

# KIC 008261920

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008261920-01	OBS	2174.01	6.693317	137.703424	785.8	2.538	17.9	20.3	0.64	4245	2.66	32.63
008261920-02	OBS	2174.03	15.450176	145.906679	738.7	1.772	11.7	13.2	0.64	4245	1.67	10.70
008261920-03	OBS	2174.02	33.136074	136.372878	866.9	4.492	11.4	13.0	0.64	4245	2.32	3.87
008261920-04	OBS	2174.04	3.016064	131.556135	184.1	1.867	7.4	7.4	0.64	4245	1.06	94.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008261920-01	OBS	PC	0.97	0	0	0	0	CENT_KIC_POS
008261920-02	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
008261920-03	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
008261920-04	OBS	PC	0.69	0	0	0	0	CENT_KIC_POS

**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 008261920-01

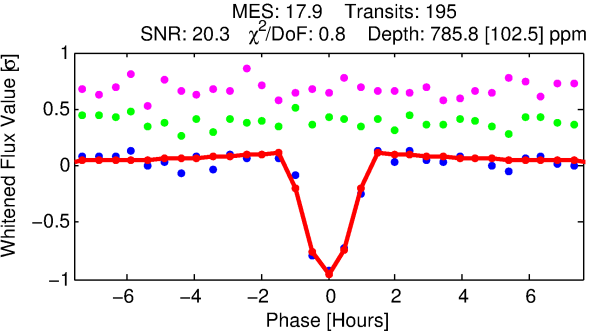
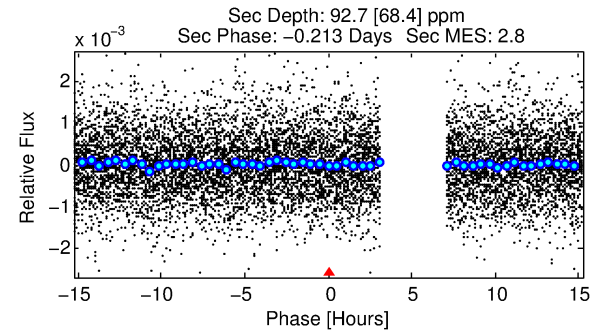
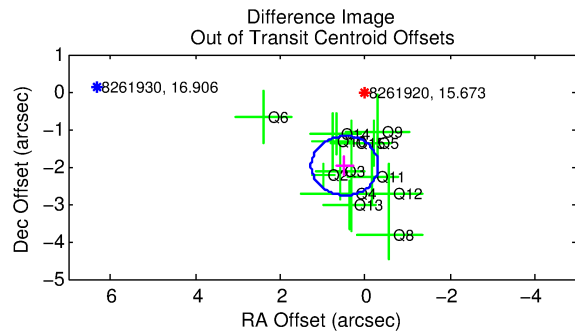
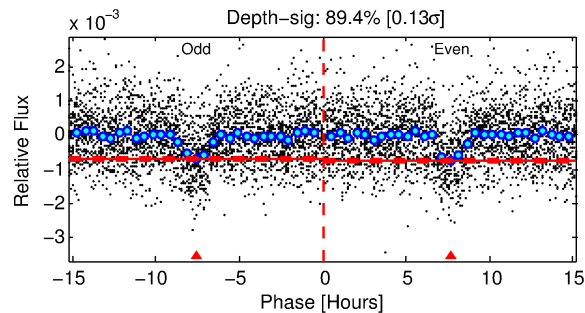
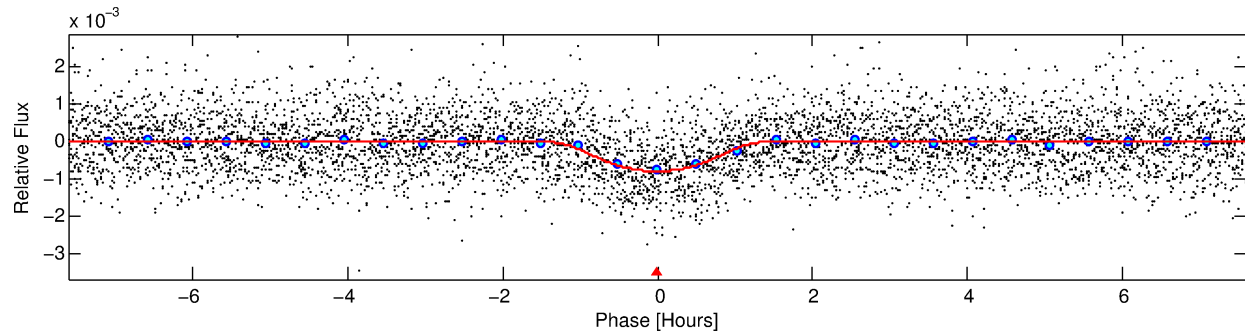
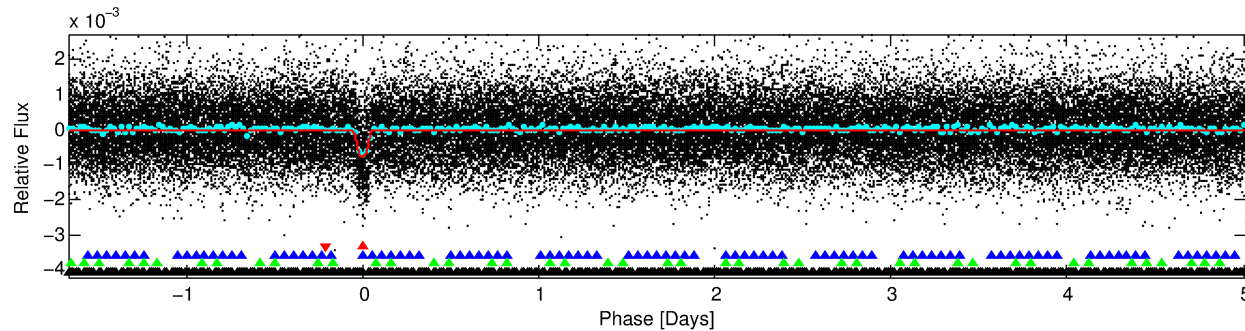
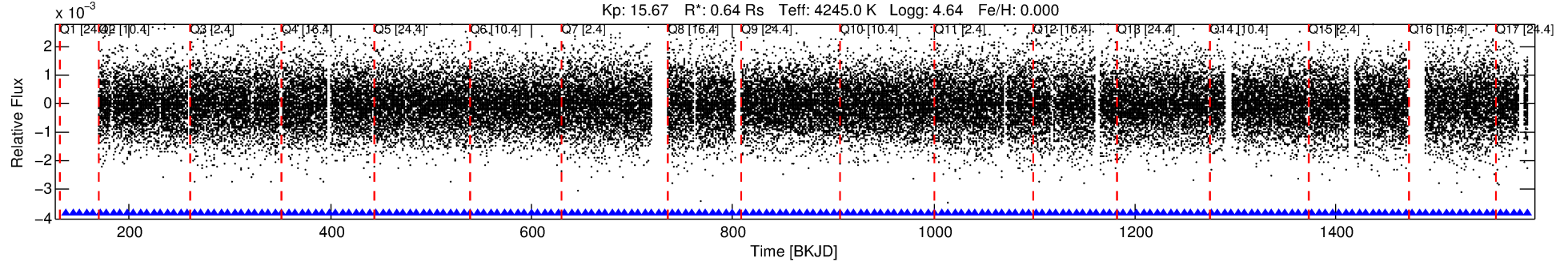
No Significant Match Found

# DV One-Page Summary

KIC: 8261920 Candidate: 1 of 4 Period: 6.693 d

KOI: K02174.01 Corr: 0.884

Kp: 15.67 R\*: 0.64 Rs Teff: 4245.0 K Logg: 4.64 Fe/H: 0.000



## DV Fit Results:

Period = 6.69332 [0.00002] d  
Epoch = 137.7034 [0.0026] BKJD  
Rp/R\* = 0.0383 [0.0148]  
a/R\* = 7.43 [1.69]  
b = 0.97 [0.04]  
Seff = 32.63 [3.14]  
Teq = 609 [15] K  
Rp = 2.66 [1.04] Re  
a = 0.0601 [0.0024] AU  
Ag = 26.05 [27.86] [0.90σ]  
Teff = 2129 [570] K [2.66σ]

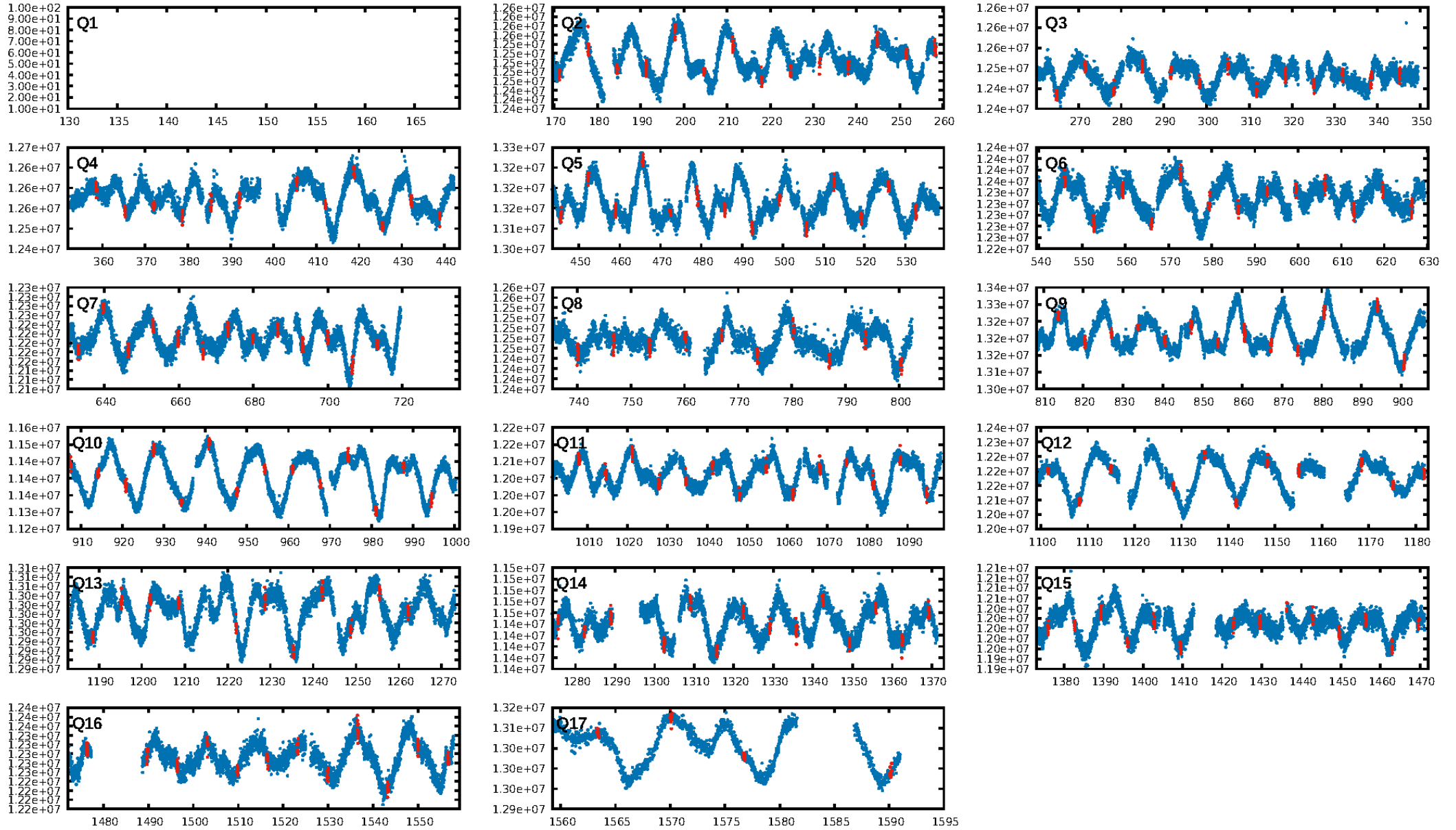
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [28.02σ]  
LongPeriod-sig: 100.0% [67.91σ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.59e-69  
RollingBand-fgt: 1.00 [191/191]  
GhostDiagnostic-chr: 4.721  
Centroid-sig: 71.5%  
Centroid-so: 1.040 arcsec [2.86σ]  
OotOffset-rm: 2.031 arcsec [7.70σ]  
KicOffset-rm: 0.978 arcsec [3.83σ]  
OotOffset-st: 4/3/3/3 [13]  
KicOffset-st: 4/3/3/3 [13]  
DiffImageQuality-fgm: 0.62 [8/13]  
DiffImageOverlap-fno: 1.00 [16/16]

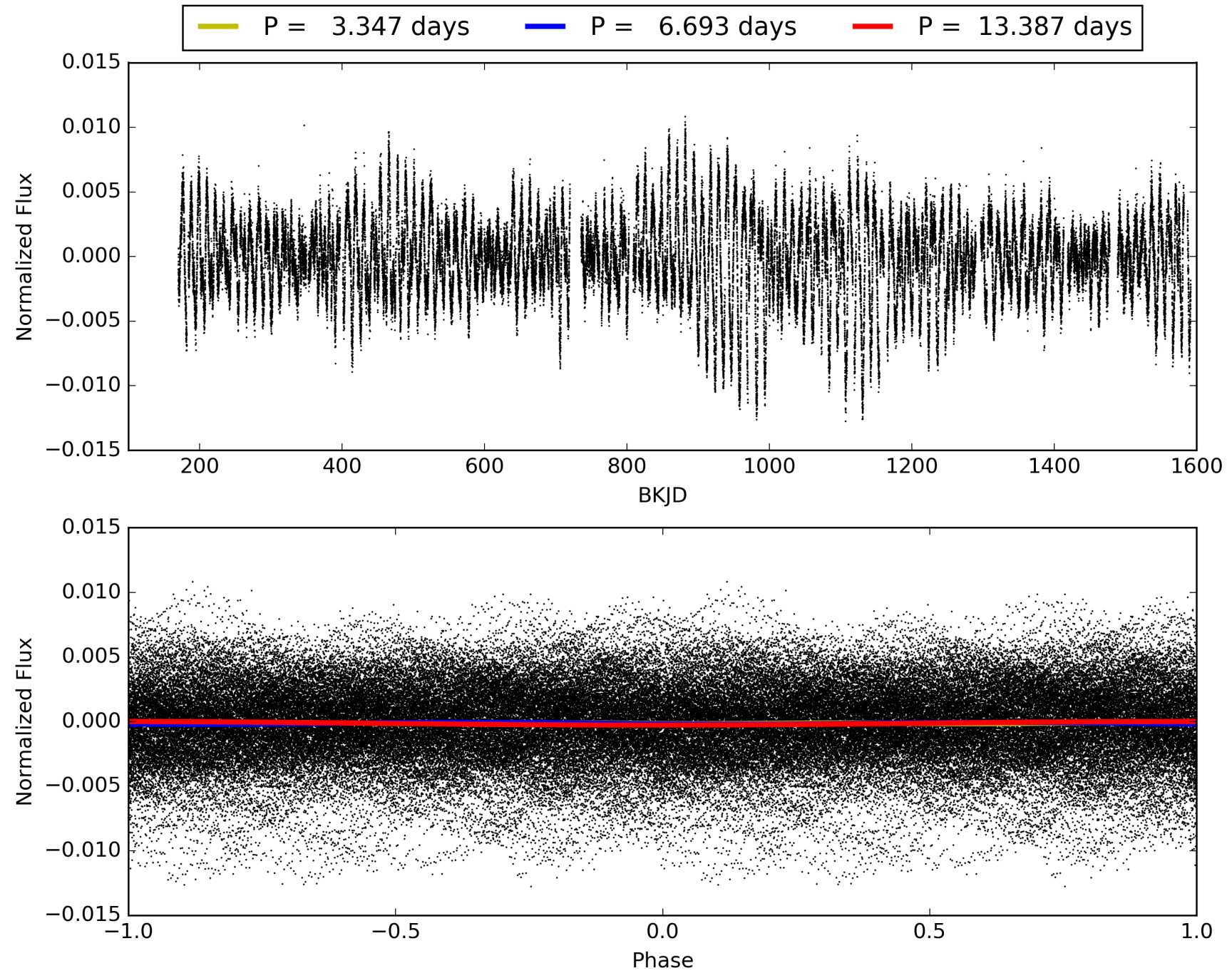
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:57:57 Z

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

# TCE 008261920-01, PDC Light Curves



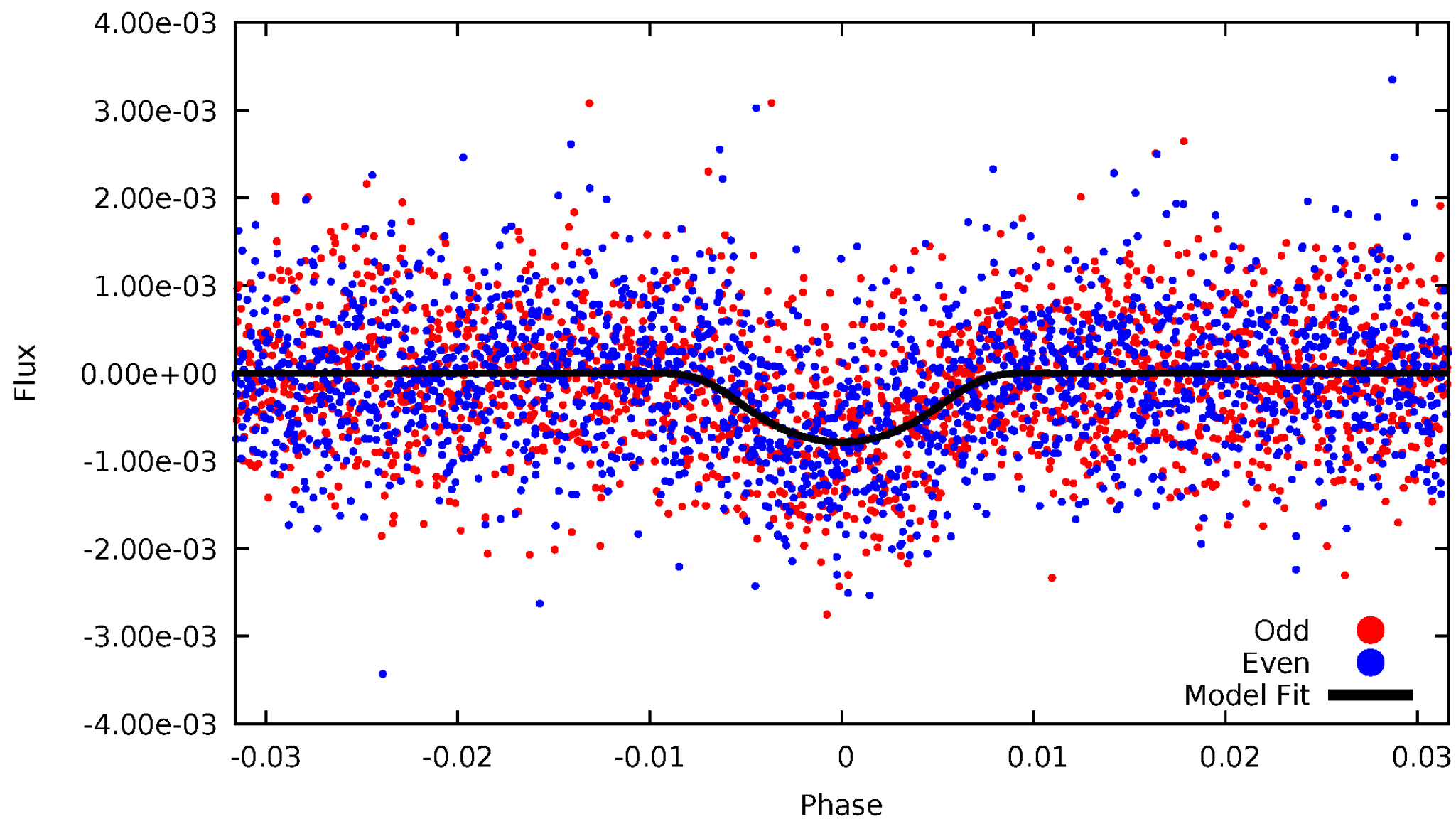
# TCE 008261920-01





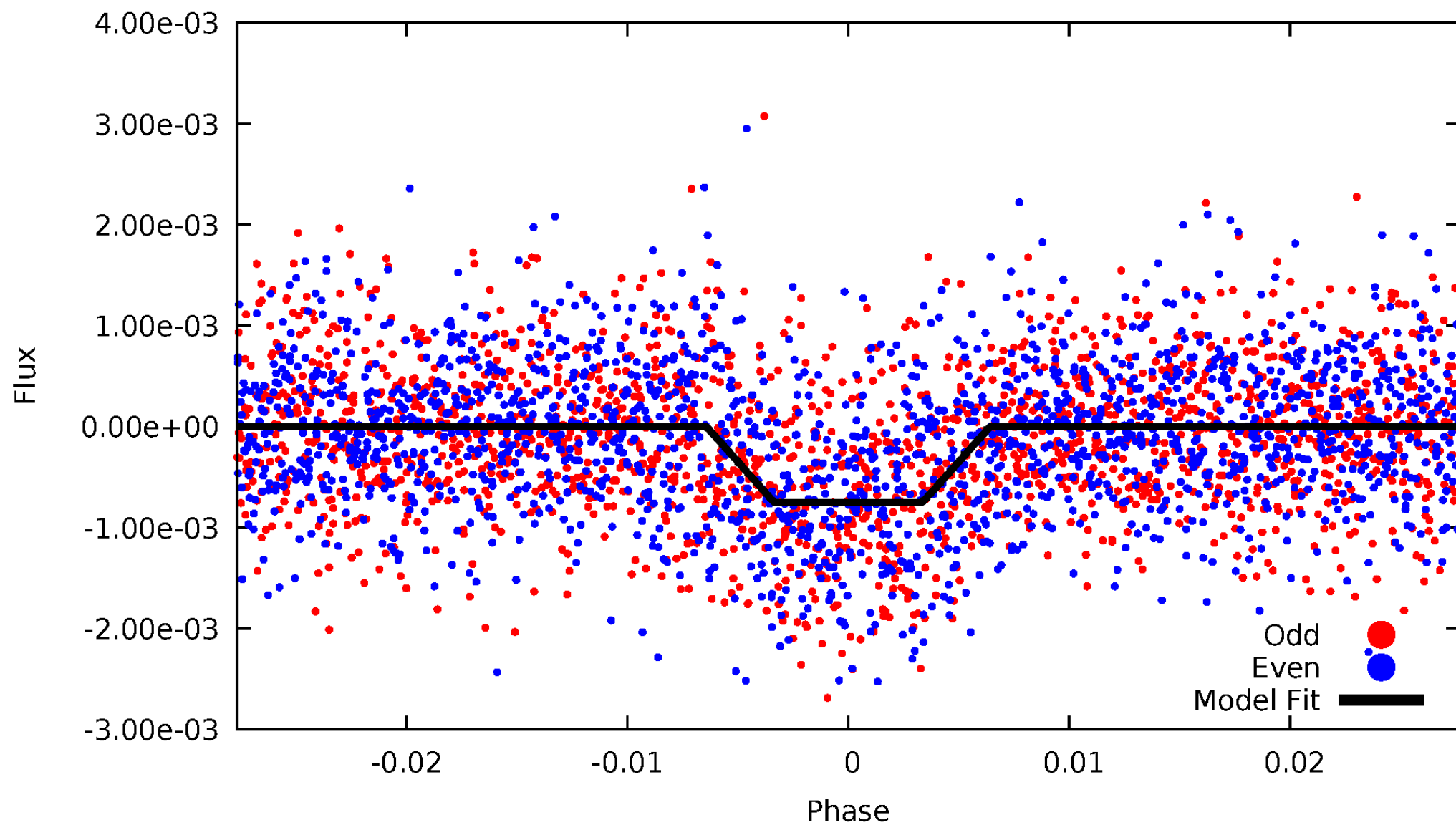
# DV Odd/Even

TCE 008261920-01

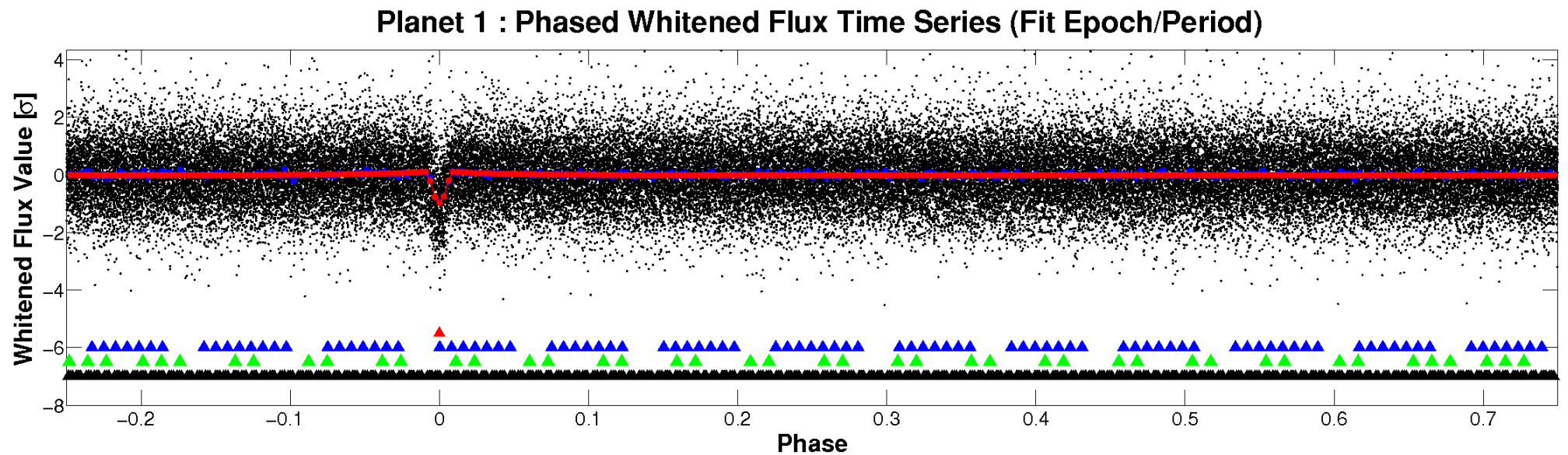
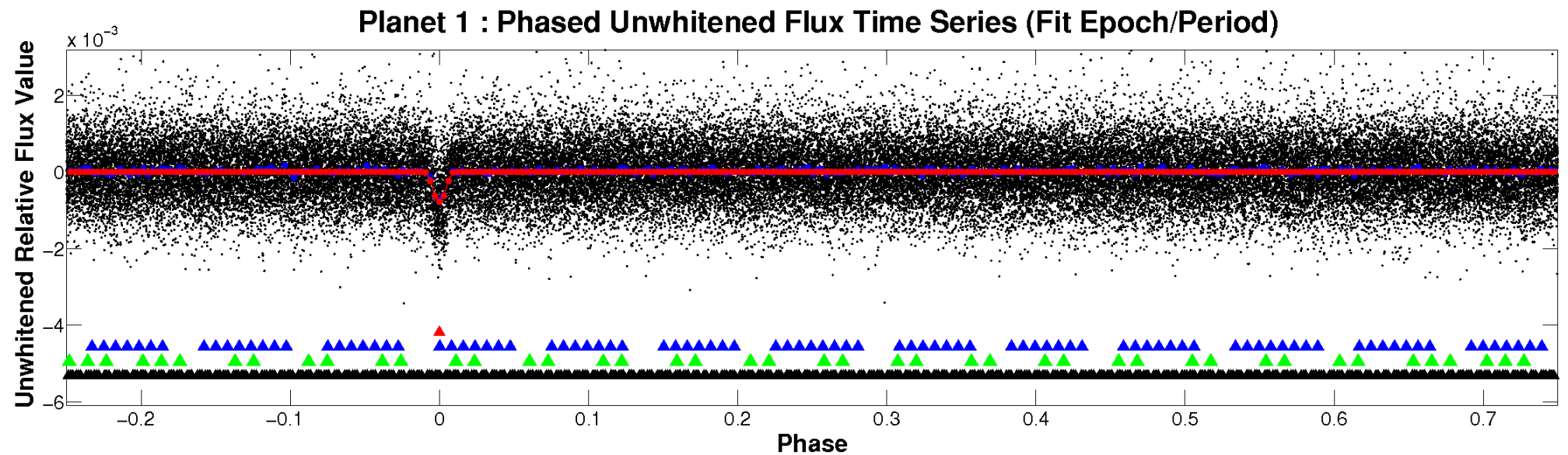


# ALT Odd/Even

TCE 008261920-01

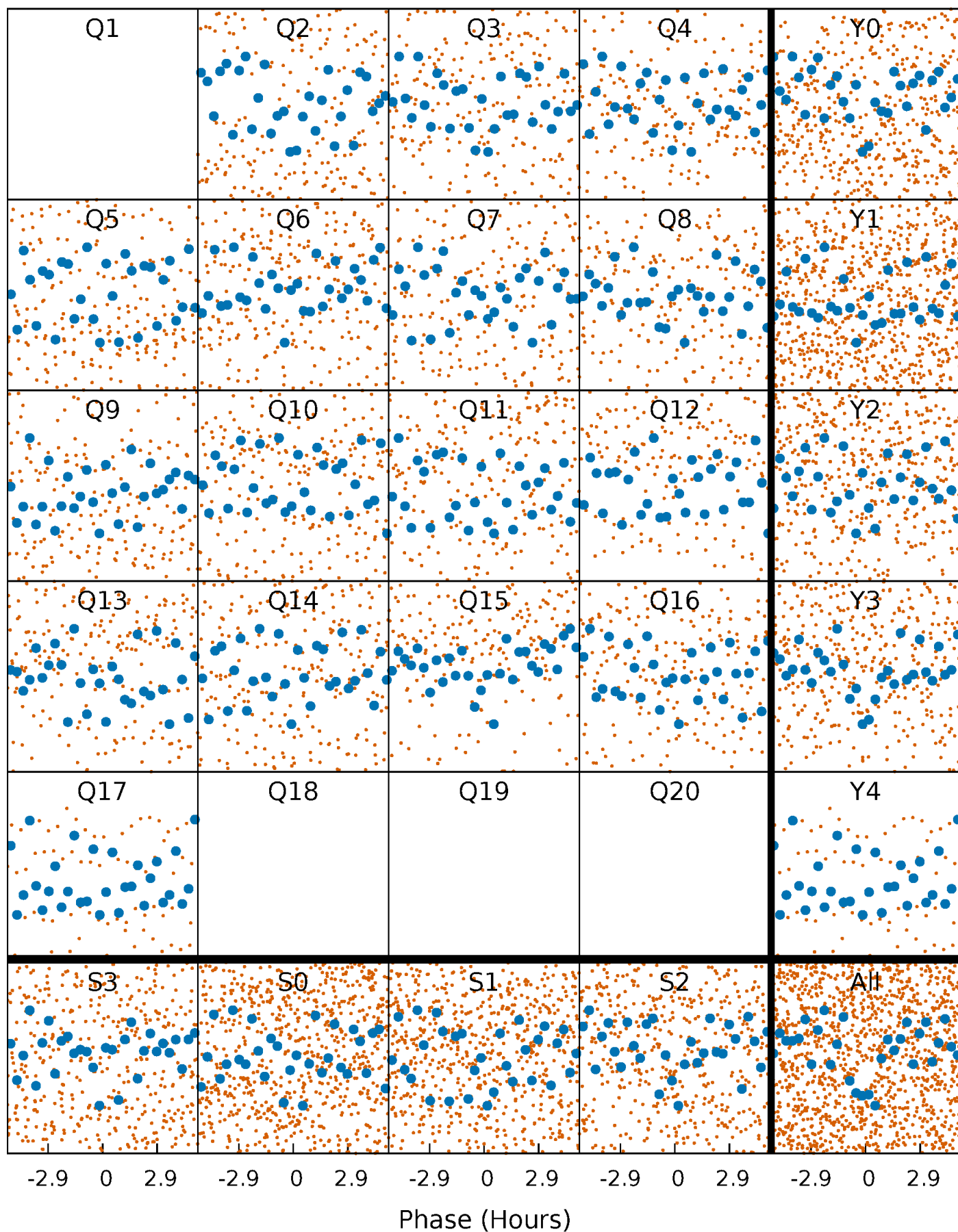


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

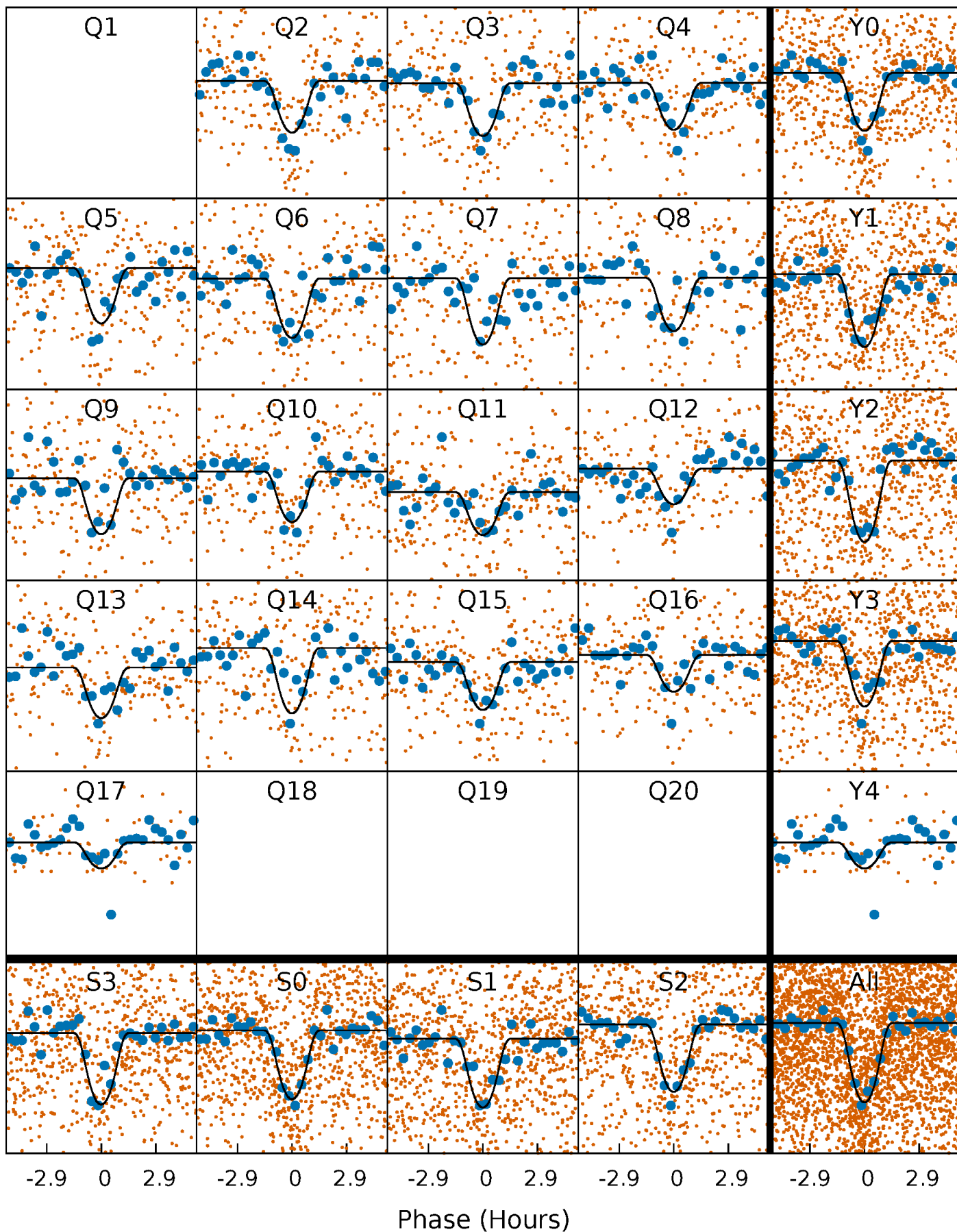
TCE 008261920-01 P= 6.693317 Days  $T_0=137.703424$  (BKJD)





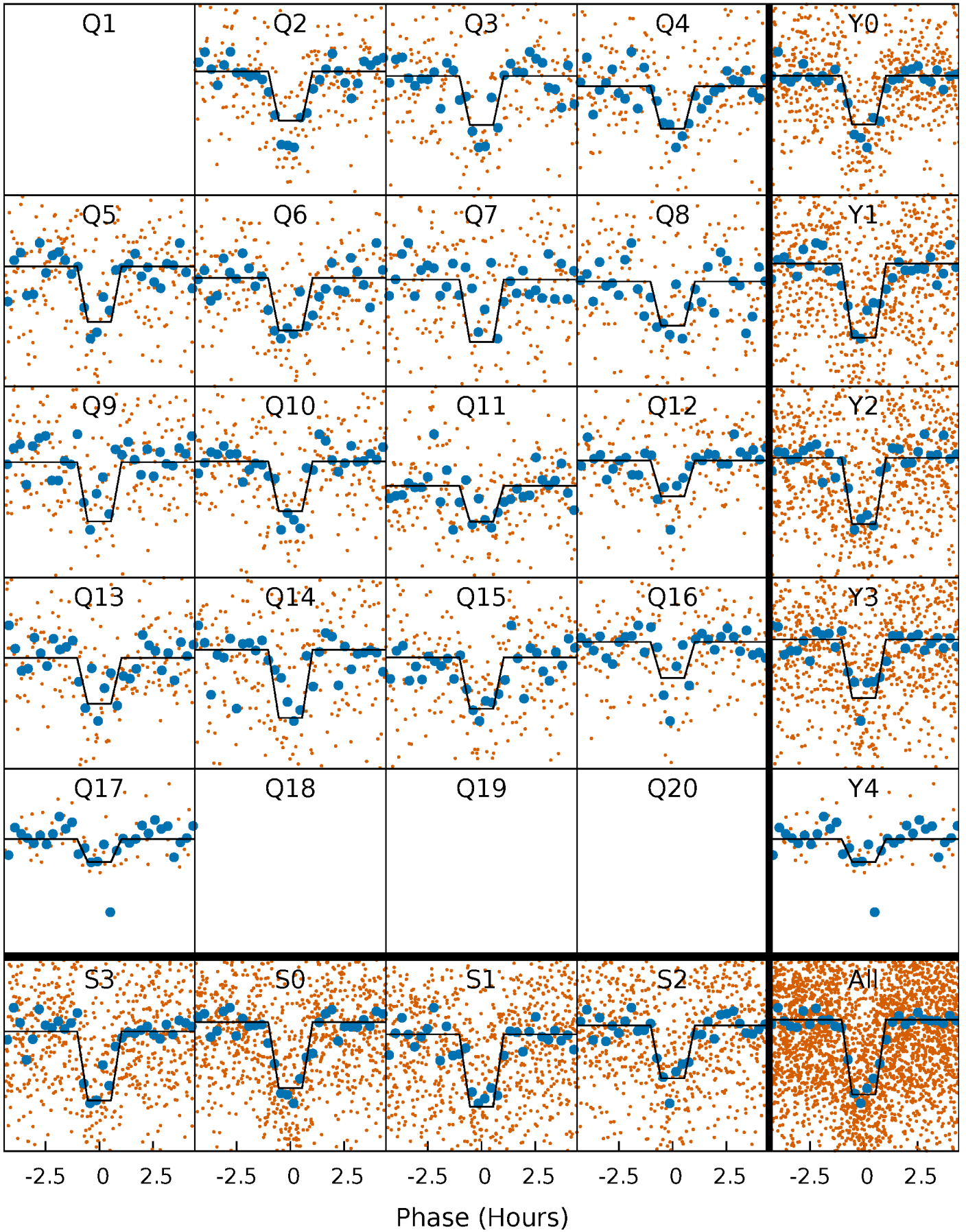
# DV Quarter-Phased Transit Curves

TCE 008261920-01 P= 6.693317 Days  $T_0=137.703424$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

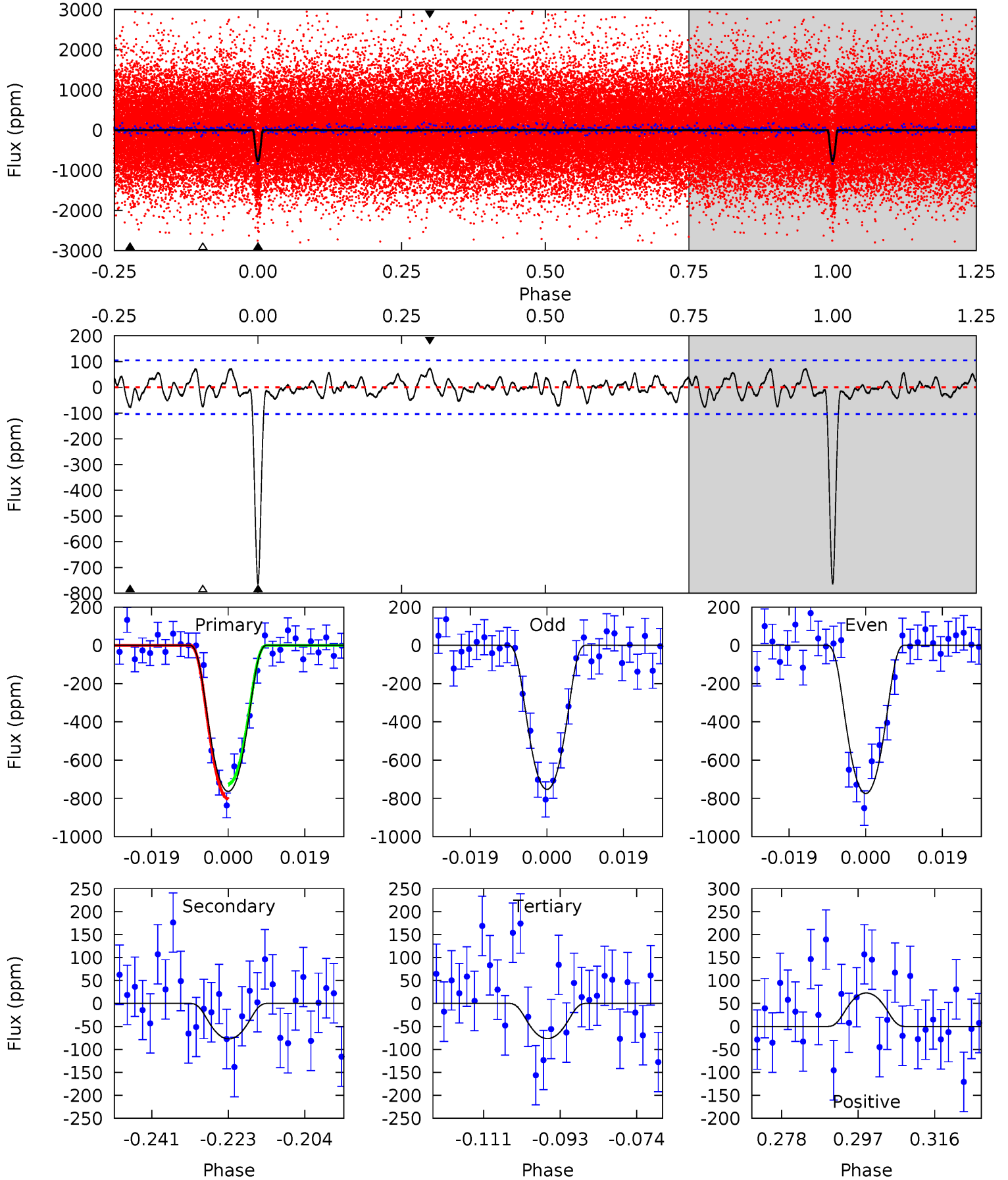
TCE 008261920-01 P= 6.693319 Days  $T_0=137.704180$  (BKJD)



# DV Model-Shift Uniqueness Test

008261920-01, P = 6.693317 Days, E = 137.703424 Days

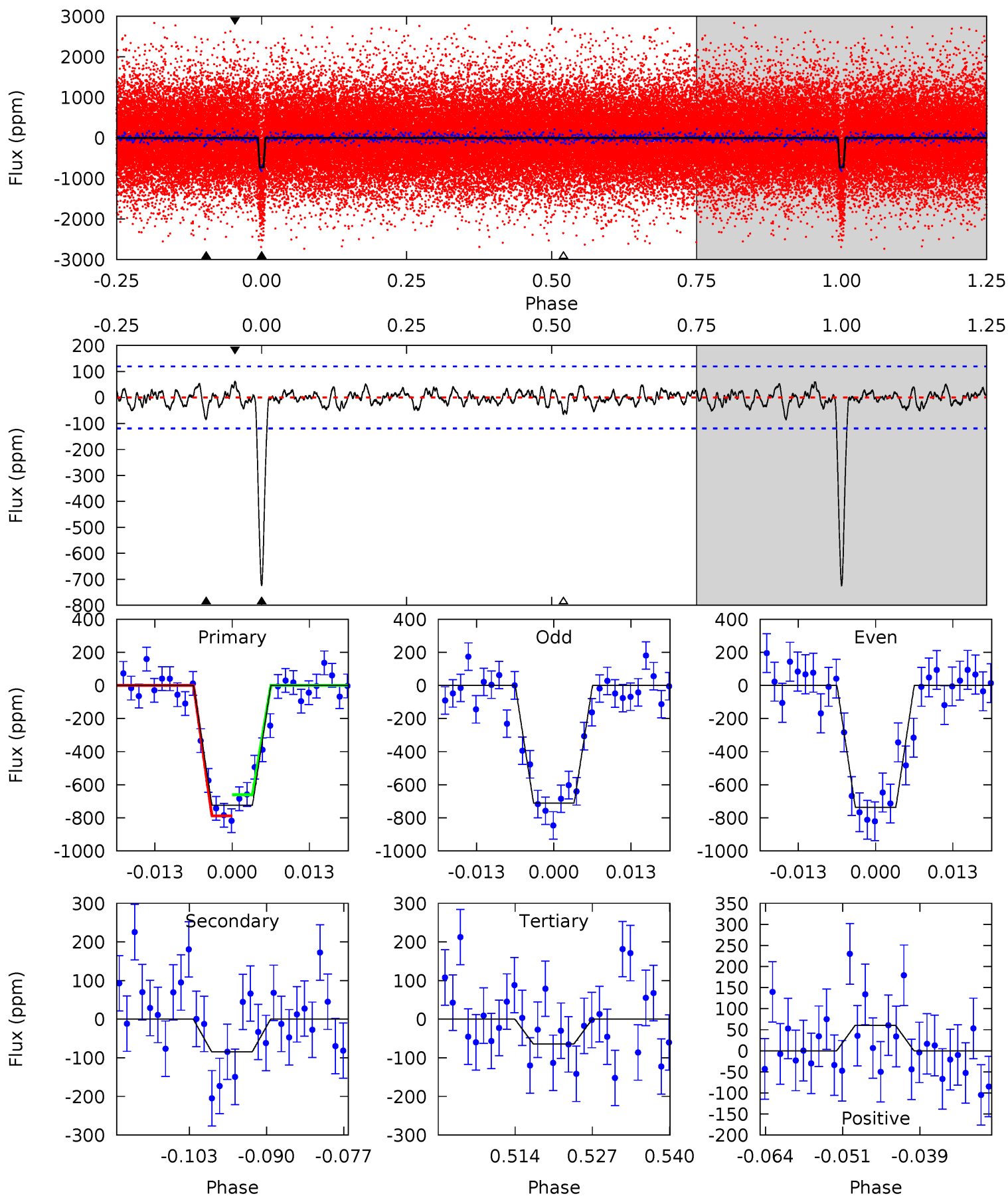
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.9	3.63	3.59	3.42	4.91	2.35	1.32	32.3	32.5	0.03	0.20	0.51	0.97	0.09	1.82



# Alt Model-Shift Uniqueness Test

008261920-01, P = 6.693319 Days, E = 137.704180 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
30.2	3.53	2.68	2.51	4.98	2.49	0.91	27.5	27.7	0.85	1.02	0.52	1.03	0.08	2.65





### Stellar Parameters For KIC 008261920

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4245^{+85}_{-85}$	$4.641^{+0.027}_{-0.020}$	$0.000^{+0.150}_{-0.150}$	$0.637^{+0.026}_{-0.032}$	$0.649^{+0.032}_{-0.032}$	$3.533^{+0.378}_{-0.282}$
	+2%/-2%	+1%/-0%	+inf%/-inf%	+4%/-5%	+5%/-5%	+11%/-8%
Source	SPE60	SPE60	SPE60	DSEP		

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

### Secondary Eclipse Parameters for KIC 008261920-01 / KOI 2174.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-77 \pm 21$	$2.65^{+1.08}_{-0.98}$	$849^{+20}_{-17}$	$2693^{+384}_{-251}$	$22^{+36}_{-12}$
Alt.	$-85 \pm 24$	$1.99^{+1.00}_{-1.00}$	$851^{+18}_{-20}$	$2943^{+665}_{-340}$	$41^{+124}_{-23}$

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

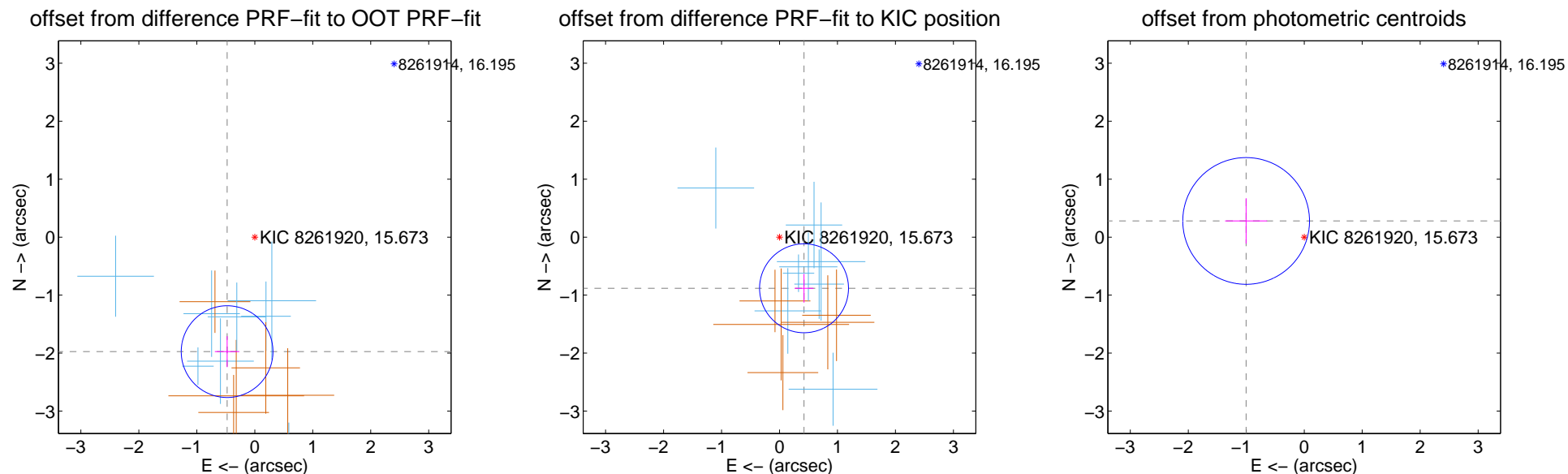
## DV Centroid Data

Supplemental centroid analysis for 008261920-01. Kepler magnitude: 15.67. Transit SNR 20.30

There are 8 quarters with good PRF difference image offsets

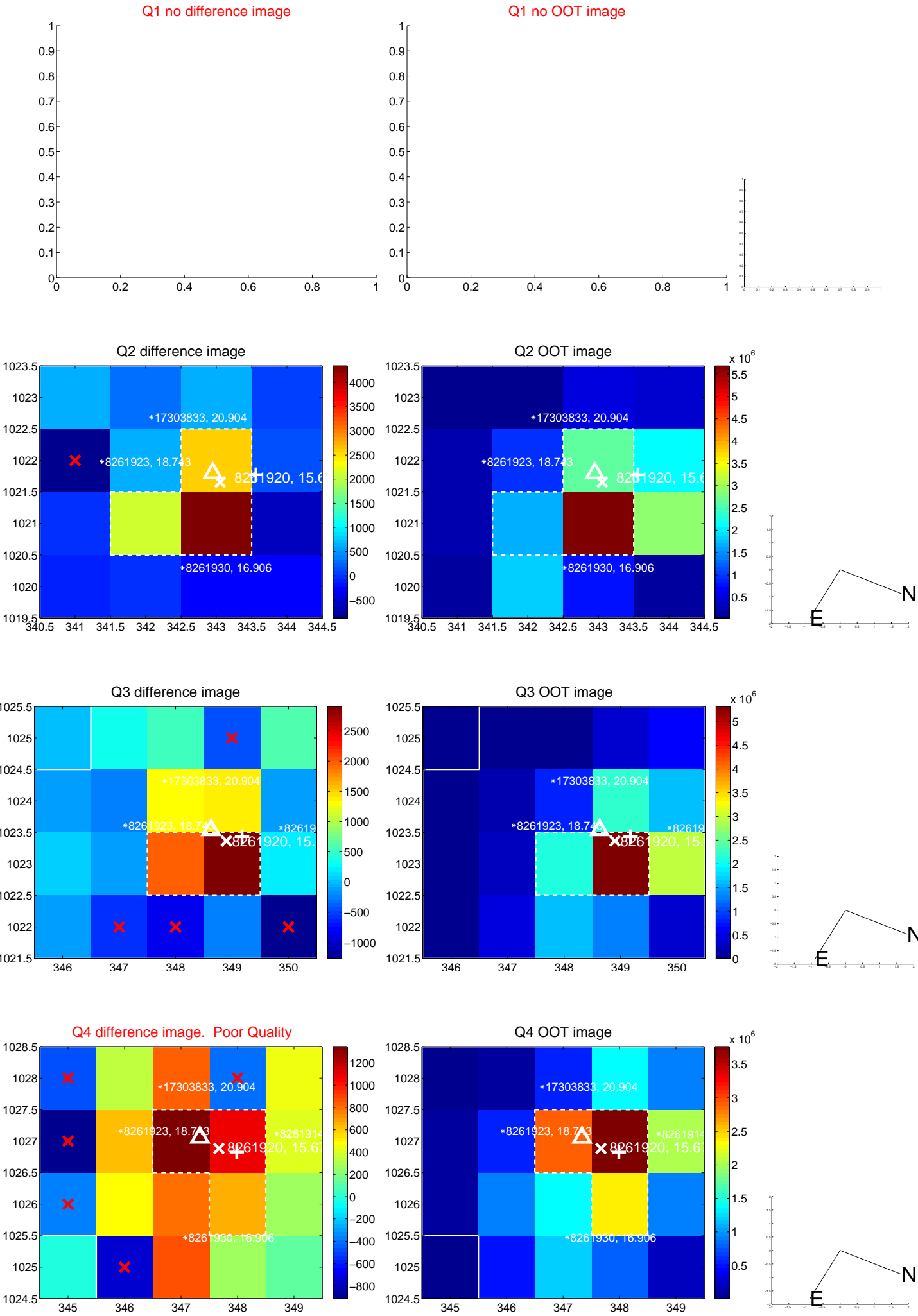
The direct PRF centroid is offset from the target star catalog position by about 1.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.031 \pm 0.264$	<b>7.70</b>	$0.477 \pm 0.211$	$-1.974 \pm 0.266$
PRF-fit source offset from KIC position	$0.978 \pm 0.256$	<b>3.83</b>	$-0.423 \pm 0.163$	$-0.882 \pm 0.247$
photometric centroid source offset	$1.04 \pm 0.36$	2.86	$1.00 \pm 0.36$	$0.28 \pm 0.39$

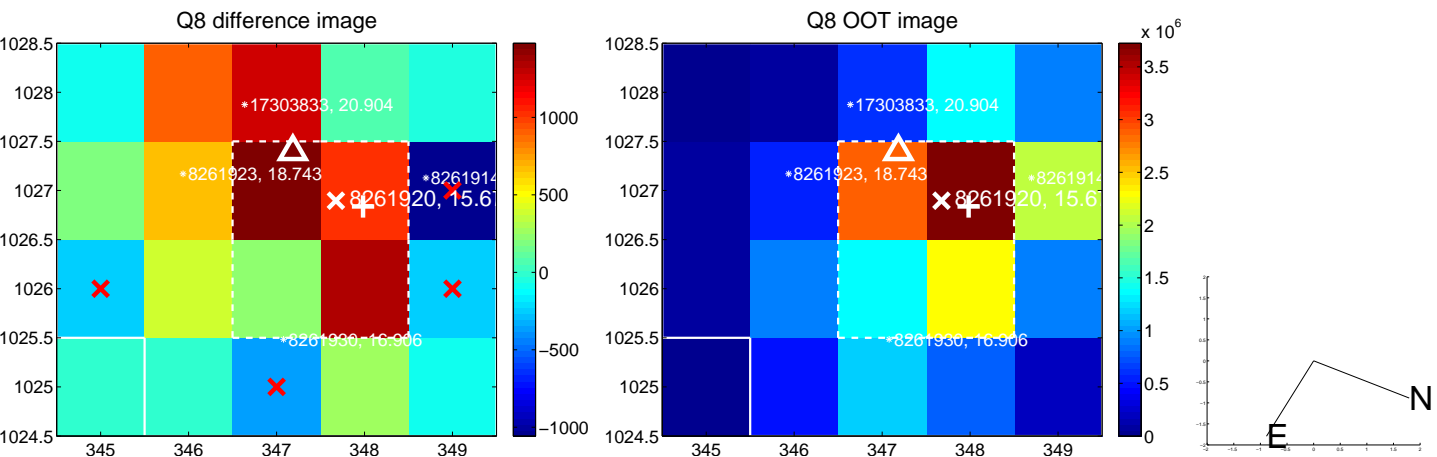
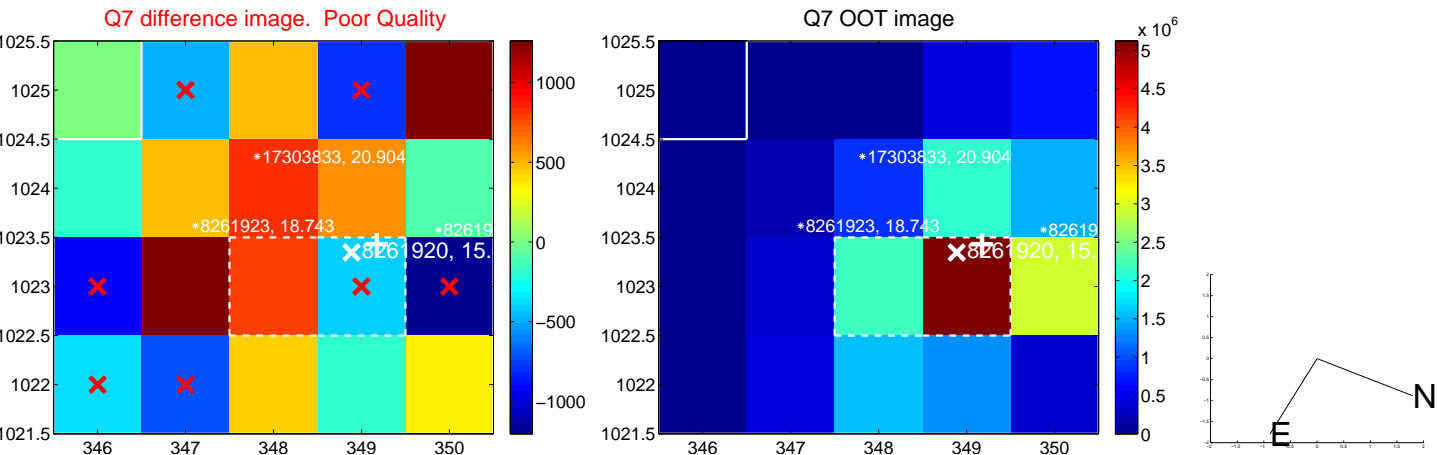
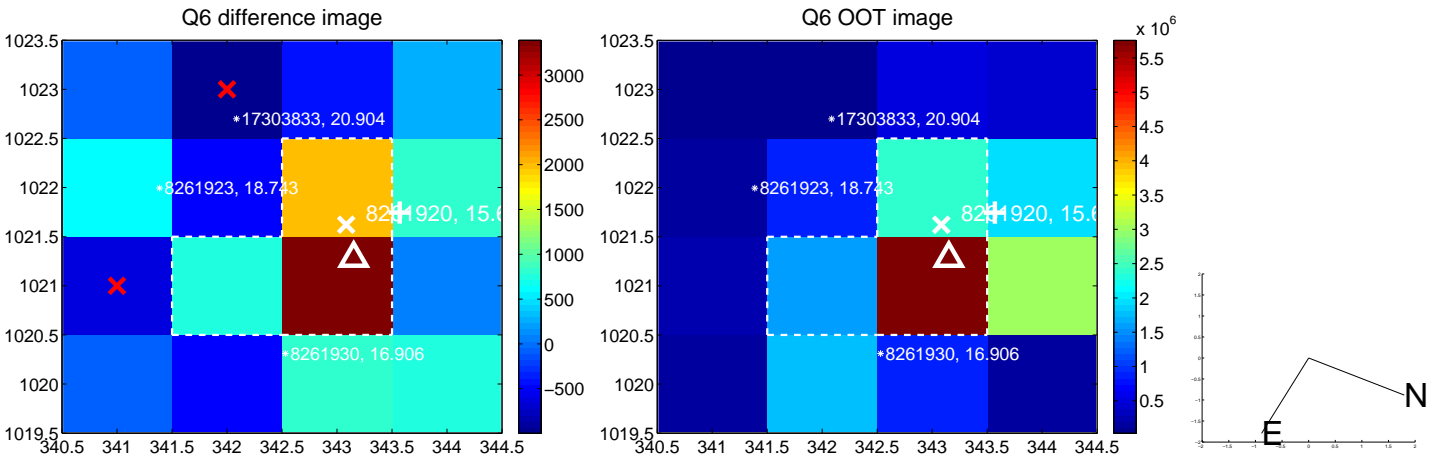
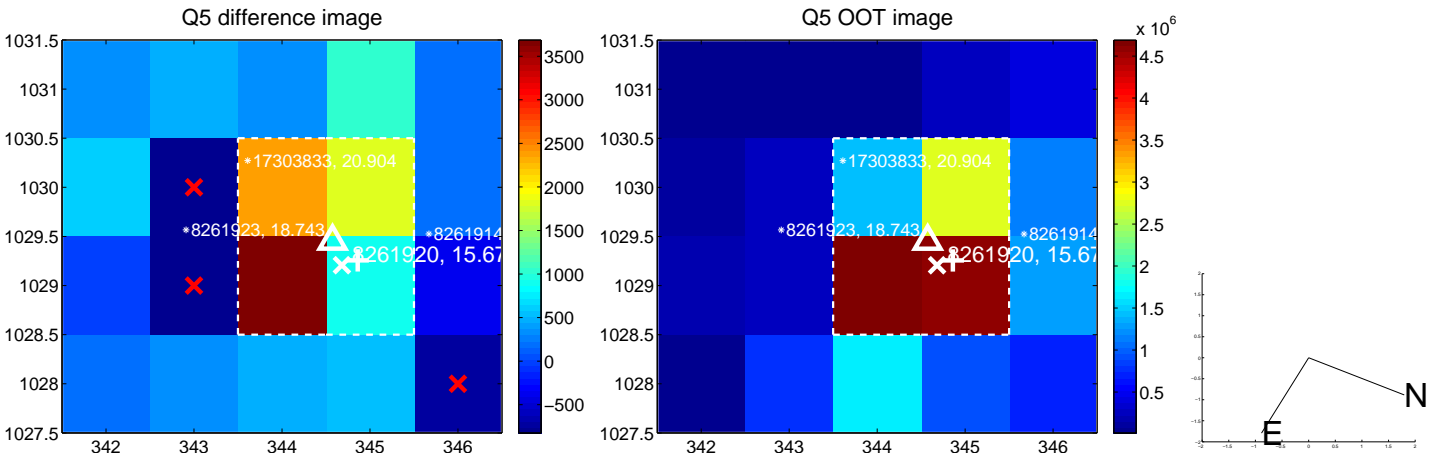


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

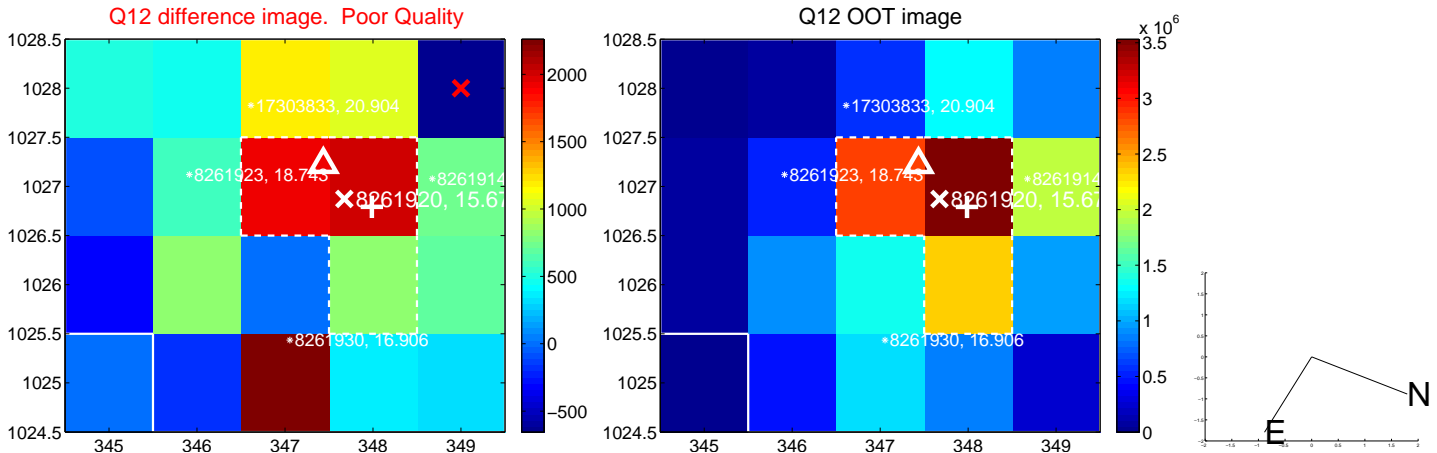
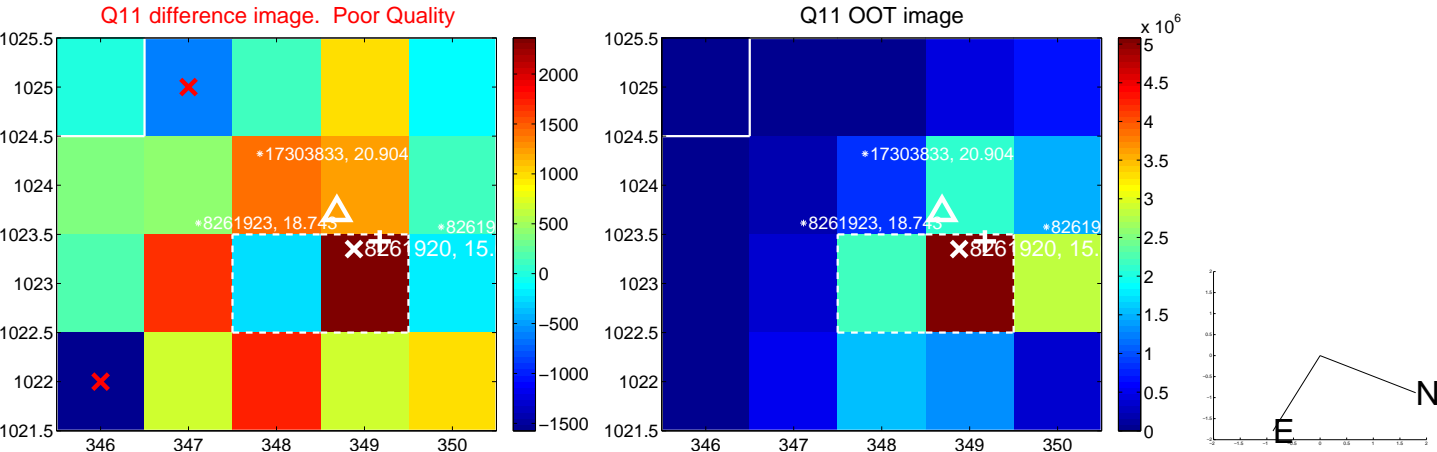
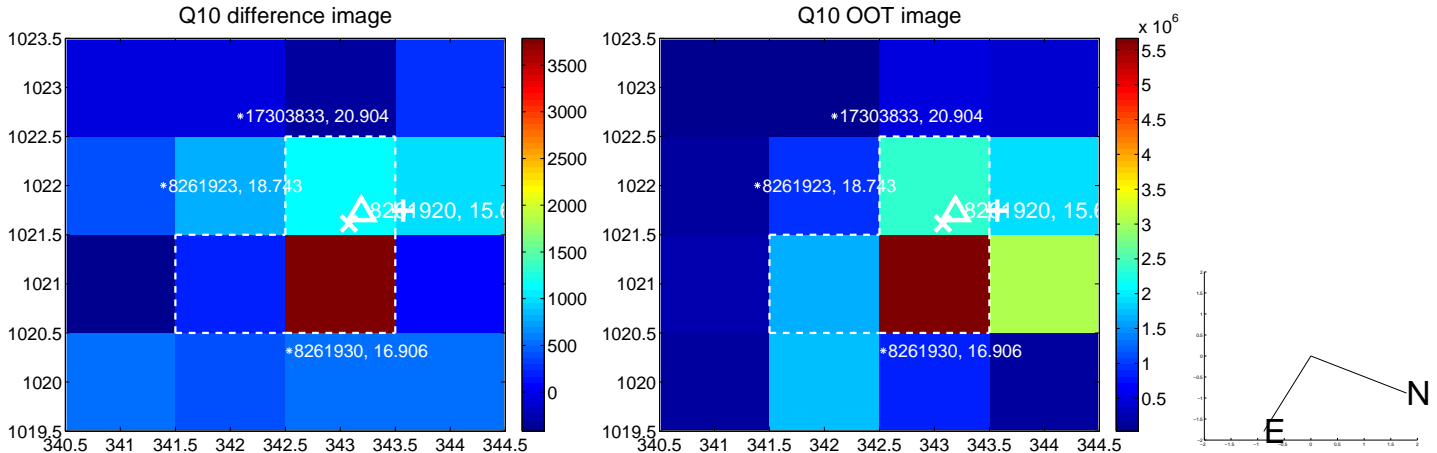
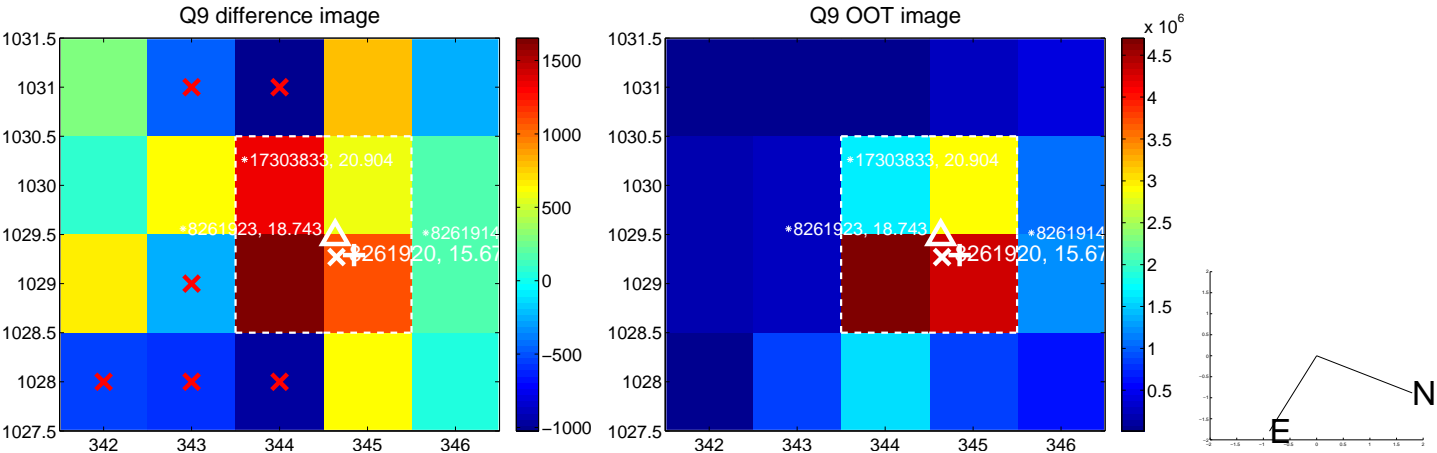


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

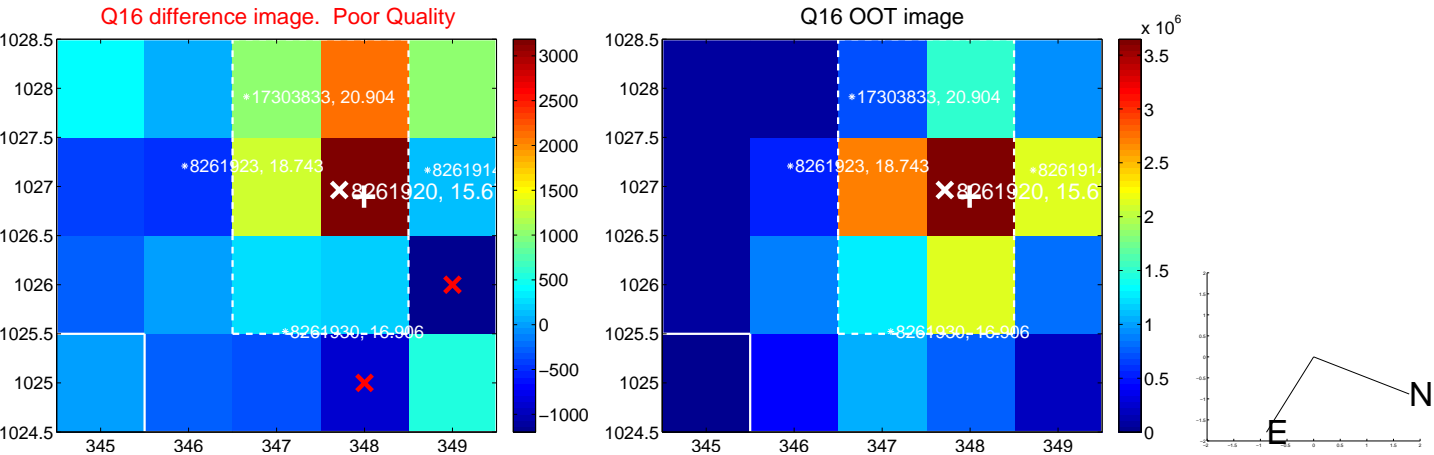
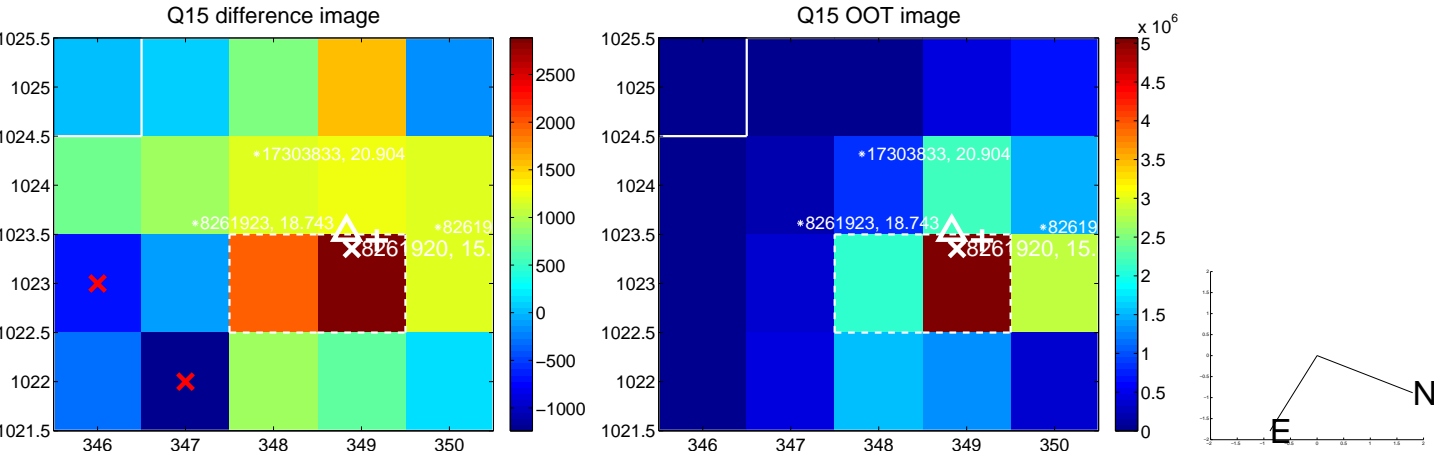
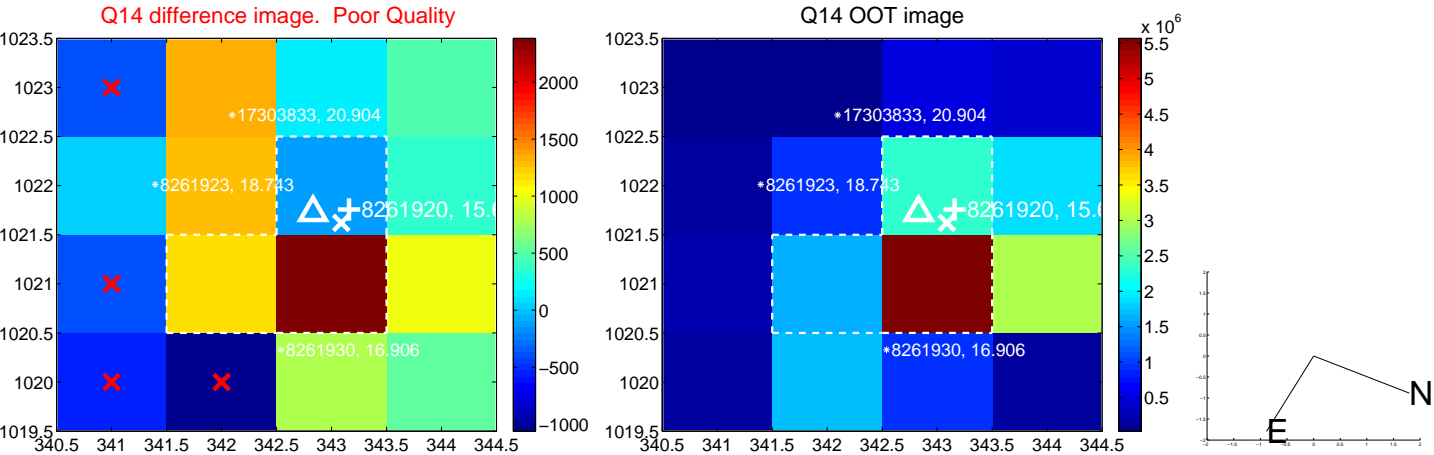
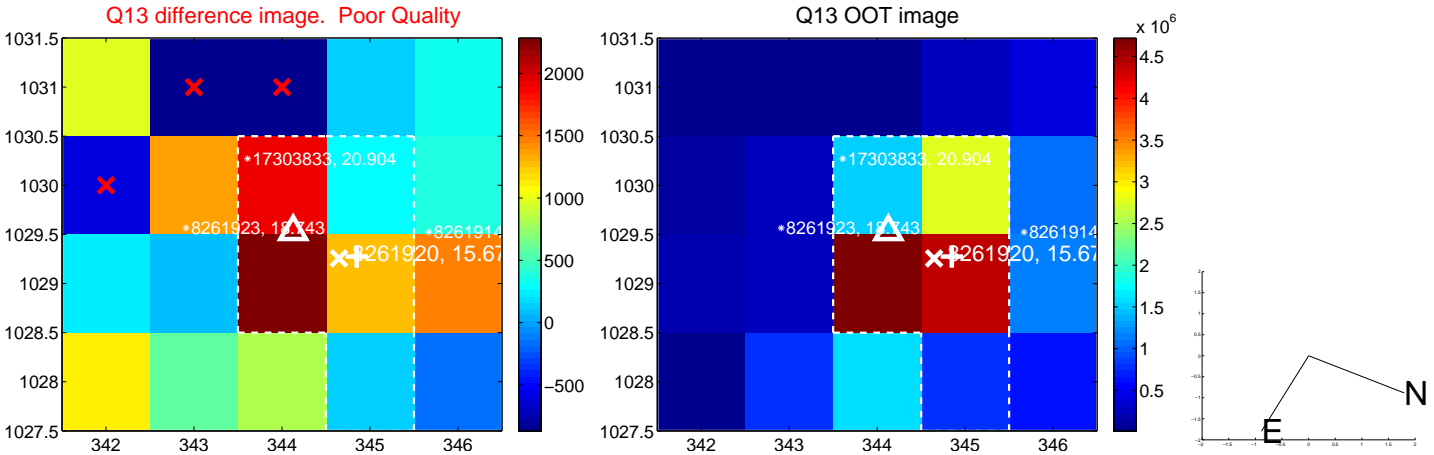




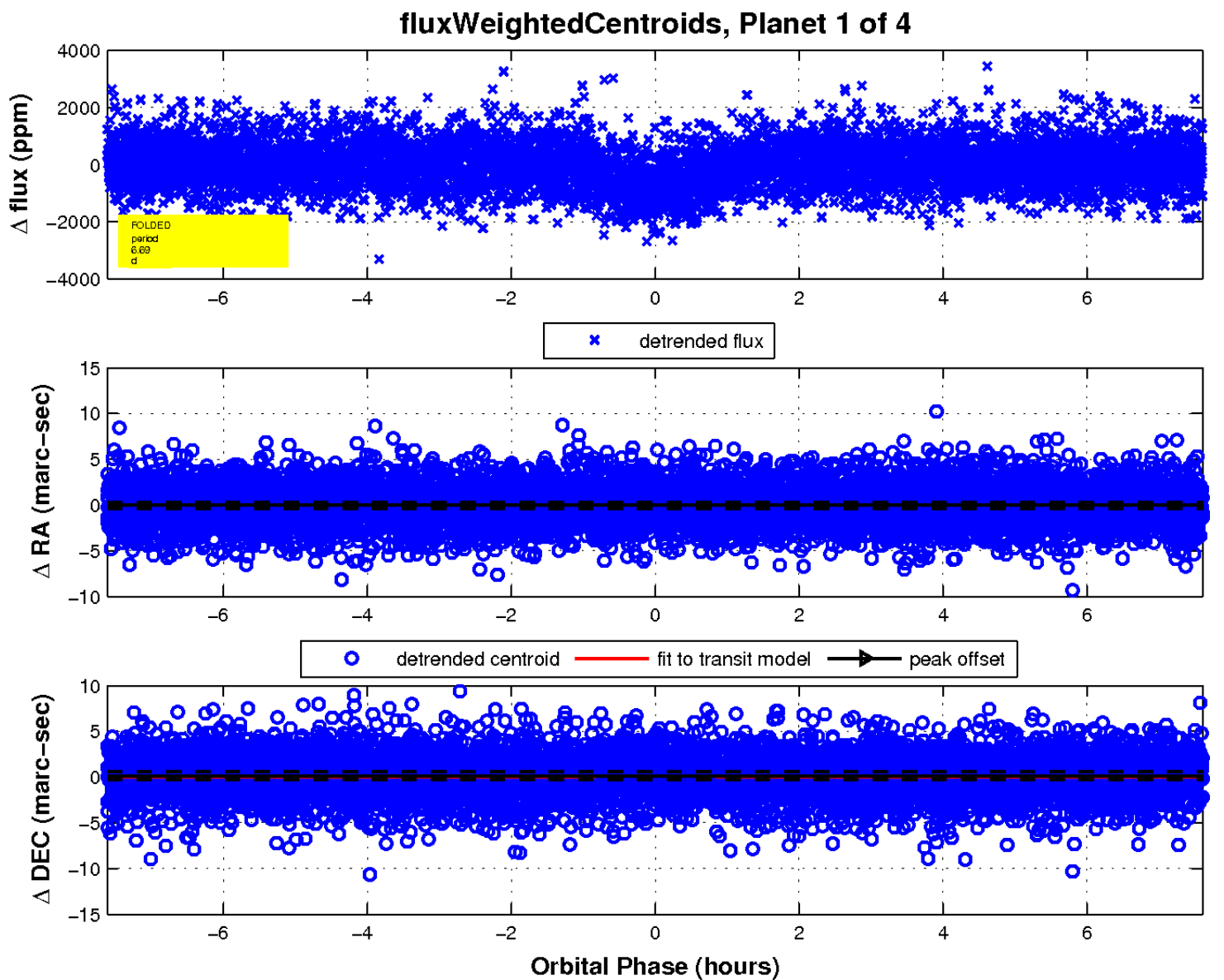
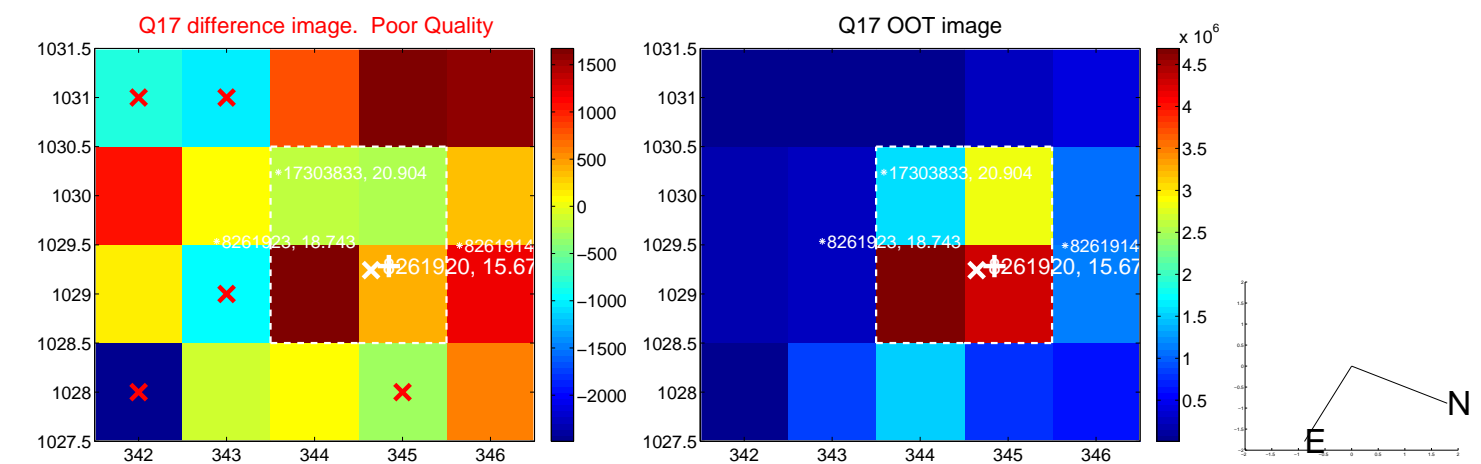
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

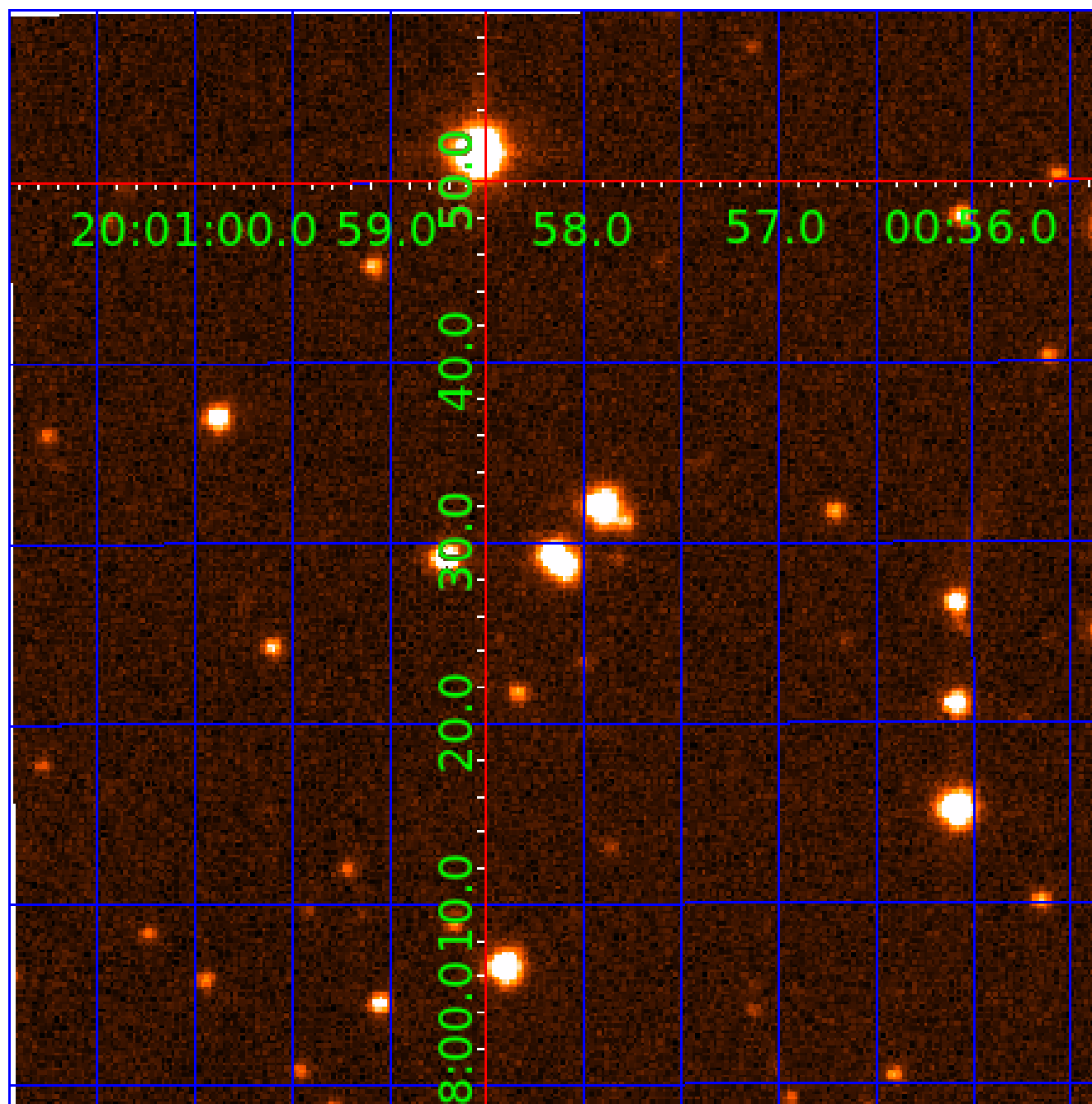


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008261920

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008261920-01	OBS	2174.01	6.693317	137.703424	785.8	2.538	17.9	20.3	0.64	4245	2.66	32.63
008261920-02	OBS	2174.03	15.450176	145.906679	738.7	1.772	11.7	13.2	0.64	4245	1.67	10.70
008261920-03	OBS	2174.02	33.136074	136.372878	866.9	4.492	11.4	13.0	0.64	4245	2.32	3.87
008261920-04	OBS	2174.04	3.016064	131.556135	184.1	1.867	7.4	7.4	0.64	4245	1.06	94.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008261920-01	OBS	PC	0.97	0	0	0	0	CENT_KIC_POS
008261920-02	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
008261920-03	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
008261920-04	OBS	PC	0.69	0	0	0	0	CENT_KIC_POS

**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.

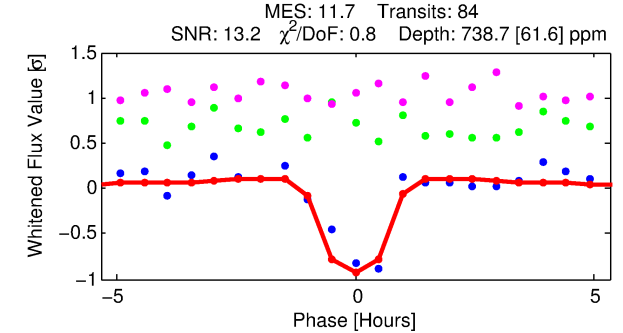
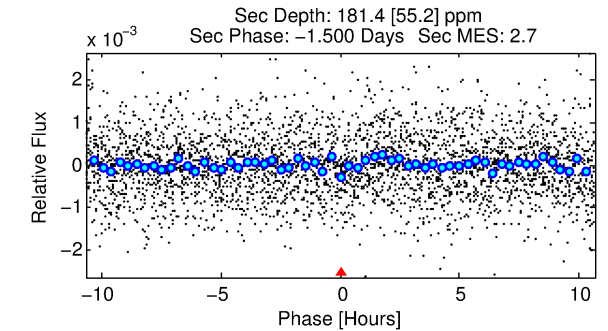
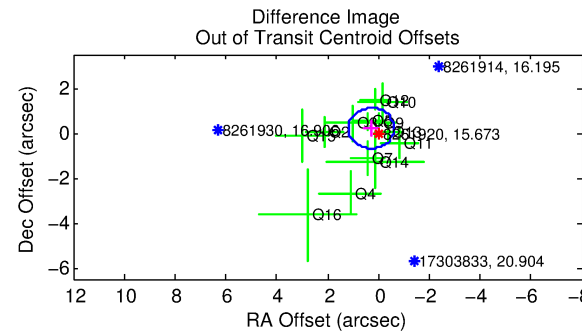
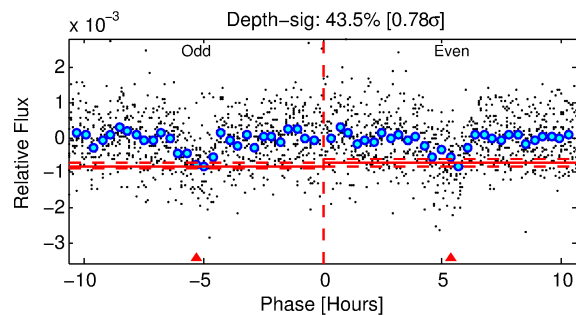
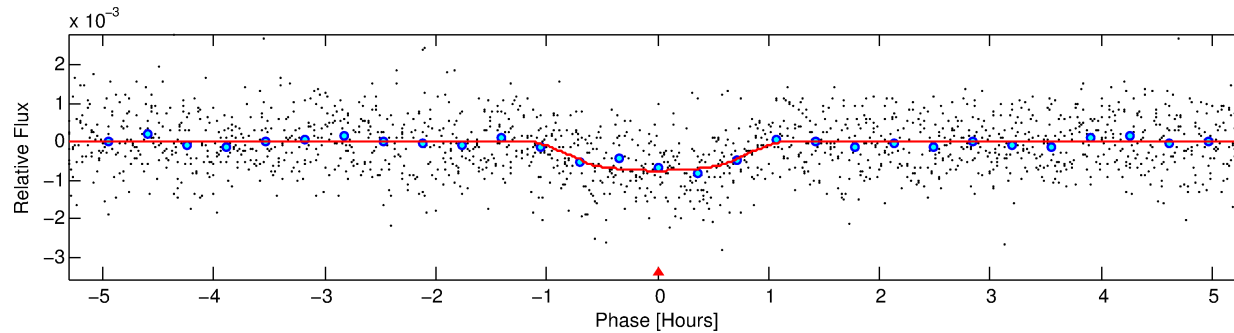
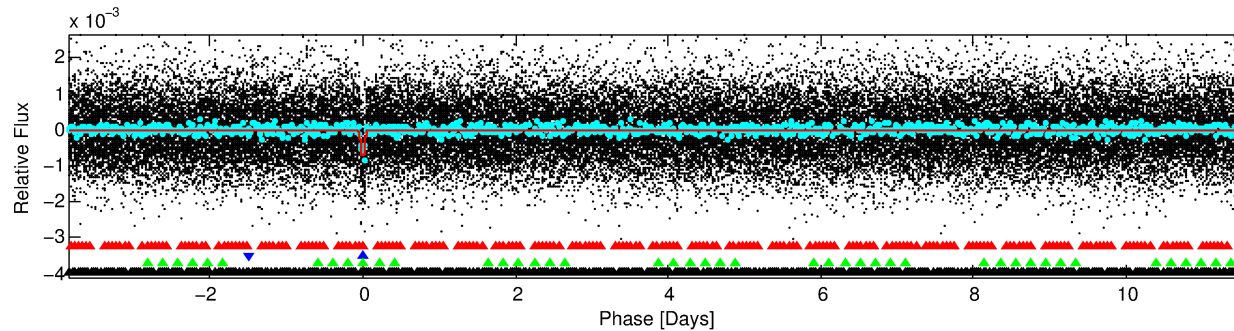
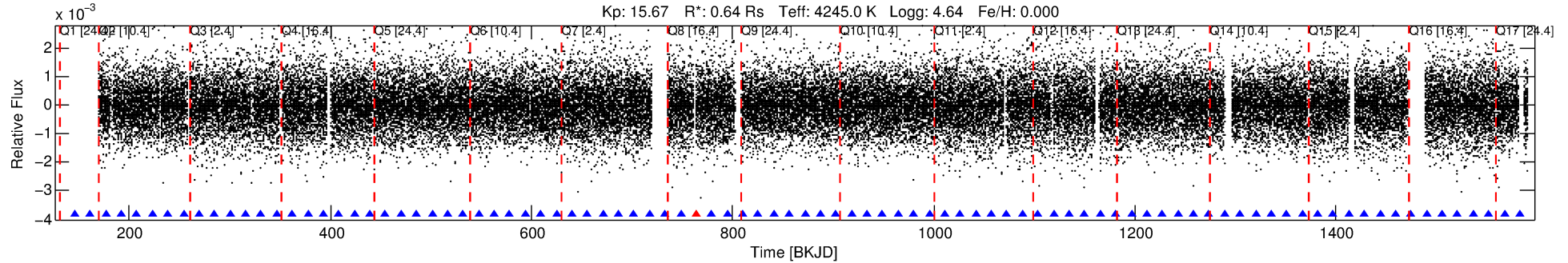
Ephemeris Match Information For 008261920-02

No Significant Match Found

# DV One-Page Summary

KIC: 8261920 Candidate: 2 of 4 Period: 15.450 d  
KOI: K02174 Corr: No Ephemeris Match

Kp: 15.67 R\*: 0.64 Rs Teff: 4245.0 K Logg: 4.64 Fe/H: 0.000



## DV Fit Results:

Period = 15.45018 [0.00007] d  
Epoch = 145.9067 [0.0036] BKJD  
Rp/R\* = 0.0240 [0.0239]  
a/R\* = 67.29 [194.97]  
b = 0.17 [17.26]  
Seff = 10.70 [1.03]  
Teq = 461 [11] K  
Rp = 1.67 [1.66] Re  
a = 0.1051 [0.0041] AU  
Ag = 394.55 [793.11] [0.50σ]  
Teffp = 3178 [1598] K [1.70σ]

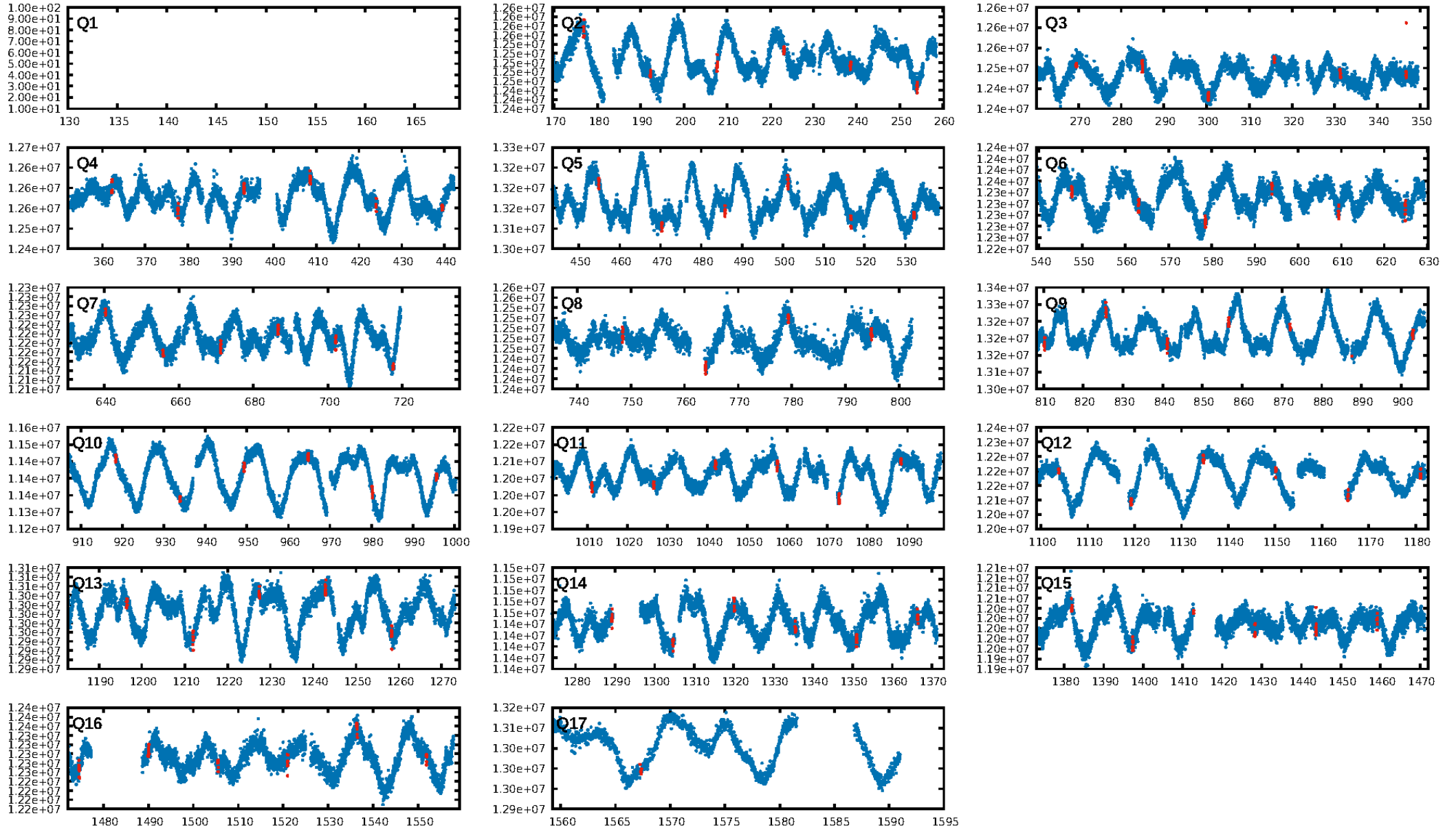
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [67.91σ]  
LongPeriod-sig: 100.0% [87.90σ]  
ModelChiSquare2-sig: 91.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.40e-30  
RollingBand-fgt: 0.99 [82/83]  
GhostDiagnostic-chr: -10.92  
Centroid-sig: 0.0%  
Centroid-so: 0.780 arcsec [1.28σ]  
OotOffset-rm: 0.352 arcsec [1.18σ]  
KicOffset-rm: 0.793 arcsec [1.90σ]  
OotOffset-st: 3/4/3/3 [13]  
KicOffset-st: 3/4/3/3 [13]  
DiffImageQuality-fgm: 0.62 [8/13]  
DiffImageOverlap-fno: 0.94 [15/16]

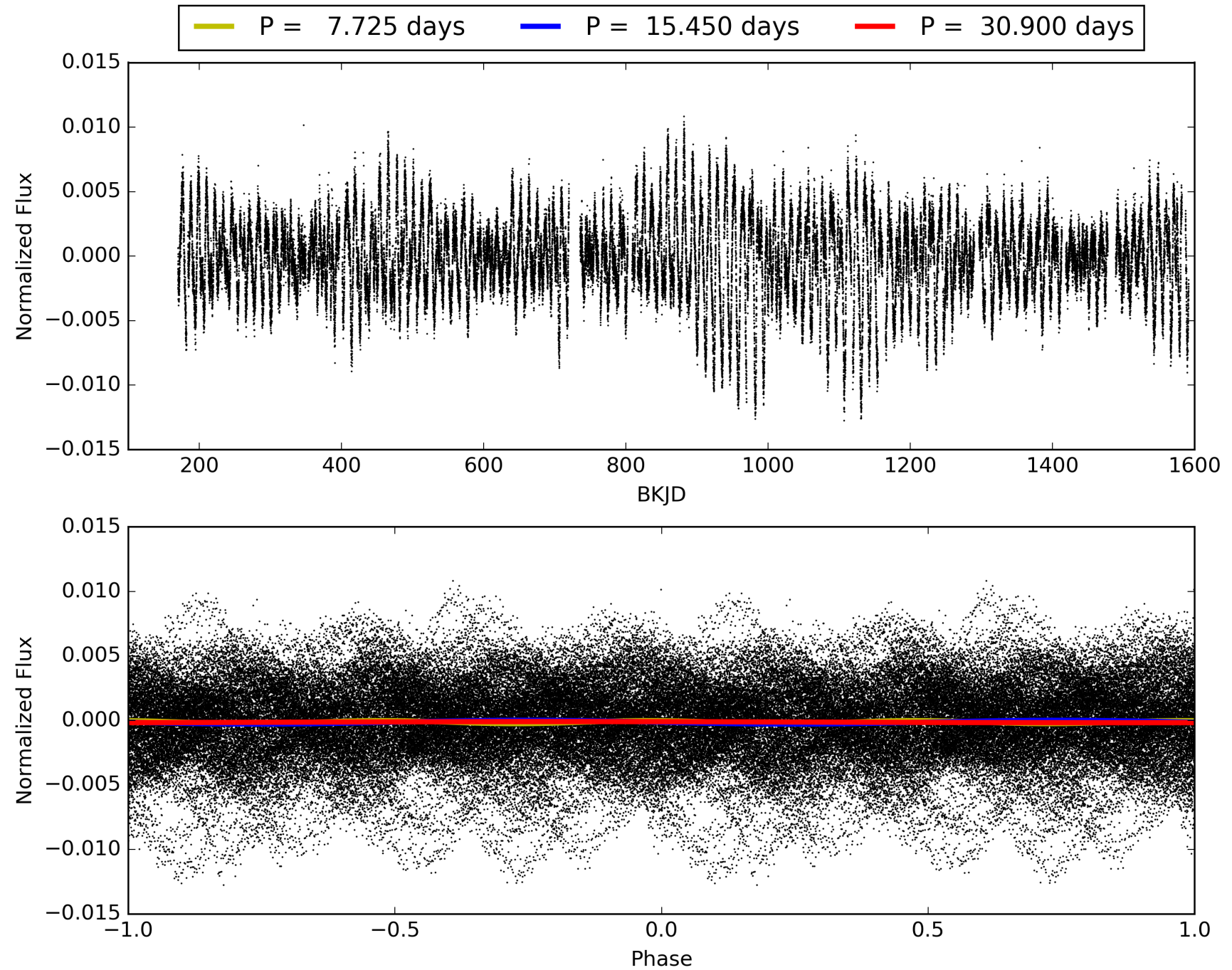
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:58:04 Z

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

# TCE 008261920-02, PDC Light Curves

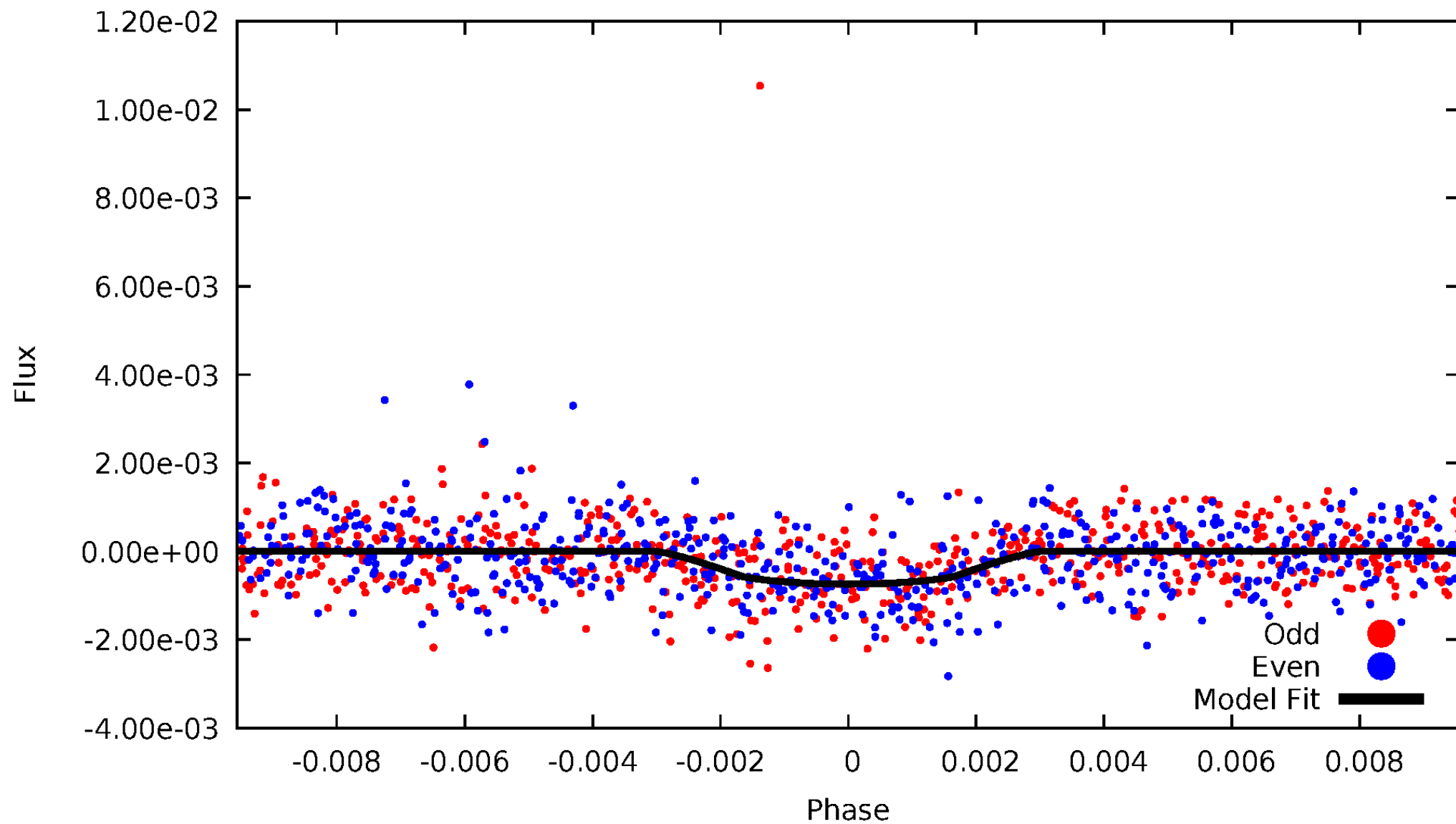


# TCE 008261920-02



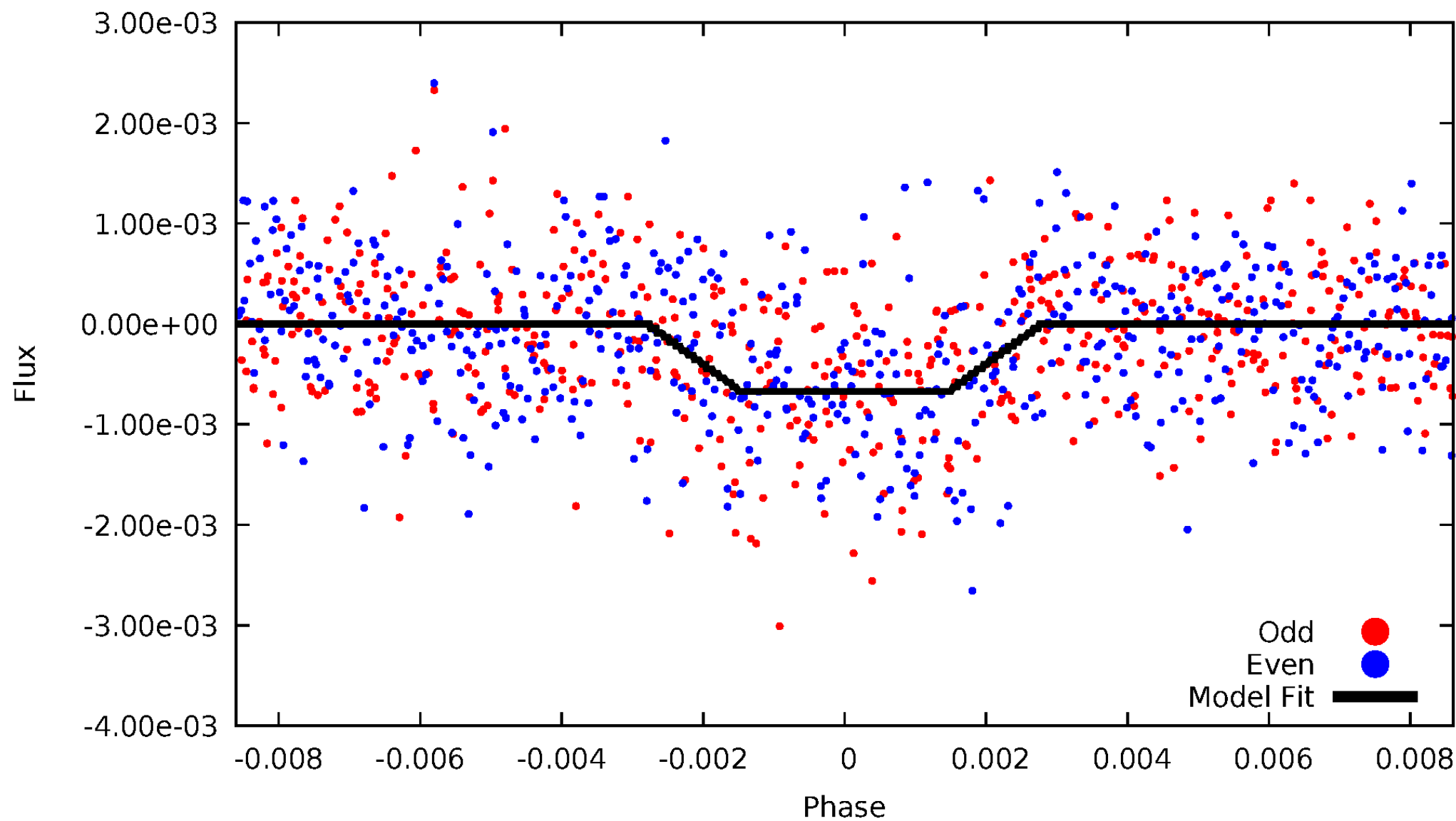
# DV Odd/Even

TCE 008261920-02



# ALT Odd/Even

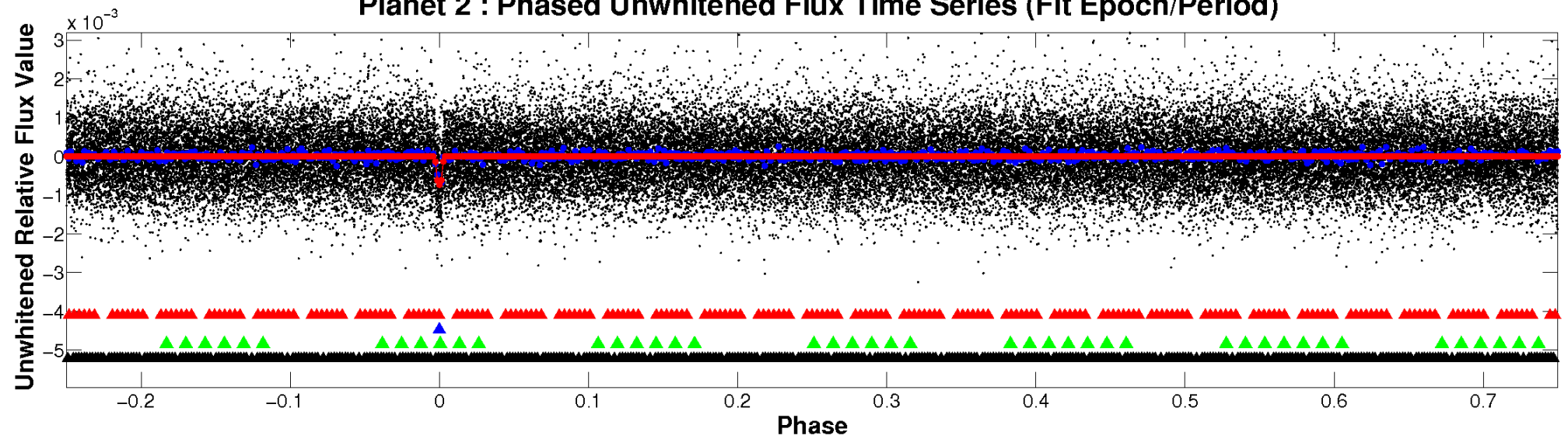
TCE 008261920-02



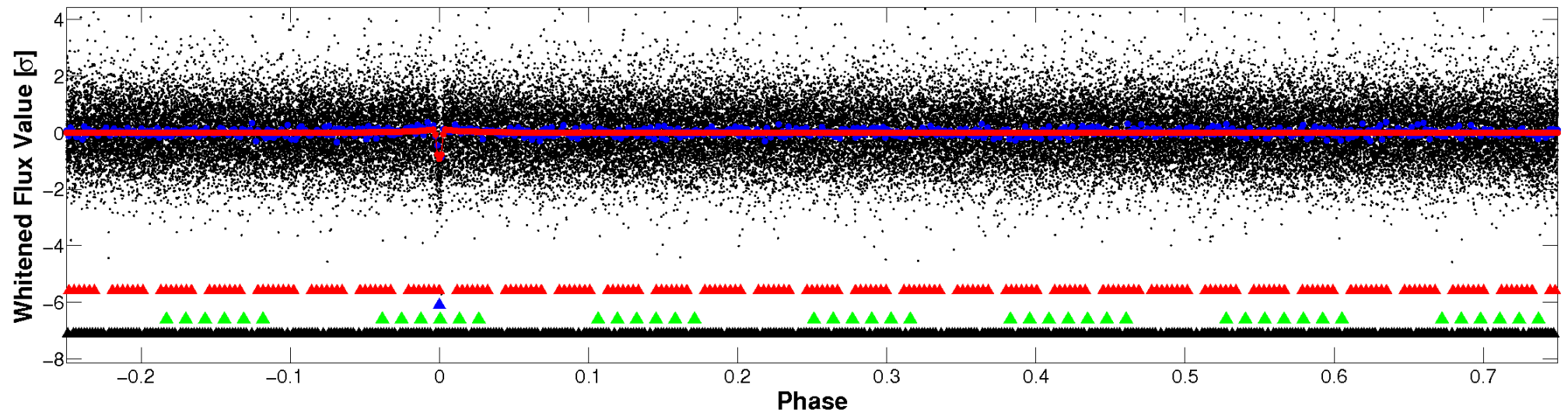


# Non-Whitened Vs. Whitened Light Curve

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

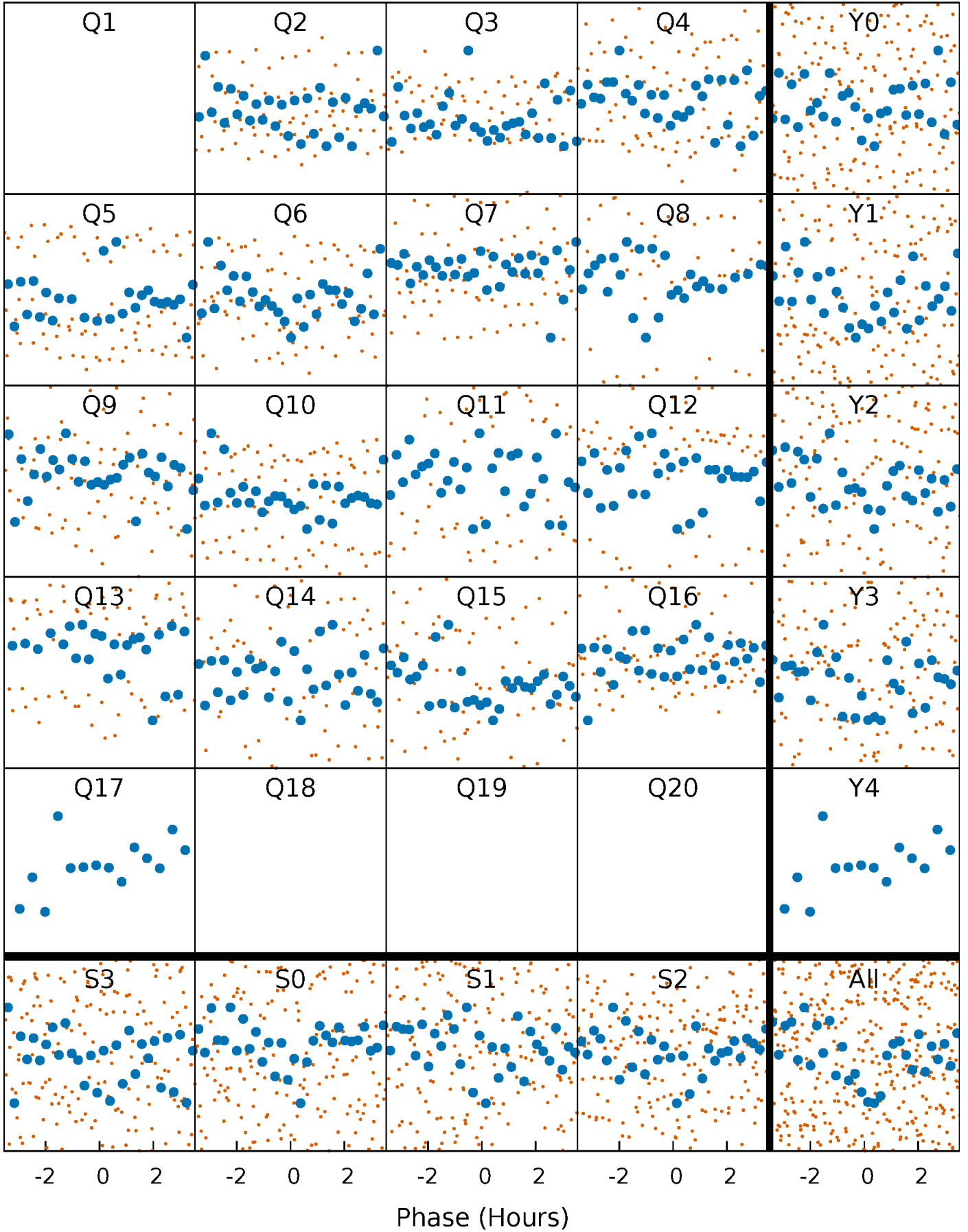


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



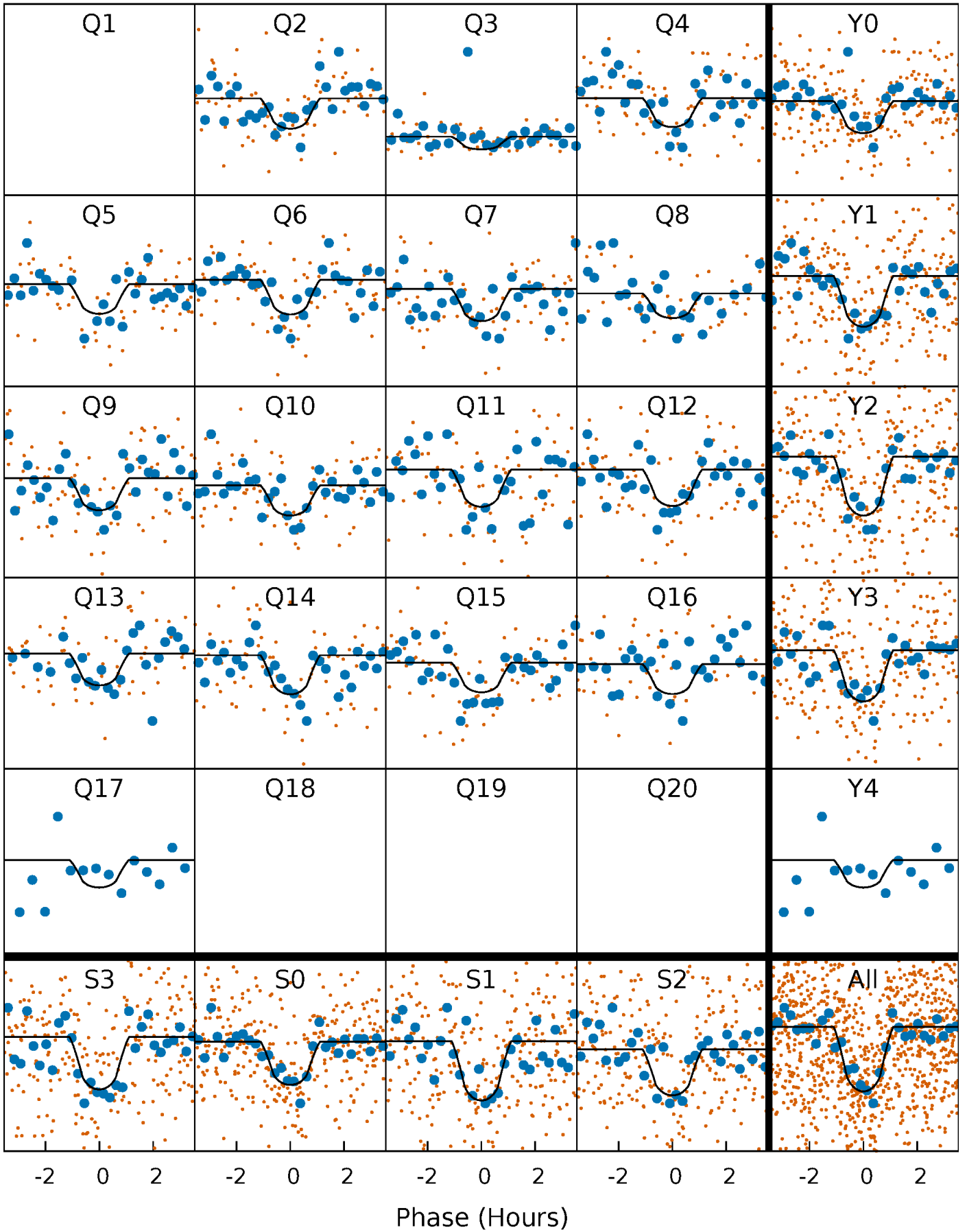
# PDC Quarter-Phased Transit Curves

TCE 008261920-02   P= 15.450176 Days    $T_0=145.906679$  (BKJD)



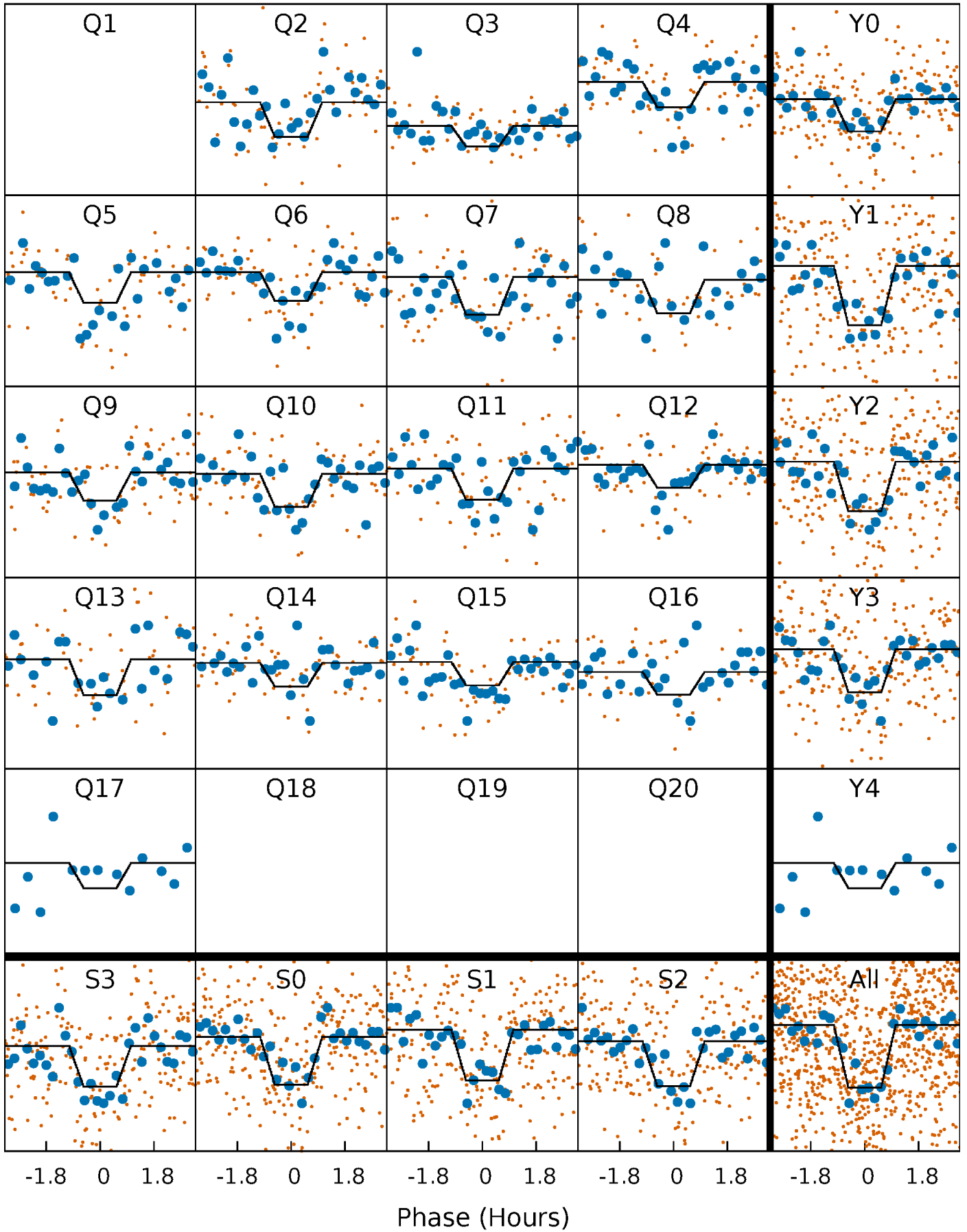
# DV Quarter-Phased Transit Curves

TCE 008261920-02 P= 15.450176 Days  $T_0=145.906679$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

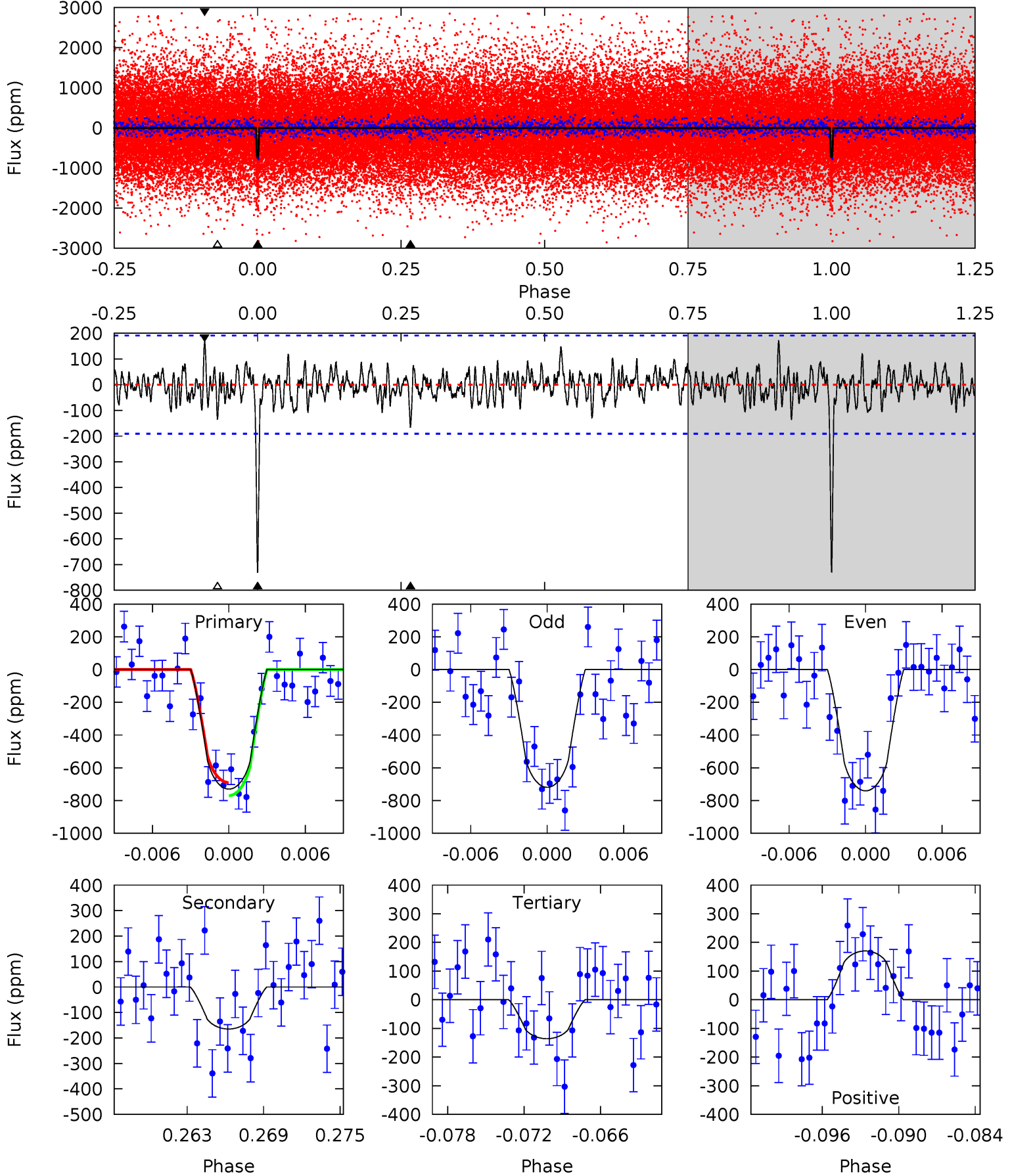
TCE 008261920-02 P= 15.450089 Days  $T_0=145.909144$  (BKJD)



# DV Model-Shift Uniqueness Test

008261920-02,  $P = 15.450176$  Days,  $E = 145.906679$  Days

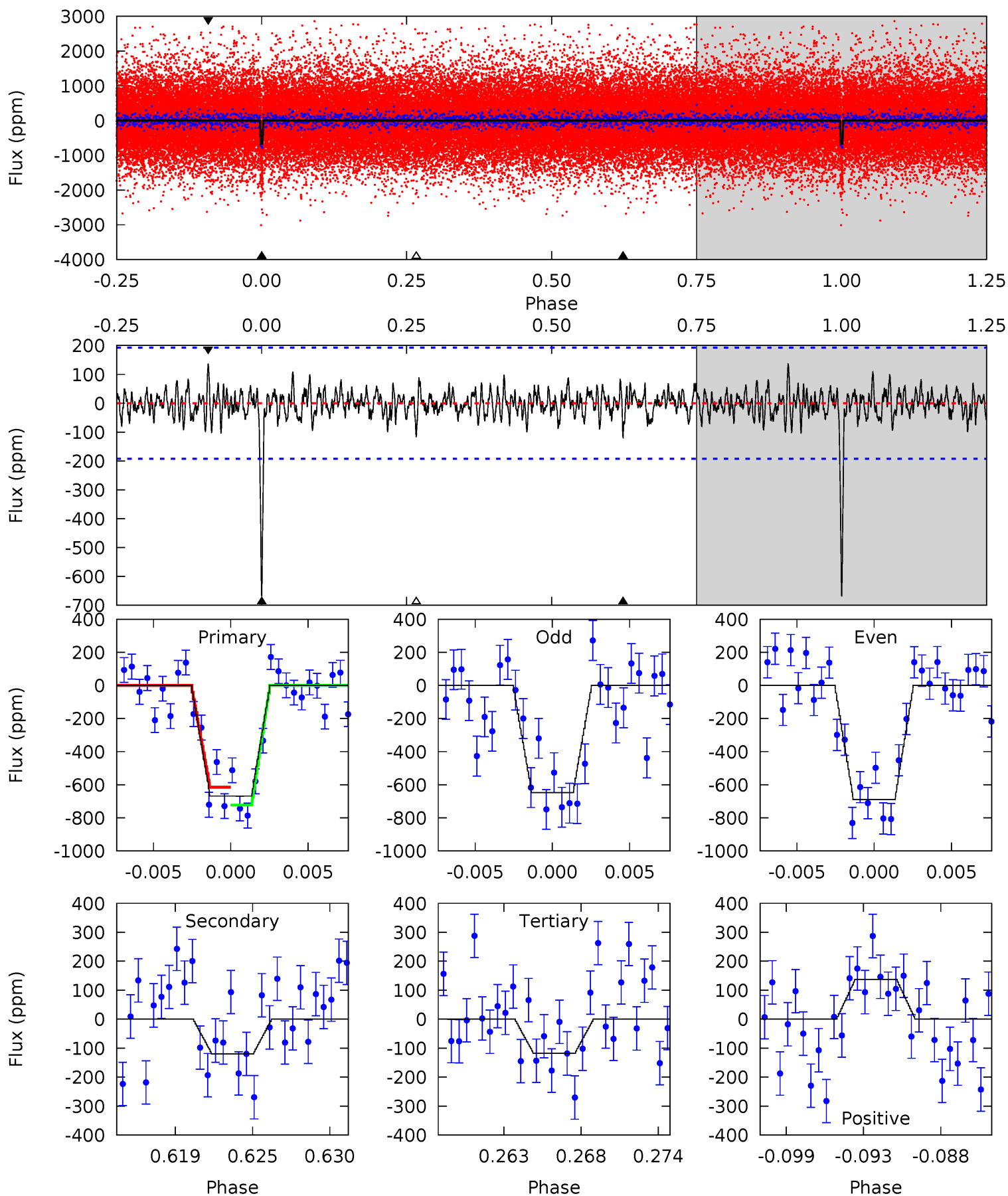
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.6	4.42	3.64	4.57	5.12	2.75	1.19	15.9	15.0	0.78	-0.14	0.29	0.93	0.19	1.07



# Alt Model-Shift Uniqueness Test

008261920-02,  $P = 15.450089$  Days,  $E = 145.909144$  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
17.9	3.19	3.14	3.66	5.14	2.78	0.96	14.7	14.2	0.06	-0.47	0.58	1.02	0.17	1.45





### Stellar Parameters For KIC 008261920

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4245^{+85}_{-85}$	$4.641^{+0.027}_{-0.020}$	$0.000^{+0.150}_{-0.150}$	$0.637^{+0.026}_{-0.032}$	$0.649^{+0.032}_{-0.032}$	$3.533^{+0.378}_{-0.282}$
	+2%/-2%	+1%/-0%	+inf%/-inf%	+4%/-5%	+5%/-5%	+11%/-8%
Source	SPE60	SPE60	SPE60	DSEP		

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

### Secondary Eclipse Parameters for KIC 008261920-02 / KOI 2174.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-165 \pm 37$	$2.06^{+1.37}_{-1.26}$	$643^{+15}_{-14}$	$3215^{+1135}_{-451}$	$236^{+1217}_{-153}$
Alt.	$-119 \pm 37$	$2.11^{+1.58}_{-1.28}$	$643^{+14}_{-14}$	$3040^{+1039}_{-433}$	$161^{+822}_{-111}$

$T_{max}$  = 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

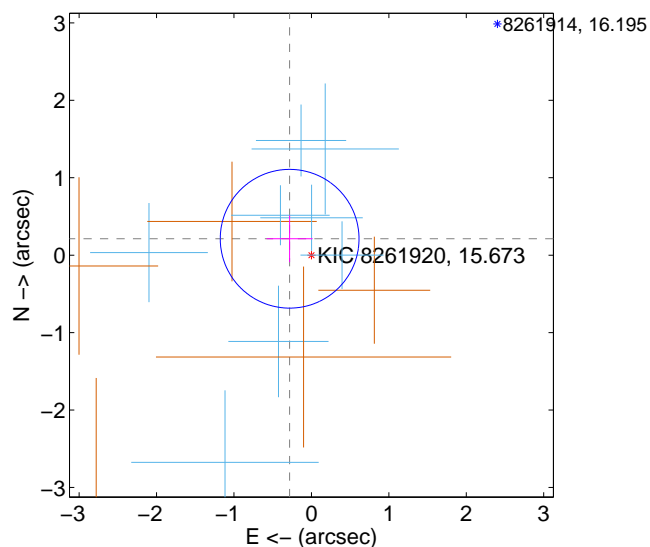
Supplemental centroid analysis for 008261920-02. Kepler magnitude: 15.67. Transit SNR 13.25

There are 8 quarters with good PRF difference image offsets

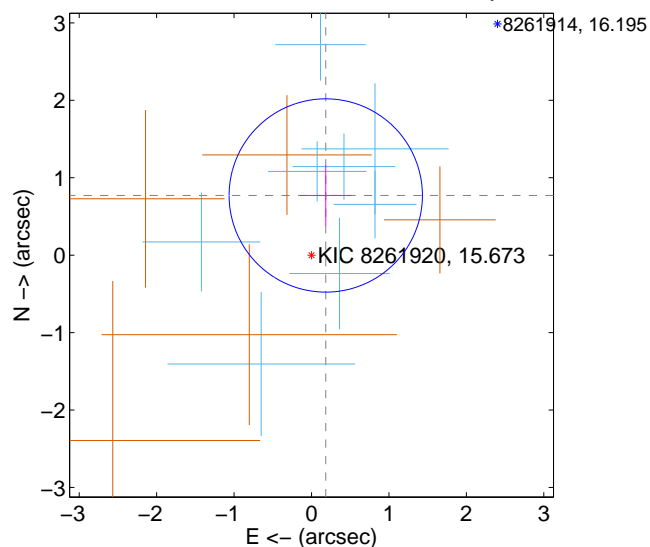
The direct PRF centroid is offset from the target star catalog position by about 1.27 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.352 \pm 0.299$	1.18	$0.281 \pm 0.298$	$0.212 \pm 0.301$
PRF-fit source offset from KIC position	$0.793 \pm 0.416$	1.90	$-0.184 \pm 0.331$	$0.771 \pm 0.389$
photometric centroid source offset	$0.78 \pm 0.61$	1.28	$-0.20 \pm 0.57$	$-0.75 \pm 0.61$

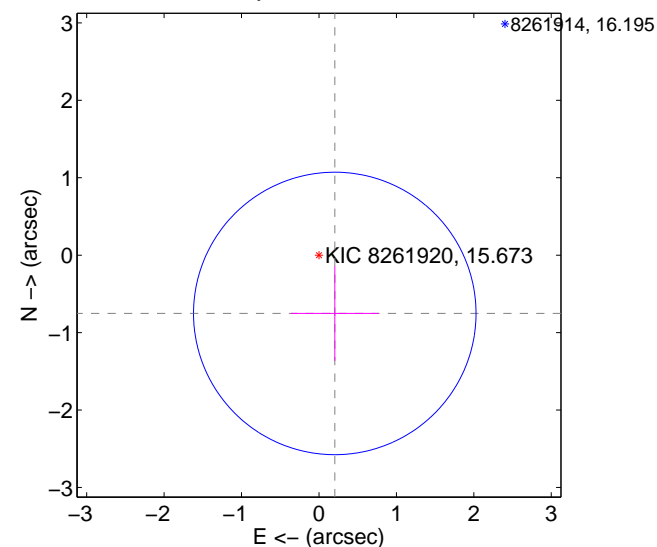
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

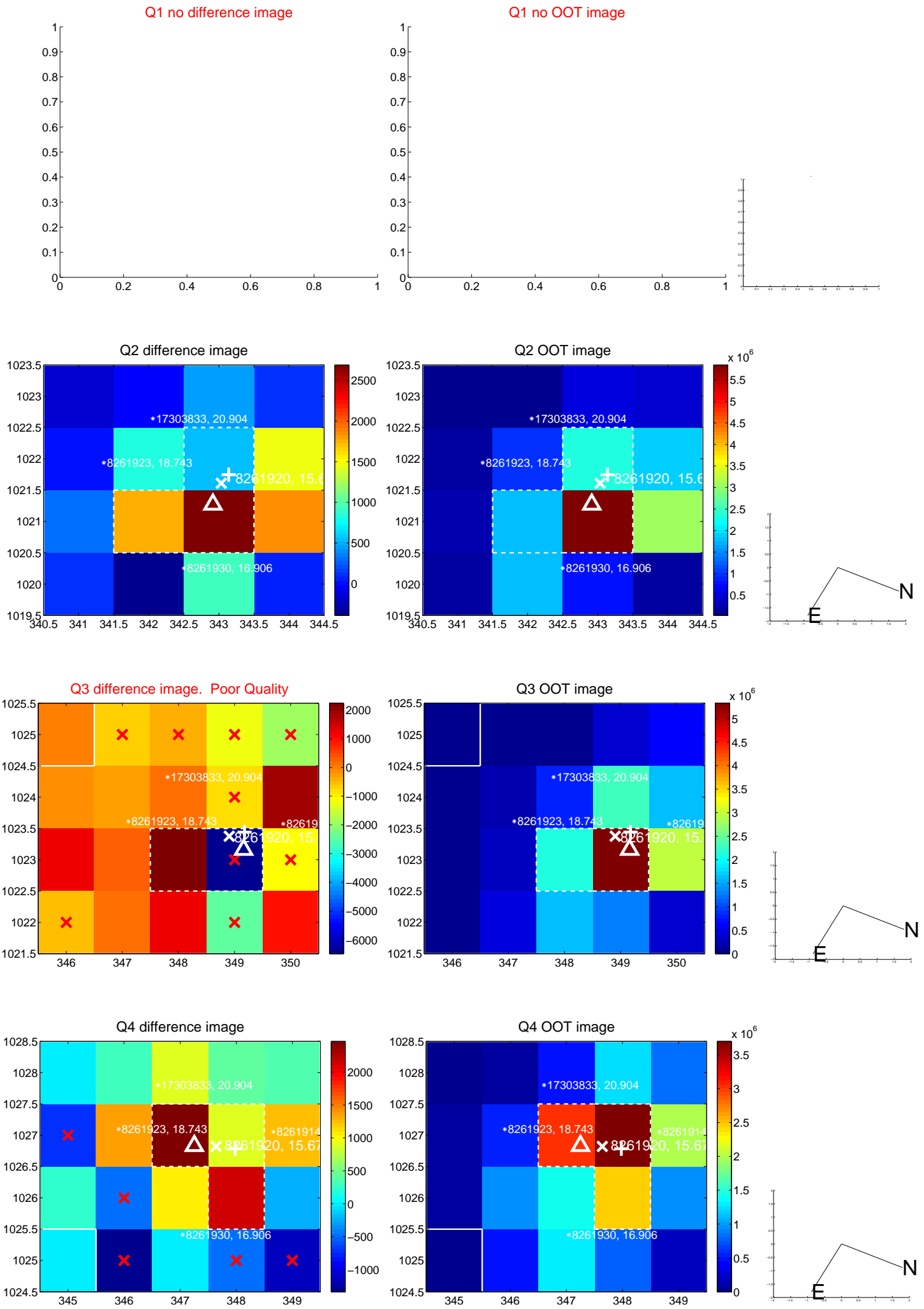


offset from photometric centroids

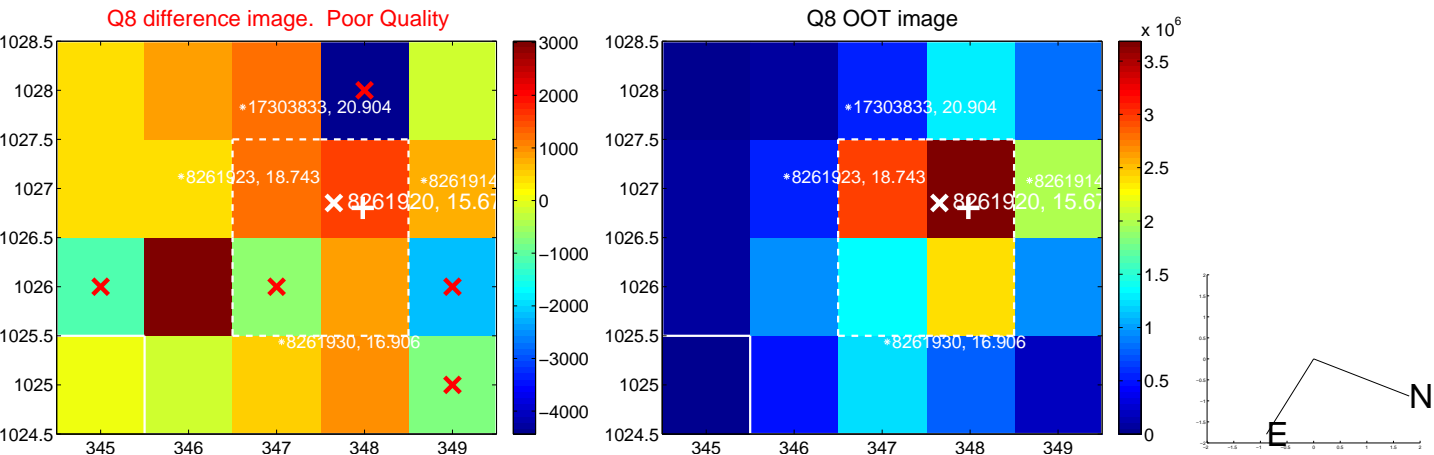
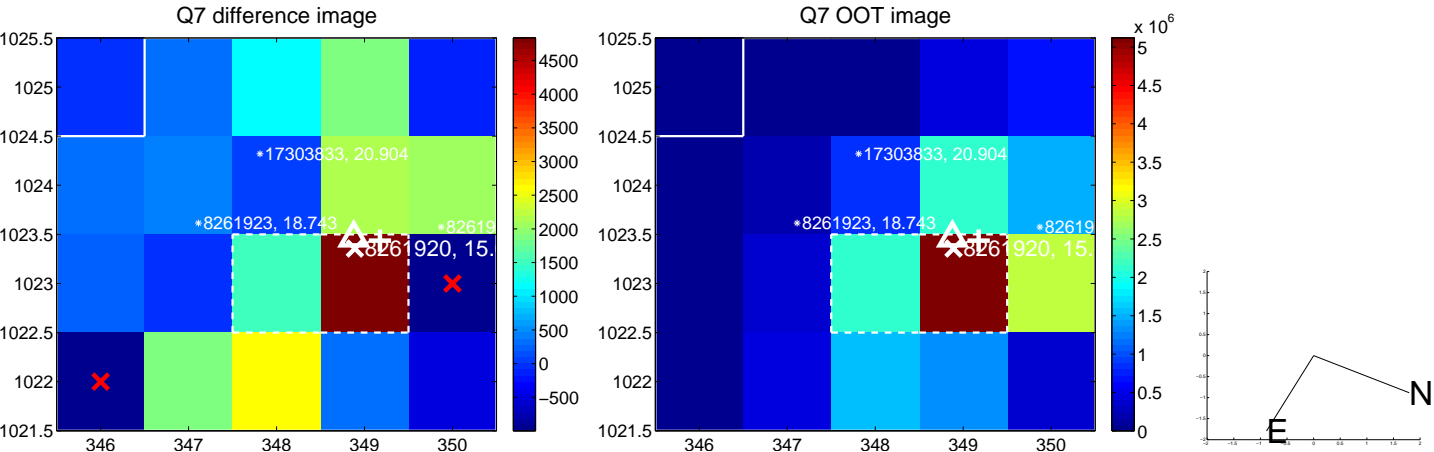
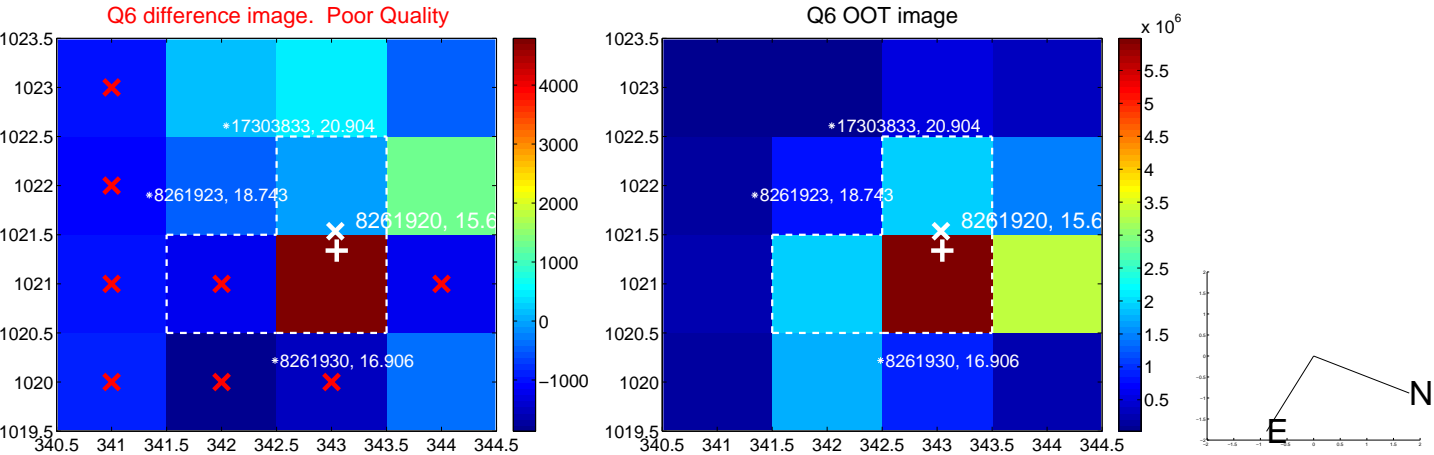
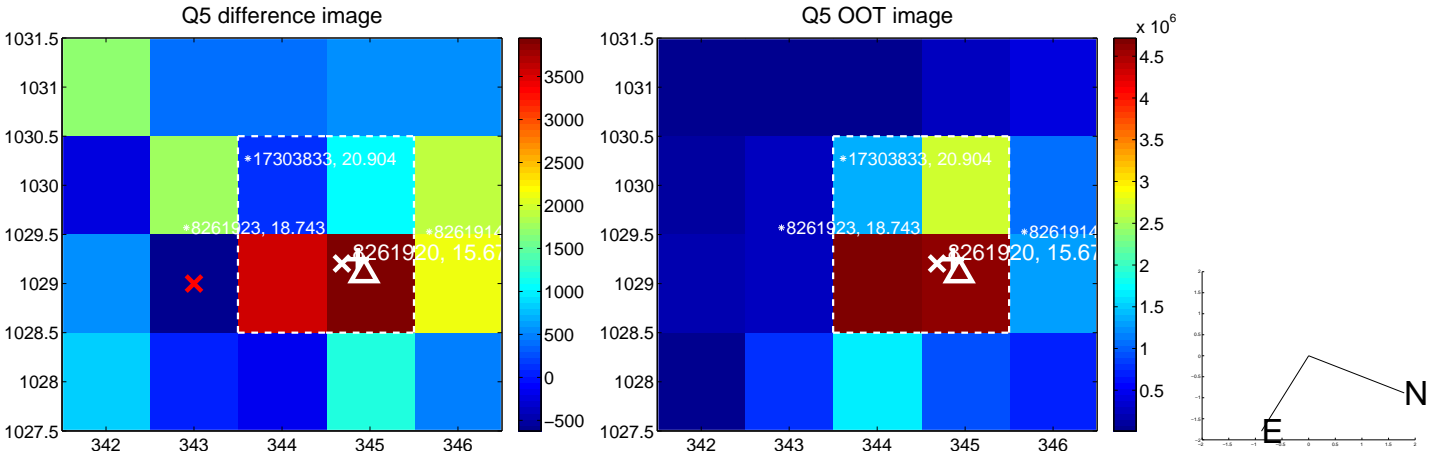


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

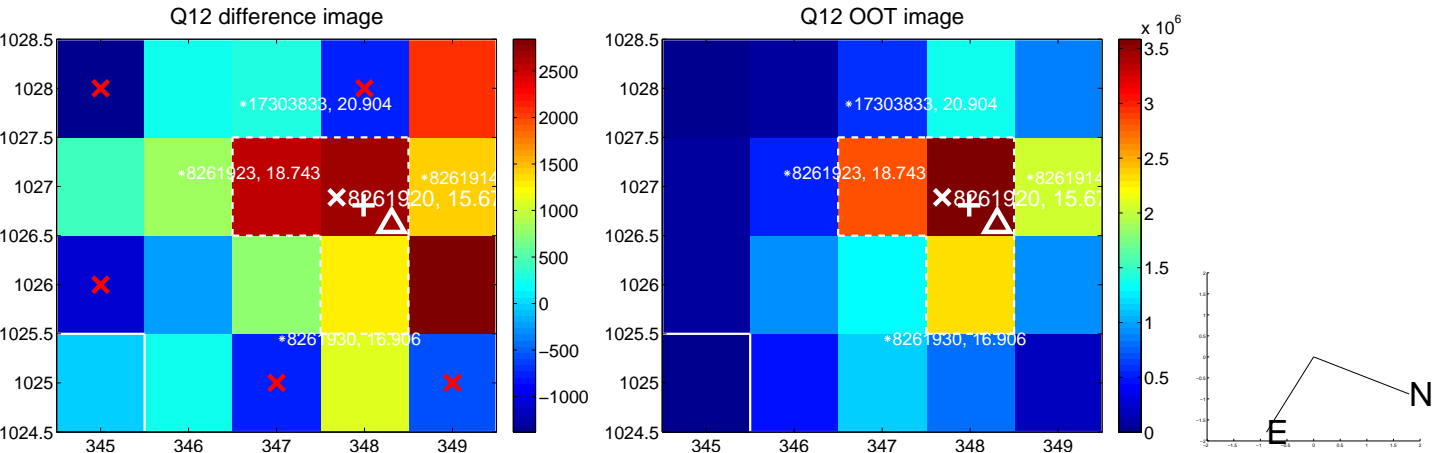
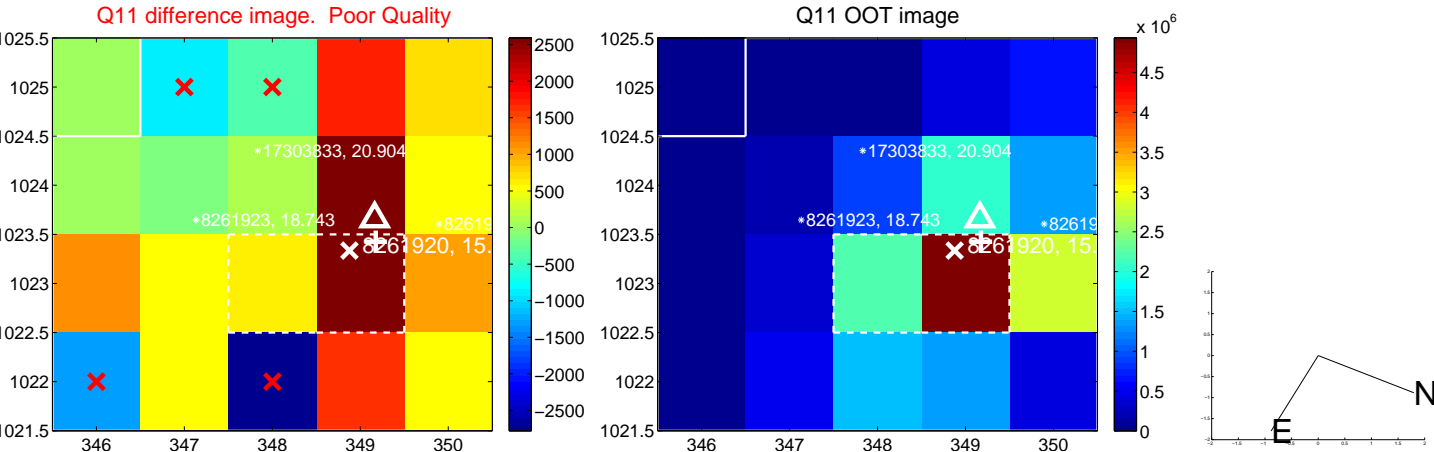
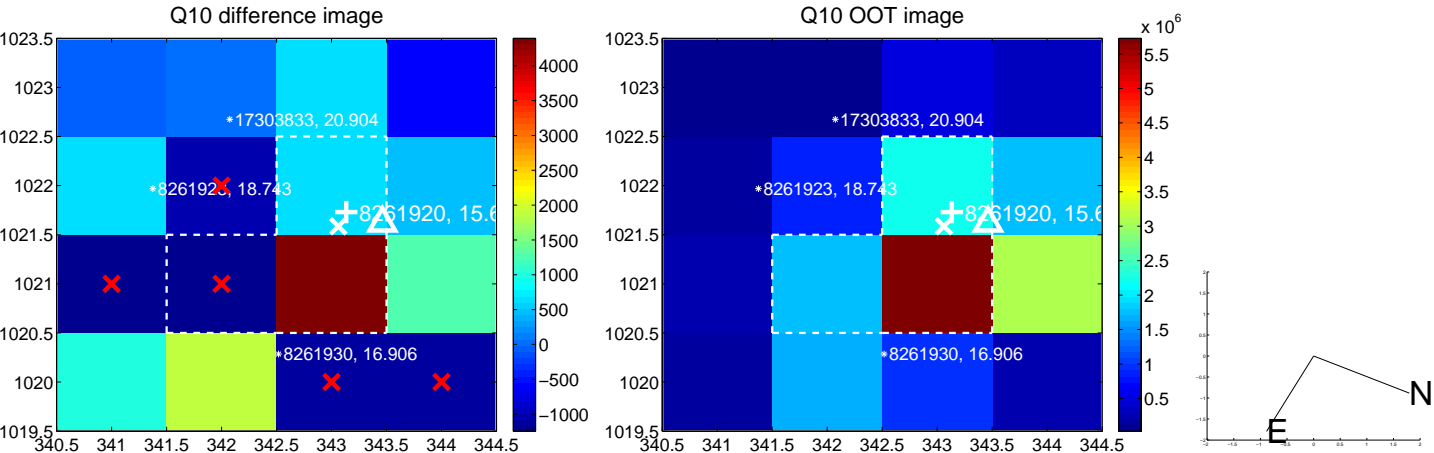
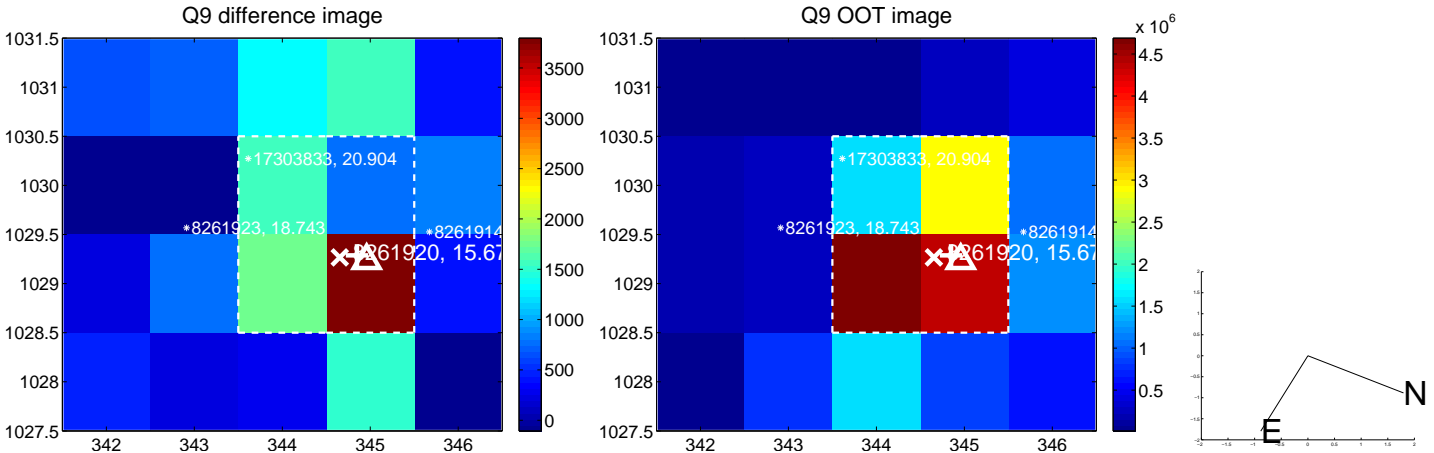
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



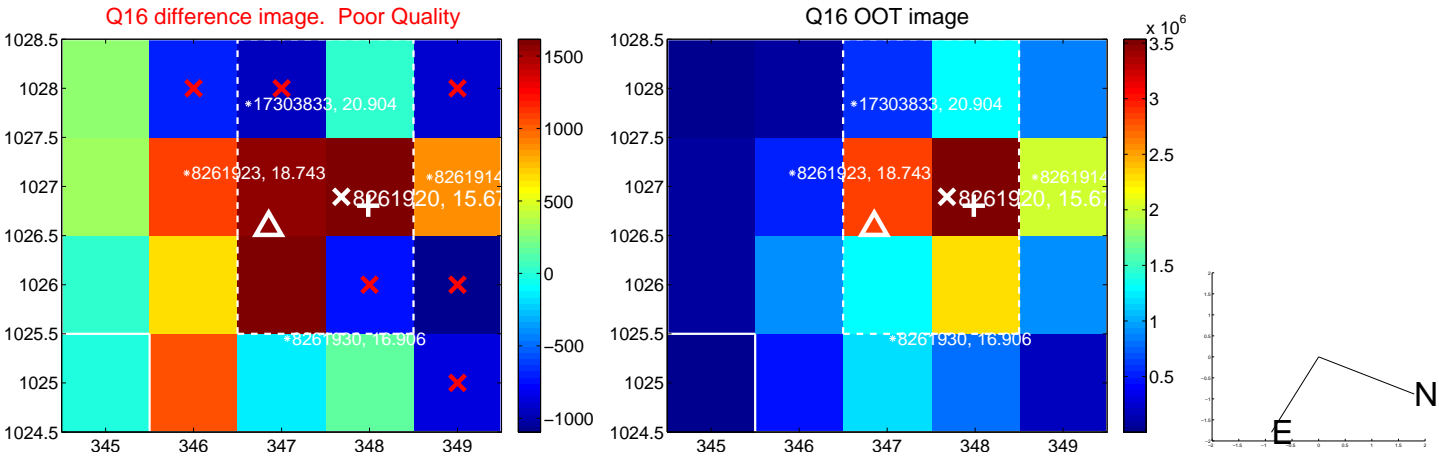
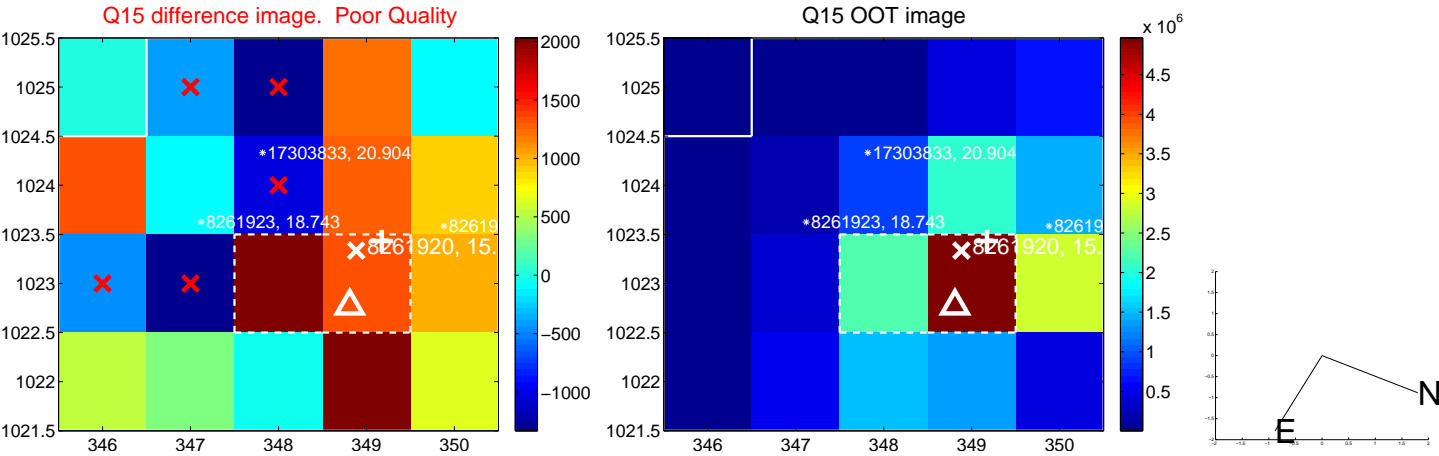
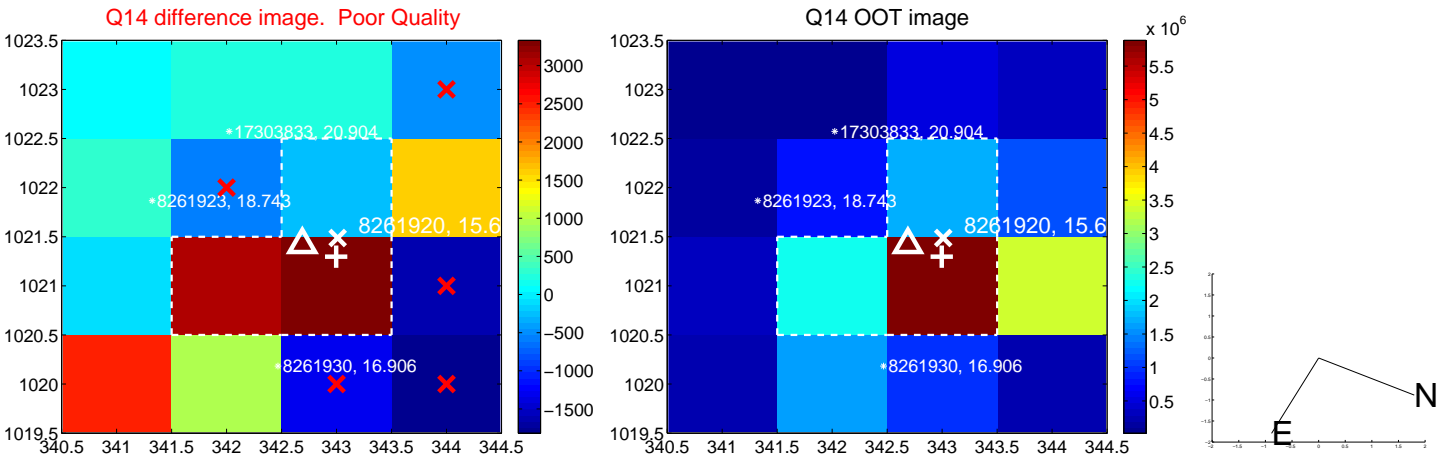
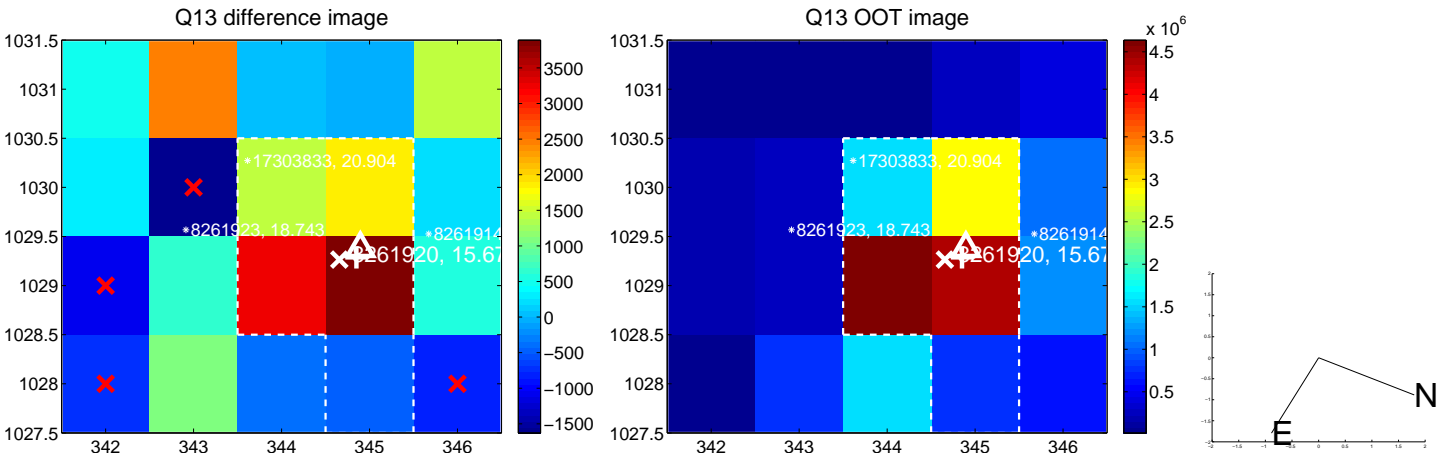
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

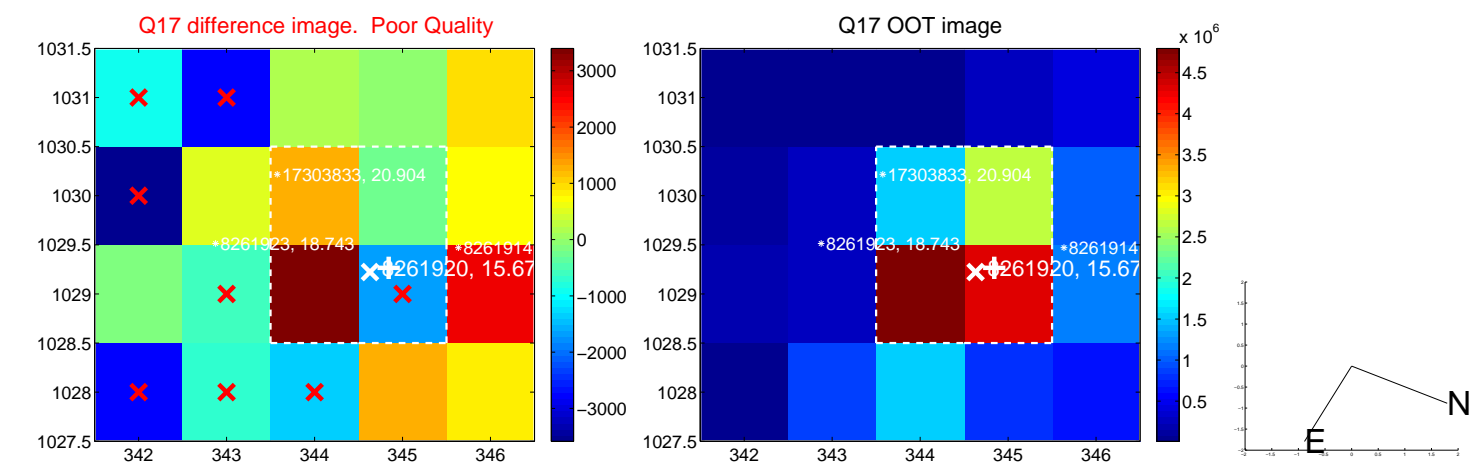


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

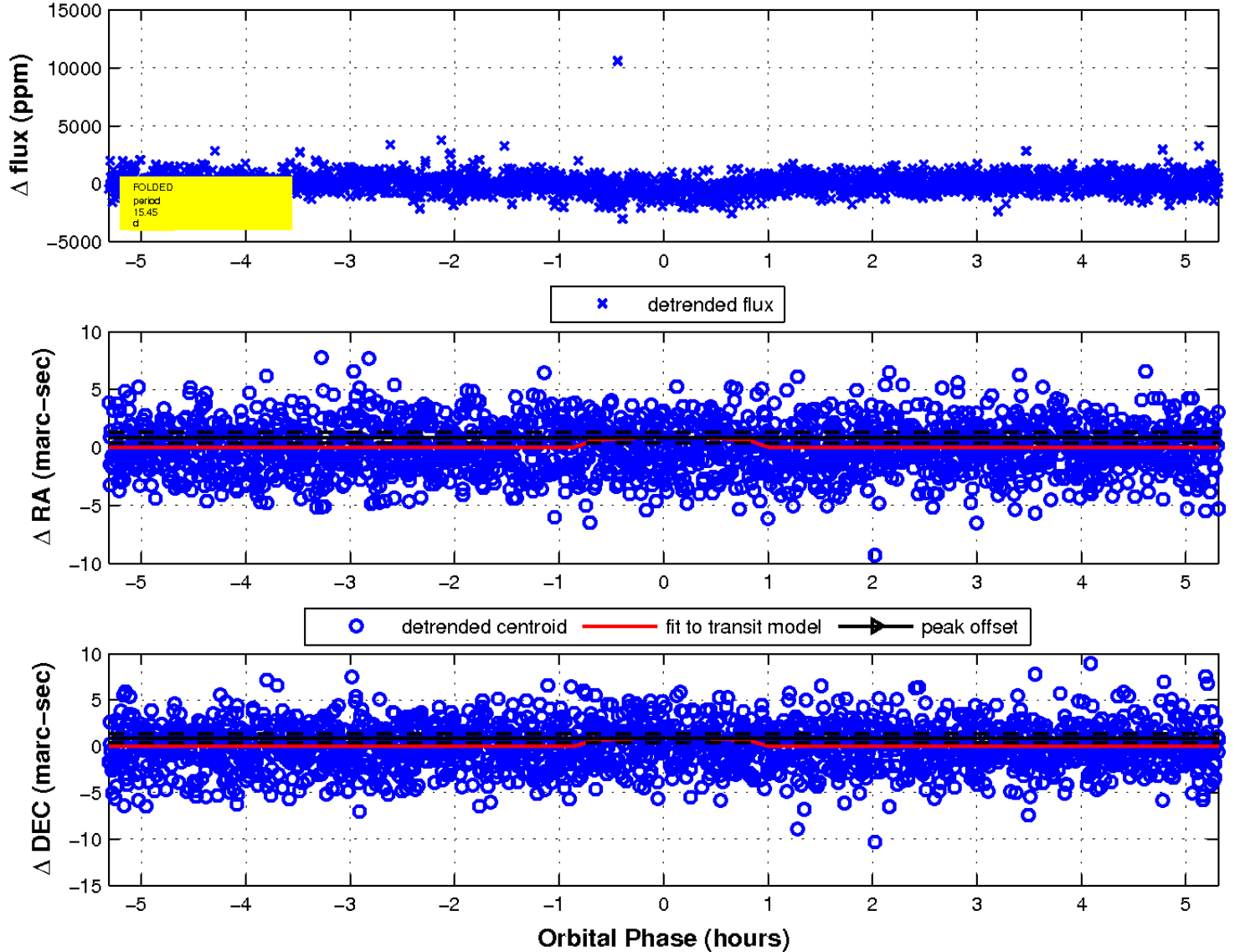




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

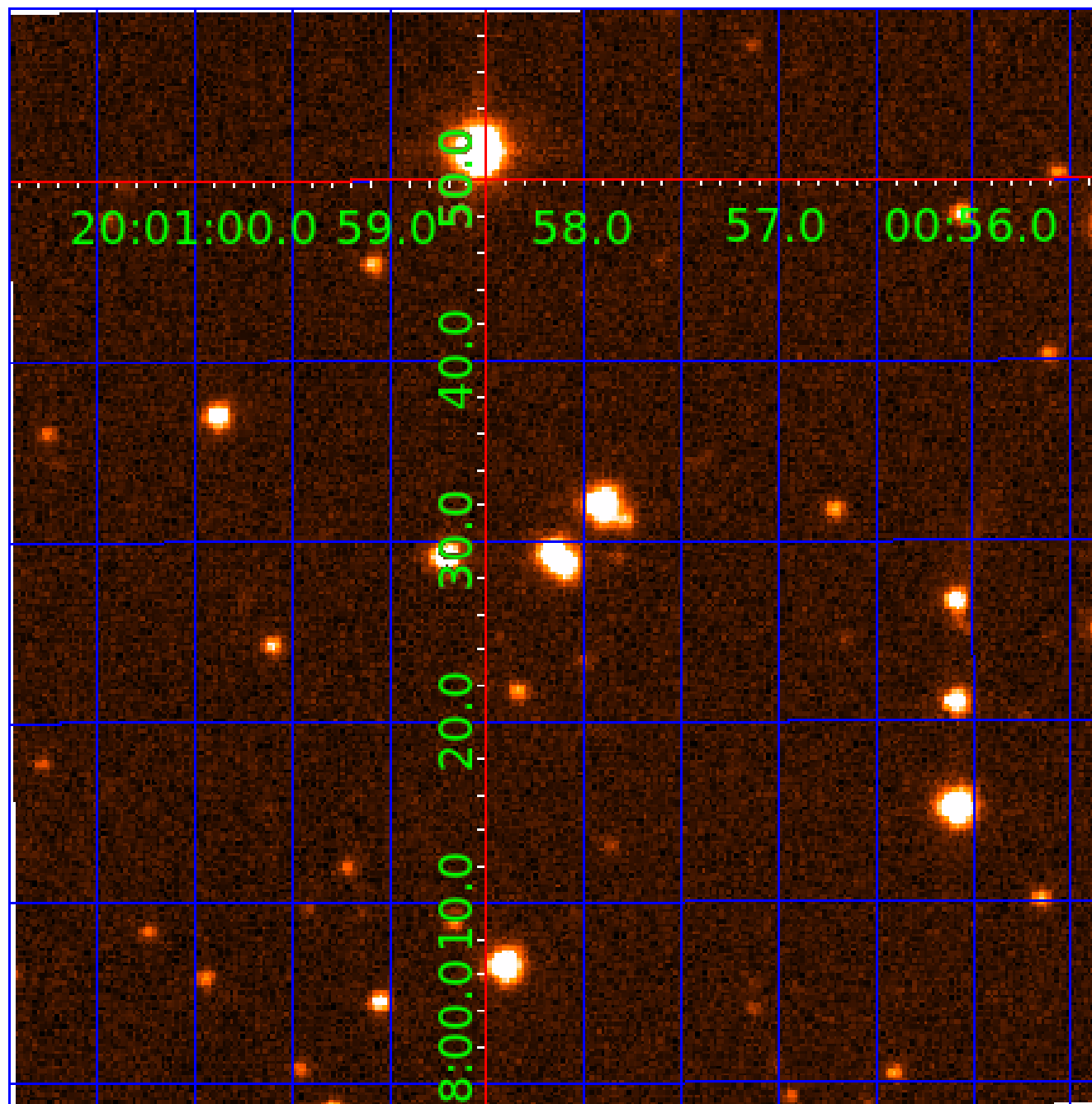


fluxWeightedCentroids, Planet 2 of 4



UKIRT Image

Declination



# KIC 008261920

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008261920-01	OBS	2174.01	6.693317	137.703424	785.8	2.538	17.9	20.3	0.64	4245	2.66	32.63
008261920-02	OBS	2174.03	15.450176	145.906679	738.7	1.772	11.7	13.2	0.64	4245	1.67	10.70
008261920-03	OBS	2174.02	33.136074	136.372878	866.9	4.492	11.4	13.0	0.64	4245	2.32	3.87
008261920-04	OBS	2174.04	3.016064	131.556135	184.1	1.867	7.4	7.4	0.64	4245	1.06	94.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008261920-01	OBS	PC	0.97	0	0	0	0	CENT_KIC_POS
008261920-02	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
008261920-03	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
008261920-04	OBS	PC	0.69	0	0	0	0	CENT_KIC_POS

**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 008261920-03

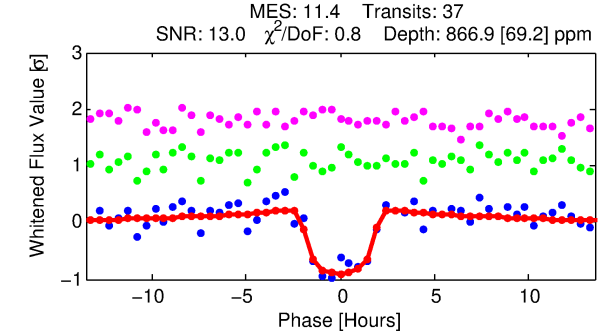
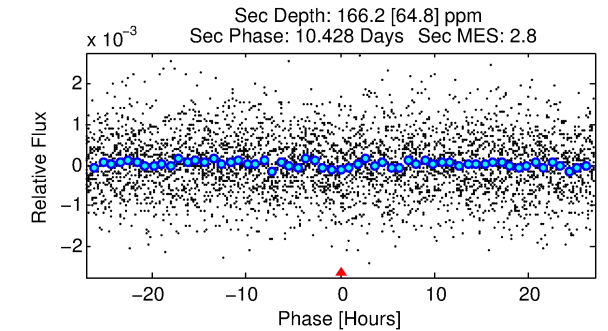
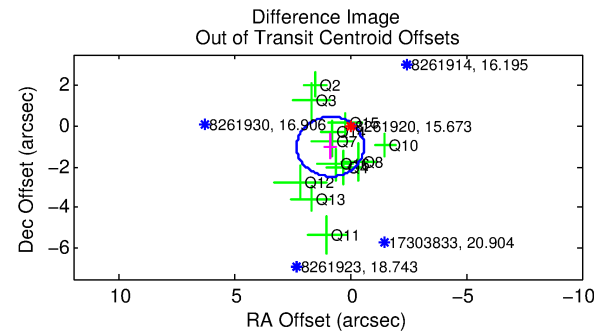
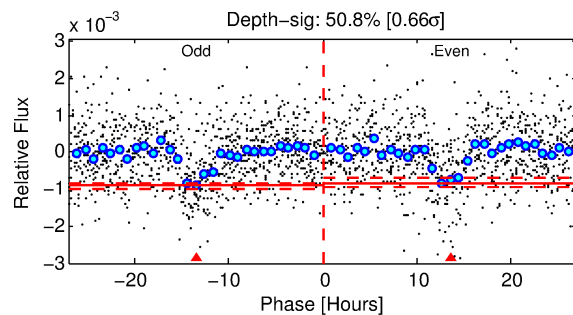
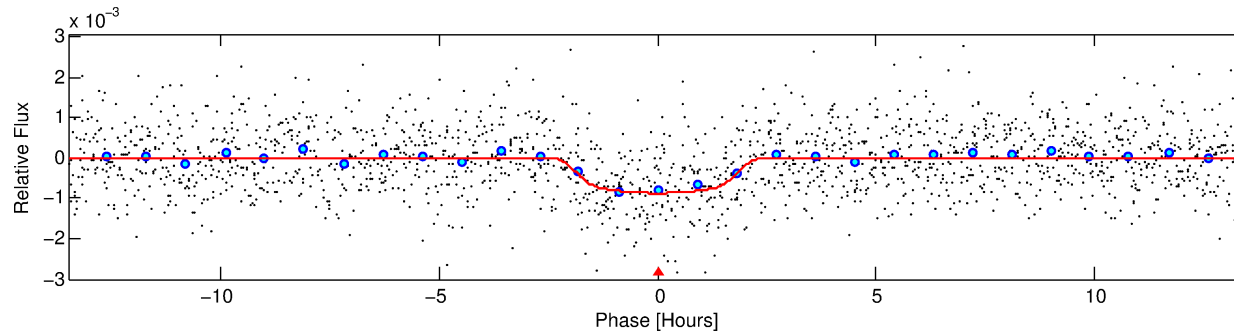
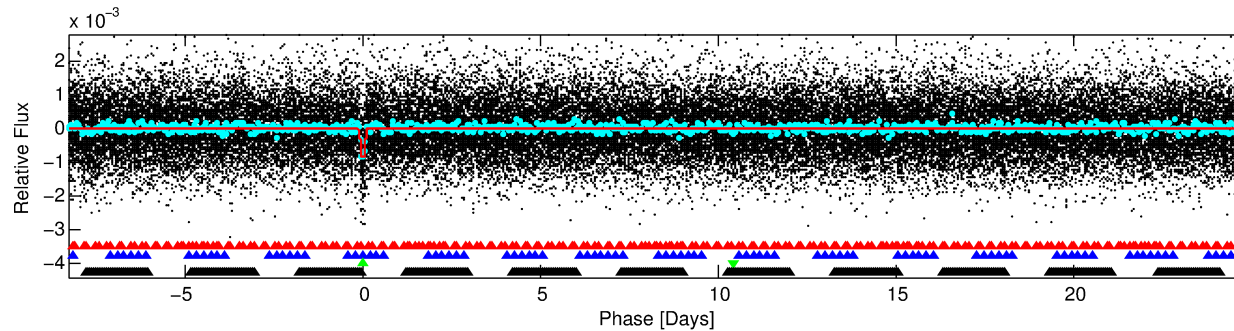
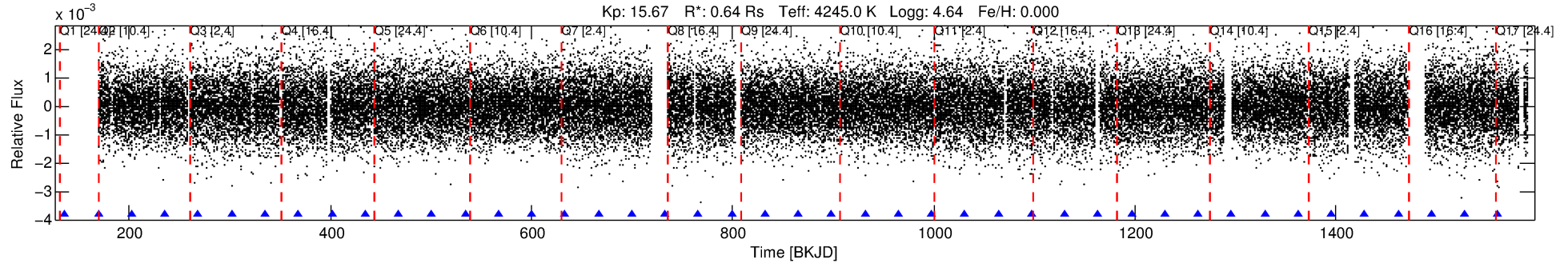
No Significant Match Found

# DV One-Page Summary

KIC: 8261920 Candidate: 3 of 4 Period: 33.136 d

KOI: K02174.02 Corr: 0.938

Kp: 15.67 R\*: 0.64 Rs Teff: 4245.0 K Logg: 4.64 Fe/H: 0.000



## DV Fit Results:

Period = 33.13607 [0.00027] d  
Epoch = 136.3729 [0.0069] BKJD  
Rp/R\* = 0.0334 [0.0044]  
a/R\* = 28.11 [12.36]  
b = 0.91 [0.09]  
Seff = 3.87 [0.37]  
Teq = 358 [9] K  
Rp = 2.32 [0.33] Re  
a = 0.1747 [0.0069] AU  
Ag = 517.74 [245.48] [2.11σ]  
Teffp = 2637 [315] K [7.23σ]

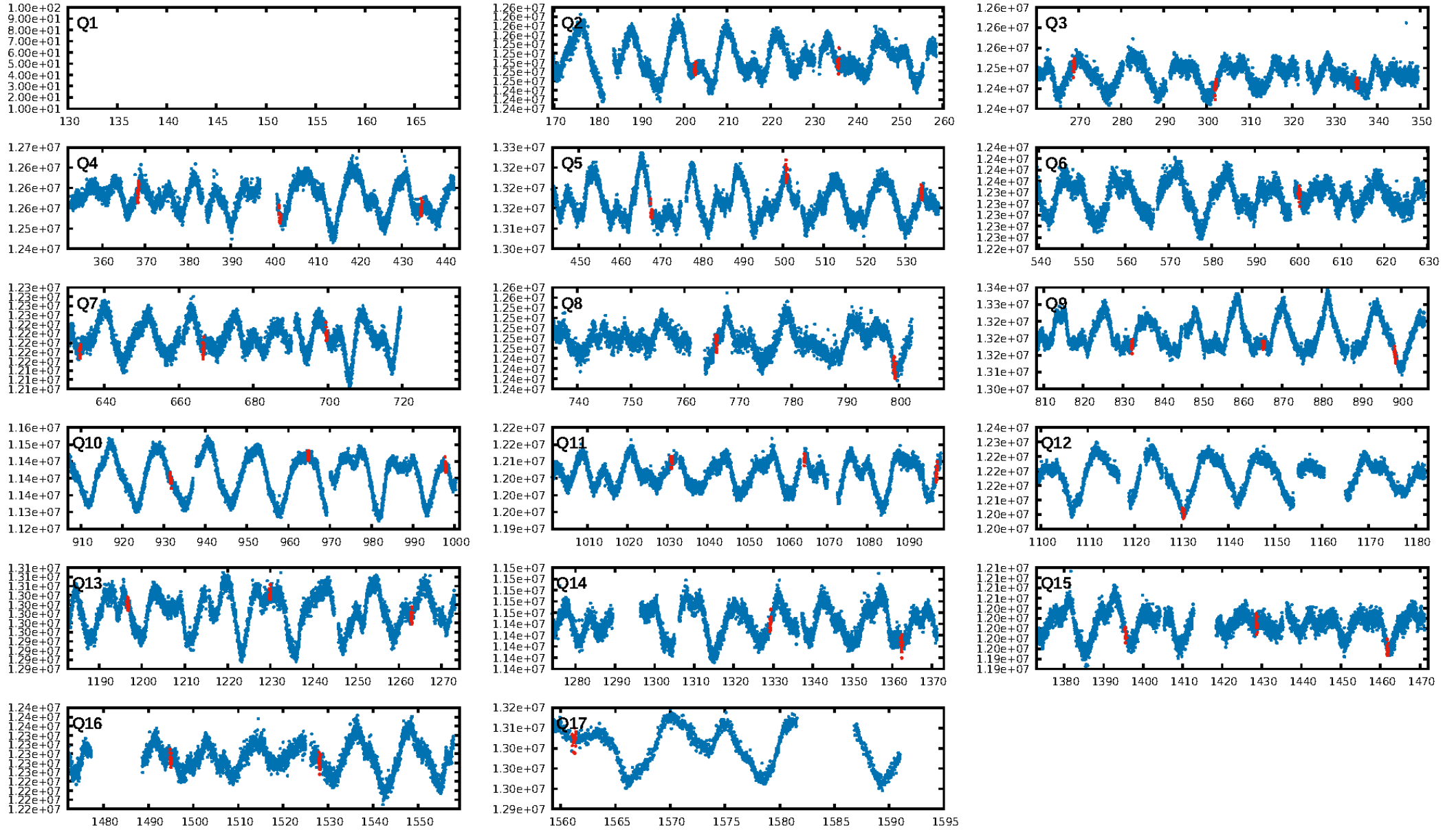
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [87.90σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.1%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.55e-30  
RollingBand-fgt: 1.00 [36/36]  
GhostDiagnostic-chr: 1.692  
Centroid-sig: 0.0%  
Centroid-so: 1.664 arcsec [3.20σ]  
OotOffset-rm: 1.353 arcsec [2.78σ]  
KicOffset-rm: 0.446 arcsec [1.23σ]  
OotOffset-st: 3/4/4/1 [12]  
KicOffset-st: 3/4/4/1 [12]  
DiffImageQuality-fgm: 0.58 [7/12]  
DiffImageOverlap-fno: 0.71 [10/14]

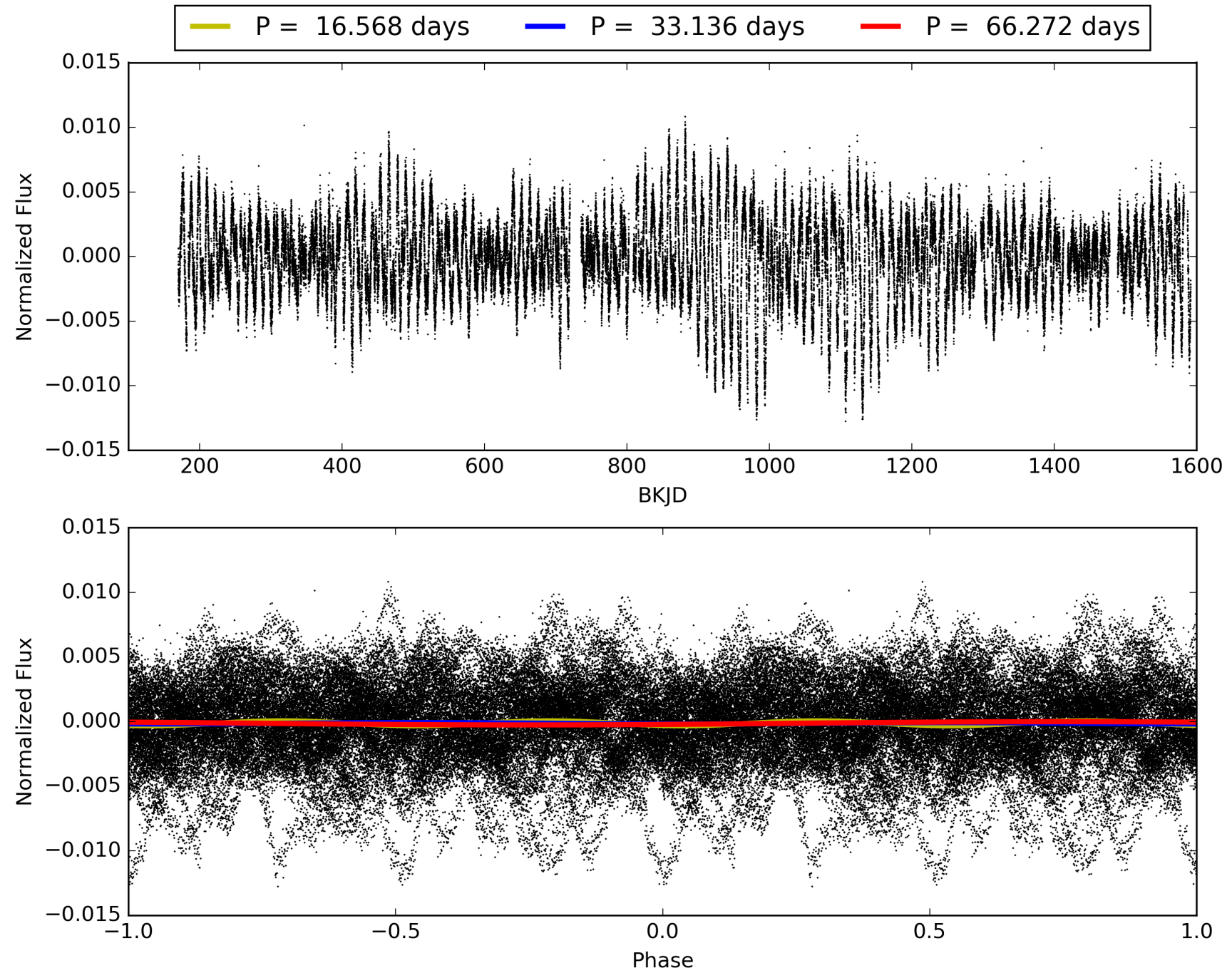
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:58:11 Z

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

# TCE 008261920-03, PDC Light Curves



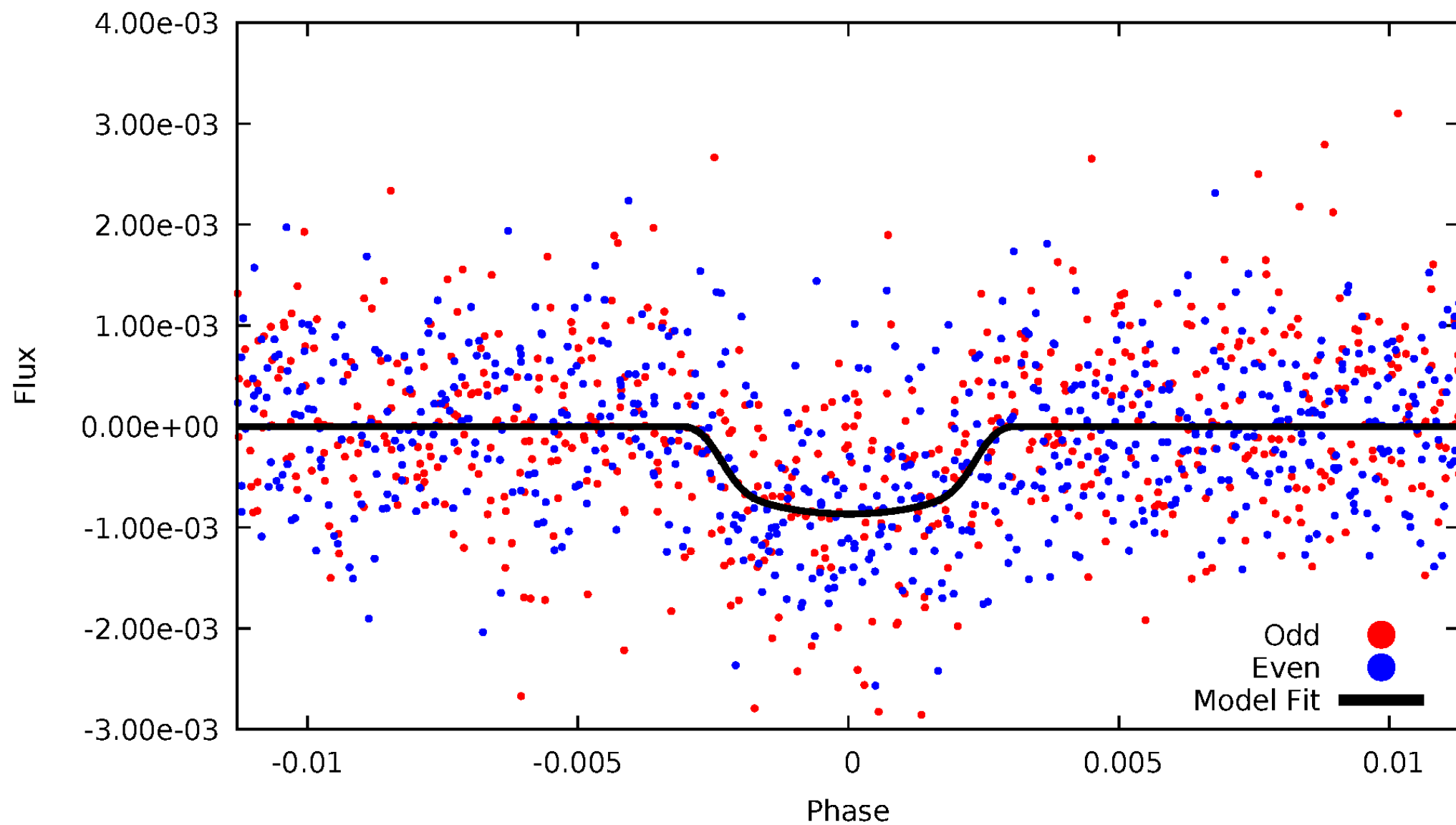
TCE 008261920-03





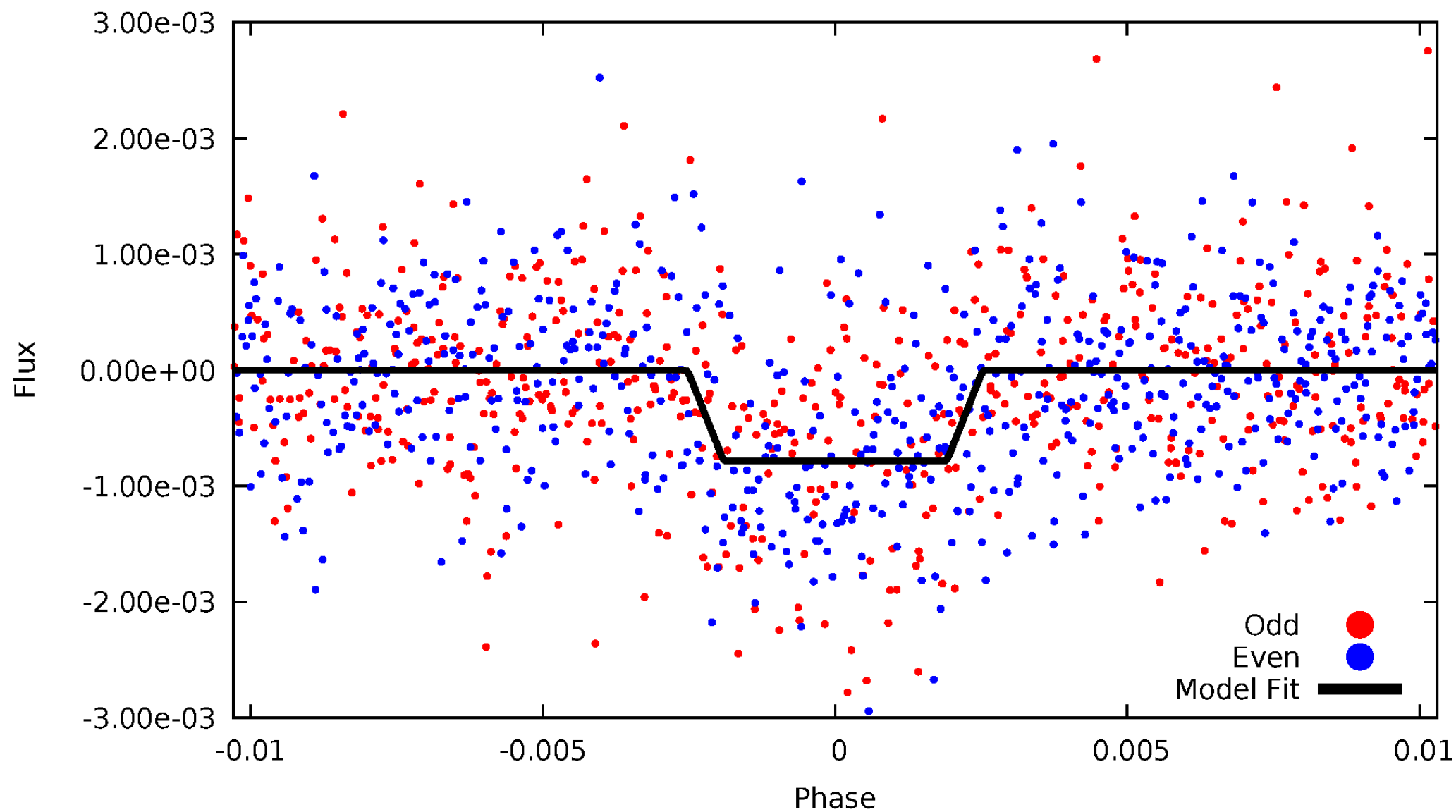
# DV Odd/Even

TCE 008261920-03

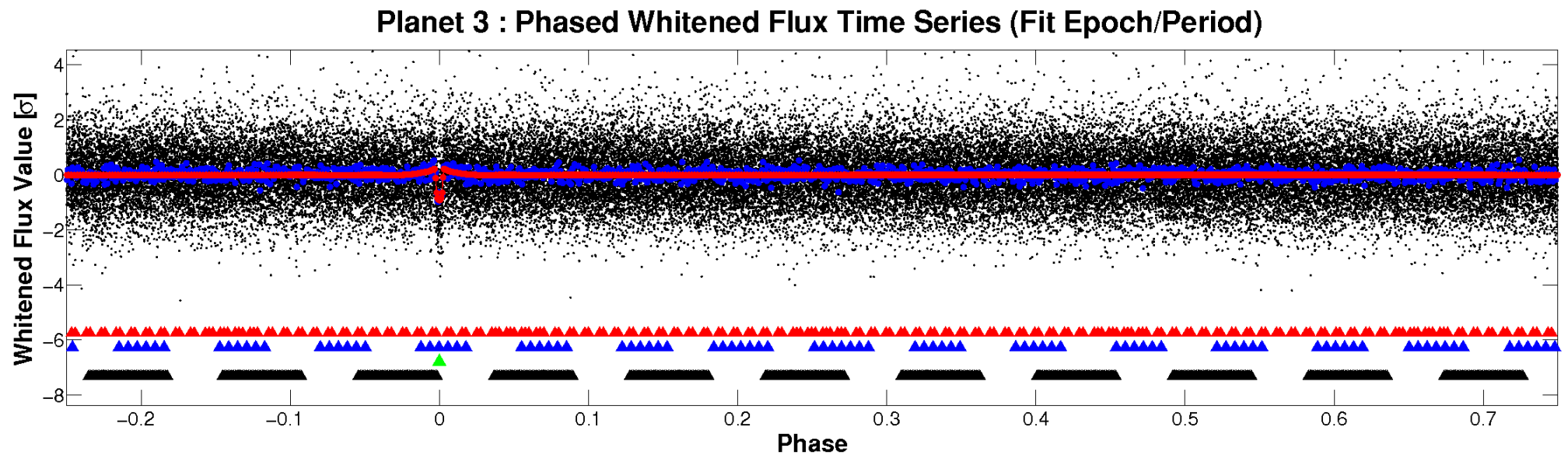
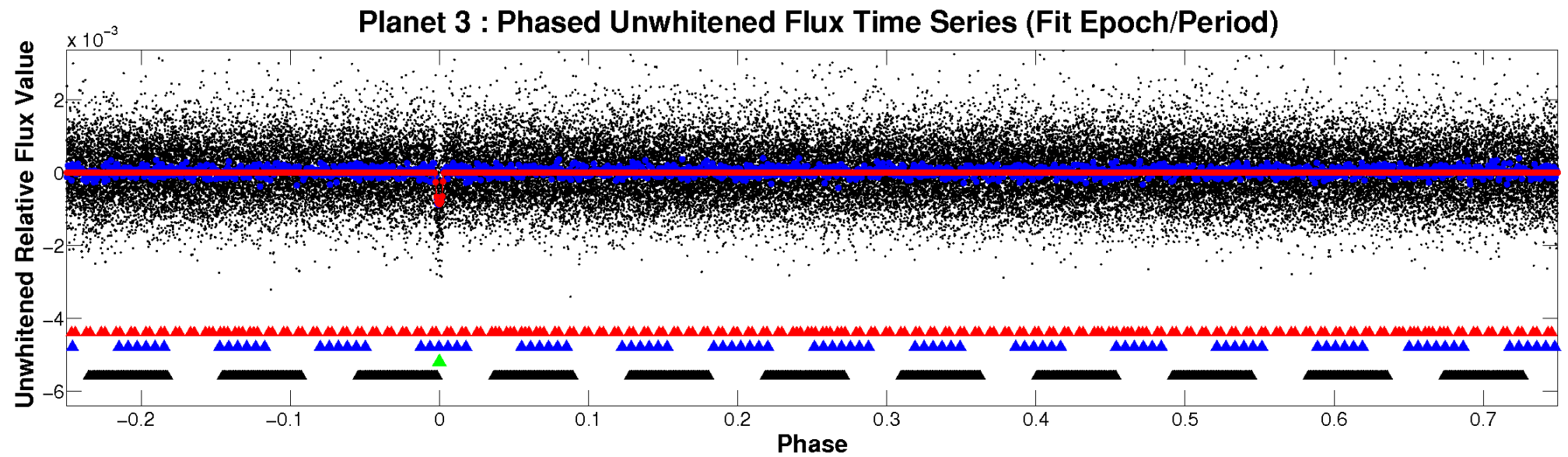


# ALT Odd/Even

TCE 008261920-03

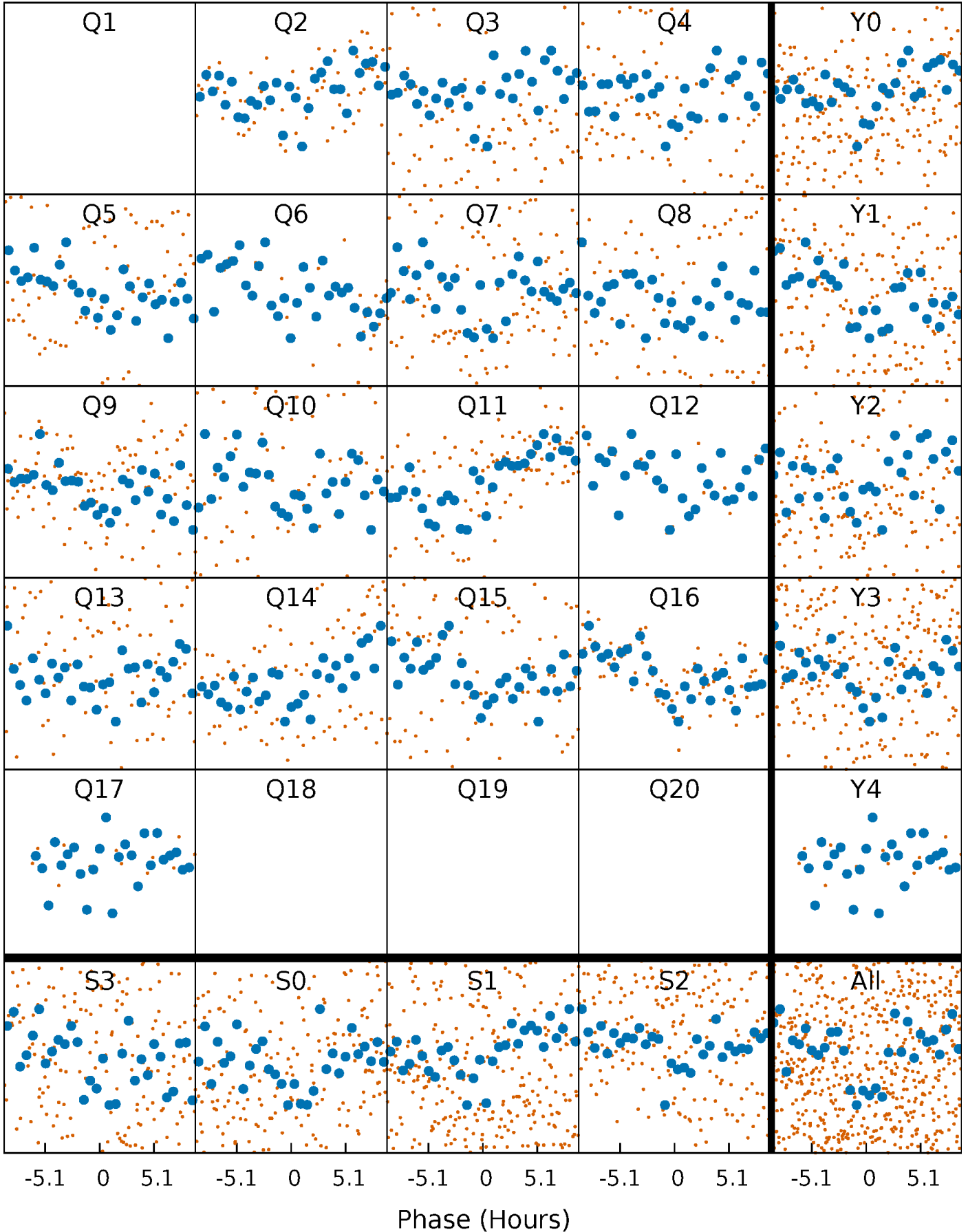


# Non-Whitened Vs. Whitened Light Curve



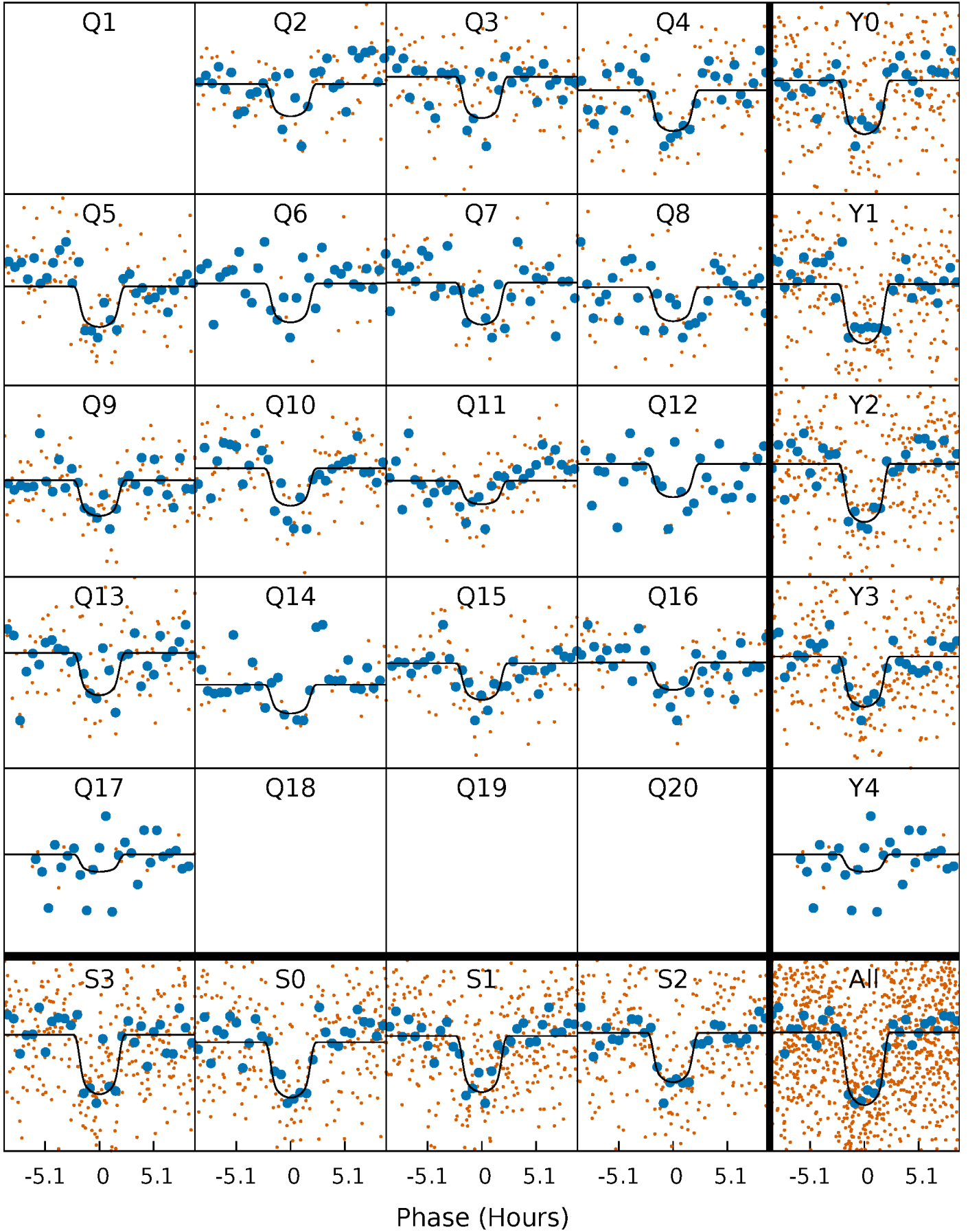
# PDC Quarter-Phased Transit Curves

TCE 008261920-03   P= 33.136074 Days    $T_0=136.372878$  (BKJD)



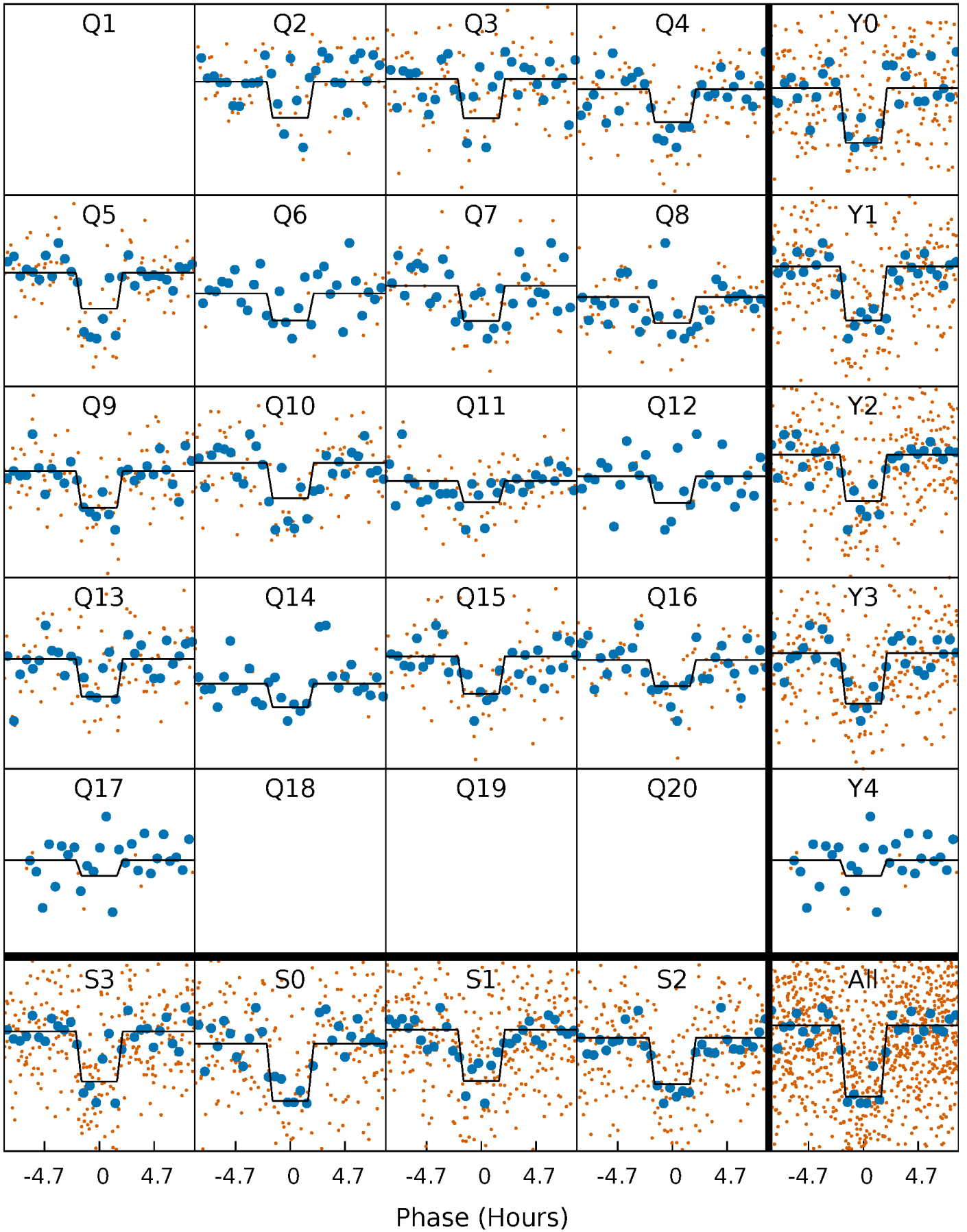
# DV Quarter-Phased Transit Curves

TCE 008261920-03 P= 33.136074 Days  $T_0=136.372878$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

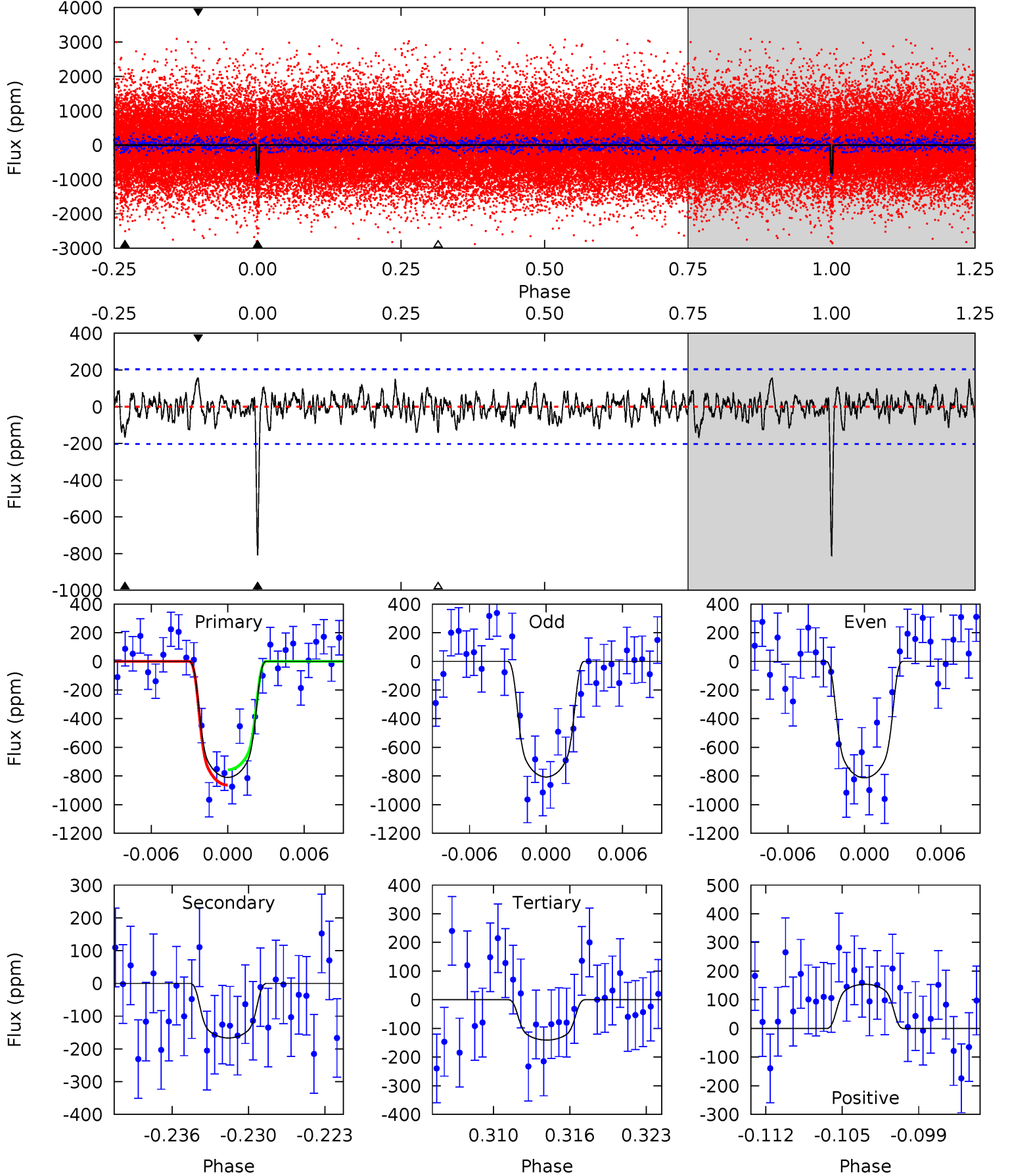
TCE 008261920-03 P= 33.135989 Days  $T_0=136.374055$  (BKJD)



# DV Model-Shift Uniqueness Test

008261920-03, P = 33.136074 Days, E = 136.372878 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
20.4	4.19	3.54	3.88	5.12	2.74	1.26	16.8	16.5	0.65	0.31	0.08	0.98	0.16	1.34

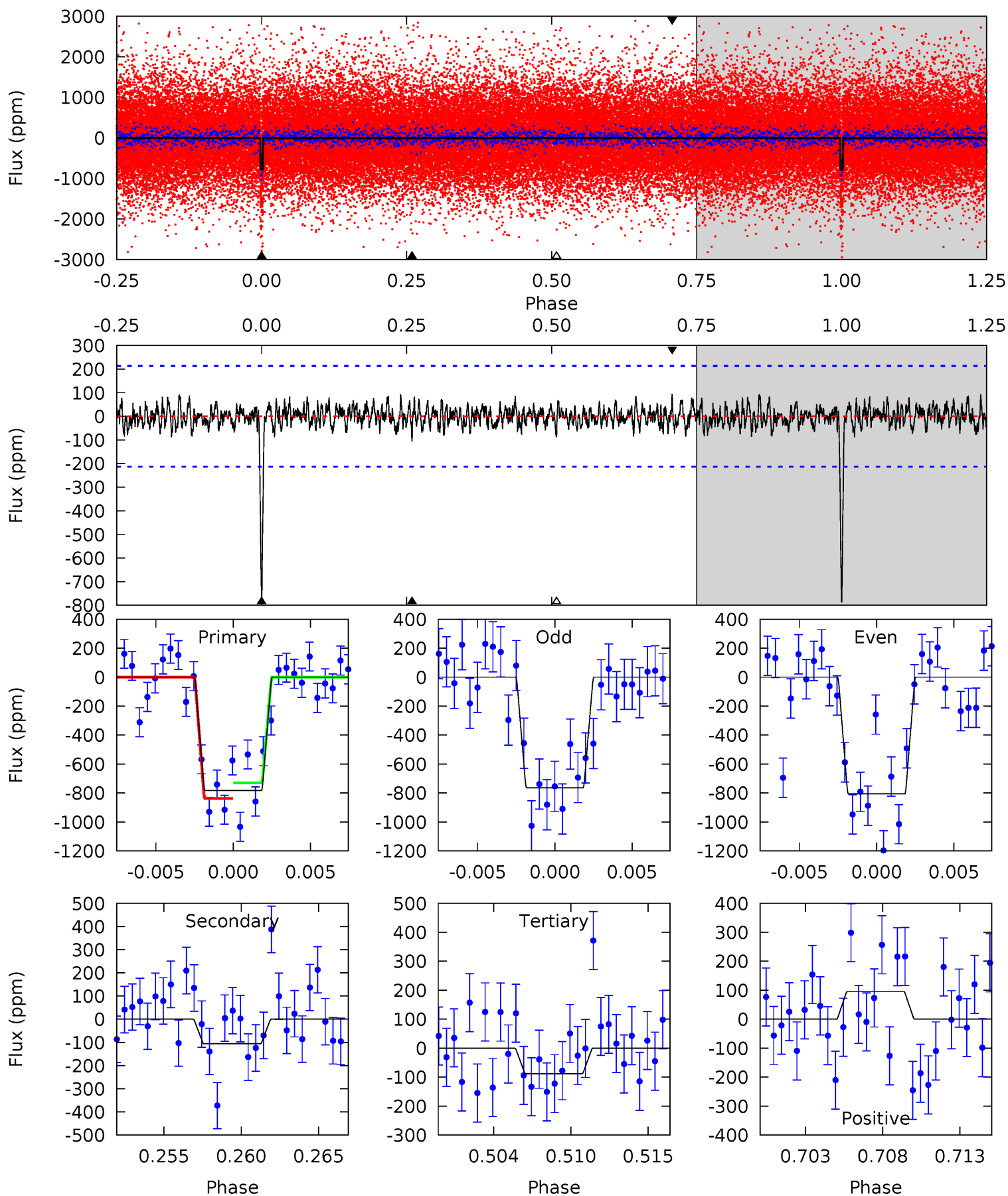




# Alt Model-Shift Uniqueness Test

008261920-03,  $P = 33.135989$  Days,  $E = 136.374055$  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
18.9	2.57	2.13	2.30	5.15	2.80	0.80	16.8	16.6	0.44	0.27	0.51	1.11	0.11	1.30



### Stellar Parameters For KIC 008261920

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4245^{+85}_{-85}$	$4.641^{+0.027}_{-0.020}$	$0.000^{+0.150}_{-0.150}$	$0.637^{+0.026}_{-0.032}$	$0.649^{+0.032}_{-0.032}$	$3.533^{+0.378}_{-0.282}$
	+2%/-2%	+1%/-0%	+inf%/-inf%	+4%/-5%	+5%/-5%	+11%/-8%
Source	SPE60	SPE60	SPE60	DSEP		

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

### Secondary Eclipse Parameters for KIC 008261920-03 / KOI 2174.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-167 \pm 40$	$2.32^{+0.32}_{-0.34}$	$499^{+11}_{-11}$	$3121^{+172}_{-173}$	$522^{+235}_{-159}$
Alt.	$-106 \pm 41$	$1.93^{+0.32}_{-0.32}$	$498^{+12}_{-10}$	$3063^{+240}_{-238}$	$468^{+310}_{-203}$

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

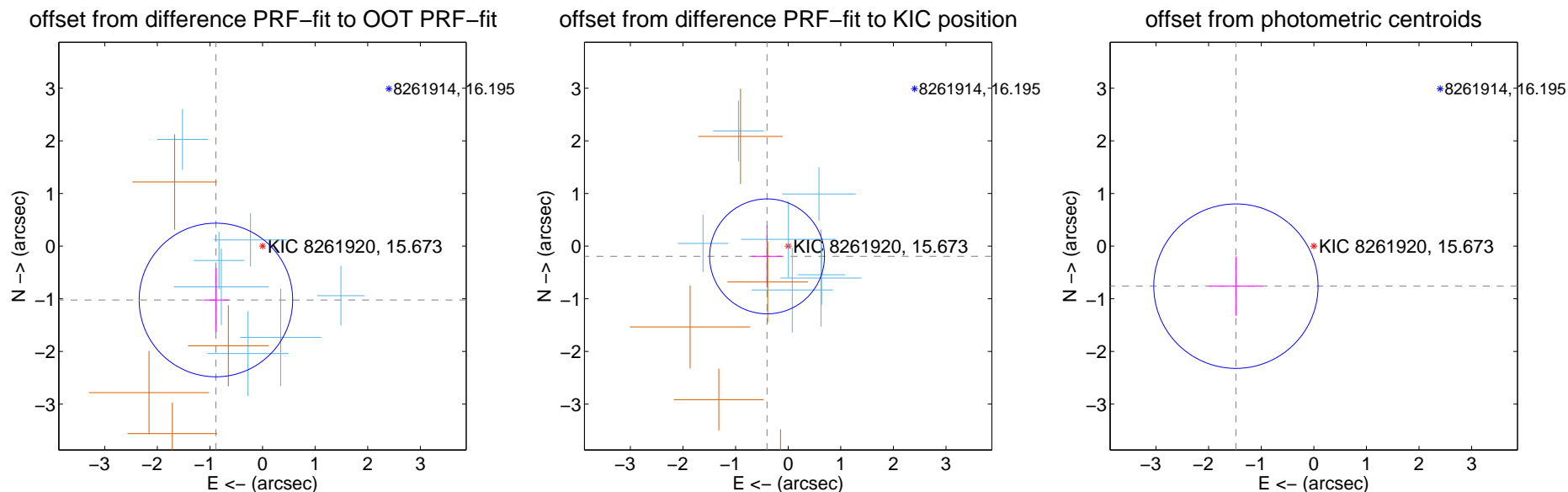
## DV Centroid Data

Supplemental centroid analysis for 008261920-03. Kepler magnitude: 15.67. Transit SNR 12.96

There are 7 quarters with good PRF difference image offsets

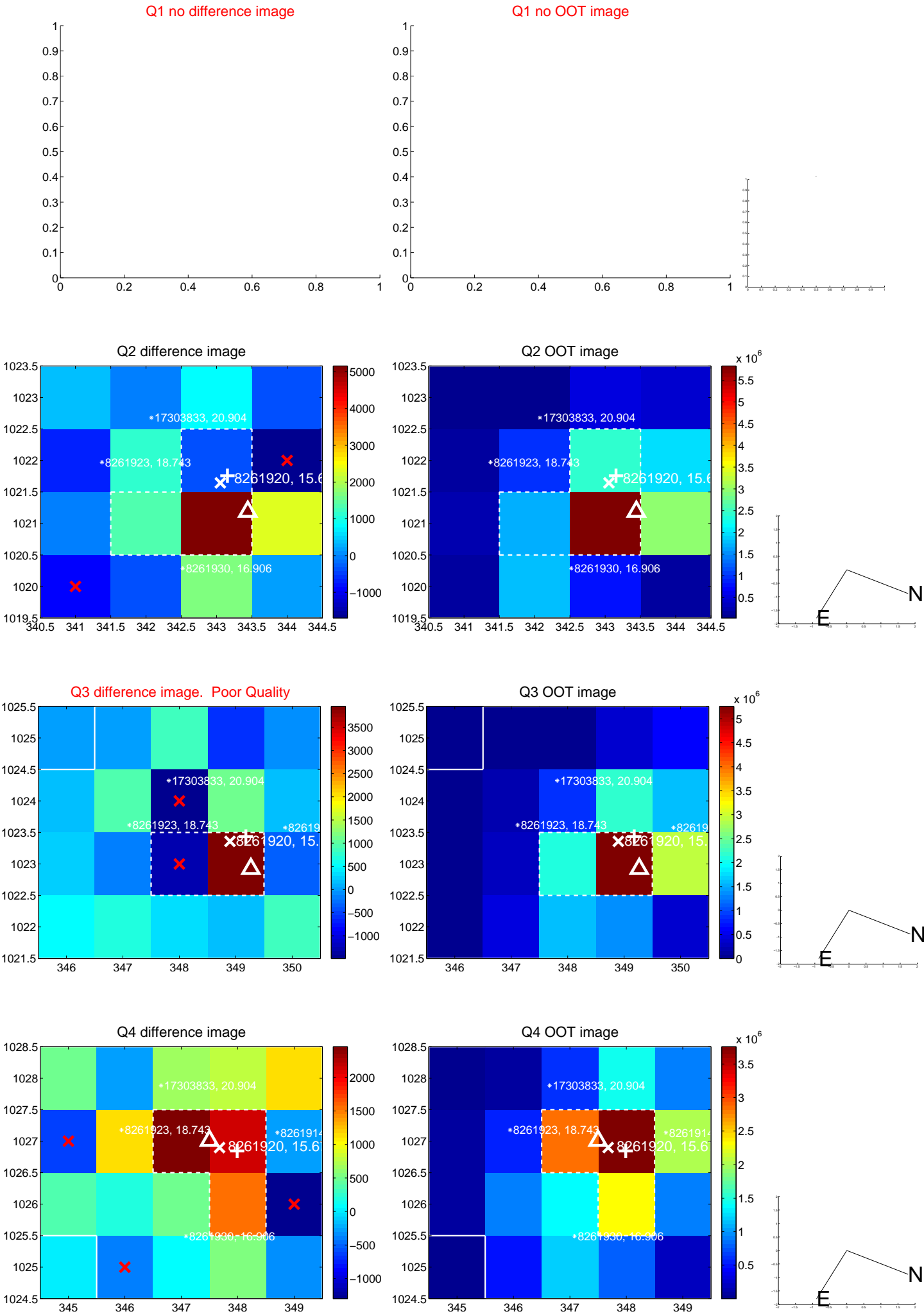
The direct PRF centroid is offset from the target star catalog position by about 1.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.353 \pm 0.486$	2.78	$0.886 \pm 0.243$	$-1.022 \pm 0.608$
PRF-fit source offset from KIC position	$0.446 \pm 0.364$	1.23	$0.402 \pm 0.287$	$-0.194 \pm 0.588$
photometric centroid source offset	$1.66 \pm 0.52$	3.20	$1.48 \pm 0.51$	$-0.76 \pm 0.56$

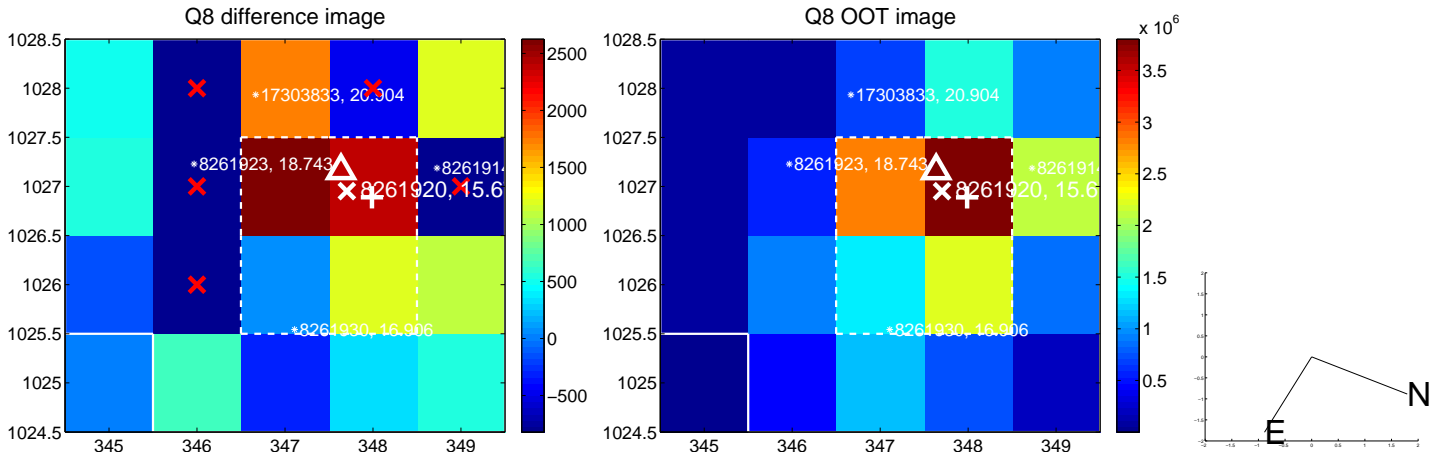
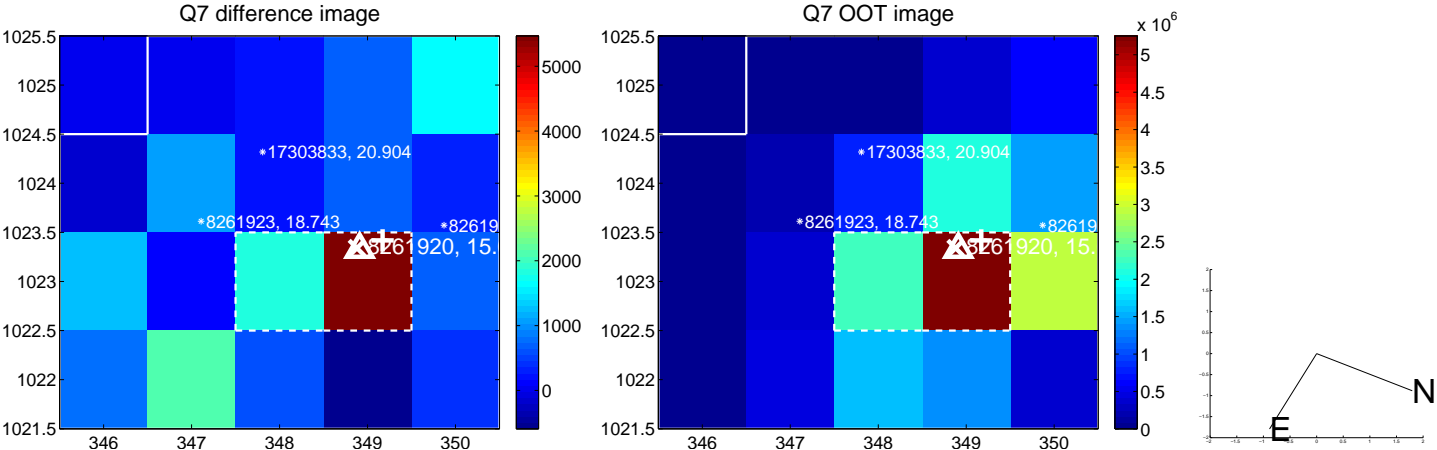
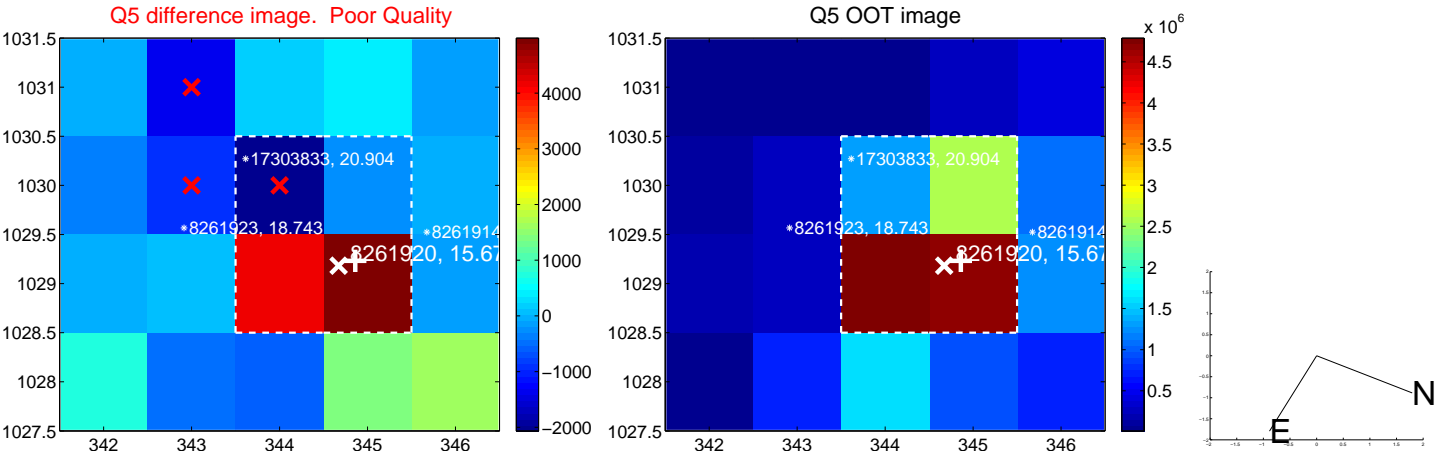


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

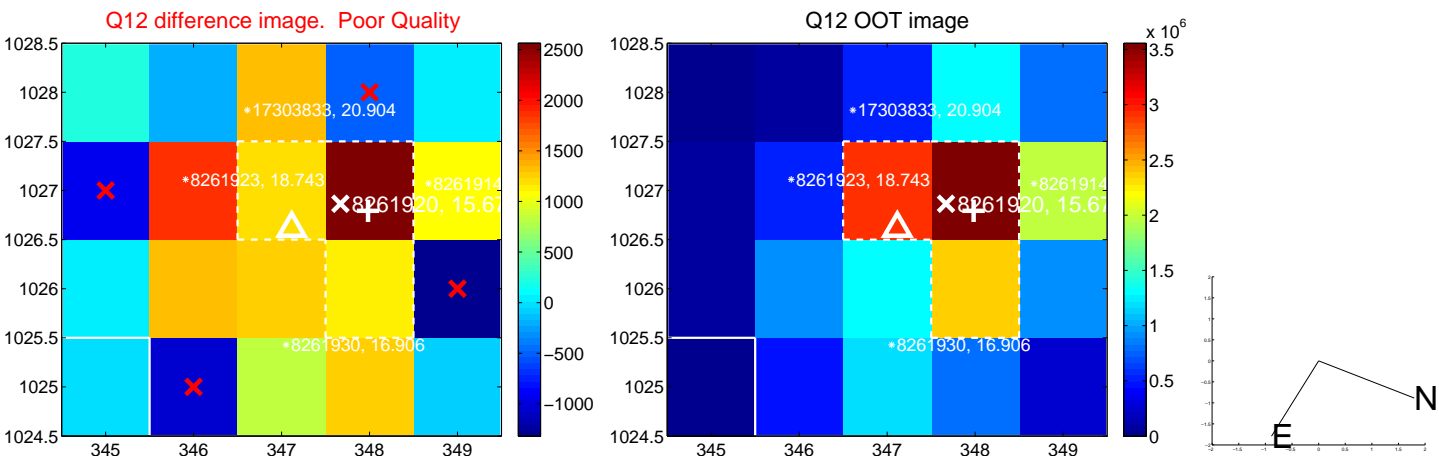
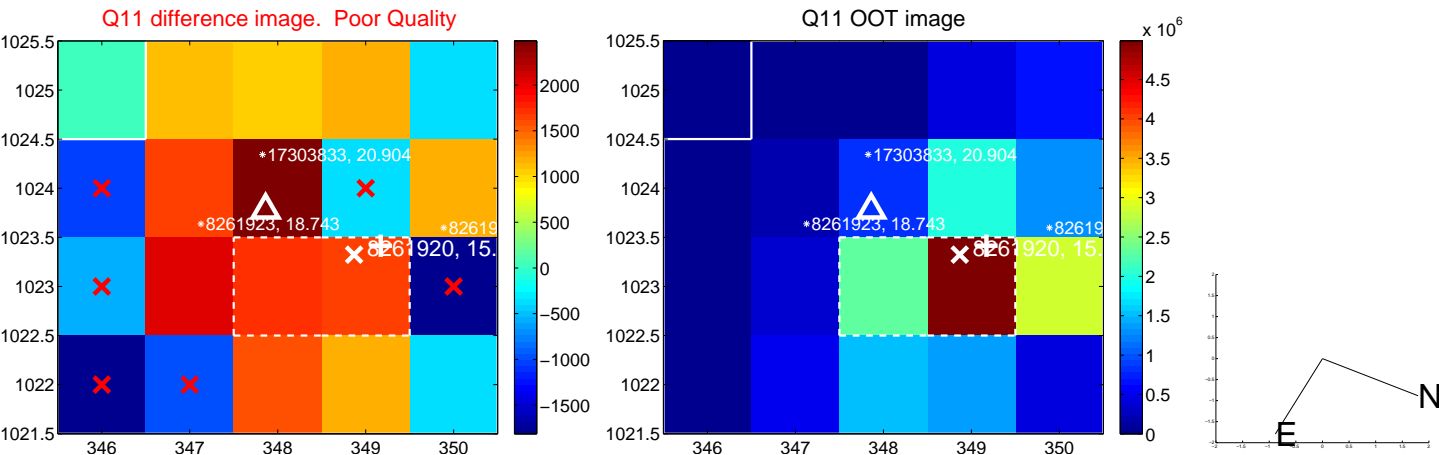
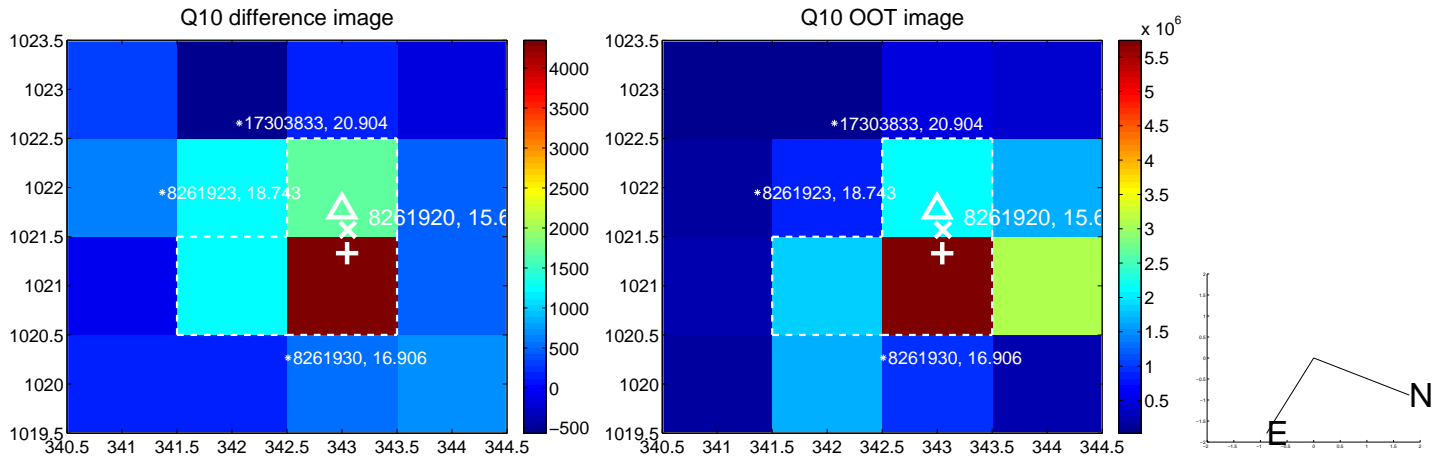
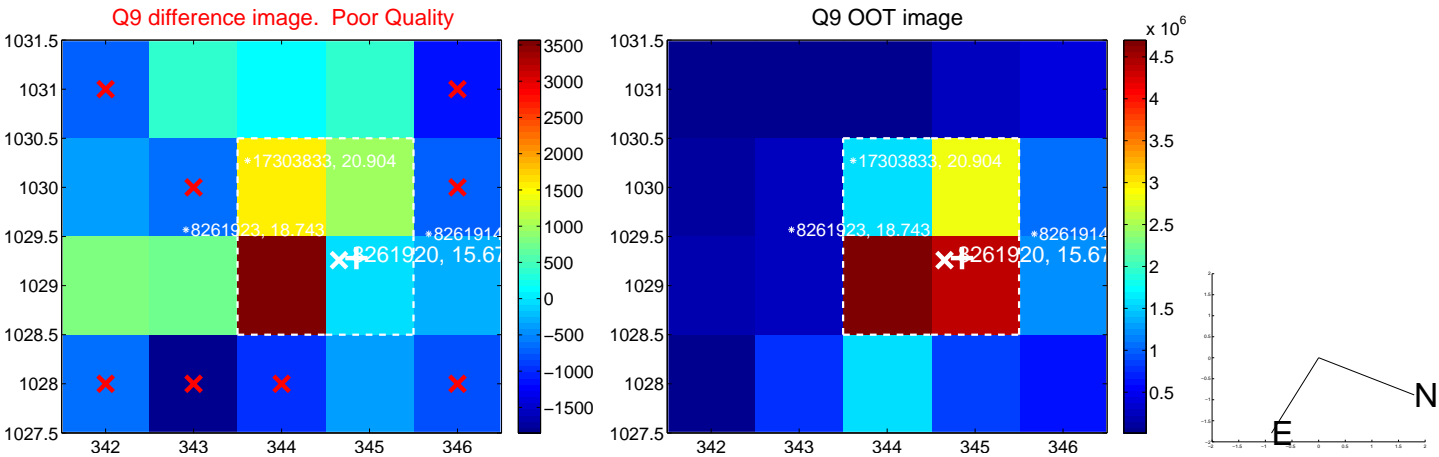
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



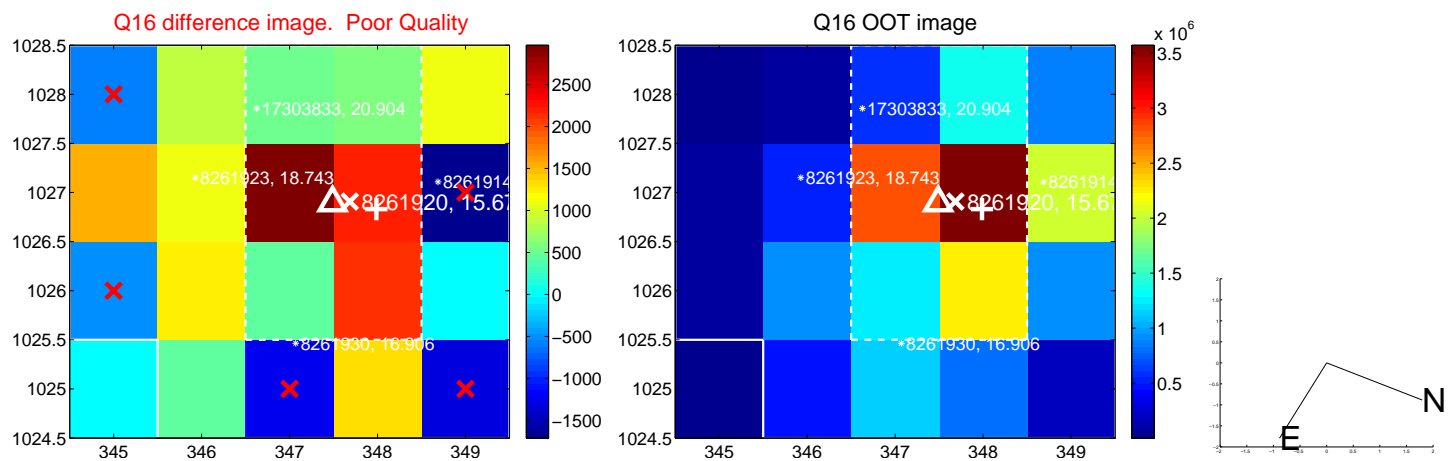
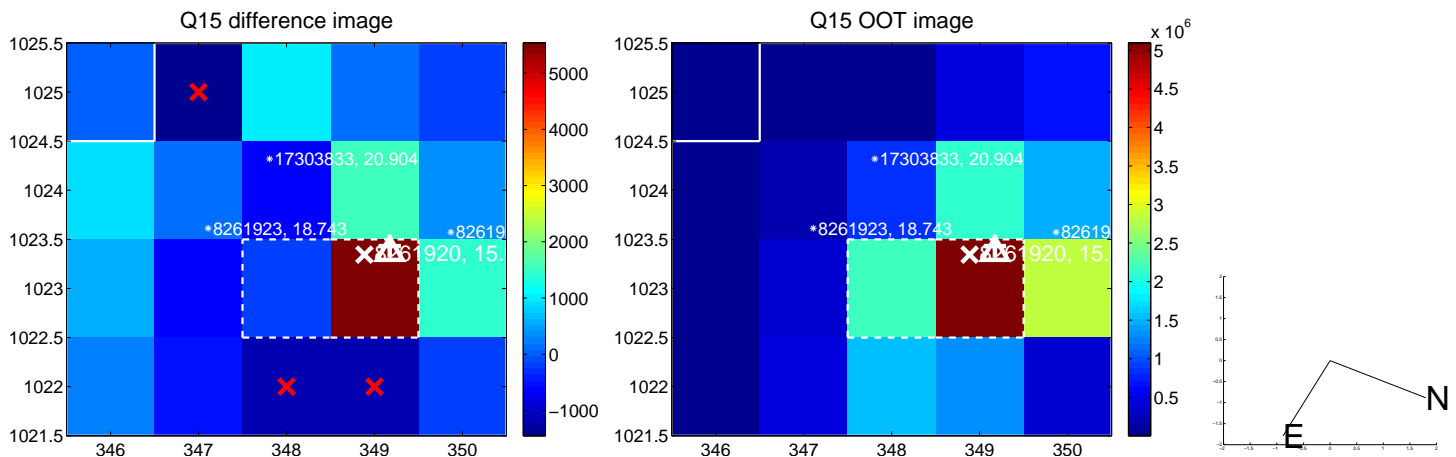
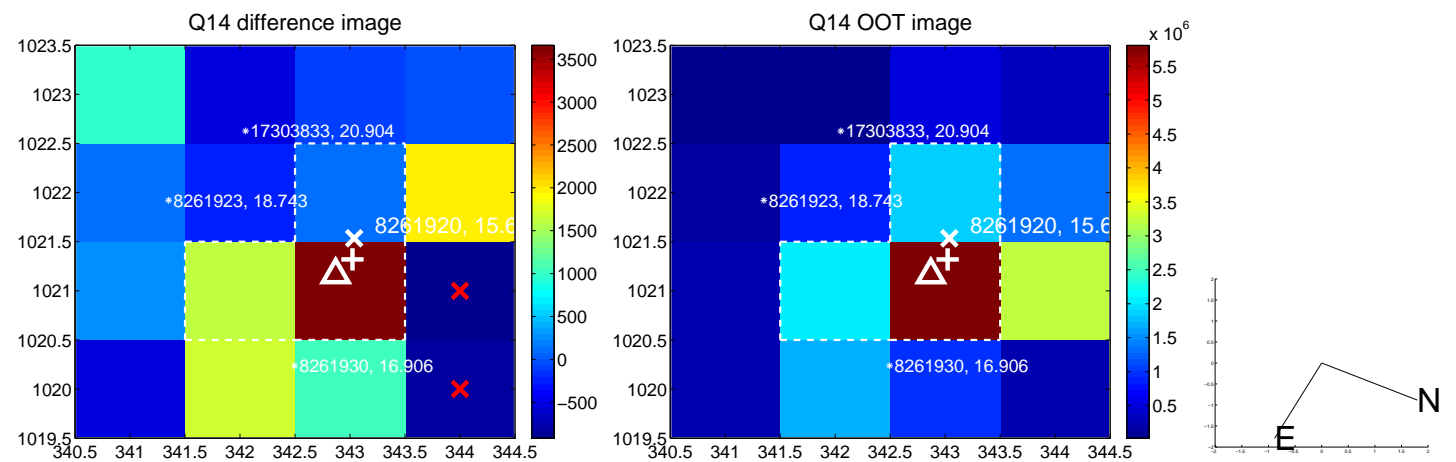
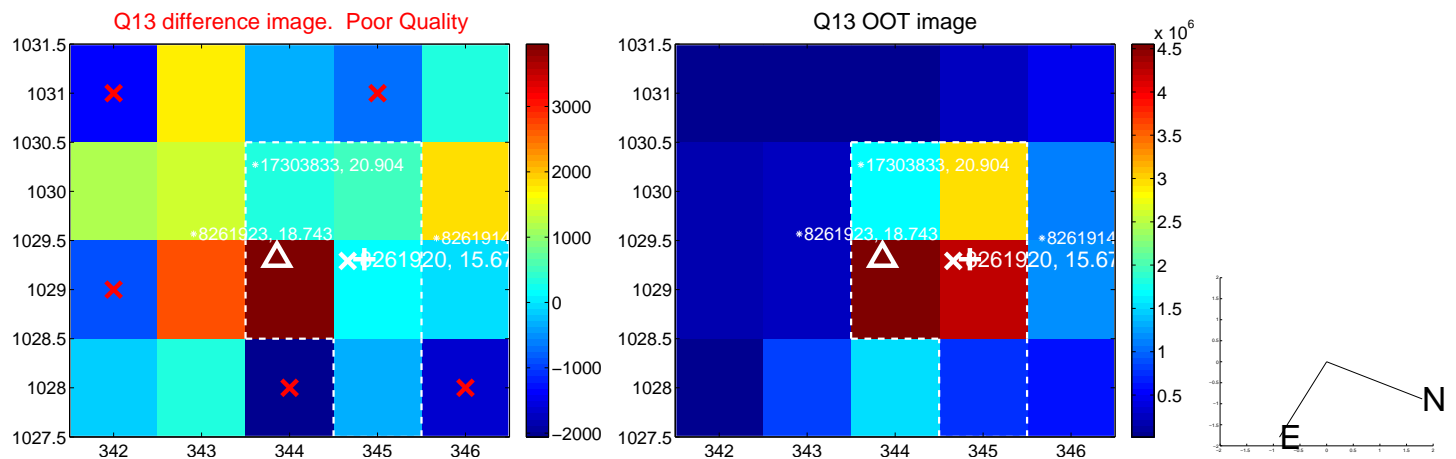
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

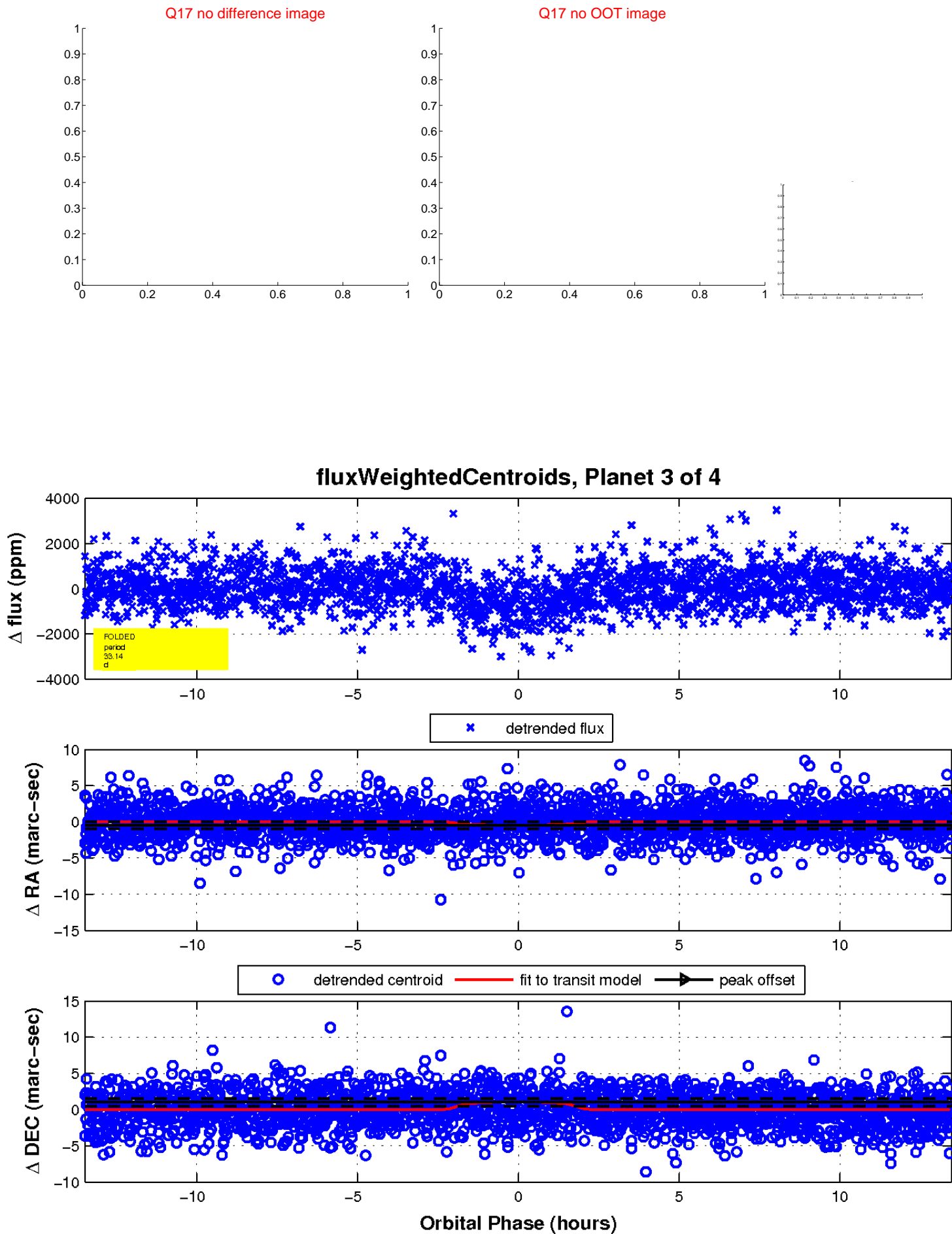


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



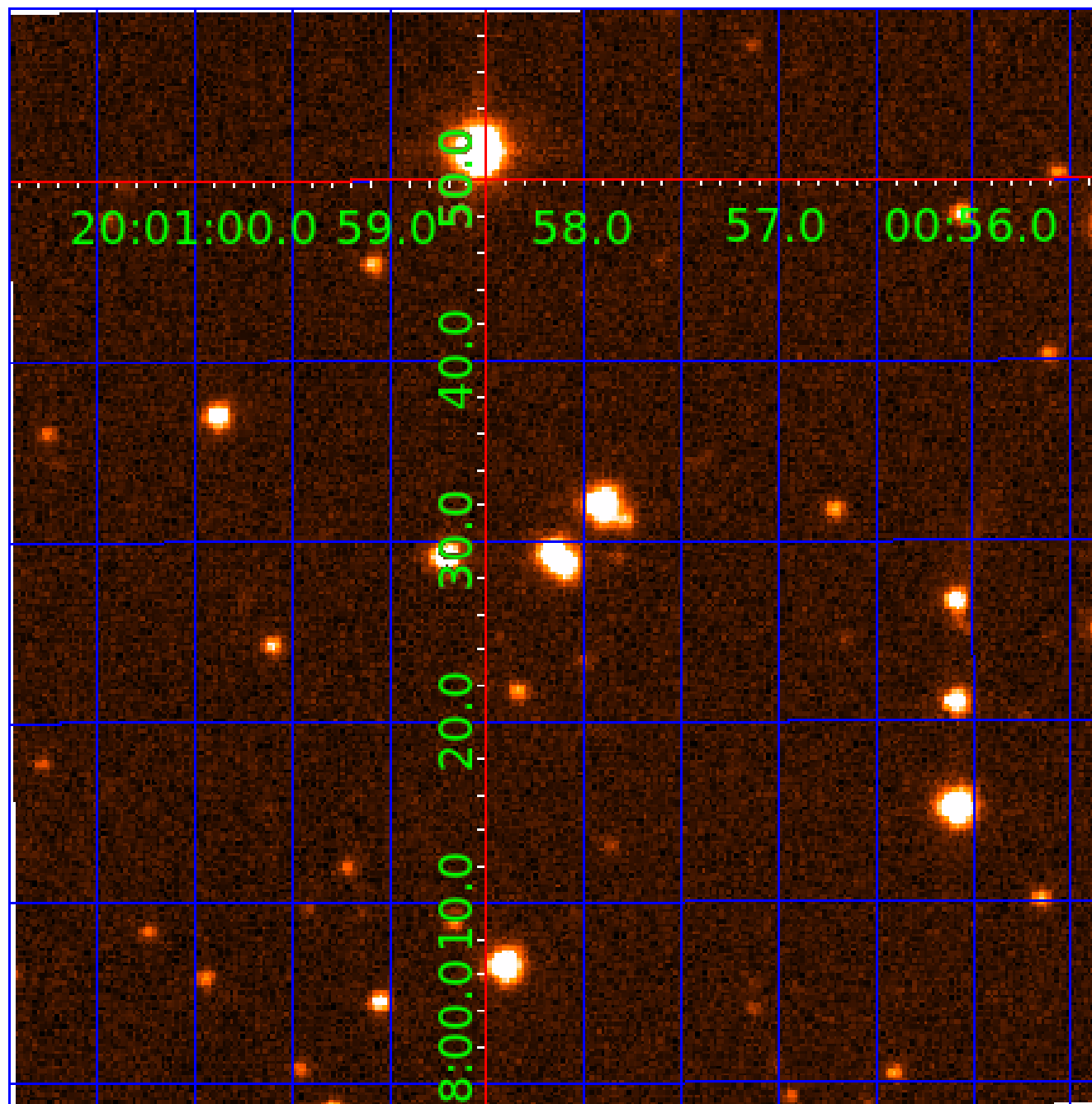


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008261920

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008261920-01	OBS	2174.01	6.693317	137.703424	785.8	2.538	17.9	20.3	0.64	4245	2.66	32.63
008261920-02	OBS	2174.03	15.450176	145.906679	738.7	1.772	11.7	13.2	0.64	4245	1.67	10.70
008261920-03	OBS	2174.02	33.136074	136.372878	866.9	4.492	11.4	13.0	0.64	4245	2.32	3.87
008261920-04	OBS	2174.04	3.016064	131.556135	184.1	1.867	7.4	7.4	0.64	4245	1.06	94.46

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008261920-01	OBS	PC	0.97	0	0	0	0	CENT_KIC_POS
008261920-02	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
008261920-03	OBS	PC	0.99	0	0	0	0	CENT_KIC_POS
008261920-04	OBS	PC	0.69	0	0	0	0	CENT_KIC_POS

**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.

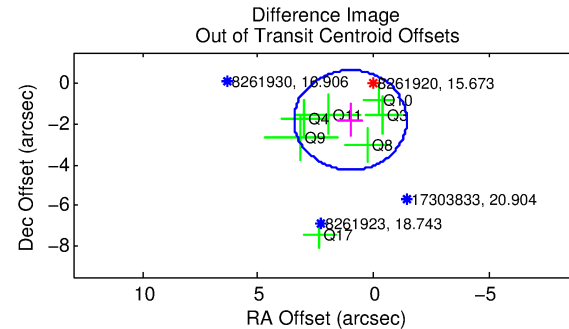
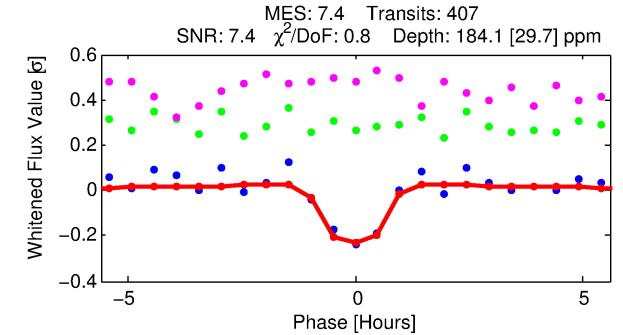
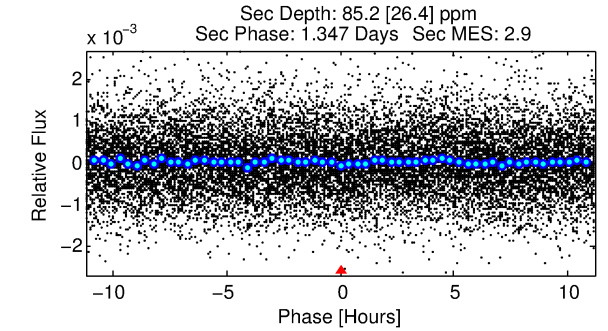
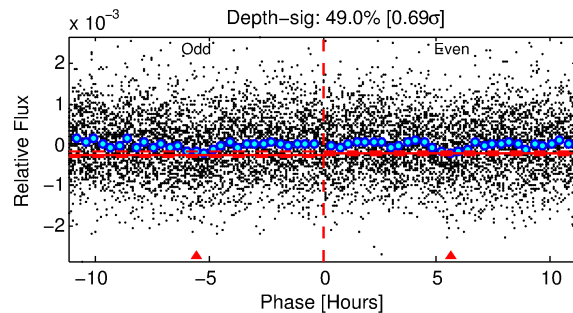
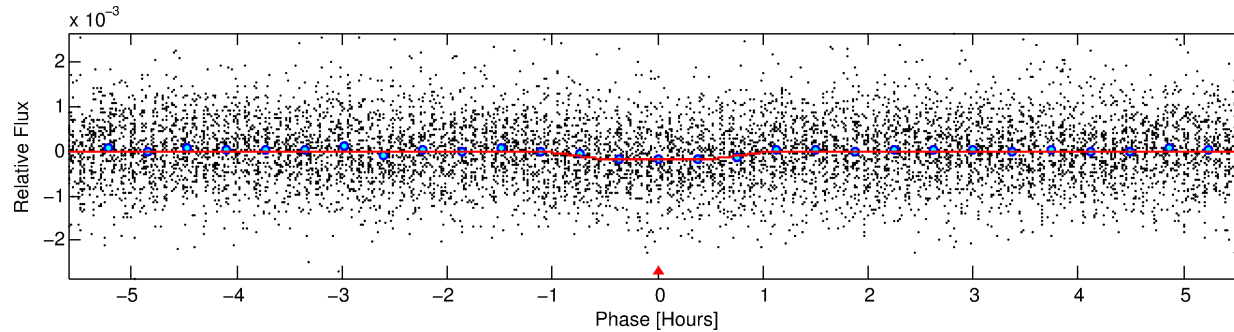
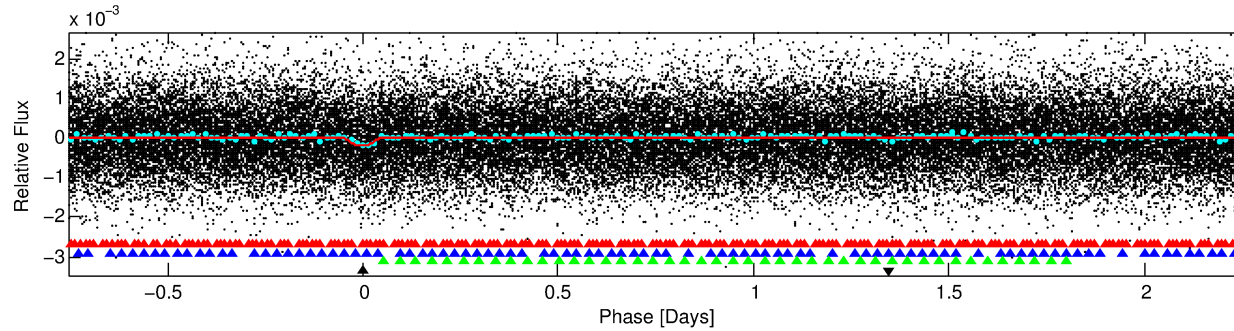
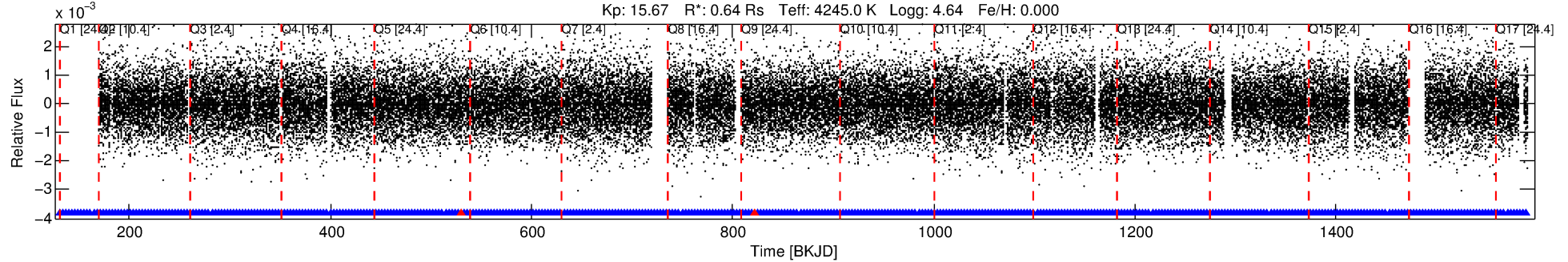
Ephemeris Match Information For 008261920-04

No Significant Match Found

# DV One-Page Summary

KIC: 8261920 Candidate: 4 of 4 Period: 3.016 d  
KOI: K02174 Corr: No Ephemeris Match

Kp: 15.67 R\*: 0.64 Rs Teff: 4245.0 K Logg: 4.64 Fe/H: 0.000



## DV Fit Results:

Period = 3.01606 [0.00002] d  
Epoch = 131.5561 [0.0042] BKJD  
Rp/R\* = 0.0153 [0.0195]  
a/R\* = 5.87 [27.63]  
b = 0.90 [1.05]  
Seff = 94.46 [9.09]  
Teq = 795 [19] K  
Rp = 1.07 [1.36] Re  
a = 0.0354 [0.0014] AU  
Ag = 51.65 [132.69] [0.38σ]  
Teffp = 3295 [2117] K [1.18σ]

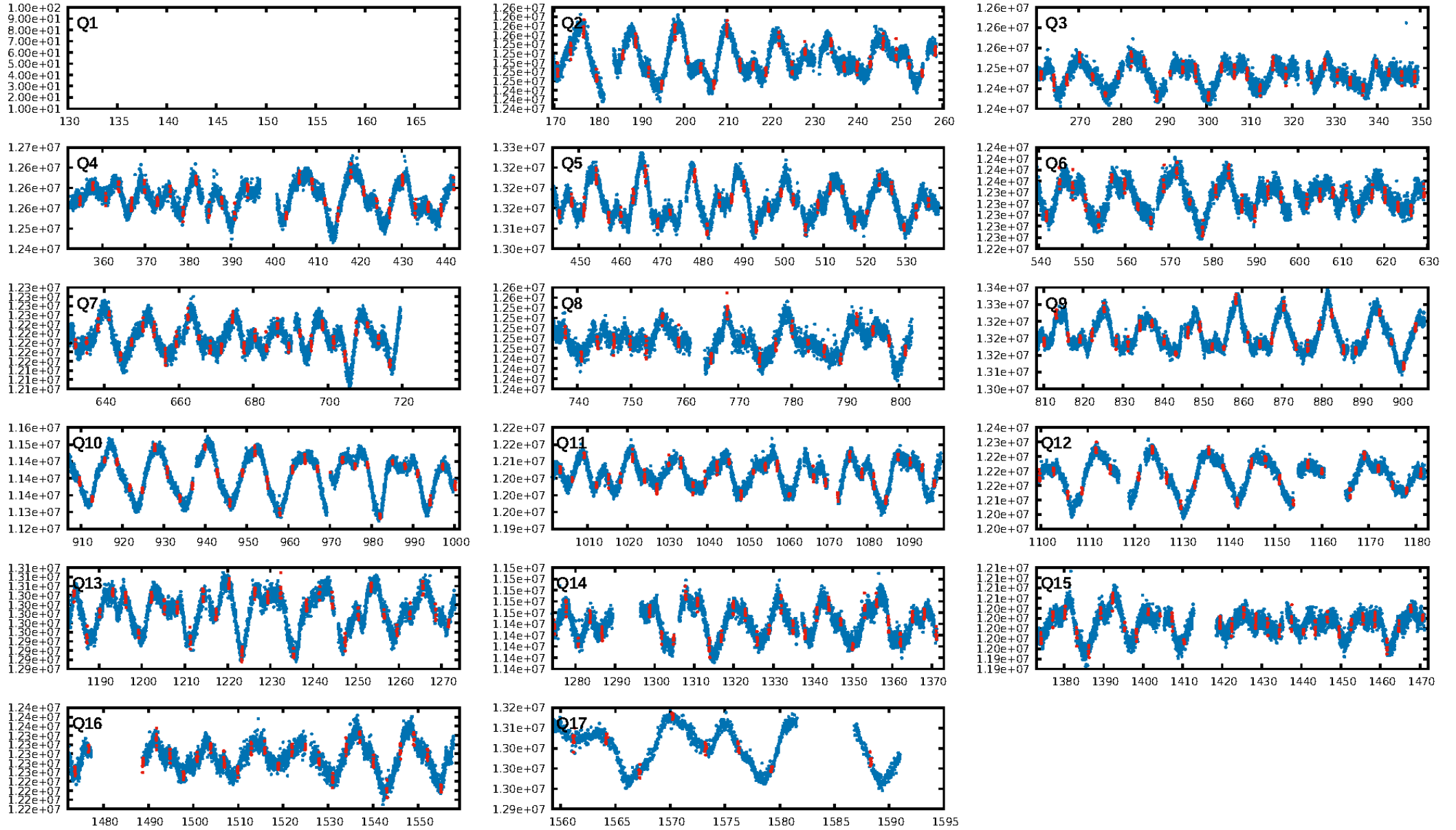
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [28.02σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 6.12e-14  
RollingBand-fgt: 0.99 [398/400]  
GhostDiagnostic-chr: 6.801  
Centroid-sig: 34.1%  
Centroid-so: 1.790 arcsec [1.81σ]  
OotOffset-rm: 2.082 arcsec [2.56σ]  
KicOffset-rm: 1.098 arcsec [1.15σ]  
OotOffset-st: 1/2/2/2 [7]  
KicOffset-st: 1/2/2/2 [7]  
DiffImageQuality-fgm: 0.43 [3/7]  
DiffImageOverlap-fno: 1.00 [16/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:58:17 Z

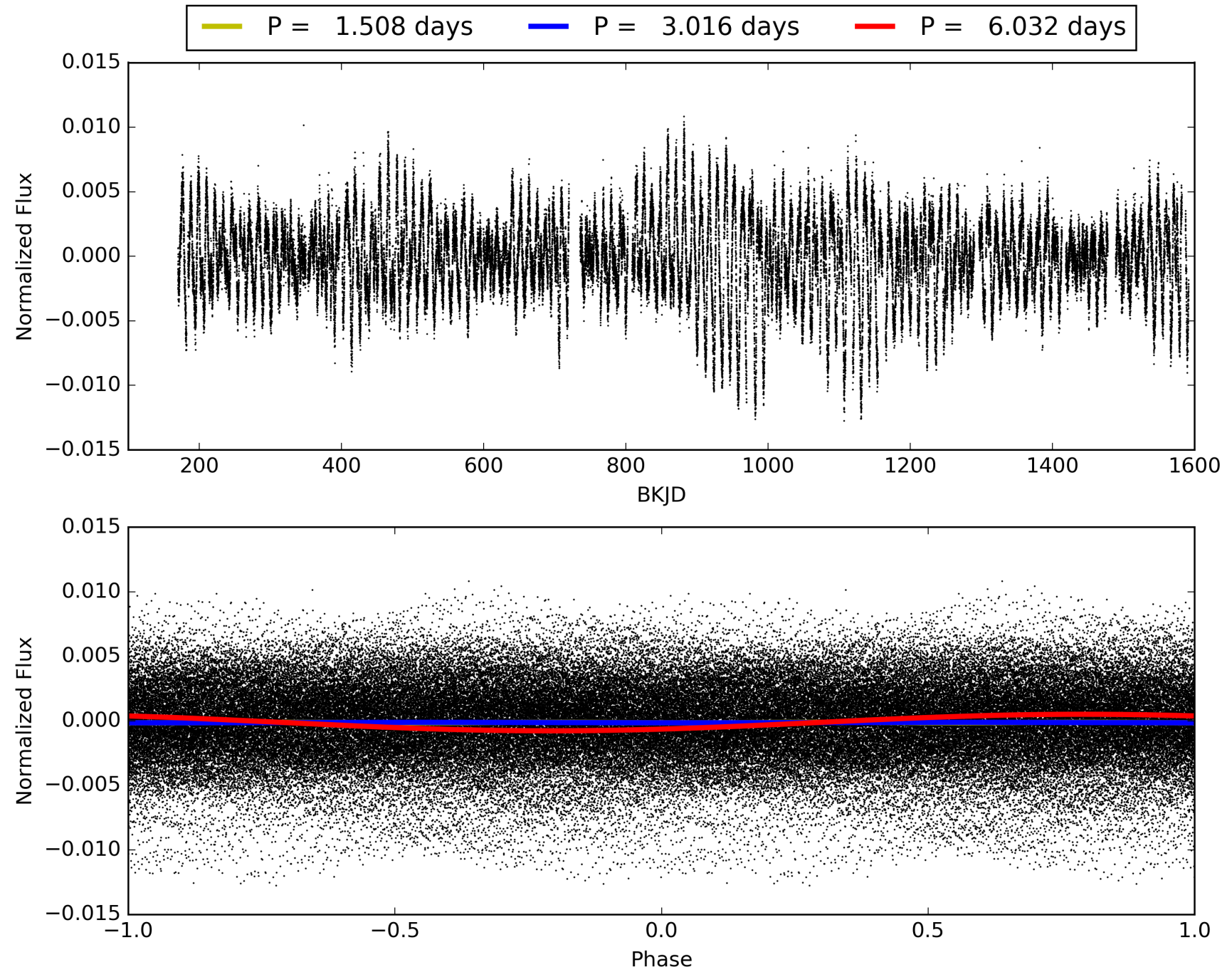
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008261920-04, PDC Light Curves





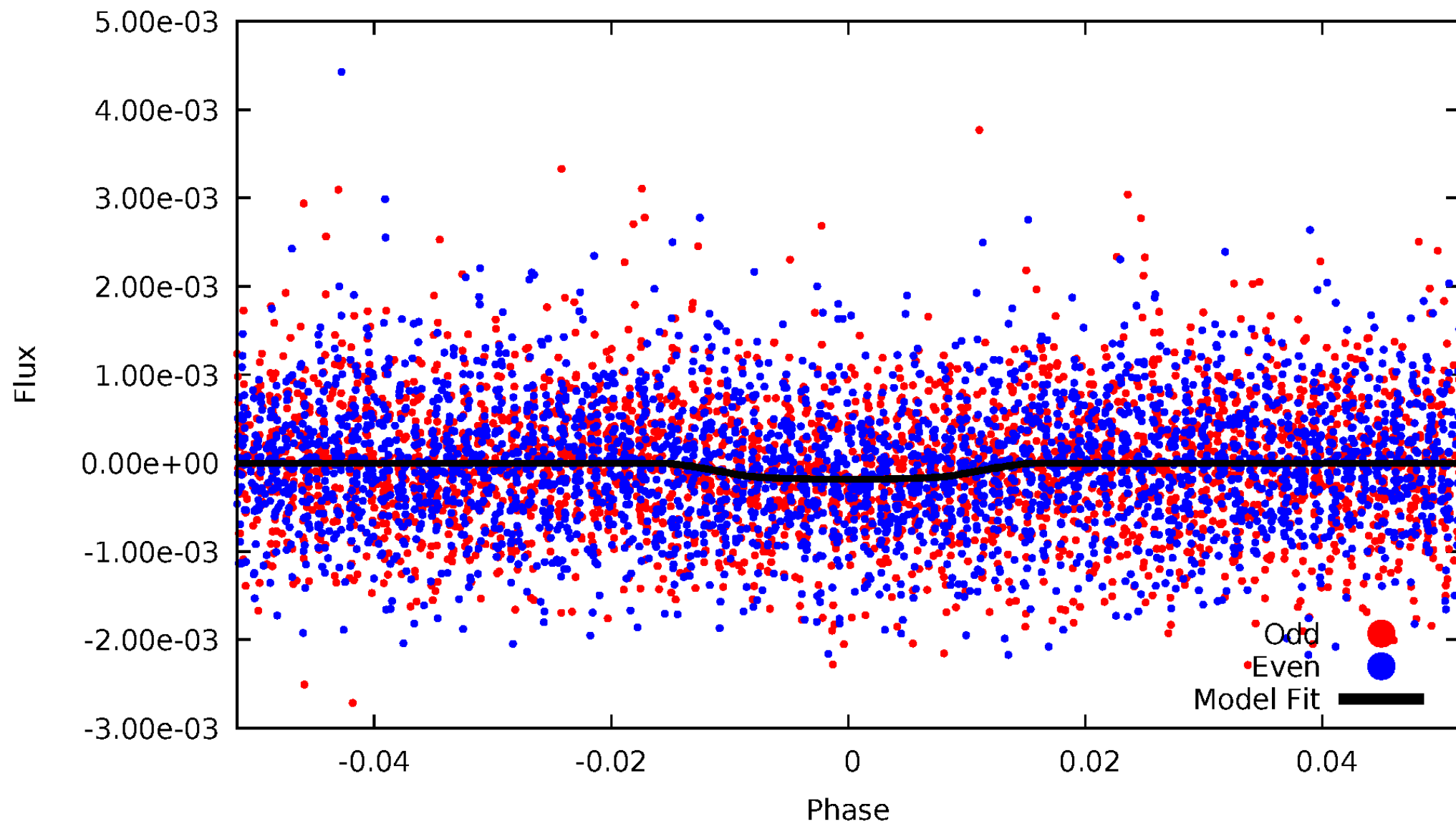
# TCE 008261920-04





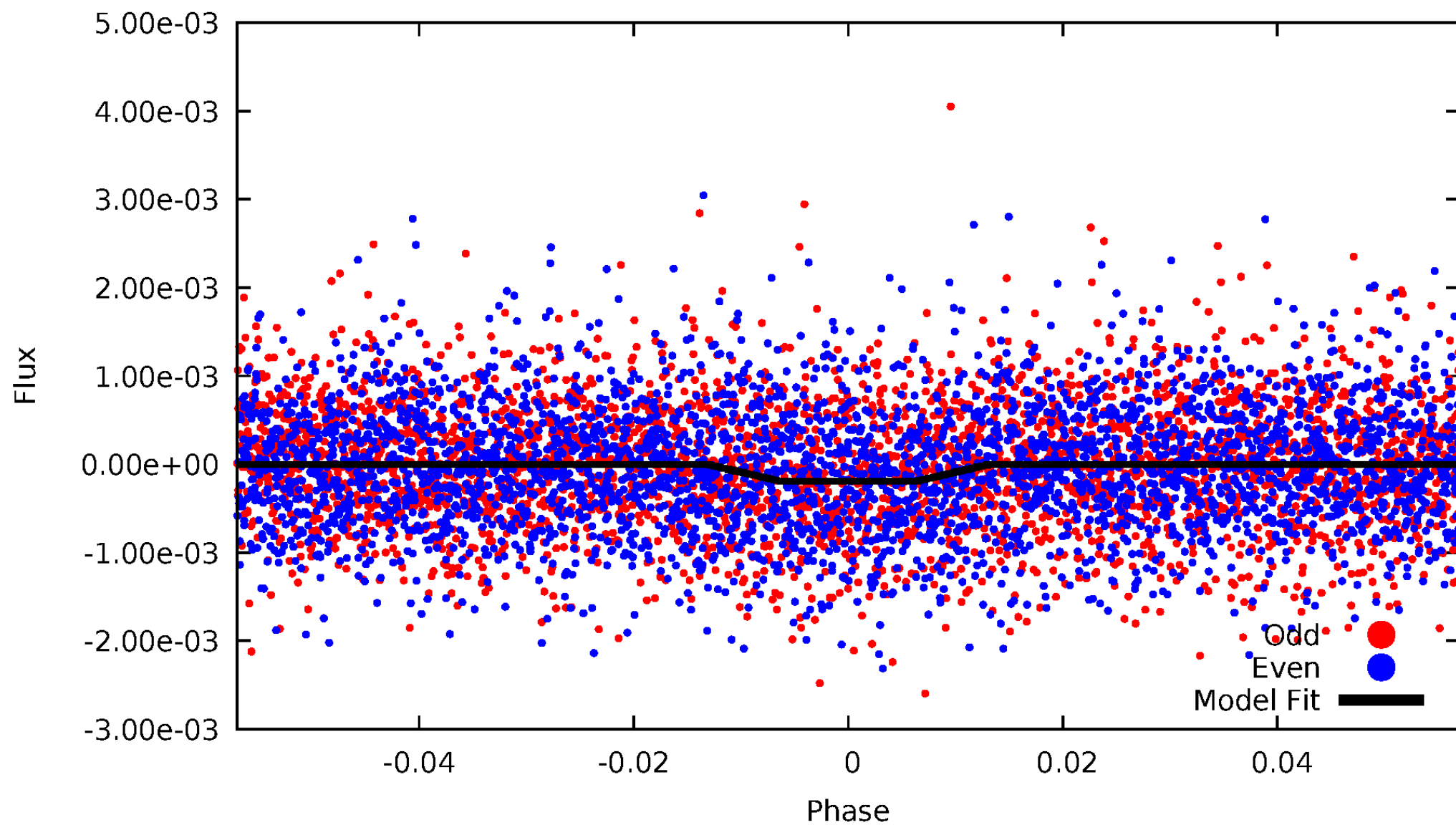
# DV Odd/Even

TCE 008261920-04



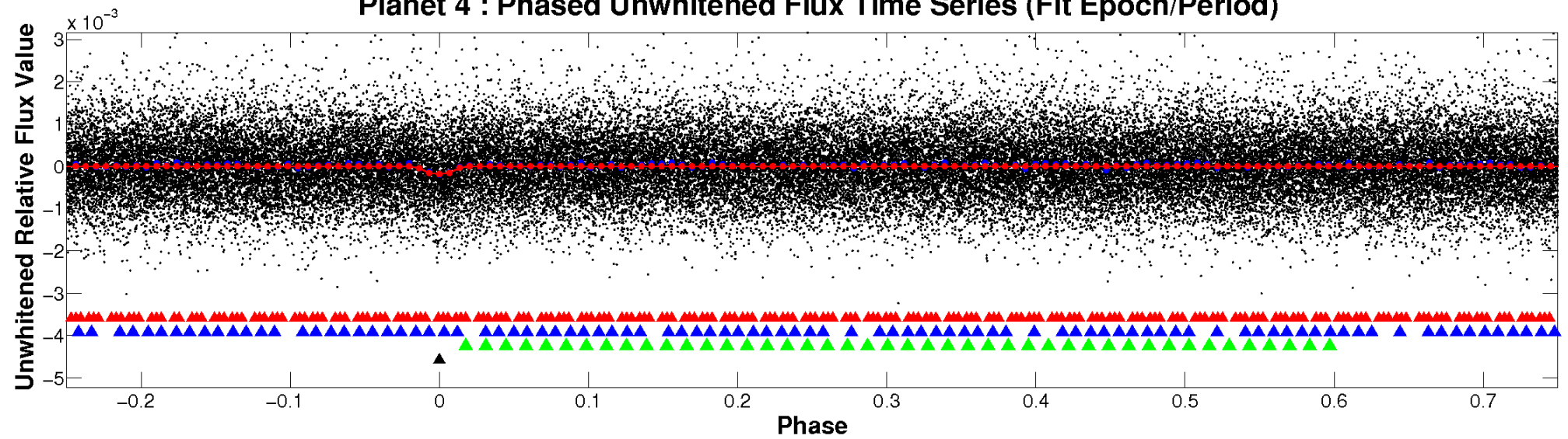
# ALT Odd/Even

TCE 008261920-04

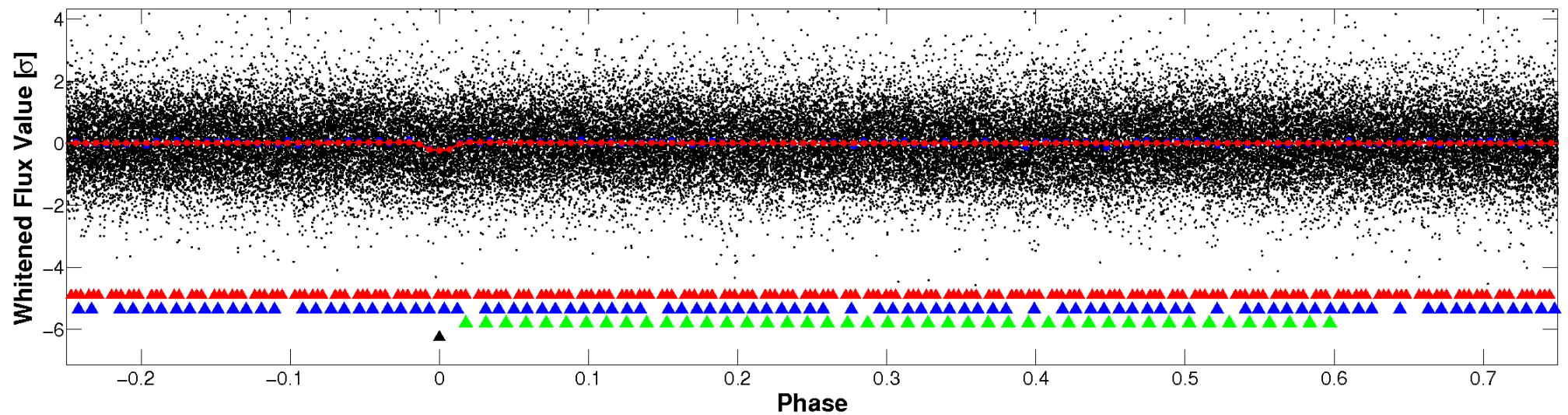


# Non-Whitened Vs. Whitened Light Curve

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

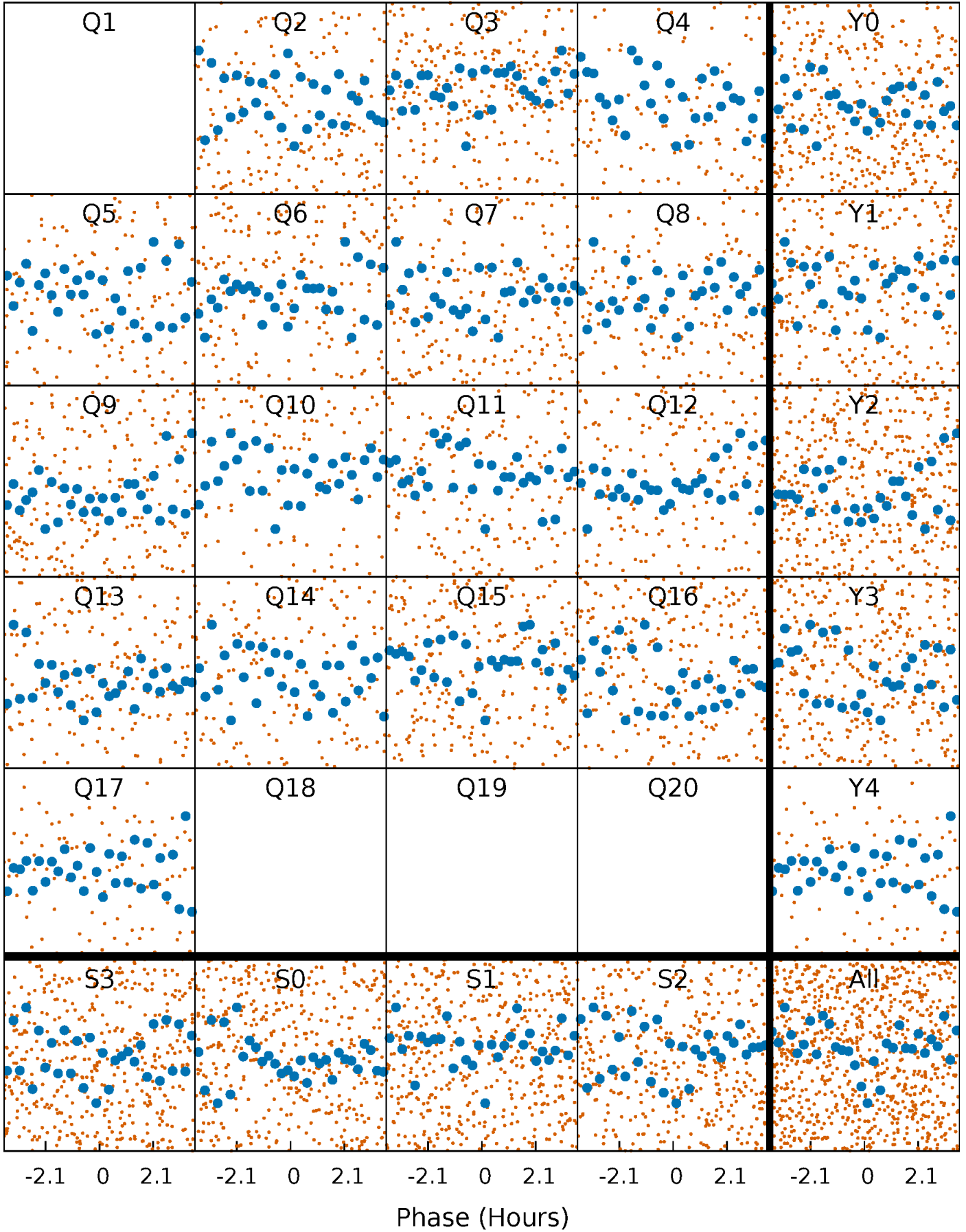


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



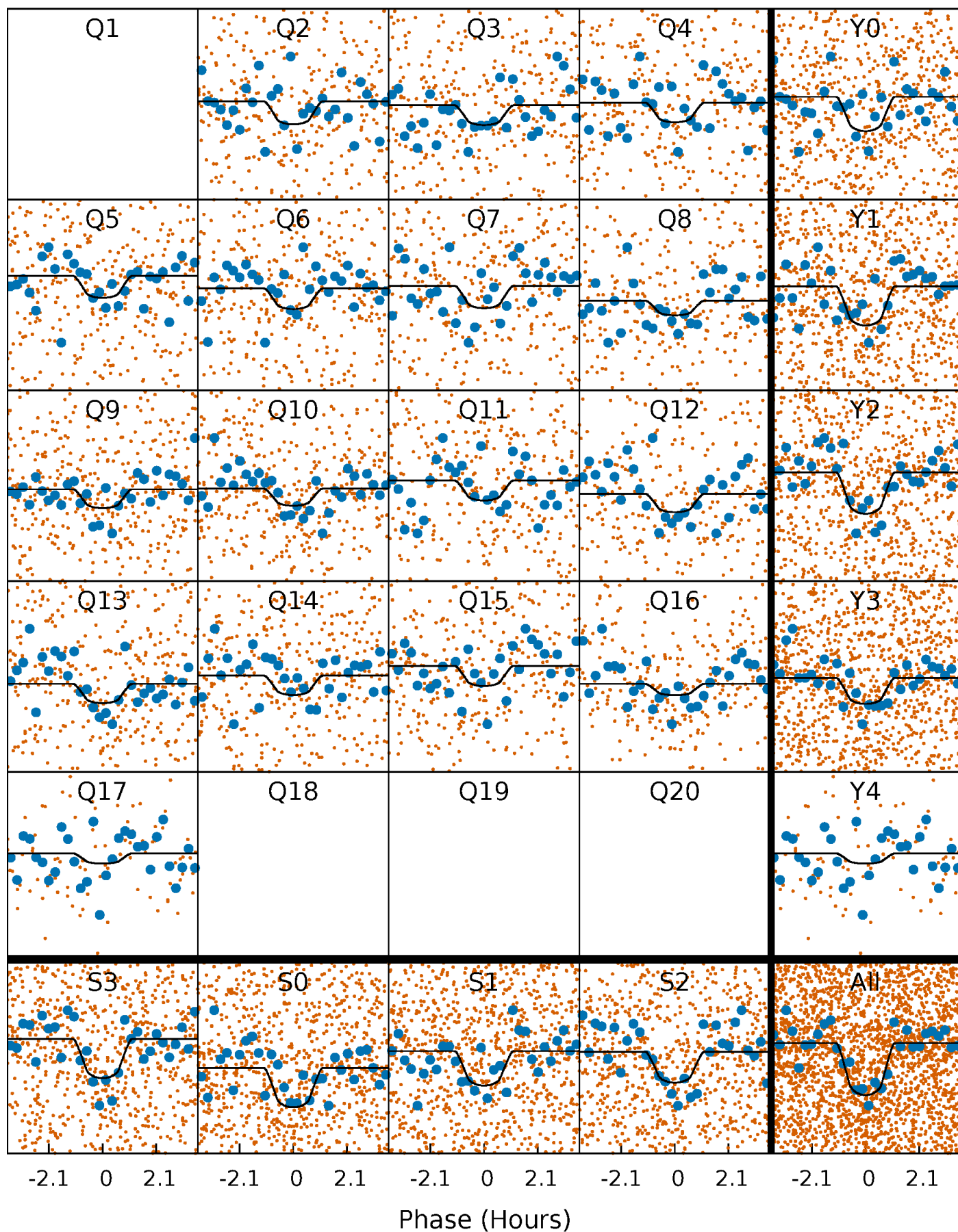
# PDC Quarter-Phased Transit Curves

TCE 008261920-04   P= 3.016064 Days    $T_0=131.556135$  (BKJD)



# DV Quarter-Phased Transit Curves

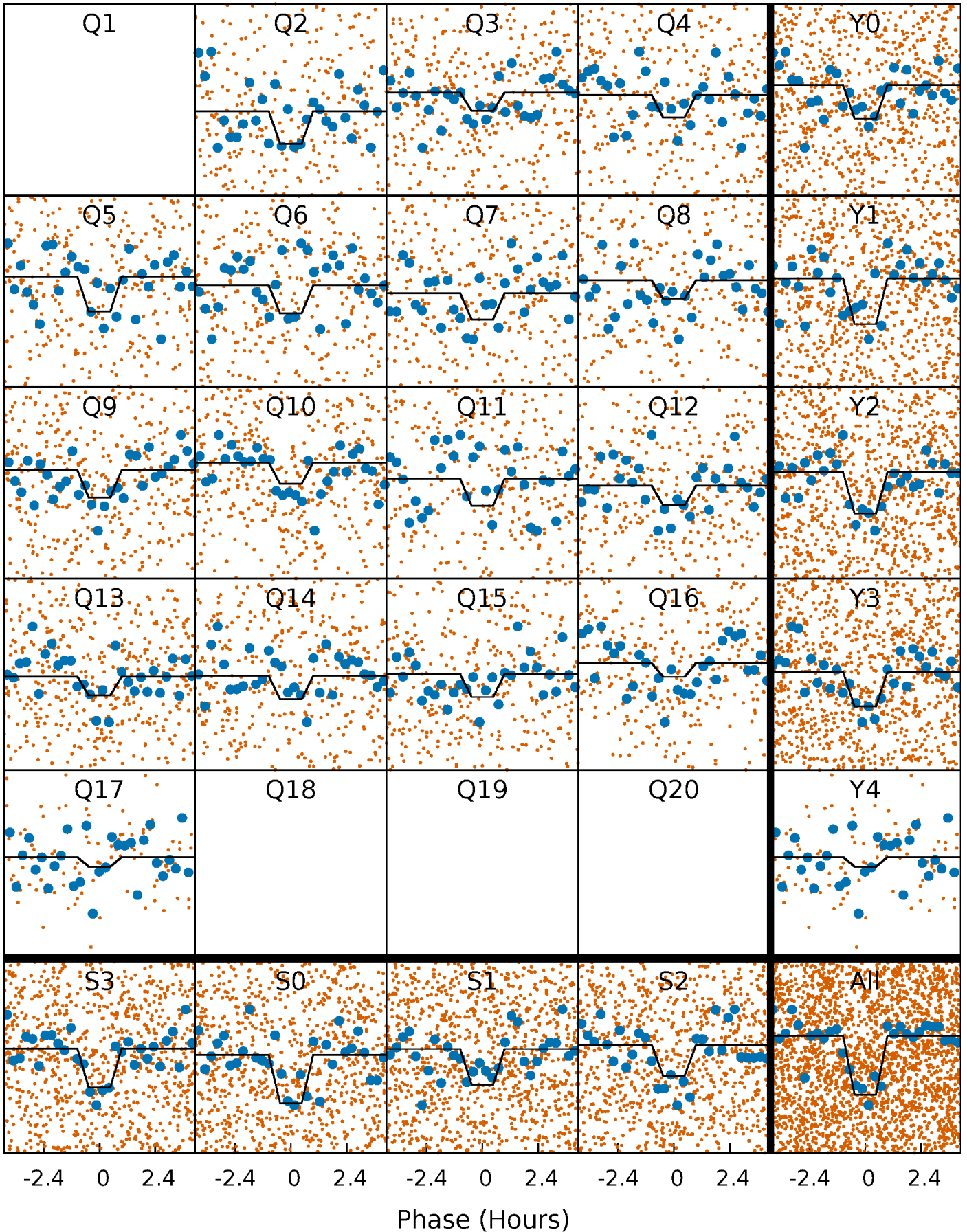
TCE 008261920-04   P= 3.016064 Days    $T_0=131.556135$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008261920-04 P= 3.016089 Days  $T_0=131.551688$  (BKJD)

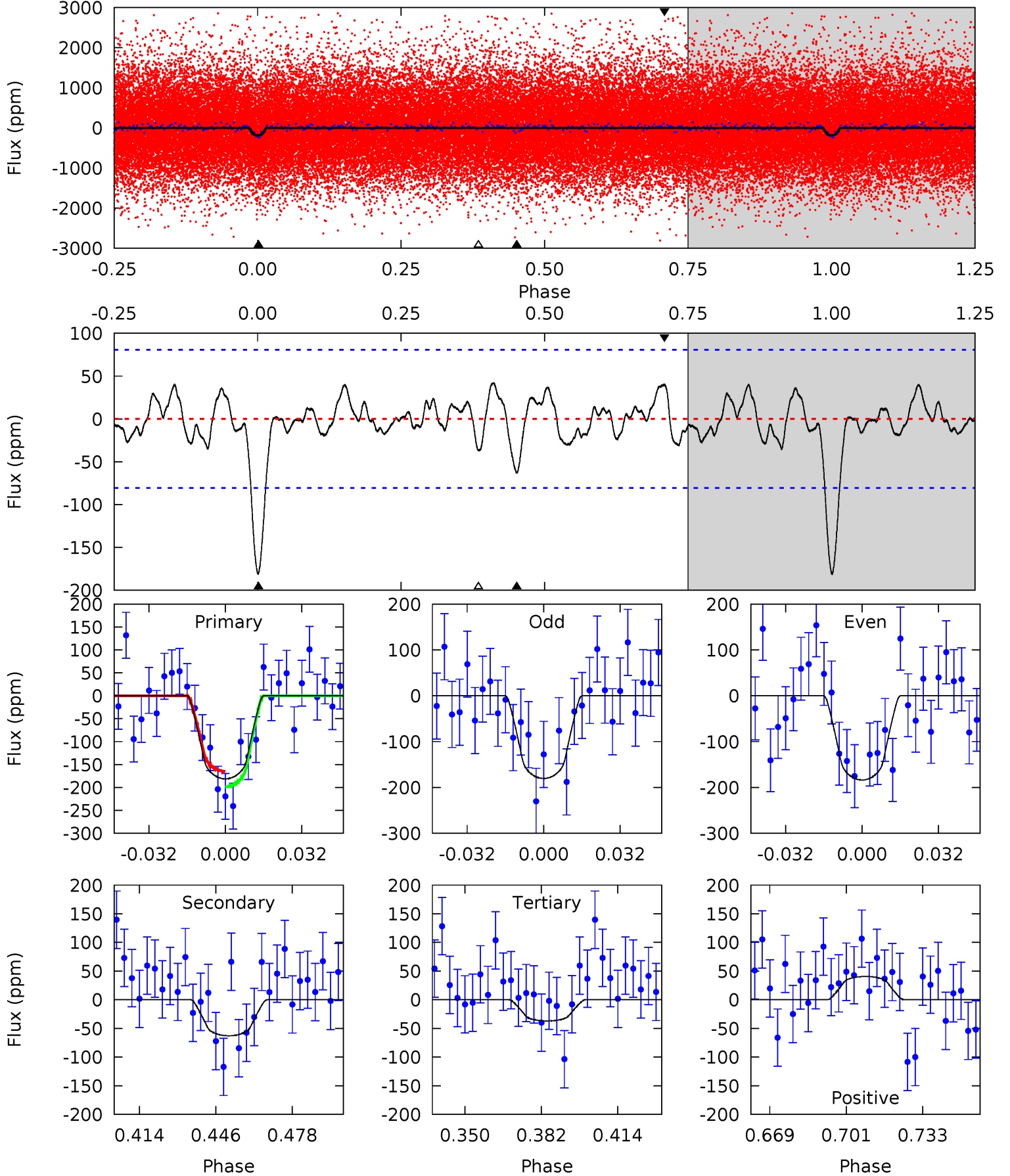




# DV Model-Shift Uniqueness Test

008261920-04, P = 3.016064 Days, E = 131.556135 Days

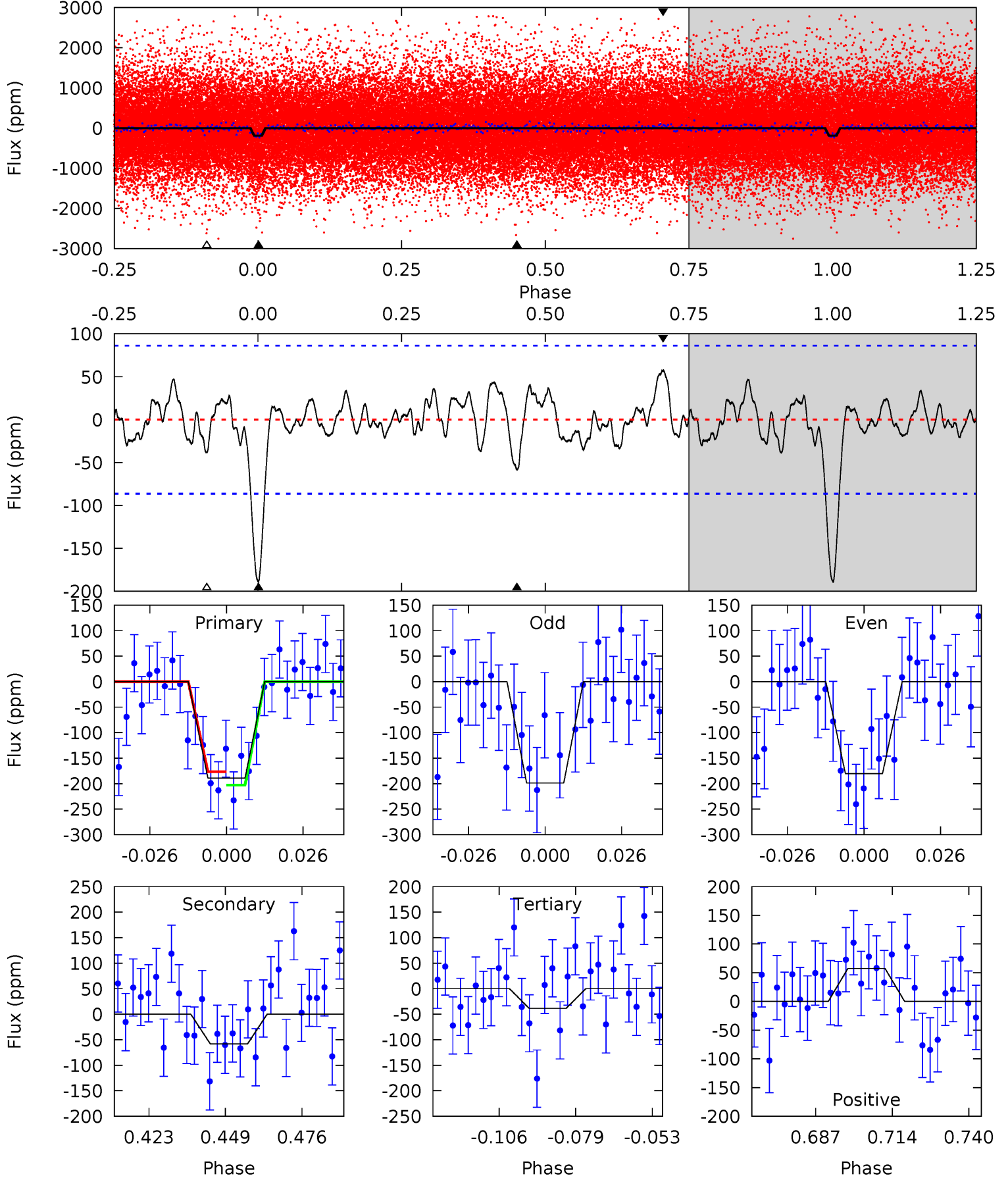
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	3.74	2.20	2.42	4.80	2.15	1.10	8.58	8.37	1.54	1.32	0.10	0.98	0.19	1.01



# Alt Model-Shift Uniqueness Test

008261920-04, P = 3.016089 Days, E = 131.551688 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
10.6	3.27	2.15	3.23	4.84	2.22	1.12	8.45	7.38	1.12	0.05	0.52	0.92	0.23	0.73



### Stellar Parameters For KIC 008261920

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4245^{+85}_{-85}$	$4.641^{+0.027}_{-0.020}$	$0.000^{+0.150}_{-0.150}$	$0.637^{+0.026}_{-0.032}$	$0.649^{+0.032}_{-0.032}$	$3.533^{+0.378}_{-0.282}$
	+2%/-2%	+1%/-0%	+inf%/-inf%	+4%/-5%	+5%/-5%	+11%/-8%
Source	SPE60	SPE60	SPE60	DSEP		

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

### Secondary Eclipse Parameters for KIC 008261920-04 / KOI 2174.04

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-63 \pm 17$	$1.44^{+1.25}_{-0.95}$	$1108^{+26}_{-23}$	$3099^{+1314}_{-515}$	$21^{+155}_{-15}$
Alt.	$-58 \pm 18$	$1.29^{+1.19}_{-0.85}$	$1109^{+26}_{-24}$	$3150^{+1370}_{-554}$	$24^{+169}_{-18}$

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

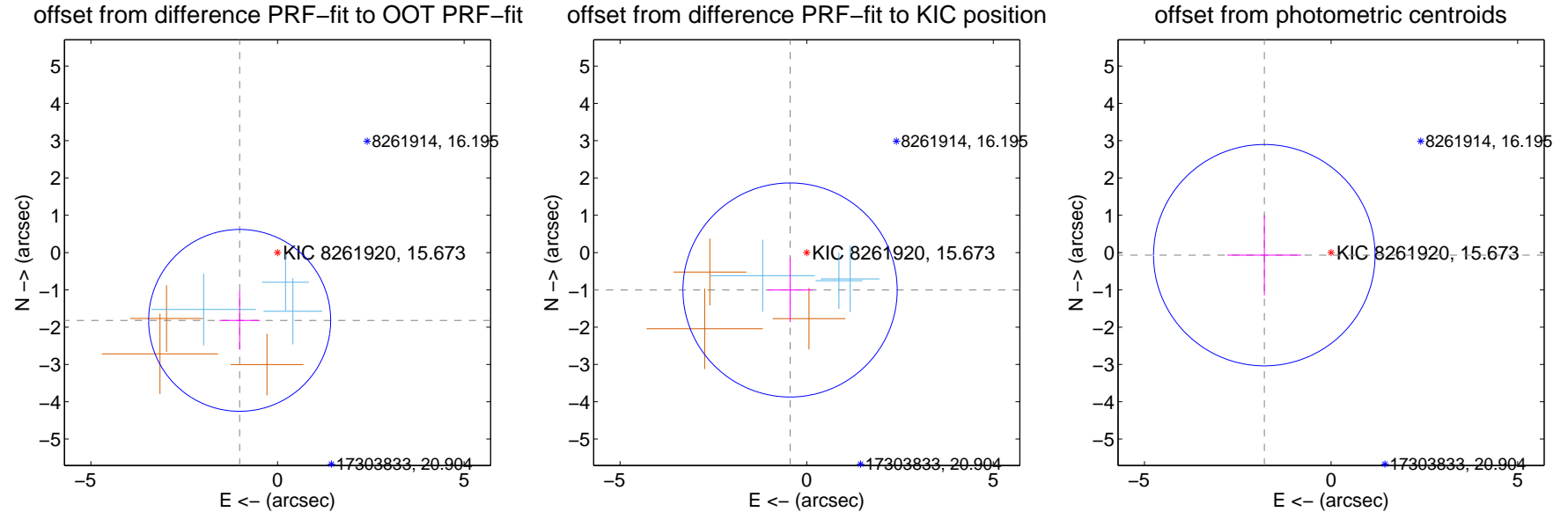
## DV Centroid Data

Supplemental centroid analysis for 008261920-04. Kepler magnitude: 15.67. Transit SNR 7.38

There are 3 quarters with good PRF difference image offsets

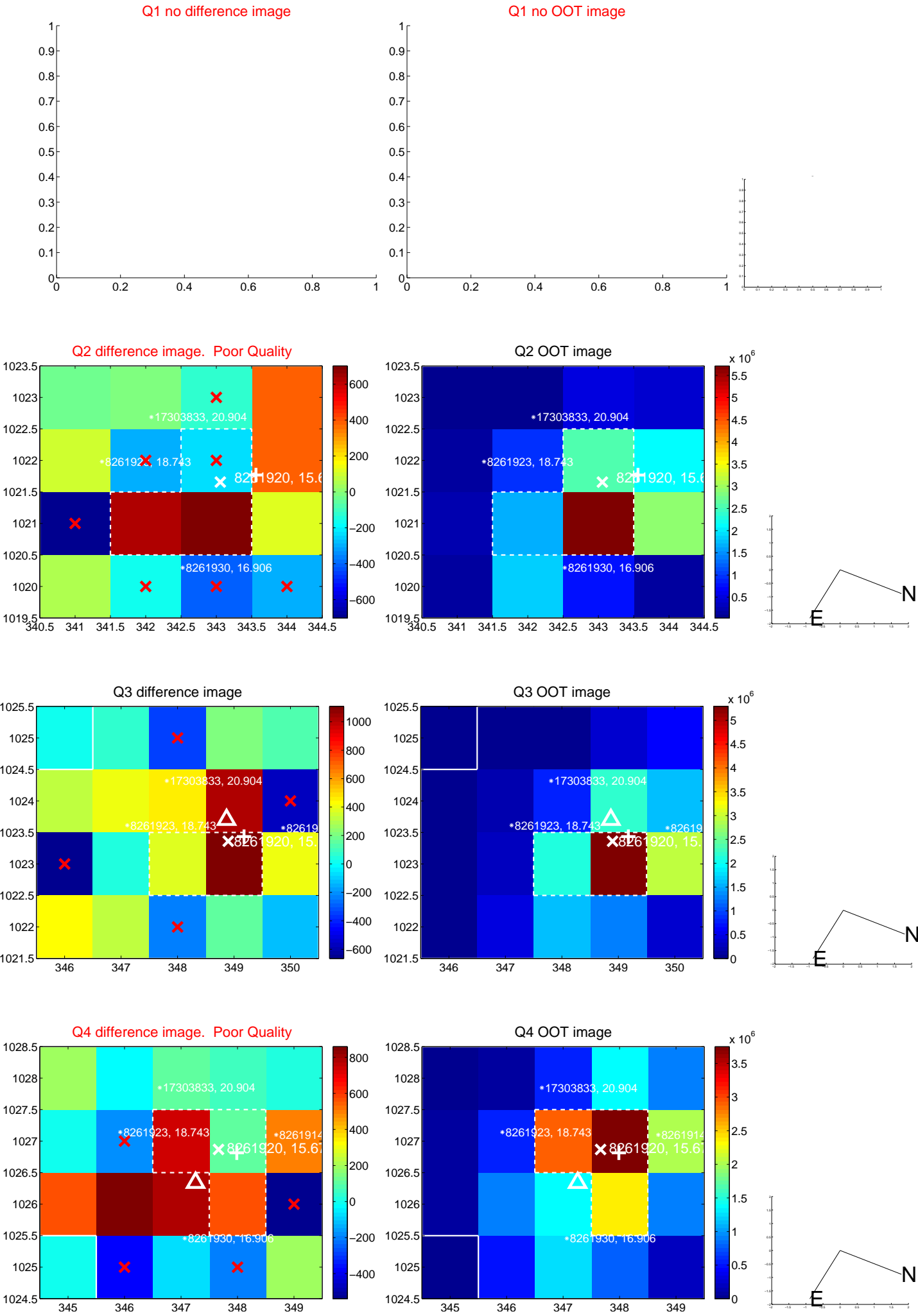
The direct PRF centroid is offset from the target star catalog position by about 0.83 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.082 \pm 0.813$	2.56	$1.014 \pm 0.542$	$-1.818 \pm 0.782$
PRF-fit source offset from KIC position	$1.098 \pm 0.957$	1.15	$0.446 \pm 0.604$	$-1.003 \pm 0.862$
photometric centroid source offset	$1.79 \pm 0.99$	1.81	$1.79 \pm 0.99$	$-0.07 \pm 1.08$

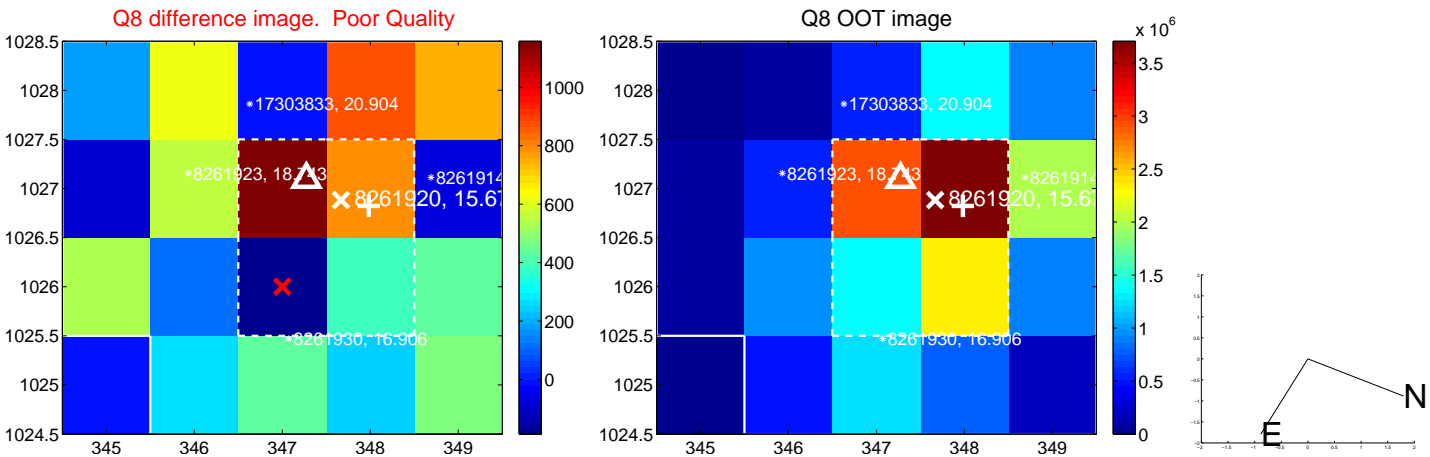
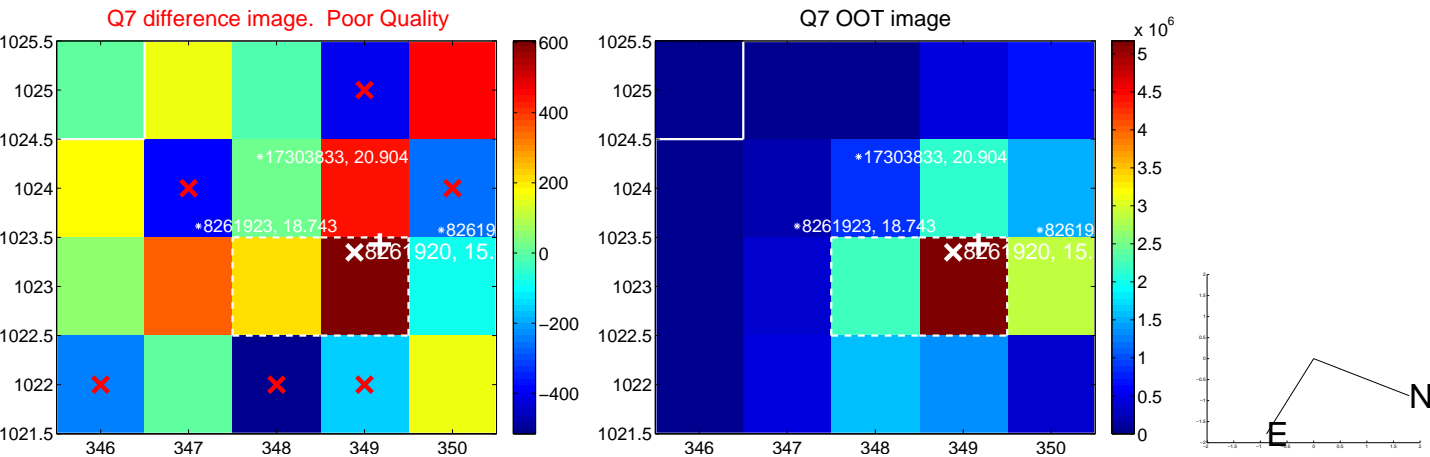
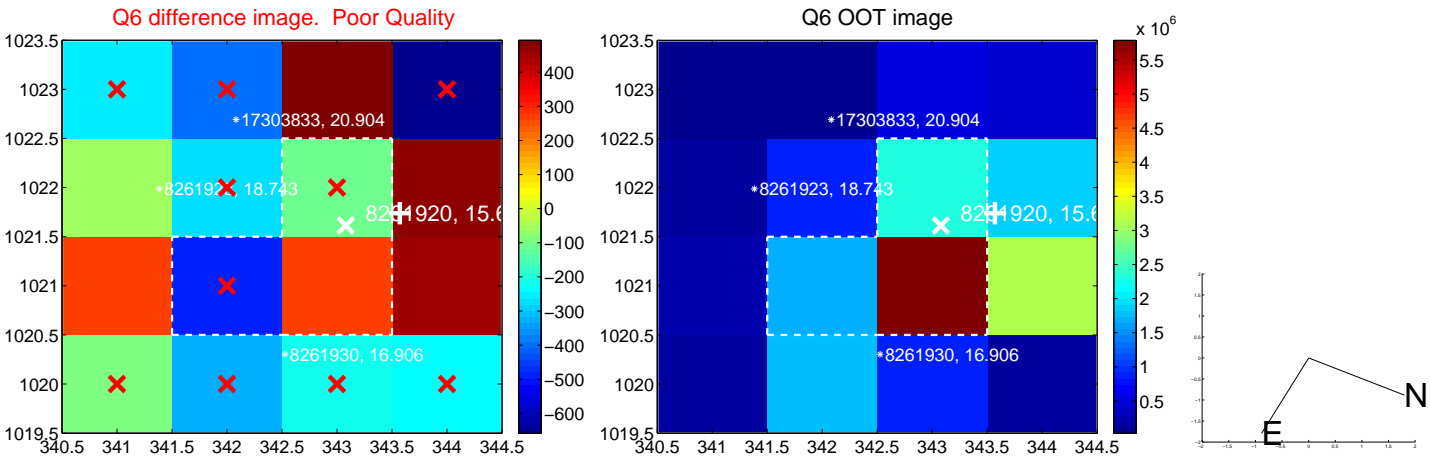
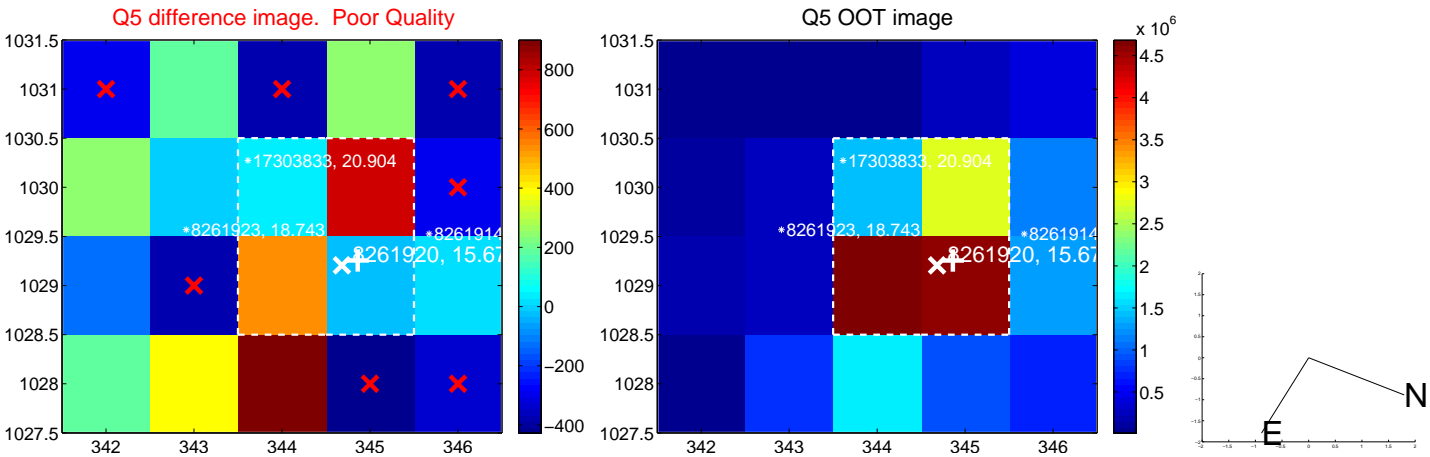


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

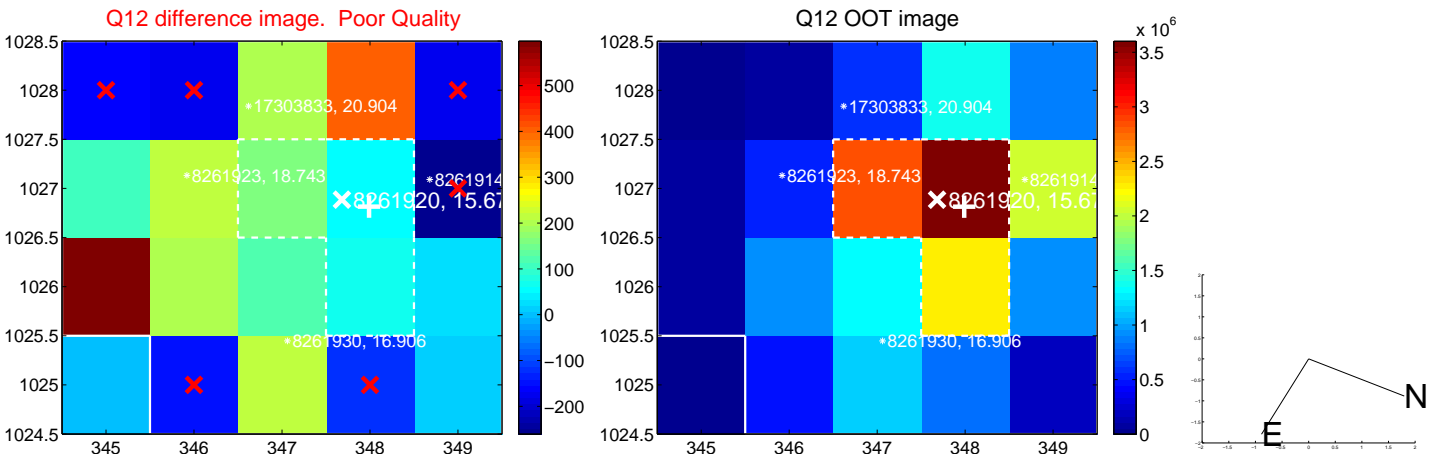
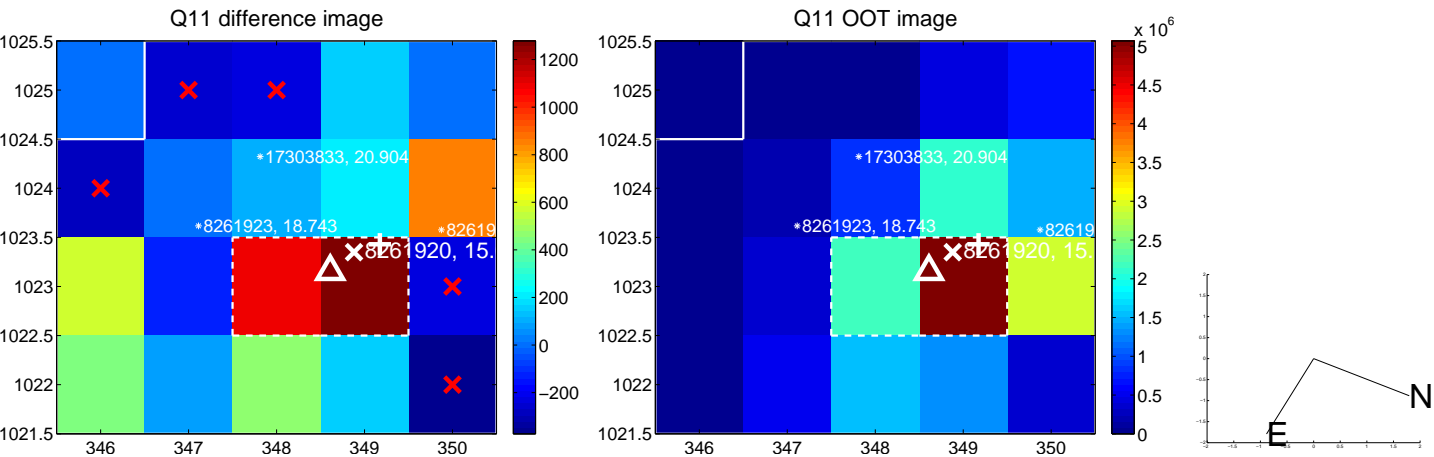
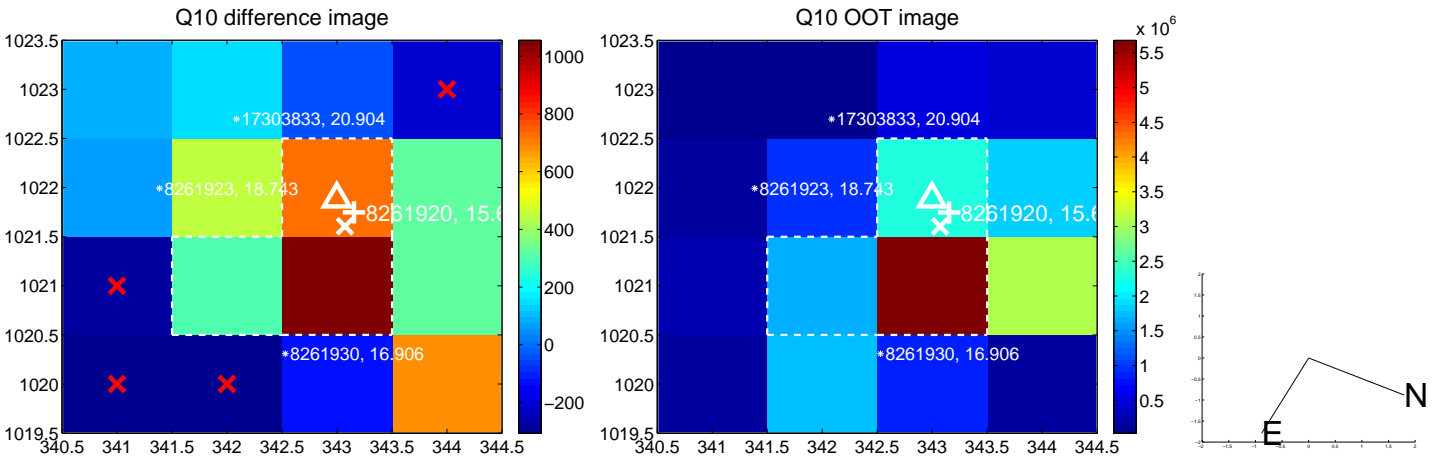
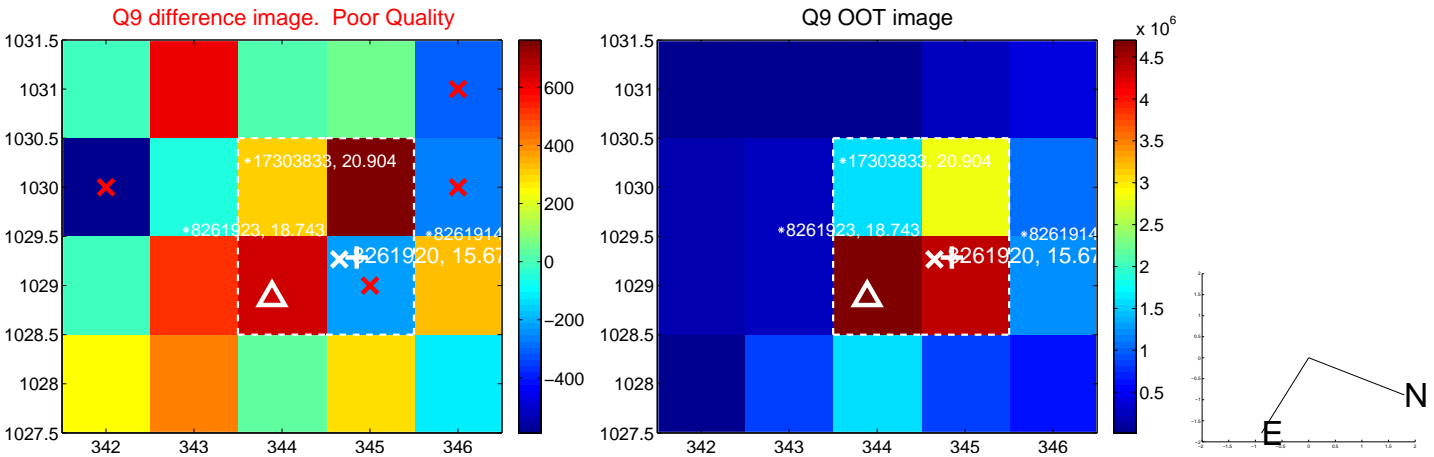
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

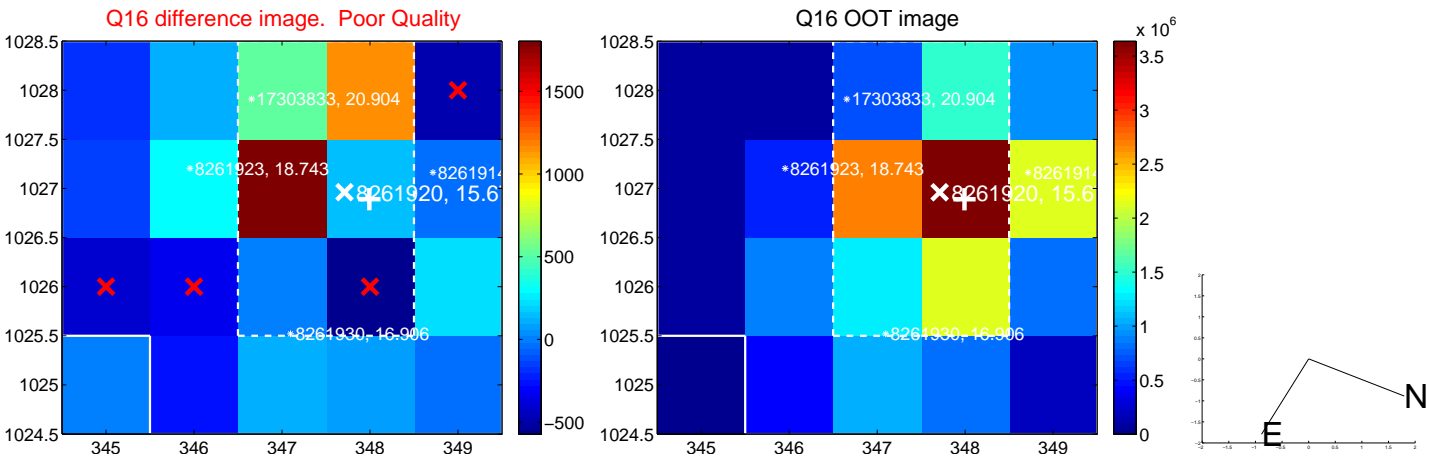
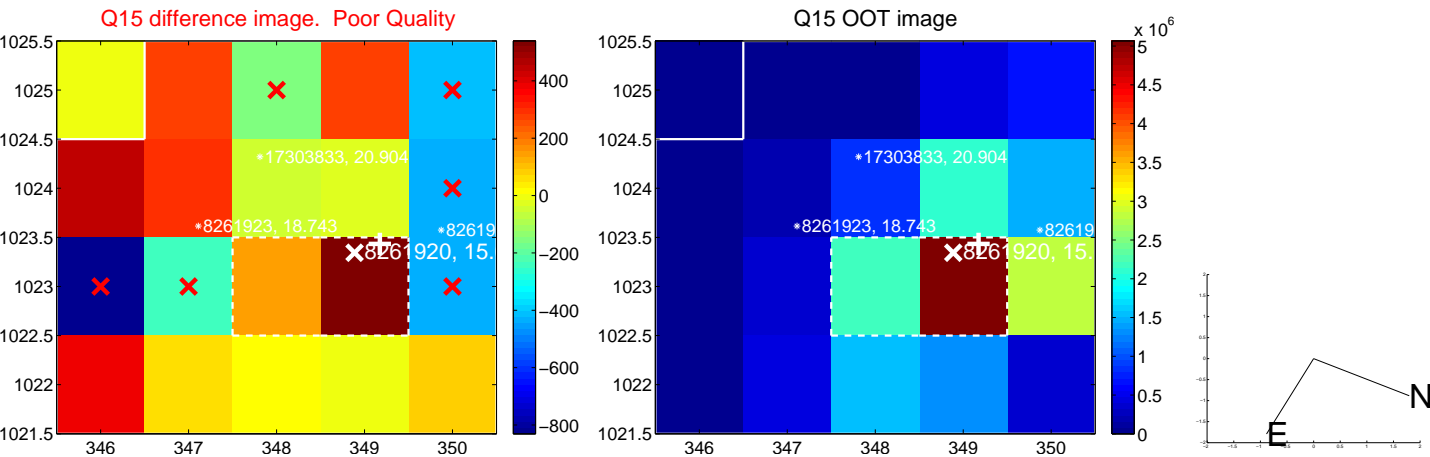
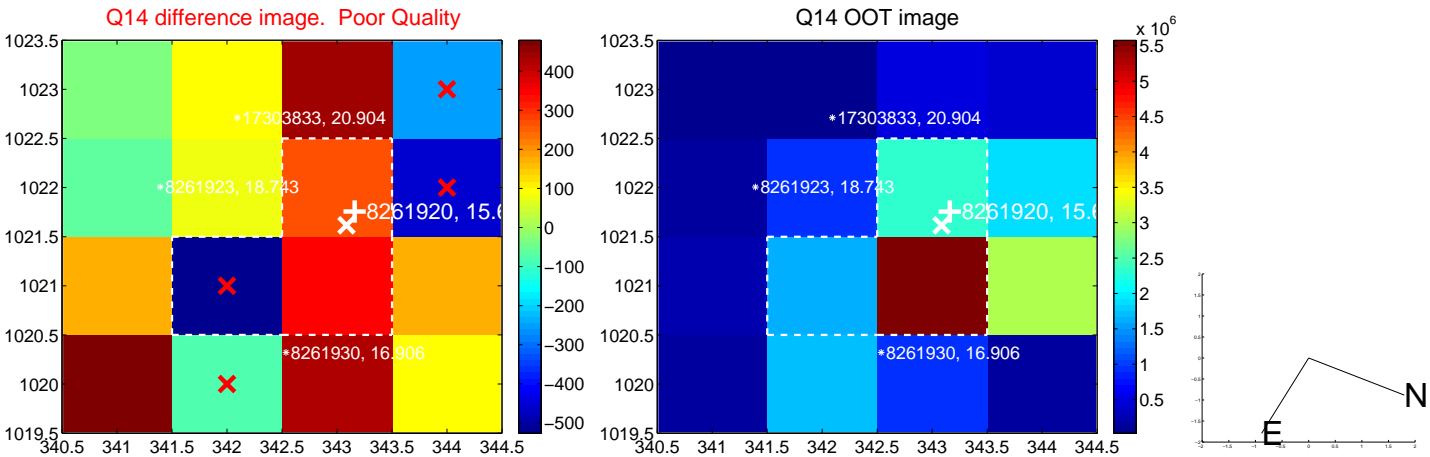
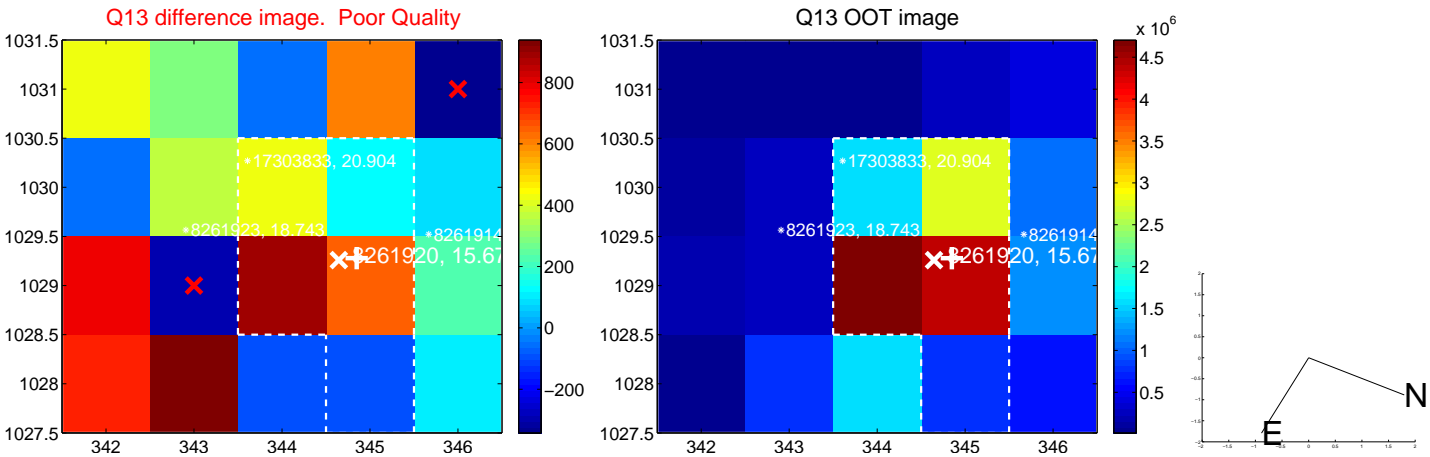


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

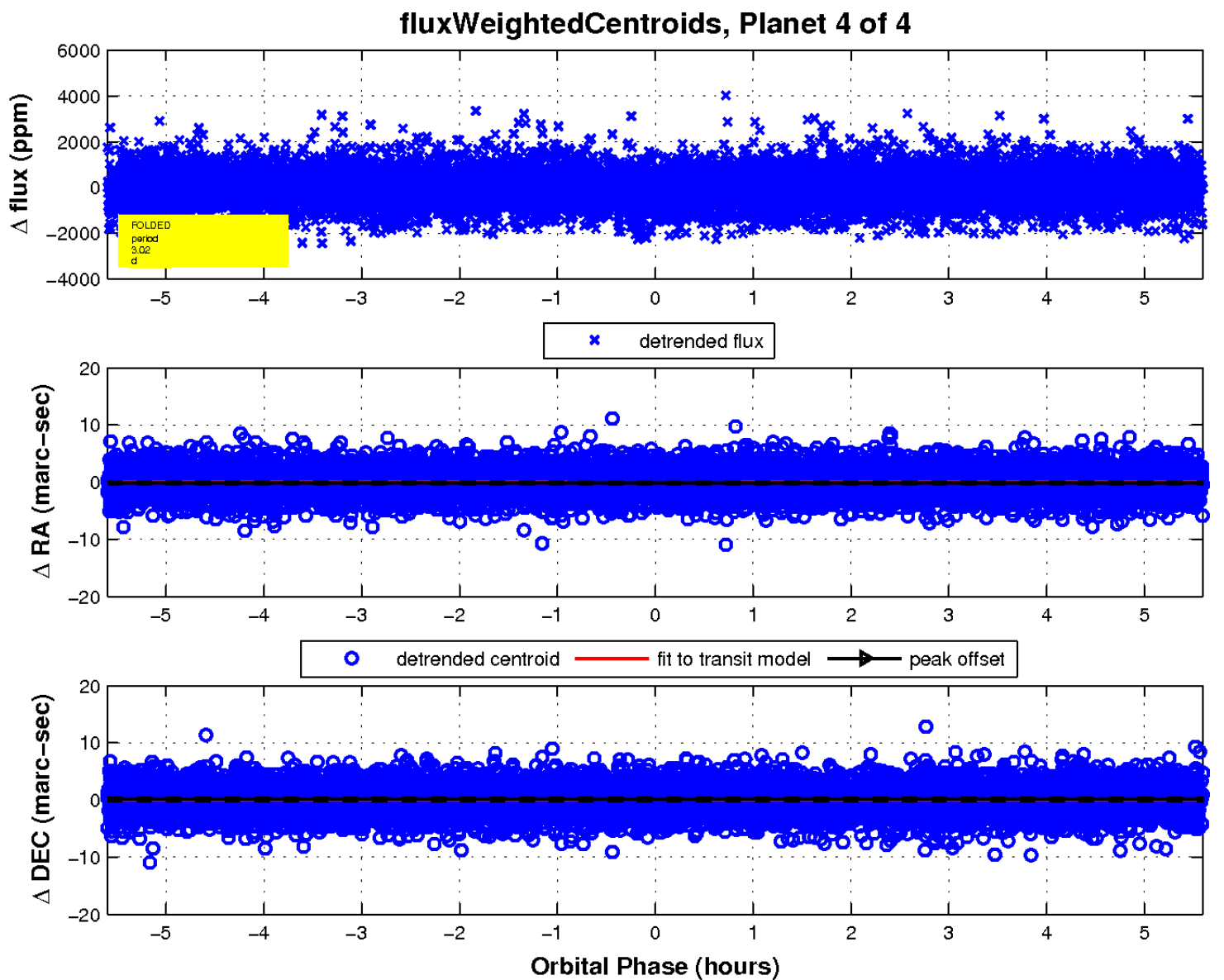
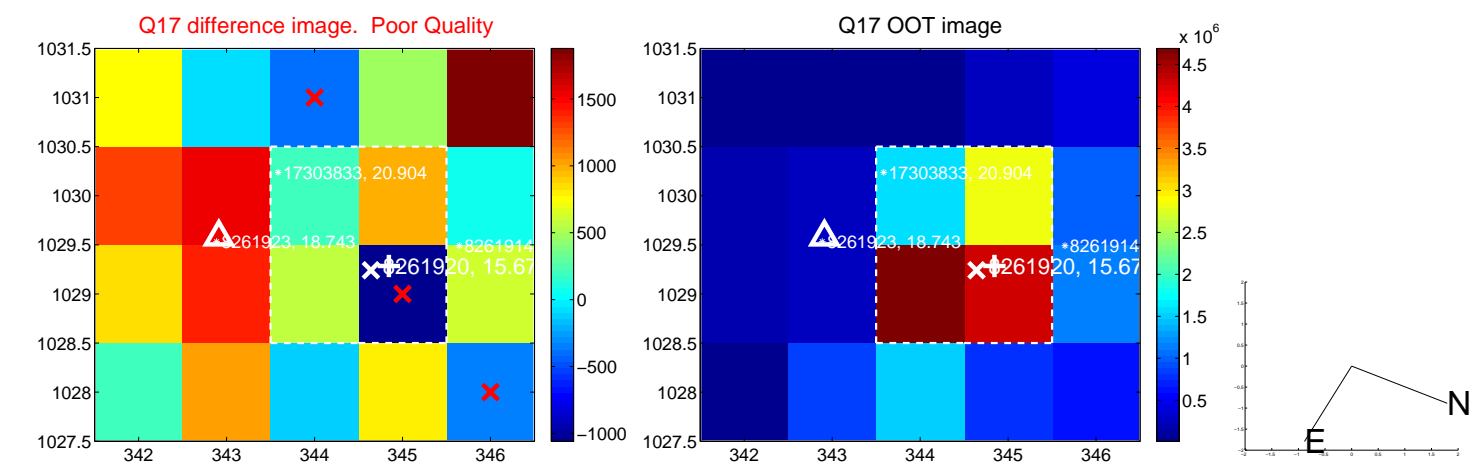




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

