

# KIC 004953696

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004953696-01	OBS	No	1.367923	132.481450	0.0	0.747	7.8	0.0	2.08	6334	0.01	9057.52
004953696-02	OBS	No	1.368013	132.781280	236.8	5.000	8.2	-1.0	2.08	6334	3.21	9056.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004953696-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004953696-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

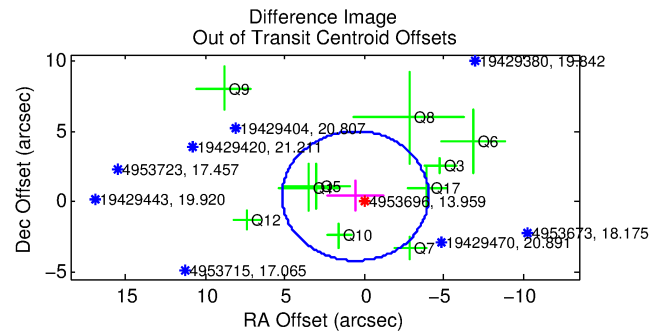
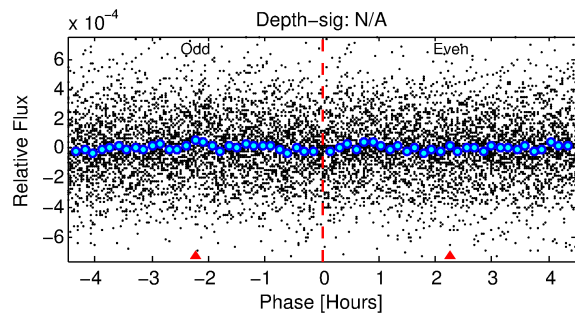
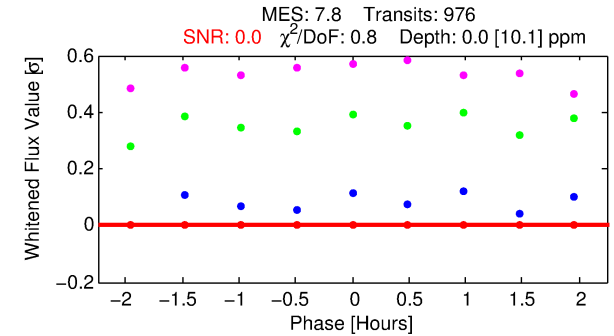
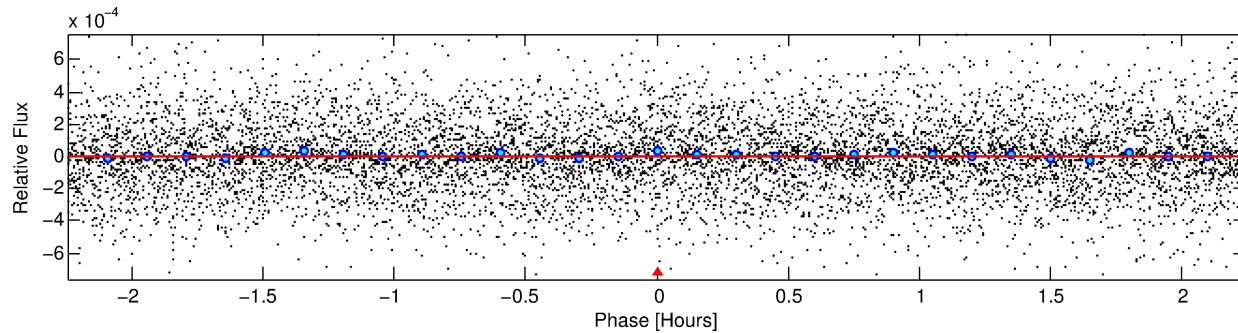
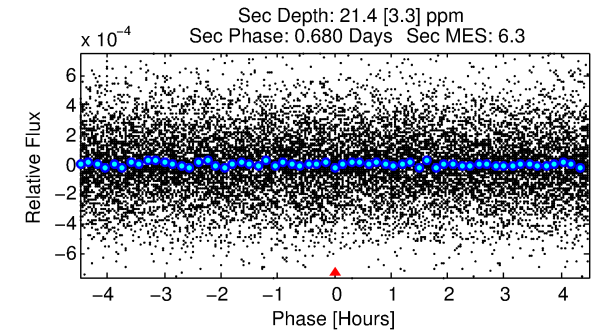
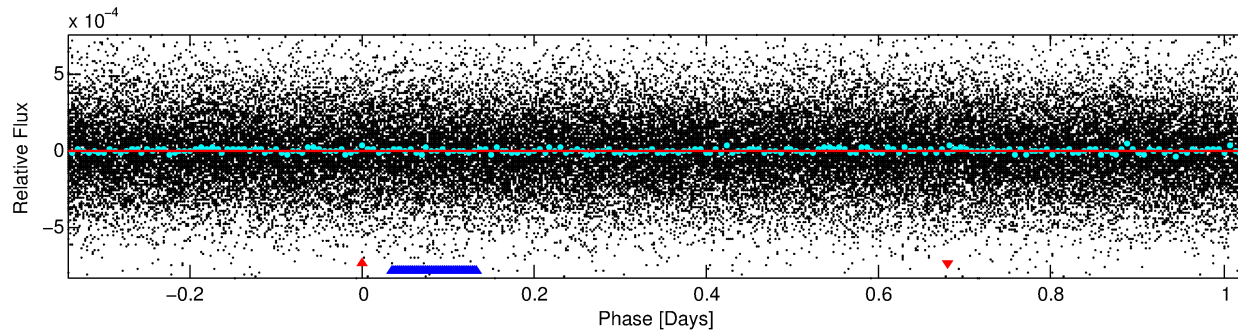
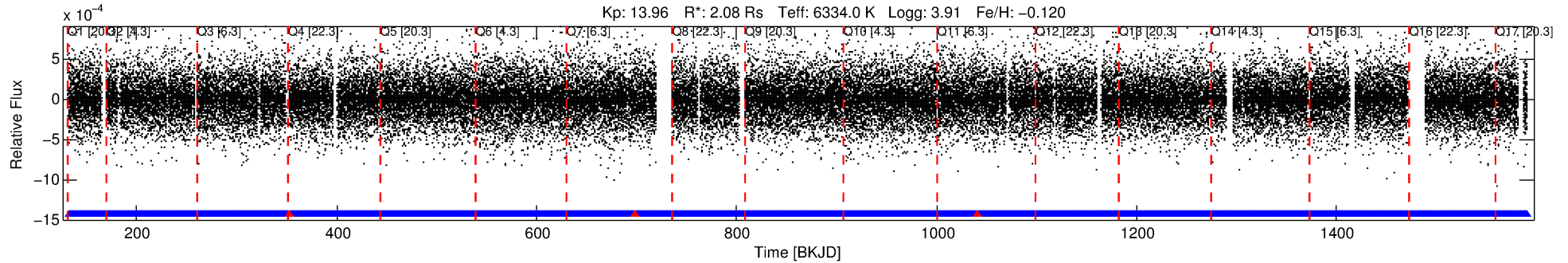
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004953696-01

No Significant Match Found

# DV One-Page Summary

KIC: 4953696 Candidate: 1 of 2 Period: 1.368 d



## DV Fit Results:

Period = 1.36792 [1.31278] d  
Epoch = 132.4815 [193.7659] BKJD  
Rp/R\* = 0.0000 [0.1979]  
a/R\* = 13.08 [26369.63]  
b = 0.36 [3058.57]  
Seff = 9057.52 [13237.75]  
Teq = 2488 [909] K  
Rp = 0.01 [44.83] Re  
a = 0.0262 [0.0202] AU  
Ag = 297019.10 [5105599607.39] [0.00σ]  
Teffp = 89787 [385867804] K [0.00σ]

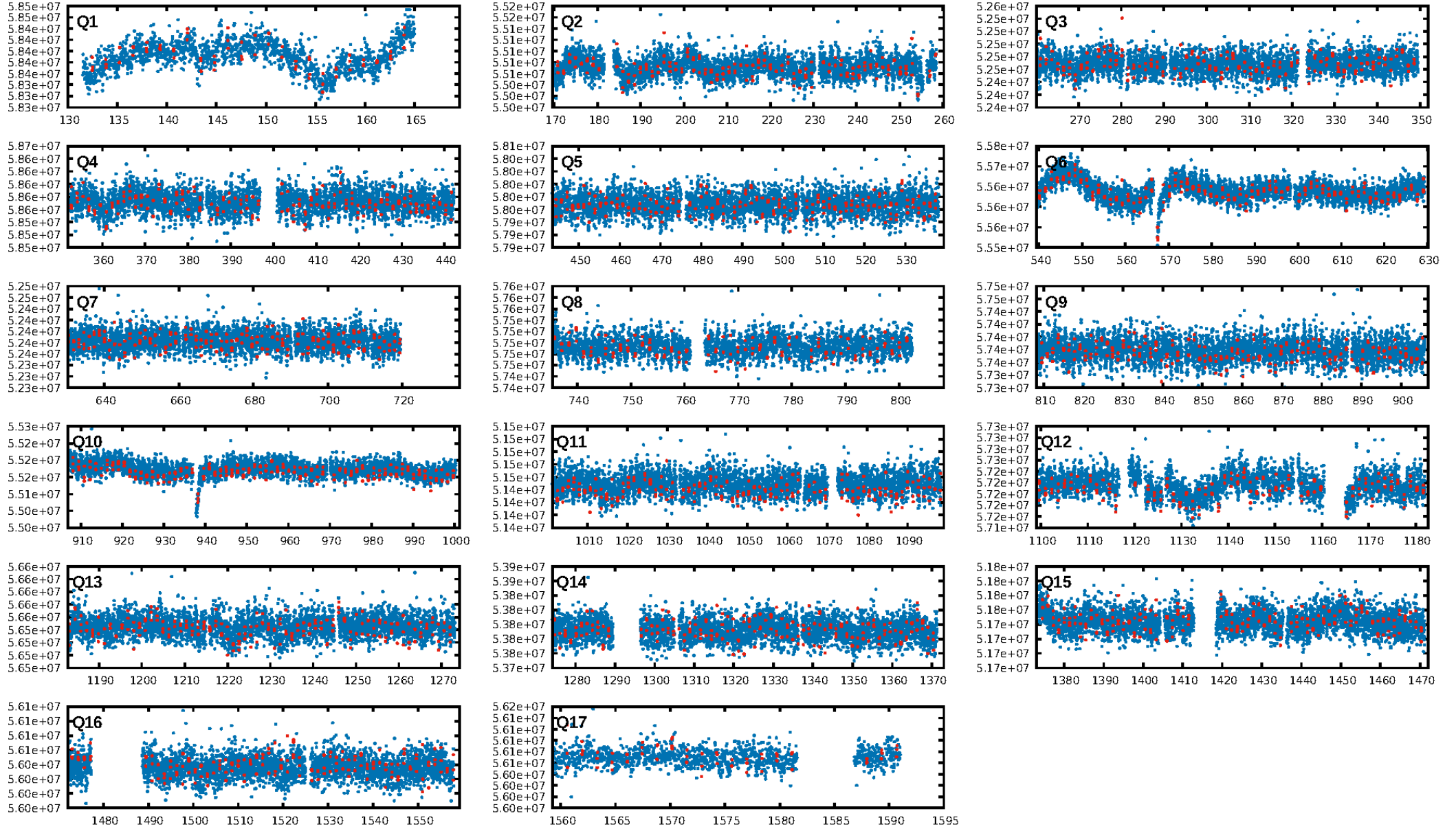
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 9.57e-14  
RollingBand-fgt: 1.00 [929/932]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.702 arcsec [0.46σ]  
KicOffset-rm: 0.502 arcsec [0.32σ]  
OotOffset-st: 2/2/2/4 [10]  
KicOffset-st: 2/2/2/4 [10]  
DiffImageQuality-fgm: 0.00 [0/10]  
DiffImageOverlap-fno: 0.00 [0/17]

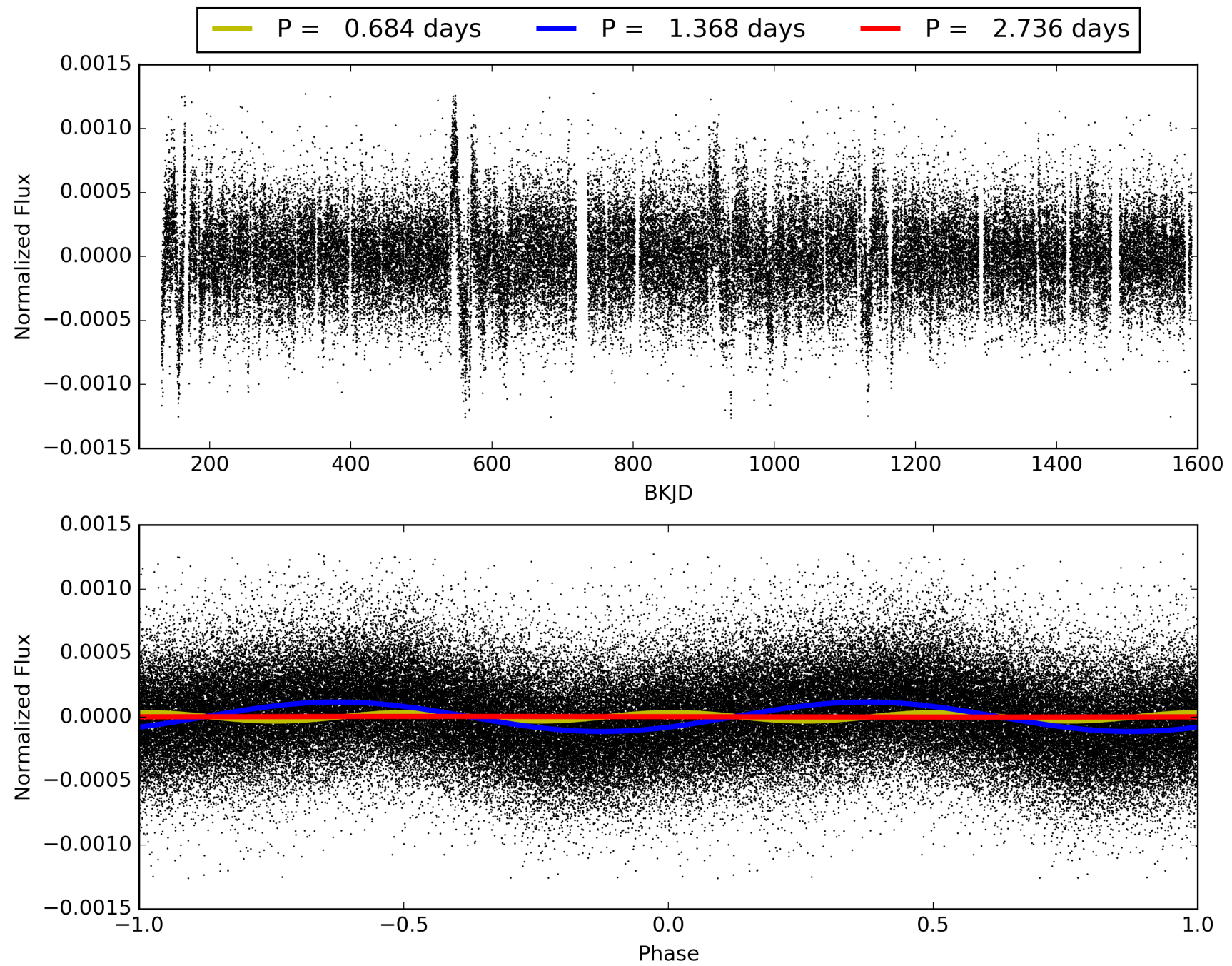
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:12:32 Z

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

# TCE 004953696-01, PDC Light Curves



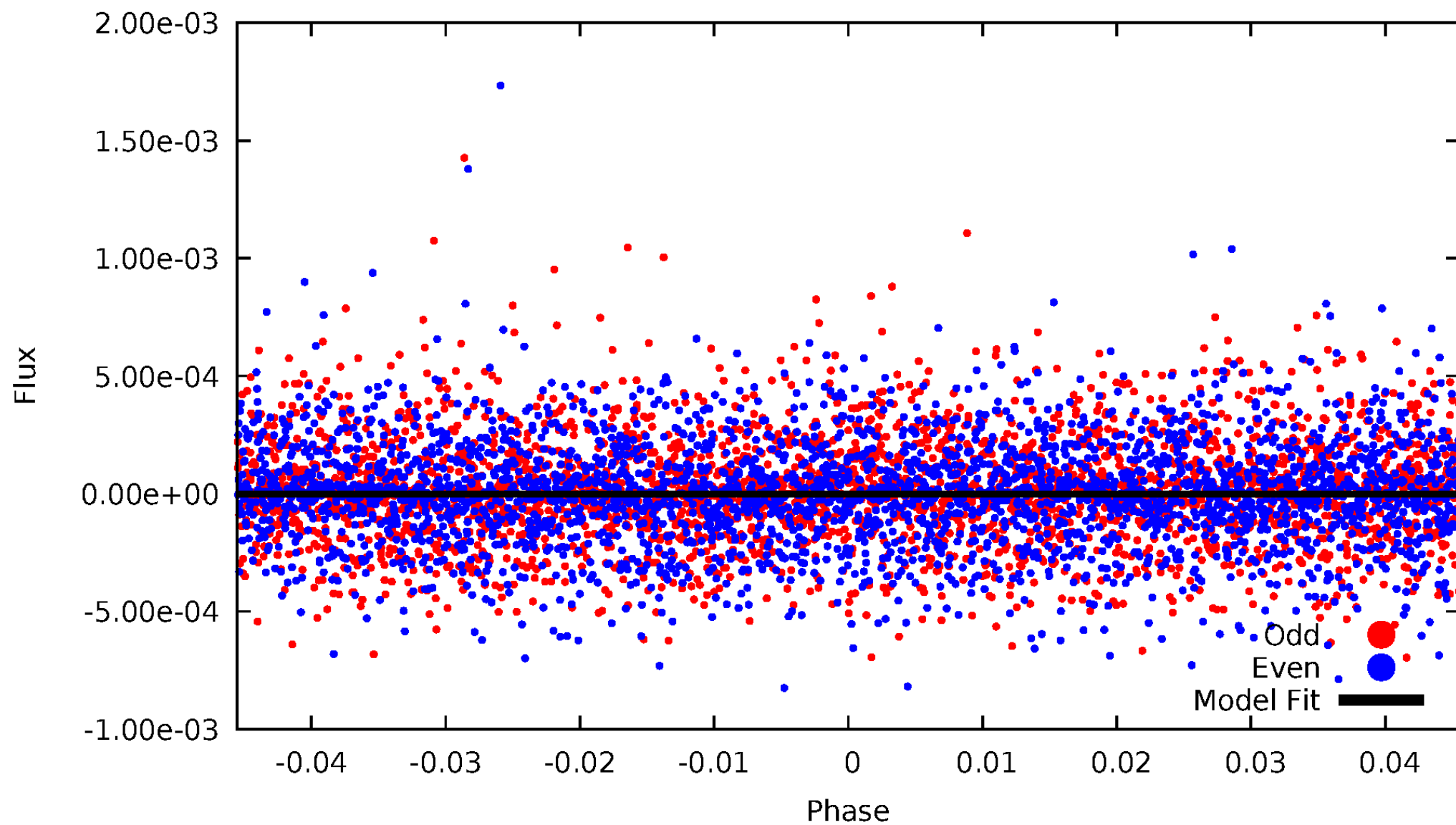
TCE 004953696-01





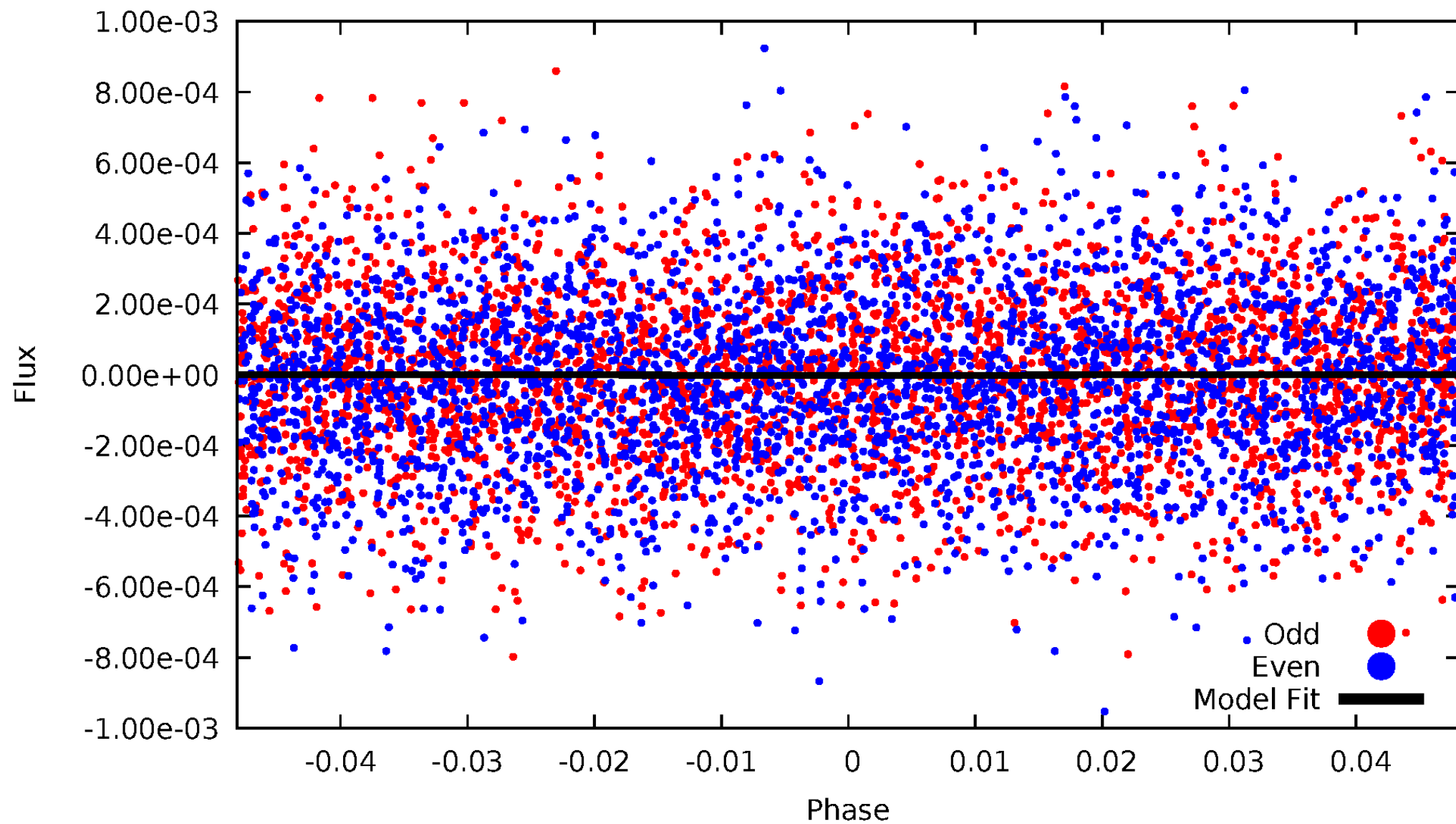
# DV Odd/Even

TCE 004953696-01



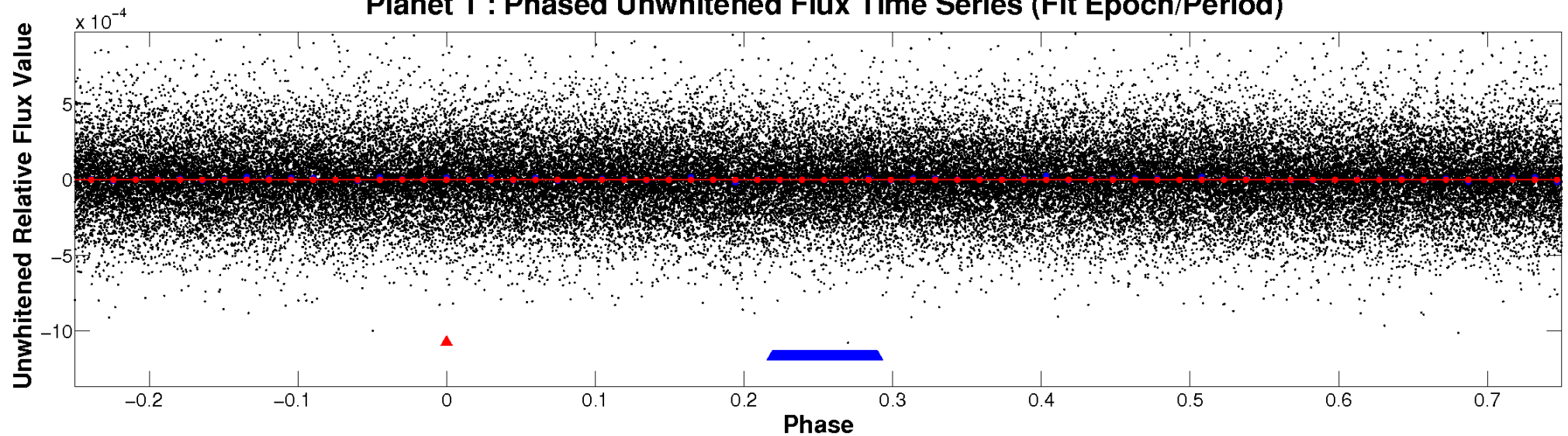
# ALT Odd/Even

TCE 004953696-01

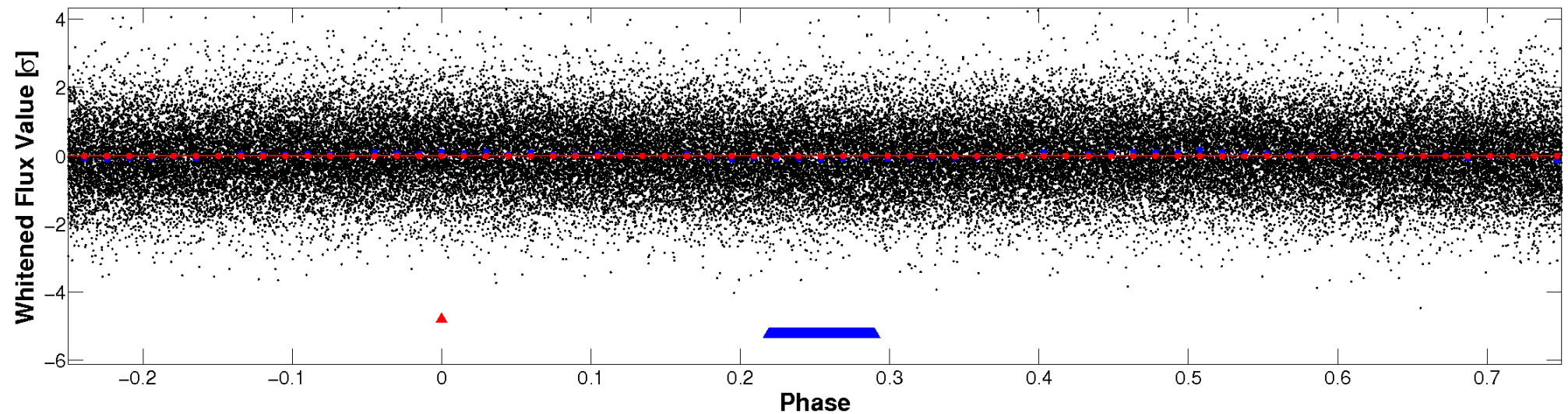


# Non-Whitened Vs. Whitened Light Curve

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

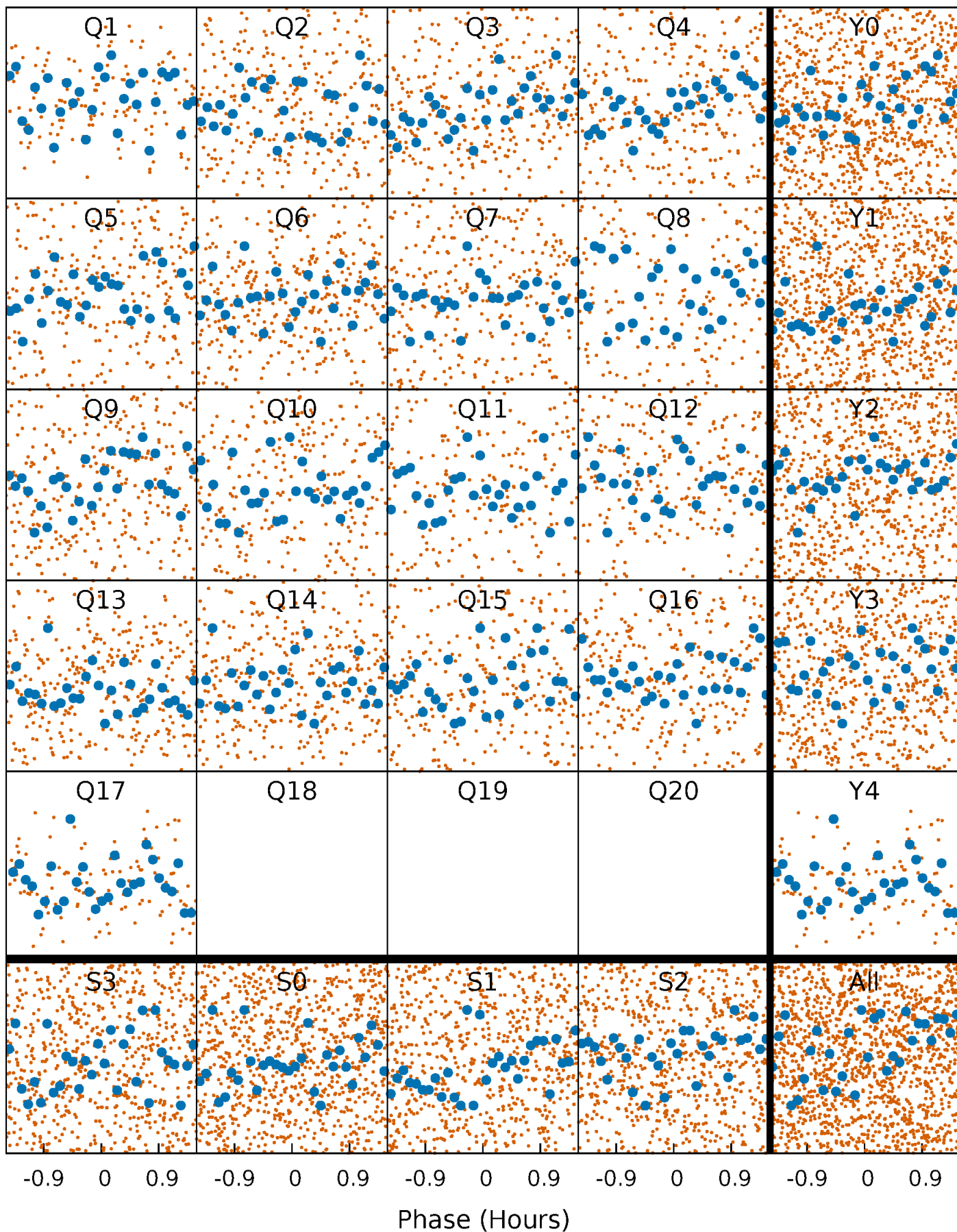


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

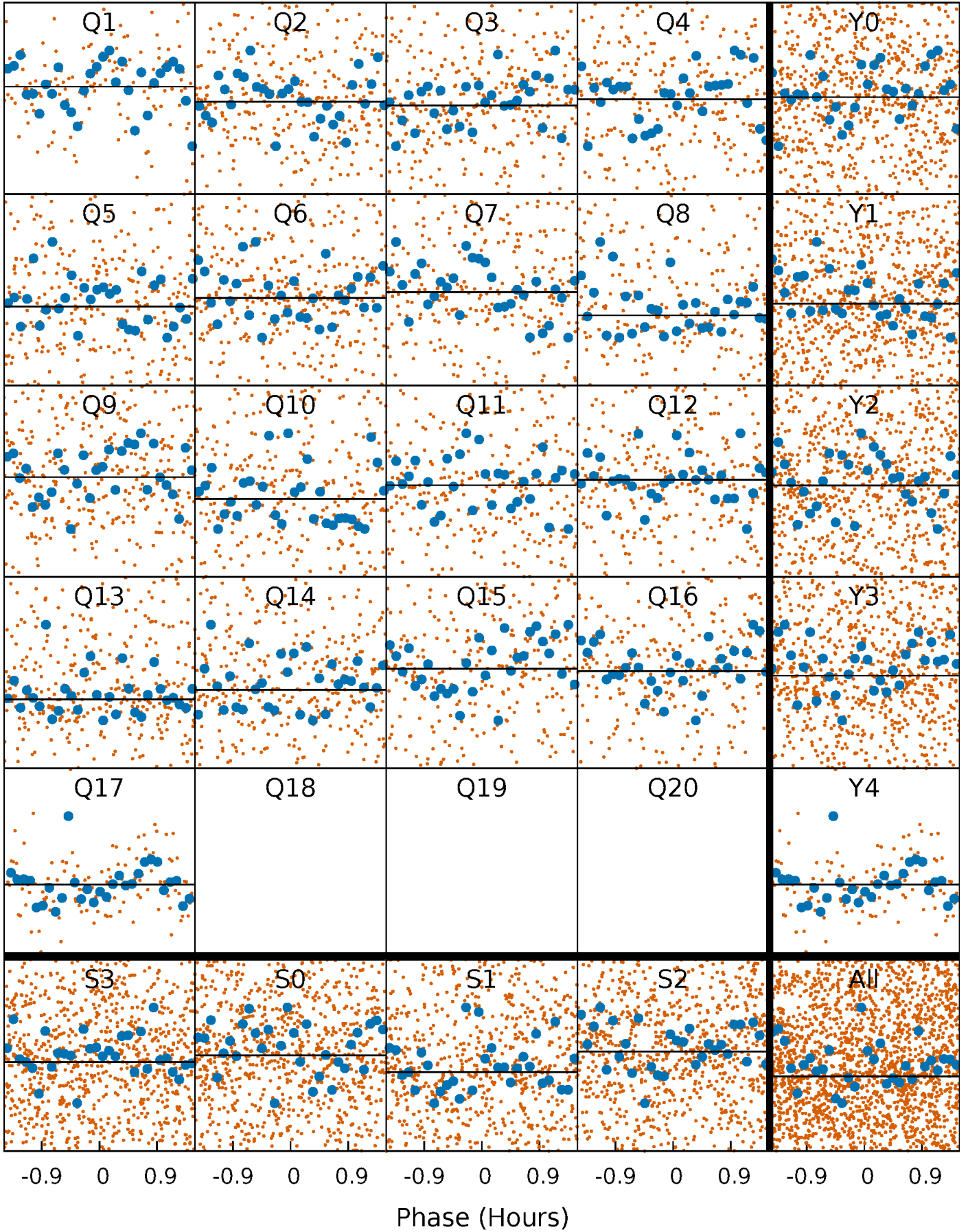
TCE 004953696-01 P= 1.367923 Days  $T_0=132.481450$  (BKJD)





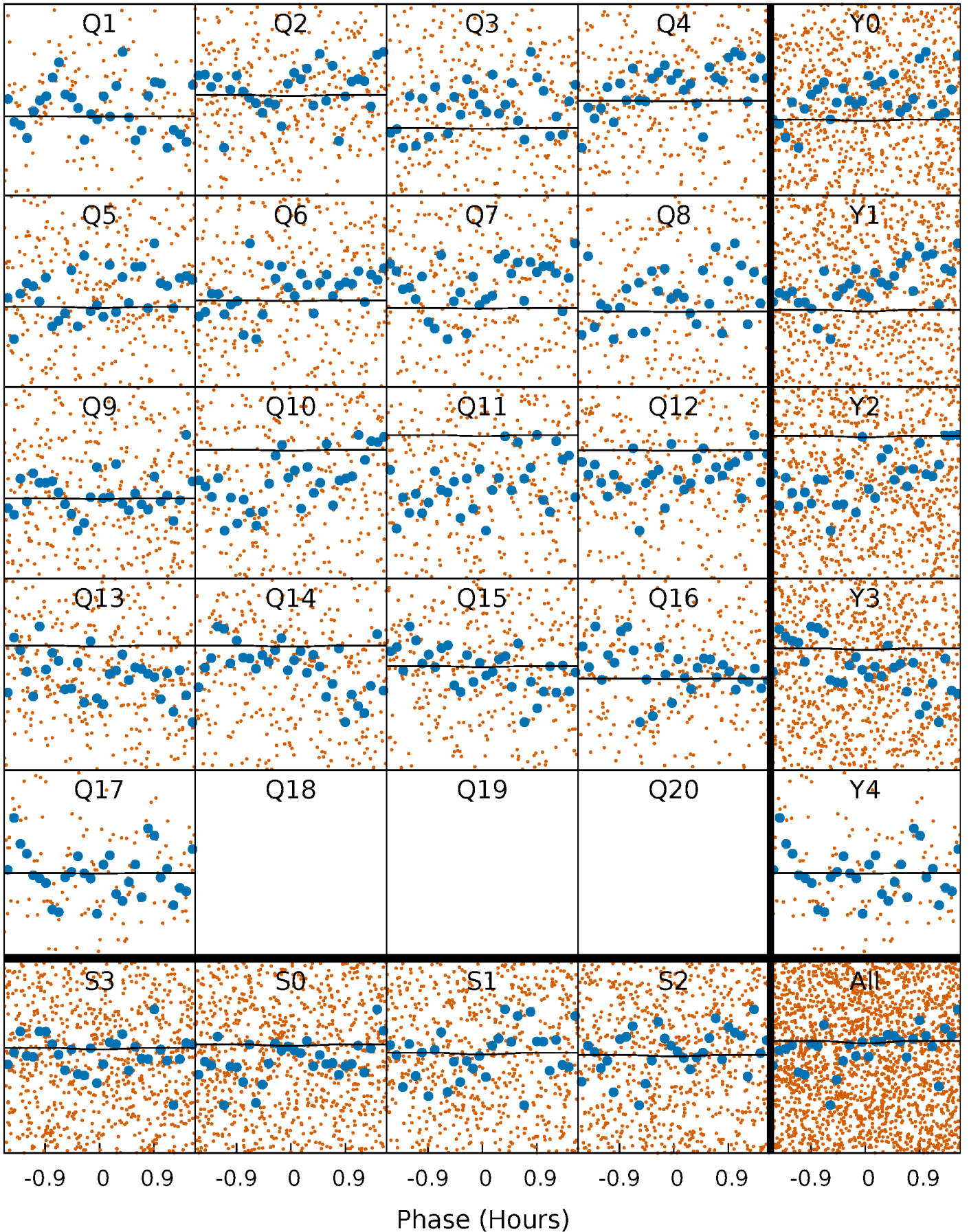
# DV Quarter-Phased Transit Curves

TCE 004953696-01 P= 1.367923 Days  $T_0=132.481450$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

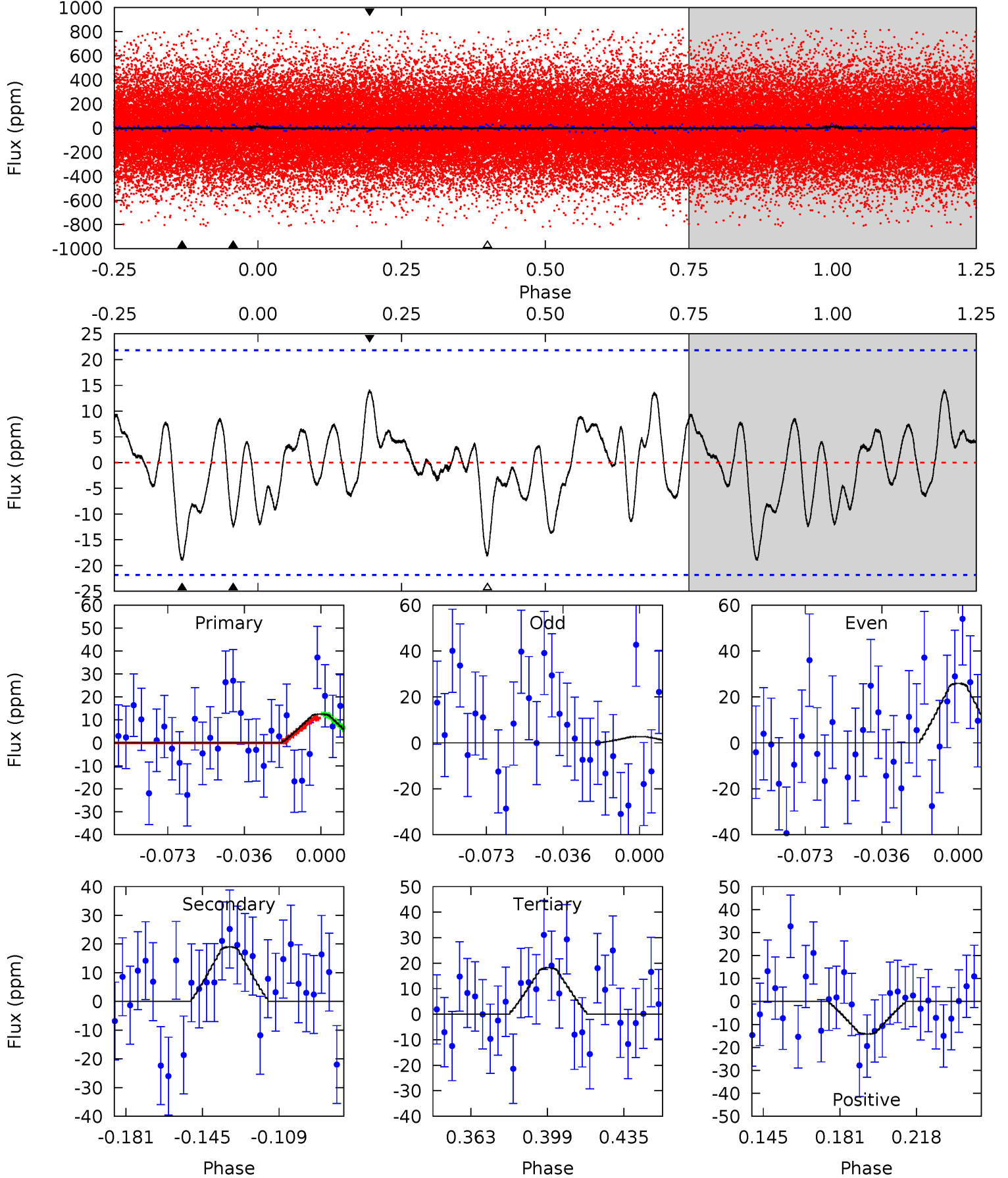
TCE 004953696-01   P= 1.367974 Days    $T_0=132.515045$  (BKJD)



# DV Model-Shift Uniqueness Test

004953696-01, P = 1.367923 Days, E = 131.113527 Days

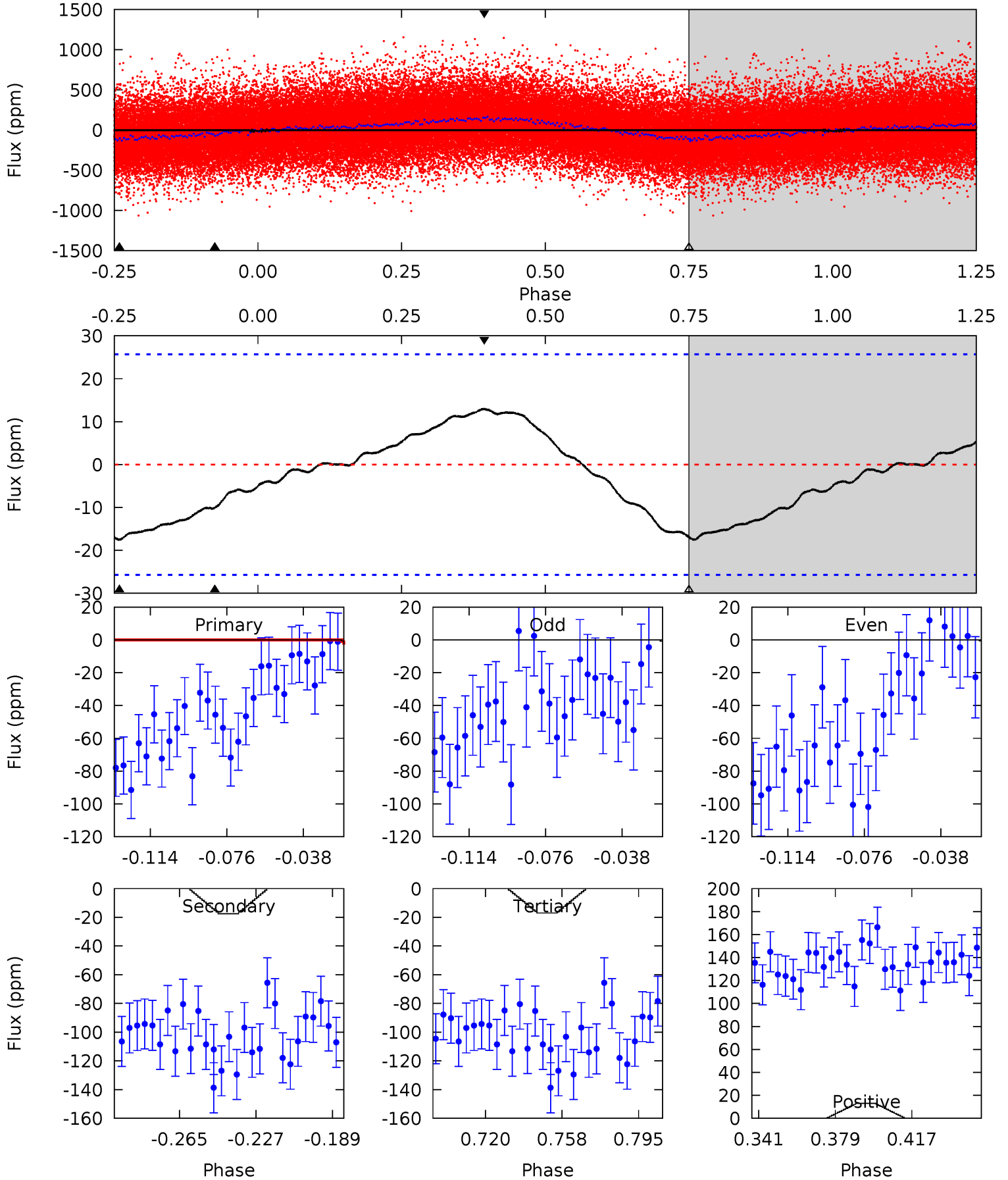
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.74	4.16	3.98	3.10	4.77	2.09	1.29	-1.24	-0.37	0.18	1.05	2.56	1.79	0.43	0.18



# Alt Model-Shift Uniqueness Test

004953696-01, P = 1.367974 Days, E = 131.147071 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
1.87	3.25	3.15	2.41	4.76	2.08	1.65	-1.28	-0.54	0.10	0.85	0.48	-31.1	0.43	1.05





### Stellar Parameters For KIC 004953696

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6334^{+181}_{-249}$	$3.911^{+0.405}_{-0.135}$	$-0.120^{+0.300}_{-0.300}$	$2.076^{+0.496}_{-0.921}$	$1.280^{+0.195}_{-0.260}$	$0.202^{+0.719}_{-0.080}$
	+3%/-4%	+10%/-3%	+250%/-250%	+24%/-44%	+15%/-20%	+357%/-40%
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 004953696-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-19 \pm 5$	$28.31^{+33.10}_{-21.07}$	$3176^{+1101}_{-603}$	$-3104^{+548}_{-710}$	$0.011^{+0.160}_{-0.010}$
Alt.	$-18 \pm 5$	$27.20^{+33.57}_{-18.40}$	$3163^{+1087}_{-580}$	$-3117^{+468}_{-679}$	$0.010^{+0.088}_{-0.008}$

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

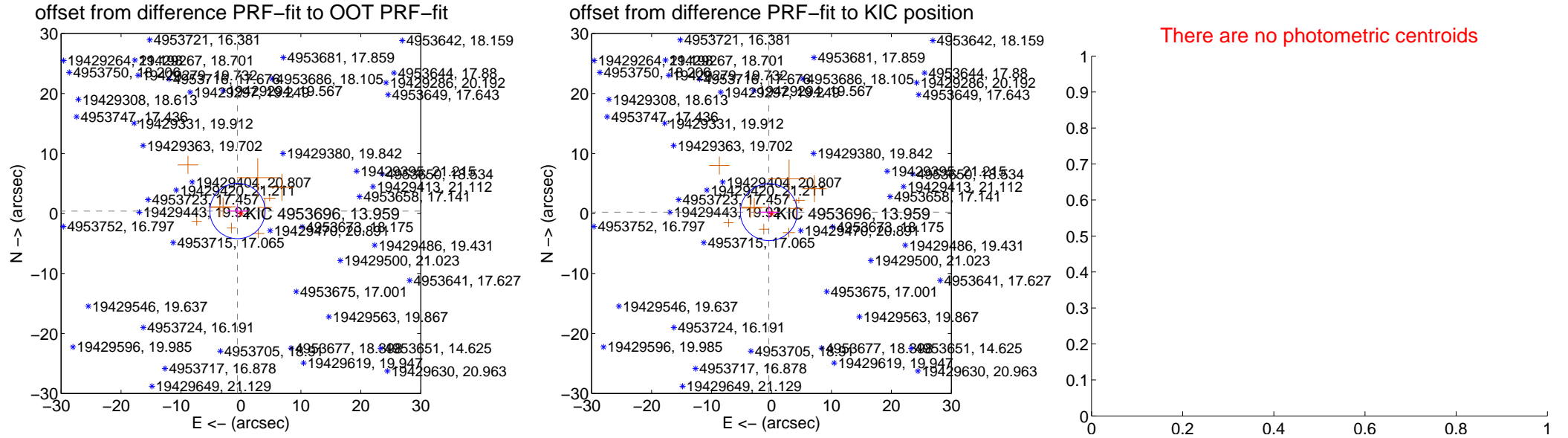
## DV Centroid Data

Supplemental centroid analysis for 004953696-01. Kepler magnitude: 13.96. Transit SNR 0.00

There are 0 quarters with good PRF difference image offsets

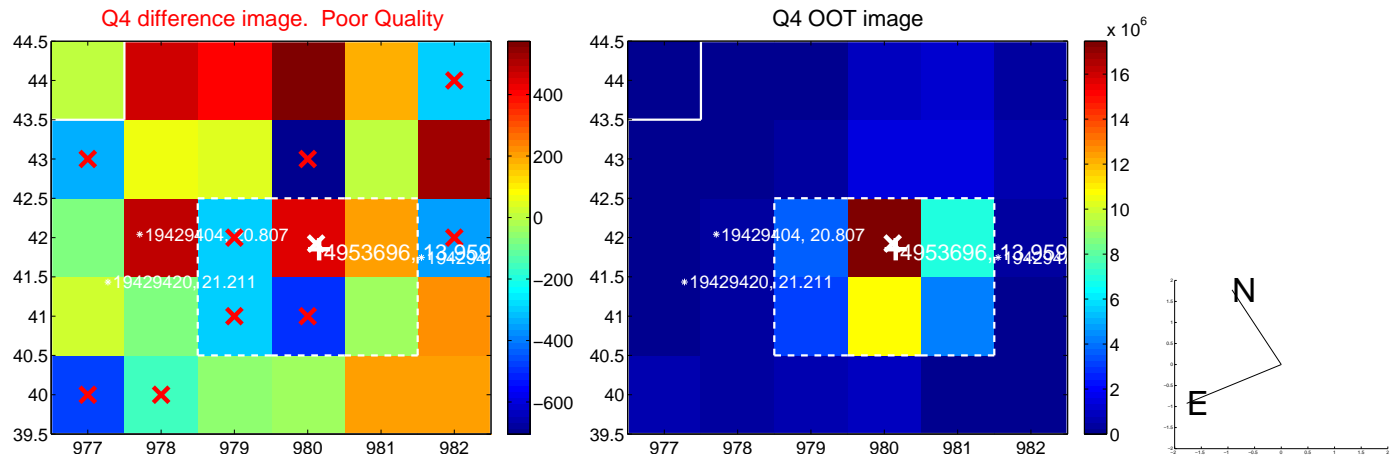
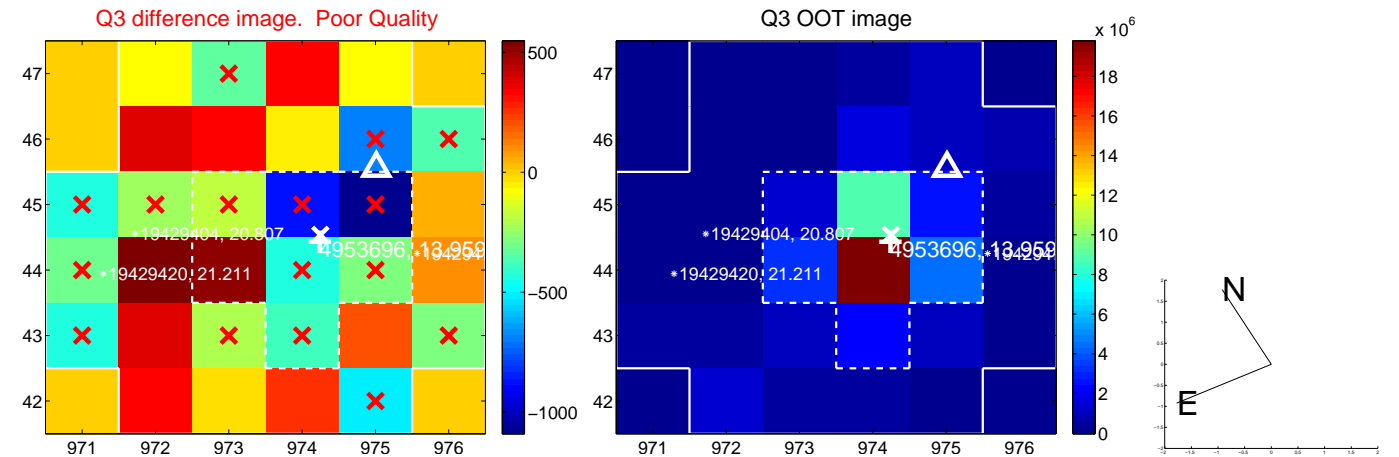
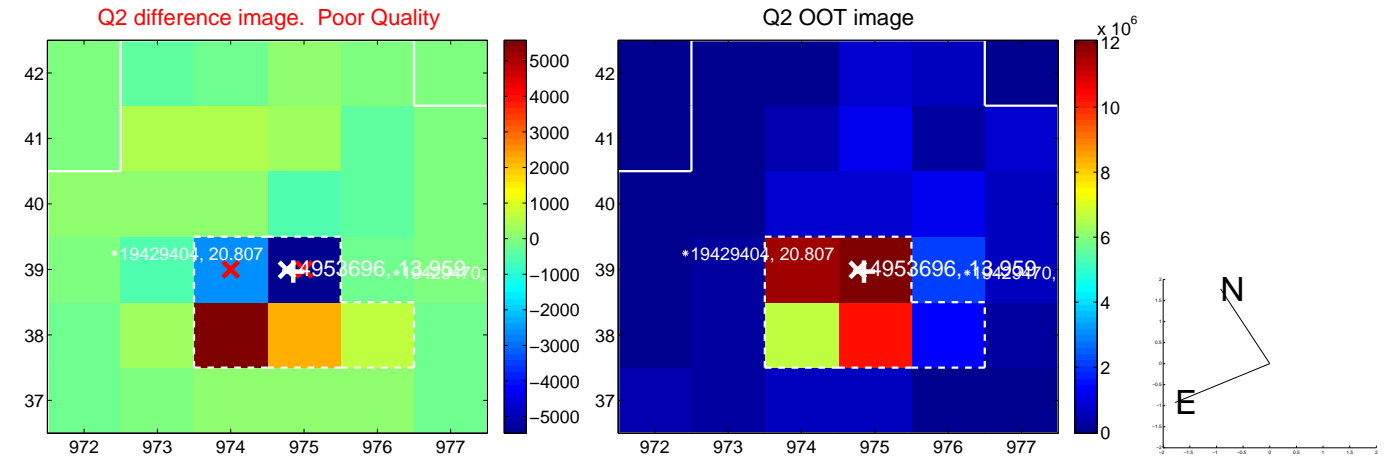
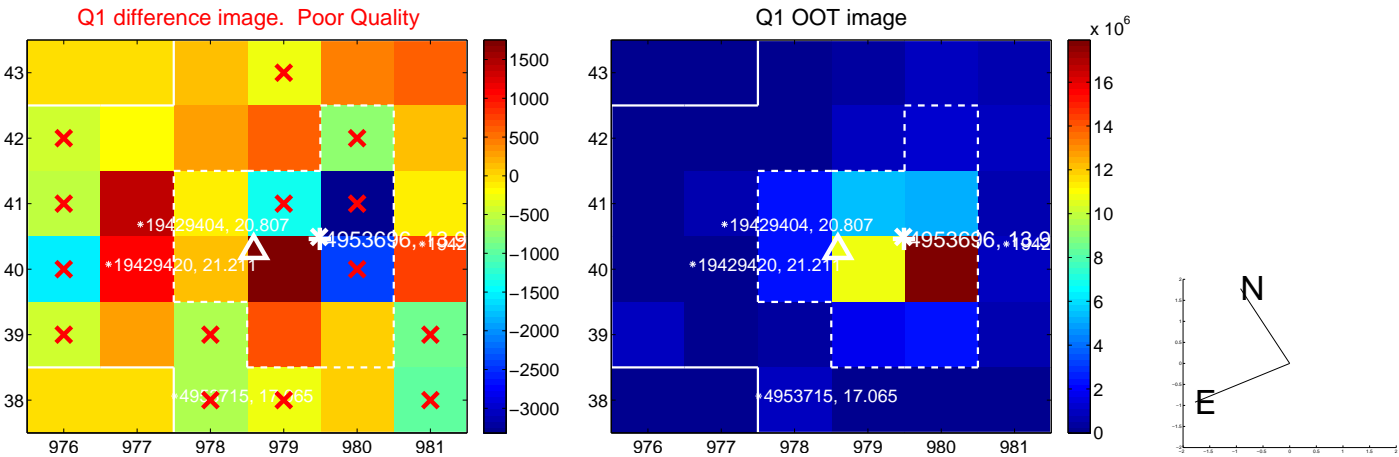
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.702 \pm 1.536$	0.46	$0.570 \pm 1.720$	$0.410 \pm 1.096$
PRF-fit source offset from KIC position	$0.502 \pm 1.582$	0.32	$0.449 \pm 1.689$	$0.225 \pm 1.052$
photometric centroid source offset	—	—	—	—

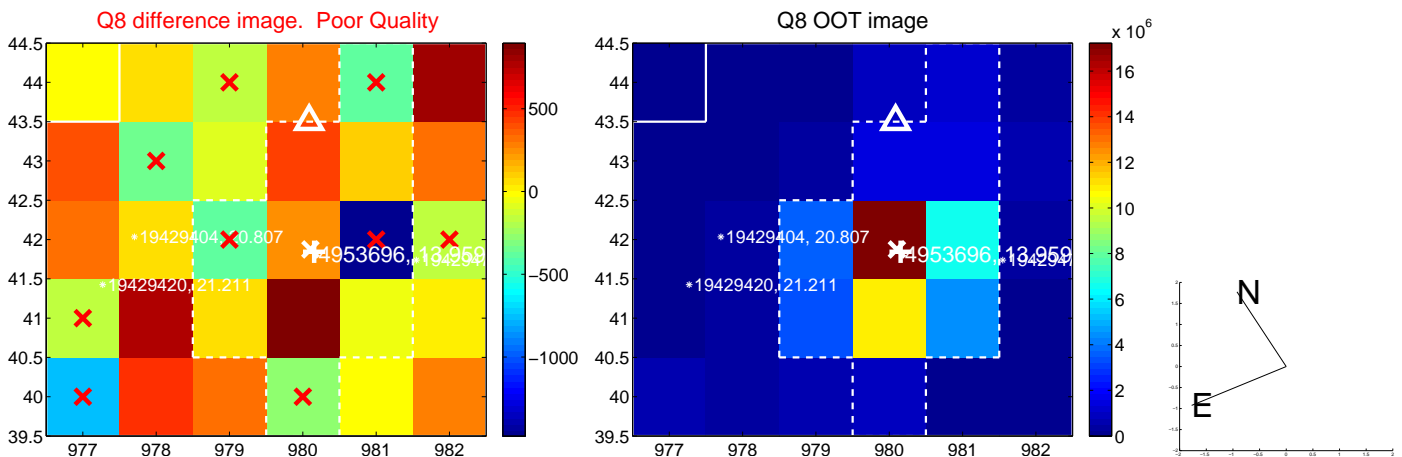
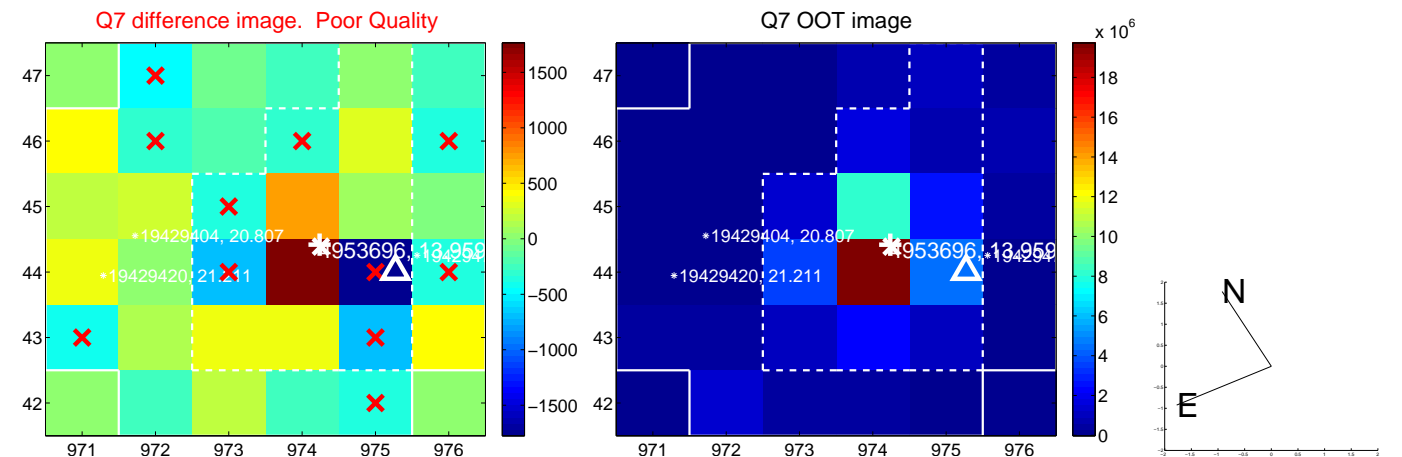
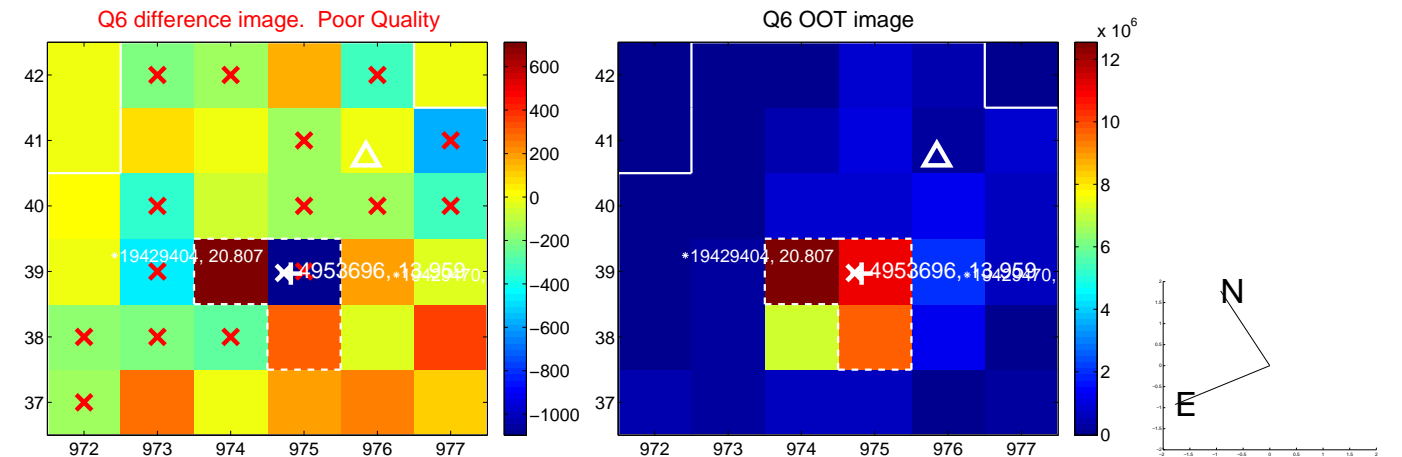
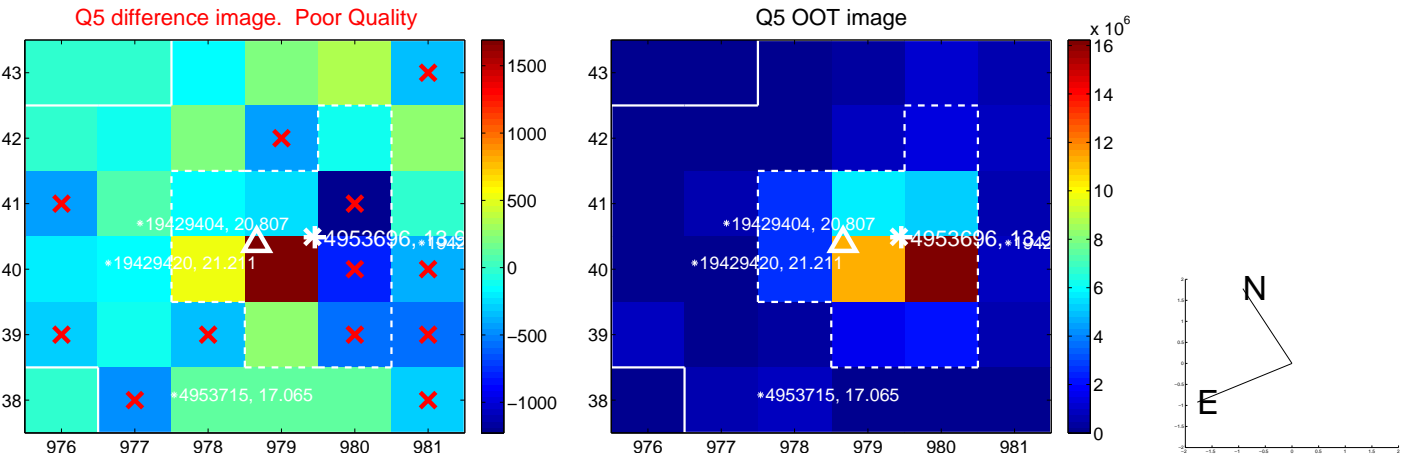


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

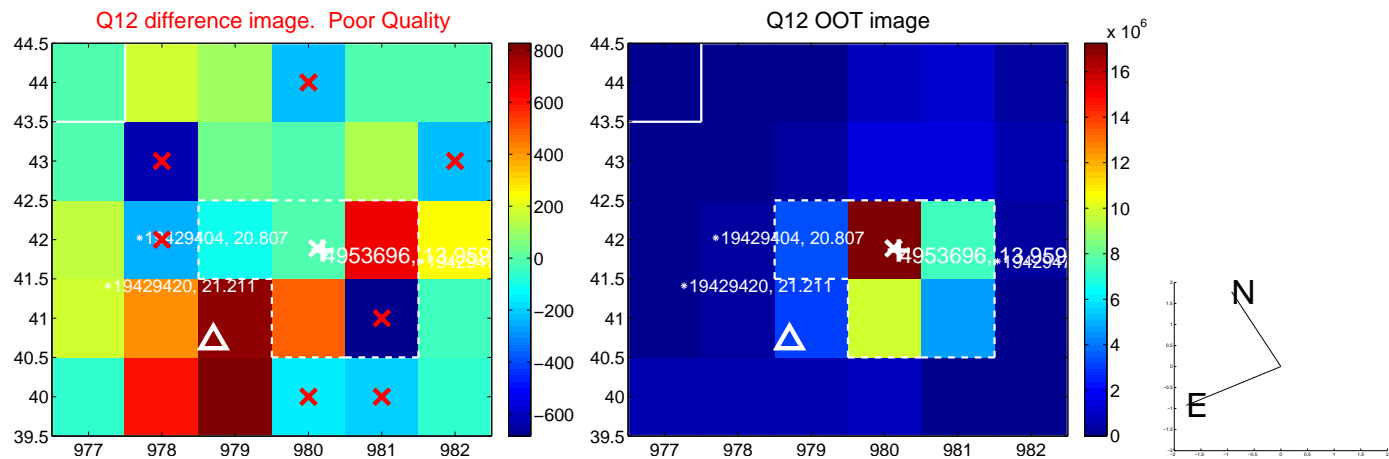
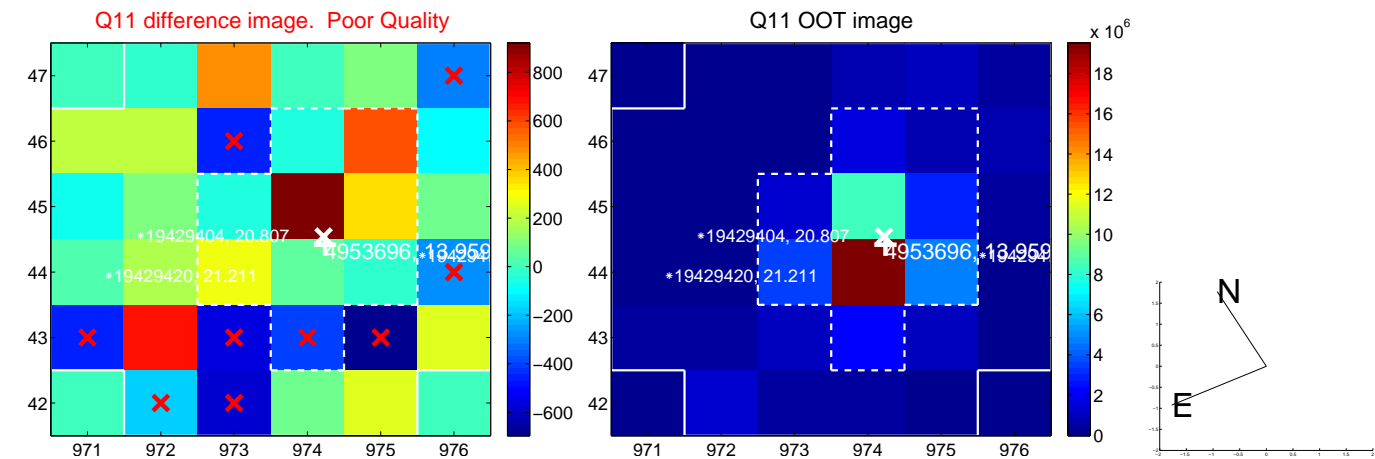
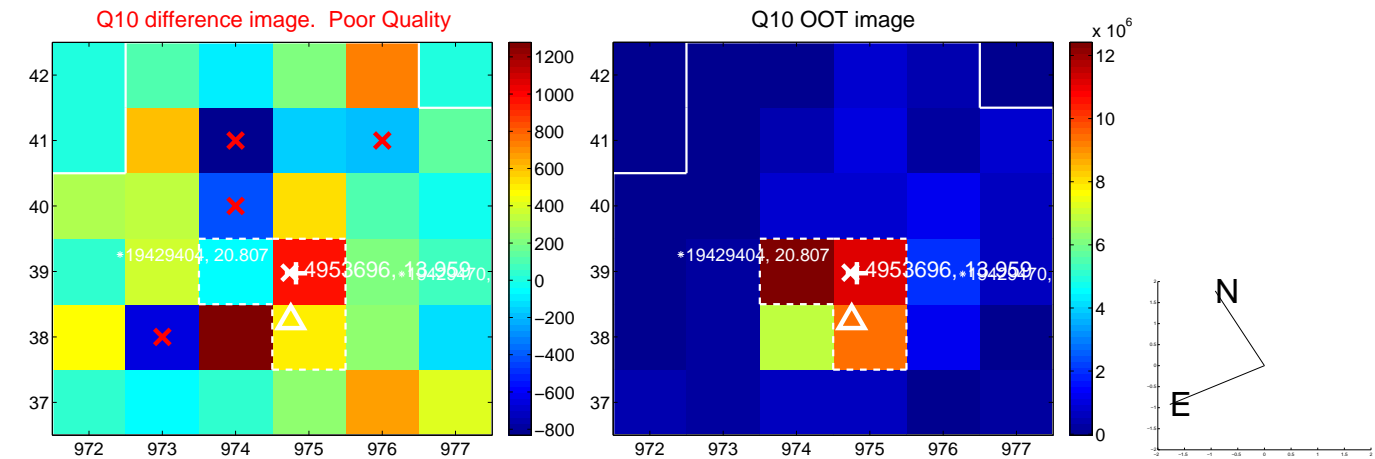
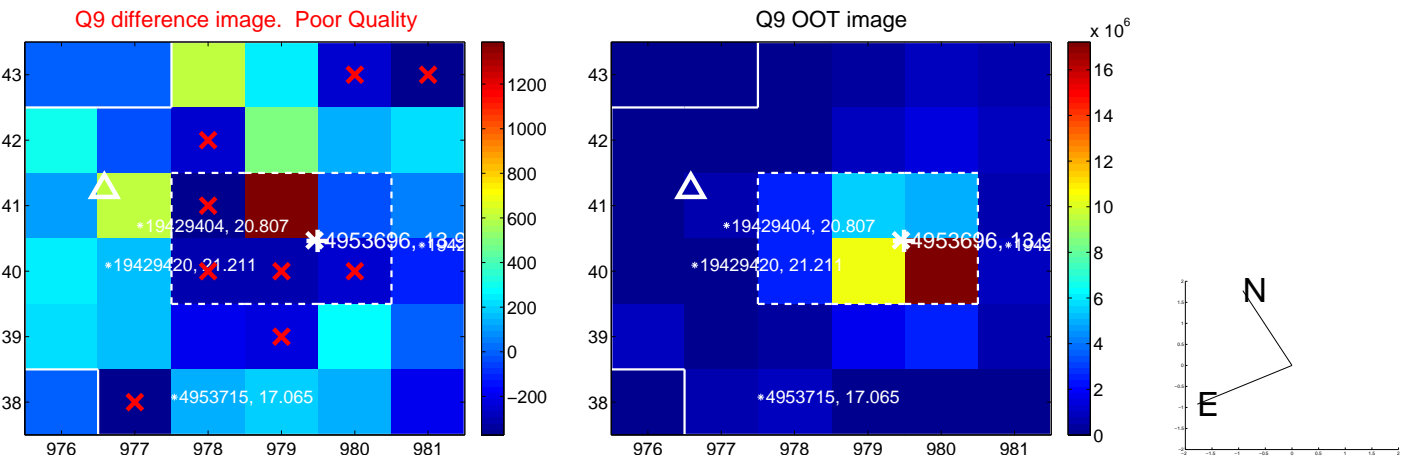


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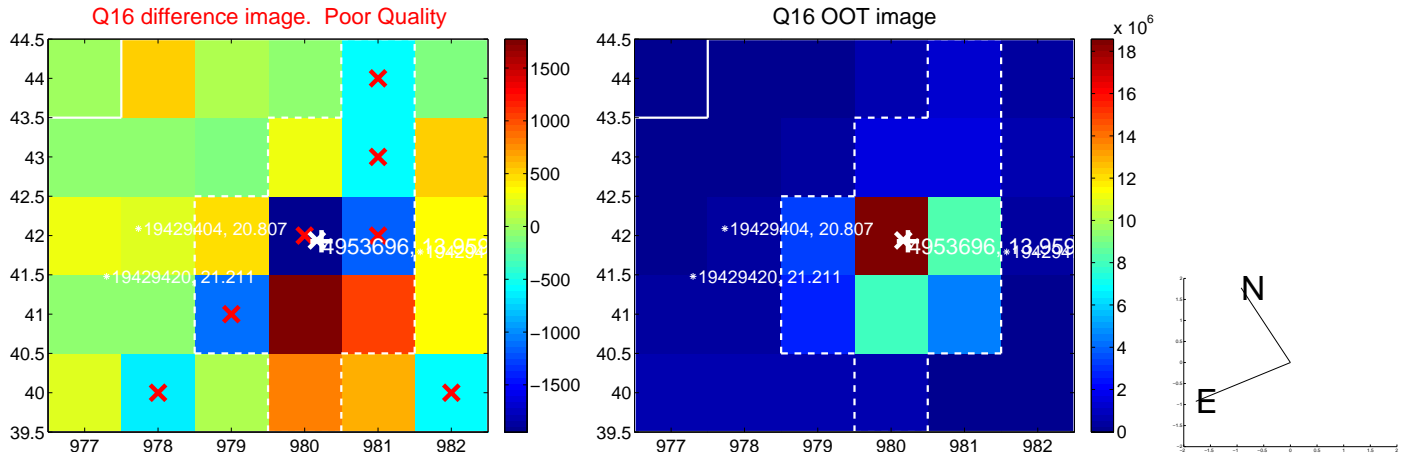
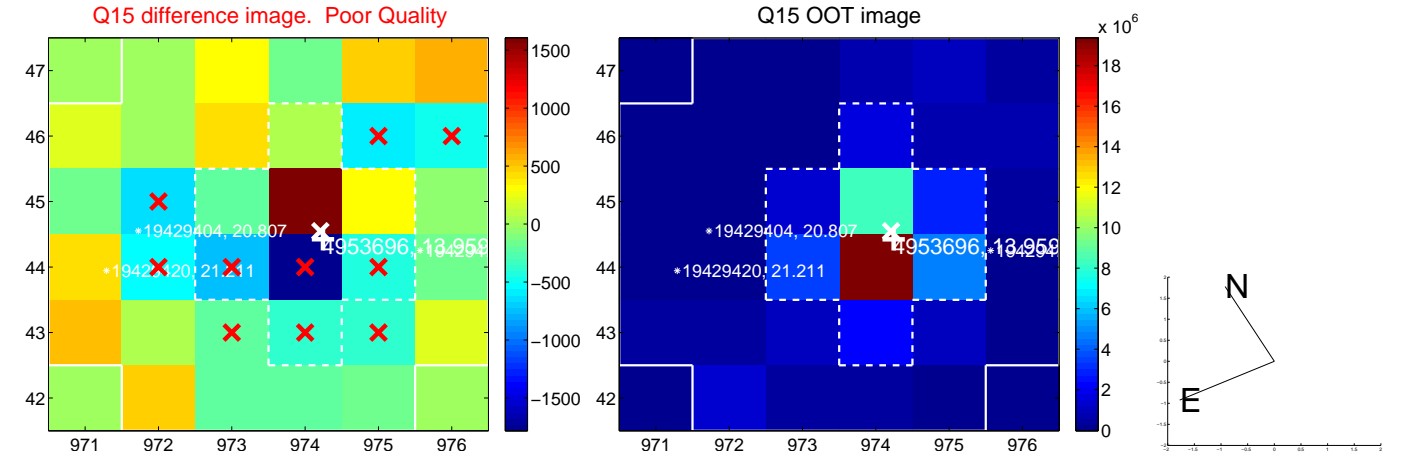
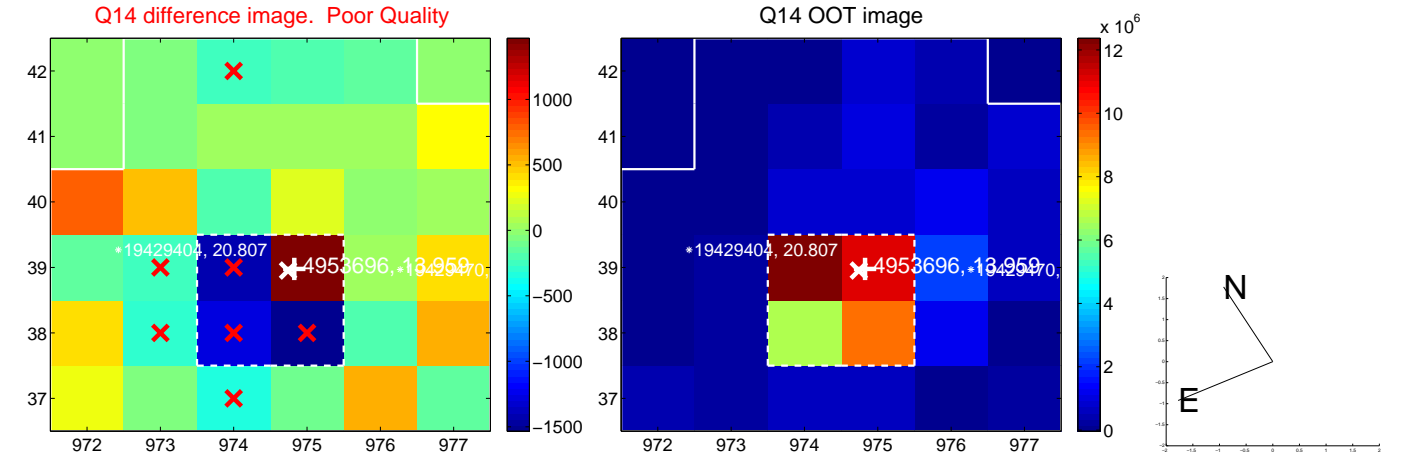
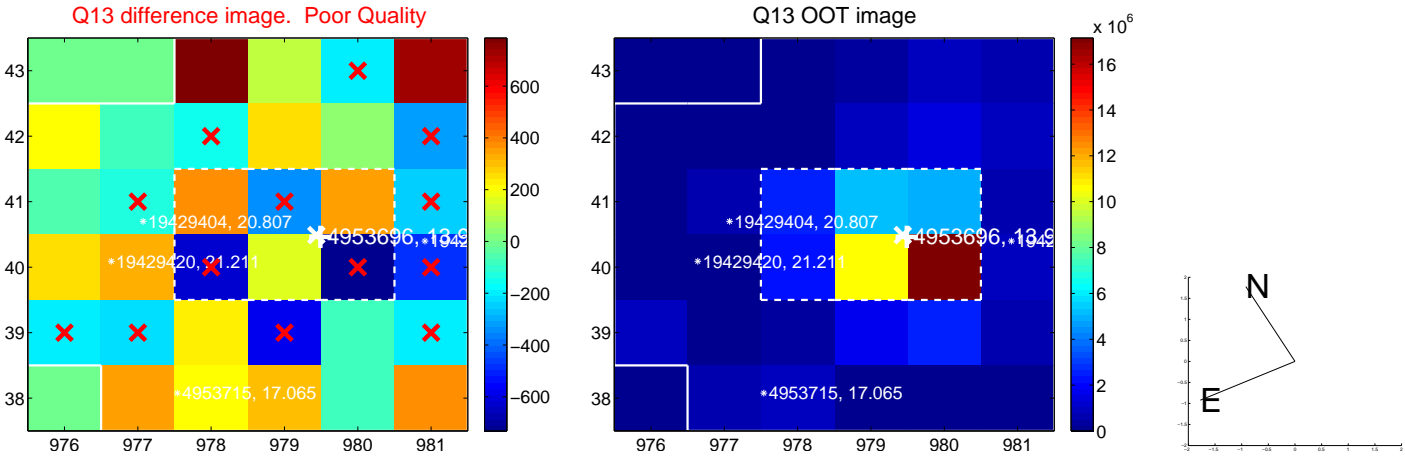




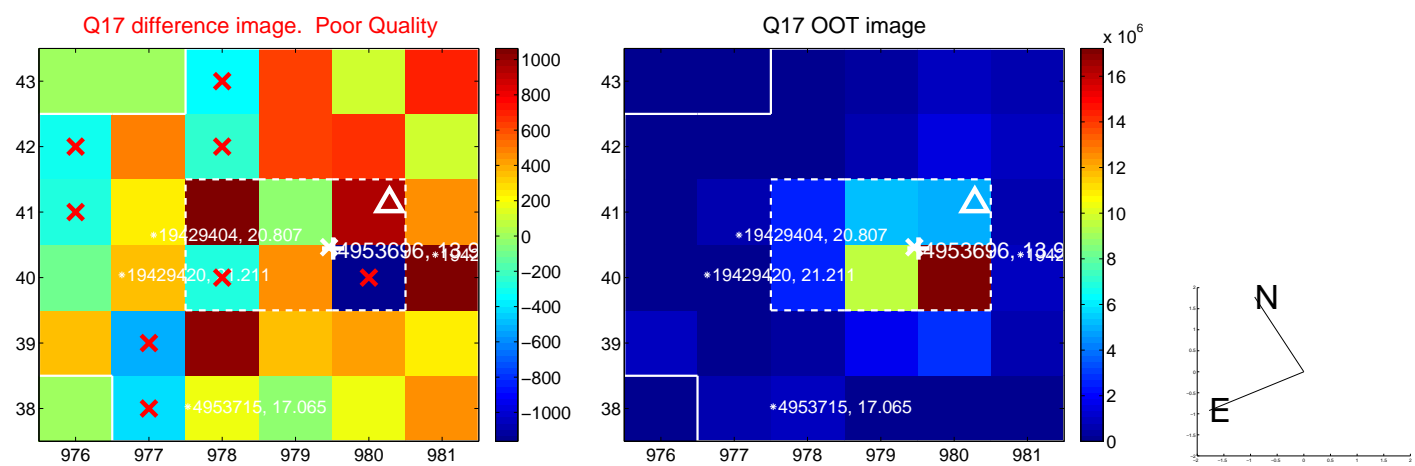
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



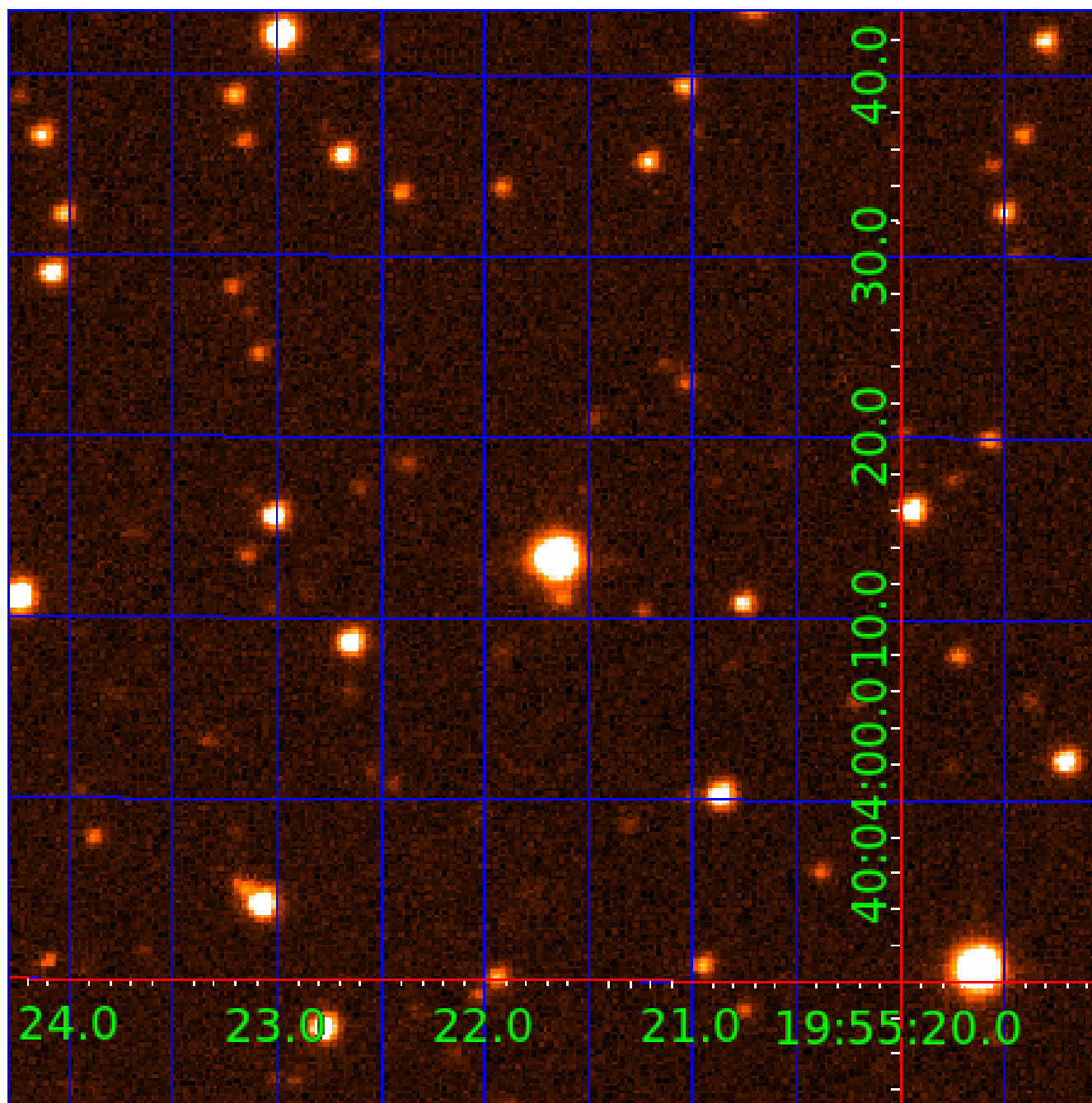
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination





# KIC 004953696

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004953696-01	OBS	No	1.367923	132.481450	0.0	0.747	7.8	0.0	2.08	6334	0.01	9057.52
004953696-02	OBS	No	1.368013	132.781280	236.8	5.000	8.2	-1.0	2.08	6334	3.21	9056.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004953696-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004953696-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

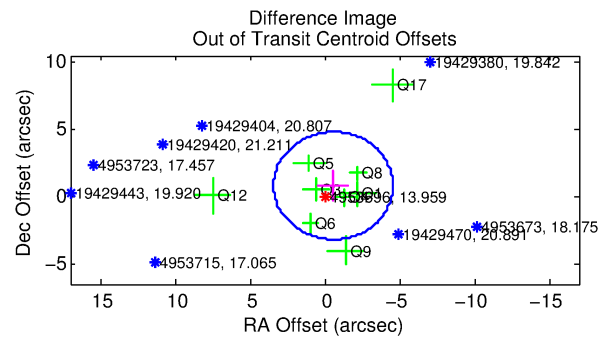
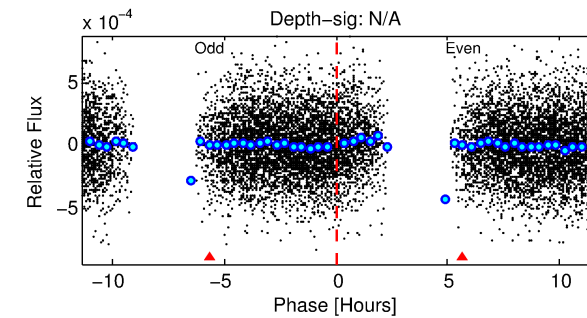
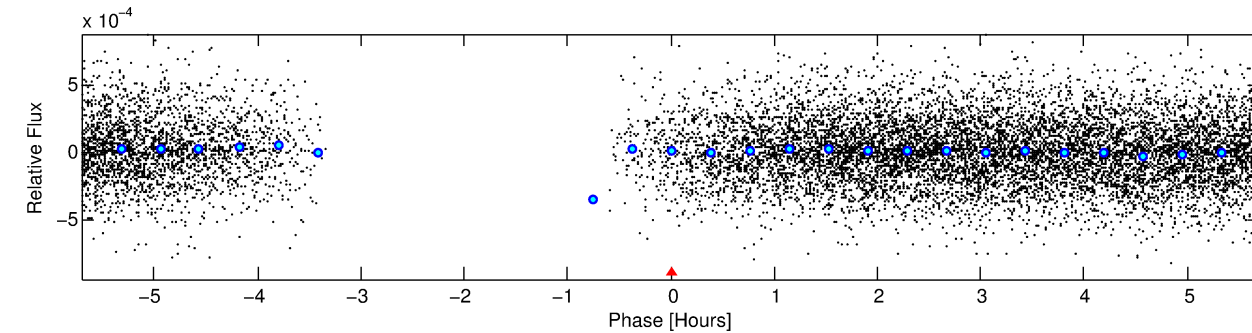
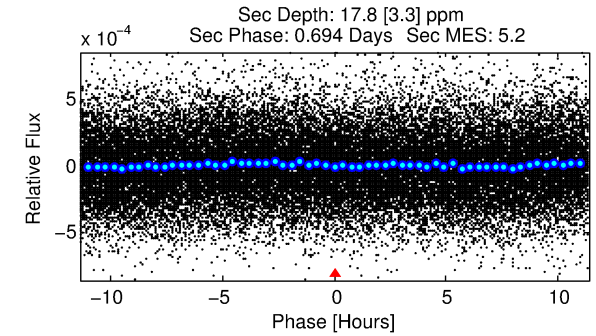
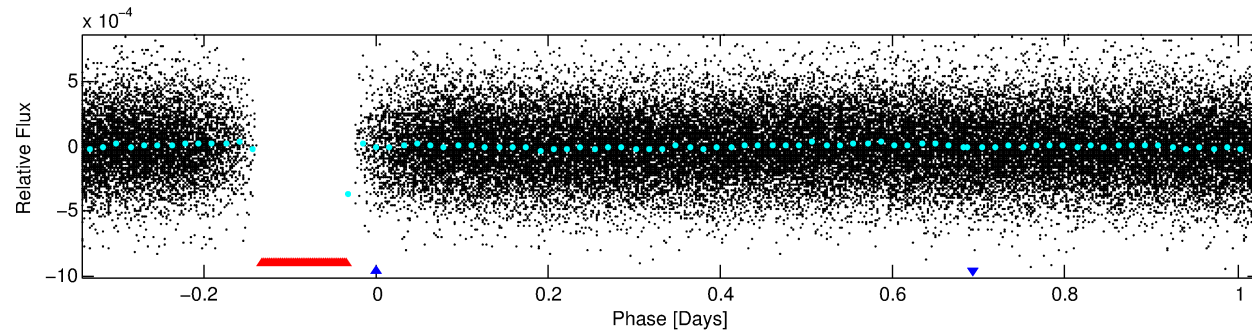
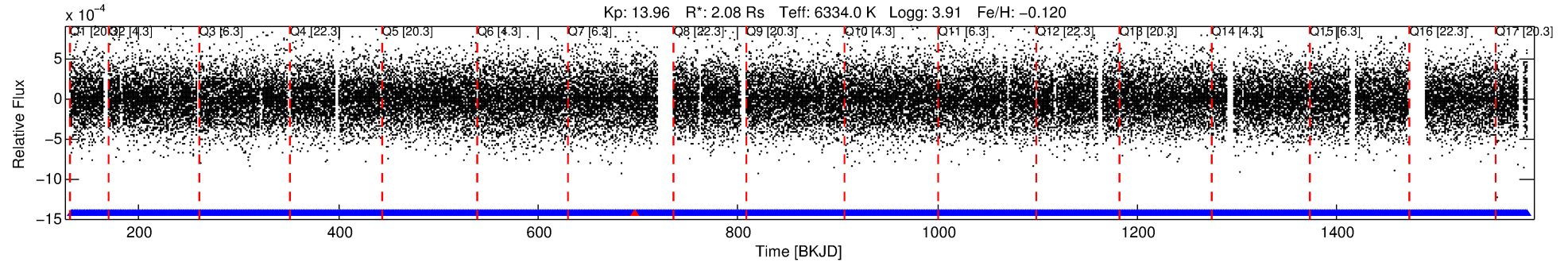
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004953696-02

No Significant Match Found

# DV One-Page Summary

KIC: 4953696 Candidate: 2 of 2 Period: 1.368 d



## TPS TCE Results:

Period = 1.36801 d  
Epoch = 132.7813 BKJD

DV fit results are unavailable

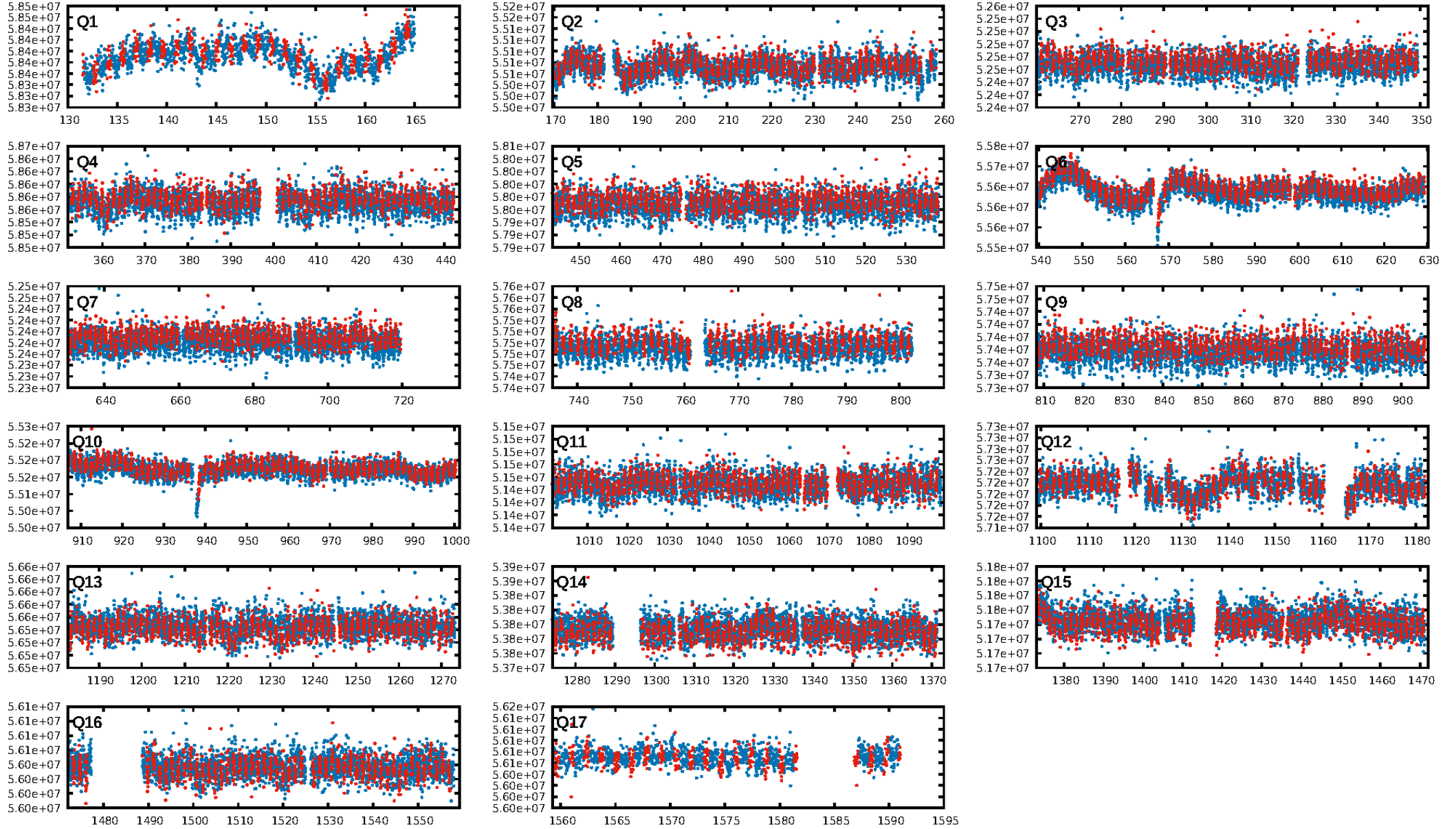
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.23e-15  
RollingBand-fgt: 1.00 [648/649]  
GhostDiagnostic-chr: 21.82  
Centroid-sig: 1.3%  
Centroid-so: 1.940 arcsec [2.42σ]  
OotOffset-rm: 1.001 arcsec [0.75σ]  
KicOffset-rm: 0.872 arcsec [0.75σ]  
OotOffset-st: 1/1/3/4 [9]  
KicOffset-st: 1/1/3/4 [9]  
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DiffImageOverlap-fno: 0.00 [0/17]

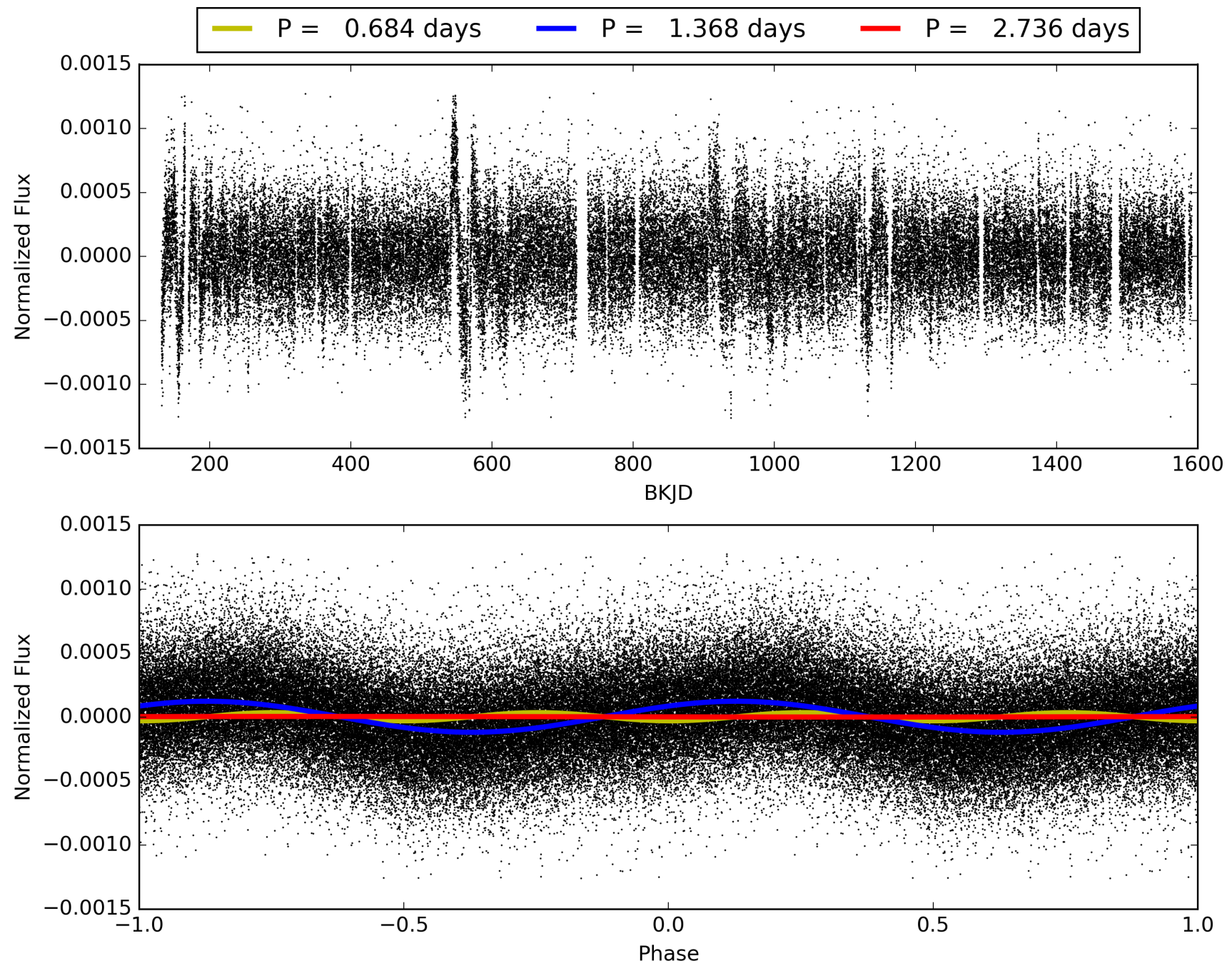
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:12:40 Z

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

# TCE 004953696-02, PDC Light Curves



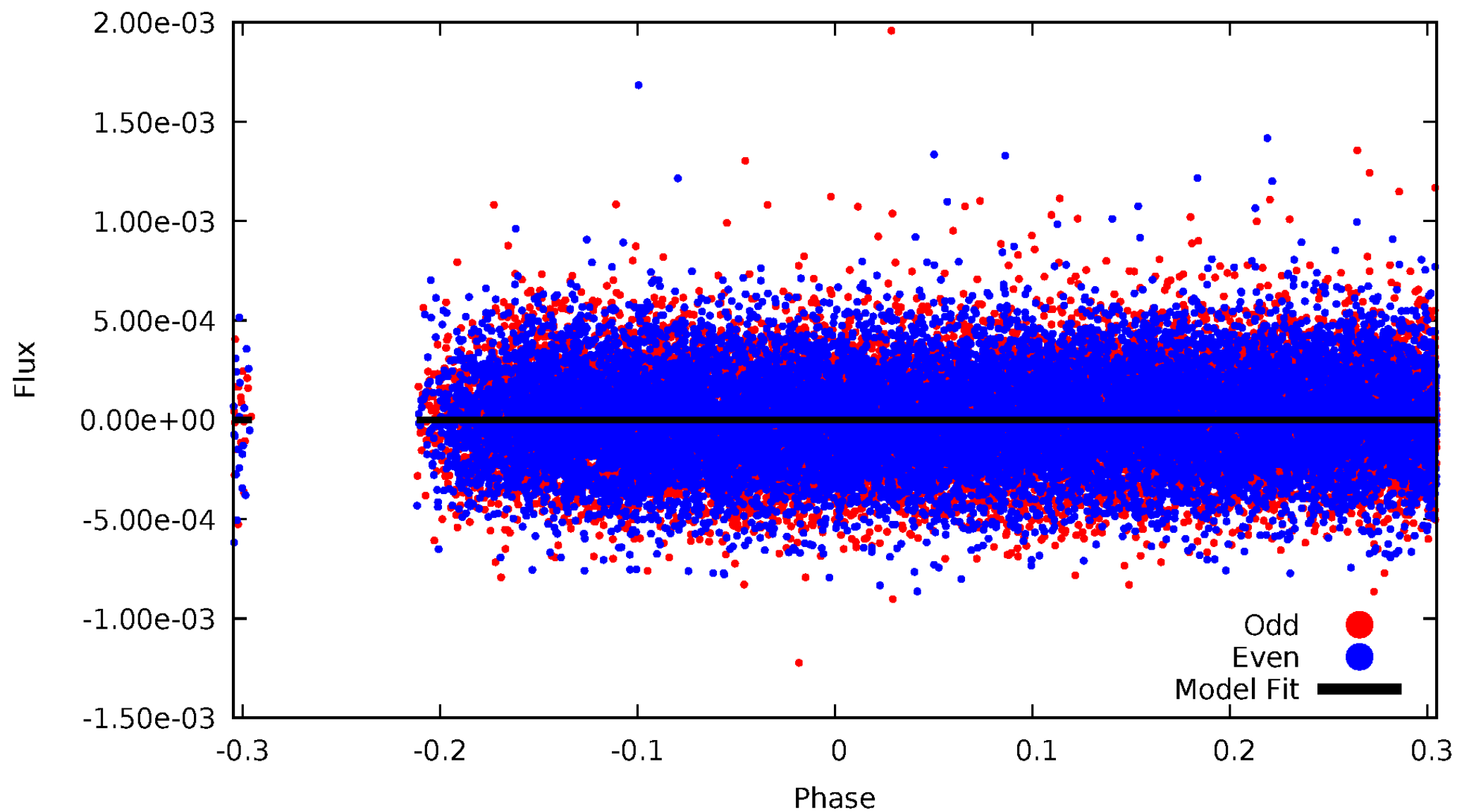
TCE 004953696-02





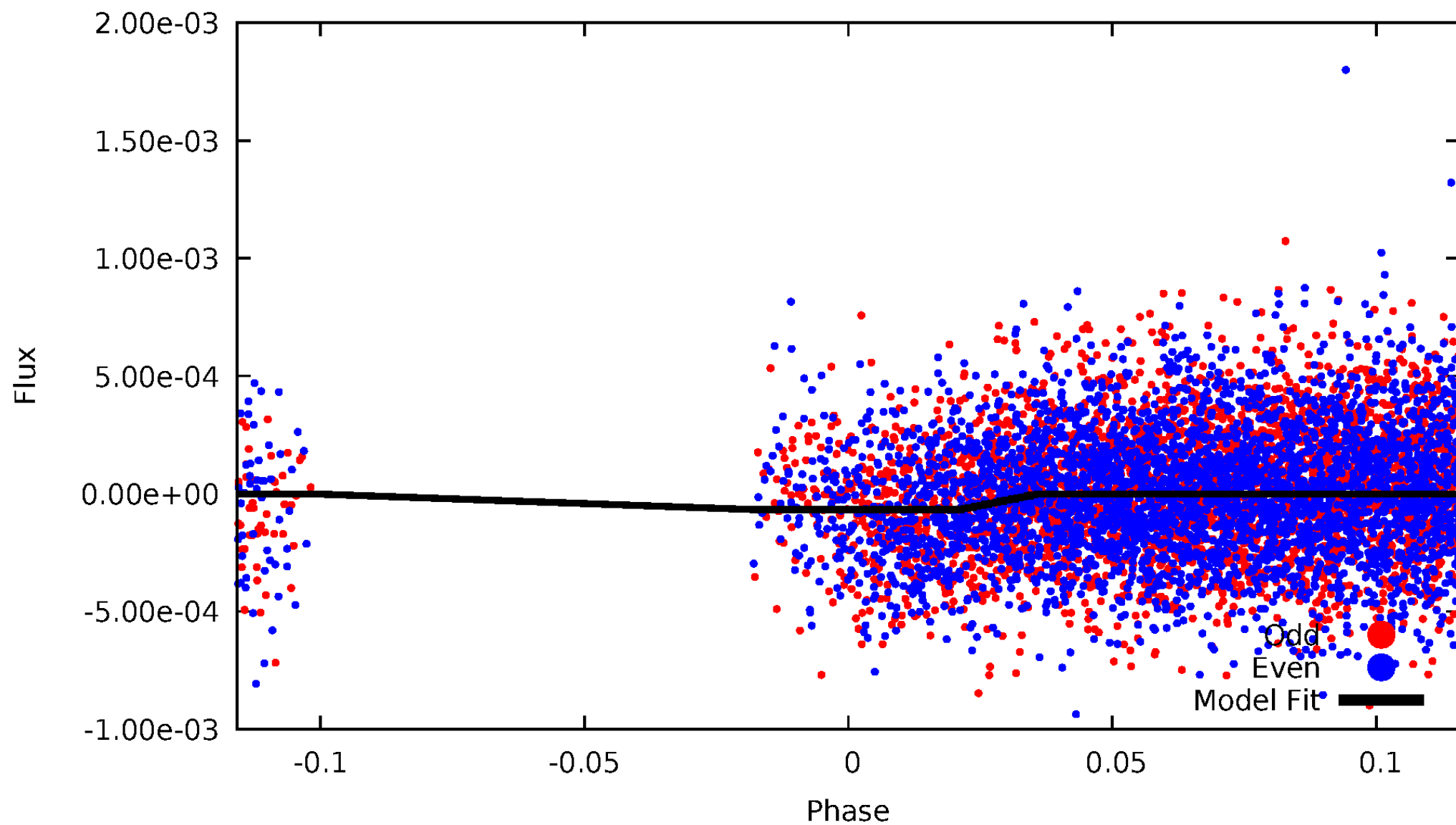
# DV Odd/Even

TCE 004953696-02



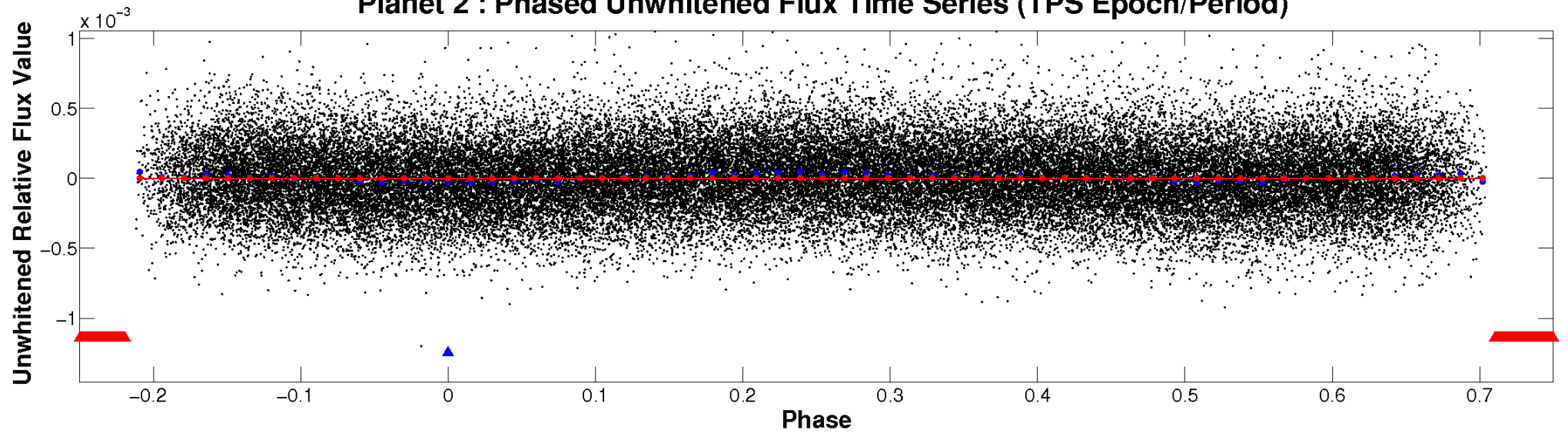
# ALT Odd/Even

TCE 004953696-02



# Non-Whitened Vs. Whitened Light Curve

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

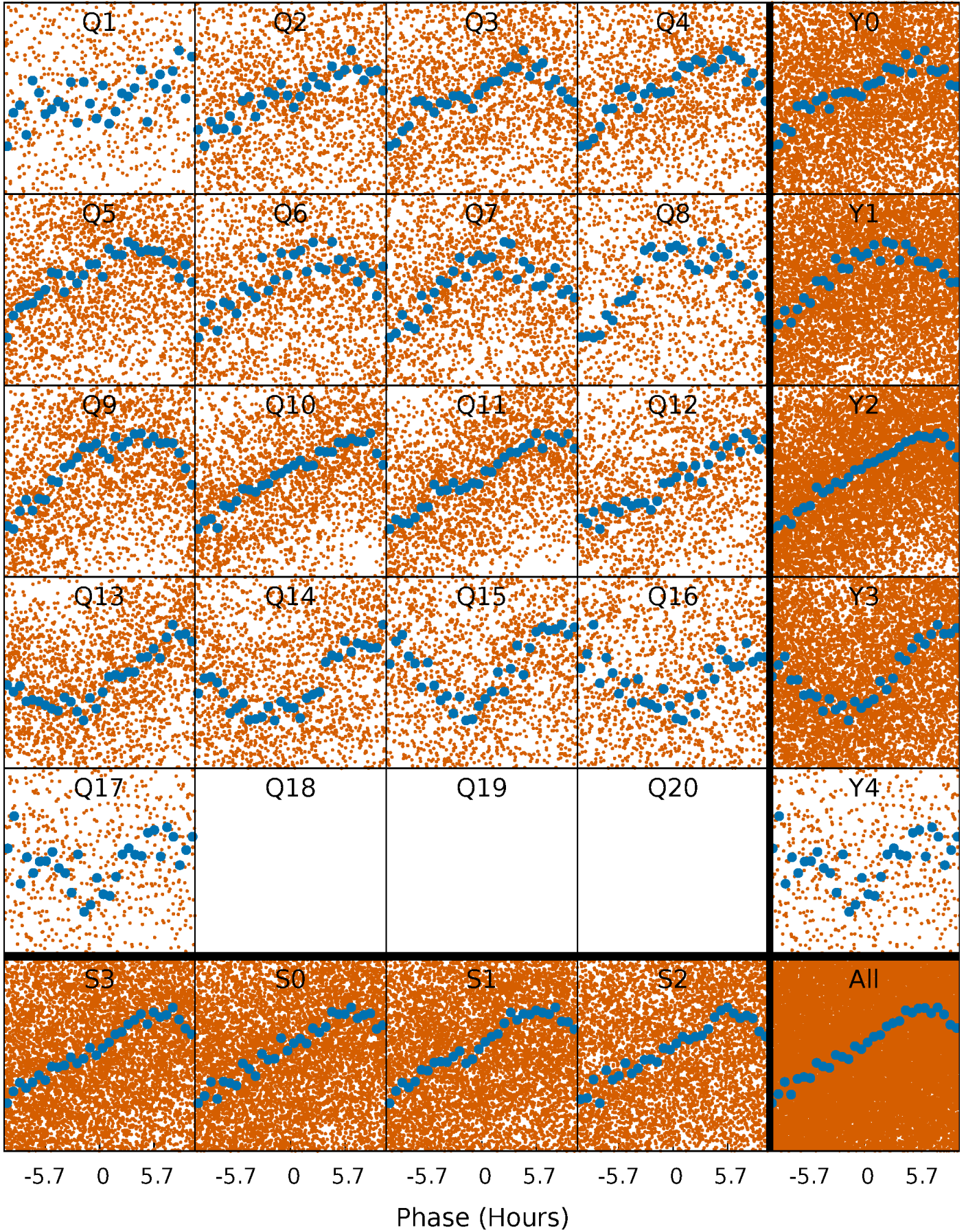


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

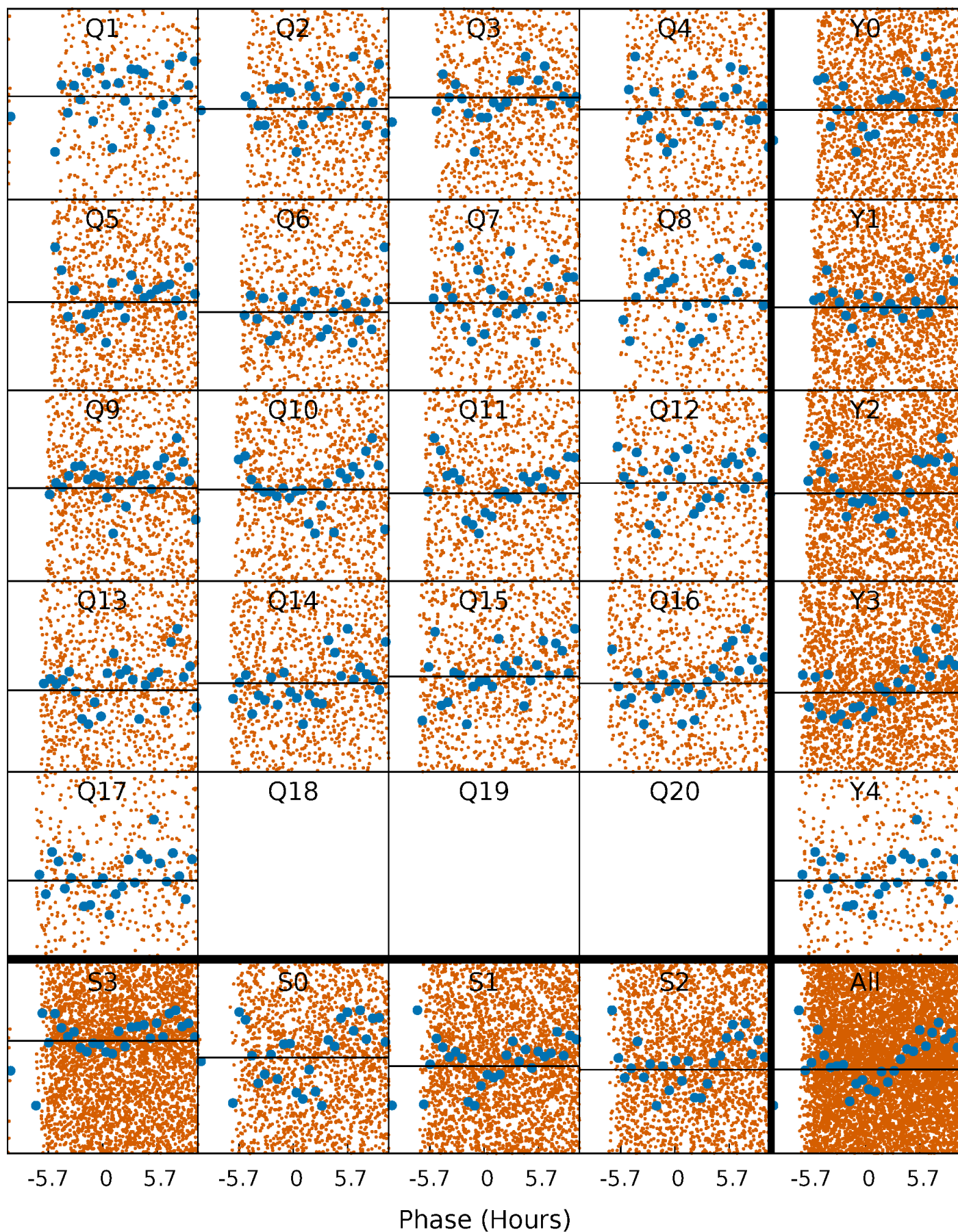
TCE 004953696-02 P= 1.368013 Days  $T_0=132.781280$  (BKJD)





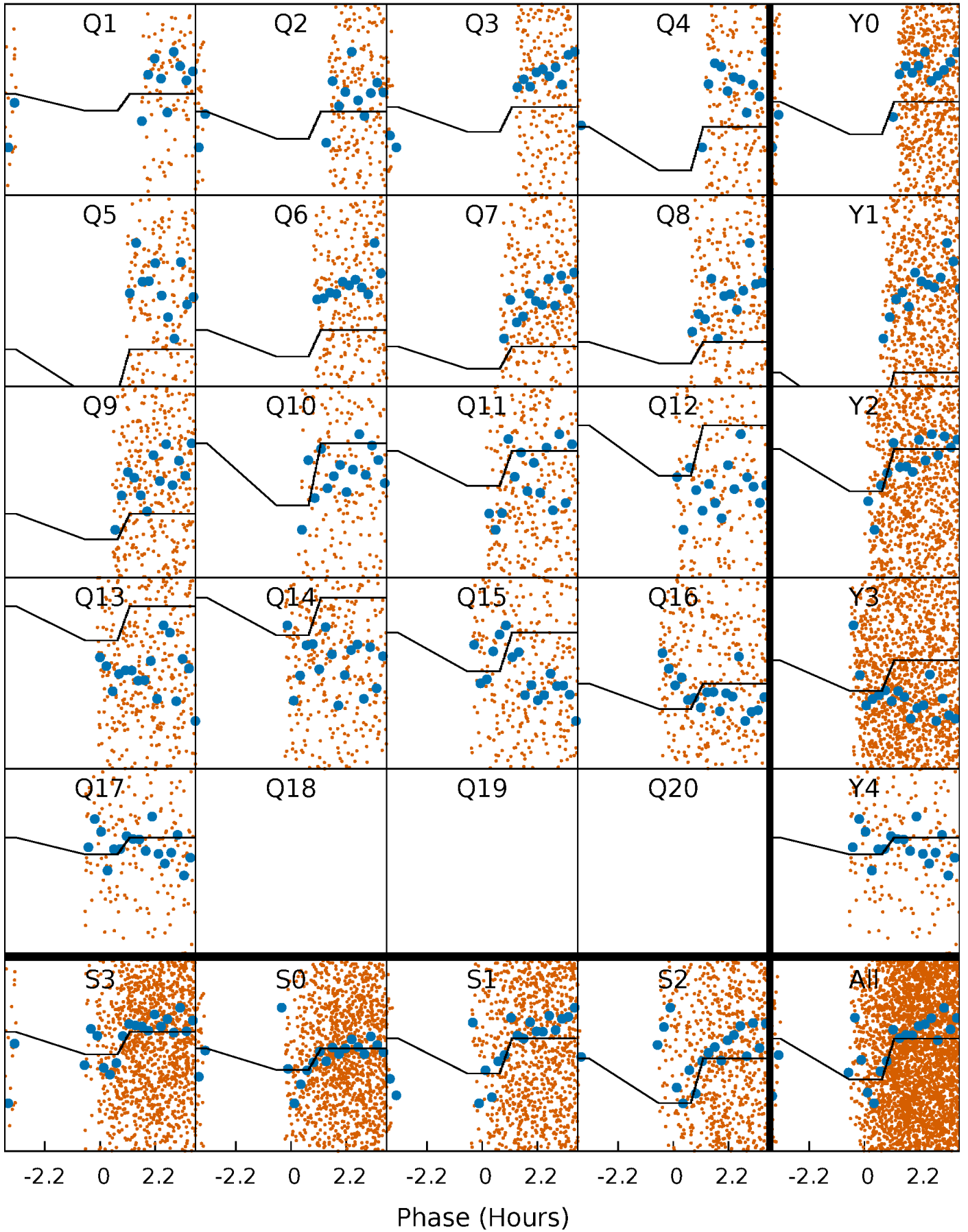
# DV Quarter-Phased Transit Curves

TCE 004953696-02   P= 1.368013 Days    $T_0=132.781280$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 004953696-02 P= 1.368013 Days  $T_0=132.516248$  (BKJD)

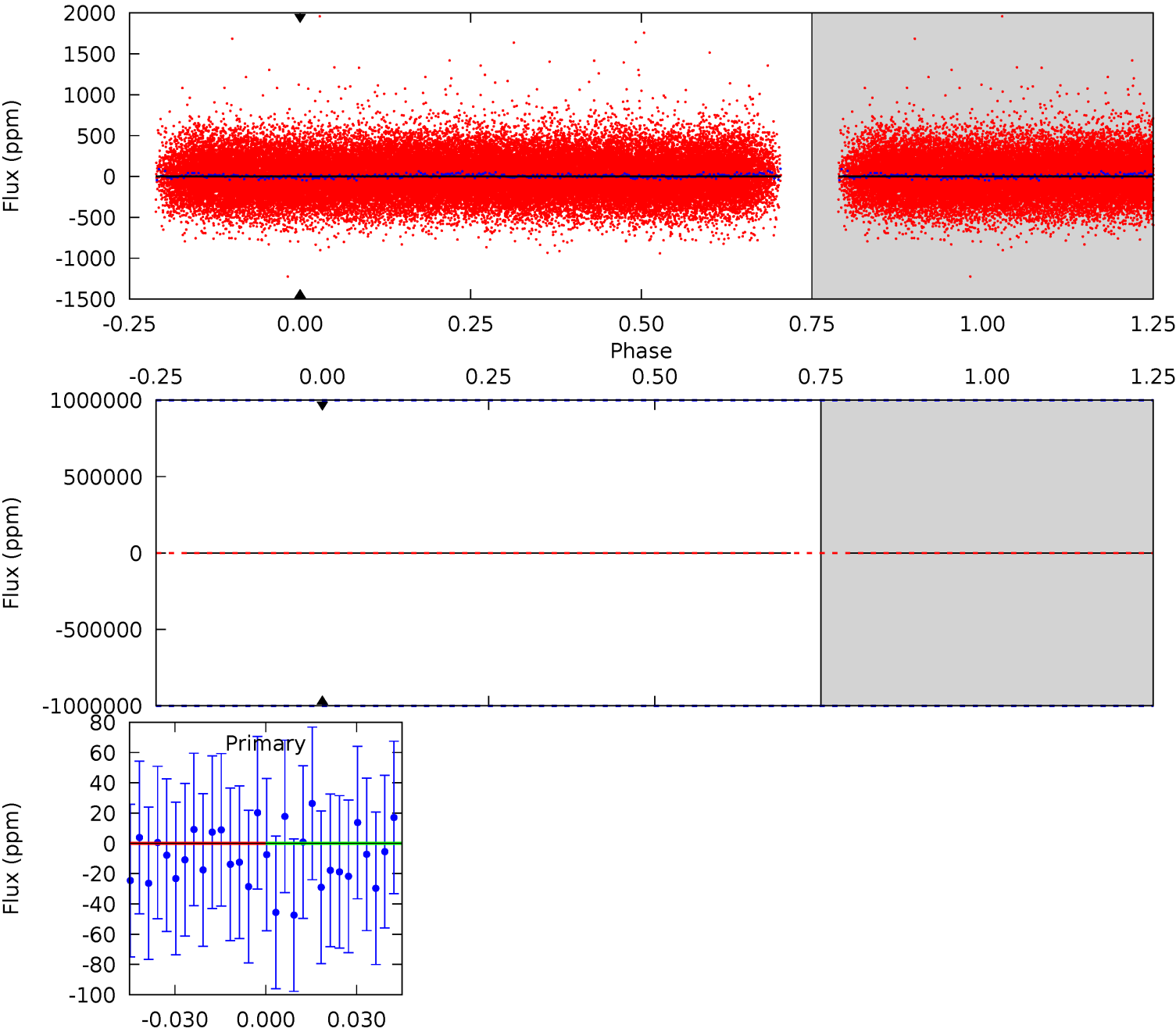




DV Model-Shift Uniqueness Test

004953696-02, P = 1.368013 Days, E = 131.413267 Days

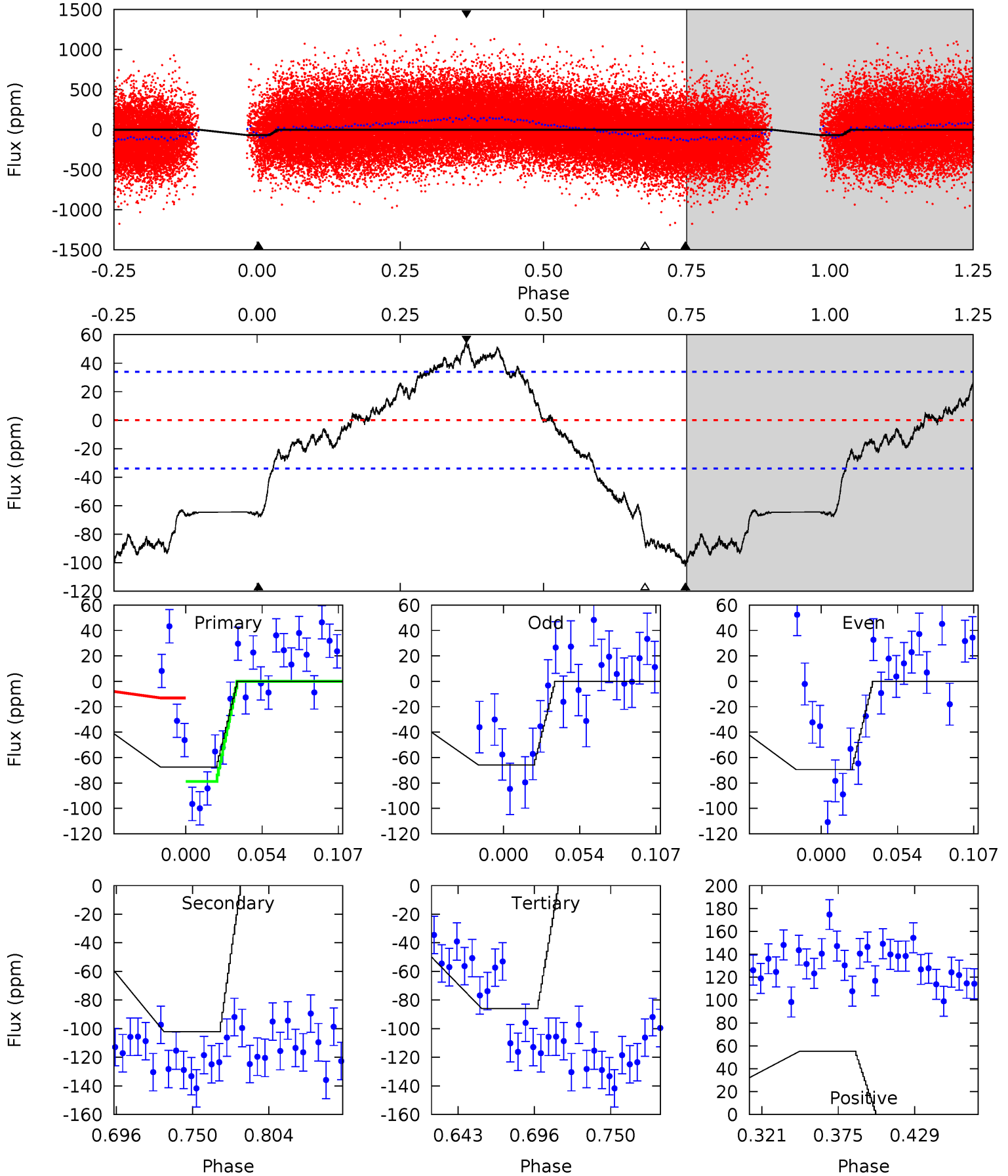
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

004953696-02, P = 1.368013 Days, E = 131.148235 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
9.35	14.1	11.9	7.64	4.69	1.93	5.76	-2.54	1.71	2.25	6.50	0.25	0.96	0.35	3.08



### Stellar Parameters For KIC 004953696

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6334^{+181}_{-249}$	$3.911^{+0.405}_{-0.135}$	$-0.120^{+0.300}_{-0.300}$	$2.076^{+0.496}_{-0.921}$	$1.280^{+0.195}_{-0.260}$	$0.202^{+0.719}_{-0.080}$
	+3%/-4%	+10%/-3%	+250%/-250%	+24%/-44%	+15%/-20%	+357%/-40%
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 004953696-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$14.99^{+16.07}_{-10.84}$	$3383^{+286}_{-414}$	$4945^{+22272}_{-29243}$	$2.822^{+352.131}_{-267.758}$
Alt.	$-102 \pm 7$	$14.71^{+16.67}_{-10.36}$	$3393^{+273}_{-381}$	$-2817^{+7206}_{-508}$	$0.179^{+1.923}_{-0.141}$

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

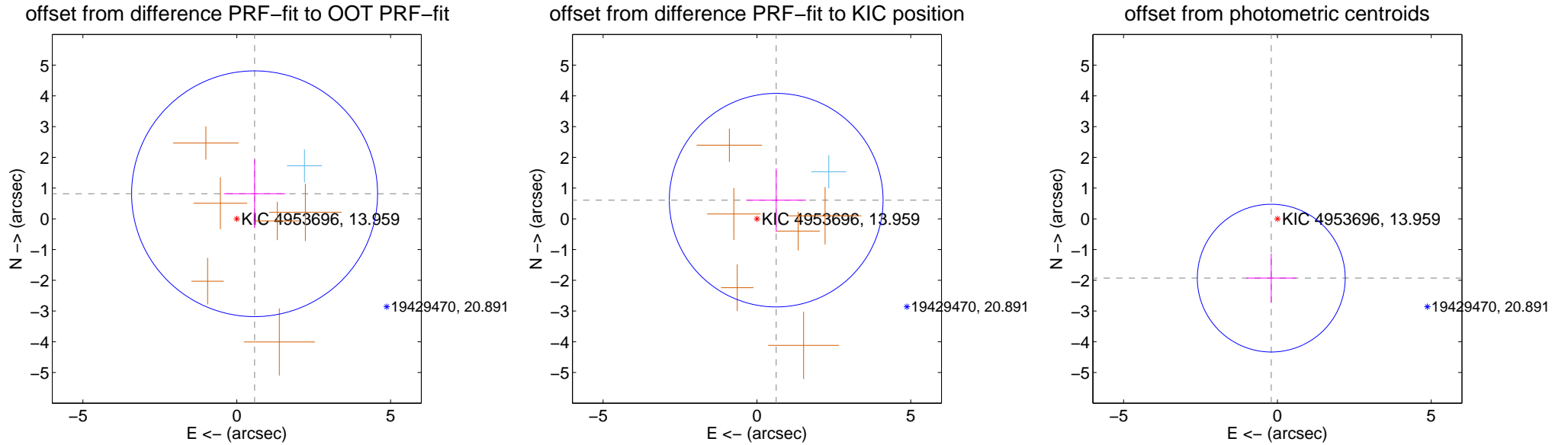
## DV Centroid Data

Supplemental centroid analysis for 004953696-02. Kepler magnitude: 13.96. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

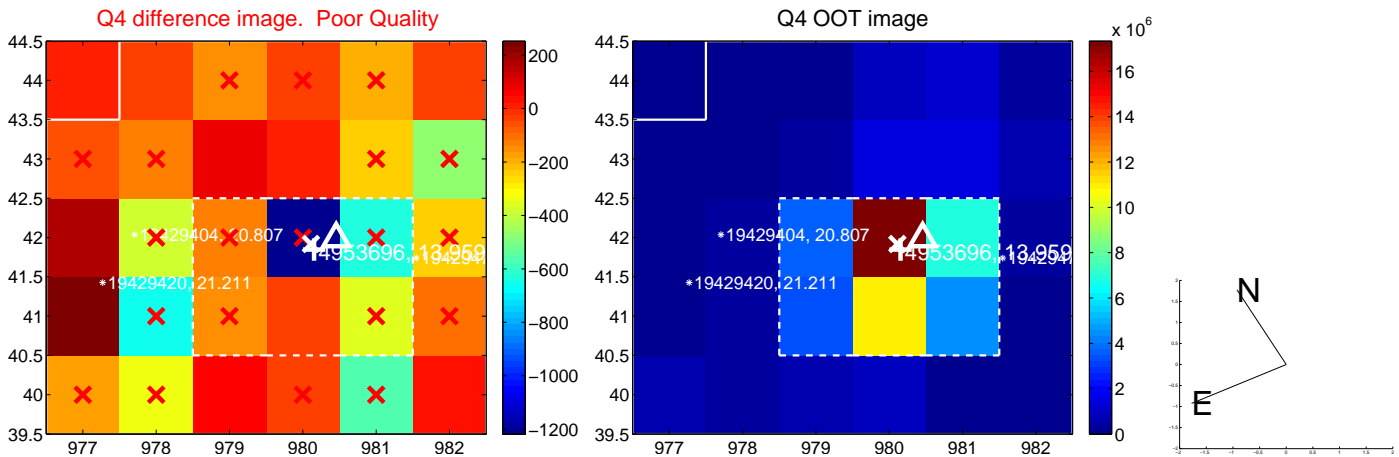
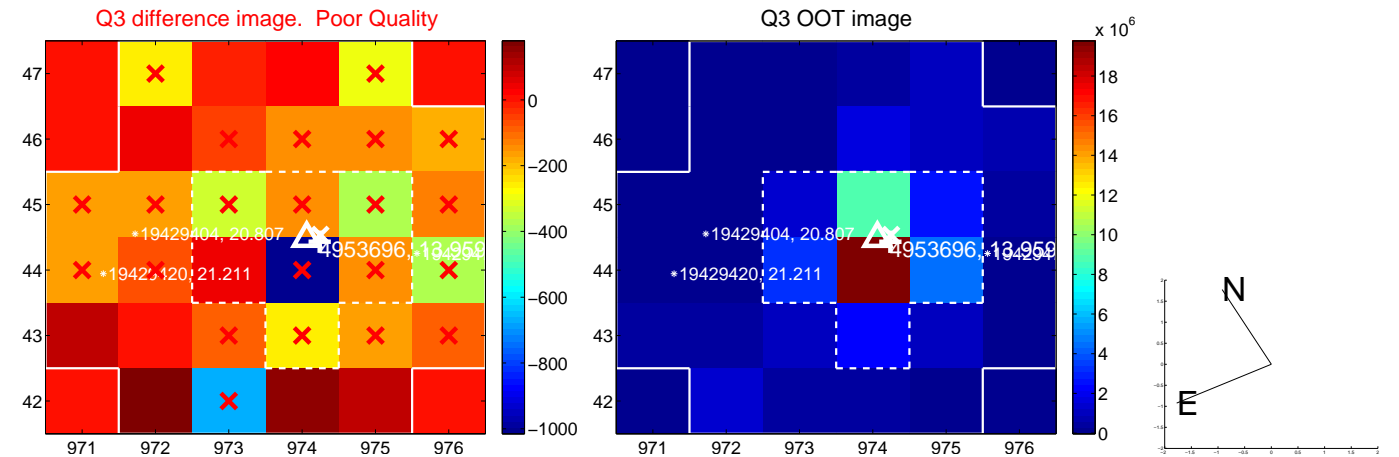
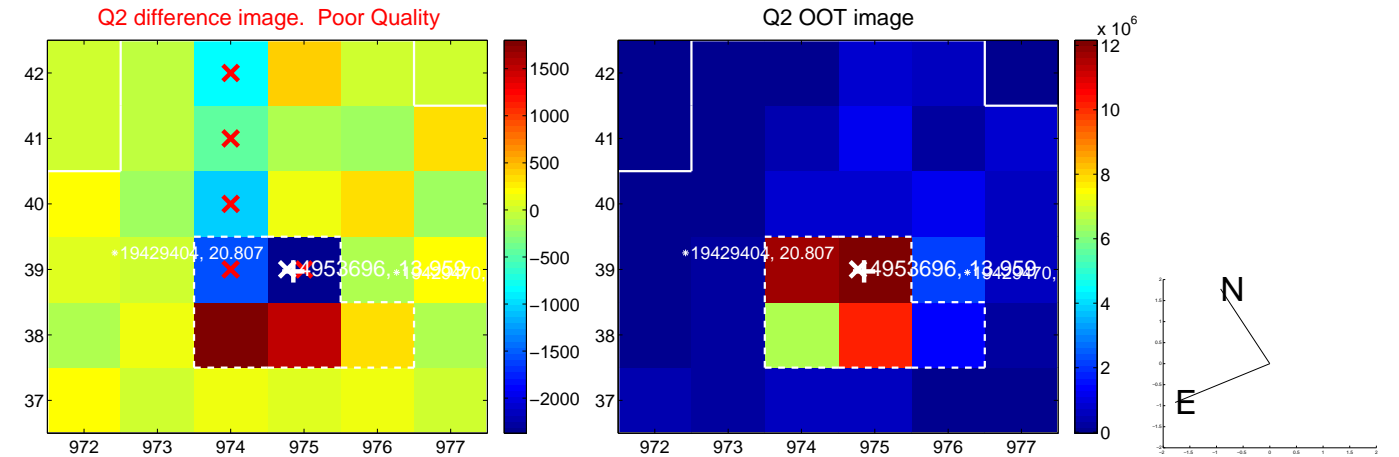
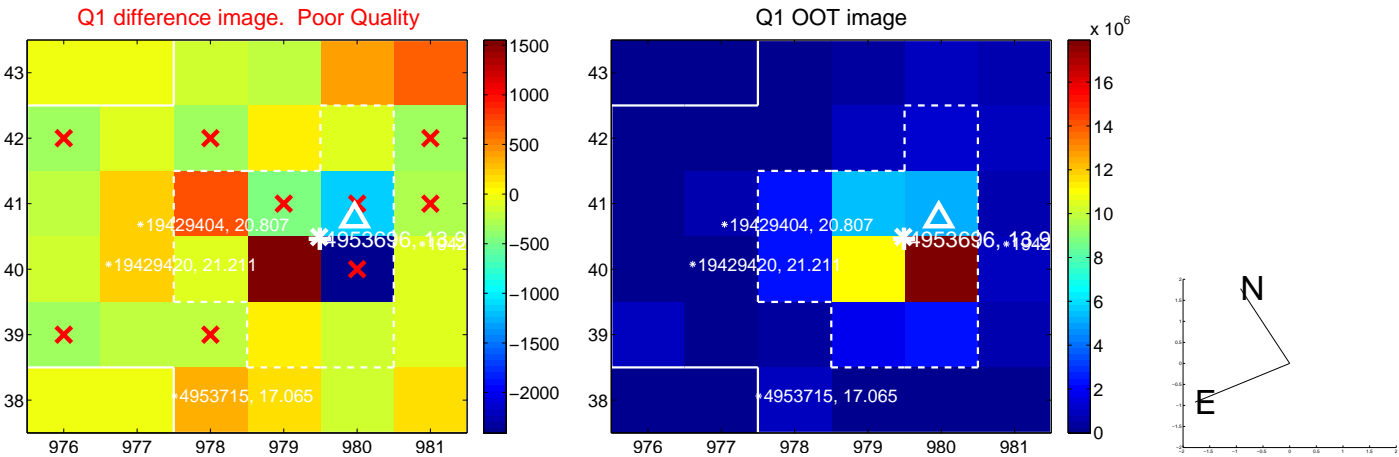
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.001 \pm 1.332$	0.75	$-0.580 \pm 1.000$	$0.816 \pm 1.114$
PRF-fit source offset from KIC position	$0.872 \pm 1.158$	0.75	$-0.626 \pm 0.973$	$0.607 \pm 1.030$
photometric centroid source offset	$1.94 \pm 0.80$	2.42	$0.20 \pm 0.81$	$-1.93 \pm 0.80$

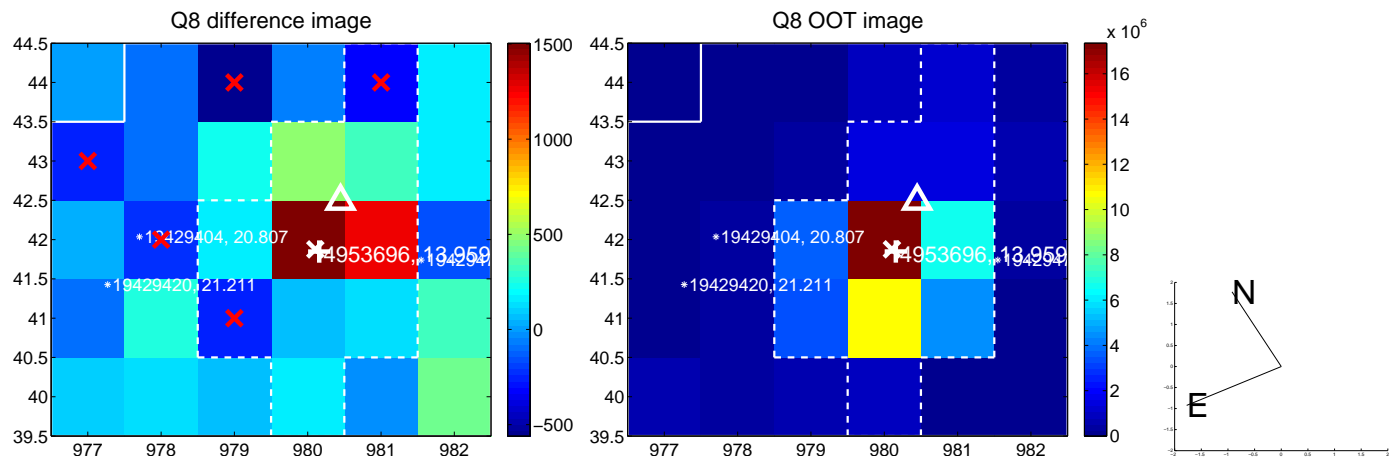
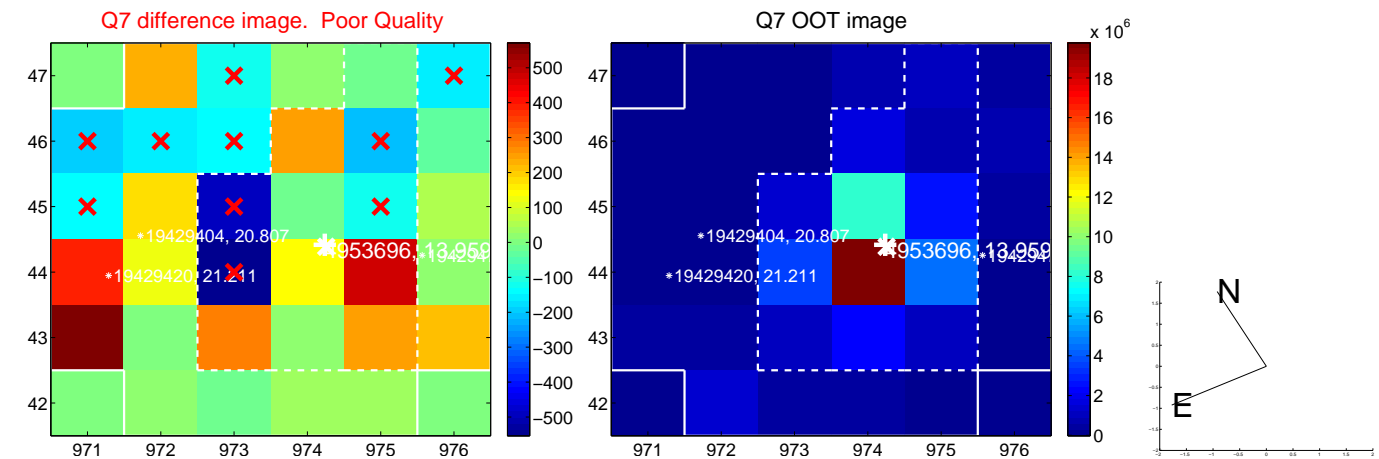
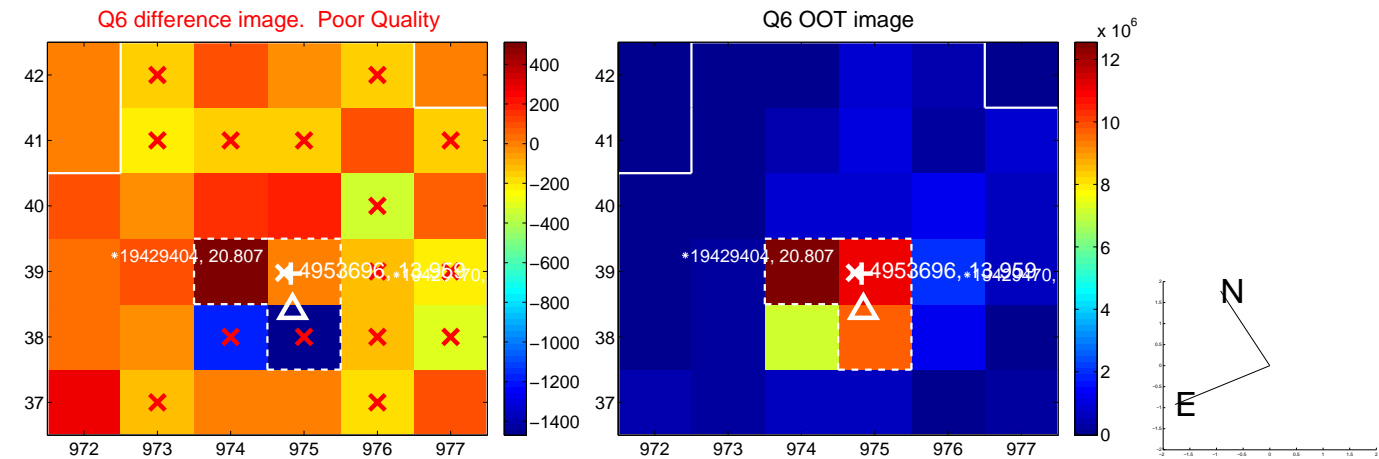
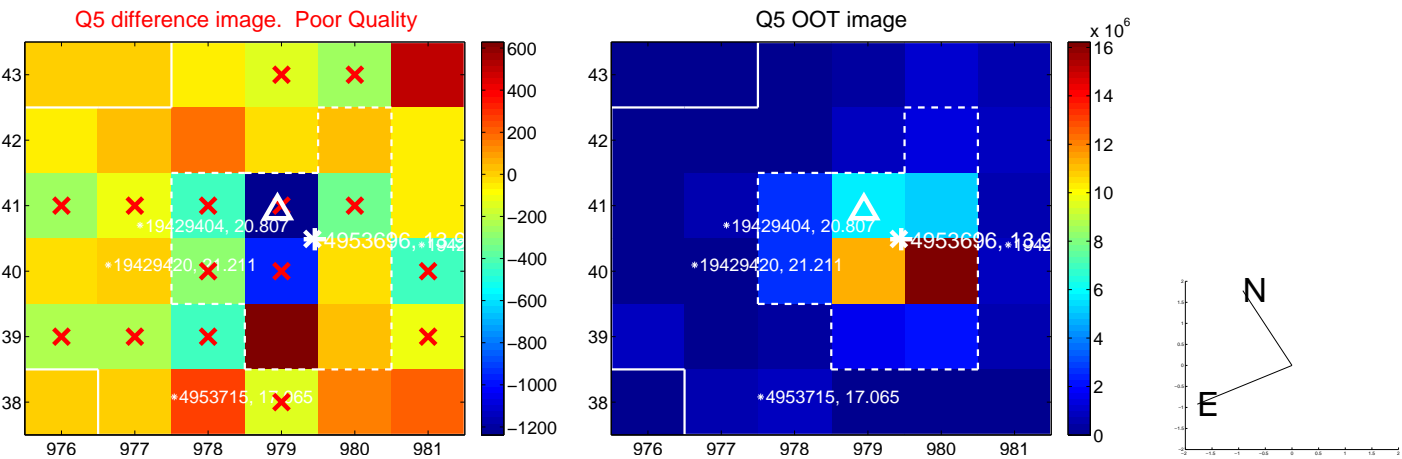


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

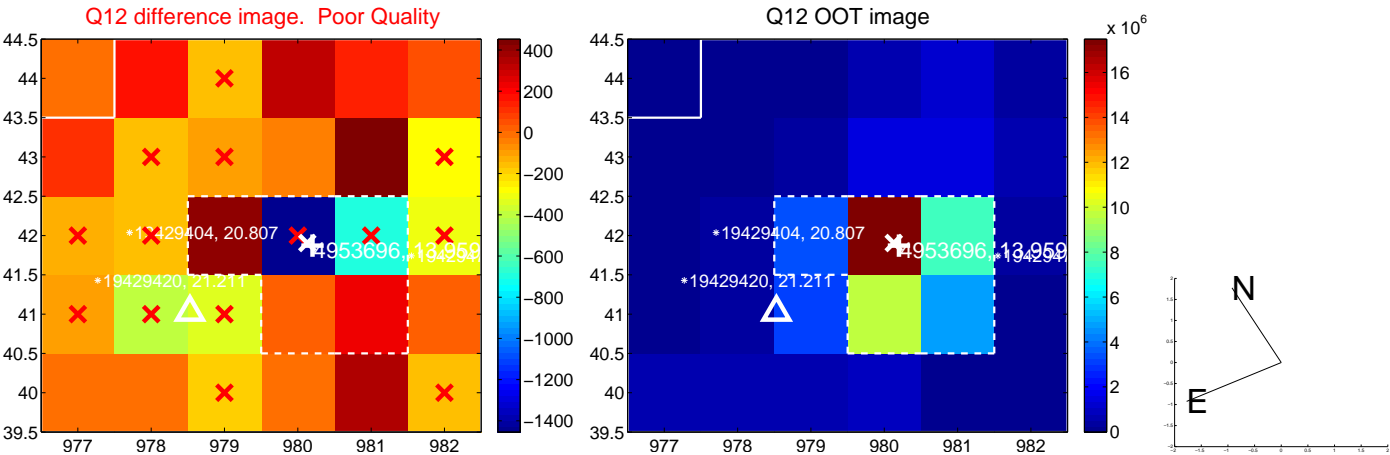
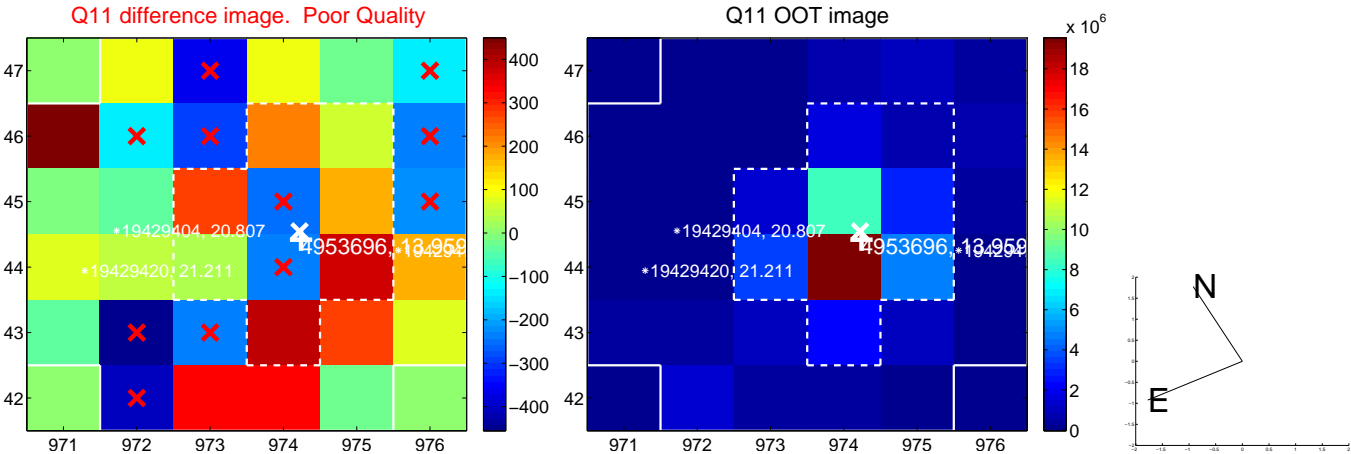
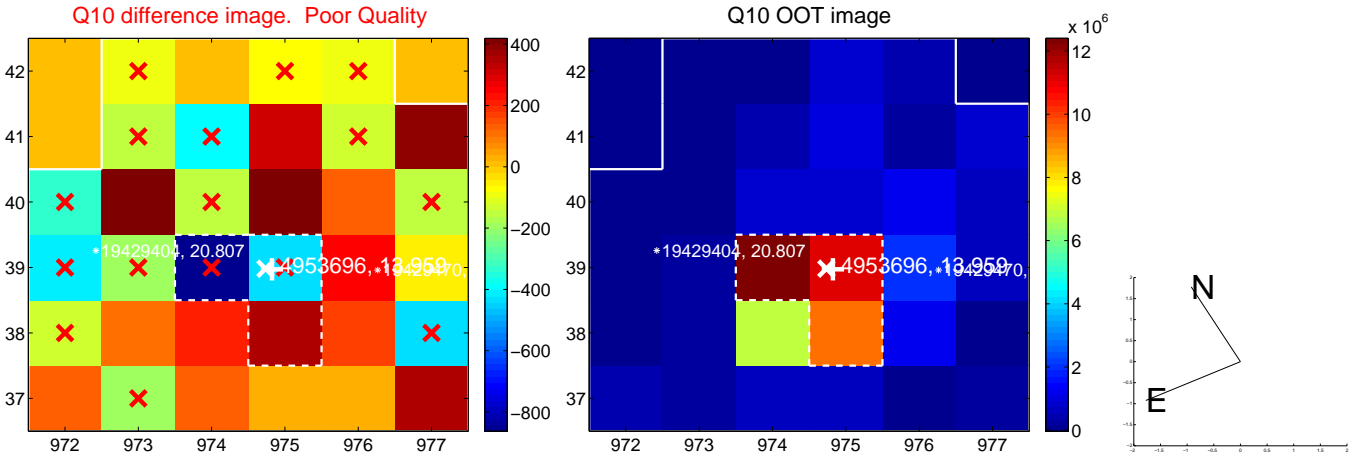
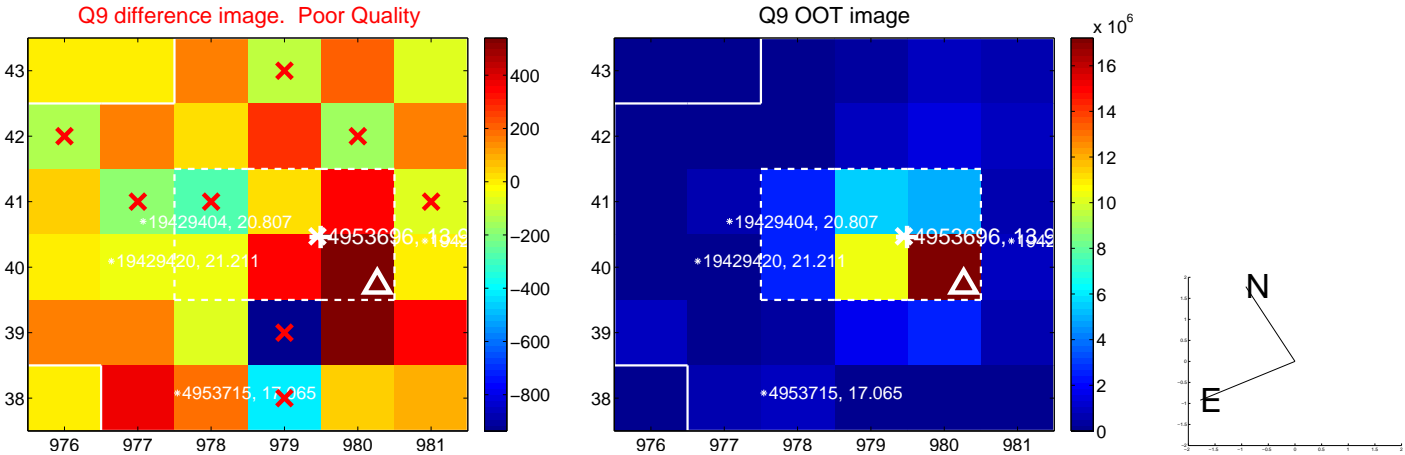


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

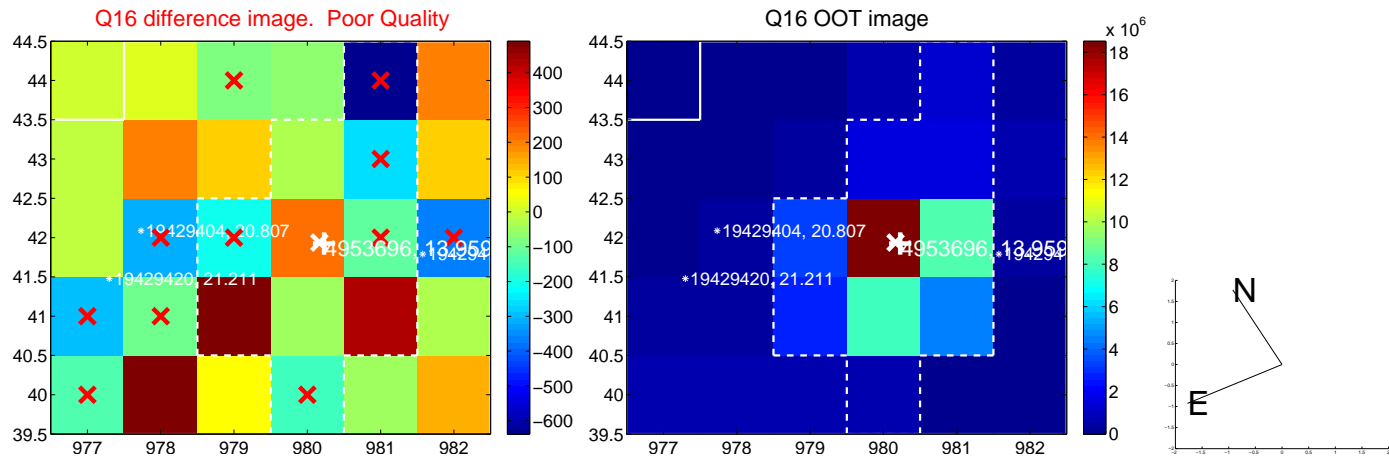
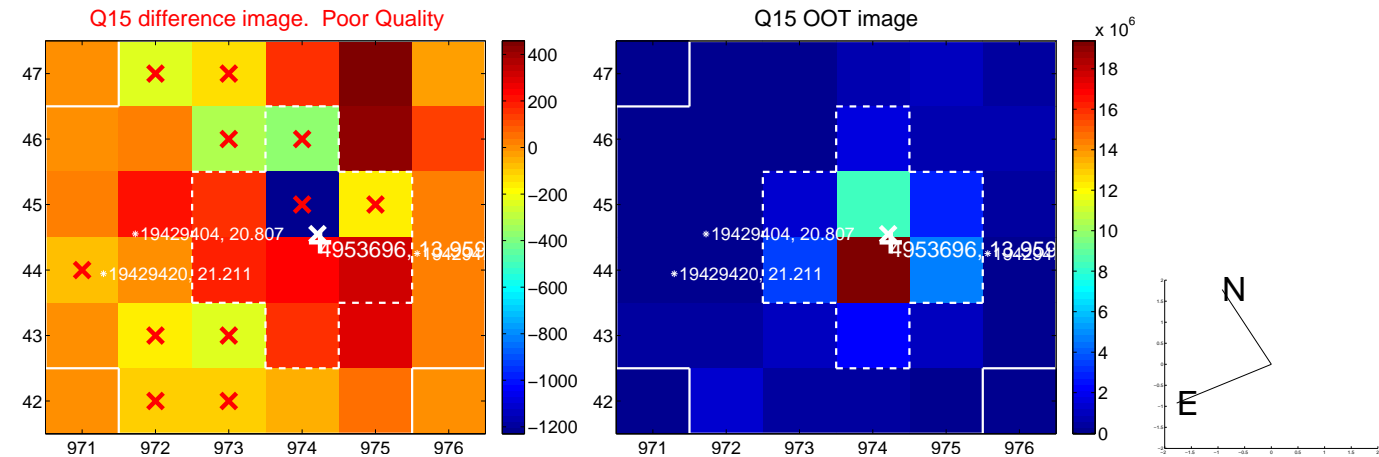
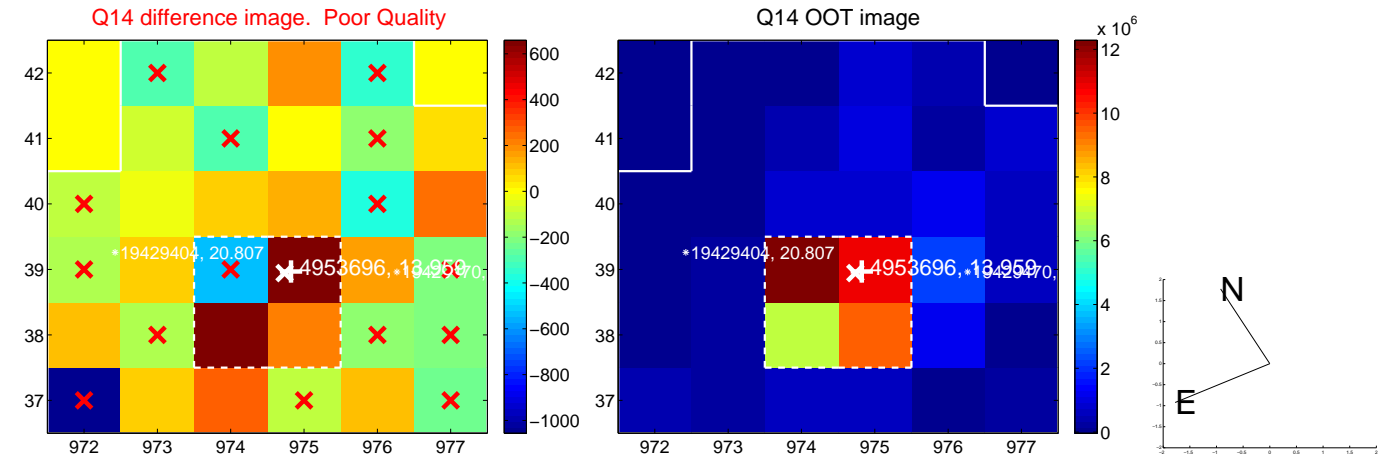
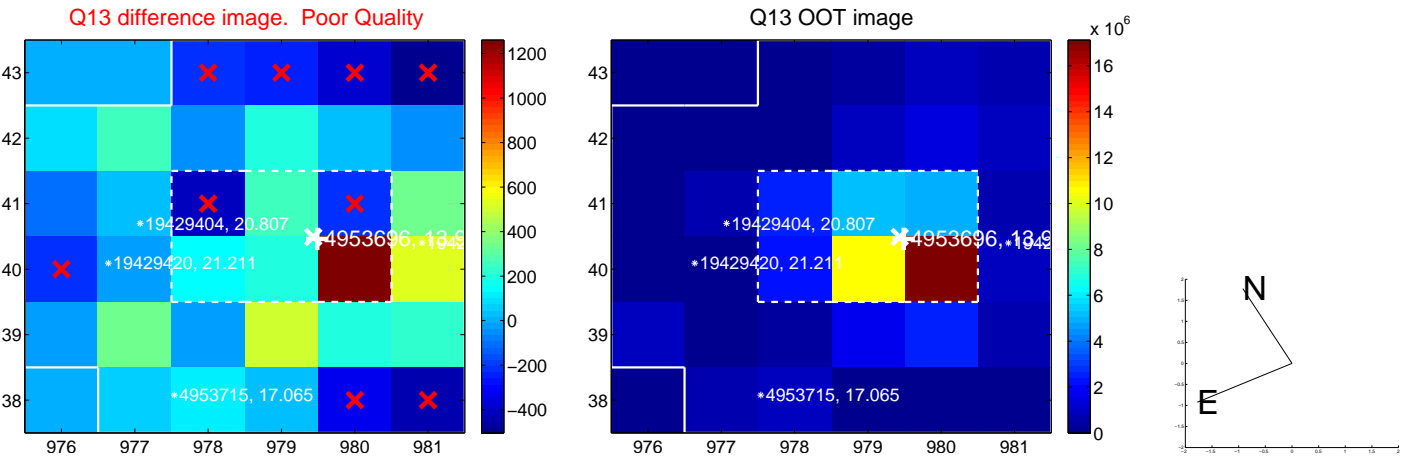




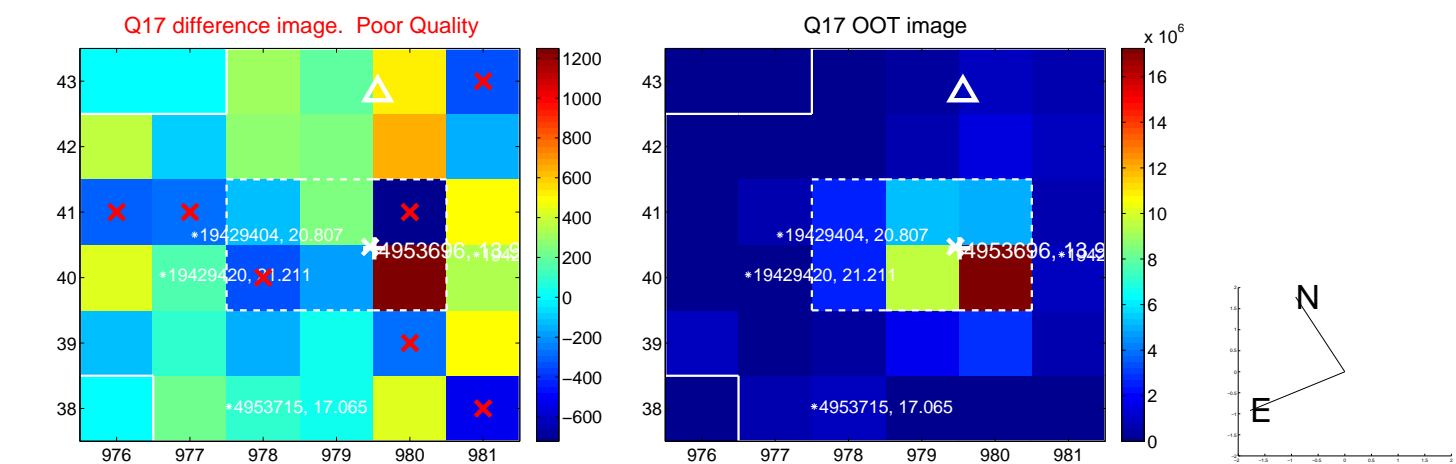
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



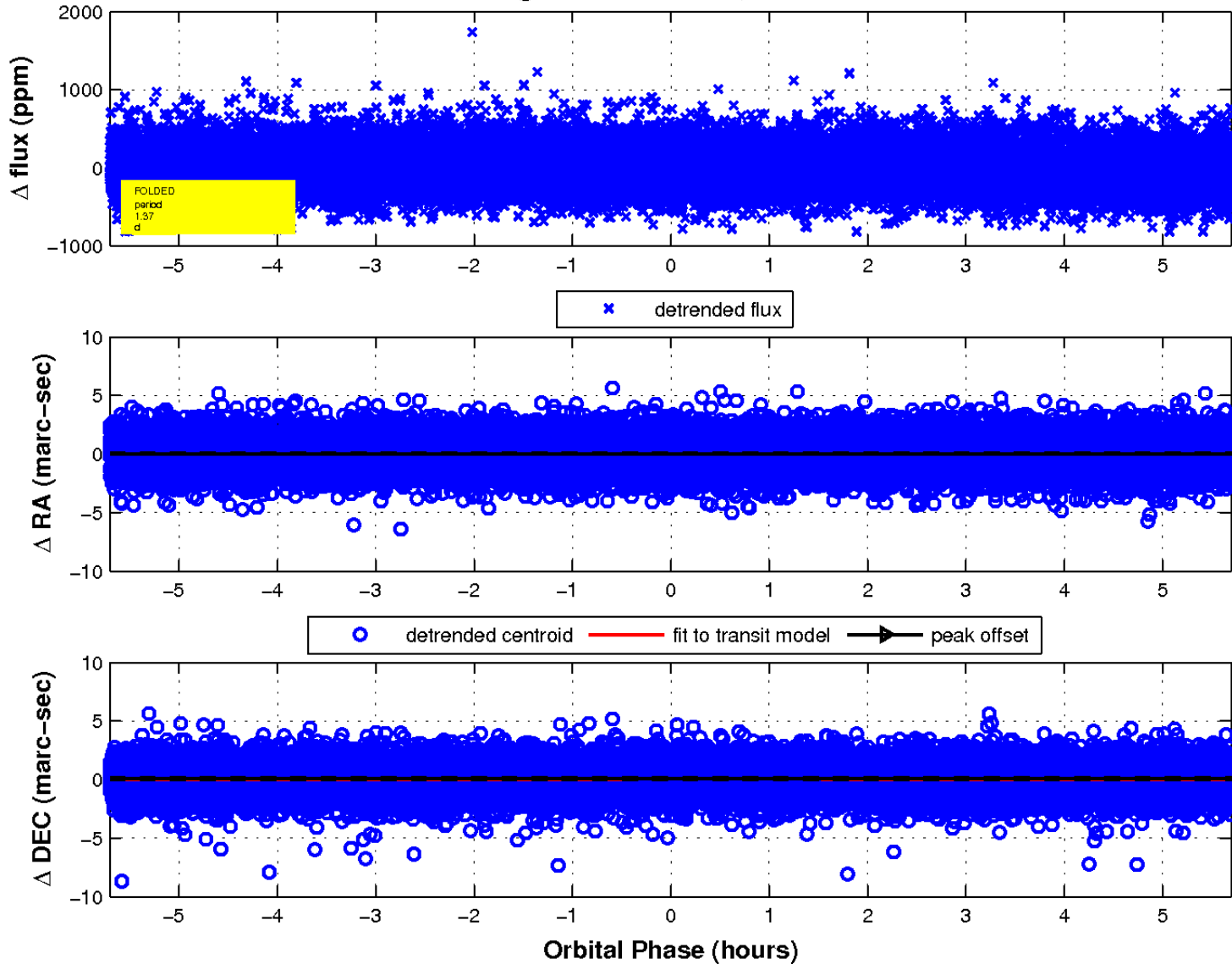
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

