

# KIC 009026611

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009026611-01	OBS	No	1.245824	132.080280	110.3	5.573	14.3	14.1	2.05	7505	2.59	16429.54
009026611-02	OBS	No	0.568045	131.792169	159.8	1.137	7.9	8.4	2.05	7505	2.96	46815.55

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009026611-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009026611-02	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—HALO_GHOST

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

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

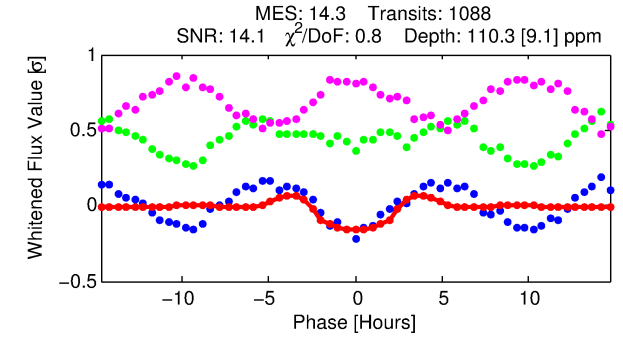
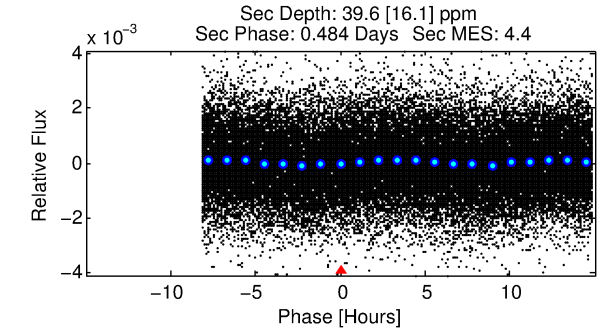
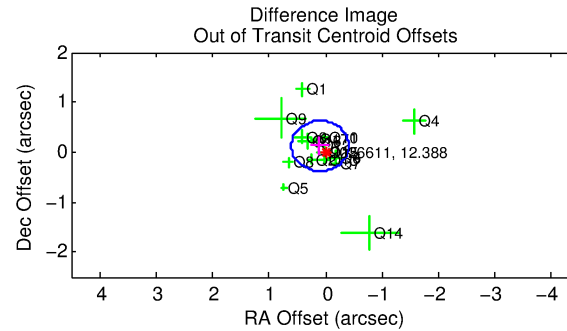
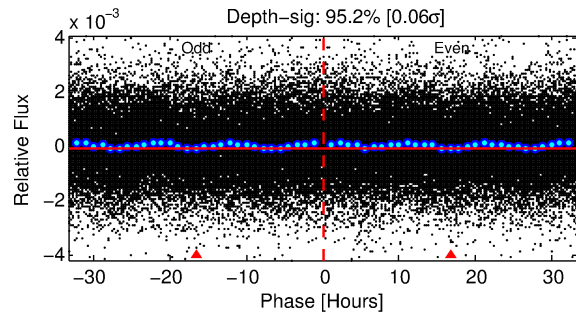
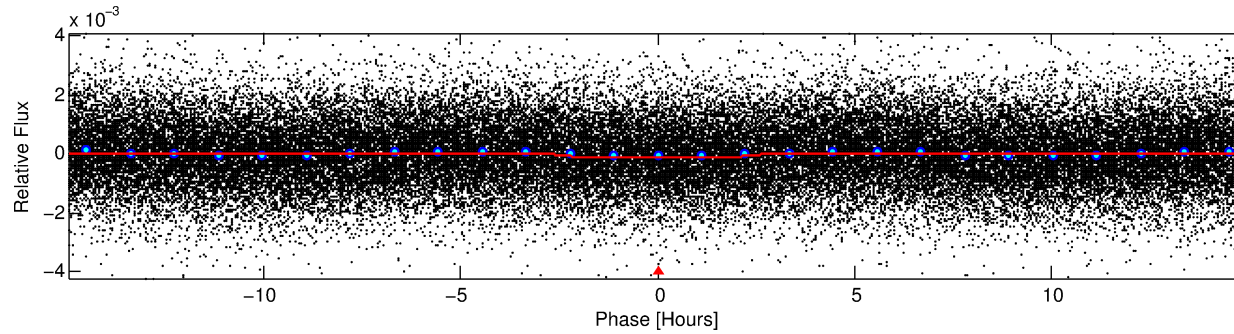
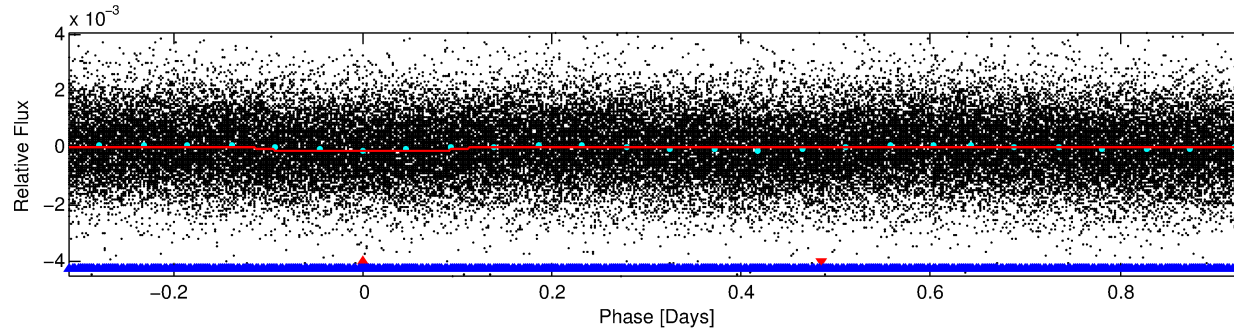
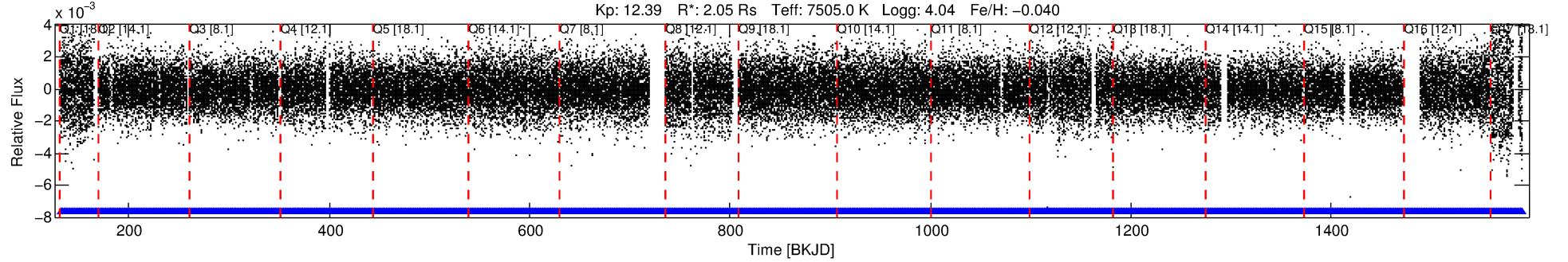
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009026611-01

No Significant Match Found

# DV One-Page Summary

KIC: 9026611 Candidate: 1 of 2 Period: 1.246 d



## DV Fit Results:

Period = 1.24582 [0.00001] d  
Epoch = 132.0803 [0.0046] BKJD  
Rp/R\* = 0.0116 [0.0015]  
a/R\* = 1.15 [0.23]  
b = 0.94 [0.09]  
Seff = 16429.54 [5838.15]  
Teq = 2887 [256] K  
Rp = 2.59 [0.76] Re  
a = 0.0269 [0.0058] AU  
Ag = 2.35 [1.35] [1.00 $\sigma$ ]  
Teffp = 5526 [707] K [3.51 $\sigma$ ]

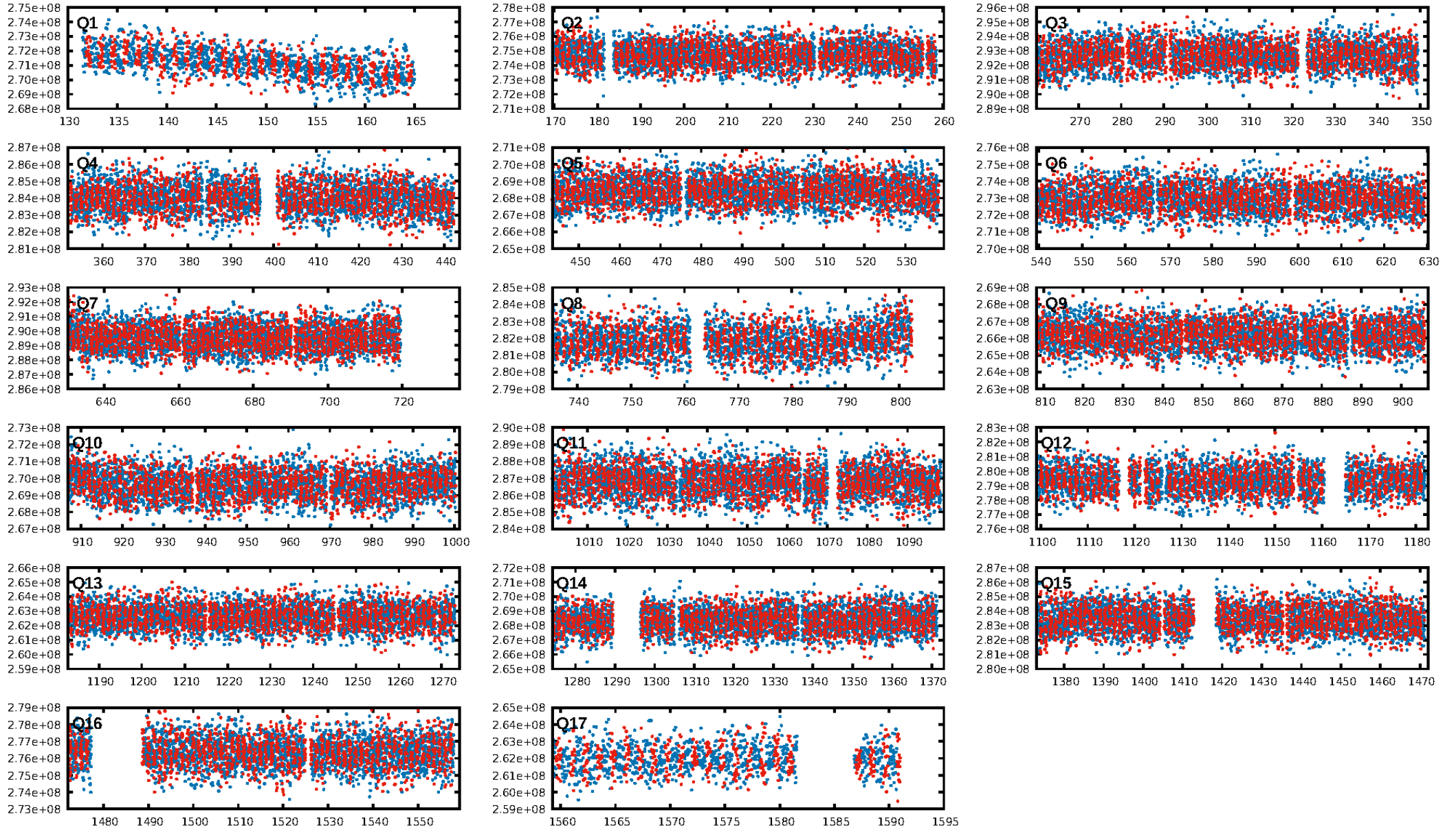
## DV Diagnostic Results:

ShortPeriod-sig: 99.6% [2.86 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 9.98e-65  
RollingBand-fgt: 1.00 [1039/1039]  
GhostDiagnostic-chr: 5.675  
Centroid-sig: 72.6%  
Centroid-so: 0.148 arcsec [1.52 $\sigma$ ]  
OotOffset-rm: 0.161 arcsec [0.95 $\sigma$ ]  
KicOffset-rm: 0.104 arcsec [0.59 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.88 [15/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:15:53 Z

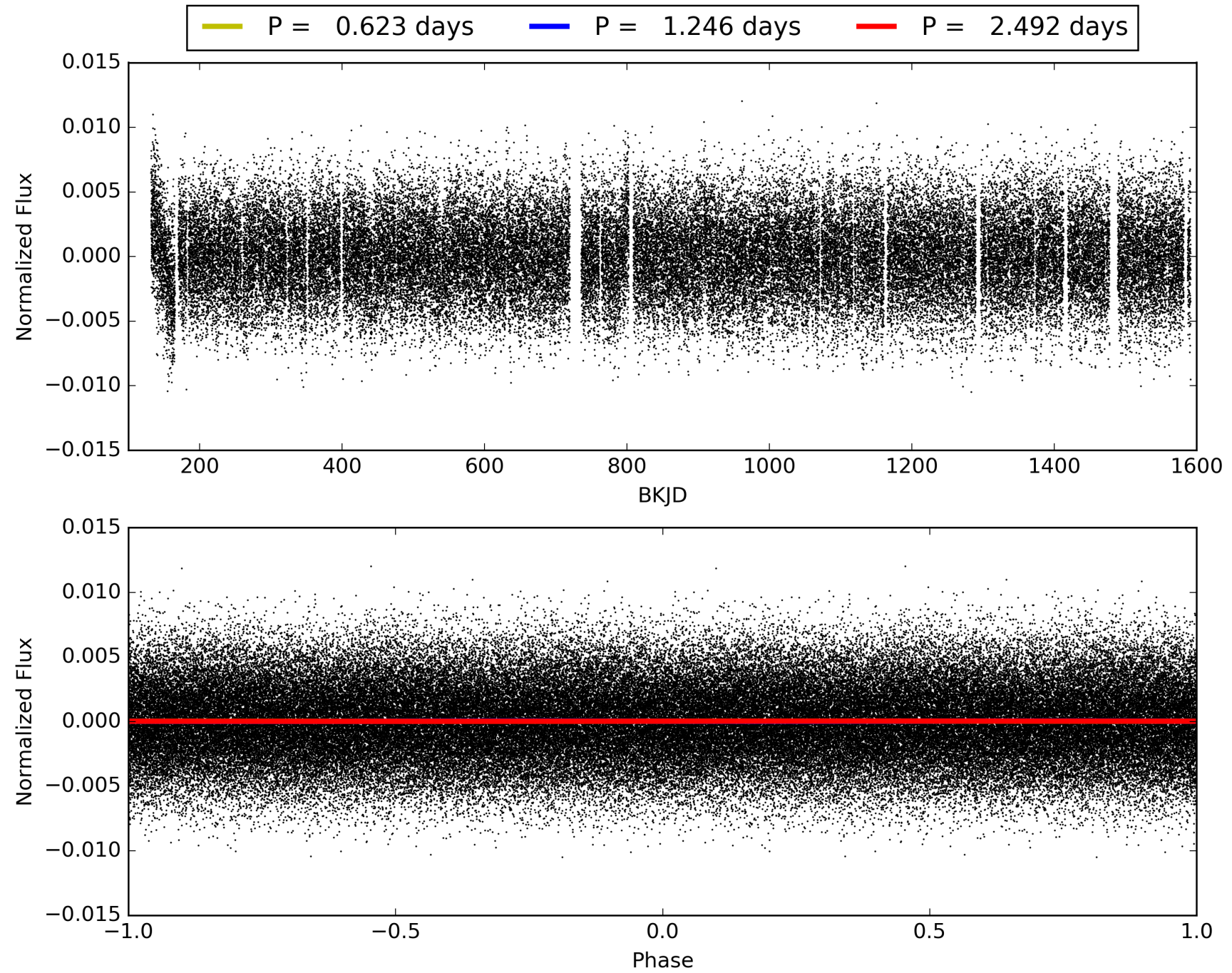
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009026611-01, PDC Light Curves



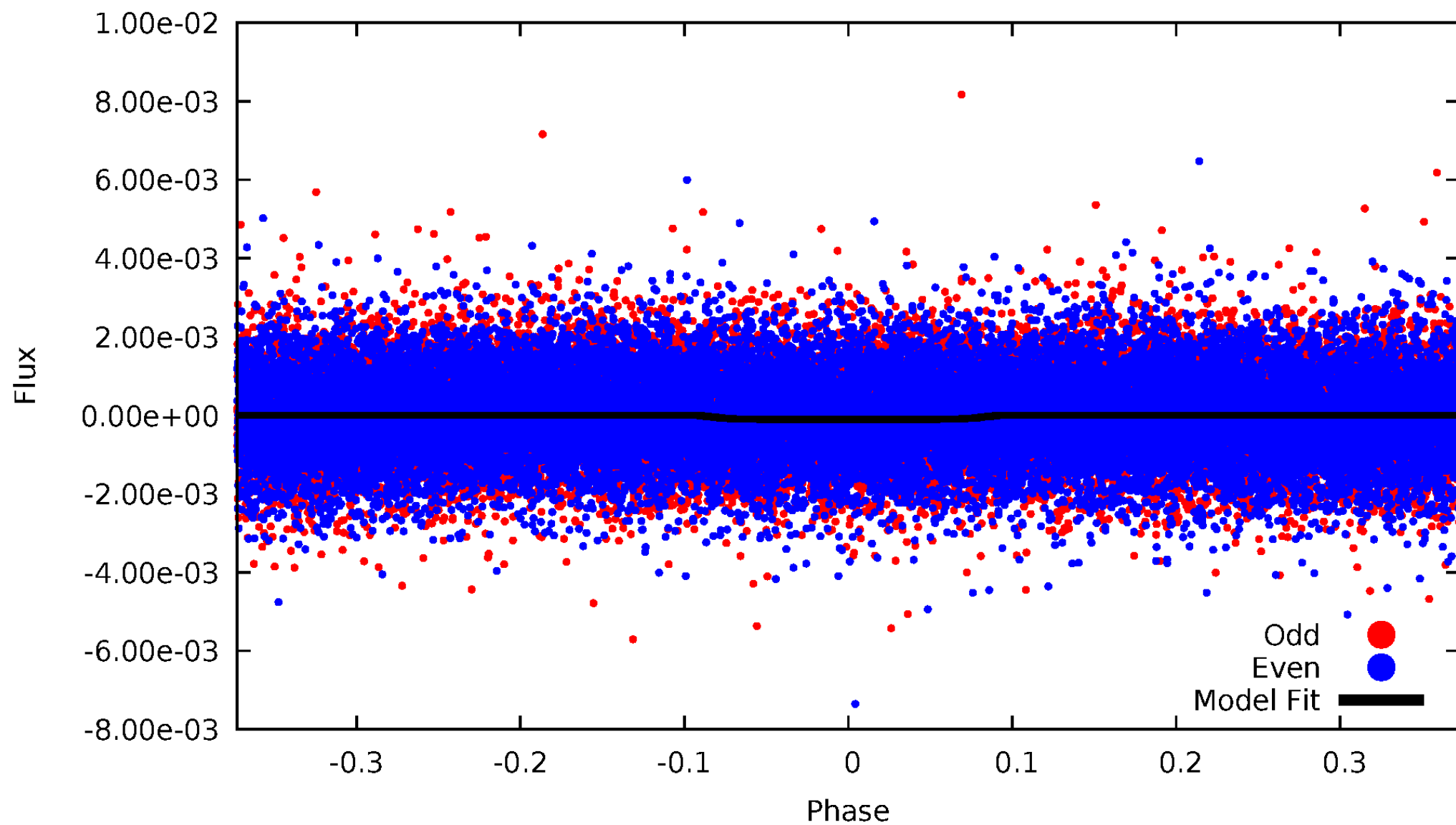


TCE 009026611-01



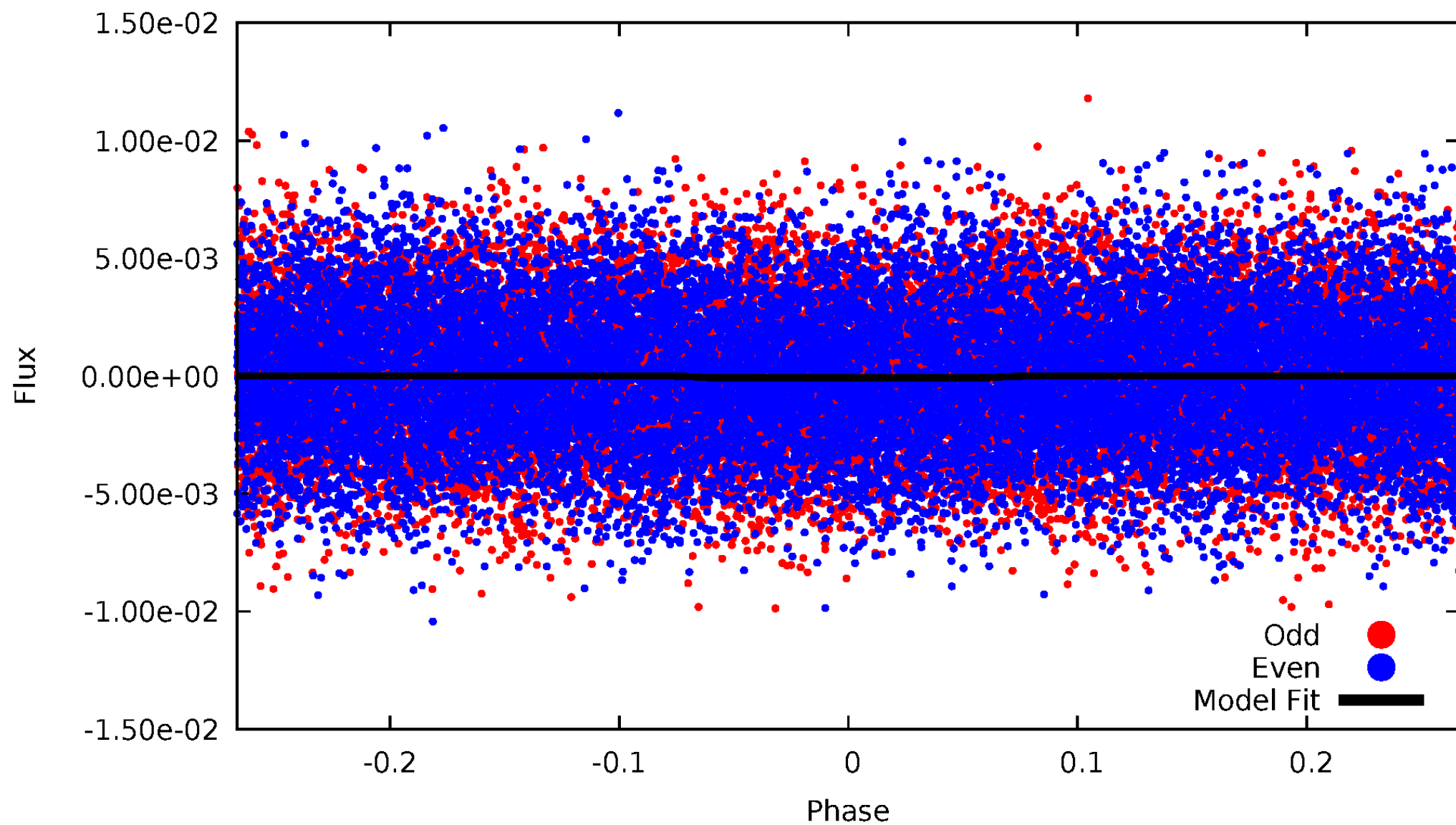
# DV Odd/Even

TCE 009026611-01



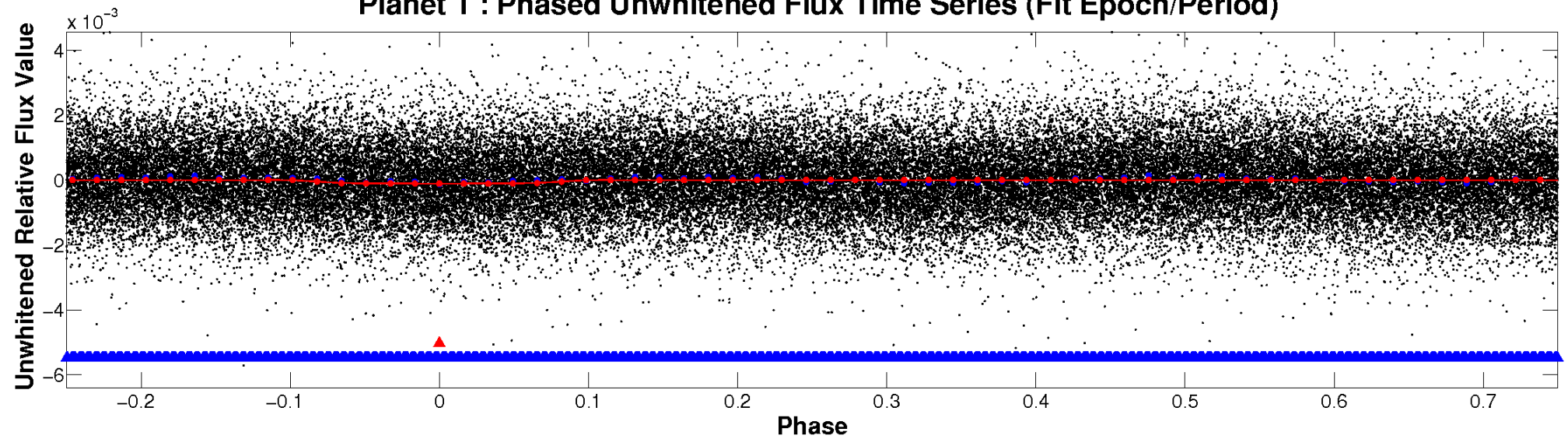
# ALT Odd/Even

TCE 009026611-01

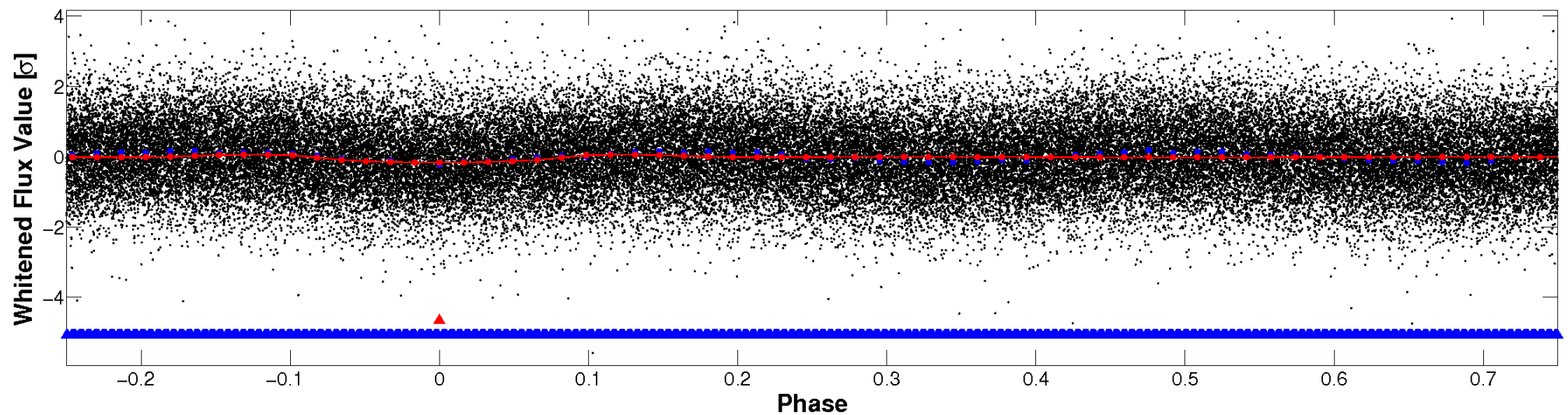


# Non-Whitened Vs. Whitened Light Curve

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



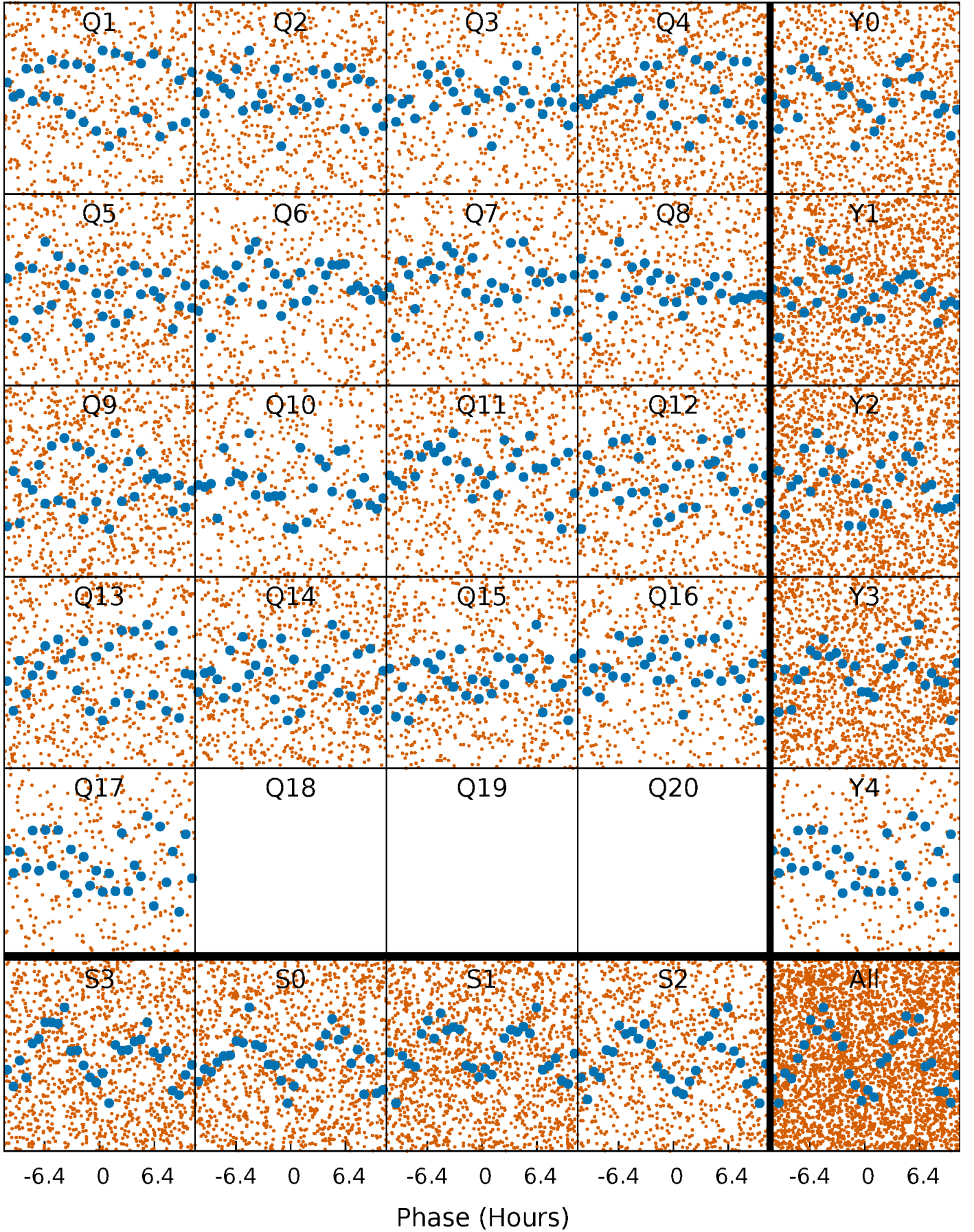
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

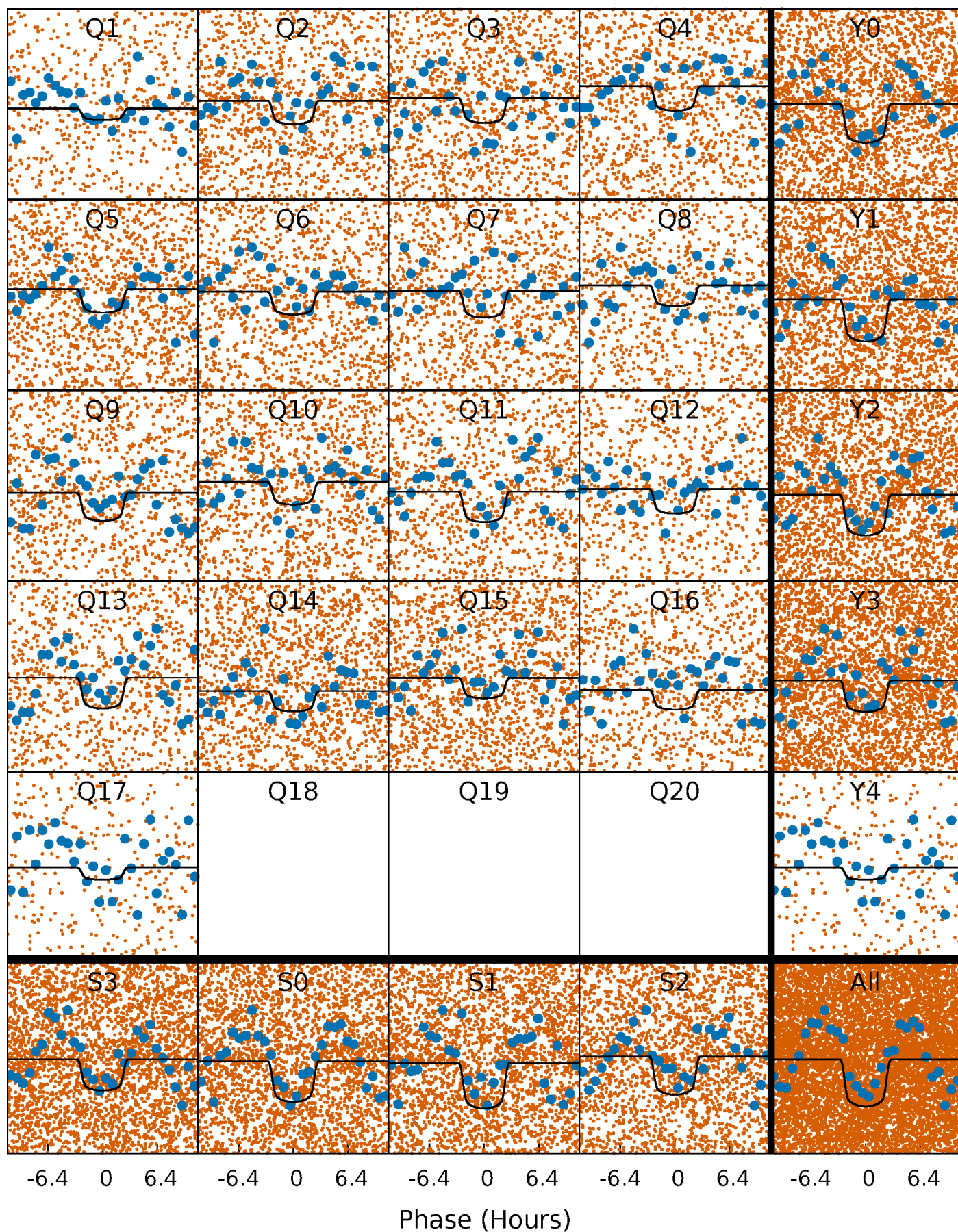
TCE 009026611-01 P= 1.245824 Days  $T_0=132.080280$  (BKJD)





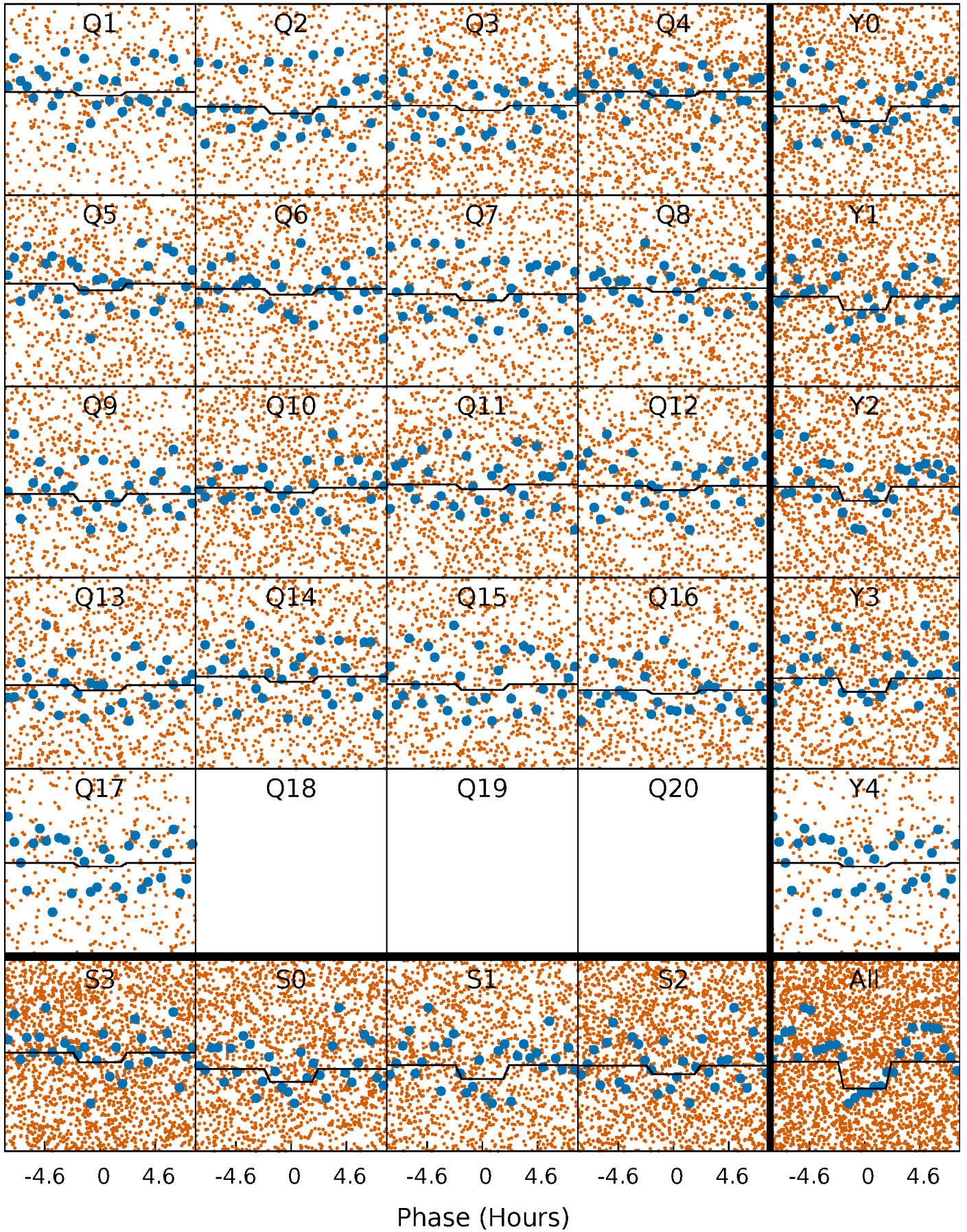
# DV Quarter-Phased Transit Curves

TCE 009026611-01 P= 1.245824 Days  $T_0=132.080280$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009026611-01 P= 1.245804 Days  $T_0=132.090419$  (BKJD)

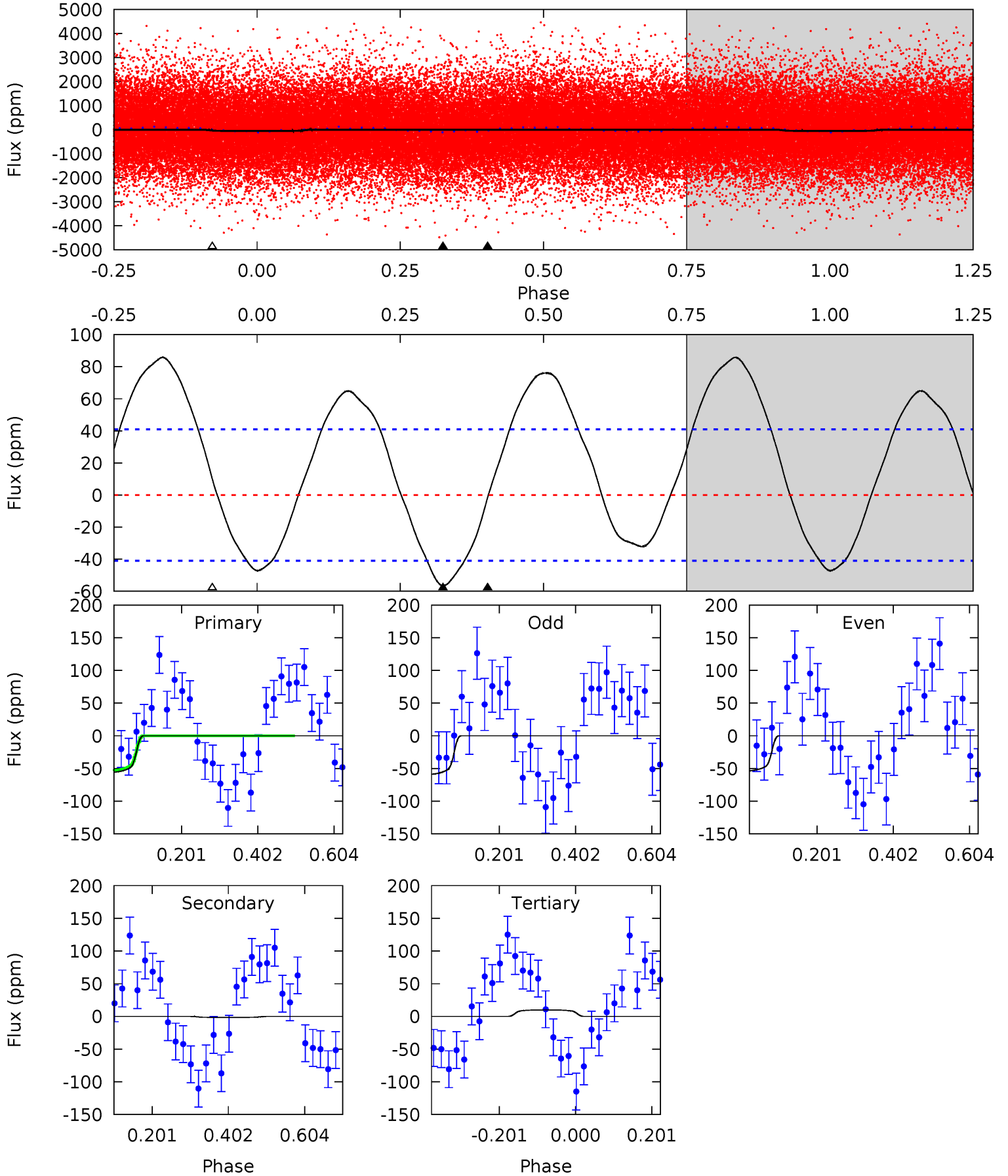




# DV Model-Shift Uniqueness Test

009026611-01, P = 1.245824 Days, E = 130.834456 Days

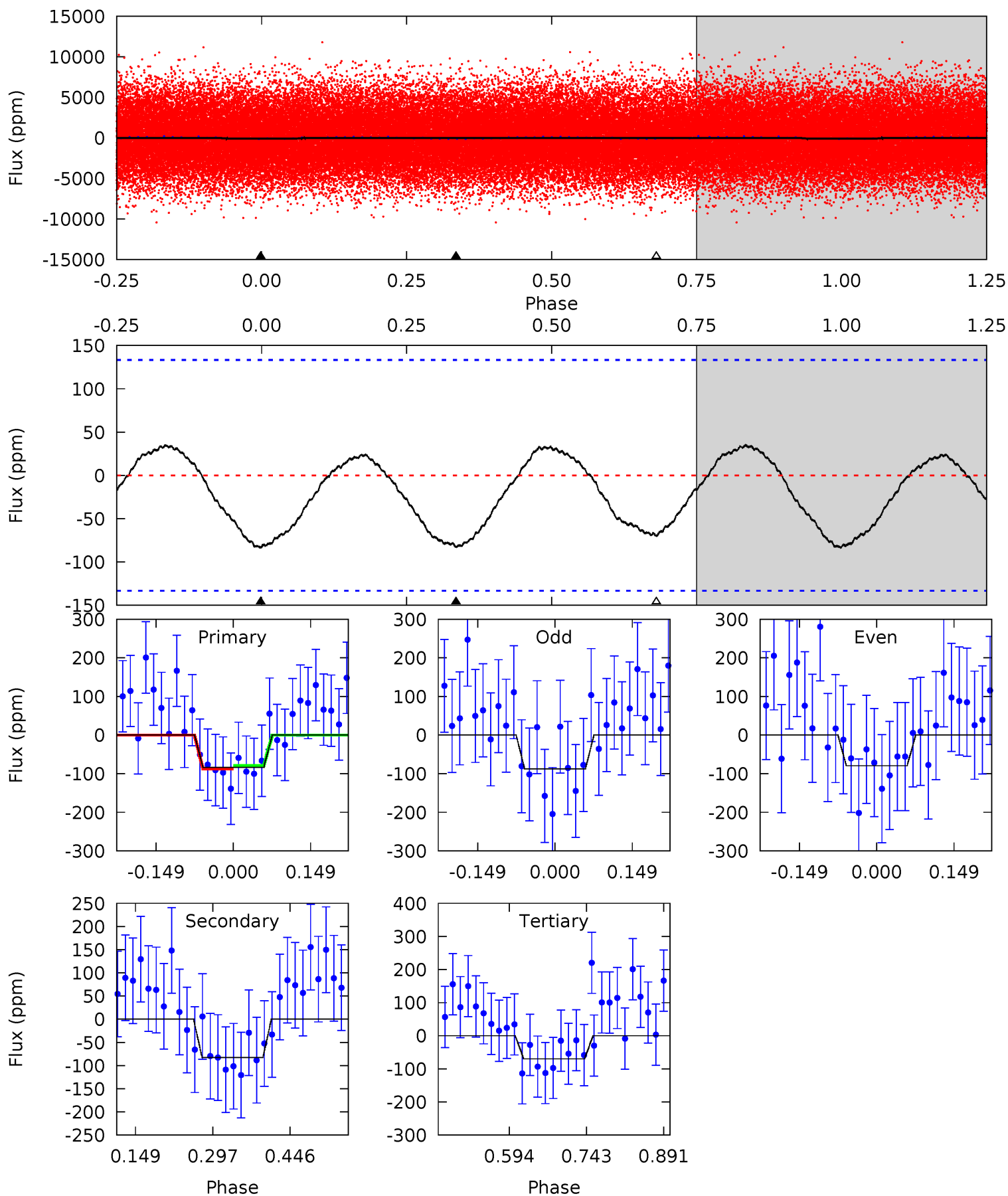
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.10	0.16	-1.07	0	4.42	1.28	4.58	7.17	6.10	1.24	0.16	0.29	0.93	0.60	0.32



# Alt Model-Shift Uniqueness Test

009026611-01, P = 1.245804 Days, E = 130.844615 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
2.81	2.78	2.35	0	4.48	1.44	1.21	0.45	2.81	0.43	2.78	0.14	0.88	0.30	0.15





### Stellar Parameters For KIC 009026611

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7505^{+209}_{-314}$	$4.040^{+0.170}_{-0.170}$	$-0.040^{+0.200}_{-0.350}$	$2.046^{+0.533}_{-0.480}$	$1.674^{+0.200}_{-0.275}$	$0.275^{+0.283}_{-0.121}$
	+3%/-4%	+4%/-4%	+500%/-875%	+26%/-23%	+12%/-16%	+103%/-44%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 009026611-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-2 \pm 9$	$2.56^{+0.52}_{-0.44}$	$4018^{+278}_{-304}$	$-3488^{+7231}_{-887}$	$0.078^{+0.583}_{-0.544}$
Alt.	$-83 \pm 30$	$2.02^{+0.52}_{-0.39}$	$4021^{+298}_{-283}$	$7351^{+1258}_{-1109}$	$7.728^{+5.527}_{-3.472}$

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

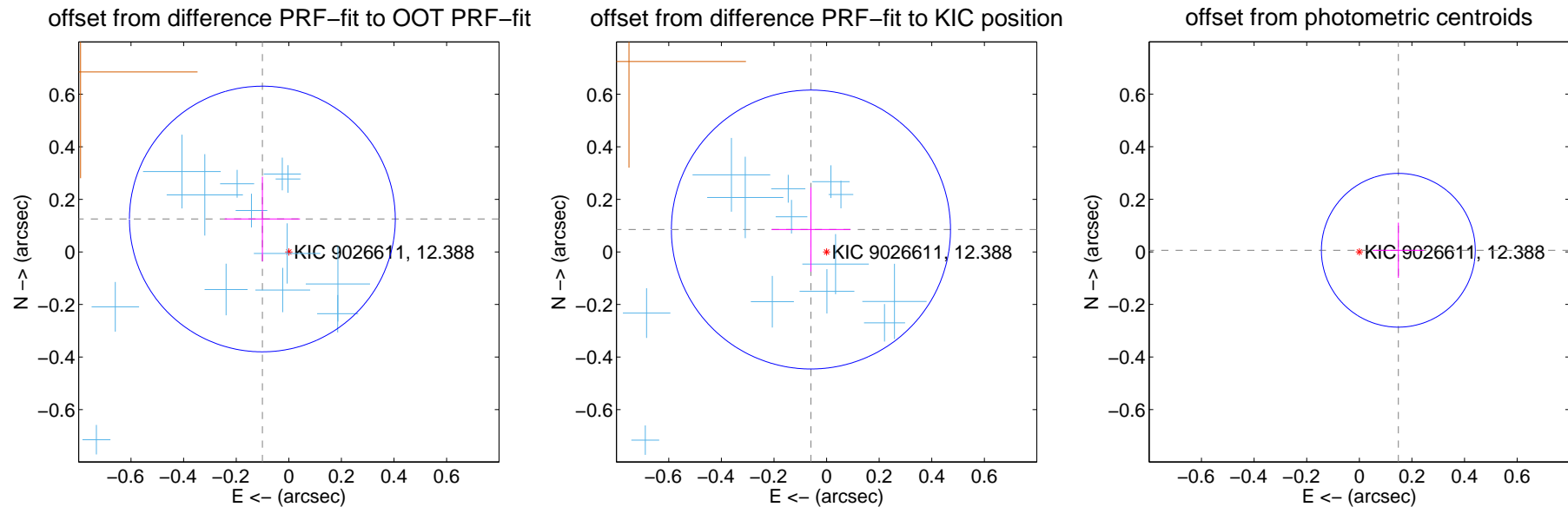
## DV Centroid Data

Supplemental centroid analysis for 009026611-01. Kepler magnitude: 12.39. Transit SNR 14.10

There are 15 quarters with good PRF difference image offsets

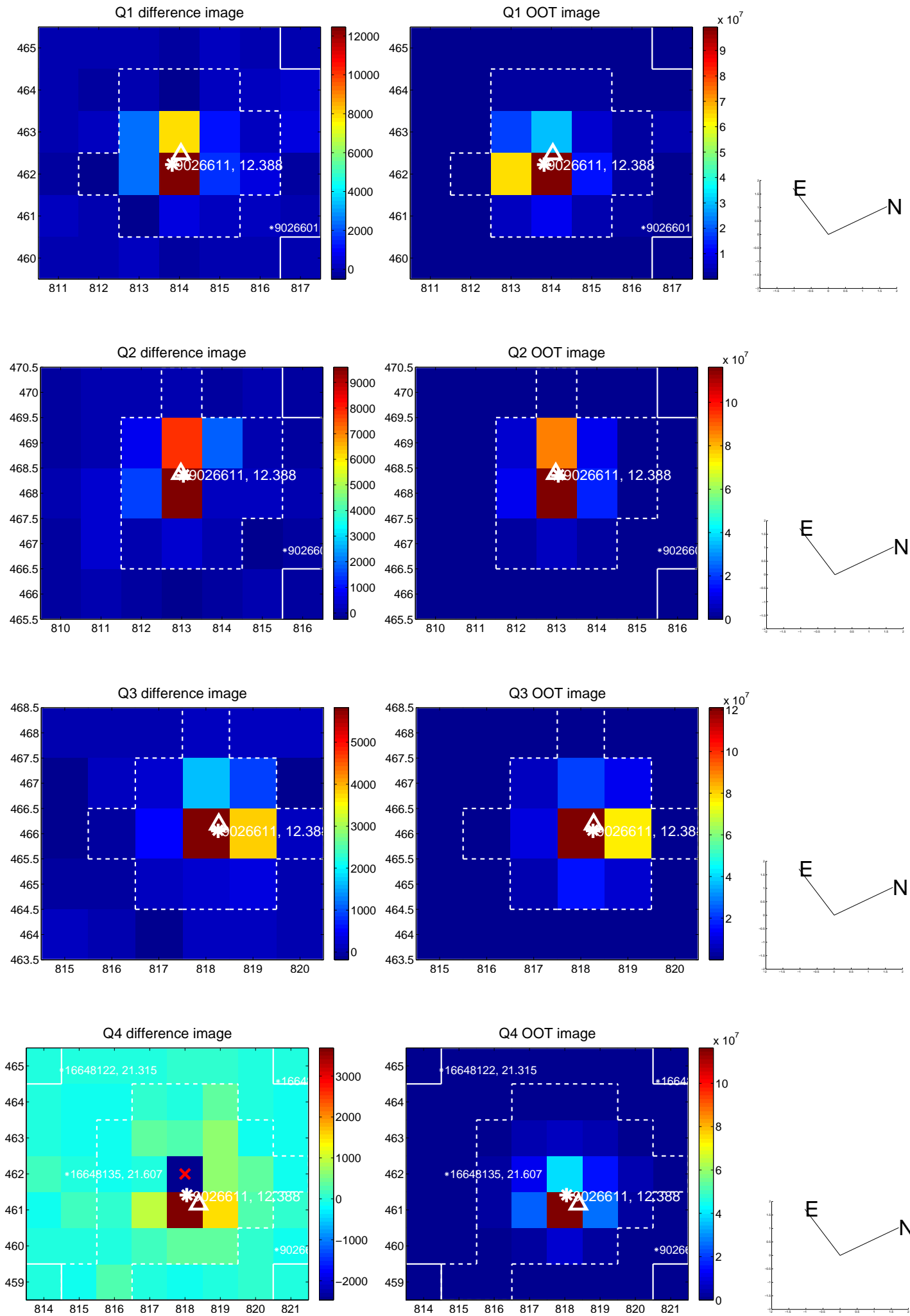
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.161 \pm 0.168$	0.95	$0.101 \pm 0.143$	$0.125 \pm 0.161$
PRF-fit source offset from KIC position	$0.104 \pm 0.177$	0.59	$0.059 \pm 0.150$	$0.085 \pm 0.160$
photometric centroid source offset	$0.15 \pm 0.10$	1.52	$-0.15 \pm 0.10$	$0.01 \pm 0.10$

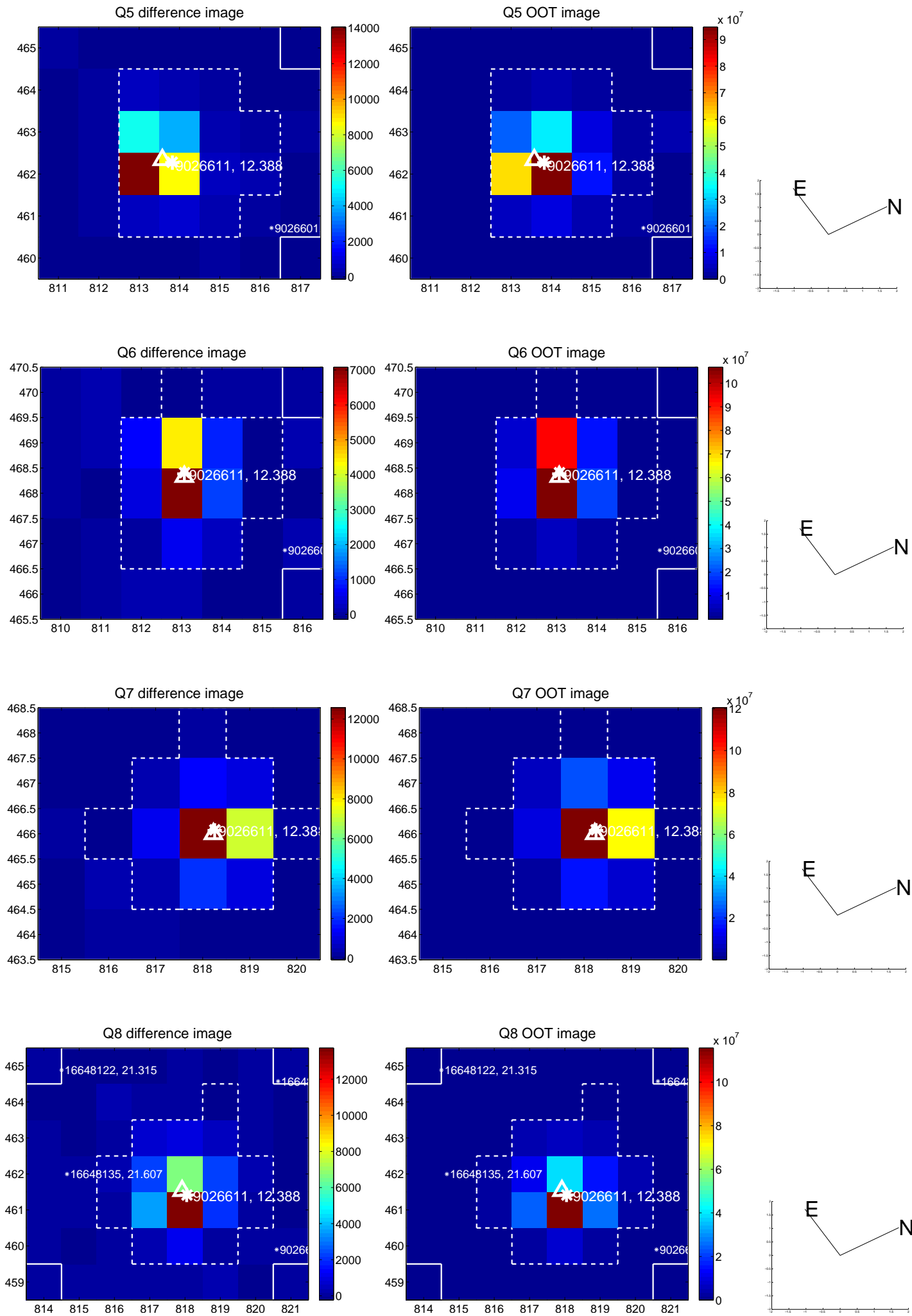


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

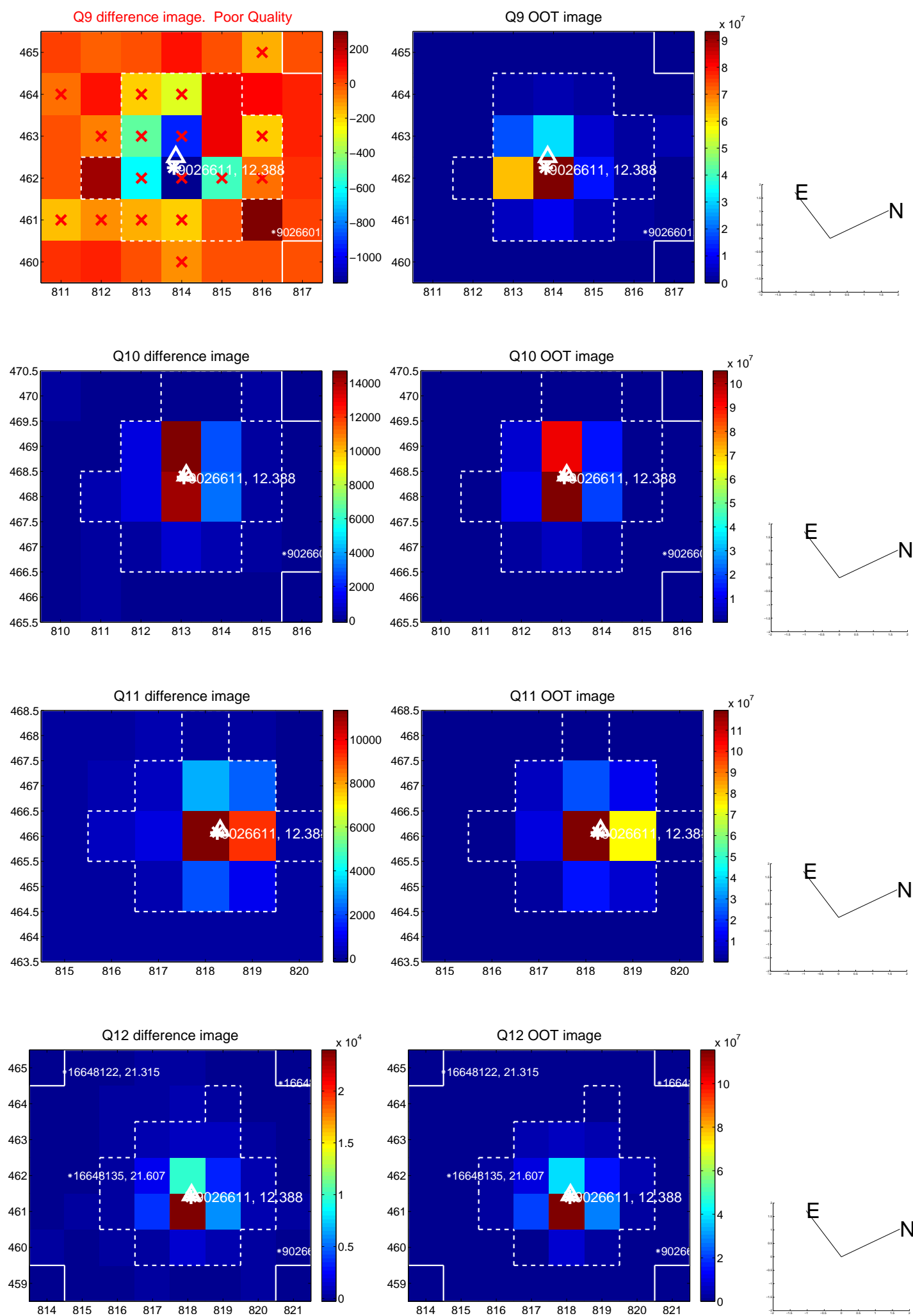


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

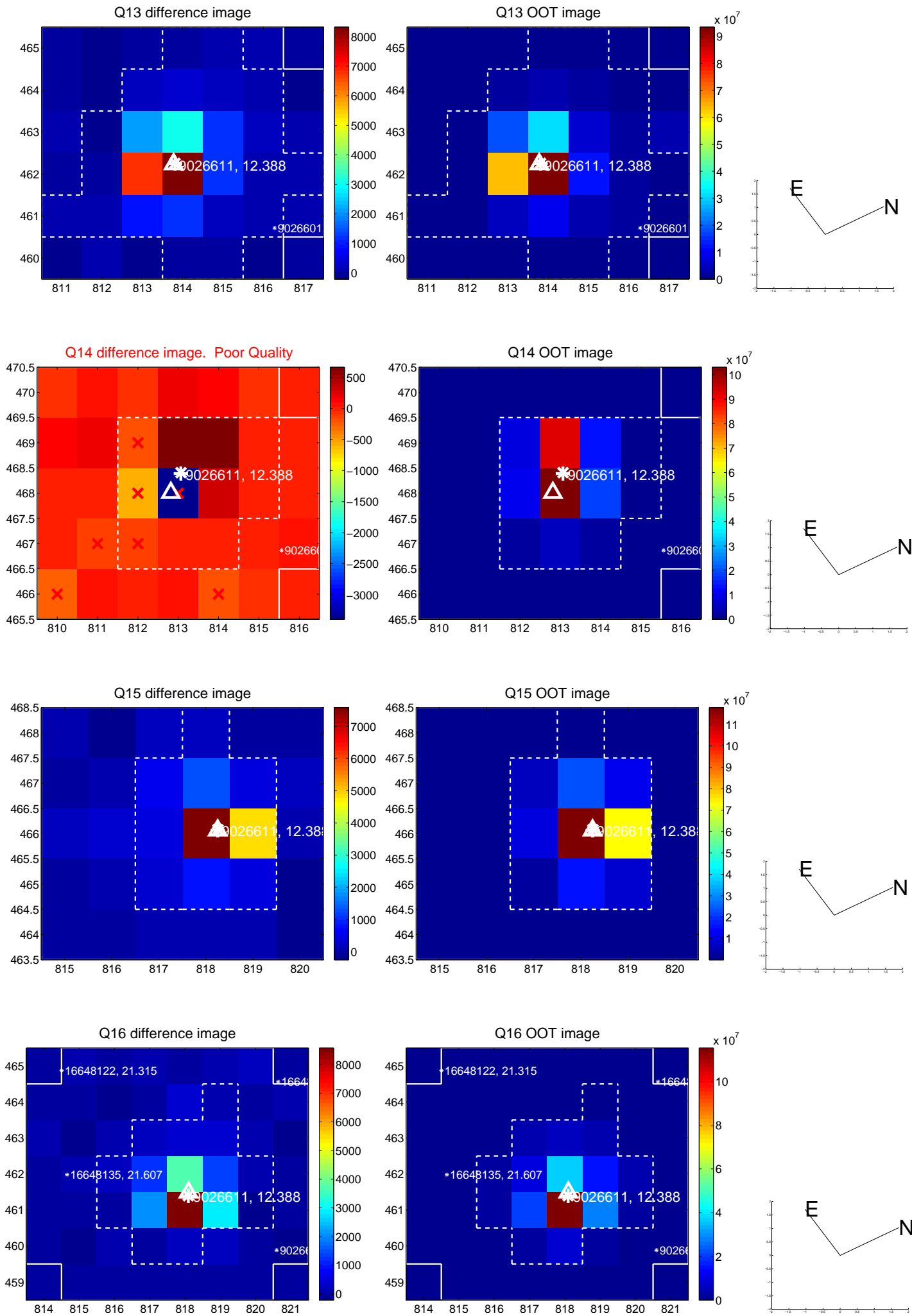




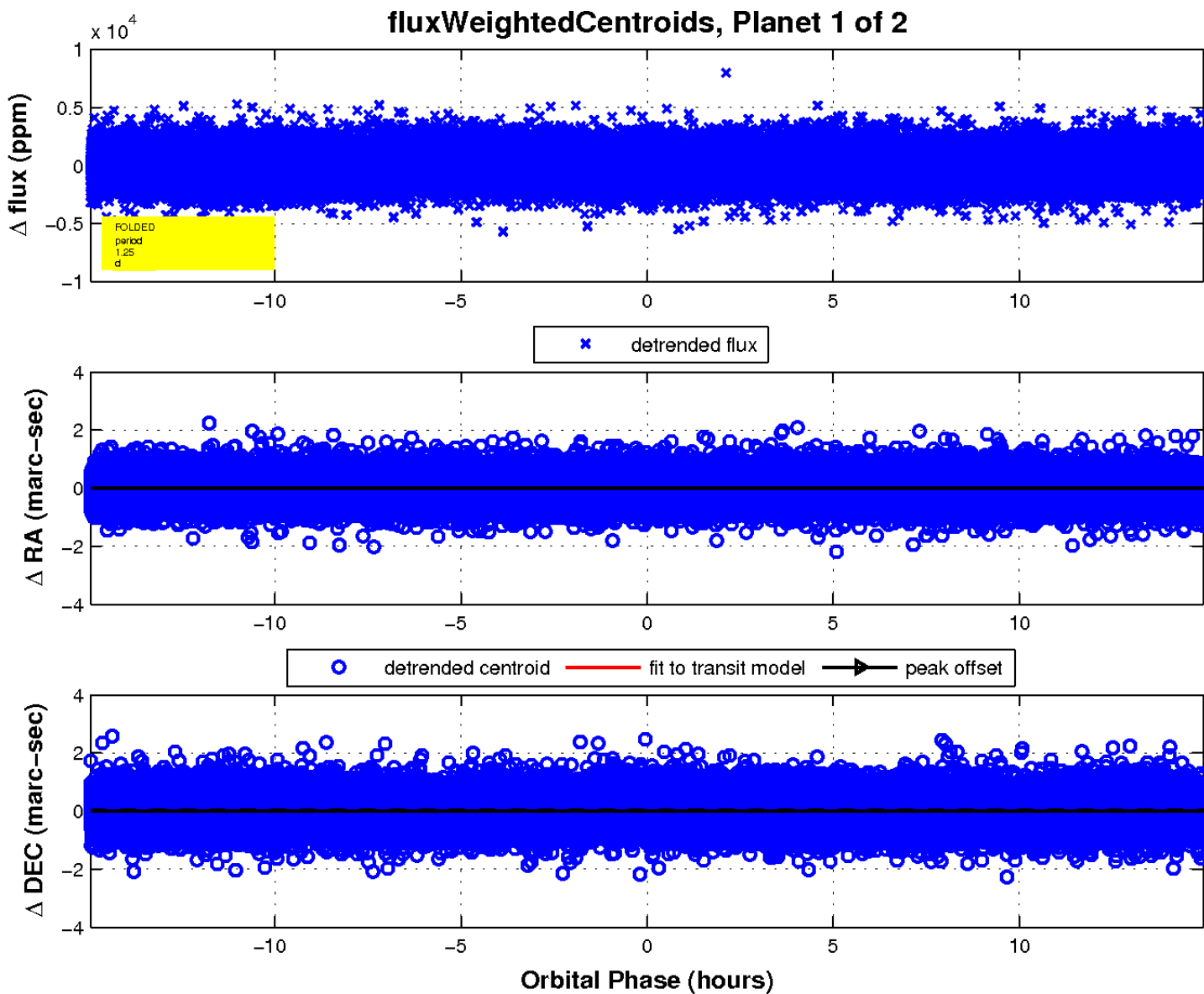
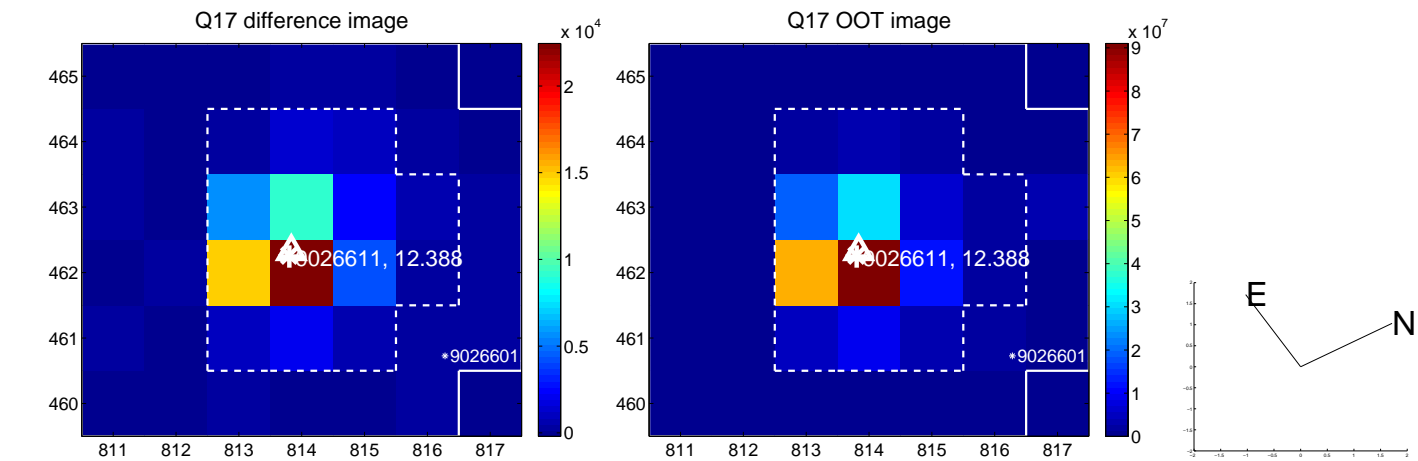
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

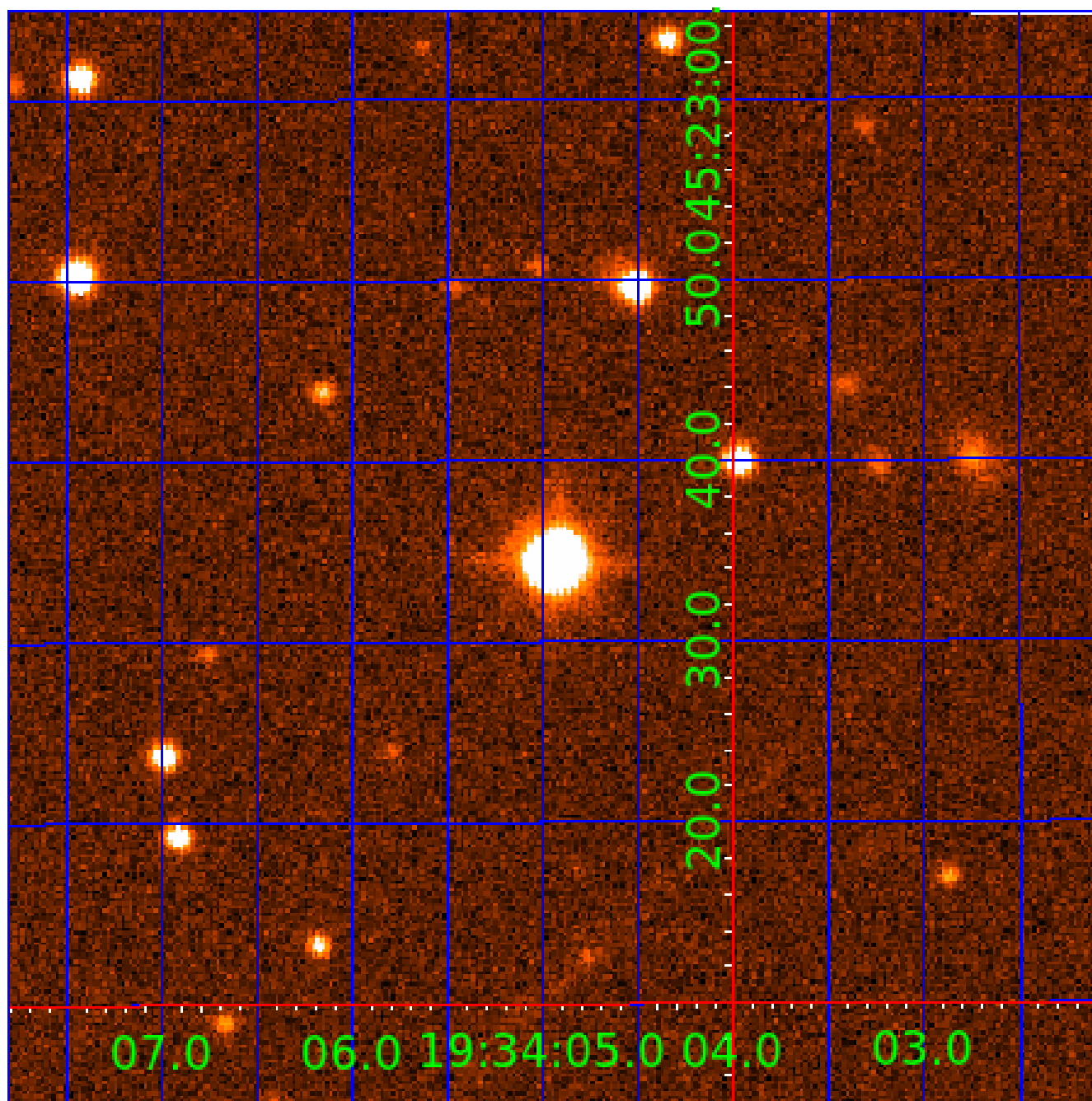


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 009026611

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009026611-01	OBS	No	1.245824	132.080280	110.3	5.573	14.3	14.1	2.05	7505	2.59	16429.54
009026611-02	OBS	No	0.568045	131.792169	159.8	1.137	7.9	8.4	2.05	7505	2.96	46815.55

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009026611-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009026611-02	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_ALT—HALO_GHOST

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

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

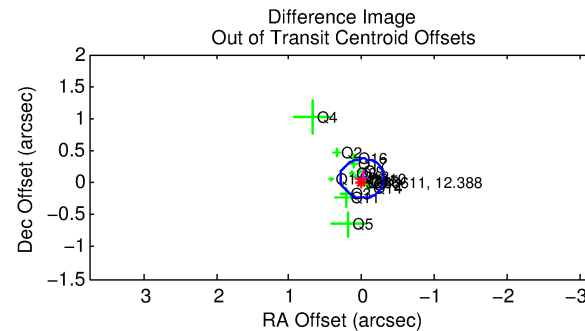
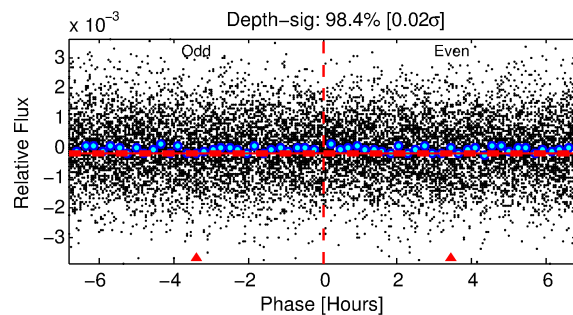
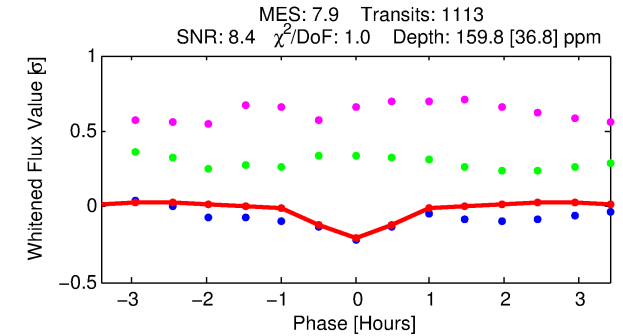
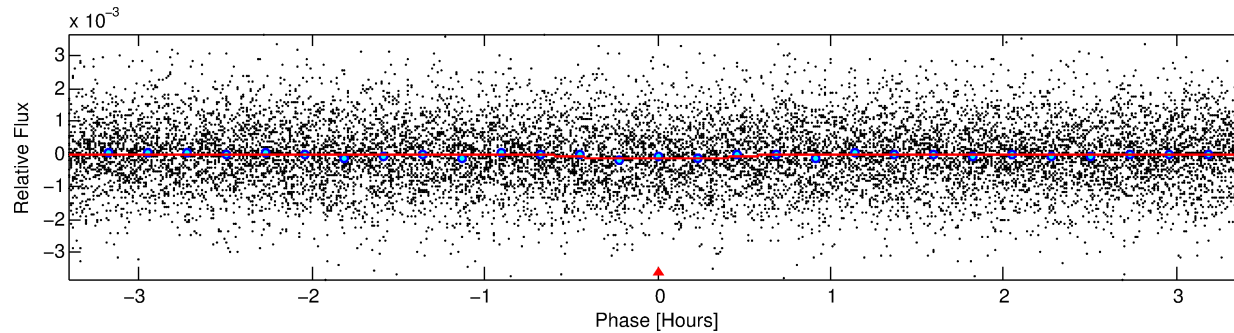
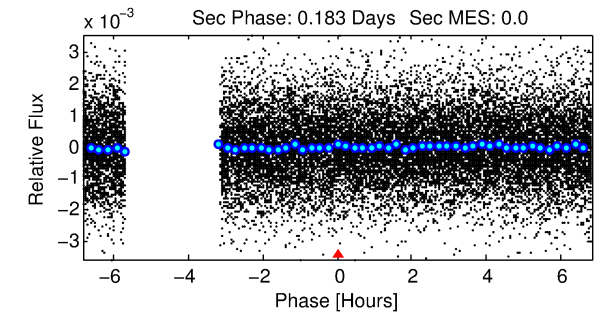
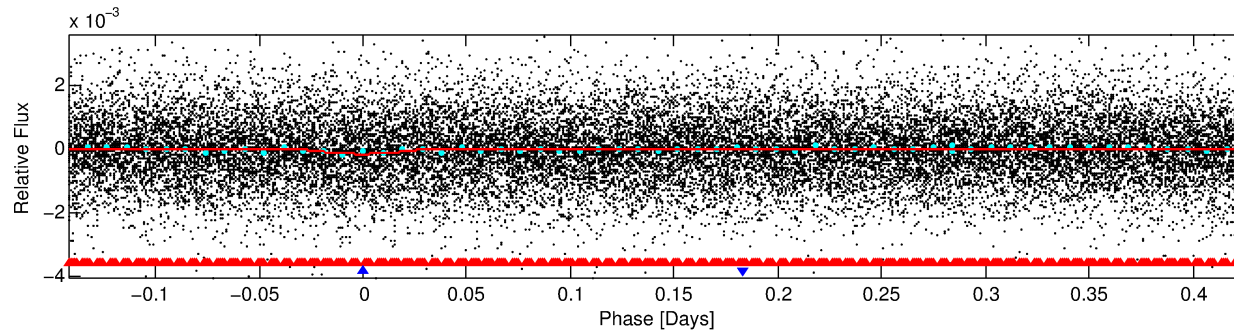
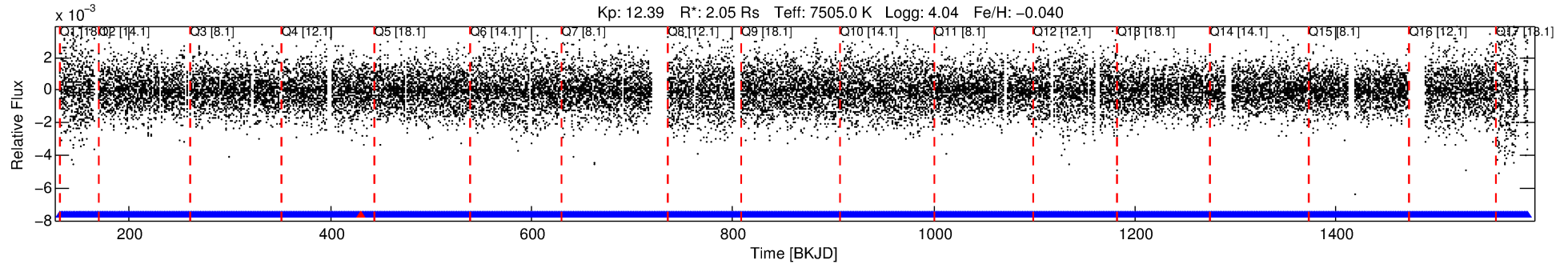
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009026611-02

No Significant Match Found

# DV One-Page Summary

KIC: 9026611 Candidate: 2 of 2 Period: 0.568 d



## DV Fit Results:

Period = 0.56805 [0.00002] d  
Epoch = 131.7922 [0.0029] BKJD  
Rp/R\* = 0.0133 [0.0130]  
a/R\* = 2.14 [10.64]  
b = 0.88 [1.68]  
Seff = 46815.55 [16635.65]  
Teq = 3751 [333] K  
Rp = 2.96 [3.00] Re  
a = 0.0159 [0.0035] AU  
Ag = N/A  
Teffp = N/A

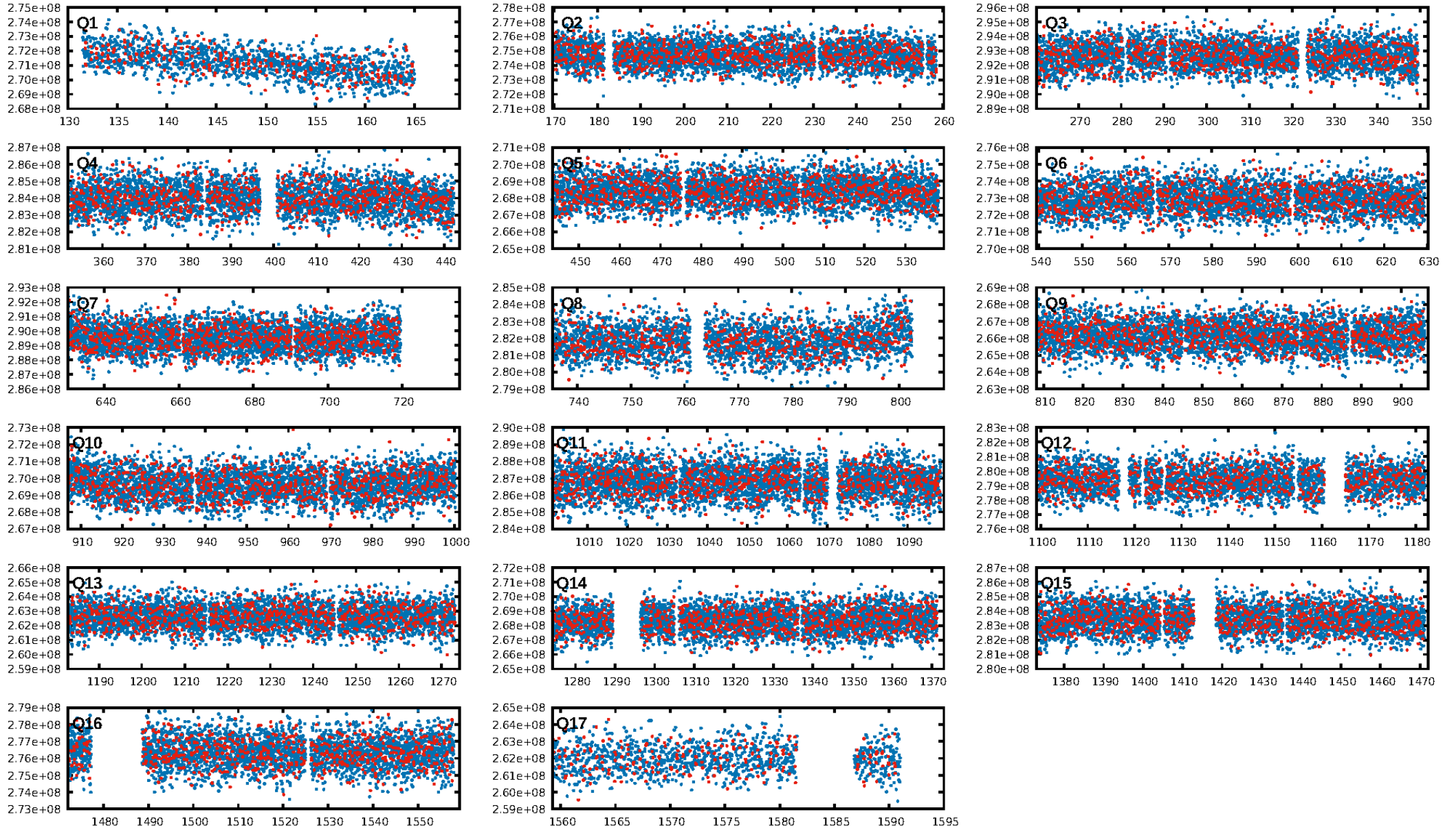
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 99.6% [2.86σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 6.56e-34  
RollingBand-fgt: 1.00 [1062/1063]  
**GhostDiagnostic-chr: 0.07495**  
Centroid-sig: 81.0%  
Centroid-so: 0.104 arcsec [1.06σ]  
OotOffset-rm: 0.068 arcsec [0.67σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 0.058 arcsec [0.72σ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.47 [8/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:16:05 Z

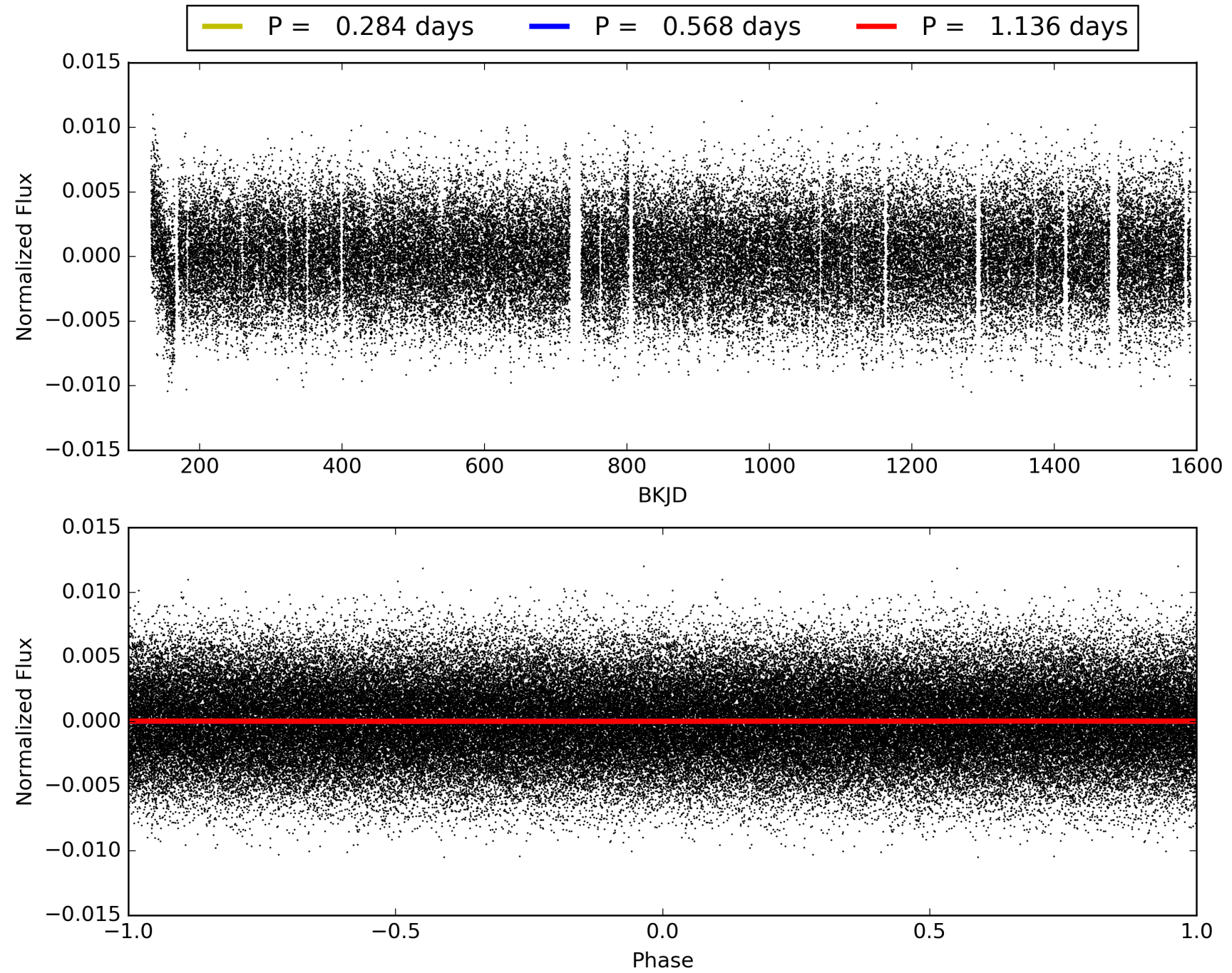
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009026611-02, PDC Light Curves





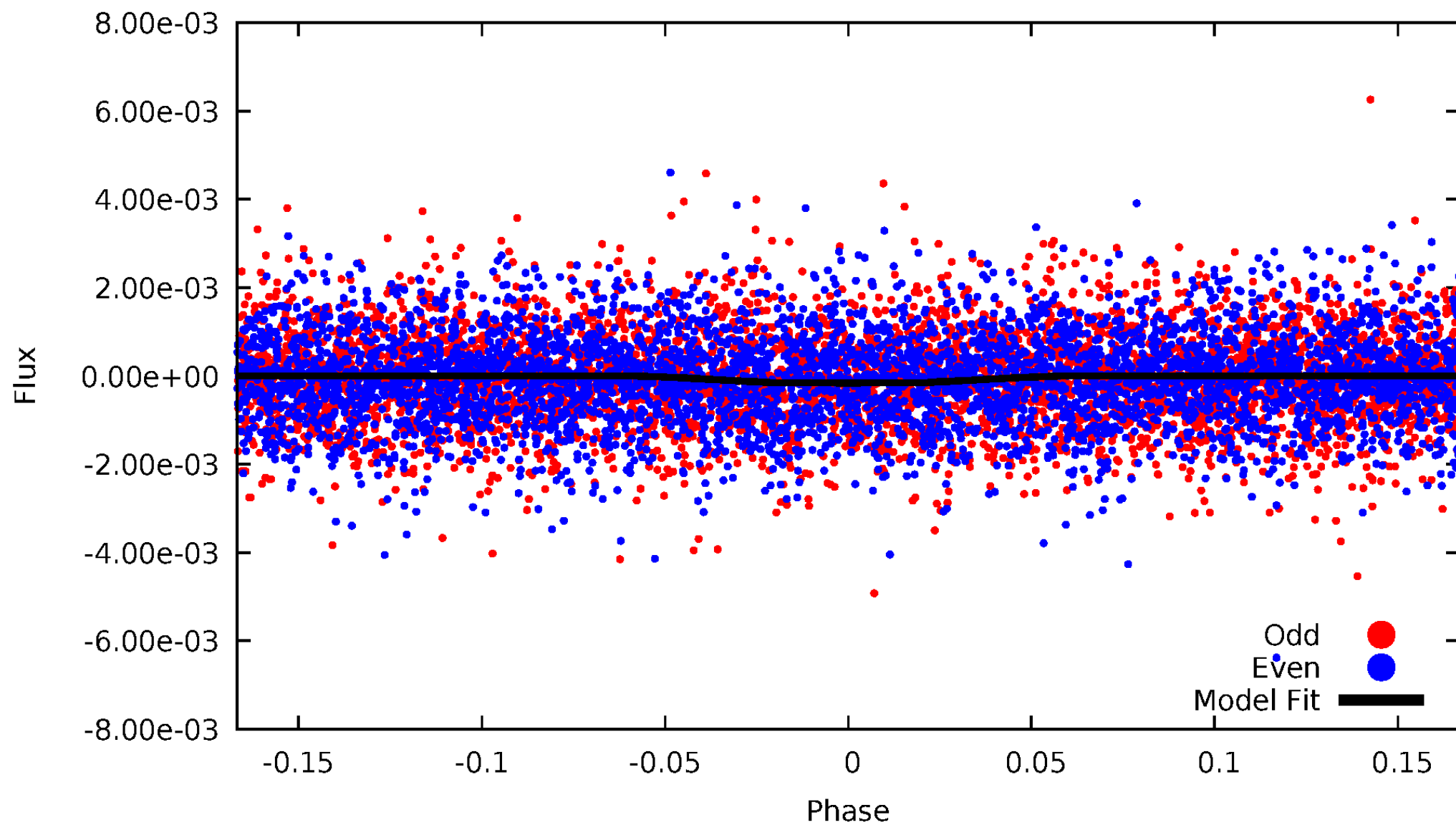
TCE 009026611-02





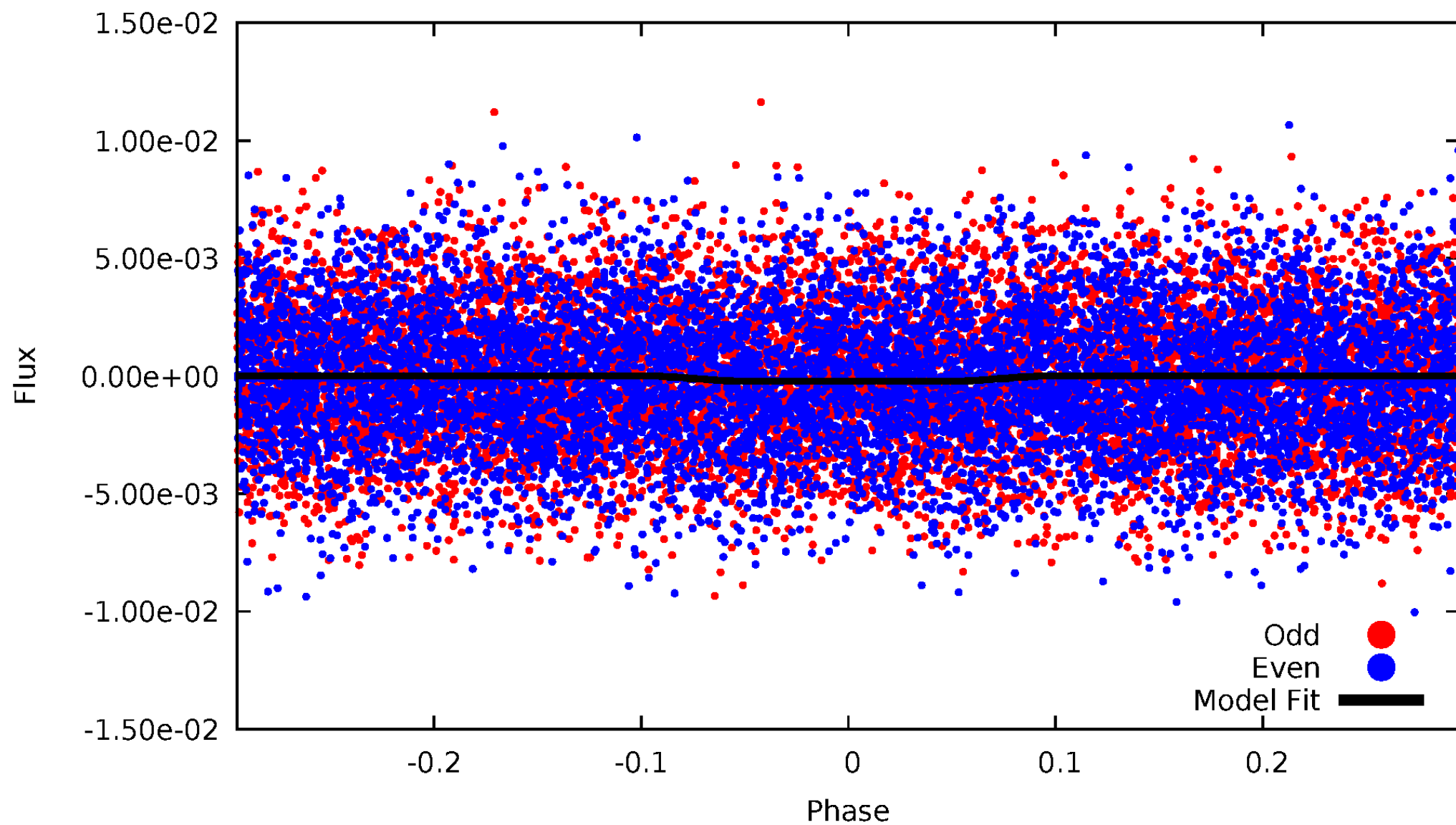
DV Odd/Even

TCE 009026611-02



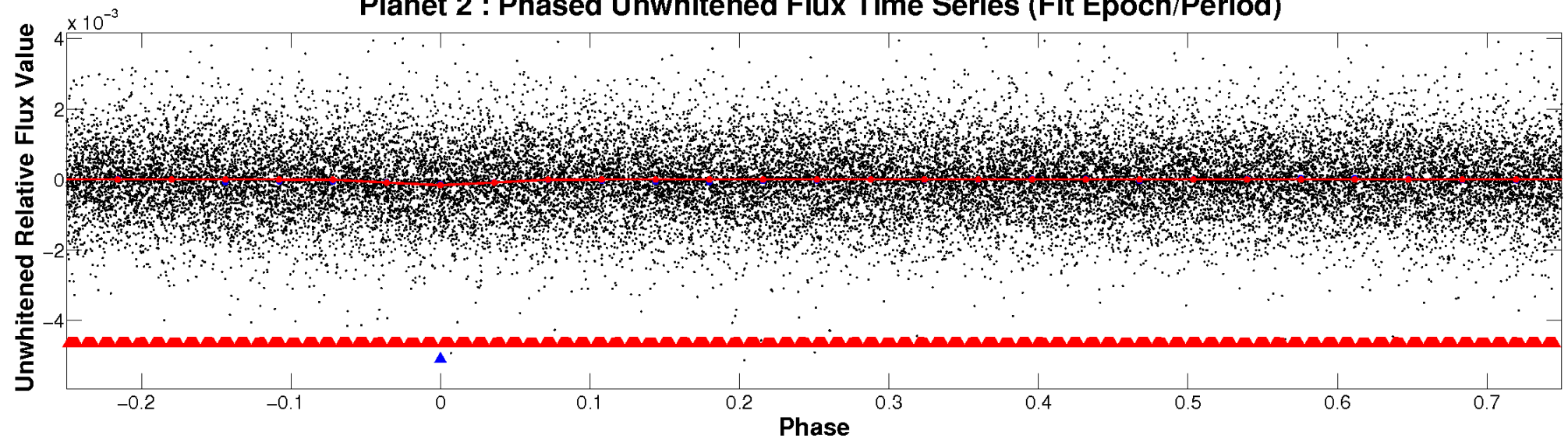
# ALT Odd/Even

TCE 009026611-02

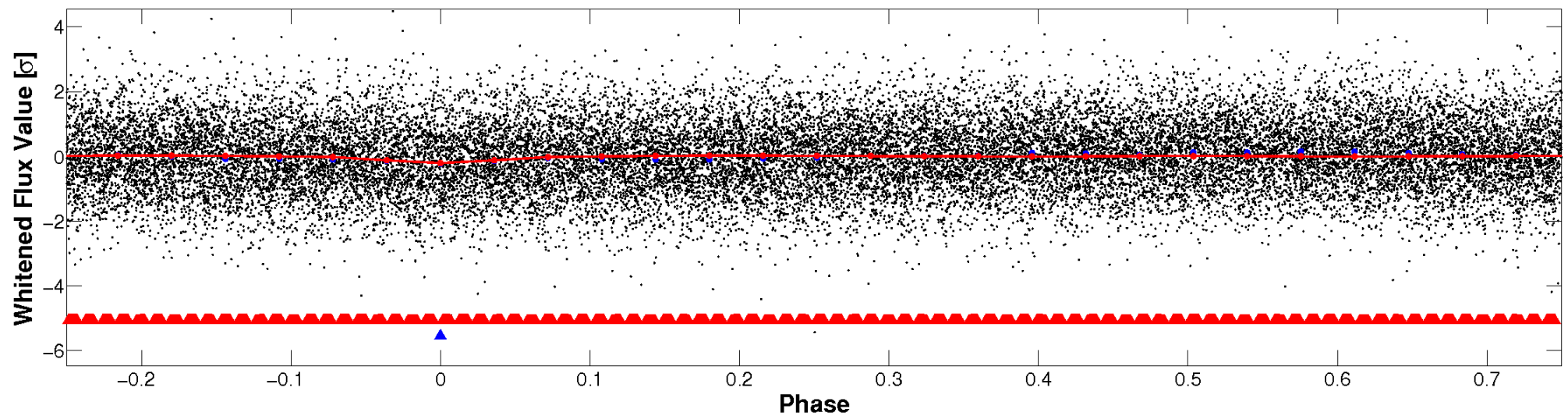


# Non-Whitened Vs. Whitened Light Curve

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

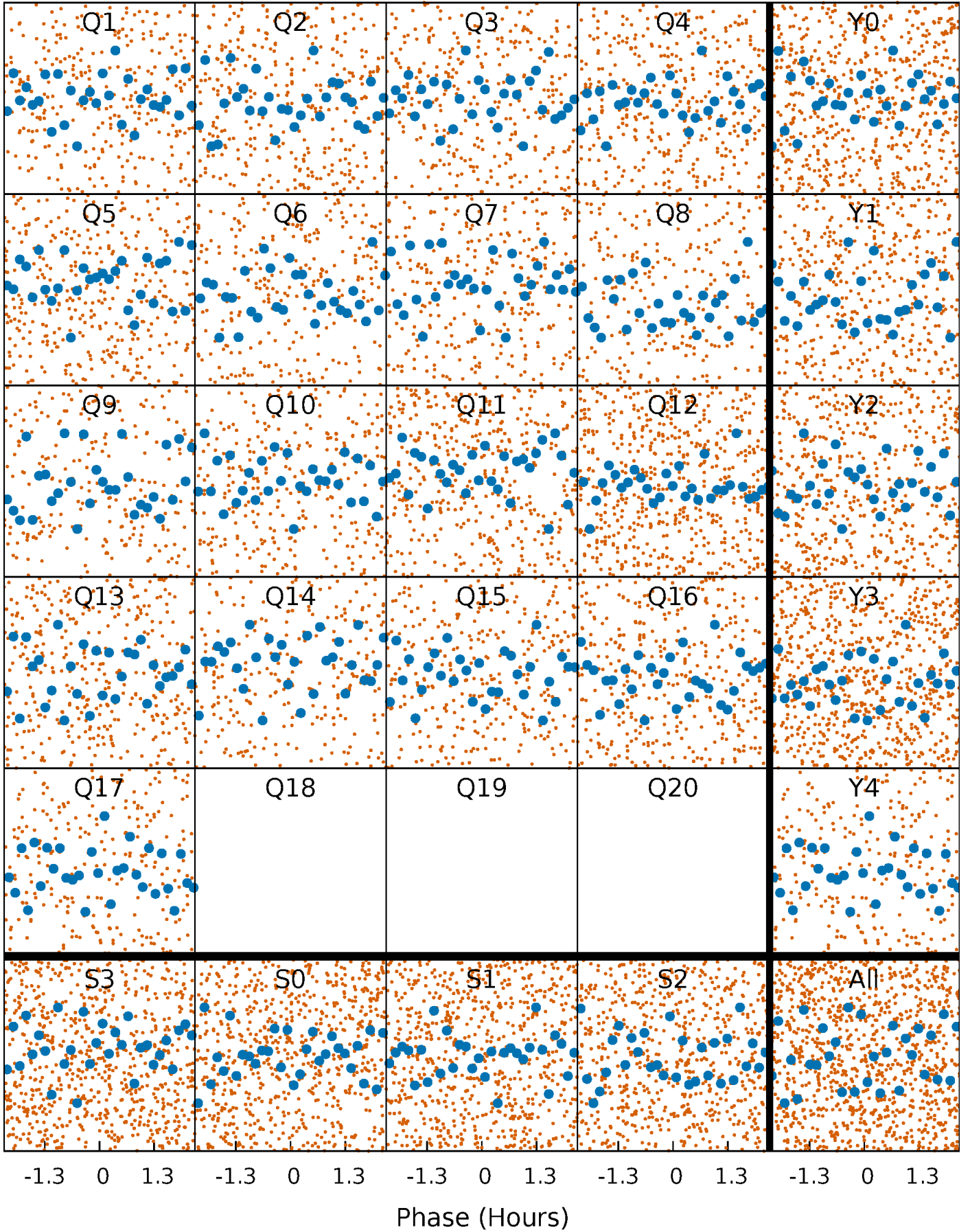


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

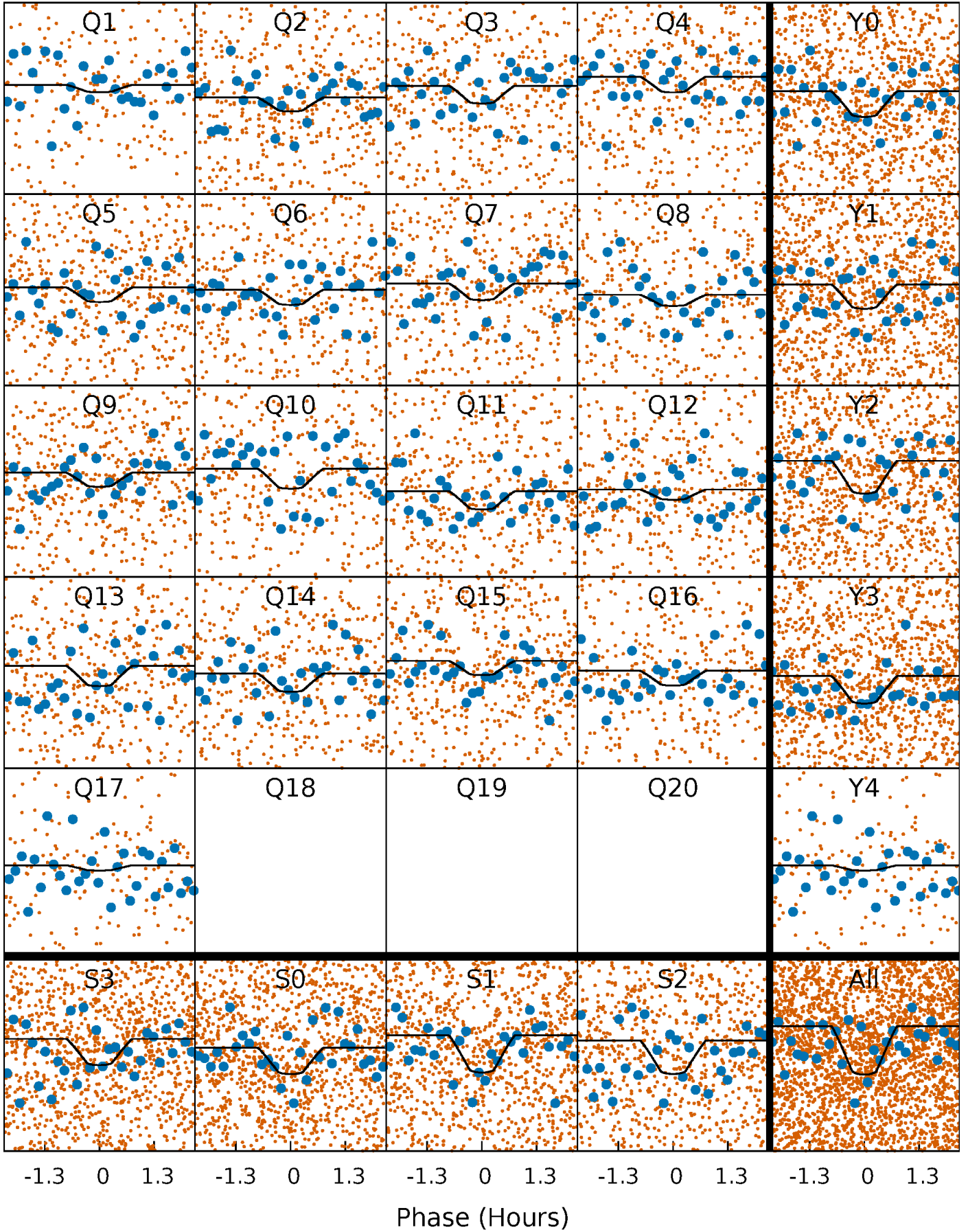
TCE 009026611-02 P= 0.568045 Days  $T_0=131.792169$  (BKJD)





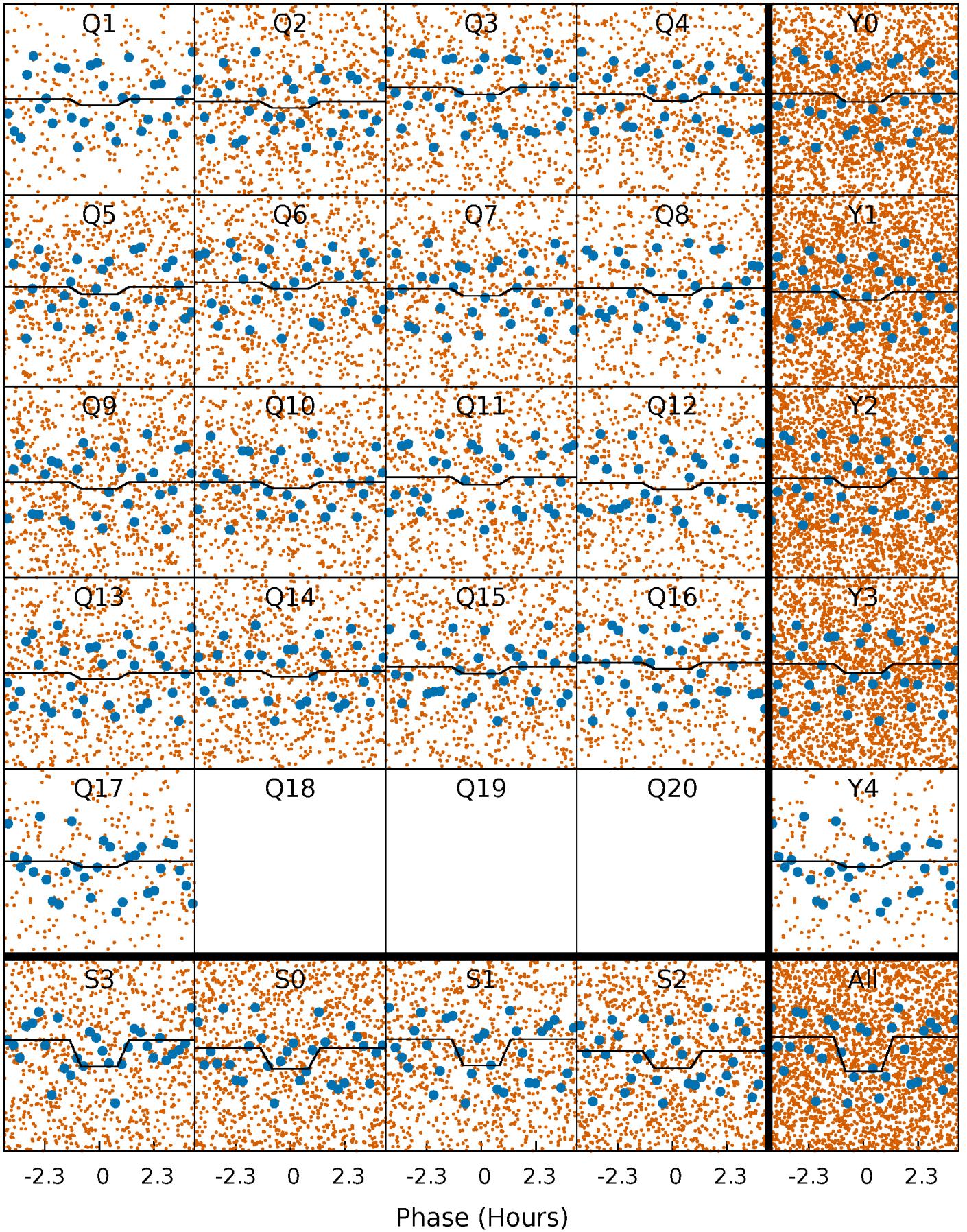
# DV Quarter-Phased Transit Curves

TCE 009026611-02   P= 0.568045 Days    $T_0=131.792169$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009026611-02 P= 0.568045 Days  $T_0=131.796573$  (BKJD)

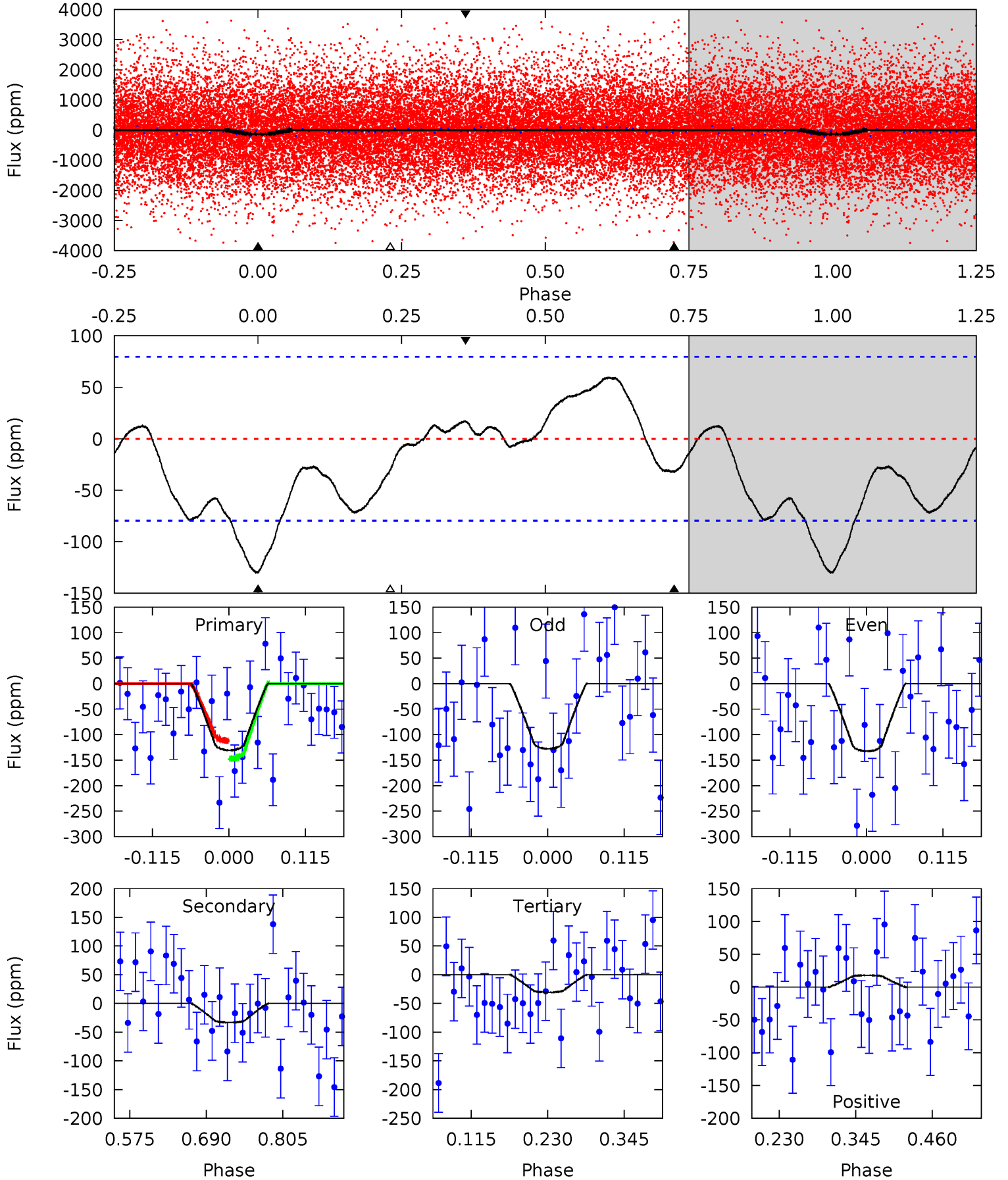




# DV Model-Shift Uniqueness Test

009026611-02, P = 0.568045 Days, E = 131.224124 Days

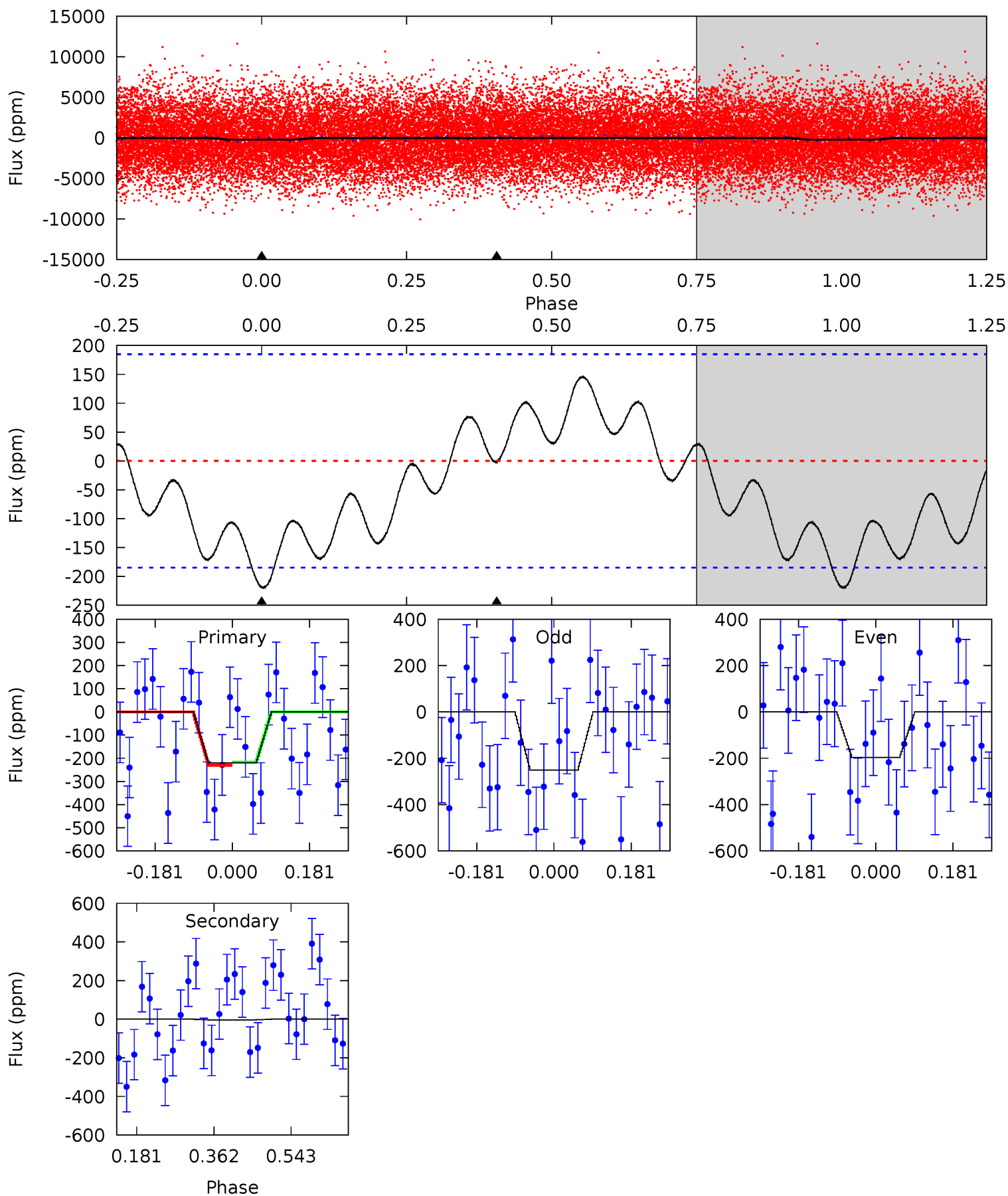
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.44	1.88	1.75	1.02	4.54	1.58	2.12	5.69	6.42	0.13	0.86	0.14	1.00	0.31	0.99



# Alt Model-Shift Uniqueness Test

009026611-02, P = 0.568045 Days, E = 131.228528 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
5.29	0.08	0	0	4.44	1.34	1.78	5.29	5.29	0.08	0.08	0.66	1.07	0.40	0.17



### Stellar Parameters For KIC 009026611

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7505^{+209}_{-314}$	$4.040^{+0.170}_{-0.170}$	$-0.040^{+0.200}_{-0.350}$	$2.046^{+0.533}_{-0.480}$	$1.674^{+0.200}_{-0.275}$	$0.275^{+0.283}_{-0.121}$
	+3%/-4%	+4%/-4%	+500%/-875%	+26%/-23%	+12%/-16%	+103%/-44%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 009026611-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-33 \pm 18$	$3.56^{+2.88}_{-2.28}$	$5237^{+369}_{-365}$	$2813^{+4009}_{-7062}$	$0.316^{+2.038}_{-0.249}$
Alt.	$-3 \pm 42$	$3.92^{+2.44}_{-2.35}$	$5227^{+362}_{-347}$	$-4320^{+9315}_{-1062}$	$0.029^{+0.823}_{-0.419}$

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

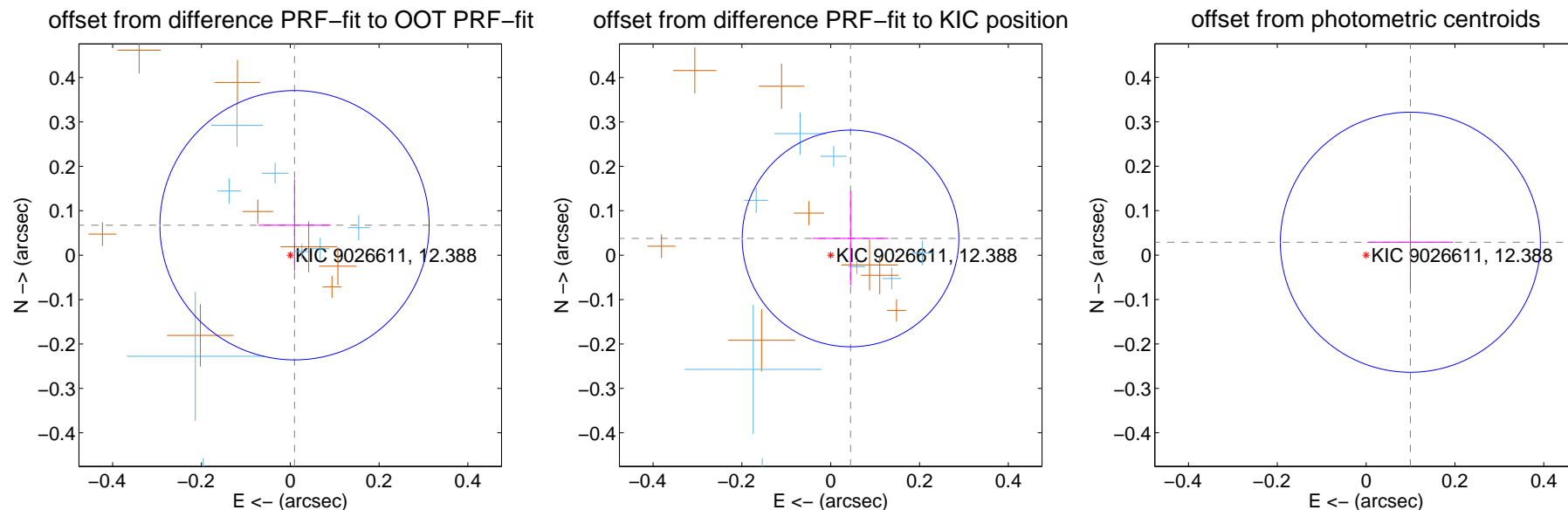
## DV Centroid Data

Supplemental centroid analysis for 009026611-02. Kepler magnitude: 12.39. Transit SNR 8.43

There are 8 quarters with good PRF difference image offsets

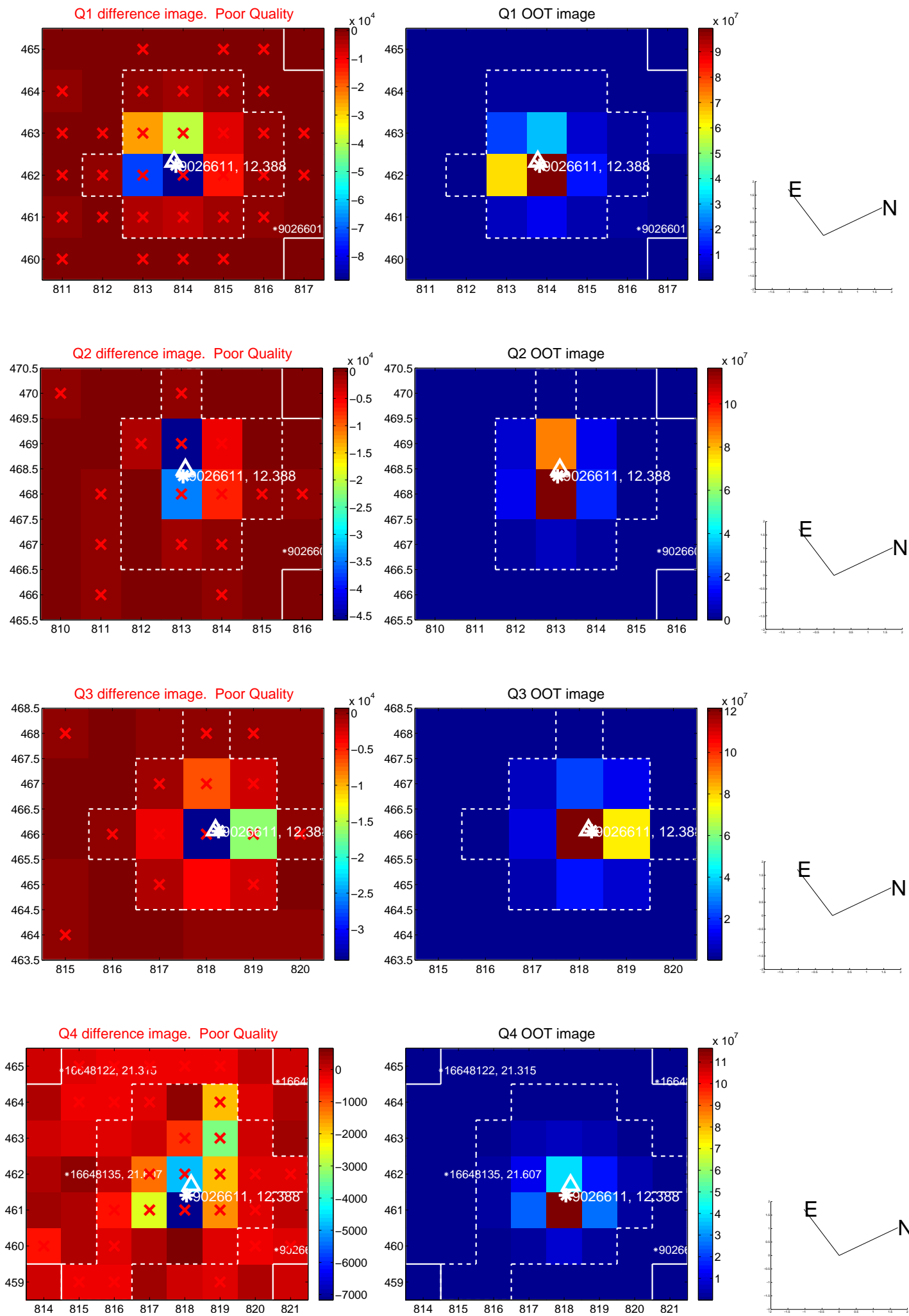
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.068 \pm 0.101$	0.67	$-0.010 \pm 0.082$	$0.067 \pm 0.104$
PRF-fit source offset from KIC position	$0.058 \pm 0.081$	0.72	$-0.045 \pm 0.086$	$0.038 \pm 0.106$
photometric centroid source offset	$0.10 \pm 0.10$	1.06	$-0.10 \pm 0.10$	$0.03 \pm 0.11$

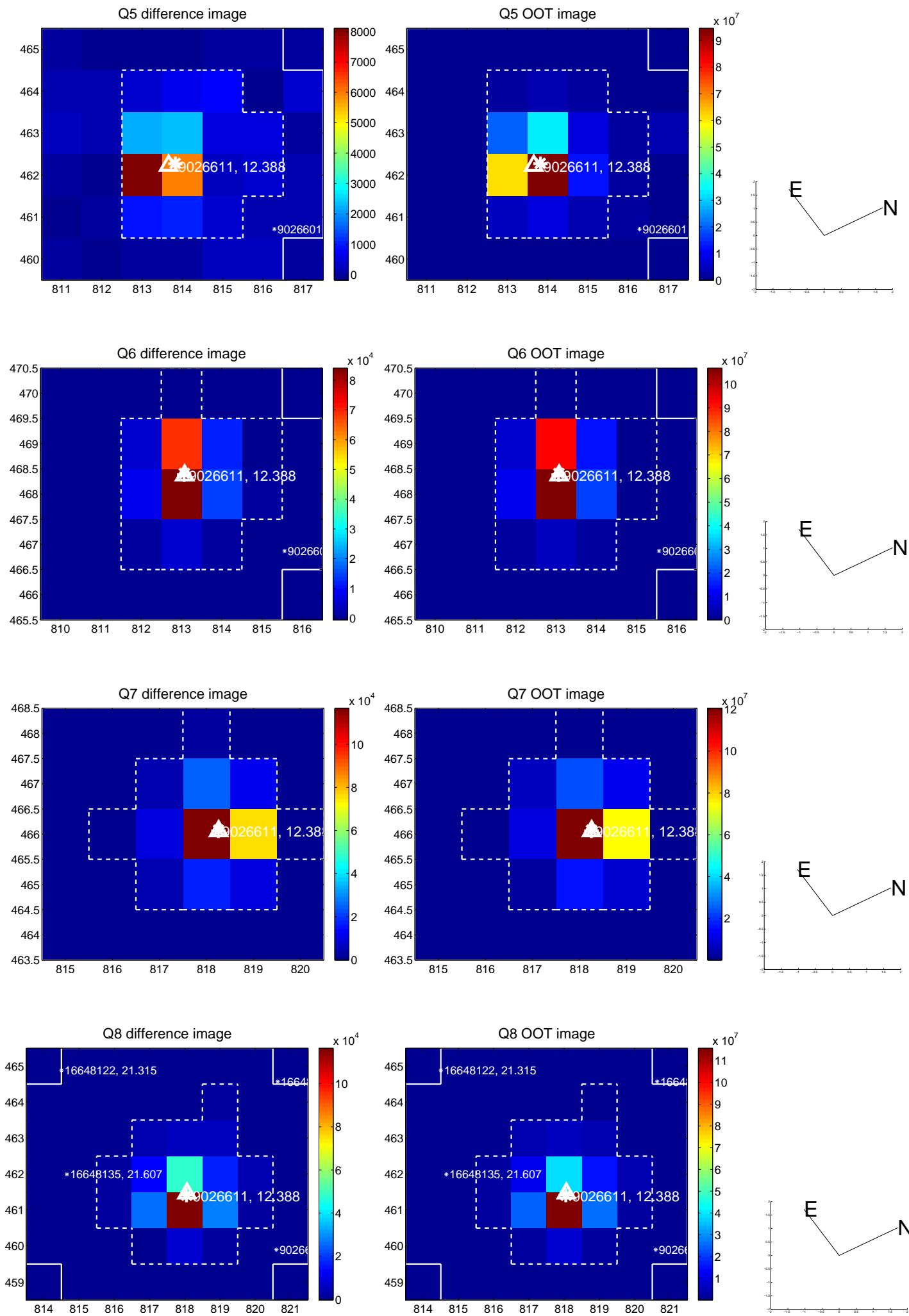


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

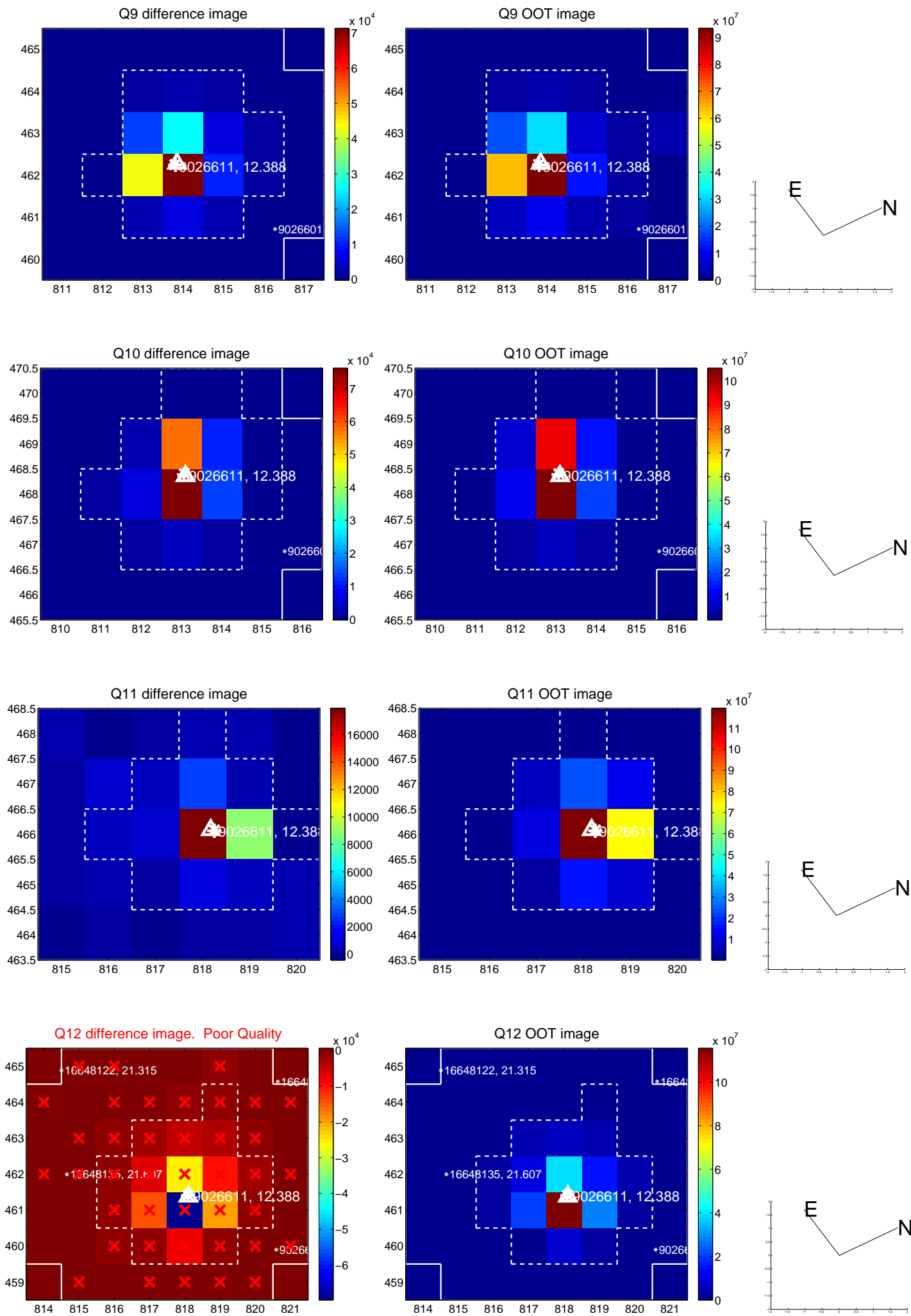


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

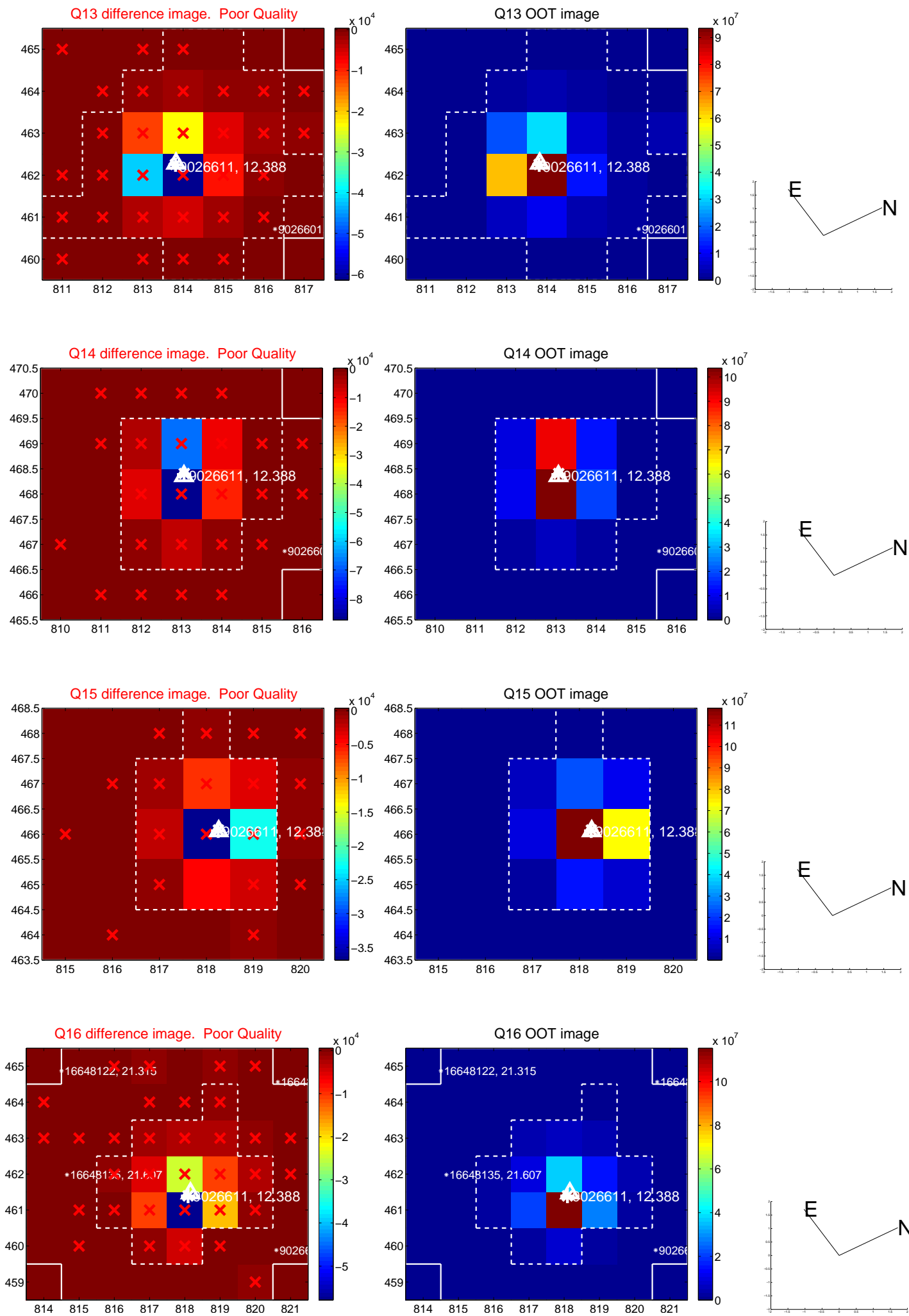




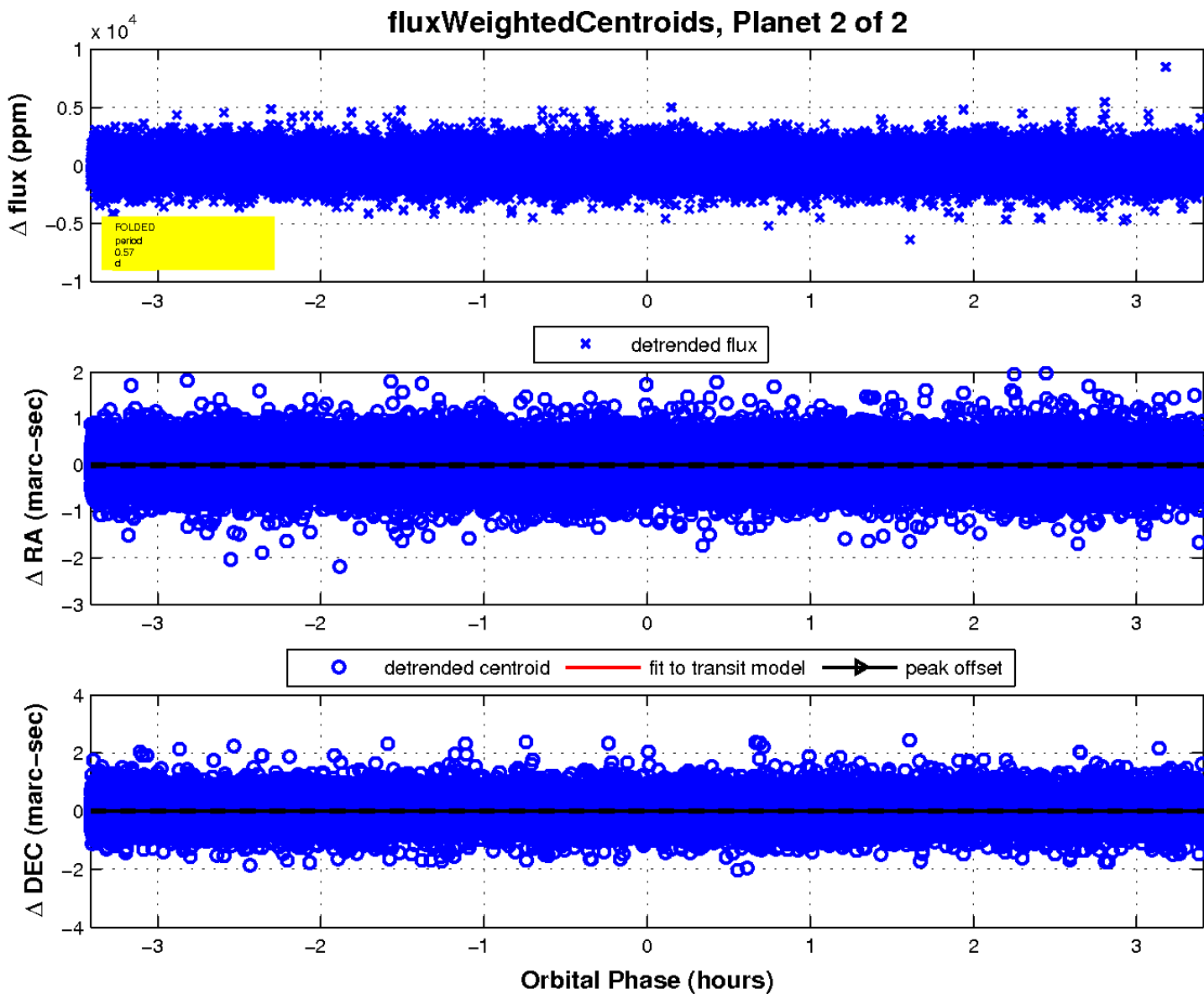
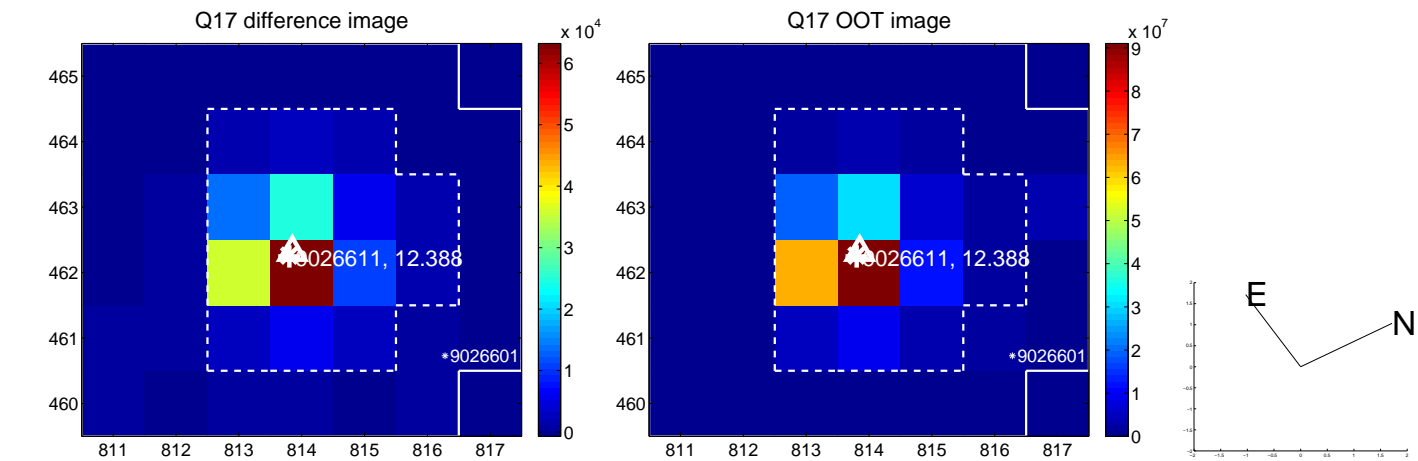
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

