

# KIC 010136240

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010136240-01	OBS	No	0.565929	131.846249	30.6	2.005	325.9	0.0	1.03	6079	0.66	7280.32
010136240-02	OBS	No	0.565795	131.676619	2751.1	1.500	53.1	-1.0	1.03	6079	5.42	7282.63

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010136240-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—HALO_GHOST
010136240-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_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.

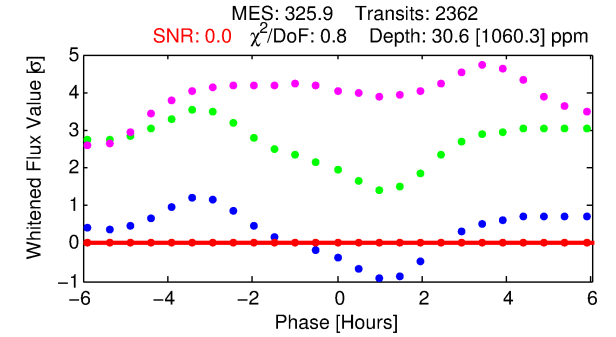
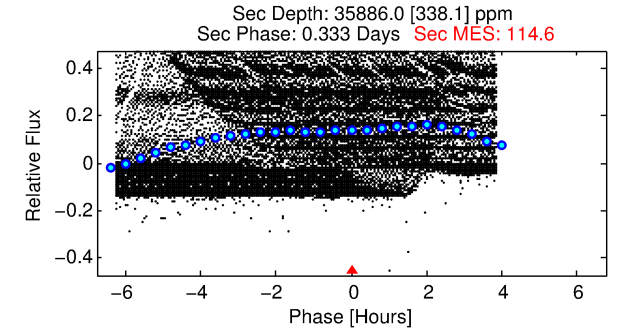
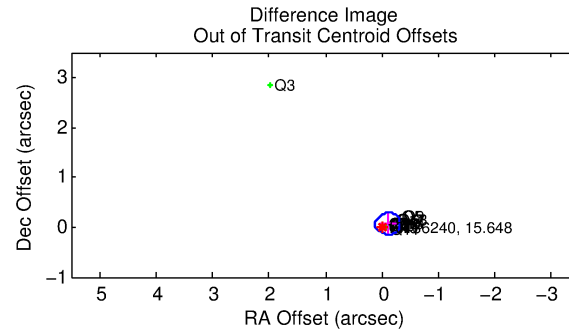
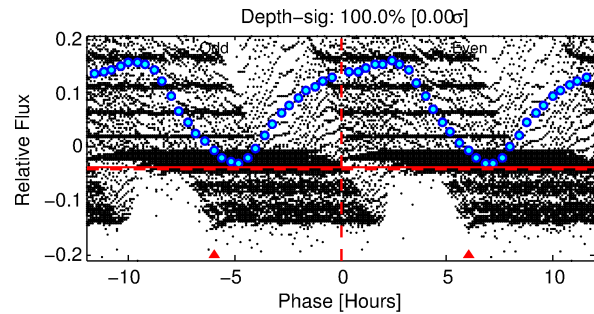
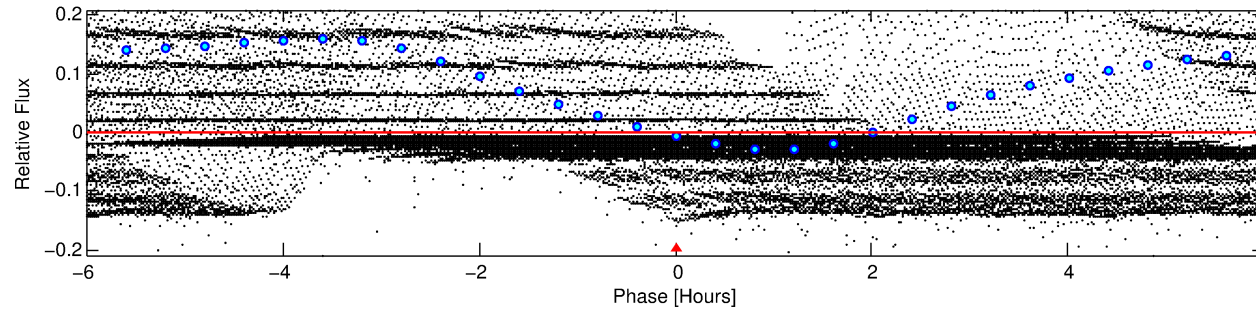
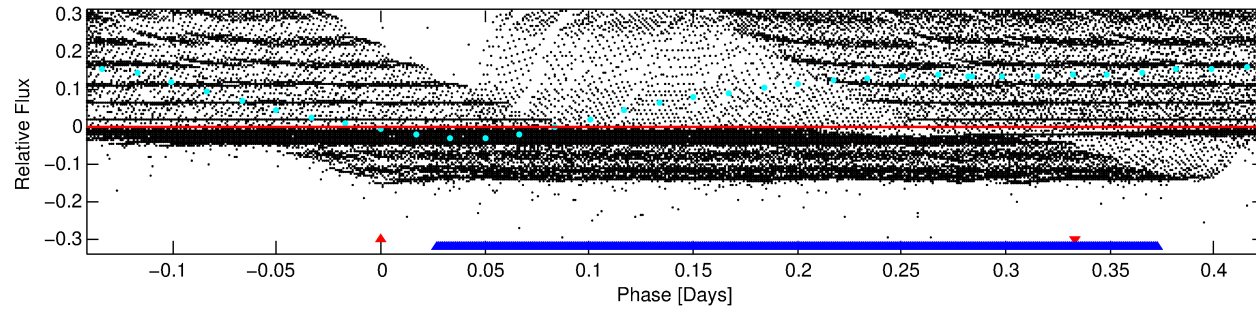
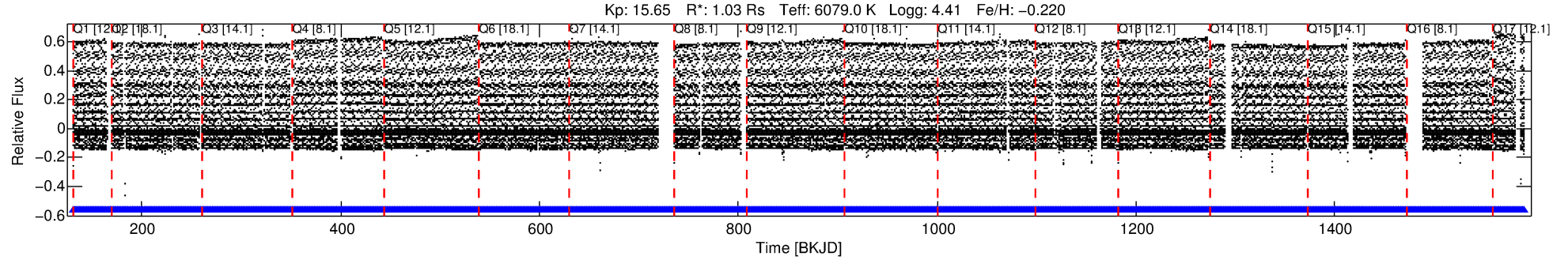
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010136240-01

No Significant Match Found

# DV One-Page Summary

KIC: 10136240 Candidate: 1 of 2 Period: 0.566 d



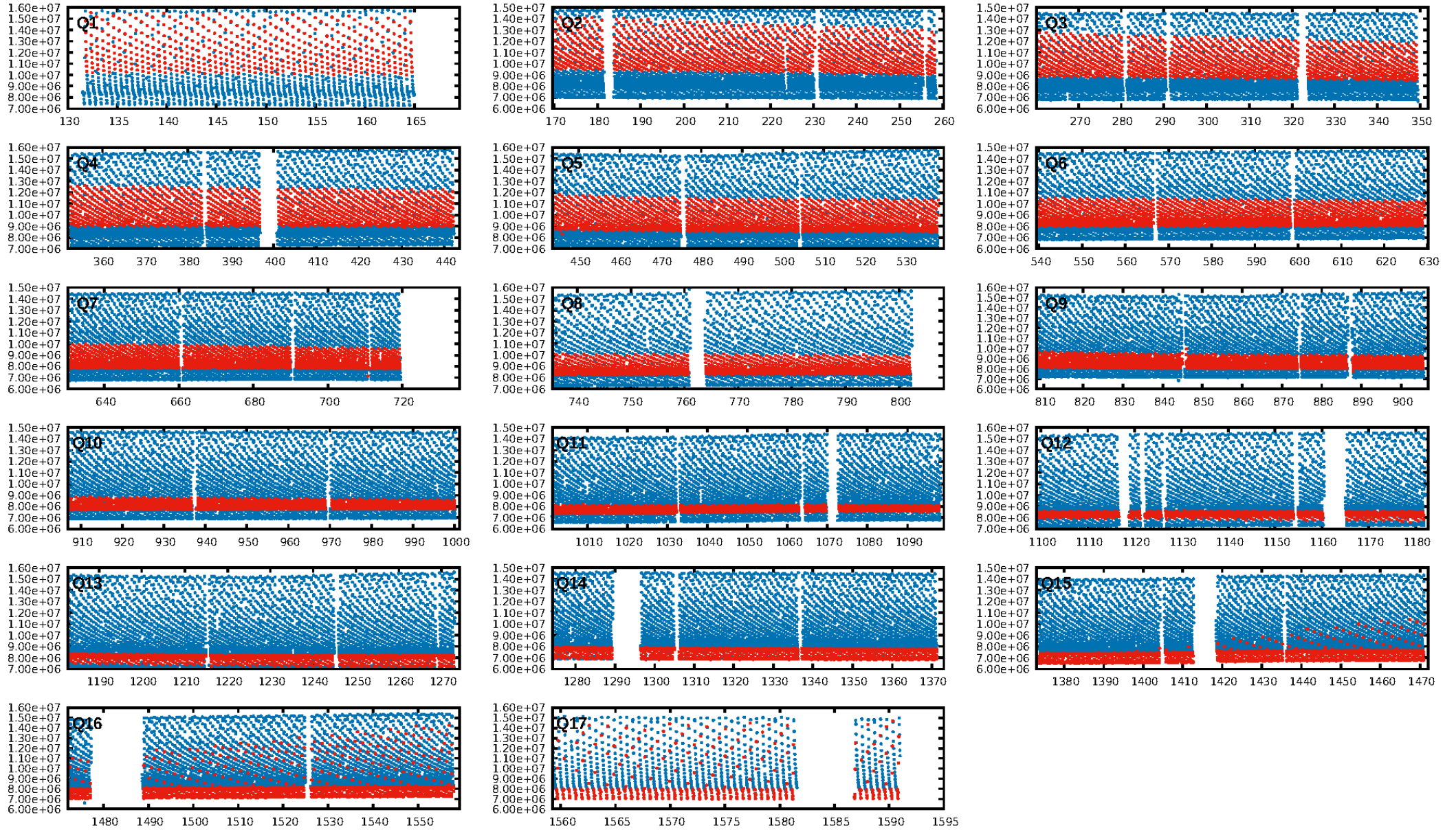
## DV Fit Results:

Period = 0.56593 [0.00245] d  
Epoch = 131.8462 [0.3974] BKJD  
Rp/R\* = 0.0059 [0.3886]  
a/R\* = 1.42 [241.22]  
b = 0.87 [93.78]  
Seff = 7280.32 [2879.74]  
Teff = 2355 [233] K  
Rp = 0.66 [43.64] Re  
a = 0.0133 [0.0034] AU  
Ag = 8128.21 [1079067.85] [0.01σ]  
Teffp = 34578 [1147622] K [0.03σ]

## DV Diagnostic Results:

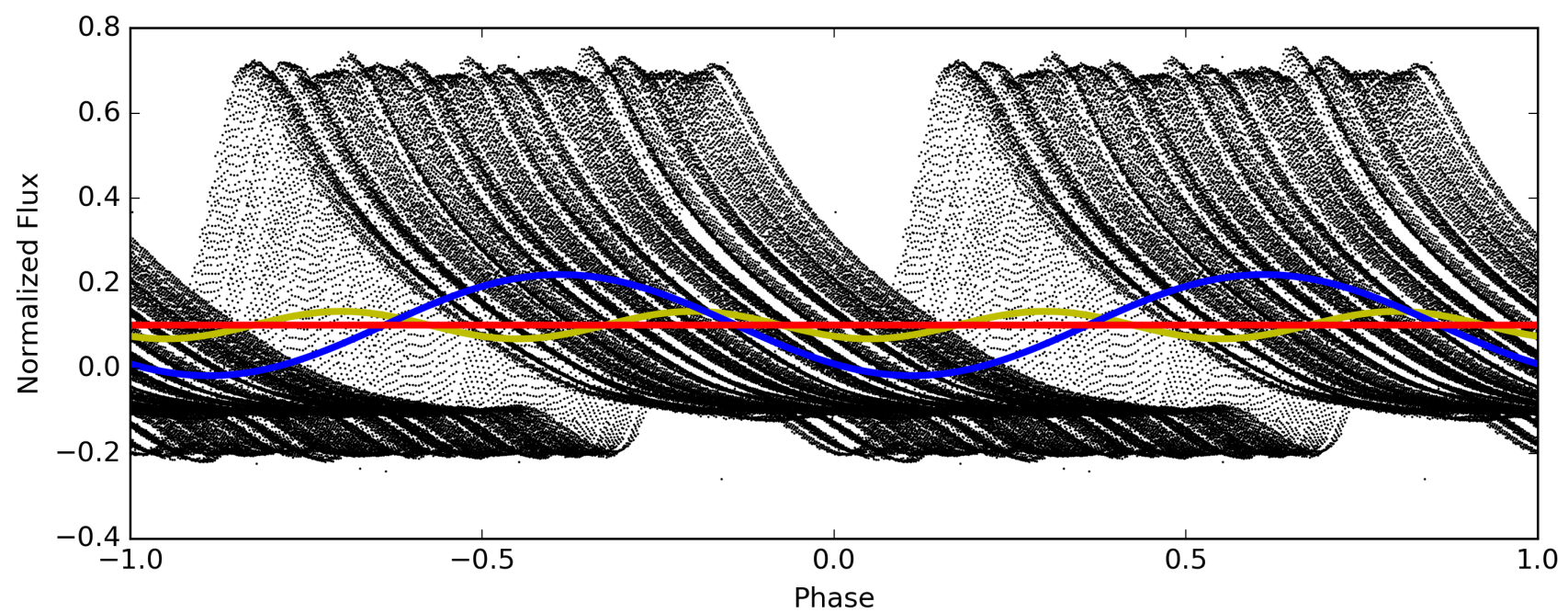
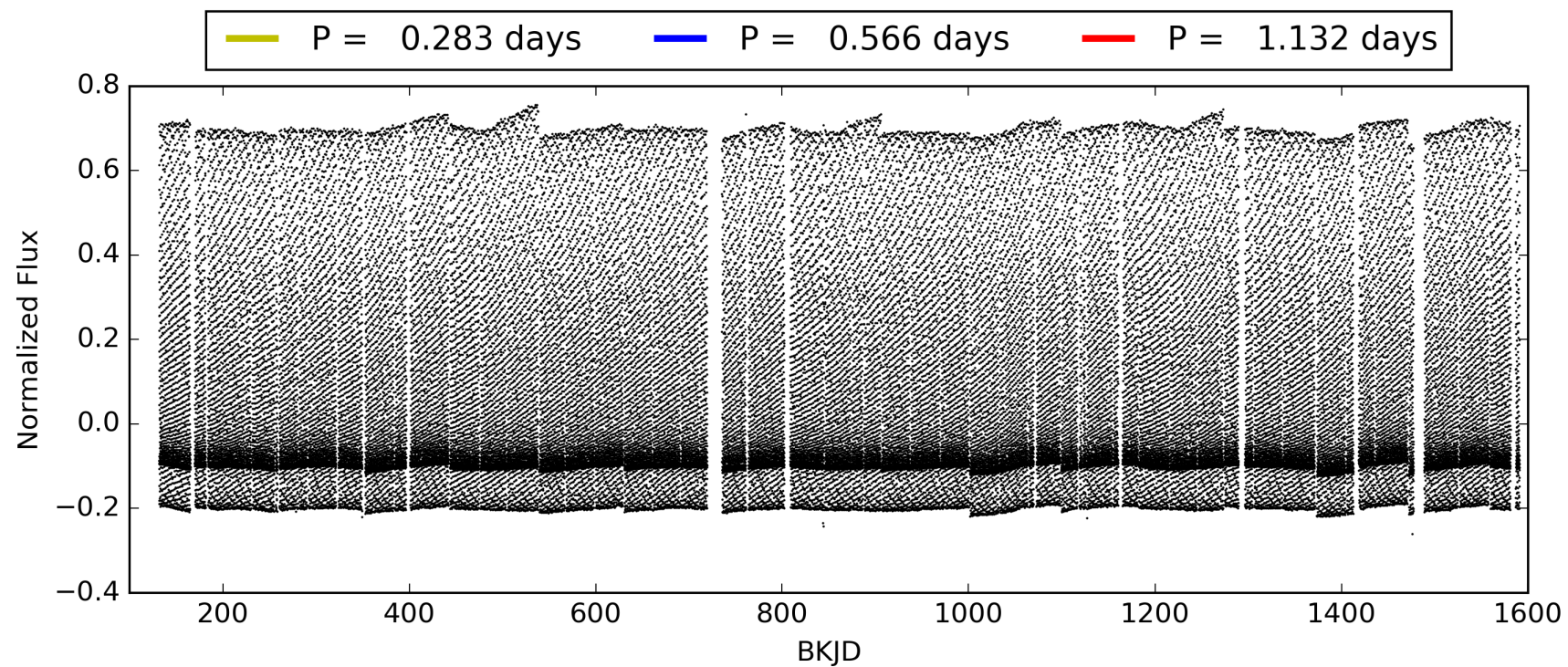
**ShortPeriod-sig: 0.1% [0.00σ]**  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2256/2256]  
**GhostDiagnostic-chr: 0.1629**  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.120 arcsec [1.67σ]  
KicOffset-rm: 0.087 arcsec [0.40σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.82 [14/17]  
DiffImageOverlap-fno: 0.00 [0/17]

# TCE 010136240-01, PDC Light Curves



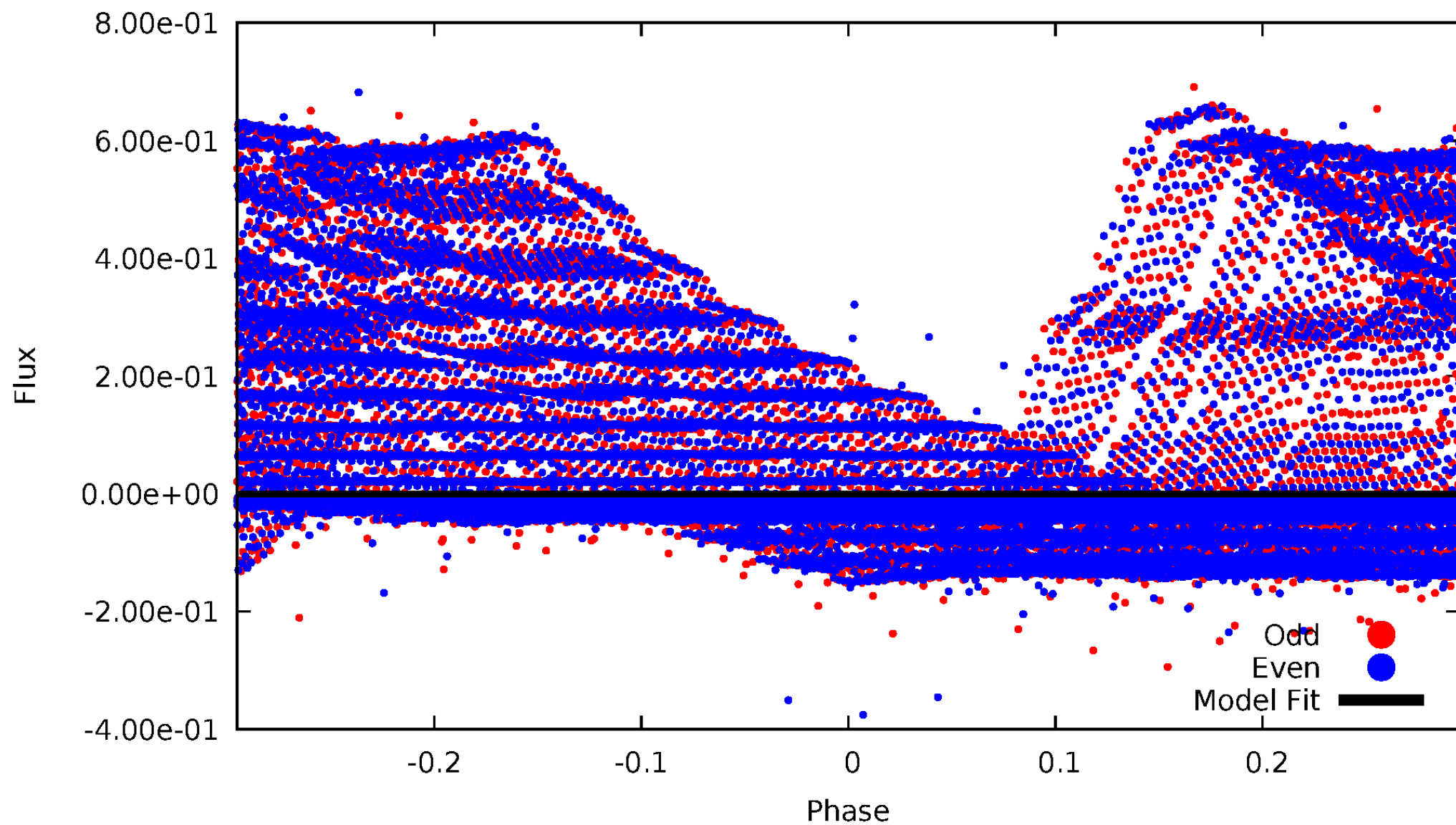


TCE 010136240-01



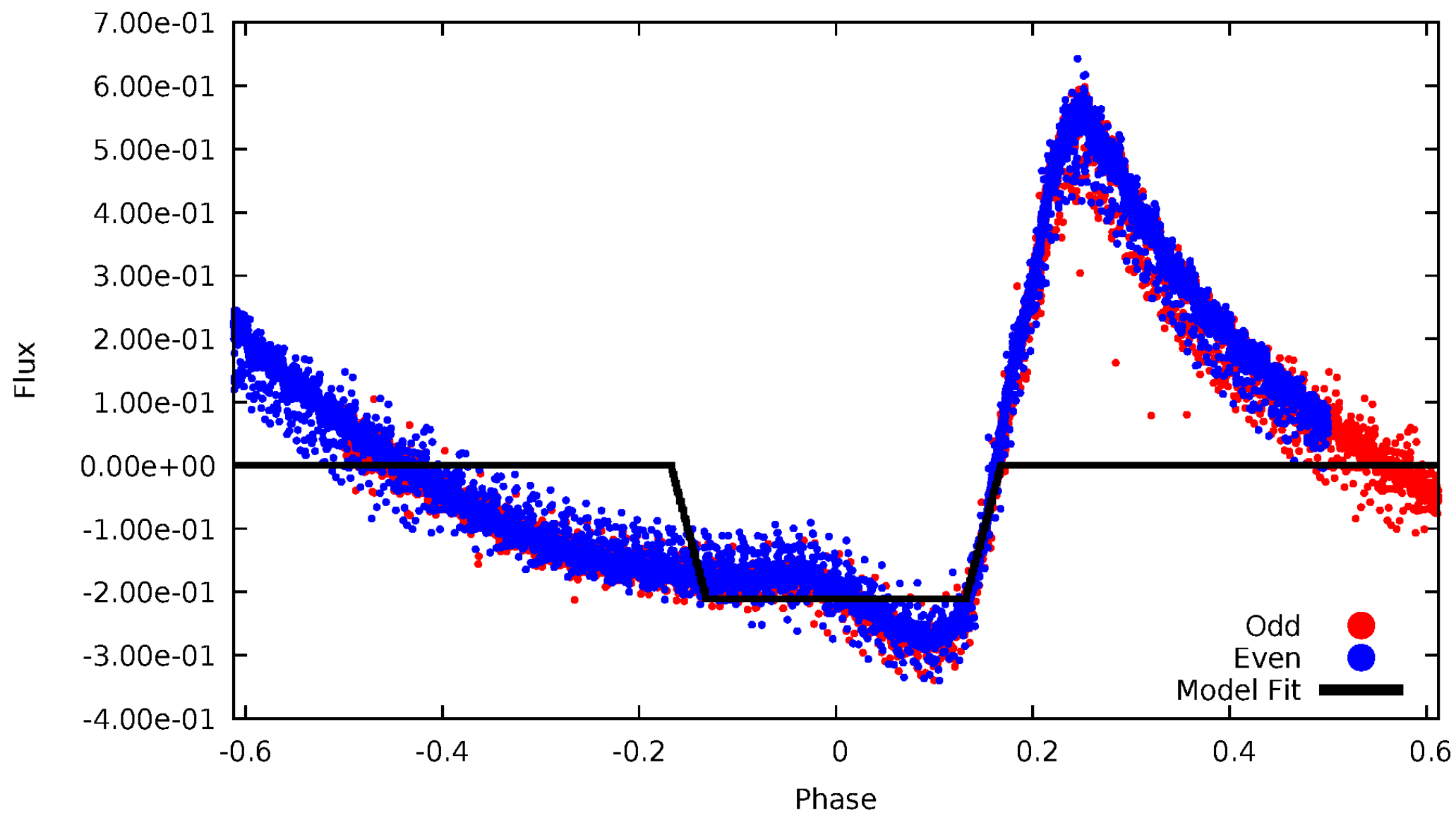
# DV Odd/Even

TCE 010136240-01



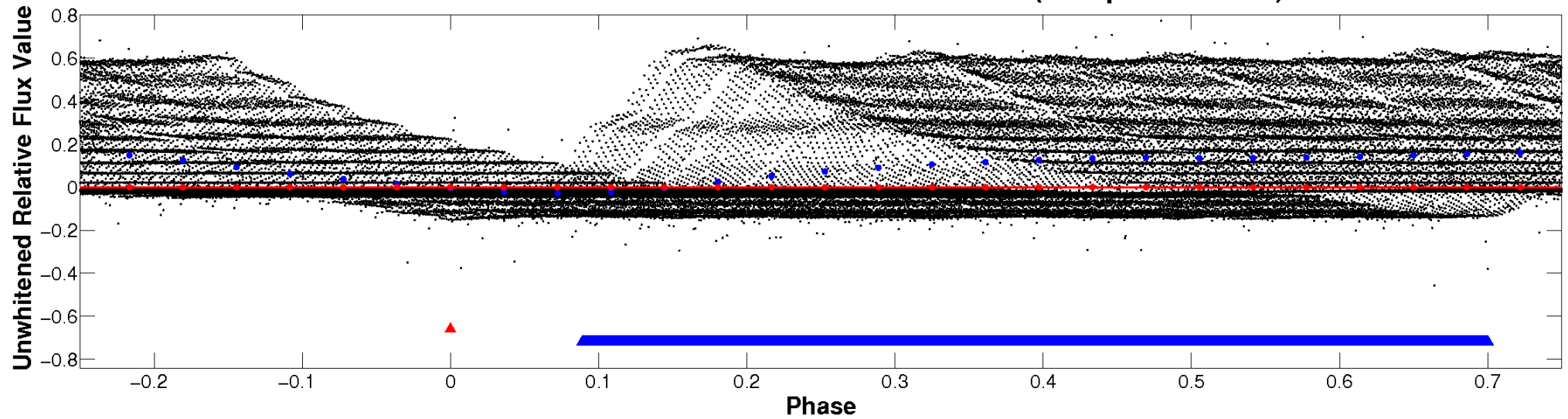
# ALT Odd/Even

TCE 010136240-01

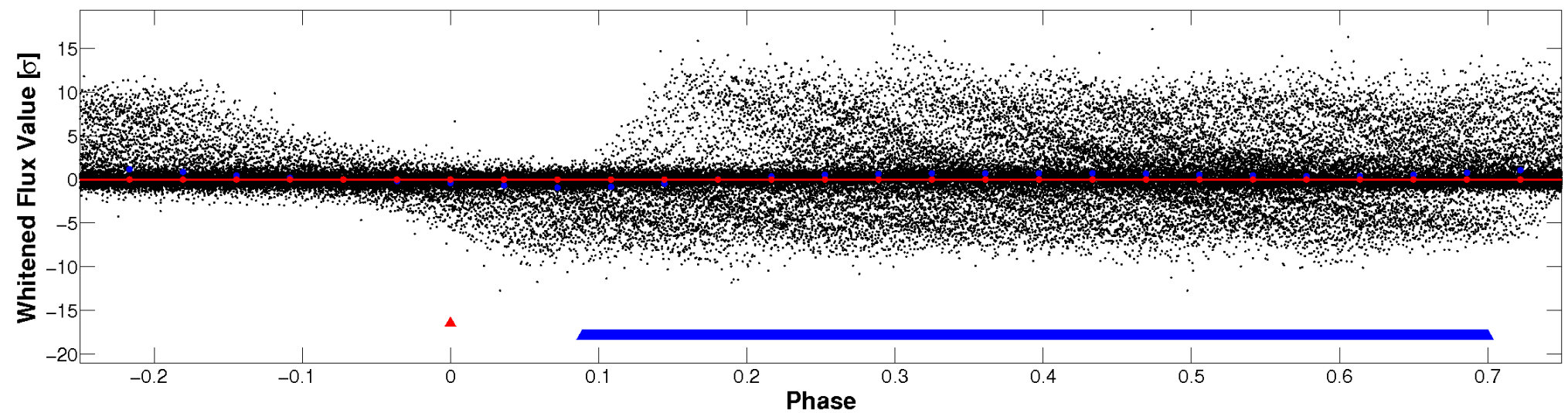


# Non-Whitened Vs. Whitened Light Curve

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



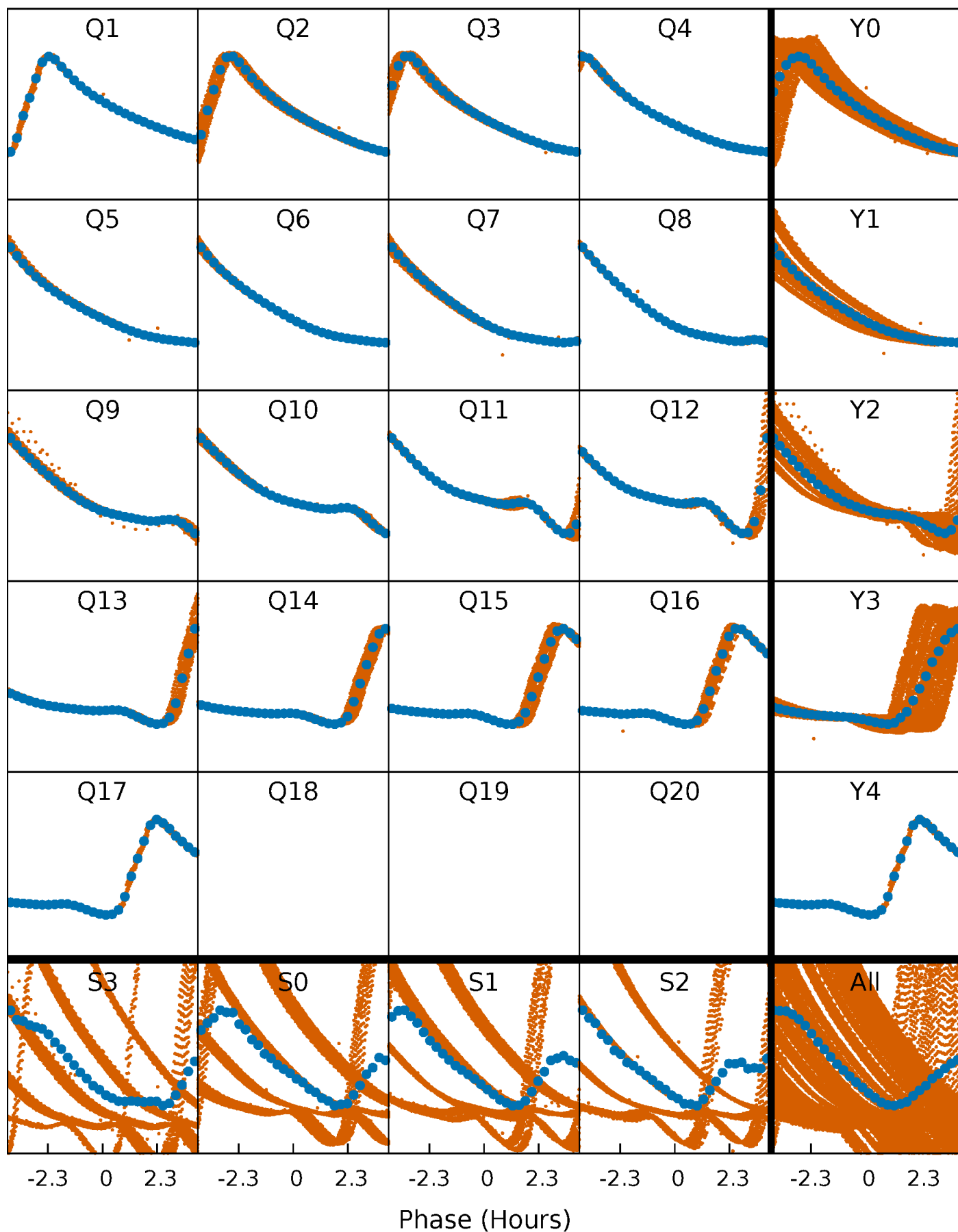
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

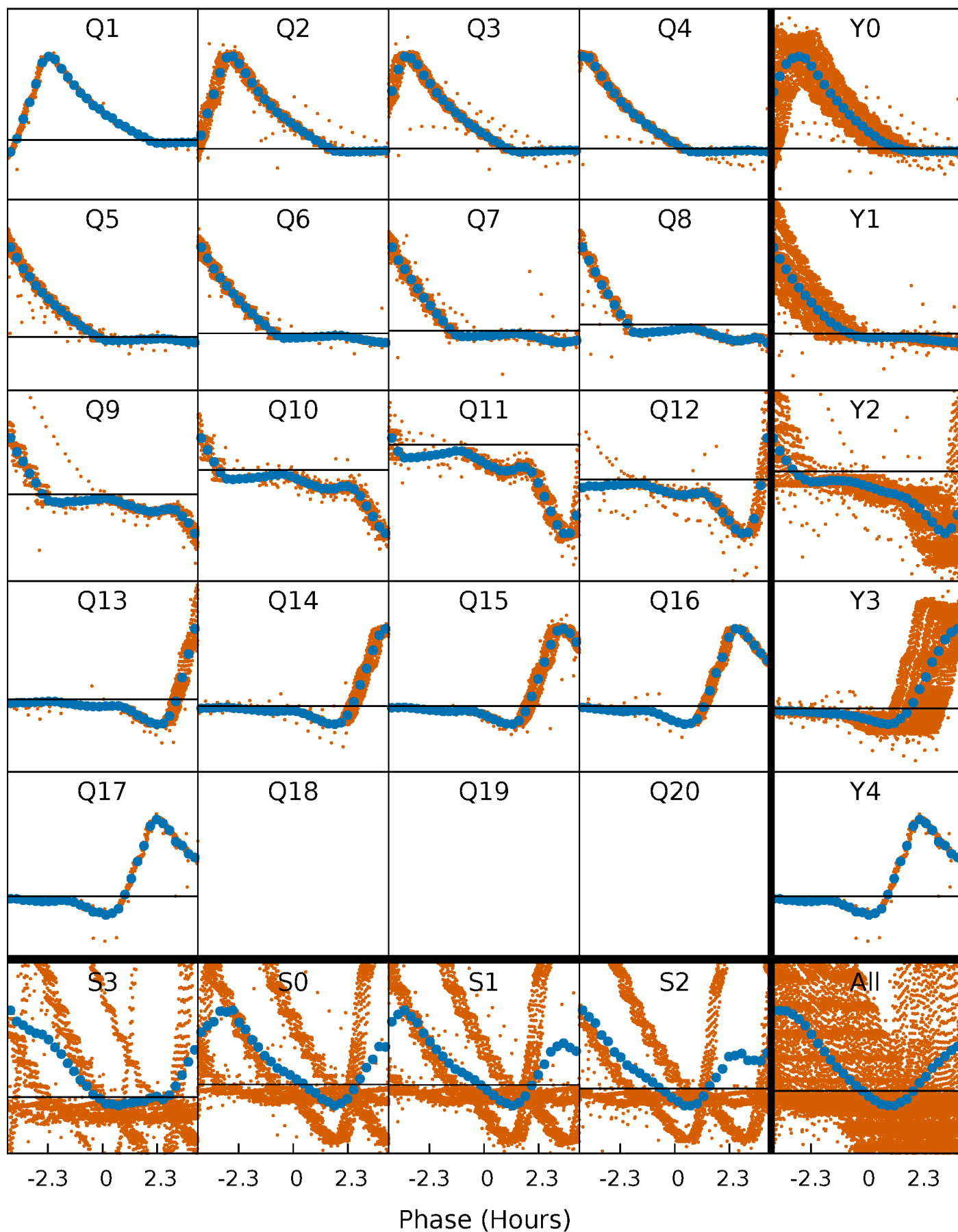
TCE 010136240-01   P= 0.565929 Days    $T_0=131.846249$  (BKJD)





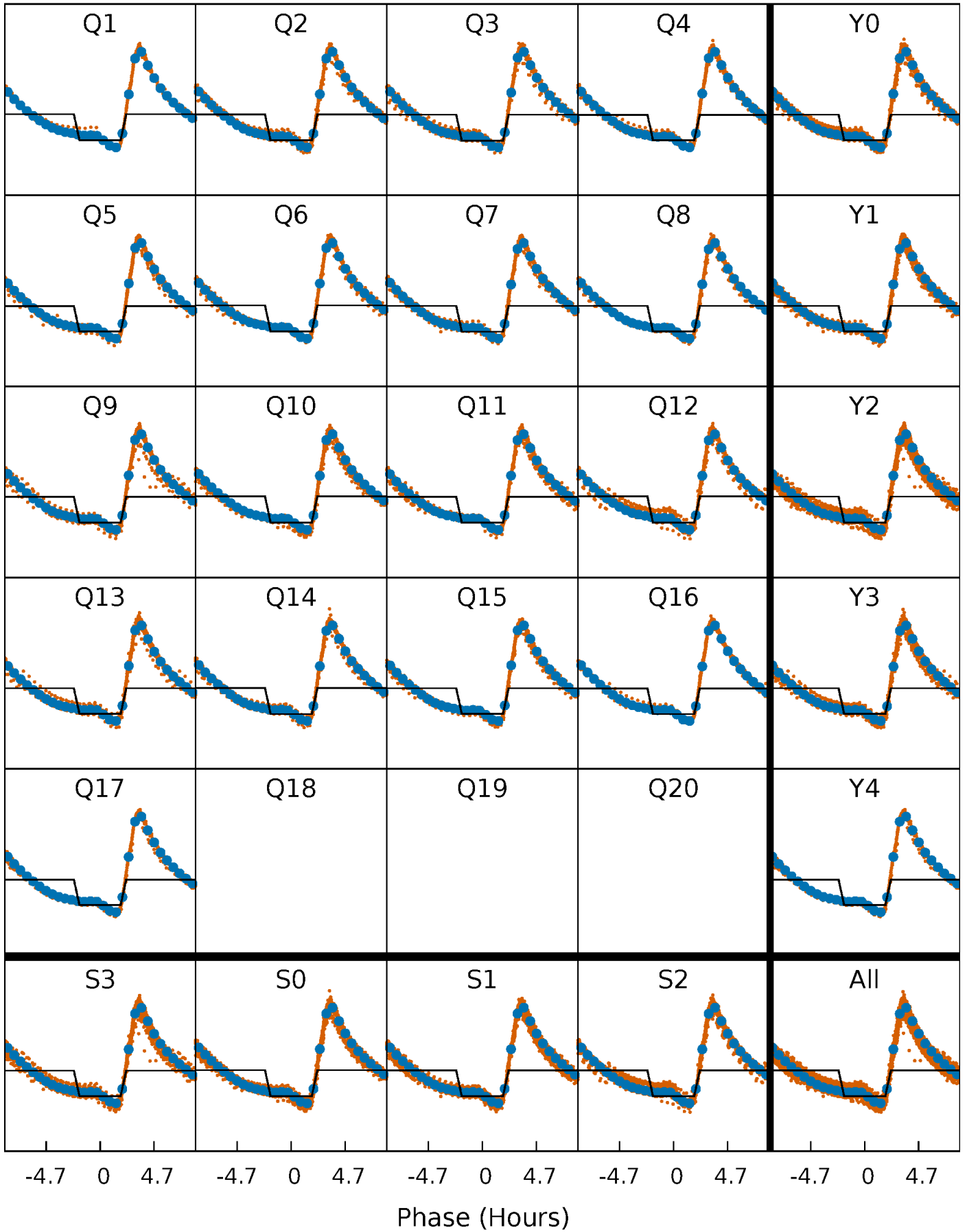
# DV Quarter-Phased Transit Curves

TCE 010136240-01   P= 0.565929 Days    $T_0=131.846249$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

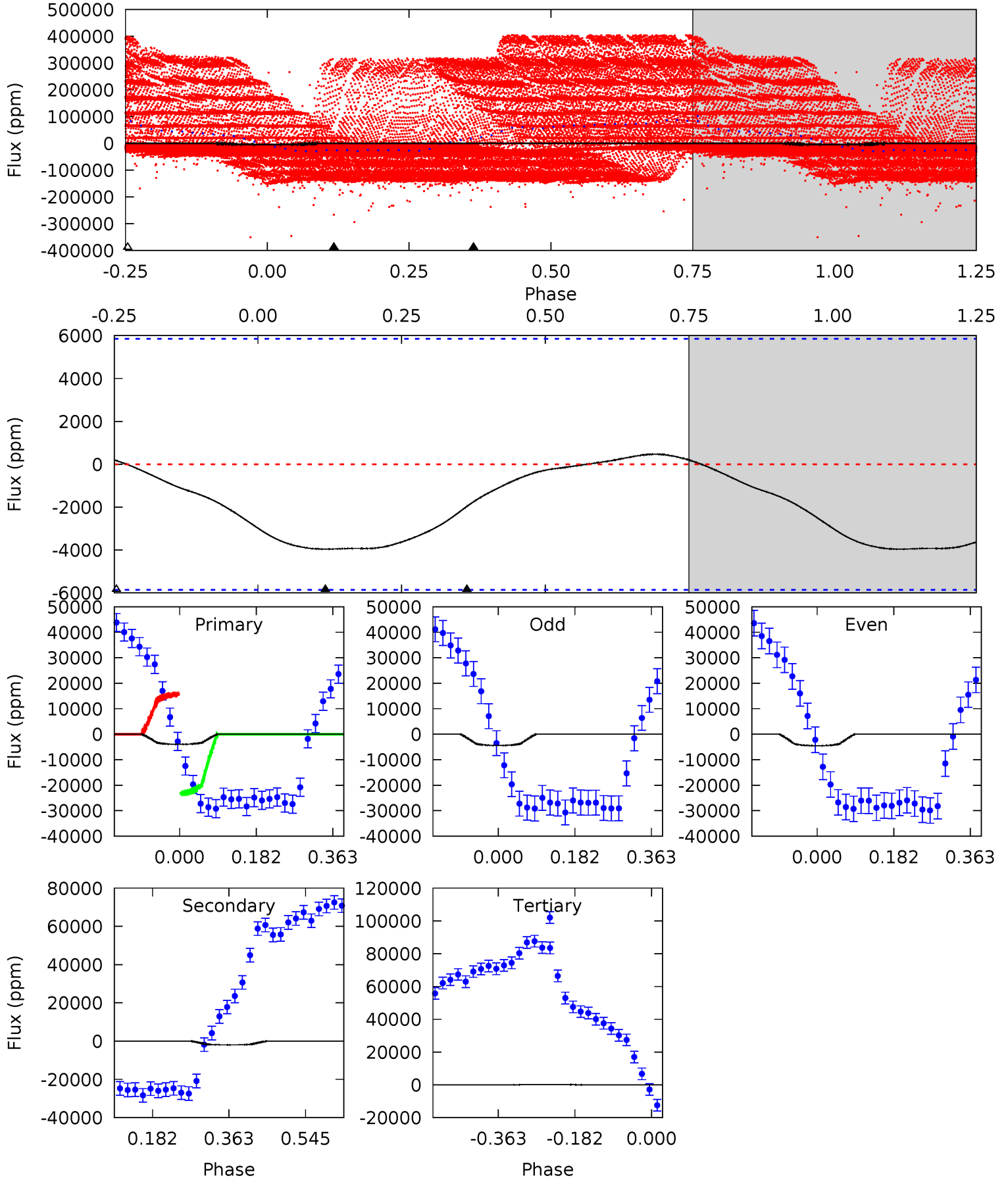
TCE 010136240-01 P= 0.565780 Days  $T_0=131.615579$  (BKJD)



# DV Model-Shift Uniqueness Test

010136240-01, P = 0.565929 Days, E = 131.280320 Days

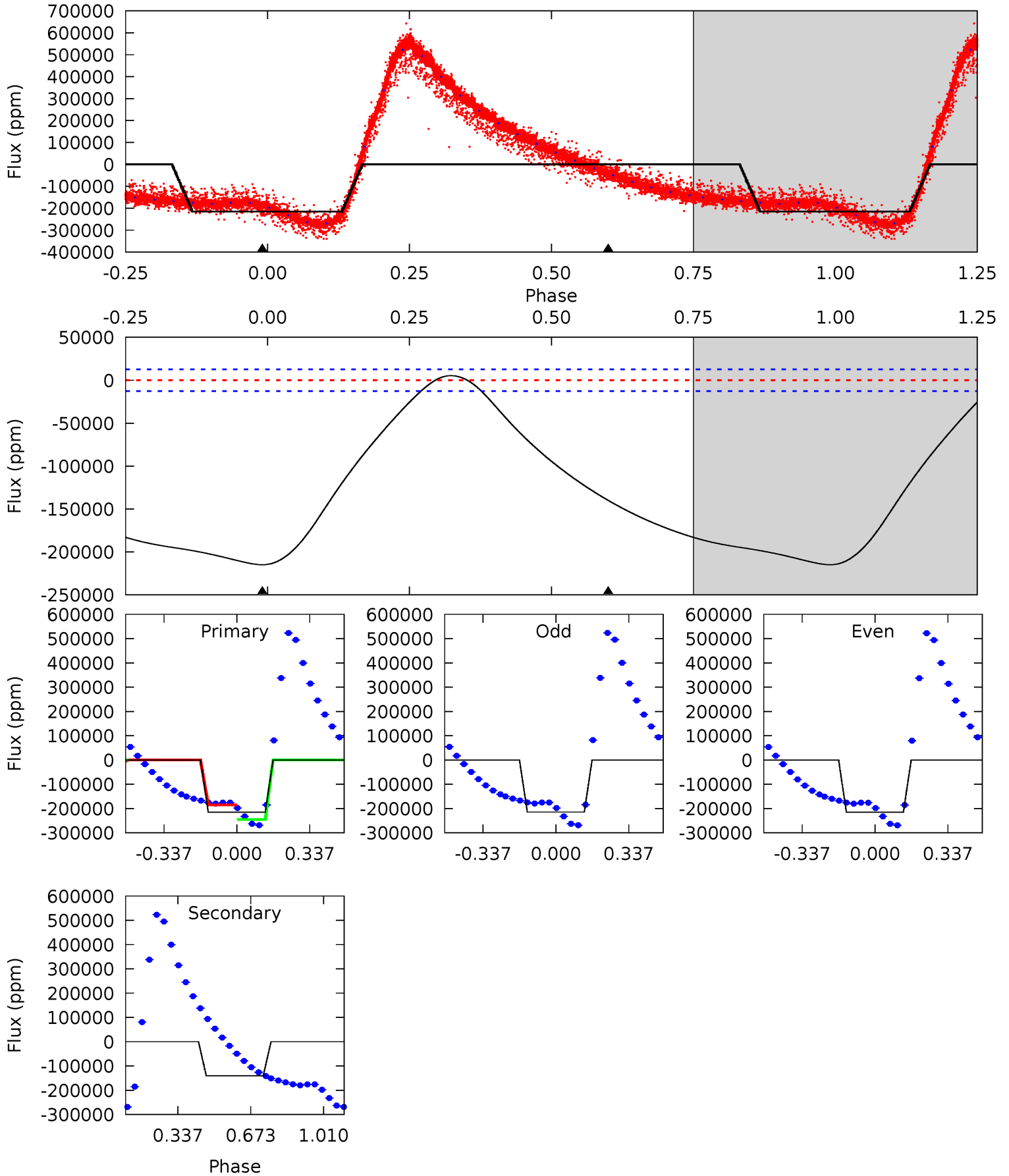
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.00	1.49	-0.13	0	4.44	1.34	0.53	3.13	3.00	1.62	1.49	0.04	0.18	0.11	5.63



# Alt Model-Shift Uniqueness Test

010136240-01, P = 0.565780 Days, E = 131.049799 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
72.5	47.2	0	0	4.30	0.96	3.54	72.5	72.5	47.2	47.2	0.12	1.00	0.02	11.5





### Stellar Parameters For KIC 010136240

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6079^{+190}_{-232}$	$4.408^{+0.090}_{-0.195}$	$-0.220^{+0.300}_{-0.300}$	$1.029^{+0.322}_{-0.138}$	$0.988^{+0.143}_{-0.117}$	$1.276^{+0.598}_{-0.656}$
	+3%/-4%	+2%/-4%	+136%/-136%	+31%/-13%	+14%/-12%	+47%/-51%
Source	PHO54	PHO54	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 010136240-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1966 \pm 1319$	$31.32^{+32.24}_{-22.23}$	$3329^{+246}_{-192}$	$-2917^{+7337}_{-382}$	$0.163^{+2.030}_{-0.138}$
Alt.	$-139948 \pm 2962$	$57.16^{+42.36}_{-34.33}$	$3337^{+218}_{-193}$	$5414^{+3917}_{-1190}$	$4.846^{+24.301}_{-3.258}$

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

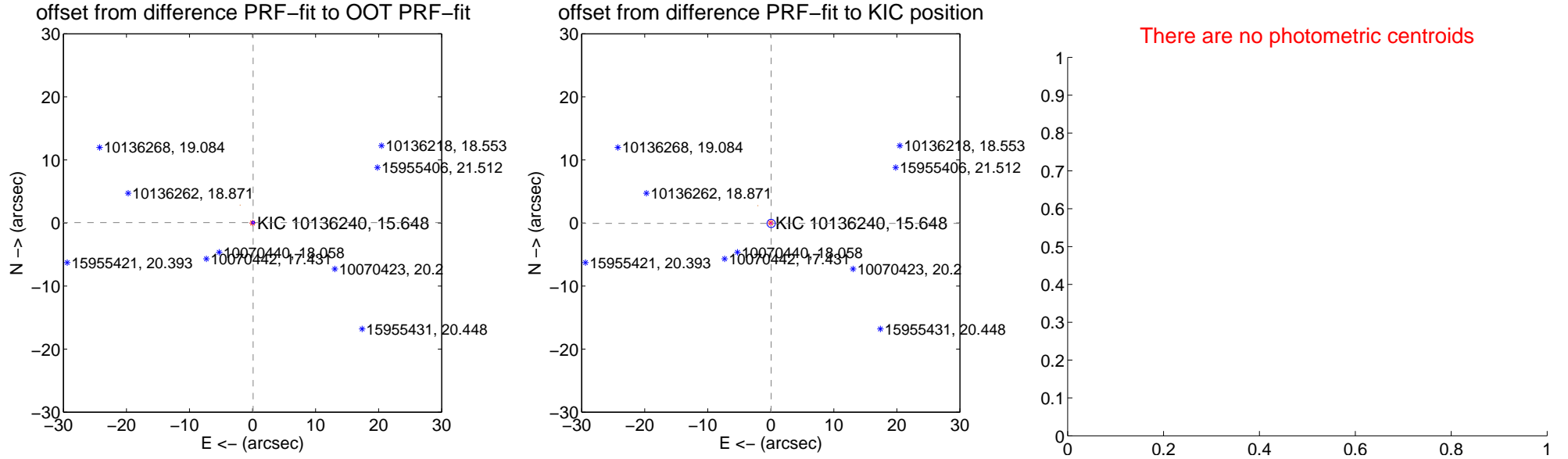
## DV Centroid Data

Supplemental centroid analysis for 010136240-01. Kepler magnitude: 15.65. Transit SNR 0.04

There are 14 quarters with good PRF difference image offsets

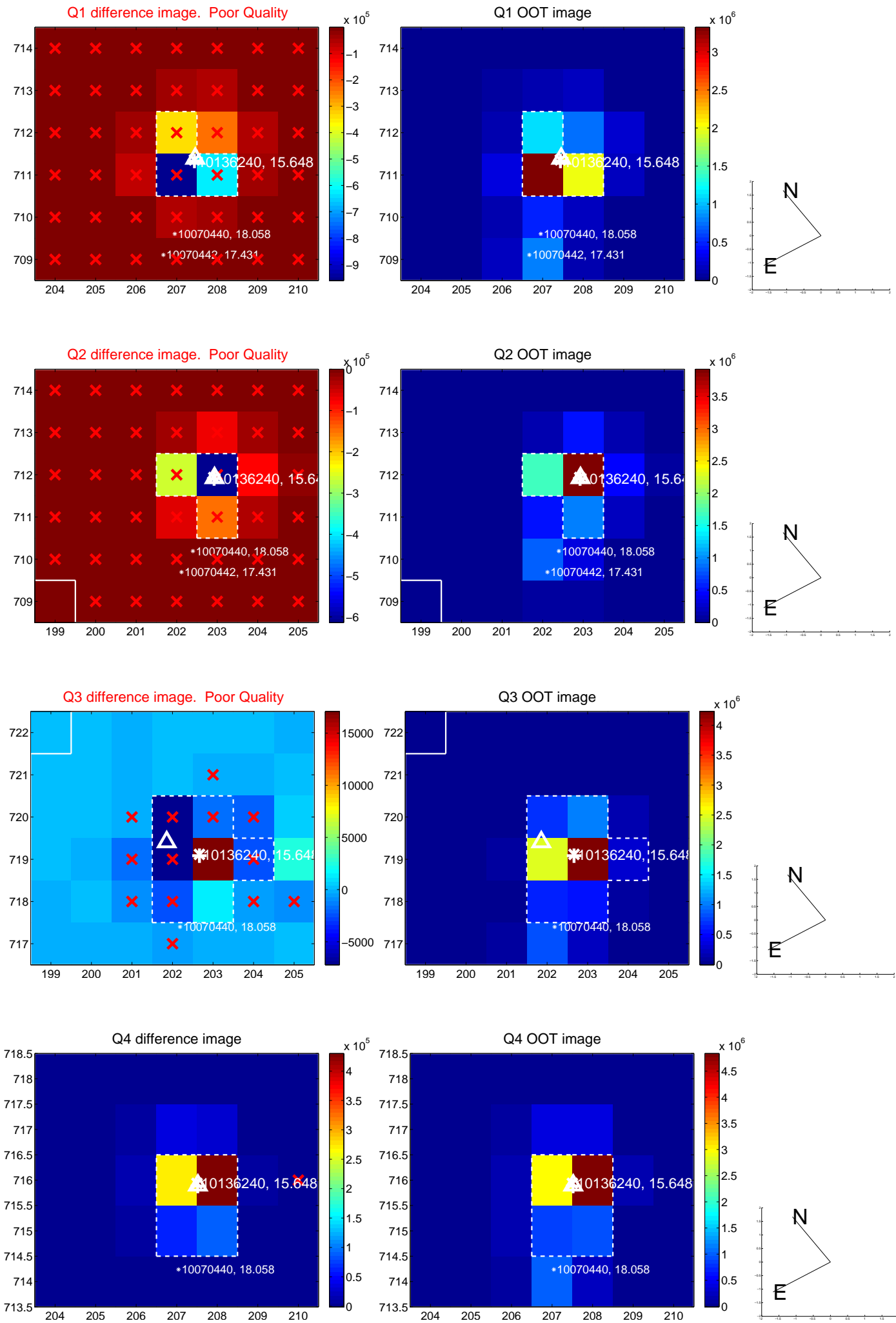
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.120 \pm 0.072$	1.67	$-0.099 \pm 0.137$	$0.067 \pm 0.173$
PRF-fit source offset from KIC position	$0.087 \pm 0.219$	0.40	$-0.053 \pm 0.144$	$-0.068 \pm 0.180$
photometric centroid source offset	—	—	—	—

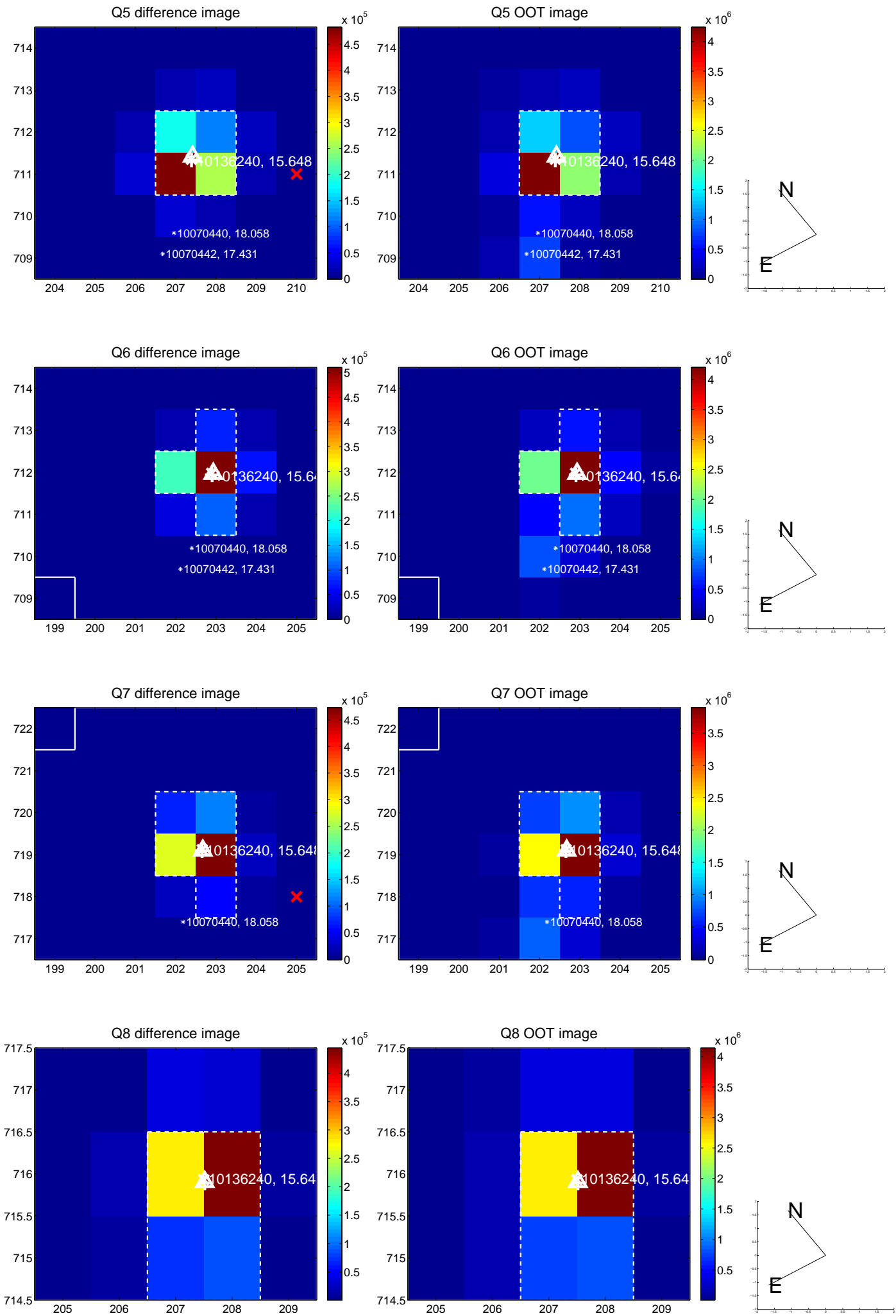


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

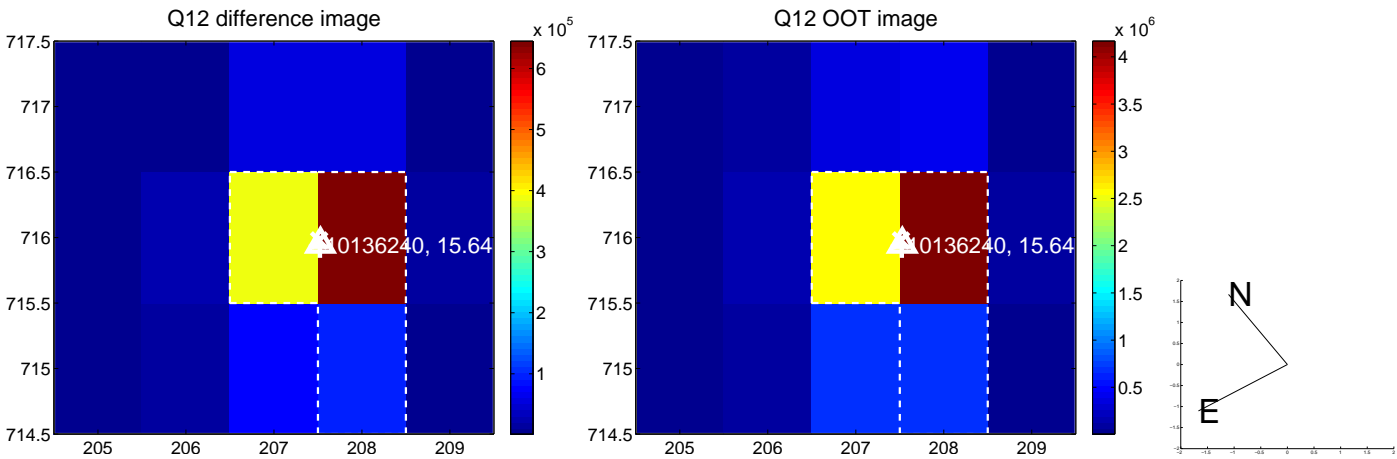
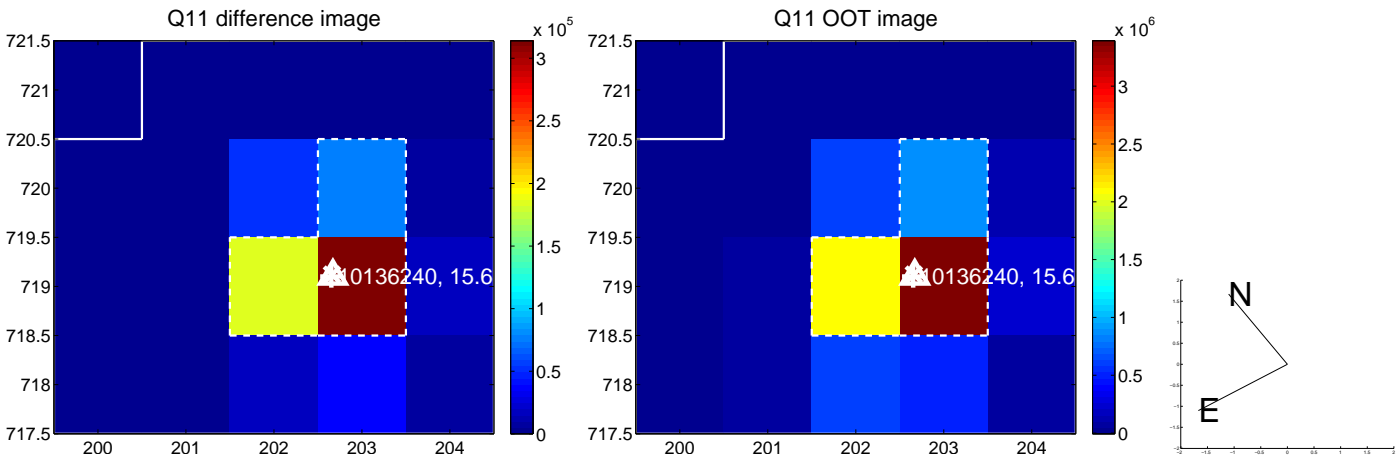
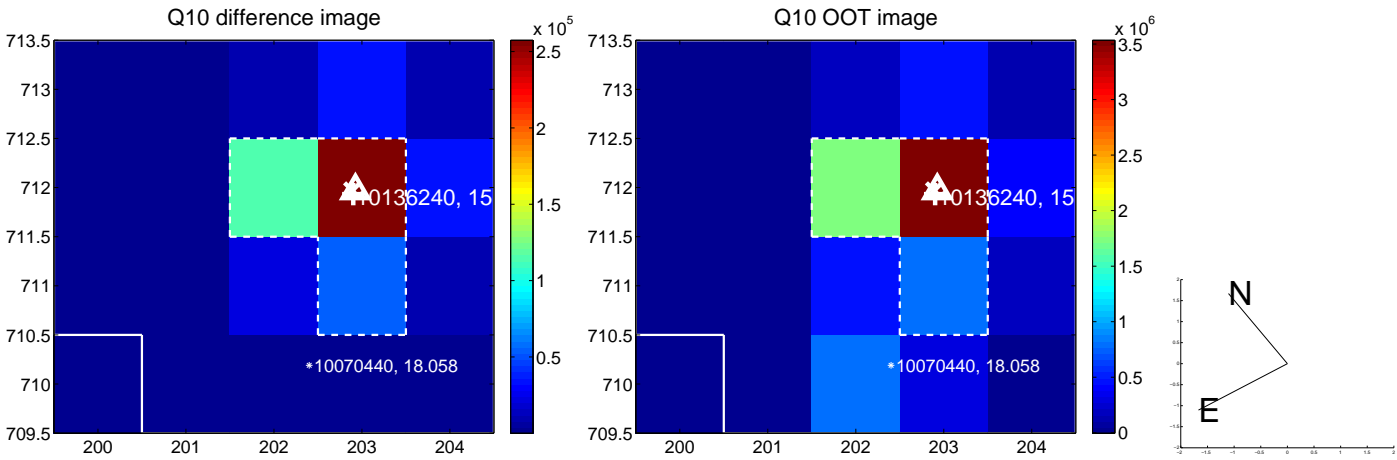
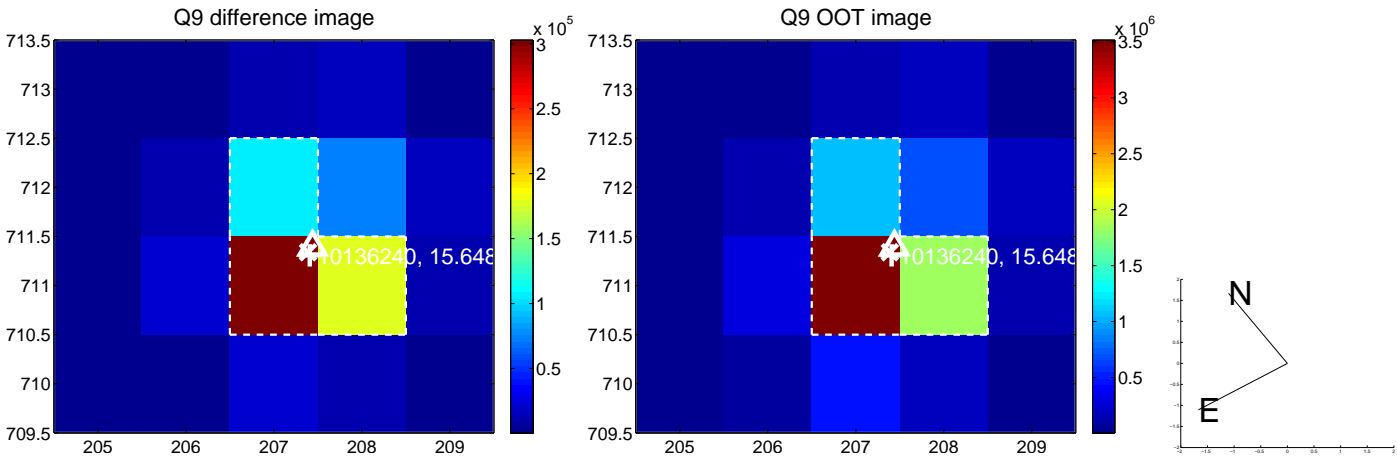


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

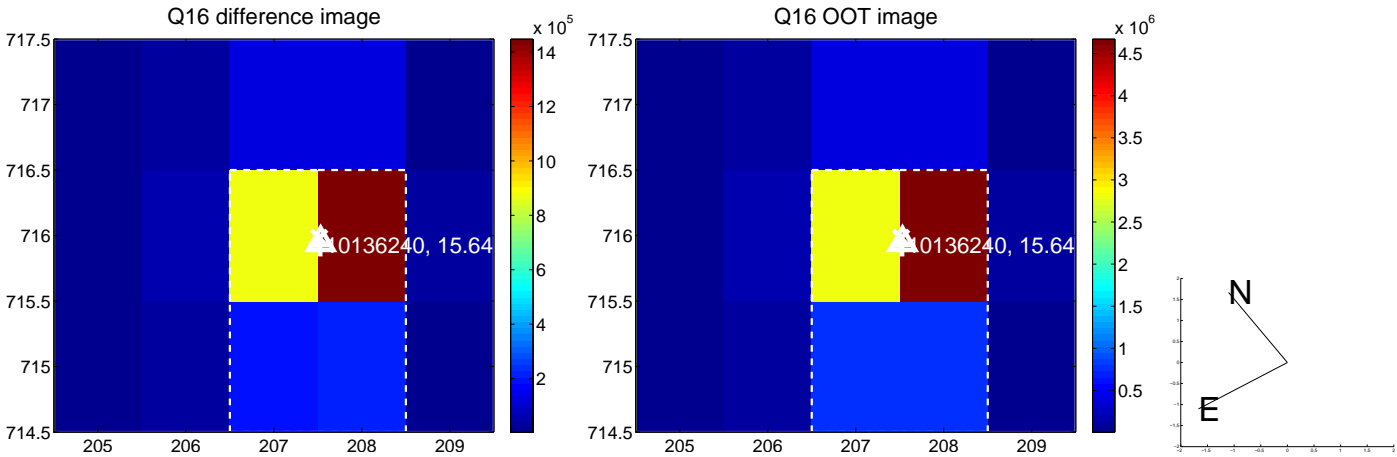
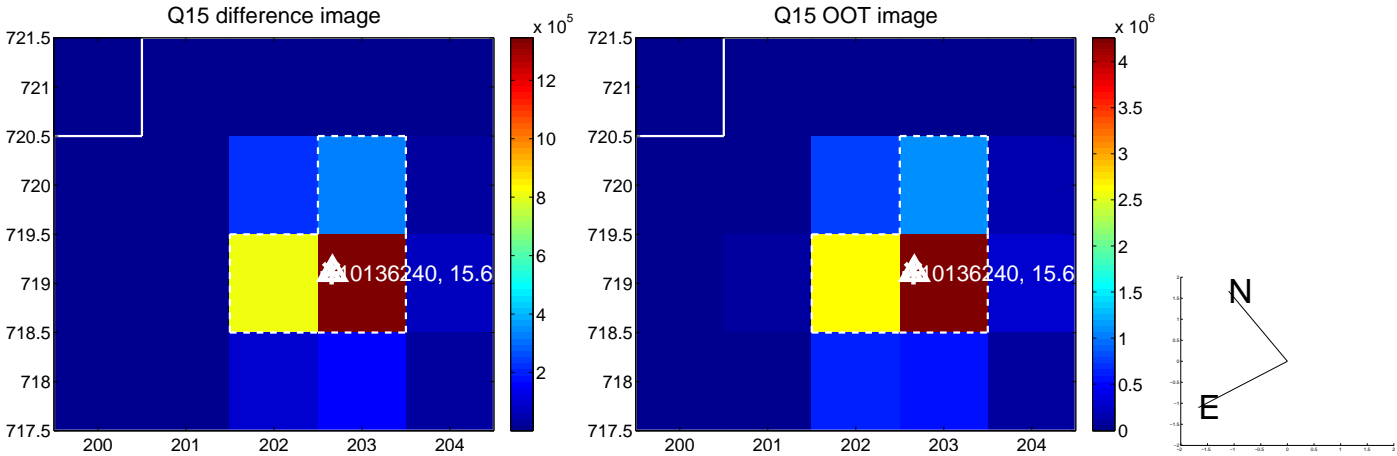
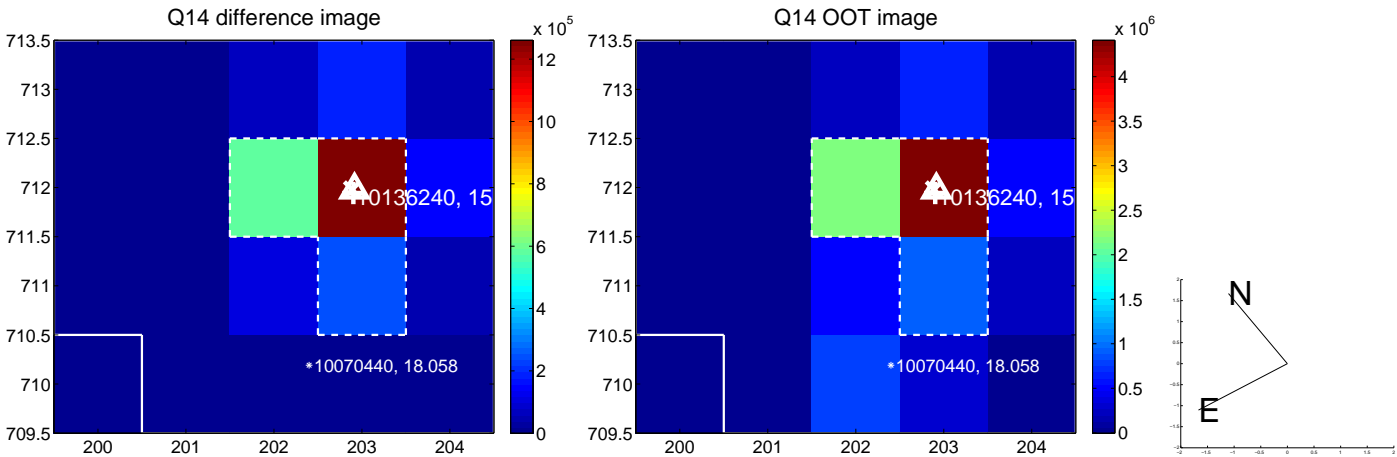
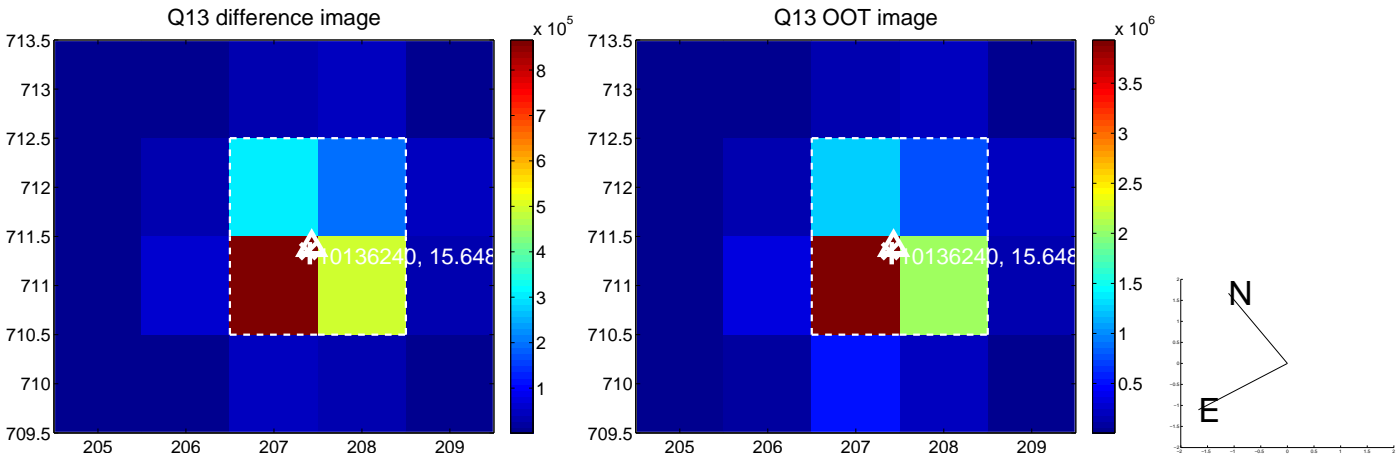




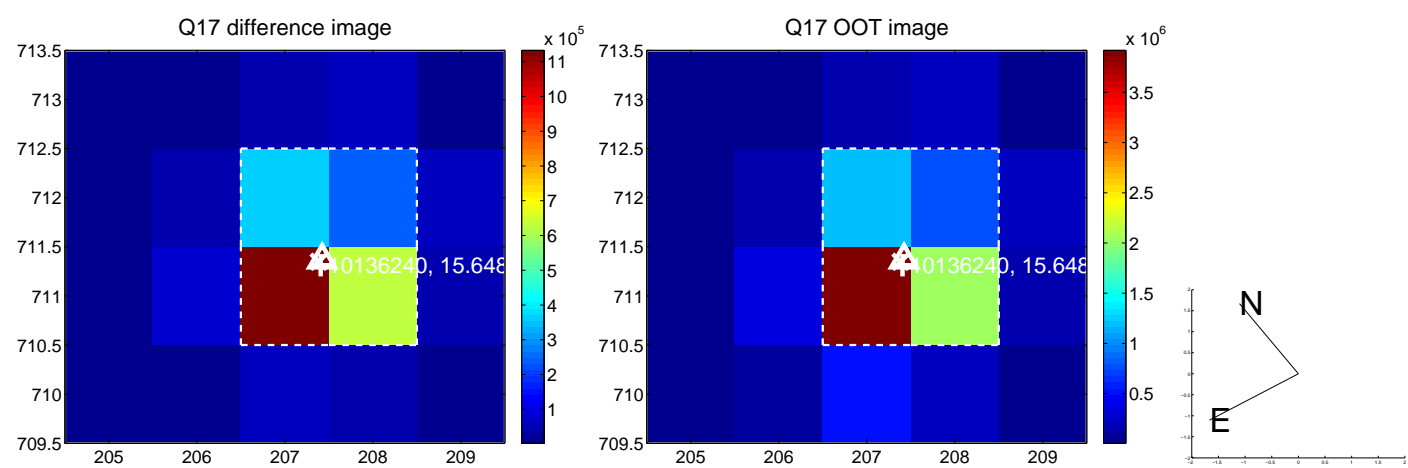
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



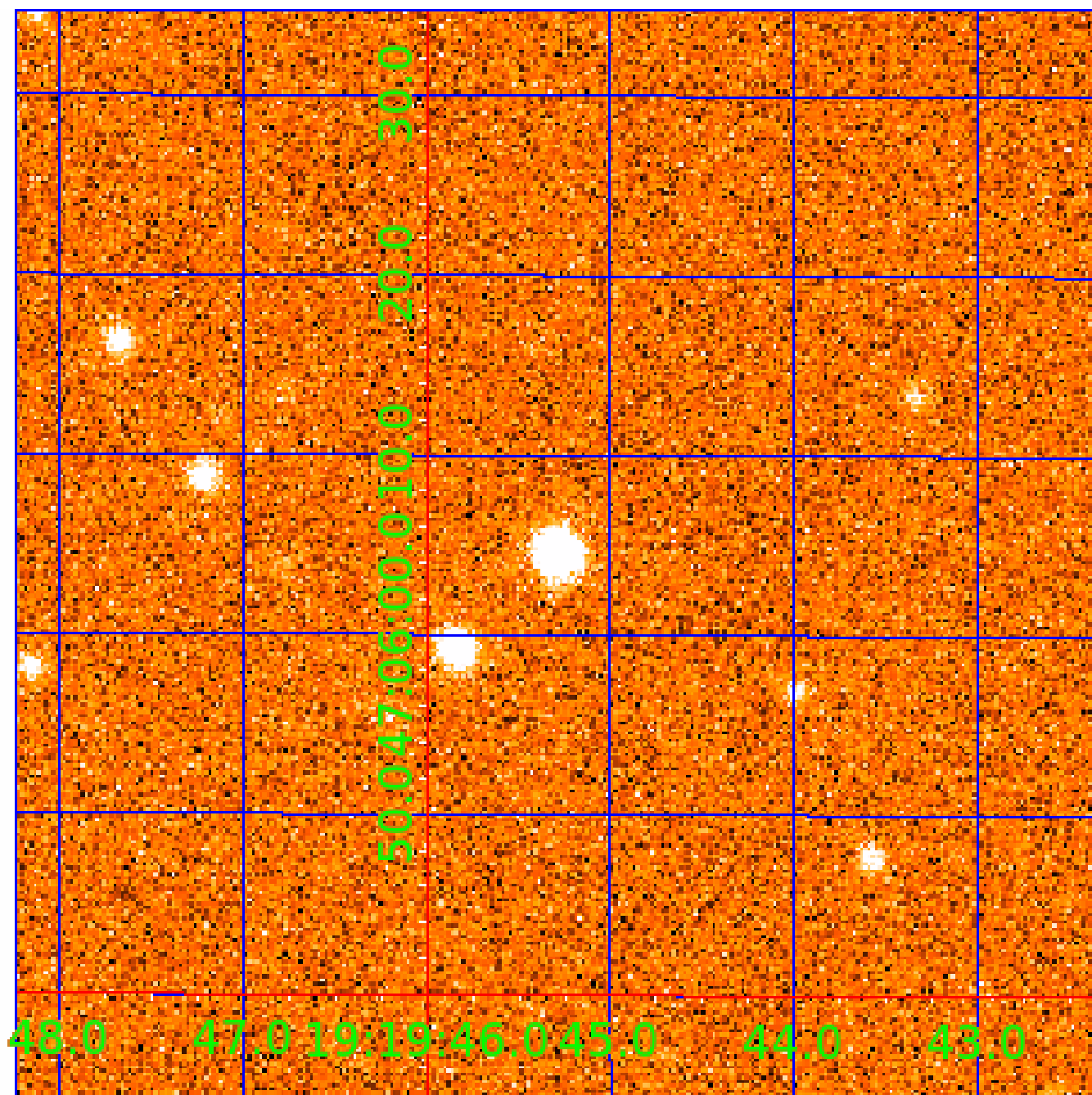
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination





# KIC 010136240

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010136240-01	OBS	No	0.565929	131.846249	30.6	2.005	325.9	0.0	1.03	6079	0.66	7280.32
010136240-02	OBS	No	0.565795	131.676619	2751.1	1.500	53.1	-1.0	1.03	6079	5.42	7282.63

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010136240-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—HALO_GHOST
010136240-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_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.

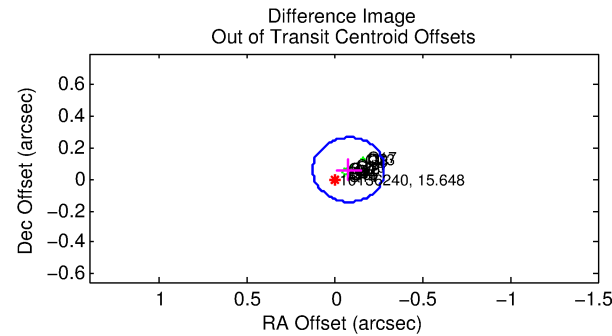
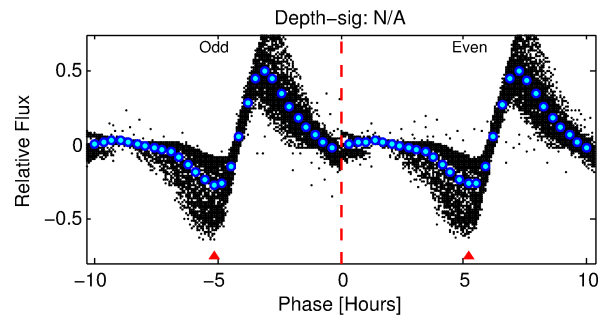
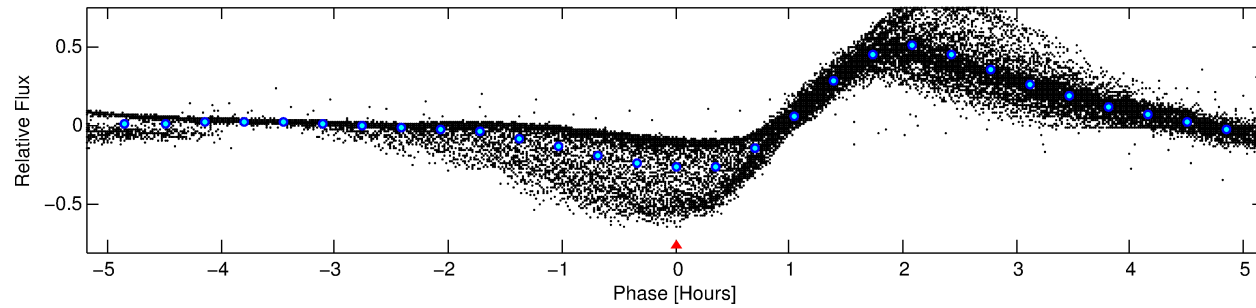
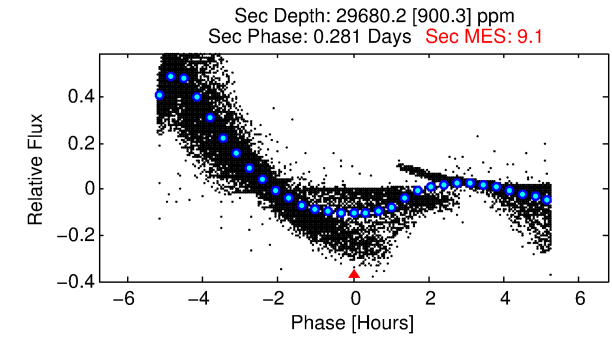
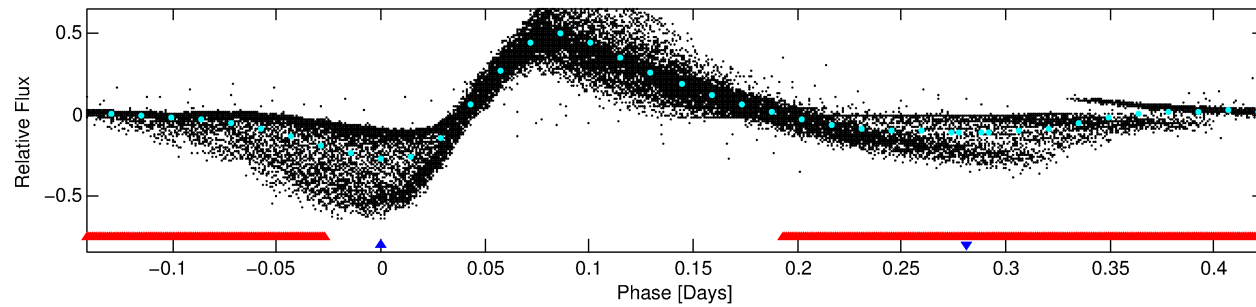
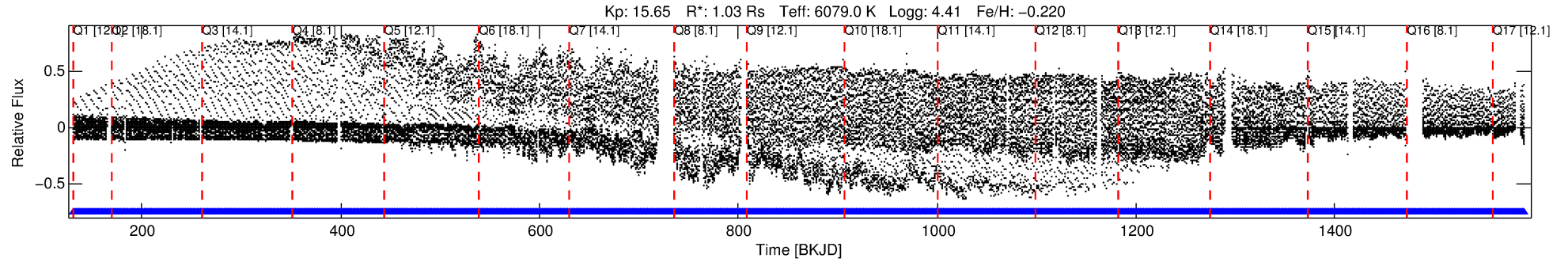
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010136240-02

No Significant Match Found

# DV One-Page Summary

KIC: 10136240 Candidate: 2 of 2 Period: 0.566 d



## TPS TCE Results:

Period = 0.56579 d  
Epoch = 131.6766 BKJD

DV fit results are unavailable

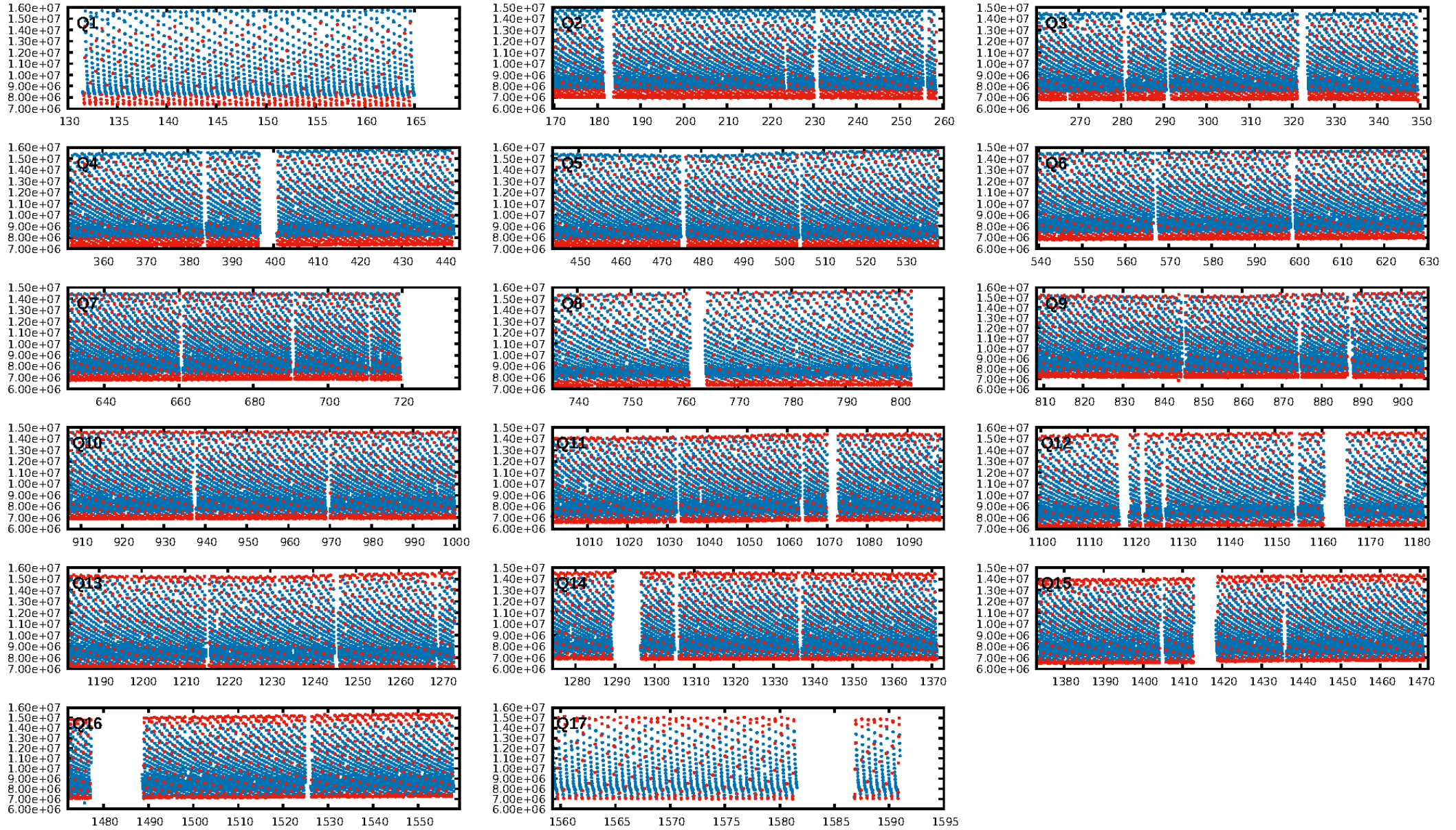
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1827/1827]  
GhostDiagnostic-chr: 3.847  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.102 arcsec [1.49σ]  
KicOffset-rm: 0.062 arcsec [0.90σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.12 [2/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:36:47 Z

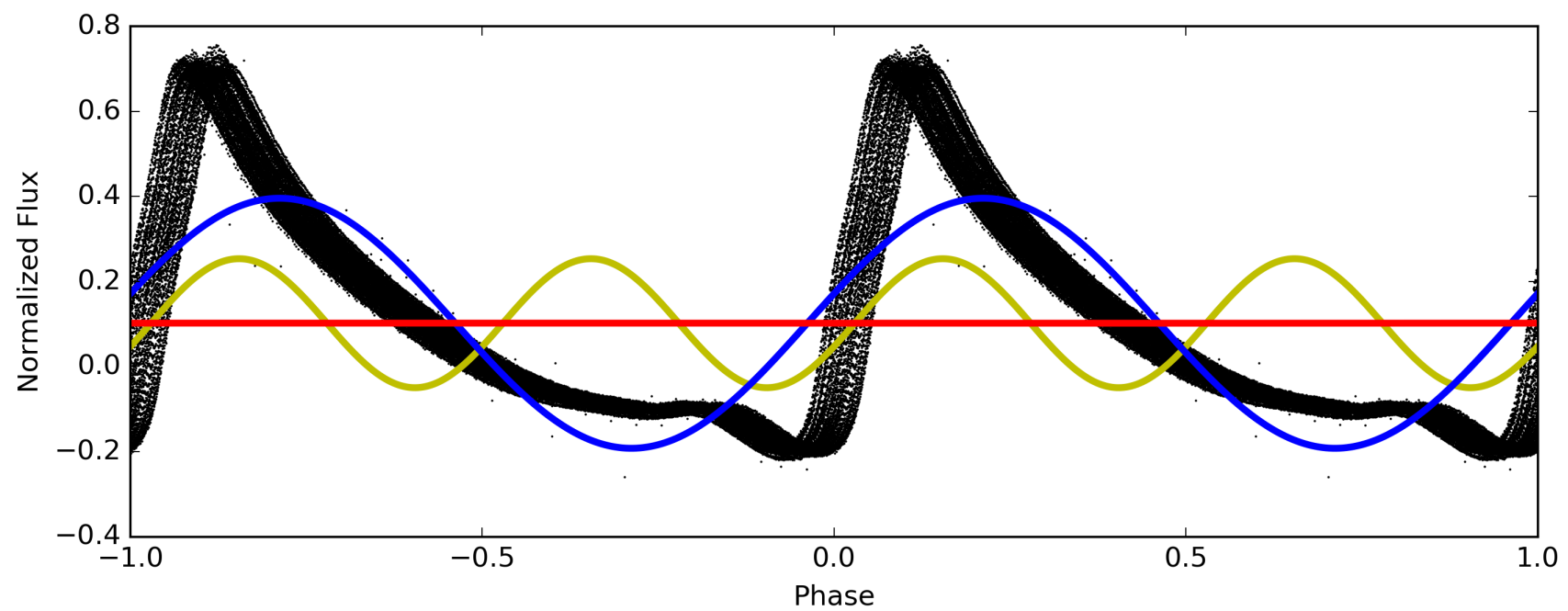
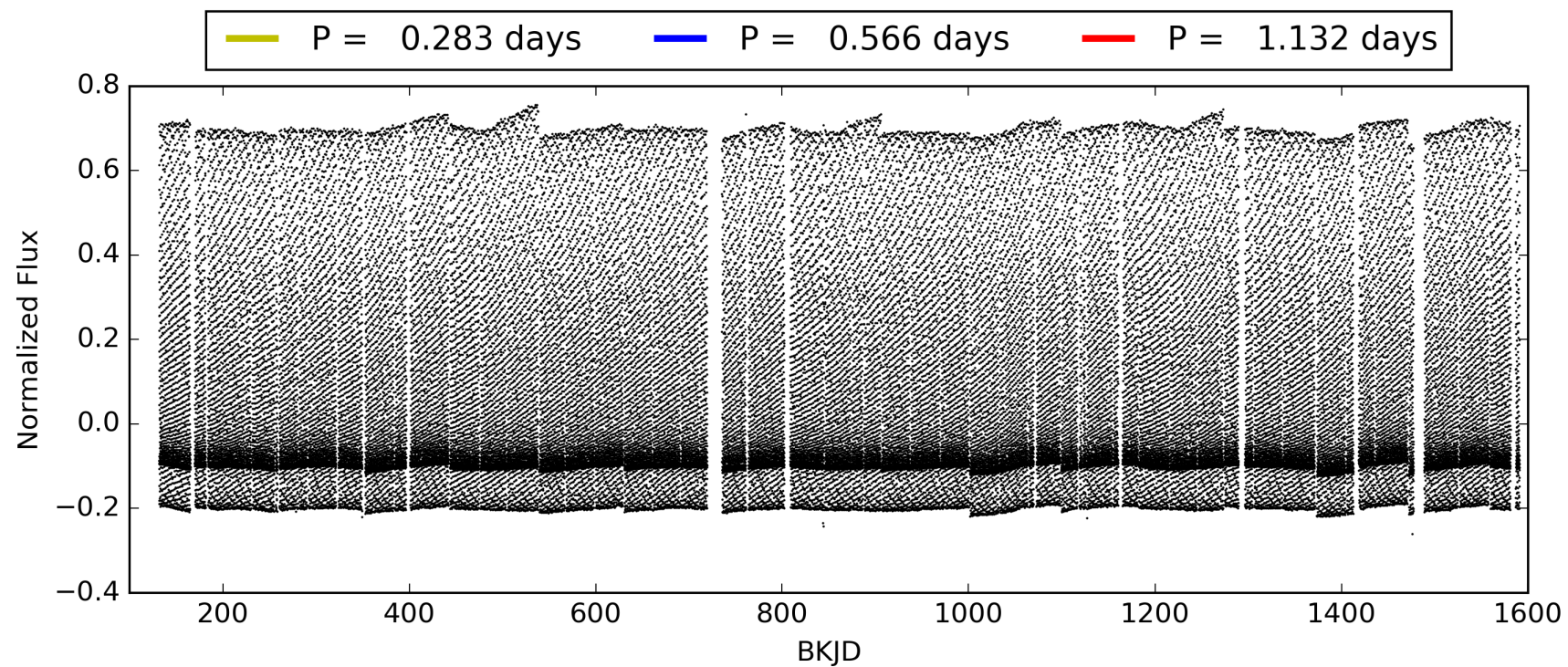
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010136240-02, PDC Light Curves



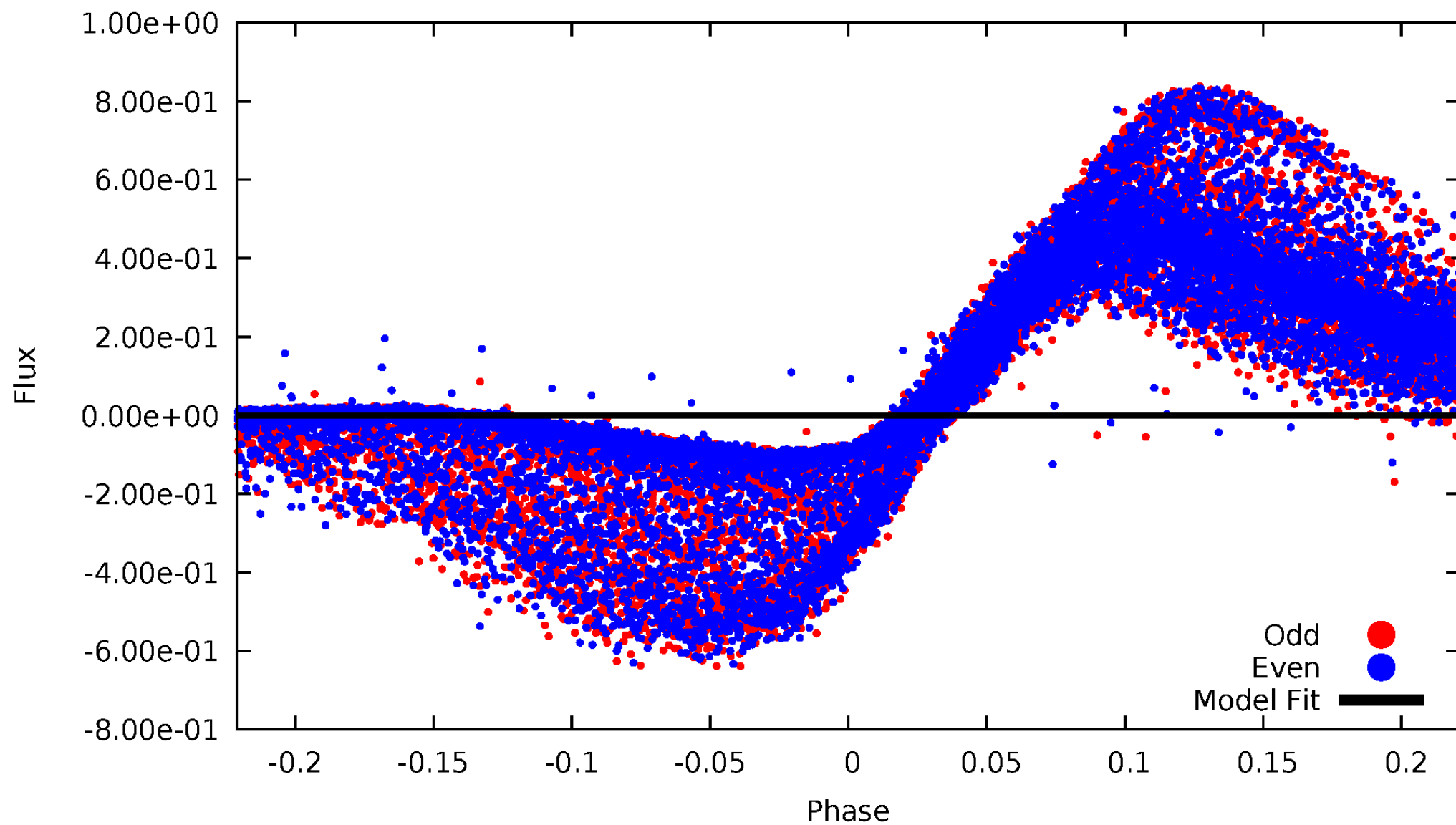


TCE 010136240-02



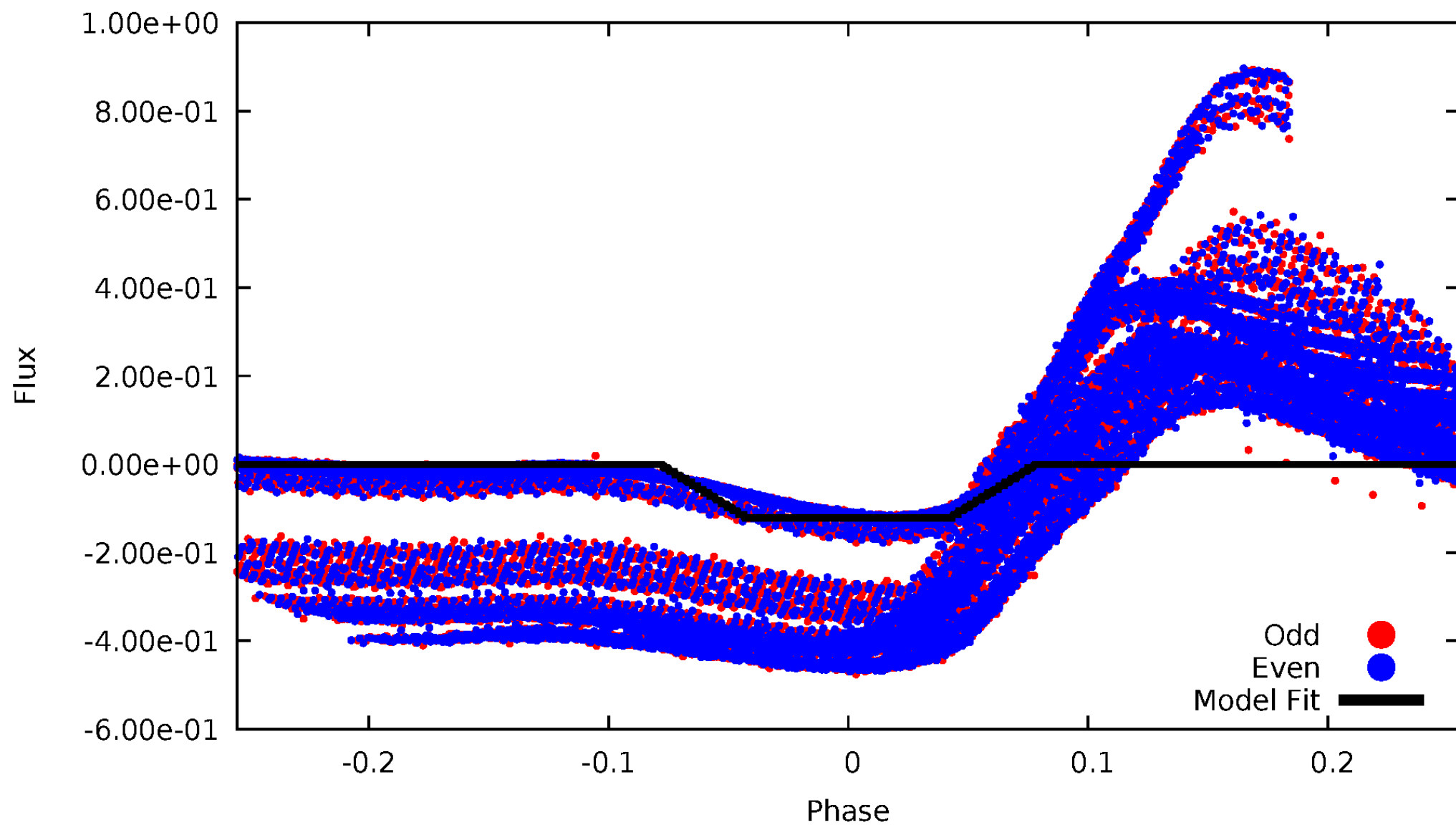
# DV Odd/Even

TCE 010136240-02



# ALT Odd/Even

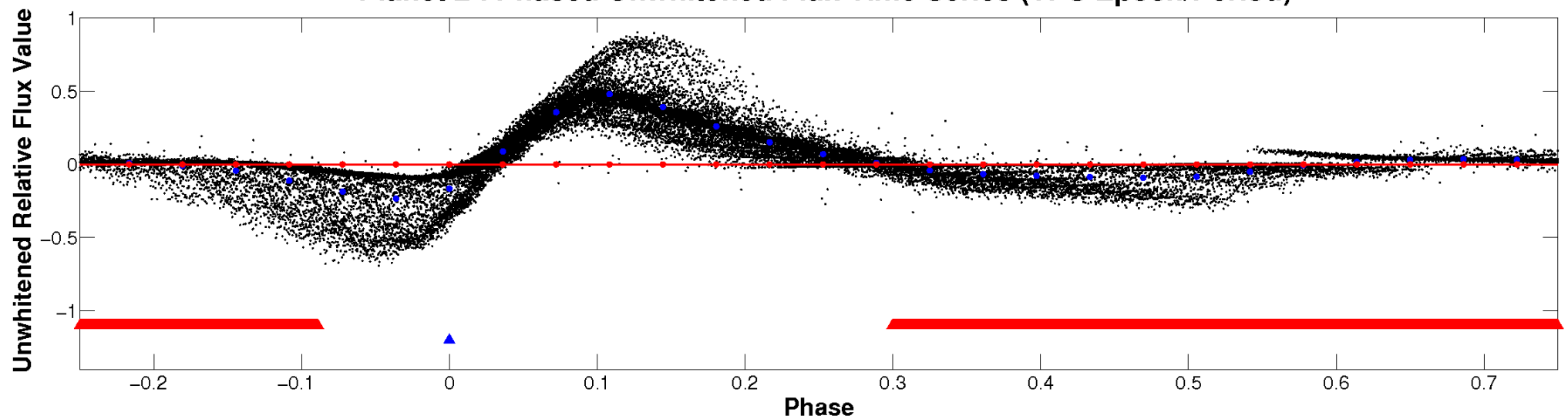
TCE 010136240-02





# Non-Whitened Vs. Whitened Light Curve

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

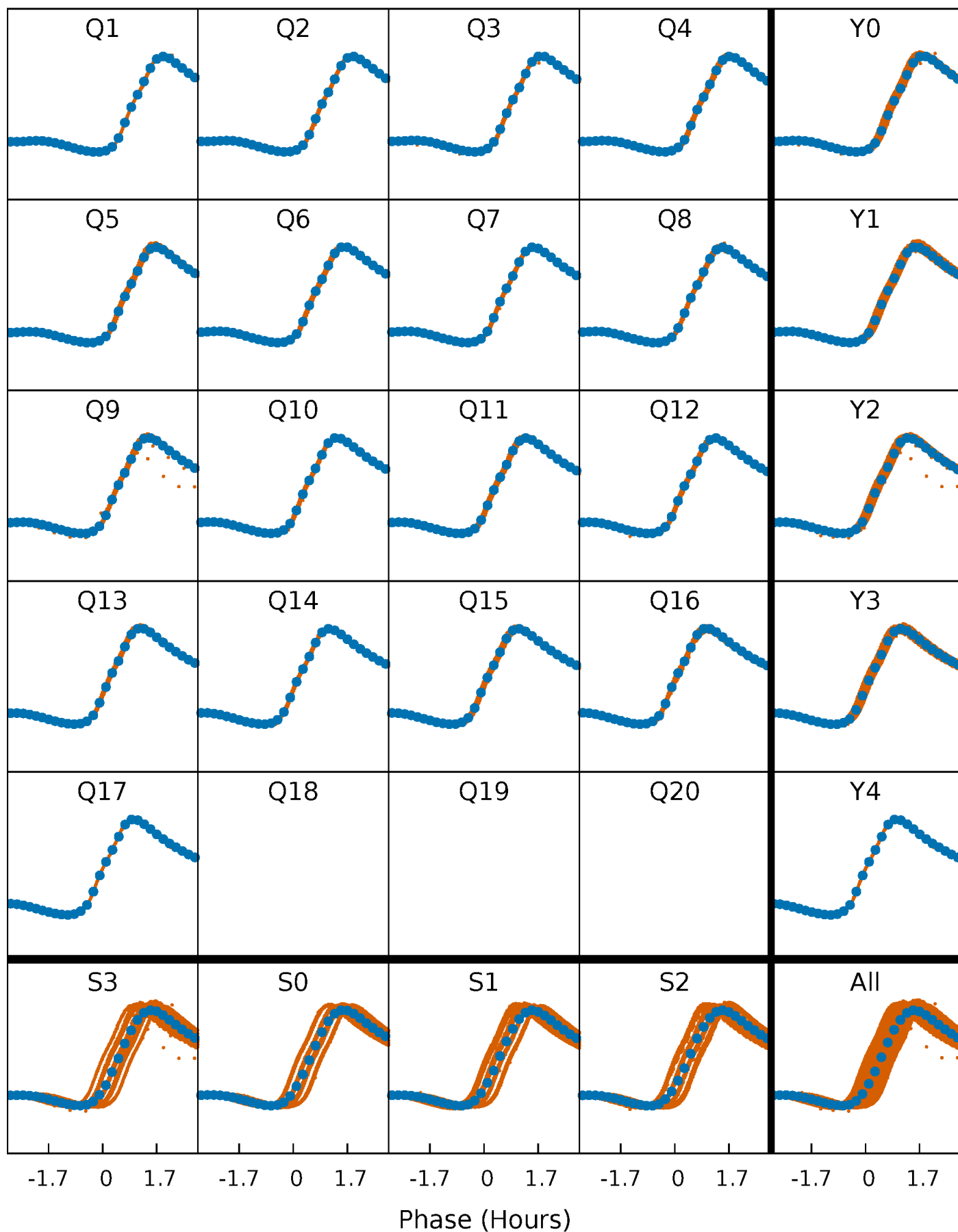


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



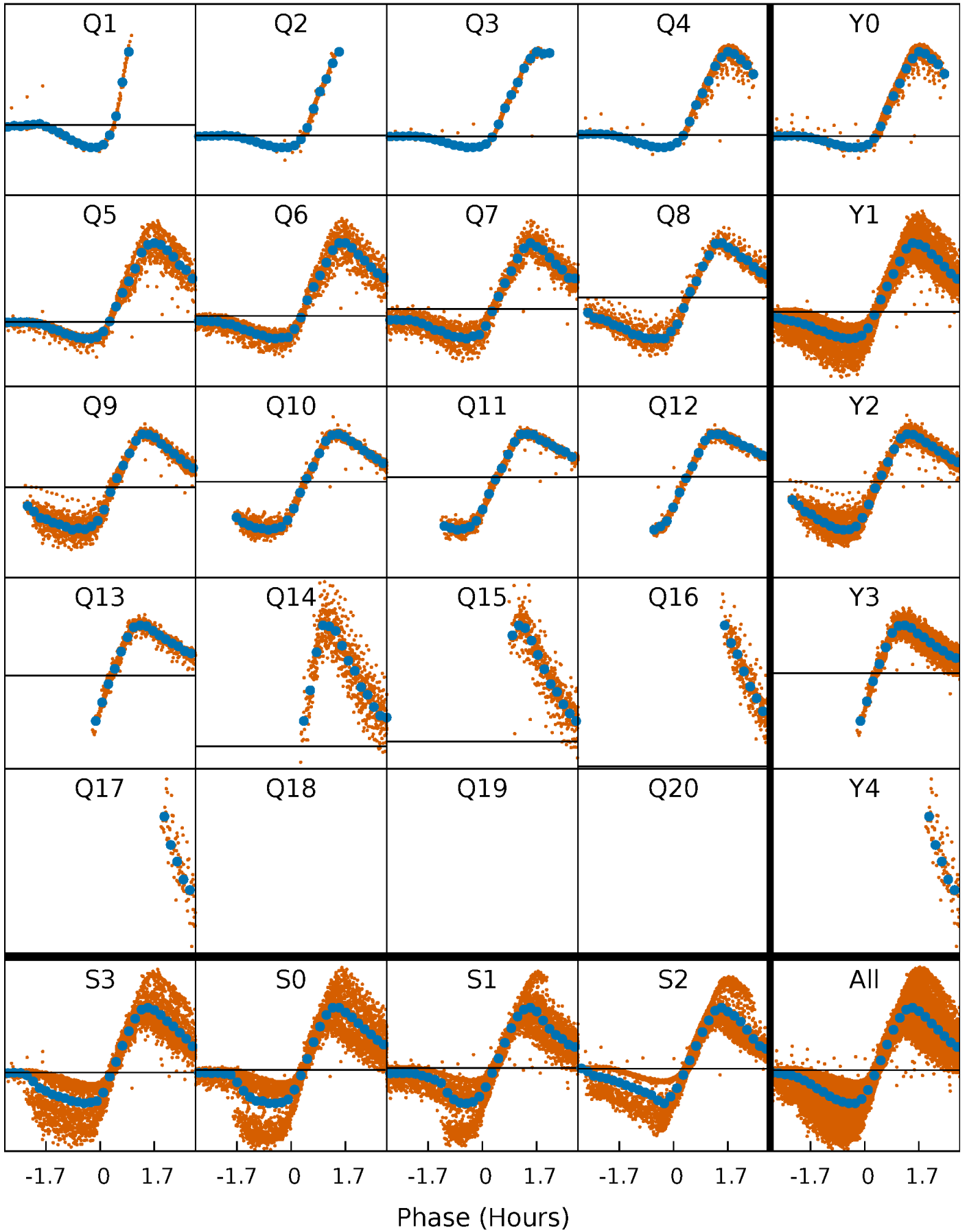
# PDC Quarter-Phased Transit Curves

TCE 010136240-02     $P = 0.565795$  Days     $T_0 = 131.676619$  (BKJD)



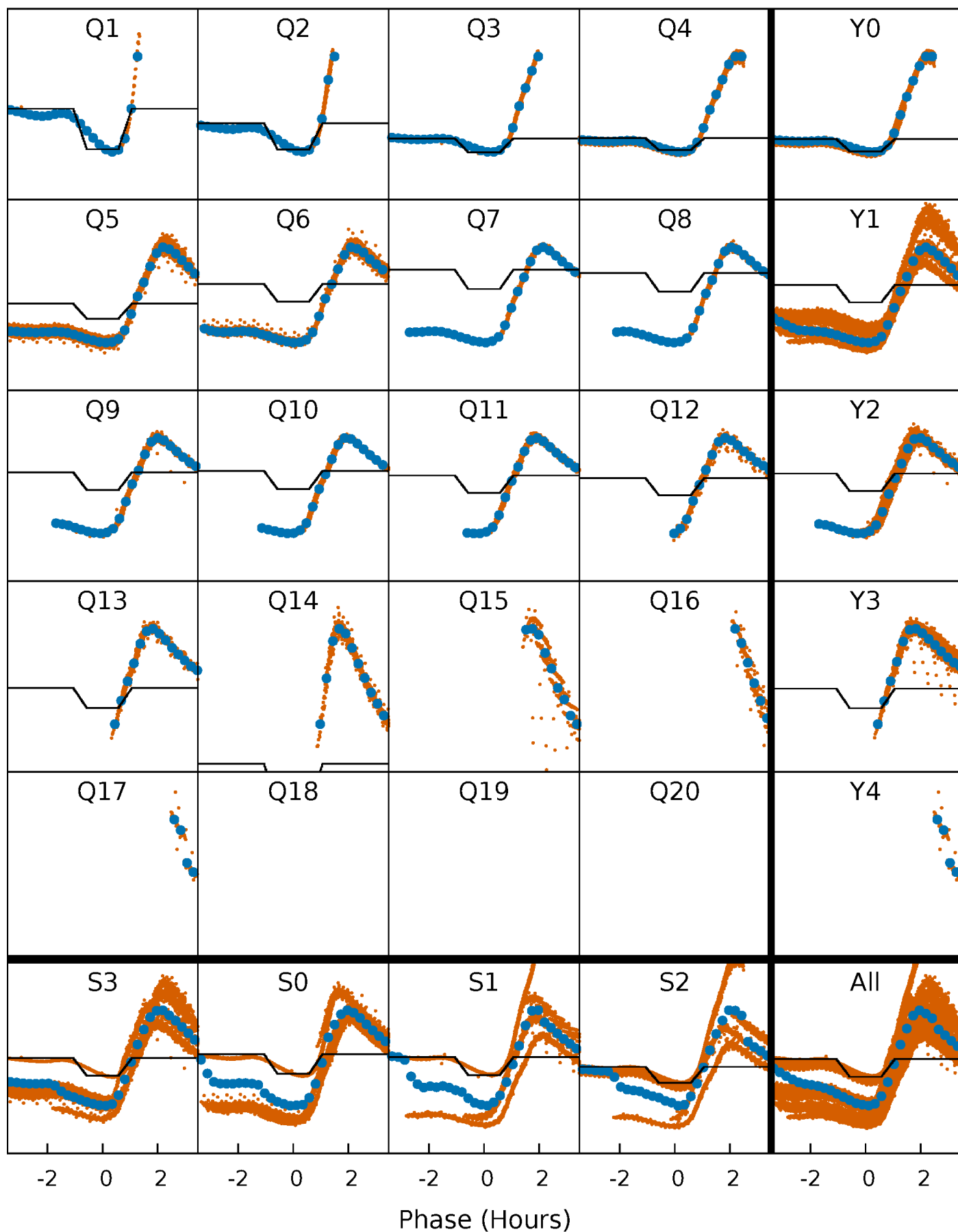
# DV Quarter-Phased Transit Curves

TCE 010136240-02   P= 0.565795 Days    $T_0=131.676619$  (BKJD)



## Alt. Detrend Quarter-Phased Transit Curves

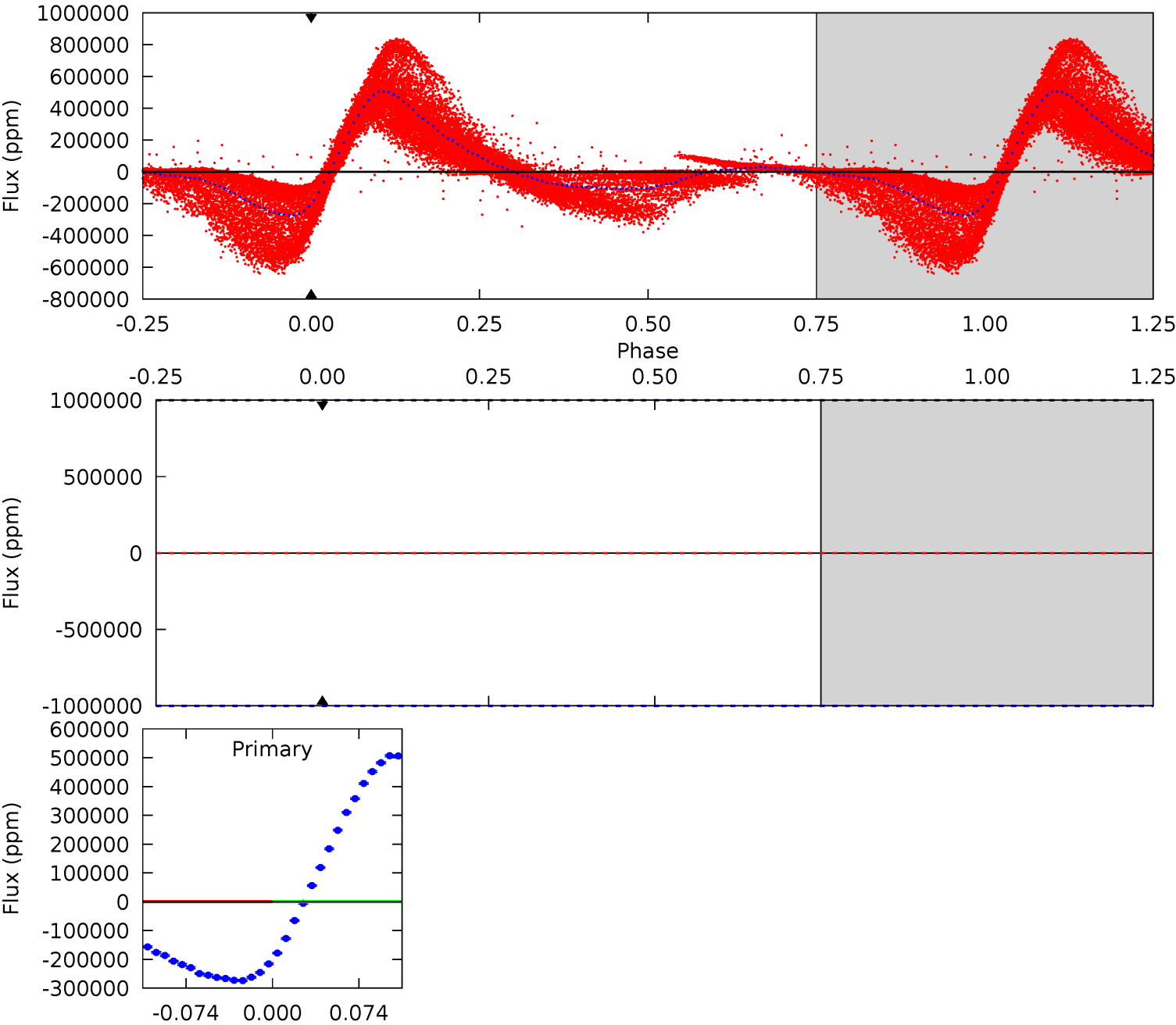
TCE 010136240-02   P= 0.565795 Days    $T_0=131.653035$  (BKJD)



# DV Model-Shift Uniqueness Test

010136240-02, P = 0.565795 Days, E = 131.110824 Days

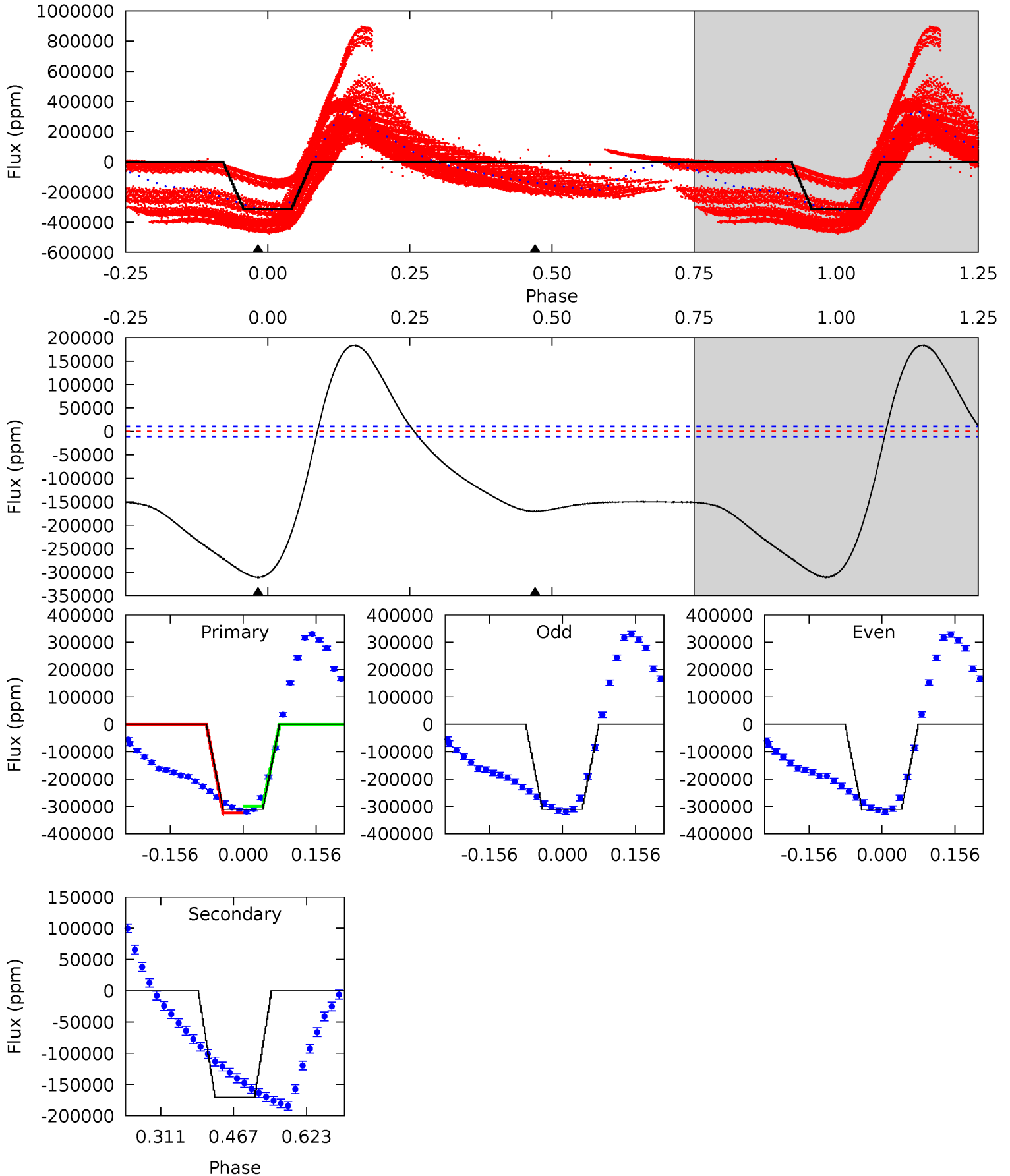
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

010136240-02, P = 0.565795 Days, E = 131.087240 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
127.6	69.8	0	0	4.47	1.42	51.5	127.6	127.6	69.8	69.8	0.03	0.86	0.37	6.03



### Stellar Parameters For KIC 010136240

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6079^{+190}_{-232}$	$4.408^{+0.090}_{-0.195}$	$-0.220^{+0.300}_{-0.300}$	$1.029^{+0.322}_{-0.138}$	$0.988^{+0.143}_{-0.117}$	$1.276^{+0.598}_{-0.656}$
	+3%/-4%	+2%/-4%	+136%/-136%	+31%/-13%	+14%/-12%	+47%/-51%
Source	PHO54	PHO54	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 010136240-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$10.20^{+9.35}_{-6.84}$	$3321^{+243}_{-181}$	$-3792^{+21318}_{-15013}$	$-0.462^{+130.771}_{-158.807}$
Alt.	$-170153 \pm 2437$	$40.53^{+13.00}_{-12.80}$	$3333^{+273}_{-196}$	$6891^{+1738}_{-828}$	$12^{+14}_{-5}$

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



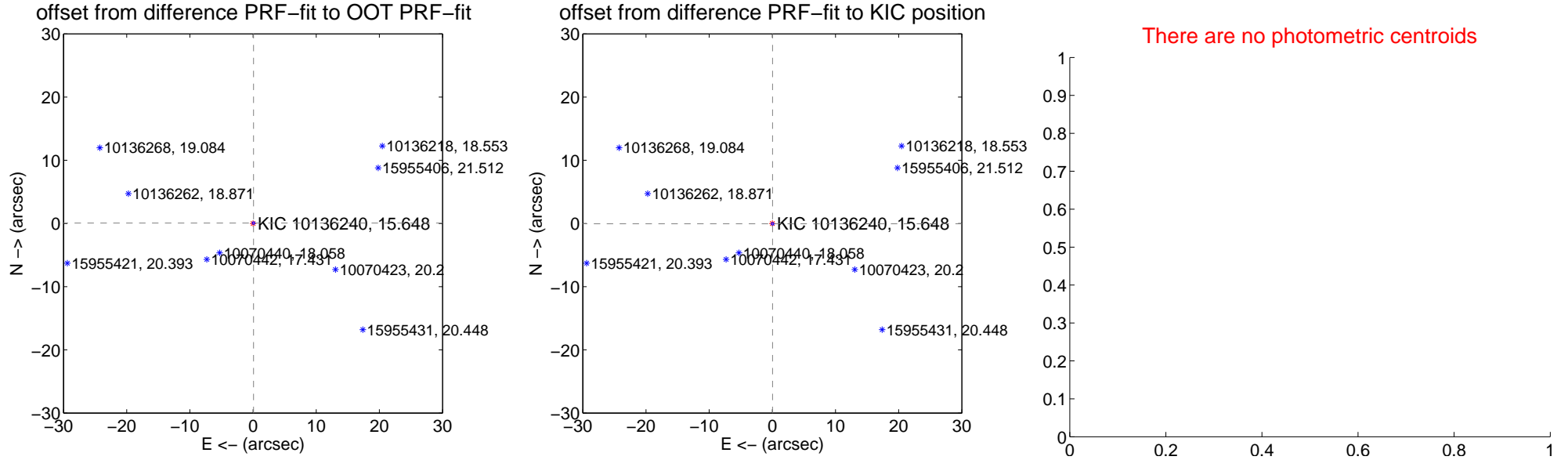
## DV Centroid Data

Supplemental centroid analysis for 010136240-02. Kepler magnitude: 15.65. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

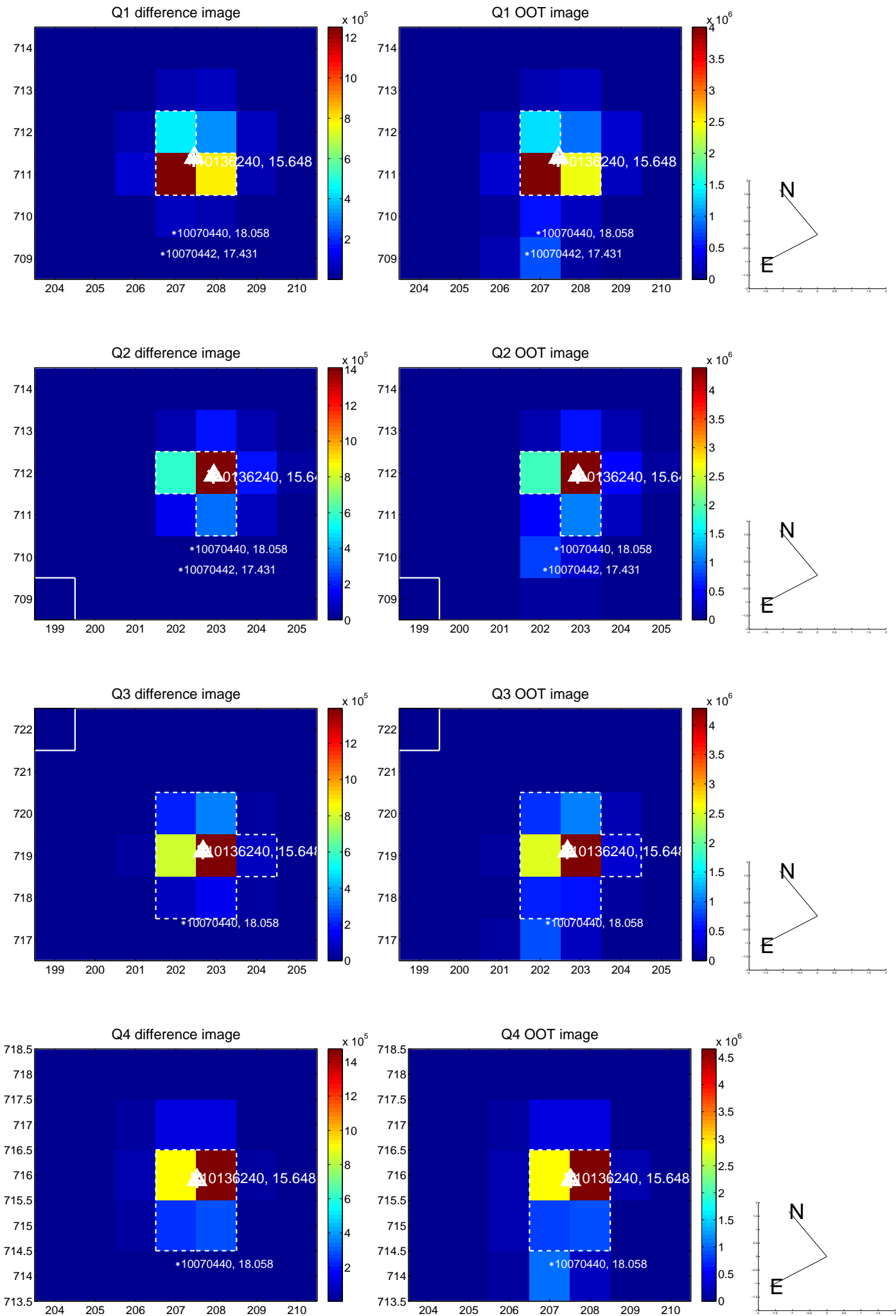
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.102 \pm 0.068$	1.49	$-0.080 \pm 0.068$	$0.063 \pm 0.067$
PRF-fit source offset from KIC position	$0.062 \pm 0.068$	0.90	$-0.038 \pm 0.069$	$-0.049 \pm 0.068$
photometric centroid source offset	—	—	—	—

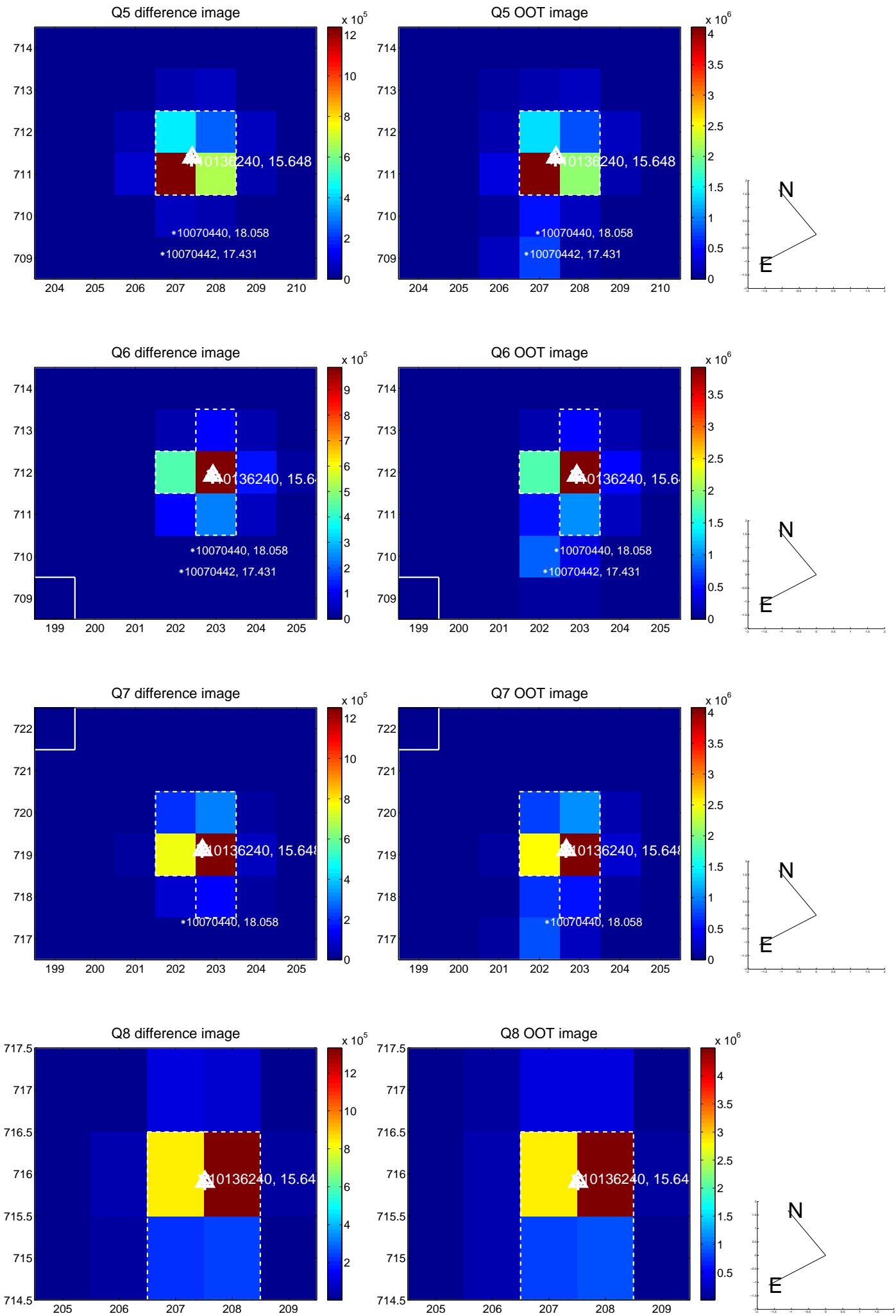


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

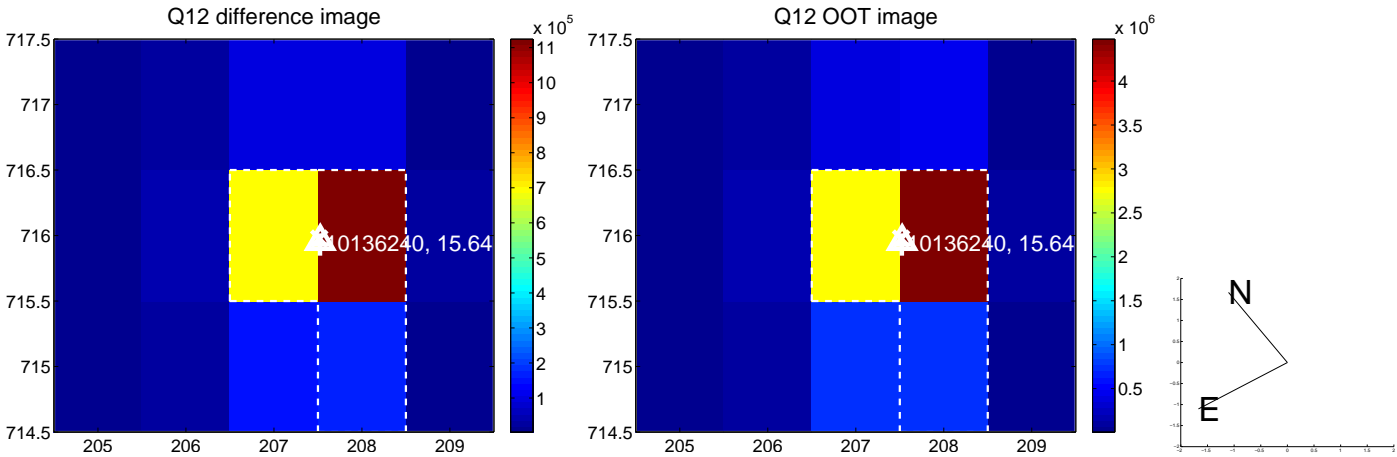
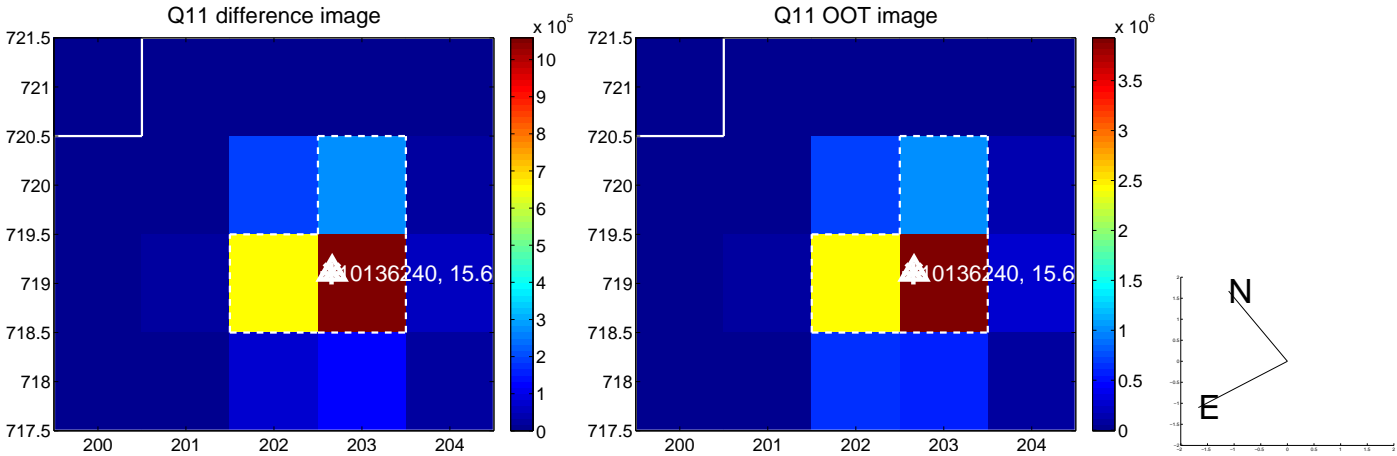
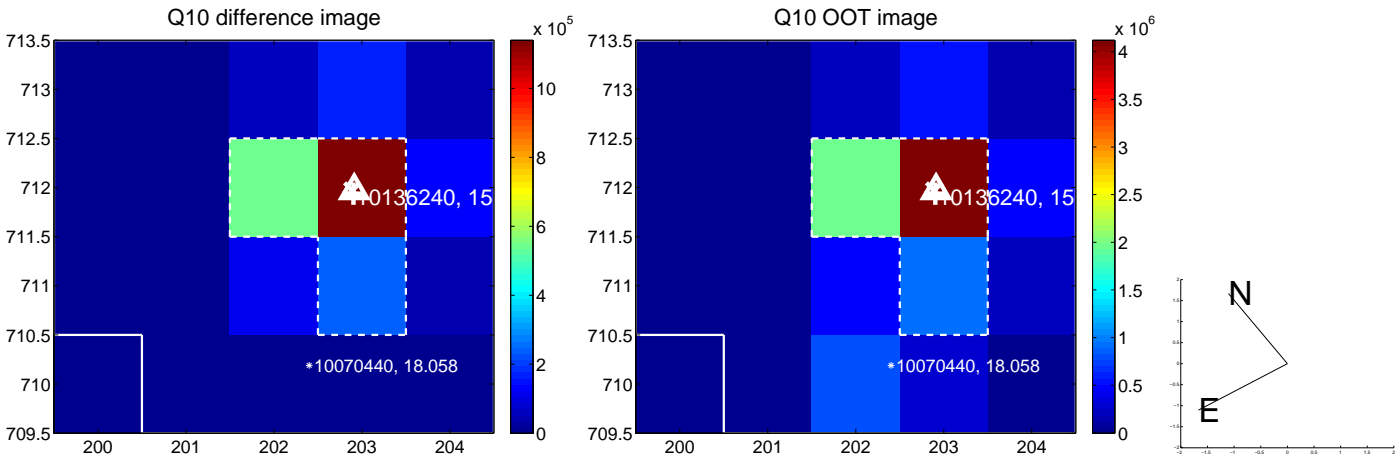
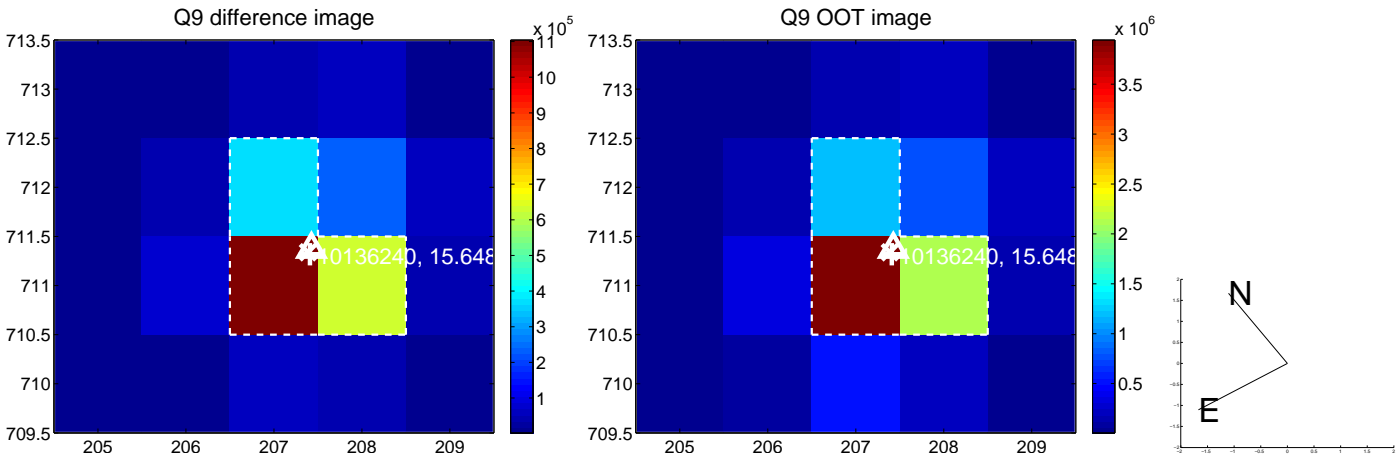
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



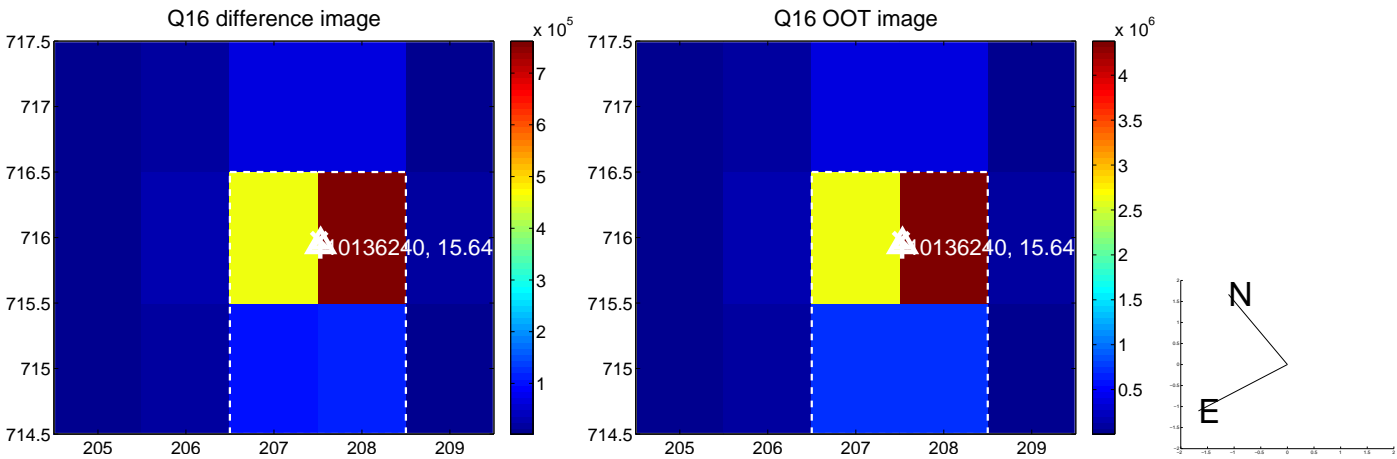
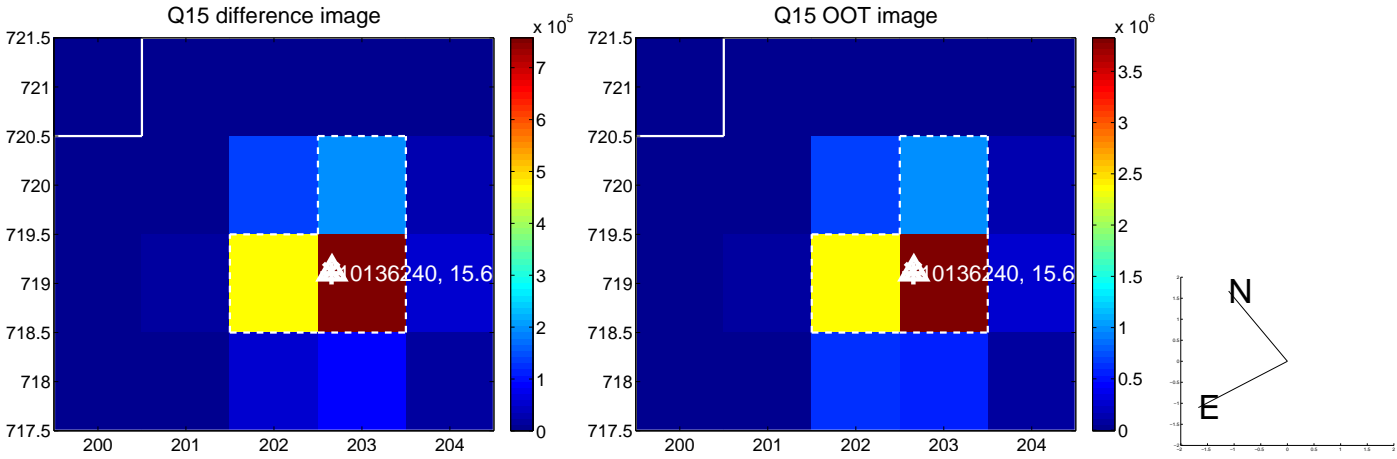
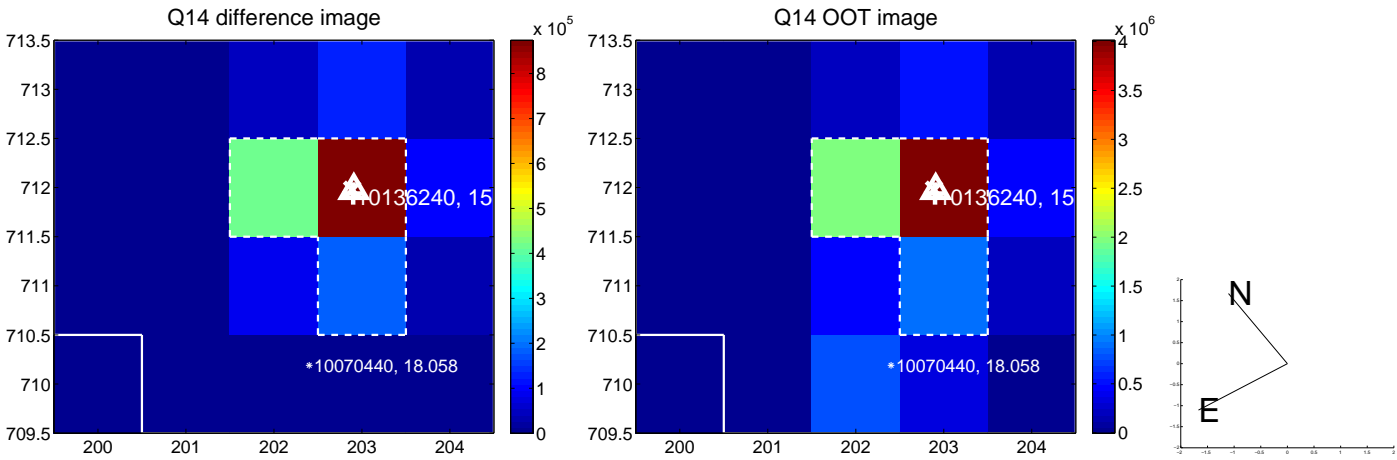
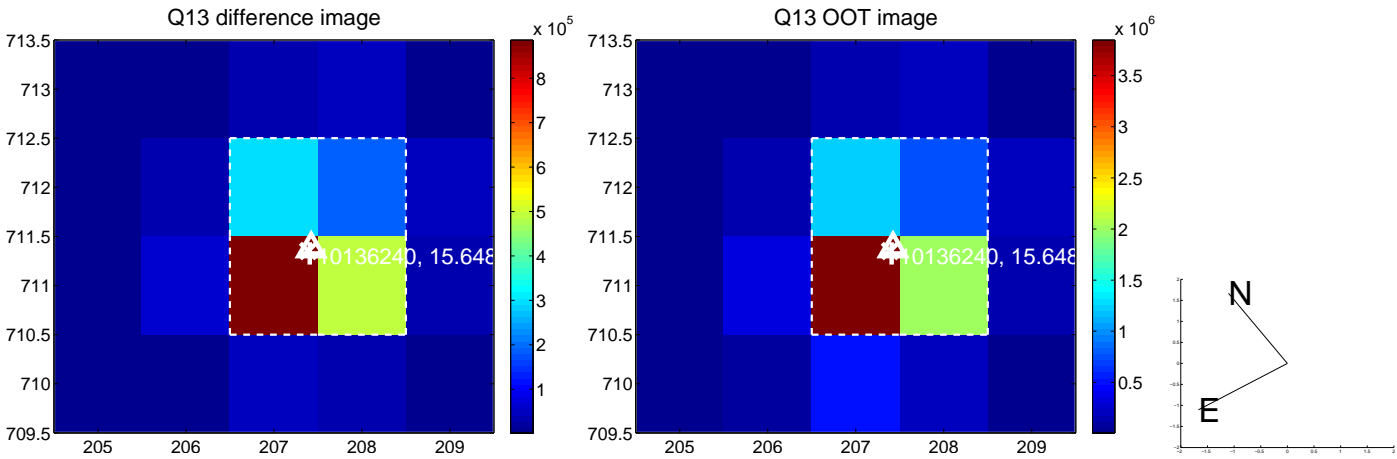
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



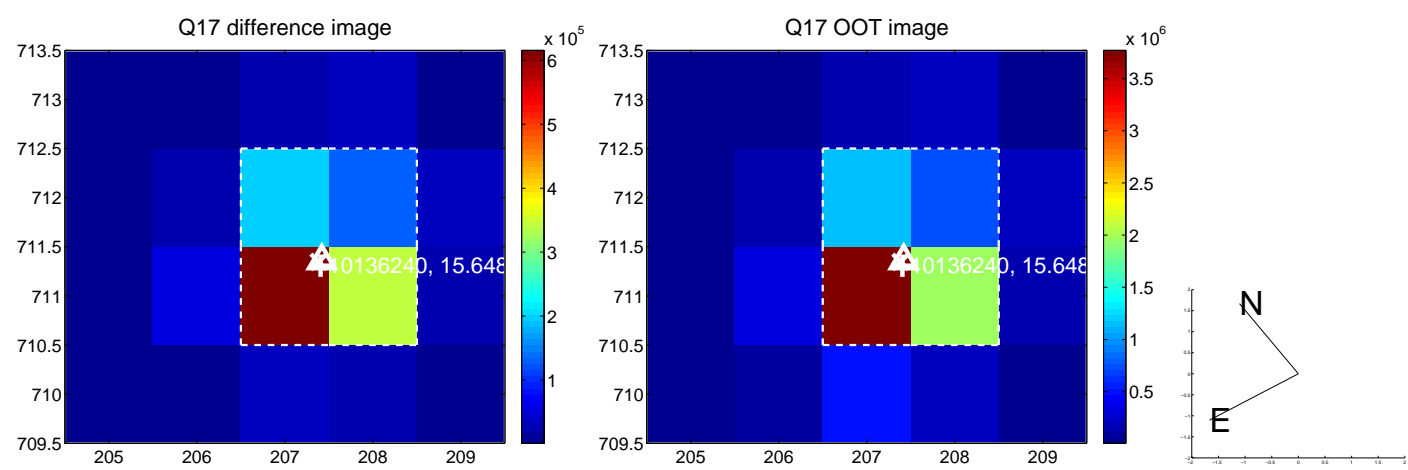
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



folded centroid time series figure for this object.

UKIRT Image

Declination

