

# KIC 005781192

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005781192-01	OBS	6626.01	9.459994	138.343299	237622.4	5.312	25761.8	16270.6	0.83	5569	49.72	81.50
005781192-02	OBS	No	9.459998	133.802334	137454.2	4.750	15736.7	8717.1	0.83	5569	45.65	81.50

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005781192-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
005781192-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

**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.

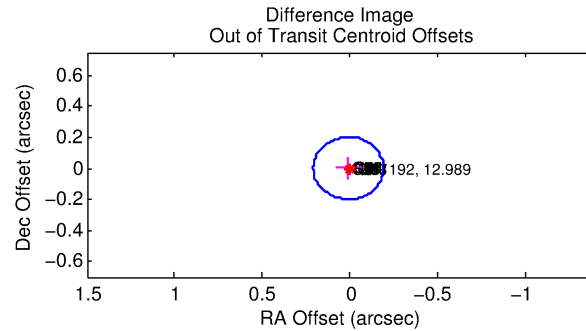
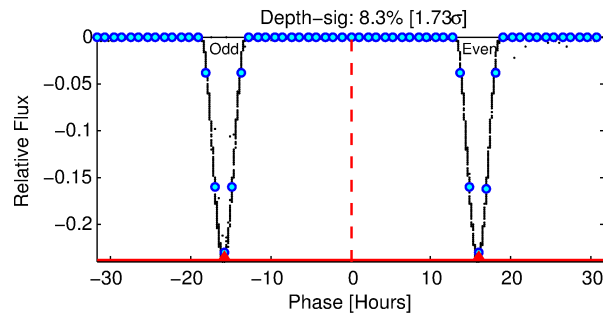
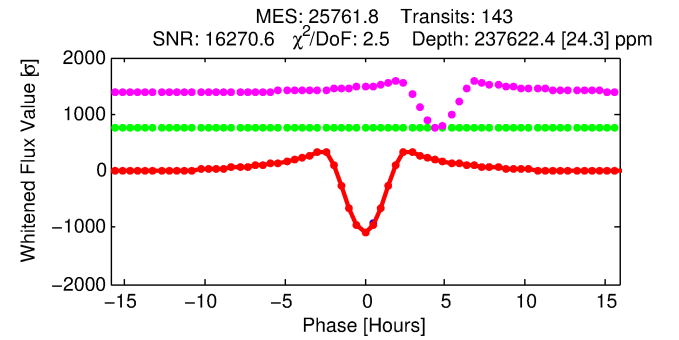
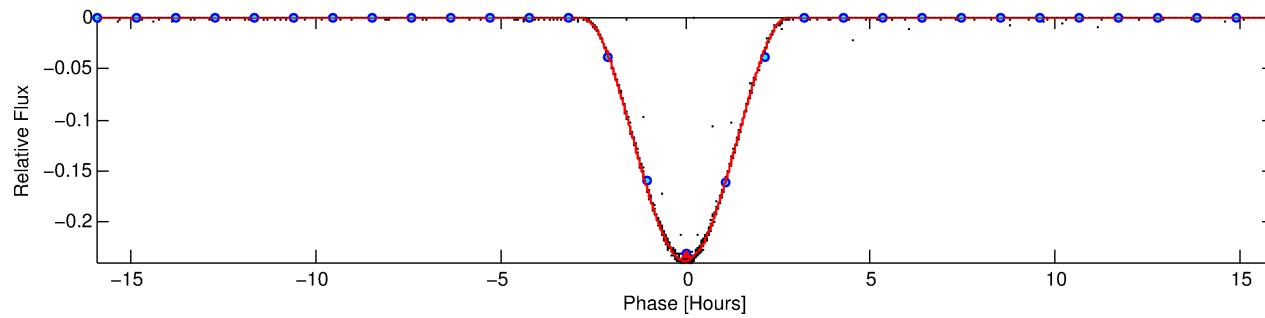
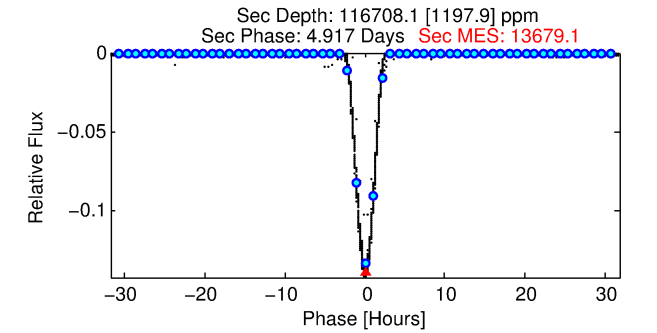
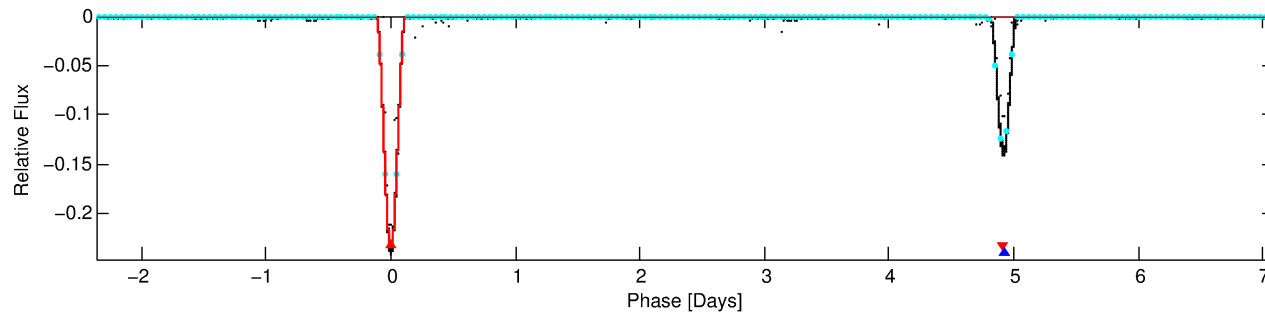
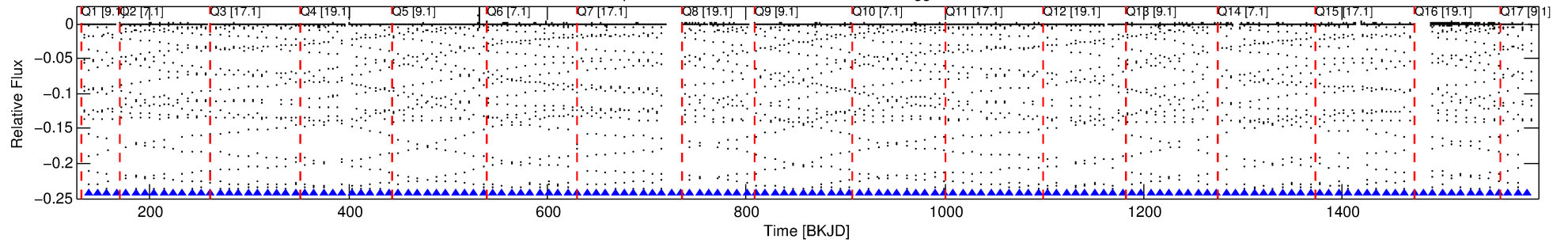
## Ephemeris Match Information For 005781192-01

No Significant Match Found

# DV One-Page Summary

KIC: 5781192 Candidate: 1 of 2 Period: 9.460 d  
KOI: K06626.01 Corr: 0.999

Kp: 12.99 R\*: 0.83 Rs Teff: 5569.0 K Logg: 4.57 Fe/H: -0.080



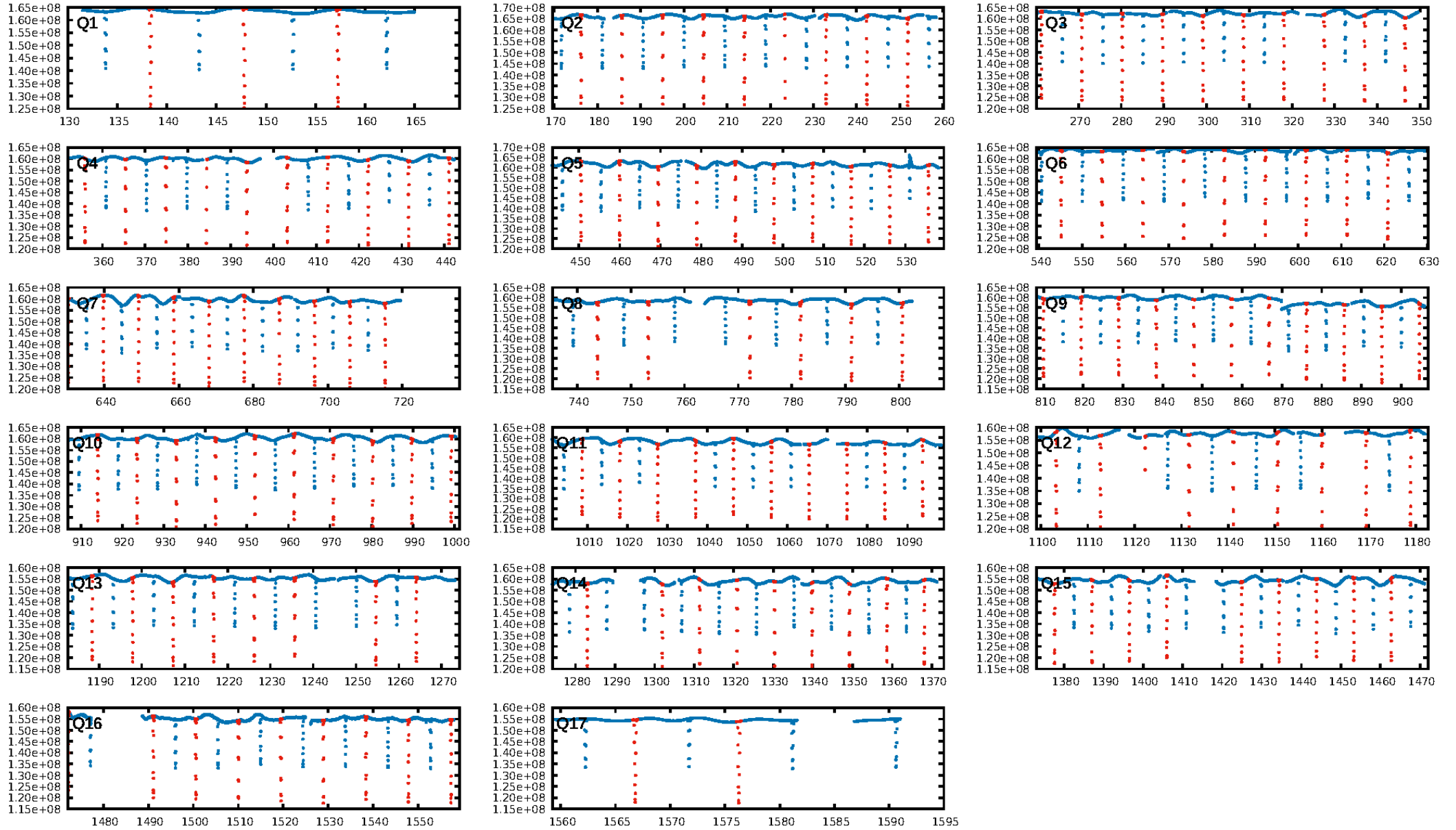
## DV Fit Results:

Period = 9.45999 [0.00000] d  
Epoch = 138.3433 [0.0000] BKJD  
Rp/R\* = 0.5496 [0.0045]  
a/R\* = 18.81 [0.02]  
b = 0.70 [0.01]  
Seff = 81.51 [24.28]  
Teff = 766 [57] K  
Rp = 49.72 [11.28] Re  
a = 0.0852 [0.0163] AU  
Ag = 188.72 [52.60] [3.57σ]  
Teffp = 4391 [119] K [27.40σ]

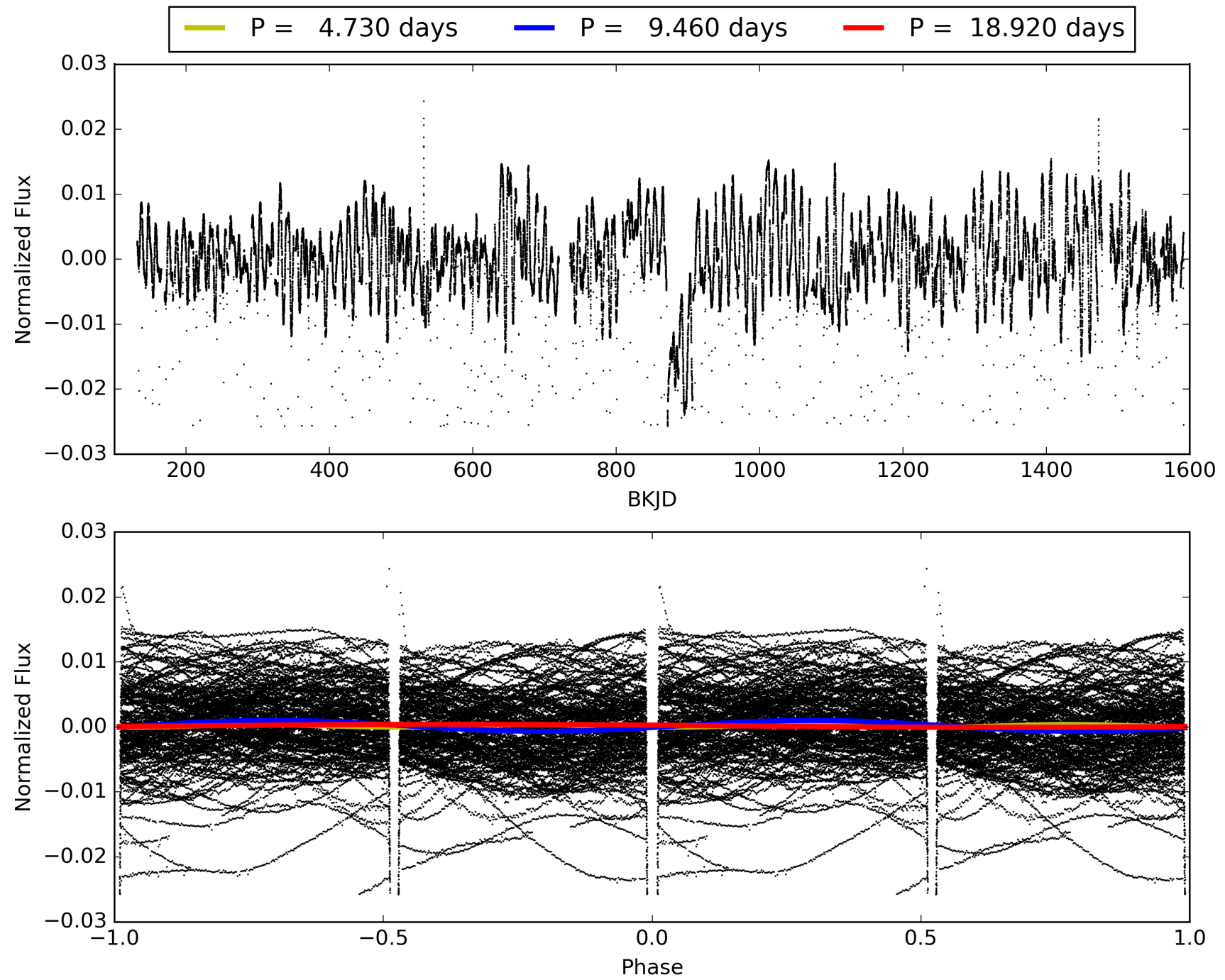
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [138/138]  
GhostDiagnostic-chr: 2.22  
Centroid-sig: N/A  
Centroid-so: 0.113 arcsec [424.69σ]  
OotOffset-rm: 0.010 arcsec [0.15σ]  
KicOffset-rm: 0.153 arcsec [2.27σ]  
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]

# TCE 005781192-01, PDC Light Curves

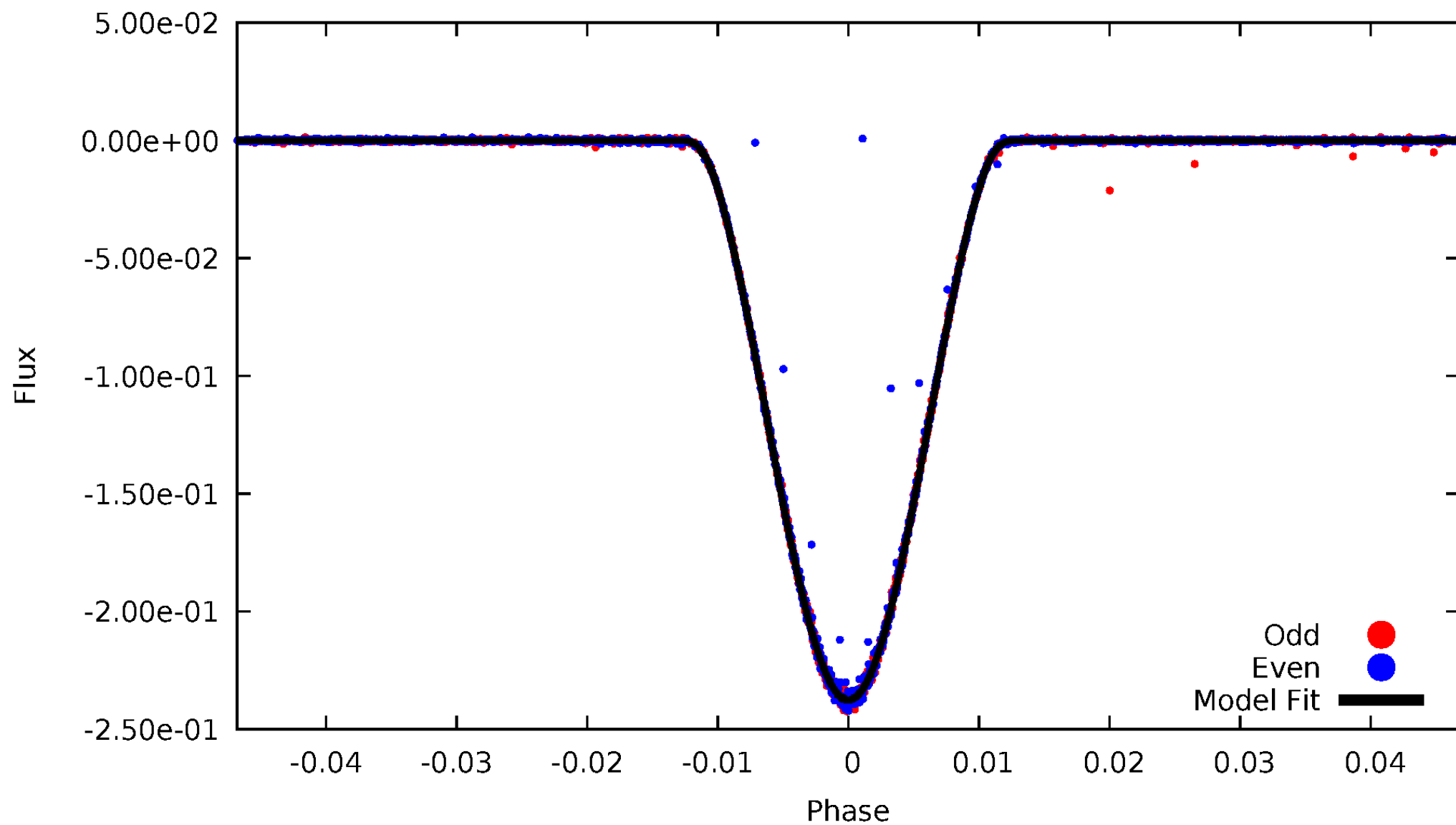


TCE 005781192-01



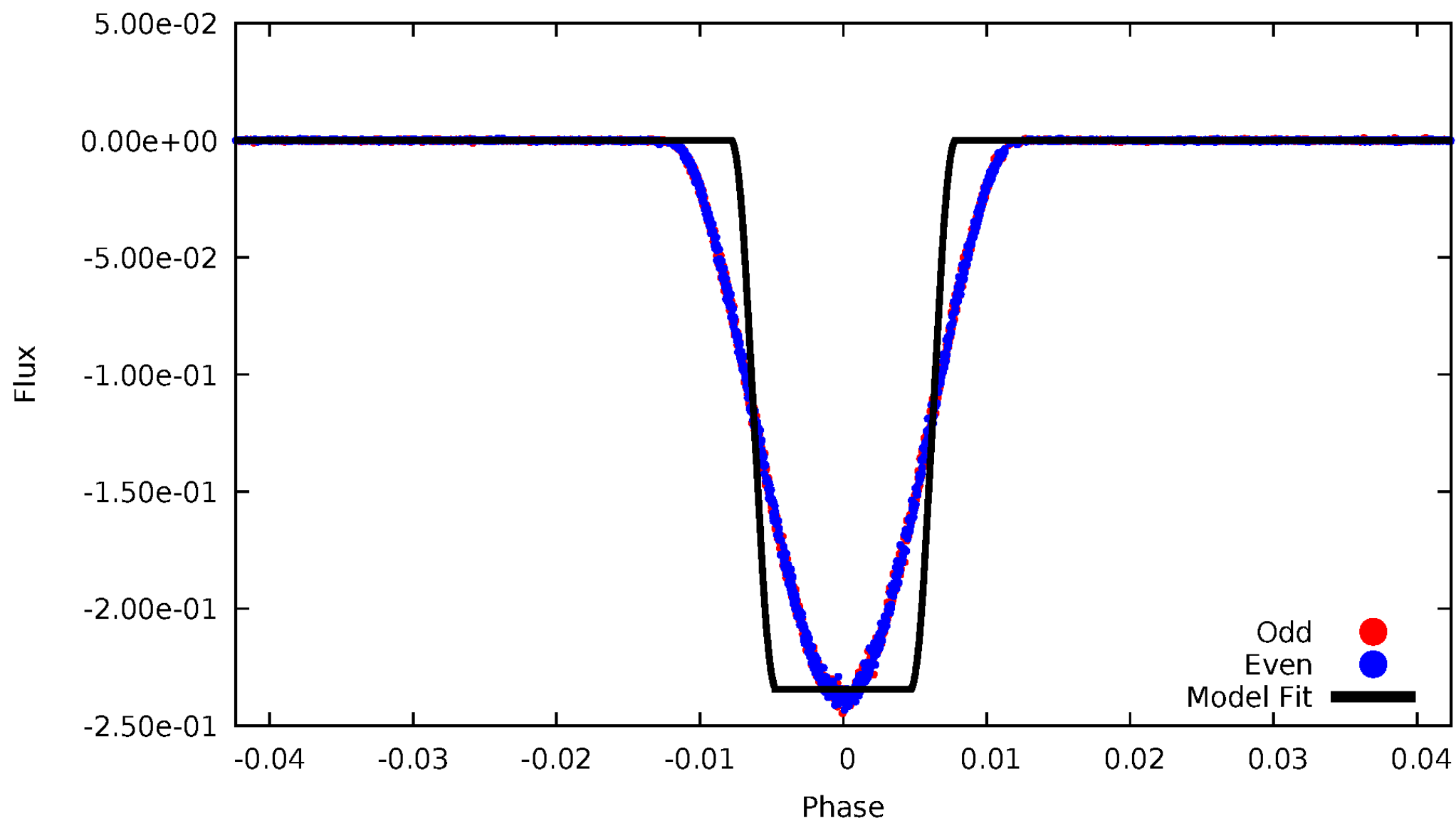
# DV Odd/Even

TCE 005781192-01



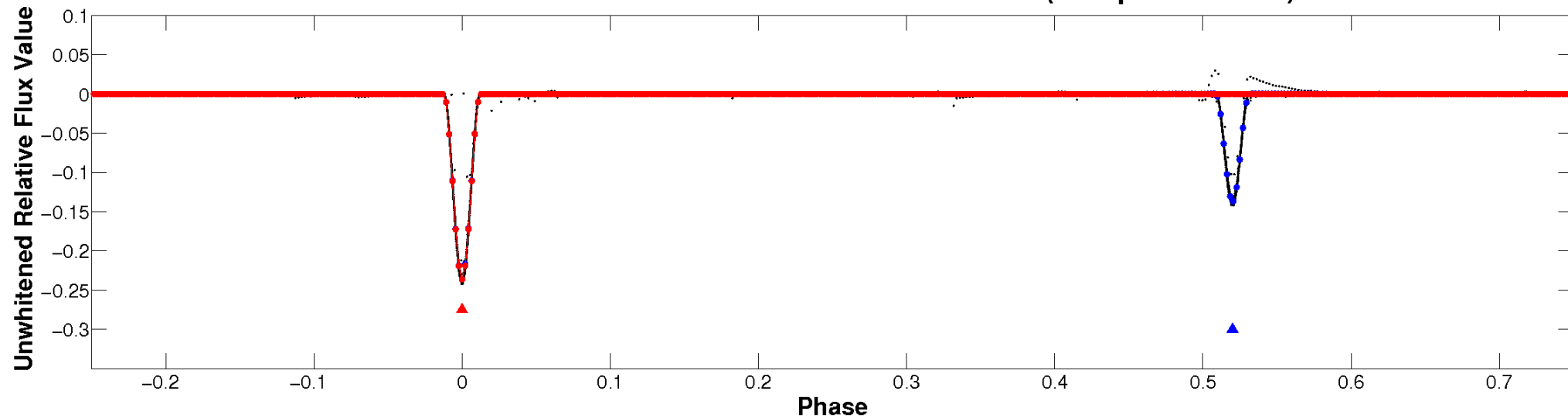
# ALT Odd/Even

TCE 005781192-01

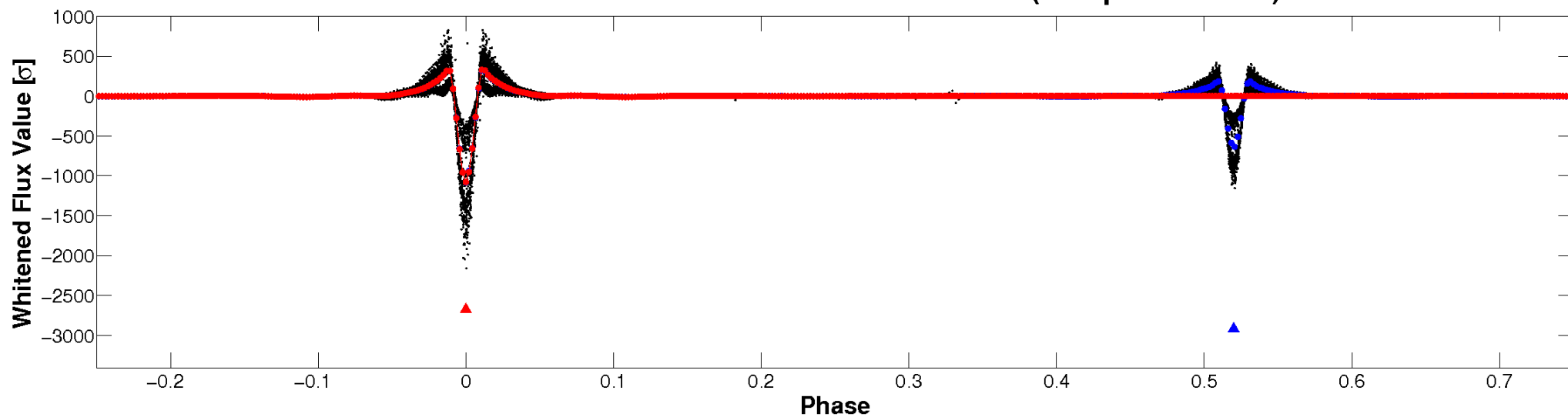


# Non-Whitened Vs. Whitened Light Curve

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

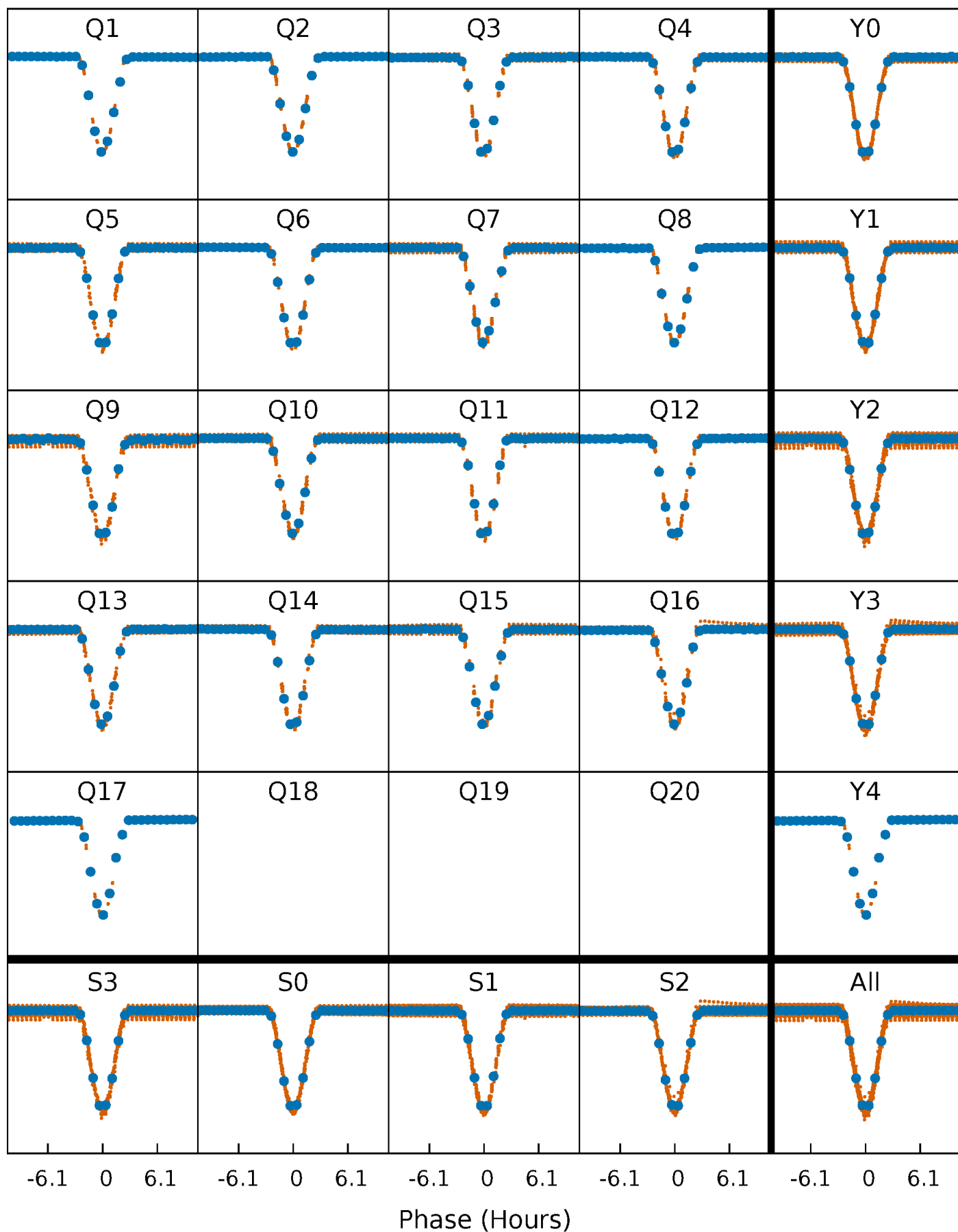


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

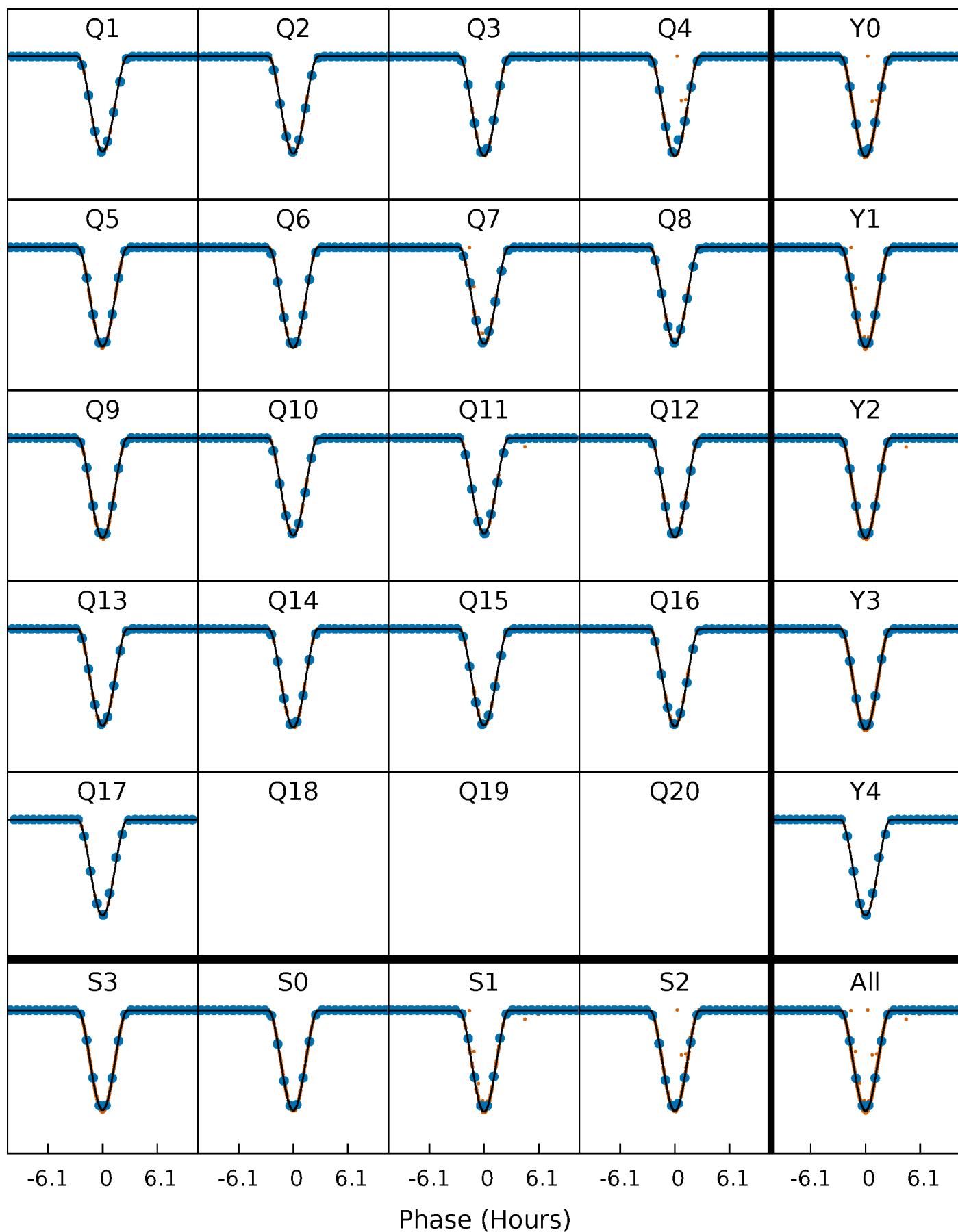
TCE 005781192-01 P= 9.459994 Days  $T_0=138.343299$  (BKJD)





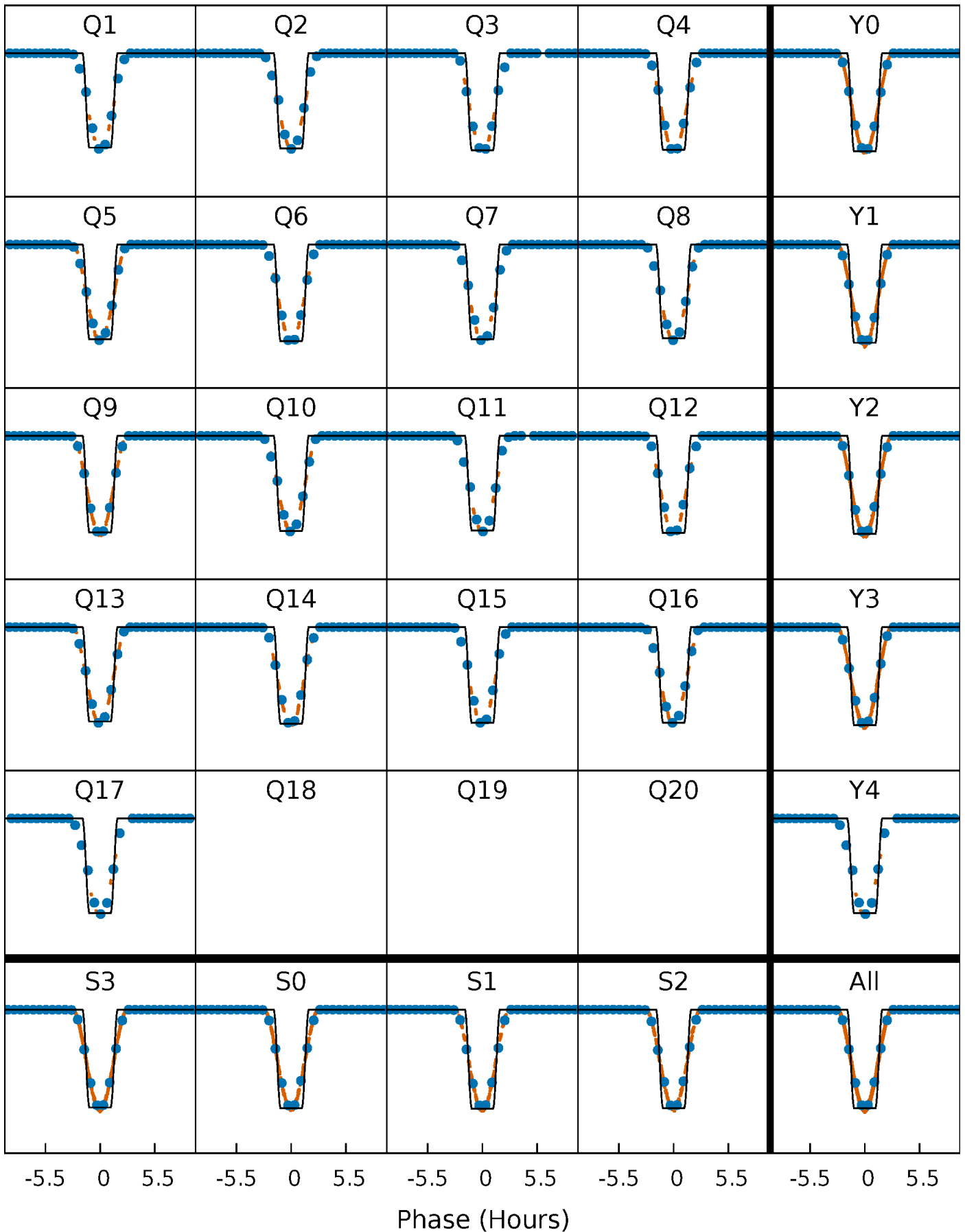
# DV Quarter-Phased Transit Curves

TCE 005781192-01 P= 9.459994 Days  $T_0=138.343299$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

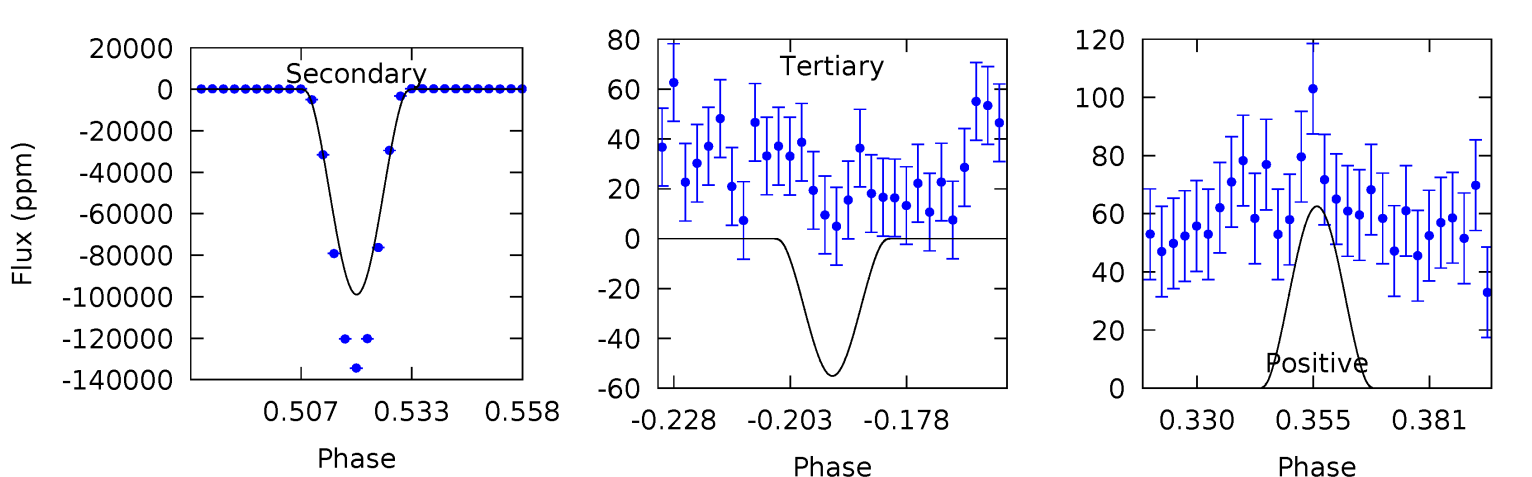
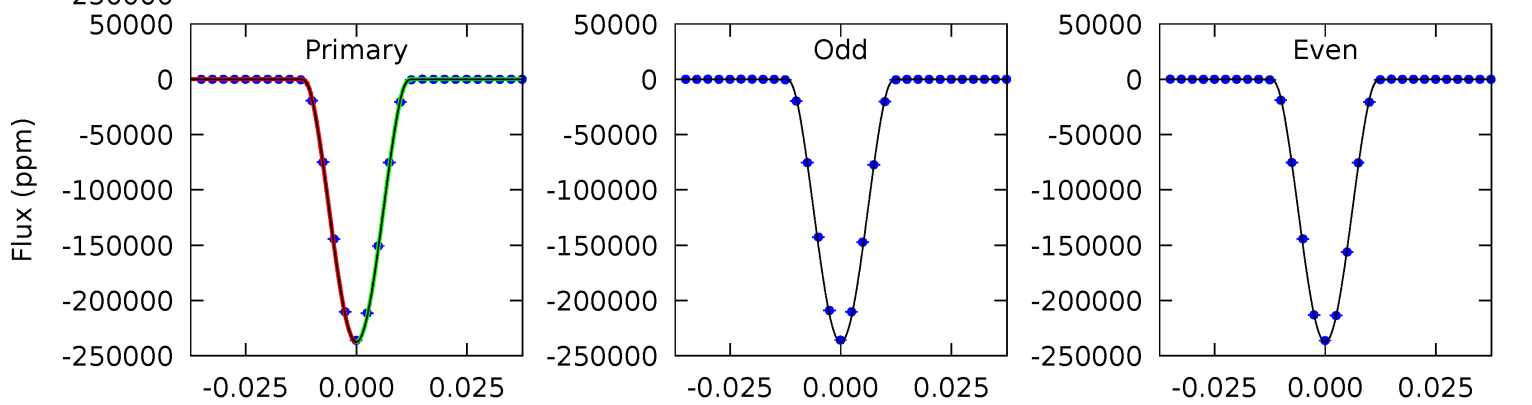
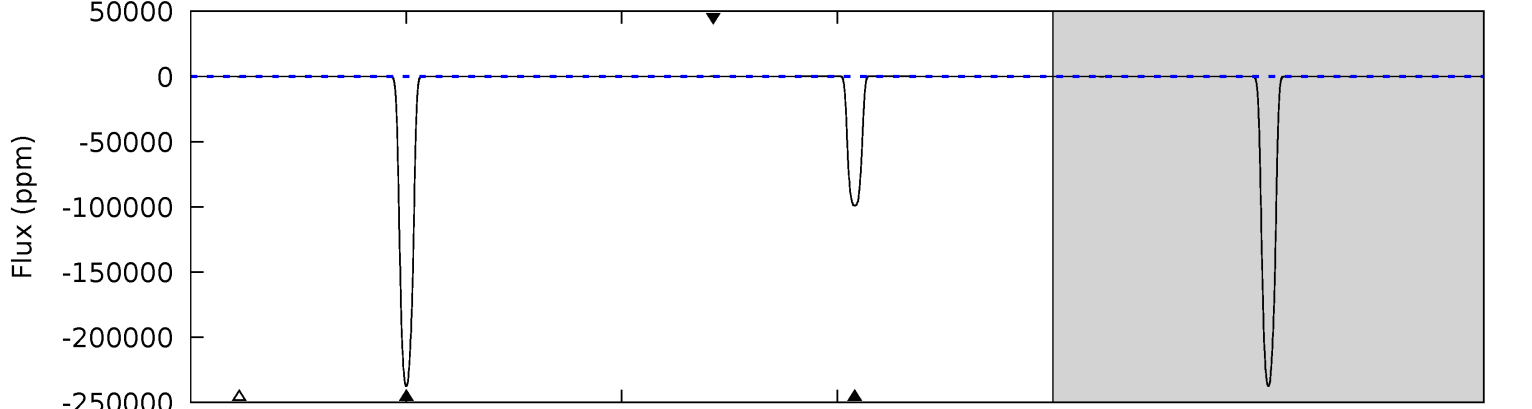
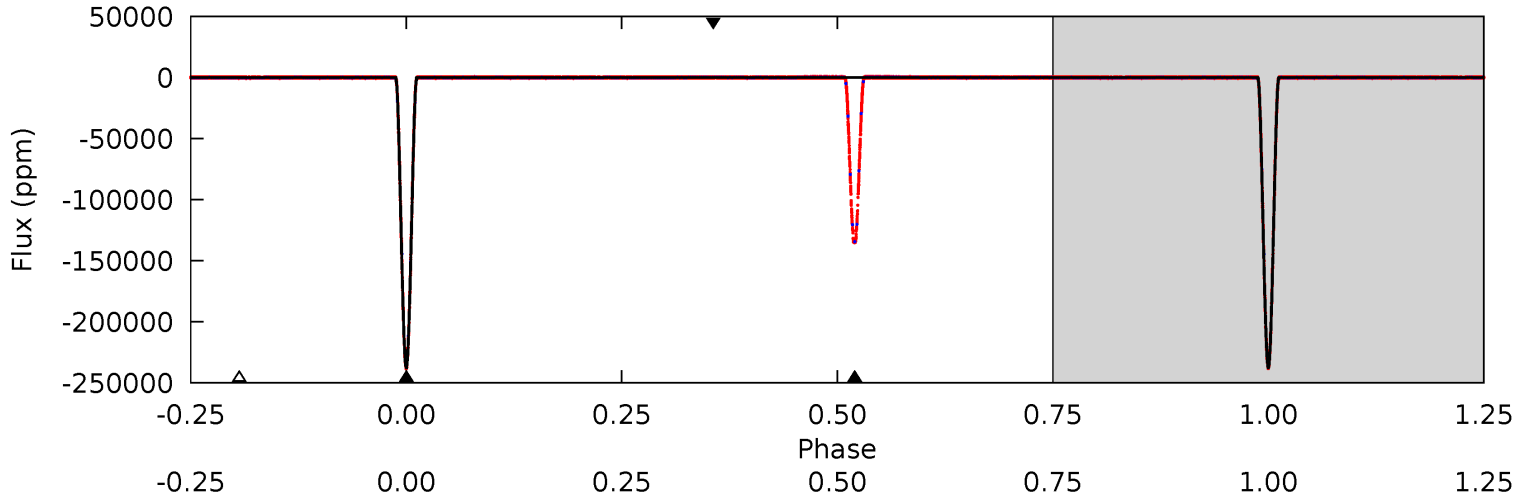
TCE 005781192-01 P= 9.460012 Days  $T_0=138.342127$  (BKJD)



# DV Model-Shift Uniqueness Test

005781192-01, P = 9.459994 Days, E = 128.883305 Days

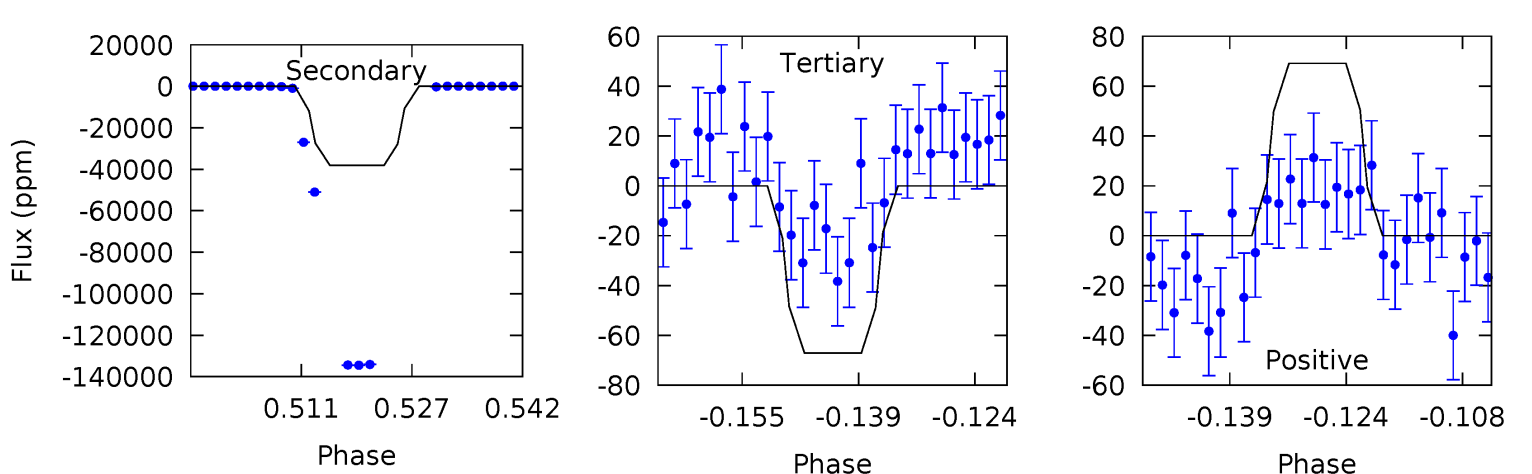
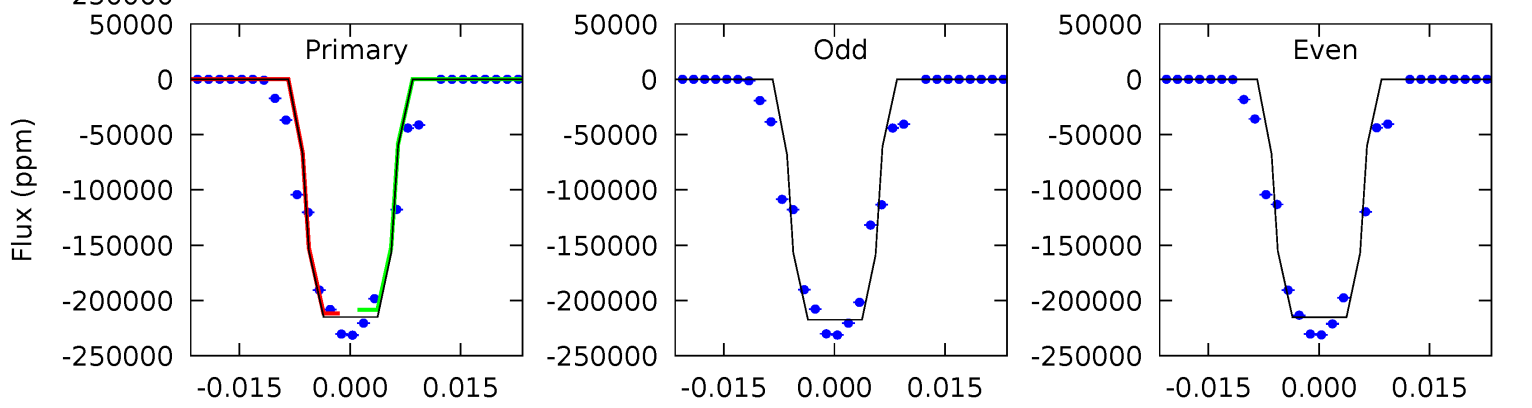
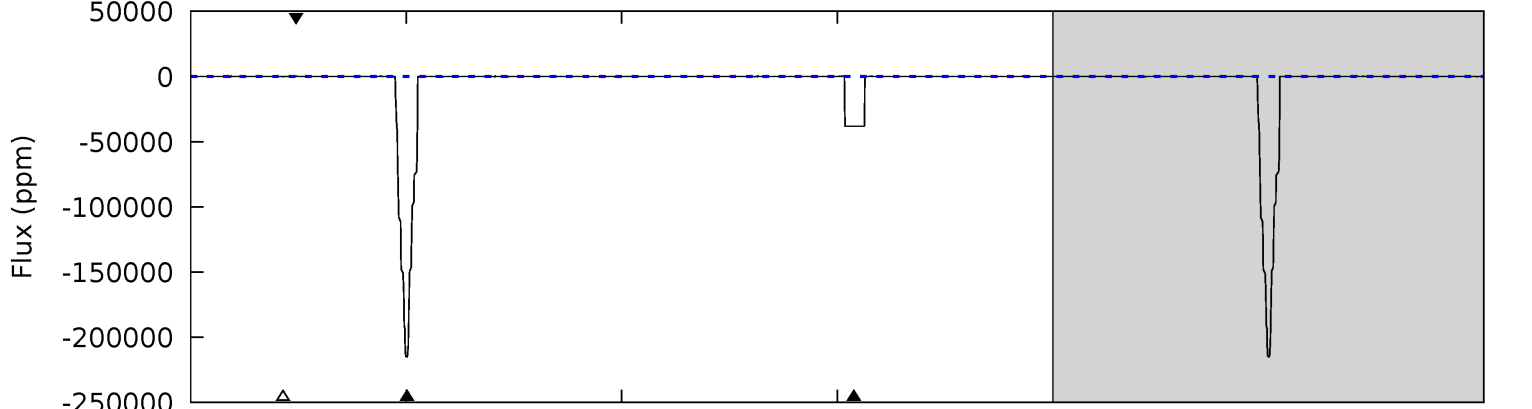
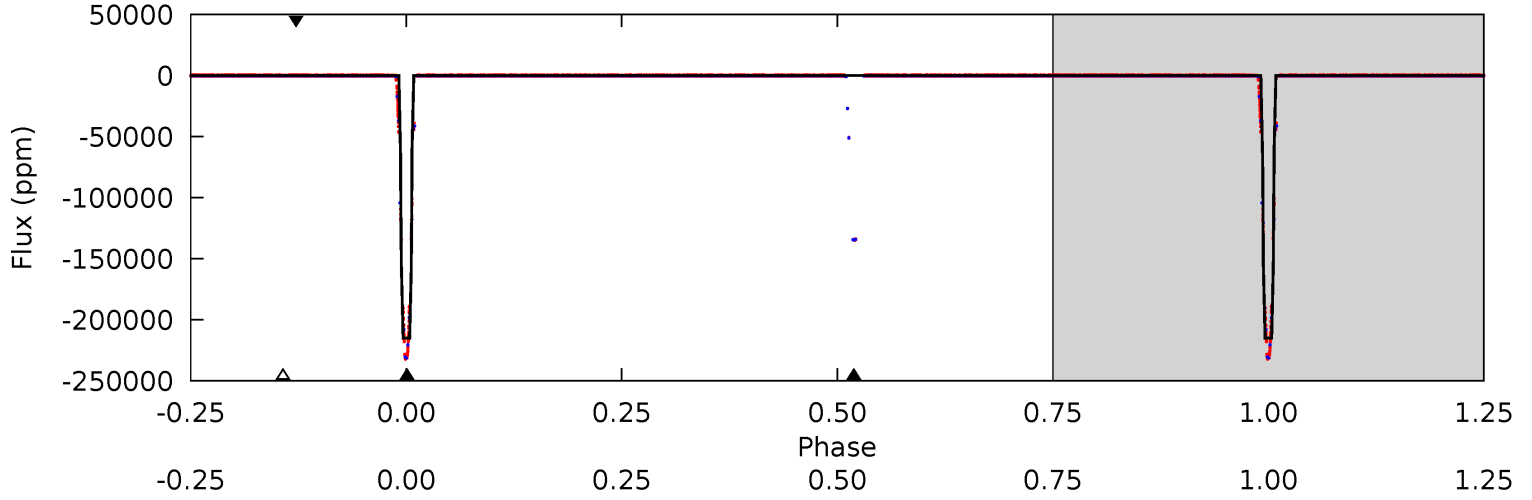
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35209	14672	8.17	9.28	4.84	2.24	7.23	35201	35200	14664	14663	14.9	0.99	0.00	0



# Alt Model-Shift Uniqueness Test

005781192-01, P = 9.460012 Days, E = 128.882115 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
12708	2256	3.96	4.09	4.94	2.42	1.12	12704	12704	2252	2252	27.1	1.00	0.00	0



### Stellar Parameters For KIC 005781192

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5569^{+149}_{-149}$	$4.566^{+0.038}_{-0.152}$	$-0.080^{+0.300}_{-0.300}$	$0.829^{+0.188}_{-0.075}$	$0.928^{+0.083}_{-0.111}$	$2.295^{+0.448}_{-0.951}$
	+3%/-3%	+1%/-3%	+375%/-375%	+23%/-9%	+9%/-12%	+20%/-41%
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 005781192-01 / KOI 6626.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-98947 \pm 7$	$50.99^{+5.76}_{-3.30}$	$1092^{+52}_{-44}$	$4497^{+98}_{-103}$	$167^{+19}_{-28}$
Alt.	$-38164 \pm 17$	$44.84^{+5.26}_{-2.87}$	$1093^{+58}_{-44}$	$3906^{+84}_{-73}$	$77^{+10}_{-13}$

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

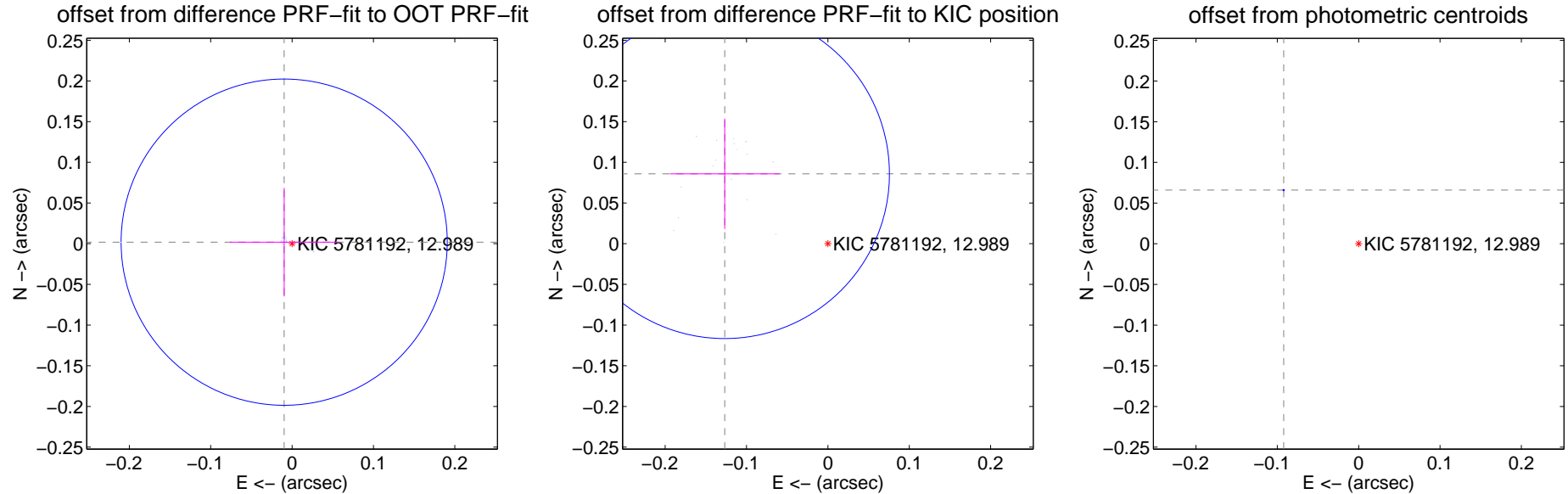
## DV Centroid Data

Supplemental centroid analysis for 005781192-01. Kepler magnitude: 12.99. Transit SNR 16270.61

There are 17 quarters with good PRF difference image offsets

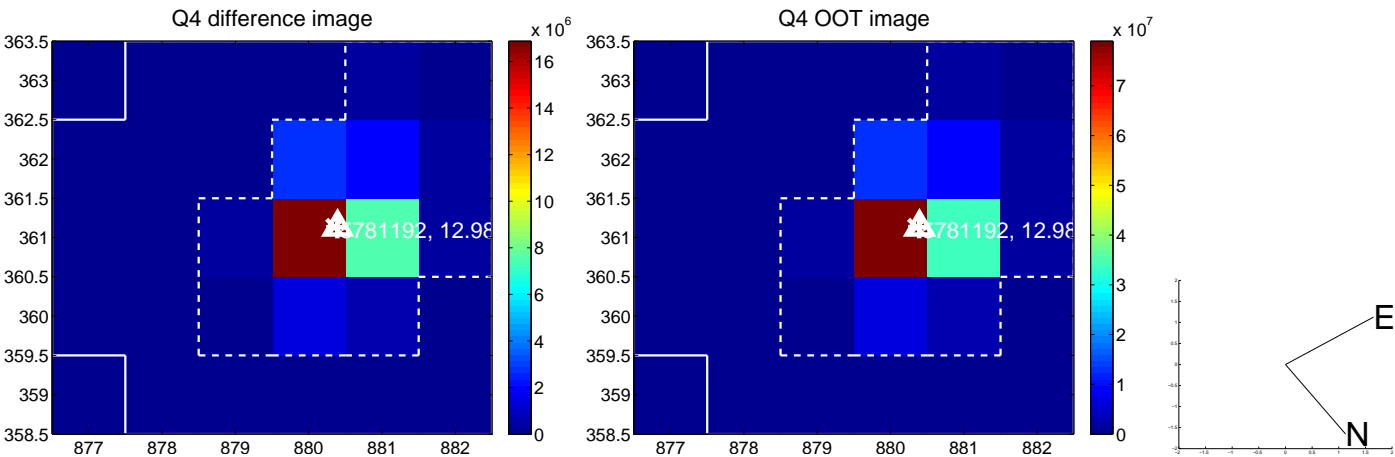
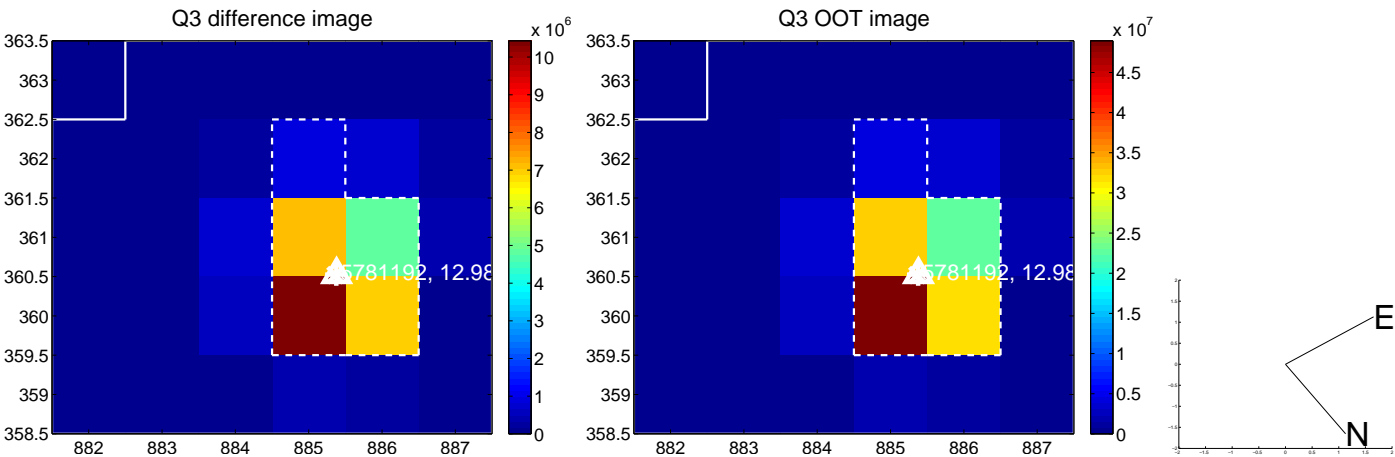
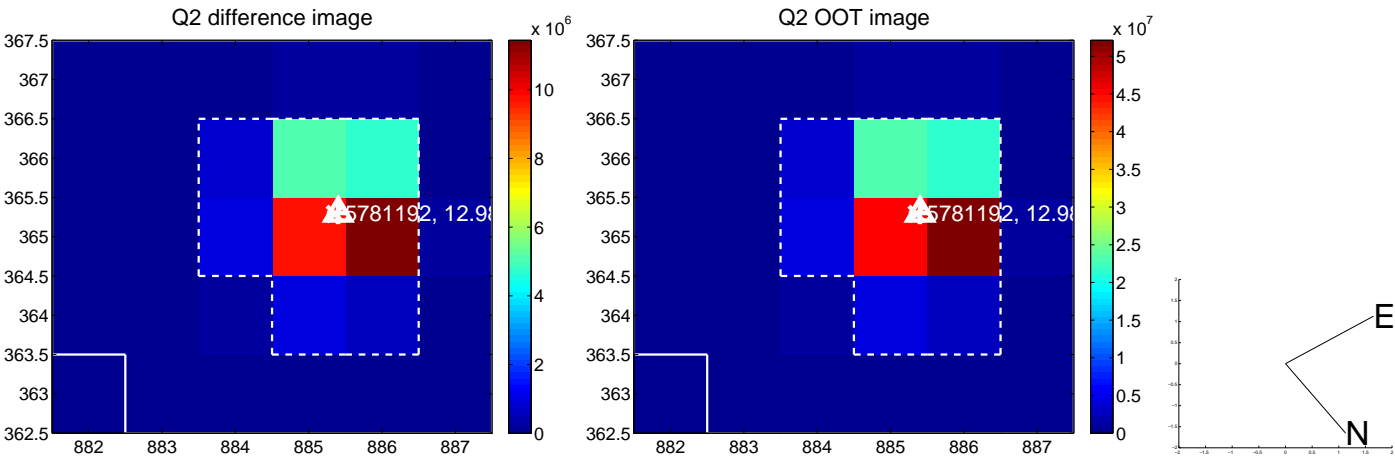
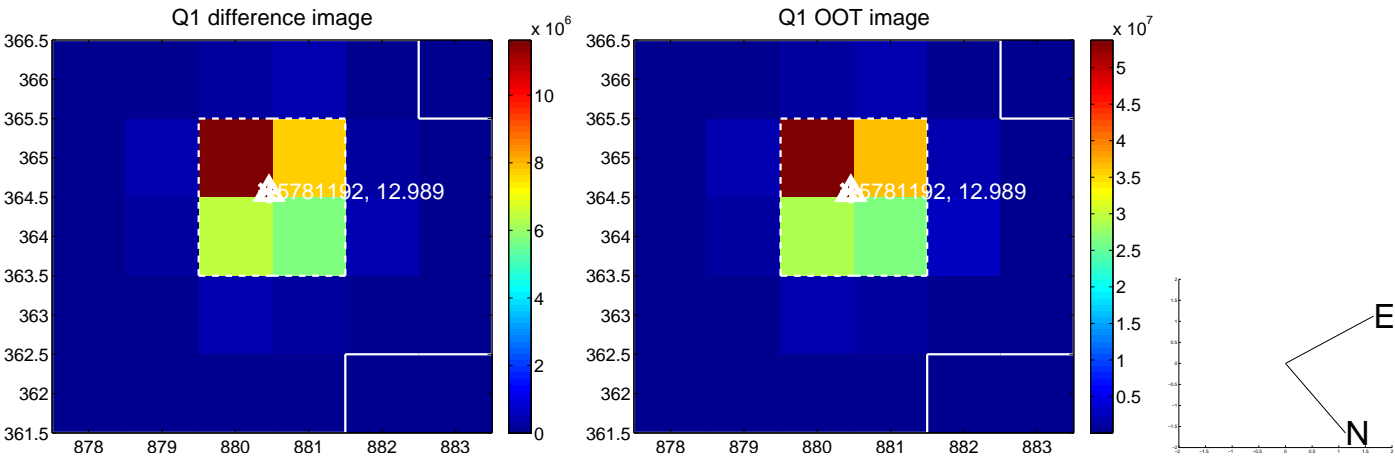
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.010 \pm 0.067$	0.15	$0.010 \pm 0.067$	$0.002 \pm 0.067$
PRF-fit source offset from KIC position	$0.153 \pm 0.067$	2.27	$0.127 \pm 0.067$	$0.086 \pm 0.068$
photometric centroid source offset	$0.11 \pm 0.00$	424.69	$0.09 \pm 0.00$	$0.07 \pm 0.00$

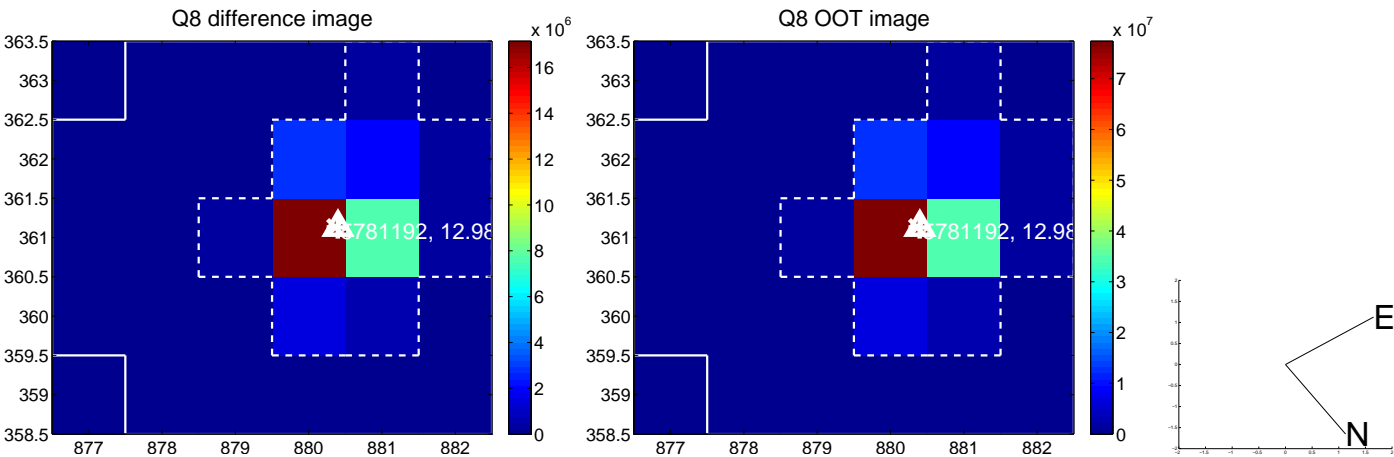
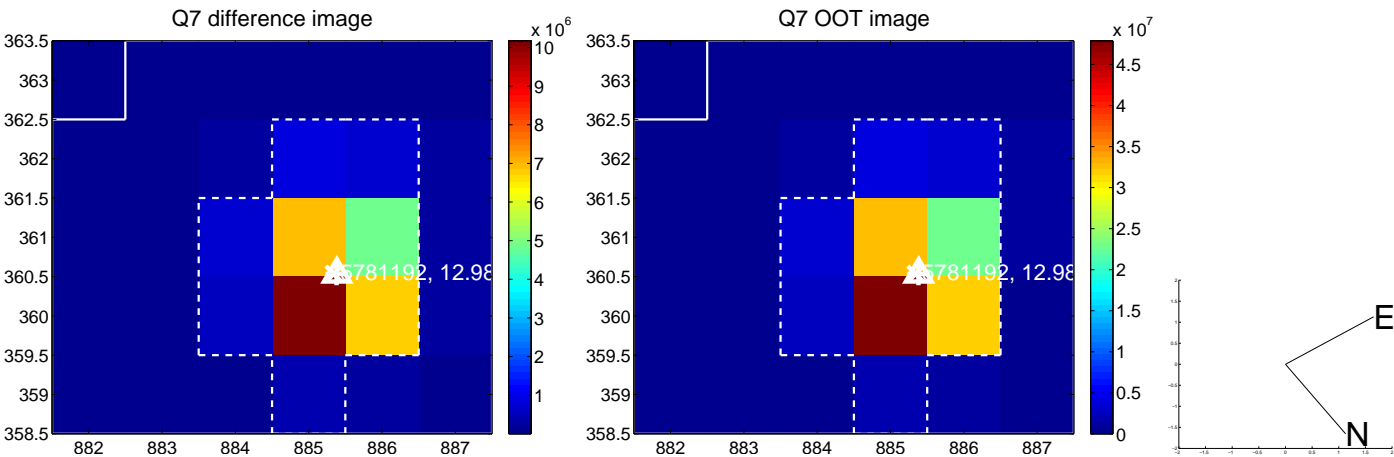
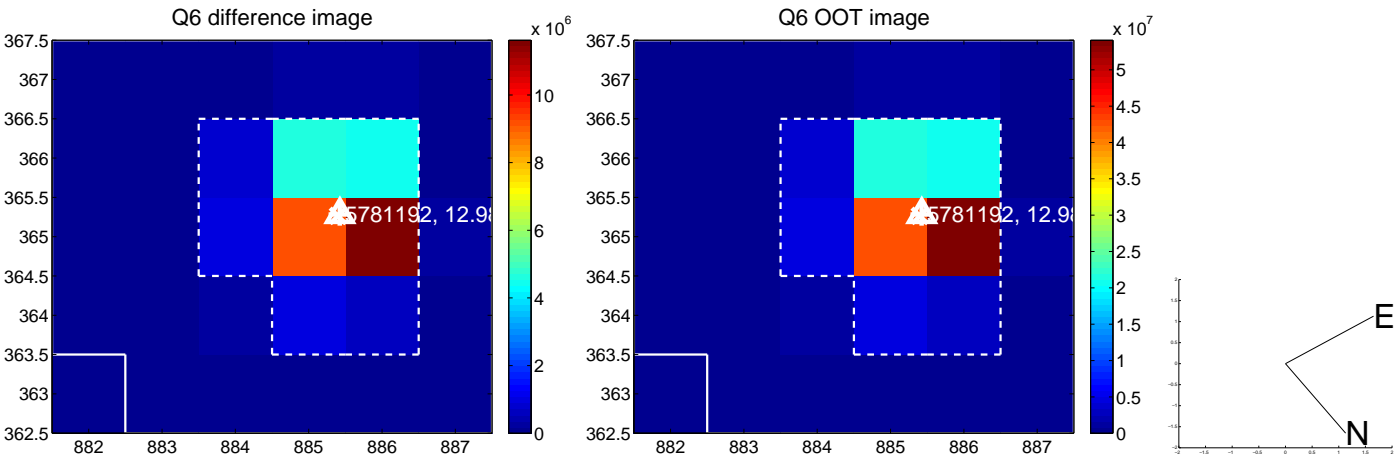
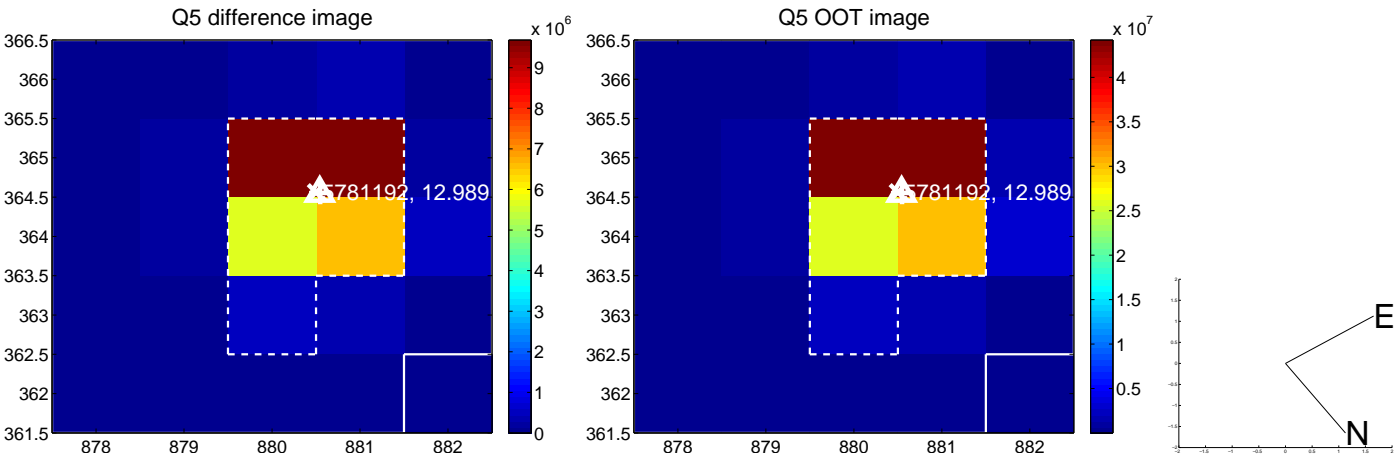


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

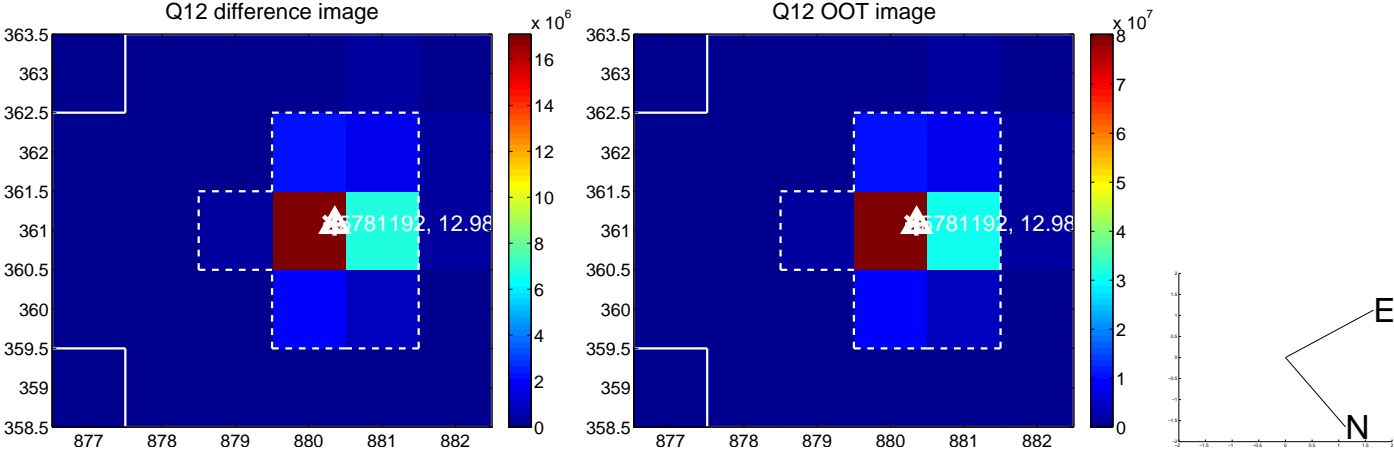
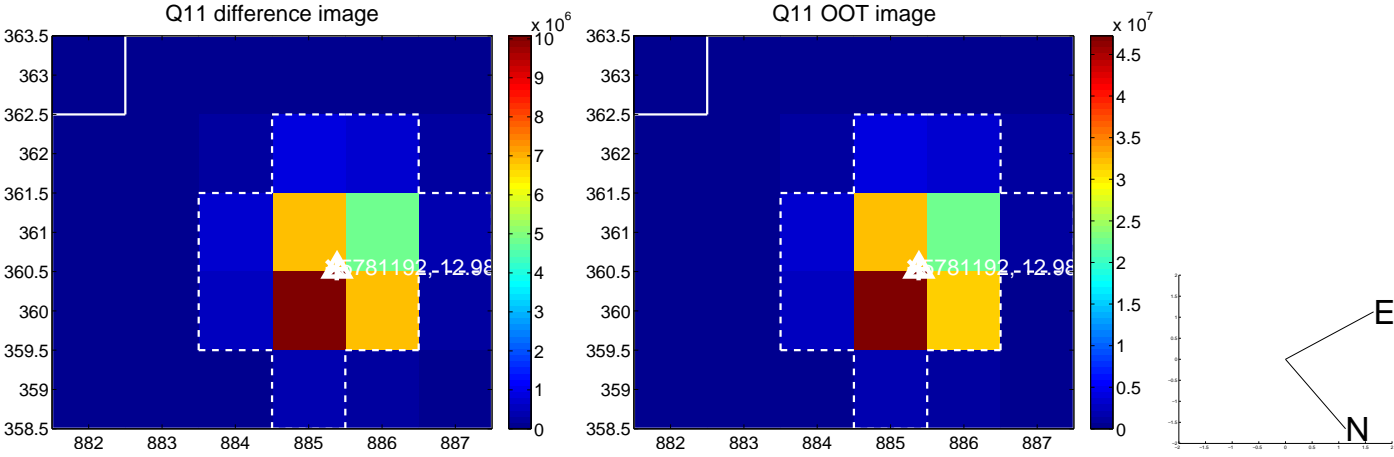
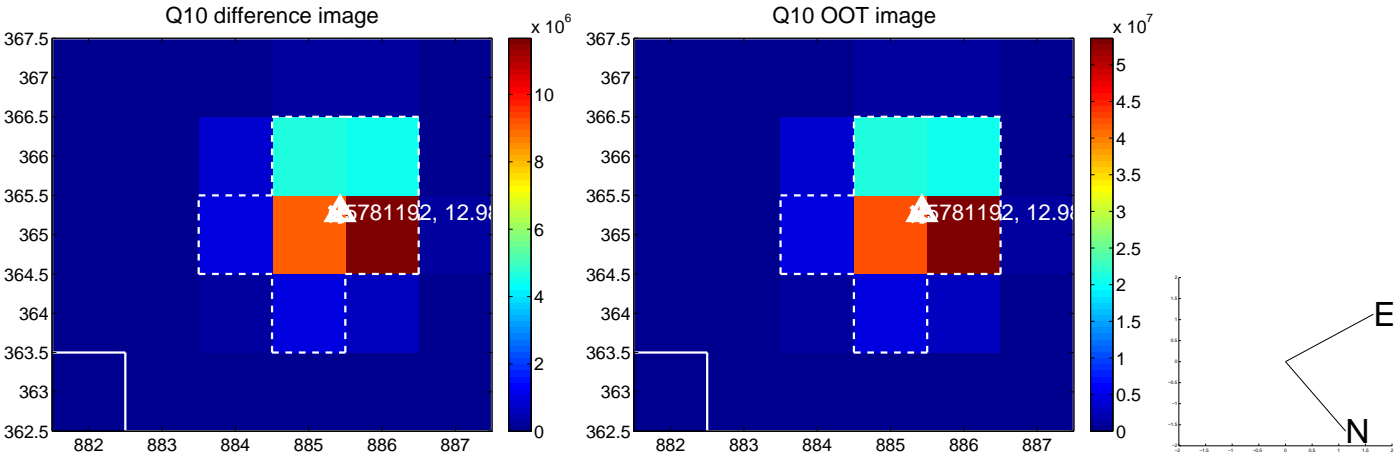
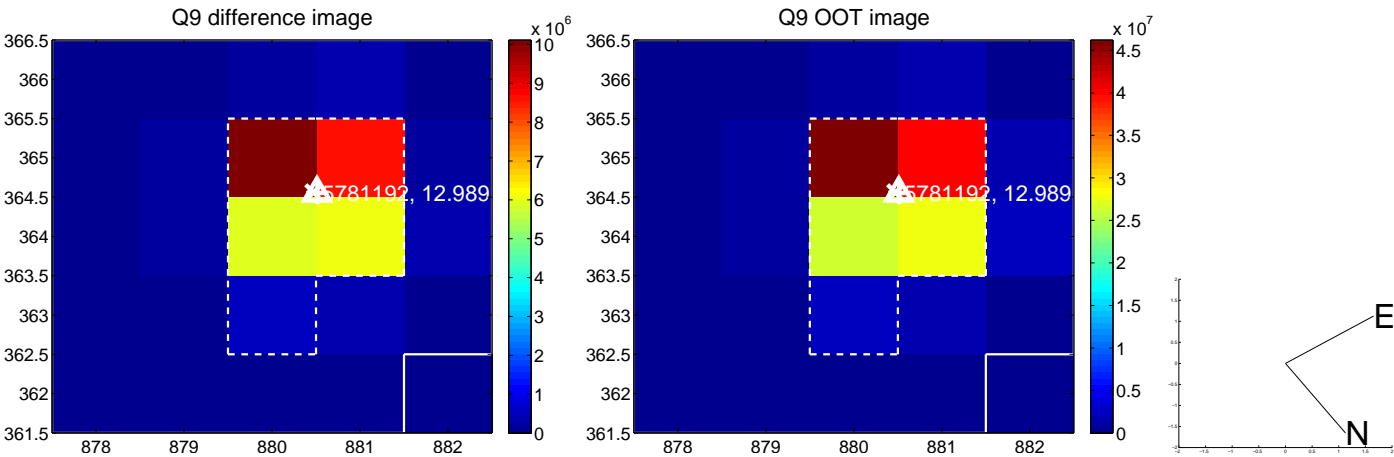


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

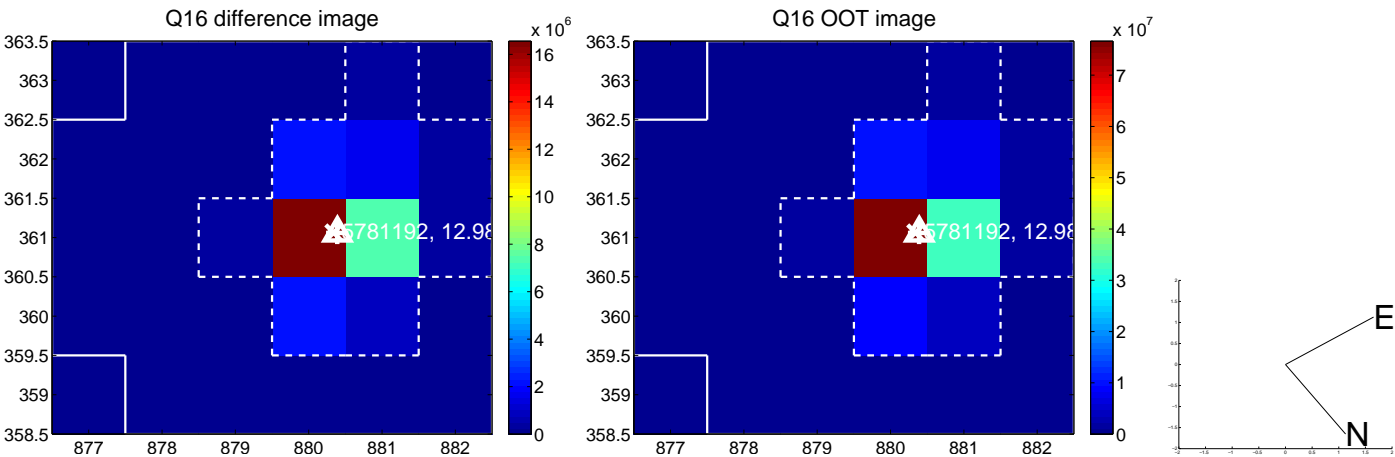
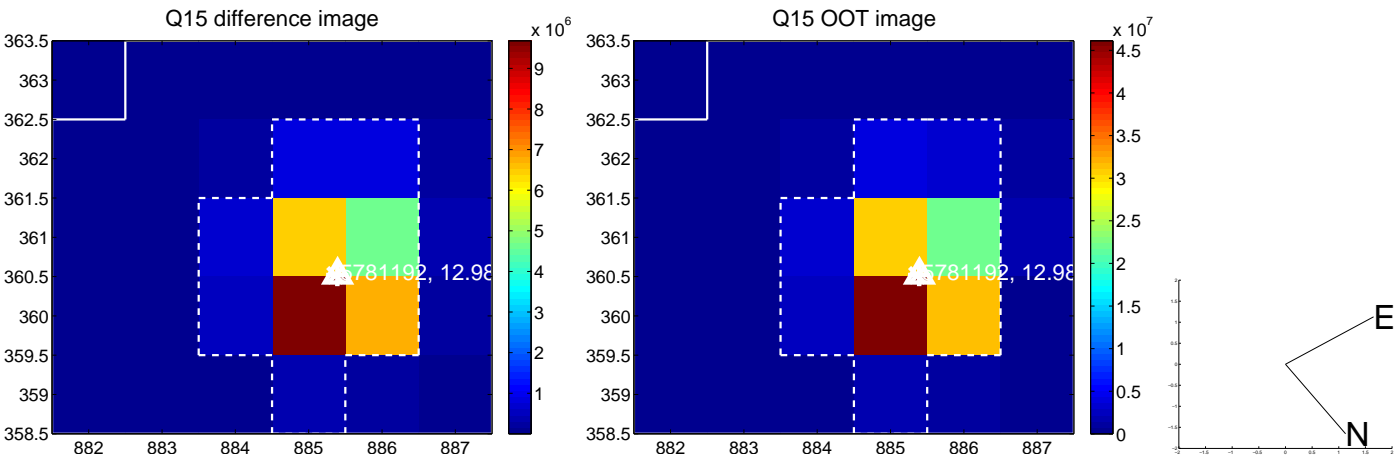
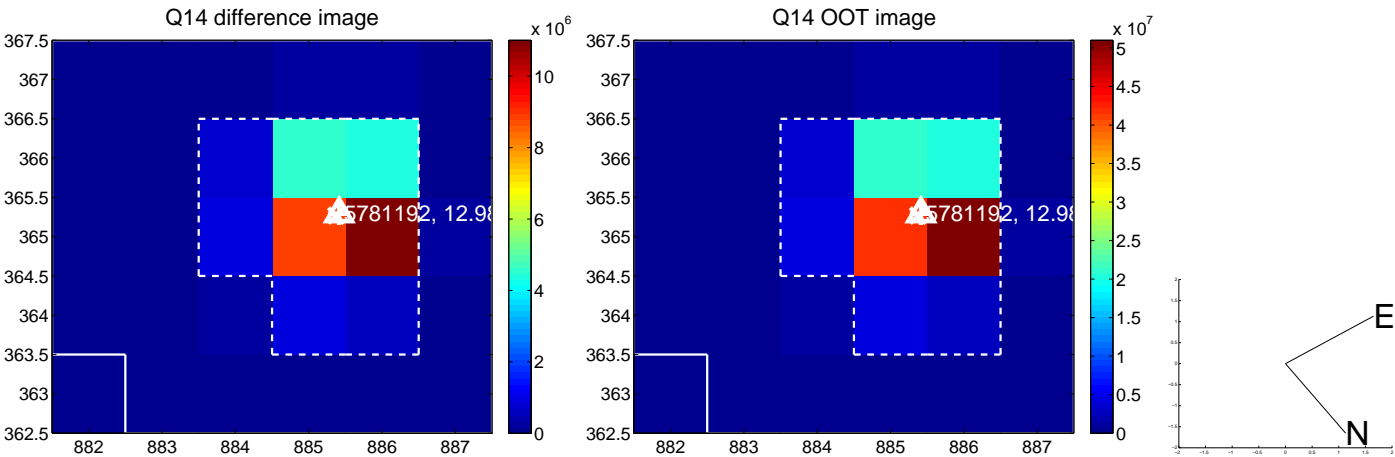
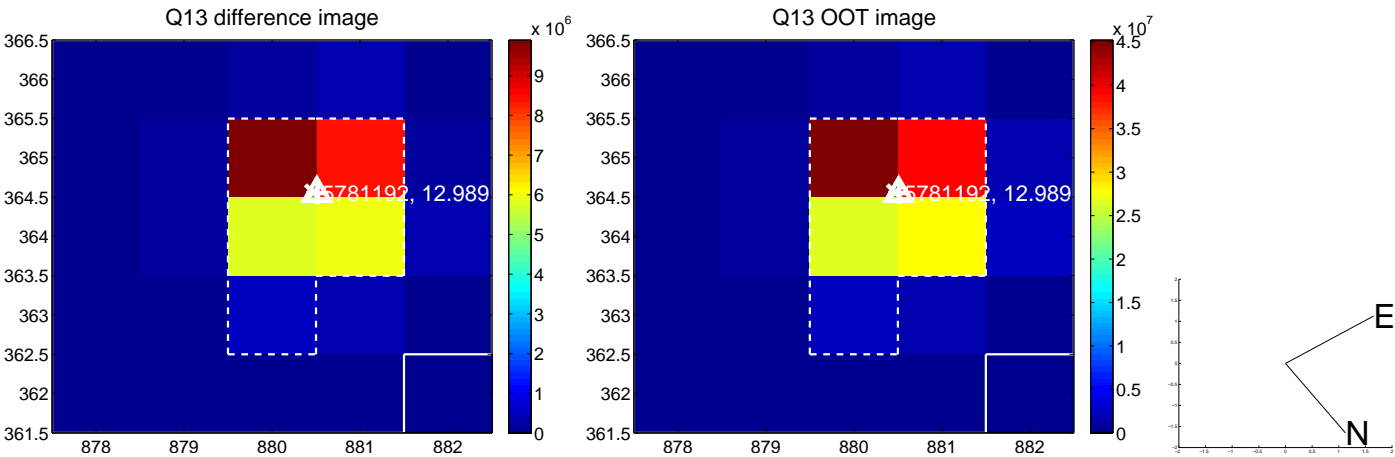




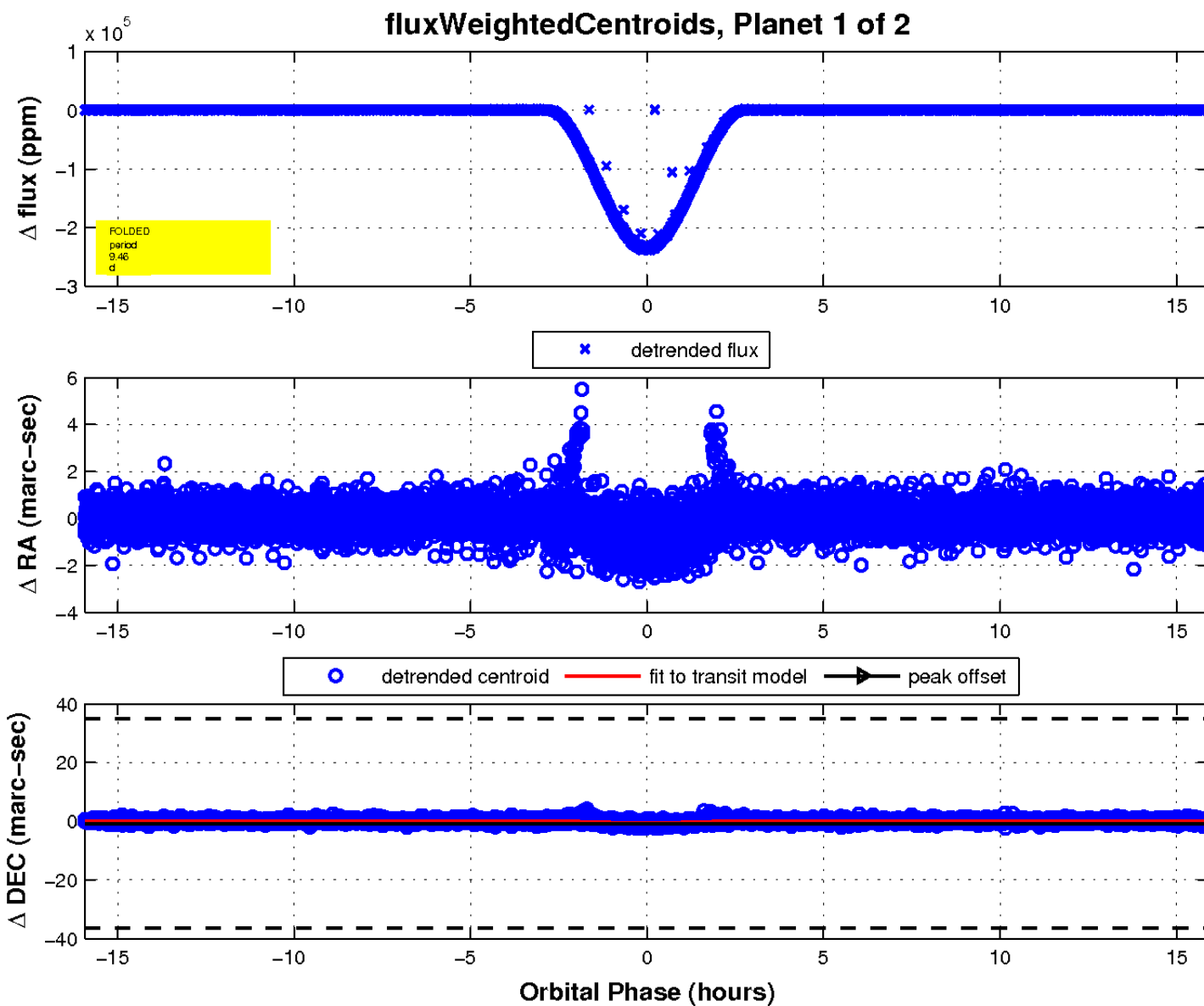
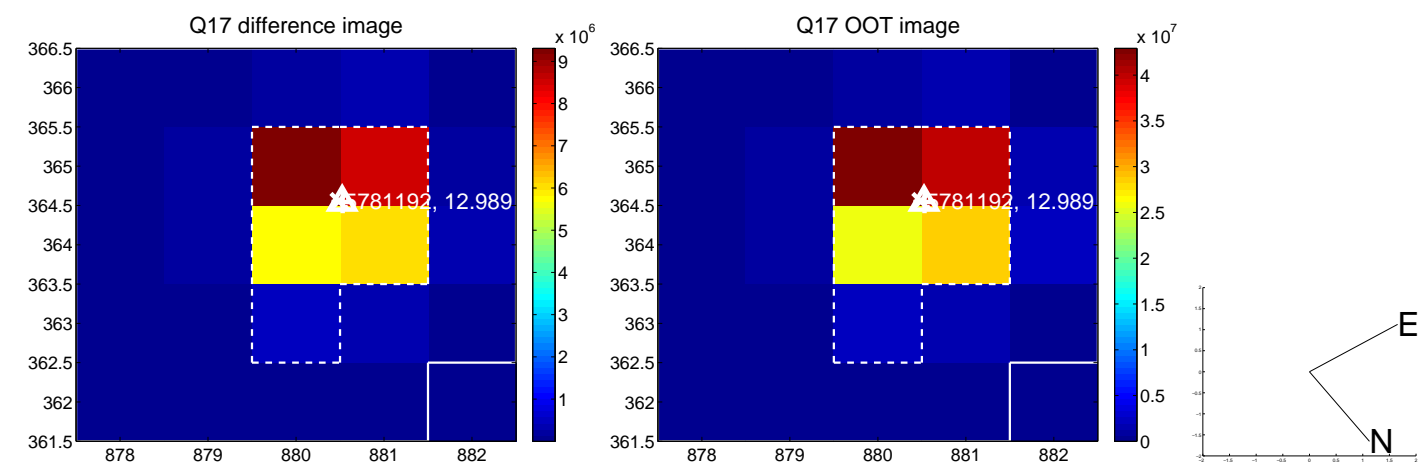
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

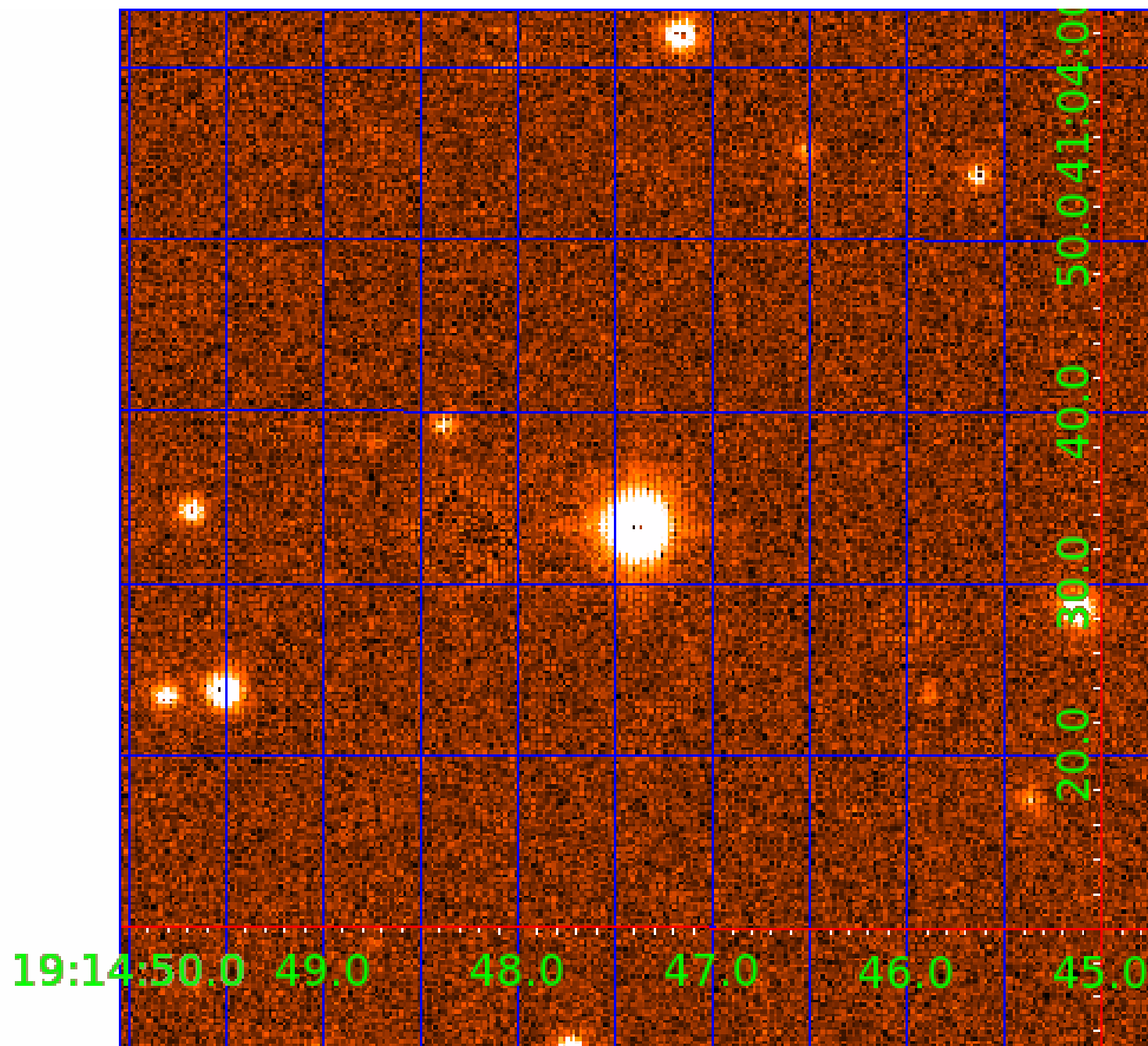


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 005781192

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005781192-01	OBS	6626.01	9.459994	138.343299	237622.4	5.312	25761.8	16270.6	0.83	5569	49.72	81.50
005781192-02	OBS	No	9.459998	133.802334	137454.2	4.750	15736.7	8717.1	0.83	5569	45.65	81.50

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005781192-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—DEEP_V_SHAPED—HAS_SEC_TCE
005781192-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

**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.

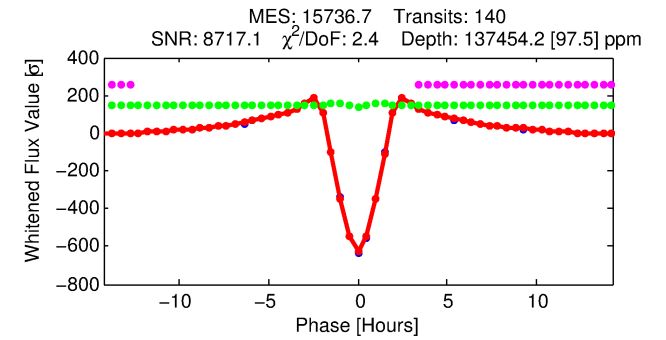
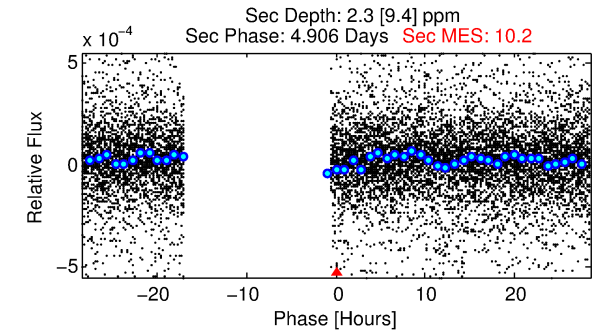
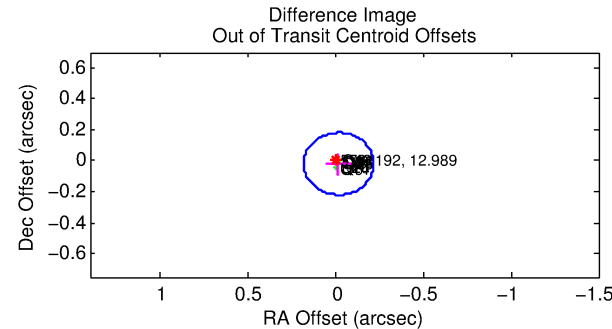
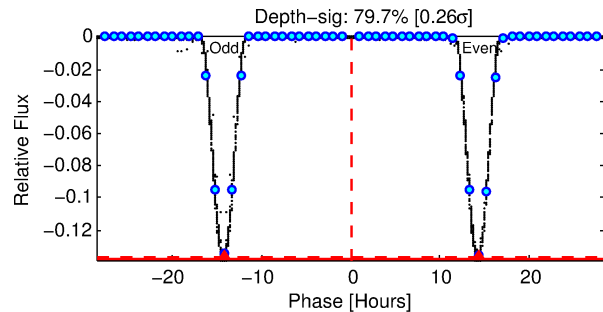
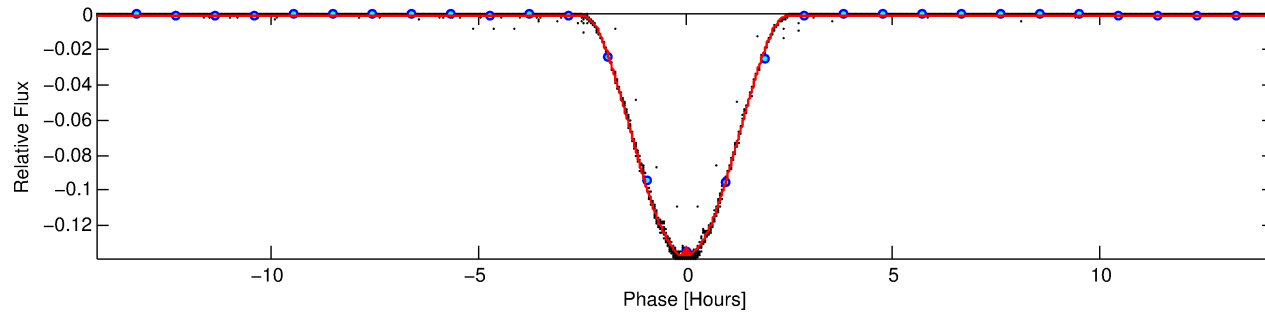
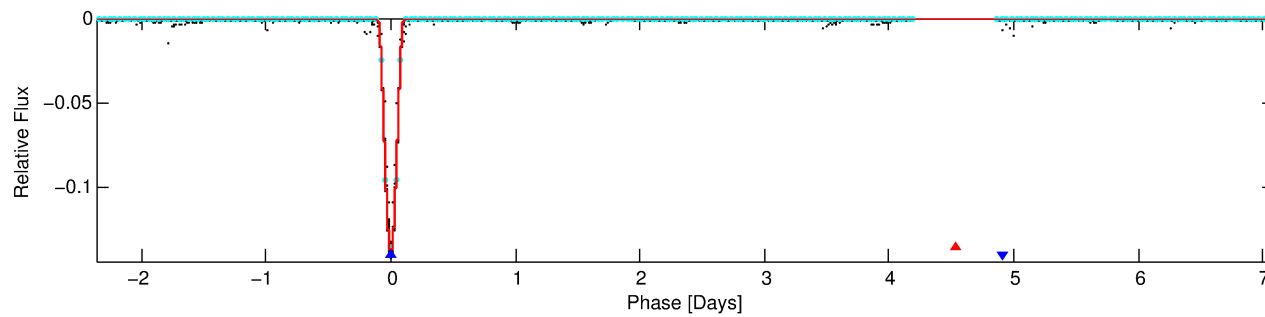
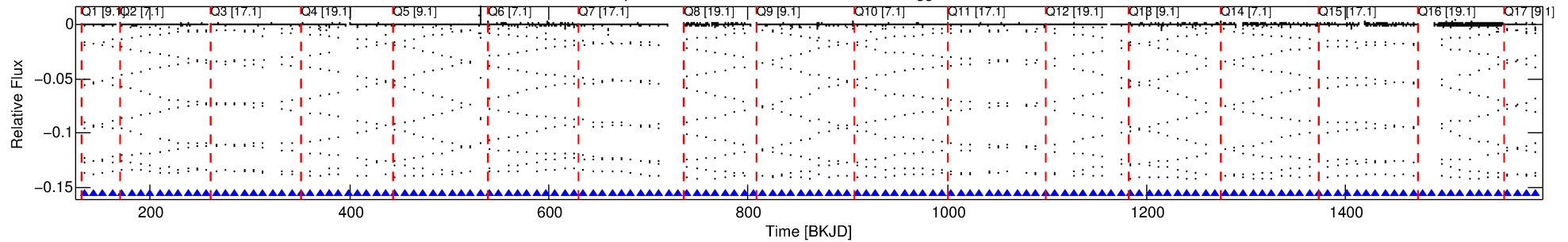
## Ephemeris Match Information For 005781192-02

No Significant Match Found

# DV One-Page Summary

KIC: 5781192 Candidate: 2 of 2 Period: 9.460 d  
KOI: K06626 Corr: No Ephemeris Match

Kp: 12.99 R\*: 0.83 Rs Teff: 5569.0 K Logg: 4.57 Fe/H: -0.080



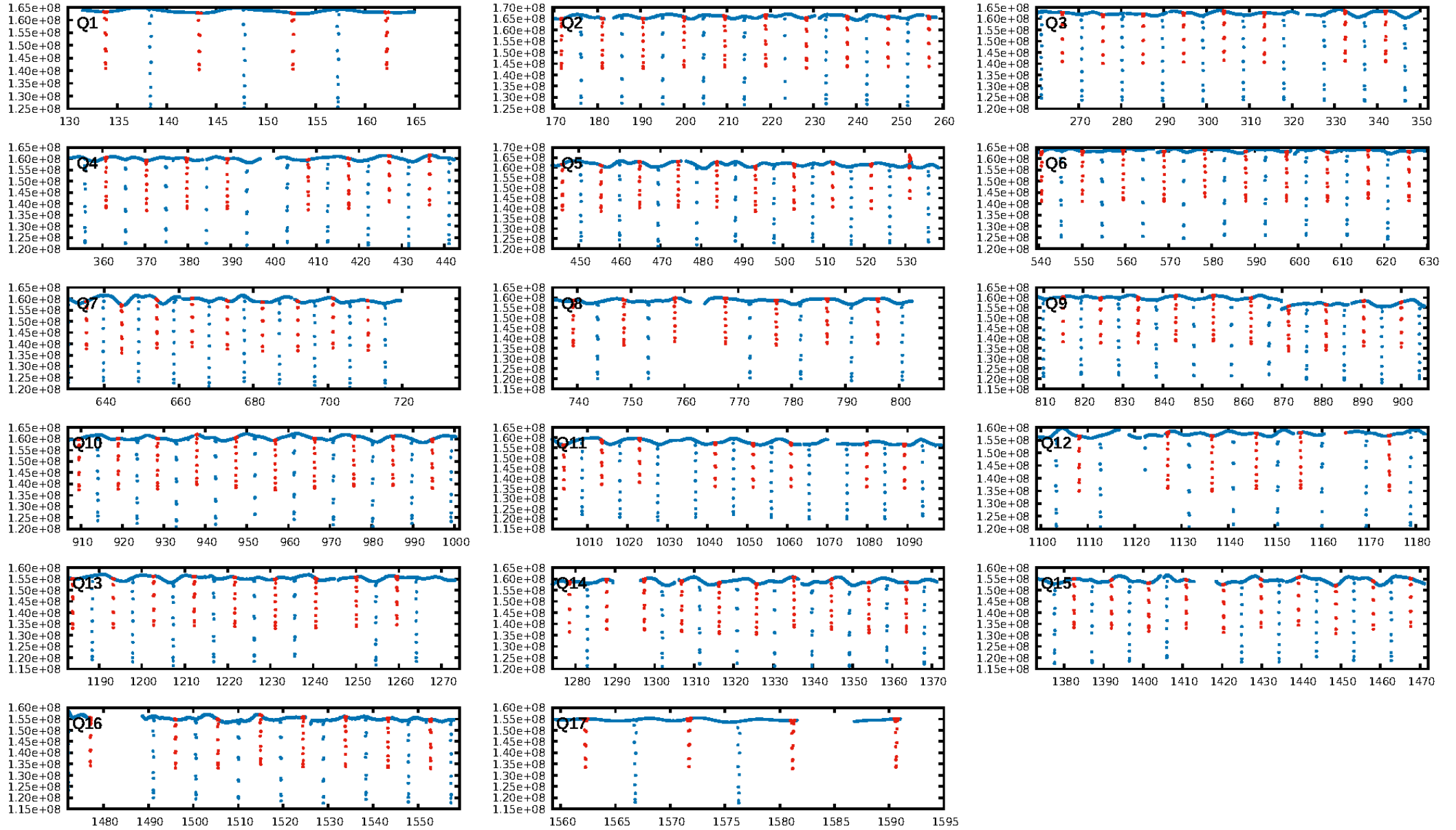
## DV Fit Results:

Period = 9.46000 [0.00000] d  
Epoch = 133.8023 [0.0000] BKJD  
Rp/R\* = 0.5047 [0.0288]  
a/R\* = 18.38 [0.09]  
b = 0.90 [0.04]  
Seff = 81.51 [24.28]  
Teff = 766 [57] K  
Rp = 45.65 [10.67] Re  
a = 0.0852 [0.0163] AU  
Ag = 0.00 [0.02] [-55.14σ]  
Teffp = 306 [310] K [-1.46σ]

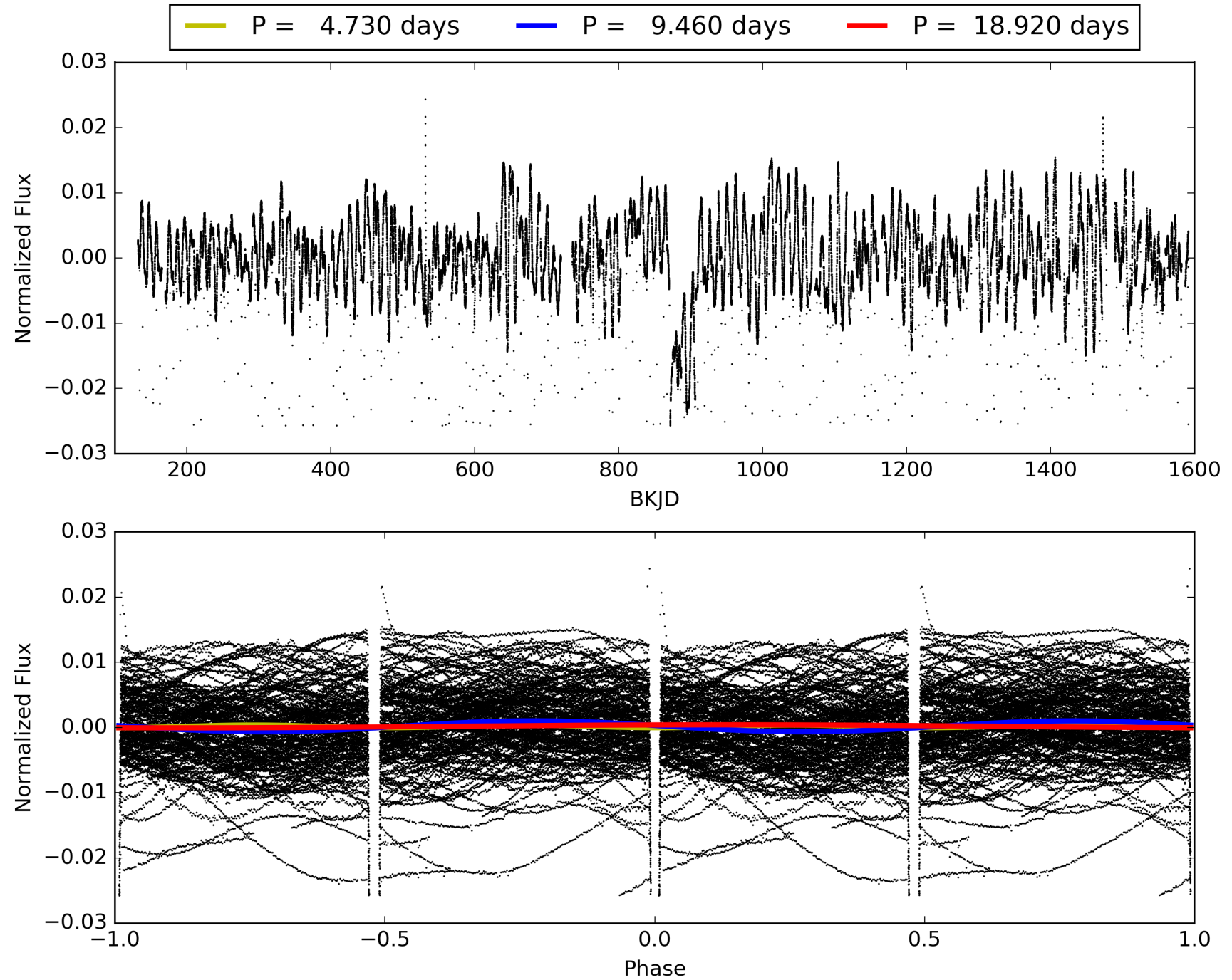
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [132/132]  
GhostDiagnostic-chr: 2.449  
Centroid-sig: N/A  
Centroid-so: 0.089 arcsec [216.51σ]  
OotOffset-rm: 0.025 arcsec [0.38σ]  
KicOffset-rm: 0.127 arcsec [1.88σ]  
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]

# TCE 005781192-02, PDC Light Curves



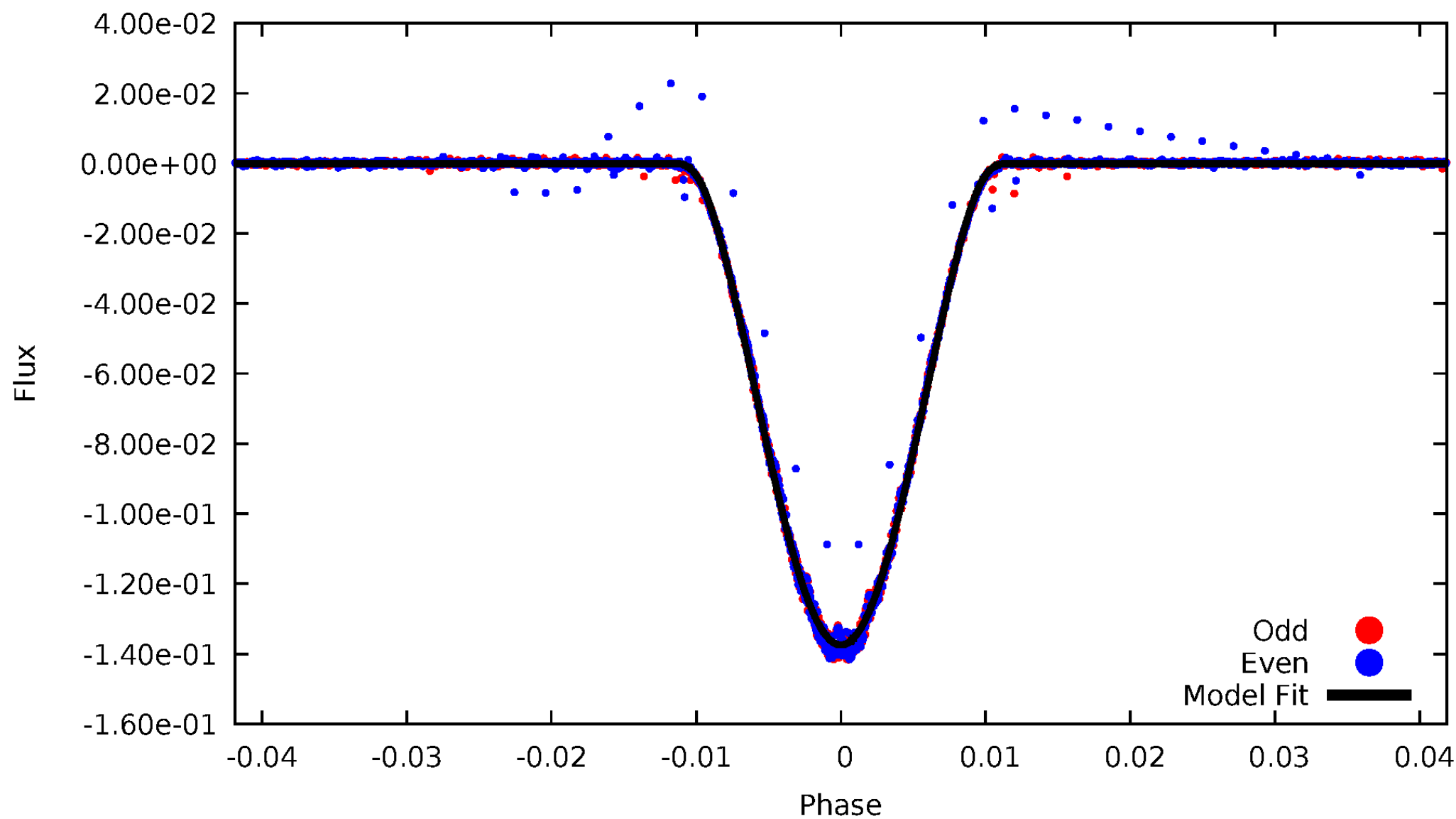
# TCE 005781192-02





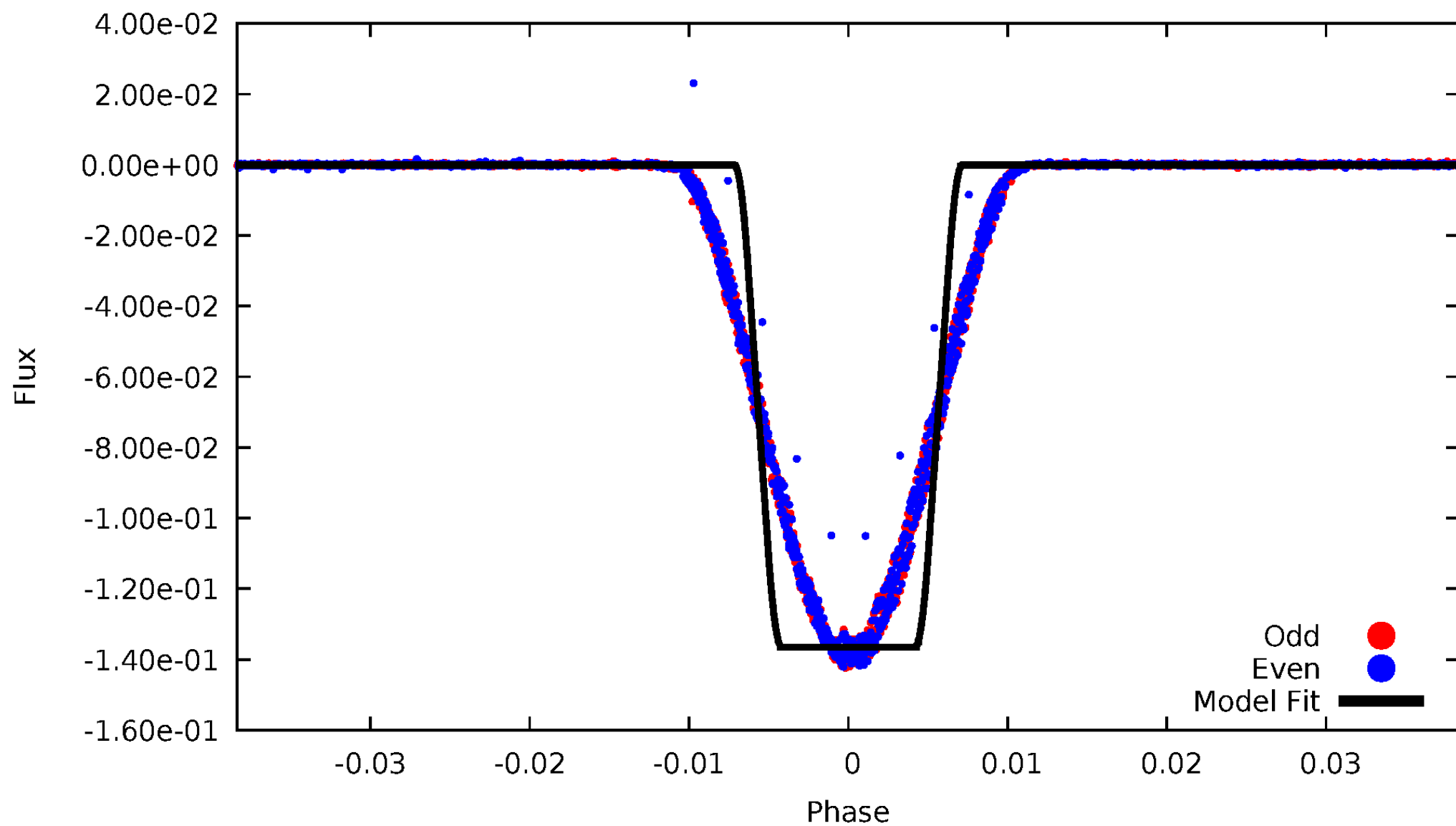
# DV Odd/Even

TCE 005781192-02



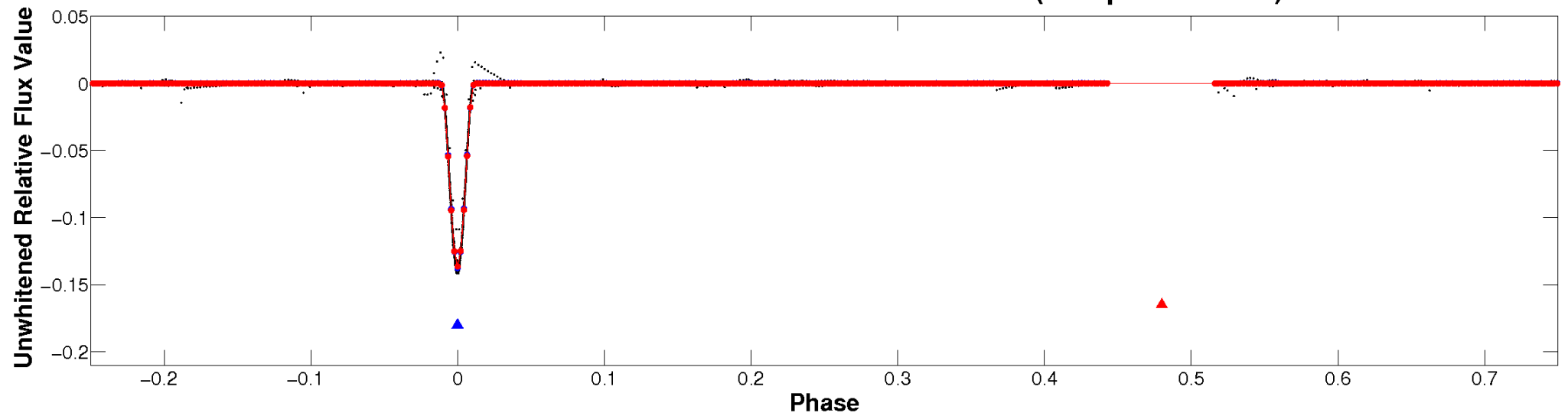
# ALT Odd/Even

TCE 005781192-02

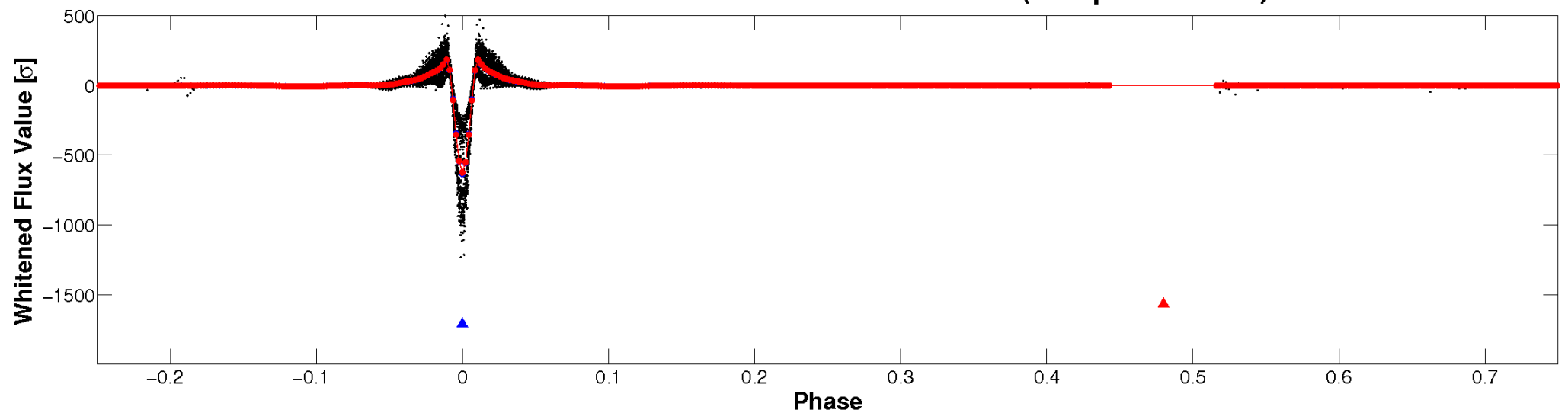


# Non-Whitened Vs. Whitened Light Curve

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

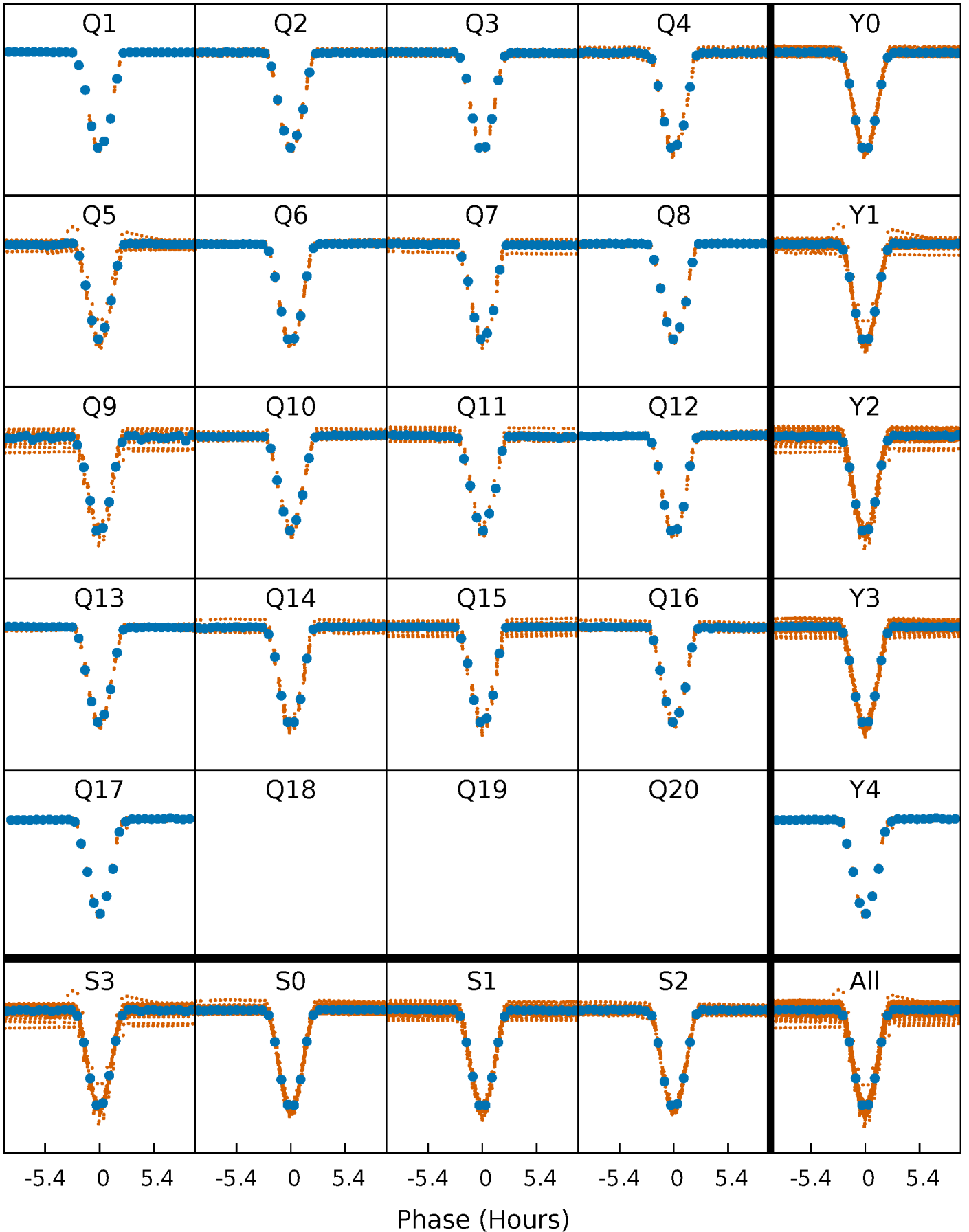


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



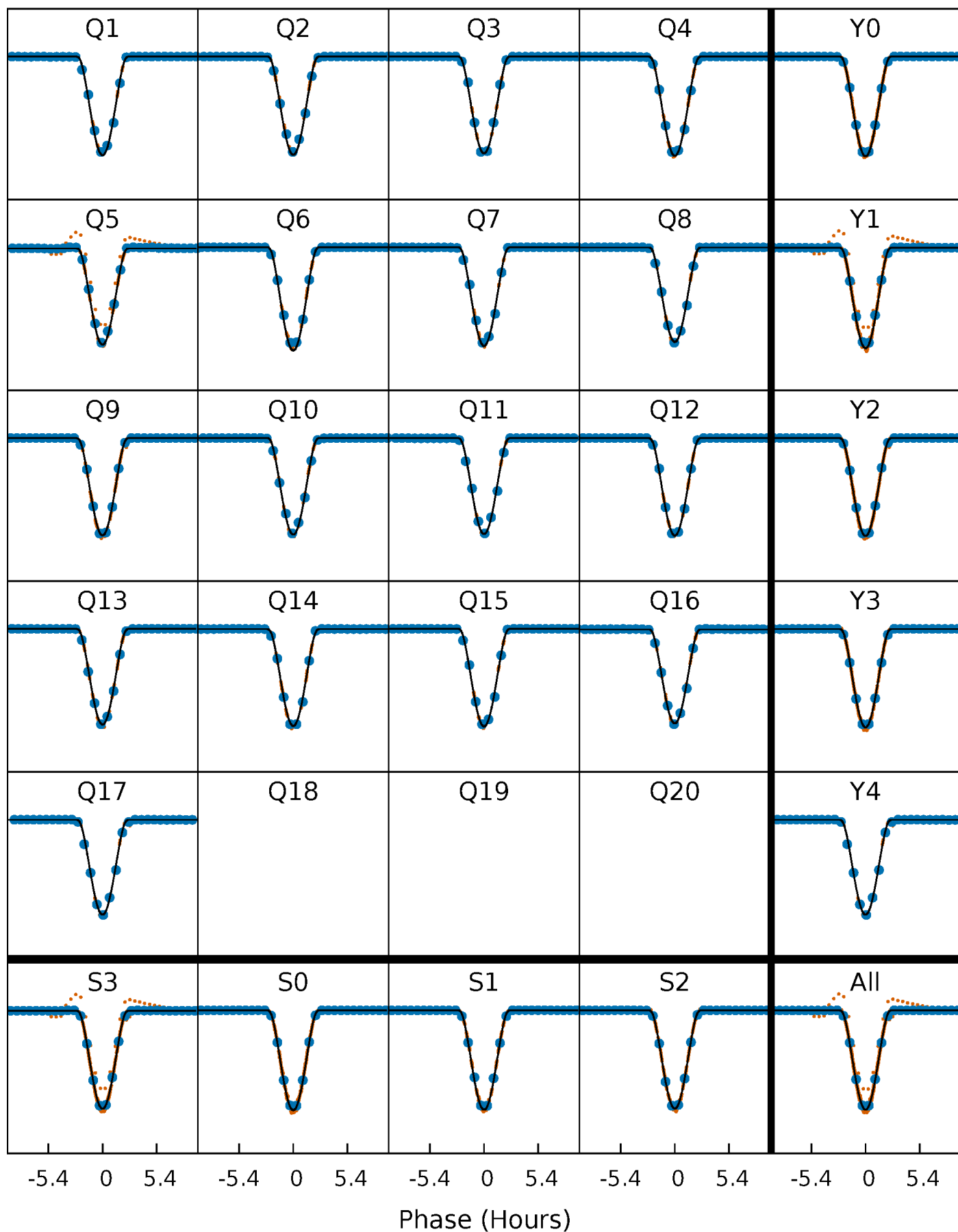
# PDC Quarter-Phased Transit Curves

TCE 005781192-02     $P = 9.459998$  Days     $T_0 = 133.802334$  (BKJD)



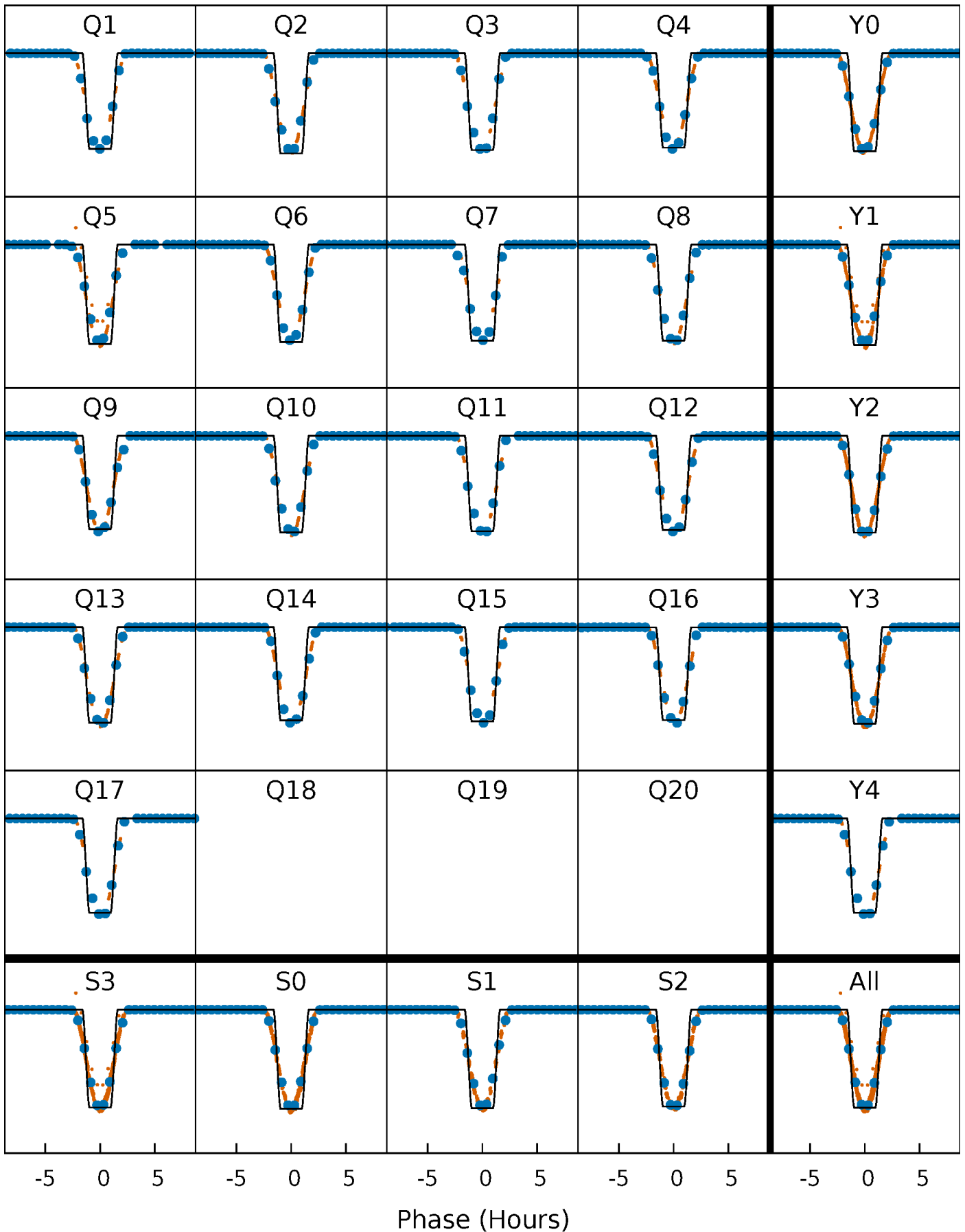
# DV Quarter-Phased Transit Curves

TCE 005781192-02 P= 9.459998 Days  $T_0=133.802334$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

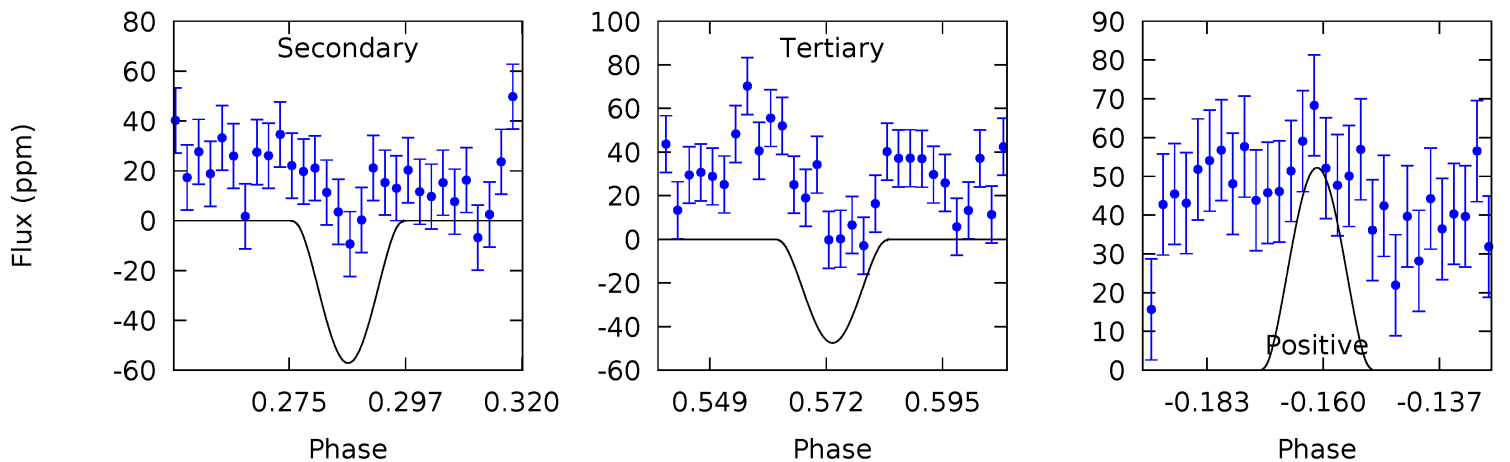
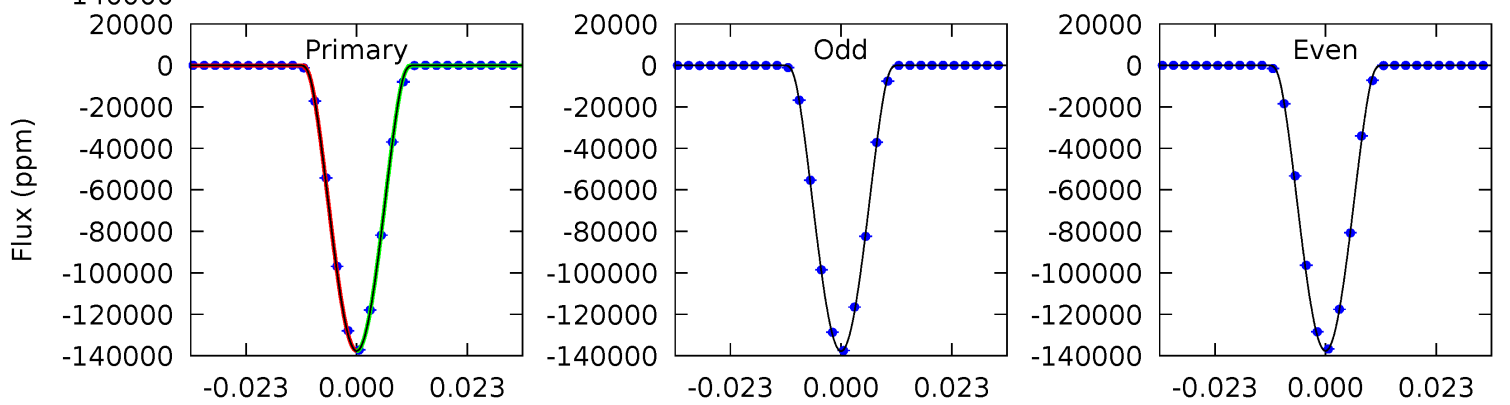
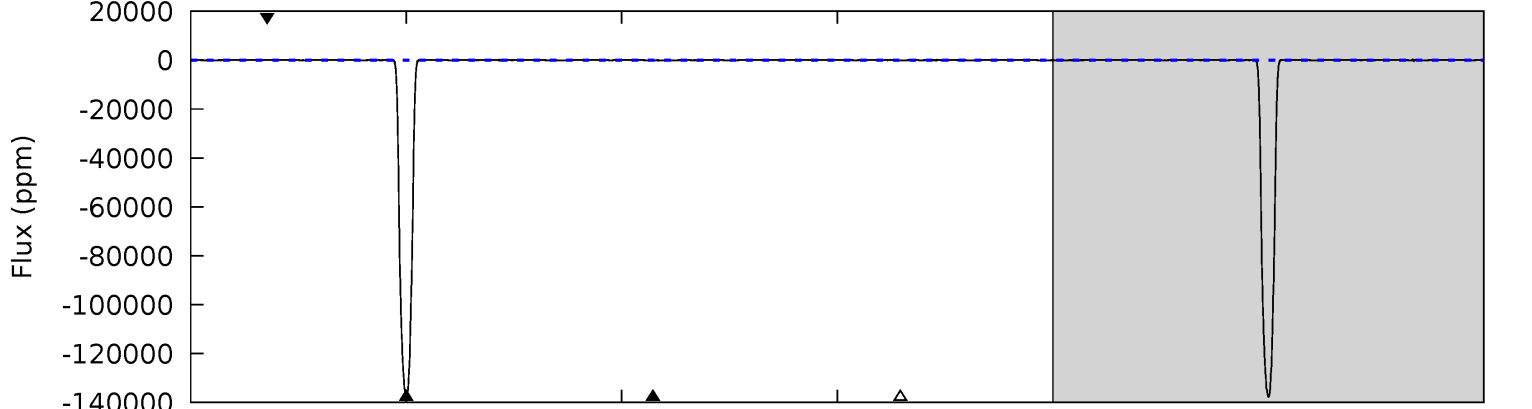
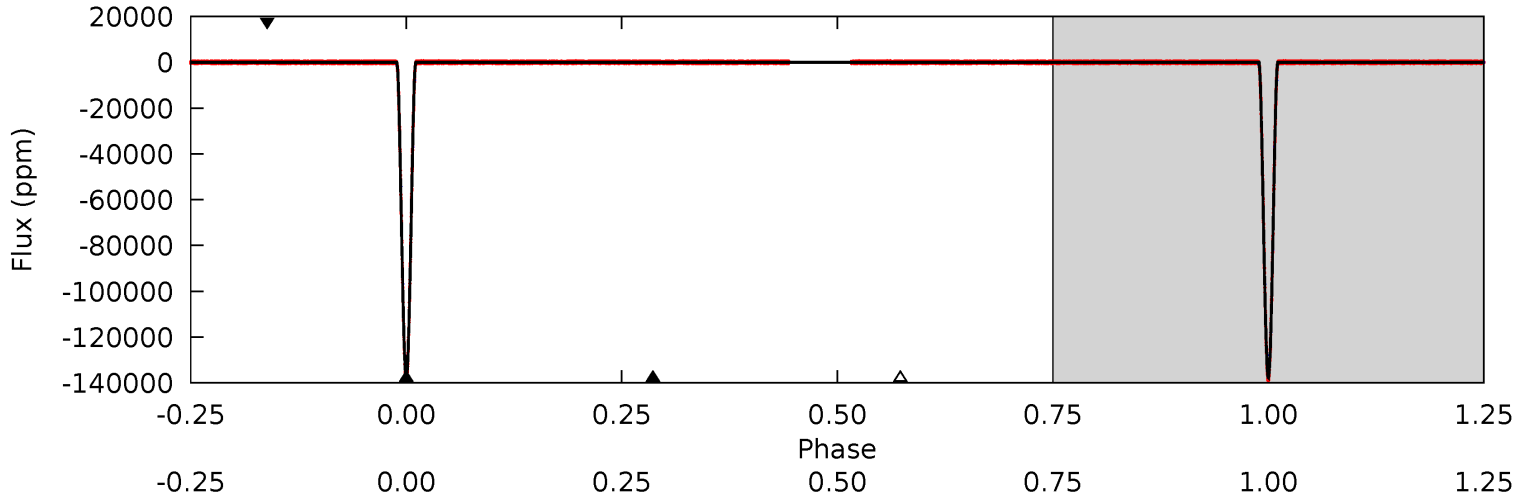
TCE 005781192-02     $P = 9.459953$  Days     $T_0 = 133.805365$  (BKJD)



# DV Model-Shift Uniqueness Test

005781192-02, P = 9.459998 Days, E = 124.342336 Days

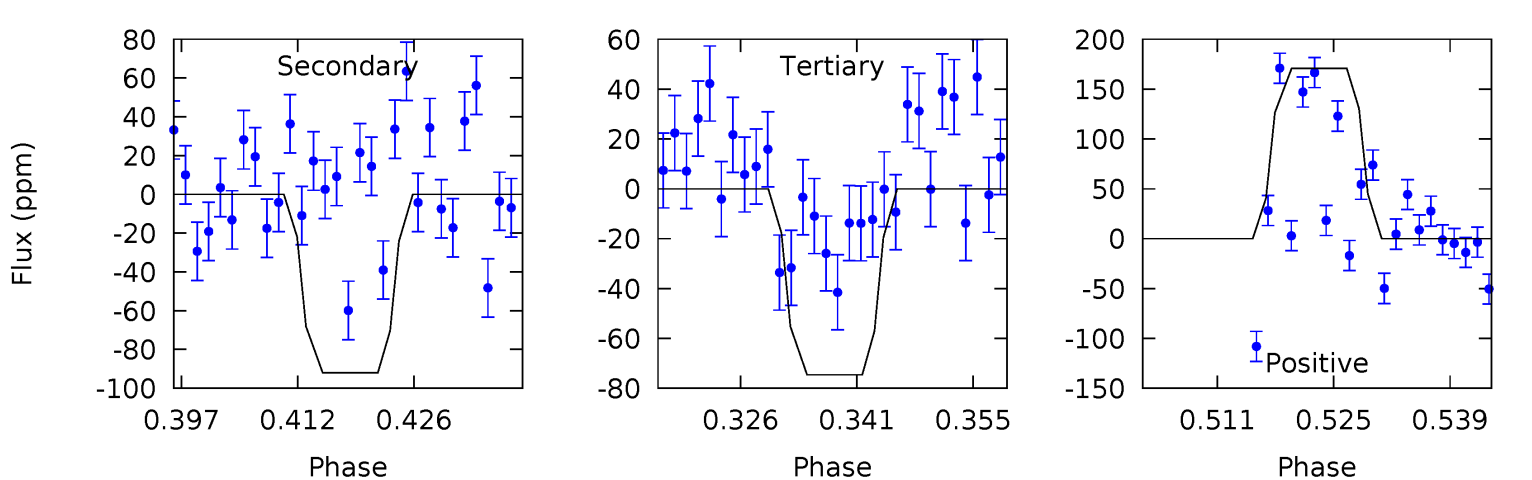
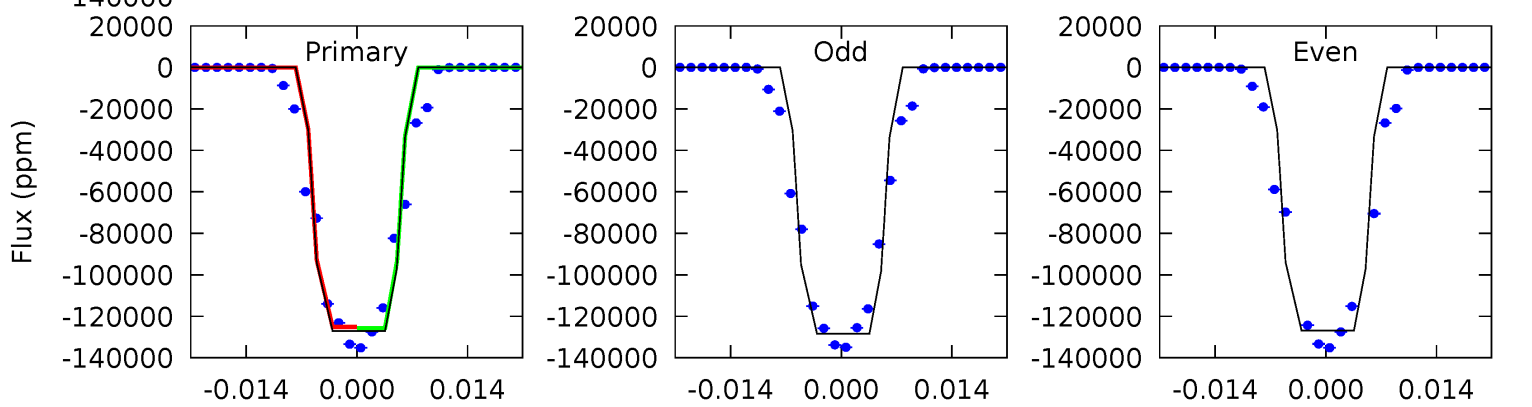
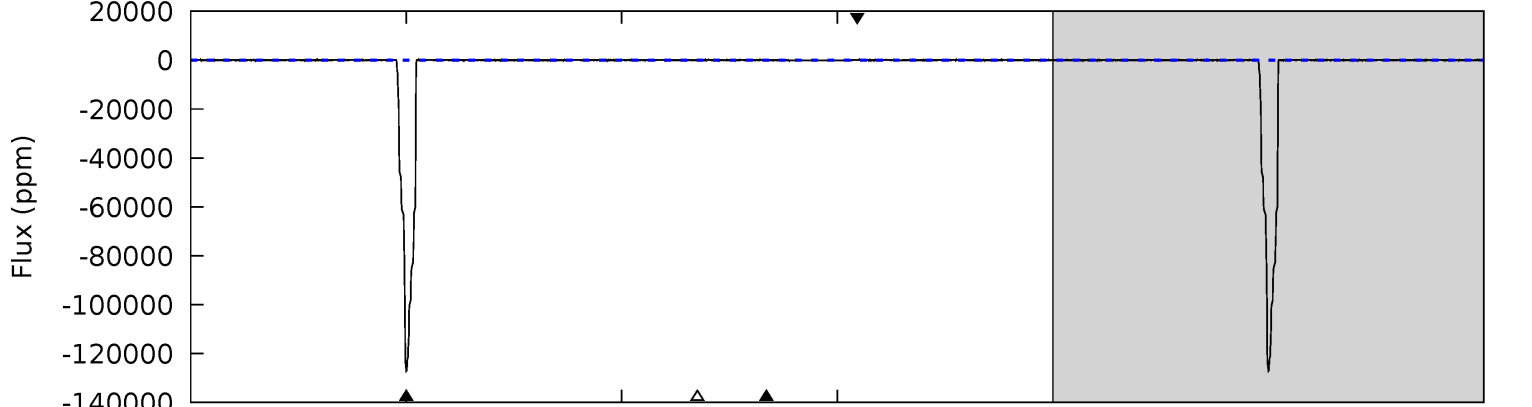
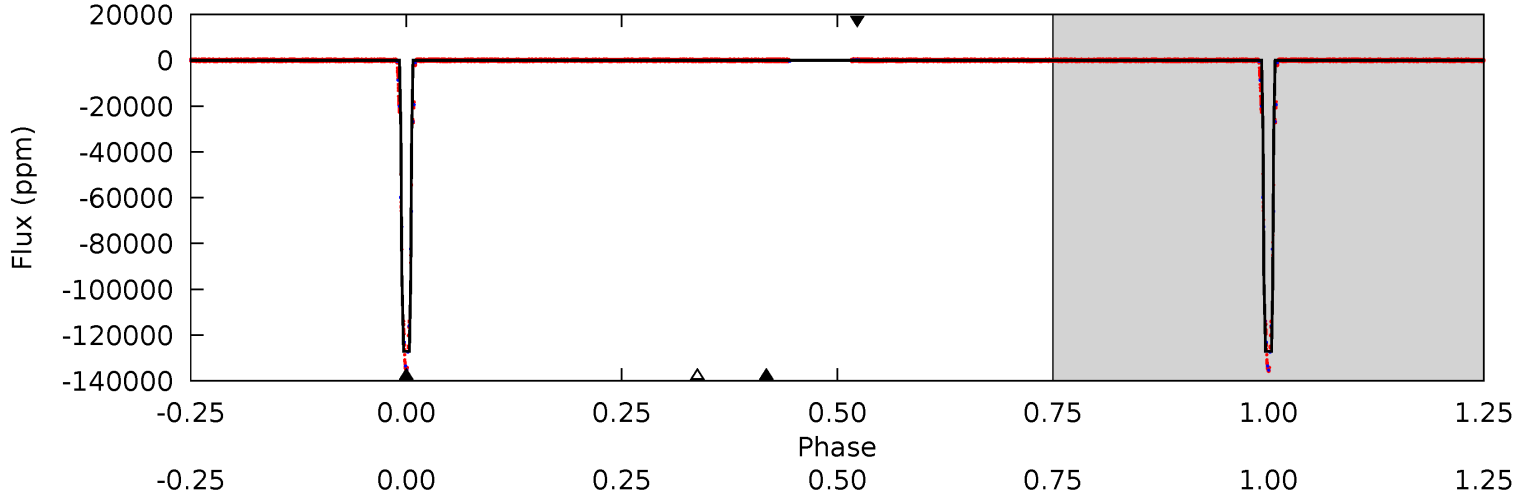
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19874	8.25	6.85	7.54	4.87	2.28	2.69	19867	19867	1.39	0.71	5.60	1.00	0.00	0



# Alt Model-Shift Uniqueness Test

005781192-02, P = 9.459953 Days, E = 124.345412 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
6420	4.65	3.77	8.62	4.96	2.45	1.12	6416	6411	0.88	-3.97	38.5	0.99	0.00	13.3





### Stellar Parameters For KIC 005781192

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5569^{+149}_{-149}$	$4.566^{+0.038}_{-0.152}$	$-0.080^{+0.300}_{-0.300}$	$0.829^{+0.188}_{-0.075}$	$0.928^{+0.083}_{-0.111}$	$2.295^{+0.448}_{-0.951}$
	+3%/-3%	+1%/-3%	+375%/-375%	+23%/-9%	+9%/-12%	+20%/-41%
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 005781192-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-57 \pm 7$	$46.98^{+6.43}_{-4.13}$	$1091^{+59}_{-45}$	$-1837^{+43}_{-56}$	$0.100^{+0.024}_{-0.022}$
Alt.	$-92 \pm 20$	$34.70^{+4.15}_{-3.66}$	$1092^{+54}_{-47}$	$1110^{+608}_{-2825}$	$0.300^{+0.098}_{-0.085}$

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

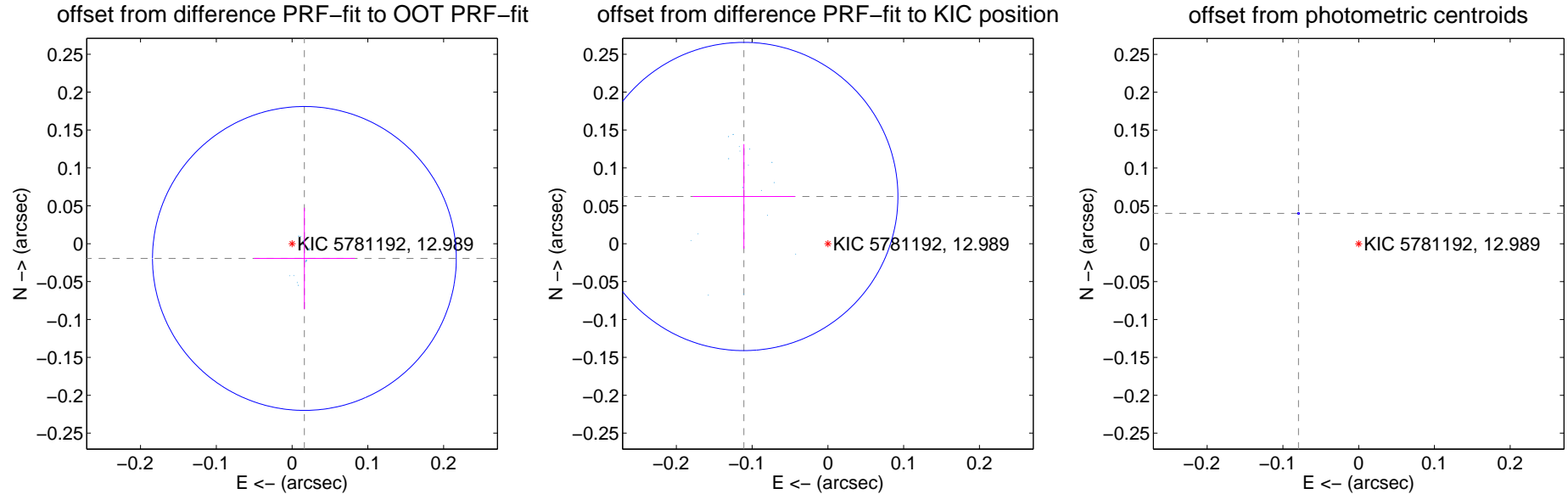
## DV Centroid Data

Supplemental centroid analysis for 005781192-02. Kepler magnitude: 12.99. Transit SNR 8717.09

There are 17 quarters with good PRF difference image offsets

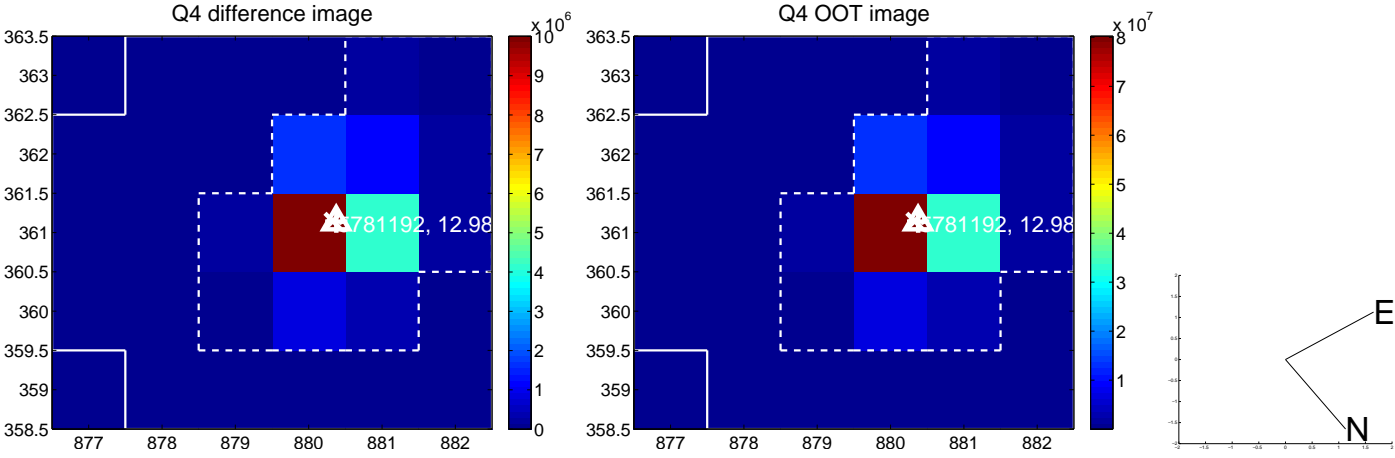
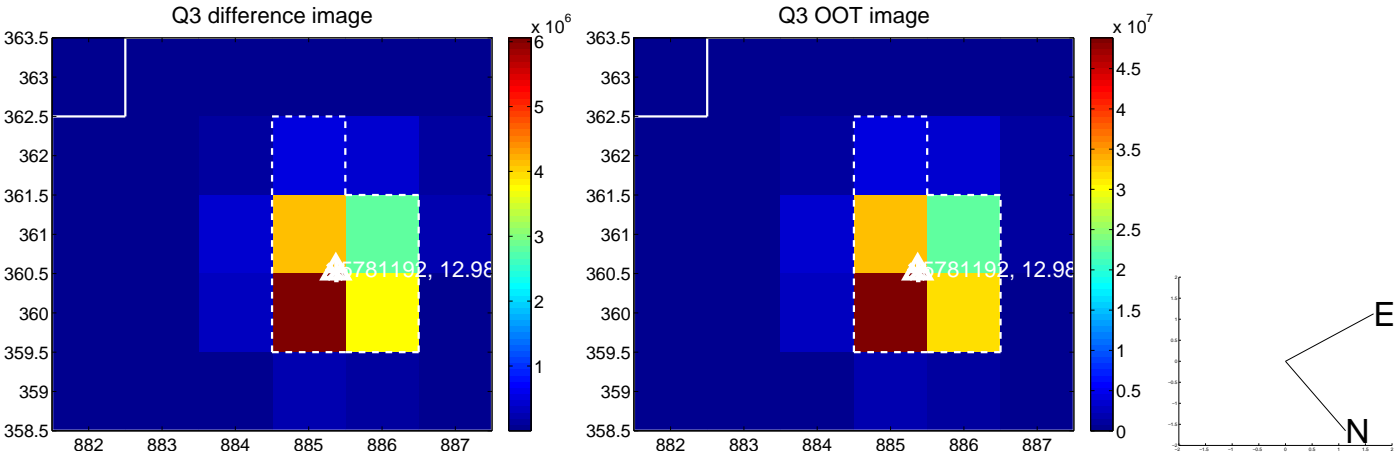
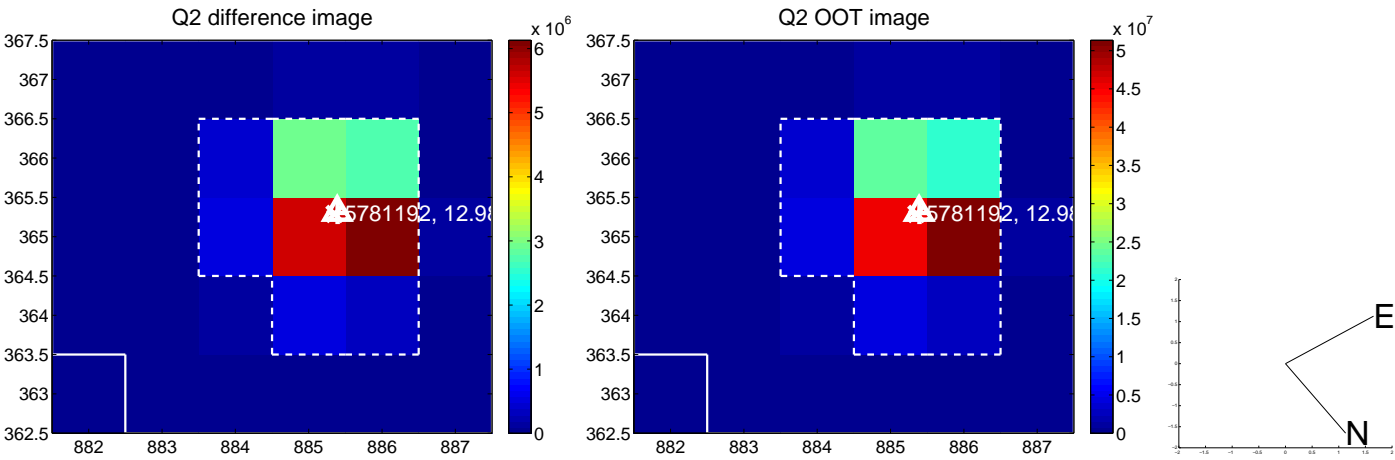
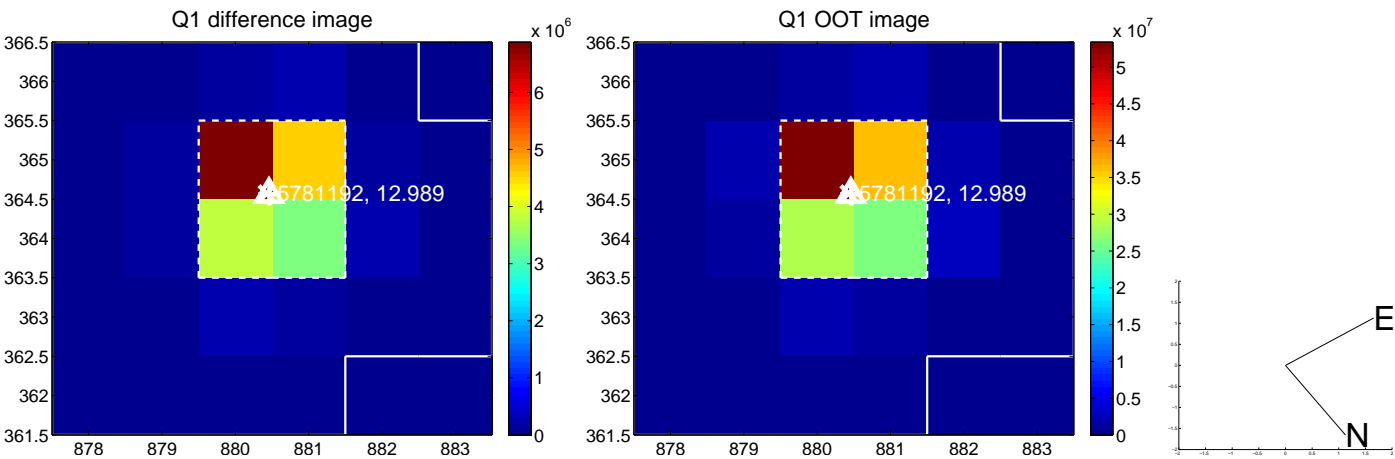
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.025 \pm 0.067$	0.38	$-0.016 \pm 0.067$	$-0.019 \pm 0.067$
PRF-fit source offset from KIC position	$0.127 \pm 0.068$	1.88	$0.111 \pm 0.067$	$0.062 \pm 0.069$
photometric centroid source offset	$0.09 \pm 0.00$	<b>216.51</b>	$0.08 \pm 0.00$	$0.04 \pm 0.00$

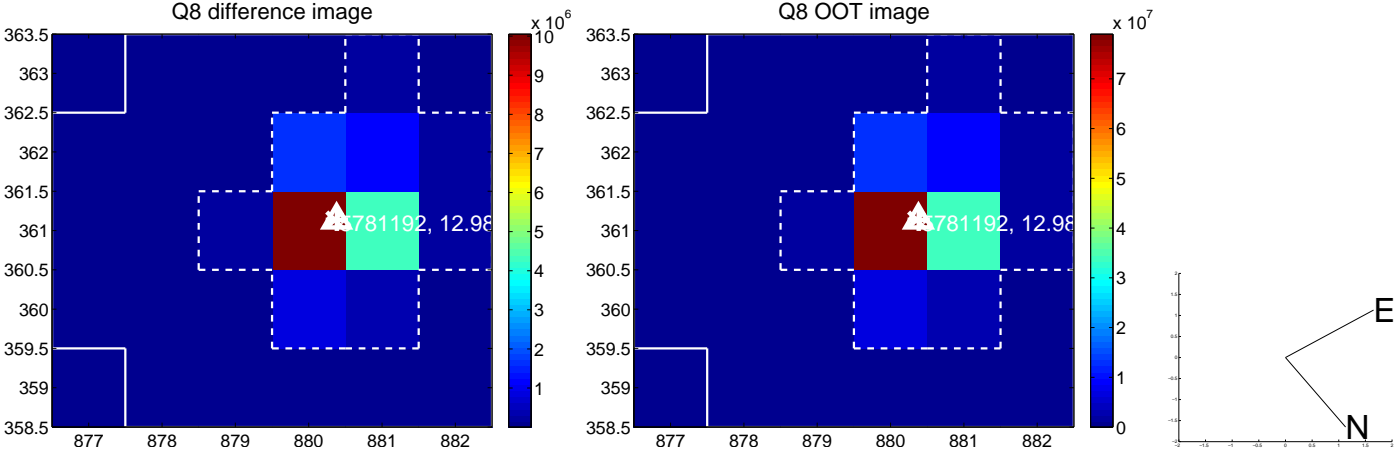
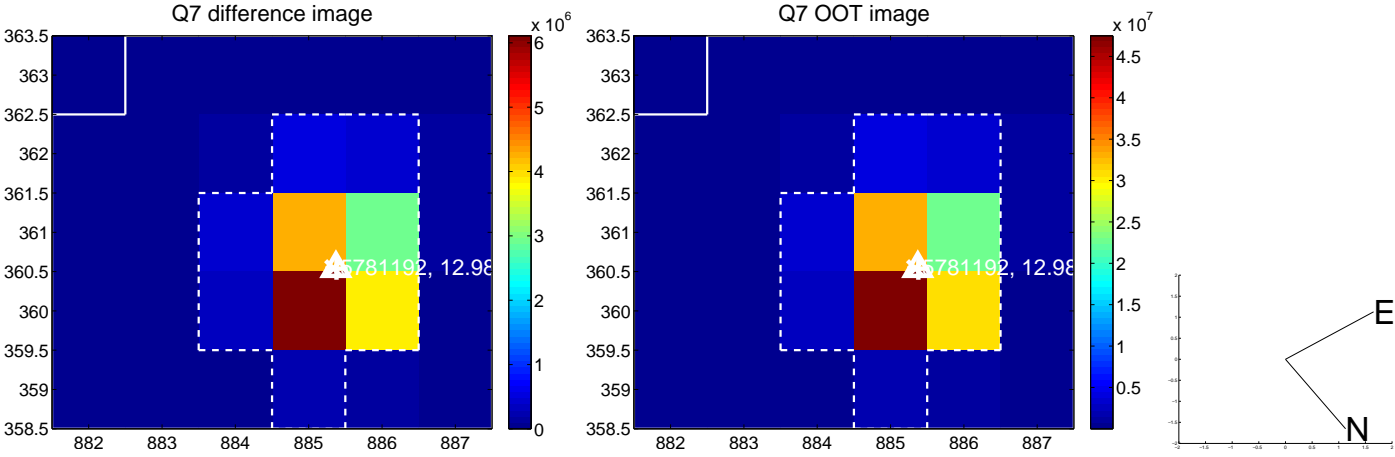
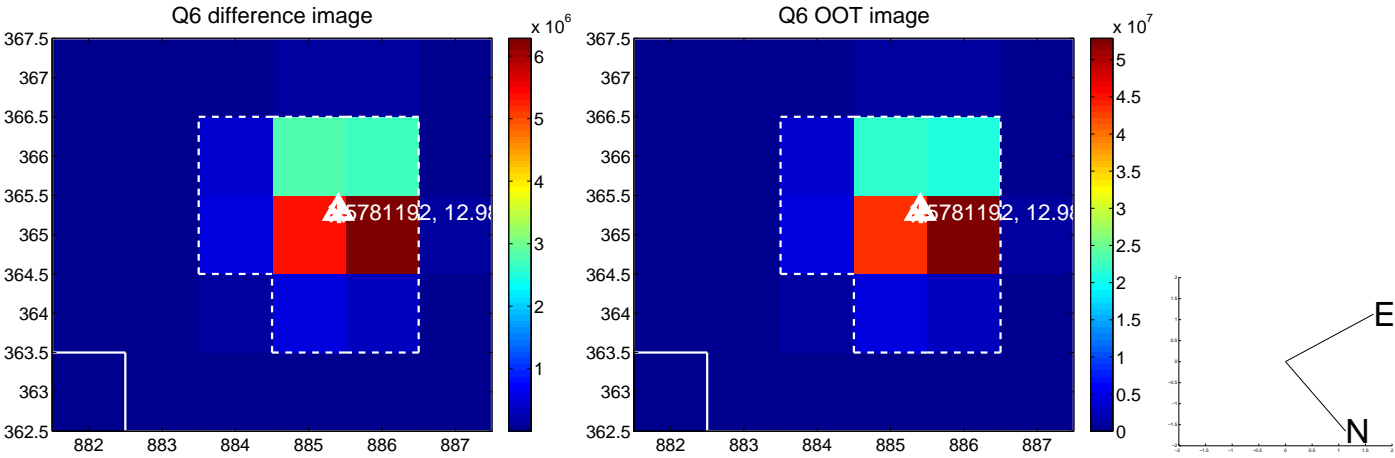
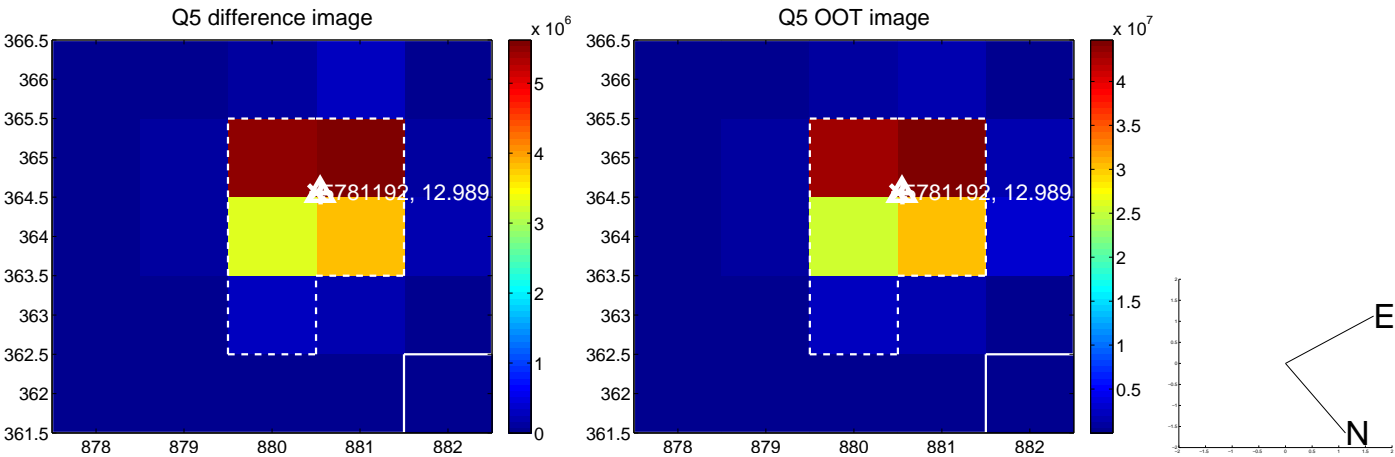


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

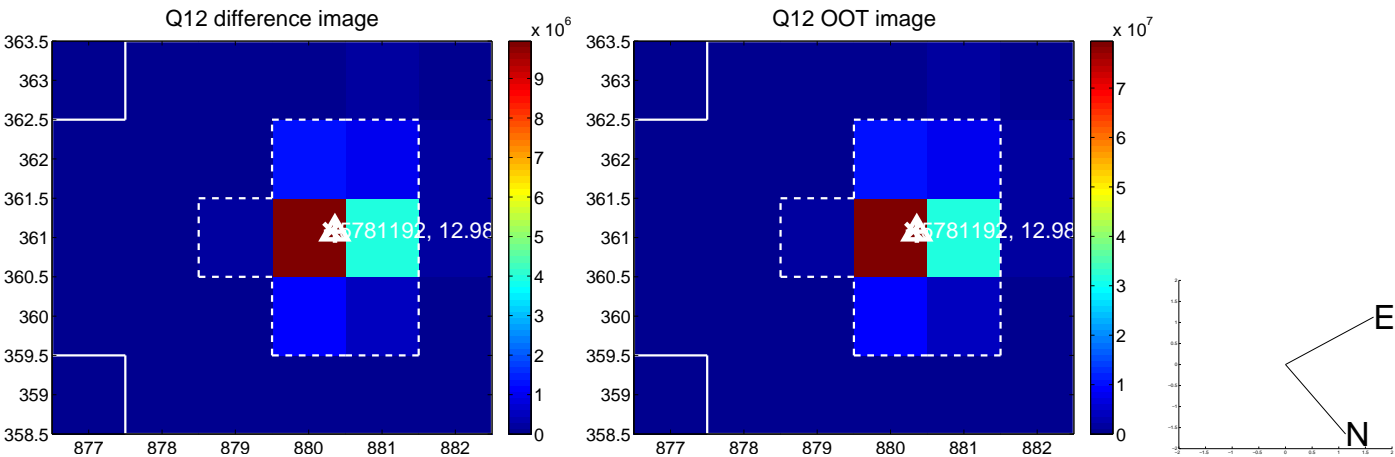
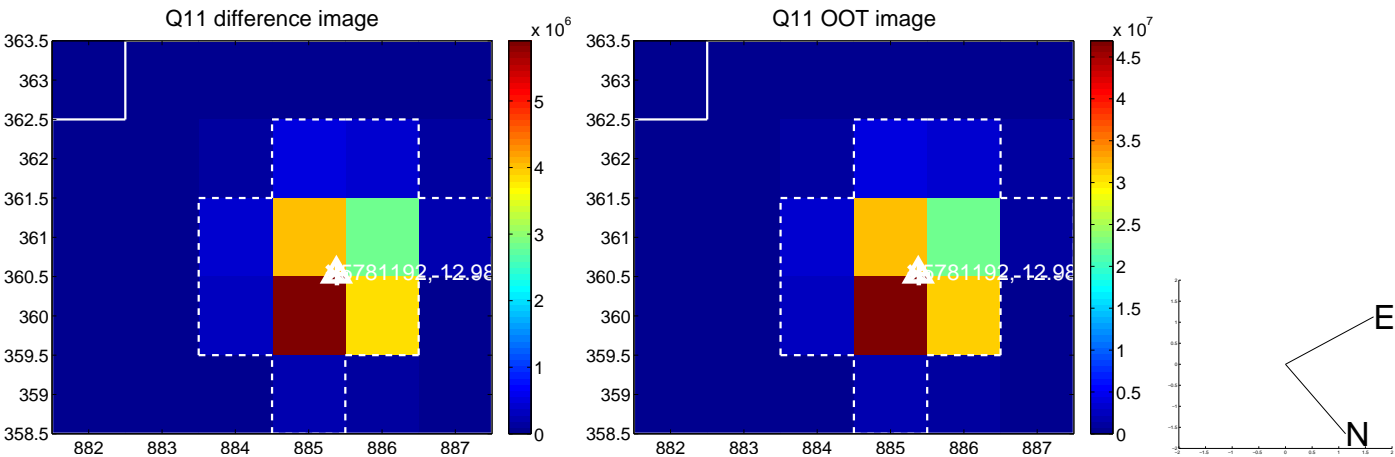
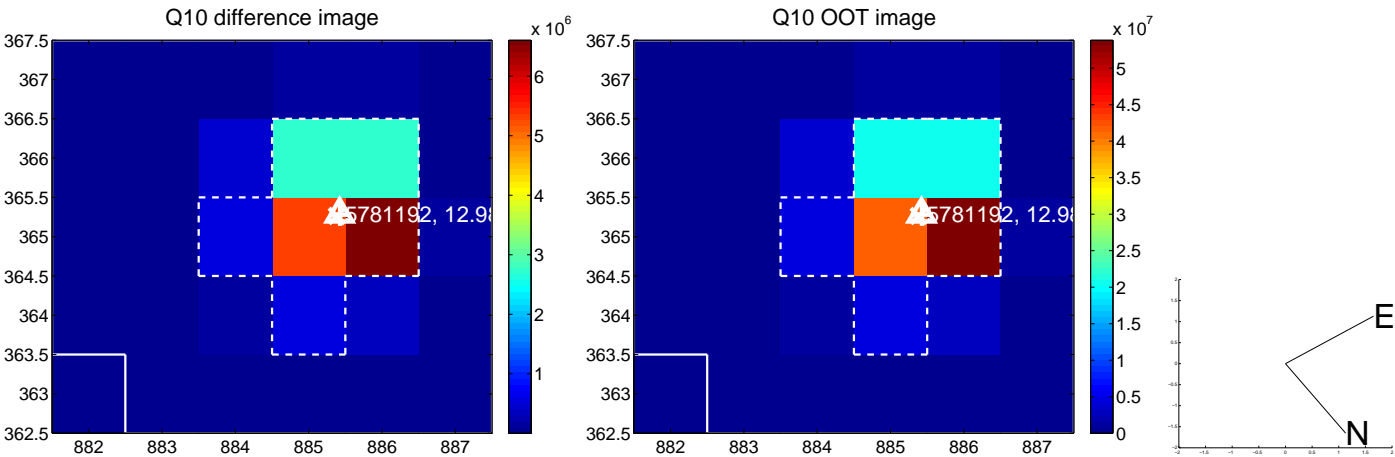
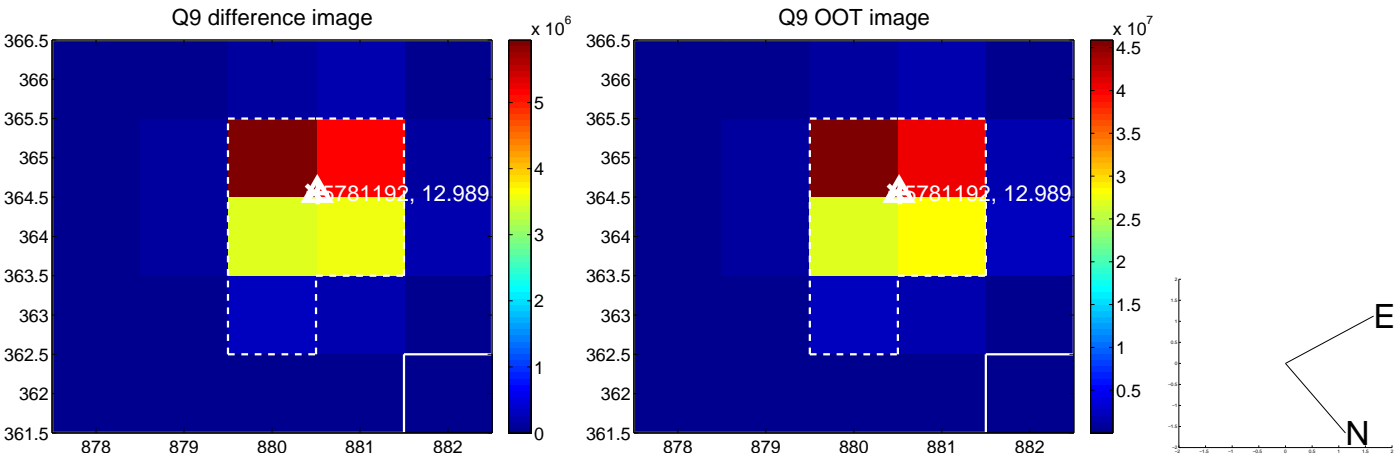
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



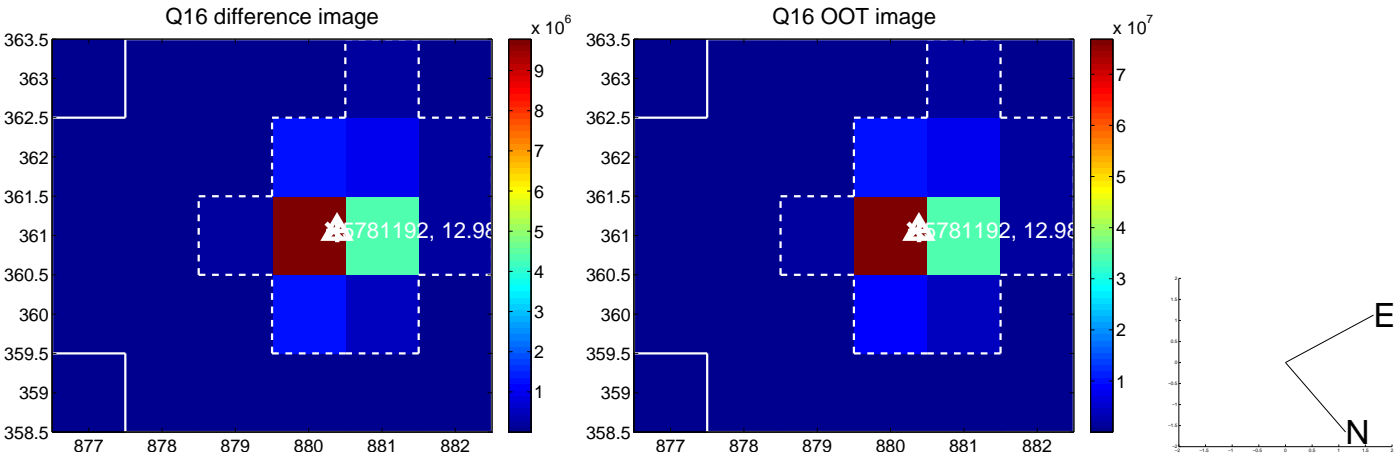
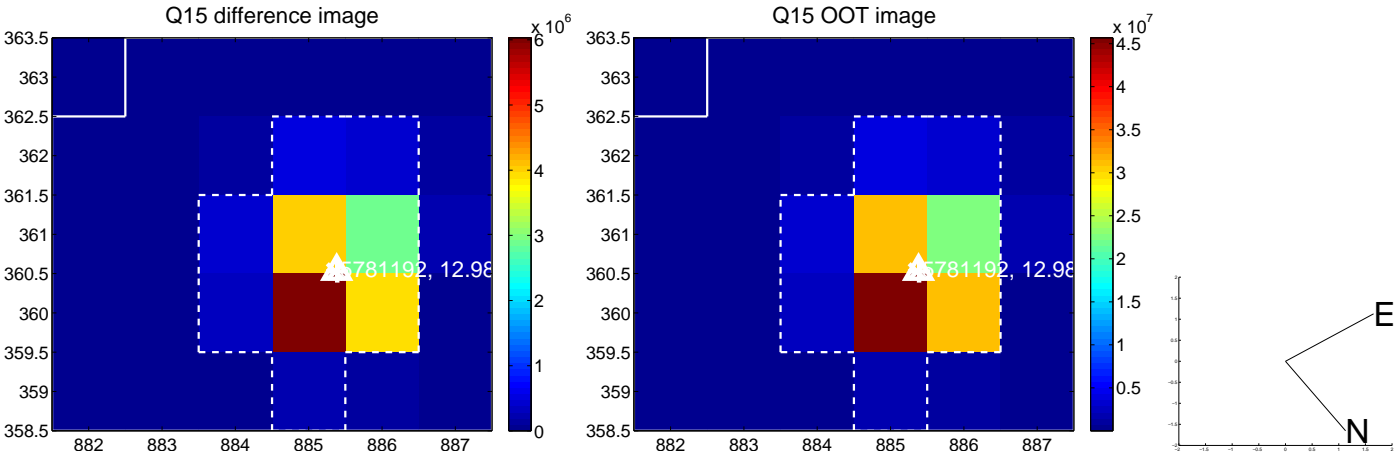
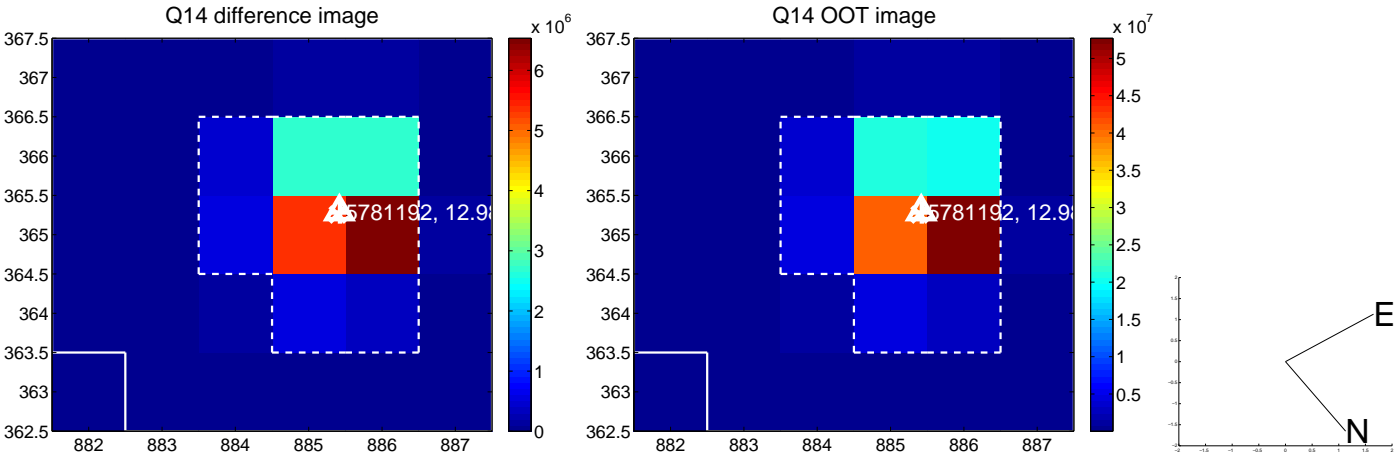
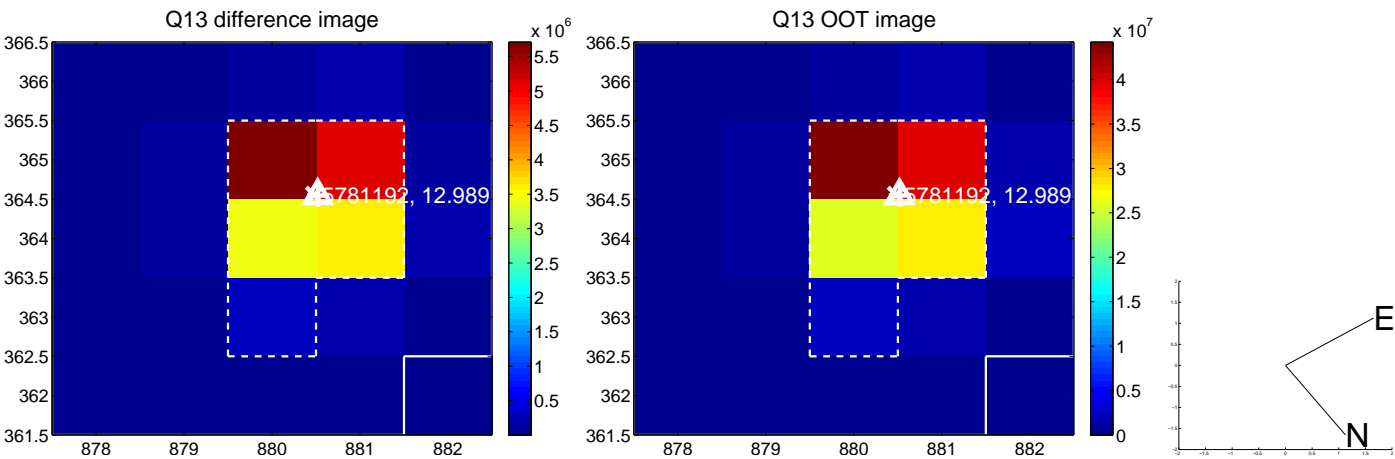
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



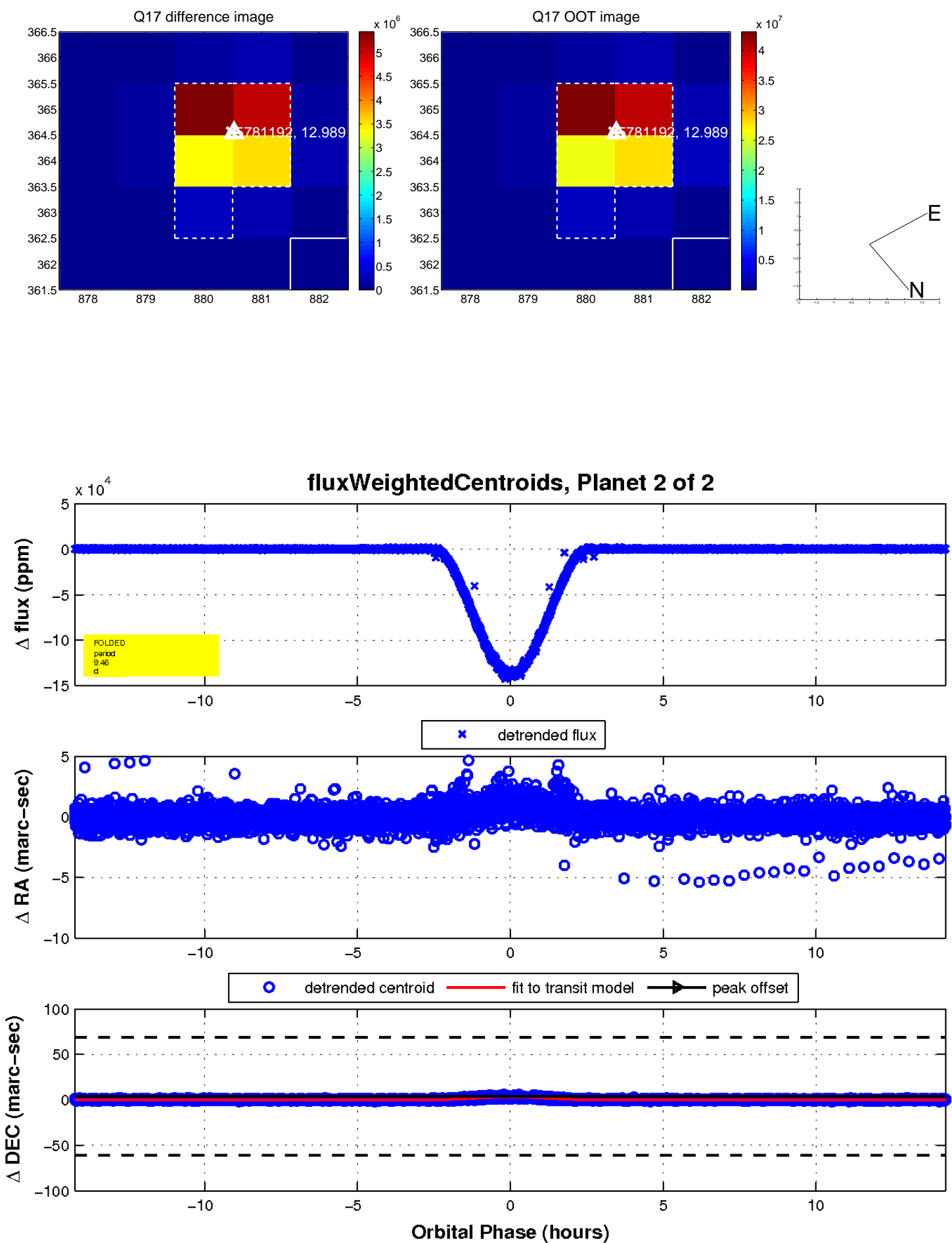
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

