

# KIC 009266285

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009266285-01	OBS	7151.01	5.613870	132.572739	59848.7	5.056	5357.8	3716.7	0.71	4504	29.39	61.48
009266285-02	OBS	No	5.613868	135.368622	19873.3	4.955	1986.0	1434.5	0.71	4504	13.07	61.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009266285-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_KIC_POS
009266285-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—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.

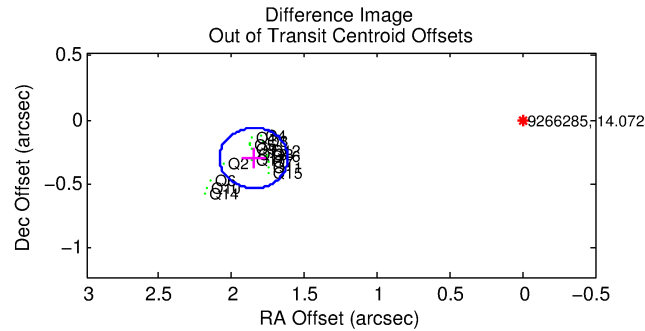
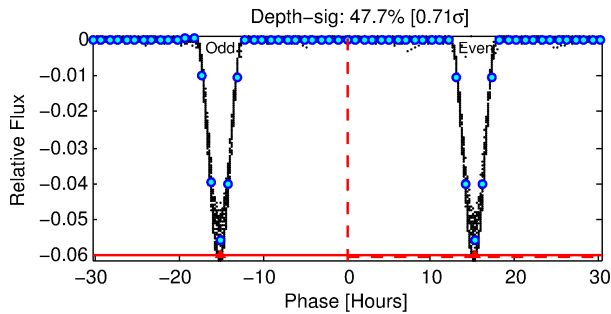
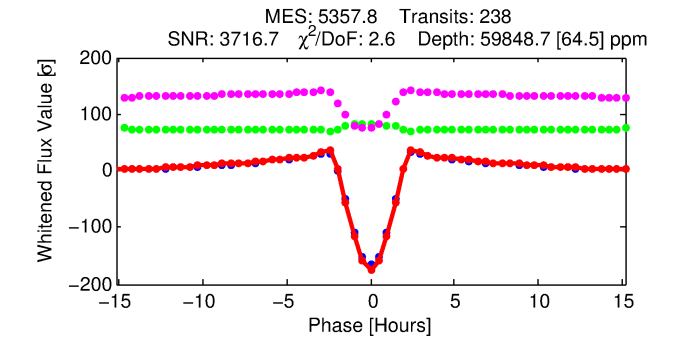
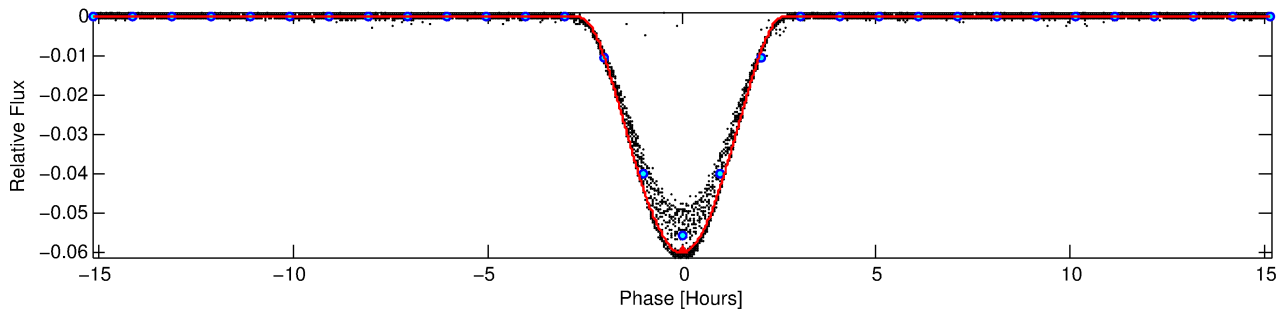
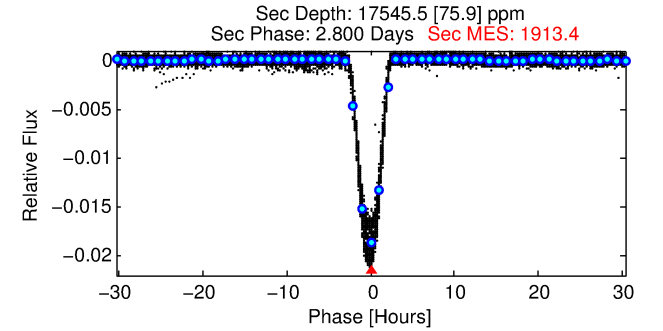
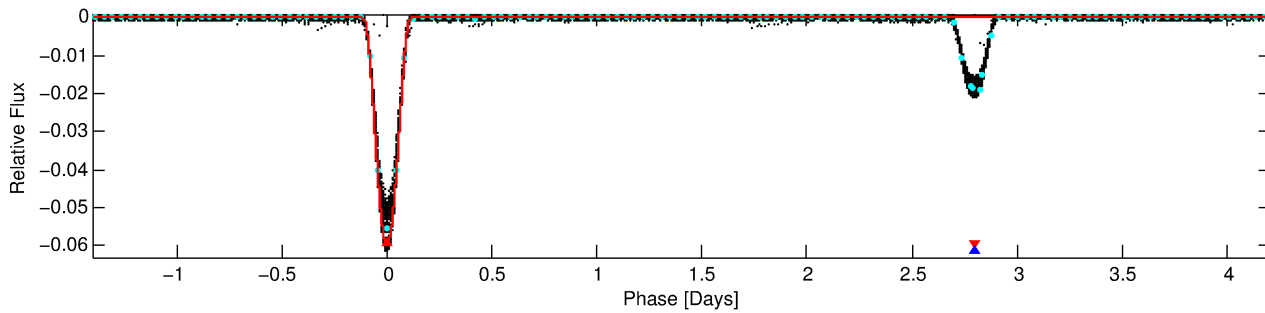
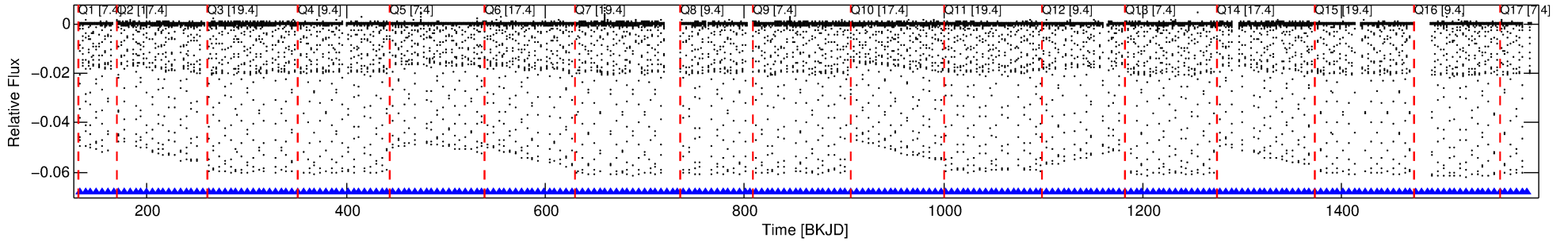
## Ephemeris Match Information For 009266285-01

No Significant Match Found

# DV One-Page Summary

KIC: 9266285 Candidate: 1 of 2 Period: 5.614 d  
KOI: K07151.01 Corr: 0.998

Kp: 14.07 R\*: 0.71 Rs Teff: 4504.0 K Logg: 4.58 Fe/H: 0.100



## DV Fit Results:

Period = 5.61387 [0.00000] d  
Epoch = 132.5727 [0.0000] BKJD  
Rp/R\* = 0.3799 [0.0153]  
a/R\* = 8.32 [0.01]  
b = 0.98 [0.02]  
Seff = 61.48 [10.03]  
Teff = 714 [29] K  
Rp = 29.40 [2.75] Re  
a = 0.0549 [0.0038] AU  
Ag = 33.68 [4.26] [7.66σ]  
Teffp = 2659 [102] K [18.35σ]

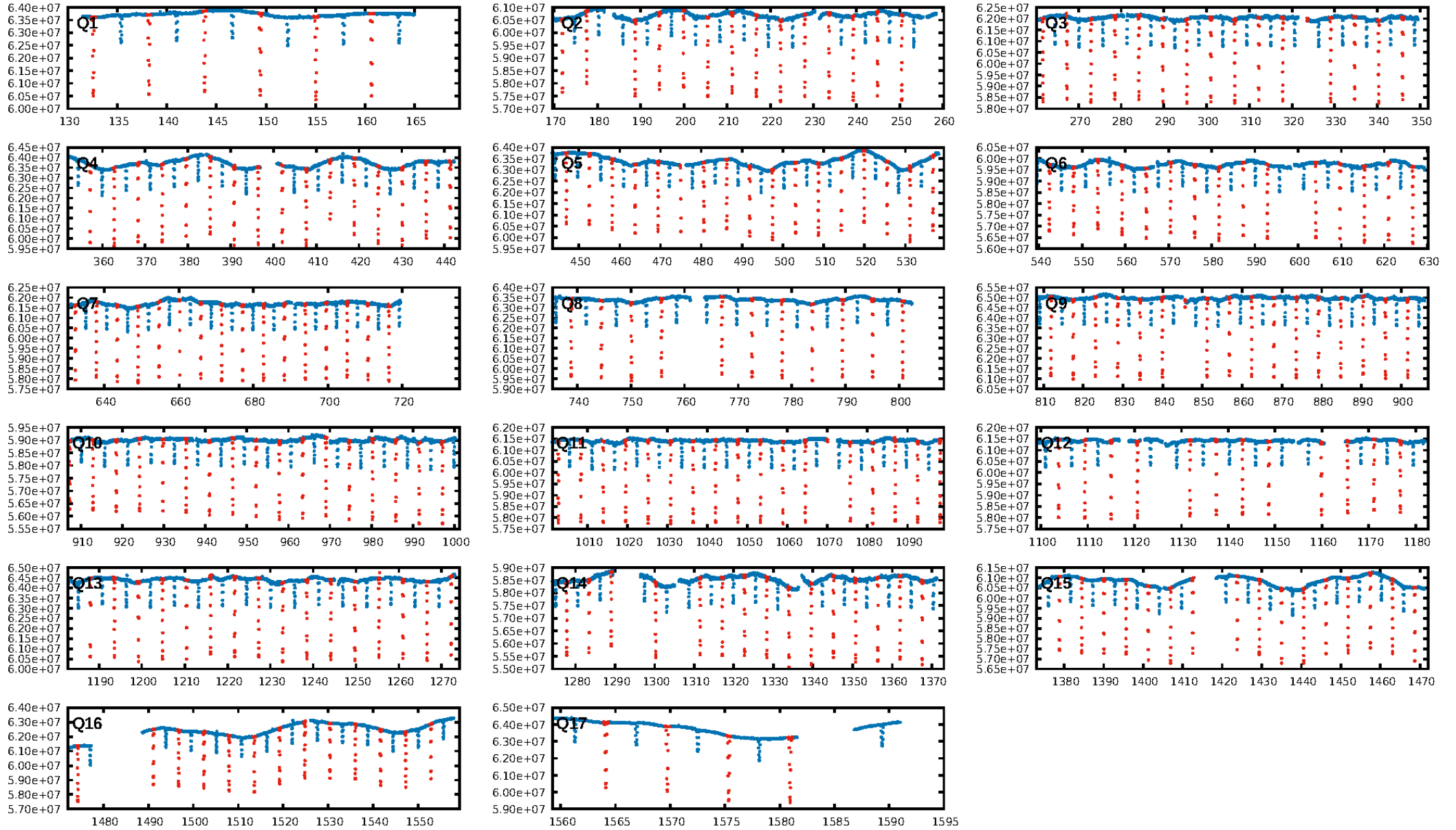
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [228/228]  
GhostDiagnostic-chr: 3.549  
Centroid-sig: 0.0%  
Centroid-so: 2.126 arcsec [1245.80σ]  
OotOffset-rm: 1.873 arcsec [23.95σ]  
KicOffset-rm: 2.136 arcsec [30.42σ]  
OotOffset-st: 4/4/4/5 [17]  
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DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

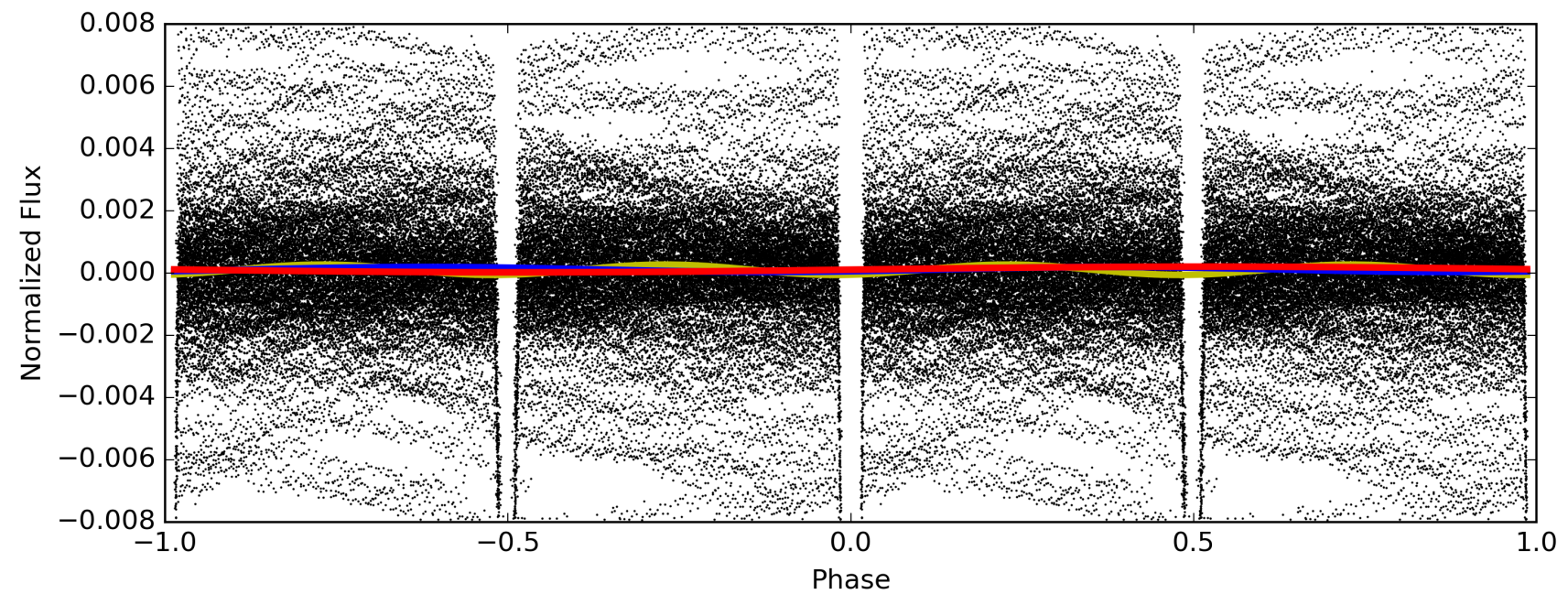
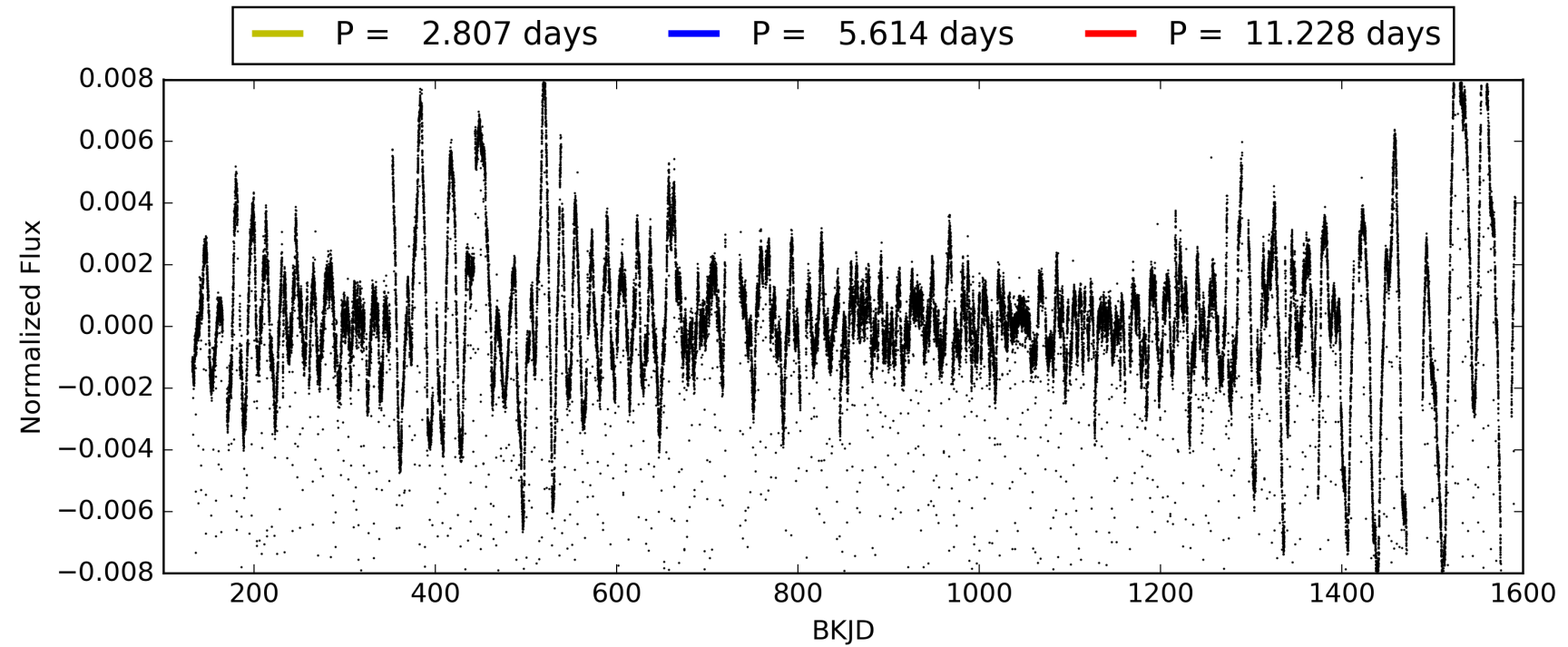
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009266285-01, PDC Light Curves

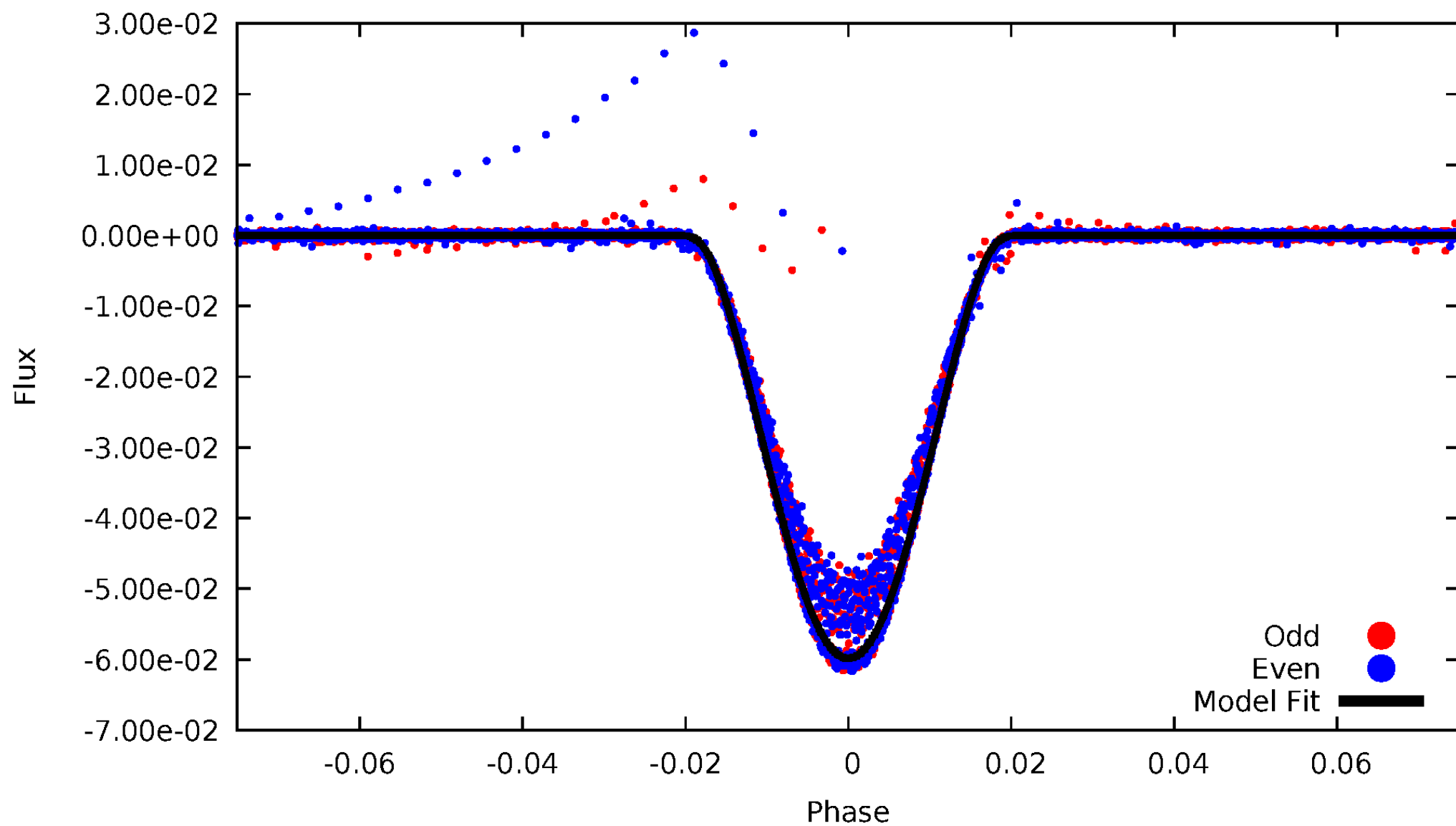


TCE 009266285-01



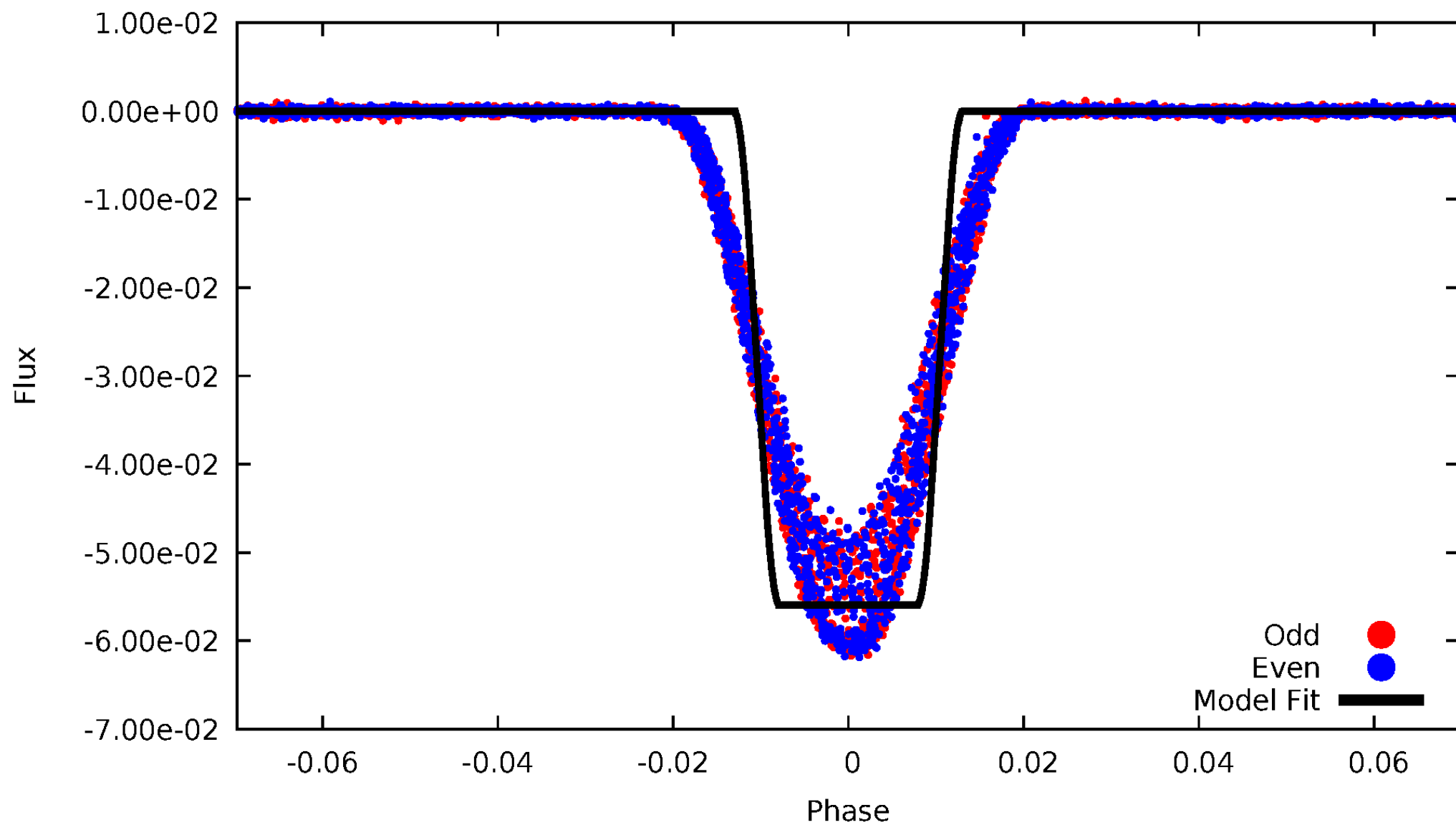
# DV Odd/Even

TCE 009266285-01



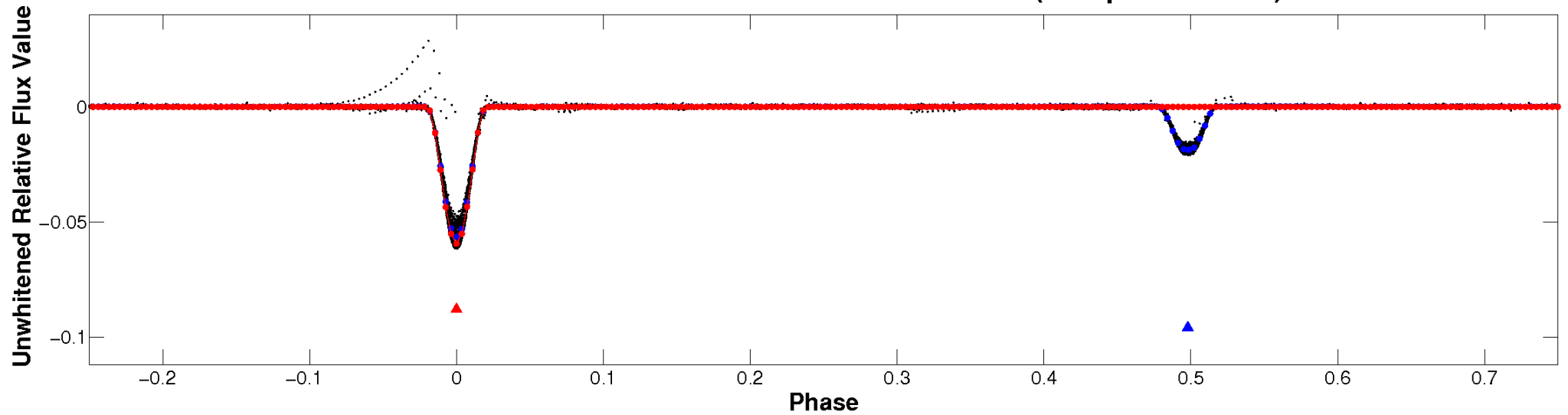
# ALT Odd/Even

TCE 009266285-01

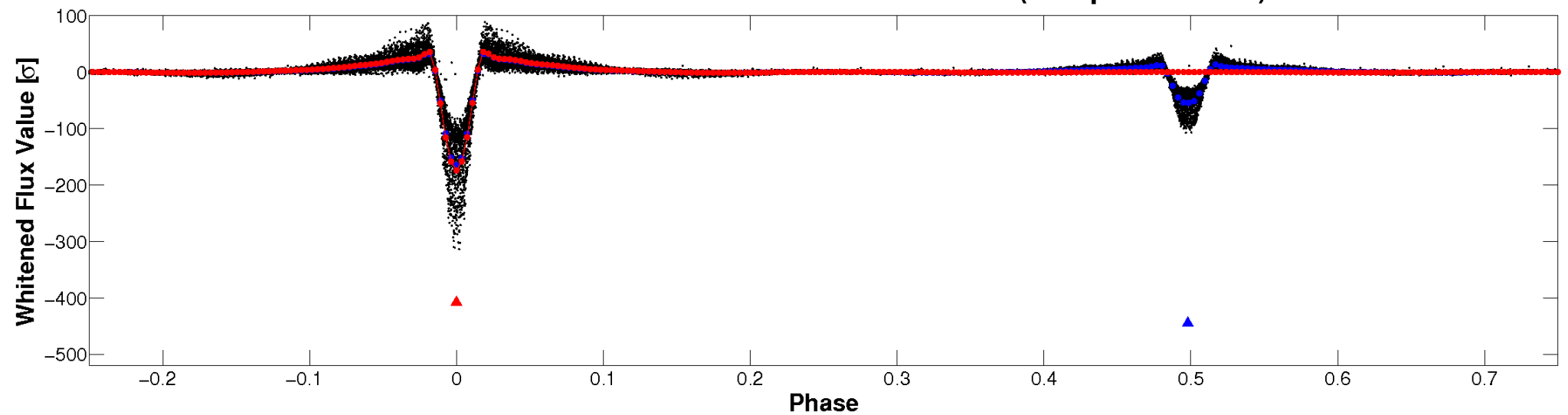


# Non-Whitened Vs. Whitened Light Curve

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

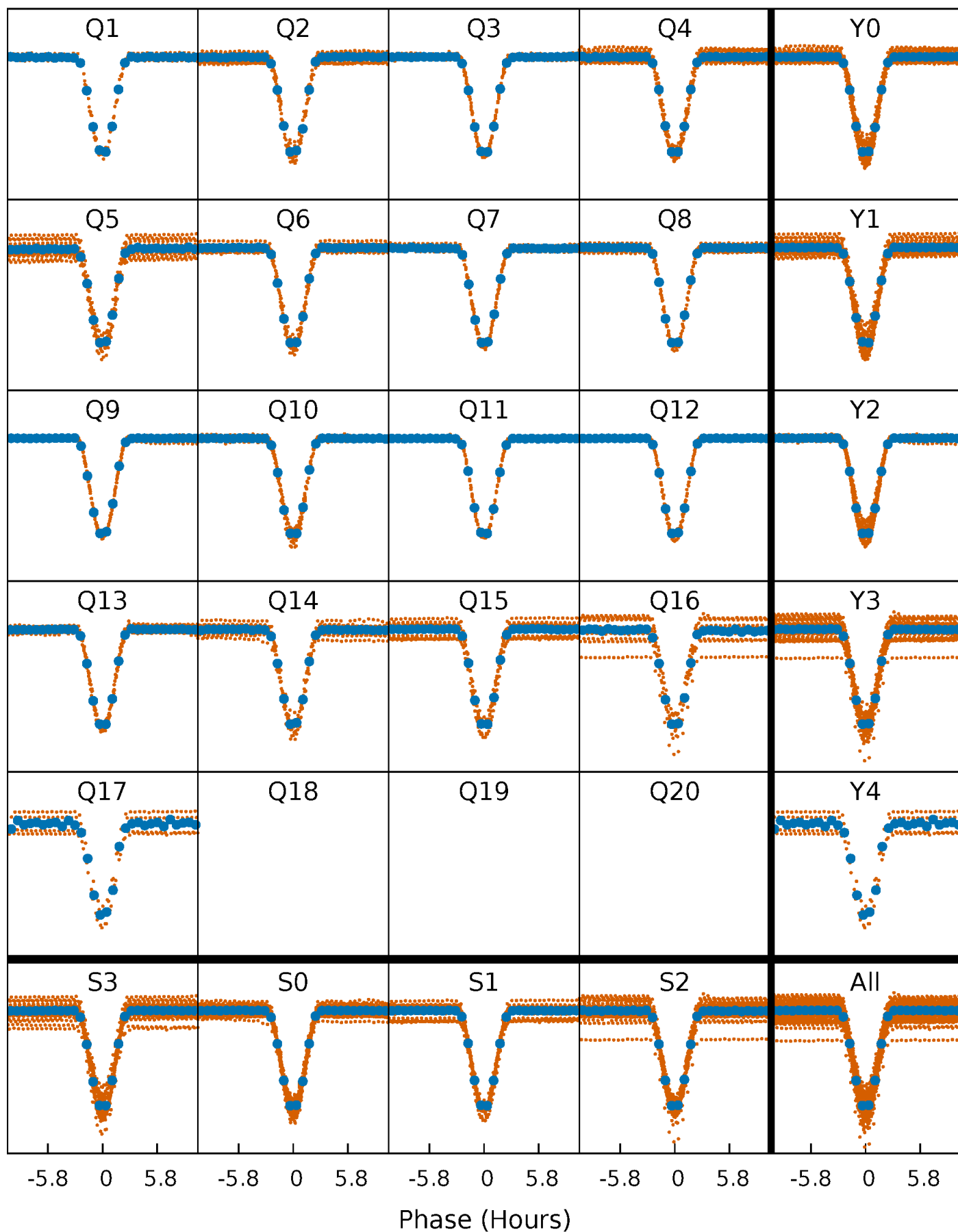


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

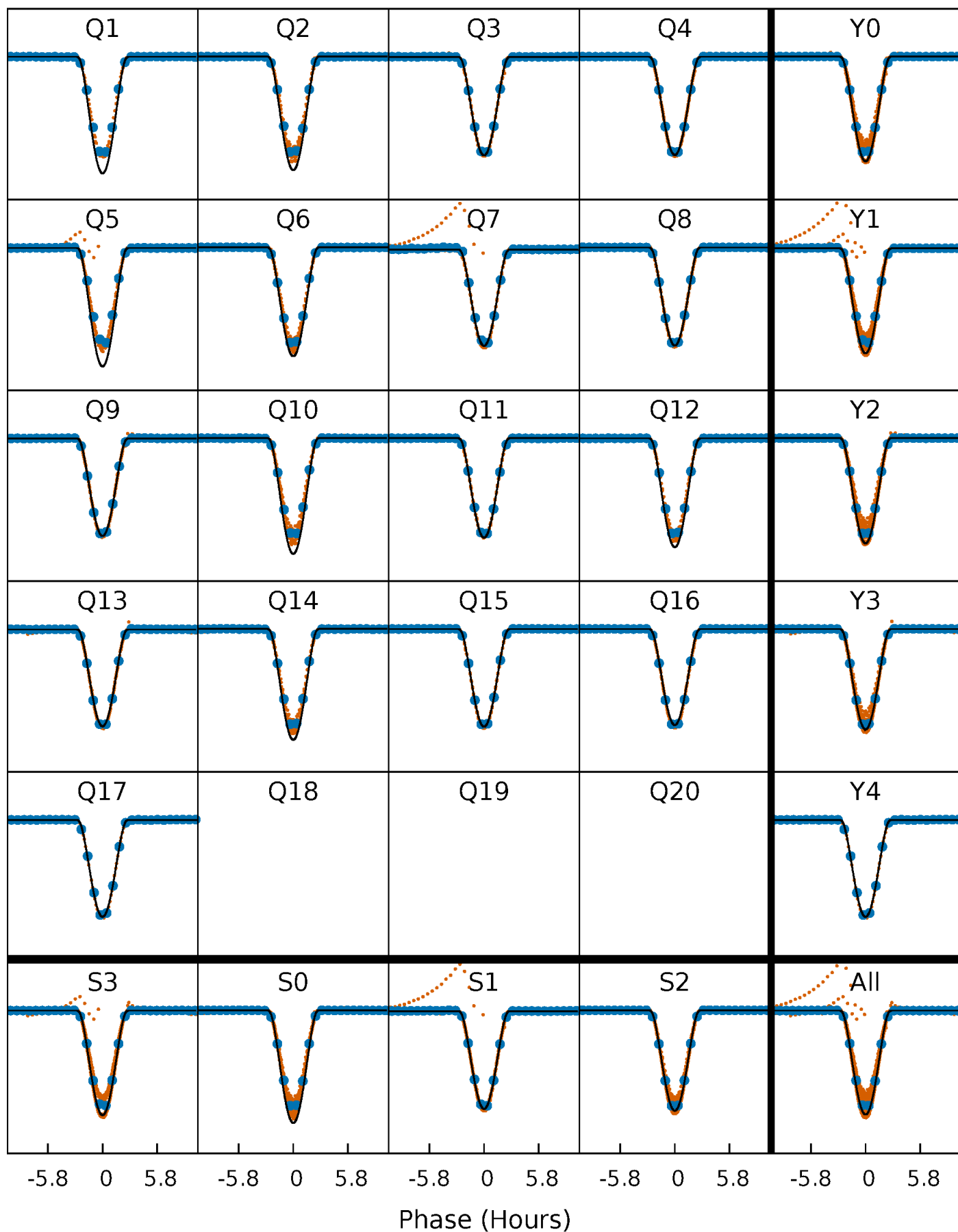
TCE 009266285-01 P= 5.613870 Days  $T_0=132.572739$  (BKJD)





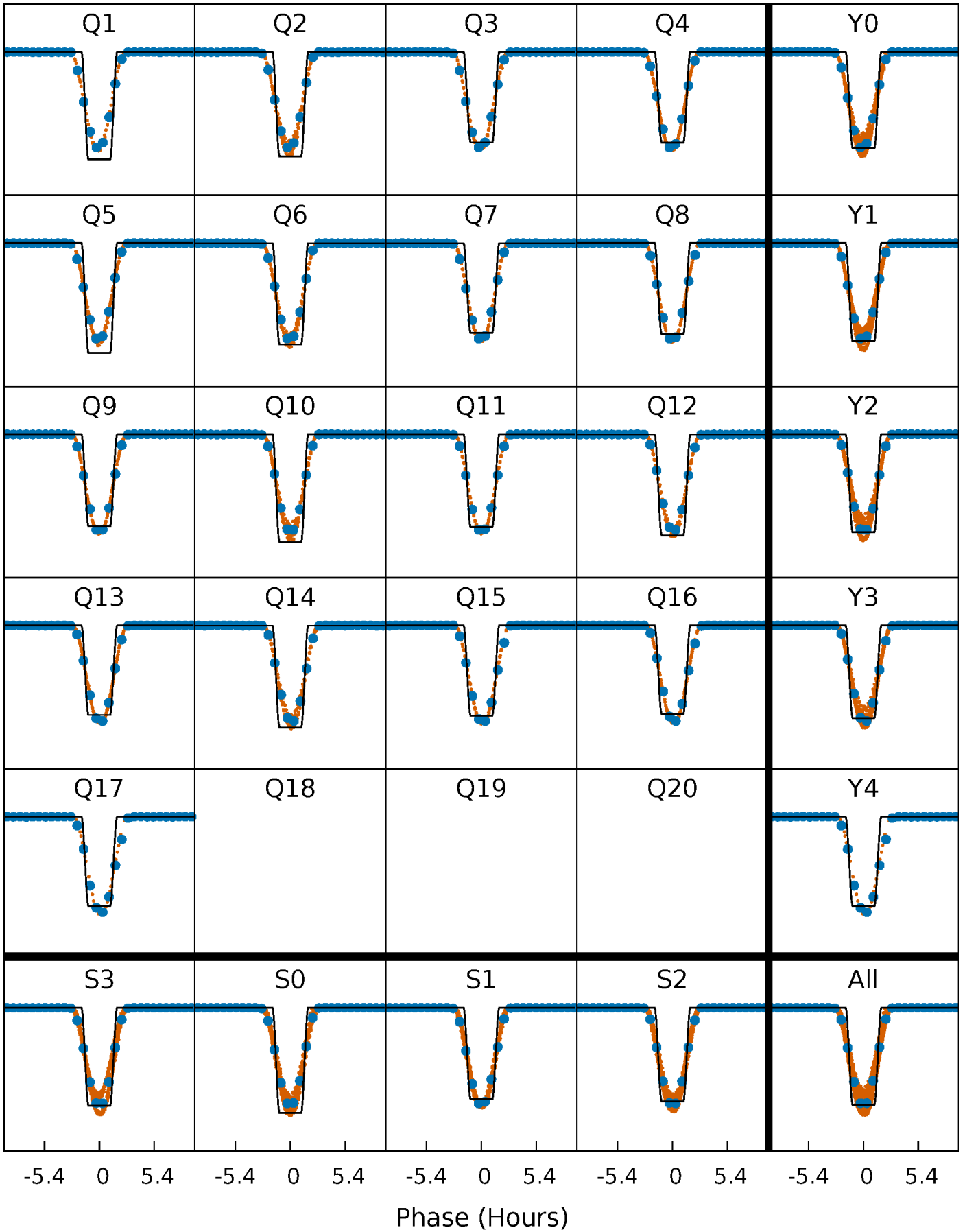
# DV Quarter-Phased Transit Curves

TCE 009266285-01 P= 5.613870 Days  $T_0=132.572739$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

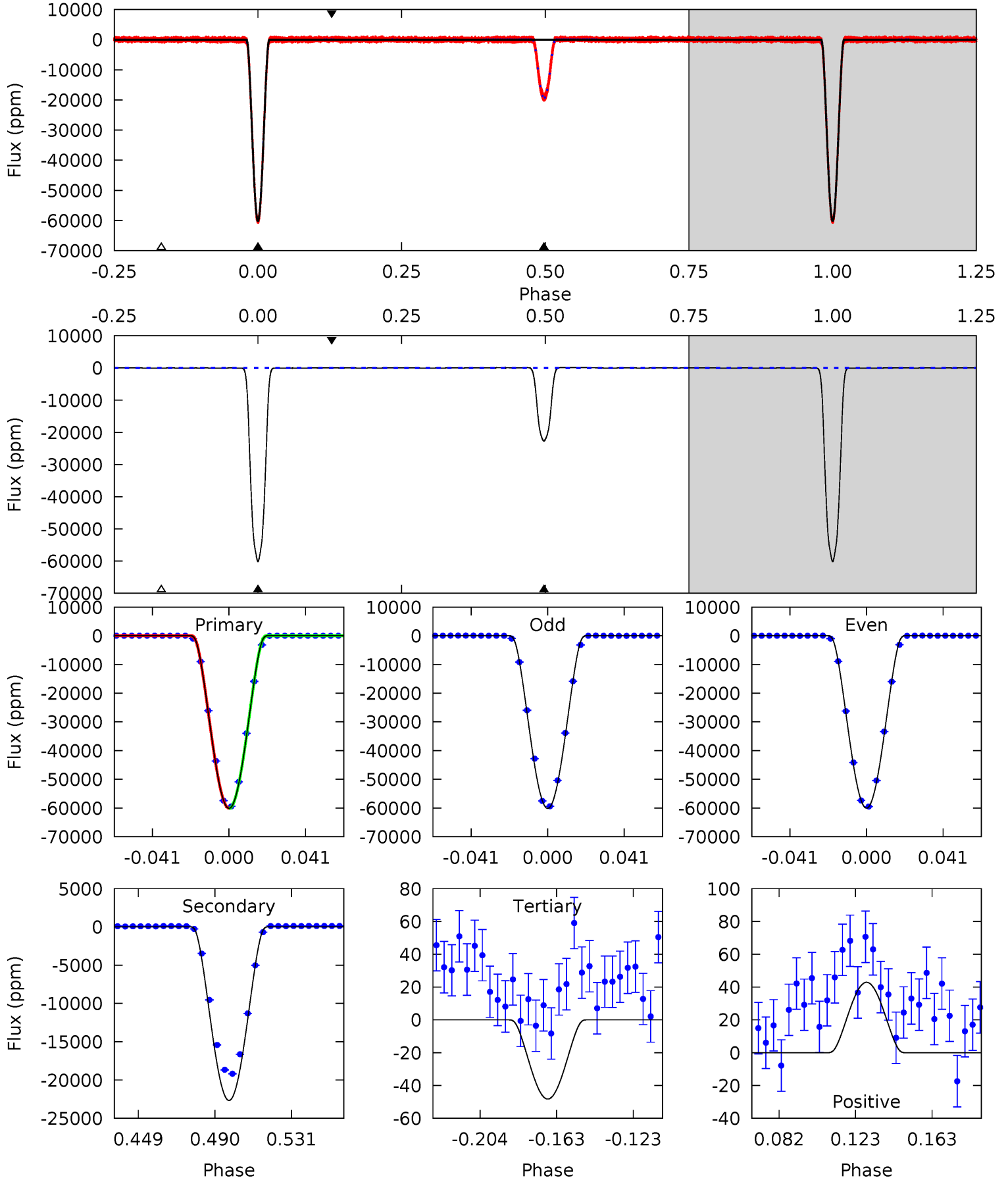
TCE 009266285-01   P= 5.613821 Days    $T_0=132.579242$  (BKJD)



# DV Model-Shift Uniqueness Test

009266285-01, P = 5.613870 Days, E = 126.958869 Days

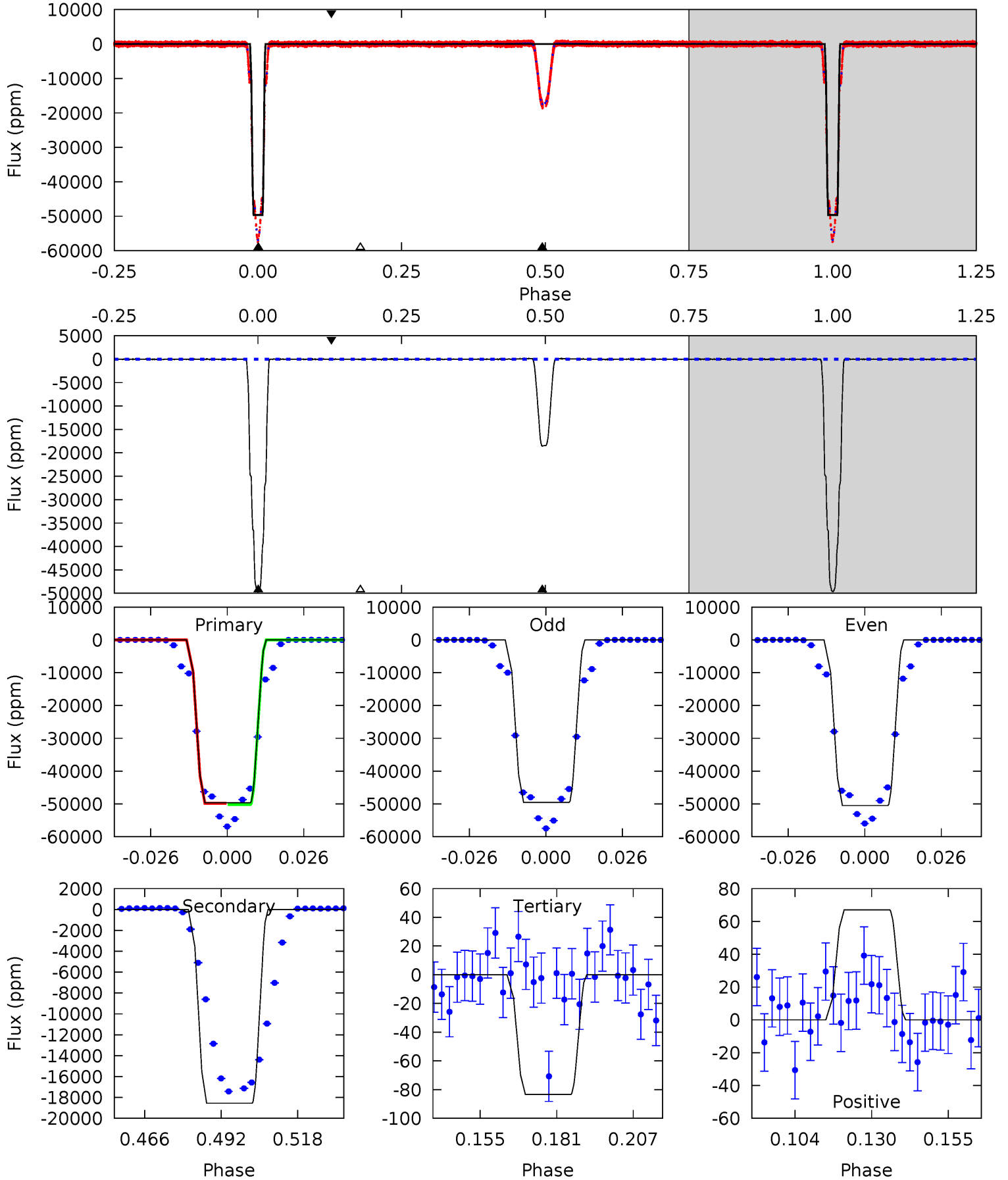
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9605	3622	7.71	6.85	4.75	2.05	5.91	9597	9598	3614	3615	7.70	0.95	0.00	10.2



# Alt Model-Shift Uniqueness Test

009266285-01, P = 5.613821 Days, E = 126.965421 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
2774	1037	4.66	3.74	4.84	2.23	1.73	2769	2770	1032	1033	27.3	0.96	0.00	0



### Stellar Parameters For KIC 009266285

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4504^{+147}_{-147}$	$4.582^{+0.052}_{-0.024}$	$0.100^{+0.250}_{-0.300}$	$0.709^{+0.038}_{-0.060}$	$0.701^{+0.060}_{-0.054}$	$2.768^{+0.641}_{-0.236}$
	+3%/-3%	+1%/-1%	+250%/-300%	+5%/-8%	+9%/-8%	+23%/-9%
Source	PHO1	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 009266285-01 / KOI 7151.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-22676 \pm 6$	$29.24^{+1.71}_{-1.79}$	$994^{+40}_{-39}$	$3296^{+96}_{-92}$	$46^{+5}_{-4}$
Alt.	$-18551 \pm 18$	$18.27^{+1.40}_{-1.38}$	$992^{+36}_{-38}$	$3703^{+127}_{-123}$	$95^{+15}_{-12}$

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

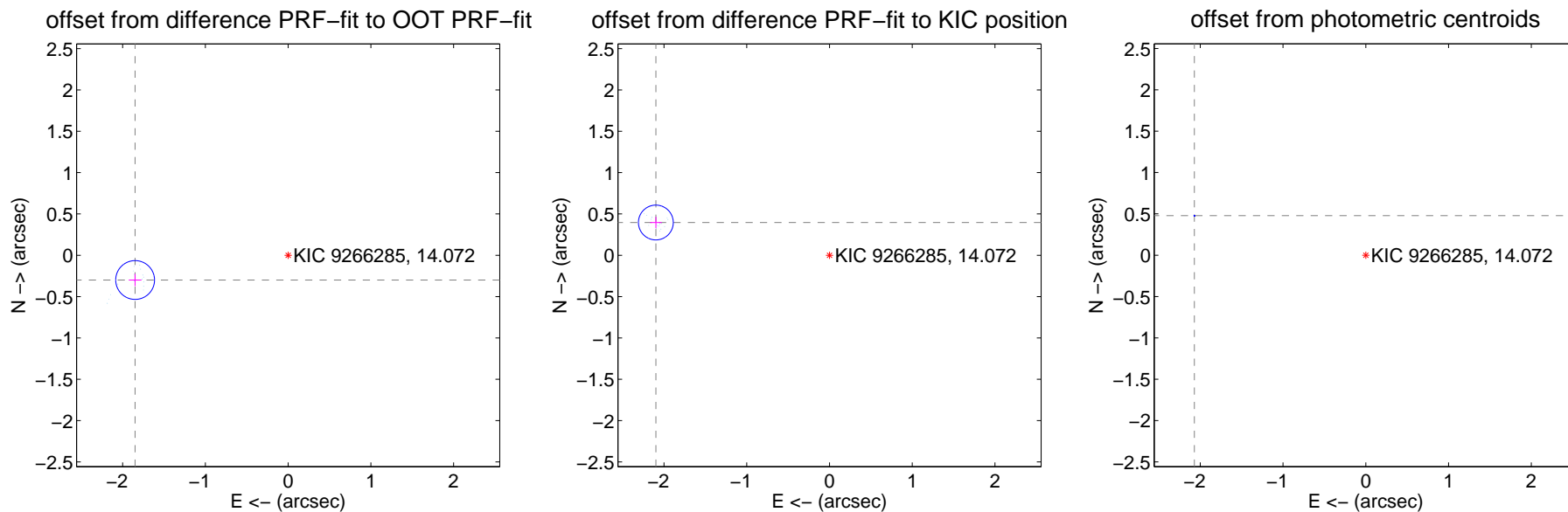
## DV Centroid Data

Supplemental centroid analysis for 009266285-01. Kepler magnitude: 14.07. Transit SNR 3716.66

There are 17 quarters with good PRF difference image offsets

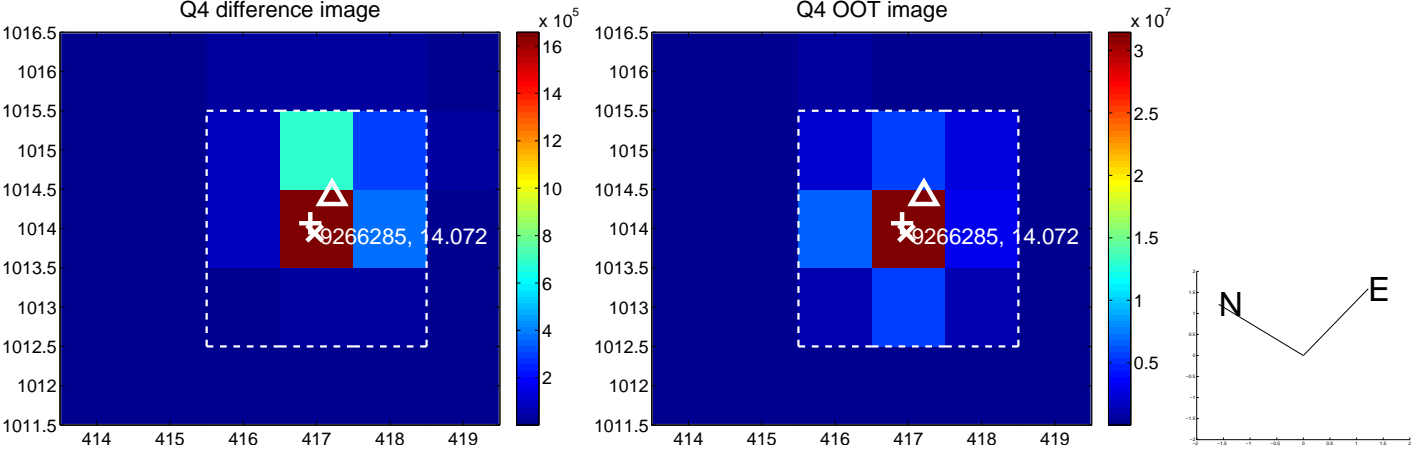
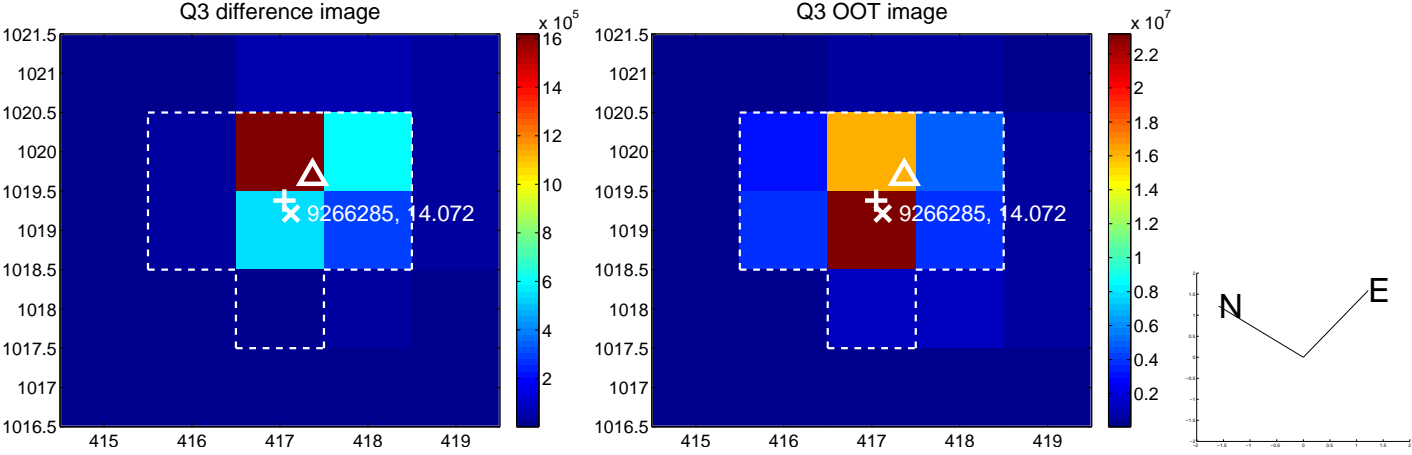
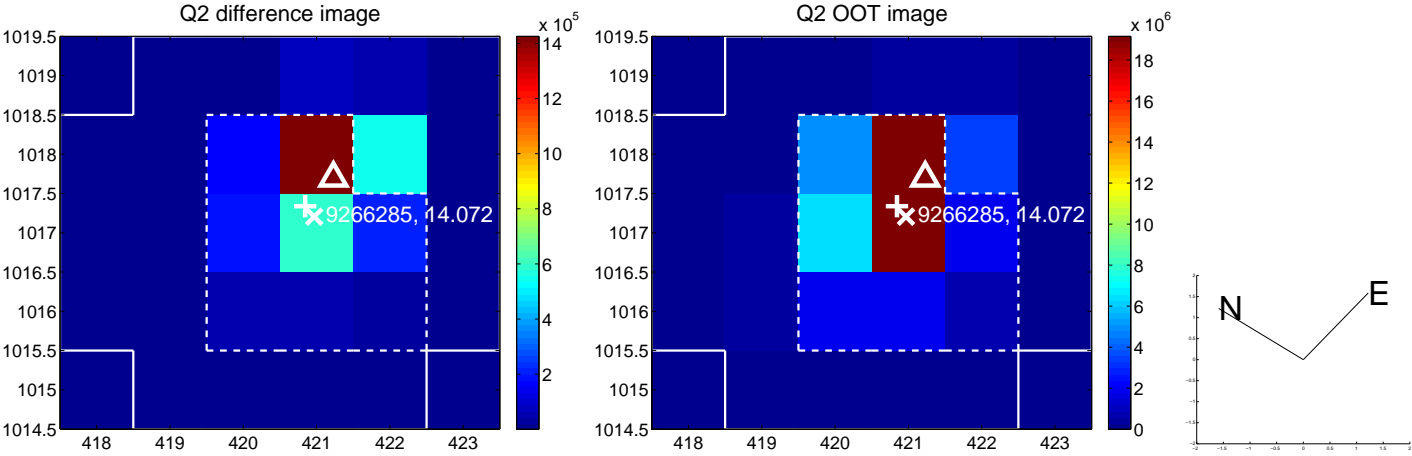
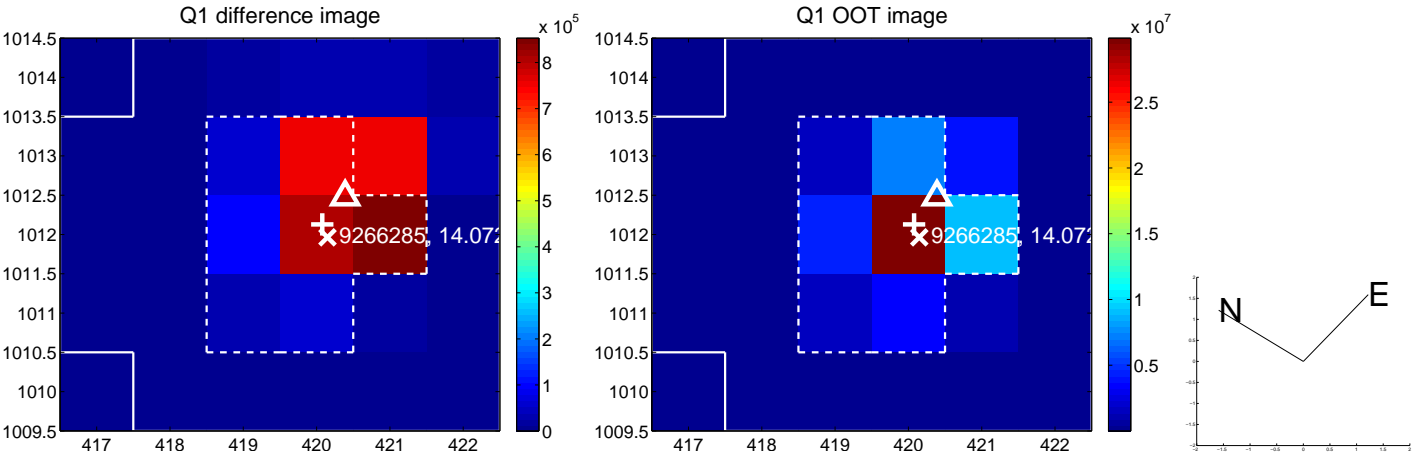
The direct PRF centroid is offset from the target star catalog position by about 0.82 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.873 \pm 0.078$	23.95	$1.849 \pm 0.077$	$-0.299 \pm 0.074$
PRF-fit source offset from KIC position	$2.136 \pm 0.070$	30.42	$2.099 \pm 0.070$	$0.396 \pm 0.069$
photometric centroid source offset	$2.13 \pm 0.00$	1245.80	$2.07 \pm 0.00$	$0.48 \pm 0.00$

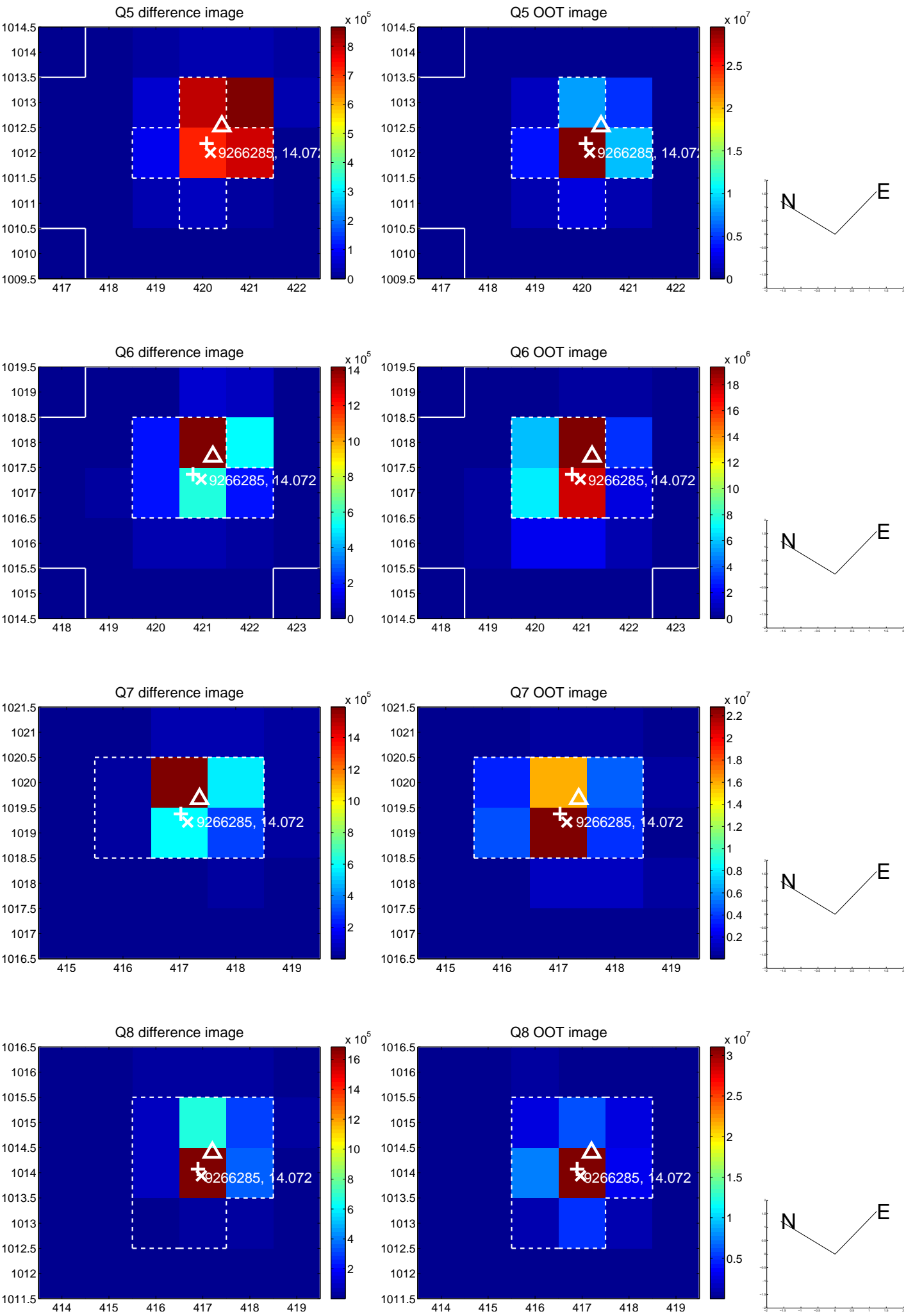


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

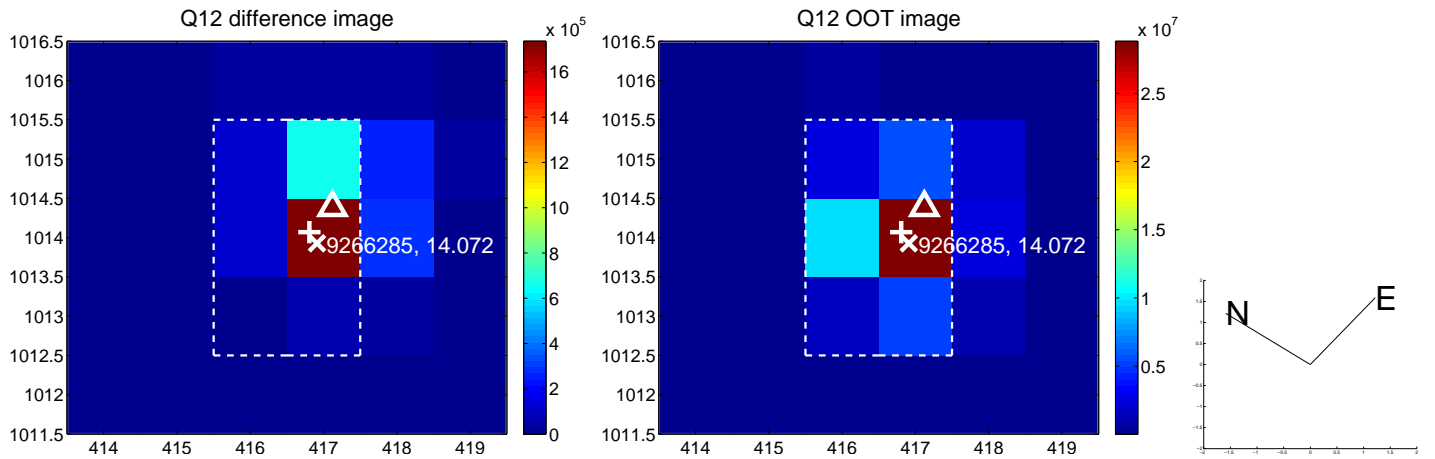
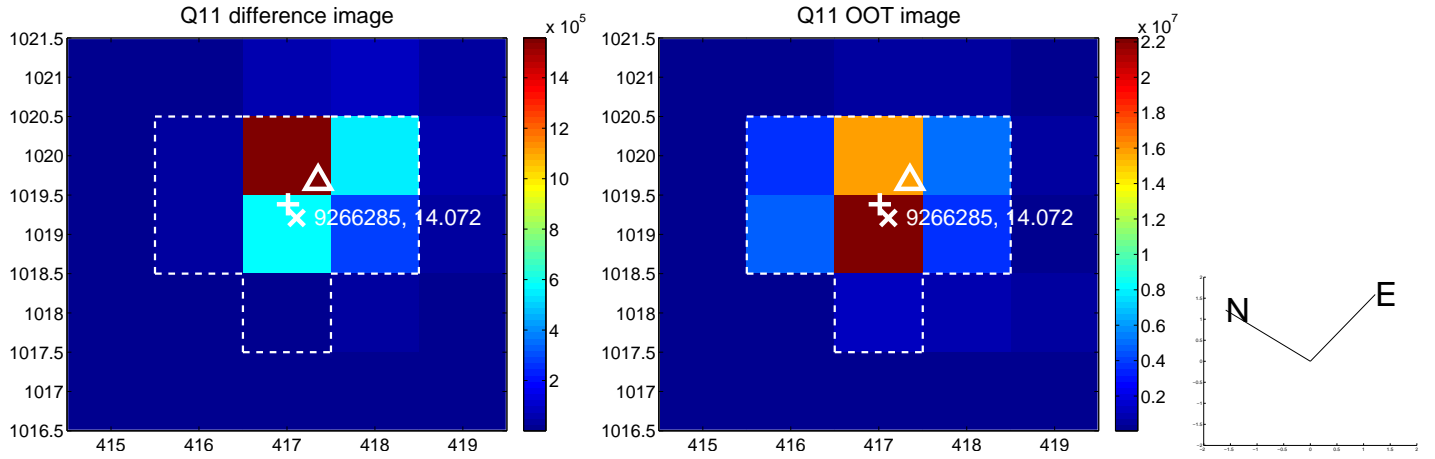
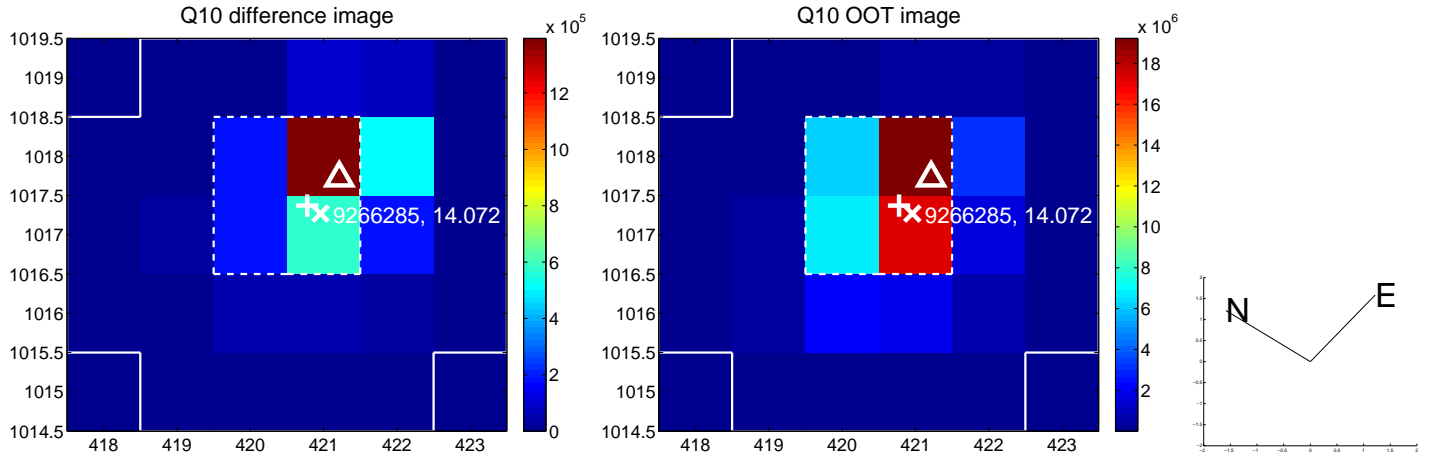
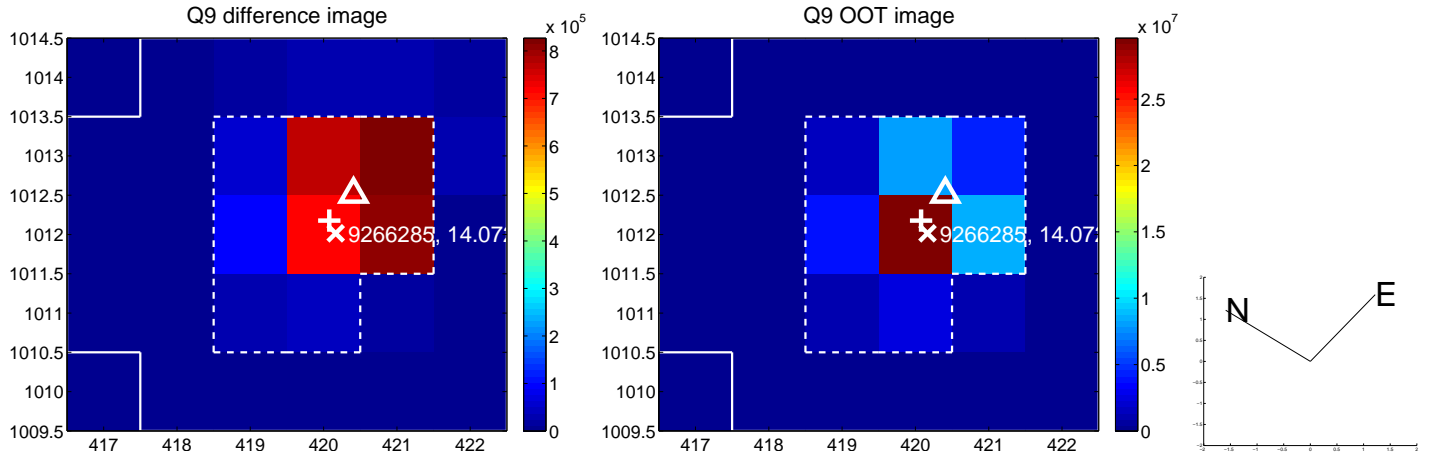


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

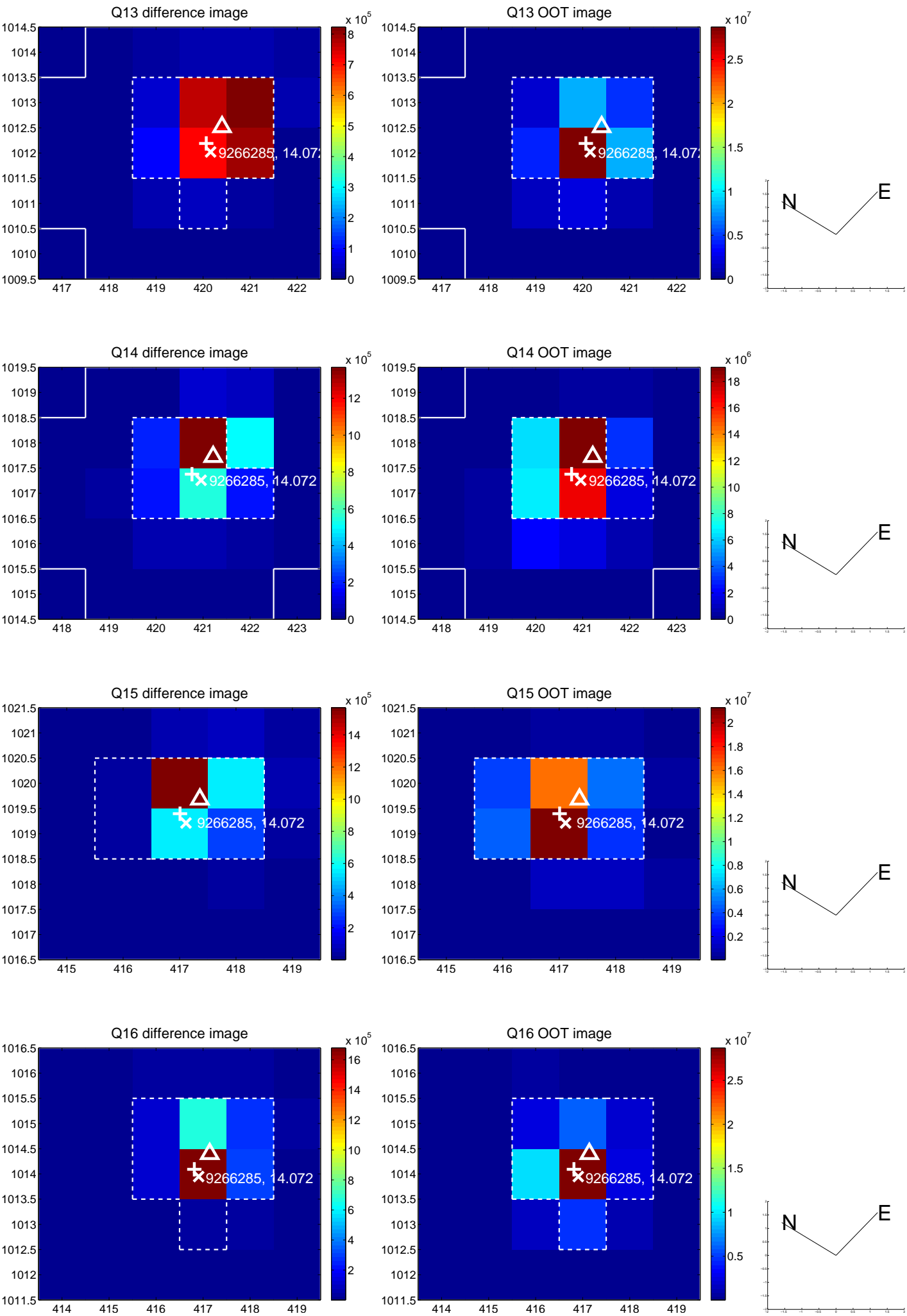




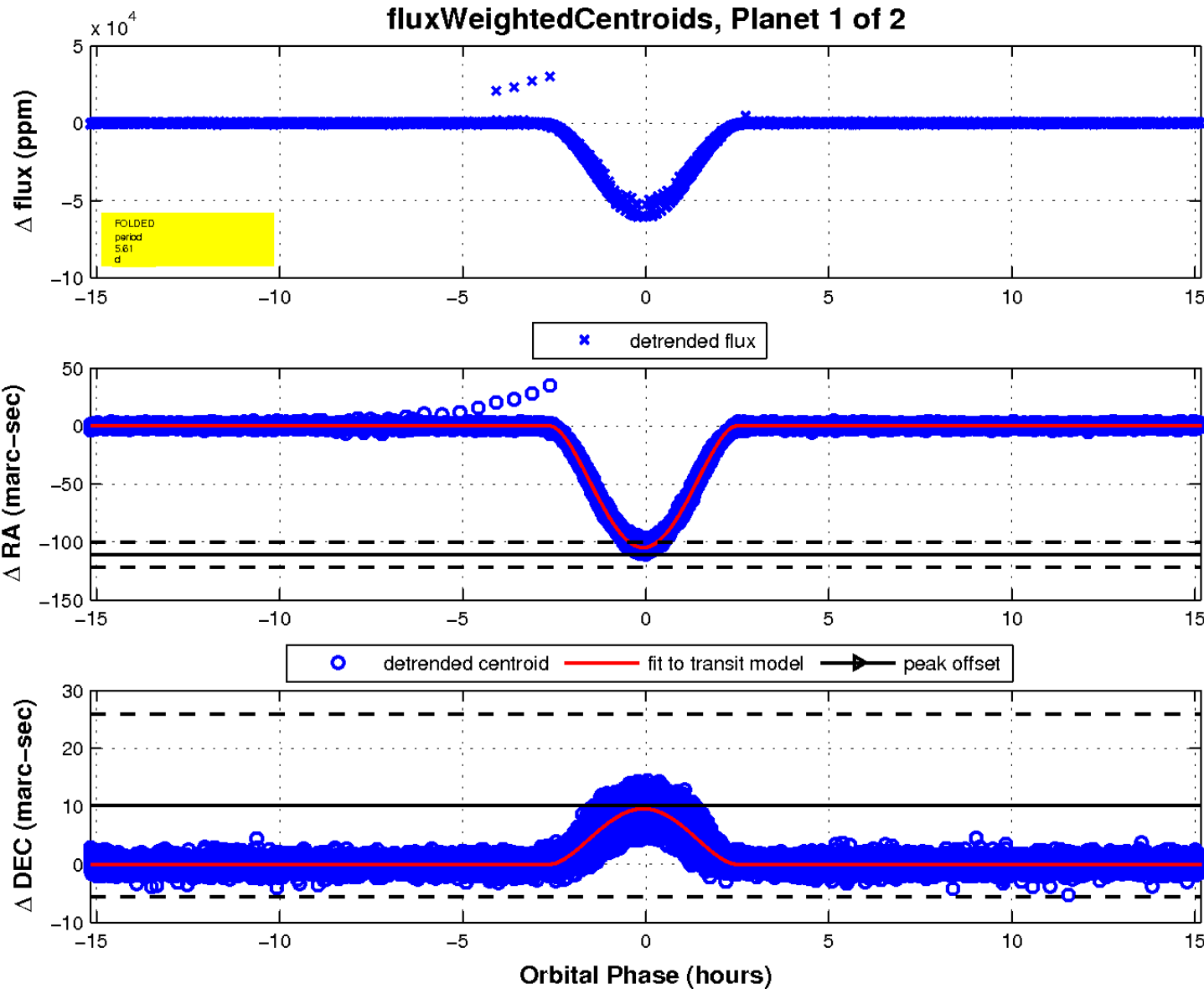
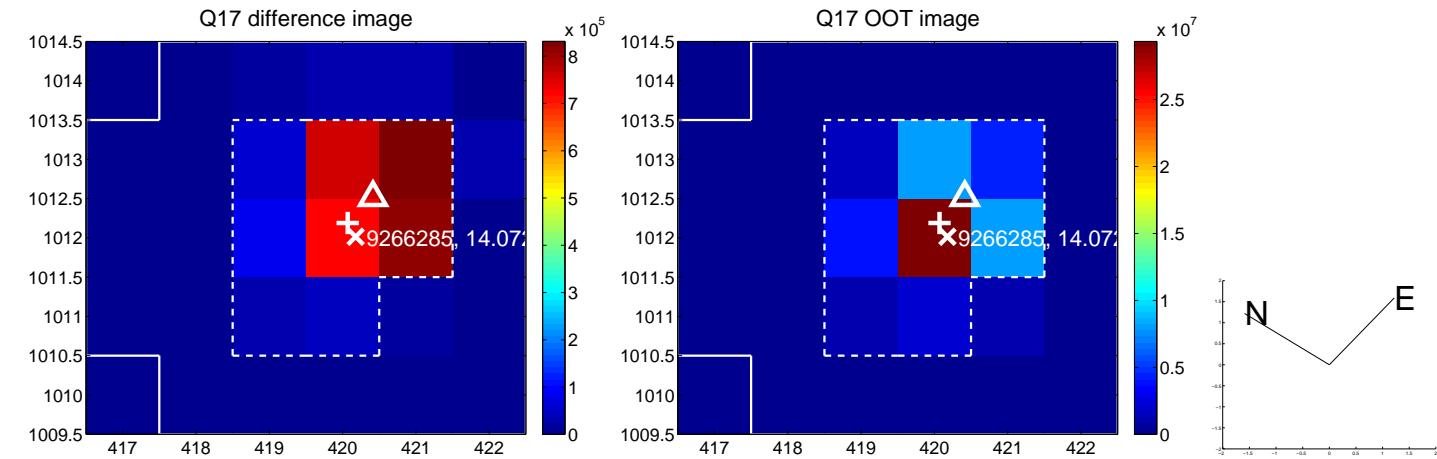
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

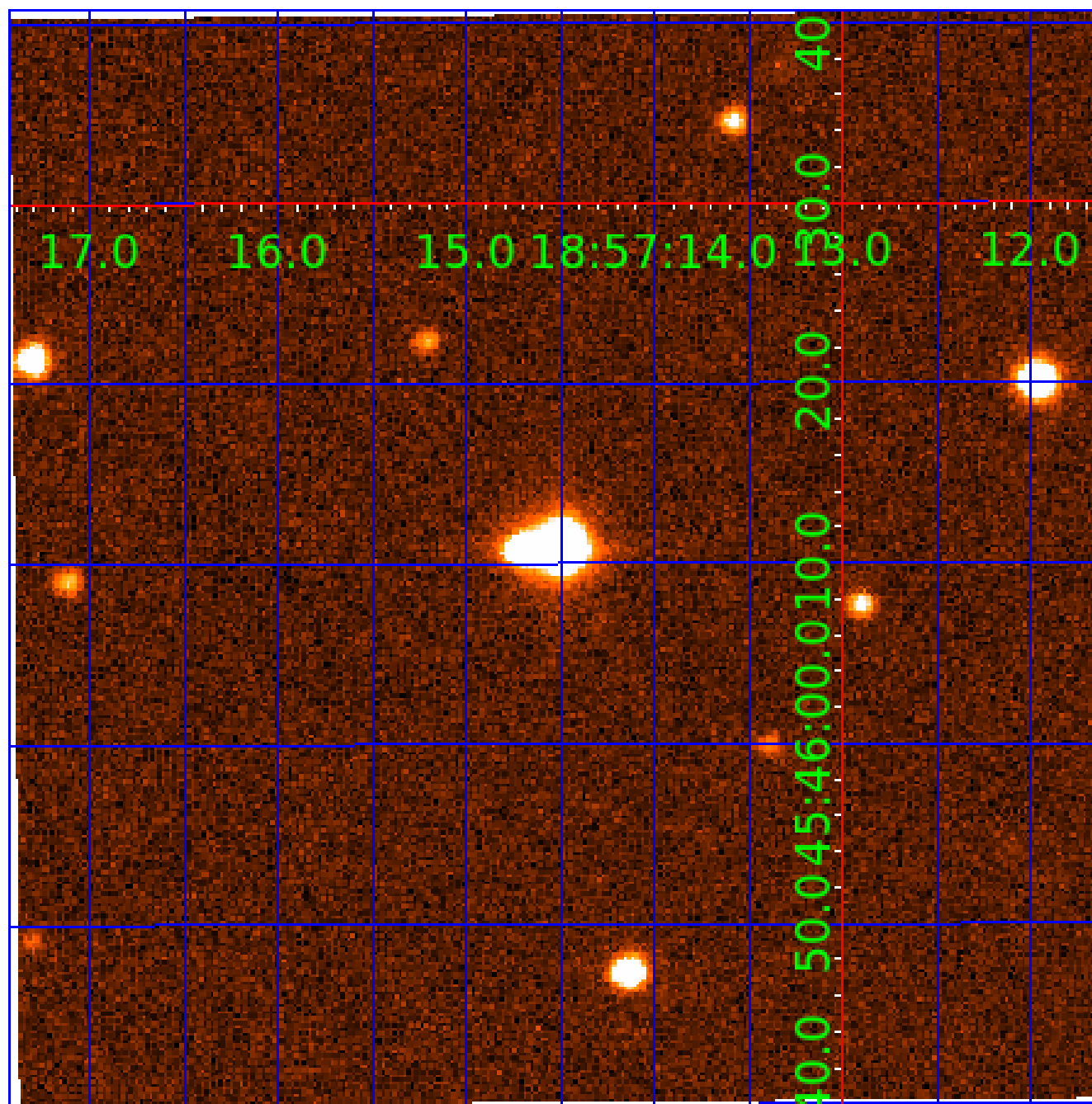


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 009266285

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009266285-01	OBS	7151.01	5.613870	132.572739	59848.7	5.056	5357.8	3716.7	0.71	4504	29.39	61.48
009266285-02	OBS	No	5.613868	135.368622	19873.3	4.955	1986.0	1434.5	0.71	4504	13.07	61.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009266285-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE—CENT_KIC_POS
009266285-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—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.

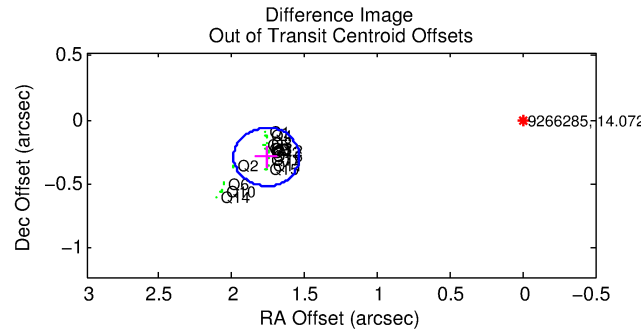
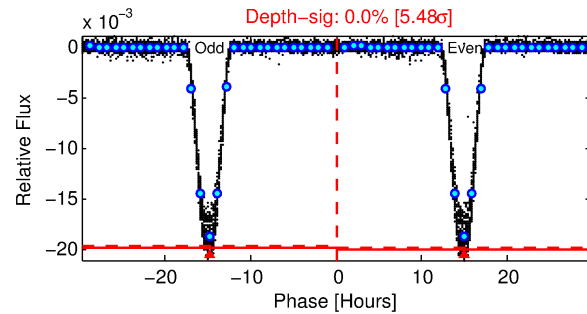
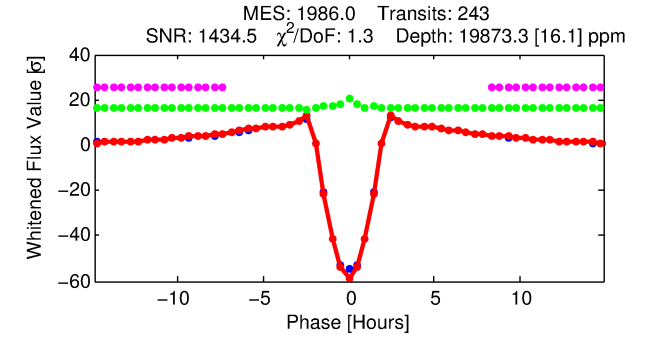
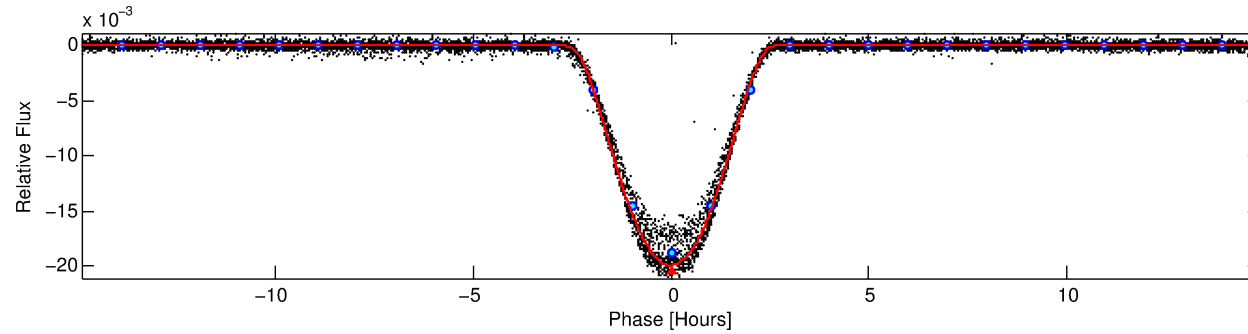
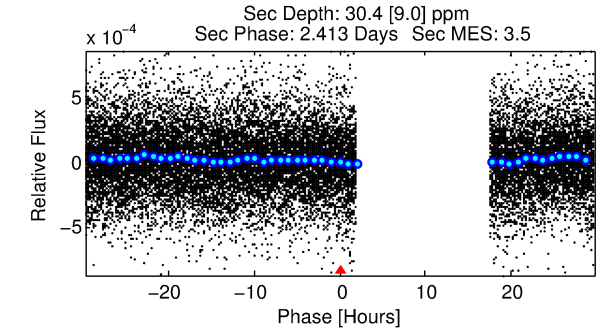
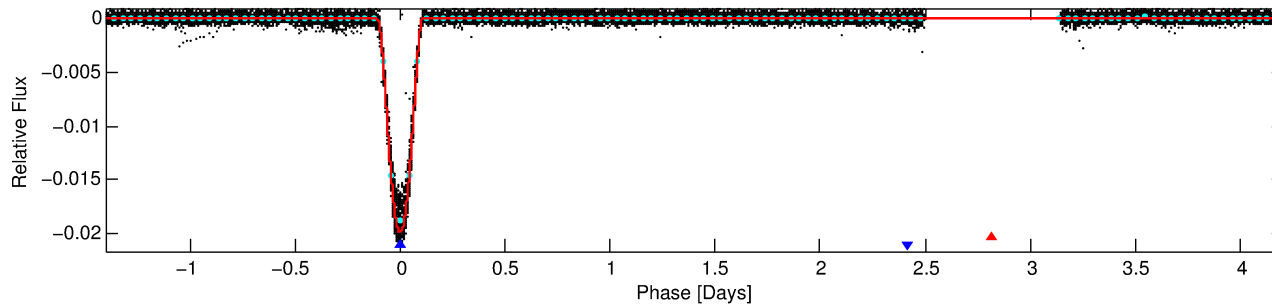
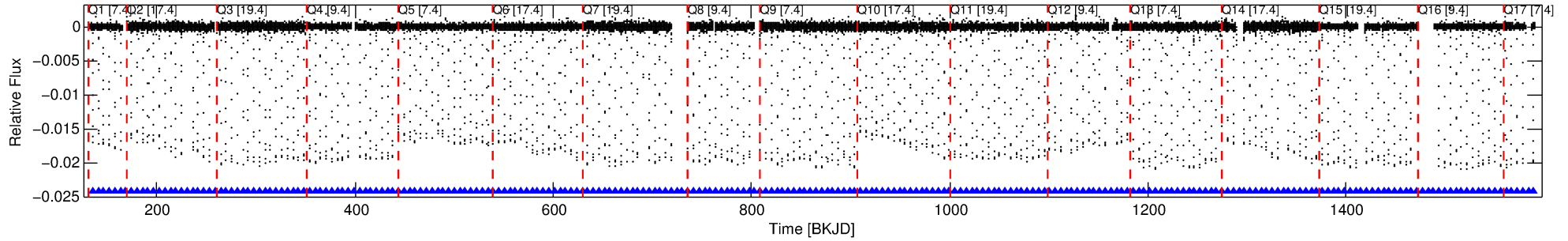
## Ephemeris Match Information For 009266285-02

No Significant Match Found

# DV One-Page Summary

KIC: 9266285 Candidate: 2 of 2 Period: 5.614 d  
KOI: K07151 Corr: No Ephemeris Match

Kp: 14.07 R\*: 0.71 Rs Teff: 4504.0 K Logg: 4.58 Fe/H: 0.100



## DV Fit Results:

Period = 5.61387 [0.00000] d  
Epoch = 135.3686 [0.0001] BKJD  
Rp/R\* = 0.1690 [0.0009]  
a/R\* = 6.64 [0.01]  
b = 0.89 [0.00]  
Seff = 61.48 [10.03]  
Teq = 714 [29] K  
Rp = 13.07 [1.11] Re  
a = 0.0549 [0.0038] AU  
Ag = 0.30 [0.09] [-7.69σ]  
Teffp = 814 [66] K [1.39σ]

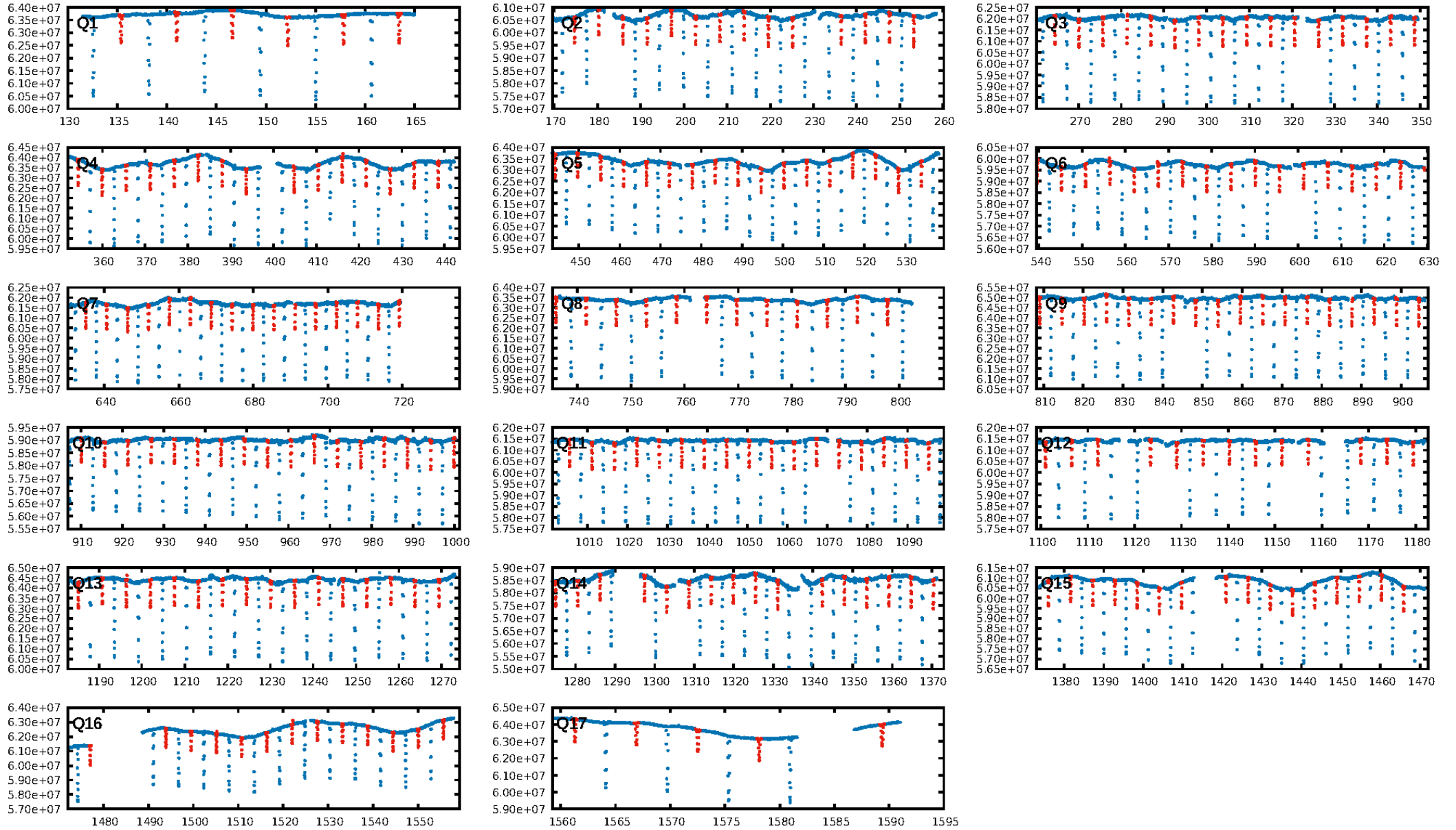
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [232/232]  
GhostDiagnostic-chr: 2.985  
Centroid-sig: 0.0%  
Centroid-so: 2.084 arcsec [423.77σ]  
OotOffset-rm: 1.785 arcsec [23.65σ]  
KicOffset-rm: 2.084 arcsec [30.24σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 05:36:58 Z

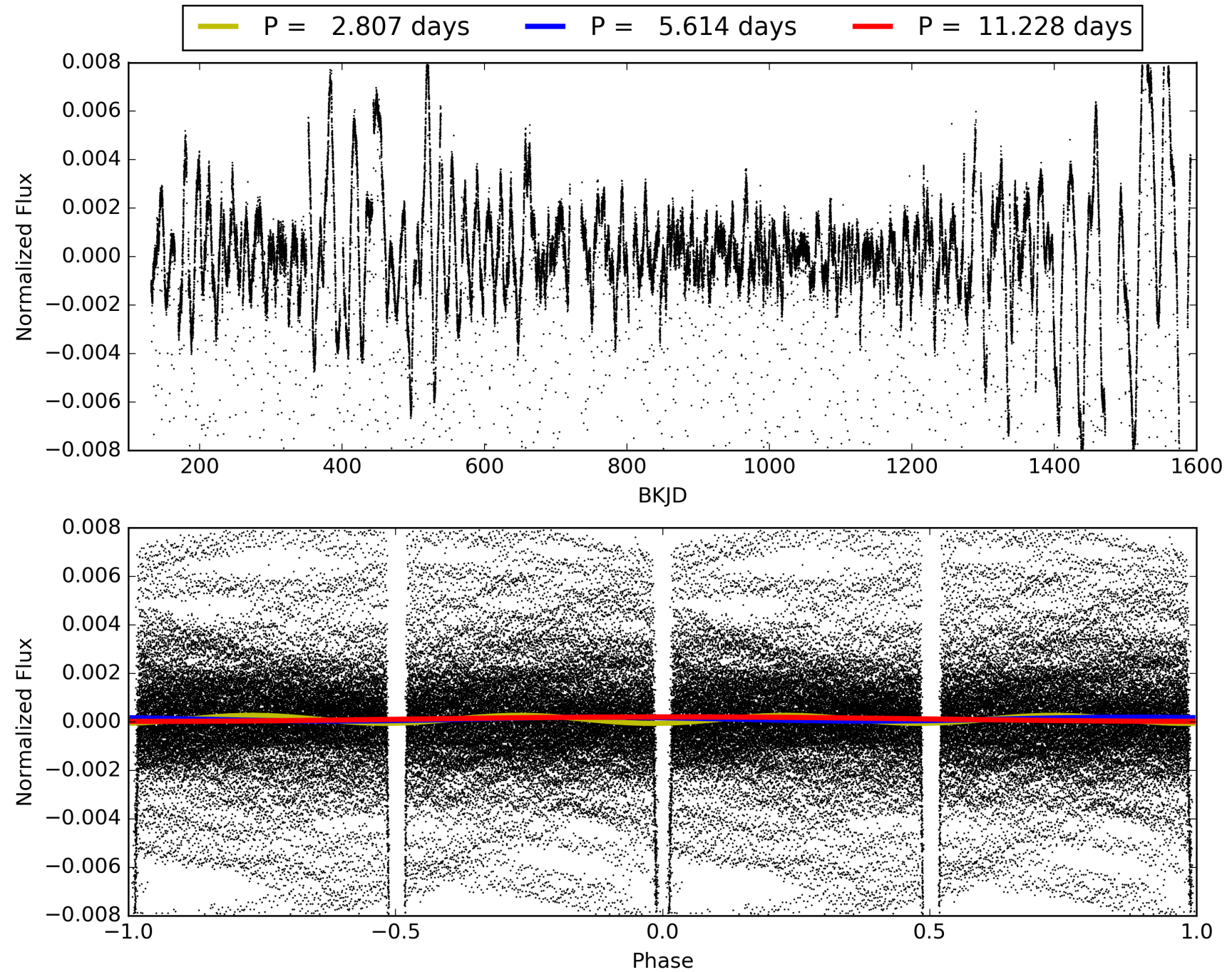
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009266285-02, PDC Light Curves





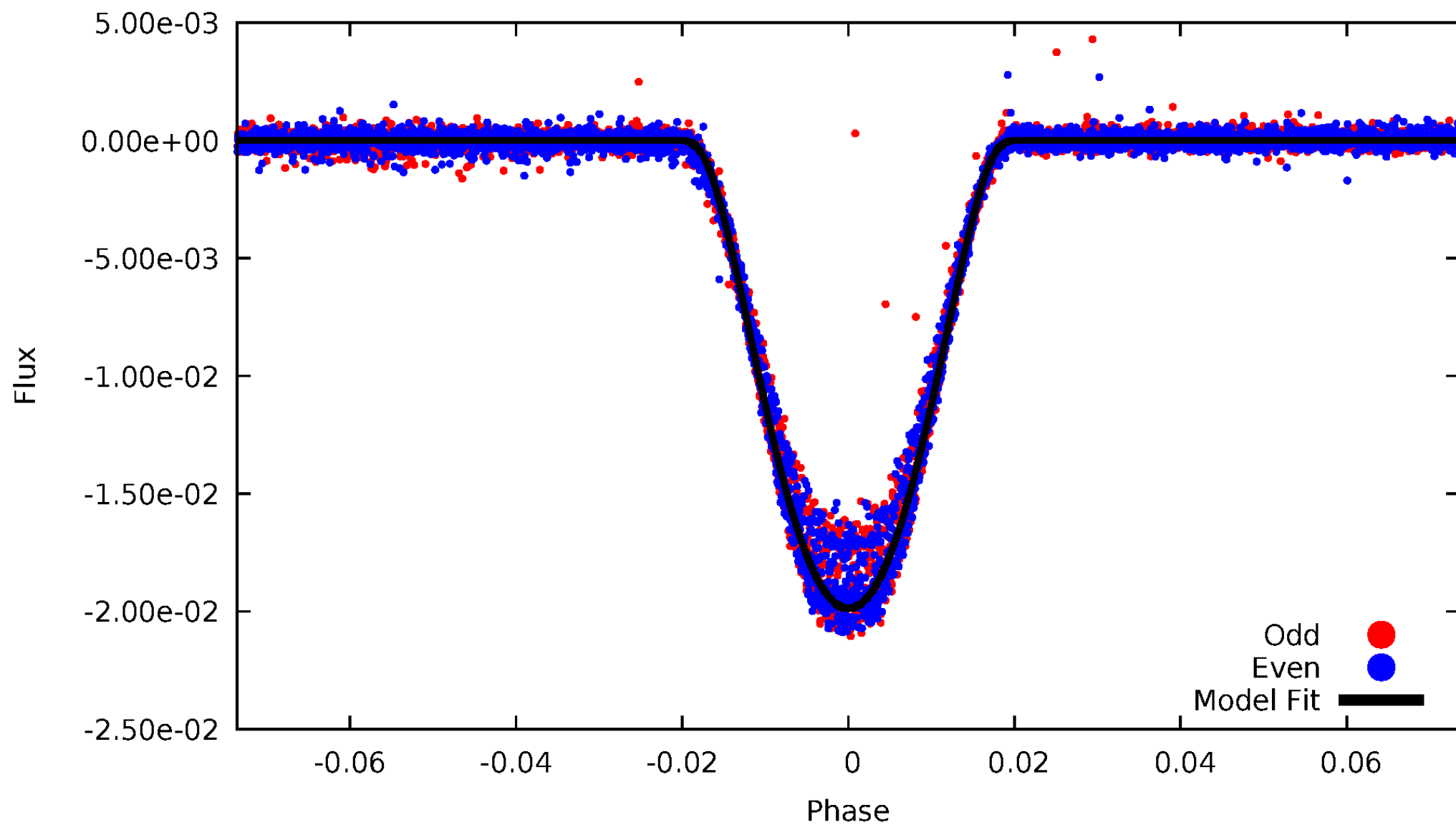
TCE 009266285-02





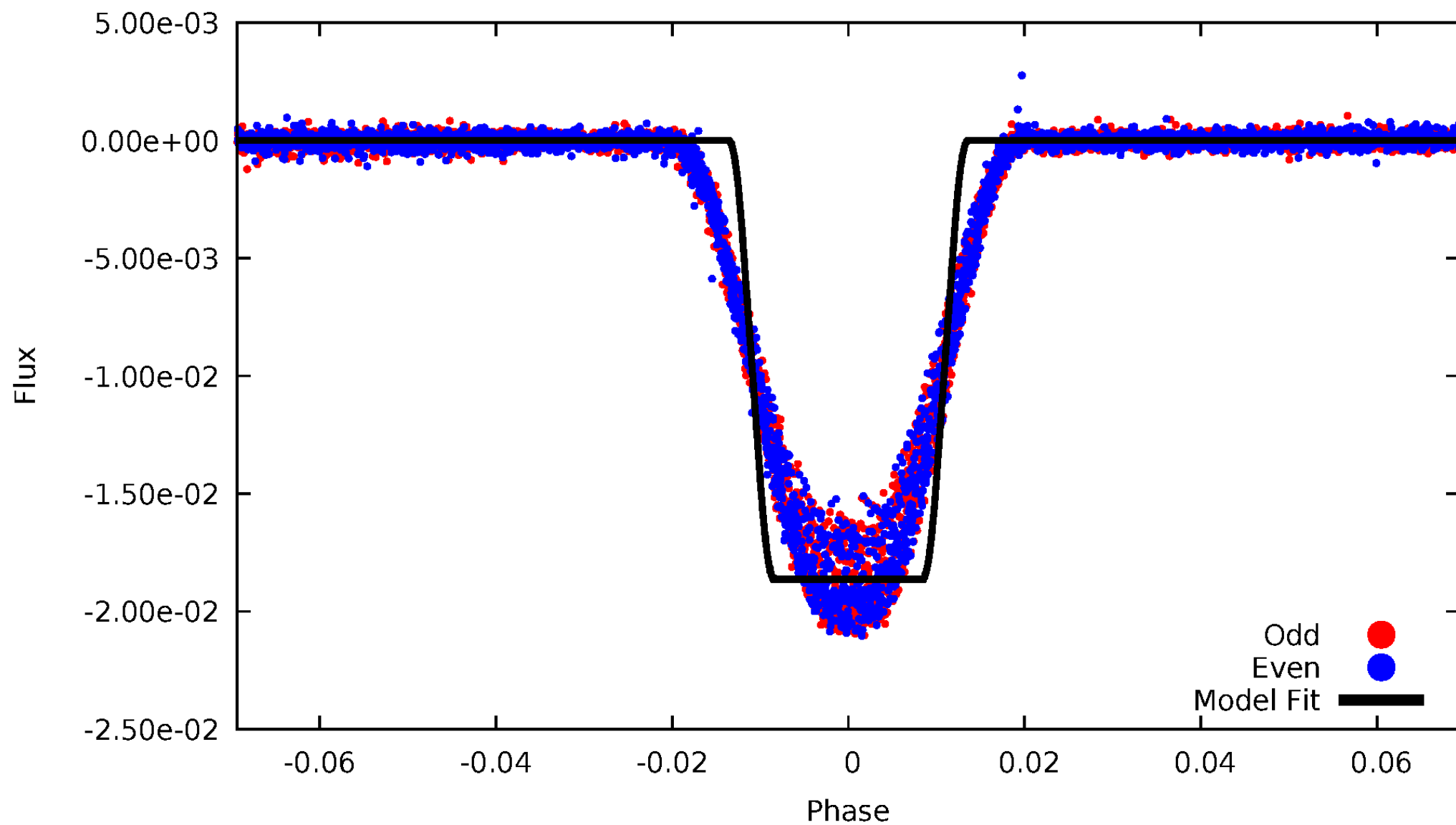
# DV Odd/Even

TCE 009266285-02



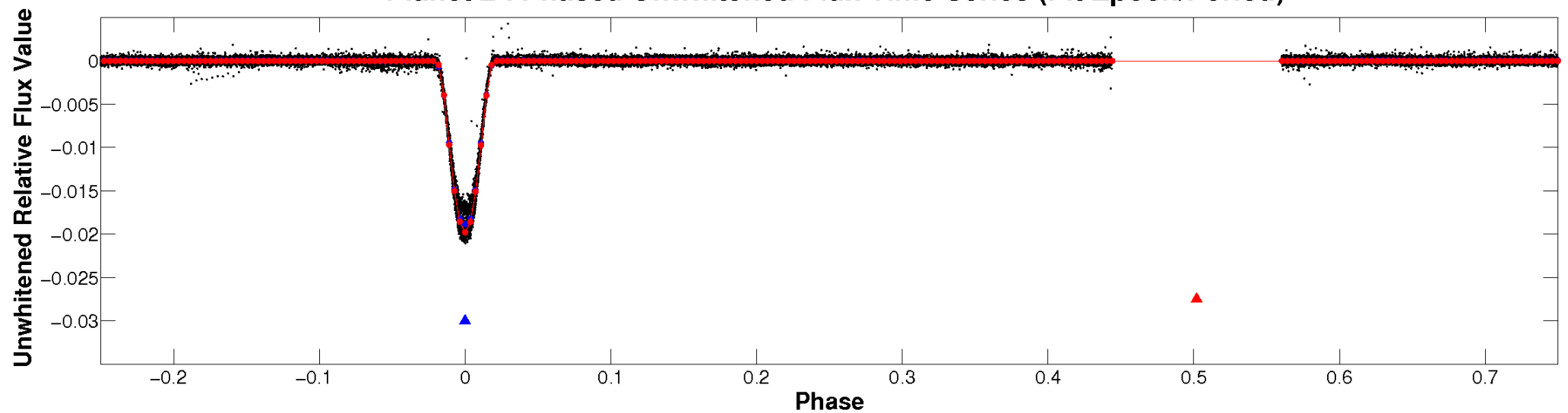
# ALT Odd/Even

TCE 009266285-02

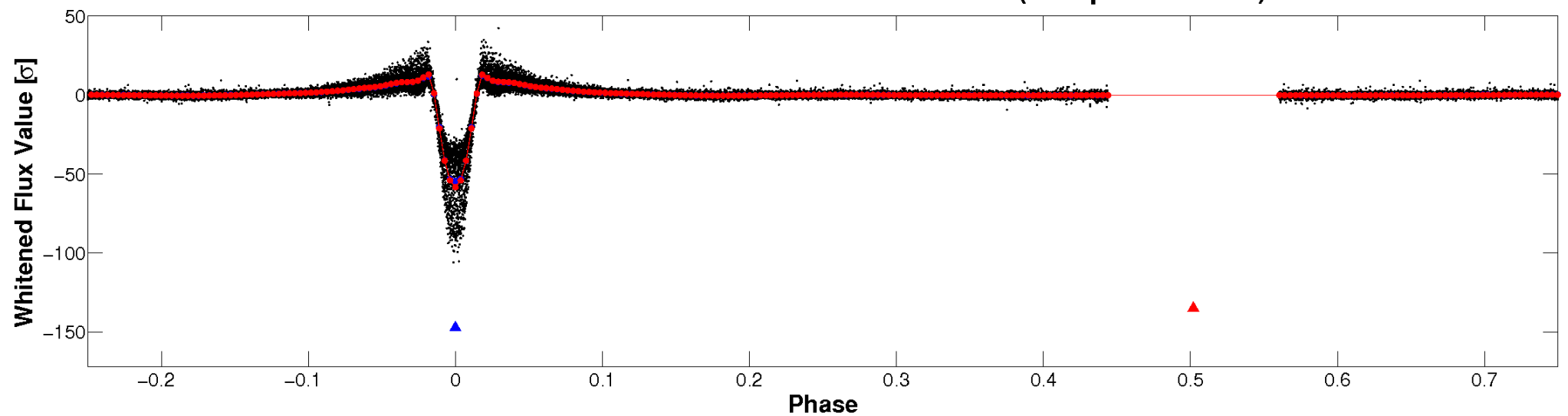


# Non-Whitened Vs. Whitened Light Curve

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

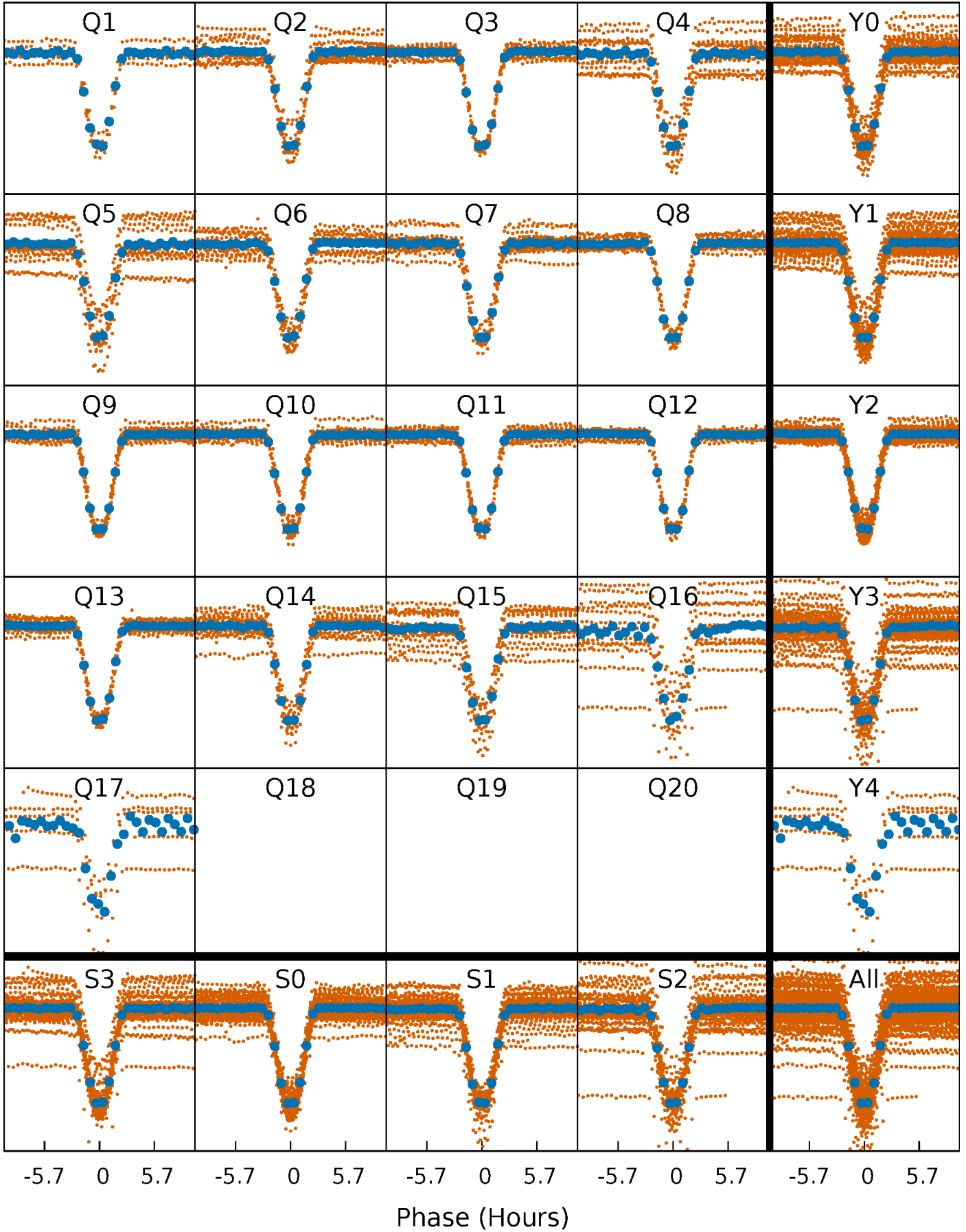


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



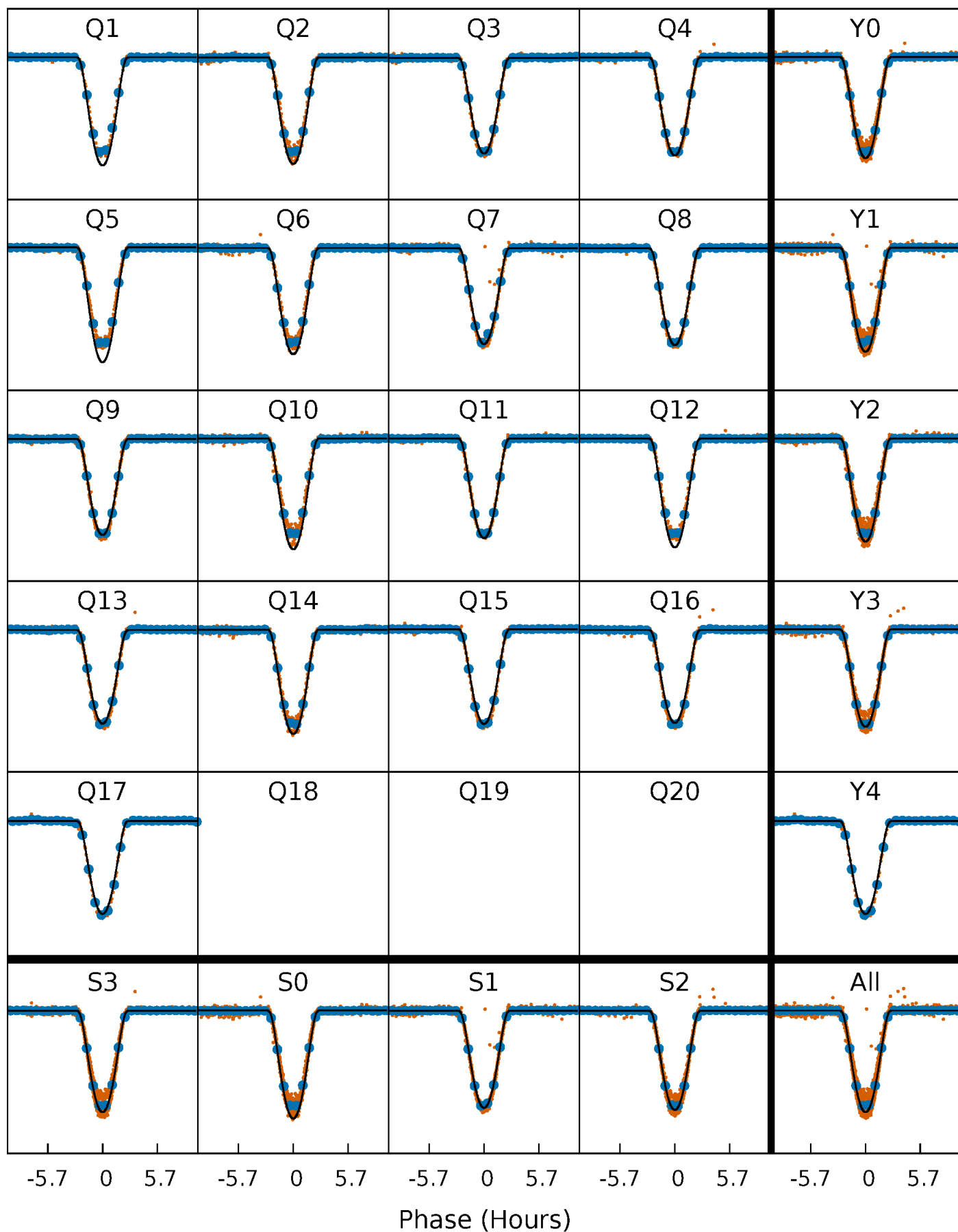
# PDC Quarter-Phased Transit Curves

TCE 009266285-02   P= 5.613868 Days    $T_0=135.368622$  (BKJD)



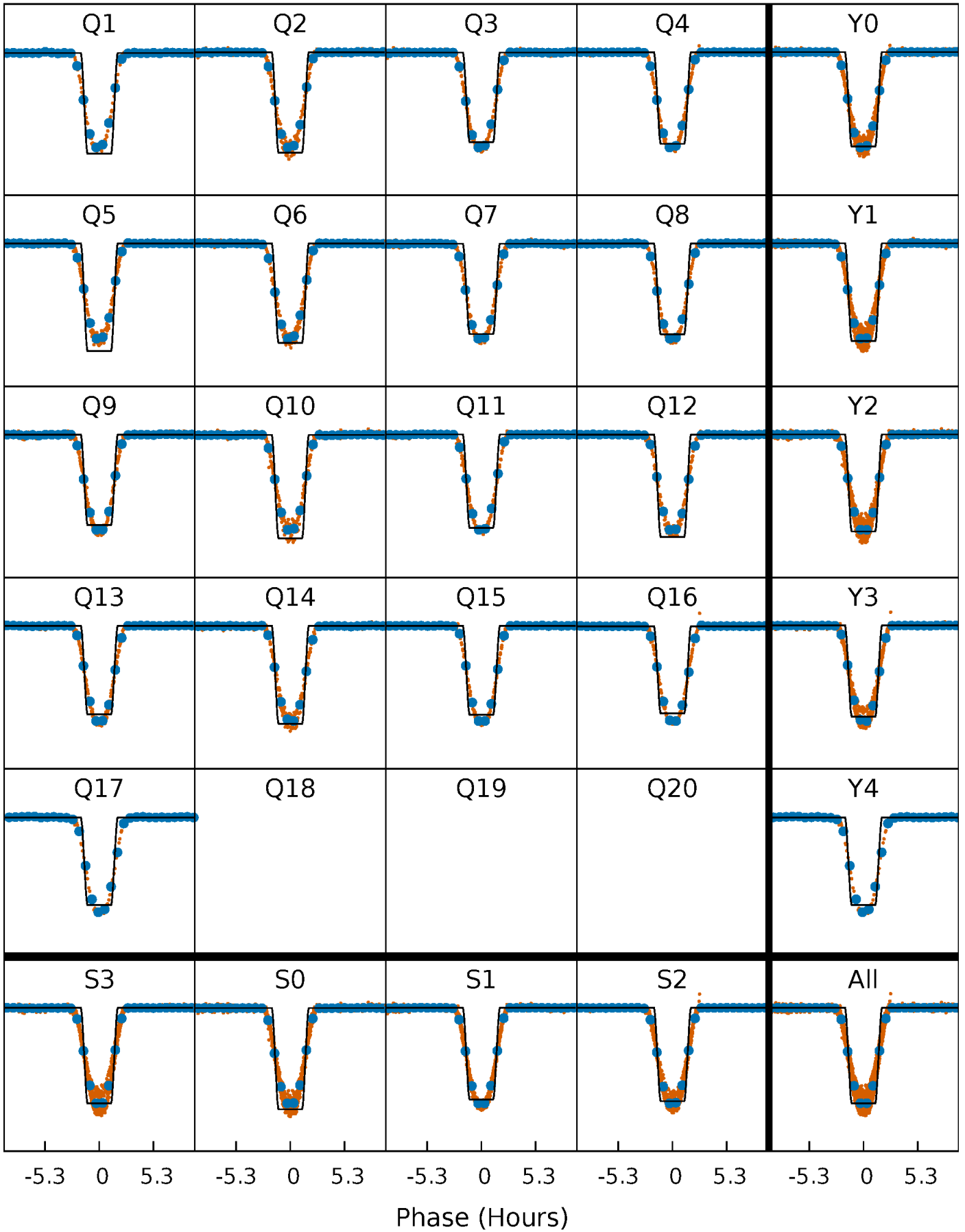
# DV Quarter-Phased Transit Curves

TCE 009266285-02 P= 5.613868 Days  $T_0=135.368622$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

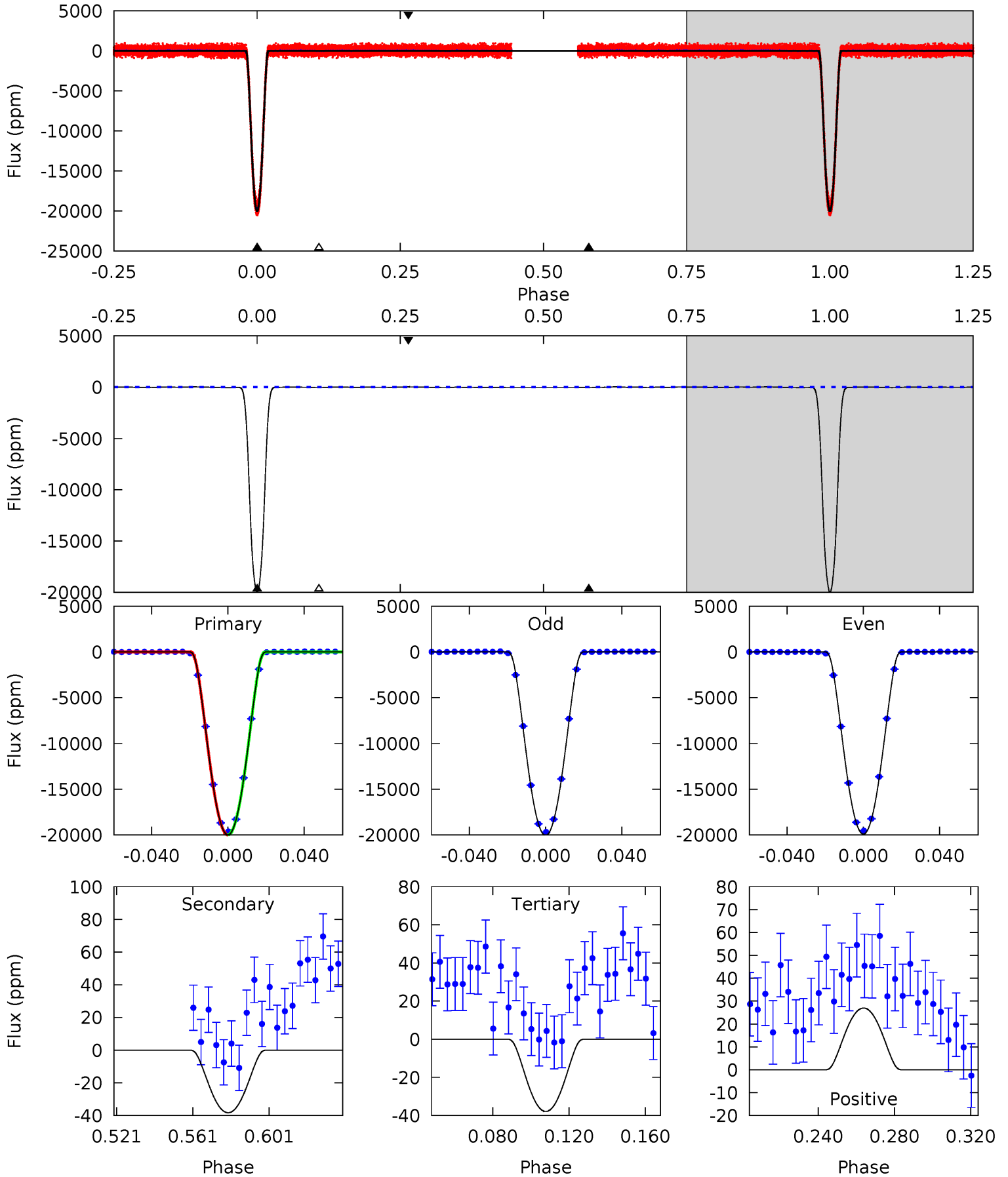
TCE 009266285-02     $P = 5.613844$  Days     $T_0 = 135.371875$  (BKJD)



# DV Model-Shift Uniqueness Test

009266285-02, P = 5.613868 Days, E = 129.754754 Days

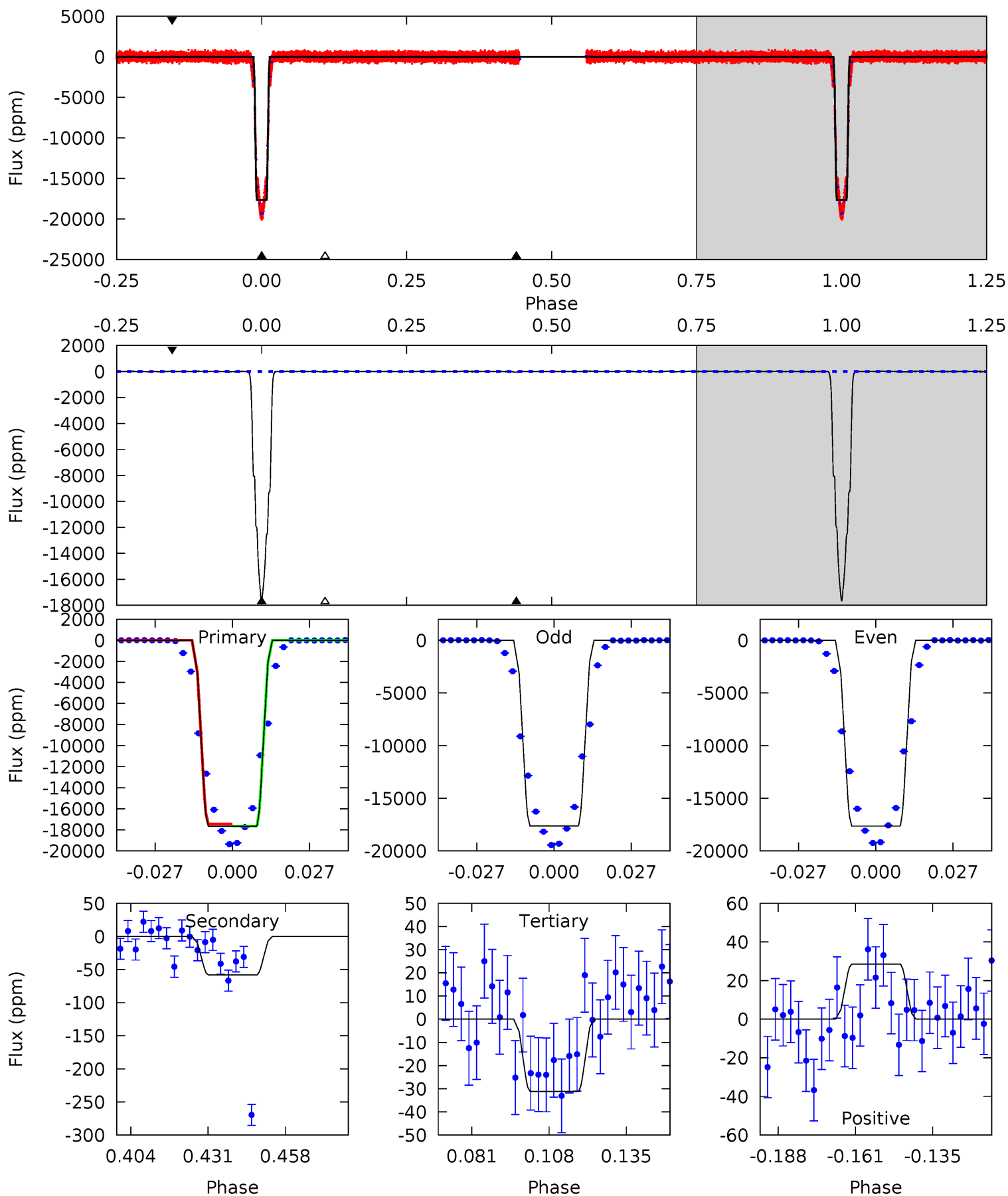
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3712	7.11	7.04	5.01	4.75	2.05	3.16	3705	3707	0.07	2.10	13.3	0.97	0.00	0



# Alt Model-Shift Uniqueness Test

009266285-02, P = 5.613844 Days, E = 129.758031 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
2102	6.94	3.71	3.40	4.83	2.21	1.27	2098	2099	3.23	3.54	0.81	0.98	0.00	0





### Stellar Parameters For KIC 009266285

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4504^{+147}_{-147}$	$4.582^{+0.052}_{-0.024}$	$0.100^{+0.250}_{-0.300}$	$0.709^{+0.038}_{-0.060}$	$0.701^{+0.060}_{-0.054}$	$2.768^{+0.641}_{-0.236}$
	+3%/-3%	+1%/-1%	+250%/-300%	+5%/-8%	+9%/-8%	+23%/-9%
Source	PHO1	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 009266285-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-38 \pm 5$	$13.04^{+0.51}_{-0.62}$	$992^{+37}_{-36}$	$1618^{+81}_{-140}$	$0.382^{+0.064}_{-0.054}$
Alt.	$-58 \pm 8$	$10.55^{+0.37}_{-0.54}$	$991^{+37}_{-36}$	$1935^{+54}_{-58}$	$0.894^{+0.141}_{-0.147}$

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

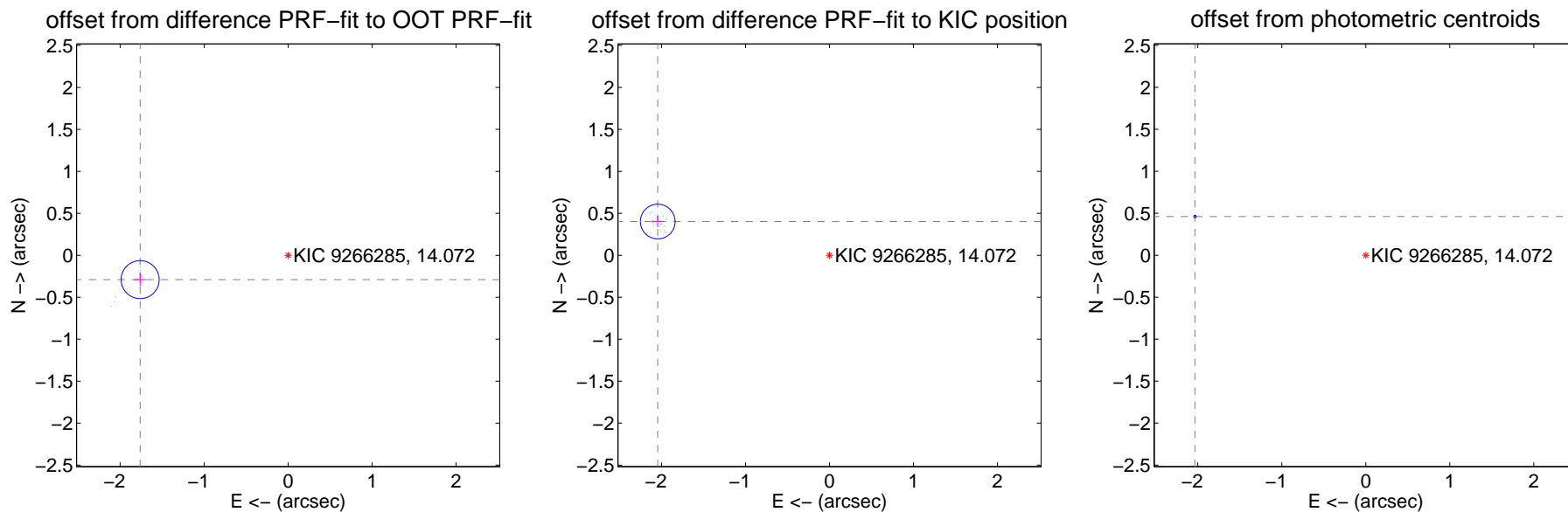
## DV Centroid Data

Supplemental centroid analysis for 009266285-02. Kepler magnitude: 14.07. Transit SNR 1434.51

There are 17 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.82 arcsec

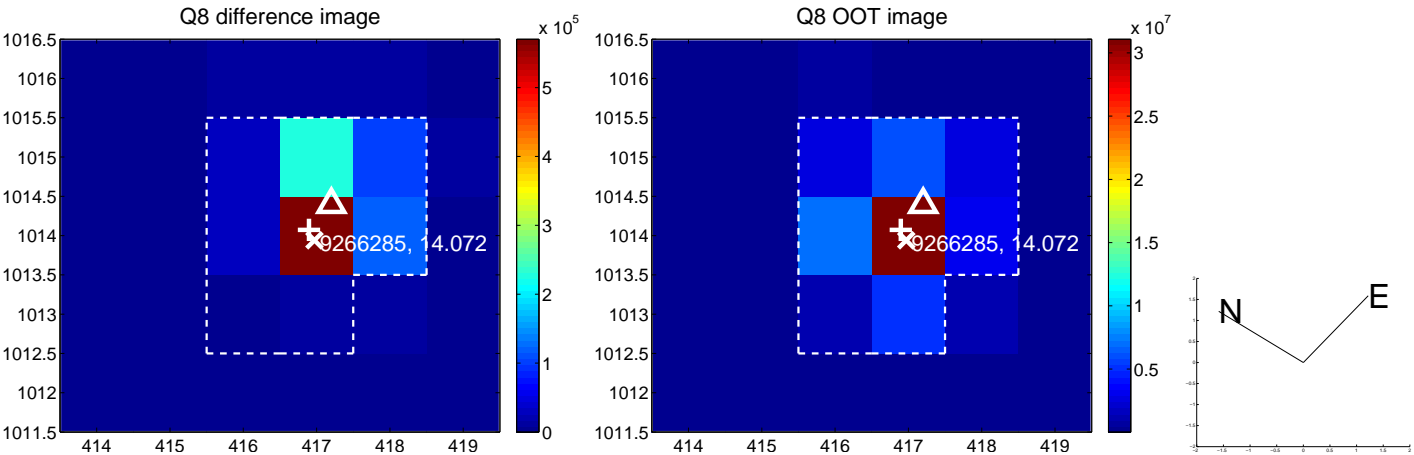
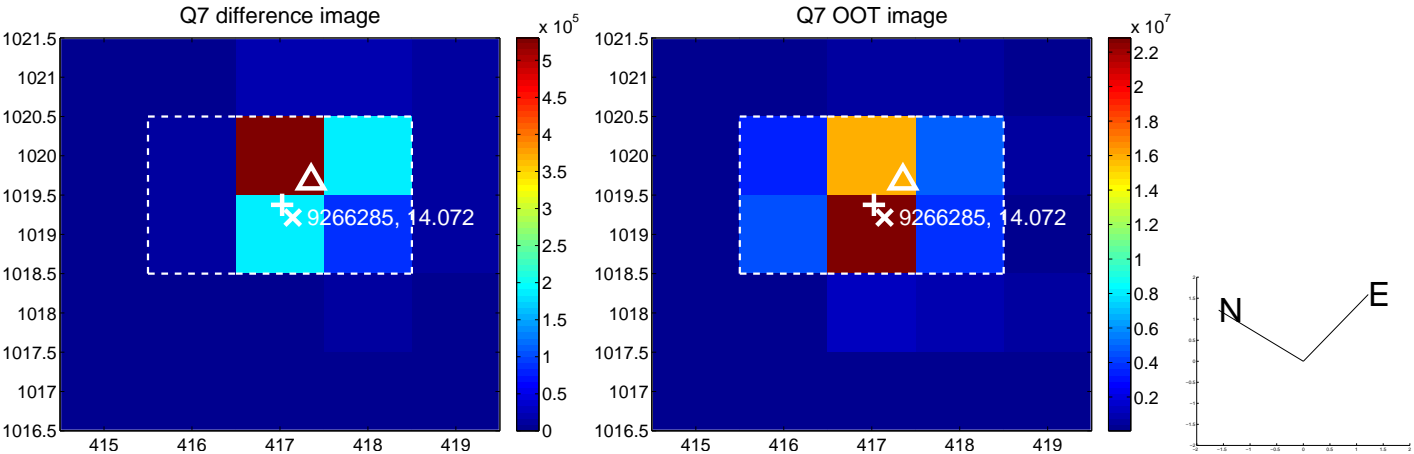
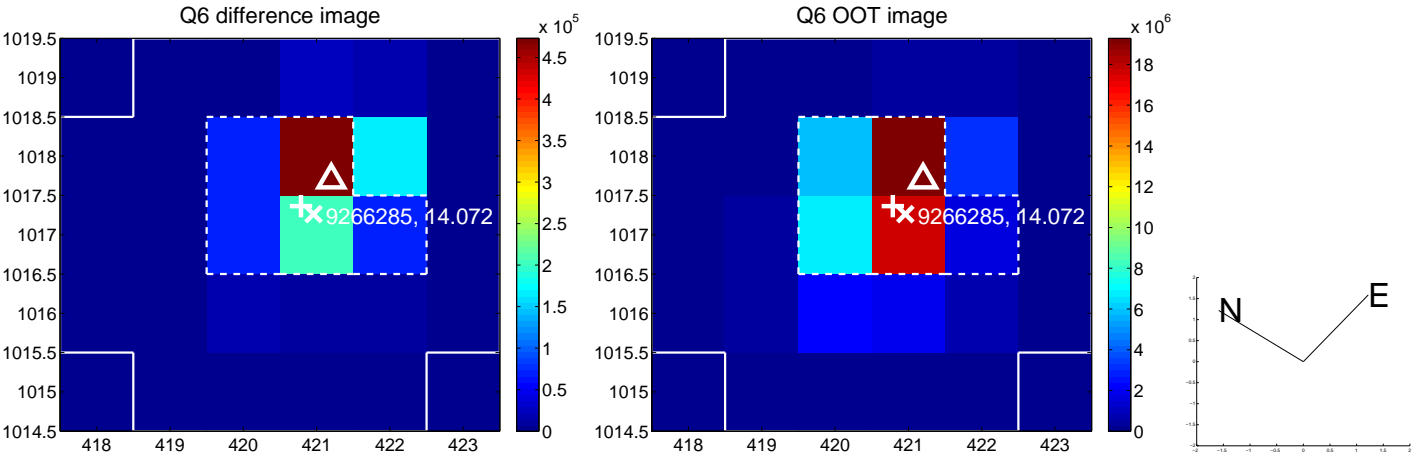
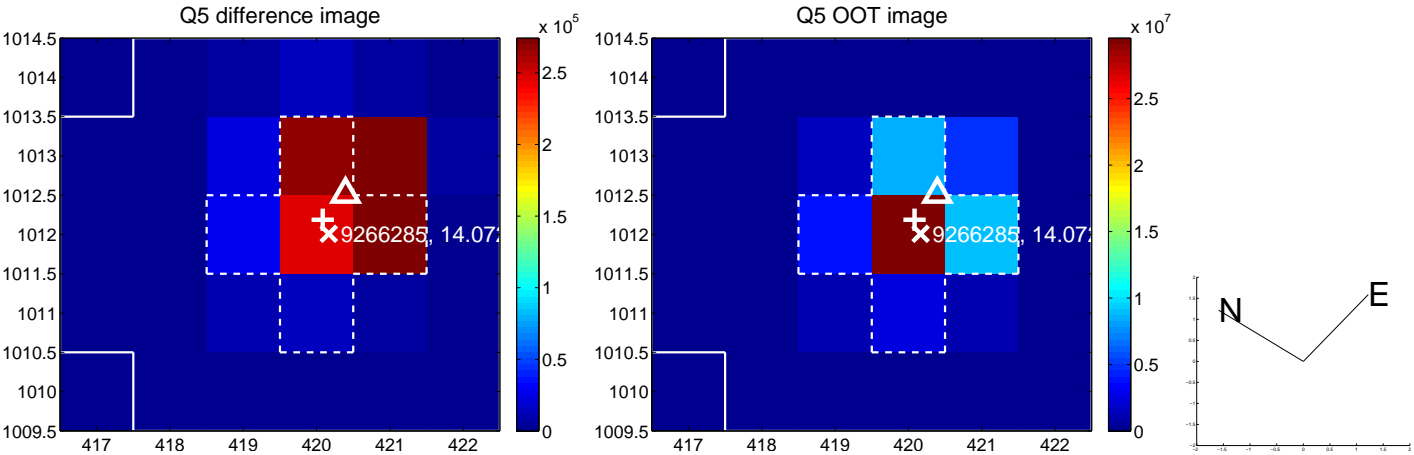
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.785 \pm 0.075$	23.65	$1.762 \pm 0.073$	$-0.290 \pm 0.075$
PRF-fit source offset from KIC position	$2.084 \pm 0.069$	30.24	$2.045 \pm 0.068$	$0.402 \pm 0.069$
photometric centroid source offset	$2.08 \pm 0.00$	423.77	$2.03 \pm 0.00$	$0.46 \pm 0.00$



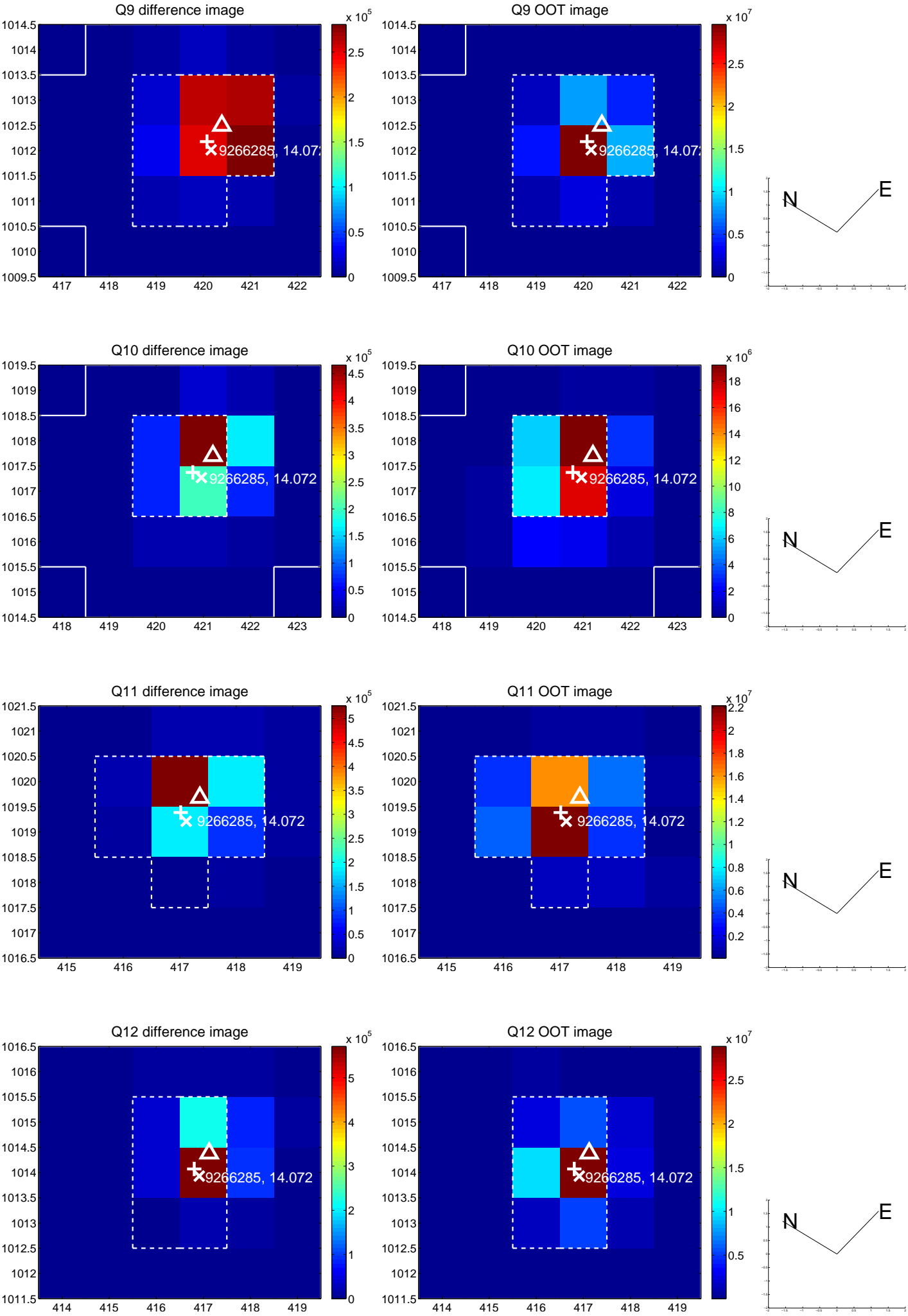
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



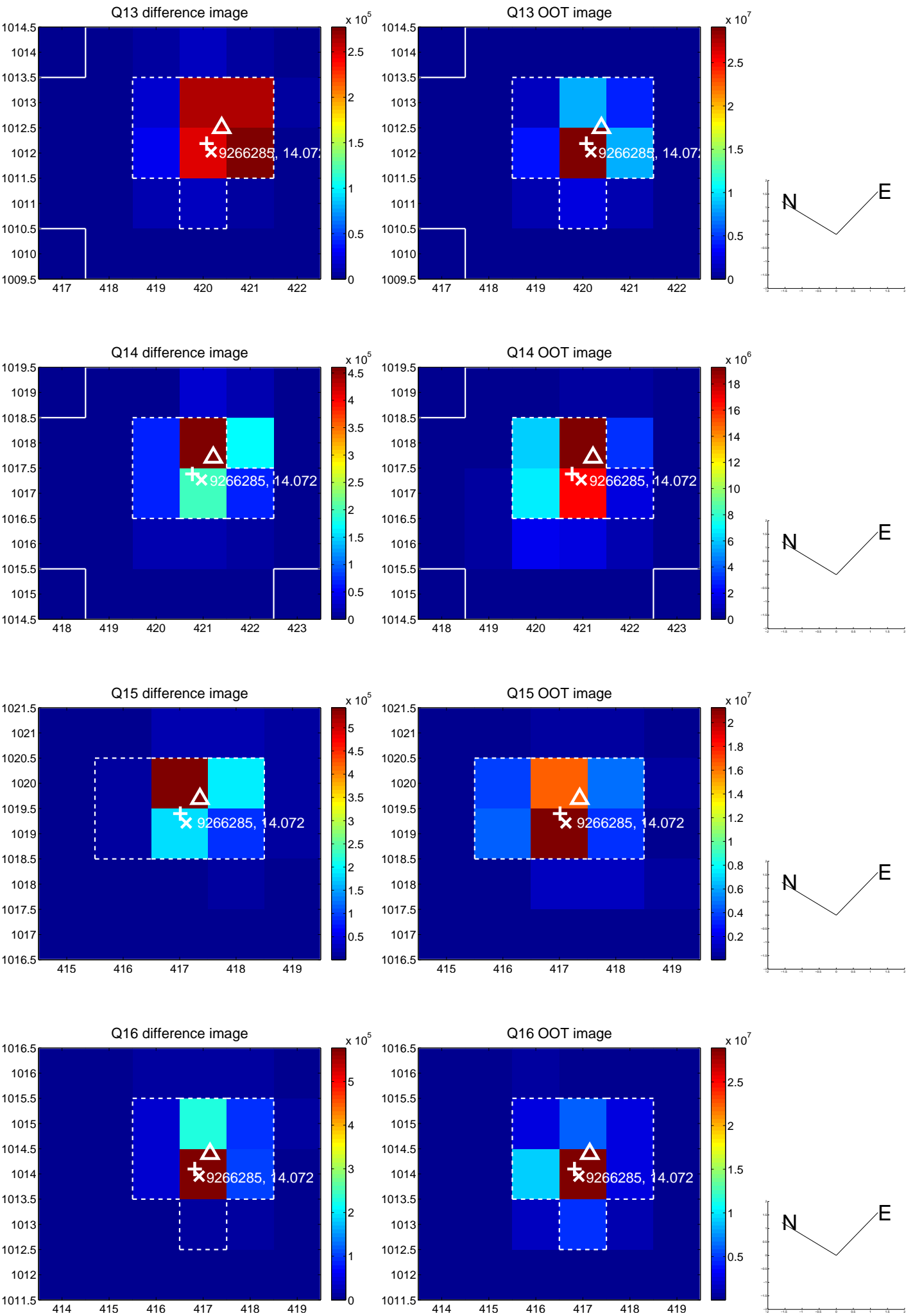
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



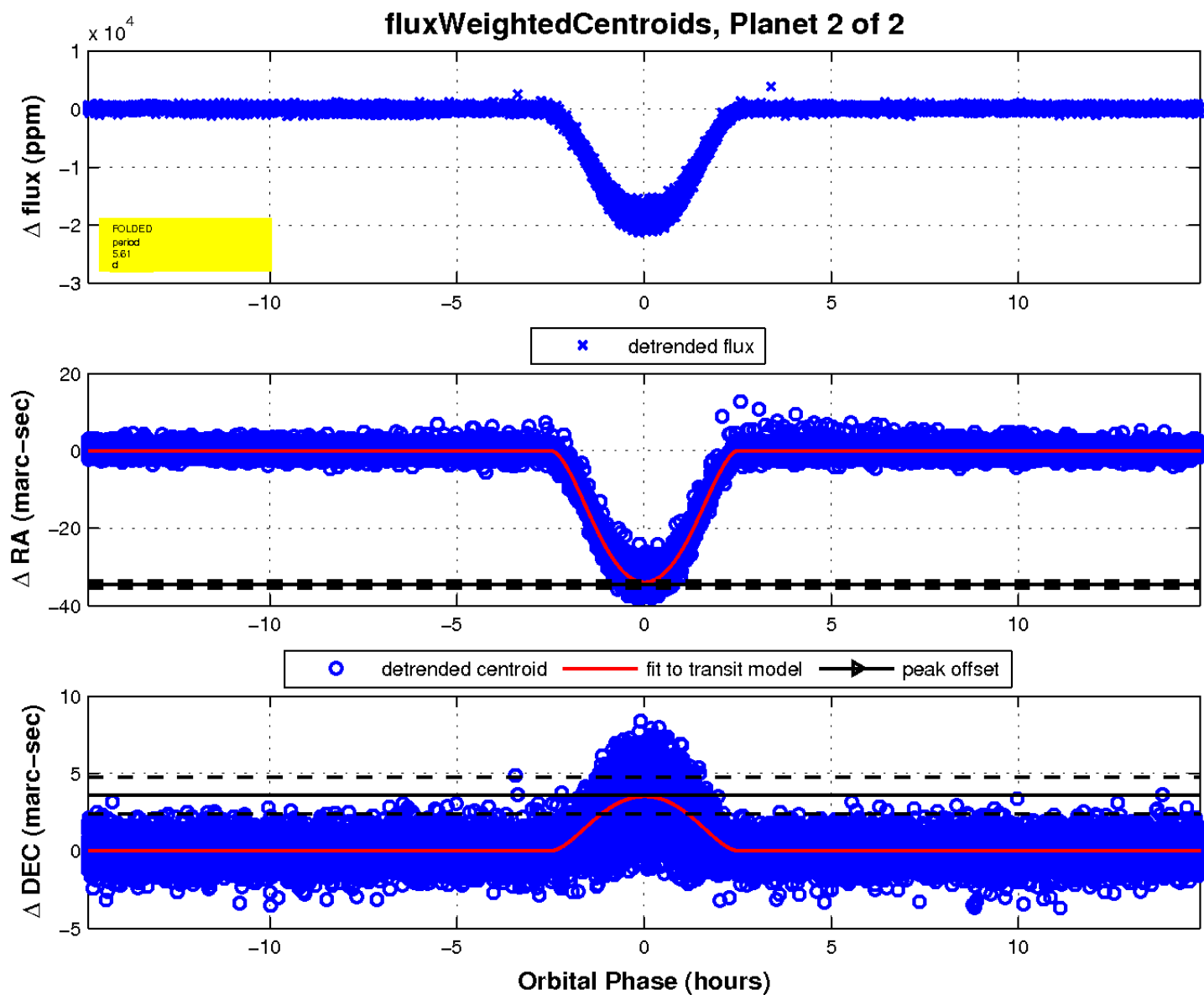
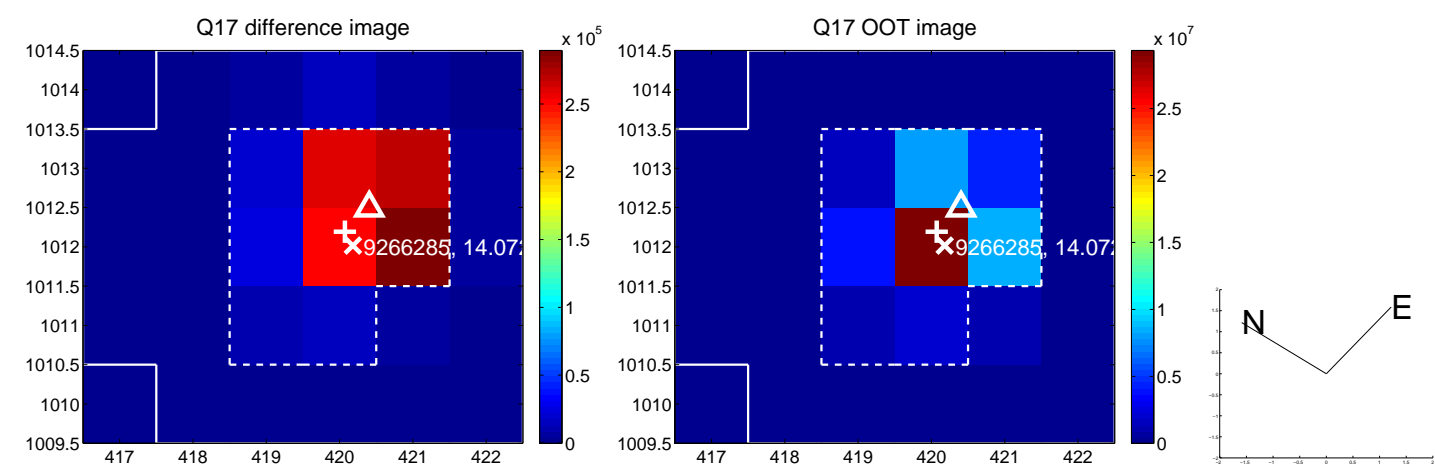
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

