

# KIC 005480040

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005480040-01	OBS	No	0.949134	132.041935	0.0	6.106	10.3	0.0	1.91	6429	0.01	13124.52
005480040-02	OBS	No	101.275407	159.097258	503.9	3.072	8.9	8.5	1.91	6429	4.76	25.93

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005480040-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
005480040-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_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.

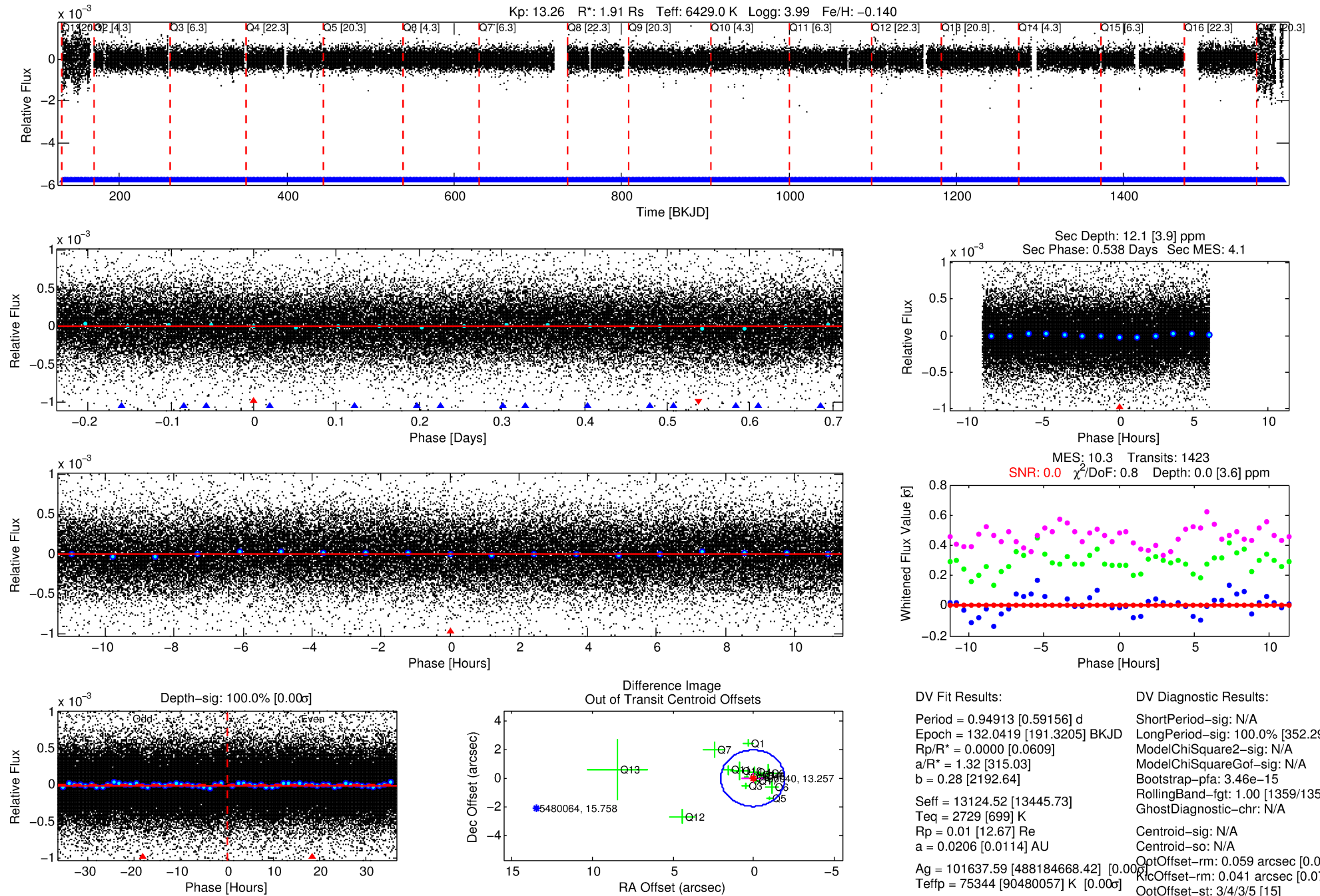
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005480040-01

No Significant Match Found

# DV One-Page Summary

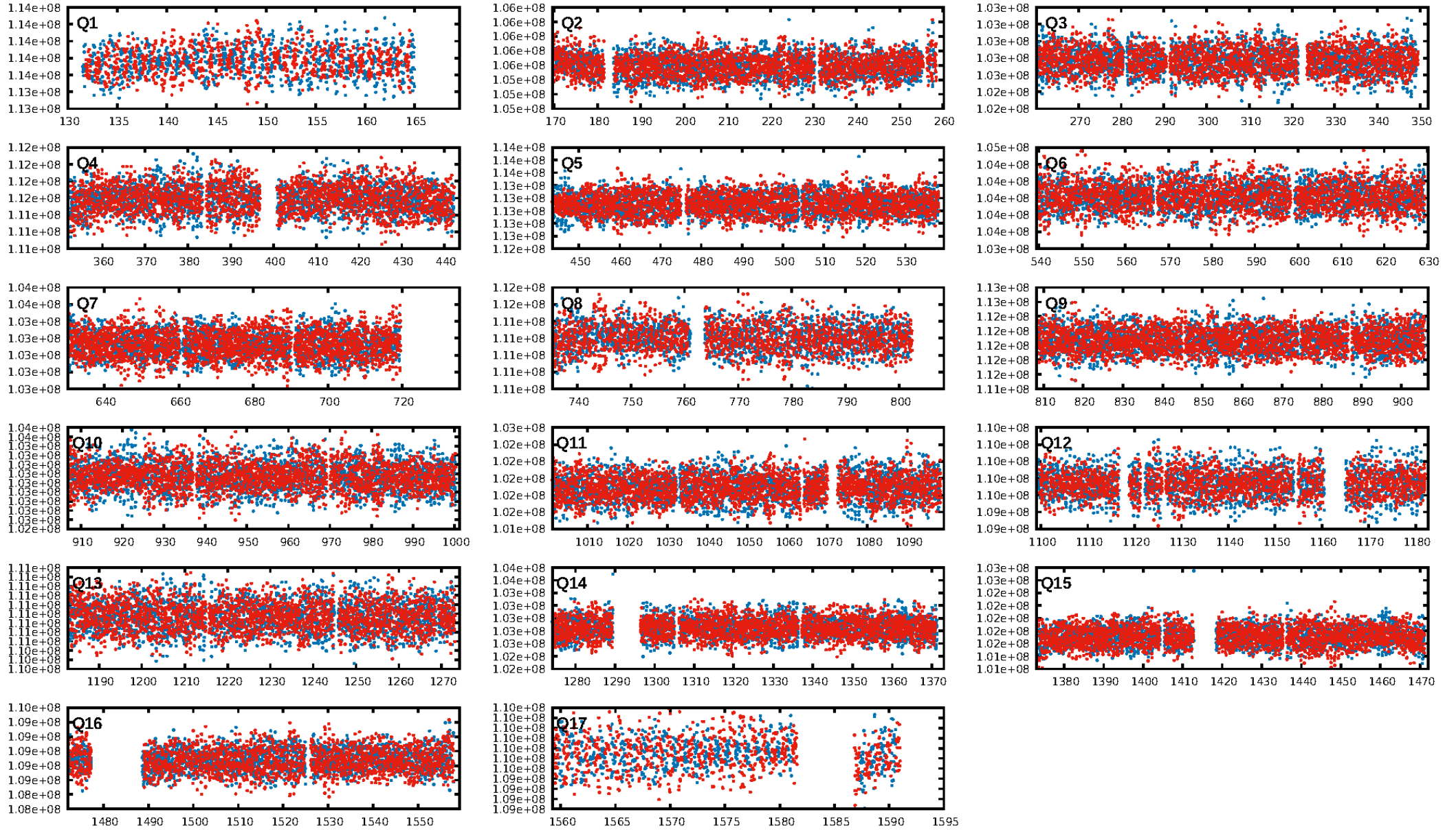
KIC: 5480040 Candidate: 1 of 2 Period: 0.949 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:27:53 Z

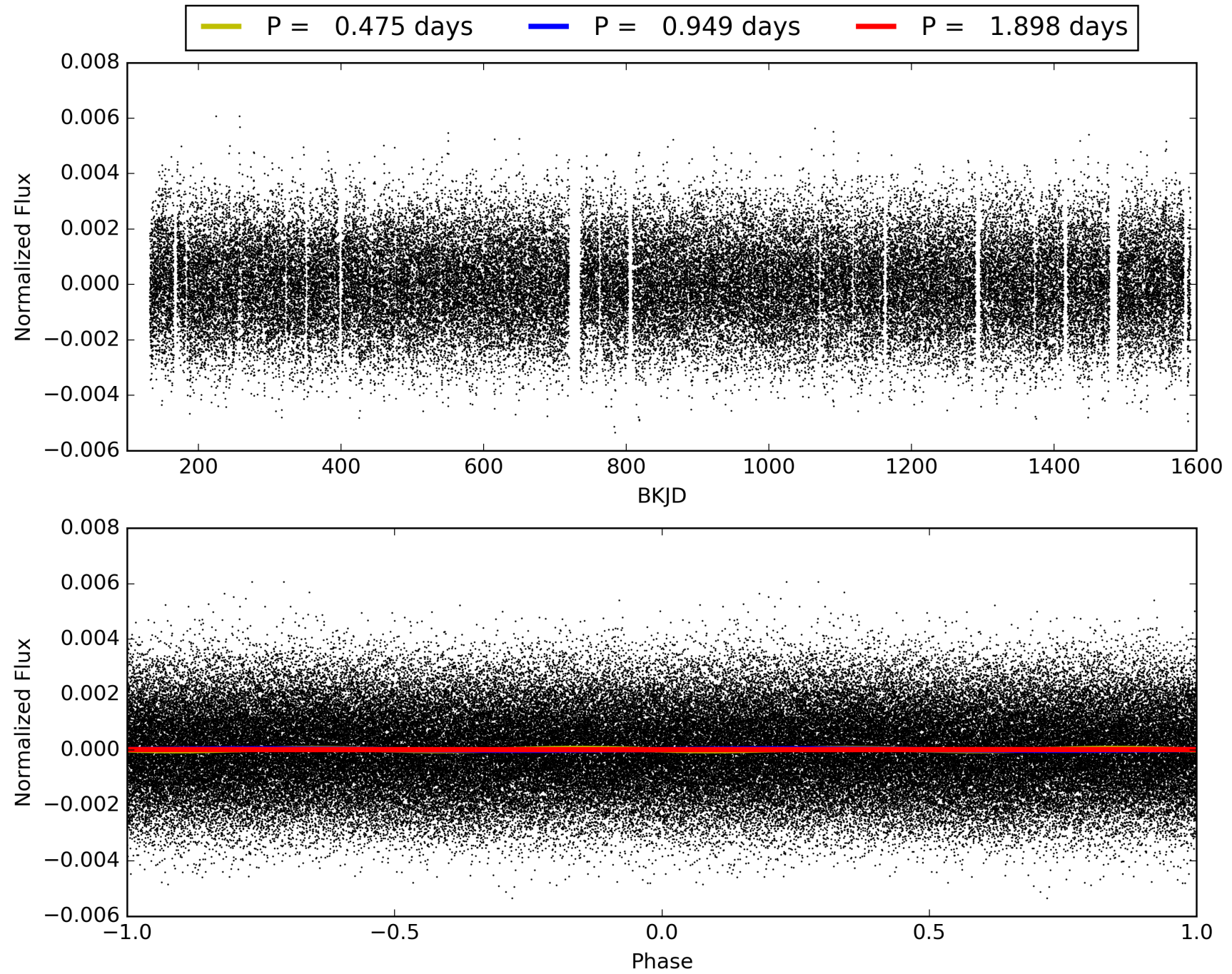
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005480040-01, PDC Light Curves



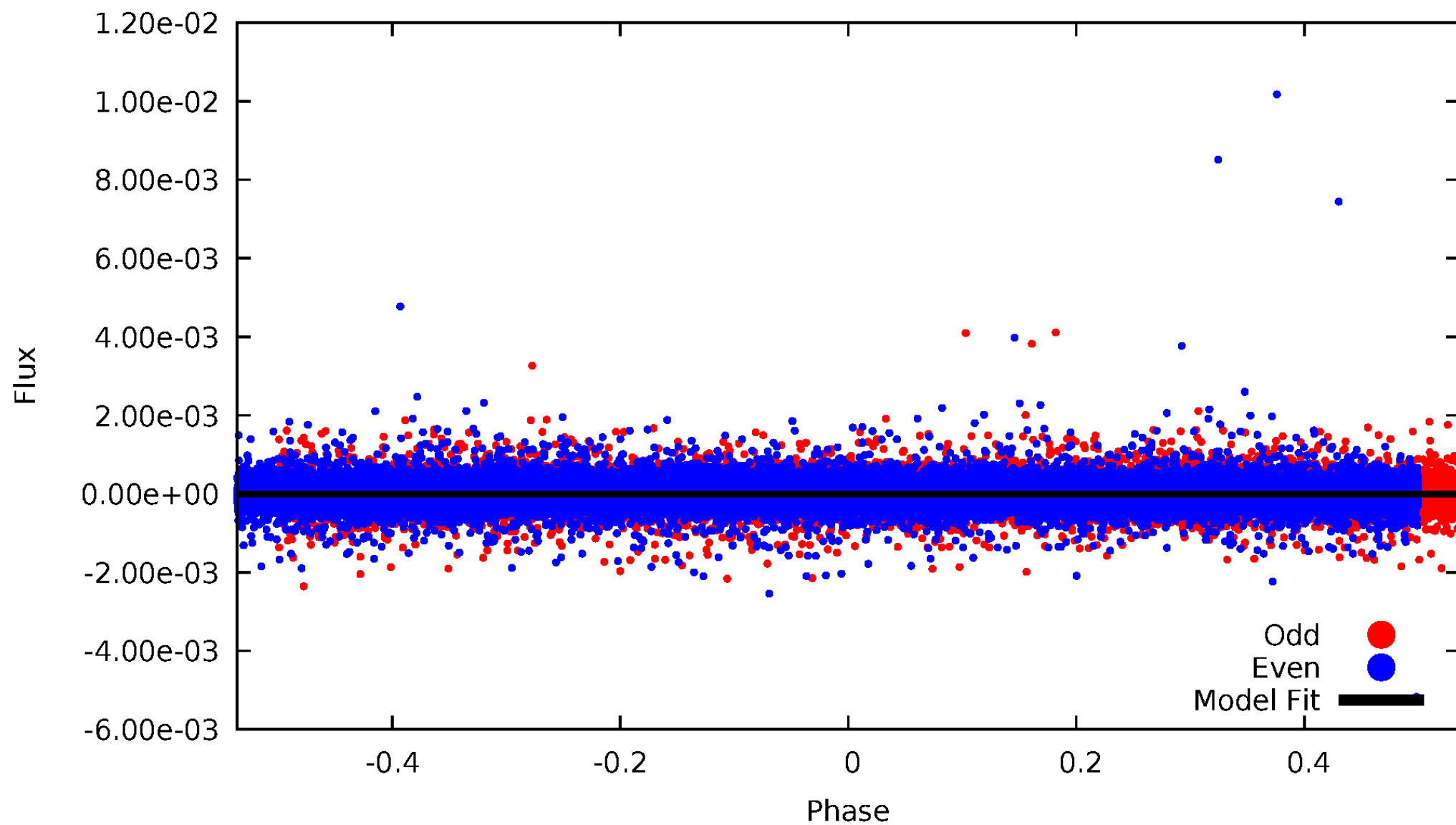


TCE 005480040-01



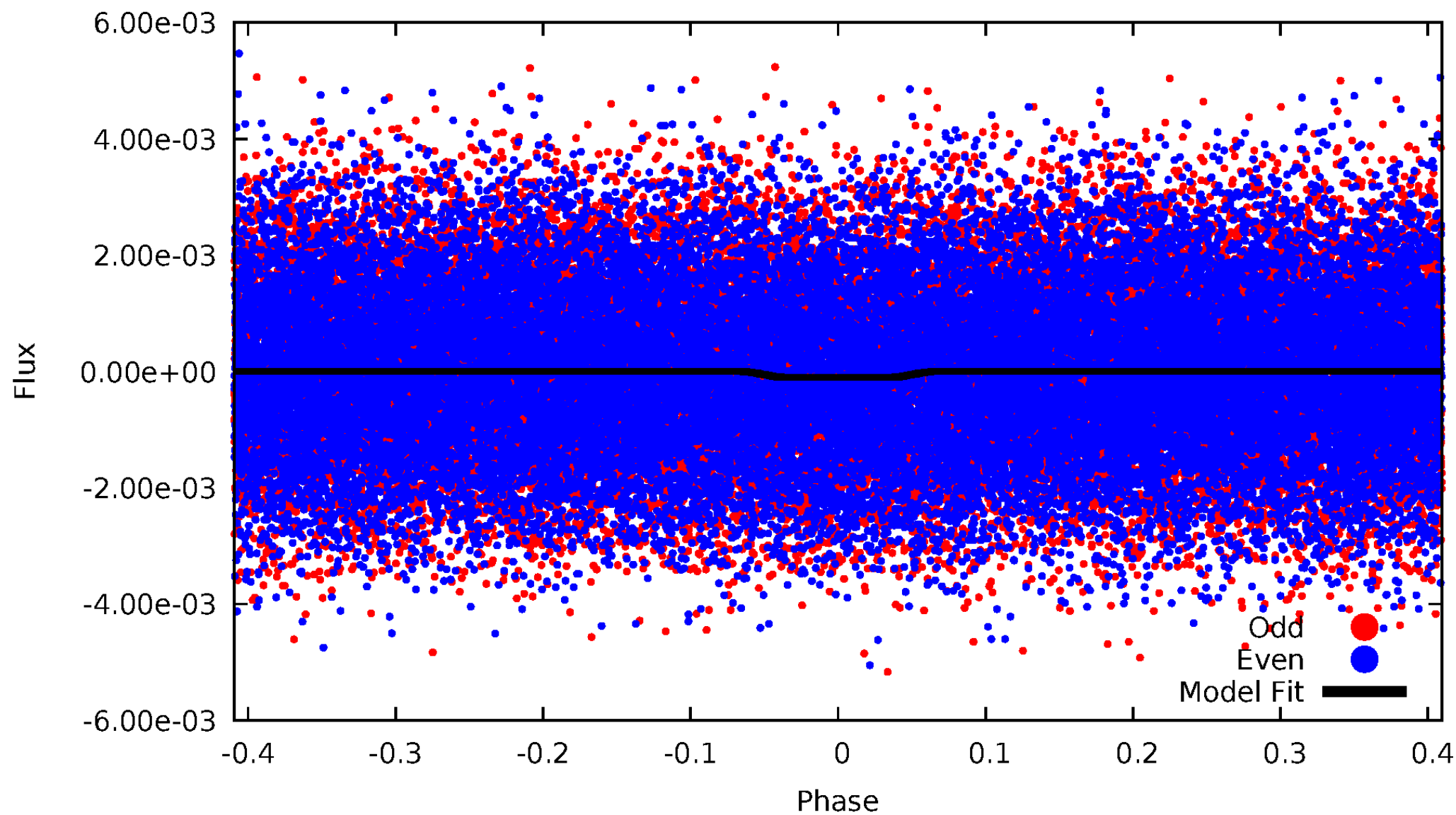
# DV Odd/Even

TCE 005480040-01



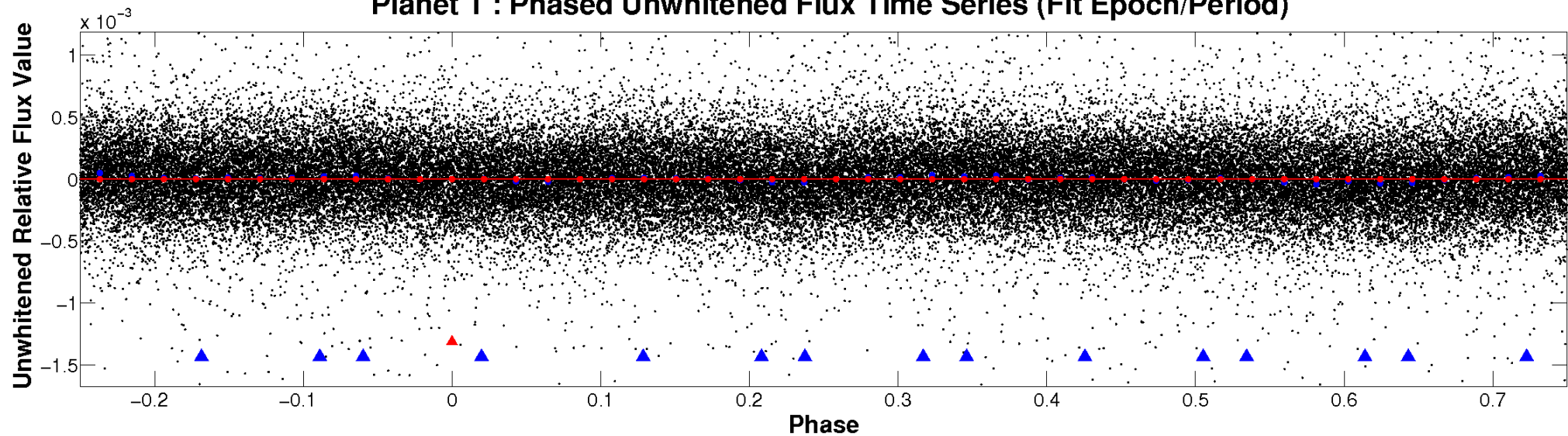
# ALT Odd/Even

TCE 005480040-01

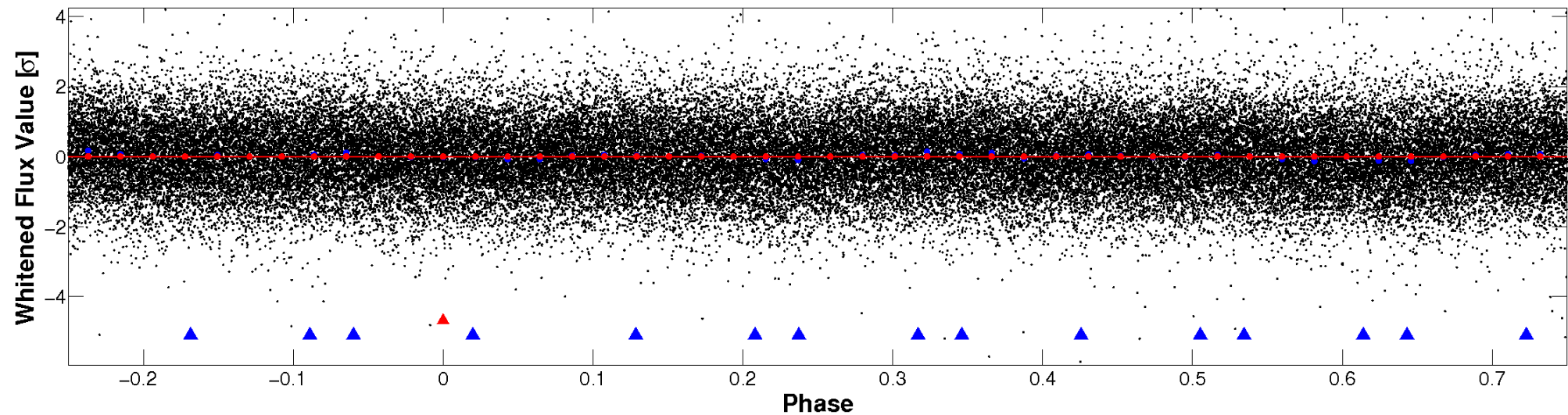


# Non-Whitened Vs. Whitened Light Curve

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



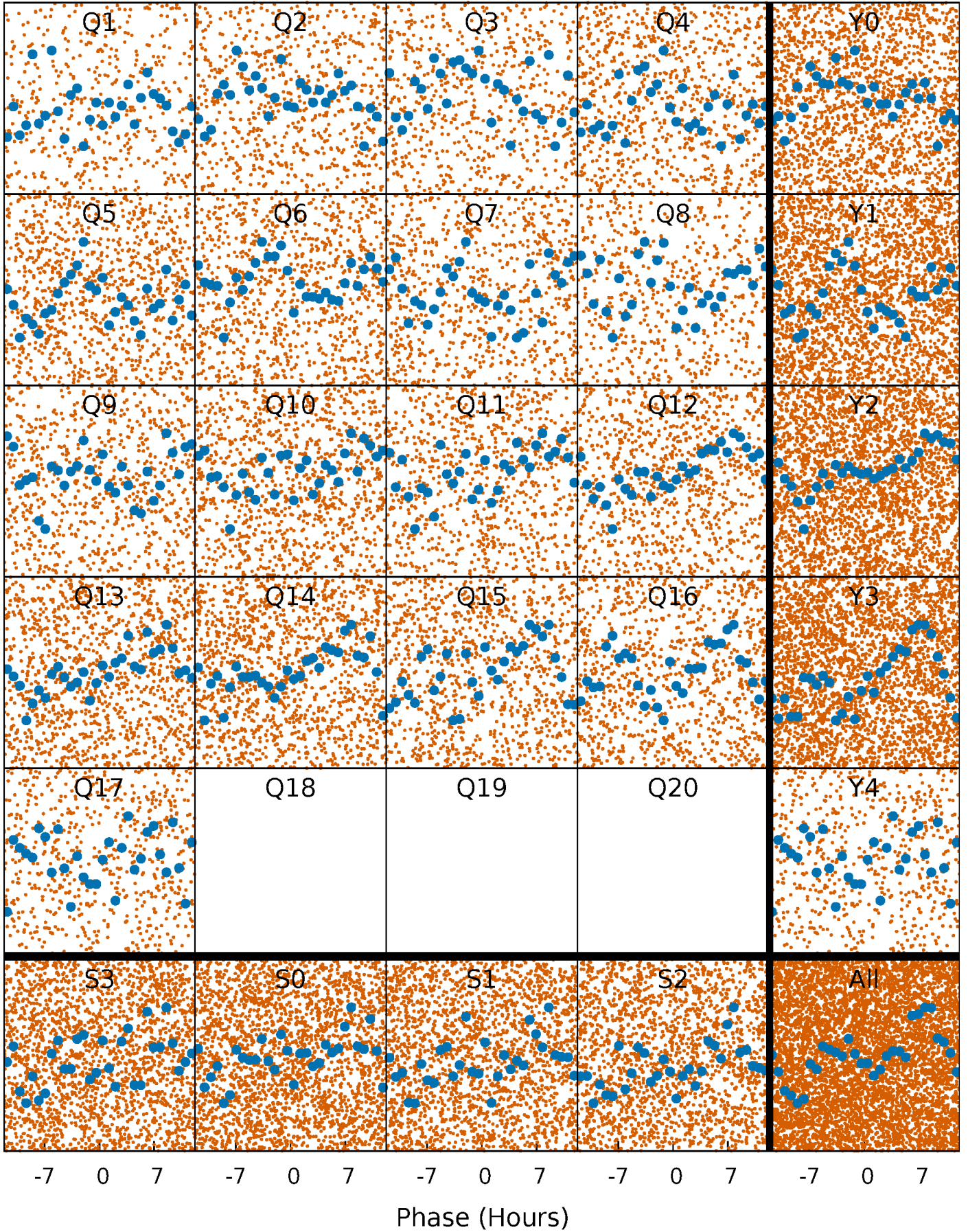
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

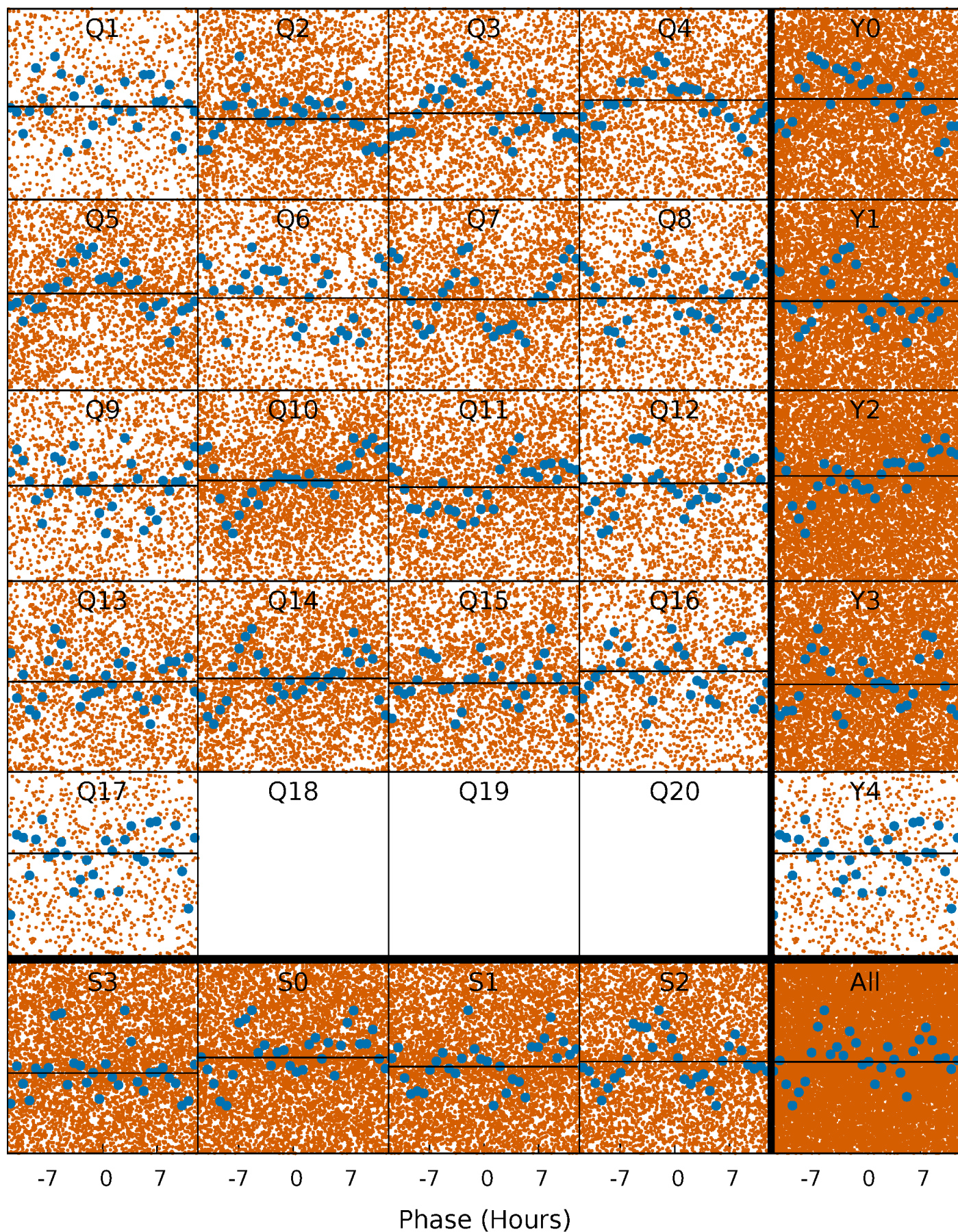
TCE 005480040-01   P= 0.949134 Days    $T_0=132.041935$  (BKJD)





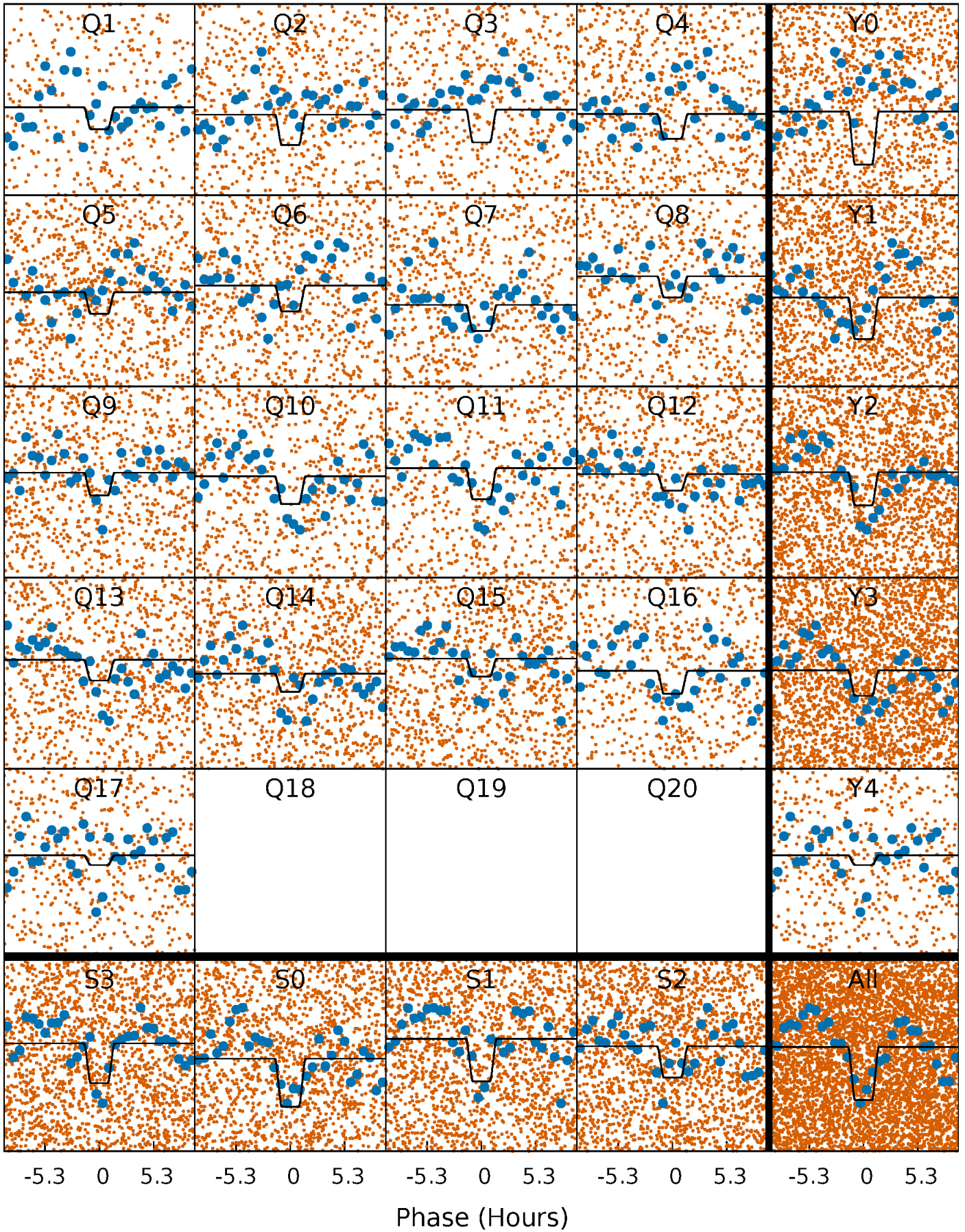
# DV Quarter-Phased Transit Curves

TCE 005480040-01 P= 0.949134 Days  $T_0=132.041935$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005480040-01 P= 0.948897 Days  $T_0=131.906883$  (BKJD)

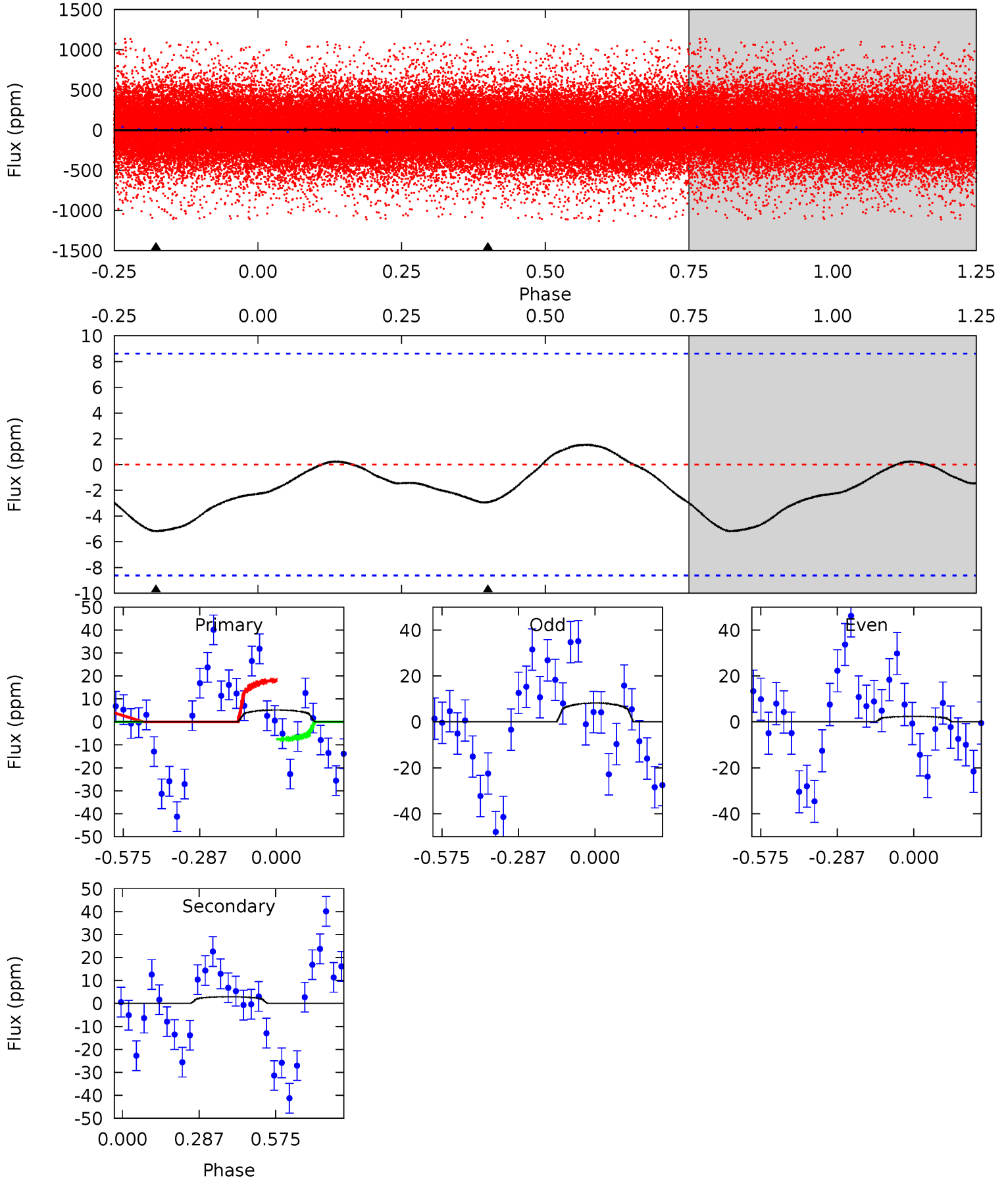




# DV Model-Shift Uniqueness Test

005480040-01,  $P = 0.949134$  Days,  $E = 131.092801$  Days

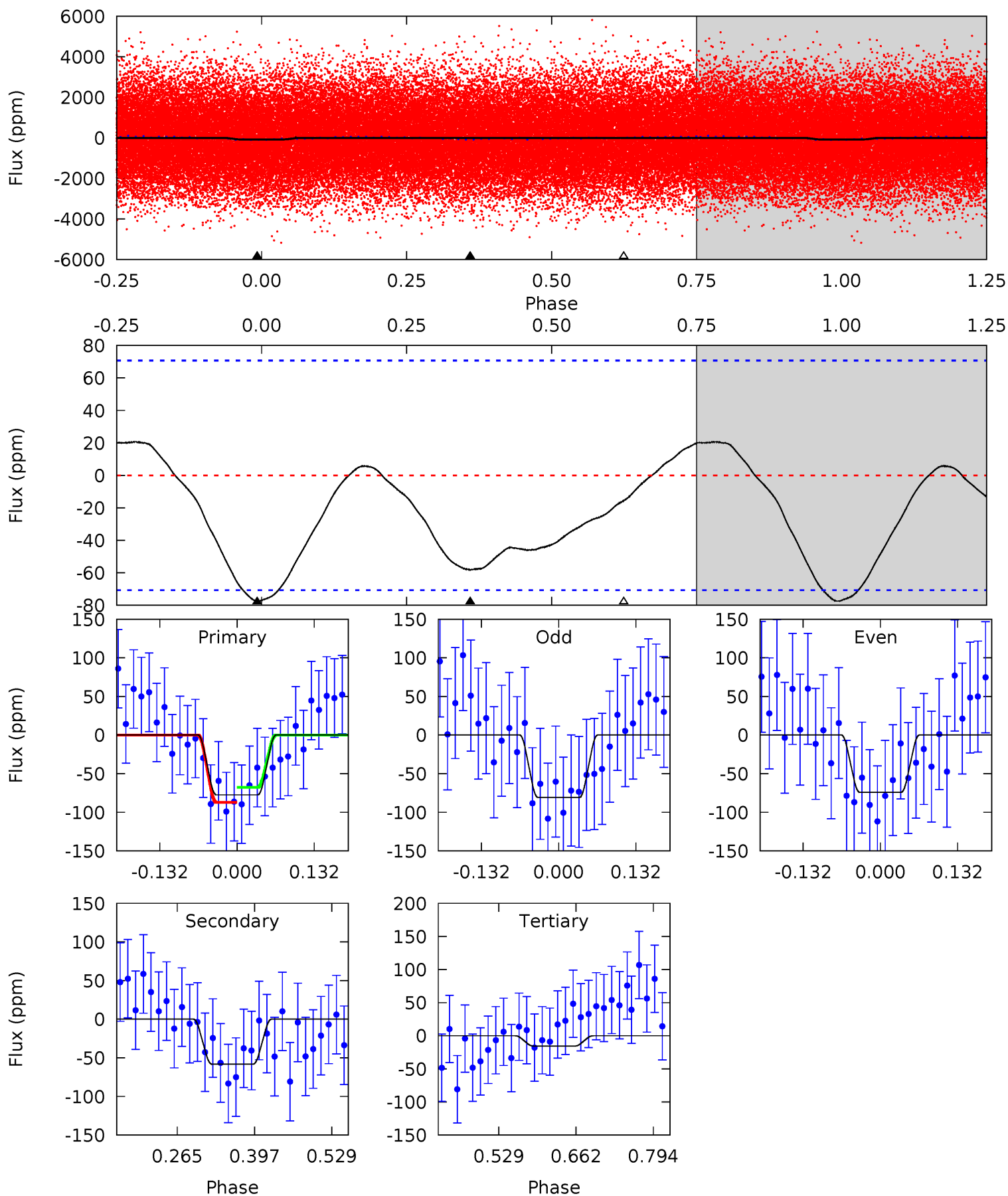
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.60	1.47	0	0	4.34	1.06	0.21	2.60	2.60	1.47	1.47	1.46	1.21	0.23	2.60



# Alt Model-Shift Uniqueness Test

005480040-01, P = 0.948897 Days, E = 130.957986 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
4.94	3.70	0.99	0	4.51	1.50	1.20	3.94	4.94	2.71	3.70	0.22	1.05	0.21	0.62





### Stellar Parameters For KIC 005480040

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6429^{+175}_{-214}$	$3.989^{+0.343}_{-0.147}$	$-0.140^{+0.250}_{-0.300}$	$1.908^{+0.543}_{-0.724}$	$1.298^{+0.193}_{-0.257}$	$0.263^{+0.670}_{-0.108}$
	+3%/-3%	+9%/-4%	+179%/-214%	+28%/-38%	+15%/-20%	+255%/-41%
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 005480040-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-3 \pm 2$	$7.81^{+10.30}_{-5.53}$	$3792^{+1047}_{-657}$	$-3472^{+508}_{-667}$	$0.007^{+0.094}_{-0.007}$
Alt.	$-58 \pm 16$	$9.21^{+9.28}_{-6.49}$	$3723^{+1180}_{-669}$	$-2985^{+7449}_{-1036}$	$0.149^{+1.587}_{-0.125}$

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

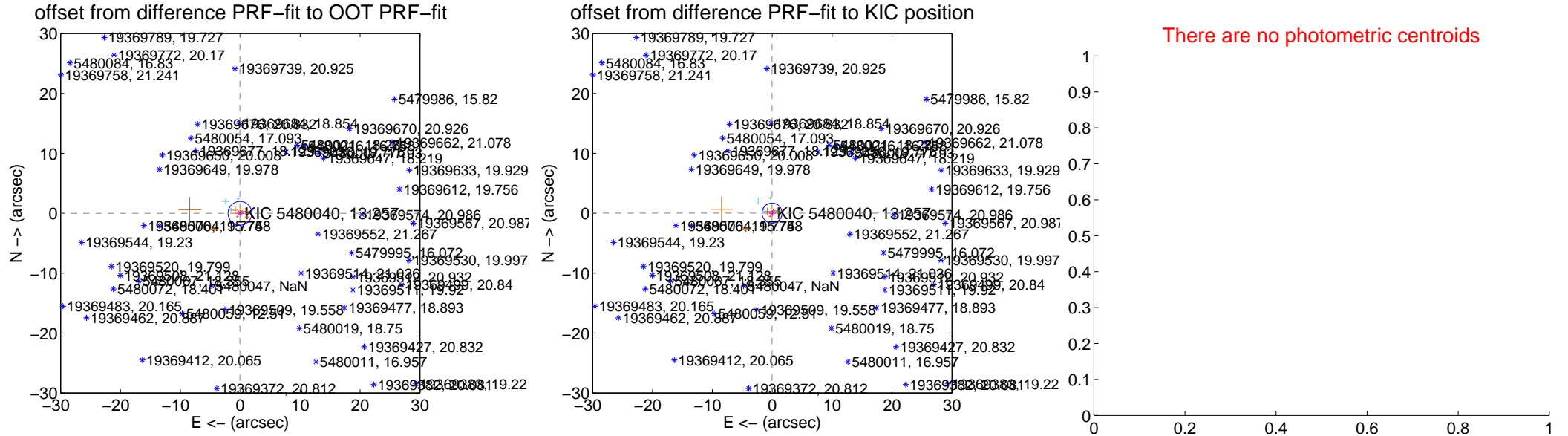
## DV Centroid Data

Supplemental centroid analysis for 005480040-01. Kepler magnitude: 13.26. Transit SNR 0.00

There are 7 quarters with good PRF difference image offsets

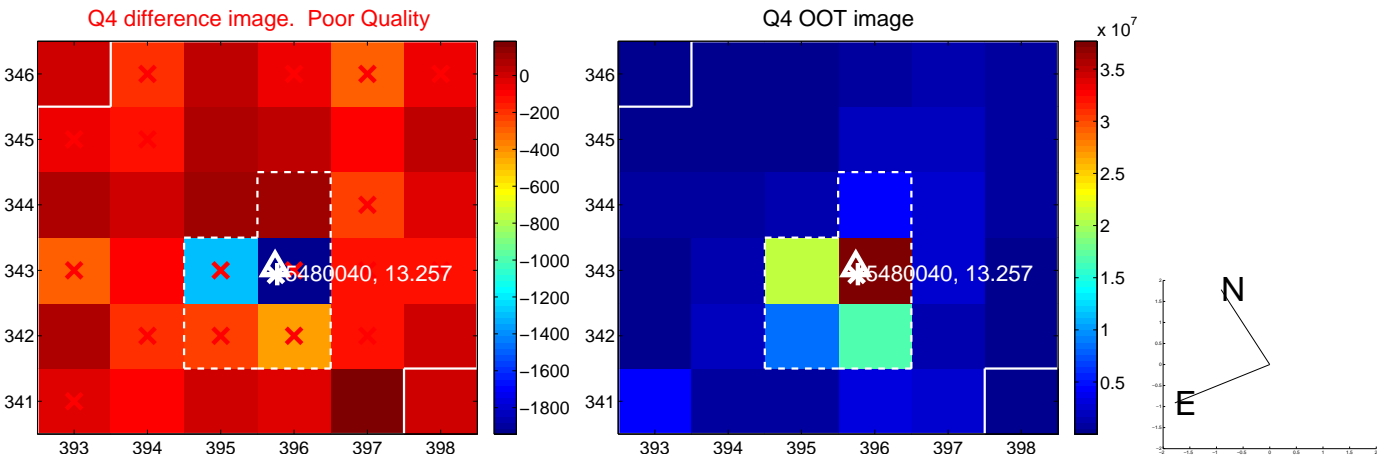
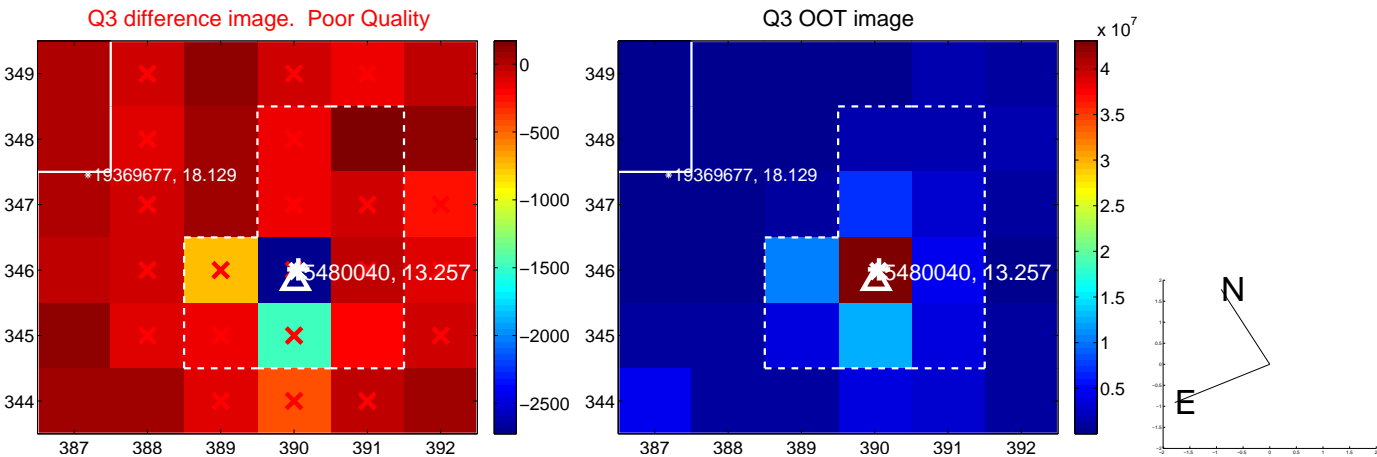
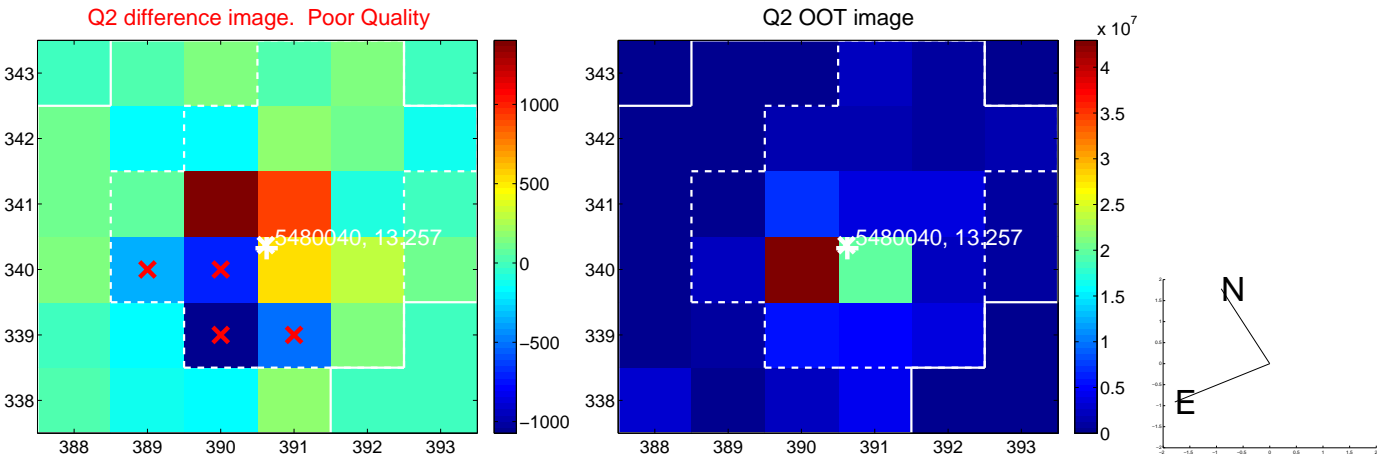
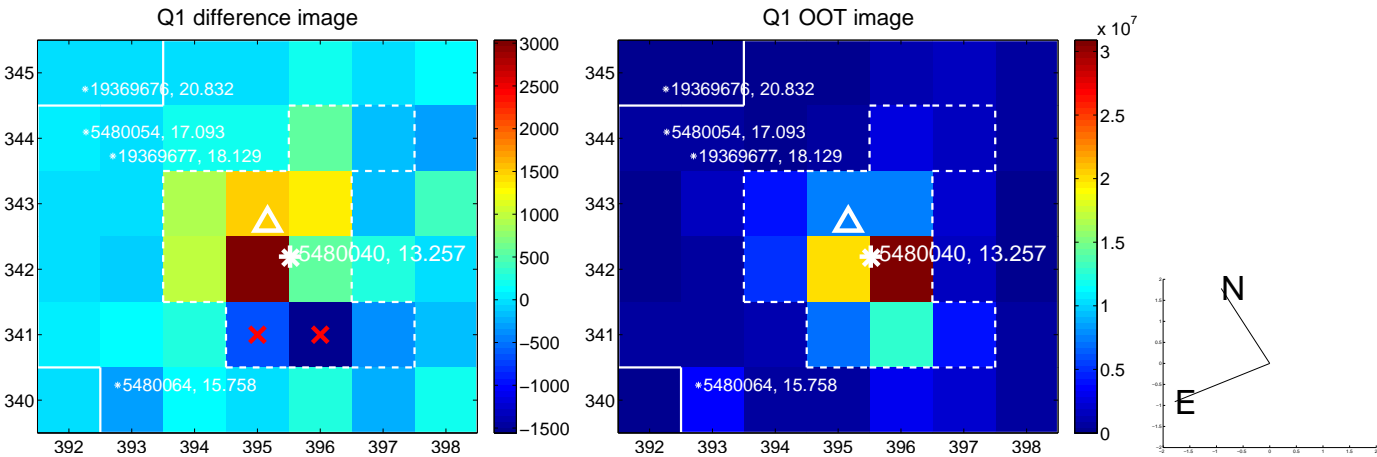
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.059 \pm 0.661$	0.09	$0.058 \pm 0.665$	$-0.009 \pm 0.311$
PRF-fit source offset from KIC position	$0.041 \pm 0.557$	0.07	$0.035 \pm 0.606$	$0.022 \pm 0.340$
photometric centroid source offset	—	—	—	—

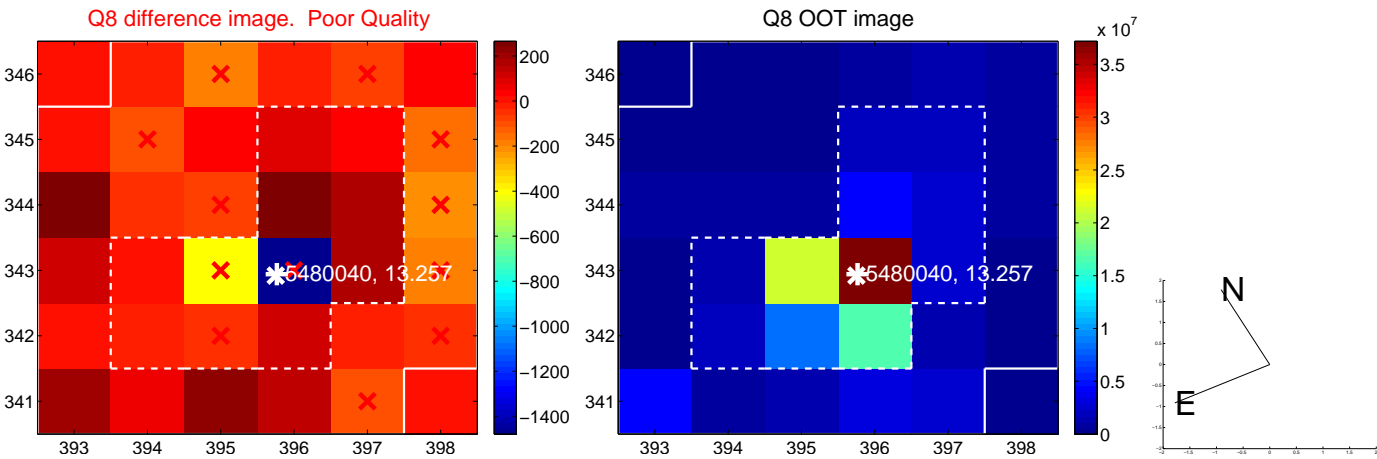
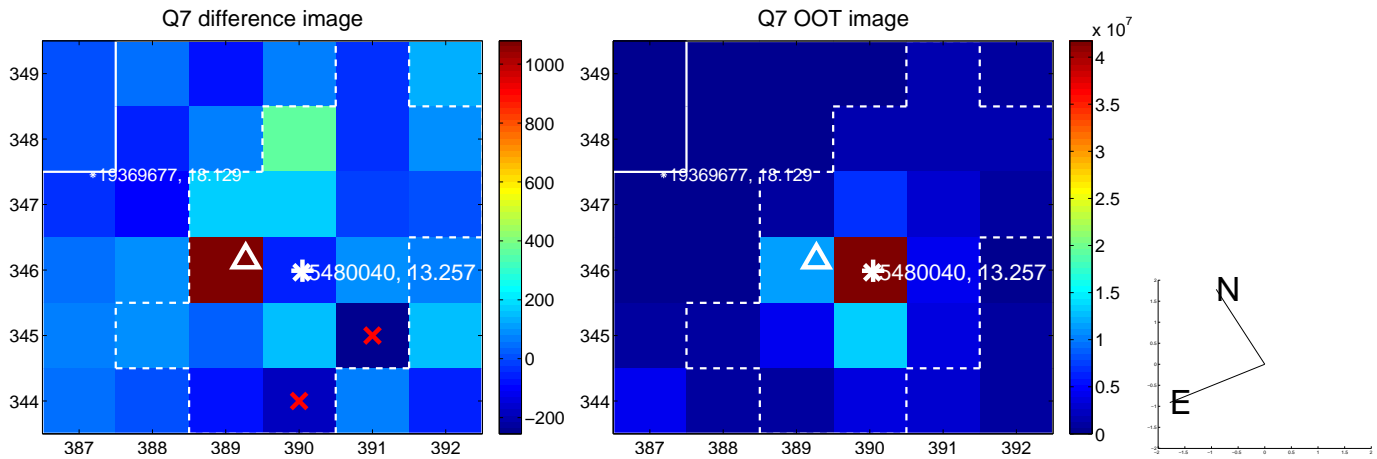
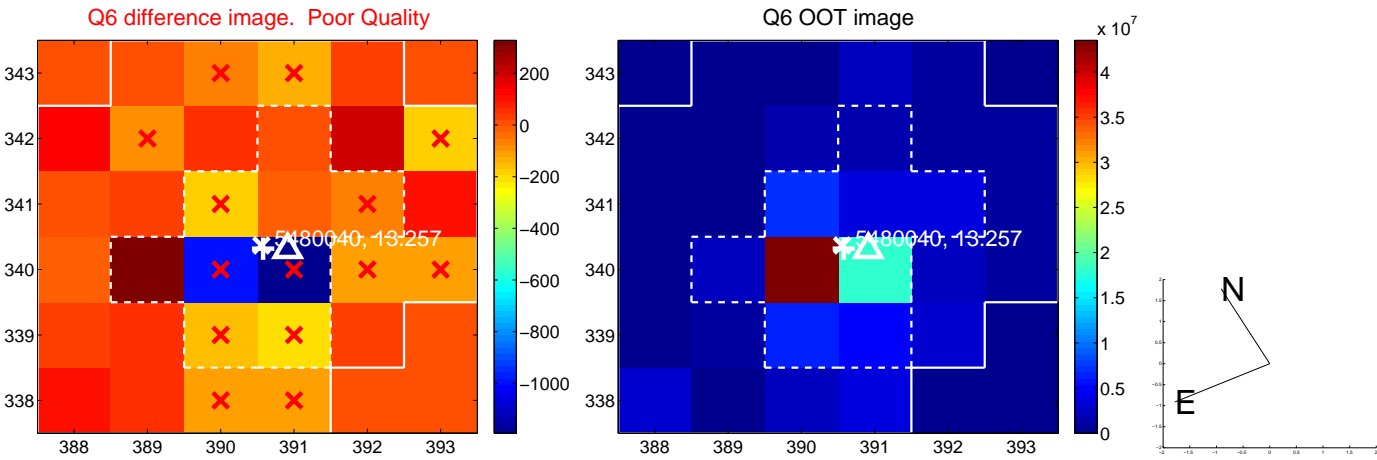
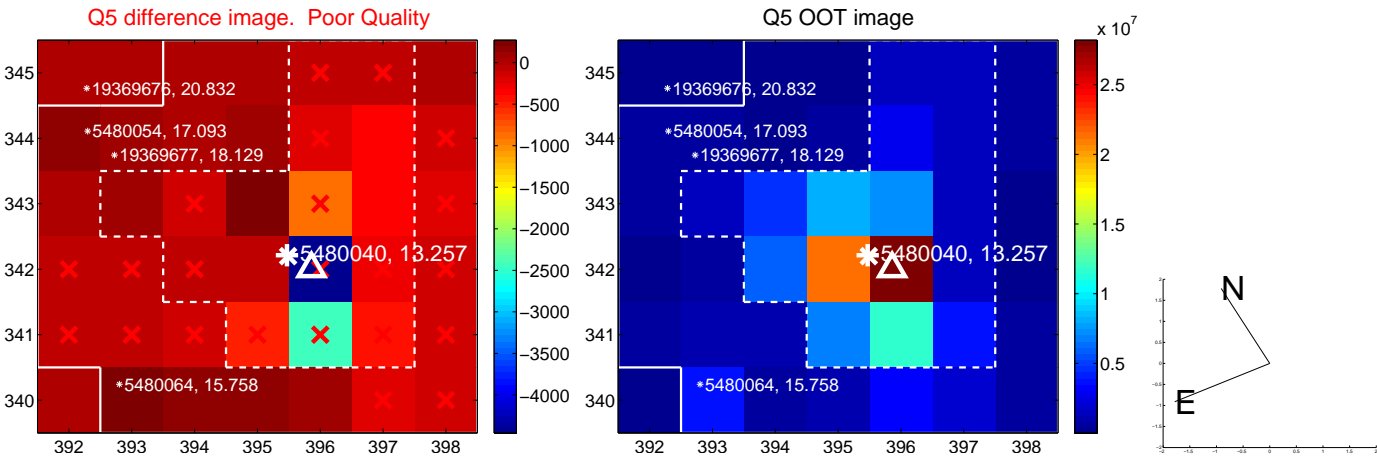


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

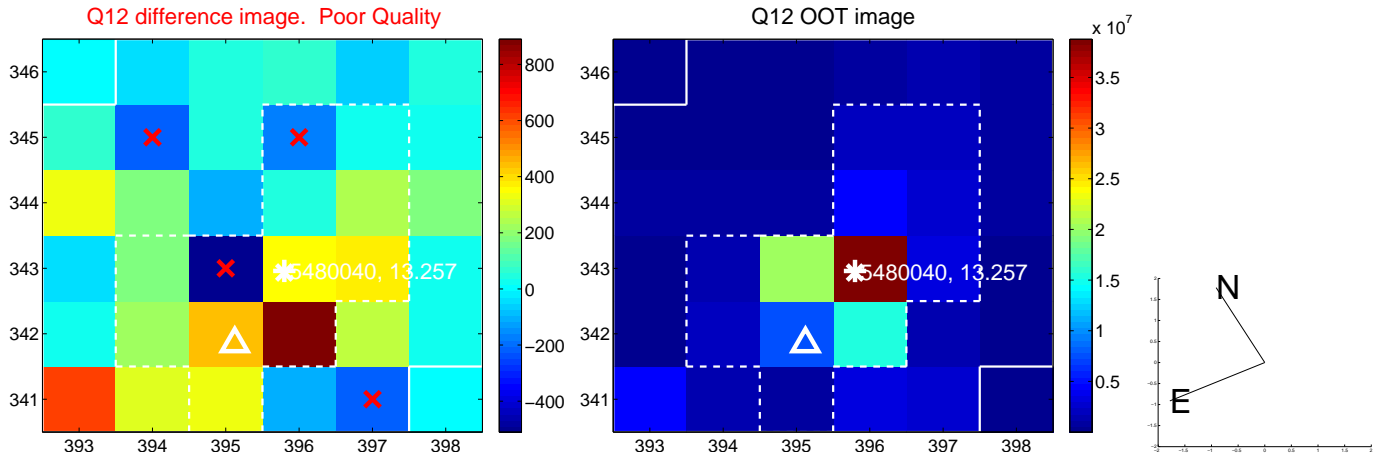
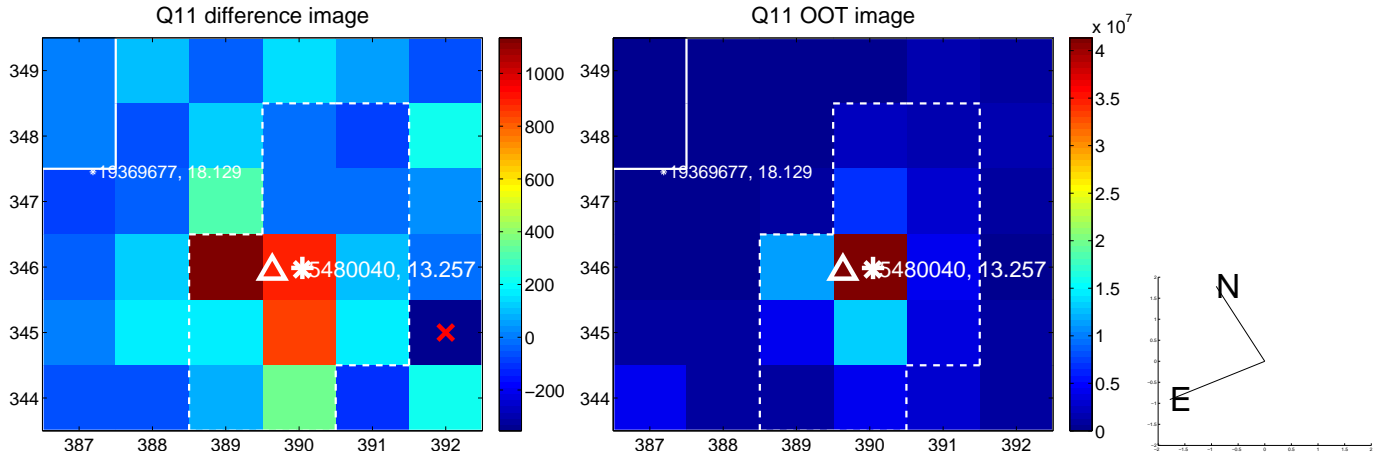
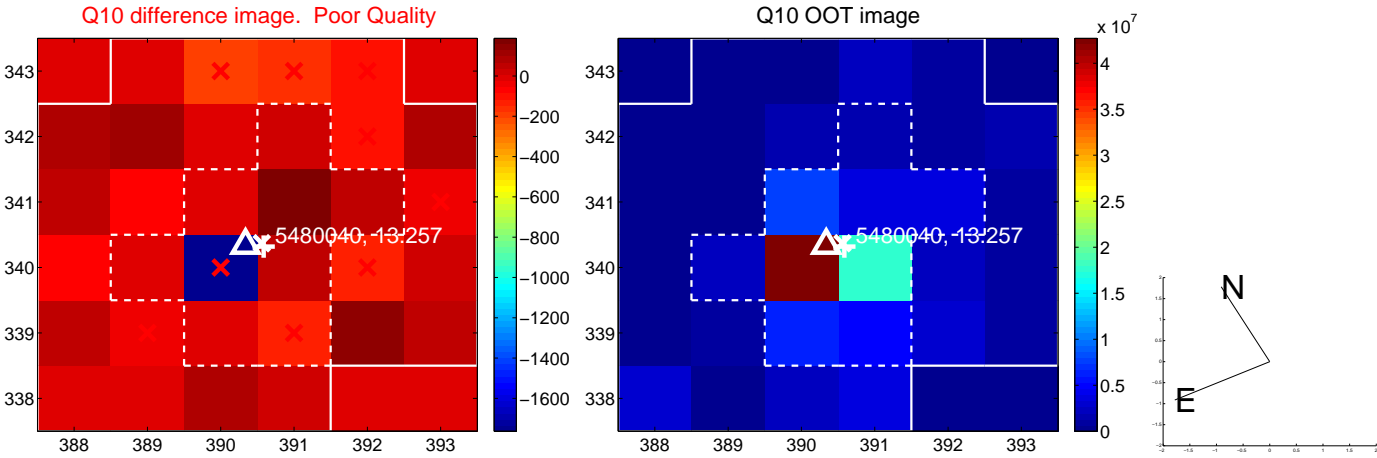
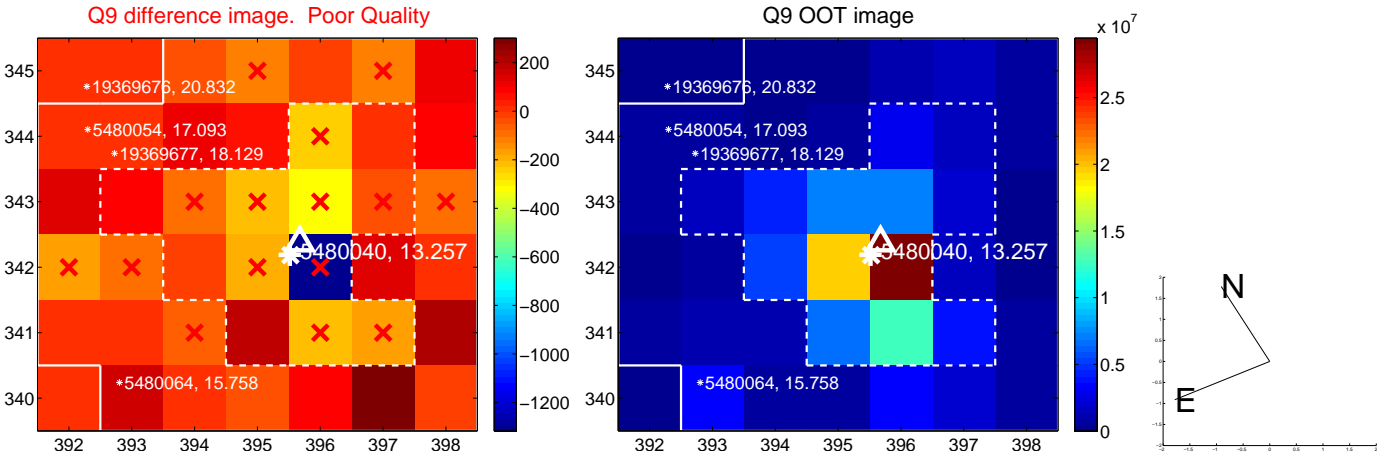


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

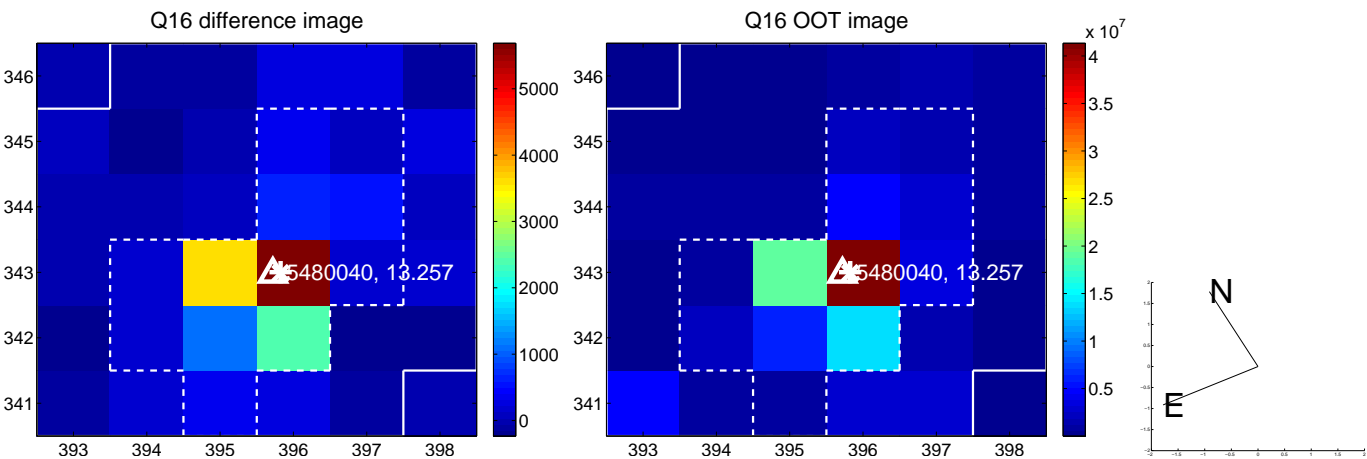
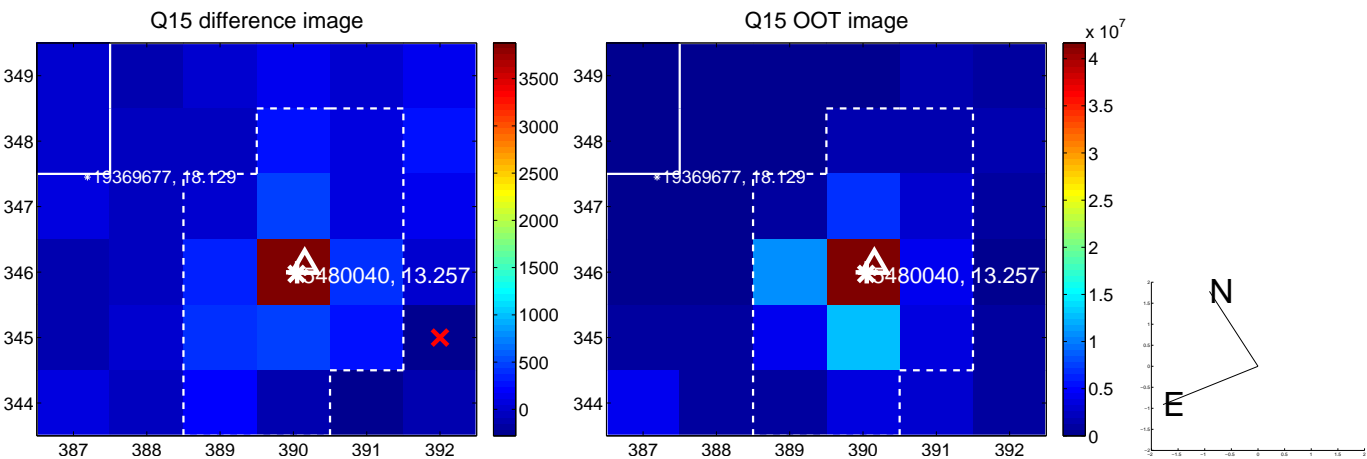
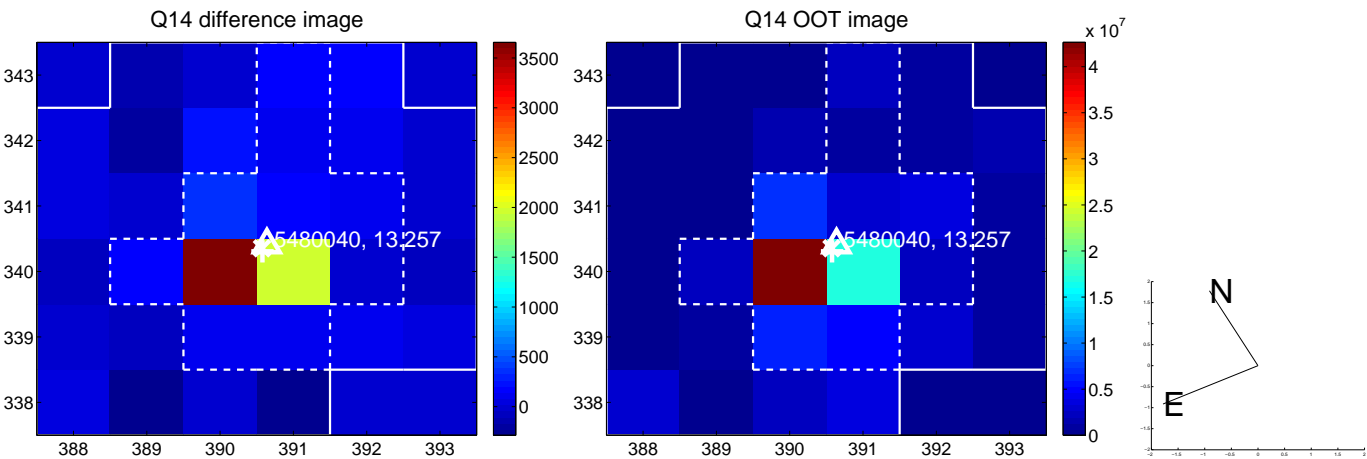
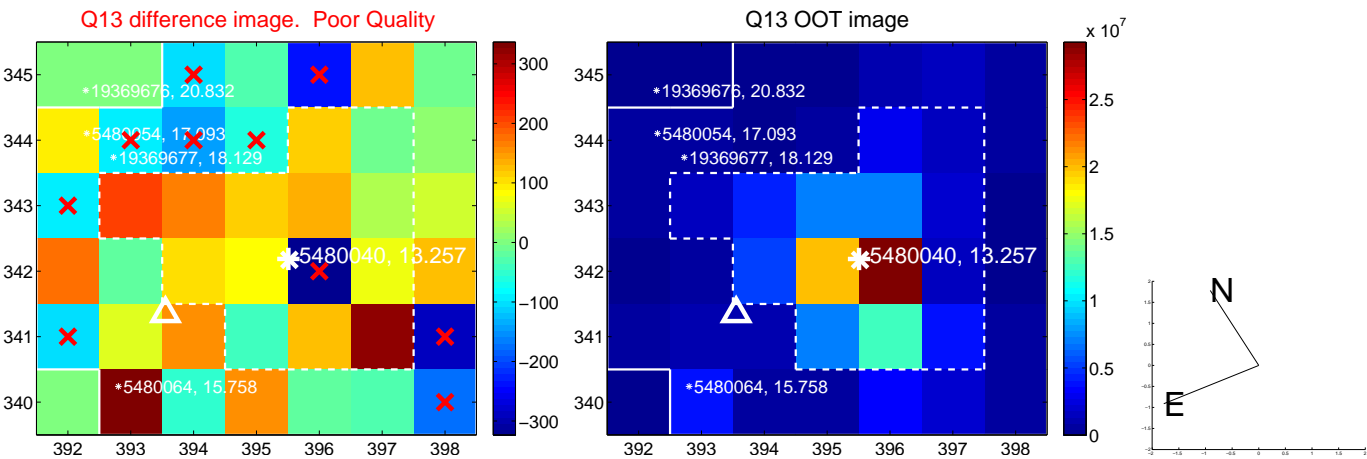




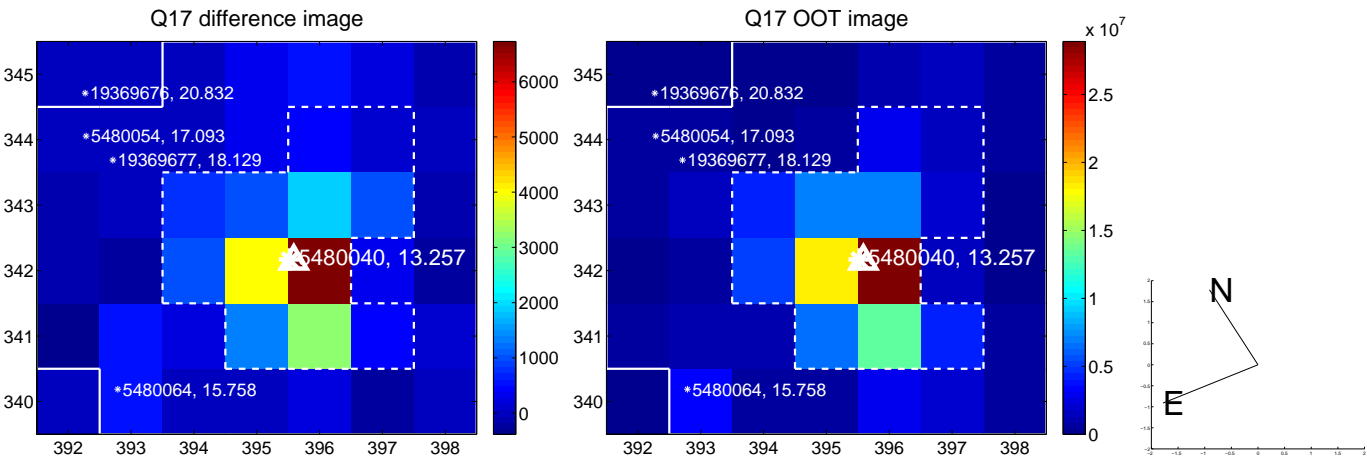
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



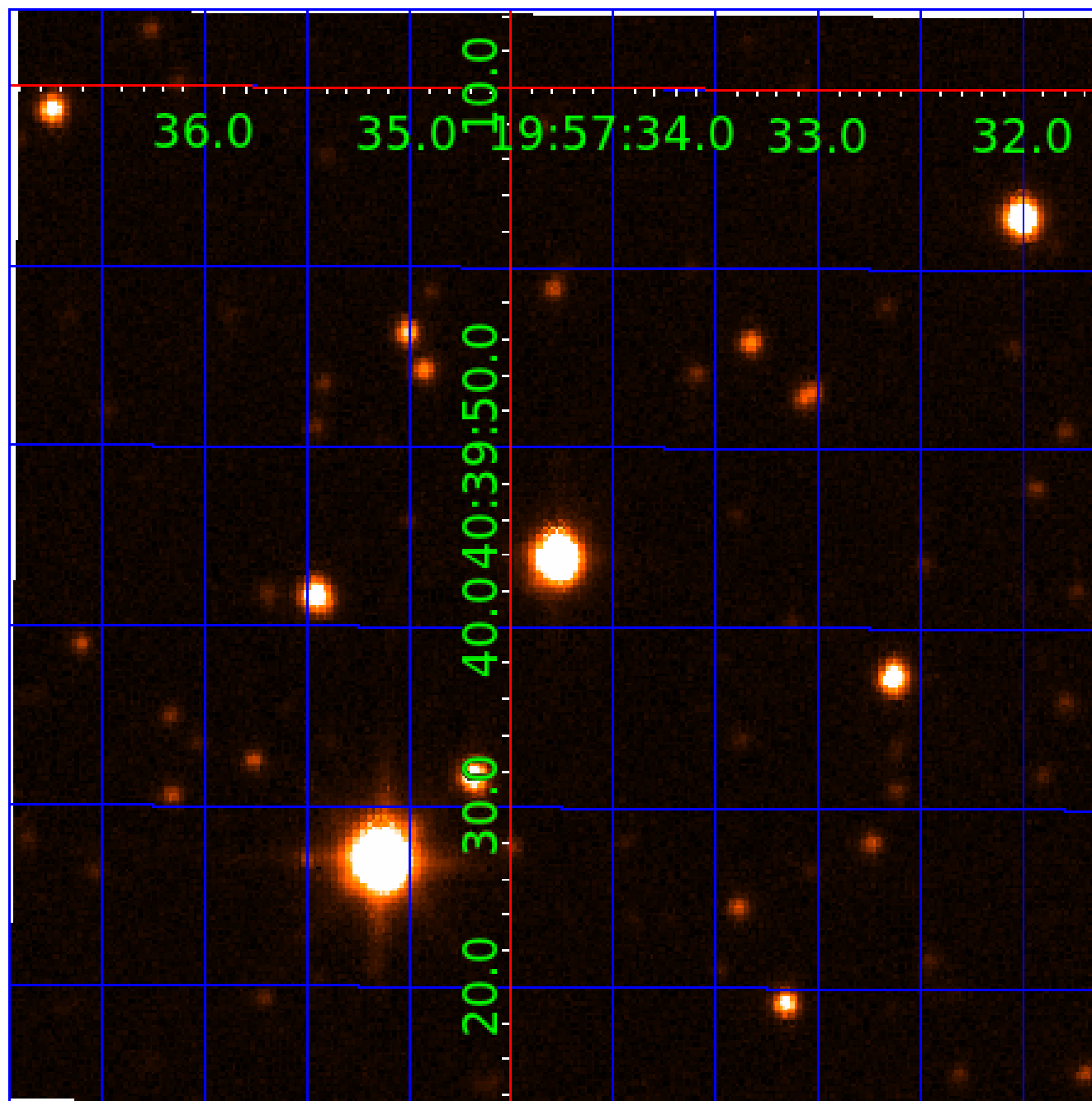
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination





# KIC 005480040

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005480040-01	OBS	No	0.949134	132.041935	0.0	6.106	10.3	0.0	1.91	6429	0.01	13124.52
005480040-02	OBS	No	101.275407	159.097258	503.9	3.072	8.9	8.5	1.91	6429	4.76	25.93

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005480040-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
005480040-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_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.

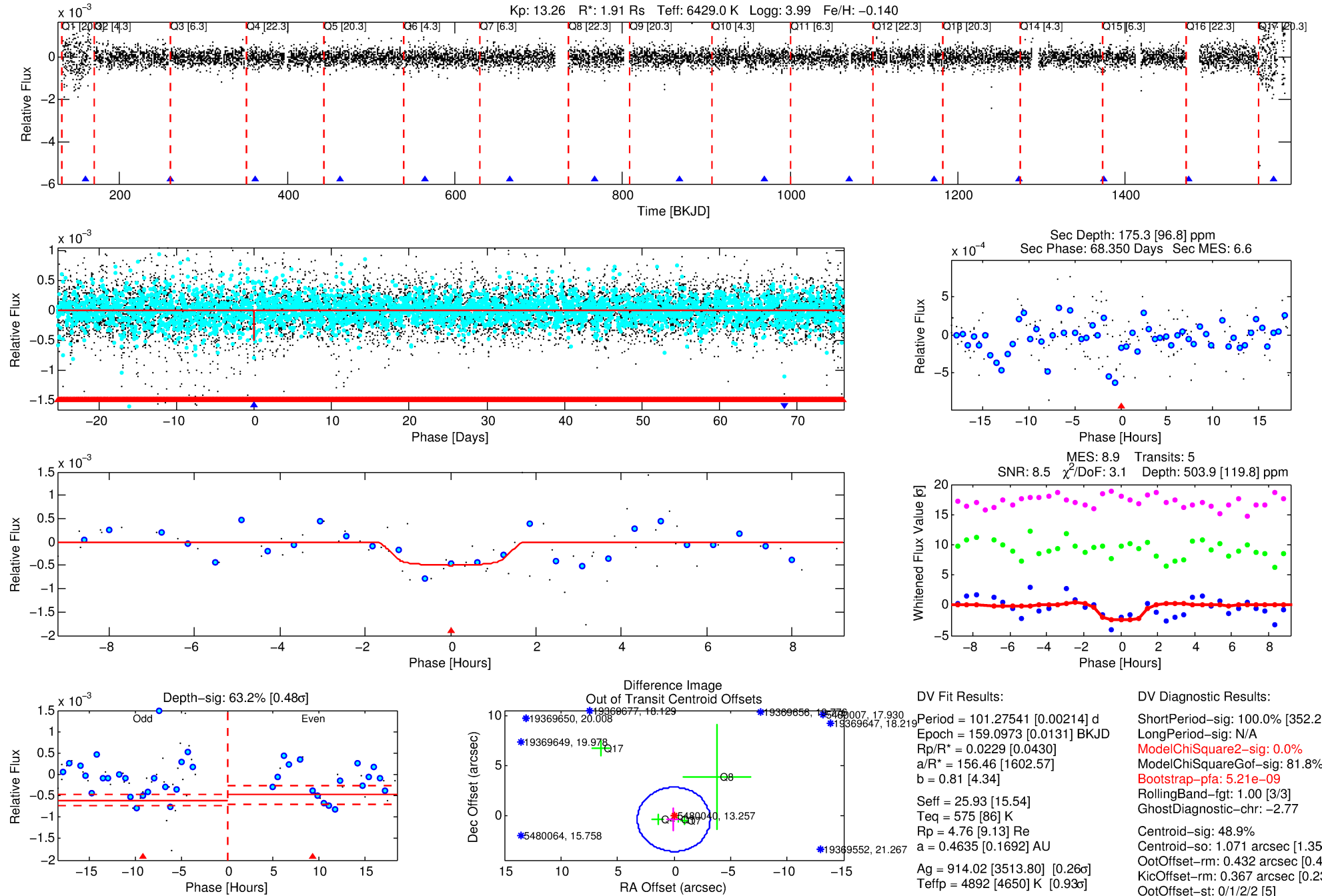
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005480040-02

No Significant Match Found

# DV One-Page Summary

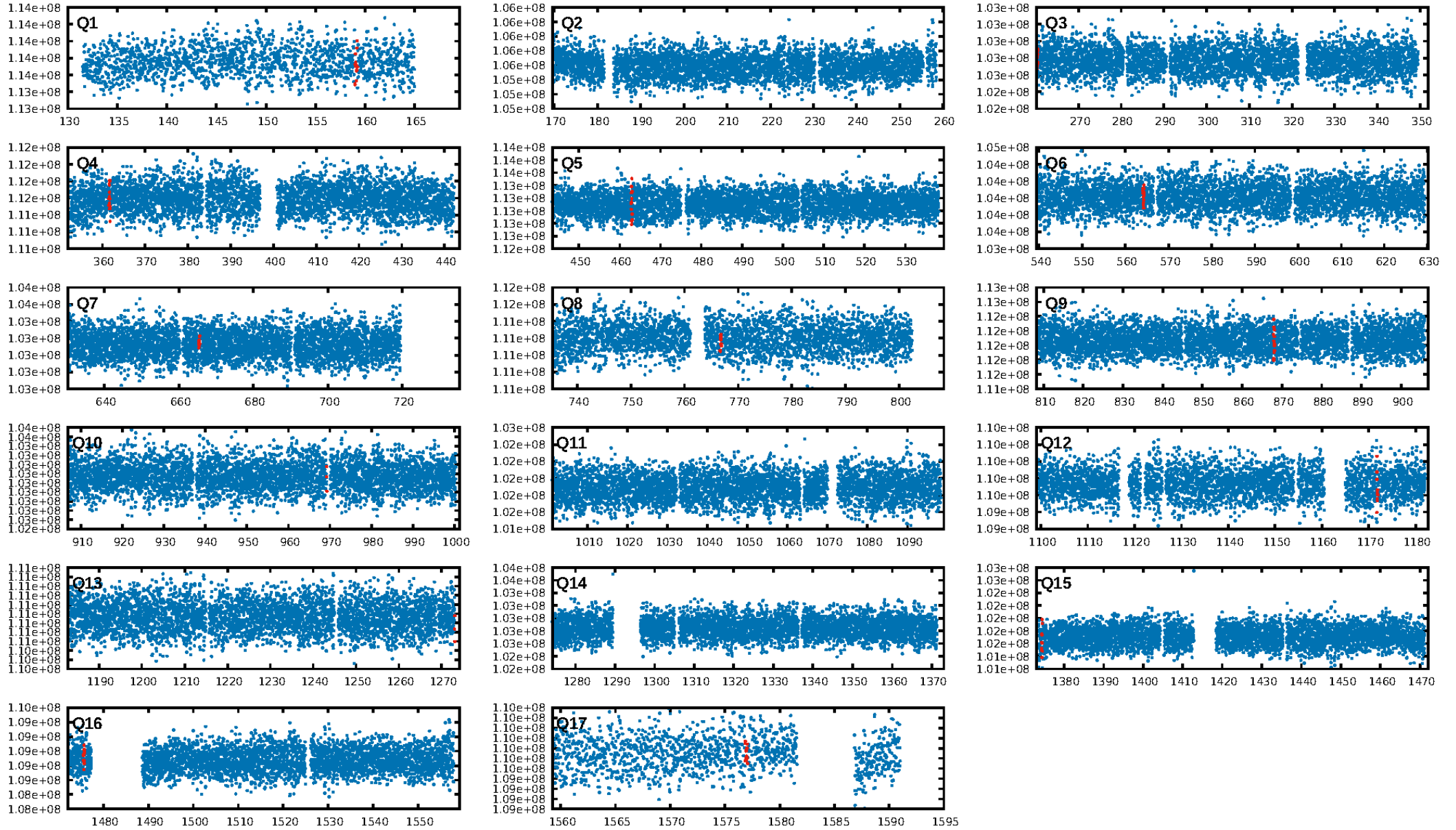
KIC: 5480040 Candidate: 2 of 2 Period: 101.275 d



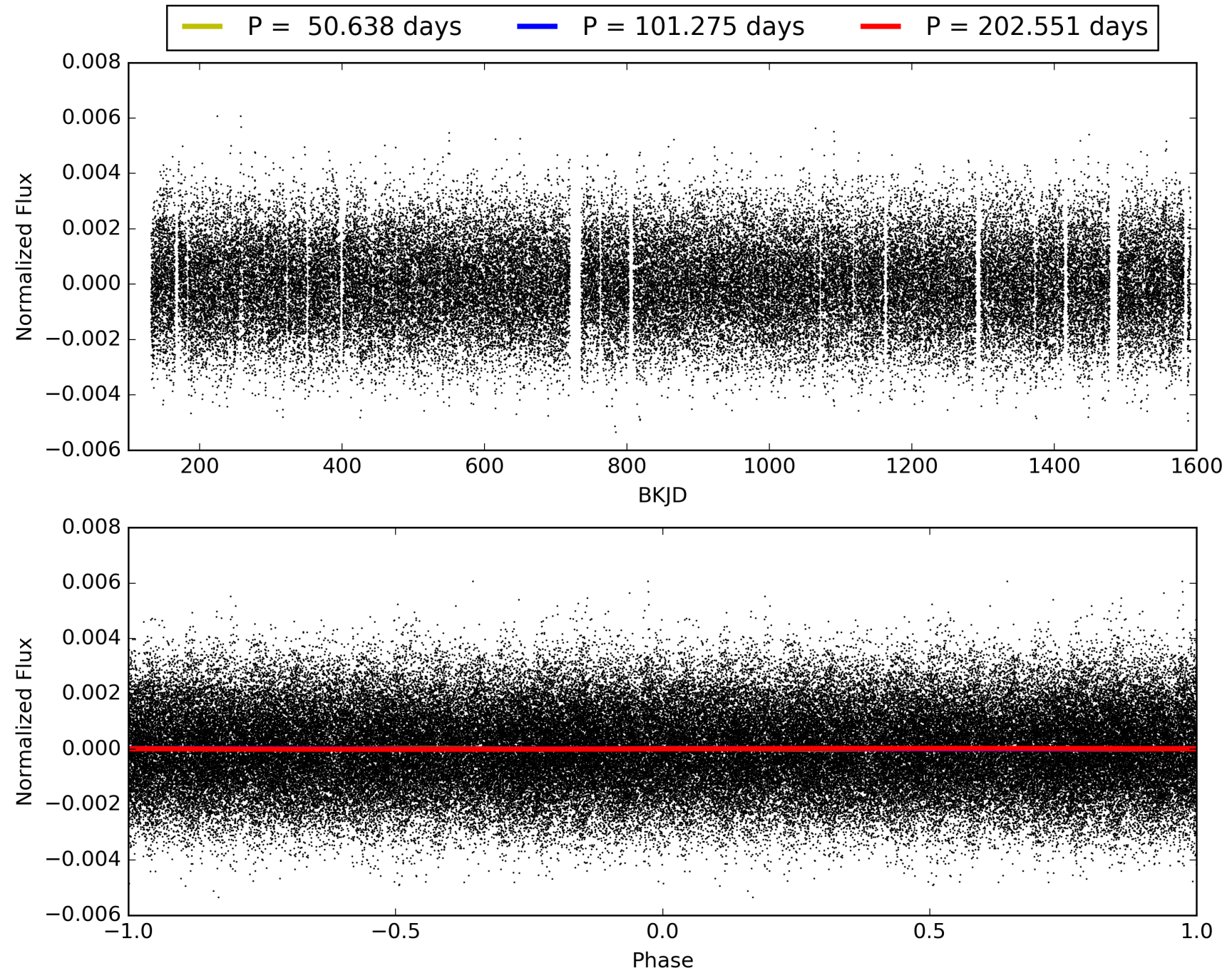
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:28:04 Z

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

# TCE 005480040-02, PDC Light Curves



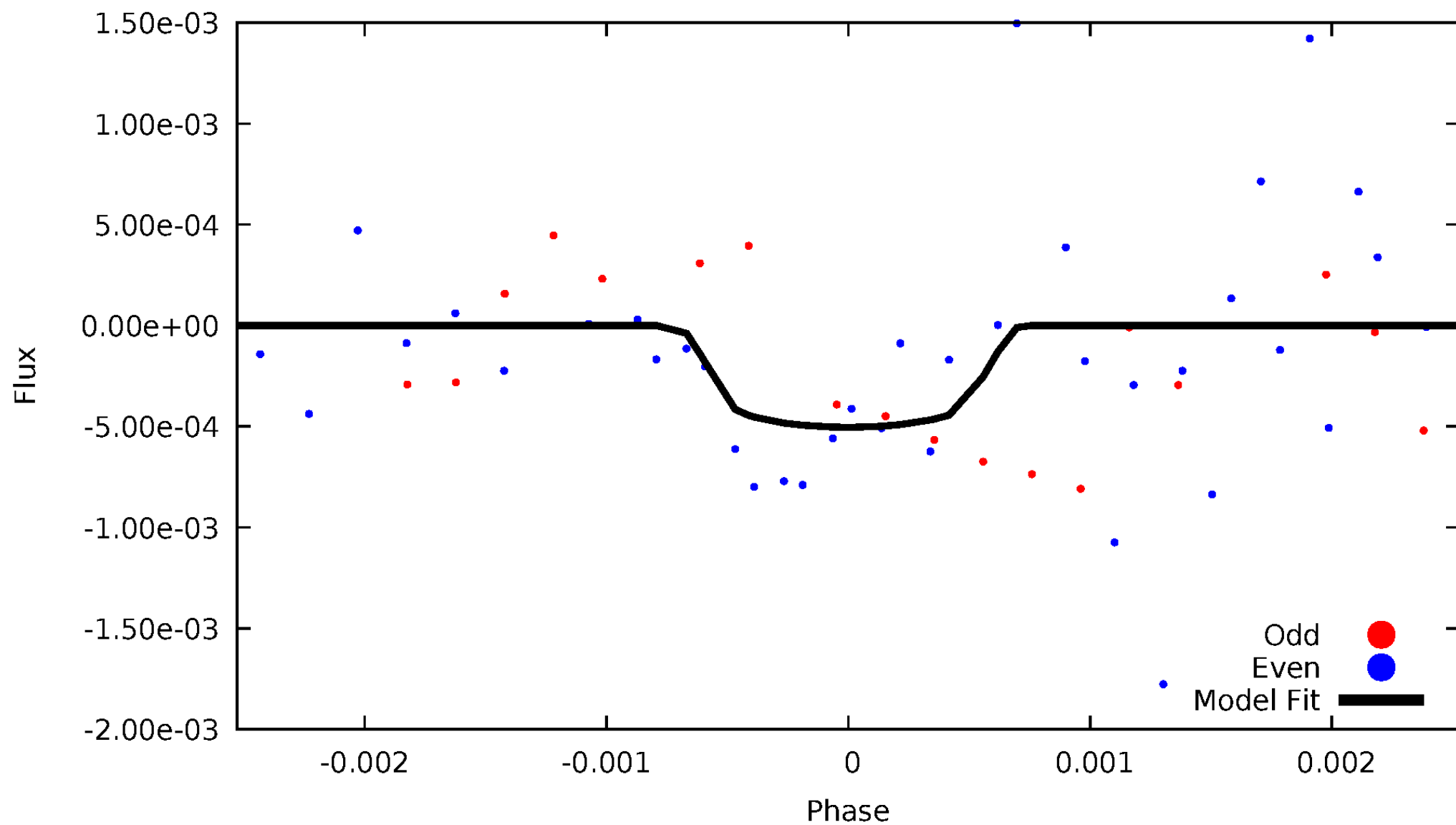
TCE 005480040-02





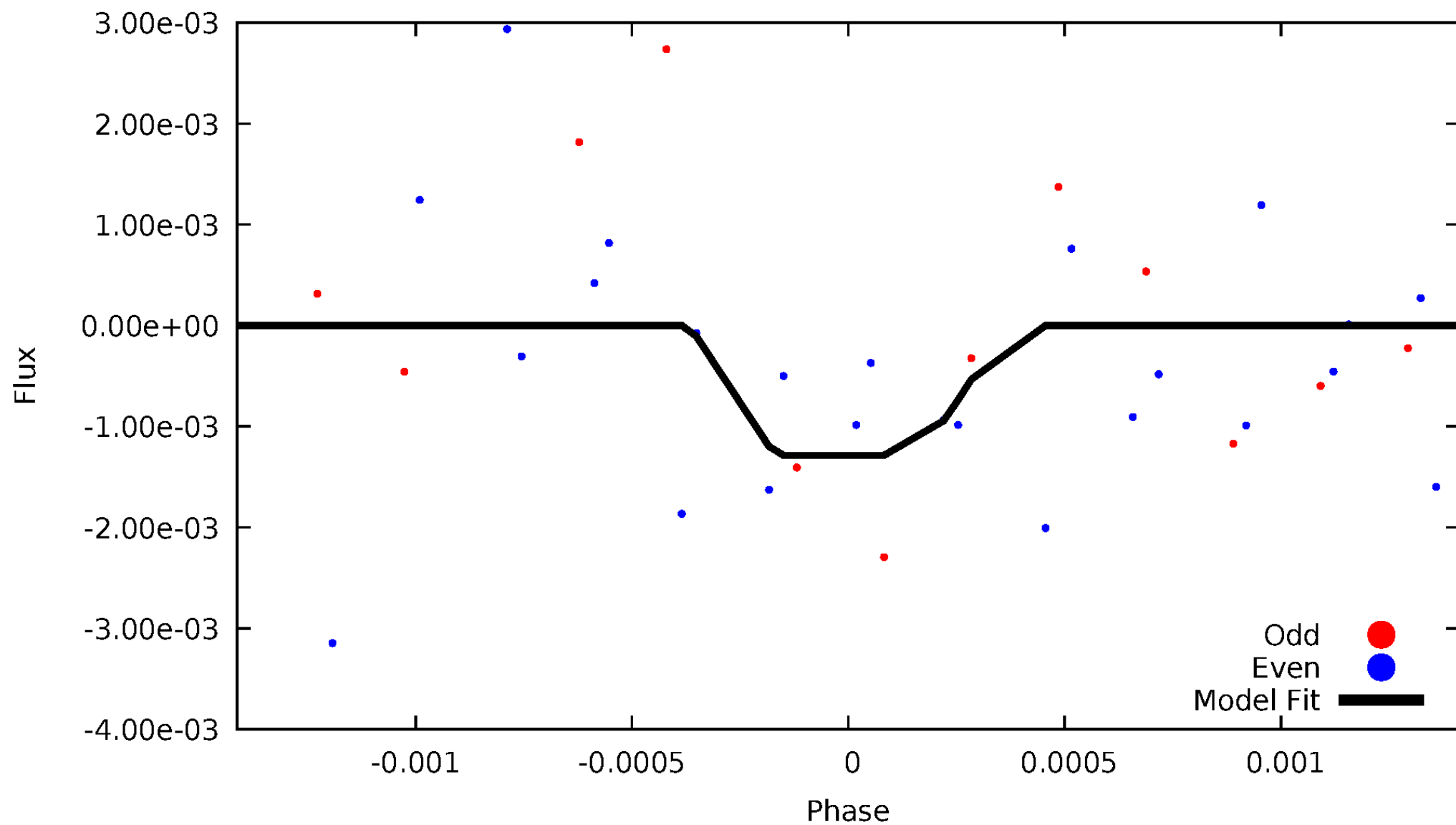
# DV Odd/Even

TCE 005480040-02



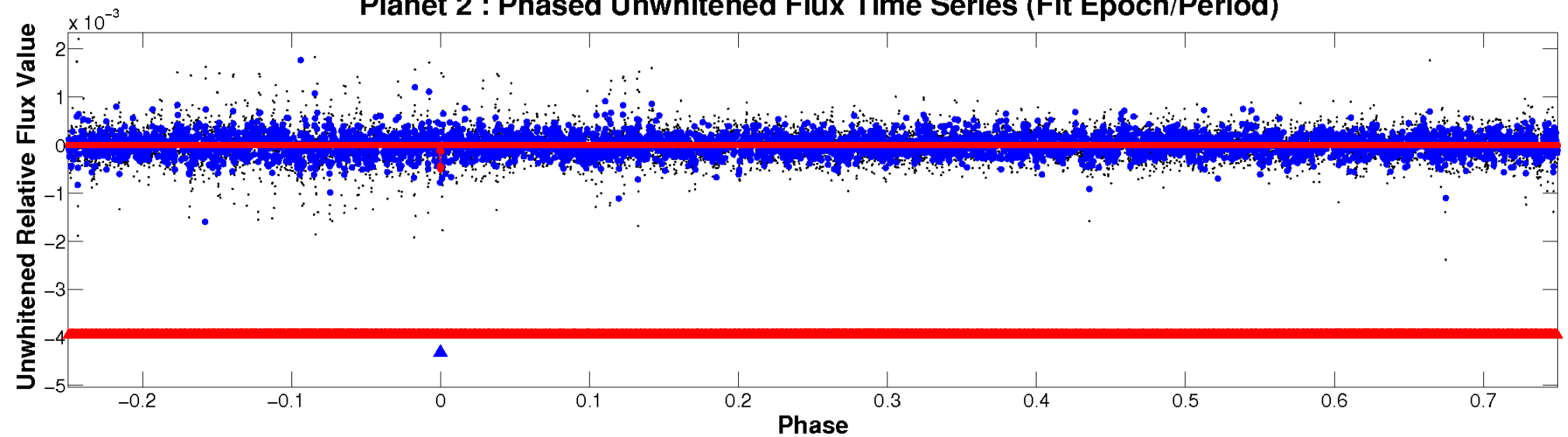
# ALT Odd/Even

TCE 005480040-02

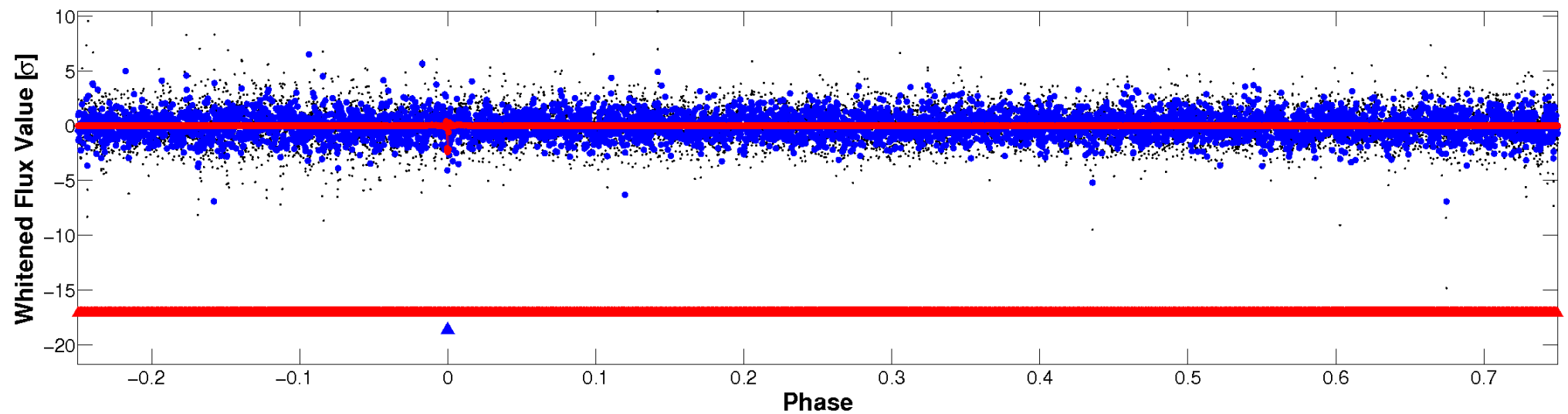


# Non-Whitened Vs. Whitened Light Curve

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

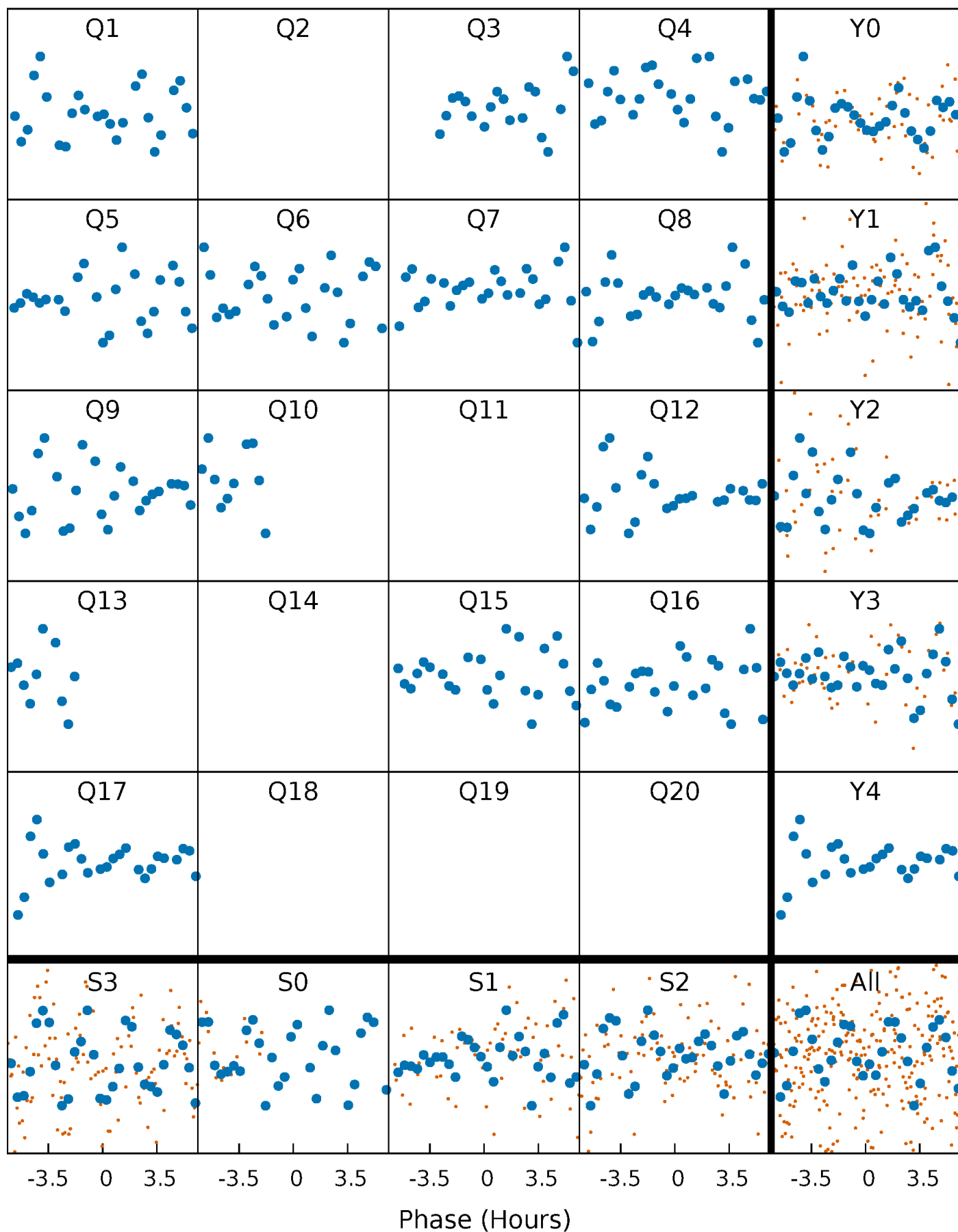


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



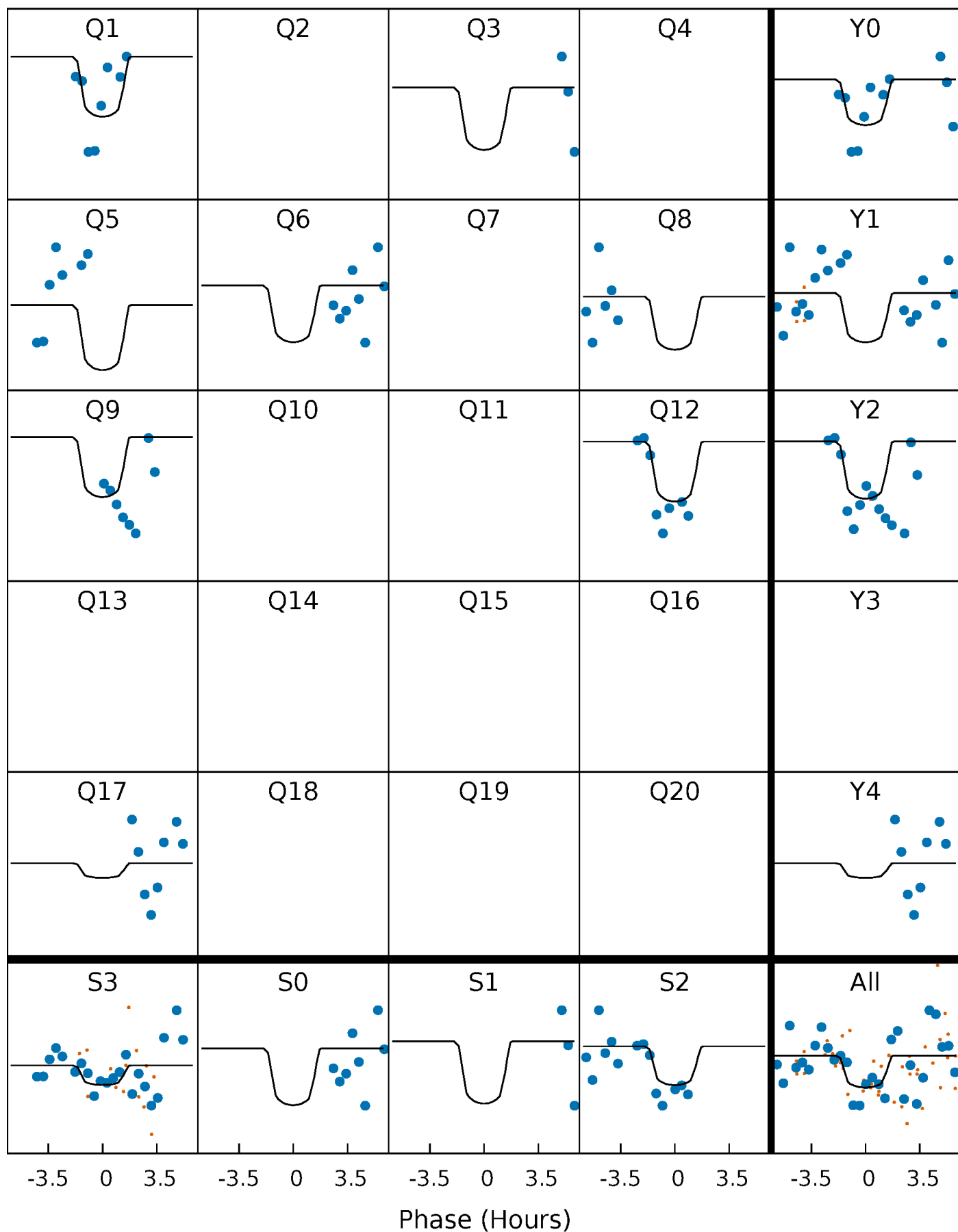
# PDC Quarter-Phased Transit Curves

TCE 005480040-02 P=101.275407 Days  $T_0=159.097258$  (BKJD)



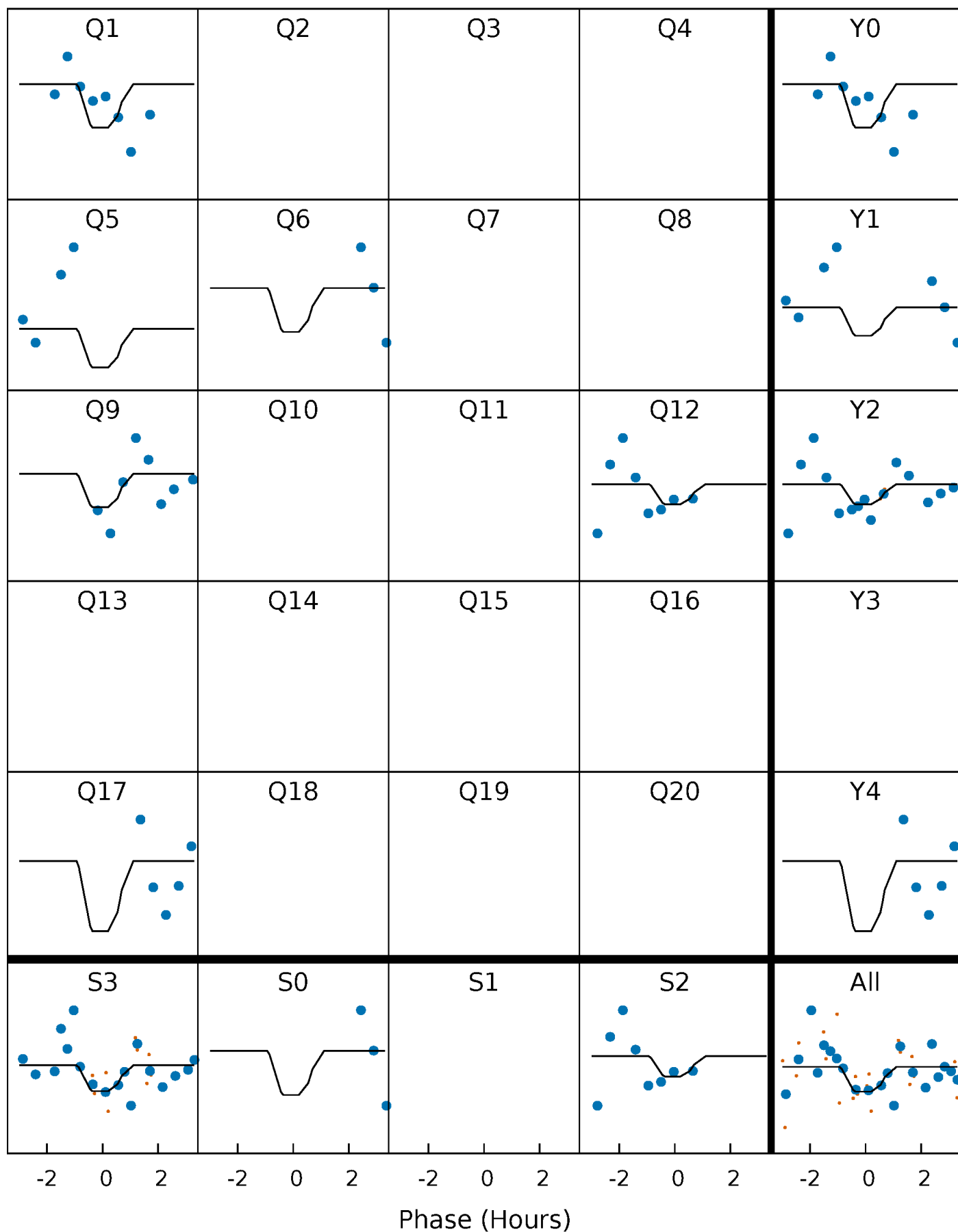
# DV Quarter-Phased Transit Curves

TCE 005480040-02 P=101.275407 Days  $T_0=159.097258$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005480040-02 P=101.277008 Days  $T_0=159.093307$  (BKJD)

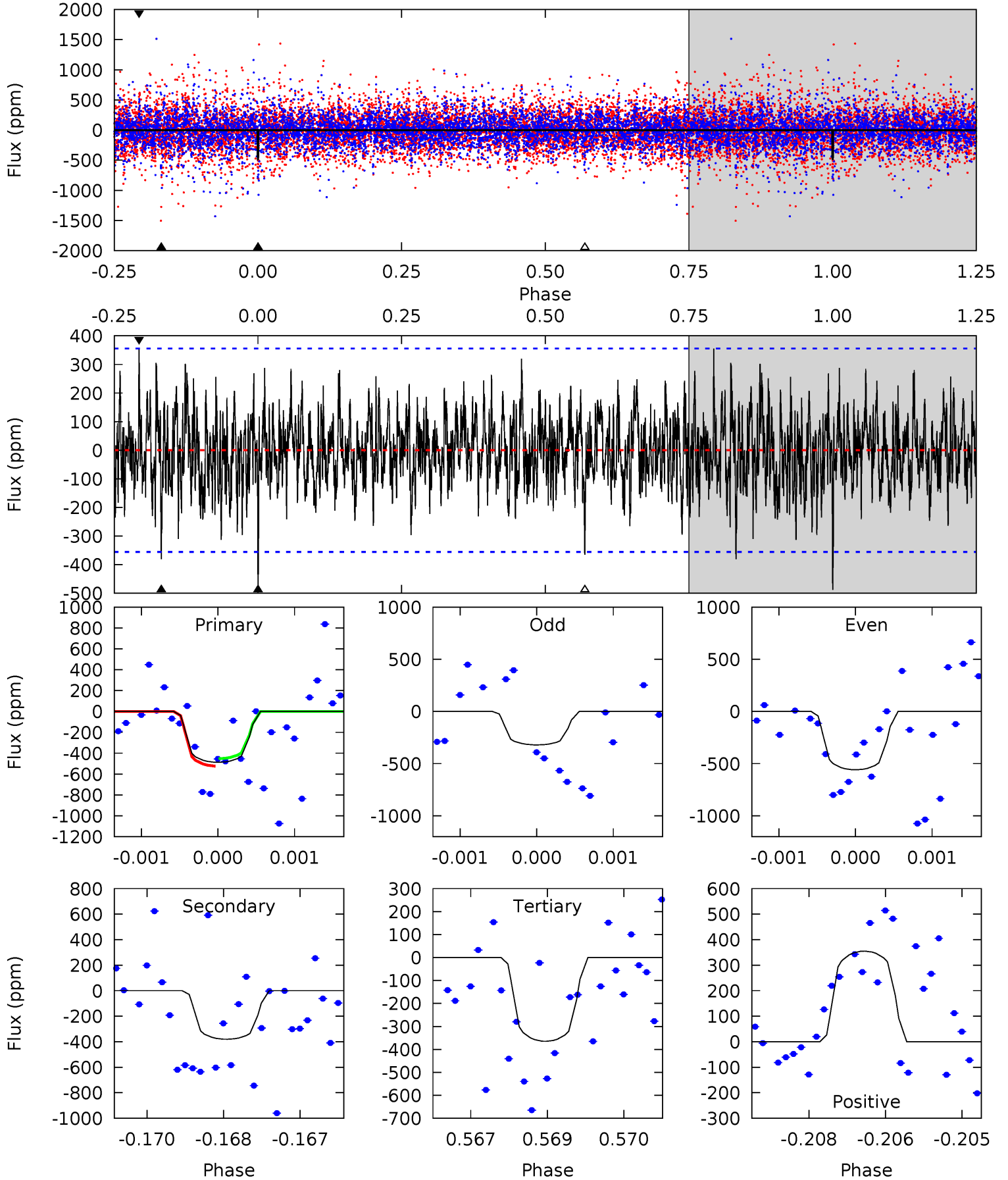




# DV Model-Shift Uniqueness Test

005480040-02, P = 101.275407 Days, E = 57.821851 Days

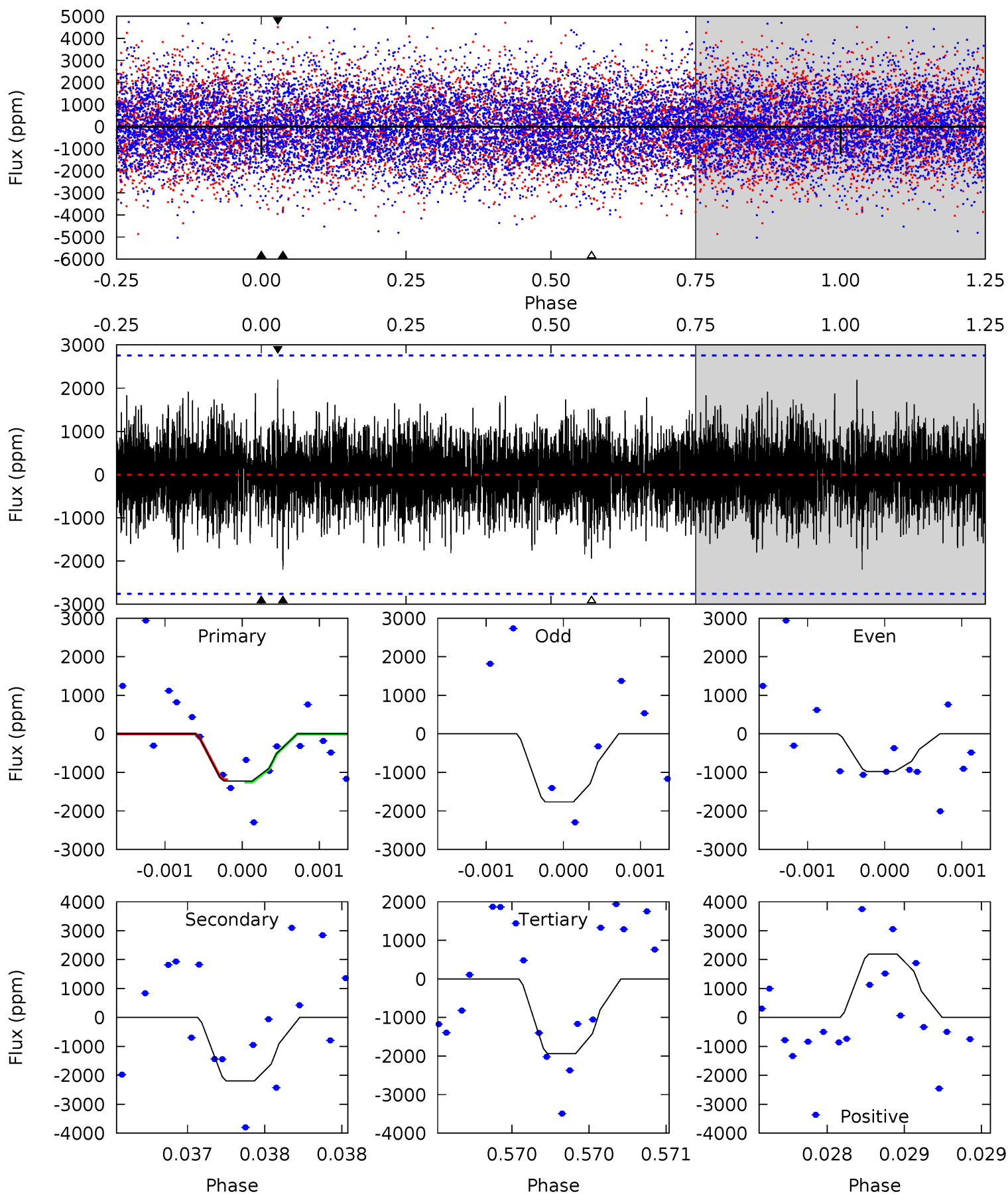
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.40	5.77	5.53	5.39	5.40	3.20	1.60	1.86	2.01	0.24	0.39	1.73	0.57	0.42	0.54



# Alt Model-Shift Uniqueness Test

005480040-02, P = 101.277008 Days, E = 57.816299 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
2.46	4.41	3.89	4.39	5.53	3.42	1.22	-1.43	-1.94	0.52	0.02	0.70	0.93	0.50	0.05



### Stellar Parameters For KIC 005480040

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6429^{+175}_{-214}$	$3.989^{+0.343}_{-0.147}$	$-0.140^{+0.250}_{-0.300}$	$1.908^{+0.543}_{-0.724}$	$1.298^{+0.193}_{-0.257}$	$0.263^{+0.670}_{-0.108}$
	+3%/-3%	+9%/-4%	+179%/-214%	+28%/-38%	+15%/-20%	+255%/-41%
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 005480040-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-381 \pm 66$	$7.27^{+7.49}_{-4.84}$	$786^{+61}_{-86}$	$4736^{+3533}_{-1058}$	$848^{+6156}_{-646}$
Alt.	$-2198 \pm 498$	$9.33^{+7.84}_{-6.03}$	$787^{+64}_{-79}$	$6297^{+5997}_{-1445}$	$2939^{+19123}_{-2067}$

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

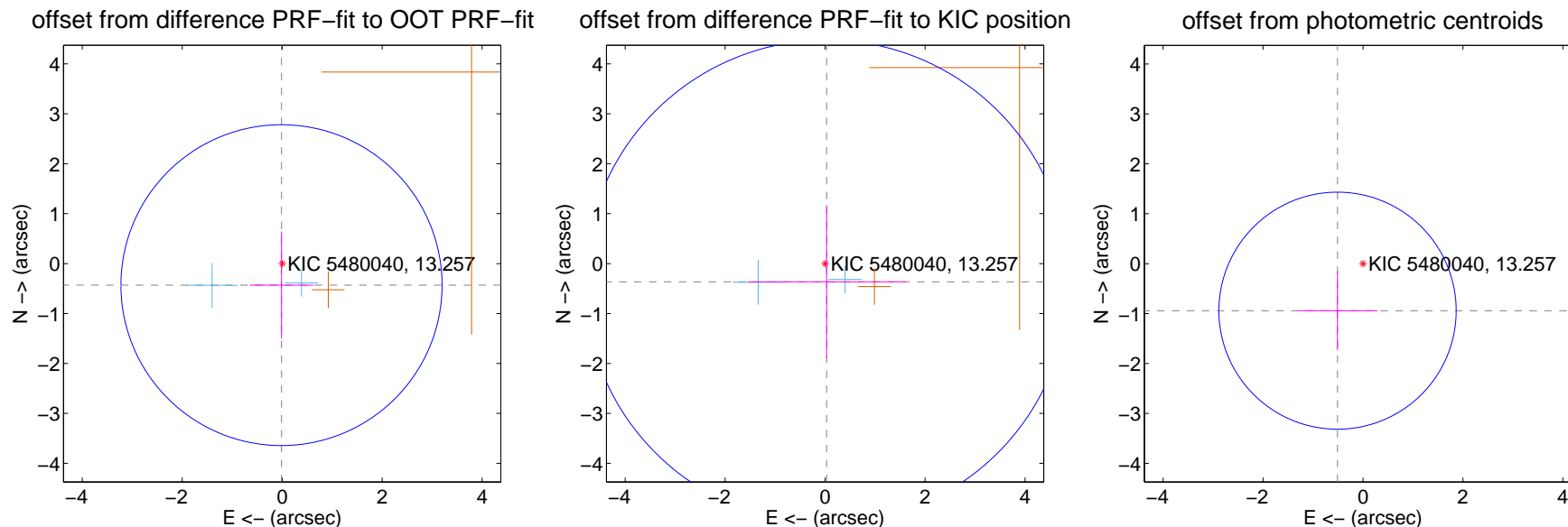
## DV Centroid Data

Supplemental centroid analysis for 005480040-02. Kepler magnitude: 13.26. Transit SNR 8.46

There are 2 quarters with good PRF difference image offsets

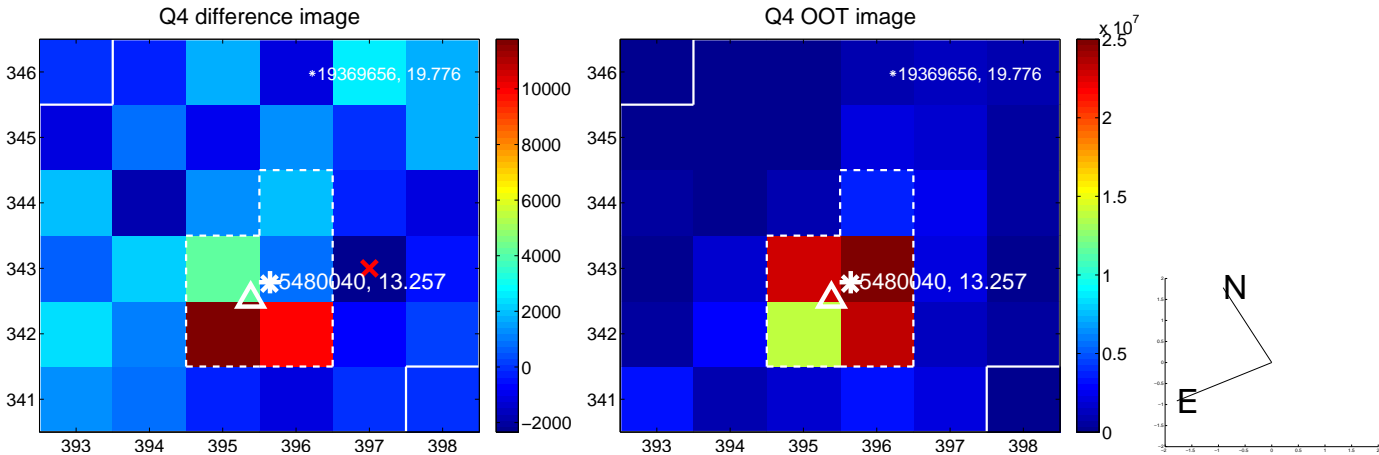
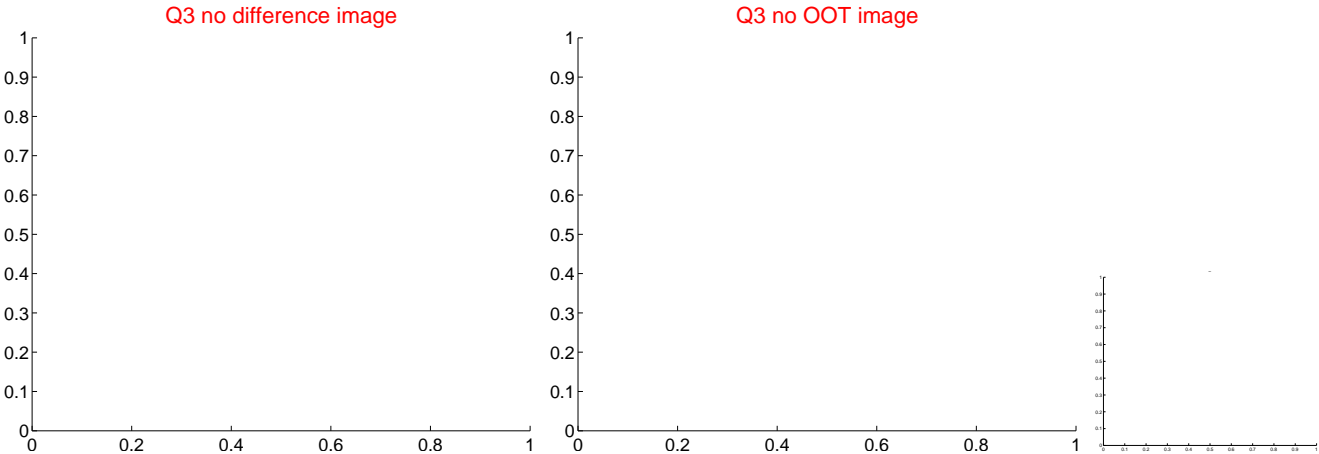
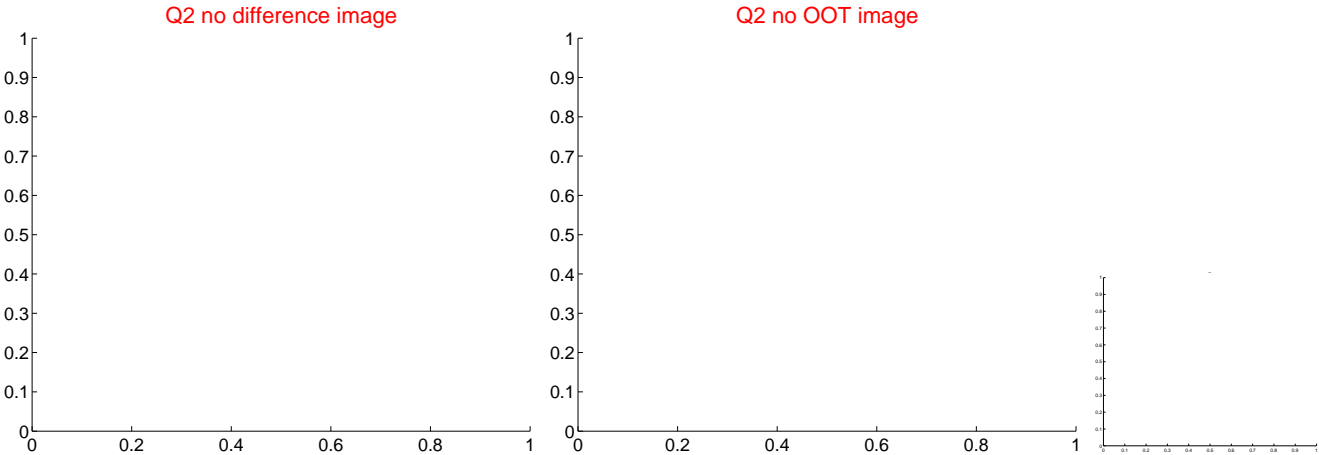
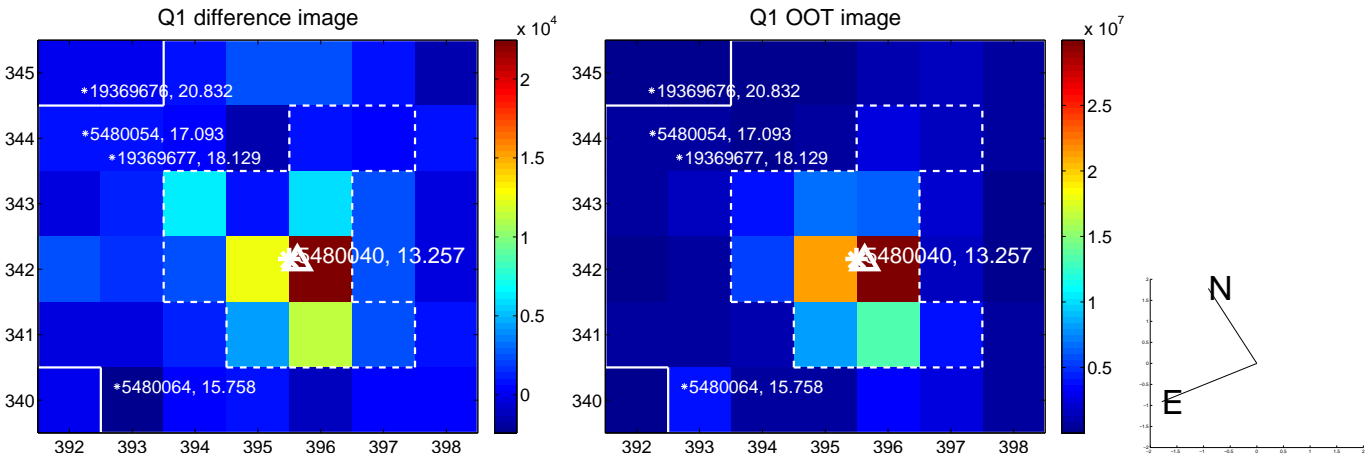
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.432 \pm 1.071$	0.40	$0.014 \pm 0.640$	$-0.432 \pm 1.071$
PRF-fit source offset from KIC position	$0.367 \pm 1.614$	0.23	$-0.031 \pm 1.576$	$-0.365 \pm 1.531$
photometric centroid source offset	$1.07 \pm 0.79$	1.35	$0.51 \pm 0.80$	$-0.94 \pm 0.79$

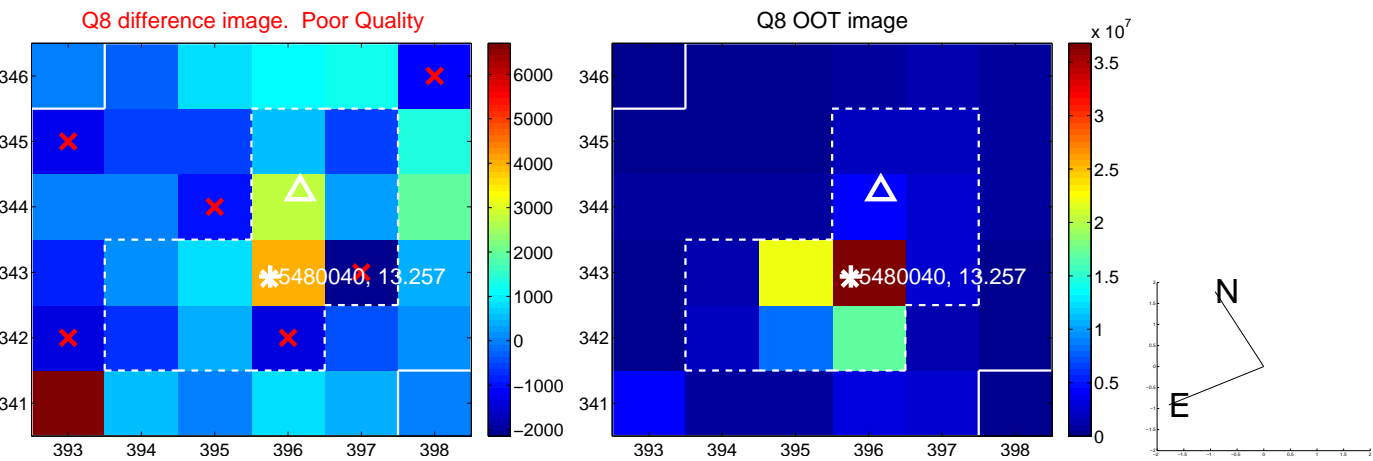
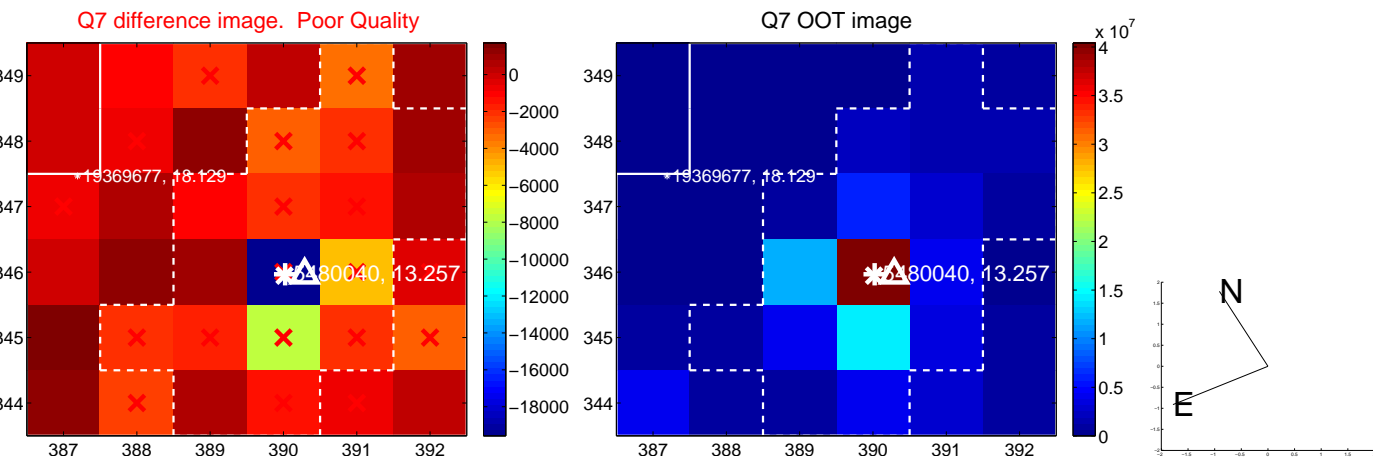
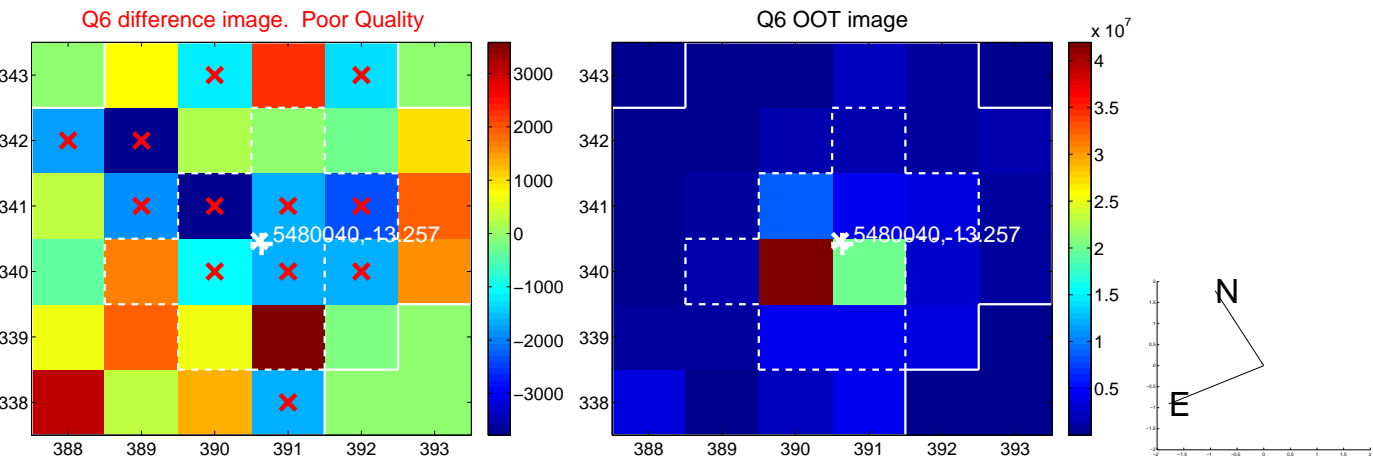
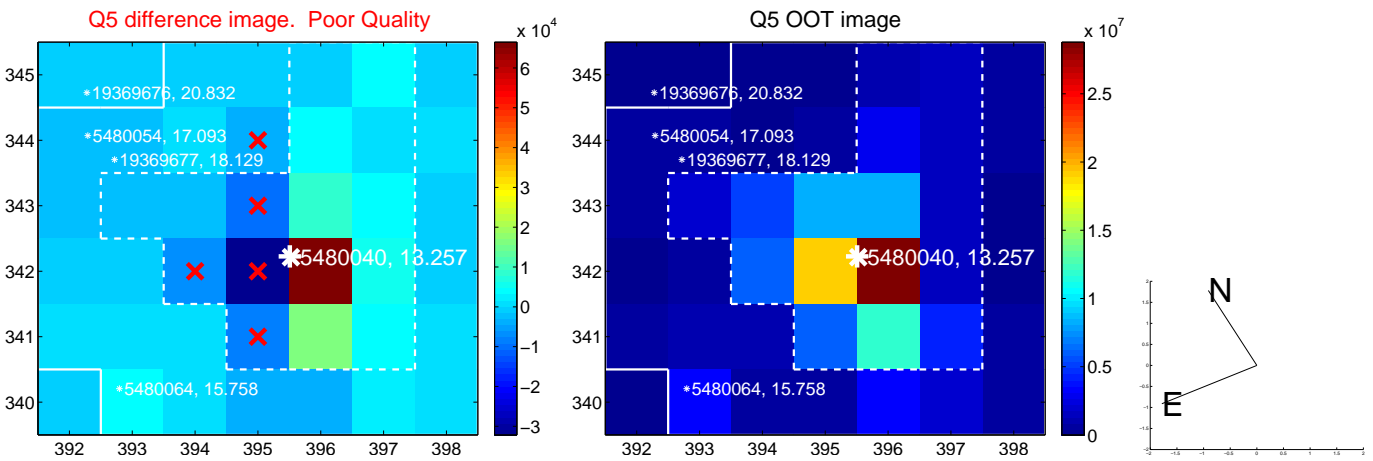


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.

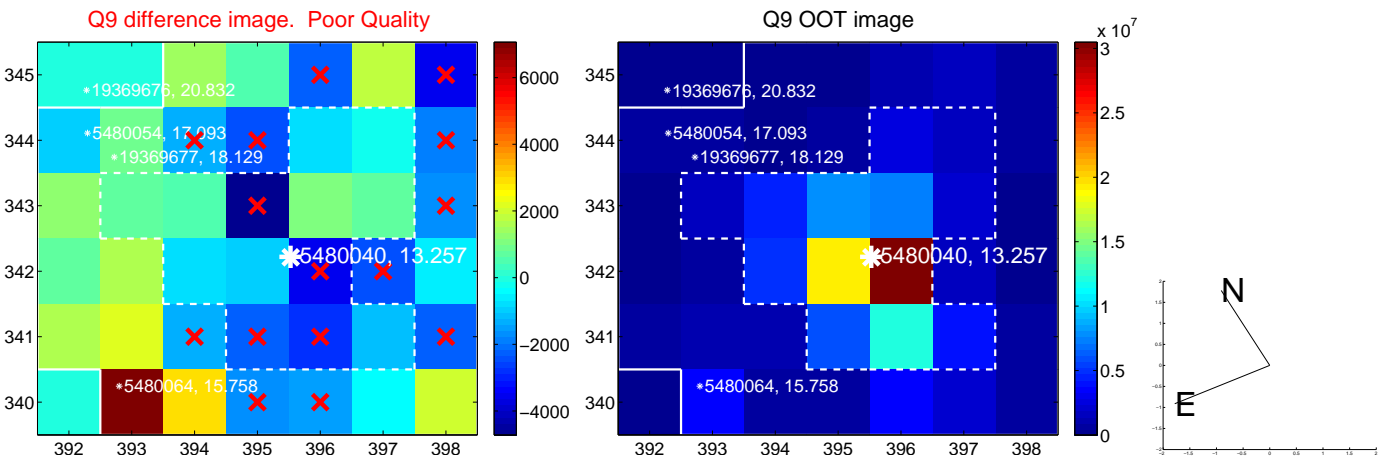


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





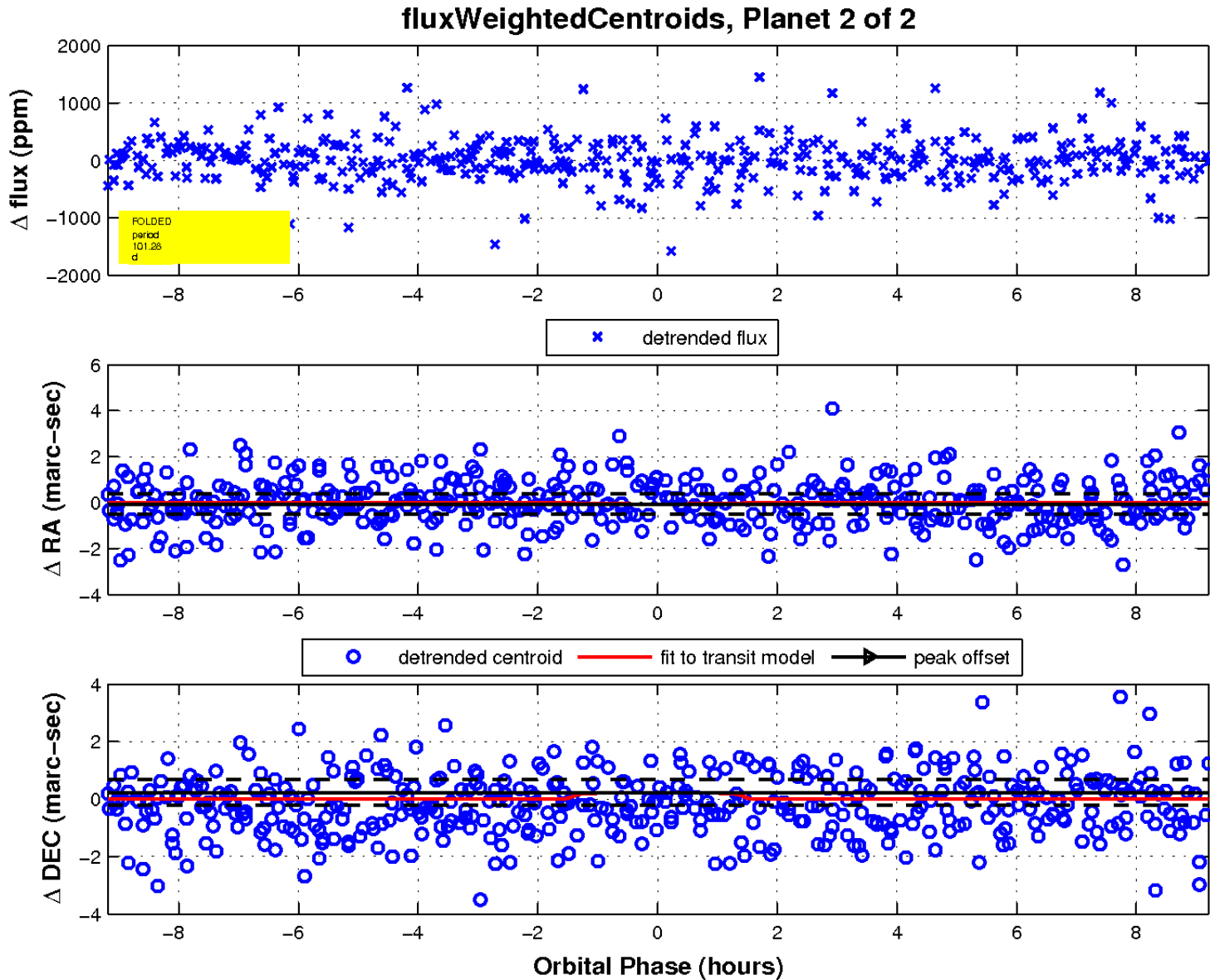
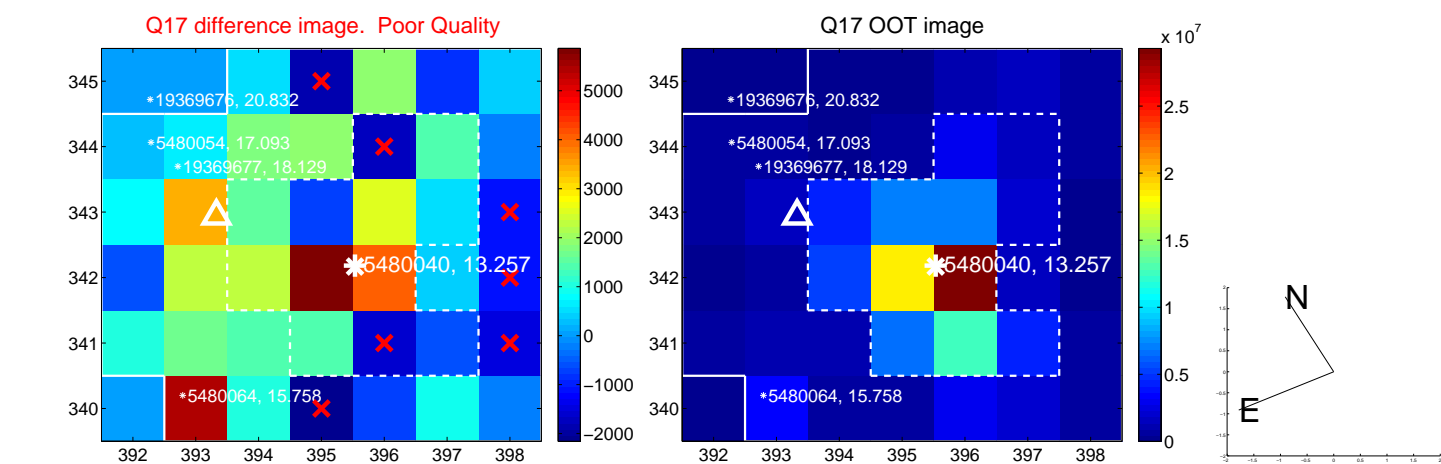
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



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



UKIRT Image

Declination

