

# KIC 008559152

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008559152-01	OBS	2488.01	12.412780	140.362851	114.2	4.632	16.6	18.3	1.35	5945	1.78	179.63

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008559152-01	OBS	PC	0.97	0	0	0	0	CENT_KIC_POS

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

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

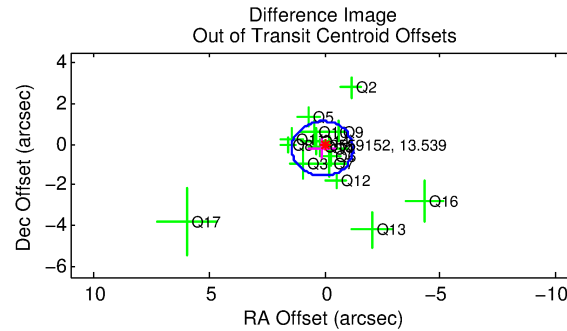
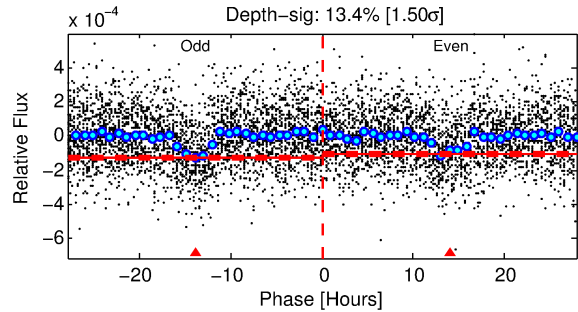
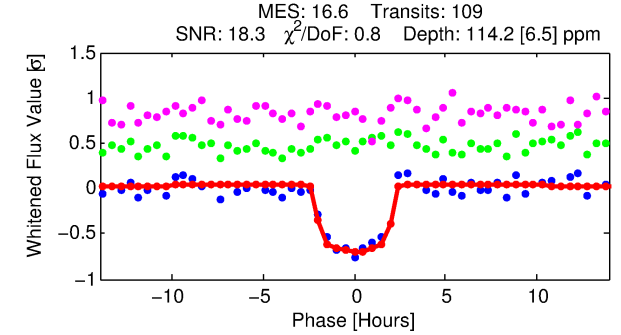
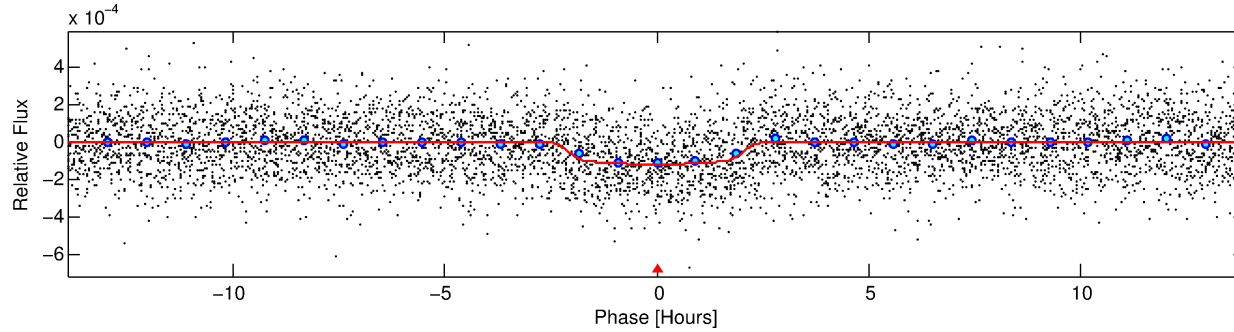
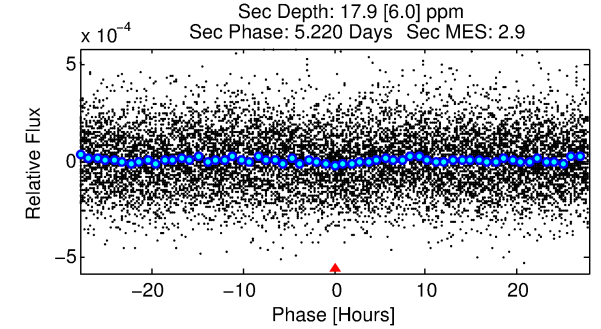
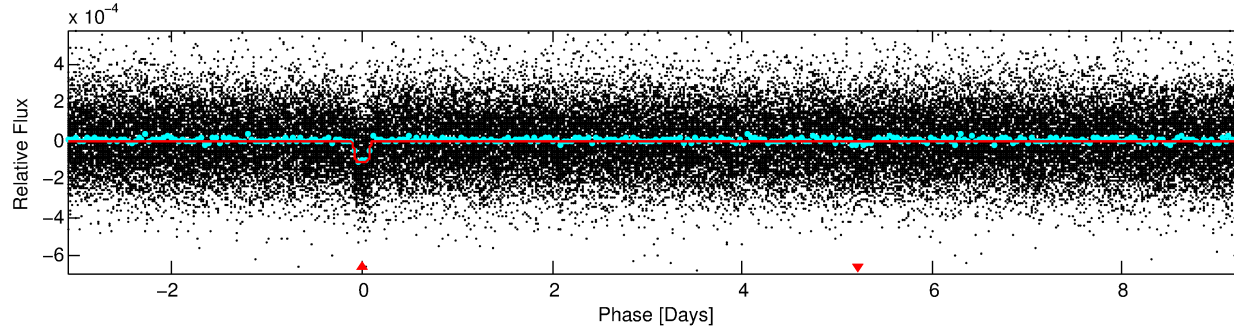
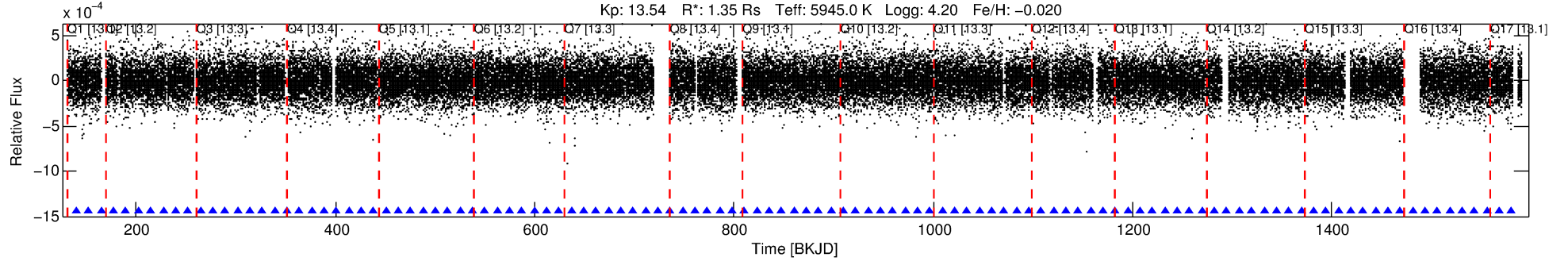
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008559152-01

No Significant Match Found

# DV One-Page Summary

KIC: 8559152 Candidate: 1 of 1 Period: 12.413 d  
KOI: K02488.01 Corr: 0.971



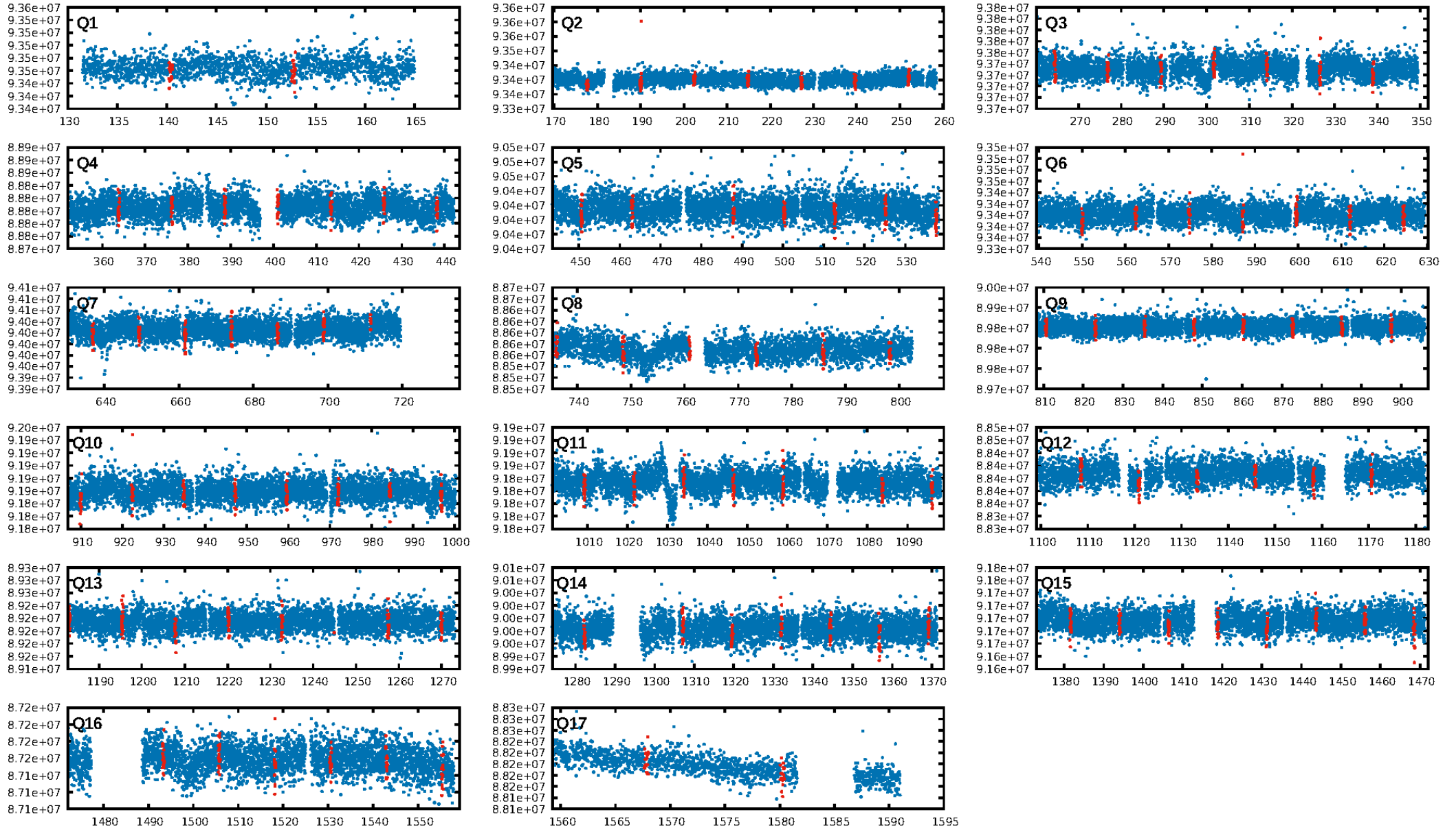
## DV Fit Results:

Period = 12.41278 [0.00008] d  
Epoch = 140.3629 [0.0049] BKJD  
Rp/R\* = 0.0121 [0.0014]  
a/R\* = 7.74 [4.60]  
b = 0.94 [0.08]  
Seff = 179.63 [52.89]  
Teq = 934 [69] K  
Rp = 1.78 [0.38] Re  
a = 0.1062 [0.0186] AU  
Ag = 35.09 [17.51] [1.95σ]  
Teffp = 3513 [367] K [6.90σ]

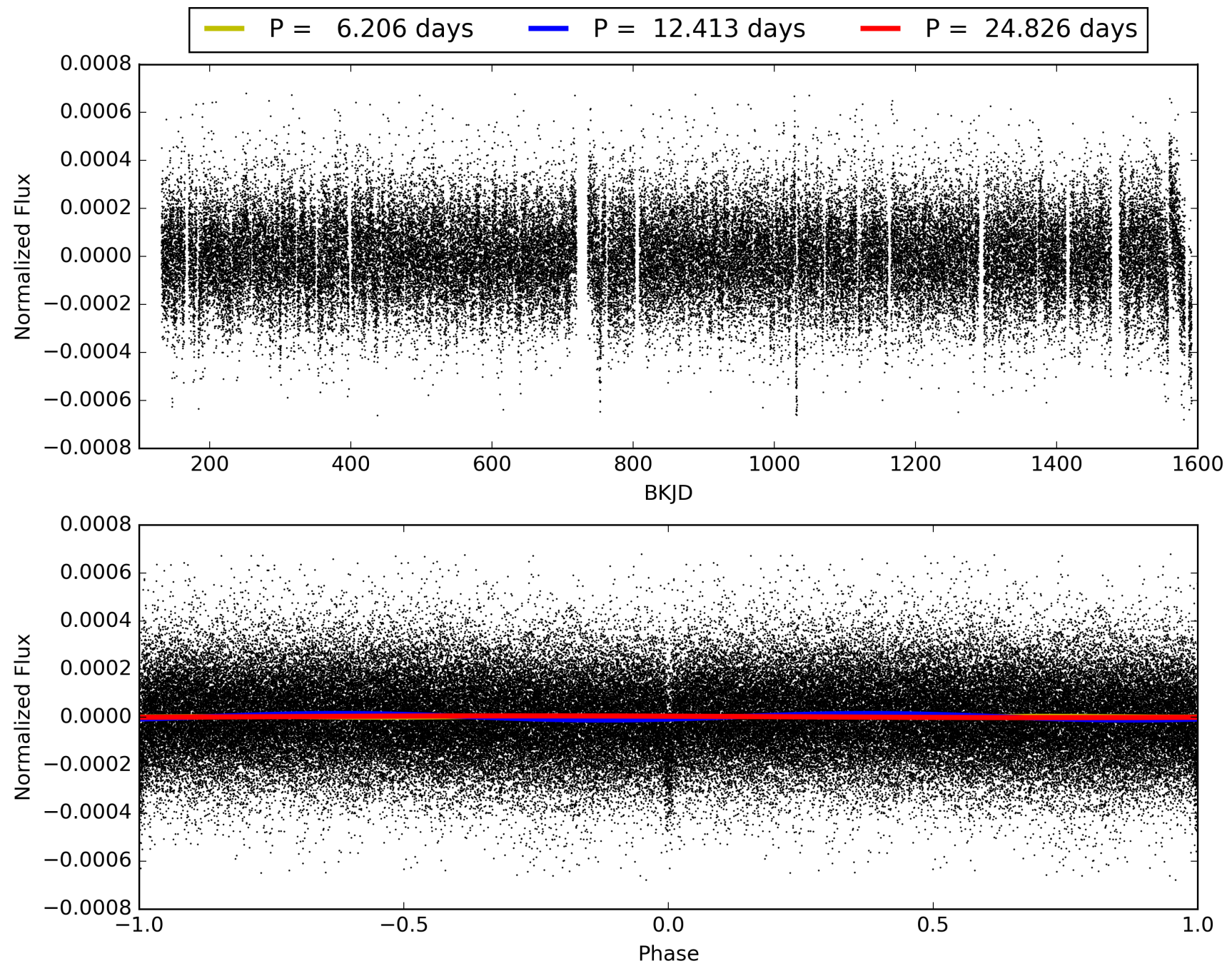
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 95.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.05e-58  
RollingBand-fgt: 1.00 [105/105]  
GhostDiagnostic-chr: 4.948  
Centroid-sig: 12.5%  
Centroid-so: 0.608 arcsec [0.85σ]  
OotOffset-rm: 0.239 arcsec [0.54σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-rm: 0.521 arcsec [1.08σ]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.81 [13/16]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 008559152-01, PDC Light Curves

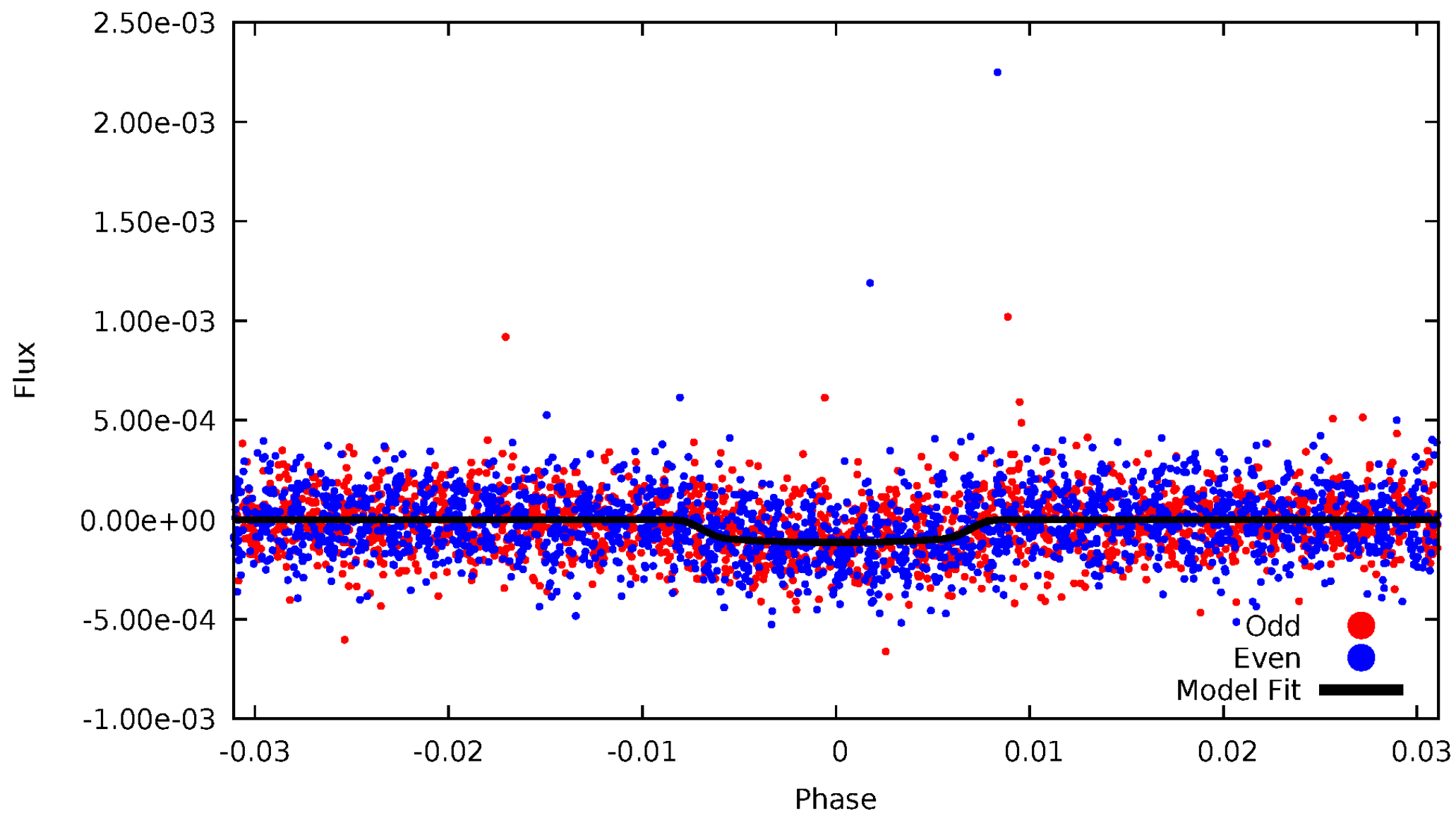


TCE 008559152-01



# DV Odd/Even

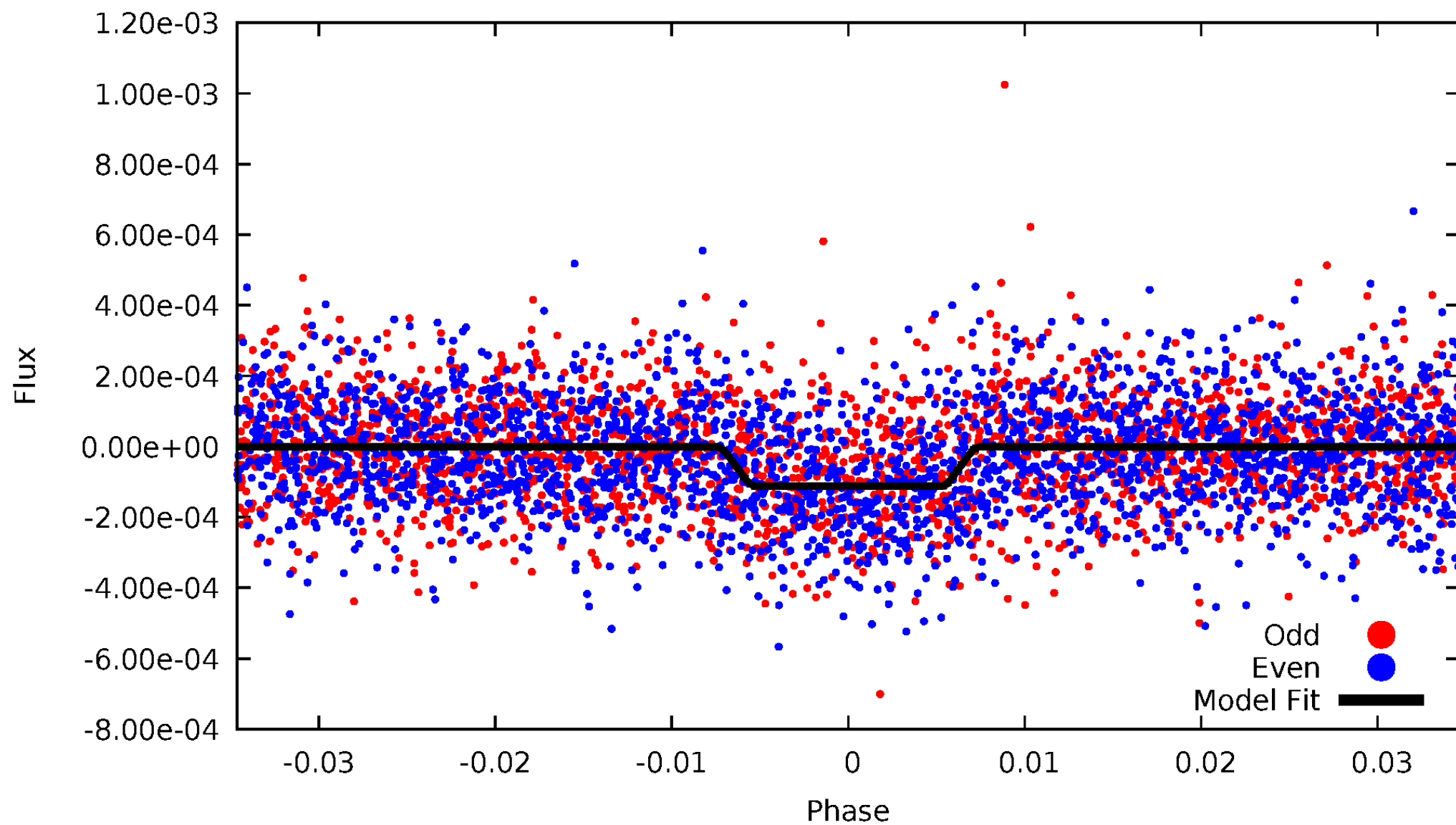
TCE 008559152-01





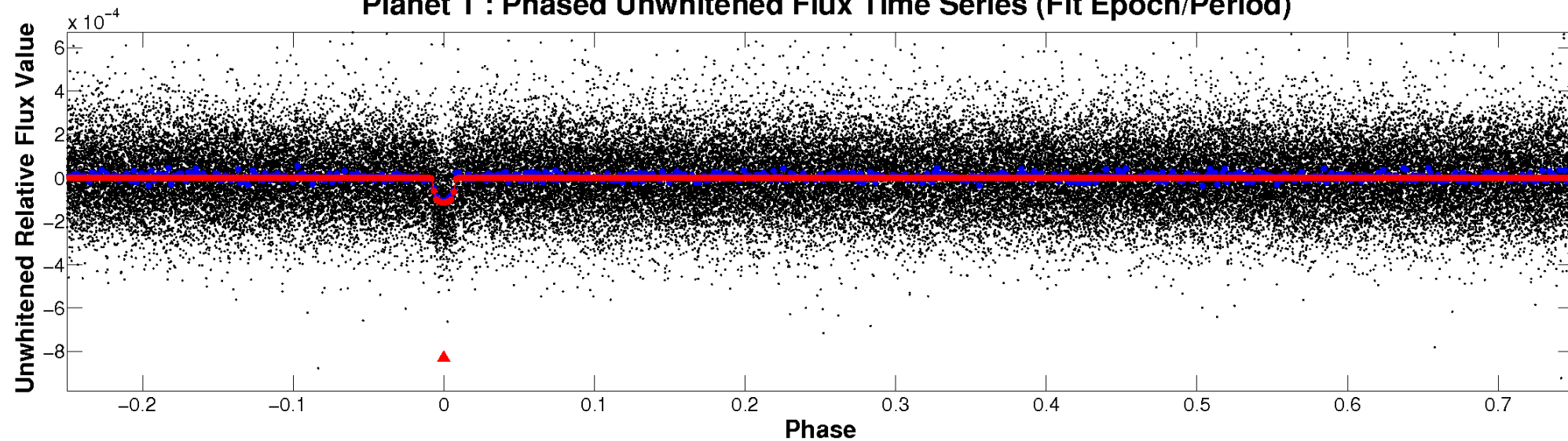
# ALT Odd/Even

TCE 008559152-01

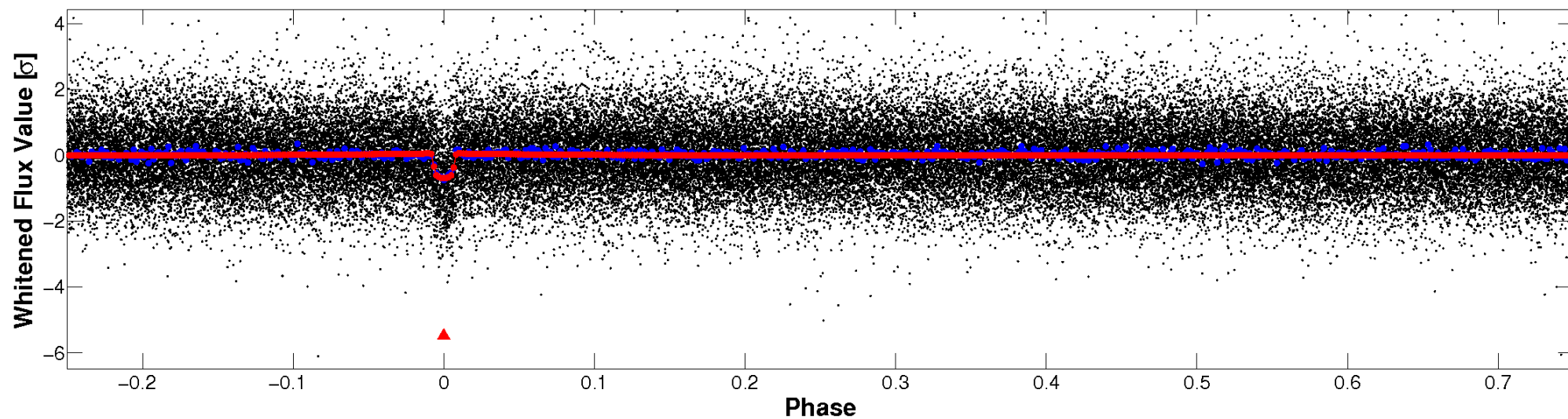


# Non-Whitened Vs. Whitened Light Curve

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

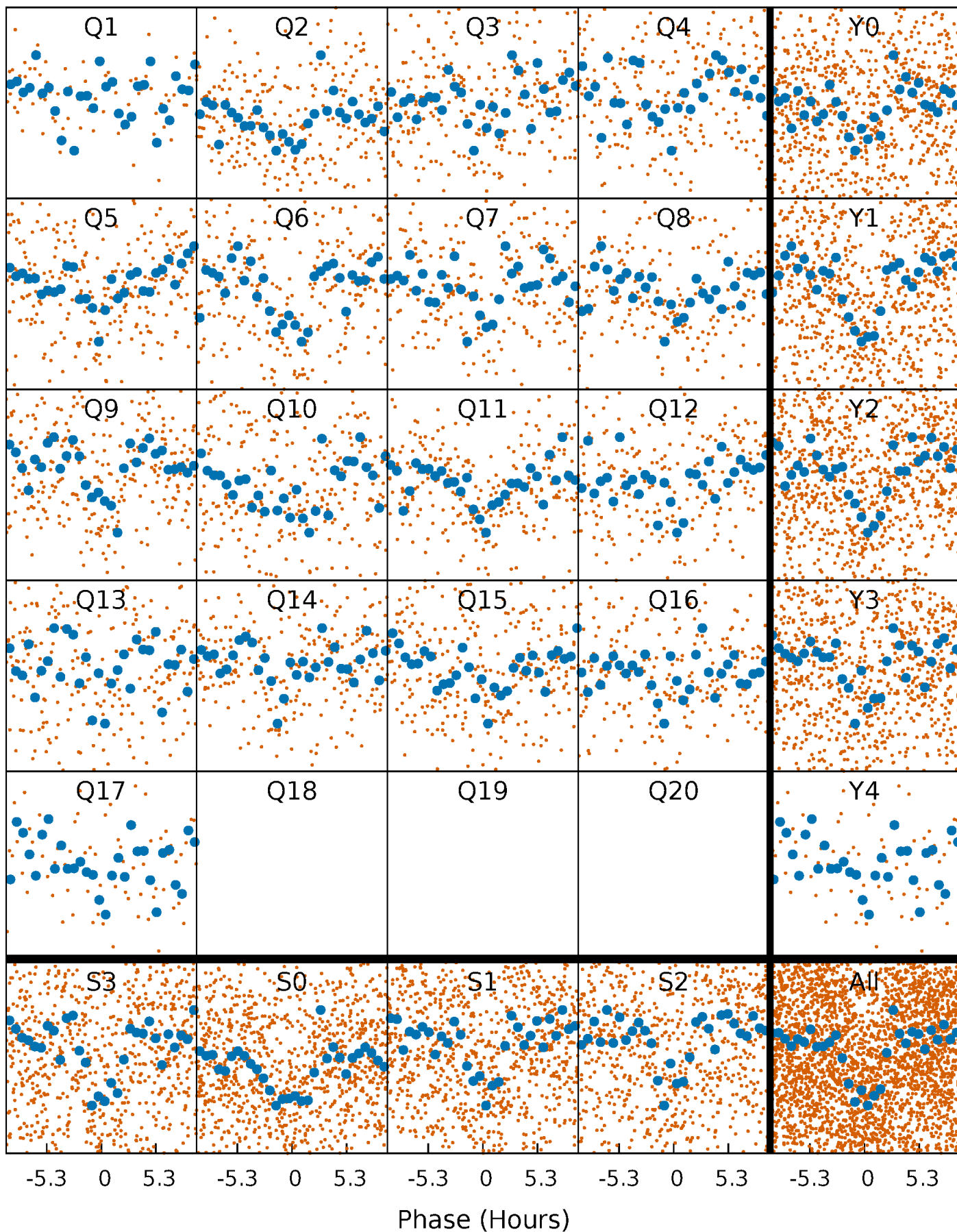


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

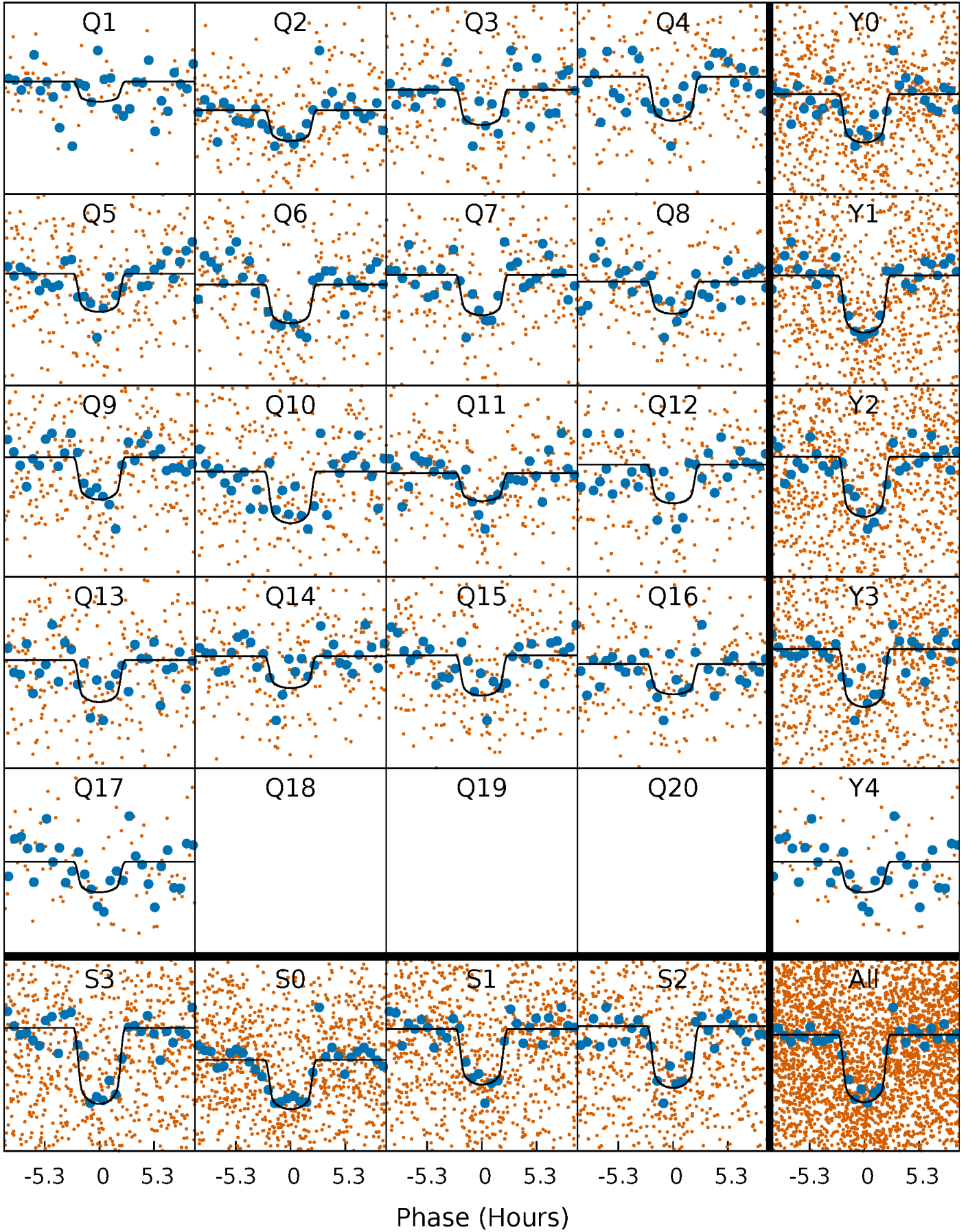
TCE 008559152-01 P= 12.412780 Days  $T_0=140.362851$  (BKJD)





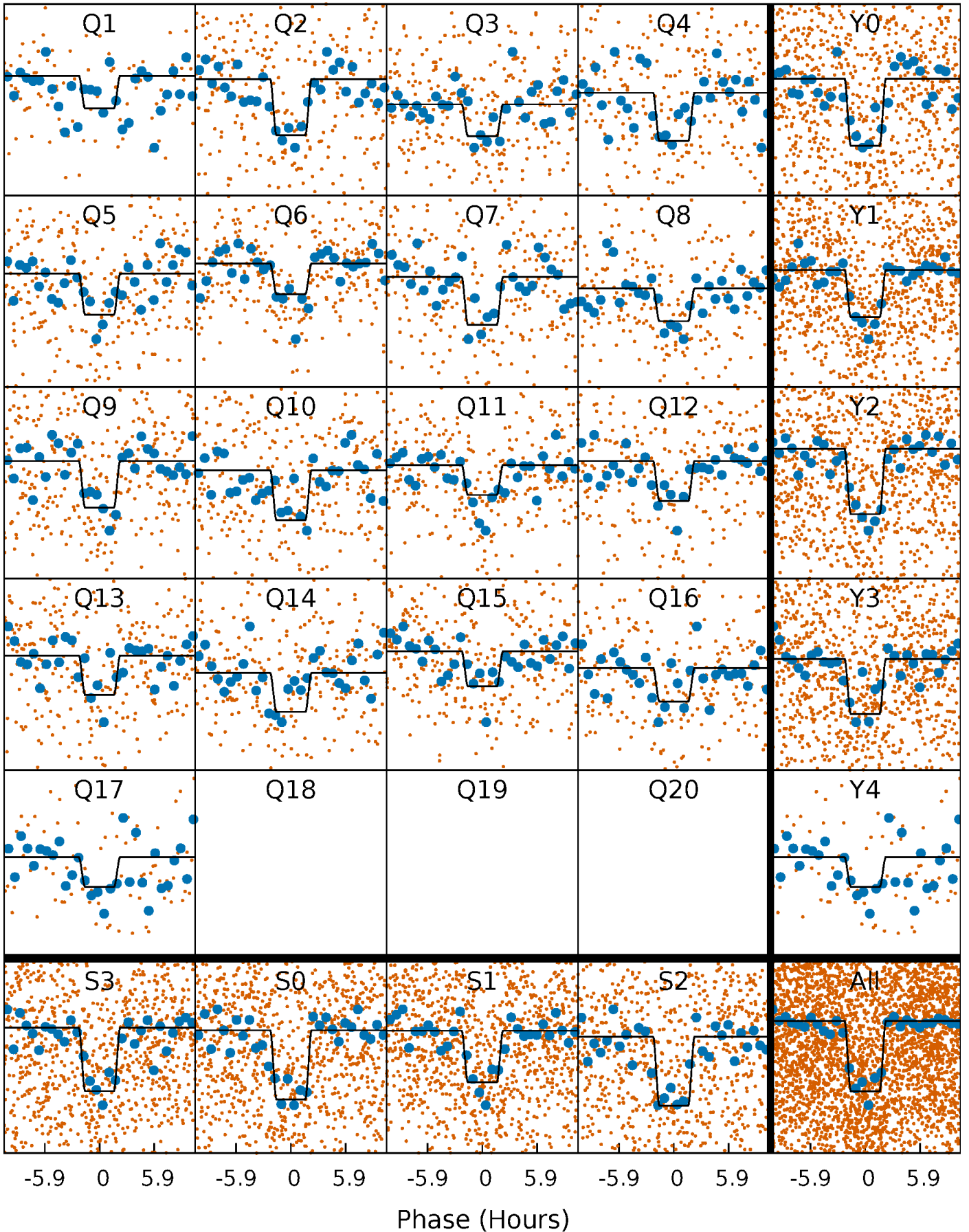
# DV Quarter-Phased Transit Curves

TCE 008559152-01   P= 12.412780 Days    $T_0=140.362851$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

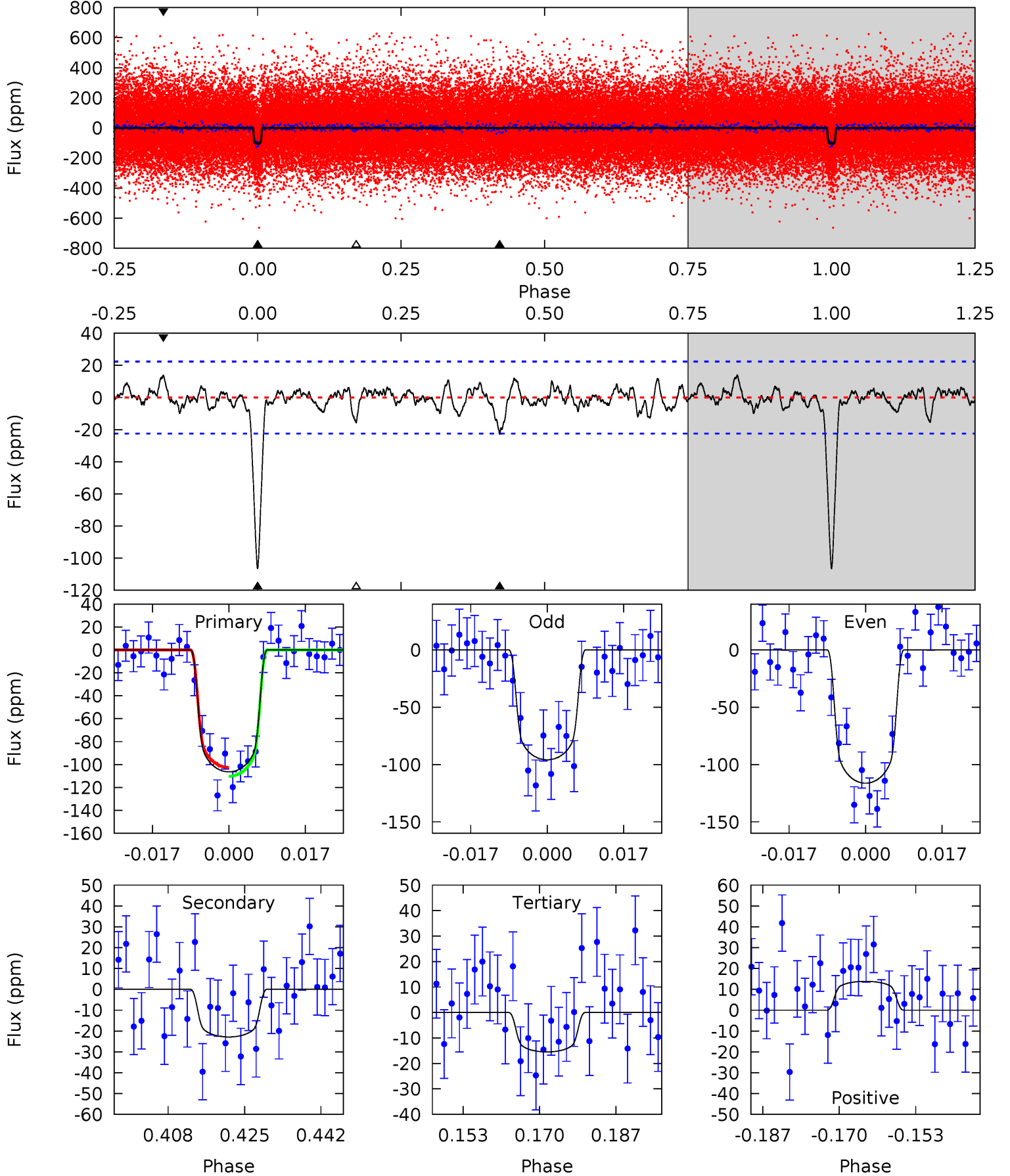
TCE 008559152-01 P= 12.412996 Days  $T_0=140.349201$  (BKJD)



# DV Model-Shift Uniqueness Test

008559152-01,  $P = 12.412780$  Days,  $E = 127.950071$  Days

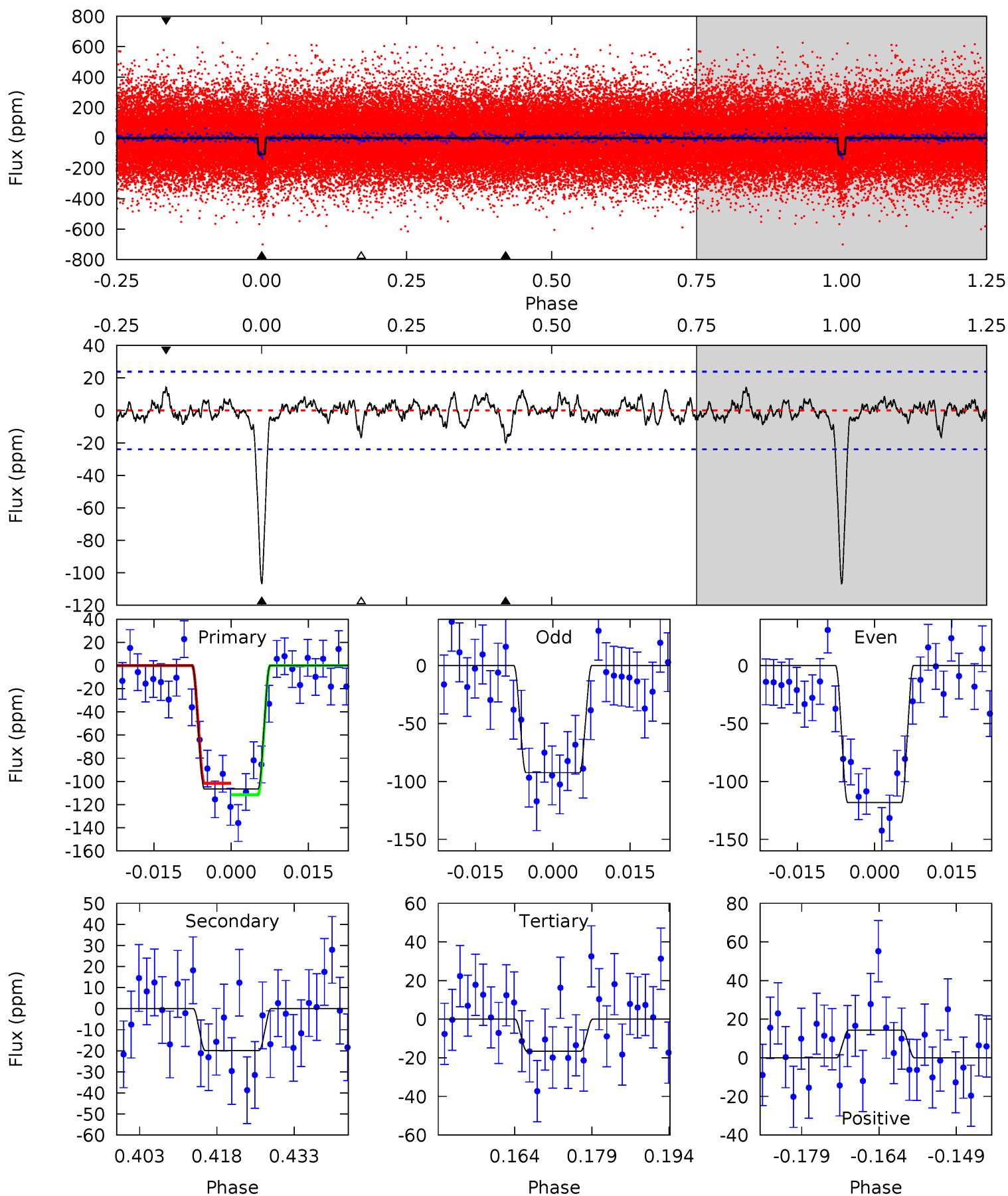
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.3	5.02	3.40	3.03	4.92	2.39	1.08	19.9	20.3	1.62	1.98	2.24	1.03	0.12	0.85



# Alt Model-Shift Uniqueness Test

008559152-01, P = 12.412996 Days, E = 127.936205 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
22.1	4.12	3.42	2.96	4.95	2.43	0.99	18.6	19.1	0.70	1.16	2.67	1.08	0.12	1.03



### Stellar Parameters For KIC 008559152

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5945^{+118}_{-118}$	$4.196^{+0.168}_{-0.112}$	$-0.020^{+0.150}_{-0.150}$	$1.346^{+0.214}_{-0.238}$	$1.039^{+0.098}_{-0.079}$	$0.600^{+0.482}_{-0.194}$
	+2%/-2%	+4%/-3%	+750%/-750%	+16%/-18%	+9%/-8%	+80%/-32%
Source	SPE59	SPE59	SPE59	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 008559152-01 / KOI 2488.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-23 \pm 5$	$1.76^{+0.30}_{-0.27}$	$1295^{+72}_{-69}$	$4024^{+249}_{-219}$	$46^{+21}_{-15}$
Alt.	$-20 \pm 5$	$1.55^{+0.26}_{-0.26}$	$1297^{+64}_{-69}$	$4125^{+291}_{-286}$	$51^{+27}_{-17}$

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



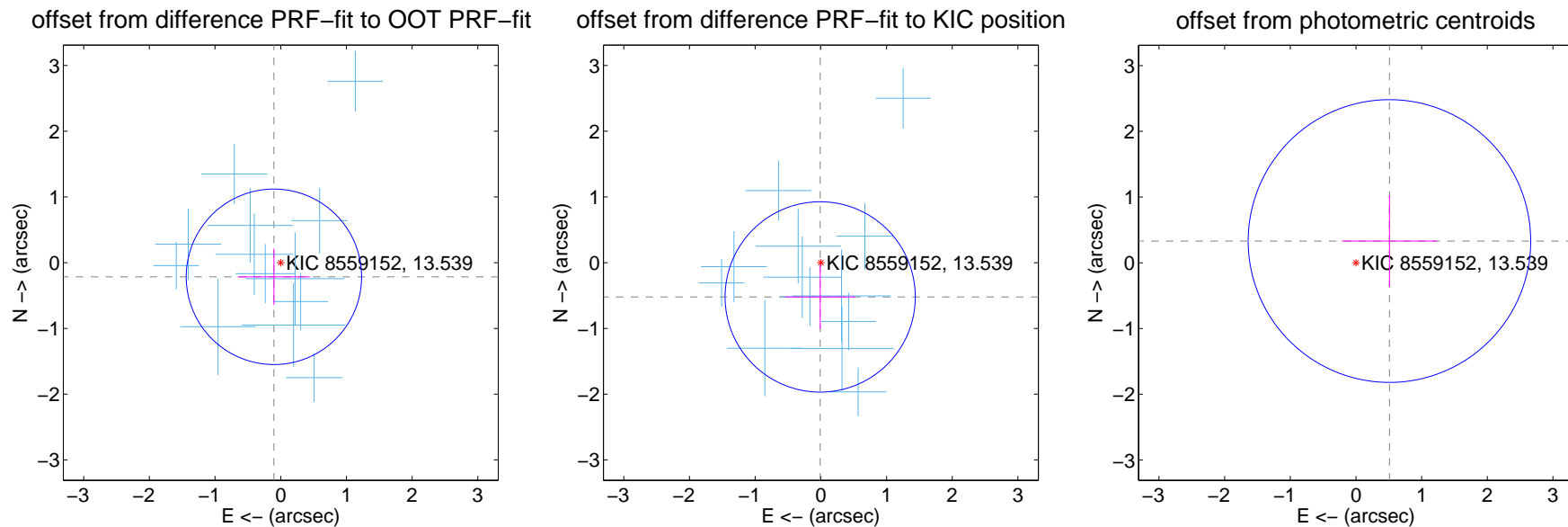
## DV Centroid Data

Supplemental centroid analysis for 008559152-01. Kepler magnitude: 13.54. Transit SNR 18.25

There are 13 quarters with good PRF difference image offsets

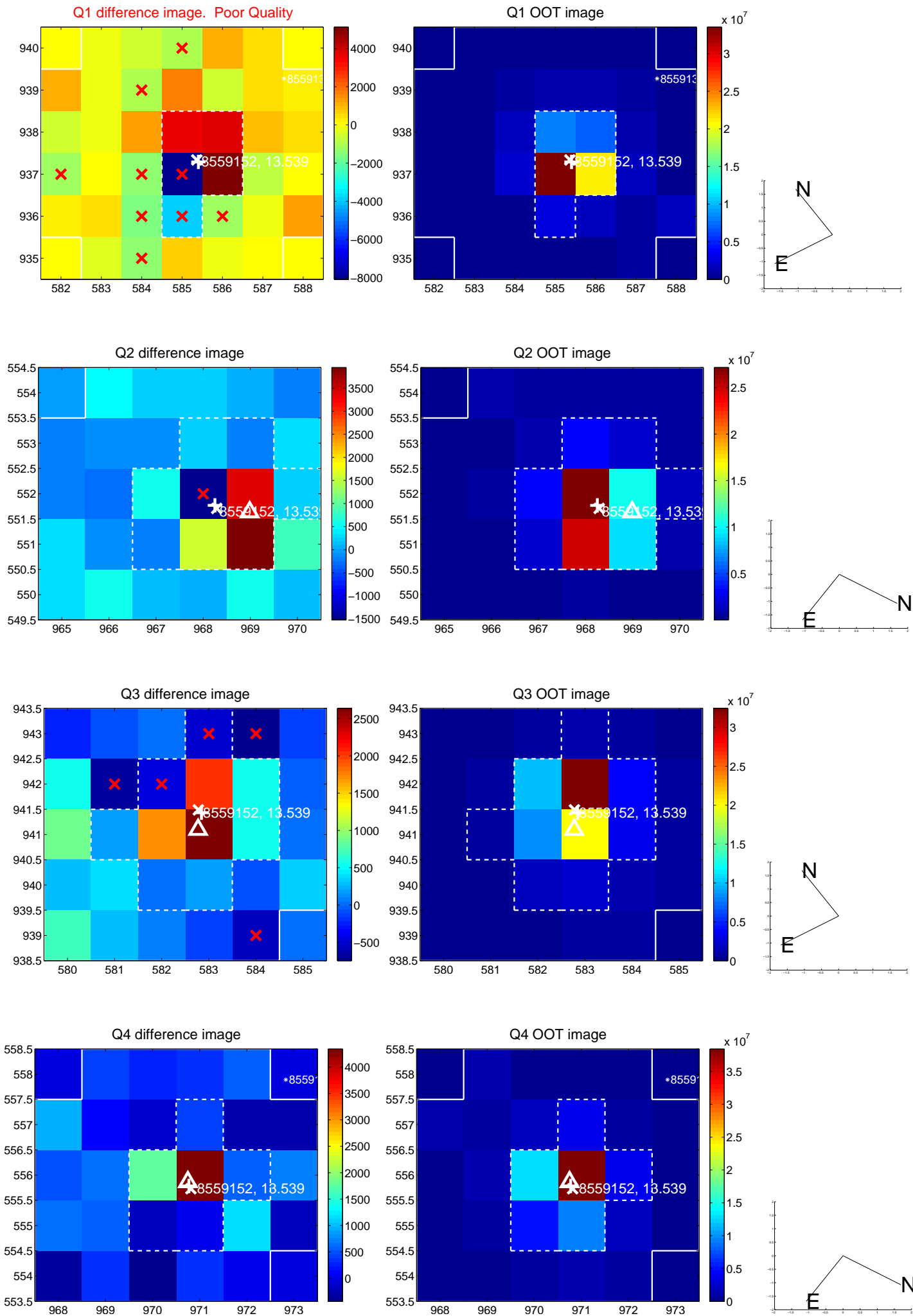
The direct PRF centroid is offset from the target star catalog position by about 0.31 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.239 \pm 0.445$	0.54	$0.104 \pm 0.549$	$-0.215 \pm 0.429$
PRF-fit source offset from KIC position	$0.521 \pm 0.483$	1.08	$0.010 \pm 0.534$	$-0.521 \pm 0.482$
photometric centroid source offset	$0.61 \pm 0.72$	0.85	$-0.51 \pm 0.72$	$0.33 \pm 0.70$

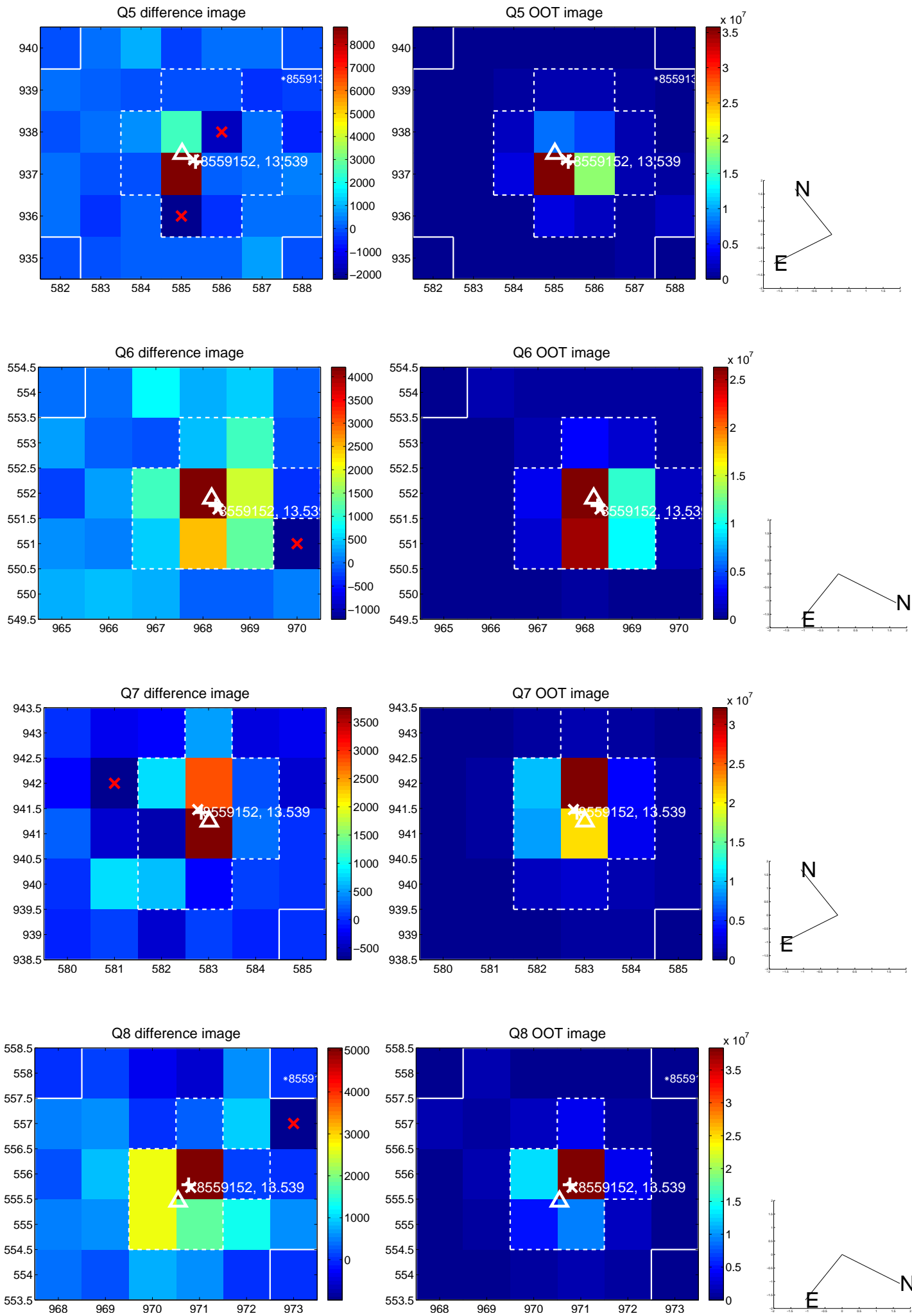


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

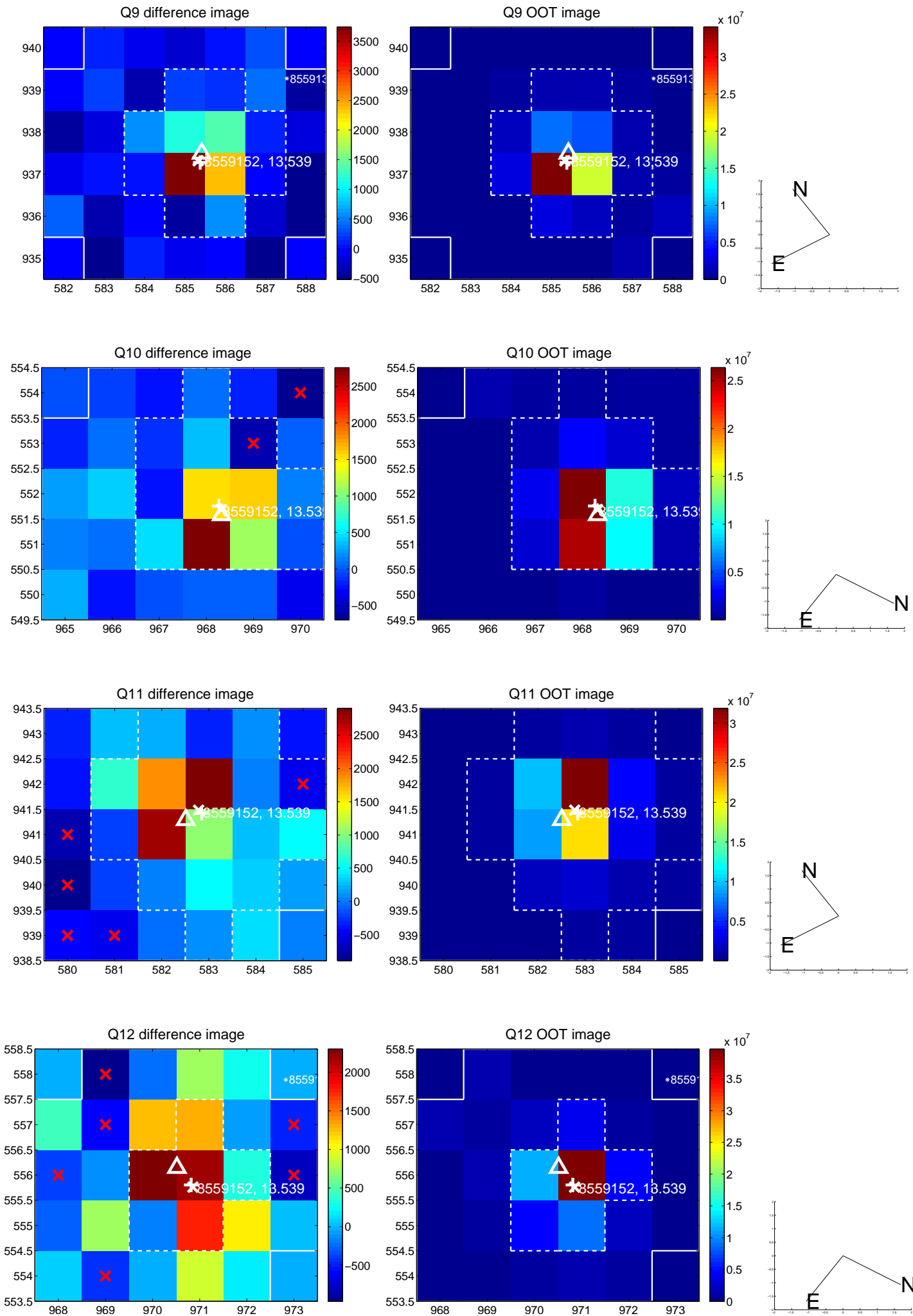
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



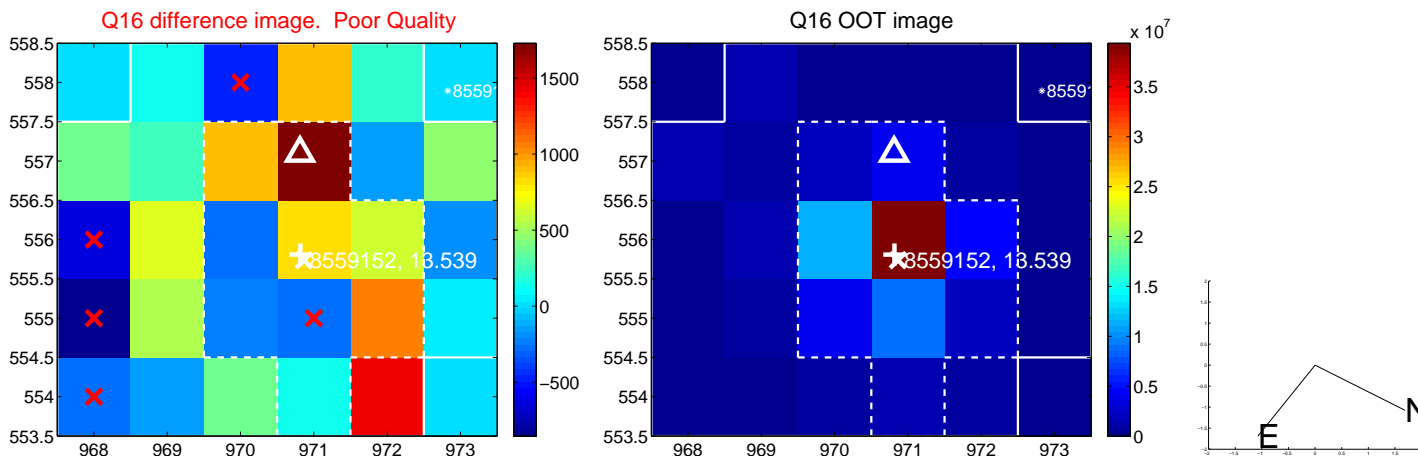
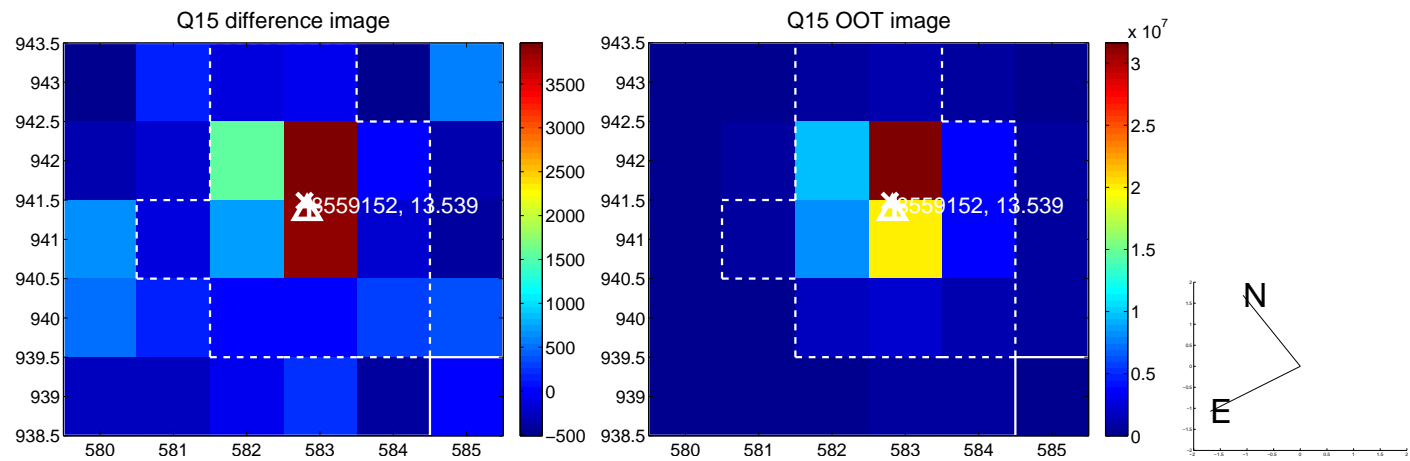
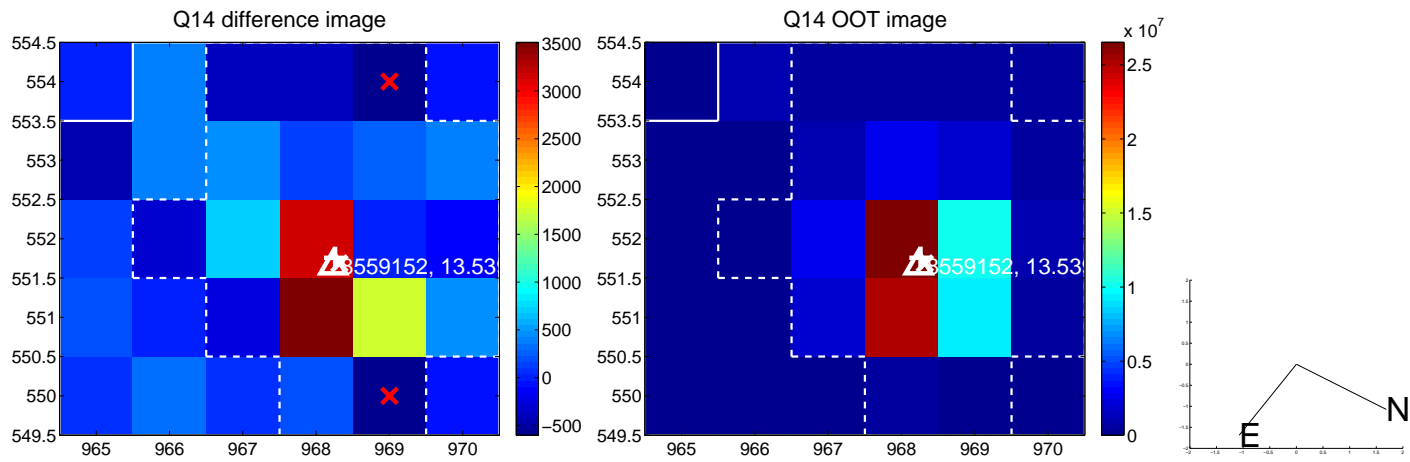
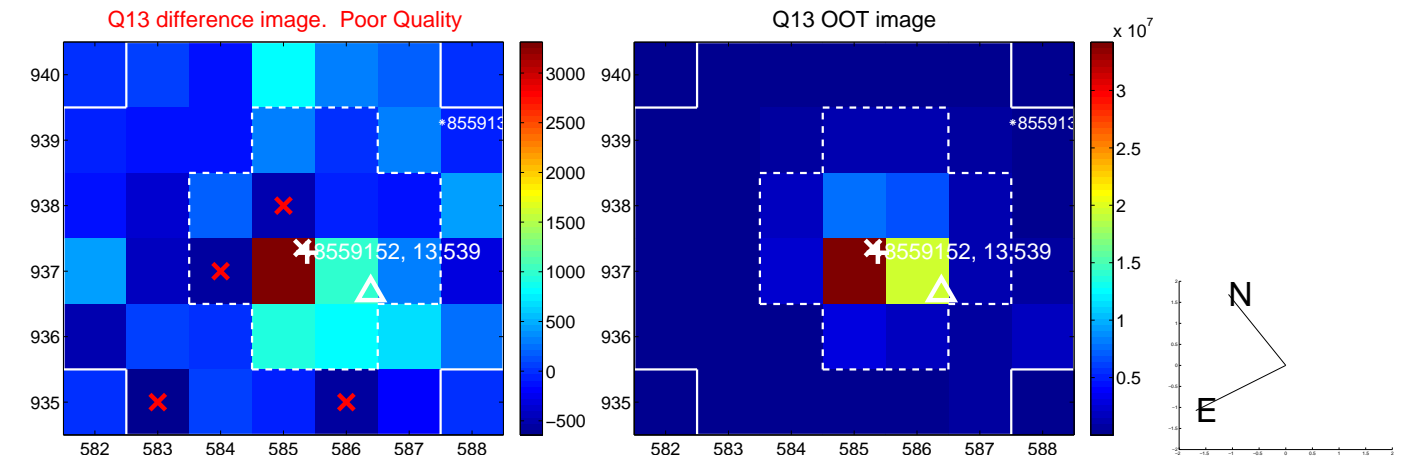
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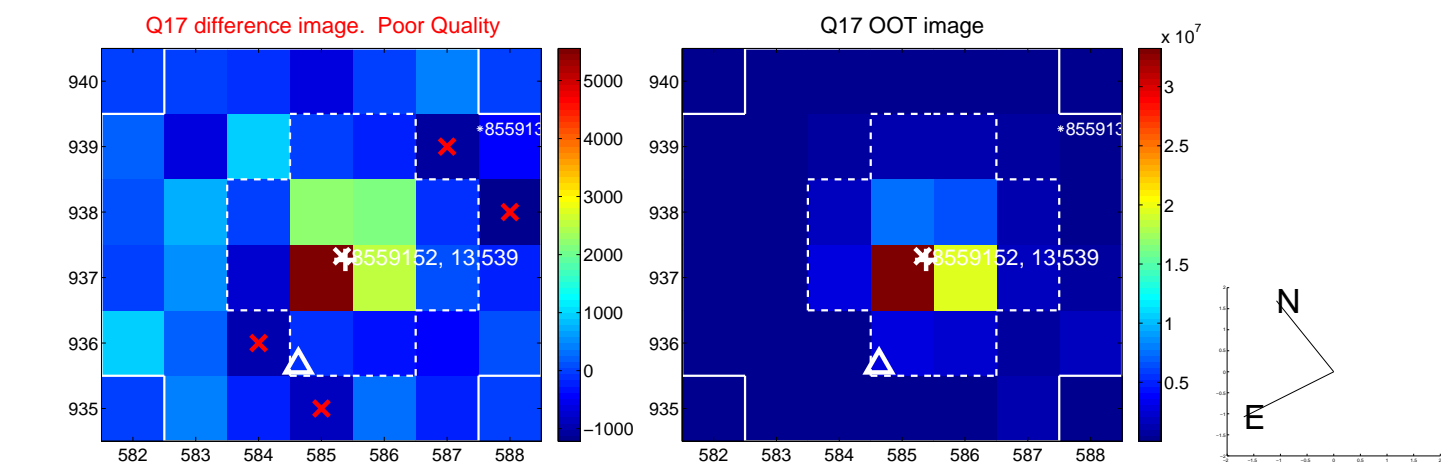


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

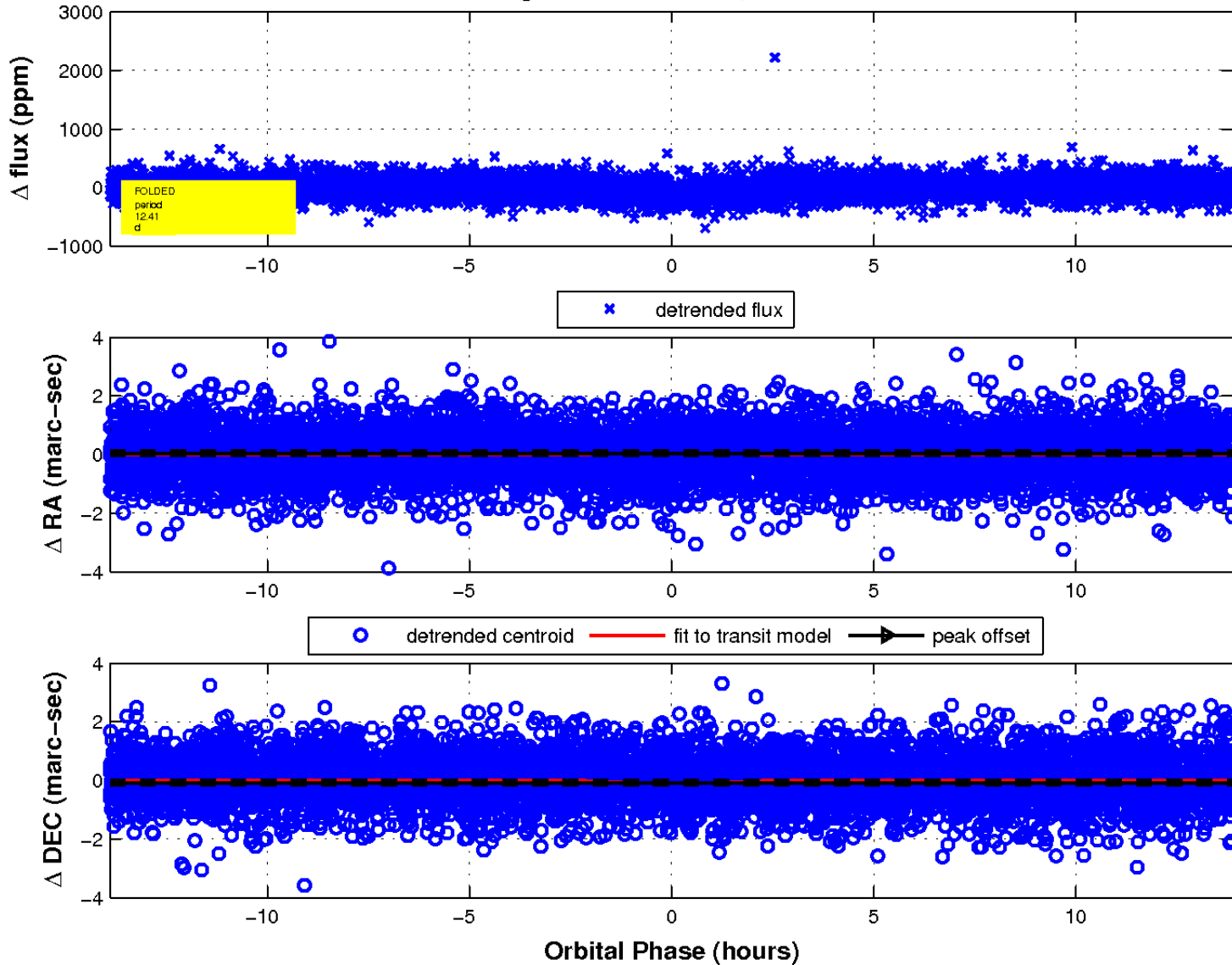




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 1



UKIRT Image

Declination

