

# KIC 008044075

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008044075-01	OBS	No	3.134945	132.156775	32.1	5.711	9.3	10.2	1.97	6664	1.36	3035.37
008044075-02	OBS	No	3.134644	131.650508	12.1	9.452	7.3	4.6	1.97	6664	0.80	3035.76

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008044075-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008044075-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

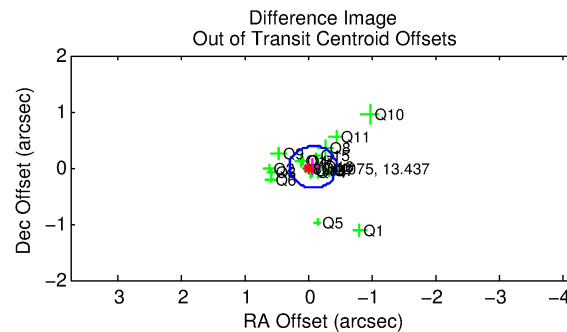
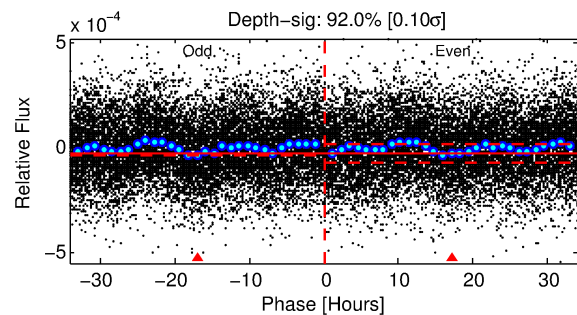
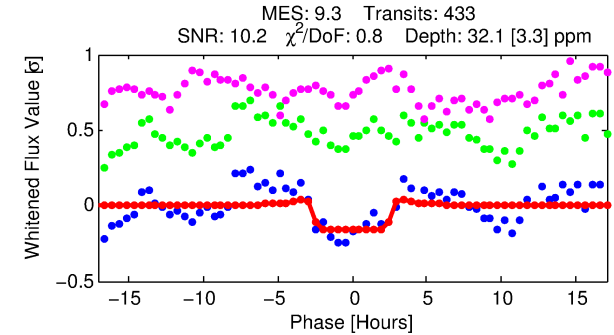
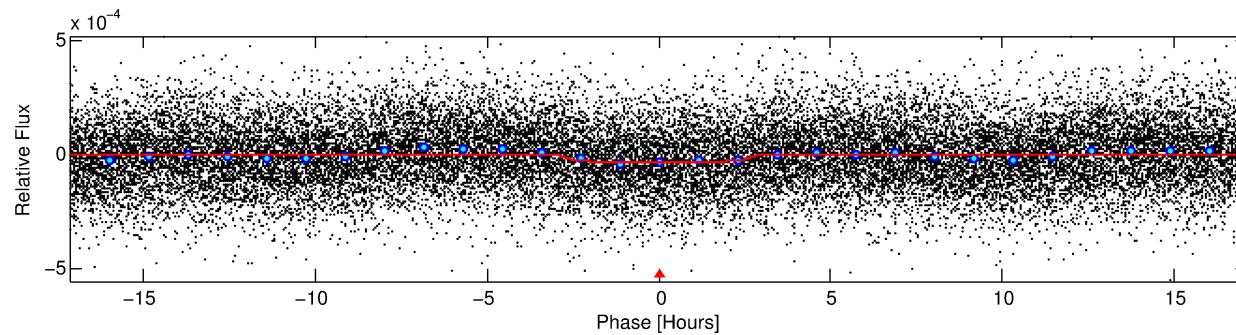
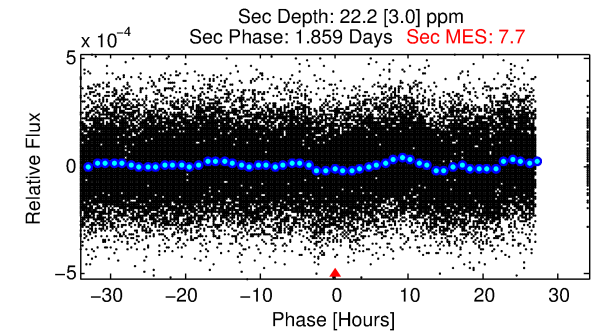
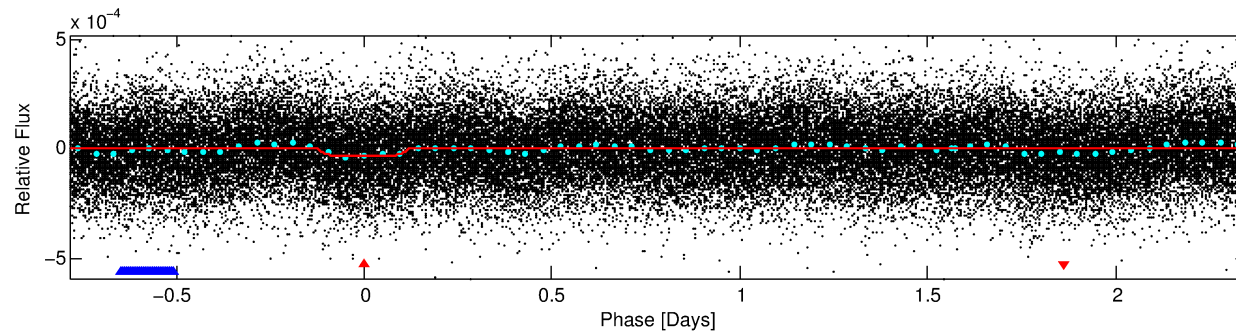
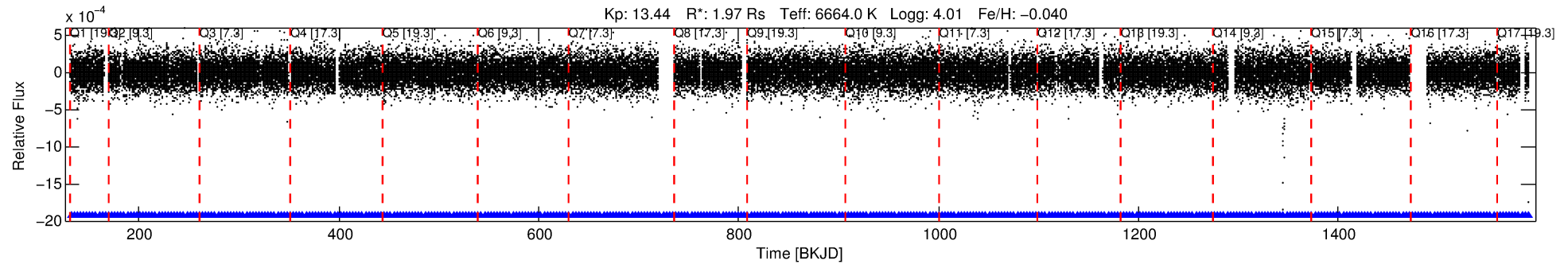
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008044075-01

No Significant Match Found

# DV One-Page Summary

KIC: 8044075 Candidate: 1 of 2 Period: 3.135 d



## DV Fit Results:

Period = 3.13494 [0.00003] d  
Epoch = 132.1568 [0.0052] BKJD  
Rp/R\* = 0.0064 [0.0011]  
a/R\* = 1.73 [1.14]  
b = 0.95 [0.11]  
Seff = 3035.37 [1498.26]  
Teq = 1893 [234] K  
Rp = 1.36 [0.53] Re  
a = 0.0475 [0.0147] AU  
Ag = 14.81 [8.79] [1.57σ]  
Teffp = 5741 [568] K [6.27σ]

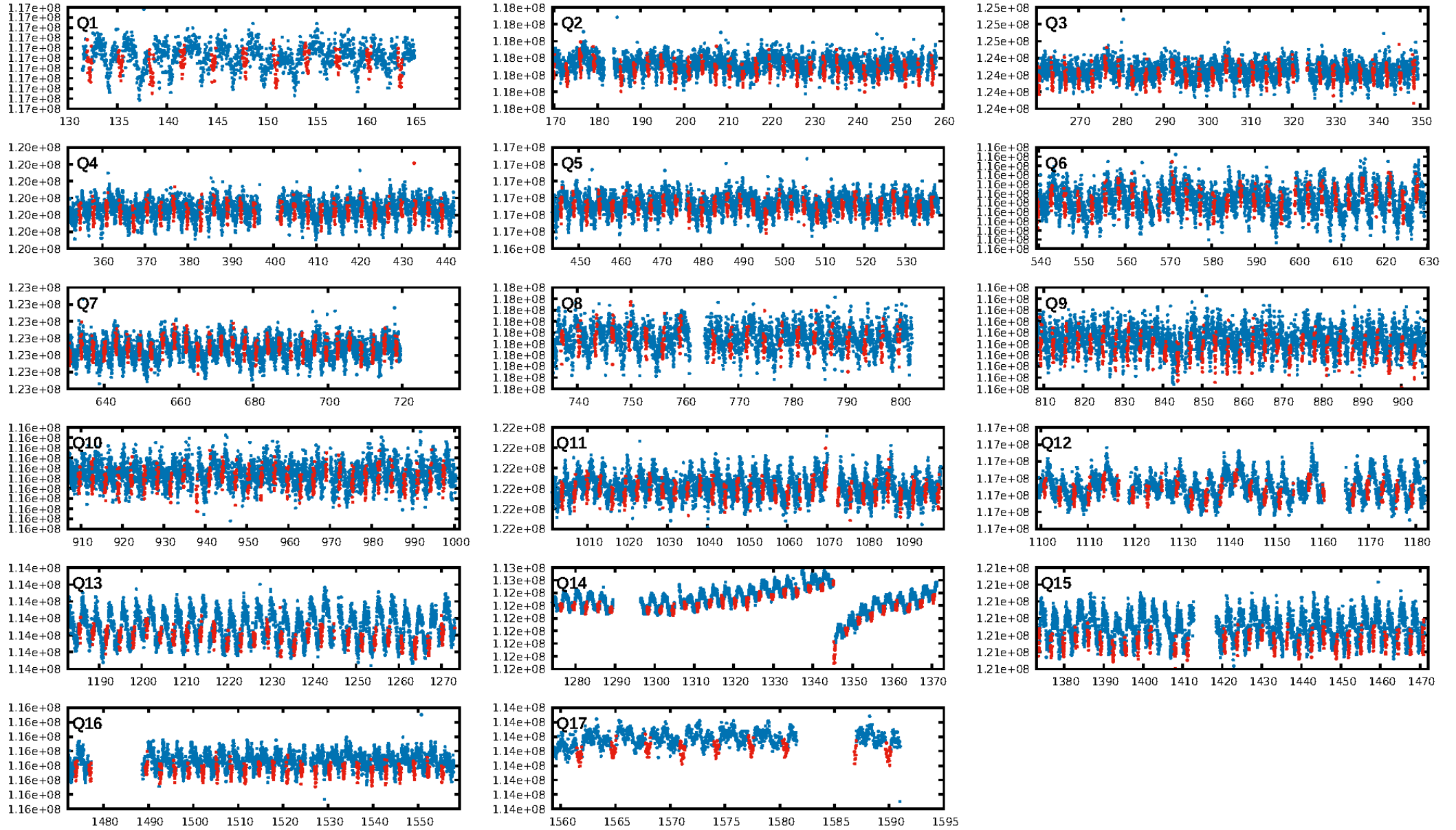
## DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: 3.75e-15  
RollingBand-fgt: 1.00 [413/413]  
GhostDiagnostic-chr: 1.586  
Centroid-sig: 35.8%  
Centroid-so: 0.758 arcsec [0.98σ]  
OotOffset-rm: 0.069 arcsec [0.56σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 0.098 arcsec [0.79σ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

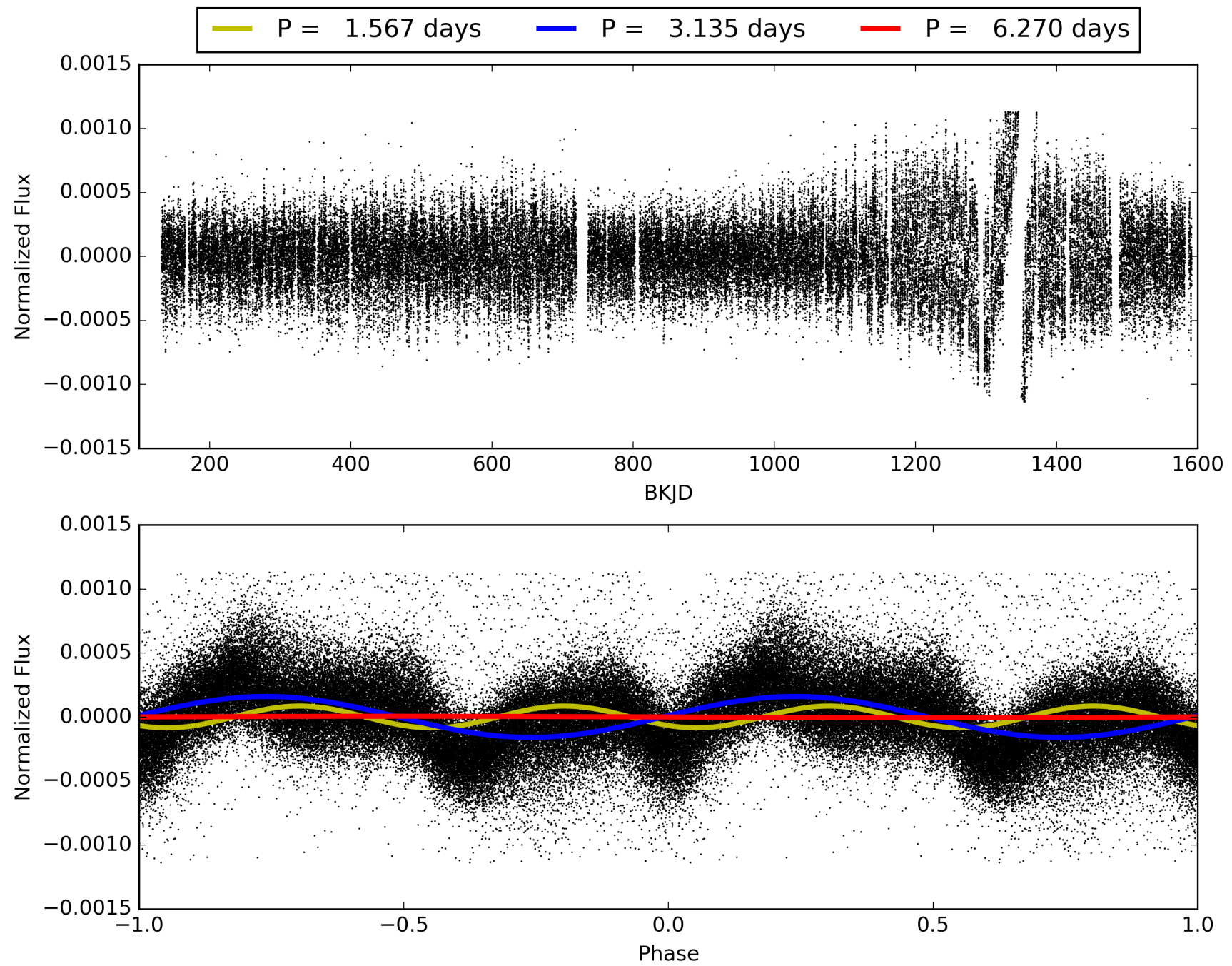
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:45:18 Z

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

# TCE 008044075-01, PDC Light Curves

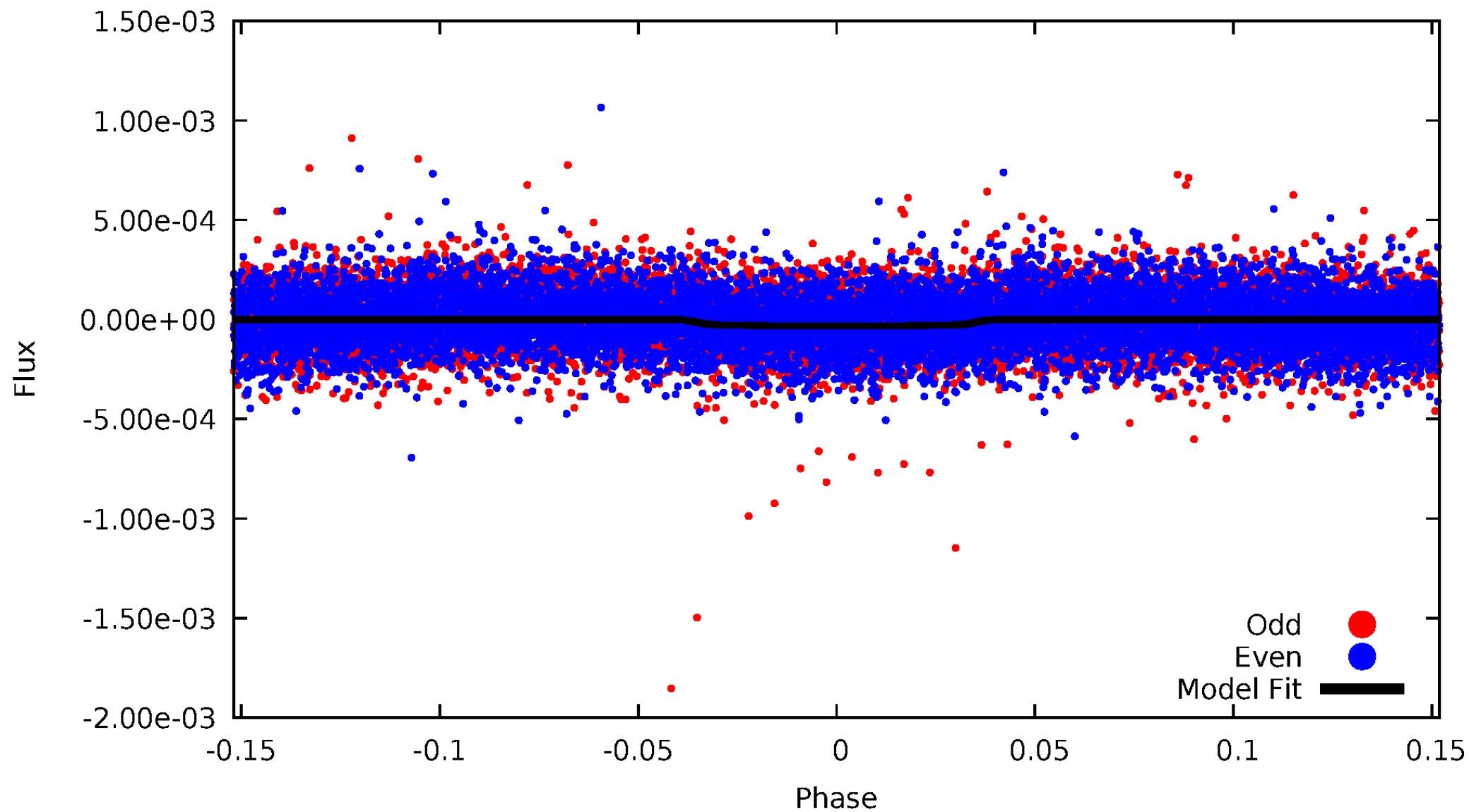


TCE 008044075-01



# DV Odd/Even

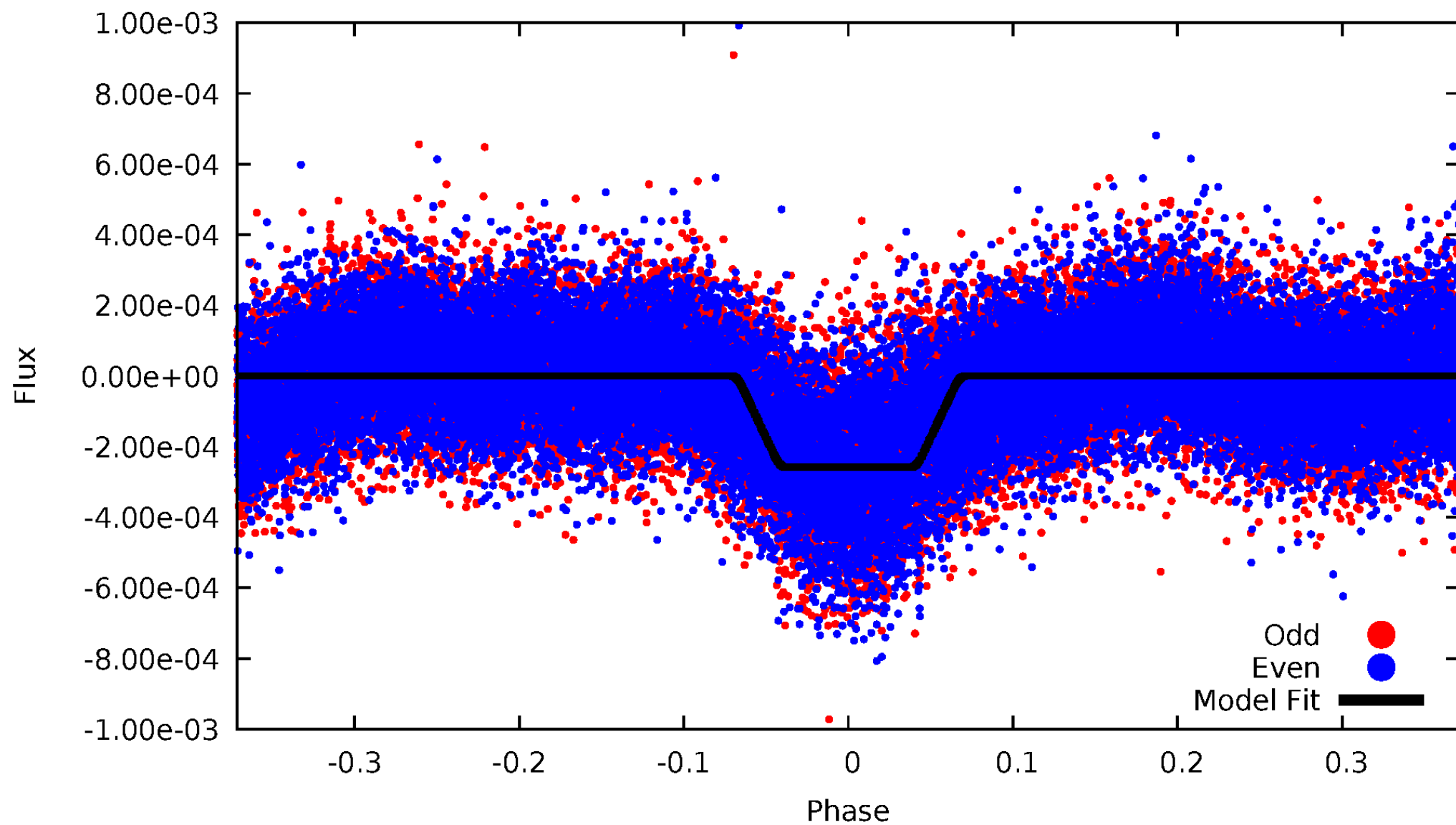
TCE 008044075-01



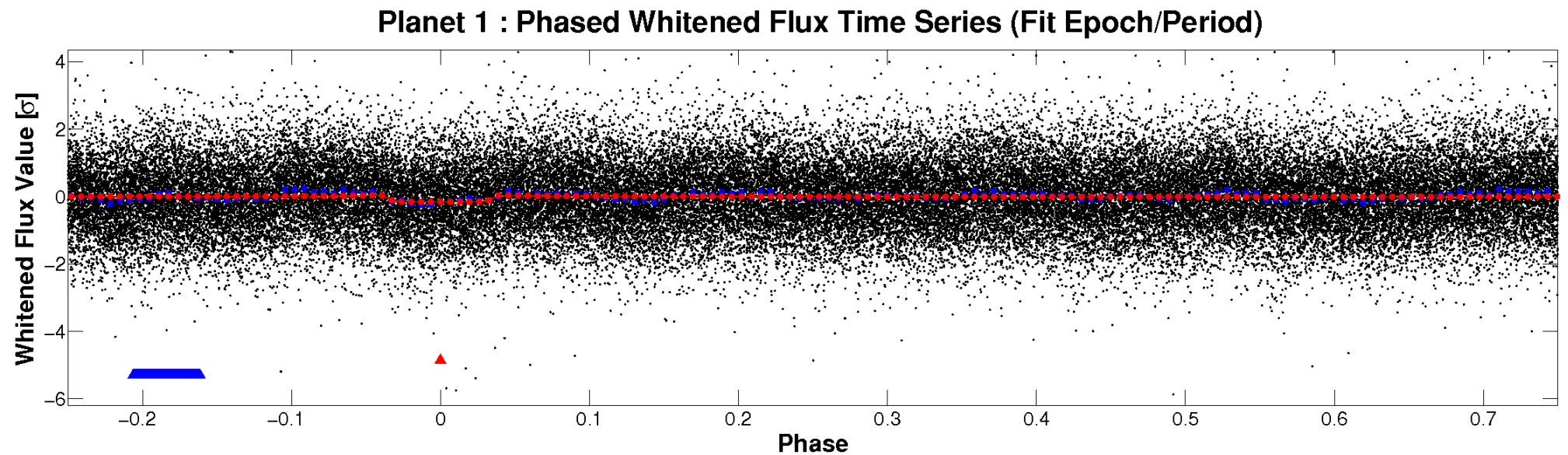
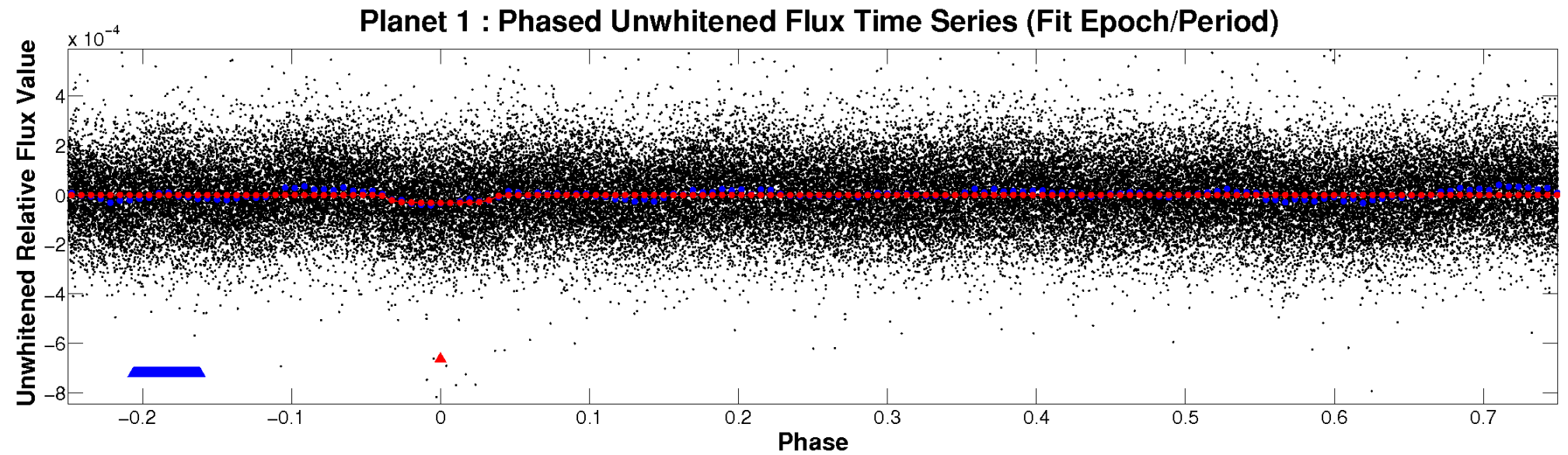


# ALT Odd/Even

TCE 008044075-01

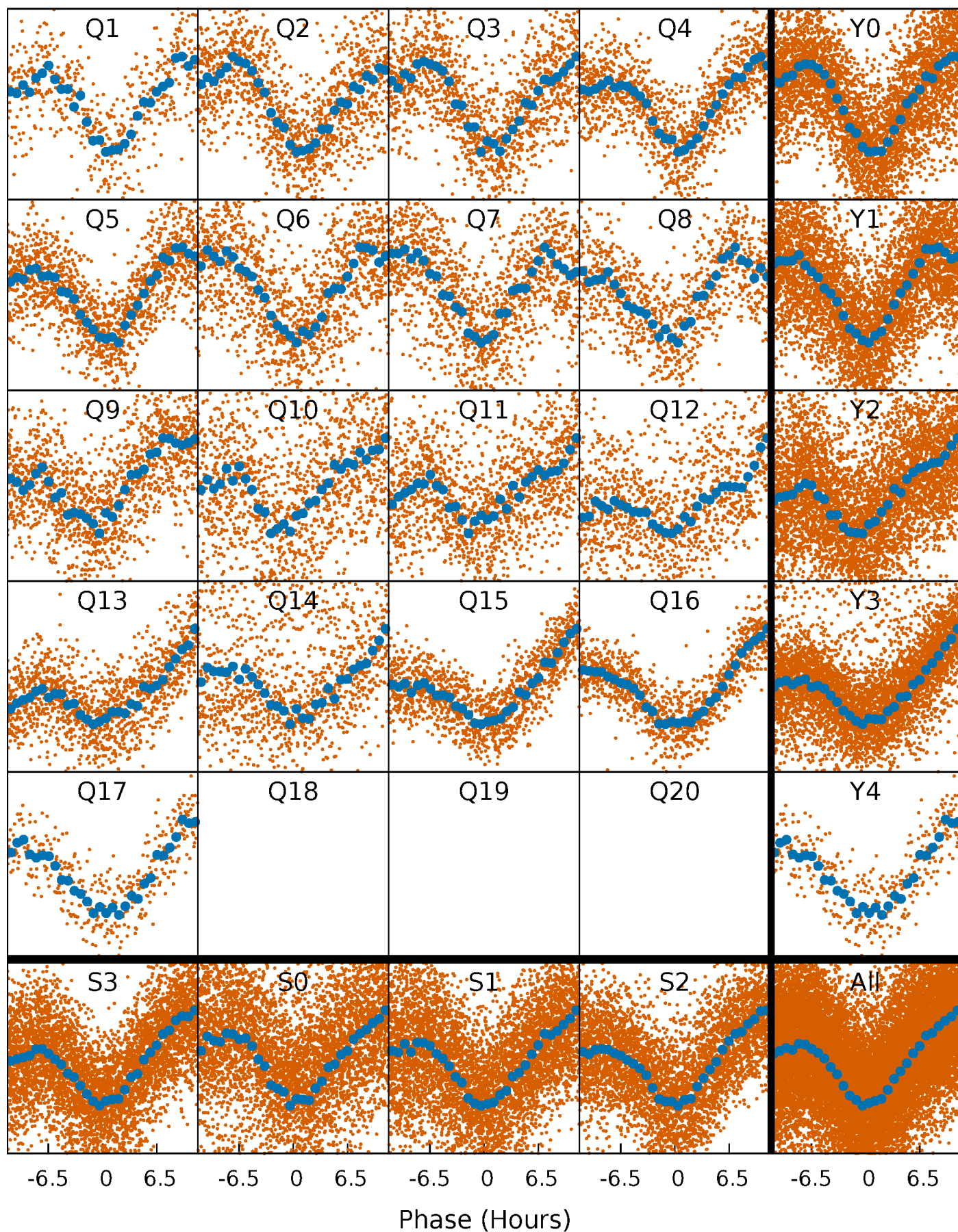


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

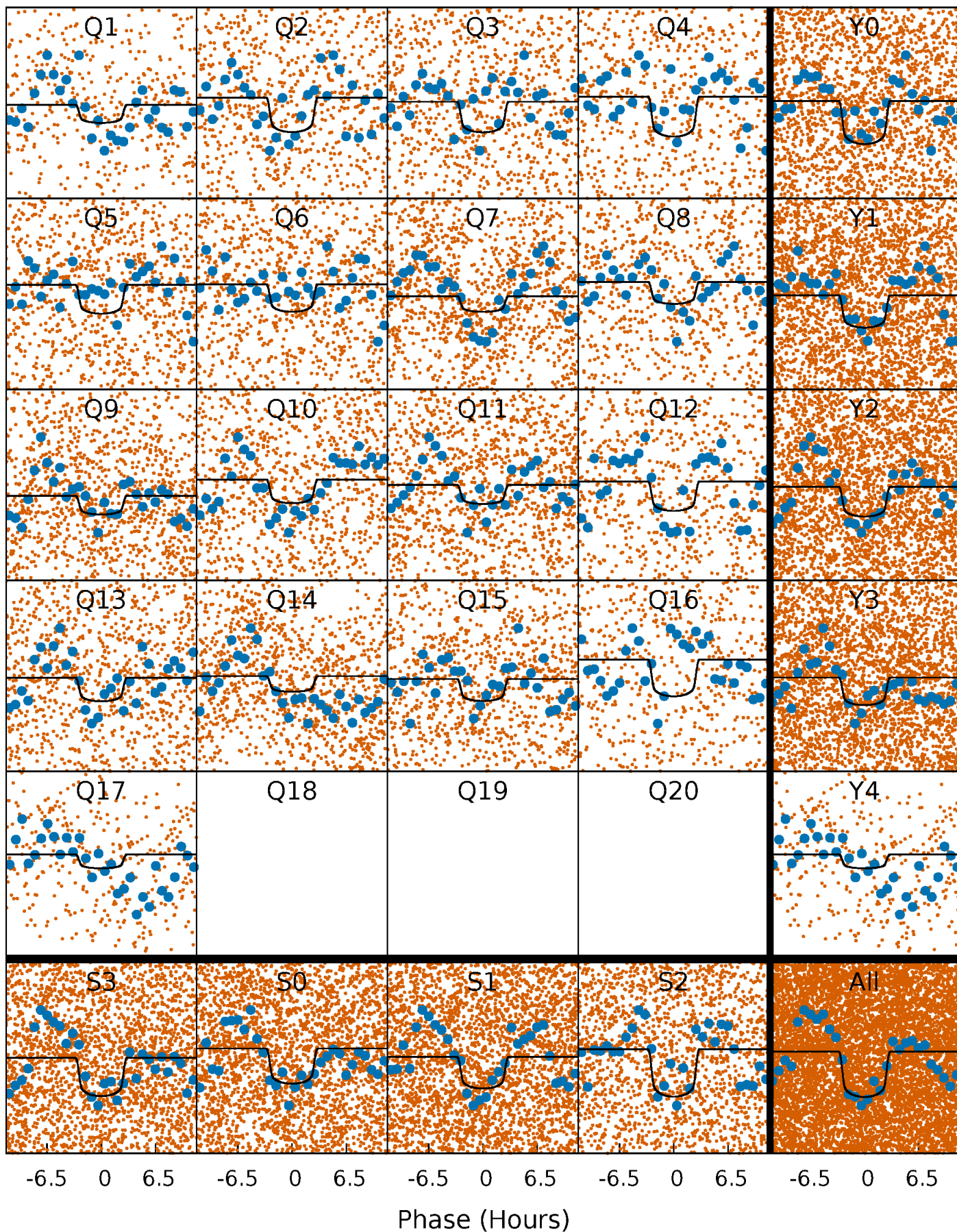
TCE 008044075-01 P= 3.134945 Days  $T_0=132.156775$  (BKJD)





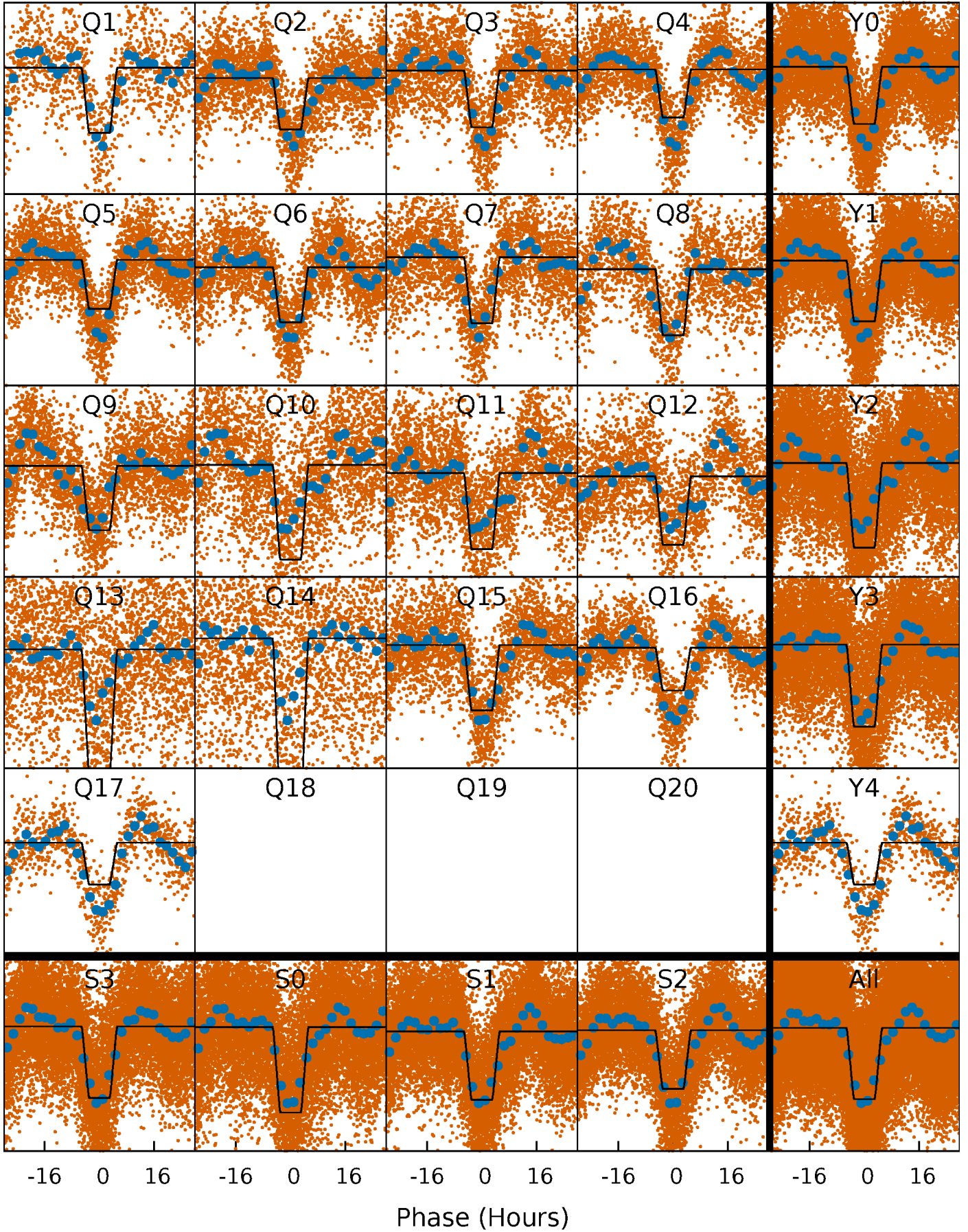
# DV Quarter-Phased Transit Curves

TCE 008044075-01 P= 3.134945 Days  $T_0=132.156775$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

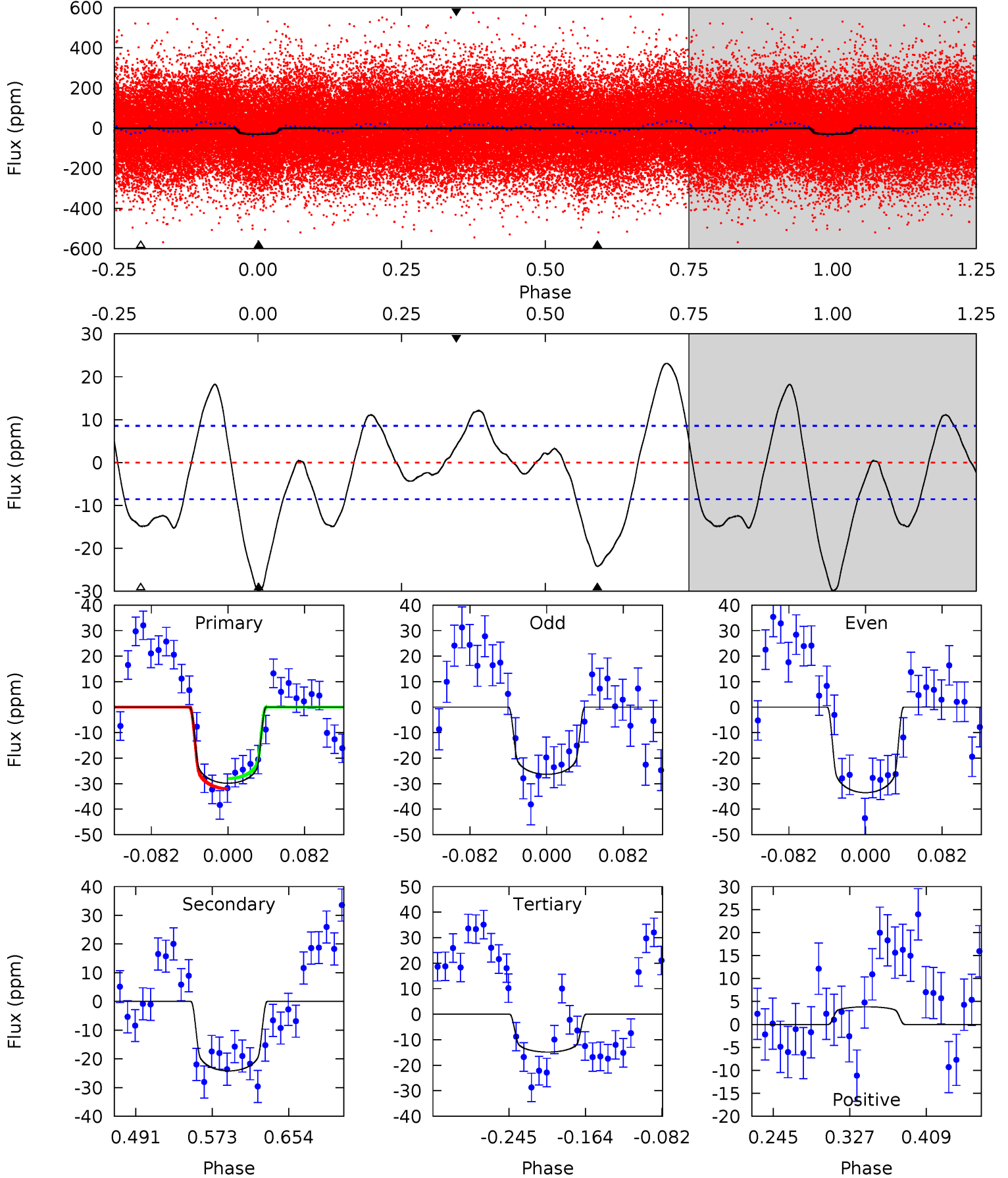
TCE 008044075-01 P= 3.134958 Days  $T_0=132.178290$  (BKJD)



# DV Model-Shift Uniqueness Test

008044075-01, P = 3.134945 Days, E = 129.021830 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
16.1	13.1	8.01	2.07	4.61	1.74	5.38	8.11	14.1	5.05	11.0	1.94	1.10	0.44	1.08

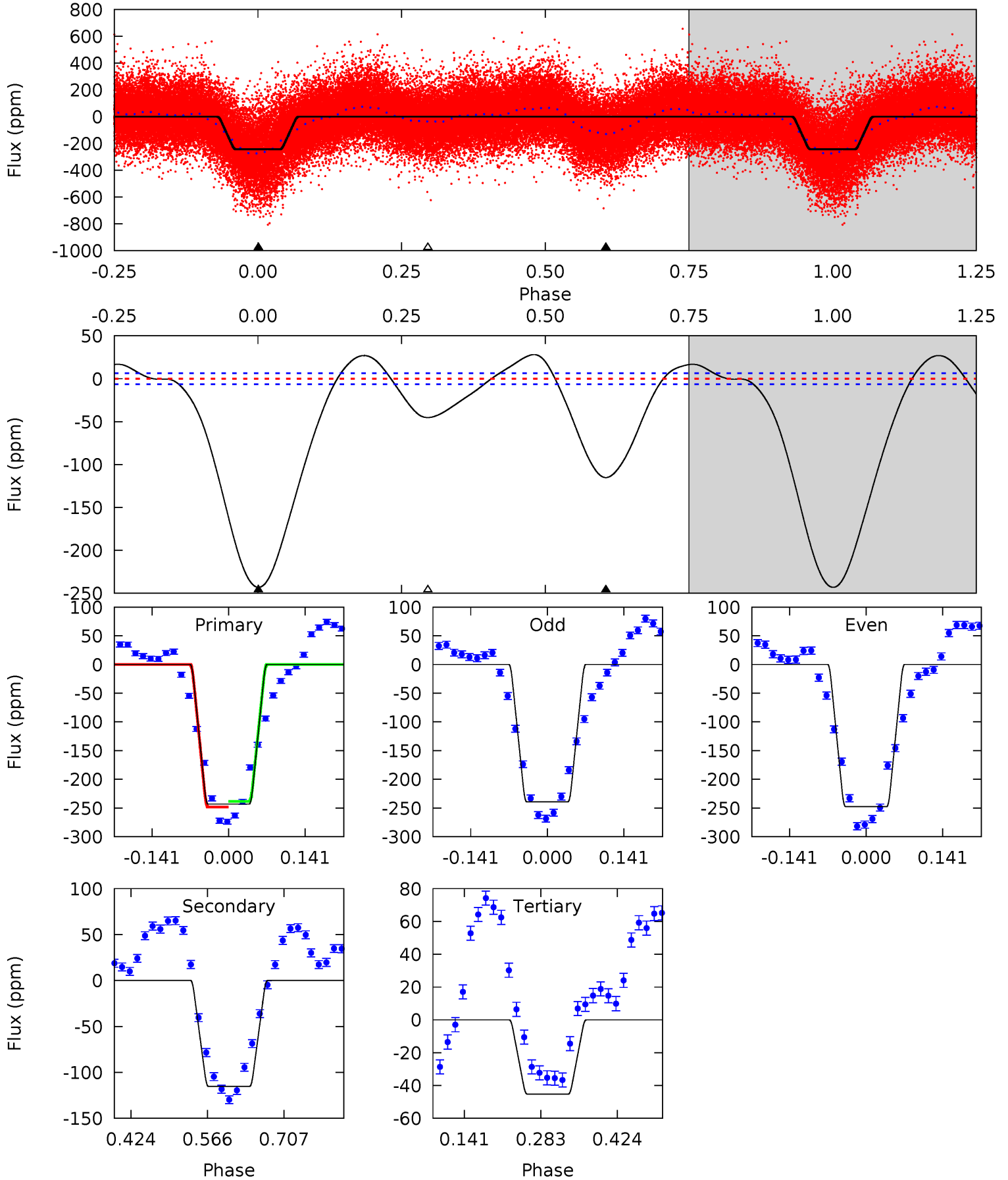




# Alt Model-Shift Uniqueness Test

008044075-01, P = 3.134958 Days, E = 129.043332 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
170.2	80.6	31.7	0	4.49	1.47	15.4	138.5	170.2	49.0	80.6	2.88	1.03	0.10	3.46





### Stellar Parameters For KIC 008044075

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6664^{+187}_{-258}$	$4.012^{+0.264}_{-0.176}$	$-0.040^{+0.250}_{-0.300}$	$1.968^{+0.569}_{-0.695}$	$1.453^{+0.203}_{-0.304}$	$0.268^{+0.510}_{-0.128}$
	+3%/-4%	+7%/-4%	+625%/-750%	+29%/-35%	+14%/-21%	+190%/-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 008044075-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-24 \pm 2$	$1.32^{+0.39}_{-0.31}$	$2627^{+205}_{-253}$	$5780^{+651}_{-443}$	$17^{+11}_{-7}$
Alt.	$-115 \pm 1$	$3.38^{+0.66}_{-0.61}$	$2623^{+220}_{-240}$	$5417^{+251}_{-223}$	$12^{+5}_{-4}$

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

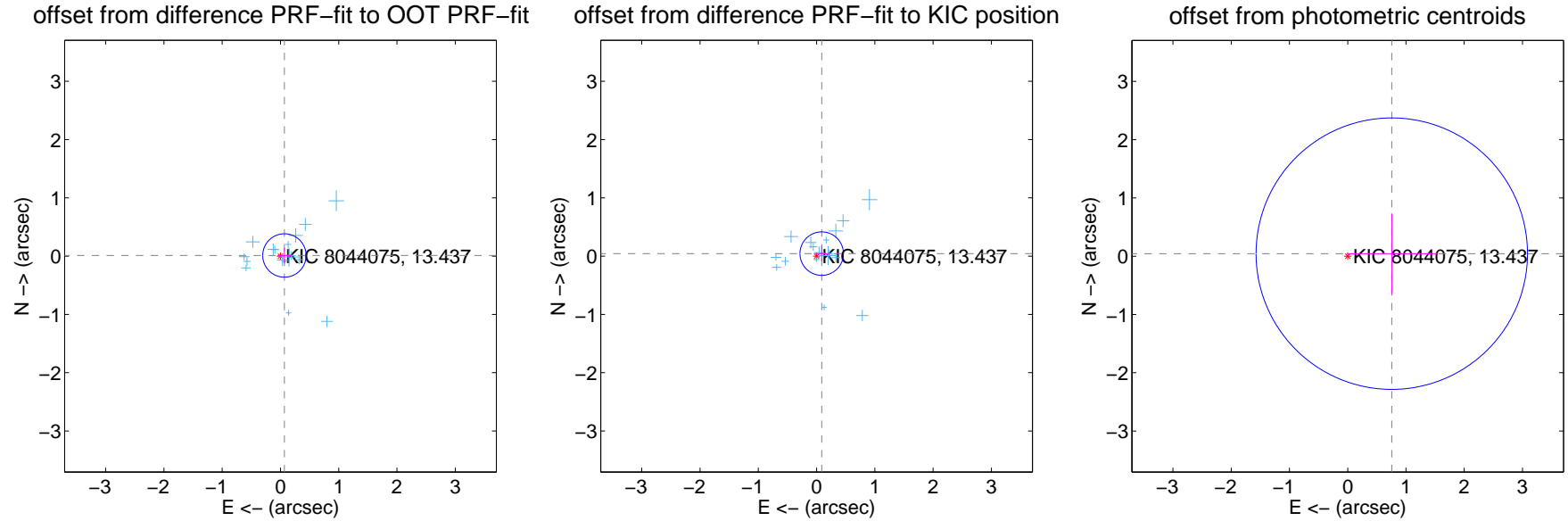
## DV Centroid Data

Supplemental centroid analysis for 008044075-01. Kepler magnitude: 13.44. Transit SNR 10.21

There are 17 quarters with good PRF difference image offsets

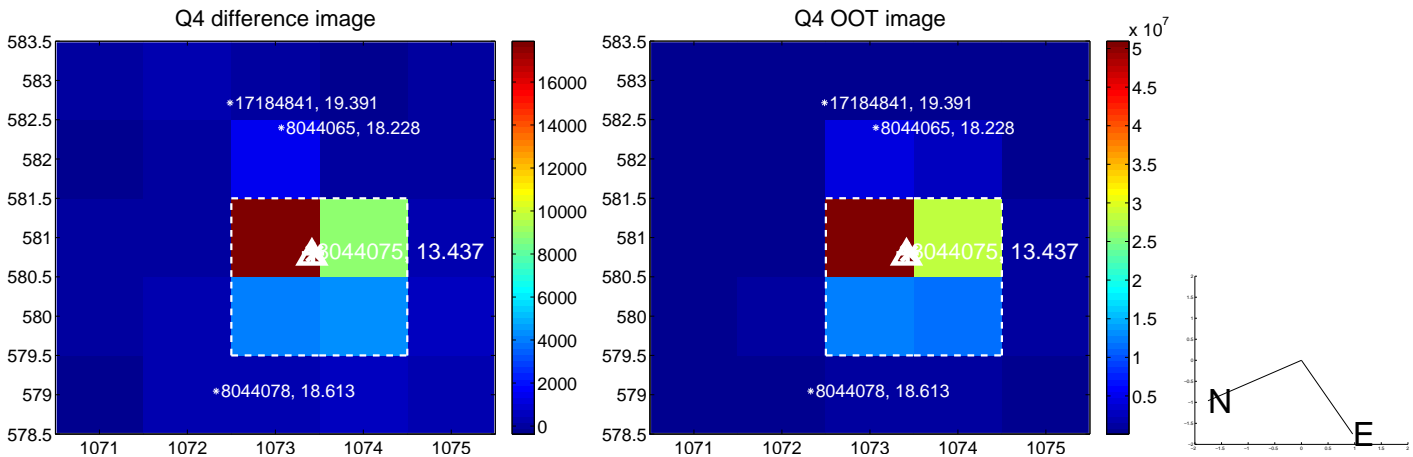
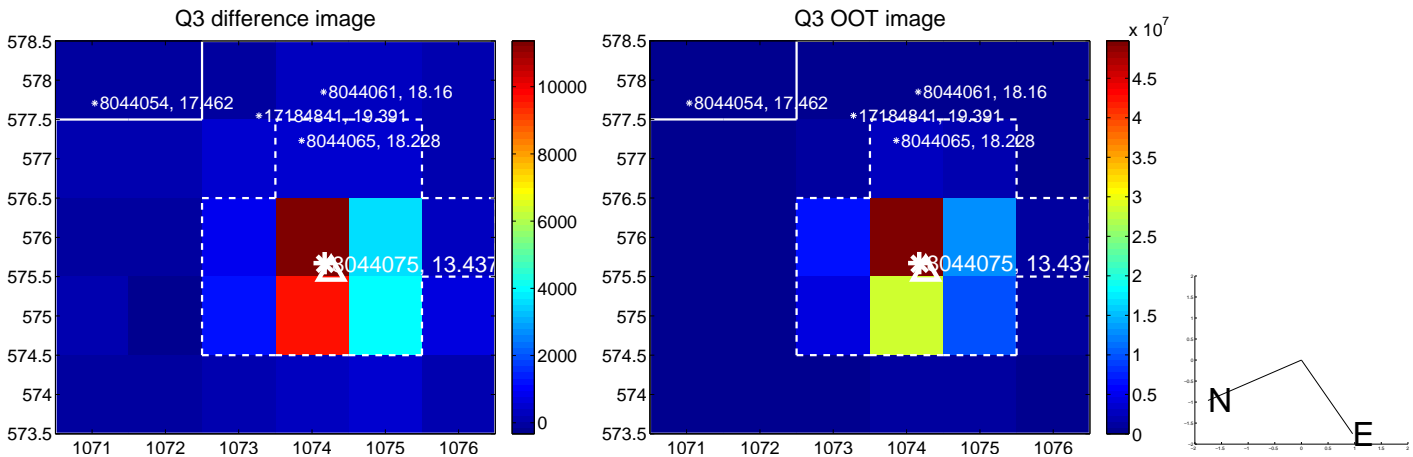
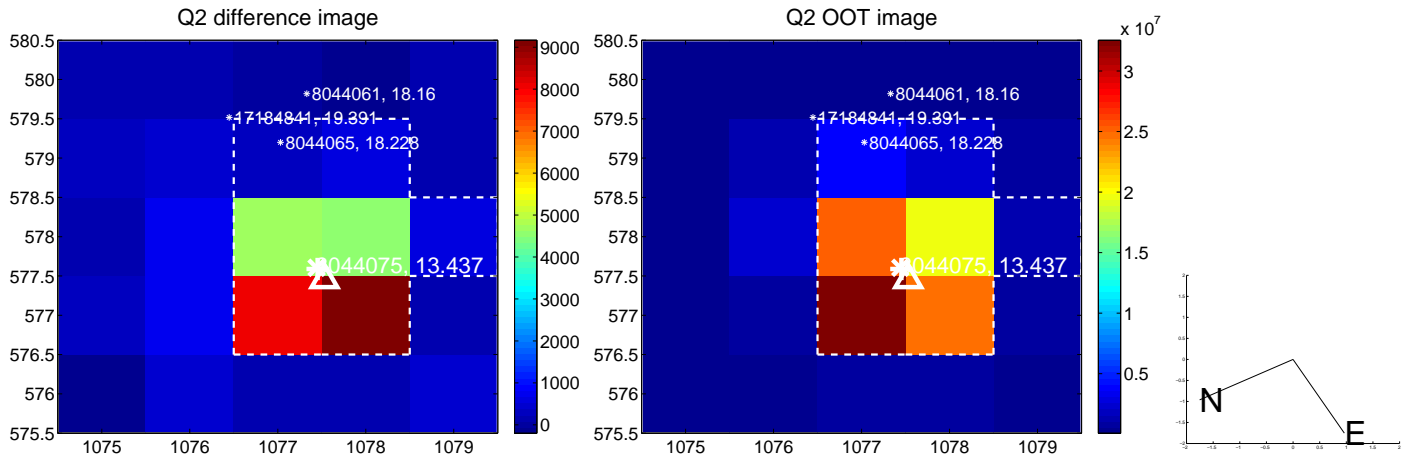
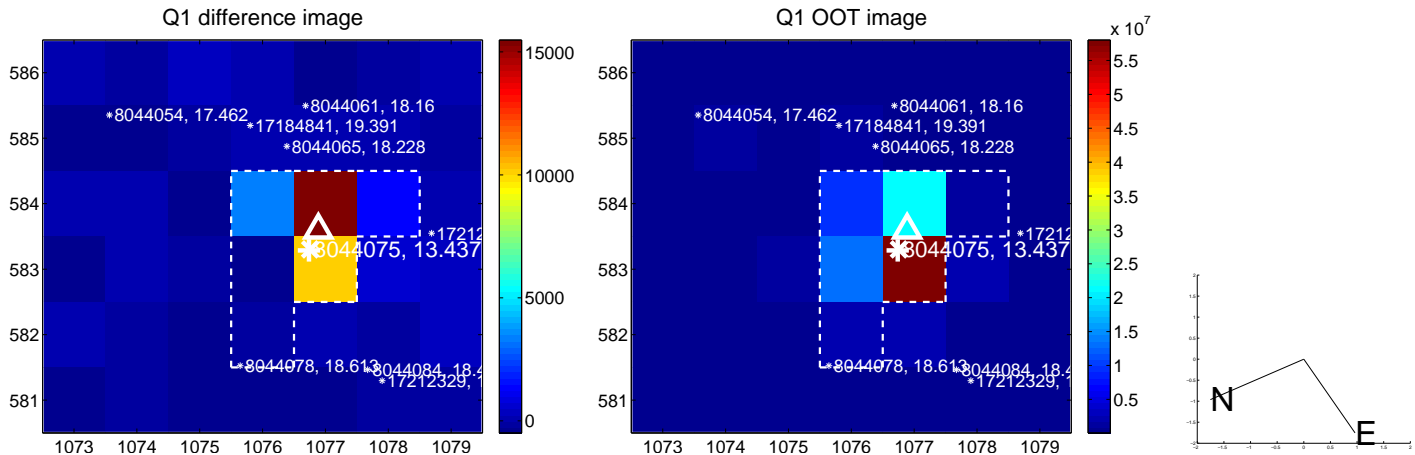
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.069 \pm 0.124$	0.56	$-0.068 \pm 0.123$	$0.011 \pm 0.131$
PRF-fit source offset from KIC position	$0.098 \pm 0.124$	0.79	$-0.088 \pm 0.117$	$0.043 \pm 0.132$
photometric centroid source offset	$0.76 \pm 0.78$	0.98	$-0.76 \pm 0.78$	$0.04 \pm 0.69$

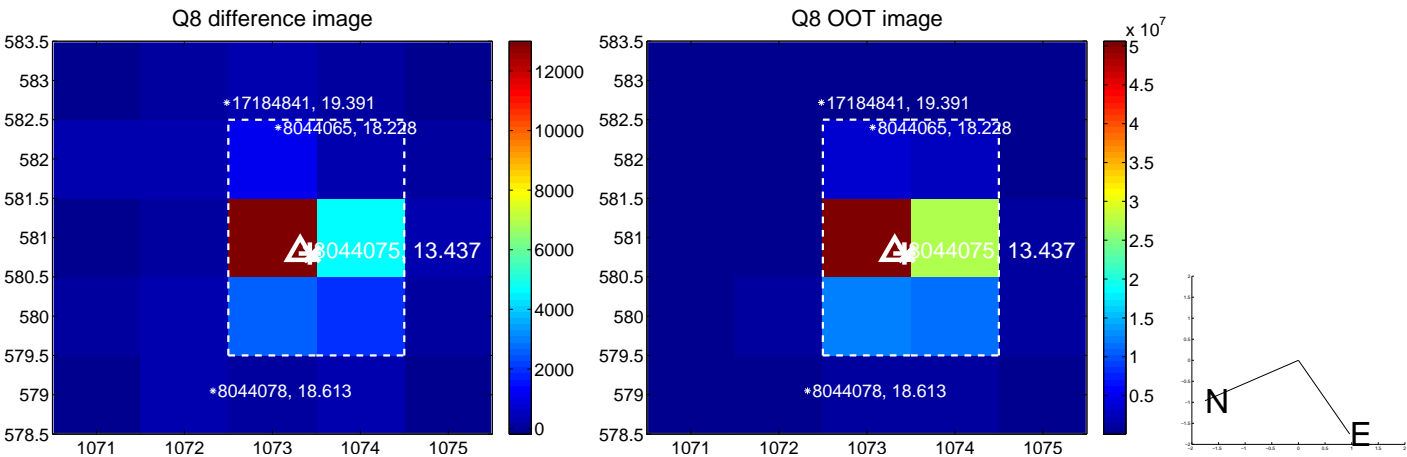
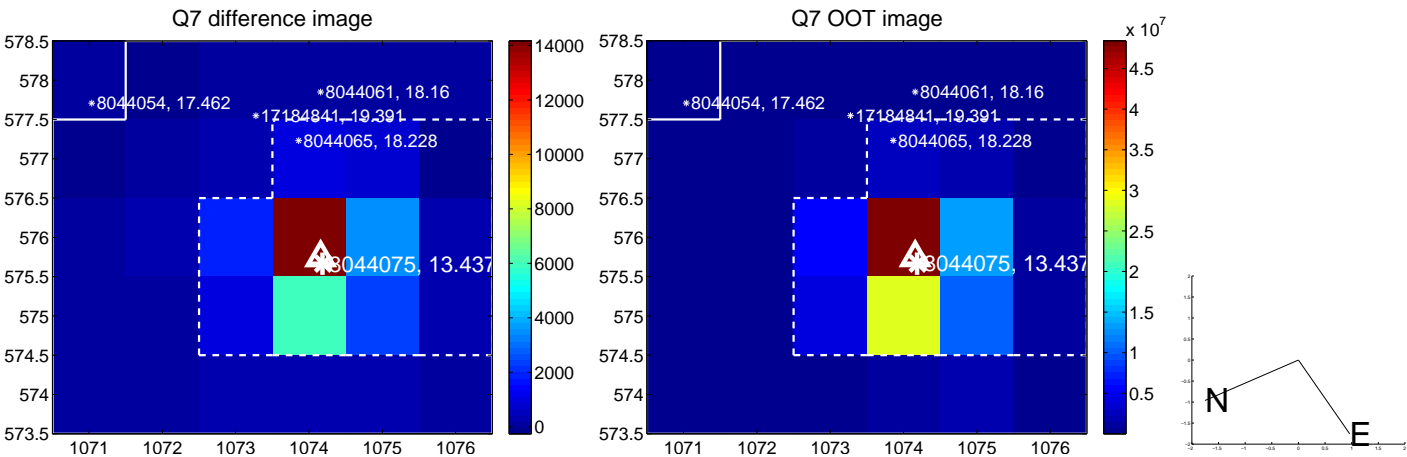
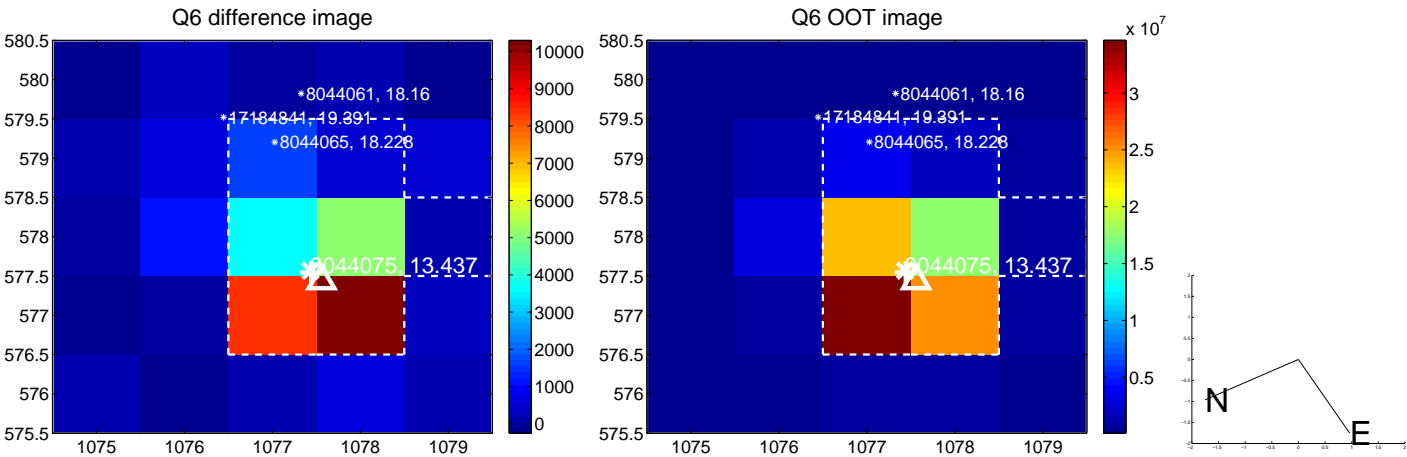
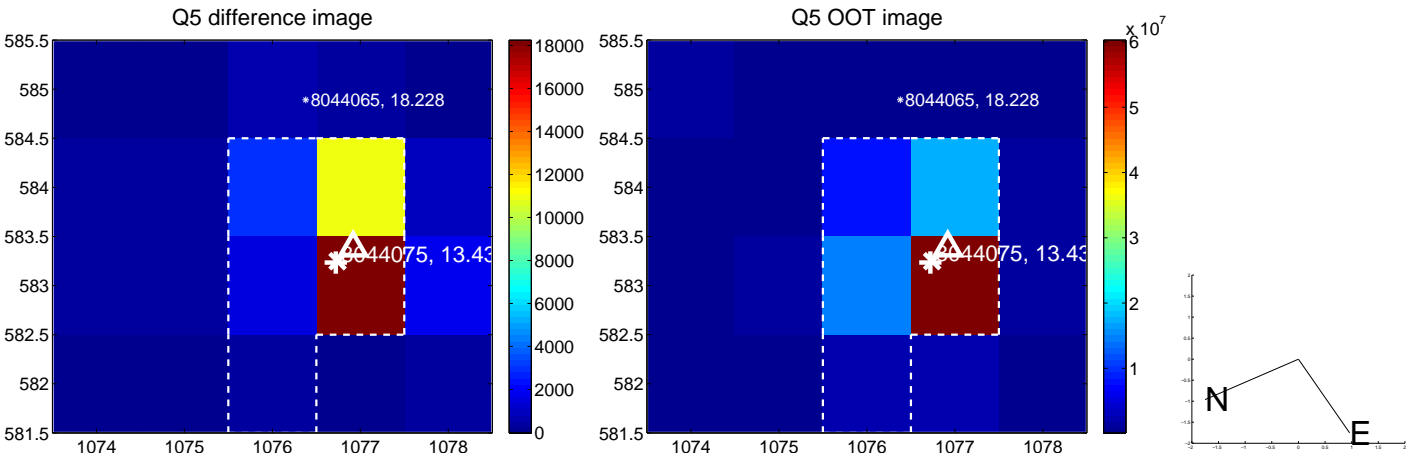


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

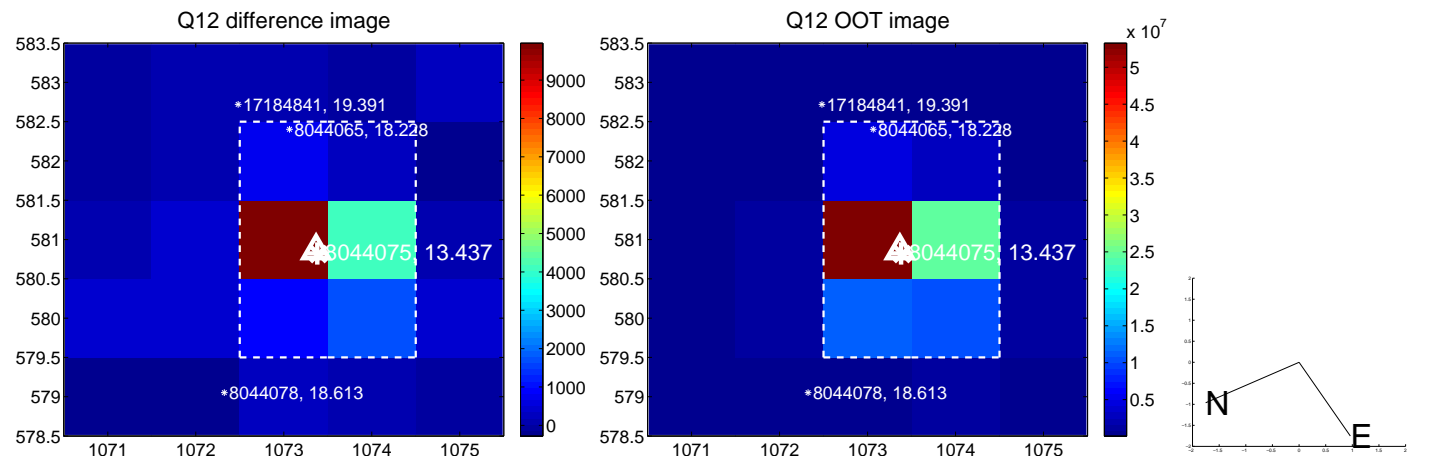
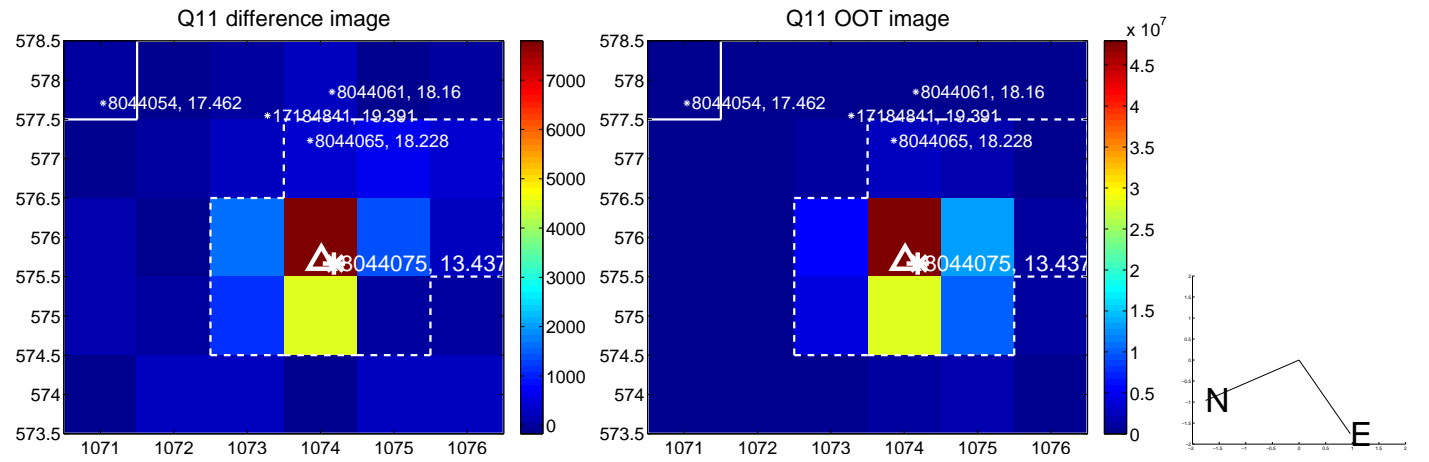
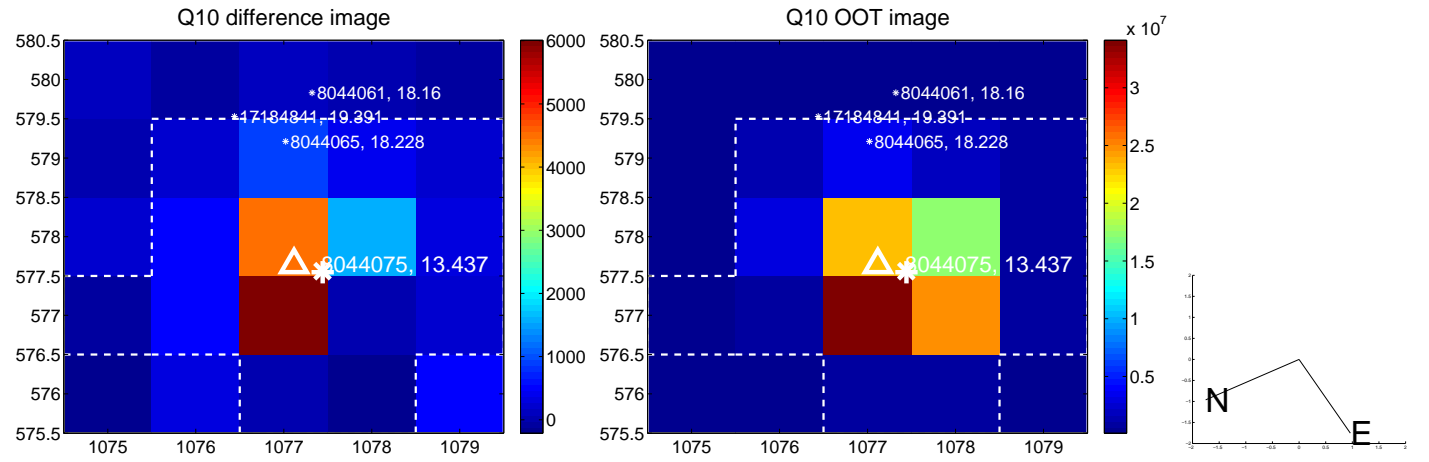
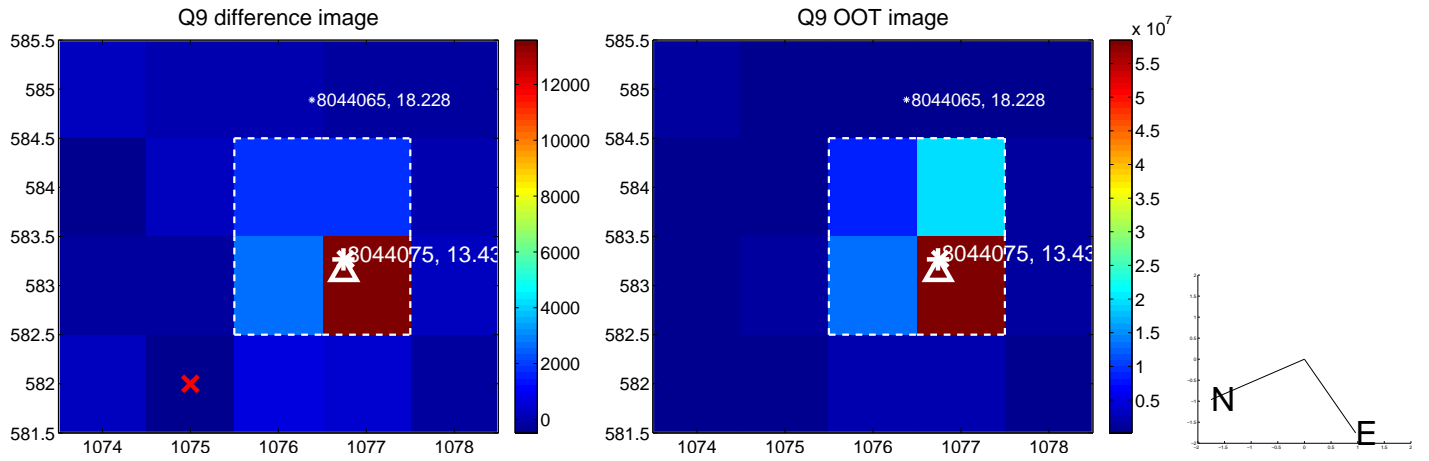


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

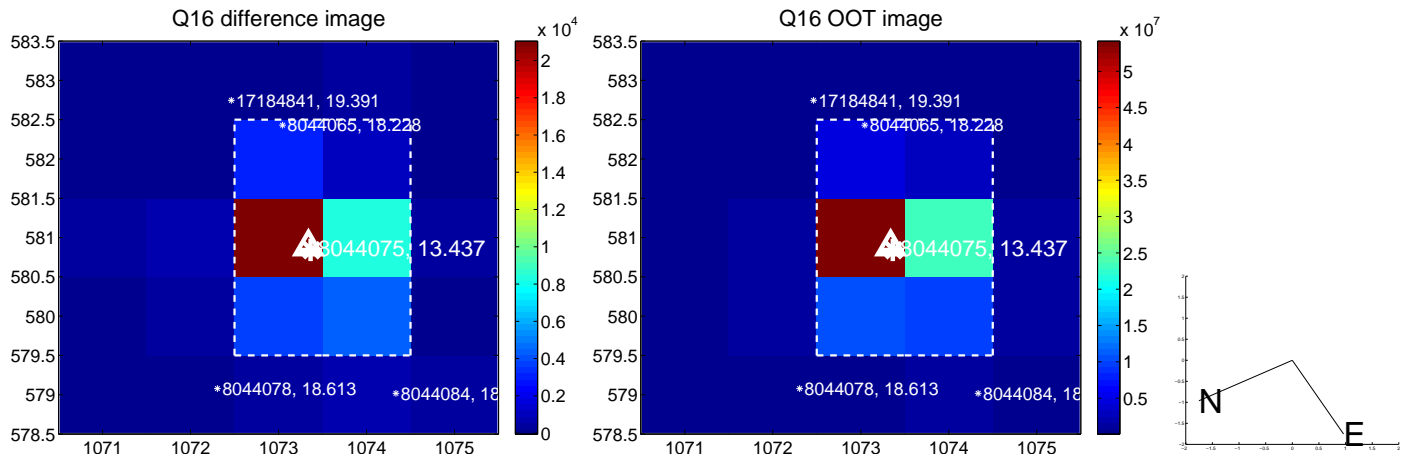
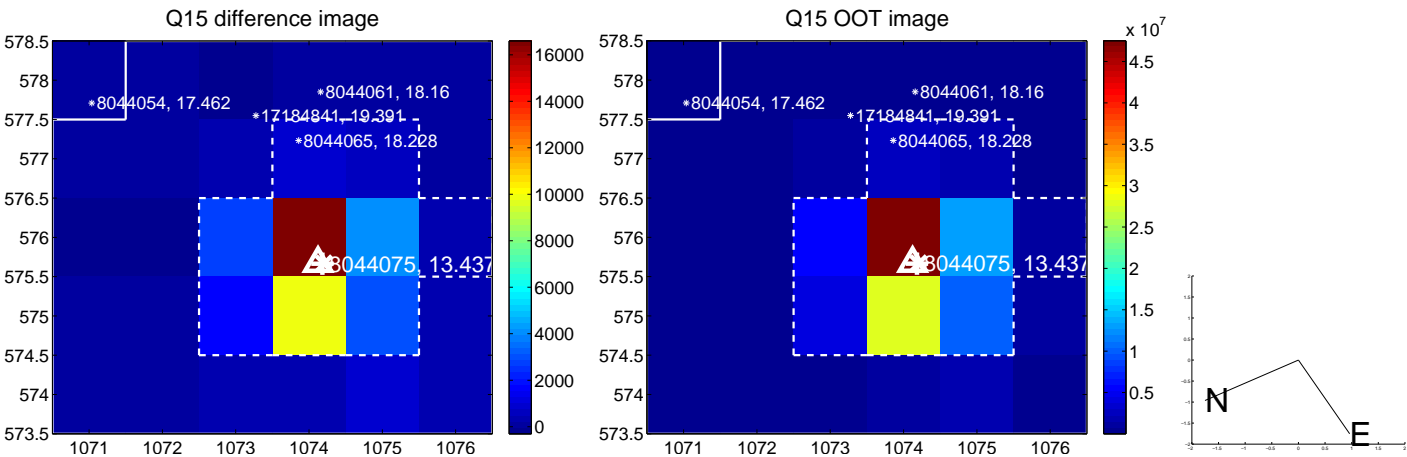
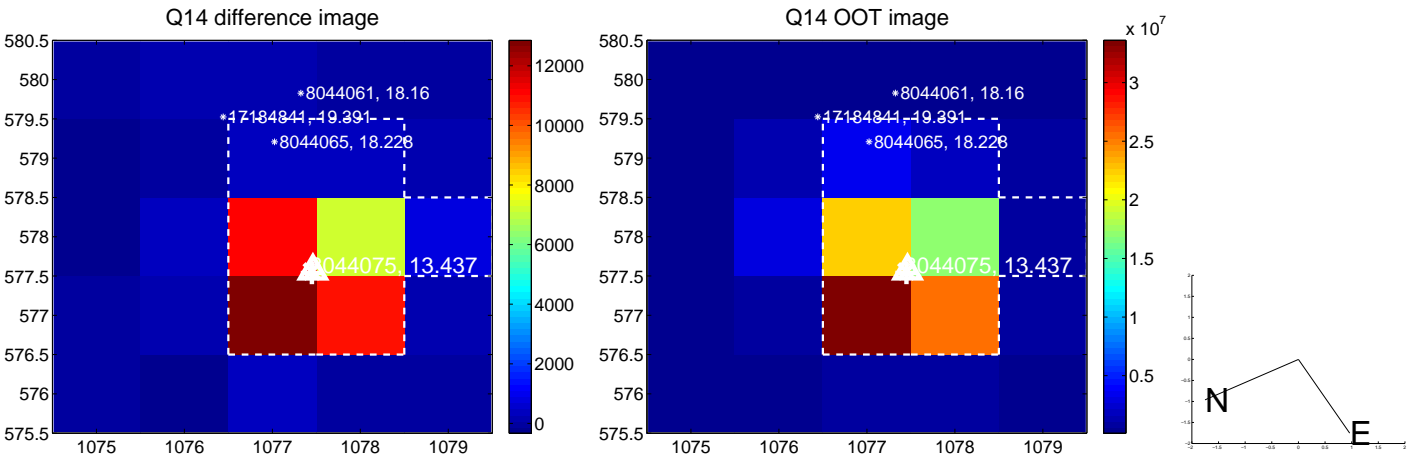
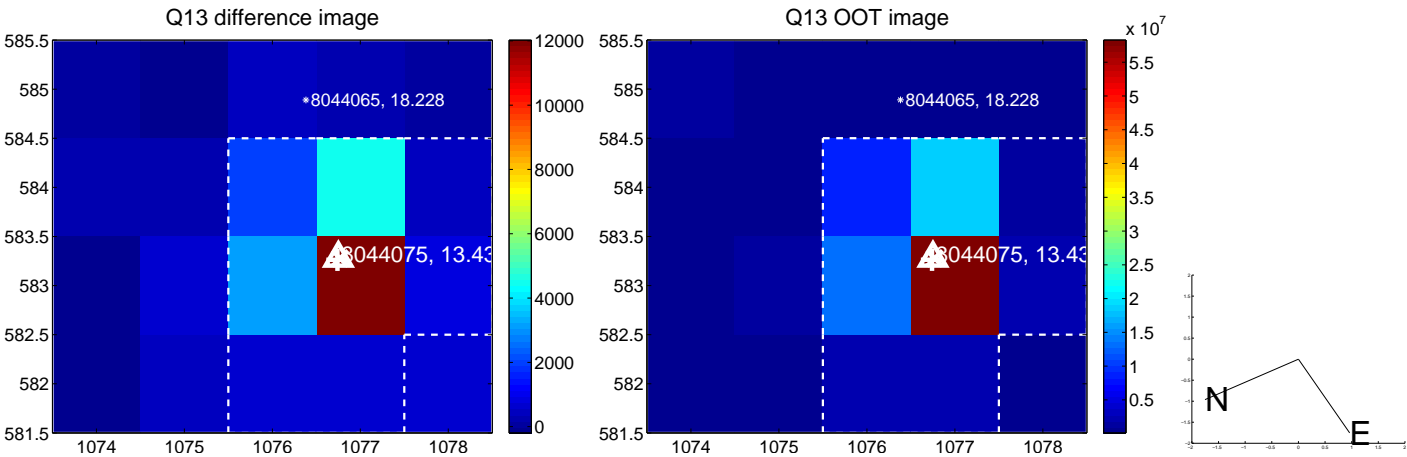




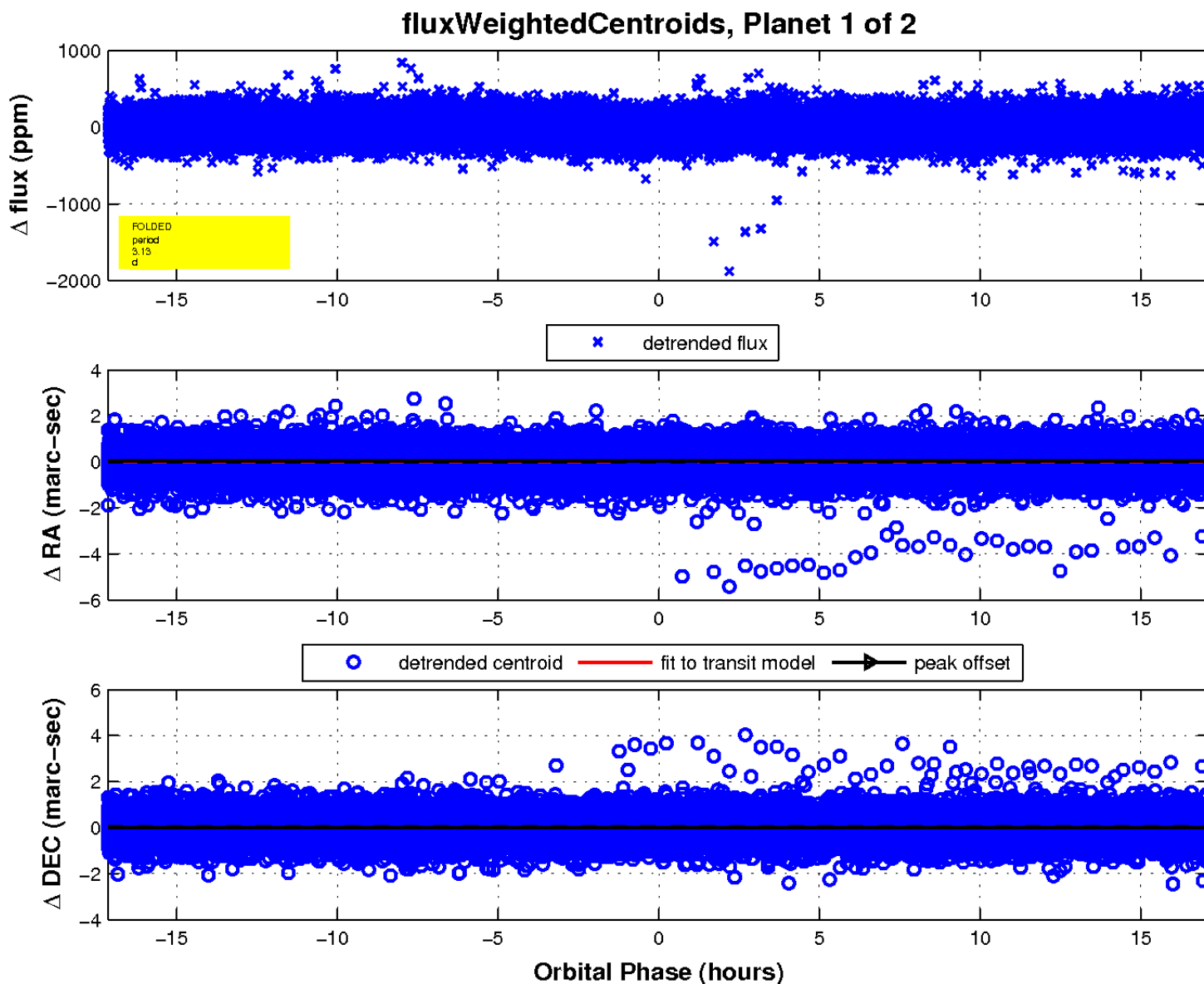
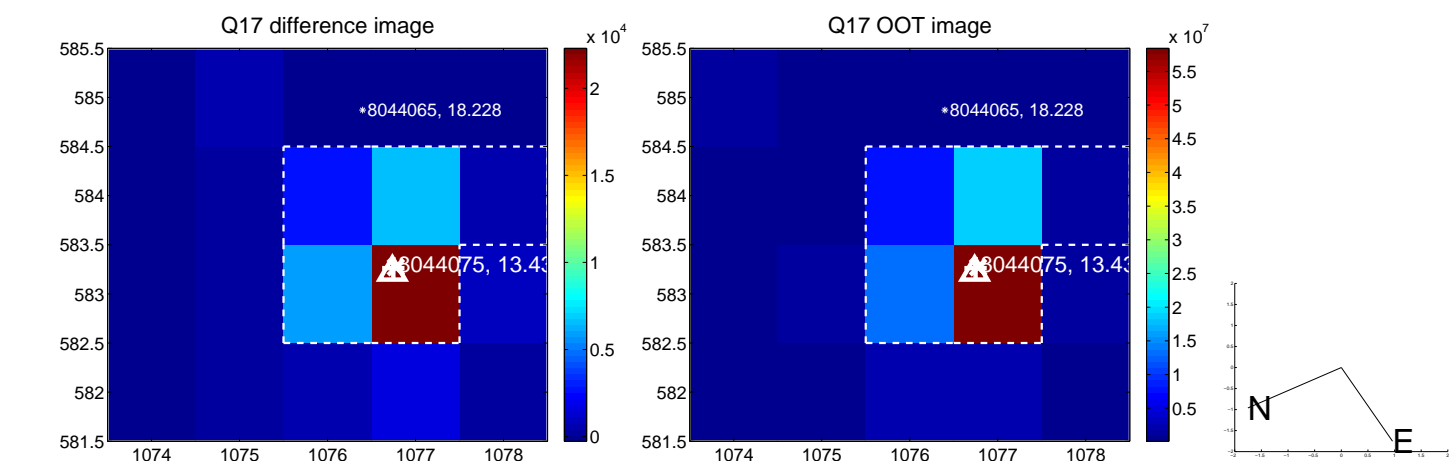
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

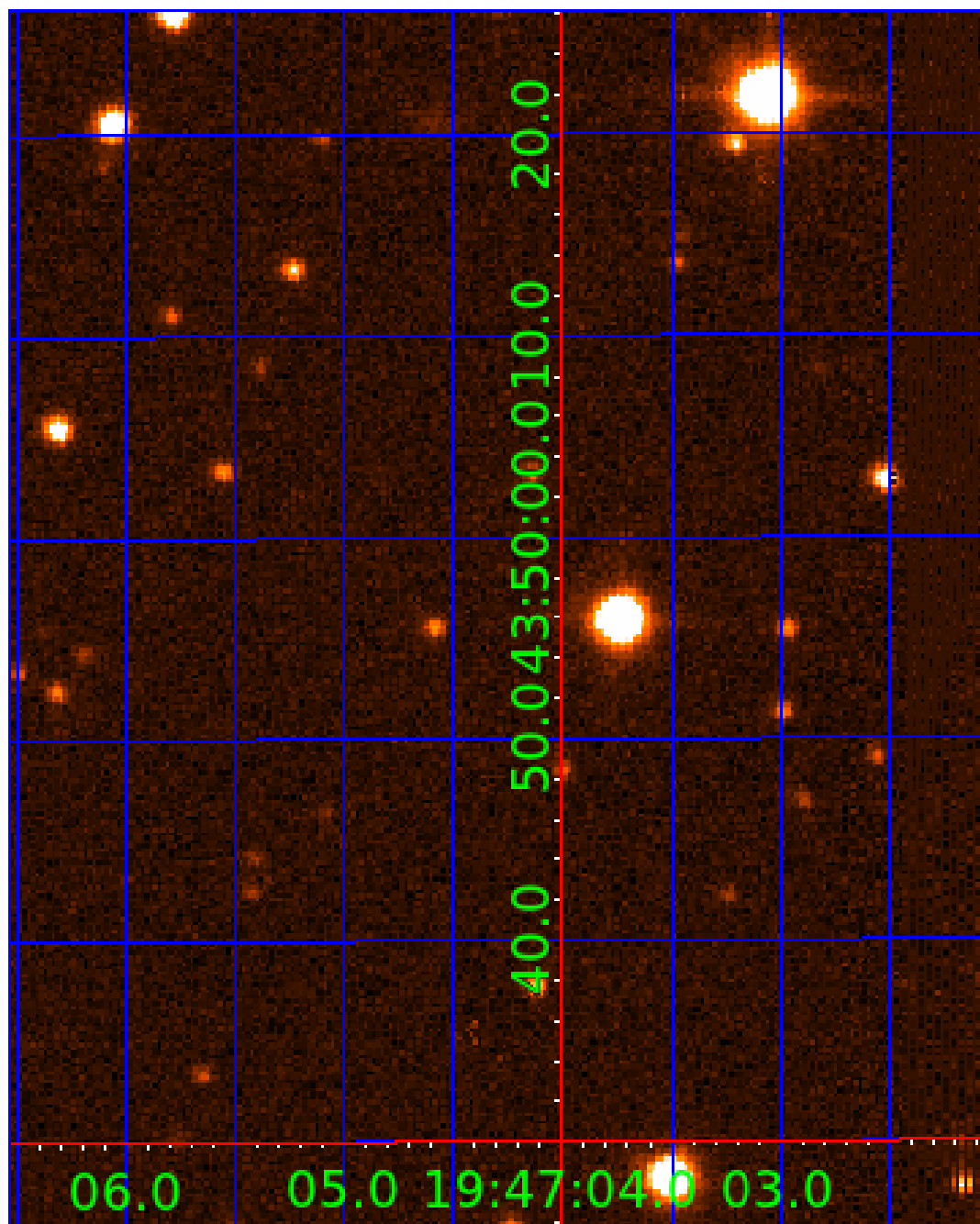


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008044075

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008044075-01	OBS	No	3.134945	132.156775	32.1	5.711	9.3	10.2	1.97	6664	1.36	3035.37
008044075-02	OBS	No	3.134644	131.650508	12.1	9.452	7.3	4.6	1.97	6664	0.80	3035.76

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008044075-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008044075-02	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS

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

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

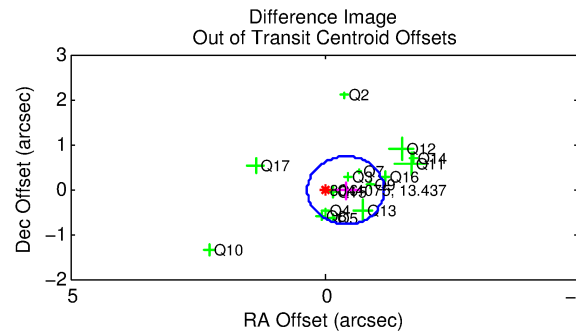
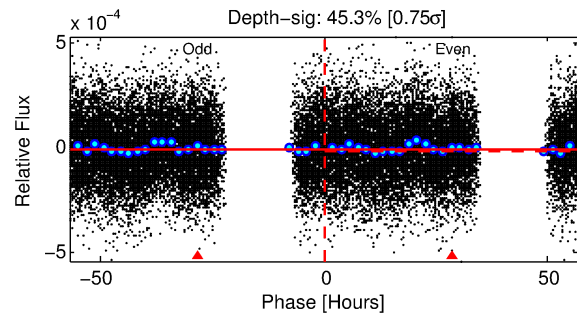
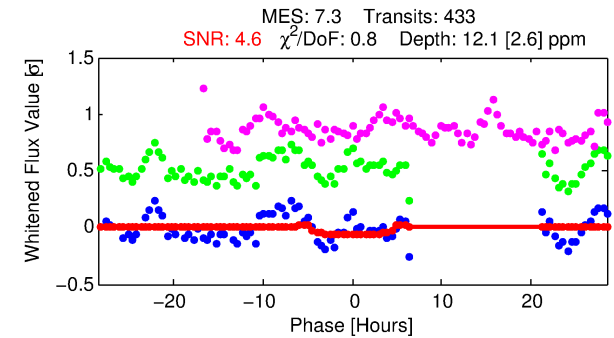
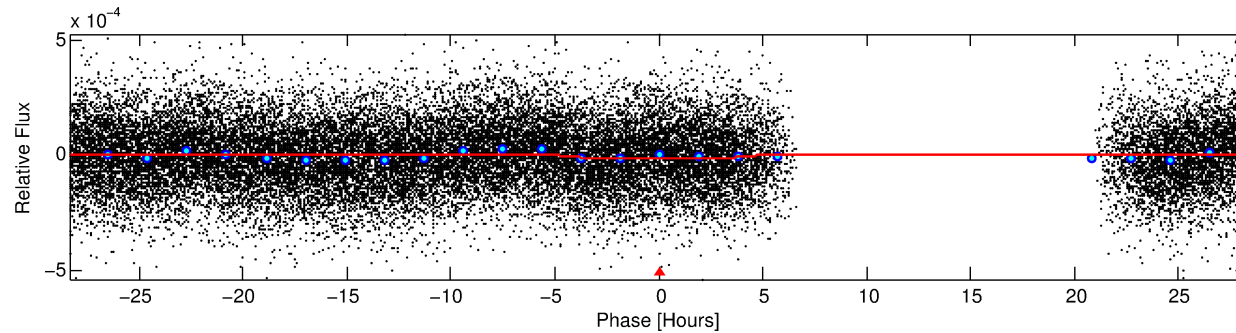
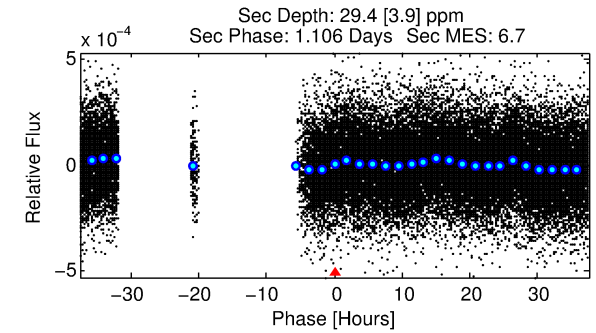
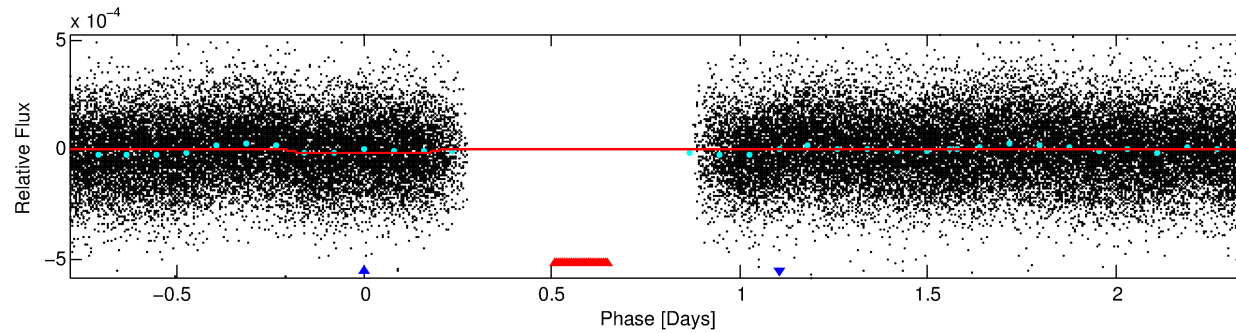
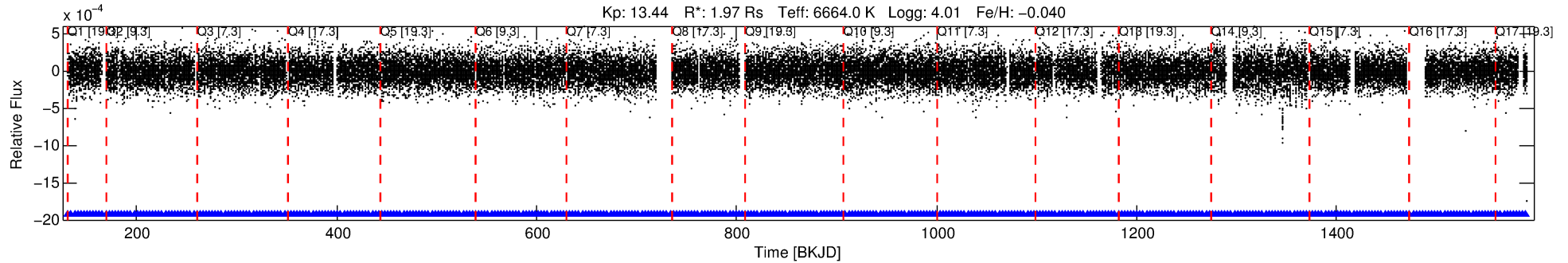
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008044075-02

No Significant Match Found

# DV One-Page Summary

KIC: 8044075 Candidate: 2 of 2 Period: 3.135 d



## DV Fit Results:

Period = 3.13464 [0.00007] d  
Epoch = 131.6505 [0.0159] BKJD  
Rp/R\* = 0.0037 [0.0016]  
a/R\* = 1.47 [1.90]  
b = 0.90 [0.52]  
Seff = 3035.76 [1498.45]  
Teq = 1893 [234] K  
Rp = 0.80 [0.44] Re  
a = 0.0475 [0.0147] AU  
Ag = 57.17 [55.45] [1.01σ]  
Teffp = 8047 [1736] K [3.51σ]

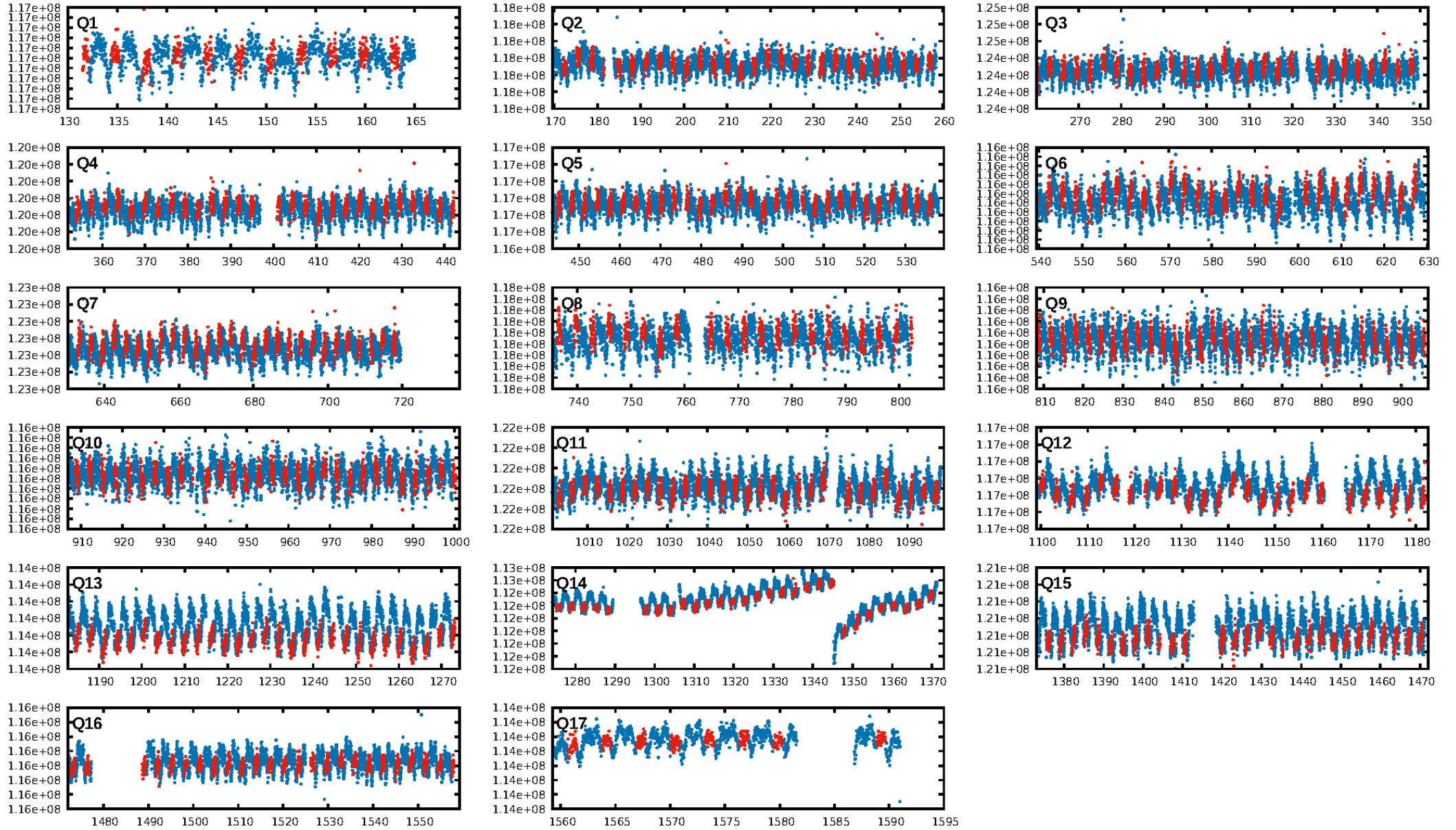
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 6.82e-11  
RollingBand-fgt: 1.00 [414/414]  
GhostDiagnostic-chr: -6.341  
Centroid-sig: 94.8%  
Centroid-so: 0.417 arcsec [0.28σ]  
OotOffset-rm: 0.413 arcsec [1.64σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-rm: 0.408 arcsec [1.50σ]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.06 [1/16]  
DiffImageOverlap-fno: 0.00 [0/17]

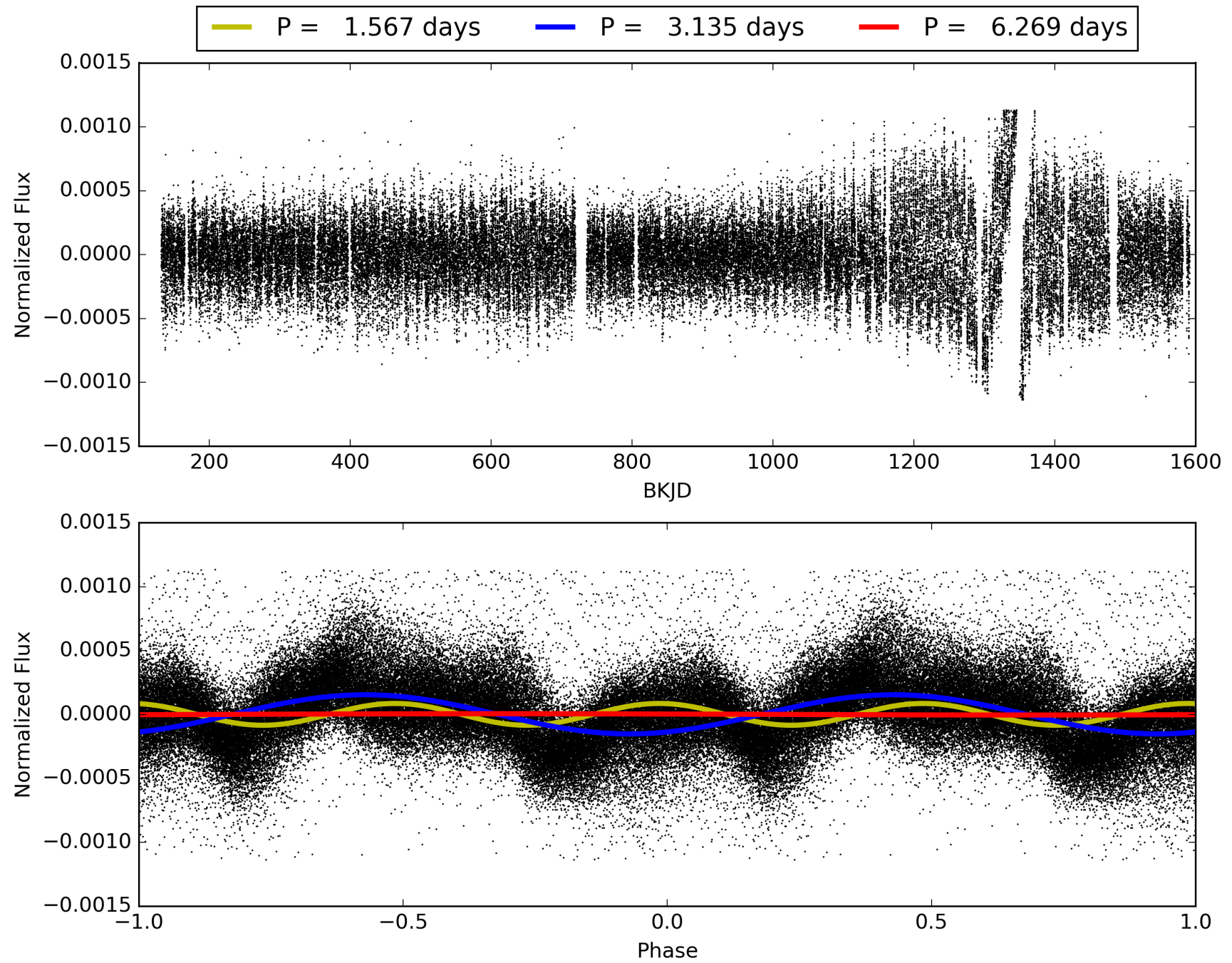
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:45:28 Z

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

# TCE 008044075-02, PDC Light Curves

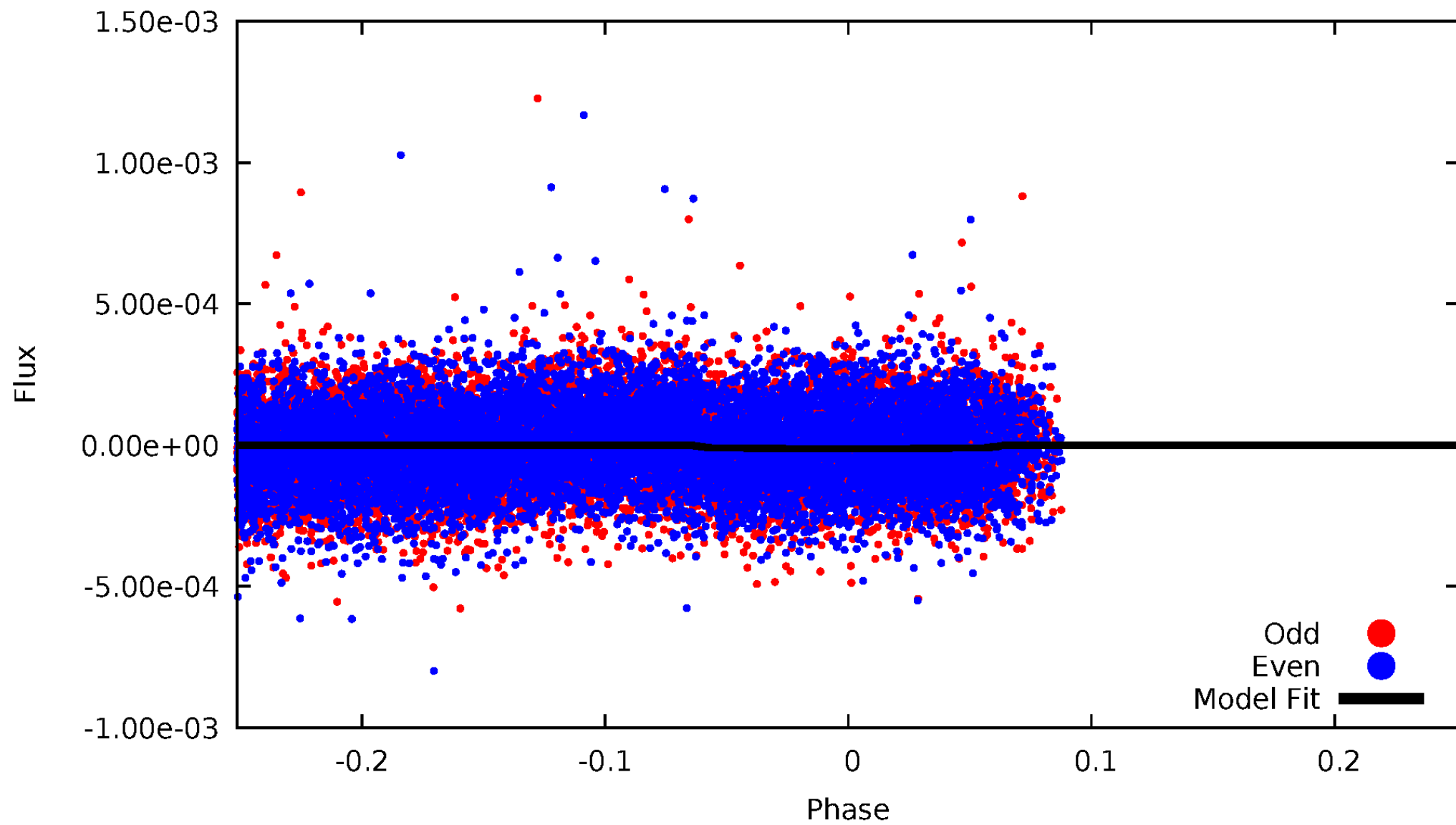


TCE 008044075-02



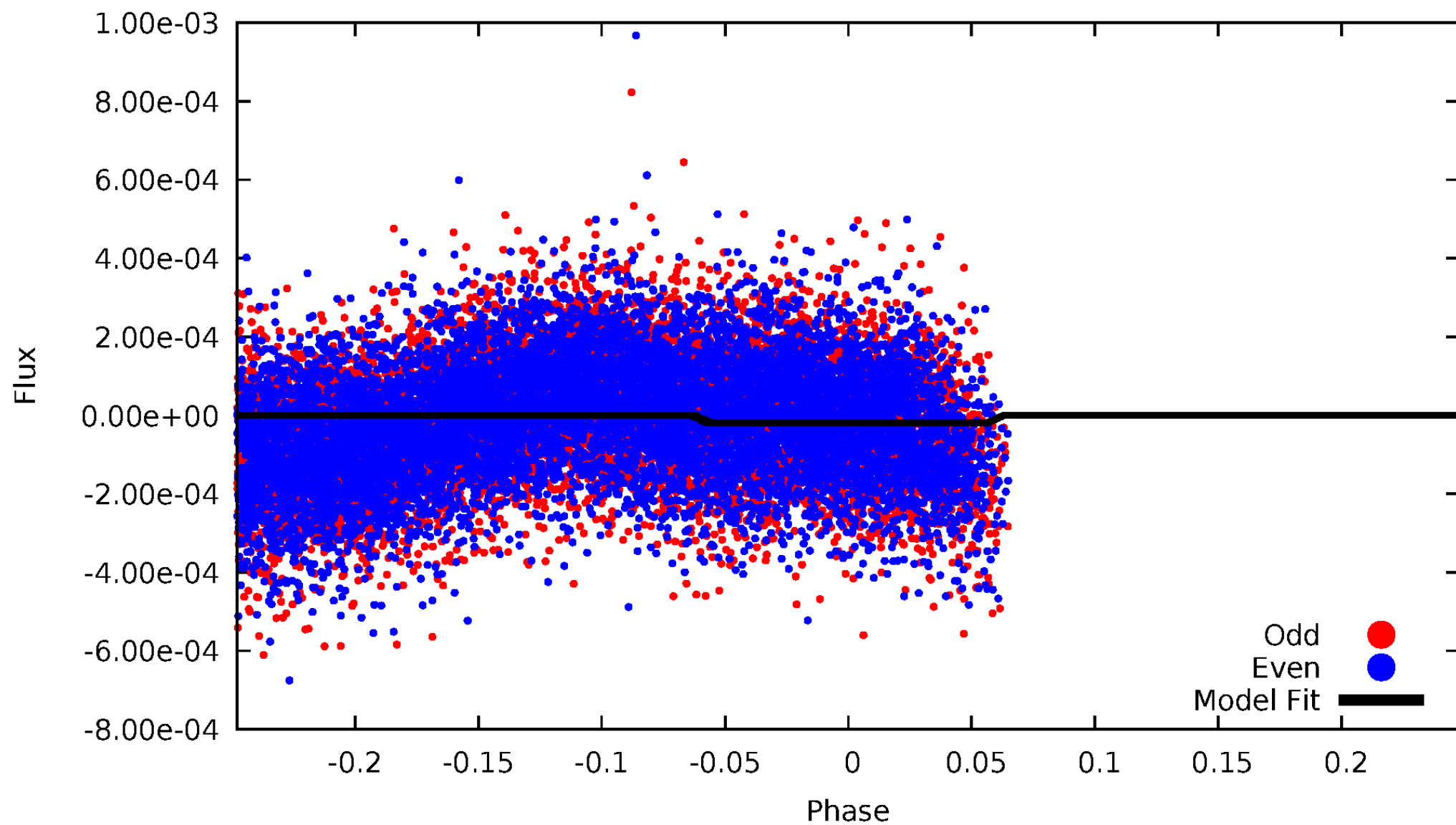
# DV Odd/Even

TCE 008044075-02



# ALT Odd/Even

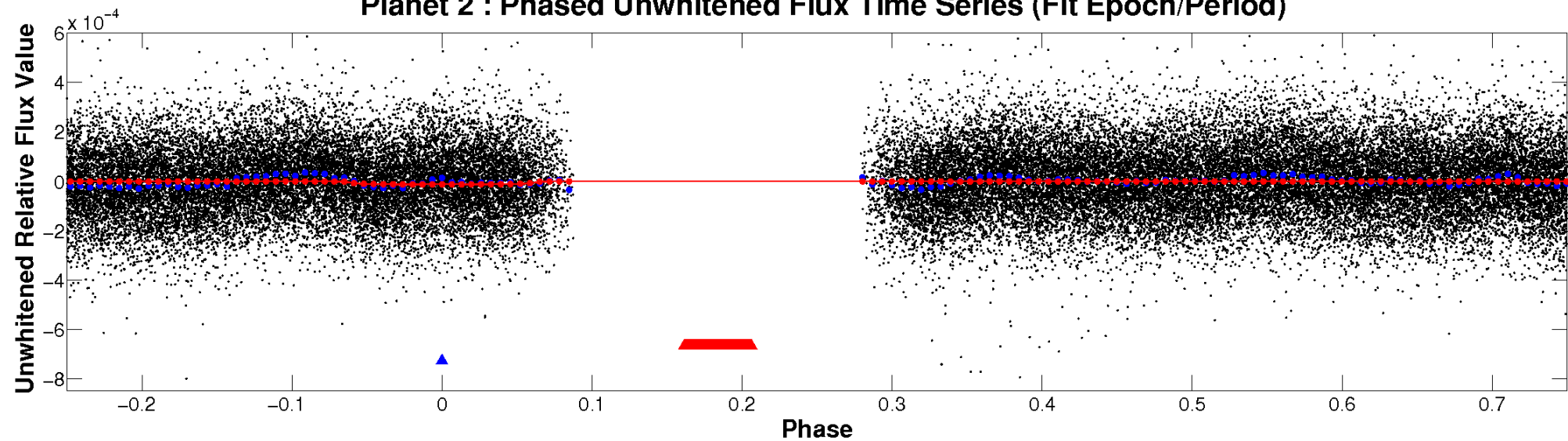
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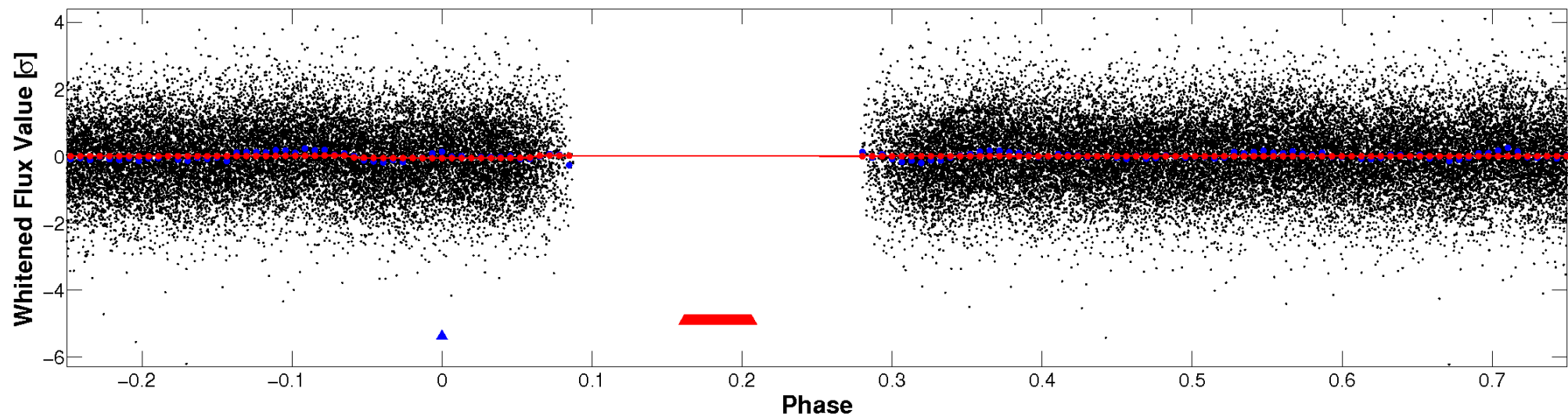


# Non-Whitened Vs. Whitened Light Curve

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

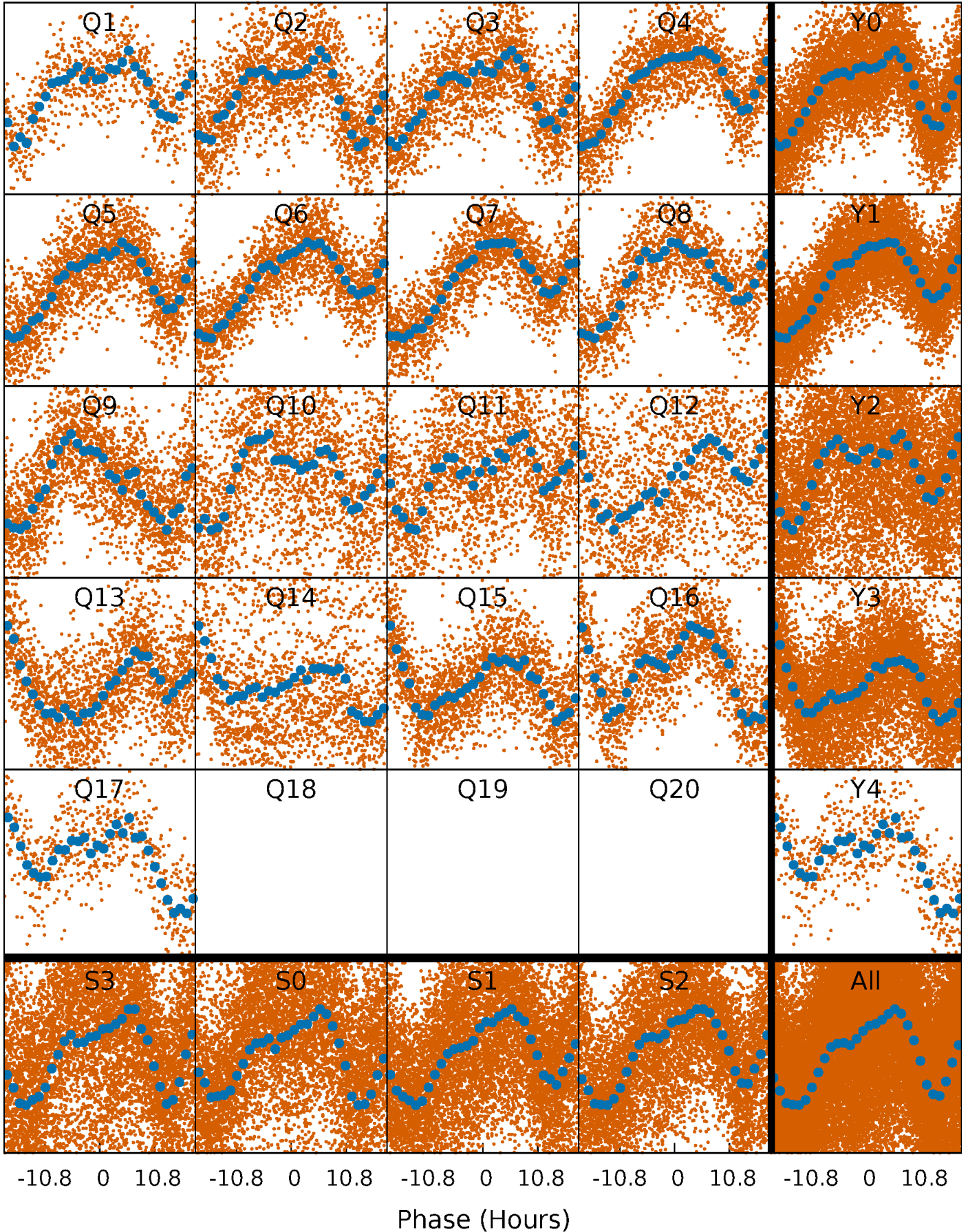


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



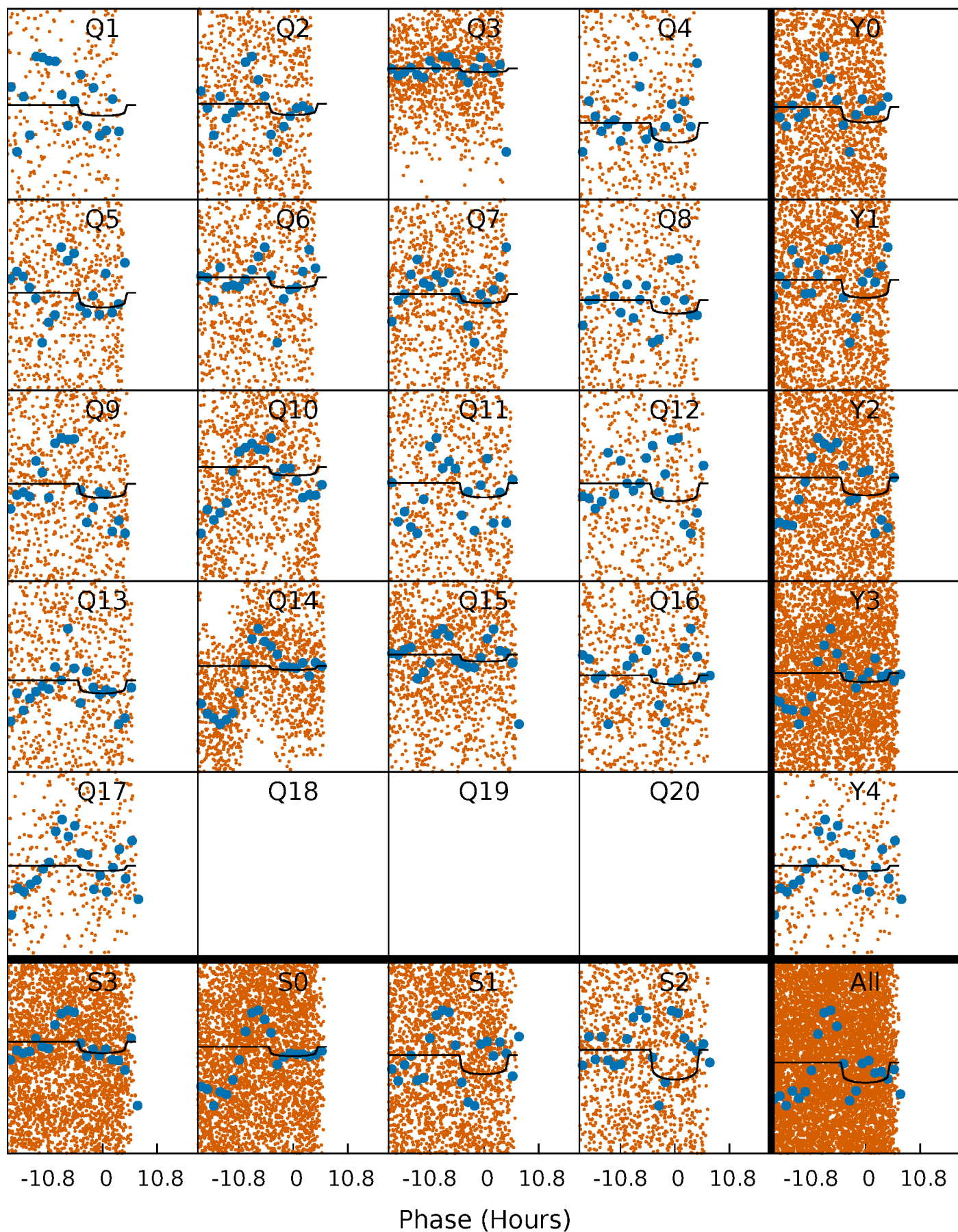
# PDC Quarter-Phased Transit Curves

TCE 008044075-02   P= 3.134644 Days    $T_0=131.650508$  (BKJD)



# DV Quarter-Phased Transit Curves

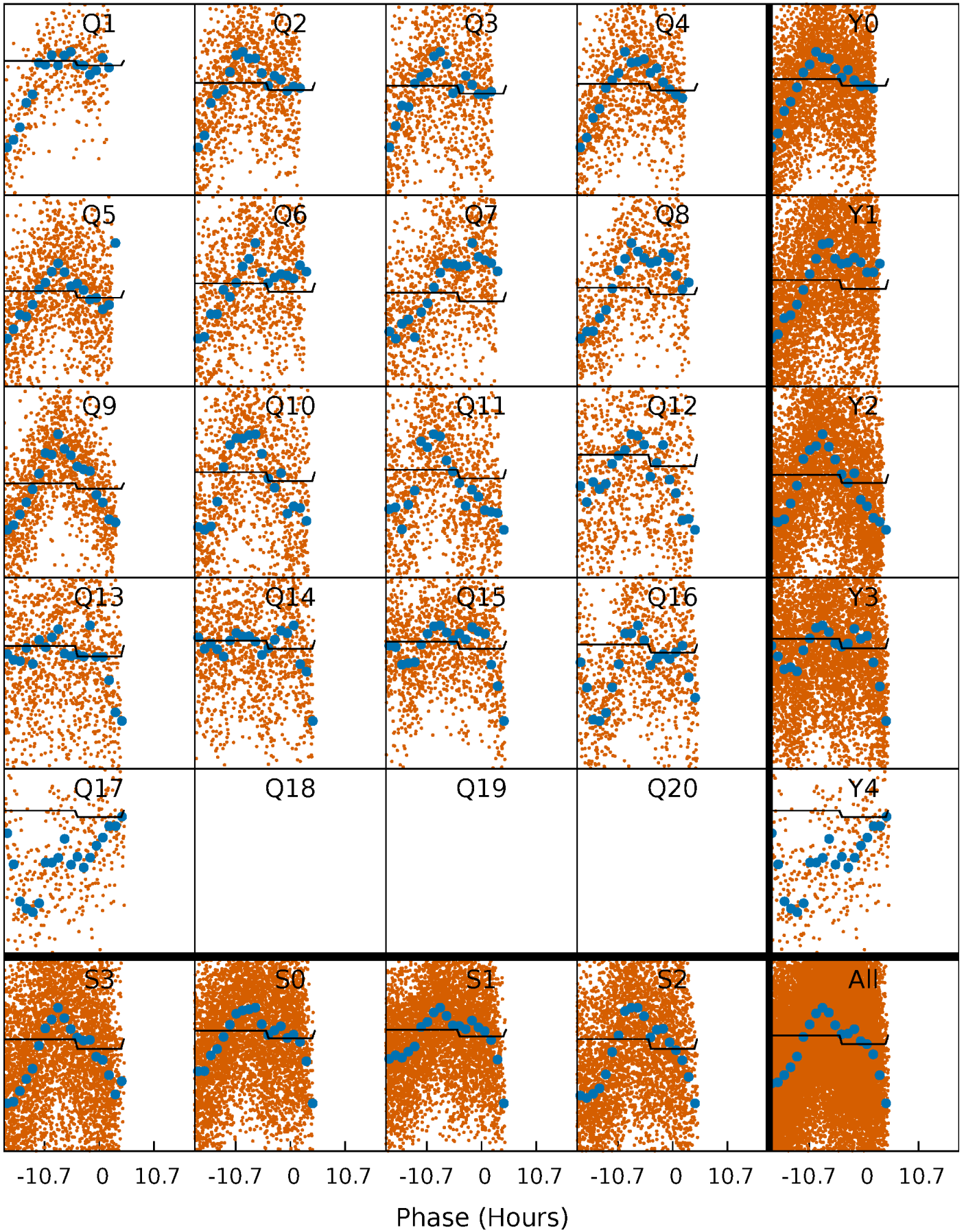
TCE 008044075-02   P= 3.134644 Days    $T_0=131.650508$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

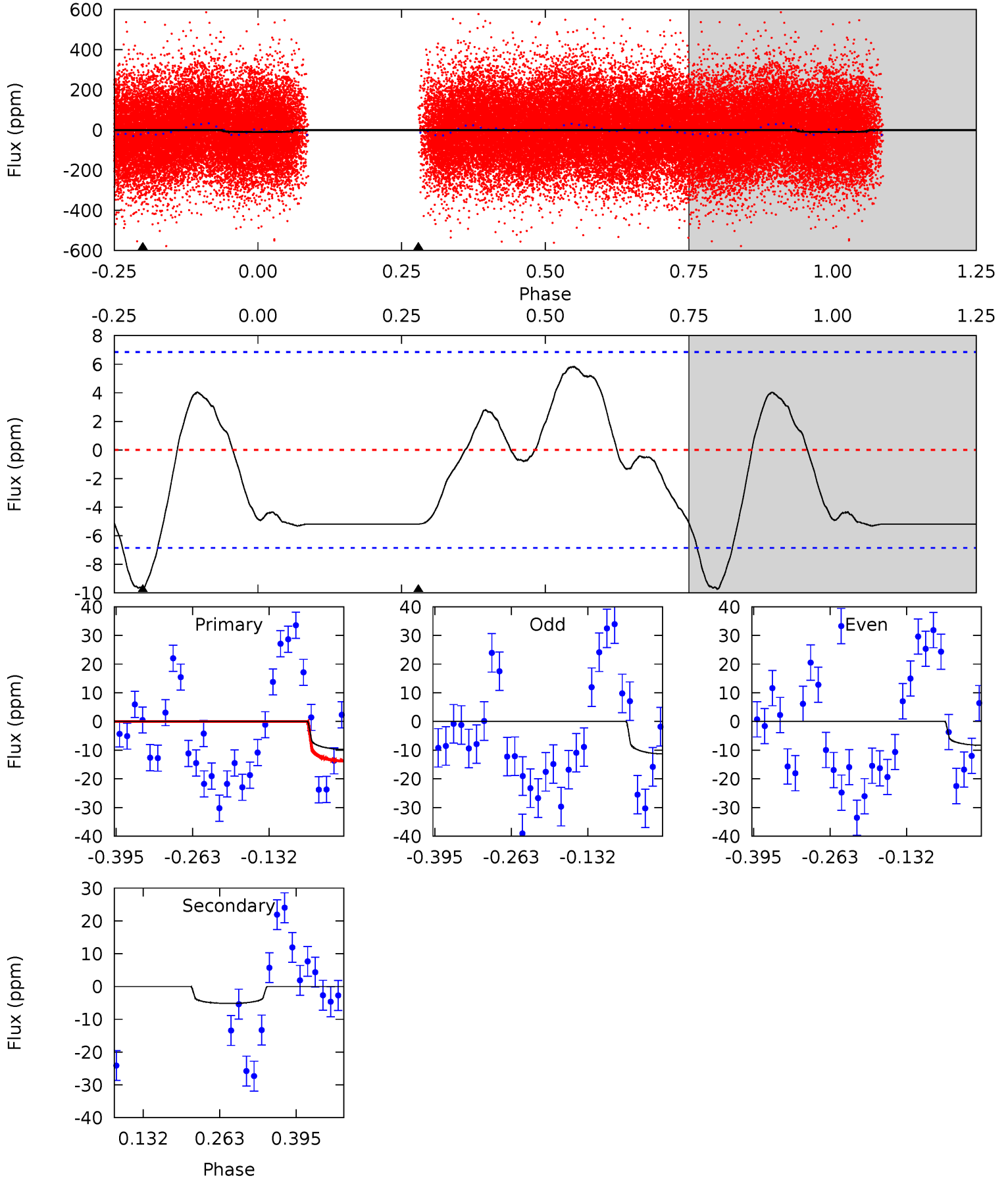
TCE 008044075-02 P= 3.134648 Days  $T_0=131.719899$  (BKJD)



# DV Model-Shift Uniqueness Test

008044075-02, P = 3.134644 Days, E = 128.515864 Days

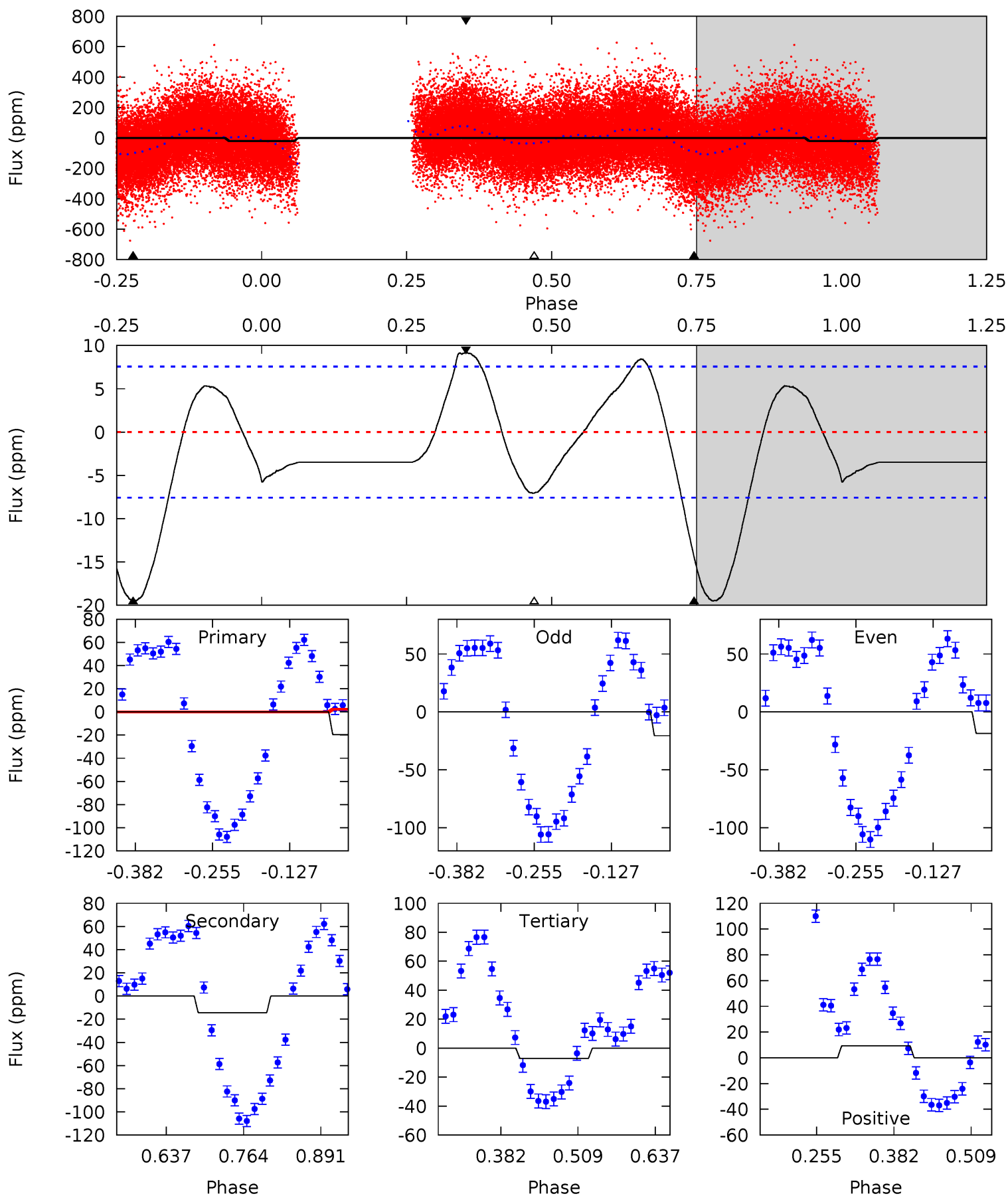
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.40	3.41	0	0	4.51	1.51	2.25	6.40	6.40	3.41	3.41	0.99	1.05	0.37	2.77



# Alt Model-Shift Uniqueness Test

008044075-02, P = 3.134648 Days, E = 128.585251 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
11.6	8.57	4.21	5.51	4.51	1.52	2.83	7.42	6.12	4.36	3.07	0.61	0.88	0.32	13.5





### Stellar Parameters For KIC 008044075

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6664^{+187}_{-258}$	$4.012^{+0.264}_{-0.176}$	$-0.040^{+0.250}_{-0.300}$	$1.968^{+0.569}_{-0.695}$	$1.453^{+0.203}_{-0.304}$	$0.268^{+0.510}_{-0.128}$
	+3%/-4%	+7%/-4%	+625%/-750%	+29%/-35%	+14%/-21%	+190%/-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 008044075-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-5 \pm 2$	$0.79^{+0.40}_{-0.33}$	$2635^{+201}_{-233}$	$5075^{+1645}_{-748}$	$9.491^{+21.084}_{-5.368}$
Alt.	$-14 \pm 2$	$0.90^{+0.44}_{-0.31}$	$2626^{+205}_{-247}$	$6073^{+1635}_{-891}$	$21^{+29}_{-11}$

$T_{\text{max}}$  = 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

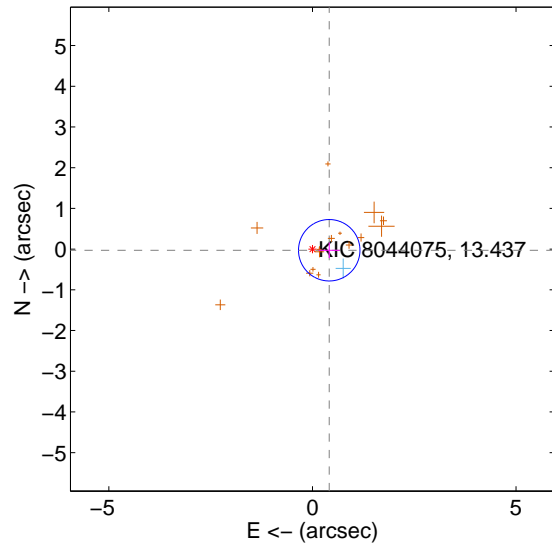
Supplemental centroid analysis for 008044075-02. Kepler magnitude: 13.44. Transit SNR 4.62

There are 1 quarters with good PRF difference image offsets

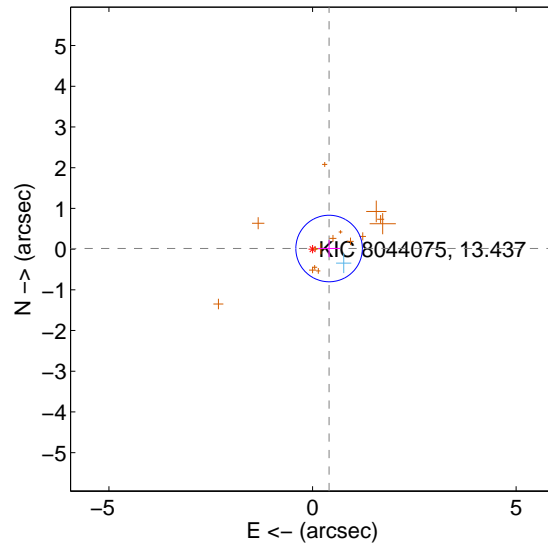
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.413 \pm 0.252$	1.64	$-0.412 \pm 0.257$	$-0.028 \pm 0.191$
PRF-fit source offset from KIC position	$0.408 \pm 0.272$	1.50	$-0.407 \pm 0.269$	$0.014 \pm 0.209$
photometric centroid source offset	$0.42 \pm 1.51$	0.28	$-0.20 \pm 1.64$	$0.36 \pm 1.47$

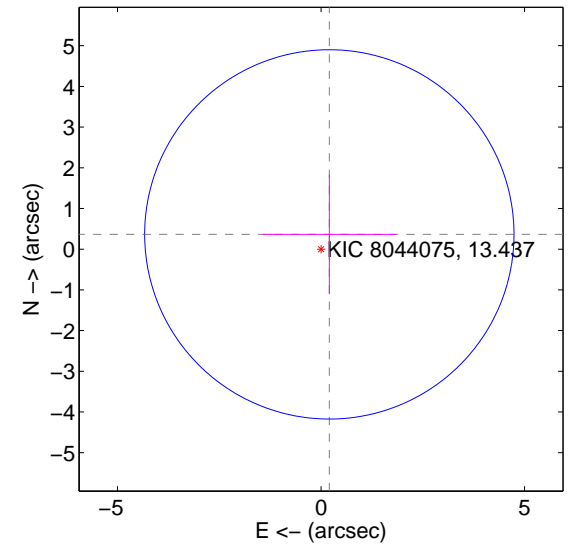
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

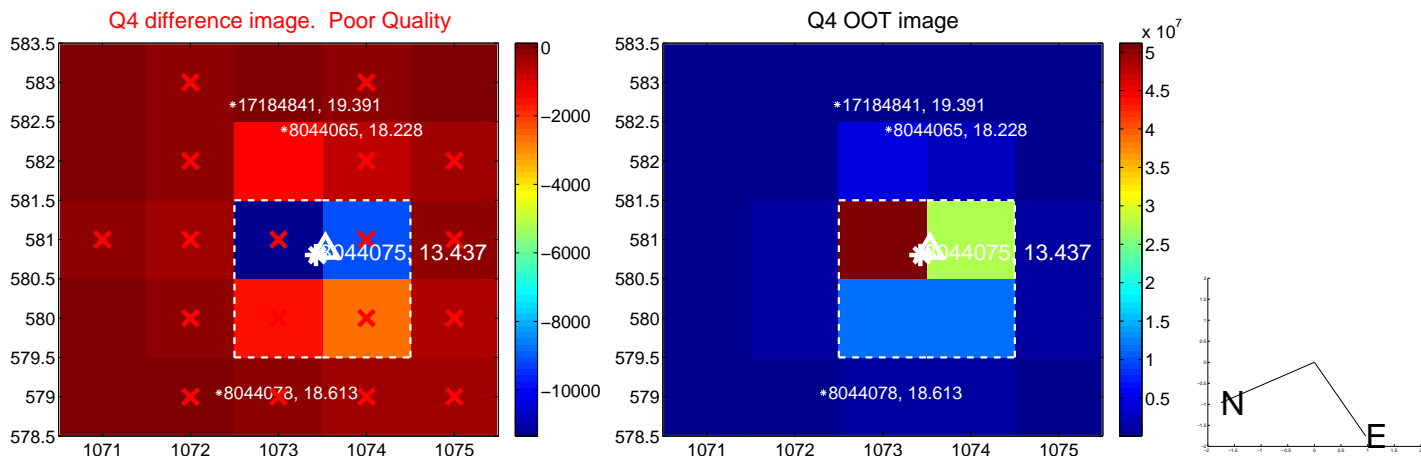
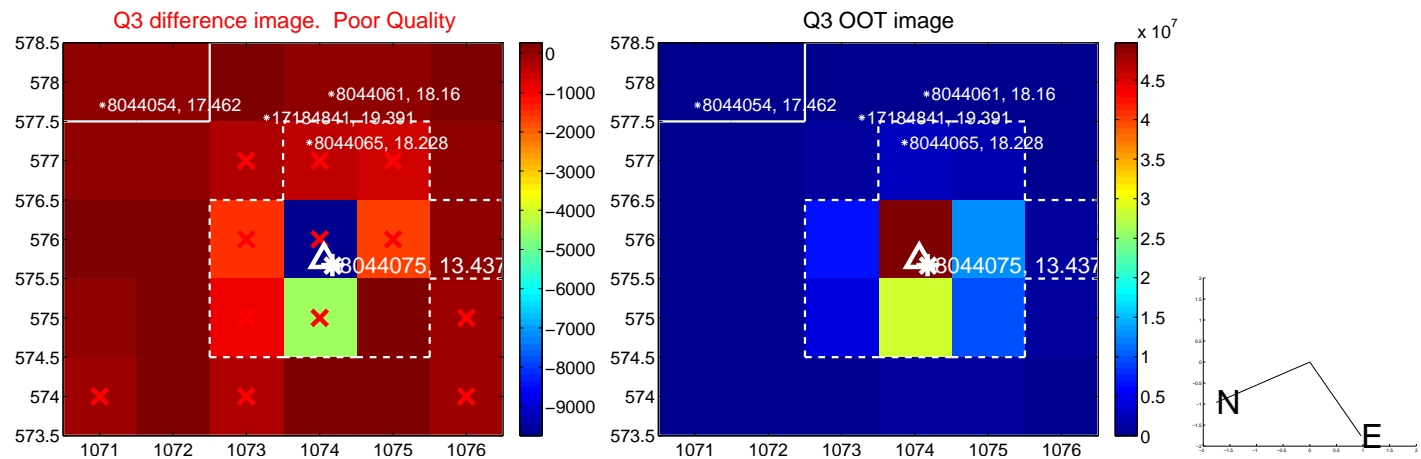
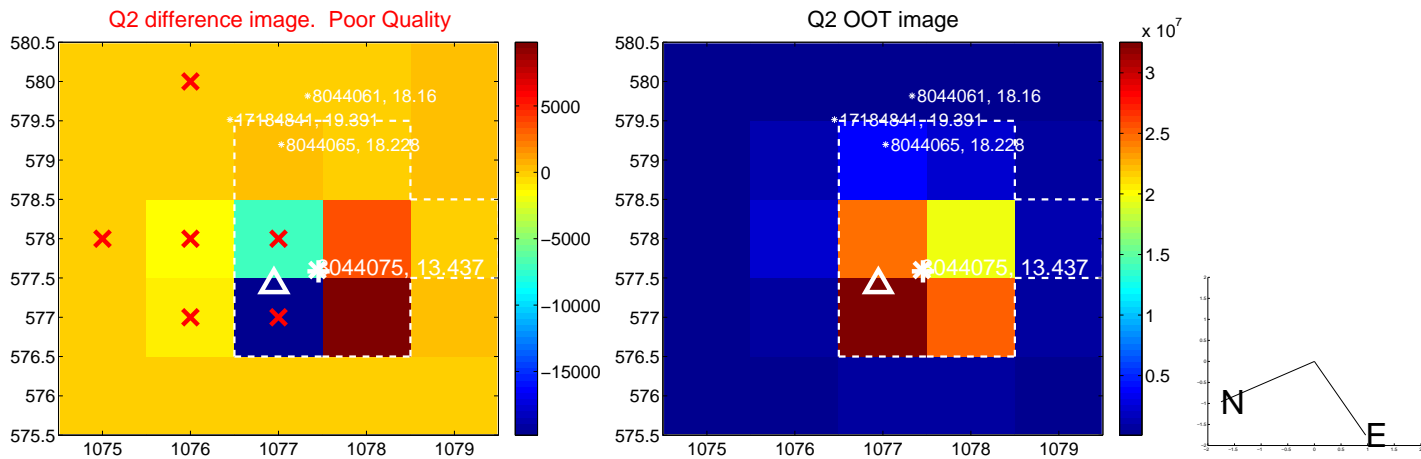
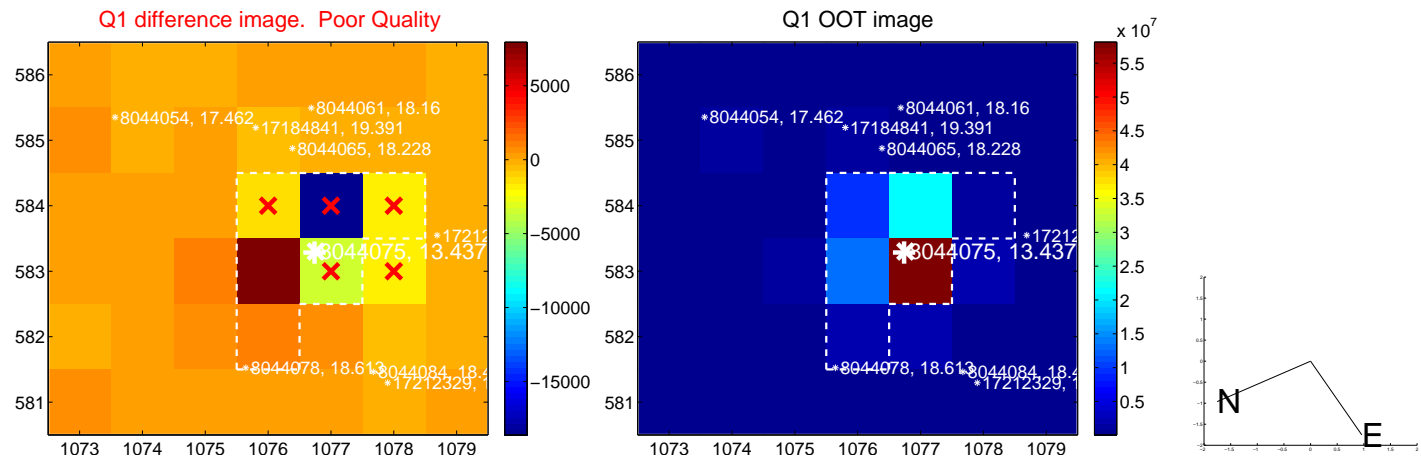


offset from photometric centroids

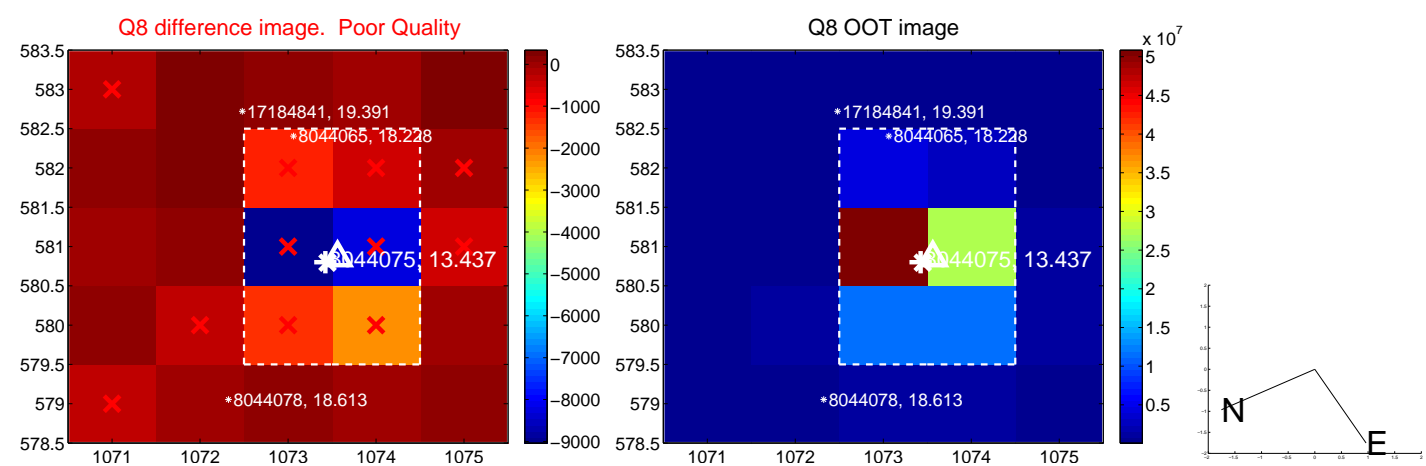
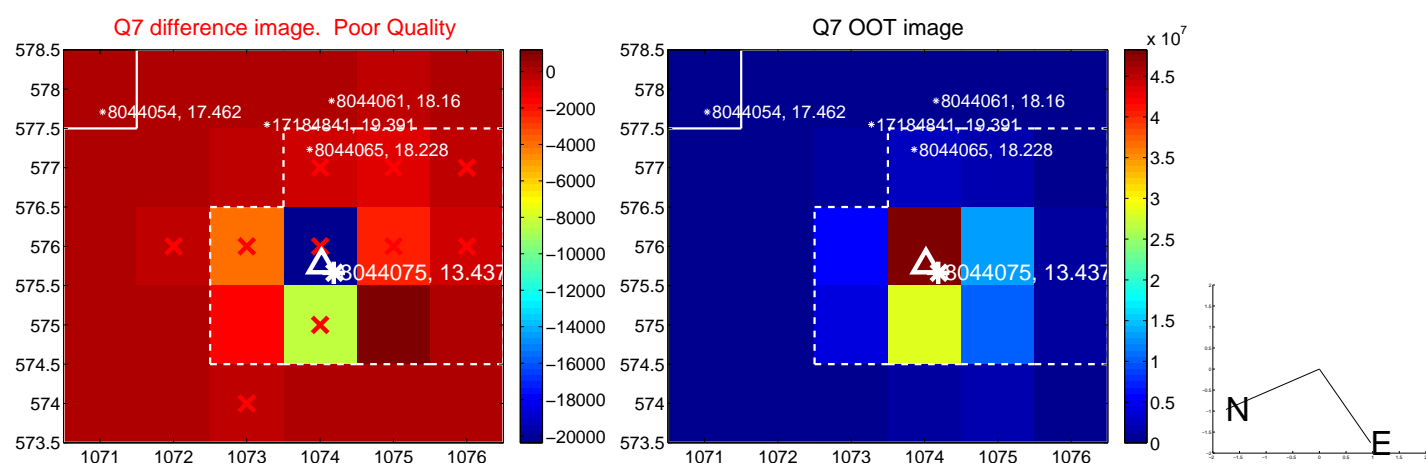
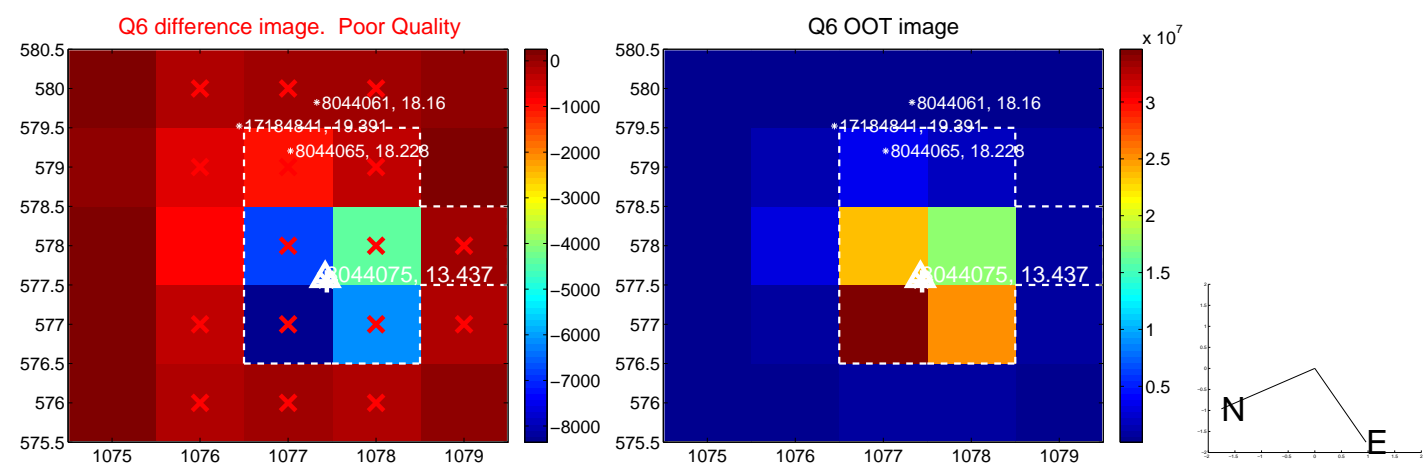
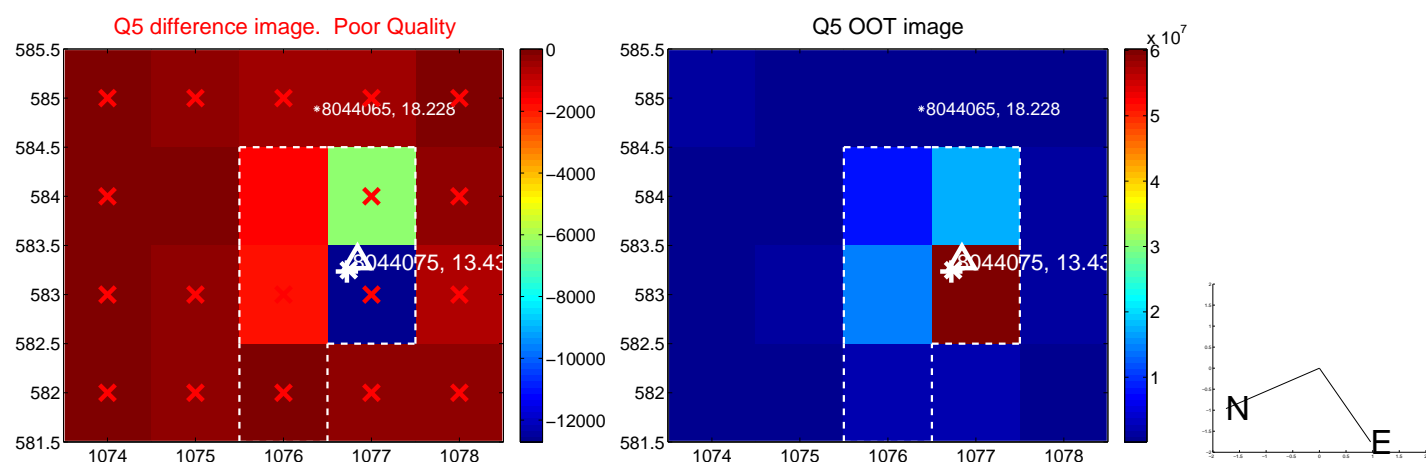


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

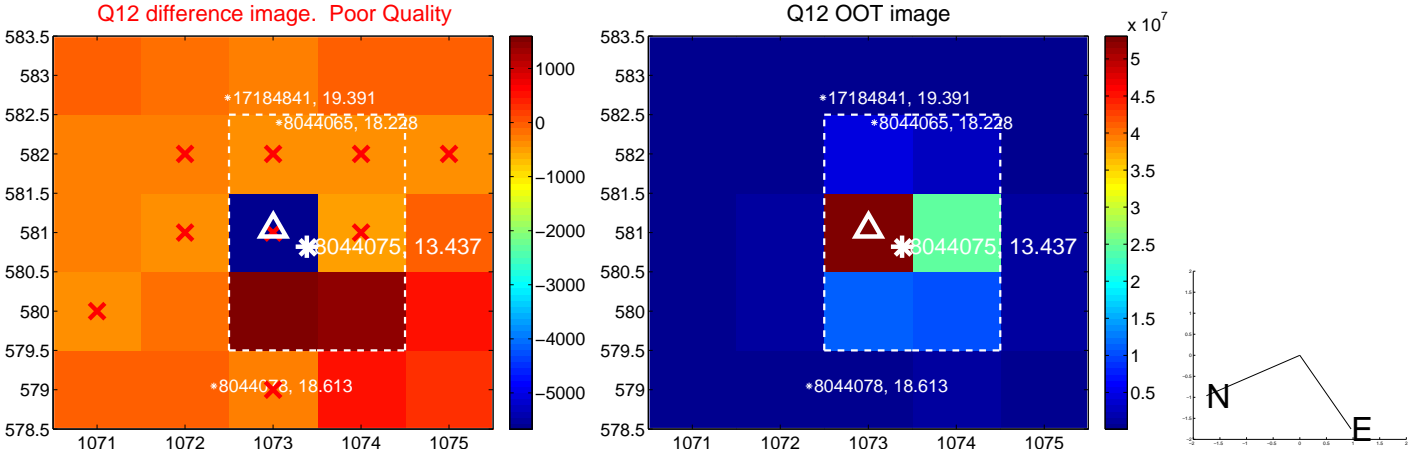
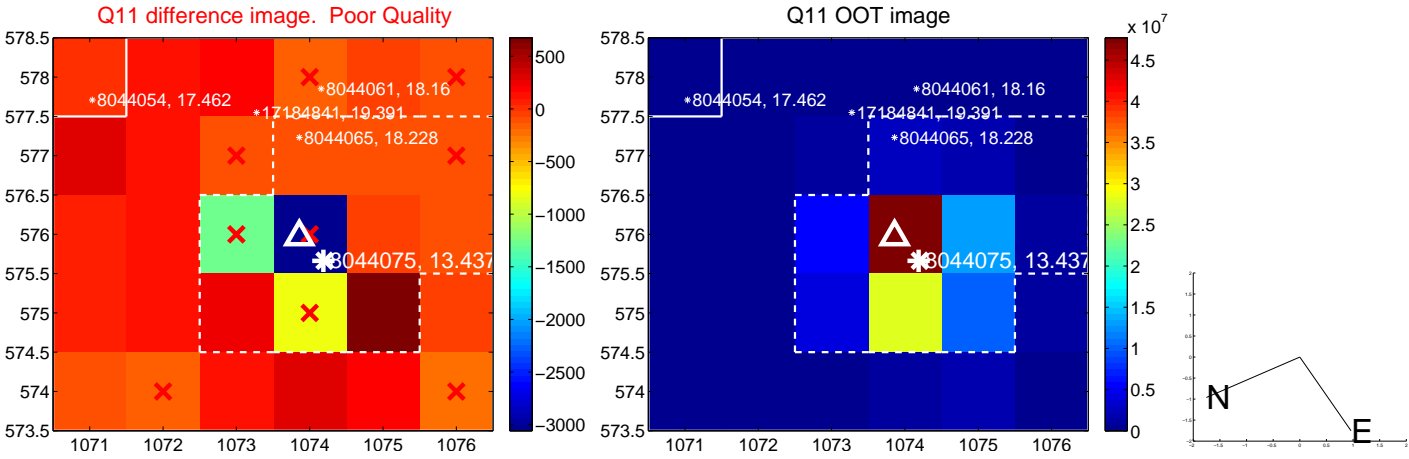
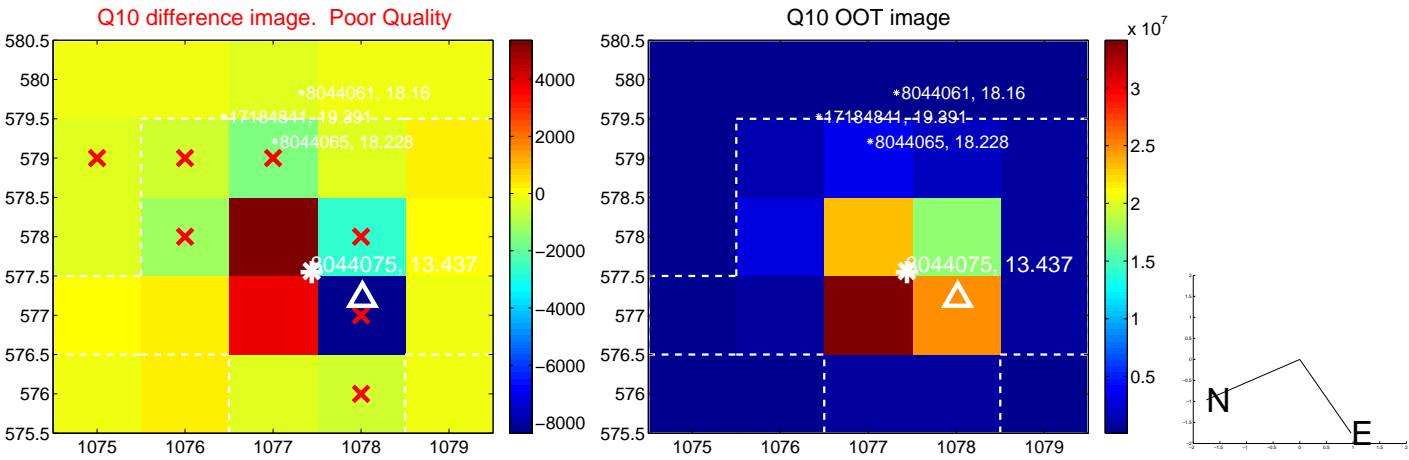
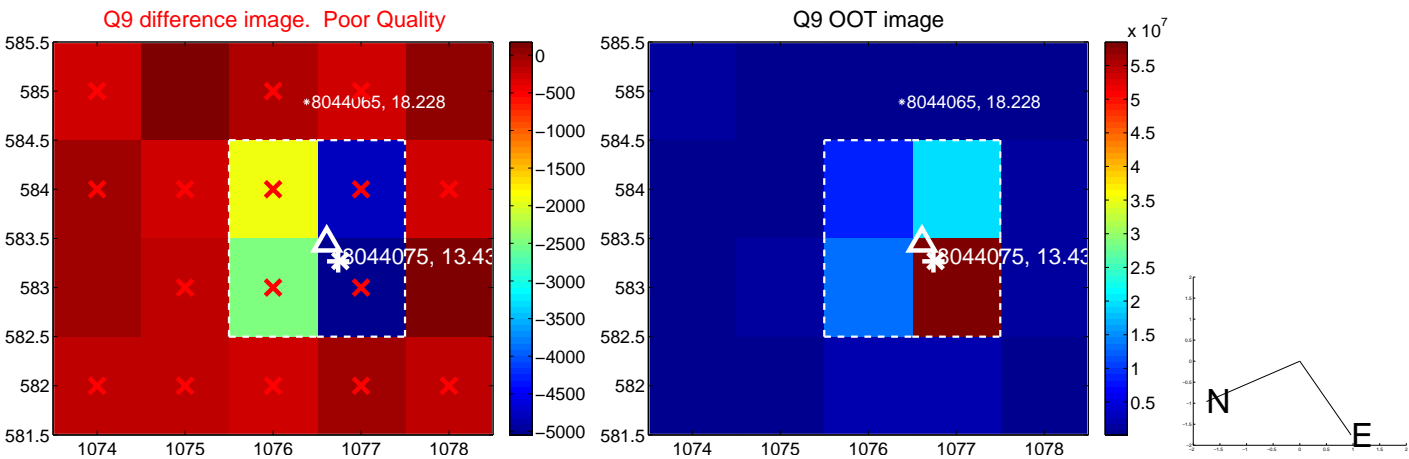
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



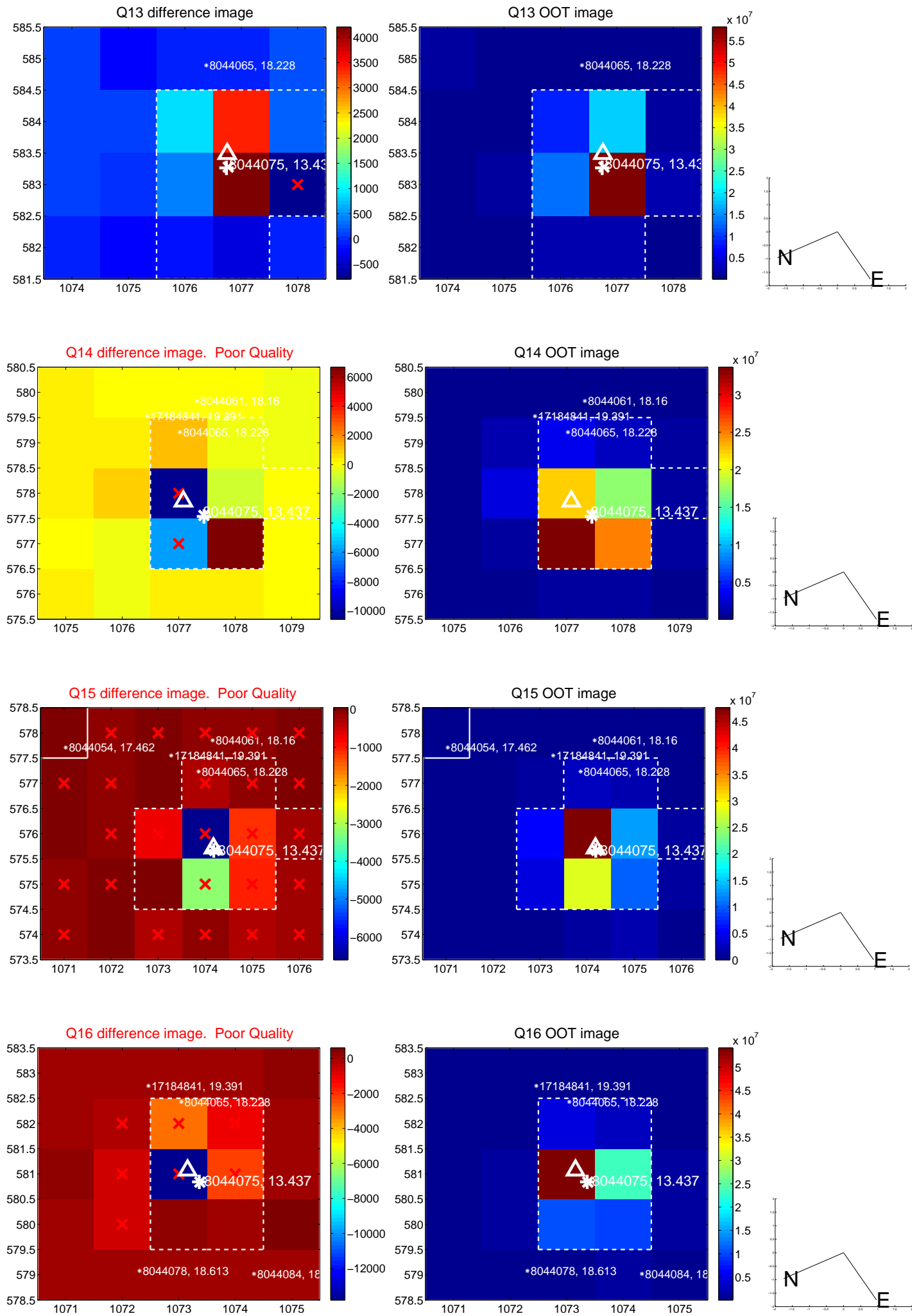
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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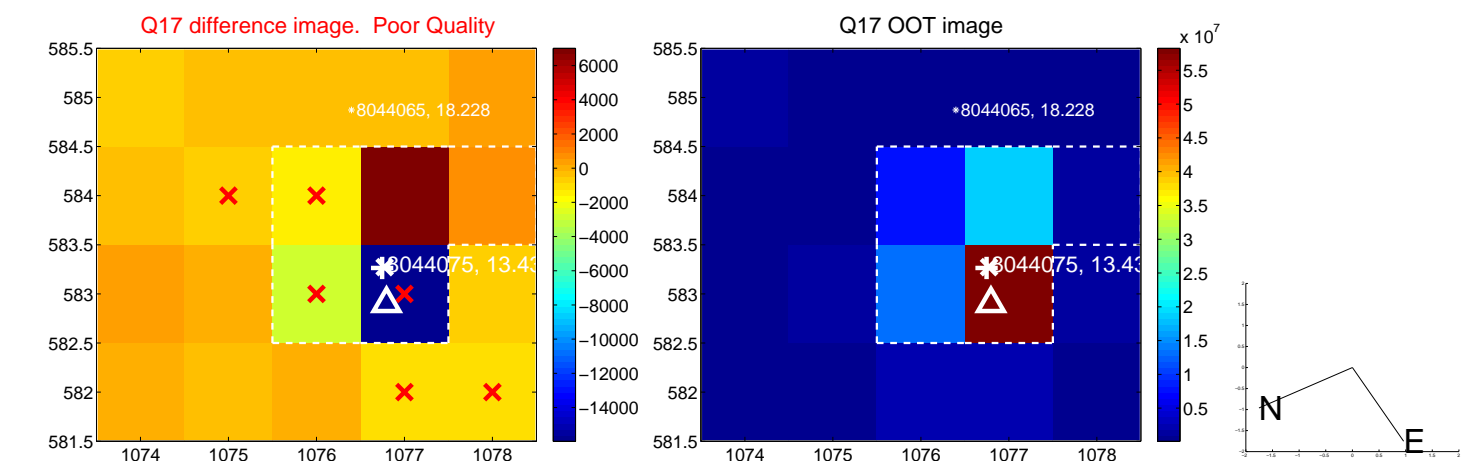


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

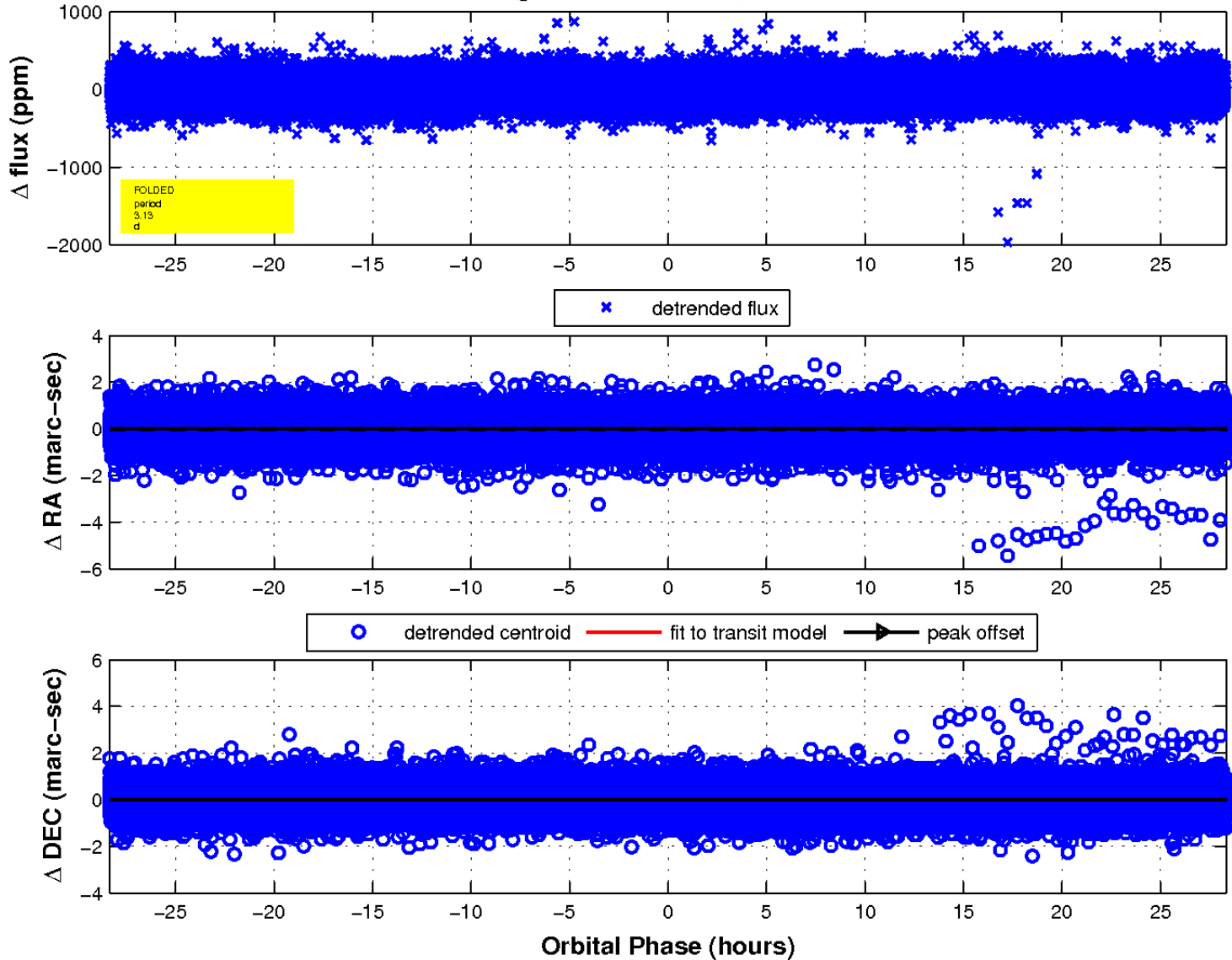




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

