

# KIC 010189523

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010189523-01	OBS	7293.01	1.013924	132.395324	207.8	1.917	48.7	7.0	0.65	5110	1.09	888.19
010189523-02	OBS	No	0.506946	131.919320	22.7	1.488	13.4	0.8	0.65	5110	0.33	2238.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010189523-01	OBS	FP	0.00	1	0	0	0	LPP_DV
010189523-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—SAME_NTL_PERIOD

**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.

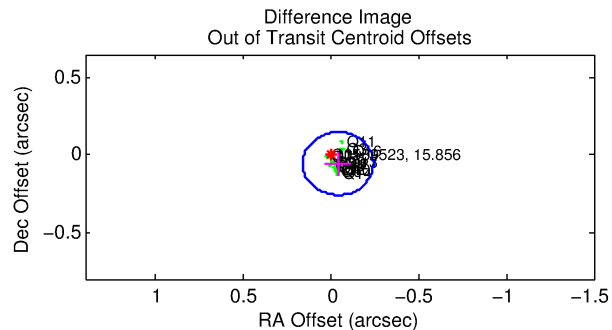
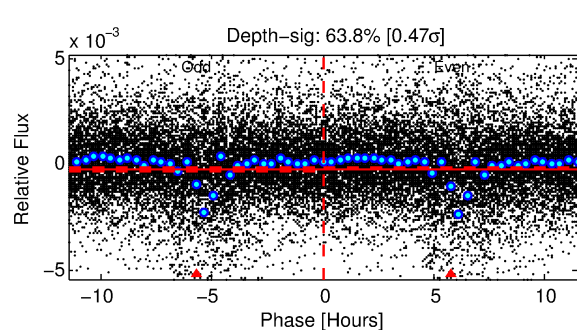
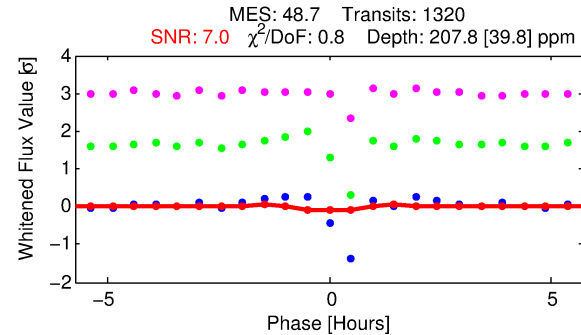
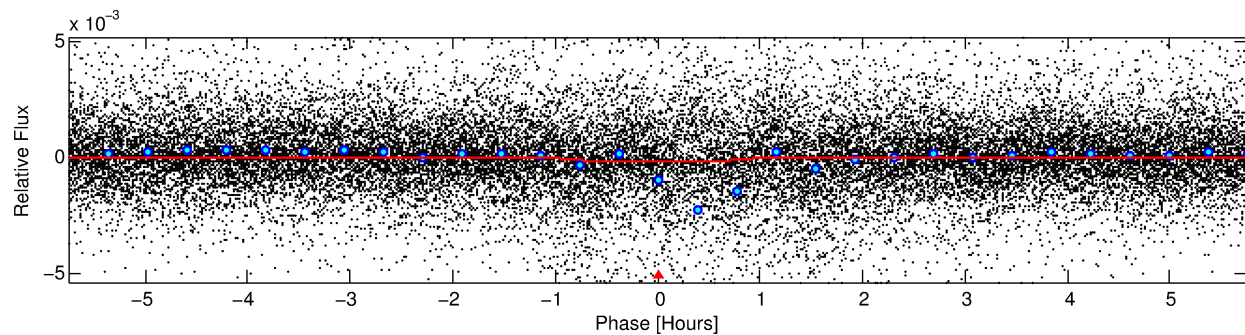
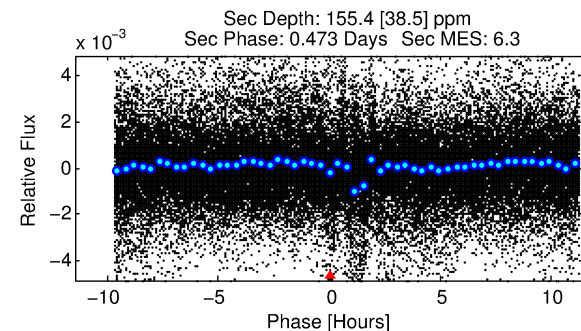
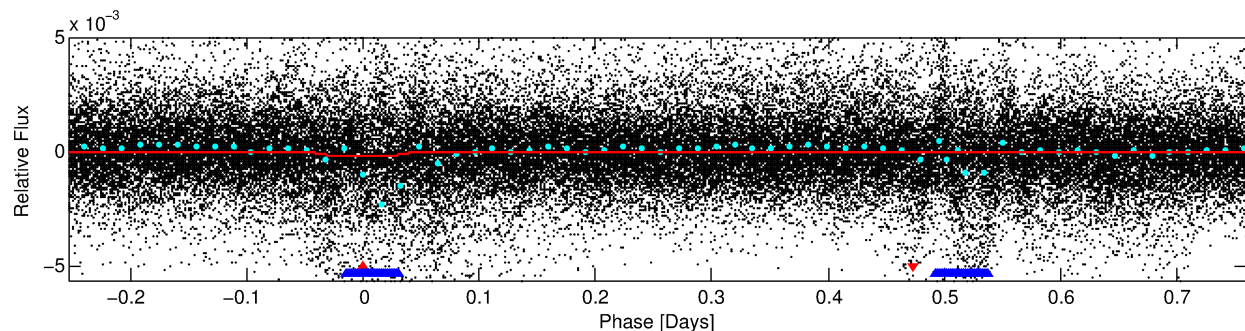
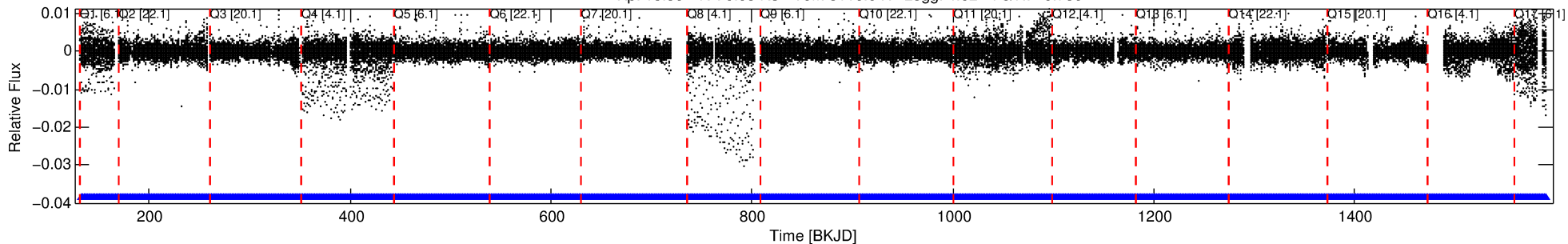
## Ephemeris Match Information For 010189523-01

No Significant Match Found

# DV One-Page Summary

KIC: 10189523 Candidate: 1 of 2 Period: 1.014 d  
KOI: K07293.01 Corr: 0.761

Kp: 15.86 R\*: 0.65 Rs Teff: 5110.0 K Logg: 4.62 Fe/H: -0.780



## DV Fit Results:

Period = 1.01392 [0.00001] d  
Epoch = 132.3953 [0.0025] BKJD  
Rp/R\* = 0.0155 [0.0144]  
a/R\* = 2.28 [7.25]  
b = 0.88 [1.08]  
Seff = 888.19 [158.50]  
Teq = 1392 [62] K  
Rp = 1.09 [1.02] Re  
a = 0.0170 [0.0014] AU  
Ag = 20.54 [38.62] [0.51σ]  
Teffp = 4582 [2155] K [1.48σ]

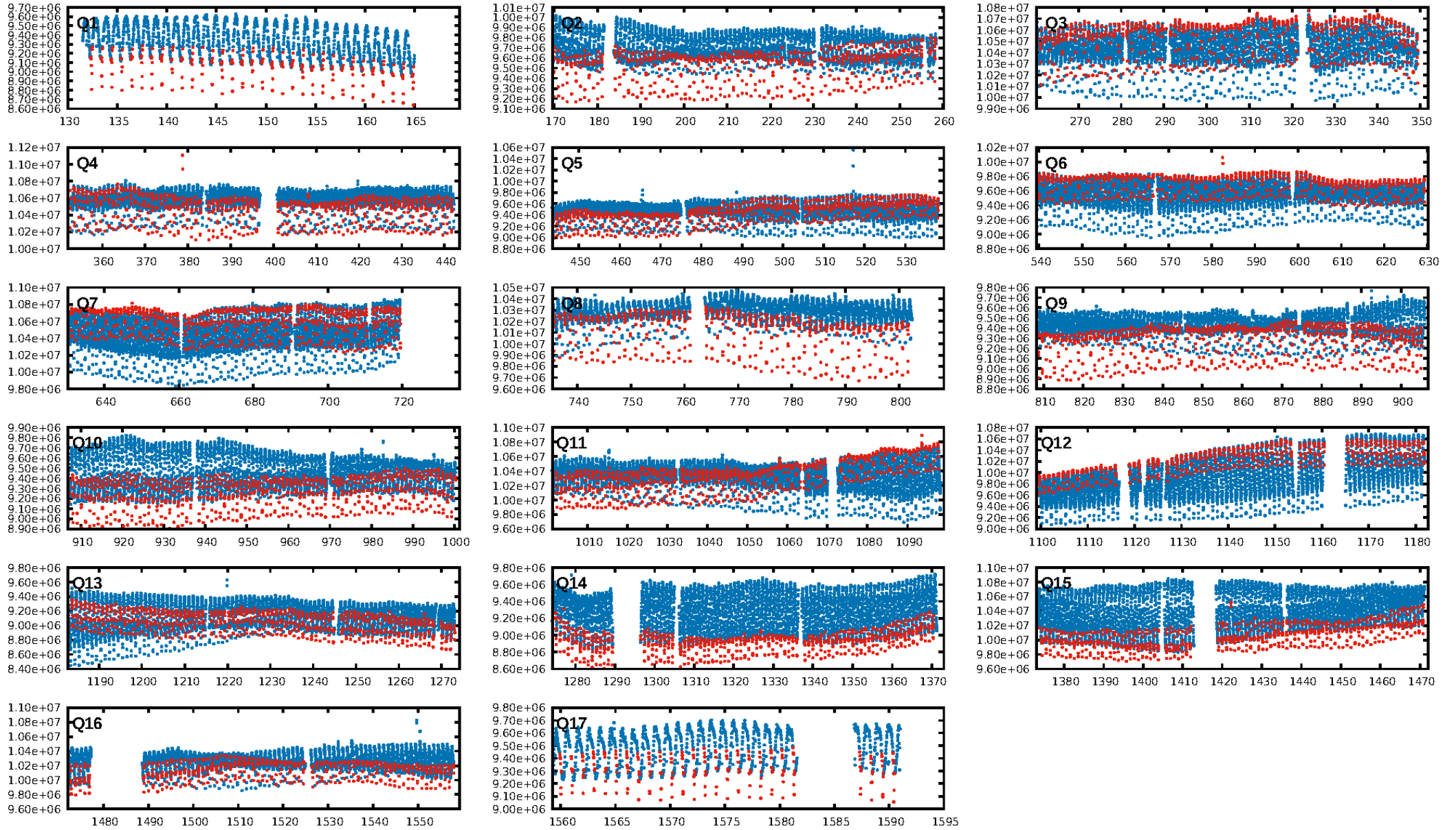
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.01σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [1261/1261]  
**GhostDiagnostic-chr: 0.9378**  
Centroid-sig: 27.3%  
Centroid-so: 0.973 arcsec [0.99σ]  
OotOffset-rm: 0.068 arcsec [1.01σ]  
KicOffset-rm: 0.205 arcsec [2.91σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:50:25 Z

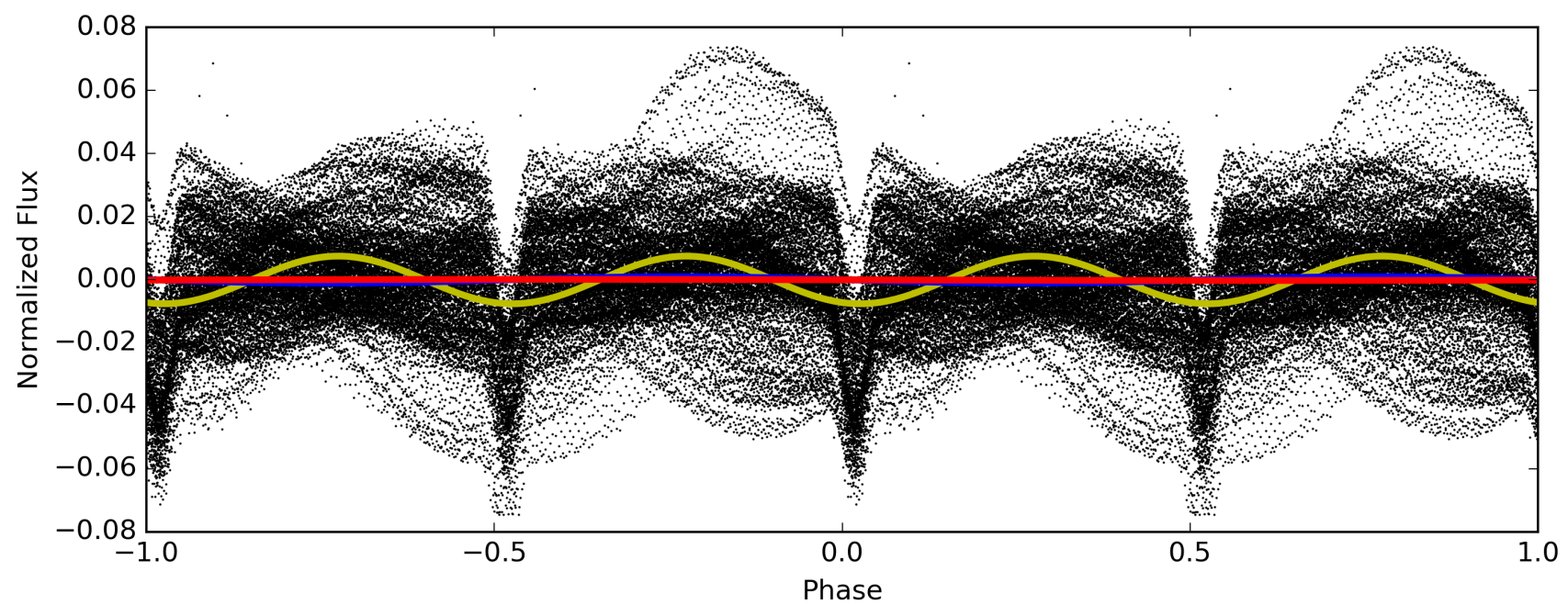
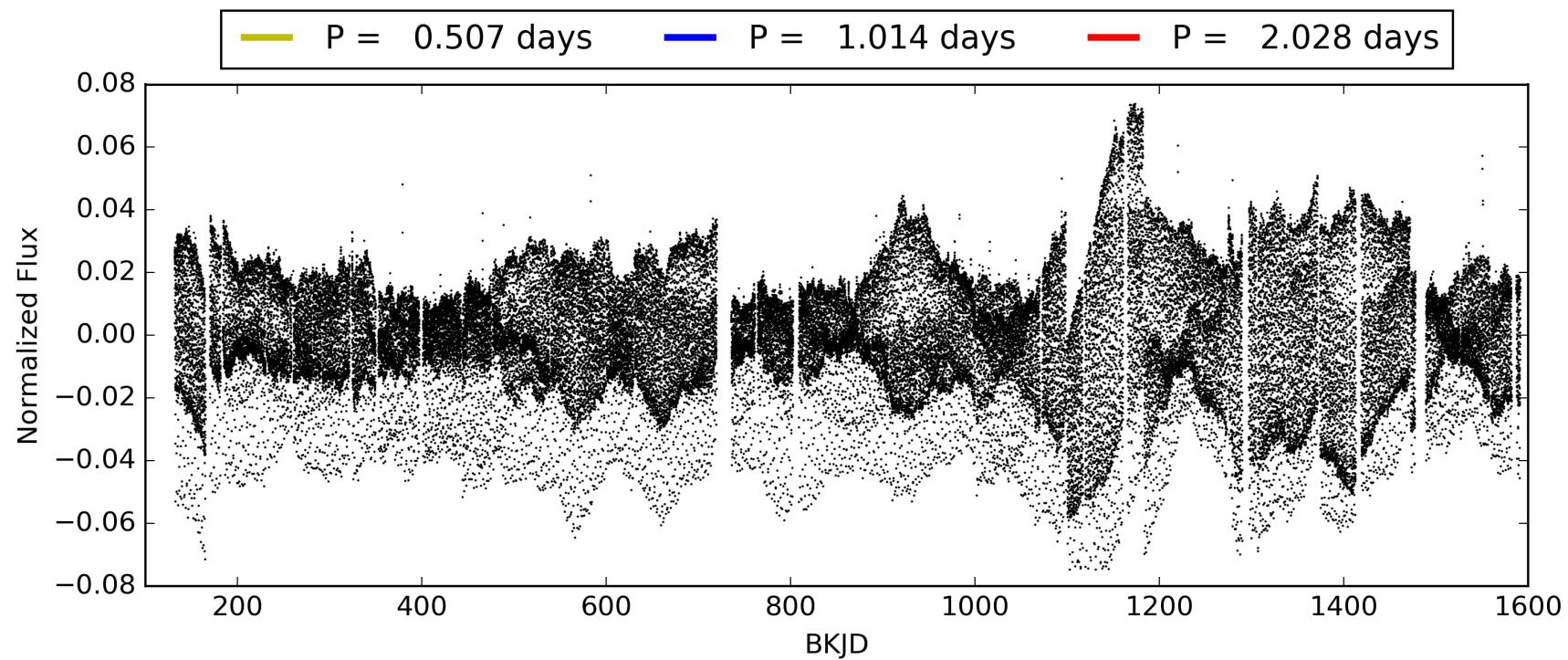
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010189523-01, PDC Light Curves



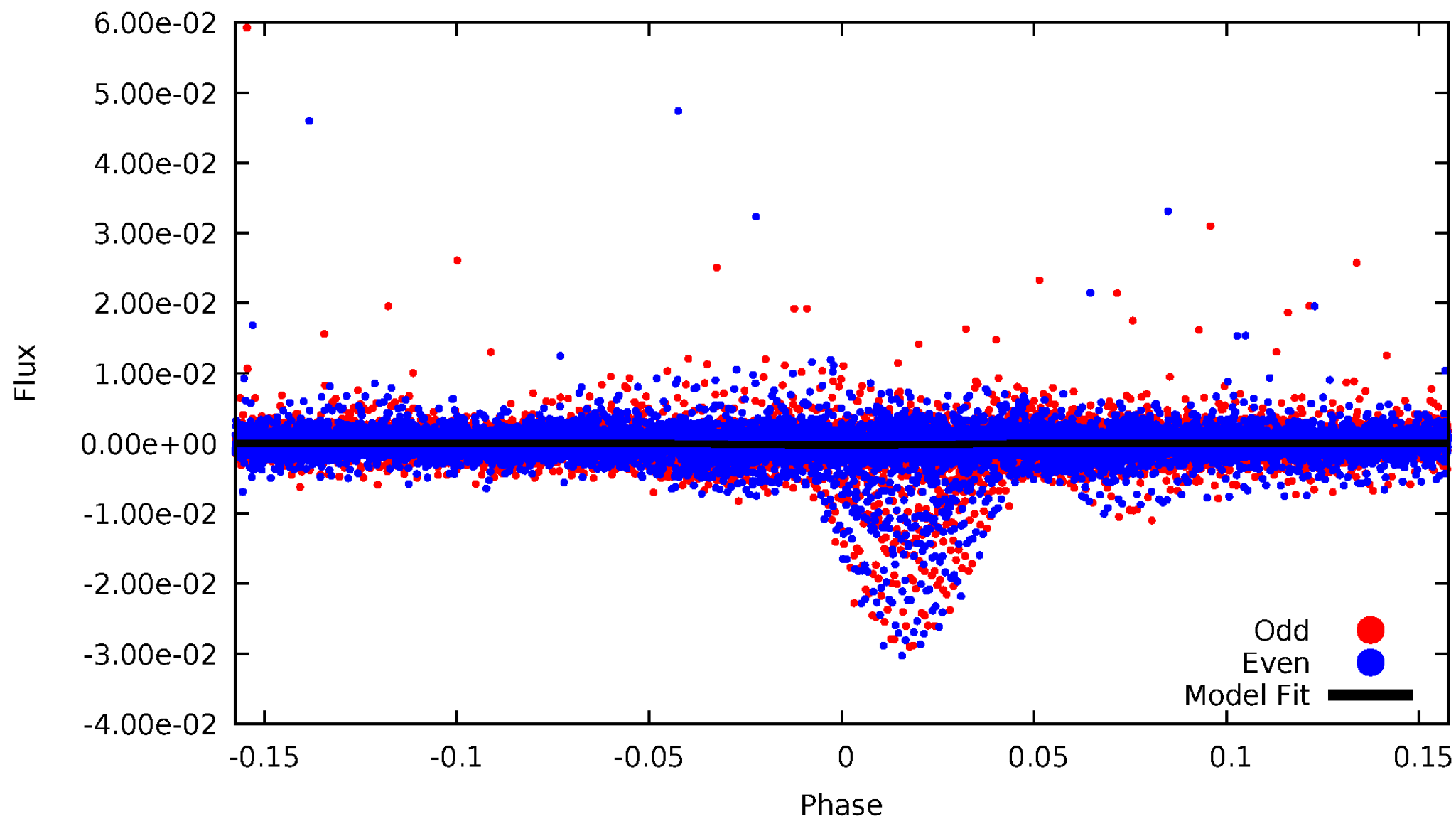


TCE 010189523-01



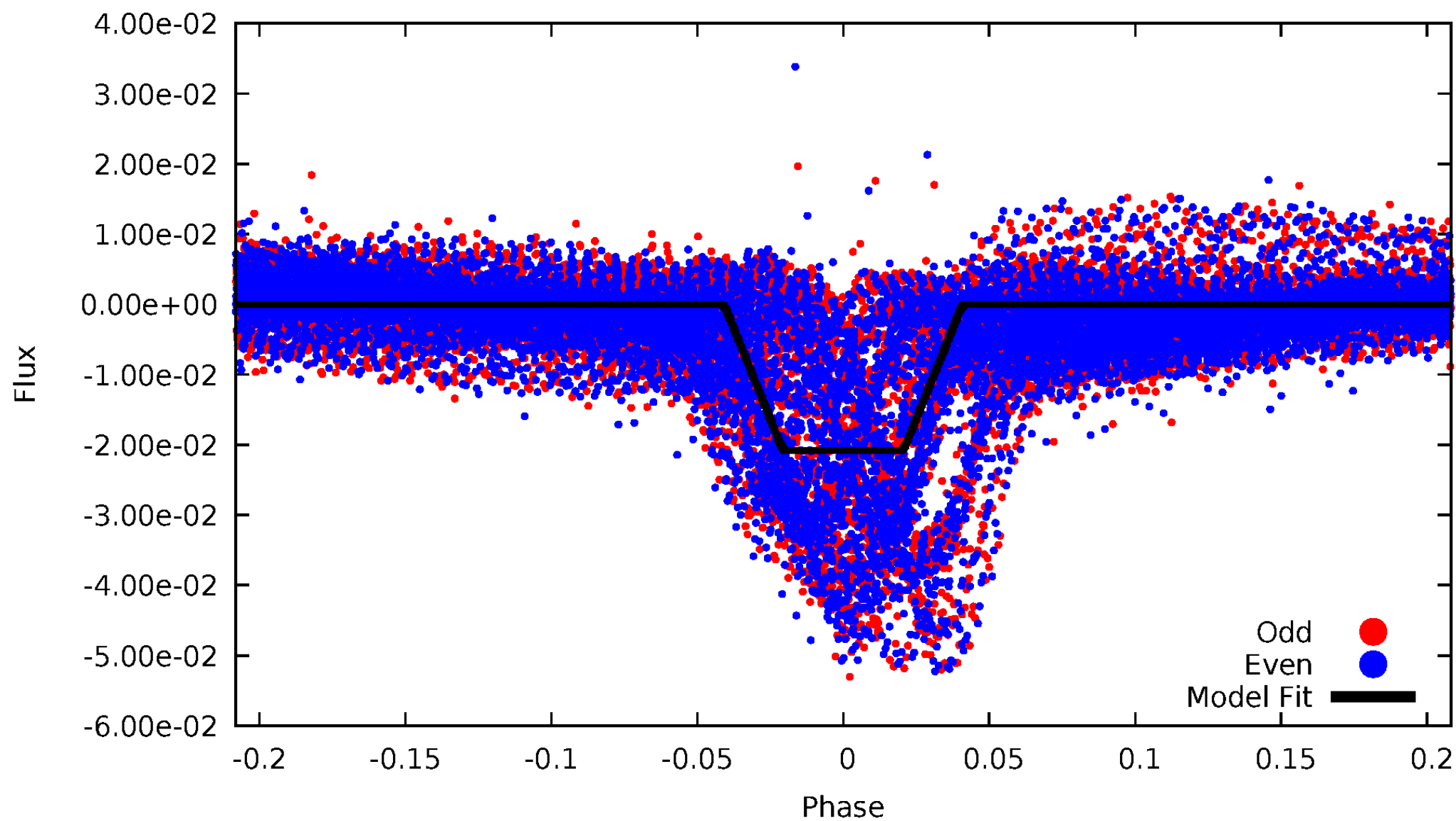
# DV Odd/Even

TCE 010189523-01

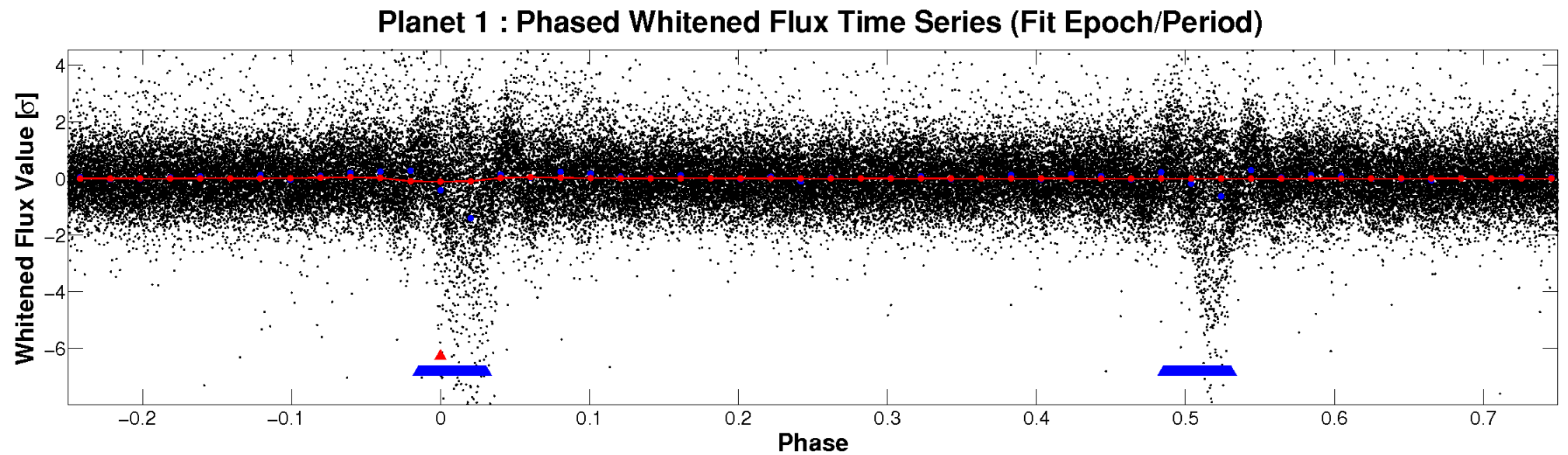
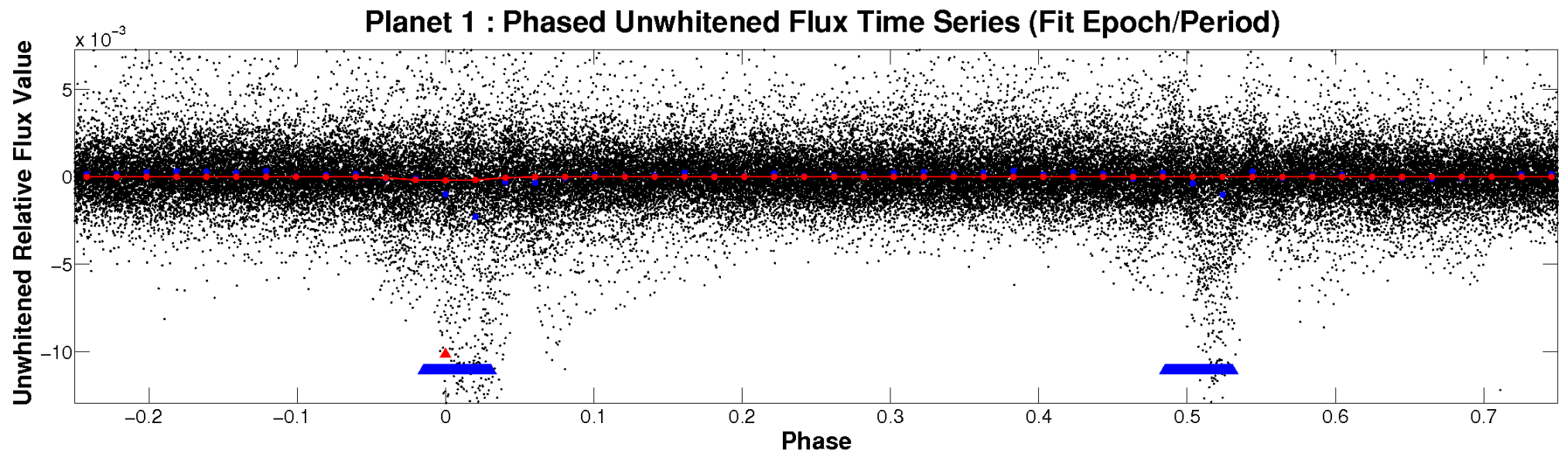


# ALT Odd/Even

TCE 010189523-01

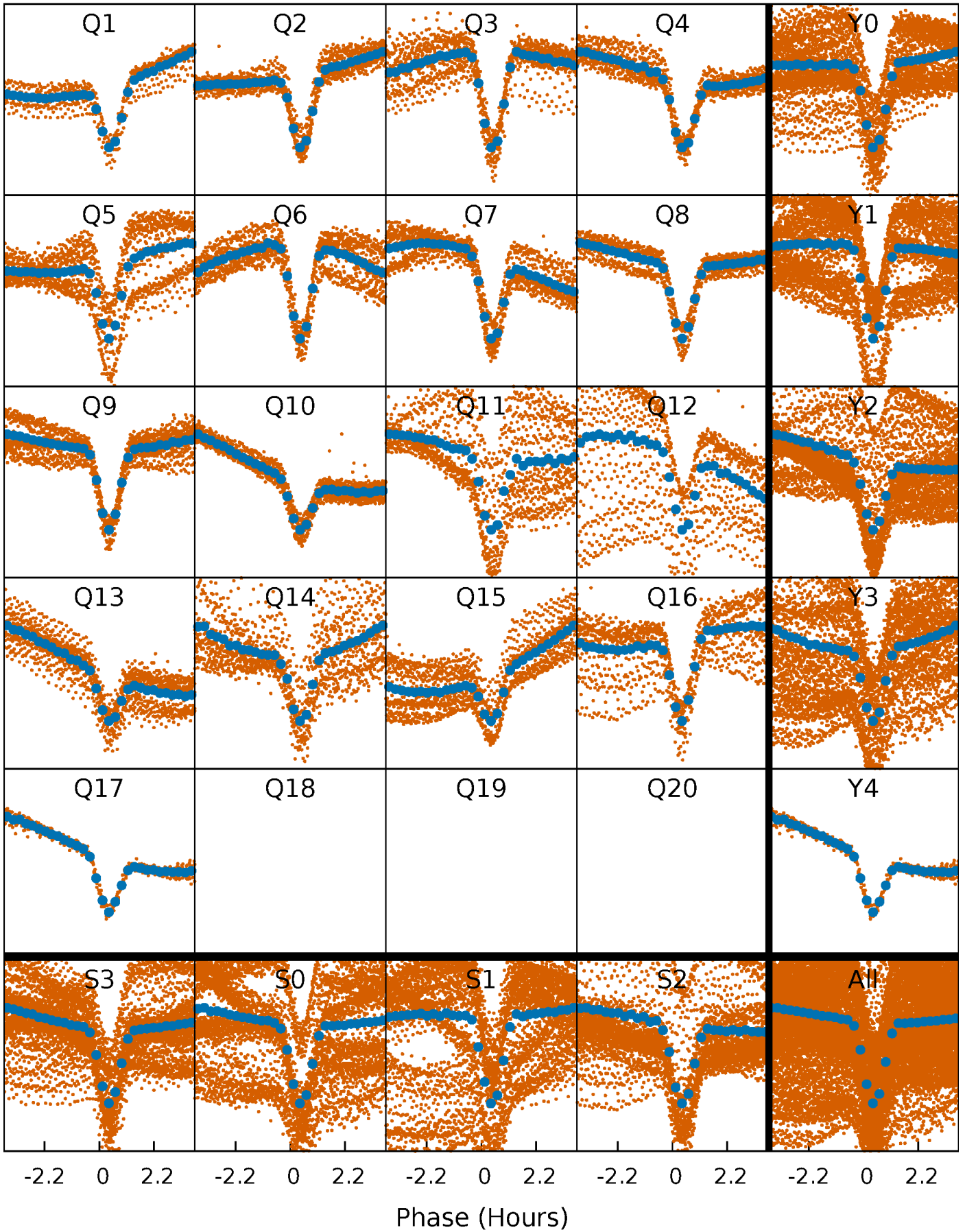


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

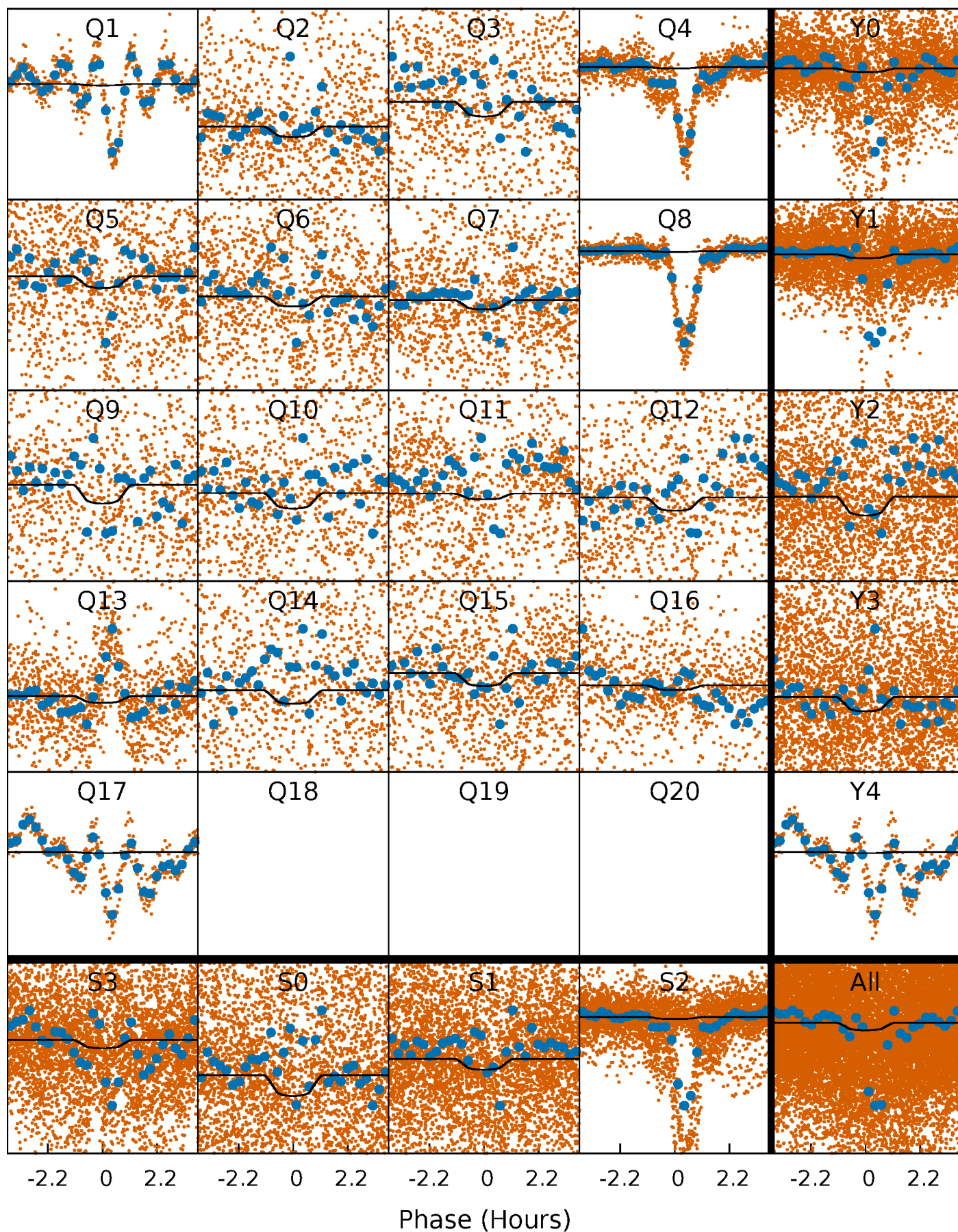
TCE 010189523-01 P= 1.013924 Days  $T_0=132.395324$  (BKJD)





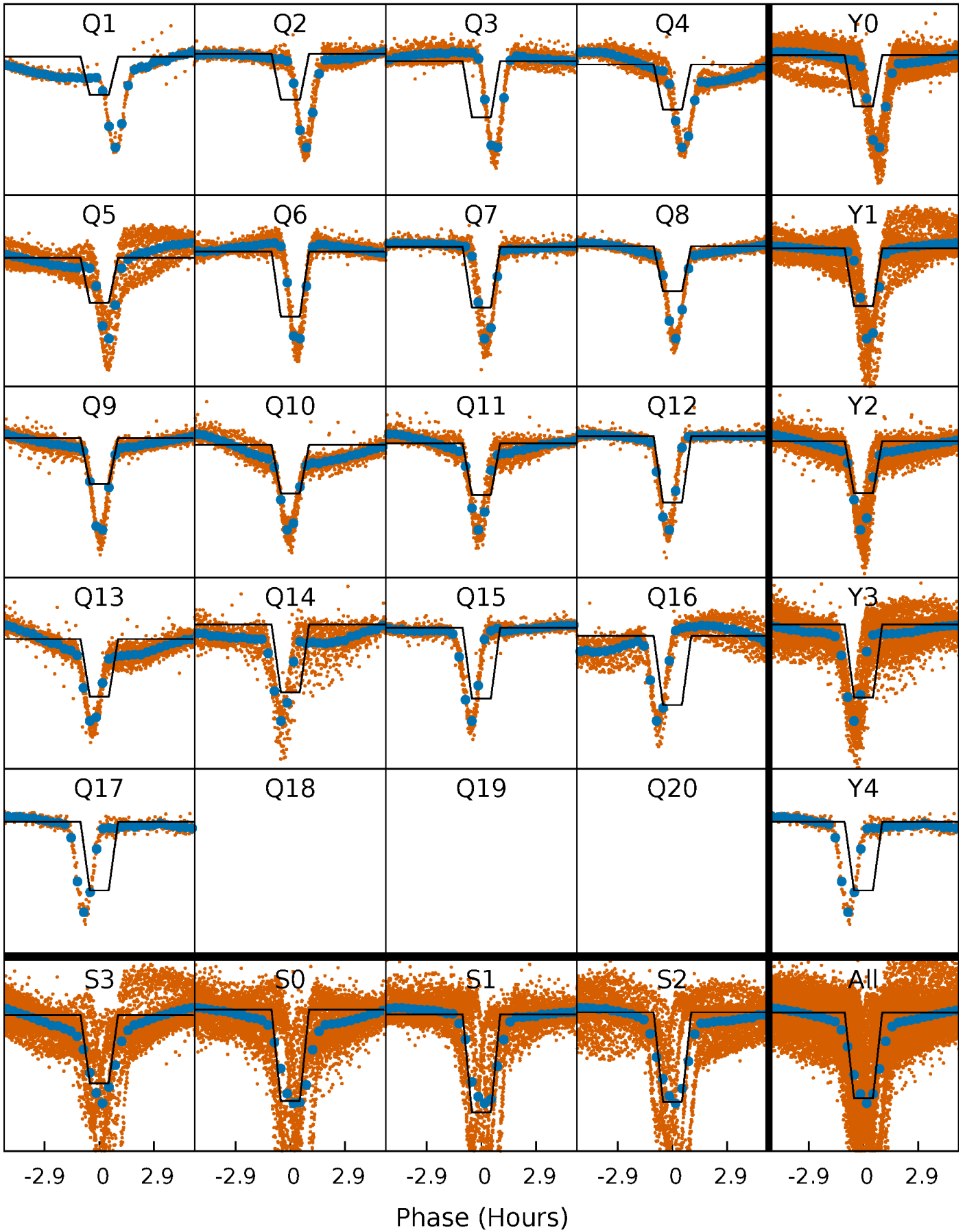
# DV Quarter-Phased Transit Curves

TCE 010189523-01   P= 1.013924 Days    $T_0=132.395324$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

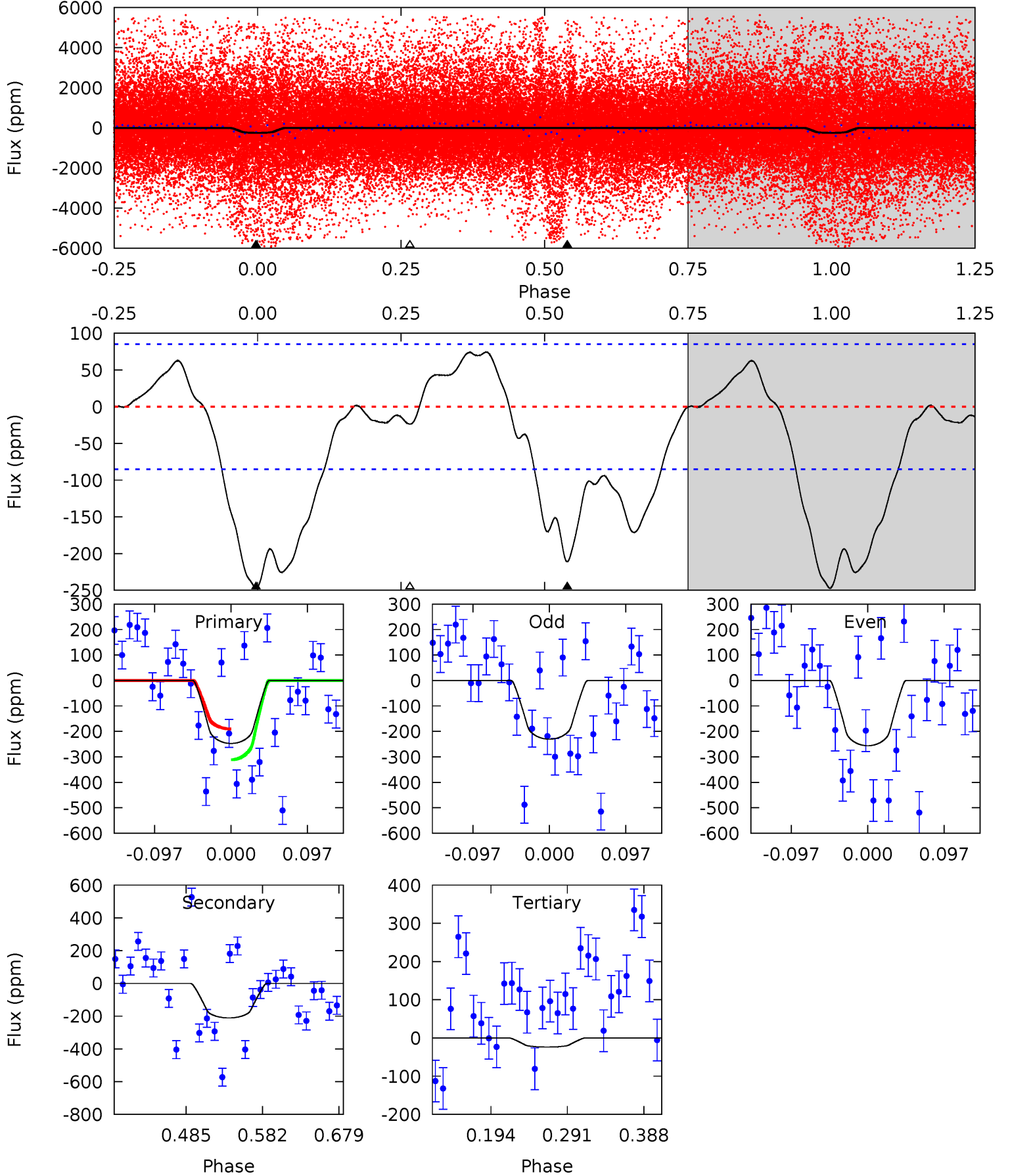
TCE 010189523-01 P= 1.013970 Days  $T_0=132.378324$  (BKJD)



# DV Model-Shift Uniqueness Test

010189523-01, P = 1.013924 Days, E = 131.381400 Days

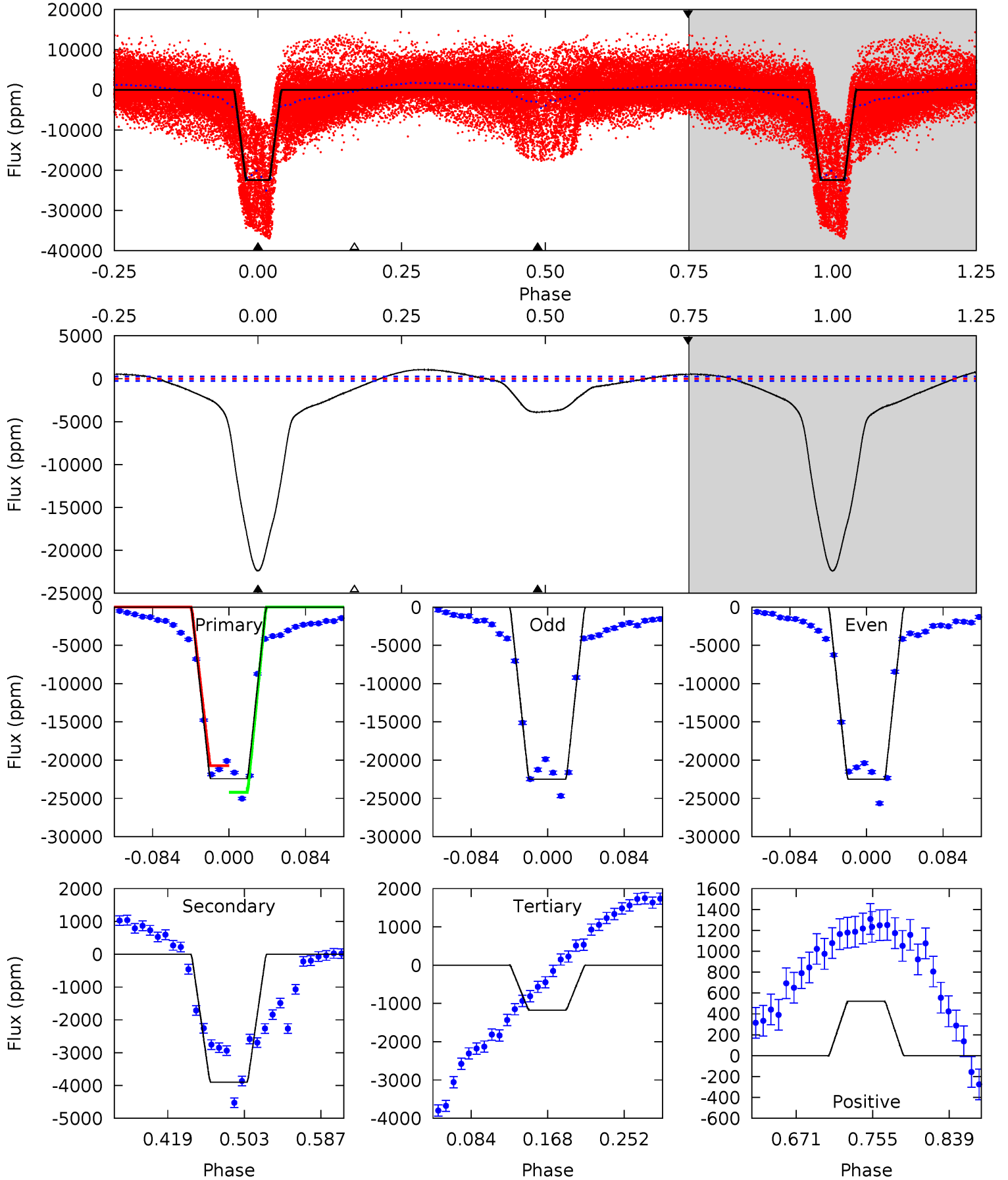
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	11.3	1.27	0	4.57	1.66	3.37	12.0	13.3	10.1	11.3	0.69	2.70	0.23	3.27



# Alt Model-Shift Uniqueness Test

010189523-01, P = 1.013970 Days, E = 131.364354 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
394.7	68.6	20.7	9.19	4.60	1.73	19.1	374.0	385.5	47.9	59.4	0.03	1.04	0.04	0





### Stellar Parameters For KIC 010189523

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5110^{+169}_{-153}$	$4.618^{+0.066}_{-0.044}$	$-0.780^{+0.300}_{-0.300}$	$0.647^{+0.062}_{-0.057}$	$0.632^{+0.069}_{-0.028}$	$3.292^{+0.922}_{-0.556}$
	+3%/-3%	+1%/-1%	+38%/-38%	+10%/-9%	+11%/-4%	+28%/-17%
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 010189523-01 / KOI 7293.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-211 \pm 19$	$1.24^{+1.01}_{-0.78}$	$1936^{+80}_{-75}$	$4680^{+2961}_{-935}$	$22^{+131}_{-15}$
Alt.	$-3898 \pm 57$	$10.16^{+1.19}_{-1.11}$	$1937^{+78}_{-70}$	$3699^{+177}_{-147}$	$6.092^{+1.639}_{-1.219}$

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

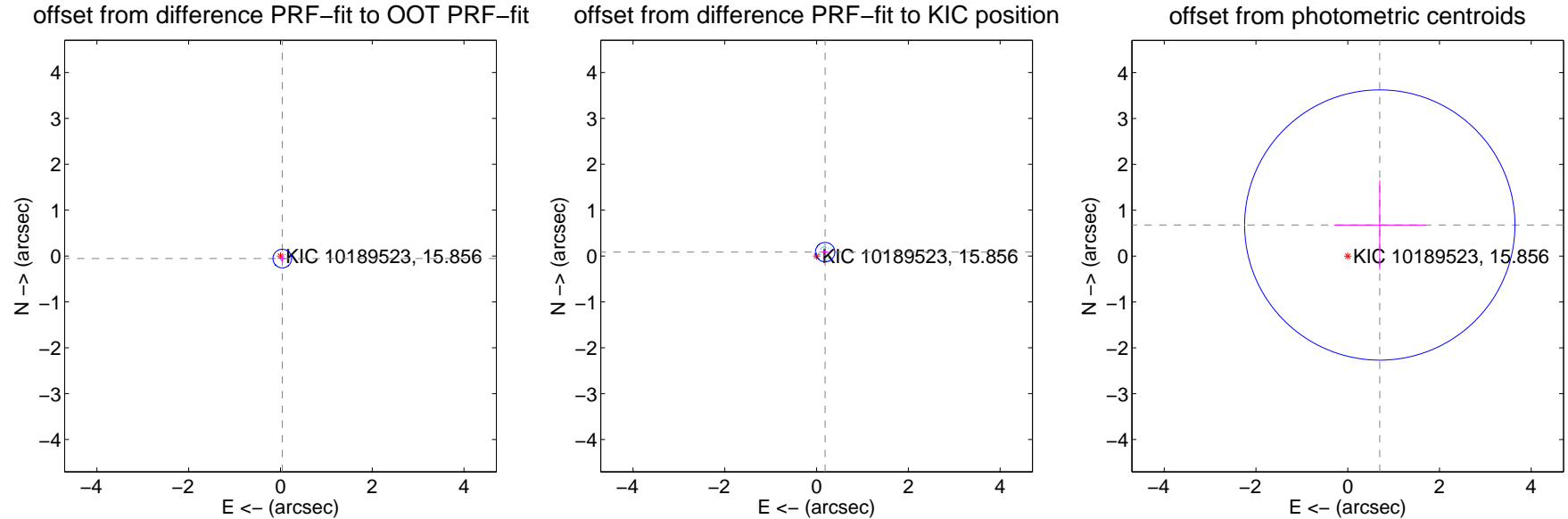
## DV Centroid Data

Supplemental centroid analysis for 010189523-01. Kepler magnitude: 15.86. Transit SNR 7.00

There are 17 quarters with good PRF difference image offsets

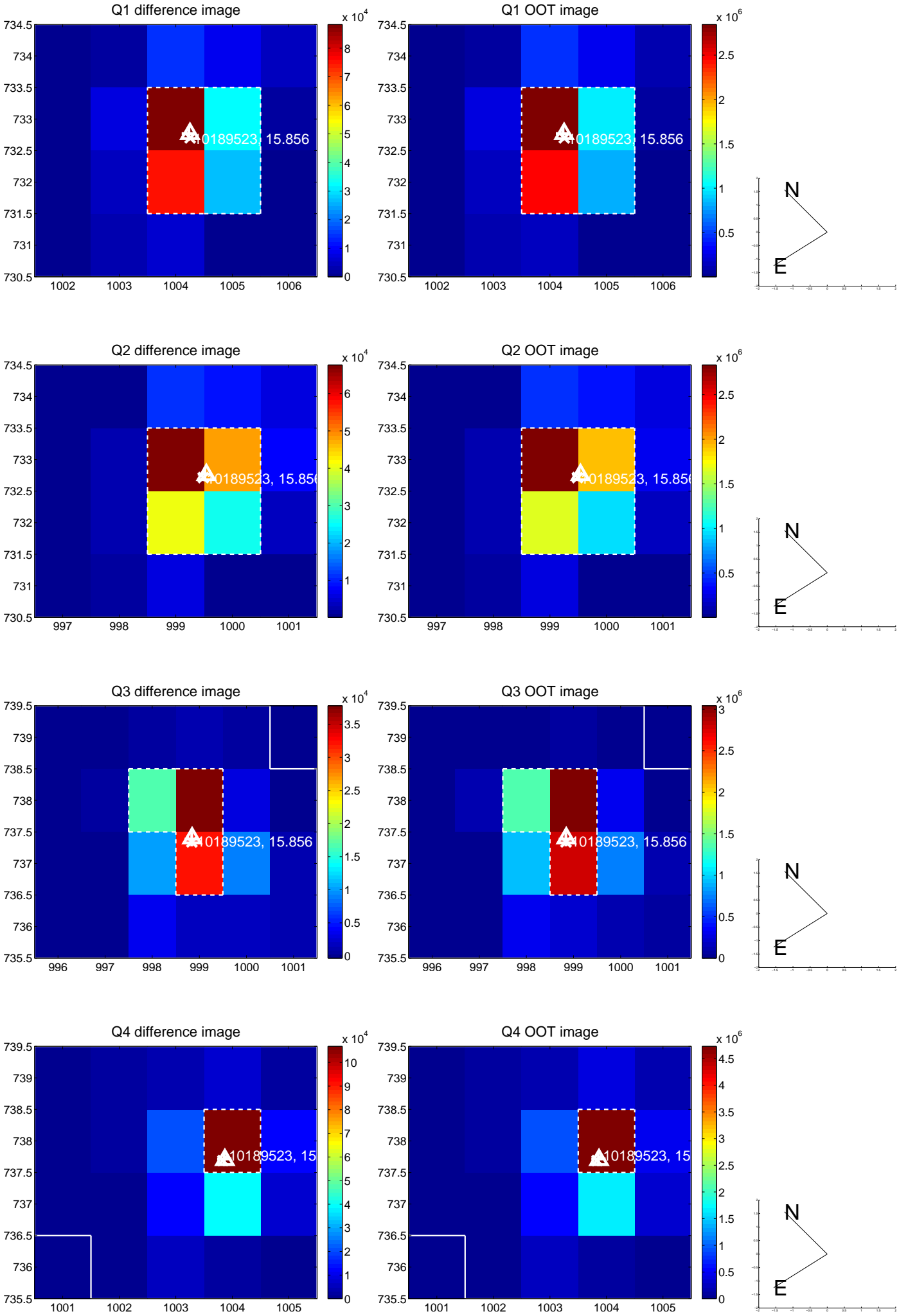
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.068 \pm 0.068$	1.01	$-0.040 \pm 0.067$	$-0.056 \pm 0.068$
PRF-fit source offset from KIC position	$0.205 \pm 0.071$	2.91	$-0.187 \pm 0.070$	$0.085 \pm 0.074$
photometric centroid source offset	$0.97 \pm 0.98$	0.99	$-0.70 \pm 0.99$	$0.68 \pm 0.97$

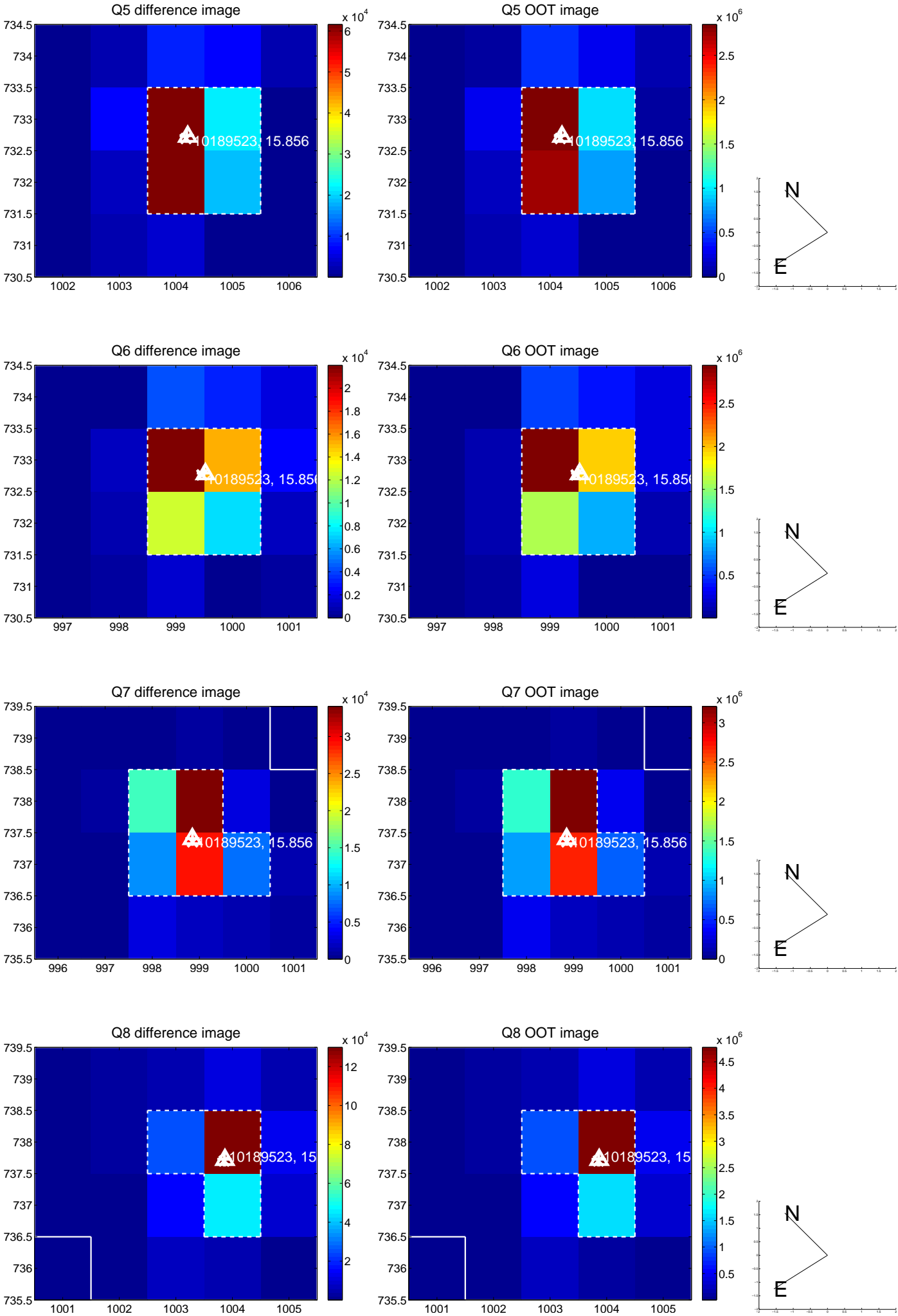


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

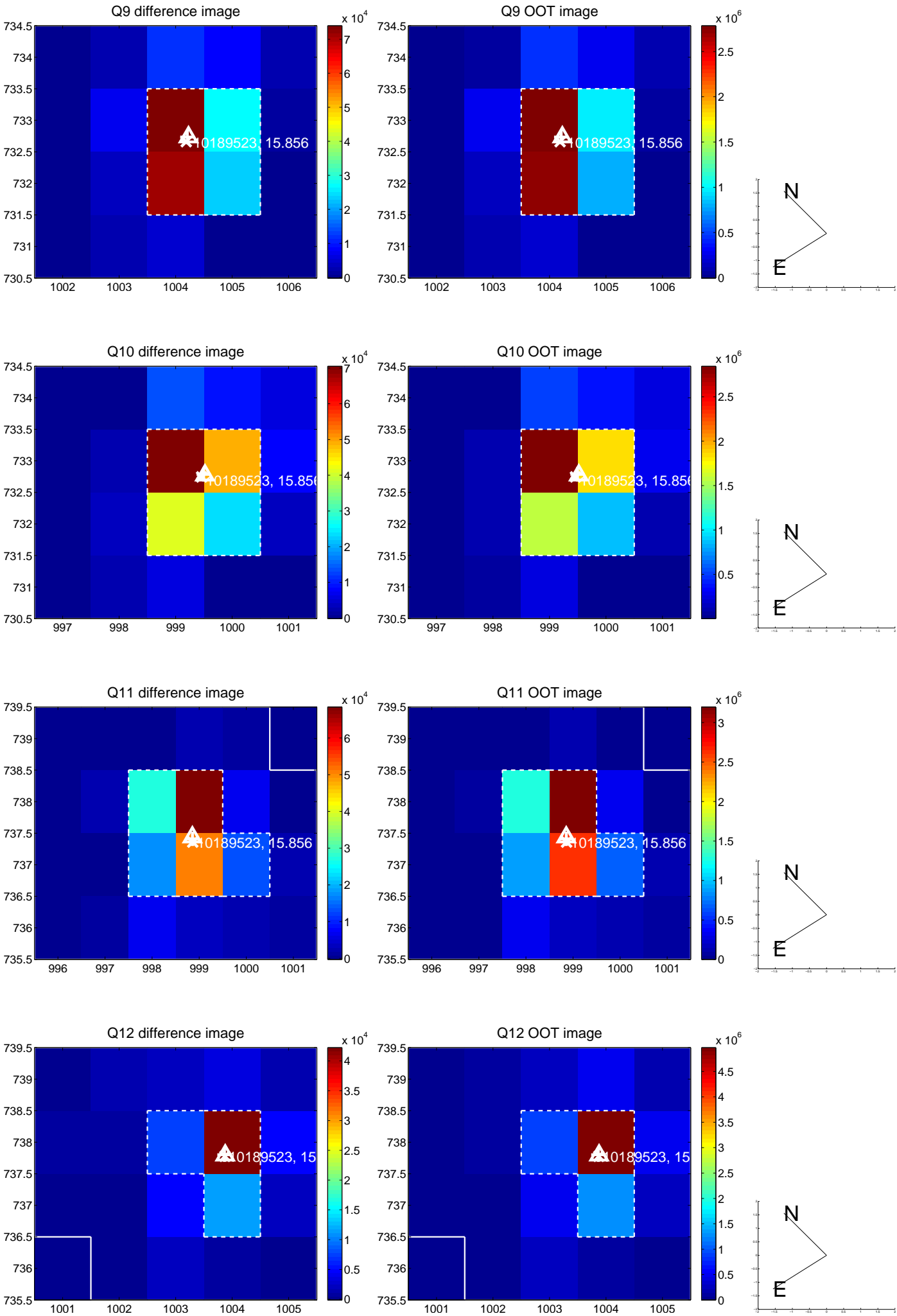


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

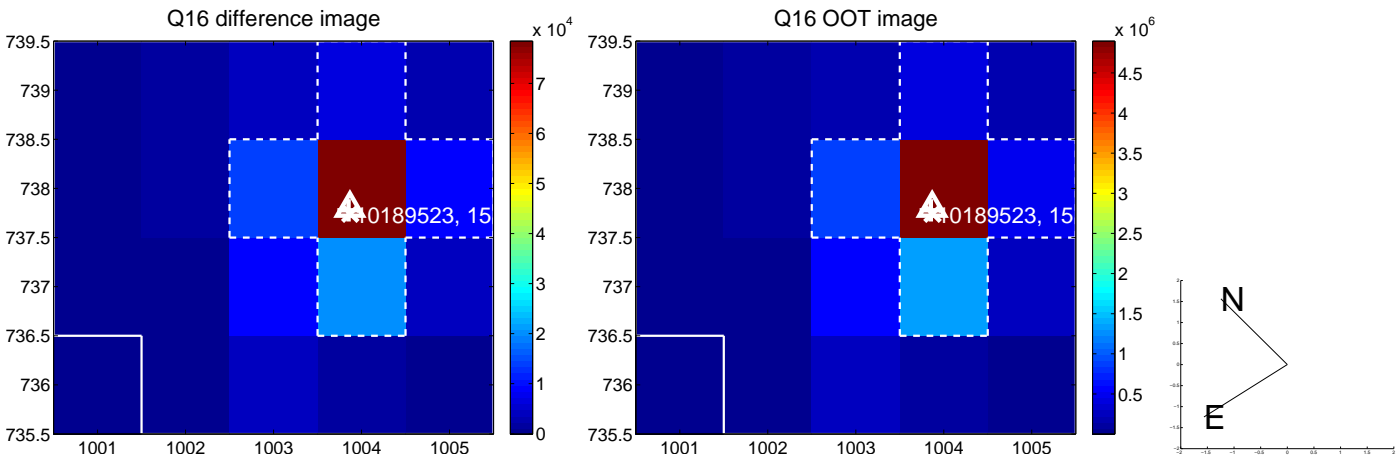
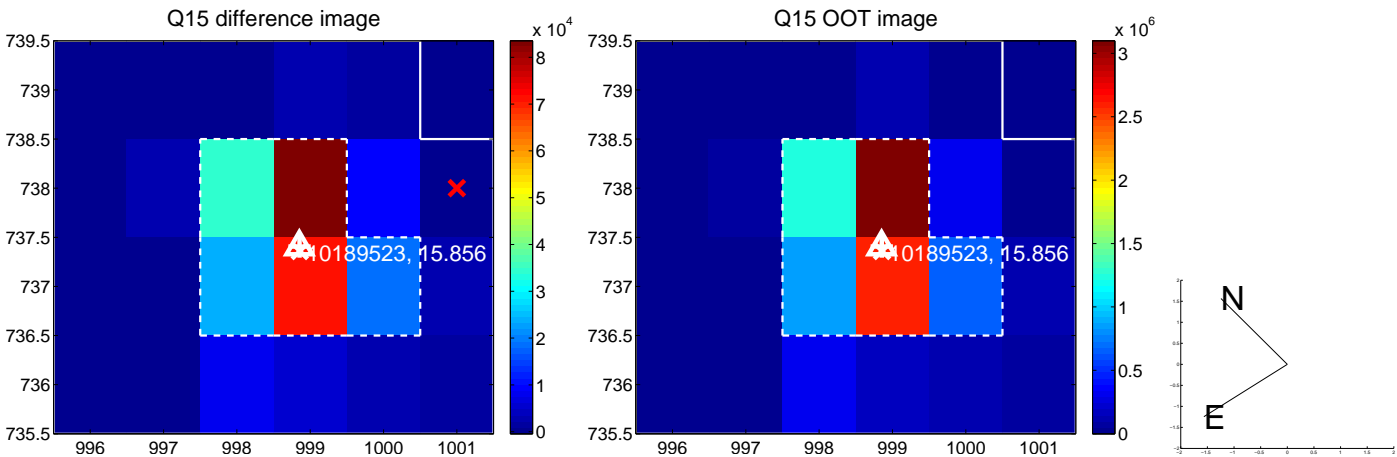
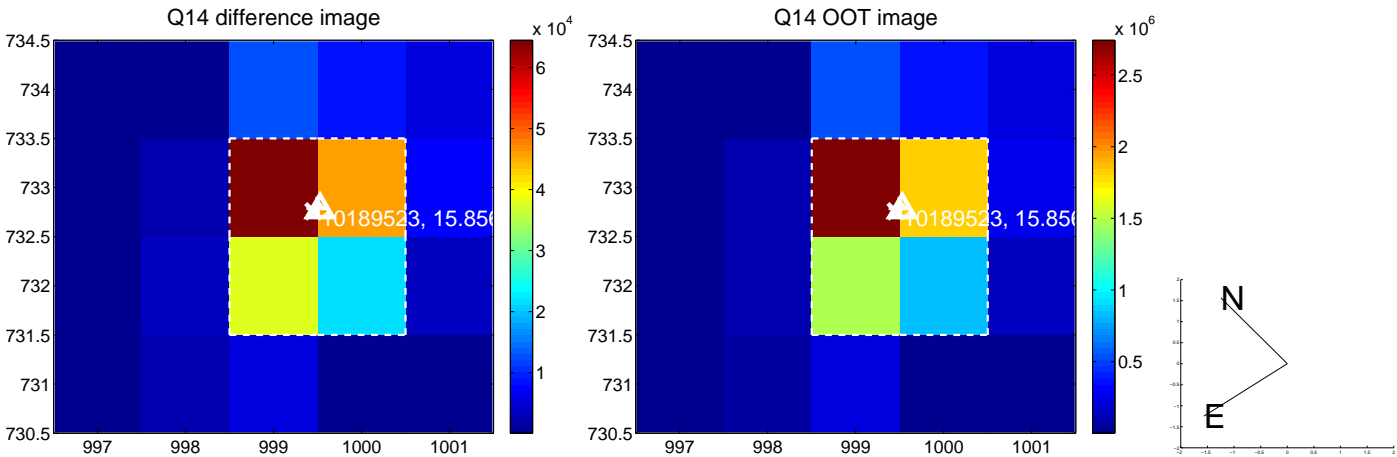
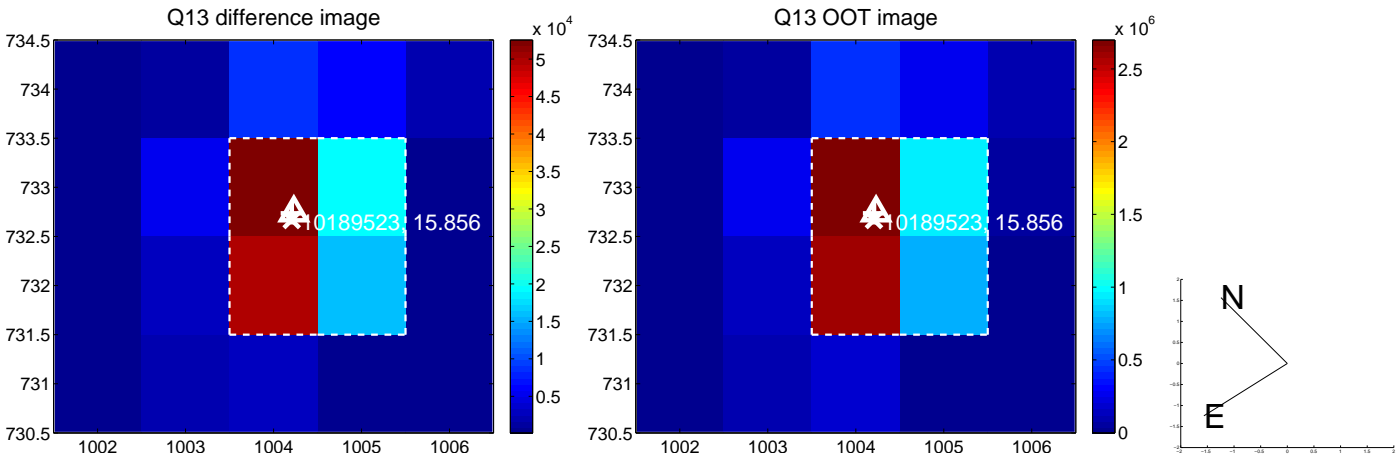




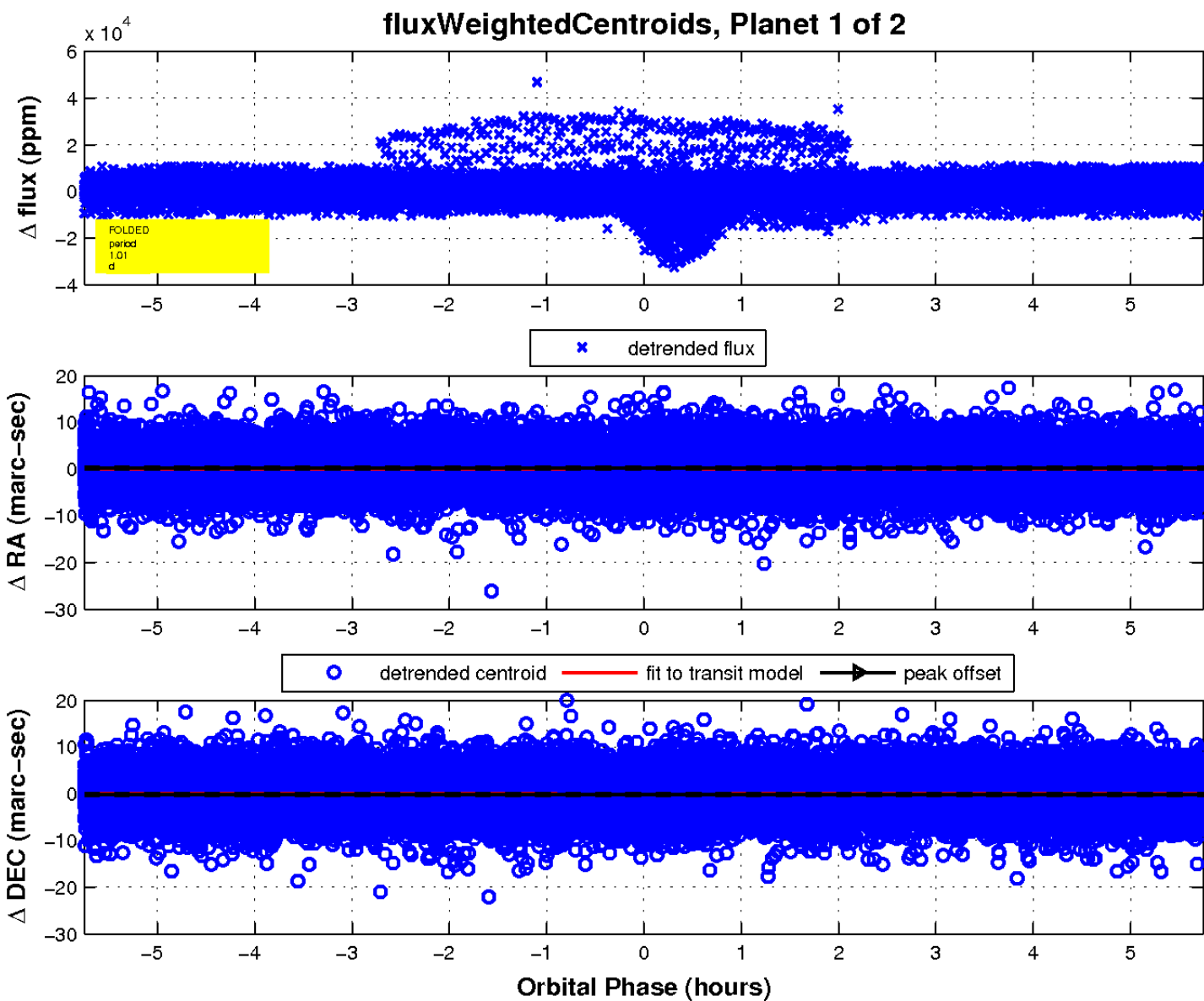
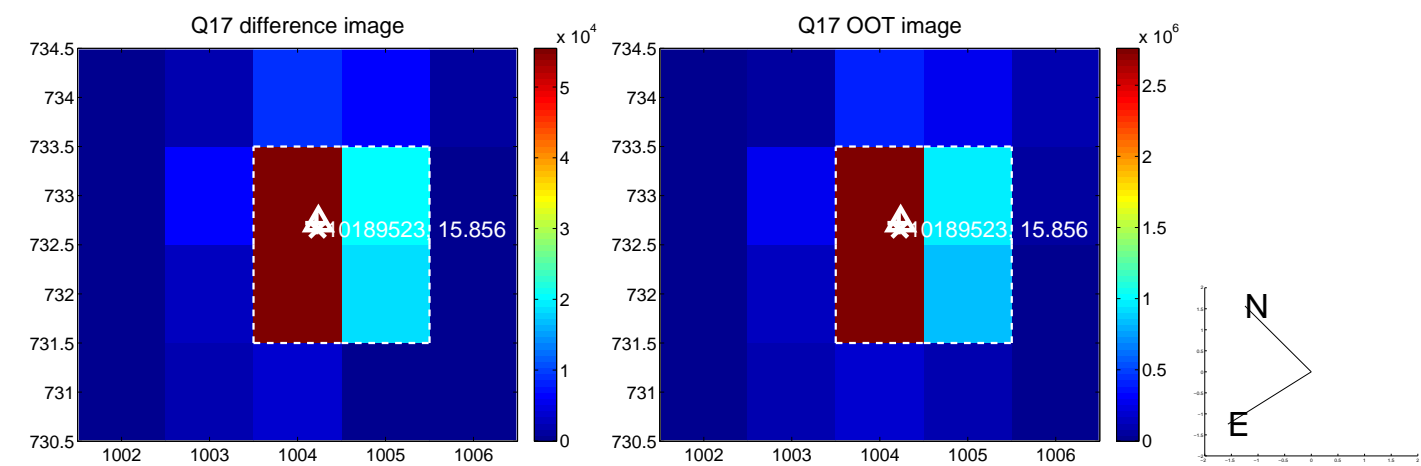
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

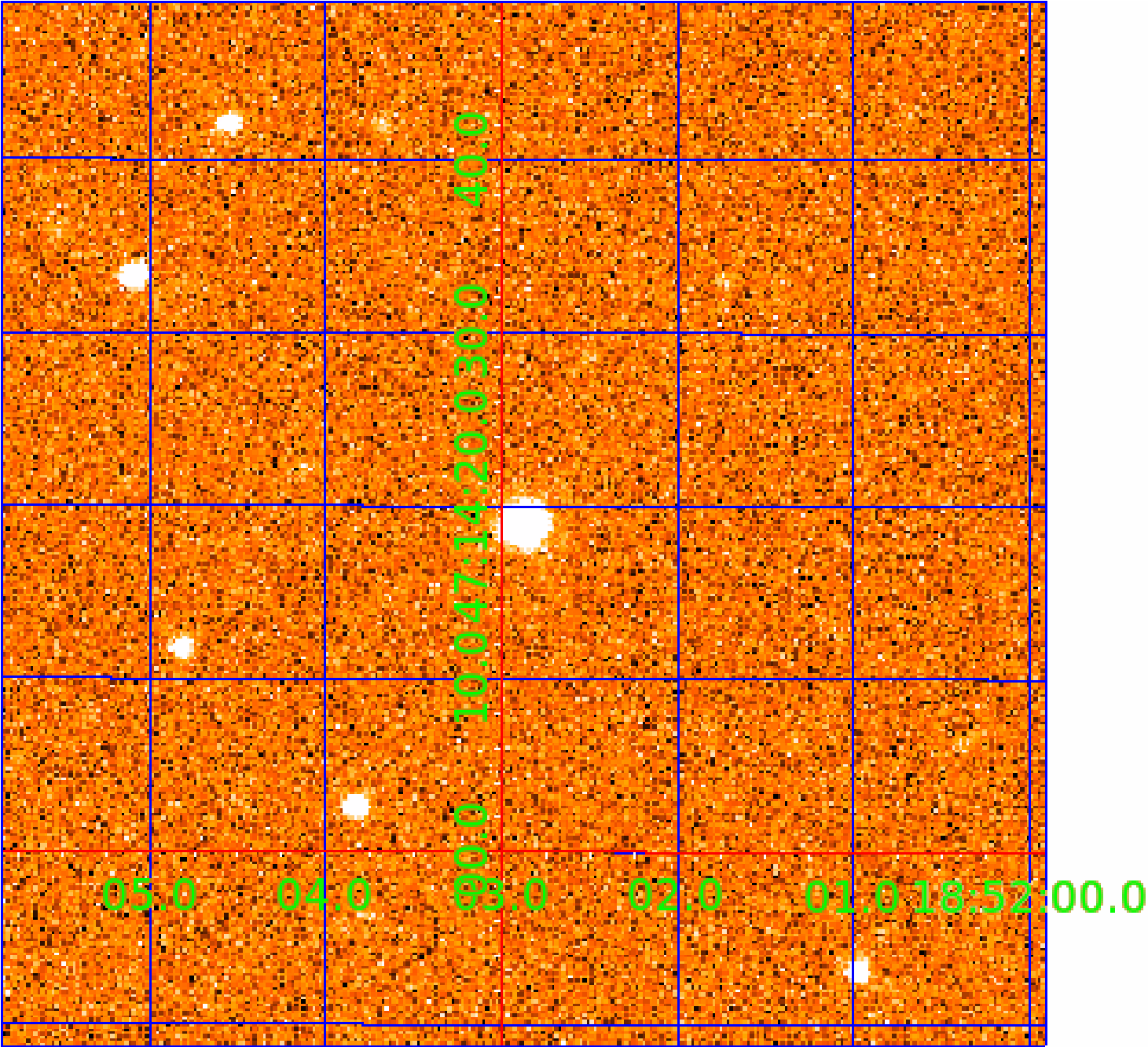


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 010189523

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010189523-01	OBS	7293.01	1.013924	132.395324	207.8	1.917	48.7	7.0	0.65	5110	1.09	888.19
010189523-02	OBS	No	0.506946	131.919320	22.7	1.488	13.4	0.8	0.65	5110	0.33	2238.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010189523-01	OBS	FP	0.00	1	0	0	0	LPP_DV
010189523-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—SAME_NTL_PERIOD

**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 010189523-02

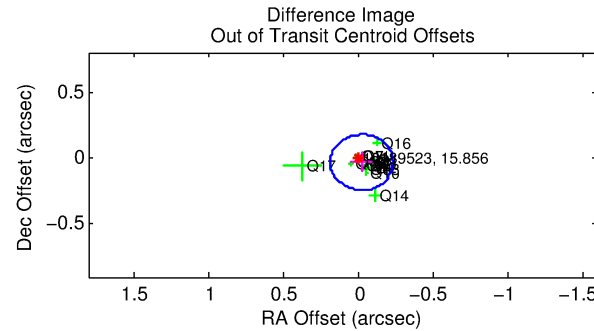
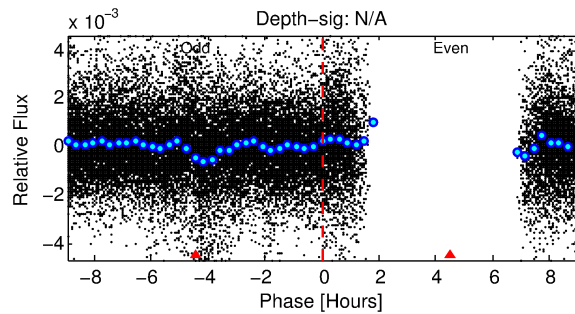
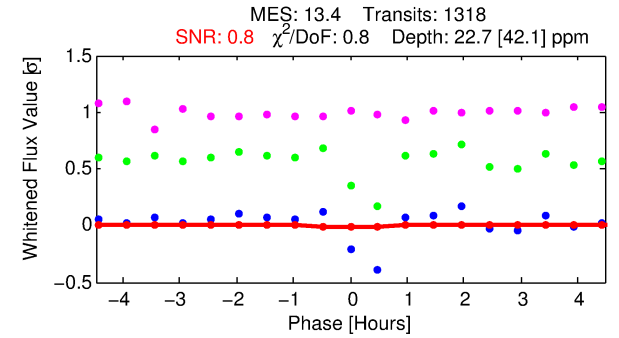
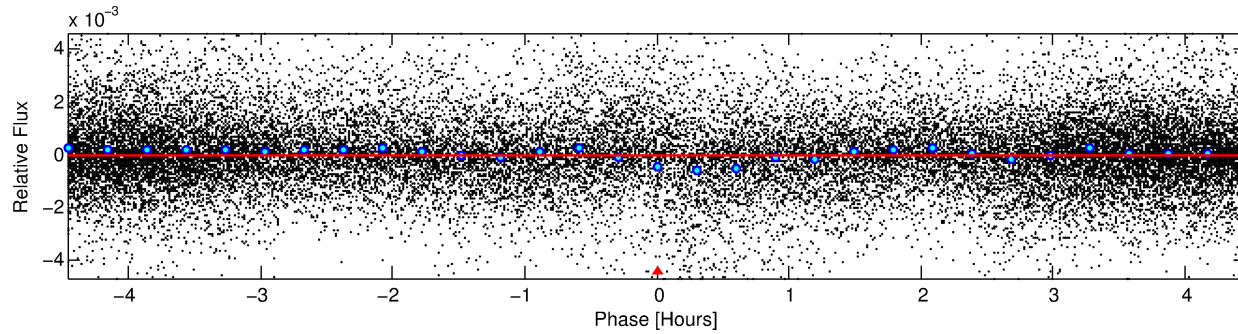
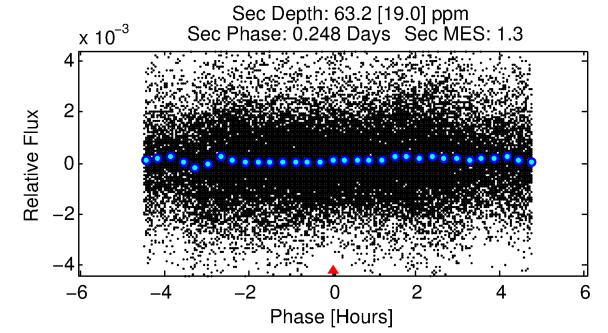
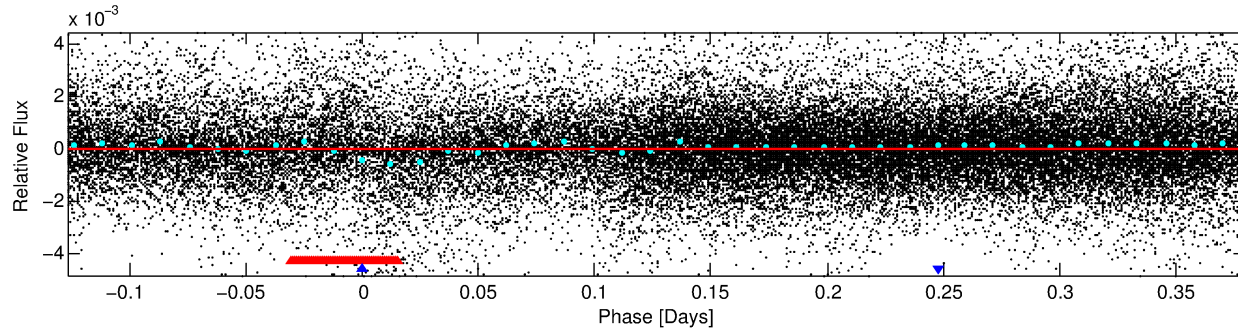
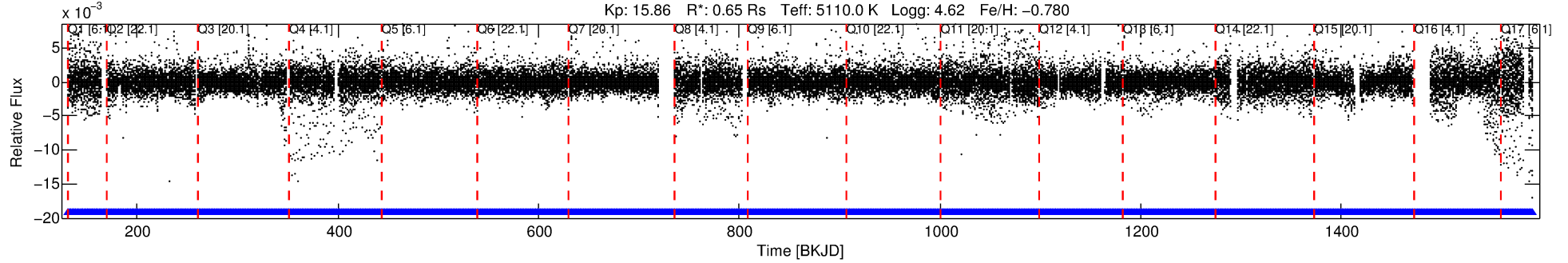
No Significant Match Found

# DV One-Page Summary

KIC: 10189523 Candidate: 2 of 2 Period: 0.507 d

KOI: K07293 Corr: No Ephemeris Match

Kp: 15.86 R\*: 0.65 Rs Teff: 5110.0 K Logg: 4.62 Fe/H: -0.780



## DV Fit Results:

Period = 0.50695 [0.00014] d  
Epoch = 131.9193 [0.0213] BKJD  
Rp/R\* = 0.0047 [0.0145]  
a/R\* = 2.05 [18.72]  
b = 0.70 [8.87]  
Seff = 2238.20 [399.42]  
Teq = 1754 [78] K  
Rp = 0.33 [1.03] Re  
a = 0.0107 [0.0009] AU  
Ag = 36.38 [226.32] [0.16σ]  
Teffp = 6660 [10359] K [0.47σ]

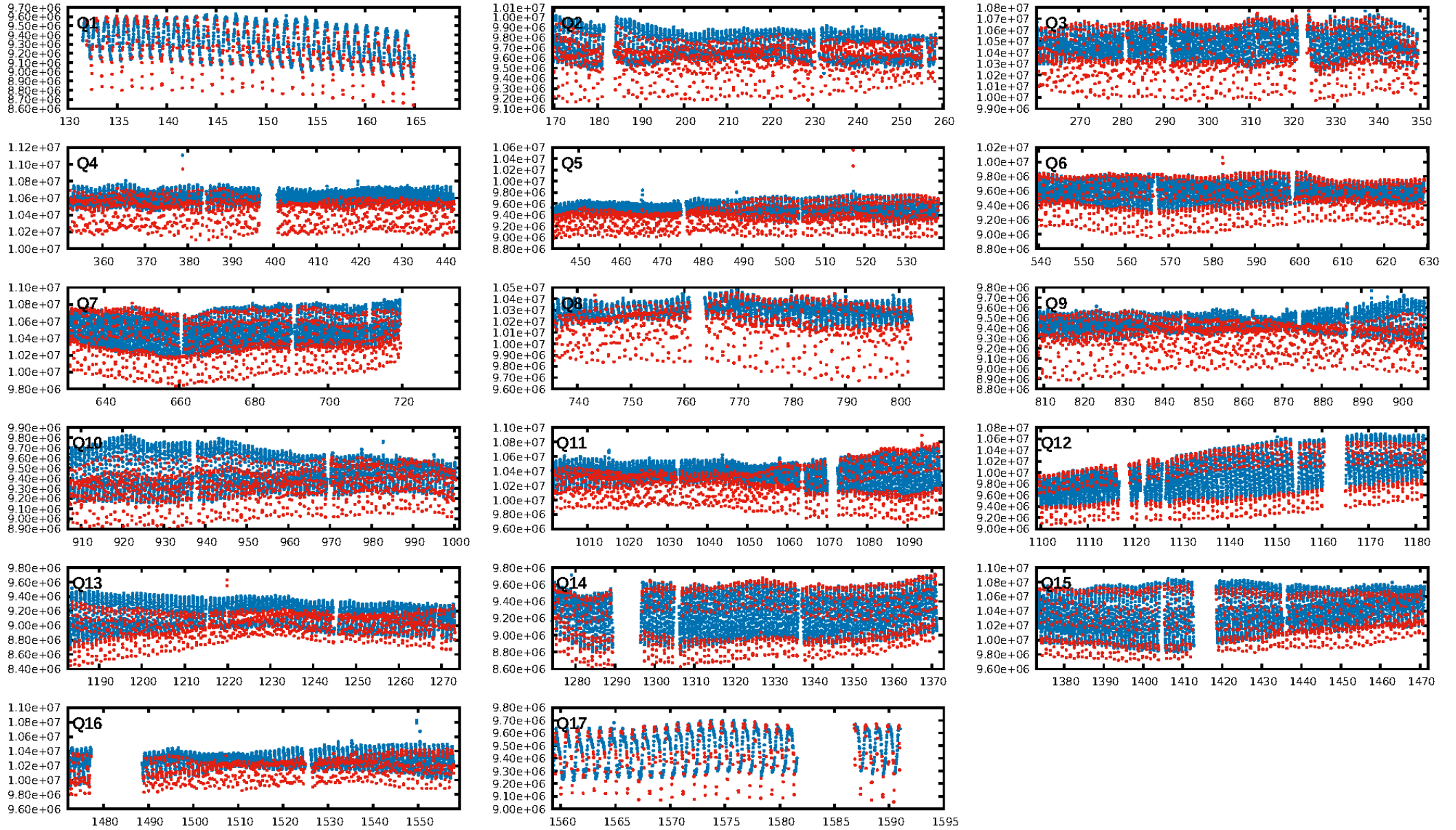
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [5.01σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.08e-245  
RollingBand-fgt: 1.00 [1258/1258]  
GhostDiagnostic-chr: -5.114  
Centroid-sig: 0.0%  
Centroid-so: 21.223 arcsec [3.00σ]  
OotOffset-rm: 0.043 arcsec [0.61σ]  
KicOffset-rm: 0.188 arcsec [2.65σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.94 [16/17]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 00:50:36 Z

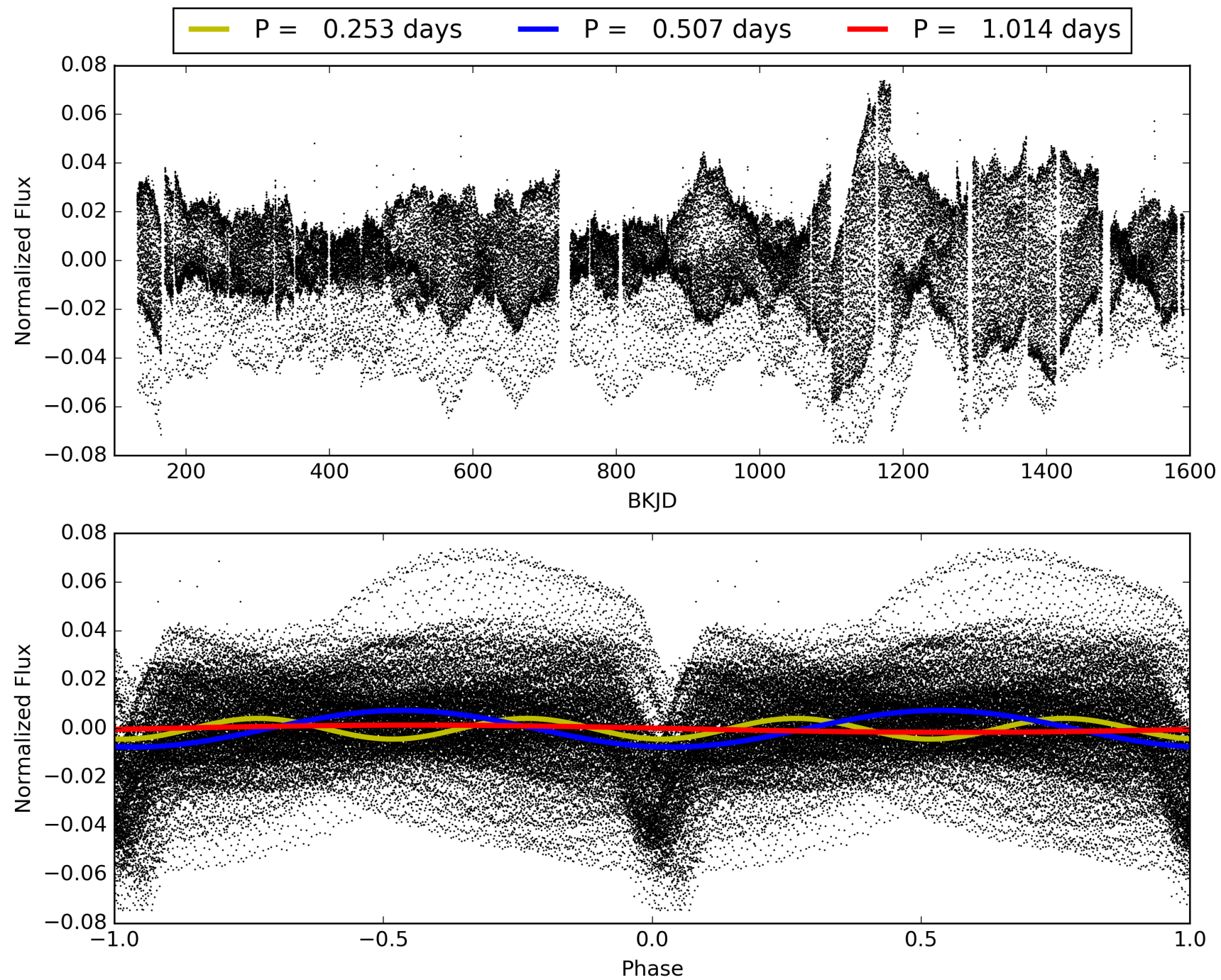
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010189523-02, PDC Light Curves





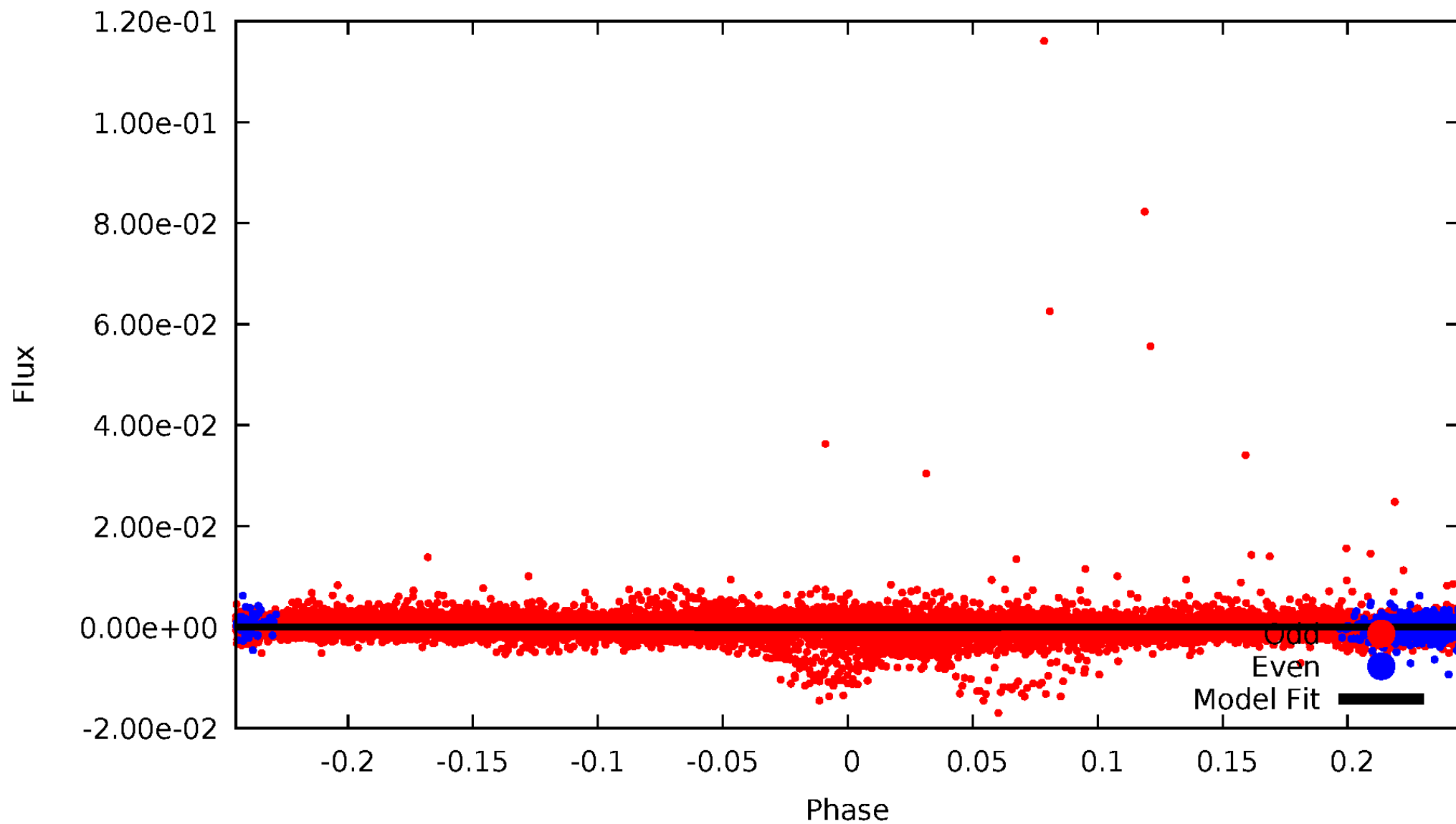
# TCE 010189523-02





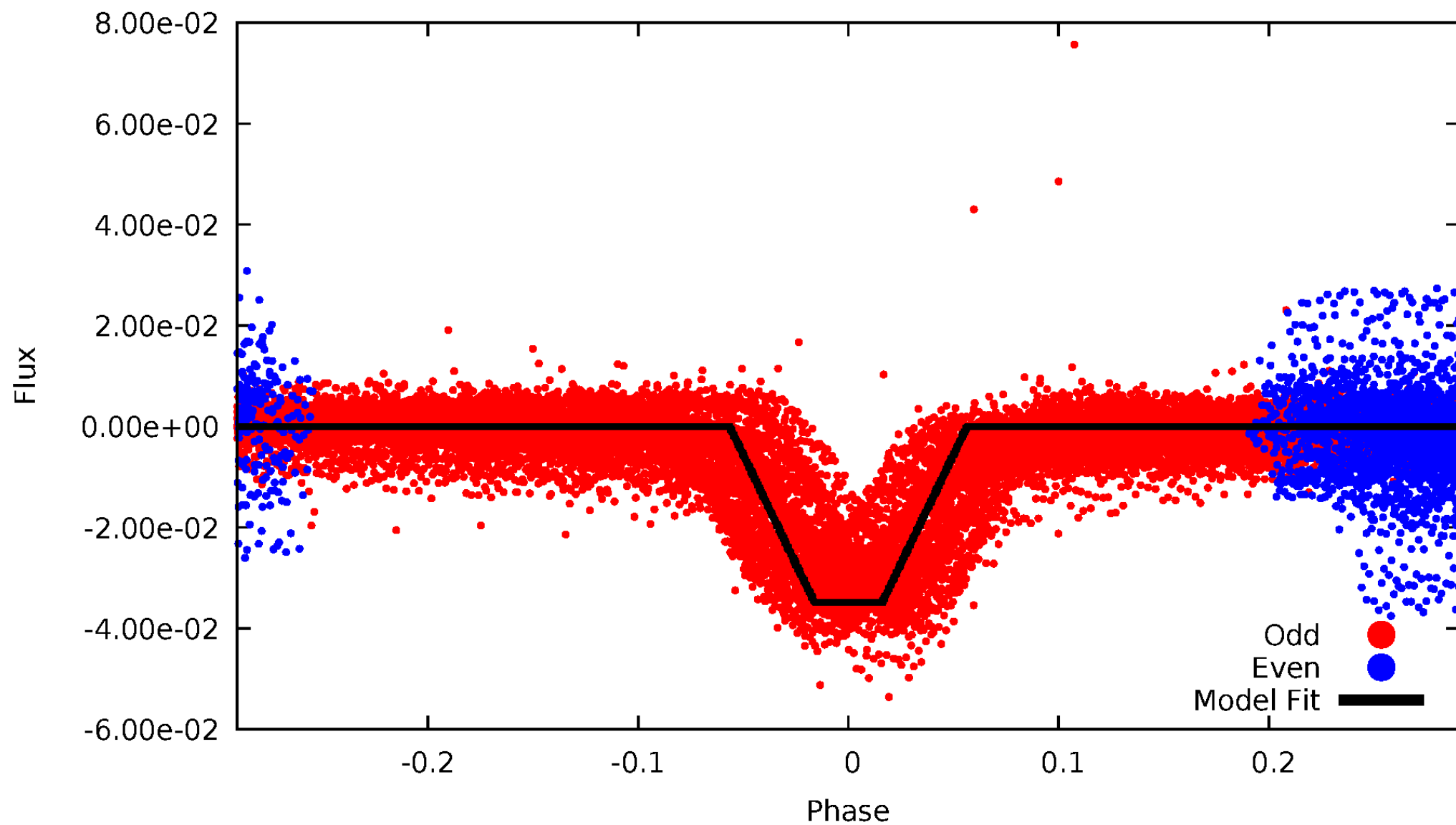
# DV Odd/Even

TCE 010189523-02



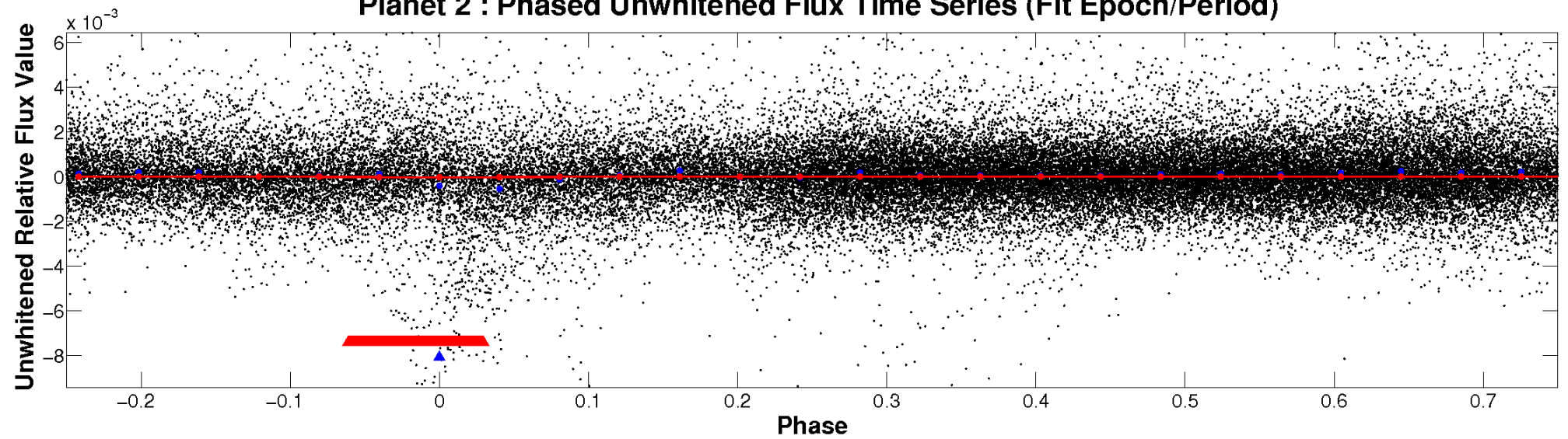
# ALT Odd/Even

TCE 010189523-02

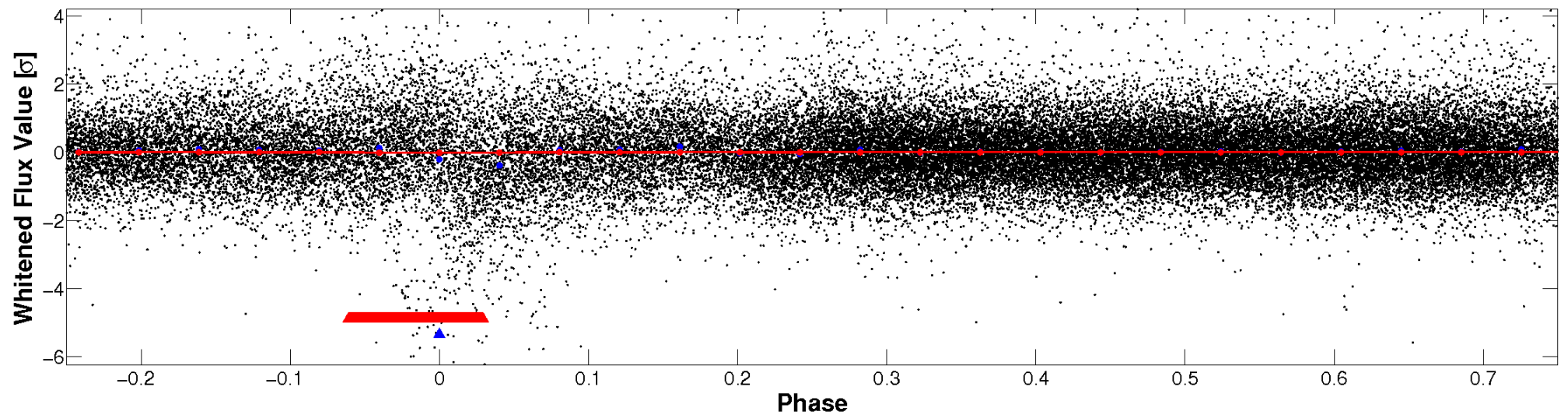


# Non-Whitened Vs. Whitened Light Curve

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

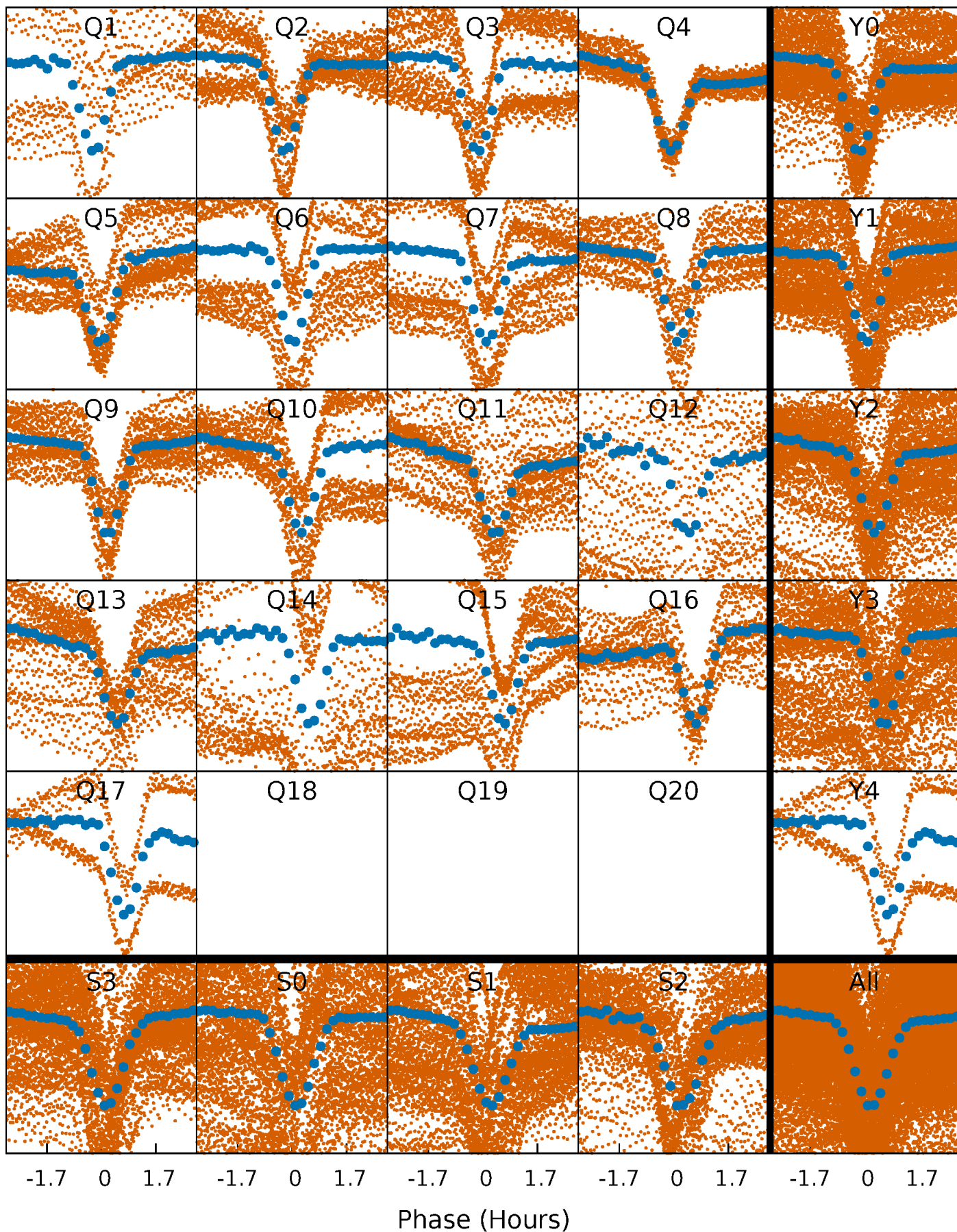


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

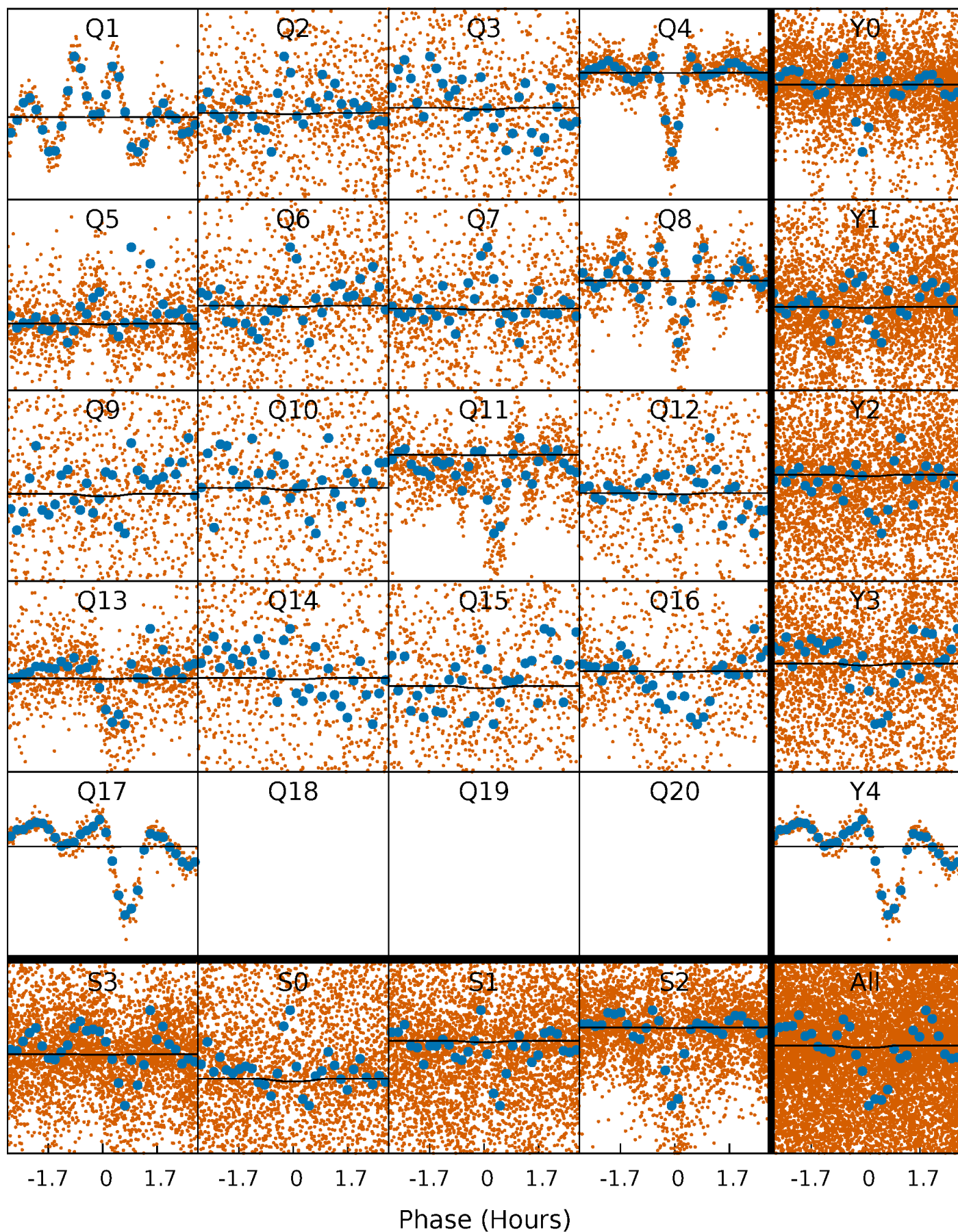
TCE 010189523-02   P= 0.506946 Days    $T_0=131.919320$  (BKJD)





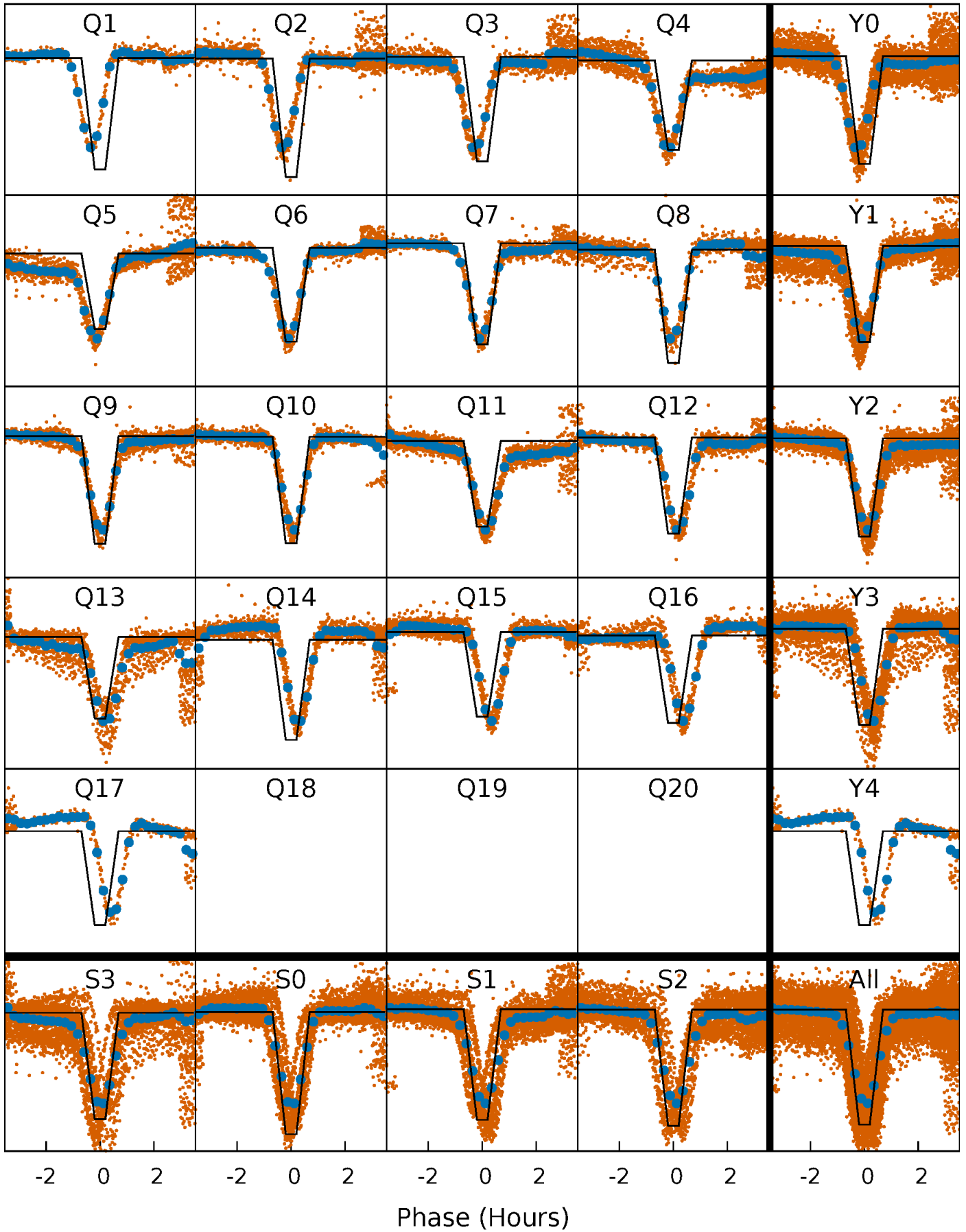
# DV Quarter-Phased Transit Curves

TCE 010189523-02   P= 0.506946 Days    $T_0=131.919320$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

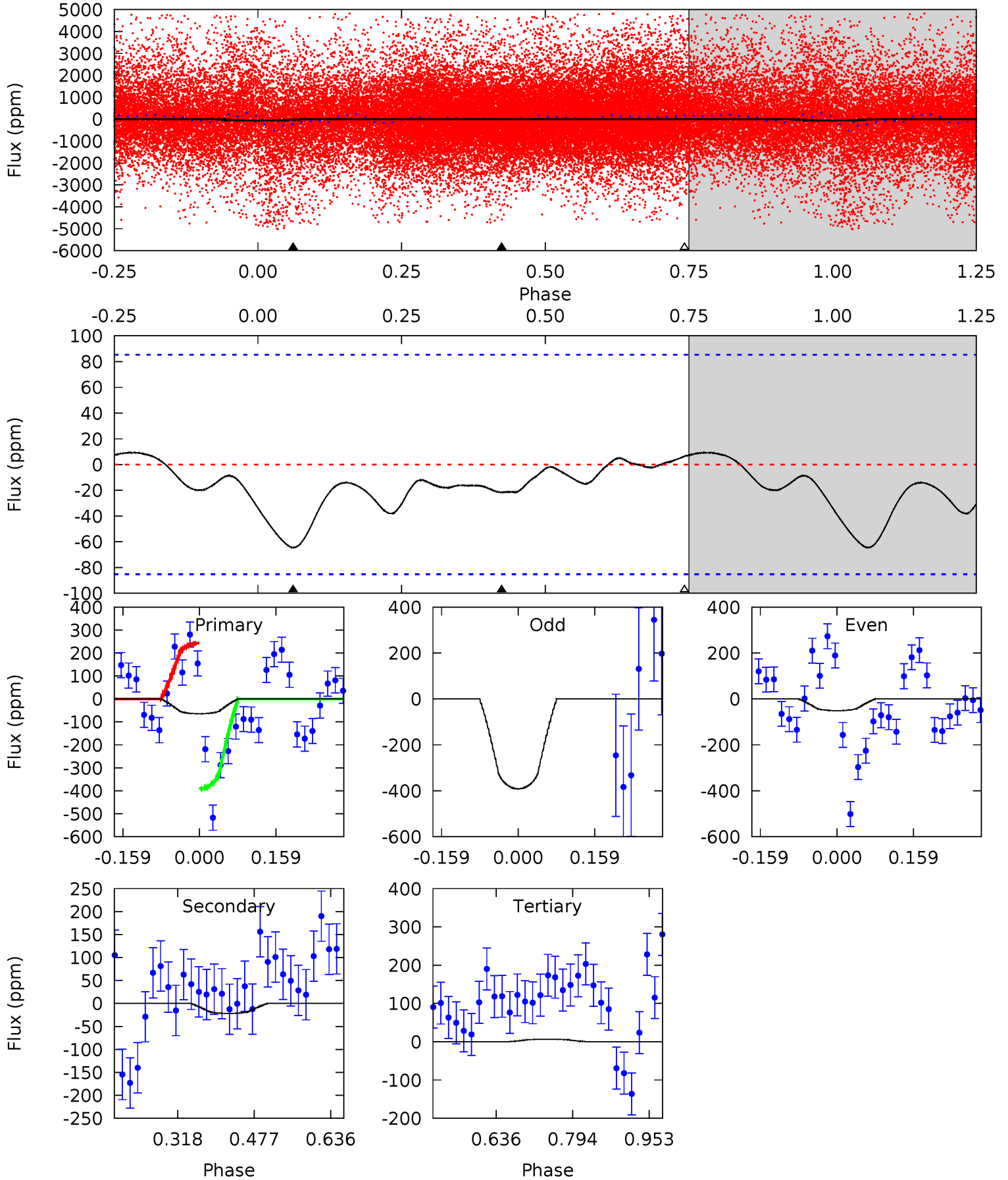
TCE 010189523-02     $P = 0.506950$  Days     $T_0 = 131.922335$  (BKJD)



# DV Model-Shift Uniqueness Test

010189523-02, P = 0.506946 Days, E = 131.412374 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
3.38	1.13	-0.33	0	4.47	1.41	0.66	3.71	3.38	1.47	1.13	10.6	1.85	0.13	0

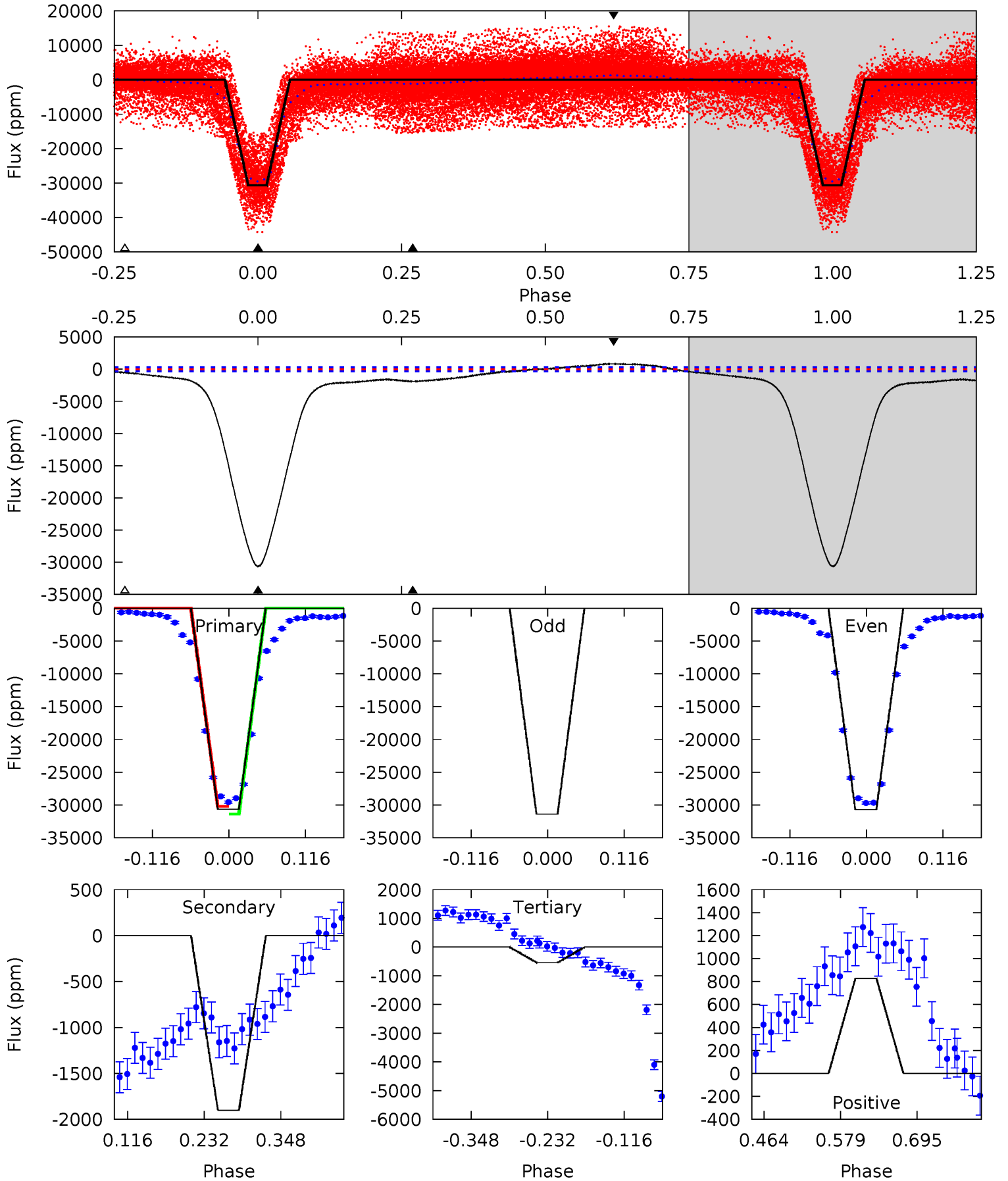




# Alt Model-Shift Uniqueness Test

010189523-02, P = 0.506950 Days, E = 131.415385 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
421.7	26.2	7.45	11.4	4.53	1.57	10.7	414.2	410.3	18.7	14.8	5.55	1.00	0.03	7.87



### Stellar Parameters For KIC 010189523

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5110^{+169}_{-153}$	$4.618^{+0.066}_{-0.044}$	$-0.780^{+0.300}_{-0.300}$	$0.647^{+0.062}_{-0.057}$	$0.632^{+0.069}_{-0.028}$	$3.292^{+0.922}_{-0.556}$
	+3%/-3%	+1%/-1%	+38%/-38%	+10%/-9%	+11%/-4%	+28%/-17%
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 010189523-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-22 \pm 19$	$0.78^{+0.90}_{-0.54}$	$2443^{+94}_{-92}$	$3326^{+2251}_{-5948}$	$1.500^{+16.636}_{-1.404}$
Alt.	$-1901 \pm 73$	$13.17^{+1.25}_{-1.23}$	$2447^{+89}_{-90}$	$2842^{+129}_{-118}$	$0.697^{+0.144}_{-0.109}$

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

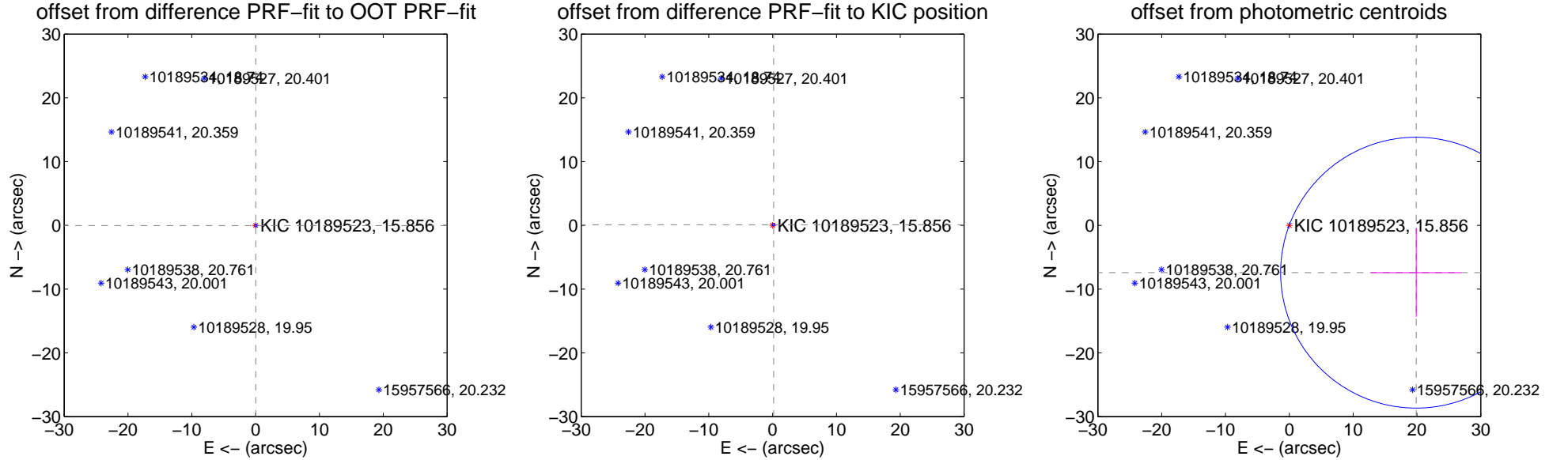
## DV Centroid Data

Supplemental centroid analysis for 010189523-02. Kepler magnitude: 15.86. Transit SNR 0.75

There are 16 quarters with good PRF difference image offsets

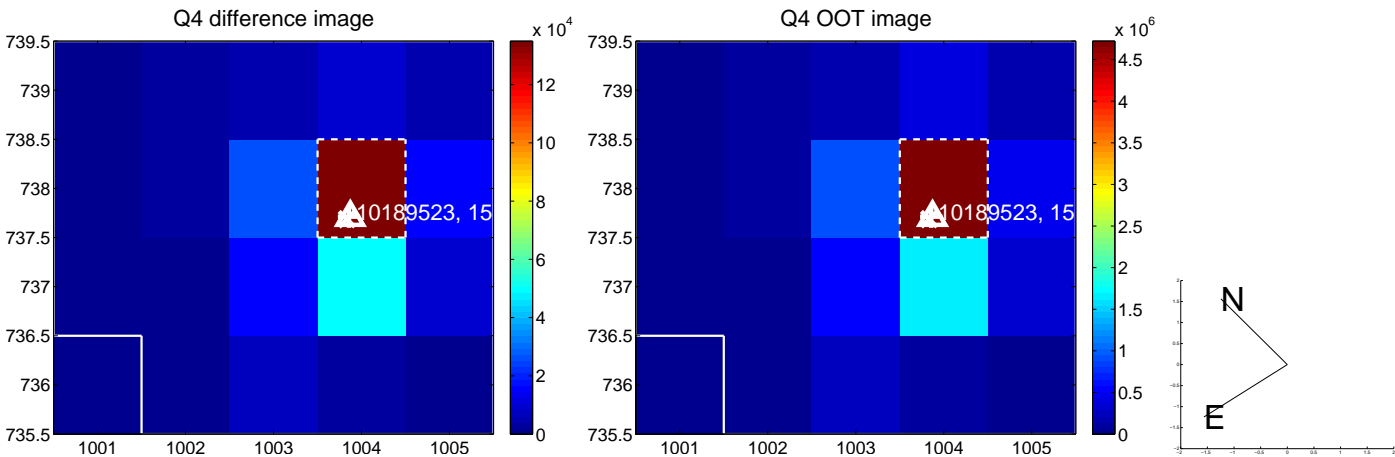
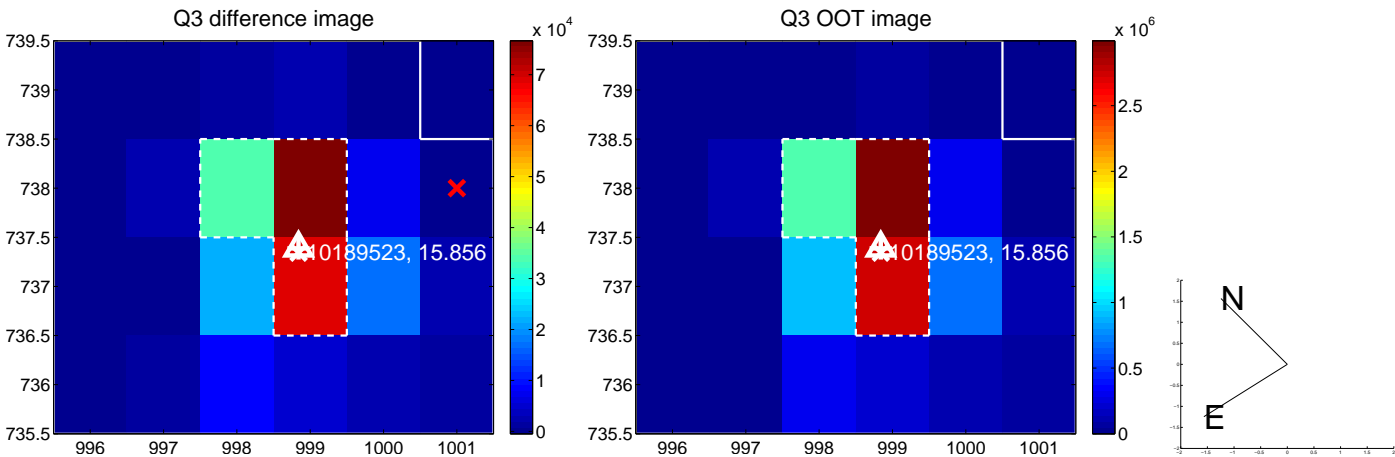
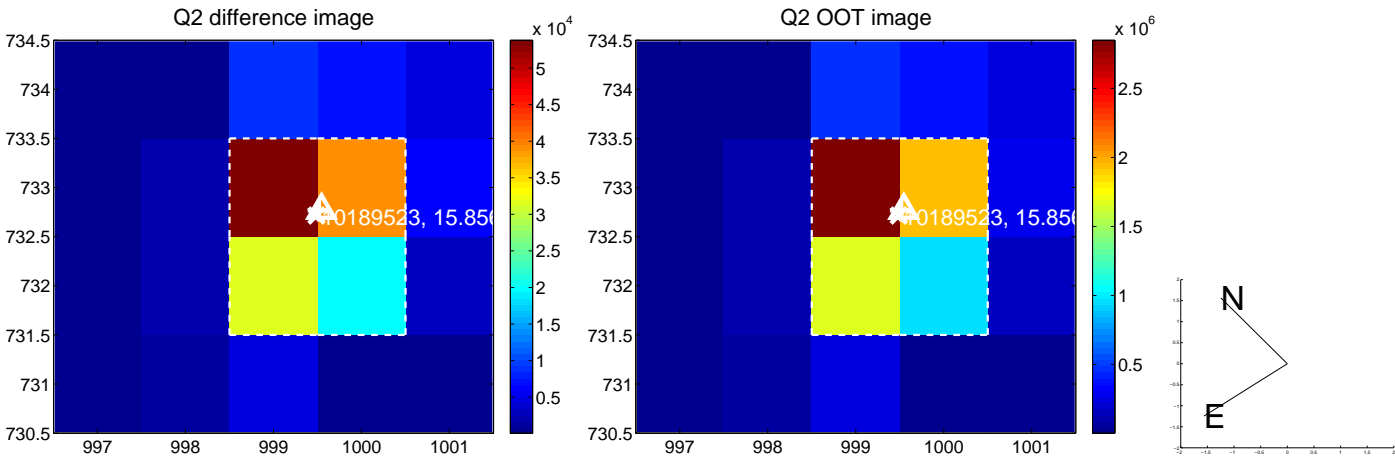
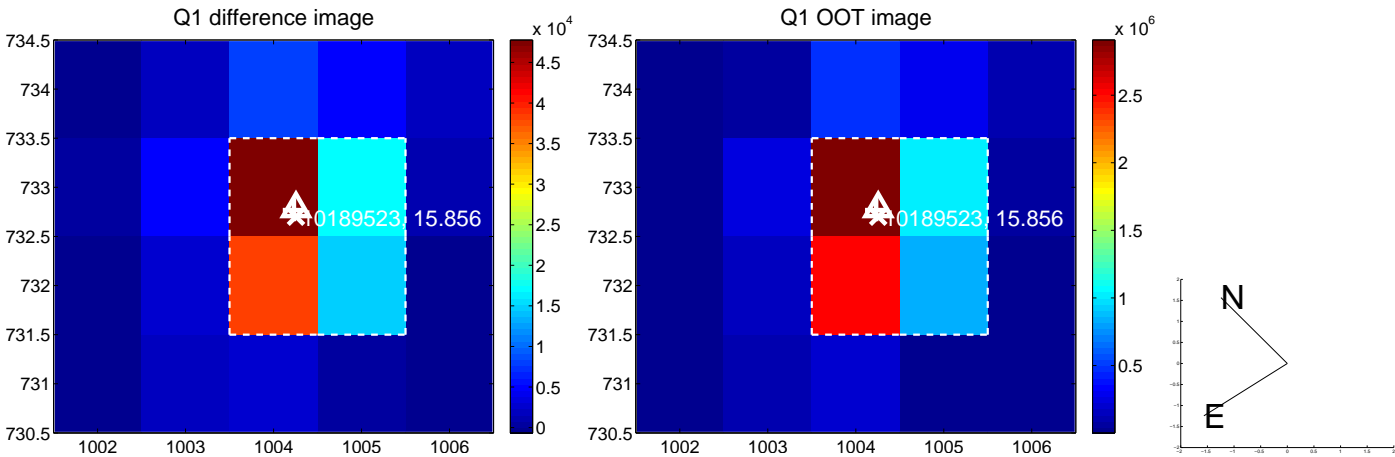
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.043 \pm 0.070$	0.61	$-0.027 \pm 0.071$	$-0.033 \pm 0.070$
PRF-fit source offset from KIC position	$0.188 \pm 0.071$	2.65	$-0.162 \pm 0.073$	$0.096 \pm 0.075$
photometric centroid source offset	$21.22 \pm 7.08$	3.00	$-19.88 \pm 7.10$	$-7.42 \pm 6.94$

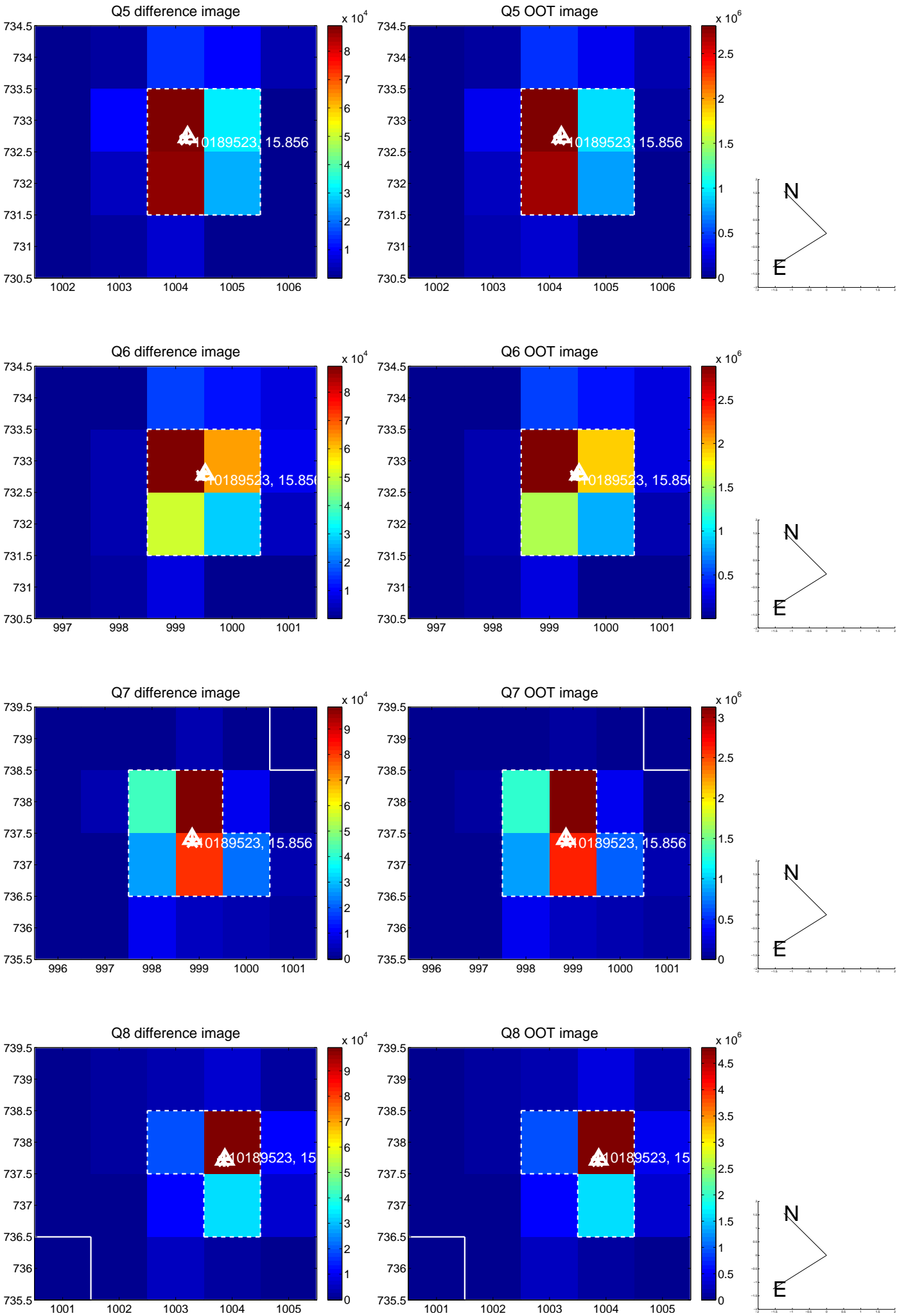


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

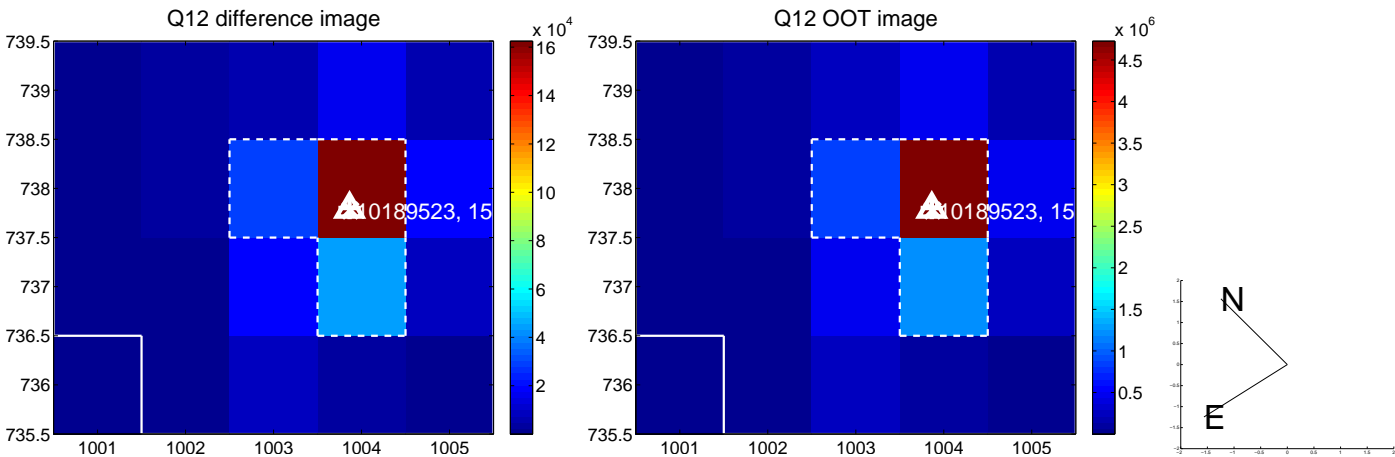
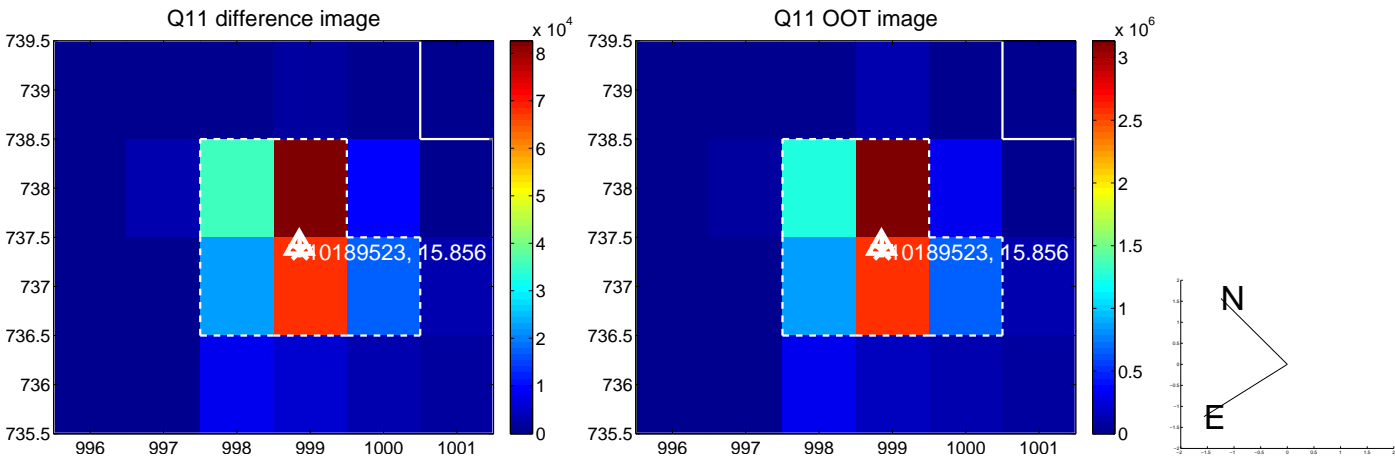
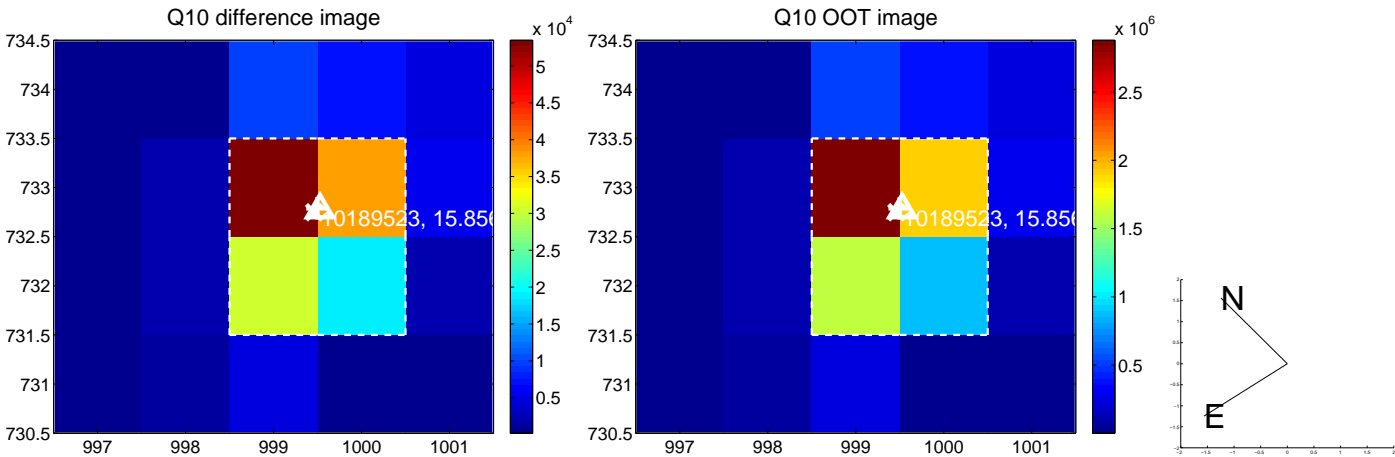
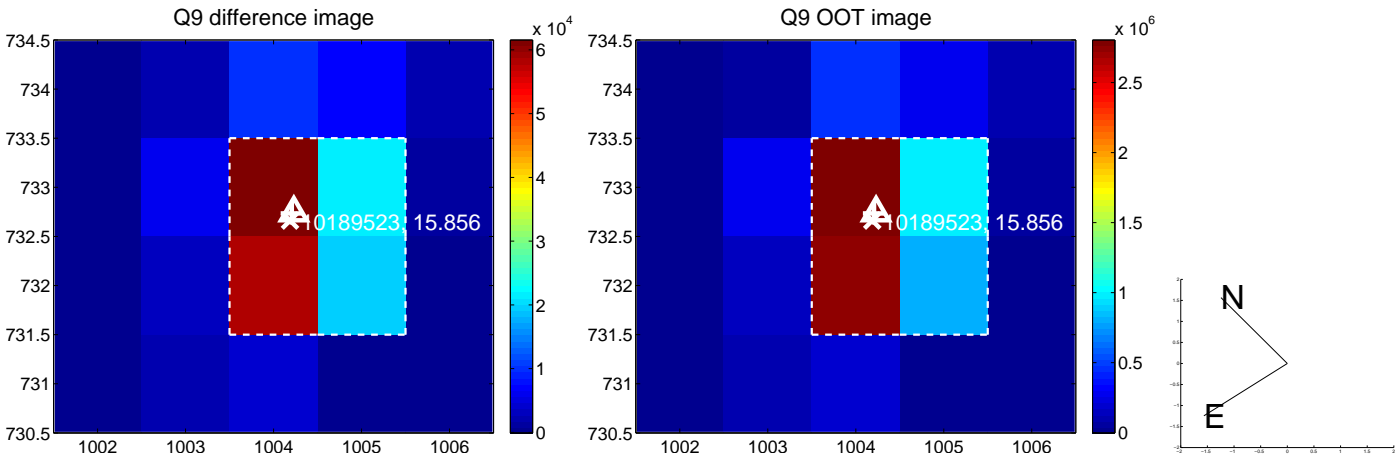
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



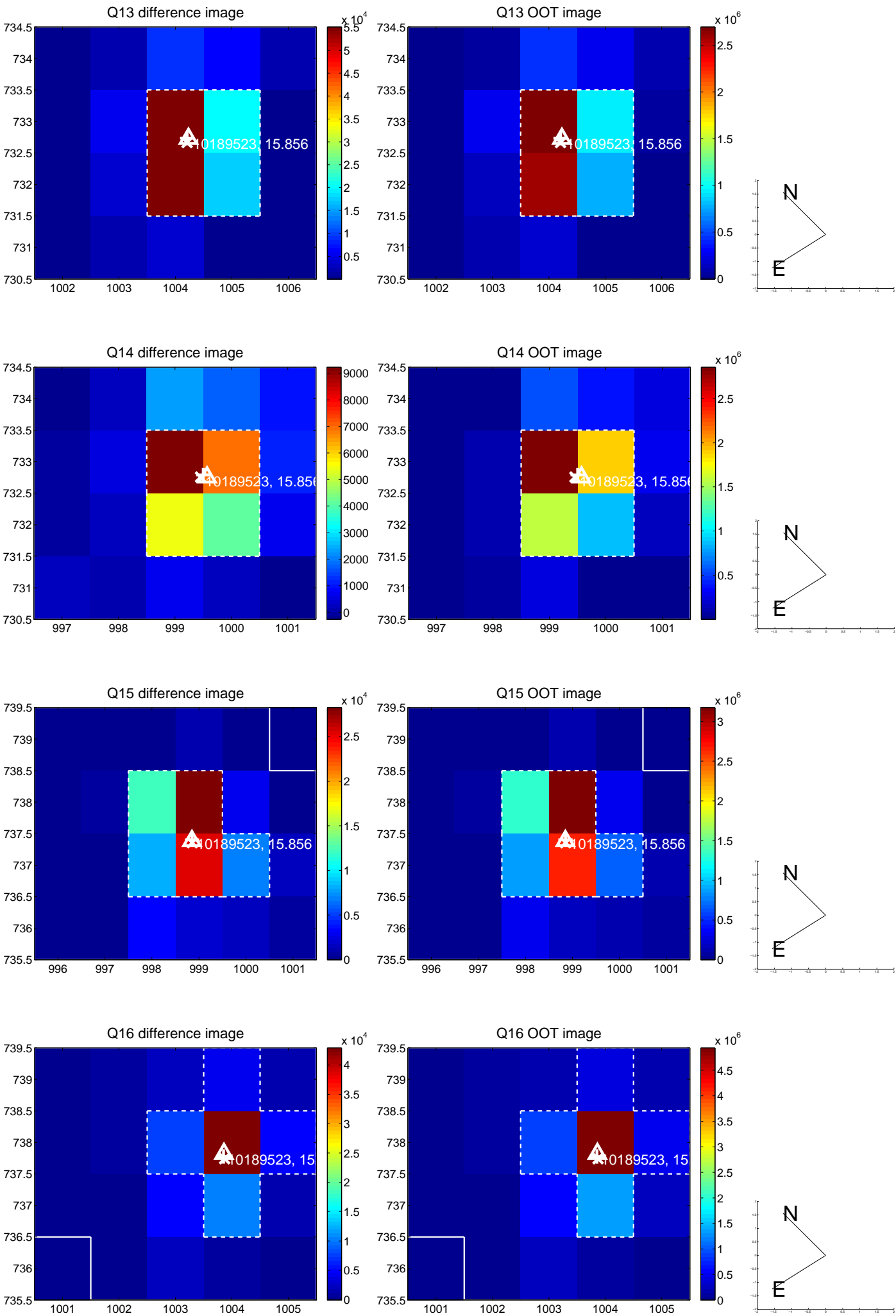
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

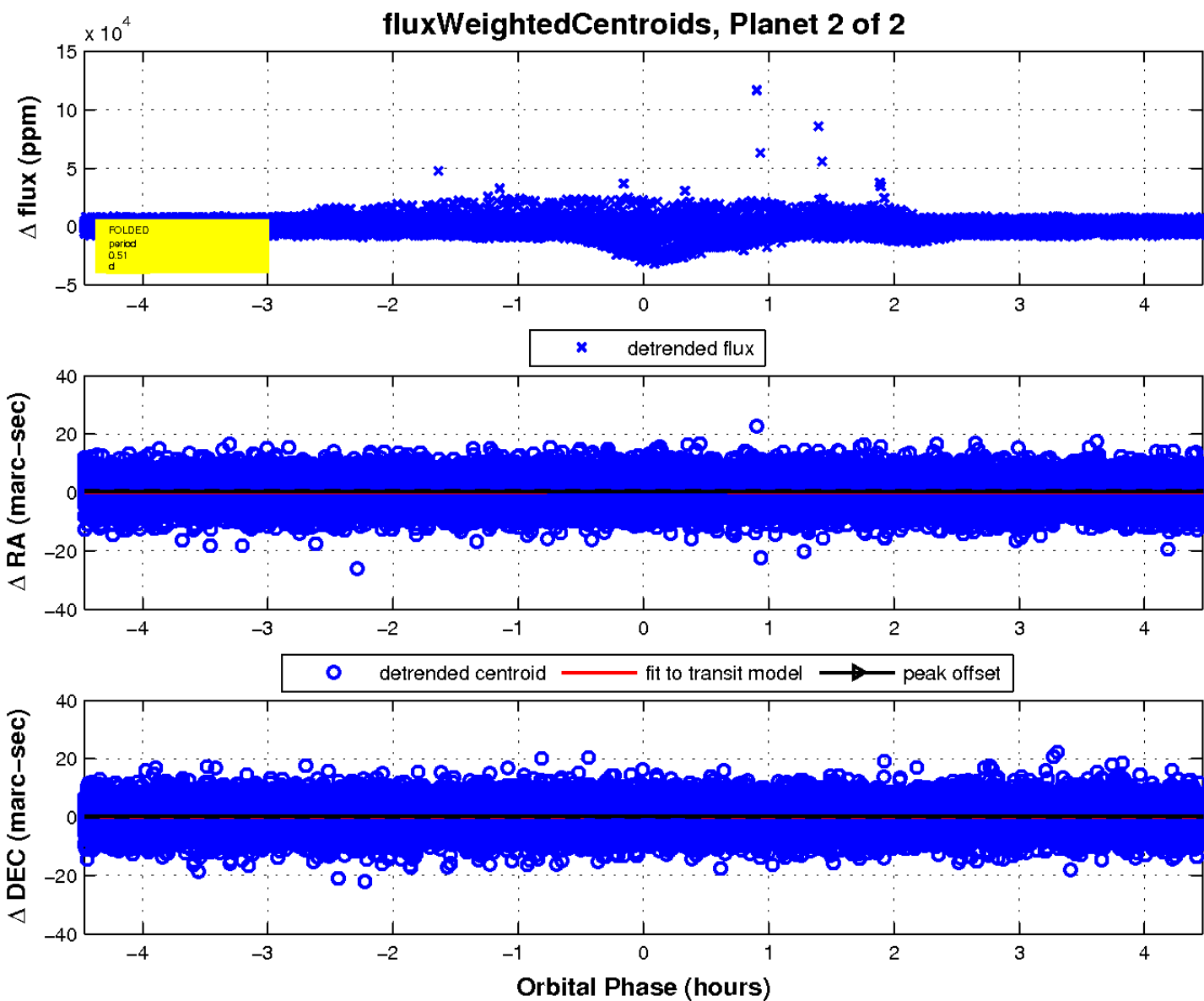
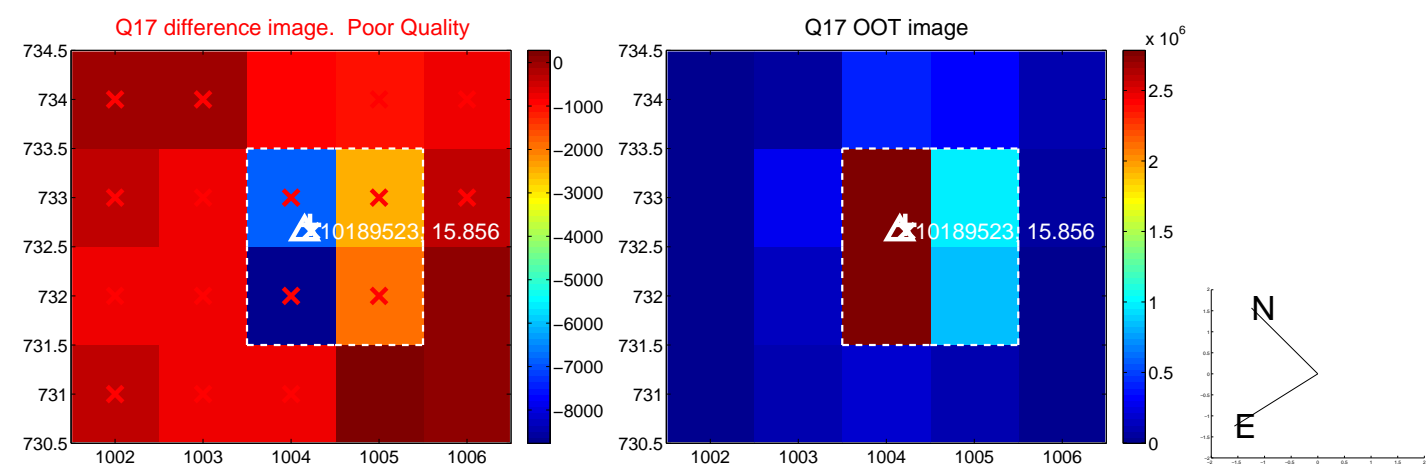


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

