

# KIC 008653675

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008653675-01	OBS	No	1.757200	132.643653	36.9	6.252	12.0	10.7	1.29	6177	0.80	2635.44
008653675-02	OBS	No	1.757208	131.804858	35.3	7.669	11.3	12.3	1.29	6177	0.77	2635.43

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008653675-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008653675-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

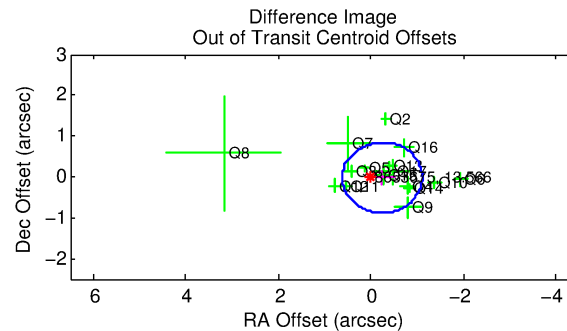
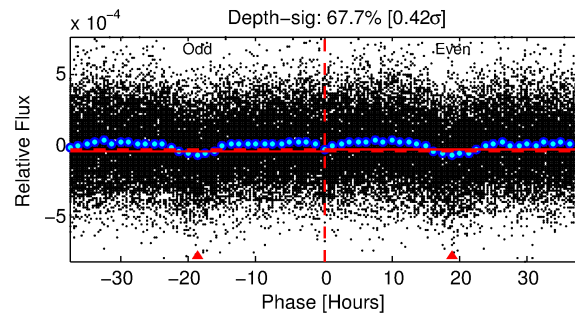
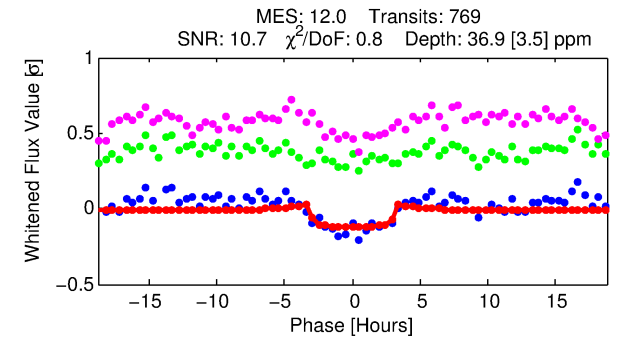
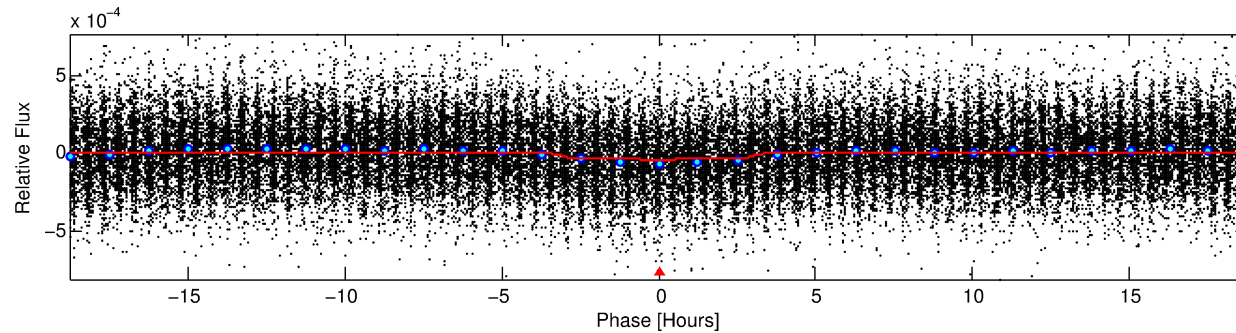
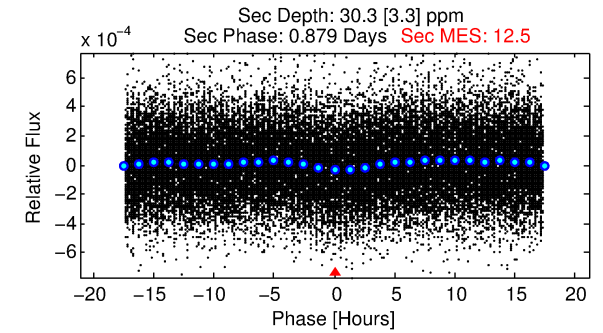
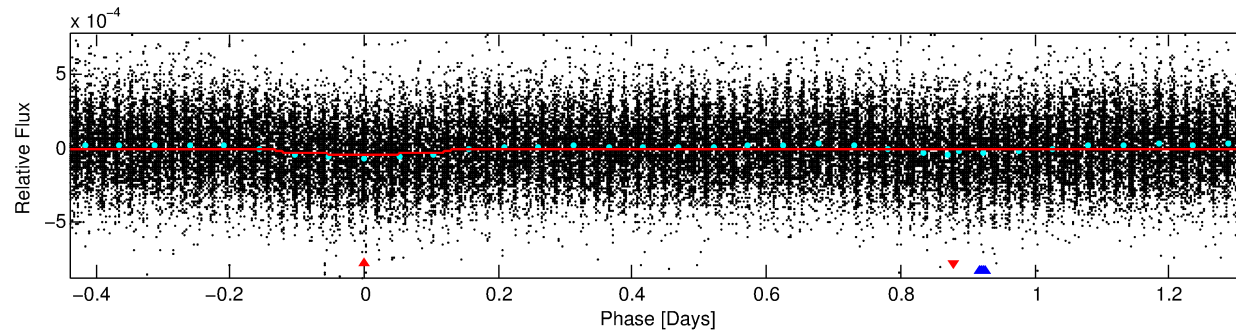
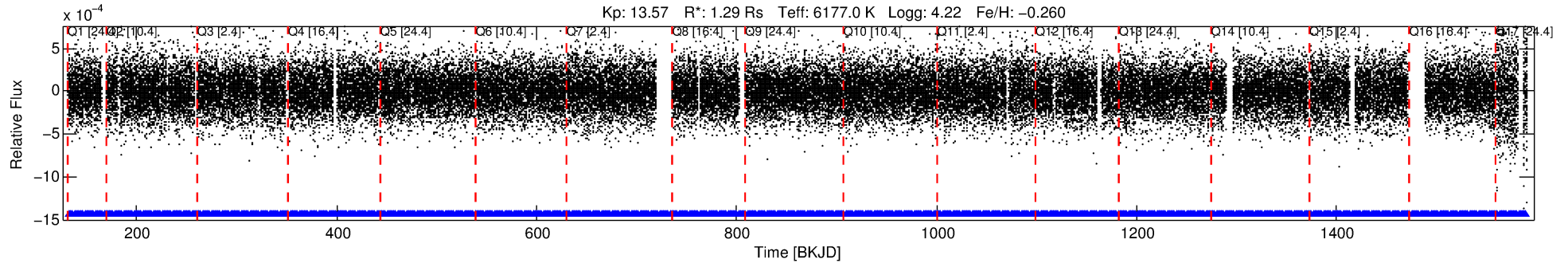
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008653675-01

No Significant Match Found

# DV One-Page Summary

KIC: 8653675 Candidate: 1 of 2 Period: 1.757 d



## DV Fit Results:

Period = 1.75720 [0.00002] d  
Epoch = 132.6437 [0.0043] BKJD  
Rp/R\* = 0.0057 [0.0025]  
a/R\* = 2.02 [3.32]  
b = 0.49 [3.44]  
Seff = 2635.44 [1104.62]  
Teq = 1827 [191] K  
Rp = 0.80 [0.42] Re  
a = 0.0287 [0.0073] AU  
Ag = 21.18 [20.16] [1.00σ]  
**T<sub>eff</sub> = 6060 [1337] K [3.13σ]**

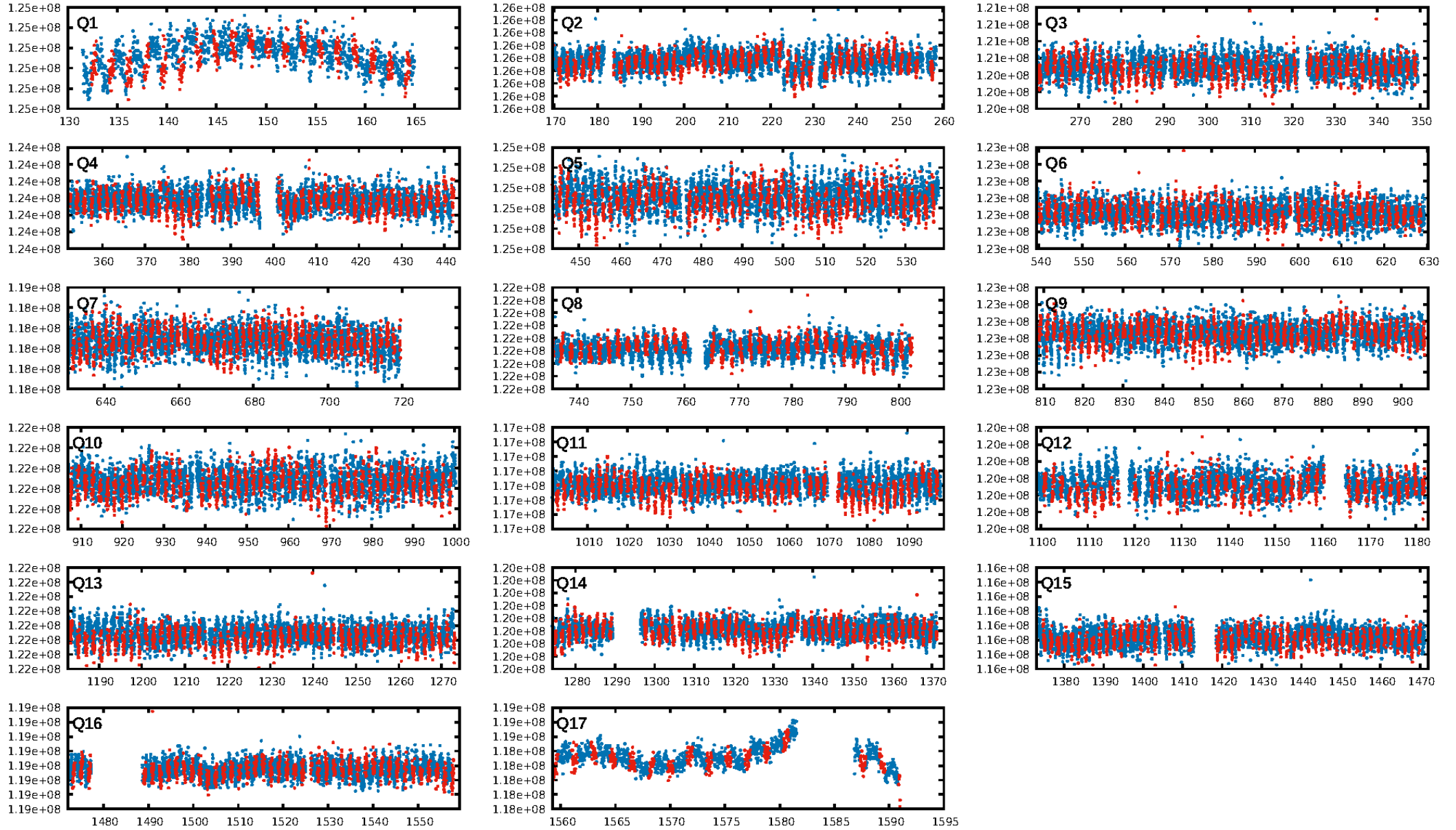
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
**LongPeriod-sig: 0.0% [0.00σ]**  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.78e-269  
RollingBand-fgt: 1.00 [734/734]  
GhostDiagnostic-chr: 1.679  
Centroid-sig: 64.3%  
Centroid-so: 0.167 arcsec [0.25σ]  
OotOffset-rm: 0.246 arcsec [0.85σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-rm: 0.181 arcsec [0.63σ]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.94 [15/16]  
DiffImageOverlap-fno: 1.00 [17/17]

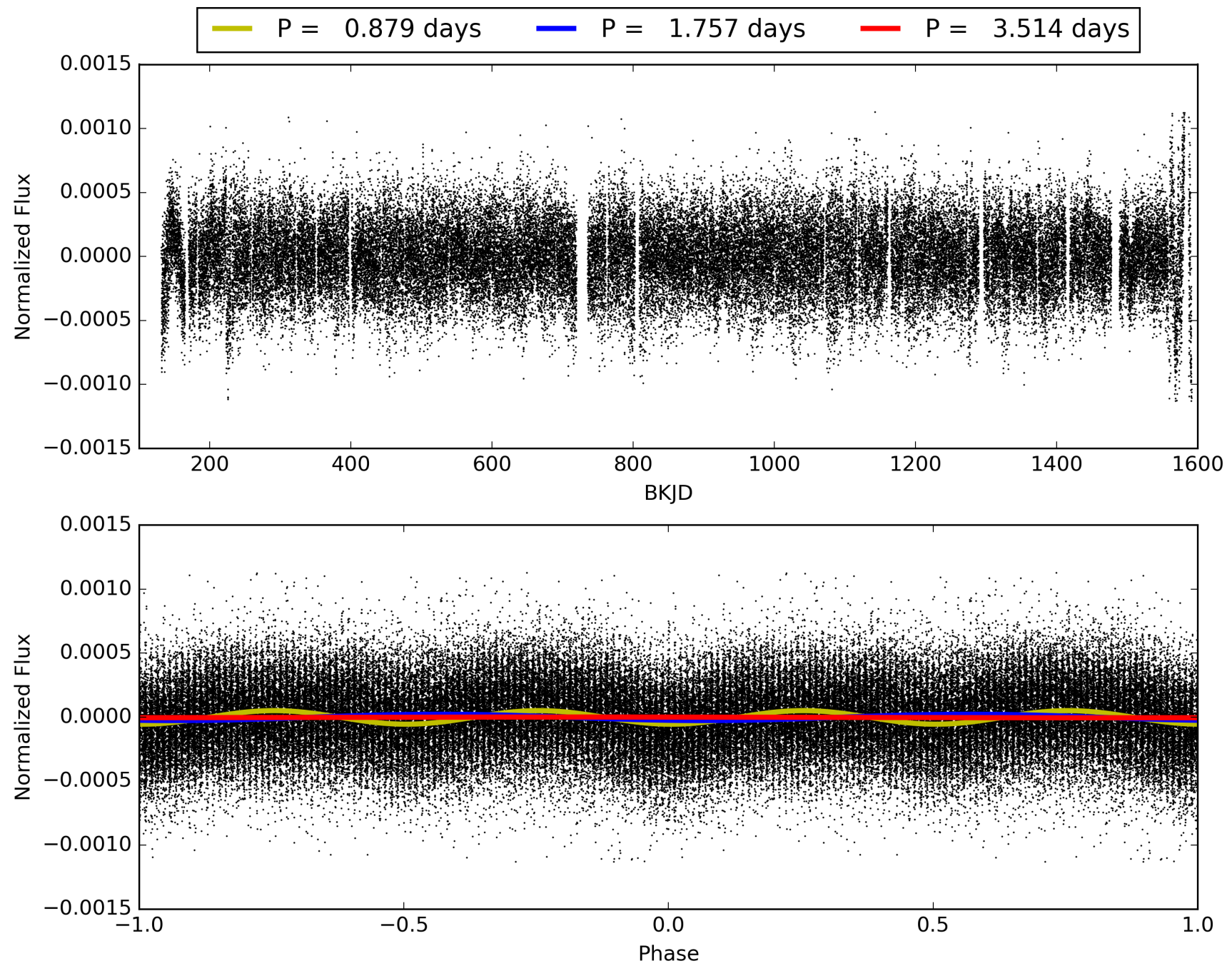
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:32:05 Z

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

# TCE 008653675-01, PDC Light Curves



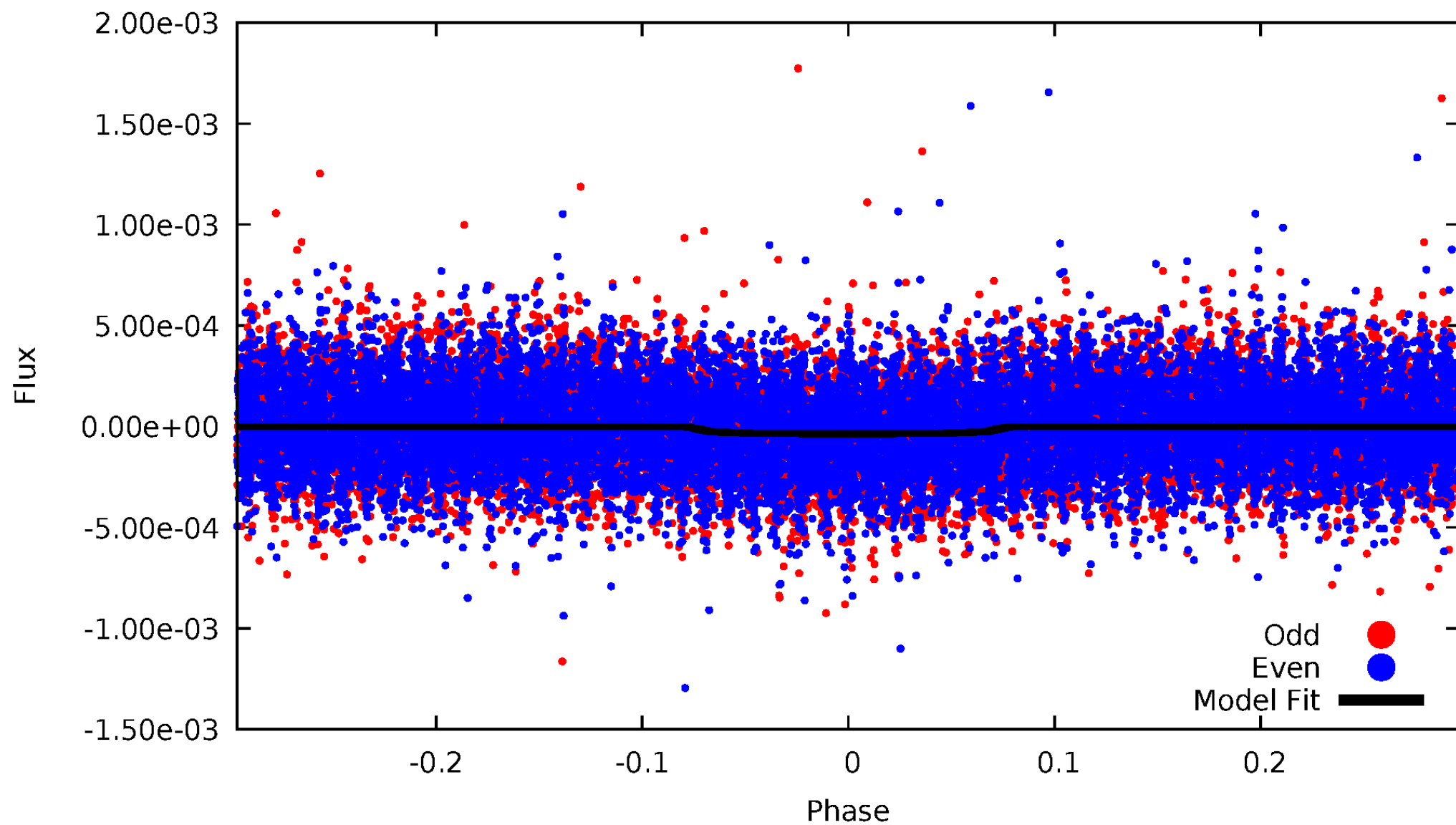
TCE 008653675-01





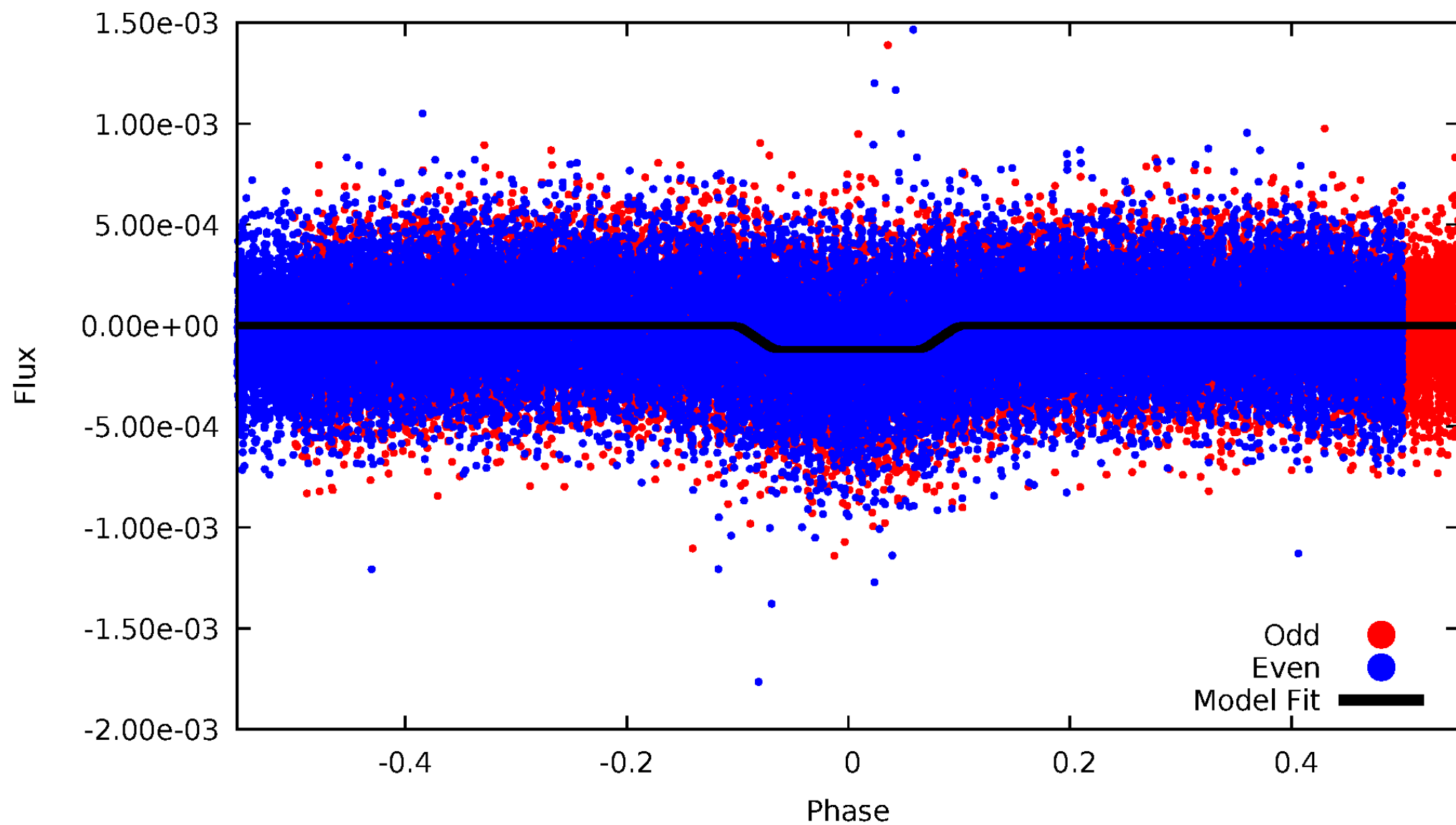
# DV Odd/Even

TCE 008653675-01



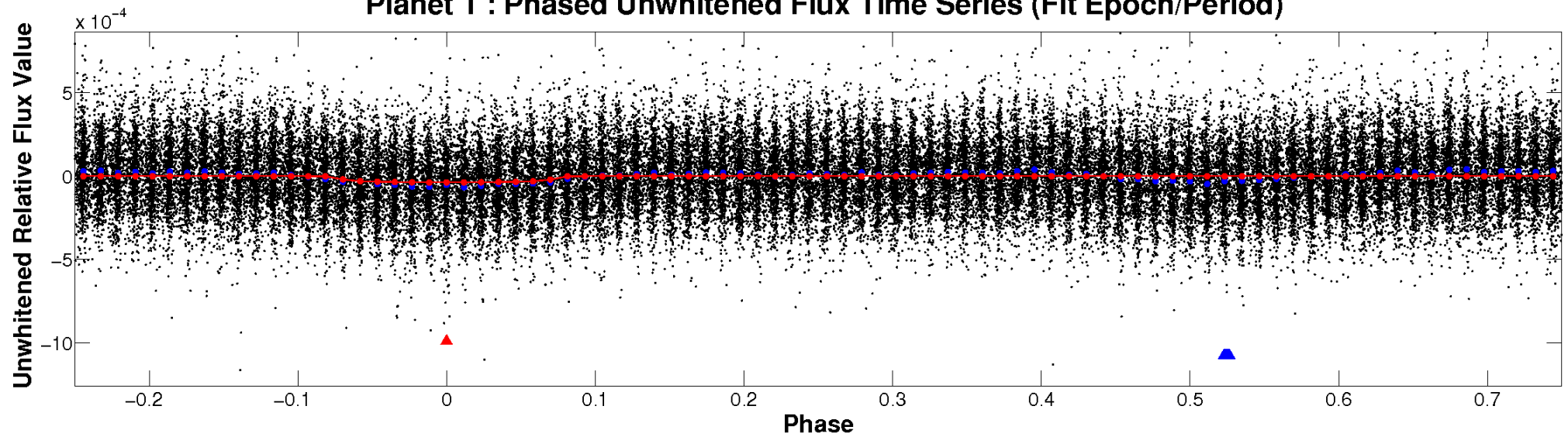
# ALT Odd/Even

TCE 008653675-01

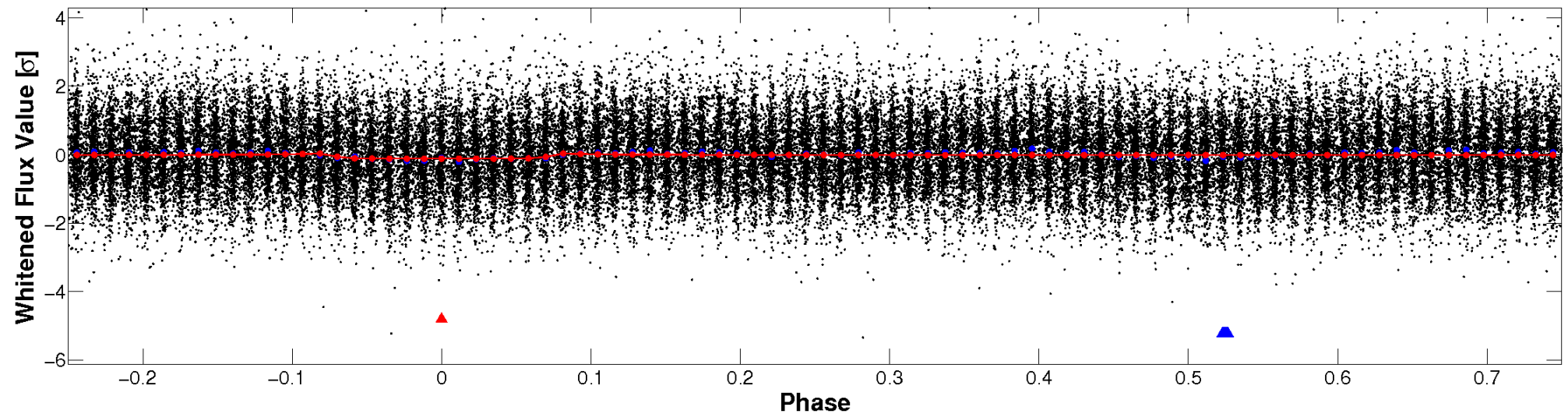


# Non-Whitened Vs. Whitened Light Curve

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

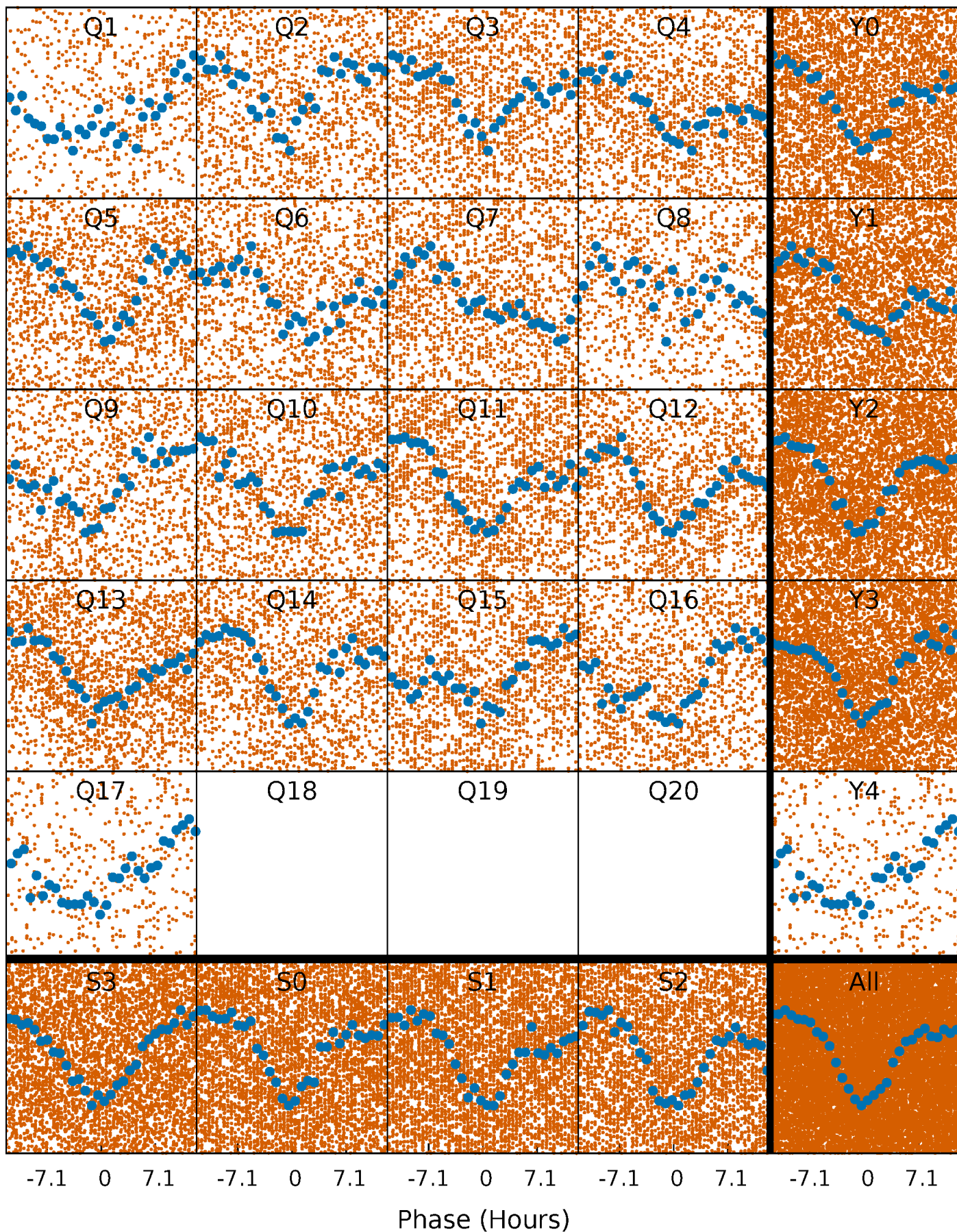


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

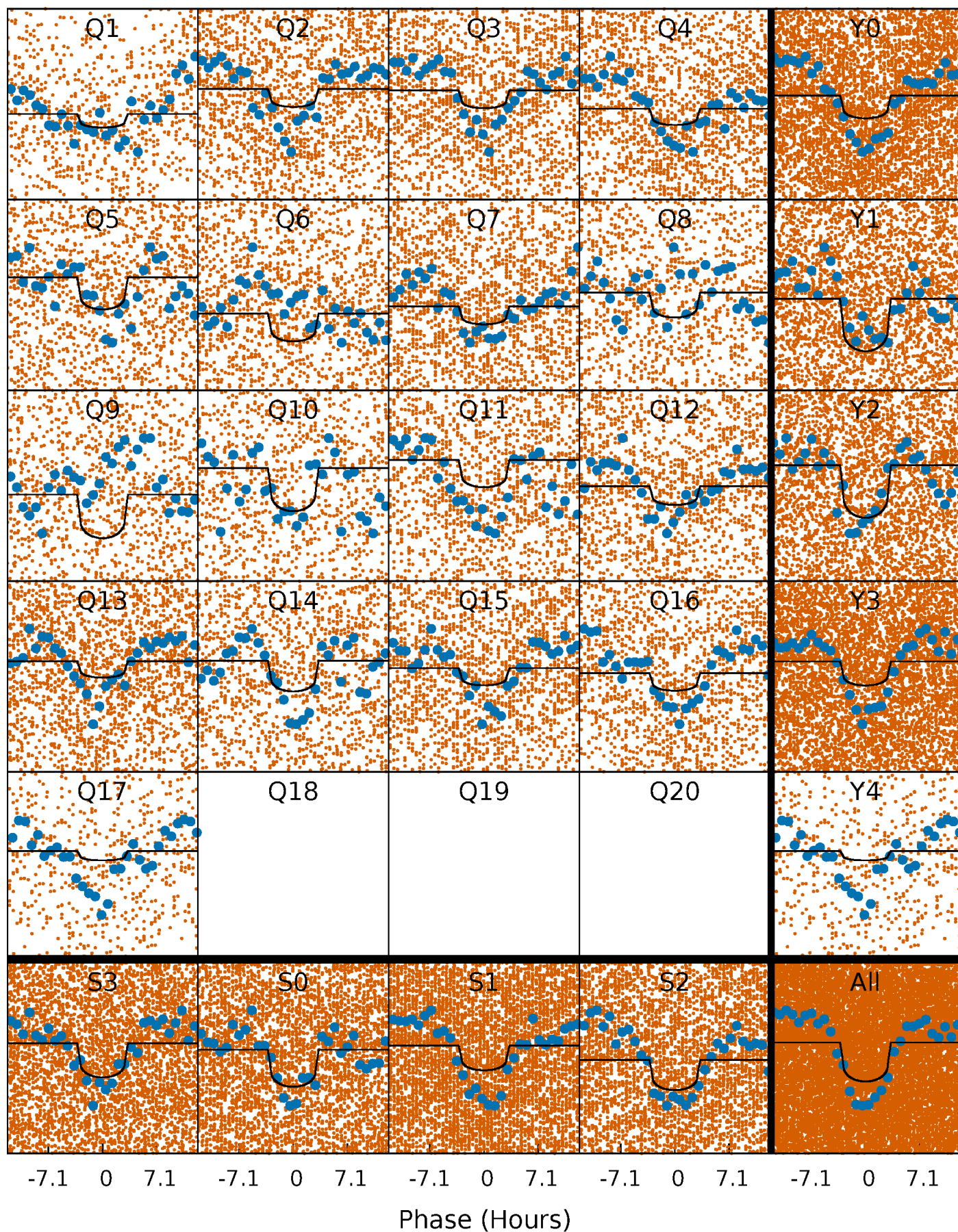
TCE 008653675-01 P= 1.757200 Days  $T_0=132.643653$  (BKJD)





# DV Quarter-Phased Transit Curves

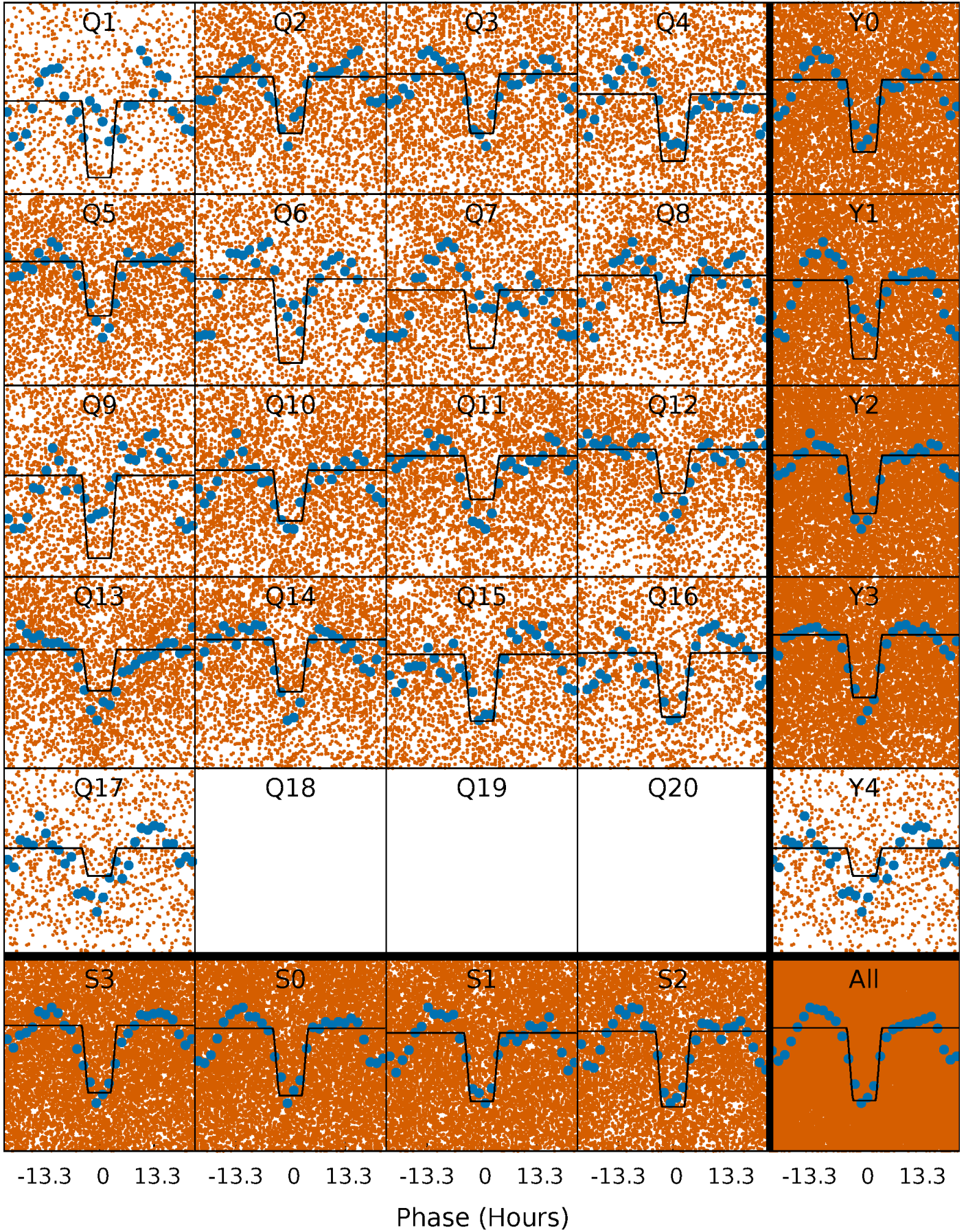
TCE 008653675-01 P= 1.757200 Days  $T_0=132.643653$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

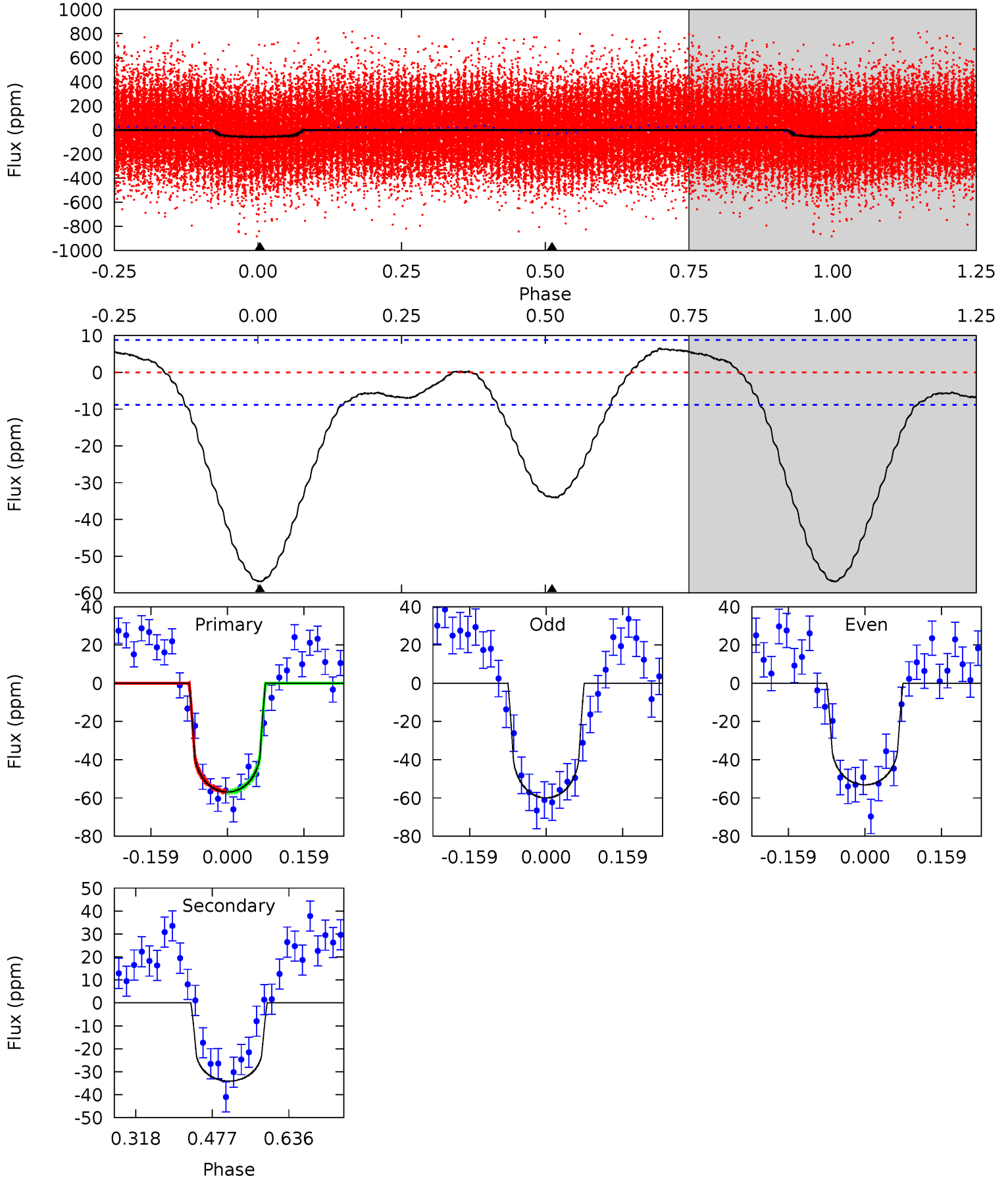
TCE 008653675-01   P= 1.757204 Days    $T_0=132.643231$  (BKJD)



# DV Model-Shift Uniqueness Test

008653675-01, P = 1.757200 Days, E = 130.886453 Days

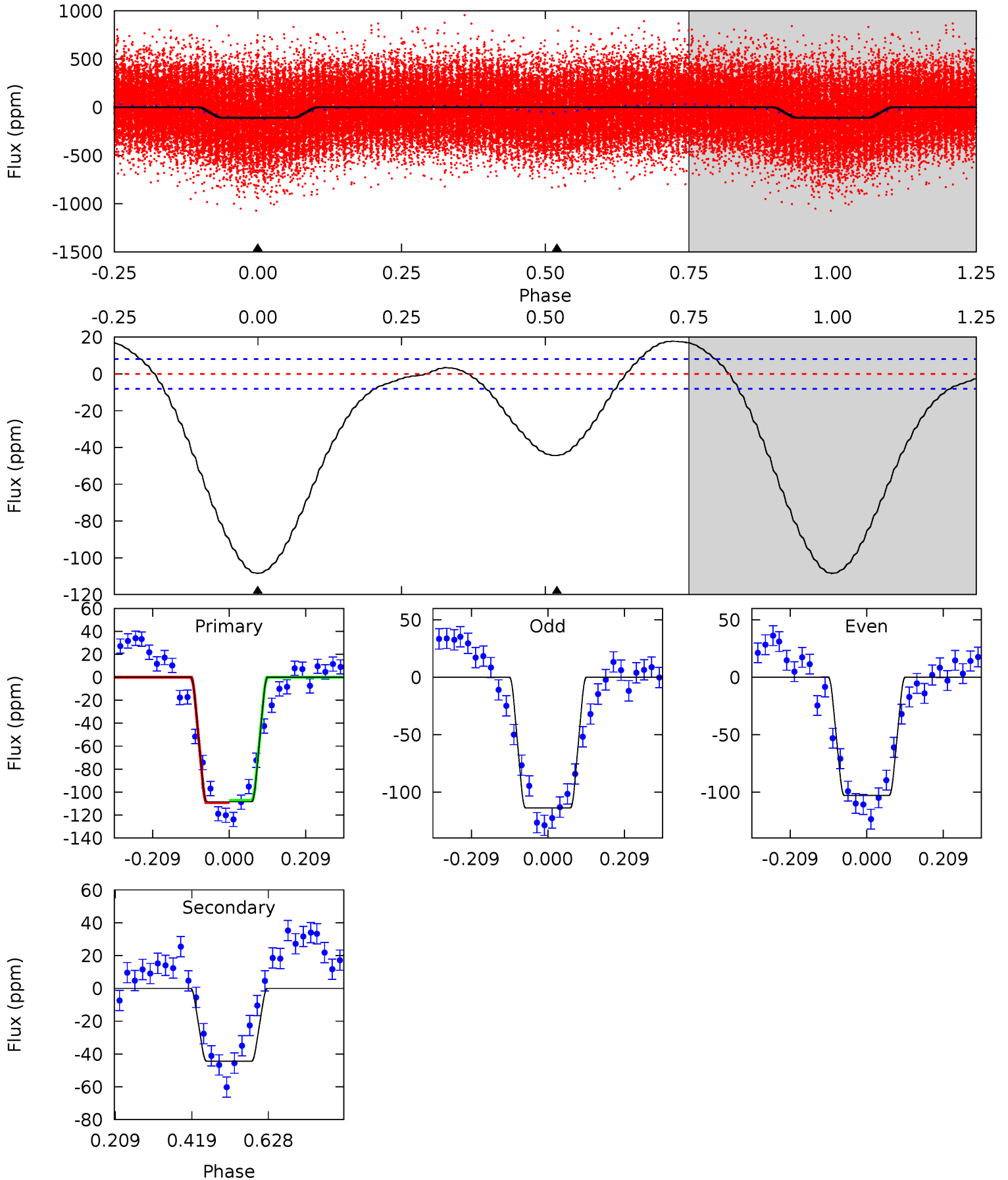
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.7	17.2	0	0	4.47	1.41	2.57	28.7	28.7	17.2	17.2	1.72	1.11	0.10	0.07



# Alt Model-Shift Uniqueness Test

008653675-01, P = 1.757204 Days, E = 130.886027 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
59.0	24.2	0	0	4.41	1.26	4.74	59.0	59.0	24.2	24.2	2.94	1.17	0.14	0.55





### Stellar Parameters For KIC 008653675

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6177^{+197}_{-241}$	$4.225^{+0.220}_{-0.180}$	$-0.260^{+0.300}_{-0.300}$	$1.288^{+0.373}_{-0.305}$	$1.016^{+0.158}_{-0.129}$	$0.669^{+0.824}_{-0.324}$
	+3%/-4%	+5%/-4%	+115%/-115%	+29%/-24%	+16%/-13%	+123%/-48%
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 008653675-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-34 \pm 2$	$0.79^{+0.34}_{-0.34}$	$2533^{+195}_{-185}$	$6172^{+2204}_{-989}$	$24^{+49}_{-12}$
Alt.	$-44 \pm 2$	$1.50^{+0.45}_{-0.35}$	$2547^{+194}_{-202}$	$4877^{+649}_{-418}$	$8.923^{+6.097}_{-3.603}$

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

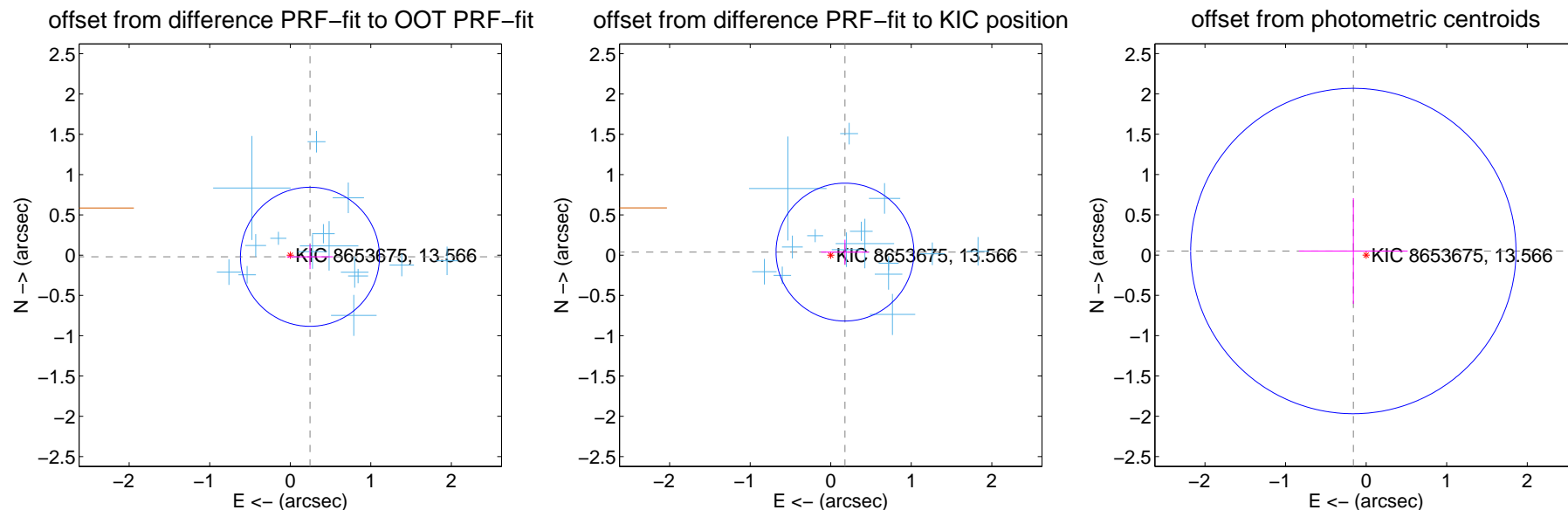
## DV Centroid Data

Supplemental centroid analysis for 008653675-01. Kepler magnitude: 13.57. Transit SNR 10.73

There are 15 quarters with good PRF difference image offsets

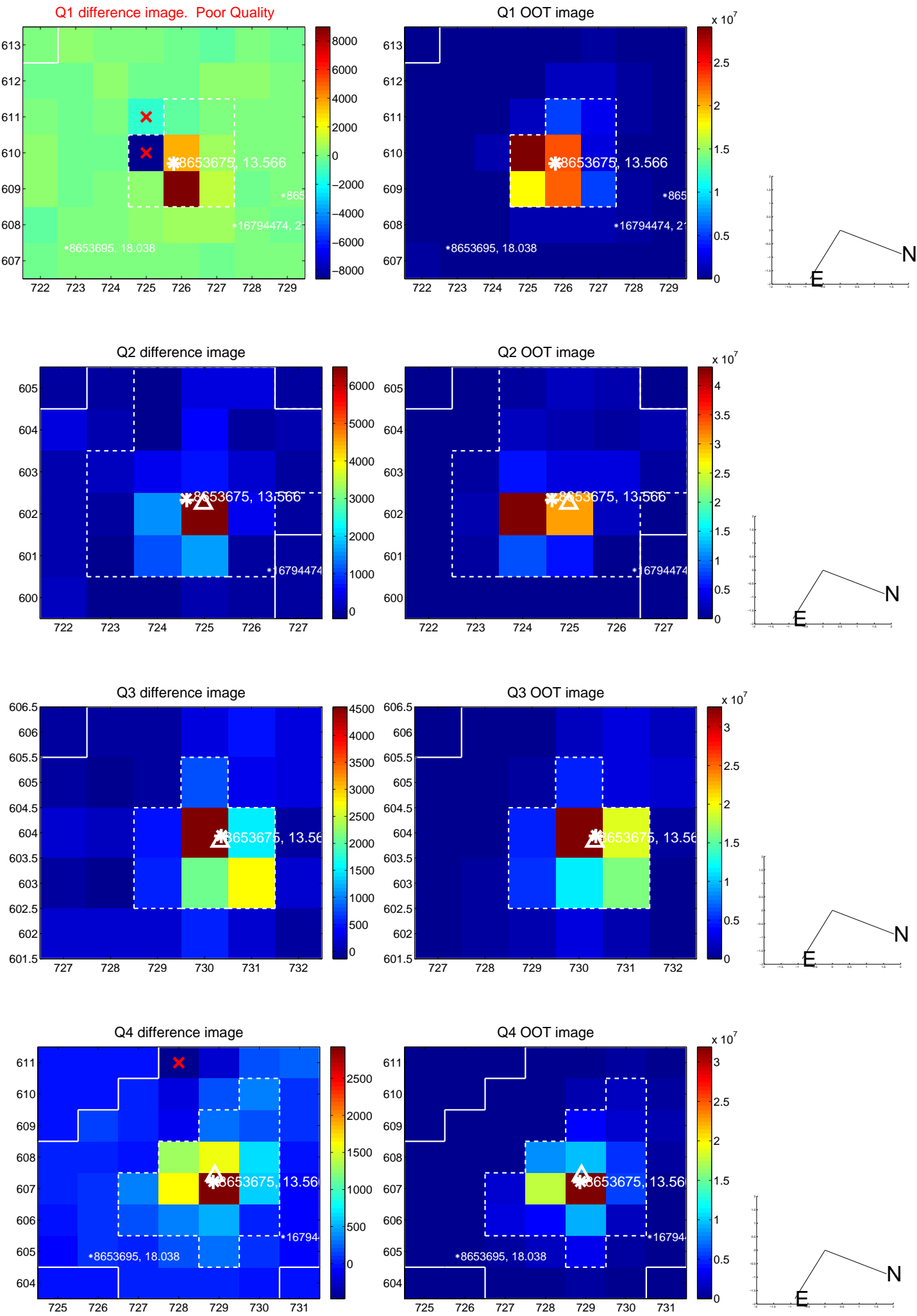
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.246 \pm 0.288$	0.85	$-0.245 \pm 0.286$	$-0.020 \pm 0.153$
PRF-fit source offset from KIC position	$0.181 \pm 0.285$	0.63	$-0.177 \pm 0.297$	$0.038 \pm 0.154$
photometric centroid source offset	$0.17 \pm 0.67$	0.25	$0.16 \pm 0.67$	$0.05 \pm 0.66$

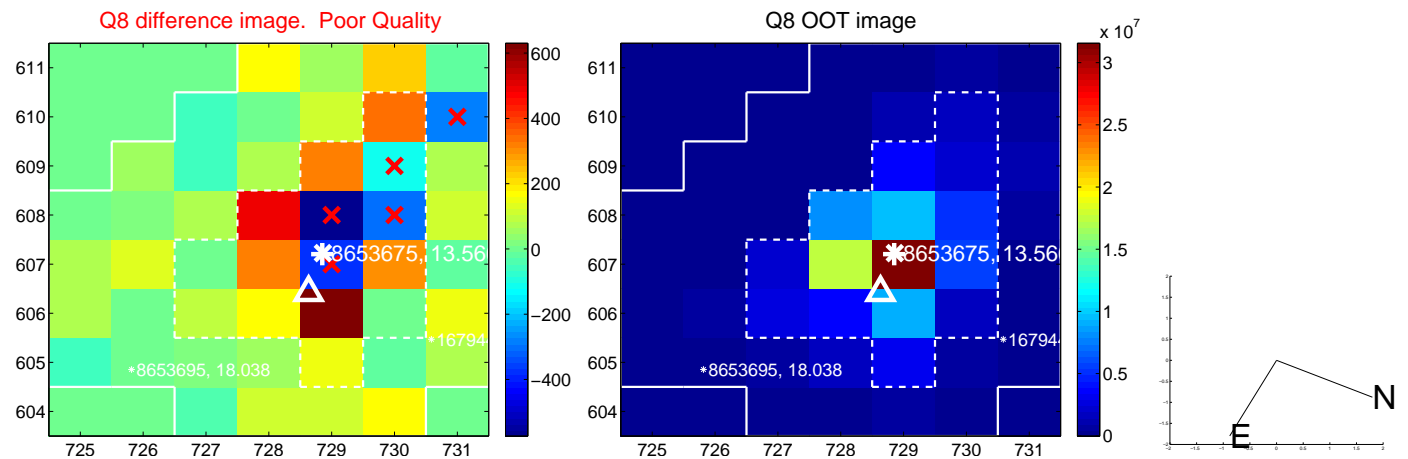
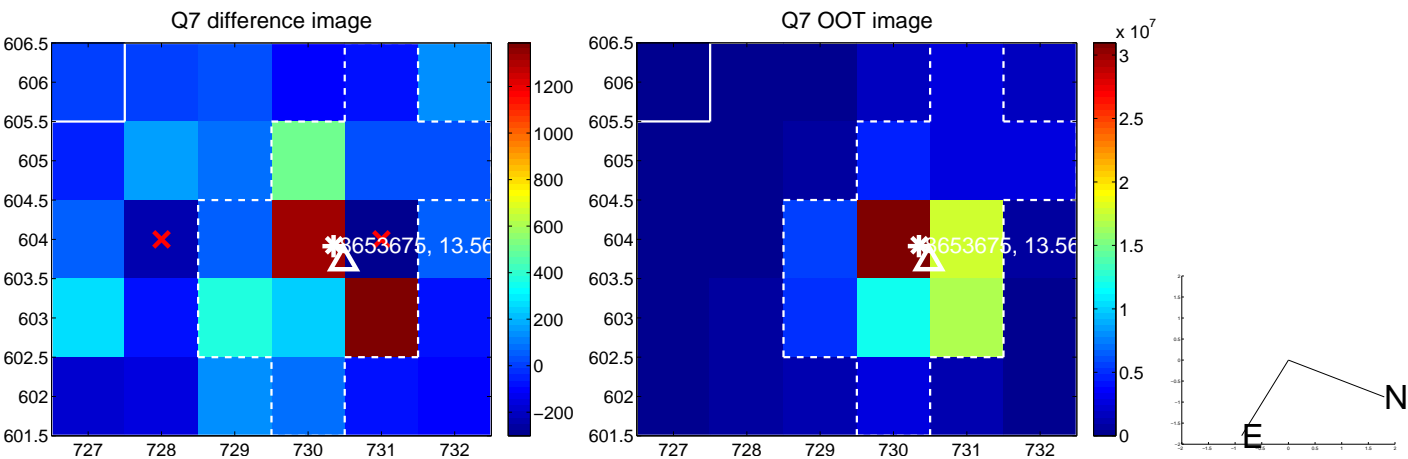
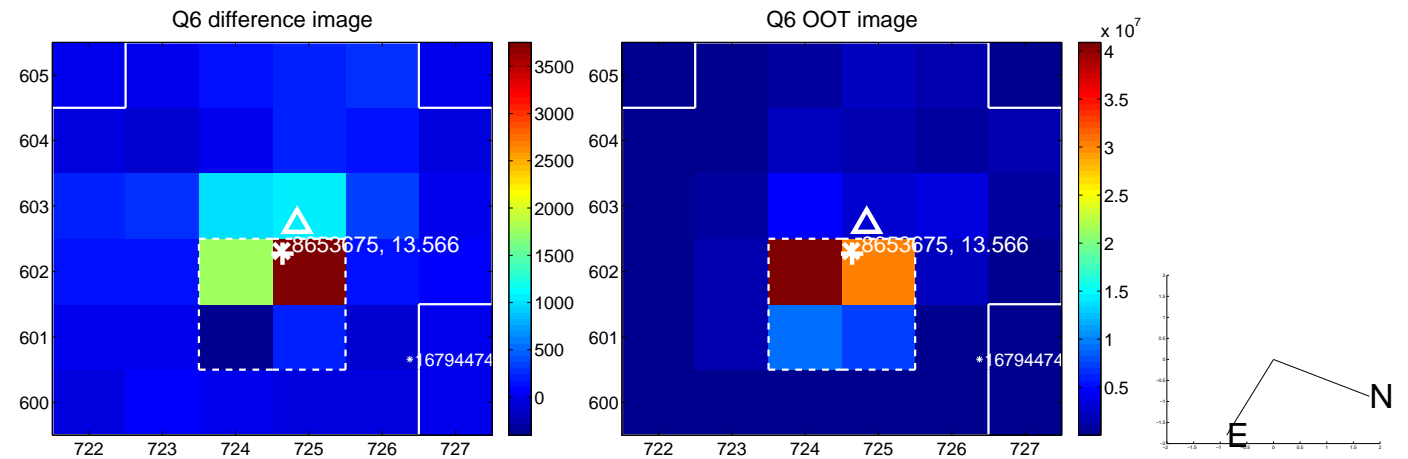
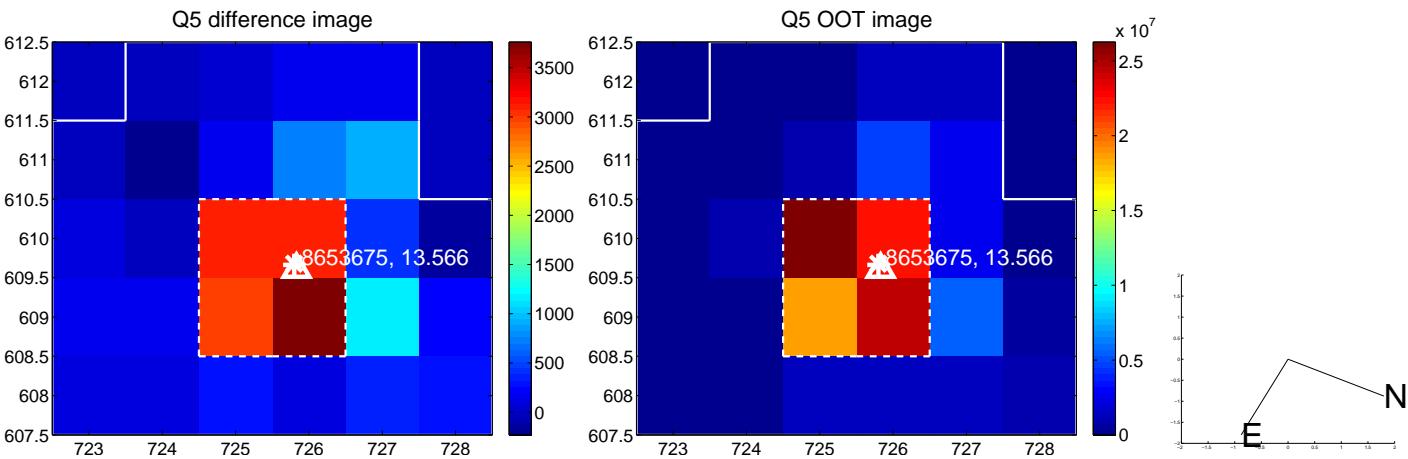


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



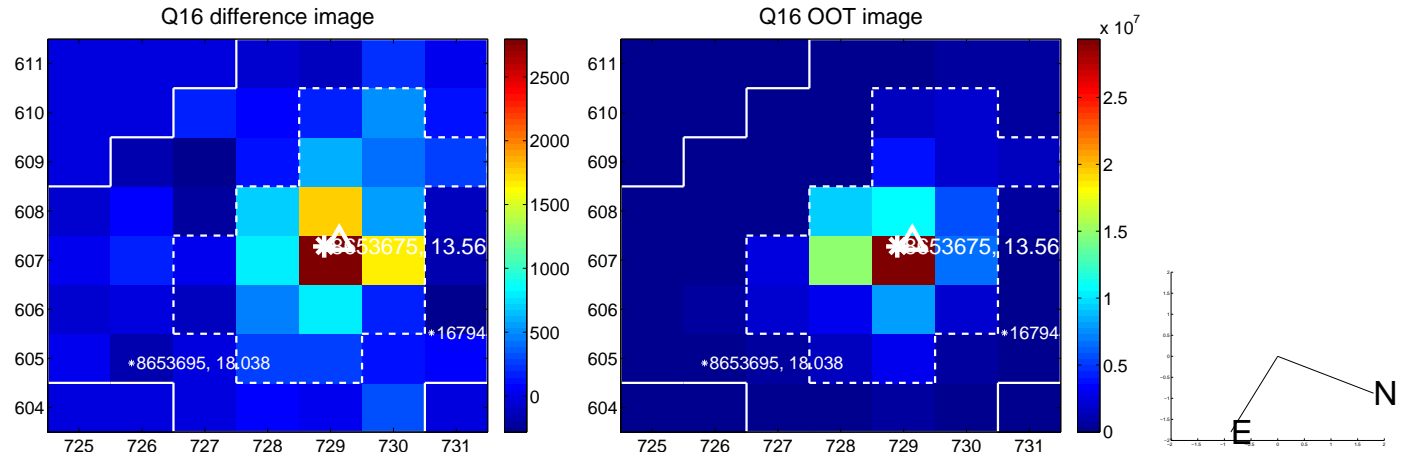
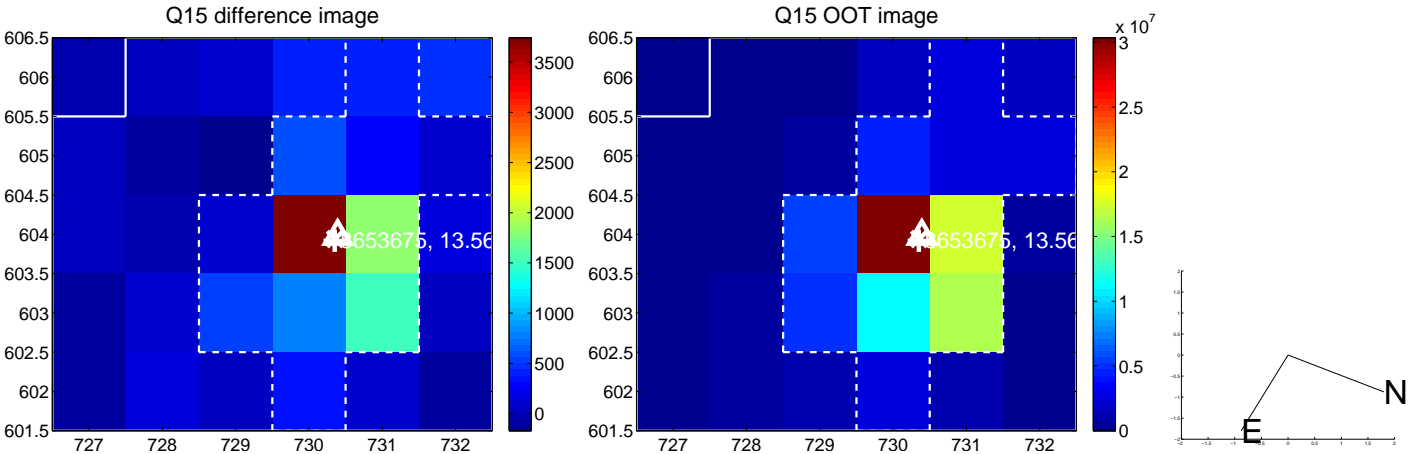
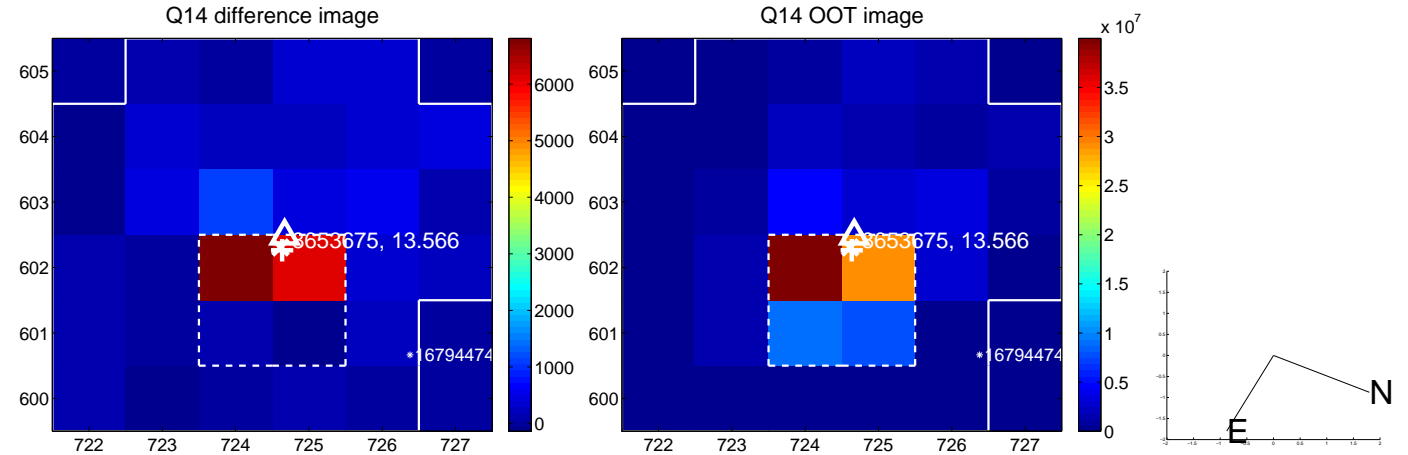
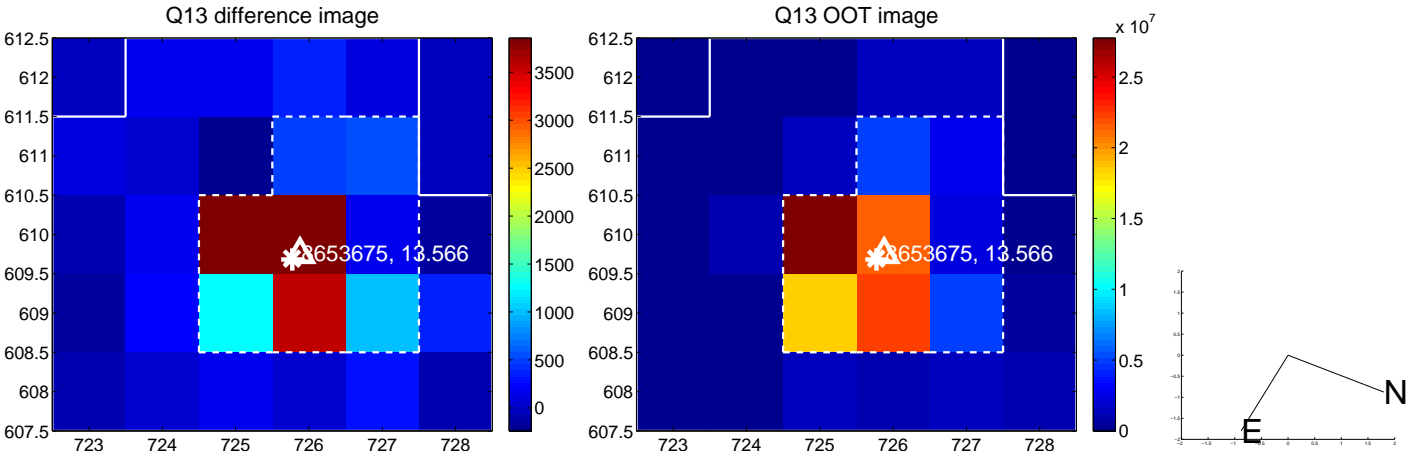
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



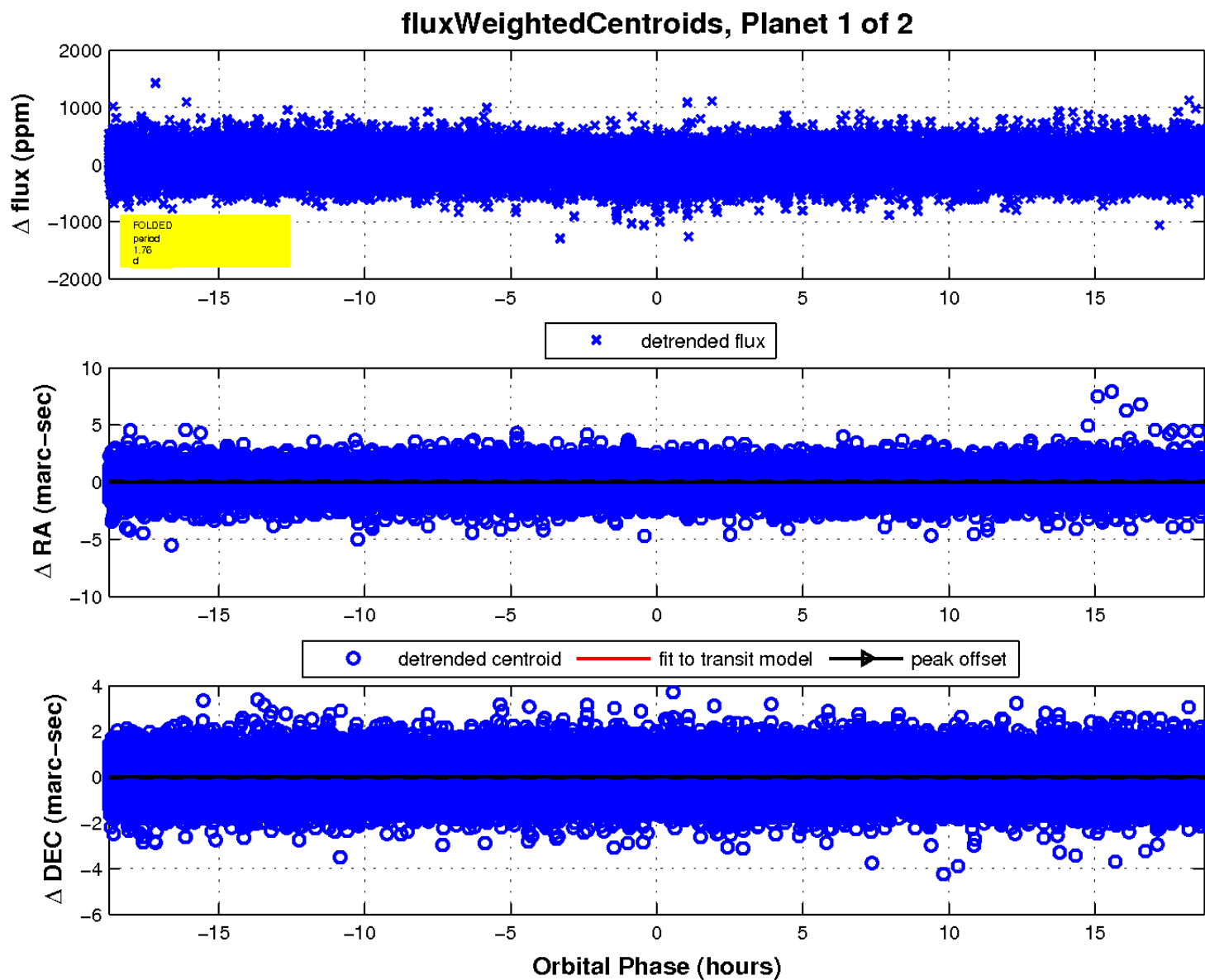
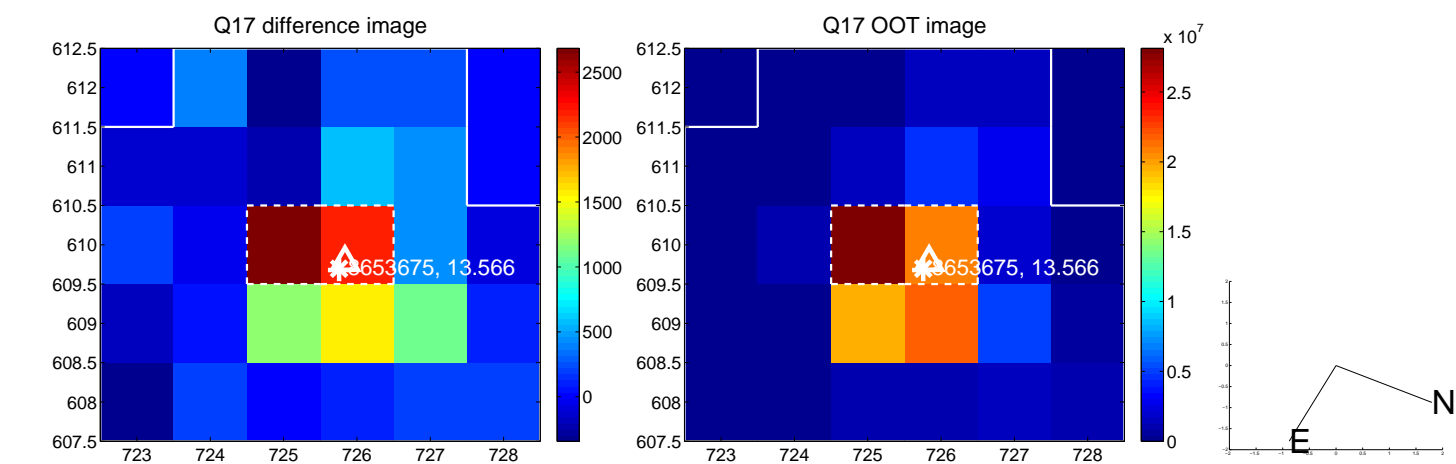




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

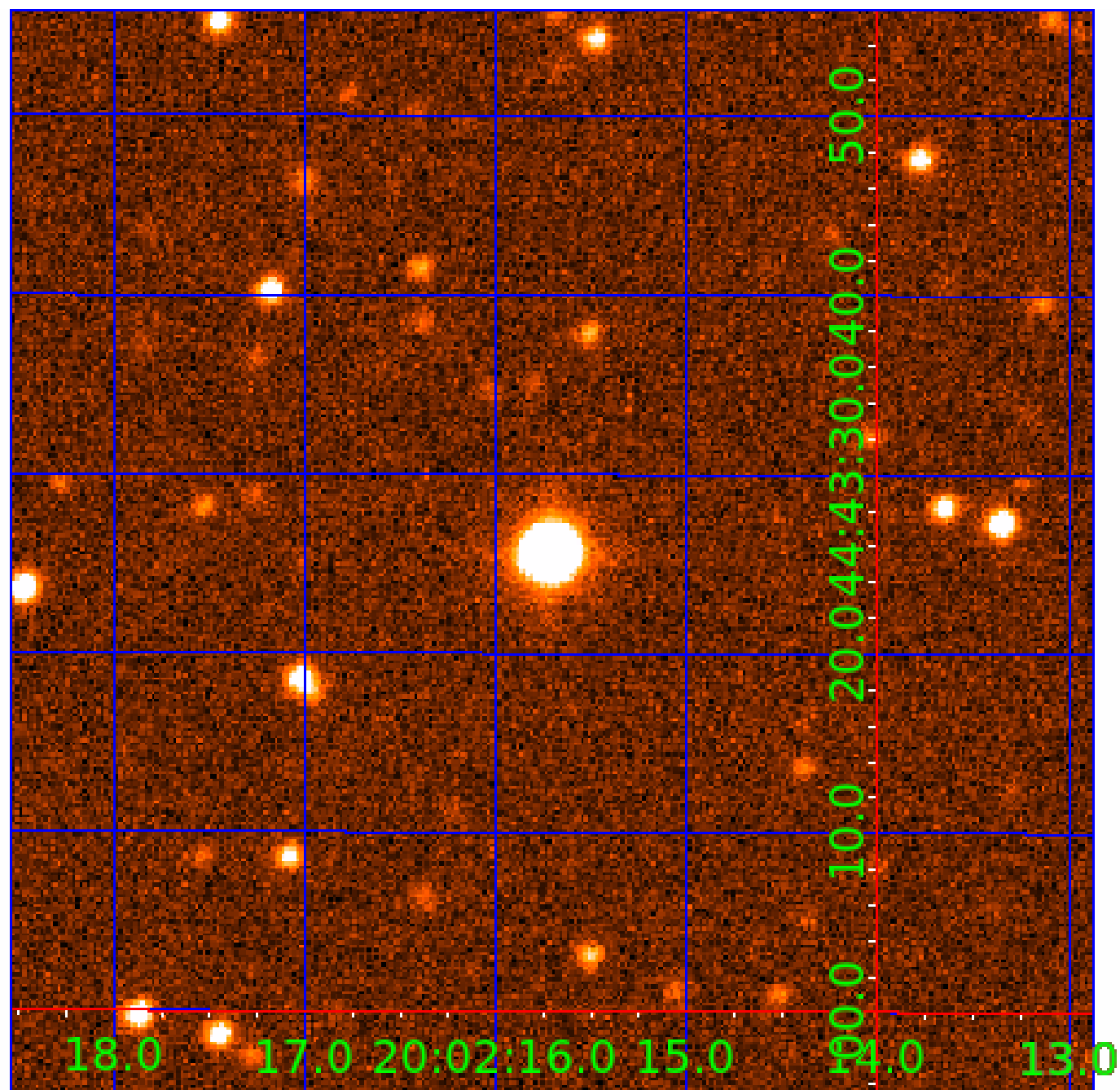


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008653675

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008653675-01	OBS	No	1.757200	132.643653	36.9	6.252	12.0	10.7	1.29	6177	0.80	2635.44
008653675-02	OBS	No	1.757208	131.804858	35.3	7.669	11.3	12.3	1.29	6177	0.77	2635.43

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008653675-01	OBS	FP	0.00	1	0	0	0	LPP_DV
008653675-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

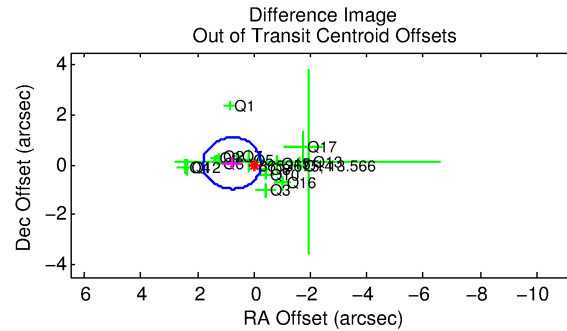
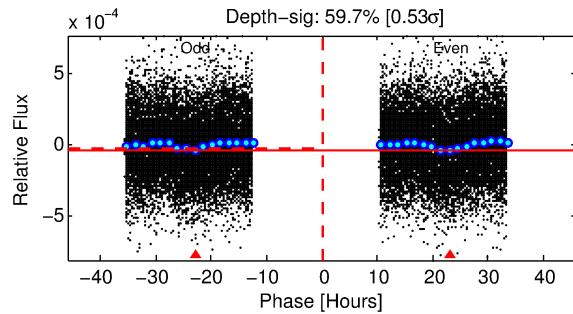
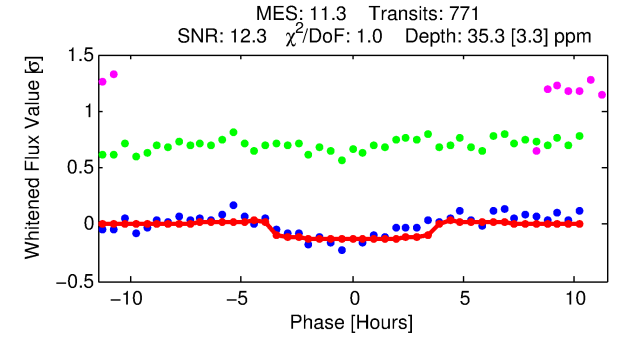
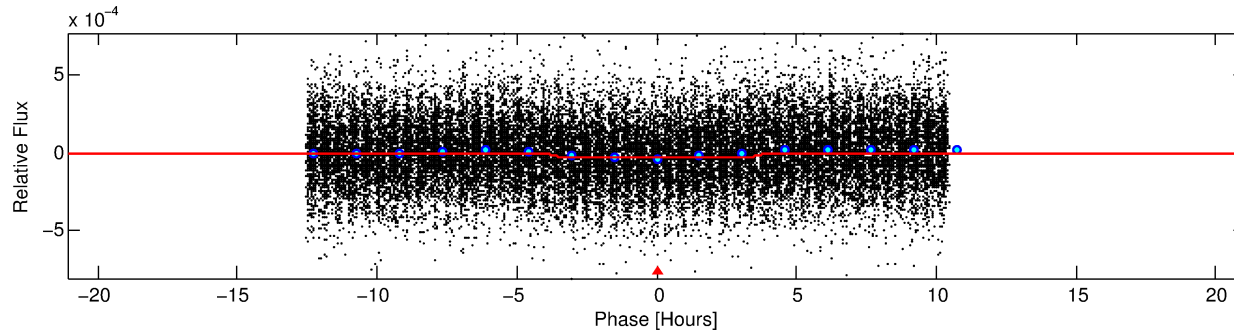
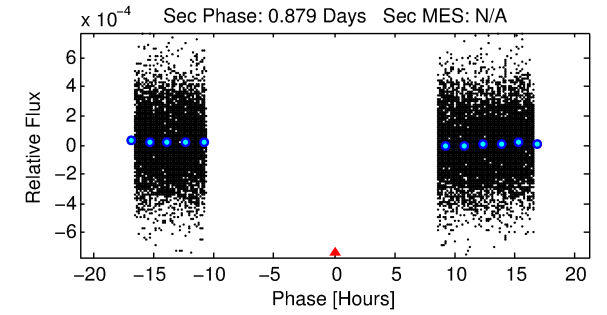
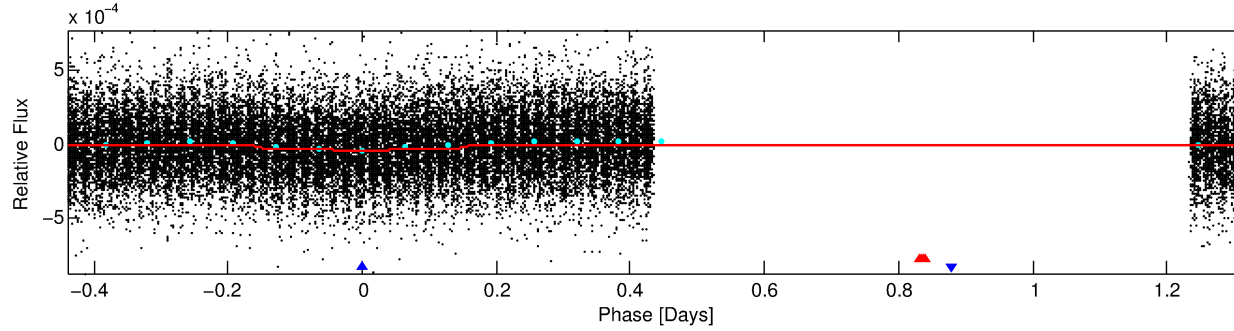
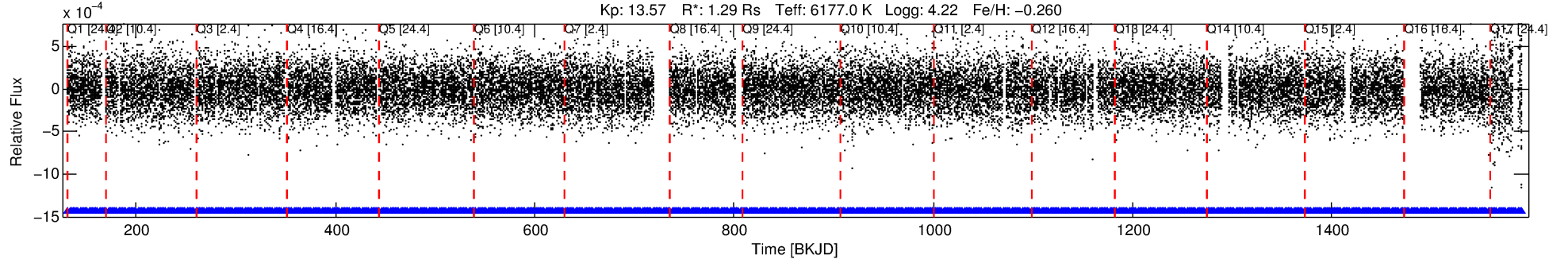
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008653675-02

No Significant Match Found

# DV One-Page Summary

KIC: 8653675 Candidate: 2 of 2 Period: 1.757 d



## DV Fit Results:

Period = 1.75721 [0.00002] d  
Epoch = 131.8049 [0.0048] BKJD  
Rp/R\* = 0.0055 [0.0046]  
a/R\* = 1.85 [5.51]  
b = 0.15 [28.08]  
Seff = 2635.43 [1104.62]  
T<sub>eq</sub> = 1827 [191] K  
Rp = 0.77 [0.68] R<sub>e</sub>  
a = 0.0287 [0.0073] AU

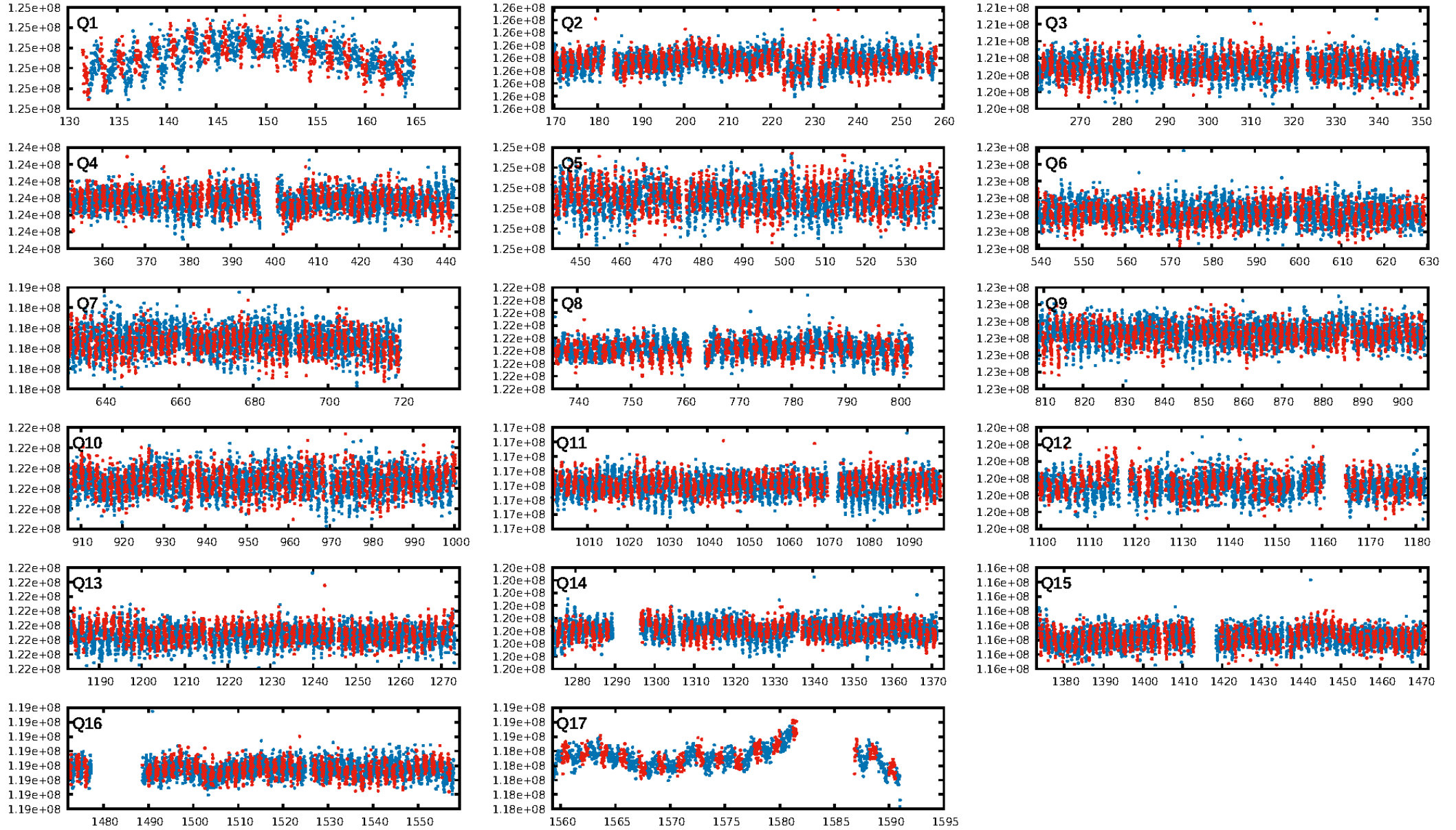
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.19e-235  
RollingBand-fgt: 1.00 [736/736]  
GhostDiagnostic-chr: 2.836  
Centroid-sig: 0.0%  
Centroid-so: 2.577 arcsec [3.99σ]  
OotOffset-rm: 0.776 arcsec [2.26σ]  
KicOffset-rm: 0.872 arcsec [2.30σ]  
OotOffset-st: 4/3/4/5 [16]  
KicOffset-st: 4/3/4/5 [16]  
DiffImageQuality-fgm: 0.88 [14/16]  
DiffImageOverlap-fno: 1.00 [17/17]

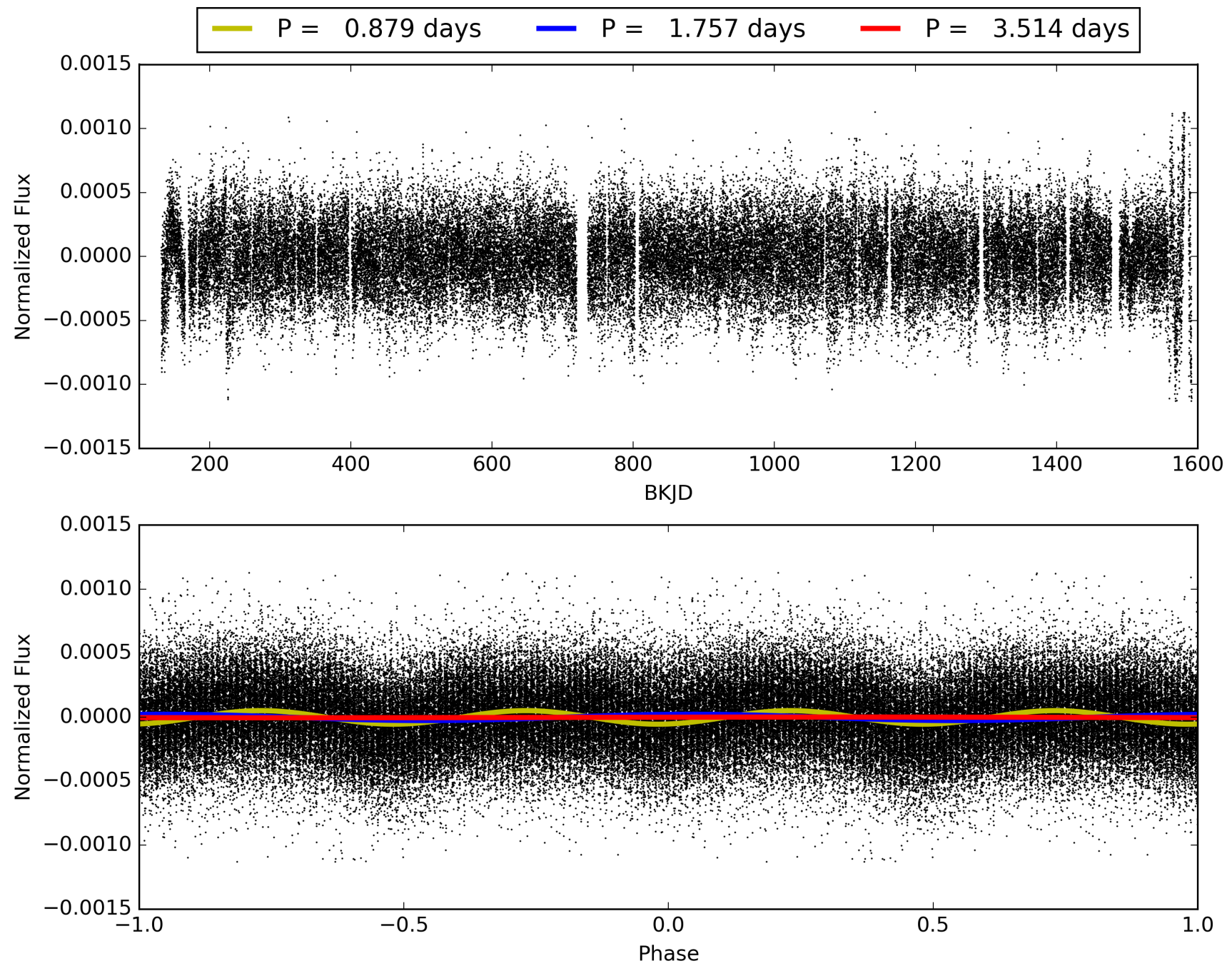
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:32:18 Z

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

# TCE 008653675-02, PDC Light Curves



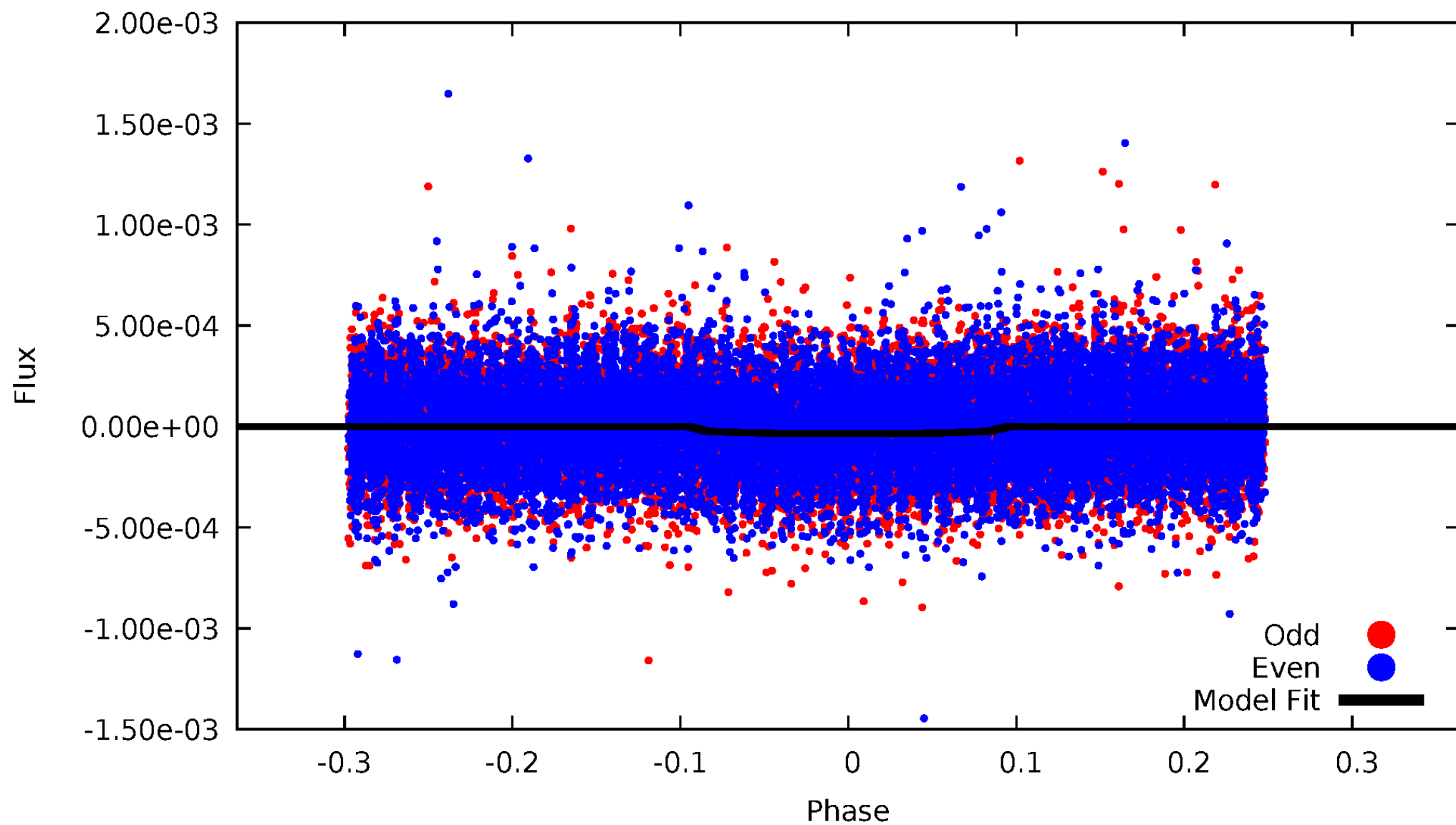
TCE 008653675-02





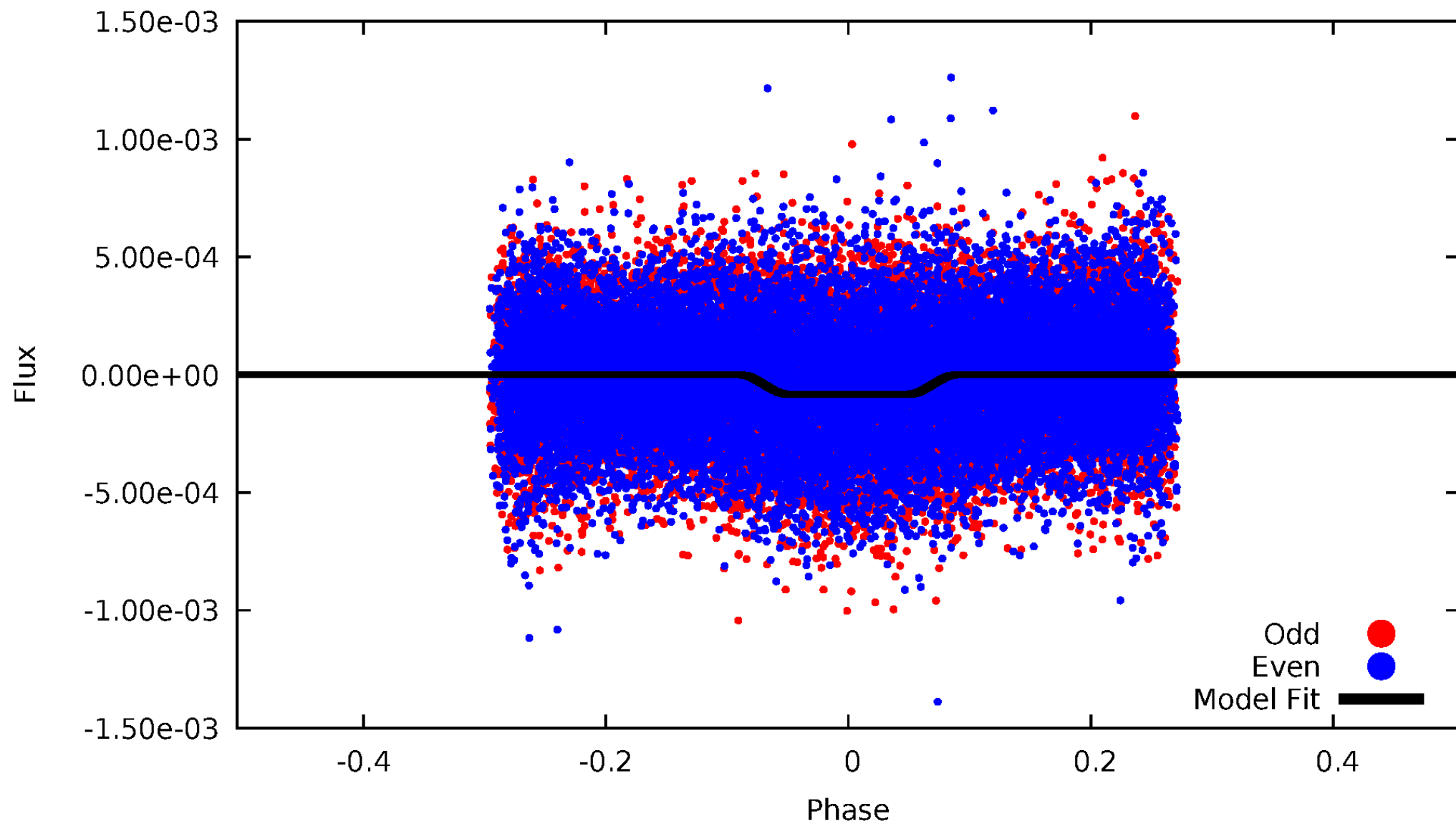
# DV Odd/Even

TCE 008653675-02



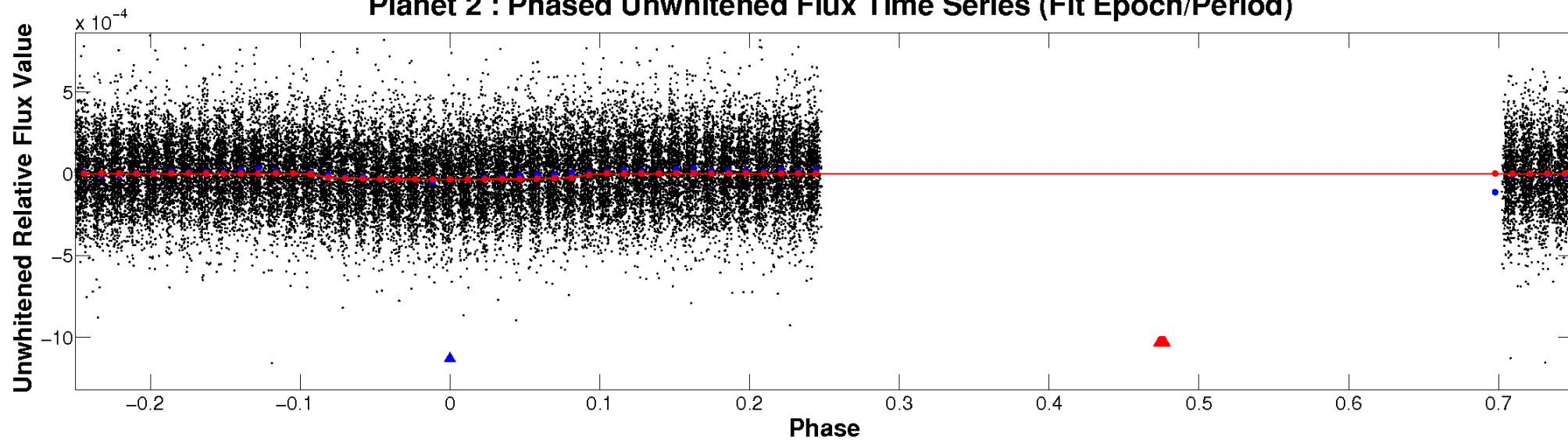
# ALT Odd/Even

TCE 008653675-02

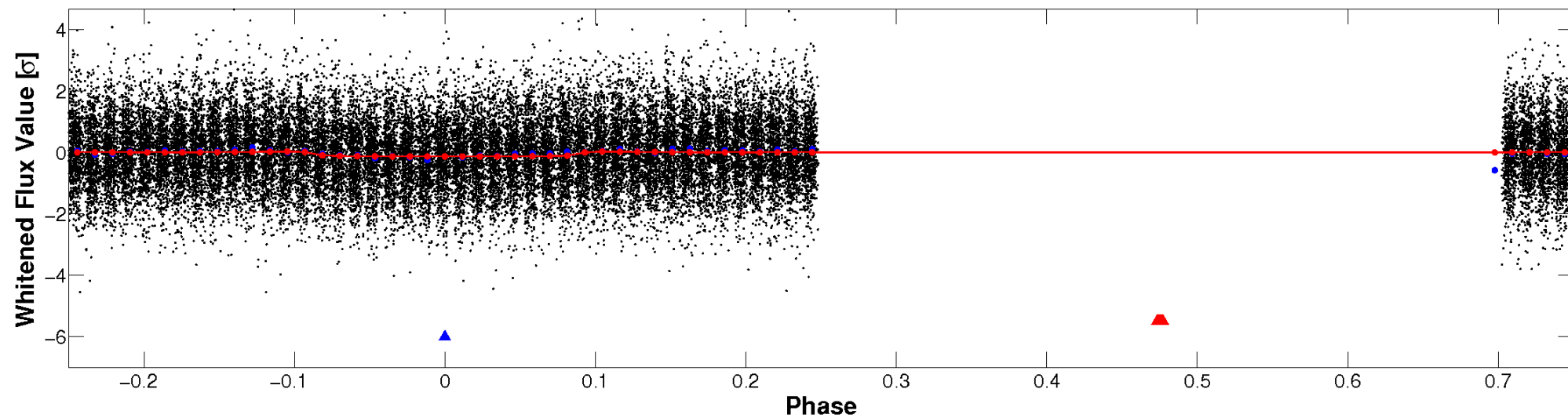


# Non-Whitened Vs. Whitened Light Curve

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

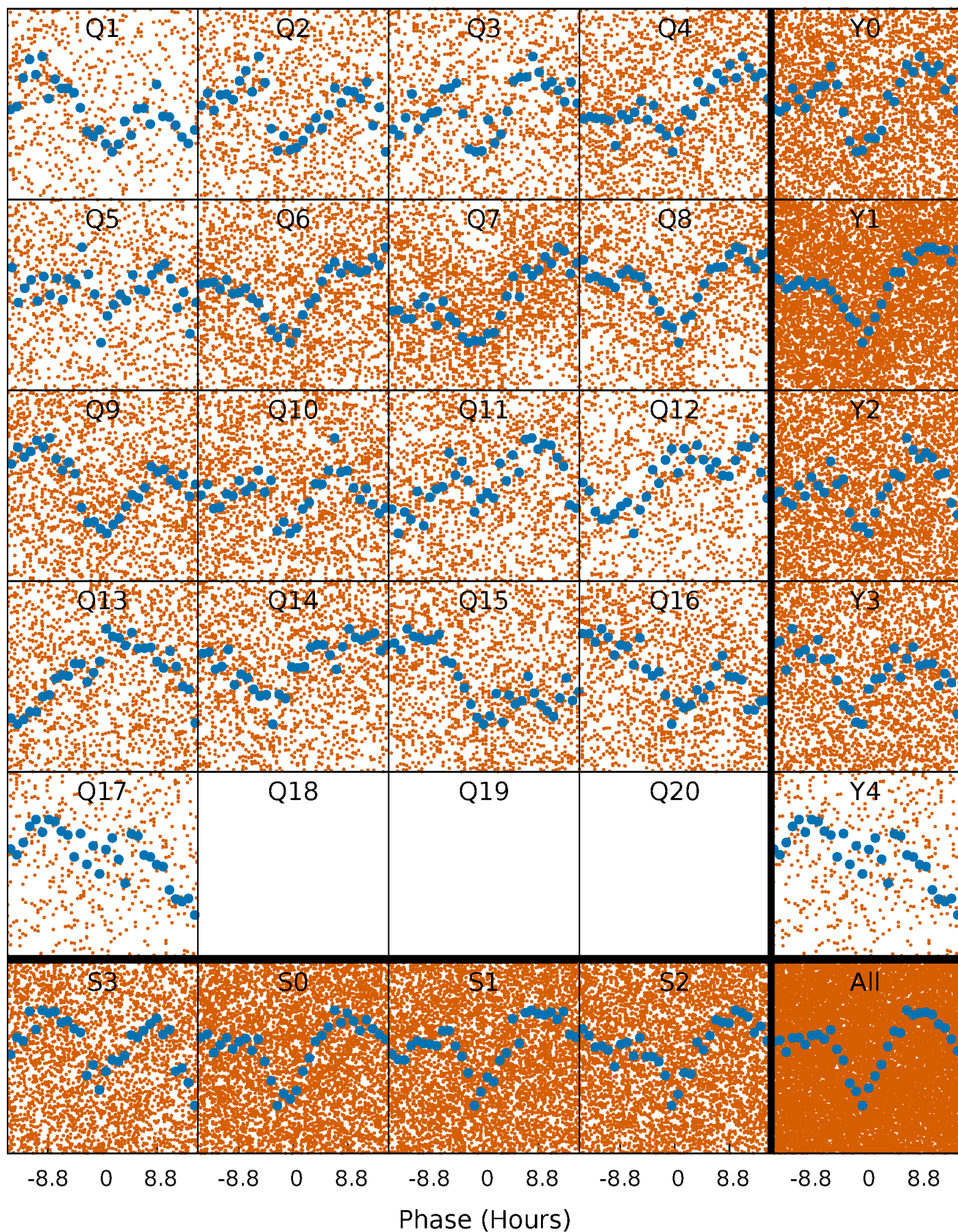


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

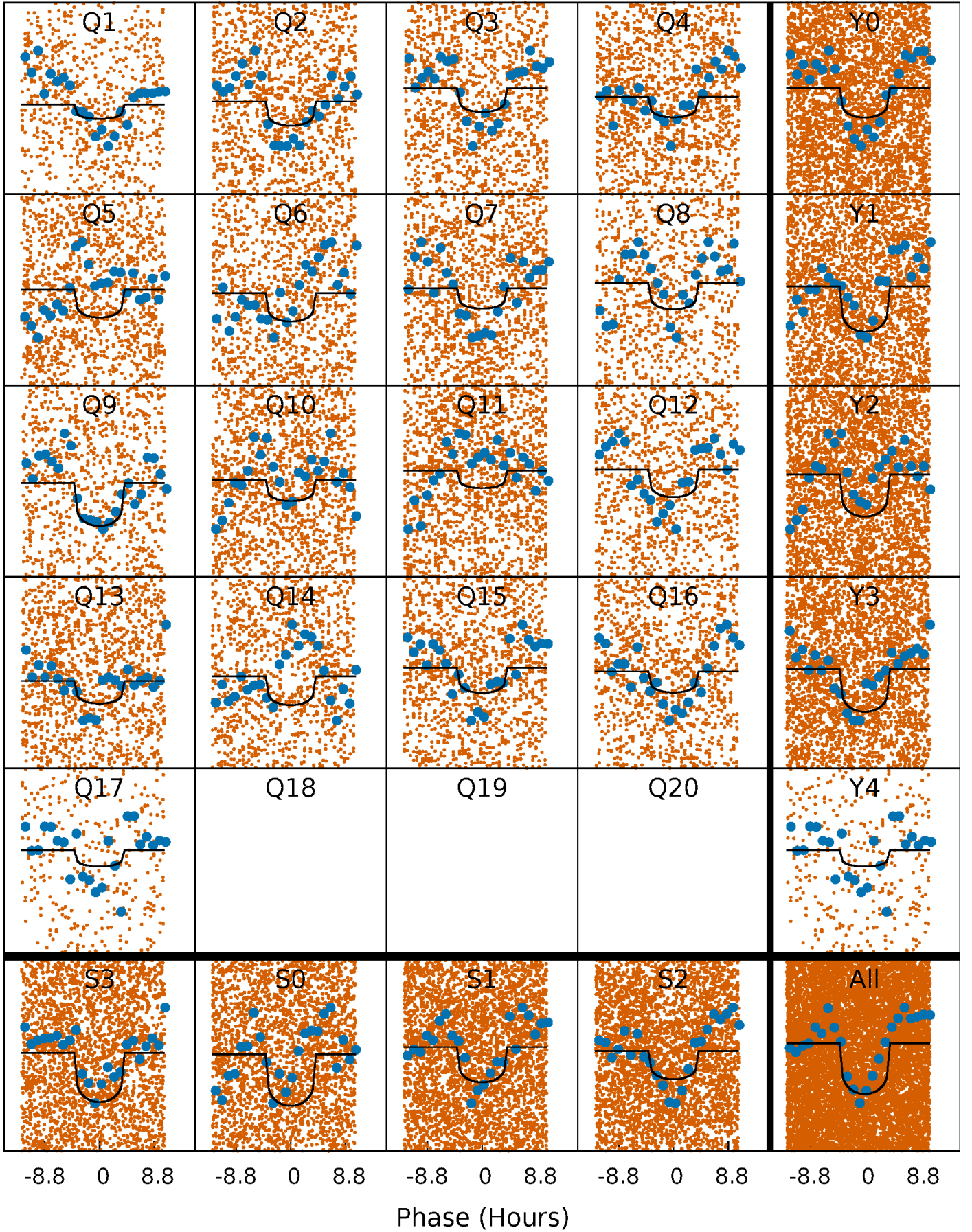
TCE 008653675-02 P= 1.757208 Days  $T_0=131.804858$  (BKJD)





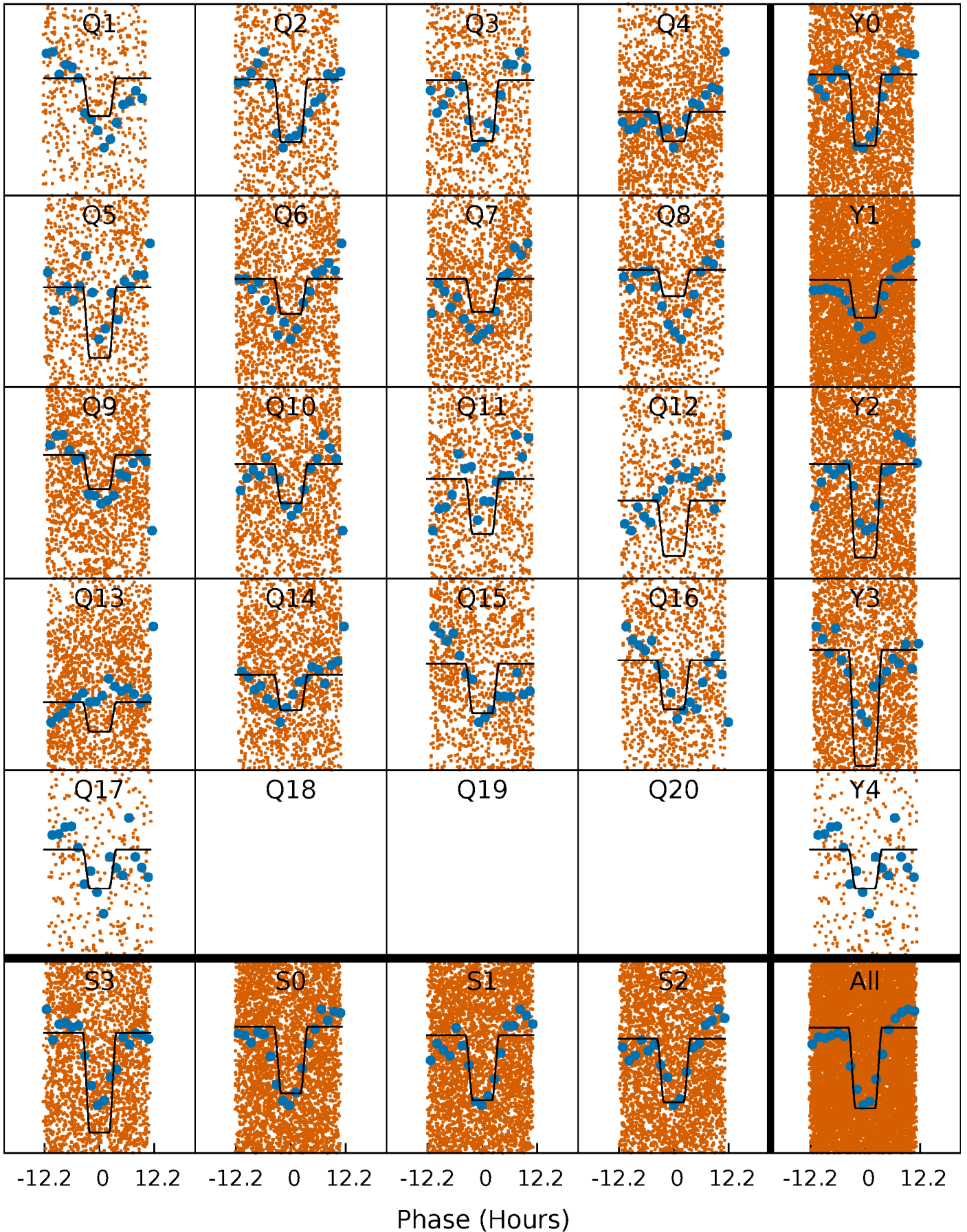
# DV Quarter-Phased Transit Curves

TCE 008653675-02   P= 1.757208 Days    $T_0=131.804858$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008653675-02   P= 1.757144 Days    $T_0=131.807807$  (BKJD)

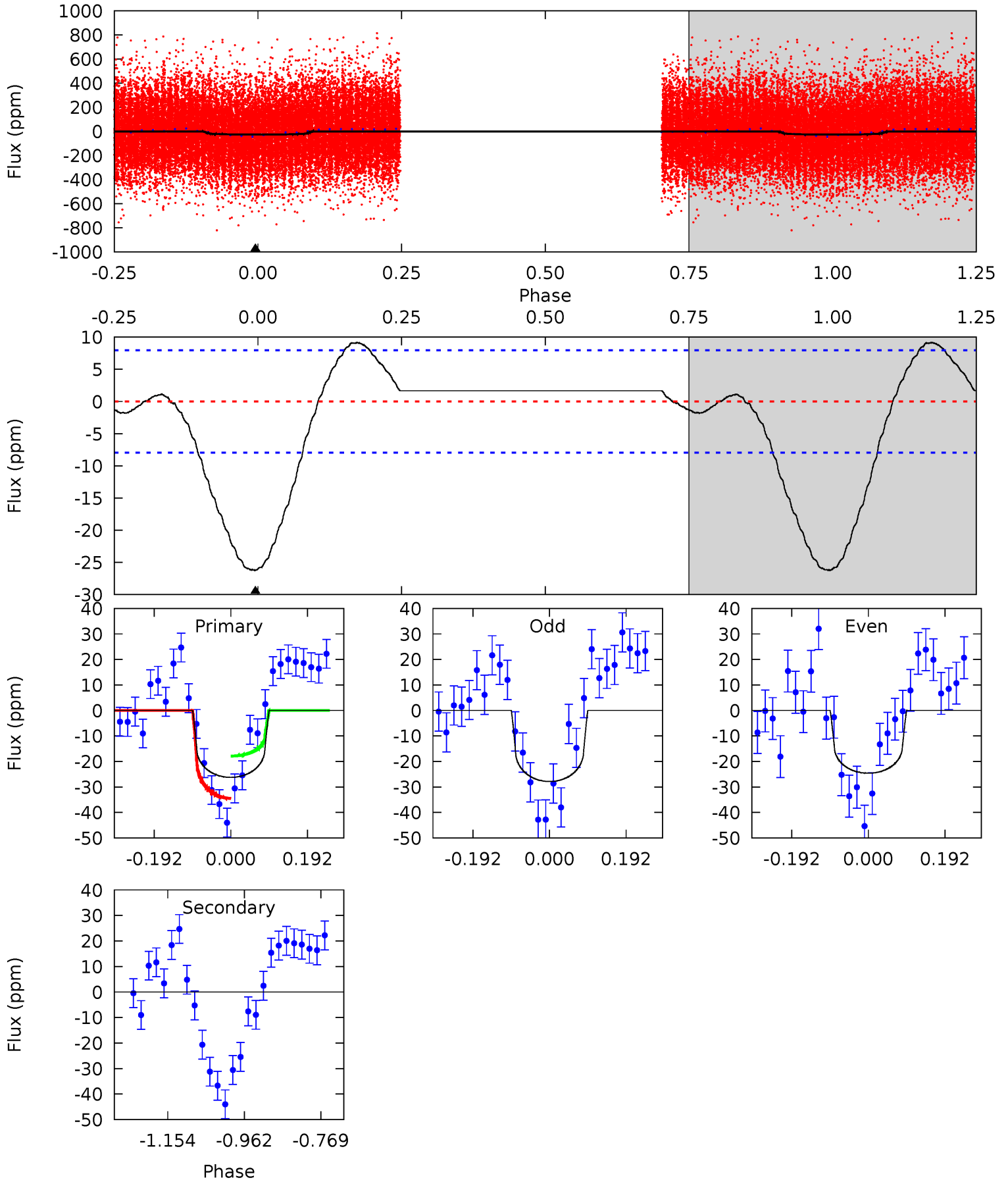




# DV Model-Shift Uniqueness Test

008653675-02, P = 1.757208 Days, E = 130.047650 Days

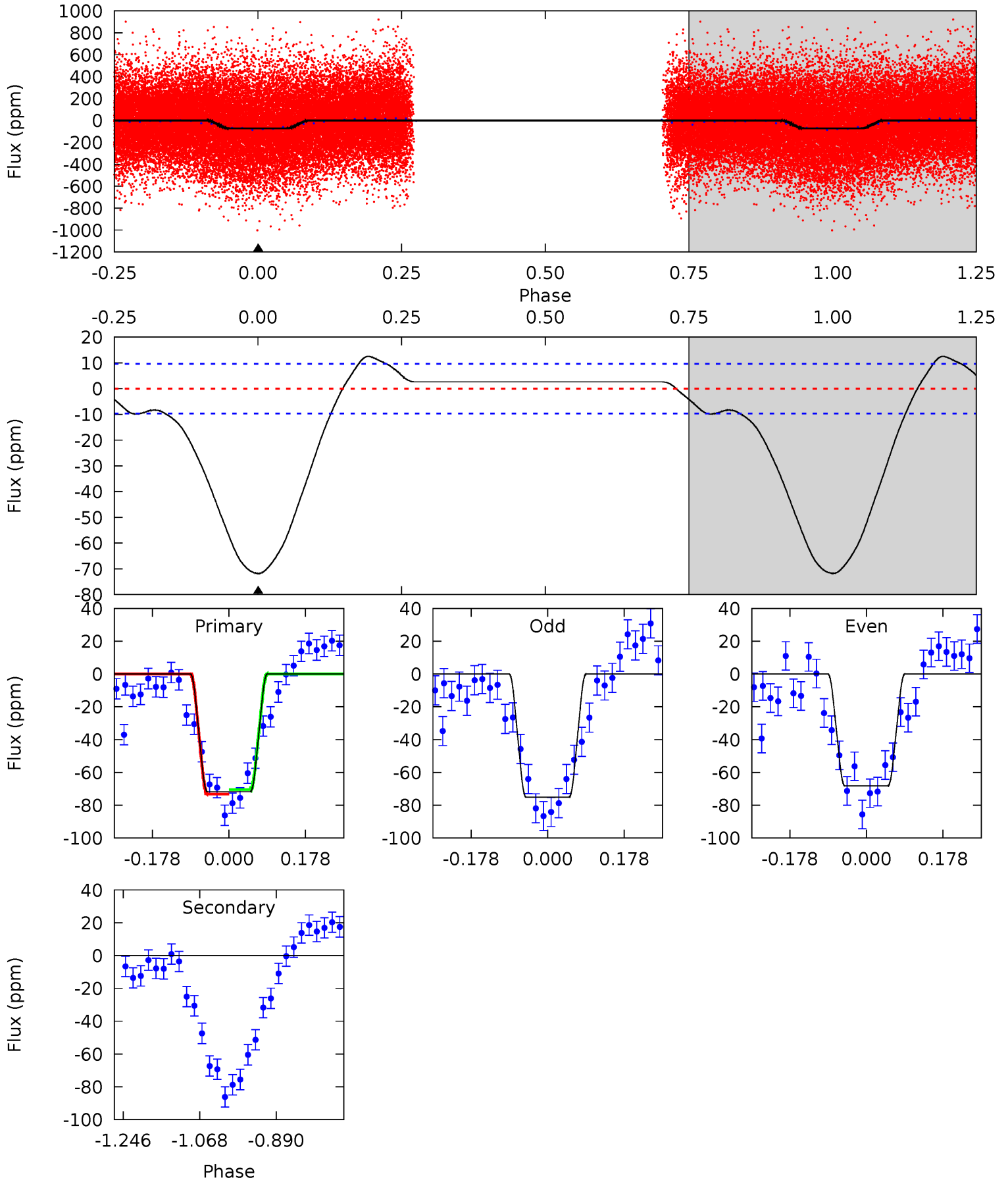
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.6	0	0	0	4.43	1.30	1.77	14.6	14.6	0	0	0.91	0.93	0.26	4.66



# Alt Model-Shift Uniqueness Test

008653675-02, P = 1.757144 Days, E = 130.050663 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
33.0	0	0	0	4.44	1.35	3.79	33.0	33.0	0	0	1.57	1.01	0.15	0.57



### Stellar Parameters For KIC 008653675

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6177^{+197}_{-241}$	$4.225^{+0.220}_{-0.180}$	$-0.260^{+0.300}_{-0.300}$	$1.288^{+0.373}_{-0.305}$	$1.016^{+0.158}_{-0.129}$	$0.669^{+0.824}_{-0.324}$
	+3%/-4%	+5%/-4%	+115%/-115%	+29%/-24%	+16%/-13%	+123%/-48%
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 008653675-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 2$	$0.83^{+0.60}_{-0.48}$	$2537^{+213}_{-200}$	$-2773^{+6229}_{-943}$	$0.046^{+1.543}_{-1.556}$
Alt.	$0 \pm 2$	$1.26^{+0.69}_{-0.58}$	$2539^{+218}_{-201}$	$-2842^{+5829}_{-531}$	$-0.004^{+0.804}_{-0.754}$

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

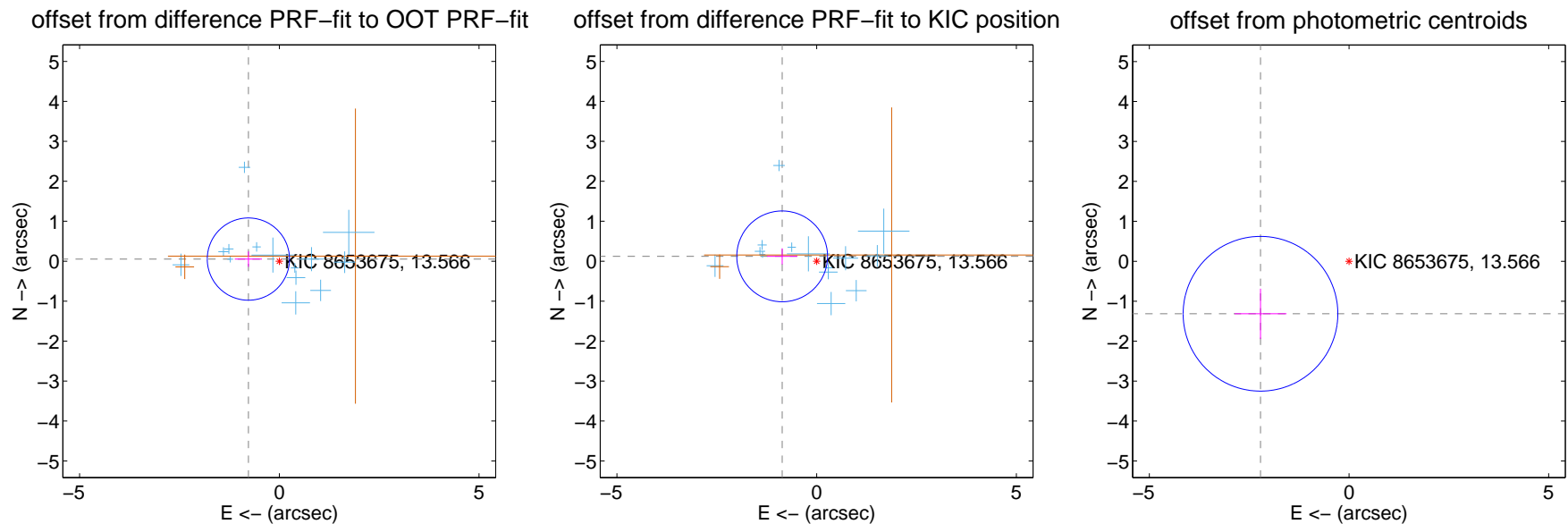
## DV Centroid Data

Supplemental centroid analysis for 008653675-02. Kepler magnitude: 13.57. Transit SNR 12.34

There are 14 quarters with good PRF difference image offsets

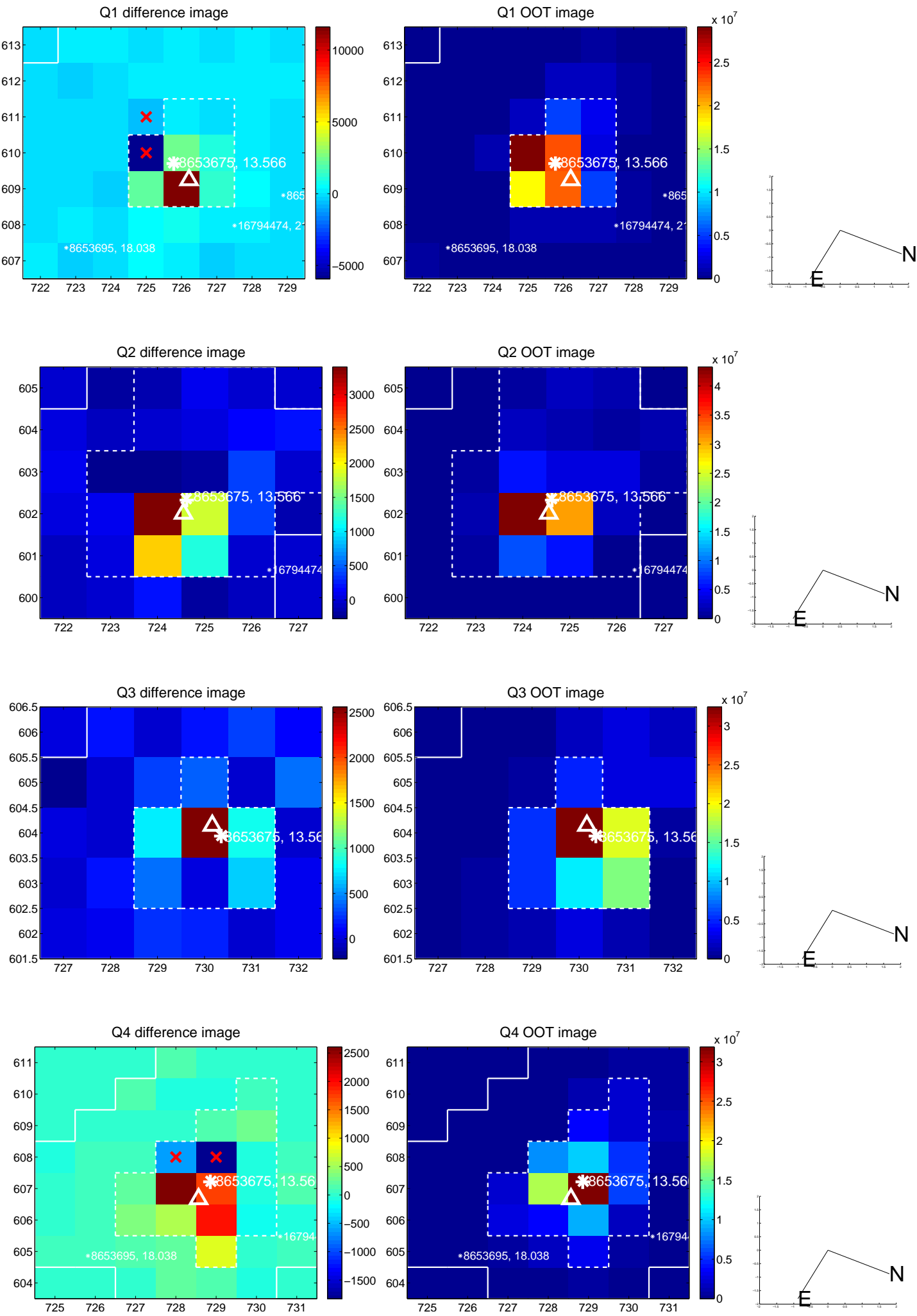
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.776 \pm 0.343$	2.26	$0.774 \pm 0.340$	$0.053 \pm 0.193$
PRF-fit source offset from KIC position	$0.872 \pm 0.379$	2.30	$0.863 \pm 0.379$	$0.121 \pm 0.200$
photometric centroid source offset	$2.58 \pm 0.65$	3.99	$2.22 \pm 0.65$	$-1.31 \pm 0.63$

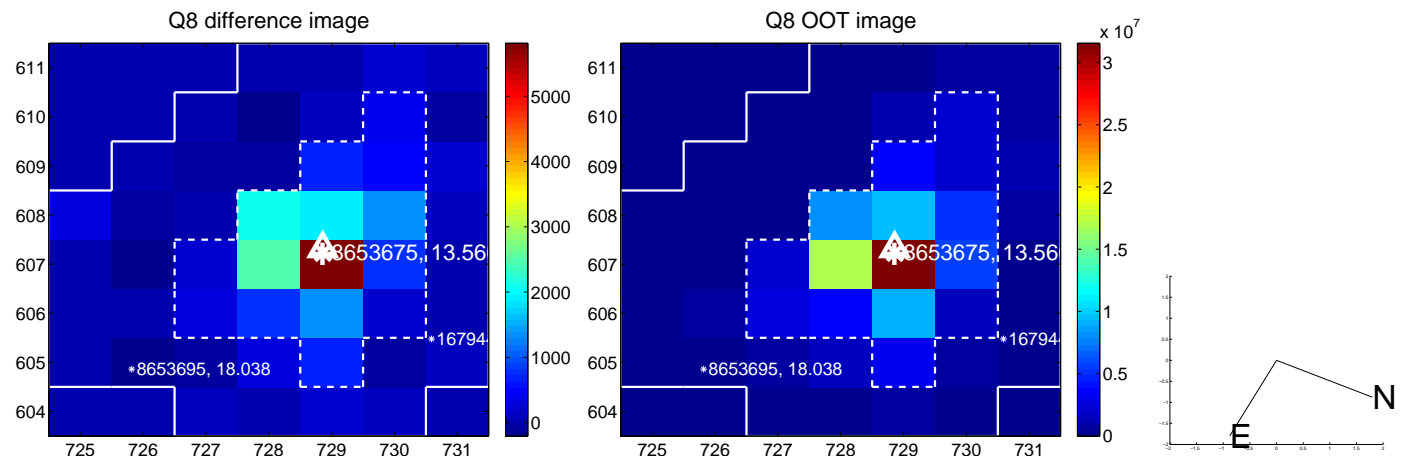
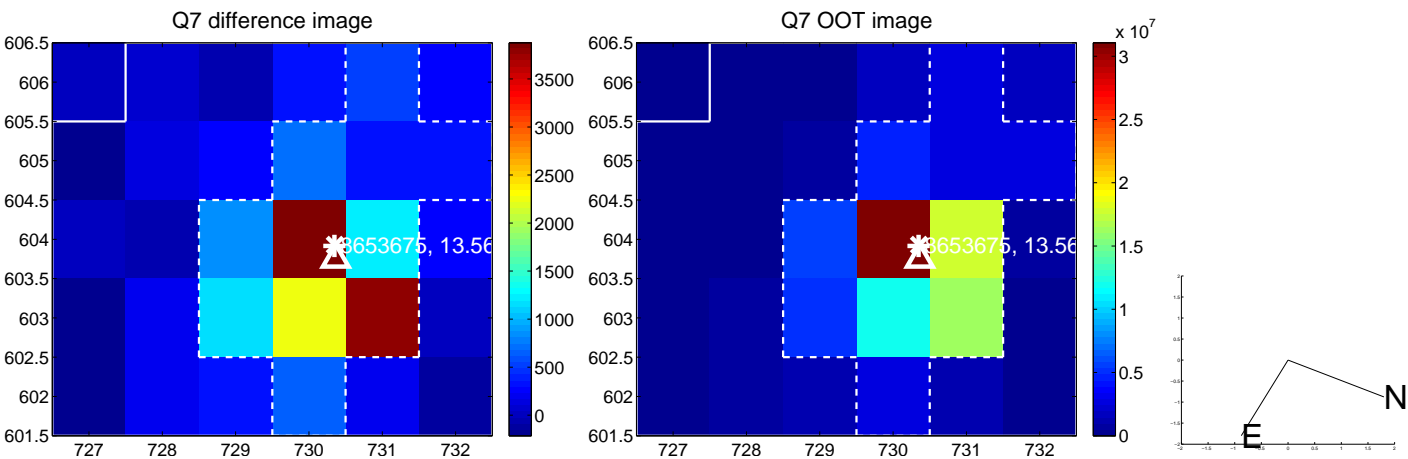
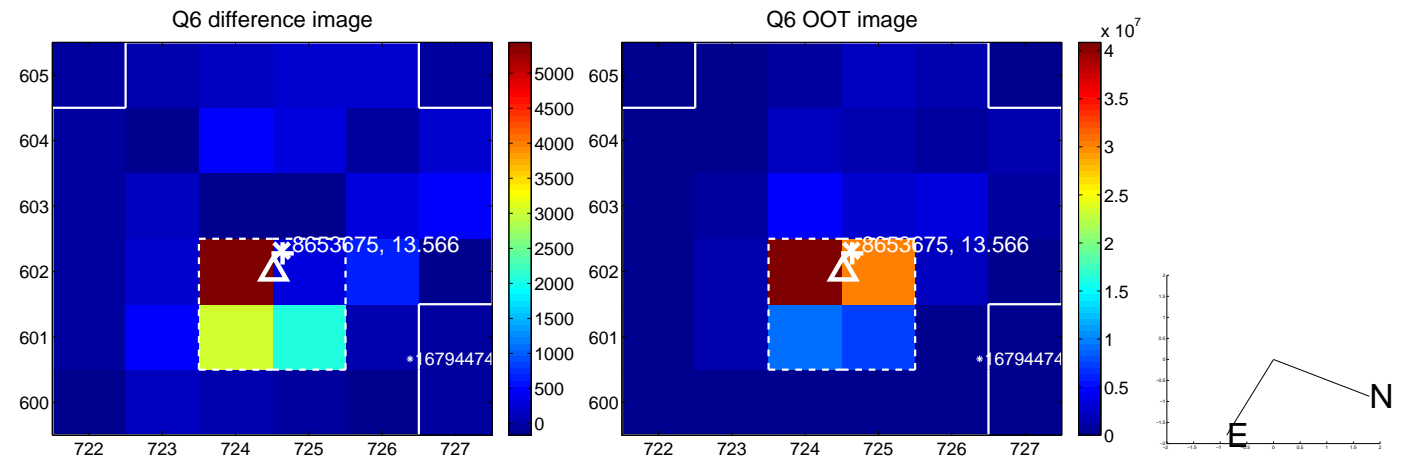
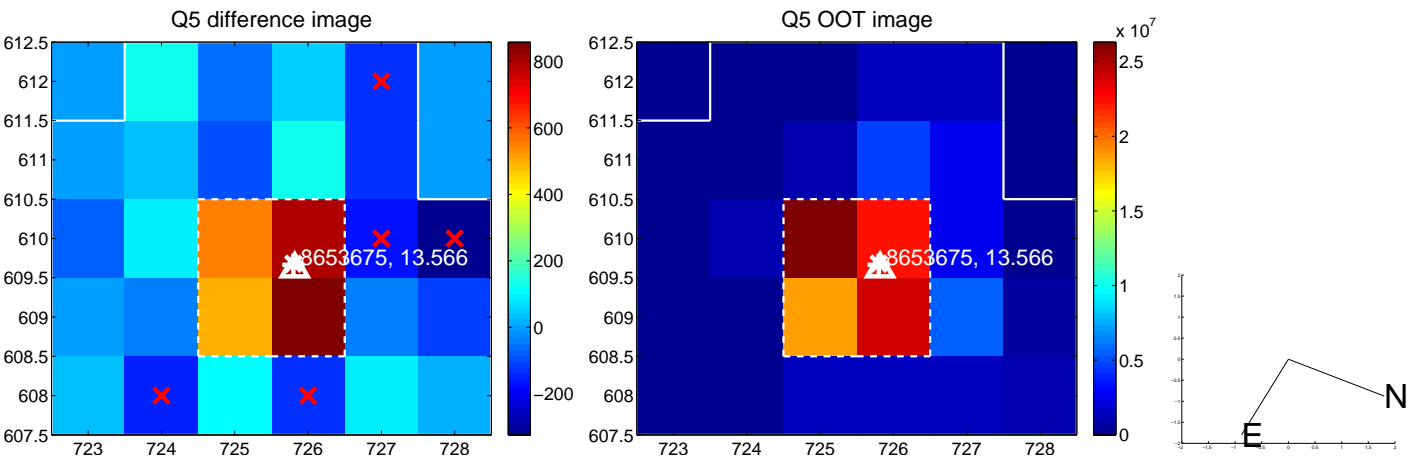


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

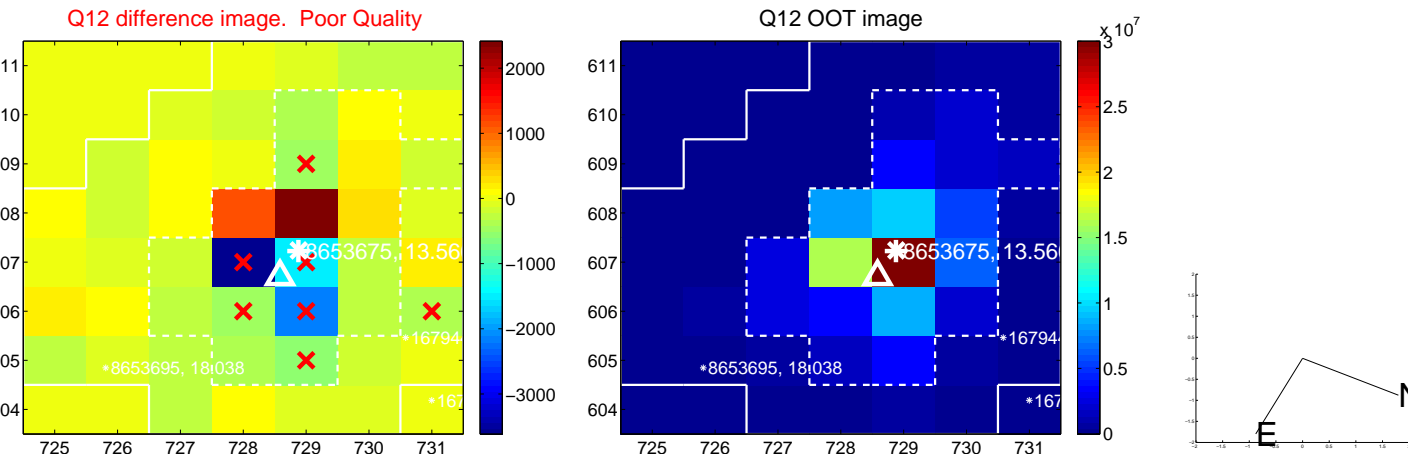
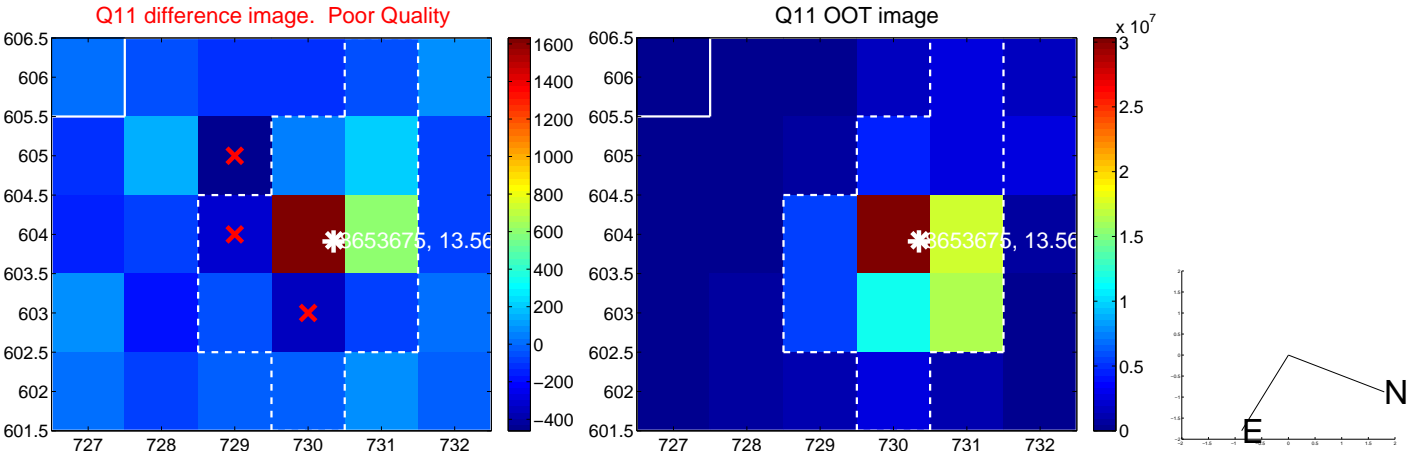
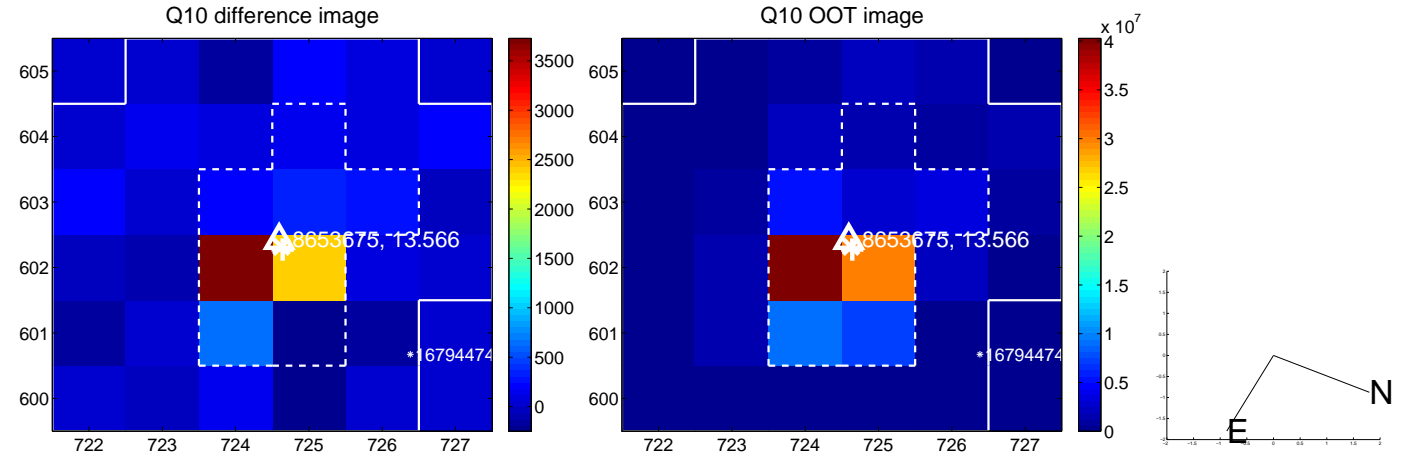
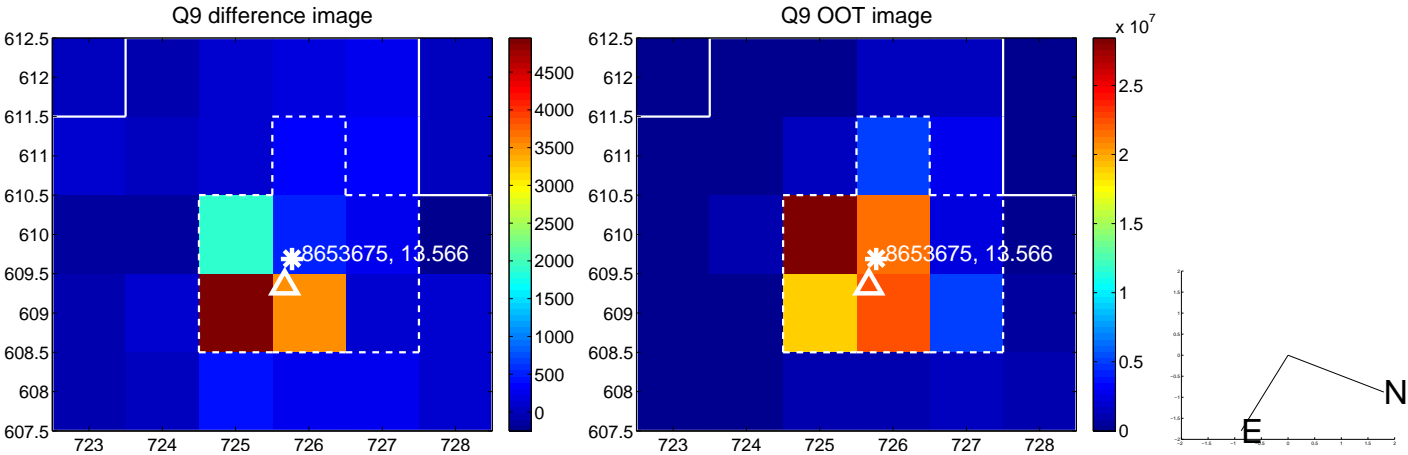


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

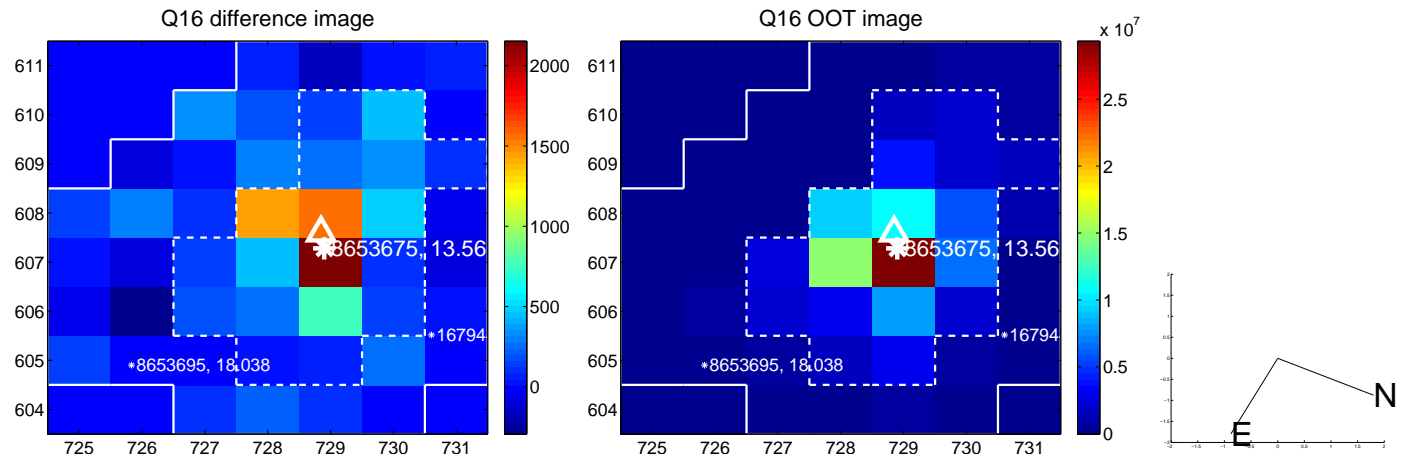
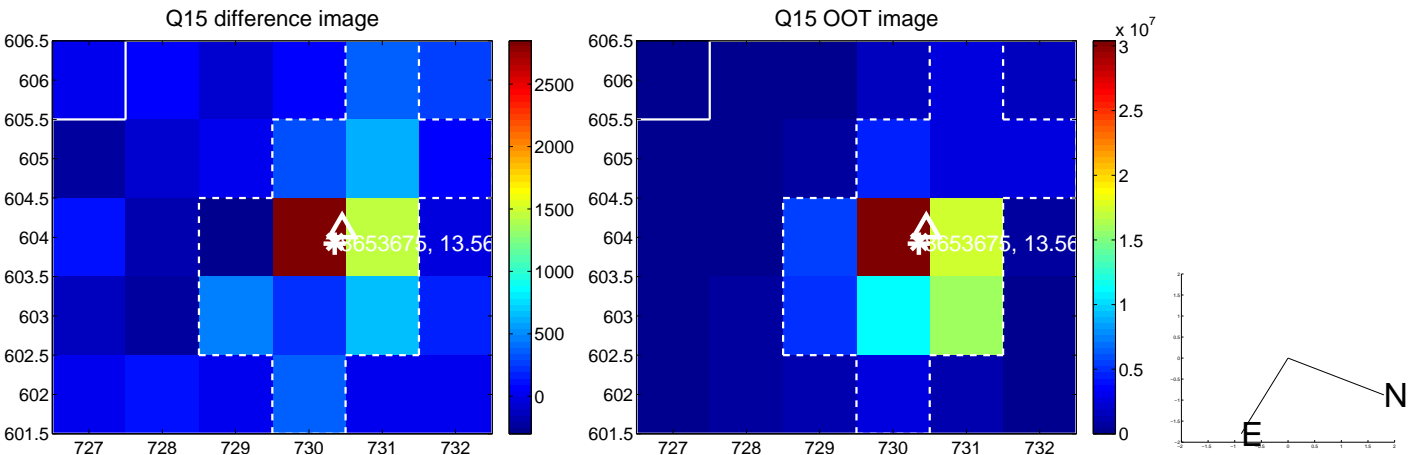
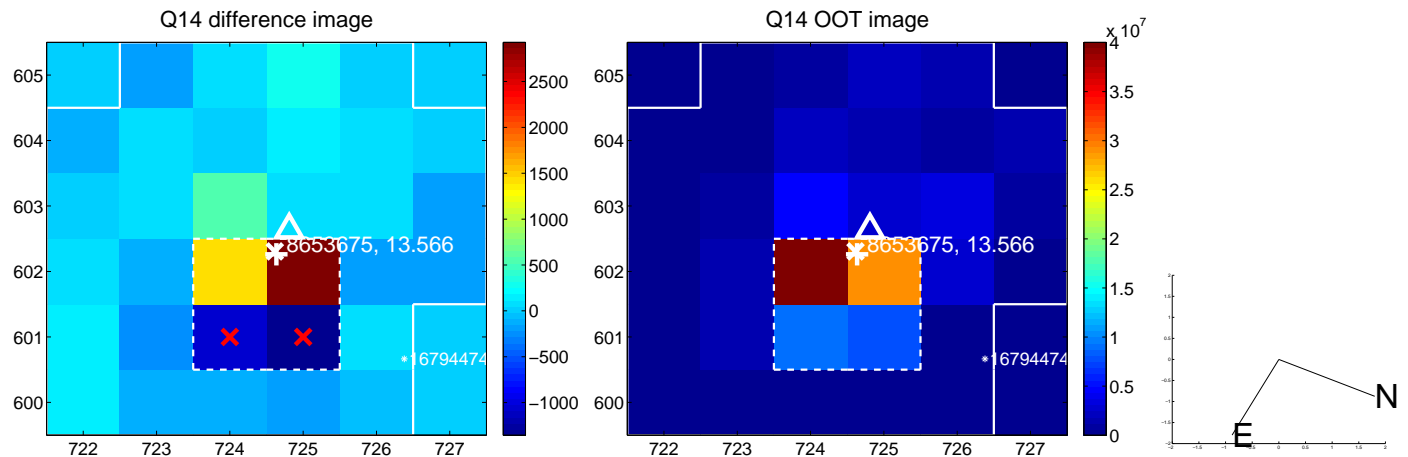
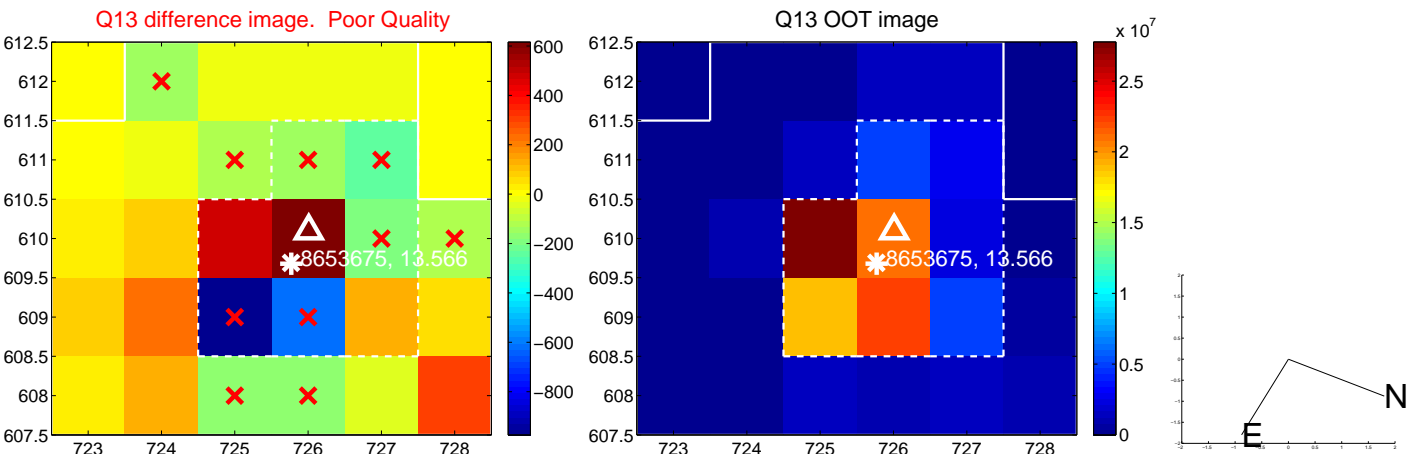




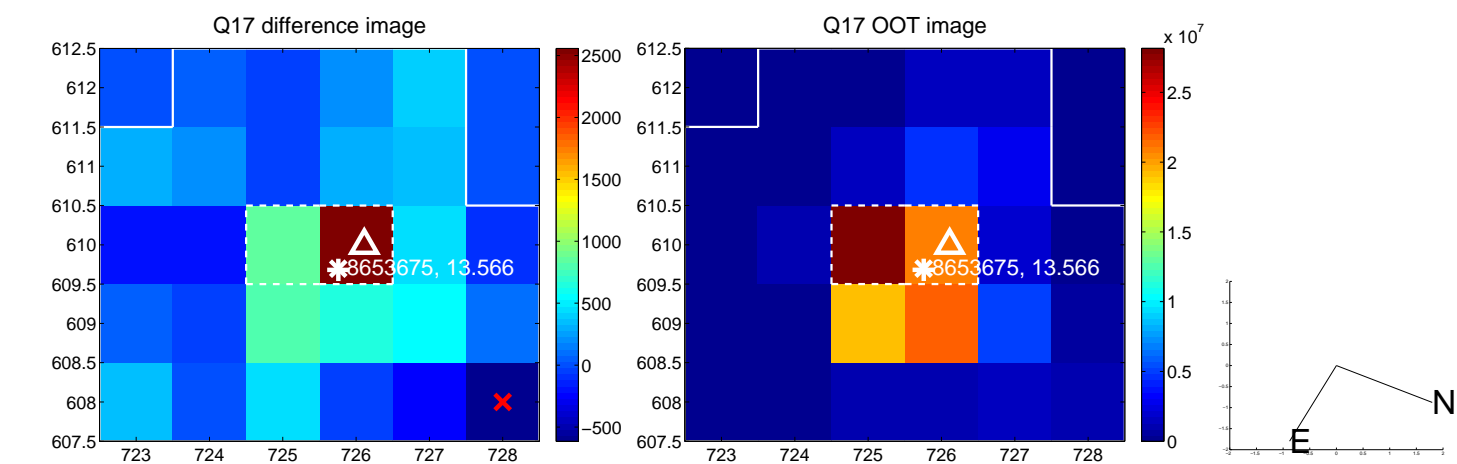
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



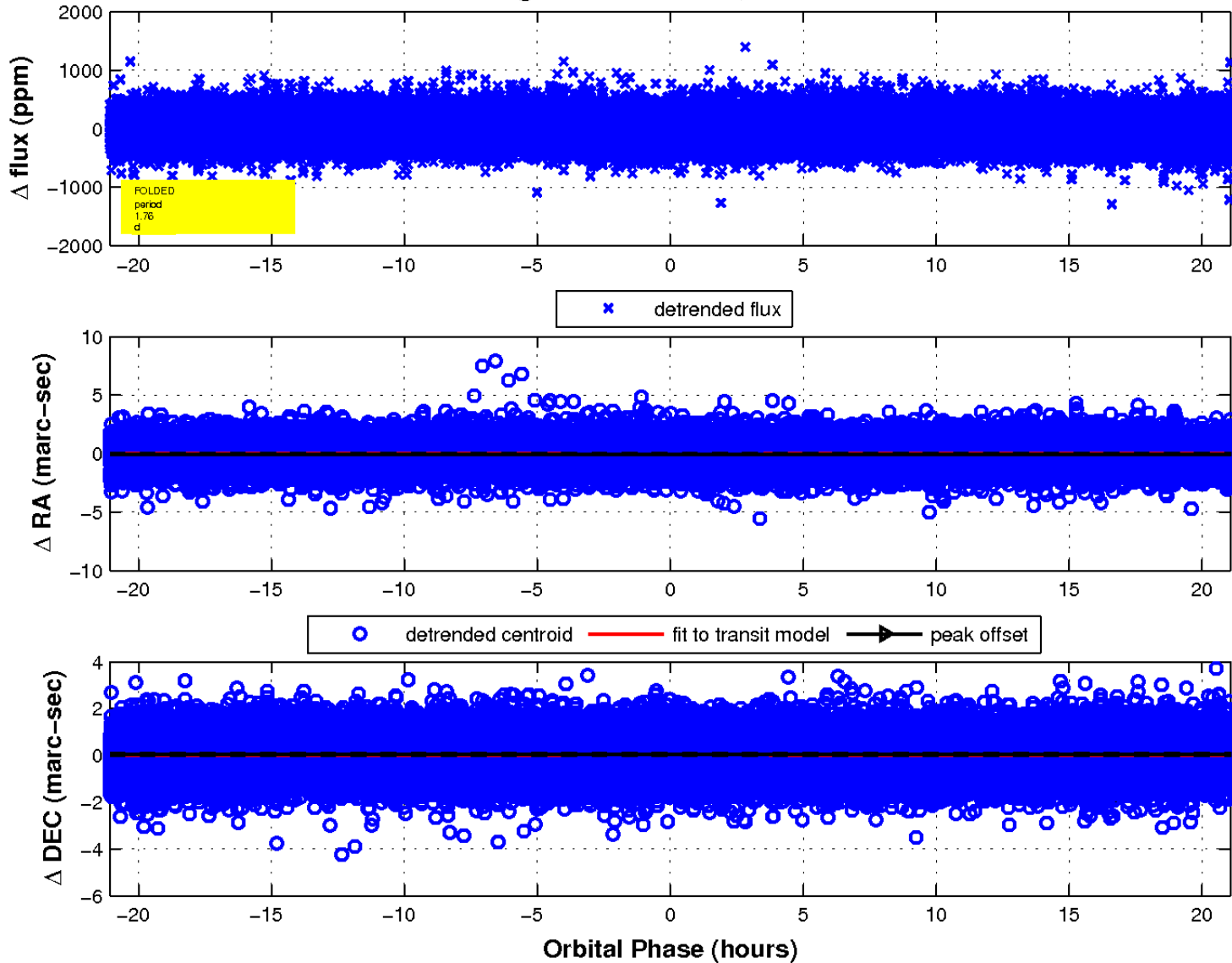
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

