

# KIC 005963222

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005963222-01	OBS	1035.01	1.217256	132.116310	5064.5	3.138	1791.1	1051.9	1.64	6631	13.71	7578.40
005963222-02	OBS	No	1.217259	132.724536	269.0	2.500	12.9	-1.0	1.64	6631	2.71	7578.37
005963222-03	OBS	No	1.217523	131.711846	41.1	13.048	10.0	13.5	1.64	6631	1.05	7576.17

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005963222-01	OBS	FP	0.00	0	1	1	0	HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
005963222-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
005963222-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—HALO_GHOST

**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.

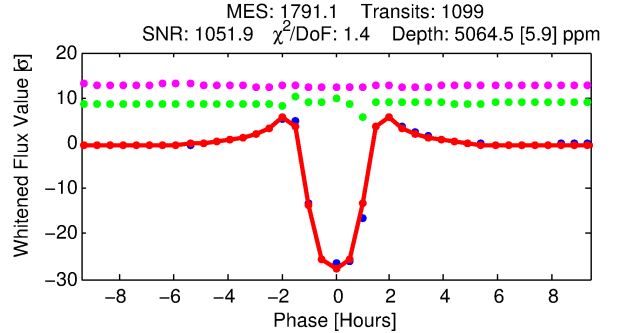
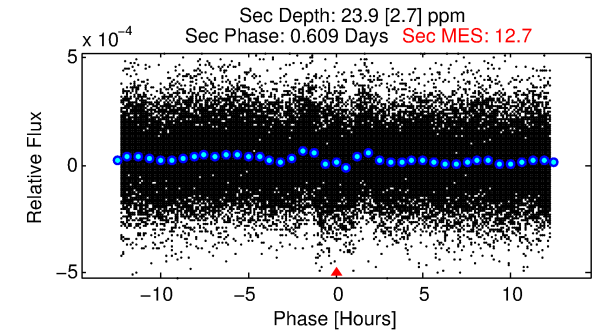
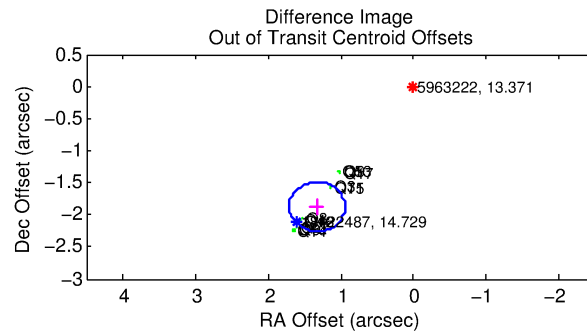
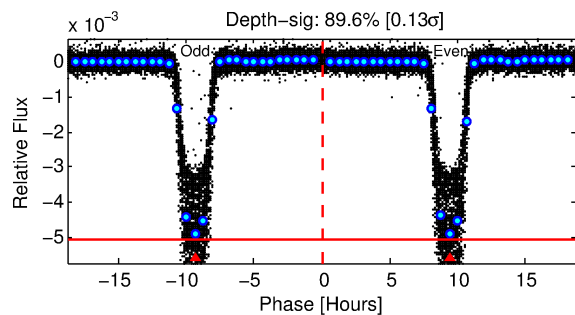
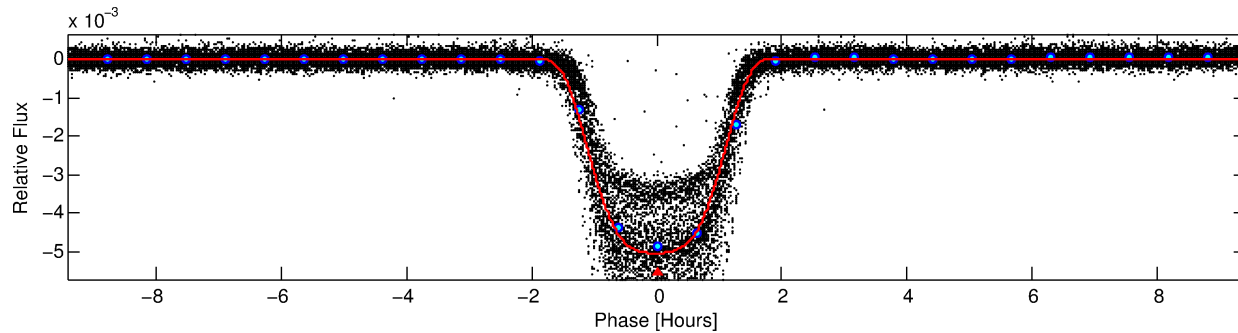
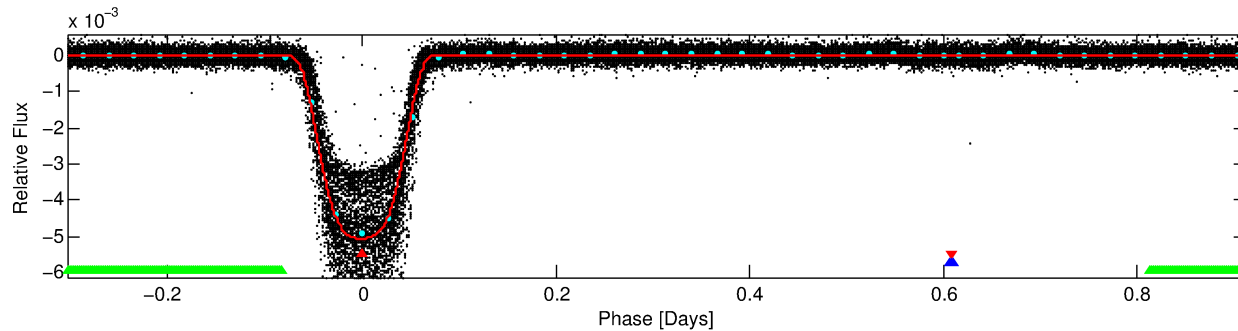
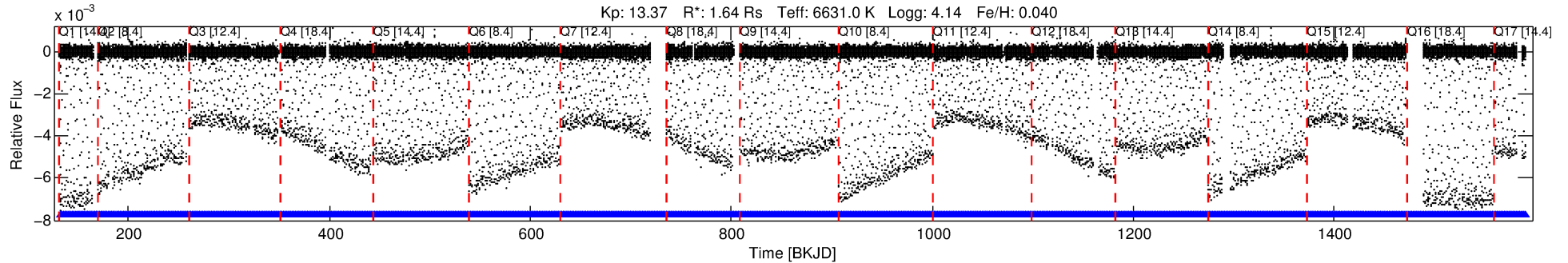
Ephemeris Match Information For 005963222-01

No Significant Match Found

# DV One-Page Summary

KIC: 5963222 Candidate: 1 of 3 Period: 1.217 d  
KOI: K01035.01 Corr: 0.928

Kp: 13.37 R\*: 1.64 Rs Teff: 6631.0 K Logg: 4.14 Fe/H: 0.040



## DV Fit Results:

Period = 1.21726 [0.00000] d  
Epoch = 132.1163 [0.0000] BKJD  
Rp/R\* = 0.0767 [0.0001]  
a/R\* = 2.00 [0.00]  
b = 0.90 [0.00]  
Seff = 7578.40 [1802.18]  
Teff = 2379 [141] K  
Rp = 13.71 [2.33] Re  
a = 0.0248 [0.0038] AU  
Ag = 0.04 [0.01] [-86.37σ]  
Teffp = 1675 [52] K [-4.68σ]

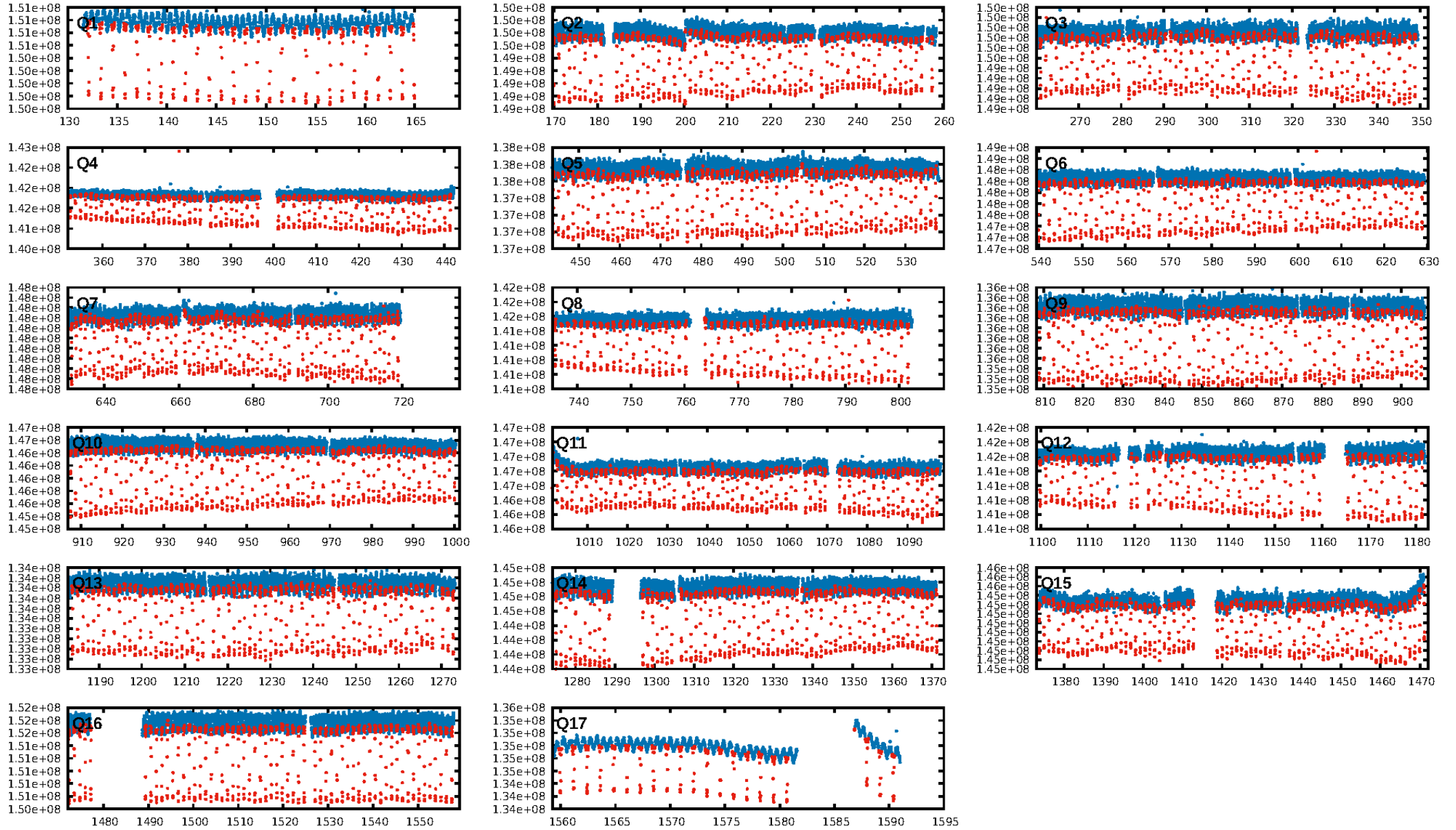
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1050/1050]  
GhostDiagnostic-chr: 0.522  
Centroid-sig: N/A  
Centroid-so: 3.187 arcsec [592.43σ]  
OotOffset-rm: 2.296 arcsec [17.92σ]  
KicOffset-rm: 2.667 arcsec [38.73σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

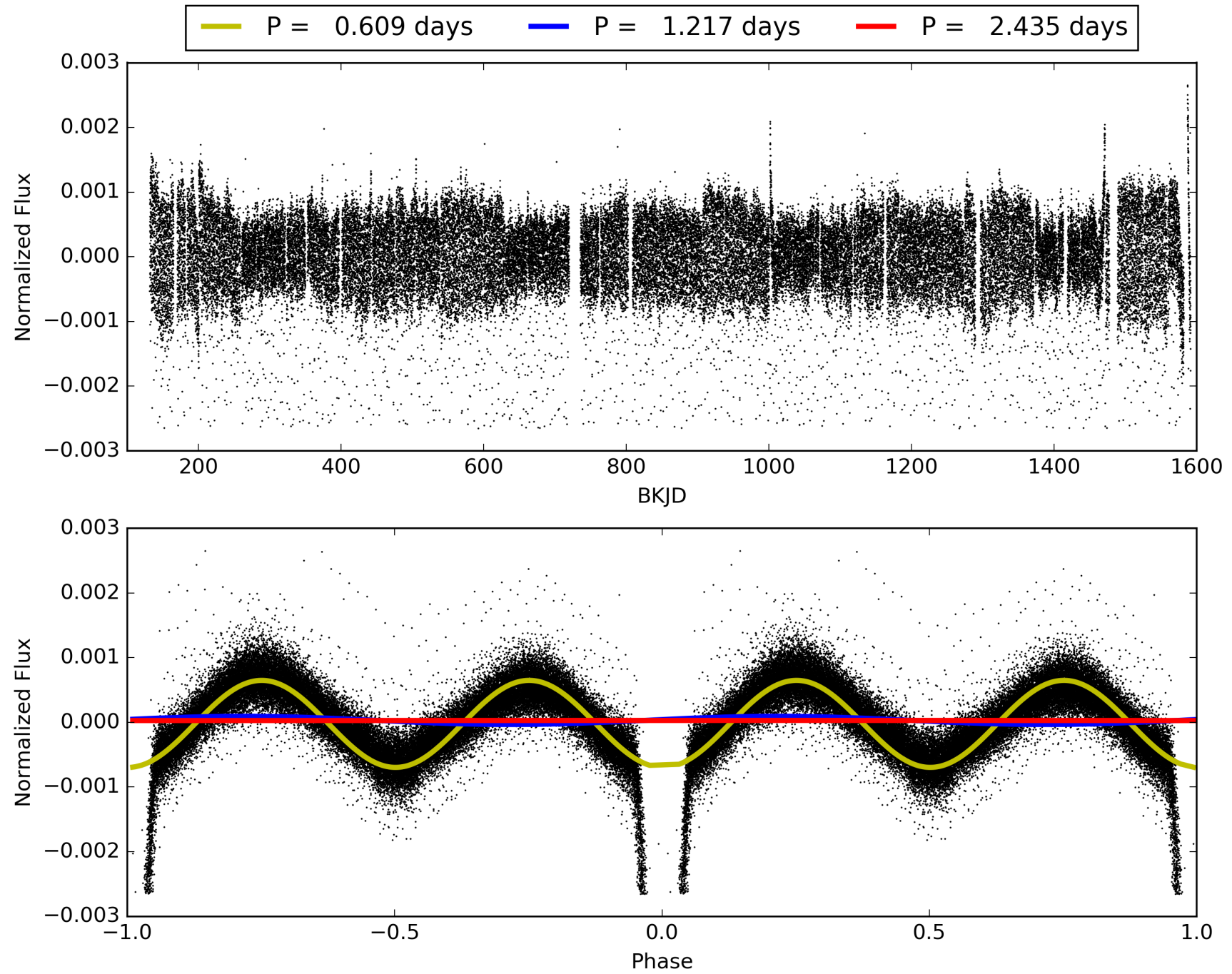
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 03:23:50 Z

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

# TCE 005963222-01, PDC Light Curves

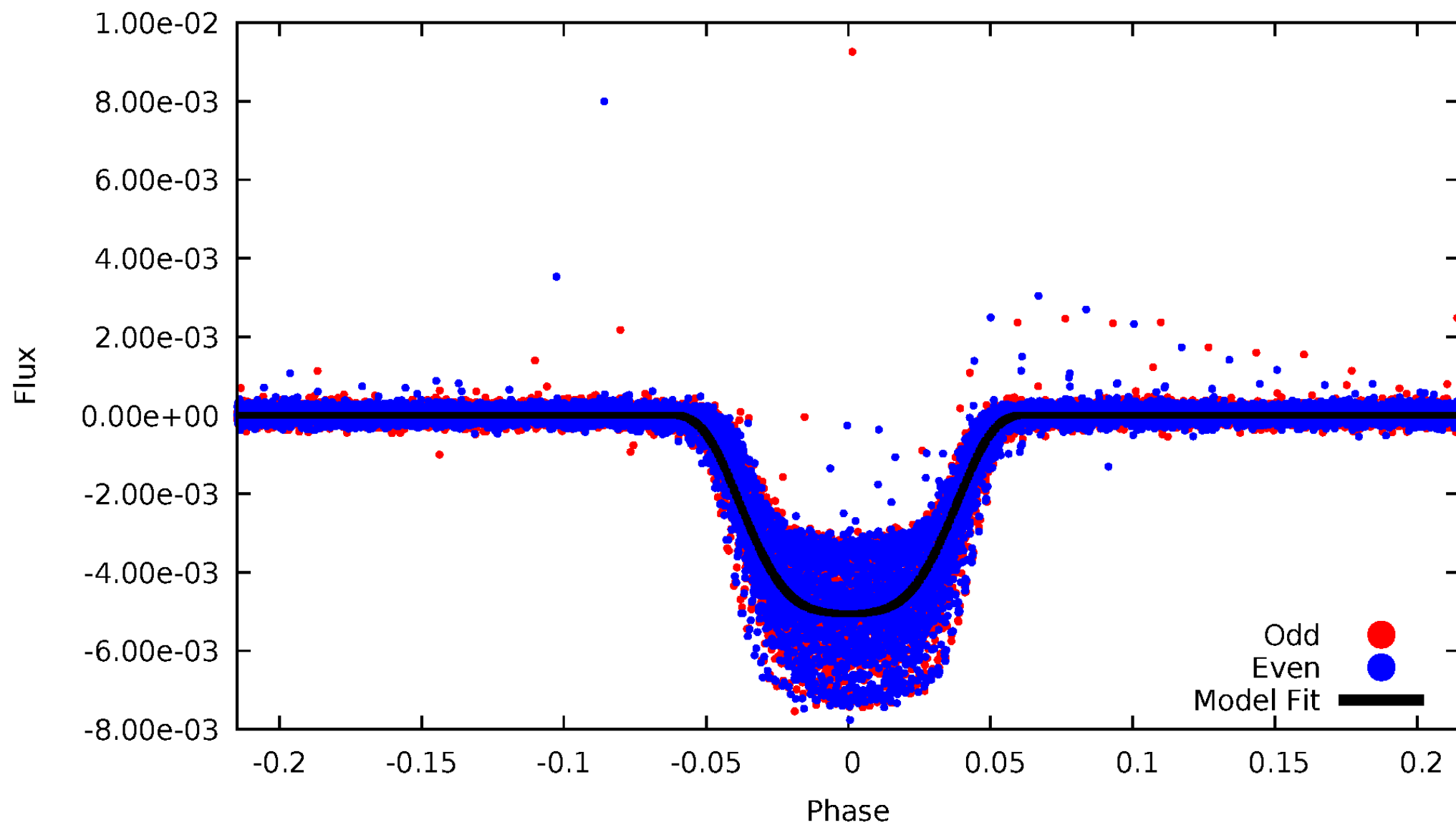


TCE 005963222-01



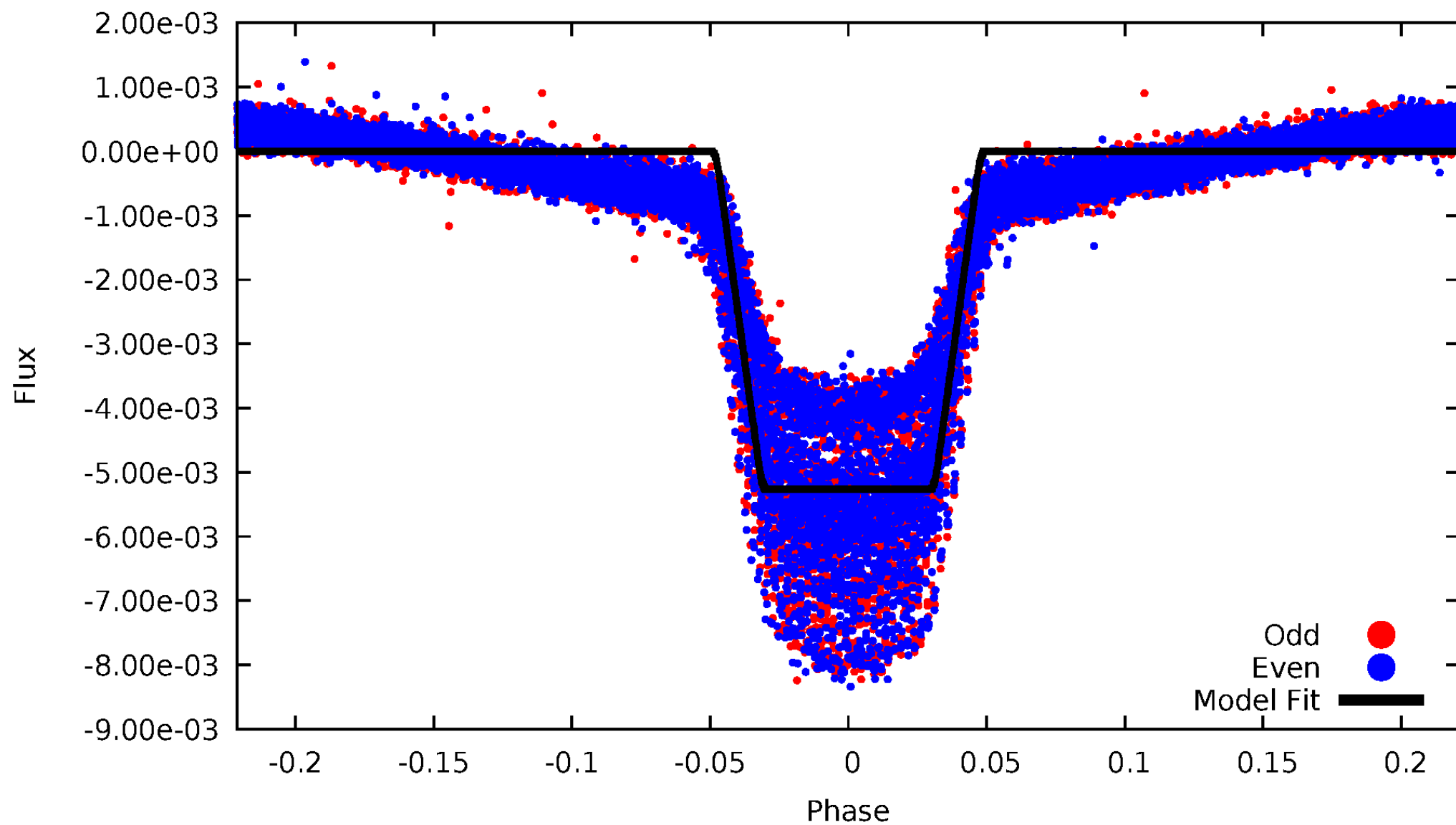
# DV Odd/Even

TCE 005963222-01



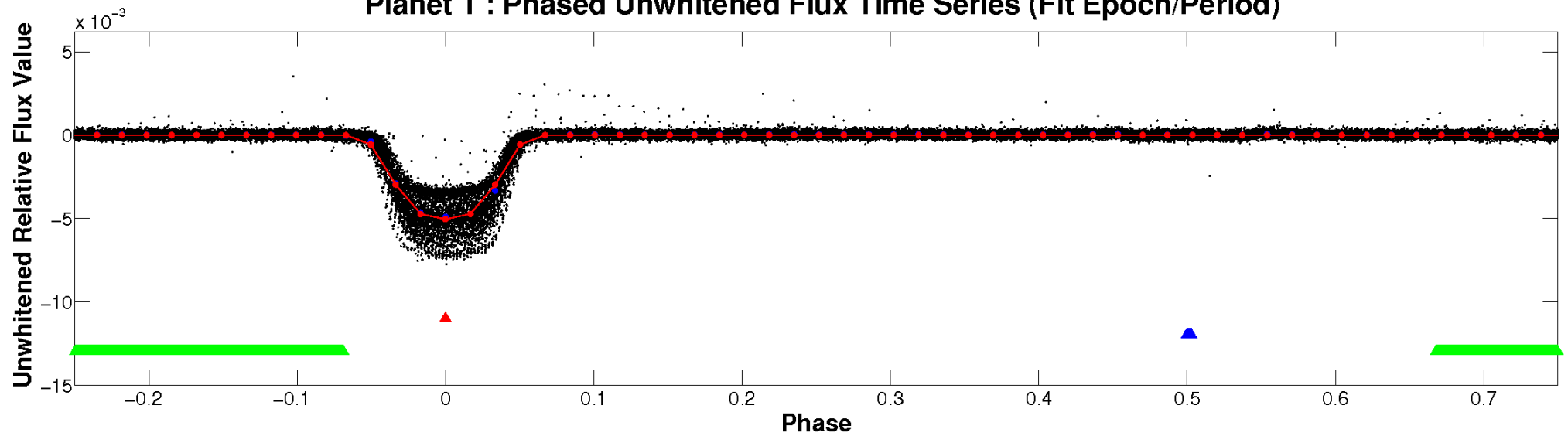
# ALT Odd/Even

TCE 005963222-01

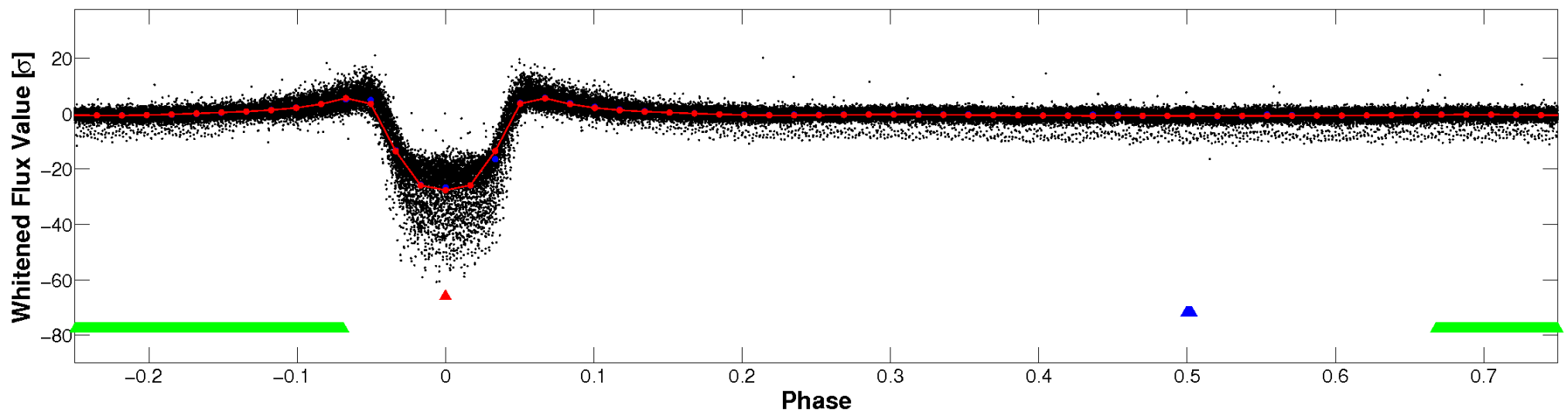


# Non-Whitened Vs. Whitened Light Curve

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



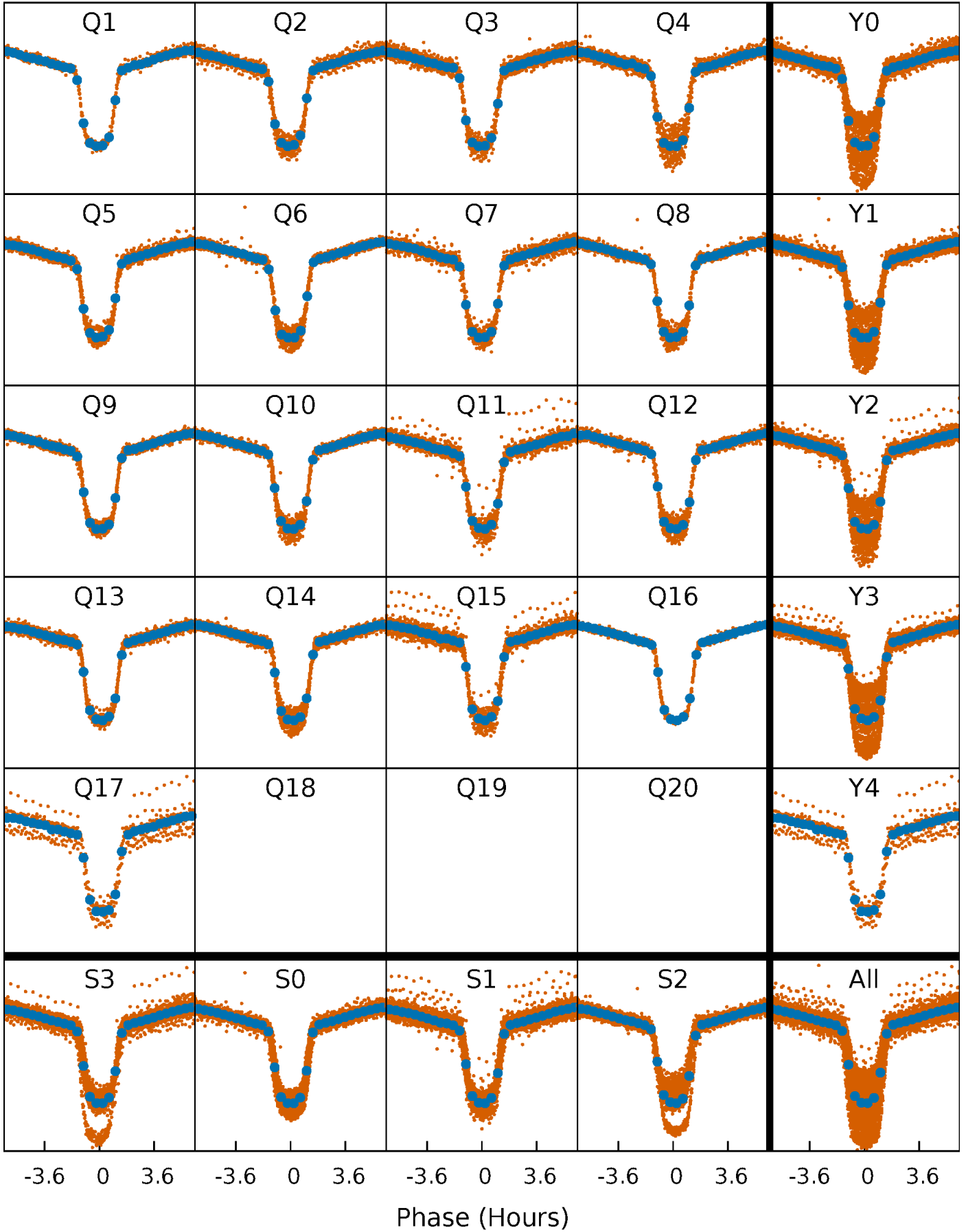
## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

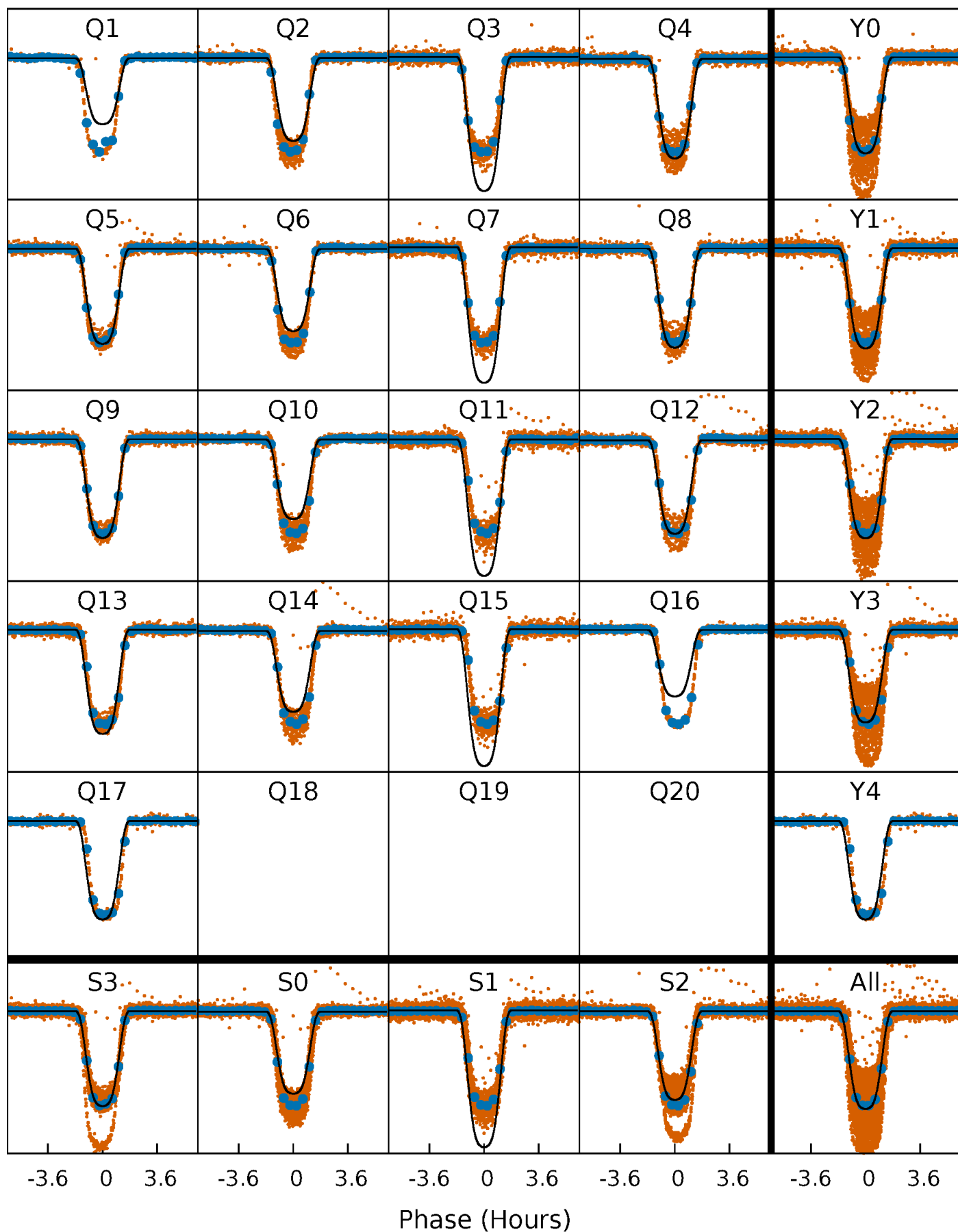
TCE 005963222-01 P= 1.217256 Days  $T_0=132.116310$  (BKJD)





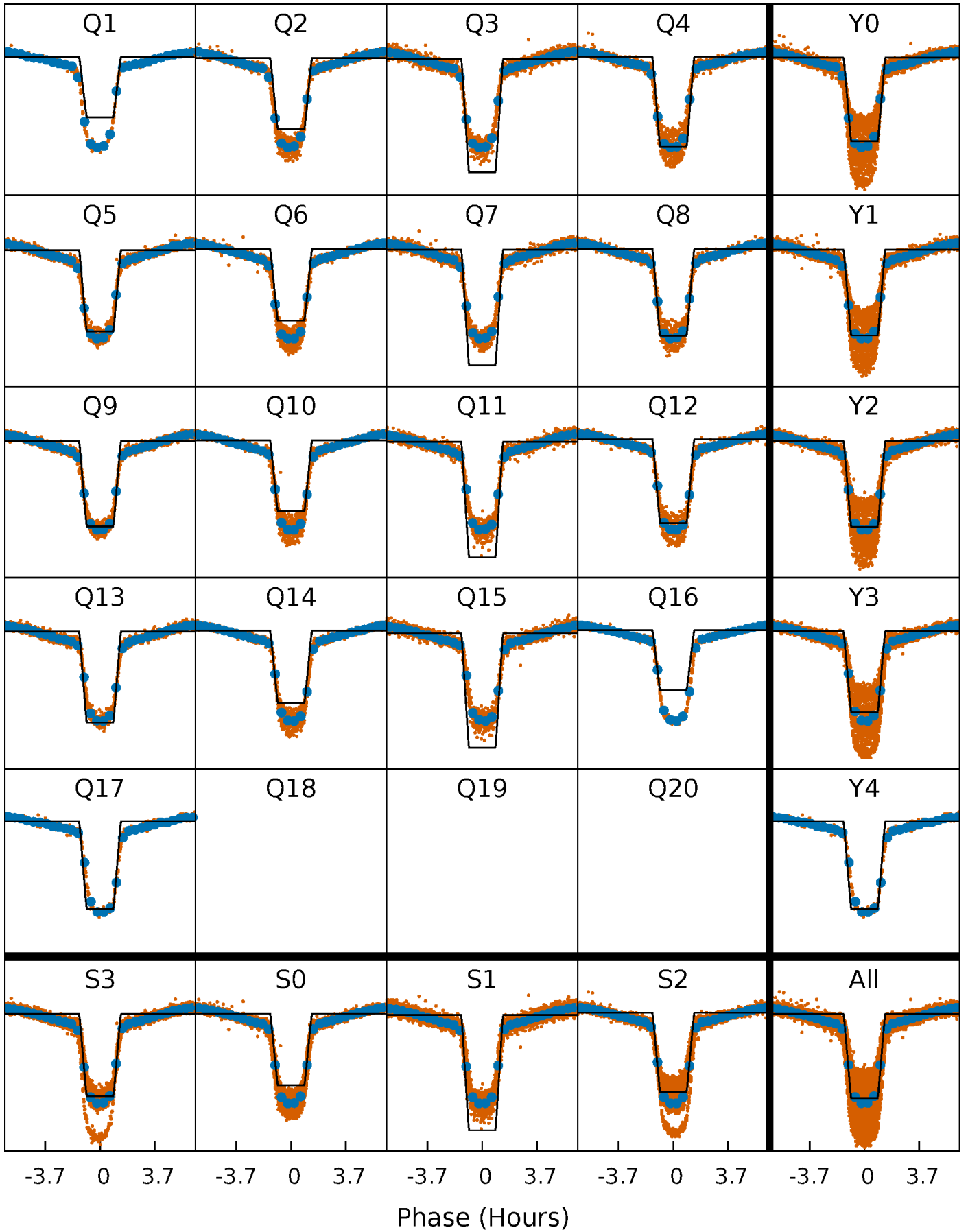
# DV Quarter-Phased Transit Curves

TCE 005963222-01 P= 1.217256 Days  $T_0=132.116310$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

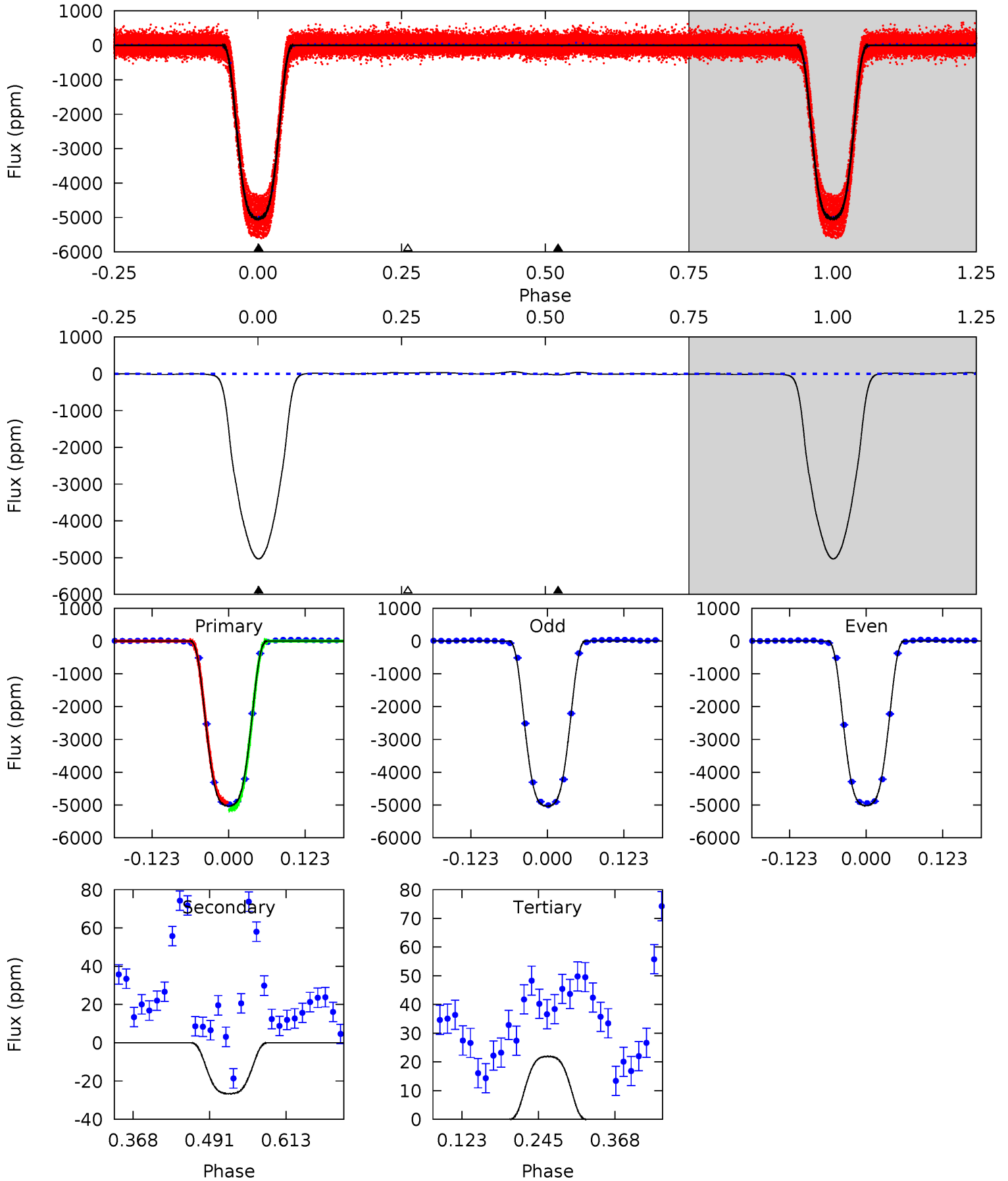
TCE 005963222-01 P= 1.217259 Days  $T_0=132.115989$  (BKJD)



# DV Model-Shift Uniqueness Test

005963222-01, P = 1.217256 Days, E = 130.899054 Days

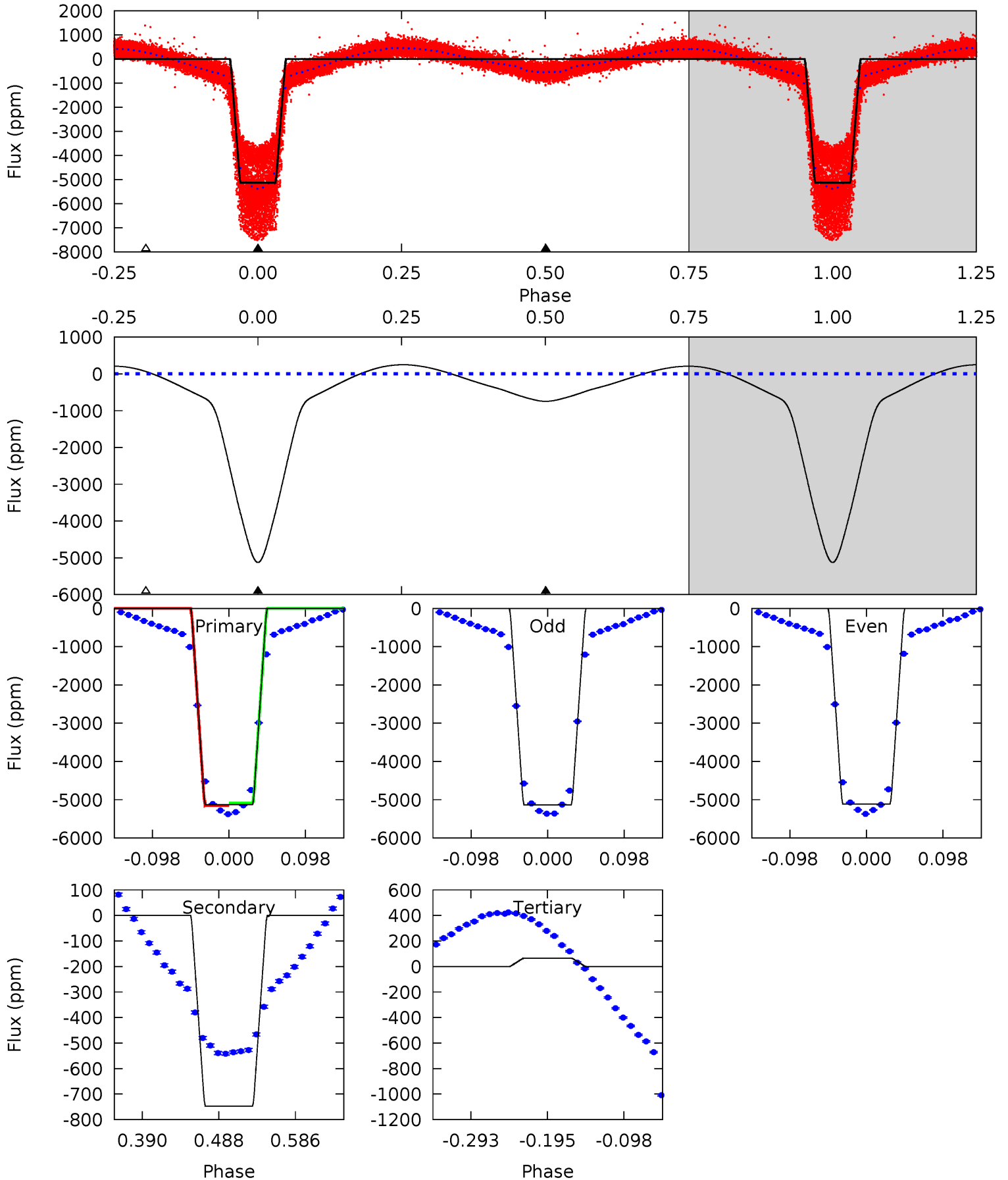
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2505	13.3	-10.9	0	4.52	1.54	8.24	2516	2505	24.2	13.3	4.49	0.99	0.01	0



# Alt Model-Shift Uniqueness Test

005963222-01, P = 1.217259 Days, E = 130.898730 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
1241	180.9	-15.7	0	4.57	1.66	56.1	1257	1241	196.6	180.9	2.99	1.00	0.05	7.66



### Stellar Parameters For KIC 005963222

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6631^{+73}_{-86}$	$4.145^{+0.132}_{-0.108}$	$0.040^{+0.150}_{-0.150}$	$1.638^{+0.278}_{-0.278}$	$1.366^{+0.098}_{-0.109}$	$0.438^{+0.266}_{-0.140}$
	+1%/-1%	+3%/-3%	+375%/-375%	+17%/-17%	+7%/-8%	+61%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005963222-01 / KOI 1035.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-27 \pm 2$	$13.64^{+1.22}_{-1.17}$	$3312^{+151}_{-138}$	$-3191^{+96}_{-99}$	$0.048^{+0.010}_{-0.008}$
Alt.	$-747 \pm 4$	$12.97^{+1.19}_{-1.16}$	$3316^{+151}_{-134}$	$4124^{+48}_{-51}$	$1.505^{+0.272}_{-0.240}$

$T_{max}$  = 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

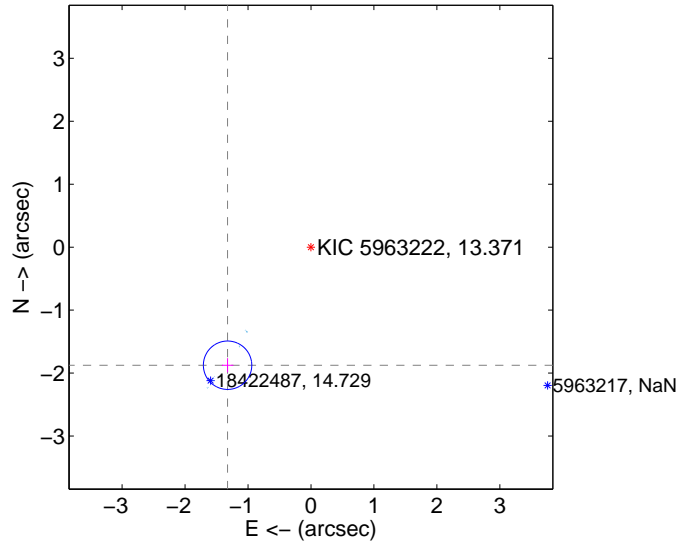
Supplemental centroid analysis for 005963222-01. Kepler magnitude: 13.37. Transit SNR 1051.90

There are 17 quarters with good PRF difference image offsets

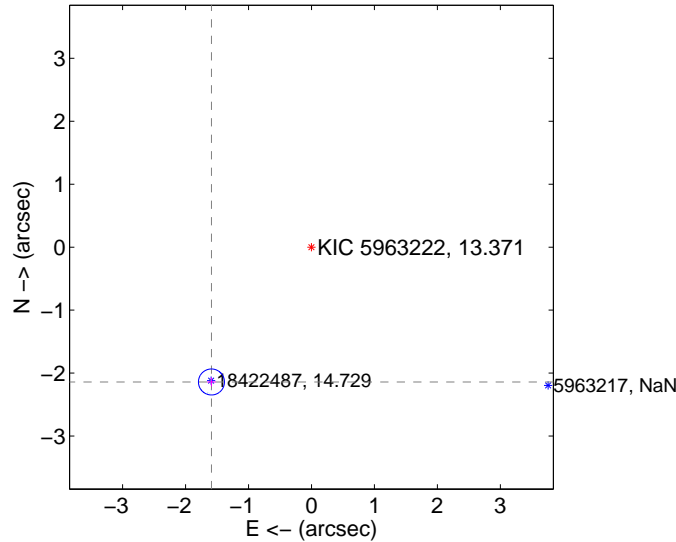
The direct PRF centroid is offset from the target star catalog position by about 0.98 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.296 \pm 0.128$	17.92	$1.325 \pm 0.092$	$-1.875 \pm 0.111$
PRF-fit source offset from KIC position	$2.667 \pm 0.069$	38.73	$1.589 \pm 0.067$	$-2.142 \pm 0.069$
photometric centroid source offset	$3.19 \pm 0.01$	592.42	$1.98 \pm 0.01$	$-2.49 \pm 0.00$

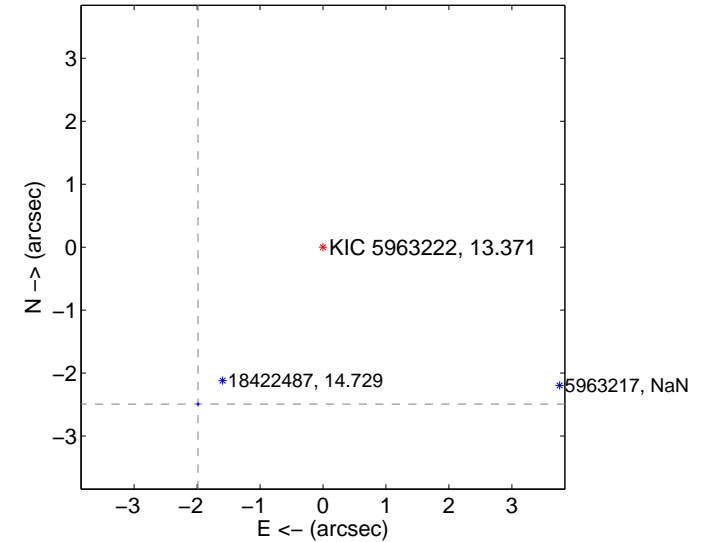
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

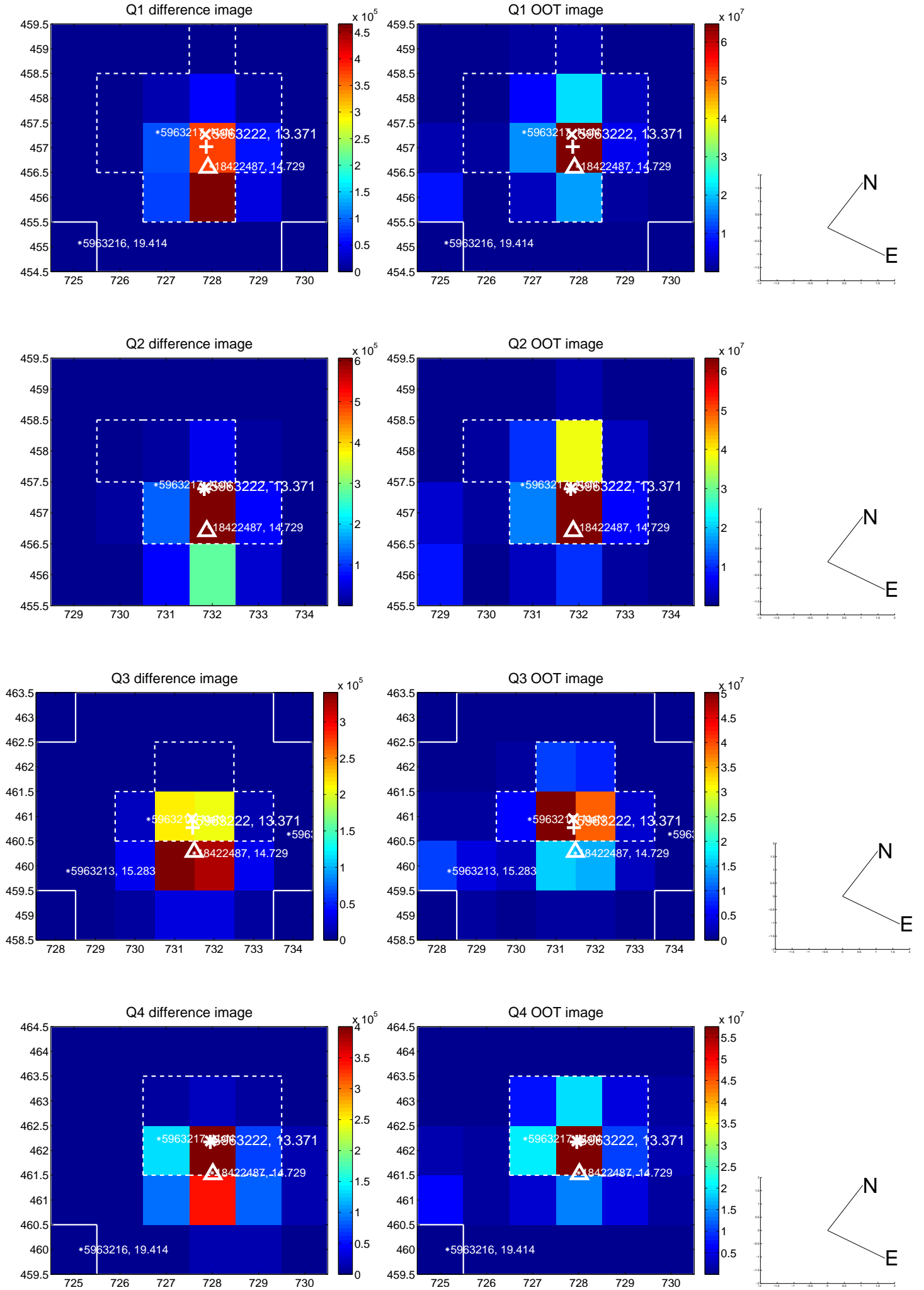


offset from photometric centroids



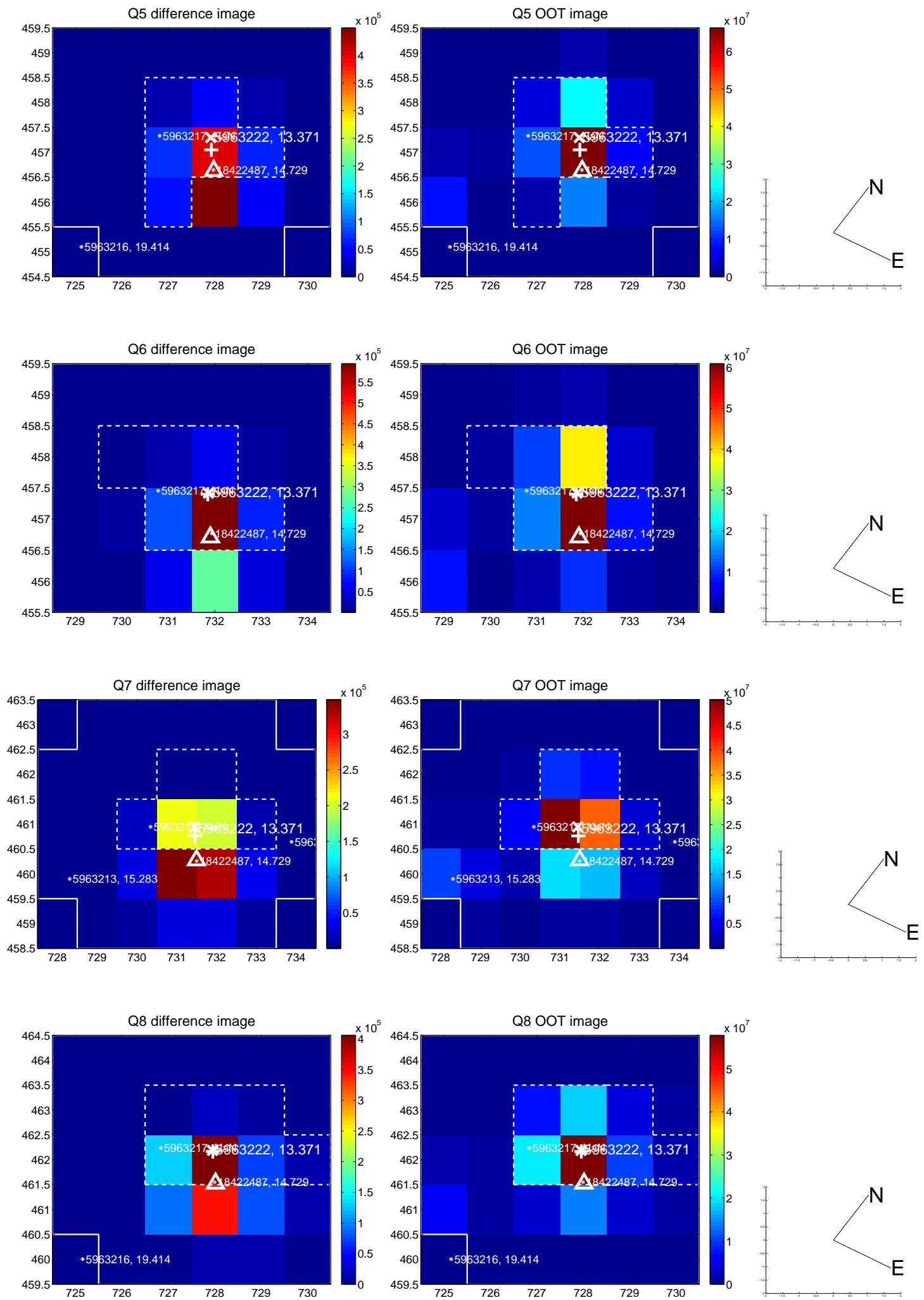
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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

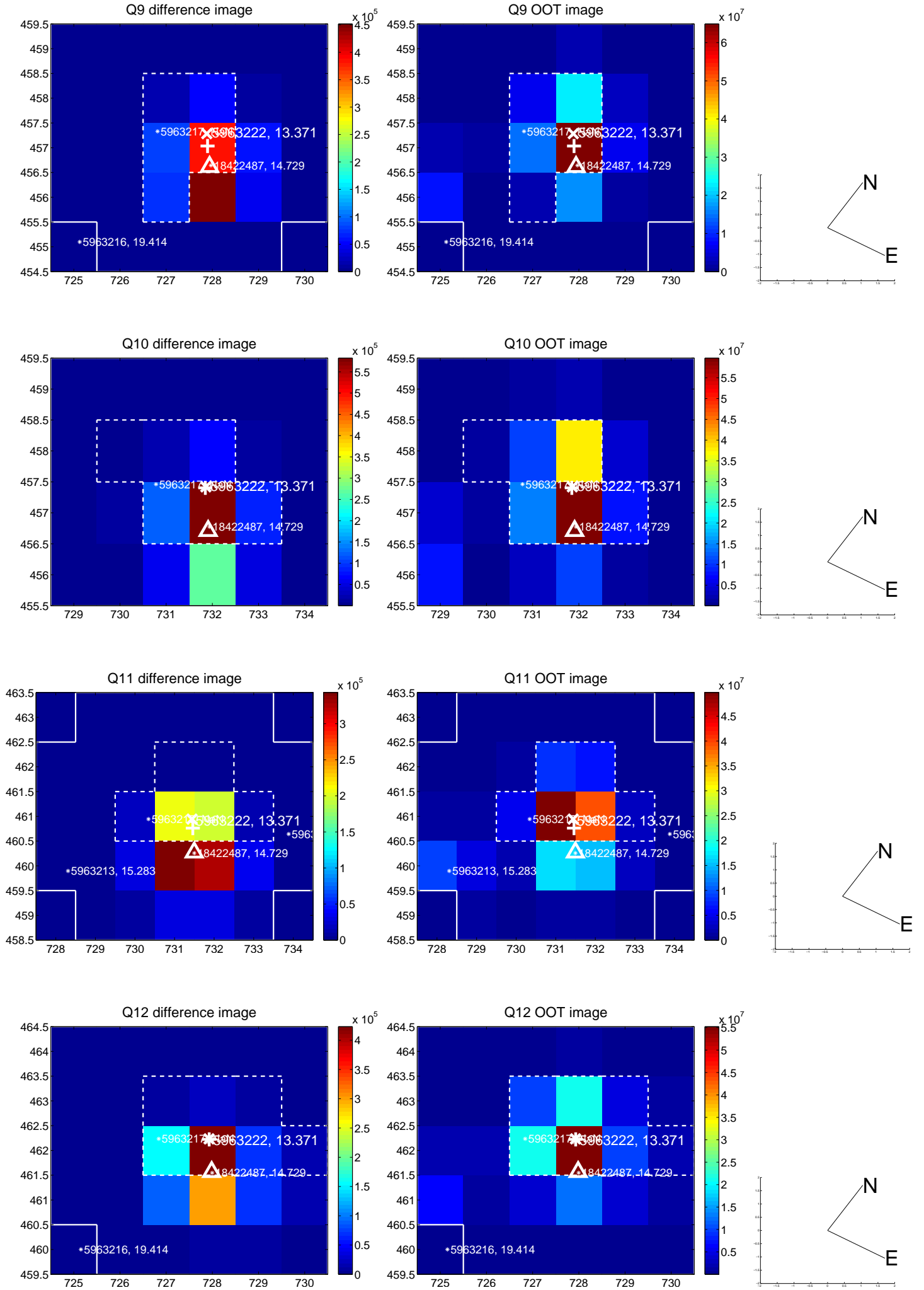




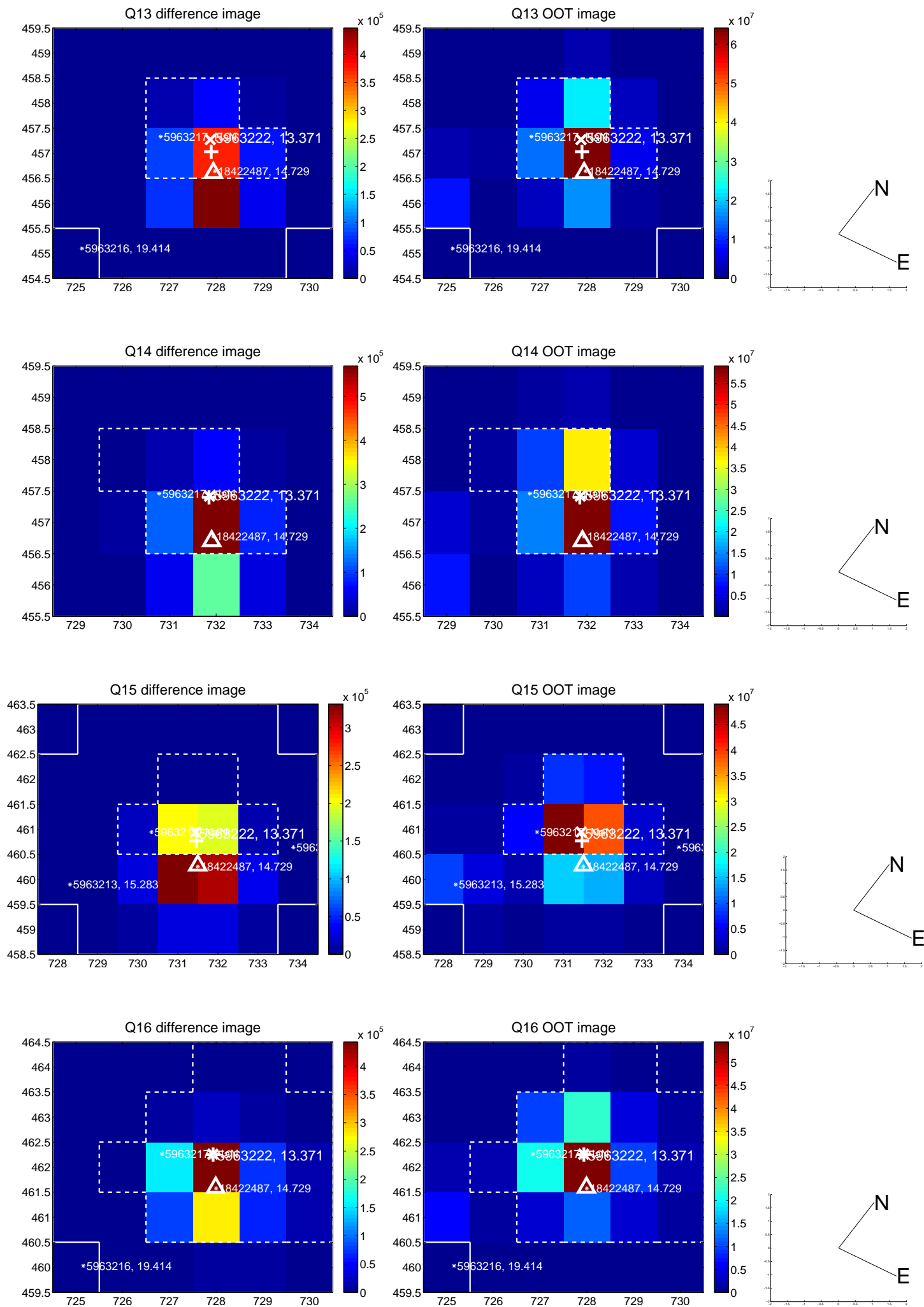
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



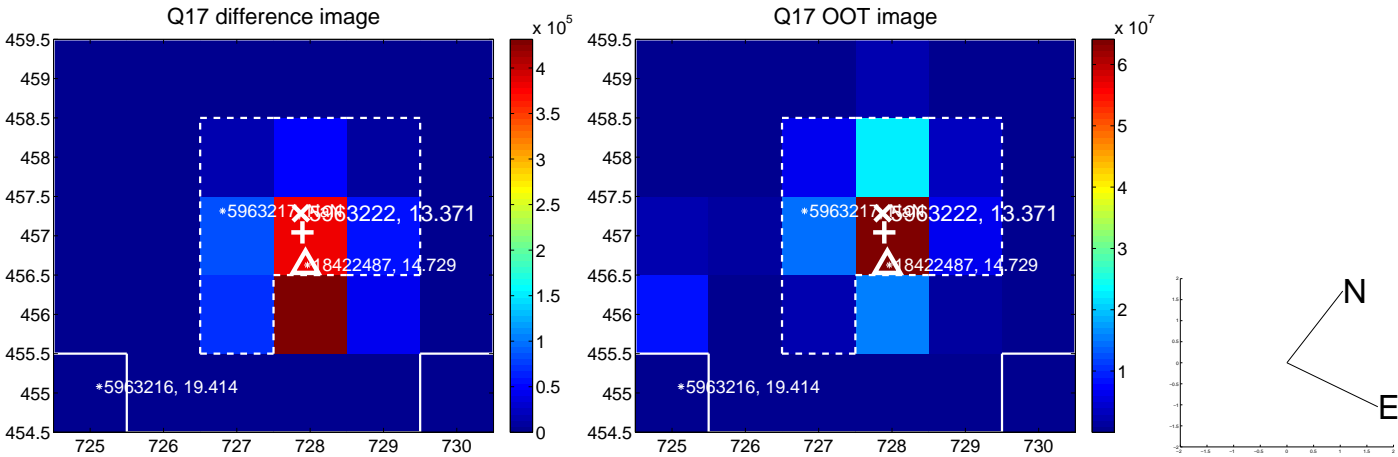
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



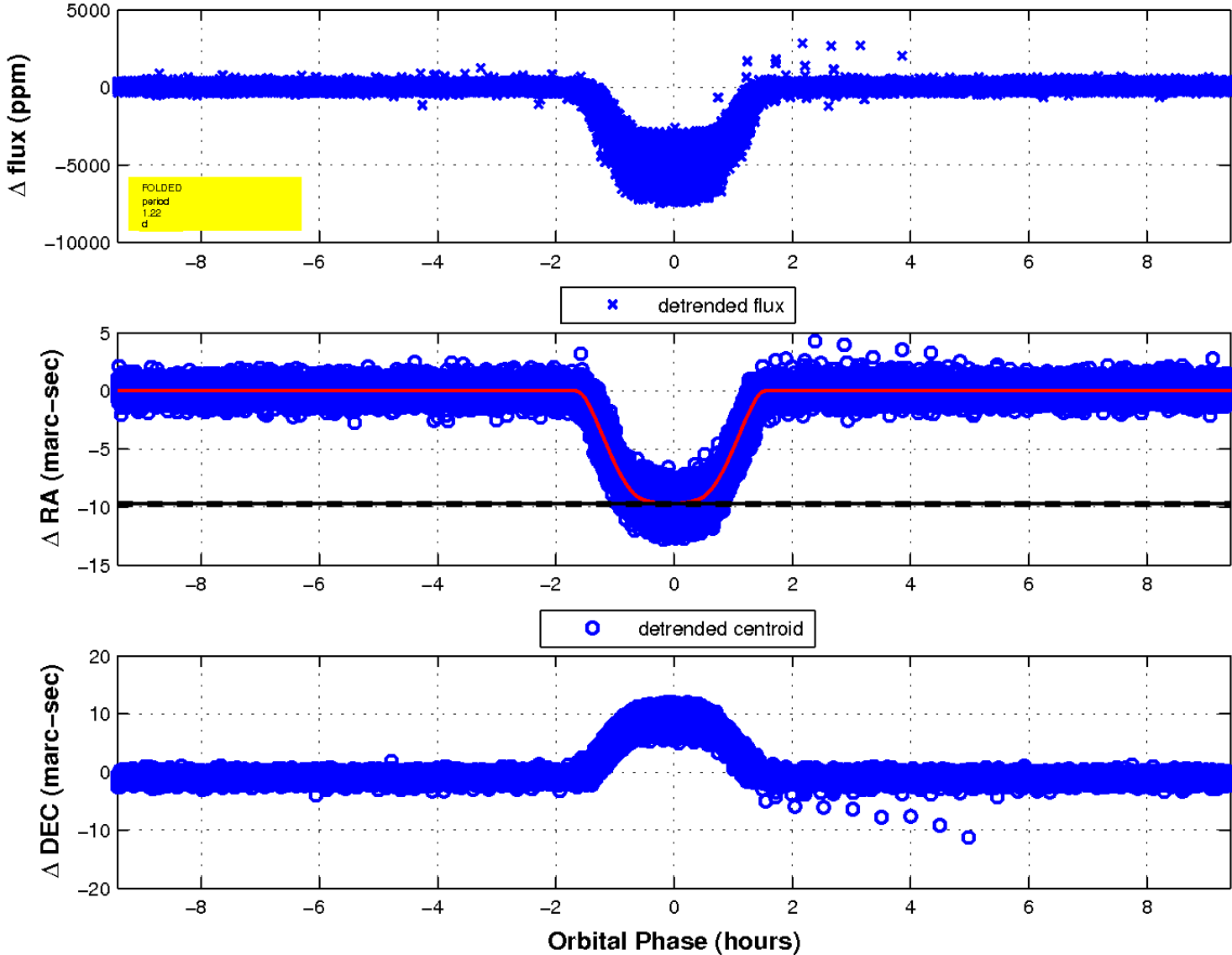
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

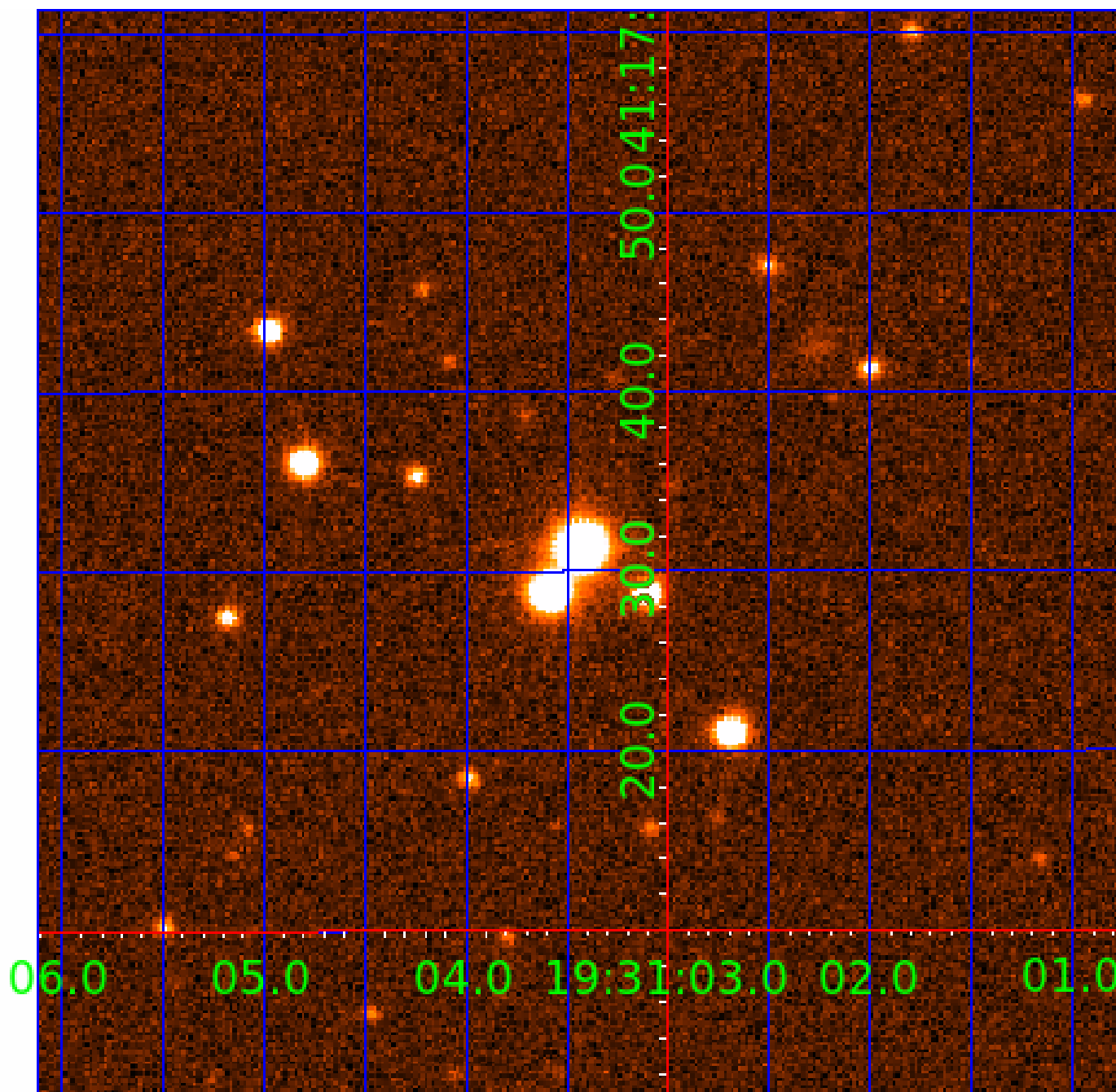


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



# KIC 005963222

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005963222-01	OBS	1035.01	1.217256	132.116310	5064.5	3.138	1791.1	1051.9	1.64	6631	13.71	7578.40
005963222-02	OBS	No	1.217259	132.724536	269.0	2.500	12.9	-1.0	1.64	6631	2.71	7578.37
005963222-03	OBS	No	1.217523	131.711846	41.1	13.048	10.0	13.5	1.64	6631	1.05	7576.17

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005963222-01	OBS	FP	0.00	0	1	1	0	HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
005963222-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
005963222-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—HALO_GHOST

**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 005963222-02

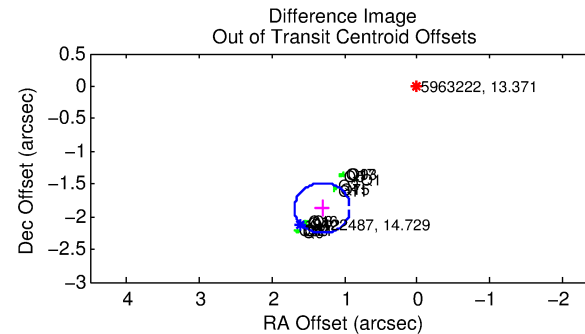
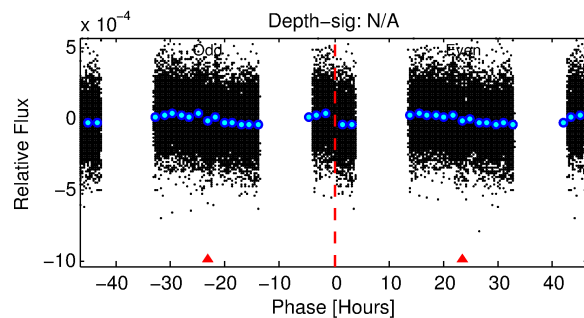
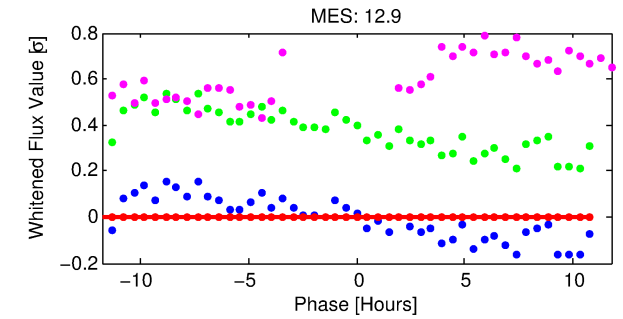
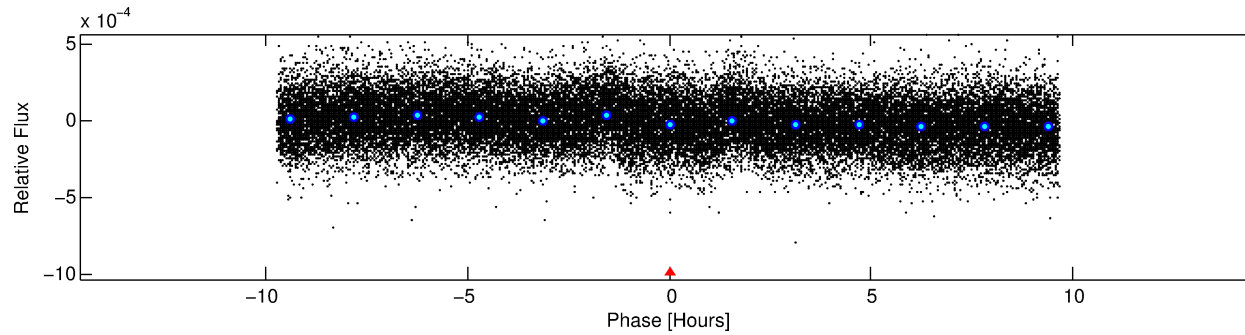
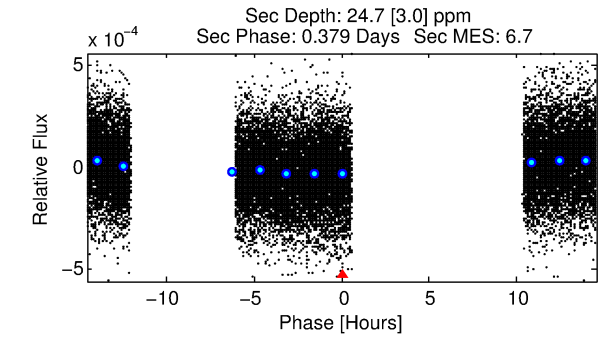
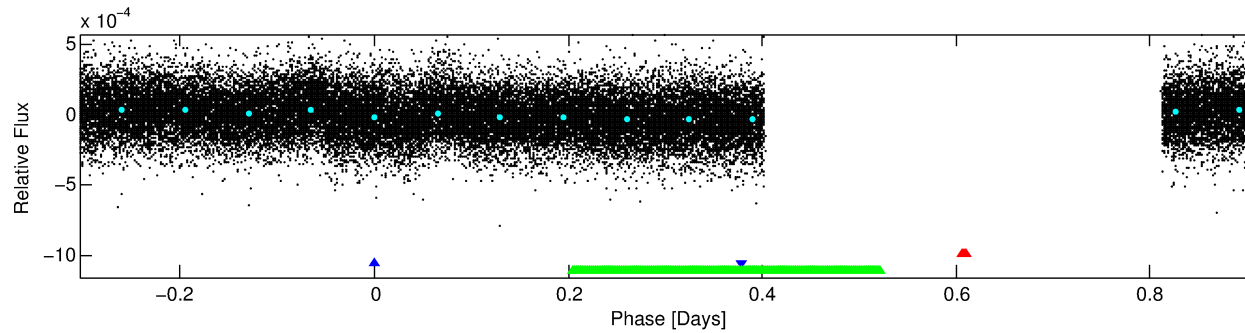
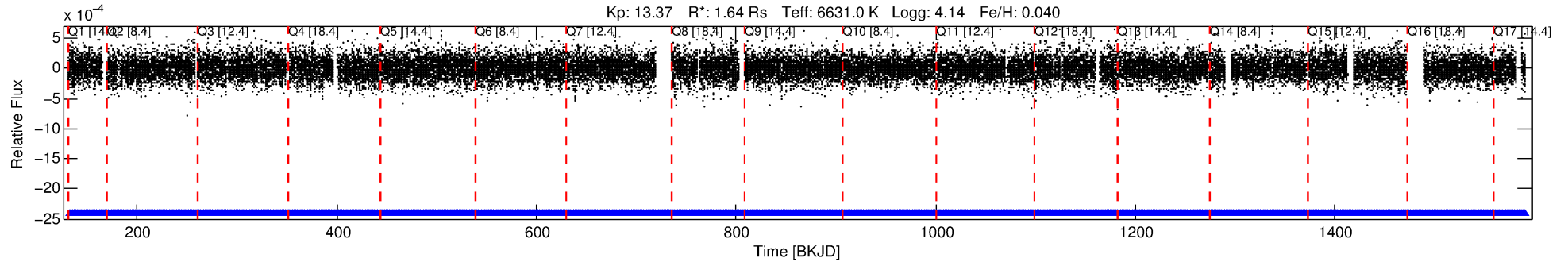
No Significant Match Found

# DV One-Page Summary

KIC: 5963222 Candidate: 2 of 3 Period: 1.217 d

KOI: K01035 Corr: No Ephemeris Match

Kp: 13.37 R\*: 1.64 Rs Teff: 6631.0 K Logg: 4.14 Fe/H: 0.040



TPS TCE Results:

Period = 1.21726 d

Epoch = 132.7245 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]

LongPeriod-sig: 0.0% [0.00σ]

ModelChiSquare2-sig: N/A

ModelChiSquareGof-sig: N/A

Bootstrap-pfa: N/A

RollingBand-fgt: 1.00 [1067/1067]

GhostDiagnostic-chr: 0.9186

Centroid-sig: N/A

Centroid-so: 0.619 arcsec [15.58σ]

OotOffset-rm: 2.280 arcsec [17.76σ]

KicOffset-rm: 2.703 arcsec [39.10σ]

OotOffset-st: 4/4/4/5 [17]

KicOffset-st: 4/4/4/5 [17]

DiffImageQuality-fgm: 1.00 [17/17]

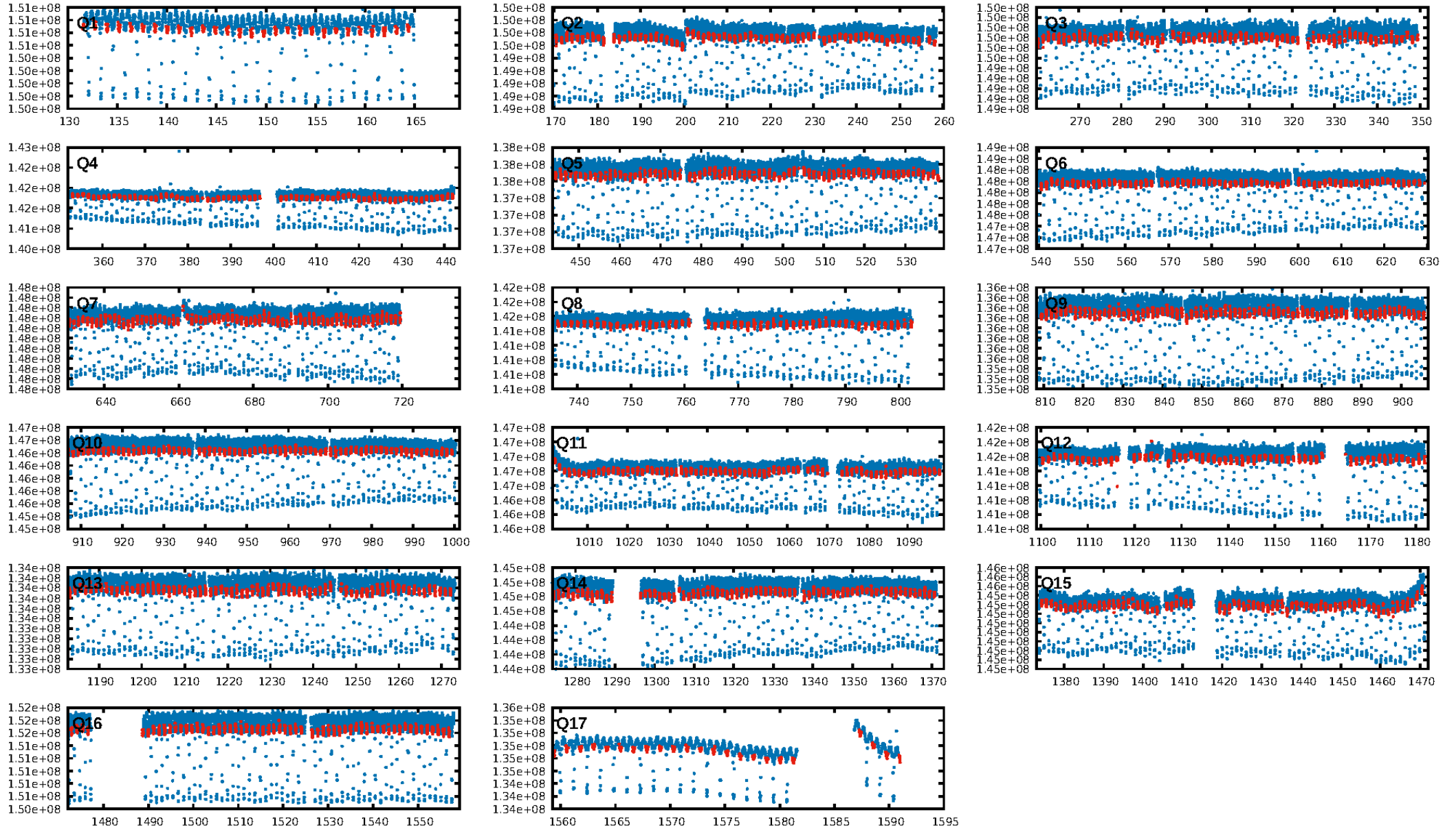
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 03:24:01 Z

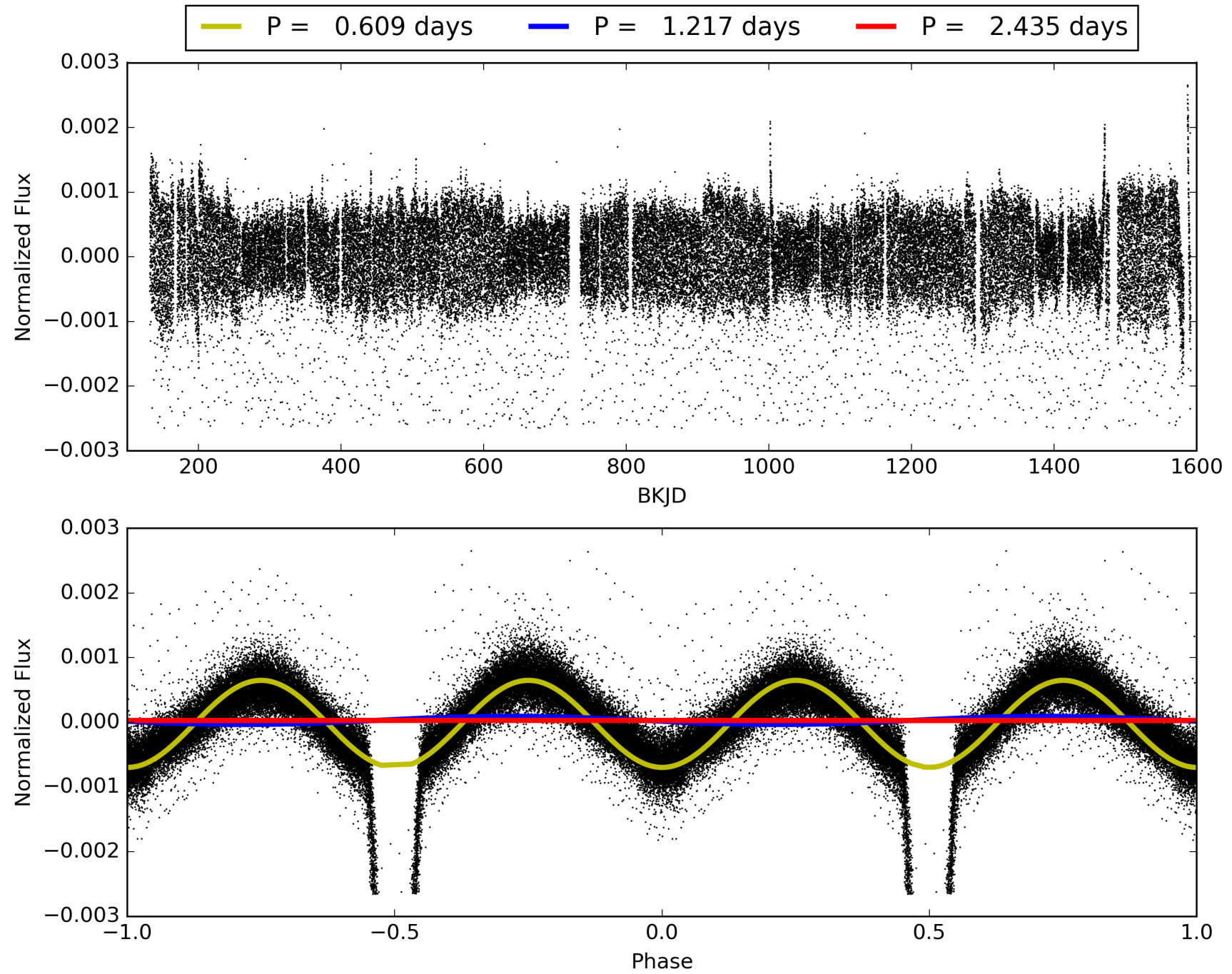
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005963222-02, PDC Light Curves

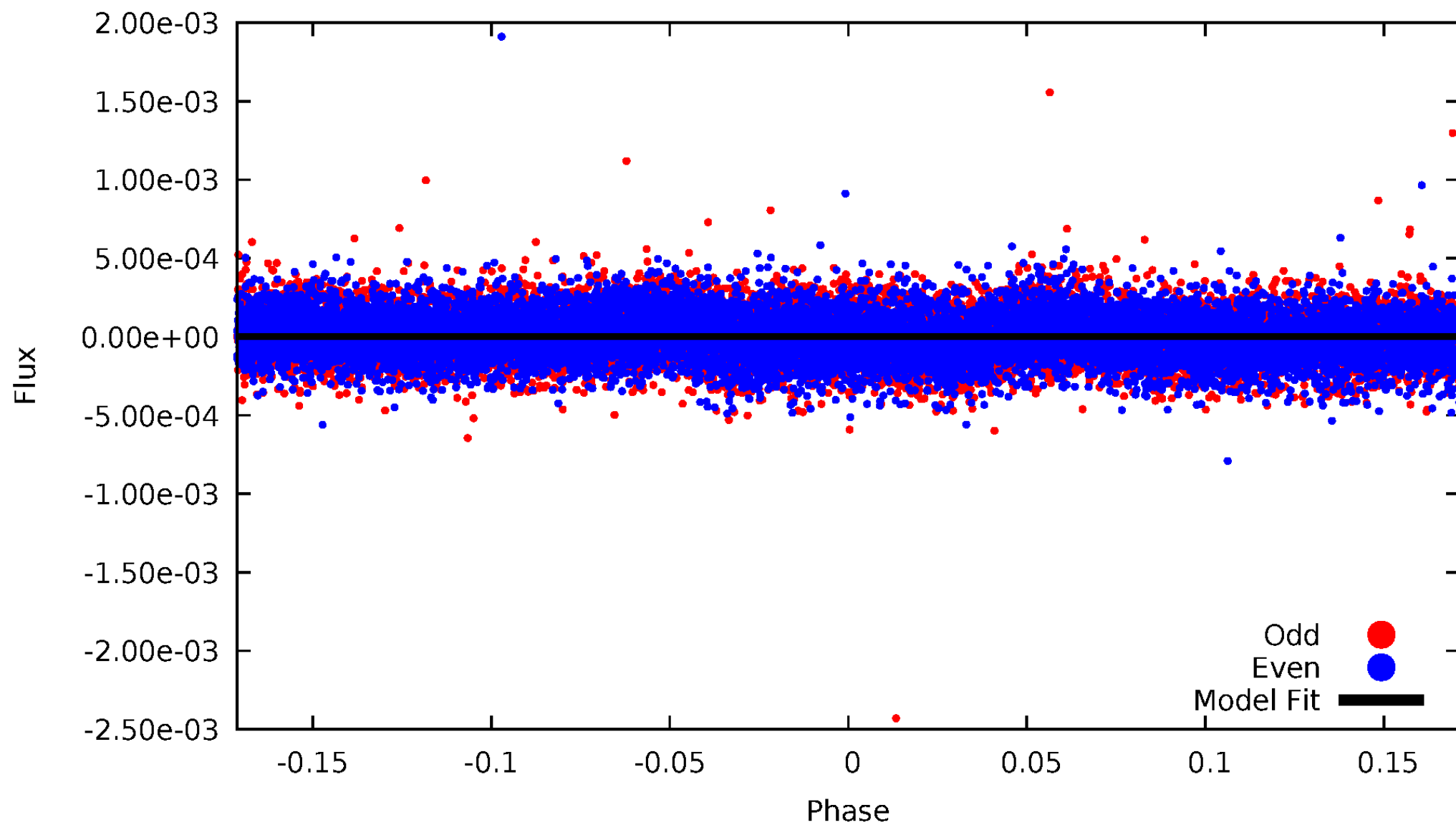


TCE 005963222-02



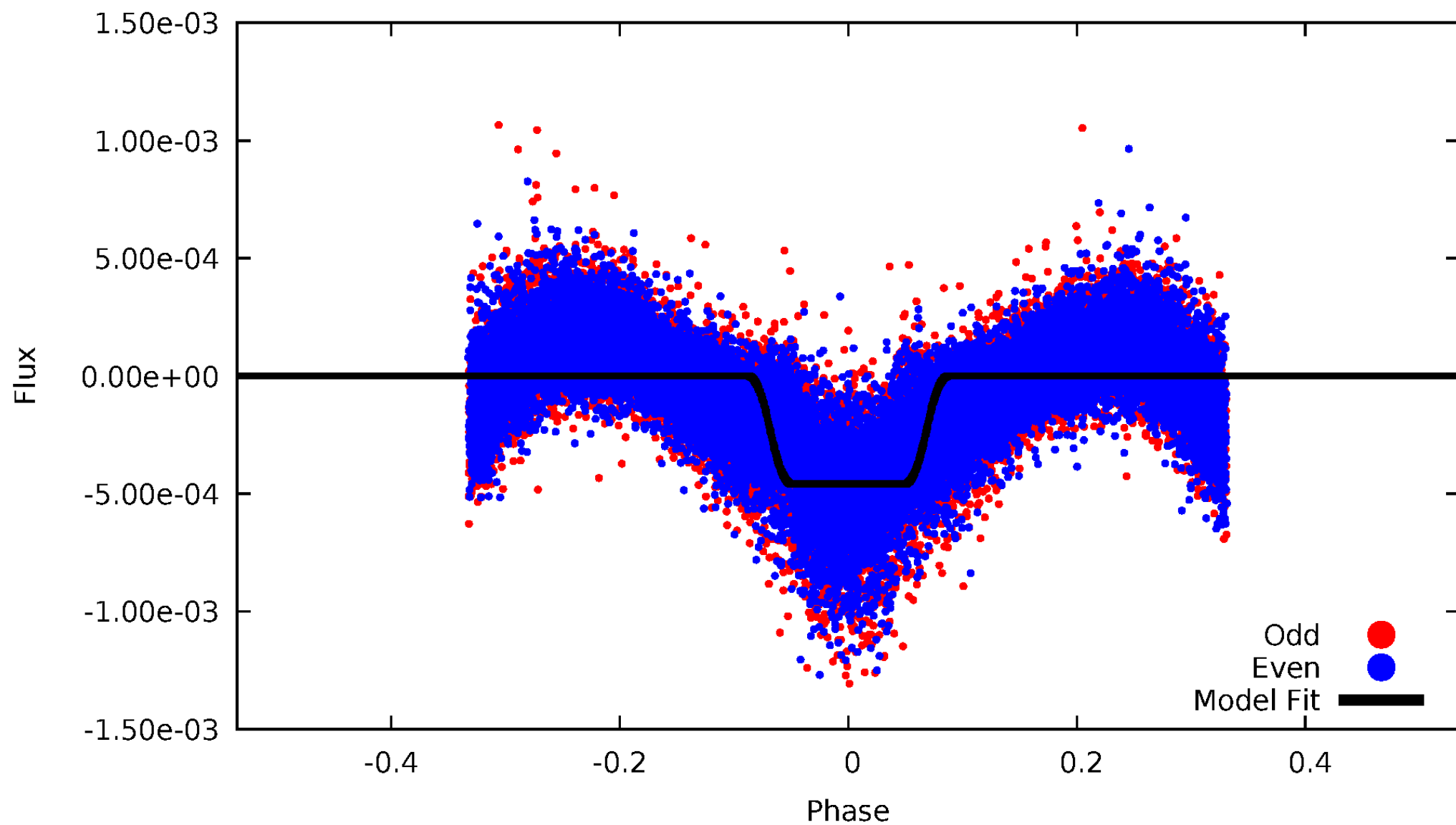
# DV Odd/Even

TCE 005963222-02



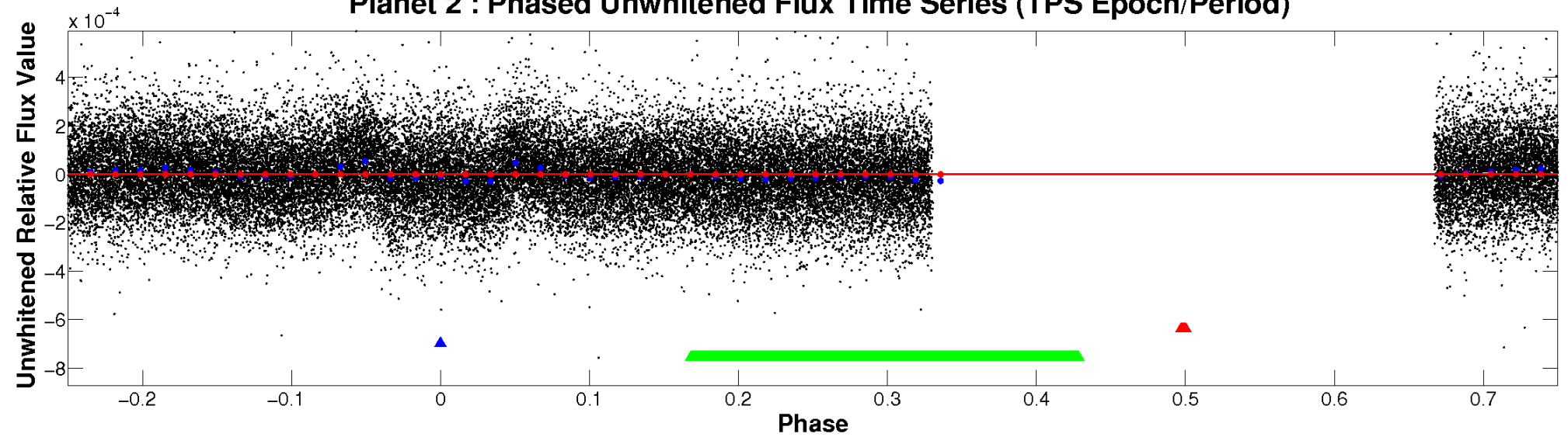
# ALT Odd/Even

TCE 005963222-02

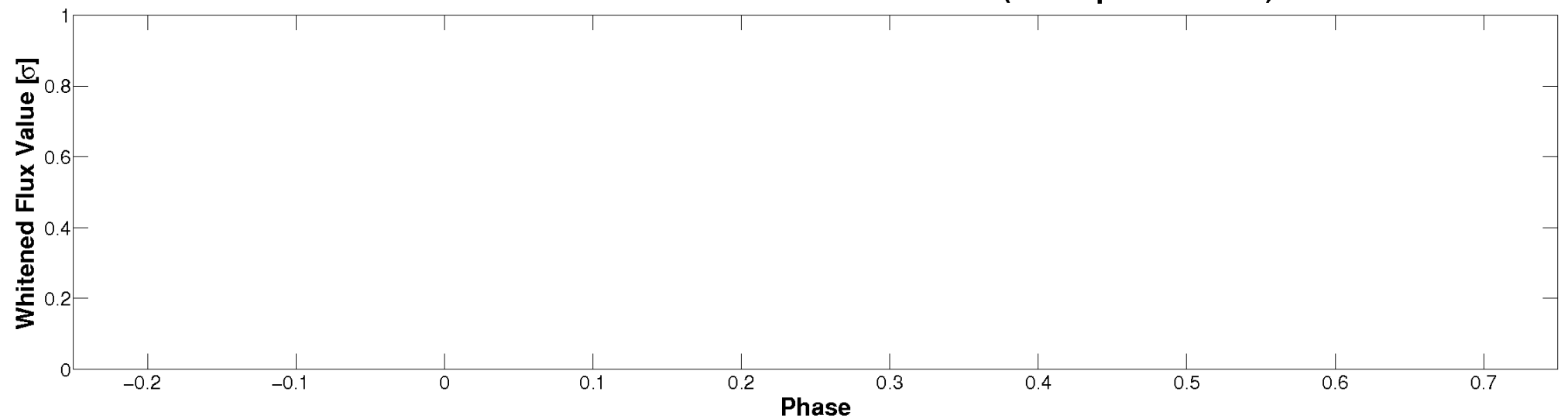


# Non-Whitened Vs. Whitened Light Curve

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

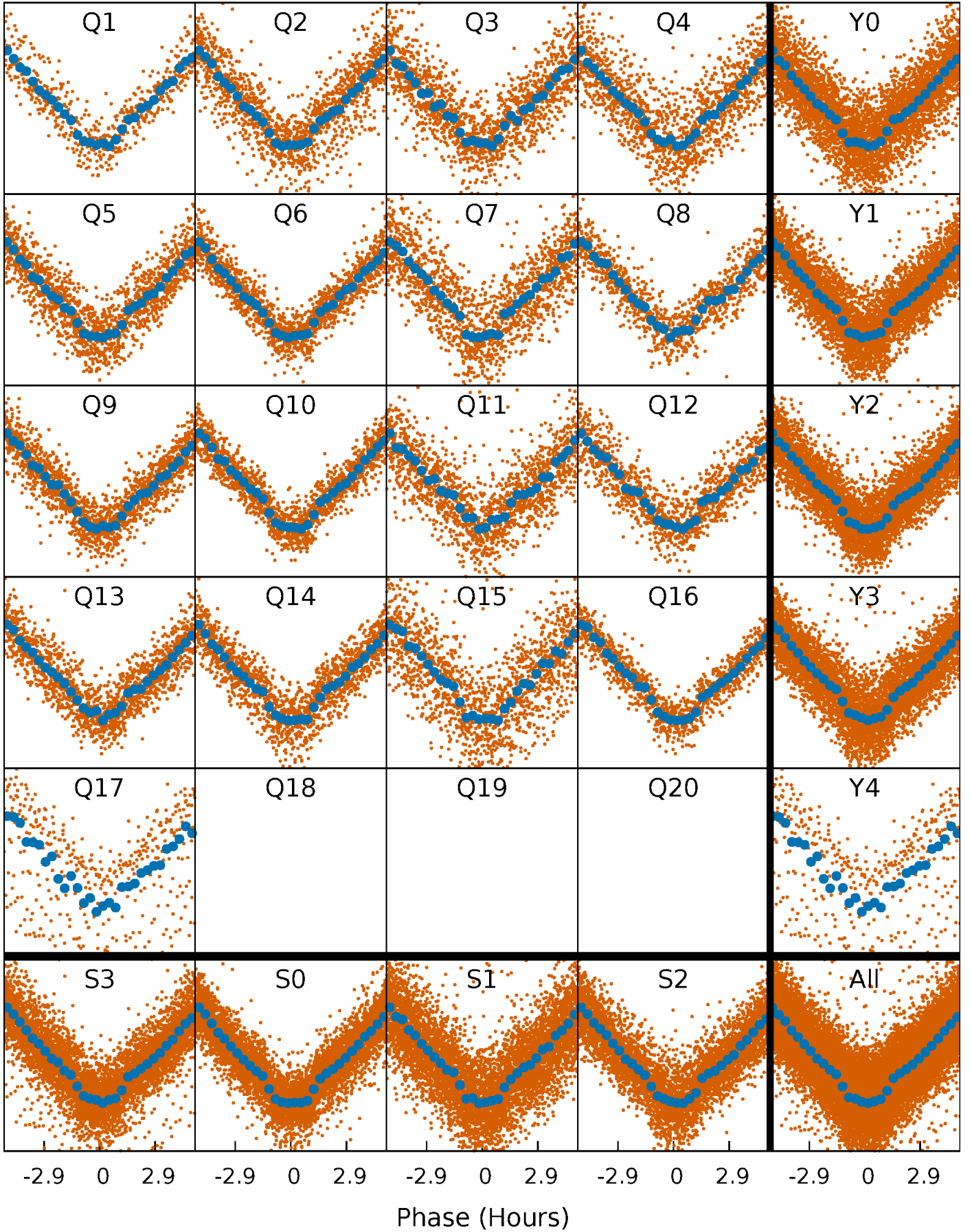


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

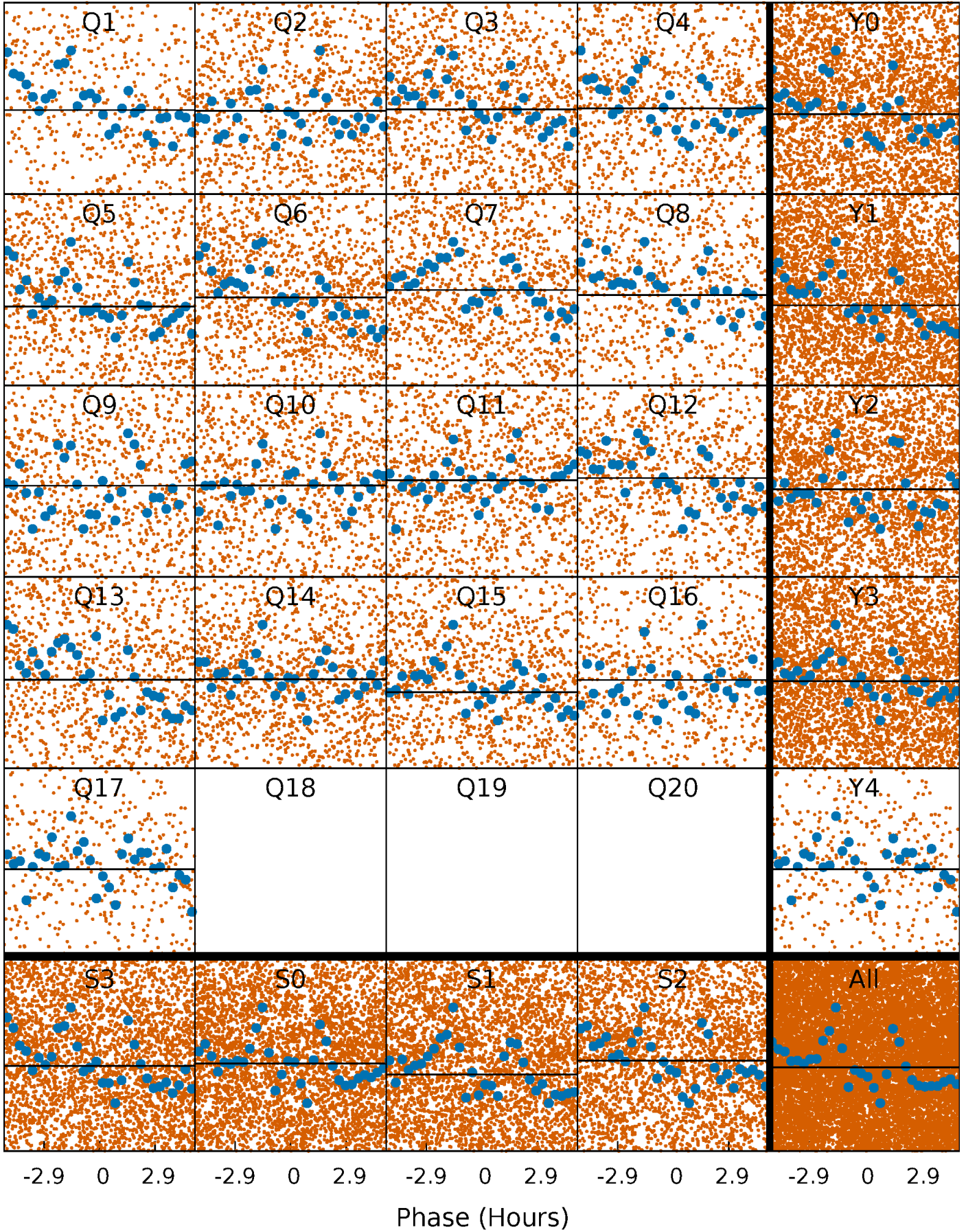
TCE 005963222-02   P= 1.217259 Days    $T_0=132.724536$  (BKJD)





# DV Quarter-Phased Transit Curves

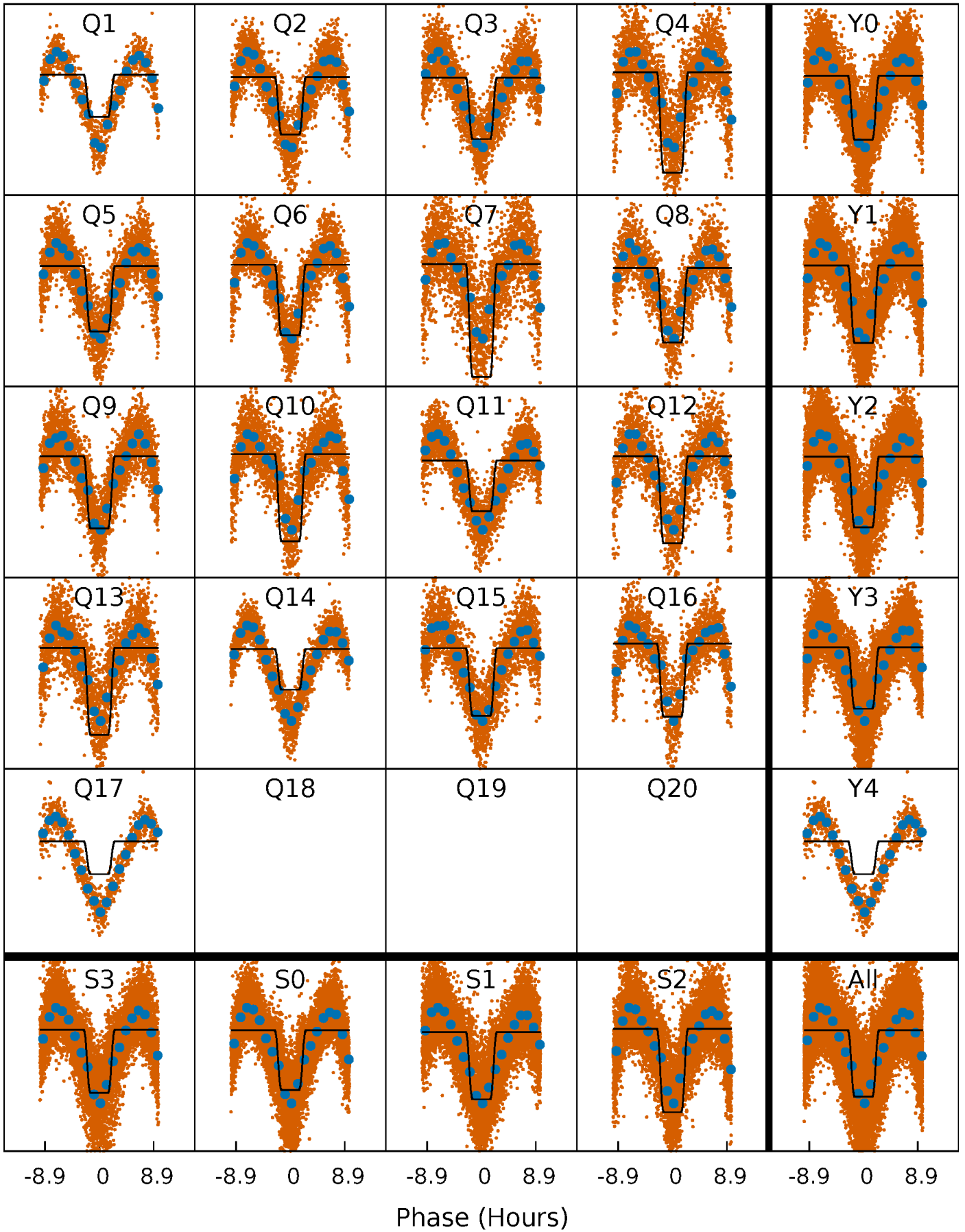
TCE 005963222-02   P= 1.217259 Days    $T_0=132.724536$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

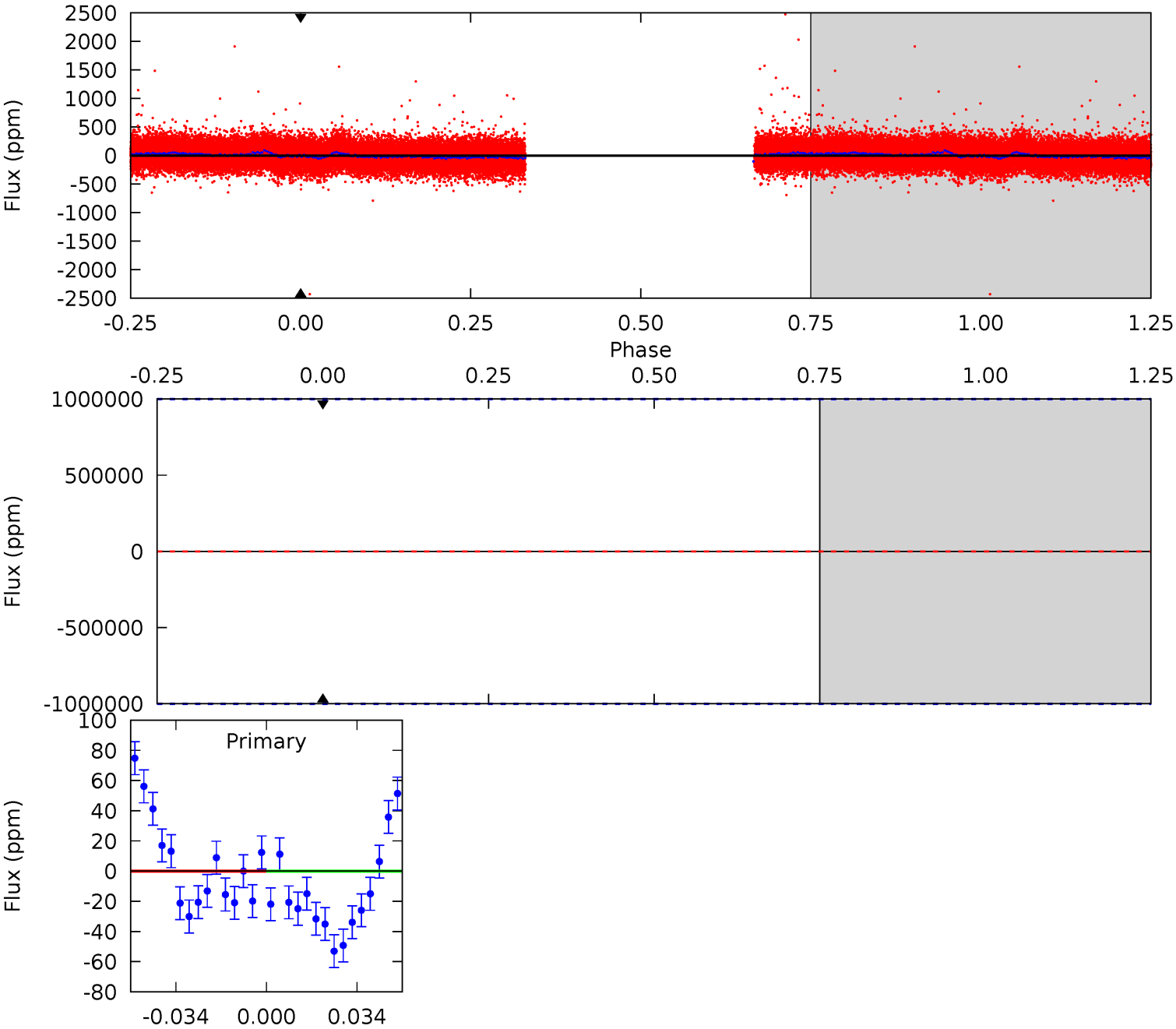
TCE 005963222-02   P= 1.217259 Days    $T_0=132.723793$  (BKJD)



DV Model-Shift Uniqueness Test

005963222-02, P = 1.217259 Days, E = 131.507277 Days

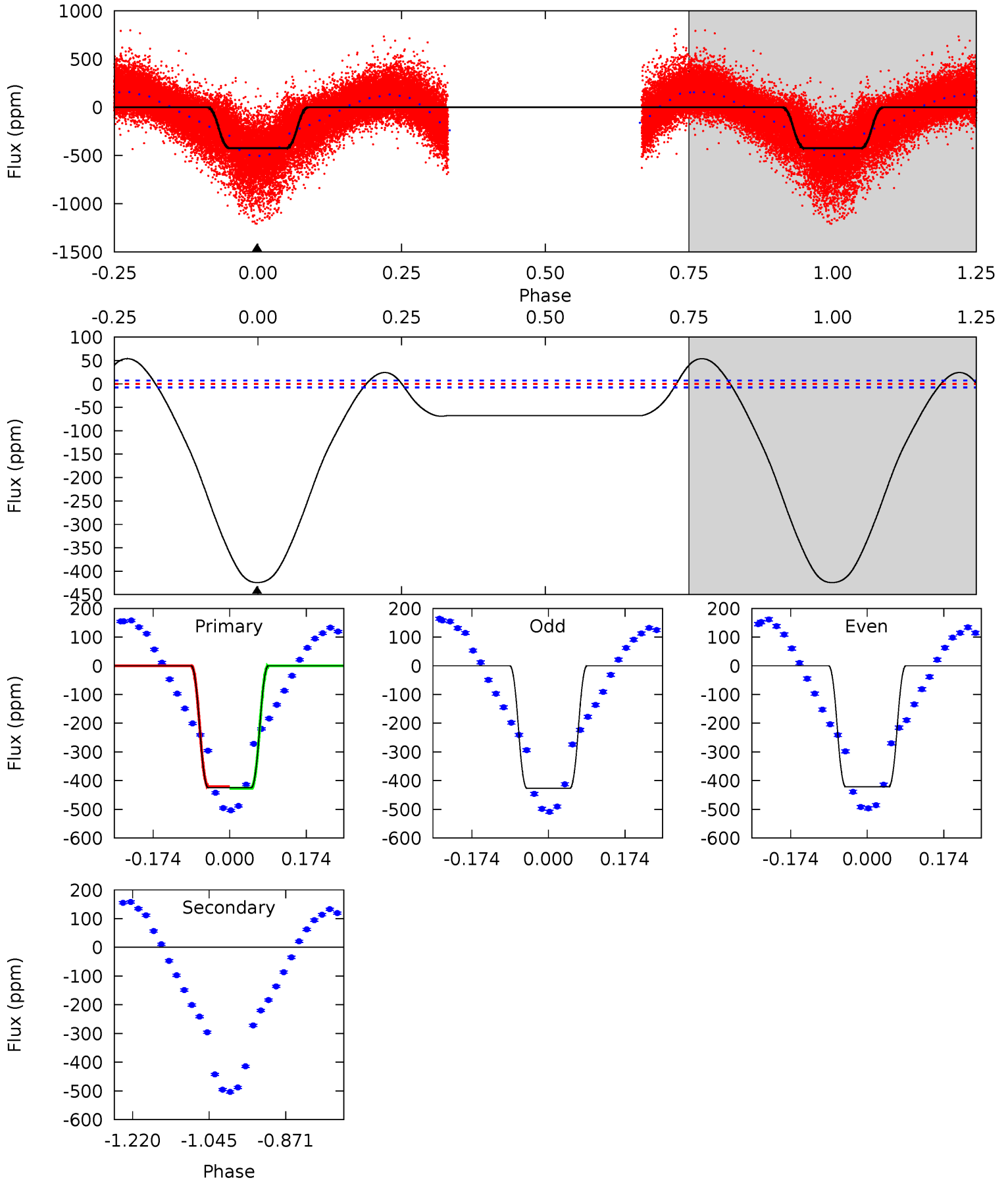
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005963222-02, P = 1.217259 Days, E = 131.506534 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
250.8	0	0	0	4.45	1.36	23.7	250.8	250.8	0	0	1.43	1.07	0.11	1.35



### Stellar Parameters For KIC 005963222

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6631^{+73}_{-86}$	$4.145^{+0.132}_{-0.108}$	$0.040^{+0.150}_{-0.150}$	$1.638^{+0.278}_{-0.278}$	$1.366^{+0.098}_{-0.109}$	$0.438^{+0.266}_{-0.140}$
	+1%/-1%	+3%/-3%	+375%/-375%	+17%/-17%	+7%/-8%	+61%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005963222-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$12.76^{+13.47}_{-8.87}$	$3317^{+143}_{-149}$	$-4231^{+39148}_{-26513}$	$-1.034^{+438.097}_{-397.741}$
Alt.	$0 \pm 2$	$14.22^{+13.27}_{-9.77}$	$3329^{+146}_{-154}$	$-3281^{+109}_{-102}$	$0.000^{+0.005}_{-0.005}$

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

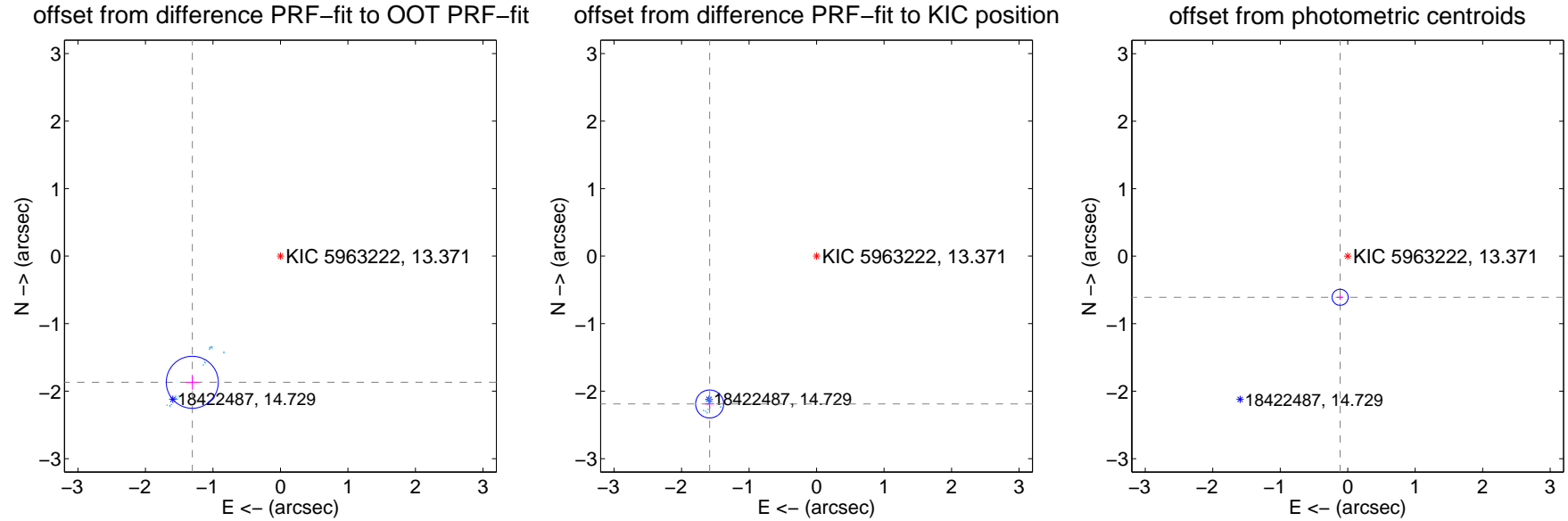
## DV Centroid Data

Supplemental centroid analysis for 005963222-02. Kepler magnitude: 13.37. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

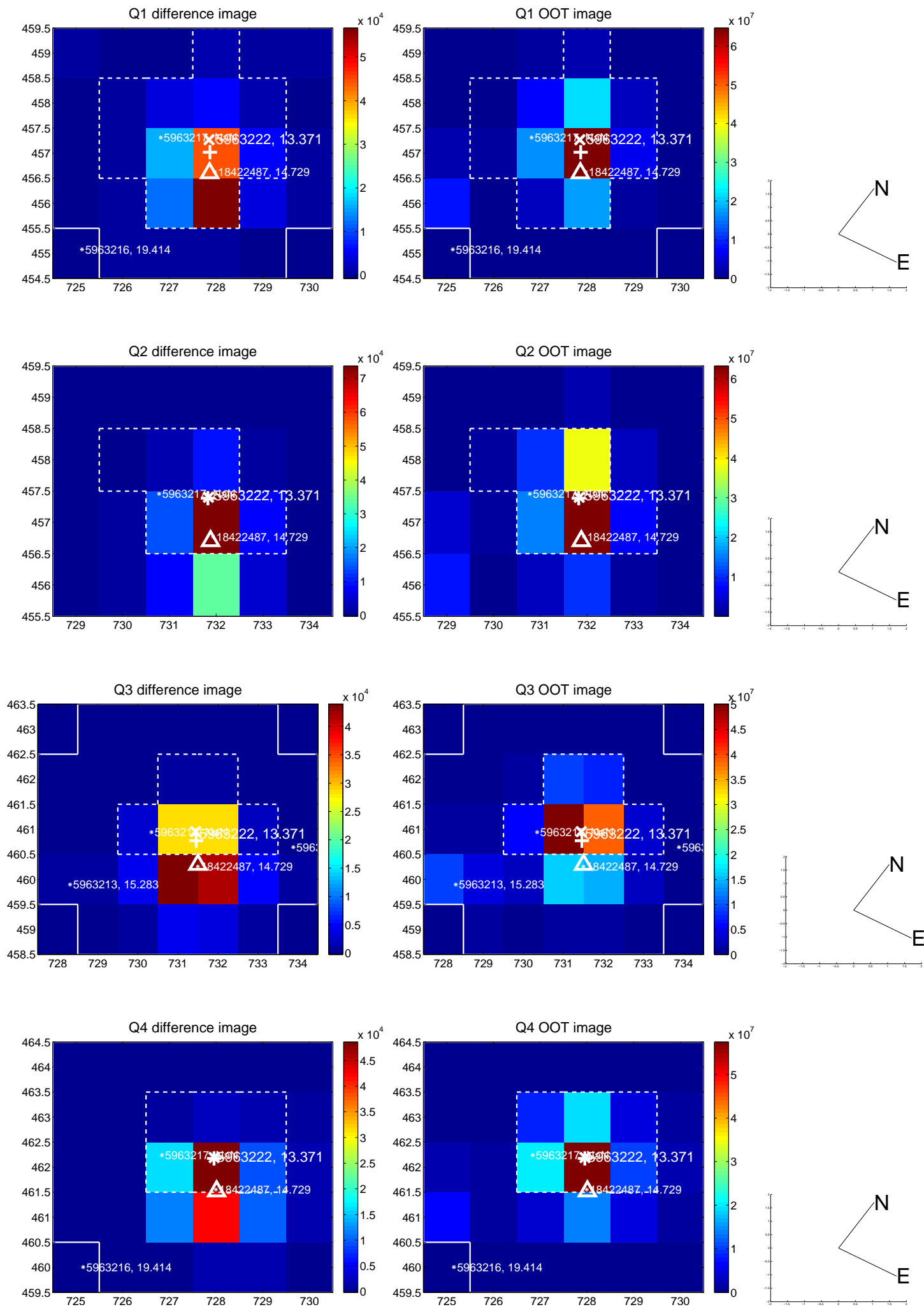
The direct PRF centroid is offset from the target star catalog position by about 0.98 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.280 \pm 0.128$	<b>17.76</b>	$1.306 \pm 0.095$	$-1.868 \pm 0.110$
PRF-fit source offset from KIC position	$2.703 \pm 0.069$	<b>39.10</b>	$1.584 \pm 0.068$	$-2.190 \pm 0.069$
photometric centroid source offset	$0.62 \pm 0.04$	<b>15.58</b>	$0.11 \pm 0.05$	$-0.61 \pm 0.04$

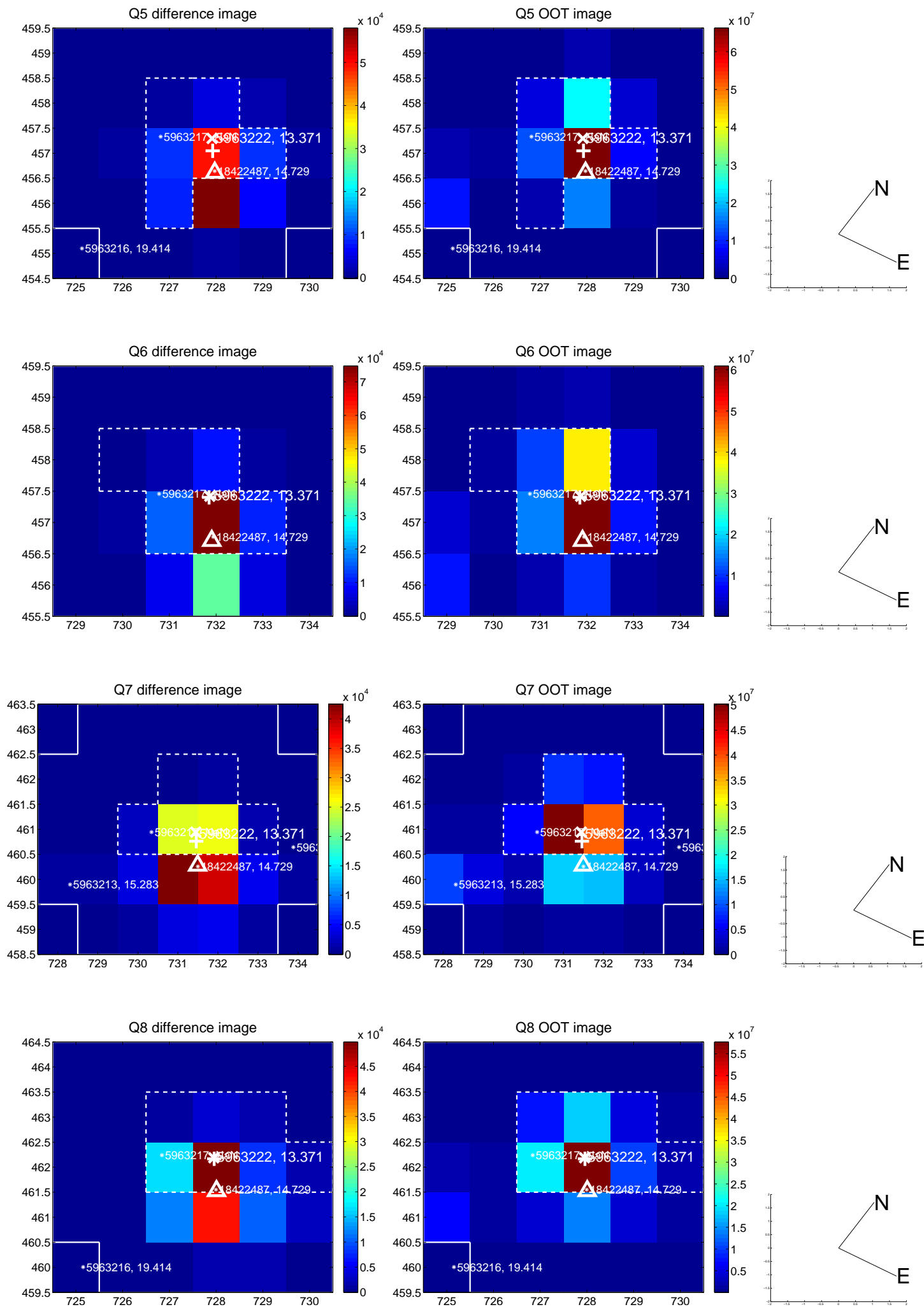


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

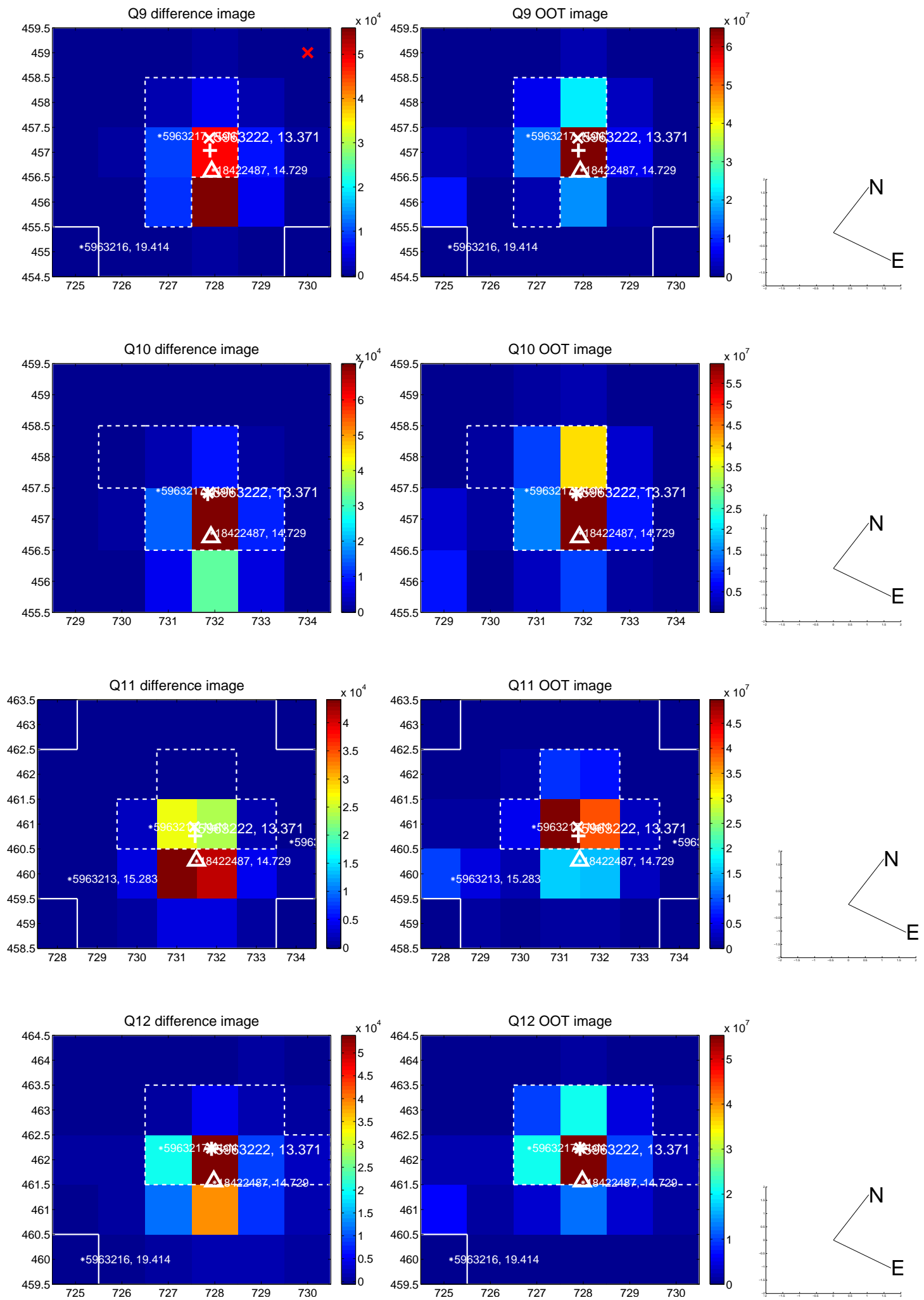


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

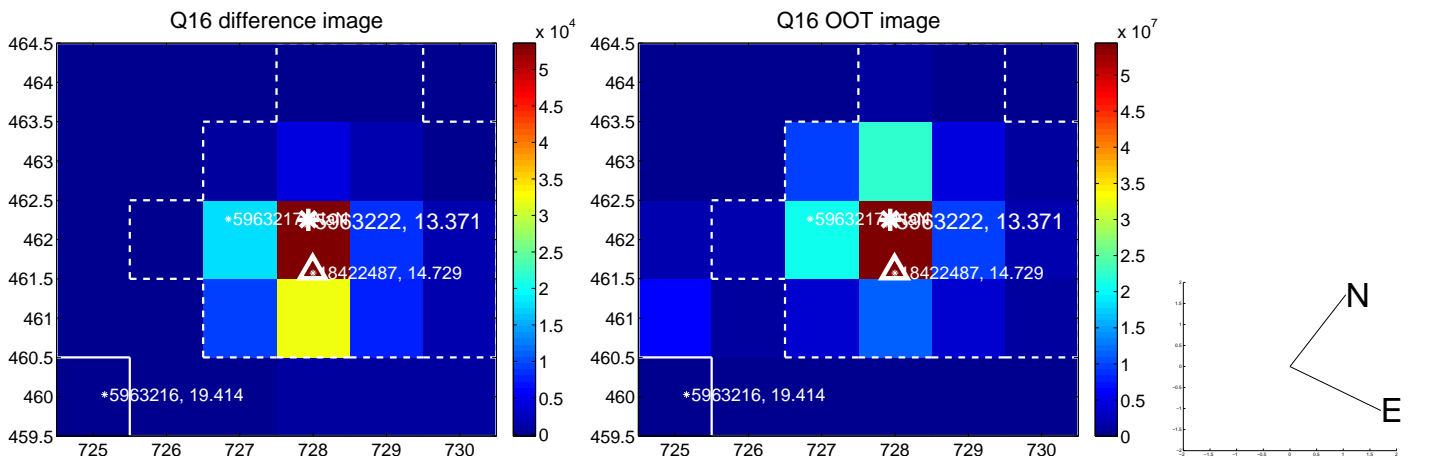
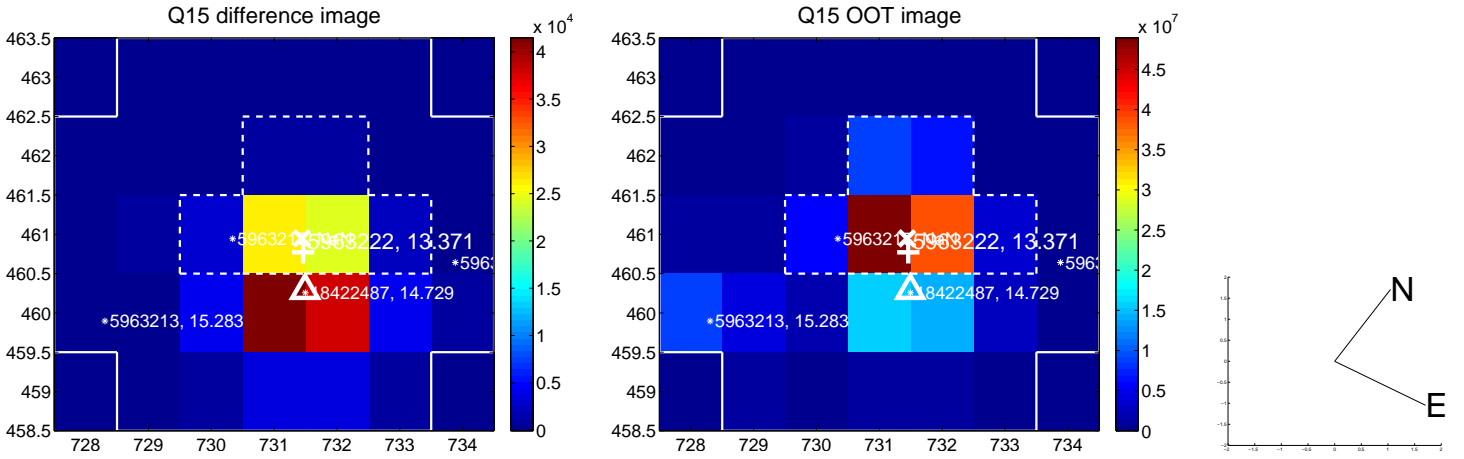
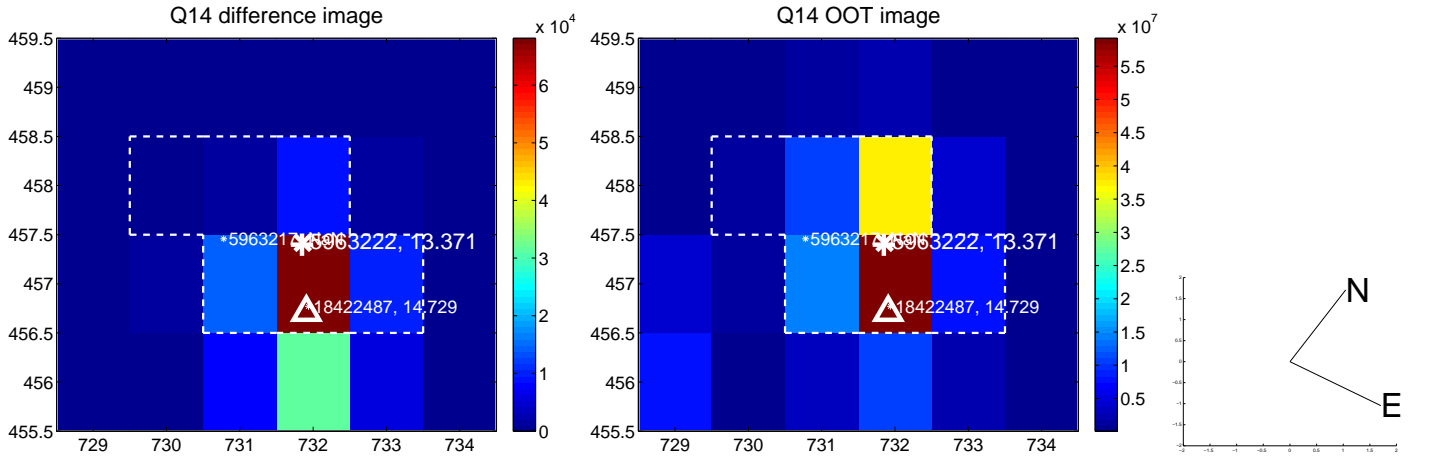
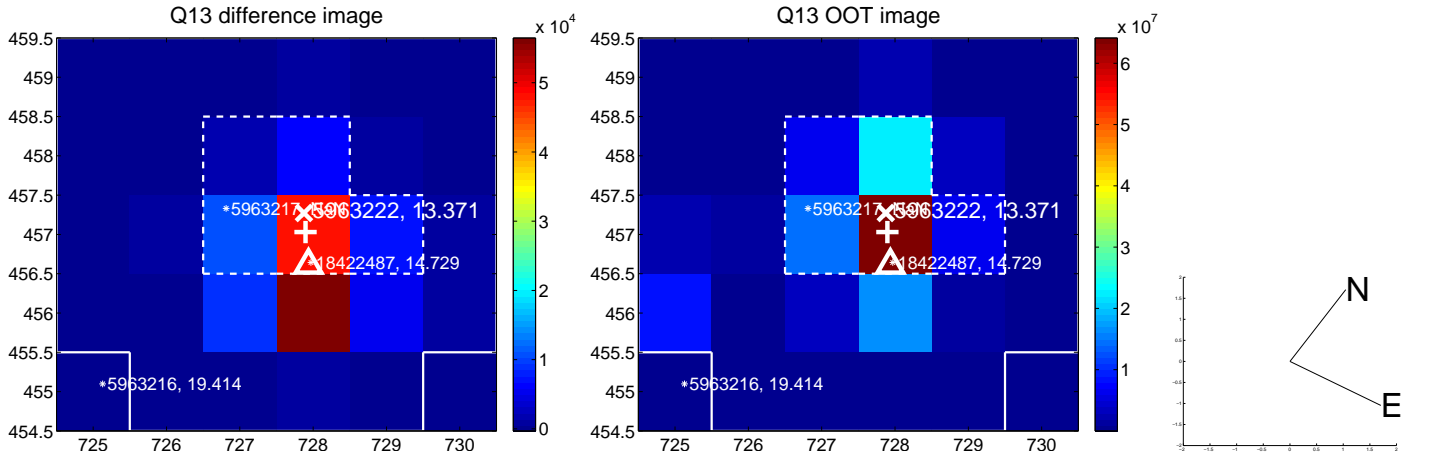




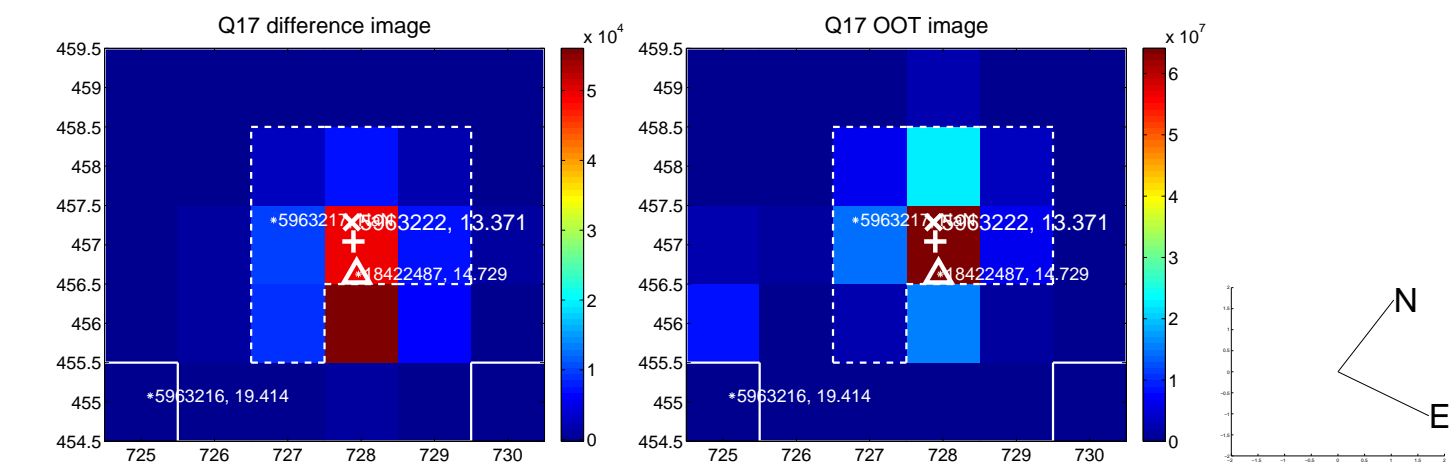
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



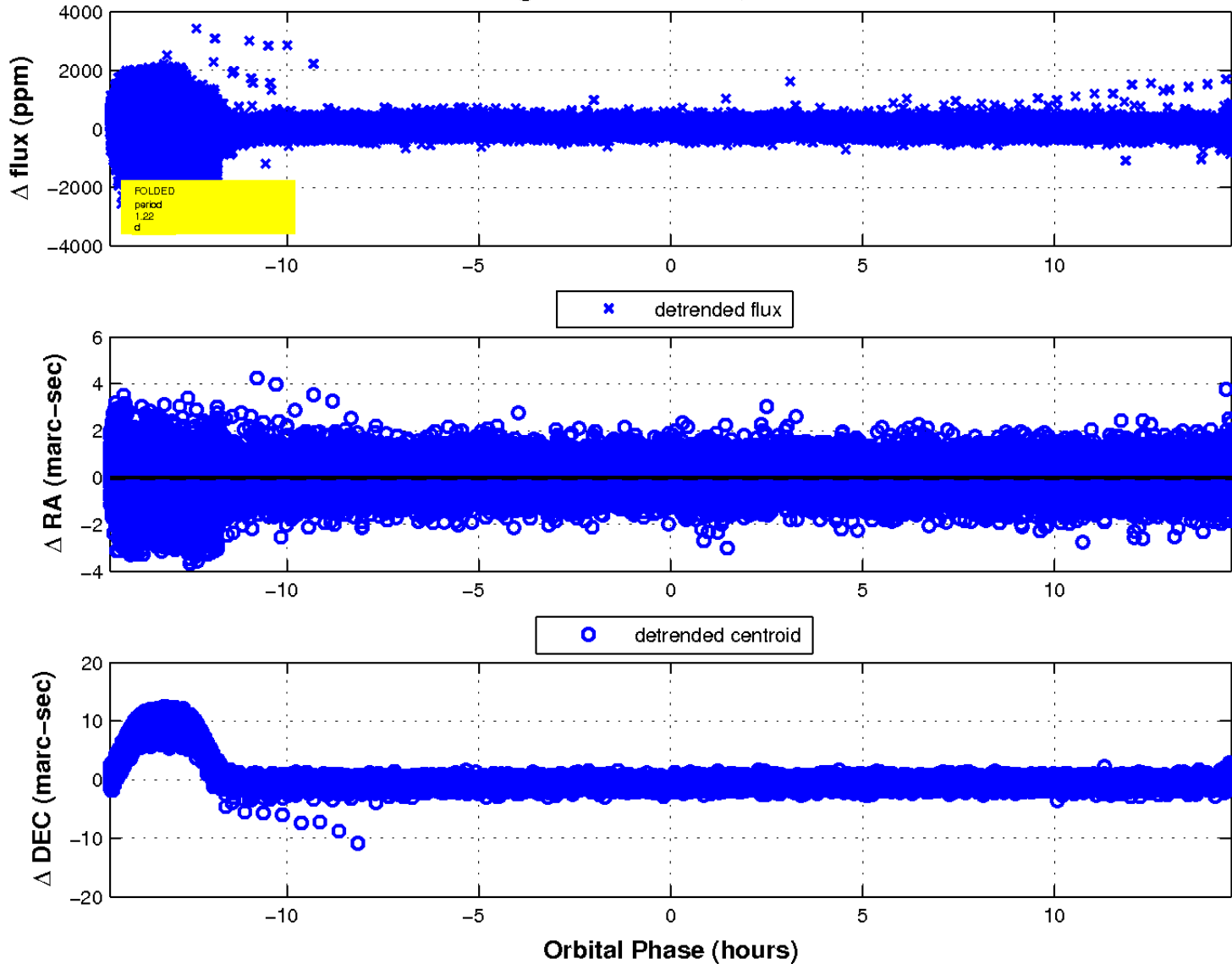
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

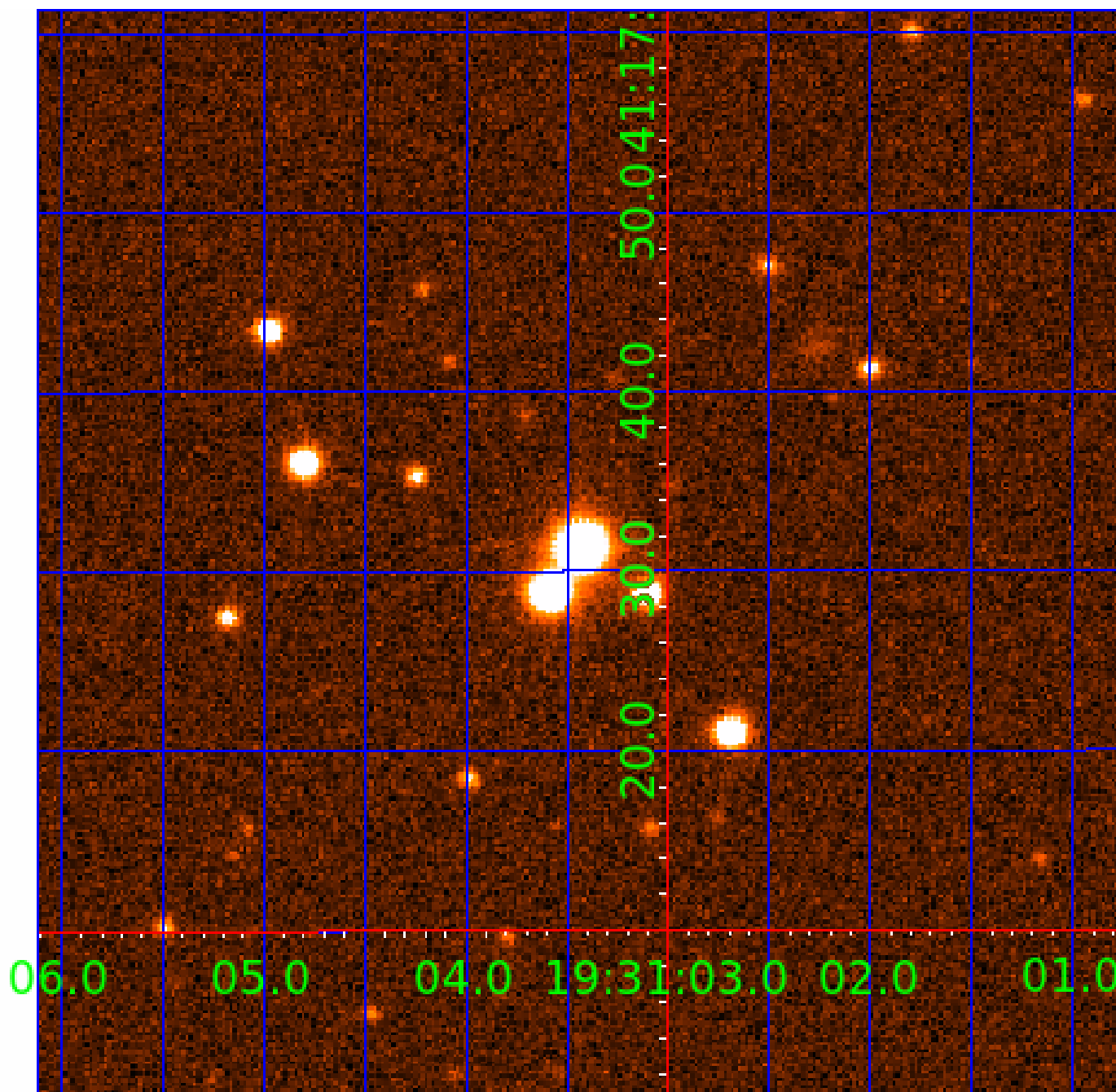


### fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



# KIC 005963222

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005963222-01	OBS	1035.01	1.217256	132.116310	5064.5	3.138	1791.1	1051.9	1.64	6631	13.71	7578.40
005963222-02	OBS	No	1.217259	132.724536	269.0	2.500	12.9	-1.0	1.64	6631	2.71	7578.37
005963222-03	OBS	No	1.217523	131.711846	41.1	13.048	10.0	13.5	1.64	6631	1.05	7576.17

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005963222-01	OBS	FP	0.00	0	1	1	0	HAS_SEC_TCE—CENT_UNRESOLVED_OFFSET
005963222-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
005963222-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—RESIDUAL_TCE—HALO_GHOST

**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.

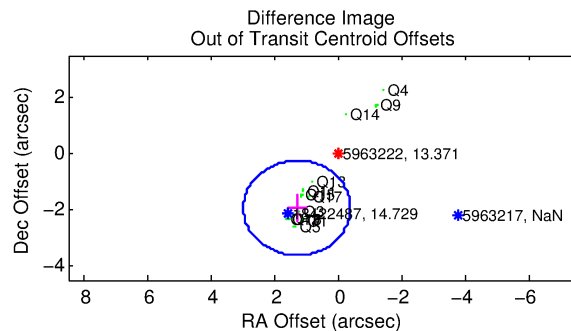
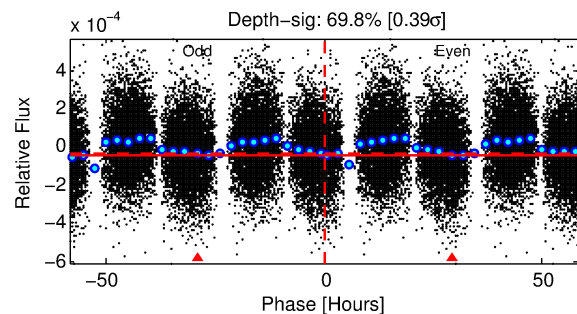
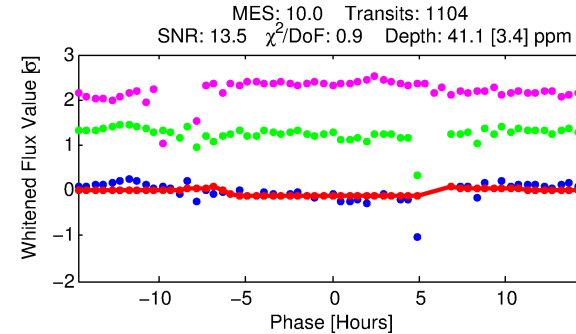
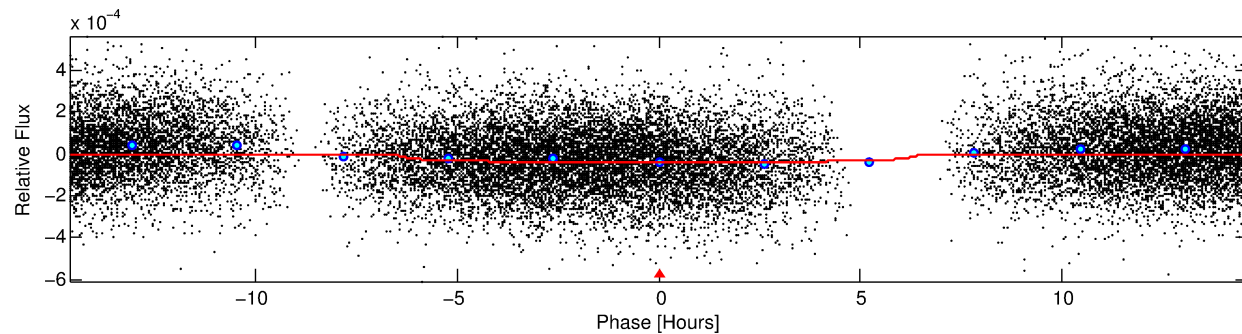
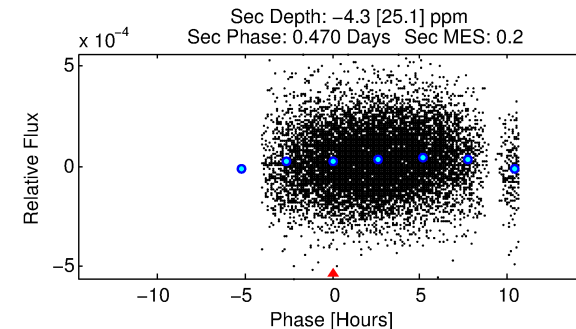
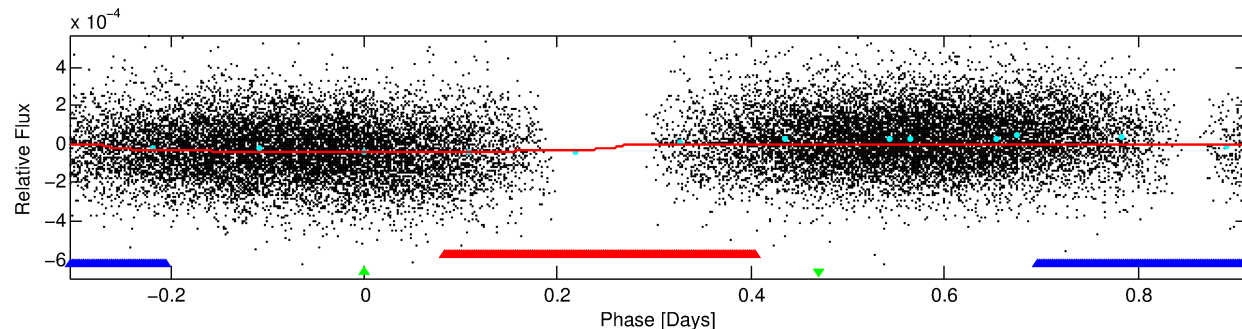
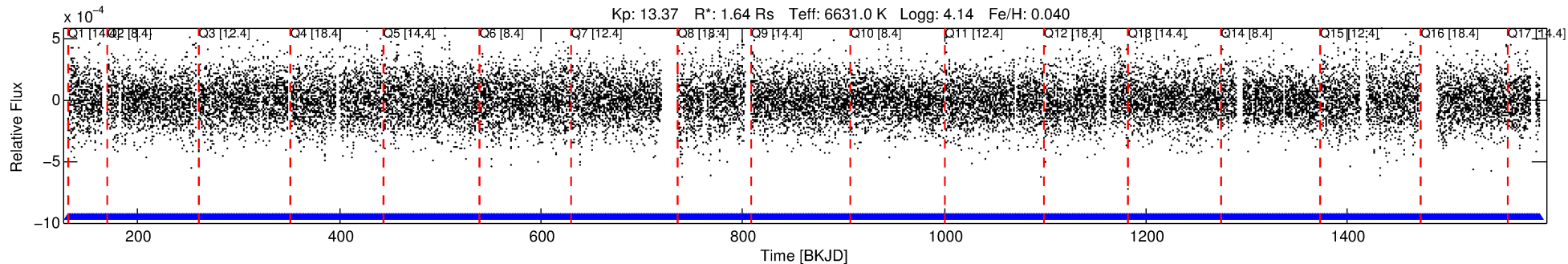
## Ephemeris Match Information For 005963222-03

No Significant Match Found

# DV One-Page Summary

KIC: 5963222 Candidate: 3 of 3 Period: 1.218 d  
KOI: K01035 Corr: No Ephemeris Match

Kp: 13.37 R\*: 1.64 Rs Teff: 6631.0 K Logg: 4.14 Fe/H: 0.040



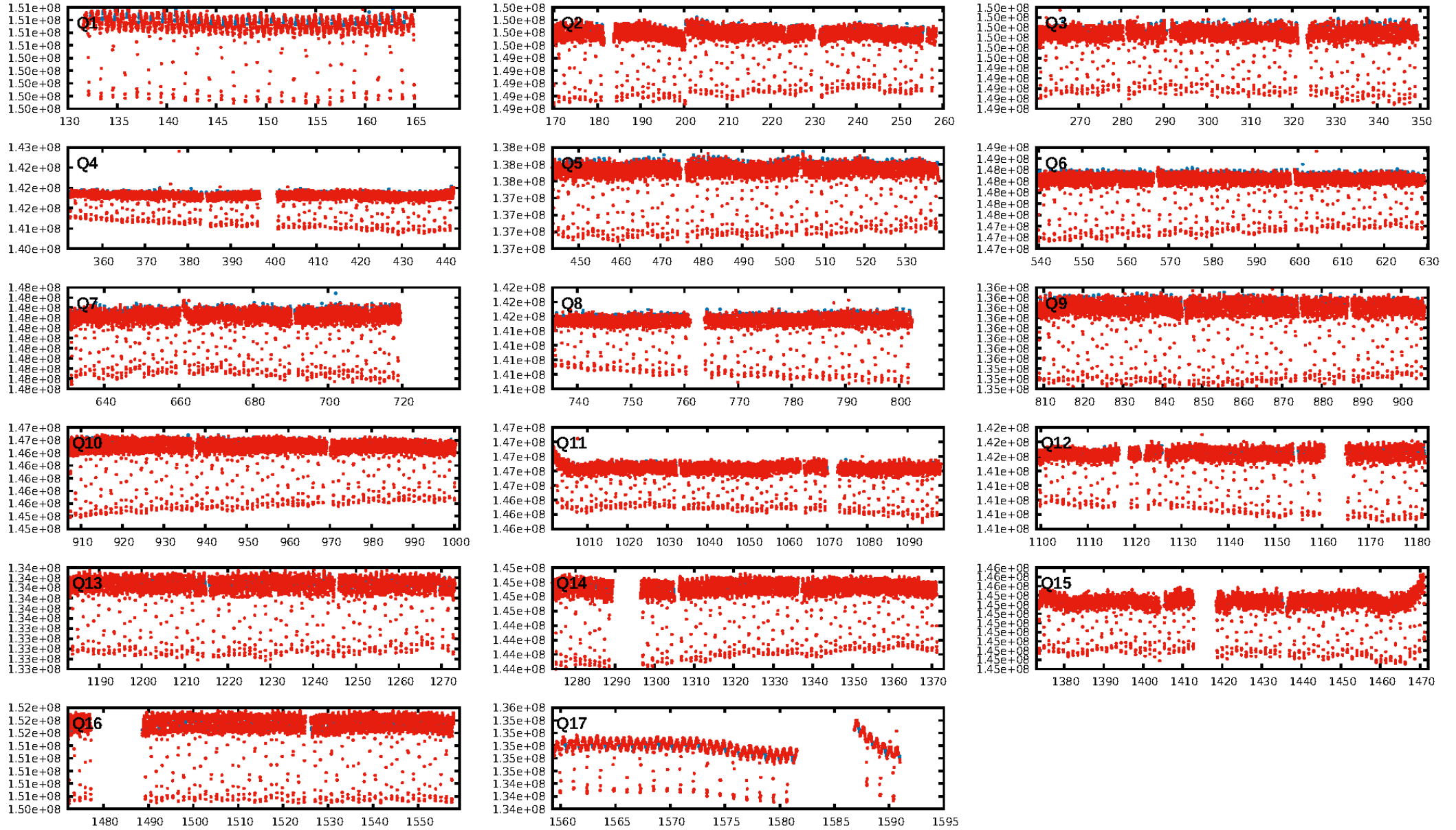
## DV Fit Results:

Period = 1.21752 [0.00002] d  
Epoch = 131.7118 [0.0219] BKJD  
Rp/R\* = 0.0059 [0.0041]  
a/R\* = 1.02 [0.14]  
b = 0.02 [191.85]  
Seff = 7576.17 [1801.65]  
Teq = 2379 [141] K  
Rp = 1.05 [0.76] Re  
a = 0.0248 [0.0038] AU  
Ag = N/A  
Teffp = N/A

## DV Diagnostic Results:

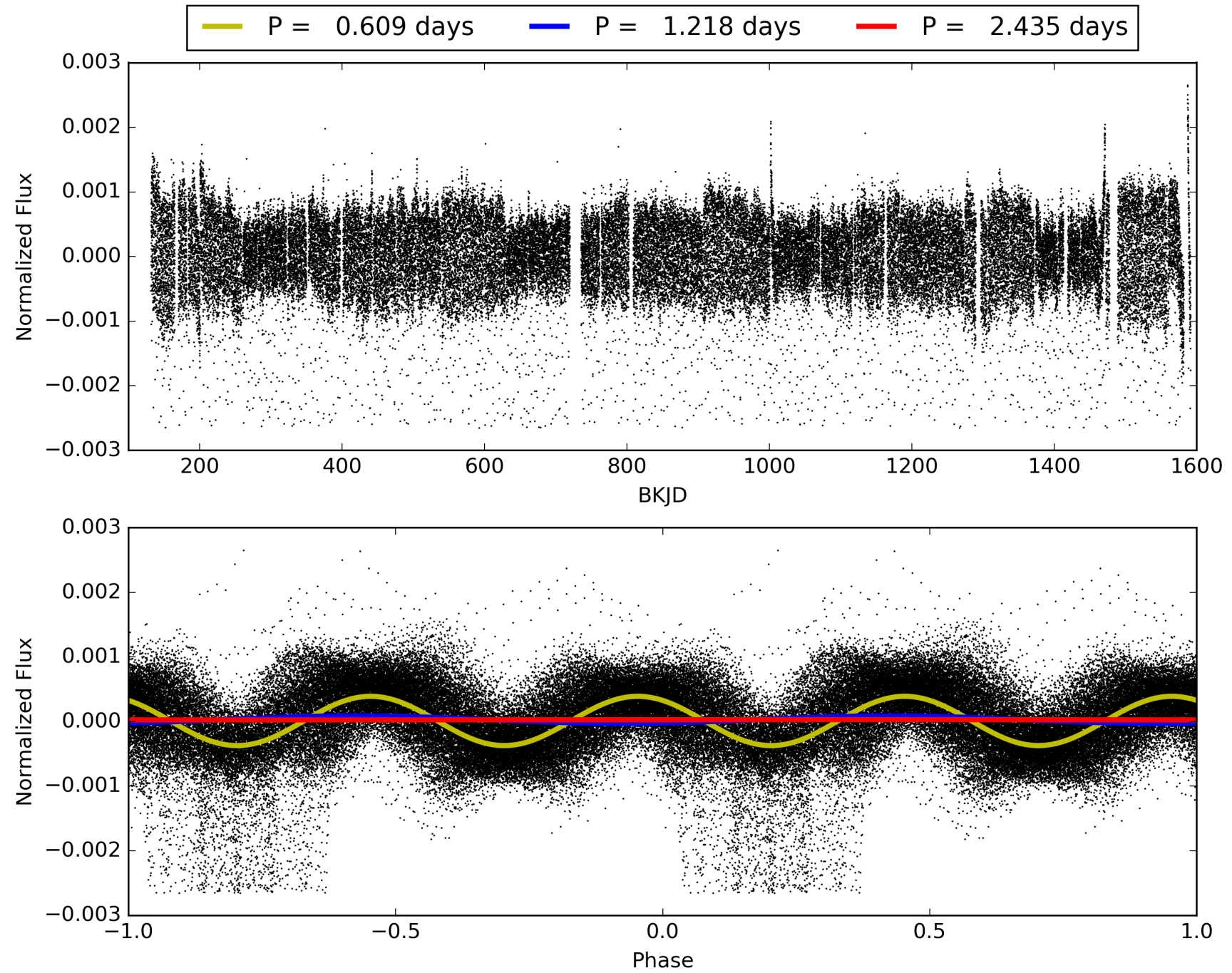
ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1054/1054]  
GhostDiagnostic-chr: 0.1225  
Centroid-sig: N/A  
Centroid-so: 5.398 arcsec [16.69 $\sigma$ ]  
OotOffset-rm: 2.337 arcsec [4.16 $\sigma$ ]  
KicOffset-rm: 2.783 arcsec [4.69 $\sigma$ ]  
OotOffset-st: 1/3/3/5 [12]  
KicOffset-st: 1/3/3/5 [12]  
DiffImageQuality-fgm: 0.67 [8/12]  
DiffImageOverlap-fno: 0.00 [0/17]

# TCE 005963222-03, PDC Light Curves





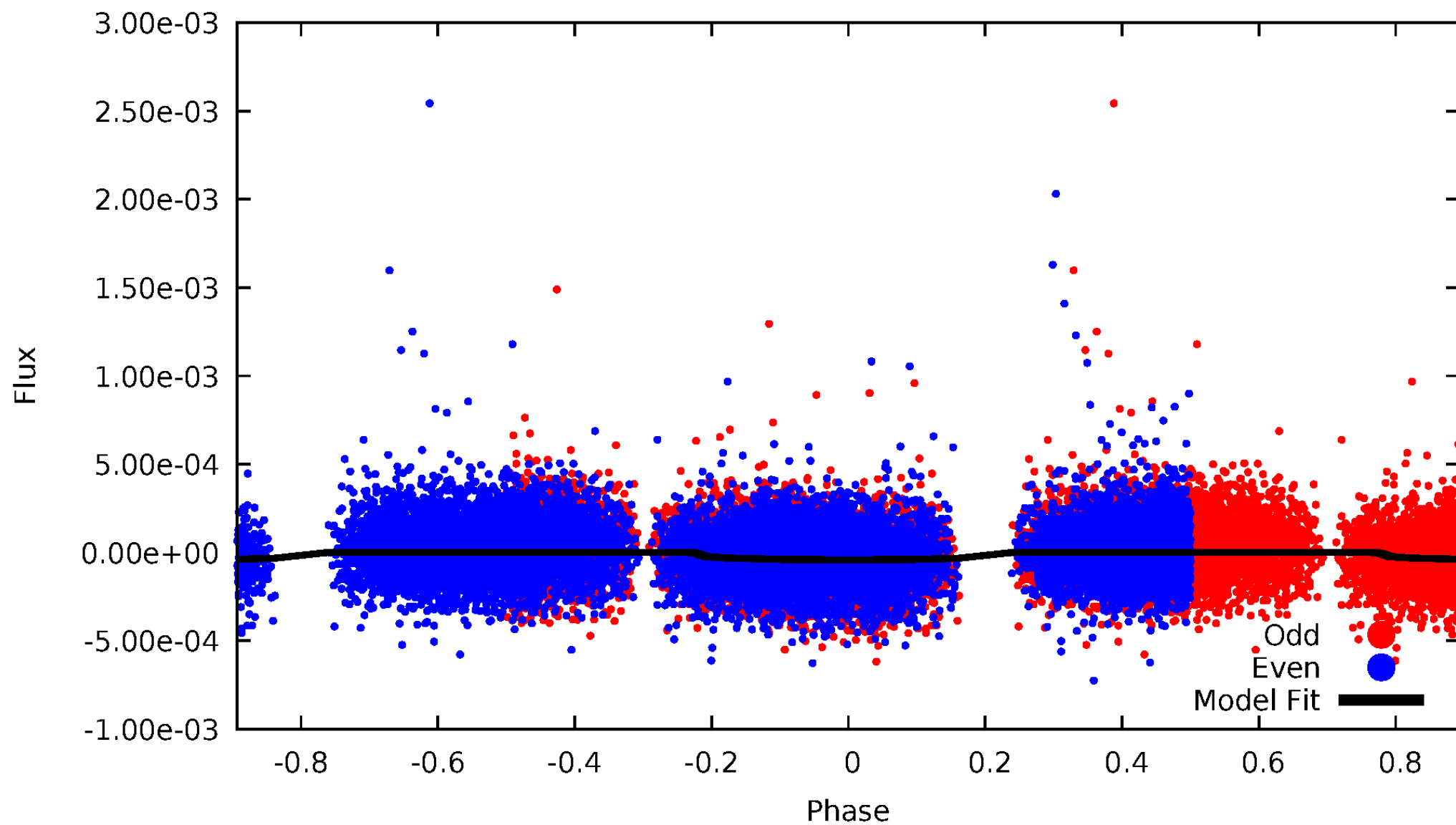
TCE 005963222-03





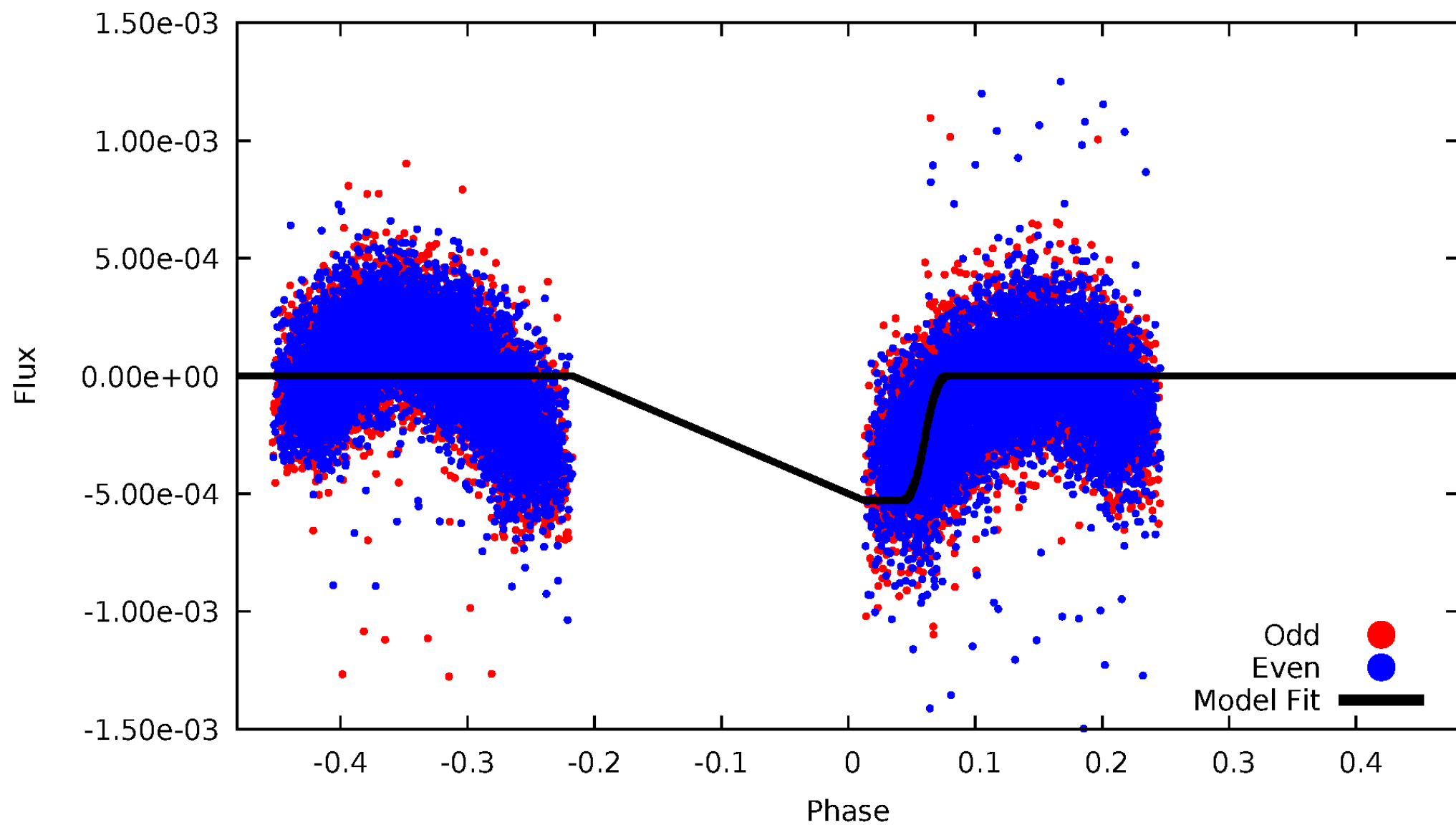
# DV Odd/Even

TCE 005963222-03



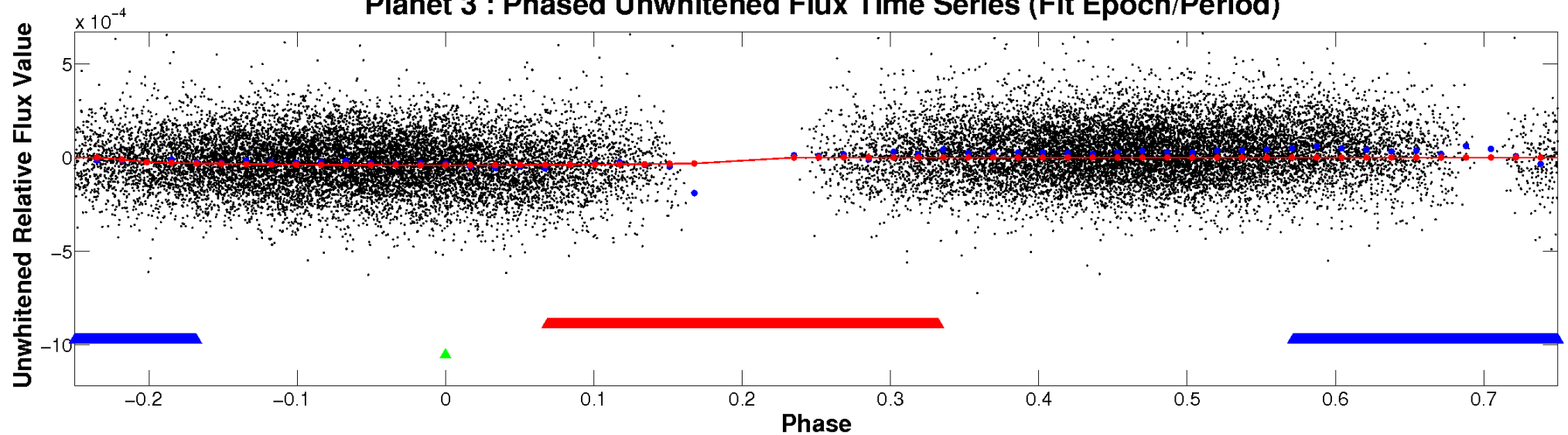
# ALT Odd/Even

TCE 005963222-03

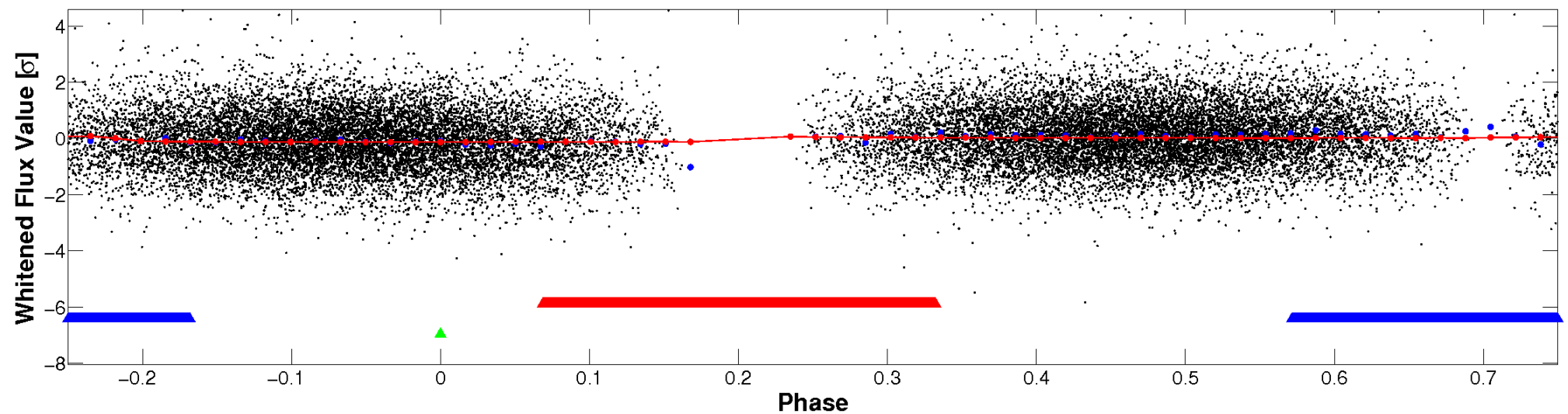


# Non-Whitened Vs. Whitened Light Curve

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

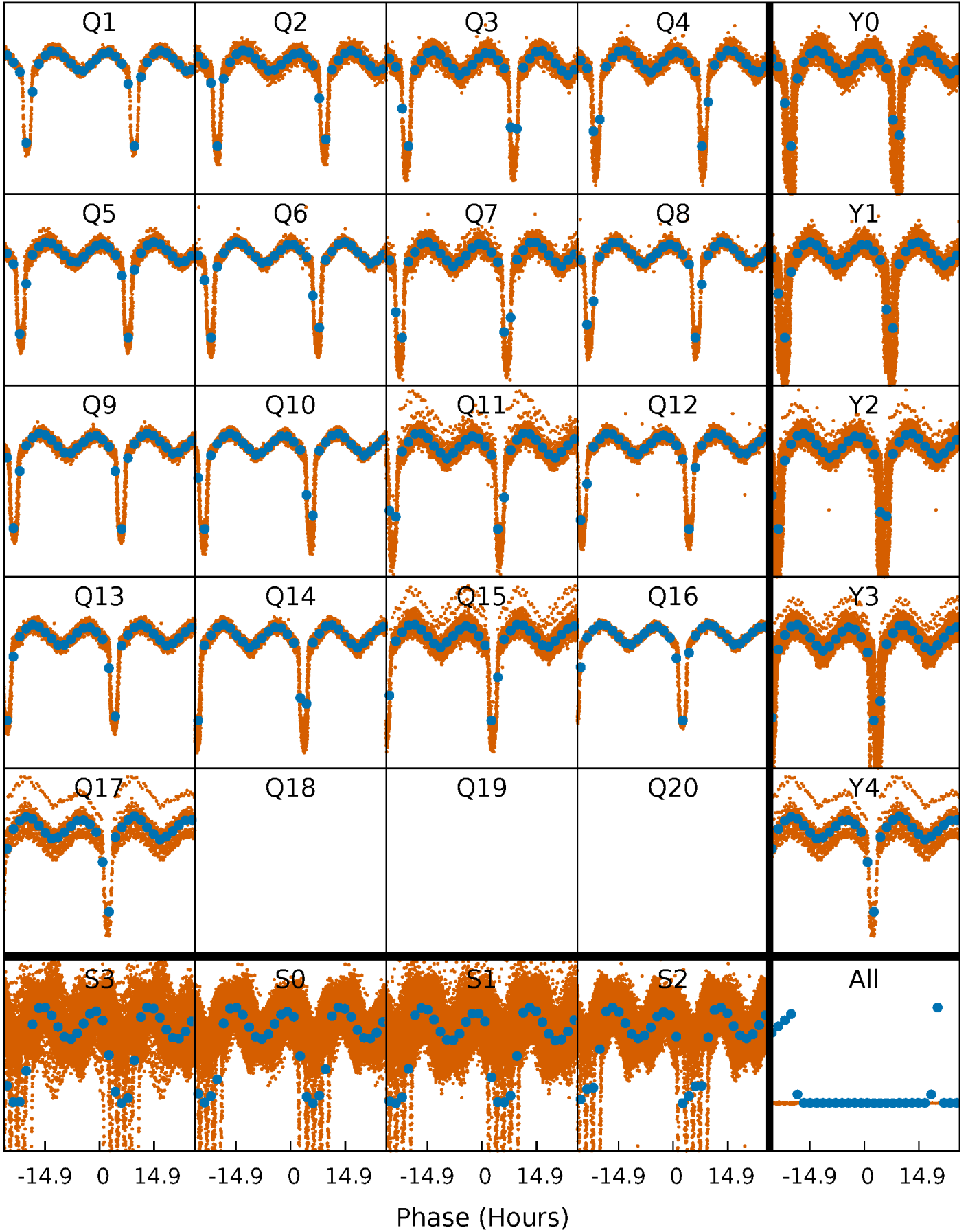


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



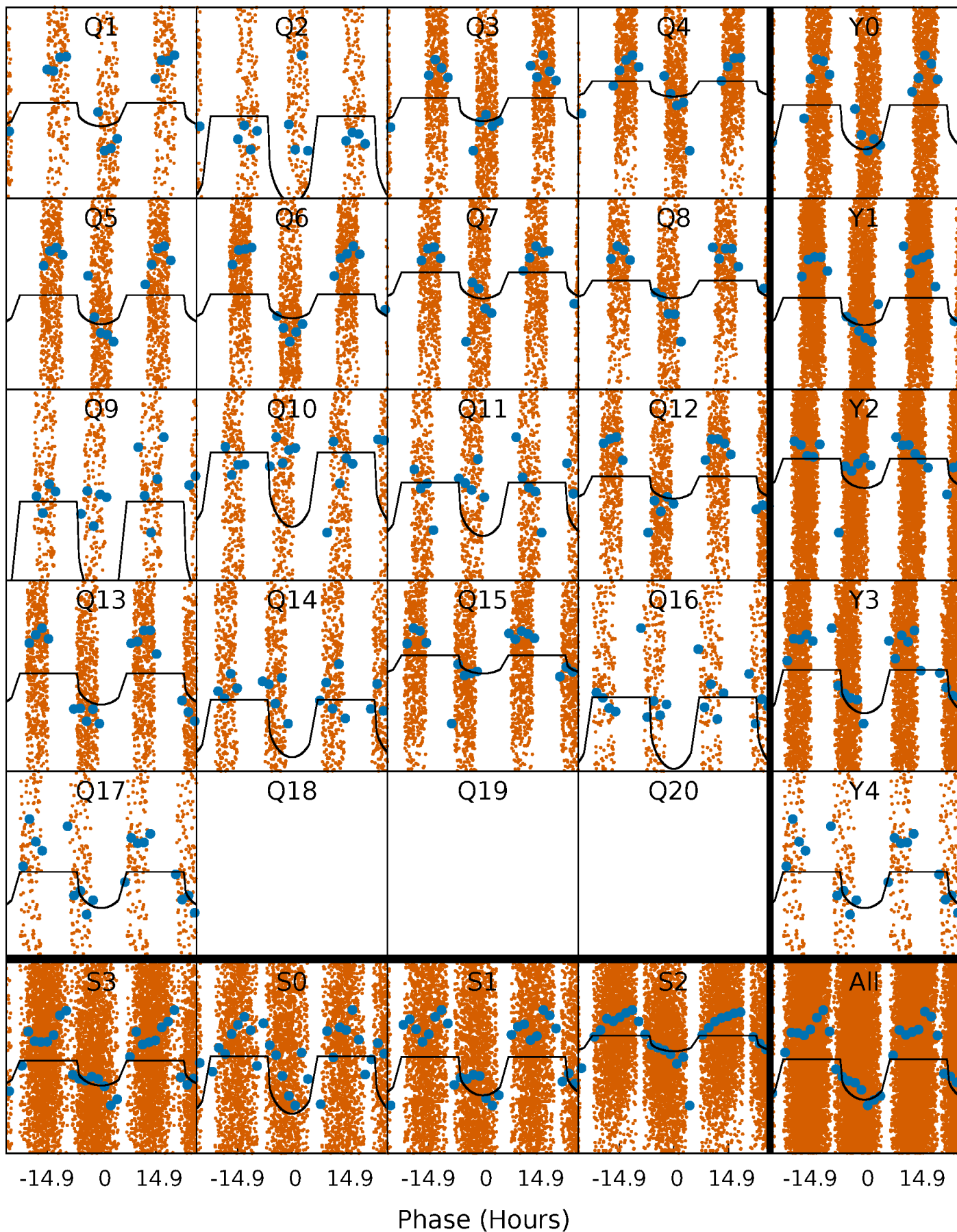
# PDC Quarter-Phased Transit Curves

TCE 005963222-03   P= 1.217523 Days    $T_0=131.711846$  (BKJD)



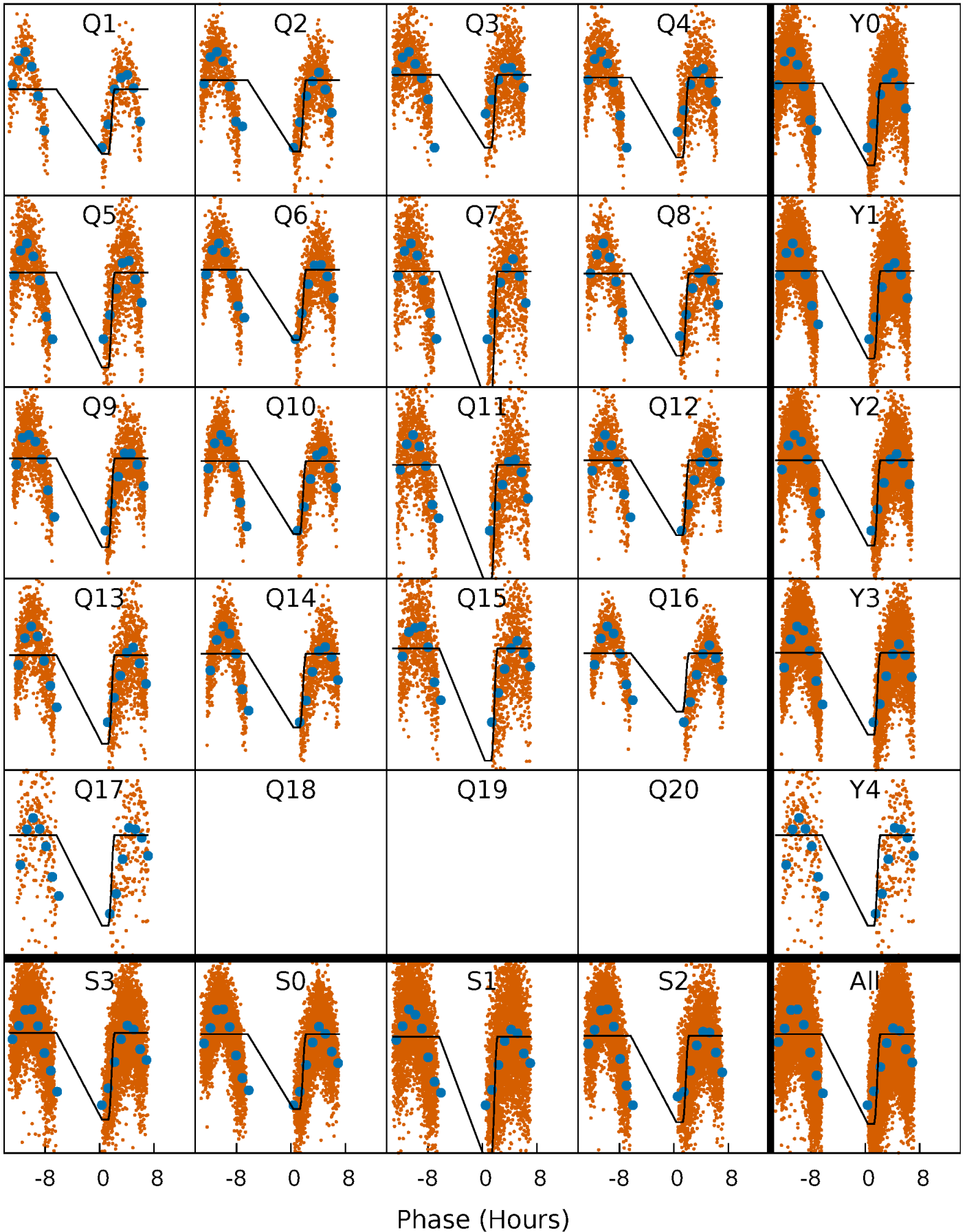
# DV Quarter-Phased Transit Curves

TCE 005963222-03   P= 1.217523 Days    $T_0=131.711846$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005963222-03 P= 1.217213 Days  $T_0=131.659265$  (BKJD)

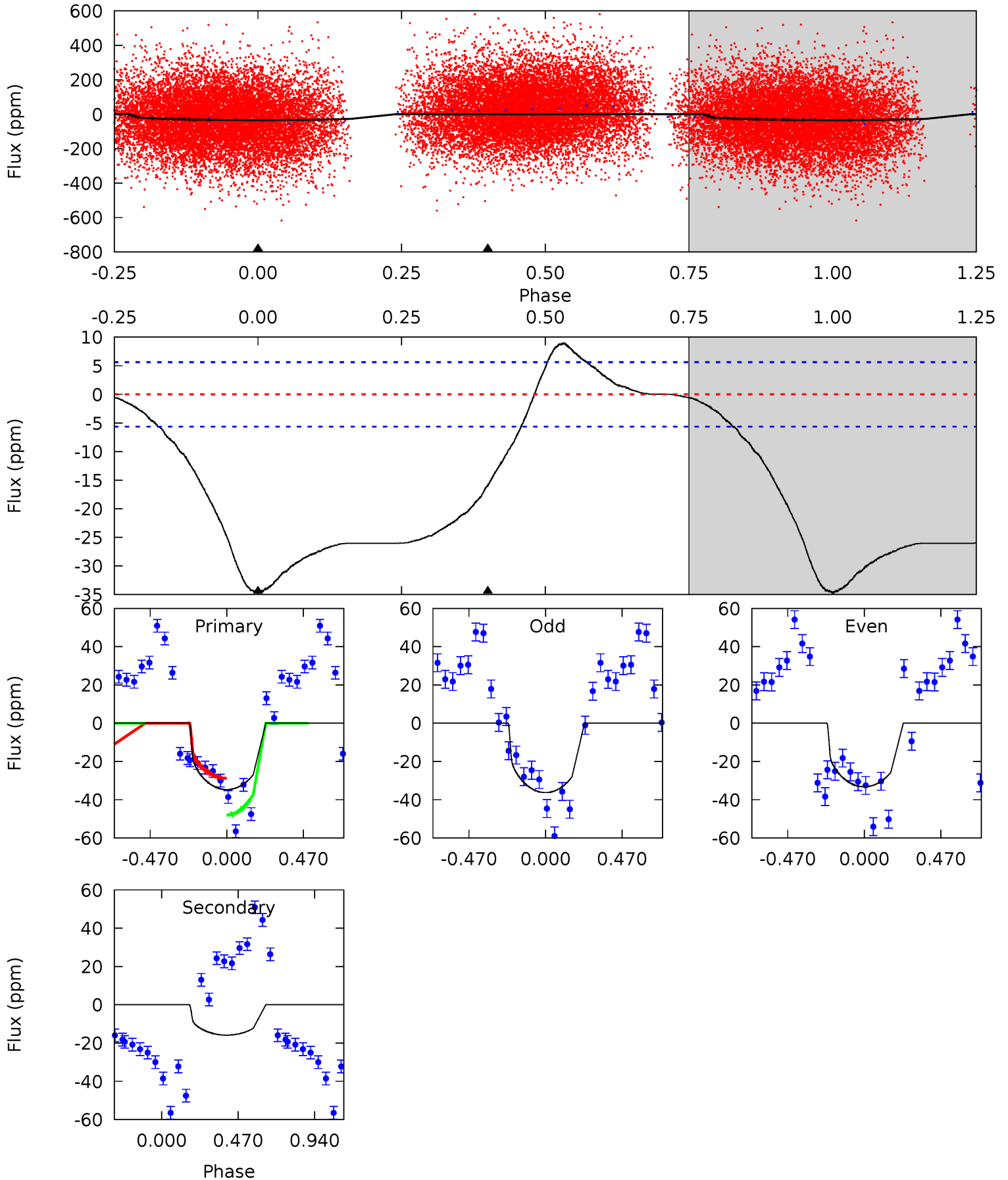




# DV Model-Shift Uniqueness Test

005963222-03, P = 1.217523 Days, E = 130.494323 Days

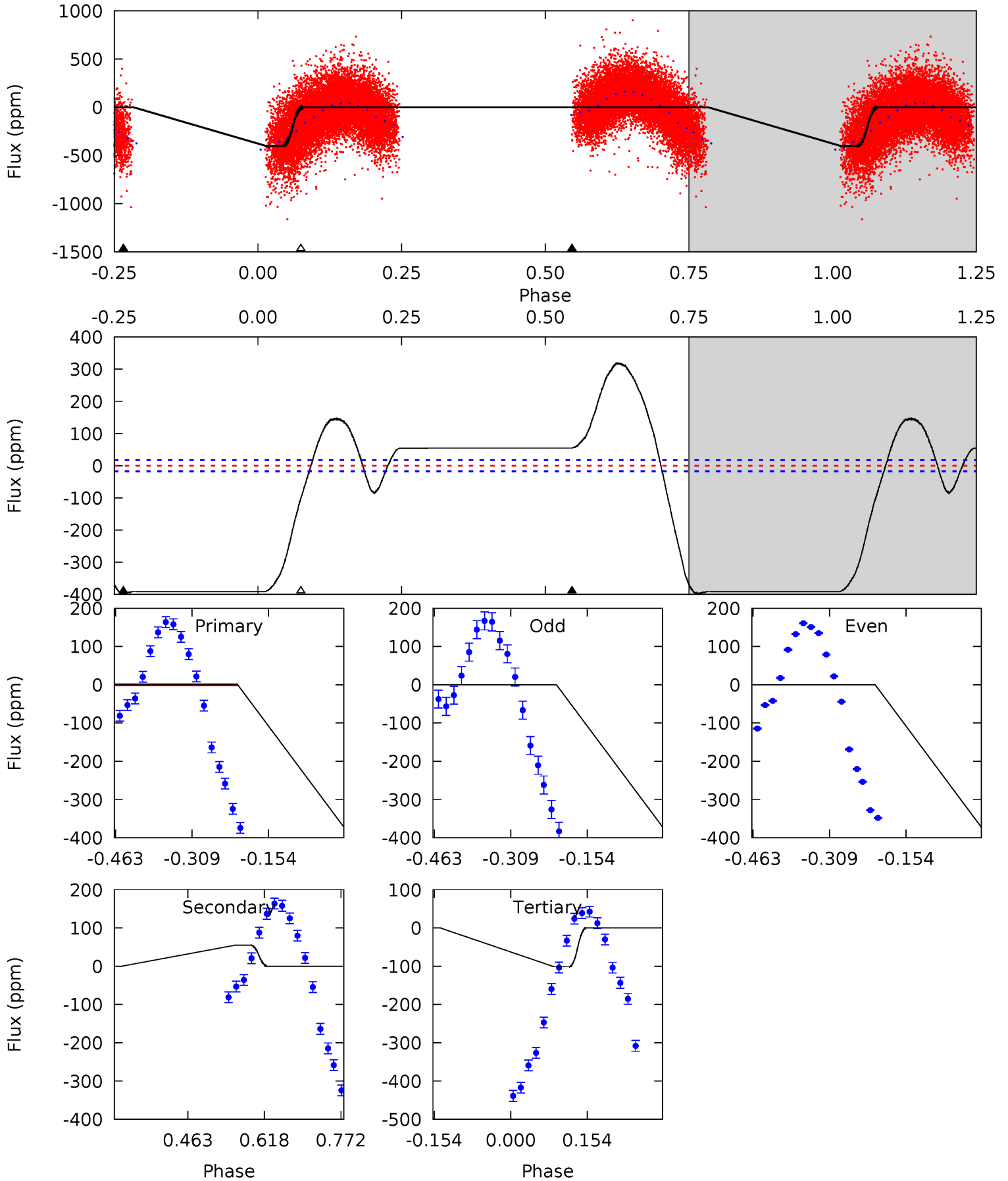
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.1	11.9	0	0	4.23	0.72	1.74	26.1	26.1	11.9	11.9	1.14	1.11	0.20	6.41



# Alt Model-Shift Uniqueness Test

005963222-03, P = 1.217213 Days, E = 131.659265 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
102.0	-14.1	26.0	0	4.47	1.42	36.5	76.1	102.0	-40.1	-14.1	0.10	1.04	0.45	0





### Stellar Parameters For KIC 005963222

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6631^{+73}_{-86}$	$4.145^{+0.132}_{-0.108}$	$0.040^{+0.150}_{-0.150}$	$1.638^{+0.278}_{-0.278}$	$1.366^{+0.098}_{-0.109}$	$0.438^{+0.266}_{-0.140}$
	+1%/-1%	+3%/-3%	+375%/-375%	+17%/-17%	+7%/-8%	+61%/-32%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 005963222-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-16 \pm 1$	$1.11^{+0.77}_{-0.60}$	$3320^{+153}_{-144}$	$5241^{+2551}_{-1063}$	$4.402^{+15.960}_{-2.891}$
Alt.	$55 \pm 4$	$4.04^{+0.83}_{-0.79}$	$3312^{+145}_{-149}$	$-4254^{+199}_{-264}$	$-1.135^{+0.364}_{-0.617}$

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

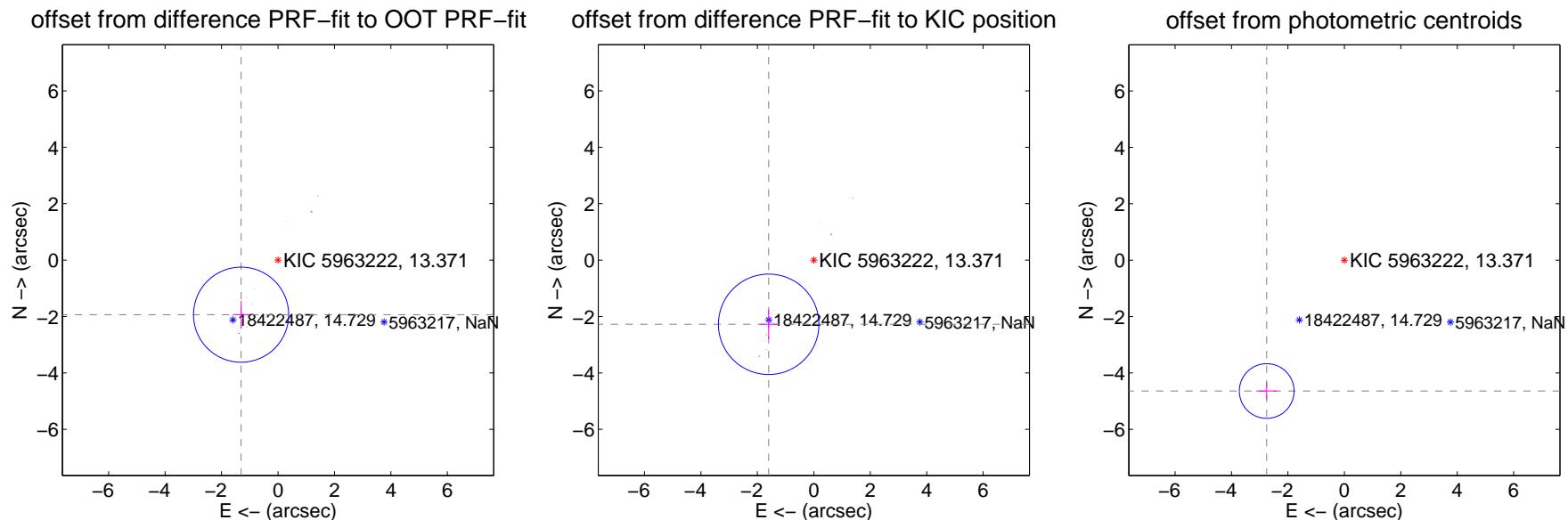
## DV Centroid Data

Supplemental centroid analysis for 005963222-03. Kepler magnitude: 13.37. Transit SNR 13.47

There are 8 quarters with good PRF difference image offsets

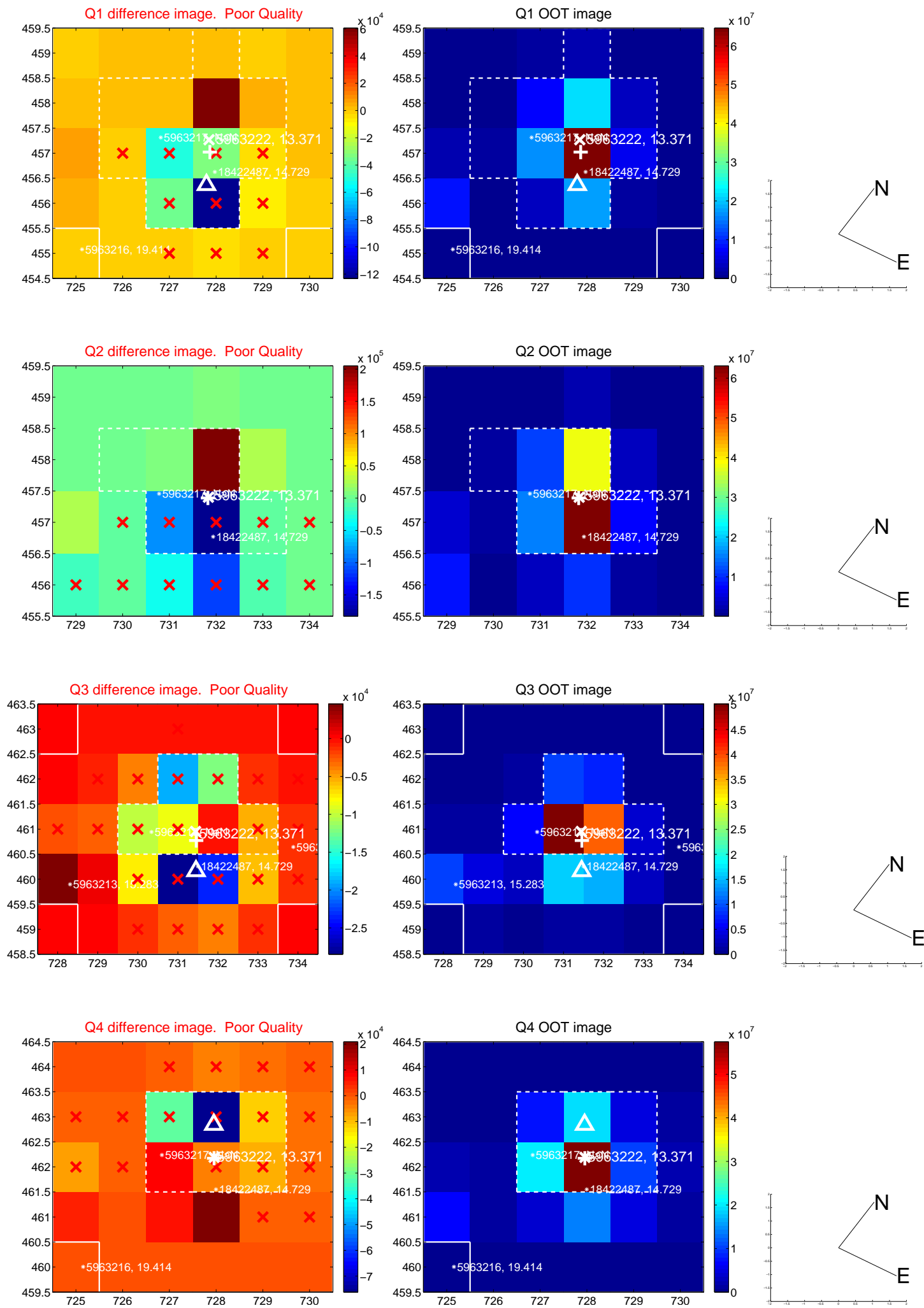
The direct PRF centroid is offset from the target star catalog position by about 0.98 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.337 \pm 0.562$	4.16	$1.308 \pm 0.297$	$-1.936 \pm 0.487$
PRF-fit source offset from KIC position	$2.783 \pm 0.593$	4.69	$1.600 \pm 0.310$	$-2.277 \pm 0.516$
photometric centroid source offset	$5.40 \pm 0.32$	16.69	$2.75 \pm 0.37$	$-4.64 \pm 0.31$

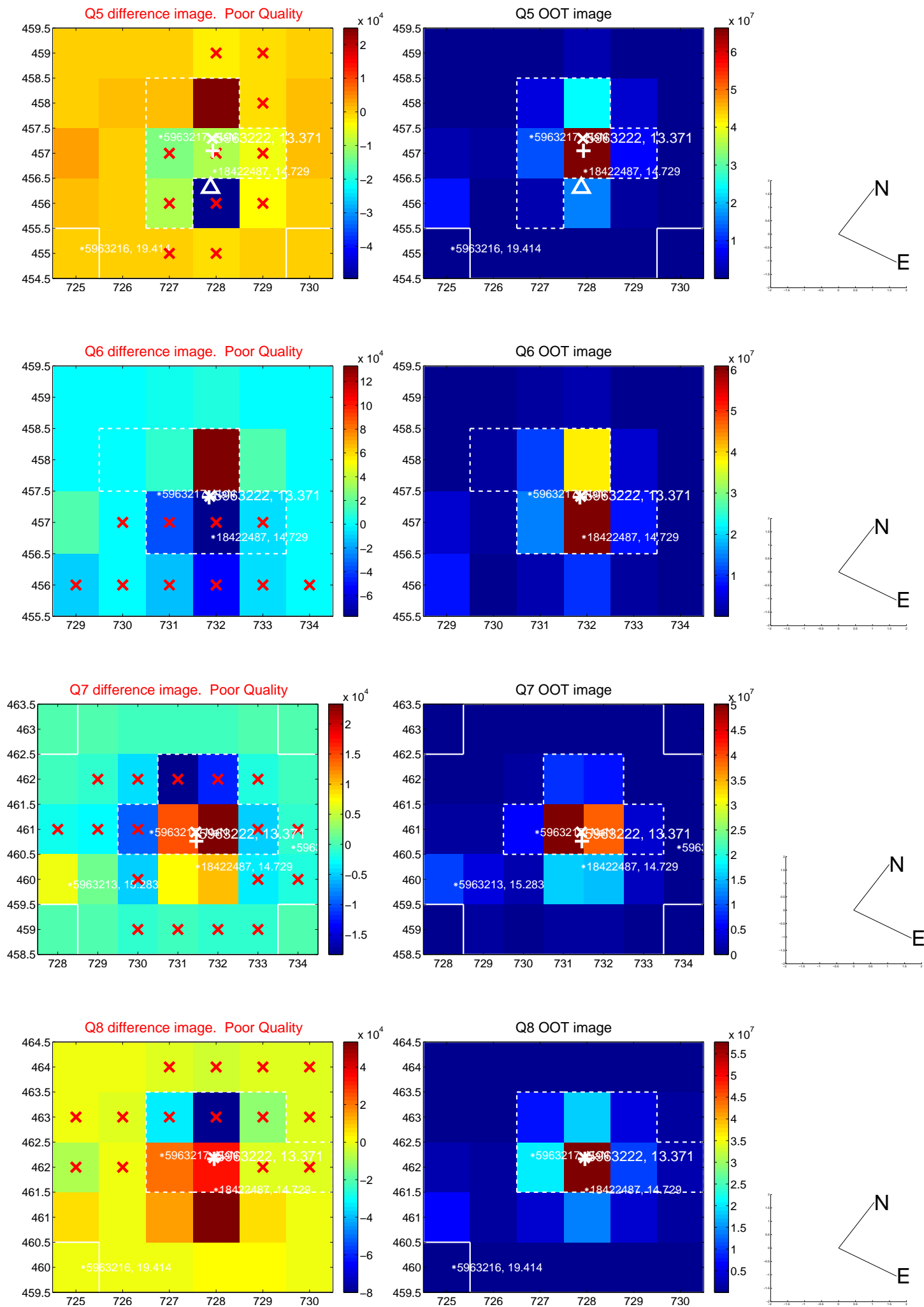


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

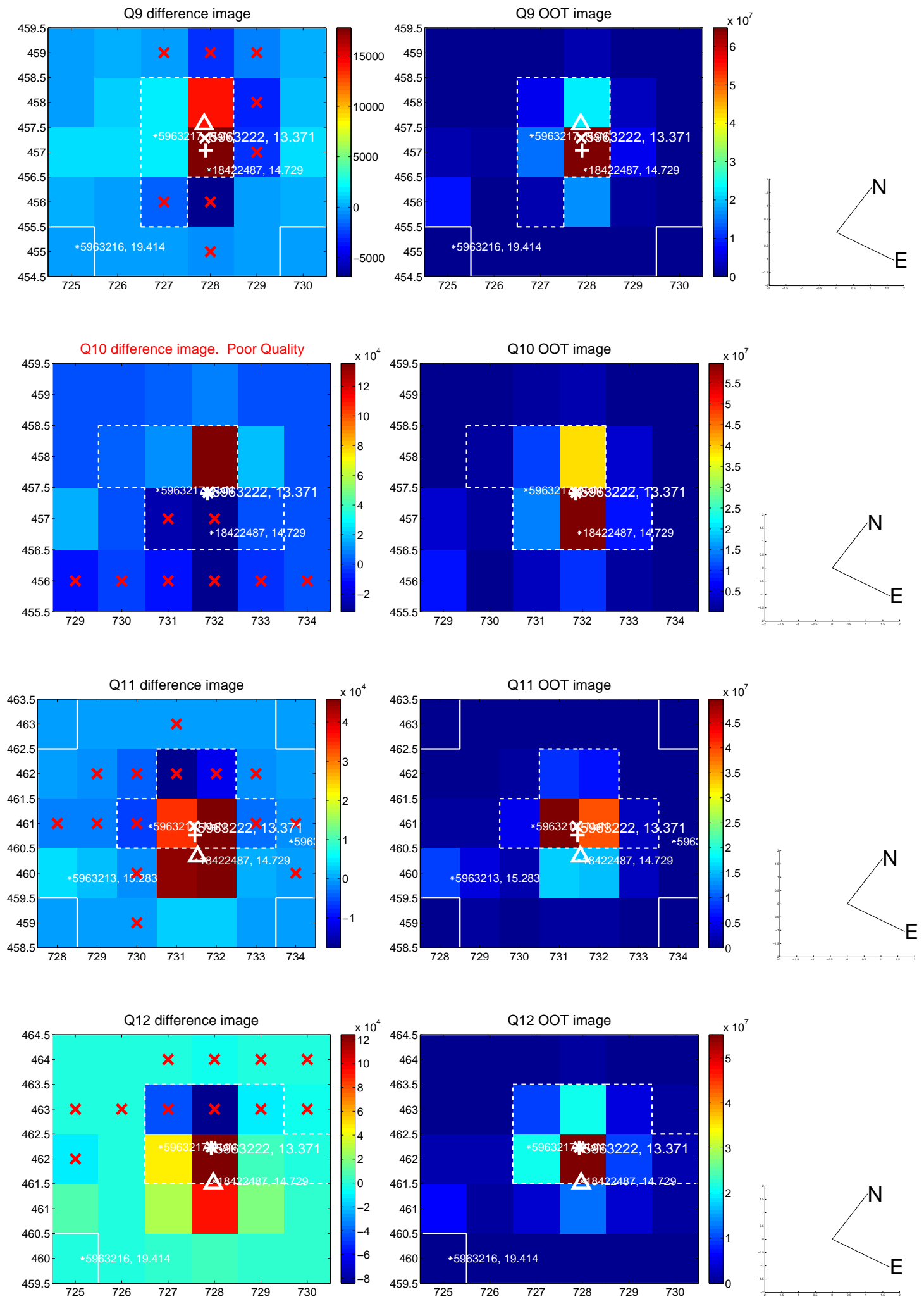
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



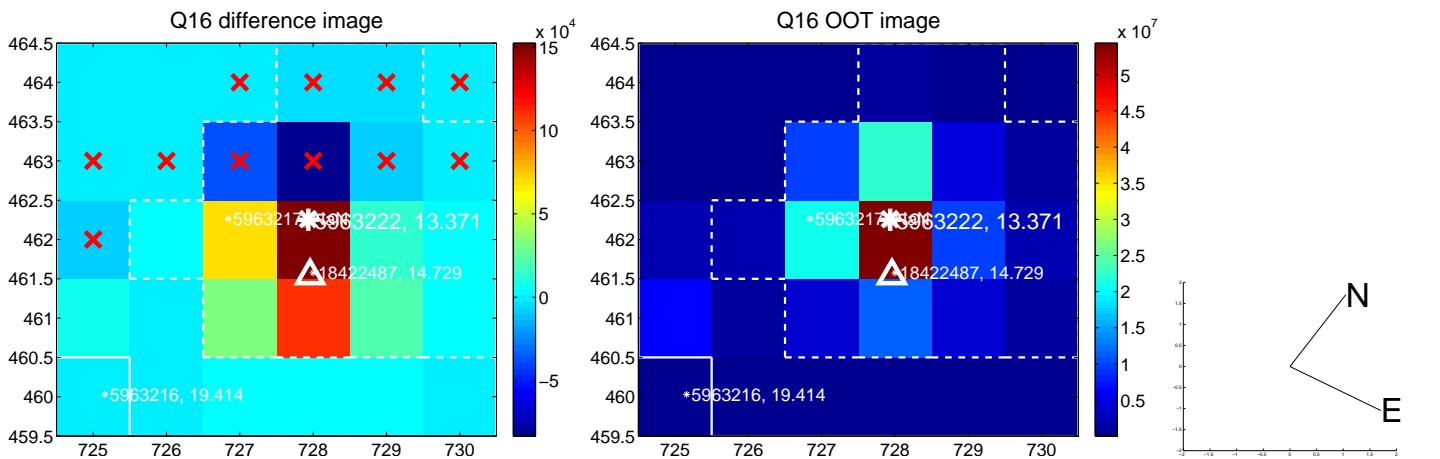
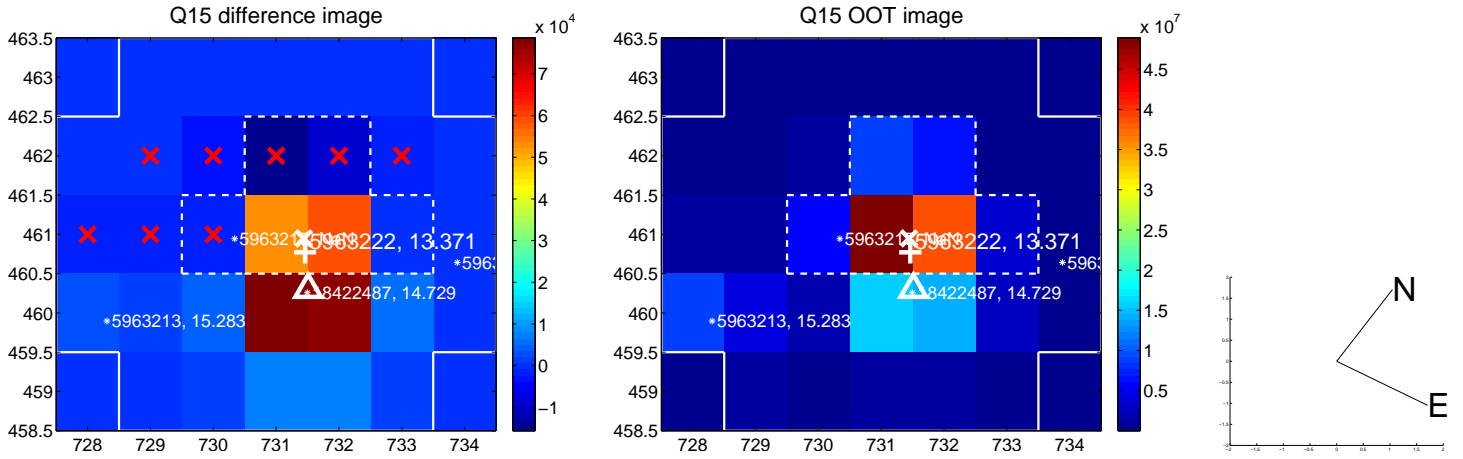
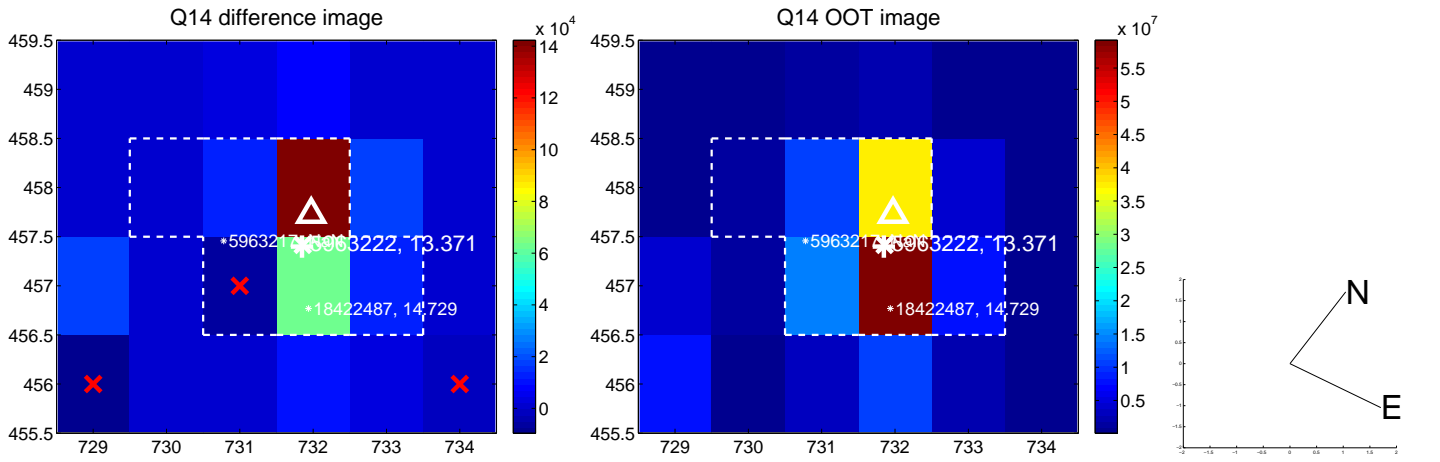
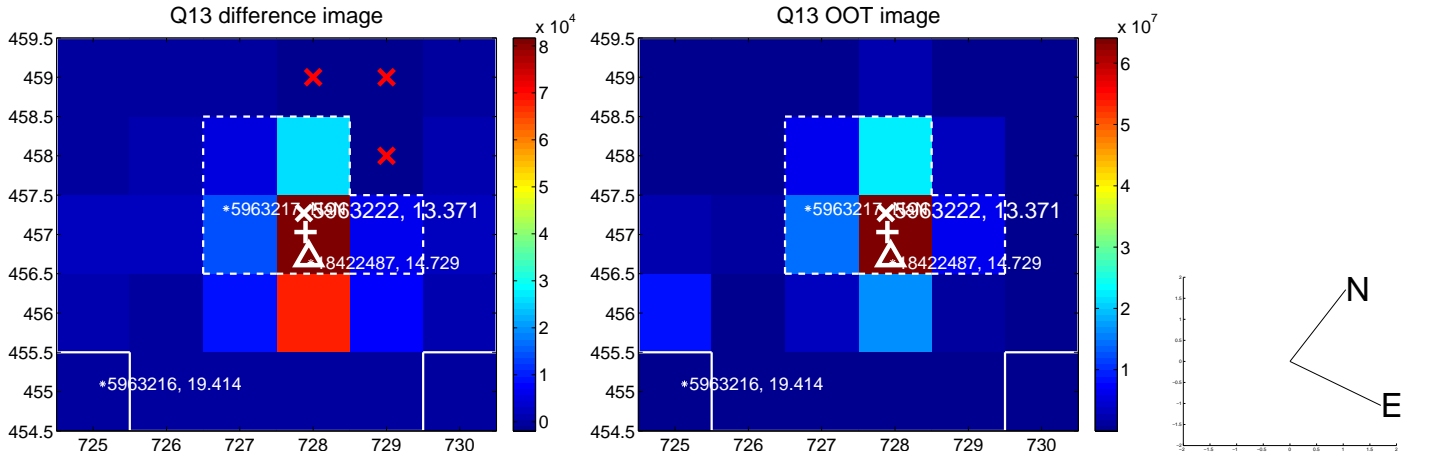
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



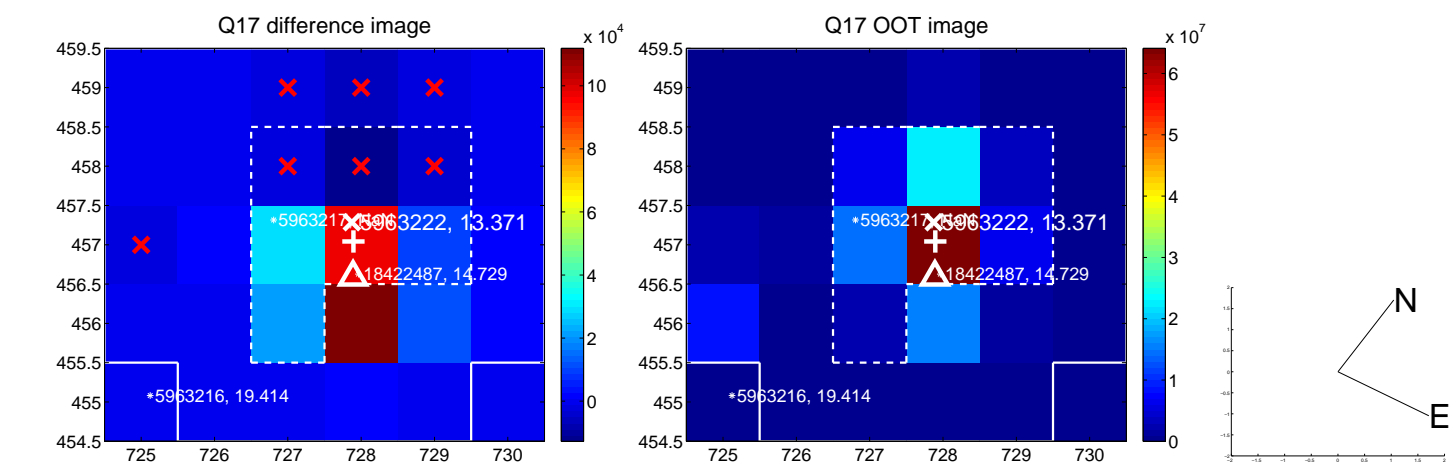
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



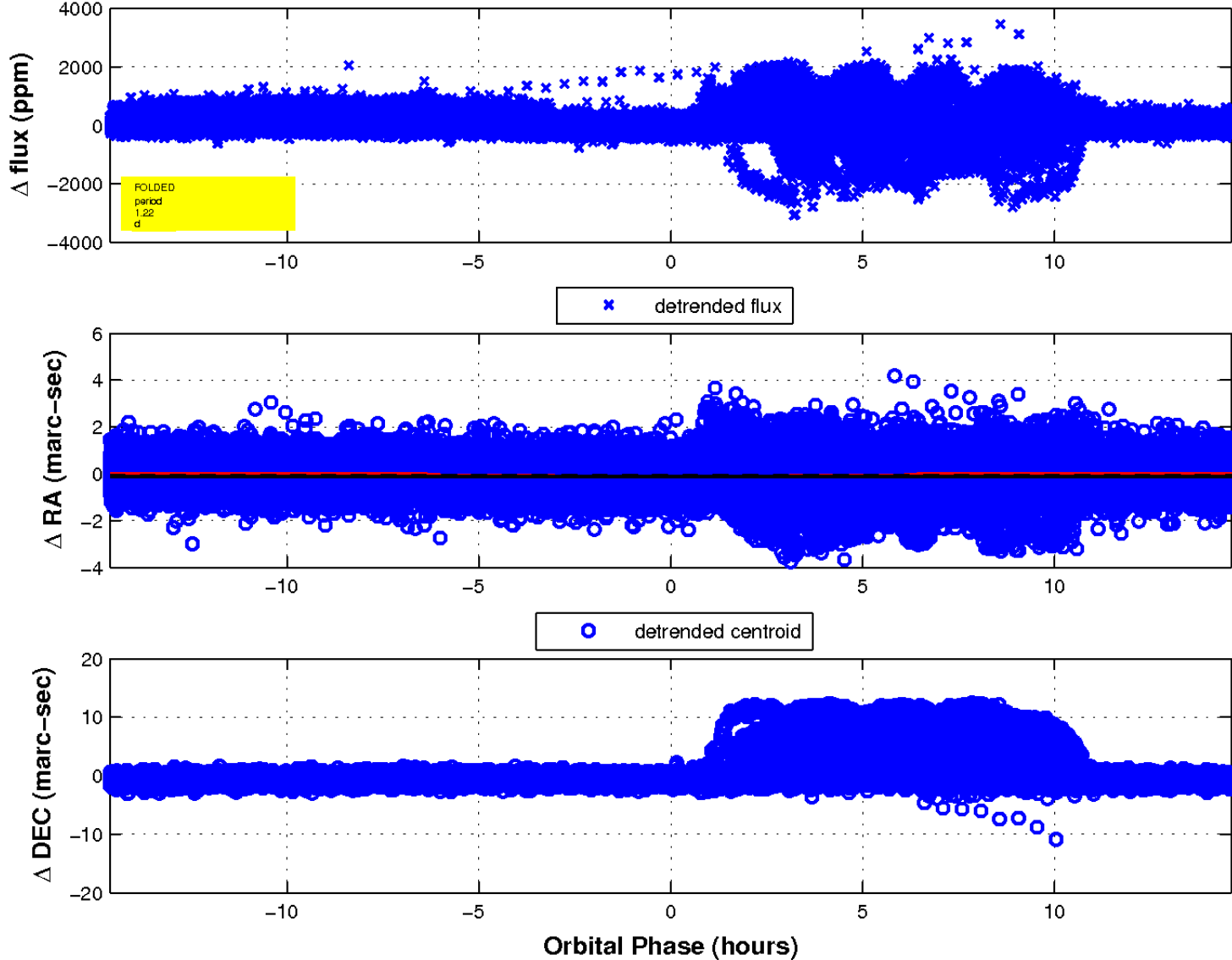
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

