

# KIC 005727396

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005727396-01	OBS	No	100.930562	189.261308	33.9	3.072	14.3	10.2	71.11	3960	39.18	4307.73
005727396-02	OBS	No	59.721222	191.100629	24.0	2.577	11.7	8.9	71.11	3960	44.32	8671.77
005727396-03	OBS	No	45.896644	176.903576	28.8	1.038	10.1	19.1	71.11	3960	36.96	0.00
005727396-04	OBS	No	54.081483	183.002218	21.3	1.908	9.5	10.0	71.11	3960	41.70	9898.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005727396-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
005727396-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
005727396-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
005727396-04	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

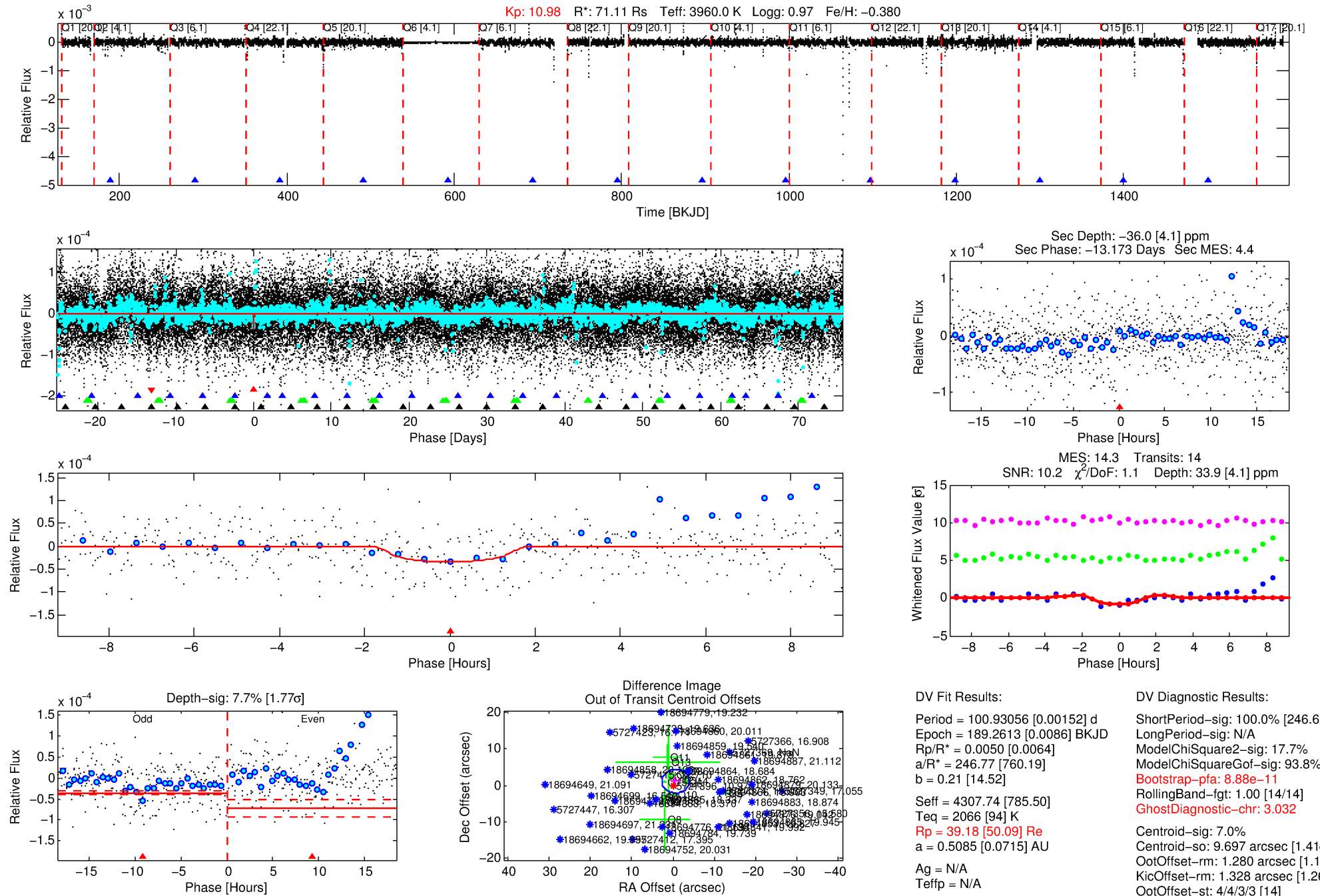
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005727396-01

No Significant Match Found

# DV One-Page Summary

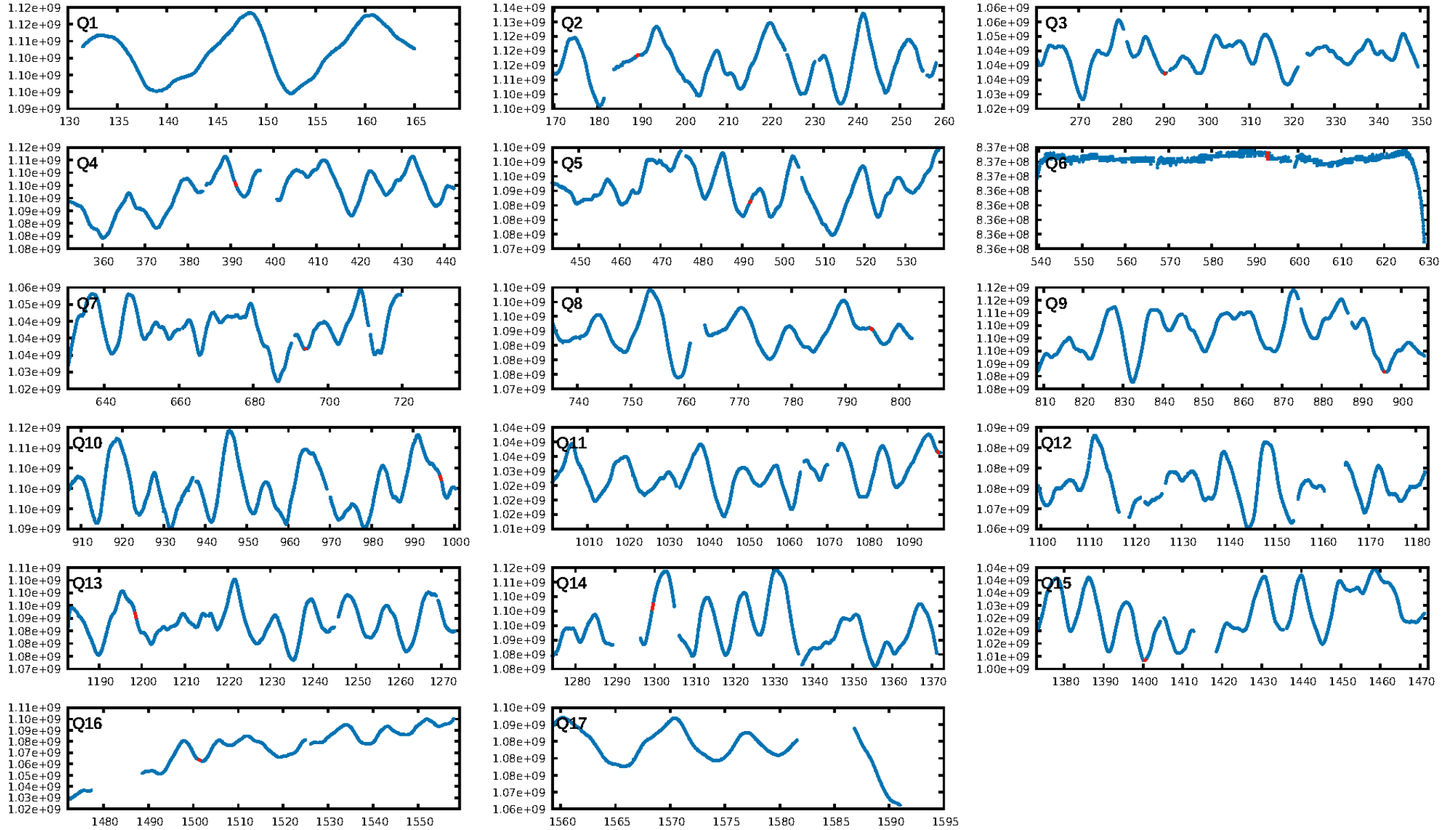
KIC: 5727396 Candidate: 1 of 4 Period: 100.931 d



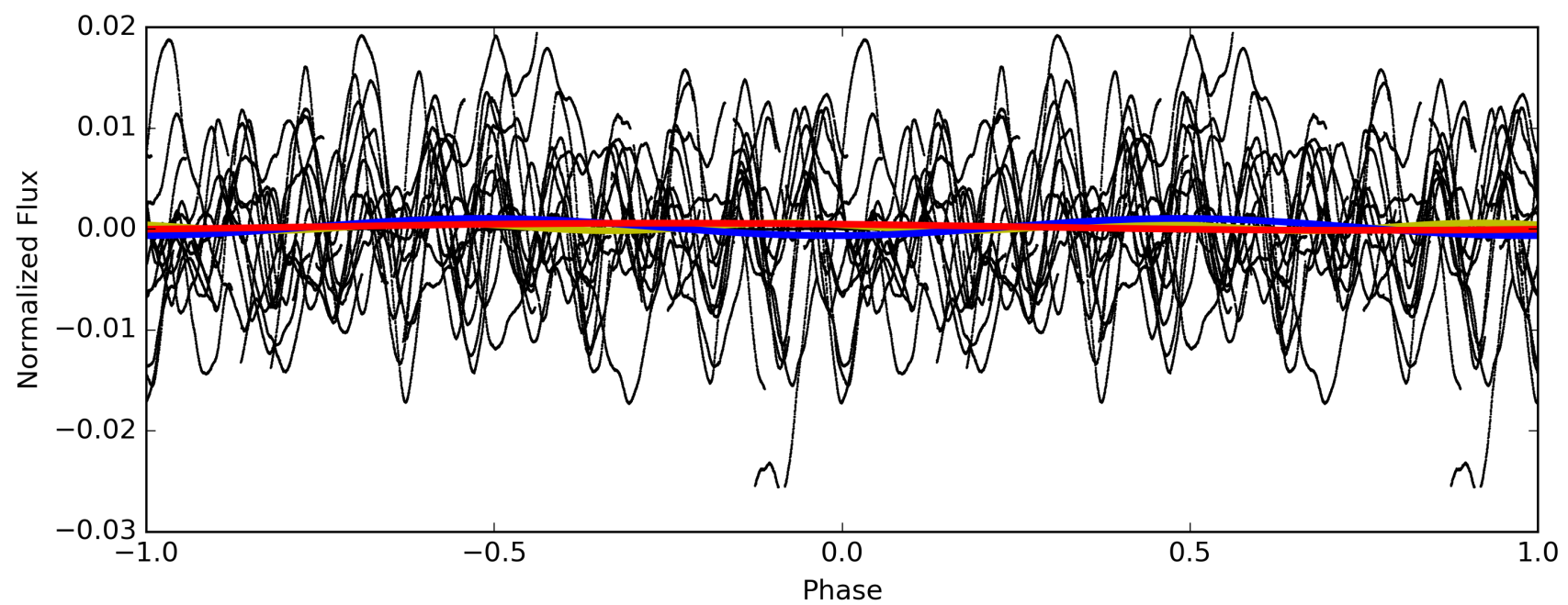
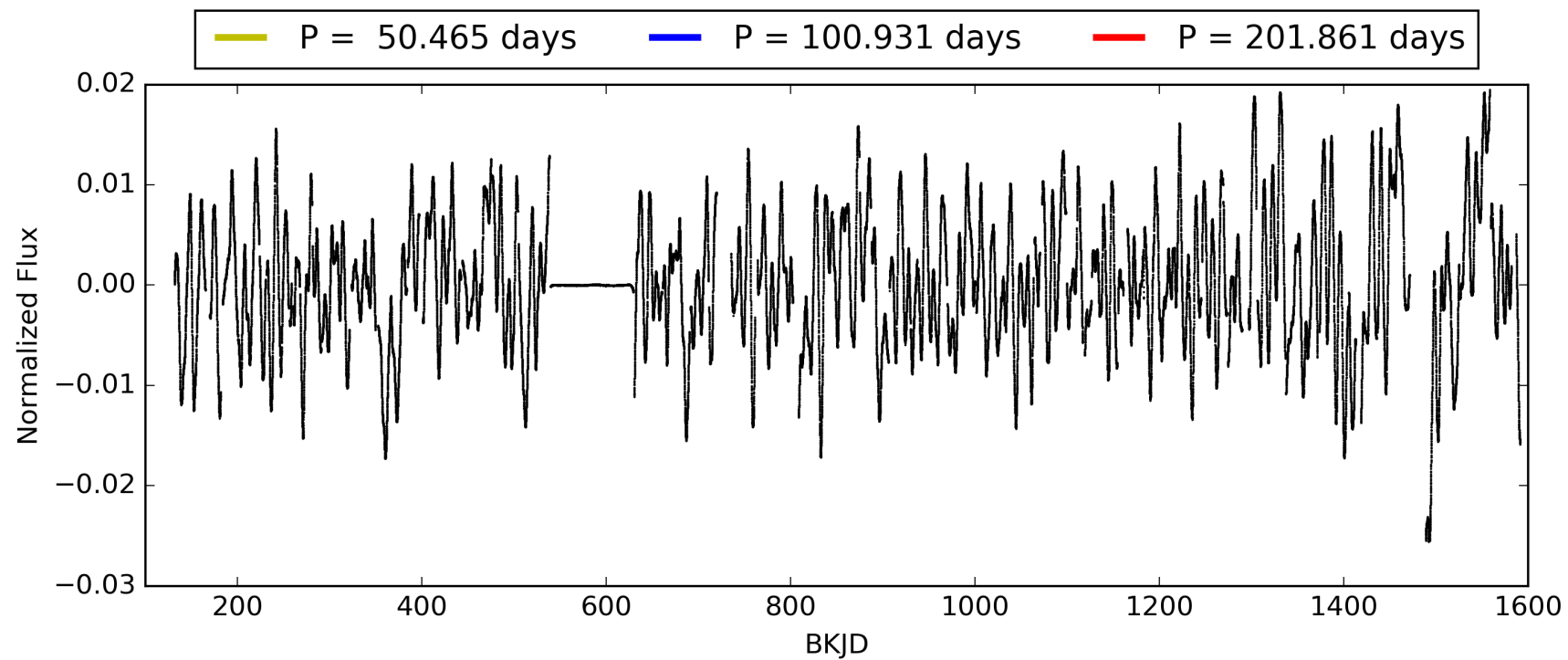
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:22:29 Z

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

# TCE 005727396-01, PDC Light Curves



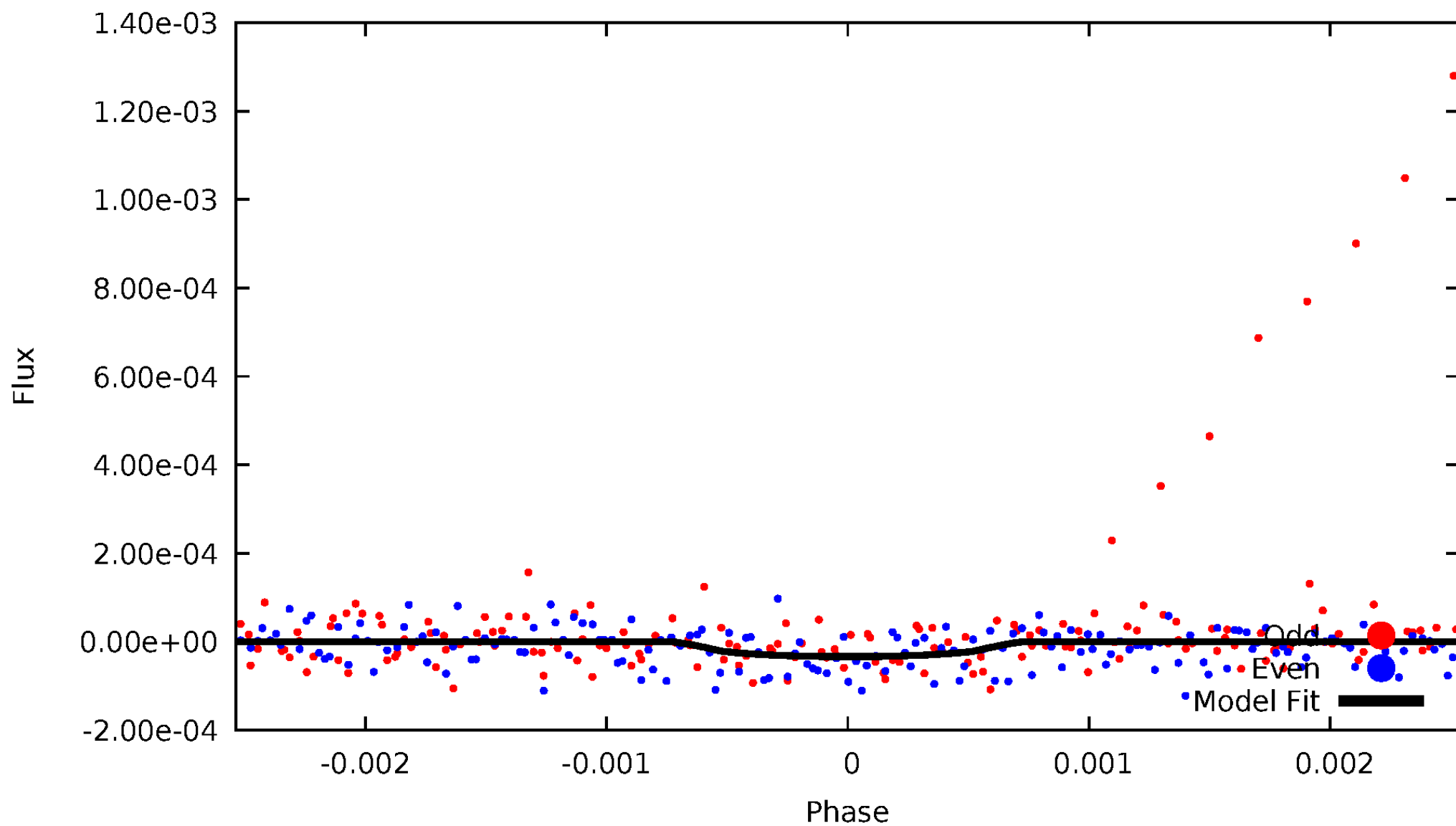
TCE 005727396-01





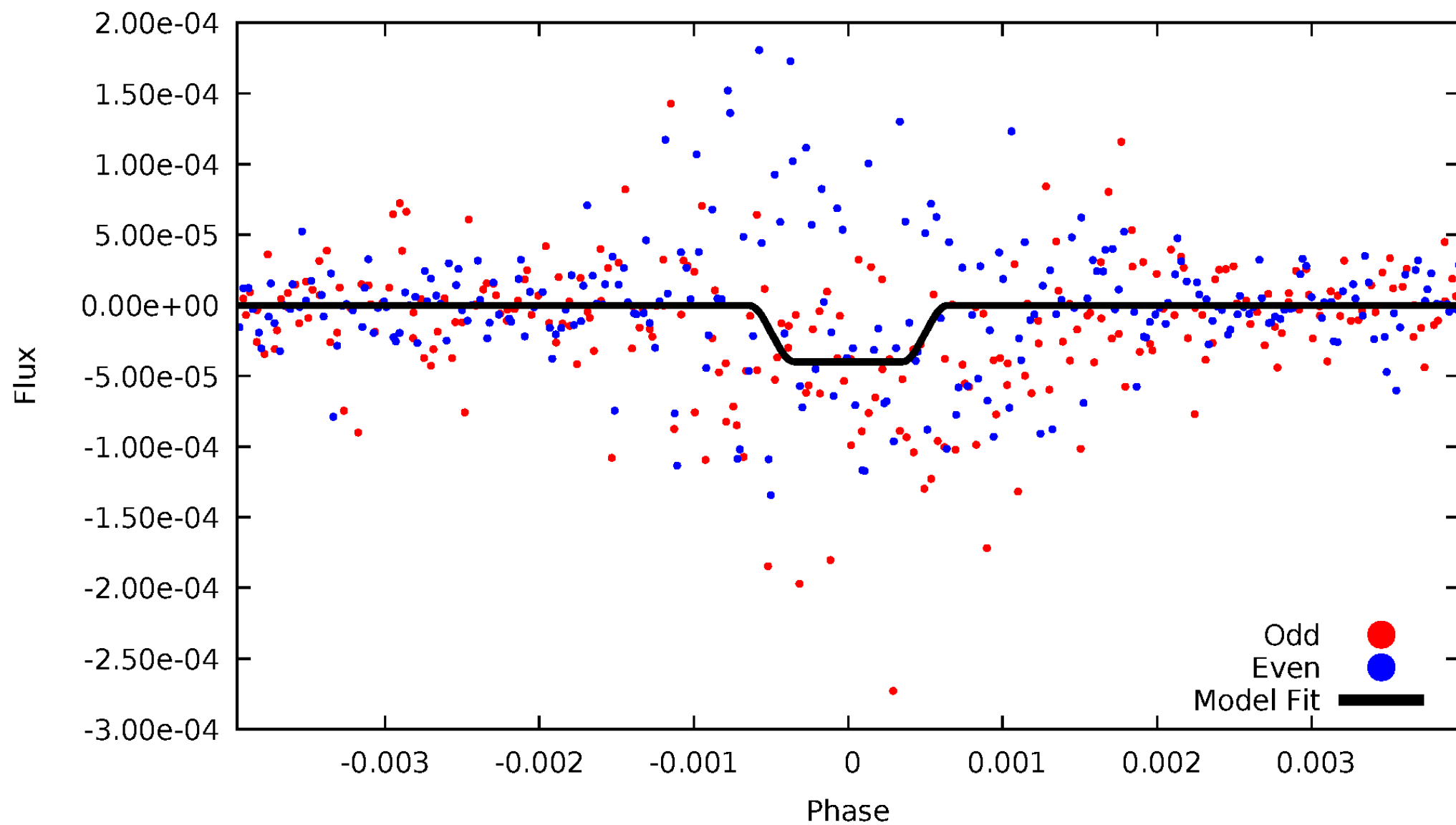
# DV Odd/Even

TCE 005727396-01



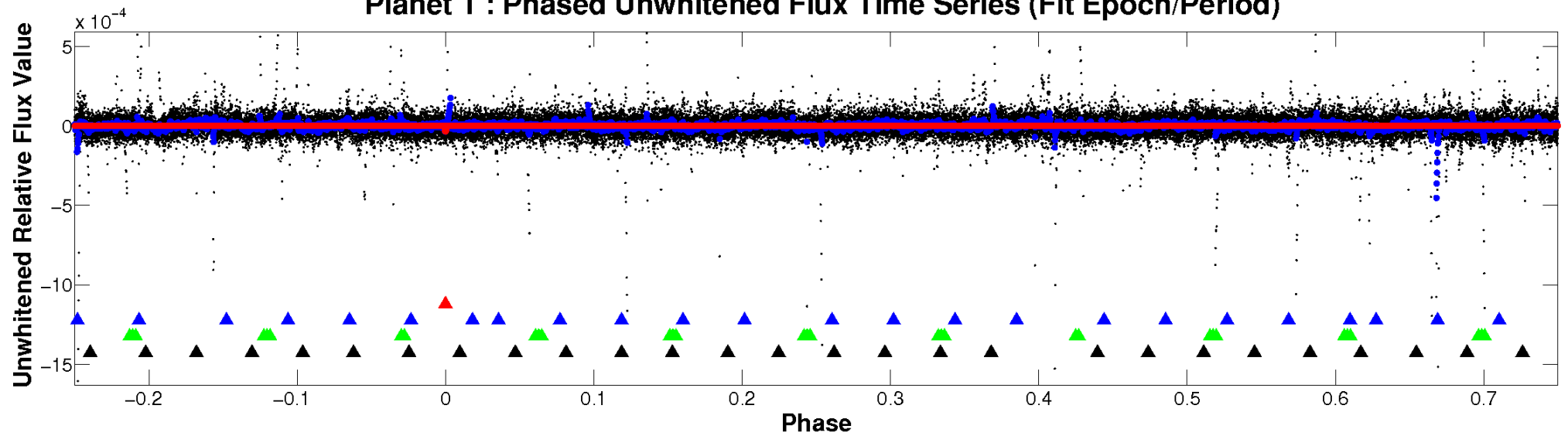
# ALT Odd/Even

TCE 005727396-01

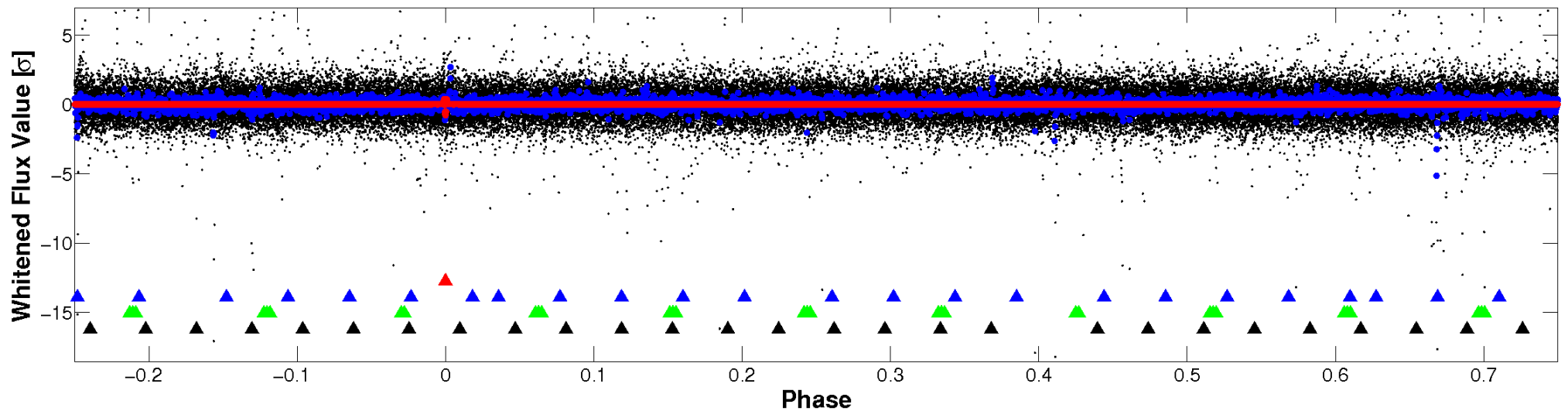


# Non-Whitened Vs. Whitened Light Curve

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

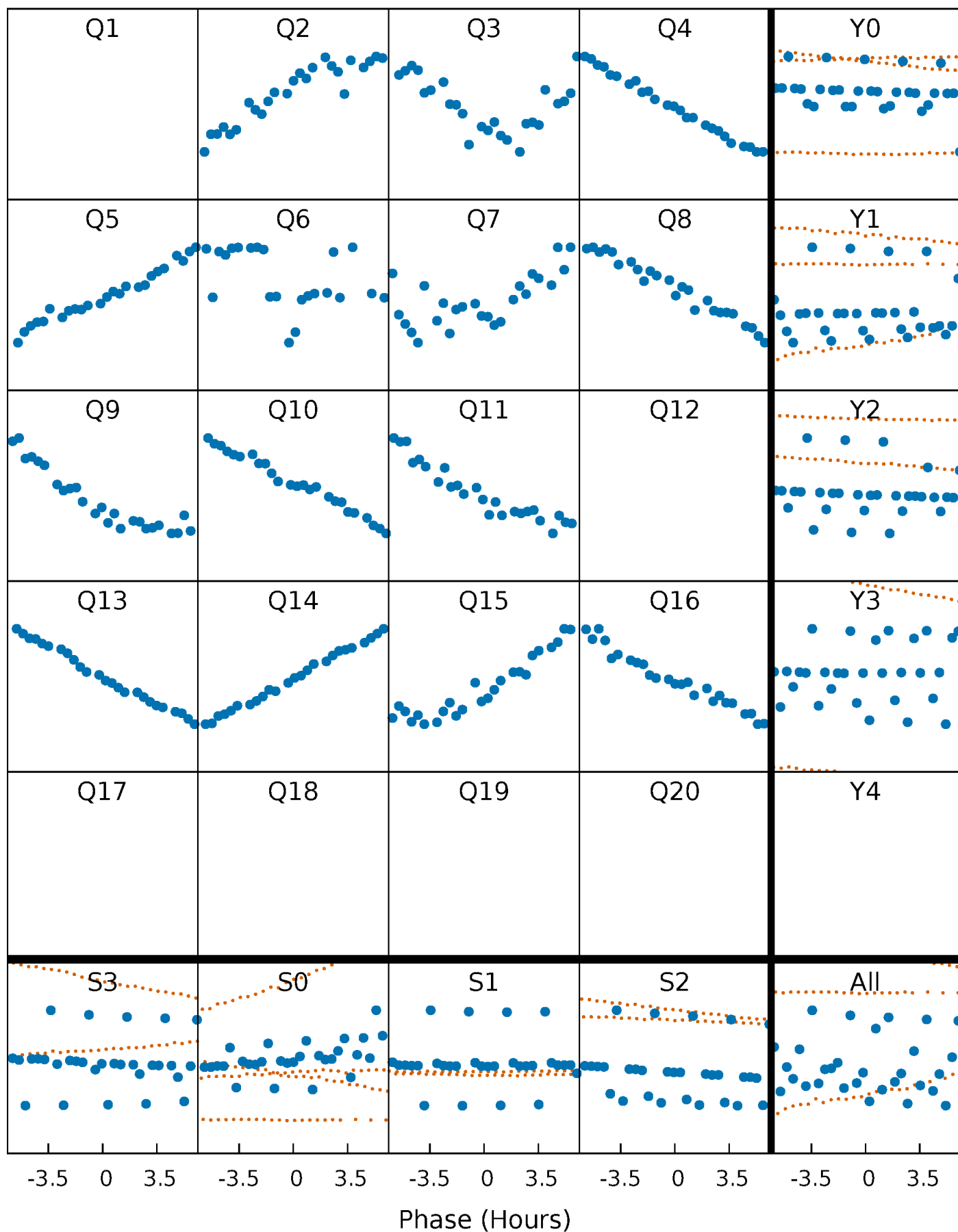


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



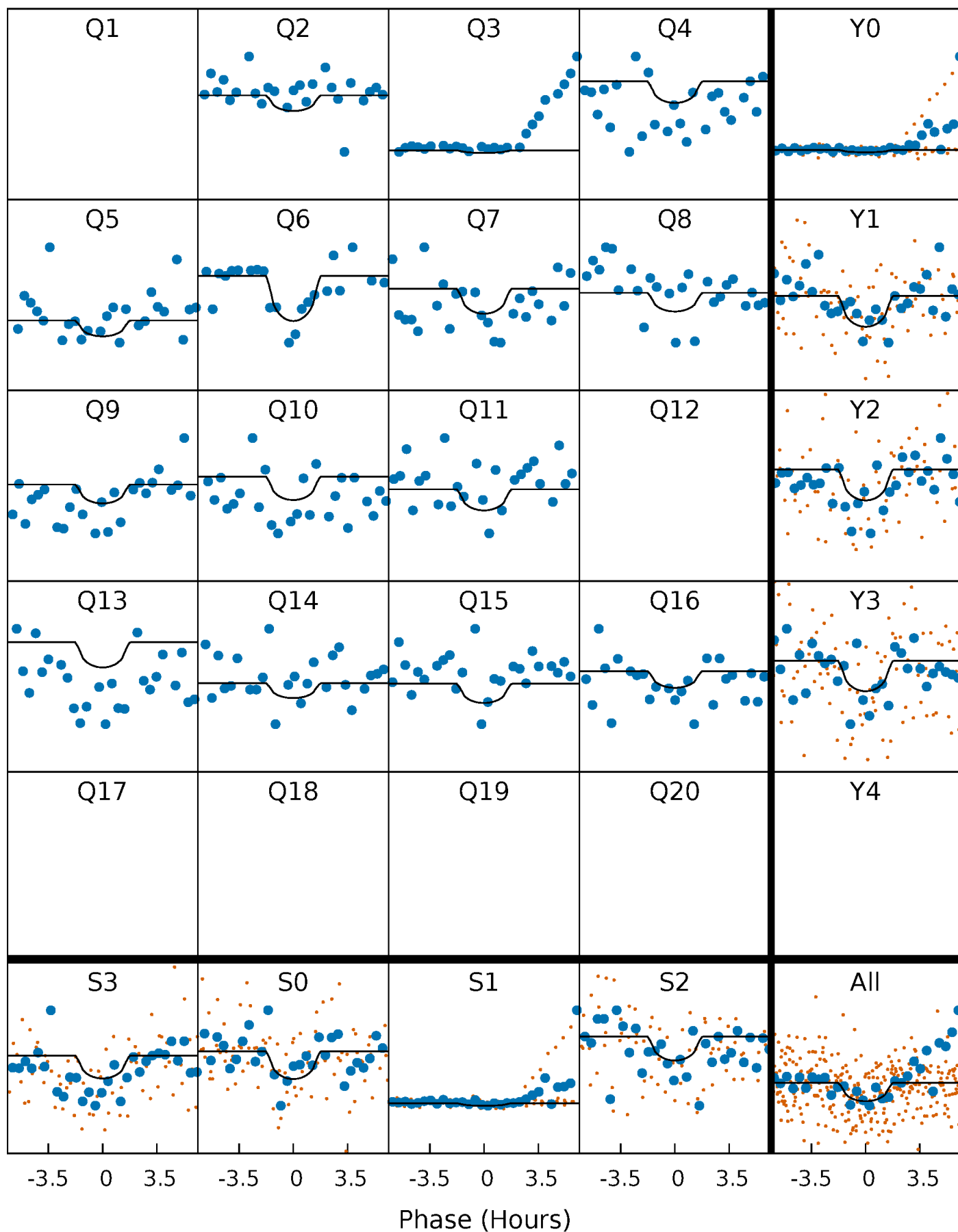
# PDC Quarter-Phased Transit Curves

TCE 005727396-01 P=100.930562 Days  $T_0=189.261308$  (BKJD)



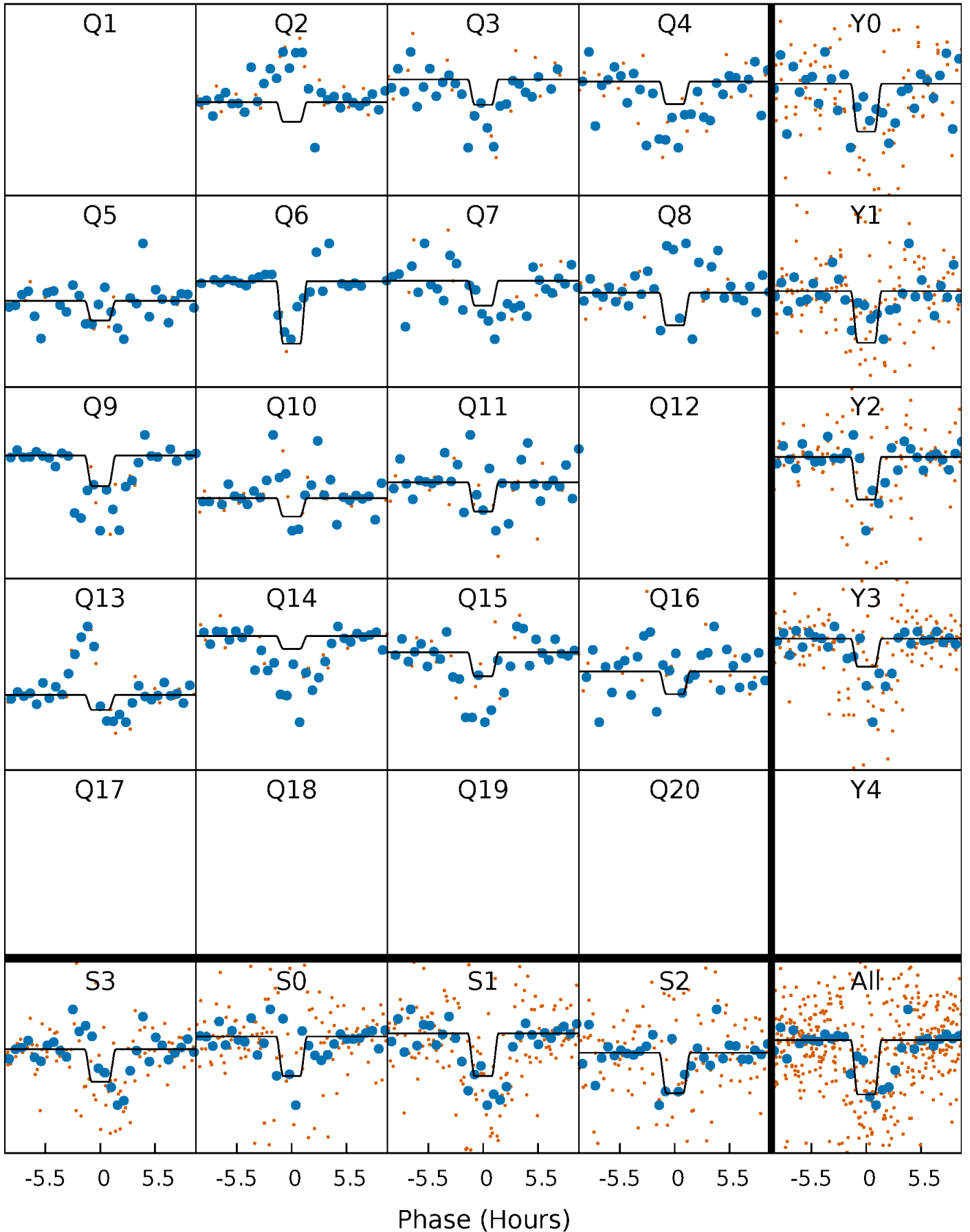
# DV Quarter-Phased Transit Curves

TCE 005727396-01 P=100.930562 Days  $T_0=189.261308$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005727396-01 P=100.920078 Days  $T_0=189.307739$  (BKJD)

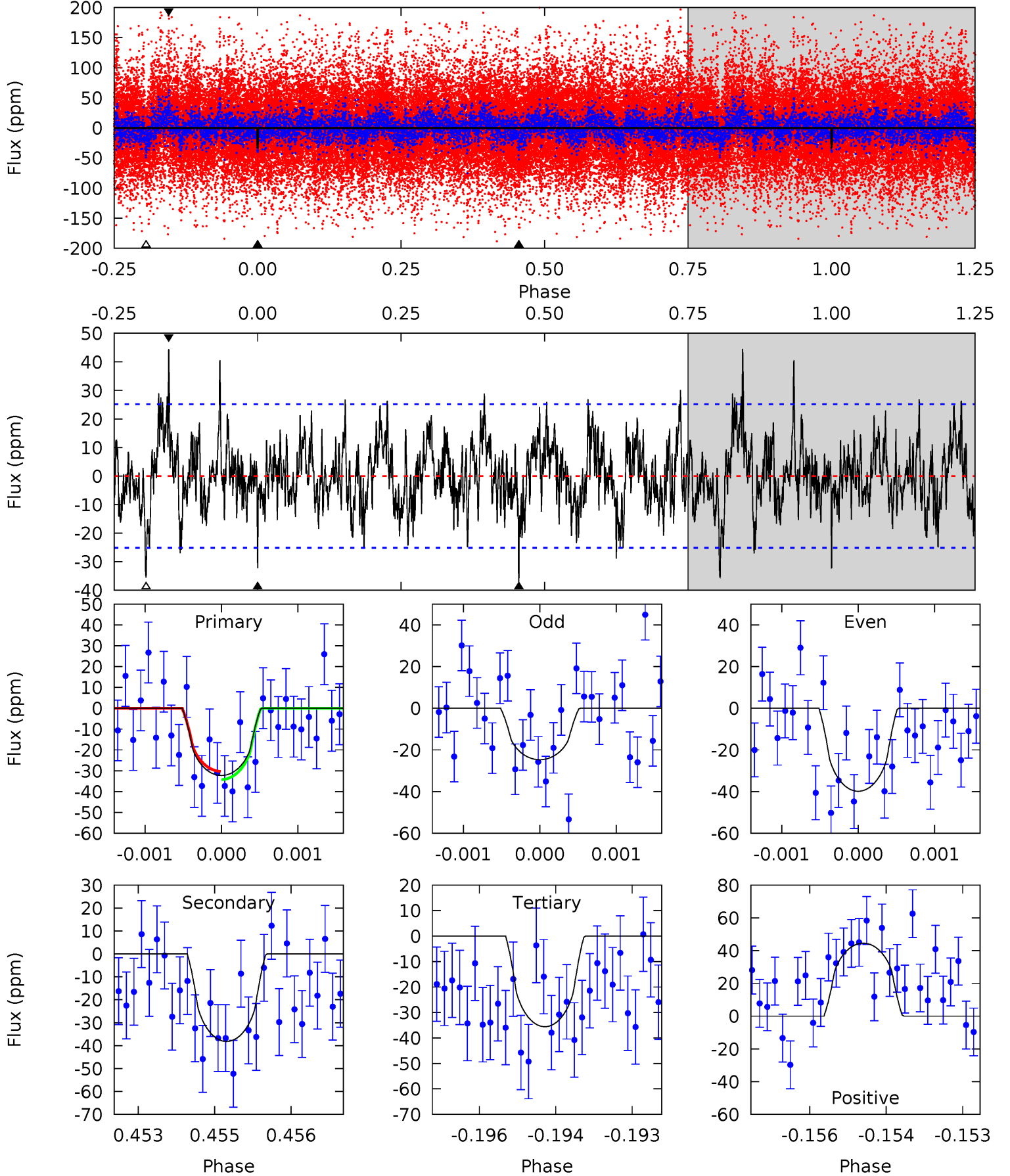




# DV Model-Shift Uniqueness Test

005727396-01, P = 100.930562 Days, E = 88.330746 Days

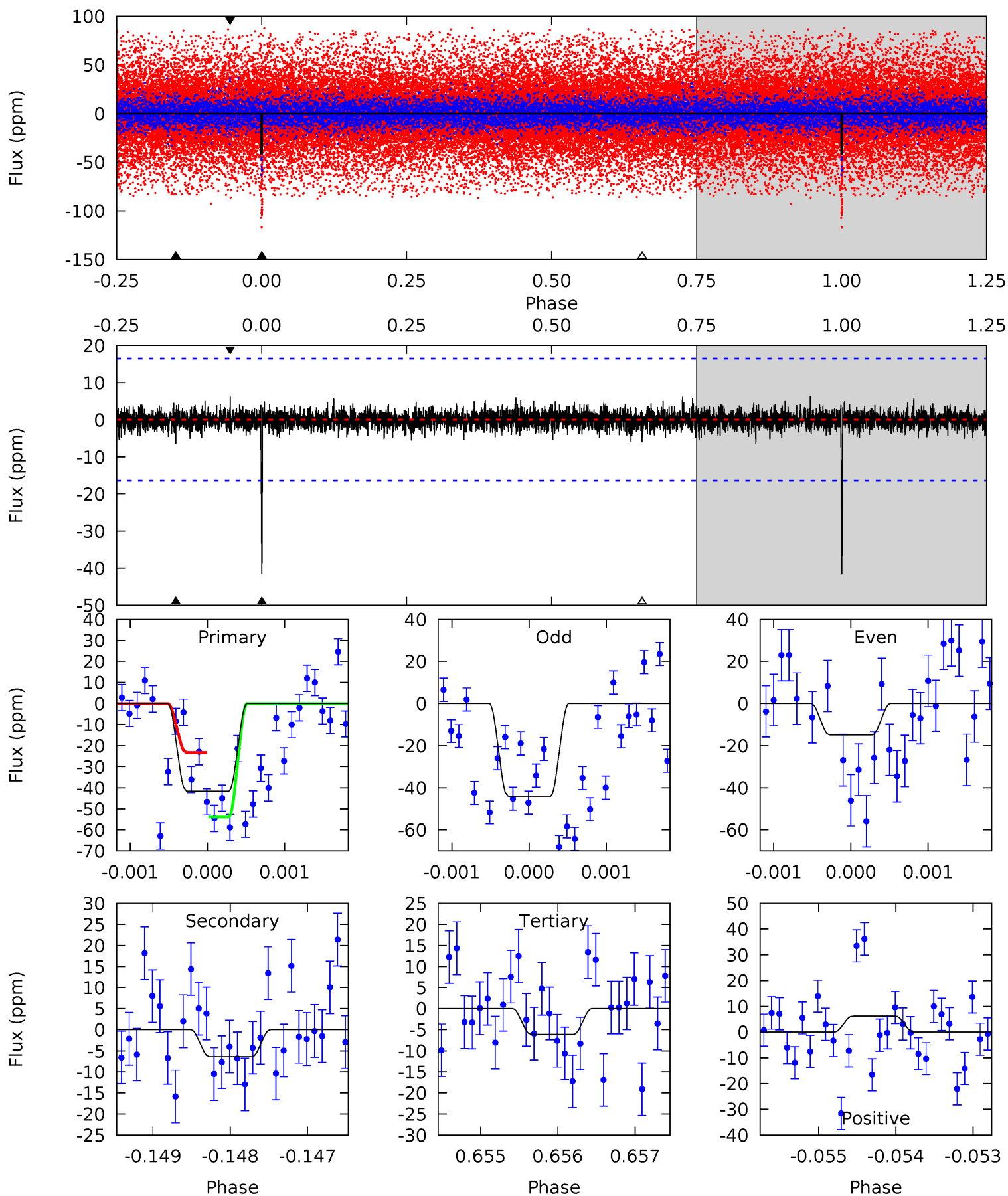
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.92	8.18	7.63	9.54	5.39	3.19	2.20	-0.71	-2.63	0.56	-1.36	1.62	1.22	0.54	0.42



# Alt Model-Shift Uniqueness Test

005727396-01, P = 100.920078 Days, E = 88.387661 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
13.6	2.10	2.00	2.04	5.41	3.23	0.52	11.6	11.6	0.09	0.06	4.88	1.23	0.13	5.10



### Stellar Parameters For KIC 005727396

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3960^{+89}_{-108}$	$0.970^{+0.030}_{-0.030}$	$-0.380^{+0.200}_{-0.250}$	$71.106^{+2.773}_{-14.790}$	$1.718^{+0.072}_{-0.613}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+3%/-3%	+53%/-66%	+4%/-21%	+4%/-36%	+30%/-8%
Source	PHO54	AST54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 005727396-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-38 \pm 5$	$54.92^{+41.73}_{-35.18}$	$2892^{+77}_{-81}$	$3669^{+1932}_{-818}$	$1.790^{+12.023}_{-1.226}$
Alt.	$-6 \pm 3$	$56.29^{+43.68}_{-36.22}$	$2888^{+74}_{-84}$	$-2190^{+5943}_{-588}$	$0.268^{+1.699}_{-0.201}$

$T_{max}$  = Theoretical Maximum Planetary Temperature

$T_{obs}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

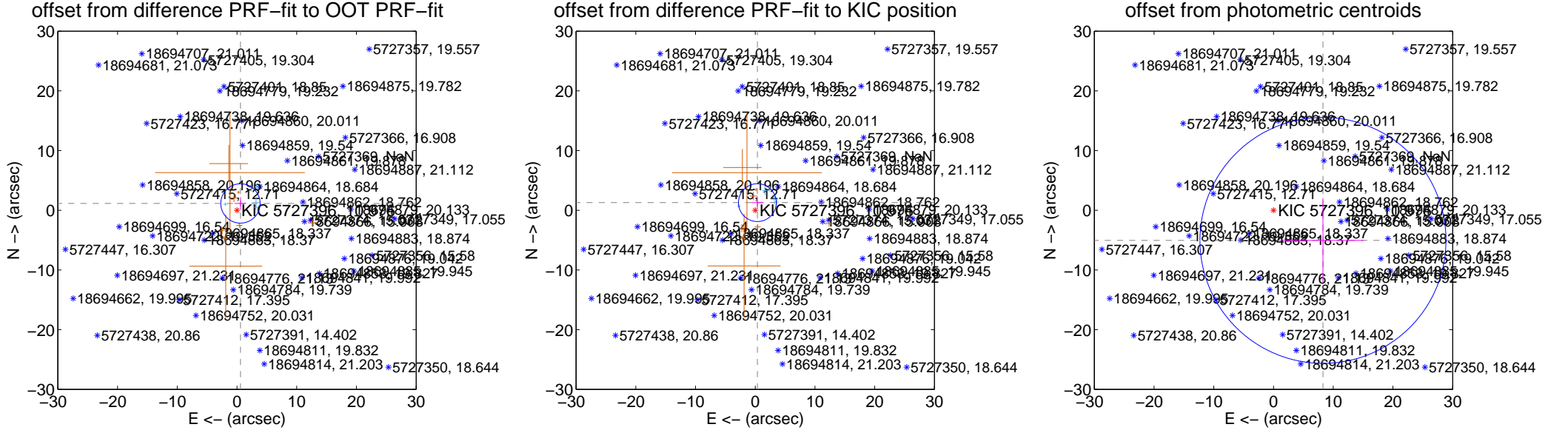
$A_{obs}$  = Observed Albedo (Assuming  $T=0$ )

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

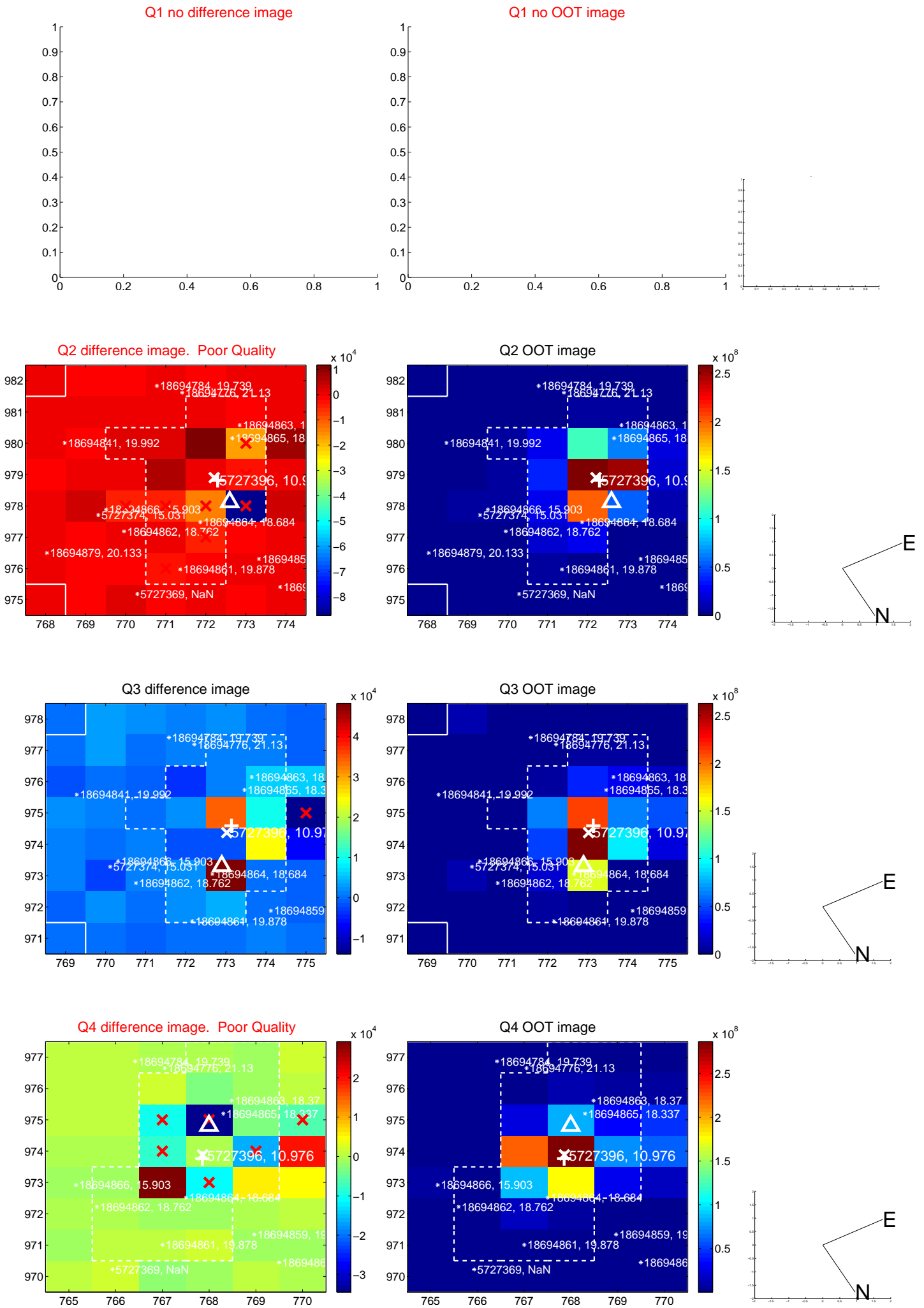
Supplemental centroid analysis for 005727396-01. **Kepler magnitude: 10.98.** Transit SNR 10.15  
 There are 5 quarters with good PRF difference image offsets  
 The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.280 \pm 1.097$	1.17	$-0.583 \pm 0.985$	$1.140 \pm 1.071$
PRF-fit source offset from KIC position	$1.328 \pm 1.055$	1.26	$-0.359 \pm 1.007$	$1.278 \pm 1.031$
photometric centroid source offset	$9.70 \pm 6.87$	1.41	$-8.28 \pm 6.79$	$-5.04 \pm 7.08$

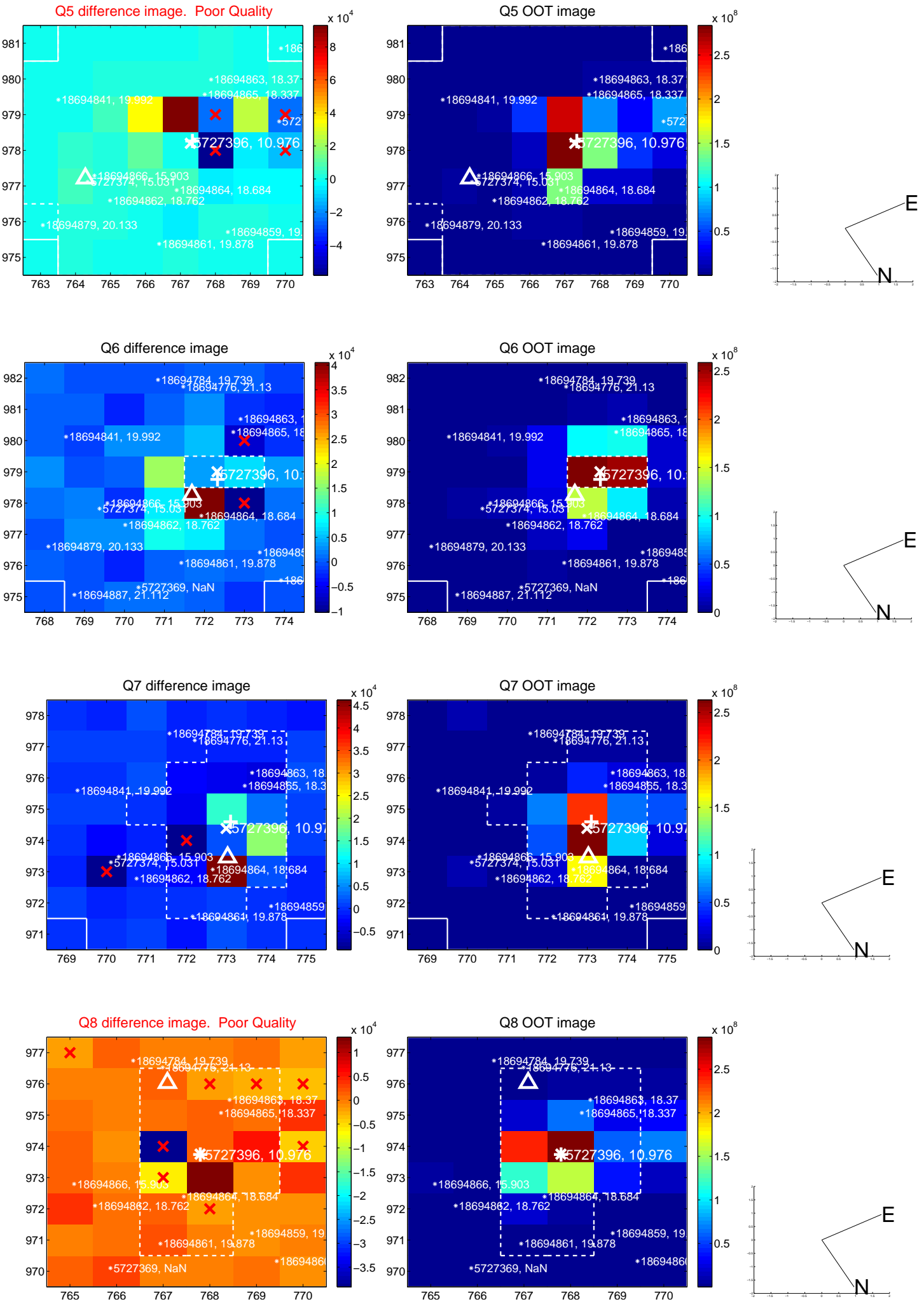


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

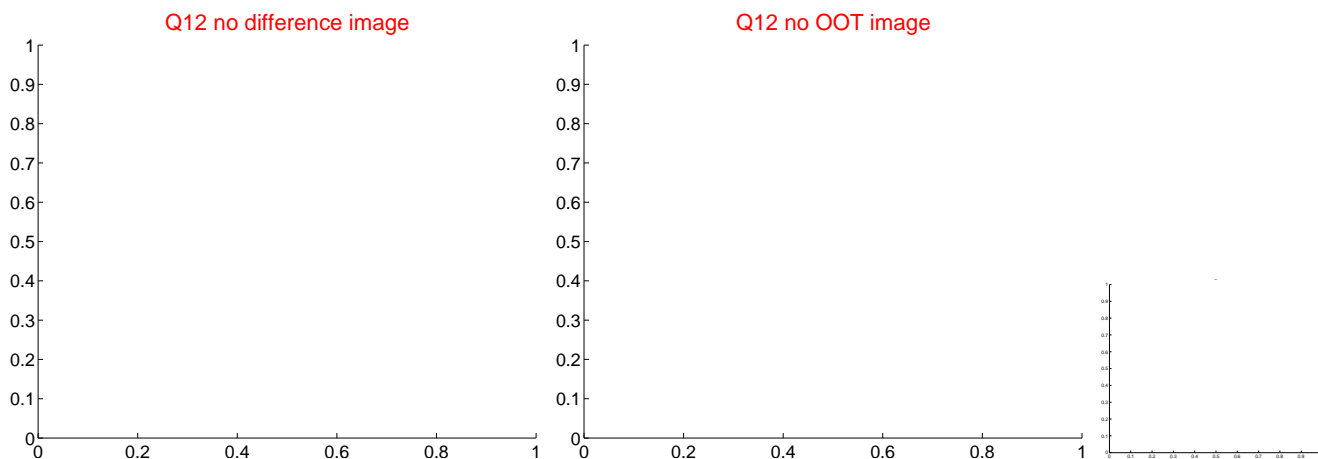
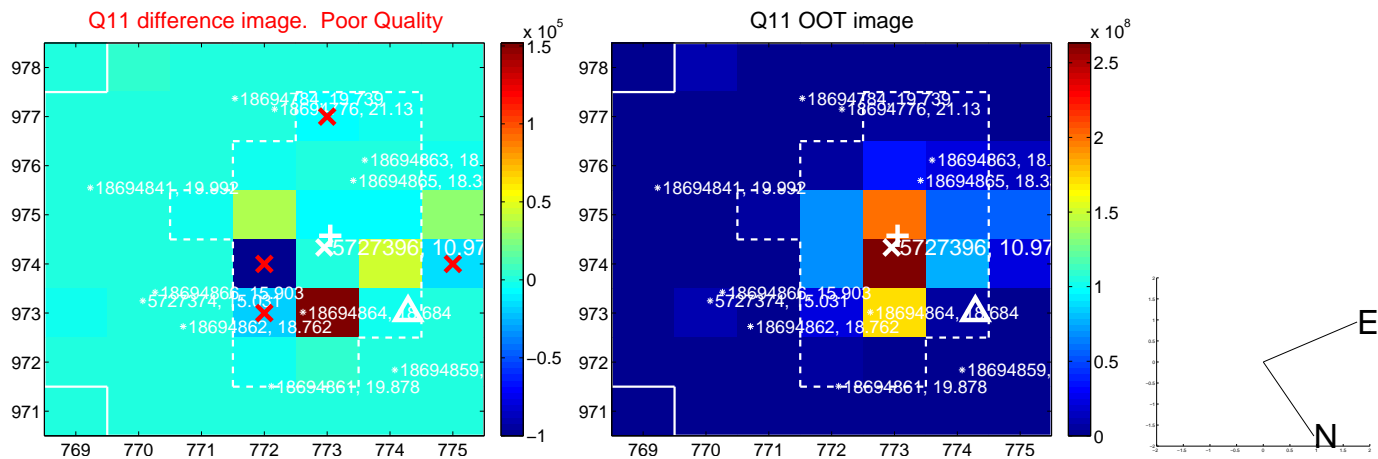
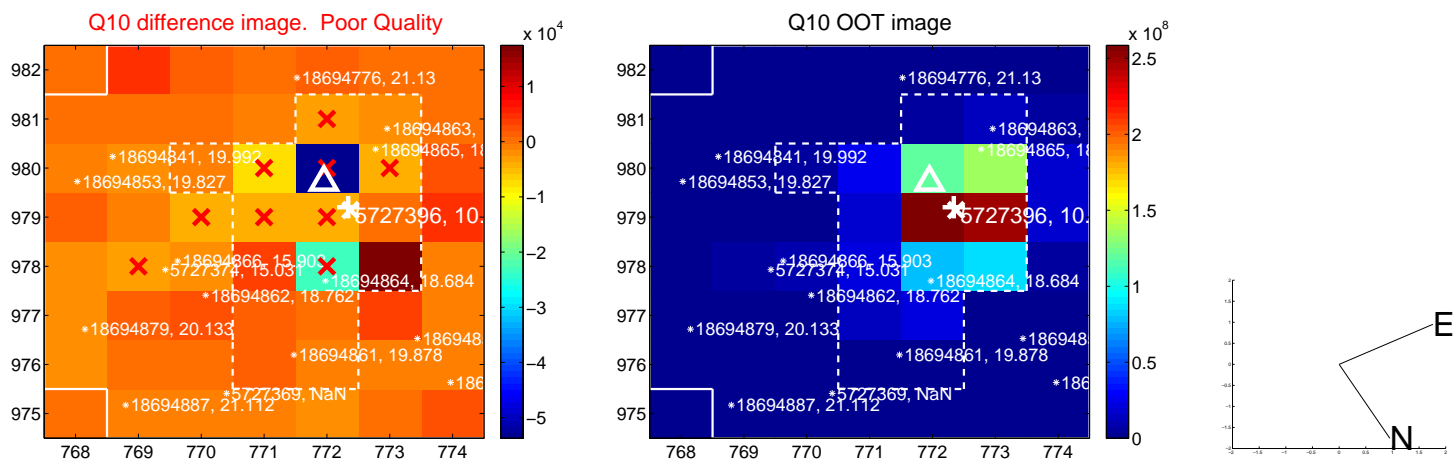
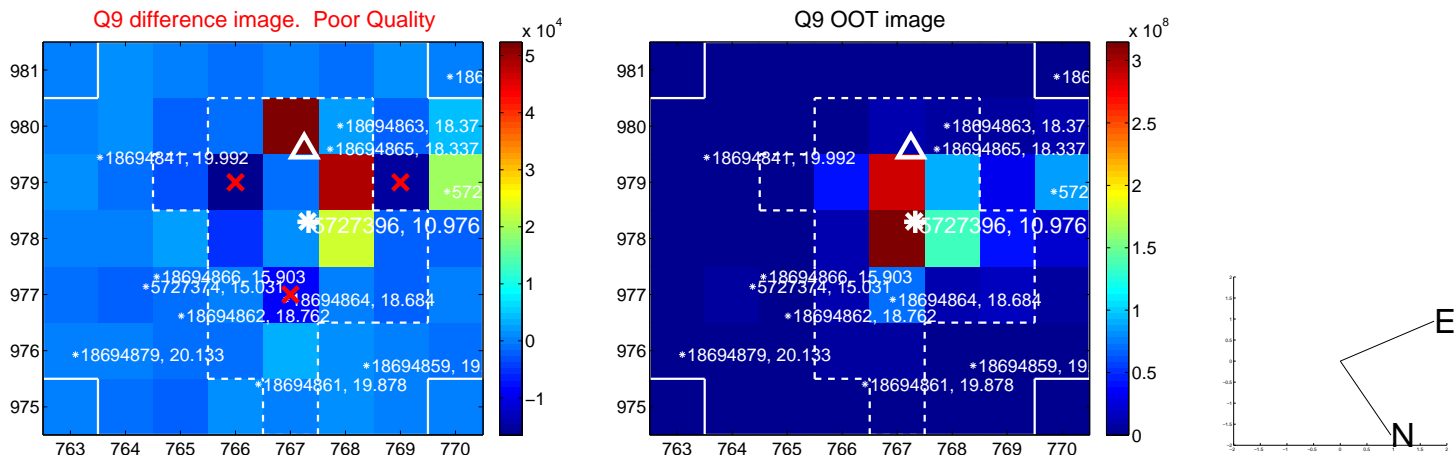


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

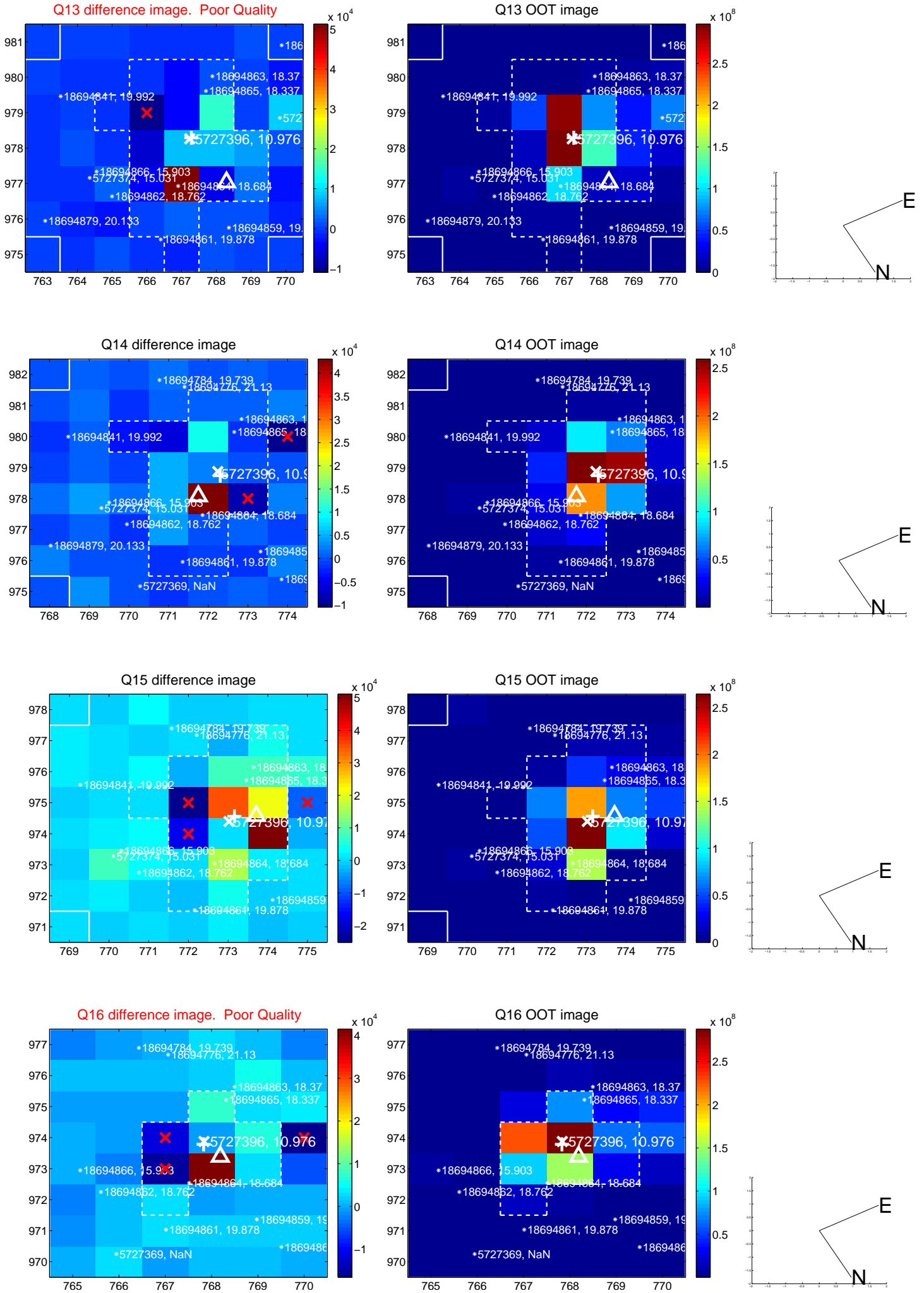




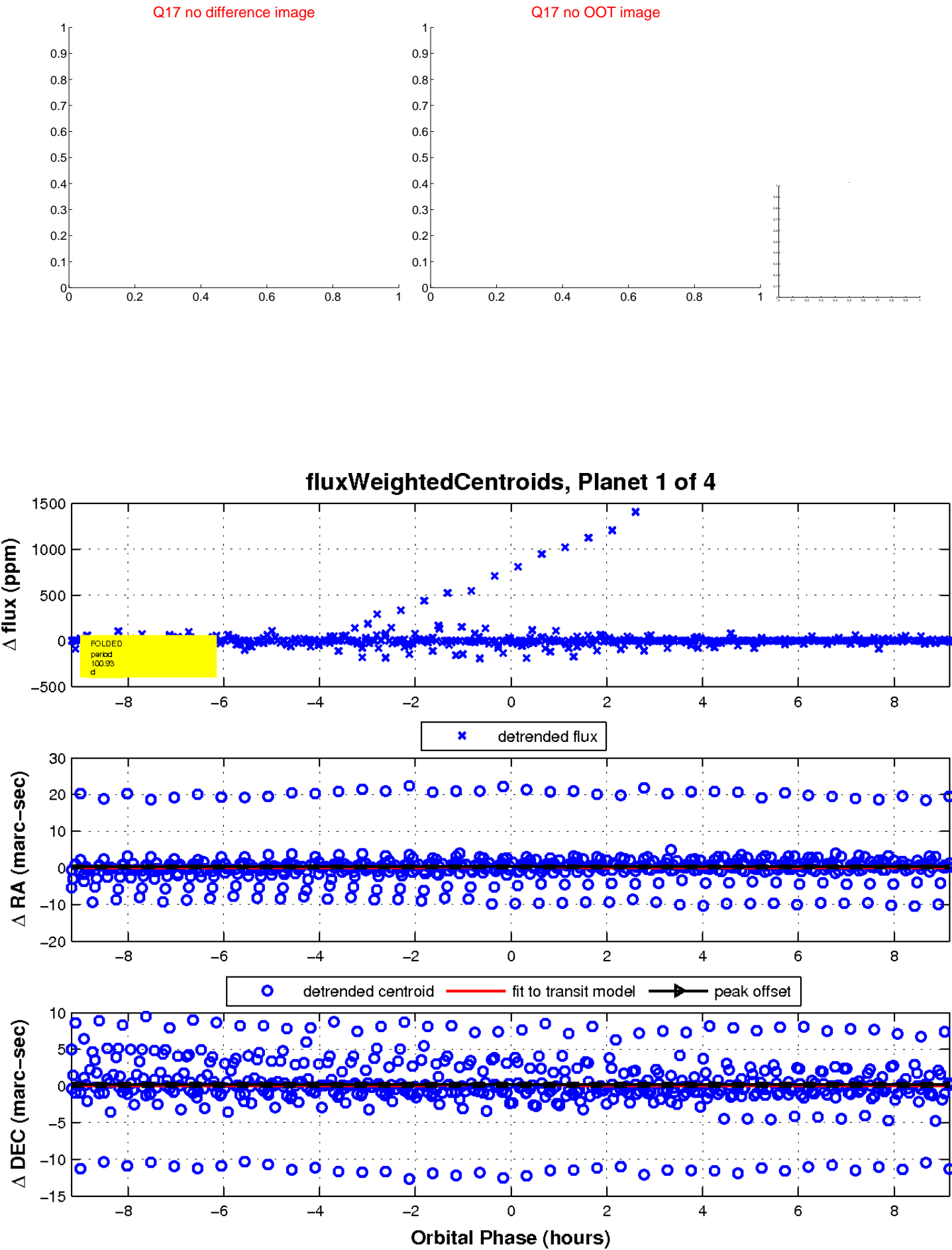
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

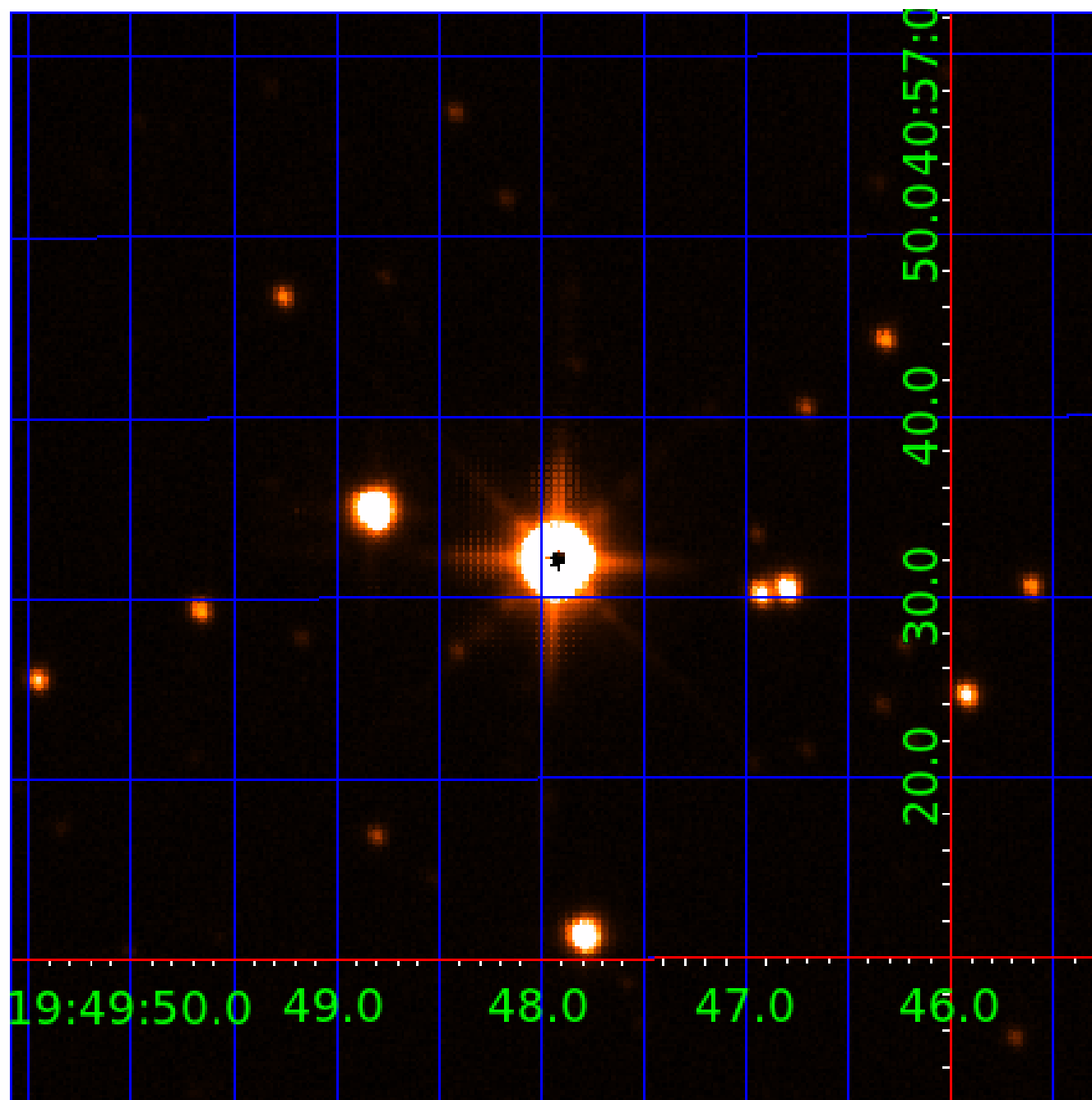


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005727396

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005727396-01	OBS	No	100.930562	189.261308	33.9	3.072	14.3	10.2	71.11	3960	39.18	4307.73
005727396-02	OBS	No	59.721222	191.100629	24.0	2.577	11.7	8.9	71.11	3960	44.32	8671.77
005727396-03	OBS	No	45.896644	176.903576	28.8	1.038	10.1	19.1	71.11	3960	36.96	0.00
005727396-04	OBS	No	54.081483	183.002218	21.3	1.908	9.5	10.0	71.11	3960	41.70	9898.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005727396-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
005727396-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
005727396-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
005727396-04	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

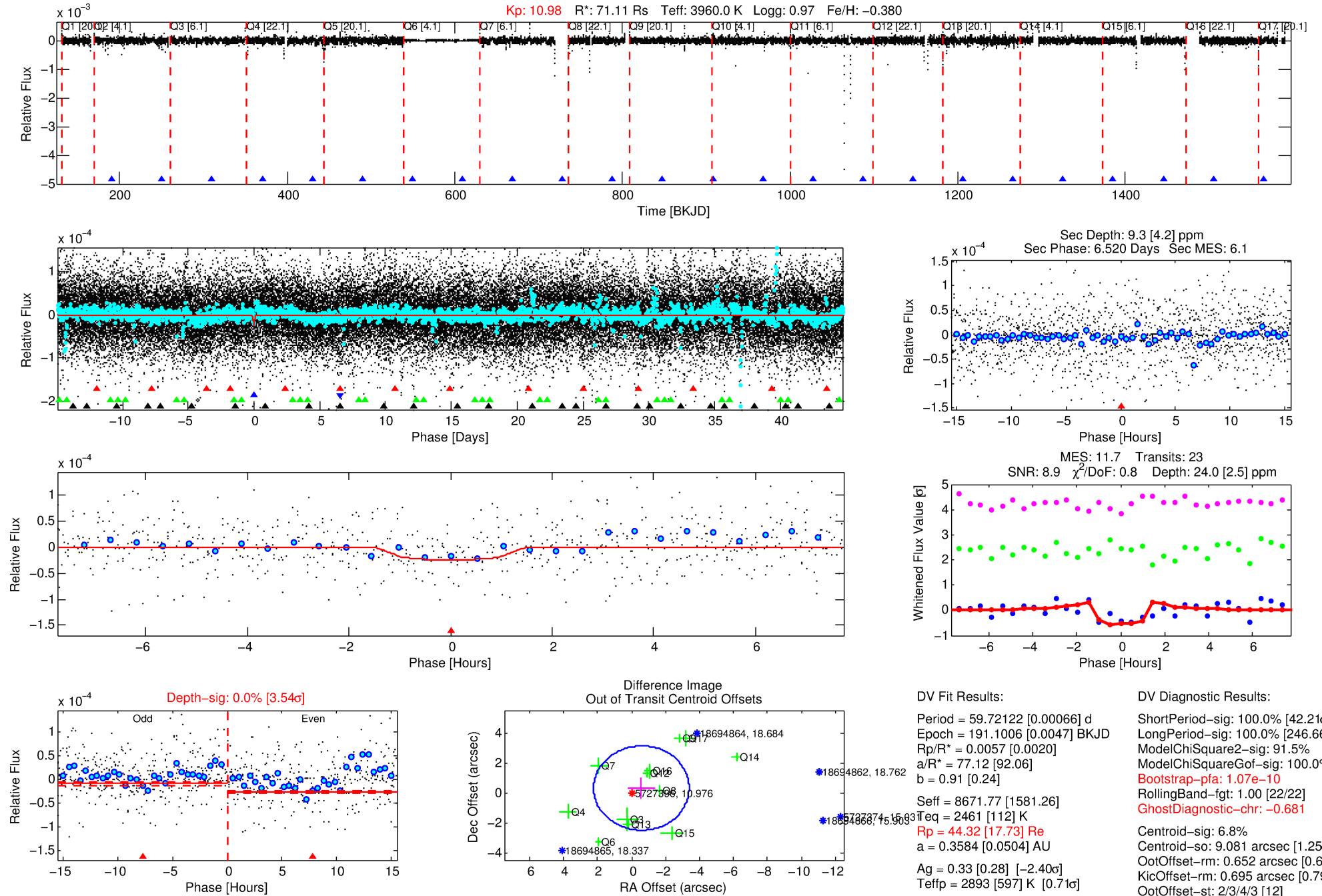
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005727396-02

No Significant Match Found

# DV One-Page Summary

KIC: 5727396 Candidate: 2 of 4 Period: 59.721 d



## DV Fit Results:

Period = 59.72122 [0.00066] d  
Epoch = 191.1006 [0.0047] BKJD  
Rp/R\* = 0.0057 [0.0020]  
a/R\* = 77.12 [92.06]  
b = 0.91 [0.24]  
Seff = 8671.77 [1581.26]  
Teff = 2461 [112] K  
Rp = 44.32 [17.73] Re  
a = 0.3584 [0.0504] AU  
Ag = 0.33 [0.28] [-2.40 $\sigma$ ]  
Teffp = 2893 [597] K [0.71 $\sigma$ ]

## DV Diagnostic Results:

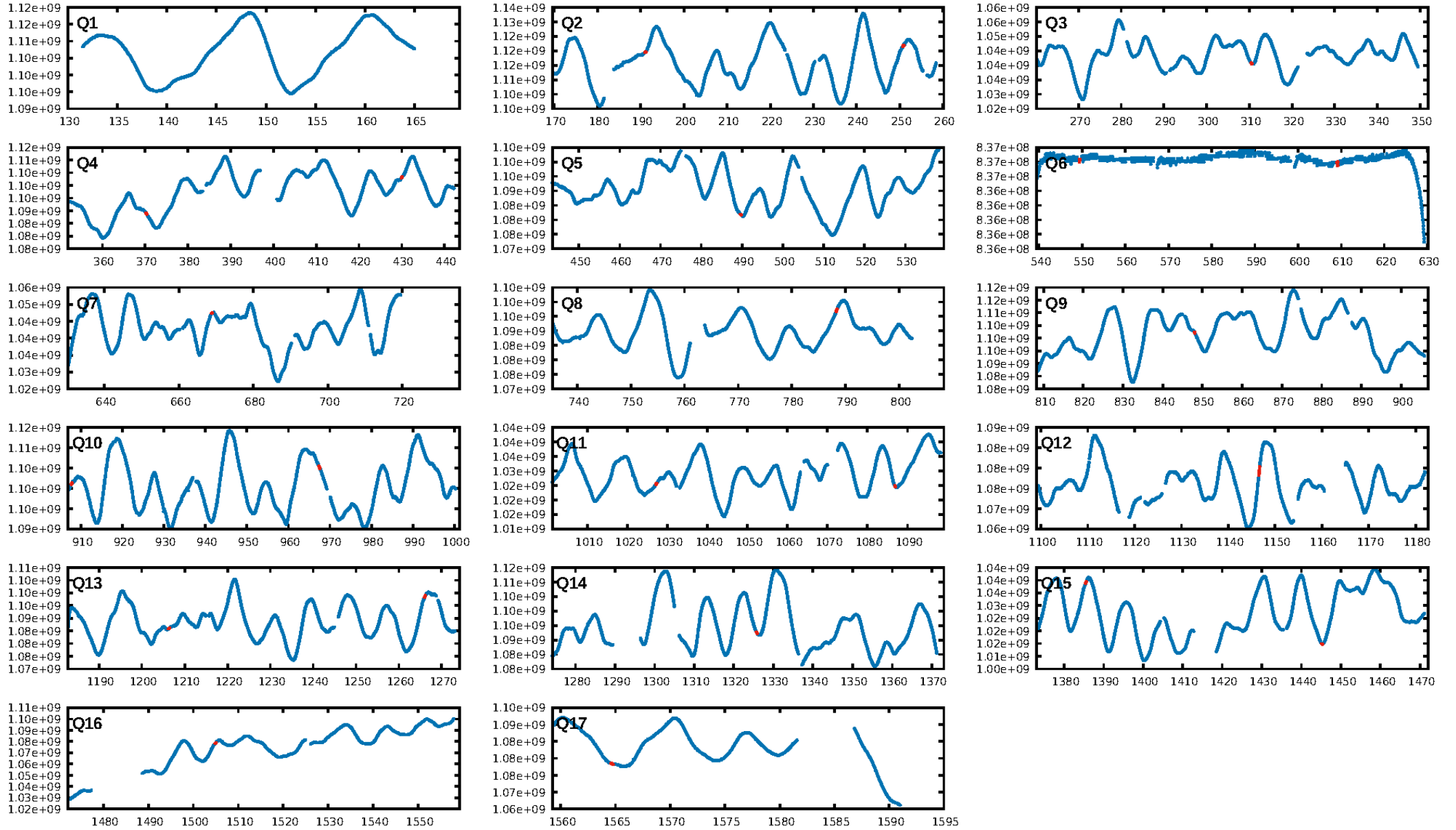
ShortPeriod-sig: 100.0% [42.21 $\sigma$ ]  
LongPeriod-sig: 100.0% [246.66 $\sigma$ ]  
ModelChiSquare2-sig: 91.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.07e-10  
RollingBand-fgt: 1.00 [22/22]  
GhostDiagnostic-chr: -0.681  
Centroid-sig: 6.8%  
Centroid-so: 9.081 arcsec [1.25 $\sigma$ ]  
OotOffset-rm: 0.652 arcsec [0.69 $\sigma$ ]  
KicOffset-rm: 0.695 arcsec [0.79 $\sigma$ ]  
OotOffset-st: 2/3/4/3 [12]  
KicOffset-st: 2/3/4/3 [12]  
DiffImageQuality-fgm: 0.33 [4/12]  
DiffImageOverlap-fno: 1.00 [16/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:22:37 Z

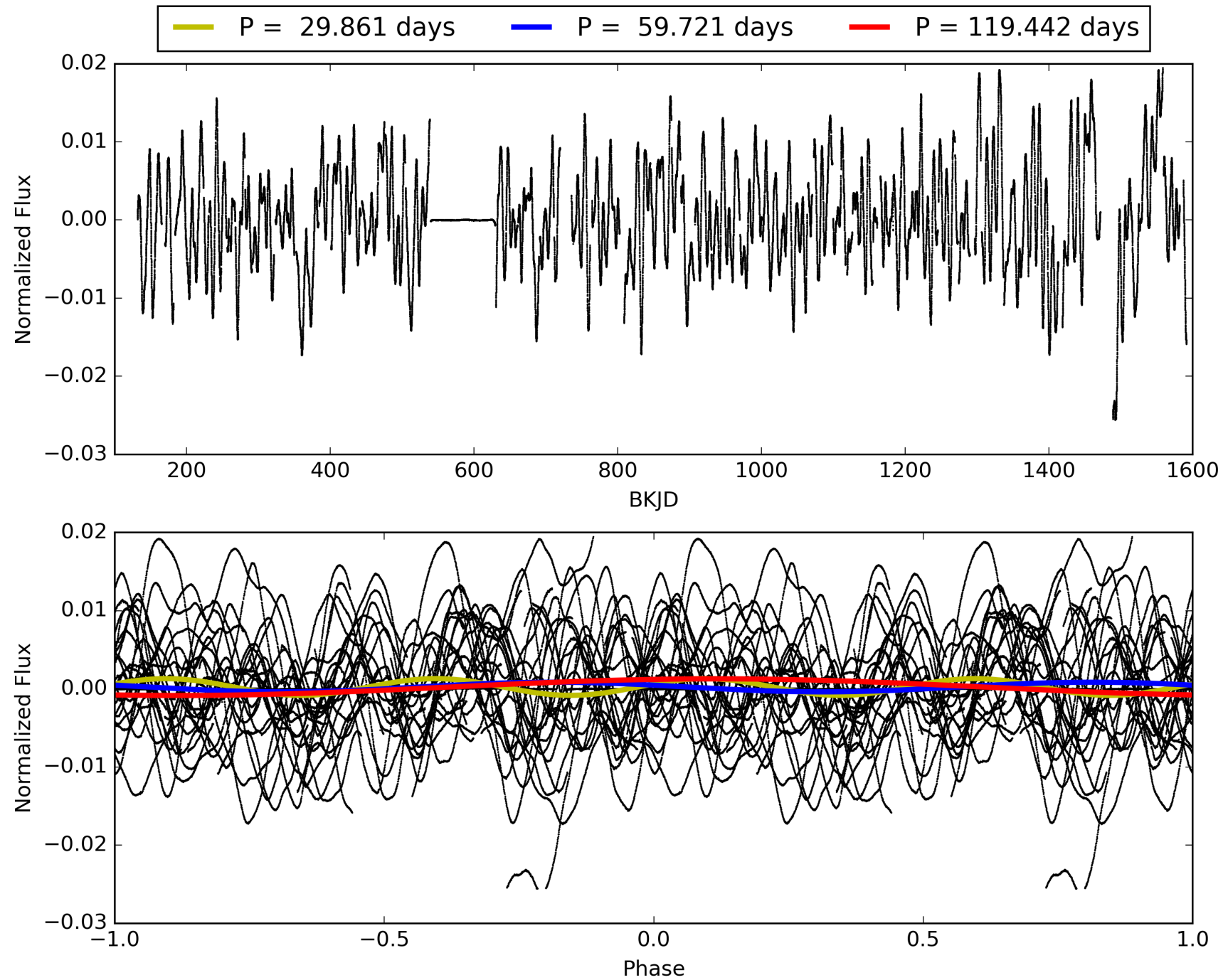
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005727396-02, PDC Light Curves

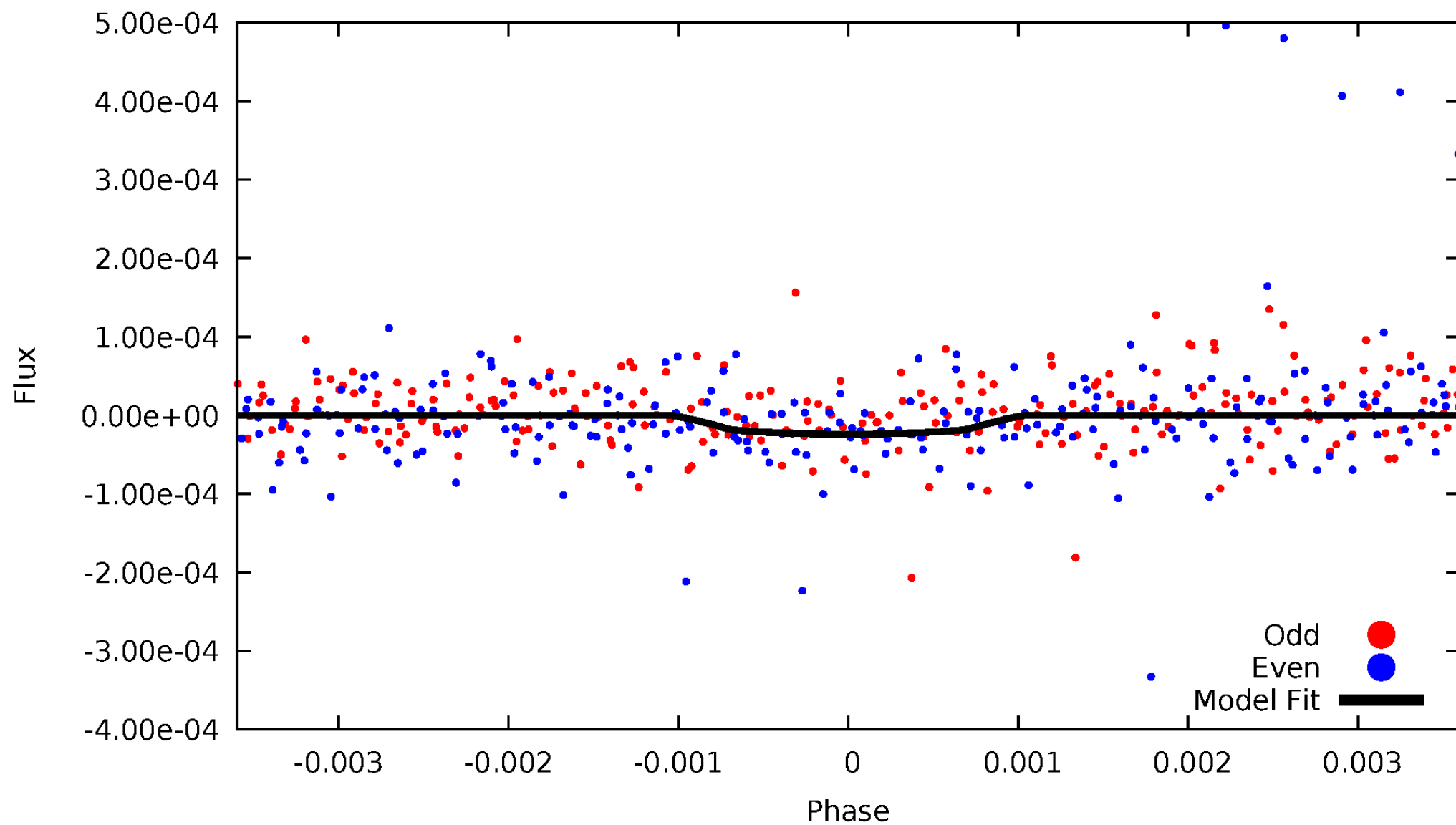


TCE 005727396-02



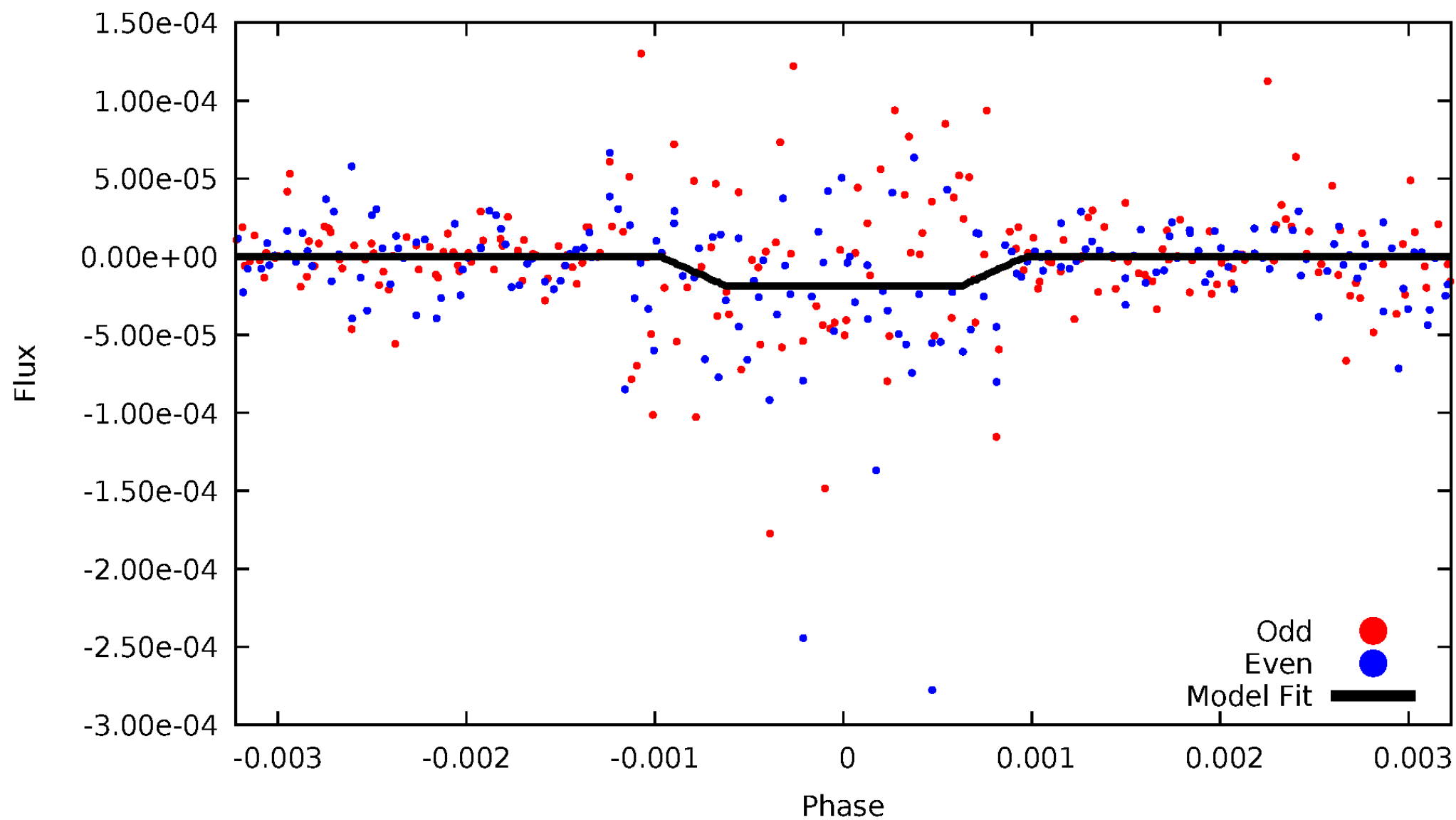
# DV Odd/Even

TCE 005727396-02



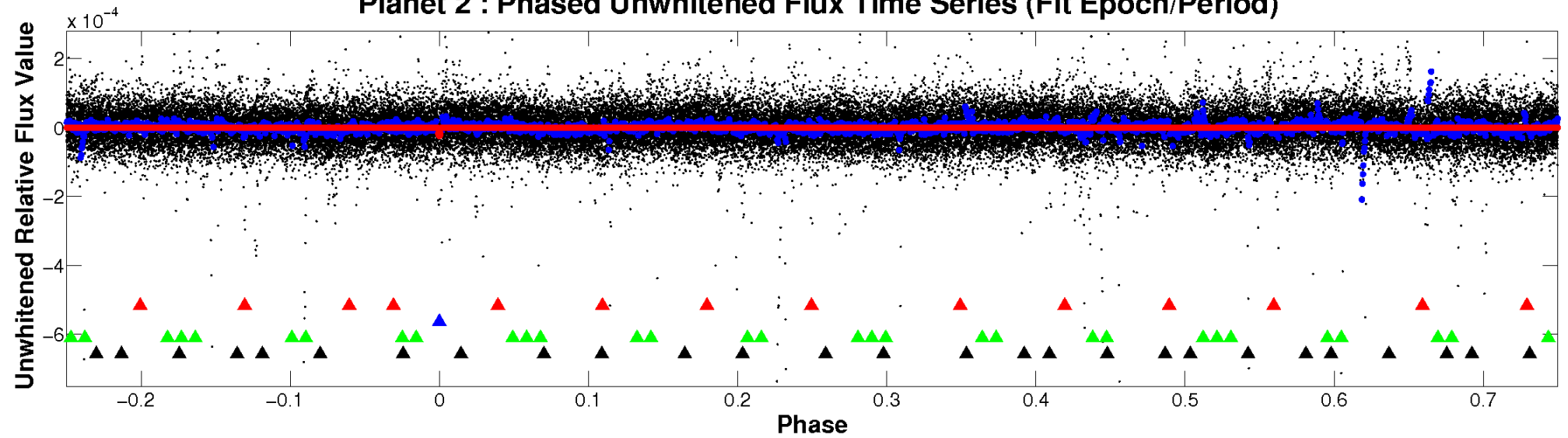
# ALT Odd/Even

TCE 005727396-02

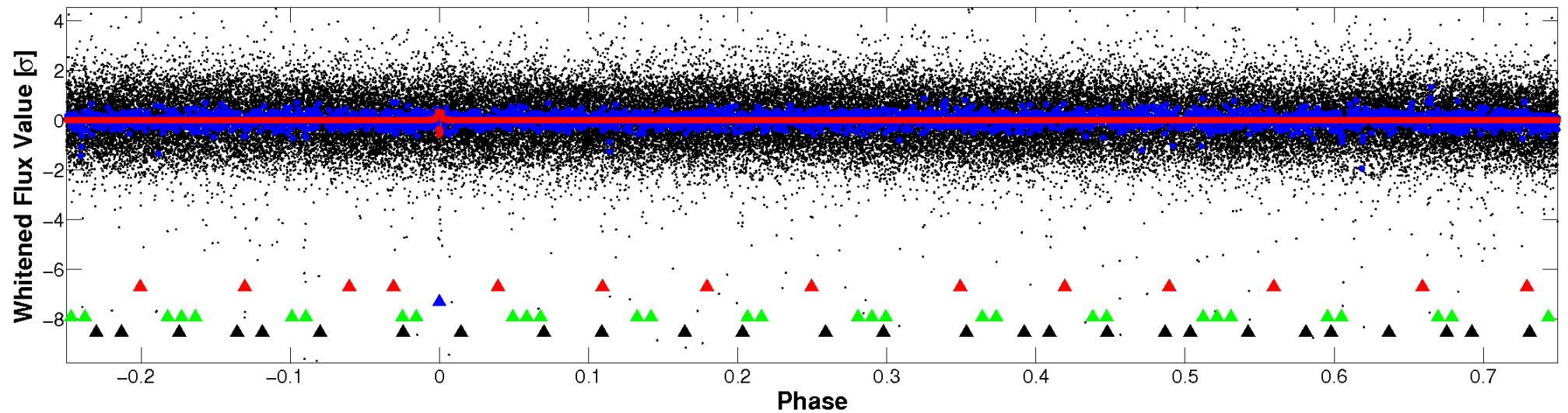


# Non-Whitened Vs. Whitened Light Curve

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

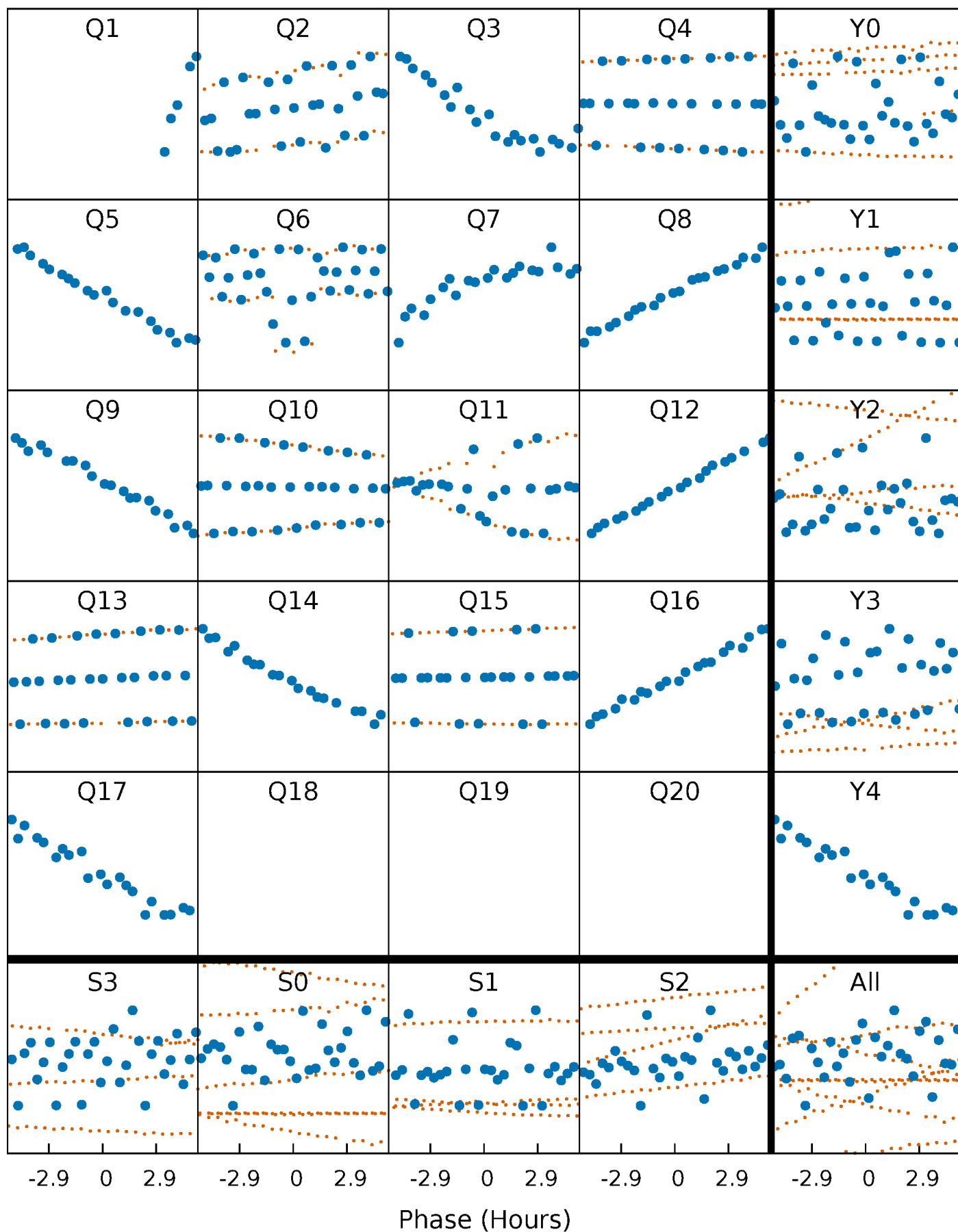


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

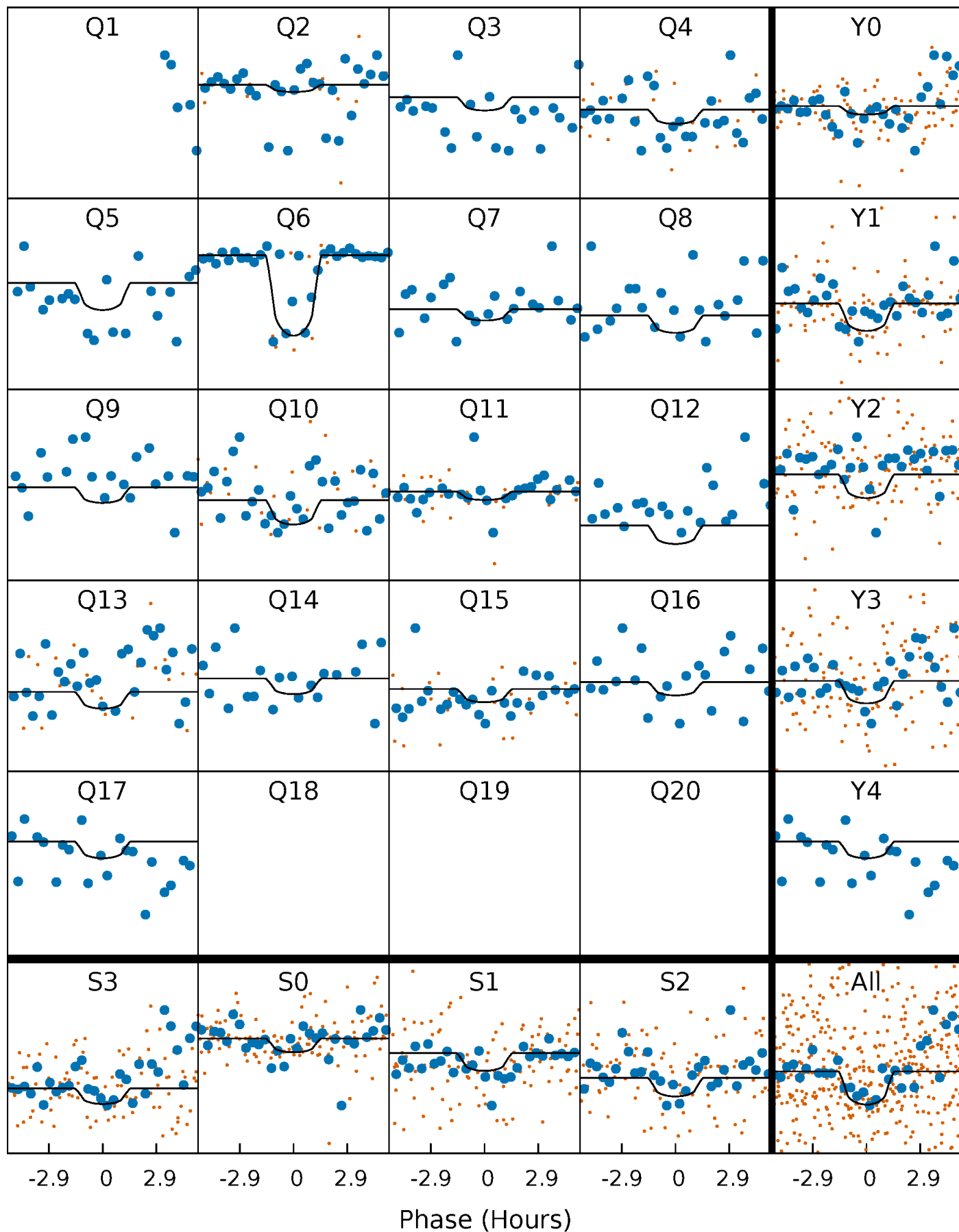
TCE 005727396-02 P= 59.721222 Days  $T_0=191.100629$  (BKJD)





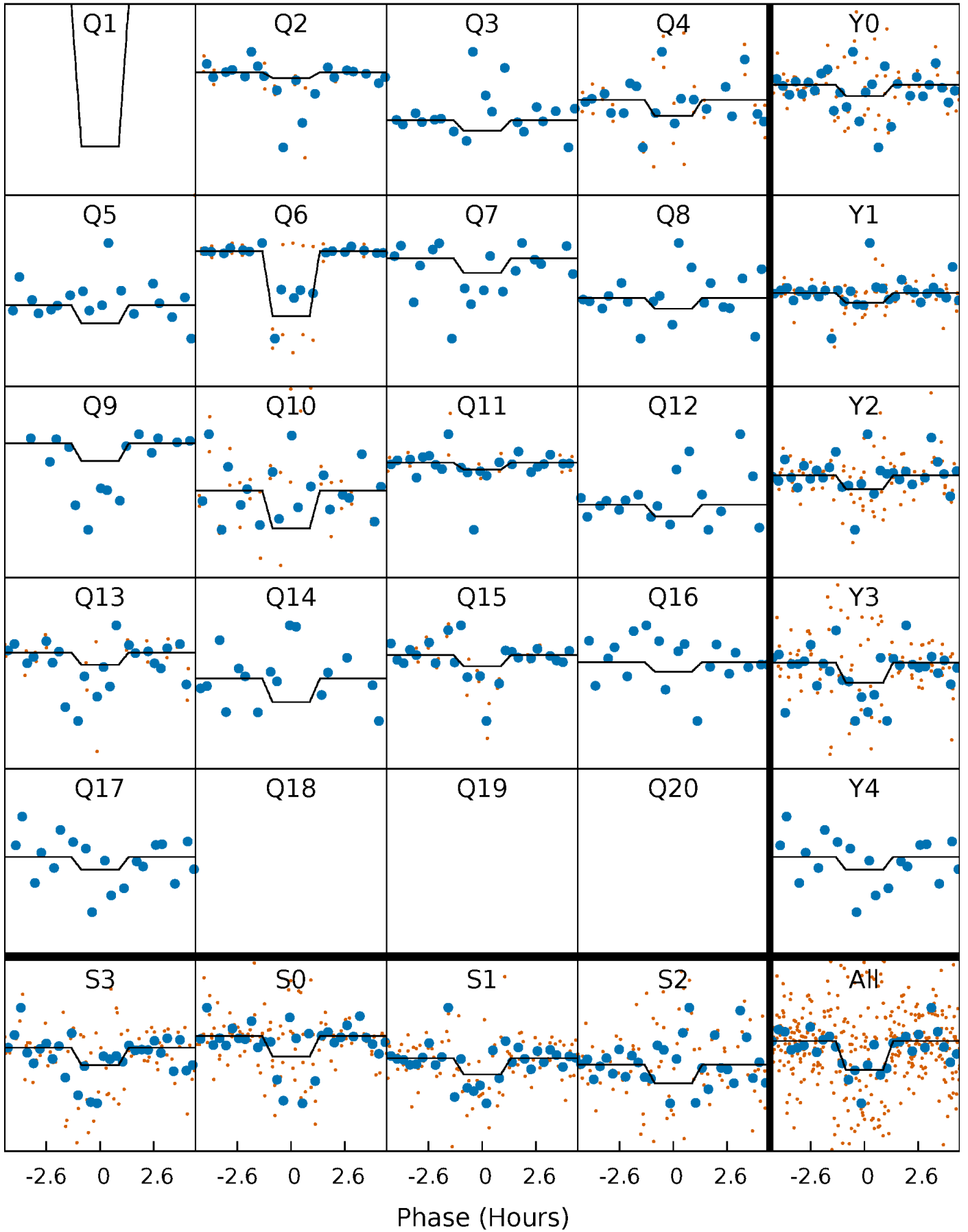
# DV Quarter-Phased Transit Curves

TCE 005727396-02   P= 59.721222 Days    $T_0=191.100629$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

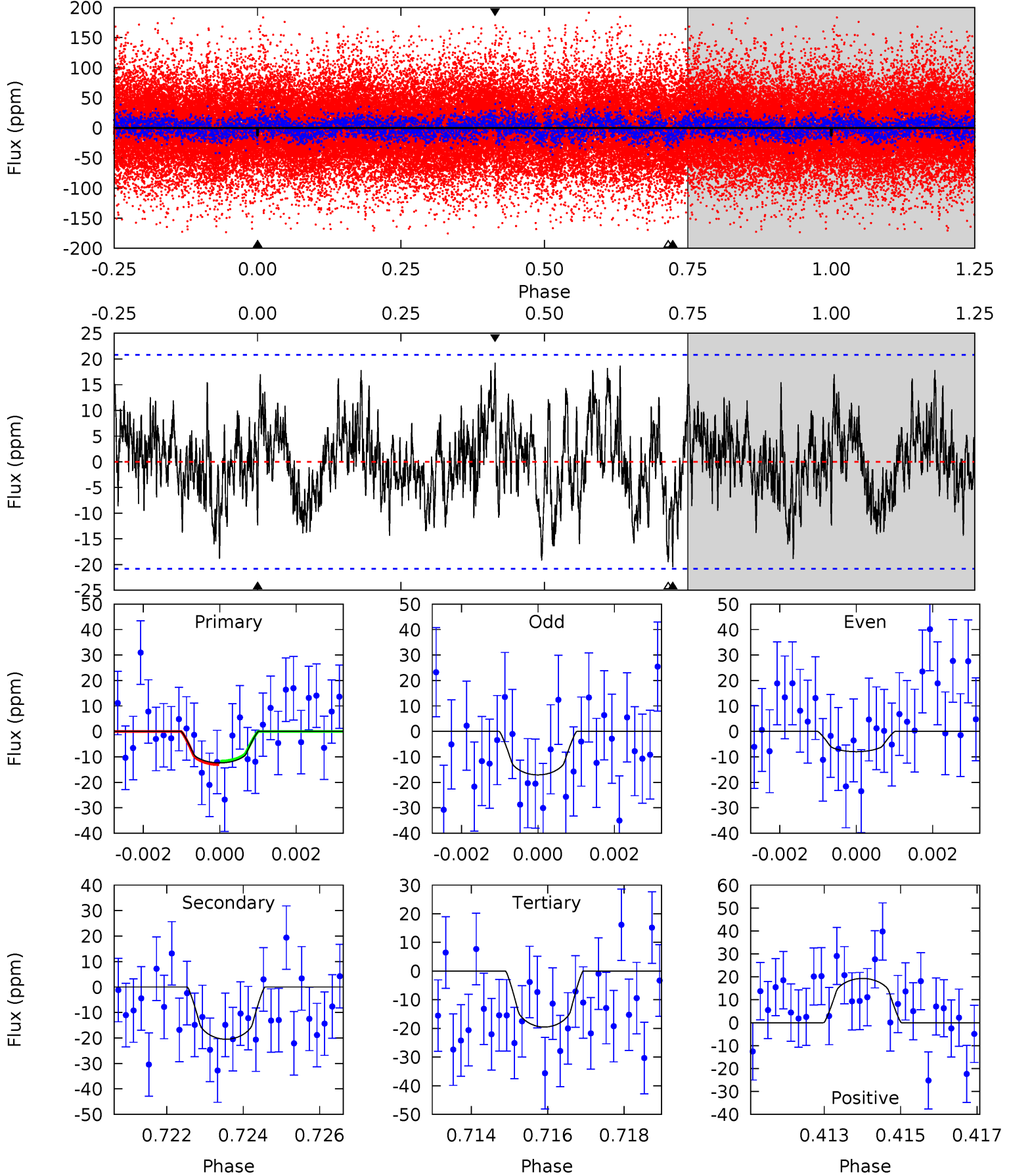
TCE 005727396-02 P= 59.728130 Days  $T_0=191.049394$  (BKJD)



# DV Model-Shift Uniqueness Test

005727396-02, P = 59.721222 Days, E = 131.379407 Days

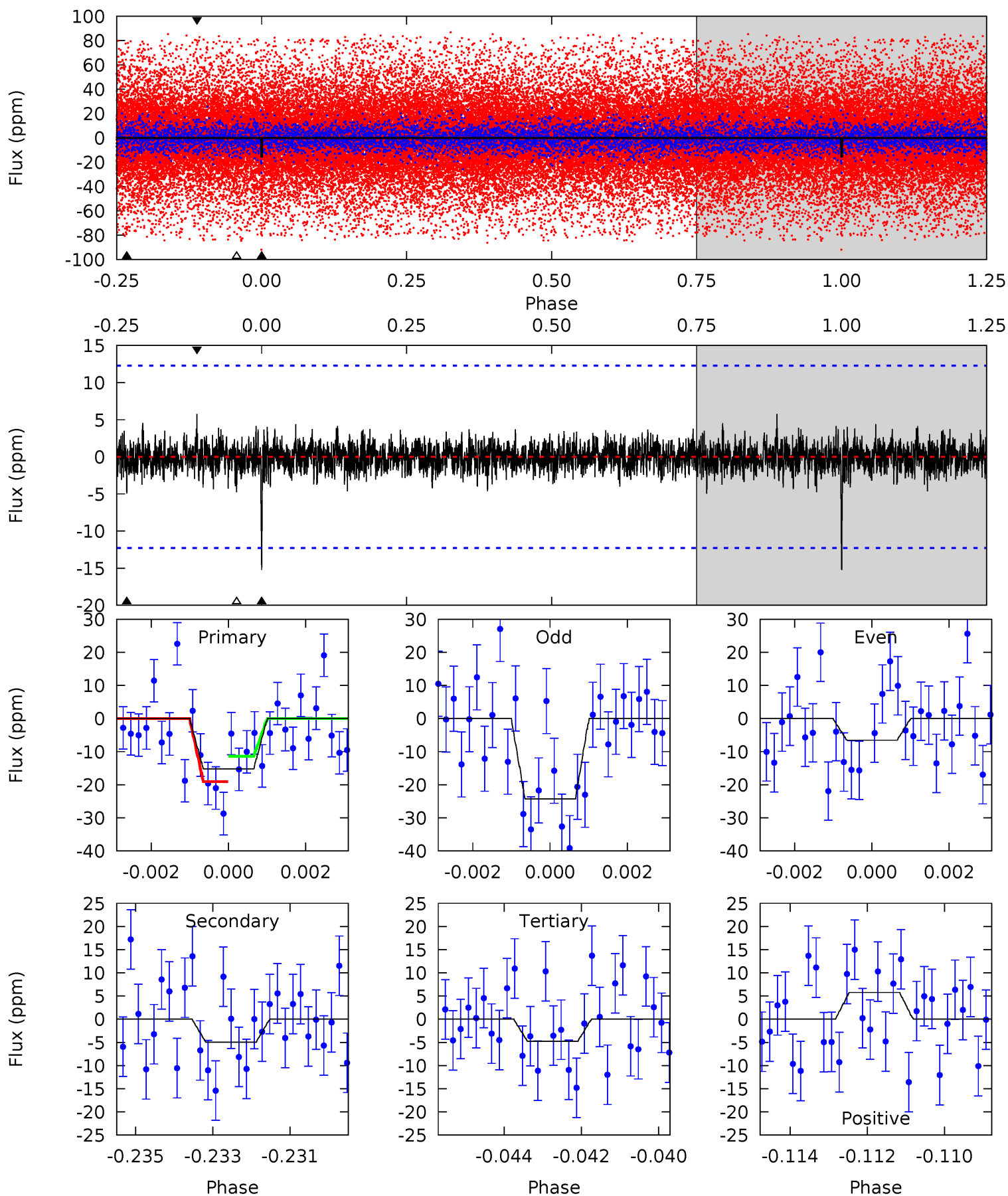
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.16	5.24	4.99	4.93	5.32	3.08	1.69	-1.83	-1.77	0.25	0.31	1.17	0.92	0.48	0.18



# Alt Model-Shift Uniqueness Test

005727396-02, P = 59.728130 Days, E = 131.321264 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
6.61	2.15	2.07	2.50	5.33	3.10	0.58	4.54	4.12	0.08	-0.35	3.93	0.93	0.27	1.69



### Stellar Parameters For KIC 005727396

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3960^{+89}_{-108}$	$0.970^{+0.030}_{-0.030}$	$-0.380^{+0.200}_{-0.250}$	$71.106^{+2.773}_{-14.790}$	$1.718^{+0.072}_{-0.613}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+3%/-3%	+53%/-66%	+4%/-21%	+4%/-36%	+30%/-8%
Source	PHO54	AST54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 005727396-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-20 \pm 4$	$43.78^{+15.54}_{-14.13}$	$3447^{+87}_{-102}$	$3347^{+724}_{-628}$	$0.730^{+0.937}_{-0.326}$
Alt.	$-5 \pm 2$	$34.60^{+15.78}_{-15.30}$	$3444^{+93}_{-107}$	$-2269^{+5820}_{-705}$	$0.277^{+0.628}_{-0.169}$

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

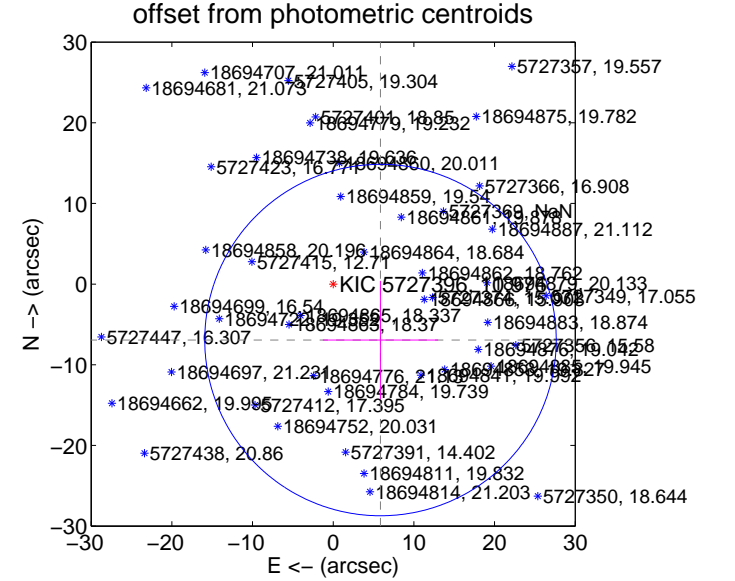
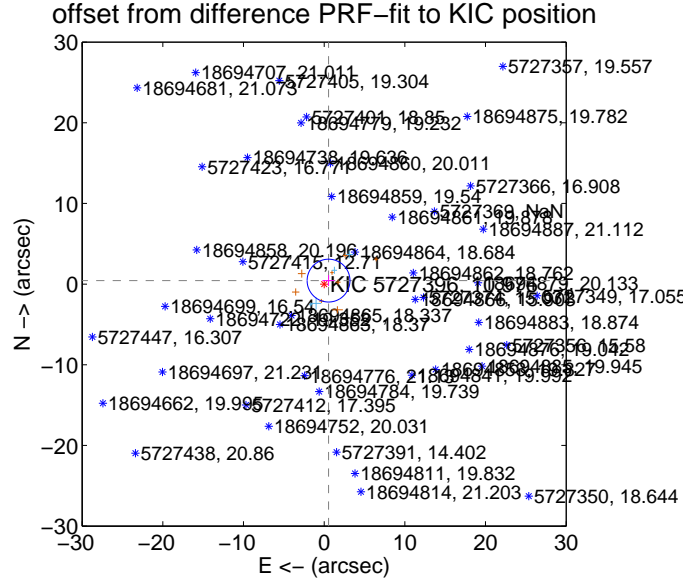
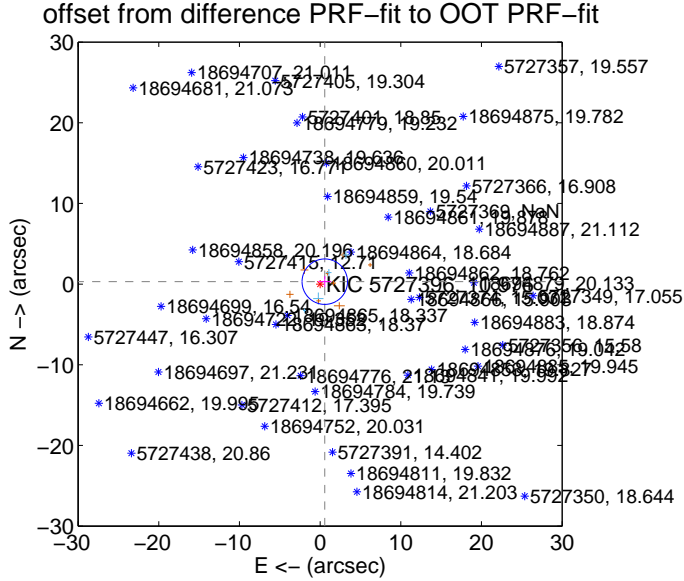
## DV Centroid Data

Supplemental centroid analysis for 005727396-02. **Kepler magnitude: 10.98.** Transit SNR 8.88

There are 4 quarters with good PRF difference image offsets

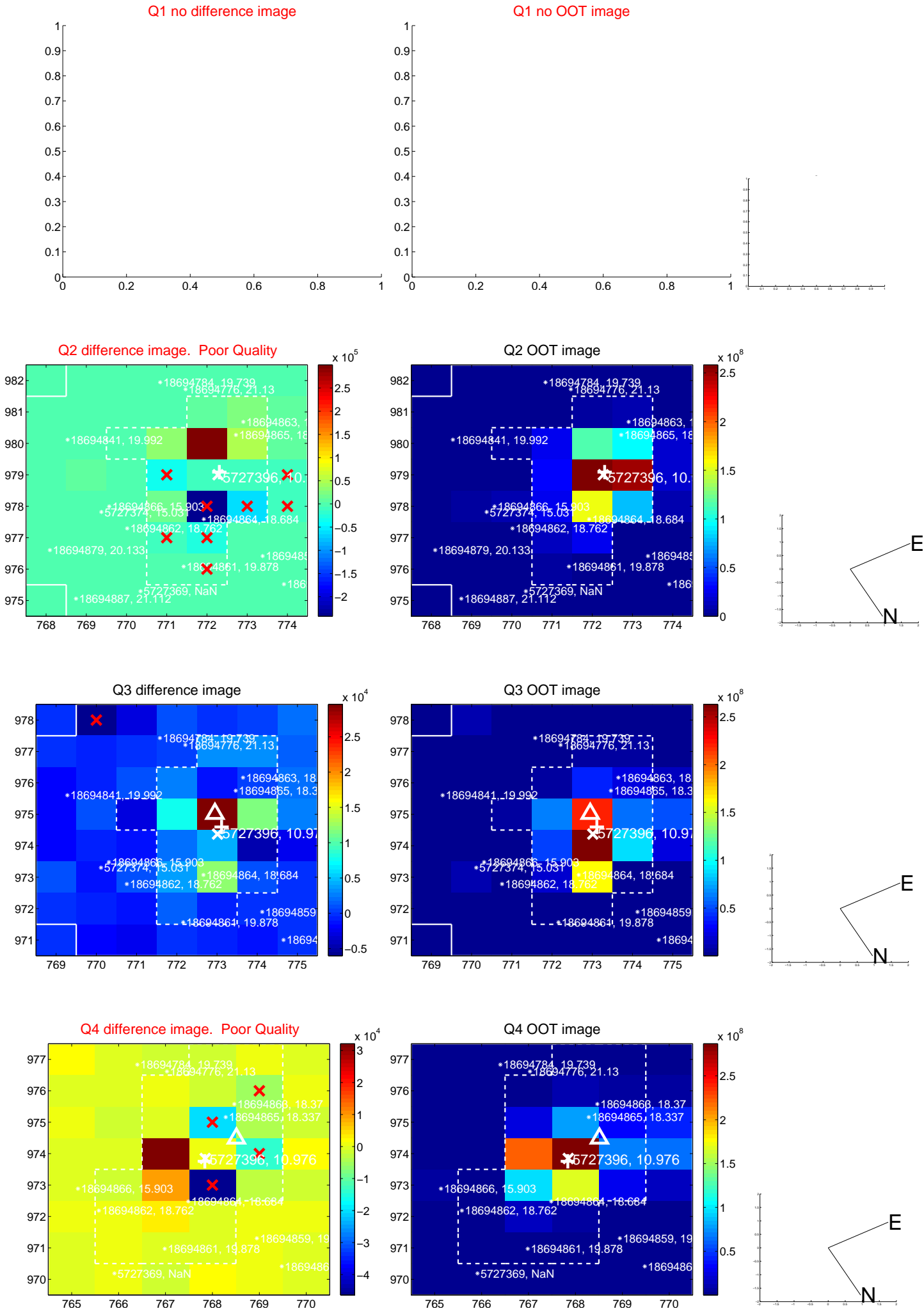
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.652 \pm 0.939$	0.69	$-0.579 \pm 0.794$	$0.300 \pm 0.681$
PRF-fit source offset from KIC position	$0.695 \pm 0.885$	0.79	$-0.543 \pm 0.759$	$0.434 \pm 0.688$
photometric centroid source offset	$9.08 \pm 7.26$	1.25	$-5.86 \pm 7.15$	$-6.93 \pm 7.34$

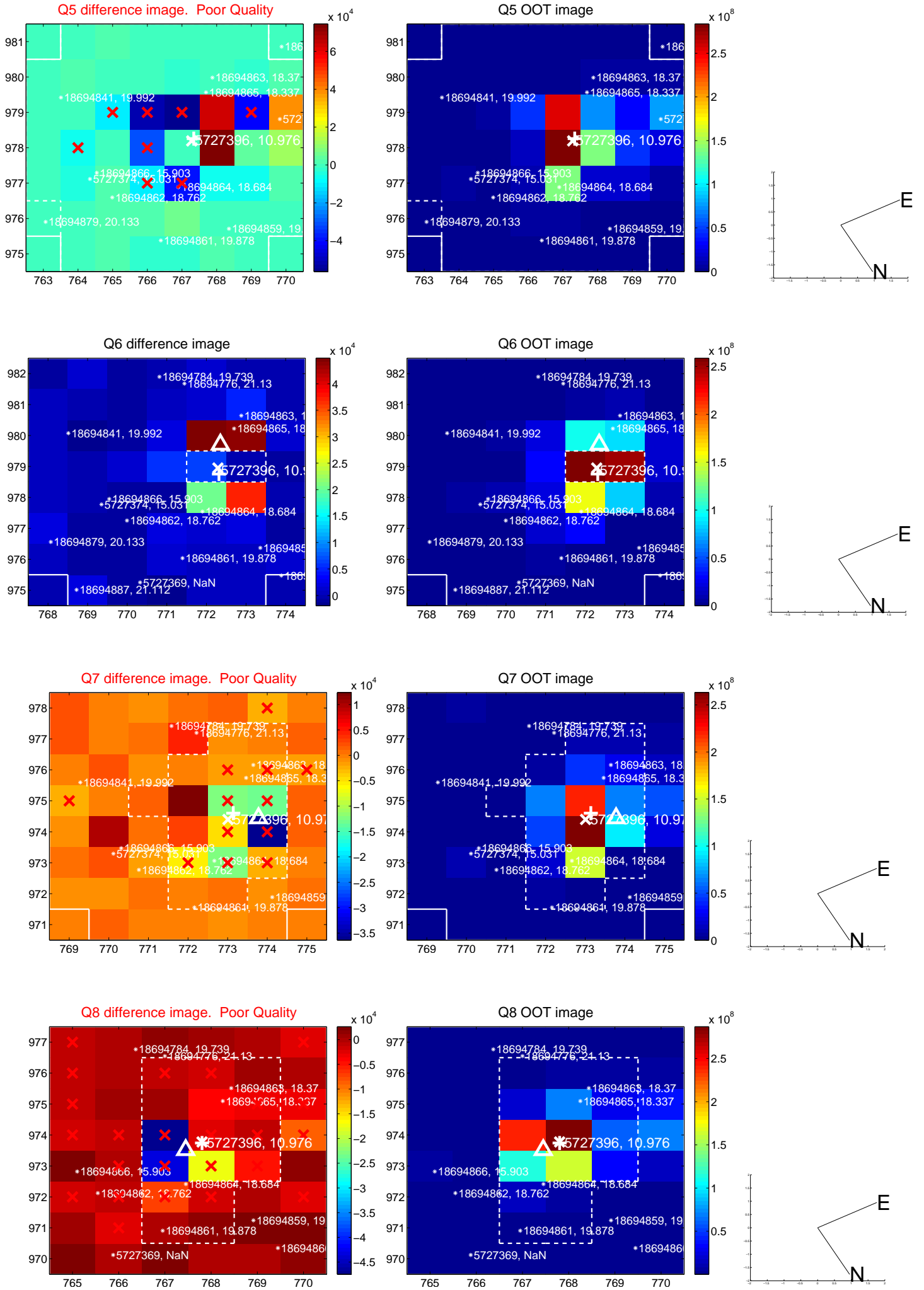


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

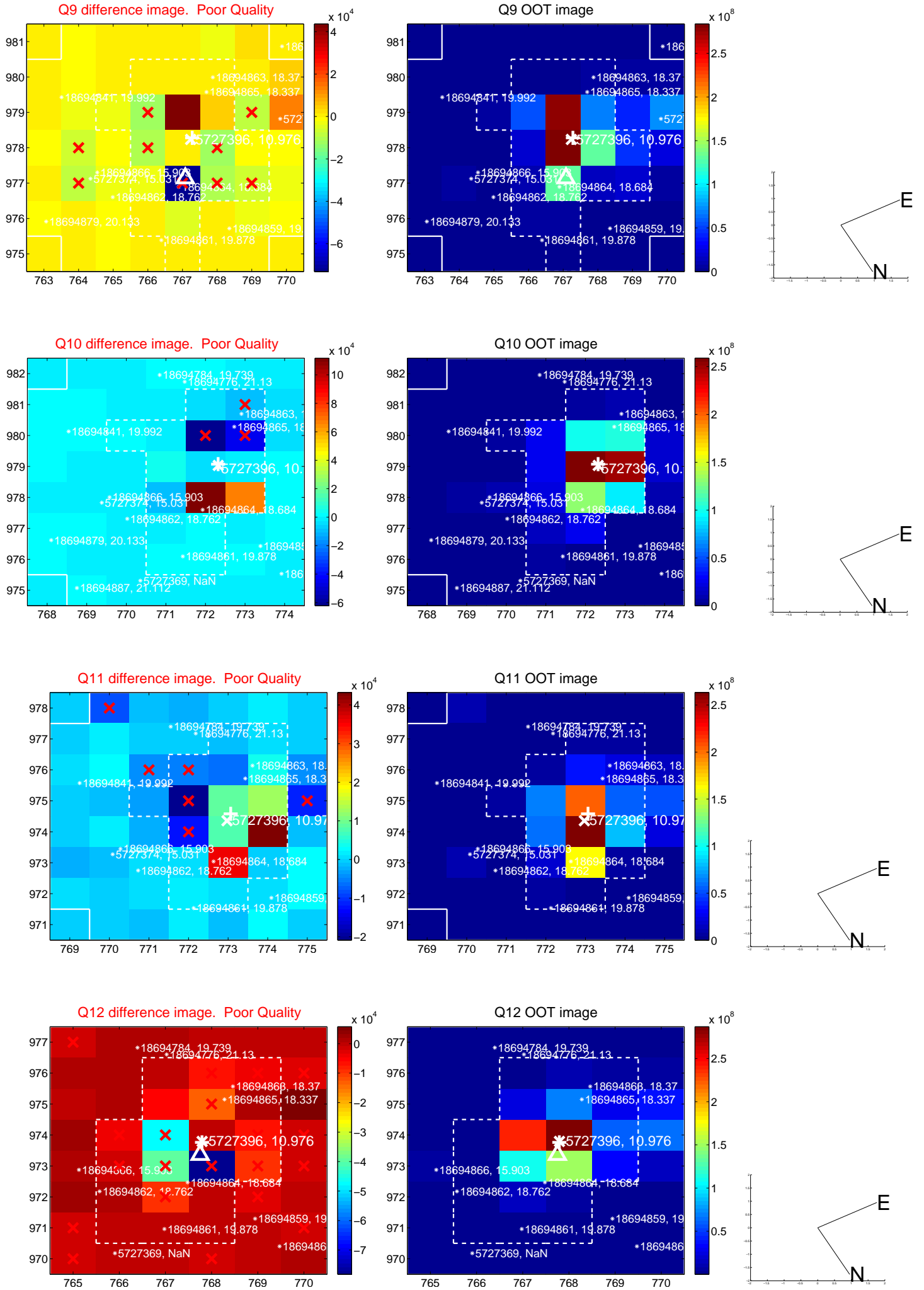


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

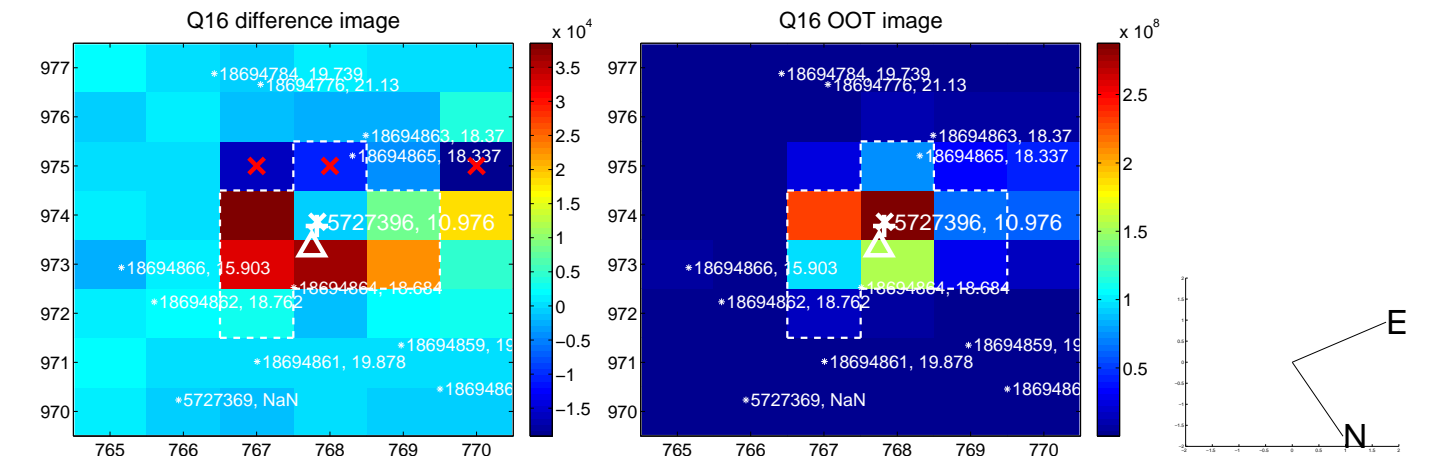
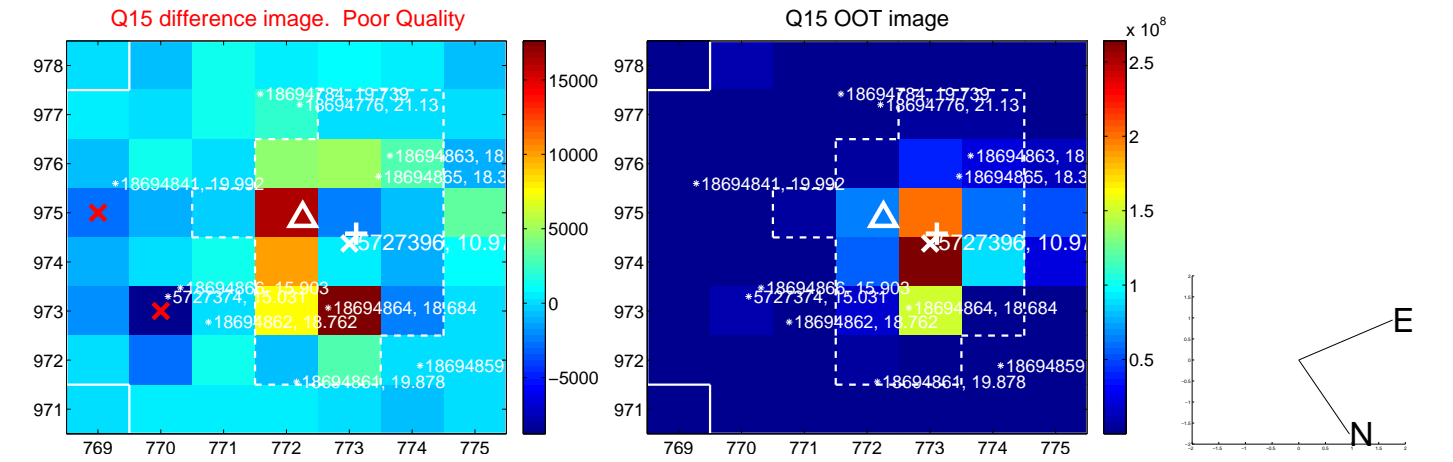
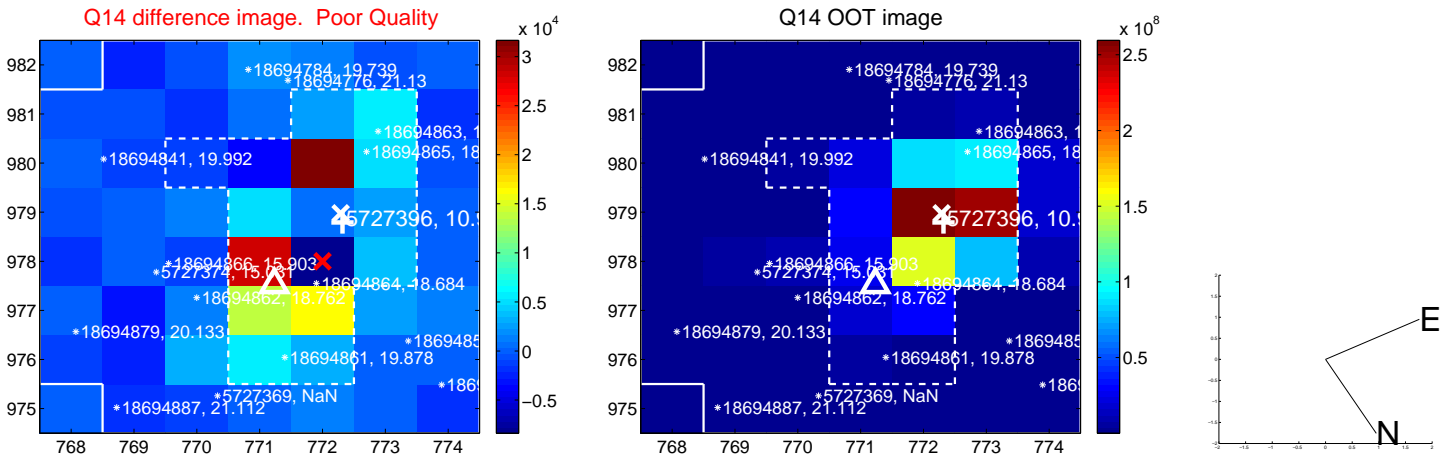
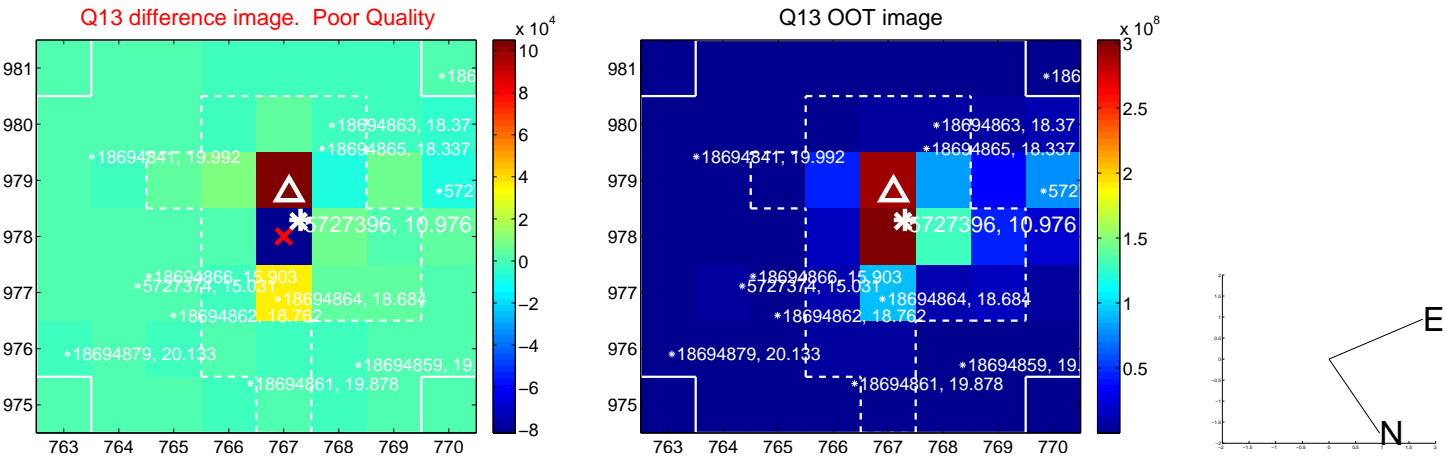




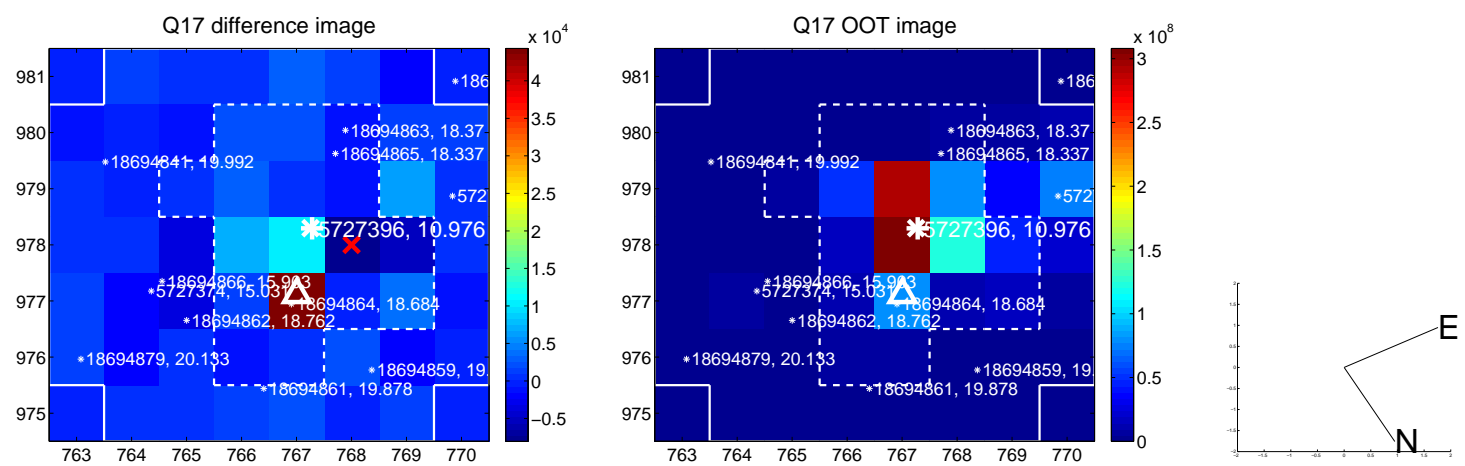
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



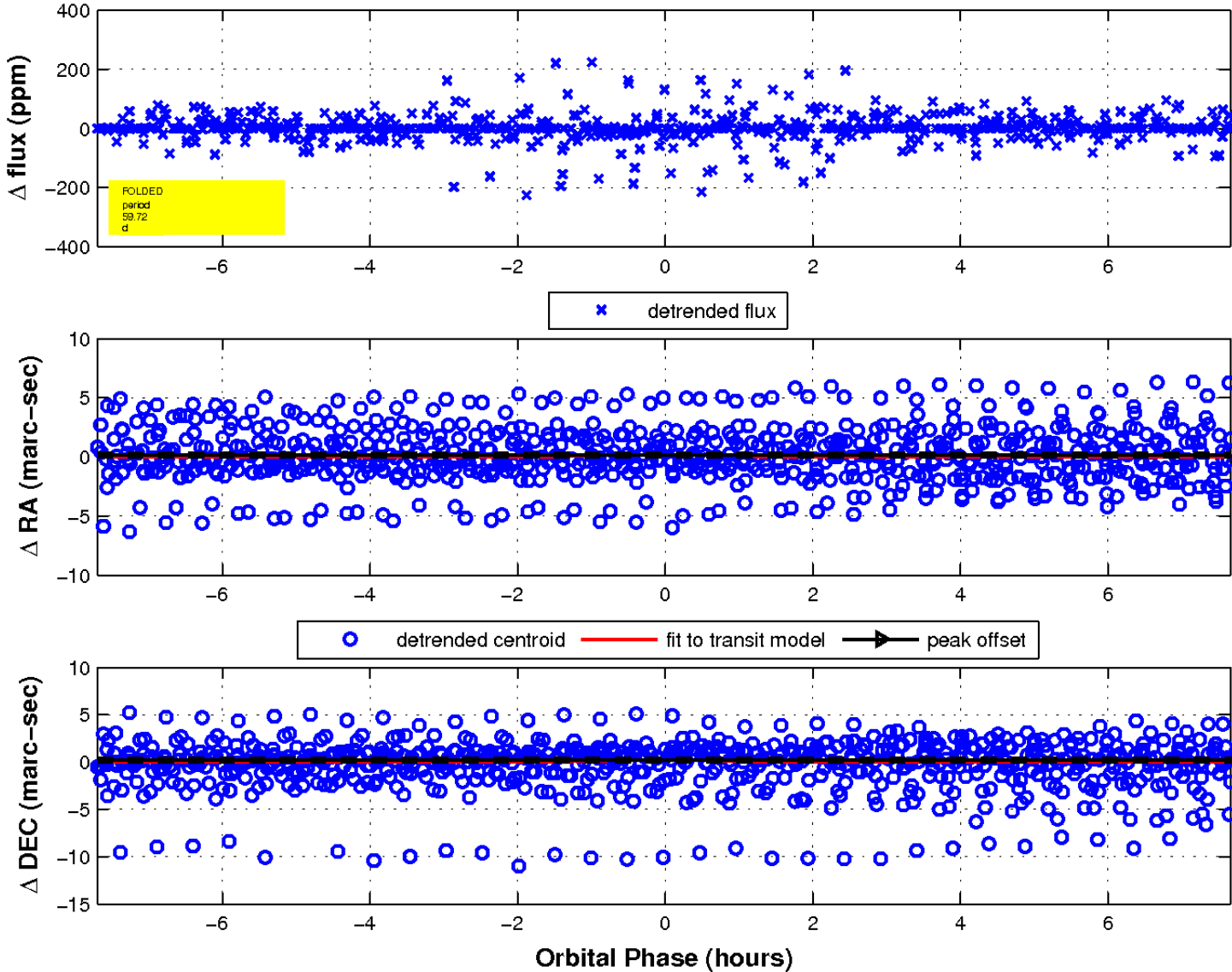
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

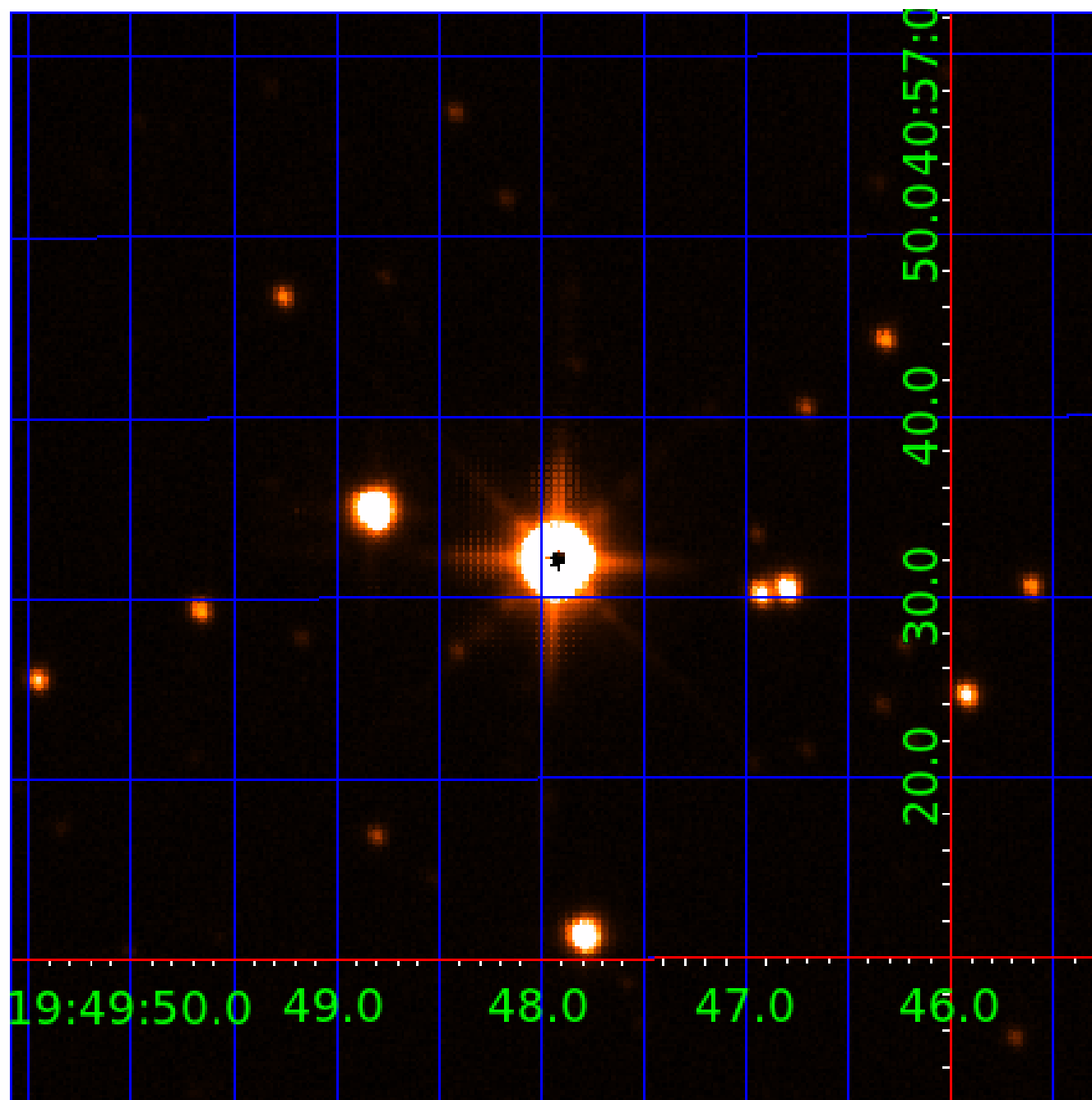


fluxWeightedCentroids, Planet 2 of 4



UKIRT Image

Declination



# KIC 005727396

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005727396-01	OBS	No	100.930562	189.261308	33.9	3.072	14.3	10.2	71.11	3960	39.18	4307.73
005727396-02	OBS	No	59.721222	191.100629	24.0	2.577	11.7	8.9	71.11	3960	44.32	8671.77
005727396-03	OBS	No	45.896644	176.903576	28.8	1.038	10.1	19.1	71.11	3960	36.96	0.00
005727396-04	OBS	No	54.081483	183.002218	21.3	1.908	9.5	10.0	71.11	3960	41.70	9898.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005727396-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
005727396-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
005727396-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
005727396-04	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

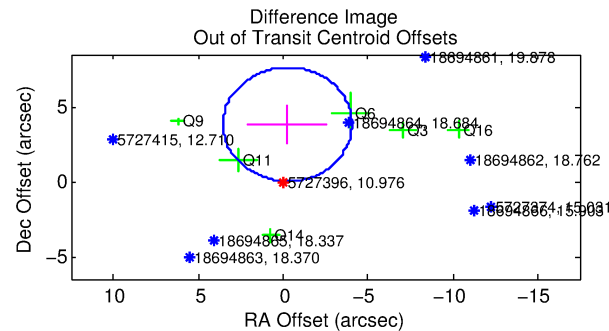
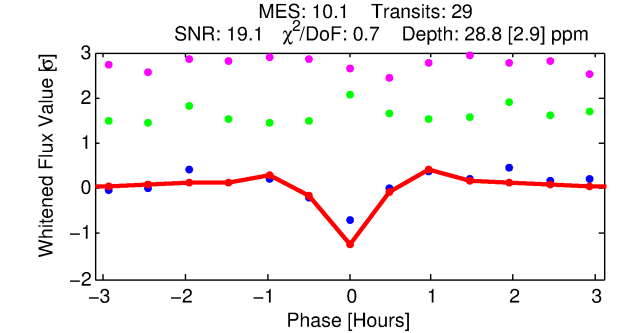
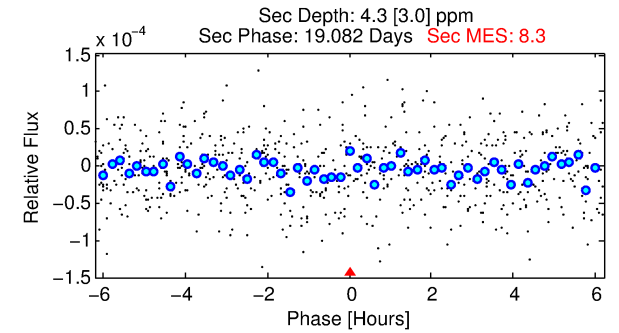
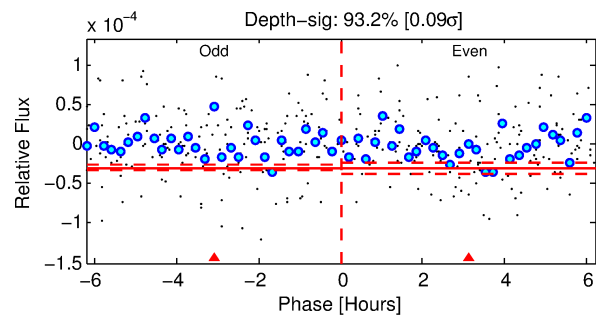
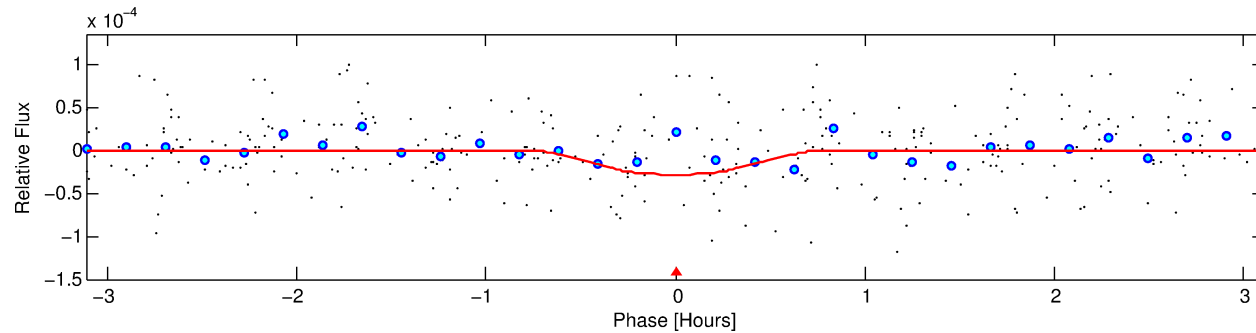
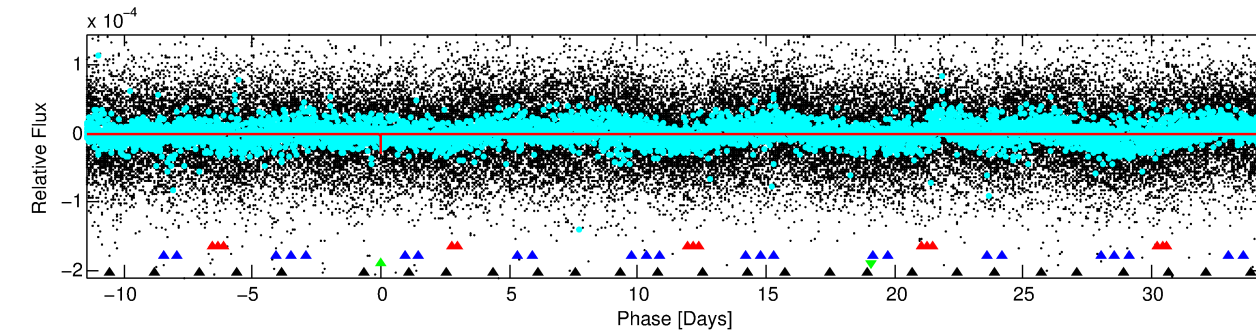
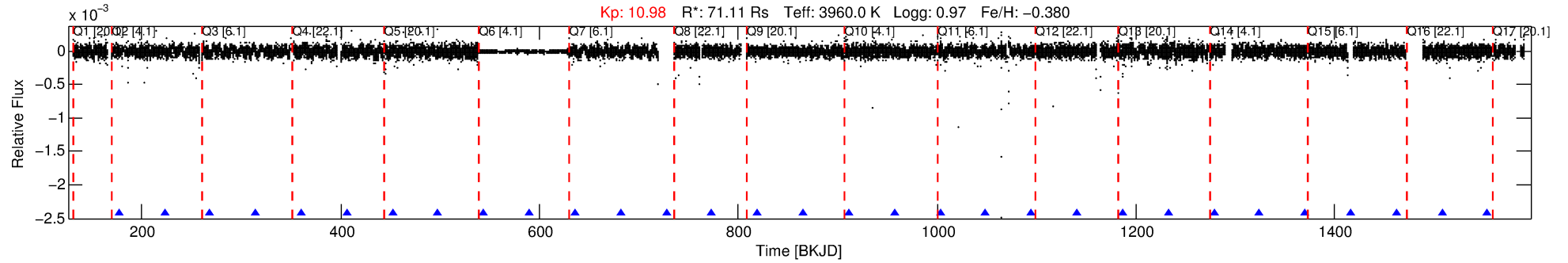
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005727396-03

No Significant Match Found

# DV One-Page Summary

KIC: 5727396 Candidate: 3 of 4 Period: 45.897 d



## DV Fit Results:

Period = 45.89664 [0.00021] d  
Epoch = 176.9036 [0.0018] BKJD  
Rp/R\* = 0.0048 [0.0047]  
a/R\* = 323.95 [820.08]  
b = 0.30 [7.80]  
Seff = N/A  
Teq = N/A  
Rp = 36.96 [37.63] Re  
a = N/A  
Ag = N/A  
Teffp = N/A

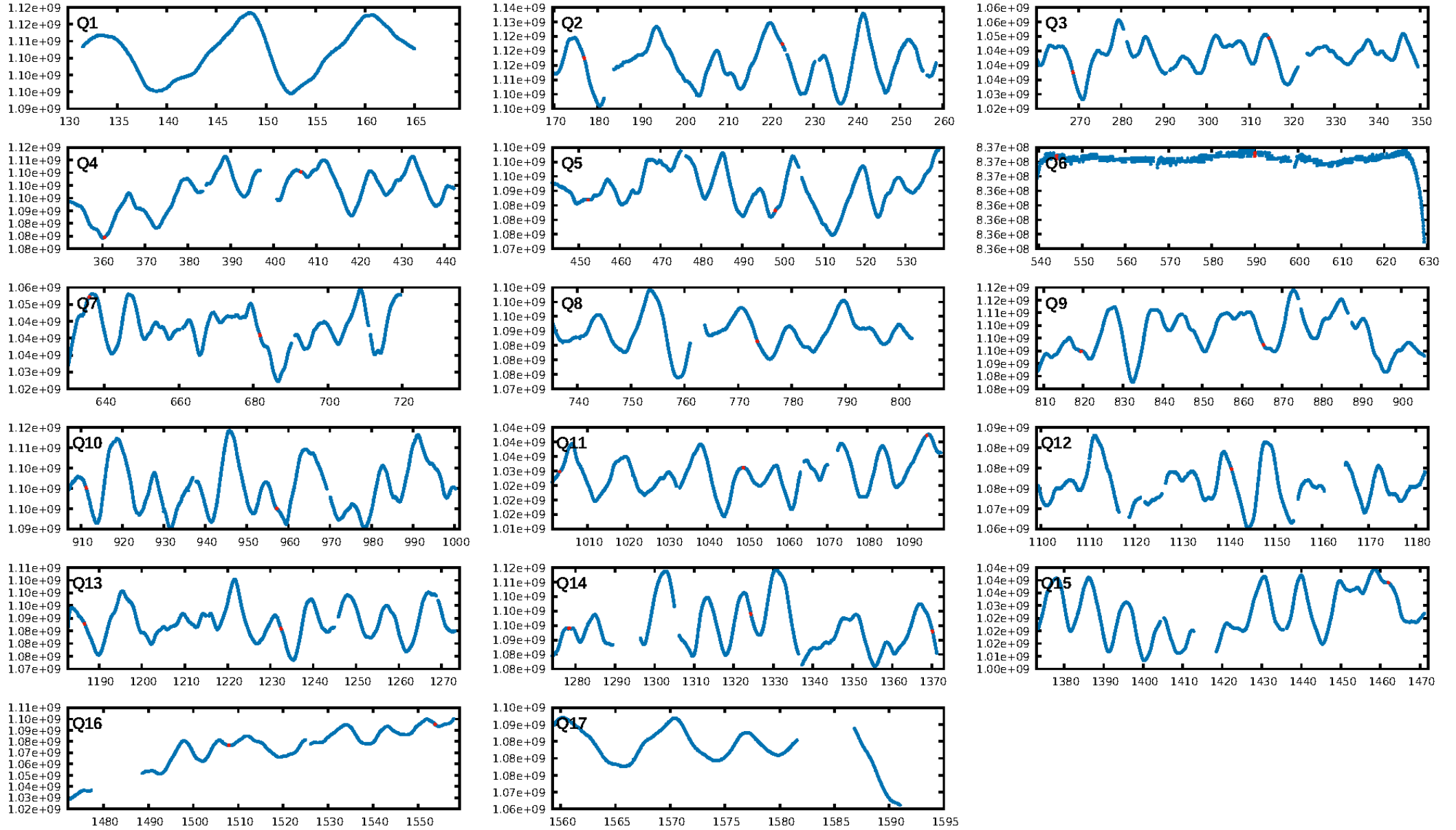
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [90.43 $\sigma$ ]  
ModelChiSquare2-sig: 89.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.24e-07  
RollingBand-fgt: 1.00 [29/29]  
GhostDiagnostic-chr: -0.8826  
Centroid-sig: 52.5%  
Centroid-so: 5.184 arcsec [0.86 $\sigma$ ]  
OotOffset-rm: 3.835 arcsec [3.03 $\sigma$ ]  
KicOffset-rm: 3.771 arcsec [3.09 $\sigma$ ]  
OotOffset-st: 2/2/1/1 [6]  
KicOffset-st: 2/2/1/1 [6]  
DiffImageQuality-fgm: 0.17 [1/6]  
DiffImageOverlap-fno: 1.00 [15/15]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:22:46 Z

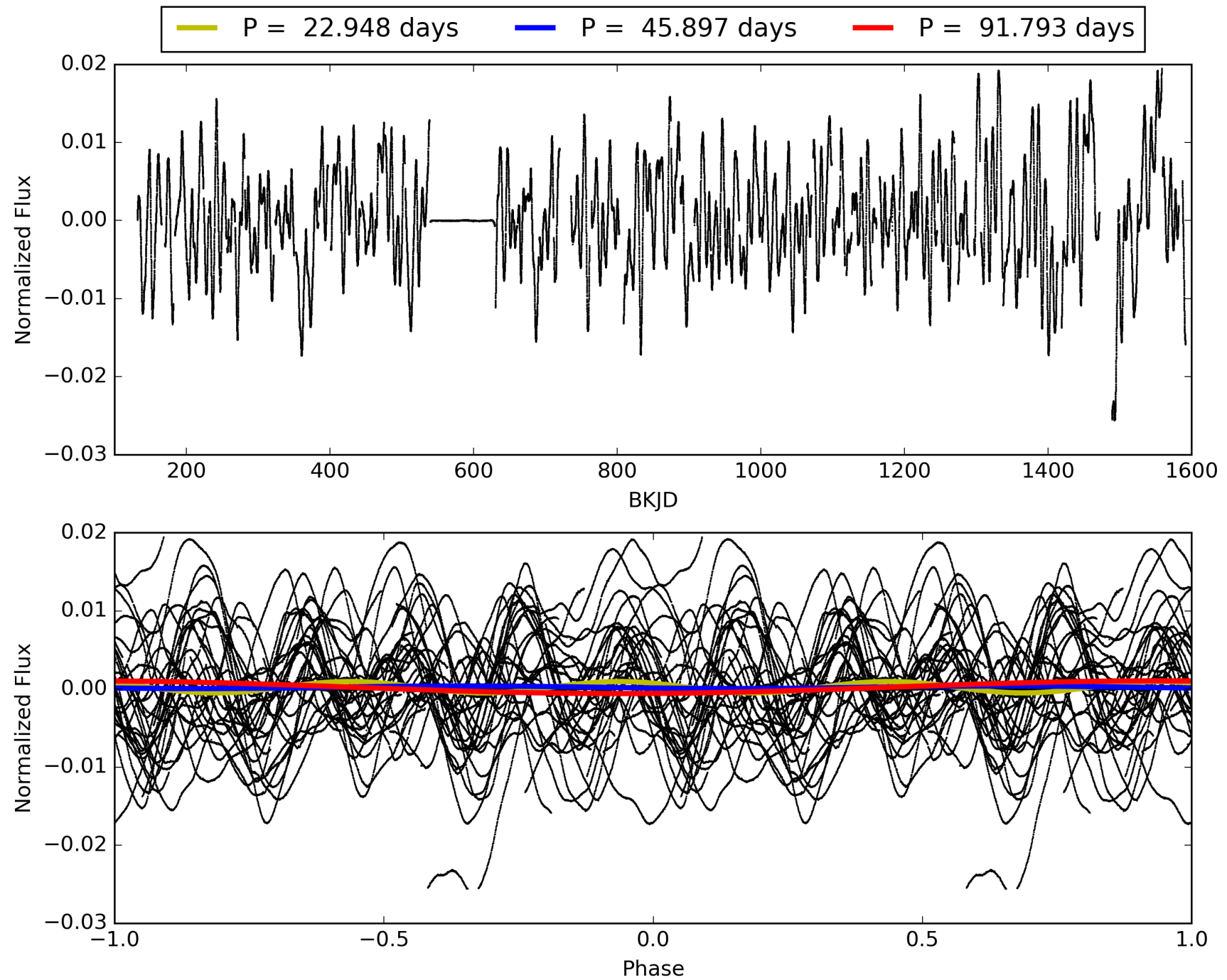
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005727396-03, PDC Light Curves





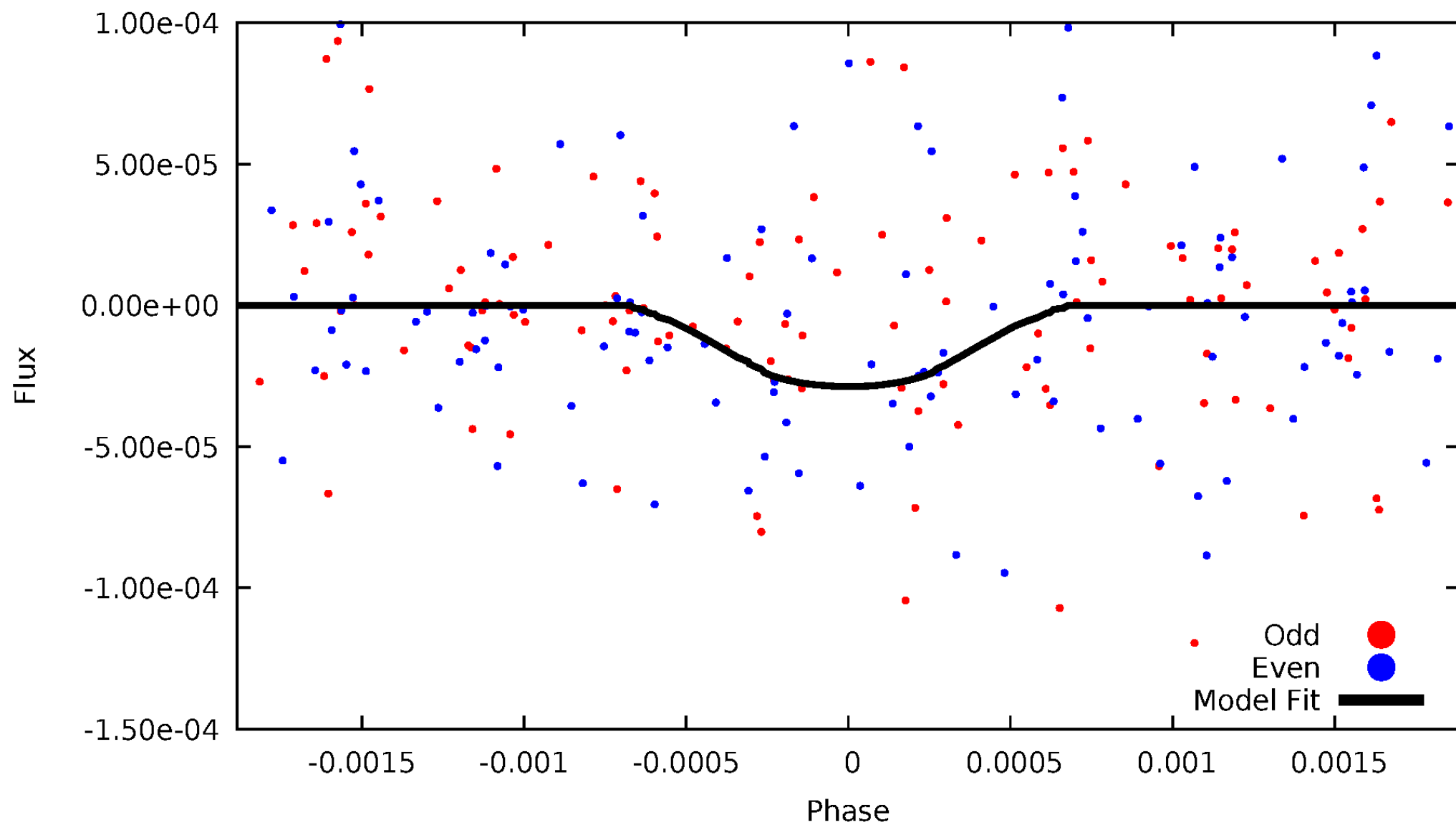
TCE 005727396-03





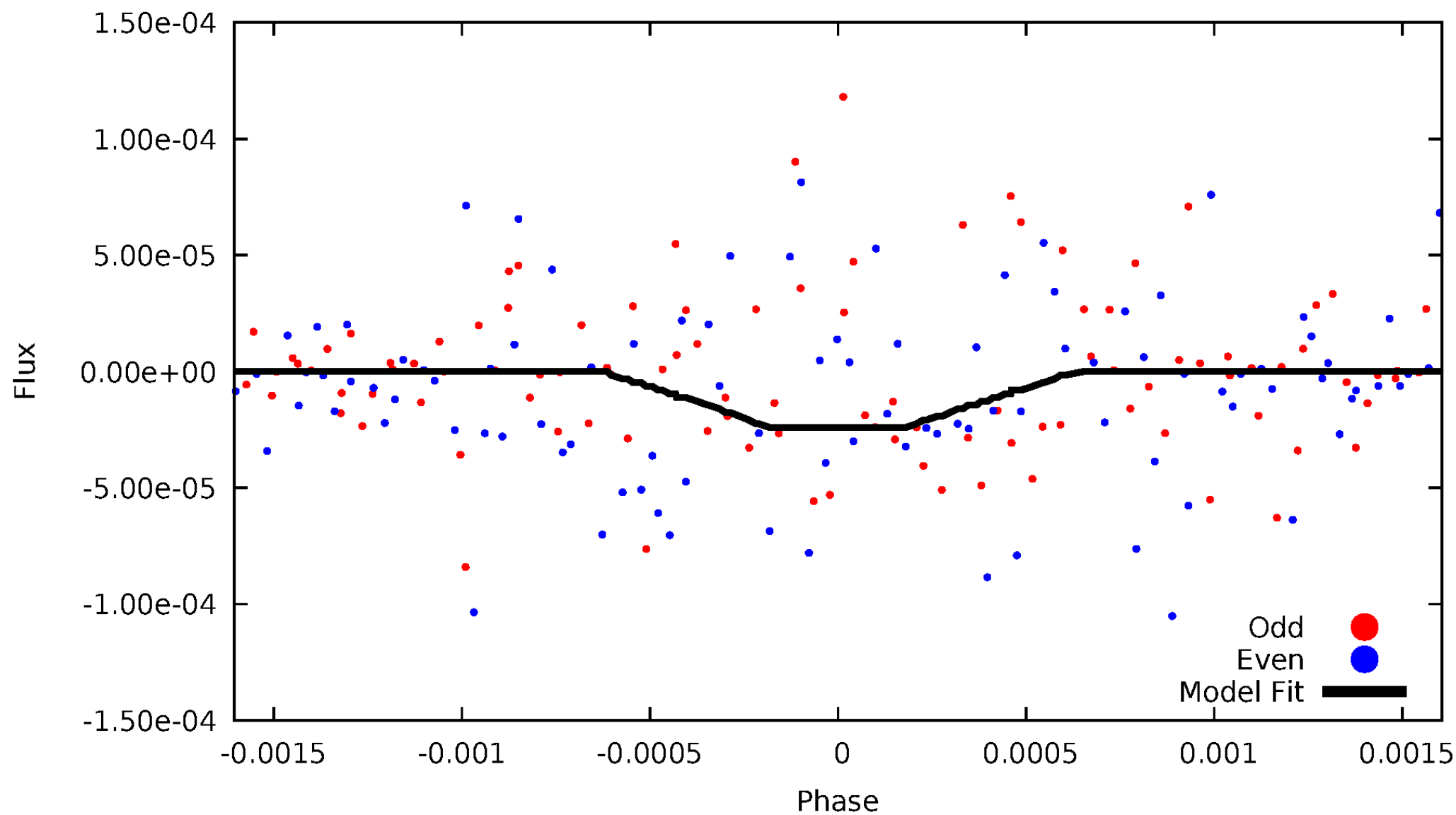
# DV Odd/Even

TCE 005727396-03



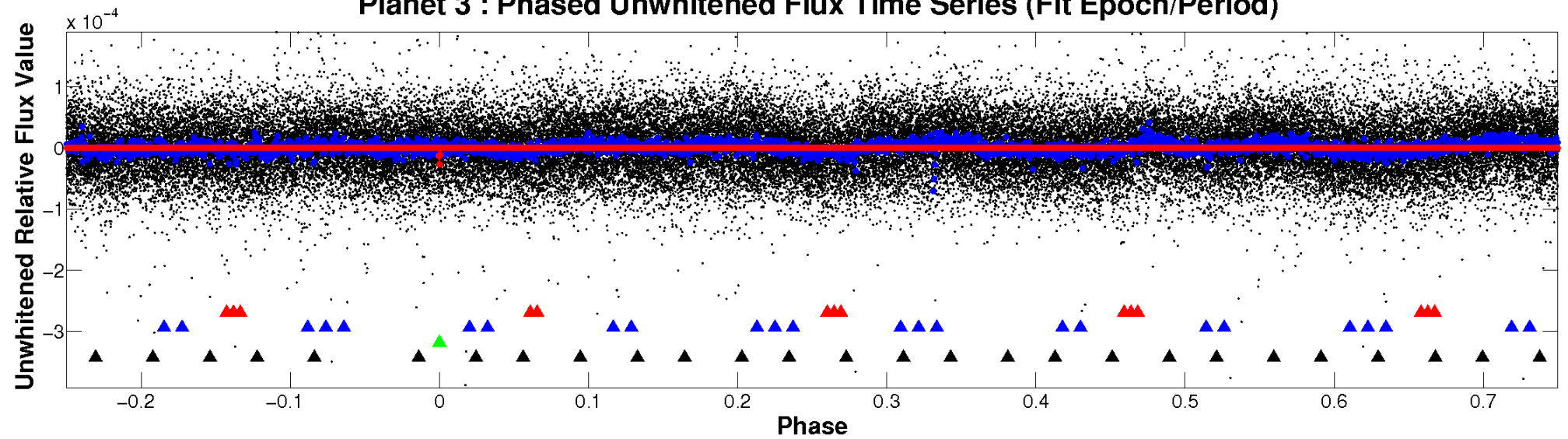
# ALT Odd/Even

TCE 005727396-03

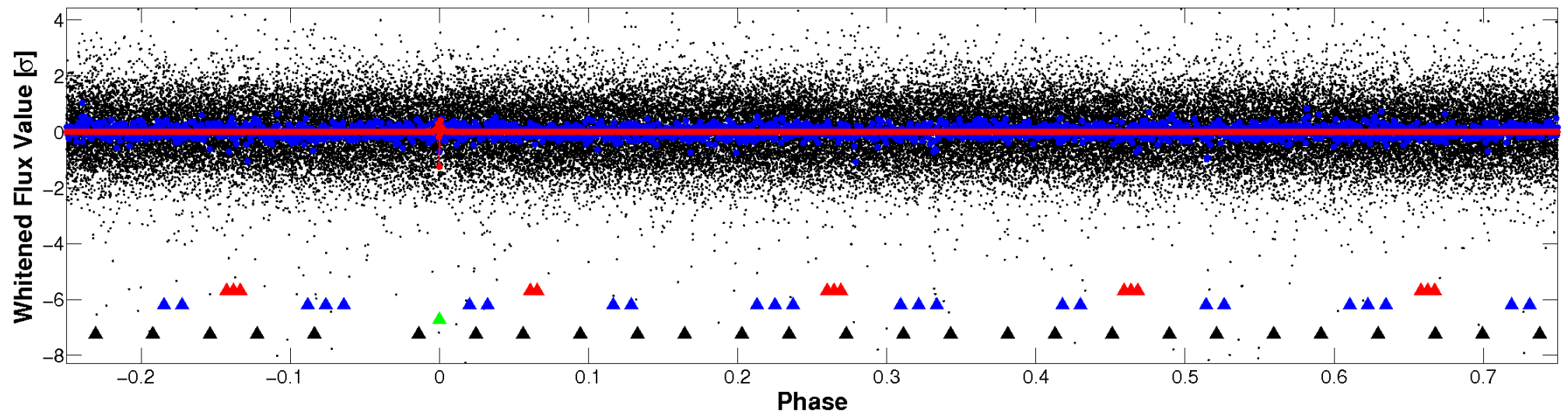


# Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

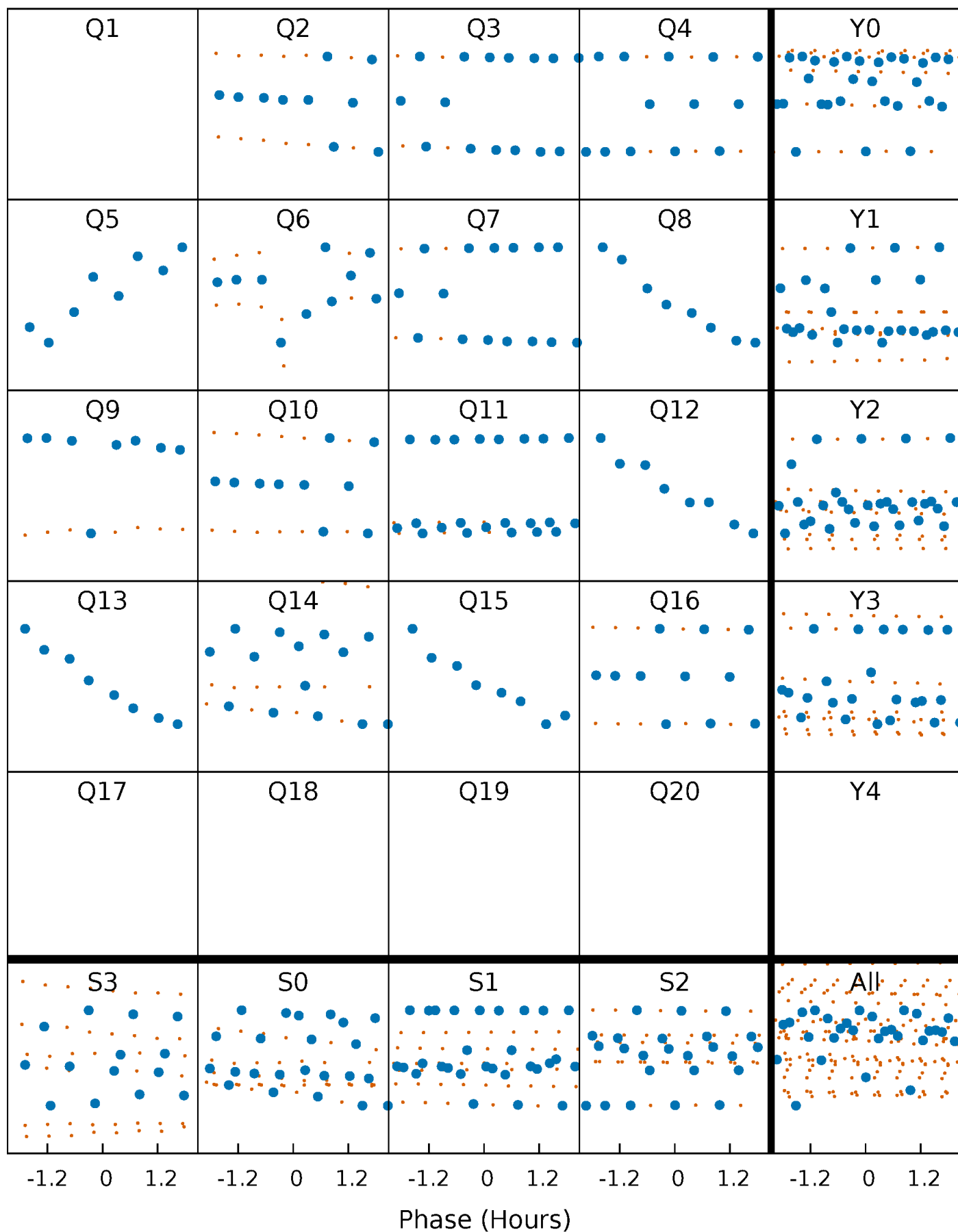


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



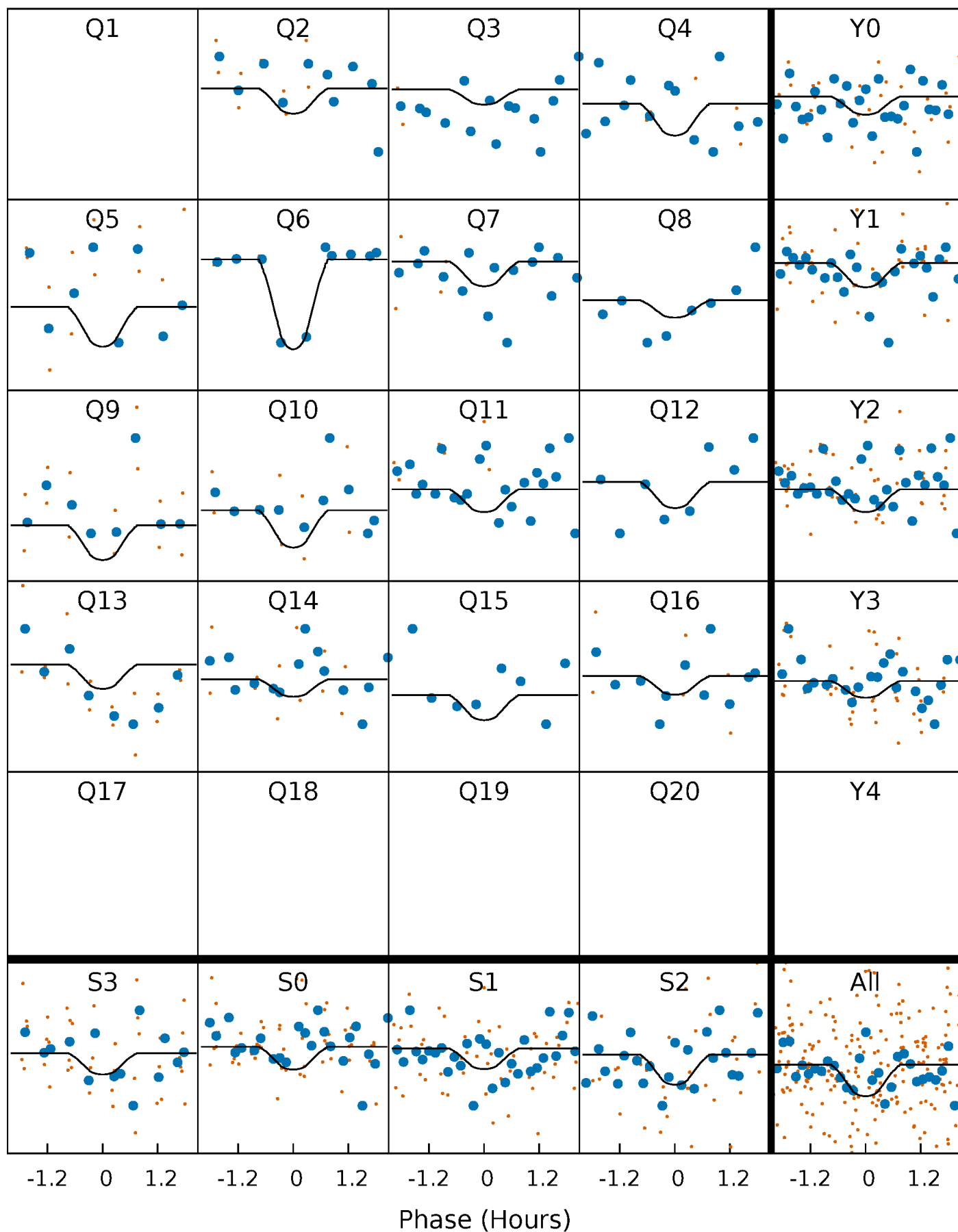
# PDC Quarter-Phased Transit Curves

TCE 005727396-03   P= 45.896644 Days    $T_0=176.903577$  (BKJD)



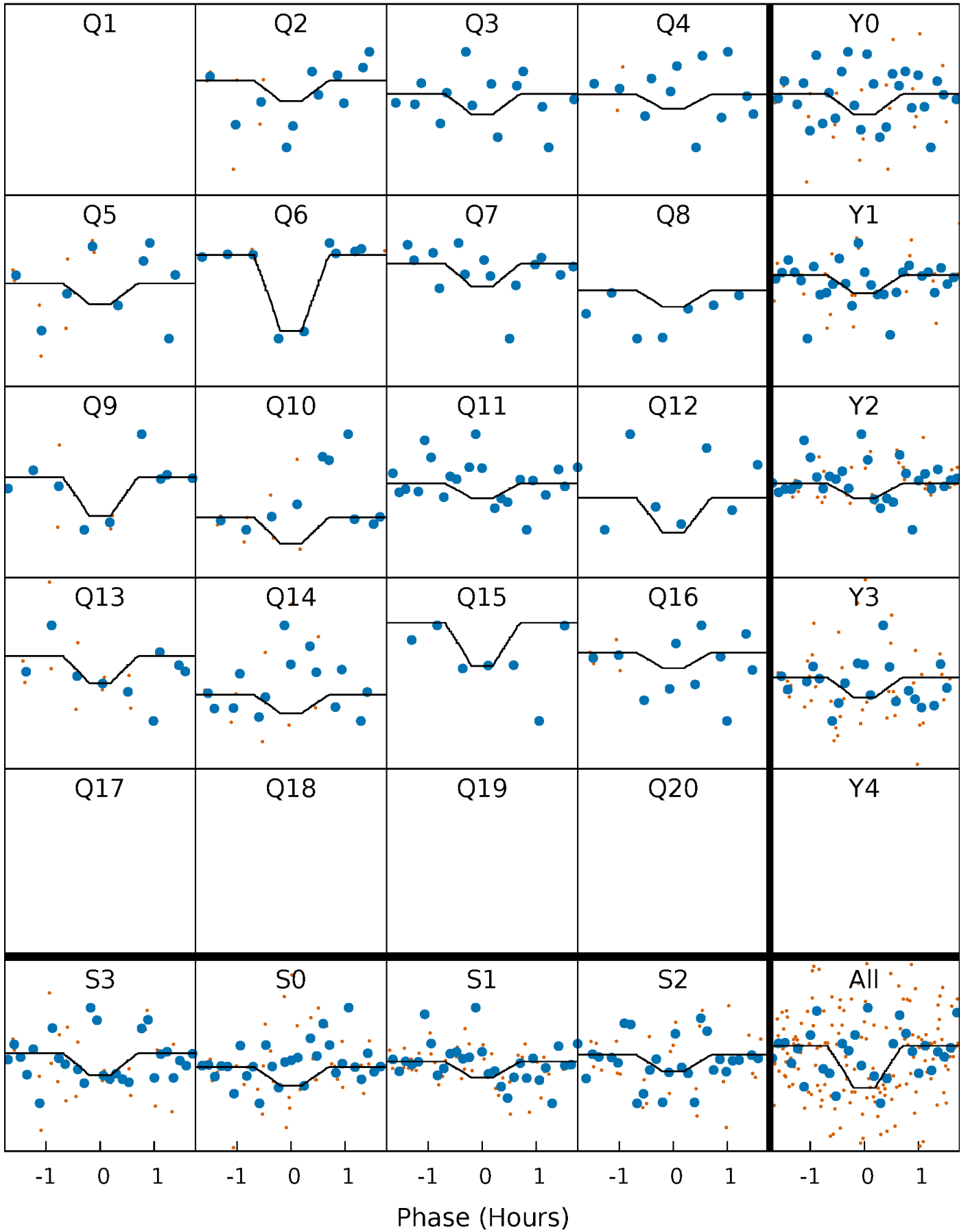
# DV Quarter-Phased Transit Curves

TCE 005727396-03     $P = 45.896644$  Days     $T_0 = 176.903577$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

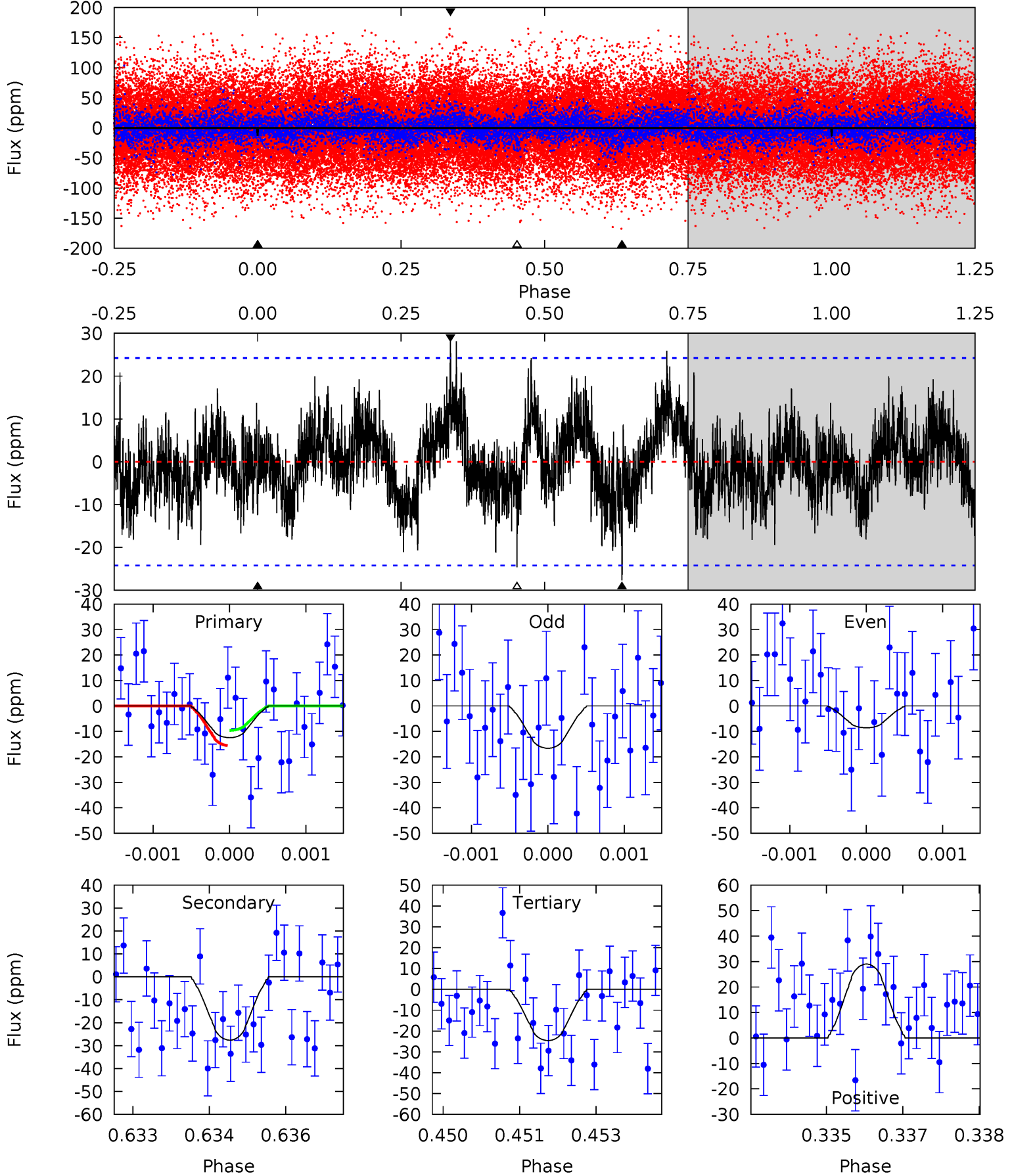
TCE 005727396-03     $P = 45.897182$  Days     $T_0 = 176.897946$  (BKJD)



# DV Model-Shift Uniqueness Test

005727396-03,  $P = 45.896644$  Days,  $E = 131.006933$  Days

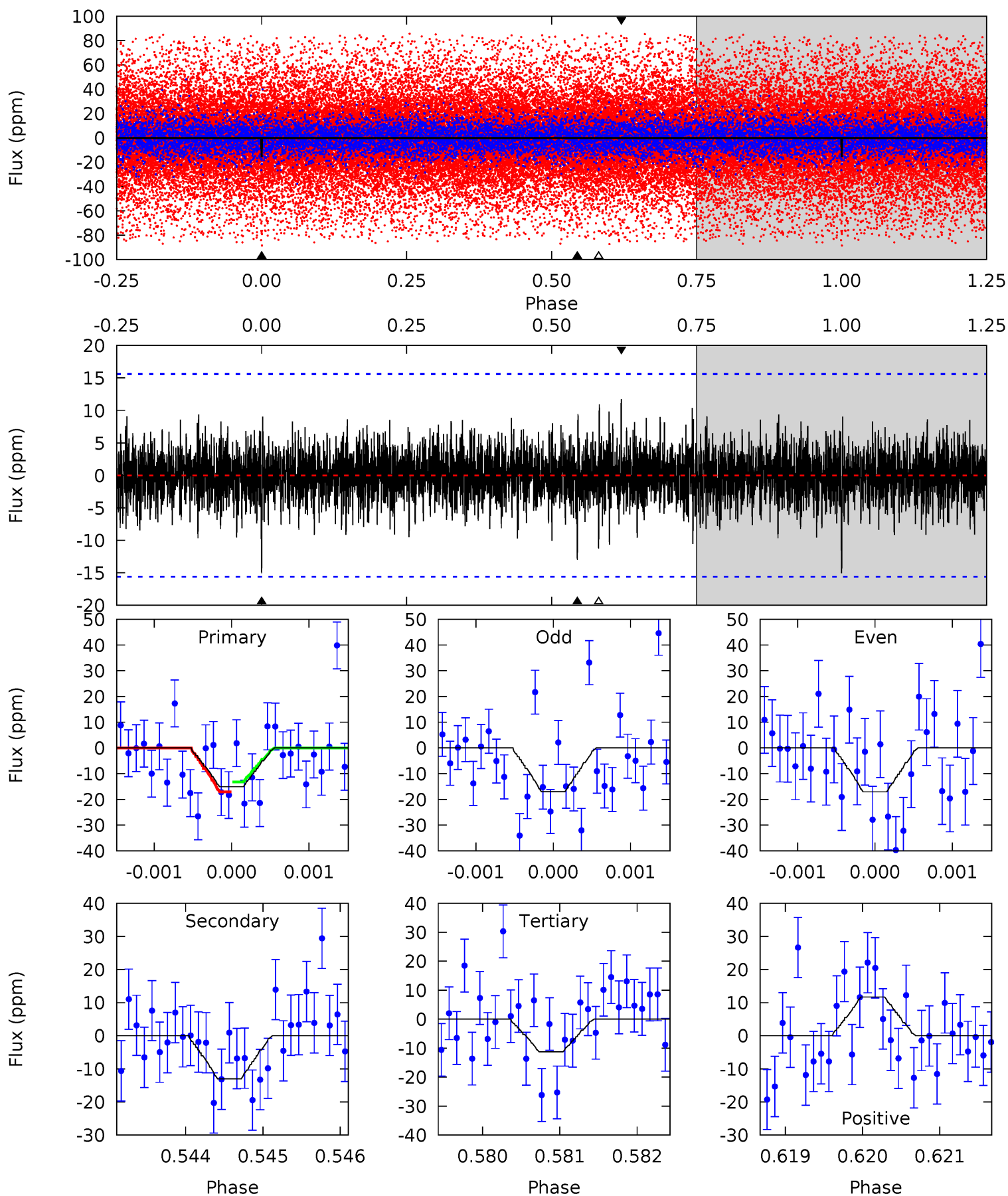
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.78	6.16	5.48	6.47	5.40	3.21	1.70	-2.70	-3.69	0.68	-0.31	0.90	0.89	0.51	0.67



# Alt Model-Shift Uniqueness Test

005727396-03, P = 45.897182 Days, E = 131.000764 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
5.25	4.52	3.92	4.07	5.42	3.24	1.07	1.32	1.17	0.60	0.44	0.02	0.30	0.44	0.69





### Stellar Parameters For KIC 005727396

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3960^{+89}_{-108}$	$0.970^{+0.030}_{-0.030}$	$-0.380^{+0.200}_{-0.250}$	$71.106^{+2.773}_{-14.790}$	$1.718^{+0.072}_{-0.613}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+3%/-3%	+53%/-66%	+4%/-21%	+4%/-36%	+30%/-8%
Source	PHO54	AST54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 005727396-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-28 \pm 4$	$44.82^{+33.30}_{-27.89}$	$3758^{+95}_{-114}$	$3460^{+2076}_{-6230}$	$0.669^{+4.135}_{-0.450}$
Alt.	$-13 \pm 3$	$44.20^{+33.96}_{-27.82}$	$3760^{+100}_{-111}$	$2412^{+2247}_{-5570}$	$0.325^{+1.872}_{-0.228}$

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

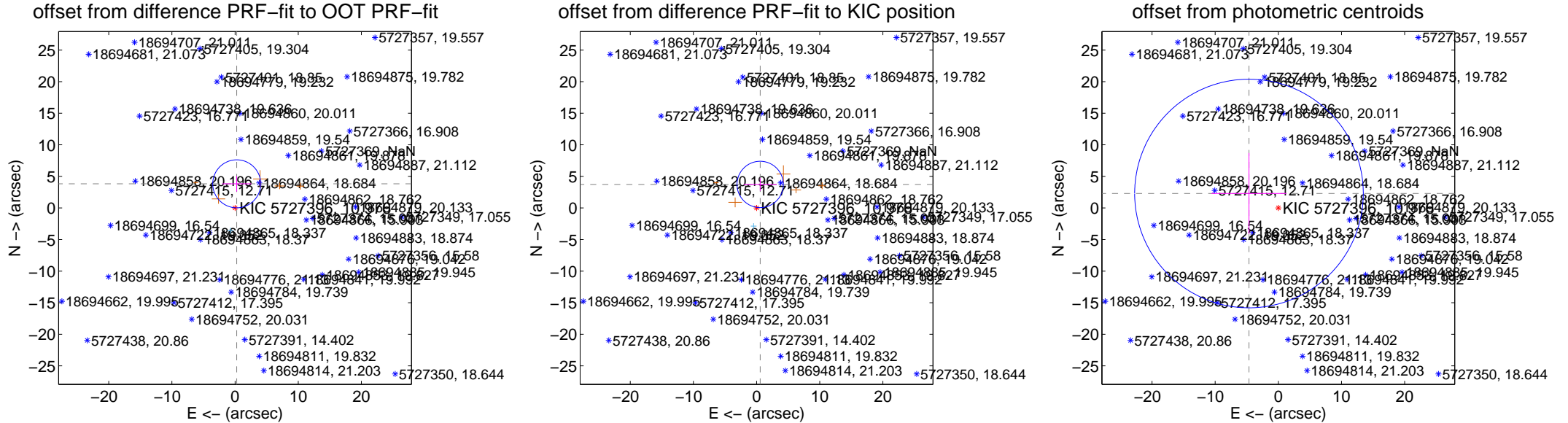
# DV Centroid Data

Supplemental centroid analysis for 005727396-03. **Kepler magnitude: 10.98.** Transit SNR 19.14

**There are 1 quarters with good PRF difference image offsets**

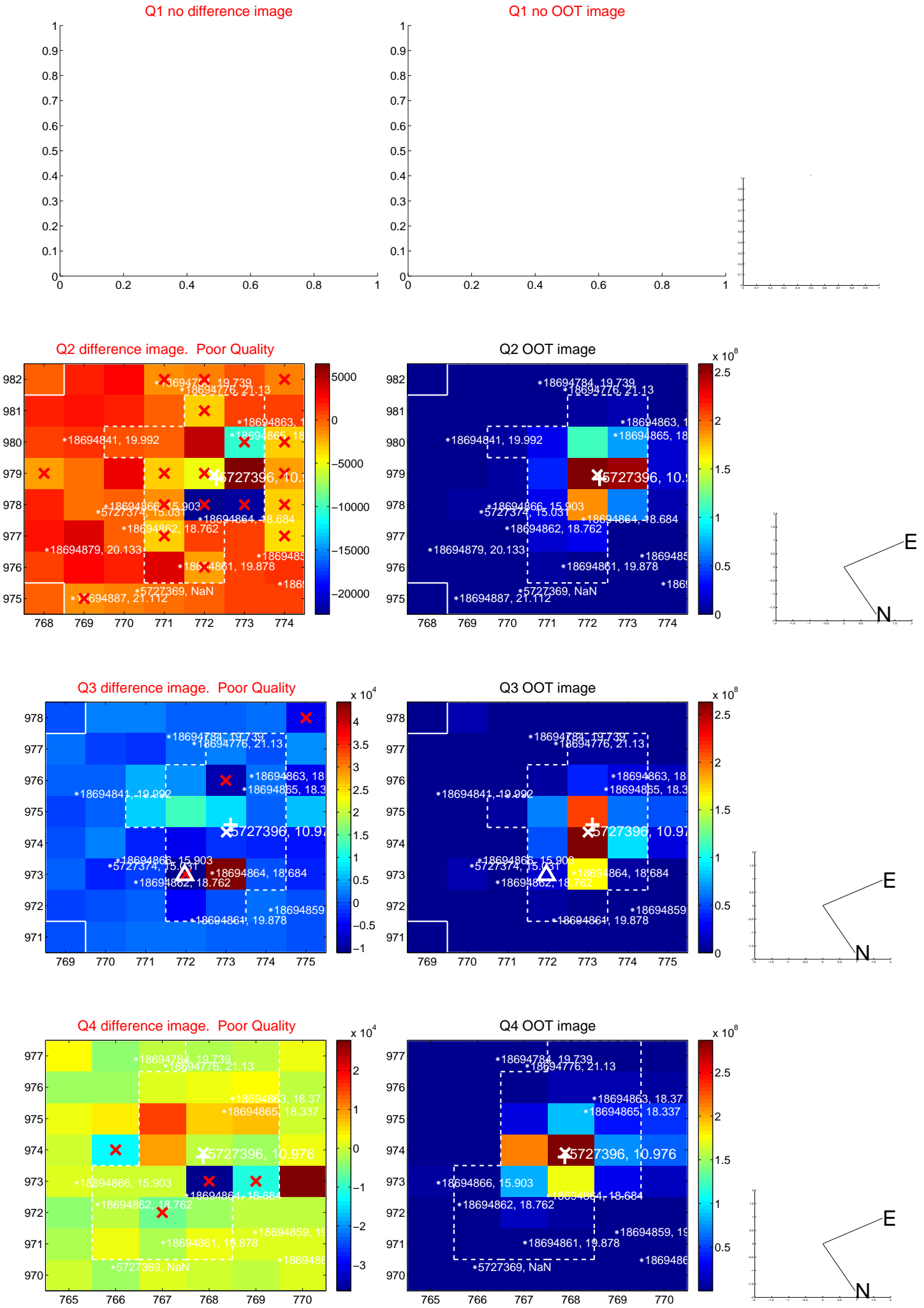
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>3.835 <math>\pm</math> 1.266</b>	<b>3.03</b>	-0.262 $\pm$ 2.309	3.826 $\pm$ 1.231
PRF-fit source offset from KIC position	<b>3.771 <math>\pm</math> 1.222</b>	<b>3.09</b>	-0.570 $\pm$ 2.612	3.728 $\pm$ 1.004
photometric centroid source offset	5.18 $\pm$ 6.03	0.86	4.65 $\pm$ 5.94	2.29 $\pm$ 6.40

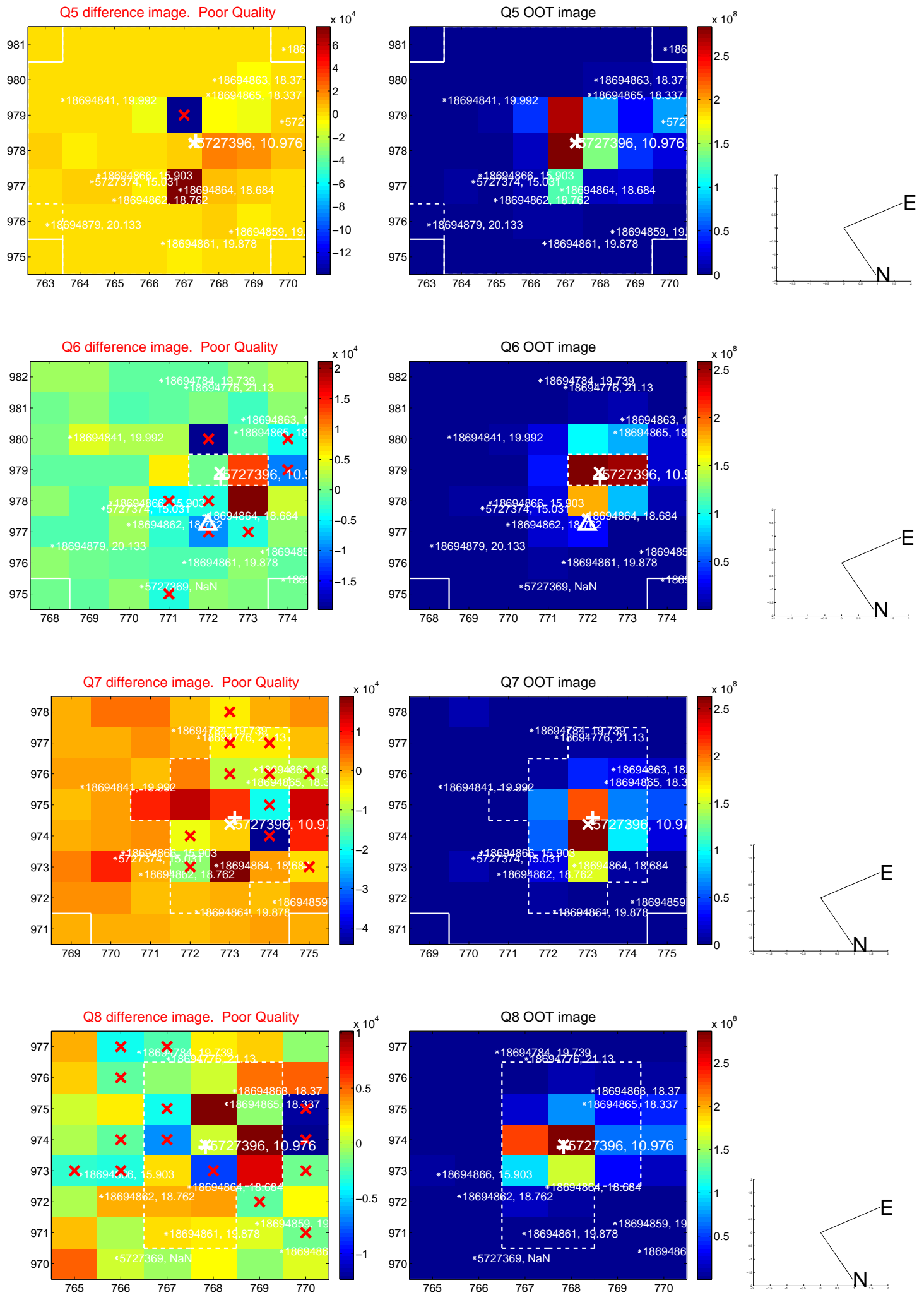


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

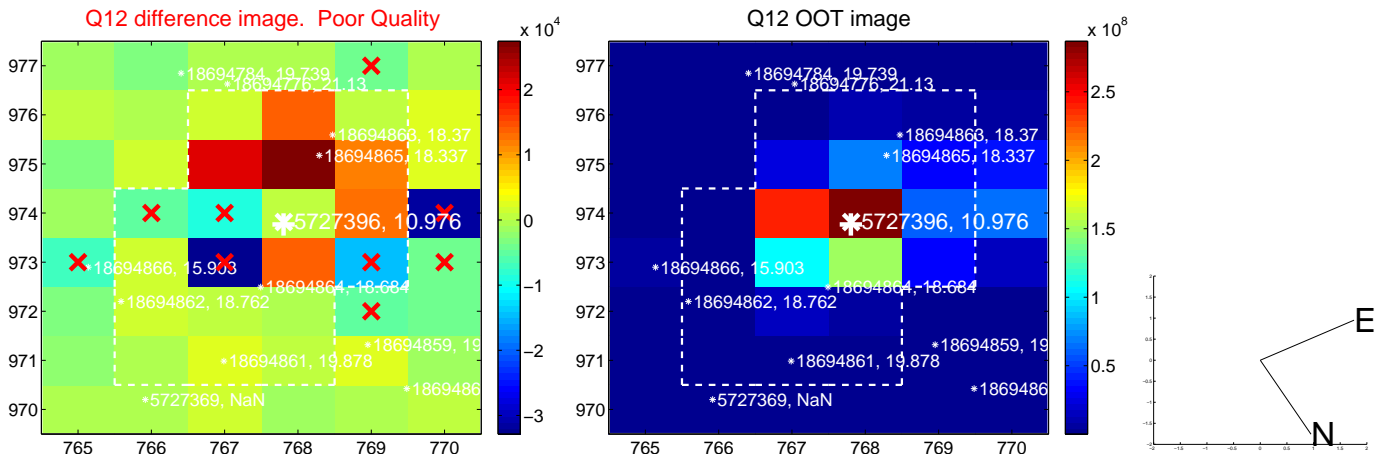
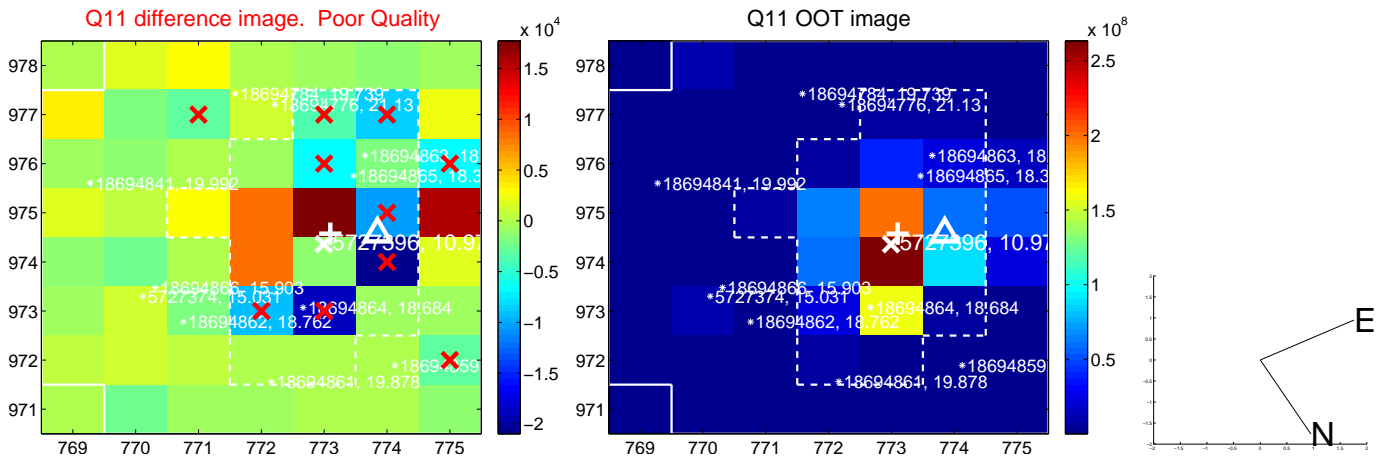
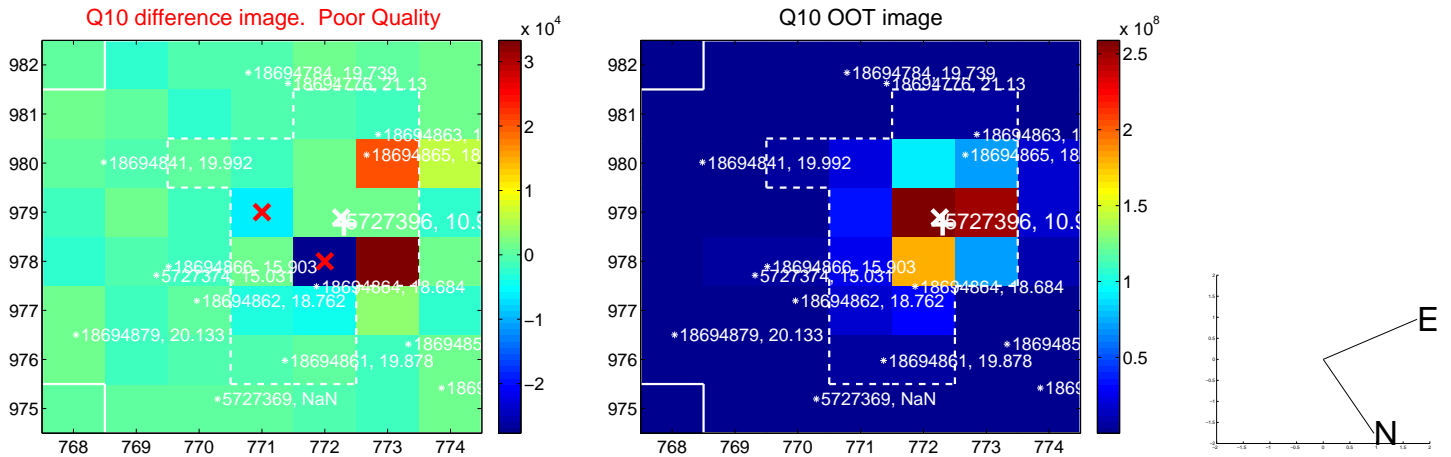
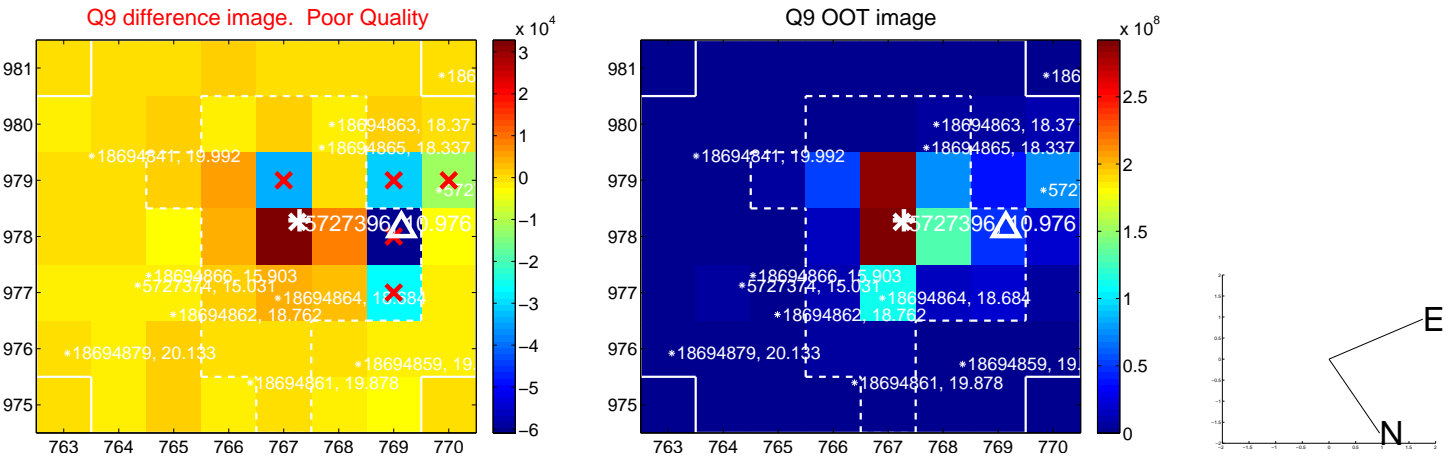
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



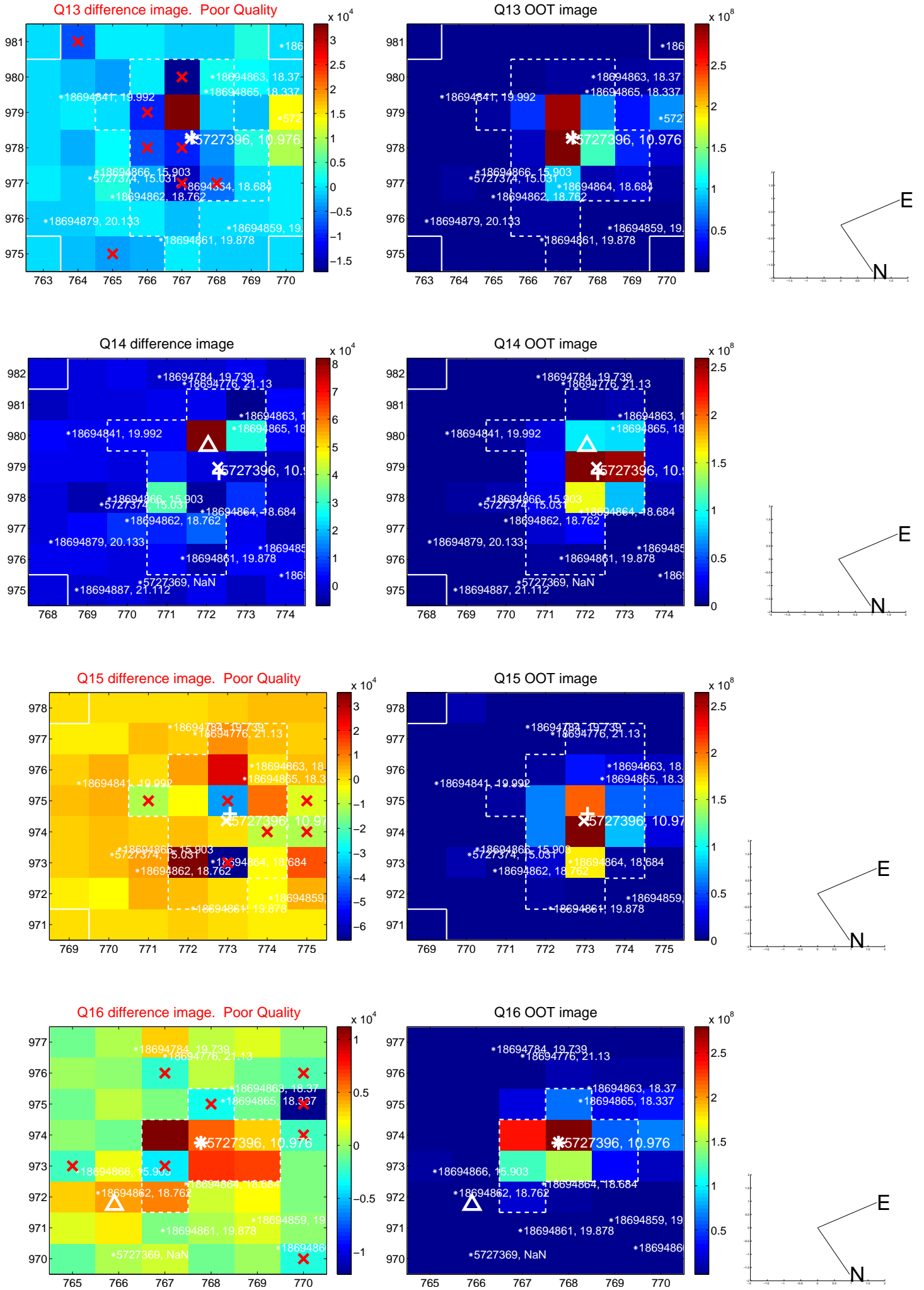
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



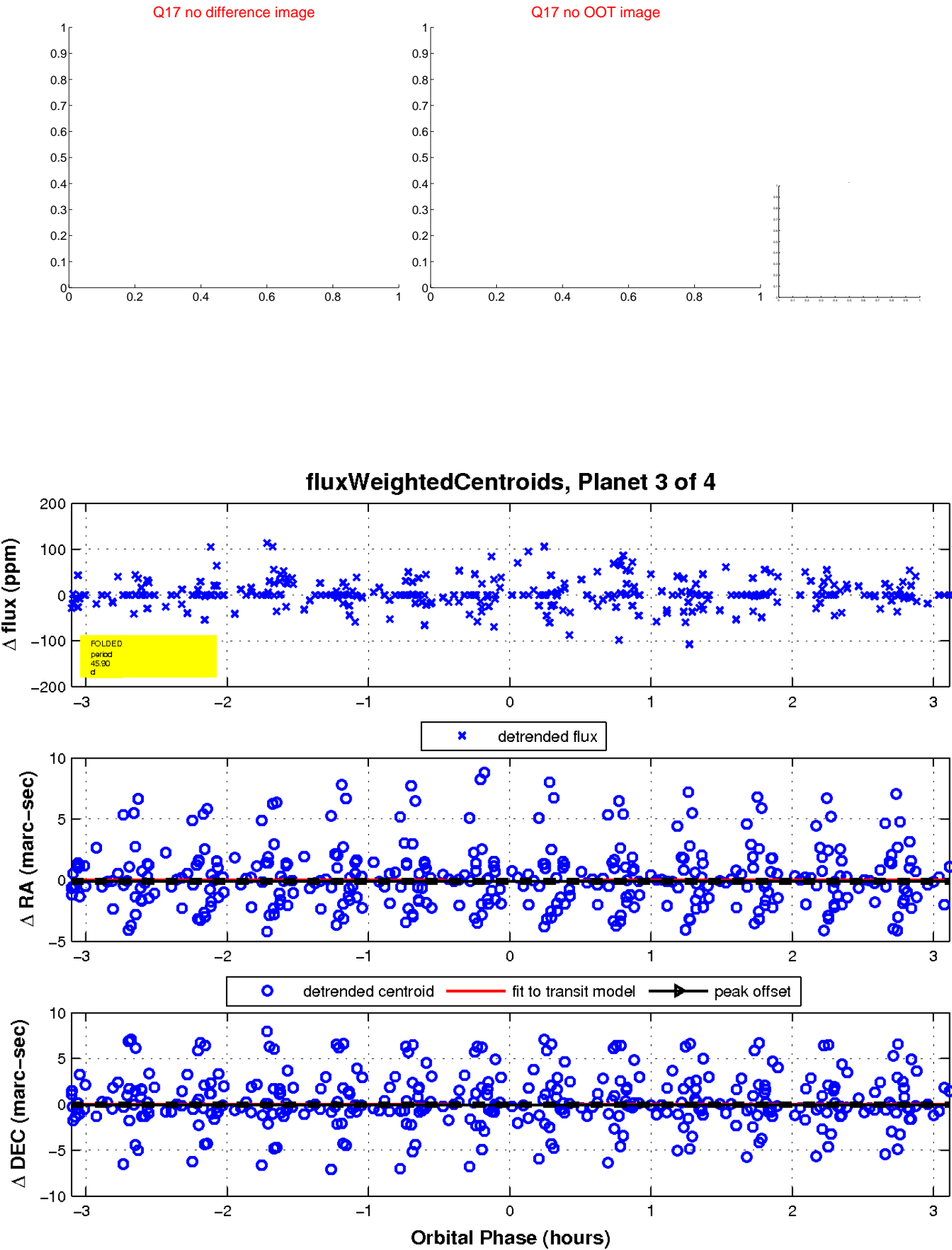
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

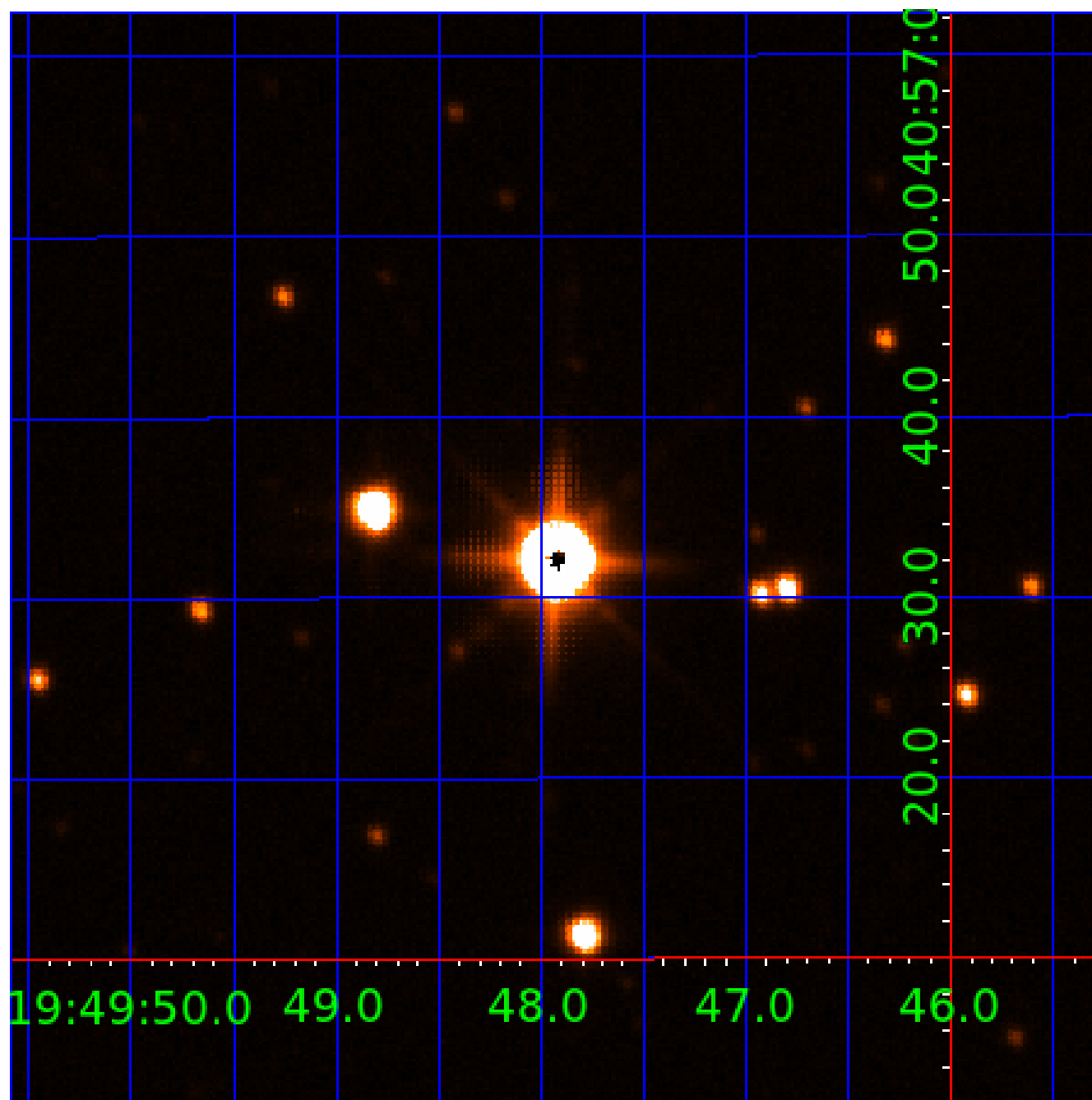


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005727396

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005727396-01	OBS	No	100.930562	189.261308	33.9	3.072	14.3	10.2	71.11	3960	39.18	4307.73
005727396-02	OBS	No	59.721222	191.100629	24.0	2.577	11.7	8.9	71.11	3960	44.32	8671.77
005727396-03	OBS	No	45.896644	176.903576	28.8	1.038	10.1	19.1	71.11	3960	36.96	0.00
005727396-04	OBS	No	54.081483	183.002218	21.3	1.908	9.5	10.0	71.11	3960	41.70	9898.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005727396-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
005727396-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
005727396-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
005727396-04	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED

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

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

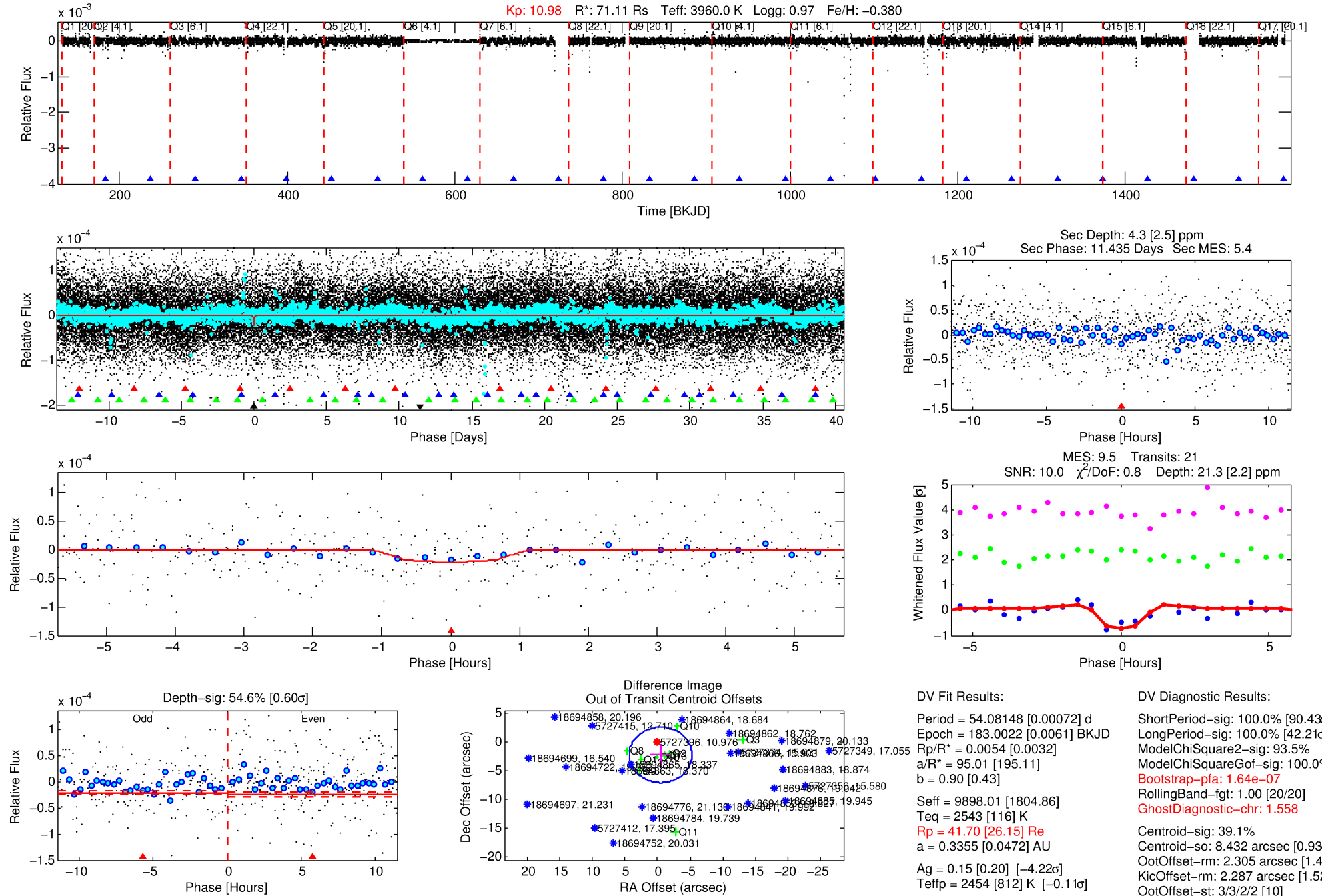
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005727396-04

No Significant Match Found

# DV One-Page Summary

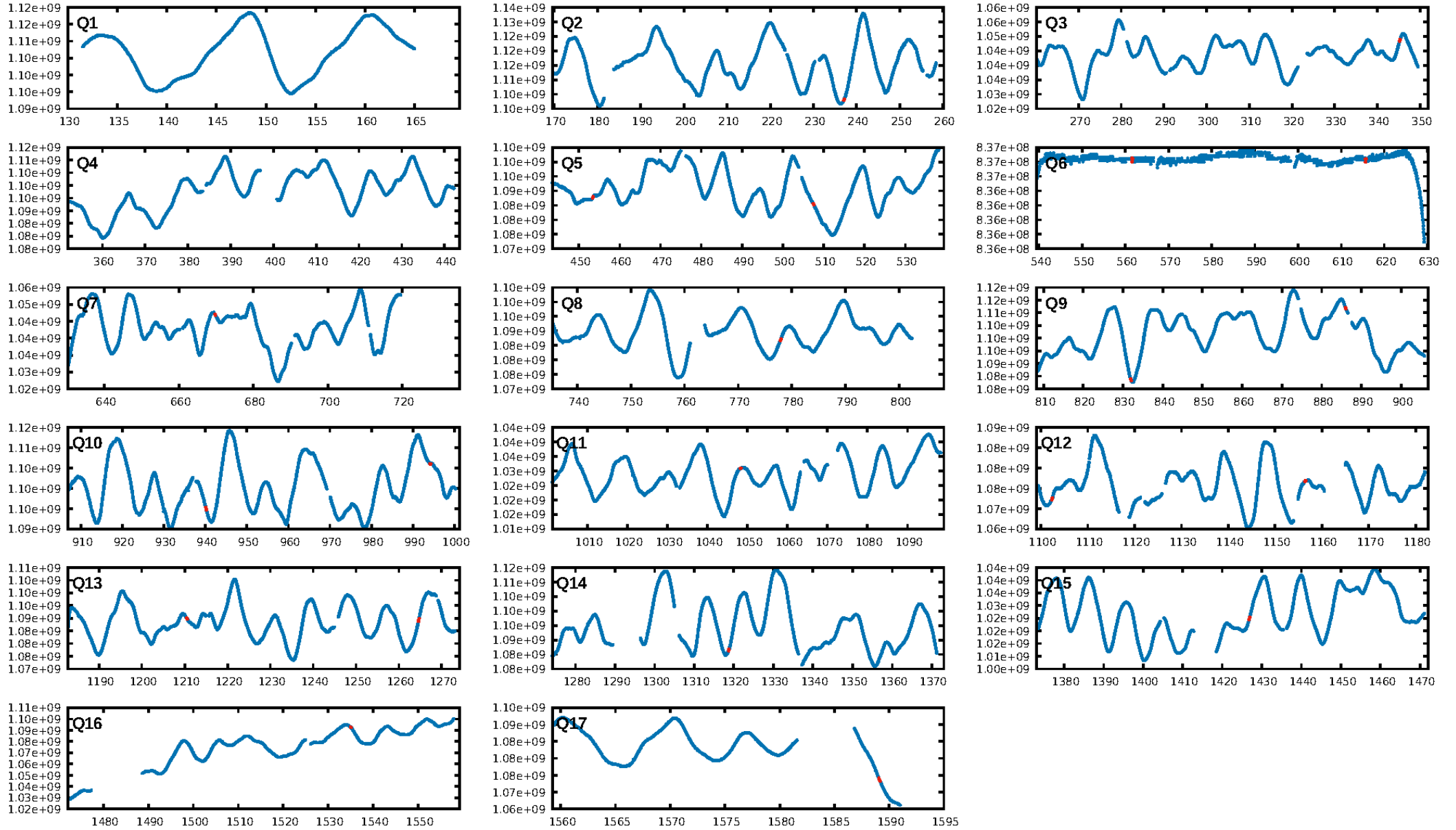
KIC: 5727396 Candidate: 4 of 4 Period: 54.081 d



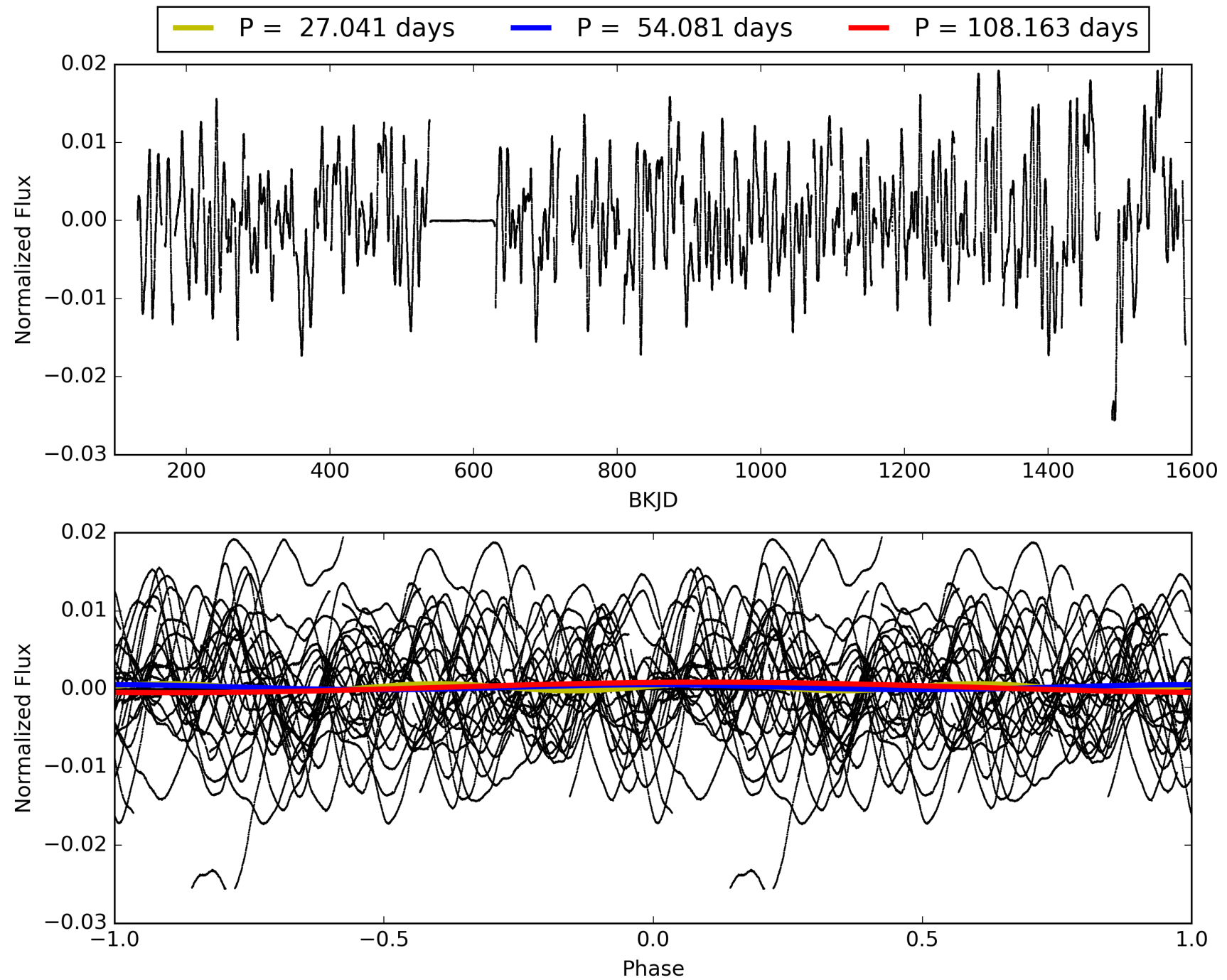
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 16:22:55 Z

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

# TCE 005727396-04, PDC Light Curves

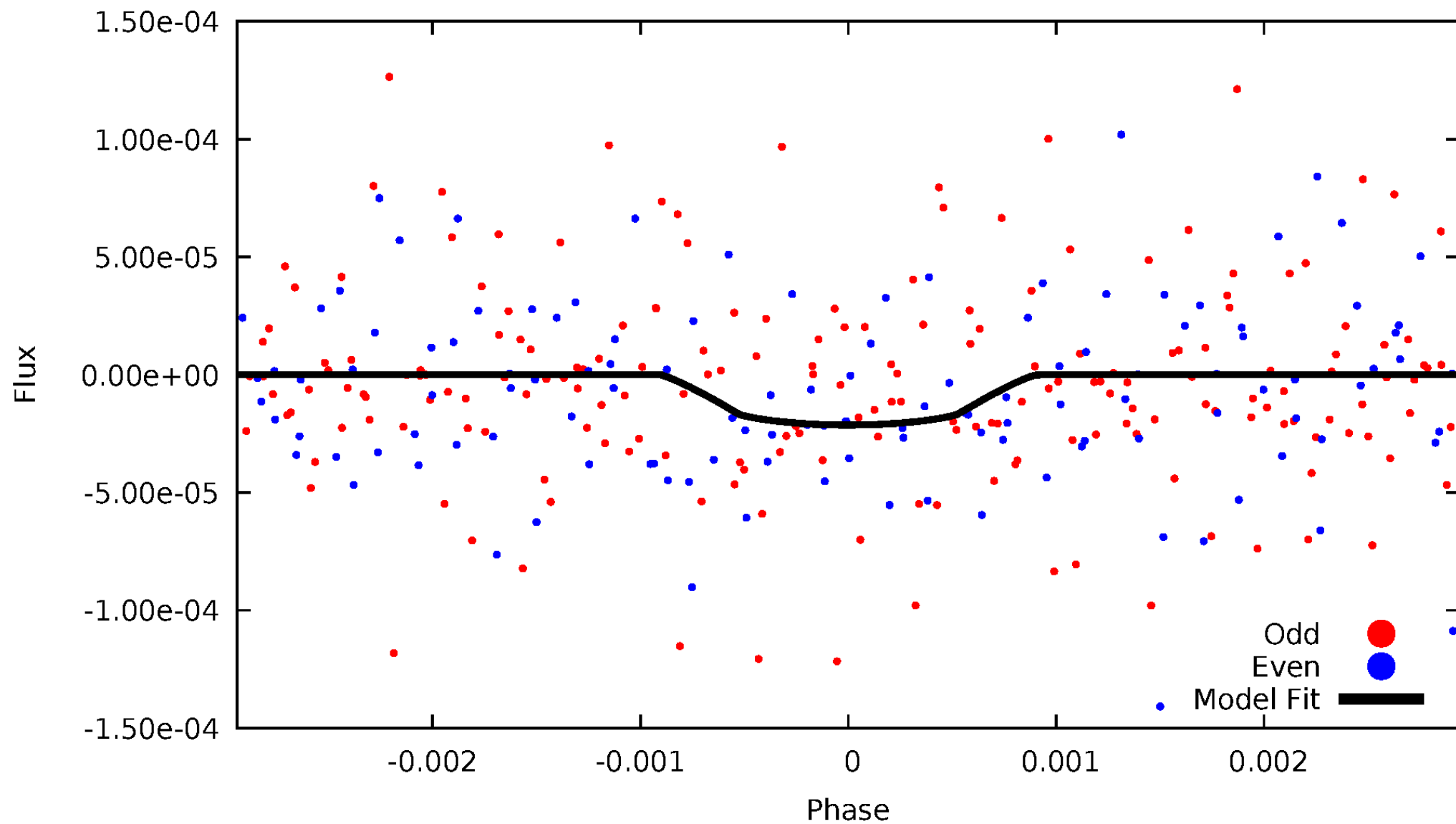


# TCE 005727396-04



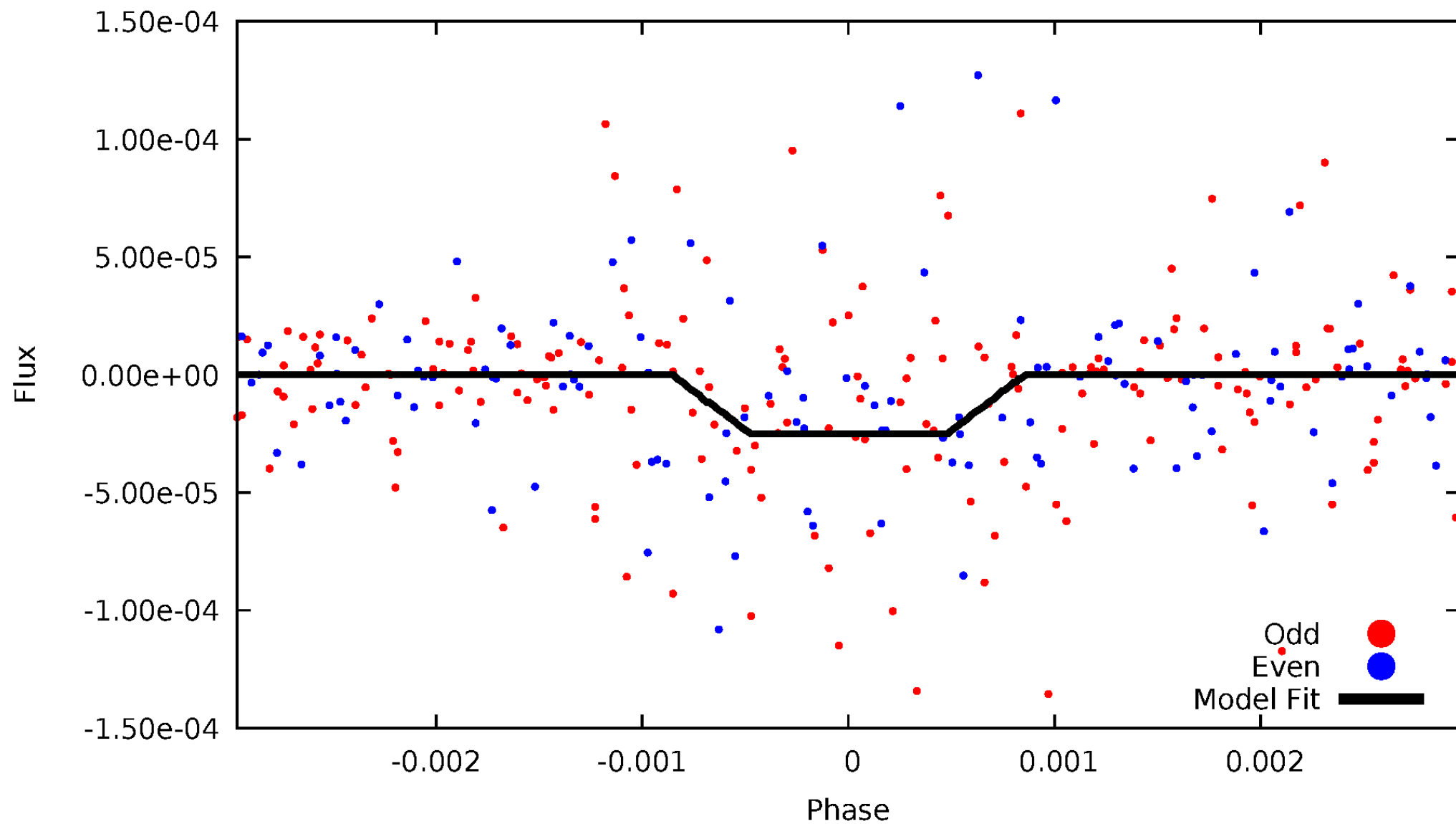
# DV Odd/Even

TCE 005727396-04



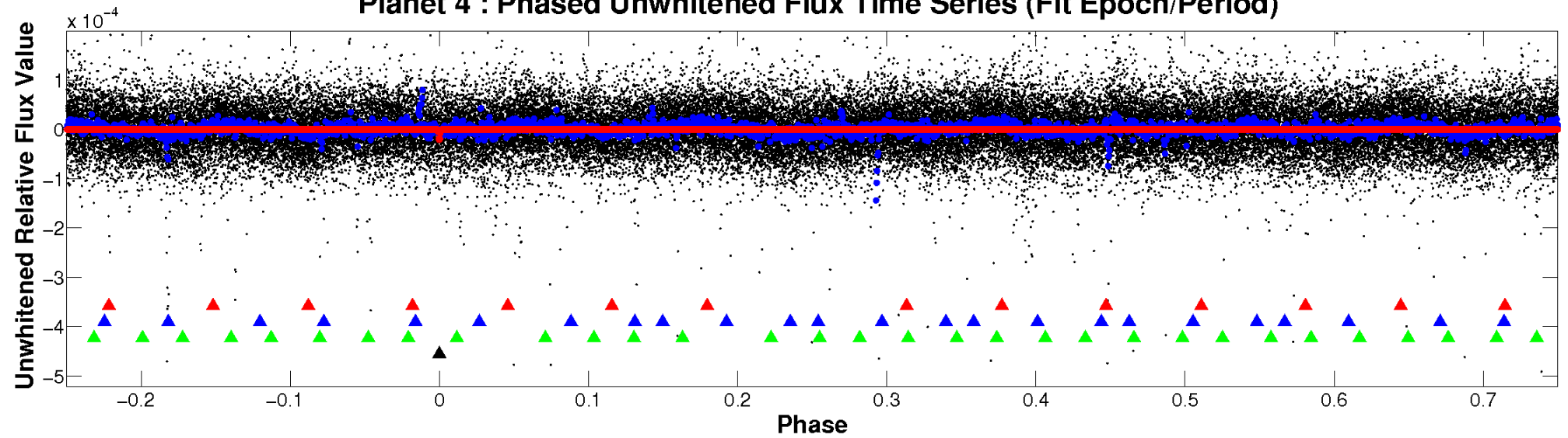
# ALT Odd/Even

TCE 005727396-04

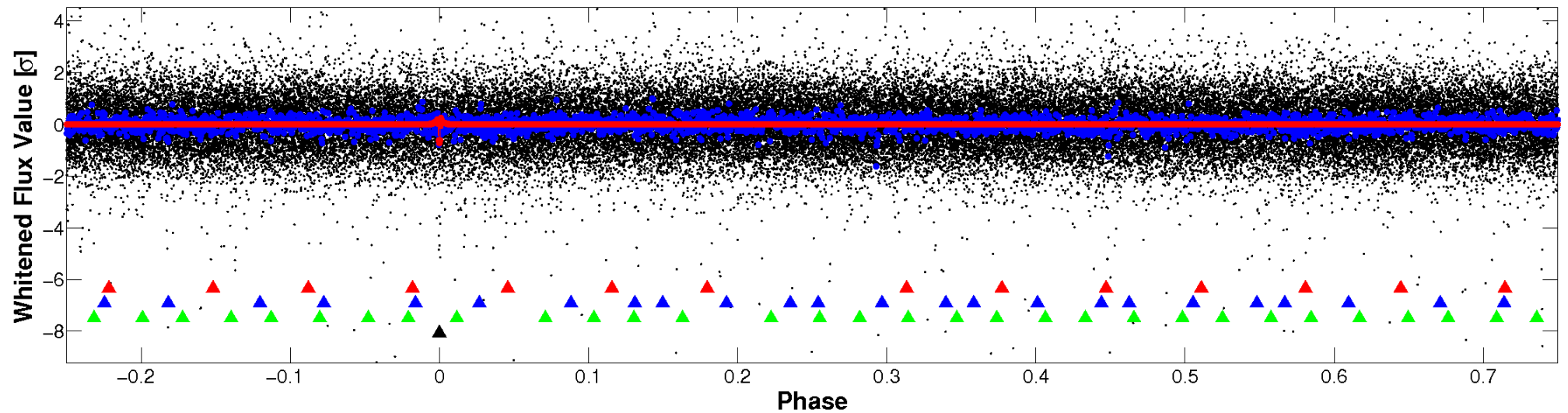


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

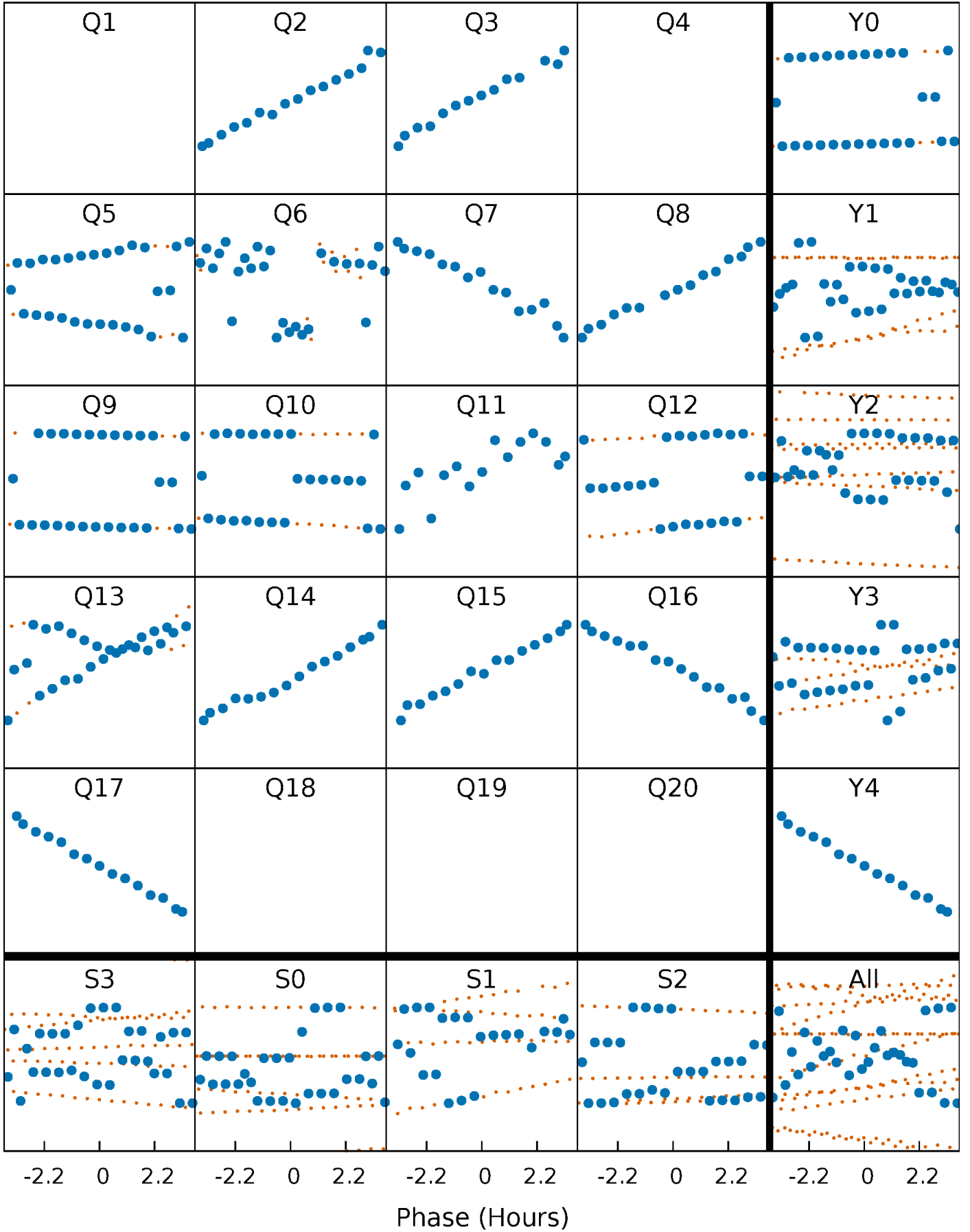


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

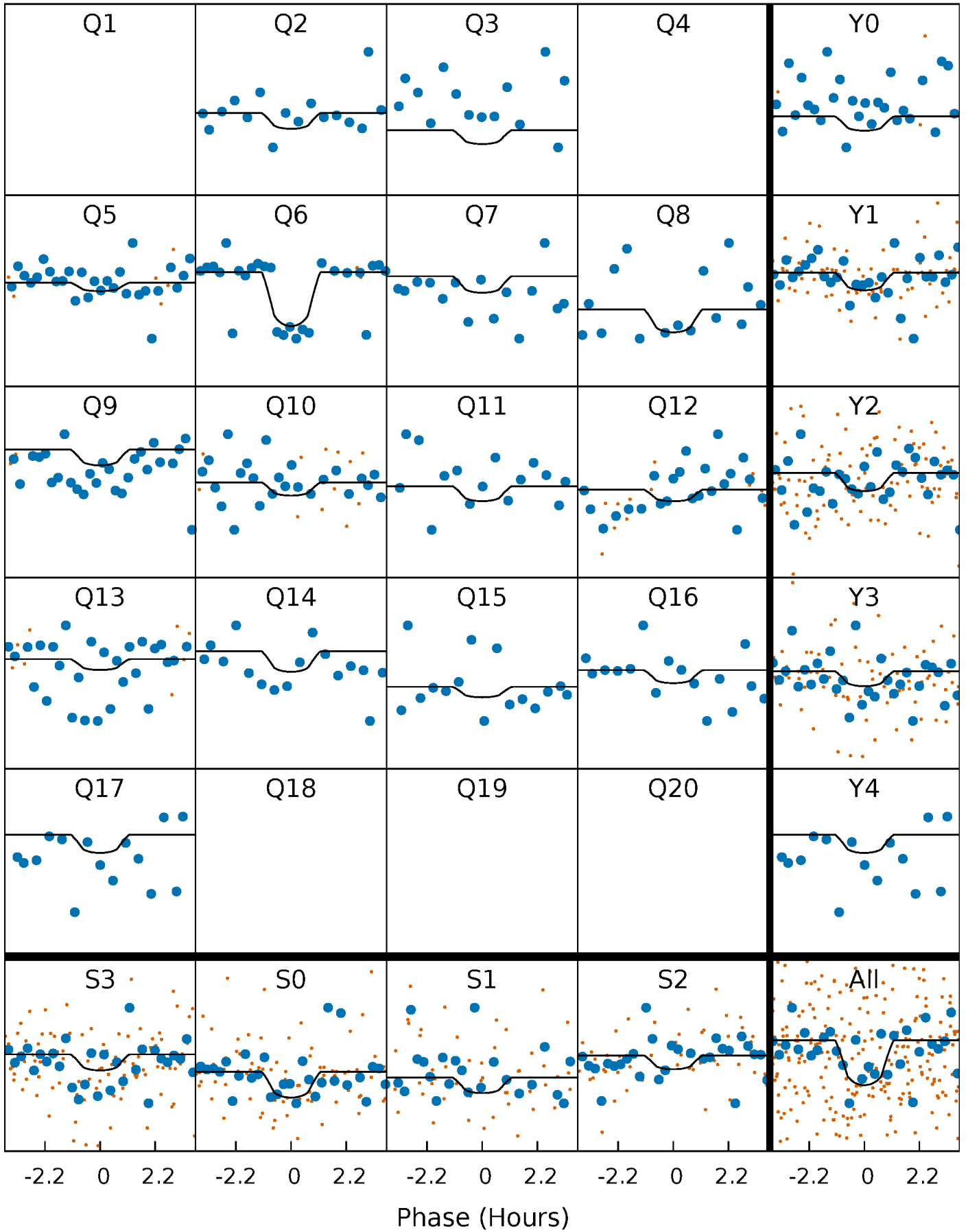
TCE 005727396-04     $P = 54.081483$  Days     $T_0 = 183.002218$  (BKJD)





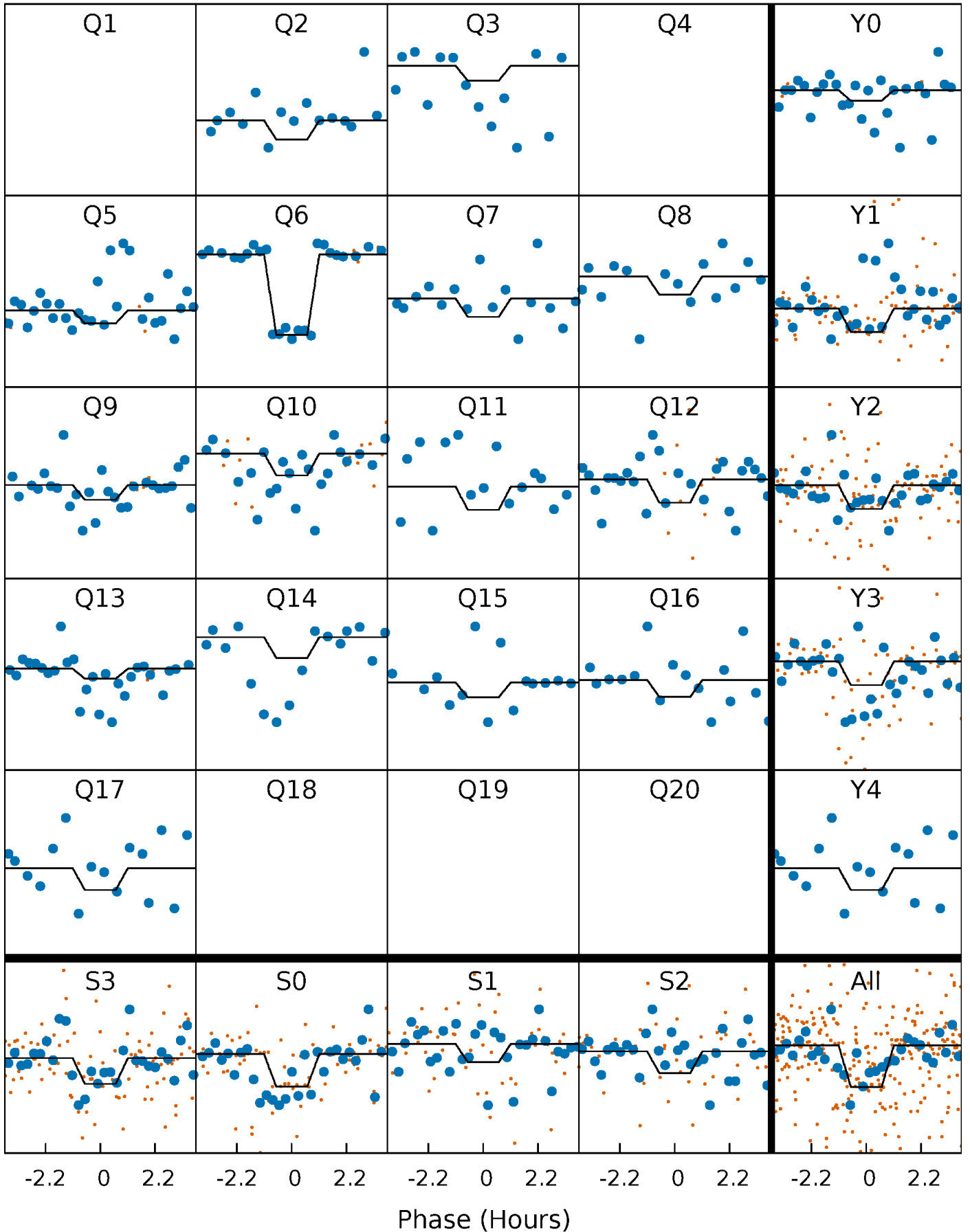
# DV Quarter-Phased Transit Curves

TCE 005727396-04     $P = 54.081483$  Days     $T_0 = 183.002218$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

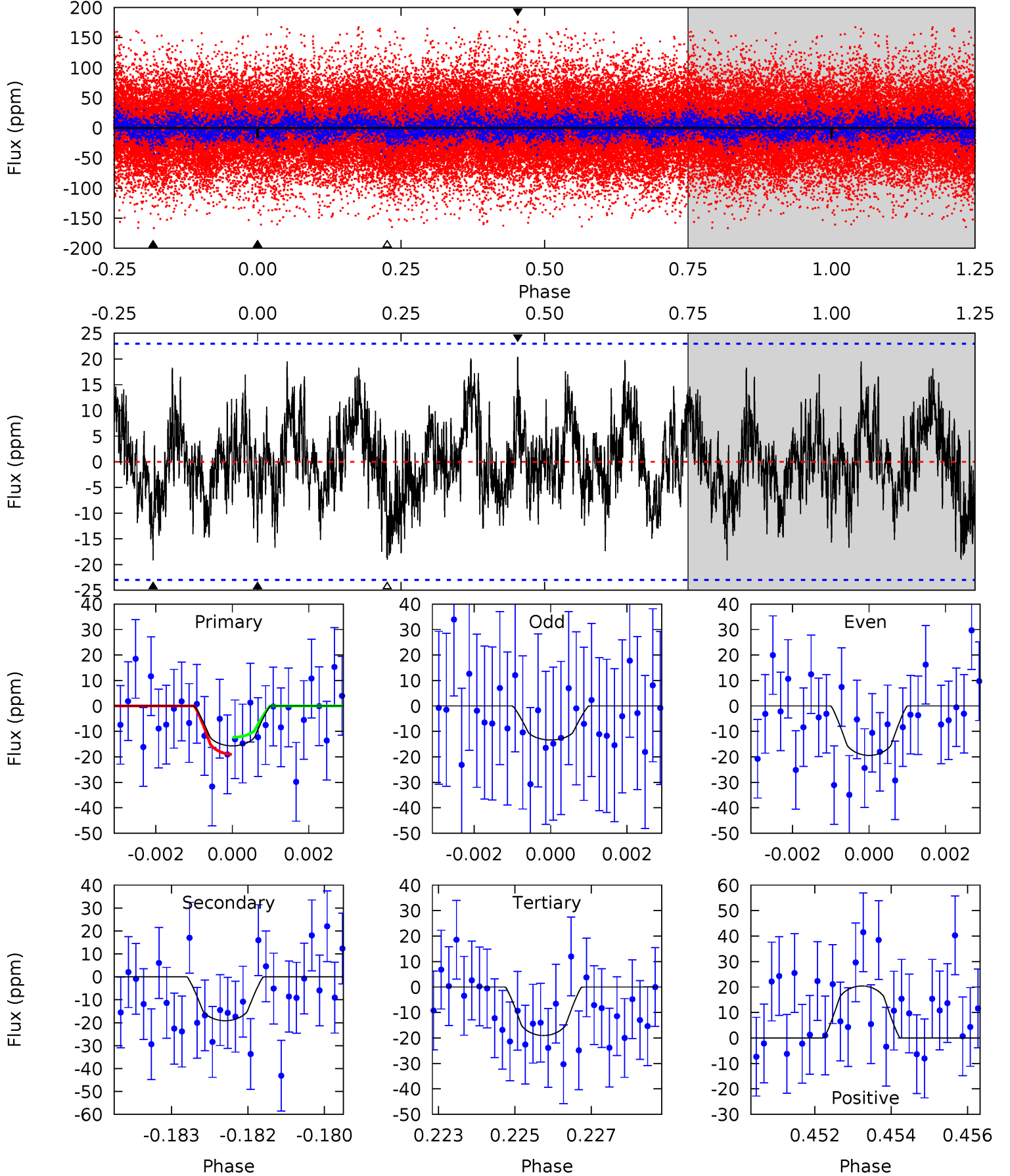
TCE 005727396-04 P= 54.080961 Days  $T_0=183.011617$  (BKJD)



# DV Model-Shift Uniqueness Test

005727396-04, P = 54.081483 Days, E = 128.920735 Days

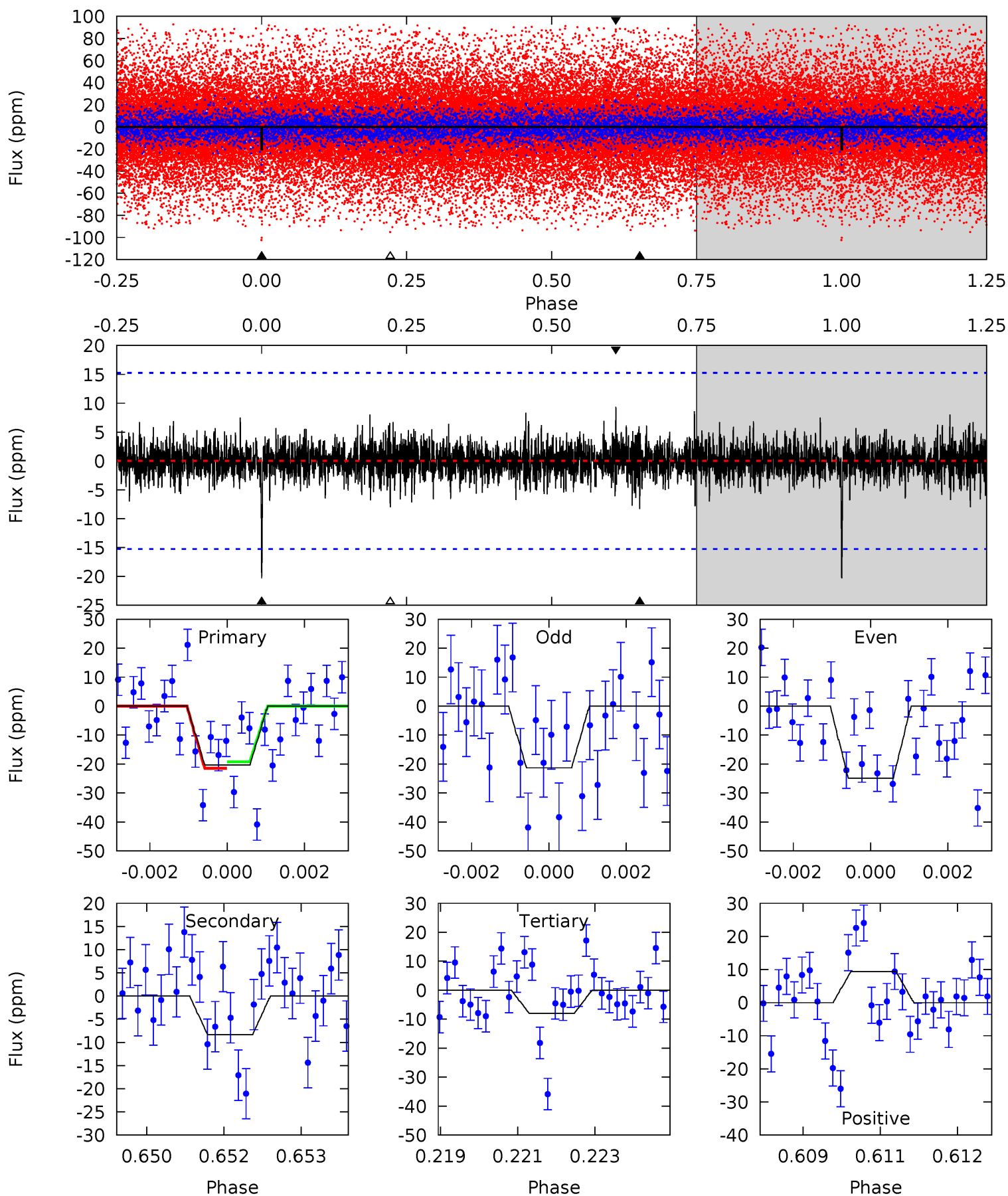
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.65	4.46	4.43	4.75	5.34	3.12	1.57	-0.78	-1.10	0.03	-0.29	0.69	0.80	0.52	0.78



# Alt Model-Shift Uniqueness Test

005727396-04, P = 54.080961 Days, E = 128.930656 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
7.14	2.93	2.80	3.30	5.36	3.15	0.74	4.34	3.85	0.12	-0.37	0.61	1.09	0.32	0.40



### Stellar Parameters For KIC 005727396

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3960^{+89}_{-108}$	$0.970^{+0.030}_{-0.030}$	$-0.380^{+0.200}_{-0.250}$	$71.106^{+2.773}_{-14.790}$	$1.718^{+0.072}_{-0.613}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+3%/-3%	+53%/-66%	+4%/-21%	+4%/-36%	+30%/-8%
Source	PHO54	AST54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 005727396-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-19 \pm 4$	$43.69^{+24.73}_{-23.97}$	$3558^{+93}_{-108}$	$3252^{+1475}_{-5841}$	$0.611^{+2.343}_{-0.370}$
Alt.	$-8 \pm 3$	$40.58^{+25.27}_{-21.99}$	$3564^{+100}_{-106}$	$2101^{+1871}_{-5134}$	$0.310^{+1.033}_{-0.201}$

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

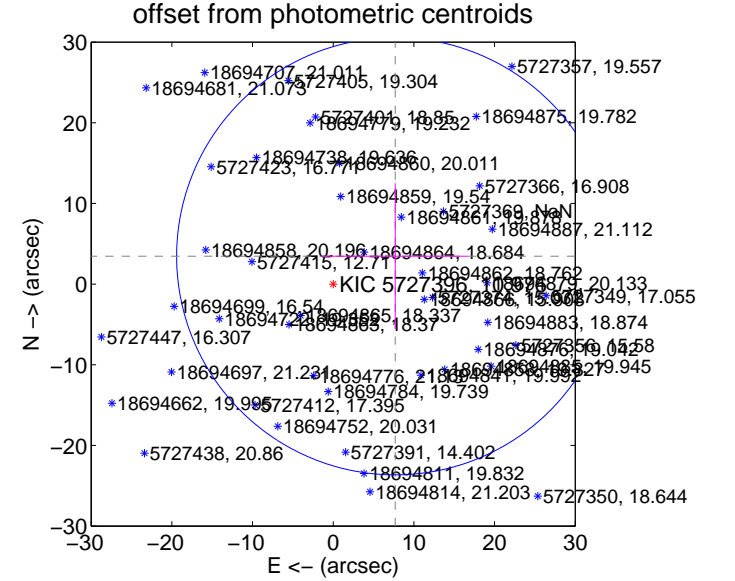
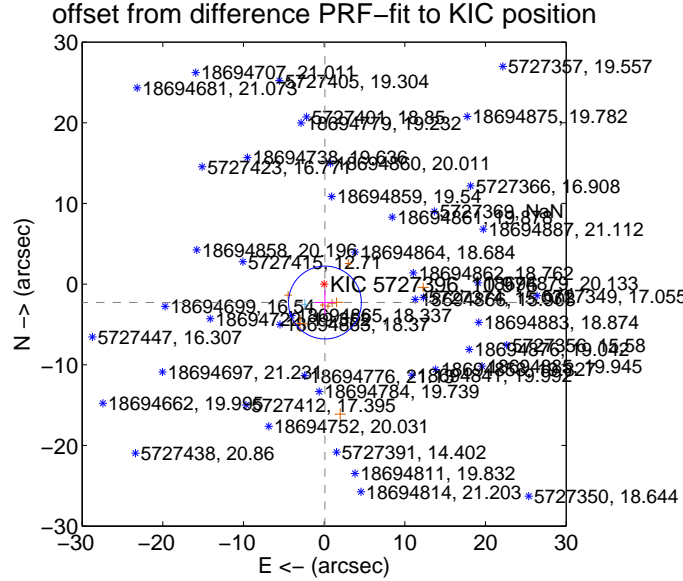
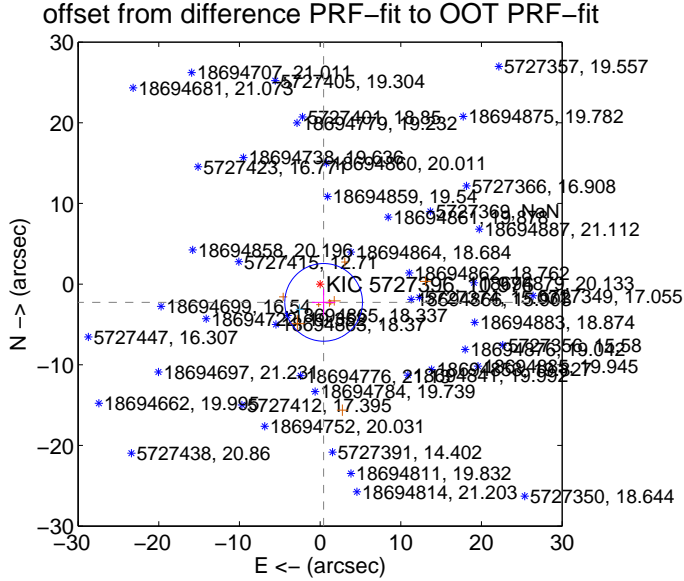
## DV Centroid Data

Supplemental centroid analysis for 005727396-04. **Kepler magnitude: 10.98.** Transit SNR 10.03

**There are 1 quarters with good PRF difference image offsets**

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.305 \pm 1.605$	1.44	$-0.437 \pm 1.452$	$-2.264 \pm 1.647$
PRF-fit source offset from KIC position	$2.287 \pm 1.505$	1.52	$-0.099 \pm 1.220$	$-2.285 \pm 1.514$
photometric centroid source offset	$8.43 \pm 9.03$	0.93	$-7.69 \pm 9.03$	$3.45 \pm 9.05$



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.

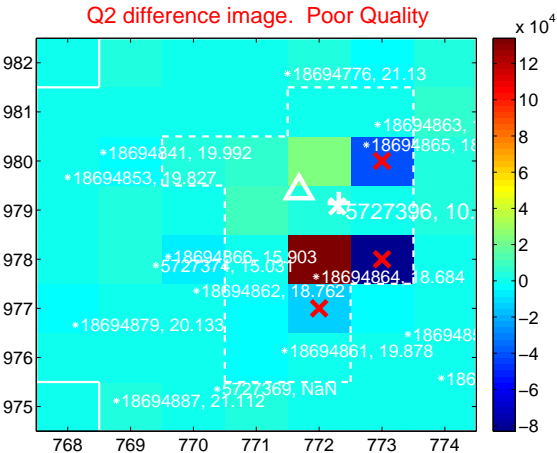
Q1 no difference image



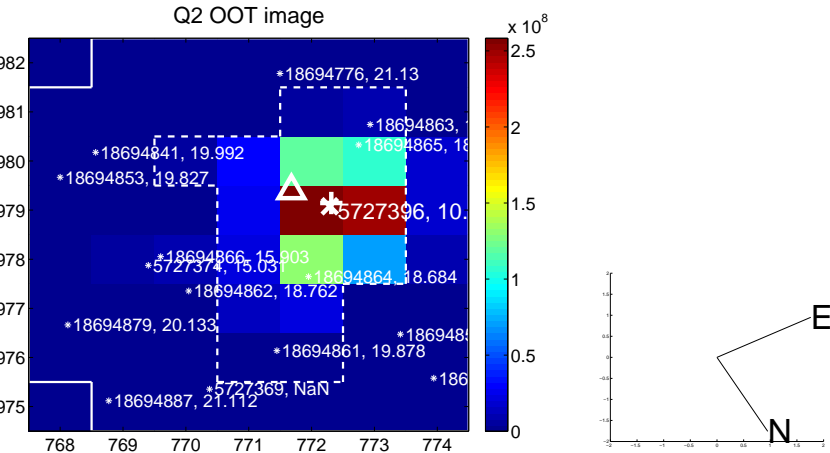
Q1 no OOT image



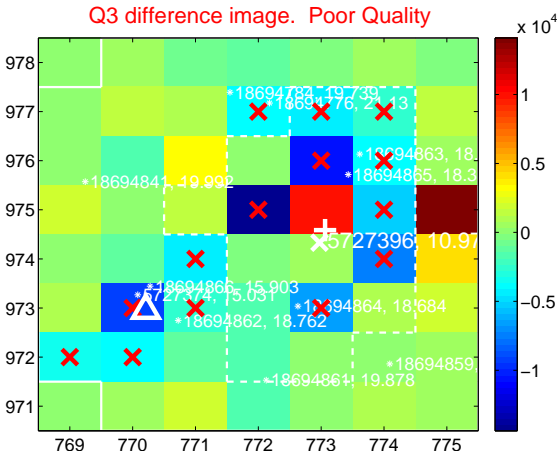
Q2 difference image. Poor Quality



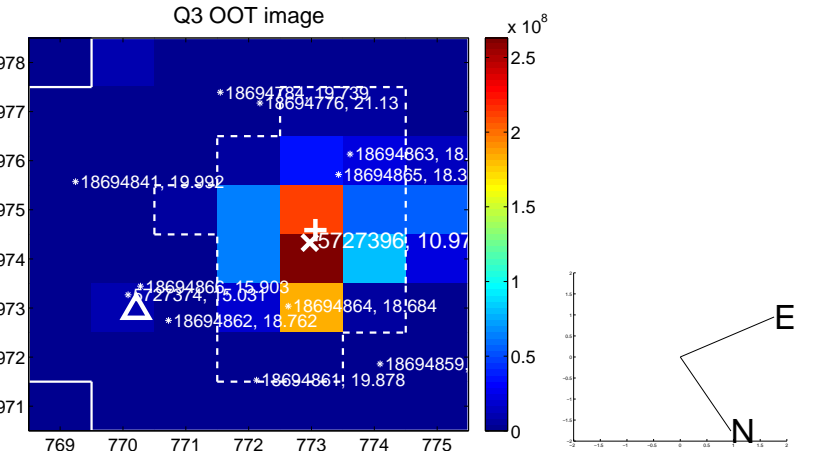
Q2 OOT image



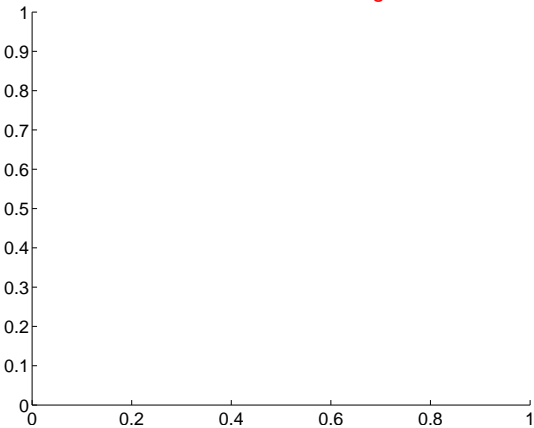
Q3 difference image. Poor Quality



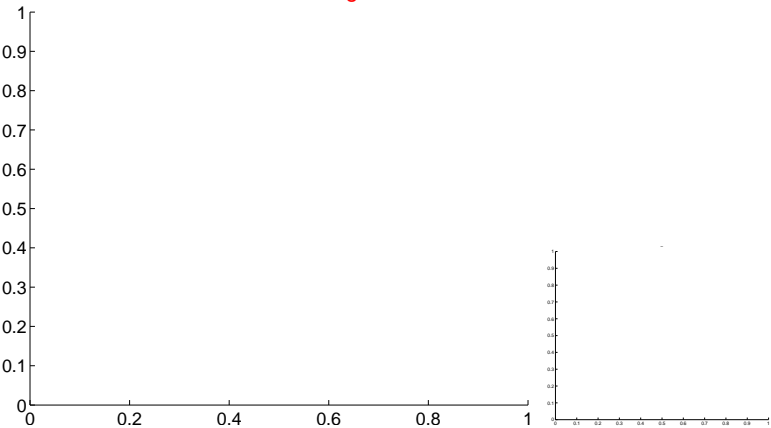
Q3 OOT image



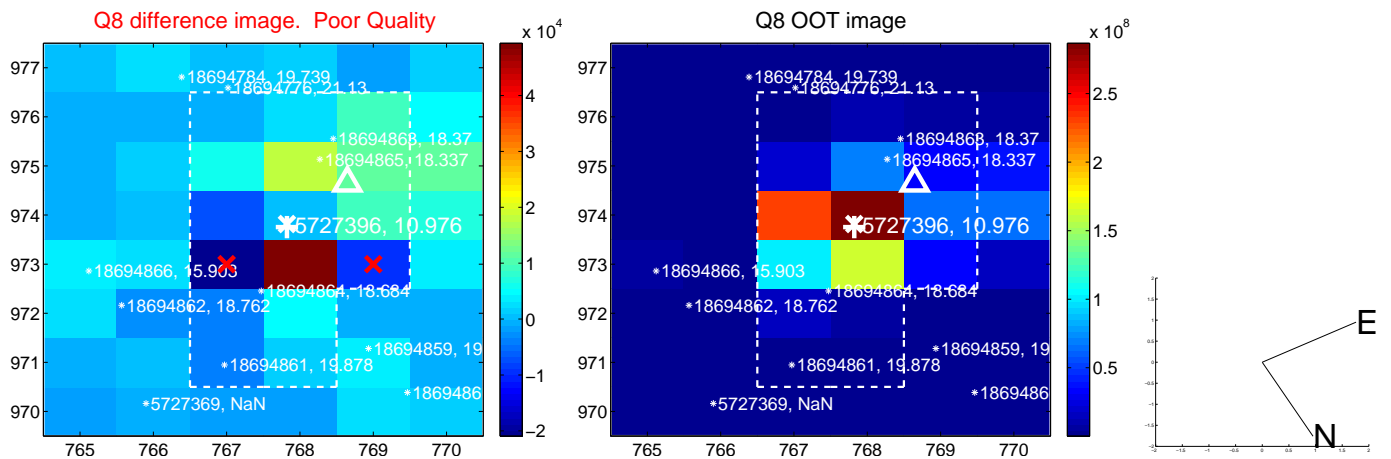
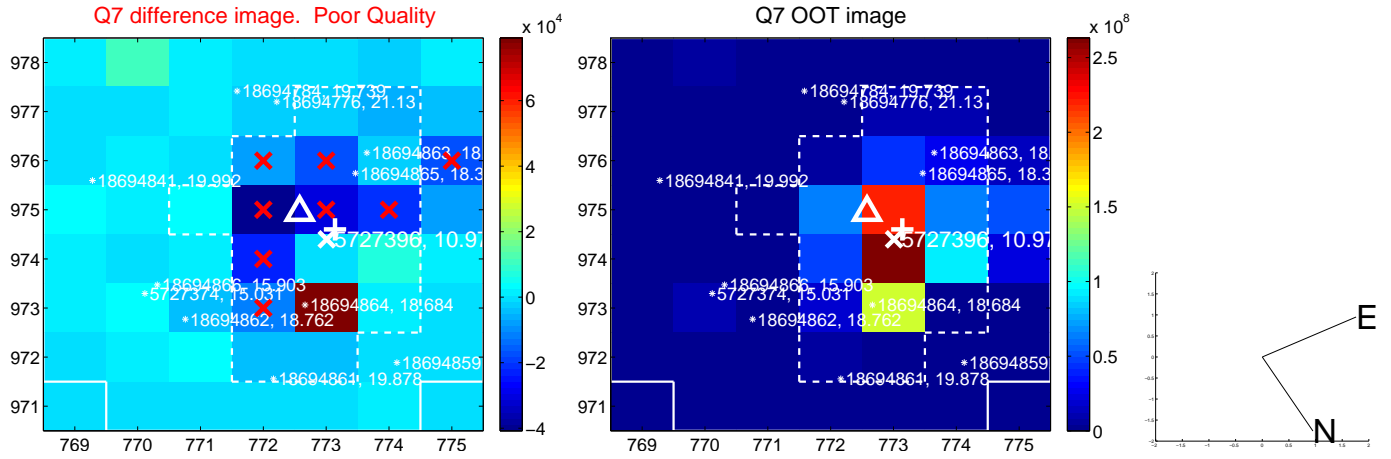
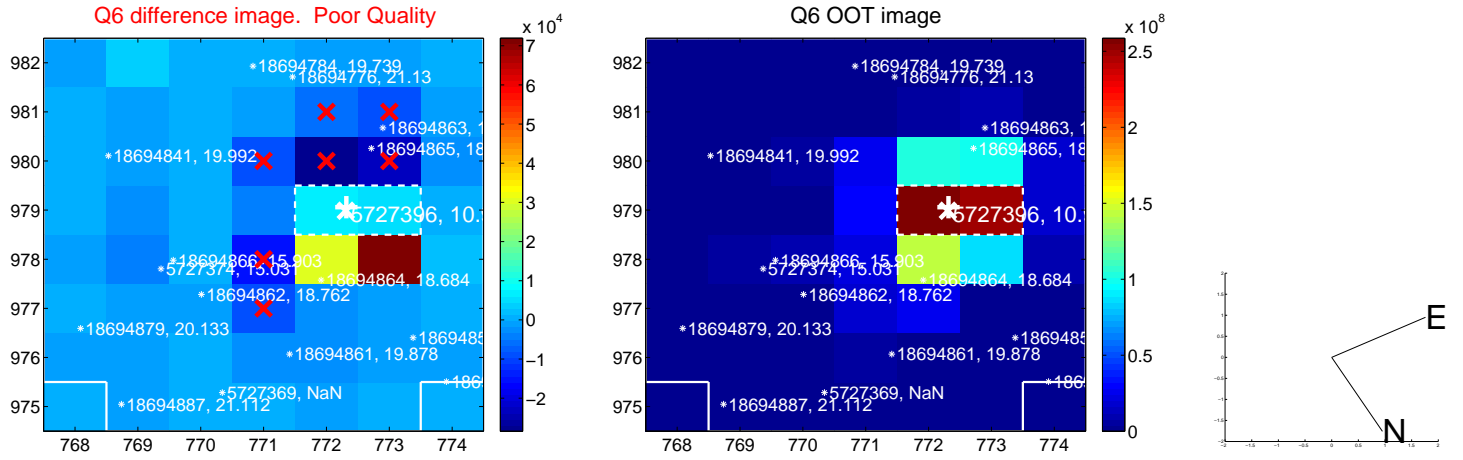
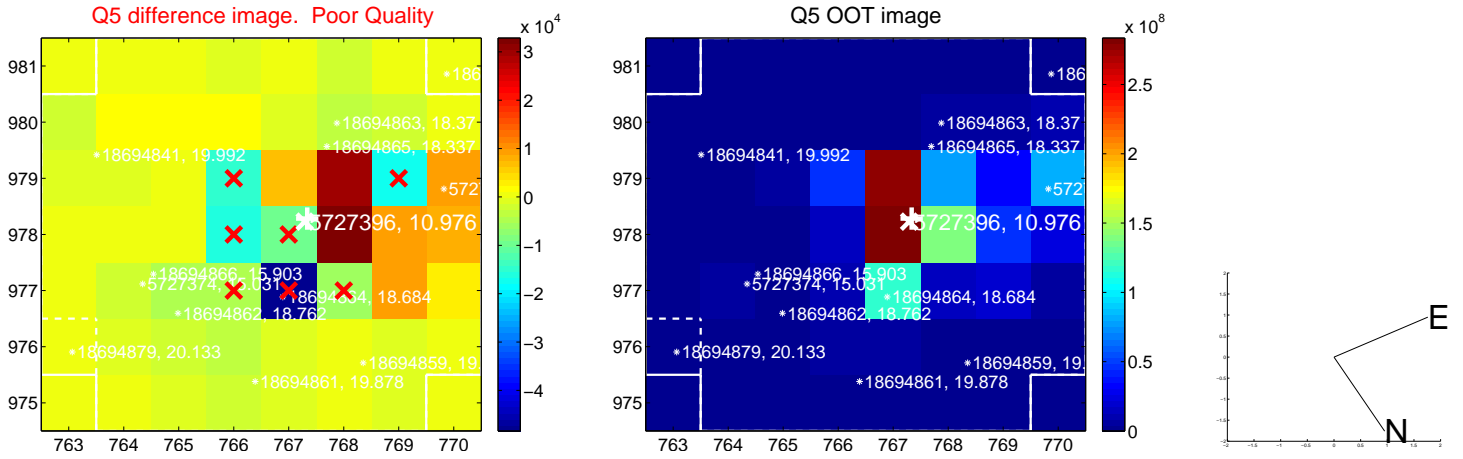
Q4 no difference image



Q4 no OOT image

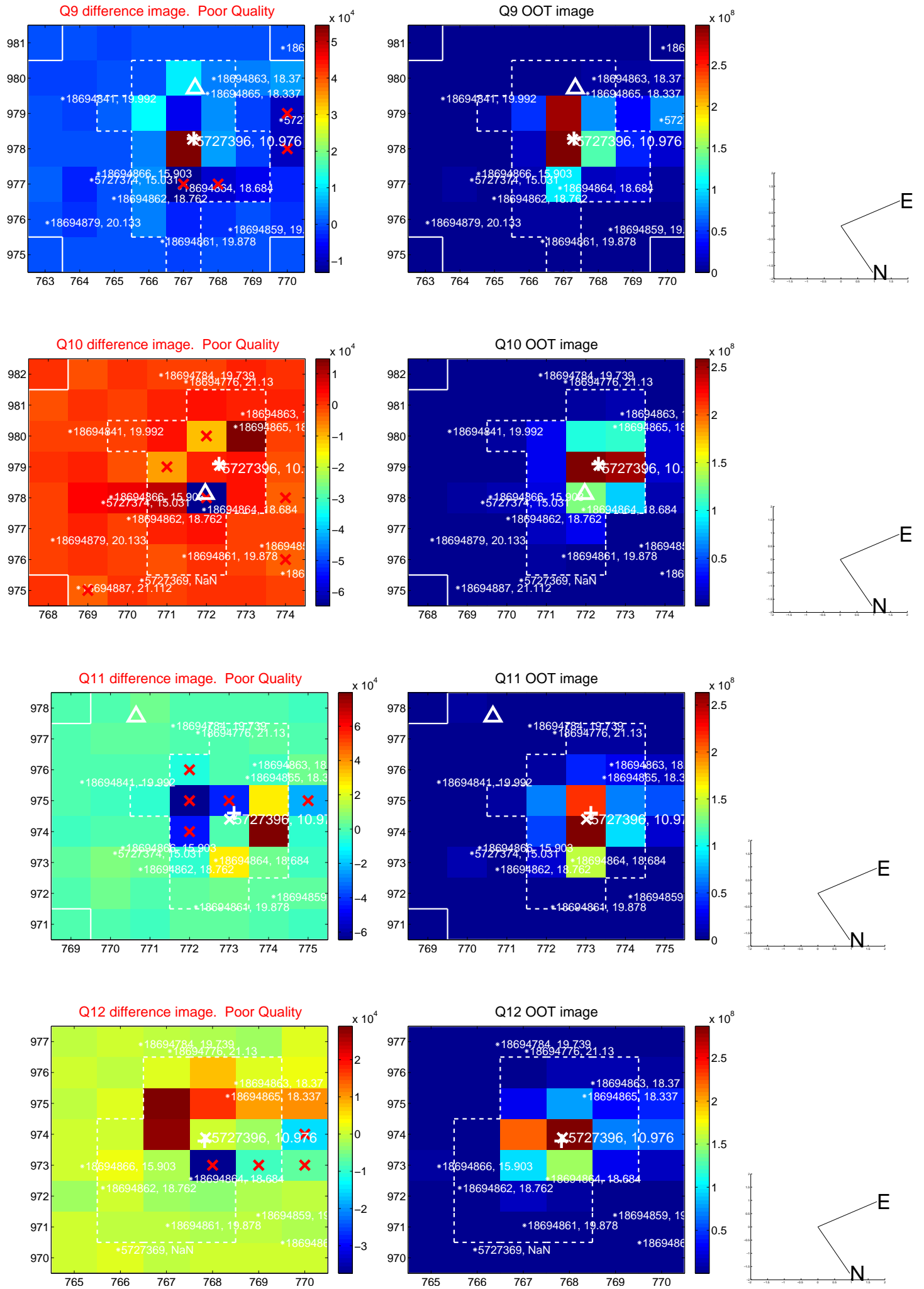


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

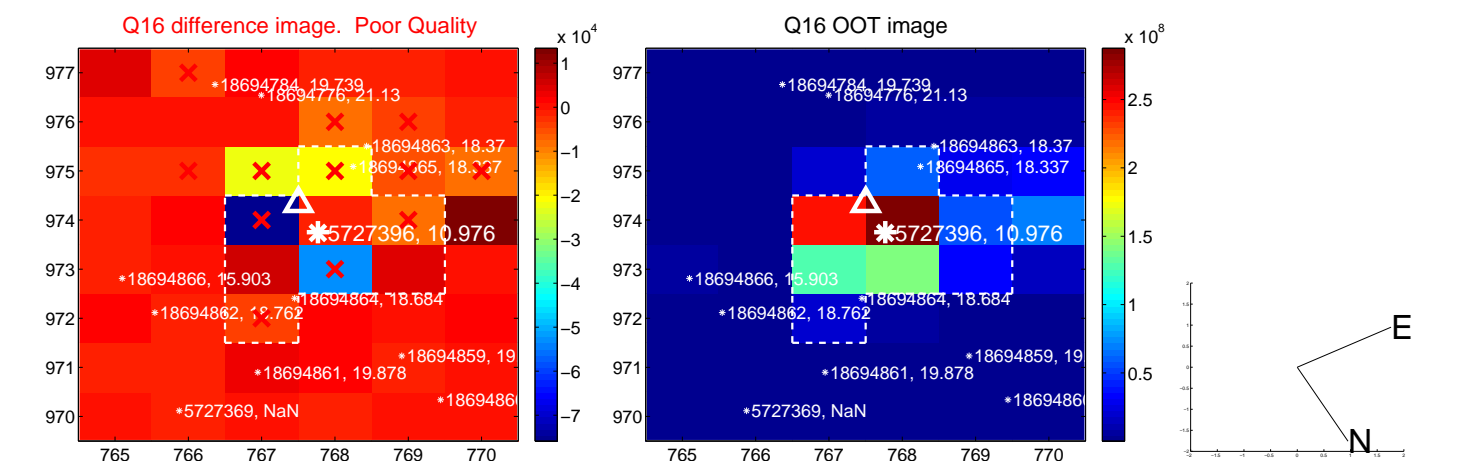
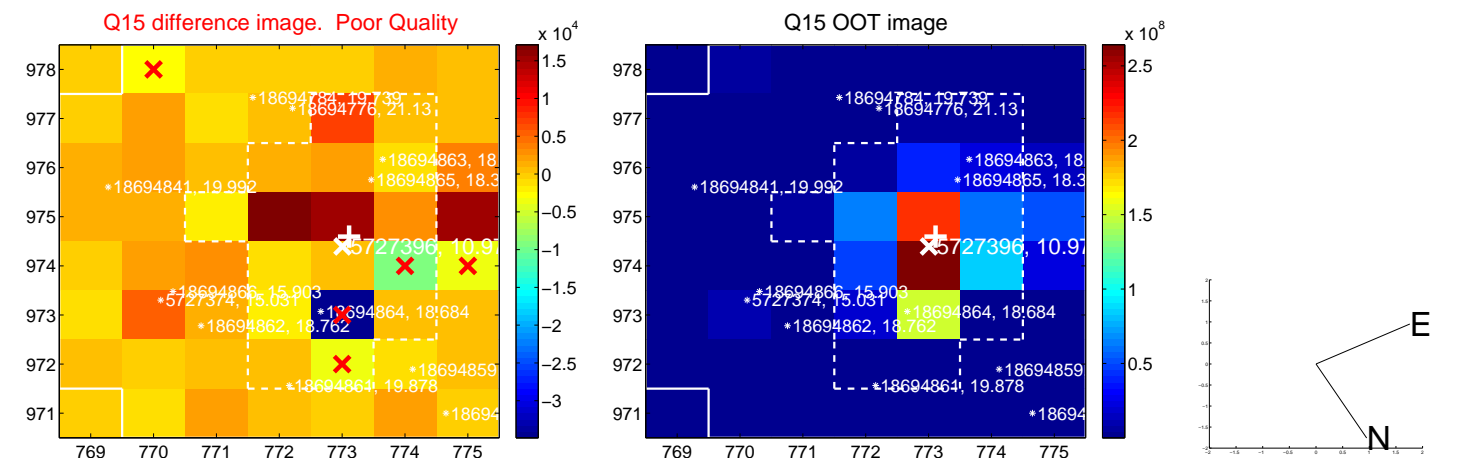
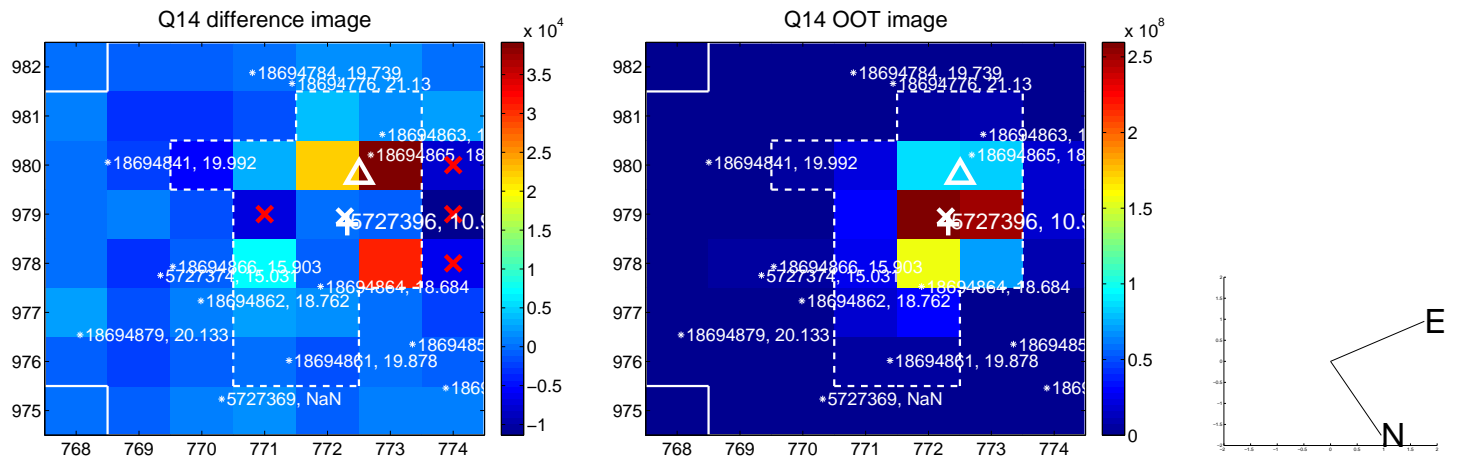
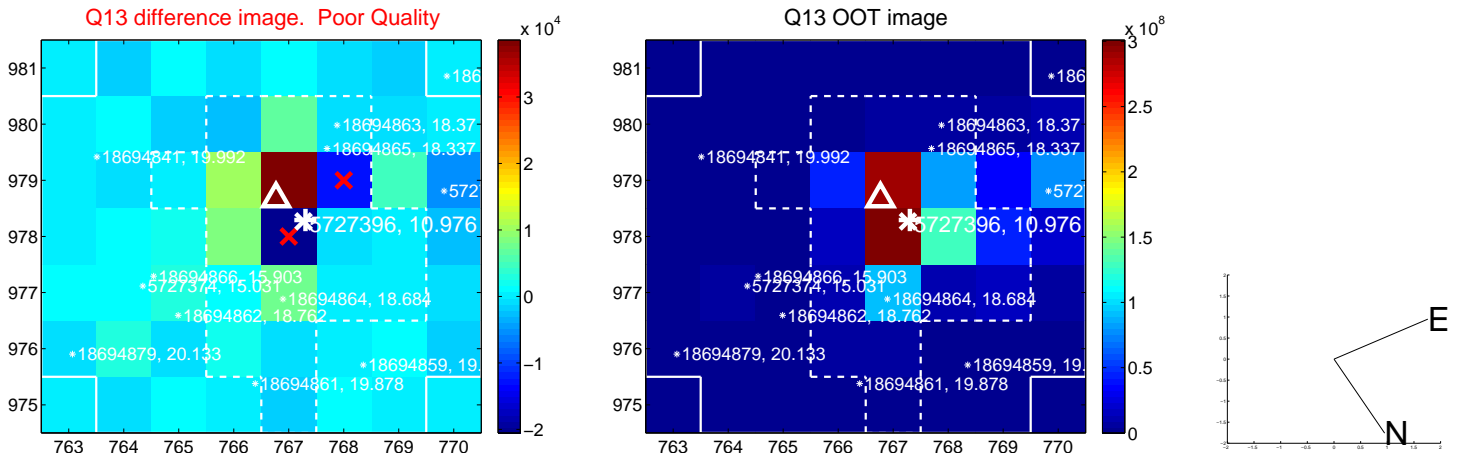




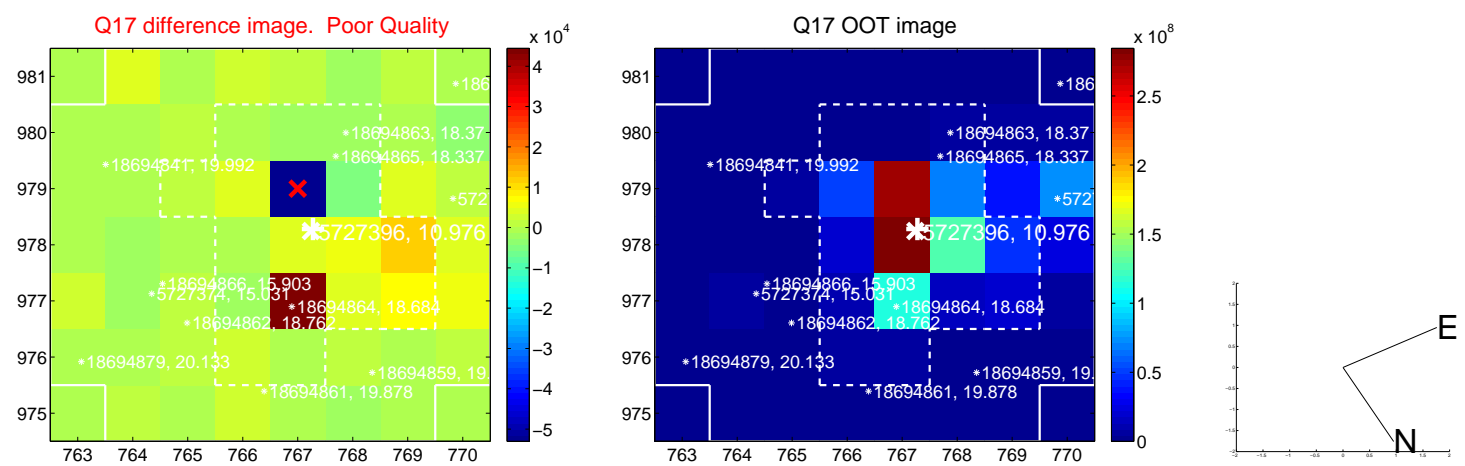
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



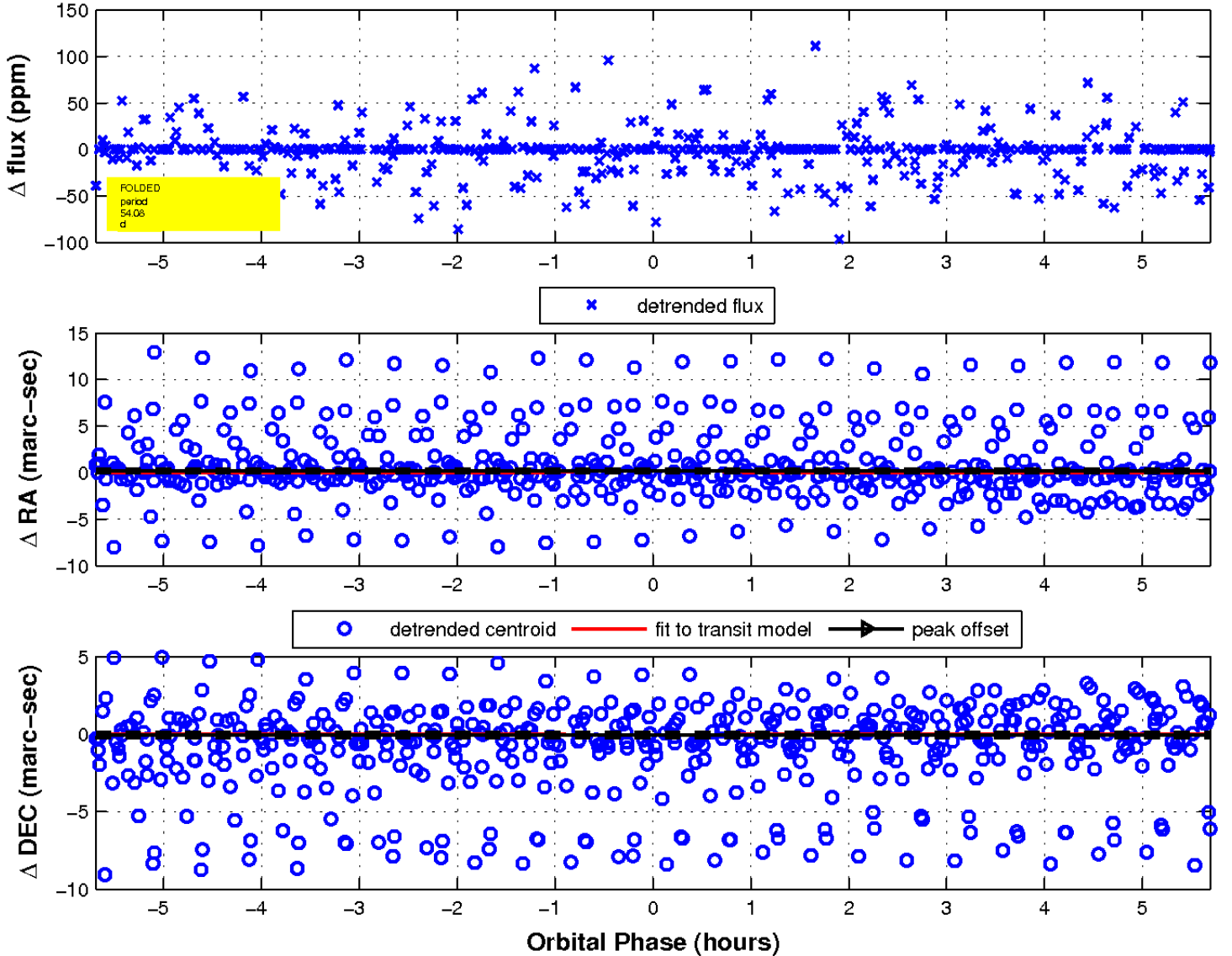
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

