

# KIC 010548195

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010548195-01	OBS	No	0.961234	132.283044	16.3	0.646	9.4	0.7	1.01	6152	0.43	3412.83
010548195-02	OBS	No	0.968880	132.301619	858.5	1.500	7.8	-1.0	1.01	6152	2.97	3376.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010548195-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010548195-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

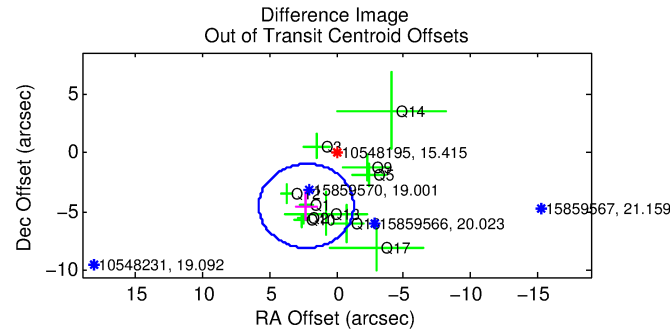
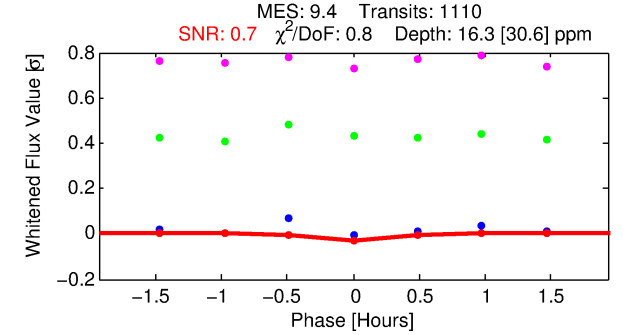
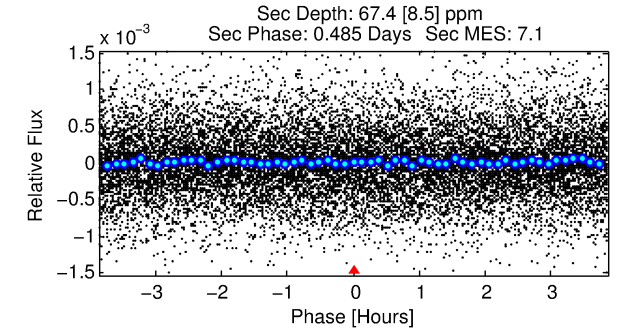
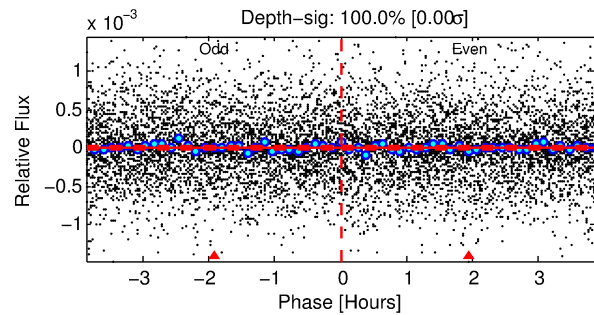
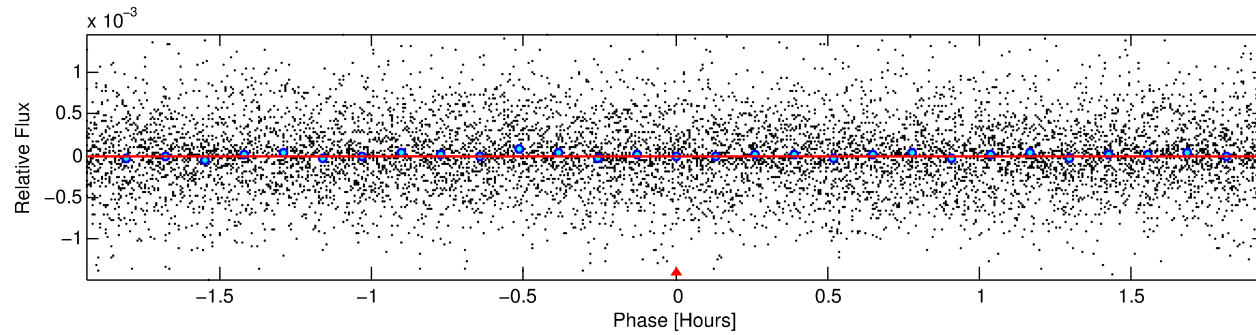
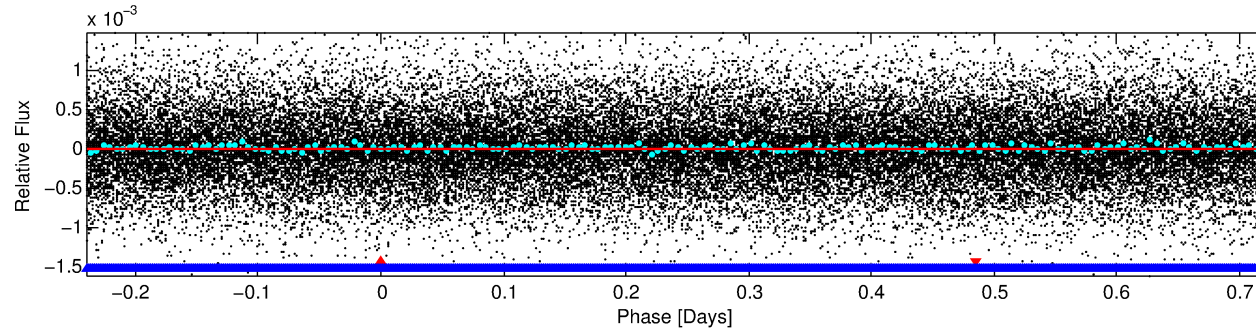
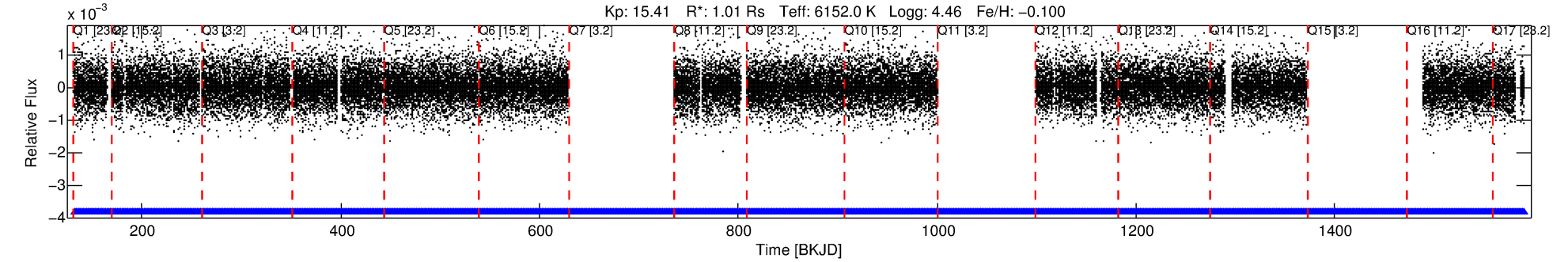
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010548195-01

No Significant Match Found

# DV One-Page Summary

KIC: 10548195 Candidate: 1 of 2 Period: 0.961 d



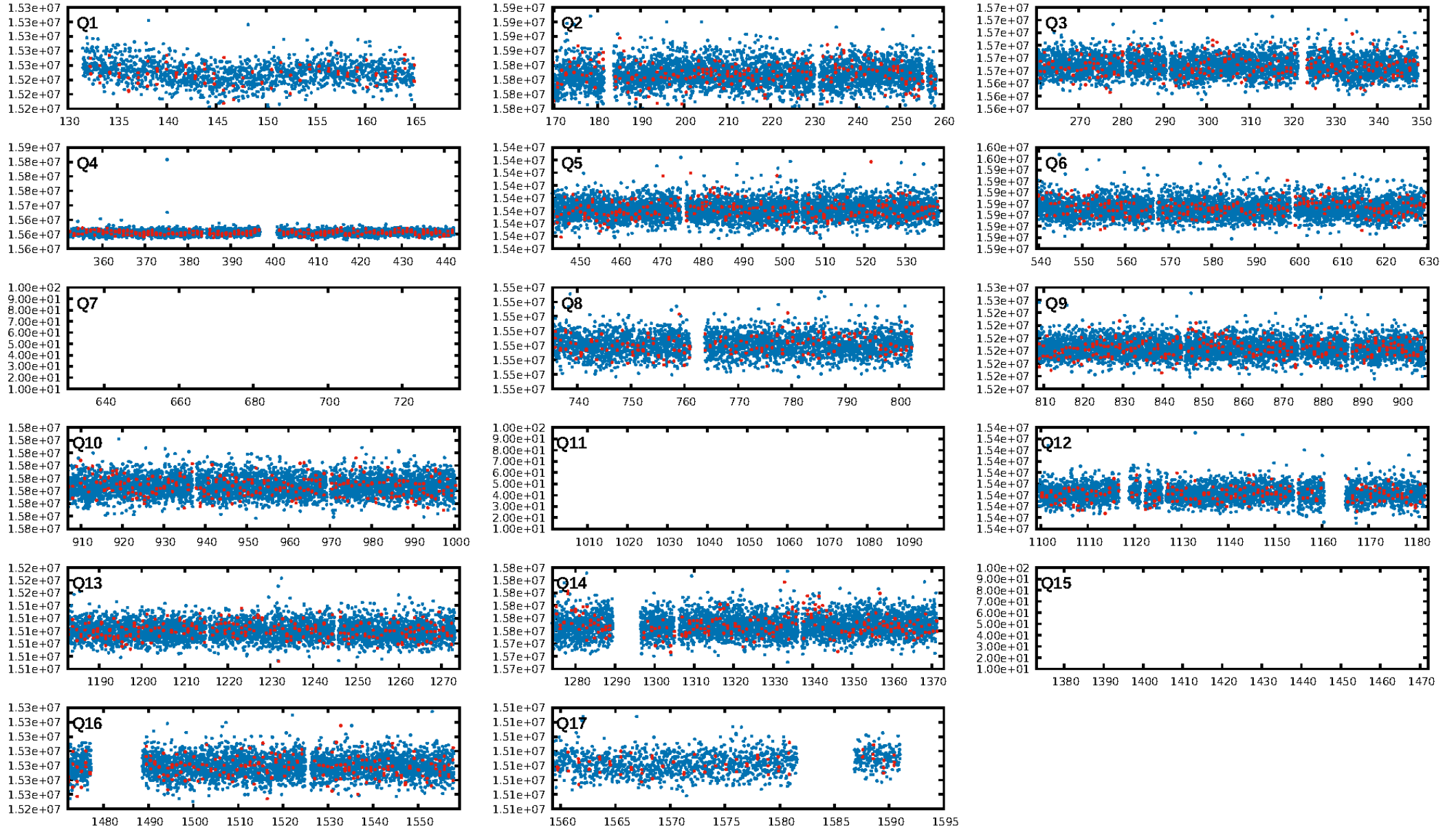
## DV Fit Results:

Period = 0.96123 [0.00014] d  
Epoch = 132.2830 [0.0191] BKJD  
Rp/R\* = 0.0039 [0.0128]  
a/R\* = 9.98 [156.19]  
b = 0.49 [24.49]  
Seff = 3412.83 [1363.05]  
Teff = 1949 [195] K  
Rp = 0.43 [1.41] Re  
a = 0.0196 [0.0049] AU  
Ag = 77.44 [508.93] [0.15σ]  
Teffp = 8939 [14667] K [0.48σ]

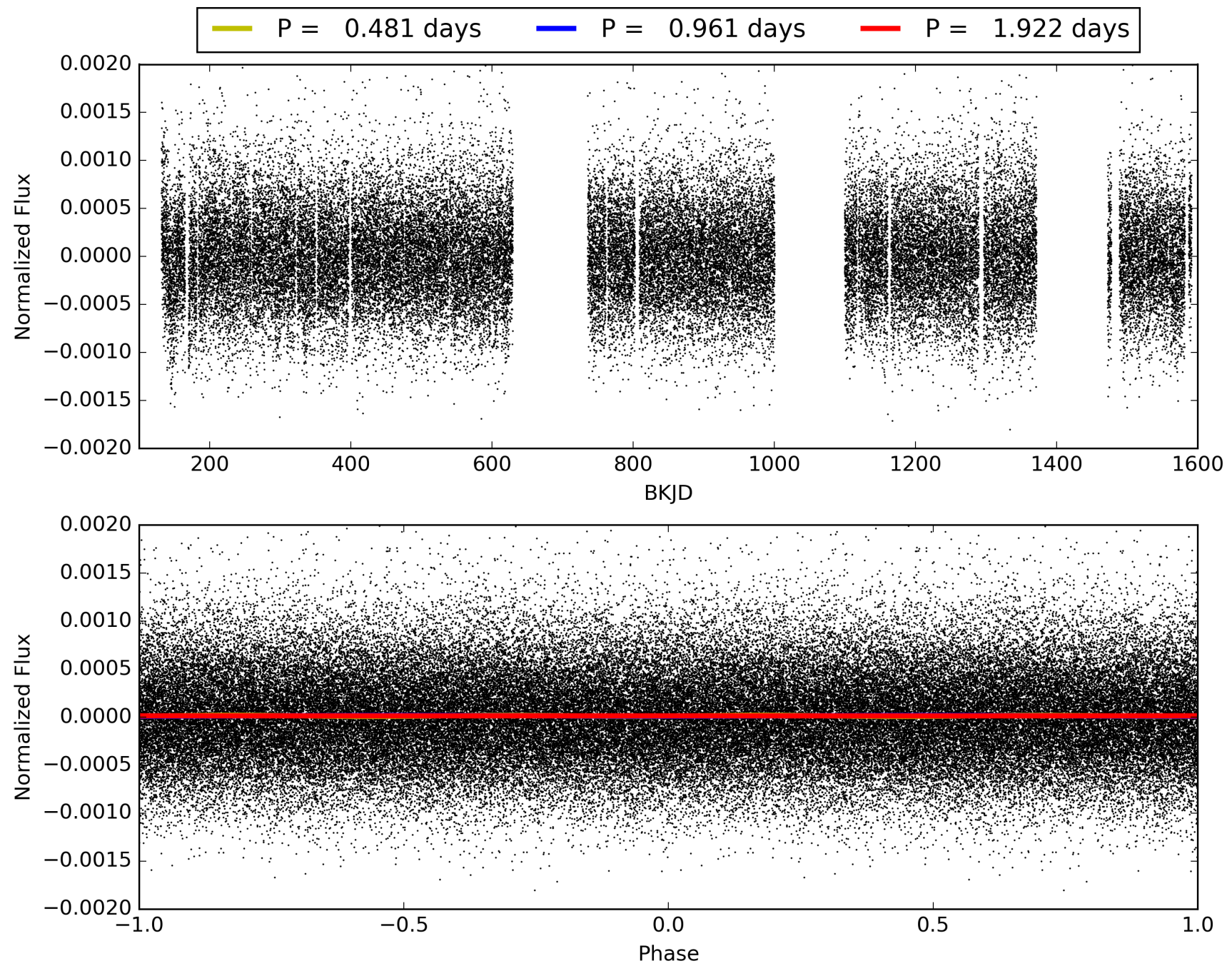
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 8.9% [0.11σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.95e-23  
RollingBand-fgt: 1.00 [1048/1048]  
GhostDiagnostic-chr: 0.7532  
Centroid-sig: 86.6%  
Centroid-so: 4.715 arcsec [0.33σ]  
OotOffset-rm: 5.025 arcsec [4.25σ]  
KicOffset-rm: 5.157 arcsec [4.85σ]  
OotOffset-st: 3/1/2/5 [11]  
KicOffset-st: 3/1/2/5 [11]  
DiffImageQuality-fgm: 0.09 [1/11]  
DiffImageOverlap-fno: 0.86 [12/14]

# TCE 010548195-01, PDC Light Curves



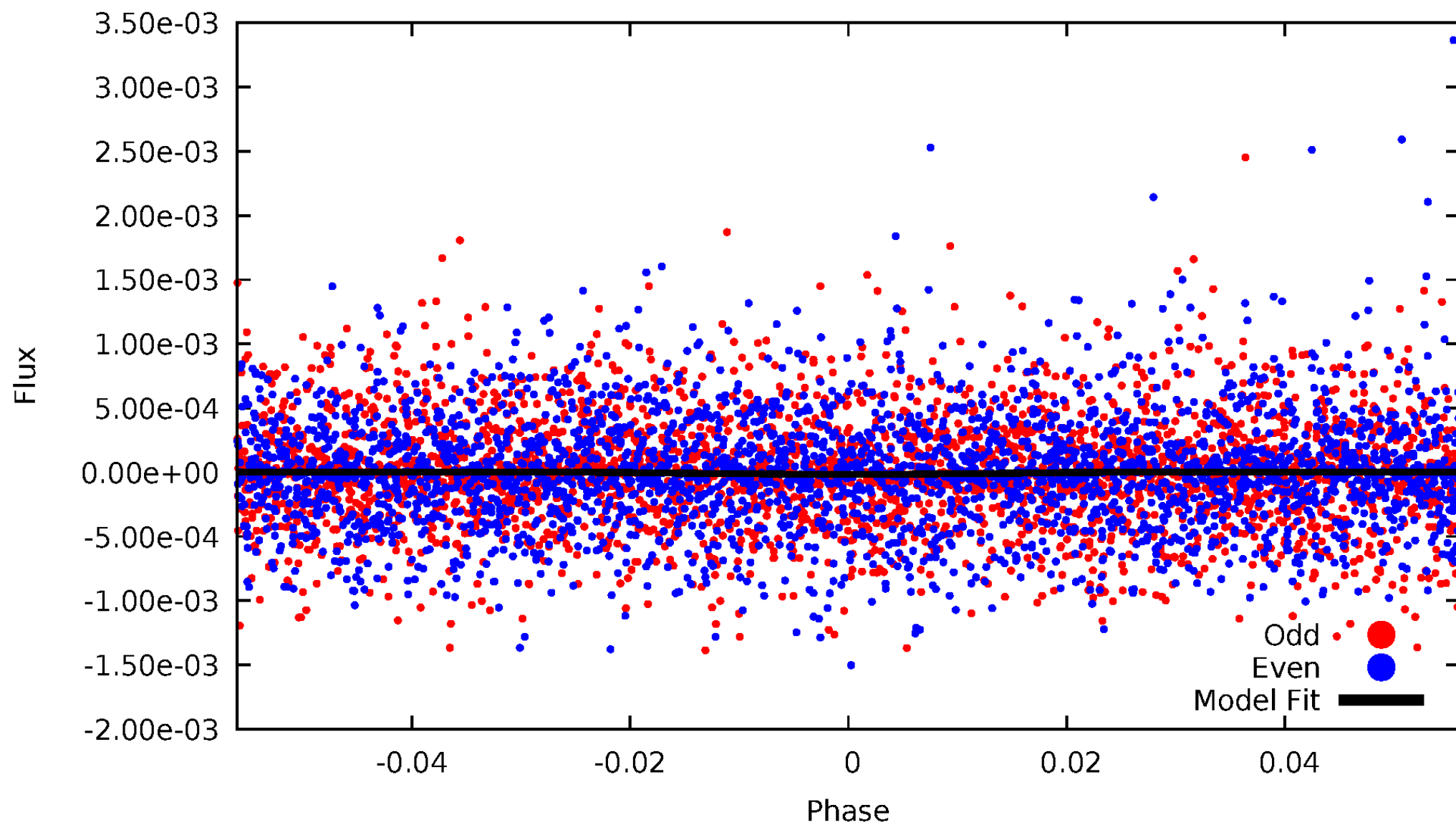
TCE 010548195-01





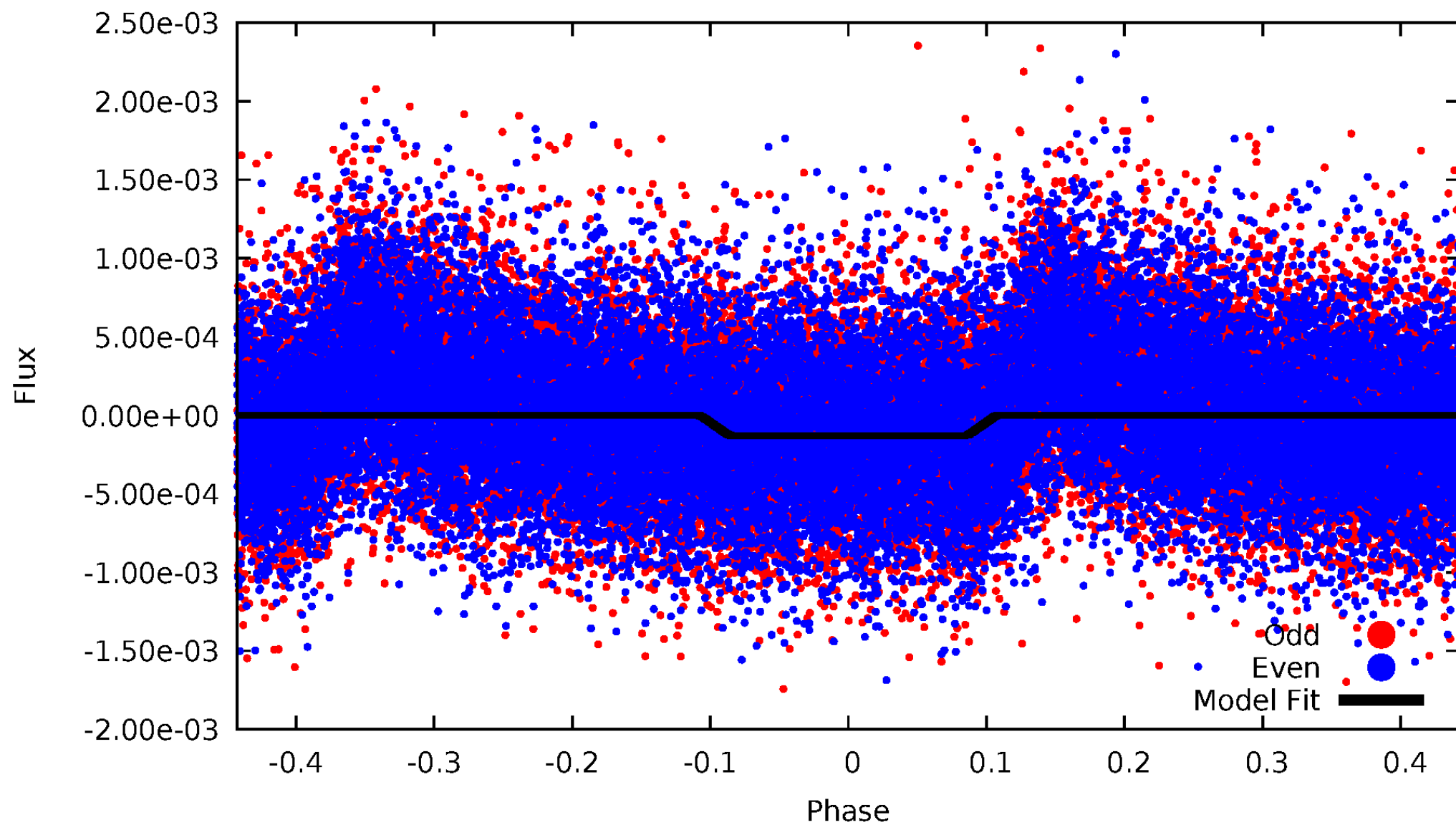
# DV Odd/Even

TCE 010548195-01



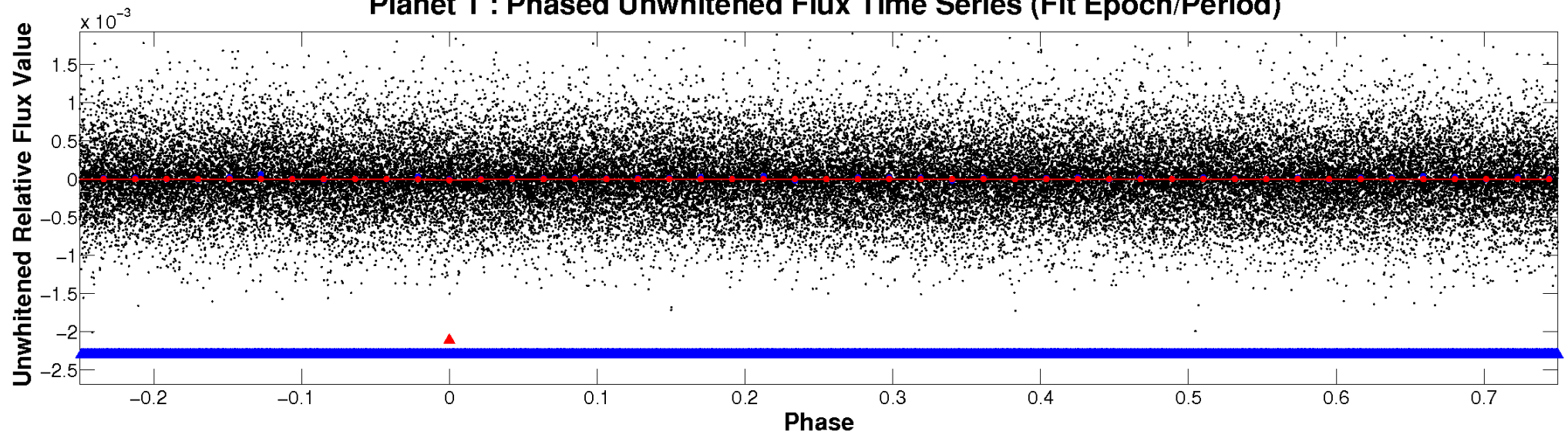
# ALT Odd/Even

TCE 010548195-01

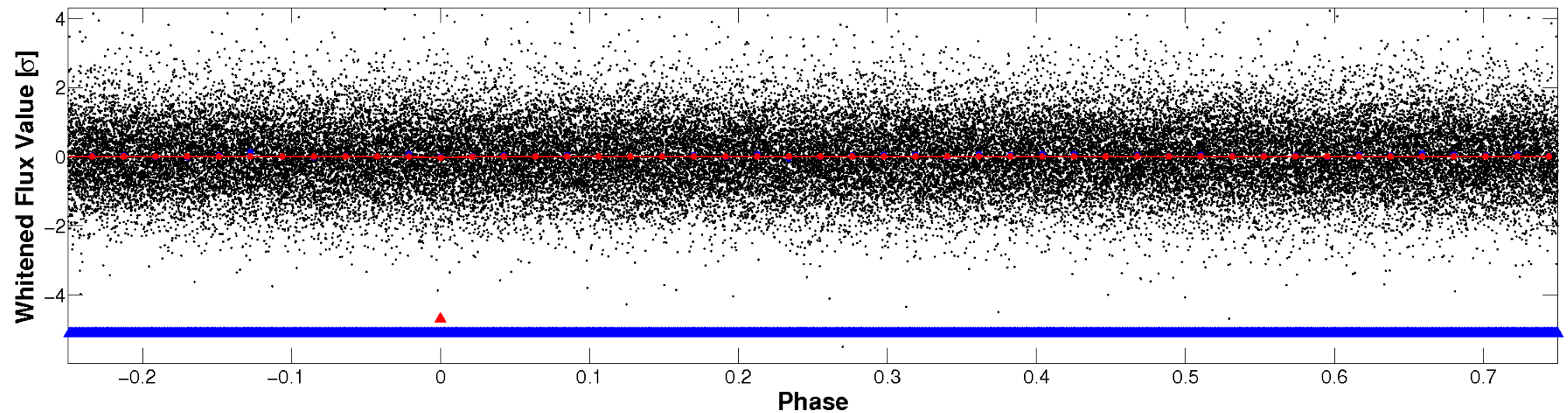


# Non-Whitened Vs. Whitened Light Curve

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

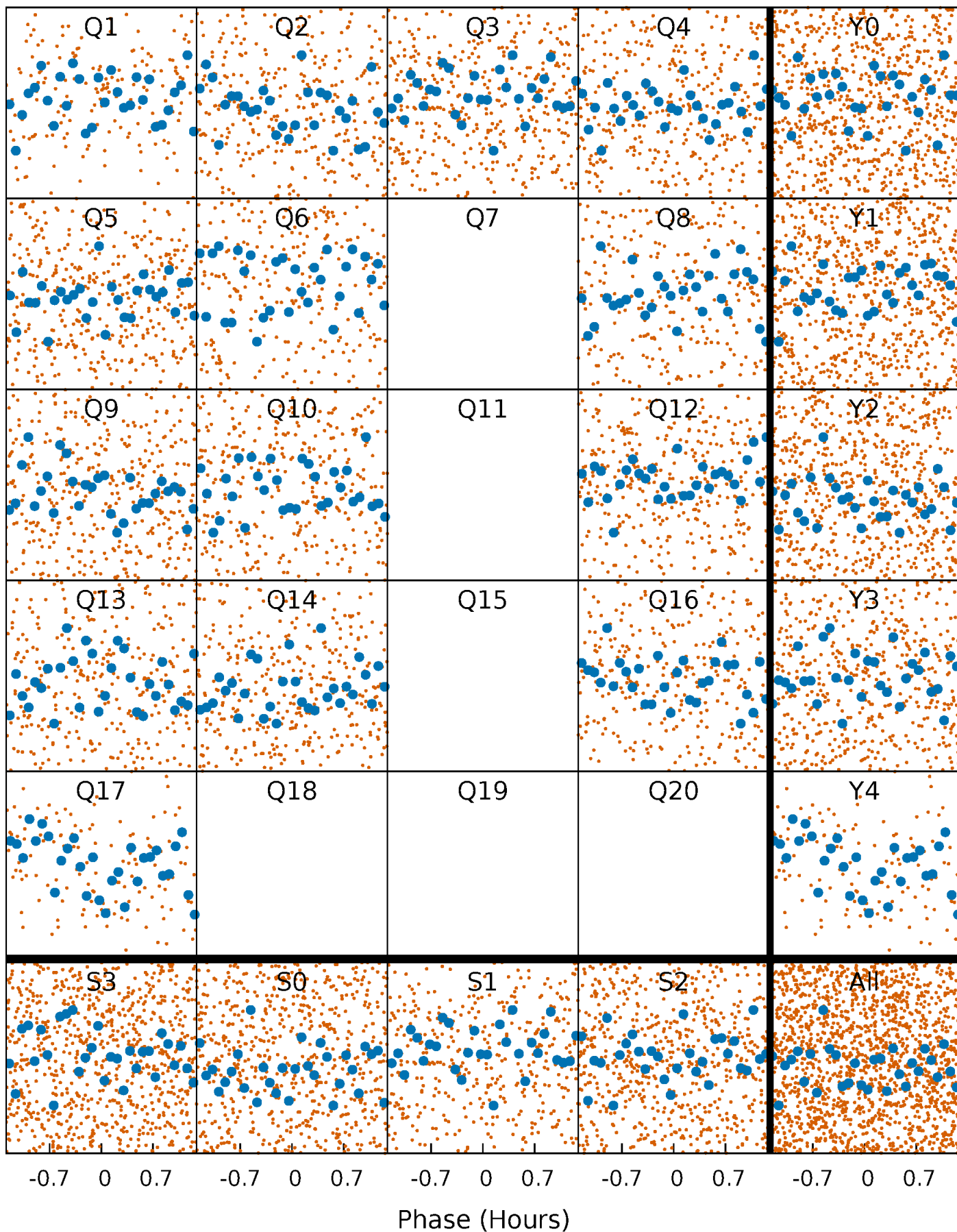


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

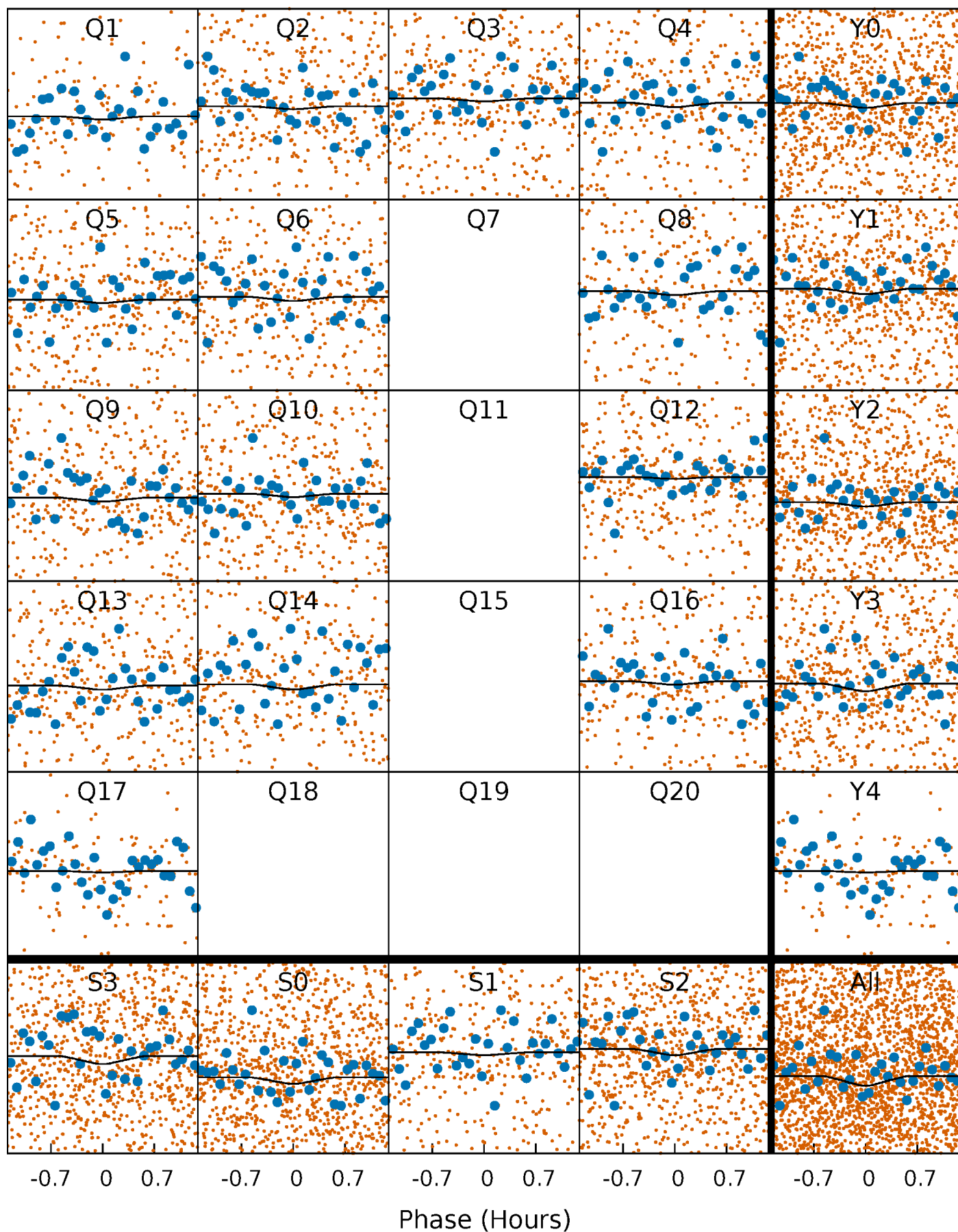
TCE 010548195-01 P= 0.961234 Days  $T_0=132.283044$  (BKJD)





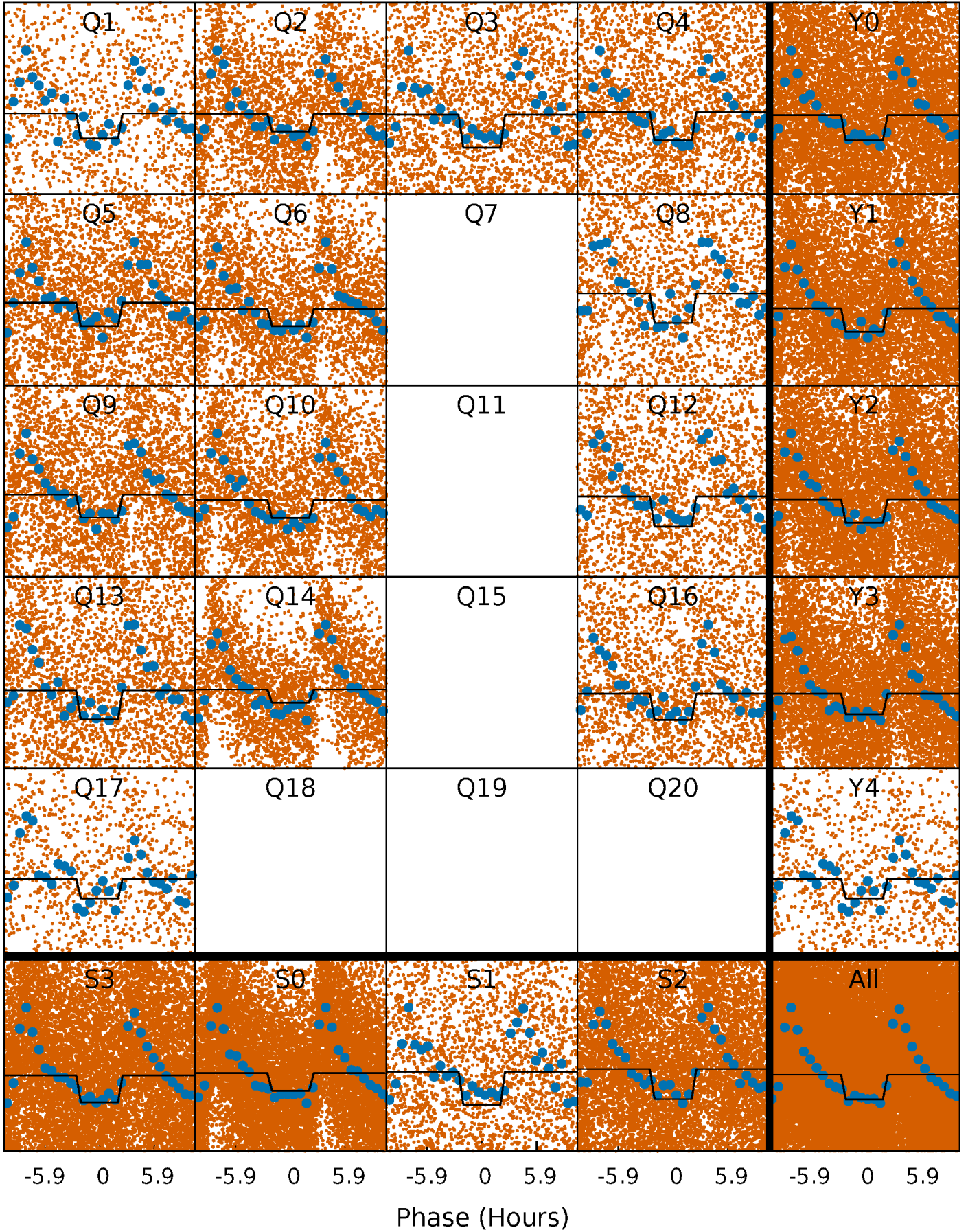
# DV Quarter-Phased Transit Curves

TCE 010548195-01 P= 0.961234 Days  $T_0=132.283044$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

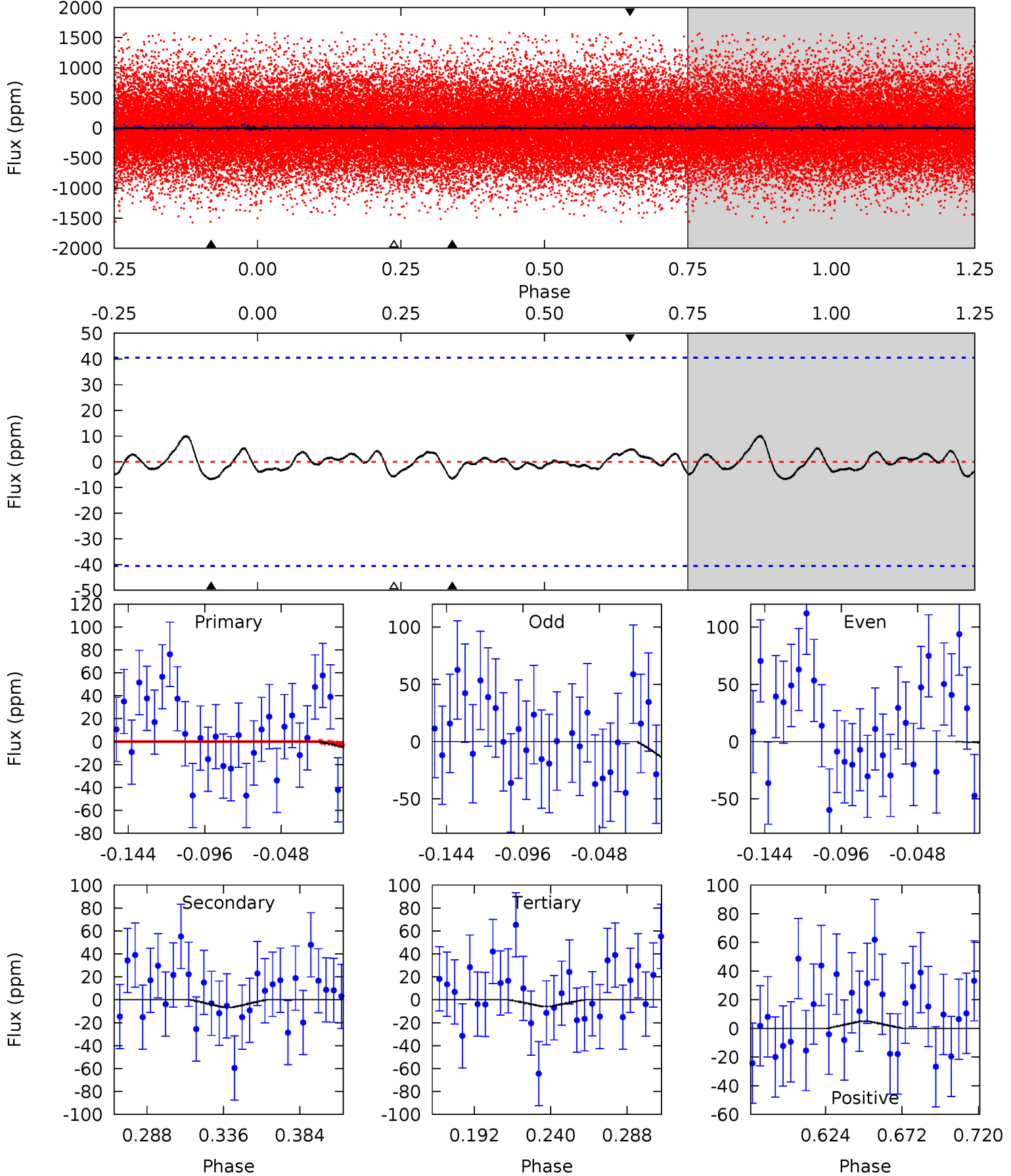
TCE 010548195-01   P= 0.968880 Days    $T_0=132.216622$  (BKJD)



# DV Model-Shift Uniqueness Test

010548195-01, P = 0.961234 Days, E = 131.321810 Days

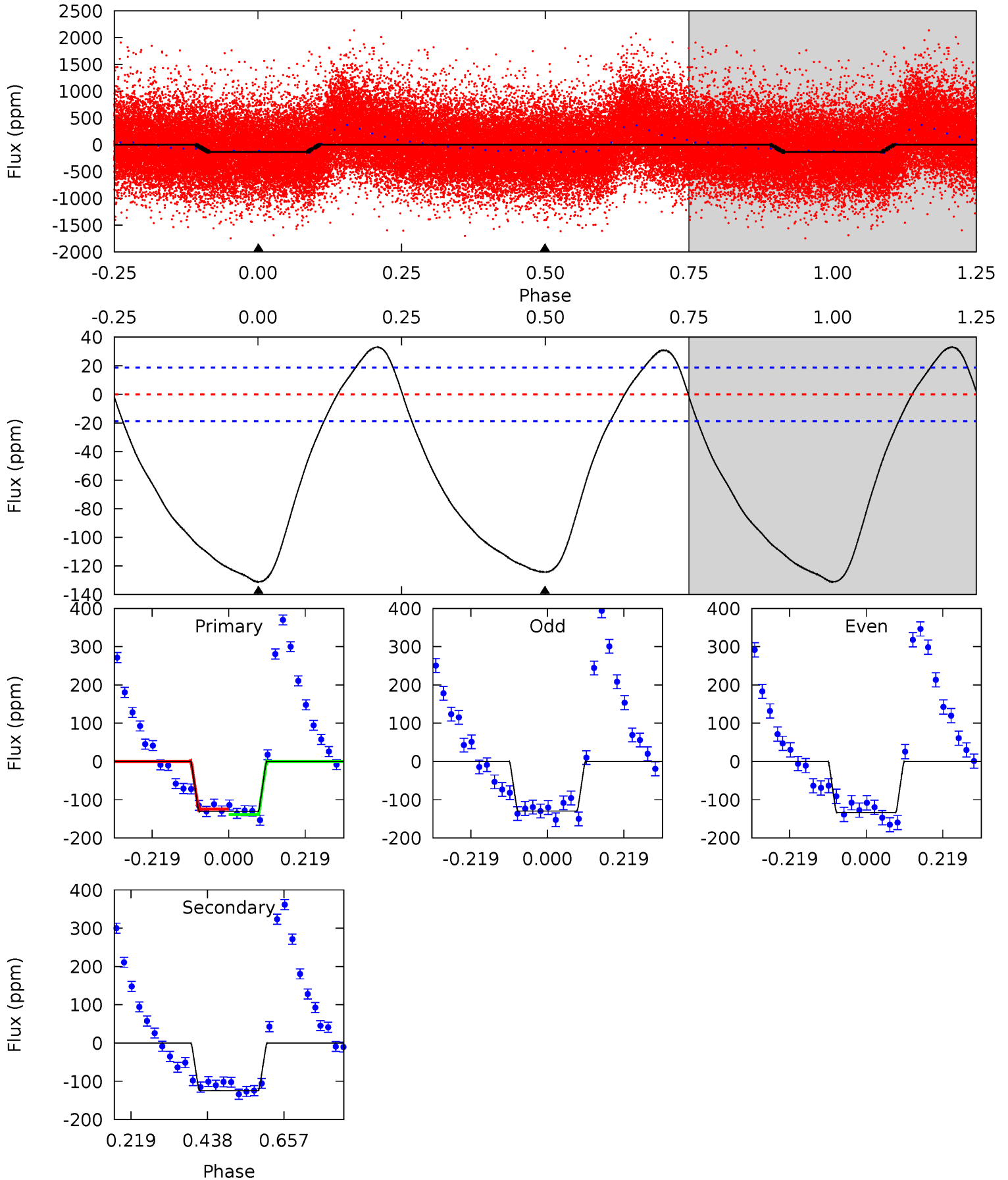
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.80	0.78	0.67	0.58	4.72	1.98	0.30	0.13	0.22	0.11	0.20	1.04	0.07	0.59	0.61



# Alt Model-Shift Uniqueness Test

010548195-01, P = 0.968880 Days, E = 131.247742 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
30.8	29.2	0	0	4.40	1.23	4.64	30.8	30.8	29.2	29.2	0.45	0.96	0.20	1.65





### Stellar Parameters For KIC 010548195

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6152^{+171}_{-236}$	$4.464^{+0.054}_{-0.202}$	$-0.100^{+0.250}_{-0.300}$	$1.009^{+0.302}_{-0.108}$	$1.079^{+0.151}_{-0.151}$	$1.480^{+0.402}_{-0.758}$
	+3%/-4%	+1%/-5%	+250%/-300%	+30%/-11%	+14%/-14%	+27%/-51%
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 010548195-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-7 \pm 9$	$1.22^{+1.13}_{-0.82}$	$2777^{+180}_{-136}$	$2987^{+1939}_{-6256}$	$0.605^{+5.590}_{-0.870}$
Alt.	$-124 \pm 4$	$1.63^{+1.41}_{-0.98}$	$2762^{+201}_{-132}$	$5377^{+3739}_{-1194}$	$9.643^{+50.435}_{-6.868}$

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

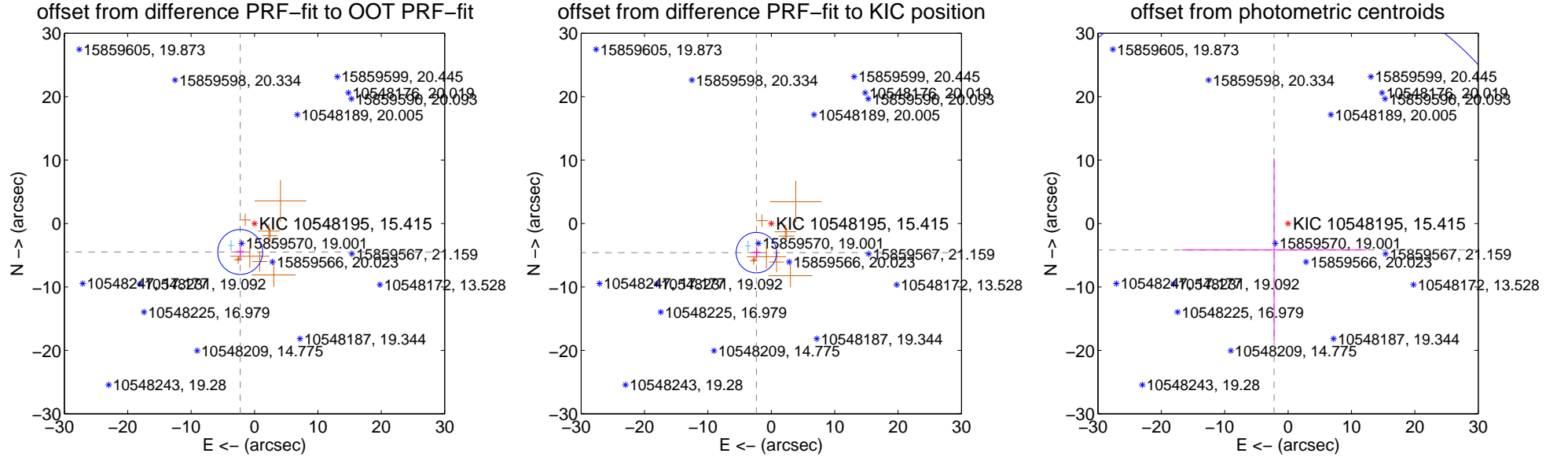
## DV Centroid Data

Supplemental centroid analysis for 010548195-01. Kepler magnitude: 15.41. Transit SNR 0.69

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

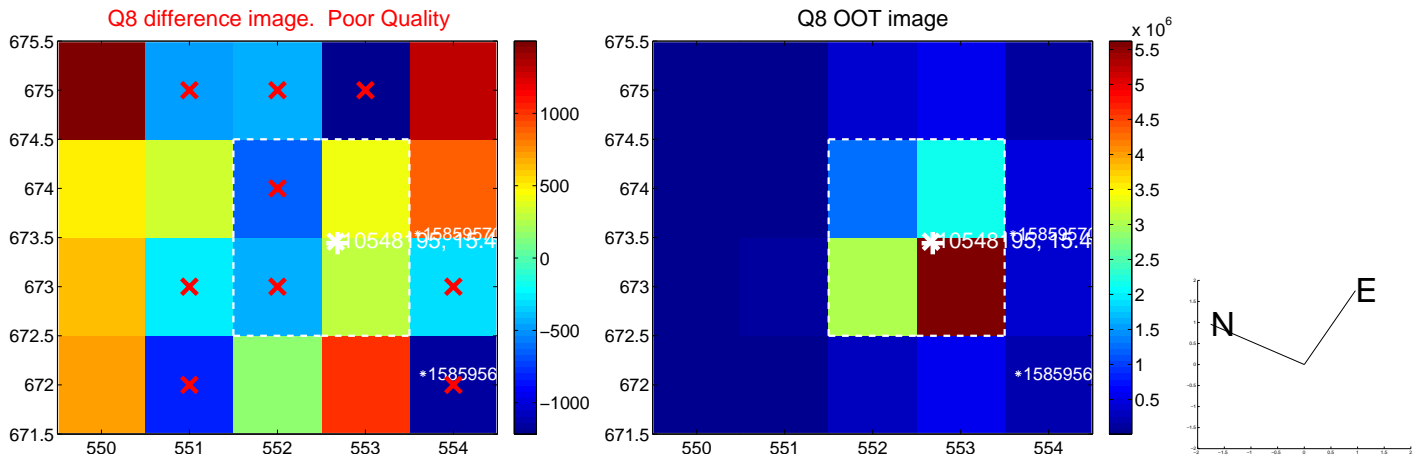
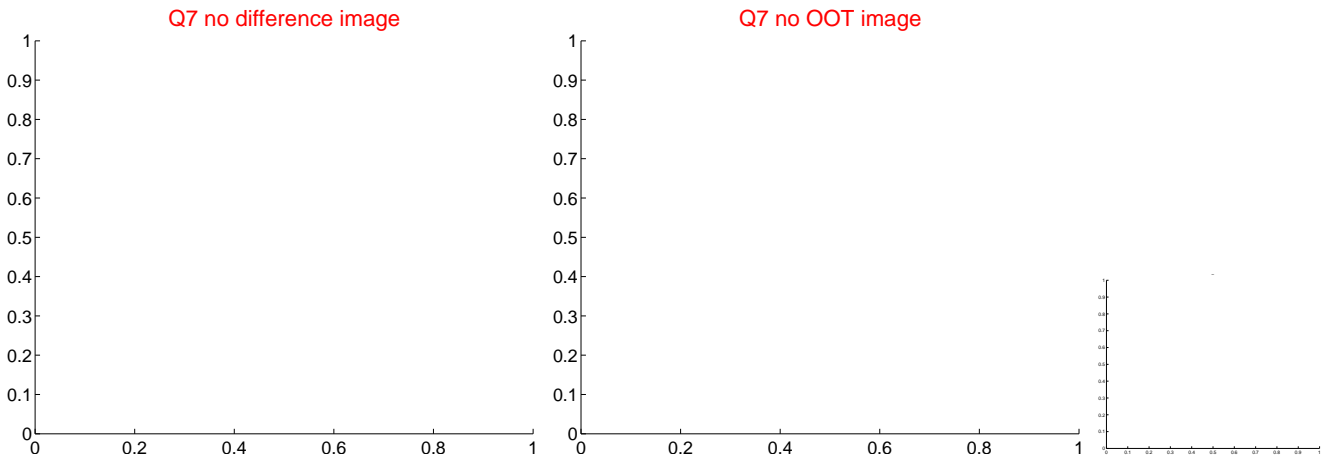
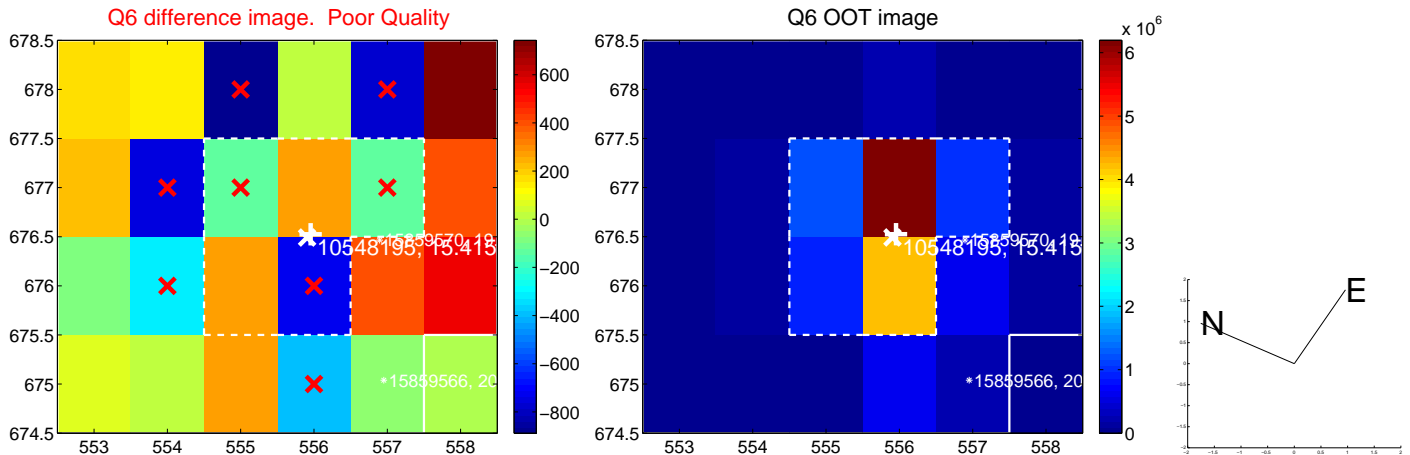
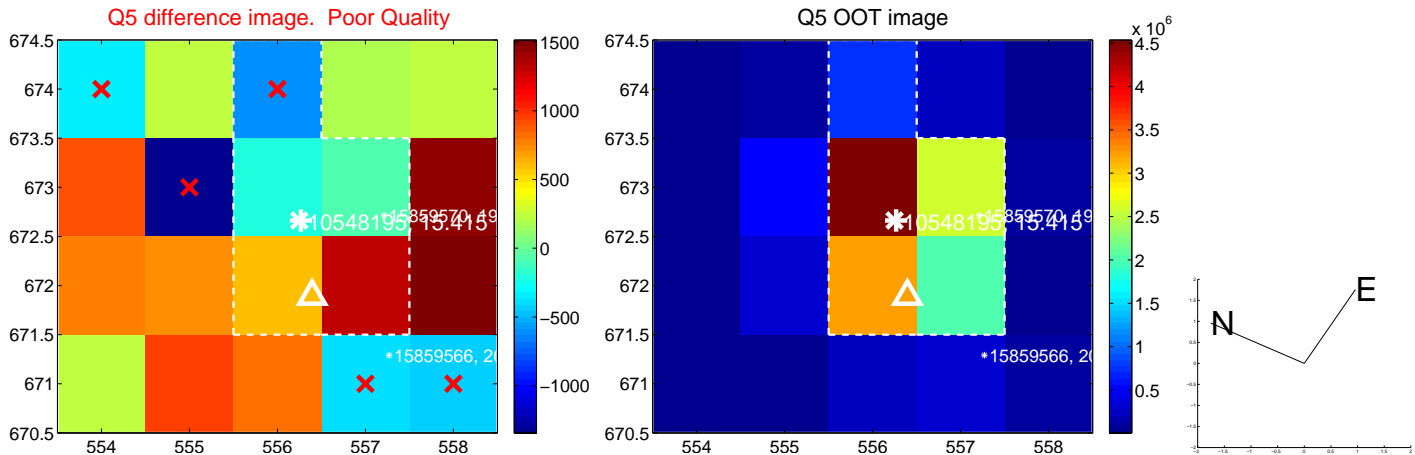
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	5.025 $\pm$ 1.181	4.25	2.256 $\pm$ 0.769	-4.490 $\pm$ 1.138
PRF-fit source offset from KIC position	5.157 $\pm$ 1.064	4.85	2.355 $\pm$ 0.815	-4.588 $\pm$ 0.967
photometric centroid source offset	4.71 $\pm$ 14.49	0.33	2.21 $\pm$ 14.59	-4.17 $\pm$ 14.46



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.

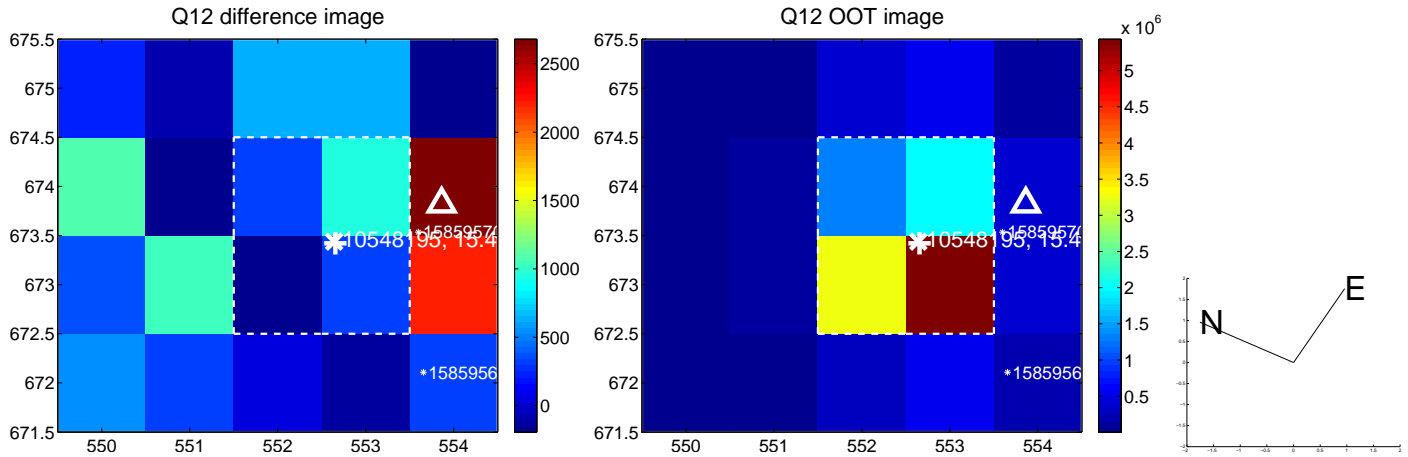
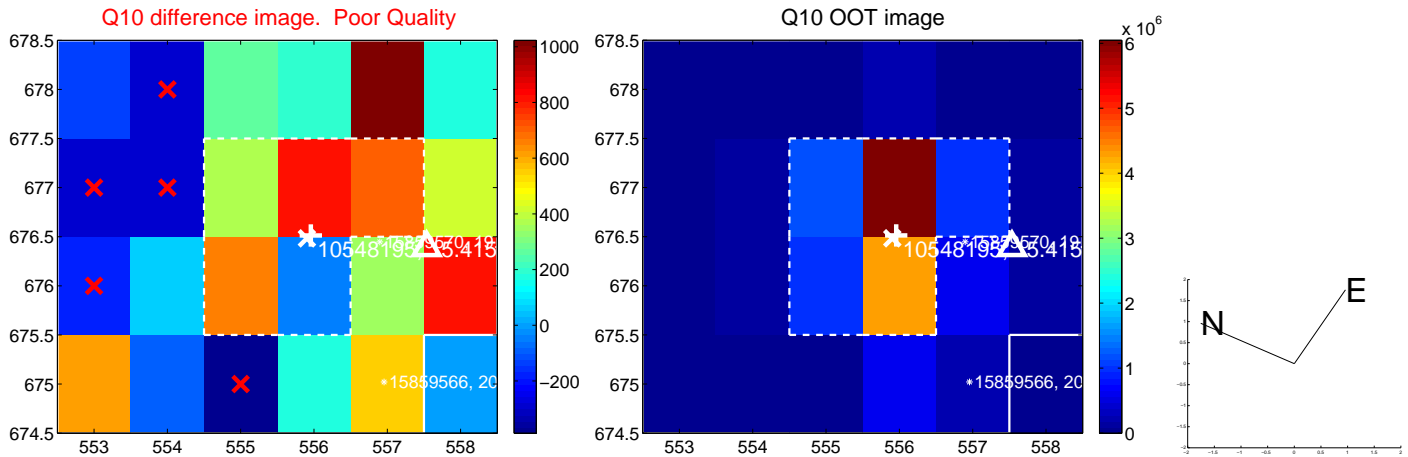
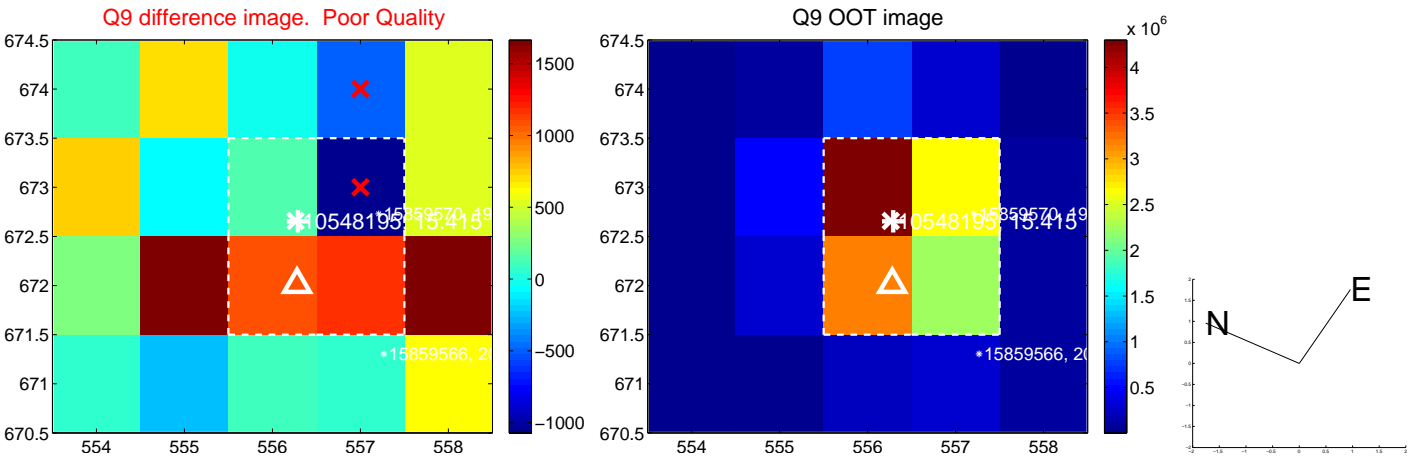


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

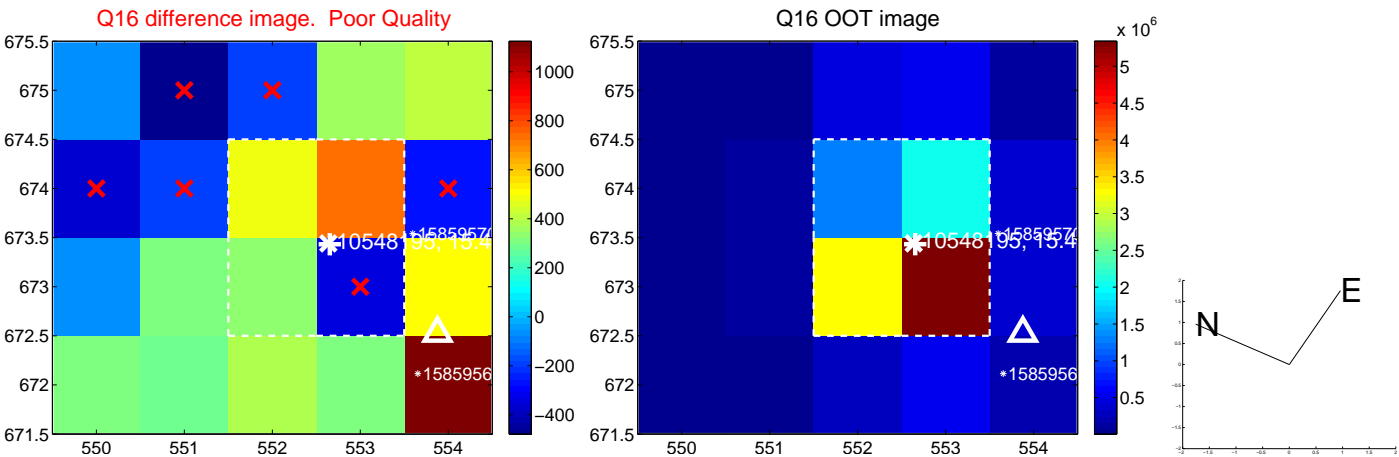
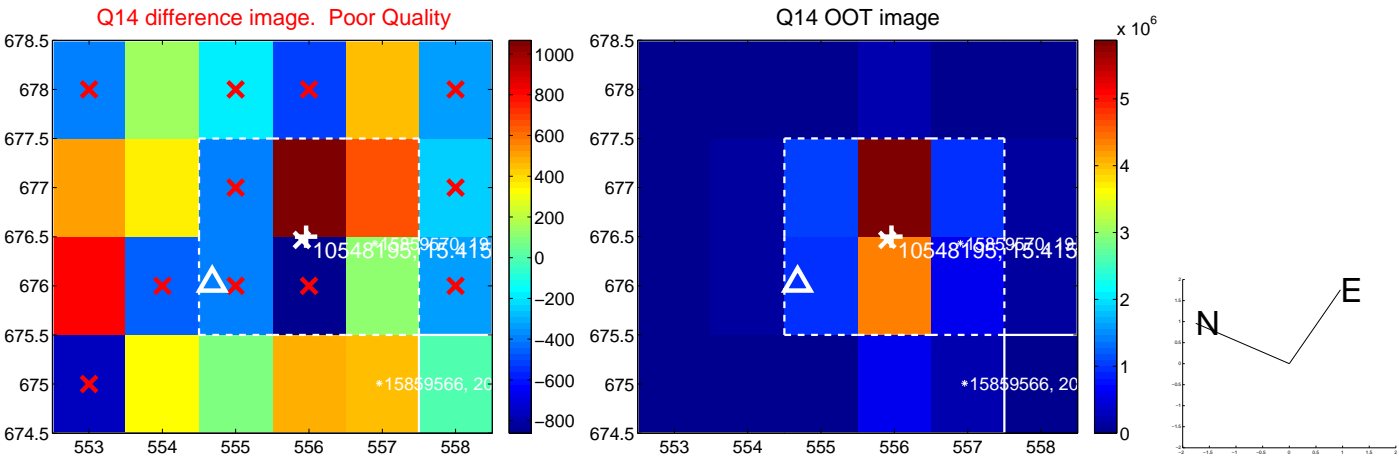
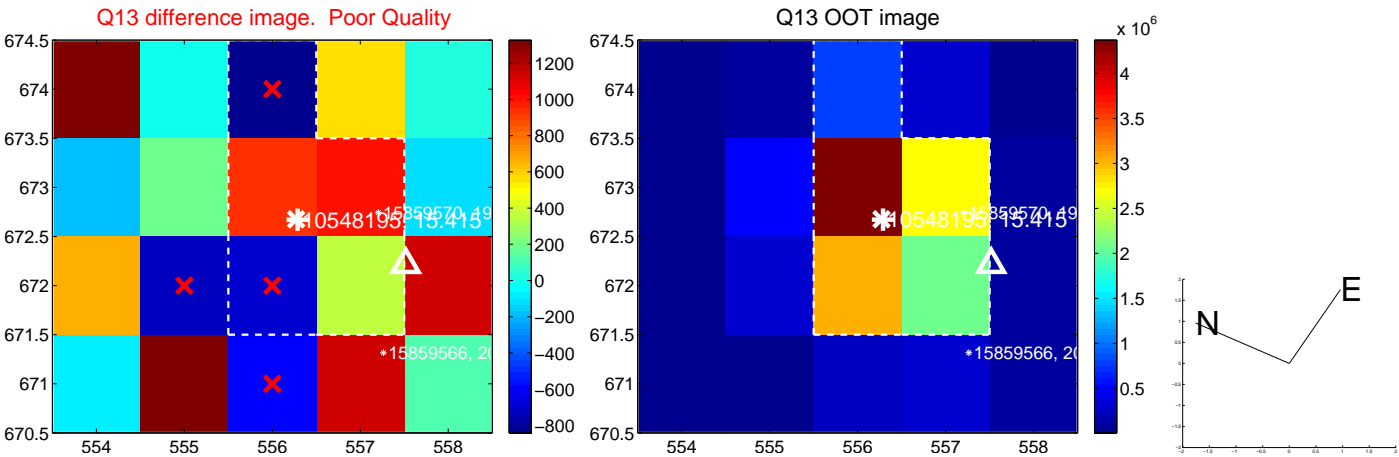




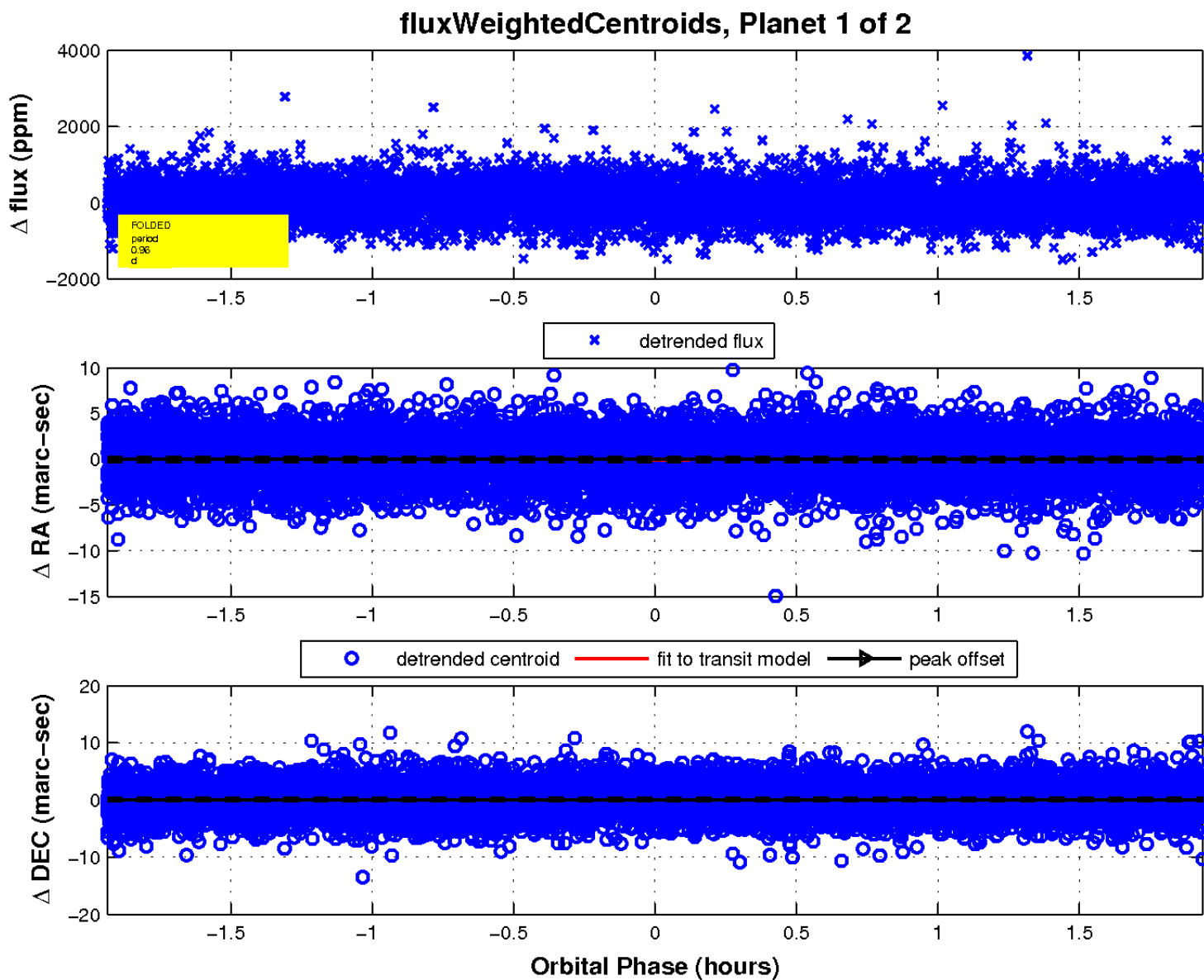
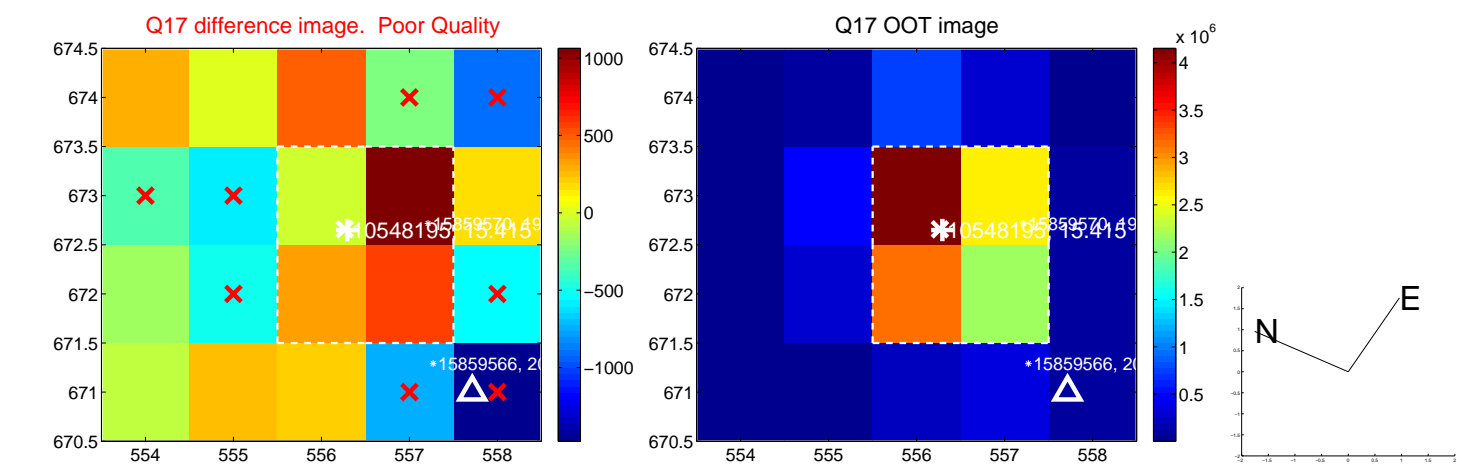
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



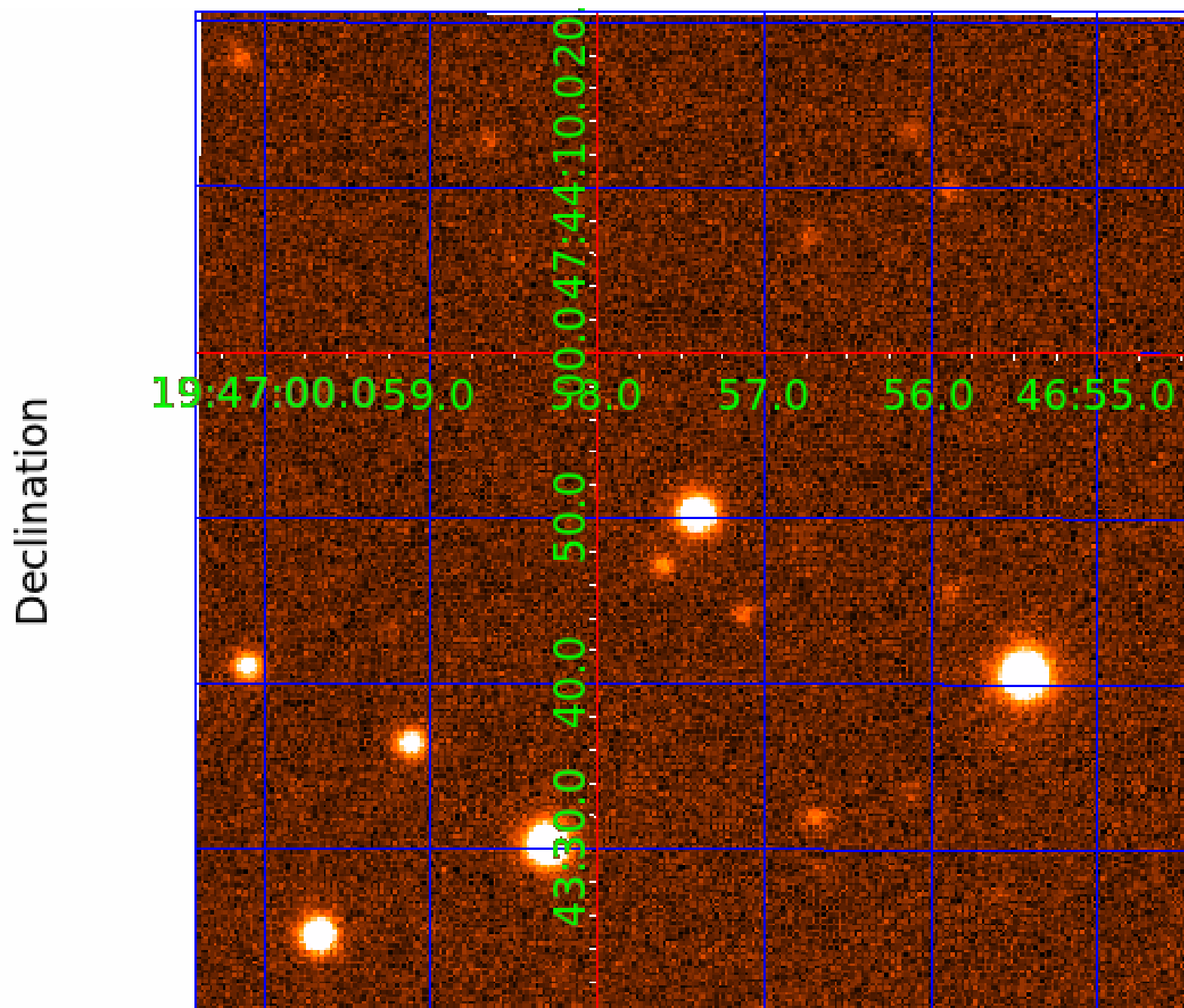
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





# KIC 010548195

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010548195-01	OBS	No	0.961234	132.283044	16.3	0.646	9.4	0.7	1.01	6152	0.43	3412.83
010548195-02	OBS	No	0.968880	132.301619	858.5	1.500	7.8	-1.0	1.01	6152	2.97	3376.97

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010548195-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010548195-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

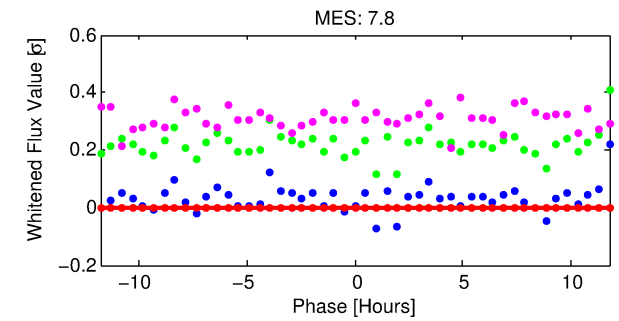
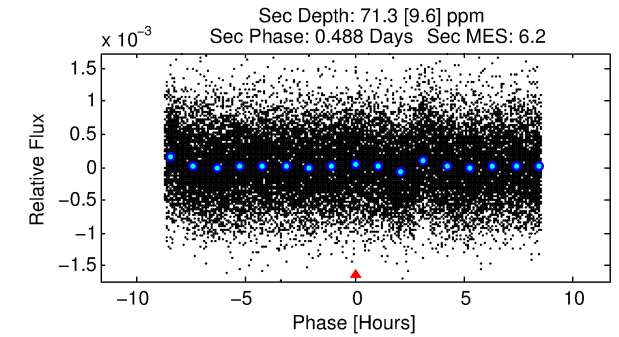
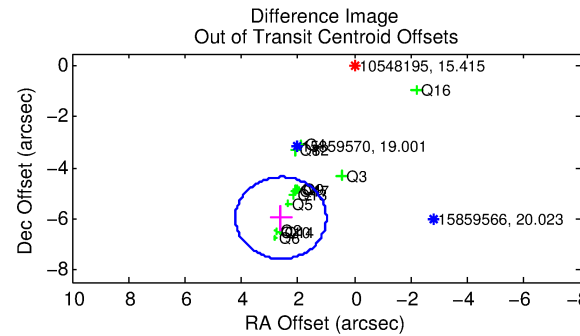
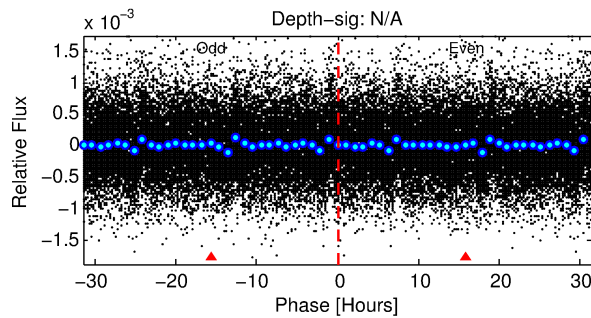
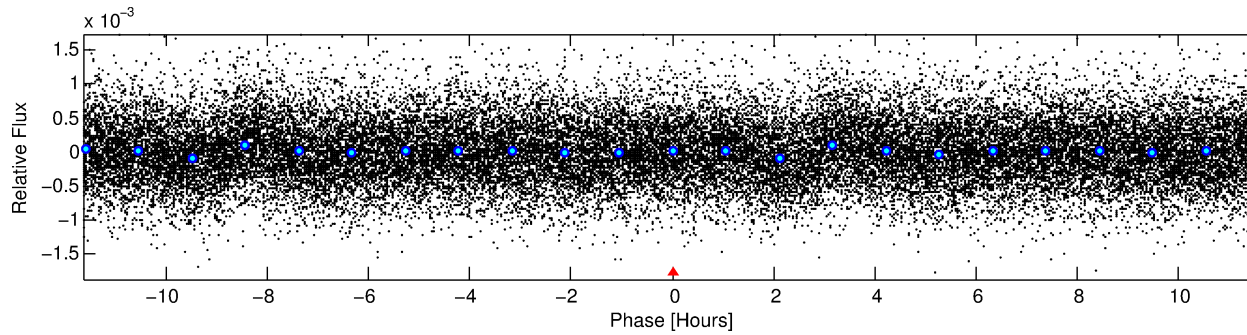
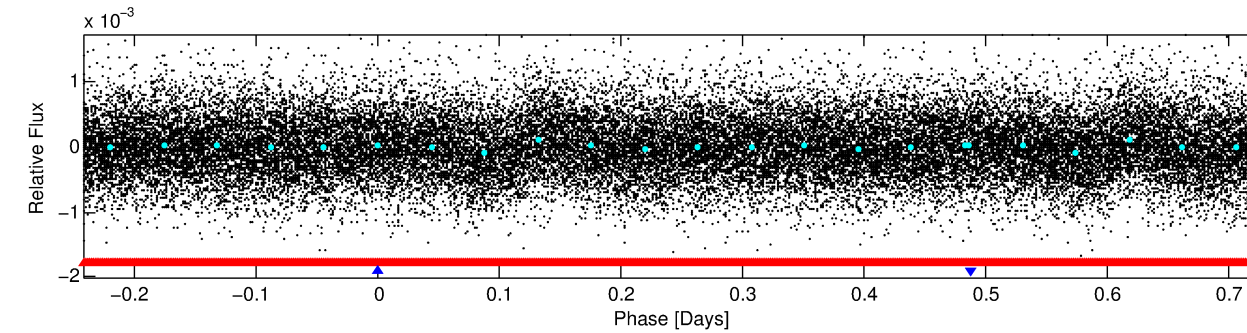
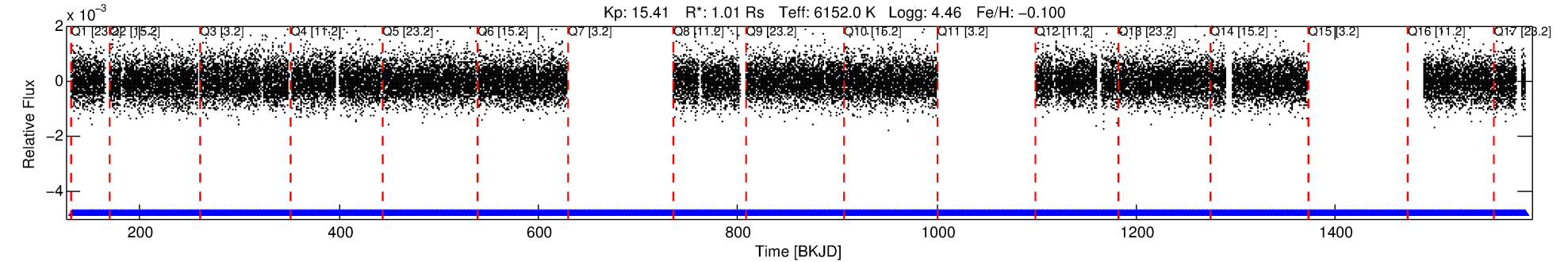
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010548195-02

No Significant Match Found

# DV One-Page Summary

KIC: 10548195 Candidate: 2 of 2 Period: 0.969 d



## TPS TCE Results:

Period = 0.96888 d  
Epoch = 132.3016 BKJD

DV fit results are unavailable

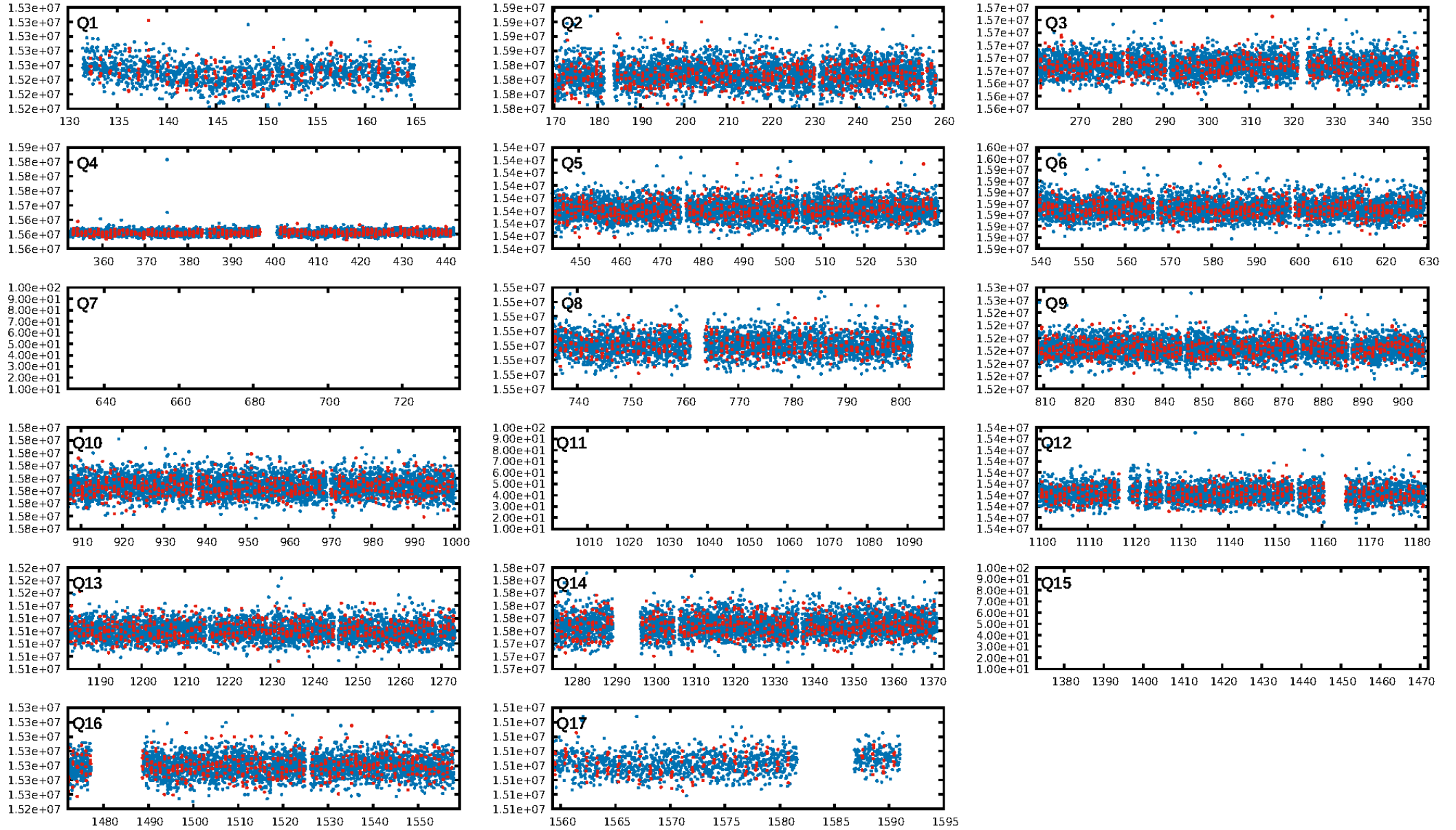
## DV Diagnostic Results:

ShortPeriod-sig: 8.9% [0.11σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 3.46e-17  
RollingBand-fgt: 1.00 [1039/1039]  
GhostDiagnostic-chr: -0.3263  
Centroid-sig: 19.6%  
Centroid-so: 0.889 arcsec [1.43σ]  
OotOffset-rm: 6.519 arcsec [12.14σ]  
KicOffset-rm: 6.696 arcsec [12.50σ]  
OotOffset-st: 4/1/4/5 [14]  
KicOffset-st: 4/1/4/5 [14]  
DiffImageQuality-fgm: 0.93 [13/14]  
DiffImageOverlap-fno: 0.00 [0/14]

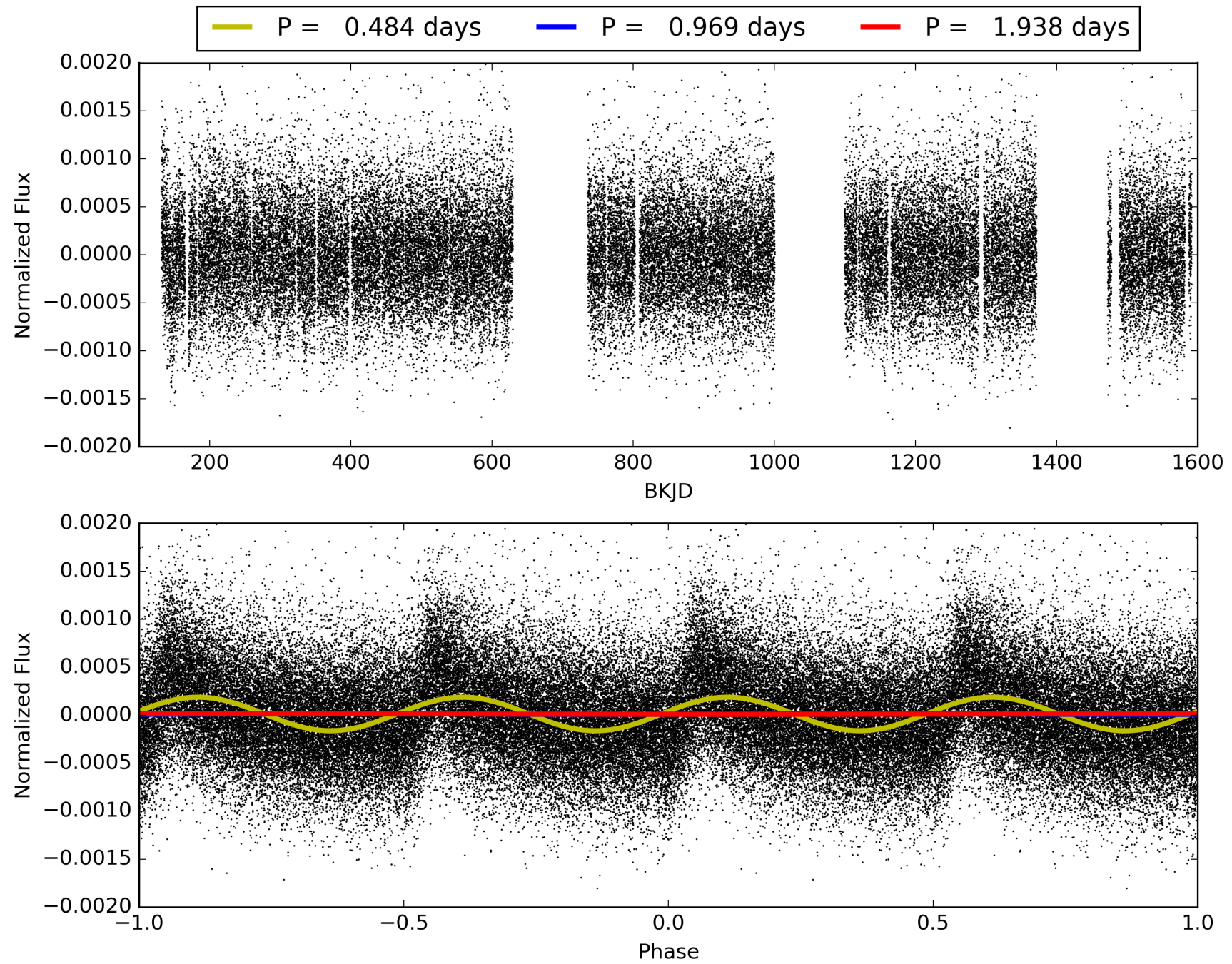
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 05:50:23 Z

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

# TCE 010548195-02, PDC Light Curves



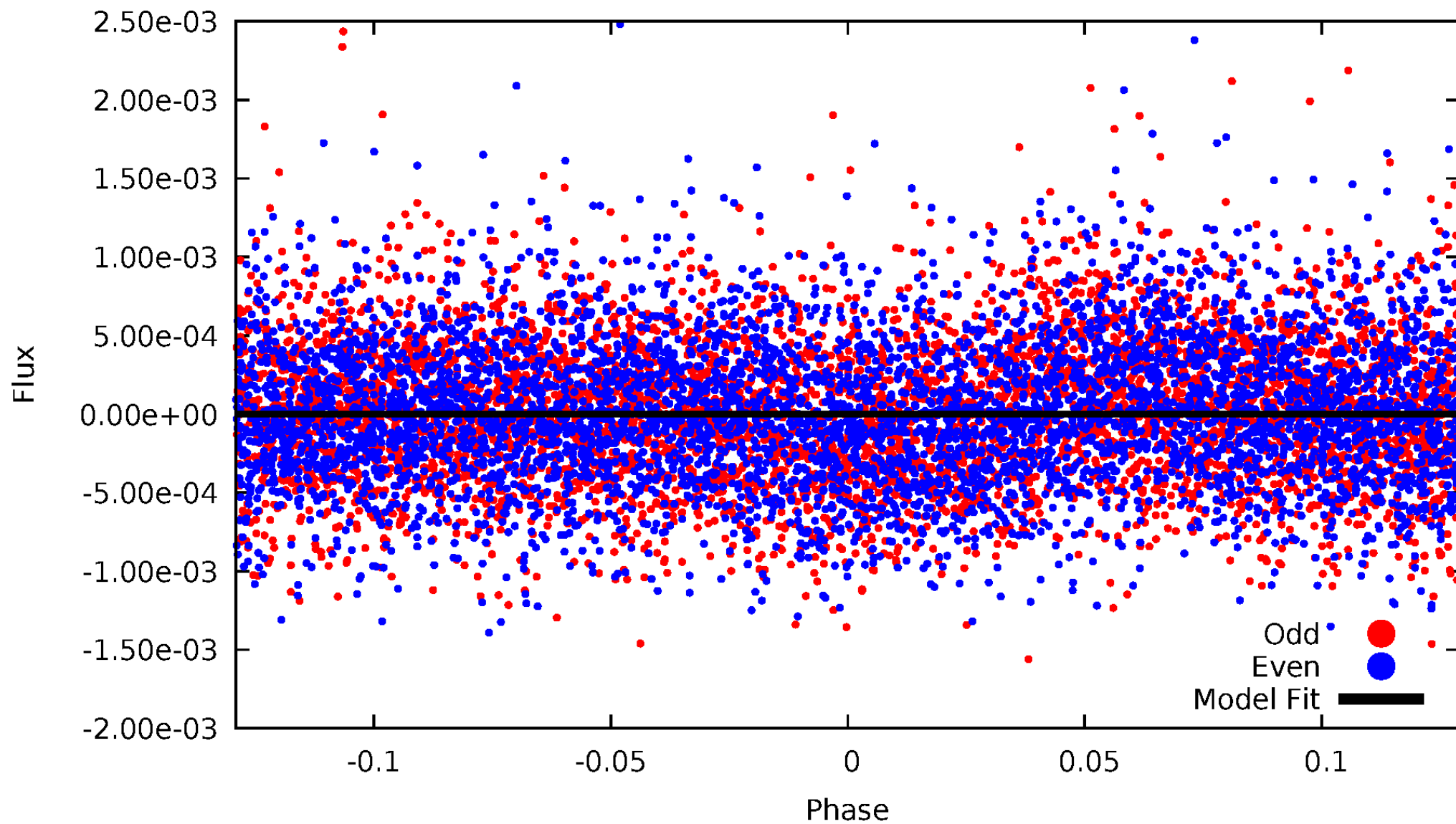
TCE 010548195-02





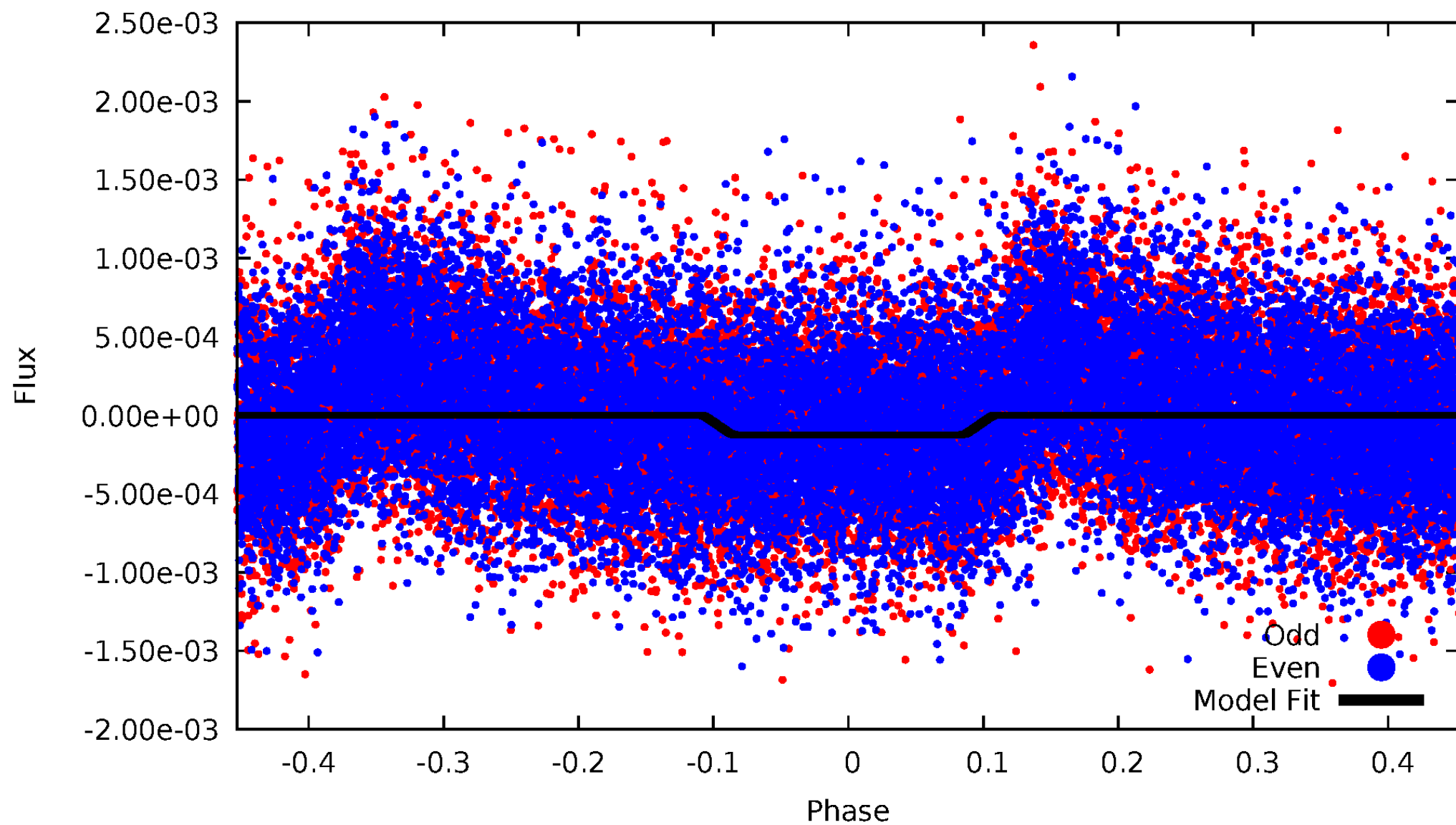
# DV Odd/Even

TCE 010548195-02



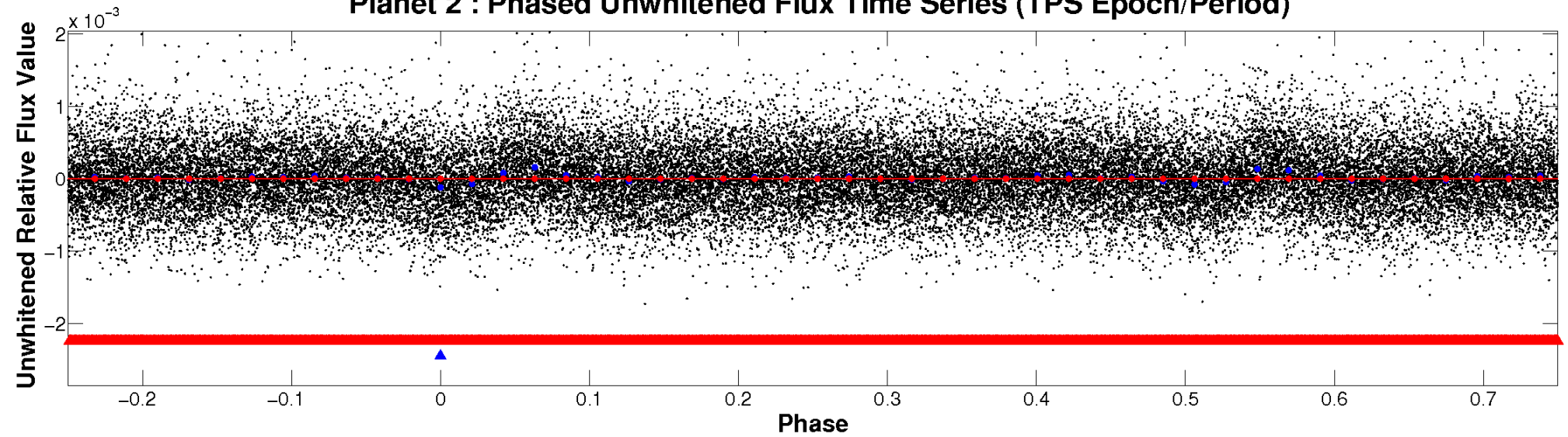
# ALT Odd/Even

TCE 010548195-02



# Non-Whitened Vs. Whitened Light Curve

**Planet 2 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

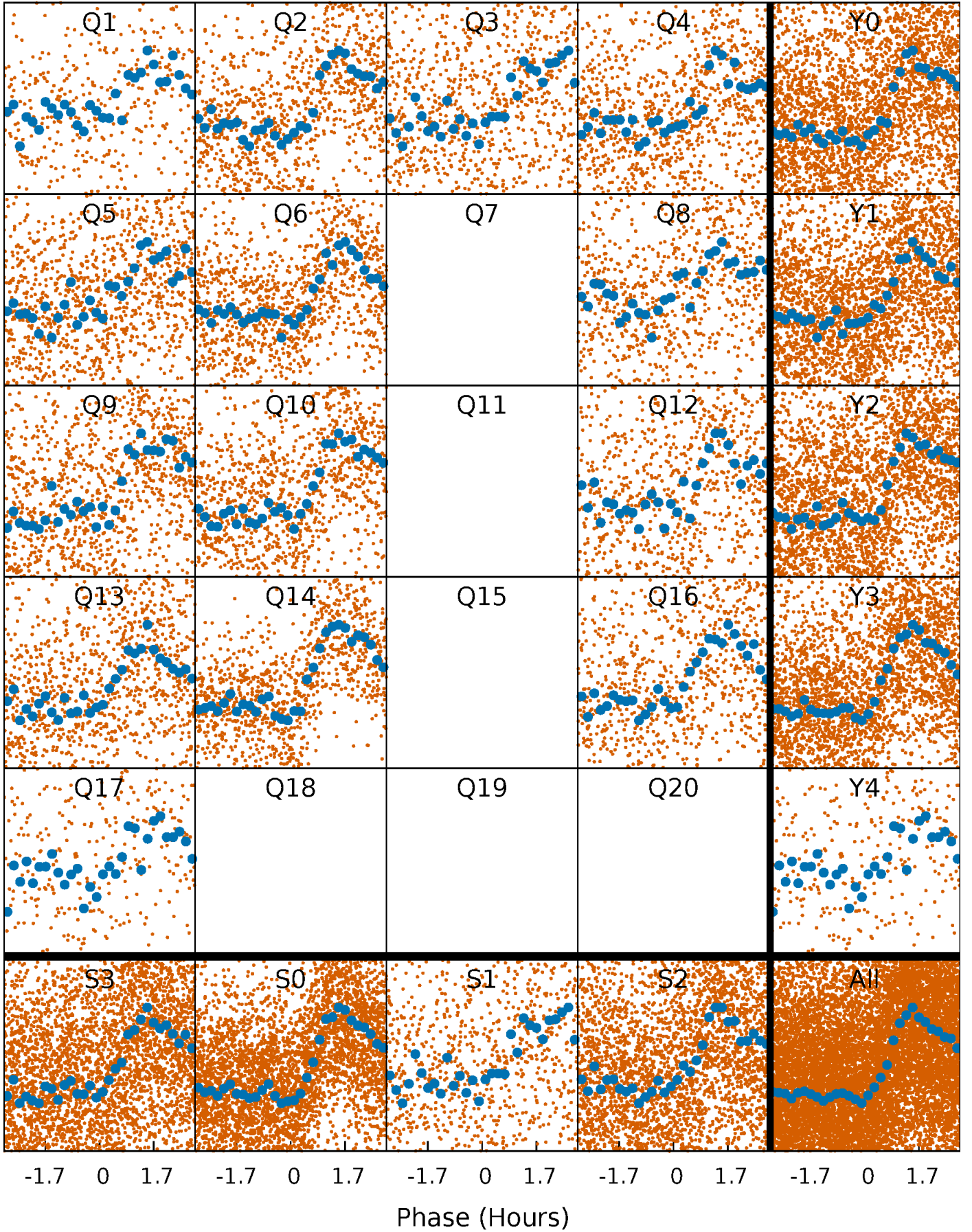


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

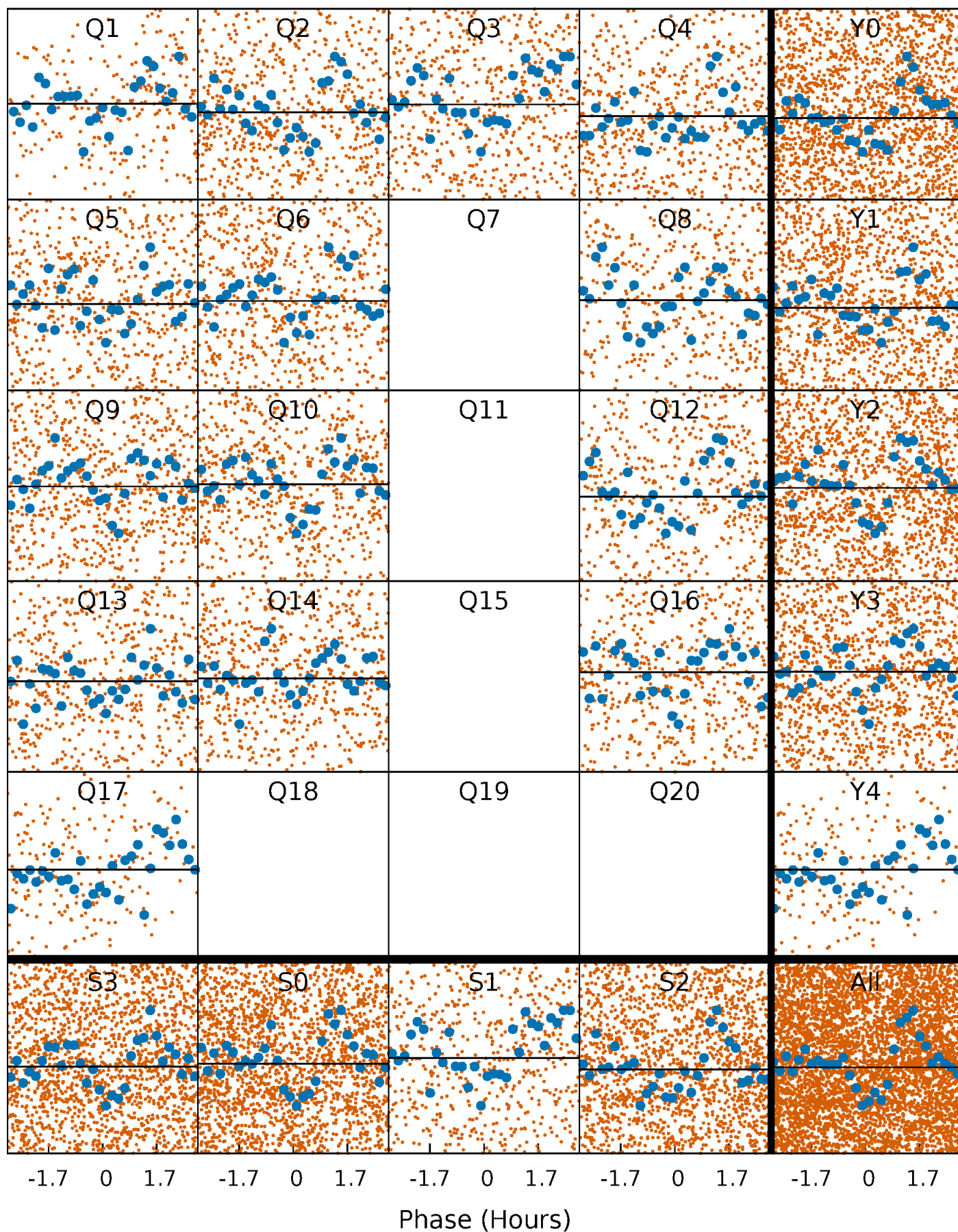
TCE 010548195-02   P= 0.968880 Days    $T_0=132.301619$  (BKJD)





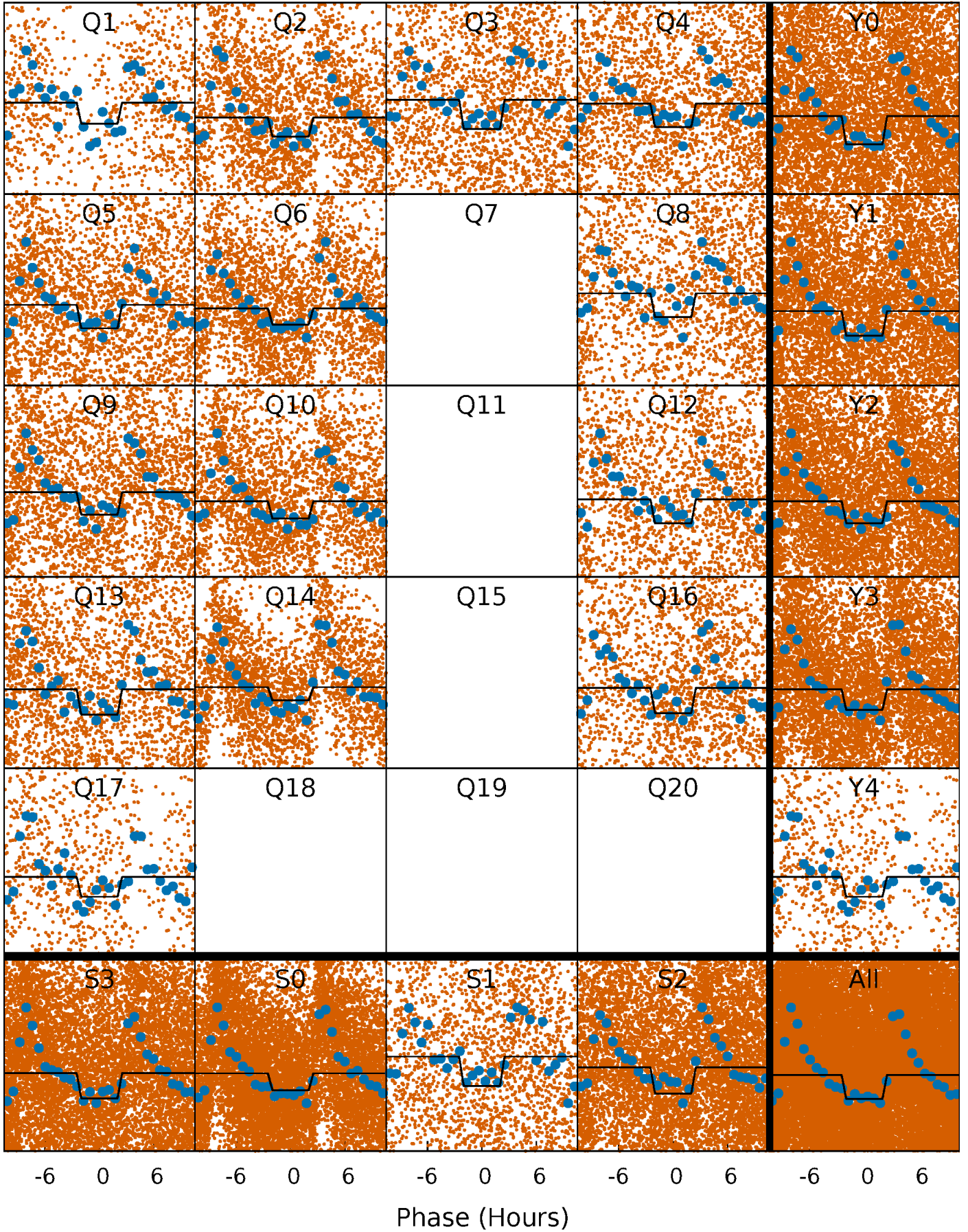
# DV Quarter-Phased Transit Curves

TCE 010548195-02   P= 0.968880 Days    $T_0=132.301619$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 010548195-02 P= 0.968880 Days  $T_0=132.218268$  (BKJD)

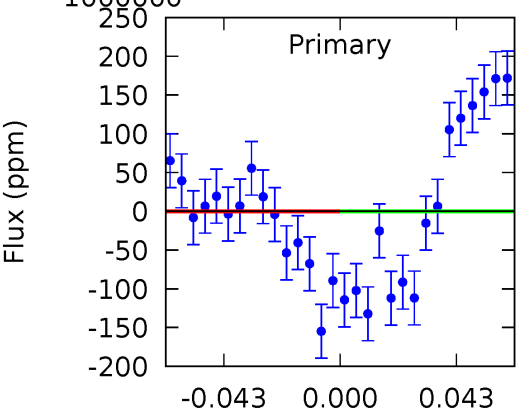
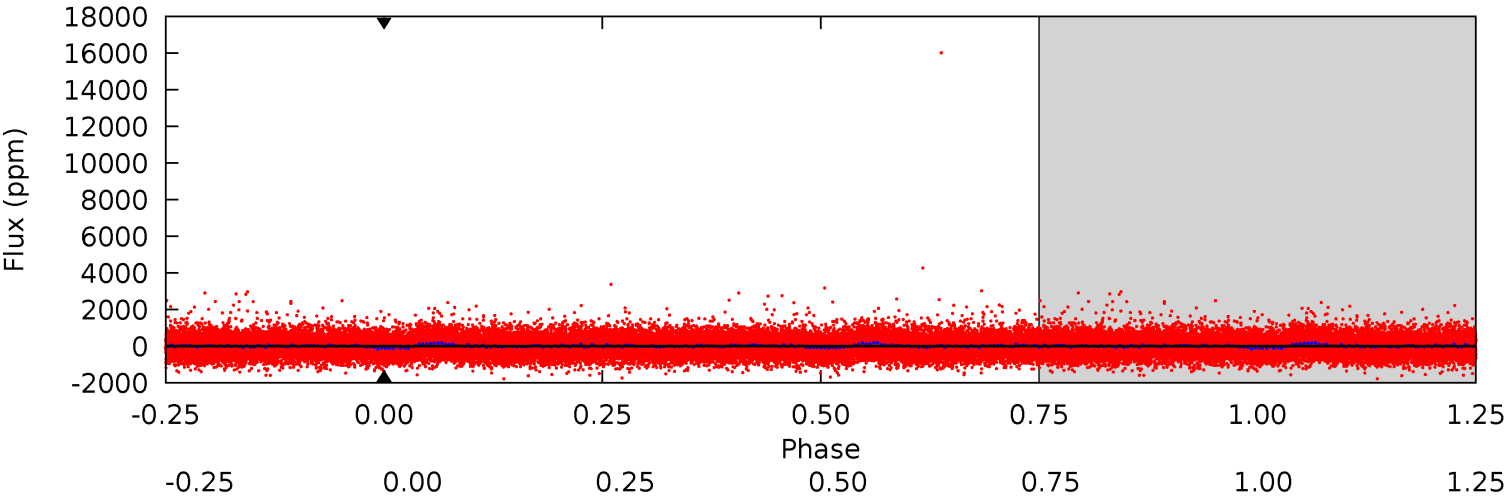




DV Model-Shift Uniqueness Test

010548195-02, P = 0.968880 Days, E = 131.332739 Days

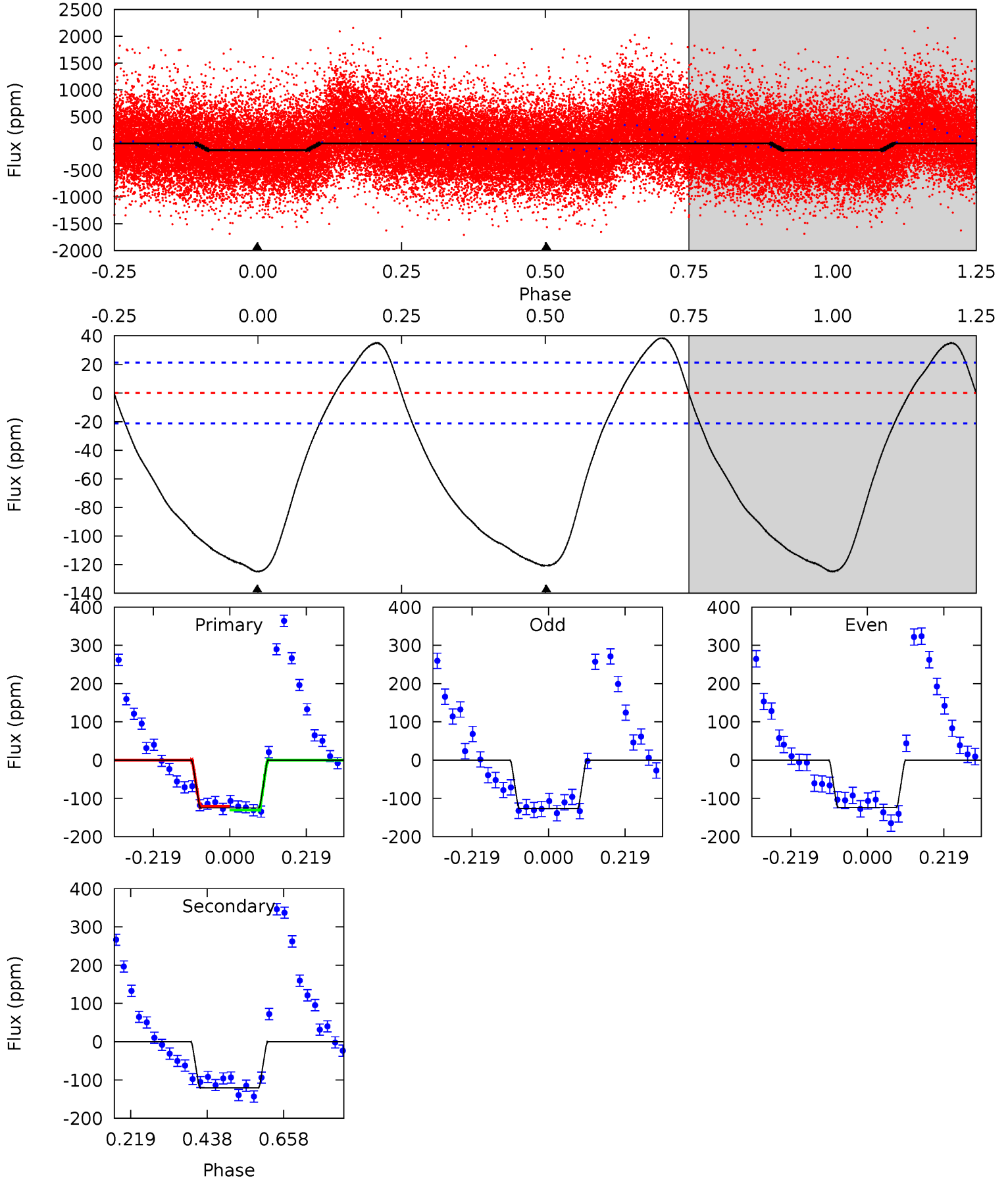
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

010548195-02, P = 0.968880 Days, E = 131.249388 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
25.8	25.0	0	0	4.40	1.23	4.13	25.8	25.8	25.0	25.0	0.24	0.93	0.24	1.04



### Stellar Parameters For KIC 010548195

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6152^{+171}_{-236}$	$4.464^{+0.054}_{-0.202}$	$-0.100^{+0.250}_{-0.300}$	$1.009^{+0.302}_{-0.108}$	$1.079^{+0.151}_{-0.151}$	$1.480^{+0.402}_{-0.758}$
	+3%/-4%	+1%/-5%	+250%/-300%	+30%/-11%	+14%/-14%	+27%/-51%
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 010548195-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$9.05^{+9.36}_{-6.11}$	$2779^{+197}_{-143}$	$-3209^{+25665}_{-16763}$	$-0.139^{+455.977}_{-373.837}$
Alt.	$-121 \pm 5$	$8.48^{+8.54}_{-5.90}$	$2770^{+189}_{-146}$	$2370^{+2089}_{-5189}$	$0.352^{+3.473}_{-0.268}$

$T_{max}$  = 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

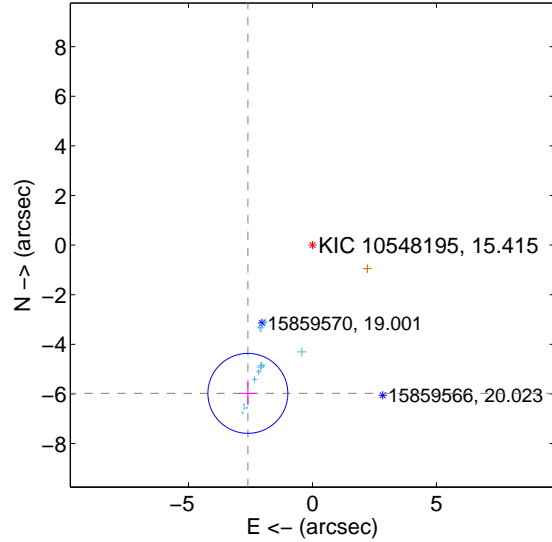
Supplemental centroid analysis for 010548195-02. Kepler magnitude: 15.41. Transit SNR -1.00

There are 13 quarters with good PRF difference image offsets

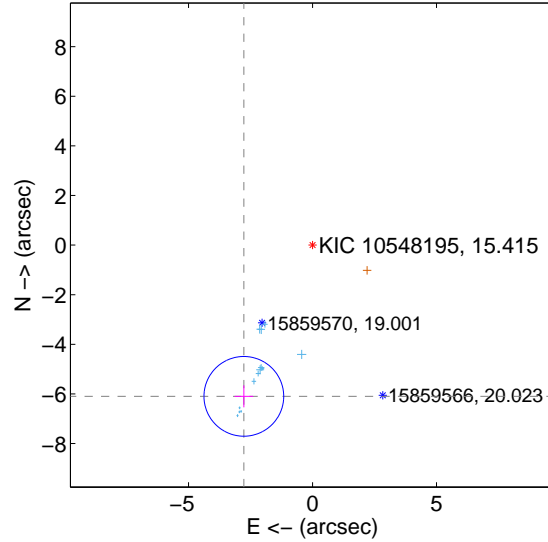
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$6.519 \pm 0.537$	12.14	$2.603 \pm 0.359$	$-5.977 \pm 0.458$
PRF-fit source offset from KIC position	$6.696 \pm 0.536$	12.50	$2.769 \pm 0.375$	$-6.097 \pm 0.443$
photometric centroid source offset	$0.89 \pm 0.62$	1.43	$0.62 \pm 0.63$	$-0.64 \pm 0.62$

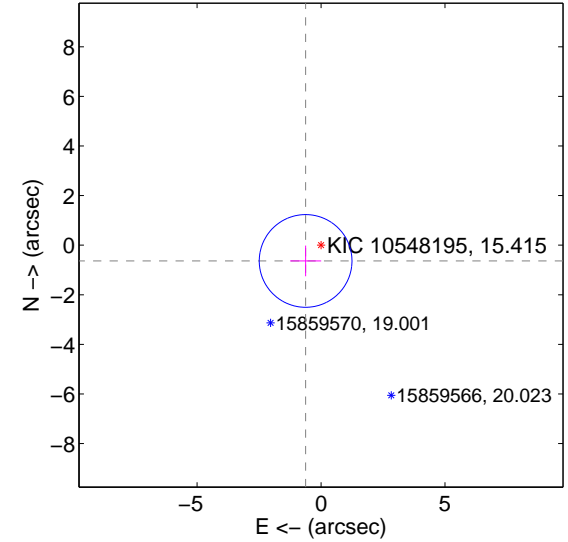
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

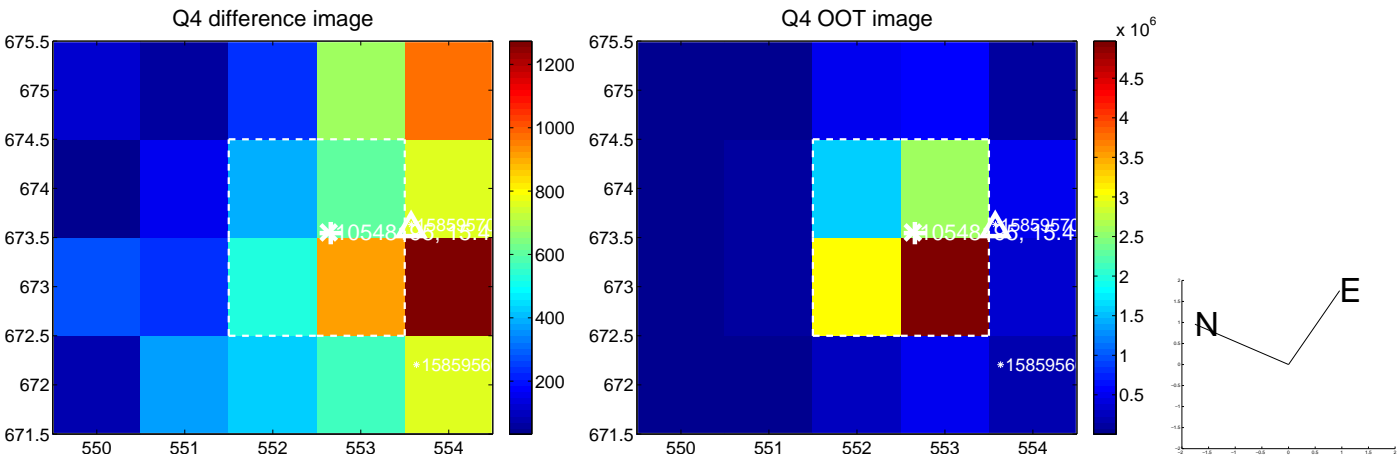
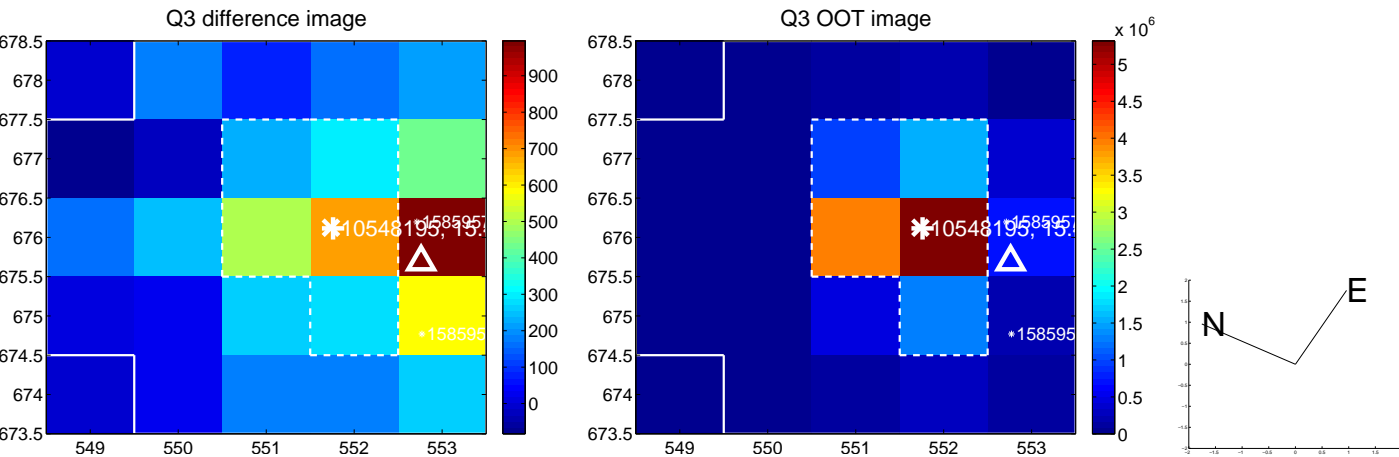
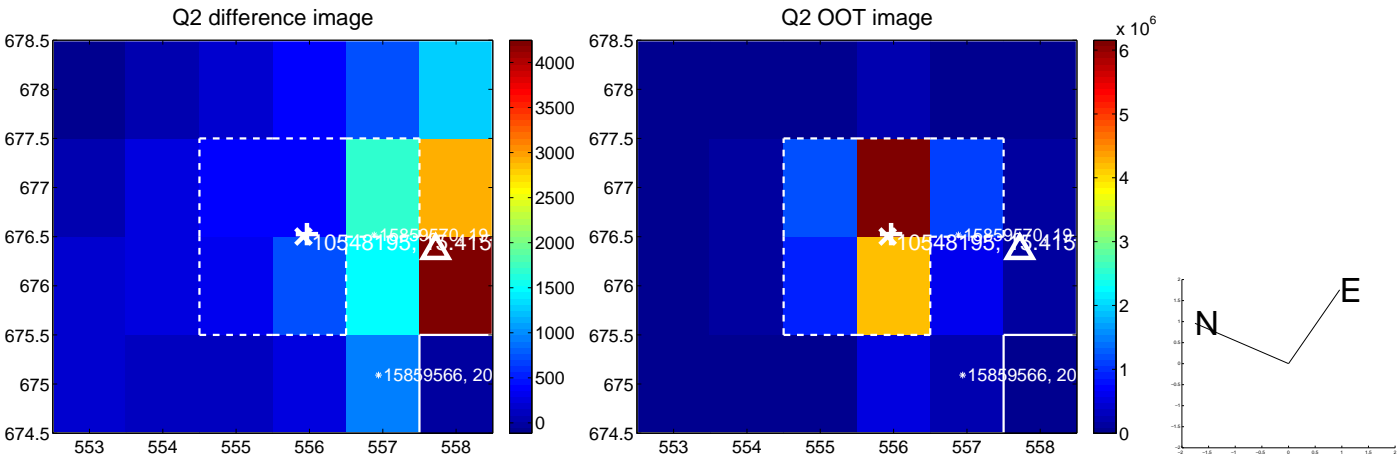
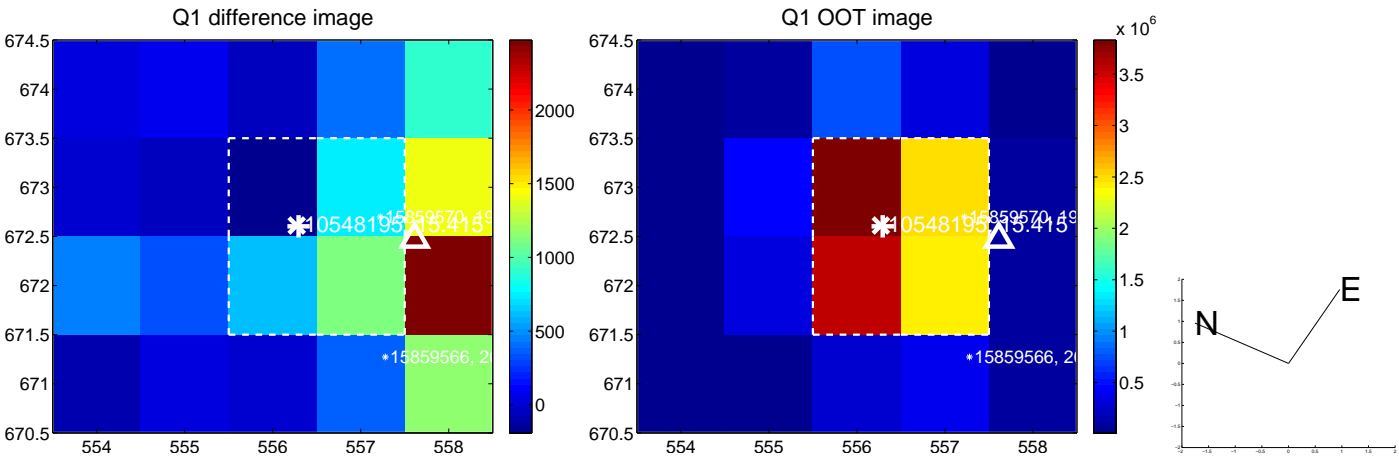


offset from photometric centroids

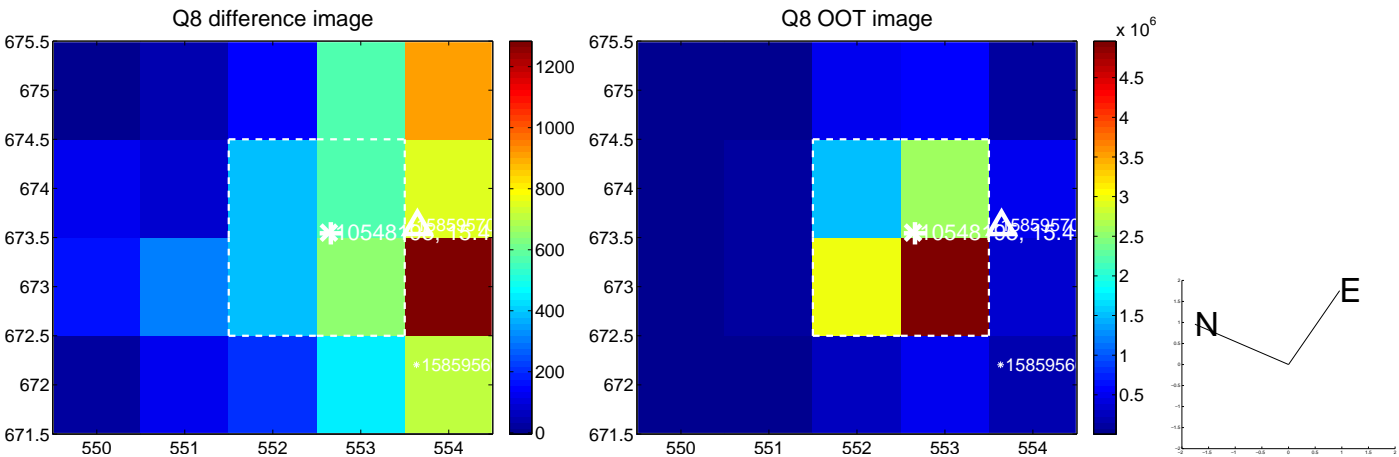
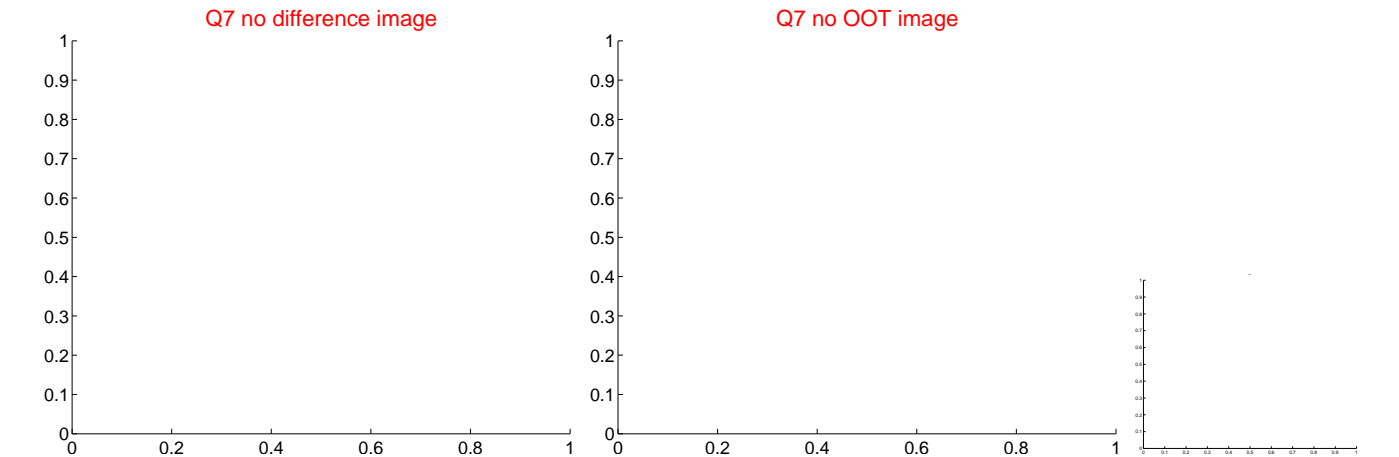
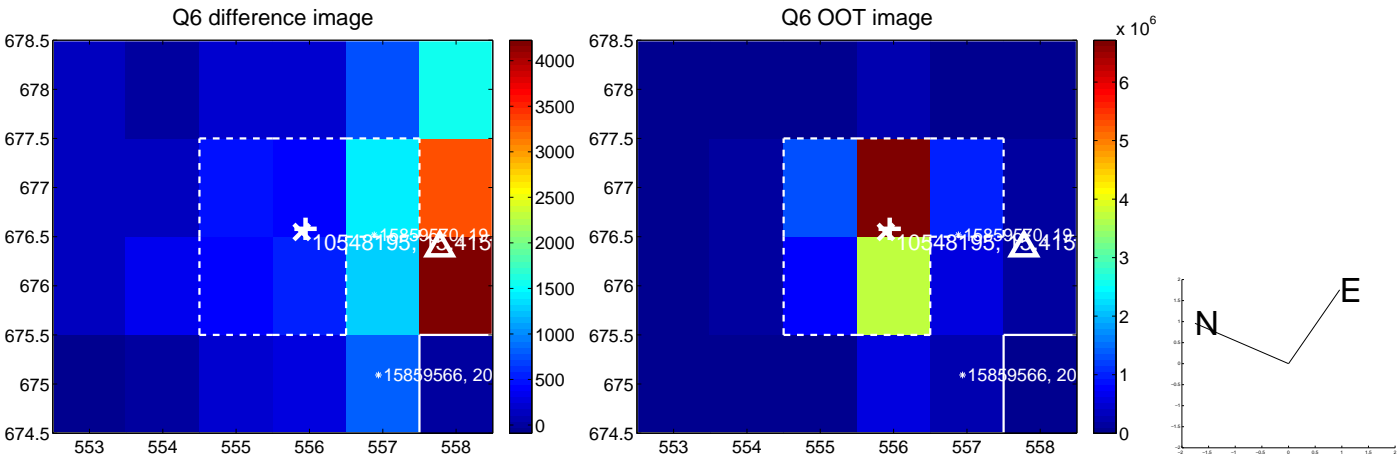
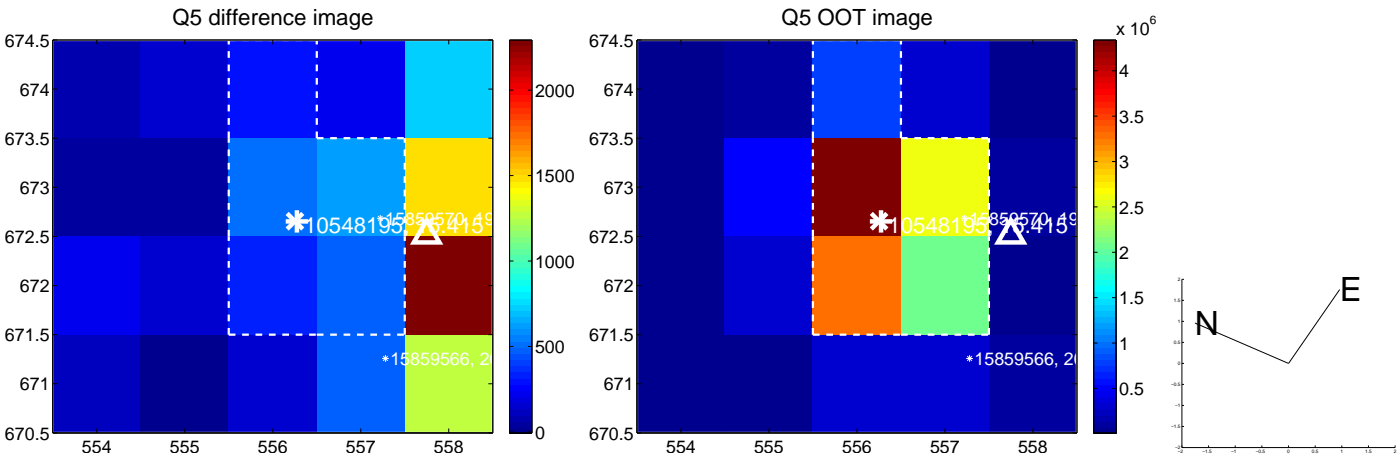


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

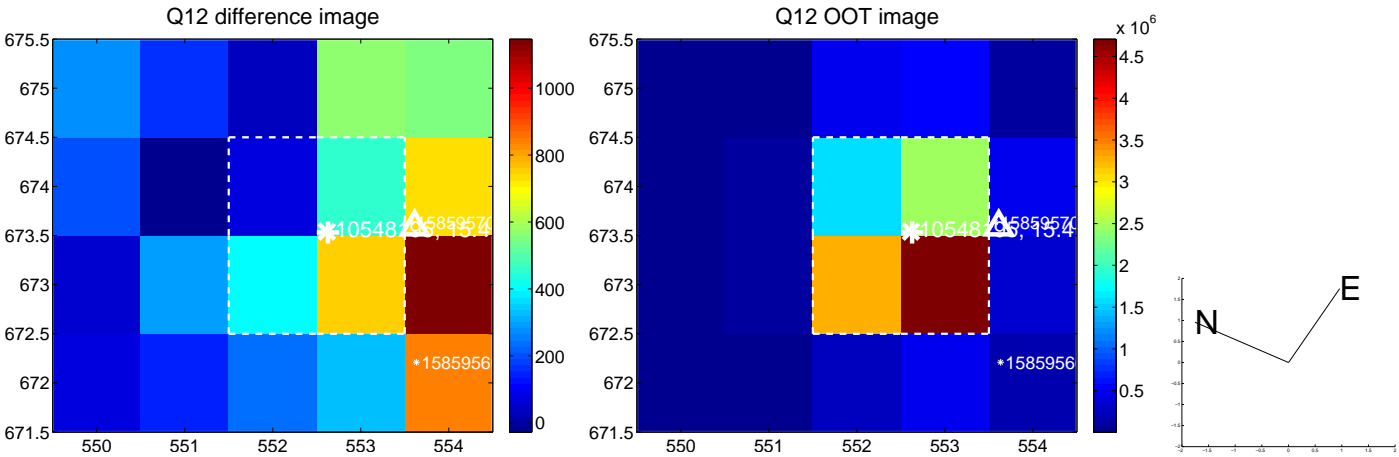
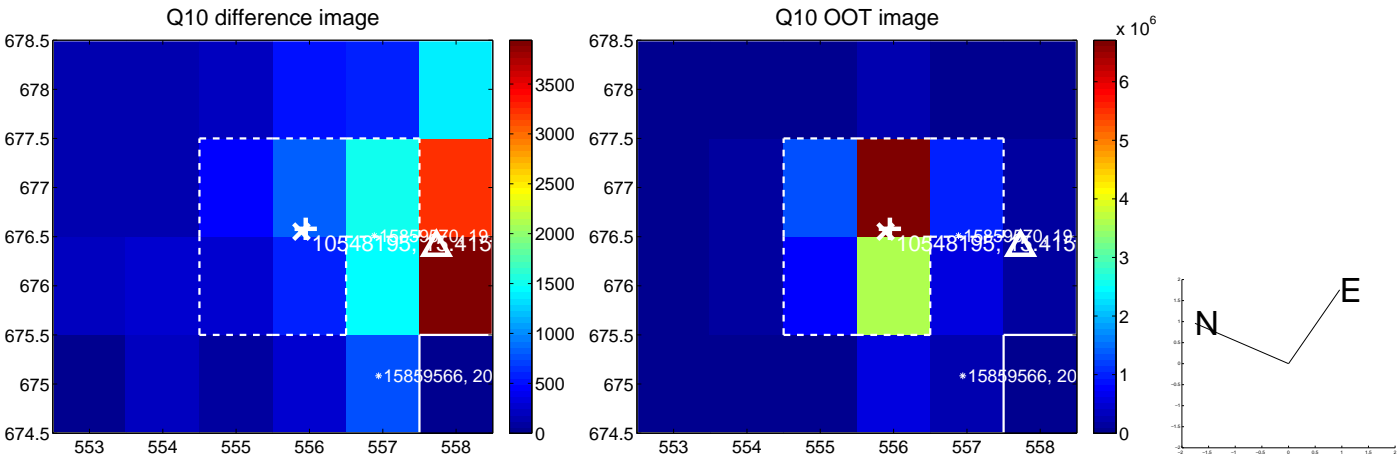
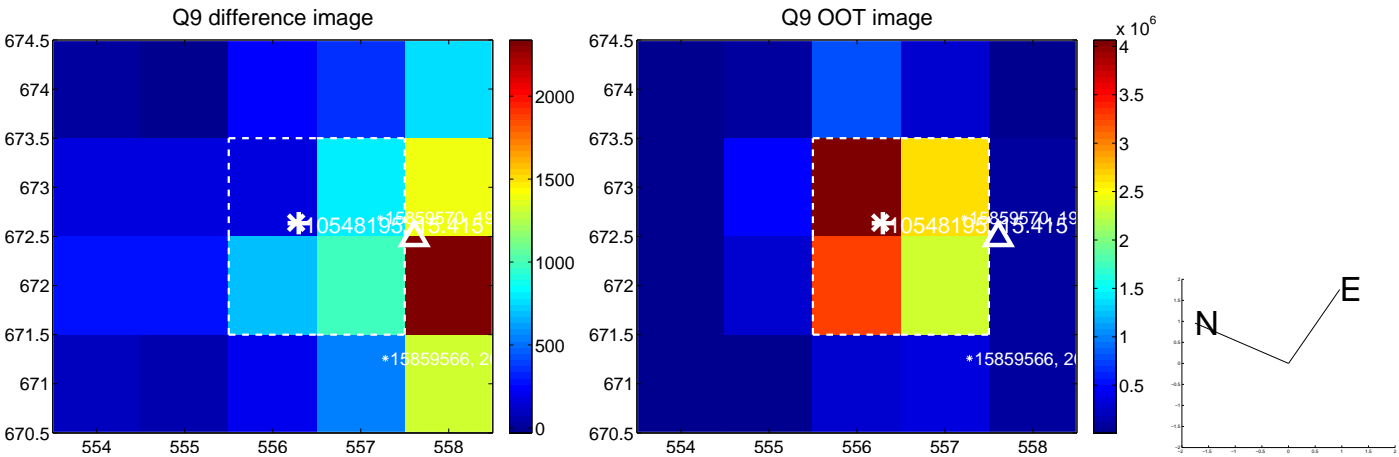


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

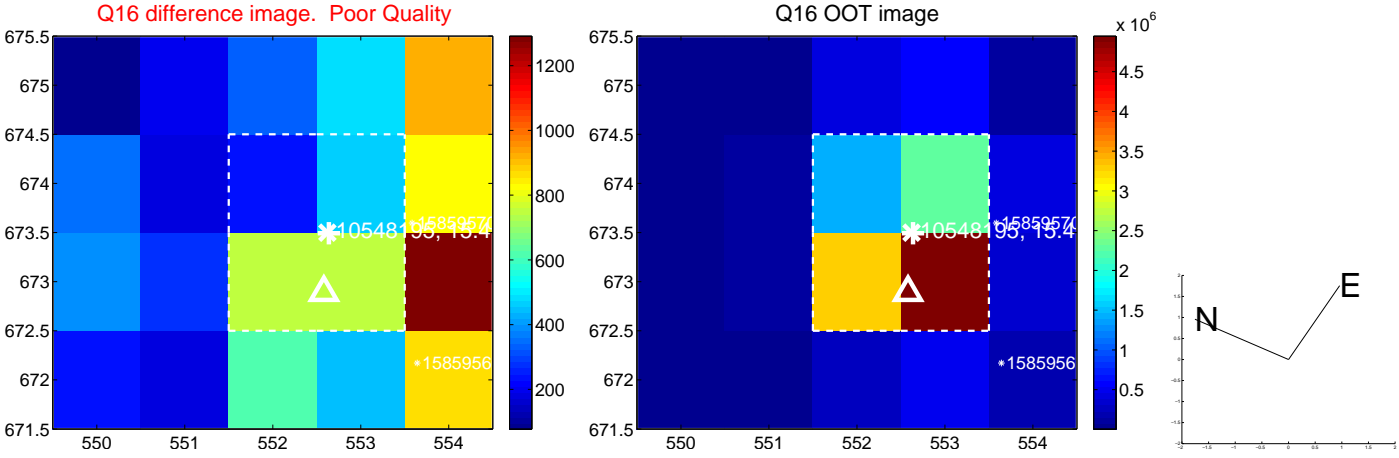
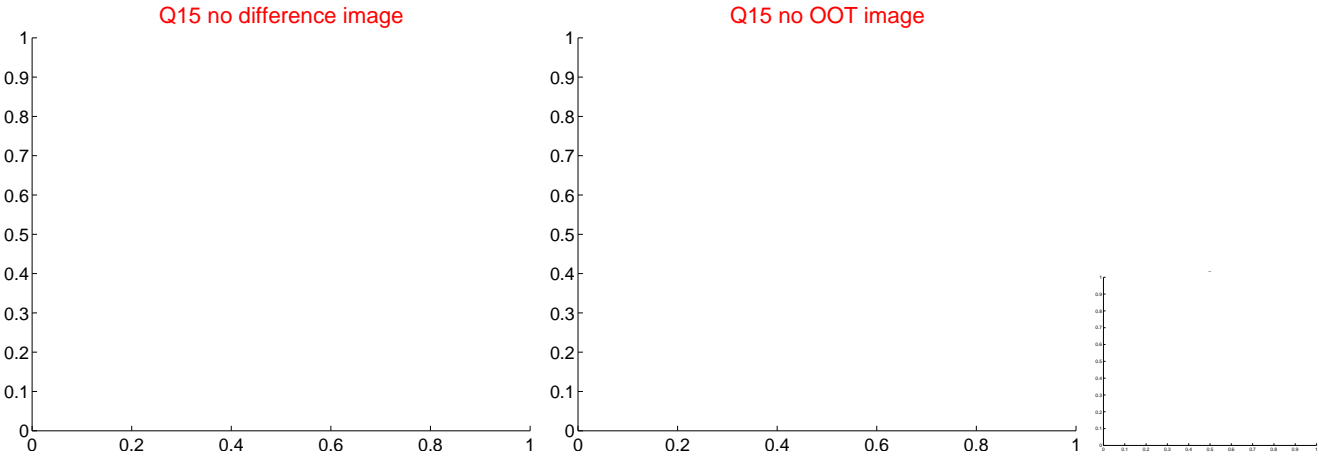
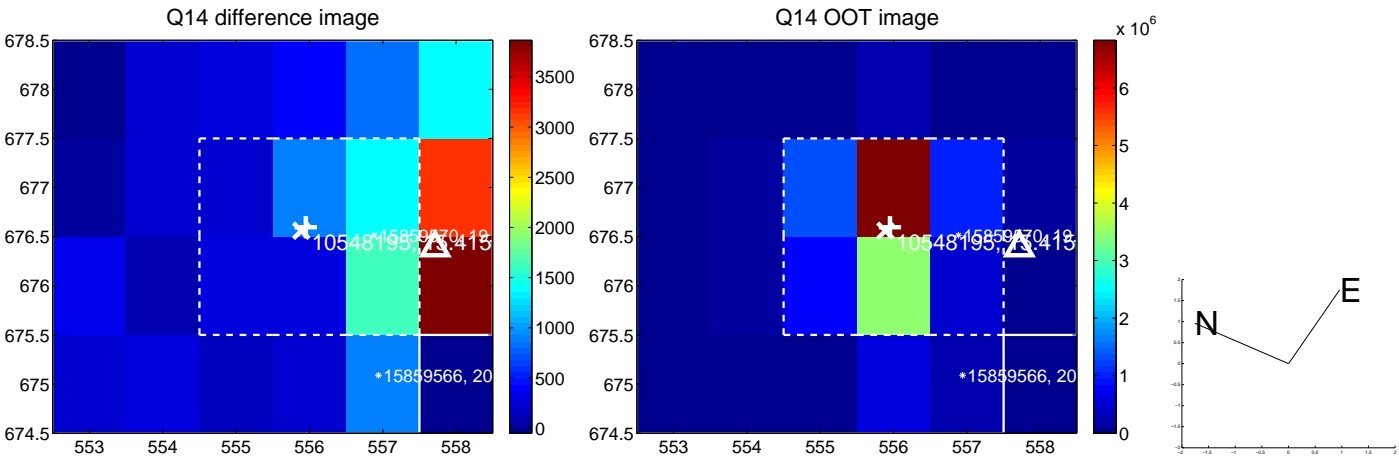
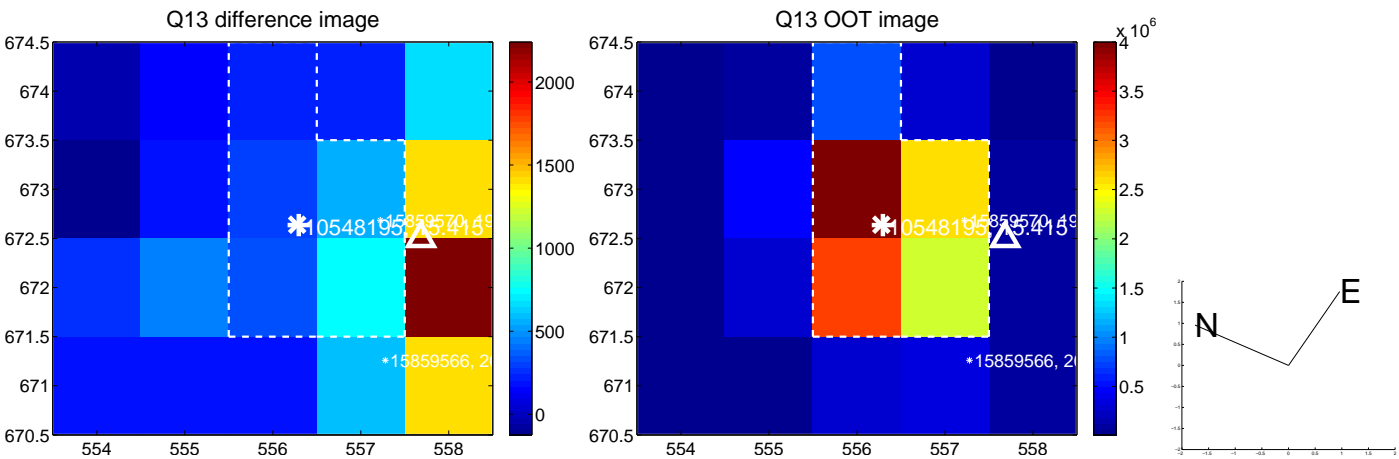




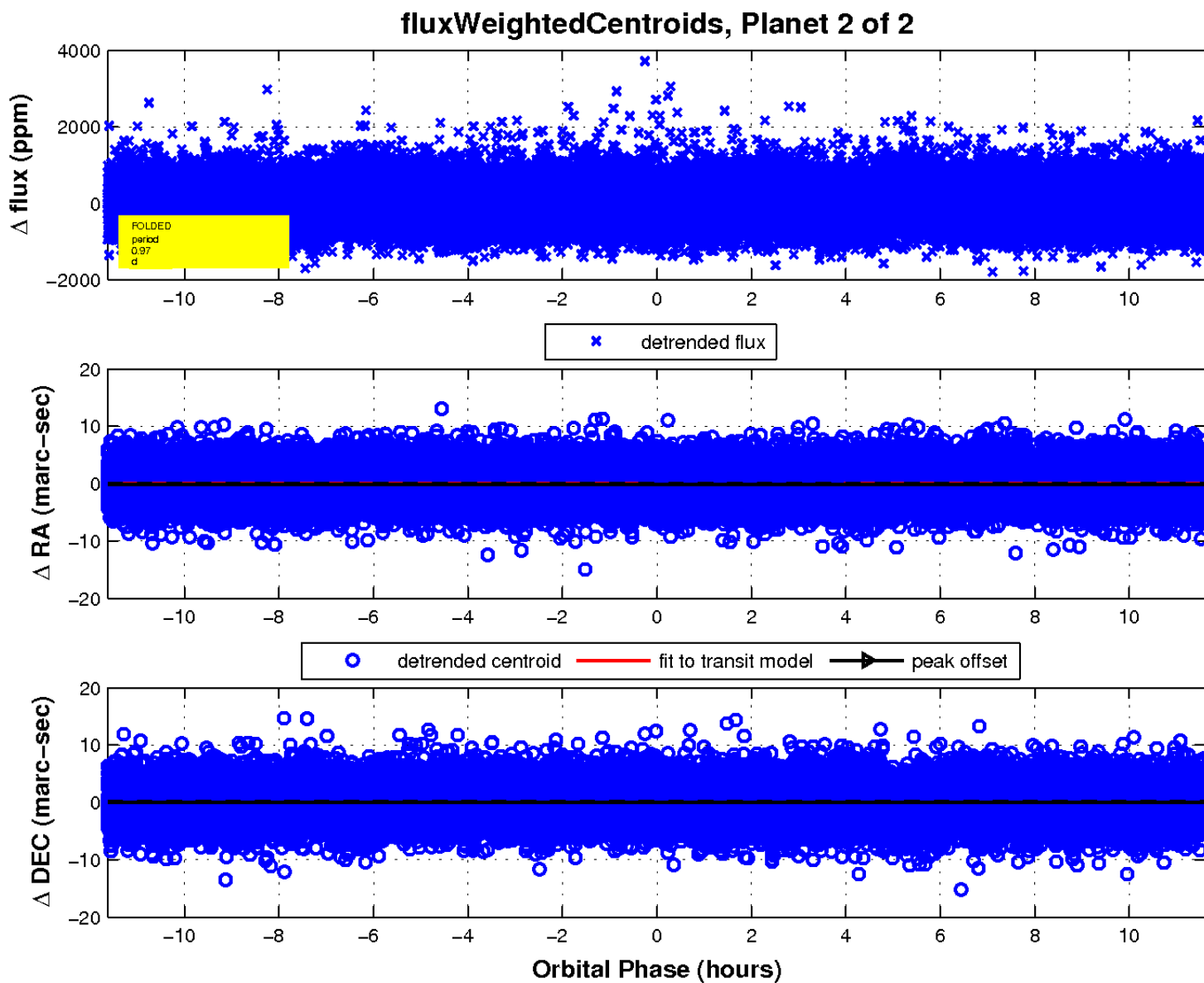
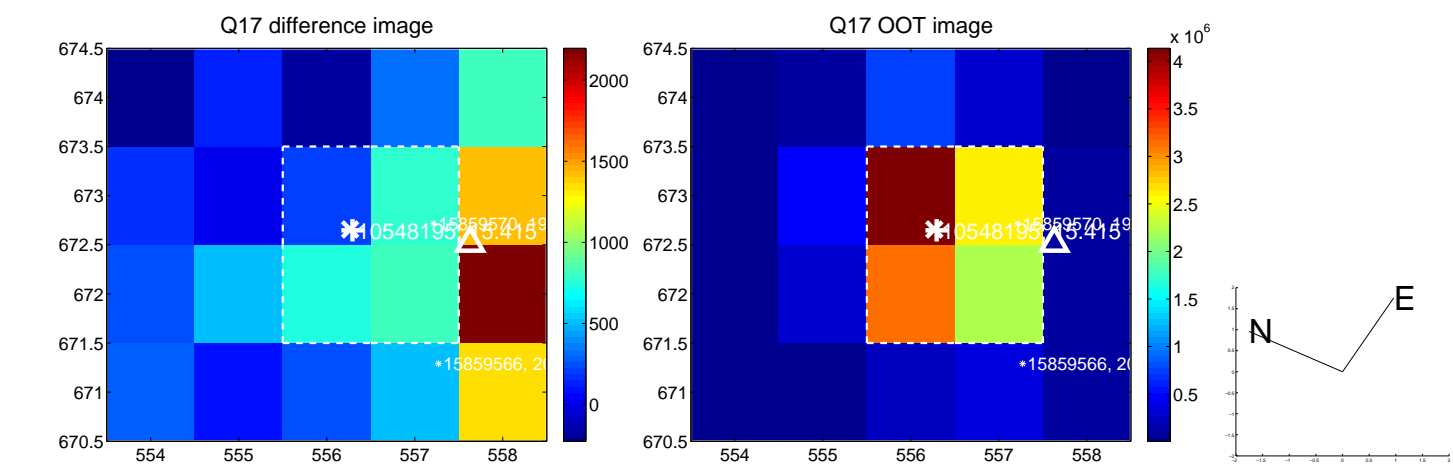
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

