

# KIC 005981819

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005981819-01	OBS	No	1.215675	132.073451	48.2	5.892	12.6	13.5	3.83	6588	4.99	34720.56
005981819-02	OBS	No	42.213516	150.091239	206.9	2.073	7.5	7.5	3.83	6588	6.37	306.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005981819-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005981819-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

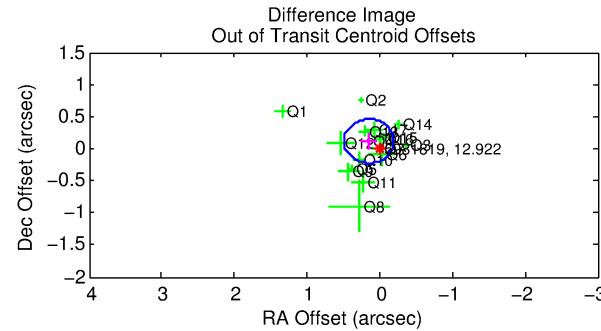
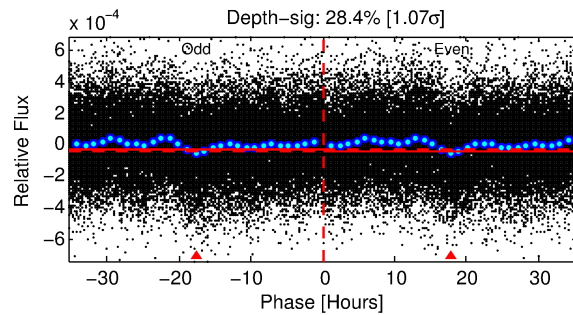
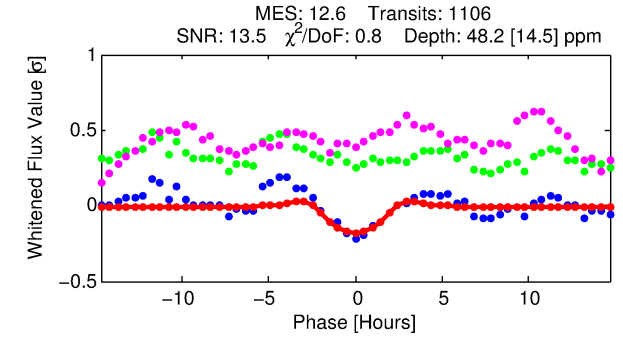
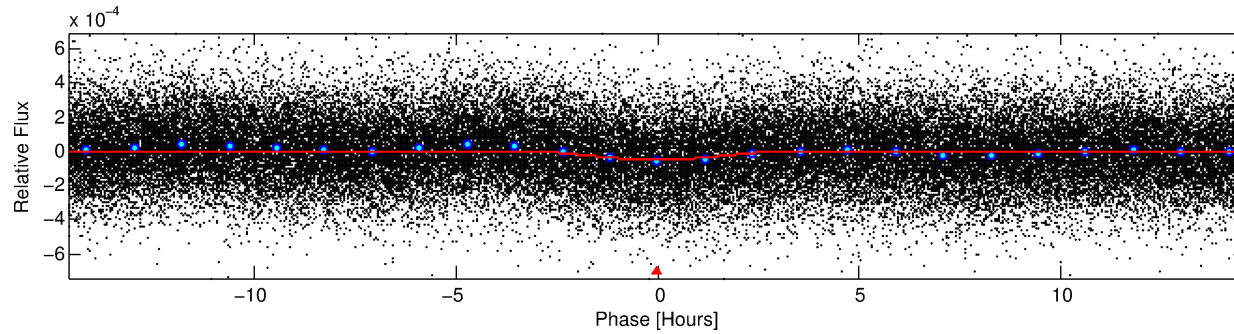
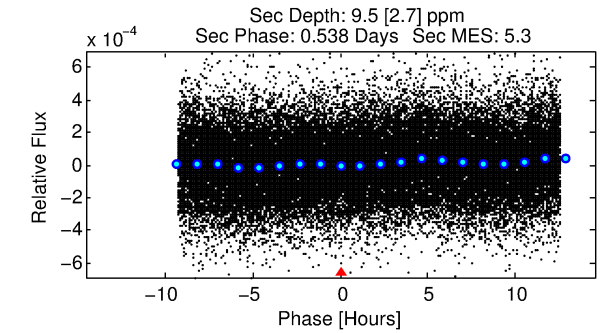
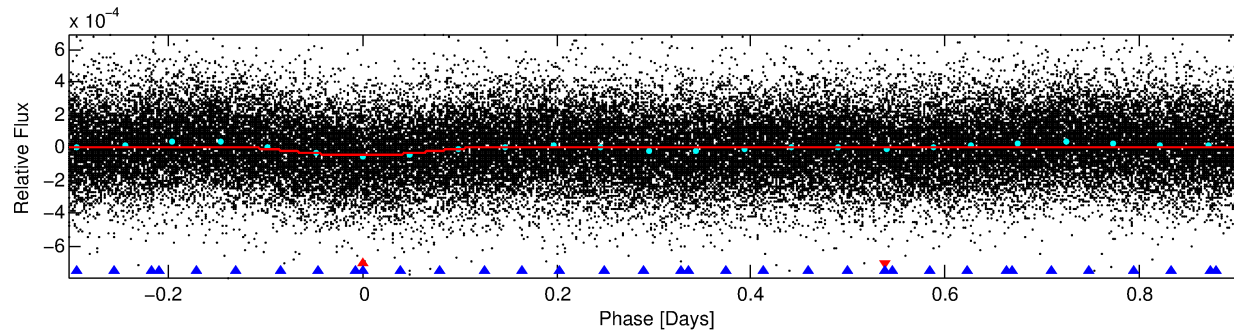
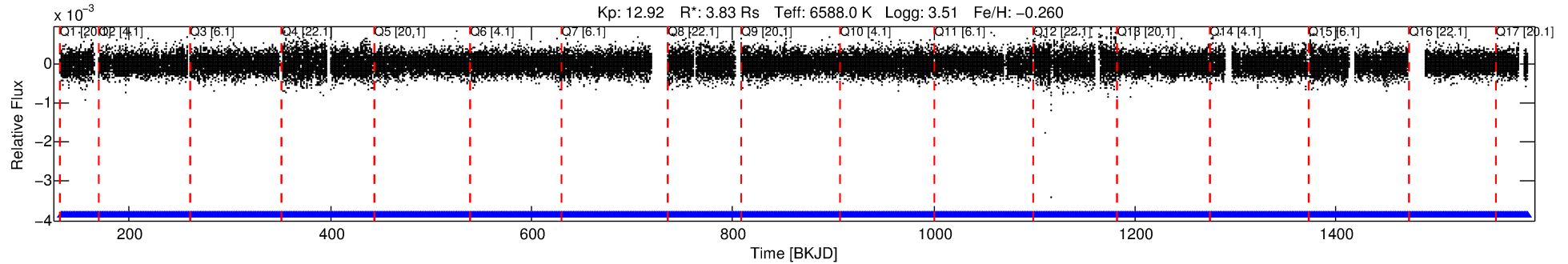
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005981819-01

No Significant Match Found

# DV One-Page Summary

KIC: 5981819 Candidate: 1 of 2 Period: 1.216 d



## DV Fit Results:

Period = 1.21568 [0.00001] d  
Epoch = 132.0735 [0.0055] BKJD  
Rp/R\* = 0.0119 [0.0131]  
a/R\* = 1.04 [0.01]  
b = 1.00 [0.02]  
Seff = 34720.56 [22069.49]  
Teq = 3481 [553] K  
Rp = 4.99 [5.82] Re  
a = 0.0267 [0.0104] AU  
Ag = 0.15 [0.34] [-2.47σ]  
Teffp = 3348 [1854] K [-0.07σ]

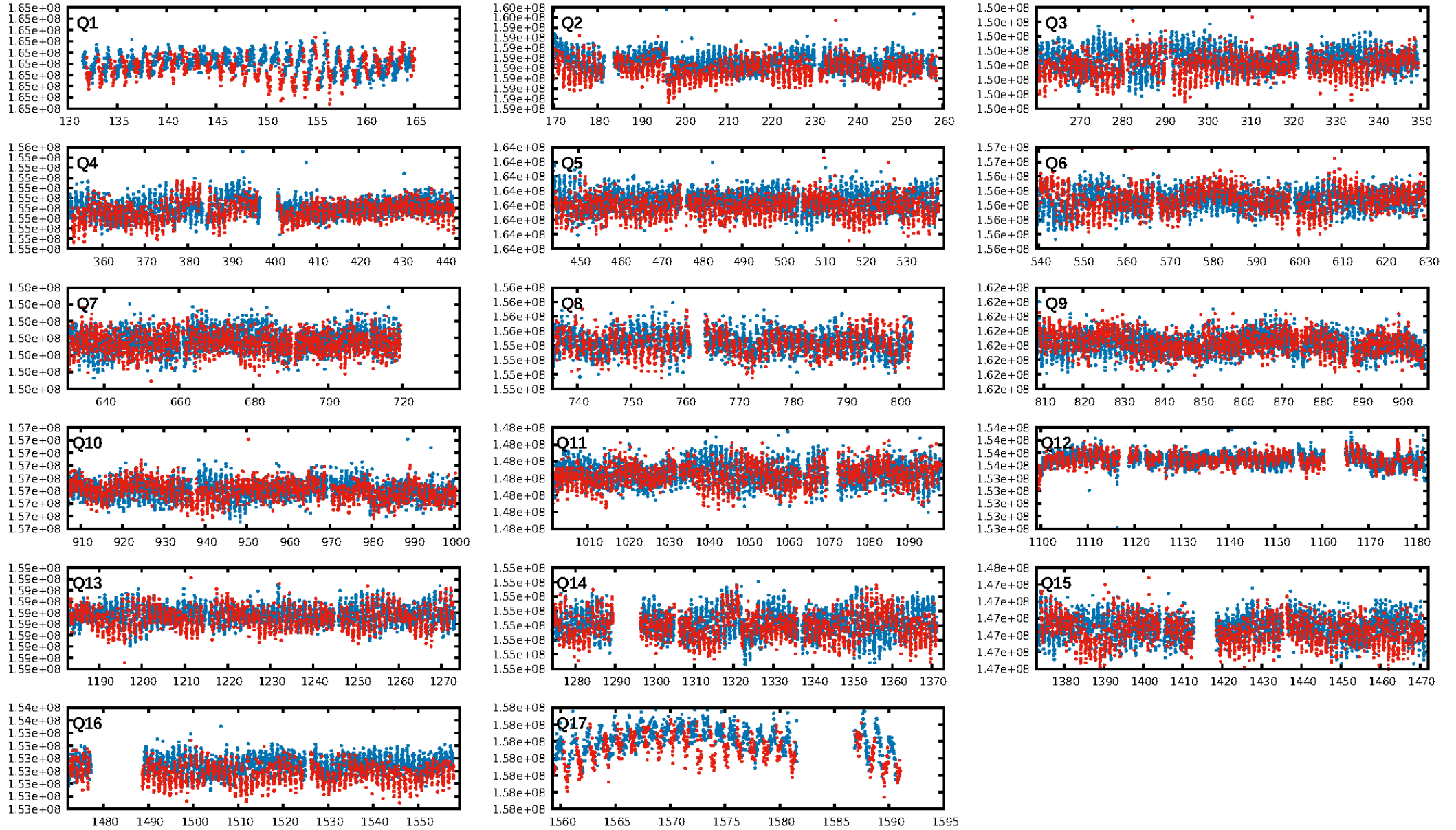
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [157.54σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.31e-21  
RollingBand-fgt: 1.00 [1055/1055]  
**GhostDiagnostic-chr: 0.9231**  
Centroid-sig: 0.6%  
Centroid-so: 0.967 arcsec [2.28σ]  
OotOffset-rm: 0.192 arcsec [1.68σ]  
KicOffset-rm: 0.105 arcsec [0.94σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

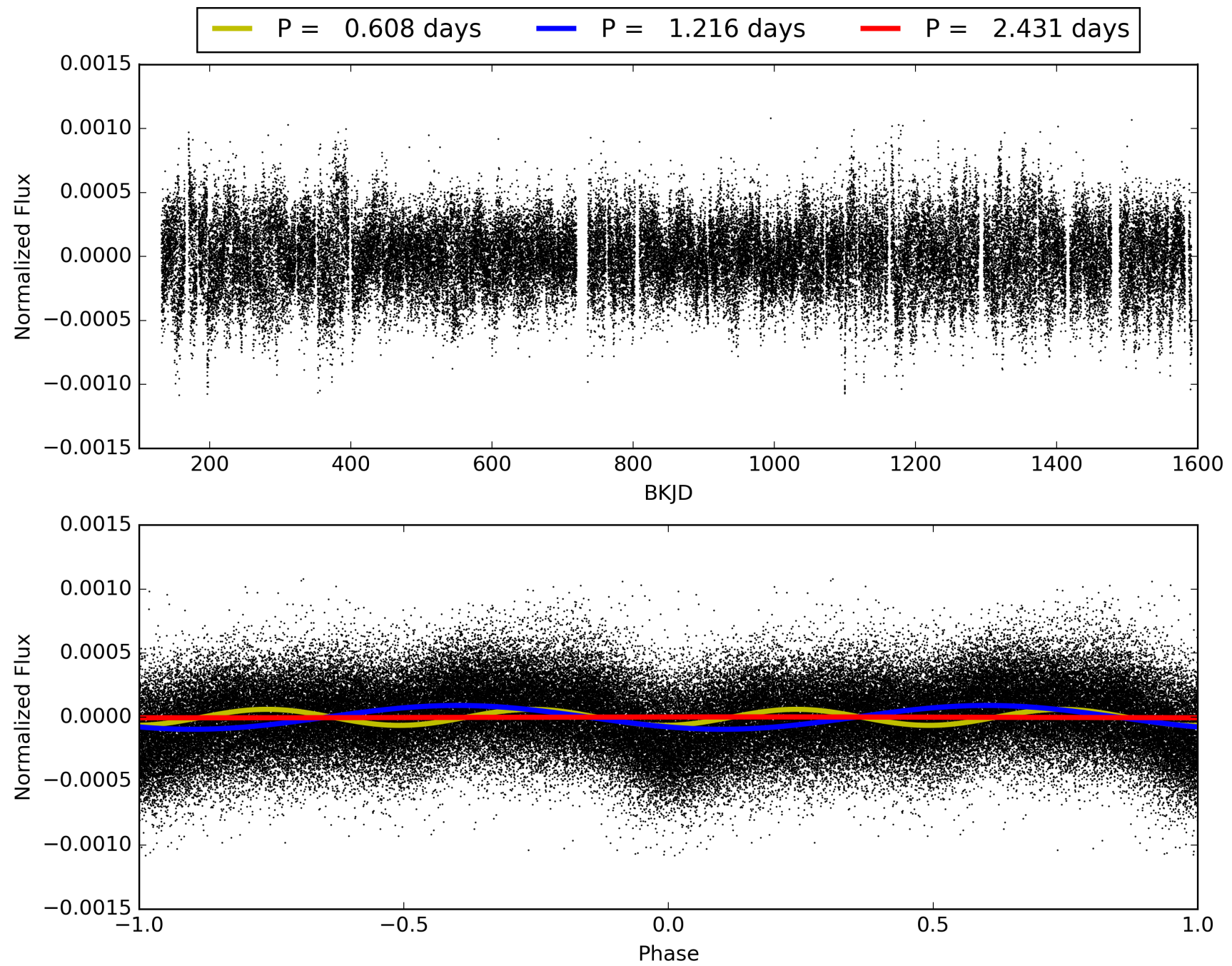
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:36:26 Z

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

# TCE 005981819-01, PDC Light Curves

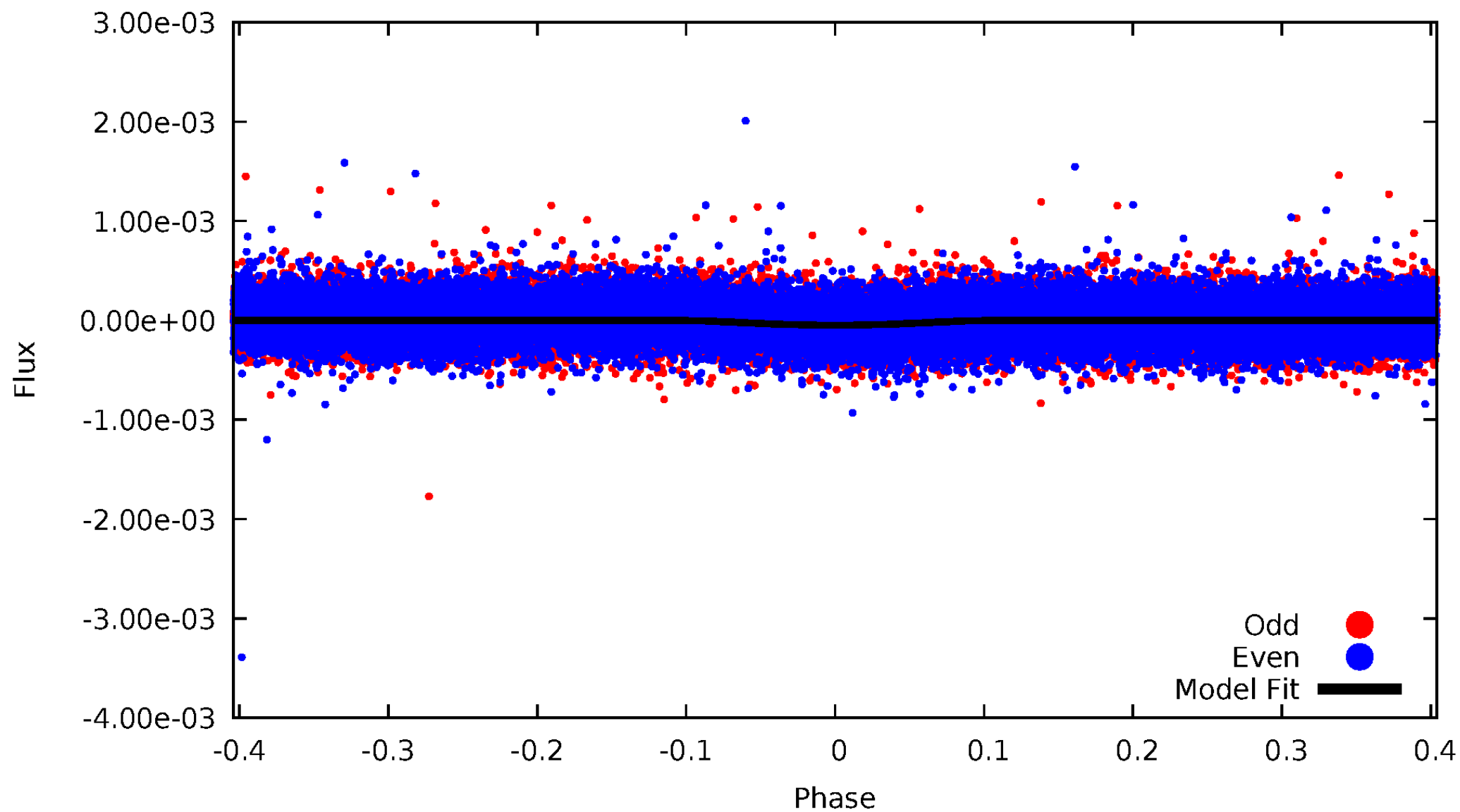


TCE 005981819-01



# DV Odd/Even

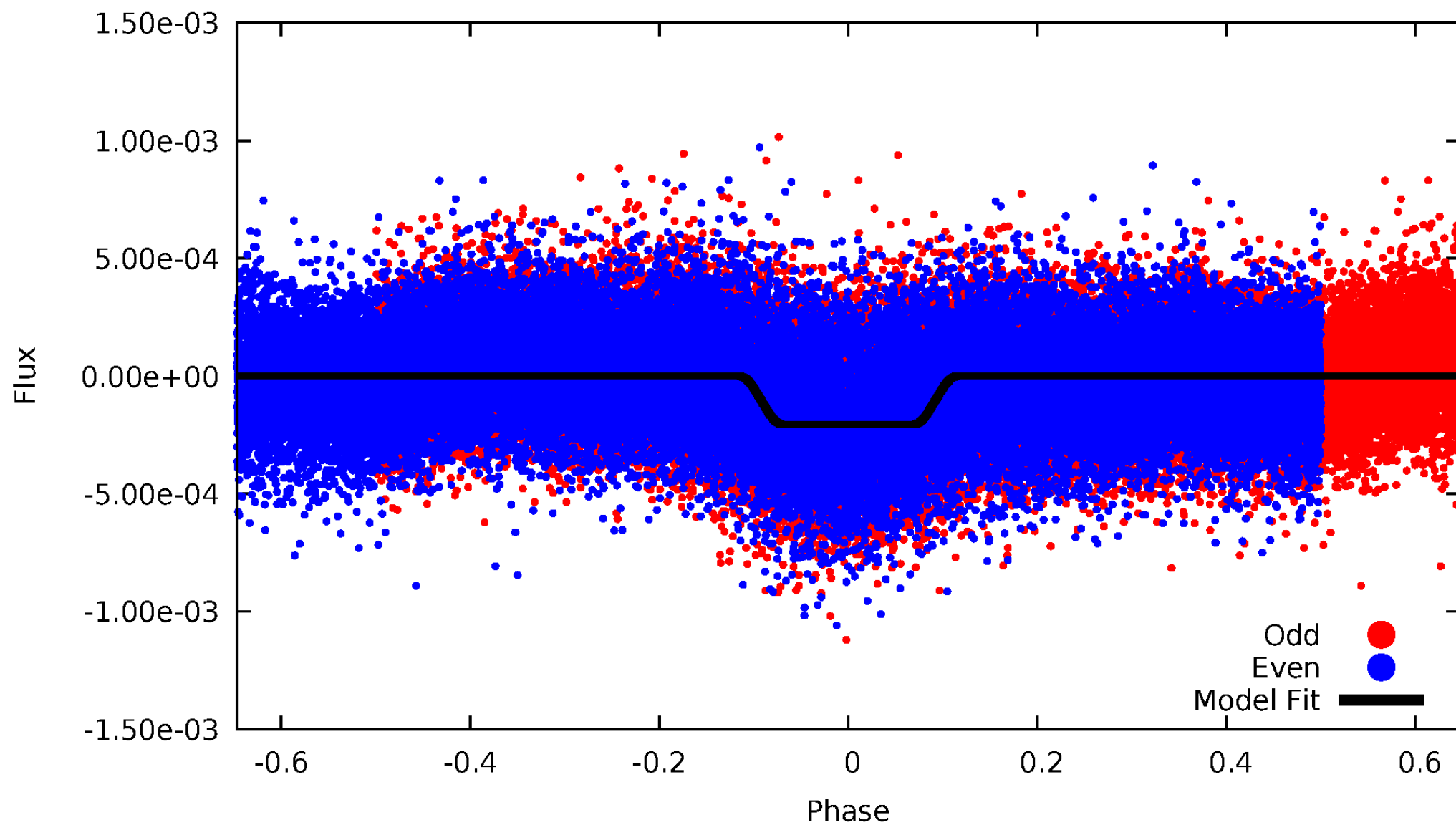
TCE 005981819-01





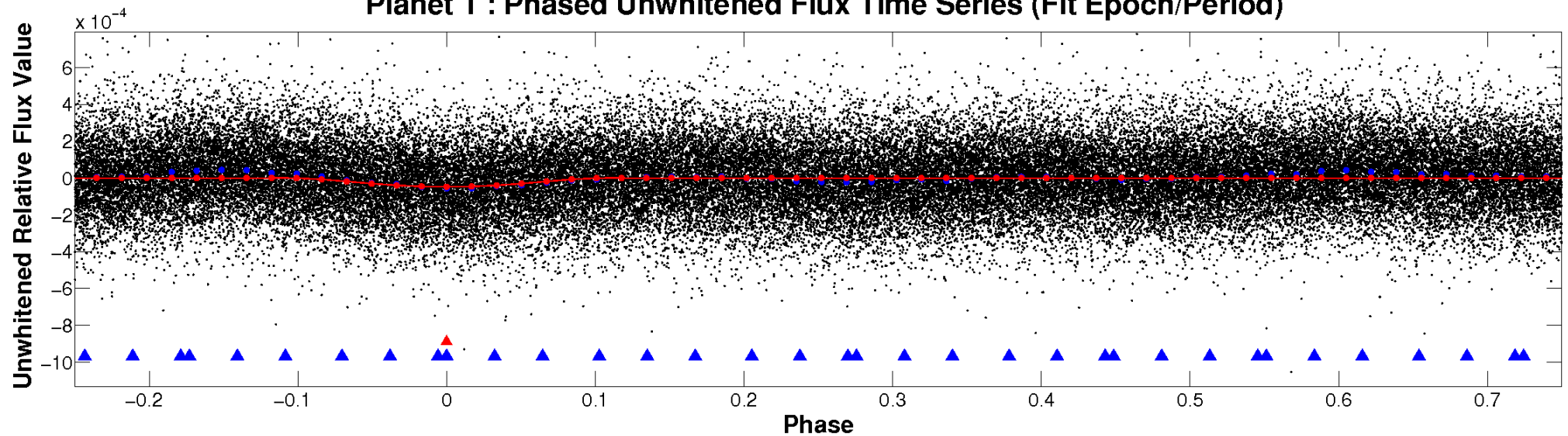
# ALT Odd/Even

TCE 005981819-01

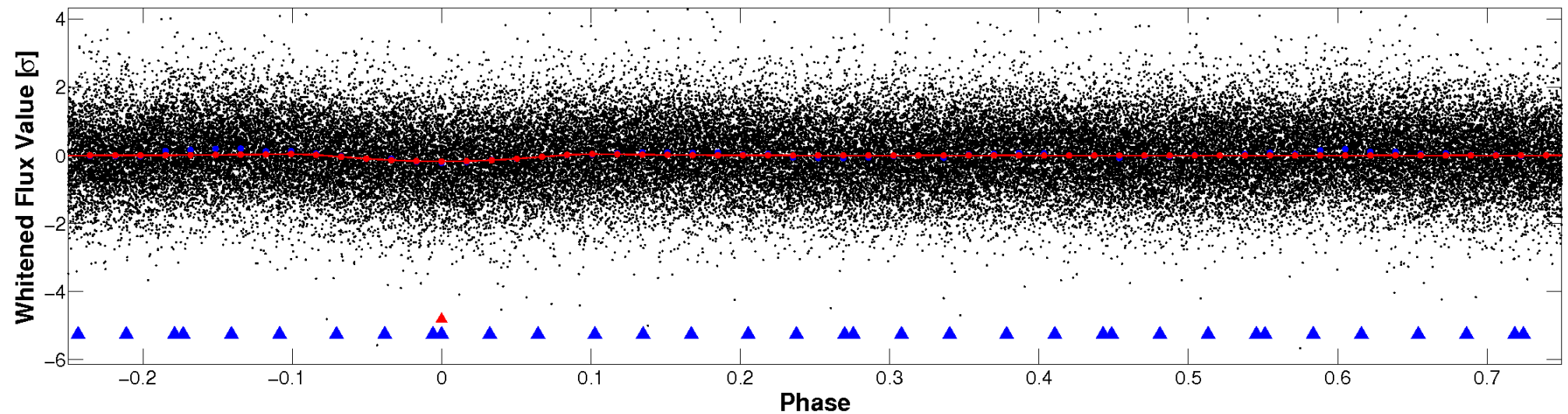


# Non-Whitened Vs. Whitened Light Curve

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

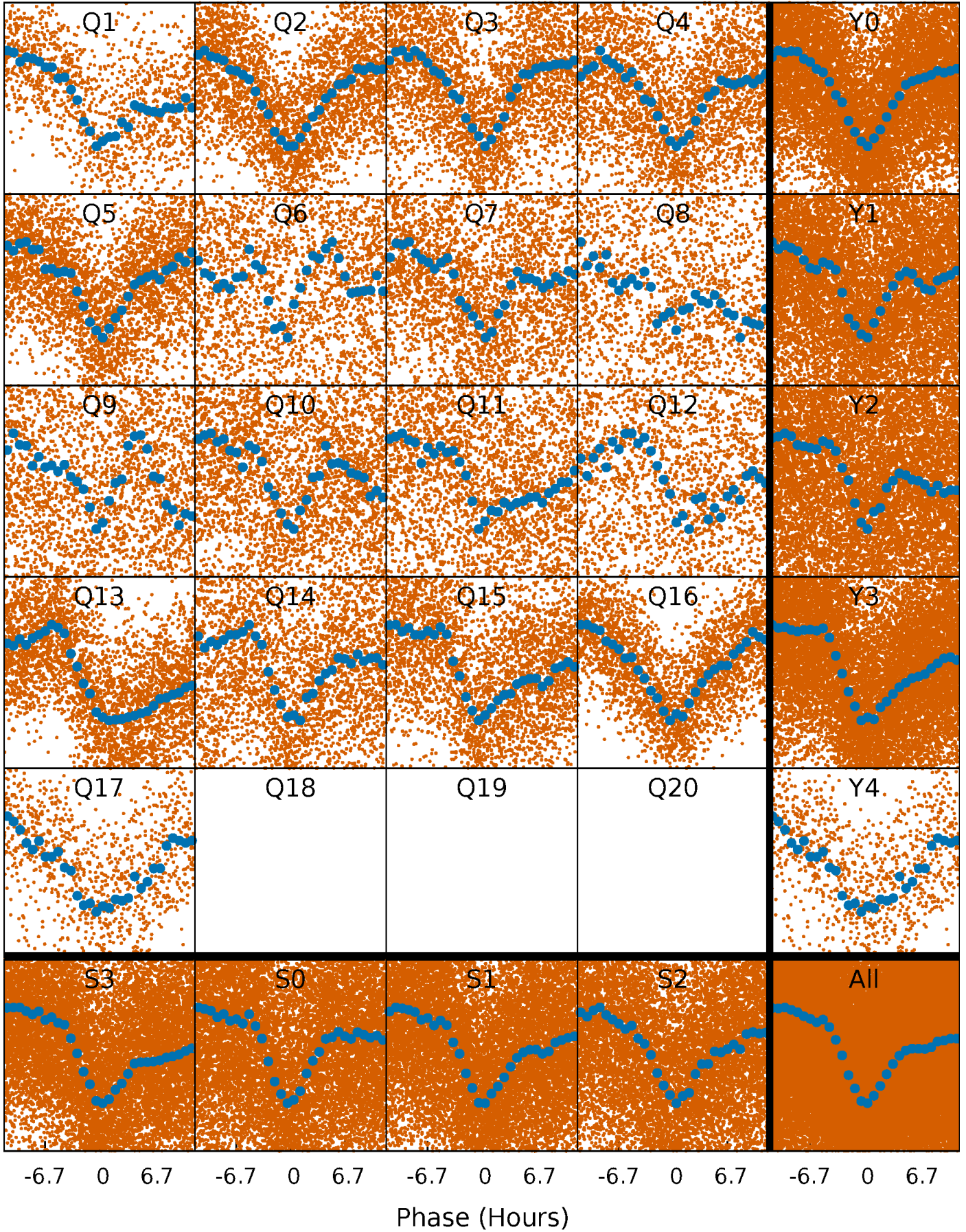


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

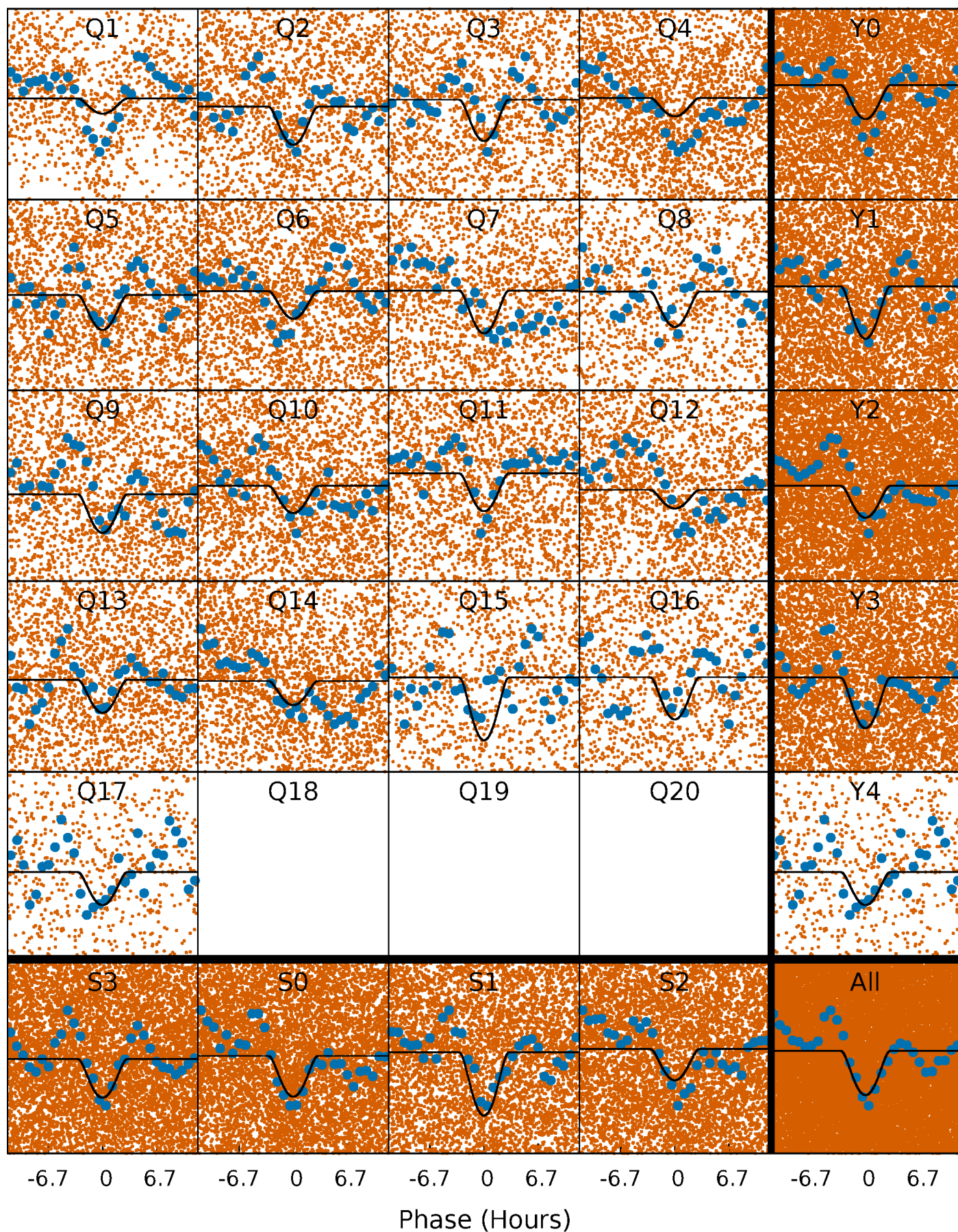
TCE 005981819-01 P= 1.215675 Days  $T_0=132.073451$  (BKJD)





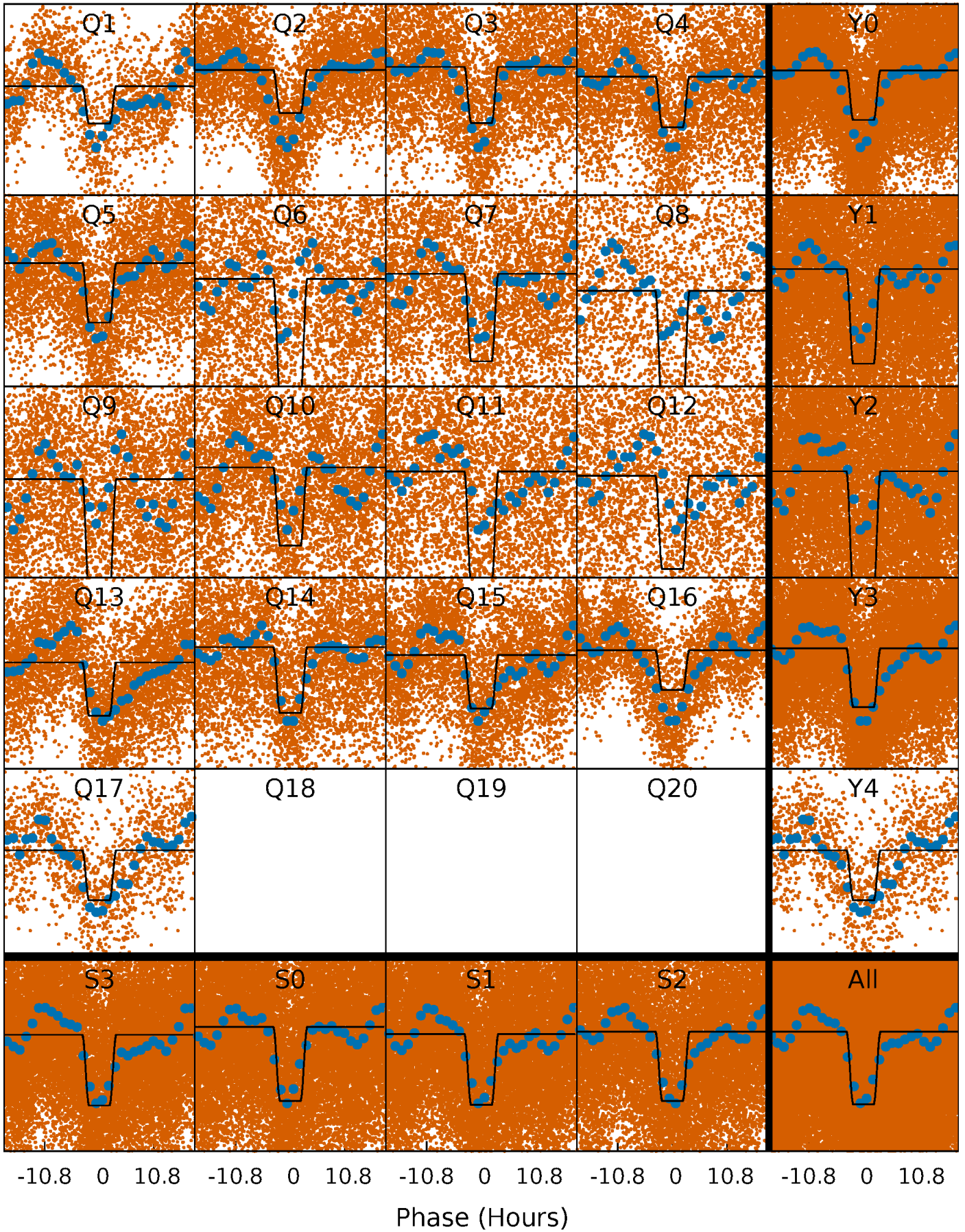
# DV Quarter-Phased Transit Curves

TCE 005981819-01 P= 1.215675 Days  $T_0=132.073451$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005981819-01 P= 1.215651 Days  $T_0=132.103225$  (BKJD)

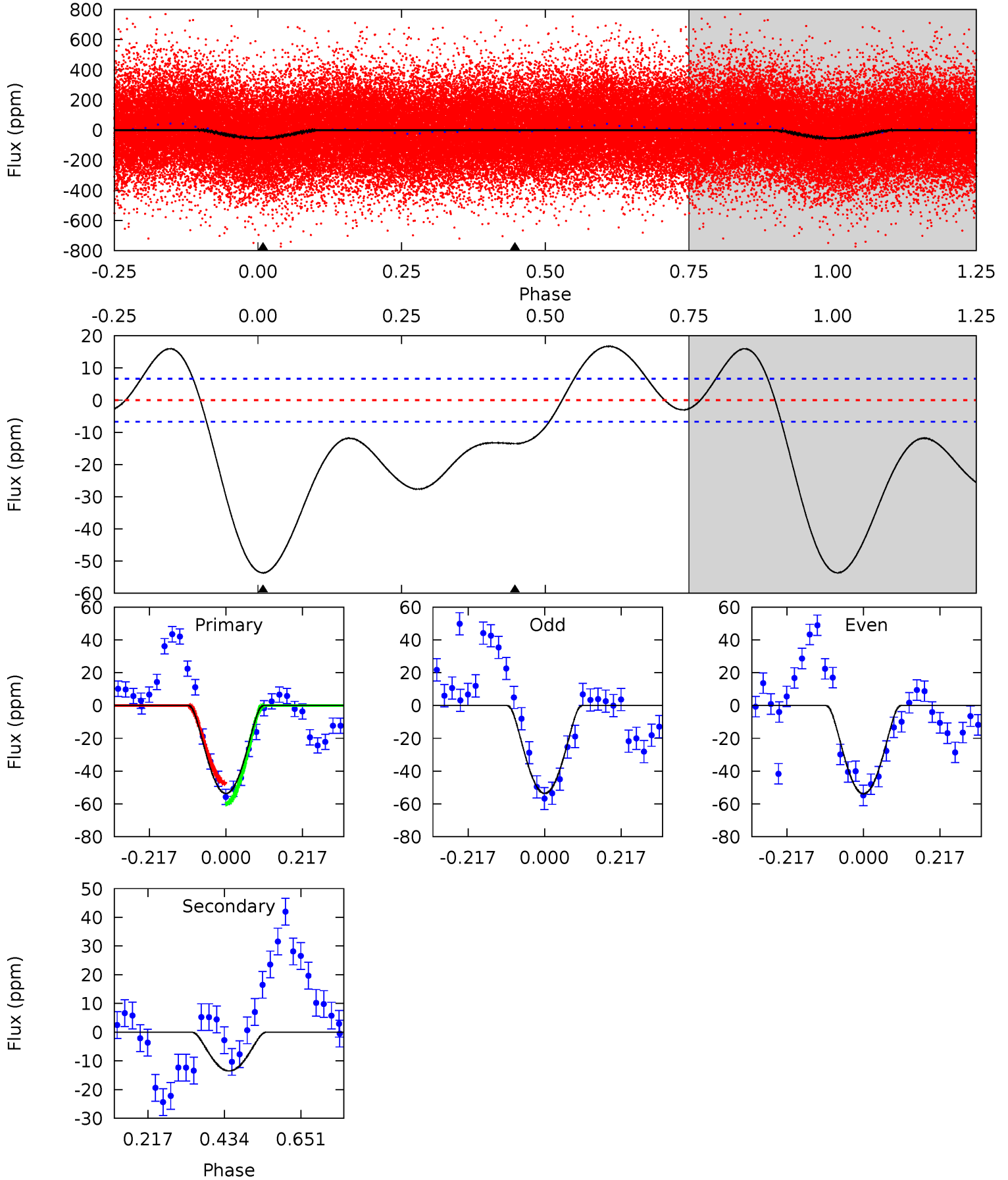




# DV Model-Shift Uniqueness Test

005981819-01, P = 1.215675 Days, E = 130.857776 Days

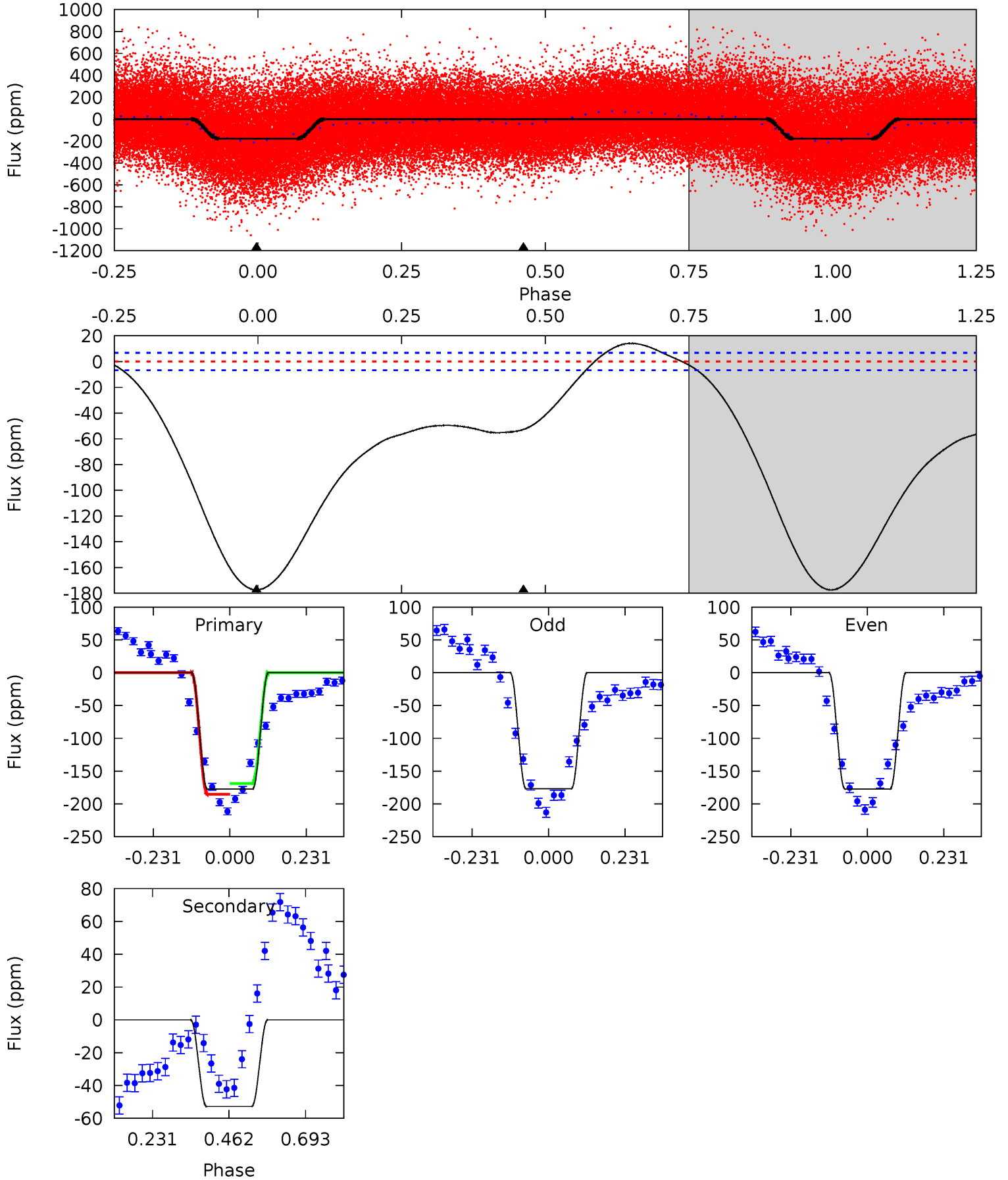
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.3	8.89	0	0	4.40	1.23	3.58	35.3	35.3	8.89	8.89	0.08	1.02	0.24	3.99



# Alt Model-Shift Uniqueness Test

005981819-01, P = 1.215651 Days, E = 130.887574 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
114.2	34.0	0	0	4.39	1.20	14.6	114.2	114.2	34.0	34.0	0.07	0.97	0.07	5.23





### Stellar Parameters For KIC 005981819

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6588^{+179}_{-199}$	$3.507^{+0.368}_{-0.092}$	$-0.260^{+0.350}_{-0.250}$	$3.834^{+0.407}_{-1.525}$	$1.724^{+0.201}_{-0.402}$	$0.043^{+0.123}_{-0.012}$
	+3%/-3%	+10%/-3%	+135%/-96%	+11%/-40%	+12%/-23%	+286%/-28%
Source	PHO1	FLK73	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 005981819-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-14 \pm 2$	$5.99^{+4.87}_{-3.98}$	$4772^{+261}_{-459}$	$-3587^{+8834}_{-507}$	$0.146^{+1.173}_{-0.100}$
Alt.	$-53 \pm 2$	$6.18^{+5.16}_{-3.85}$	$4774^{+265}_{-430}$	$3945^{+3005}_{-7610}$	$0.541^{+3.230}_{-0.381}$

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

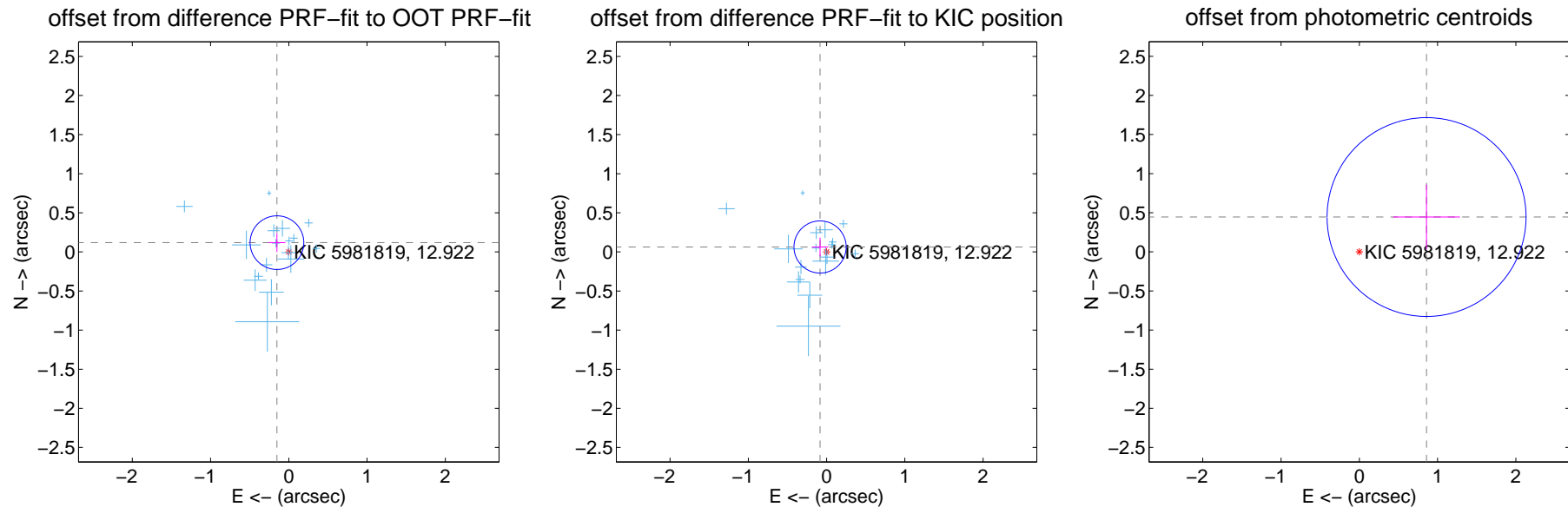
## DV Centroid Data

Supplemental centroid analysis for 005981819-01. Kepler magnitude: 12.92. Transit SNR 13.48

There are 17 quarters with good PRF difference image offsets

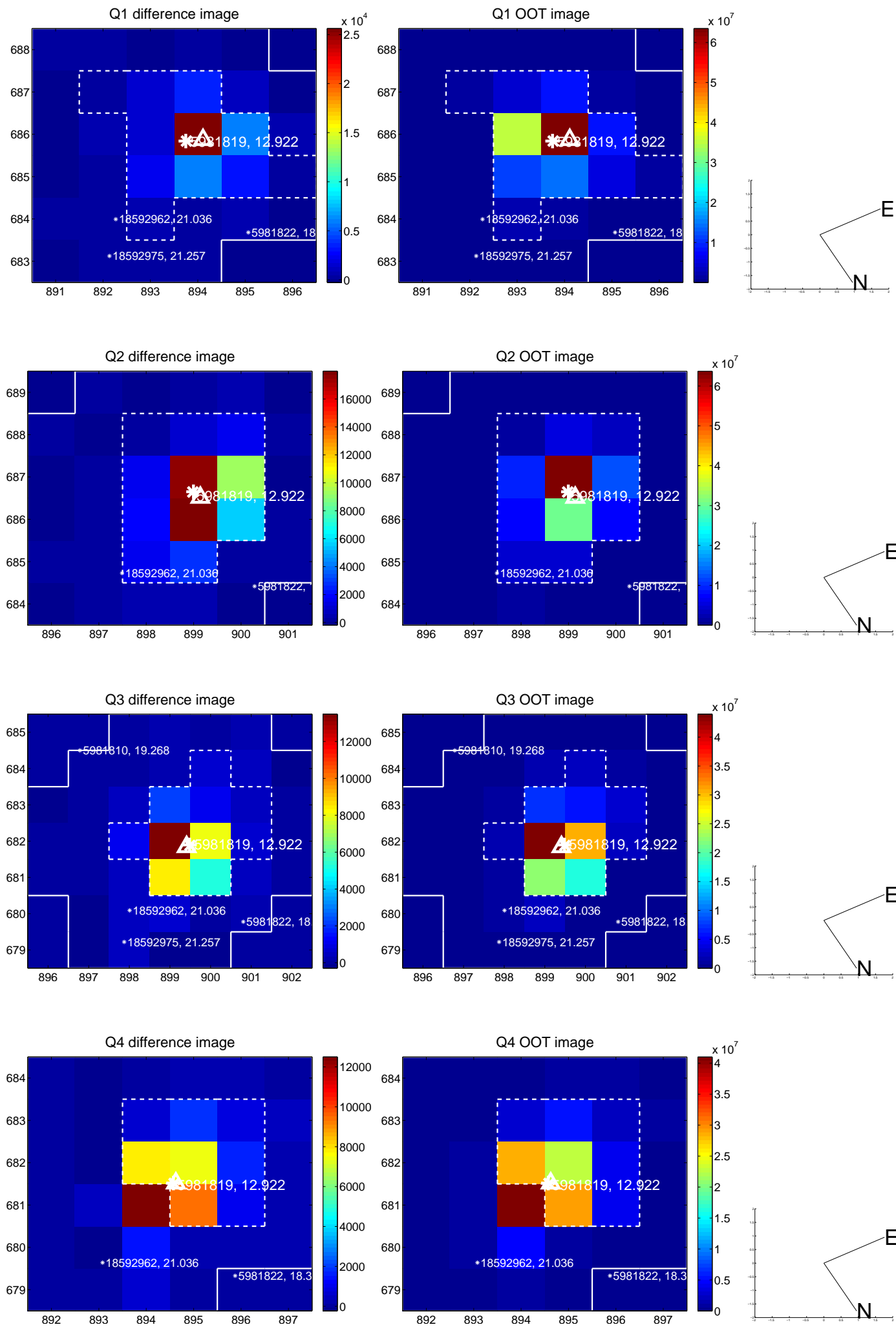
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.192 \pm 0.114$	1.68	$0.152 \pm 0.108$	$0.118 \pm 0.120$
PRF-fit source offset from KIC position	$0.105 \pm 0.111$	0.94	$0.083 \pm 0.106$	$0.063 \pm 0.120$
photometric centroid source offset	$0.97 \pm 0.42$	2.28	$-0.86 \pm 0.43$	$0.45 \pm 0.41$

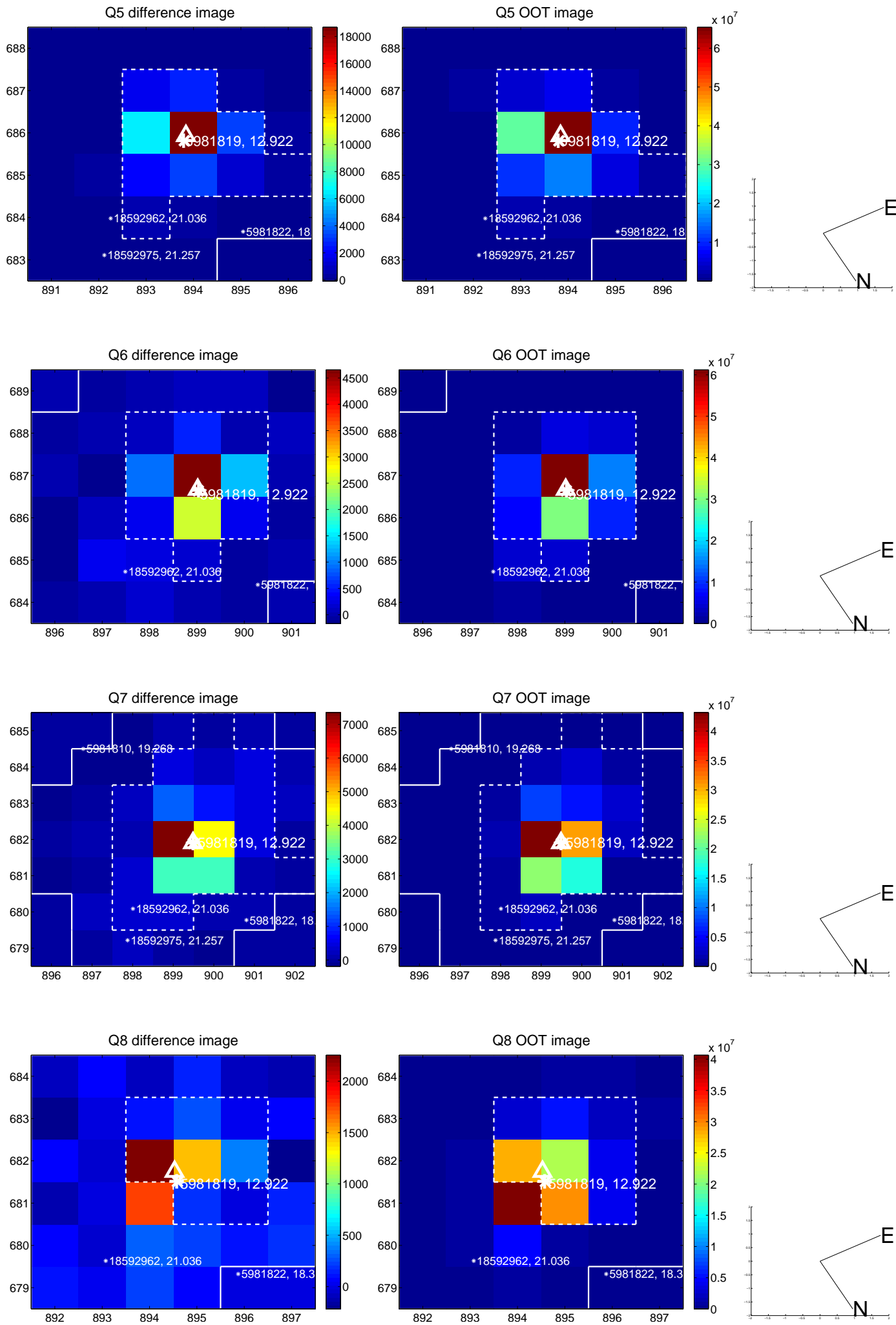


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

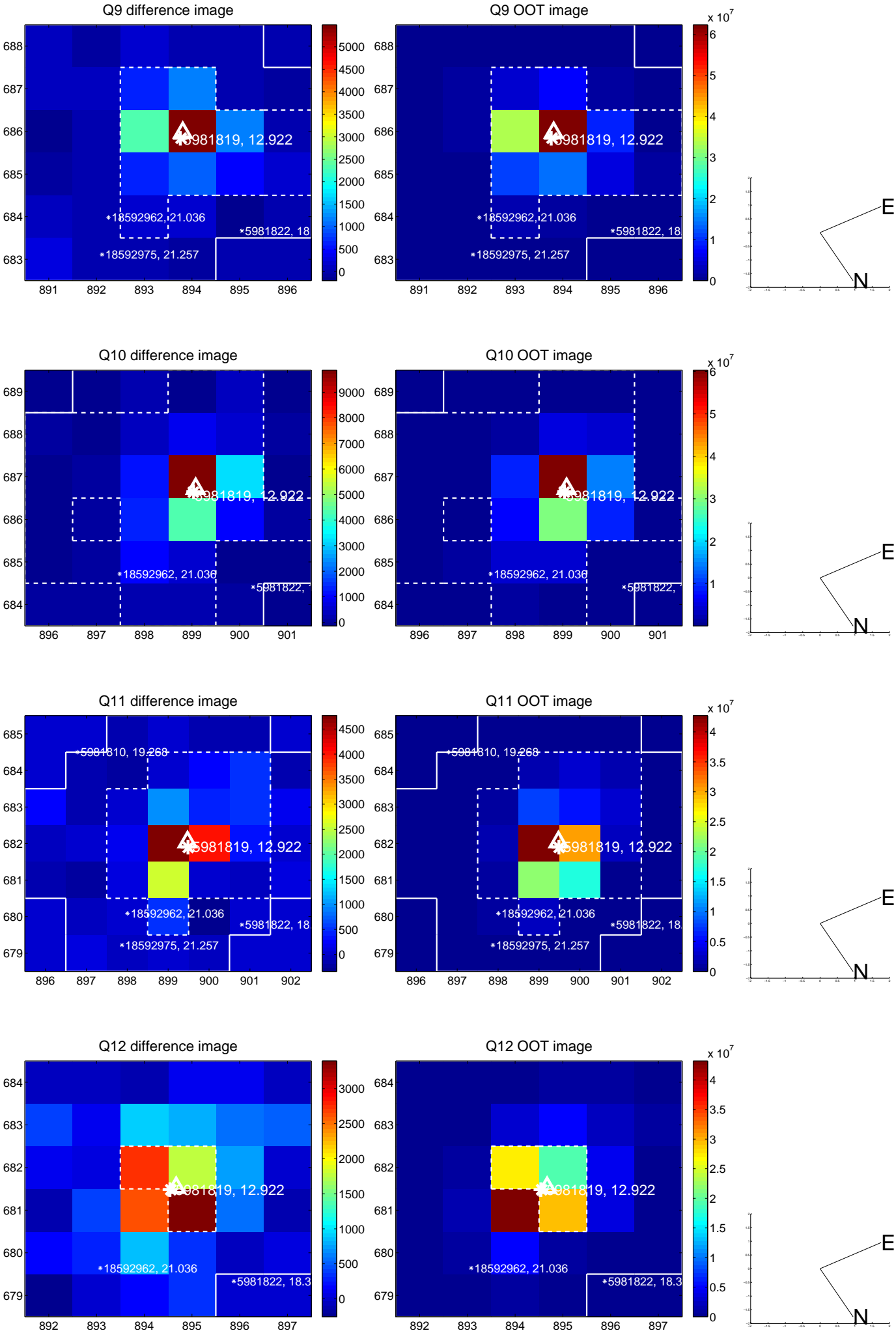


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

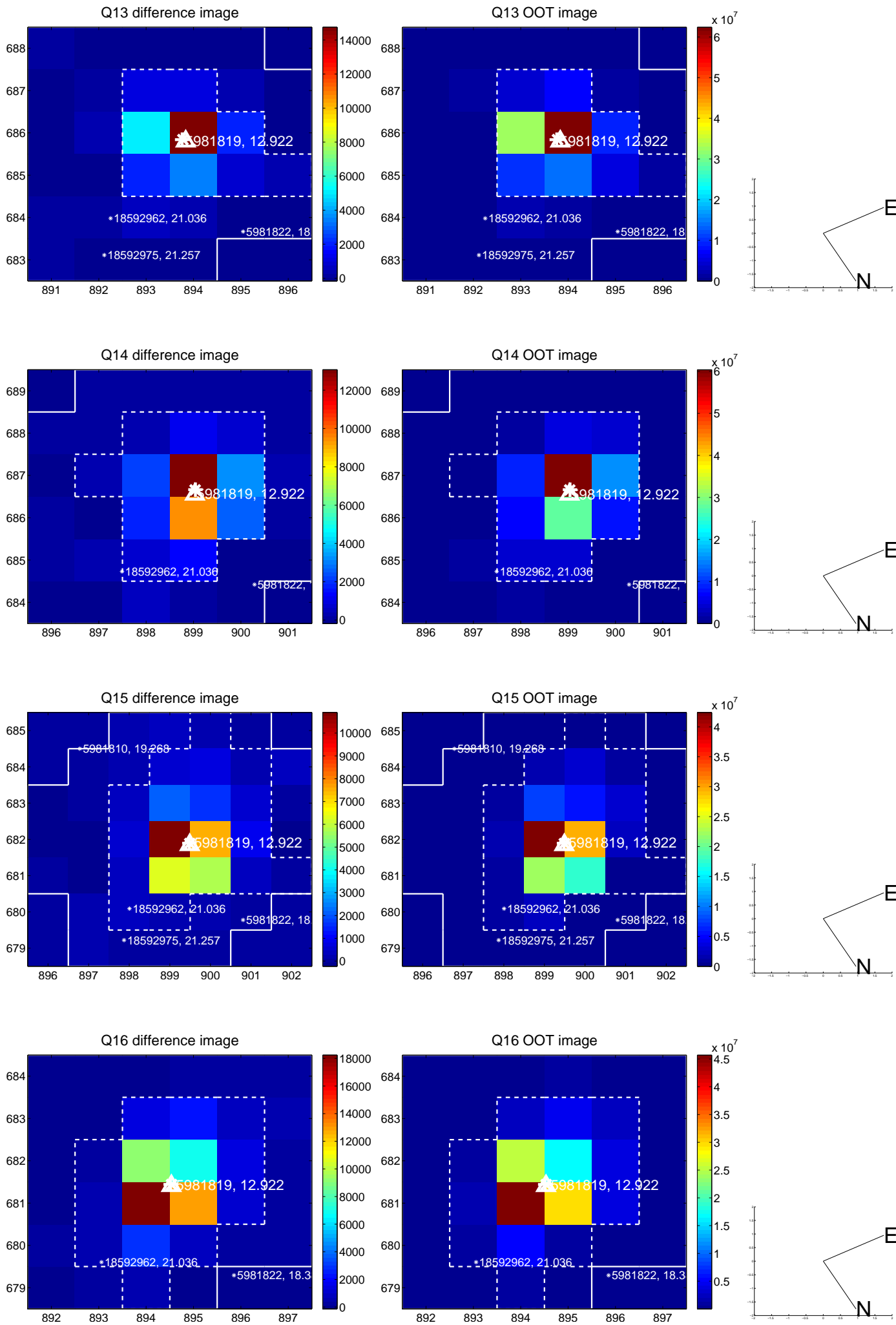




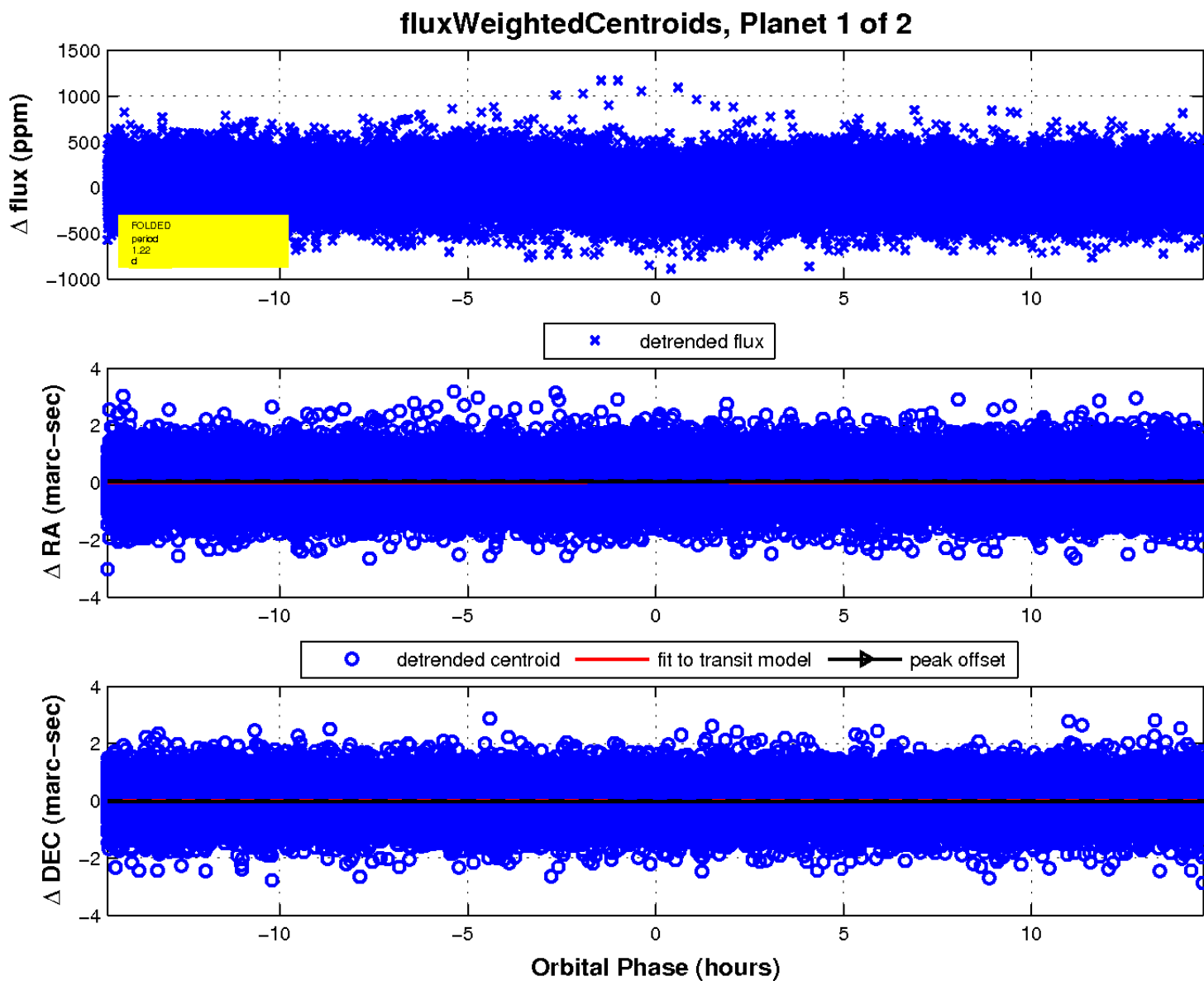
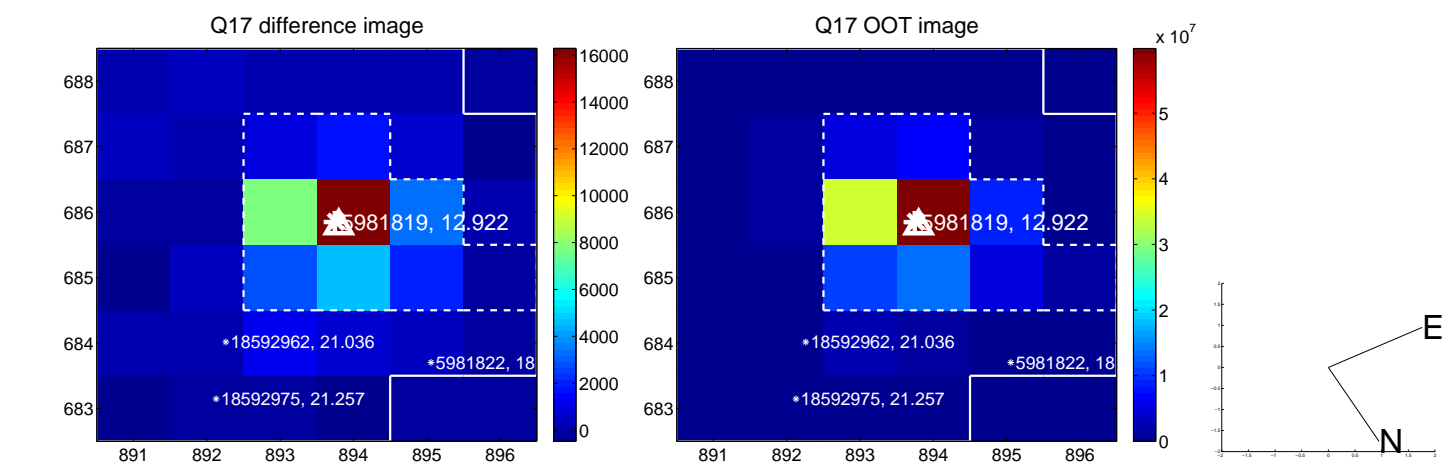
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

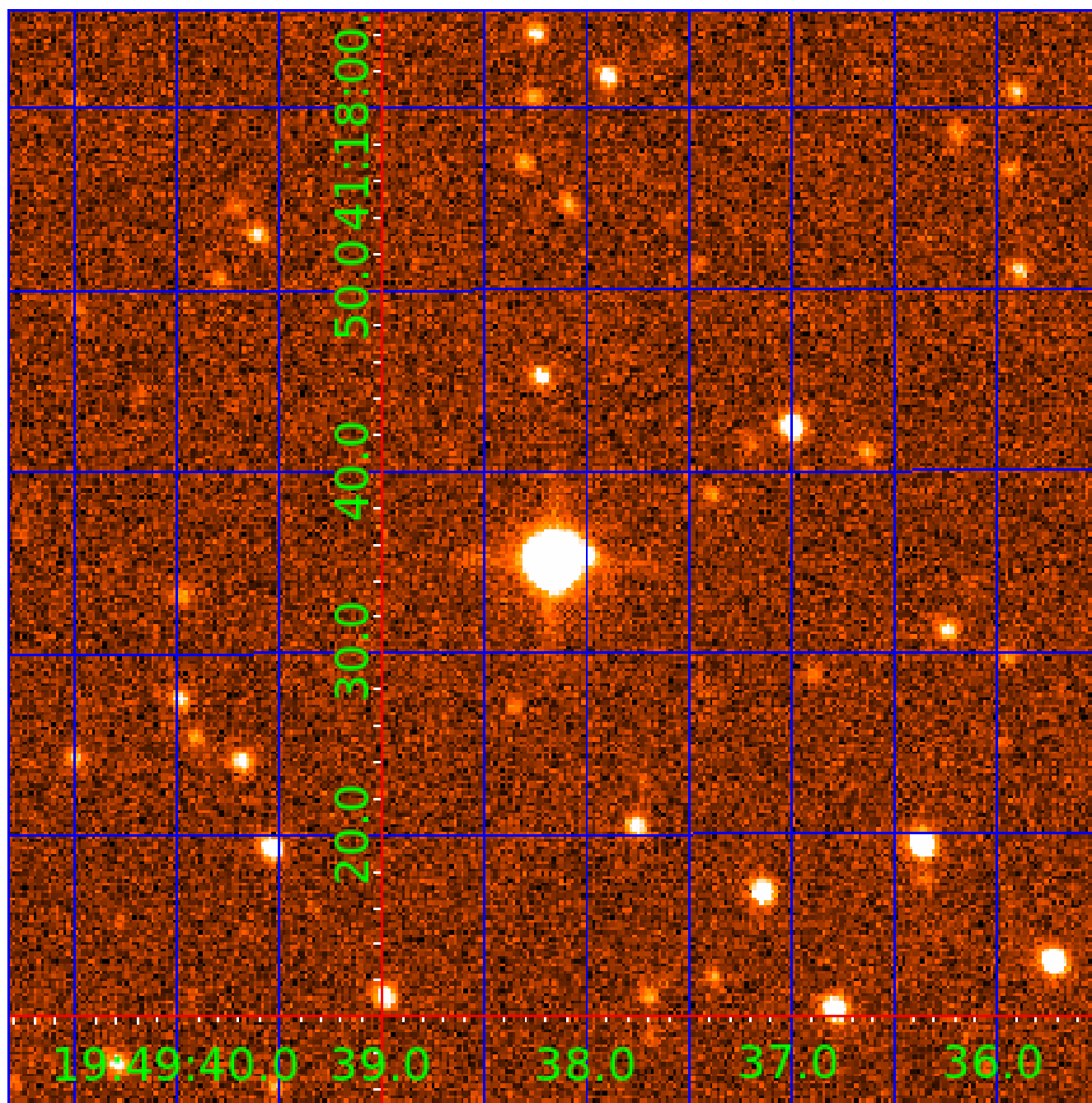


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005981819

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005981819-01	OBS	No	1.215675	132.073451	48.2	5.892	12.6	13.5	3.83	6588	4.99	34720.56
005981819-02	OBS	No	42.213516	150.091239	206.9	2.073	7.5	7.5	3.83	6588	6.37	306.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005981819-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005981819-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

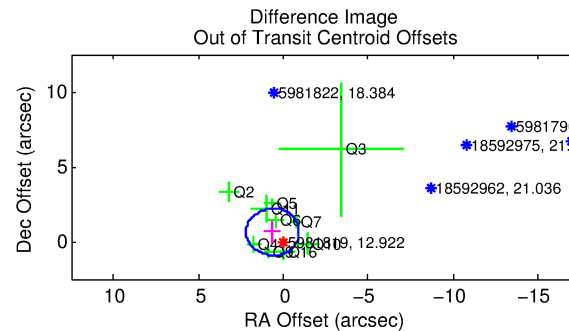
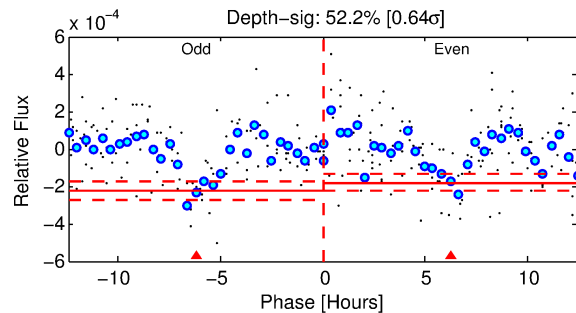
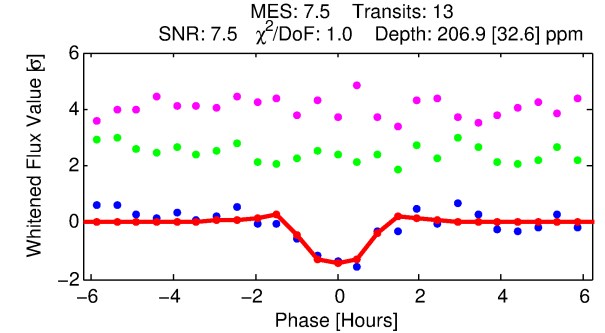
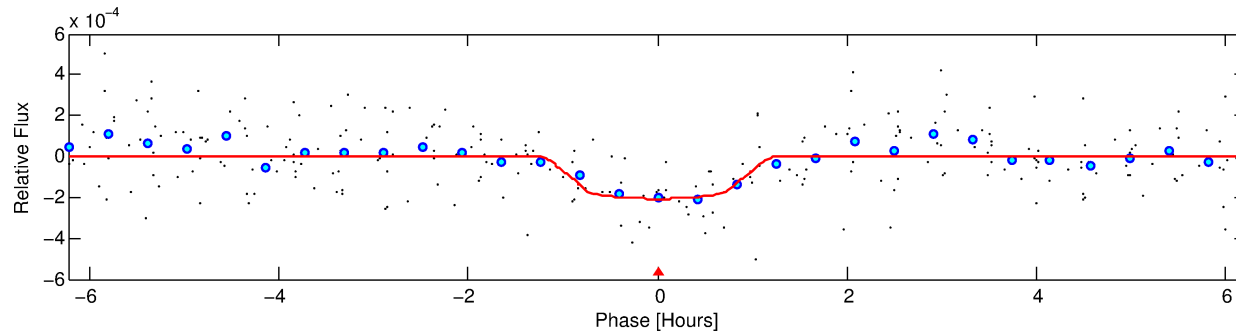
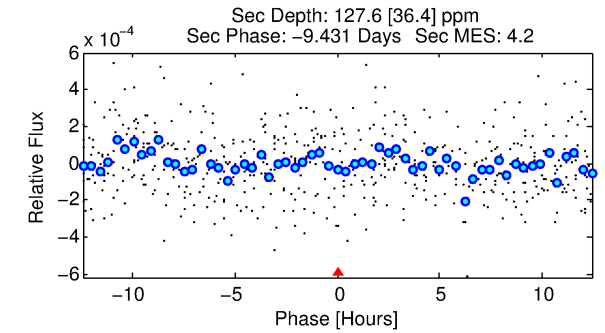
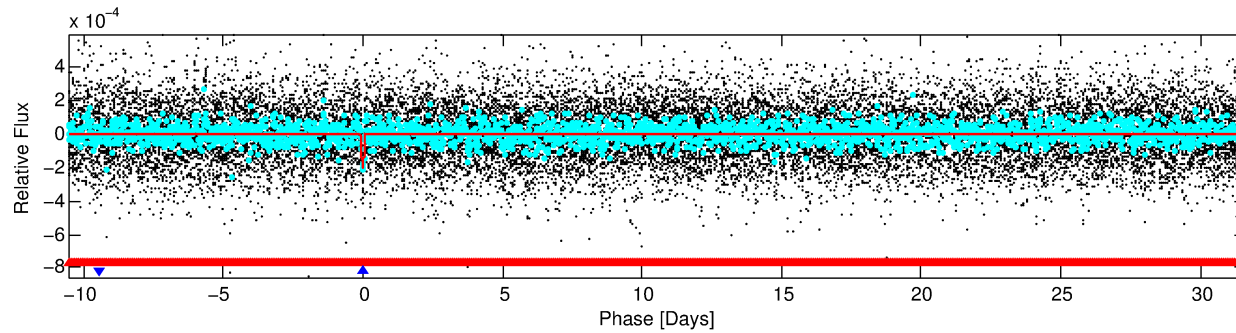
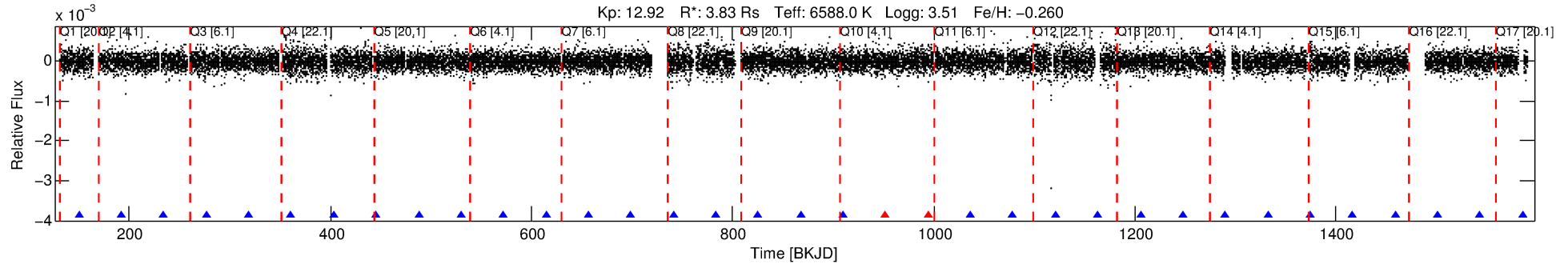
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005981819-02

No Significant Match Found

# DV One-Page Summary

KIC: 5981819 Candidate: 2 of 2 Period: 42.214 d



## DV Fit Results:

Period = 42.21352 [0.00041] d  
Epoch = 150.0912 [0.0062] BKJD  
Rp/R\* = 0.0152 [0.0139]  
a/R\* = 77.31 [414.34]  
b = 0.89 [1.32]  
Seff = 306.48 [194.81]  
Teq = 1067 [170] K  
Rp = 6.37 [6.35] Re  
a = 0.2845 [0.1102] AU  
Ag = 140.04 [273.42] [0.51σ]  
Teffp = 5675 [2630] K [1.75σ]

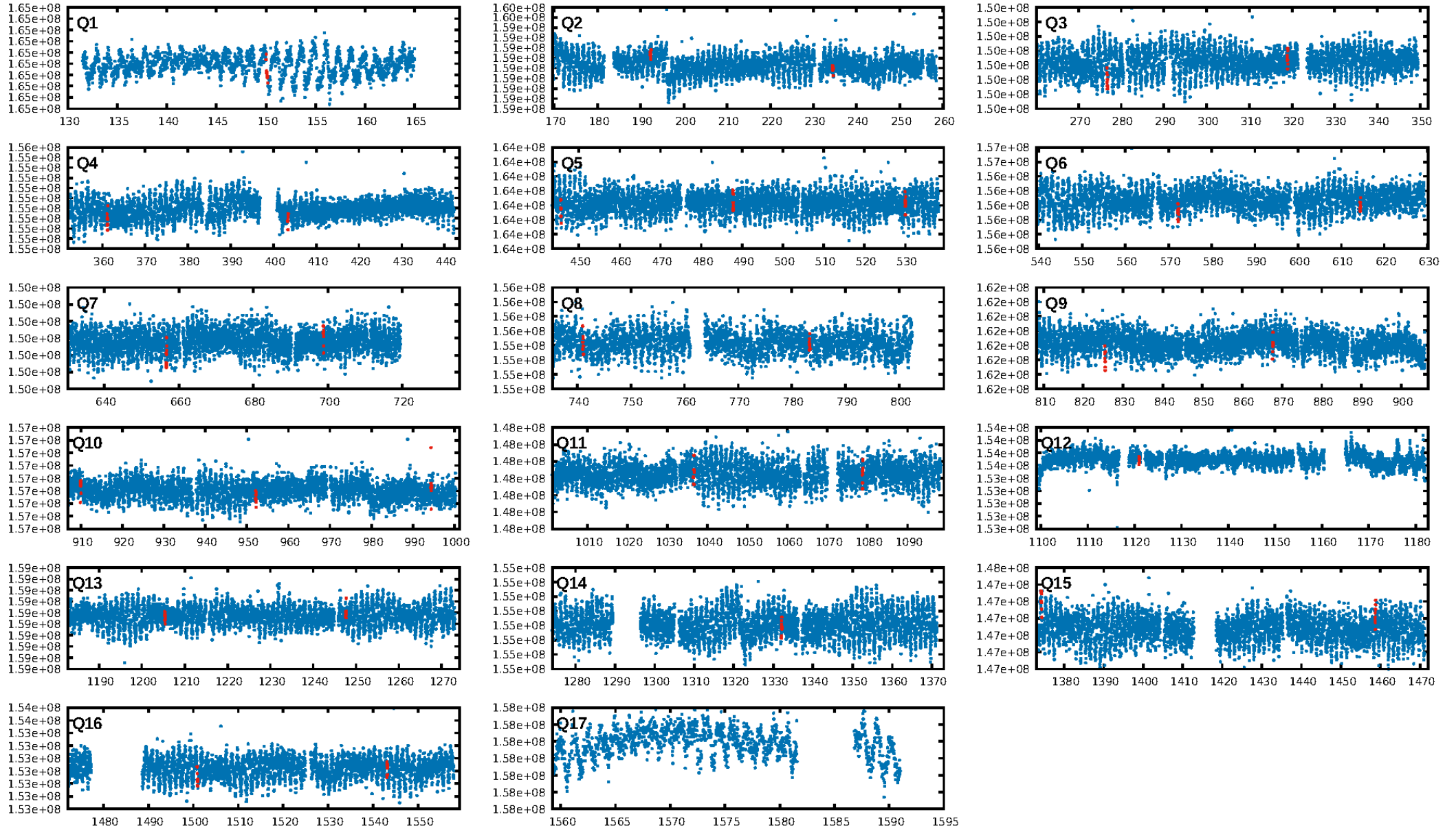
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [157.54σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 77.0%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 2.77e-09**  
RollingBand-fgt: 0.85 [11/13]  
GhostDiagnostic-chr: 1.039  
Centroid-sig: 14.6%  
Centroid-so: 0.747 arcsec [1.02σ]  
OotOffset-rm: 0.890 arcsec [1.71σ]  
OotOffset-st: 3/3/2/2 [10]  
KicOffset-rm: 0.831 arcsec [1.71σ]  
KicOffset-st: 3/3/2/2 [10]  
DiffImageQuality-fgm: 0.80 [8/10]  
DiffImageOverlap-fno: 0.53 [8/15]

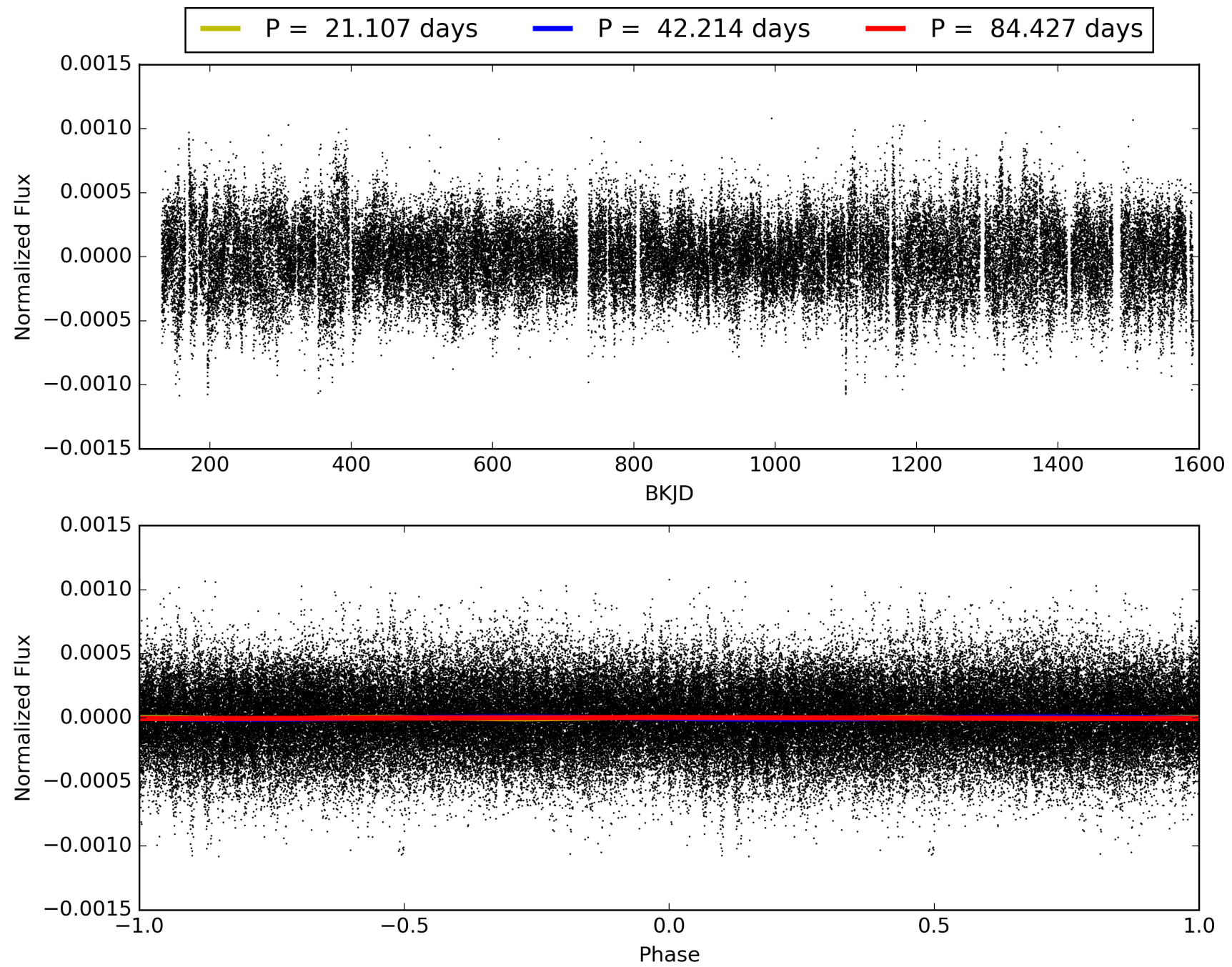
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 01:36:36 Z

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

# TCE 005981819-02, PDC Light Curves

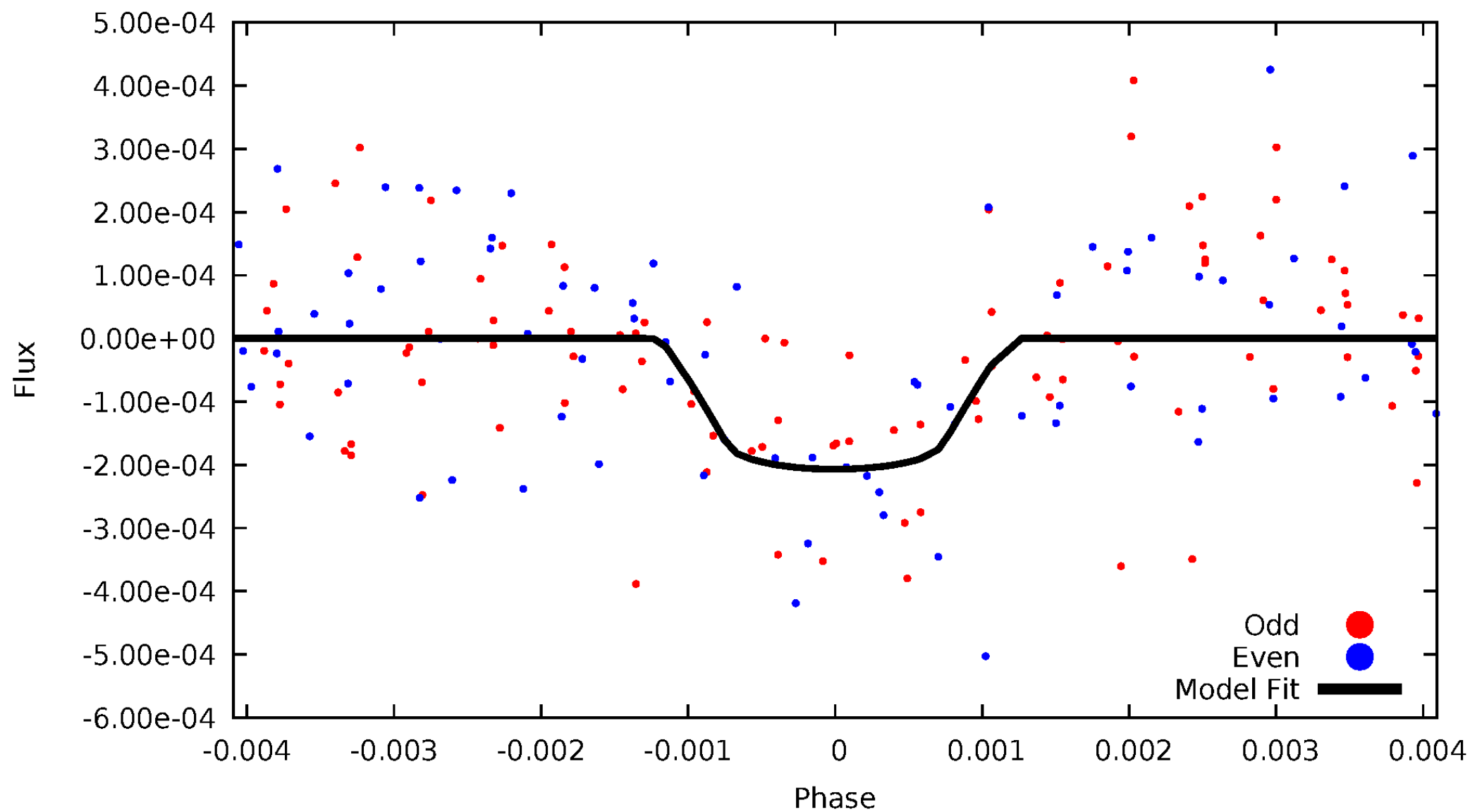


TCE 005981819-02



# DV Odd/Even

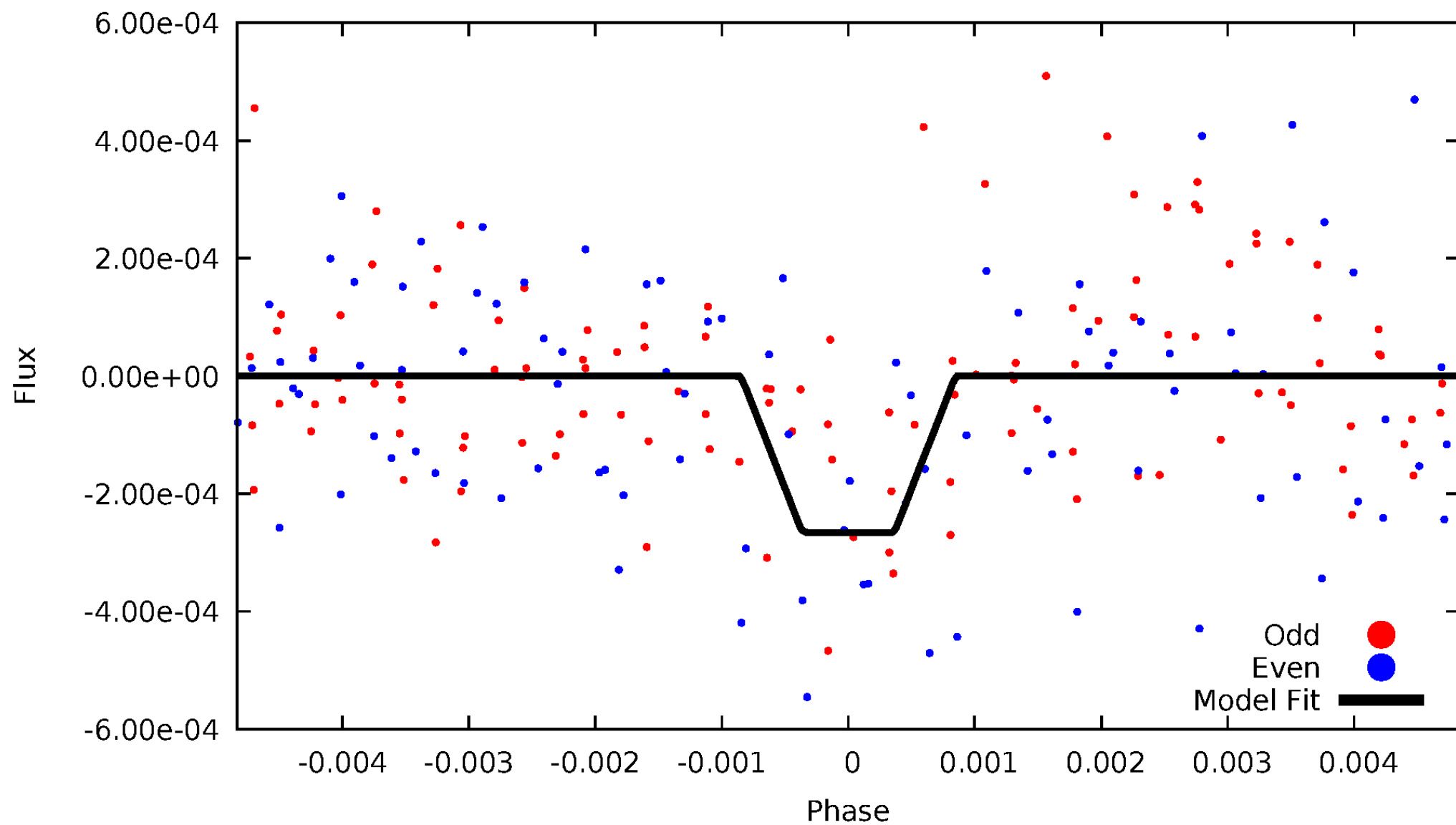
TCE 005981819-02





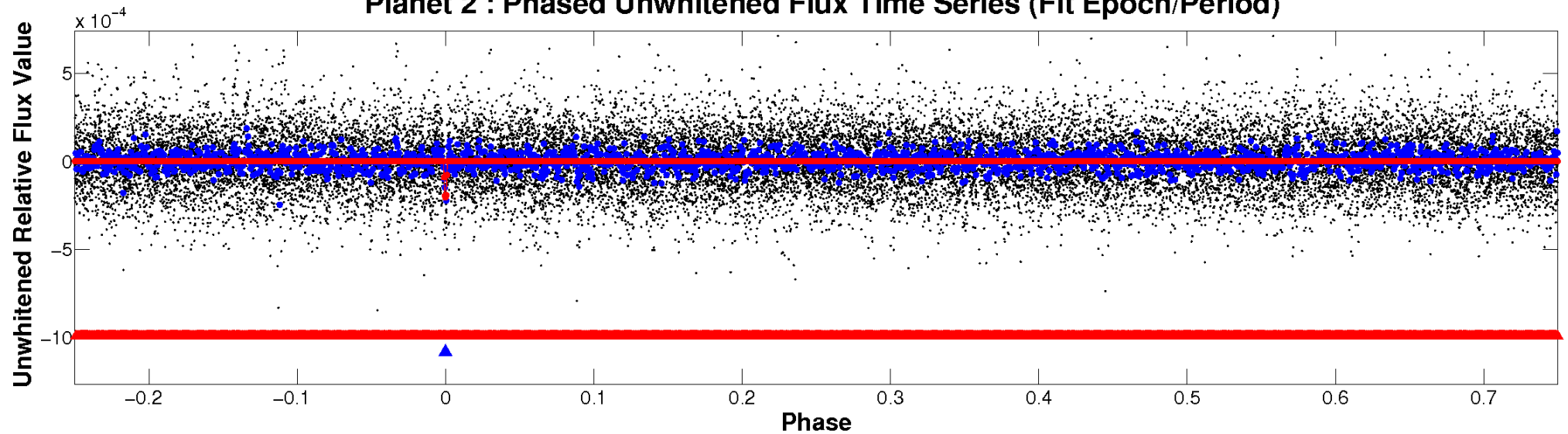
# ALT Odd/Even

TCE 005981819-02

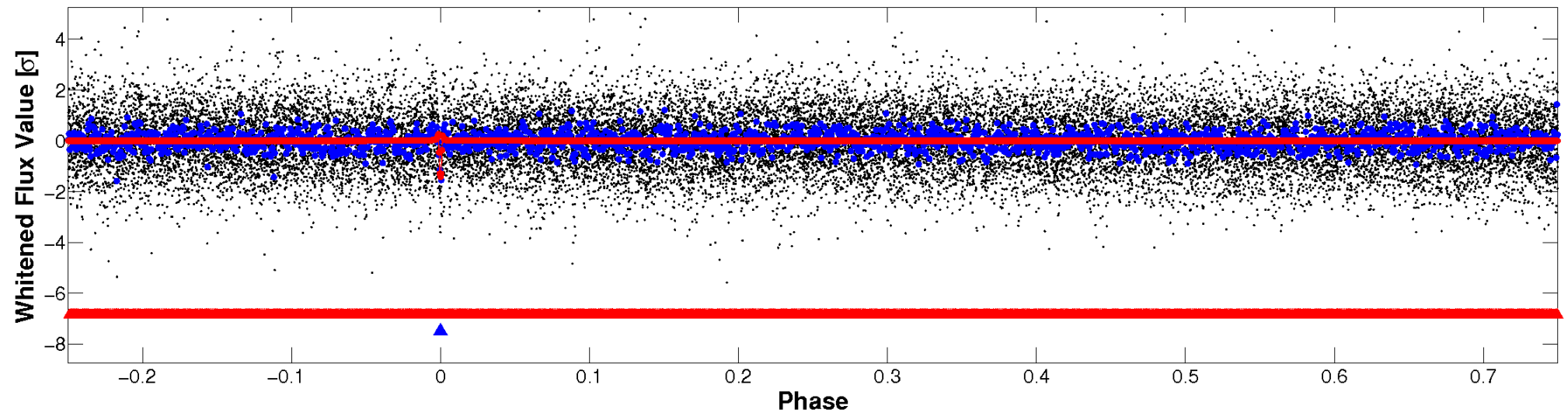


# Non-Whitened Vs. Whitened Light Curve

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

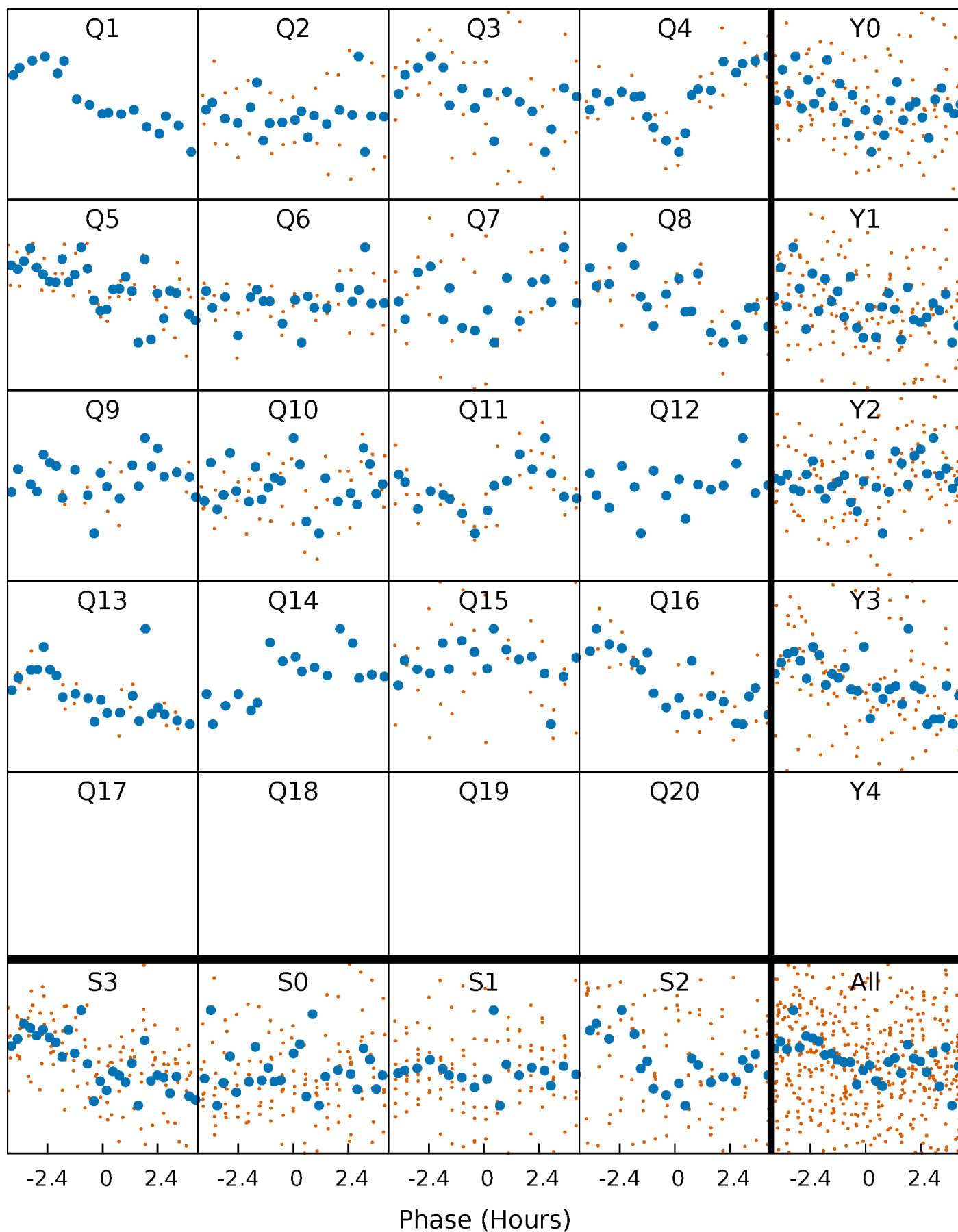


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



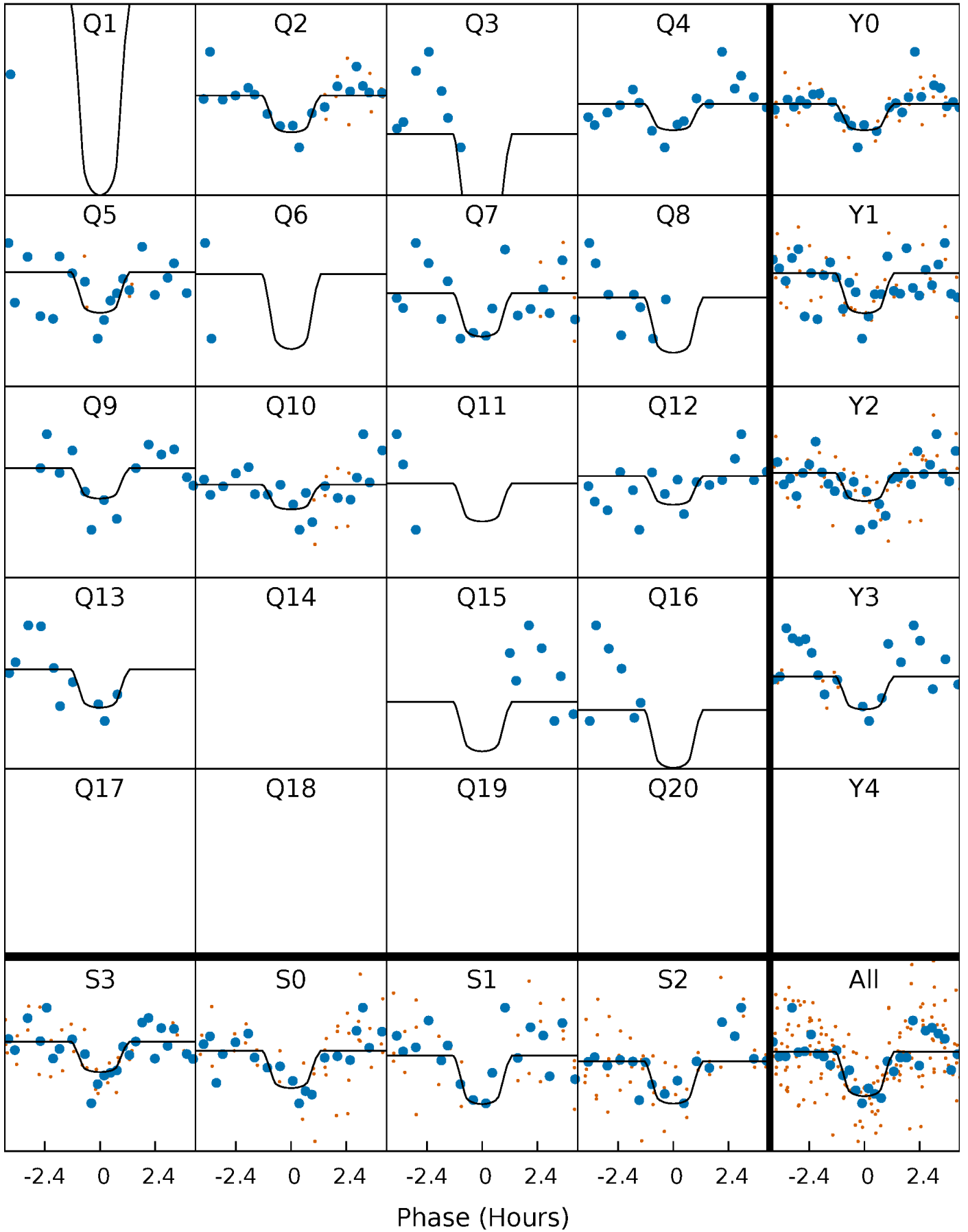
# PDC Quarter-Phased Transit Curves

TCE 005981819-02 P= 42.213516 Days  $T_0=150.091239$  (BKJD)



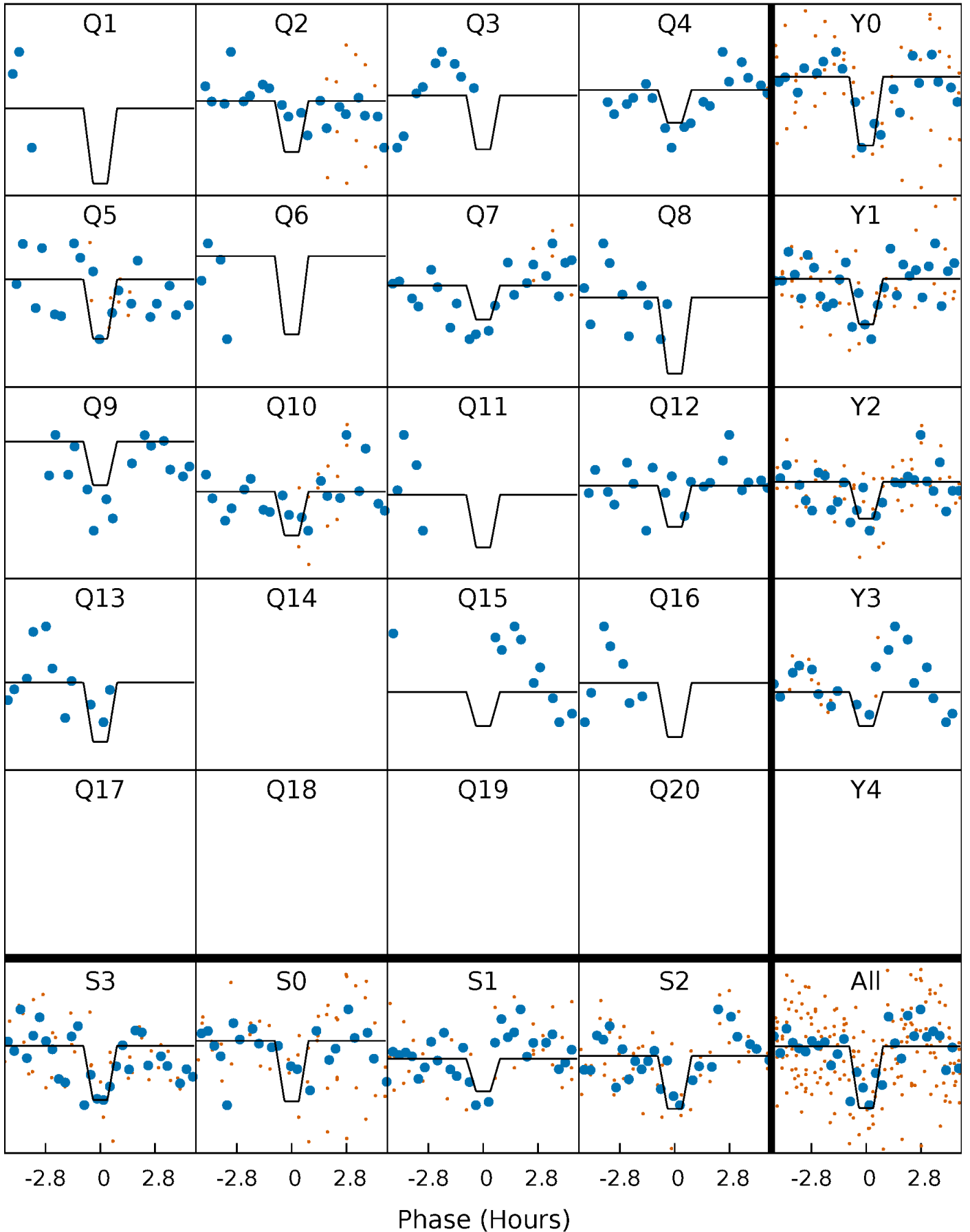
# DV Quarter-Phased Transit Curves

TCE 005981819-02 P= 42.213516 Days  $T_0=150.091239$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005981819-02 P= 42.214617 Days  $T_0=150.076072$  (BKJD)

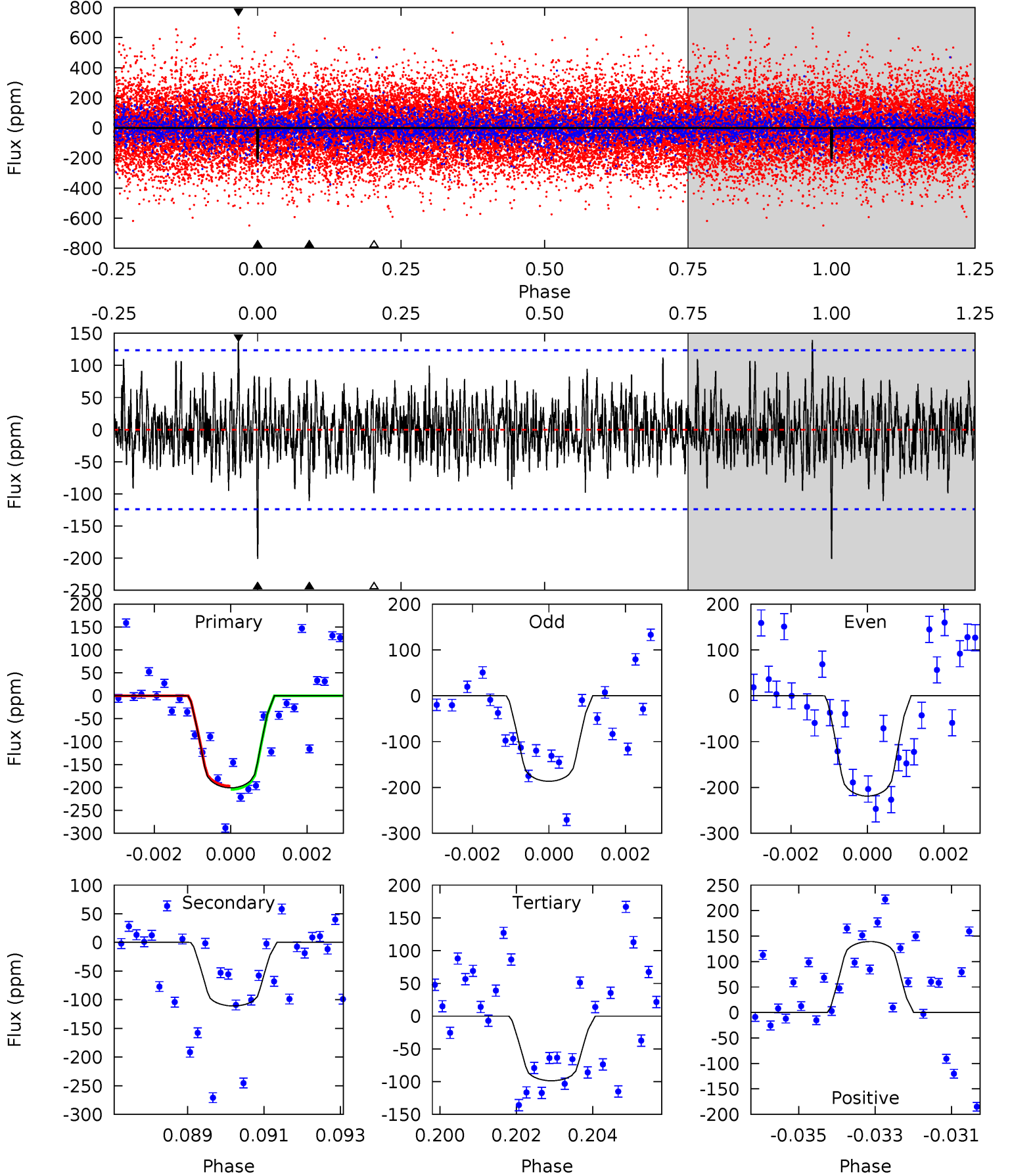




# DV Model-Shift Uniqueness Test

005981819-02, P = 42.213516 Days, E = 107.877723 Days

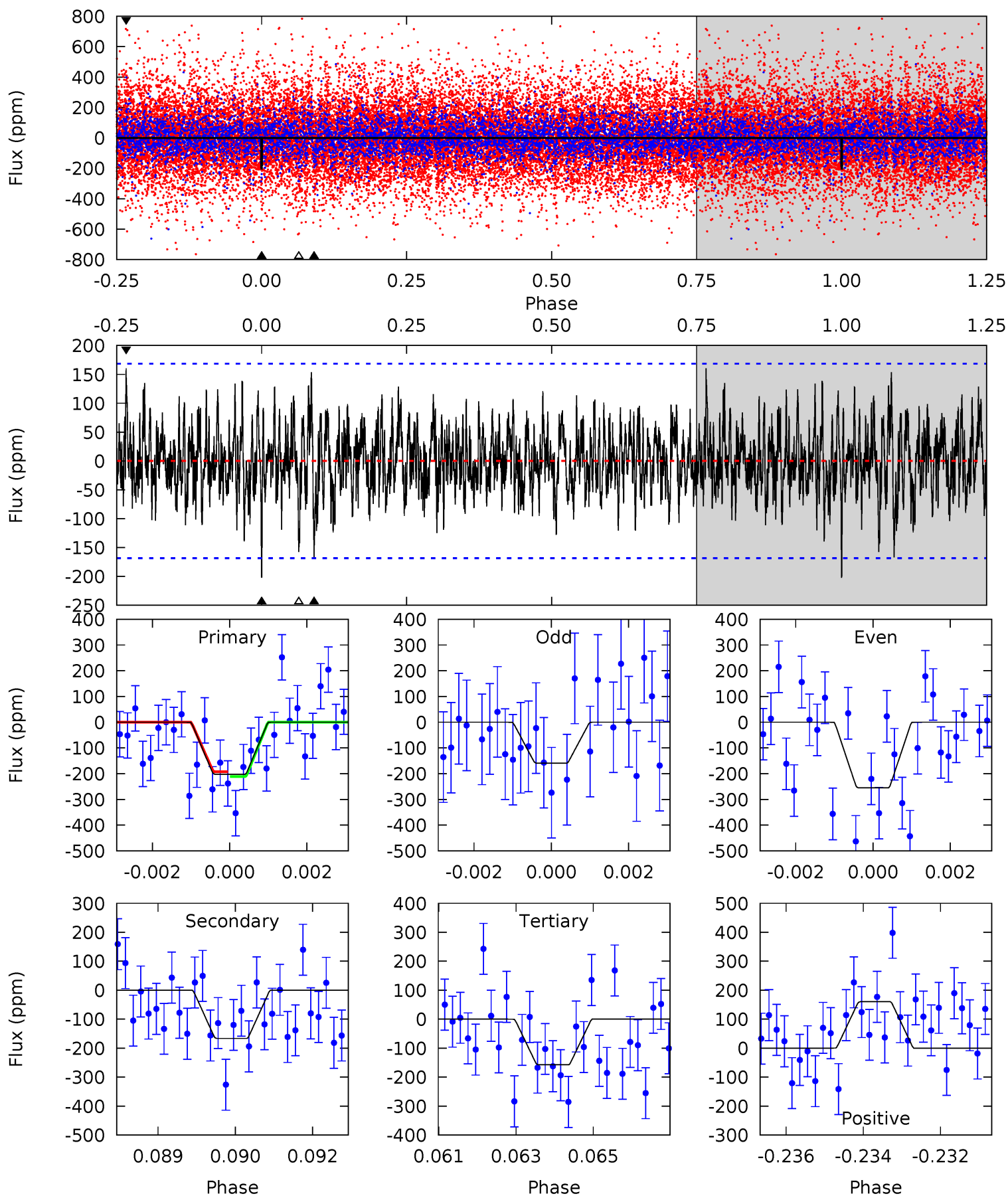
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.62	4.76	4.23	5.98	5.31	3.06	1.47	4.39	2.65	0.52	-1.22	0.70	0.93	0.41	0.16



# Alt Model-Shift Uniqueness Test

005981819-02, P = 42.214617 Days, E = 107.861455 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
6.43	5.30	5.01	5.09	5.36	3.14	1.50	1.42	1.33	0.29	0.20	1.51	1.28	0.44	0.29



### Stellar Parameters For KIC 005981819

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6588^{+179}_{-199}$	$3.507^{+0.368}_{-0.092}$	$-0.260^{+0.350}_{-0.250}$	$3.834^{+0.407}_{-1.525}$	$1.724^{+0.201}_{-0.402}$	$0.043^{+0.123}_{-0.012}$
	+3%/-3%	+10%/-3%	+135%/-96%	+11%/-40%	+12%/-23%	+286%/-28%
Source	PHO1	FLK73	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 005981819-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-111 \pm 23$	$6.77^{+5.19}_{-4.23}$	$1463^{+89}_{-145}$	$5182^{+3127}_{-1065}$	$108^{+624}_{-74}$
Alt.	$-167 \pm 31$	$7.04^{+5.16}_{-4.34}$	$1464^{+85}_{-147}$	$5537^{+3782}_{-1158}$	$144^{+867}_{-96}$

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

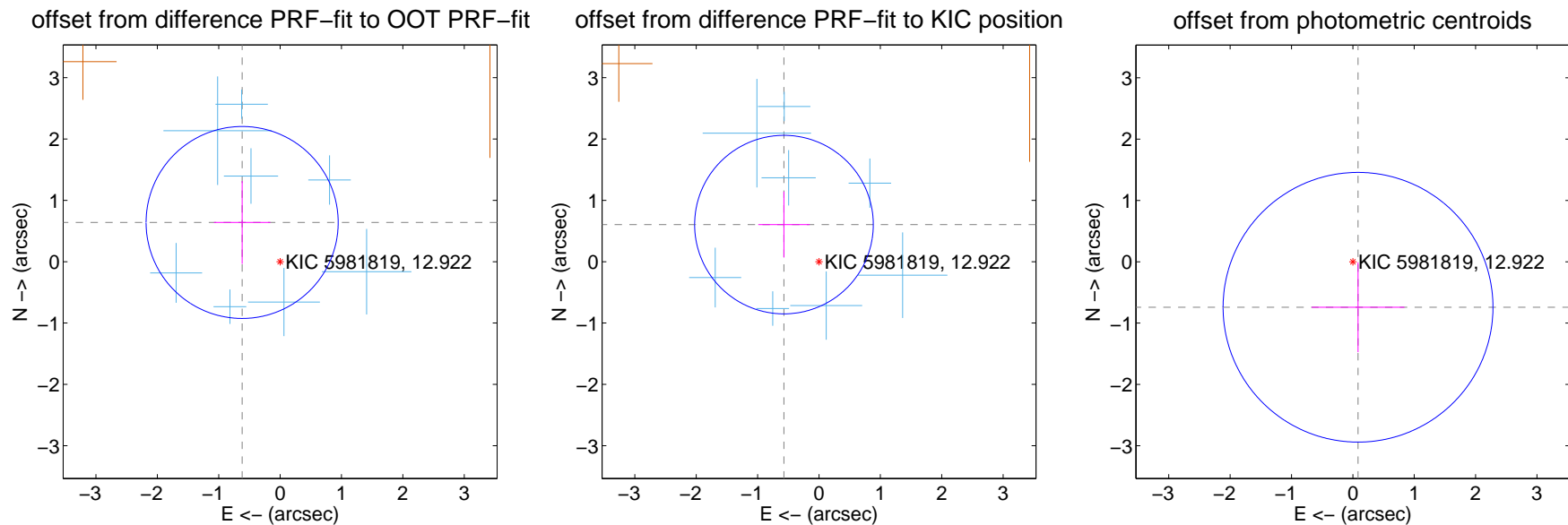
## DV Centroid Data

Supplemental centroid analysis for 005981819-02. Kepler magnitude: 12.92. Transit SNR 7.54

There are 8 quarters with good PRF difference image offsets

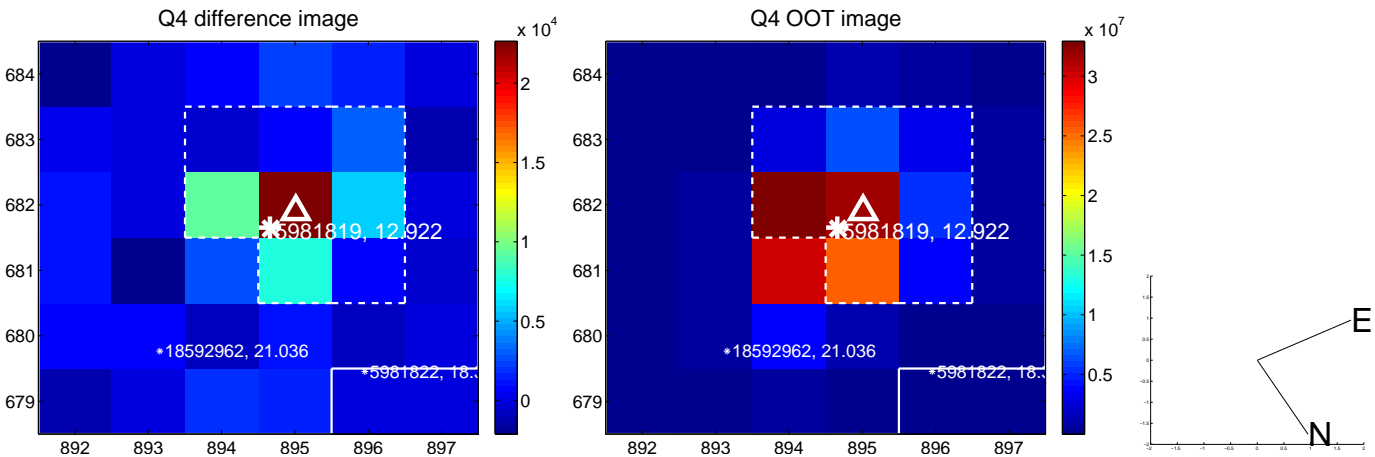
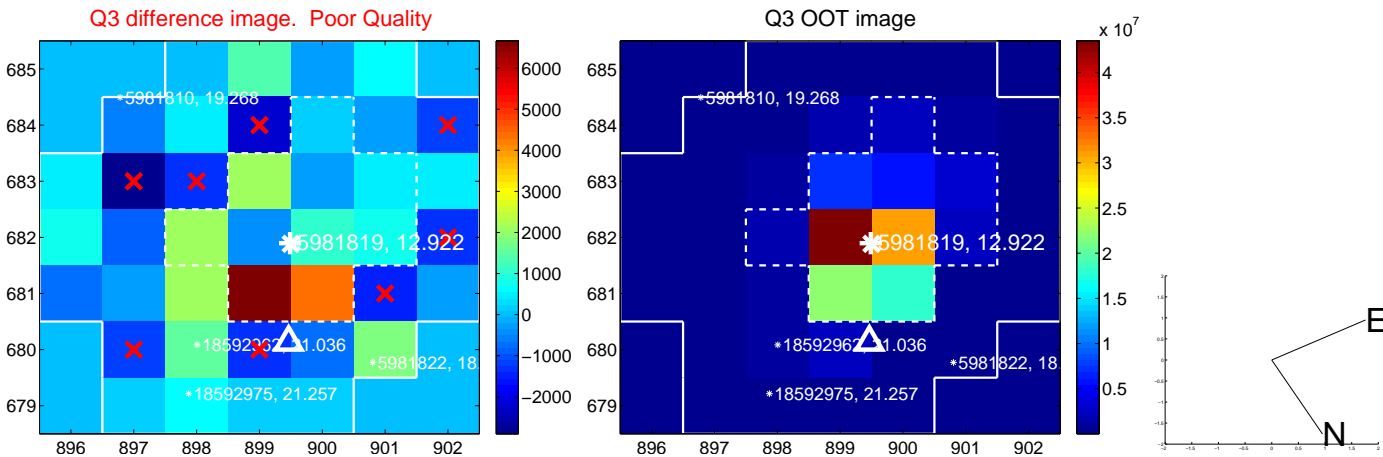
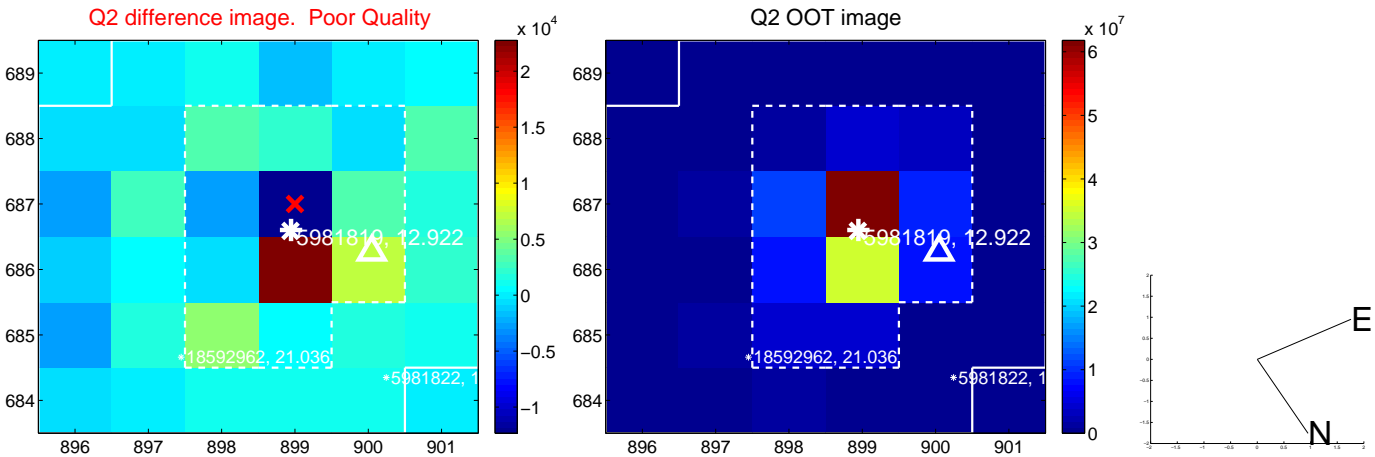
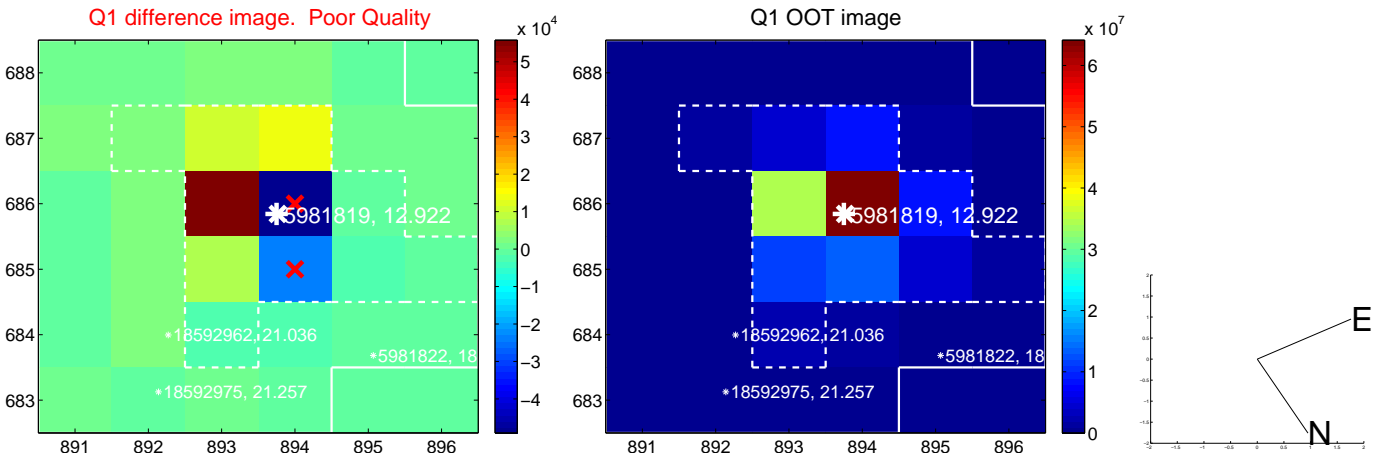
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.890 \pm 0.522$	1.71	$0.619 \pm 0.460$	$0.640 \pm 0.676$
PRF-fit source offset from KIC position	$0.831 \pm 0.485$	1.71	$0.571 \pm 0.419$	$0.605 \pm 0.537$
photometric centroid source offset	$0.75 \pm 0.73$	1.02	$-0.08 \pm 0.76$	$-0.74 \pm 0.73$



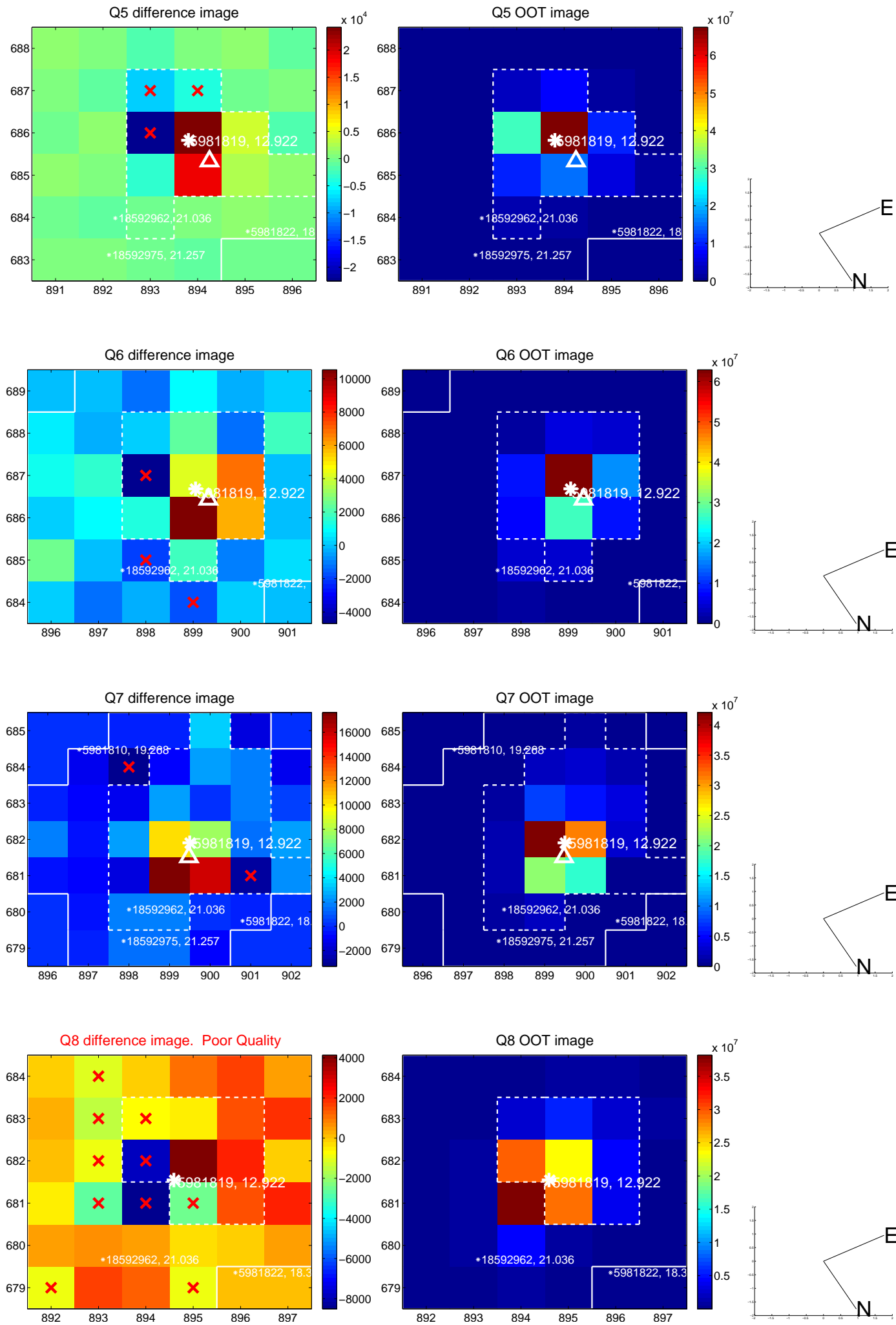
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

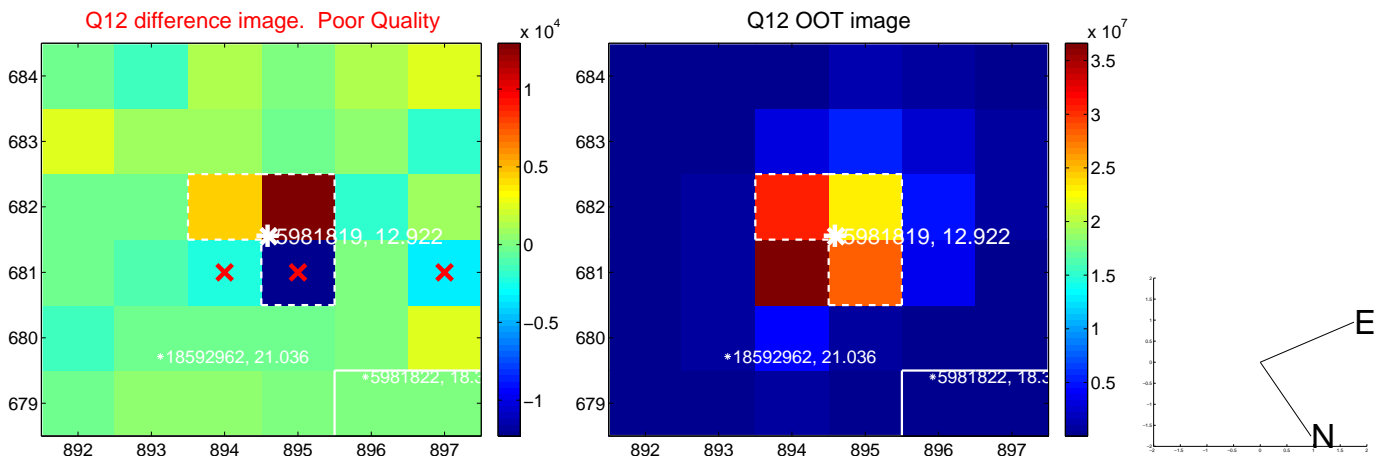
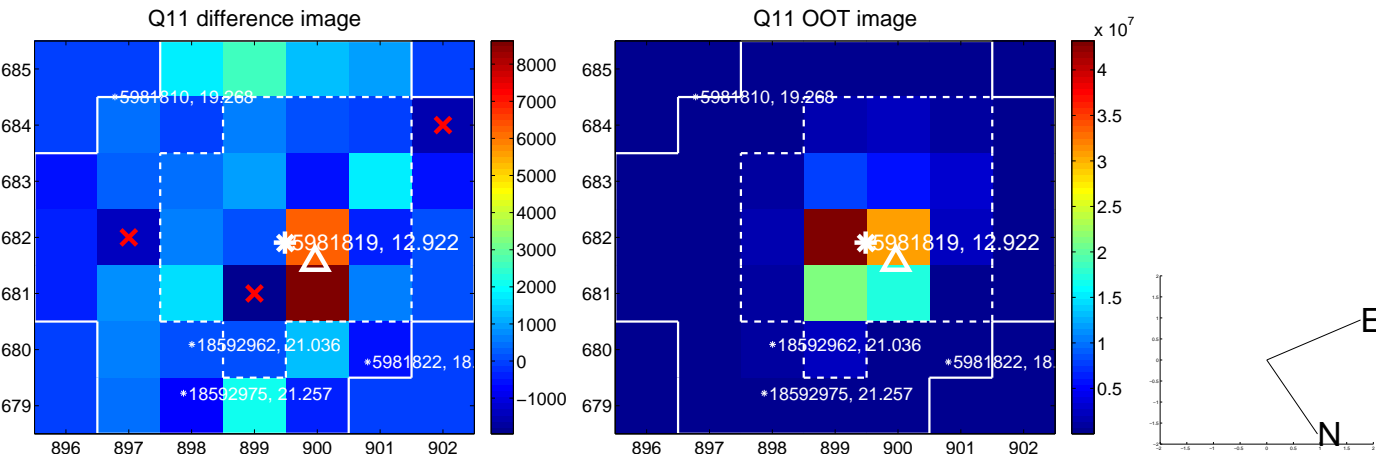
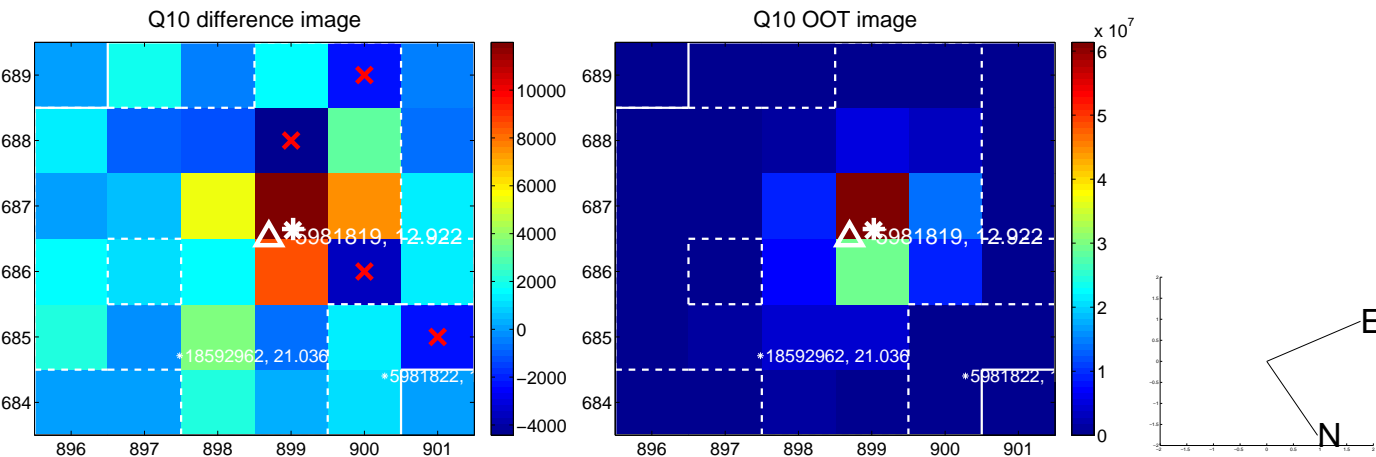
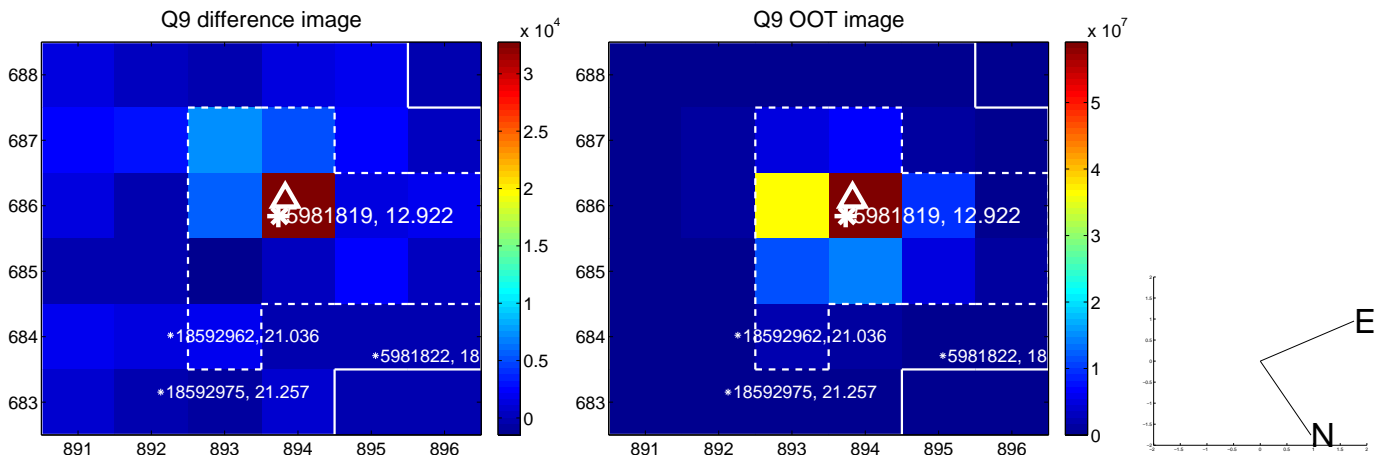




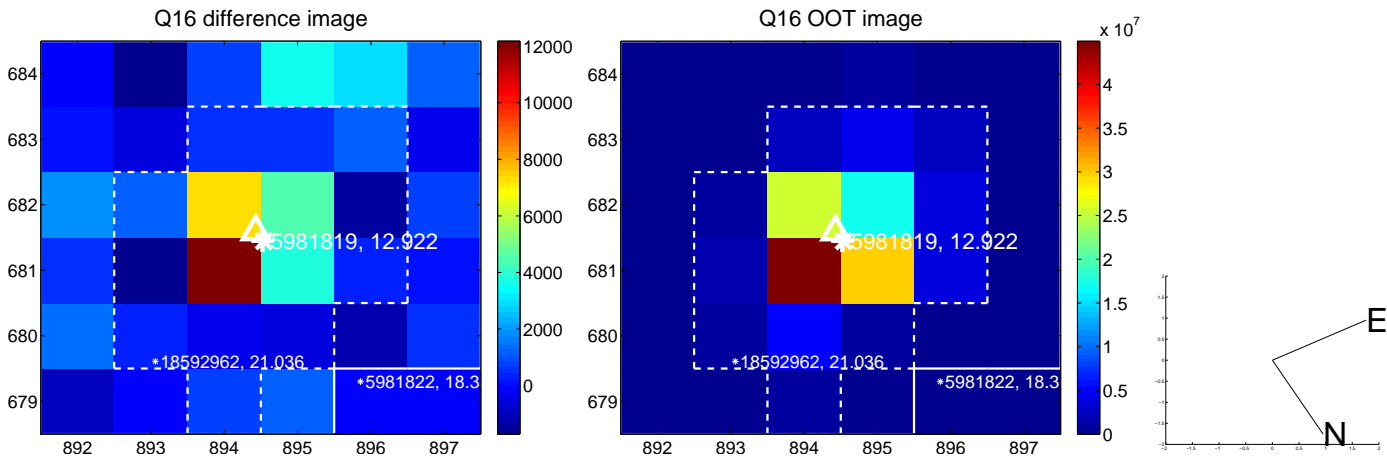
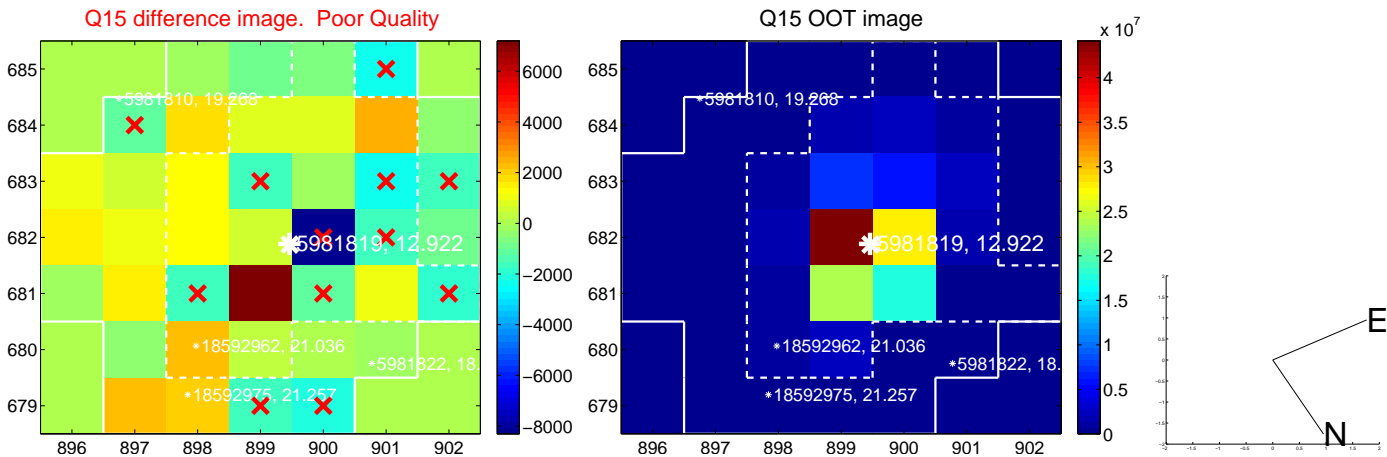
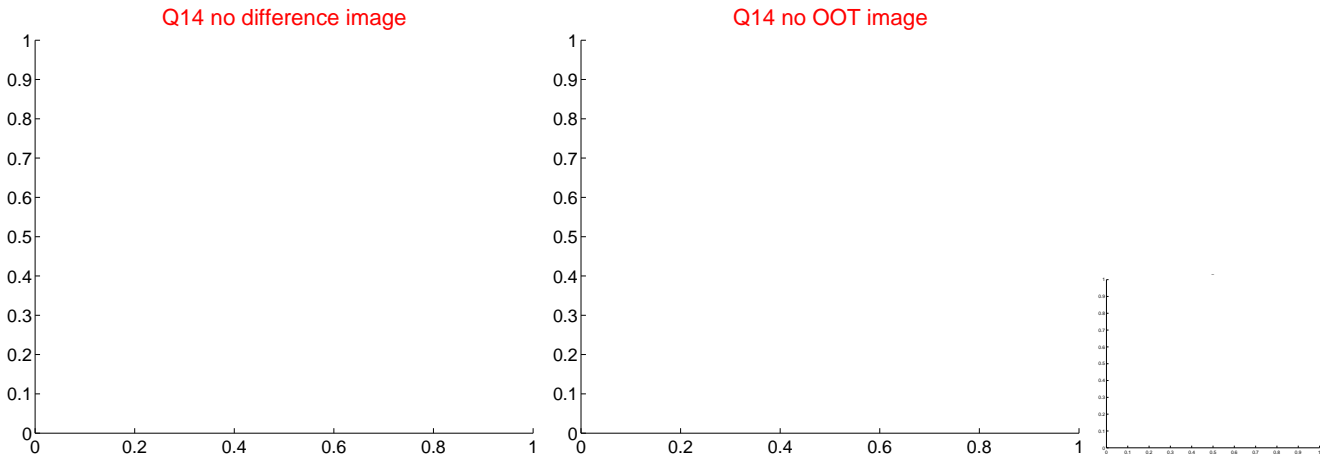
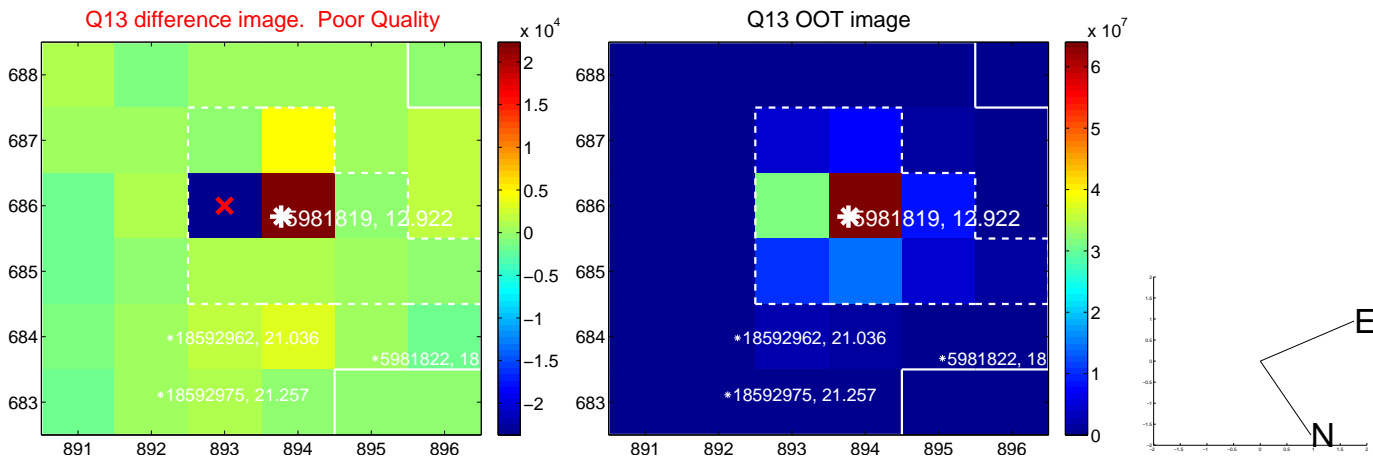
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



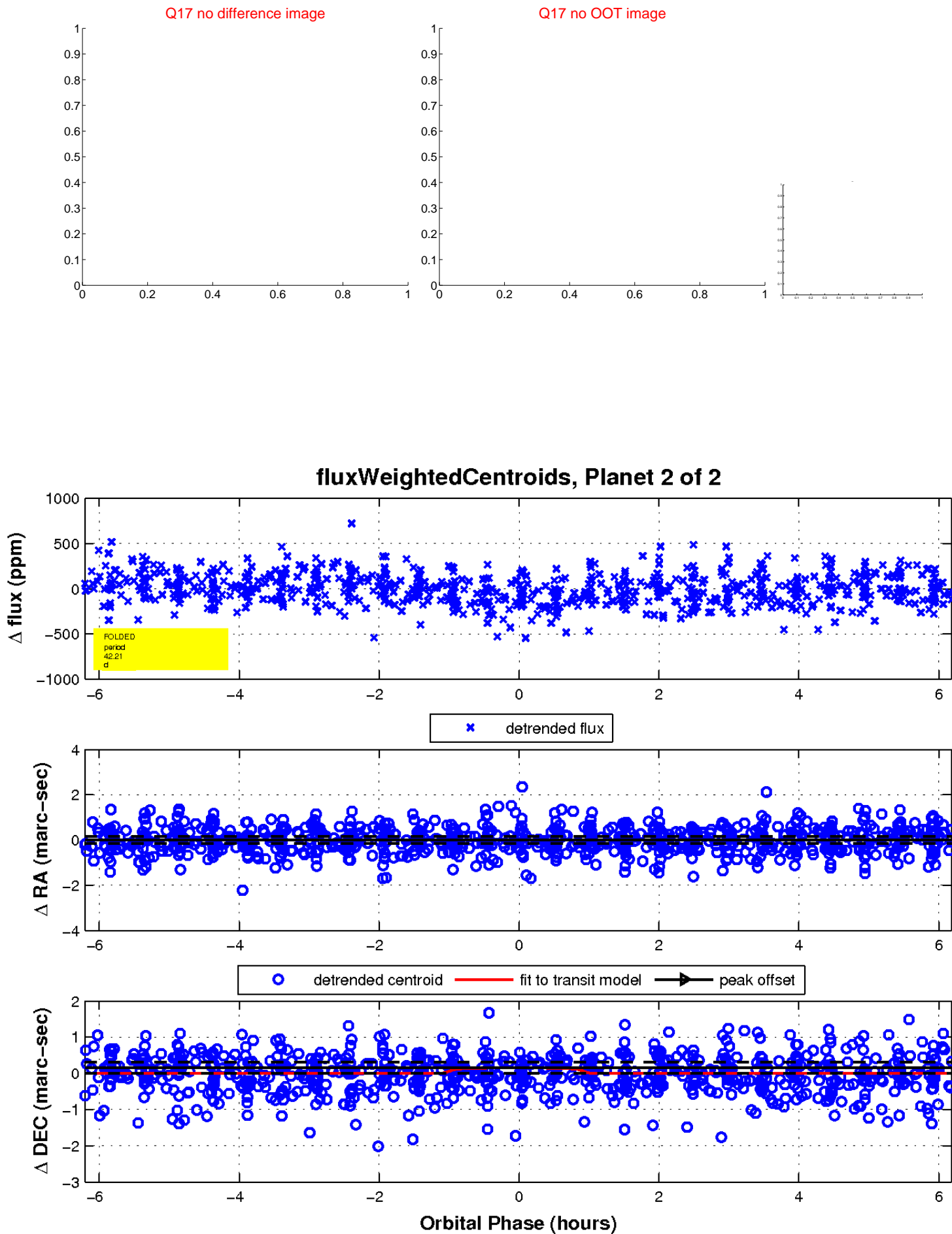
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

Declination

