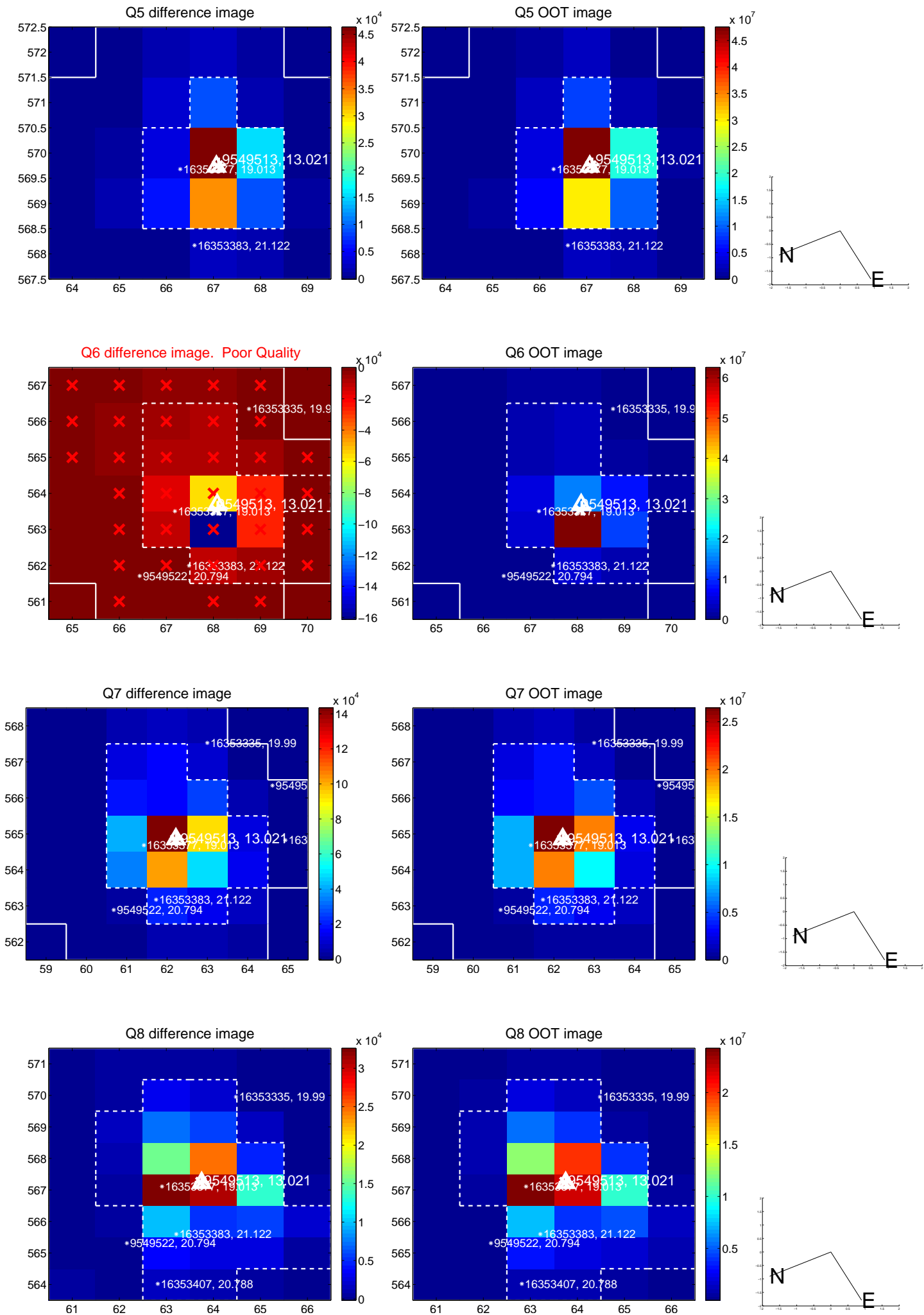


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

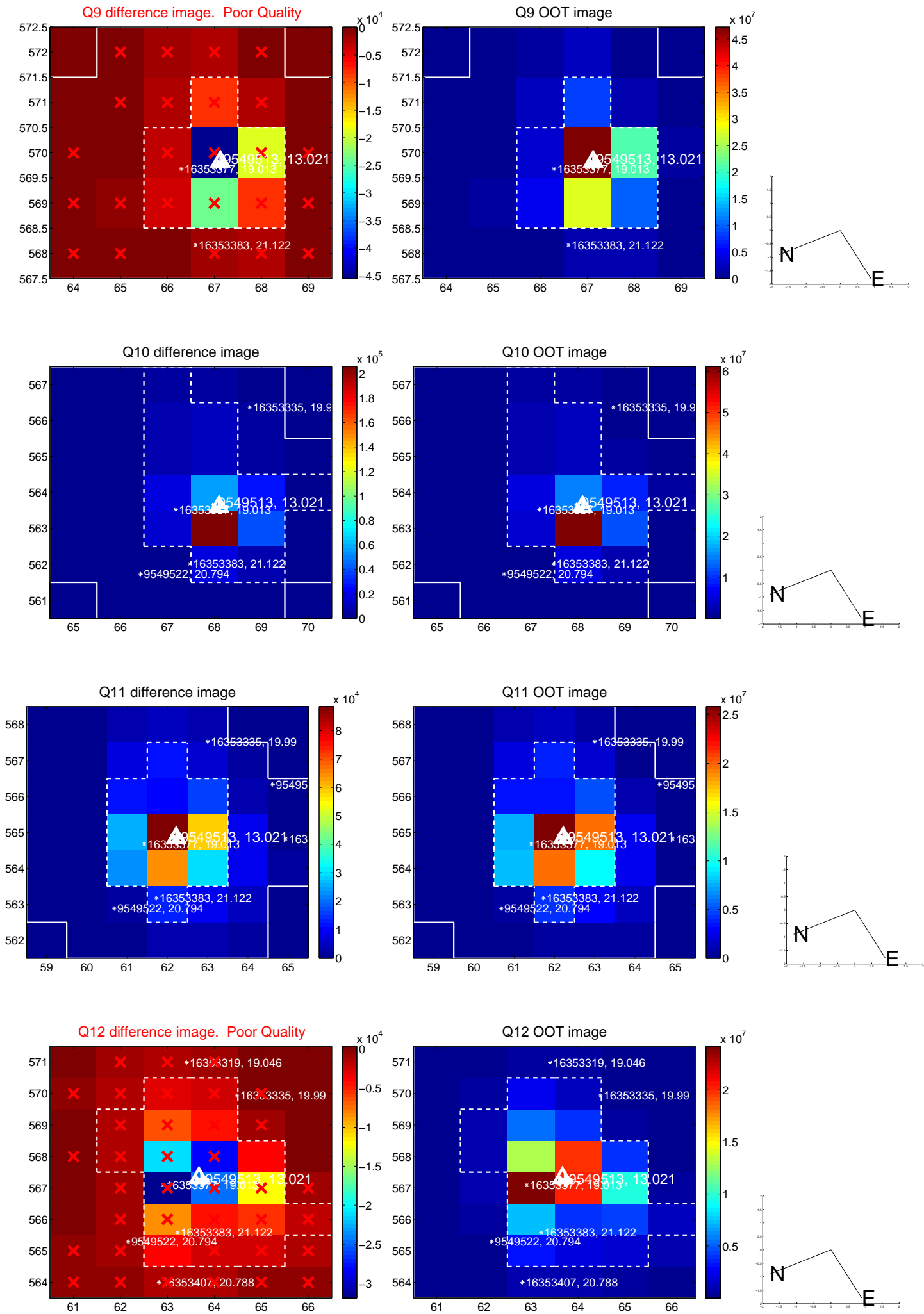


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

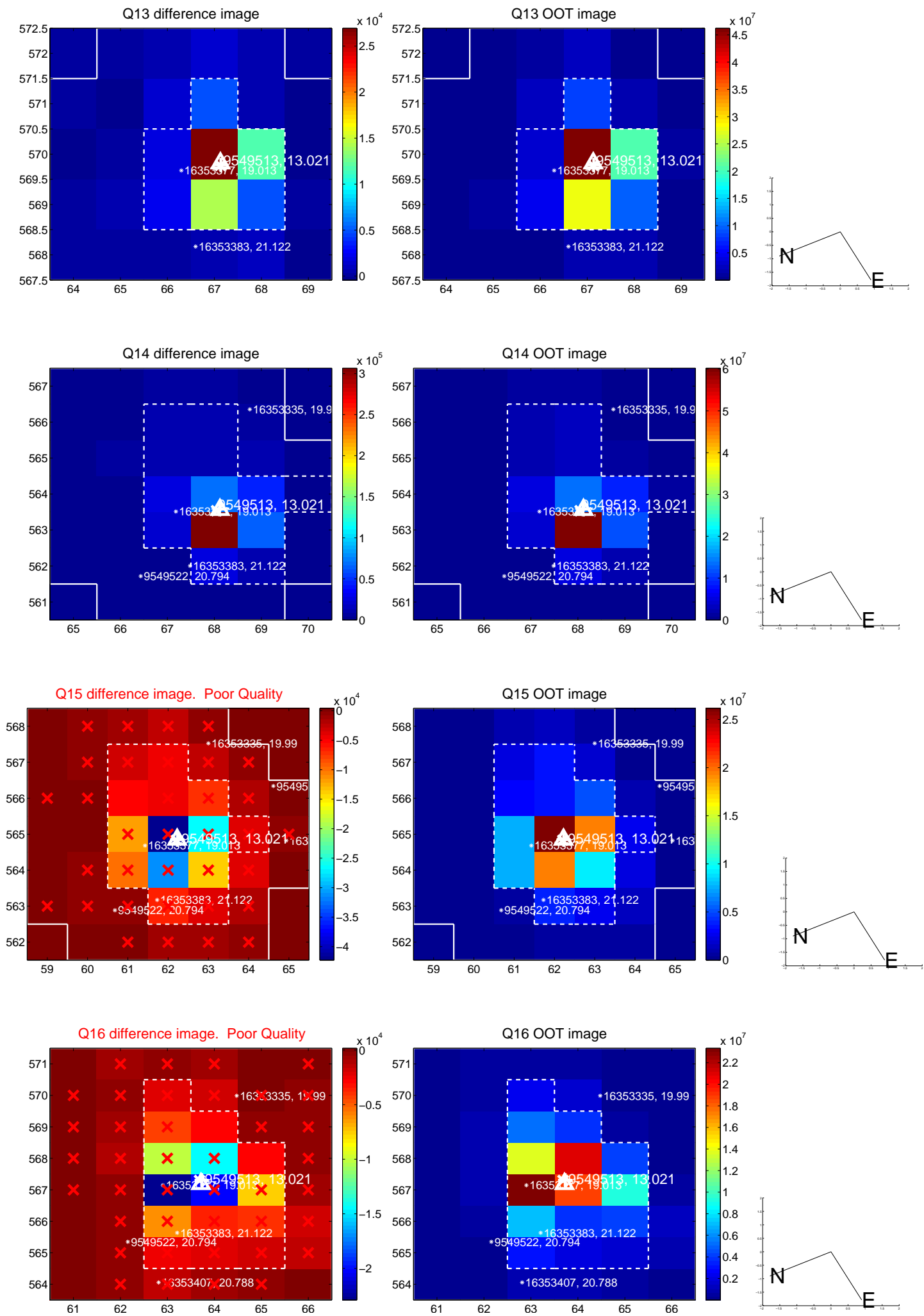




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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





UKIRT Image

Declination

