

# KIC 010799767

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010799767-01	OBS	No	391.609574	304.824322	2114.1	2.895	12.6	7.5	0.73	5591	3.34	0.49
010799767-02	OBS	No	467.370824	466.791036	1484.6	3.453	10.5	5.4	0.73	5591	2.80	0.39
010799767-03	OBS	No	451.124140	183.305165	2775.8	8.313	13.5	7.2	0.73	5591	3.80	0.41
010799767-04	OBS	No	394.721944	277.594562	2170.9	3.000	14.9	-1.0	0.73	5591	3.37	0.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010799767-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_KIC_POS
010799767-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_KIC_POS
010799767-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
010799767-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

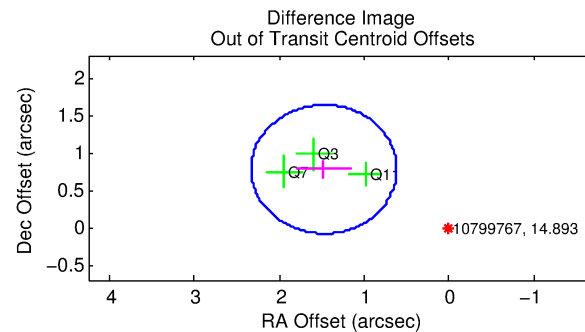
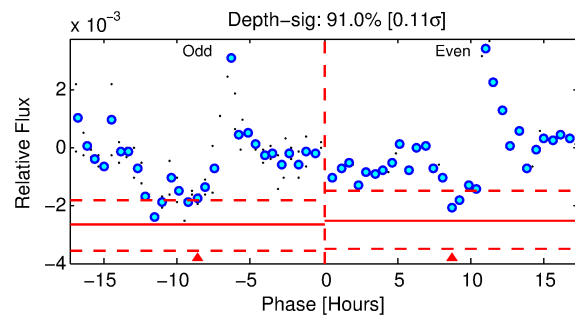
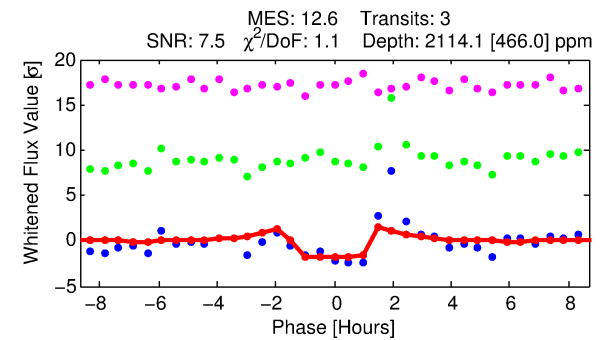
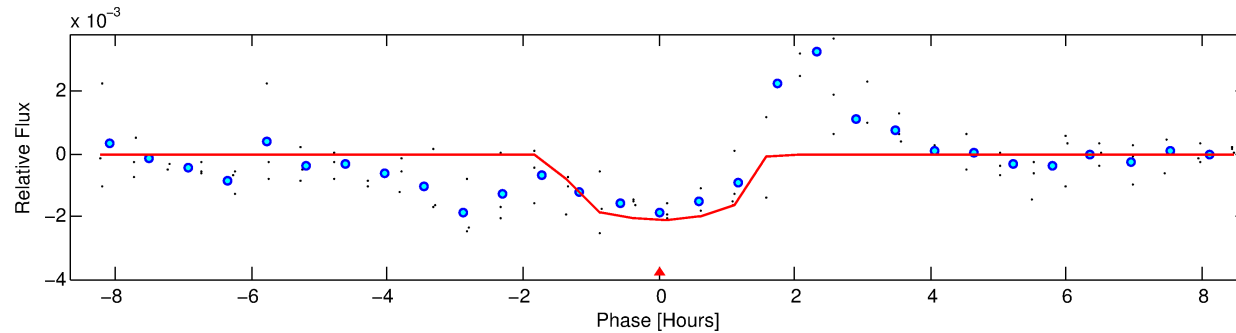
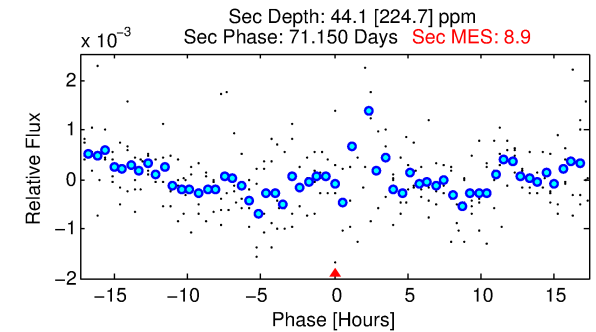
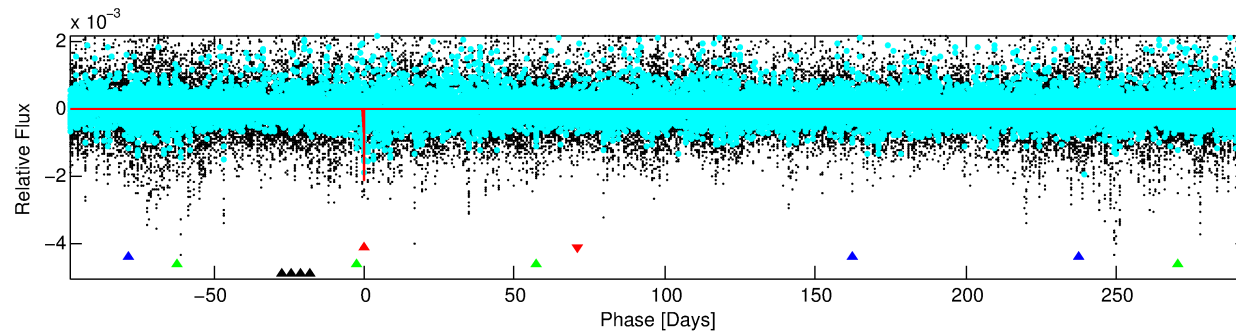
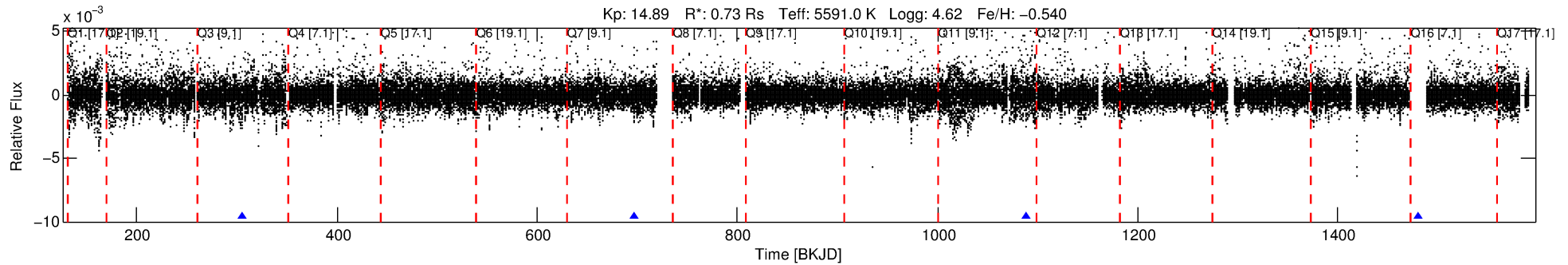
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010799767-01

No Significant Match Found

# DV One-Page Summary

KIC: 10799767 Candidate: 1 of 4 Period: 391.610 d



## DV Fit Results:

Period = 391.60957 [0.00734] d  
Epoch = 304.8243 [0.0083] BKJD  
Rp/R\* = 0.0421 [0.0725]  
a/R\* = 1054.81 [8049.70]  
b = 0.21 [35.00]  
Seff = 0.49 [0.13]  
Teq = 213 [14] K  
Rp = 3.34 [5.79] Re  
a = 0.9712 [0.1556] AU  
Ag = 2055.01 [12646.67] [0.16σ]  
Teffp = 2222 [3416] K [0.59σ]

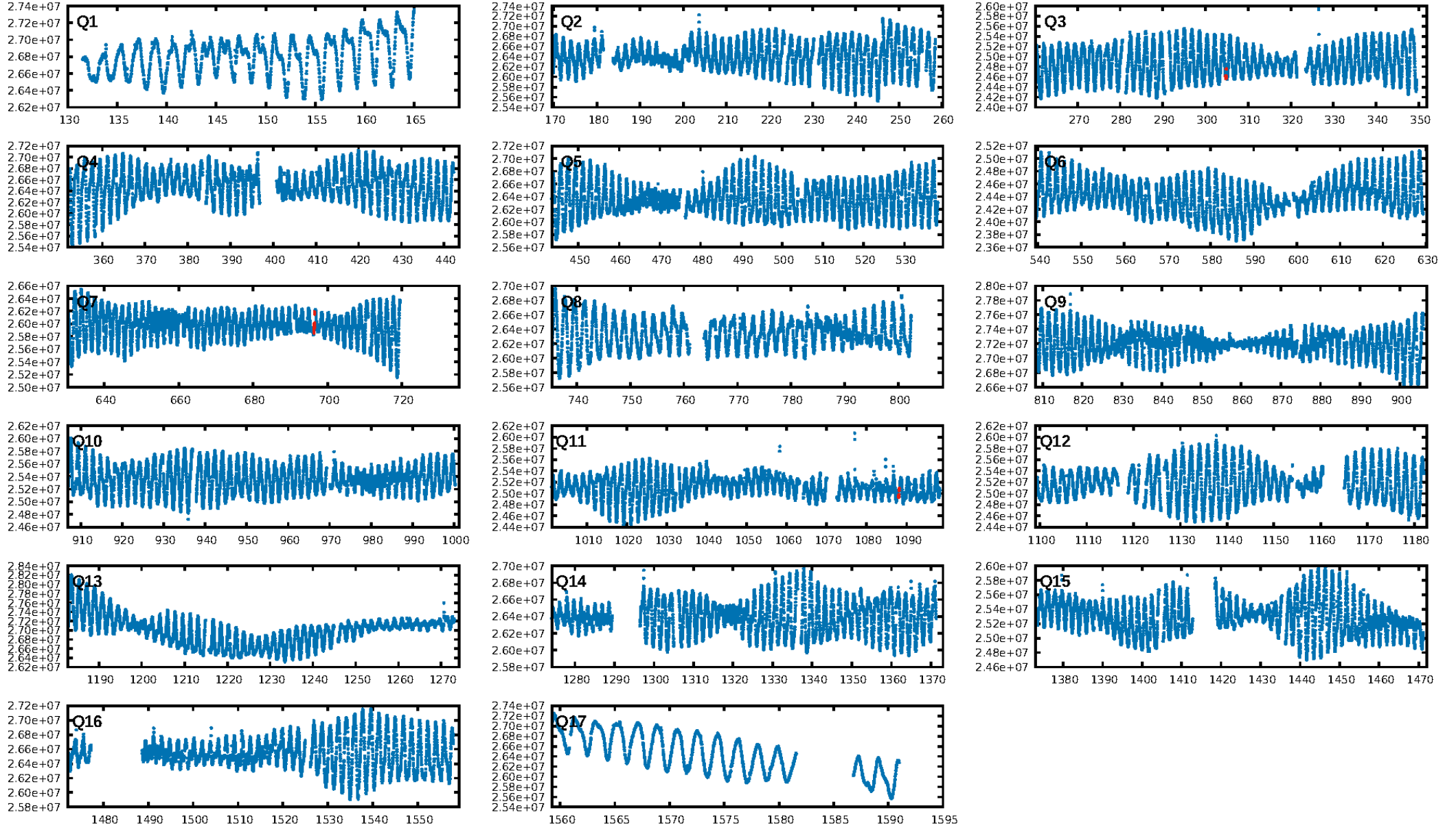
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [17.92σ]  
ModelChiSquare2-sig: 27.7%  
ModelChiSquareGof-sig: 97.4%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.751  
Centroid-sig: 61.6%  
Centroid-so: 0.698 arcsec [1.19σ]  
**OotOffset-rm: 1.664 arcsec [5.81σ]**  
OotOffset-st: 0/3/0/0 [3]  
KicOffset-rm: 0.059 arcsec [0.26σ]  
KicOffset-st: 0/3/0/0 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

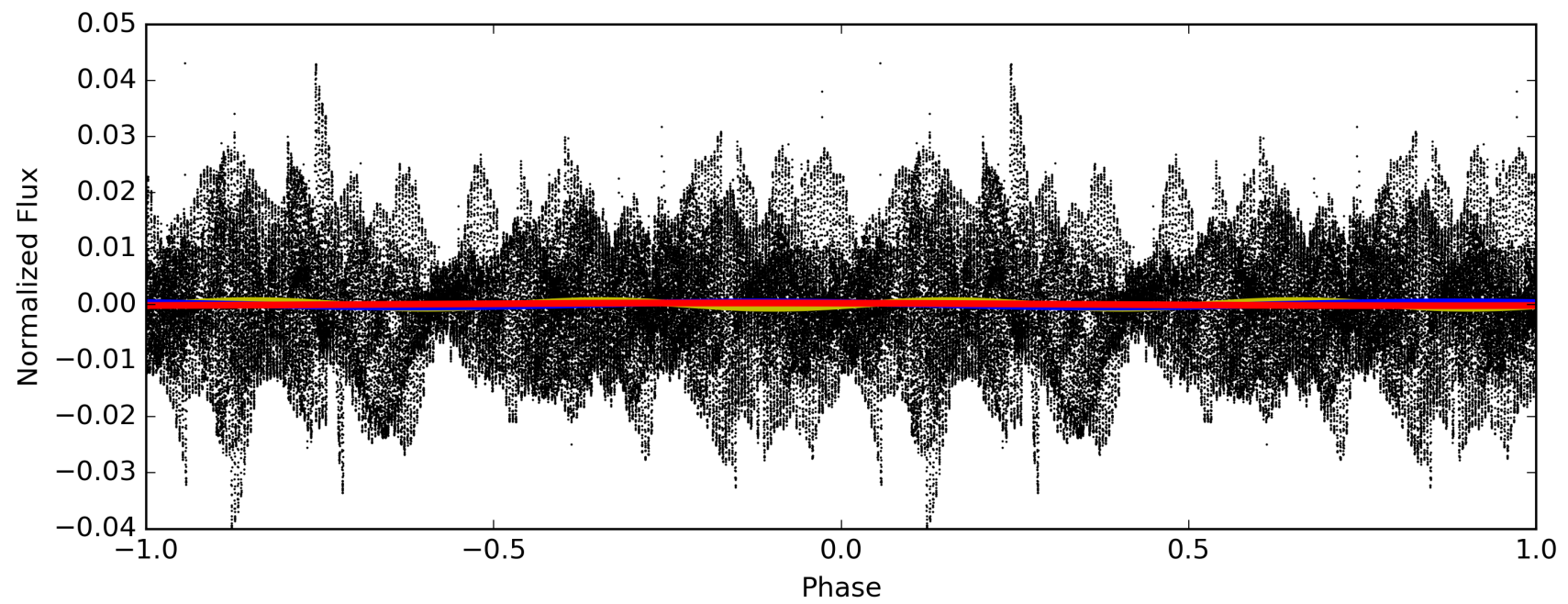
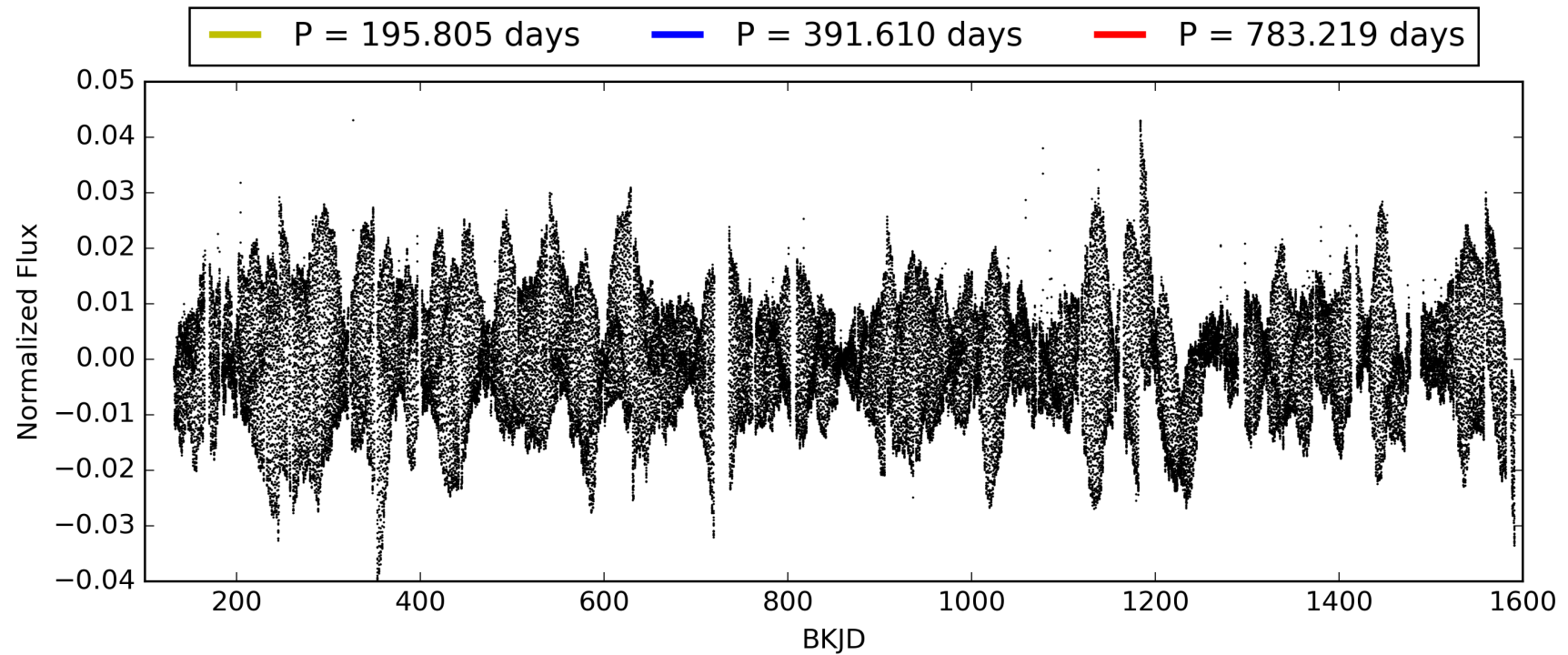
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:53:36 Z

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

# TCE 010799767-01, PDC Light Curves



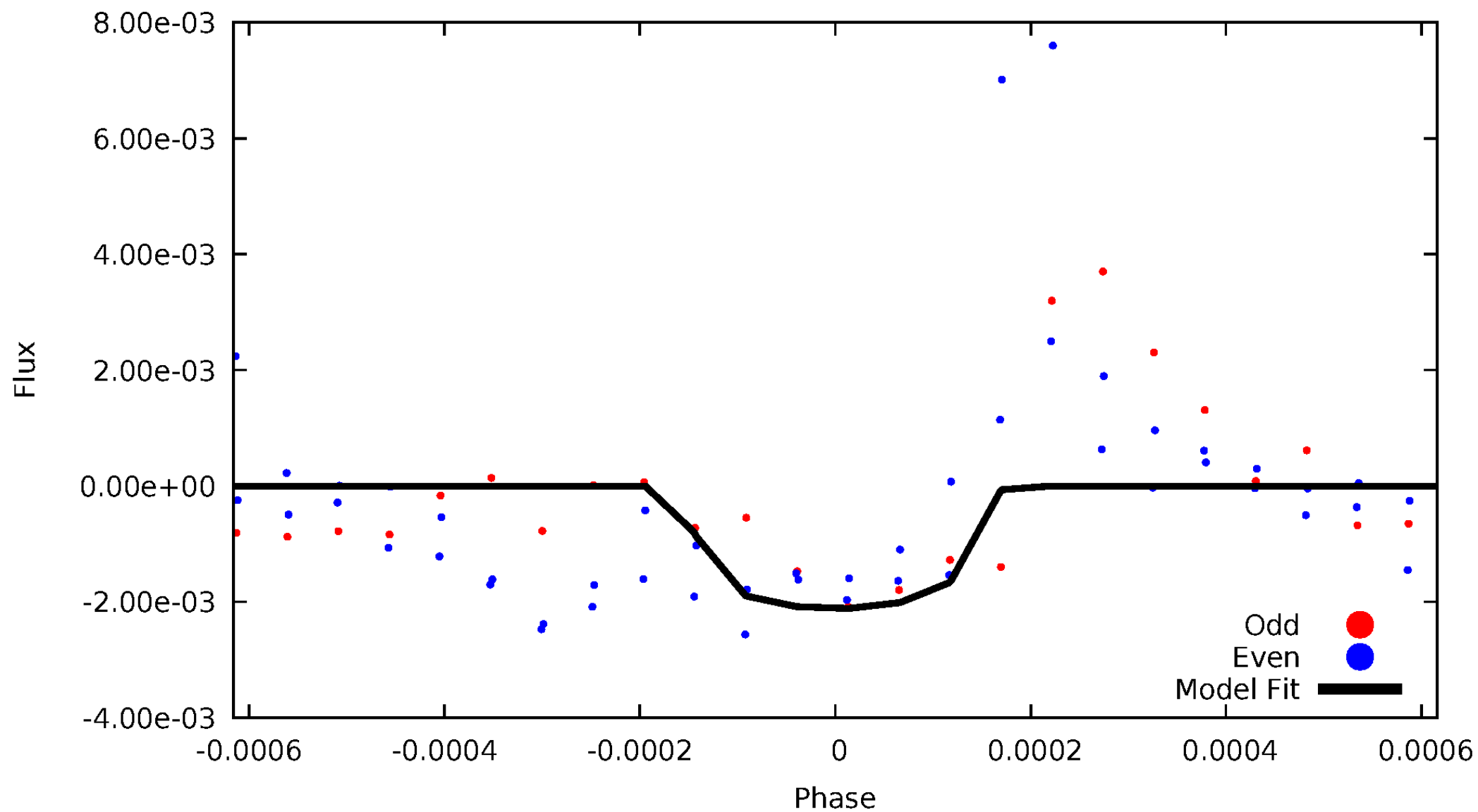
TCE 010799767-01





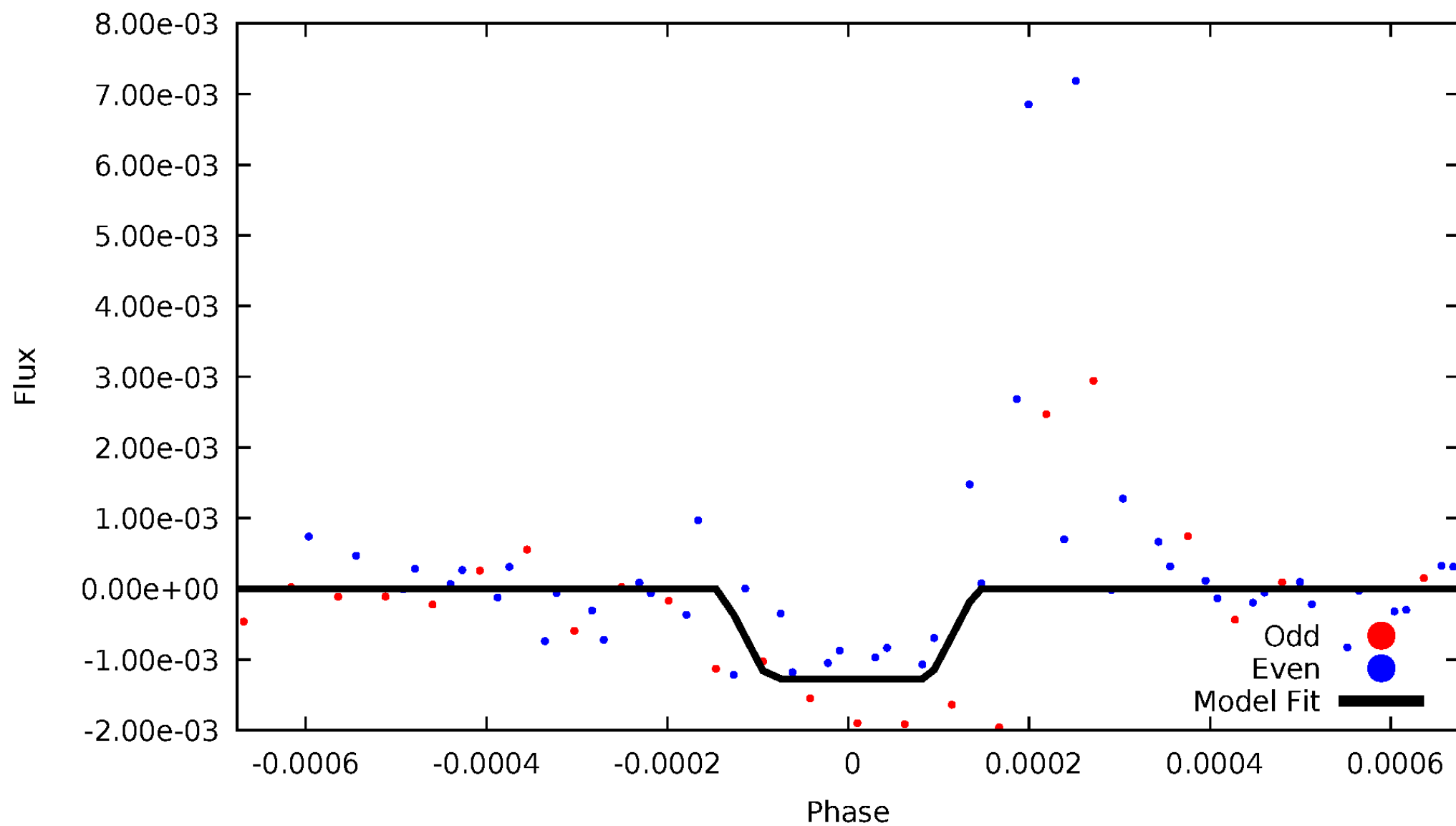
# DV Odd/Even

TCE 010799767-01



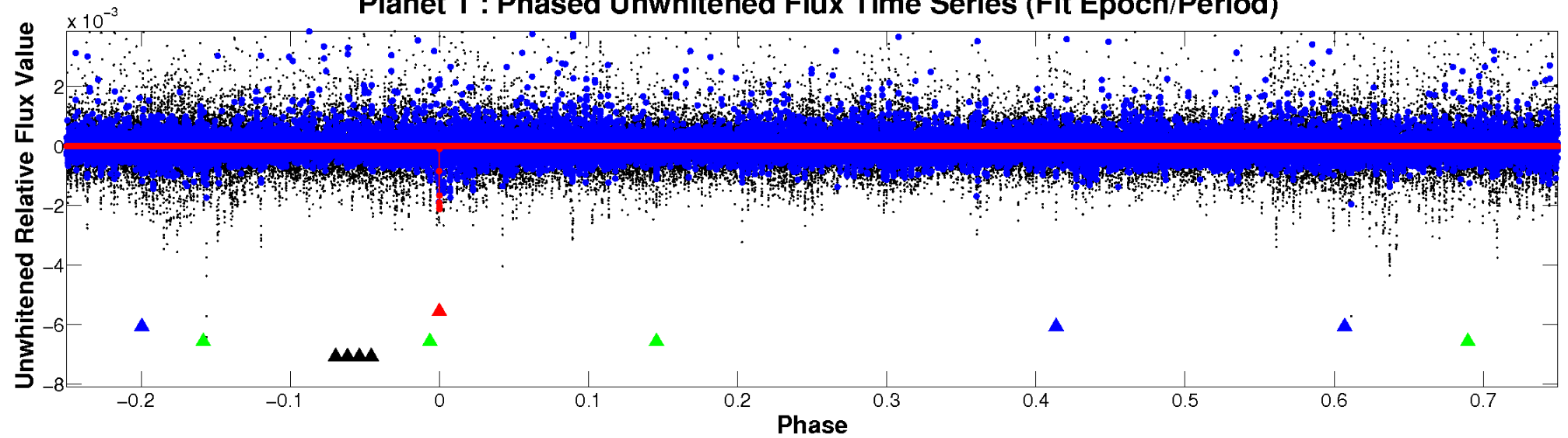
# ALT Odd/Even

TCE 010799767-01

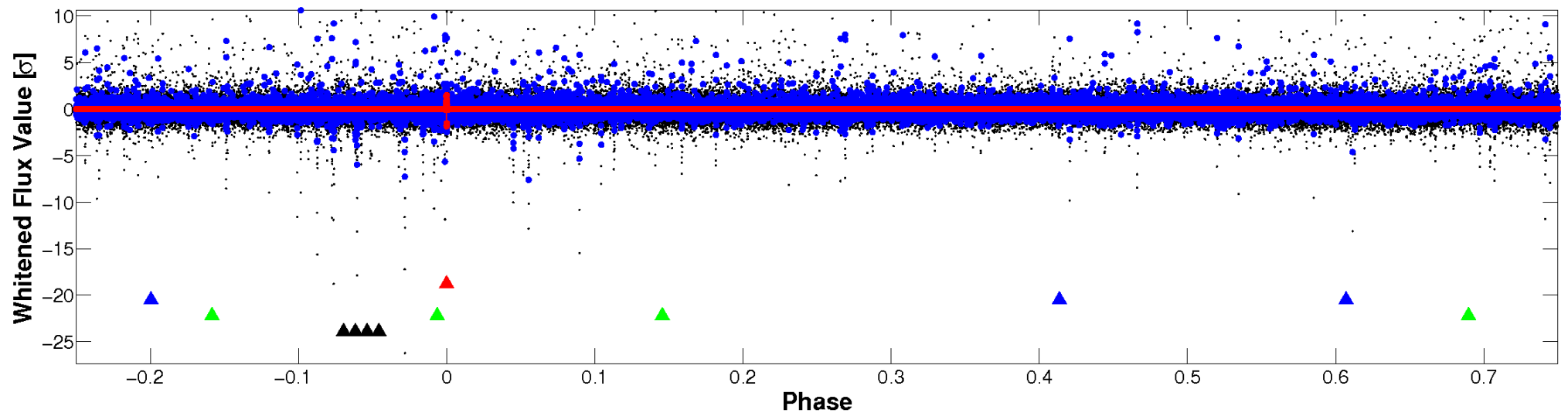


# Non-Whitened Vs. Whitened Light Curve

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

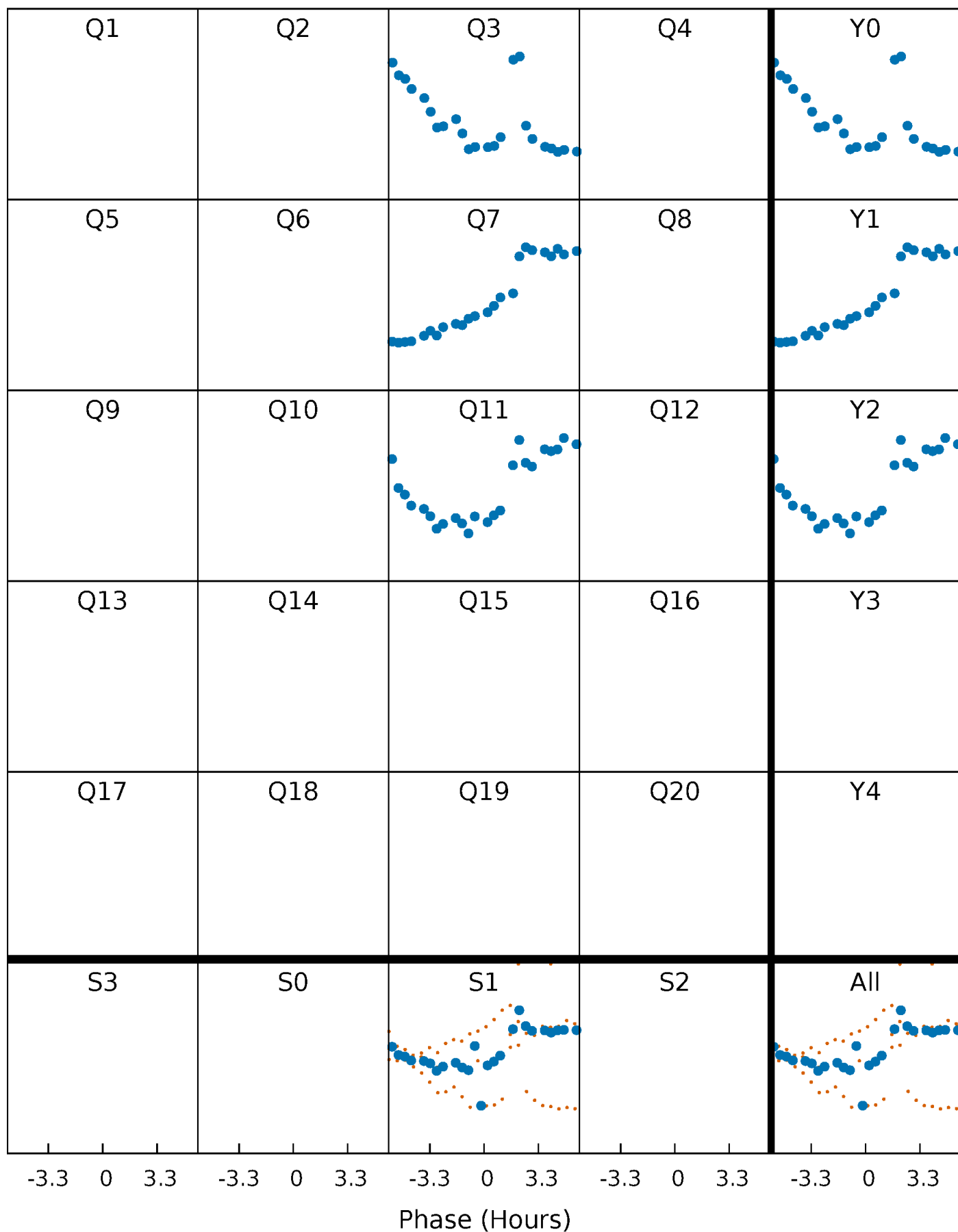


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



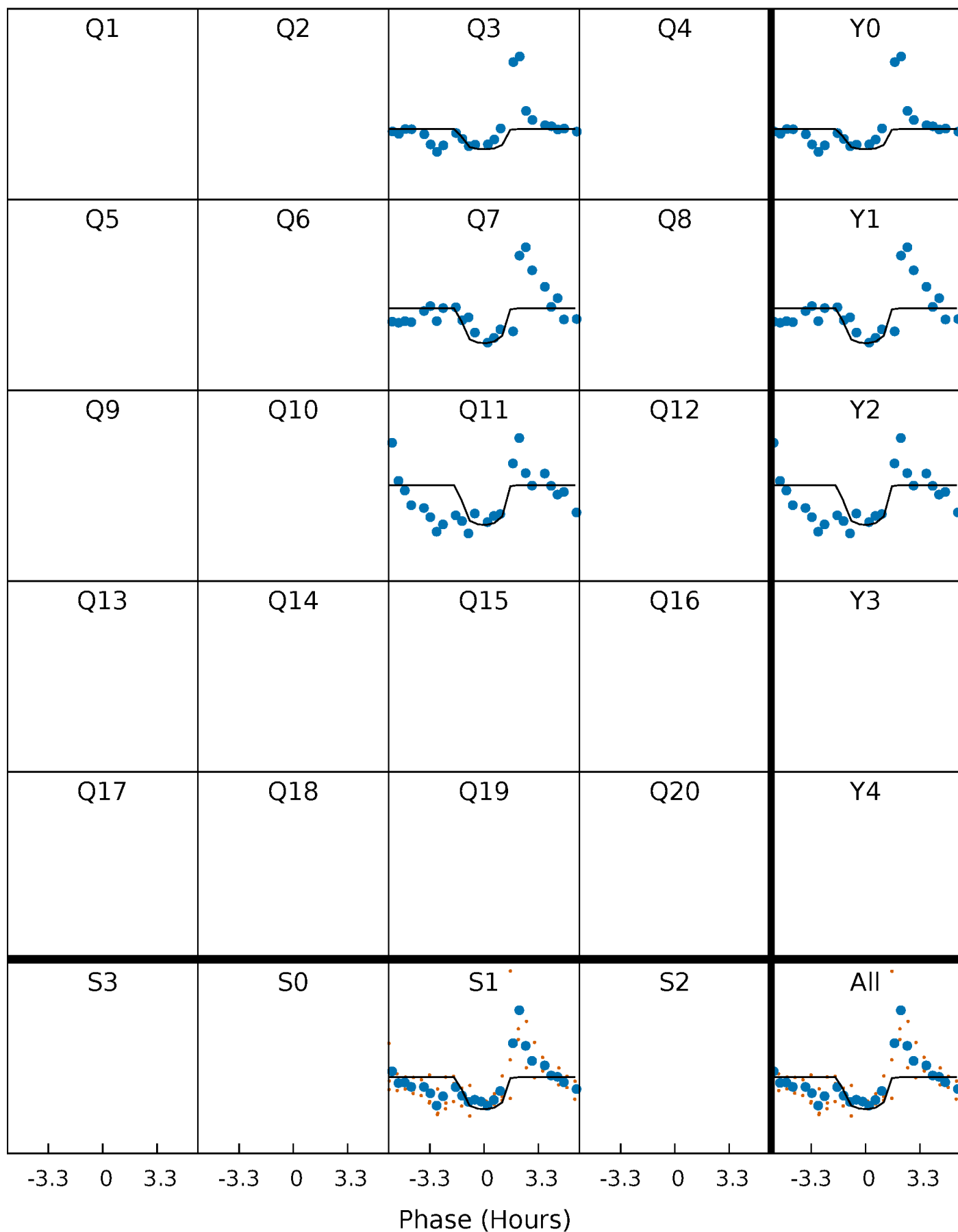
# PDC Quarter-Phased Transit Curves

TCE 010799767-01 P=391.609574 Days  $T_0=304.824322$  (BKJD)



# DV Quarter-Phased Transit Curves

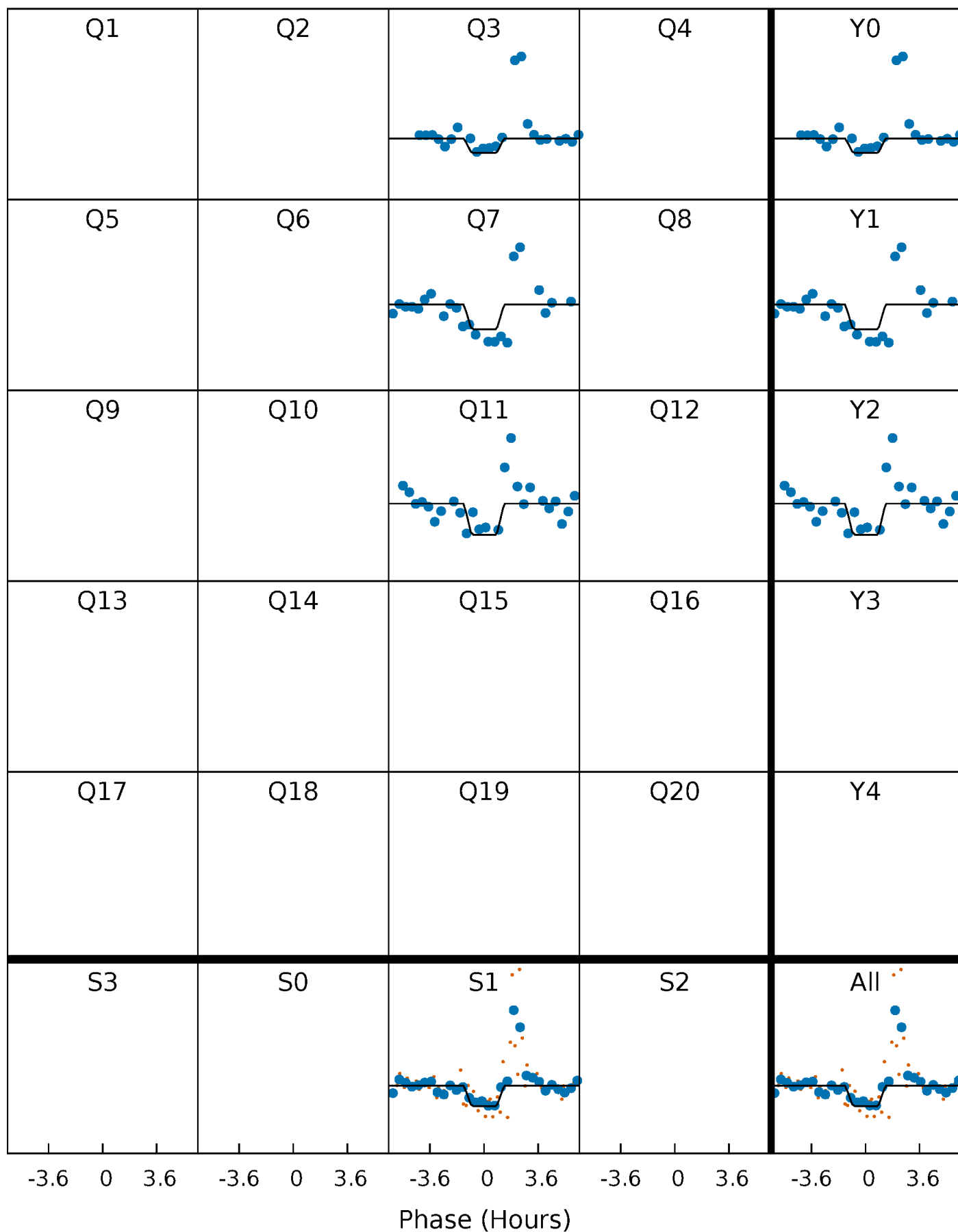
TCE 010799767-01     $P=391.609574$  Days     $T_0=304.824322$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

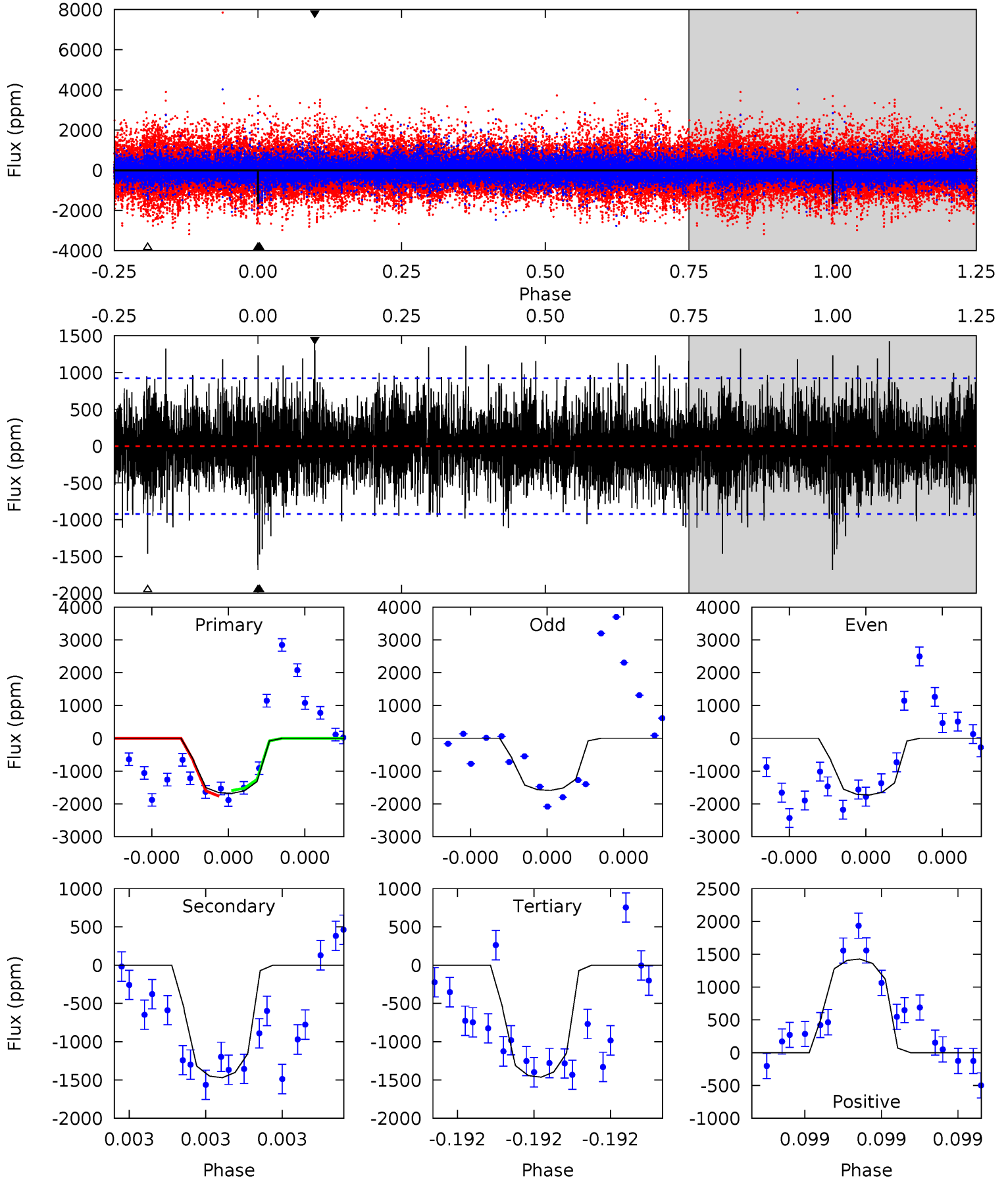
TCE 010799767-01 P=391.621943 Days  $T_0=304.813140$  (BKJD)



# DV Model-Shift Uniqueness Test

010799767-01, P = 391.609574 Days, E = 304.824322 Days

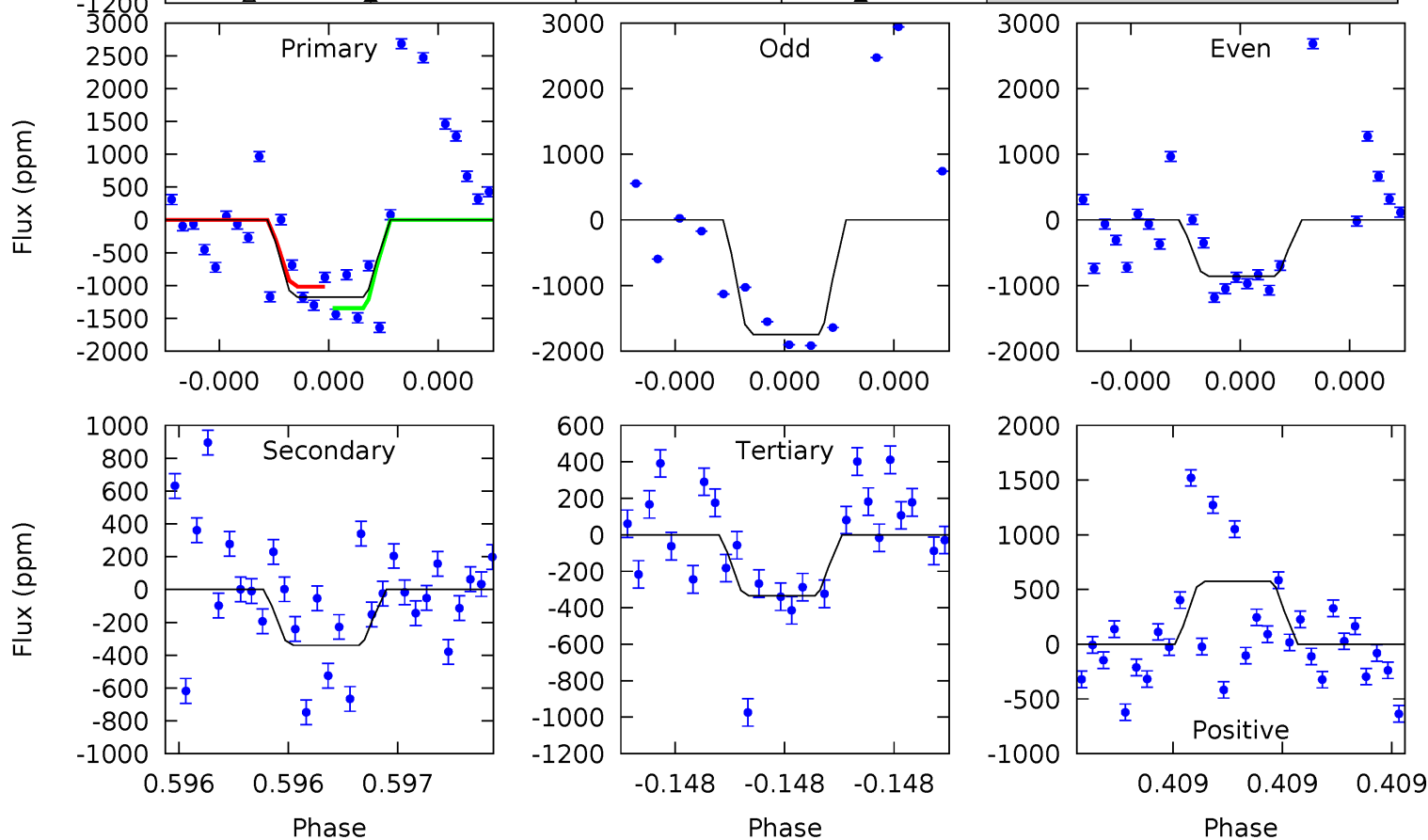
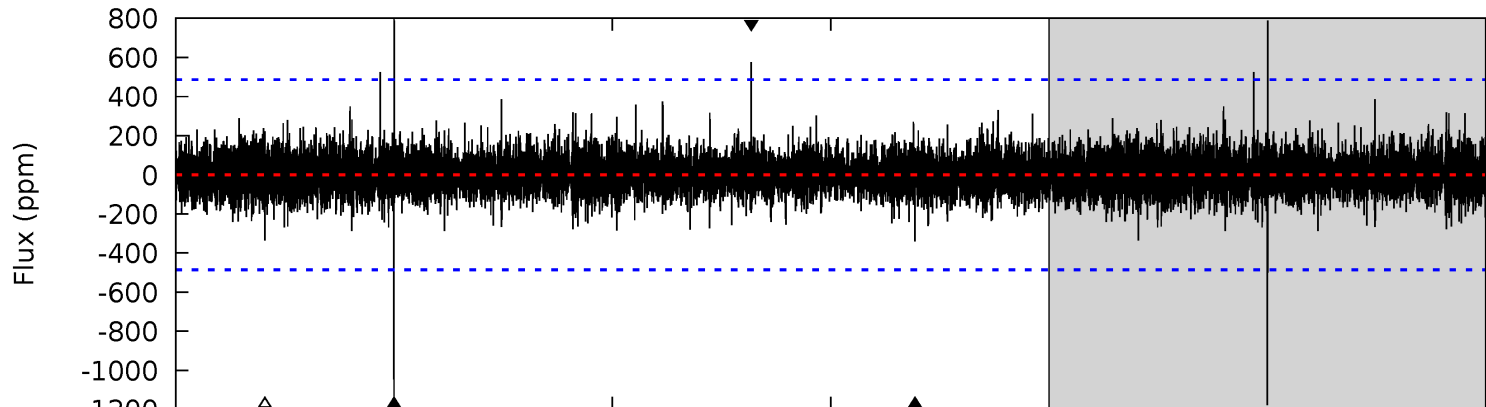
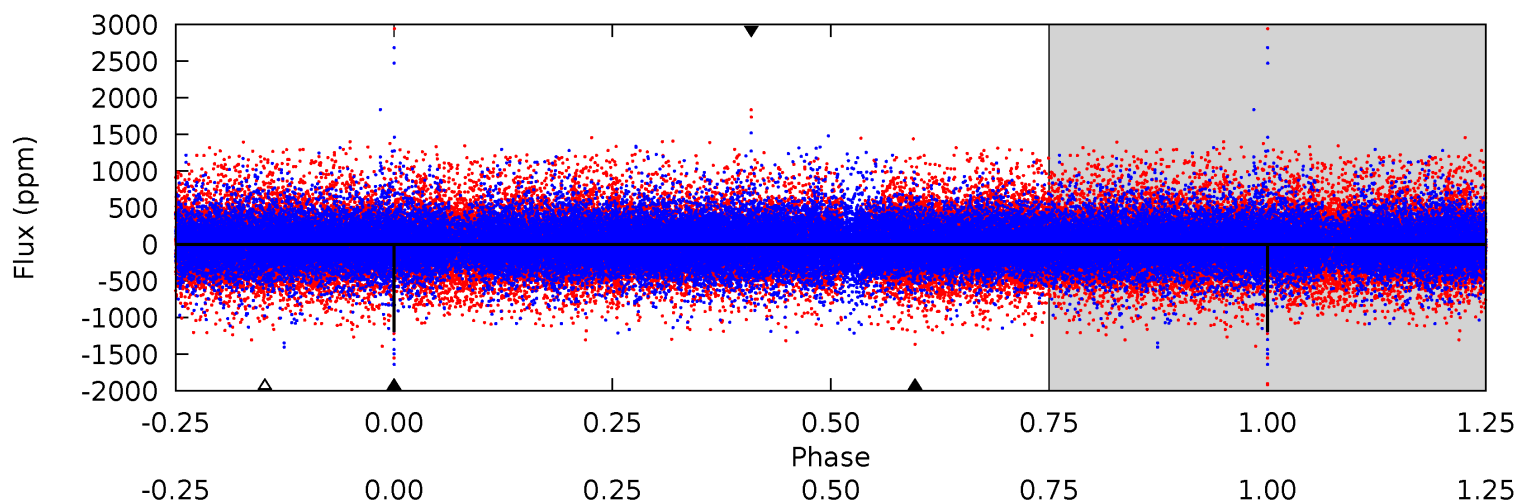
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	9.01	8.96	8.74	5.65	3.60	1.97	1.33	1.55	0.04	0.27	0.40	1.05	0.46	0.51



# Alt Model-Shift Uniqueness Test

010799767-01, P = 391.621943 Days, E = 304.813140 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
13.8	3.97	3.92	6.72	5.69	3.65	0.86	9.87	7.06	0.06	-2.75	4.97	1.33	0.40	1.94



### Stellar Parameters For KIC 010799767

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5591^{+167}_{-151}$	$4.616^{+0.032}_{-0.128}$	$-0.540^{+0.300}_{-0.300}$	$0.727^{+0.138}_{-0.059}$	$0.803^{+0.079}_{-0.079}$	$2.951^{+0.481}_{-1.135}$
	+3%/-3%	+1%/-3%	+56%/-56%	+19%/-8%	+10%/-10%	+16%/-38%
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 010799767-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1470 \pm 163$	$5.87^{+5.08}_{-3.95}$	$304^{+15}_{-12}$	$4363^{+2862}_{-865}$	$22709^{+176431}_{-16380}$
Alt.	$-340 \pm 85$	$5.37^{+5.10}_{-3.39}$	$304^{+15}_{-12}$	$3450^{+1445}_{-623}$	$5554^{+36793}_{-4068}$

$T_{max}$  = 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

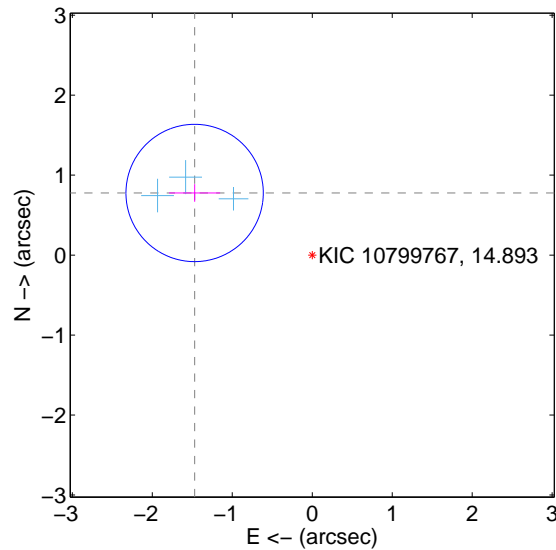
Supplemental centroid analysis for 010799767-01. Kepler magnitude: 14.89. Transit SNR 7.52

There are 3 quarters with good PRF difference image offsets

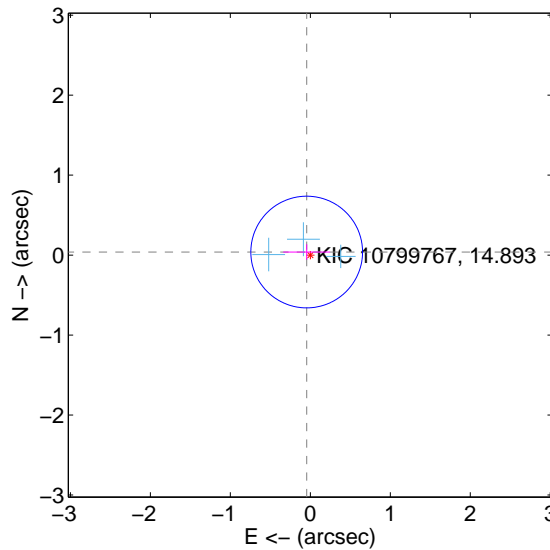
The direct PRF centroid is offset from the target star catalog position by about 1.54 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.664 \pm 0.286$	5.81	$1.471 \pm 0.318$	$0.777 \pm 0.111$
PRF-fit source offset from KIC position	$0.059 \pm 0.233$	0.26	$0.045 \pm 0.293$	$0.038 \pm 0.098$
photometric centroid source offset	$0.70 \pm 0.58$	1.19	$-0.65 \pm 0.59$	$-0.25 \pm 0.51$

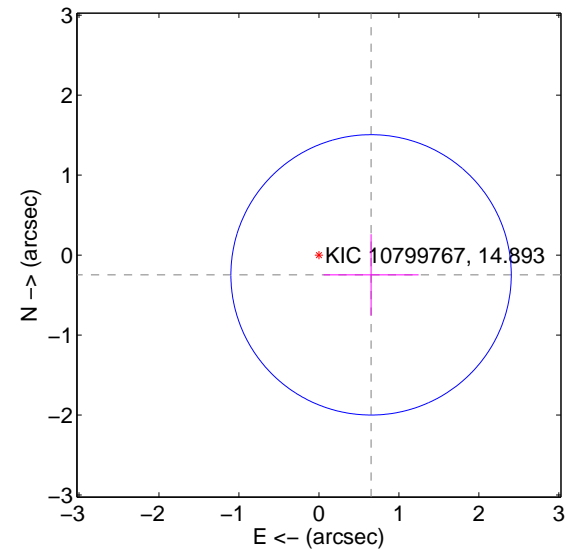
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



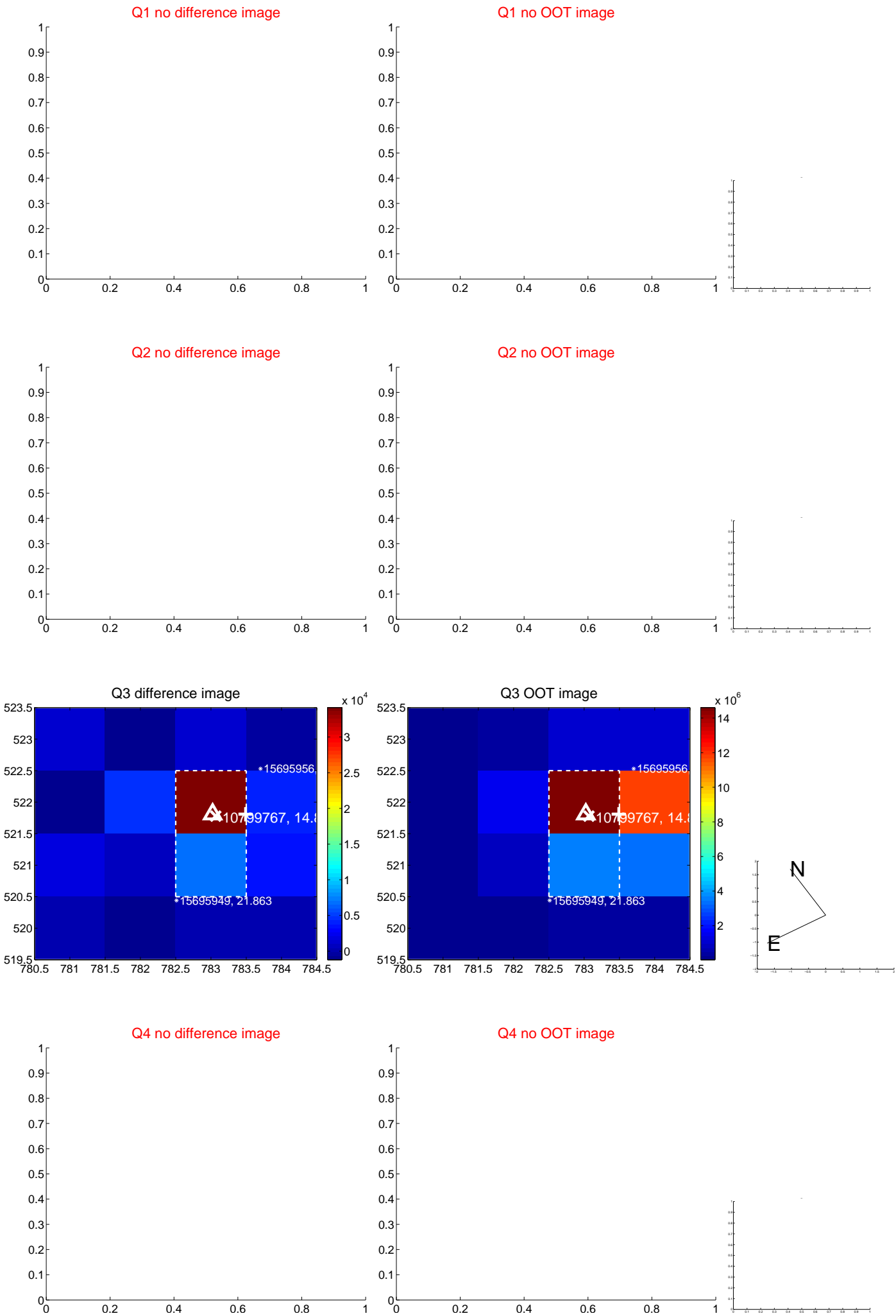
offset from photometric centroids



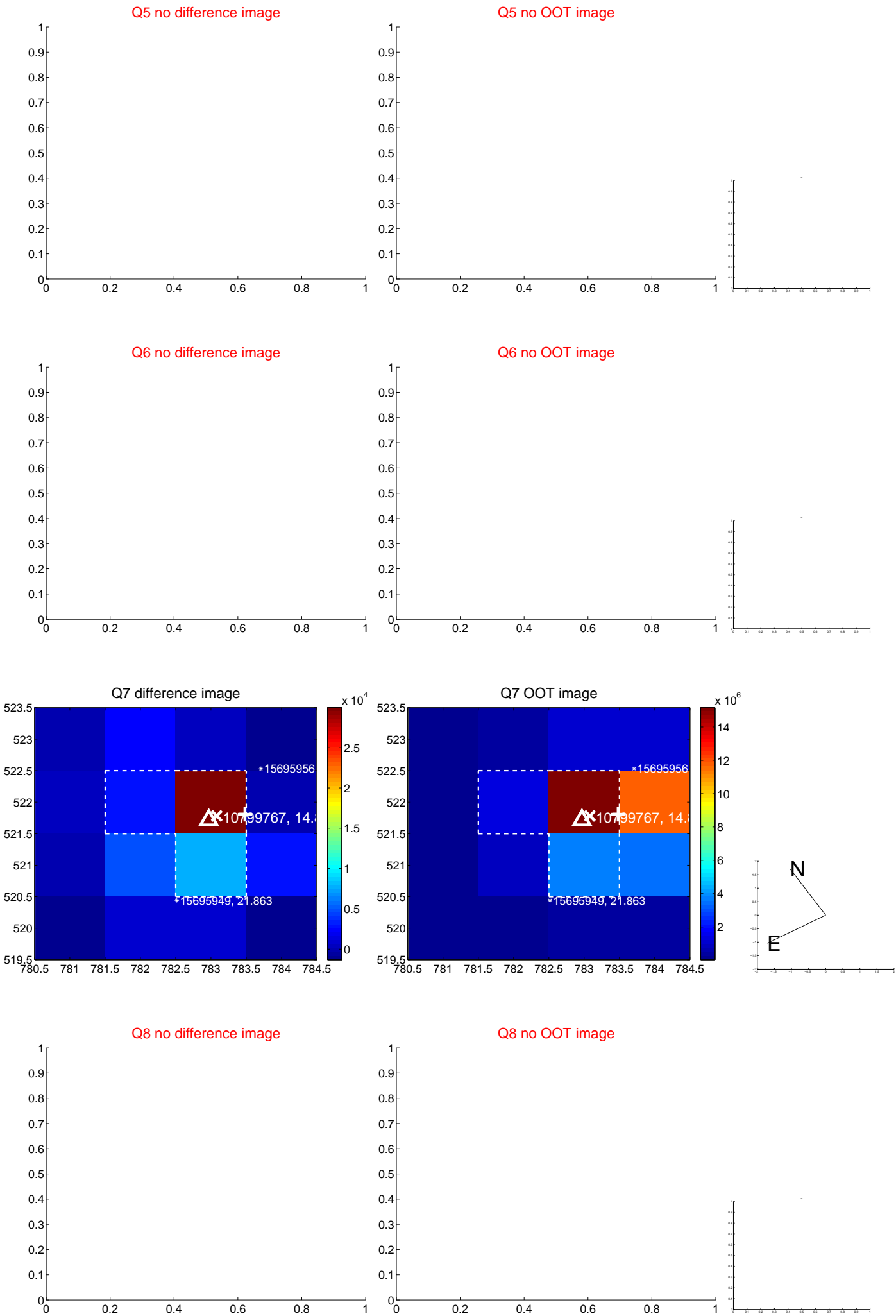
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



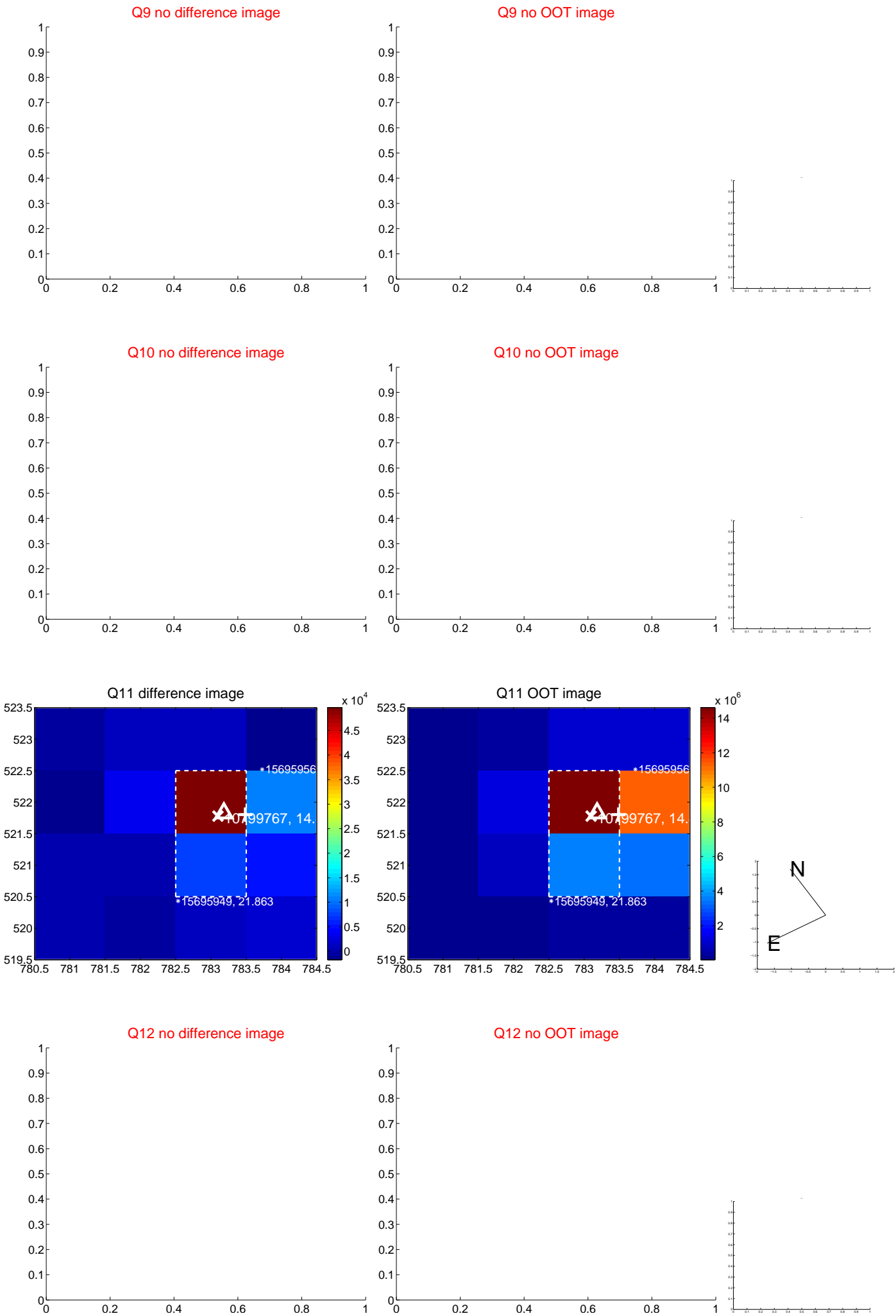
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



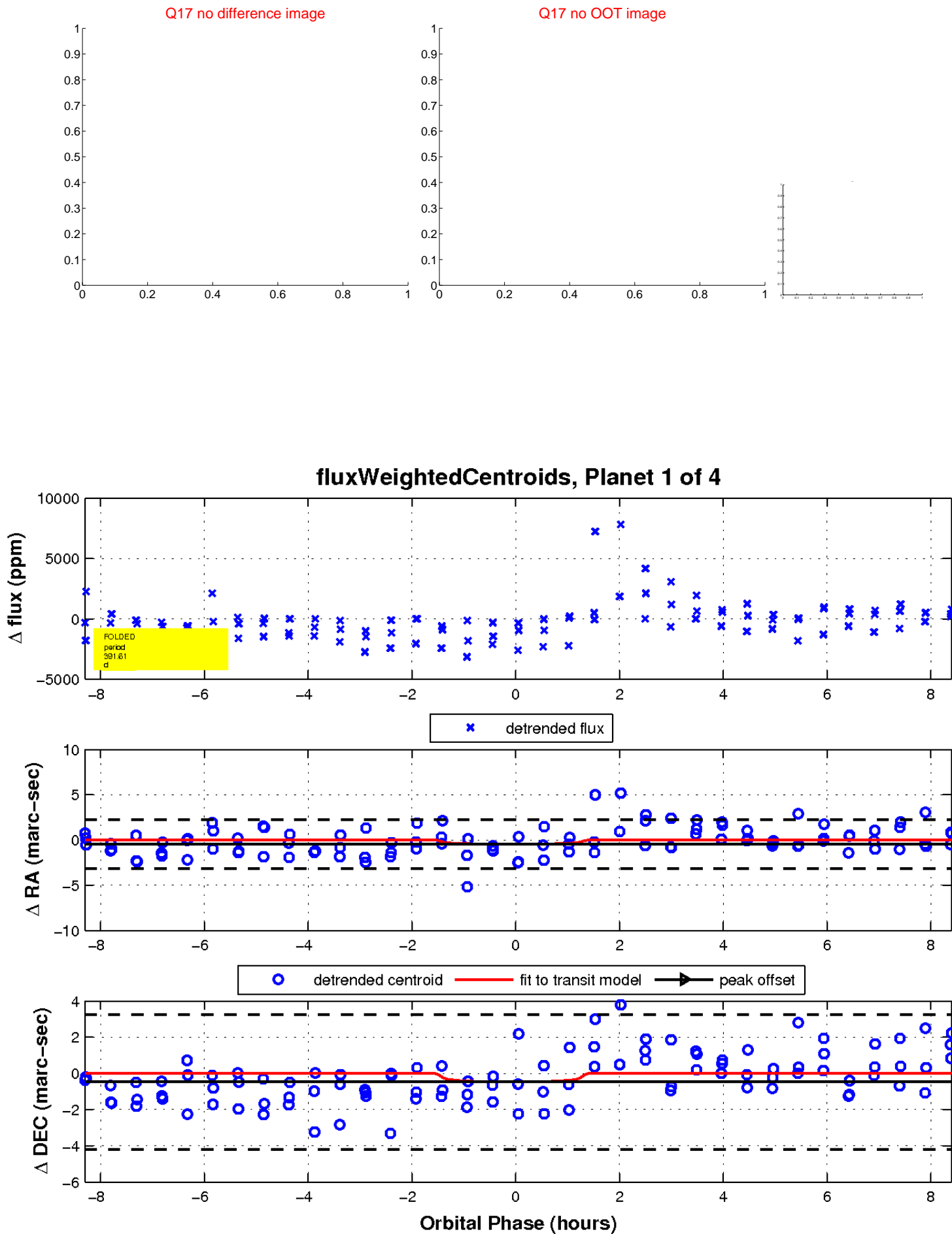
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

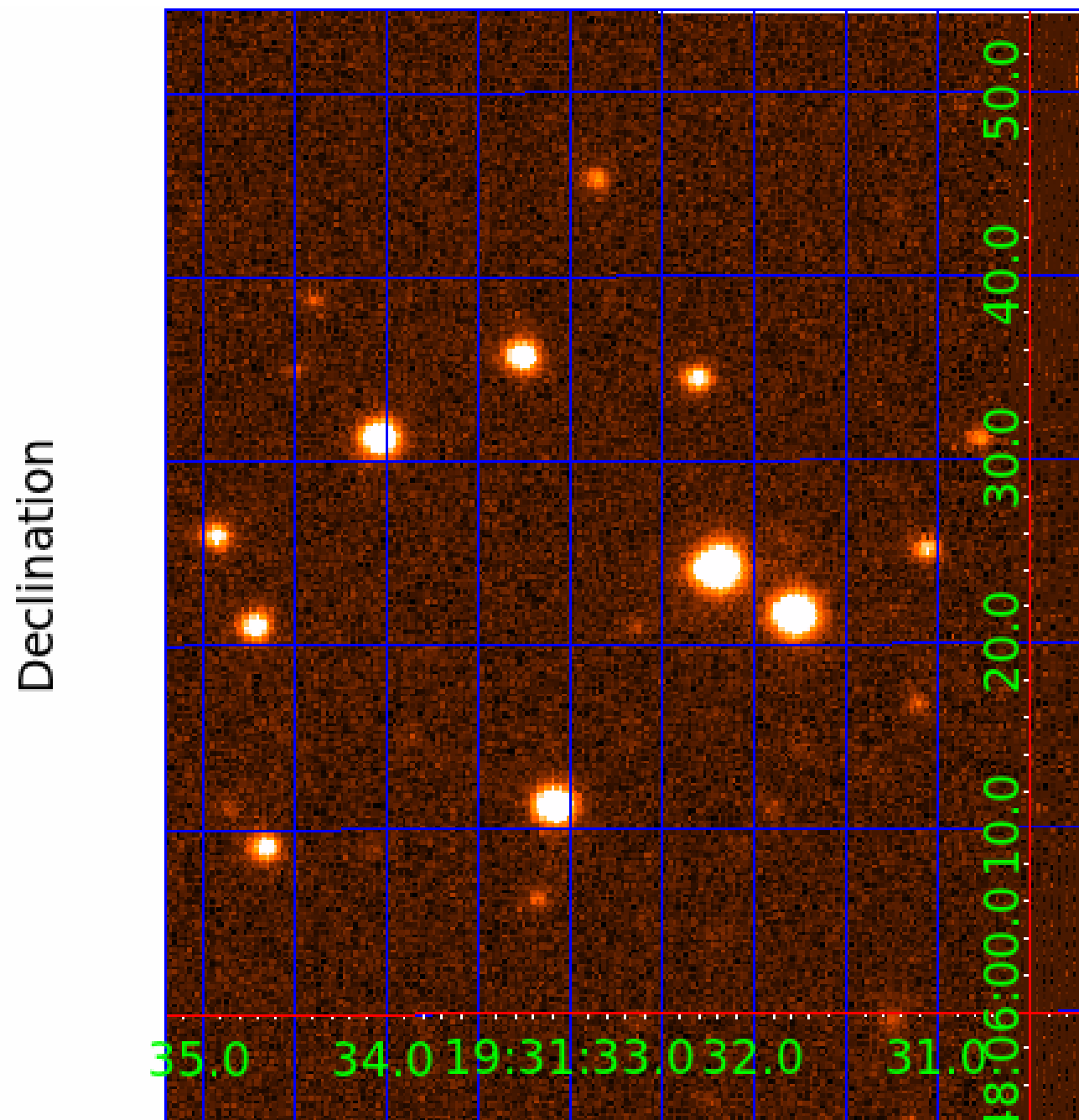


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image



# KIC 010799767

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010799767-01	OBS	No	391.609574	304.824322	2114.1	2.895	12.6	7.5	0.73	5591	3.34	0.49
010799767-02	OBS	No	467.370824	466.791036	1484.6	3.453	10.5	5.4	0.73	5591	2.80	0.39
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010799767-04	OBS	No	394.721944	277.594562	2170.9	3.000	14.9	-1.0	0.73	5591	3.37	0.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010799767-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_KIC_POS
010799767-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_KIC_POS
010799767-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
010799767-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

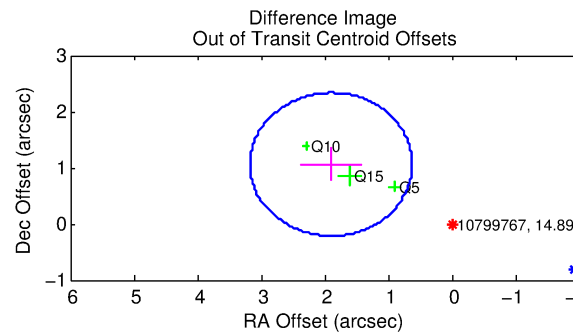
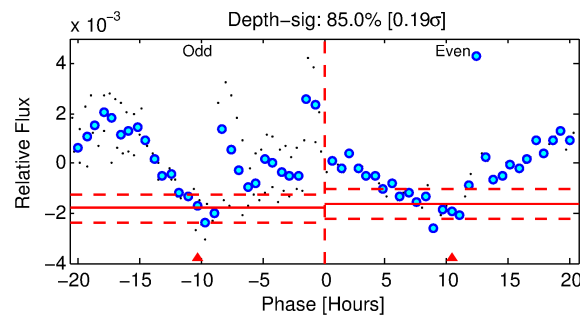
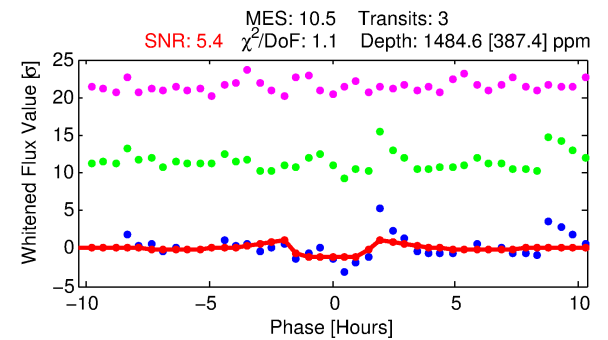
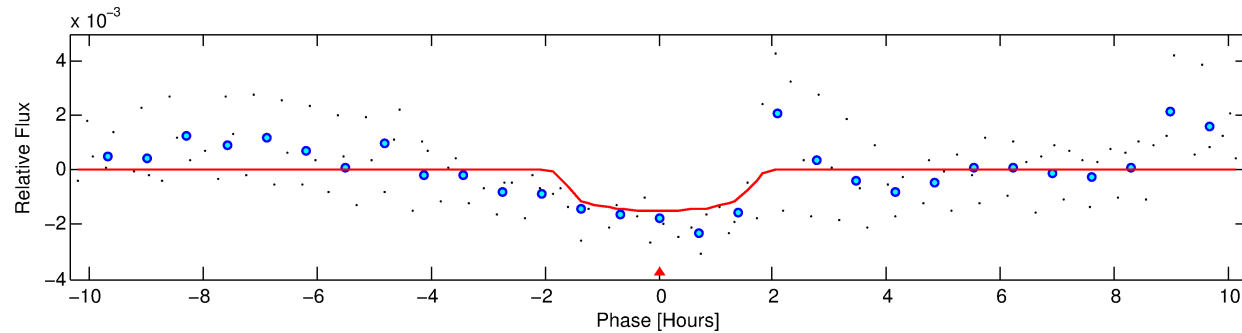
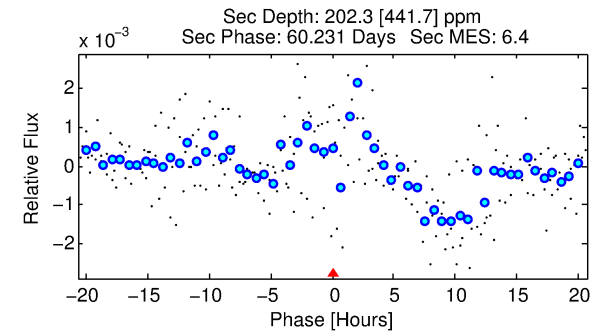
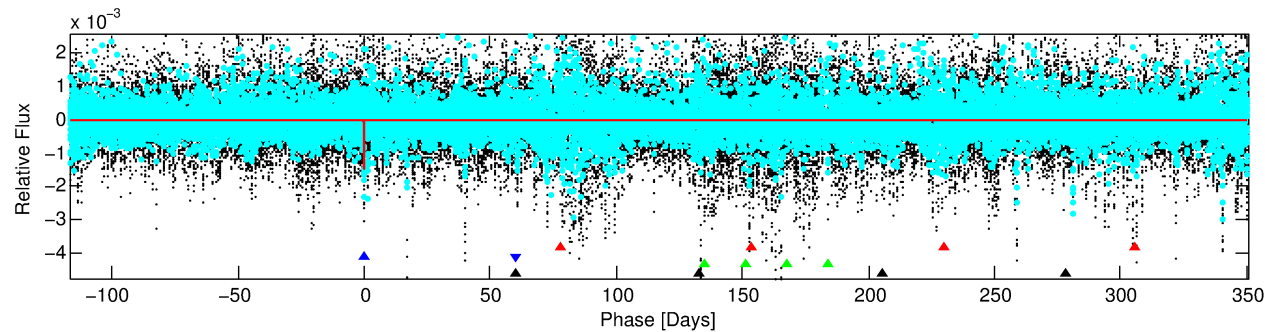
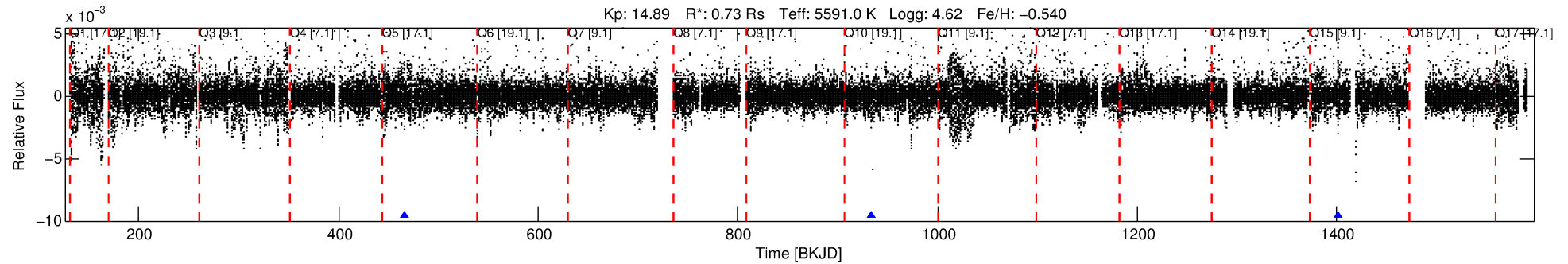
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010799767-02

No Significant Match Found

# DV One-Page Summary

KIC: 10799767 Candidate: 2 of 4 Period: 467.371 d



## DV Fit Results:

Period = 467.37082 [0.00743] d  
Epoch = 466.7910 [0.0090] BKJD  
Rp/R\* = 0.0353 [0.3550]  
a/R\* = 1043.31 [47478.01]  
b = 0.23 [186.70]  
Seff = 0.39 [0.10]  
Teq = 201 [13] K  
Rp = 2.80 [28.17] Re  
a = 1.0927 [0.1751] AU  
Ag = 16974.23 [343752.43] [0.05 $\sigma$ ]  
Teff = 3551 [17975] K [0.19 $\sigma$ ]

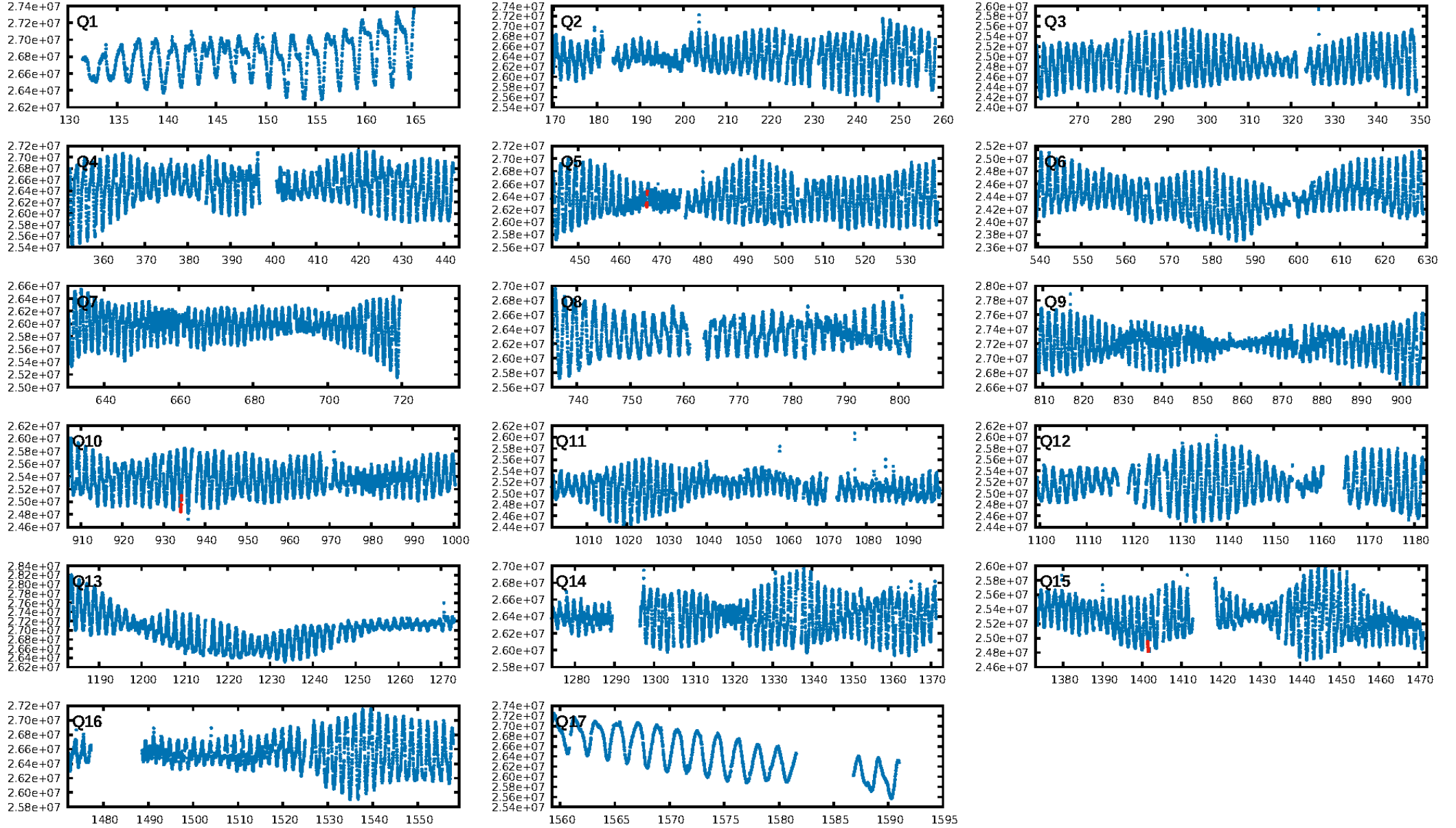
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [43.32 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 42.8%  
ModelChiSquareGof-sig: 71.1%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.4594  
Centroid-sig: 6.3%  
Centroid-so: 0.740 arcsec [0.91 $\sigma$ ]  
OotOffset-rm: 2.174 arcsec [5.11 $\sigma$ ]  
KicOffset-rm: 0.154 arcsec [1.64 $\sigma$ ]  
OotOffset-st: 1/1/0/1 [3]  
KicOffset-st: 1/1/0/1 [3]  
DiffImageQuality-fgm: 1.00 [3/3]  
DiffImageOverlap-fno: 1.00 [3/3]

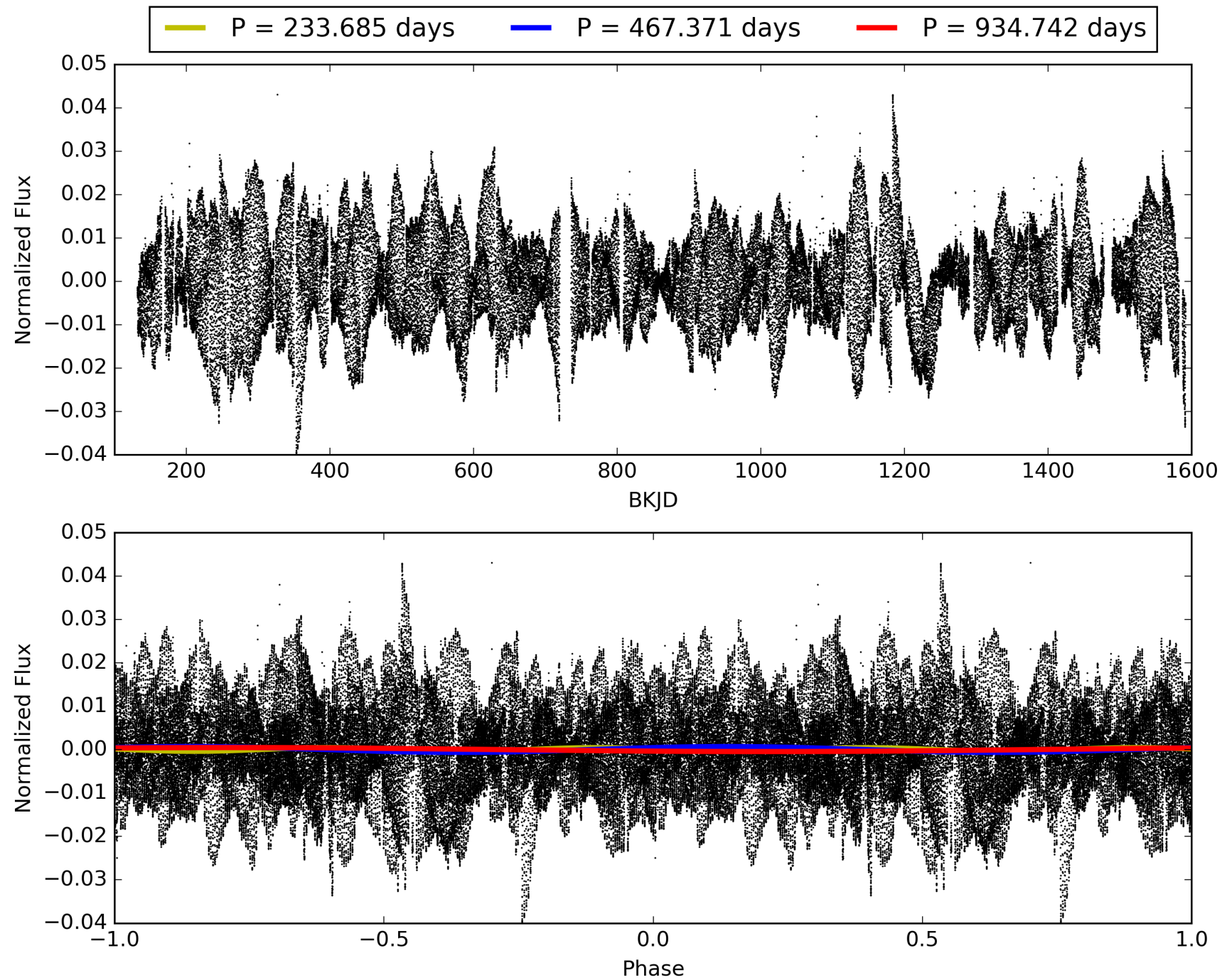
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:53:56 Z

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

# TCE 010799767-02, PDC Light Curves



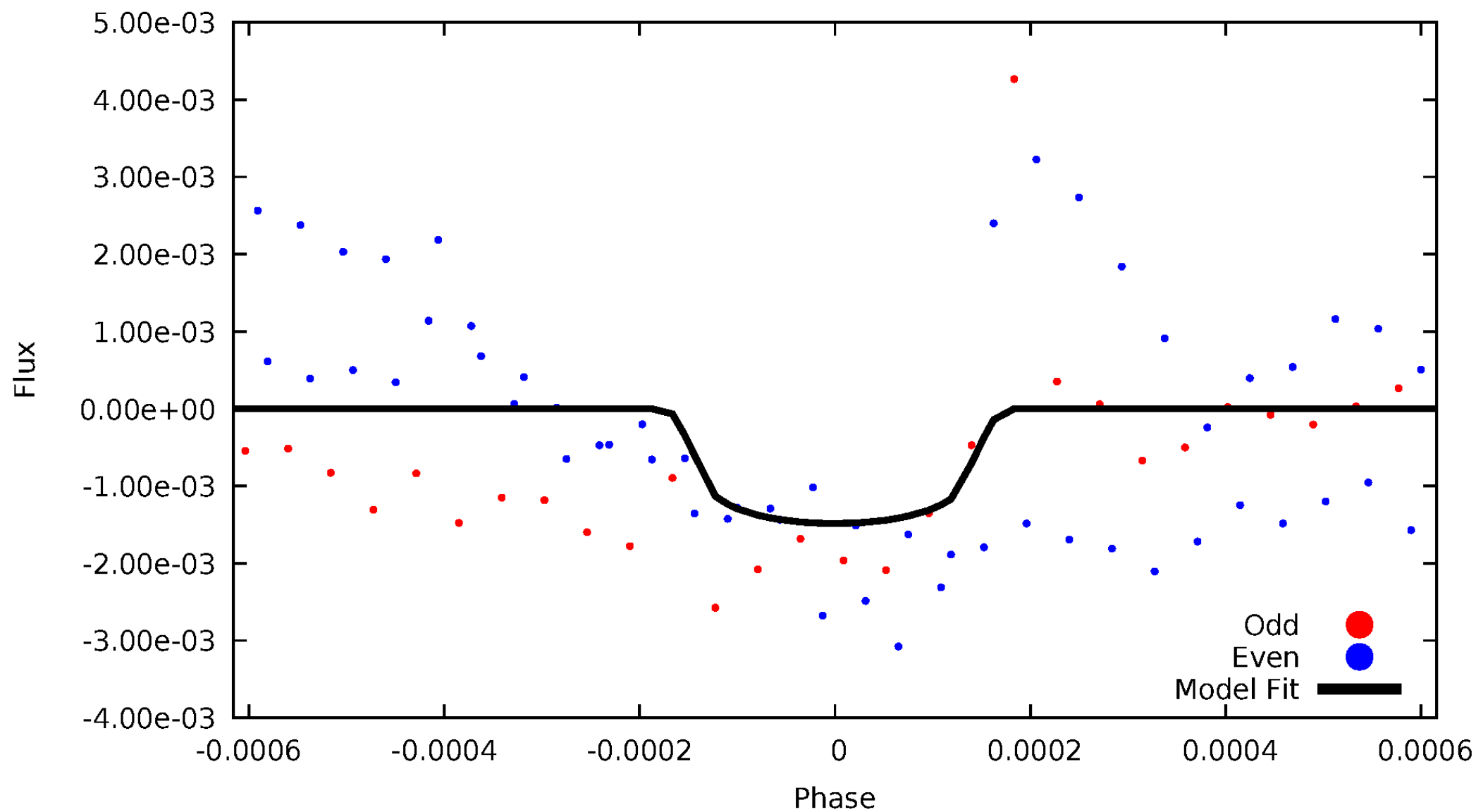
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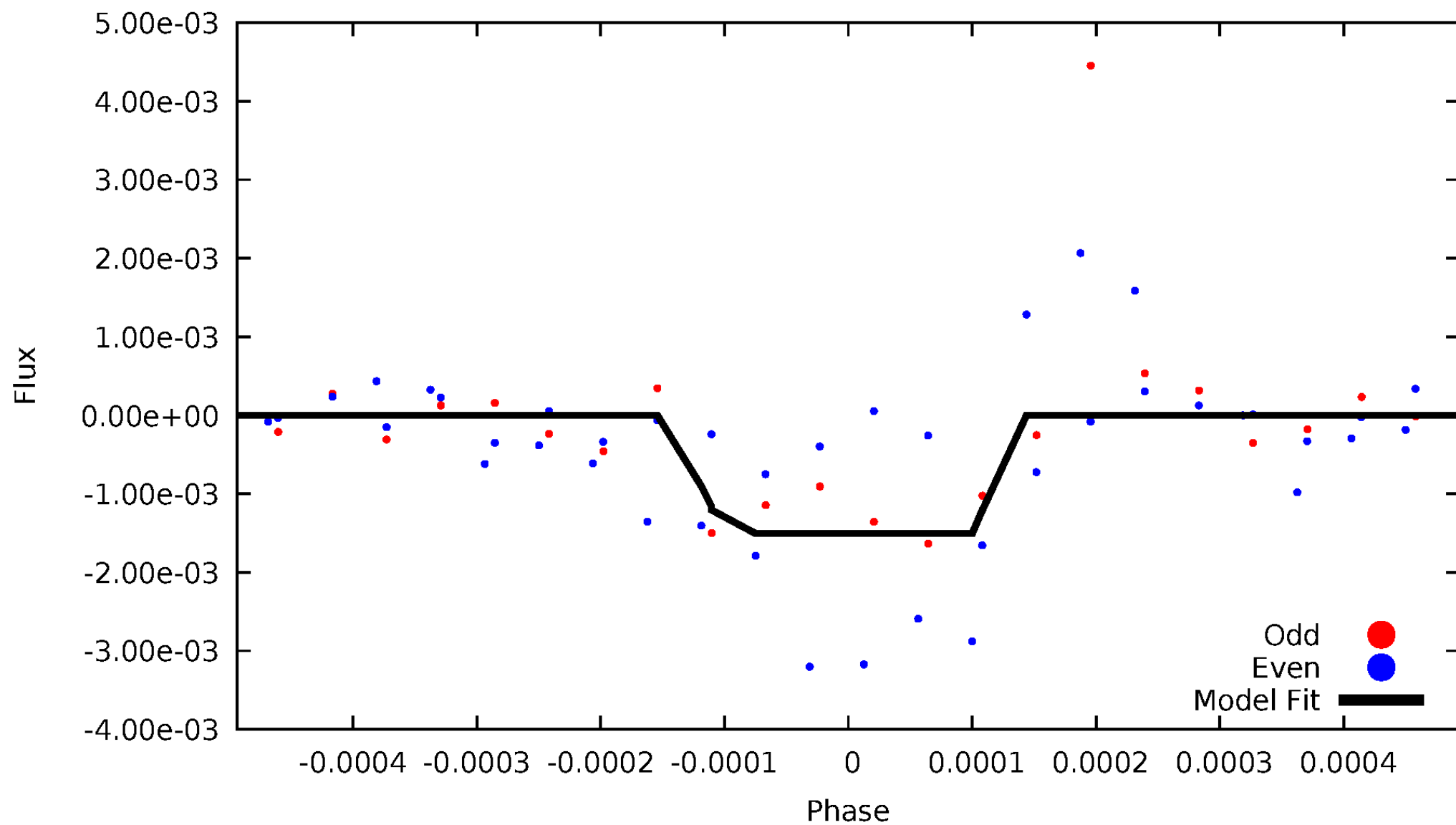
# DV Odd/Even

TCE 010799767-02



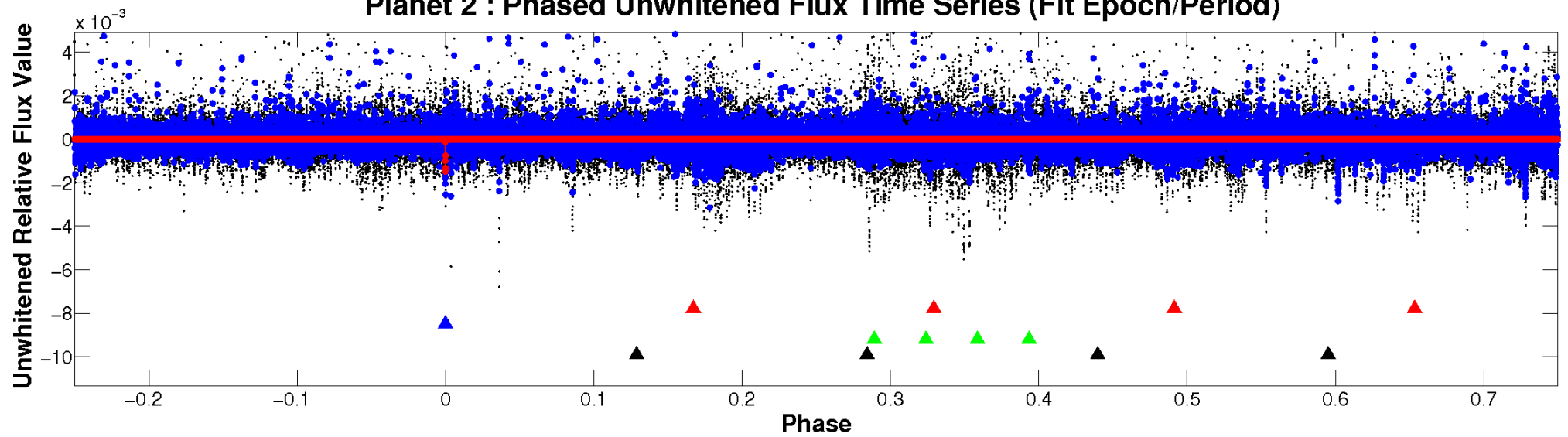
# ALT Odd/Even

TCE 010799767-02

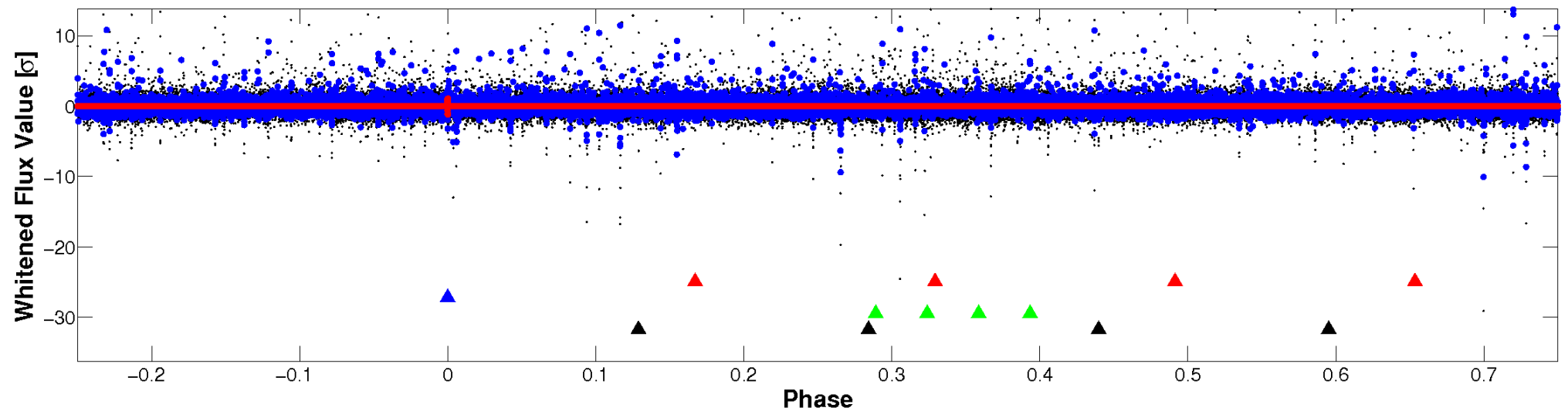


# Non-Whitened Vs. Whitened Light Curve

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

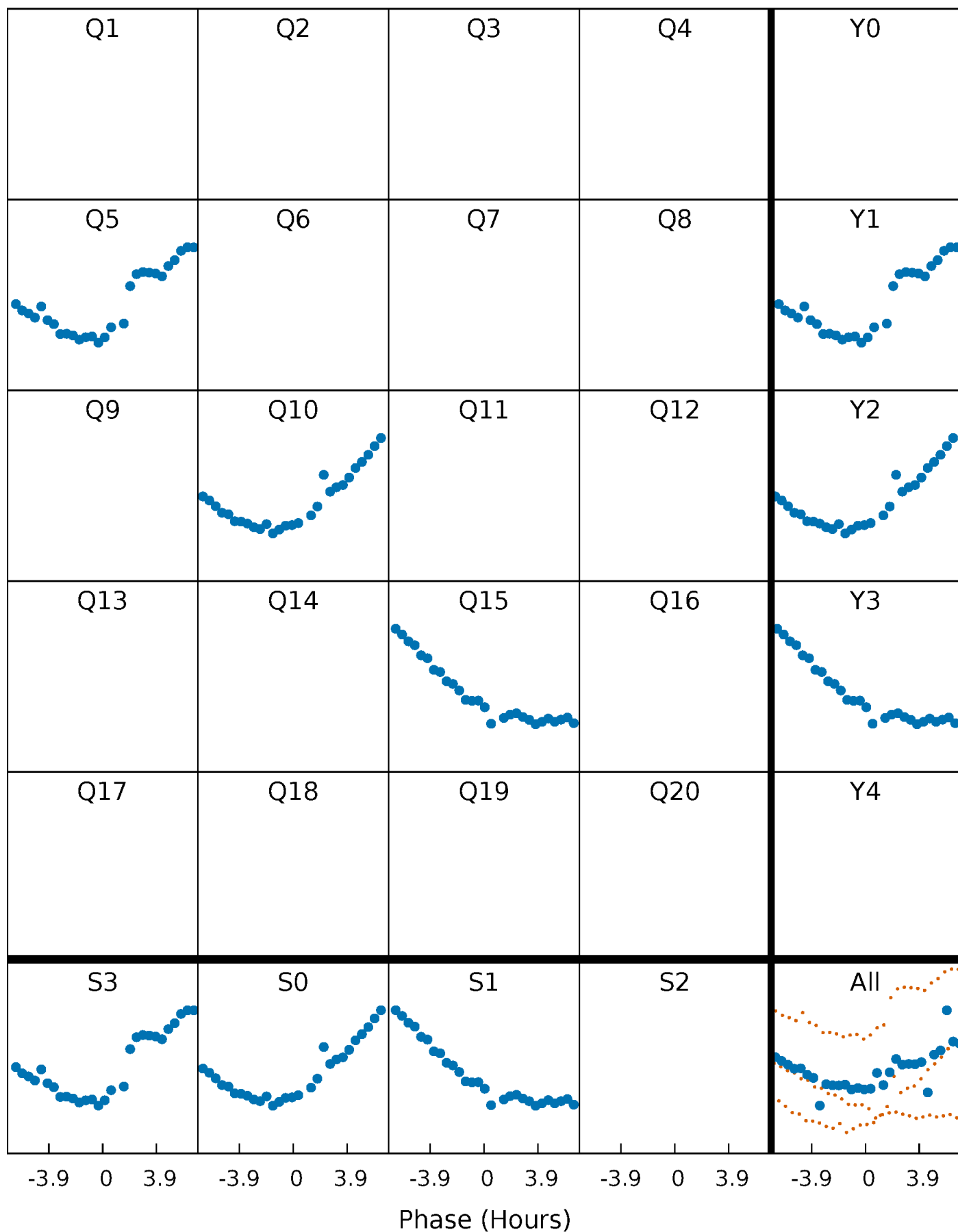


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



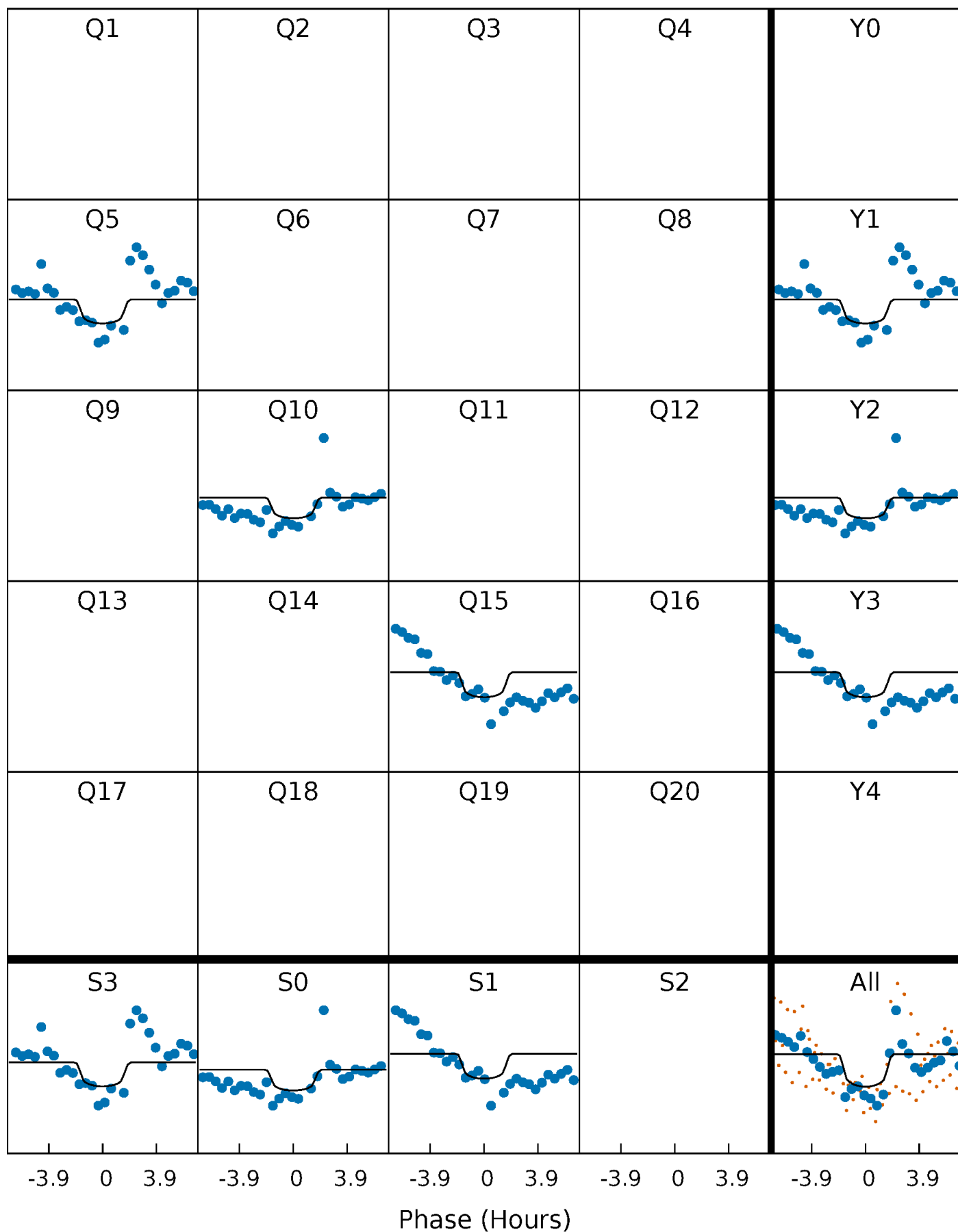
# PDC Quarter-Phased Transit Curves

TCE 010799767-02     $P=467.370824$  Days     $T_0=466.791036$  (BKJD)



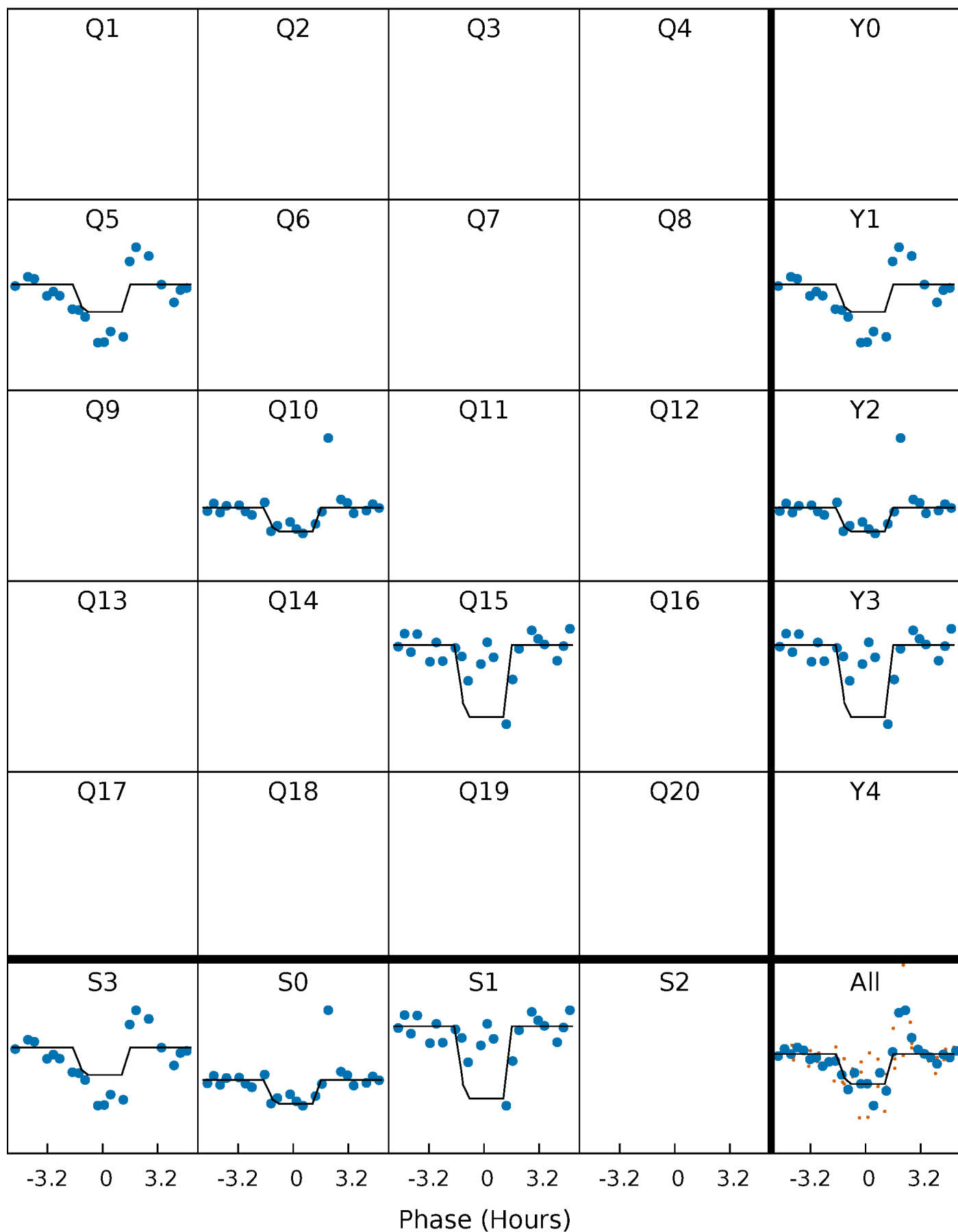
# DV Quarter-Phased Transit Curves

TCE 010799767-02     $P=467.370824$  Days     $T_0=466.791036$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

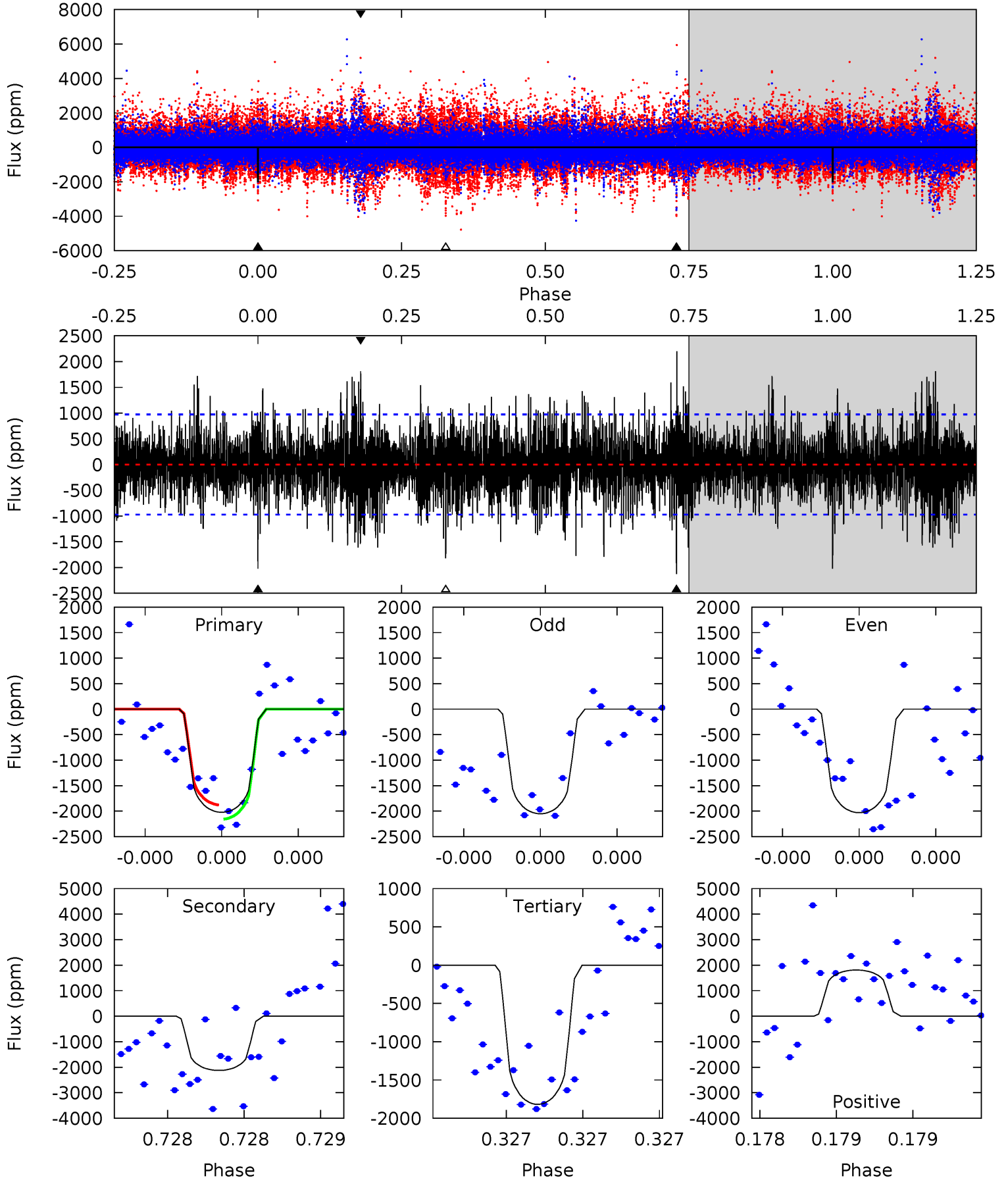
TCE 010799767-02 P=467.356384 Days  $T_0=466.799807$  (BKJD)



# DV Model-Shift Uniqueness Test

010799767-02, P = 467.370824 Days, E = 466.791036 Days

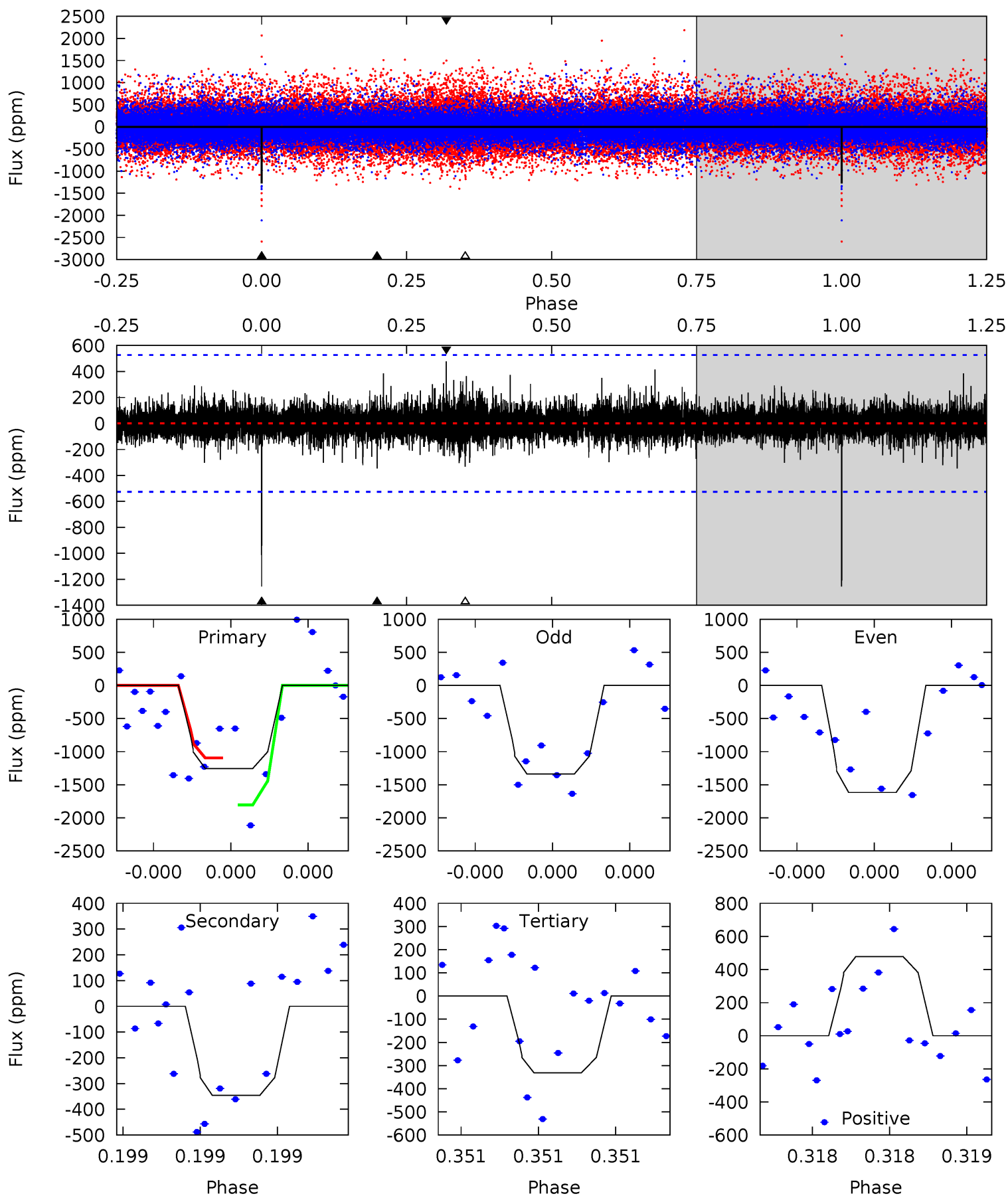
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.7	12.3	10.5	10.5	5.64	3.59	2.54	1.18	1.22	1.78	1.82	0.05	0.99	0.51	0.81



# Alt Model-Shift Uniqueness Test

010799767-02, P = 467.356384 Days, E = 466.799807 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
13.6	3.75	3.59	5.18	5.71	3.69	0.76	10.0	8.42	0.16	-1.43	1.55	1.14	0.28	3.56





### Stellar Parameters For KIC 010799767

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5591^{+167}_{-151}$	$4.616^{+0.032}_{-0.128}$	$-0.540^{+0.300}_{-0.300}$	$0.727^{+0.138}_{-0.059}$	$0.803^{+0.079}_{-0.079}$	$2.951^{+0.481}_{-1.135}$
	+3%/-3%	+1%/-3%	+56%/-56%	+19%/-8%	+10%/-10%	+16%/-38%
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 010799767-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-2125 \pm 173$	$20.73^{+23.05}_{-14.37}$	$286^{+14}_{-11}$	$3035^{+1569}_{-533}$	$3092^{+30522}_{-2354}$
Alt.	$-346 \pm 92$	$21.46^{+20.70}_{-15.85}$	$286^{+13}_{-11}$	$2372^{+1002}_{-340}$	$467^{+6118}_{-352}$

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

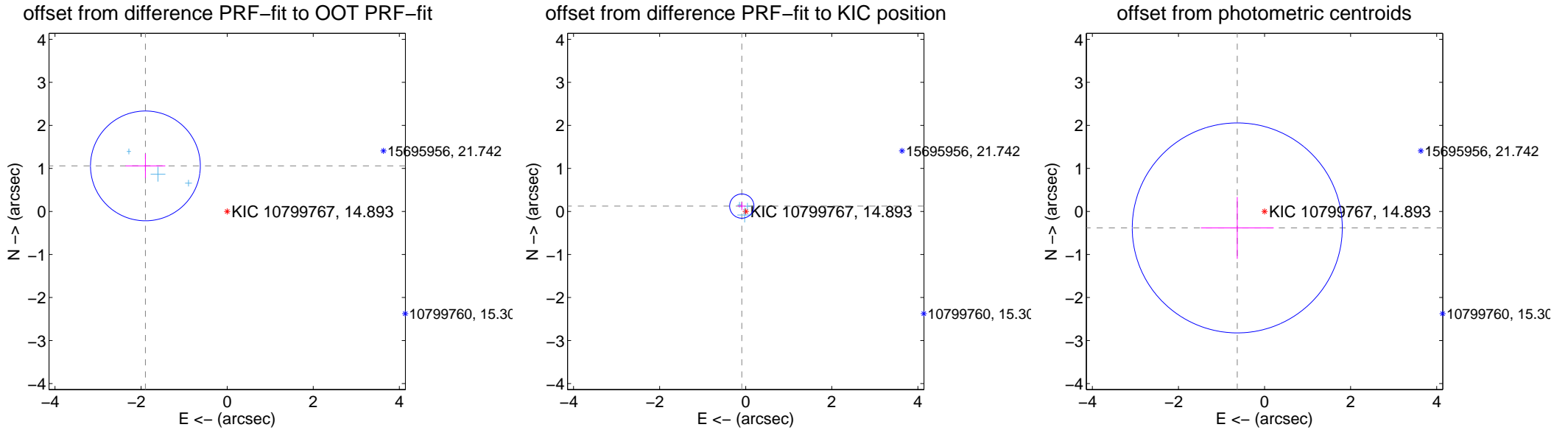
## DV Centroid Data

Supplemental centroid analysis for 010799767-02. Kepler magnitude: 14.89. Transit SNR 5.36

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.85 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>2.174 \pm 0.425</math></b>	<b>5.11</b>	$1.899 \pm 0.461$	$1.058 \pm 0.280$
PRF-fit source offset from KIC position	$0.154 \pm 0.094$	1.64	$0.091 \pm 0.093$	$0.124 \pm 0.094$
photometric centroid source offset	$0.74 \pm 0.81$	0.91	$0.63 \pm 0.84$	$-0.38 \pm 0.72$

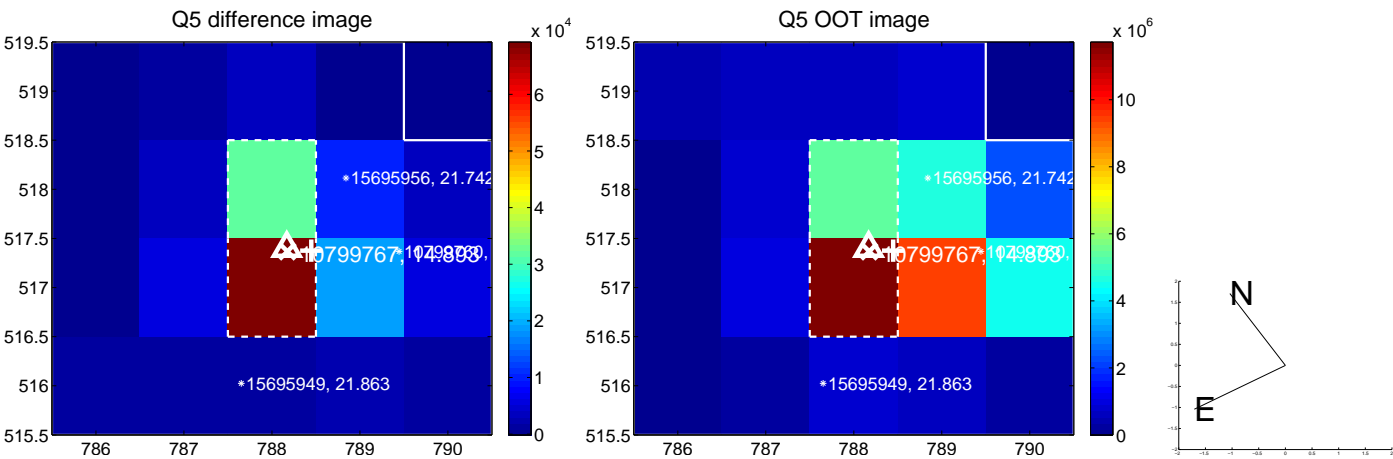


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

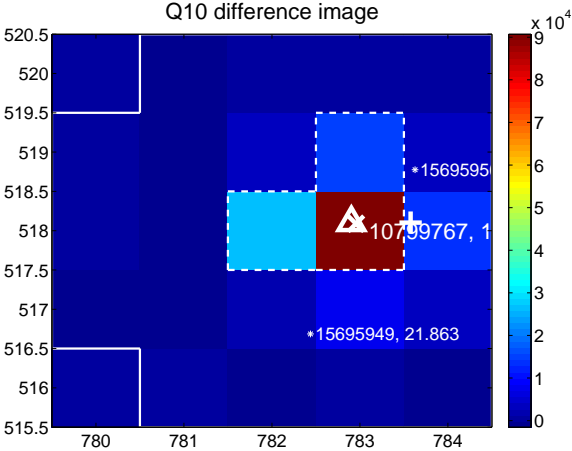
Q9 no difference image



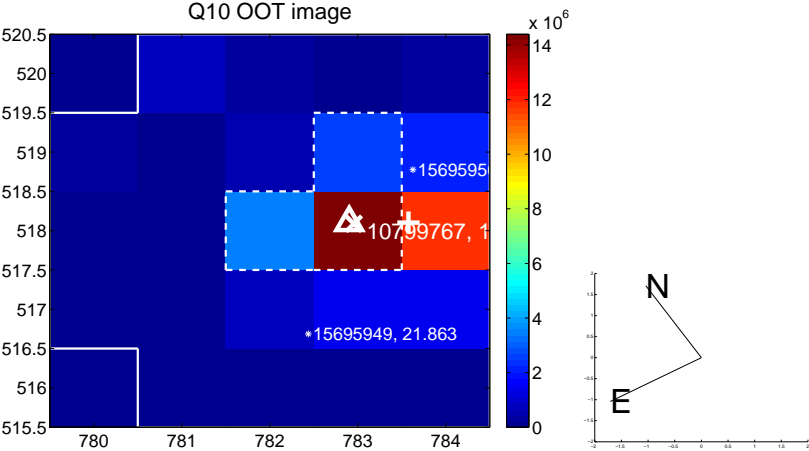
Q9 no OOT image



Q10 difference image



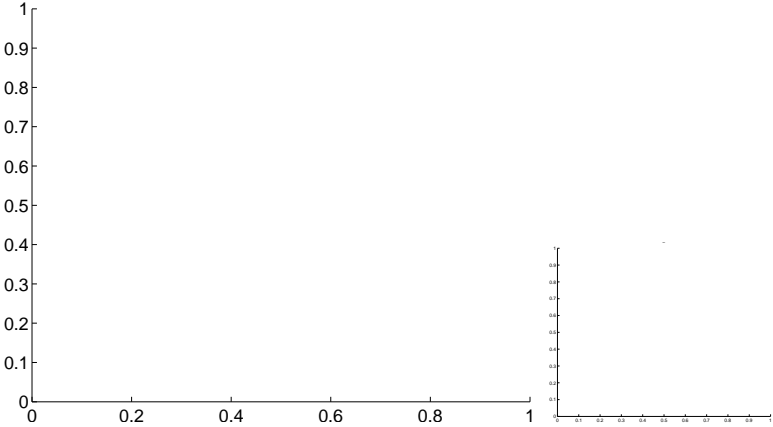
Q10 OOT image



Q11 no difference image



Q11 no OOT image



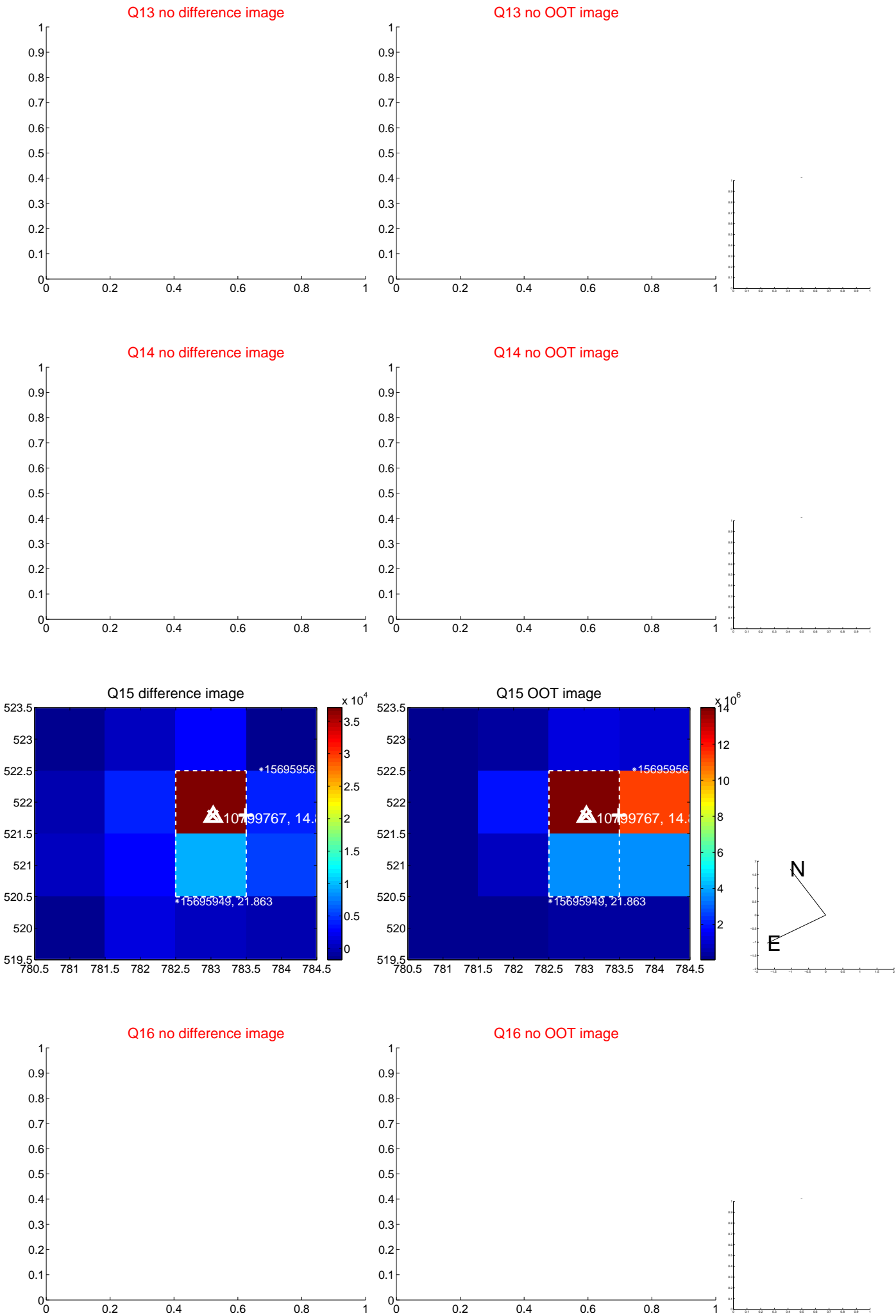
Q12 no difference image



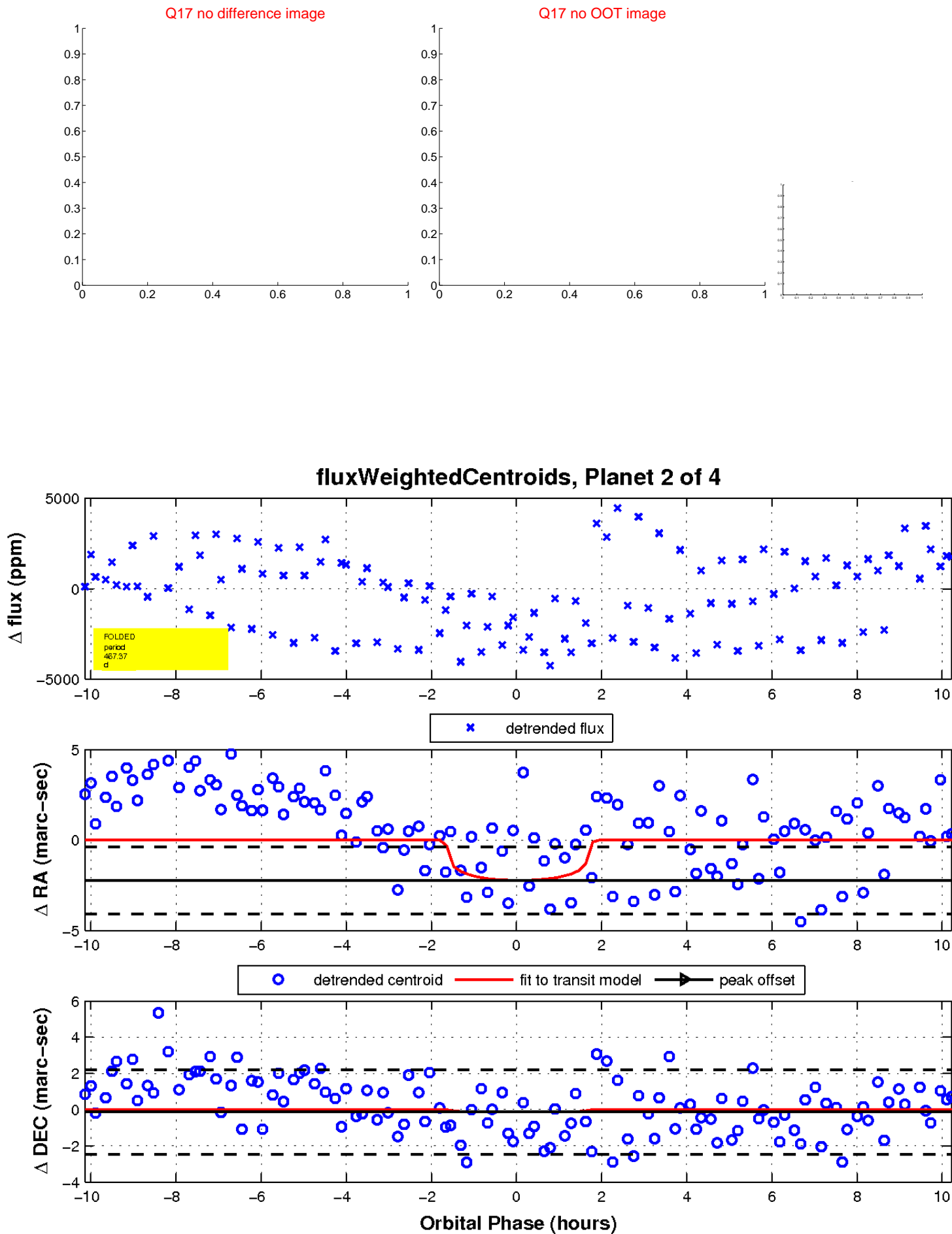
Q12 no OOT image



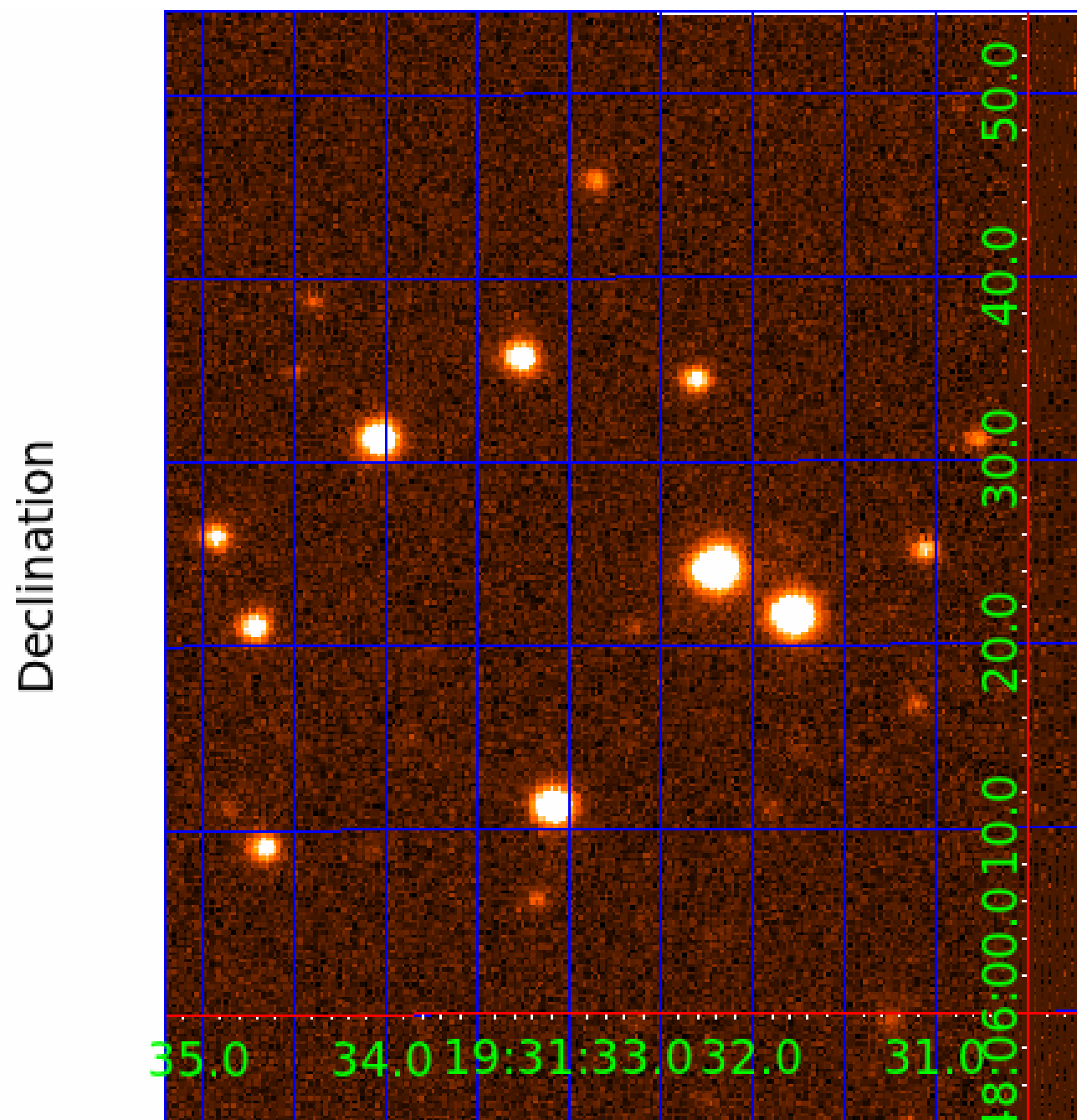
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





# KIC 010799767

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010799767-01	OBS	No	391.609574	304.824322	2114.1	2.895	12.6	7.5	0.73	5591	3.34	0.49
010799767-02	OBS	No	467.370824	466.791036	1484.6	3.453	10.5	5.4	0.73	5591	2.80	0.39
010799767-03	OBS	No	451.124140	183.305165	2775.8	8.313	13.5	7.2	0.73	5591	3.80	0.41
010799767-04	OBS	No	394.721944	277.594562	2170.9	3.000	14.9	-1.0	0.73	5591	3.37	0.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010799767-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_KIC_POS
010799767-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_KIC_POS
010799767-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
010799767-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

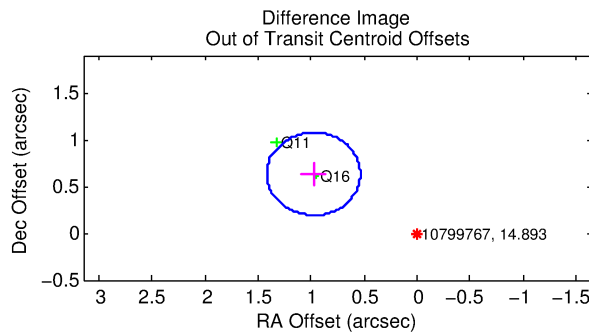
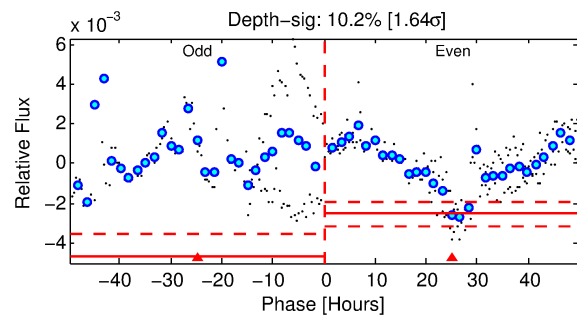
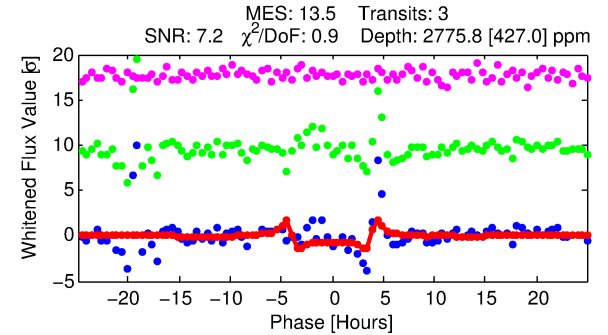
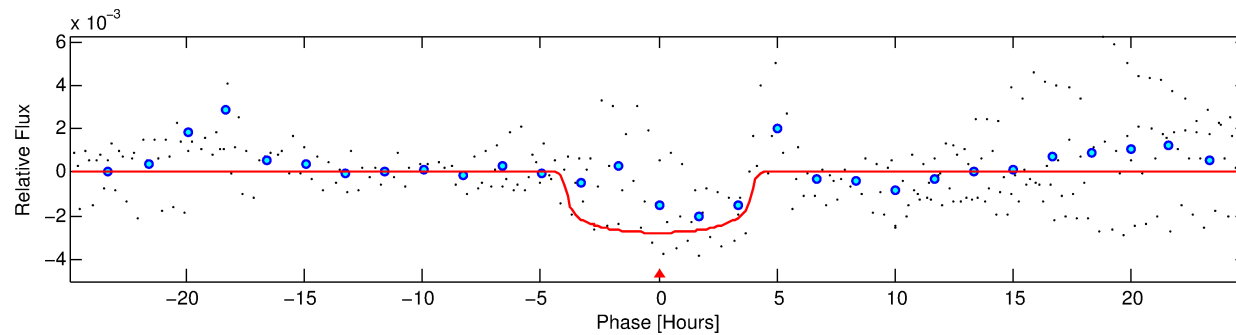
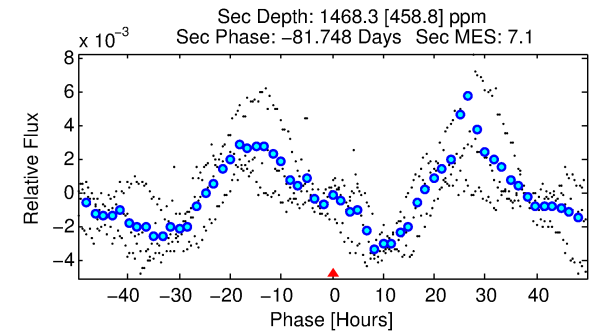
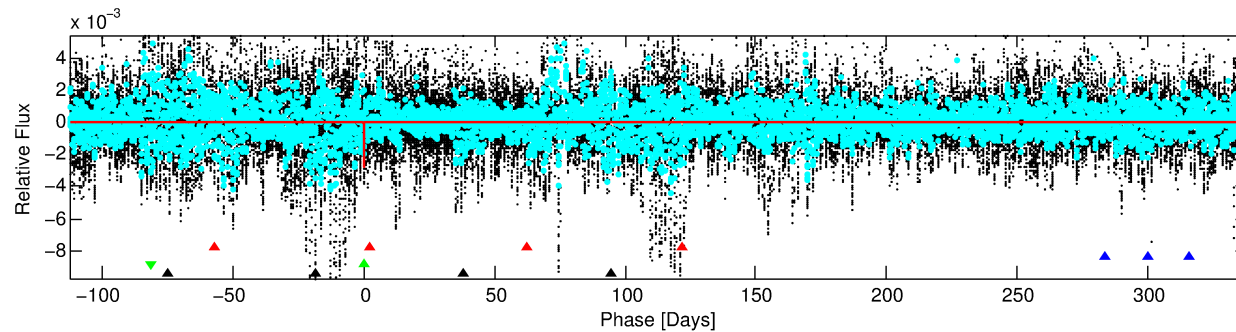
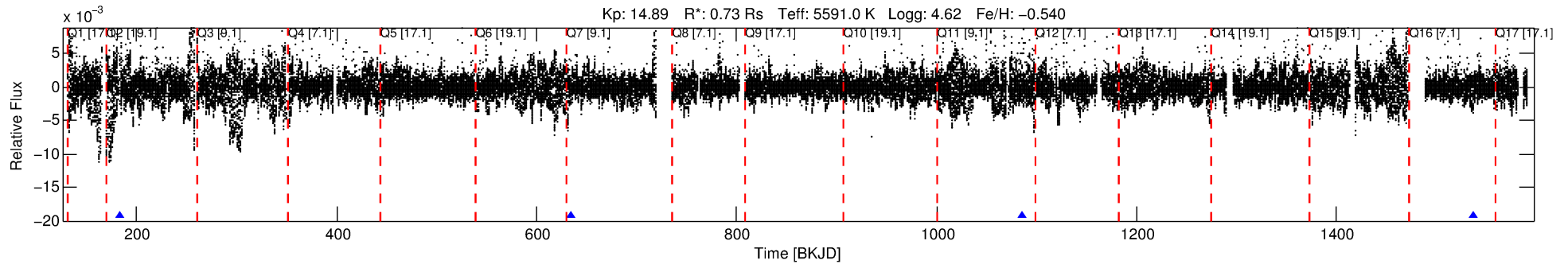
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010799767-03

No Significant Match Found

# DV One-Page Summary

KIC: 10799767 Candidate: 3 of 4 Period: 451.124 d



## DV Fit Results:

Period = 451.12414 [0.00451] d  
Epoch = 183.3052 [0.0089] BKJD  
Rp/R\* = 0.0479 [0.0128]  
a/R\* = 434.45 [459.44]  
b = 0.00 [871.57]  
Seff = 0.41 [0.11]  
Teq = 204 [13] K  
Rp = 3.80 [1.25] Re  
a = 1.0672 [0.1710] AU  
Ag = 63732.58 [42270.16] [1.51σ]  
Teffp = 5001 [790] K [6.07σ]

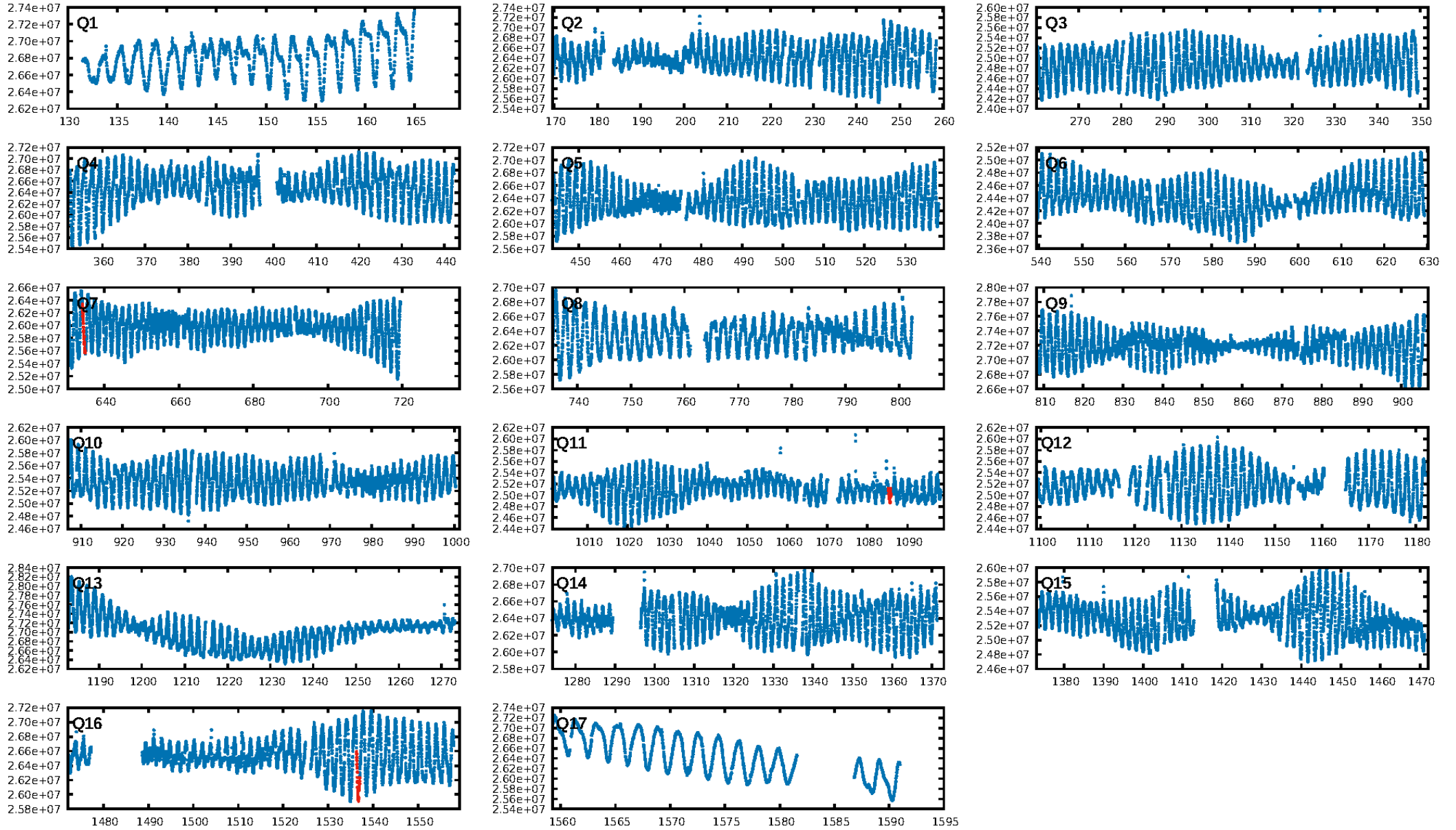
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [153.17σ]  
LongPeriod-sig: 100.0% [43.32σ]  
ModelChiSquare2-sig: 84.7%  
ModelChiSquareGof-sig: 98.4%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.8328  
Centroid-sig: 18.4%  
Centroid-so: 0.501 arcsec [1.35σ]  
OotOffset-rm: 1.165 arcsec [7.91σ]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-rm: 0.104 arcsec [1.29σ]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [2/2]

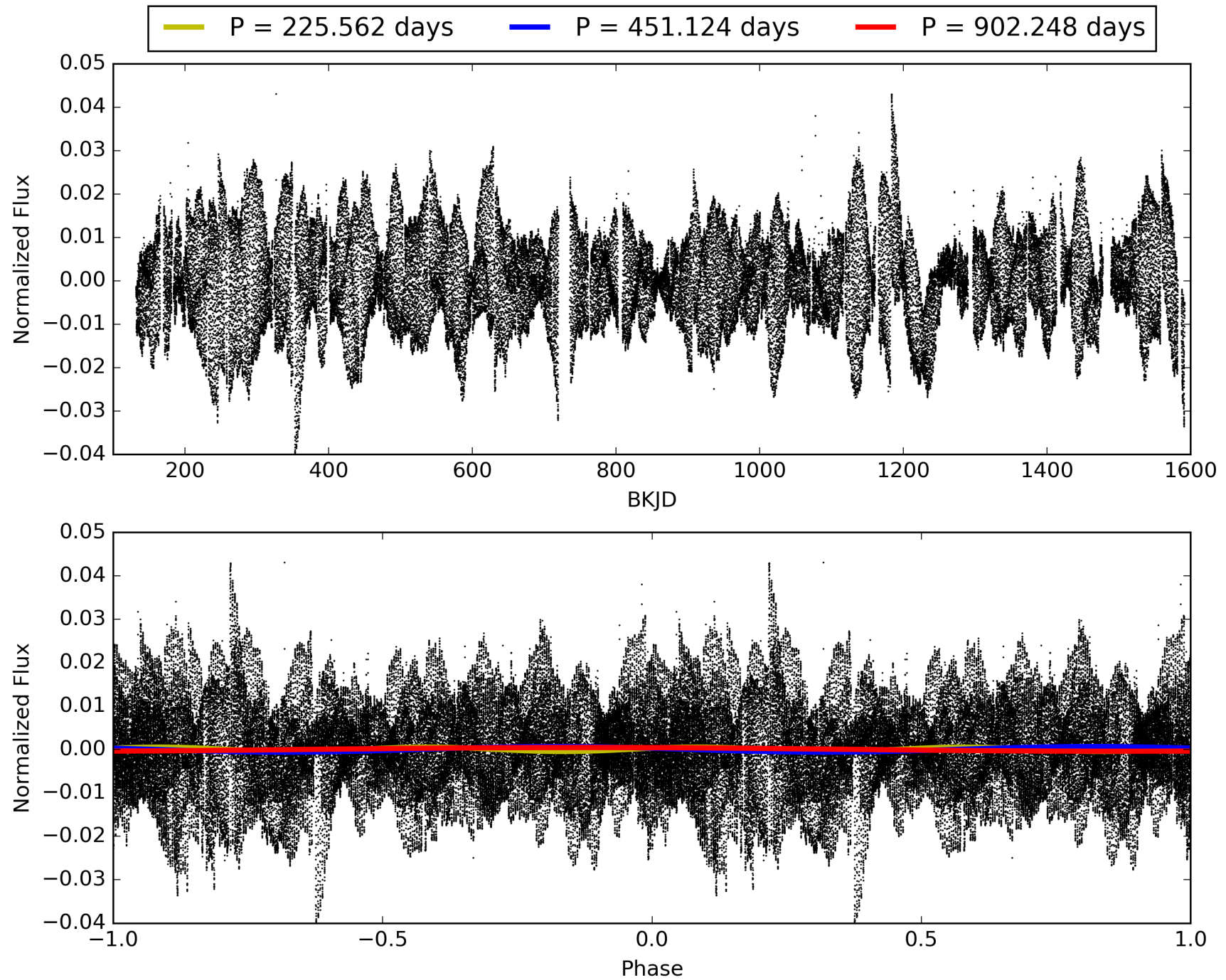
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:54:08 Z

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

# TCE 010799767-03, PDC Light Curves

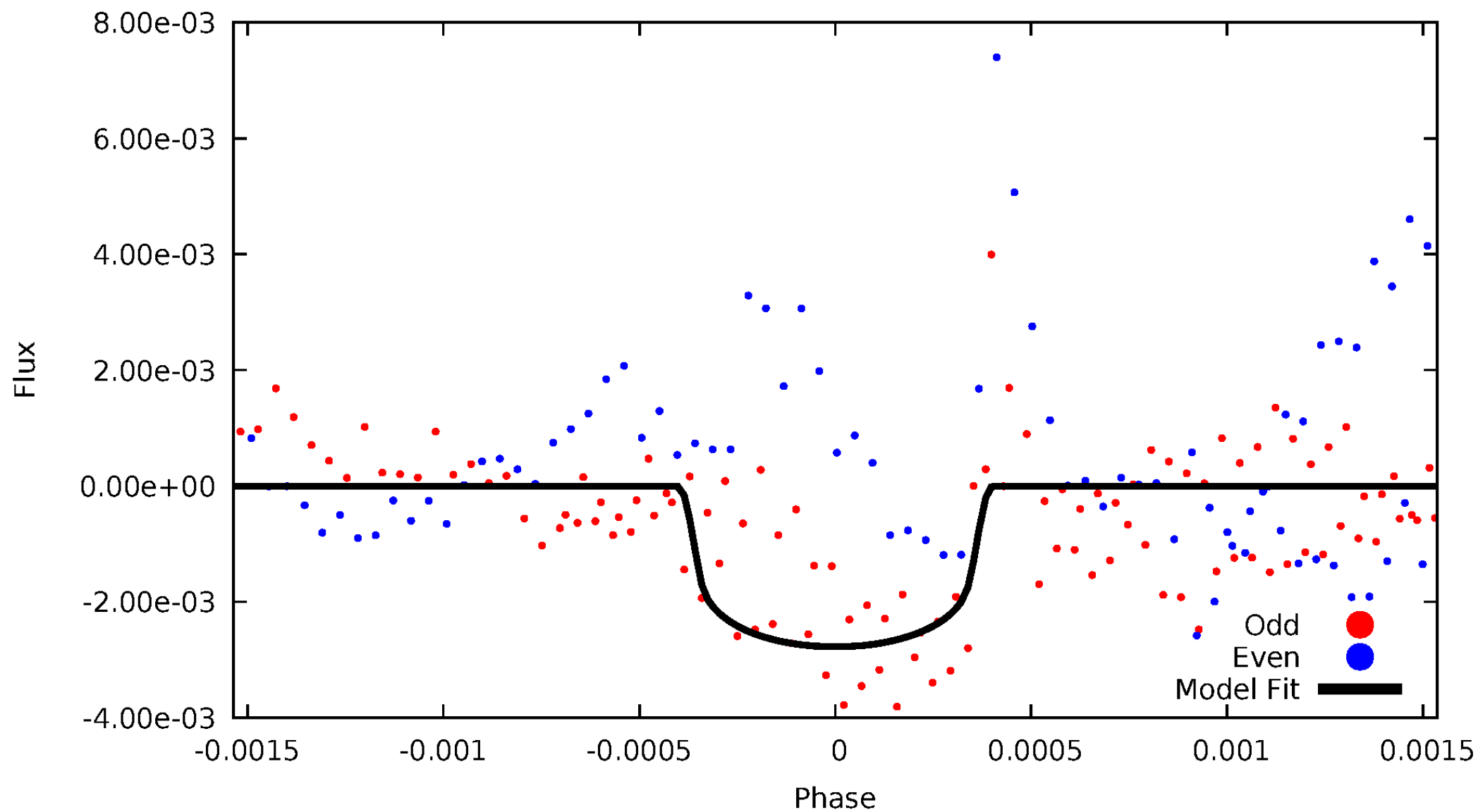


# TCE 010799767-03



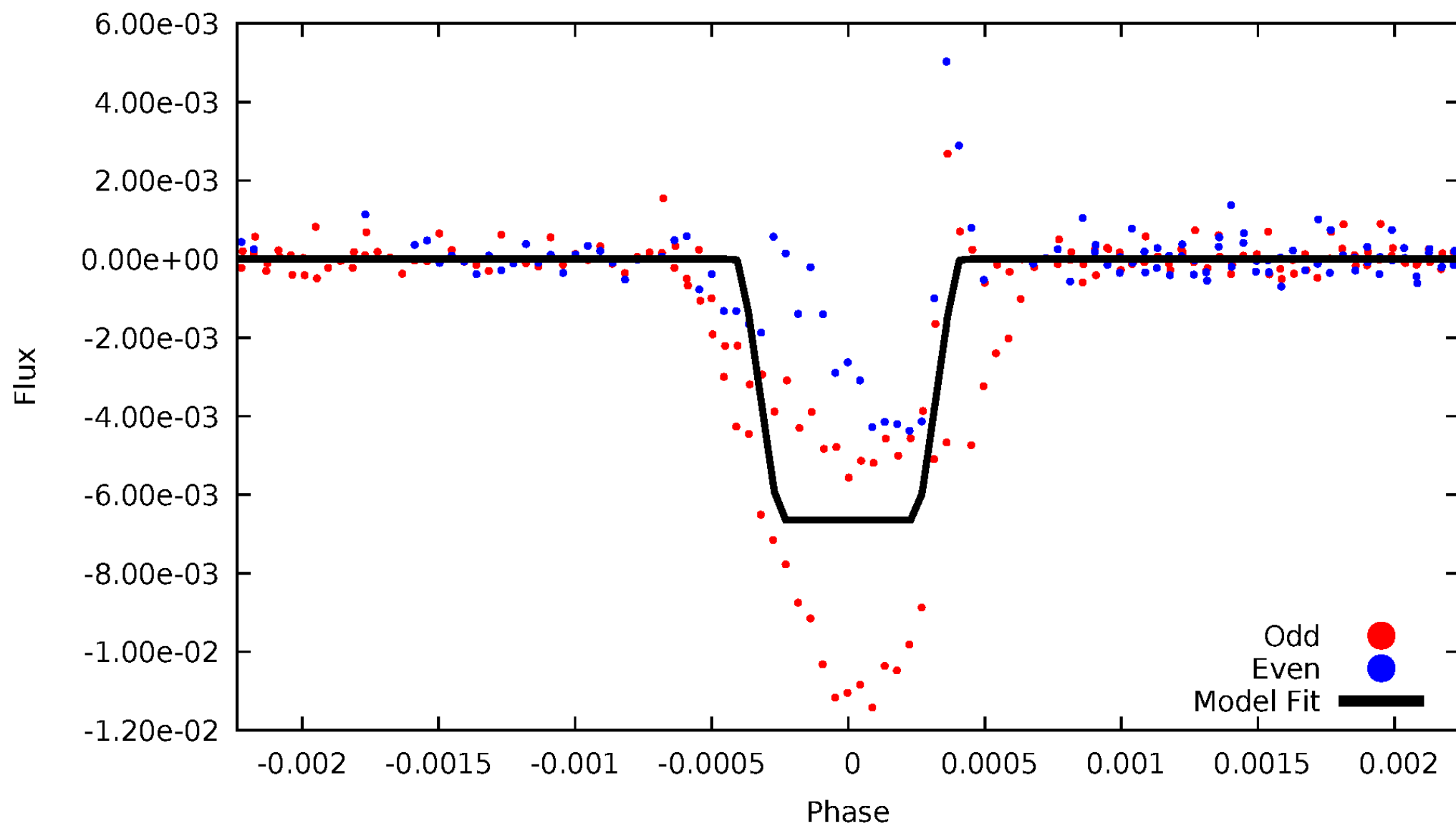
# DV Odd/Even

TCE 010799767-03

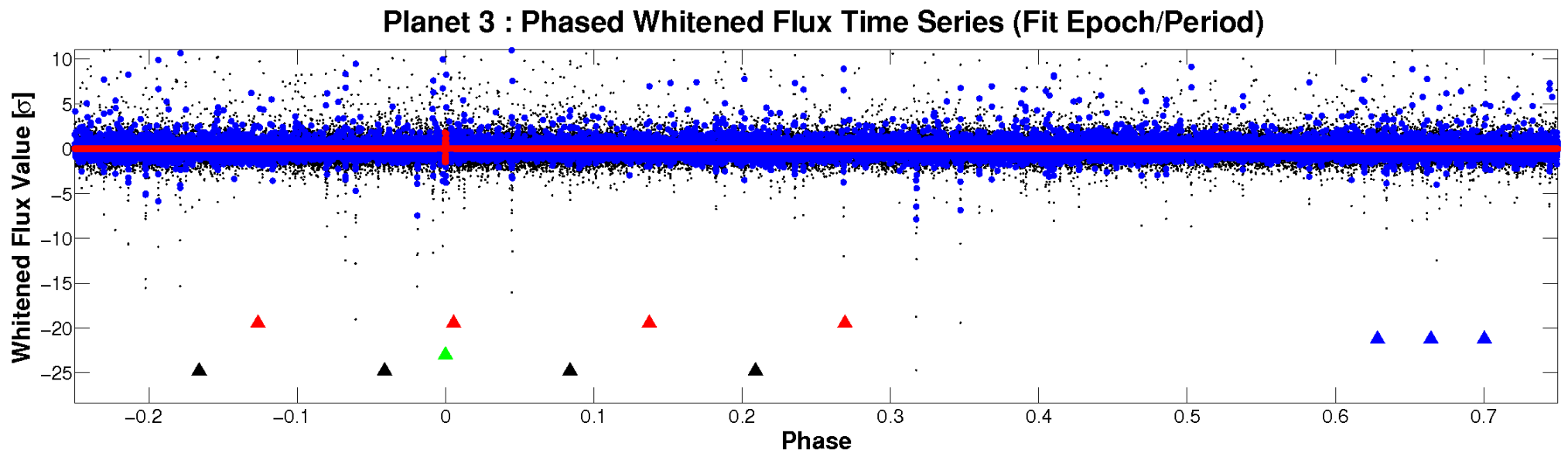
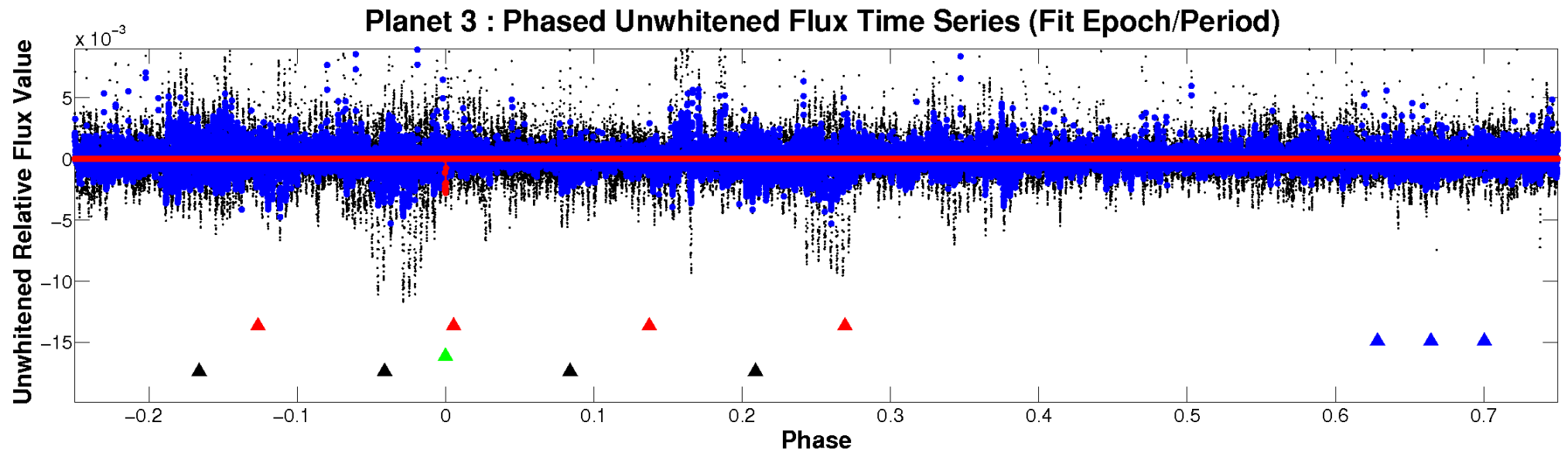


# ALT Odd/Even

TCE 010799767-03



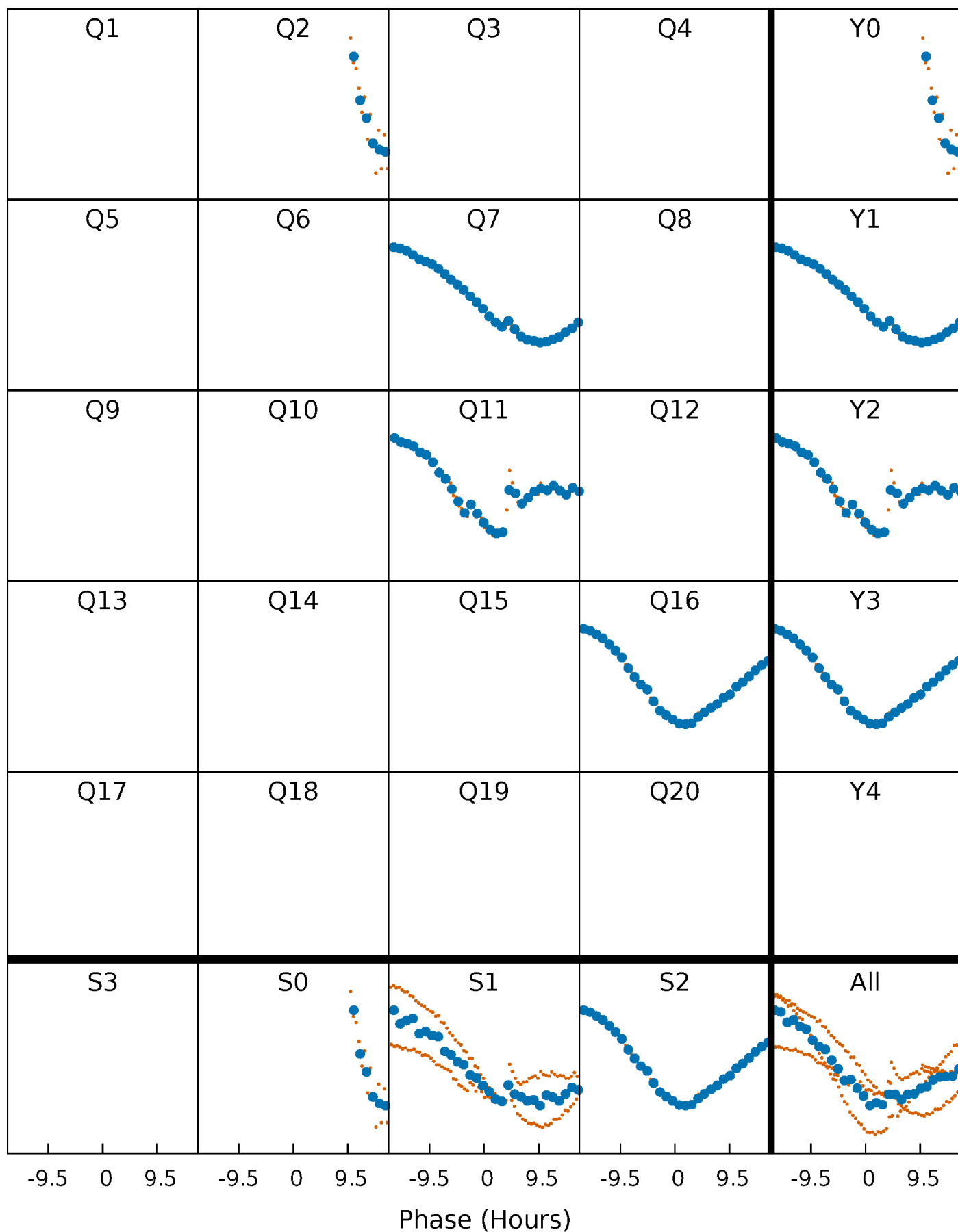
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

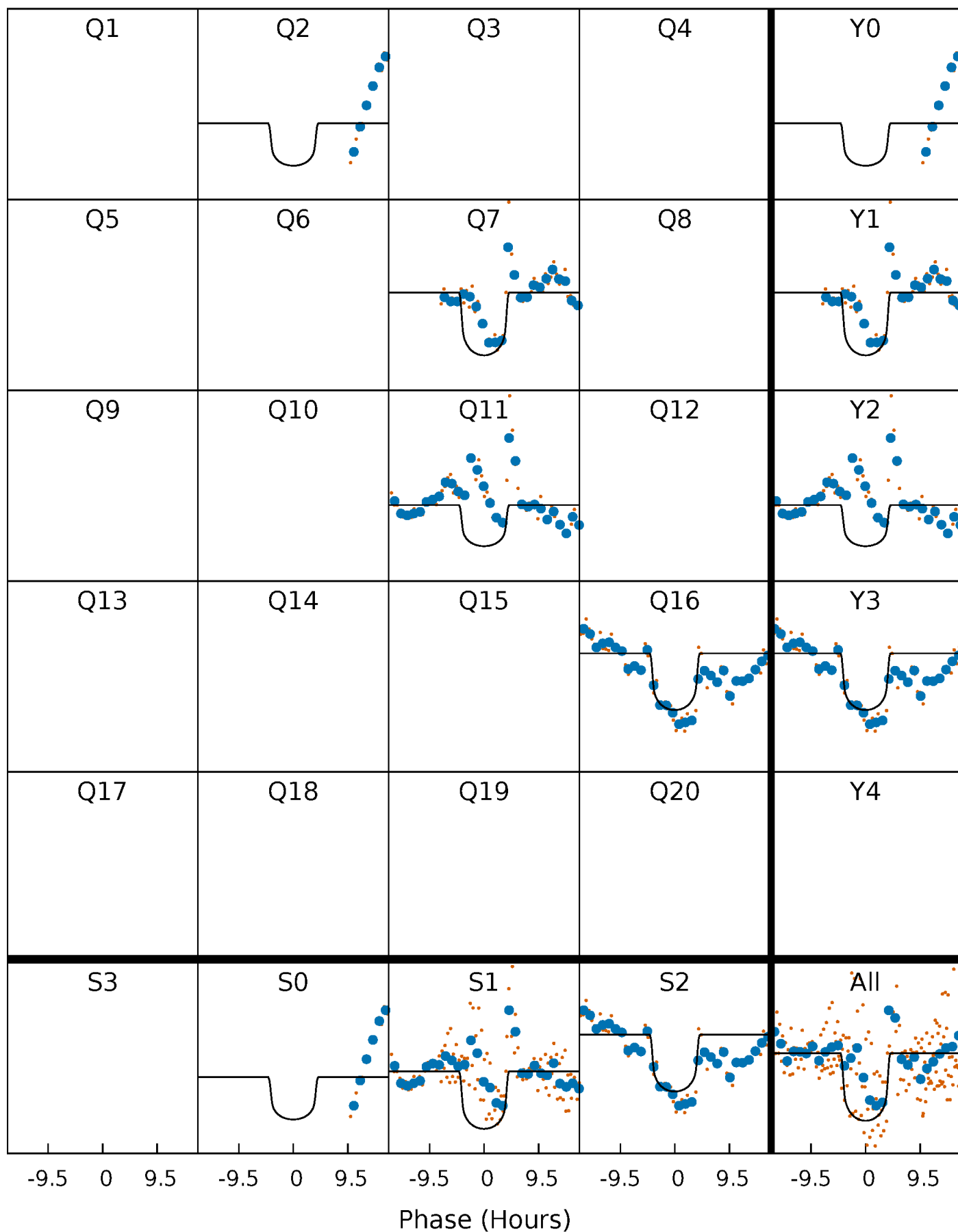
TCE 010799767-03     $P=451.124140$  Days     $T_0=183.305165$  (BKJD)





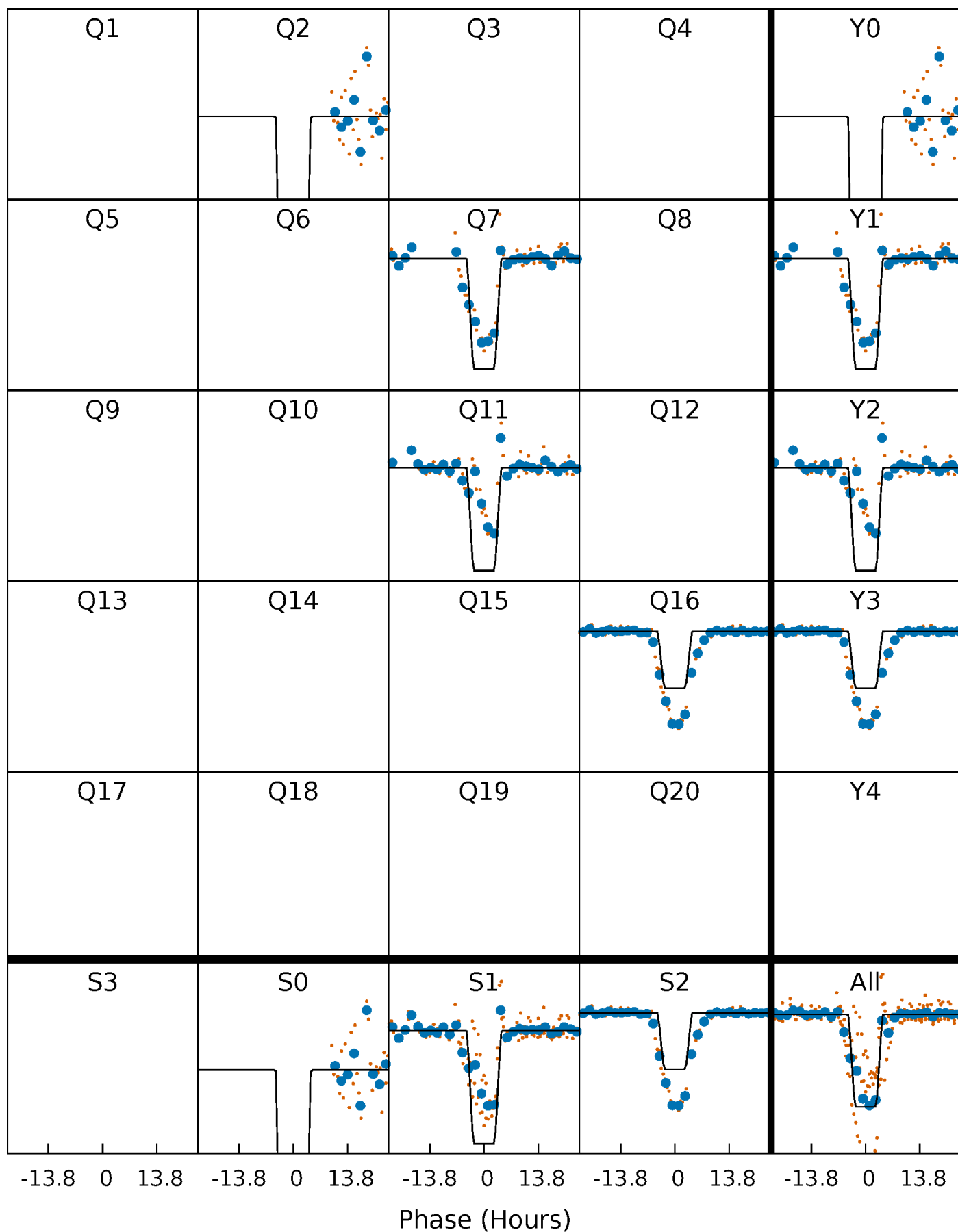
# DV Quarter-Phased Transit Curves

TCE 010799767-03 P=451.124140 Days  $T_0=183.305165$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

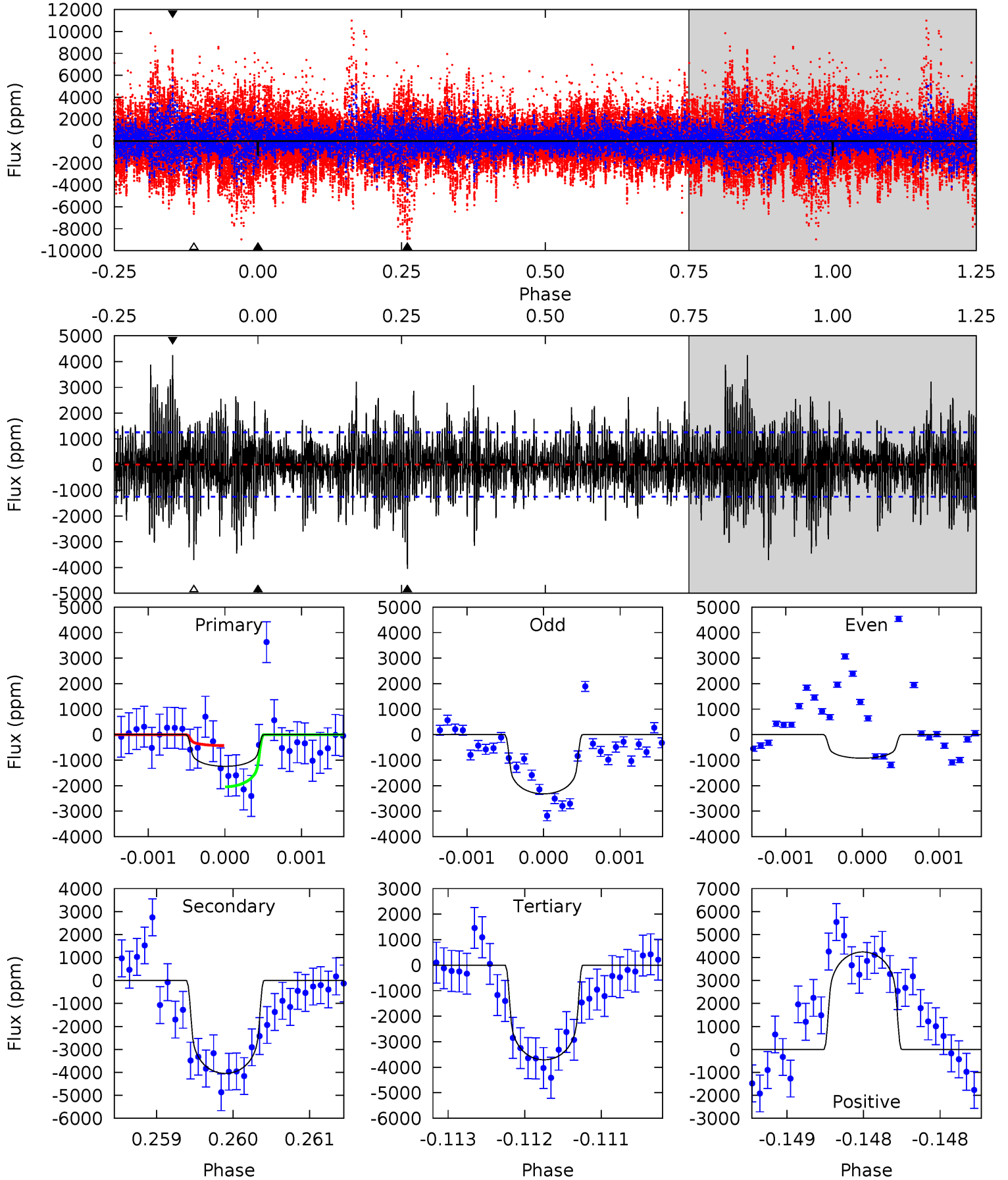
TCE 010799767-03 P=451.132138 Days  $T_0=183.312785$  (BKJD)



# DV Model-Shift Uniqueness Test

010799767-03, P = 451.124140 Days, E = 183.305165 Days

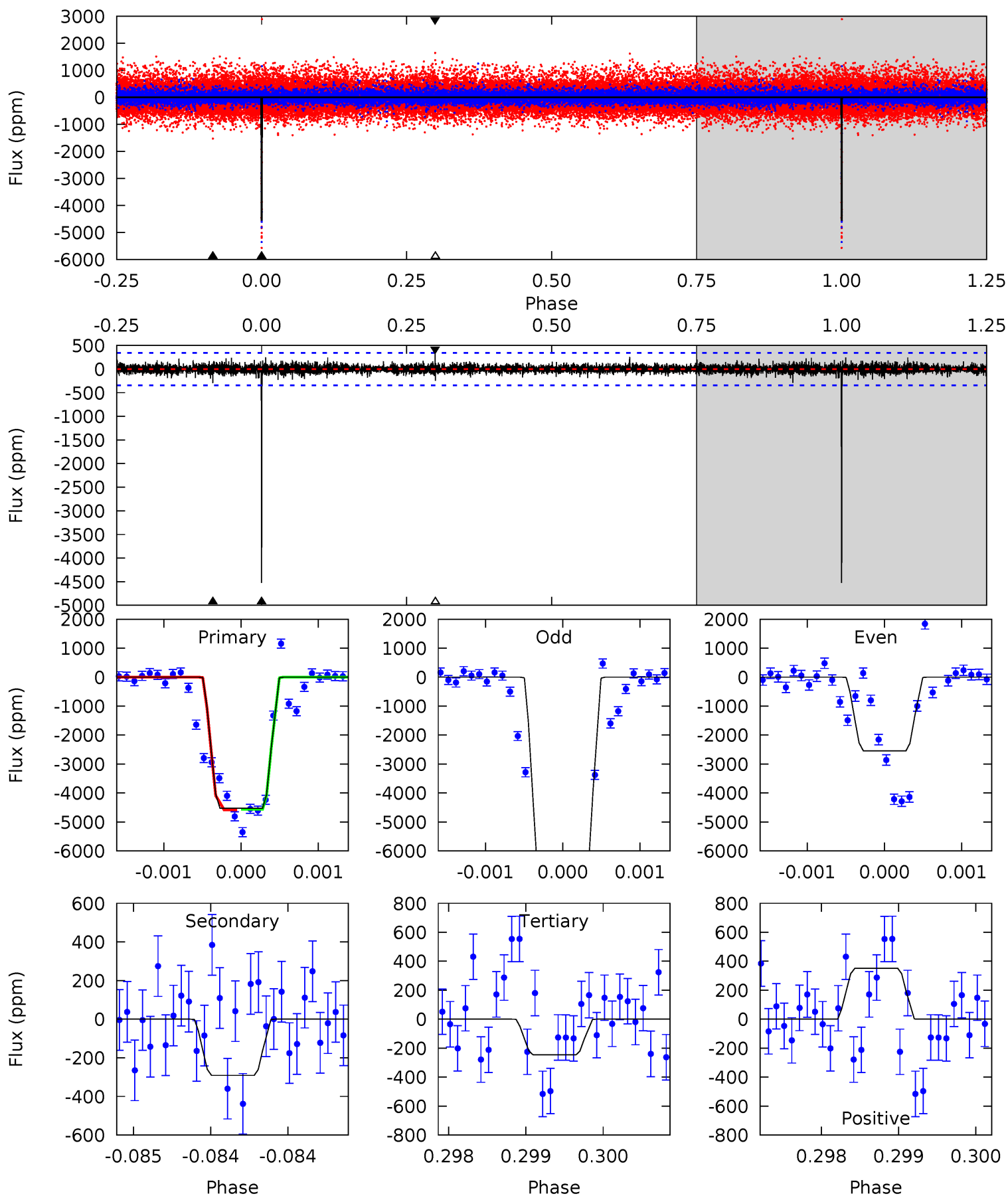
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.45	17.8	16.3	18.6	5.49	3.35	4.08	-10.8	-13.2	1.48	-0.86	2.59	0.86	0.51	3.56



# Alt Model-Shift Uniqueness Test

010799767-03, P = 451.132138 Days, E = 183.312785 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
71.9	4.63	3.92	5.60	5.49	3.35	0.77	68.0	66.3	0.71	-0.96	50.0	1.25	0.07	0



### Stellar Parameters For KIC 010799767

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5591^{+167}_{-151}$	$4.616^{+0.032}_{-0.128}$	$-0.540^{+0.300}_{-0.300}$	$0.727^{+0.138}_{-0.059}$	$0.803^{+0.079}_{-0.079}$	$2.951^{+0.481}_{-1.135}$
	+3%/-3%	+1%/-3%	+56%/-56%	+19%/-8%	+10%/-10%	+16%/-38%
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 010799767-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-4046 \pm 228$	$3.95^{+1.10}_{-1.09}$	$289^{+13}_{-11}$	$6393^{+1356}_{-711}$	$159316^{+146527}_{-60925}$
Alt.	$-291 \pm 63$	$6.75^{+1.26}_{-1.18}$	$290^{+14}_{-11}$	$3153^{+202}_{-180}$	$3946^{+2111}_{-1424}$

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

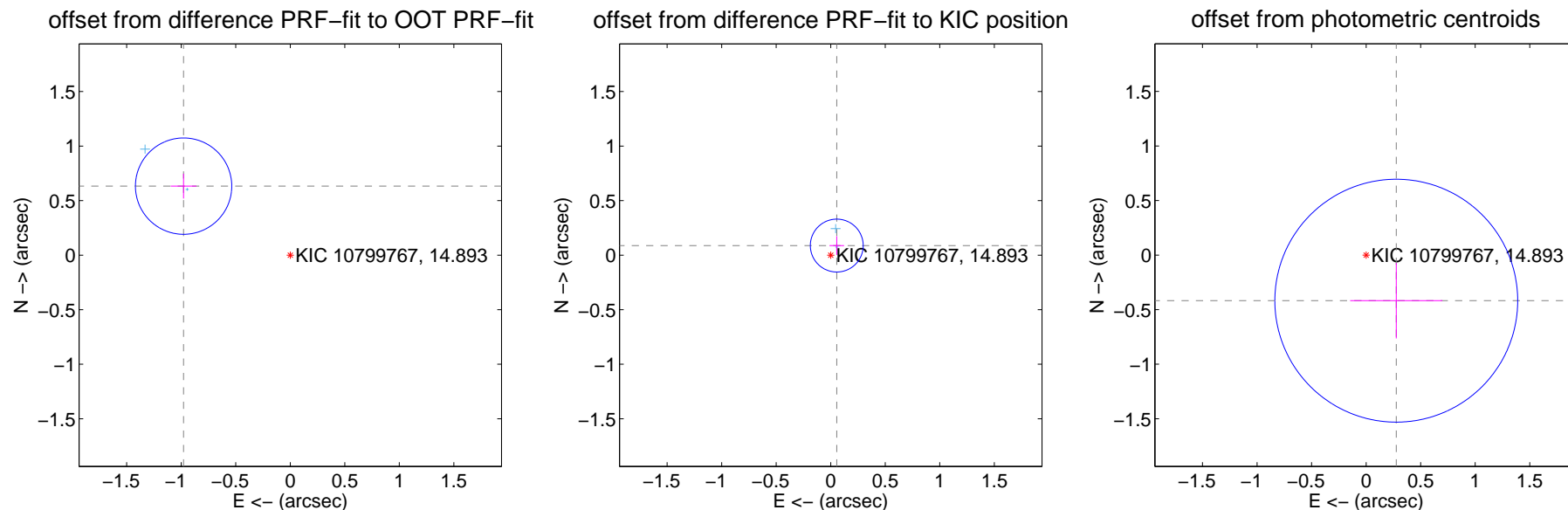
## DV Centroid Data

Supplemental centroid analysis for 010799767-03. Kepler magnitude: 14.89. Transit SNR 7.16

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.165 \pm 0.147$	7.91	$0.978 \pm 0.117$	$0.633 \pm 0.114$
PRF-fit source offset from KIC position	$0.104 \pm 0.081$	1.29	$-0.056 \pm 0.067$	$0.088 \pm 0.086$
photometric centroid source offset	$0.50 \pm 0.37$	1.35	$-0.28 \pm 0.42$	$-0.42 \pm 0.35$



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.

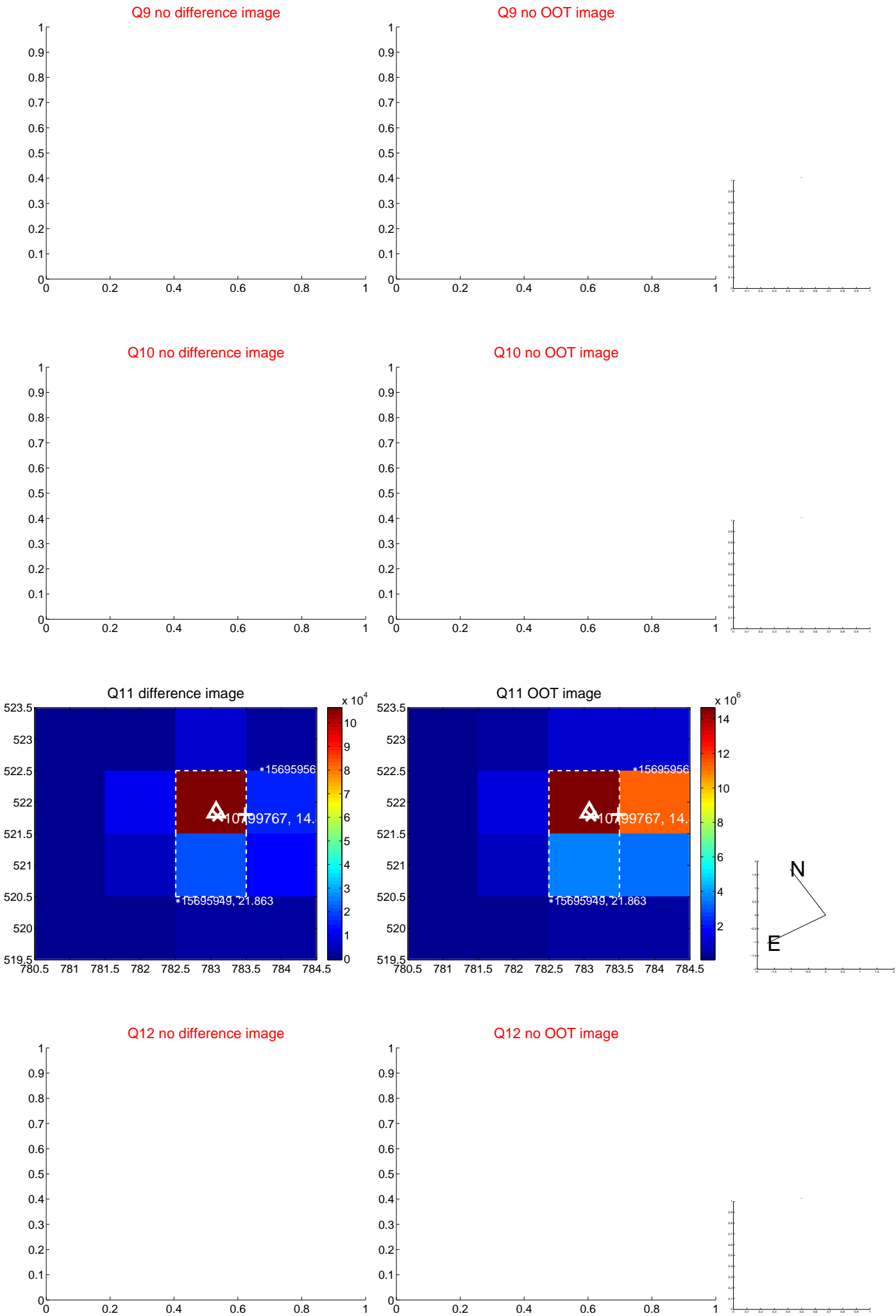


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

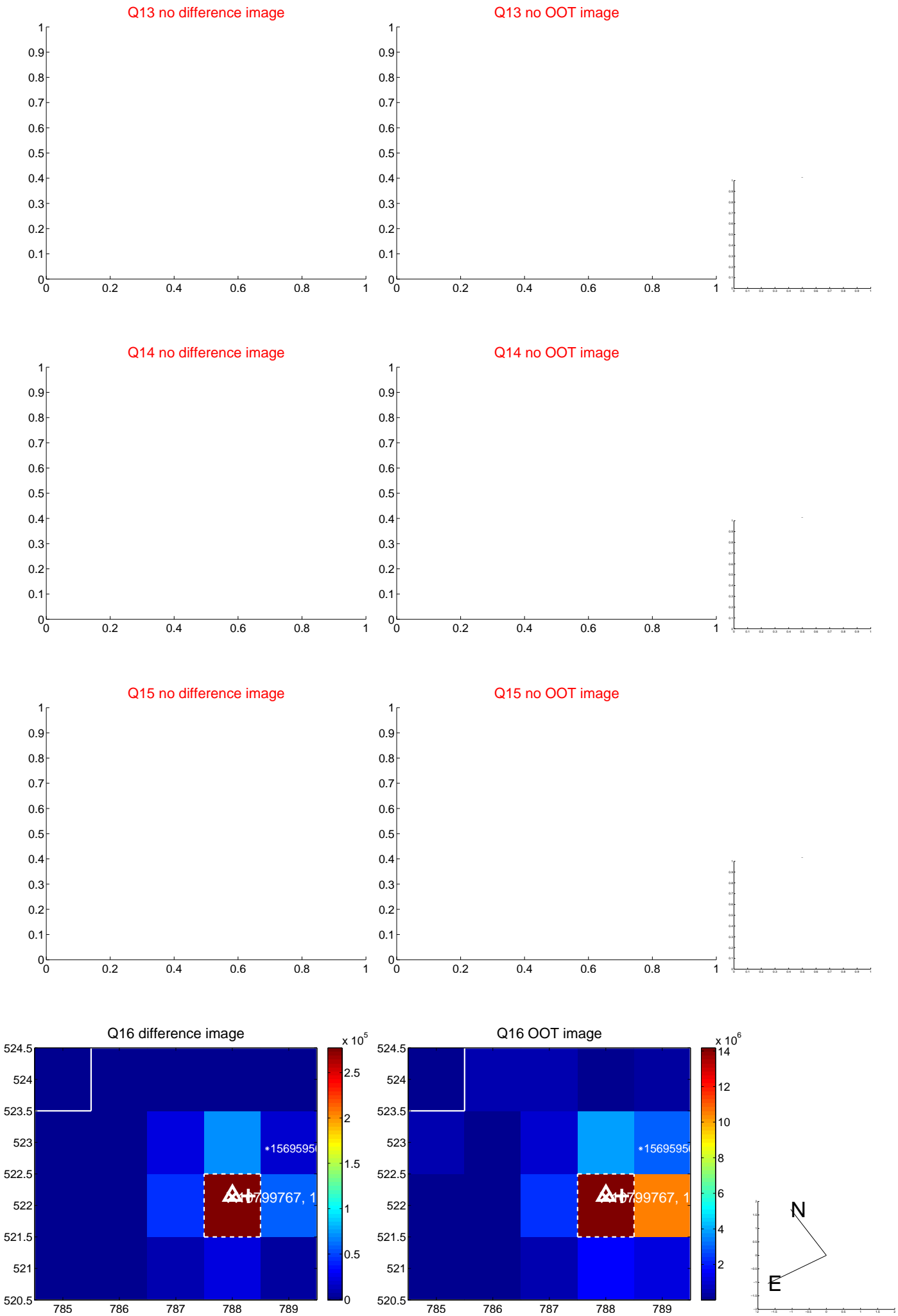




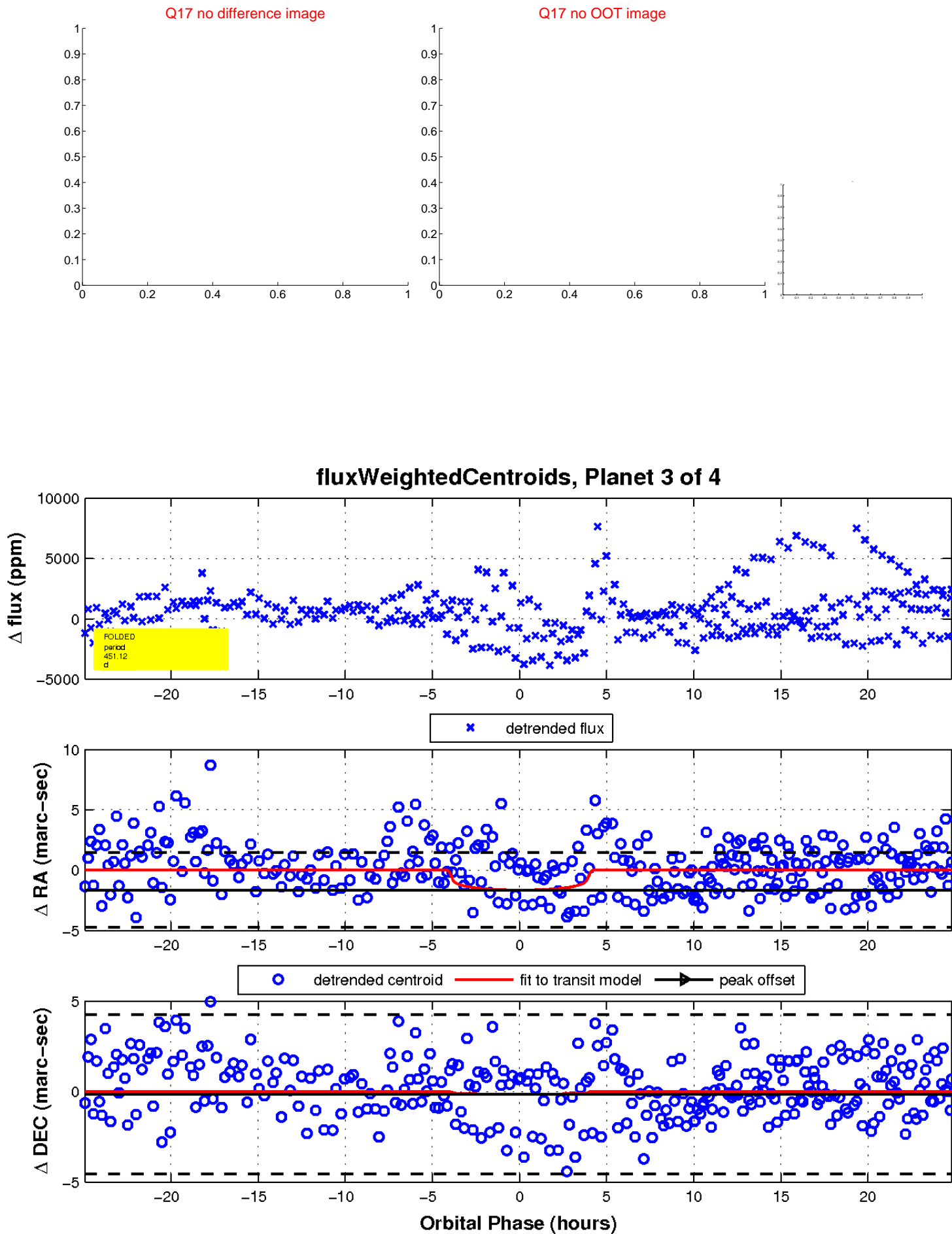
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



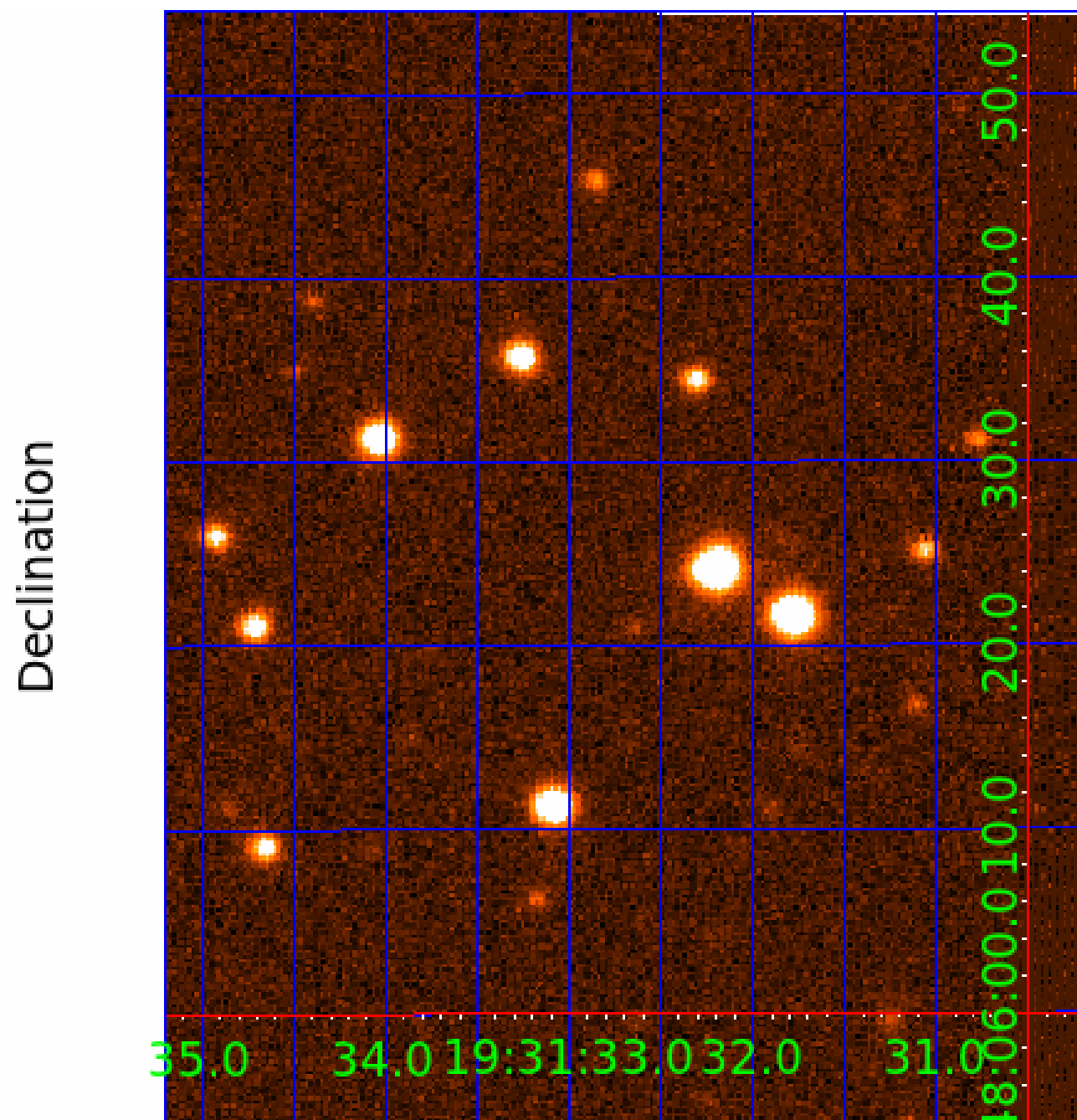
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 010799767

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010799767-01	OBS	No	391.609574	304.824322	2114.1	2.895	12.6	7.5	0.73	5591	3.34	0.49
010799767-02	OBS	No	467.370824	466.791036	1484.6	3.453	10.5	5.4	0.73	5591	2.80	0.39
010799767-03	OBS	No	451.124140	183.305165	2775.8	8.313	13.5	7.2	0.73	5591	3.80	0.41
010799767-04	OBS	No	394.721944	277.594562	2170.9	3.000	14.9	-1.0	0.73	5591	3.37	0.48

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010799767-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_KIC_POS
010799767-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_KIC_POS
010799767-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
010799767-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_NOFITS

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

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

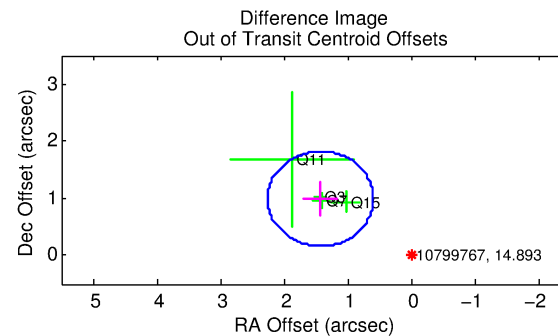
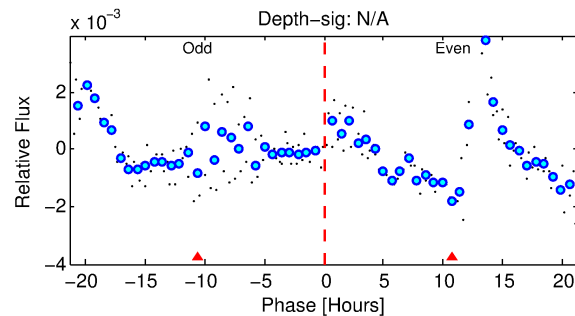
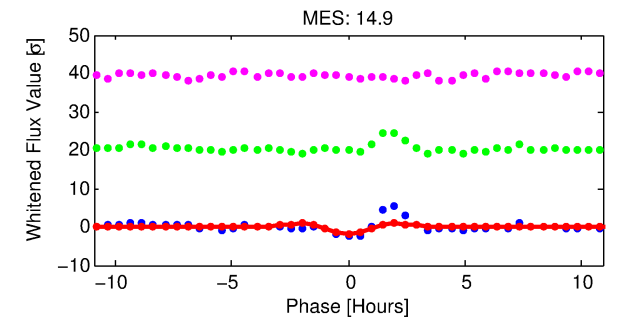
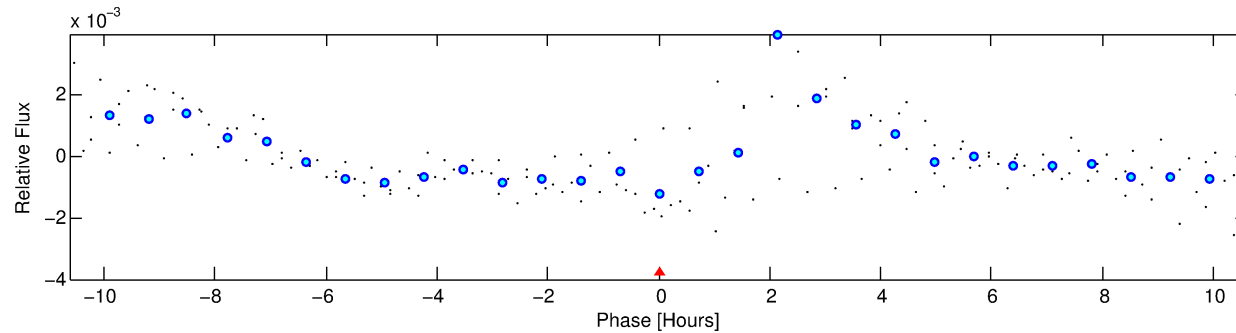
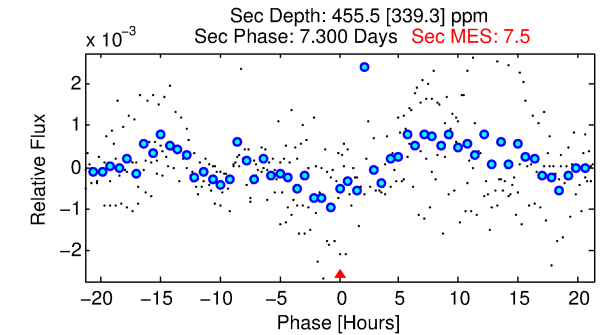
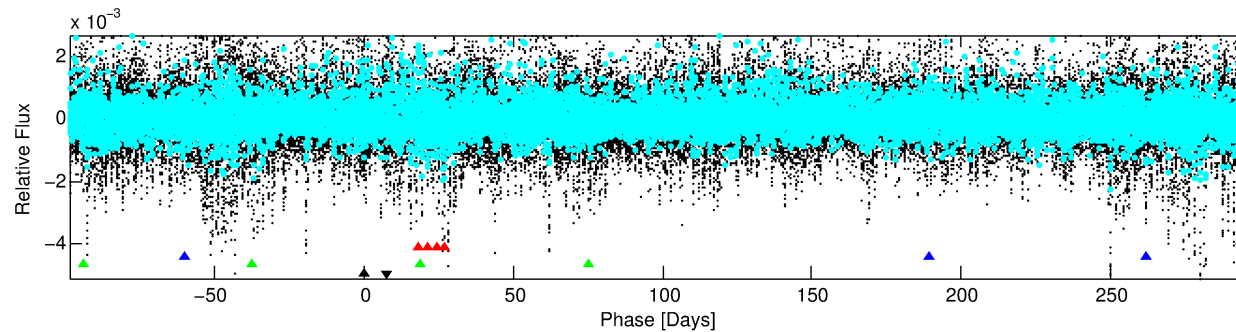
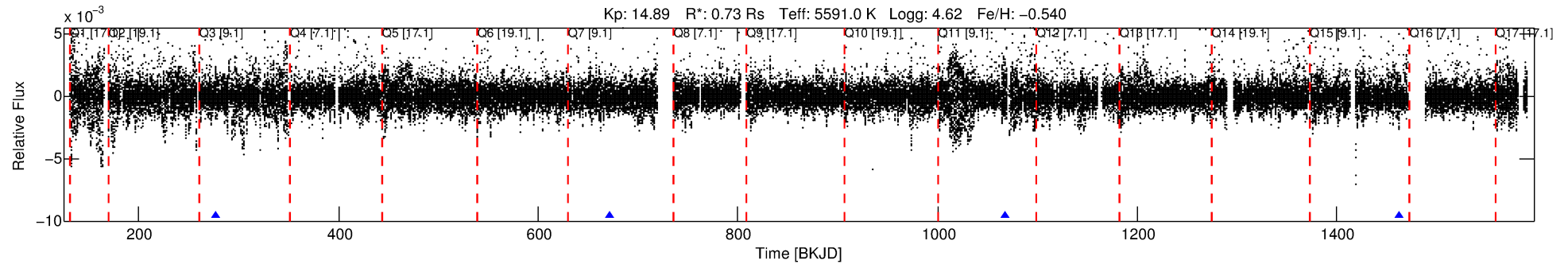
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010799767-04

No Significant Match Found

# DV One-Page Summary

KIC: 10799767 Candidate: 4 of 4 Period: 394.722 d



## TPS TCE Results:

Period = 394.72194 d  
Epoch = 277.5946 BKJD

**DV fit results are unavailable**

## DV Diagnostic Results:

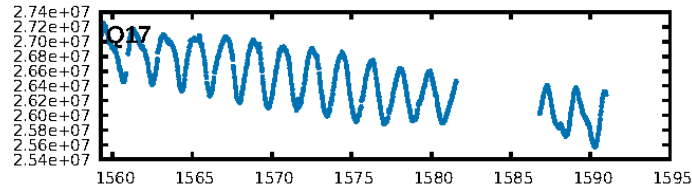
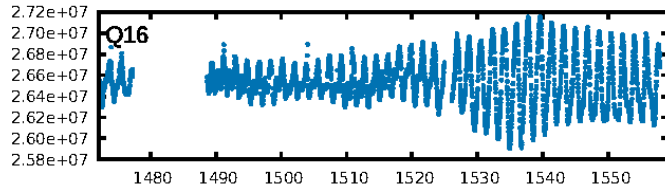
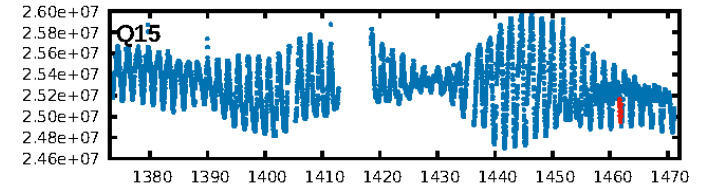
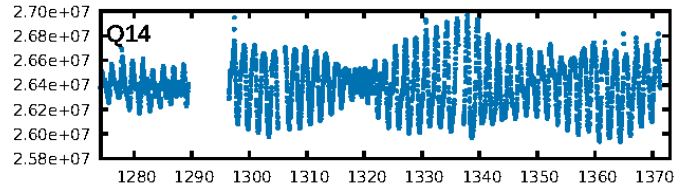
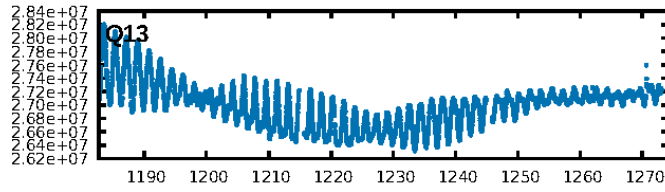
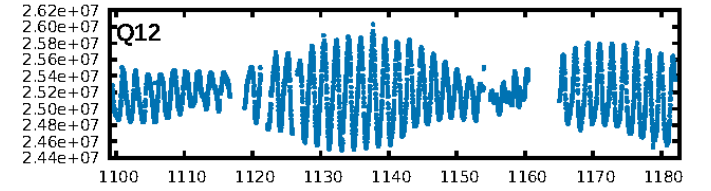
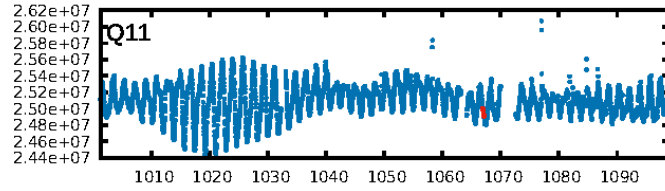
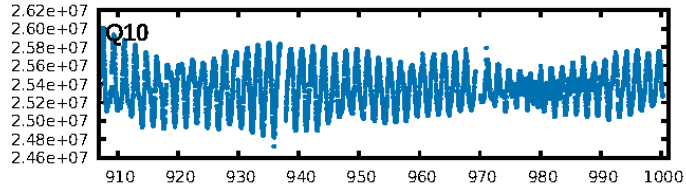
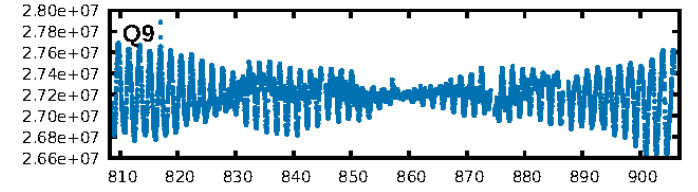
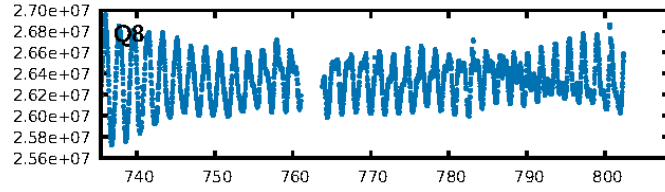
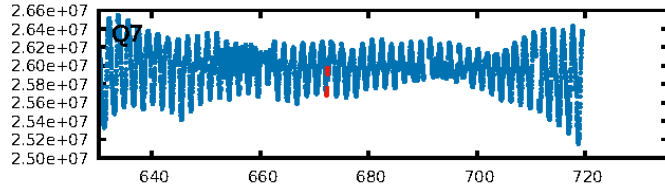
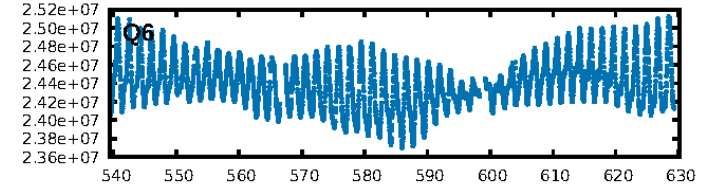
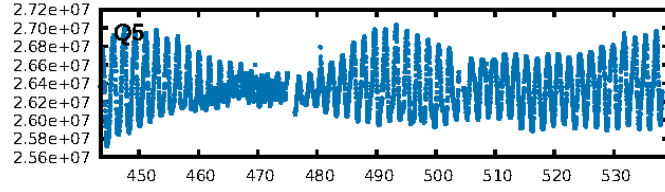
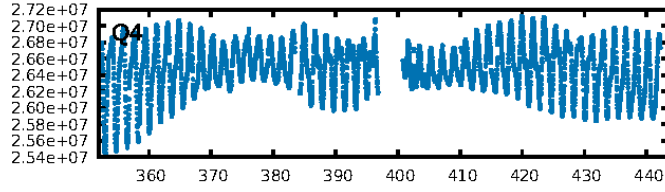
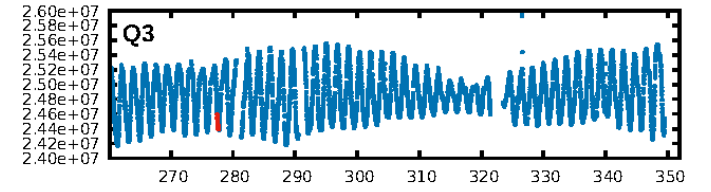
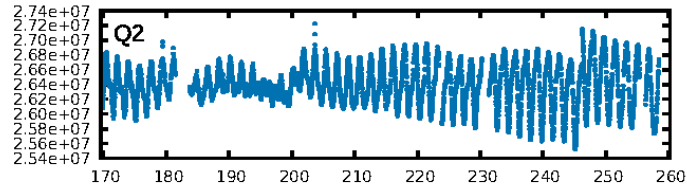
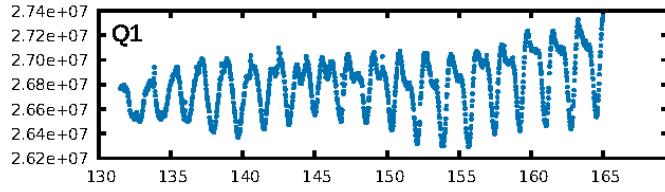
ShortPeriod-sig: 100.0% [17.92σ]  
LongPeriod-sig: 100.0% [153.17σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 1.179

Centroid-sig: 45.8%  
Centroid-so: 0.494 arcsec [0.78σ]  
**OotOffset-rm: 1.736 arcsec [6.27σ]**  
KicOffset-rm: 0.210 arcsec [0.72σ]  
OotOffset-st: 0/4/0/0 [4]  
KicOffset-st: 0/4/0/0 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 1.00 [4/4]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:54:24 Z

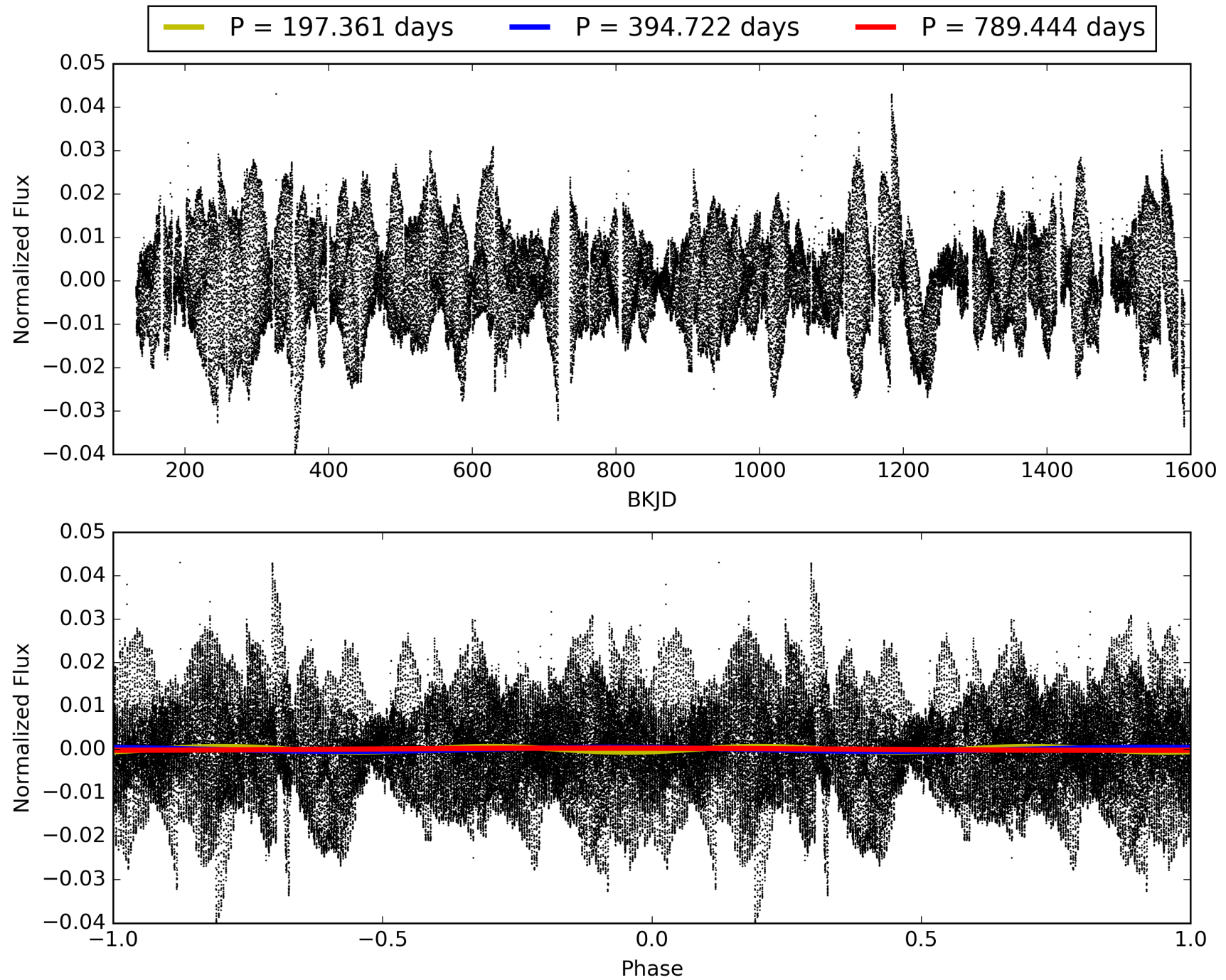
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010799767-04, PDC Light Curves





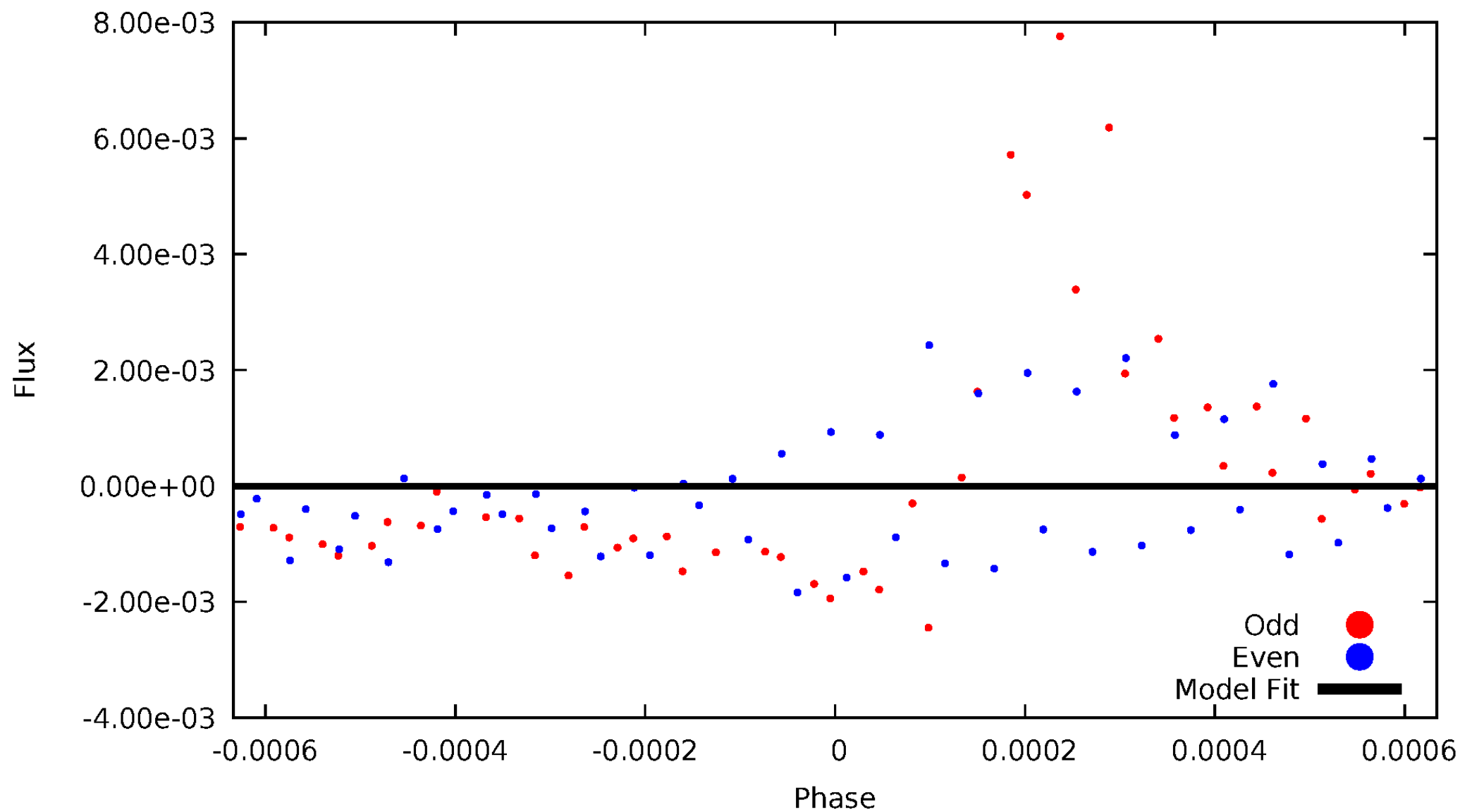
# TCE 010799767-04





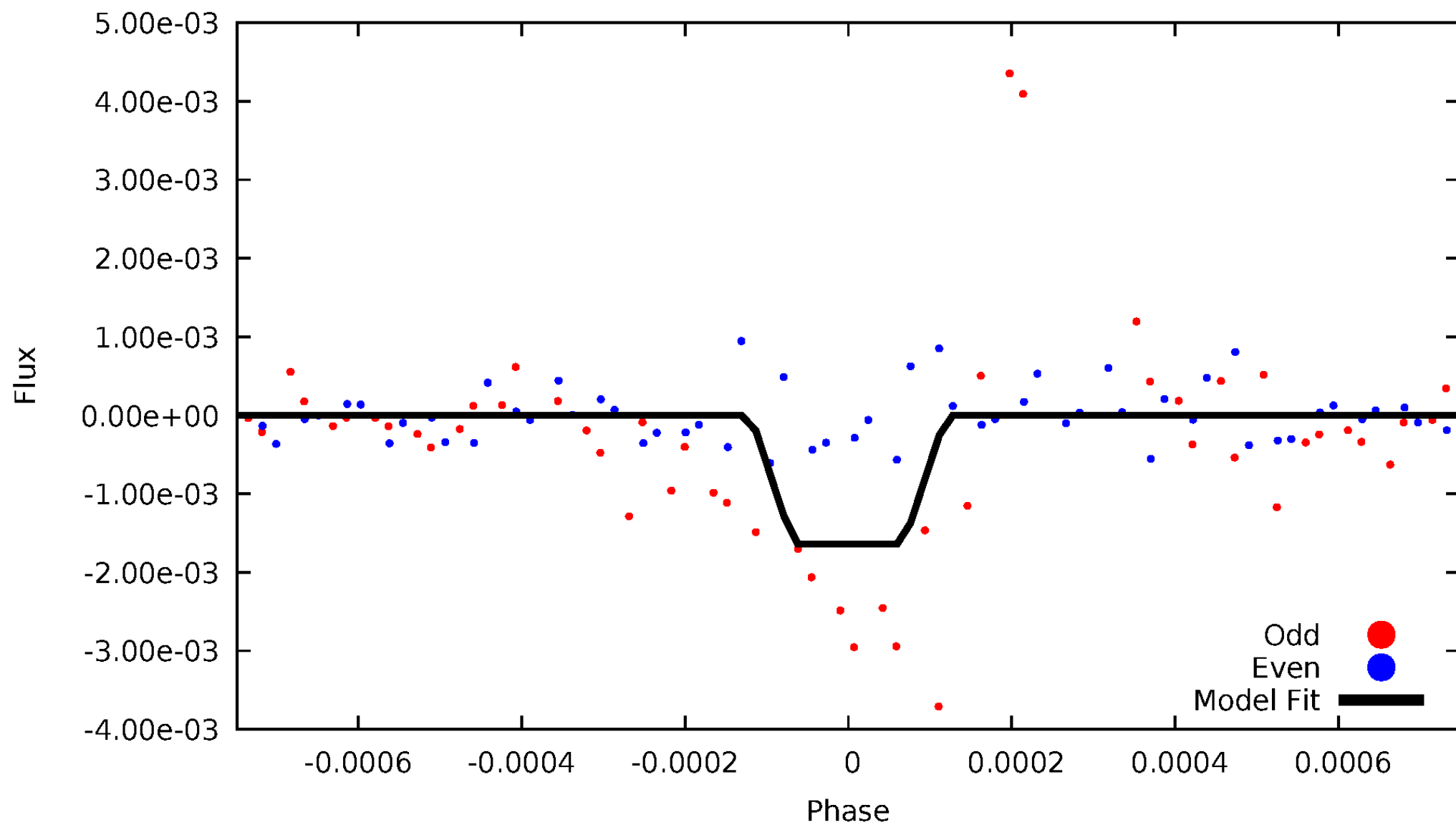
# DV Odd/Even

TCE 010799767-04



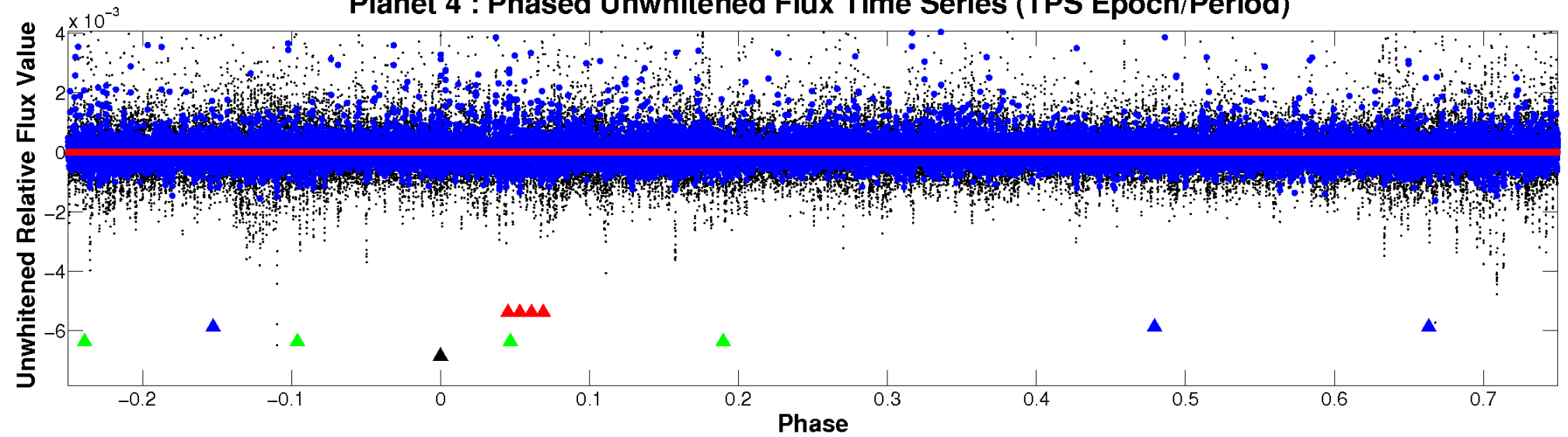
# ALT Odd/Even

TCE 010799767-04



# Non-Whitened Vs. Whitened Light Curve

**Planet 4 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

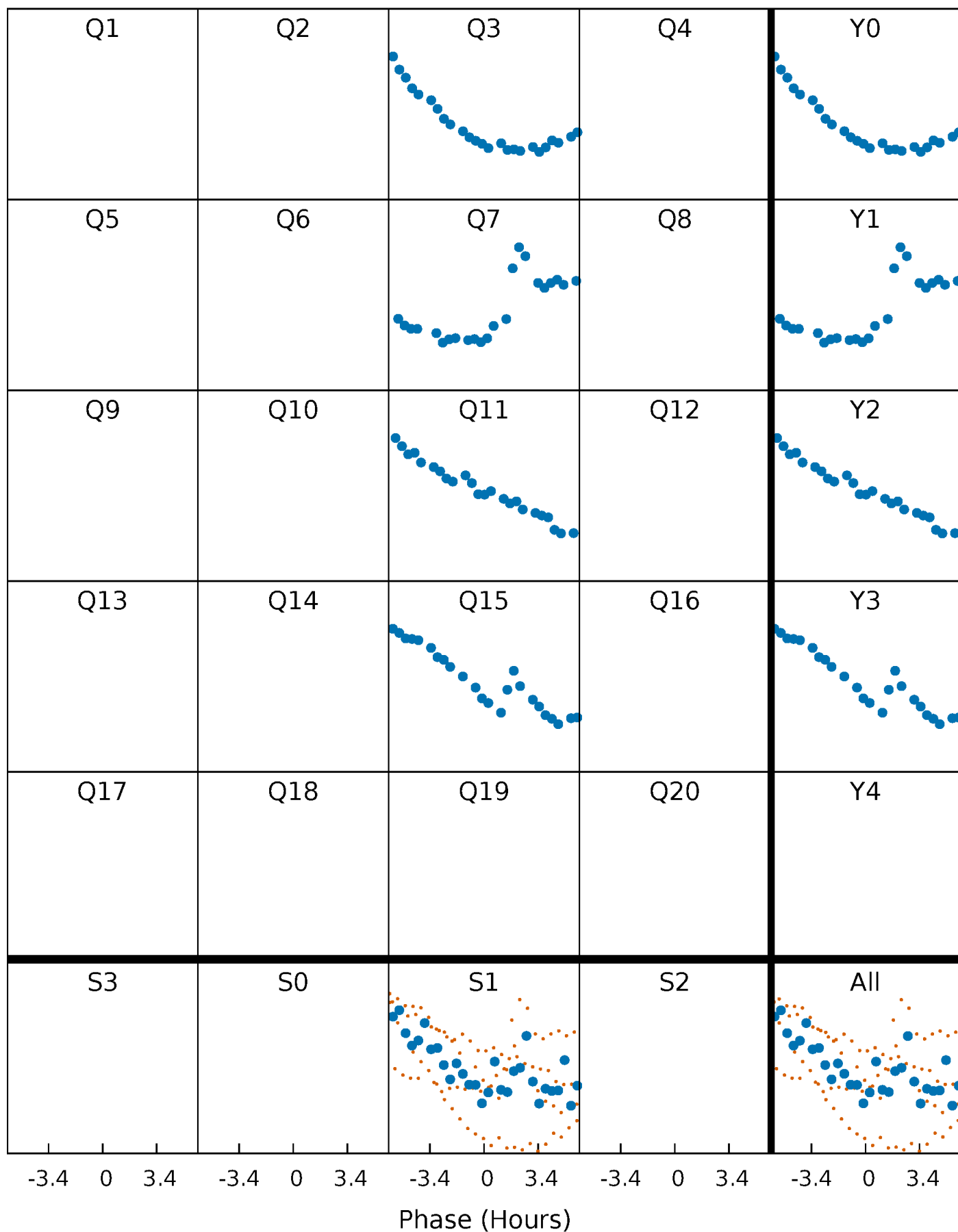


**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



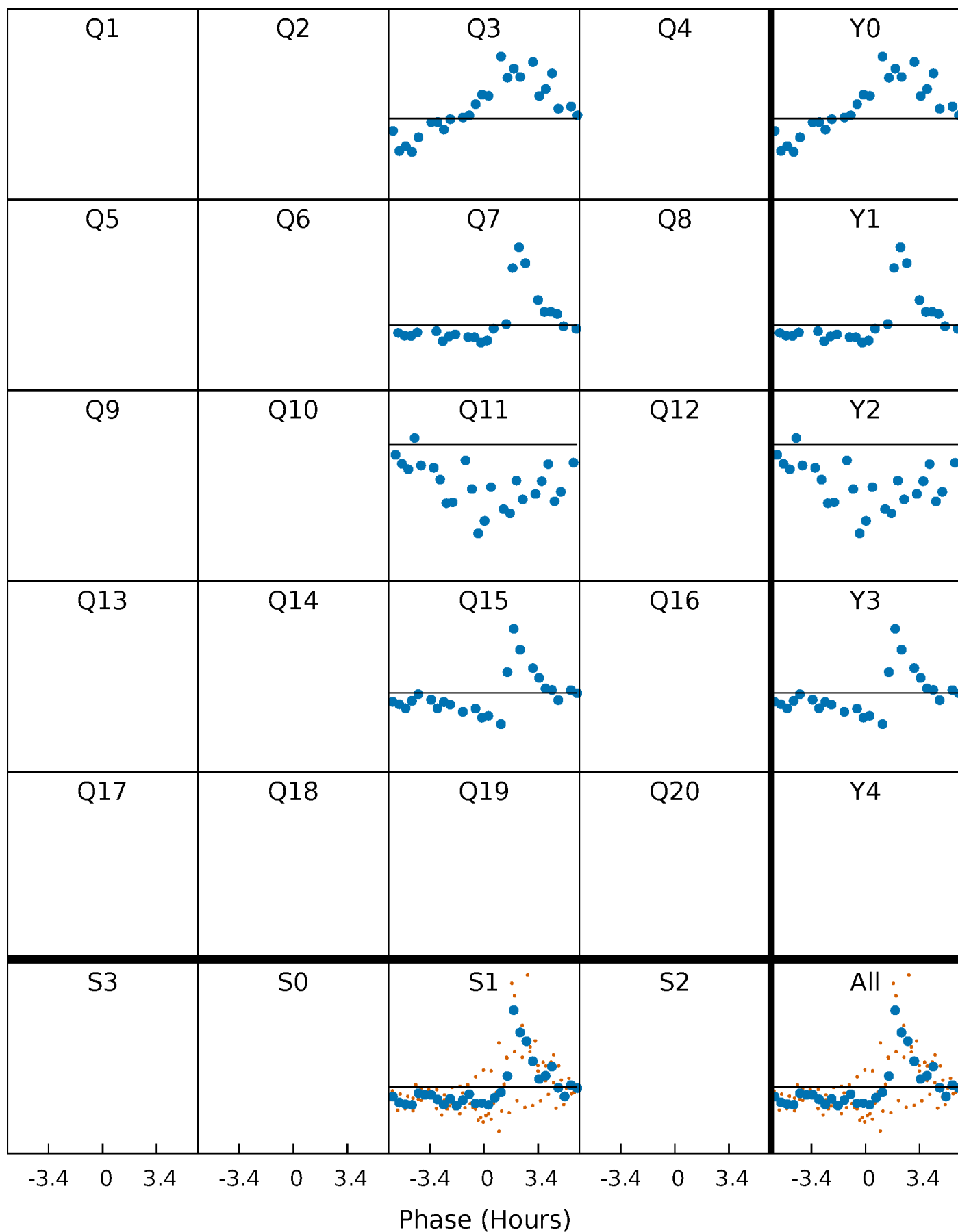
# PDC Quarter-Phased Transit Curves

TCE 010799767-04     $P=394.721944$  Days     $T_0=277.594562$  (BKJD)



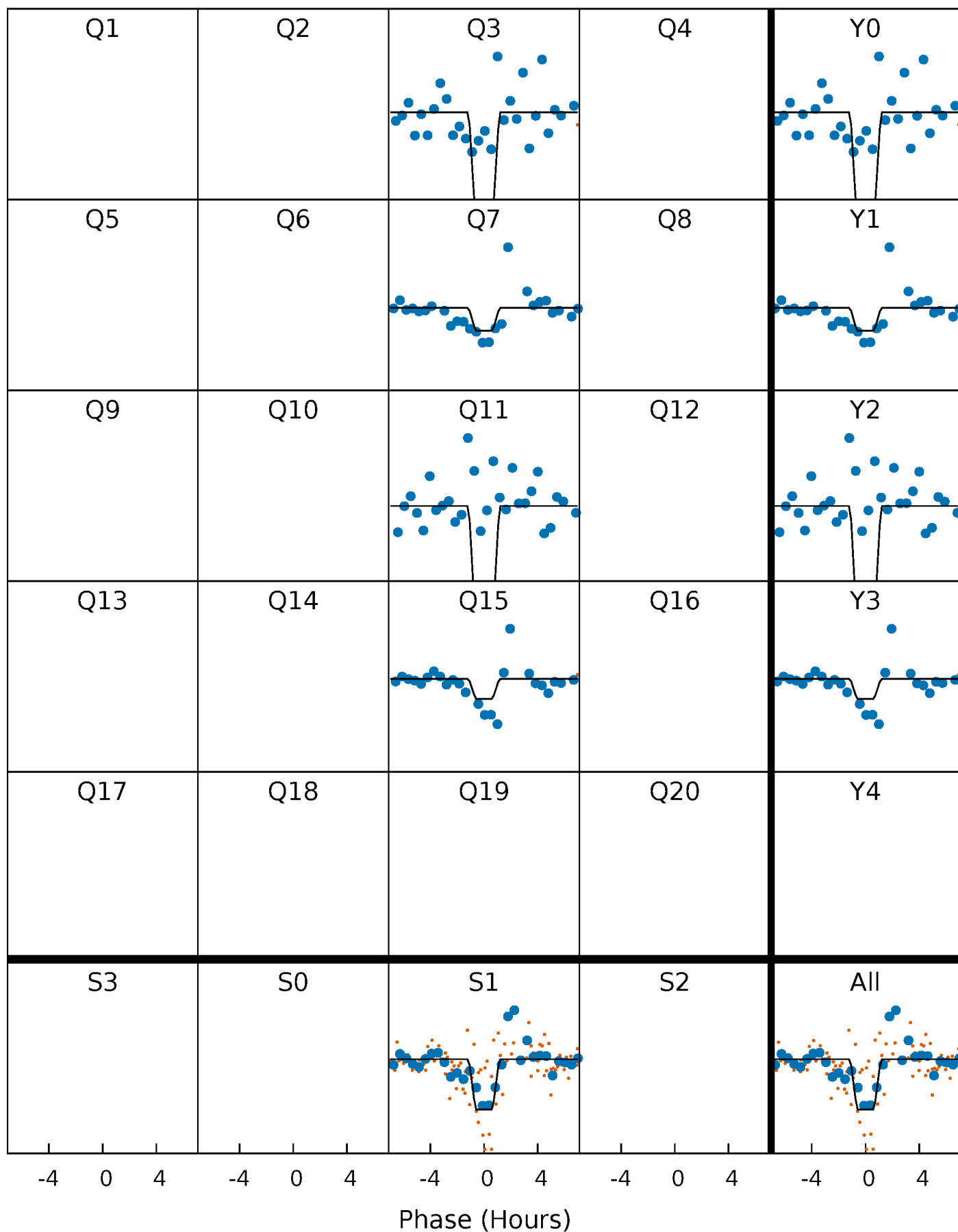
# DV Quarter-Phased Transit Curves

TCE 010799767-04     $P=394.721944$  Days     $T_0=277.594562$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

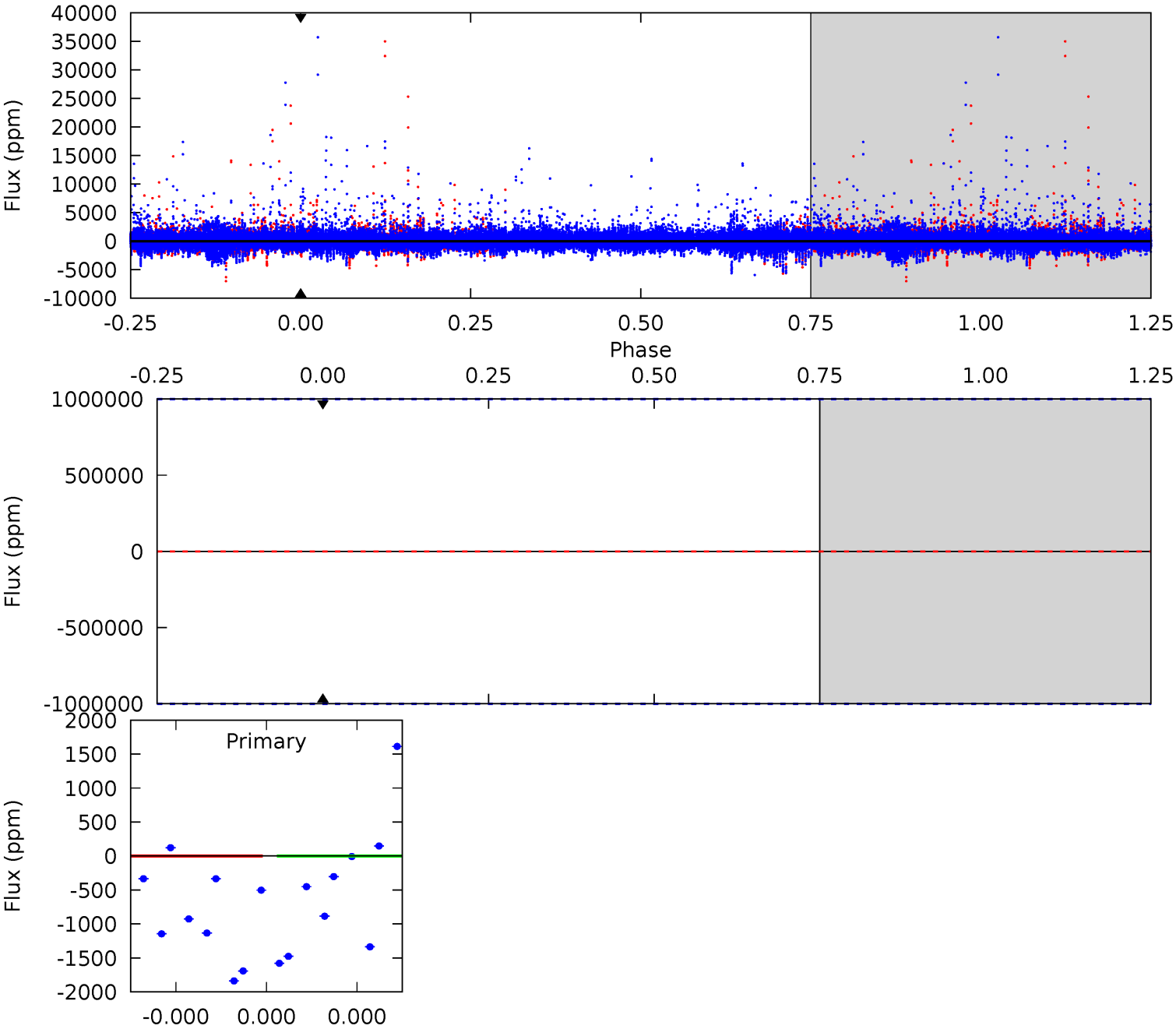
TCE 010799767-04     $P=394.721944$  Days     $T_0=277.589750$  (BKJD)



# DV Model-Shift Uniqueness Test

010799767-04, P = 394.721944 Days, E = 277.594562 Days

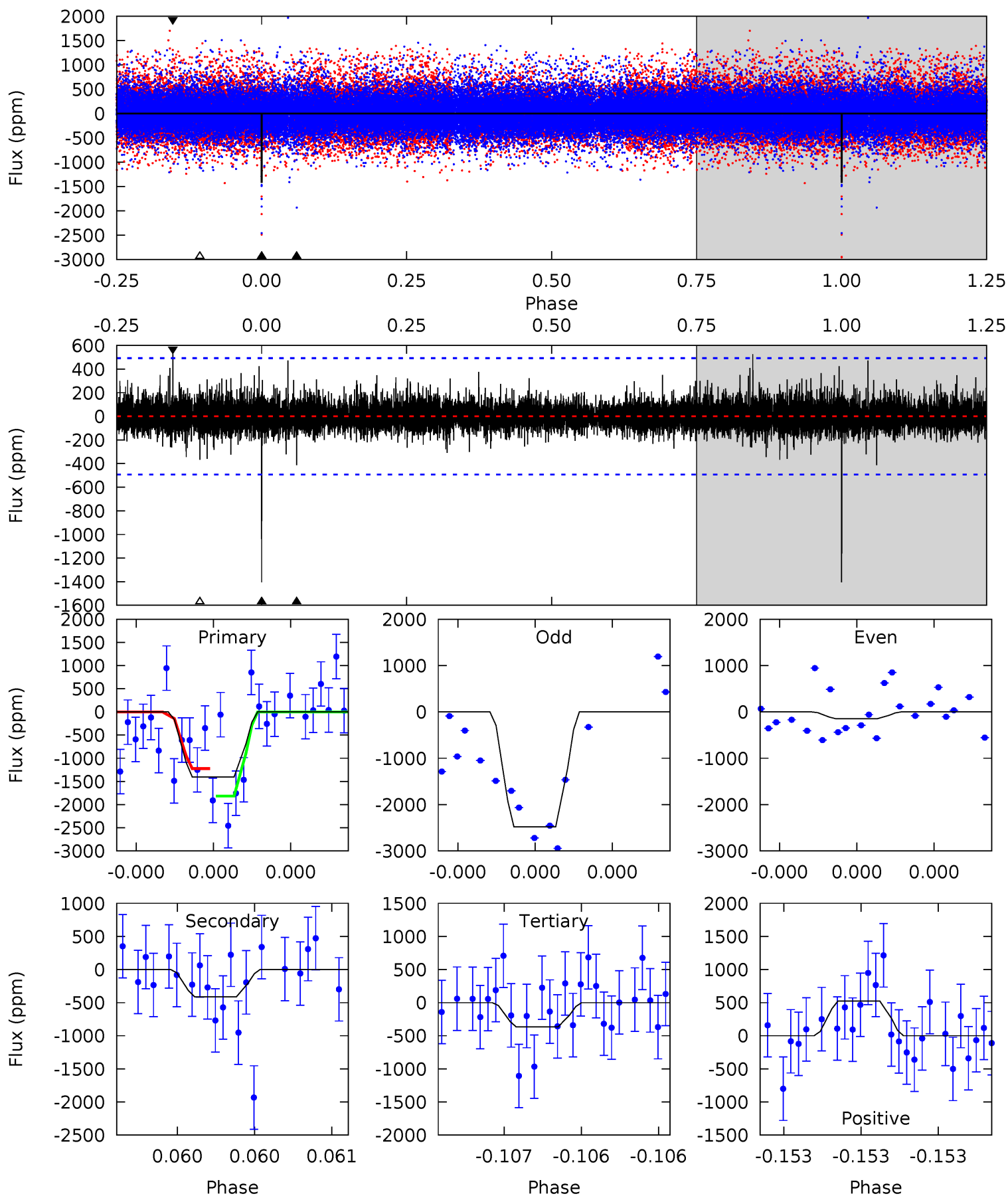
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

010799767-04, P = 394.721944 Days, E = 277.589750 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.3	4.78	4.26	6.09	5.71	3.69	0.88	12.0	10.2	0.52	-1.31	14.3	0.99	0.27	3.35





### Stellar Parameters For KIC 010799767

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5591^{+167}_{-151}$	$4.616^{+0.032}_{-0.128}$	$-0.540^{+0.300}_{-0.300}$	$0.727^{+0.138}_{-0.059}$	$0.803^{+0.079}_{-0.079}$	$2.951^{+0.481}_{-1.135}$
	+3%/-3%	+1%/-3%	+56%/-56%	+19%/-8%	+10%/-10%	+16%/-38%
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 010799767-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$7.30^{+7.03}_{-4.74}$	$303^{+15}_{-12}$	$3149^{+12690}_{-17436}$	$2818^{+1773061}_{-1446357}$
Alt.	$-412 \pm 86$	$7.55^{+6.70}_{-4.91}$	$302^{+15}_{-10}$	$3221^{+1400}_{-540}$	$3912^{+25356}_{-2890}$

$T_{\text{max}}$  = 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

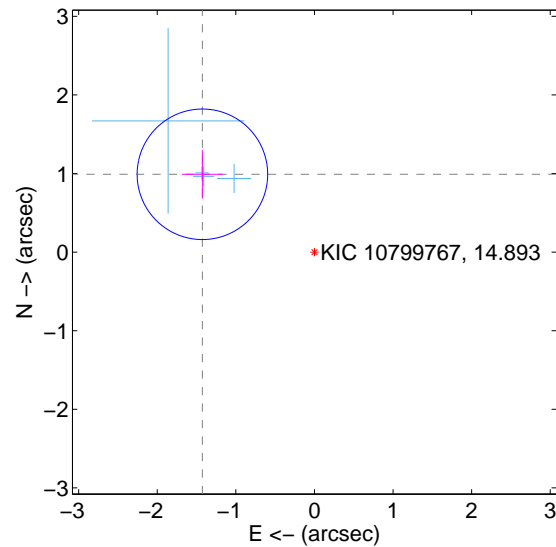
Supplemental centroid analysis for 010799767-04. Kepler magnitude: 14.89. Transit SNR -1.00

There are 4 quarters with good PRF difference image offsets

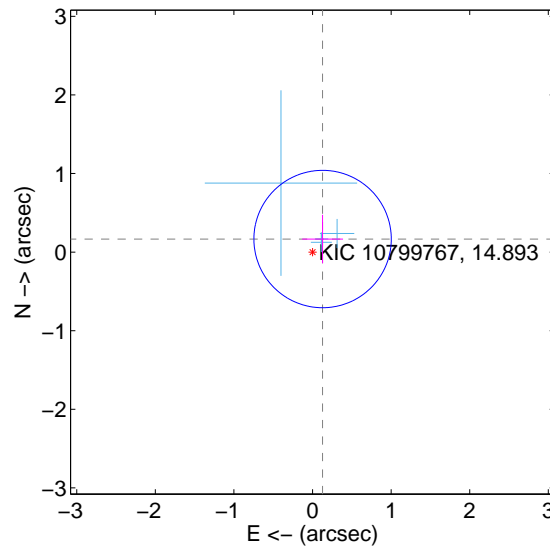
The direct PRF centroid is offset from the target star catalog position by about 1.51 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>1.736 <math>\pm</math> 0.277</b>	<b>6.27</b>	1.426 $\pm$ 0.260	0.990 $\pm$ 0.308
PRF-fit source offset from KIC position	0.210 $\pm$ 0.291	0.72	-0.128 $\pm$ 0.260	0.166 $\pm$ 0.308
photometric centroid source offset	0.49 $\pm$ 0.64	0.78	-0.45 $\pm$ 0.65	-0.20 $\pm$ 0.59

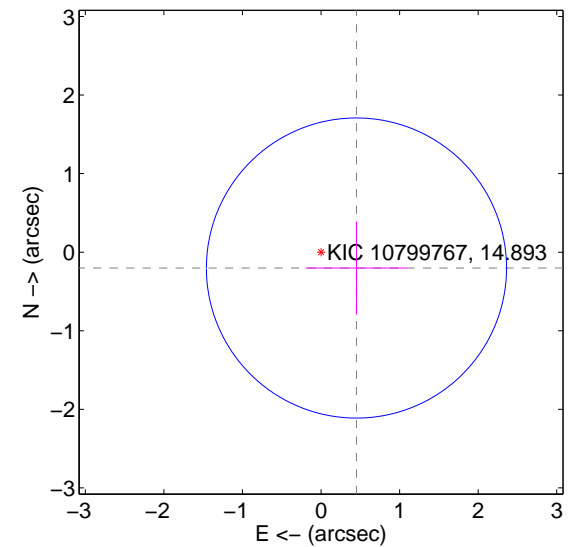
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

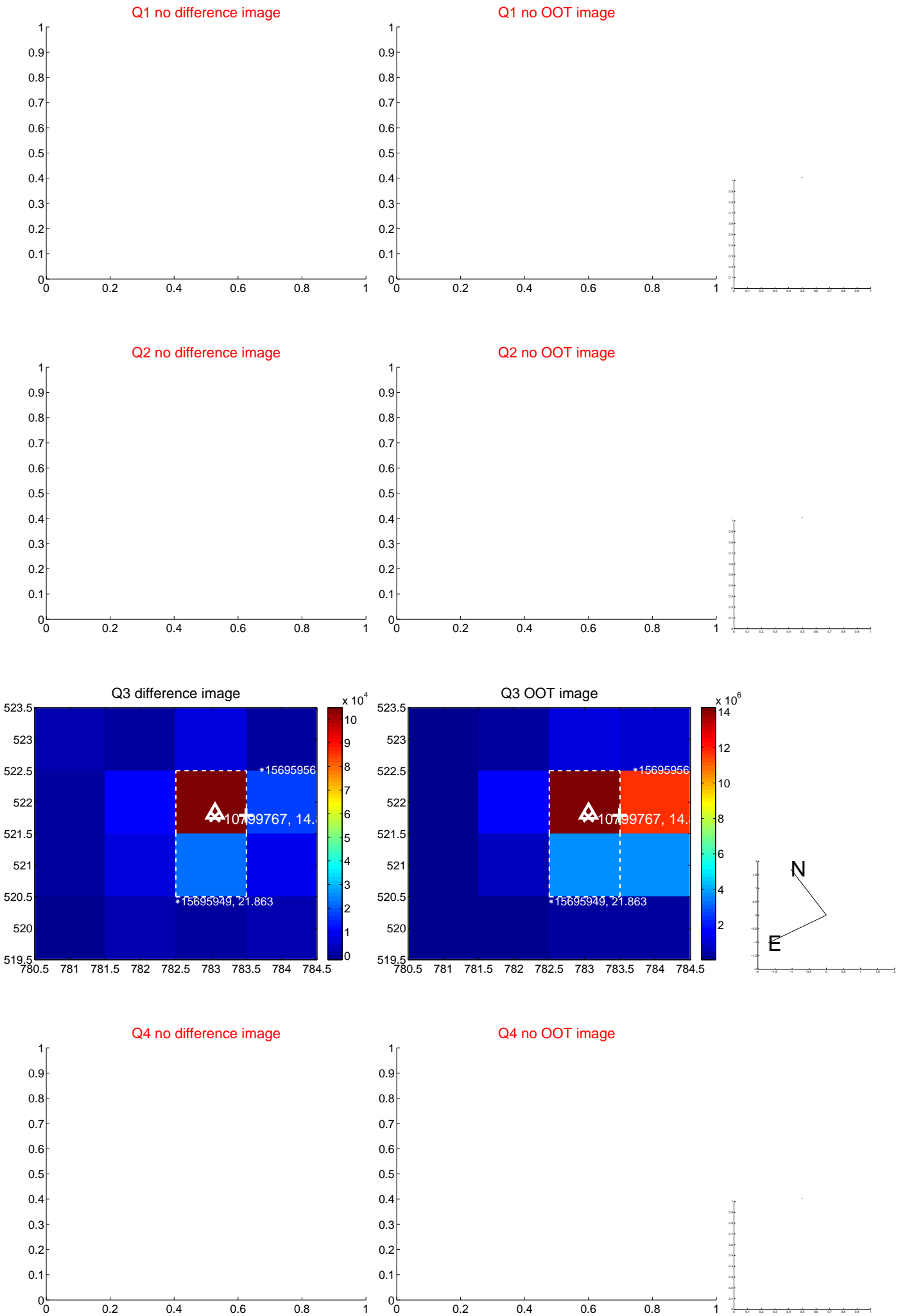


offset from photometric centroids



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.

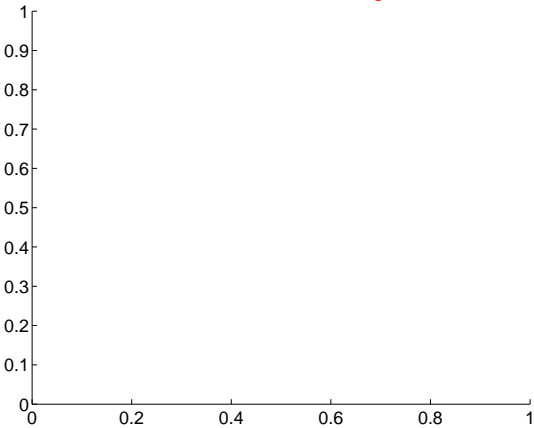
Q5 no difference image



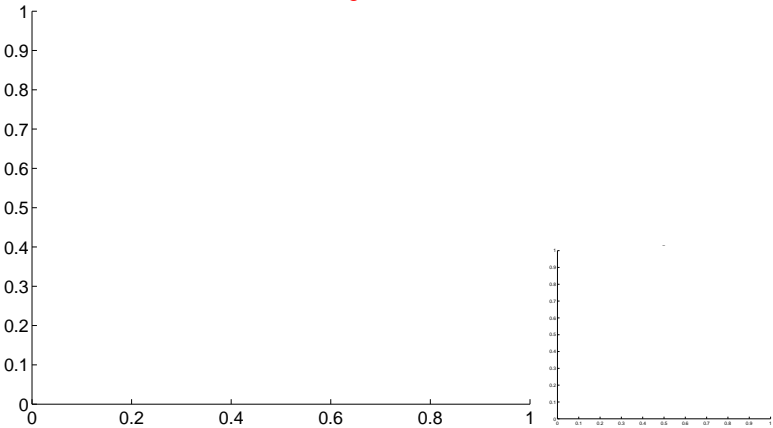
Q5 no OOT image



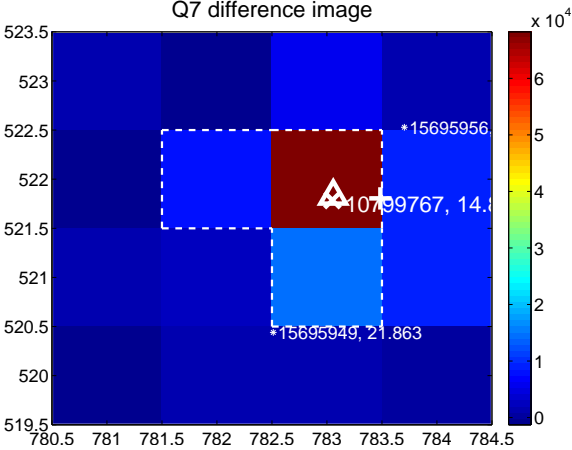
Q6 no difference image



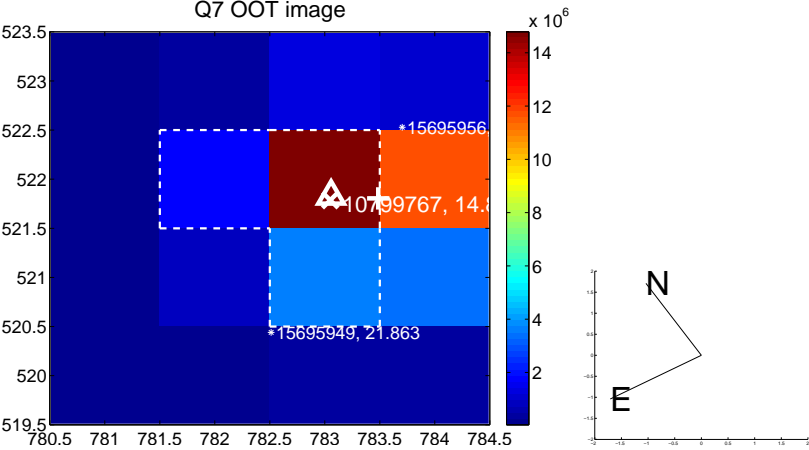
Q6 no OOT image



Q7 difference image



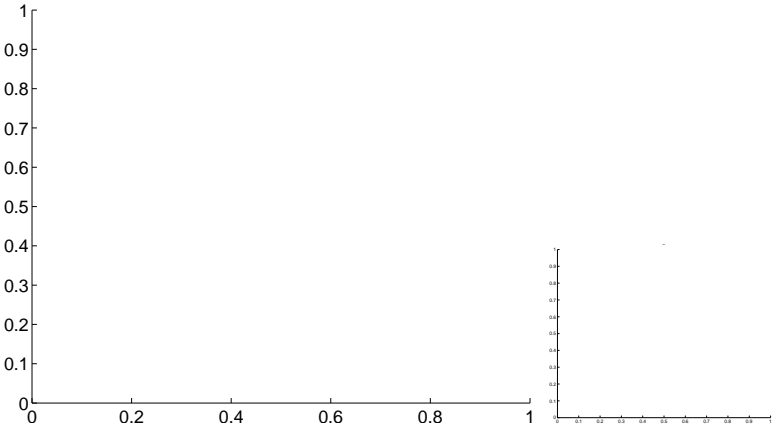
Q7 OOT image



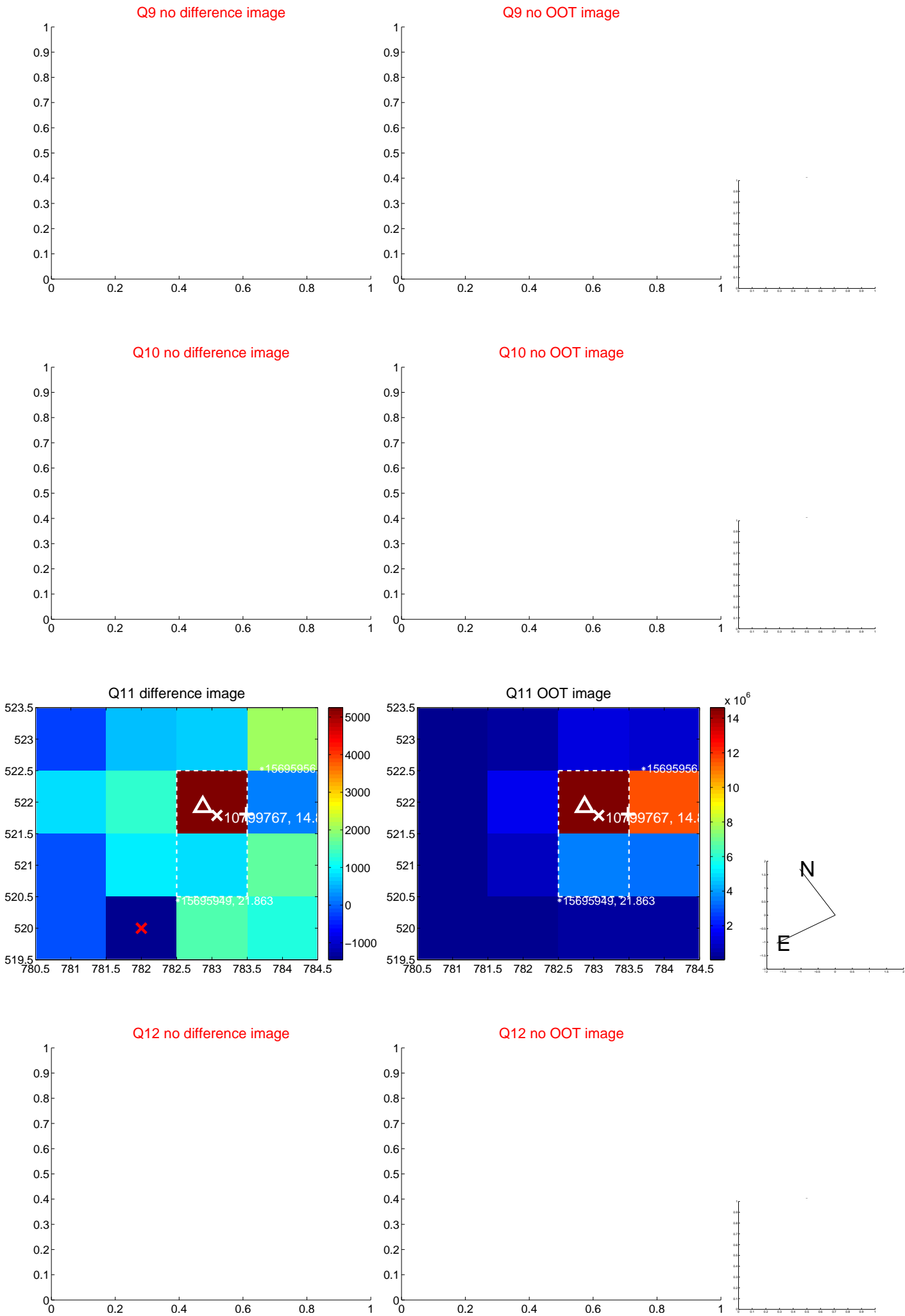
Q8 no difference image



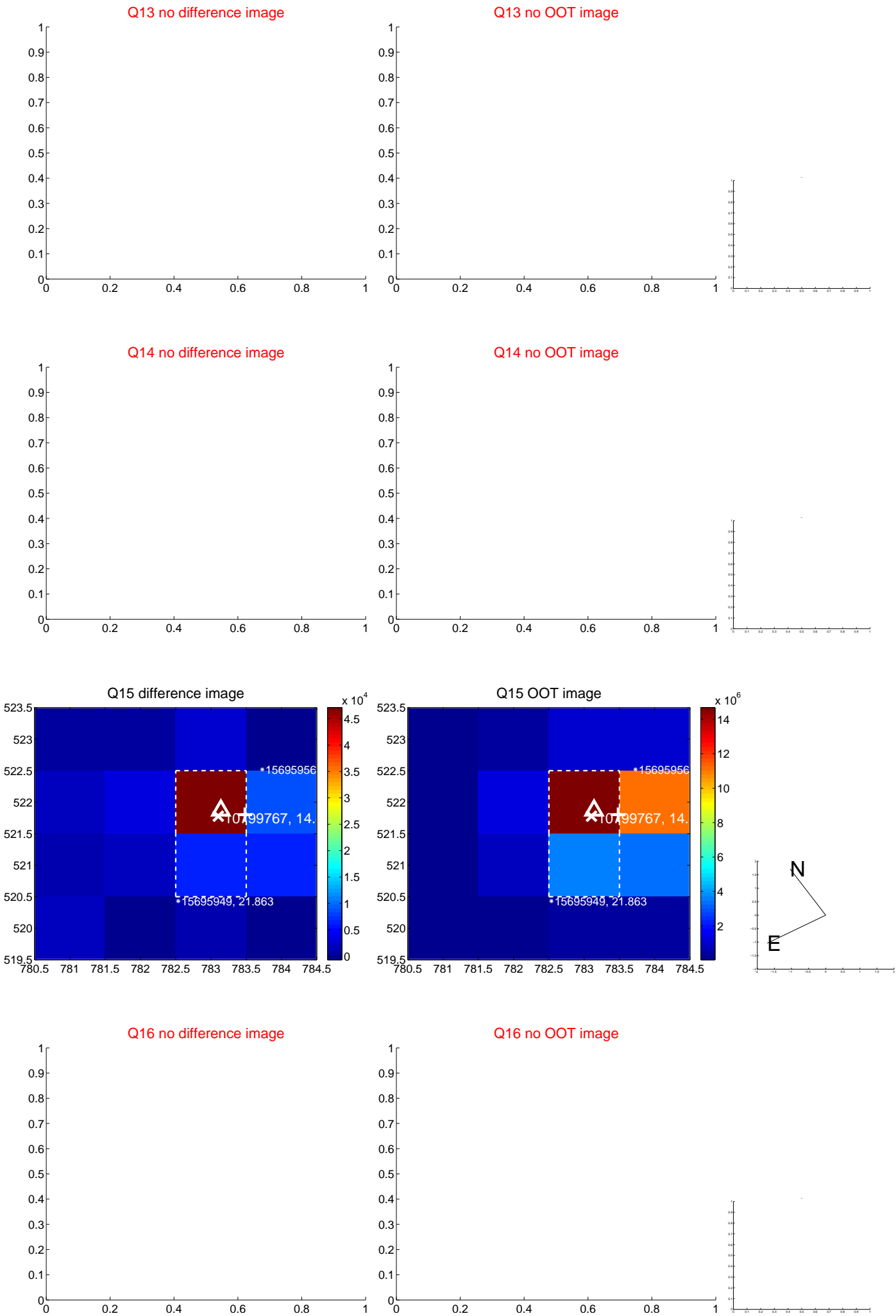
Q8 no OOT image



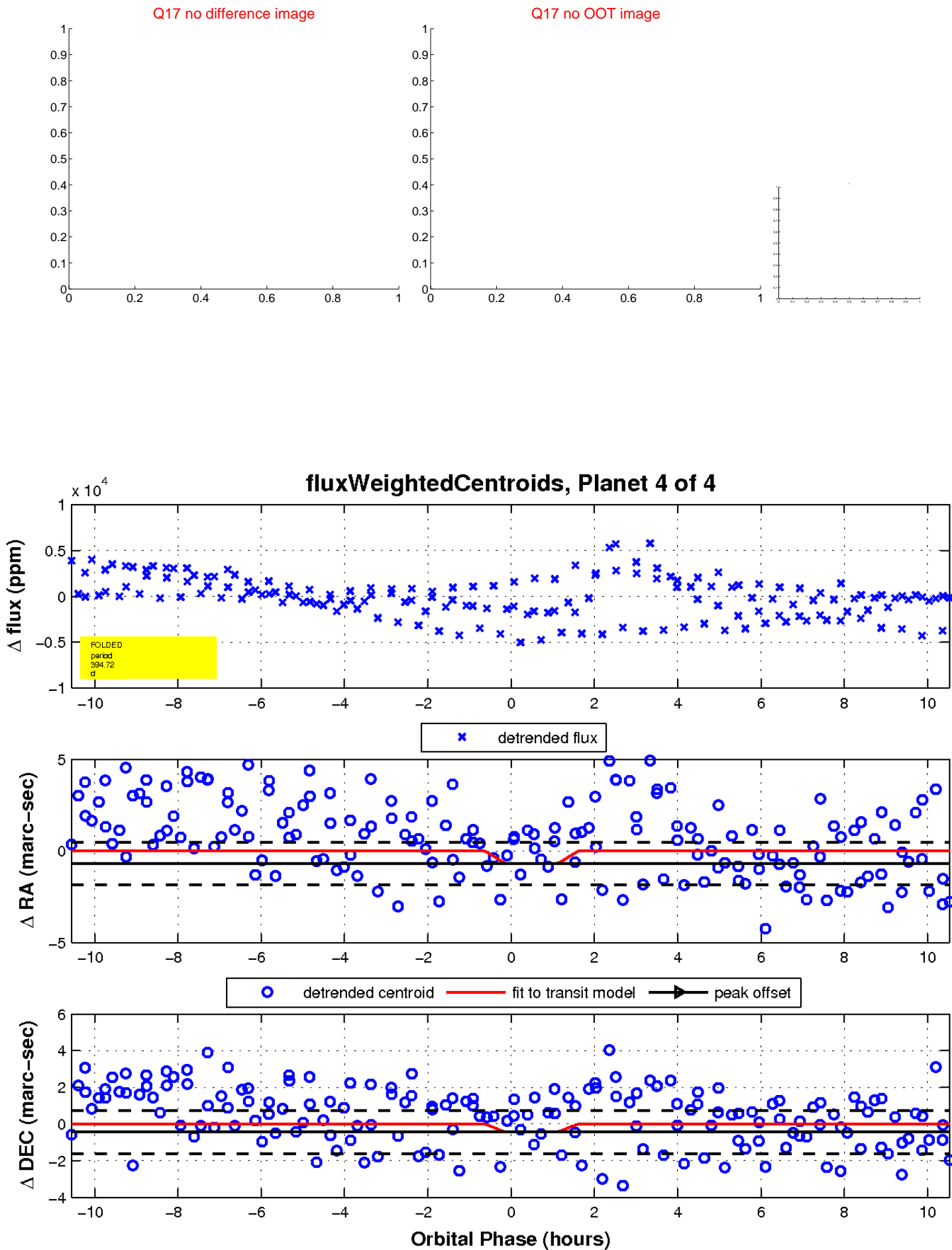
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



UKIRT Image

