

# KIC 003759394

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003759394-01	OBS	No	0.994707	131.894730	93.6	1.309	7.8	7.4	0.53	4757	0.57	514.33
003759394-02	OBS	No	0.994722	131.668094	152.3	2.991	10.6	8.8	0.53	4757	0.79	514.32

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003759394-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003759394-02	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—HALO_GHOST

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

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

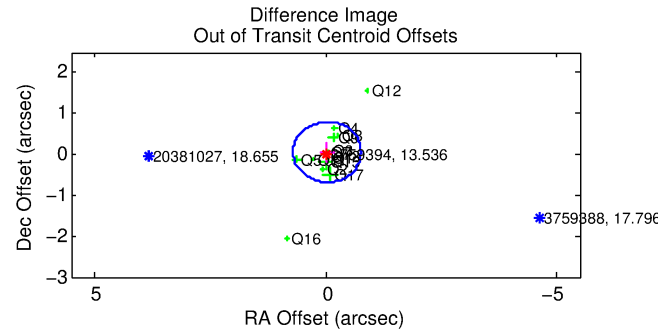
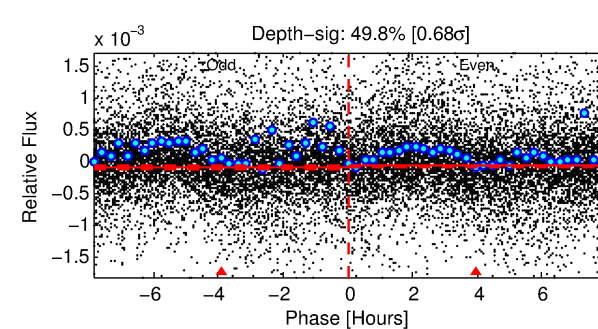
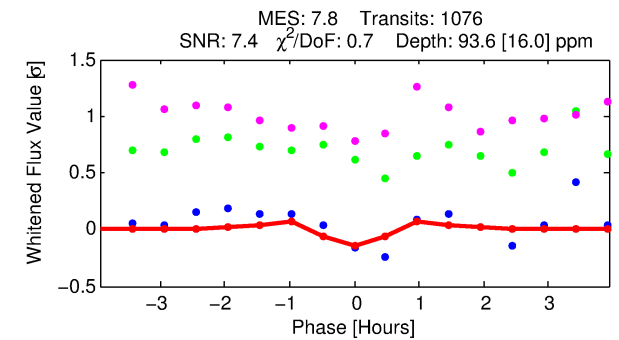
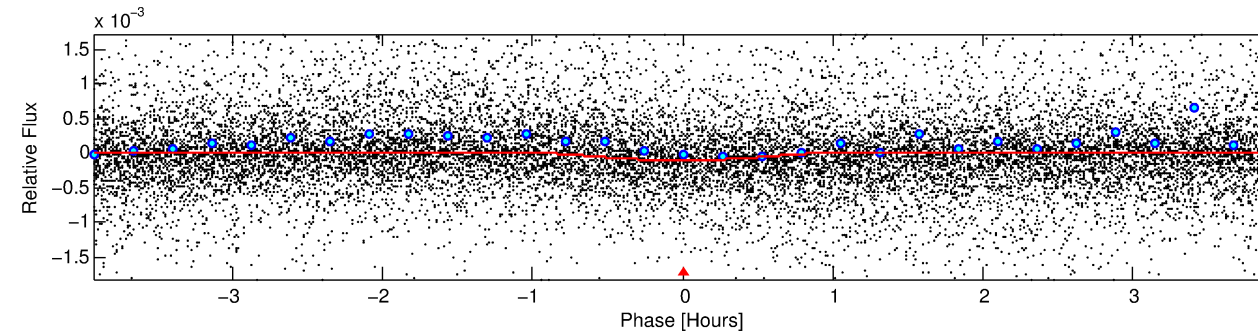
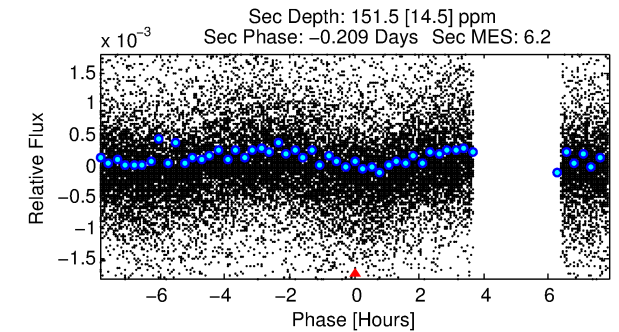
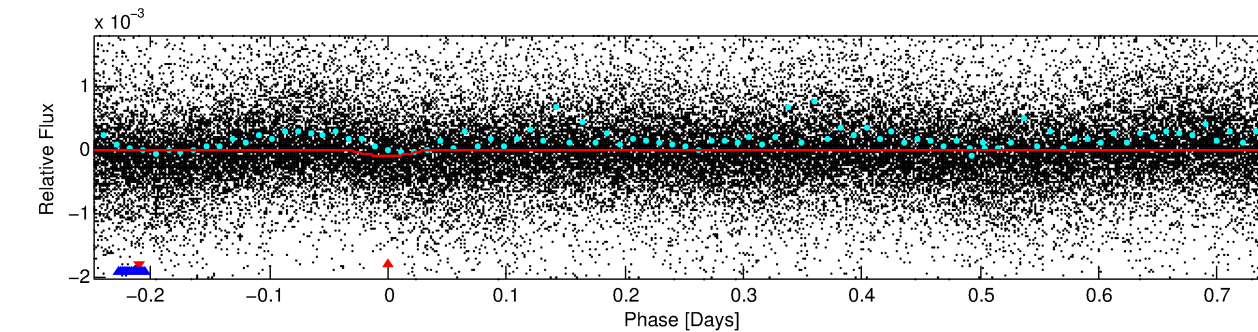
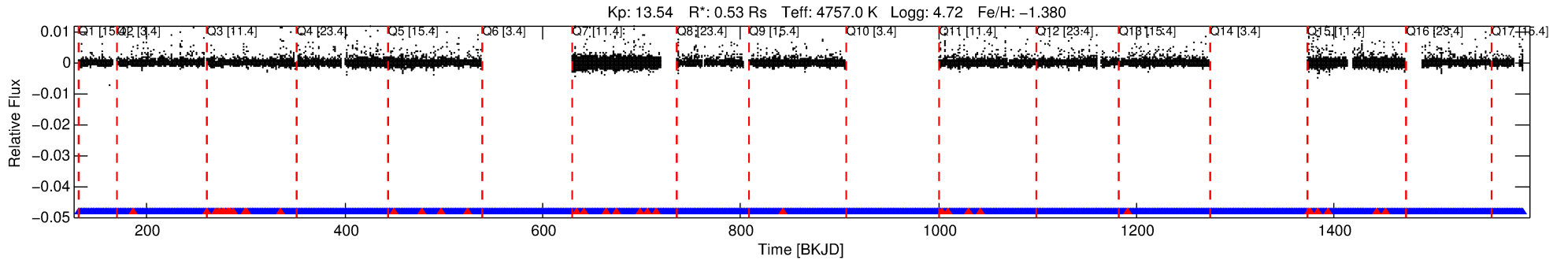
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003759394-01

No Significant Match Found

# DV One-Page Summary

KIC: 3759394 Candidate: 1 of 2 Period: 0.995 d



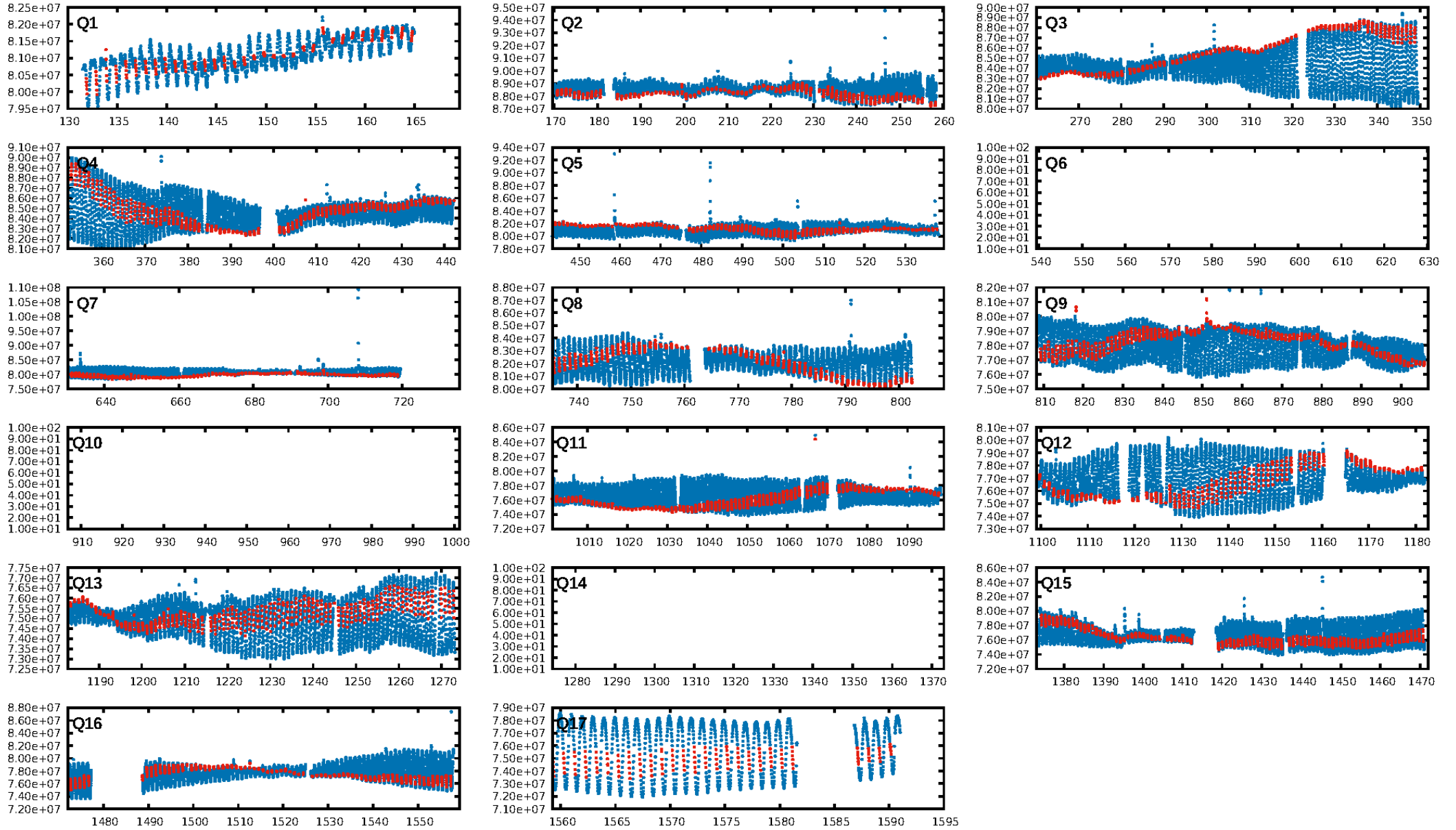
## DV Fit Results:

Period = 0.99471 [0.00001] d  
Epoch = 131.8947 [0.0018] BKJD  
Rp/R\* = 0.0098 [0.0043]  
a/R\* = 3.85 [6.58]  
b = 0.78 [0.96]  
Seff = 514.33 [80.24]  
Teq = 1214 [47] K  
Rp = 0.57 [0.25] Re  
a = 0.0159 [0.0009] AU  
Ag = 65.22 [58.51] [1.10σ]  
Teffp = 5335 [1204] K [3.42σ]

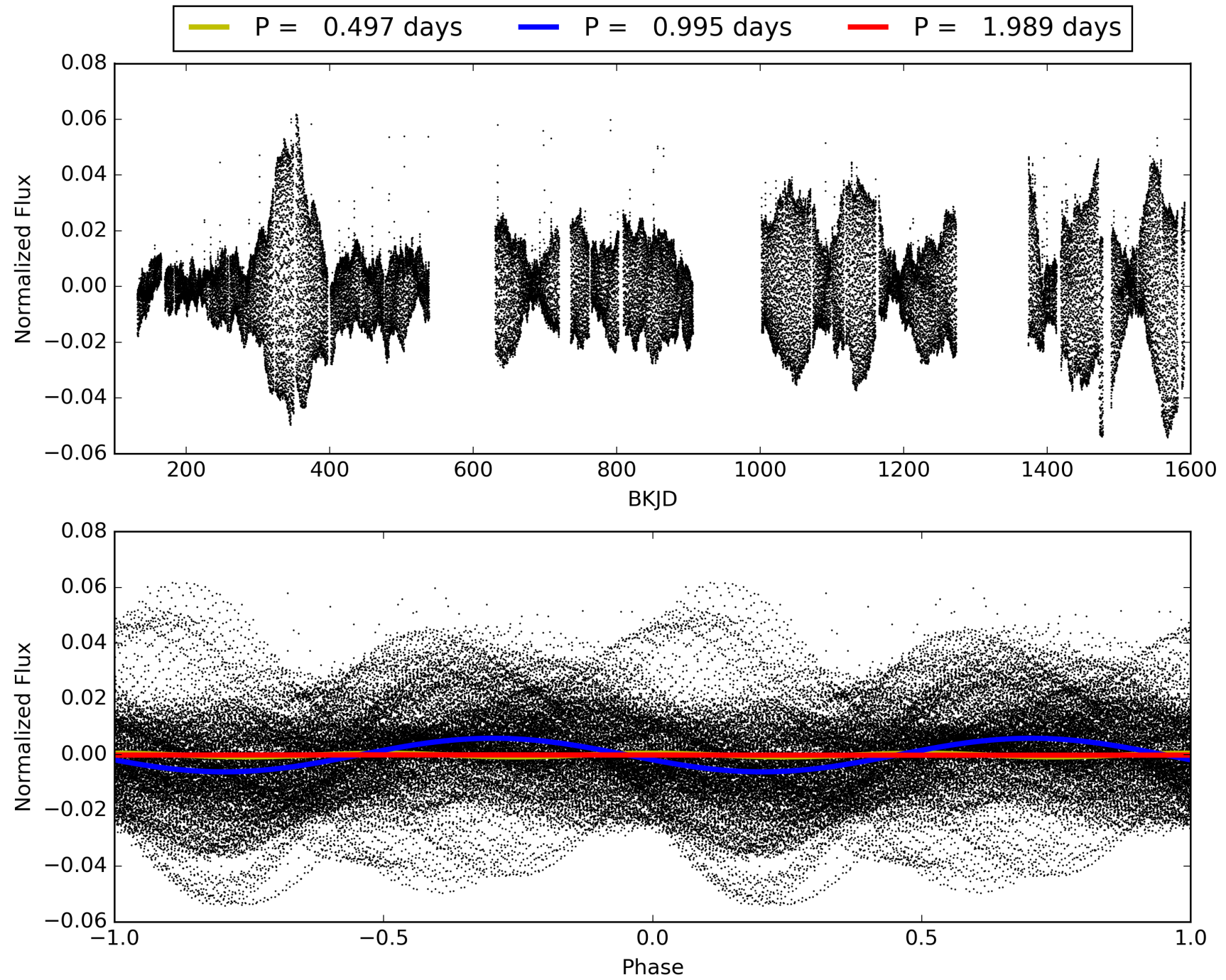
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.96 [977/1015]  
GhostDiagnostic-chr: 33.28  
Centroid-sig: 2.6%  
Centroid-so: 1.157 arcsec [1.65σ]  
OotOffset-rm: 0.066 arcsec [0.27σ]  
KicOffset-rm: 0.087 arcsec [0.38σ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.50 [7/14]  
DiffImageOverlap-fno: 0.00 [0/14]

# TCE 003759394-01, PDC Light Curves

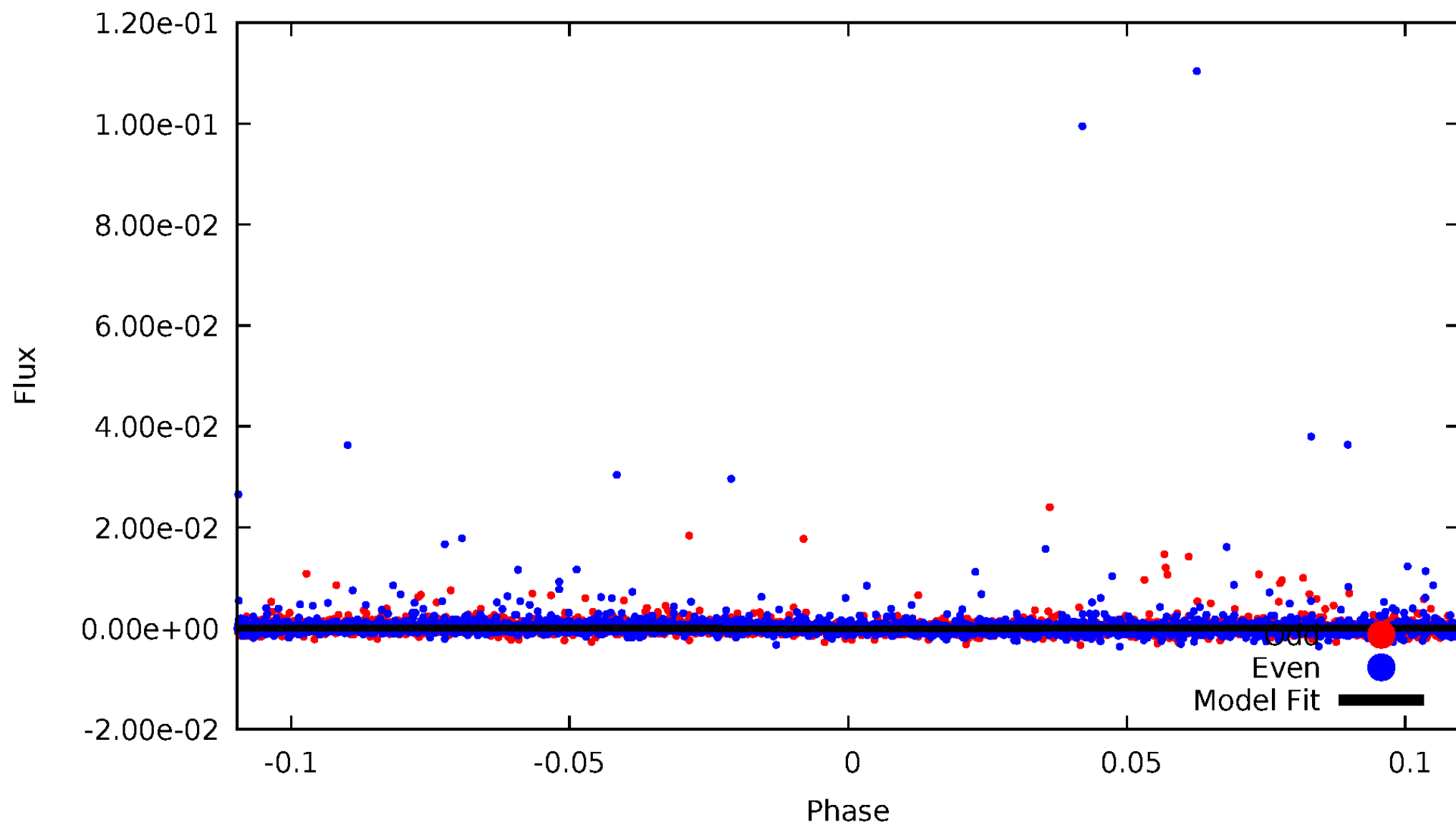


TCE 003759394-01



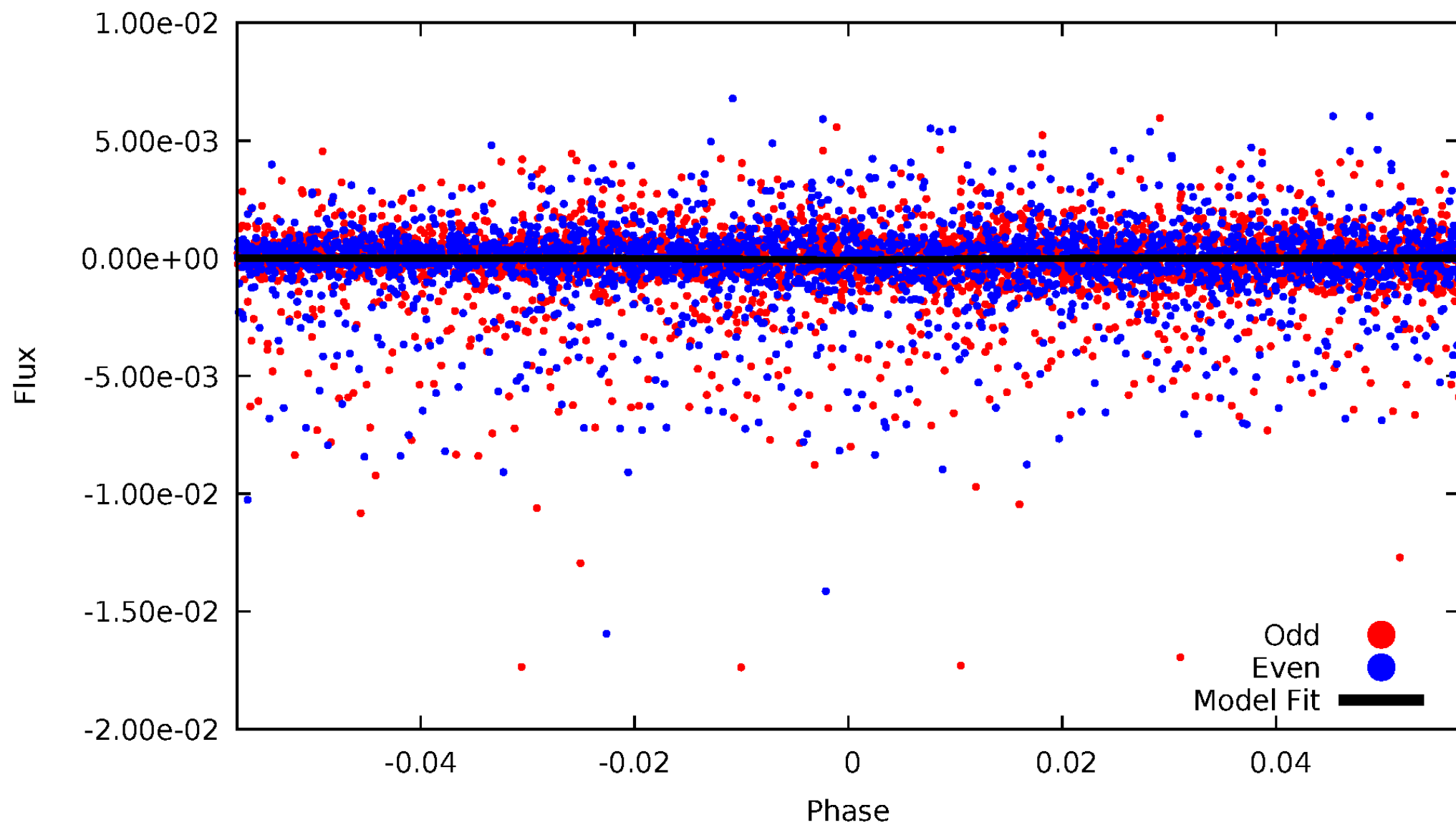
# DV Odd/Even

TCE 003759394-01



# ALT Odd/Even

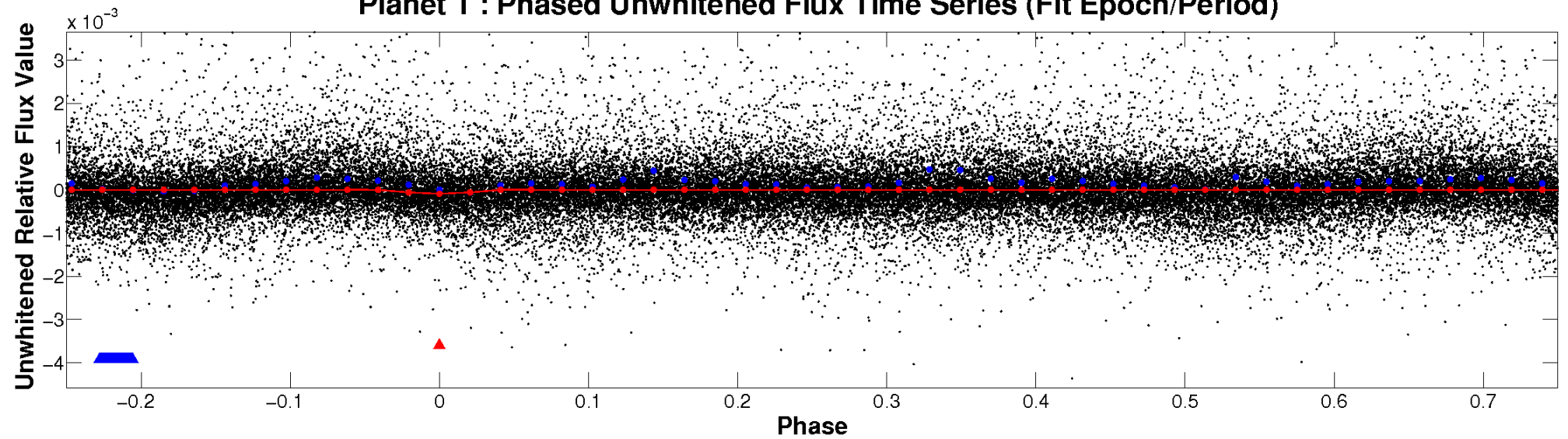
TCE 003759394-01



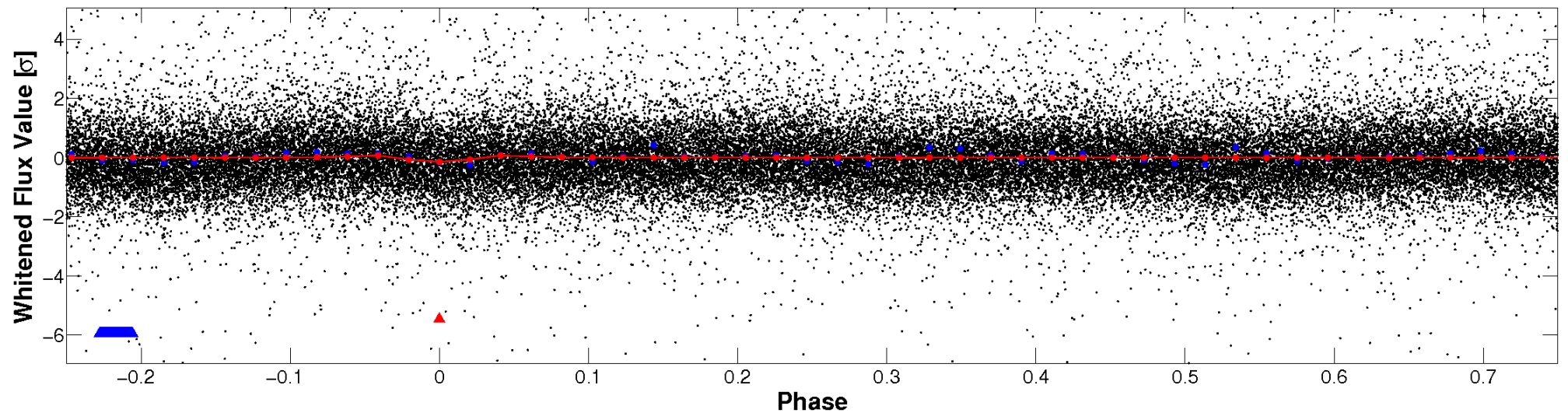


# Non-Whitened Vs. Whitened Light Curve

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

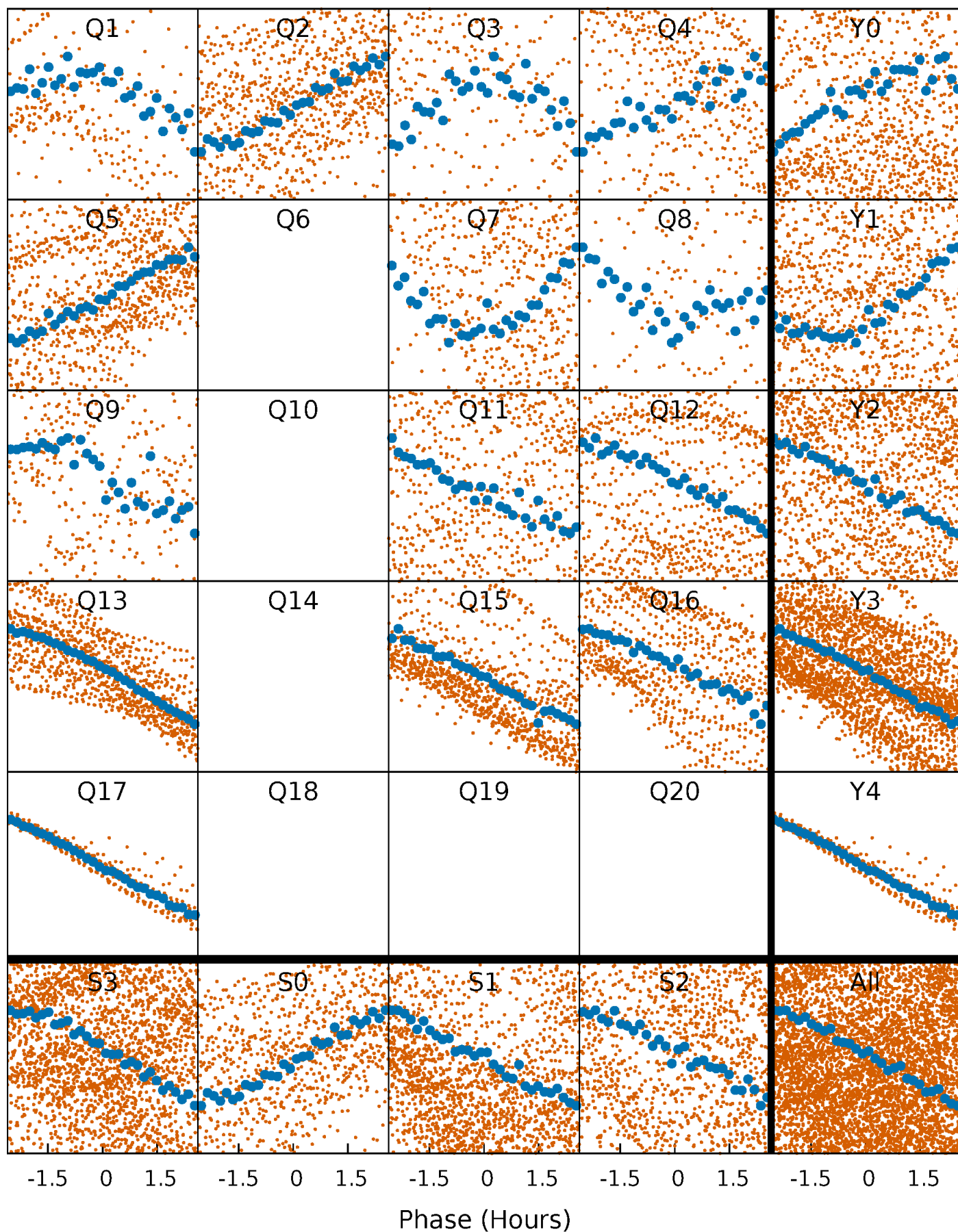


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

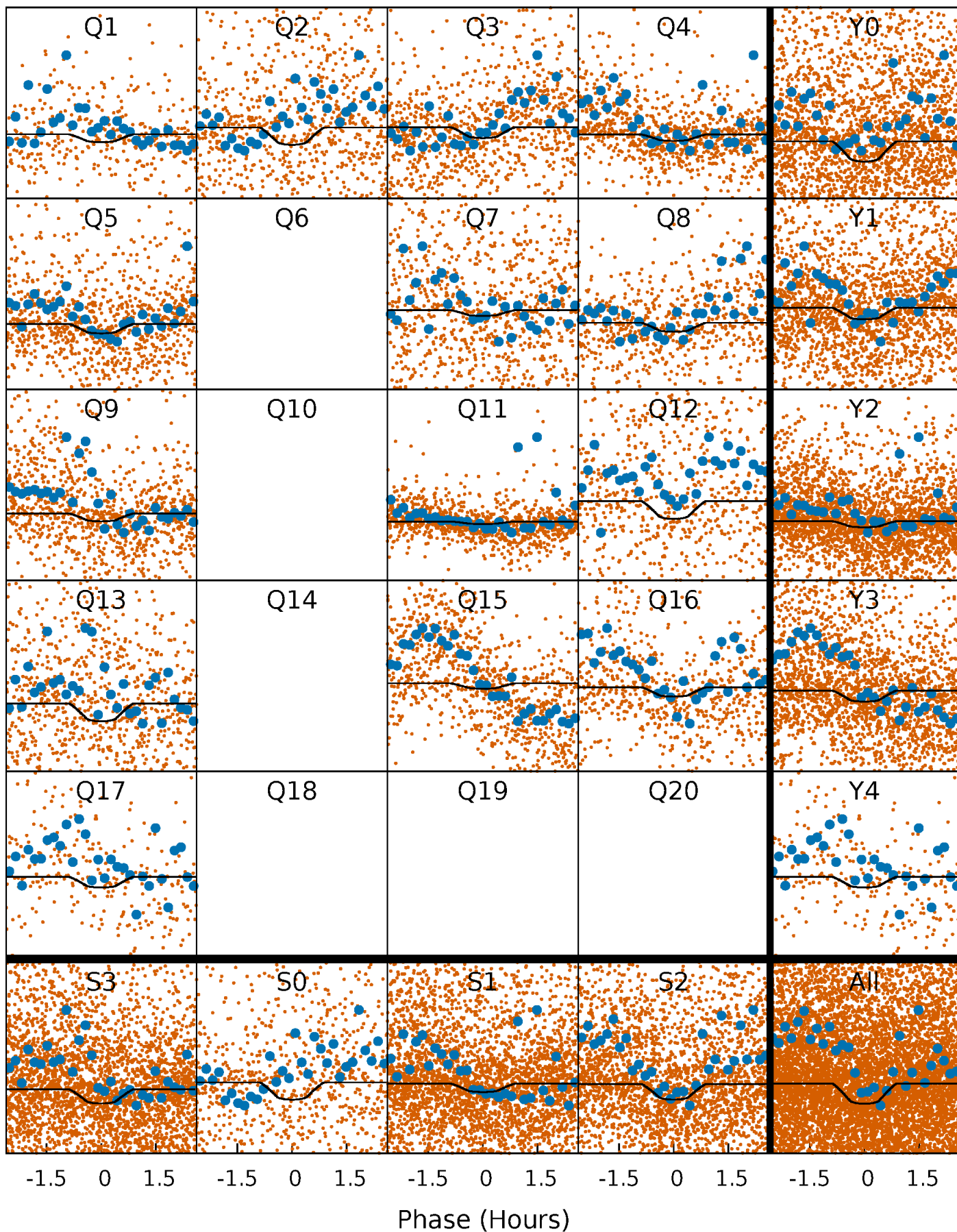
TCE 003759394-01   P= 0.994707 Days    $T_0=131.894730$  (BKJD)





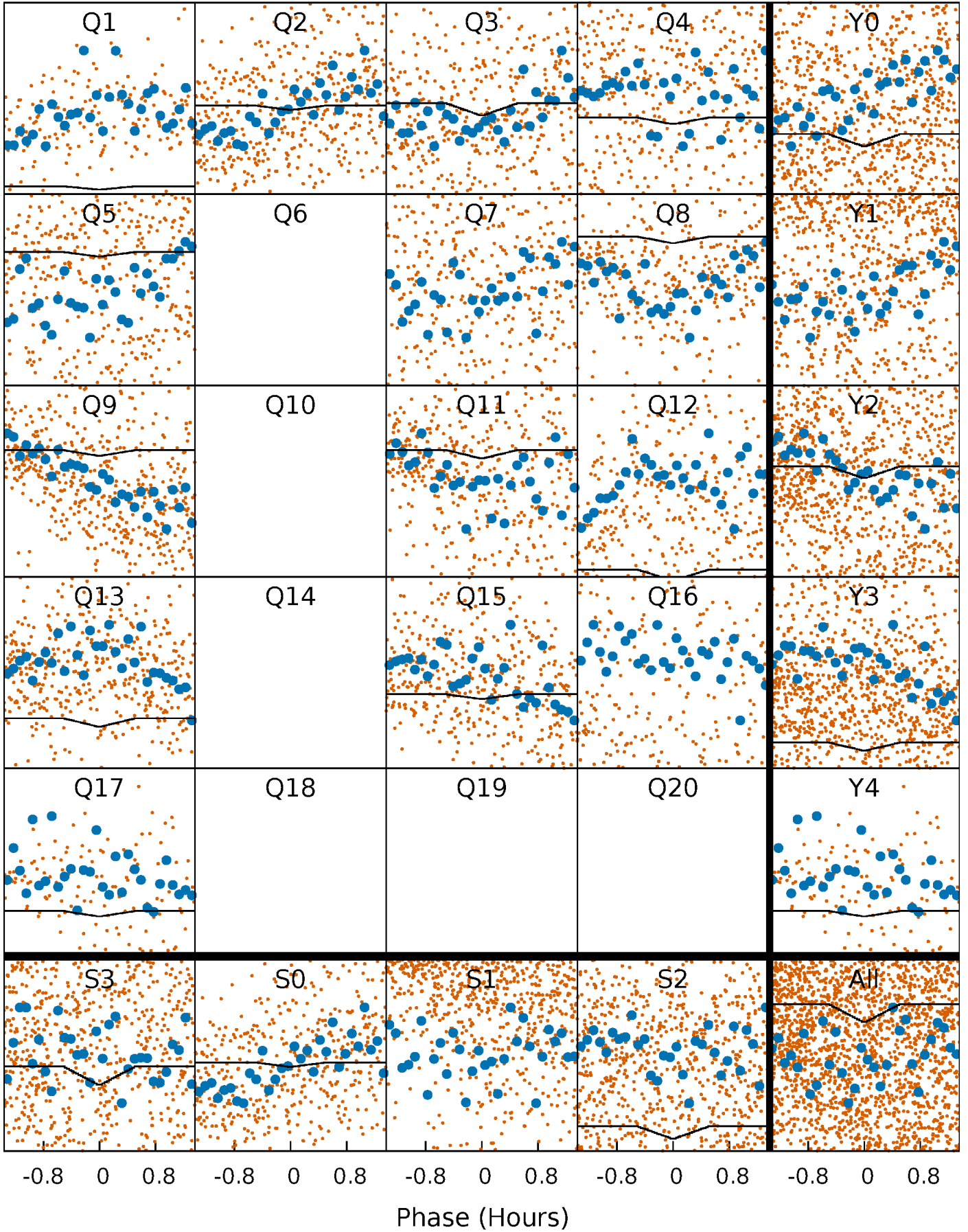
# DV Quarter-Phased Transit Curves

TCE 003759394-01 P= 0.994707 Days  $T_0=131.894730$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

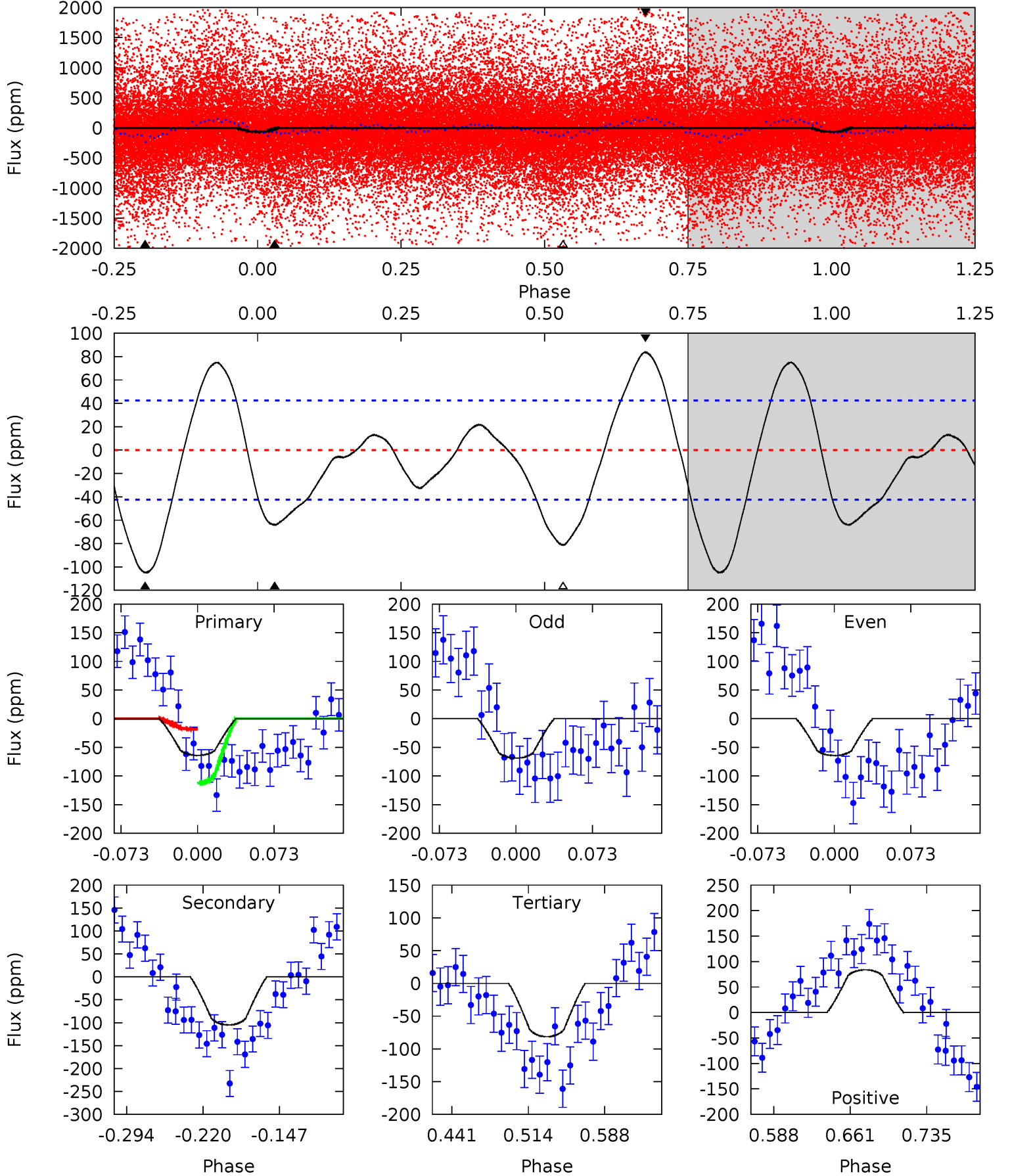
TCE 003759394-01   P= 0.994735 Days    $T_0=131.864401$  (BKJD)



# DV Model-Shift Uniqueness Test

003759394-01, P = 0.994707 Days, E = 130.900023 Days

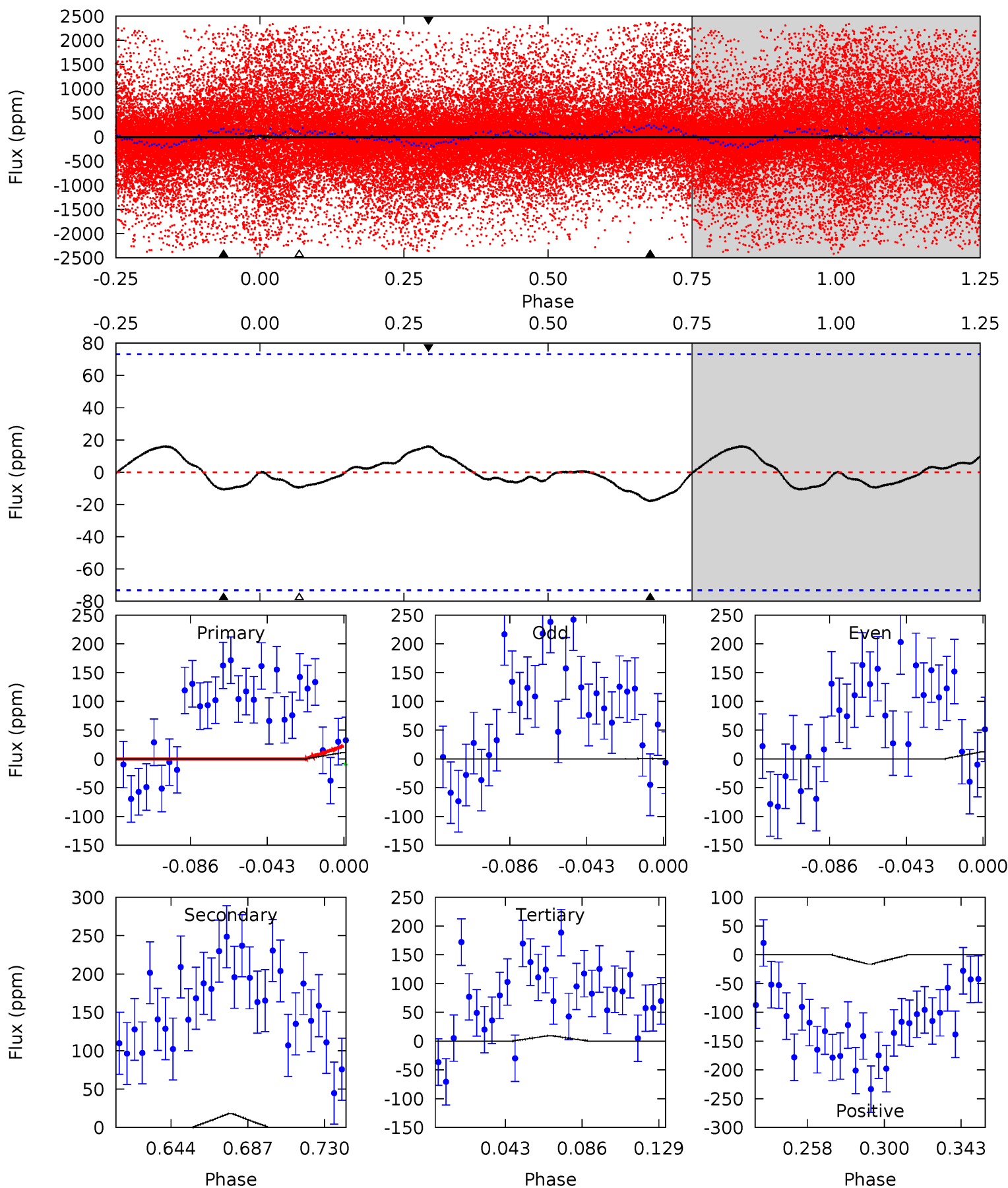
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.98	11.4	8.88	9.14	4.63	1.79	4.52	-1.89	-2.16	2.56	2.30	0.24	-0.37	0.44	5.20



# Alt Model-Shift Uniqueness Test

003759394-01, P = 0.994735 Days, E = 130.869666 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
0.70	1.16	0.61	1.04	4.74	2.02	0.48	0.09	-0.34	0.55	0.12	0.39	42.3	0.47	0.42





### Stellar Parameters For KIC 003759394

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4757^{+157}_{-157}$	$4.719^{+0.046}_{-0.025}$	$-1.380^{+0.300}_{-0.300}$	$0.532^{+0.028}_{-0.035}$	$0.540^{+0.039}_{-0.023}$	$5.053^{+0.916}_{-0.532}$
	+3%/-3%	+1%/-1%	+22%/-22%	+5%/-7%	+7%/-4%	+18%/-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 003759394-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-105 \pm 9$	$0.57^{+0.25}_{-0.25}$	$1688^{+62}_{-59}$	$4824^{+1460}_{-637}$	$45^{+92}_{-23}$
Alt.	$-18 \pm 15$	$0.50^{+0.25}_{-0.24}$	$1689^{+61}_{-64}$	$3588^{+1023}_{-1149}$	$9.024^{+28.839}_{-8.162}$

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



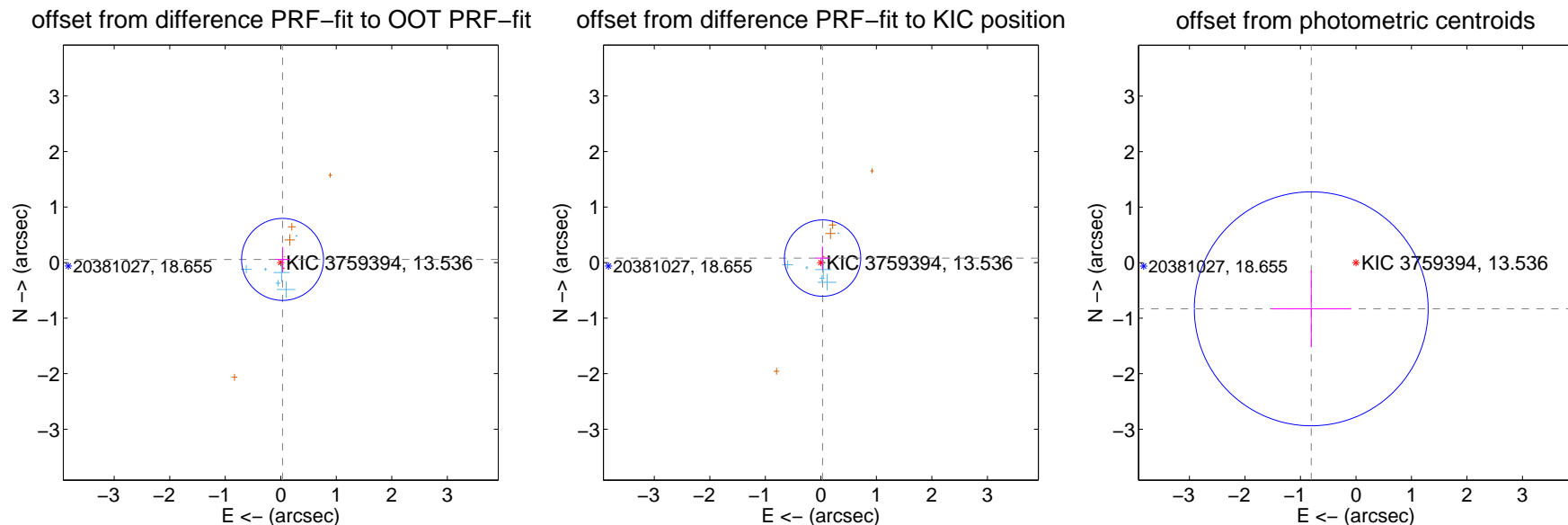
## DV Centroid Data

Supplemental centroid analysis for 003759394-01. Kepler magnitude: 13.54. Transit SNR 7.44

There are 7 quarters with good PRF difference image offsets

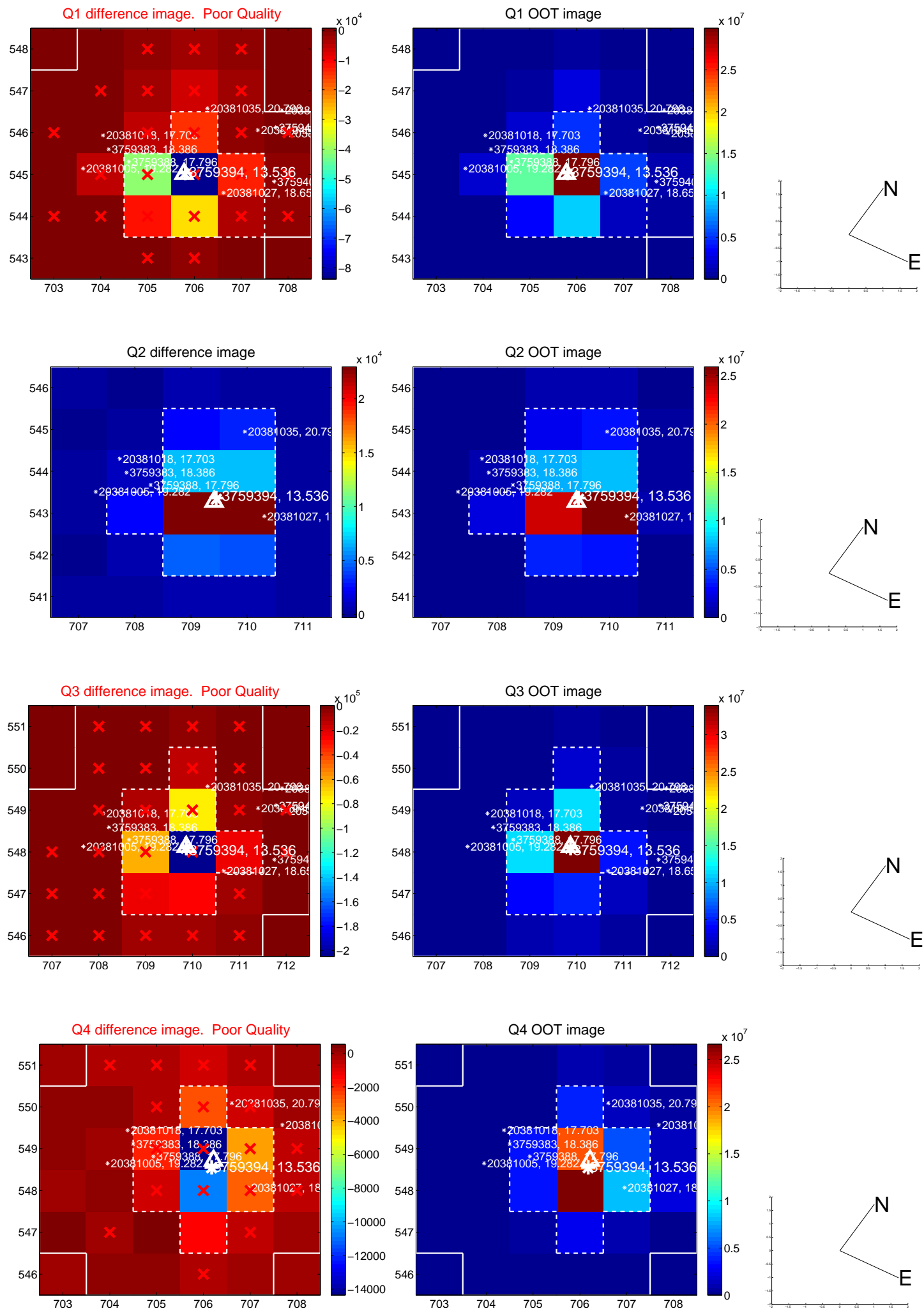
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.066 \pm 0.246$	0.27	$-0.032 \pm 0.131$	$0.057 \pm 0.224$
PRF-fit source offset from KIC position	$0.087 \pm 0.229$	0.38	$-0.031 \pm 0.127$	$0.081 \pm 0.208$
photometric centroid source offset	$1.16 \pm 0.70$	1.65	$0.81 \pm 0.72$	$-0.83 \pm 0.69$

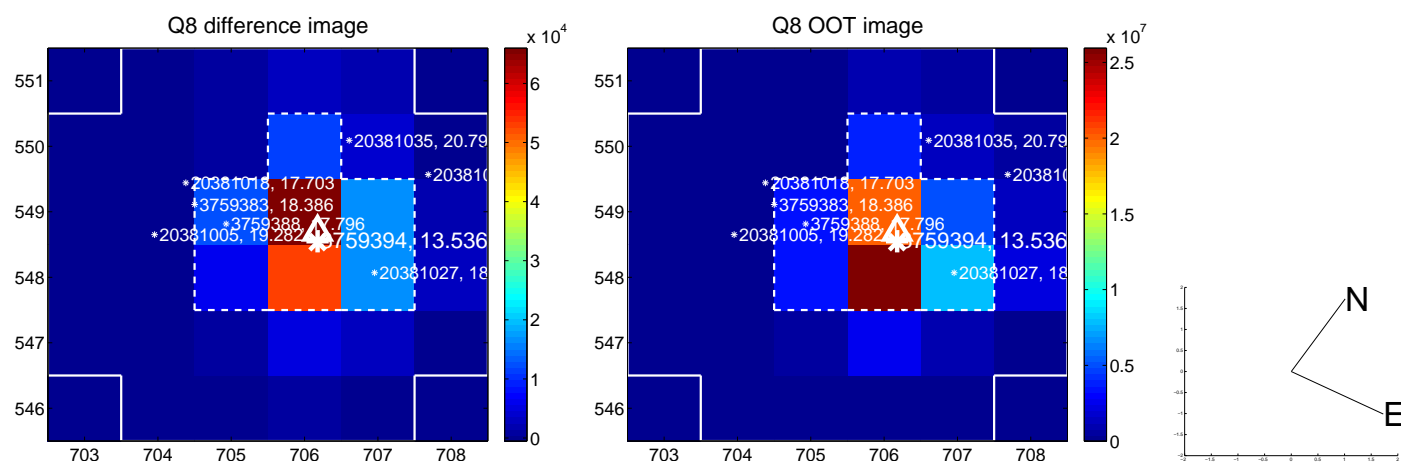
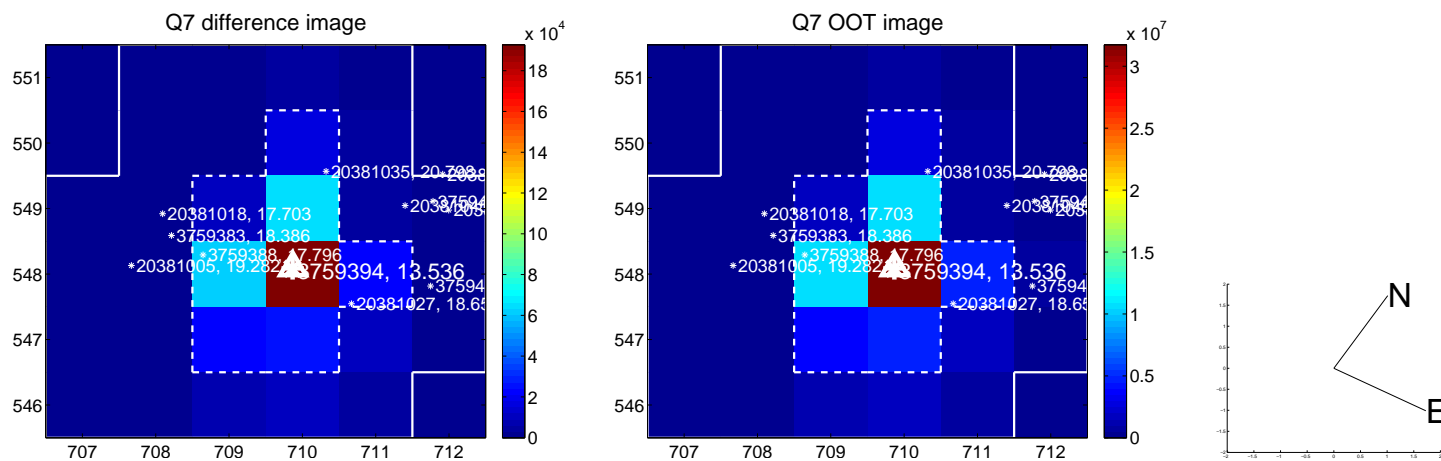
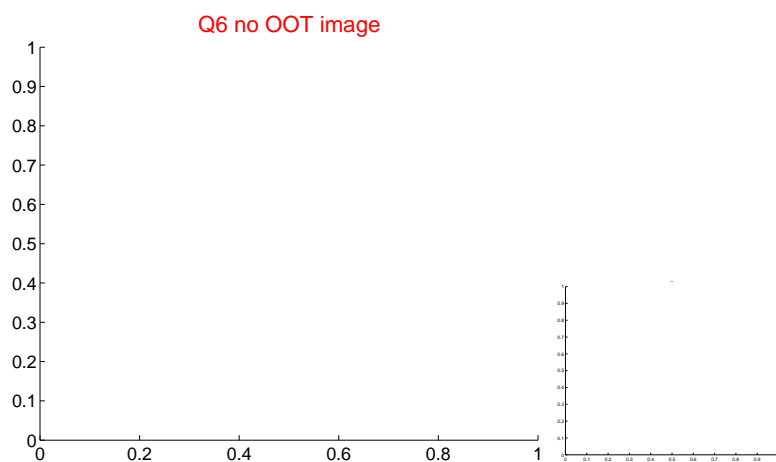
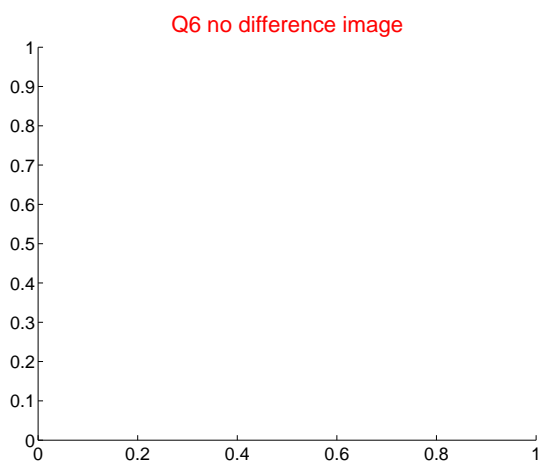
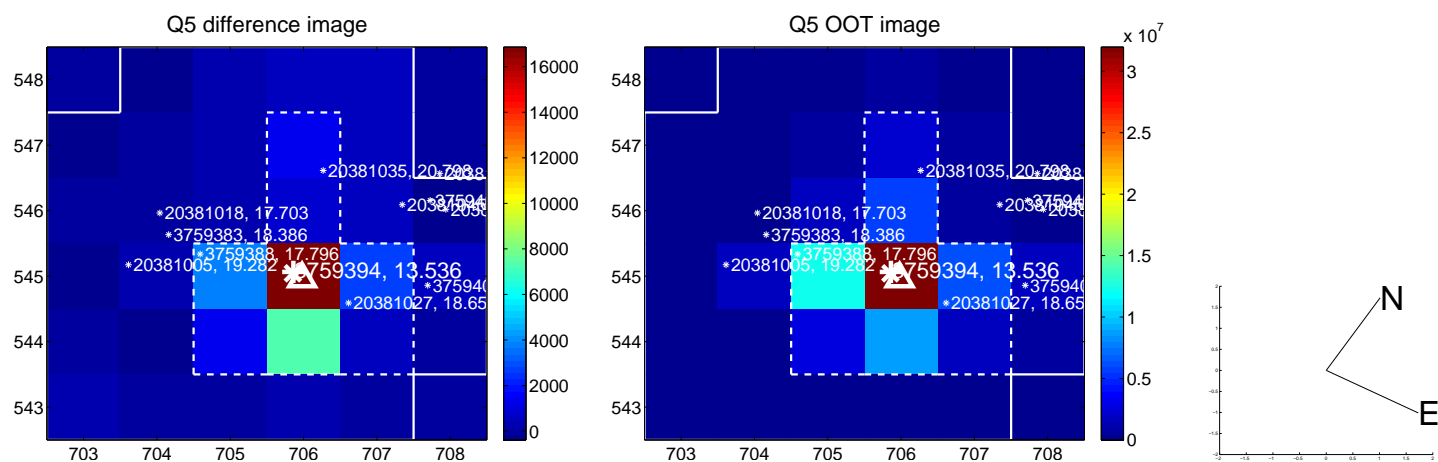


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

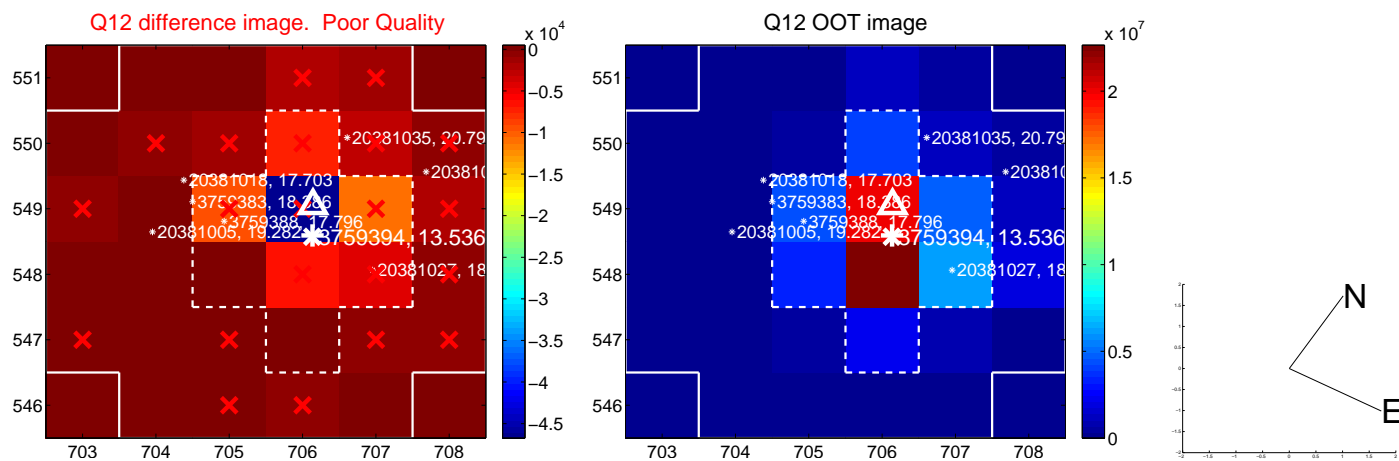
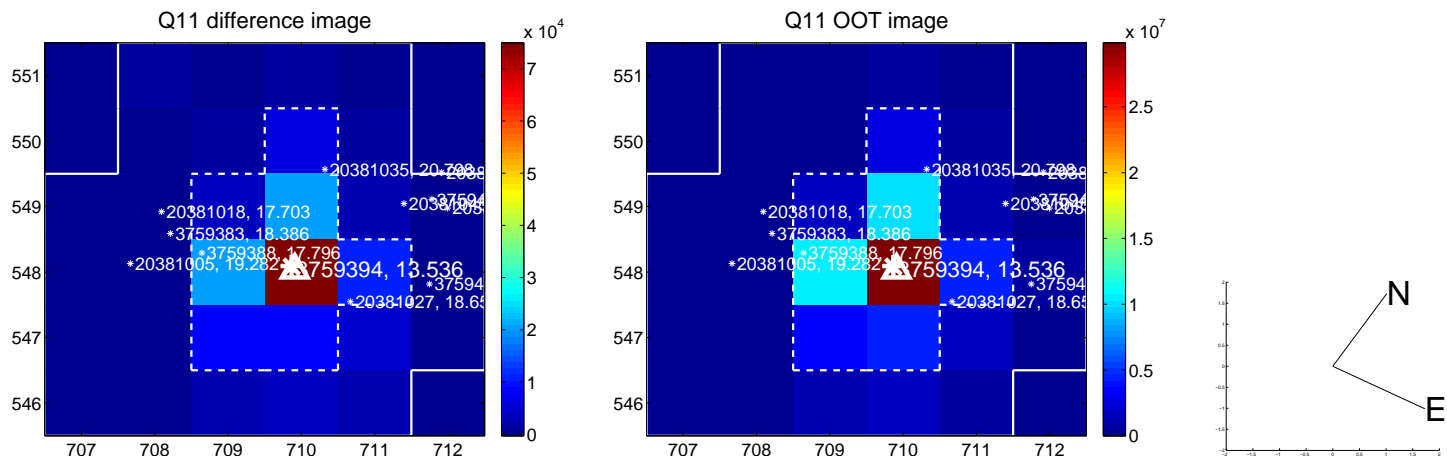
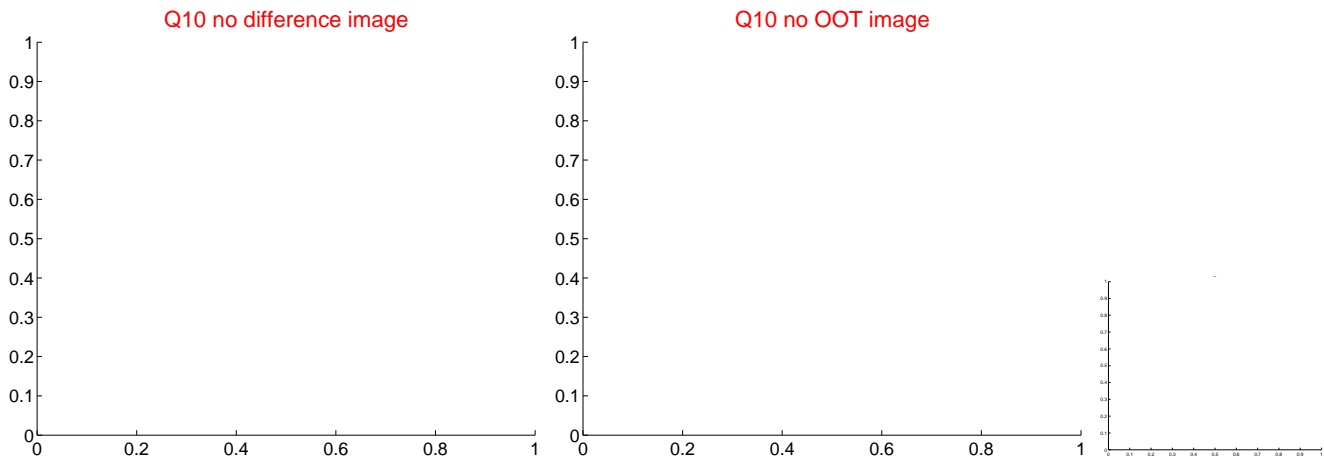
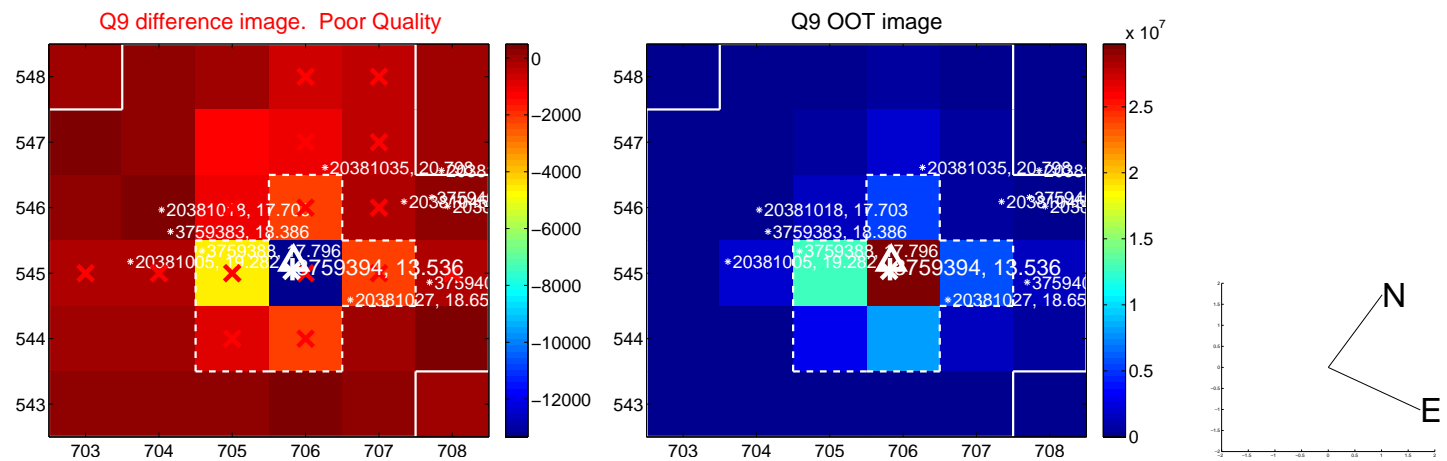
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



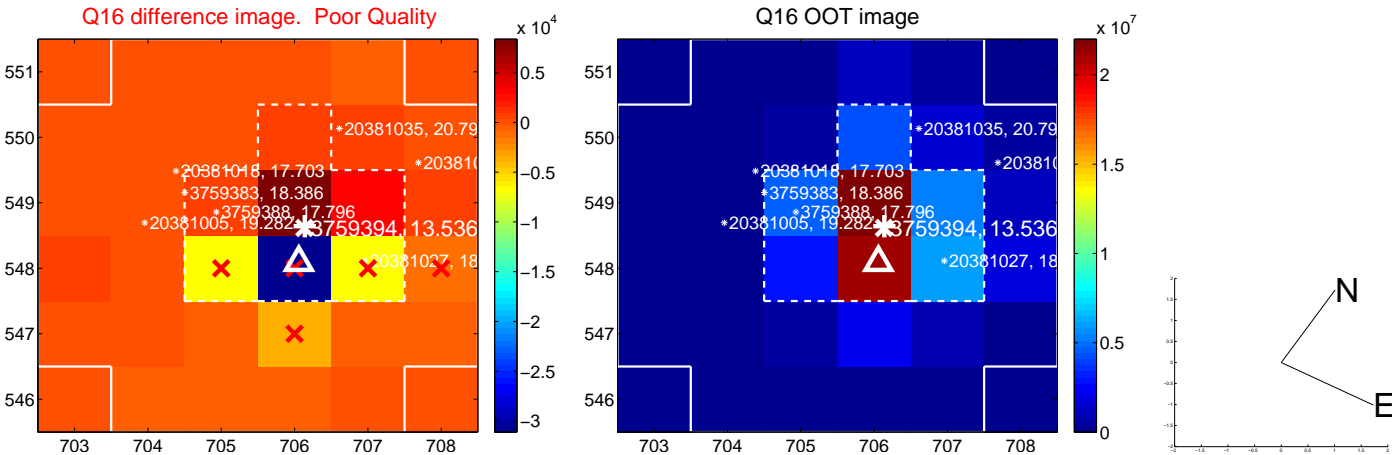
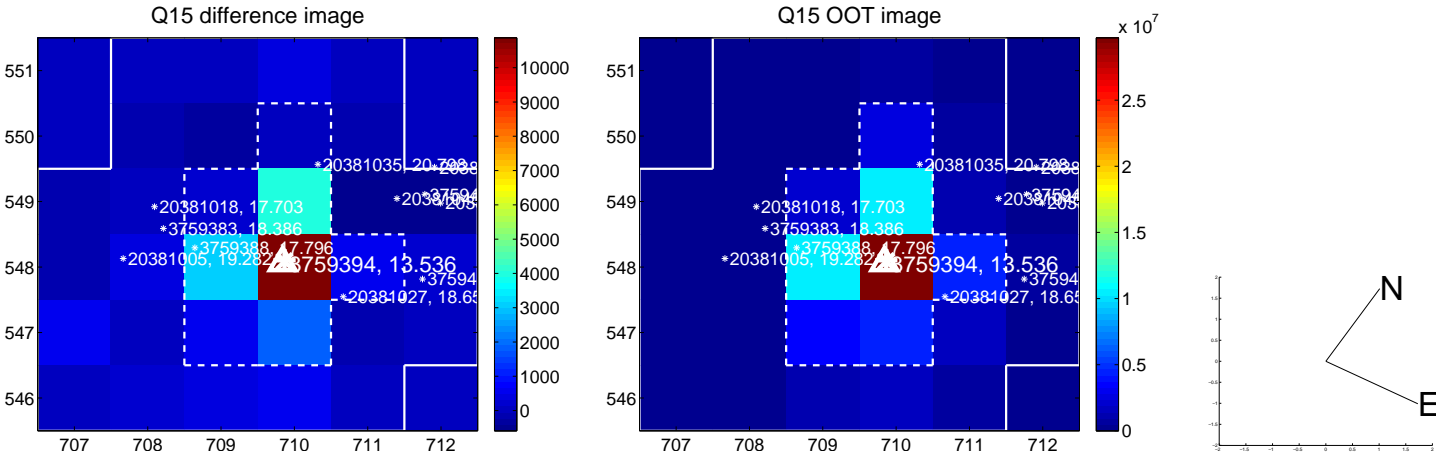
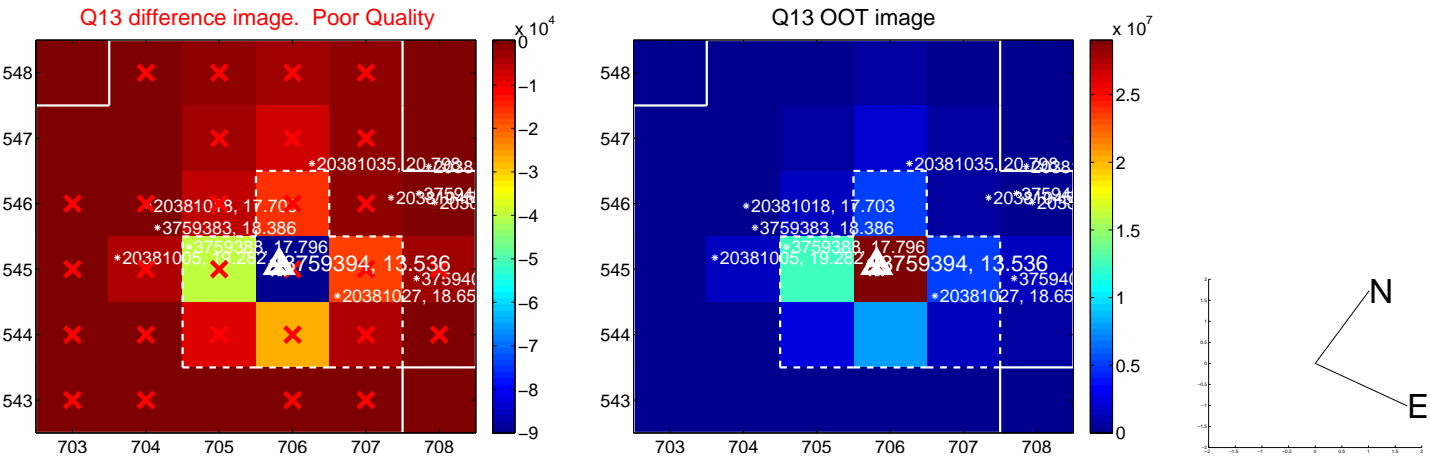
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

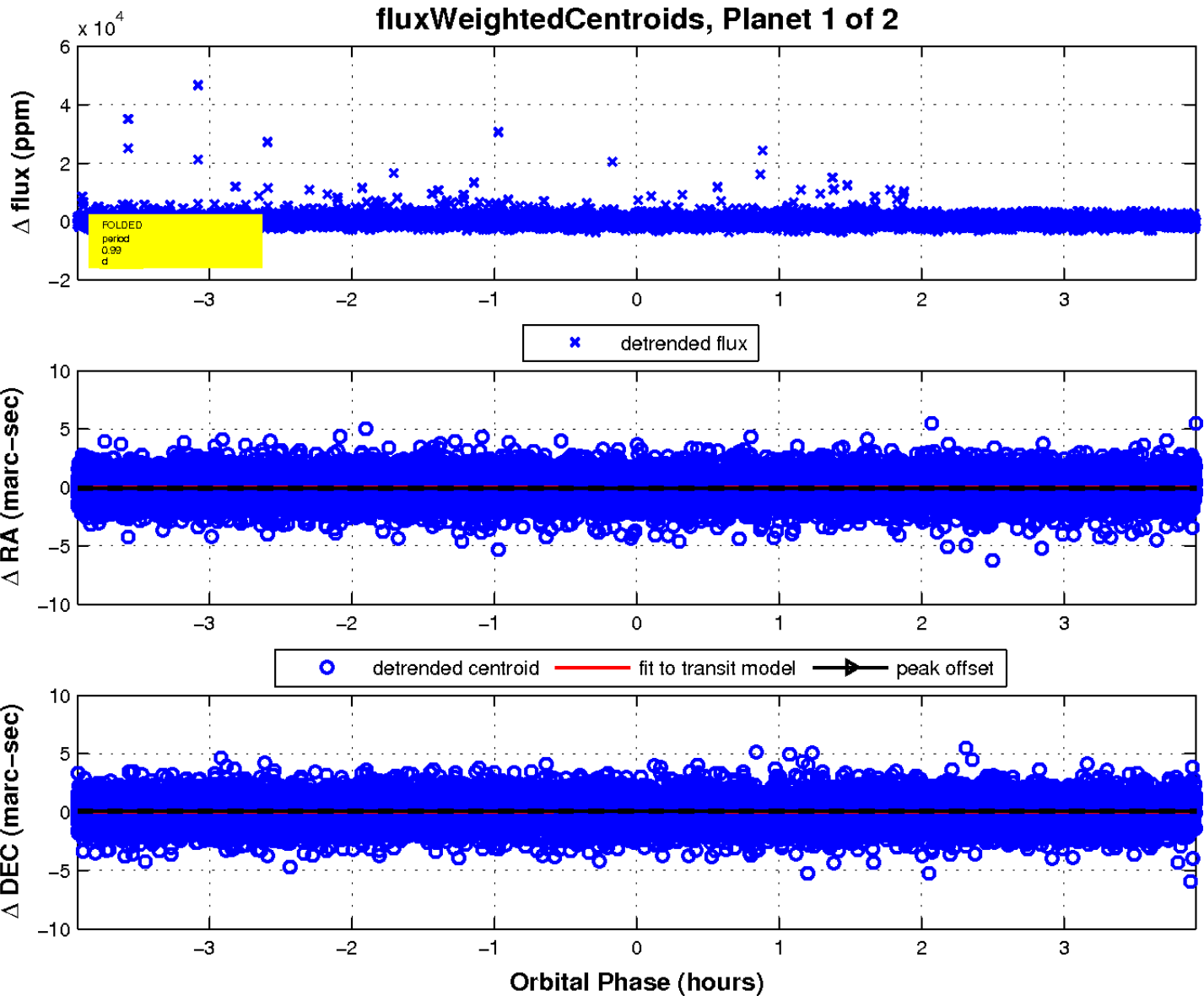
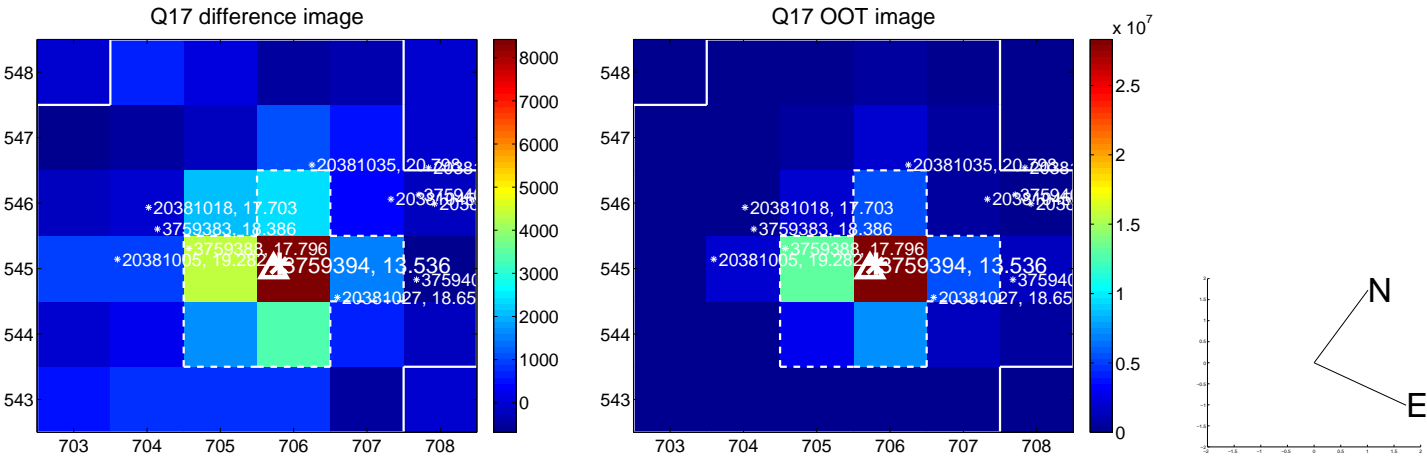


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

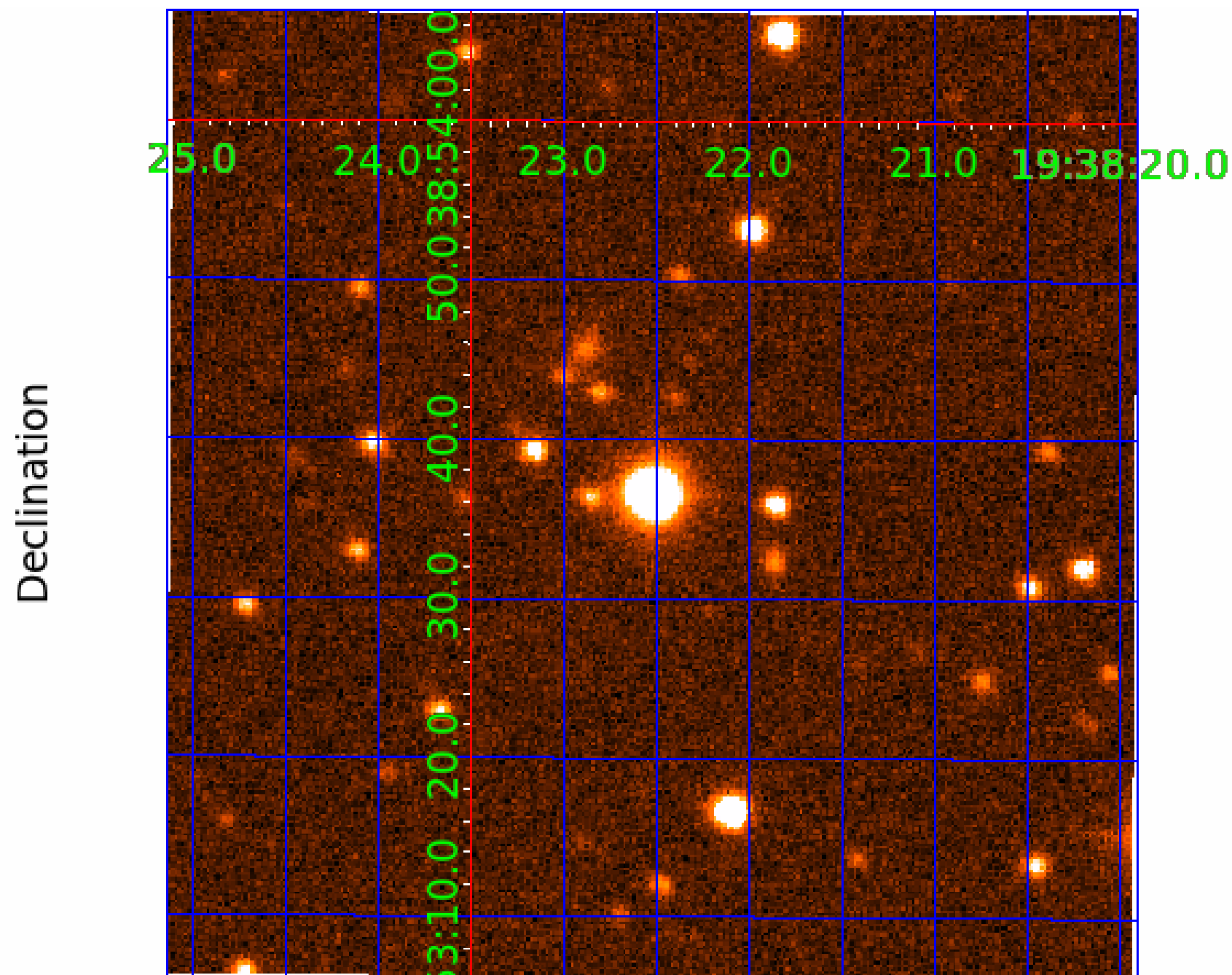




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



# KIC 003759394

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
003759394-01	OBS	No	0.994707	131.894730	93.6	1.309	7.8	7.4	0.53	4757	0.57	514.33
003759394-02	OBS	No	0.994722	131.668094	152.3	2.991	10.6	8.8	0.53	4757	0.79	514.32

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003759394-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003759394-02	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—SAME_NTL_PERIOD—HALO_GHOST

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

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

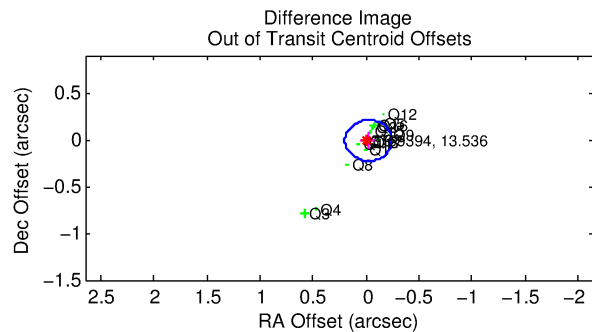
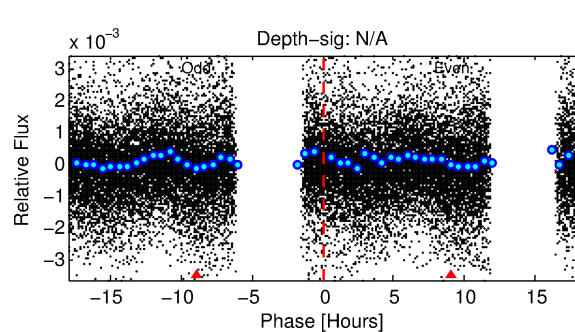
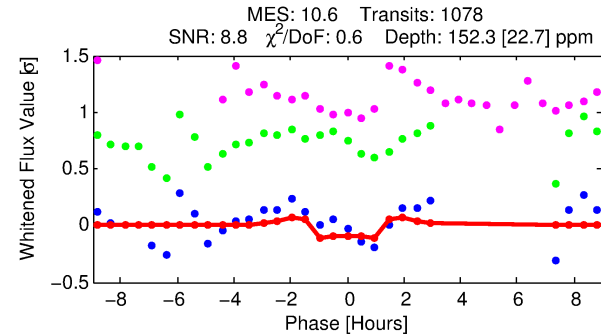
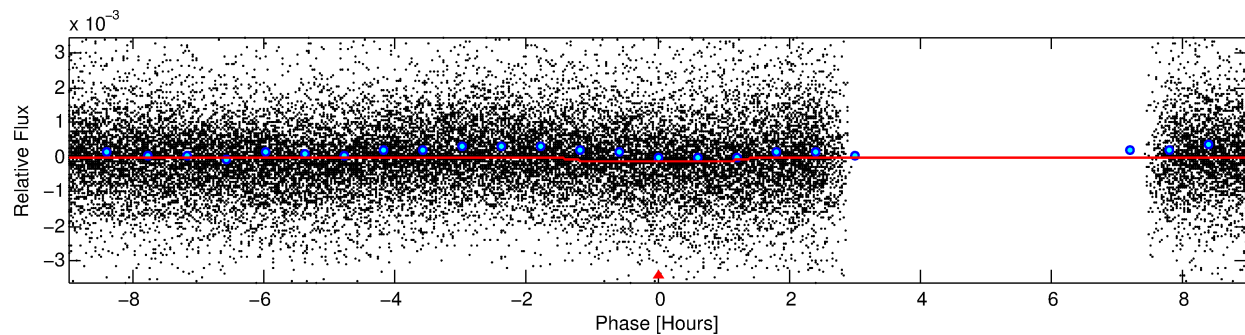
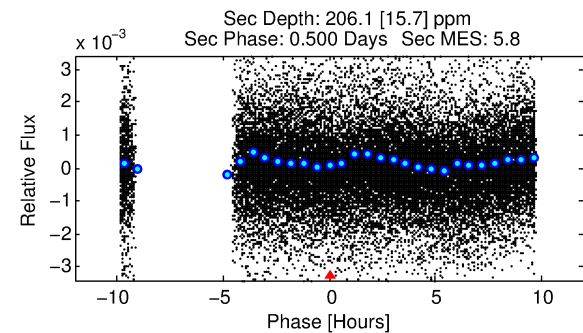
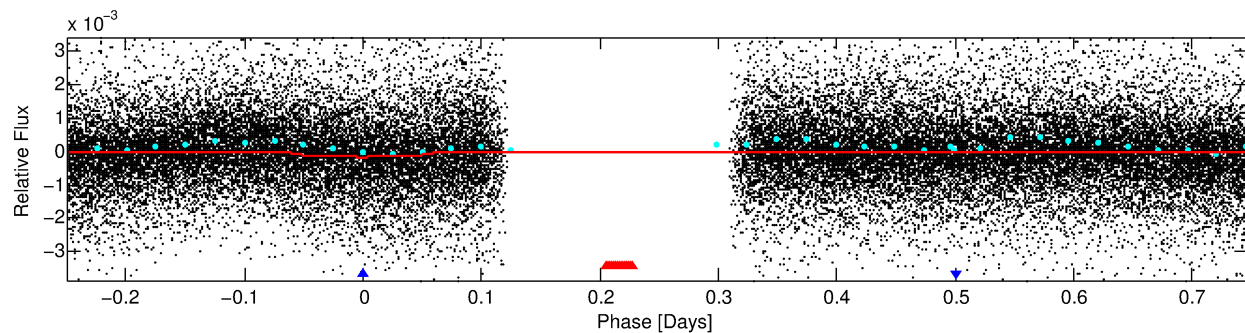
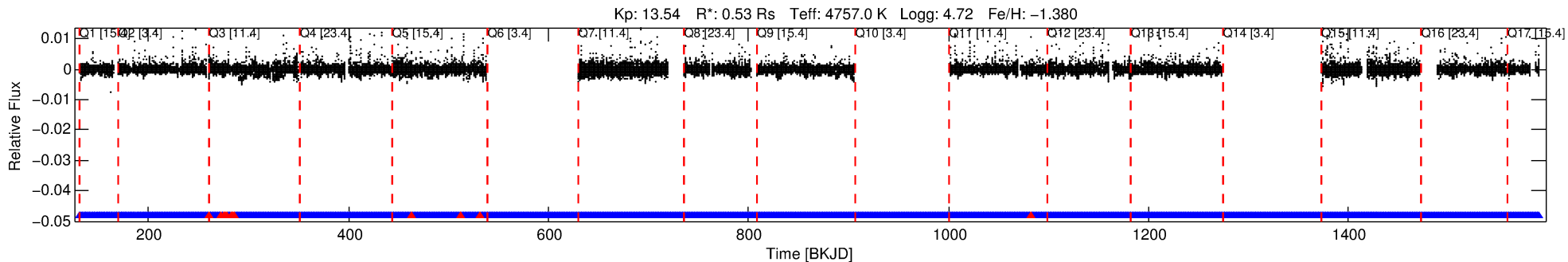
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 003759394-02

No Significant Match Found

# DV One-Page Summary

KIC: 3759394 Candidate: 2 of 2 Period: 0.995 d



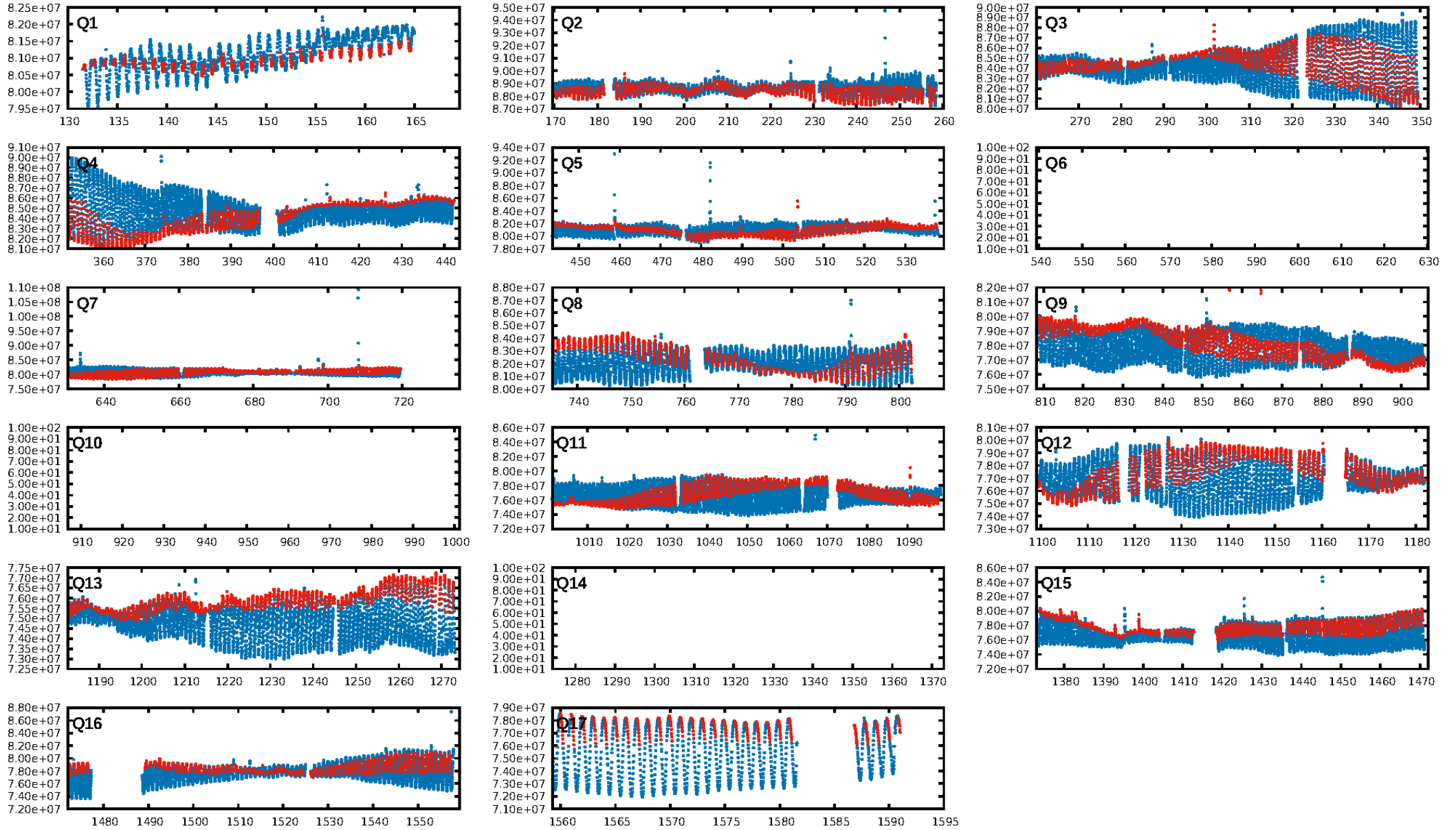
## DV Fit Results:

Period = 0.99472 [0.00001] d  
Epoch = 131.6681 [0.0018] BKJD  
Rp/R\* = 0.0135 [0.0040]  
a/R\* = 1.51 [1.02]  
b = 0.90 [0.26]  
Seff = 514.32 [80.24]  
Teff = 1214 [47] K  
Rp = 0.79 [0.24] Re  
a = 0.0159 [0.0009] AU  
Ag = 46.40 [27.65] [1.64σ]  
Teffp = 4900 [741] K [4.96σ]

## DV Diagnostic Results:

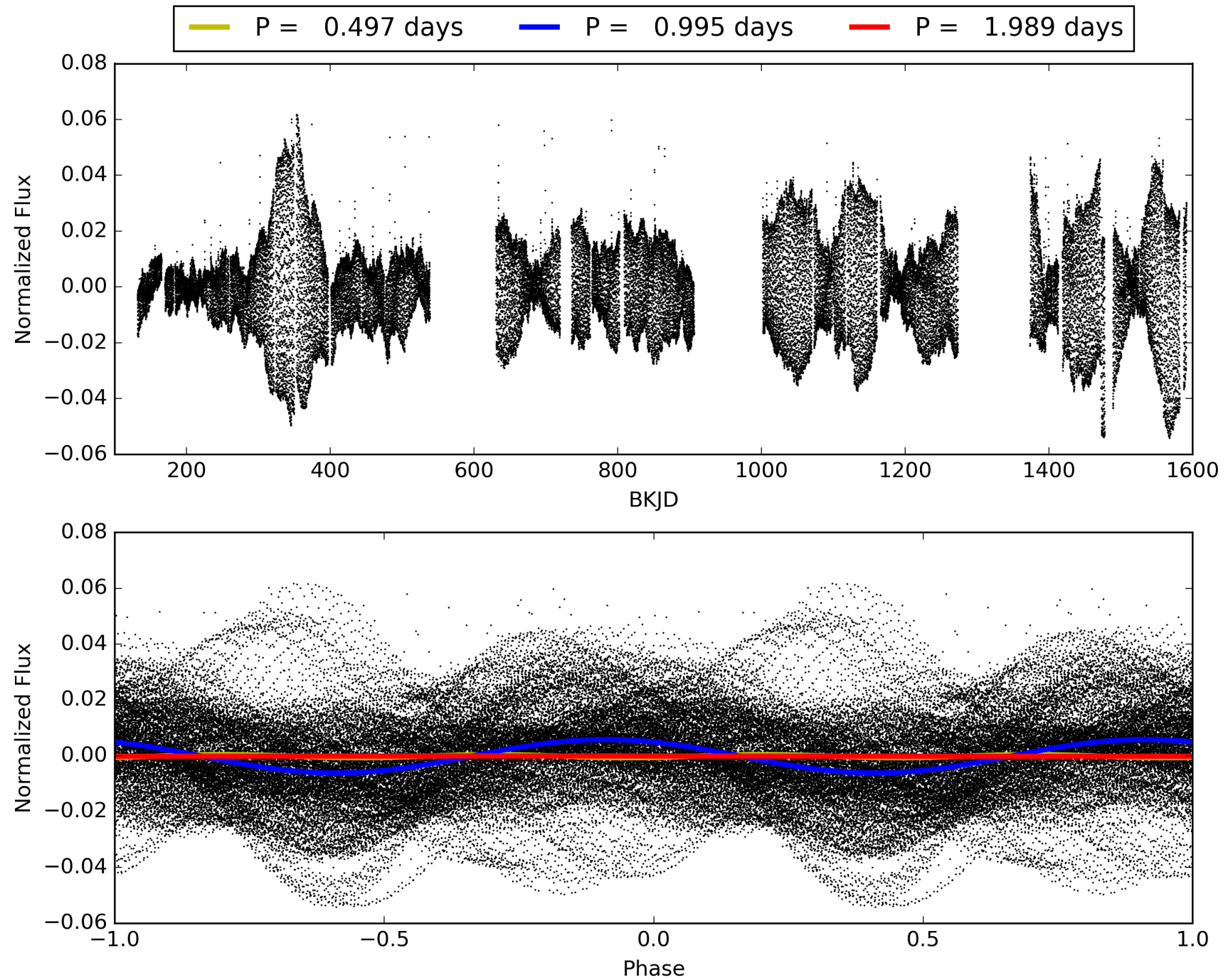
ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.99 [1004/1017]  
GhostDiagnostic-chr: -0.1213  
Centroid-sig: 0.0%  
Centroid-so: 0.658 arcsec [2.24σ]  
OotOffset-rm: 0.023 arcsec [0.31σ]  
KicOffset-rm: 0.128 arcsec [1.03σ]  
OotOffset-st: 1/4/4/5 [14]  
KicOffset-st: 1/4/4/5 [14]  
DiffImageQuality-fgm: 0.29 [4/14]  
DiffImageOverlap-fno: 0.00 [0/14]

# TCE 003759394-02, PDC Light Curves



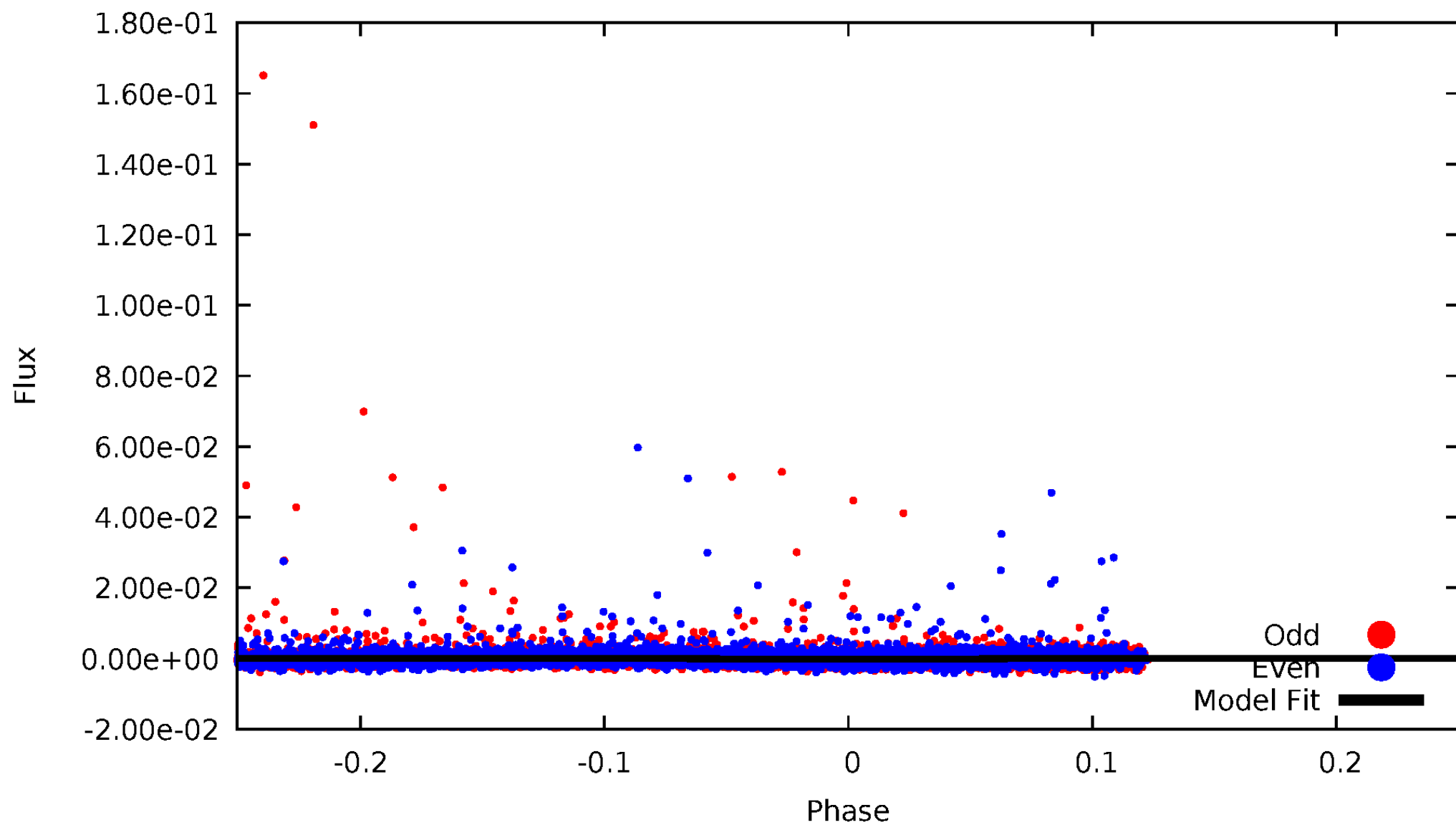


TCE 003759394-02



# DV Odd/Even

TCE 003759394-02



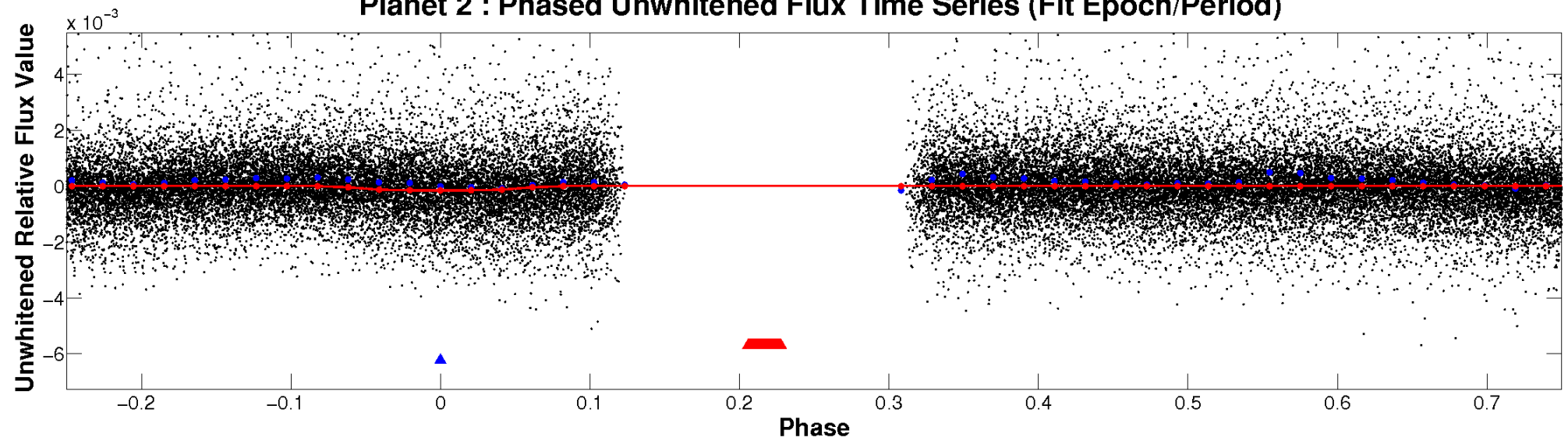


ALT Odd/Even

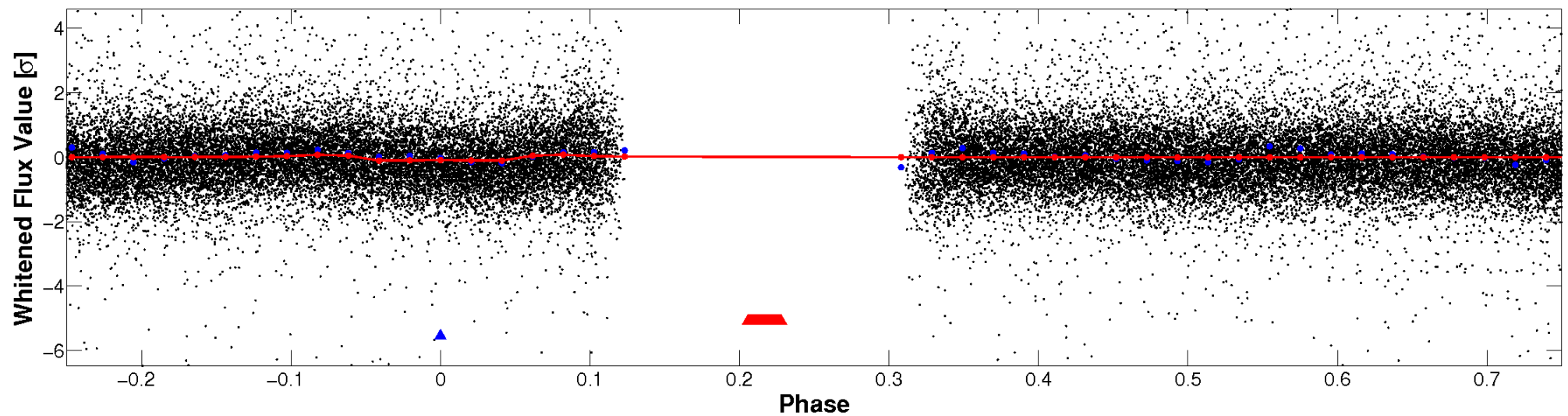
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

## Planet 2 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

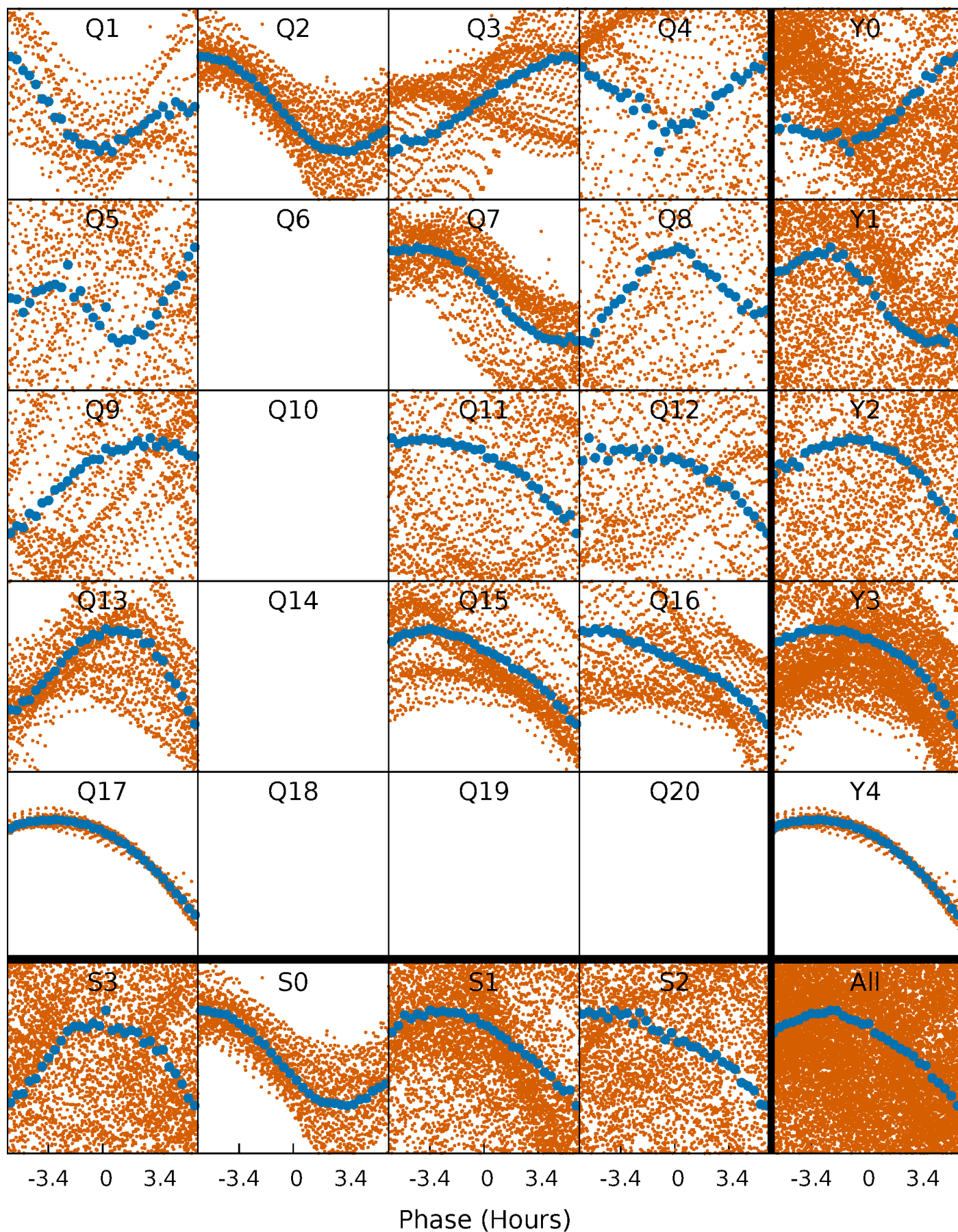


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

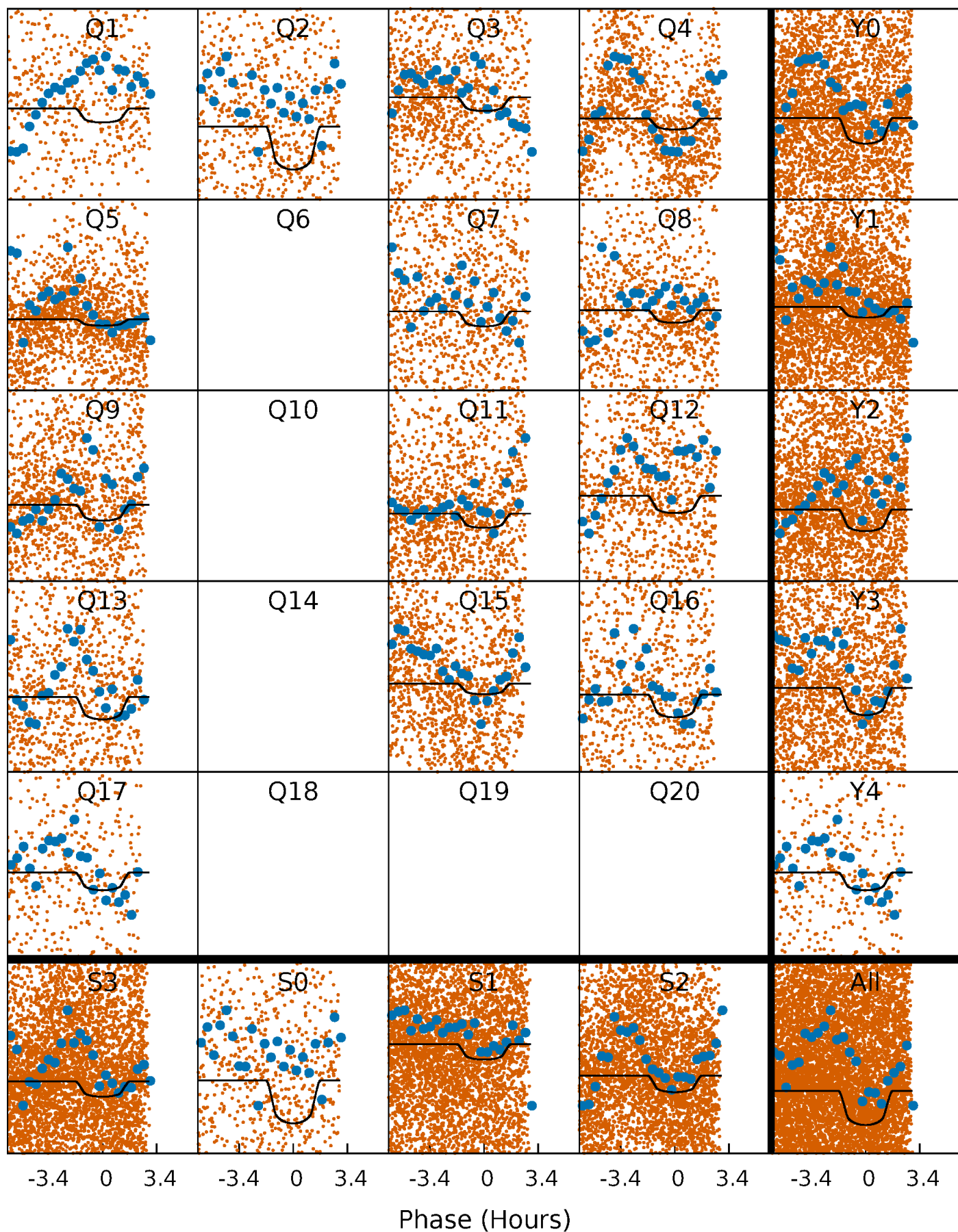
TCE 003759394-02     $P = 0.994722$  Days     $T_0 = 131.668094$  (BKJD)





# DV Quarter-Phased Transit Curves

TCE 003759394-02   P= 0.994722 Days    $T_0=131.668094$  (BKJD)

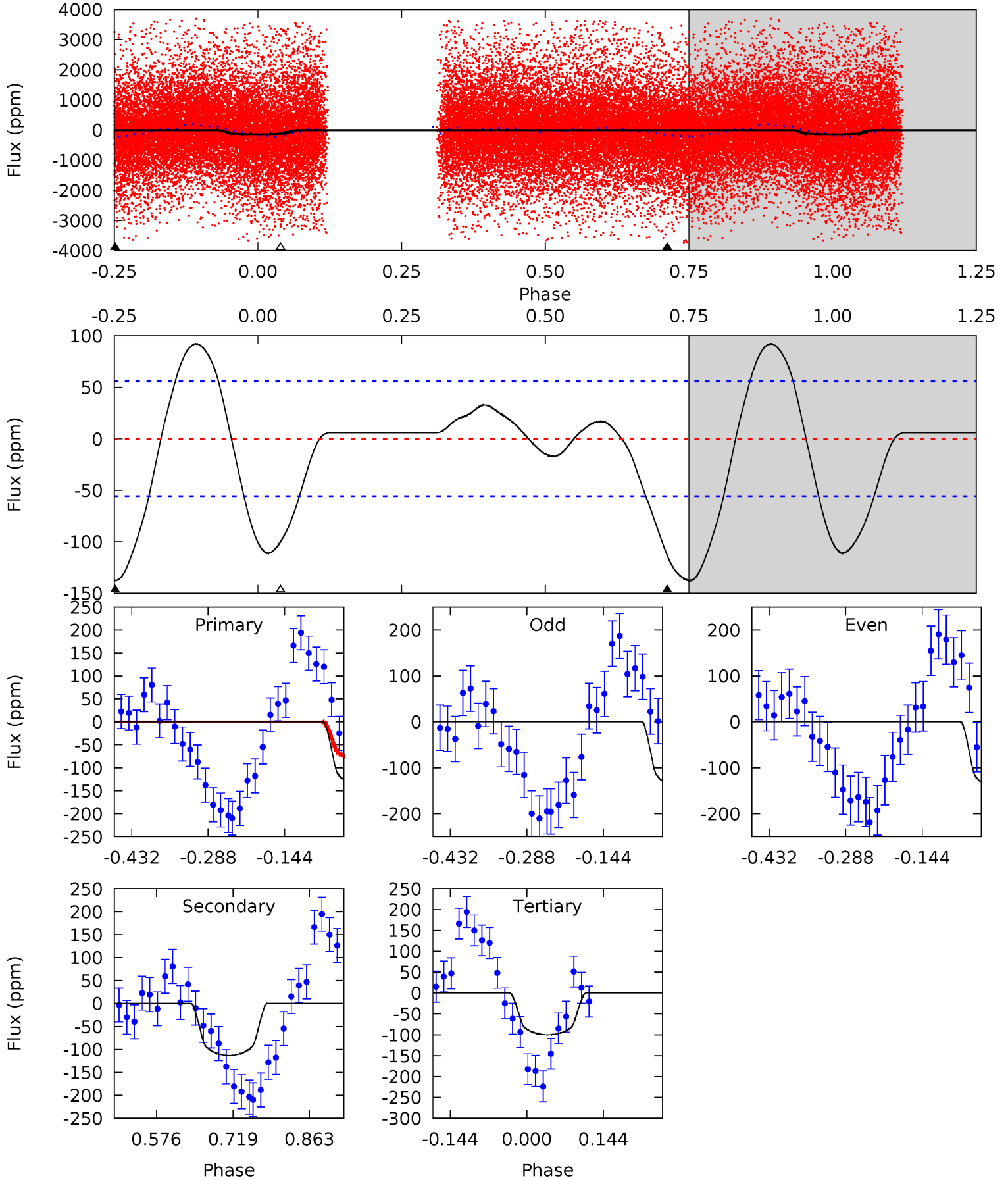


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

003759394-02, P = 0.994722 Days, E = 130.673372 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
11.1	9.11	8.05	0	4.49	1.46	4.07	3.04	11.1	1.06	9.11	0.12	-0.46	0.40	4.65



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 003759394

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4757^{+157}_{-157}$	$4.719^{+0.046}_{-0.025}$	$-1.380^{+0.300}_{-0.300}$	$0.532^{+0.028}_{-0.035}$	$0.540^{+0.039}_{-0.023}$	$5.053^{+0.916}_{-0.532}$
	+3%/-3%	+1%/-1%	+22%/-22%	+5%/-7%	+7%/-4%	+18%/-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 003759394-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-113 \pm 12$	$0.78^{+0.22}_{-0.22}$	$1691^{+60}_{-56}$	$4326^{+664}_{-419}$	$26^{+25}_{-11}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

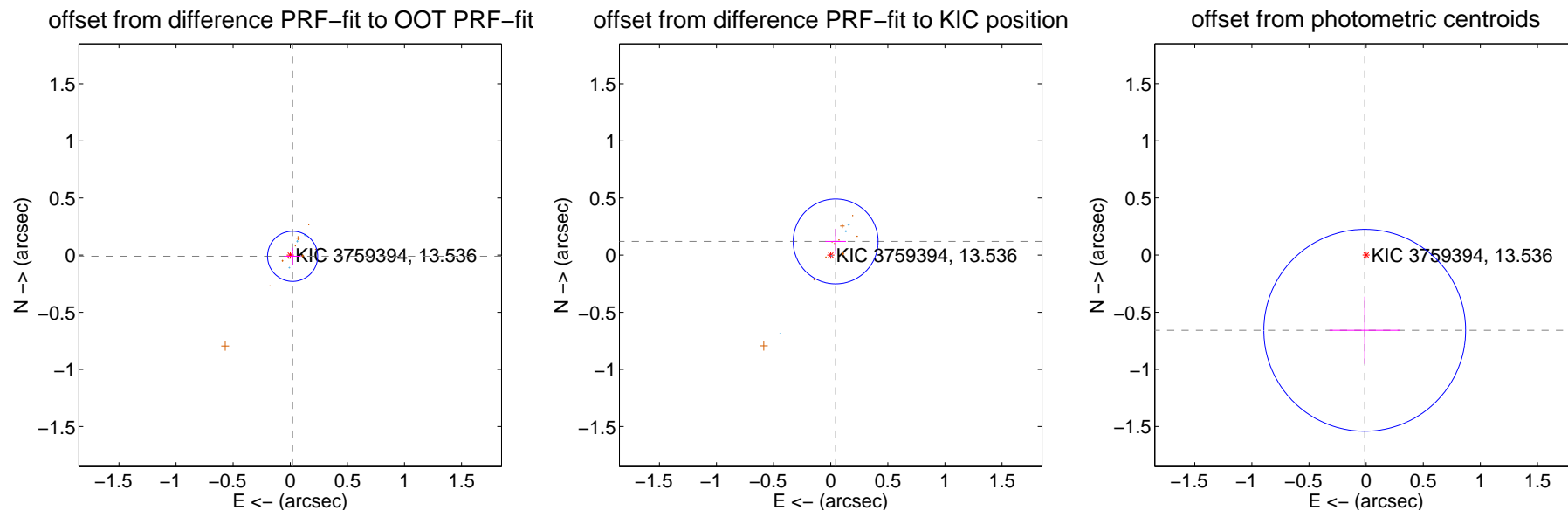
## DV Centroid Data

Supplemental centroid analysis for 003759394-02. Kepler magnitude: 13.54. Transit SNR 8.79

There are 4 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

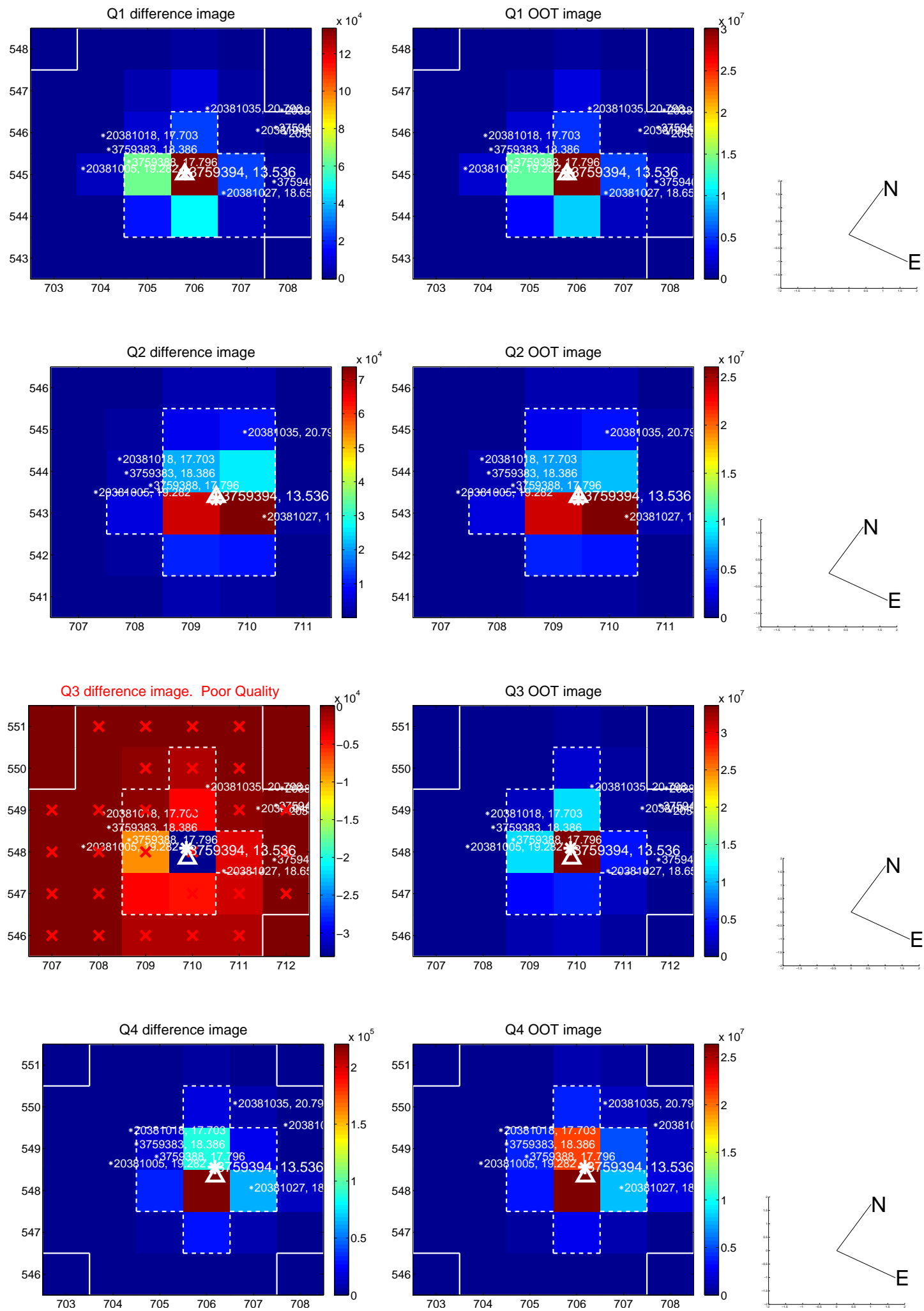
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.023 \pm 0.073$	0.31	$-0.020 \pm 0.073$	$-0.010 \pm 0.075$
PRF-fit source offset from KIC position	$0.128 \pm 0.124$	1.03	$-0.043 \pm 0.090$	$0.120 \pm 0.112$
photometric centroid source offset	$0.66 \pm 0.29$	2.24	$0.01 \pm 0.31$	$-0.66 \pm 0.29$



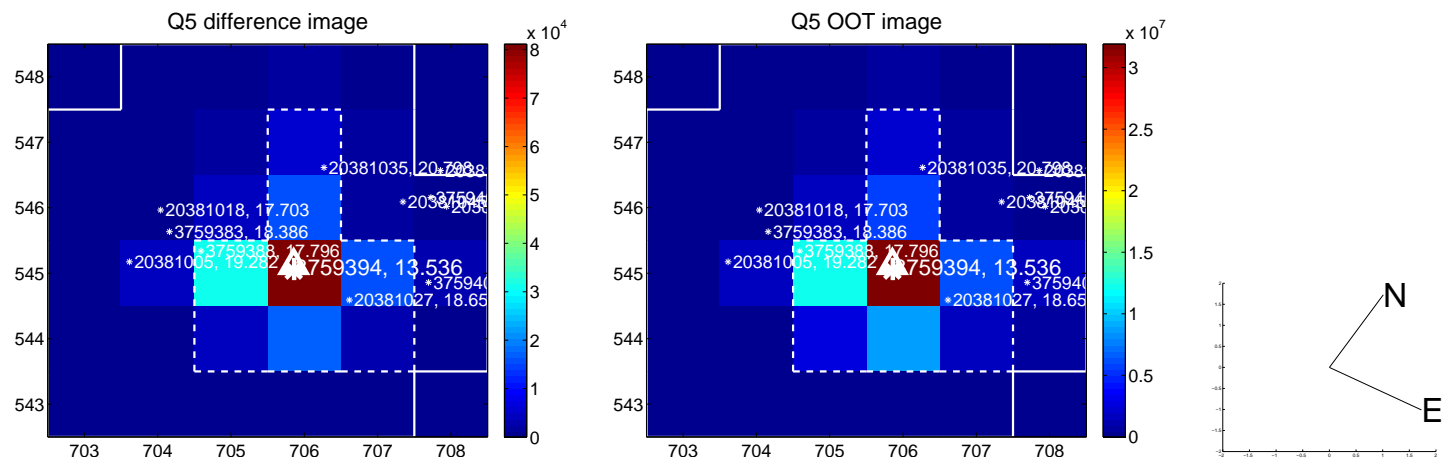
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



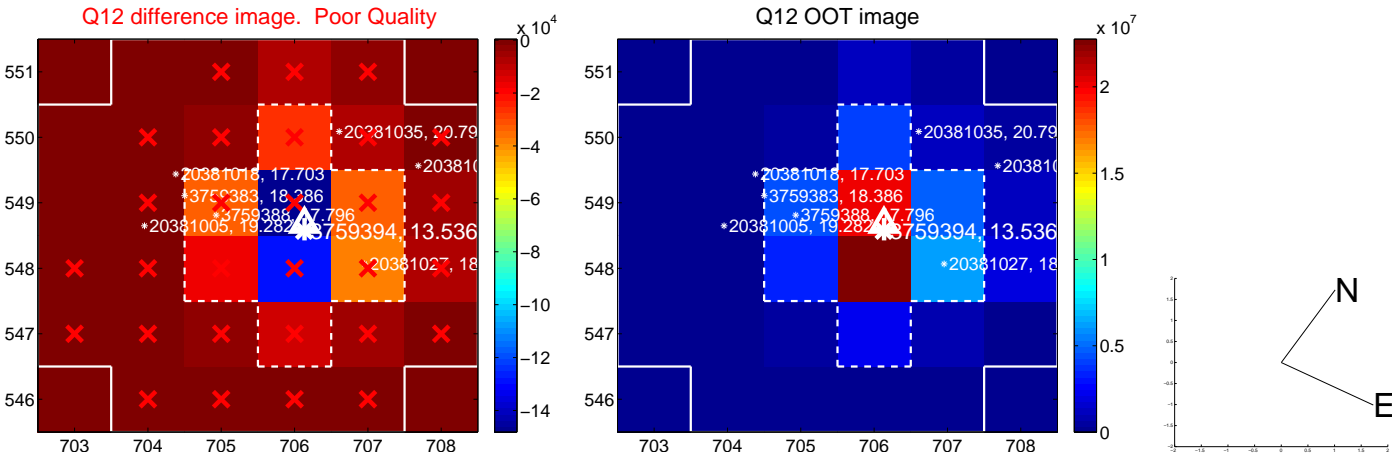
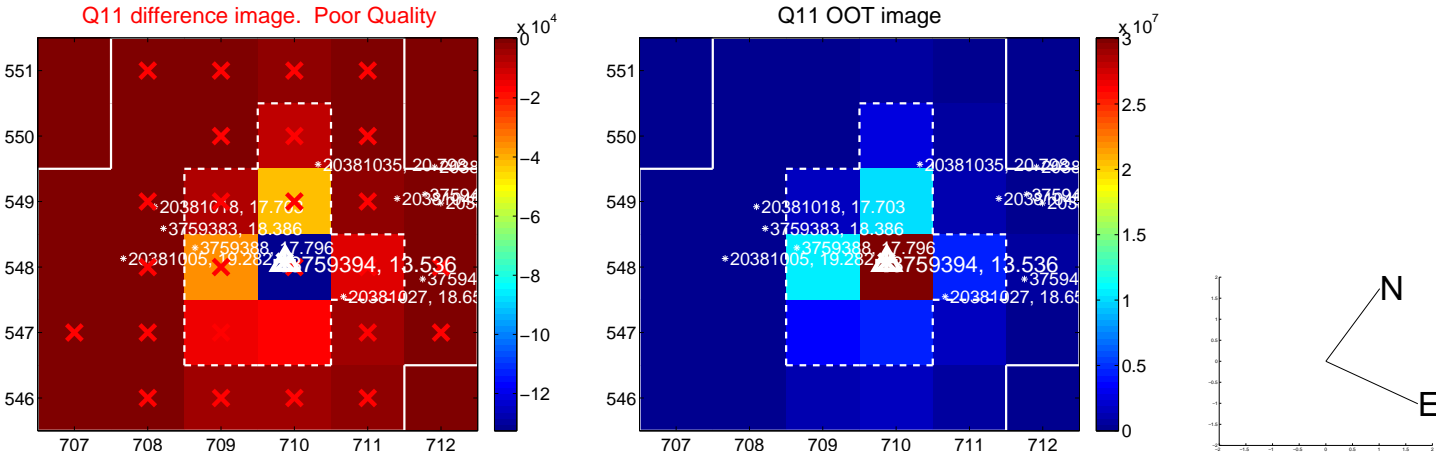
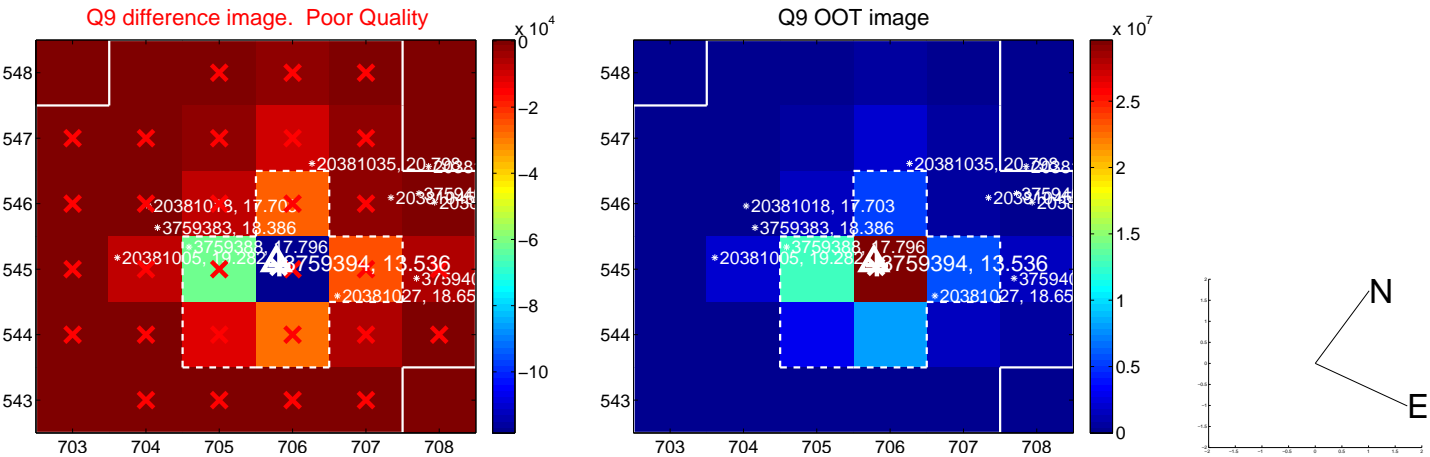
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



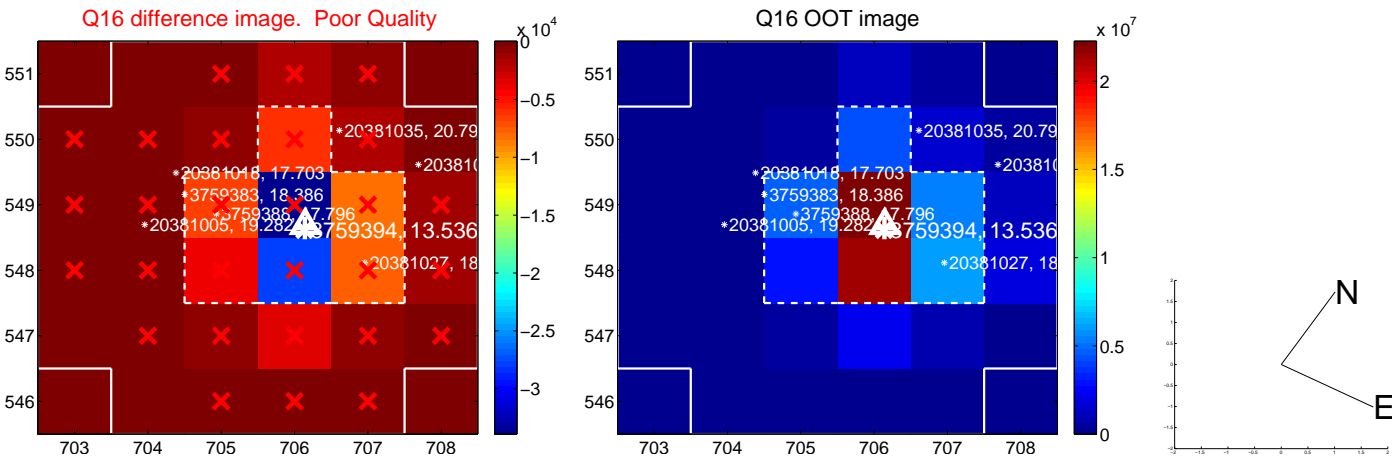
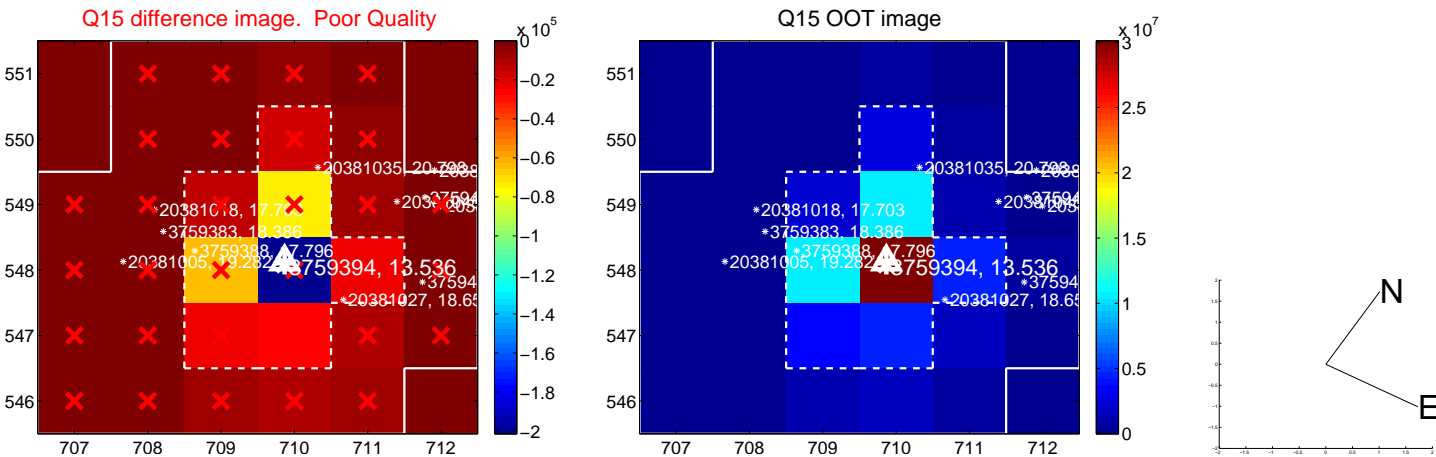
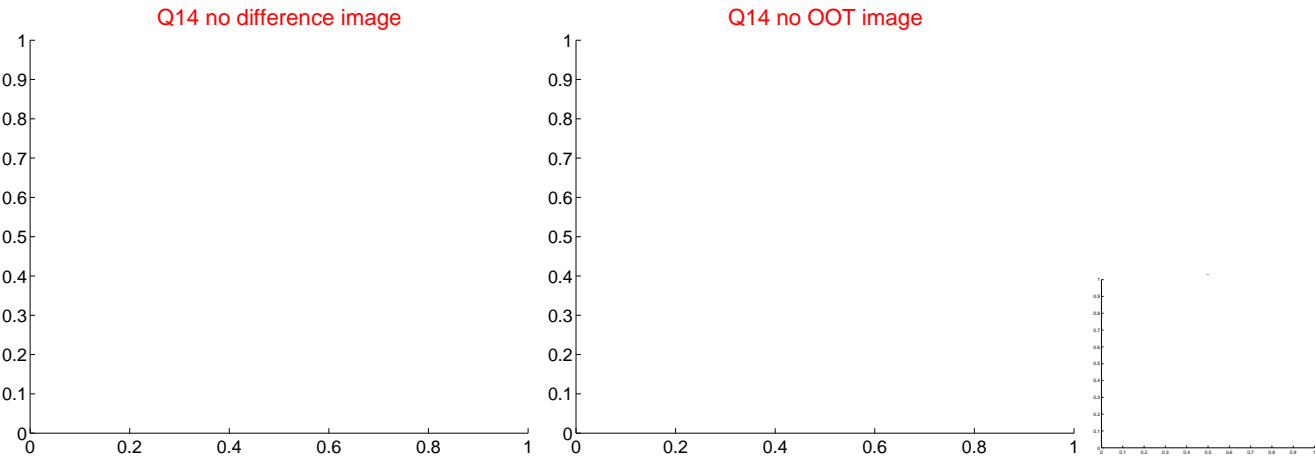
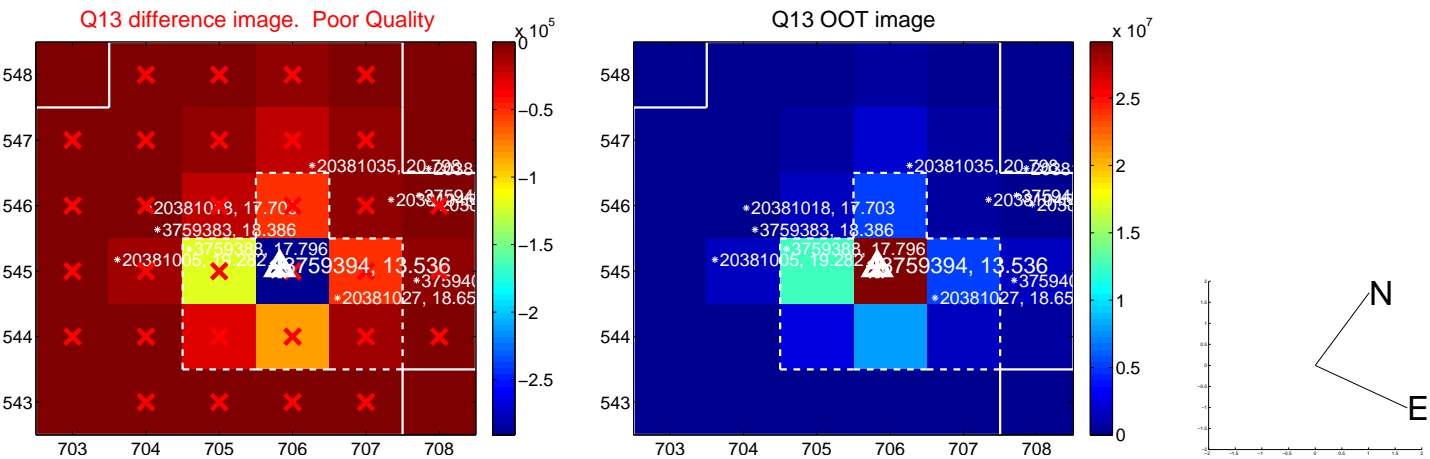
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



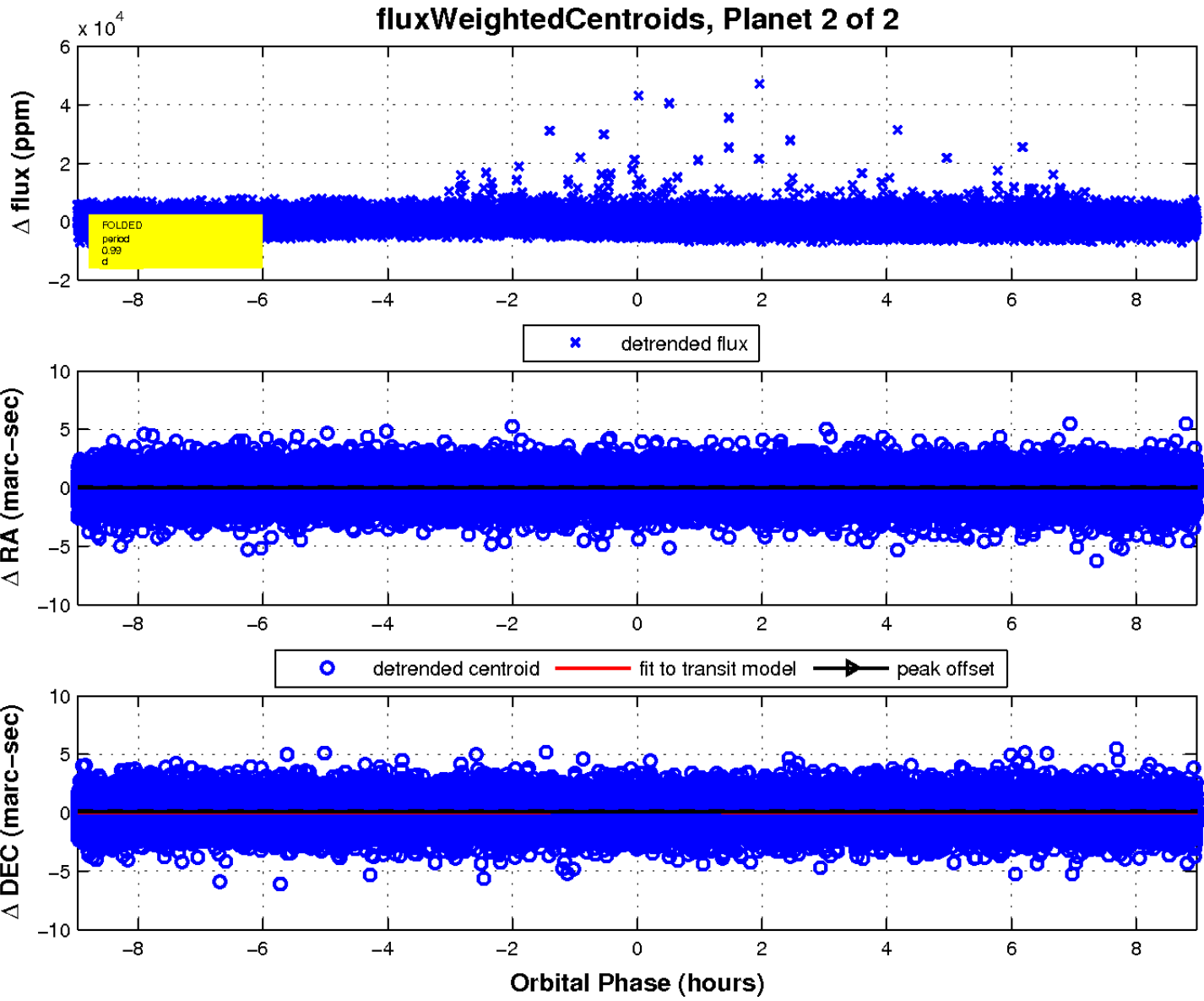
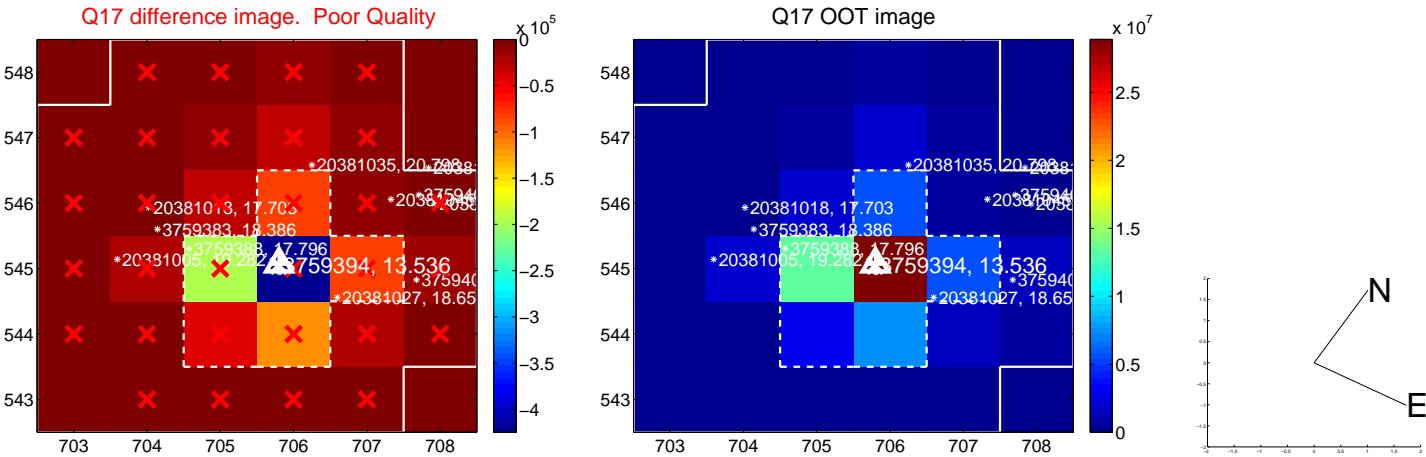
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

