

# KIC 010199218

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010199218-02	OBS	No	555.255599	408.911751	1167.9	13.323	16.0	15.8	1.75	6935	11.08	2.89
010199218-03	OBS	No	568.148971	354.911719	1761.5	12.342	13.2	16.5	1.75	6935	13.48	2.81
010199218-04	OBS	No	251.949107	224.110758	44.5	13.098	8.8	8.3	1.75	6935	1.32	8.30
010199218-05	OBS	No	188.525562	167.112992	20.4	9.797	13.0	2.2	1.75	6935	0.92	12.21
010199218-06	OBS	No	185.909494	182.914879	262.1	8.590	10.9	6.8	1.75	6935	3.21	12.44
010199218-07	OBS	No	333.598614	434.811886	248.8	14.329	10.3	4.5	1.75	6935	4.85	5.71
010199218-08	OBS	No	367.170640	371.172813	261.0	6.000	16.2	-1.0	1.75	6935	2.85	5.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010199218-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
010199218-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010199218-06	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

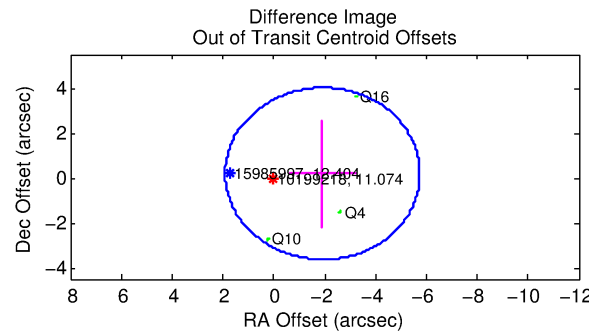
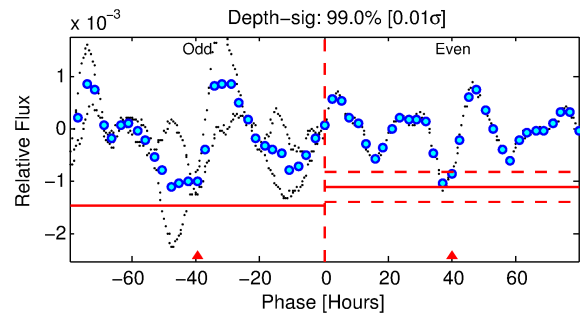
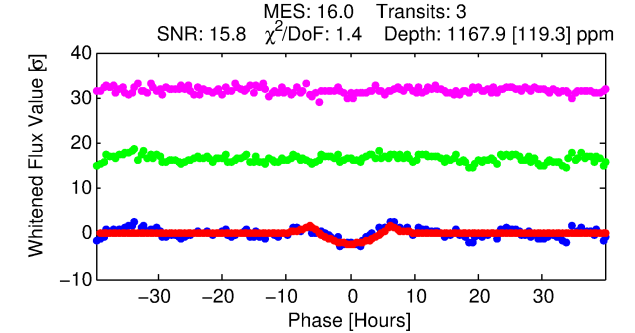
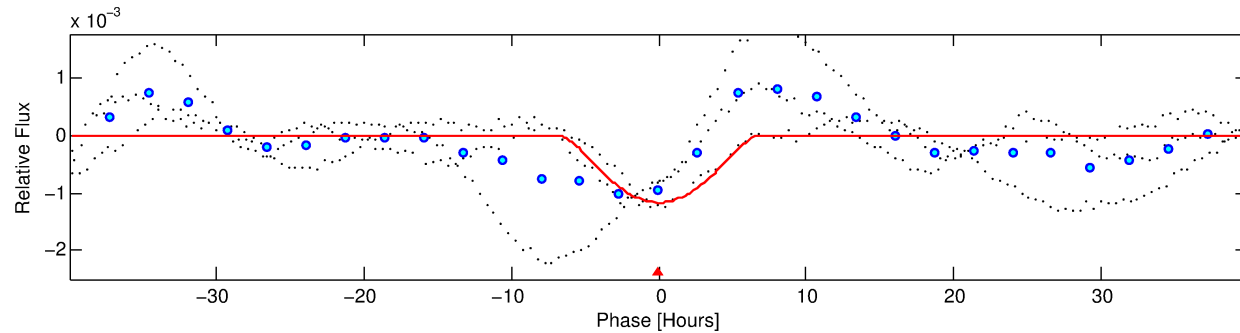
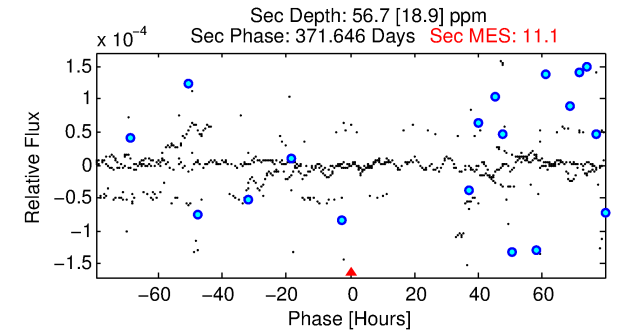
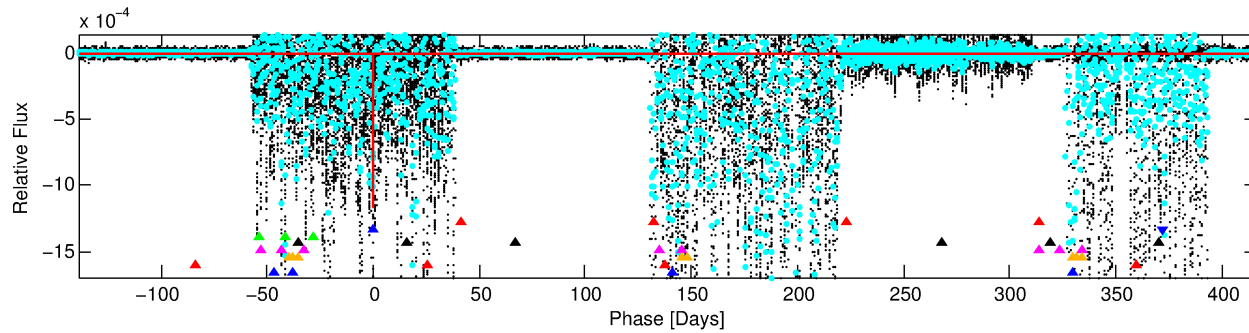
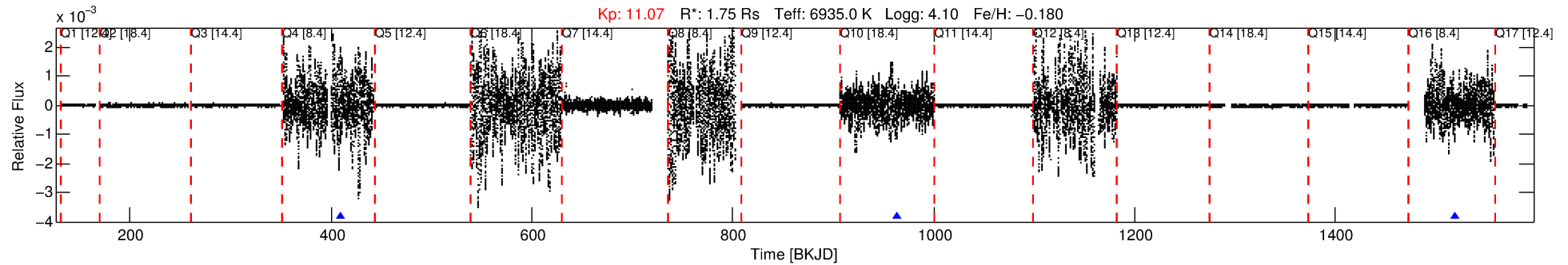
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010199218-02

No Significant Match Found

# DV One-Page Summary

KIC: 10199218 Candidate: 2 of 8 Period: 555.256 d



## DV Fit Results:

Period = 555.25560 [0.01051] d  
Epoch = 408.9118 [0.0180] BKJD  
Rp/R\* = 0.0581 [0.0496]  
a/R\* = 110.29 [21.21]  
b = 1.00 [0.07]  
Seff = 2.89 [1.00]  
Teq = 333 [29] K  
Rp = 11.08 [9.78] Re  
a = 1.4787 [0.2903] AU  
Ag = 555.35 [979.88] [0.57 $\sigma$ ]  
Teffp = 2496 [1091] K [1.98 $\sigma$ ]

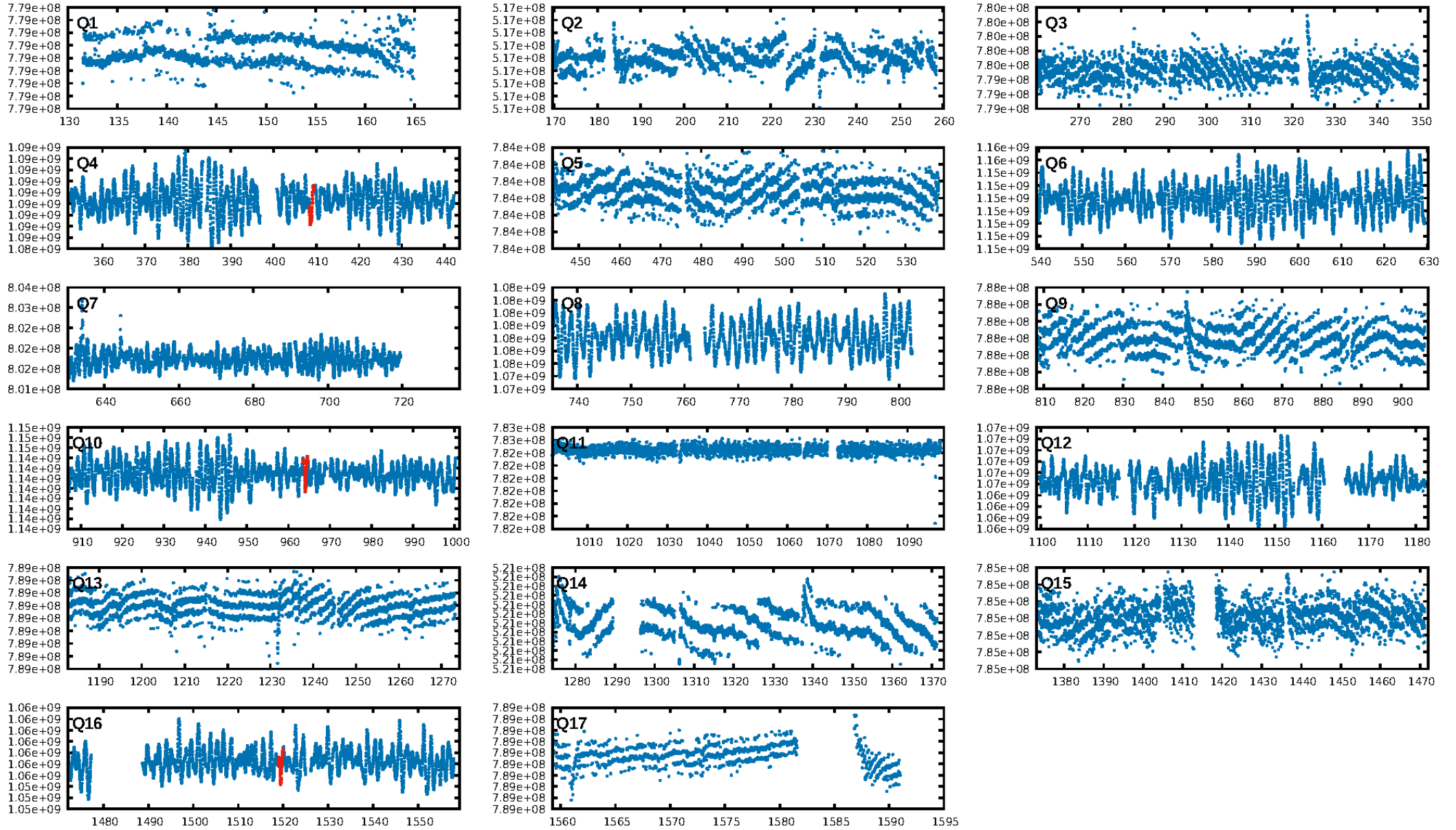
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [142.83 $\sigma$ ]  
LongPeriod-sig: 100.0% [17.04 $\sigma$ ]  
ModelChiSquare2-sig: 26.5%  
ModelChiSquareGof-sig: 39.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.2314  
Centroid-sig: 2.0%  
Centroid-so: 1.048 arcsec [3.45 $\sigma$ ]  
OotOffset-rm: 1.929 arcsec [1.51 $\sigma$ ]  
KicOffset-rm: 1.210 arcsec [0.81 $\sigma$ ]  
OotOffset-st: 1/0/2/0 [3]  
KicOffset-st: 1/0/2/0 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [3/3]

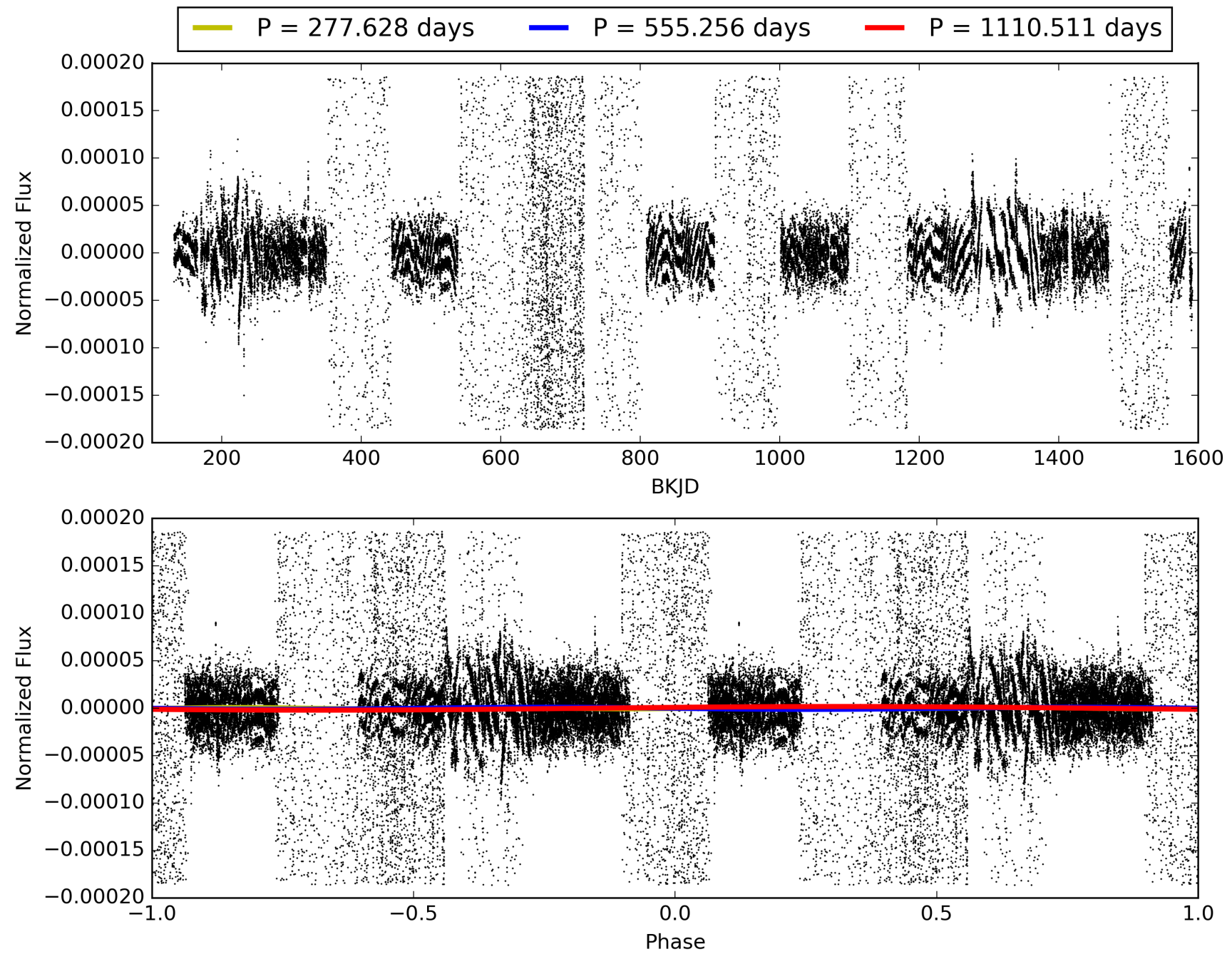
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:54:59 Z

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

# TCE 010199218-02, PDC Light Curves



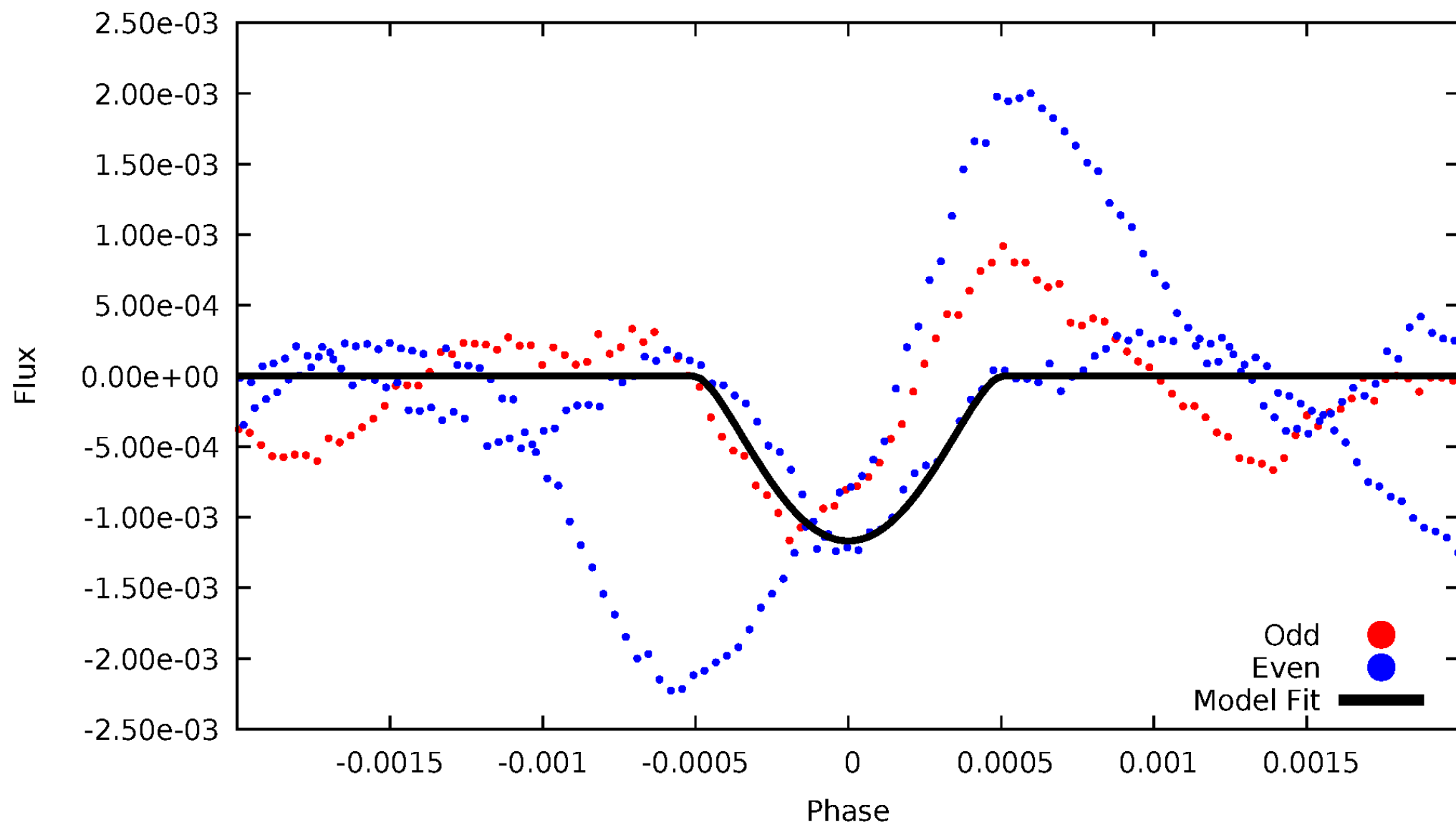
# TCE 010199218-02





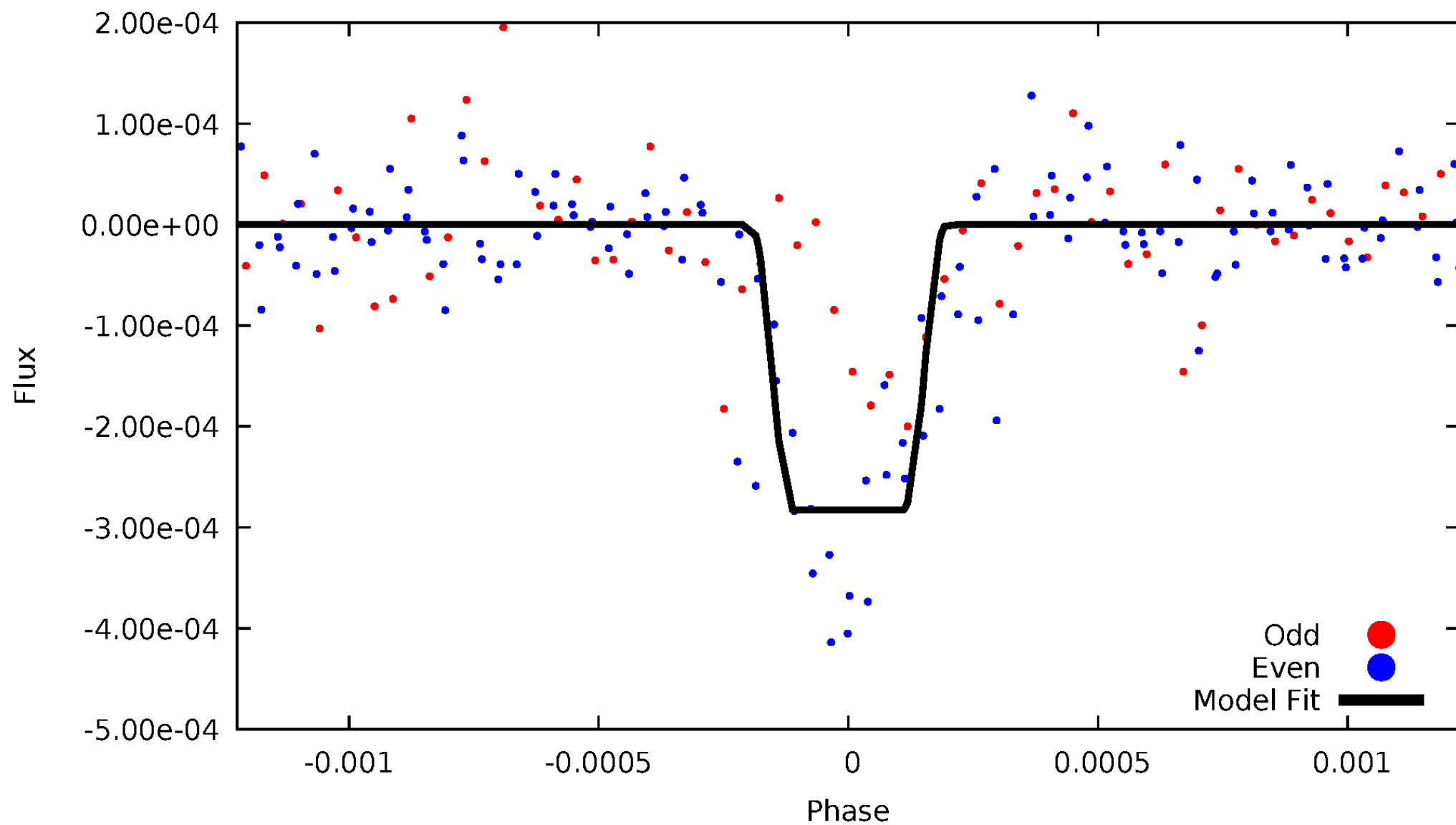
# DV Odd/Even

TCE 010199218-02



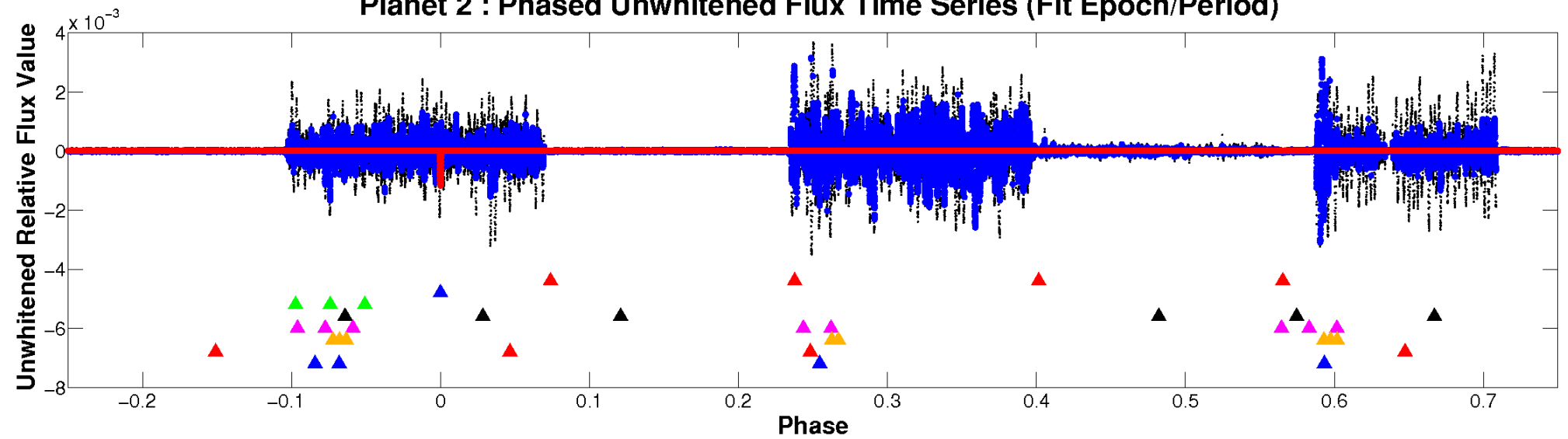
# ALT Odd/Even

TCE 010199218-02

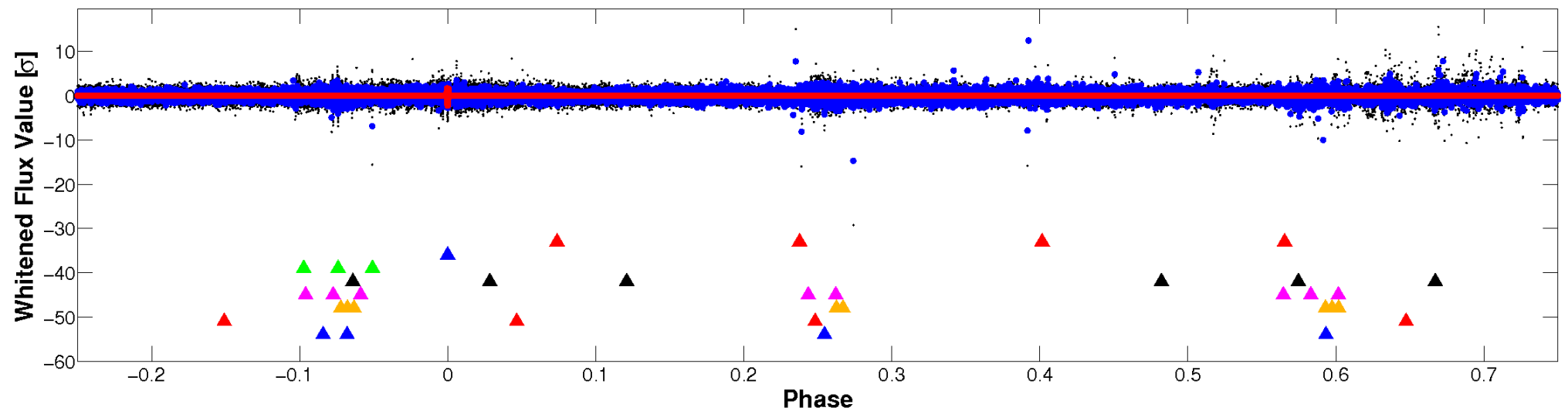


# Non-Whitened Vs. Whitened Light Curve

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

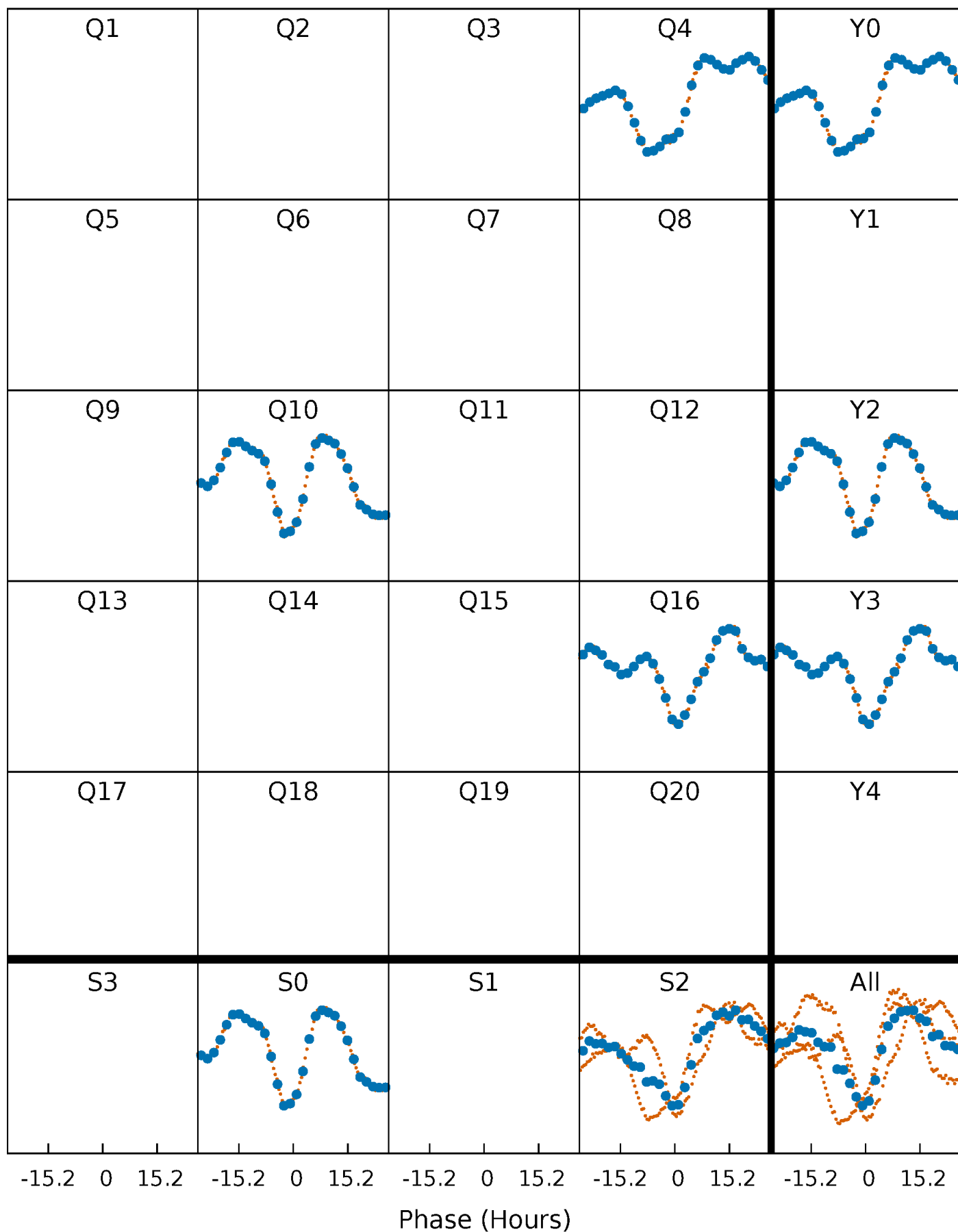


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



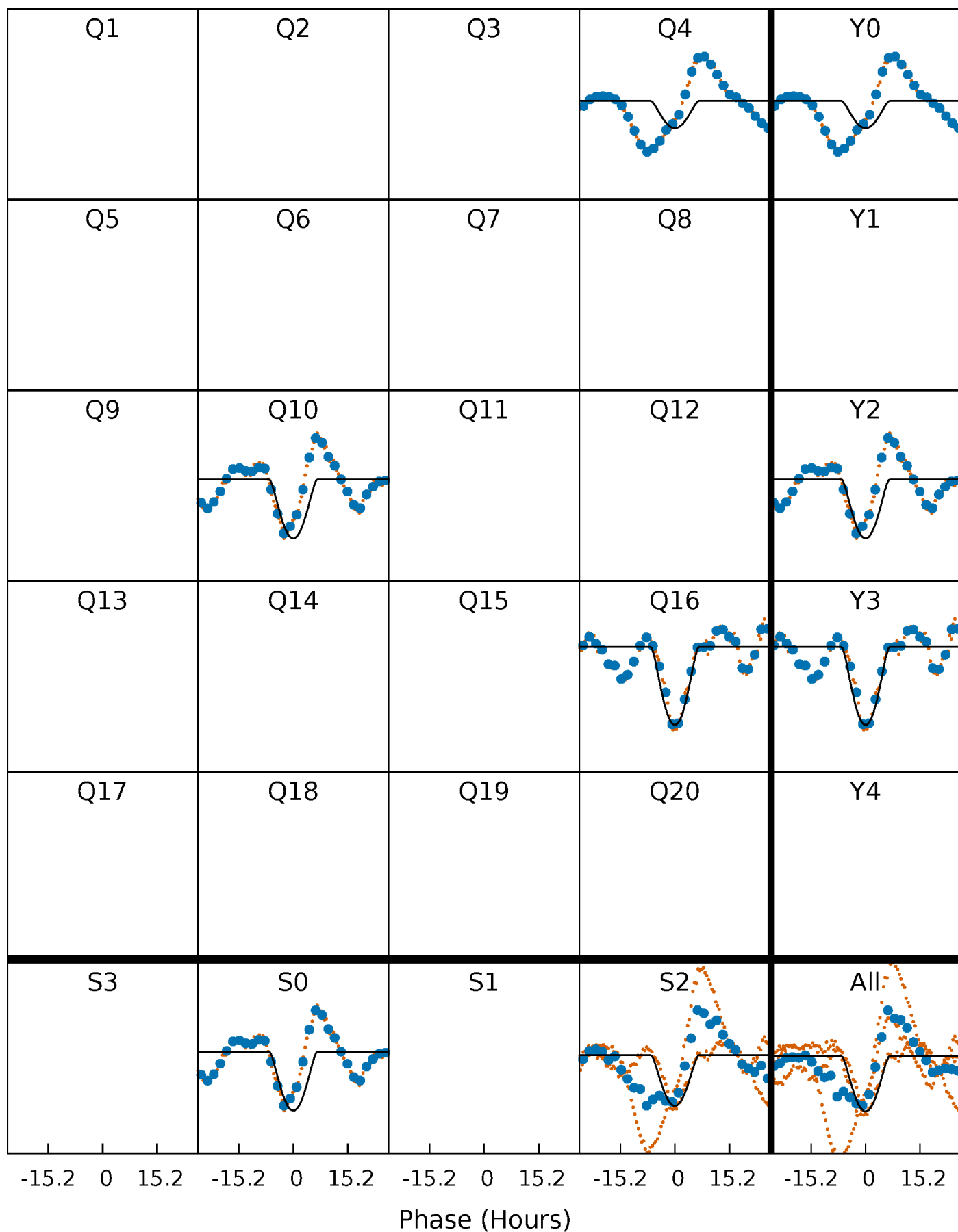
# PDC Quarter-Phased Transit Curves

TCE 010199218-02   P=555.255599 Days    $T_0=408.911751$  (BKJD)



# DV Quarter-Phased Transit Curves

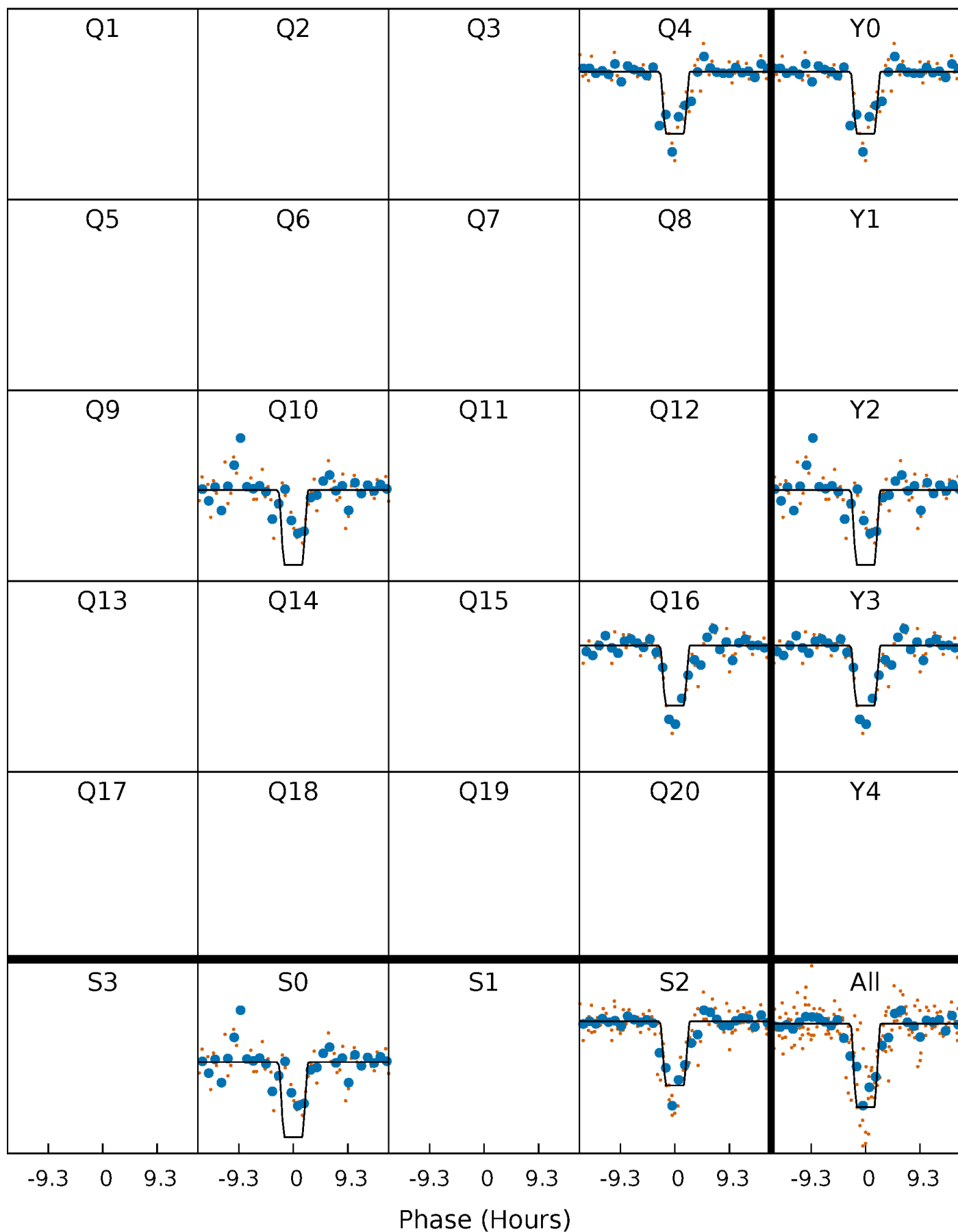
TCE 010199218-02 P=555.255599 Days  $T_0=408.911751$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

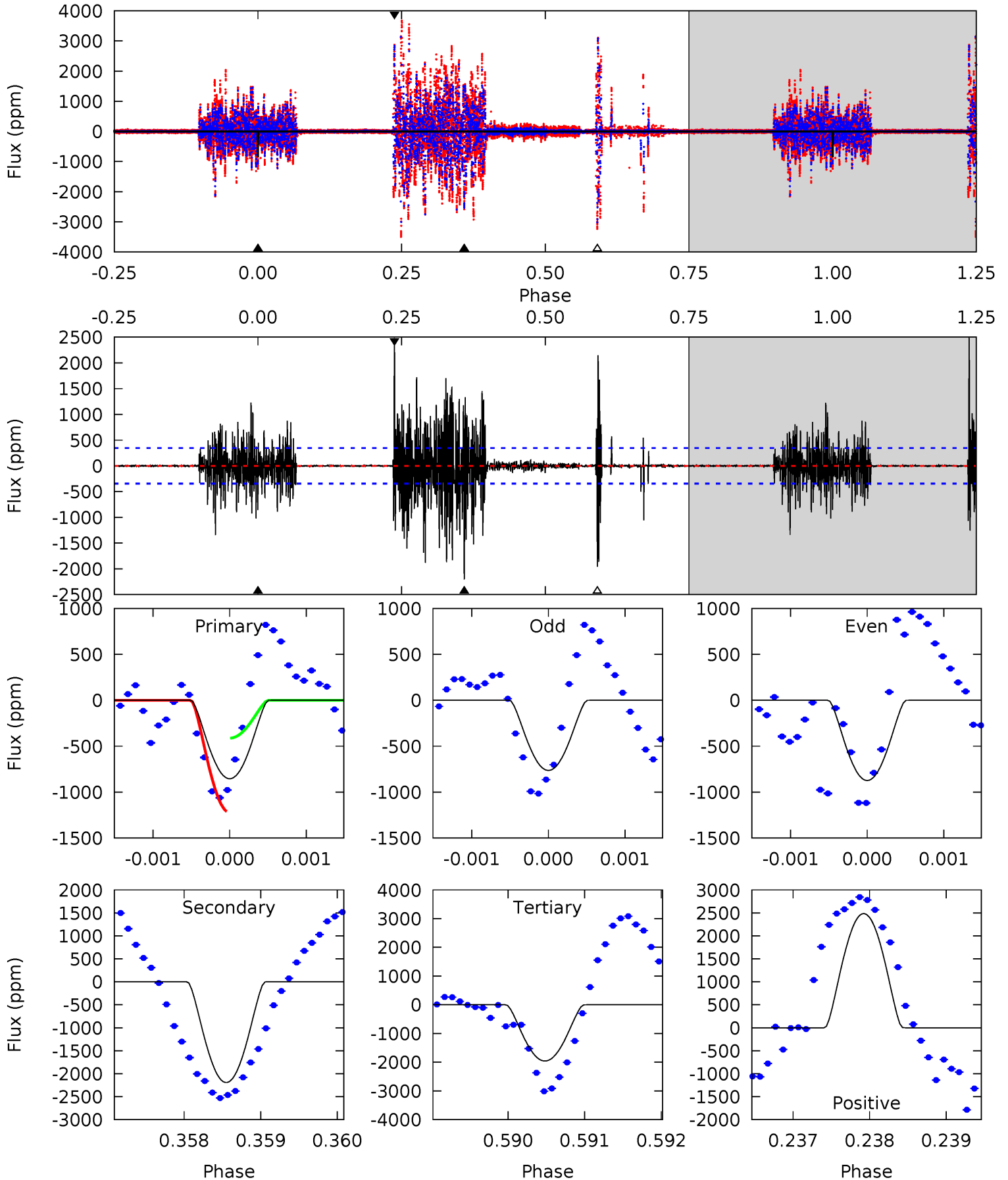
TCE 010199218-02 P=555.220692 Days  $T_0=408.978200$  (BKJD)



# DV Model-Shift Uniqueness Test

010199218-02, P = 555.255599 Days, E = 408.911751 Days

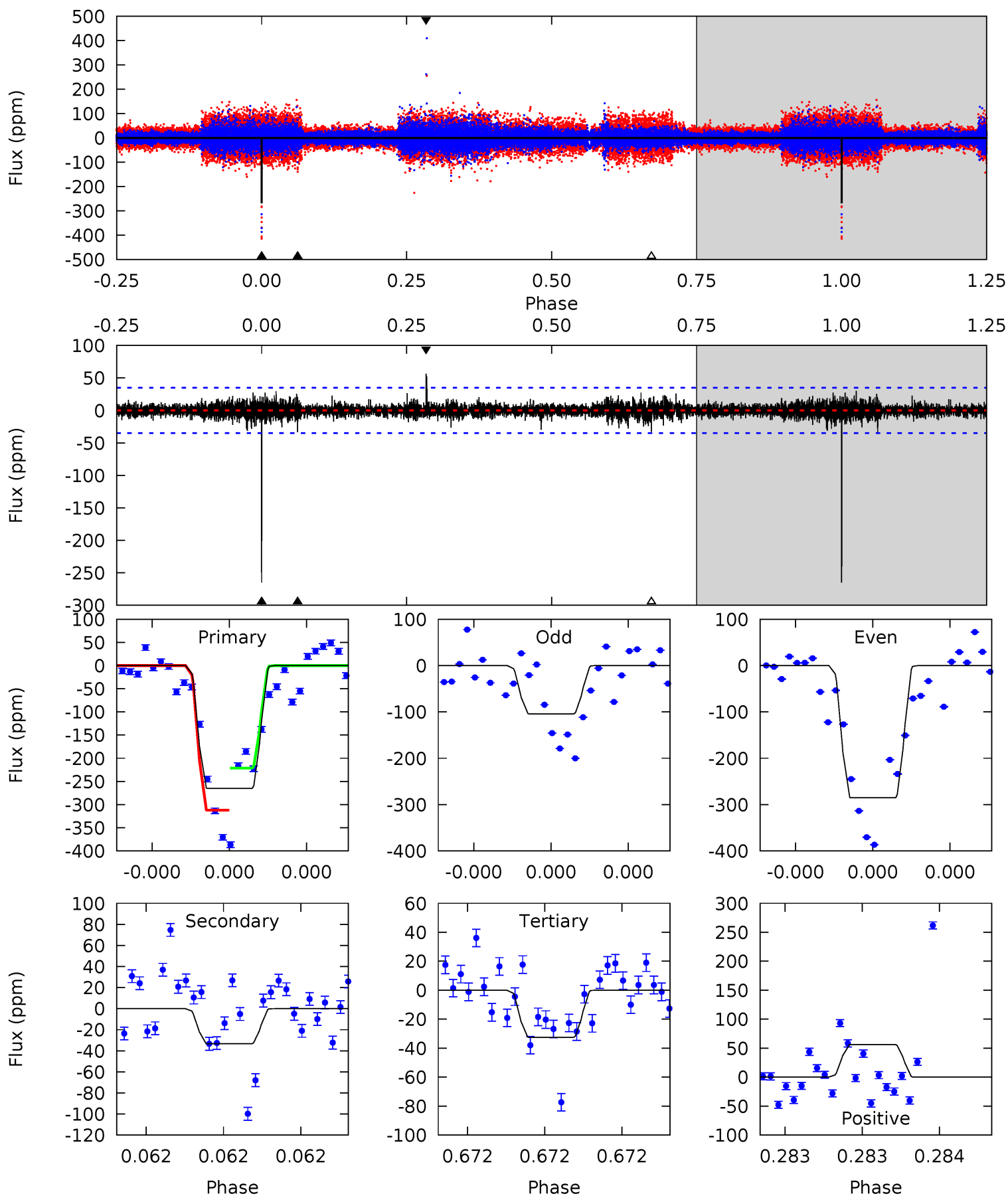
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	34.6	30.9	39.2	5.45	3.29	4.35	-17.4	-25.7	3.68	-4.61	0.84	1.07	0.53	0



# Alt Model-Shift Uniqueness Test

010199218-02, P = 555.220692 Days, E = 408.978200 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
42.7	5.36	5.24	9.07	5.62	3.56	0.98	37.5	33.7	0.12	-3.71	14.0	0.89	0.18	7.60



### Stellar Parameters For KIC 010199218

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6935^{+214}_{-309}$	$4.099^{+0.165}_{-0.135}$	$-0.180^{+0.250}_{-0.300}$	$1.747^{+0.393}_{-0.393}$	$1.403^{+0.168}_{-0.252}$	$0.371^{+0.333}_{-0.152}$
	+3%/-4%	+4%/-3%	+139%/-167%	+22%/-22%	+12%/-18%	+90%/-41%
Source	KIC0	FLK73	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 010199218-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-2192 \pm 63$	$12.33^{+9.19}_{-7.36}$	$463^{+33}_{-34}$	$5870^{+3955}_{-1309}$	$17562^{+86961}_{-11923}$
Alt.	$-33 \pm 6$	$7.70^{+7.65}_{-5.23}$	$462^{+29}_{-31}$	$3159^{+1615}_{-529}$	$679^{+6336}_{-517}$

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

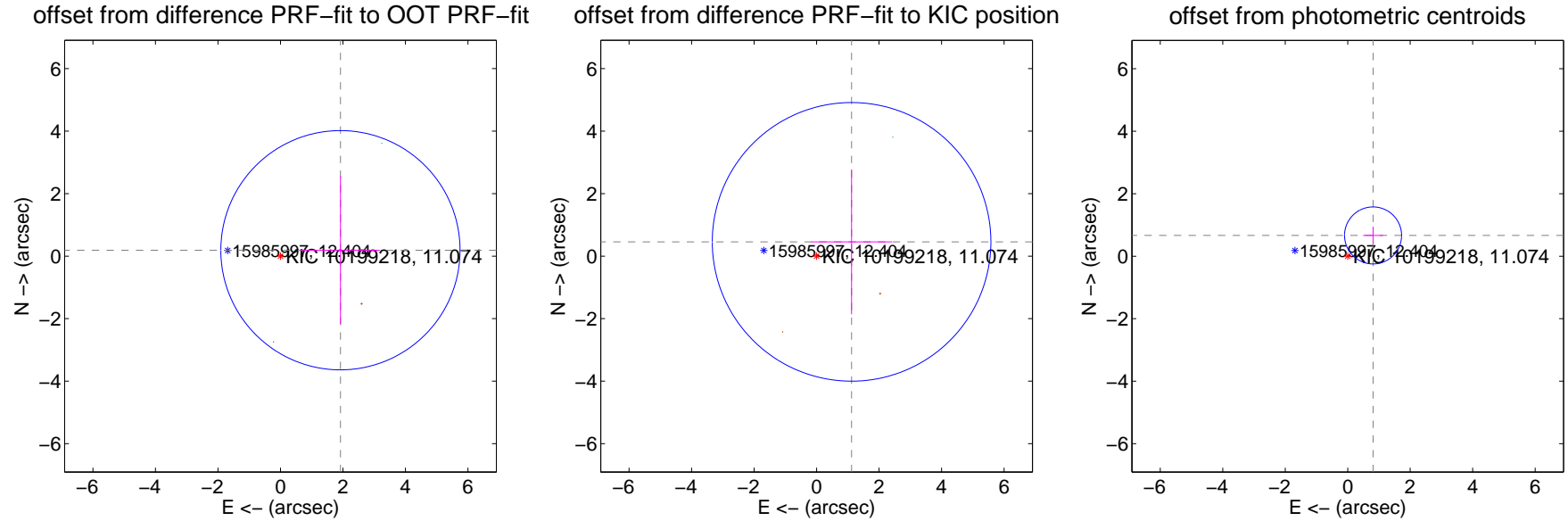
## DV Centroid Data

Supplemental centroid analysis for 010199218-02. **Kepler magnitude: 11.07.** Transit SNR 15.78

**There are 1 quarters with good PRF difference image offsets**

The direct PRF centroid is offset from the target star catalog position by about 0.83 arcsec

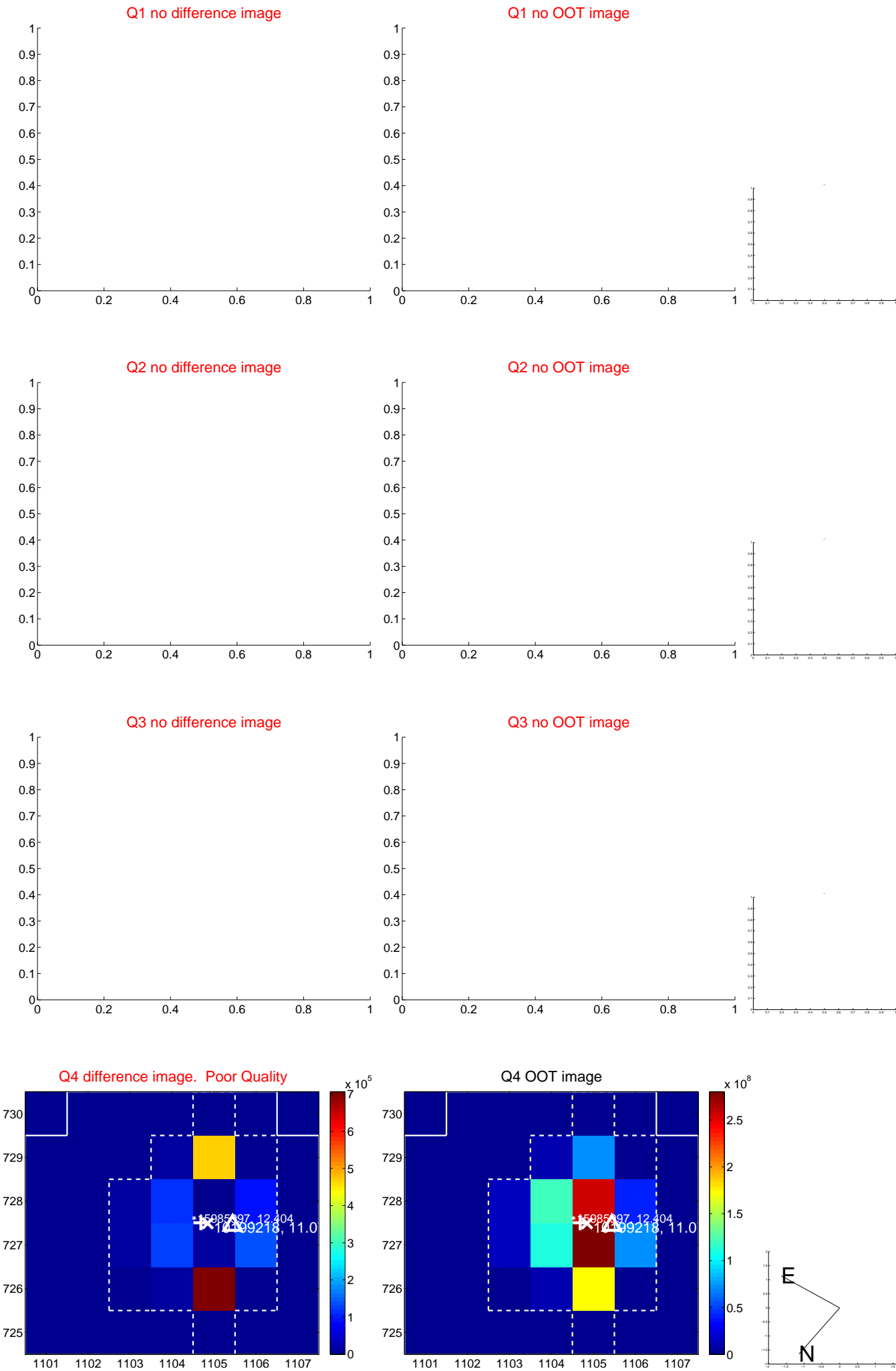
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.929 \pm 1.276$	1.51	$-1.919 \pm 1.261$	$0.189 \pm 2.369$
PRF-fit source offset from KIC position	$1.210 \pm 1.486$	0.81	$-1.120 \pm 1.297$	$0.457 \pm 2.319$
photometric centroid source offset	<b><math>1.05 \pm 0.30</math></b>	<b>3.45</b>	$-0.81 \pm 0.32$	$0.66 \pm 0.28$



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.



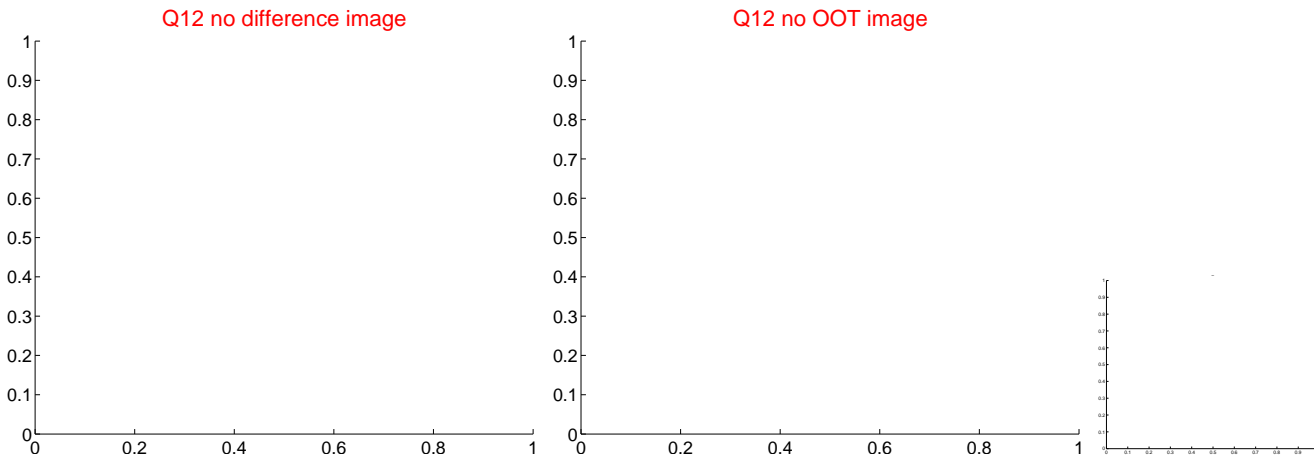
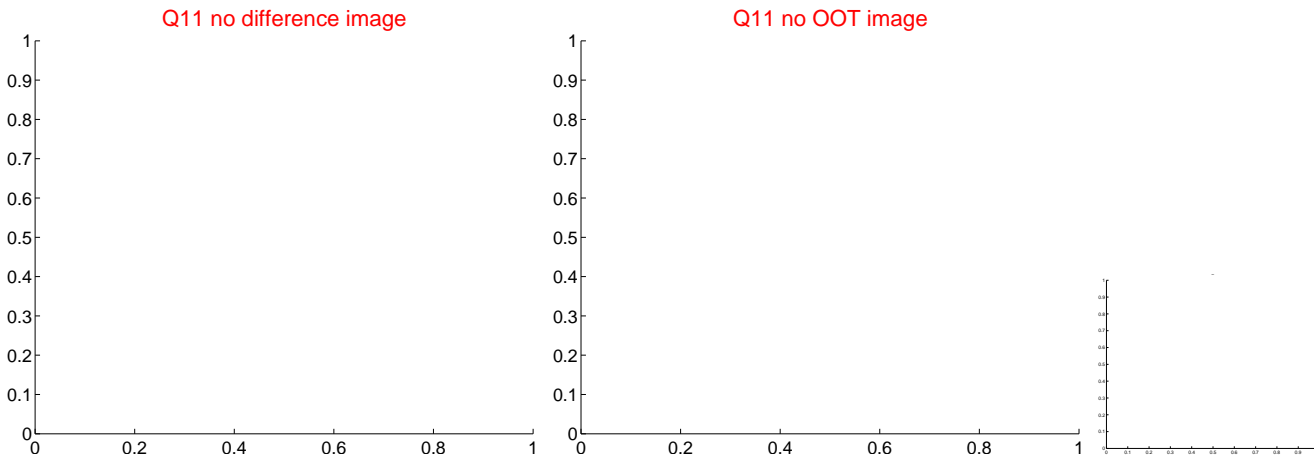
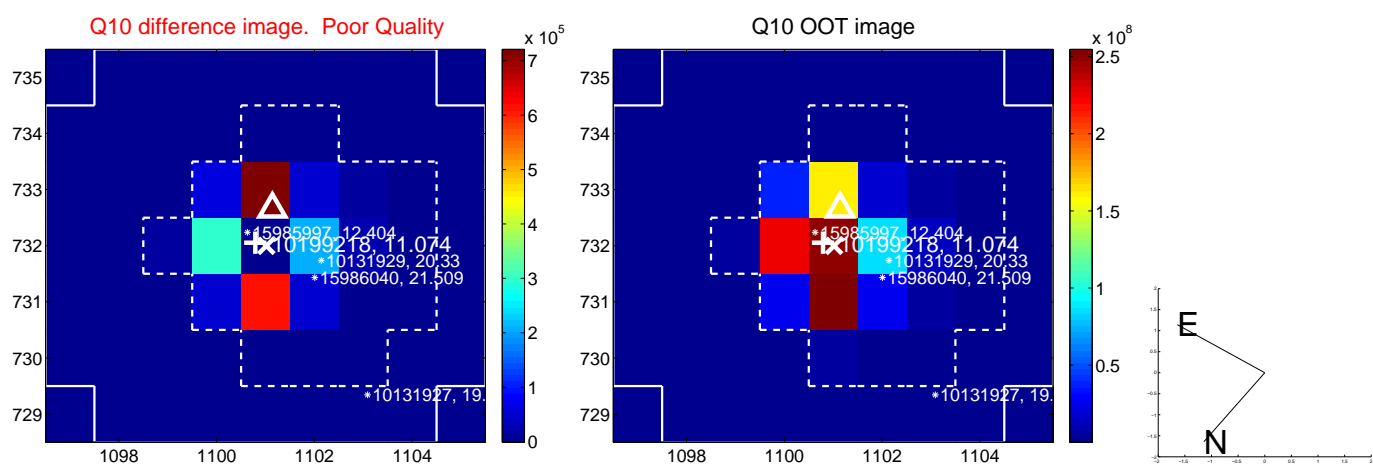
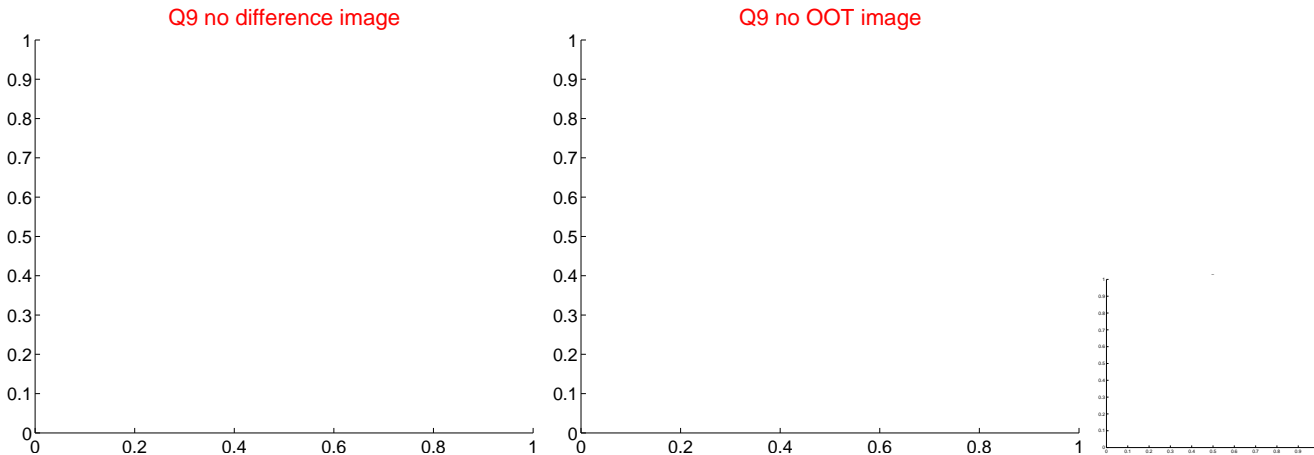
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



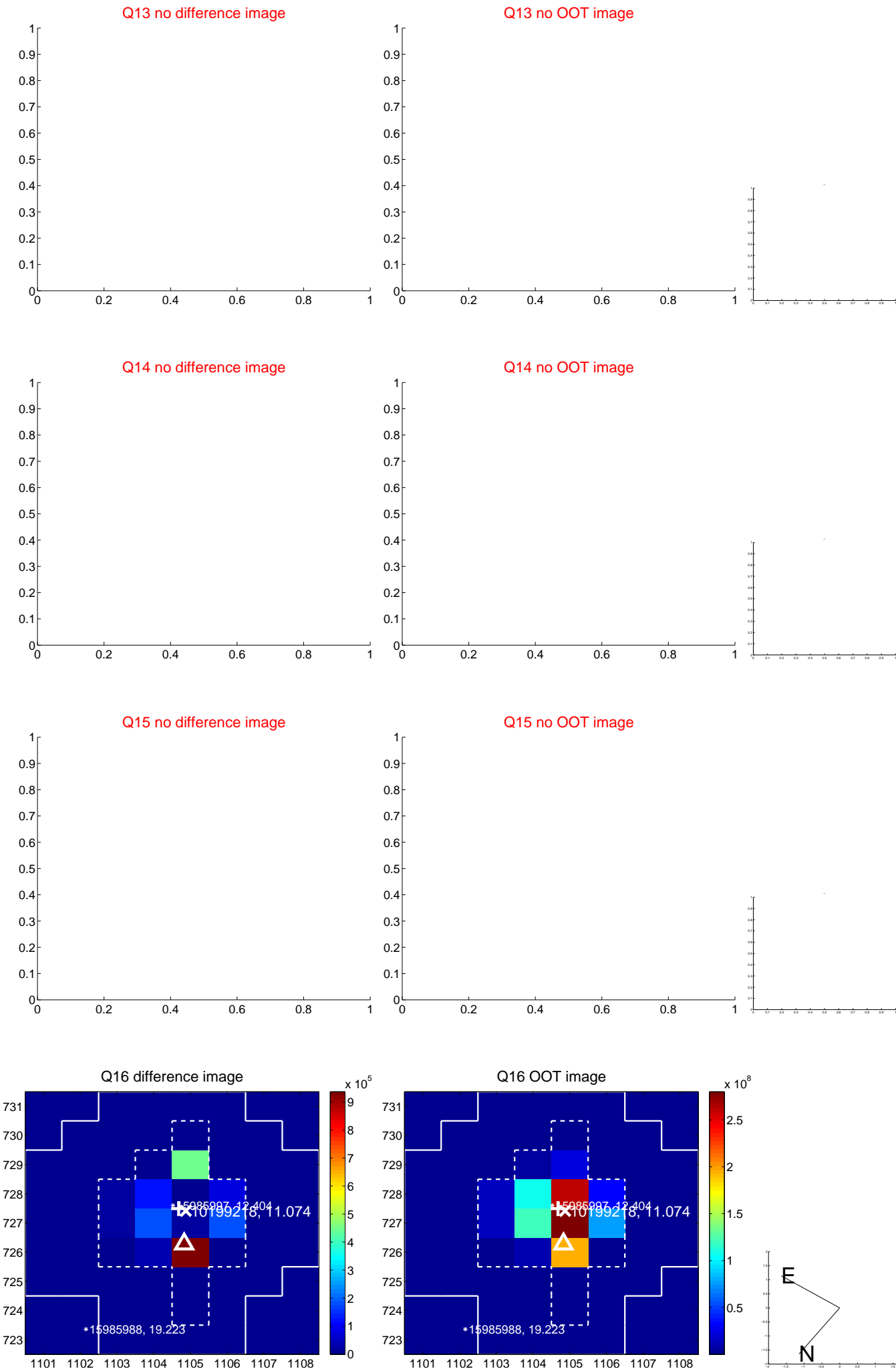
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



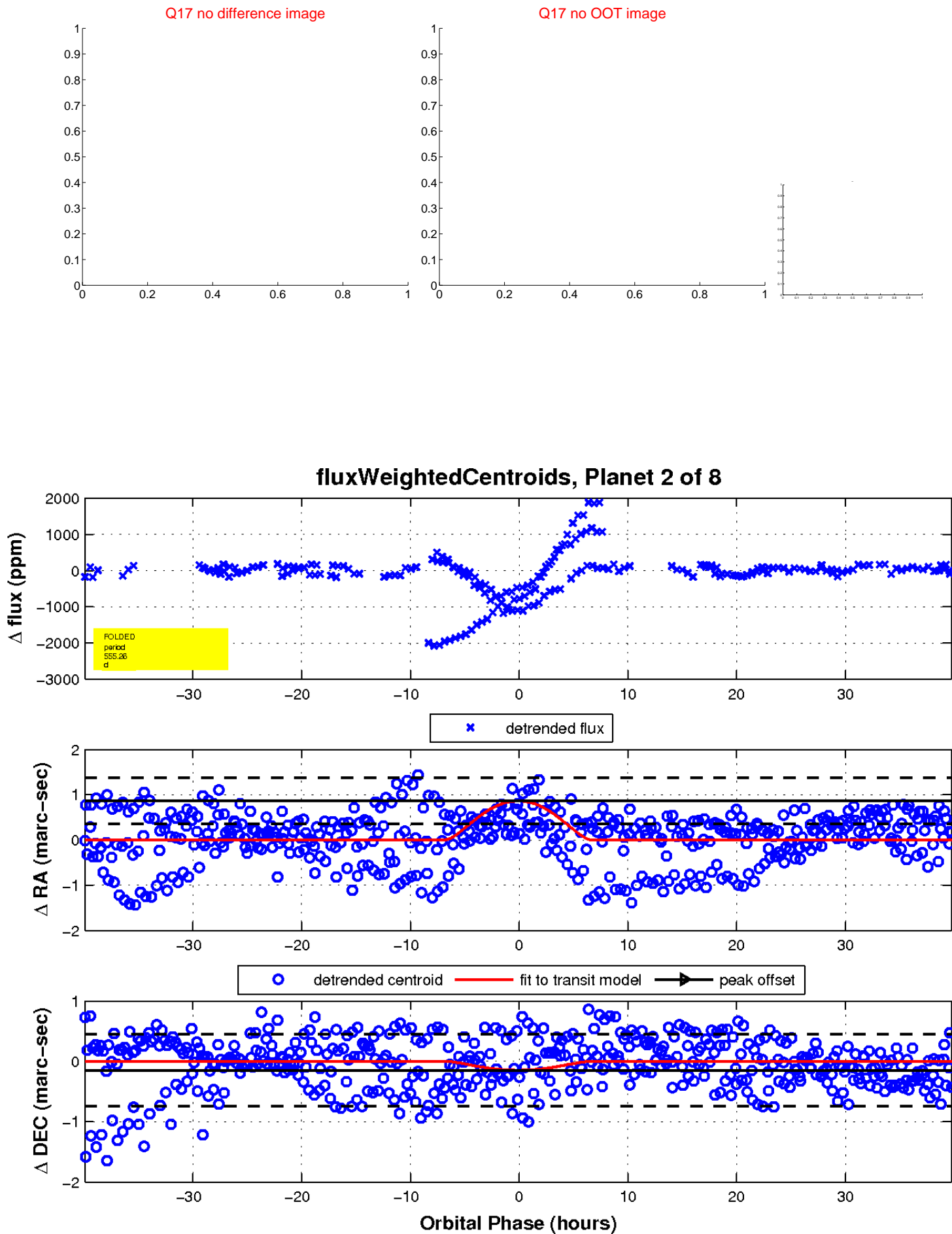
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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



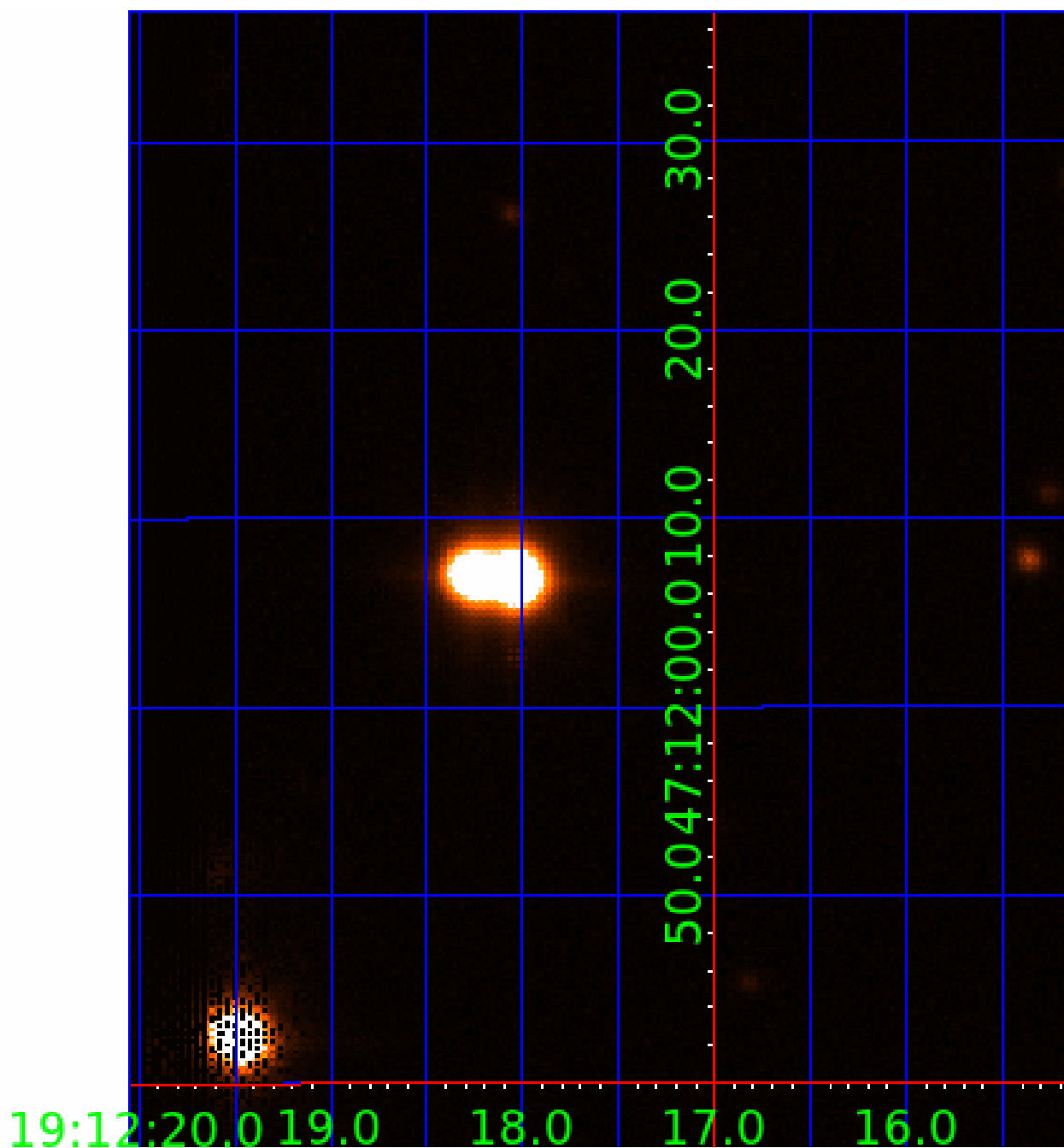
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 010199218

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010199218-02	OBS	No	555.255599	408.911751	1167.9	13.323	16.0	15.8	1.75	6935	11.08	2.89
010199218-03	OBS	No	568.148971	354.911719	1761.5	12.342	13.2	16.5	1.75	6935	13.48	2.81
010199218-04	OBS	No	251.949107	224.110758	44.5	13.098	8.8	8.3	1.75	6935	1.32	8.30
010199218-05	OBS	No	188.525562	167.112992	20.4	9.797	13.0	2.2	1.75	6935	0.92	12.21
010199218-06	OBS	No	185.909494	182.914879	262.1	8.590	10.9	6.8	1.75	6935	3.21	12.44
010199218-07	OBS	No	333.598614	434.811886	248.8	14.329	10.3	4.5	1.75	6935	4.85	5.71
010199218-08	OBS	No	367.170640	371.172813	261.0	6.000	16.2	-1.0	1.75	6935	2.85	5.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010199218-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
010199218-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010199218-06	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

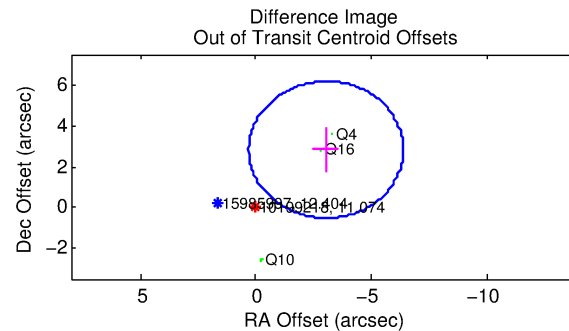
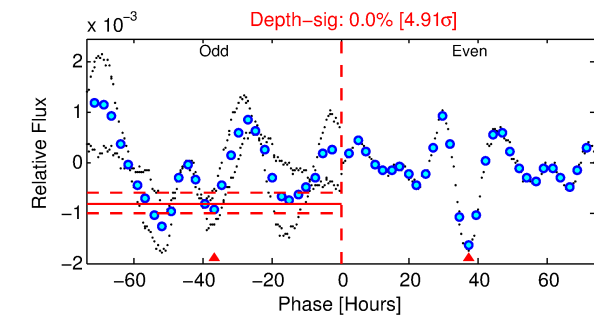
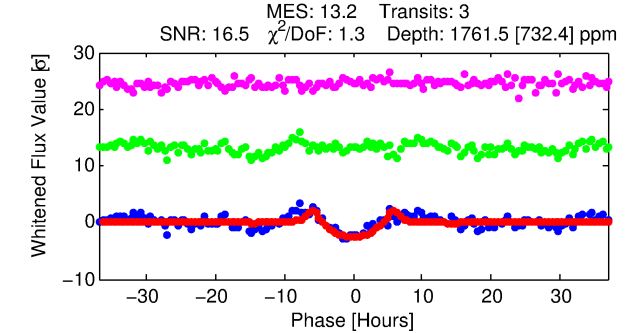
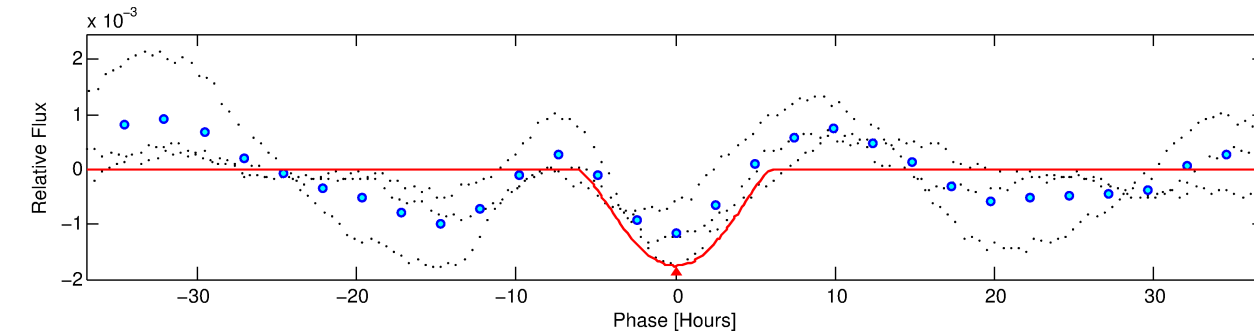
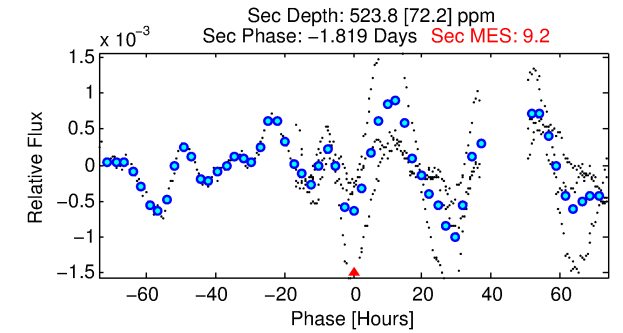
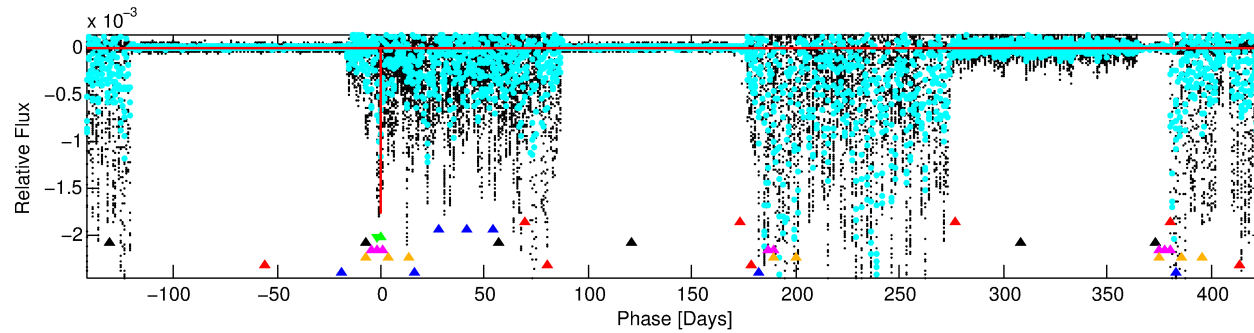
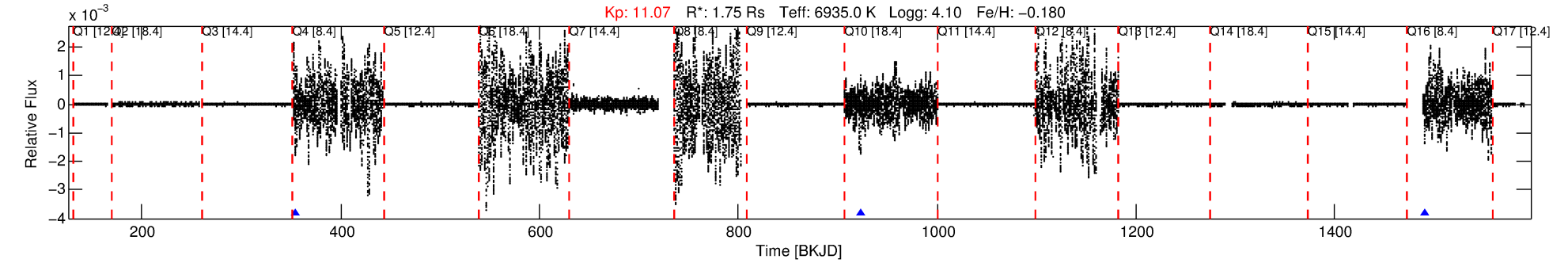
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010199218-03

No Significant Match Found

# DV One-Page Summary

KIC: 10199218 Candidate: 3 of 8 Period: 568.149 d



## DV Fit Results:

Period = 568.14897 [0.00733] d  
Epoch = 354.9117 [0.0096] BKJD  
Rp/R\* = 0.0707 [0.0442]  
a/R\* = 134.58 [17.80]  
b = 1.00 [0.04]  
Seff = 2.81 [0.97]  
Teq = 330 [28] K  
Rp = 13.48 [8.96] Re  
a = 1.5015 [0.2947] AU  
Ag = 3575.02 [4619.85] [0.77σ]  
Teffp = 3945 [1253] K [2.88σ]

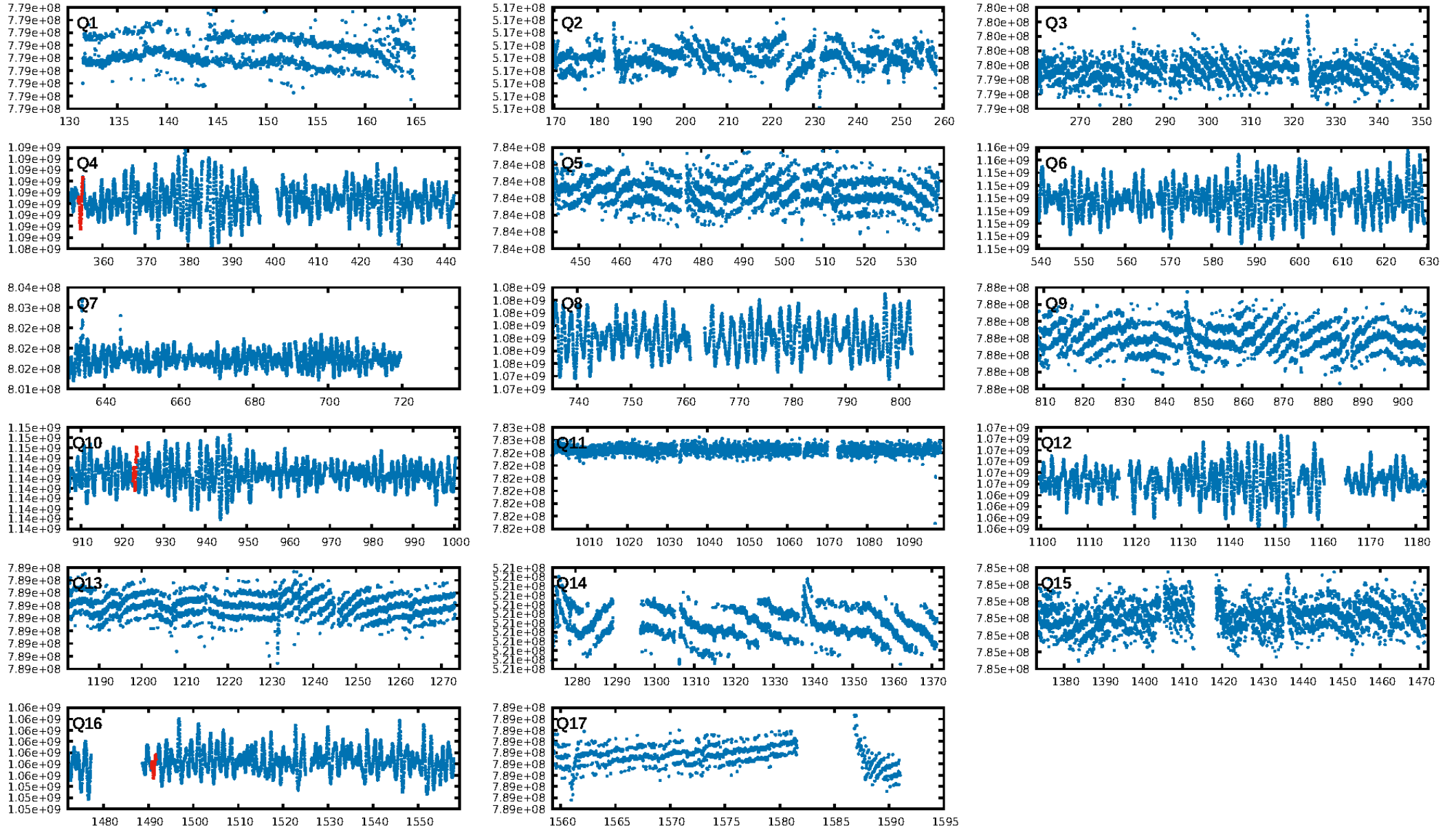
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [17.04σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 60.7%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.667  
Centroid-sig: 0.0%  
Centroid-so: 1.073 arcsec [5.34σ]  
OotOffset-rm: 4.140 arcsec [3.71σ]  
OotOffset-st: 1/0/2/0 [3]  
KicOffset-rm: 3.614 arcsec [1.70σ]  
KicOffset-st: 1/0/2/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 0.67 [2/3]

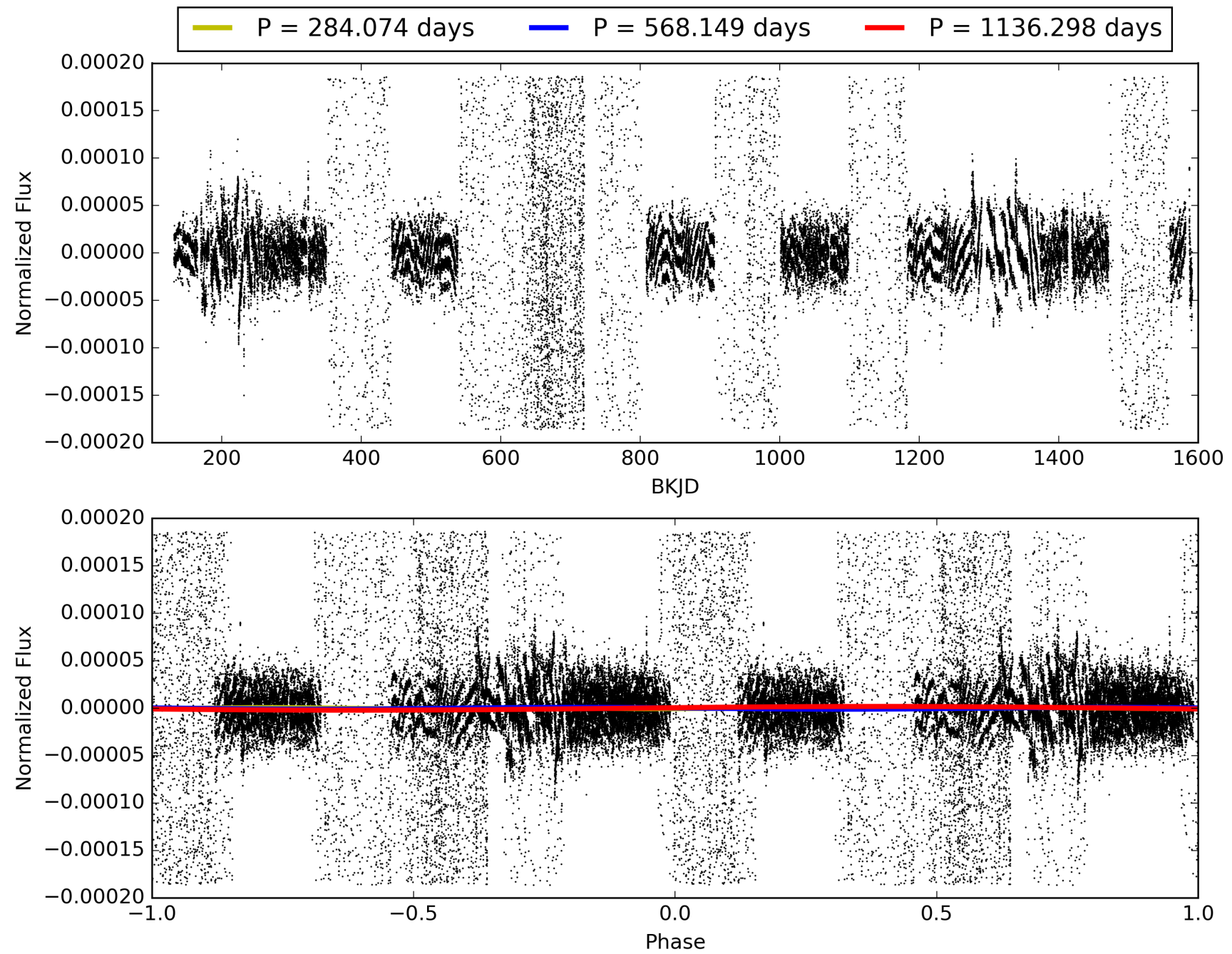
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:55:08 Z

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

# TCE 010199218-03, PDC Light Curves



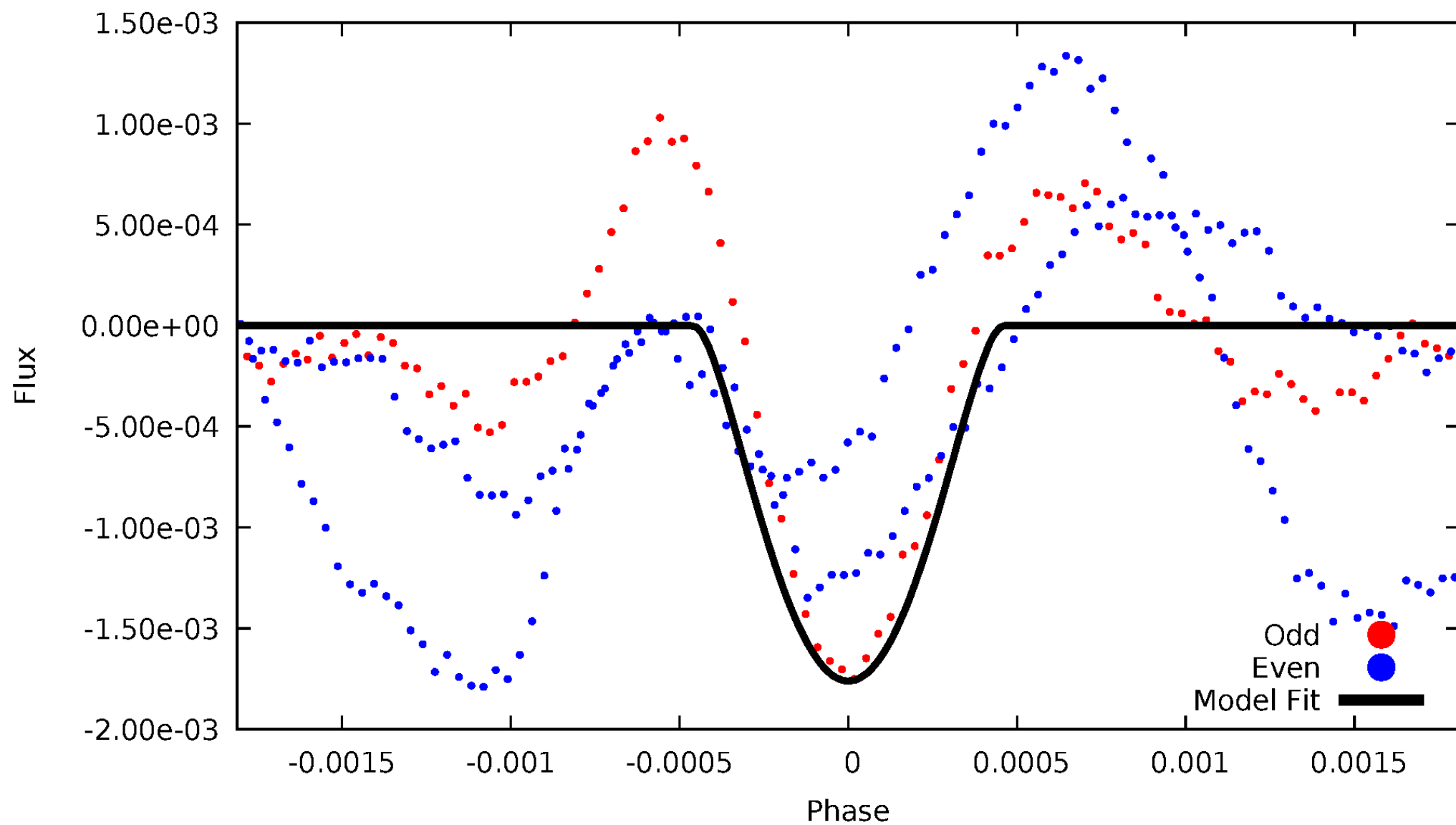
# TCE 010199218-03





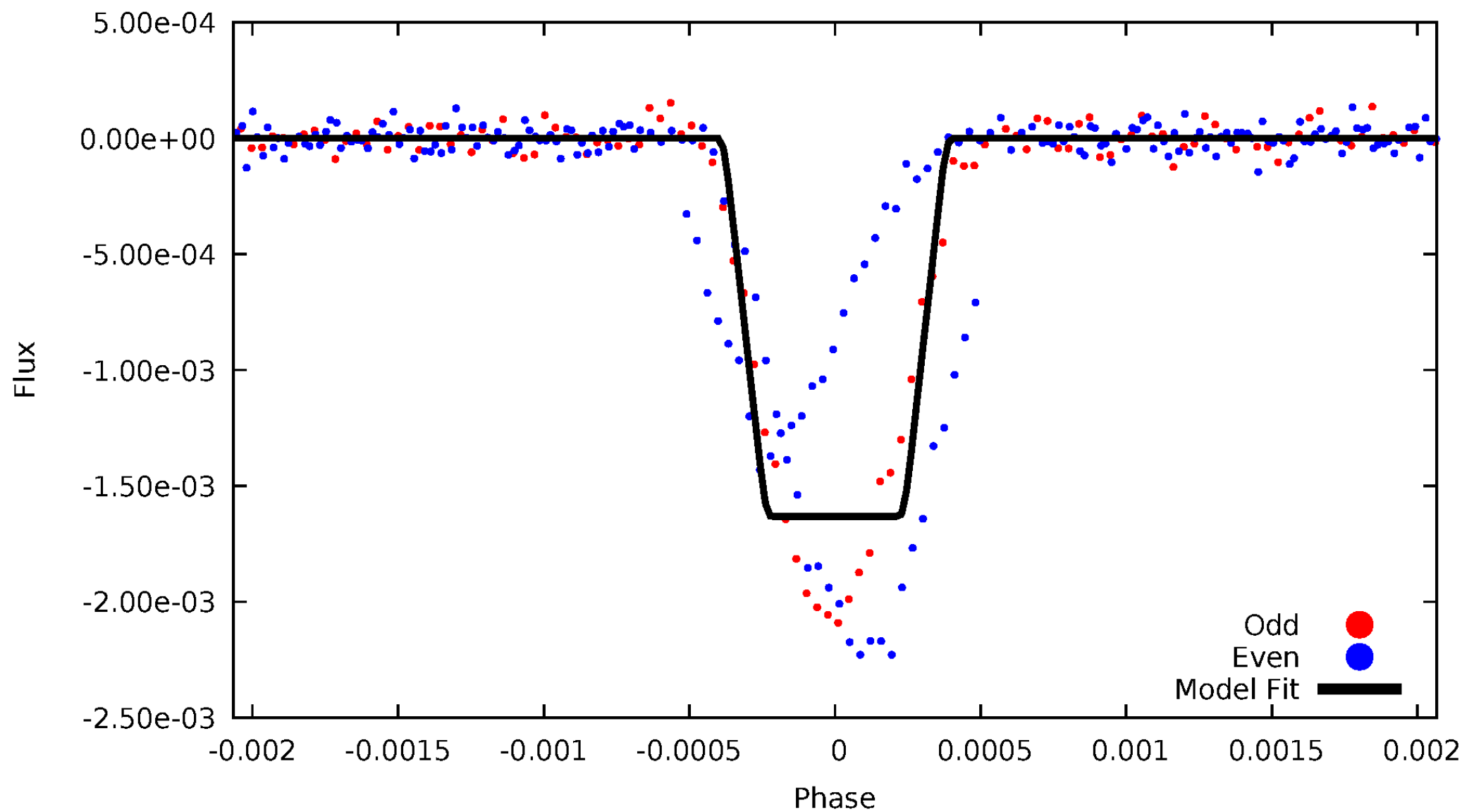
# DV Odd/Even

TCE 010199218-03



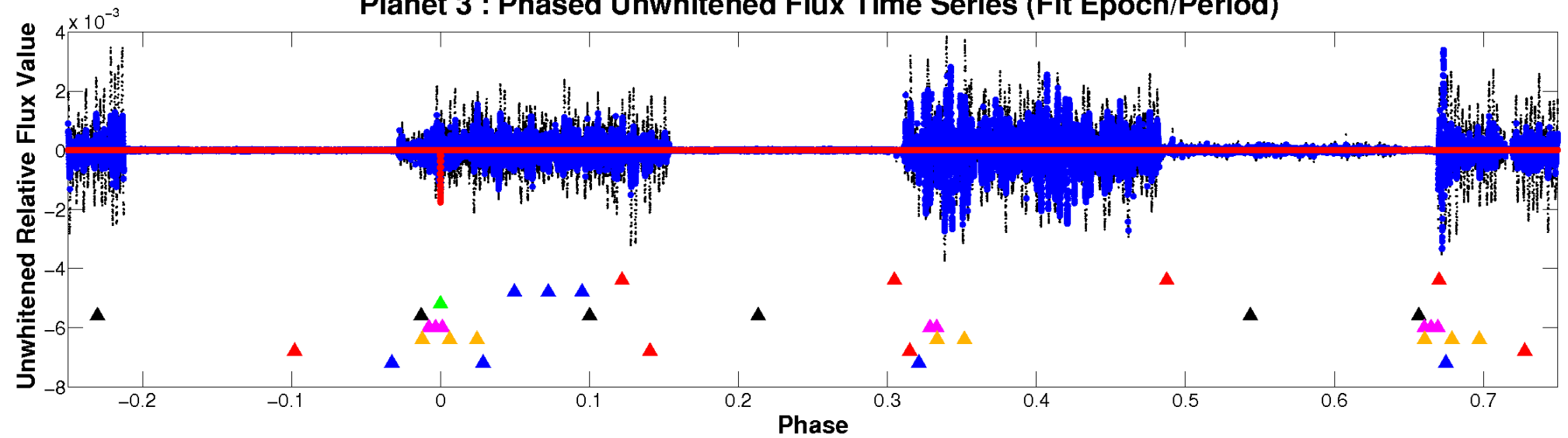
# ALT Odd/Even

TCE 010199218-03

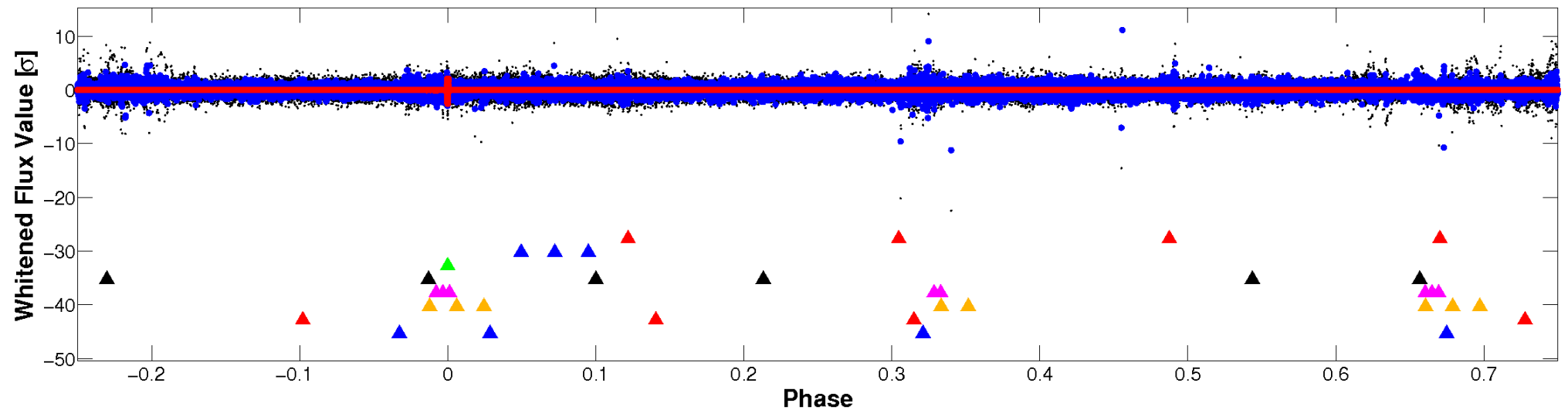


# Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

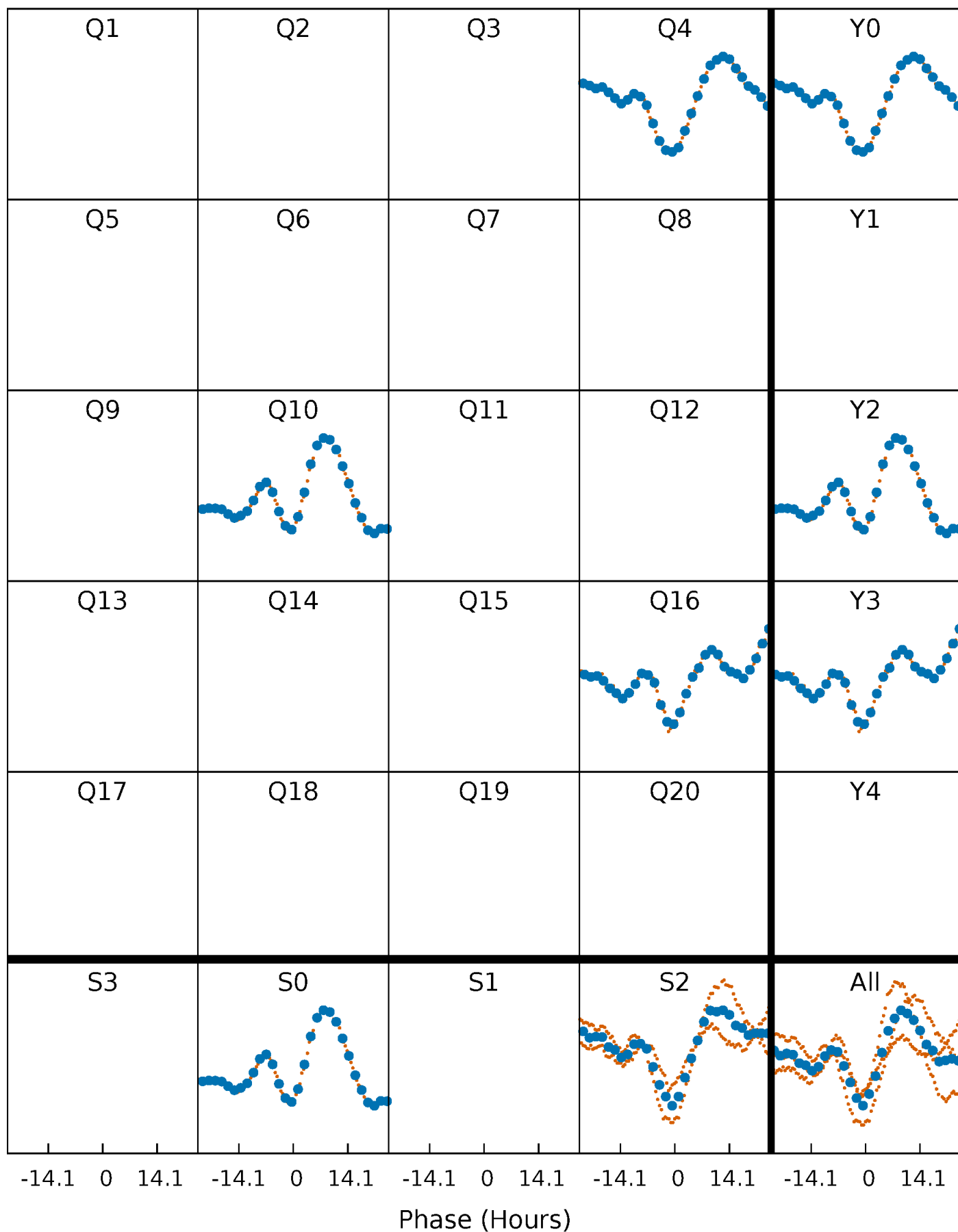


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



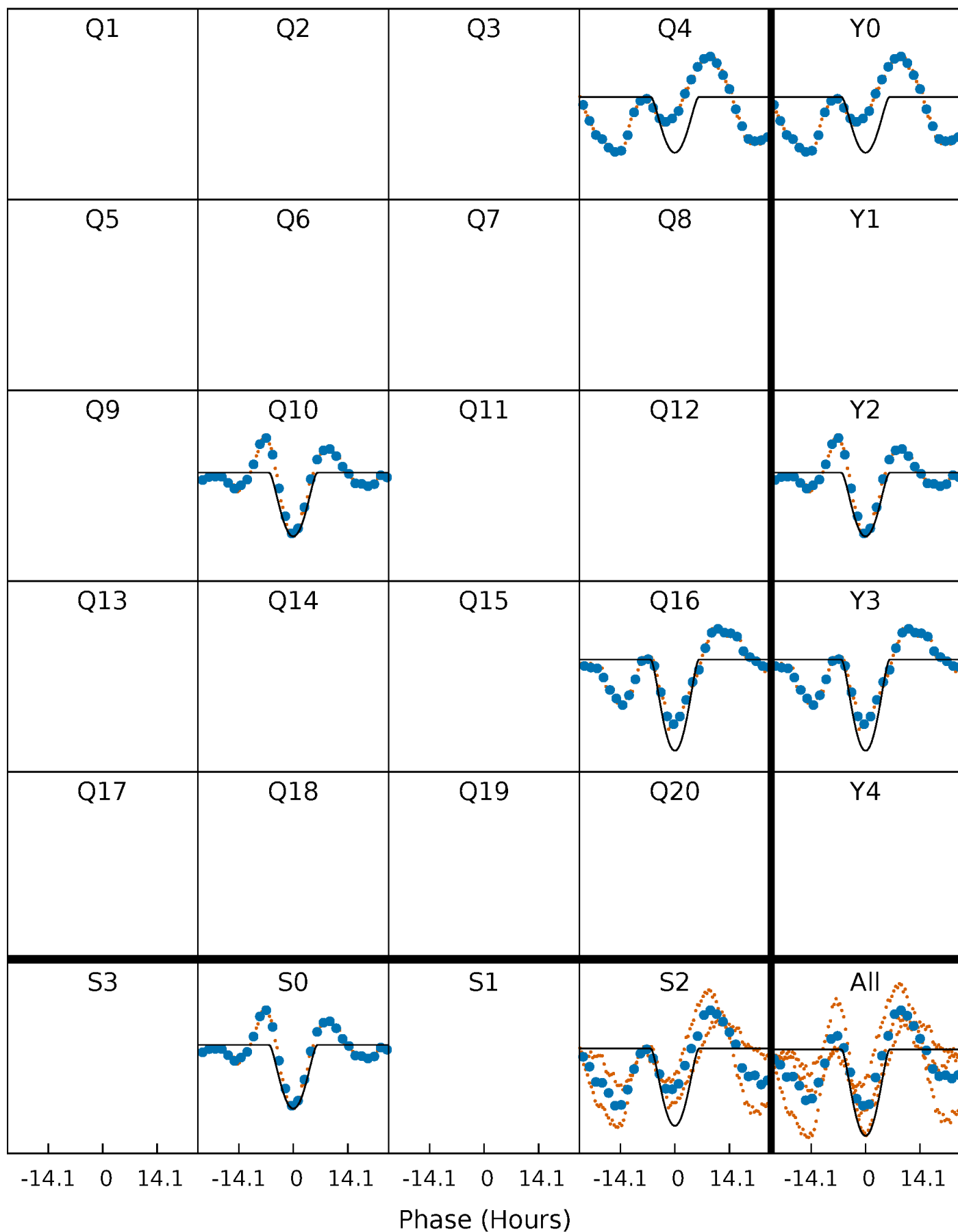
# PDC Quarter-Phased Transit Curves

TCE 010199218-03 P=568.148971 Days  $T_0=354.911719$  (BKJD)



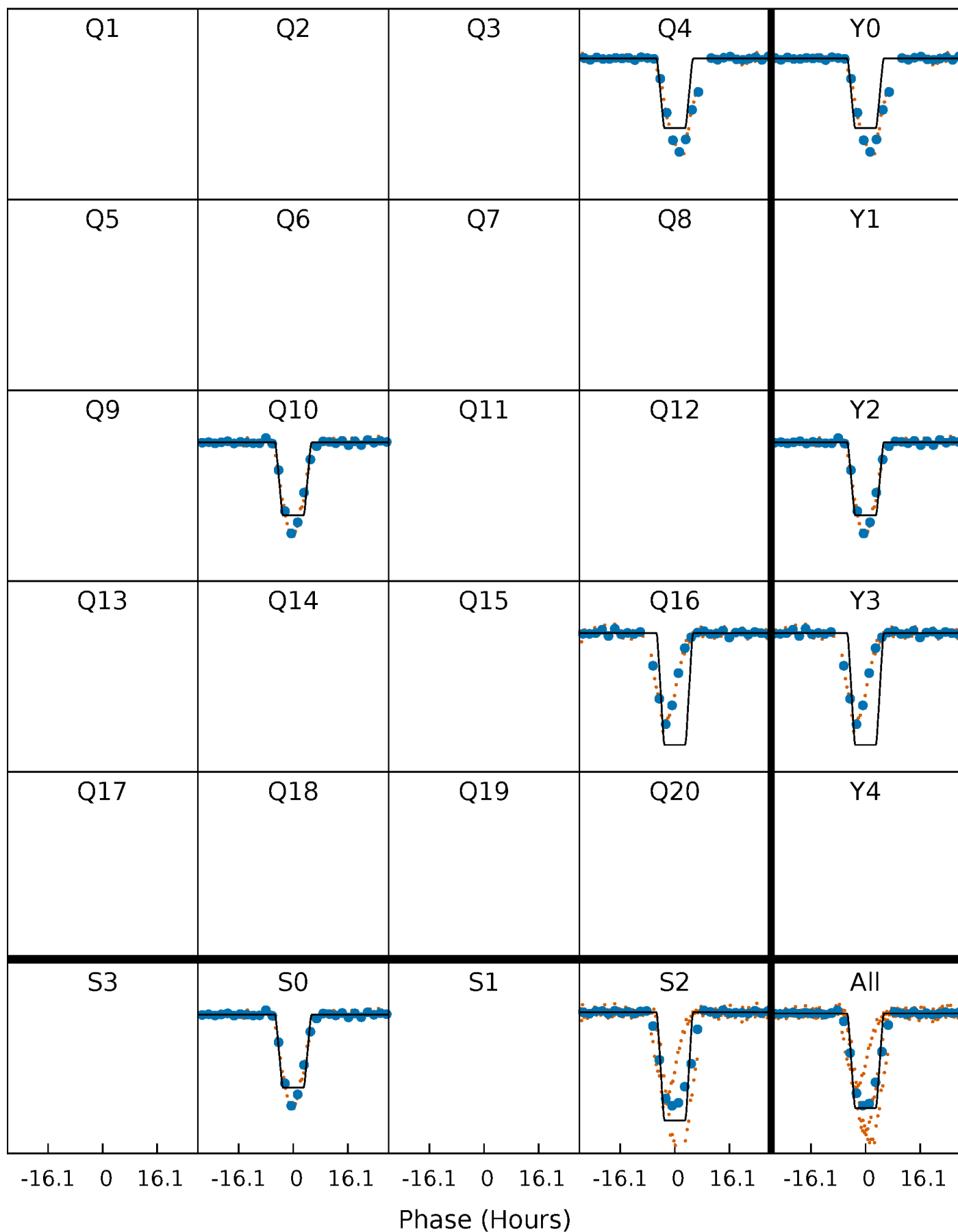
# DV Quarter-Phased Transit Curves

TCE 010199218-03     $P=568.148971$  Days     $T_0=354.911719$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

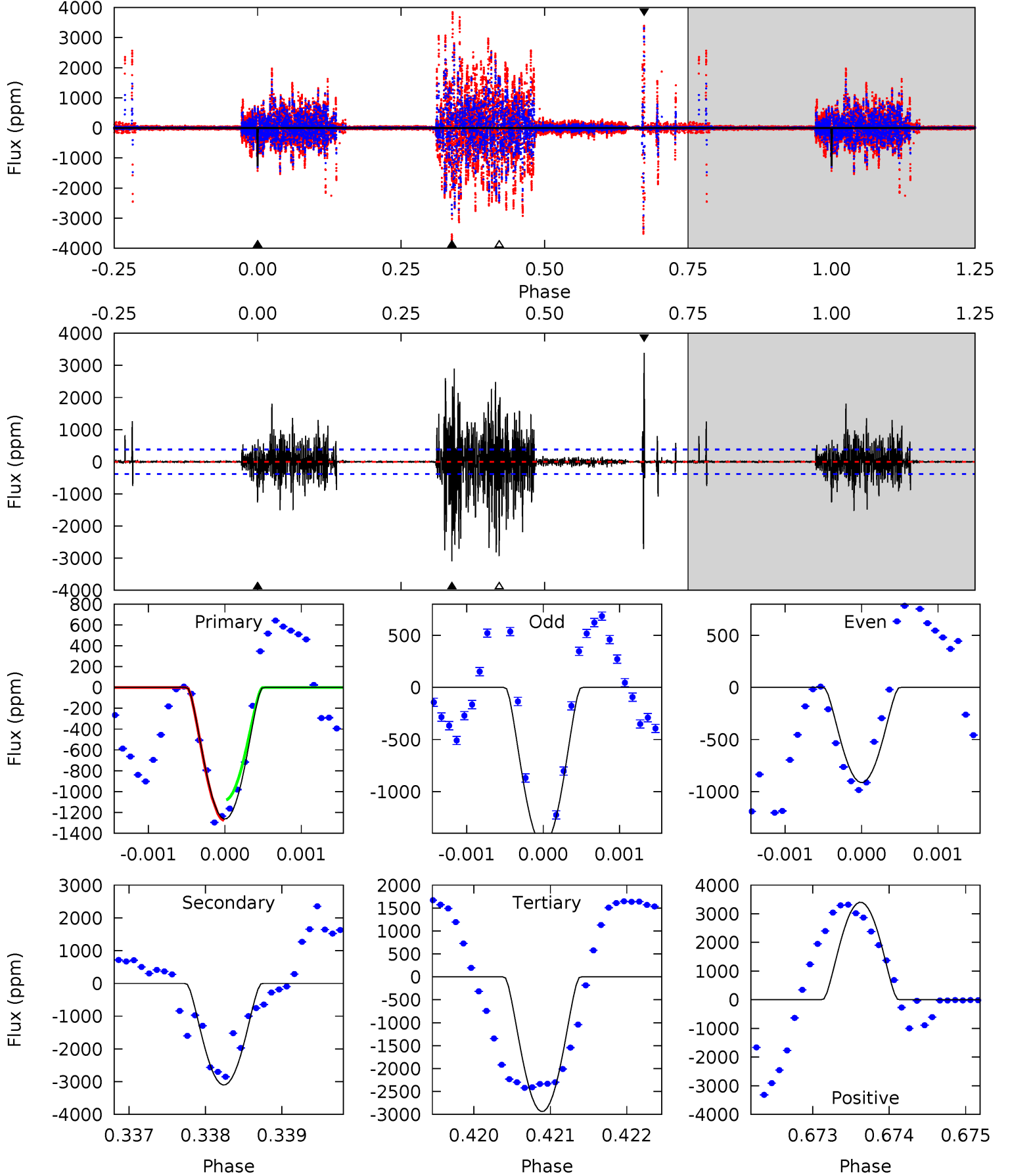
TCE 010199218-03     $P=568.223248$  Days     $T_0=354.841011$  (BKJD)



# DV Model-Shift Uniqueness Test

010199218-03, P = 568.148971 Days, E = 354.911719 Days

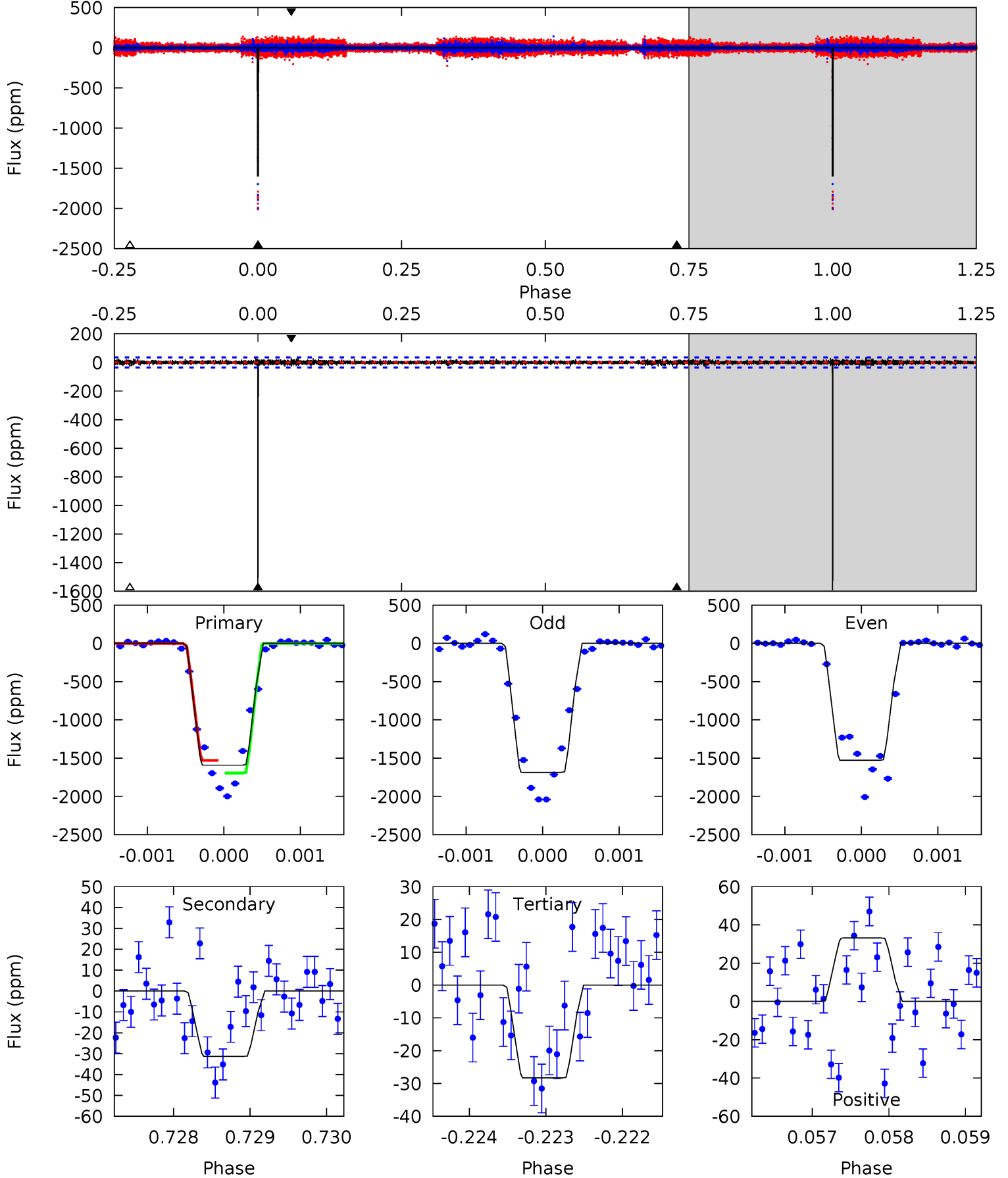
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.2	44.6	42.2	48.9	5.46	3.31	5.38	-24.1	-30.7	2.34	-4.31	4.45	0.87	0.52	0



# Alt Model-Shift Uniqueness Test

010199218-03, P = 568.223248 Days, E = 354.841011 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
247.6	4.87	4.40	5.15	5.49	3.36	0.92	243.2	242.4	0.47	-0.28	15.0	0.87	0.02	0





### Stellar Parameters For KIC 010199218

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6935^{+214}_{-309}$	$4.099^{+0.165}_{-0.135}$	$-0.180^{+0.250}_{-0.300}$	$1.747^{+0.393}_{-0.393}$	$1.403^{+0.168}_{-0.252}$	$0.371^{+0.333}_{-0.152}$
	+3%/-4%	+4%/-3%	+139%/-167%	+22%/-22%	+12%/-18%	+90%/-41%
Source	KIC0	FLK73	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 010199218-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-3093 \pm 69$	$13.82^{+8.38}_{-7.54}$	$458^{+33}_{-28}$	$5970^{+3472}_{-1064}$	$20063^{+76175}_{-12115}$
Alt.	$-31 \pm 6$	$9.54^{+7.55}_{-6.29}$	$456^{+31}_{-30}$	$2944^{+1225}_{-416}$	$413^{+3221}_{-290}$

$T_{max}$  = 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

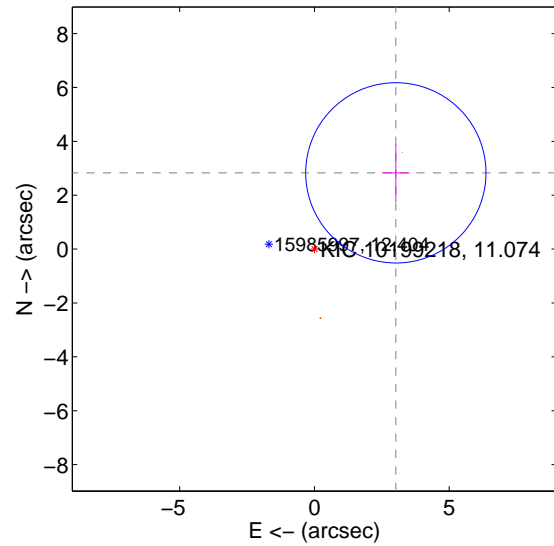
Supplemental centroid analysis for 010199218-03. **Kepler magnitude: 11.07.** Transit SNR 16.52

**There are 2 quarters with good PRF difference image offsets**

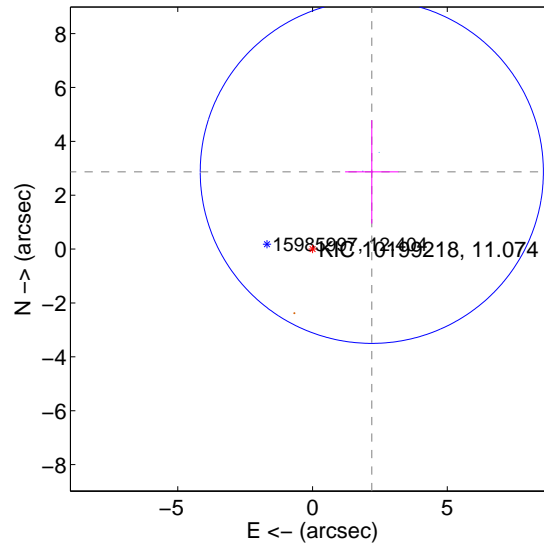
The direct PRF centroid is offset from the target star catalog position by about 0.93 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>4.140 \pm 1.115</math></b>	<b>3.71</b>	$-3.021 \pm 0.519$	$2.830 \pm 1.081$
PRF-fit source offset from KIC position	$3.614 \pm 2.122$	1.70	$-2.200 \pm 0.990$	$2.868 \pm 1.918$
photometric centroid source offset	<b><math>1.07 \pm 0.20</math></b>	<b>5.34</b>	$-0.83 \pm 0.22$	$0.67 \pm 0.16$

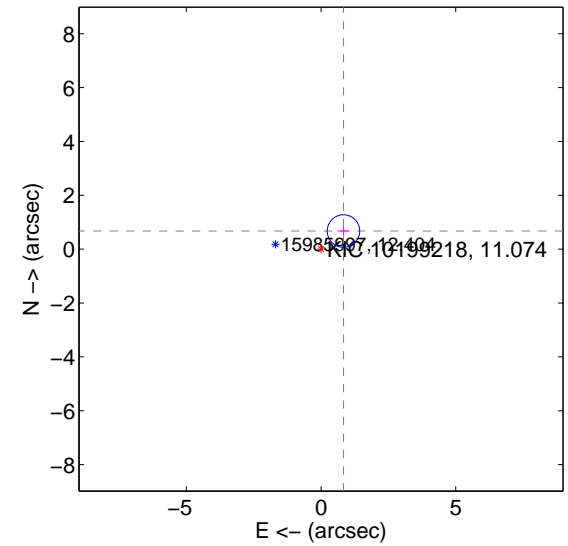
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

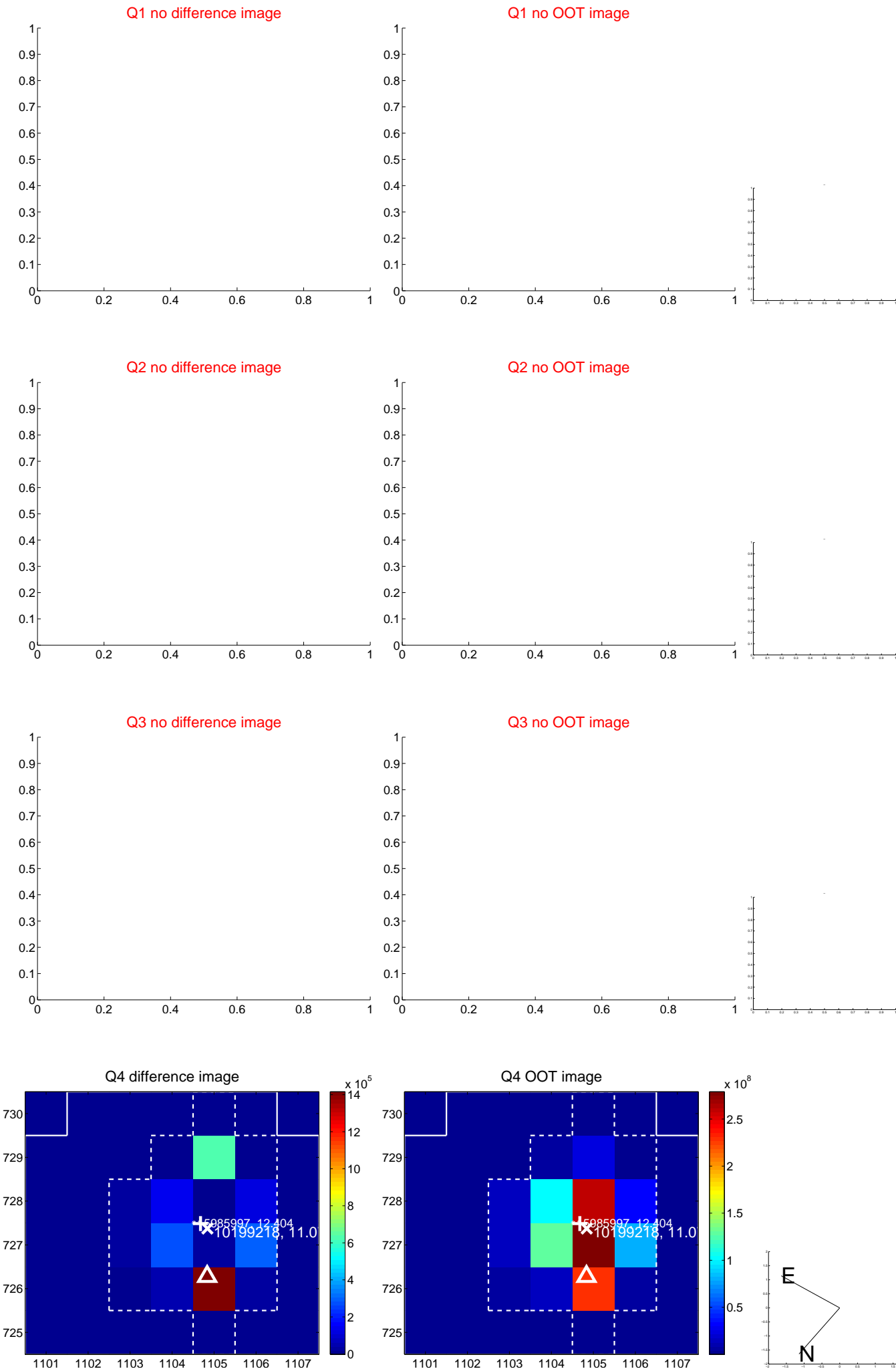


offset from photometric centroids



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.

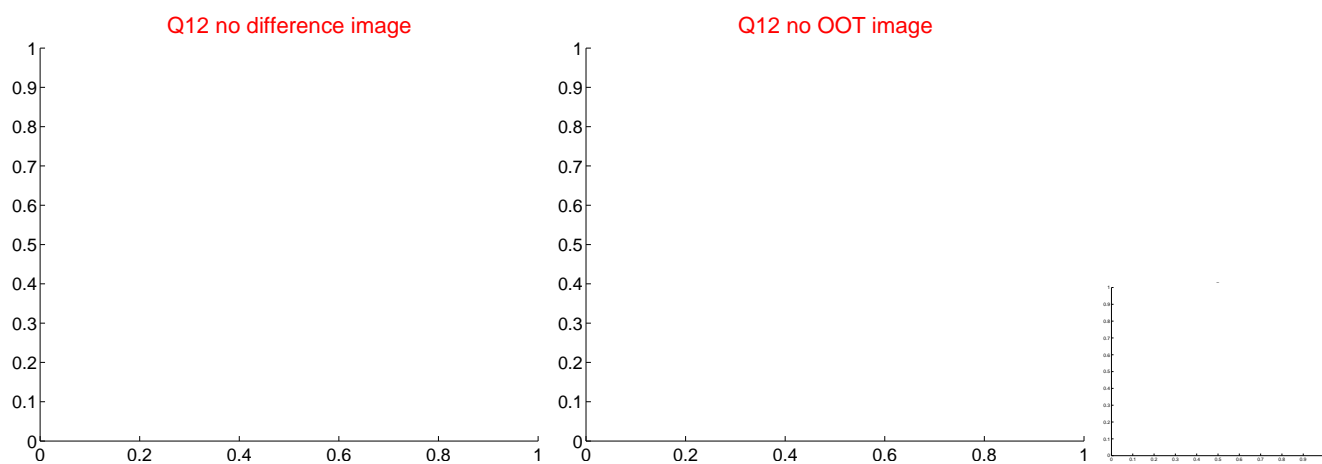
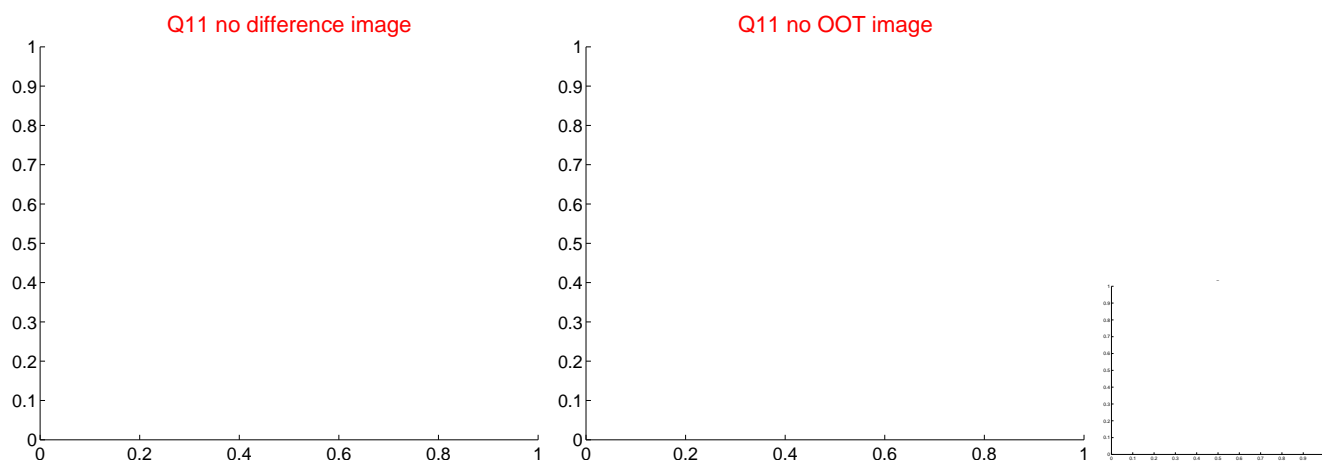
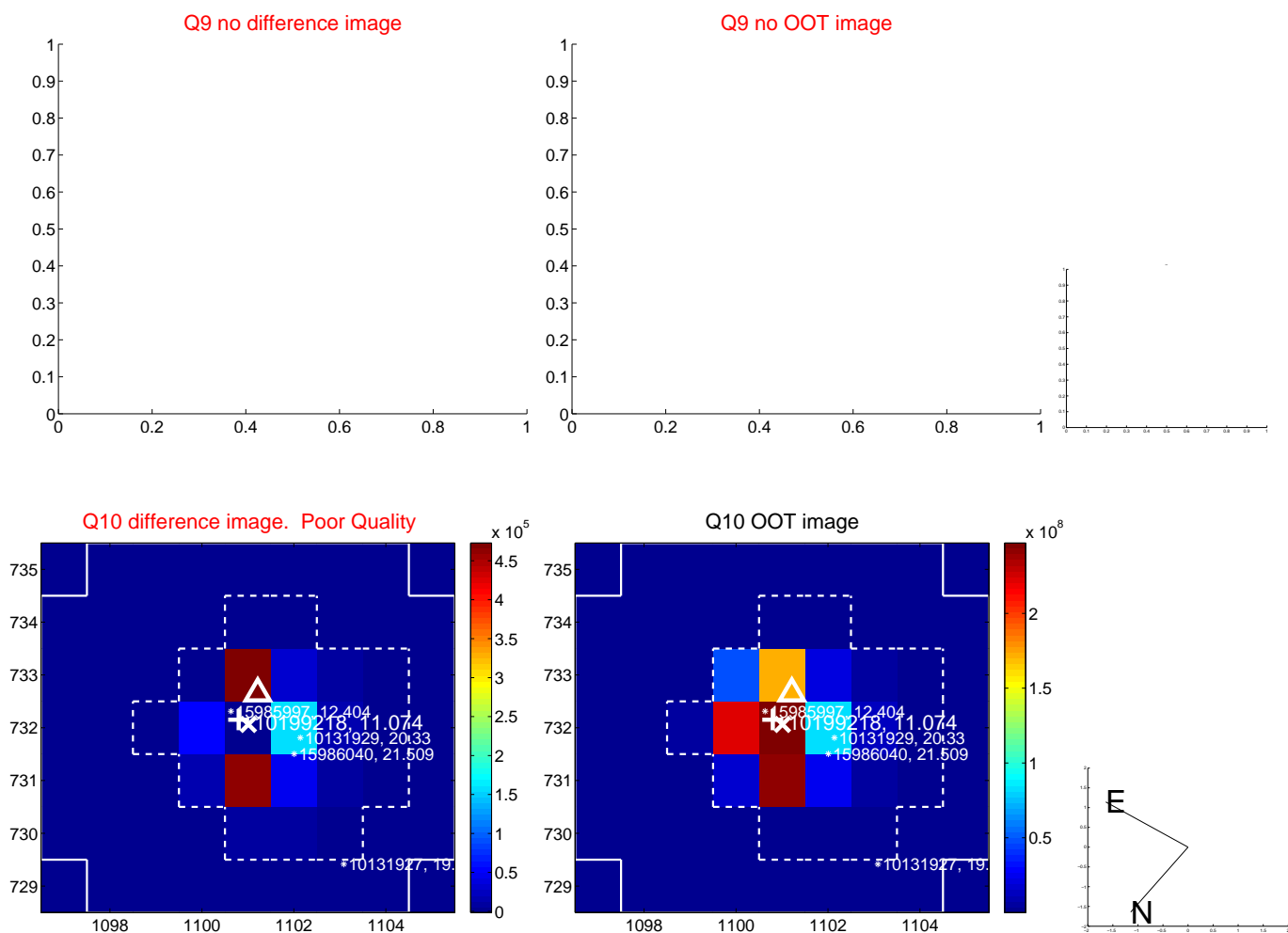
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



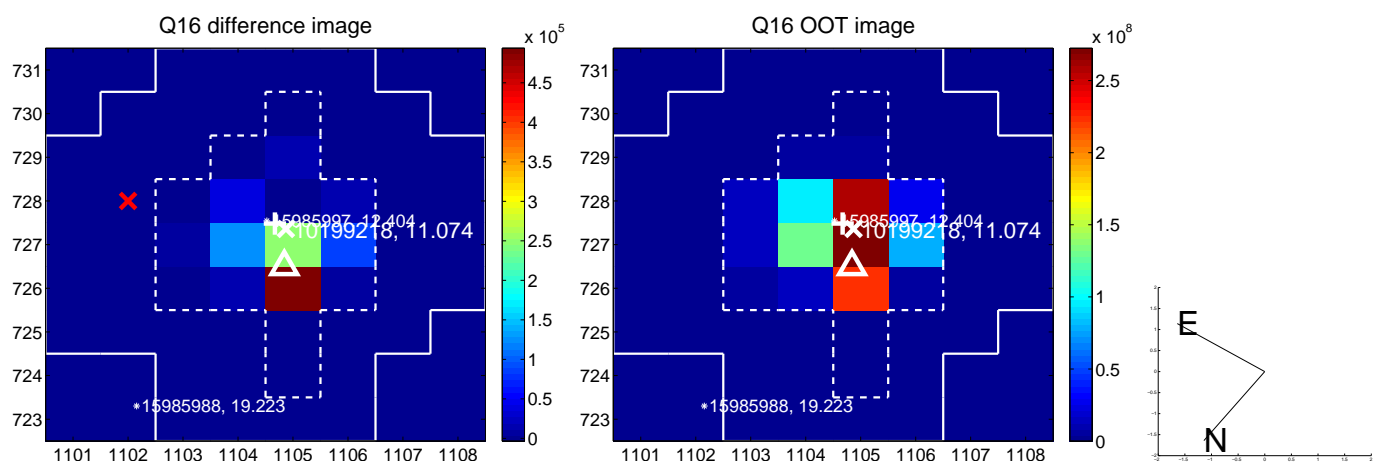
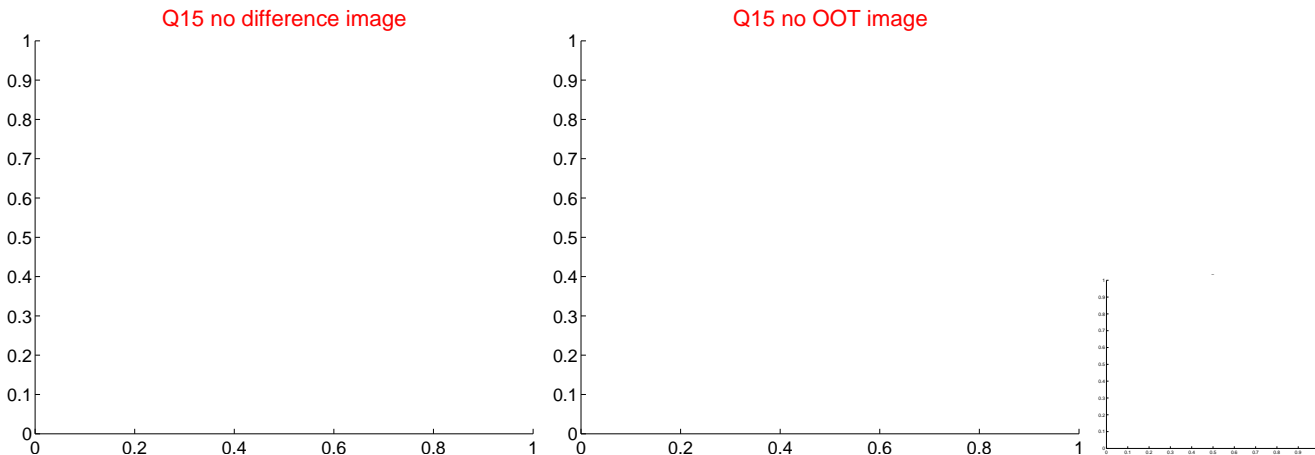
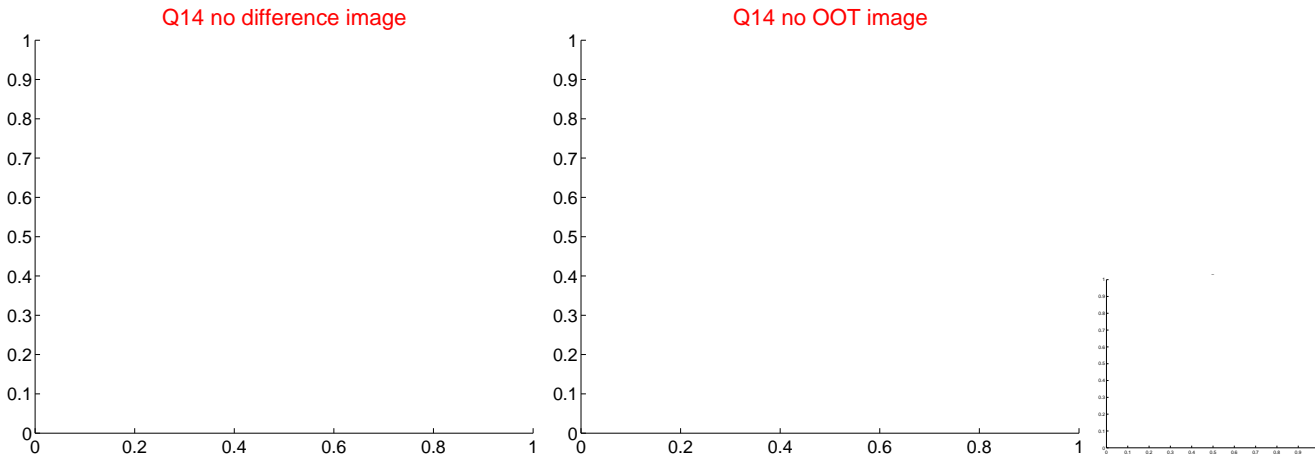
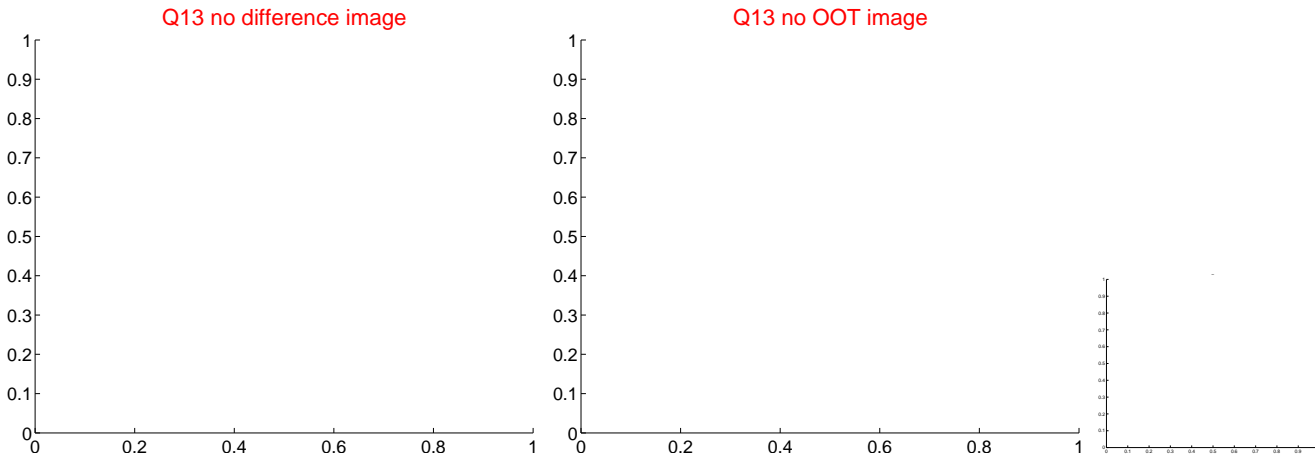
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



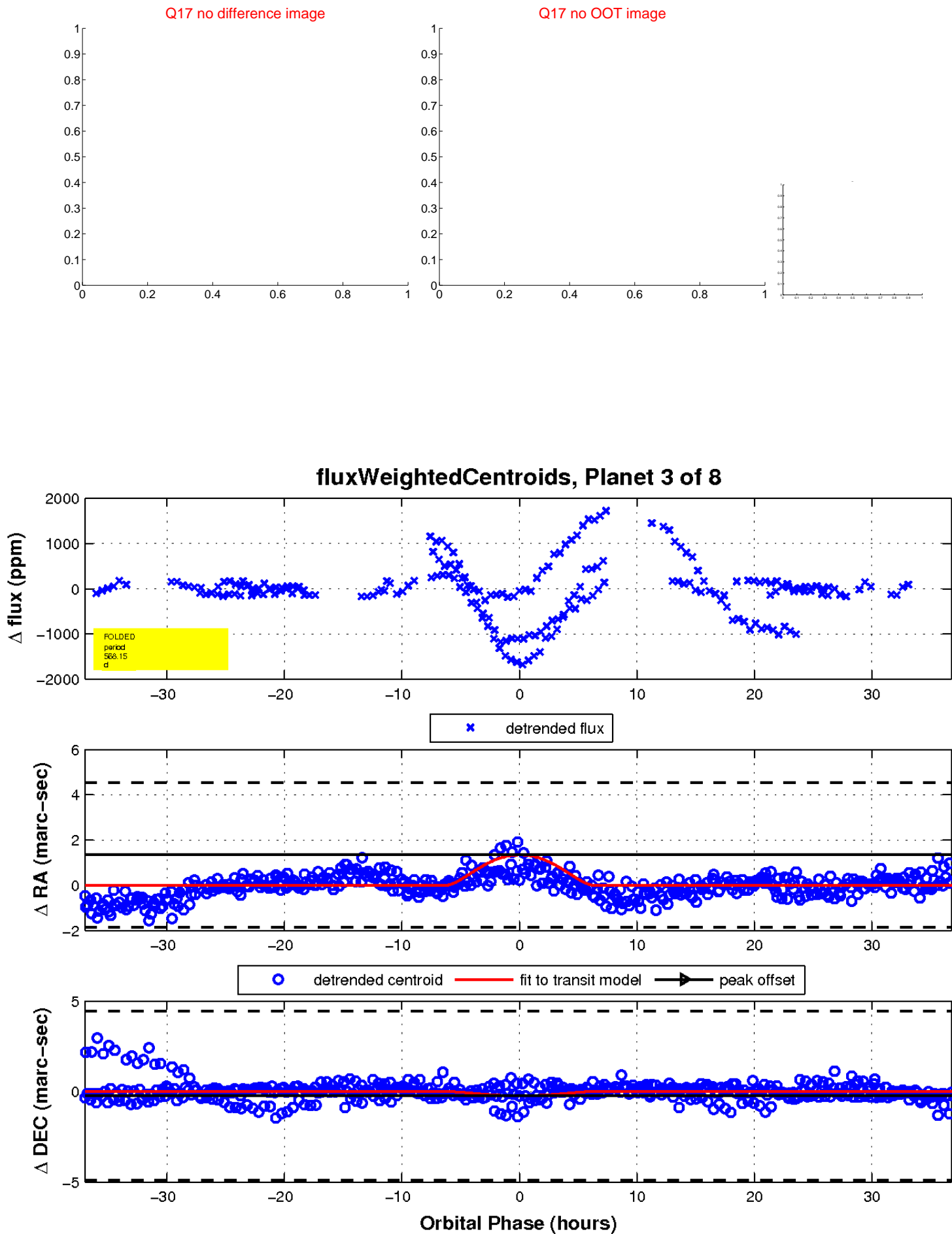
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

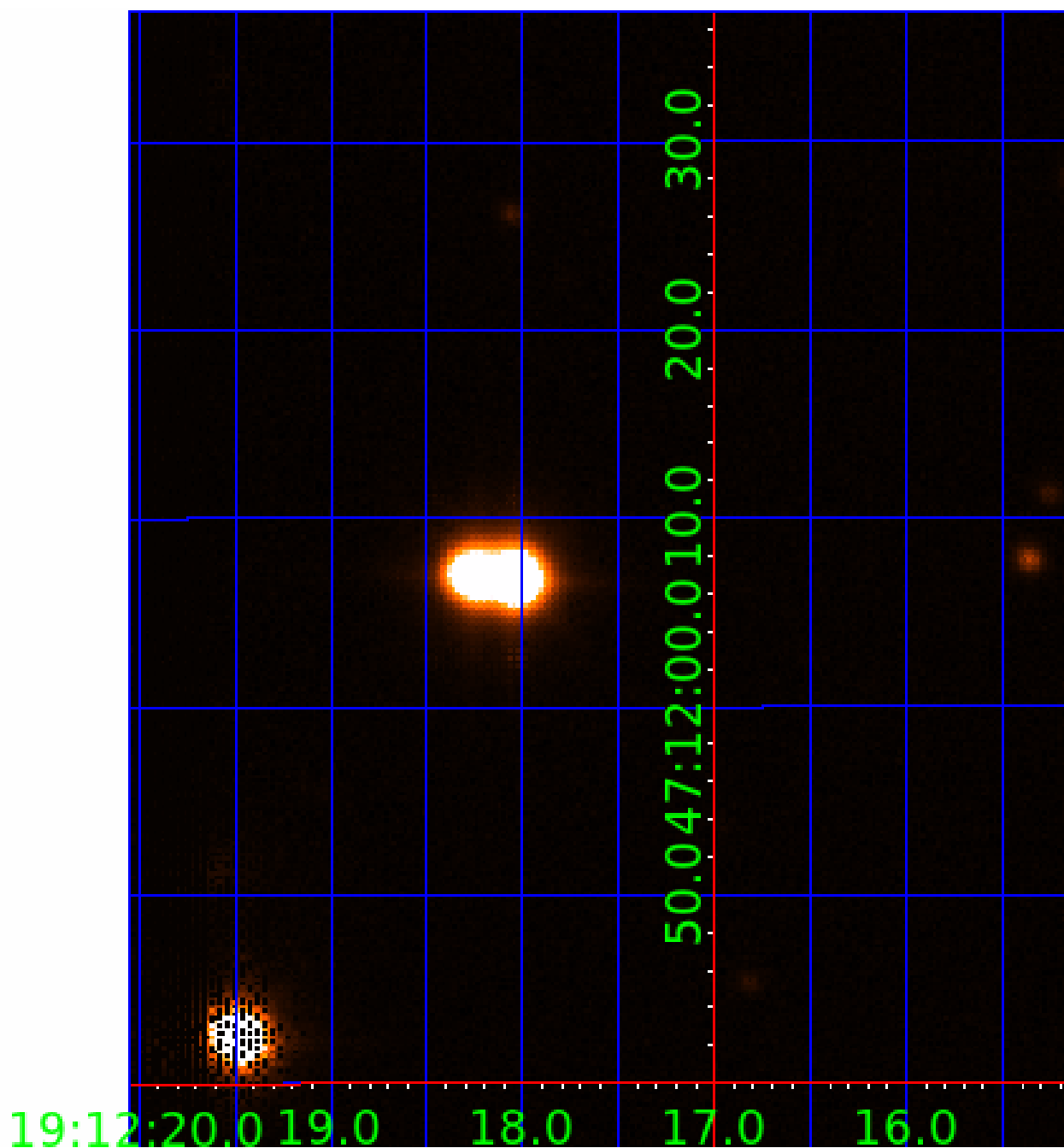


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 010199218

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010199218-02	OBS	No	555.255599	408.911751	1167.9	13.323	16.0	15.8	1.75	6935	11.08	2.89
010199218-03	OBS	No	568.148971	354.911719	1761.5	12.342	13.2	16.5	1.75	6935	13.48	2.81
010199218-04	OBS	No	251.949107	224.110758	44.5	13.098	8.8	8.3	1.75	6935	1.32	8.30
010199218-05	OBS	No	188.525562	167.112992	20.4	9.797	13.0	2.2	1.75	6935	0.92	12.21
010199218-06	OBS	No	185.909494	182.914879	262.1	8.590	10.9	6.8	1.75	6935	3.21	12.44
010199218-07	OBS	No	333.598614	434.811886	248.8	14.329	10.3	4.5	1.75	6935	4.85	5.71
010199218-08	OBS	No	367.170640	371.172813	261.0	6.000	16.2	-1.0	1.75	6935	2.85	5.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010199218-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
010199218-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010199218-06	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

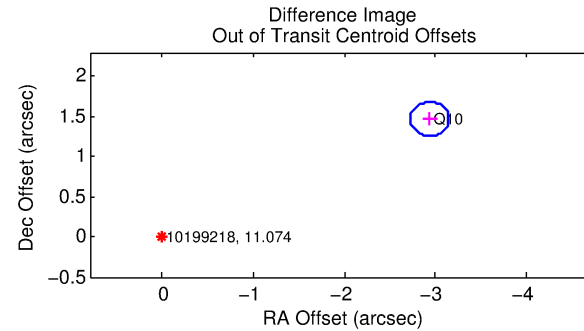
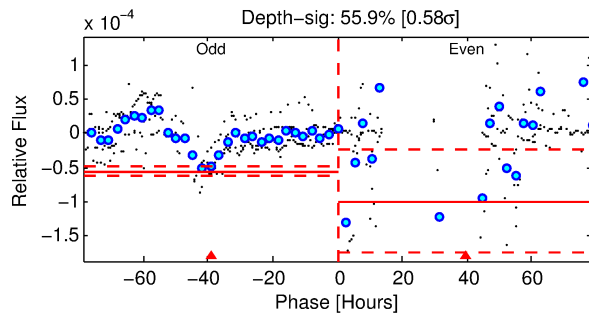
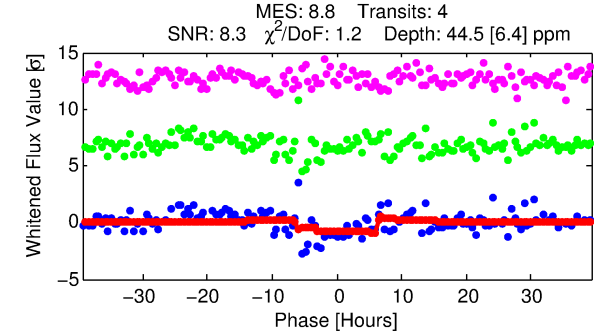
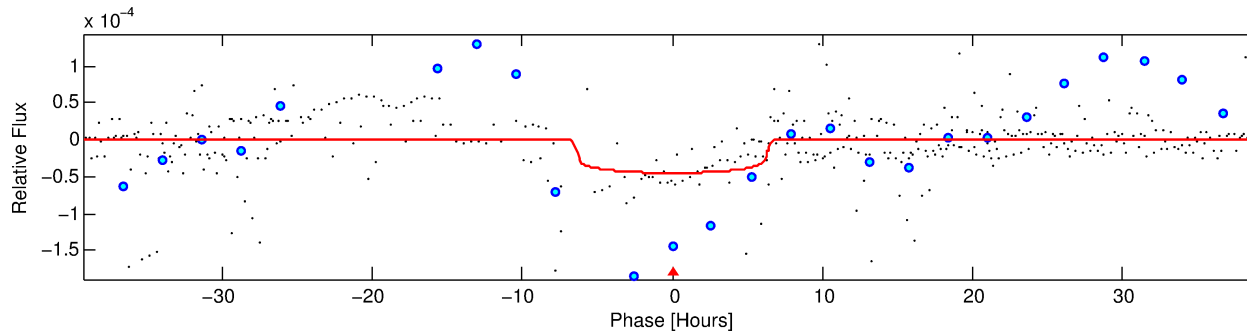
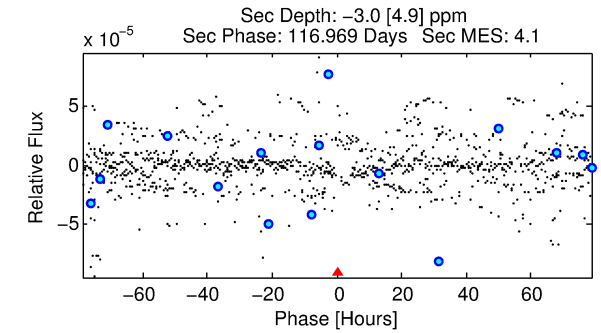
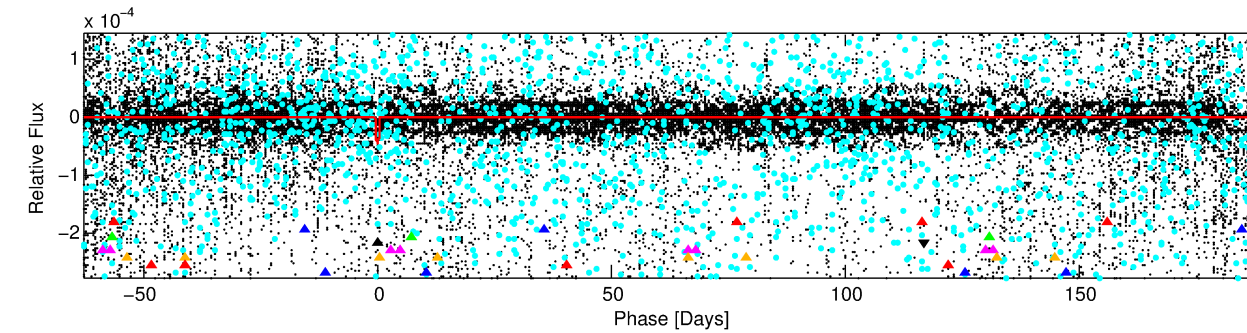
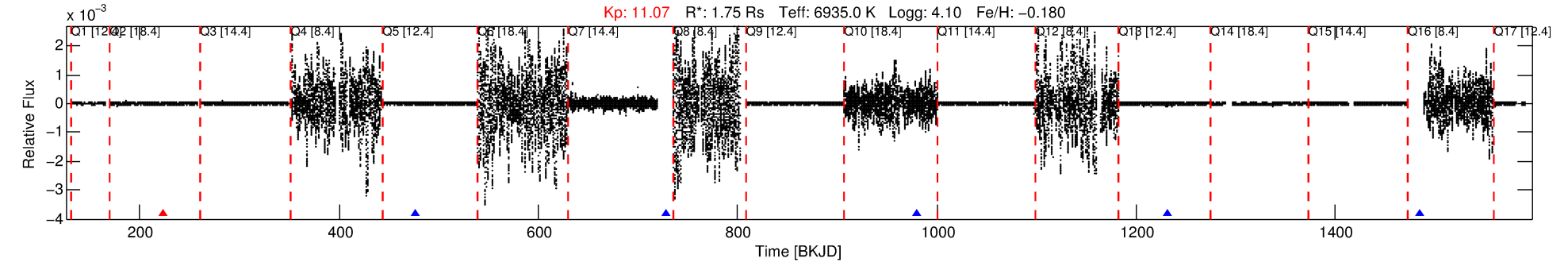
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010199218-04

No Significant Match Found

# DV One-Page Summary

KIC: 10199218 Candidate: 4 of 8 Period: 251.949 d



## DV Fit Results:

Period = 251.94911 [0.00505] d  
Epoch = 224.1108 [0.0256] BKJD  
Rp/R\* = 0.0069 [0.0011]  
a/R\* = 75.32 [66.87]  
b = 0.87 [0.24]  
Seff = 8.30 [2.85]  
Teq = 433 [37] K  
Rp = 1.32 [0.37] Re  
a = 0.8732 [0.1714] AU  
Ag = N/A  
Teffp = N/A

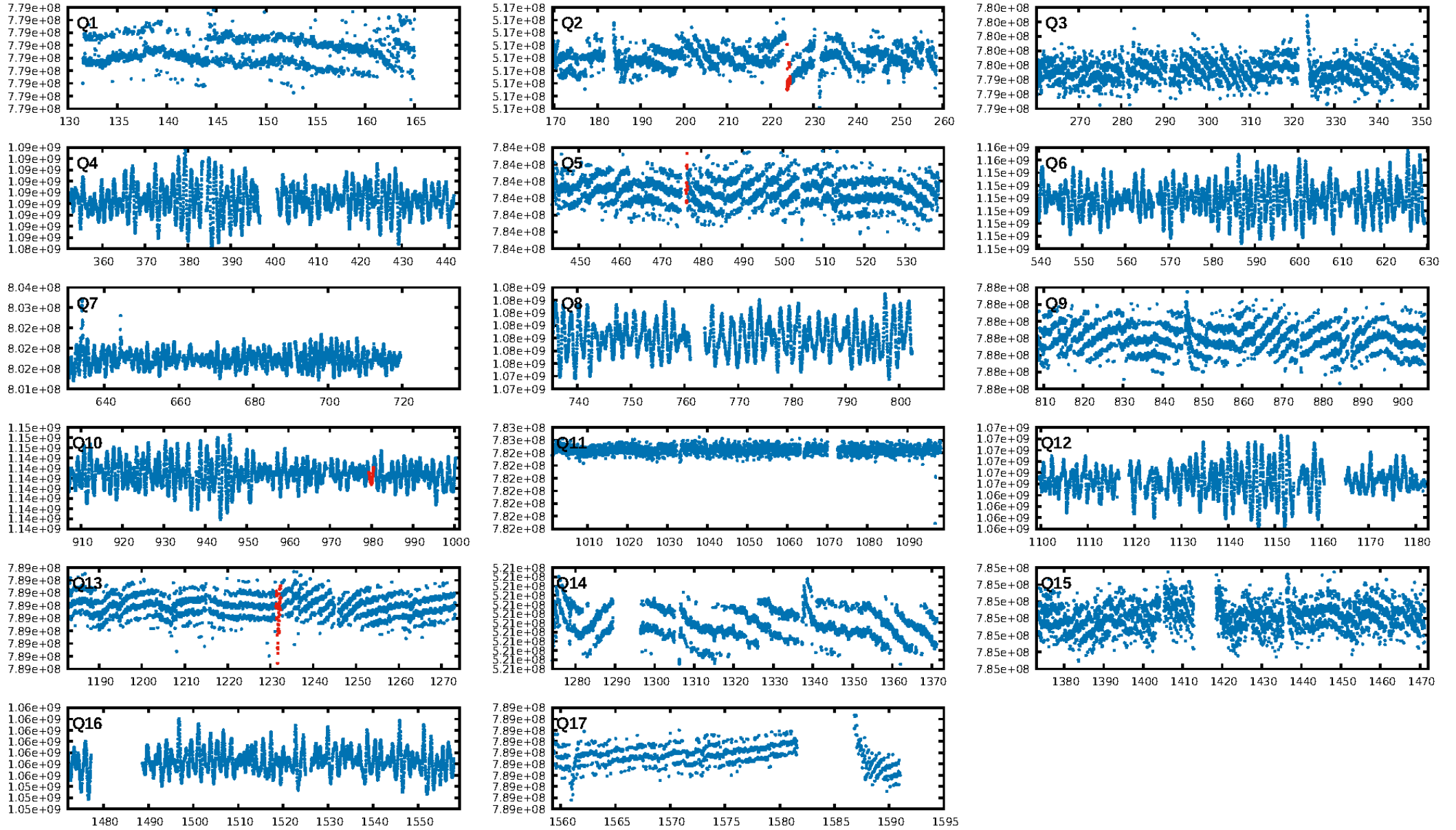
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [93.06σ]  
LongPeriod-sig: 100.0% [100.94σ]  
ModelChiSquare2-sig: 0.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.75 [3/4]  
GhostDiagnostic-chr: 11.59  
Centroid-sig: 5.6%  
Centroid-so: 10.185 arcsec [2.17σ]  
OotOffset-rm: 3.286 arcsec [46.63σ]  
KicOffset-rm: 2.975 arcsec [42.05σ]  
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [1/1]

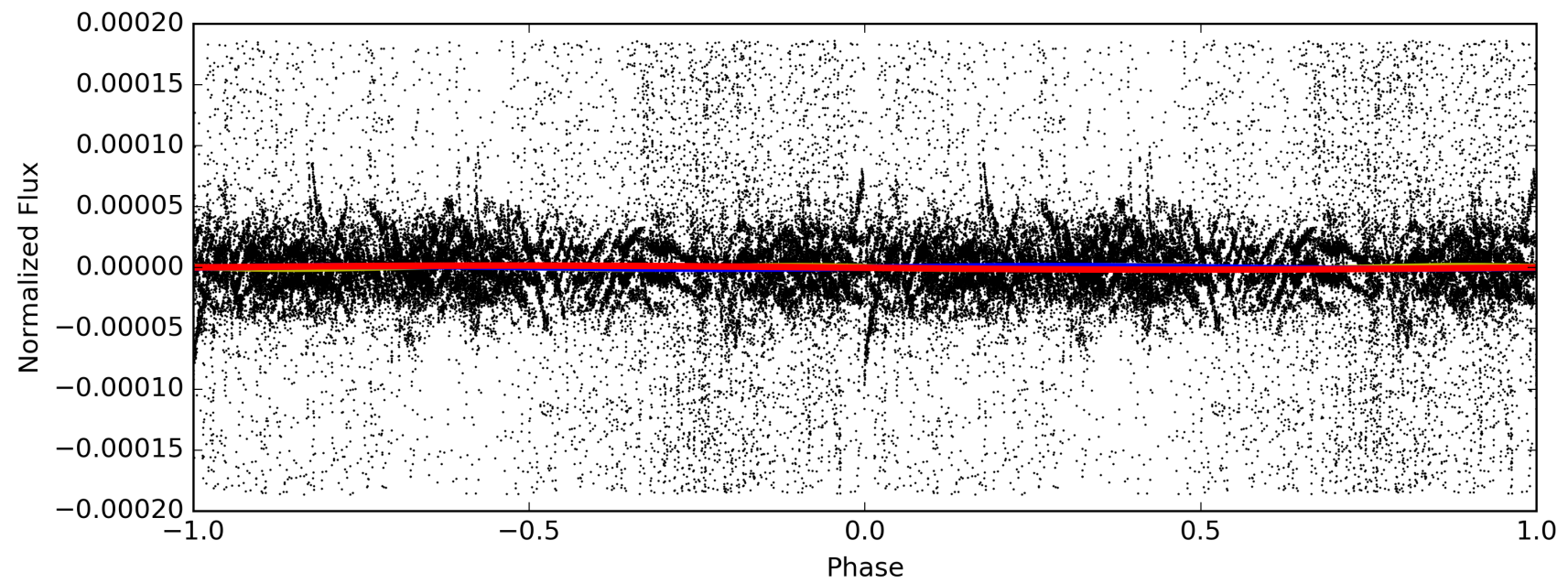
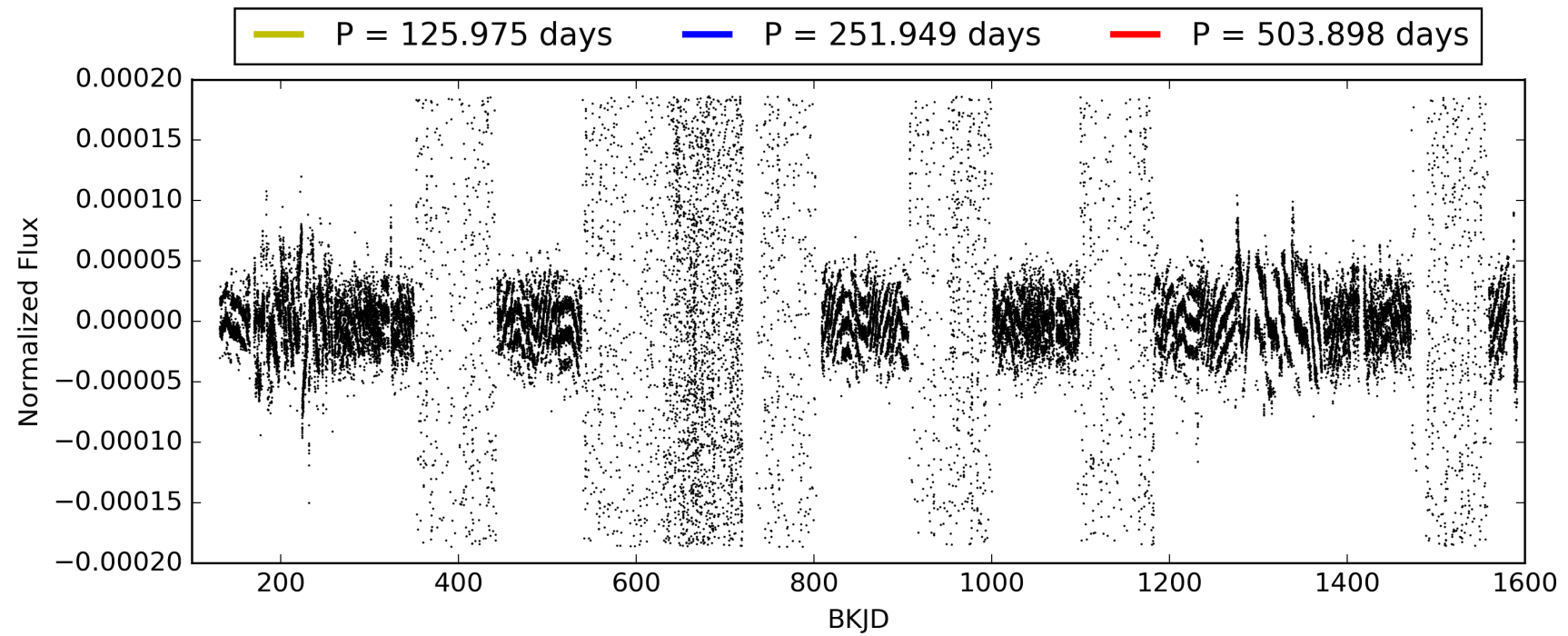
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:55:15 Z

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

# TCE 010199218-04, PDC Light Curves

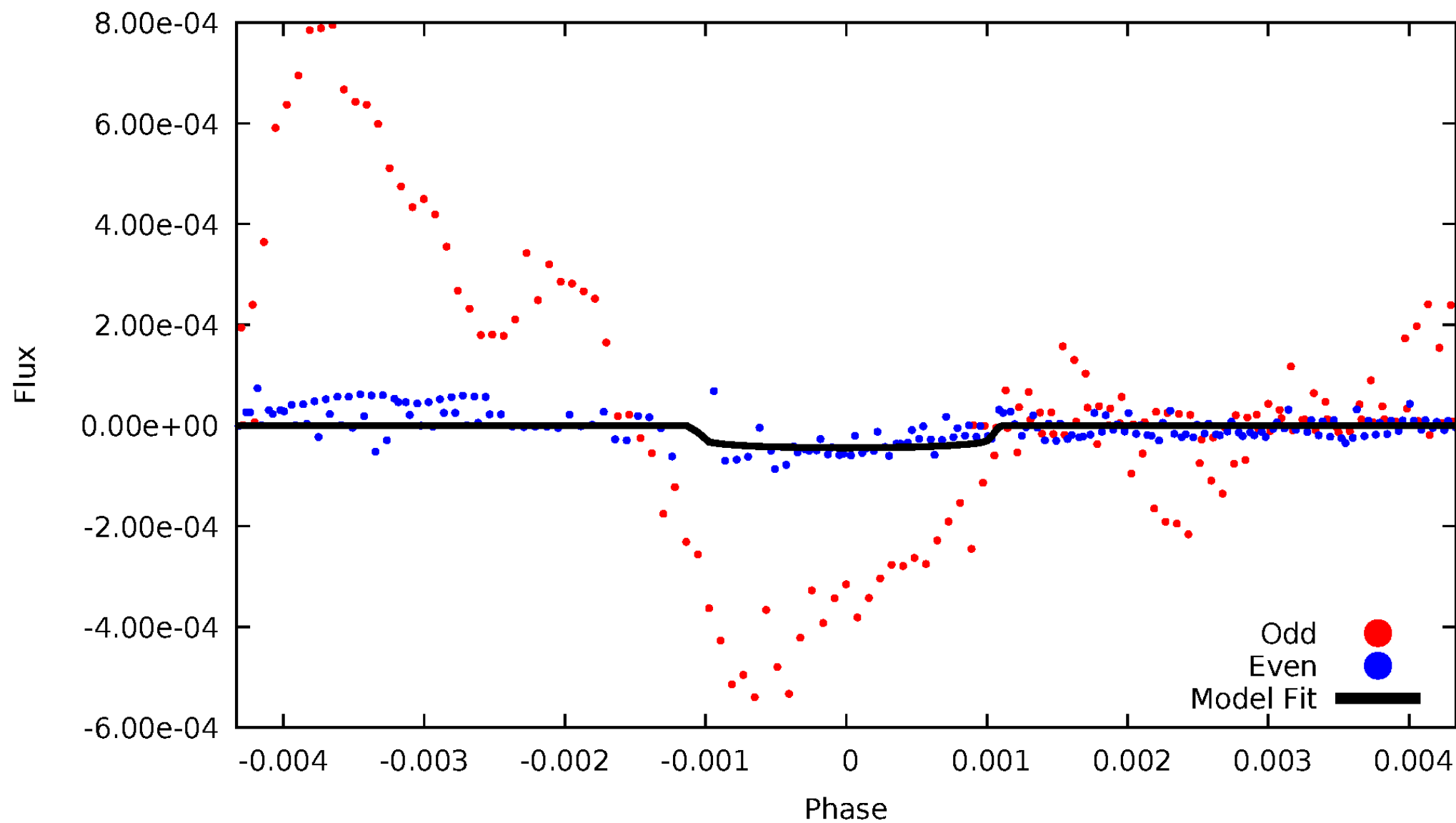


TCE 010199218-04



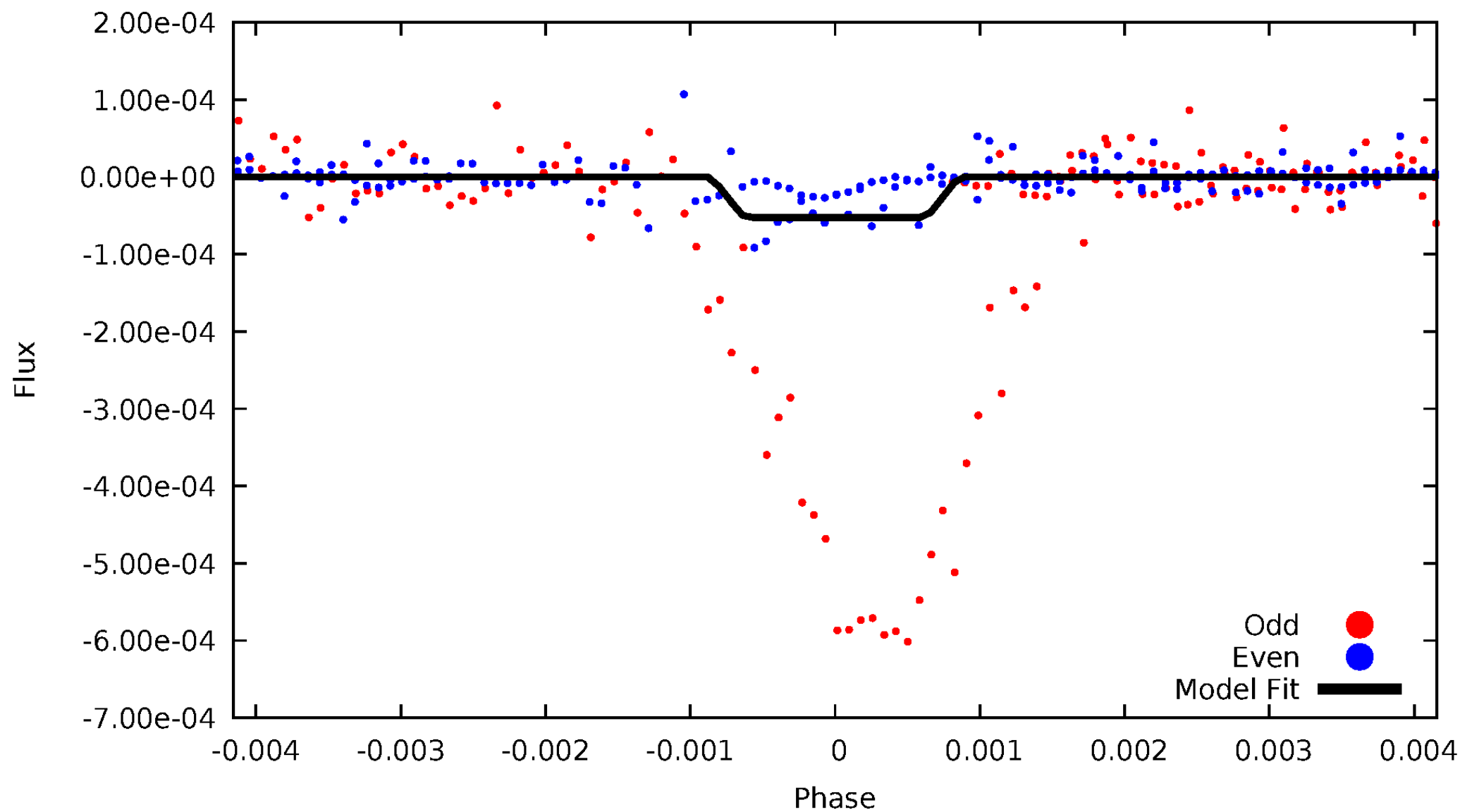
# DV Odd/Even

TCE 010199218-04



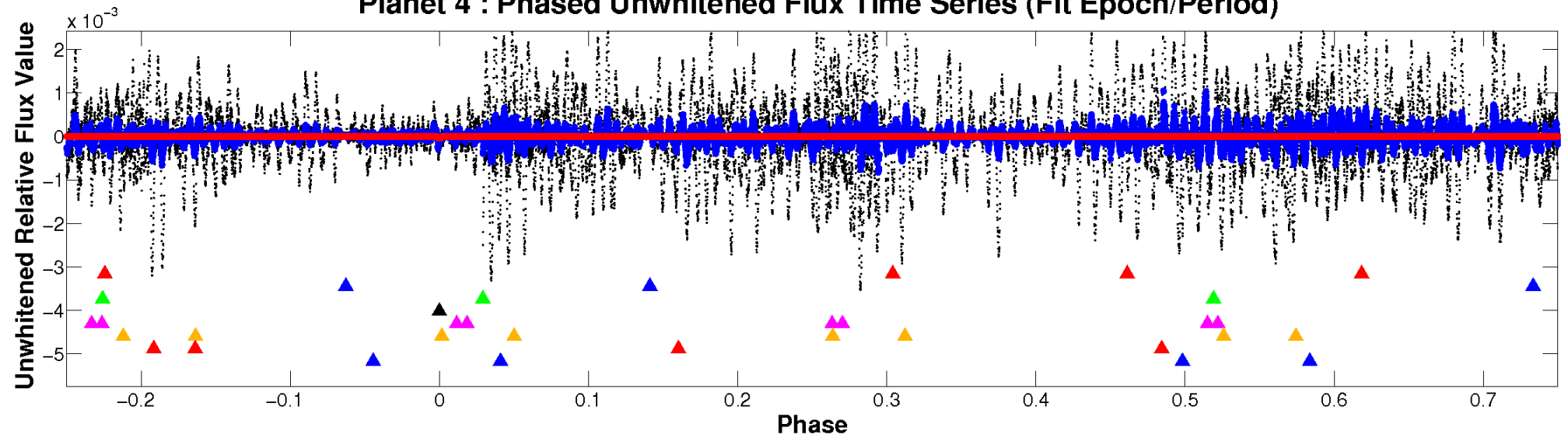
# ALT Odd/Even

TCE 010199218-04

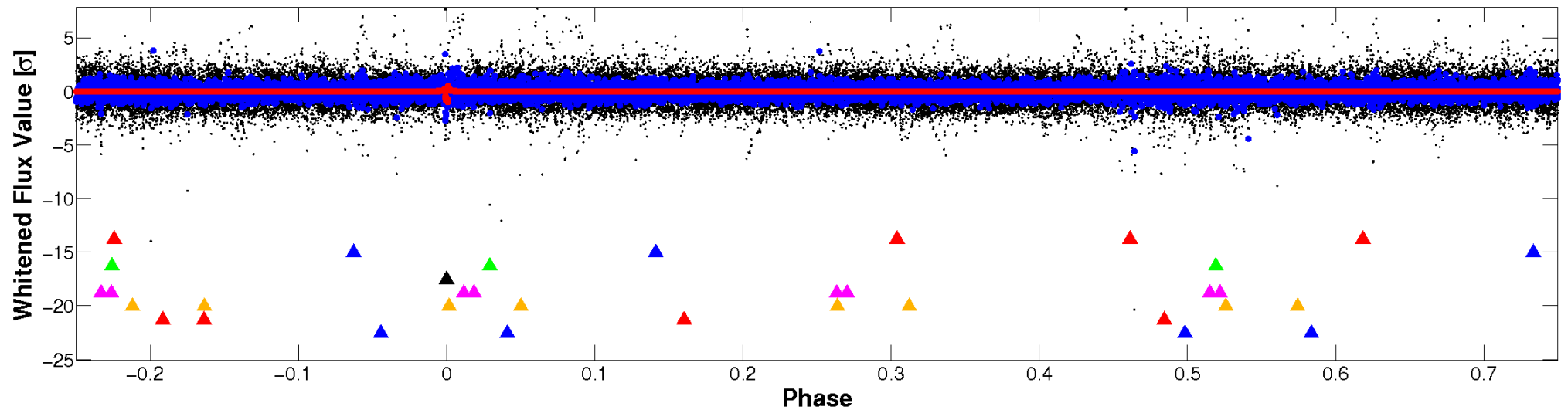


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



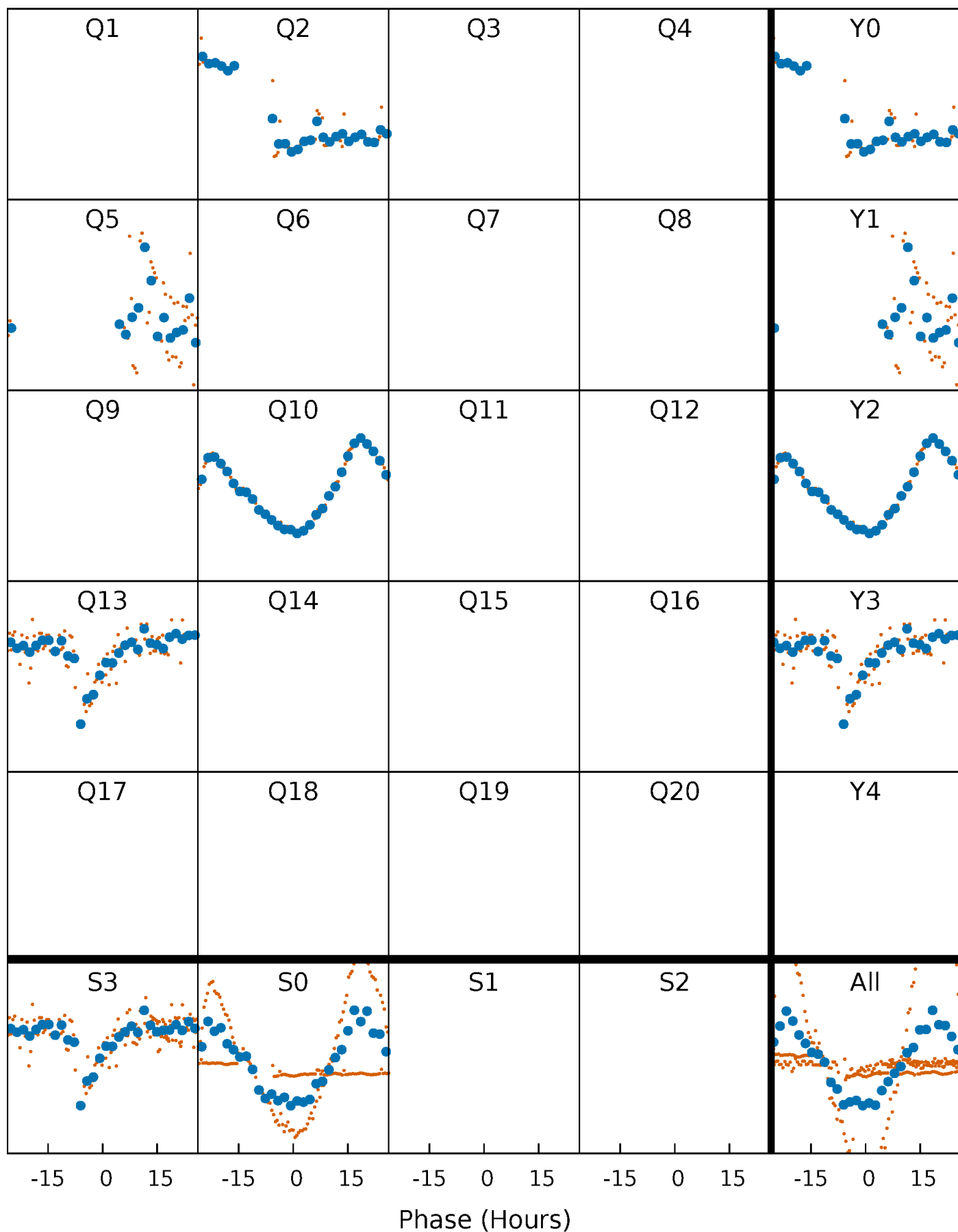
## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

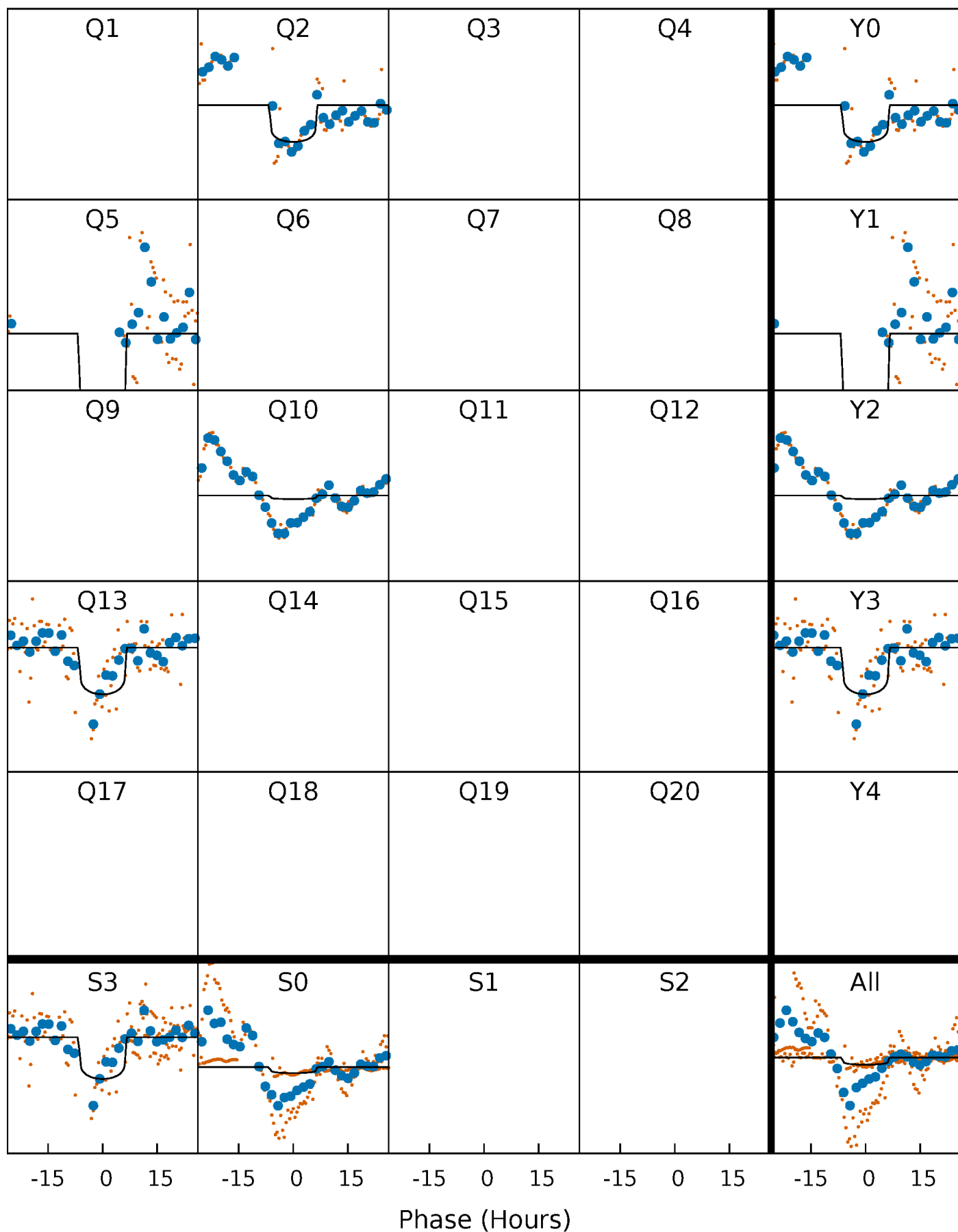
TCE 010199218-04     $P=251.949107$  Days     $T_0=224.110758$  (BKJD)





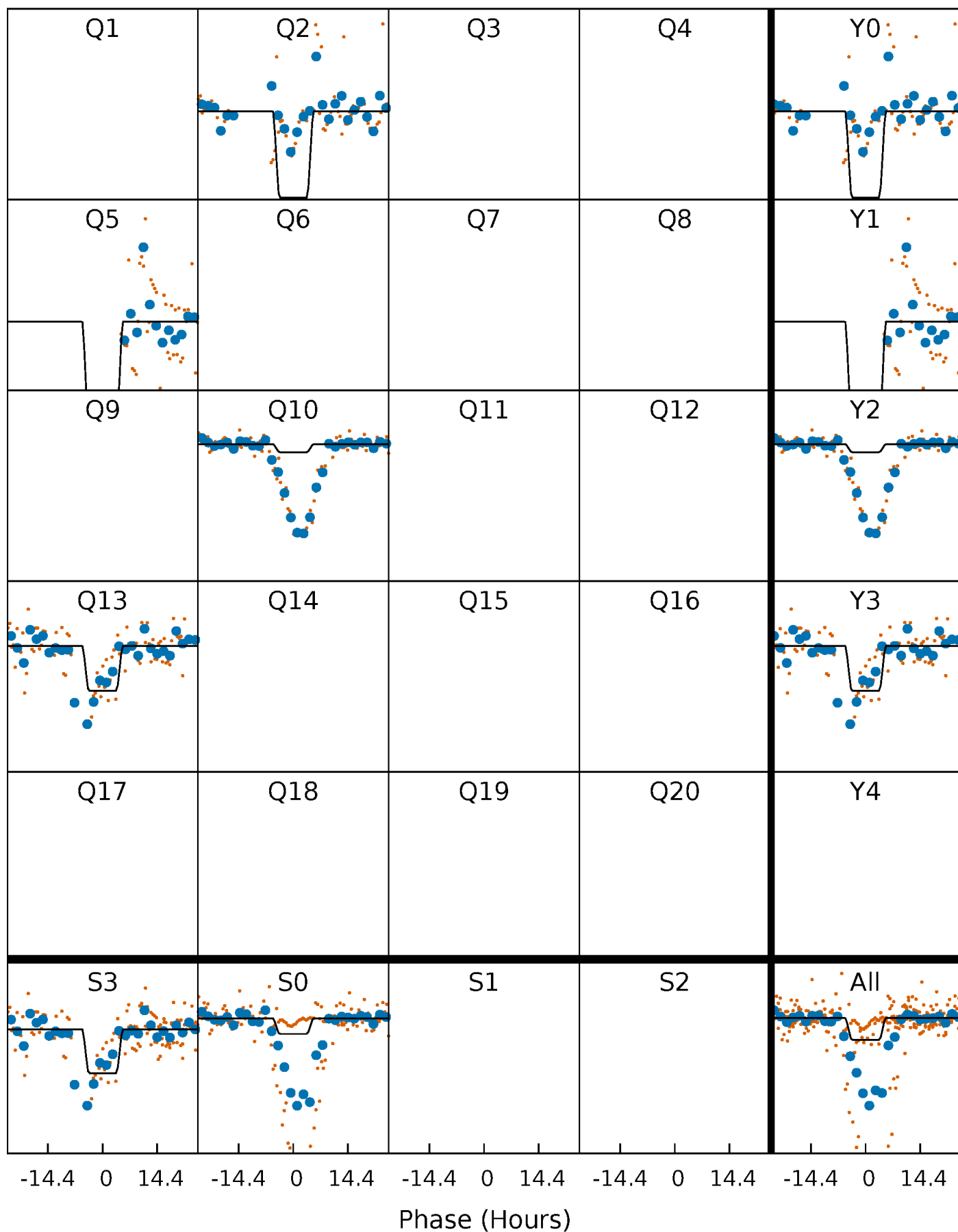
# DV Quarter-Phased Transit Curves

TCE 010199218-04 P=251.949107 Days  $T_0=224.110758$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

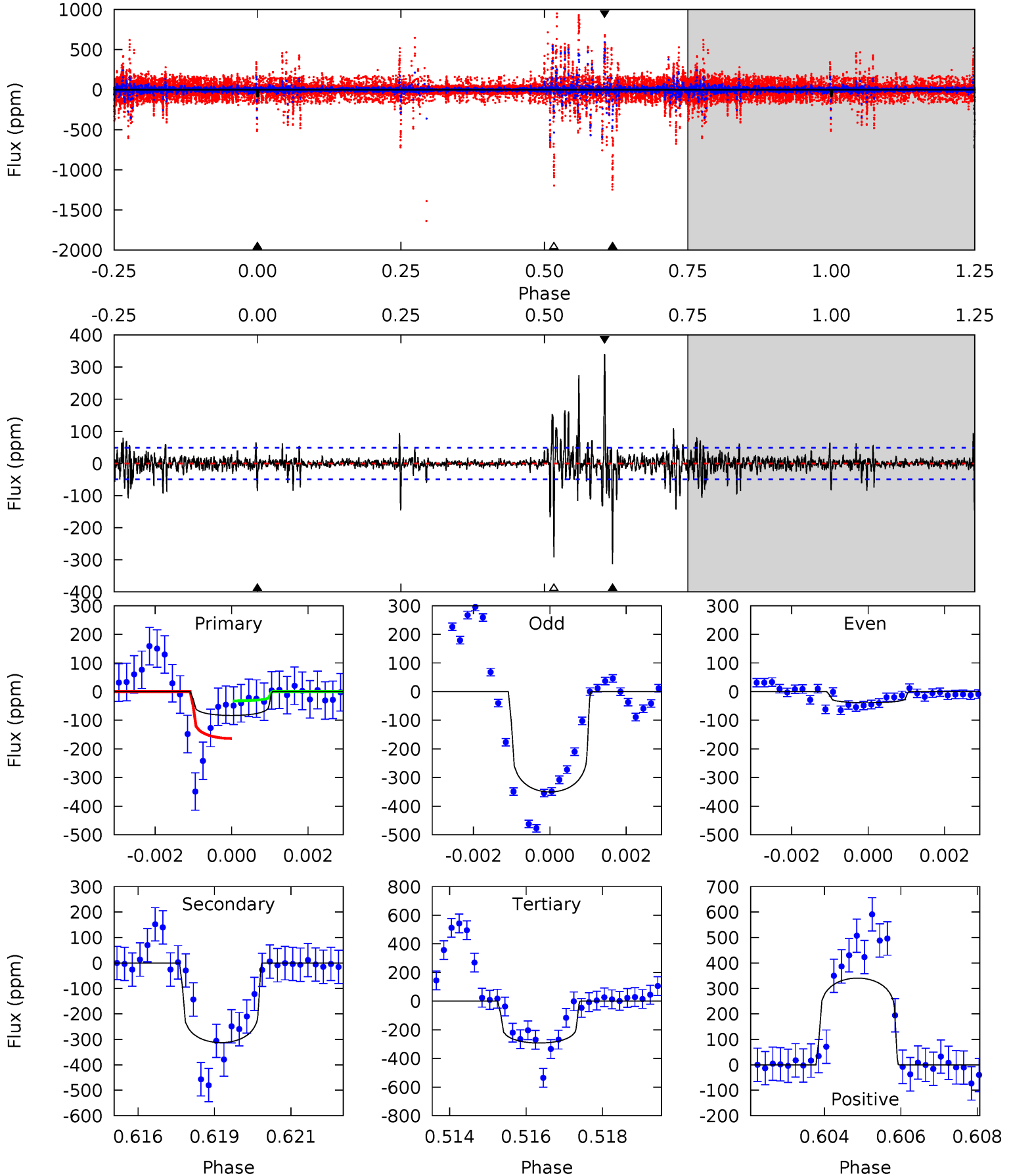
TCE 010199218-04 P=251.945795 Days  $T_0=224.136805$  (BKJD)



# DV Model-Shift Uniqueness Test

010199218-04, P = 251.949107 Days, E = 224.110758 Days

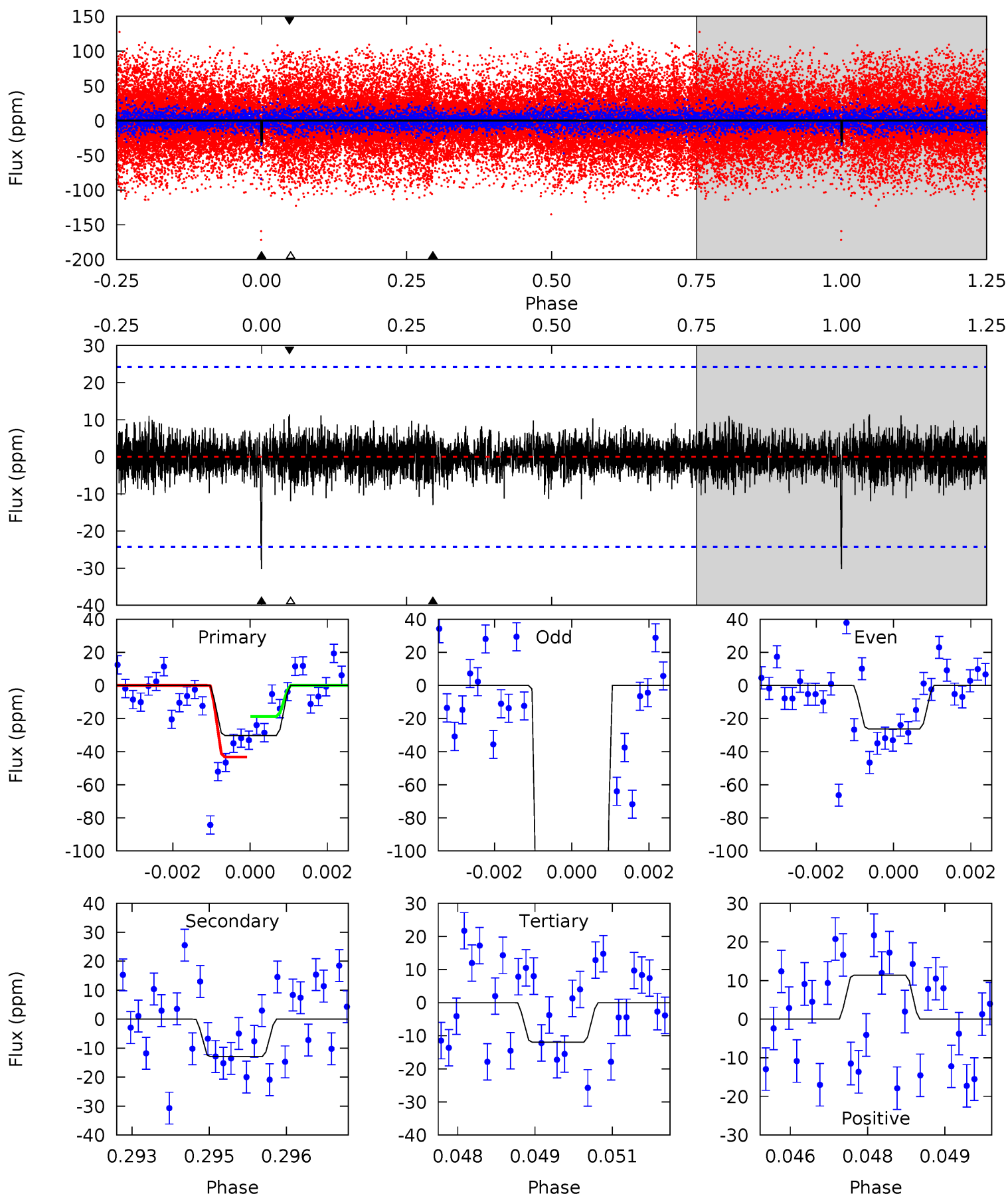
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.05	34.0	31.7	37.0	5.32	3.08	2.91	-22.7	-27.9	2.25	-3.01	4.51	2.91	0.52	6.37



# Alt Model-Shift Uniqueness Test

010199218-04, P = 251.945795 Days, E = 224.136805 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.68	2.87	2.64	2.52	5.36	3.14	0.66	4.04	4.16	0.22	0.34	55.4	4.05	0.27	0



### Stellar Parameters For KIC 010199218

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6935^{+214}_{-309}$	$4.099^{+0.165}_{-0.135}$	$-0.180^{+0.250}_{-0.300}$	$1.747^{+0.393}_{-0.393}$	$1.403^{+0.168}_{-0.252}$	$0.371^{+0.333}_{-0.152}$
	+3%/-4%	+4%/-3%	+139%/-167%	+22%/-22%	+12%/-18%	+90%/-41%
Source	KIC0	FLK73	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 010199218-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-313 \pm 9$	$1.31^{+0.28}_{-0.25}$	$601^{+40}_{-40}$	$13114^{+2663}_{-1660}$	$74674^{+39568}_{-22628}$
Alt.	$-13 \pm 5$	$1.38^{+0.27}_{-0.28}$	$600^{+38}_{-39}$	$4951^{+545}_{-546}$	$2891^{+1984}_{-1318}$

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

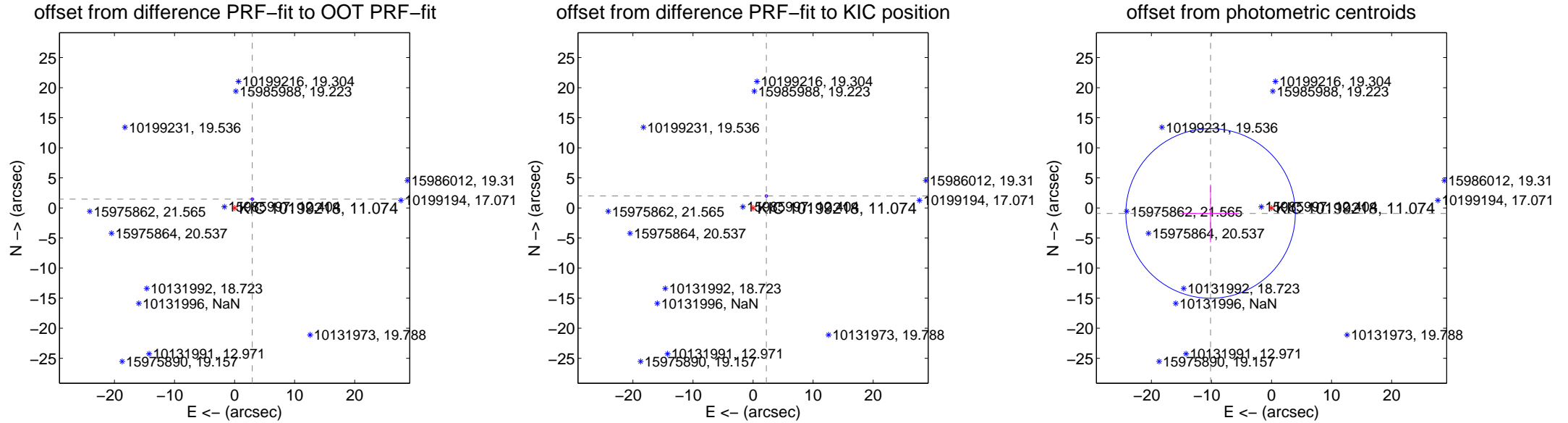
## DV Centroid Data

Supplemental centroid analysis for 010199218-04. **Kepler magnitude: 11.07.** Transit SNR 8.29

**There are 0 quarters with good PRF difference image offsets**

The direct PRF centroid is offset from the target star catalog position by about 0.89 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>3.286 \pm 0.070</math></b>	<b>46.63</b>	$-2.939 \pm 0.070$	$1.470 \pm 0.071$
PRF-fit source offset from KIC position	<b><math>2.975 \pm 0.071</math></b>	<b>42.05</b>	$-2.213 \pm 0.070$	$1.989 \pm 0.071$
photometric centroid source offset	$10.18 \pm 4.70$	2.17	$10.14 \pm 4.70$	$-0.91 \pm 4.81$



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.

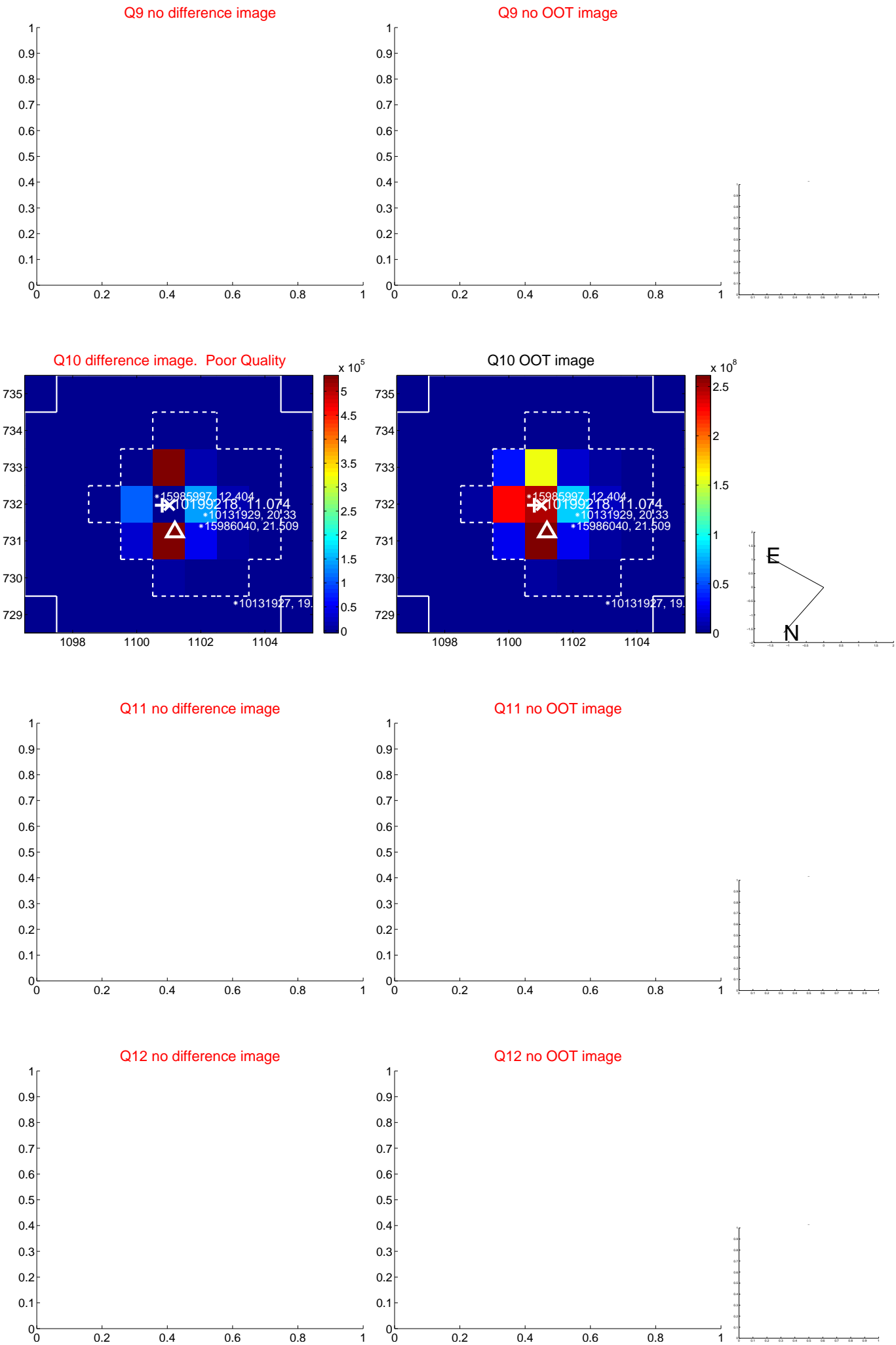


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





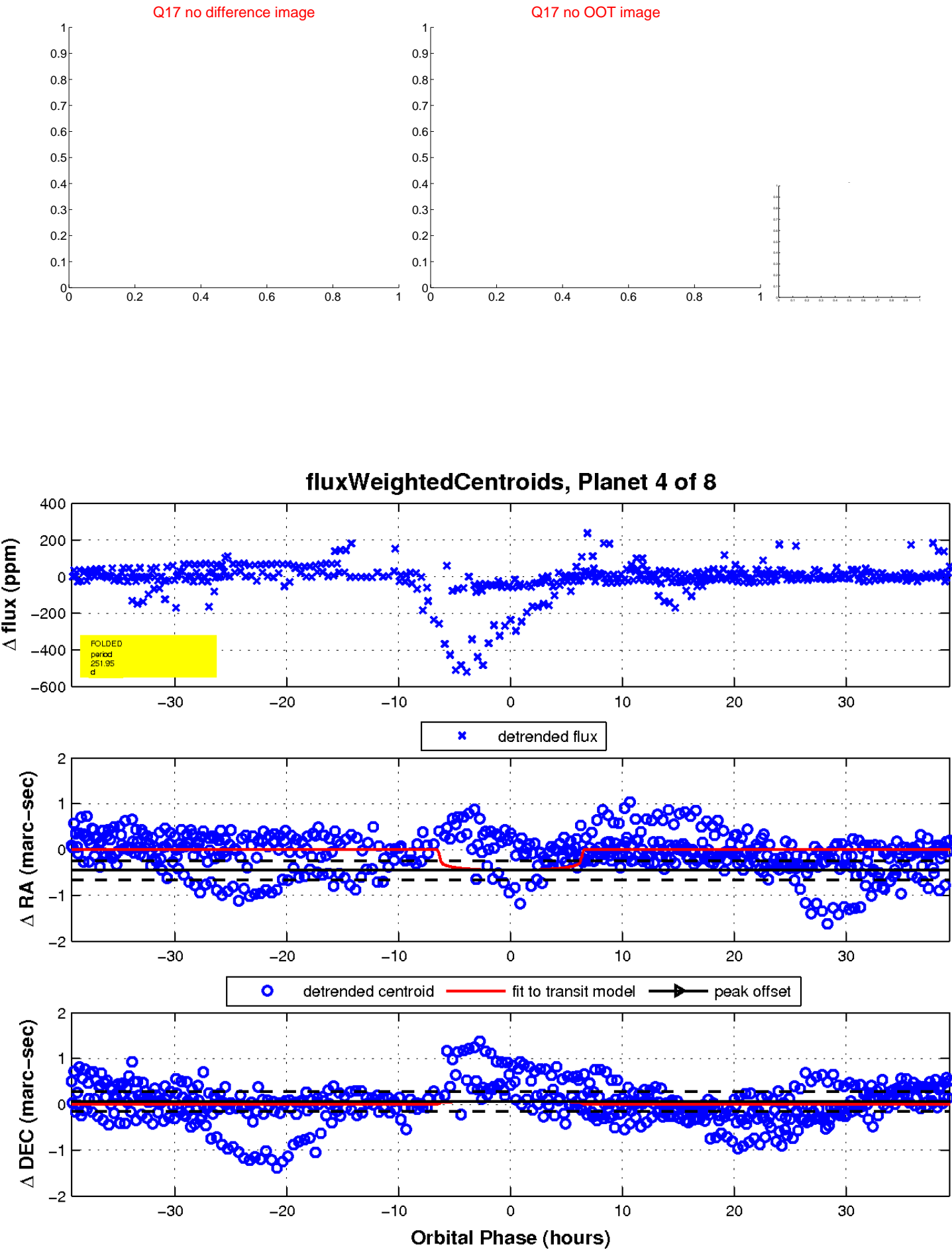
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

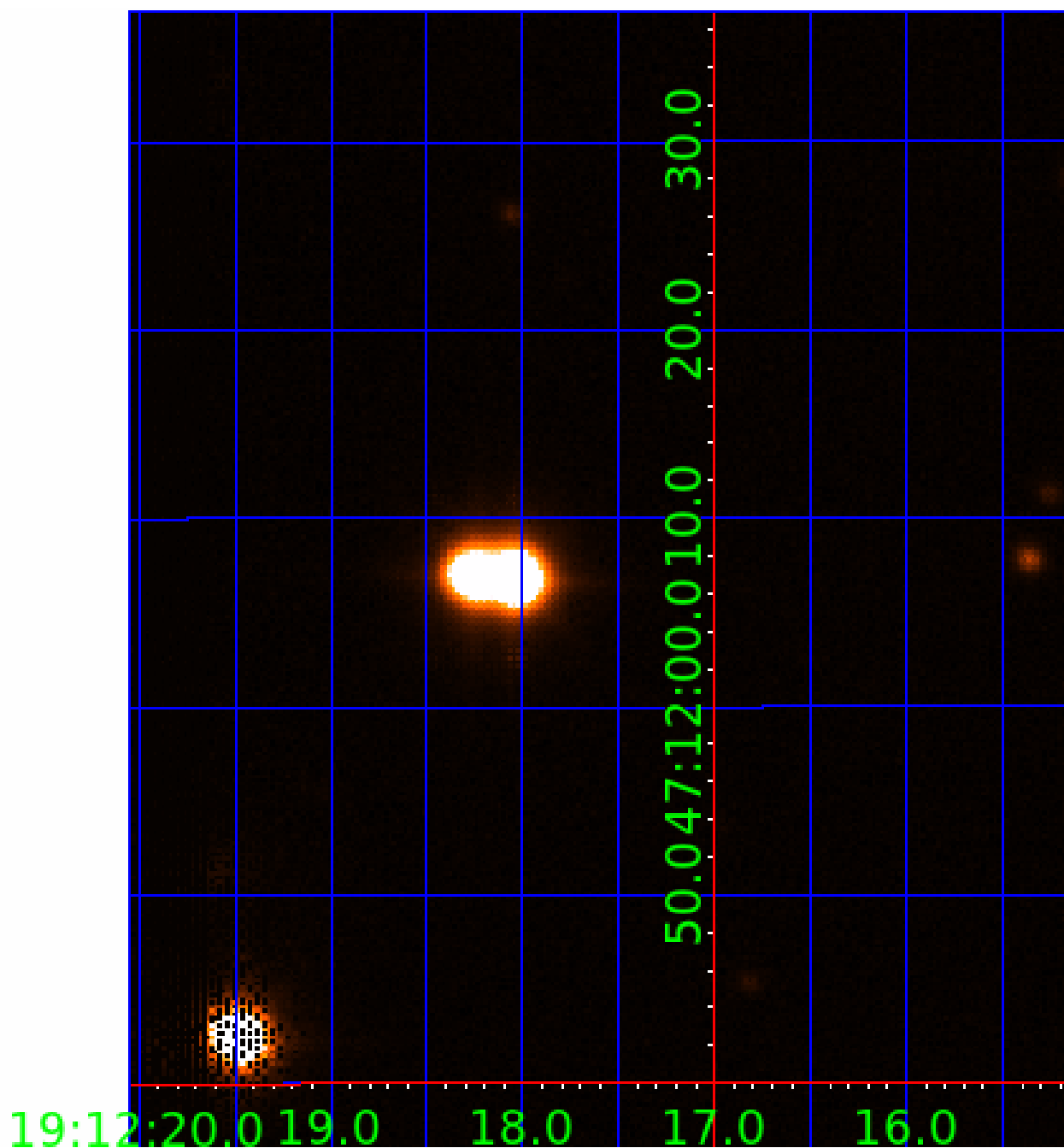


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010199218

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010199218-02	OBS	No	555.255599	408.911751	1167.9	13.323	16.0	15.8	1.75	6935	11.08	2.89
010199218-03	OBS	No	568.148971	354.911719	1761.5	12.342	13.2	16.5	1.75	6935	13.48	2.81
010199218-04	OBS	No	251.949107	224.110758	44.5	13.098	8.8	8.3	1.75	6935	1.32	8.30
010199218-05	OBS	No	188.525562	167.112992	20.4	9.797	13.0	2.2	1.75	6935	0.92	12.21
010199218-06	OBS	No	185.909494	182.914879	262.1	8.590	10.9	6.8	1.75	6935	3.21	12.44
010199218-07	OBS	No	333.598614	434.811886	248.8	14.329	10.3	4.5	1.75	6935	4.85	5.71
010199218-08	OBS	No	367.170640	371.172813	261.0	6.000	16.2	-1.0	1.75	6935	2.85	5.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010199218-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
010199218-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010199218-06	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

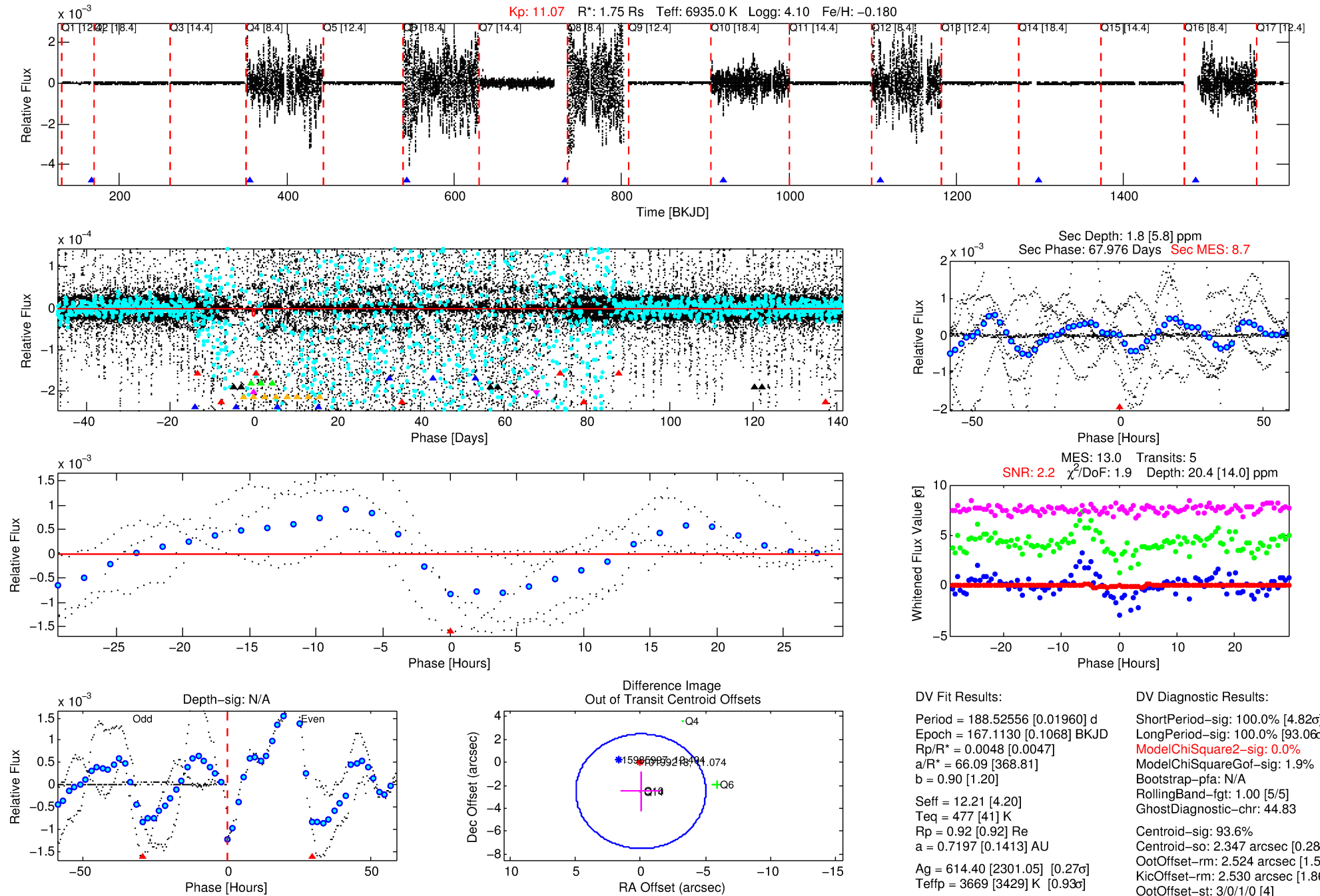
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010199218-05

No Significant Match Found

# DV One-Page Summary

KIC: 10199218 Candidate: 5 of 8 Period: 188.526 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:55:21 Z

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

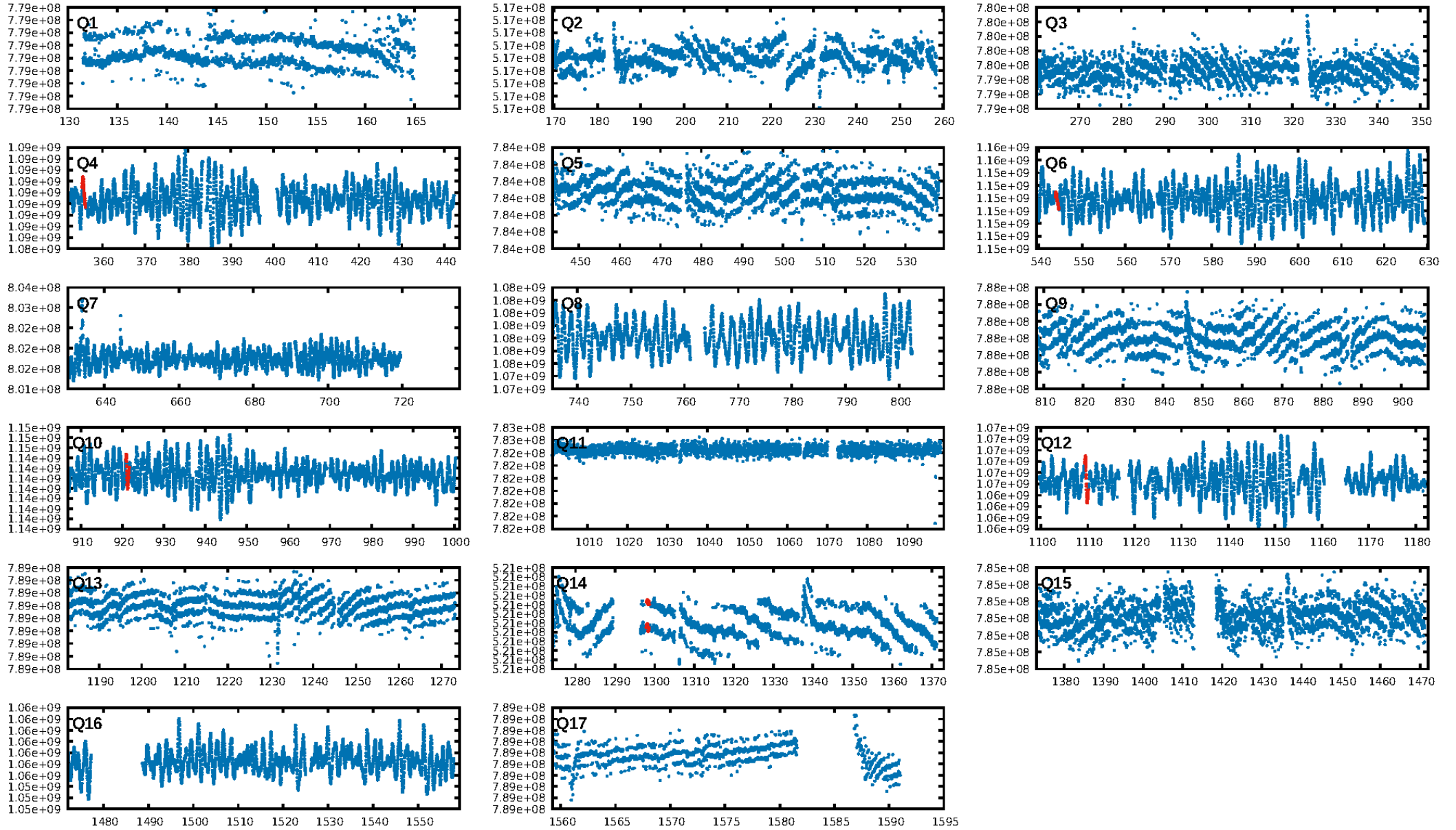
## DV Fit Results:

Period = 188.52556 [0.01960] d  
Epoch = 167.1130 [0.1068] BKJD  
Rp/R\* = 0.0048 [0.0047]  
a/R\* = 66.09 [368.81]  
b = 0.90 [1.20]  
Seff = 12.21 [4.20]  
Teq = 477 [41] K  
Rp = 0.92 [0.92] Re  
a = 0.7197 [0.1413] AU  
Ag = 614.40 [2301.05] [0.27σ]  
Teff = 3669 [3429] K [0.93σ]

## DV Diagnostic Results:

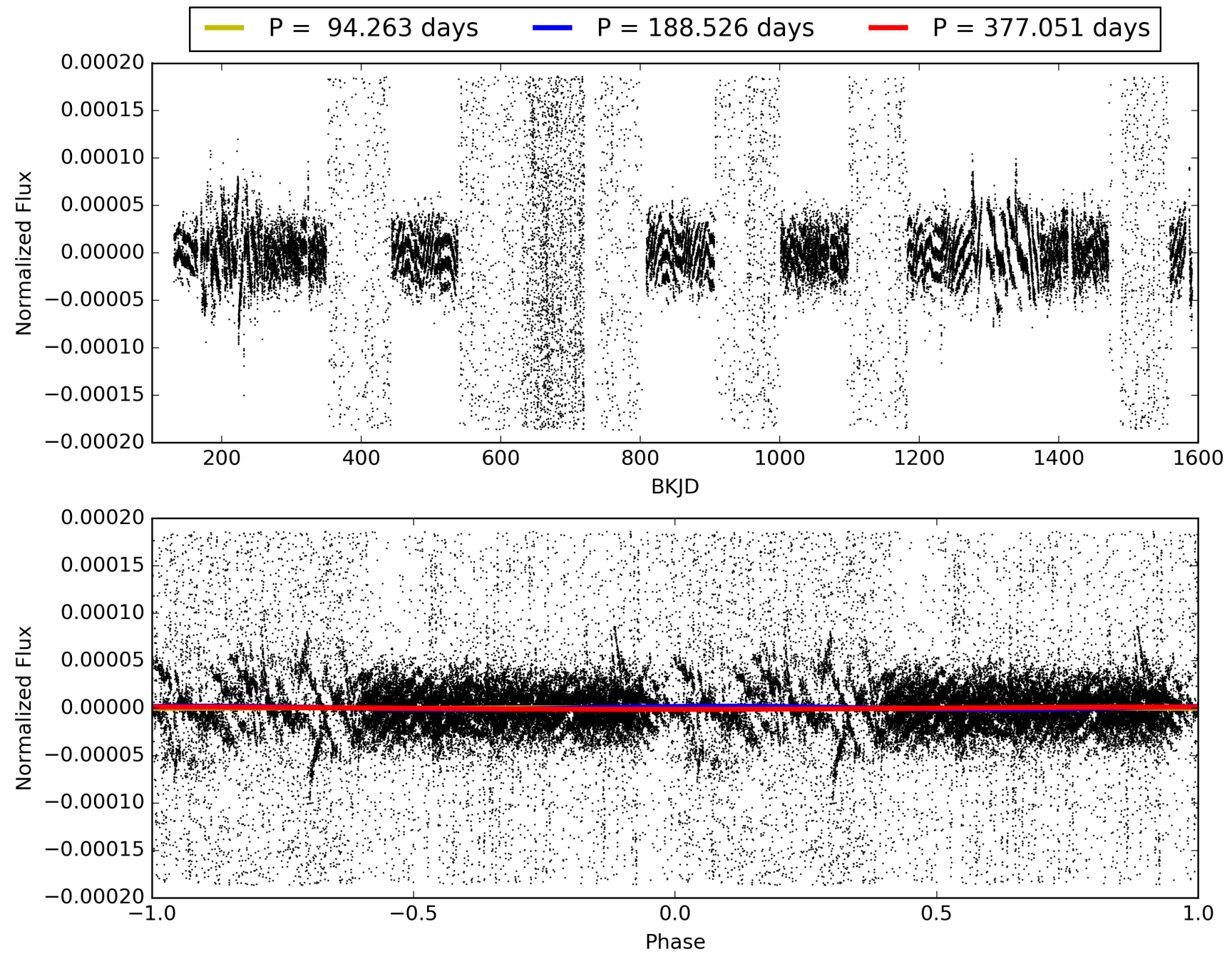
ShortPeriod-sig: 100.0% [4.82σ]  
LongPeriod-sig: 100.0% [93.06σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 1.9%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 44.83  
Centroid-sig: 93.6%  
Centroid-so: 2.347 arcsec [0.28σ]  
OotOffset-rm: 2.524 arcsec [1.52σ]  
KicOffset-rm: 2.530 arcsec [1.86σ]  
OotOffset-st: 3/0/1/0 [4]  
KicOffset-st: 3/0/1/0 [4]  
DiffImageQuality-fgm: 0.00 [0/4]  
DiffImageOverlap-fno: 0.50 [2/4]

# TCE 010199218-05, PDC Light Curves





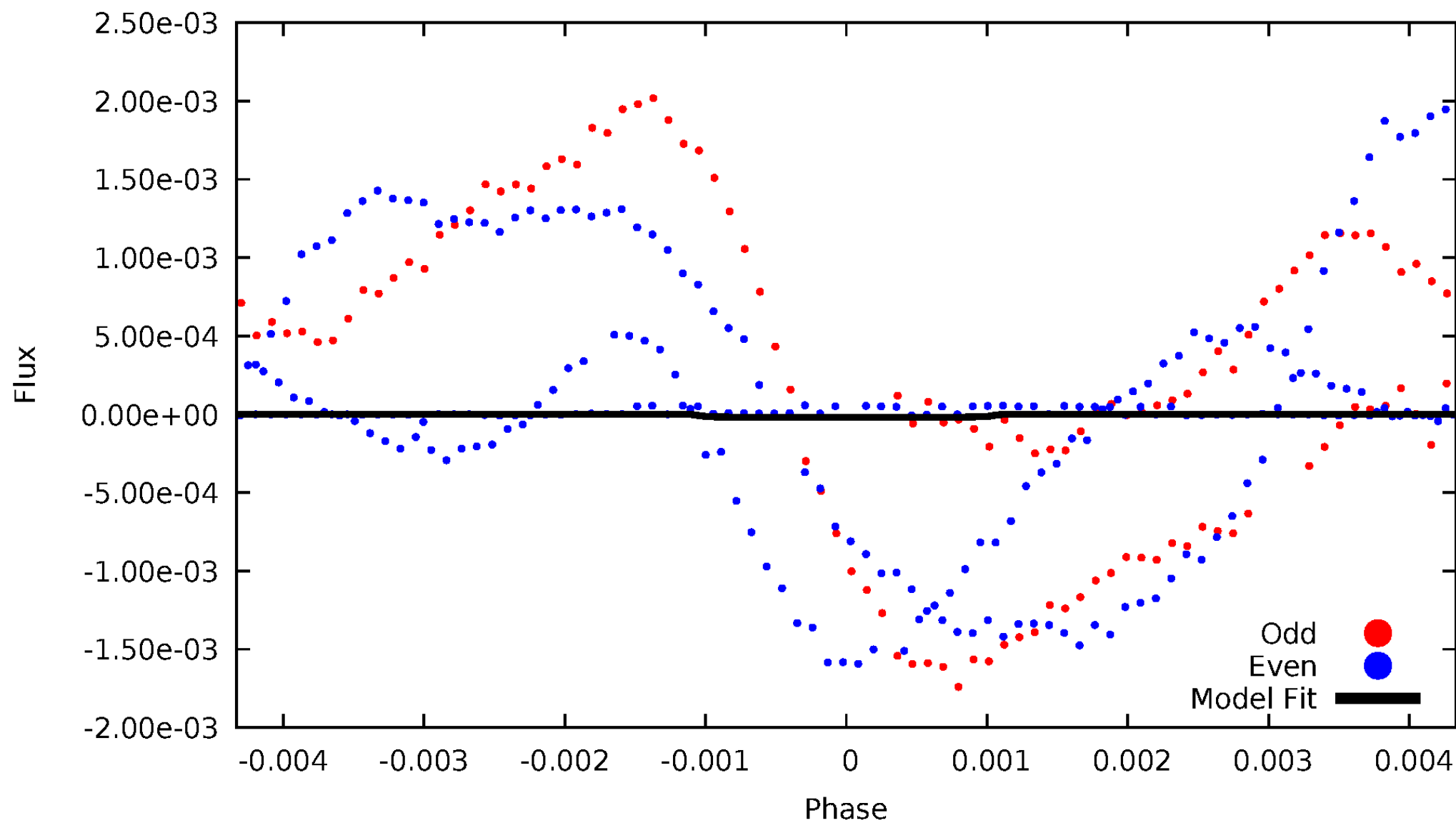
# TCE 010199218-05





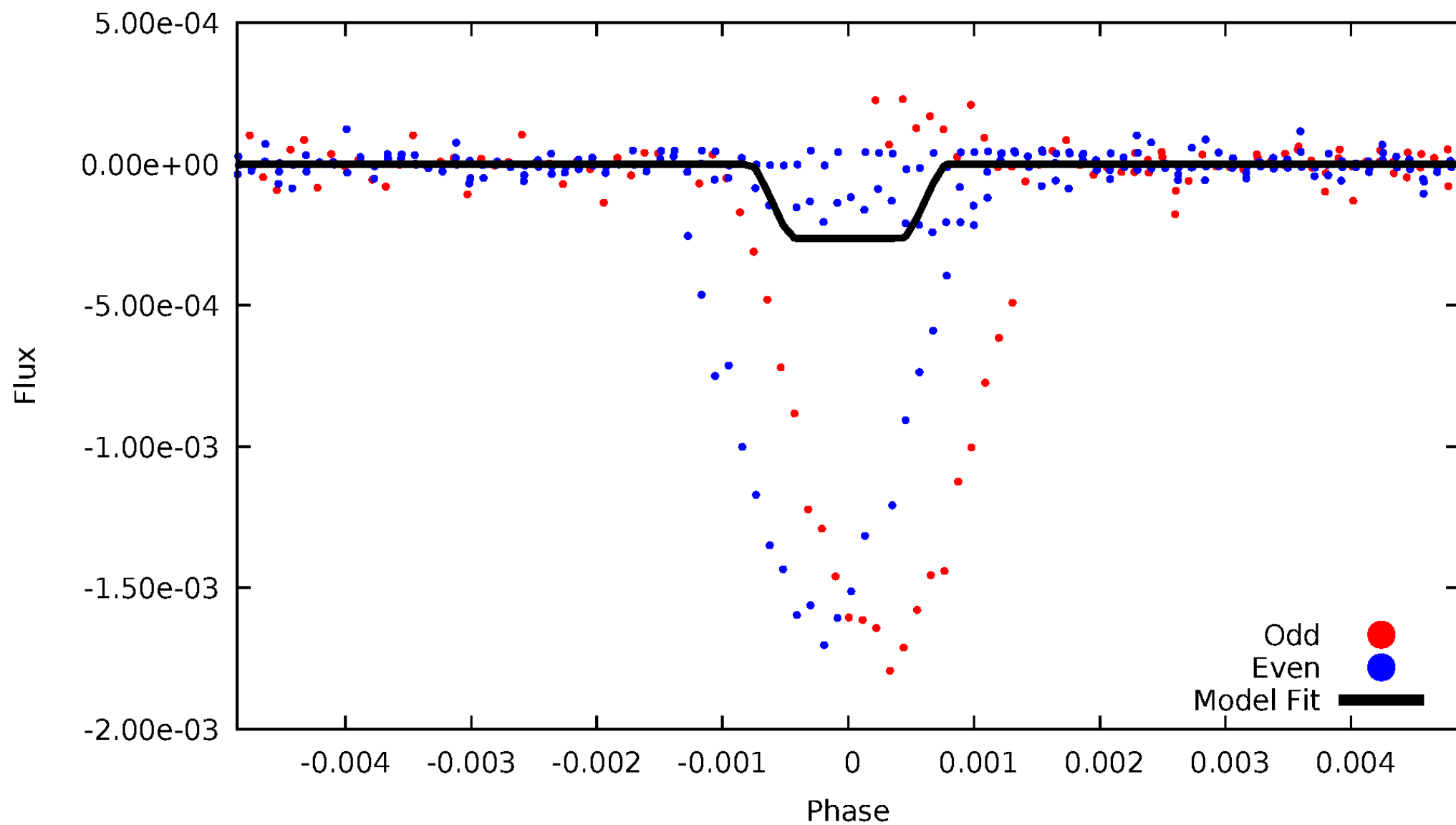
# DV Odd/Even

TCE 010199218-05



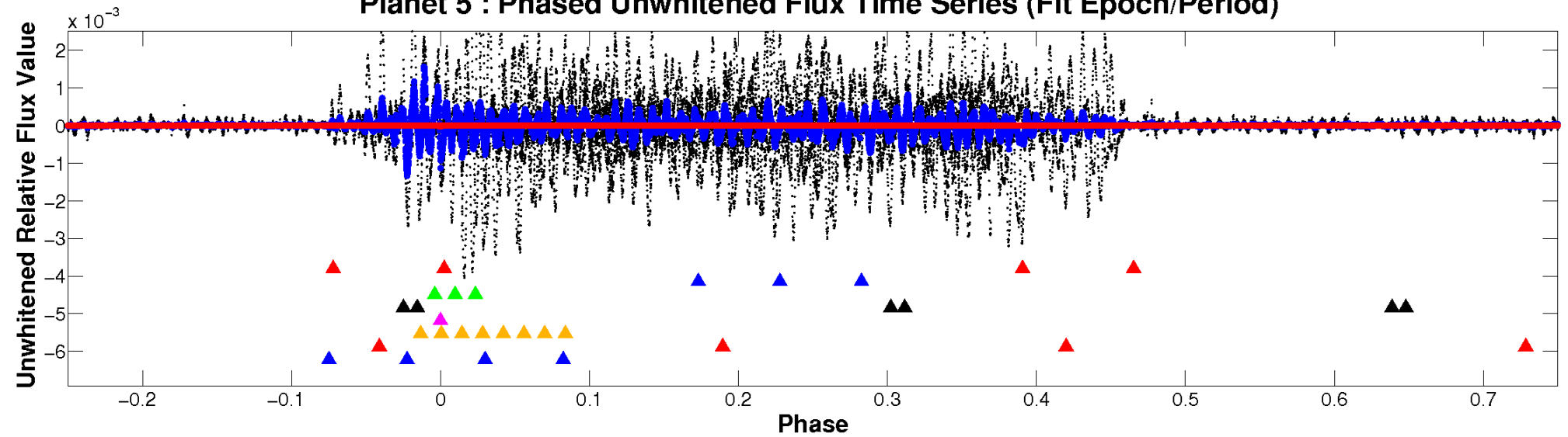
# ALT Odd/Even

TCE 010199218-05

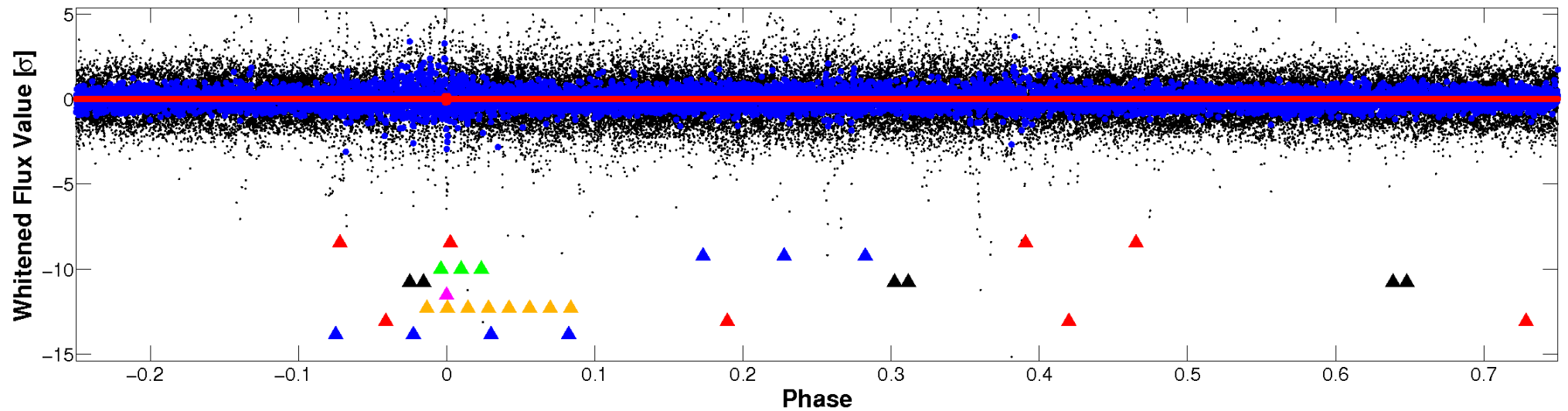


# Non-Whitened Vs. Whitened Light Curve

## Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

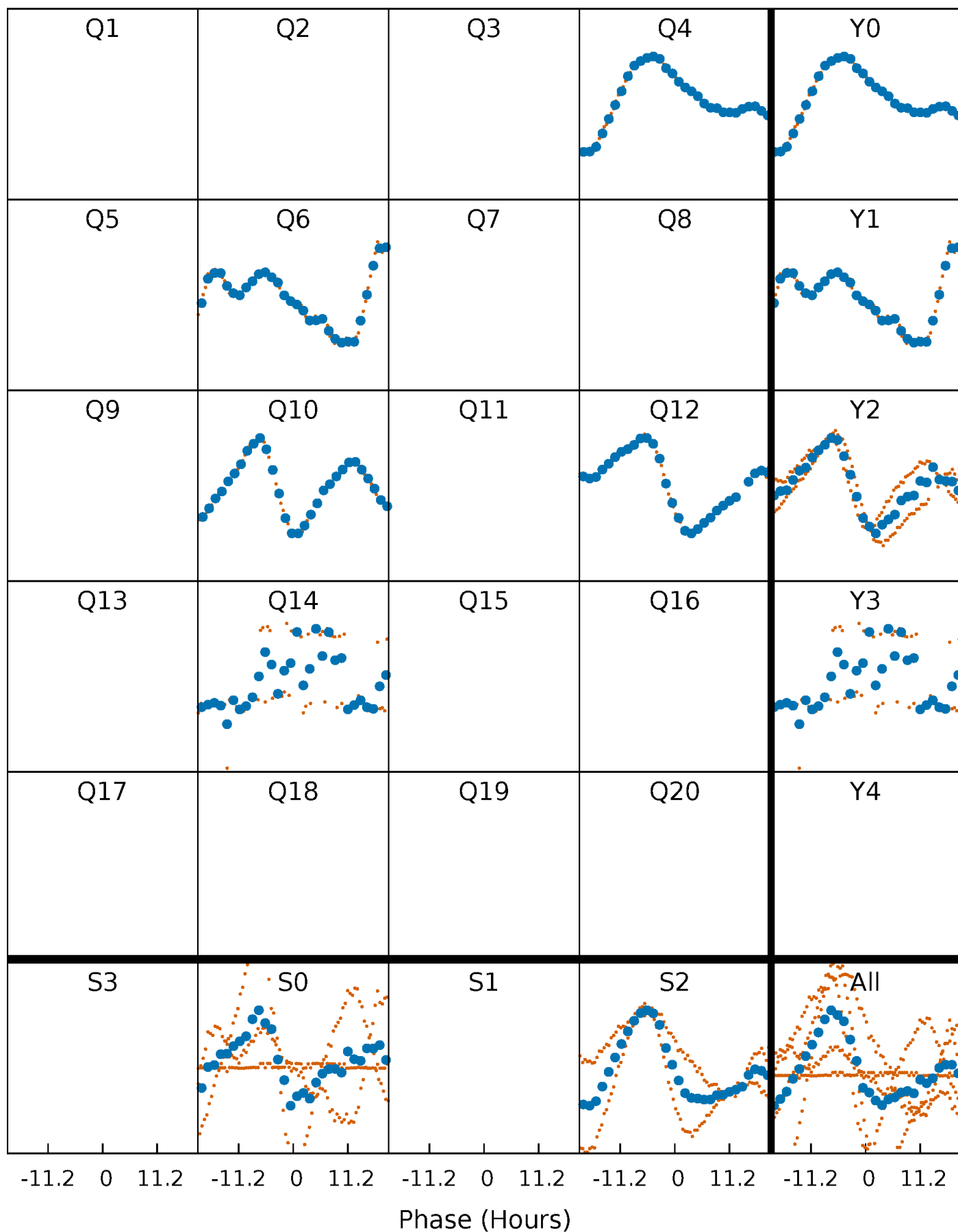


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



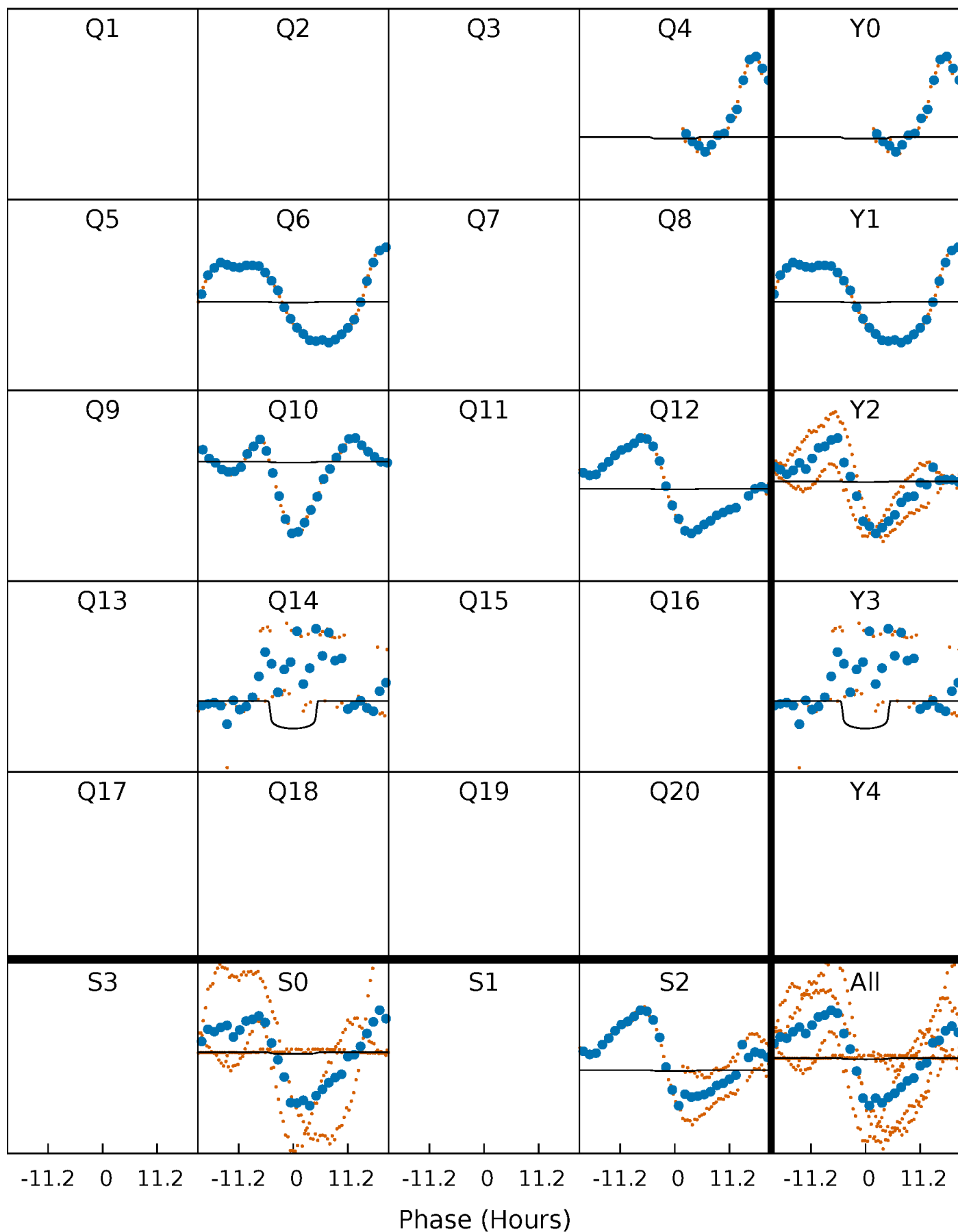
# PDC Quarter-Phased Transit Curves

TCE 010199218-05     $P=188.525562$  Days     $T_0=167.112992$  (BKJD)



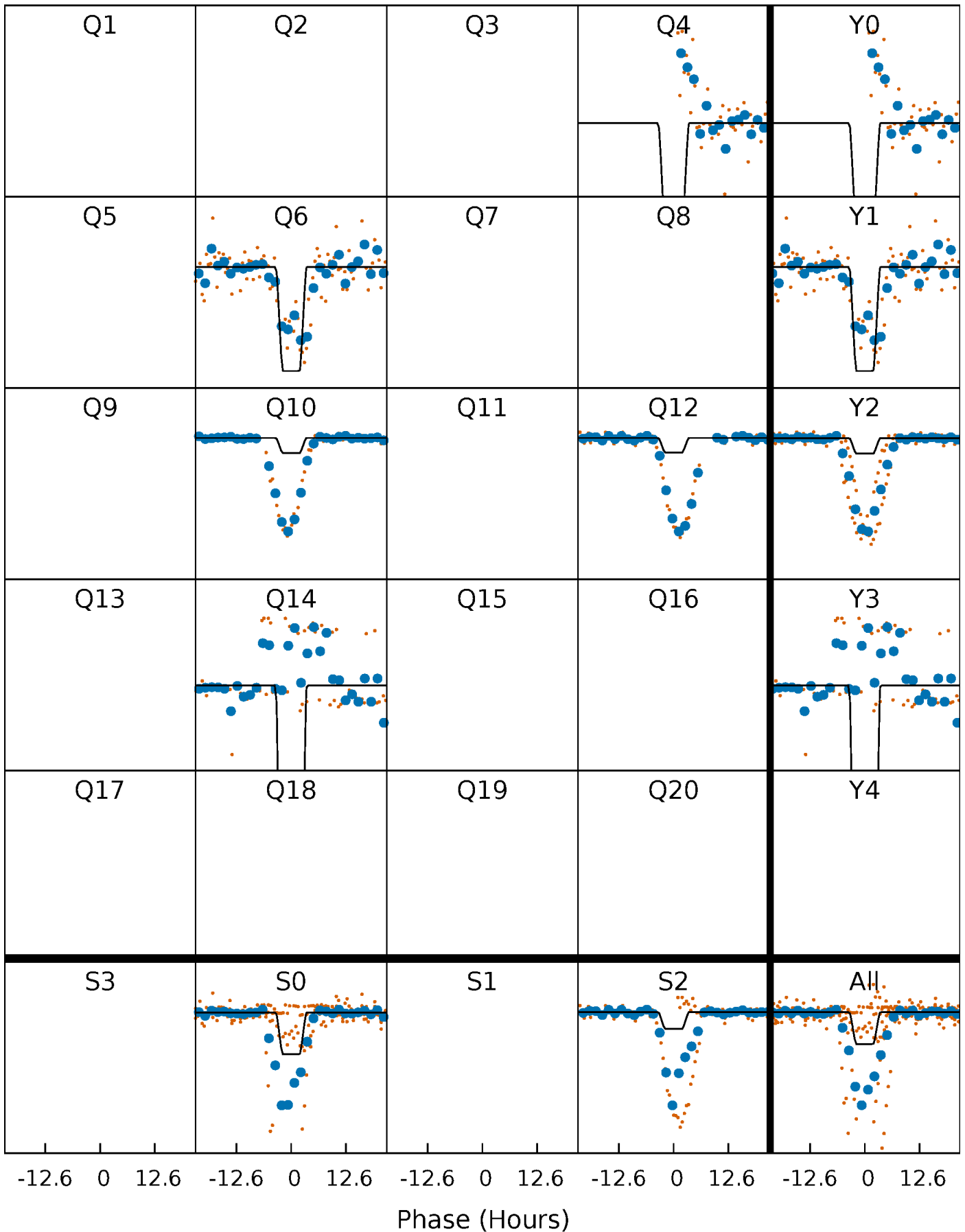
# DV Quarter-Phased Transit Curves

TCE 010199218-05     $P=188.525562$  Days     $T_0=167.112992$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

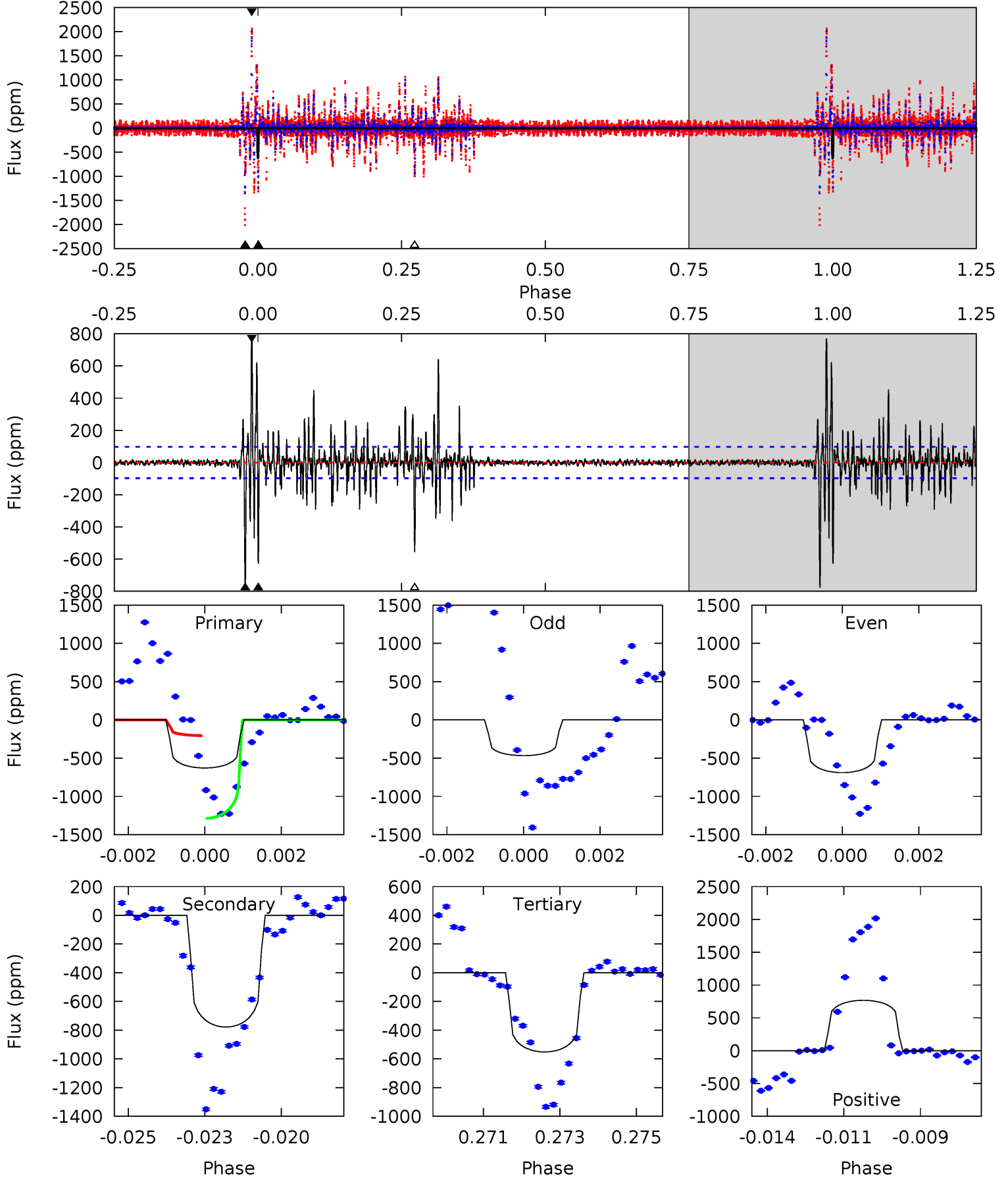
TCE 010199218-05 P=188.520025 Days  $T_0=167.146769$  (BKJD)



# DV Model-Shift Uniqueness Test

010199218-05, P = 188.525562 Days, E = 167.112992 Days

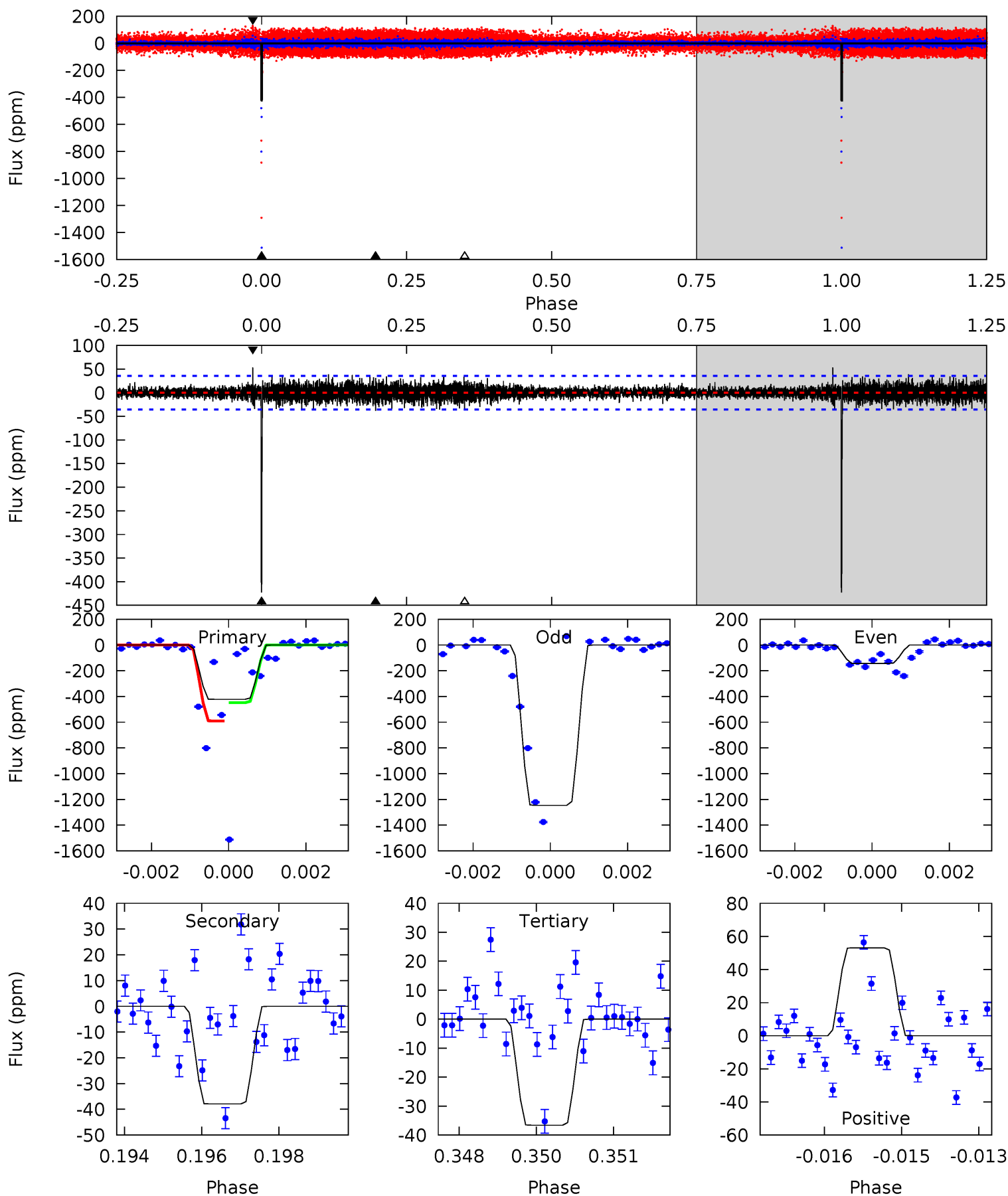
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.2	42.4	30.0	41.7	5.30	3.05	2.99	4.15	-7.56	12.3	0.60	3.21	0.85	0.50	0



# Alt Model-Shift Uniqueness Test

010199218-05, P = 188.520025 Days, E = 167.146769 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
63.4	5.70	5.50	7.97	5.36	3.15	1.22	57.9	55.5	0.20	-2.28	92.7	3.55	0.11	0





### Stellar Parameters For KIC 010199218

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6935^{+214}_{-309}$	$4.099^{+0.165}_{-0.135}$	$-0.180^{+0.250}_{-0.300}$	$1.747^{+0.393}_{-0.393}$	$1.403^{+0.168}_{-0.252}$	$0.371^{+0.333}_{-0.152}$
	+3%/-4%	+4%/-3%	+139%/-167%	+22%/-22%	+12%/-18%	+90%/-41%
Source	KIC0	FLK73	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 010199218-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-778 \pm 18$	$1.09^{+0.82}_{-0.67}$	$661^{+43}_{-45}$	$26325^{+80105}_{-12018}$	$185515^{+1087515}_{-124835}$
Alt.	$-38 \pm 7$	$3.07^{+1.02}_{-0.92}$	$663^{+41}_{-43}$	$4425^{+680}_{-441}$	$1111^{+1206}_{-484}$

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

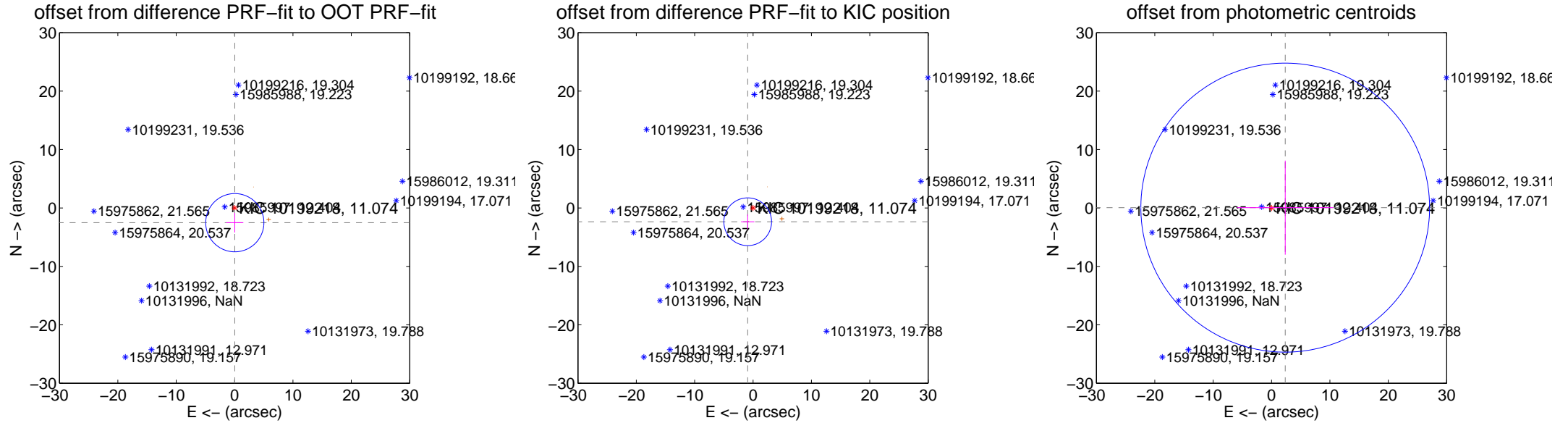
## DV Centroid Data

Supplemental centroid analysis for 010199218-05. **Kepler magnitude: 11.07.** Transit SNR 2.18

**There are 0 quarters with good PRF difference image offsets**

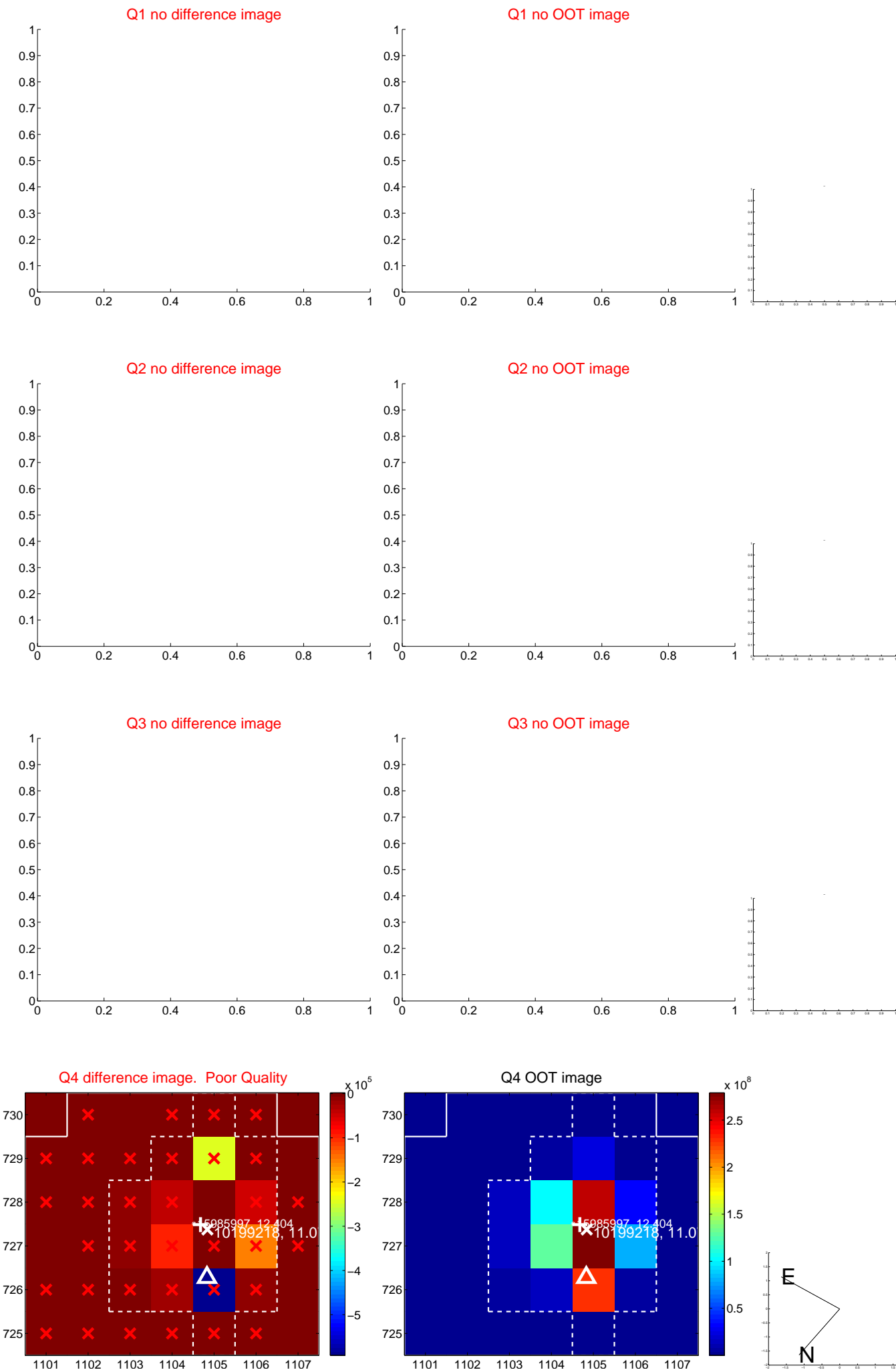
The direct PRF centroid is offset from the target star catalog position by about 0.99 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.524 \pm 1.661$	1.52	$-0.038 \pm 1.464$	$-2.524 \pm 1.673$
PRF-fit source offset from KIC position	$2.530 \pm 1.362$	1.86	$0.917 \pm 1.139$	$-2.358 \pm 1.241$
photometric centroid source offset	$2.35 \pm 8.24$	0.28	$-2.35 \pm 8.24$	$0.05 \pm 8.05$

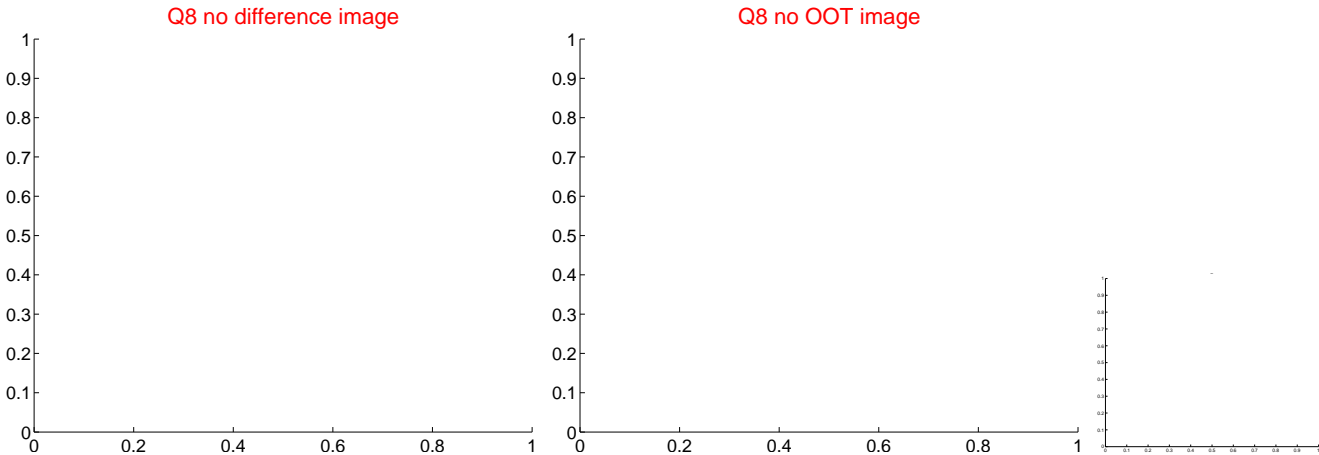
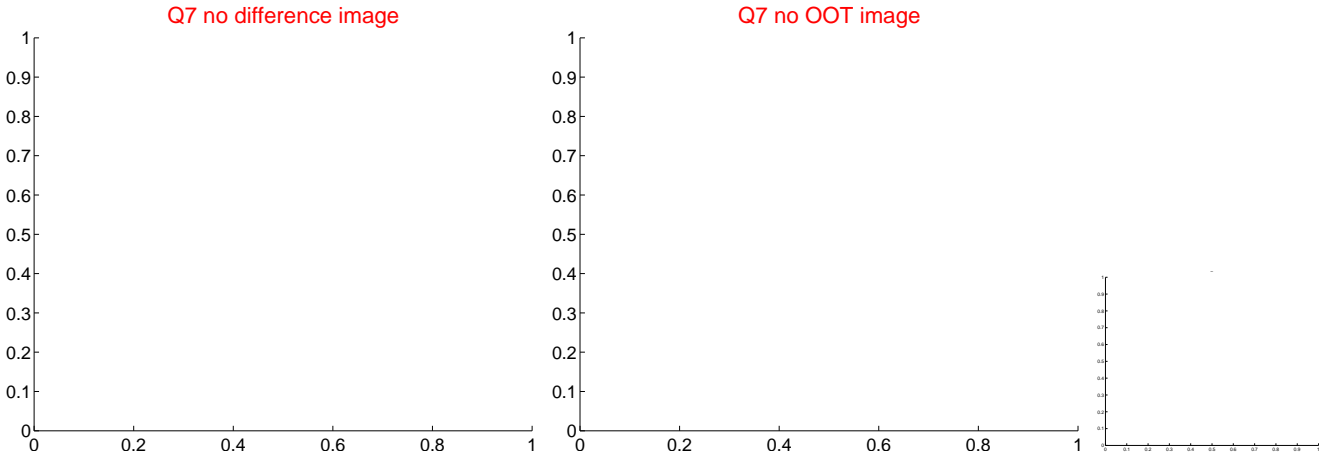
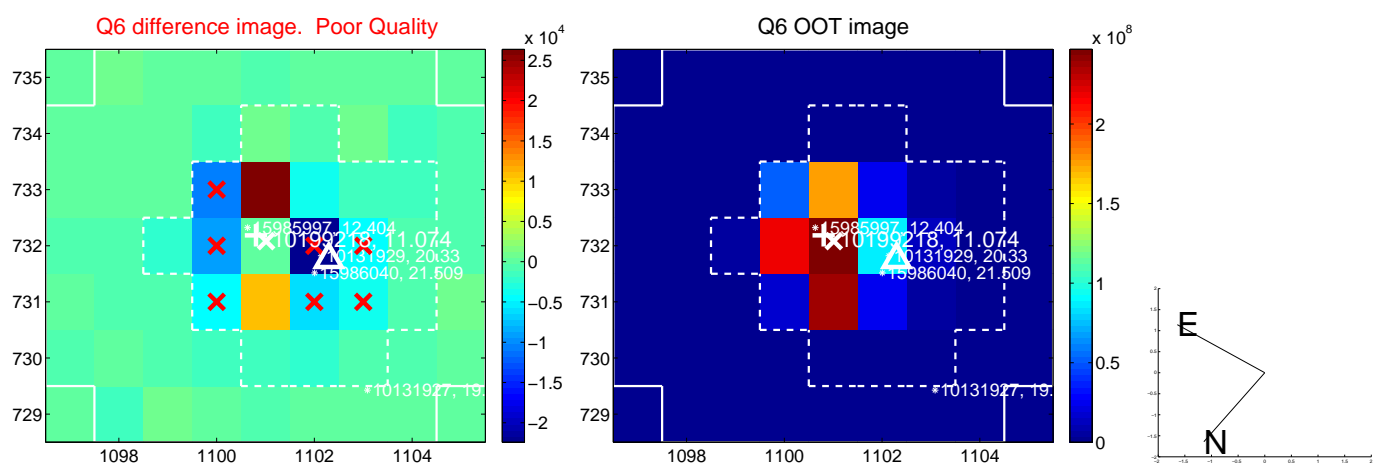
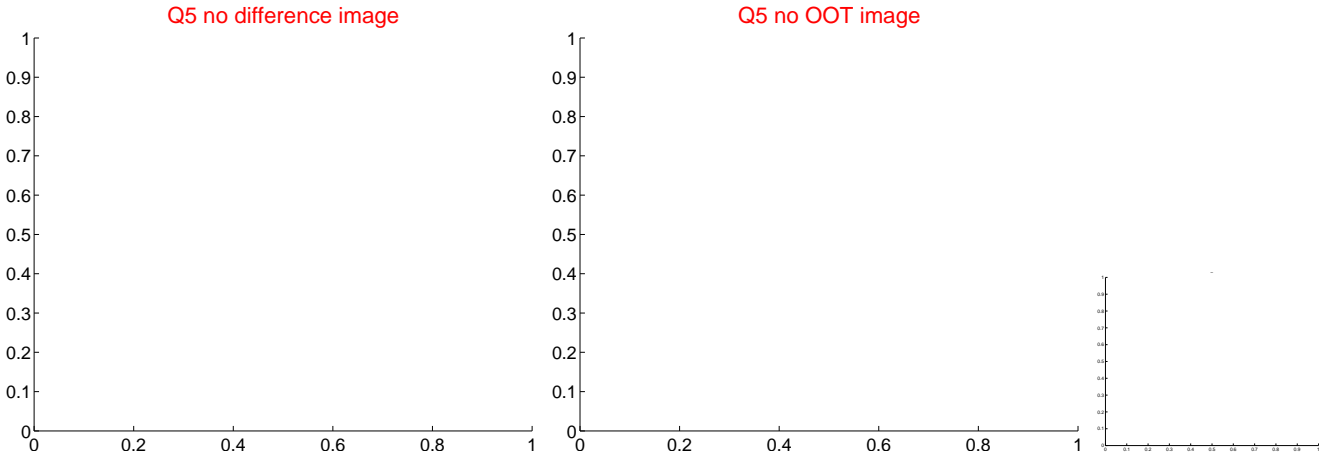


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

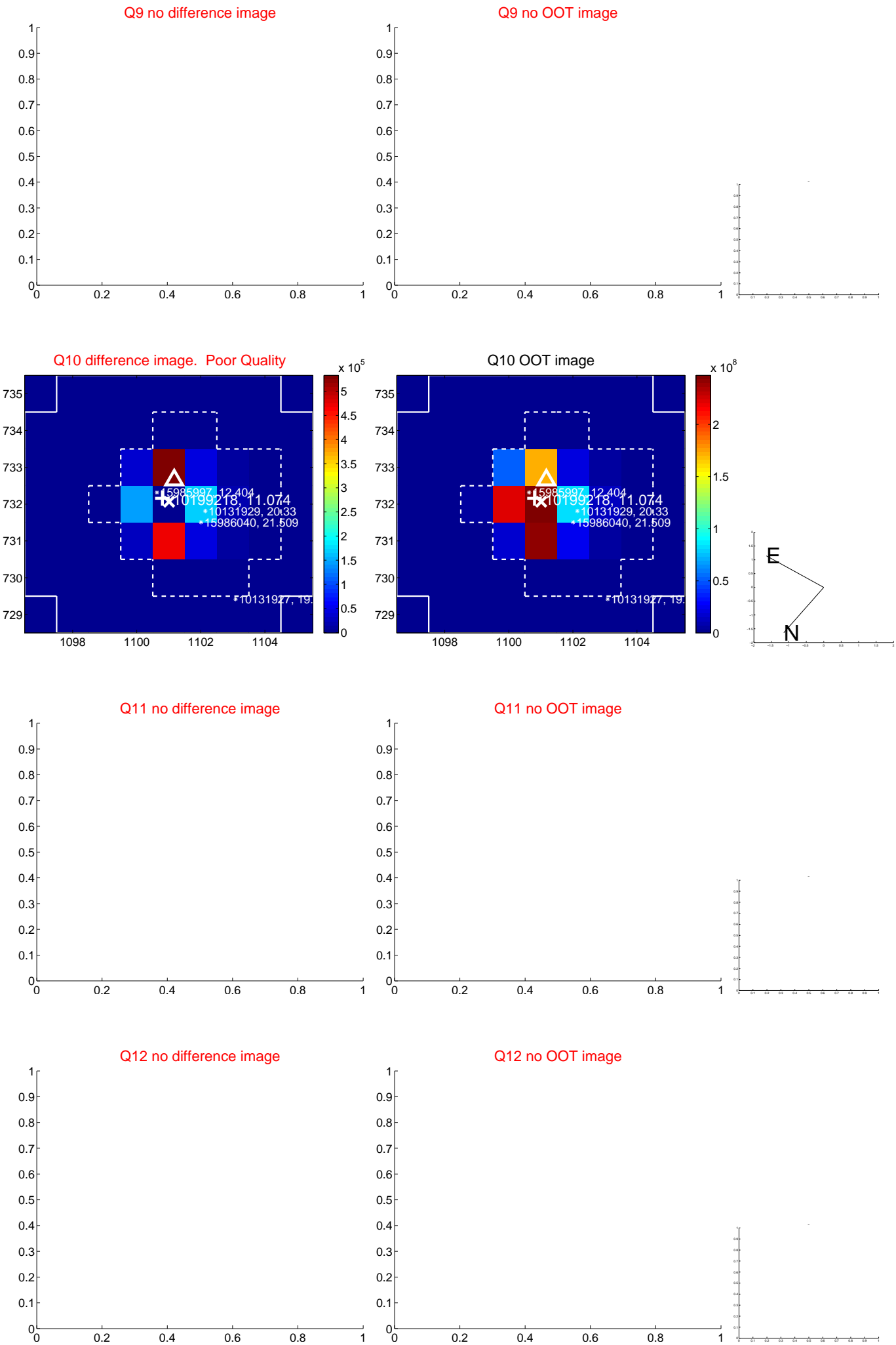
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



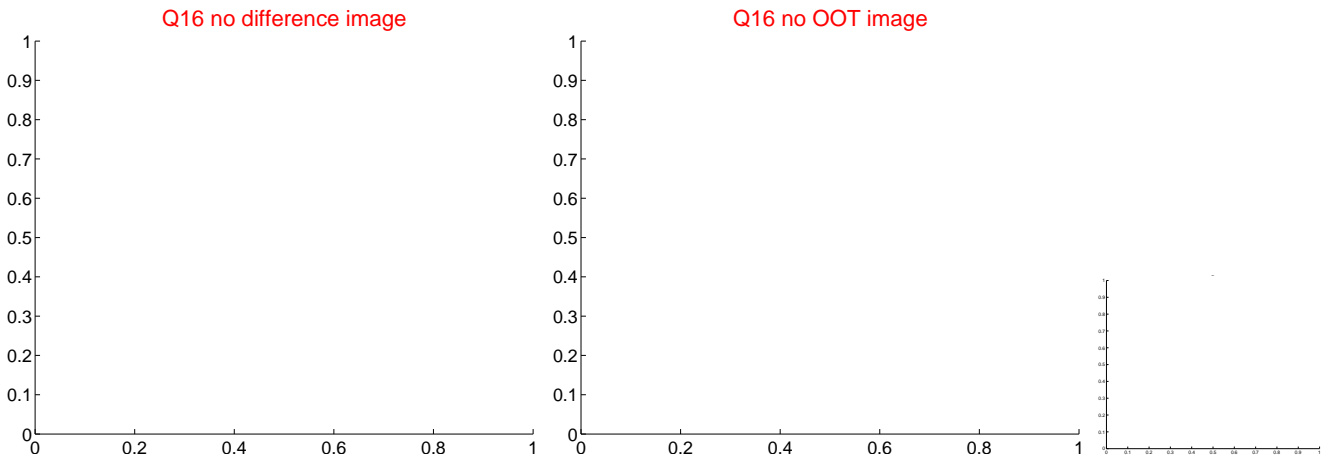
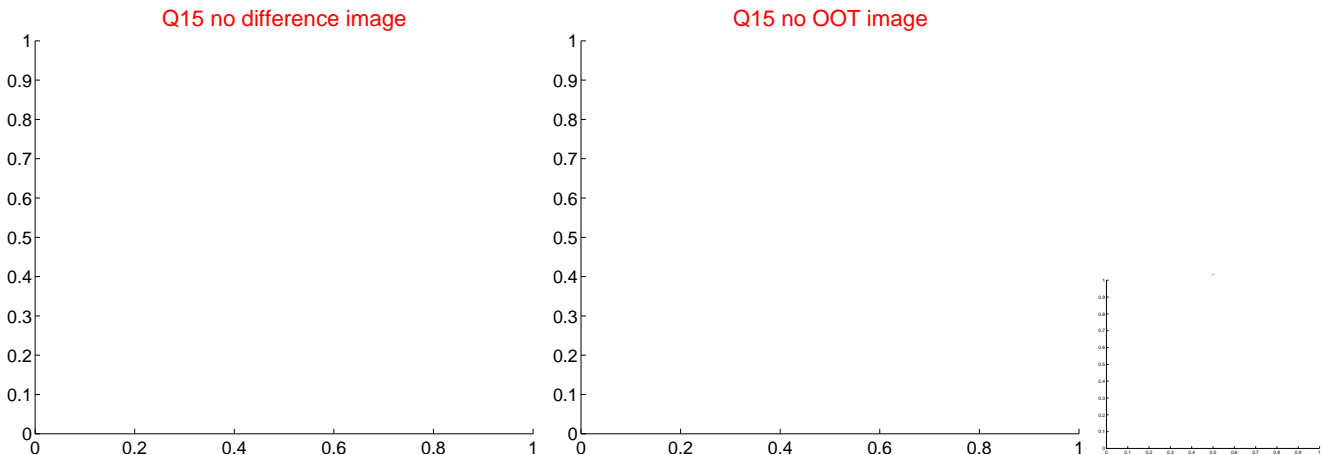
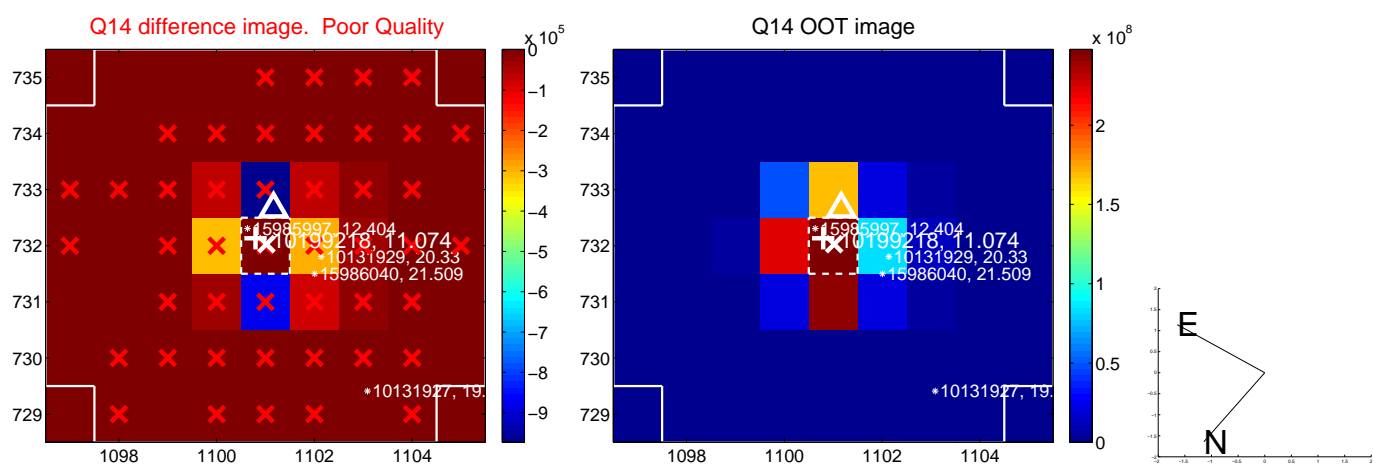
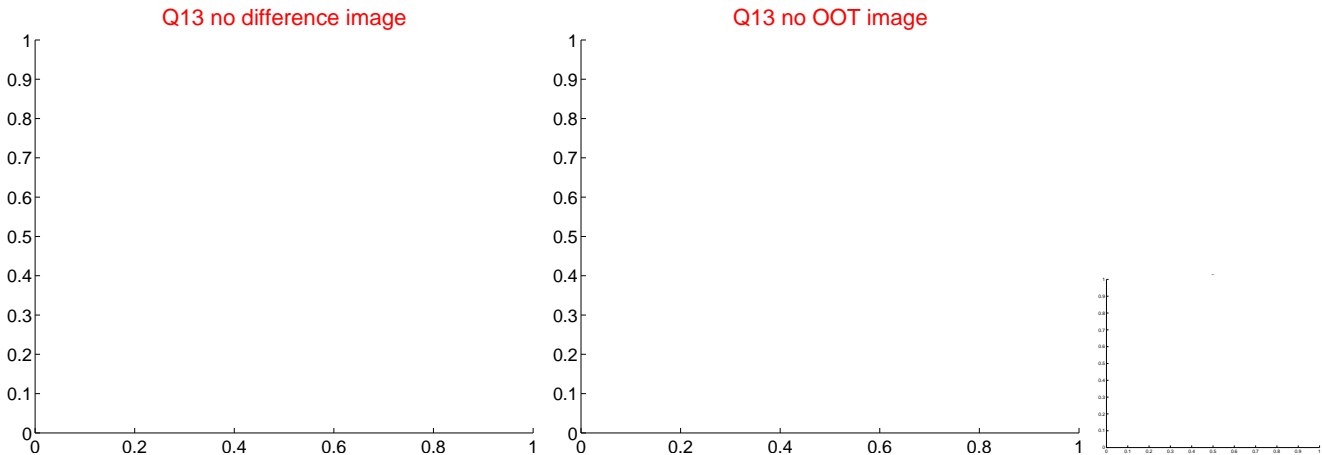
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



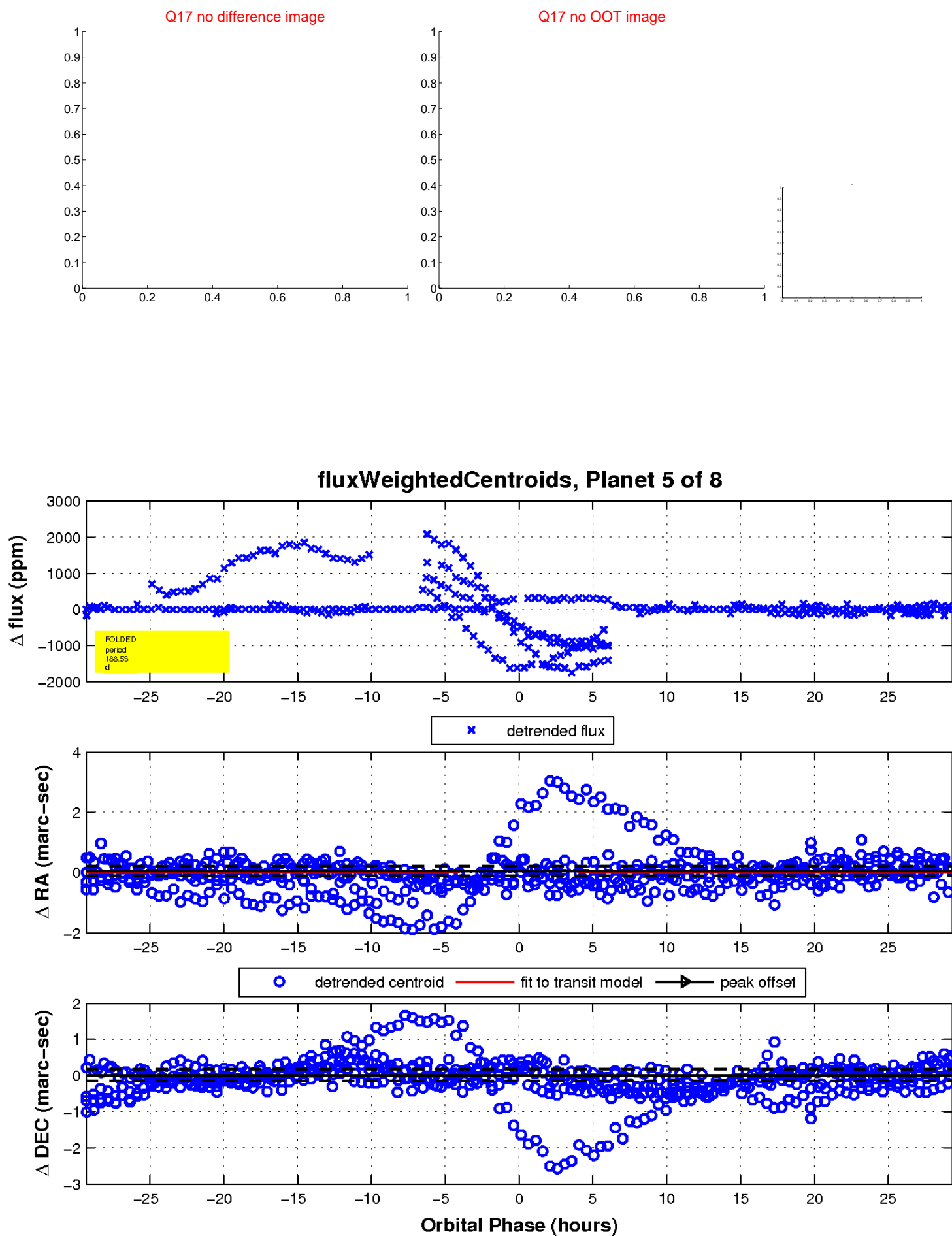
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

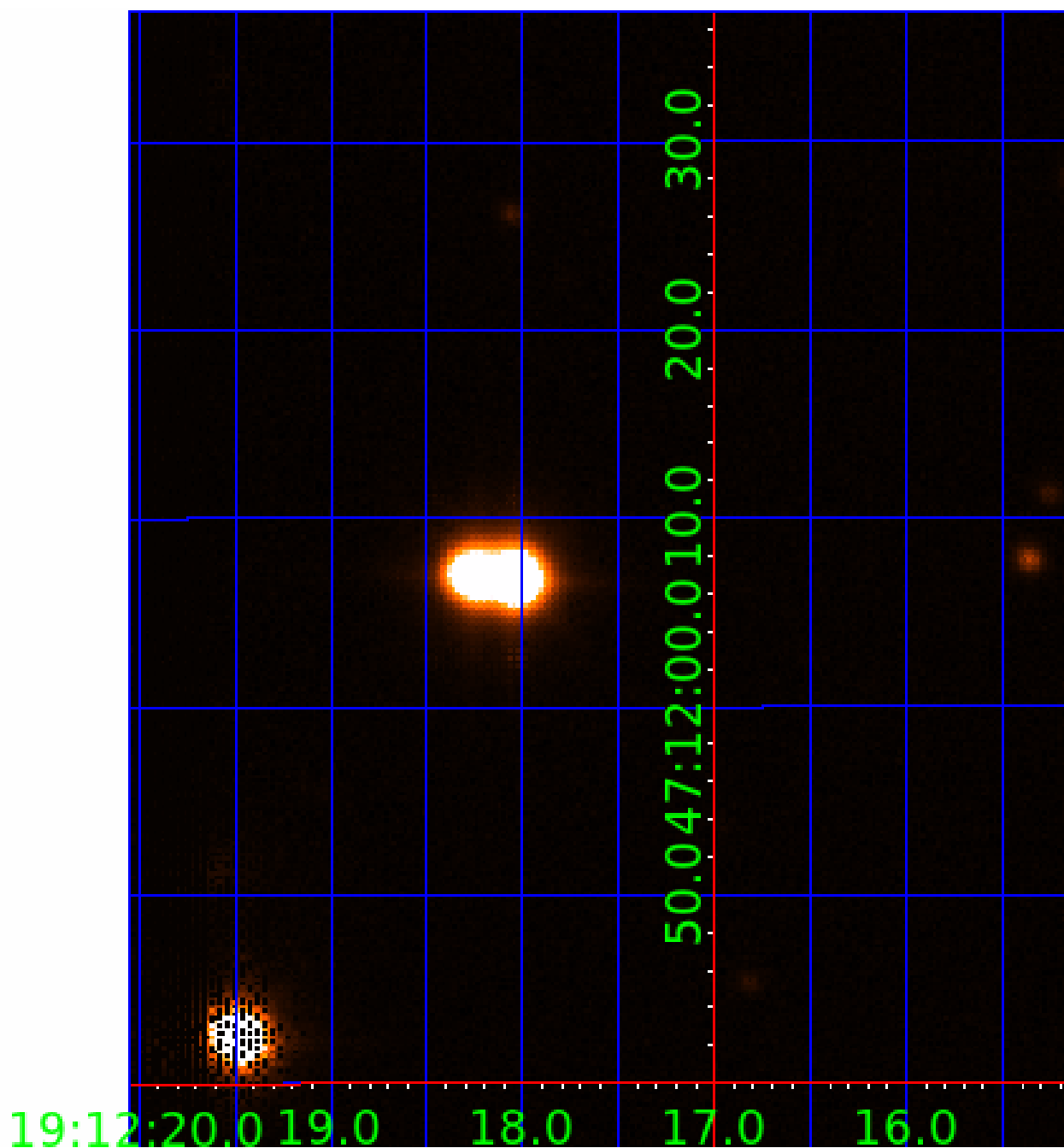


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 010199218

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010199218-02	OBS	No	555.255599	408.911751	1167.9	13.323	16.0	15.8	1.75	6935	11.08	2.89
010199218-03	OBS	No	568.148971	354.911719	1761.5	12.342	13.2	16.5	1.75	6935	13.48	2.81
010199218-04	OBS	No	251.949107	224.110758	44.5	13.098	8.8	8.3	1.75	6935	1.32	8.30
010199218-05	OBS	No	188.525562	167.112992	20.4	9.797	13.0	2.2	1.75	6935	0.92	12.21
010199218-06	OBS	No	185.909494	182.914879	262.1	8.590	10.9	6.8	1.75	6935	3.21	12.44
010199218-07	OBS	No	333.598614	434.811886	248.8	14.329	10.3	4.5	1.75	6935	4.85	5.71
010199218-08	OBS	No	367.170640	371.172813	261.0	6.000	16.2	-1.0	1.75	6935	2.85	5.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010199218-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
010199218-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010199218-06	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

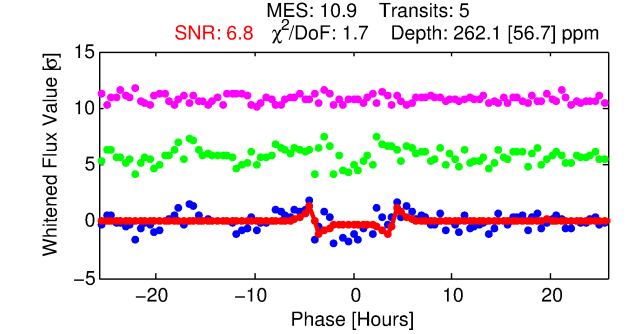
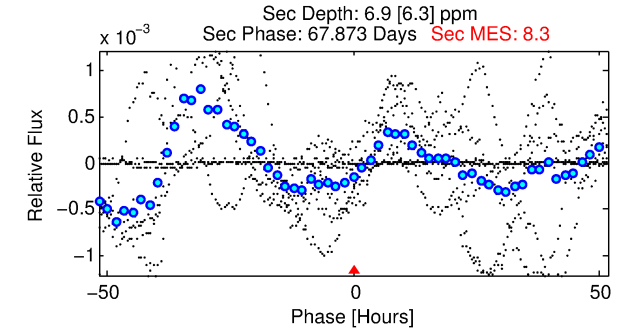
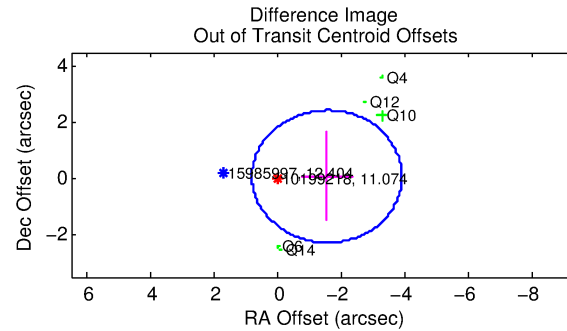
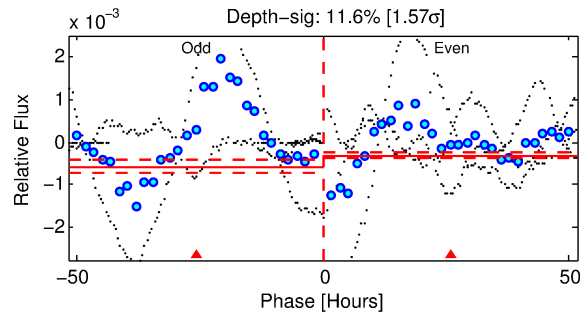
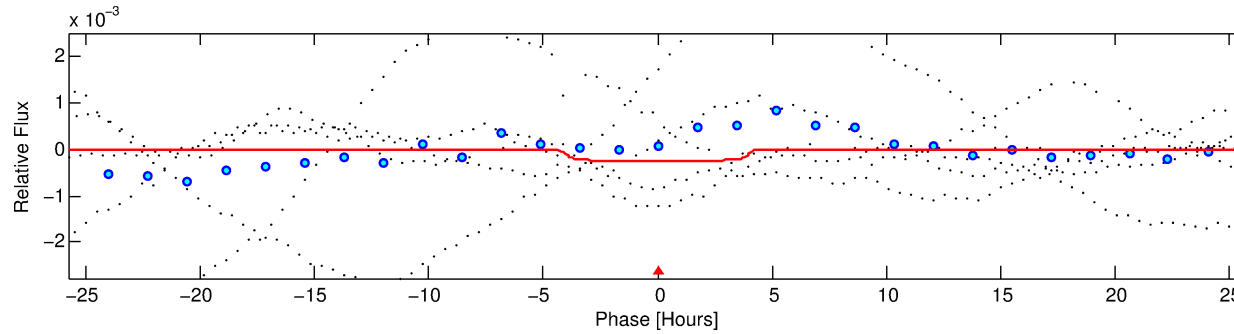
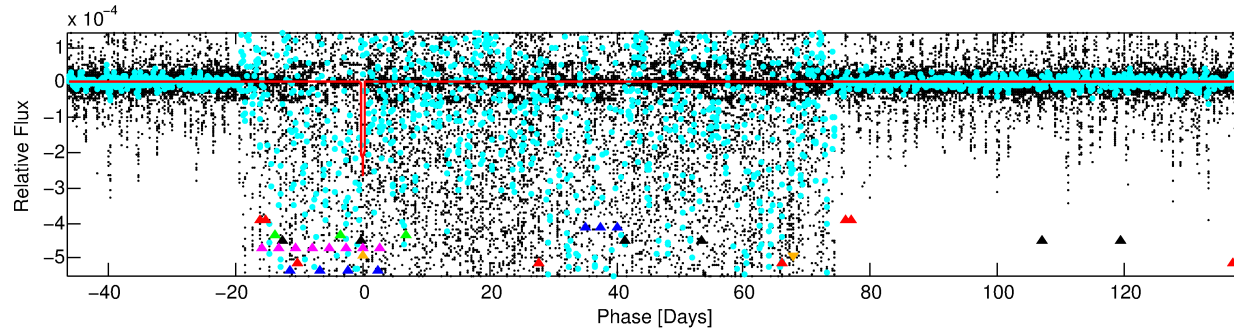
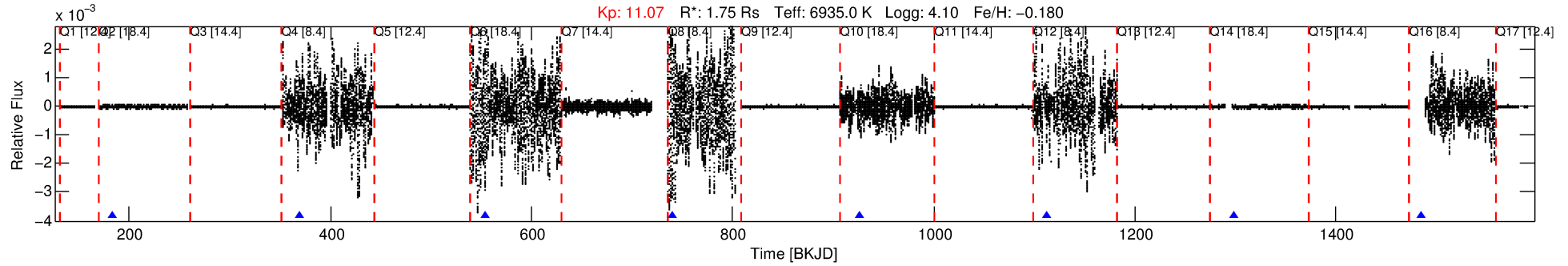
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010199218-06

No Significant Match Found

# DV One-Page Summary

KIC: 10199218 Candidate: 6 of 8 Period: 185.909 d



## DV Fit Results:

Period = 185.90949 [0.00242] d  
Epoch = 182.9149 [0.0082] BKJD  
Rp/R\* = 0.0168 [0.0026]  
a/R\* = 88.70 [44.19]  
b = 0.86 [0.15]  
Seff = 12.44 [4.28]  
Teq = 479 [41] K  
Rp = 3.21 [0.88] Re  
a = 0.7130 [0.1400] AU  
Ag = 187.86 [189.41] [0.99σ]  
Teffp = 2741 [672] K [3.36σ]

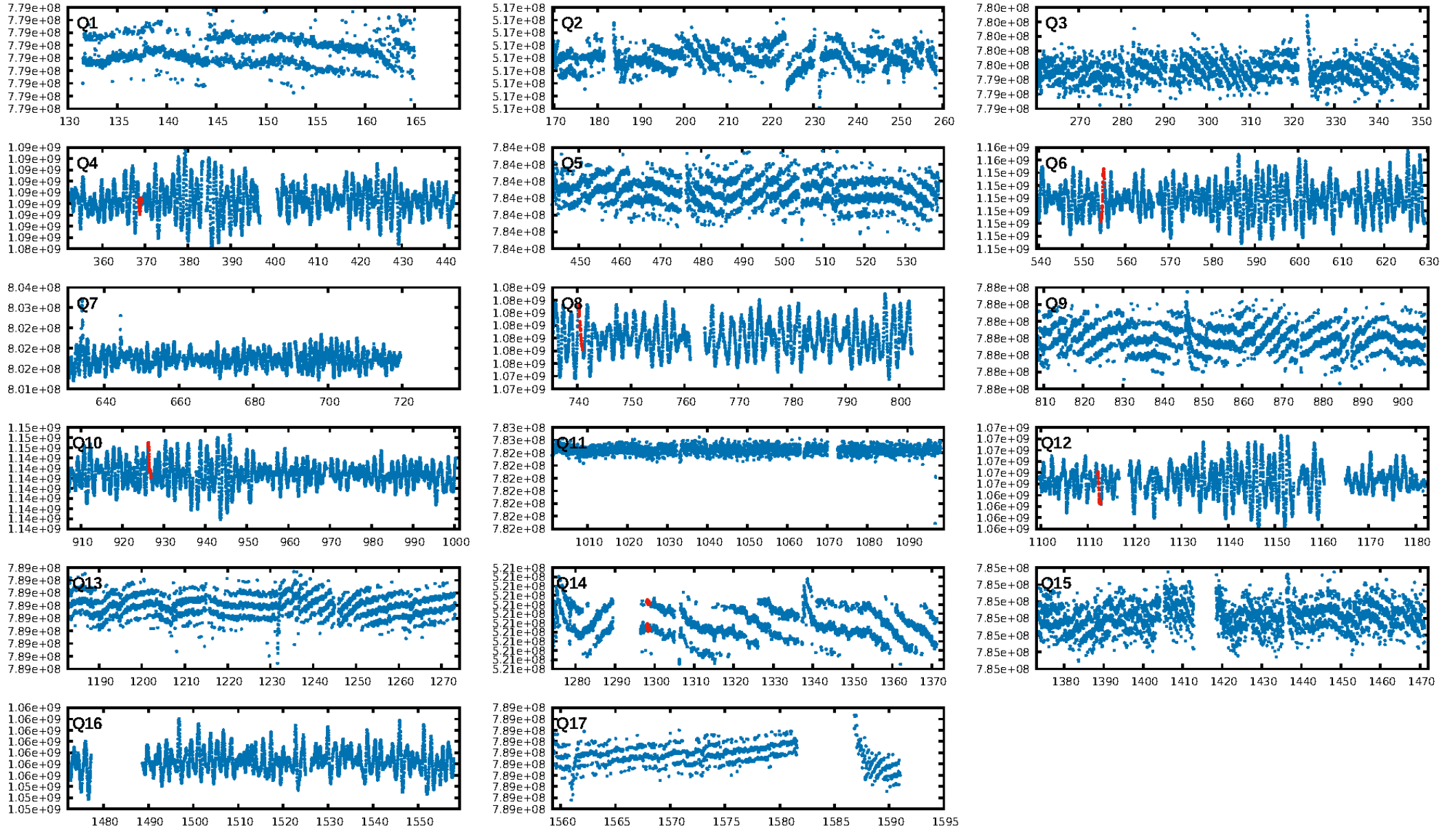
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [4.82σ]  
ModelChiSquare2-sig: 14.0%  
ModelChiSquareGof-sig: 0.5%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -13.08  
Centroid-sig: 22.4%  
Centroid-so: 1.122 arcsec [1.85σ]  
OotOffset-rm: 1.548 arcsec [1.97σ]  
OotOffset-st: 3/0/2/0 [5]  
KicOffset-rm: 0.639 arcsec [0.72σ]  
KicOffset-st: 3/0/2/0 [5]  
DiffImageQuality-fgm: 0.60 [3/5]  
DiffImageOverlap-fno: 0.83 [5/6]

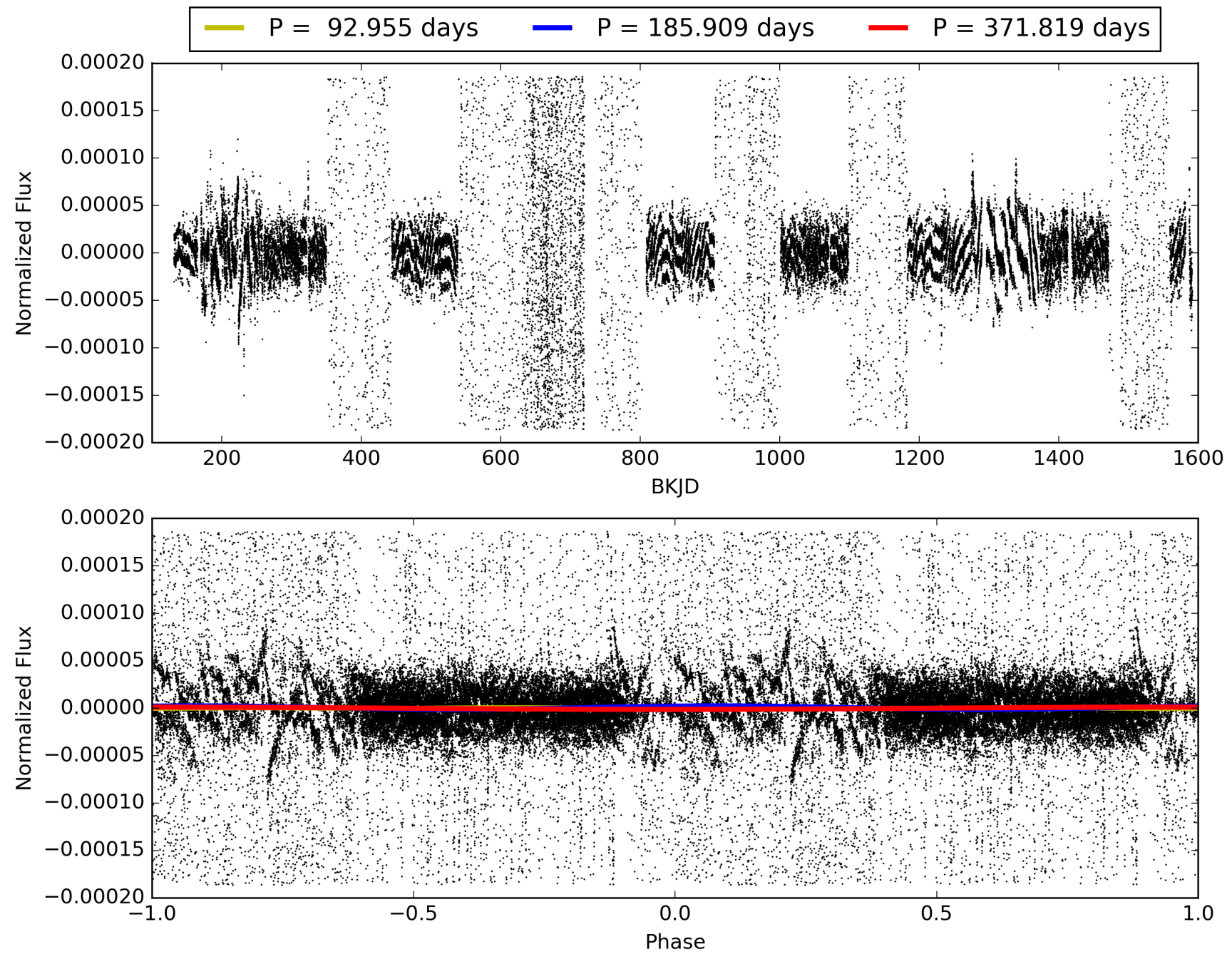
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:55:28 Z

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

# TCE 010199218-06, PDC Light Curves

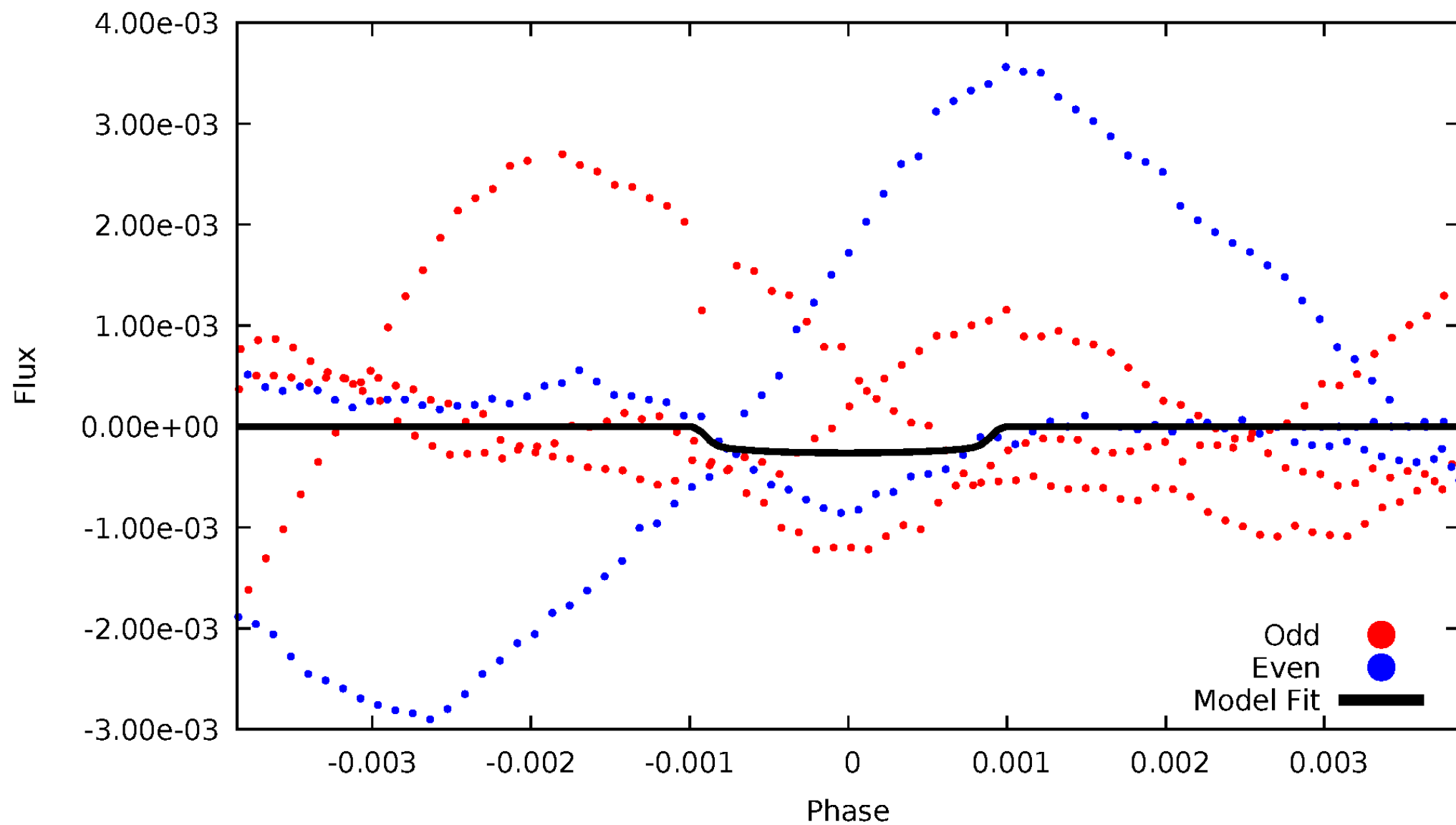


# TCE 010199218-06



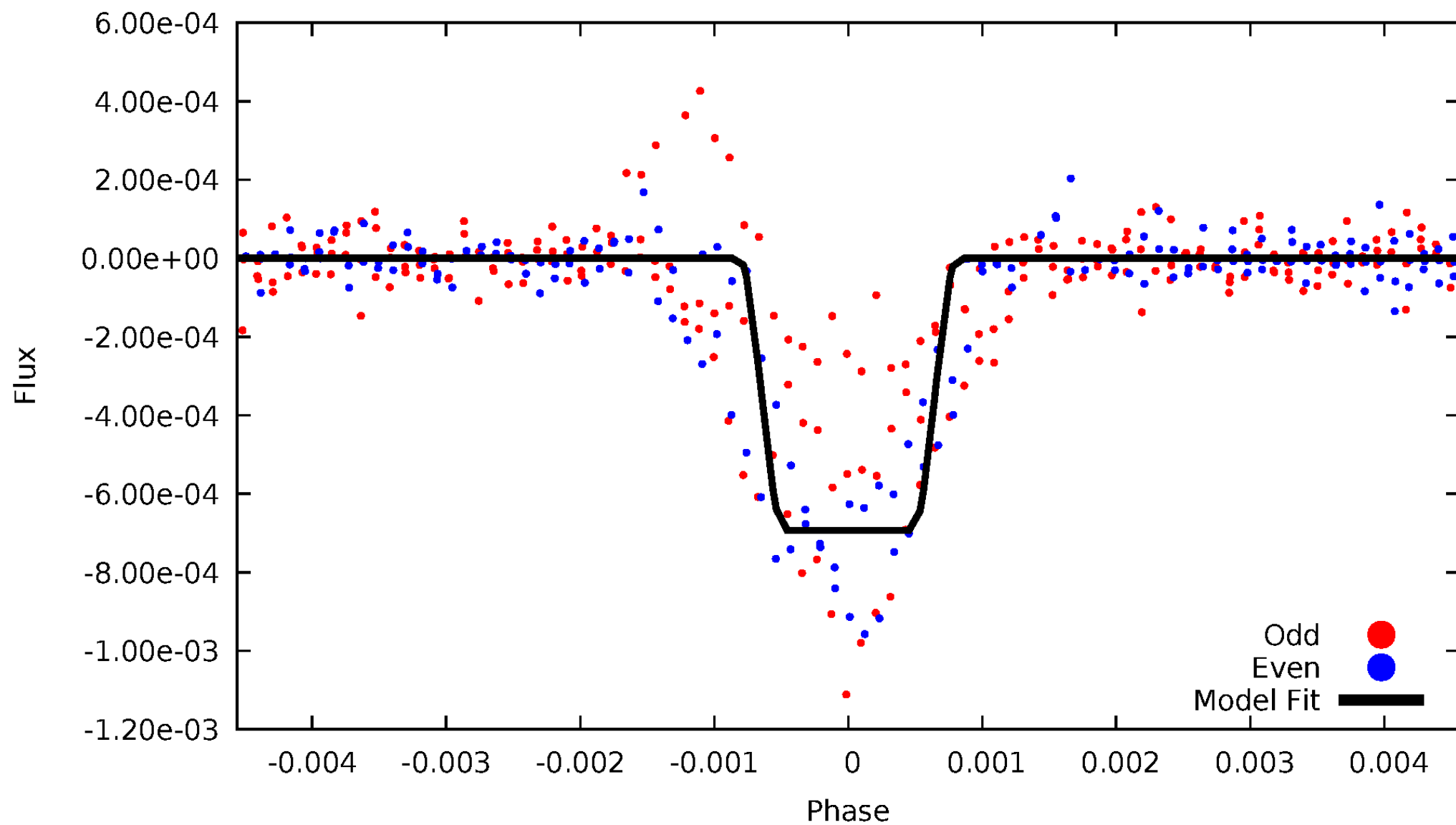
# DV Odd/Even

TCE 010199218-06



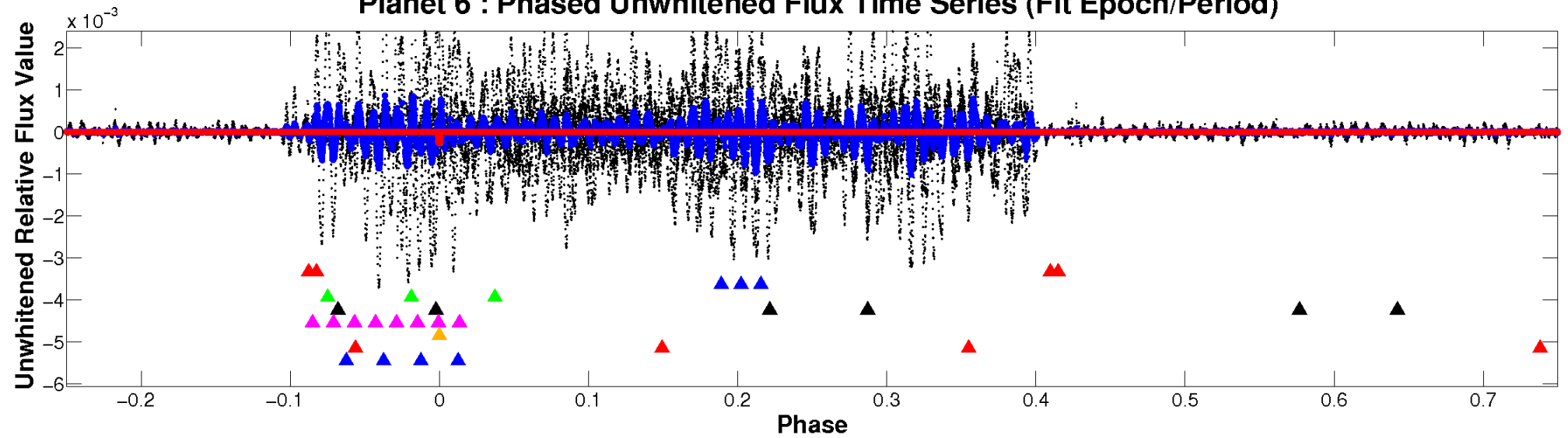
# ALT Odd/Even

TCE 010199218-06

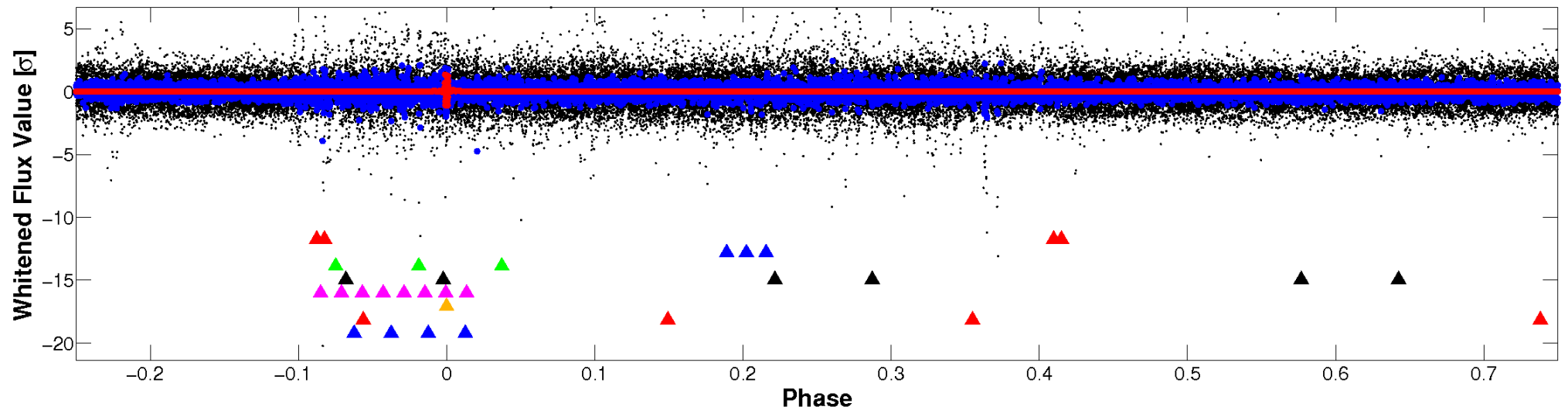


# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

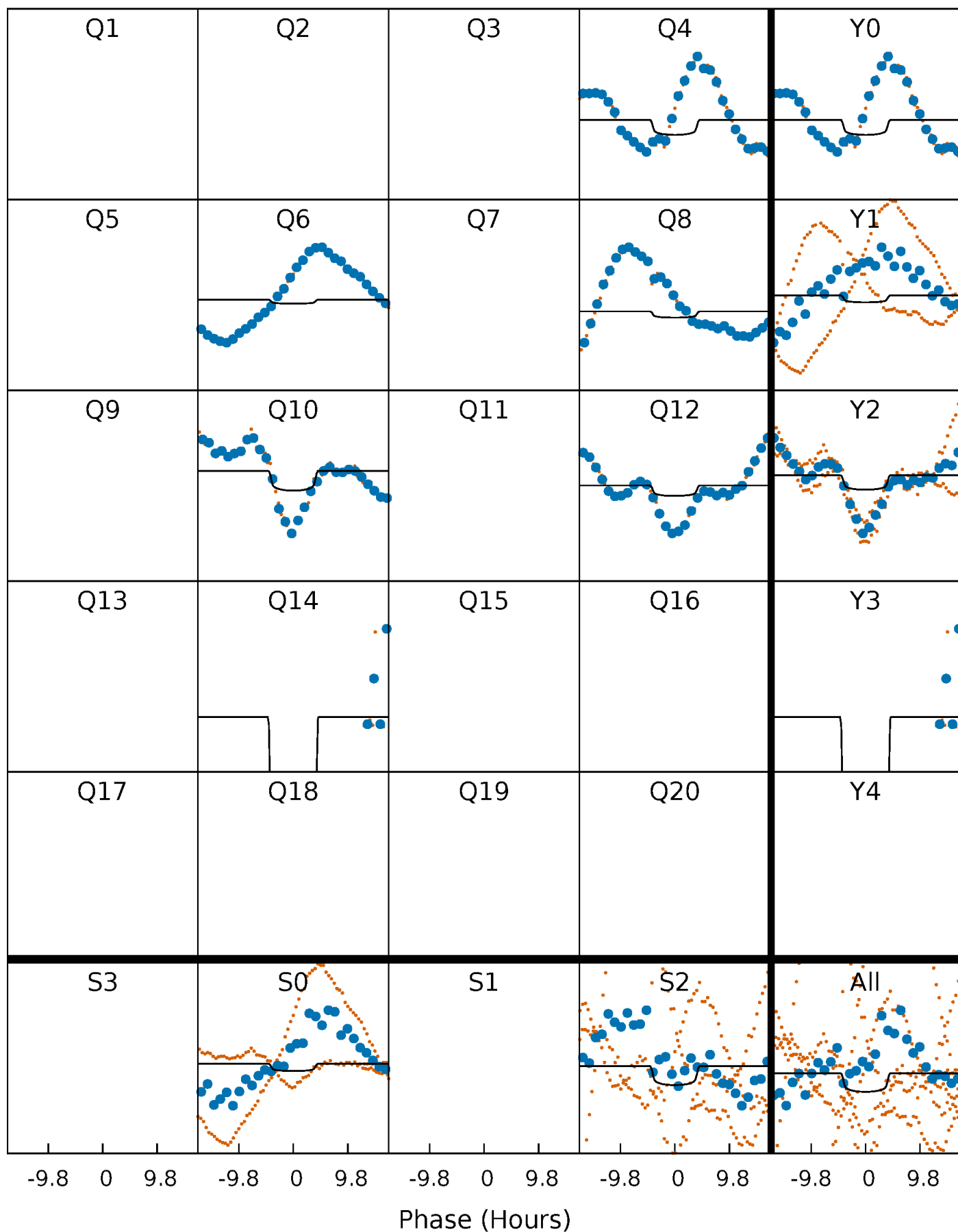
TCE 010199218-06 P=185.909494 Days  $T_0=182.914879$  (BKJD)





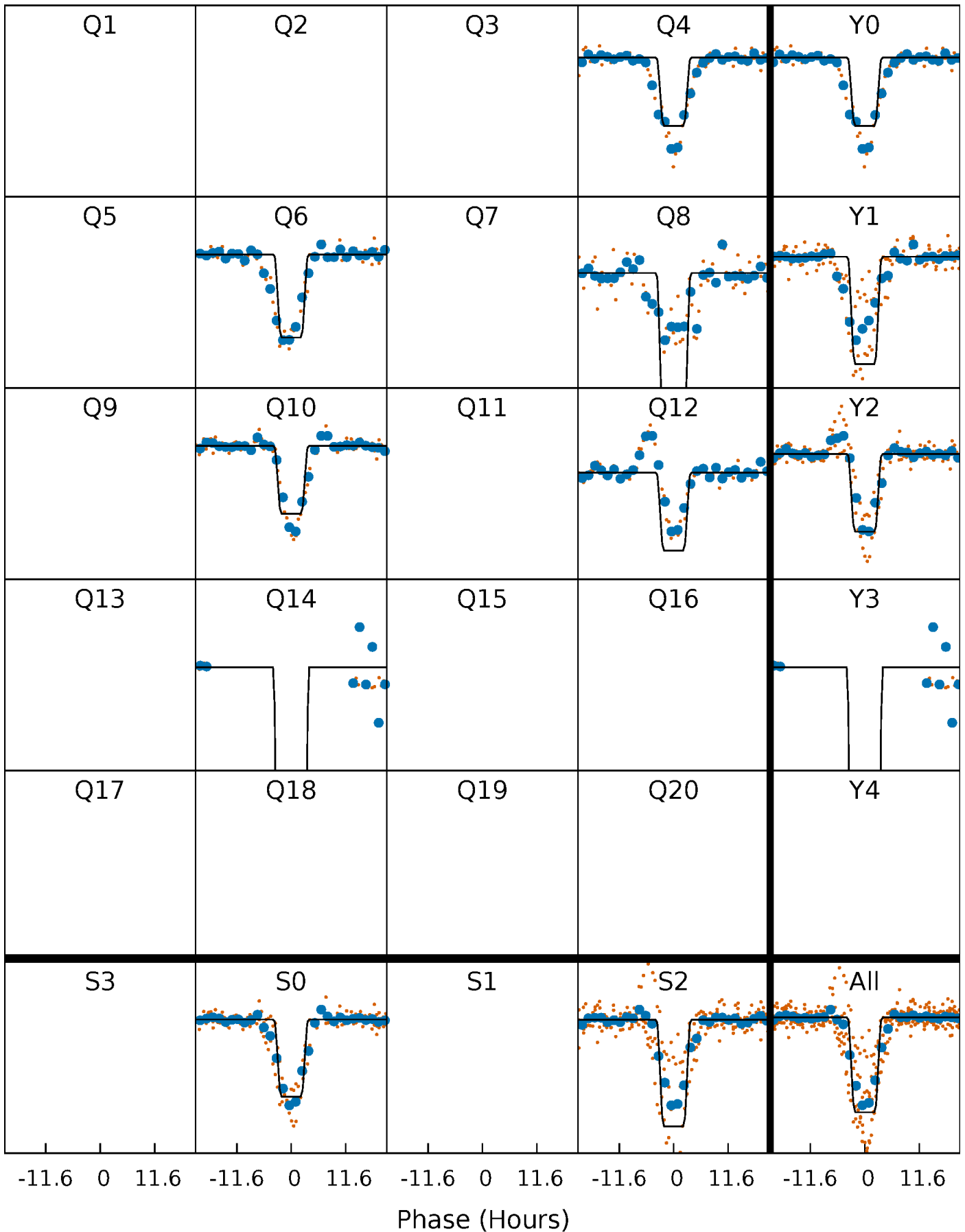
# DV Quarter-Phased Transit Curves

TCE 010199218-06 P=185.909494 Days  $T_0=182.914879$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

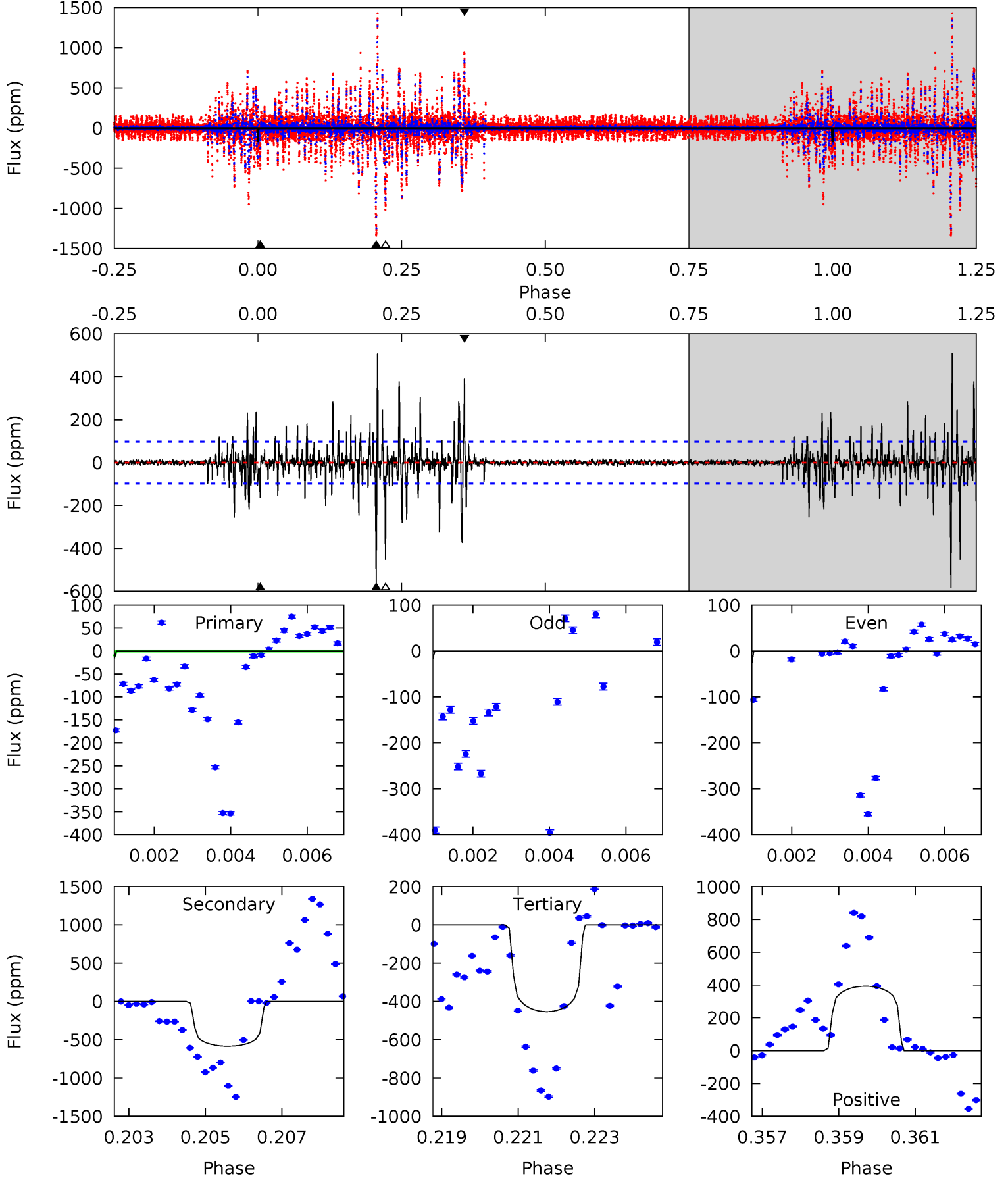
TCE 010199218-06     $P=185.924962$  Days     $T_0=182.821728$  (BKJD)



# DV Model-Shift Uniqueness Test

010199218-06, P = 185.909494 Days, E = 182.914879 Days

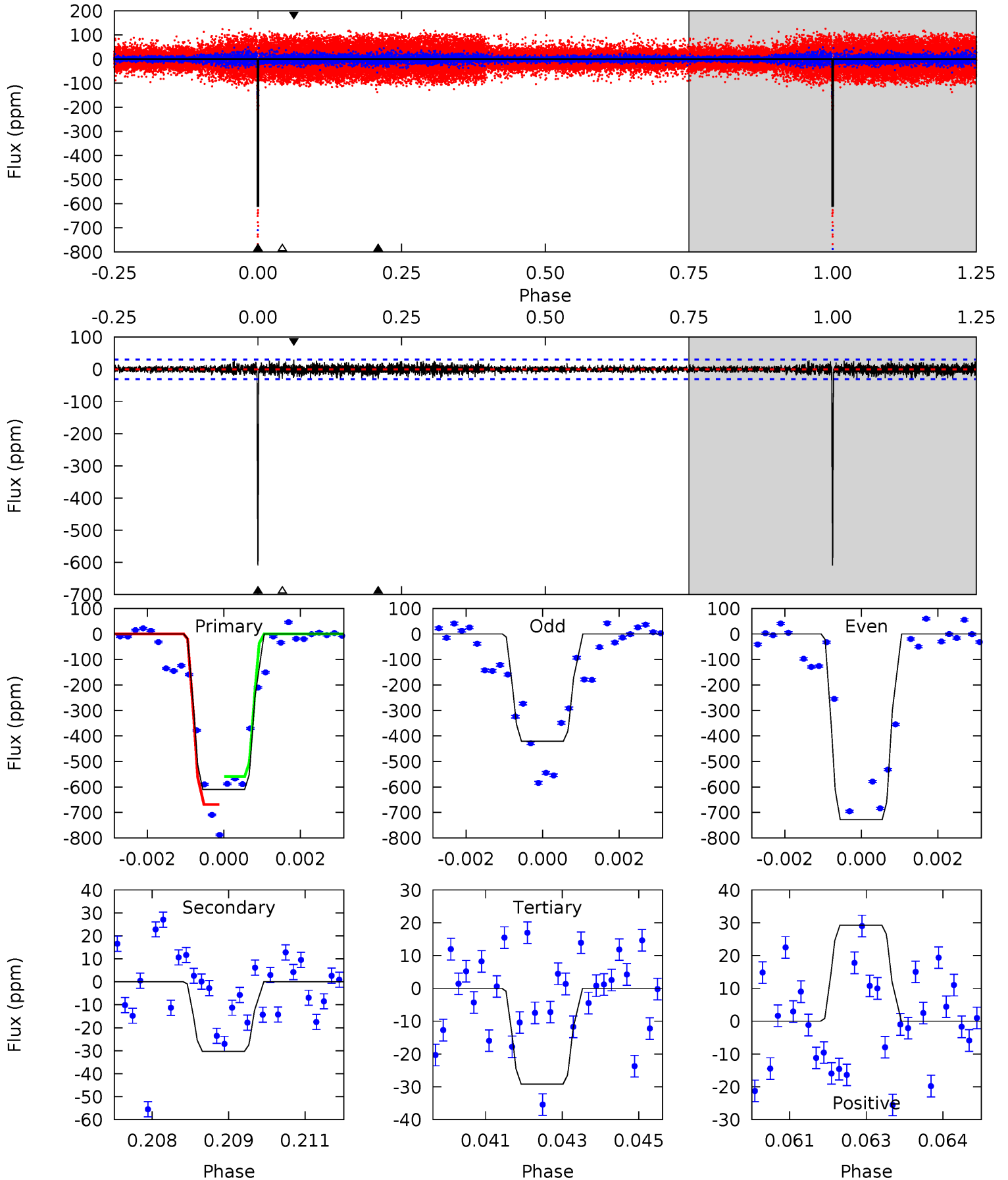
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.97	31.8	24.6	21.4	5.33	3.09	2.01	-15.7	-12.4	7.16	10.4	1.55	0.95	0.46	0



# Alt Model-Shift Uniqueness Test

010199218-06, P = 185.924962 Days, E = 182.821728 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
107.3	5.34	5.14	5.15	5.36	3.15	1.11	102.2	102.2	0.21	0.19	32.0	0.88	0.05	0



### Stellar Parameters For KIC 010199218

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6935^{+214}_{-309}$	$4.099^{+0.165}_{-0.135}$	$-0.180^{+0.250}_{-0.300}$	$1.747^{+0.393}_{-0.393}$	$1.403^{+0.168}_{-0.252}$	$0.371^{+0.333}_{-0.152}$
	+3%/-4%	+4%/-3%	+139%/-167%	+22%/-22%	+12%/-18%	+90%/-41%
Source	KIC0	FLK73	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 010199218-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-585 \pm 18$	$3.18^{+0.69}_{-0.58}$	$663^{+44}_{-45}$	$8510^{+1135}_{-841}$	$16075^{+7896}_{-5093}$
Alt.	$-30 \pm 6$	$4.95^{+0.84}_{-0.80}$	$665^{+42}_{-47}$	$3587^{+207}_{-178}$	$342^{+158}_{-110}$

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

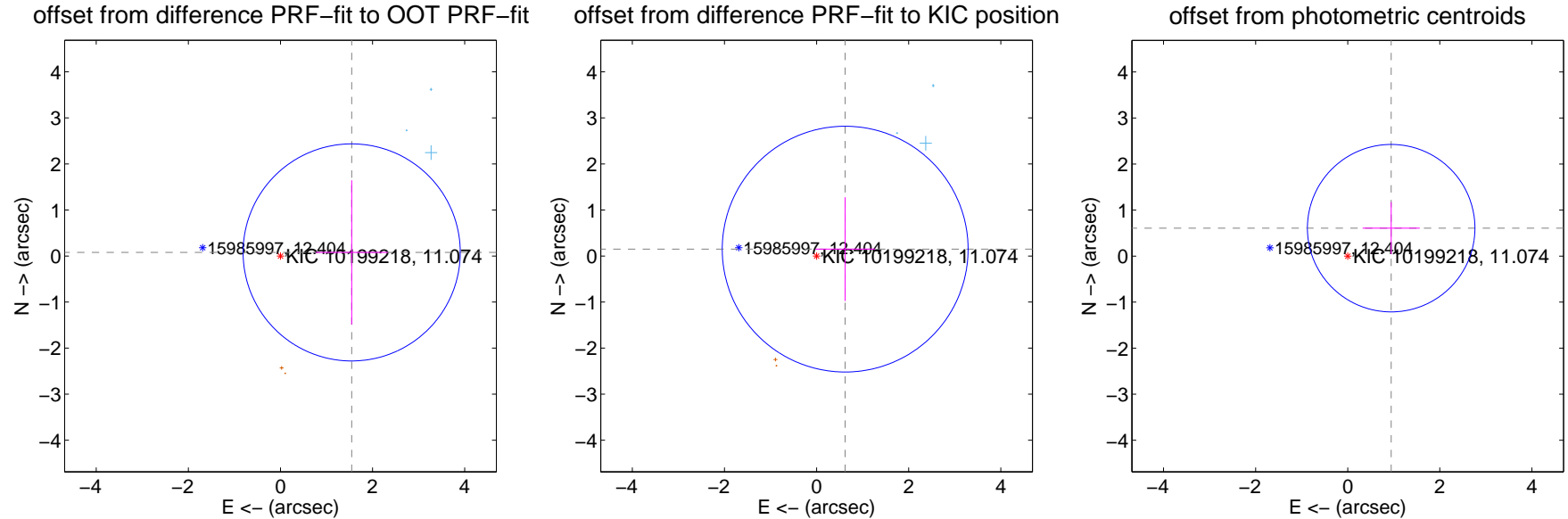
## DV Centroid Data

Supplemental centroid analysis for 010199218-06. **Kepler magnitude: 11.07.** Transit SNR 6.84

**There are 3 quarters with good PRF difference image offsets**

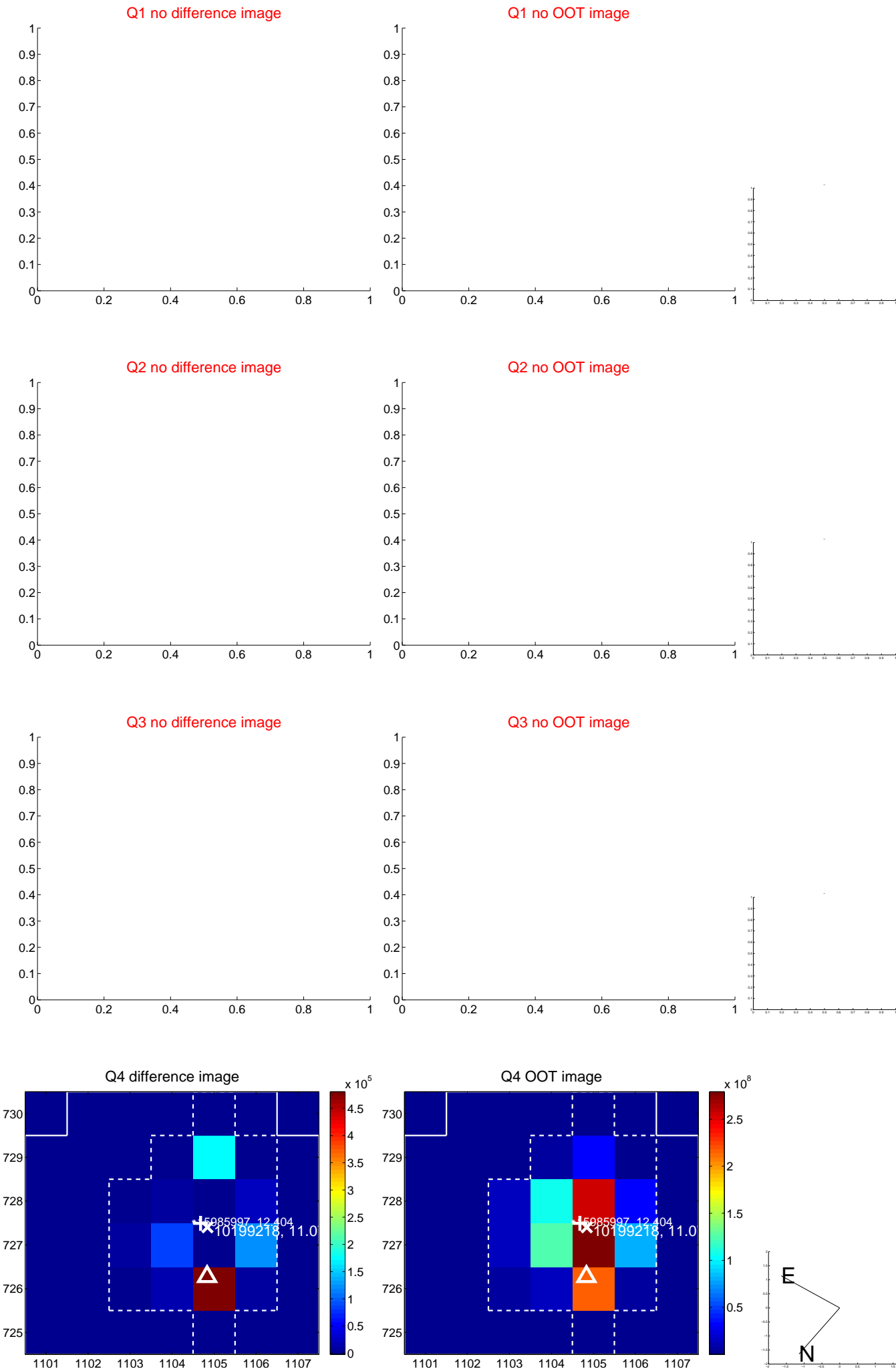
The direct PRF centroid is offset from the target star catalog position by about 0.99 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.548 \pm 0.786$	1.97	$-1.546 \pm 0.783$	$0.078 \pm 1.565$
PRF-fit source offset from KIC position	$0.639 \pm 0.889$	0.72	$-0.621 \pm 0.647$	$0.150 \pm 1.127$
photometric centroid source offset	$1.12 \pm 0.61$	1.85	$-0.94 \pm 0.62$	$0.61 \pm 0.57$

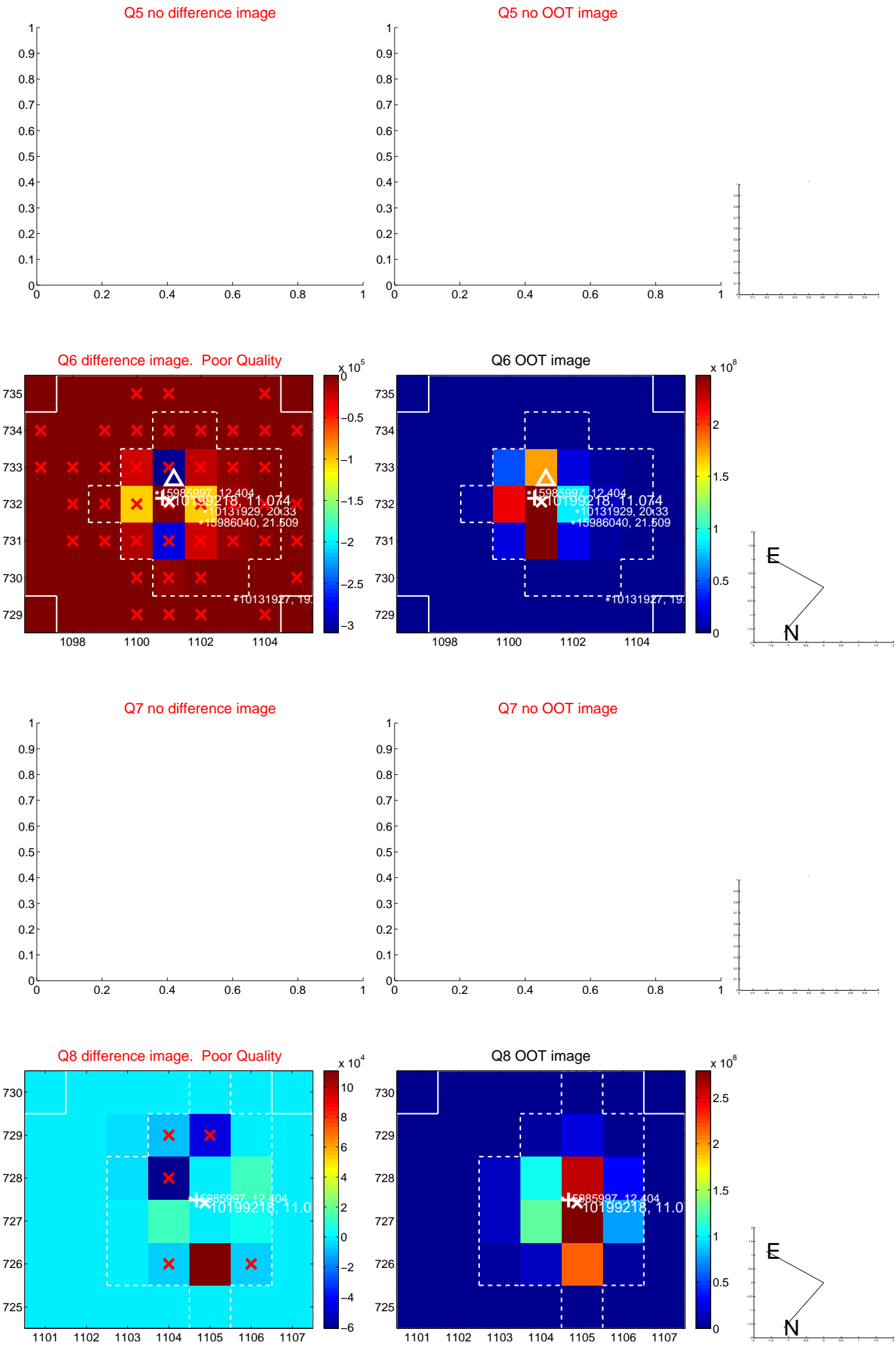


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

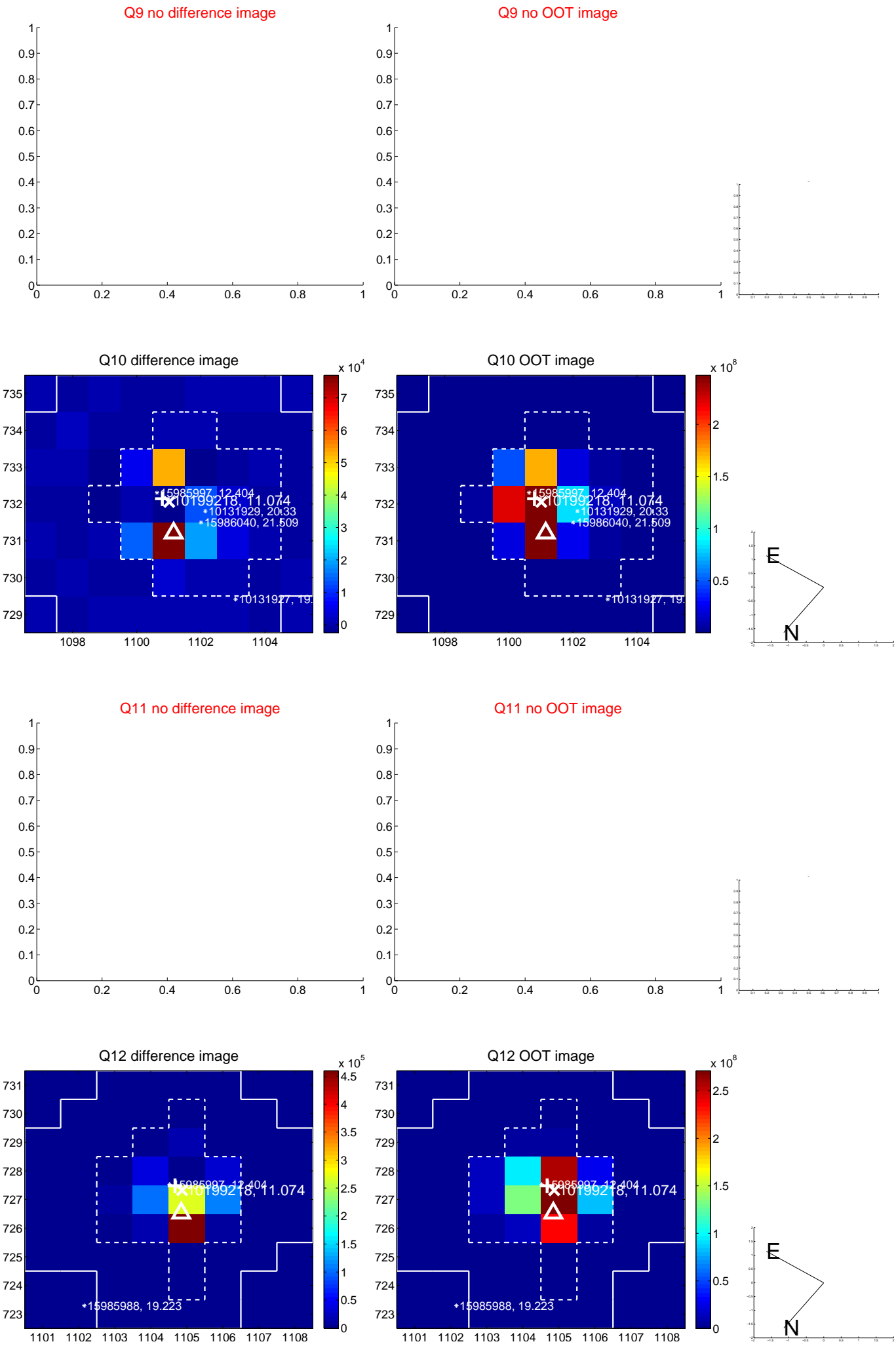


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

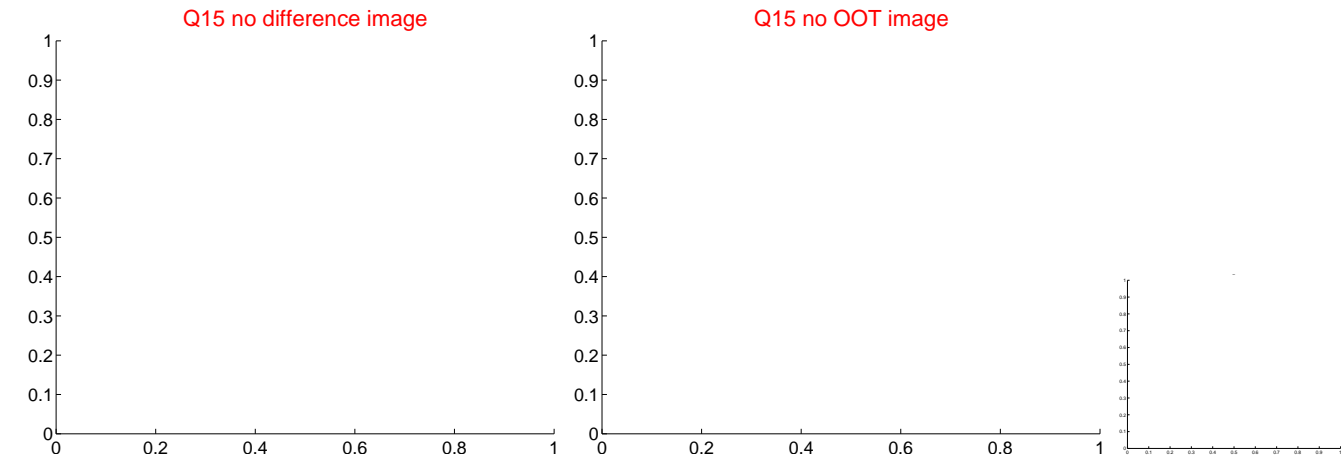
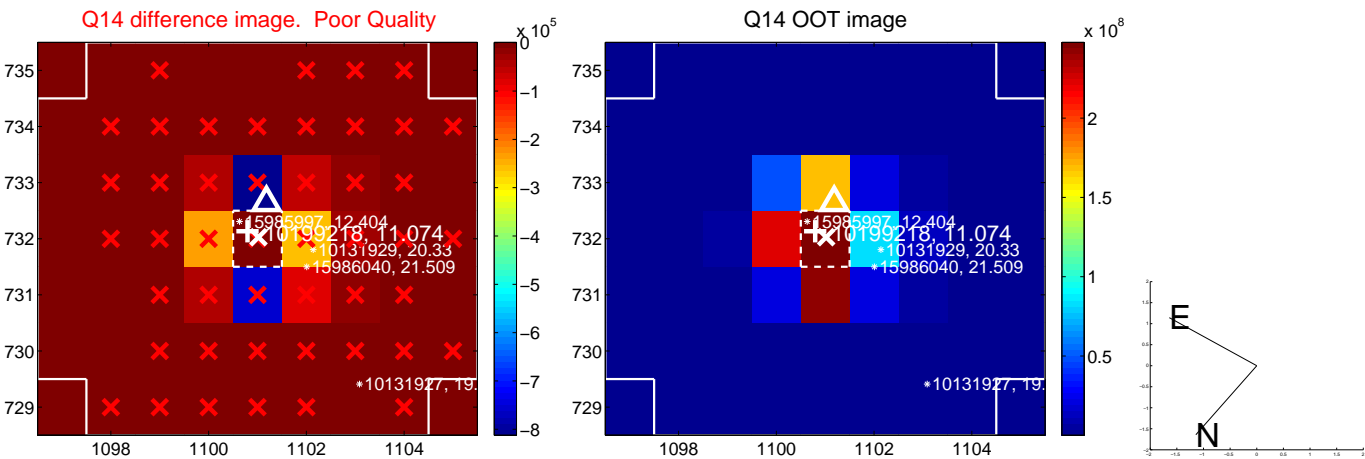




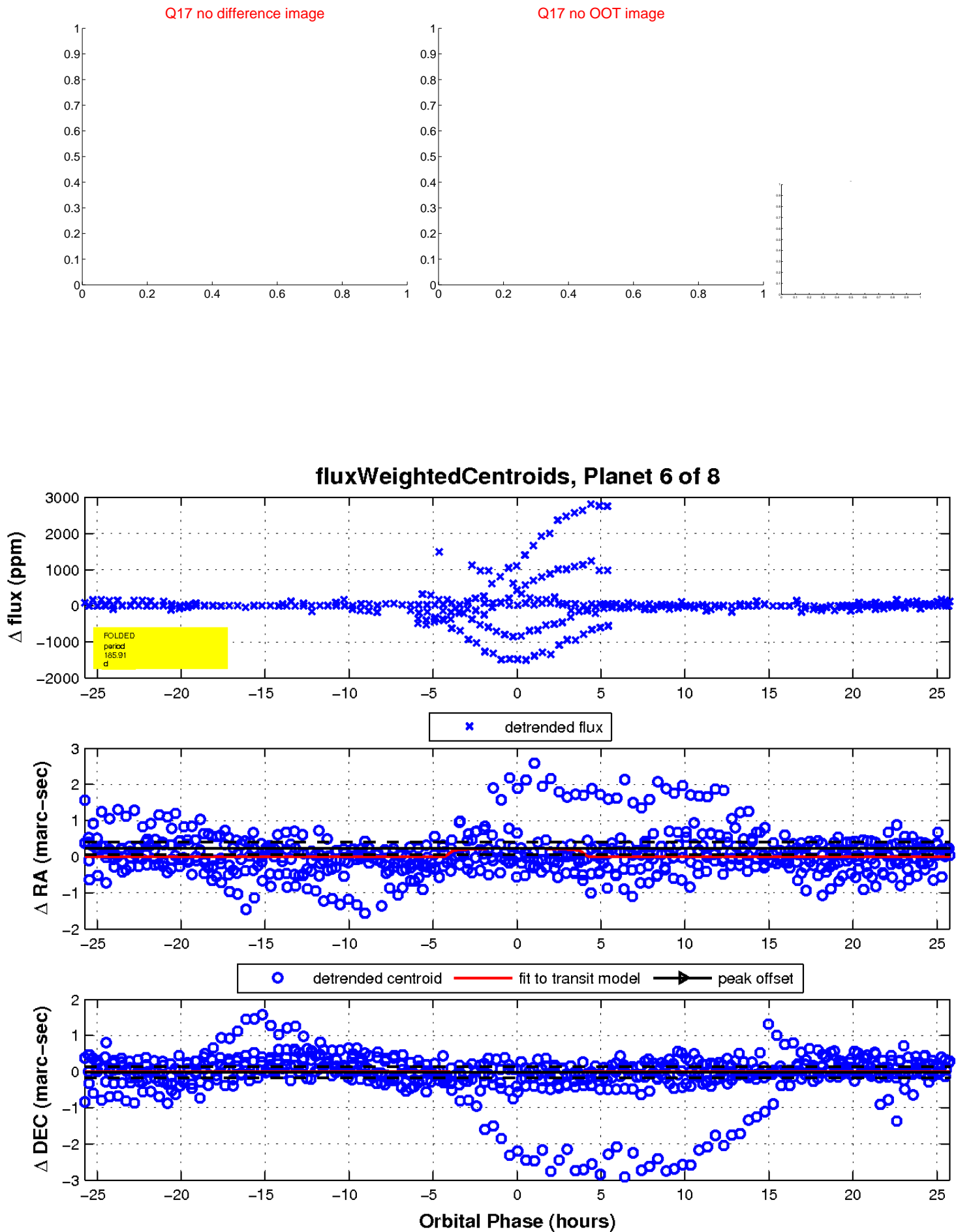
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

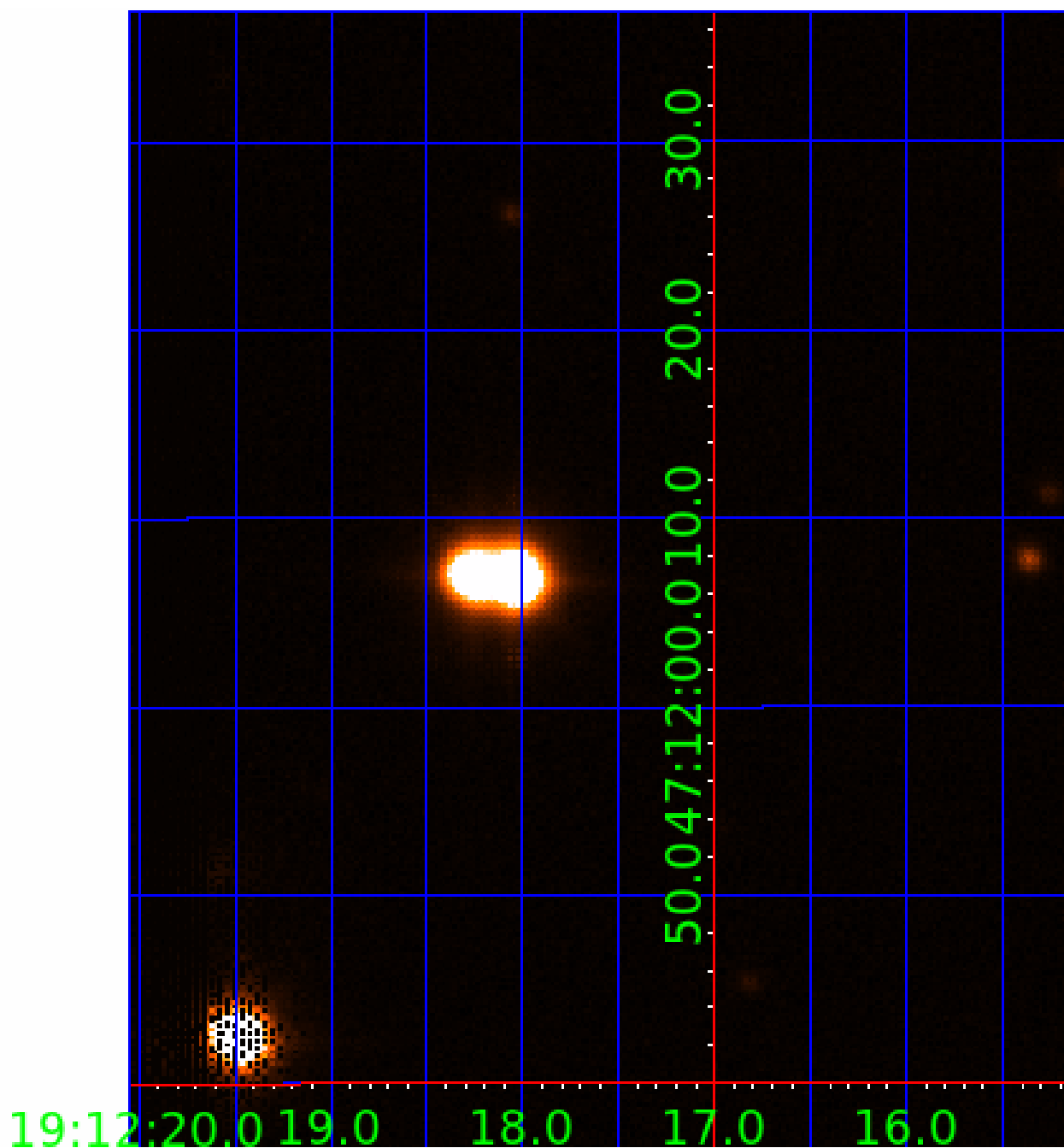


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 010199218

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010199218-02	OBS	No	555.255599	408.911751	1167.9	13.323	16.0	15.8	1.75	6935	11.08	2.89
010199218-03	OBS	No	568.148971	354.911719	1761.5	12.342	13.2	16.5	1.75	6935	13.48	2.81
010199218-04	OBS	No	251.949107	224.110758	44.5	13.098	8.8	8.3	1.75	6935	1.32	8.30
010199218-05	OBS	No	188.525562	167.112992	20.4	9.797	13.0	2.2	1.75	6935	0.92	12.21
010199218-06	OBS	No	185.909494	182.914879	262.1	8.590	10.9	6.8	1.75	6935	3.21	12.44
010199218-07	OBS	No	333.598614	434.811886	248.8	14.329	10.3	4.5	1.75	6935	4.85	5.71
010199218-08	OBS	No	367.170640	371.172813	261.0	6.000	16.2	-1.0	1.75	6935	2.85	5.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010199218-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
010199218-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010199218-06	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

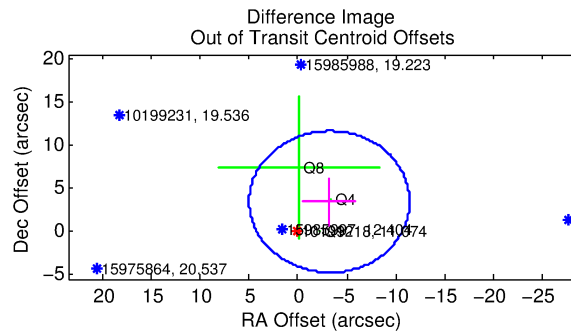
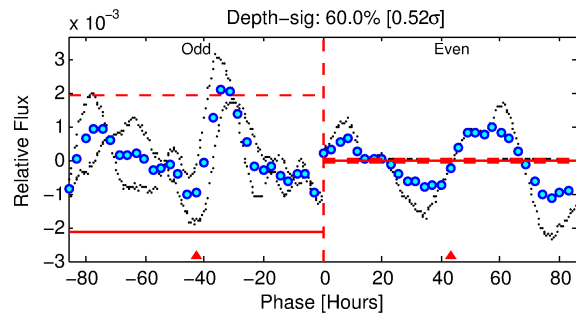
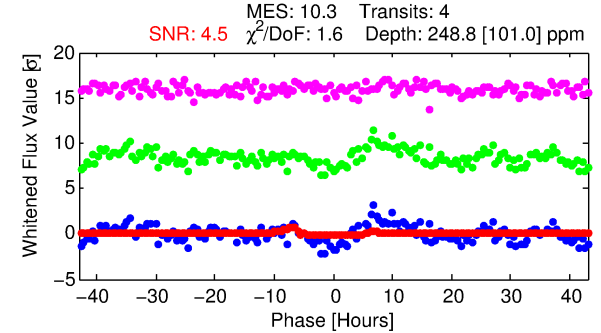
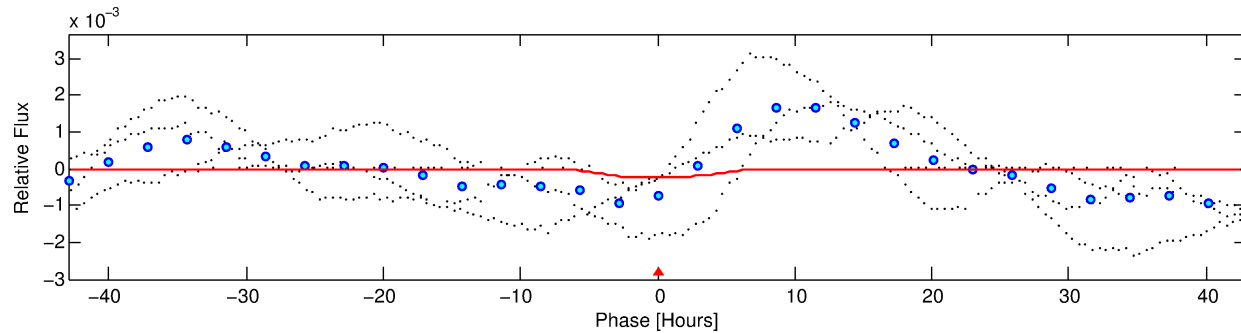
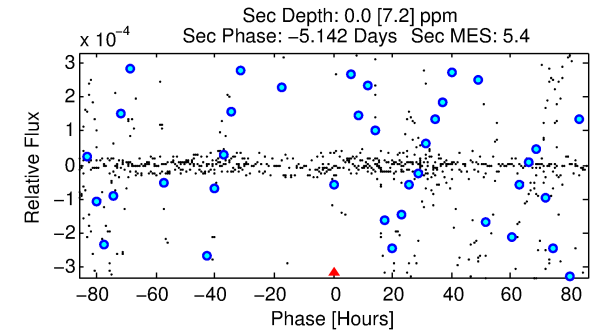
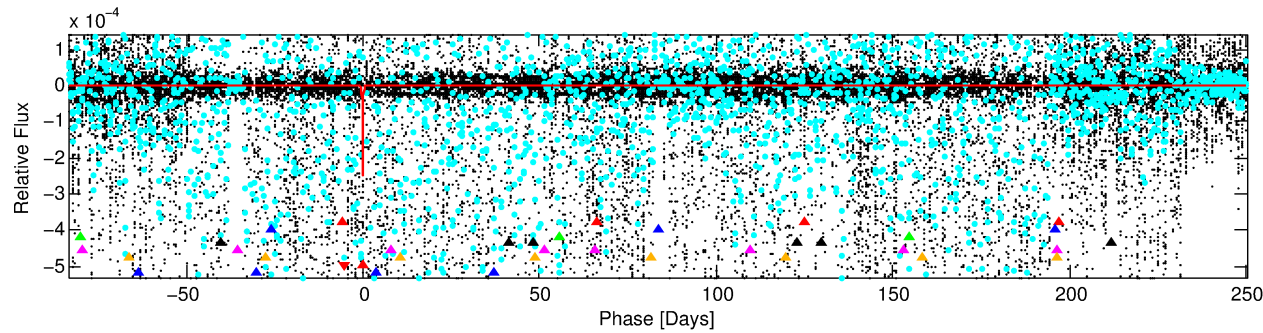
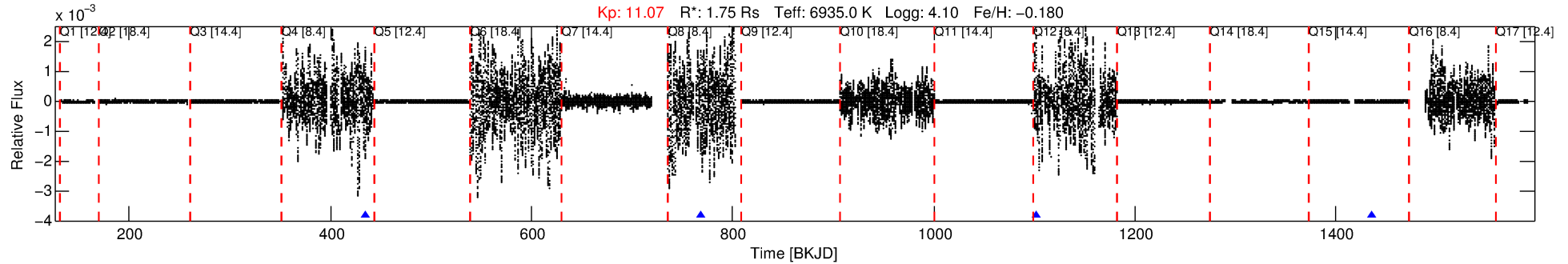
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010199218-07

No Significant Match Found

# DV One-Page Summary

KIC: 10199218 Candidate: 7 of 8 Period: 333.599 d



## DV Fit Results:

Period = 333.59861 [0.03224] d  
Epoch = 434.8119 [0.0771] BKJD  
Rp/R\* = 0.0254 [0.0618]  
a/R\* = 43.47 [26.68]  
b = 1.00 [0.10]  
Seff = 5.71 [1.96]  
Teq = 394 [34] K  
Rp = 4.85 [11.83] Re  
a = 1.0529 [0.2067] AU  
Ag = 0.95 [187.59] [-0.00σ]  
Teffp = 602 [29593] K [0.01σ]

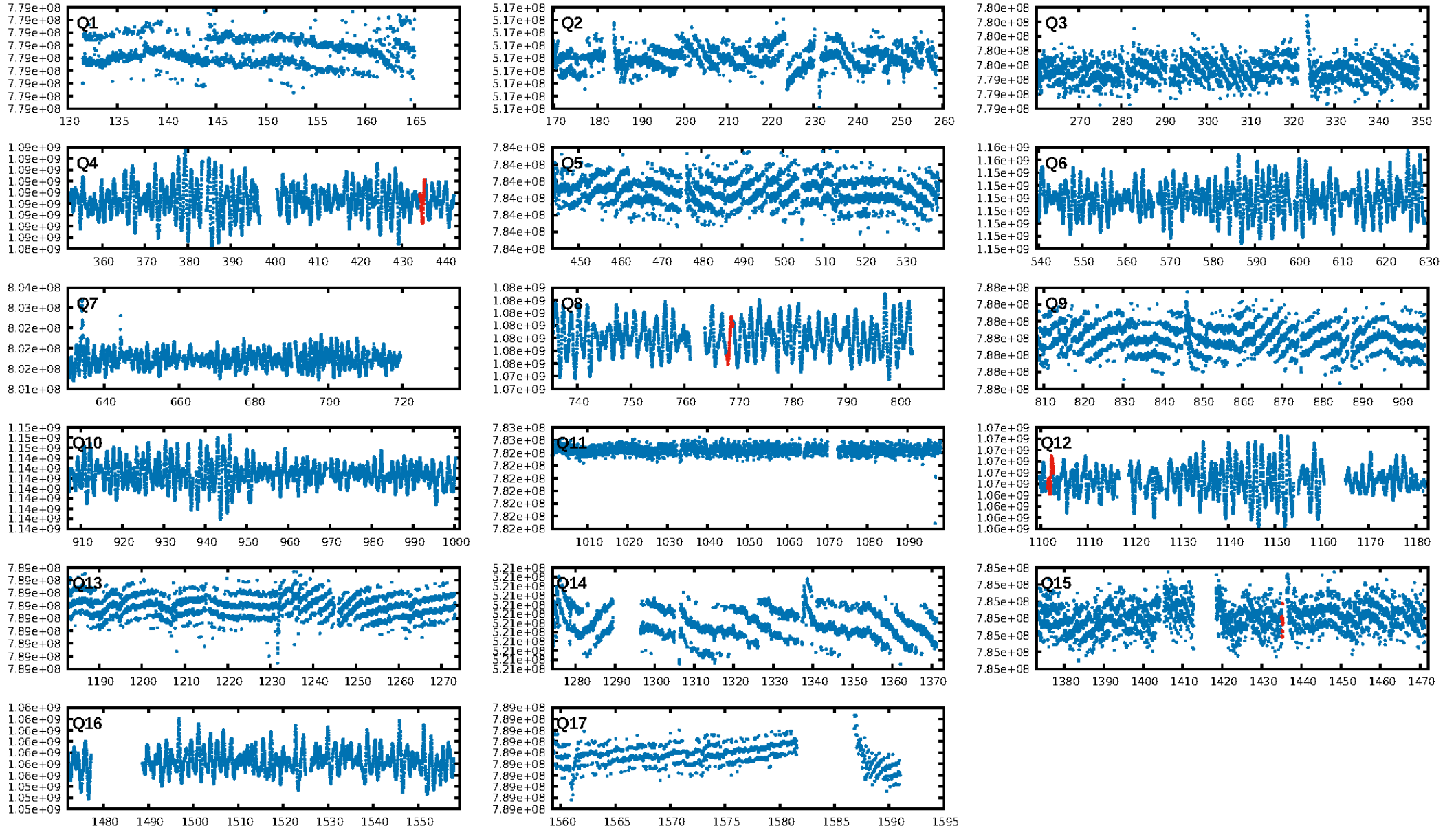
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [100.94σ]  
LongPeriod-sig: 100.0% [51.87σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 76.5%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -1.02  
Centroid-sig: 4.4%  
Centroid-so: 2.155 arcsec [1.67σ]  
OotOffset-rm: 4.698 arcsec [1.72σ]  
KicOffset-rm: 4.681 arcsec [1.71σ]  
OotOffset-st: 0/0/3/0 [3]  
KicOffset-st: 0/0/3/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 1.00 [3/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:55:36 Z

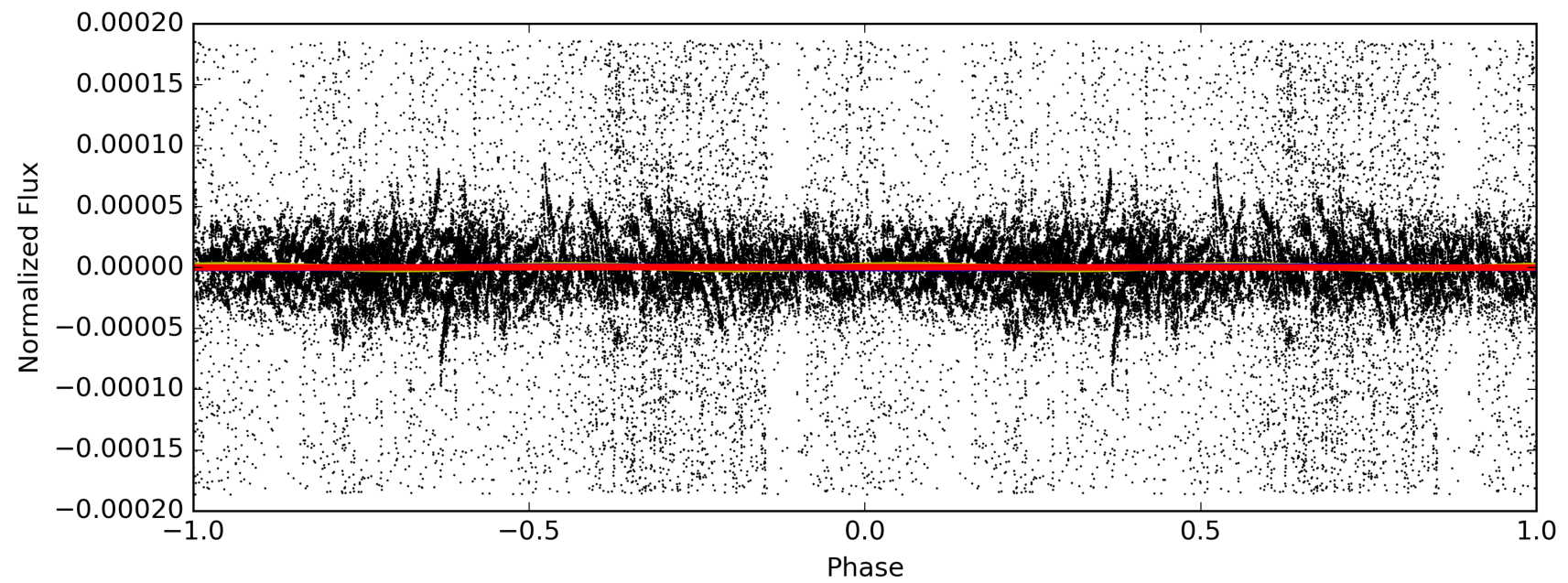
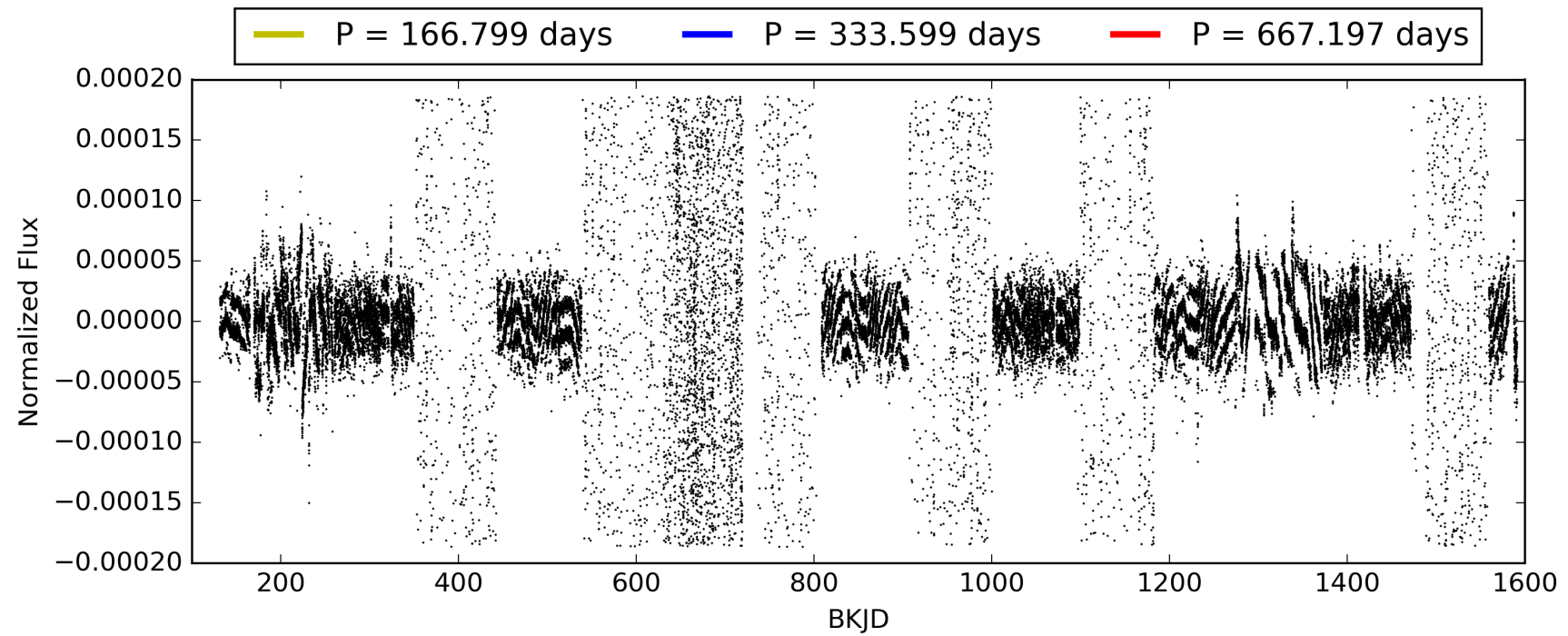
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 010199218-07, PDC Light Curves





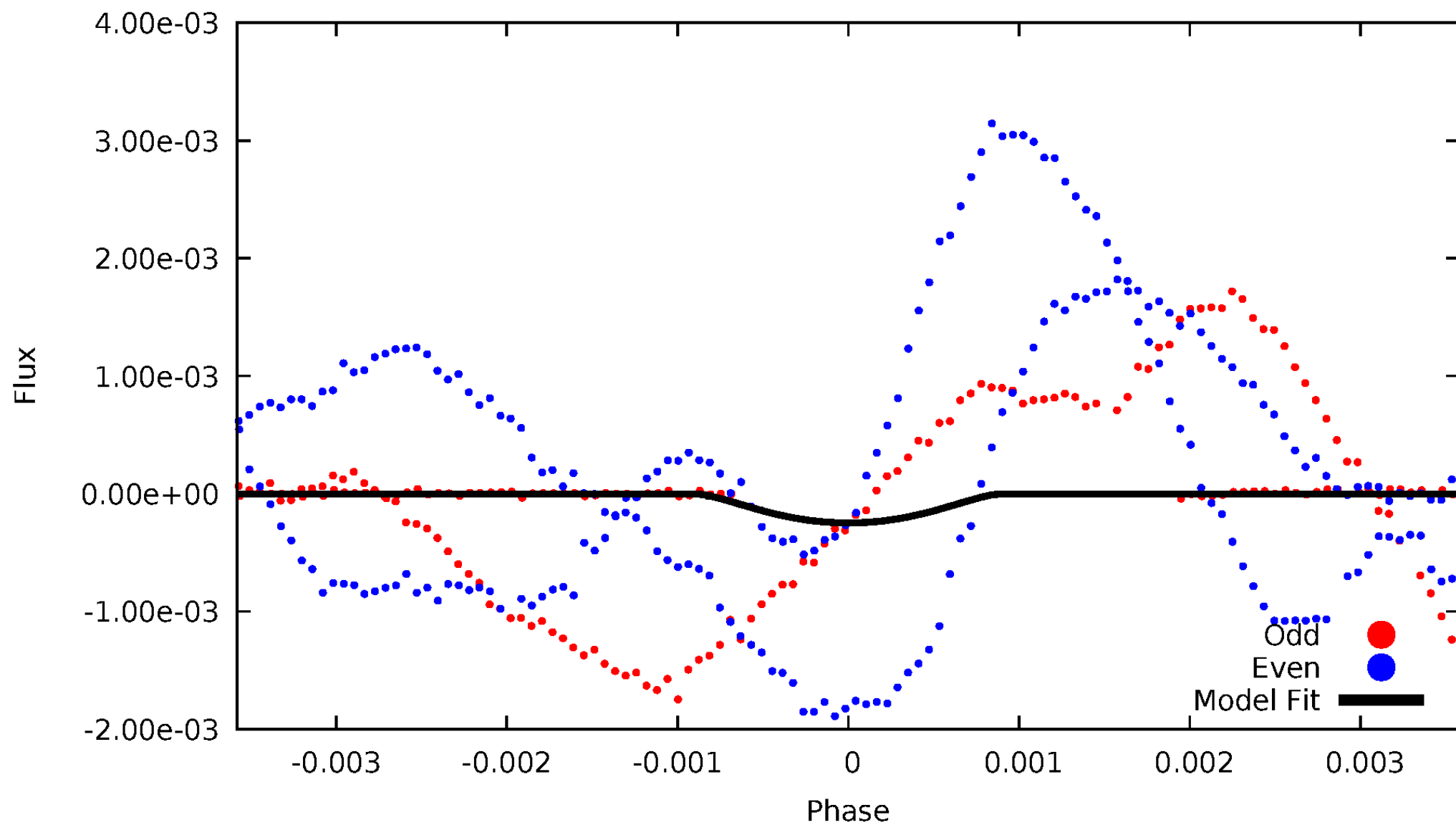
TCE 010199218-07





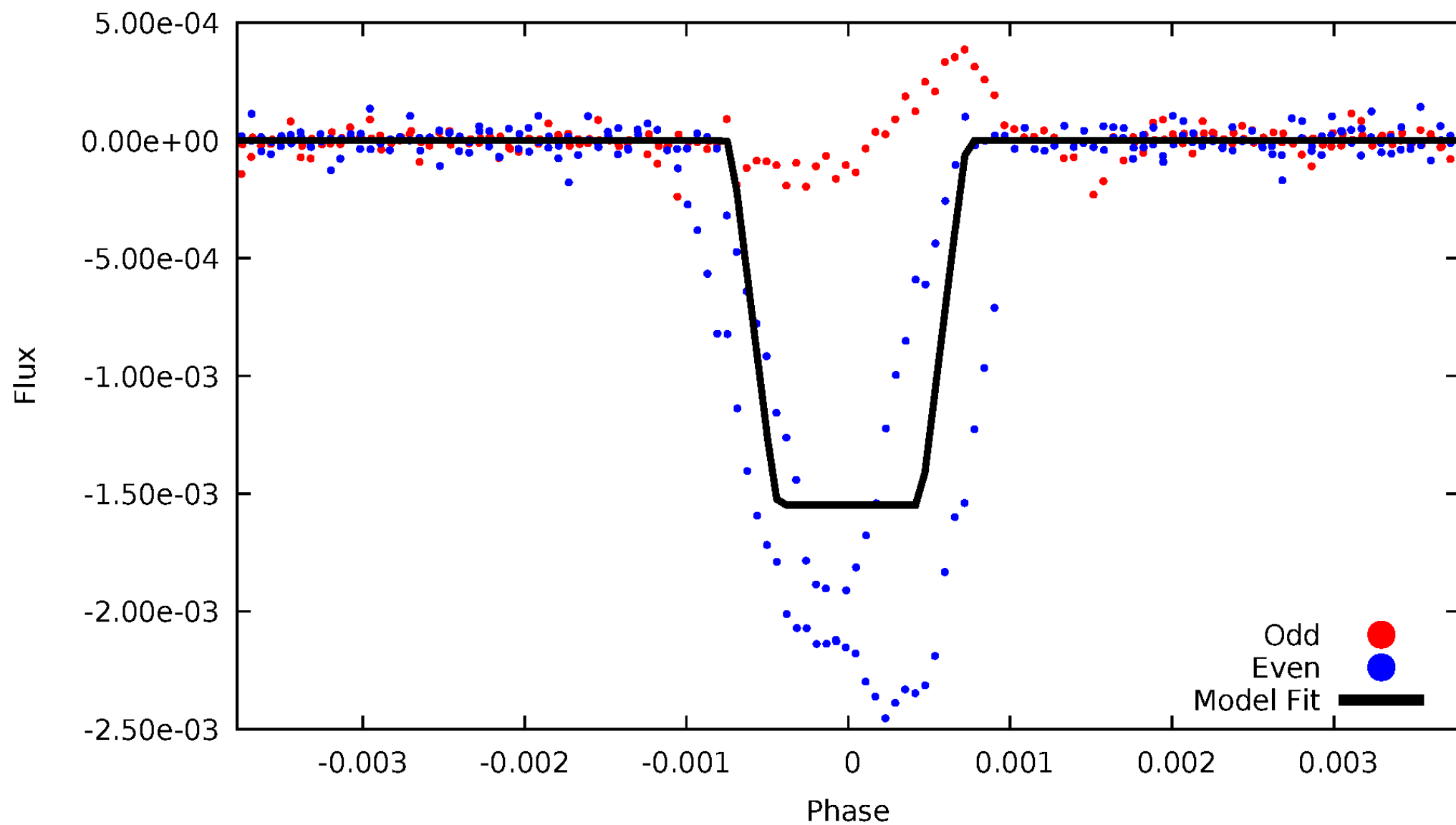
# DV Odd/Even

TCE 010199218-07



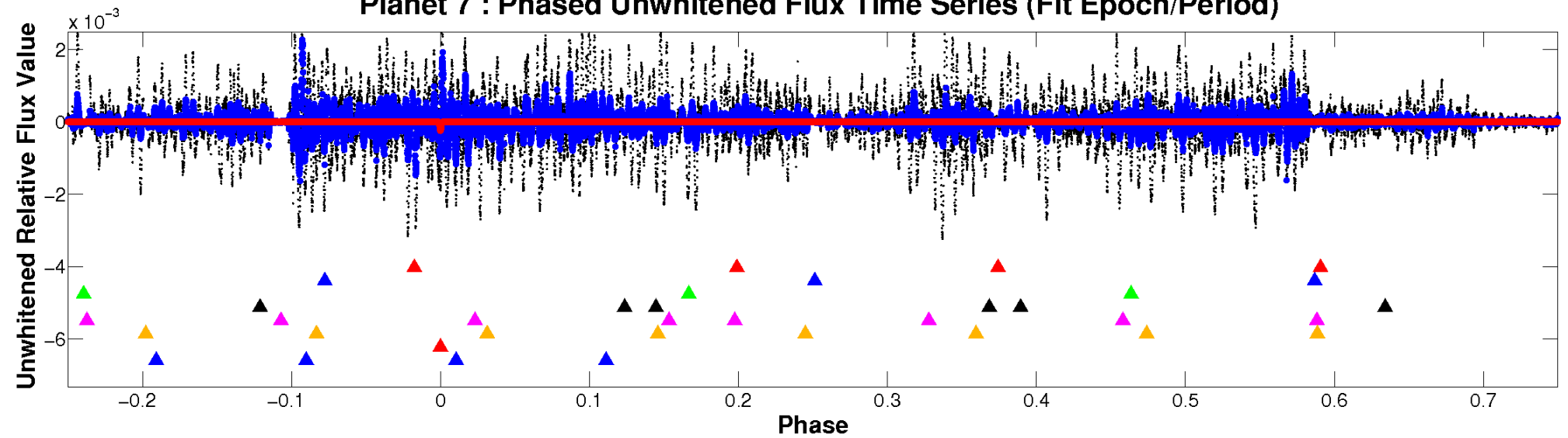
# ALT Odd/Even

TCE 010199218-07

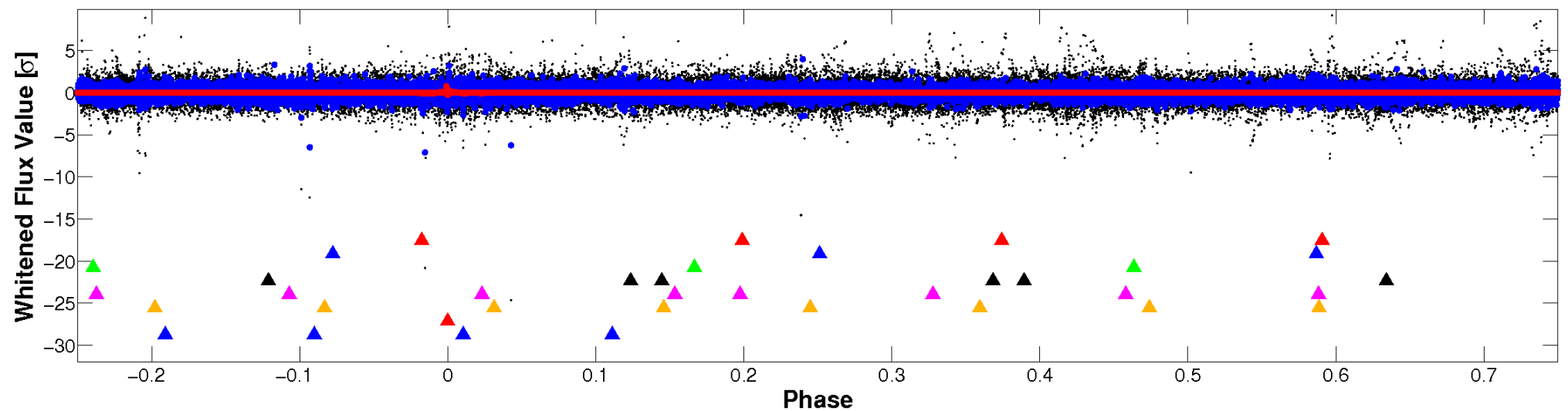


# Non-Whitened Vs. Whitened Light Curve

## Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

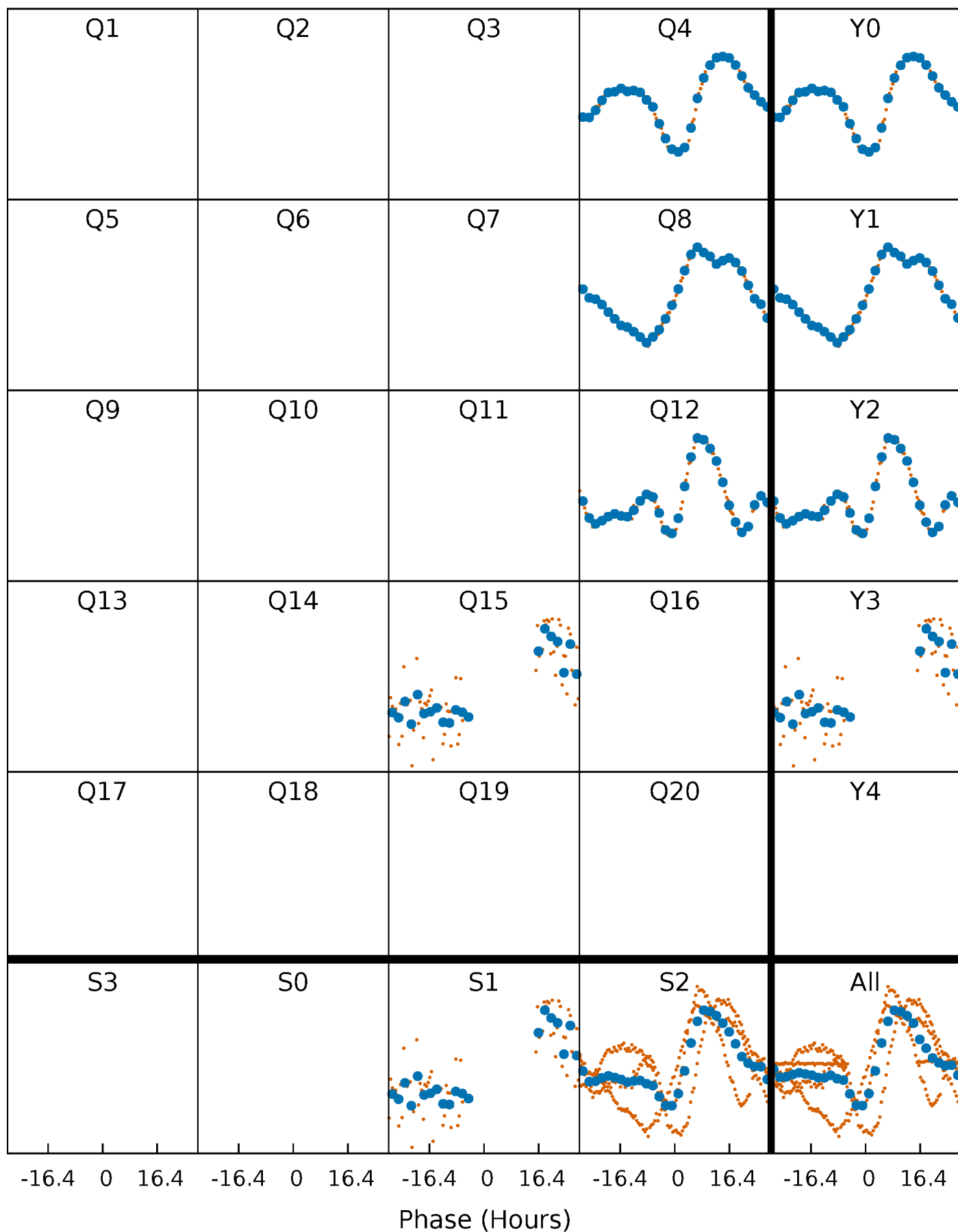


## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



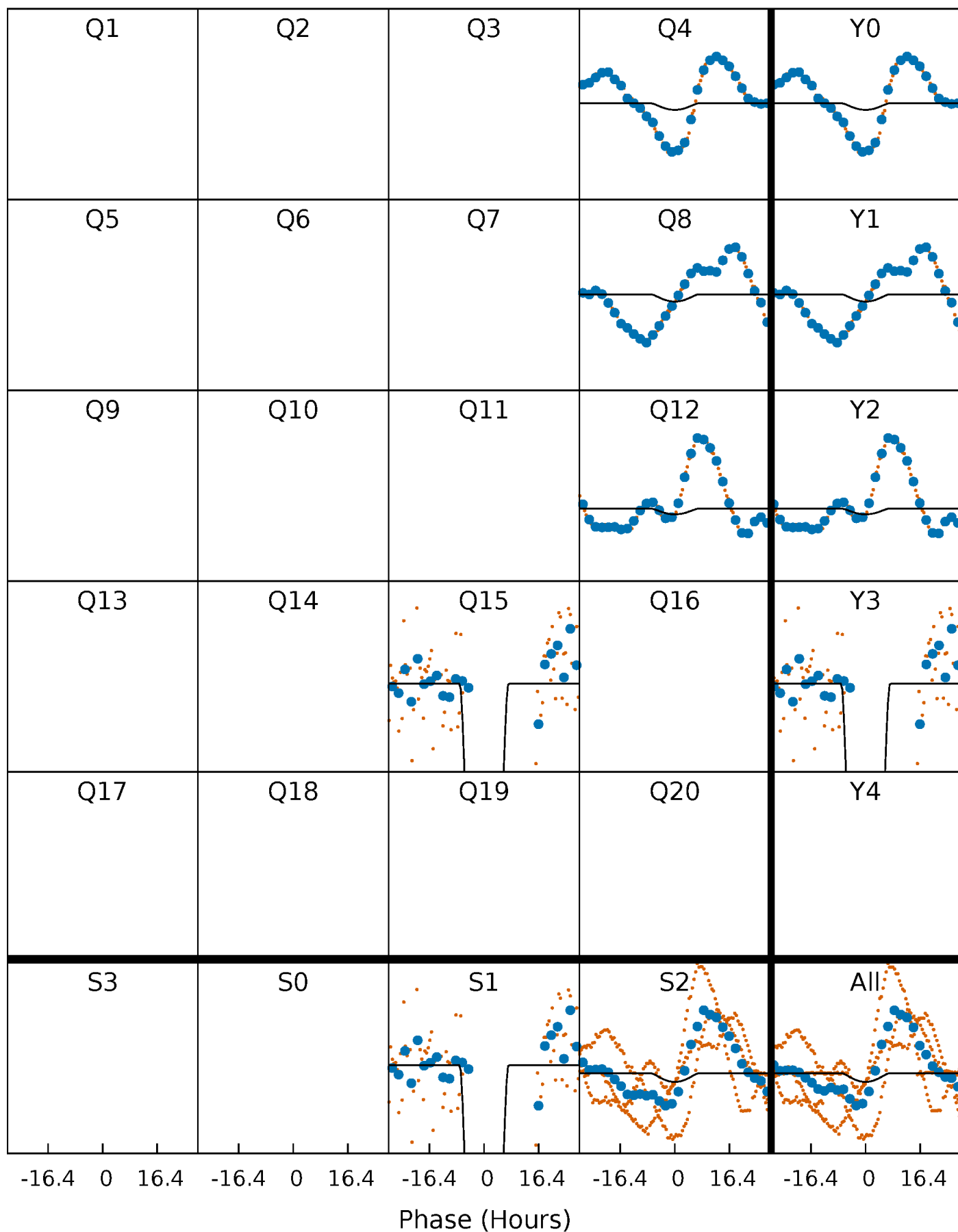
# PDC Quarter-Phased Transit Curves

TCE 010199218-07     $P=333.598614$  Days     $T_0=434.811886$  (BKJD)



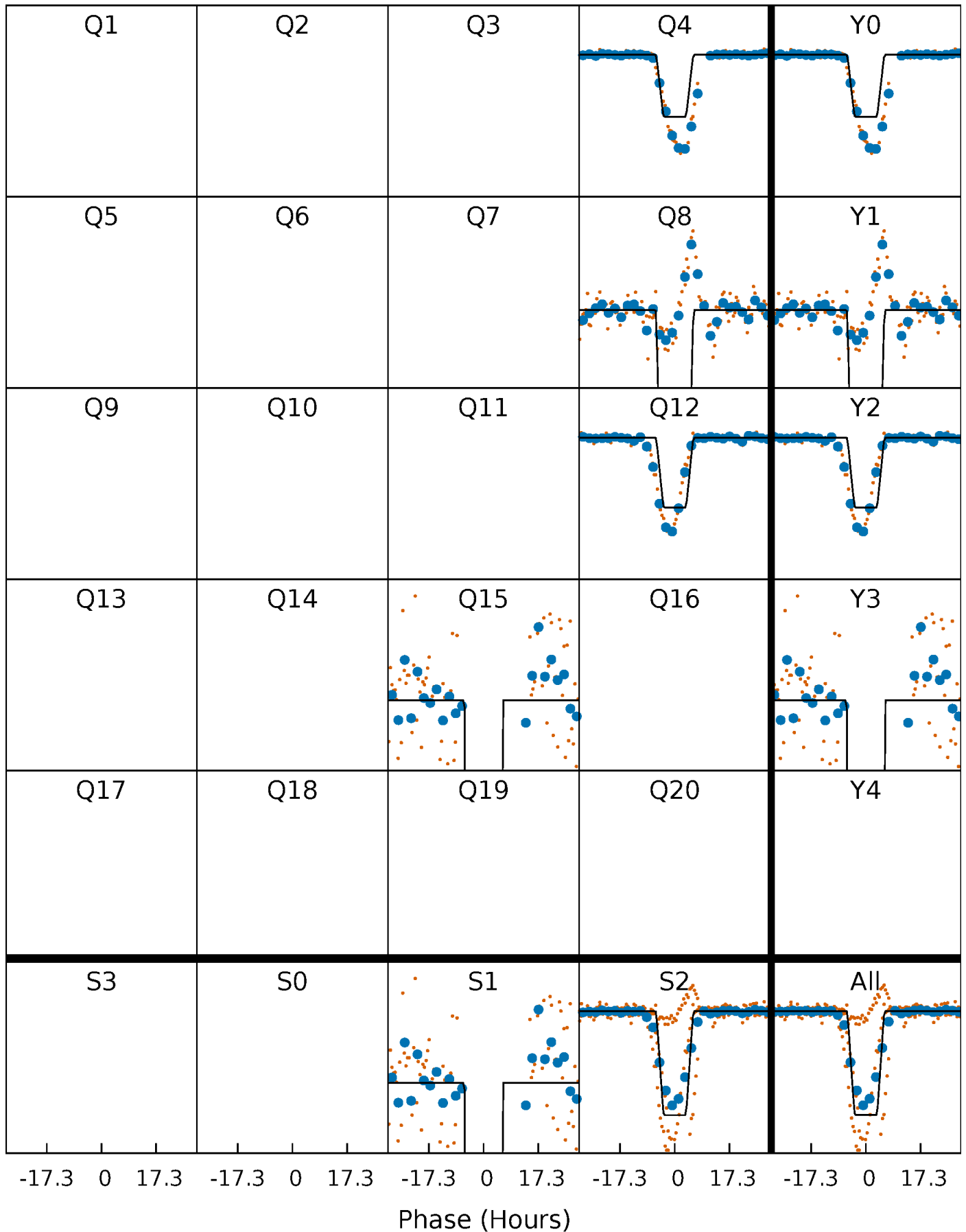
# DV Quarter-Phased Transit Curves

TCE 010199218-07 P=333.598614 Days  $T_0=434.811886$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

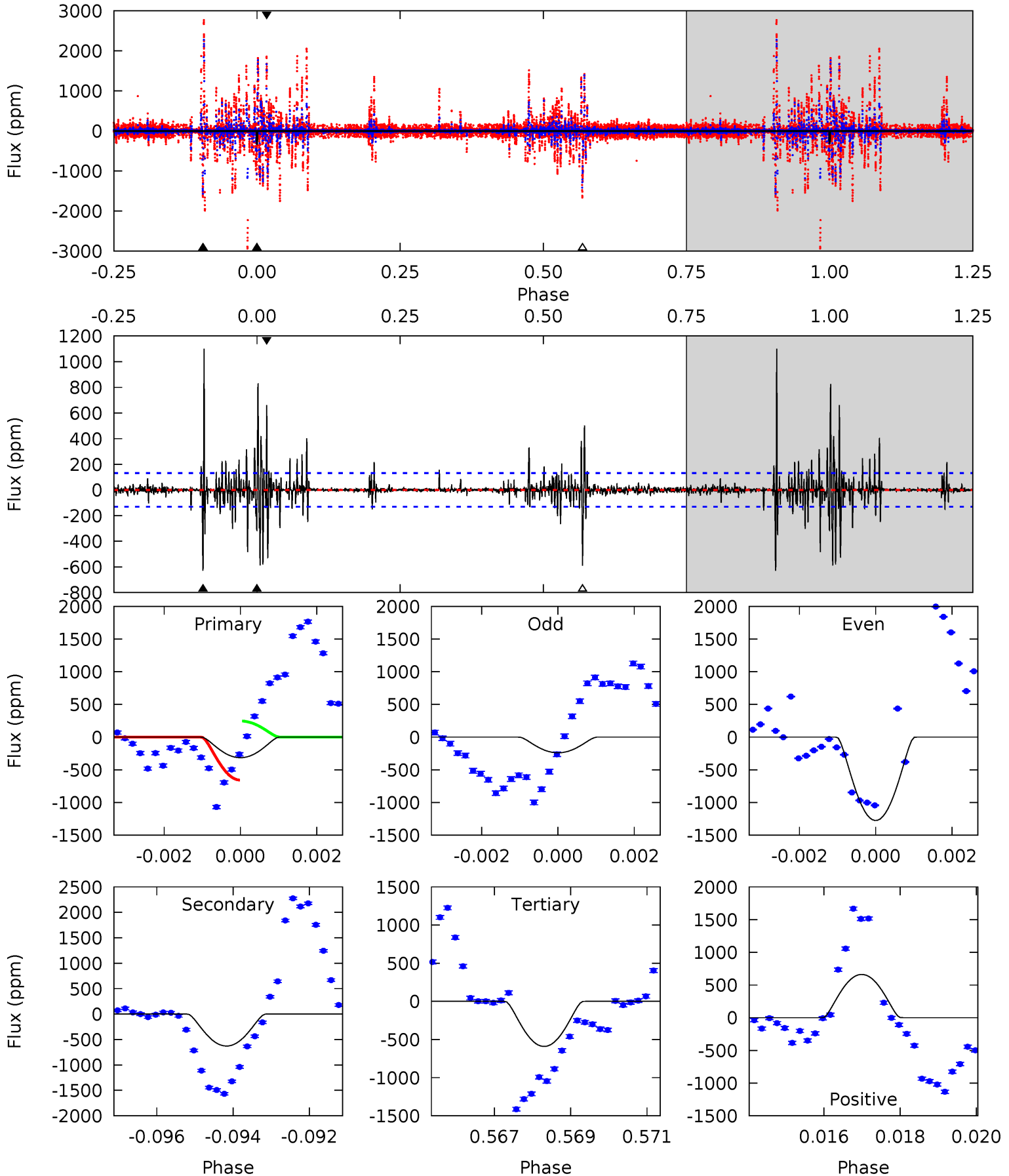
TCE 010199218-07 P=333.618734 Days  $T_0=434.811415$  (BKJD)



# DV Model-Shift Uniqueness Test

010199218-07, P = 333.598614 Days, E = 101.213272 Days

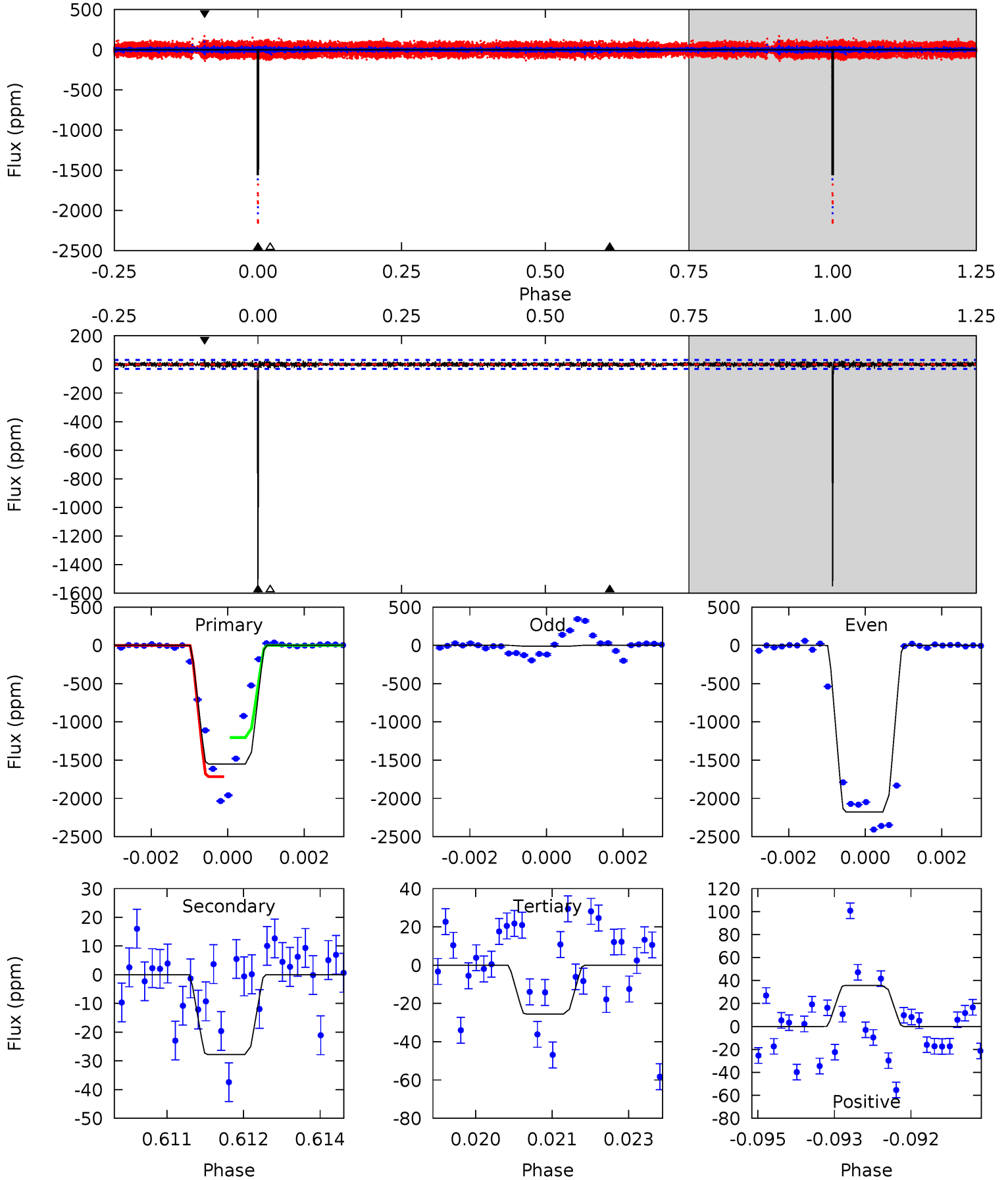
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	25.6	24.0	26.9	5.35	3.12	2.43	-11.2	-14.1	1.52	-1.37	10.5	3.17	0.64	8.52



# Alt Model-Shift Uniqueness Test

010199218-07, P = 333.618734 Days, E = 101.192681 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
268.9	4.82	4.43	6.19	5.38	3.17	1.07	264.4	262.7	0.39	-1.37	237.6	0.76	0.02	0





### Stellar Parameters For KIC 010199218

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6935^{+214}_{-309}$	$4.099^{+0.165}_{-0.135}$	$-0.180^{+0.250}_{-0.300}$	$1.747^{+0.393}_{-0.393}$	$1.403^{+0.168}_{-0.252}$	$0.371^{+0.333}_{-0.152}$
	+3%/-4%	+4%/-3%	+139%/-167%	+22%/-22%	+12%/-18%	+90%/-41%
Source	KIC0	FLK73	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 010199218-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-628 \pm 25$	$9.78^{+10.41}_{-6.68}$	$548^{+36}_{-39}$	$4898^{+4105}_{-1165}$	$4032^{+36468}_{-3083}$
Alt.	$-28 \pm 6$	$11.12^{+10.33}_{-7.44}$	$547^{+38}_{-39}$	$2779^{+1116}_{-415}$	$136^{+1116}_{-101}$

$T_{max}$  = 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

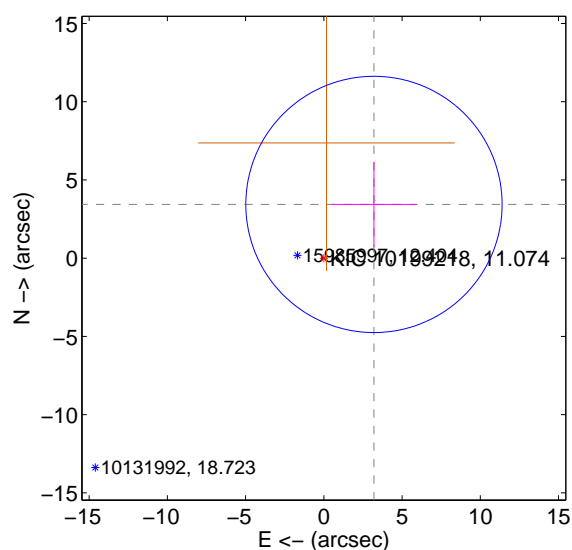
Supplemental centroid analysis for 010199218-07. **Kepler magnitude: 11.07.** Transit SNR 4.54

**There are 2 quarters with good PRF difference image offsets**

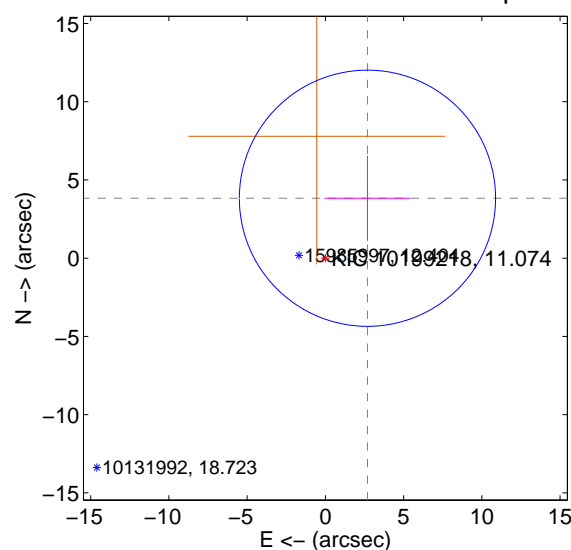
The direct PRF centroid is offset from the target star catalog position by about 1.06 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.698 \pm 2.731$	1.72	$-3.204 \pm 2.734$	$3.436 \pm 2.727$
PRF-fit source offset from KIC position	$4.681 \pm 2.730$	1.71	$-2.690 \pm 2.734$	$3.831 \pm 2.727$
photometric centroid source offset	$2.16 \pm 1.29$	1.67	$0.51 \pm 2.37$	$2.09 \pm 1.20$

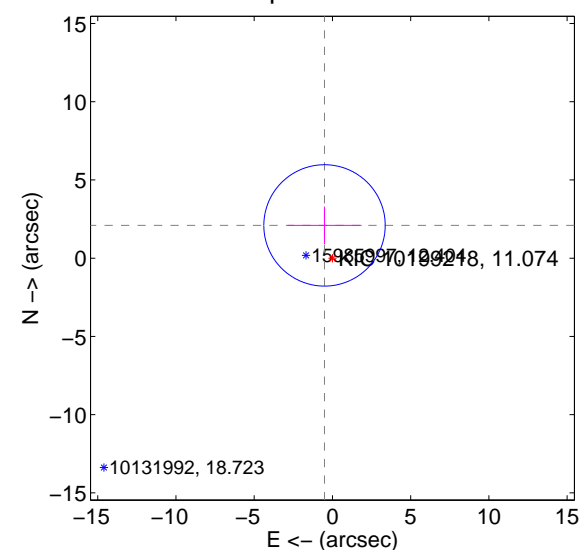
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

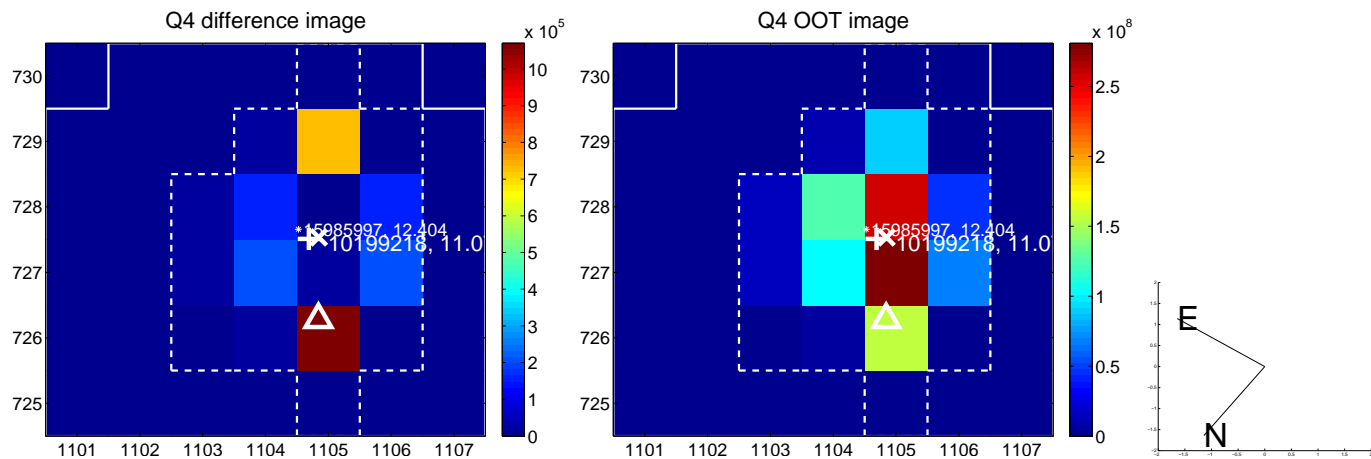
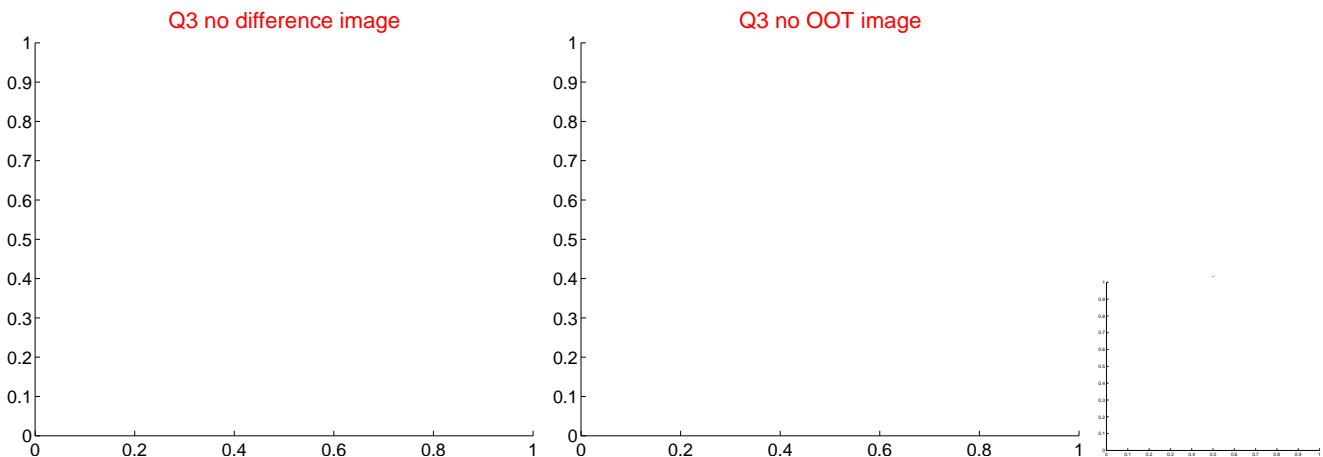
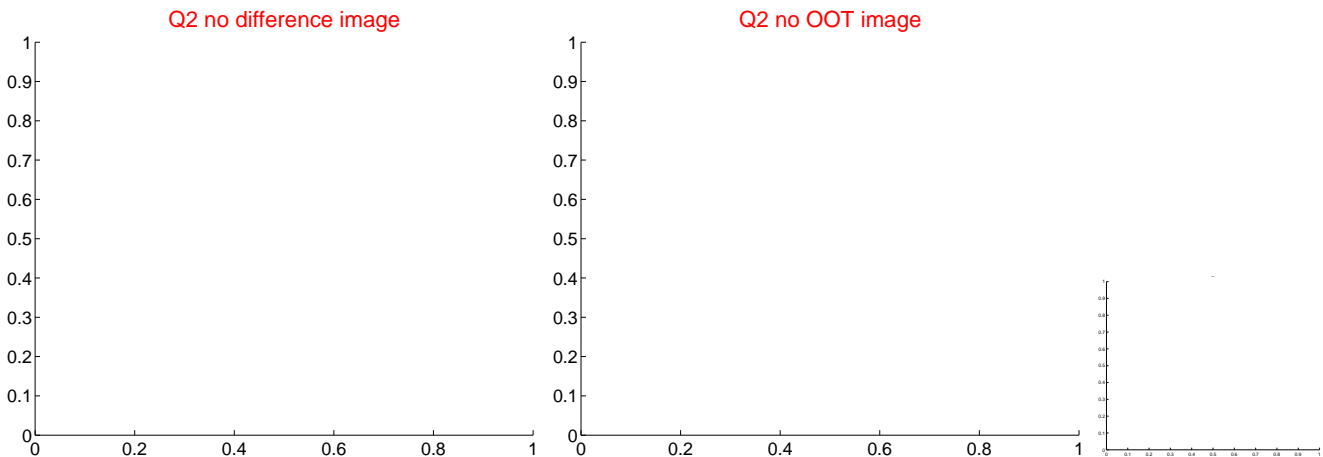


offset from photometric centroids

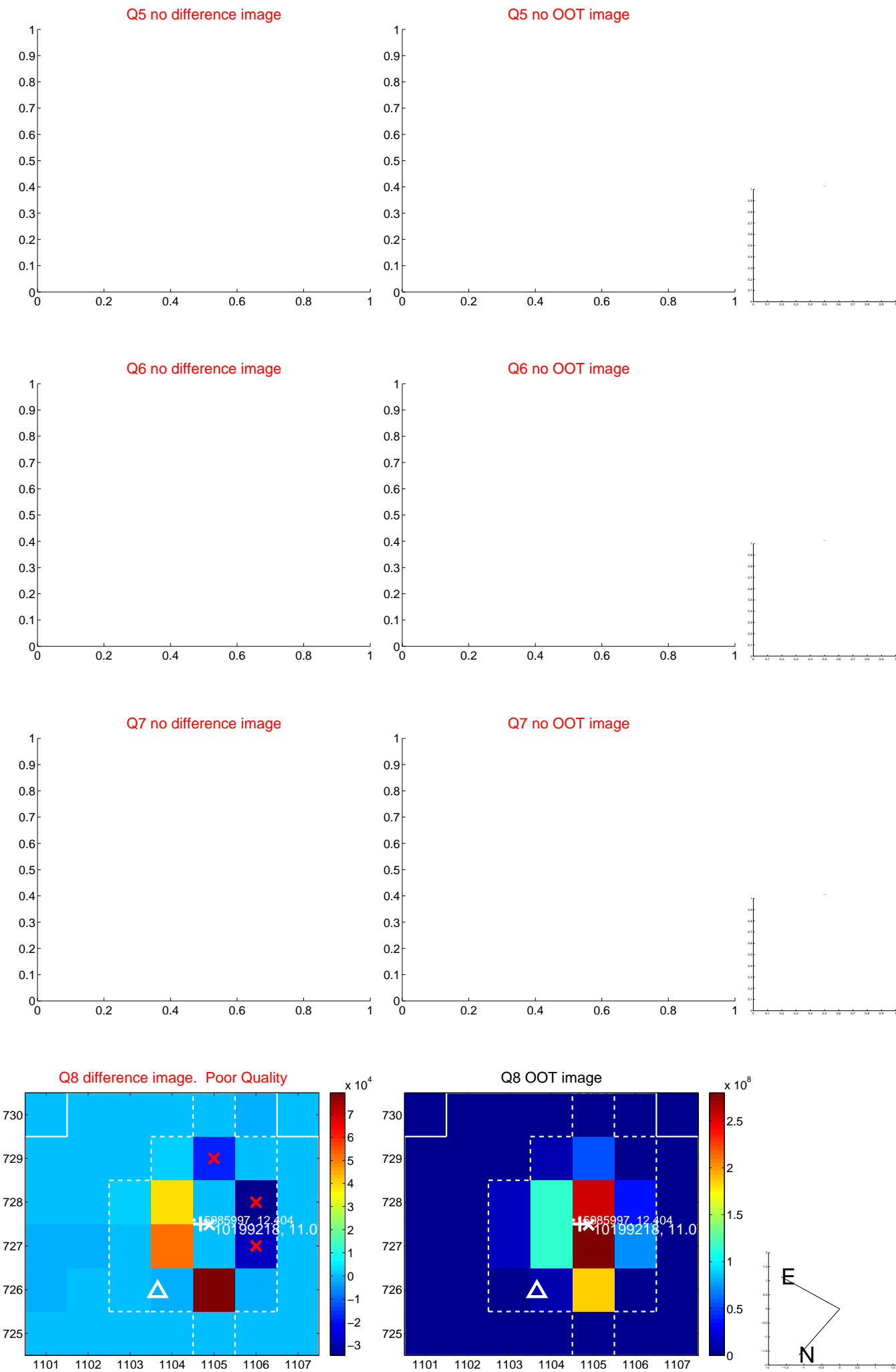


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

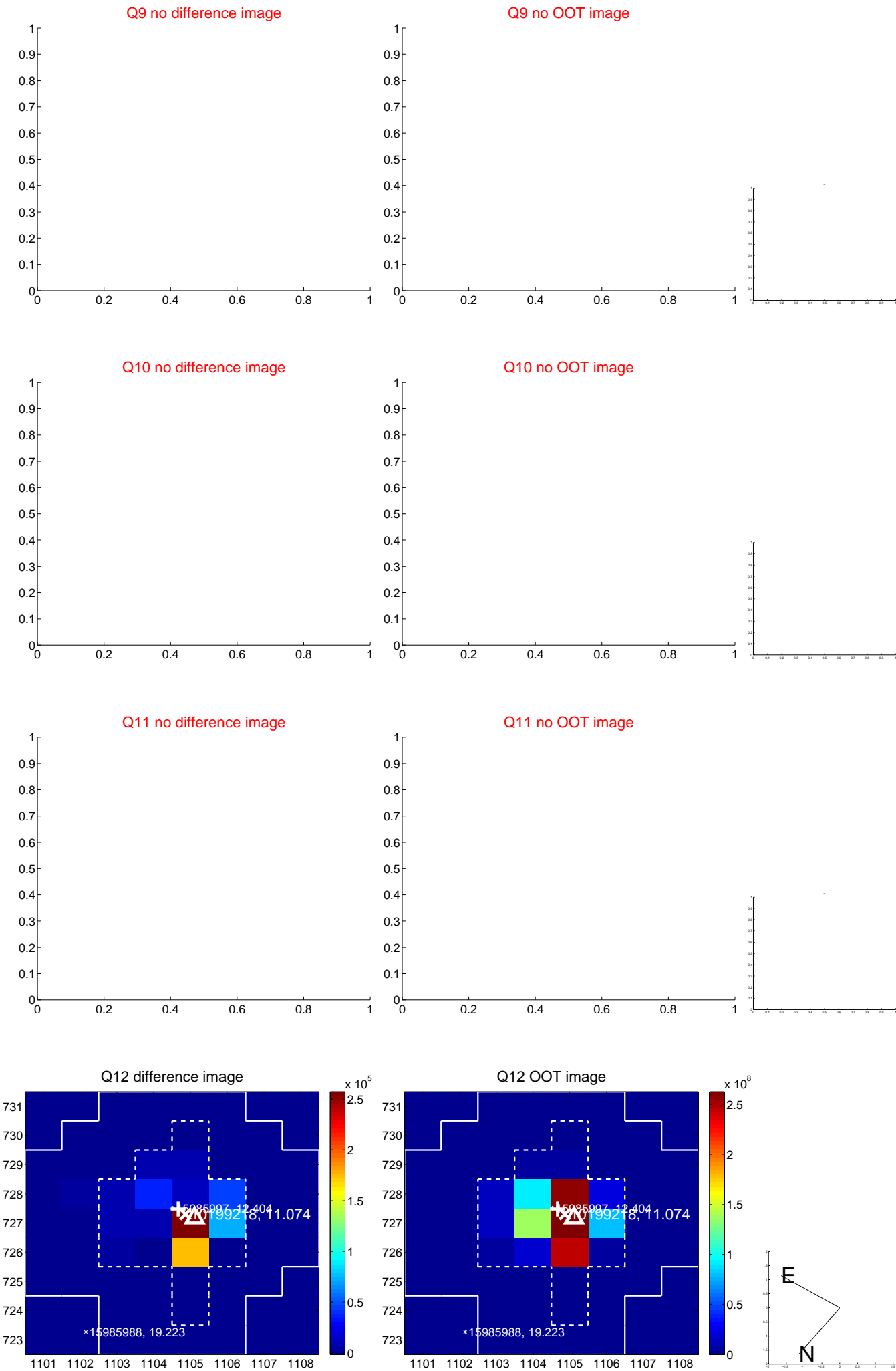
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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



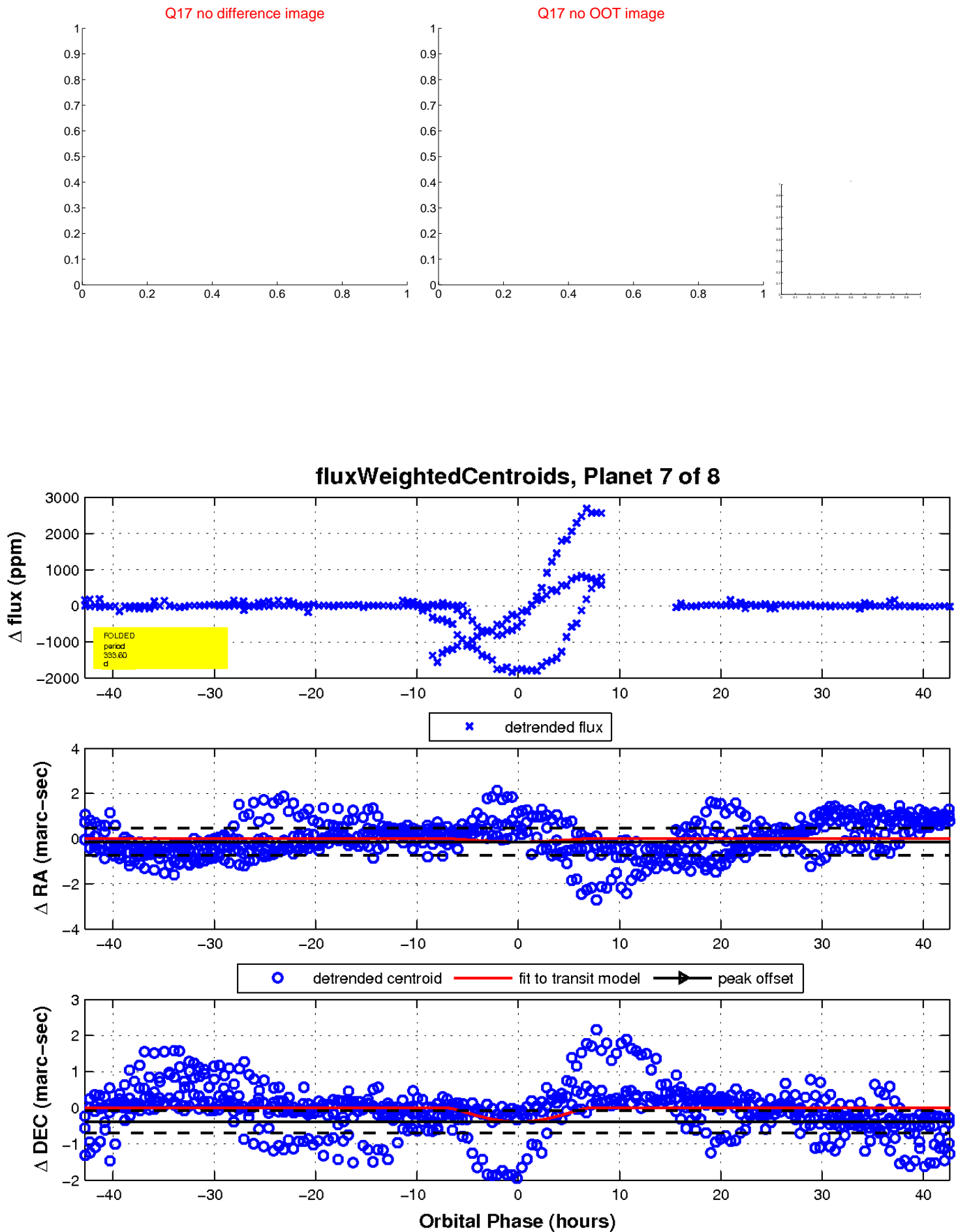
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

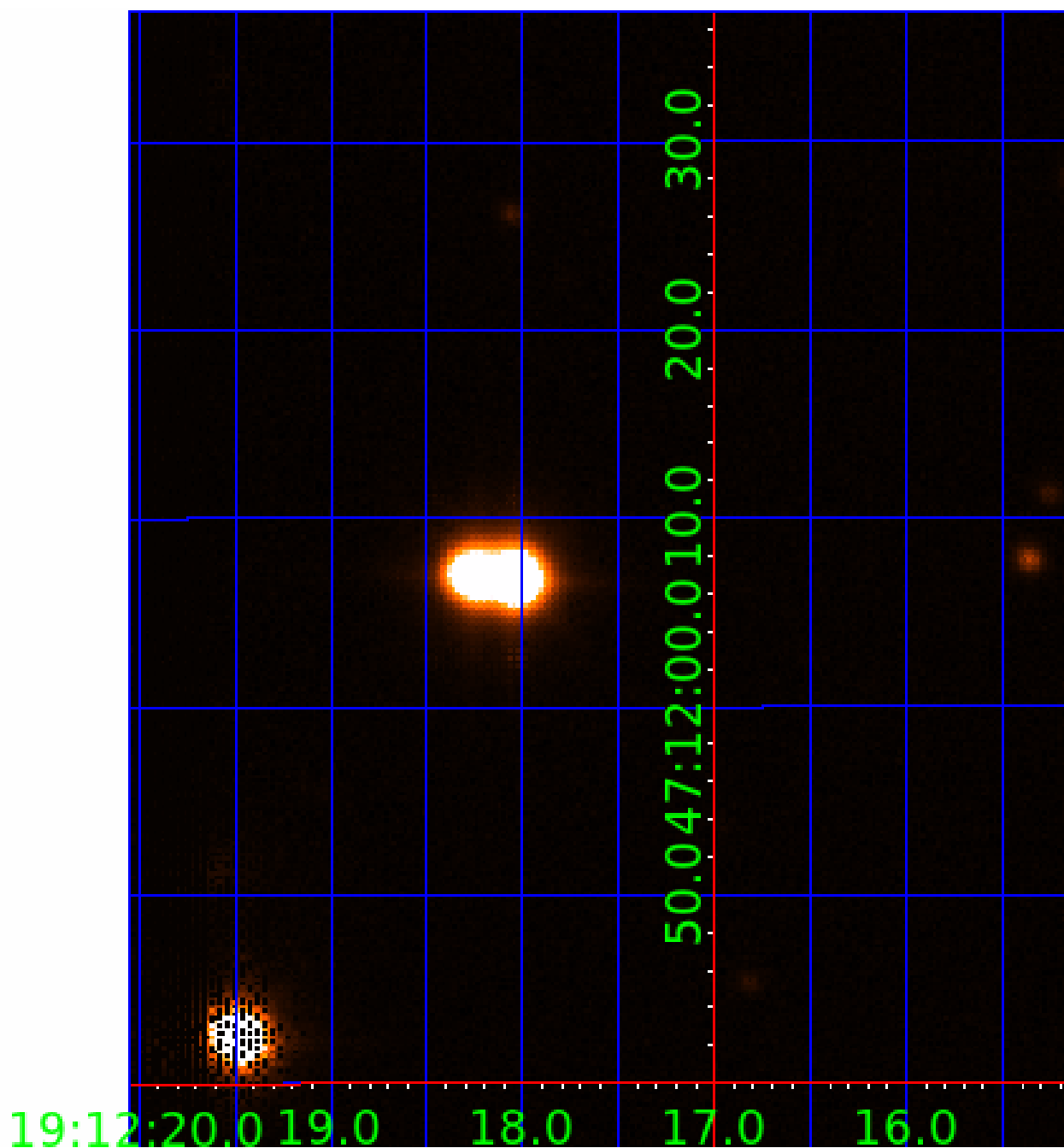


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 010199218

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010199218-02	OBS	No	555.255599	408.911751	1167.9	13.323	16.0	15.8	1.75	6935	11.08	2.89
010199218-03	OBS	No	568.148971	354.911719	1761.5	12.342	13.2	16.5	1.75	6935	13.48	2.81
010199218-04	OBS	No	251.949107	224.110758	44.5	13.098	8.8	8.3	1.75	6935	1.32	8.30
010199218-05	OBS	No	188.525562	167.112992	20.4	9.797	13.0	2.2	1.75	6935	0.92	12.21
010199218-06	OBS	No	185.909494	182.914879	262.1	8.590	10.9	6.8	1.75	6935	3.21	12.44
010199218-07	OBS	No	333.598614	434.811886	248.8	14.329	10.3	4.5	1.75	6935	4.85	5.71
010199218-08	OBS	No	367.170640	371.172813	261.0	6.000	16.2	-1.0	1.75	6935	2.85	5.02

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010199218-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
010199218-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010199218-06	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
010199218-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_SATURATED
010199218-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

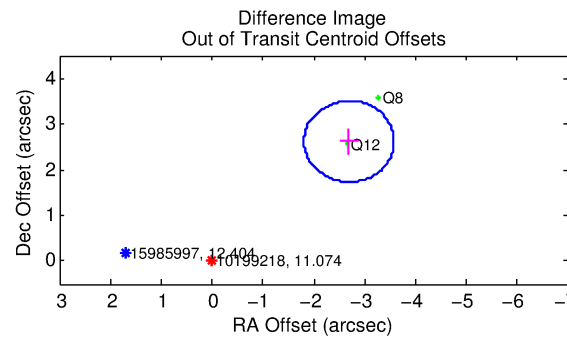
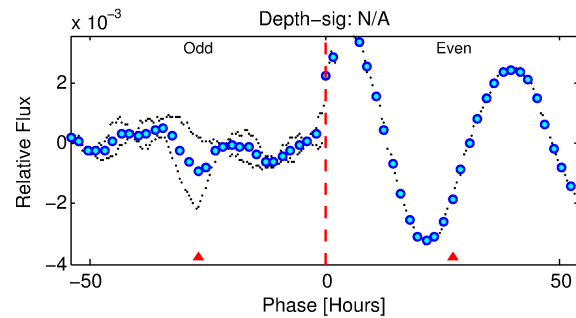
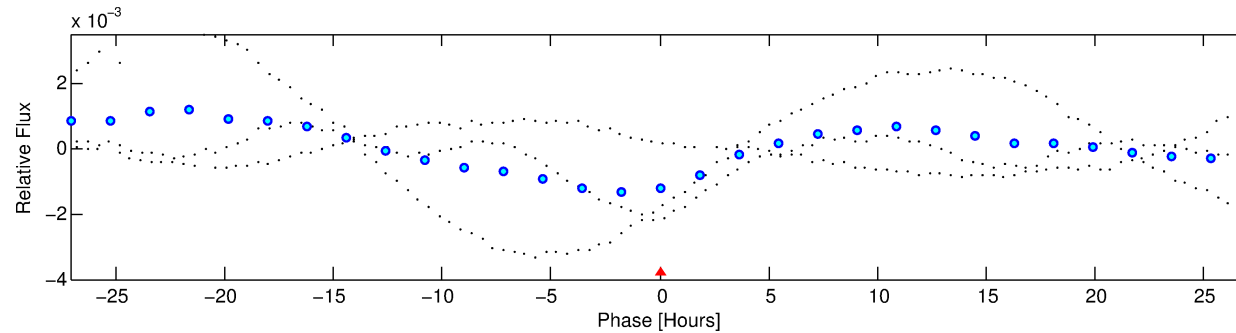
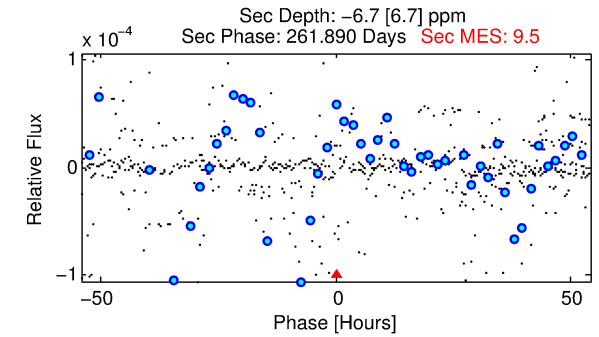
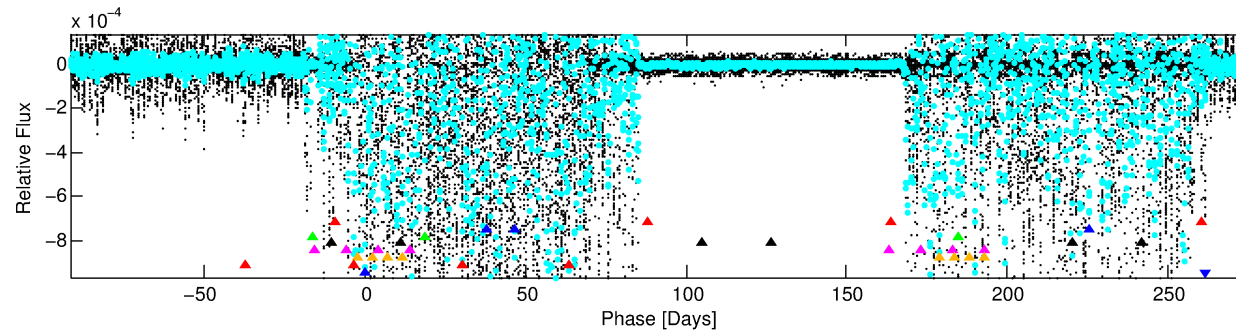
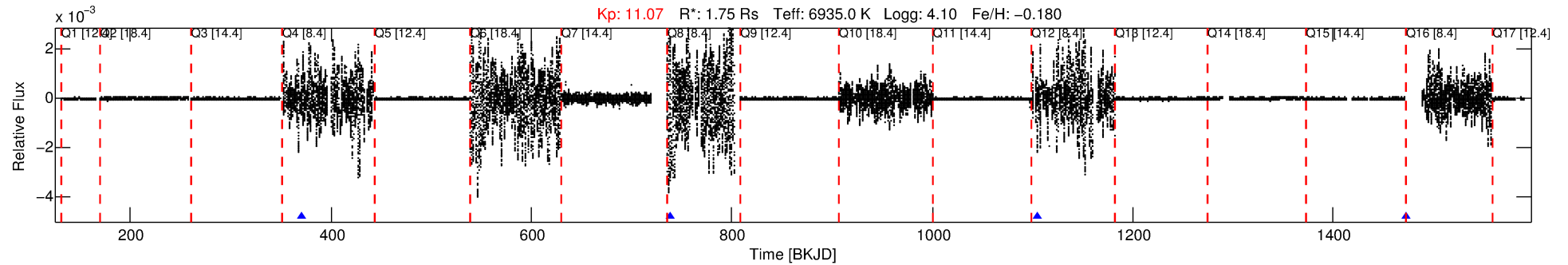
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010199218-08

No Significant Match Found

# DV One-Page Summary

KIC: 10199218 Candidate: 8 of 8 Period: 367.171 d



## TPS TCE Results:

Period = 367.17064 d  
Epoch = 371.1728 BKJD

**DV fit results are unavailable**

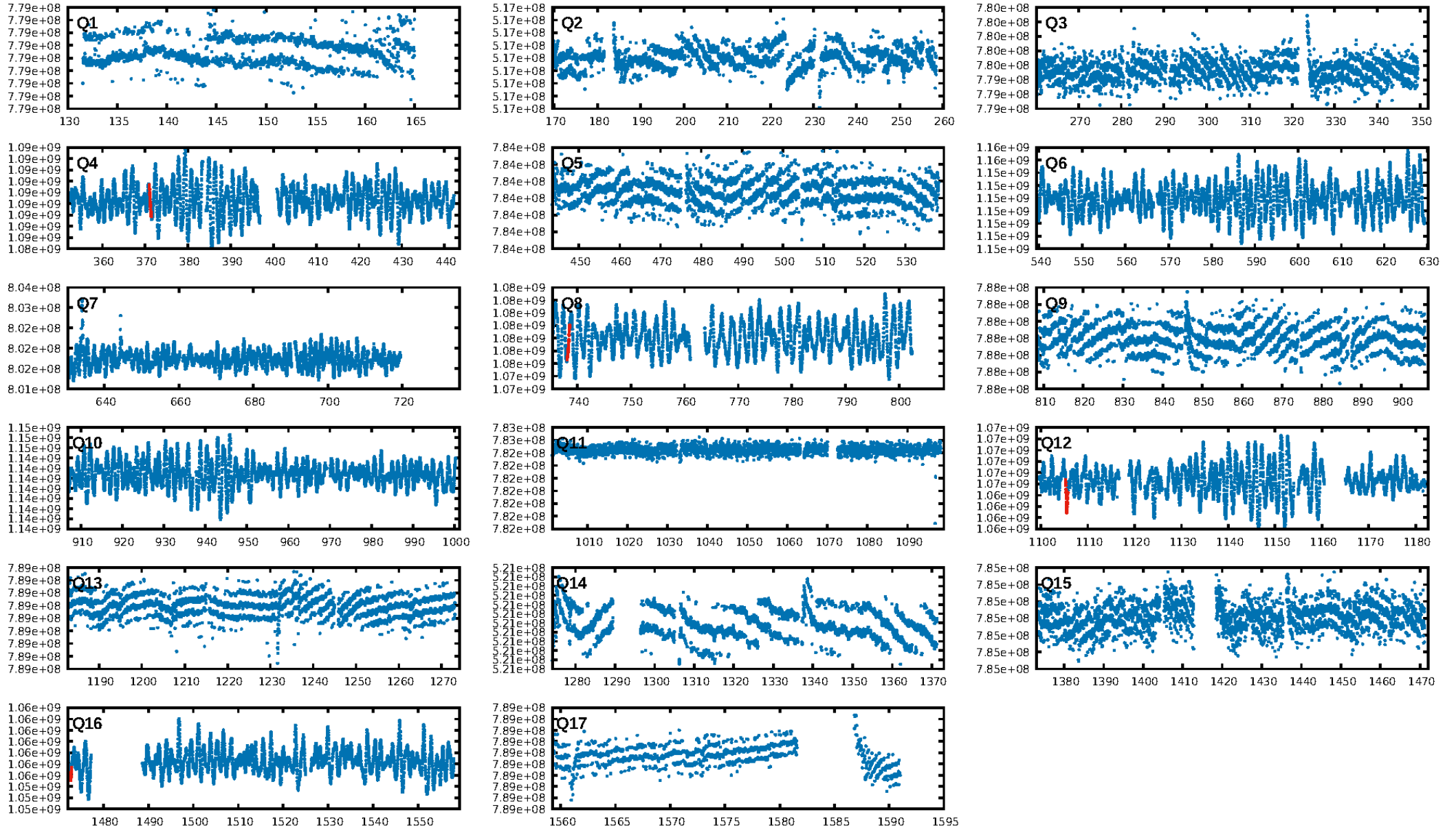
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [51.87 $\sigma$ ]  
LongPeriod-sig: 100.0% [242.80 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.663**  
Centroid-sig: 92.1%  
Centroid-so: 0.604 arcsec [1.95 $\sigma$ ]  
**OotOffset-rm: 3.757 arcsec [12.72 $\sigma$ ]**  
**KicOffset-rm: 3.036 arcsec [8.97 $\sigma$ ]**  
OotOffset-st: 0/0/2/0 [2]  
KicOffset-st: 0/0/2/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 1.00 [3/3]

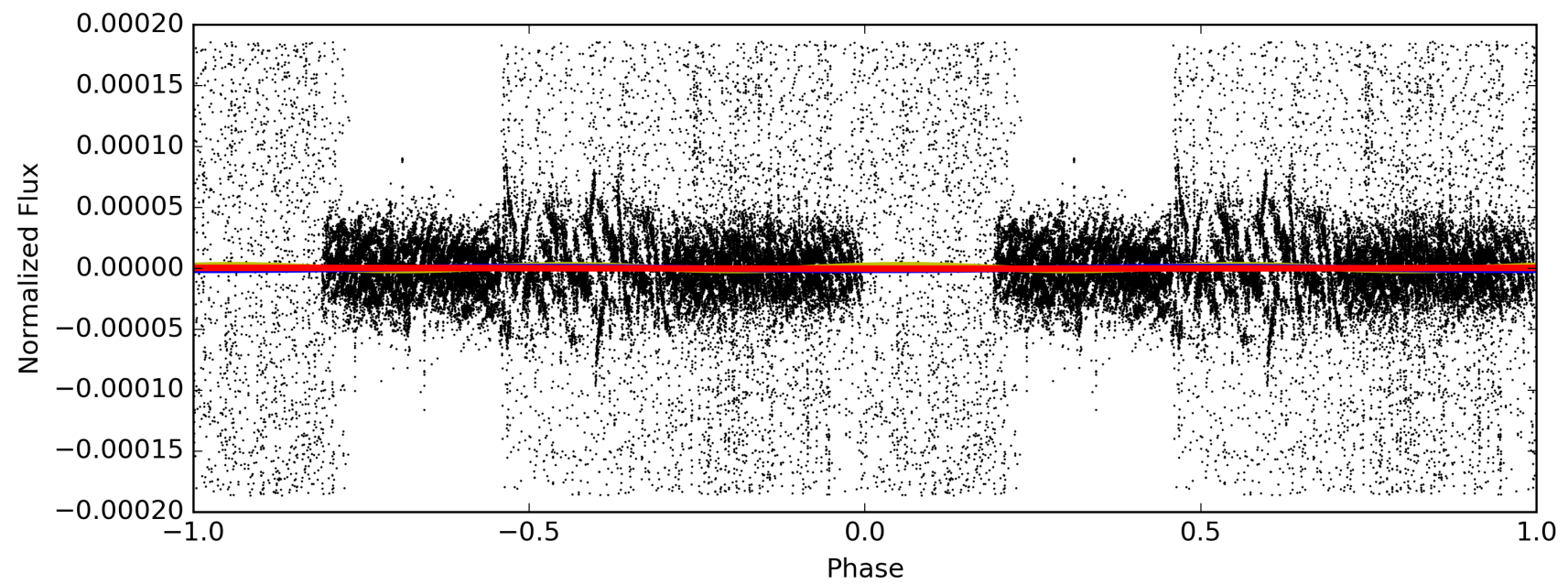
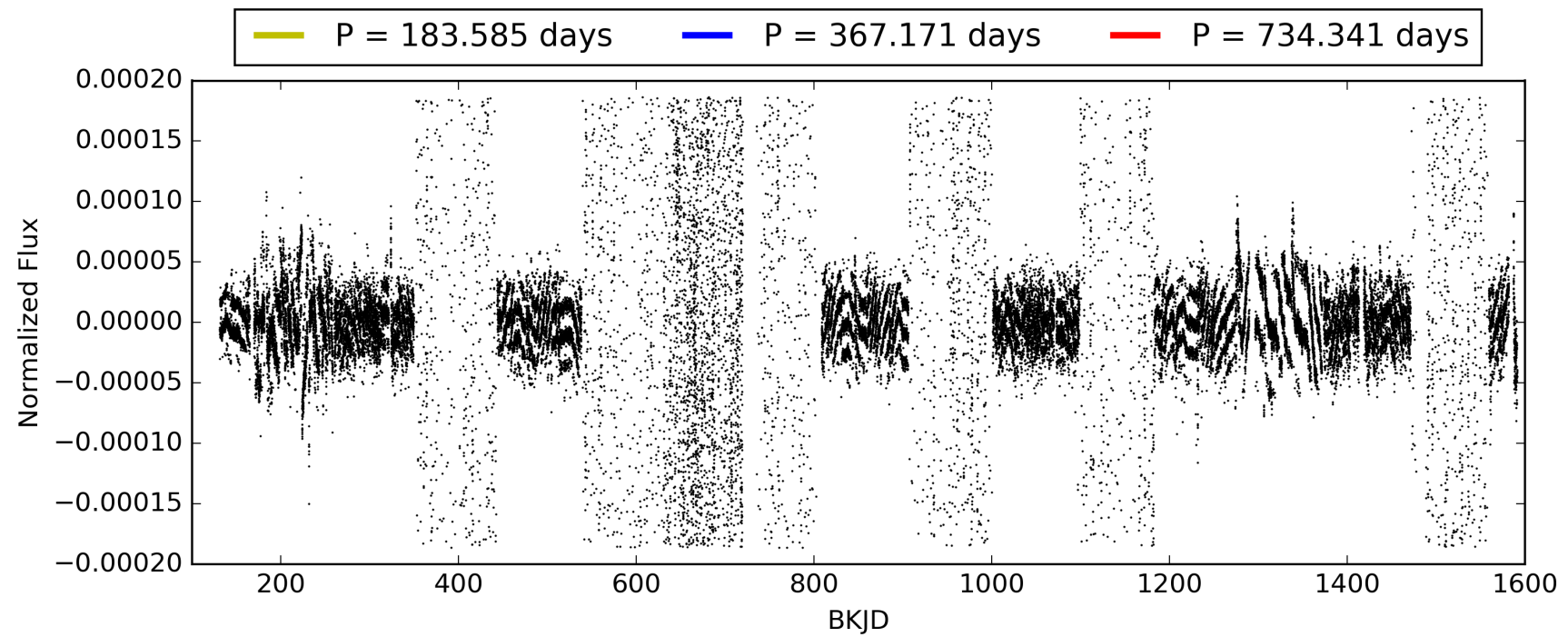
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:55:44 Z

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

# TCE 010199218-08, PDC Light Curves

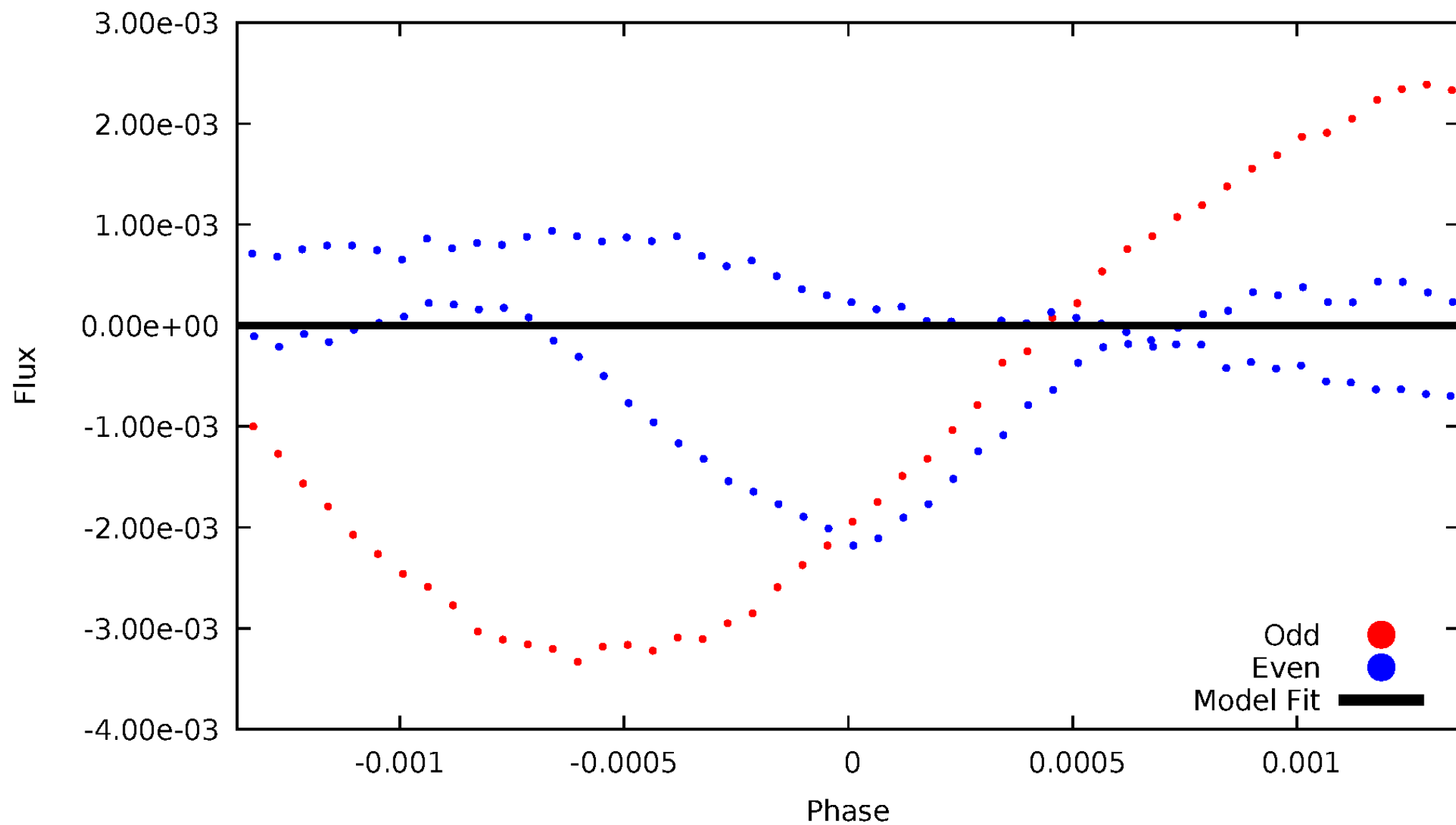


TCE 010199218-08



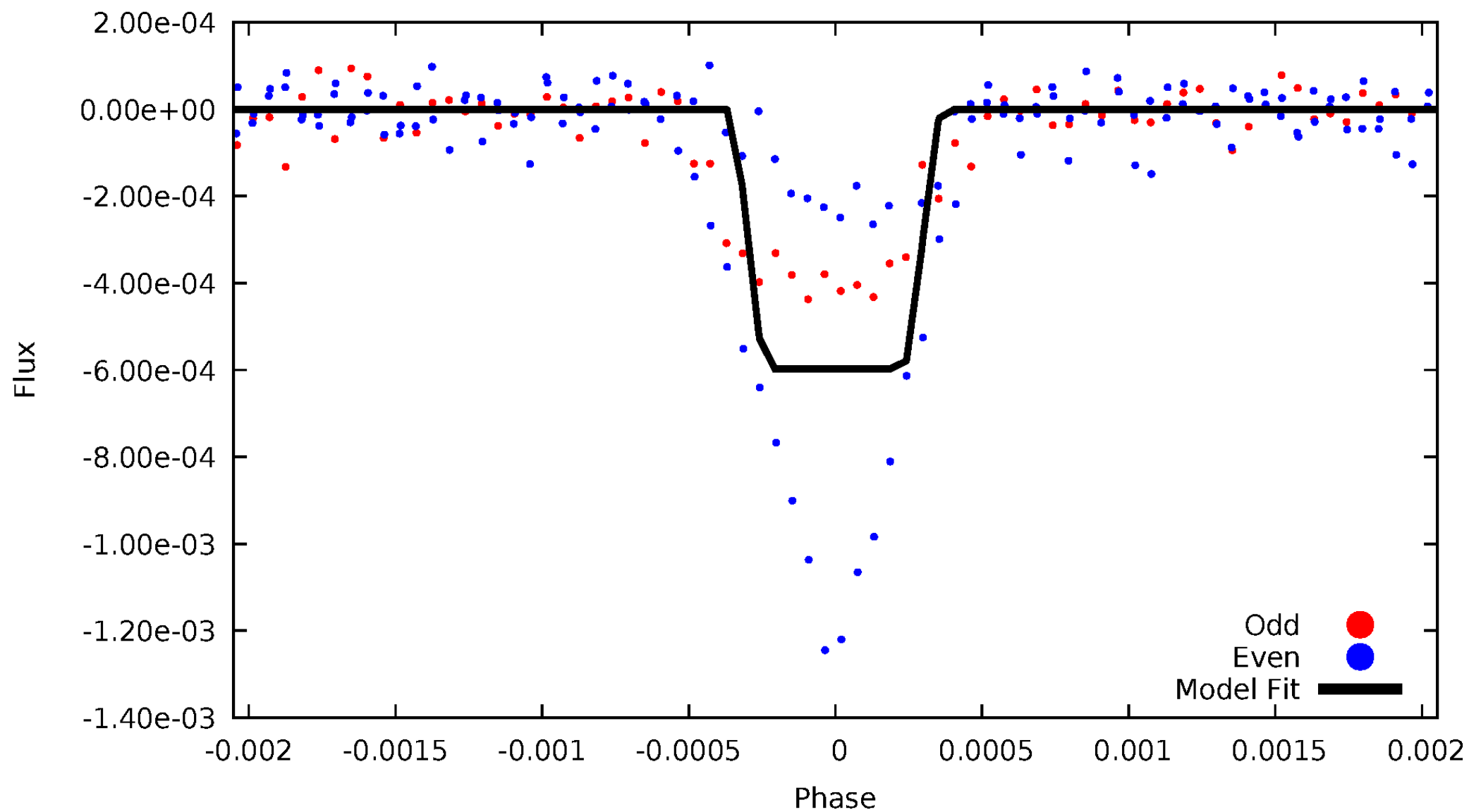
# DV Odd/Even

TCE 010199218-08



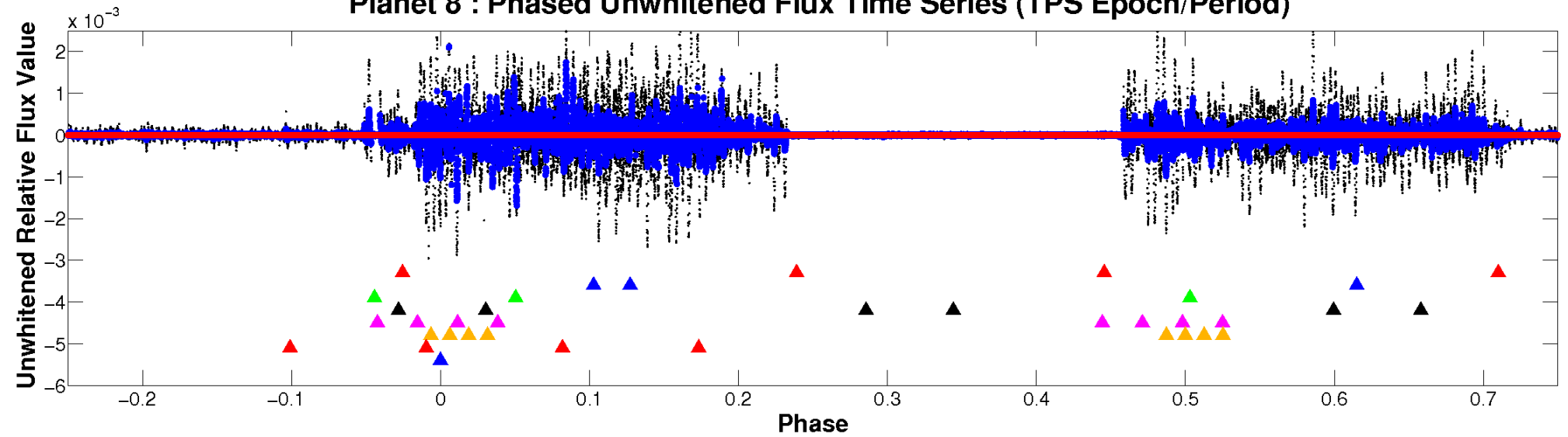
# ALT Odd/Even

TCE 010199218-08

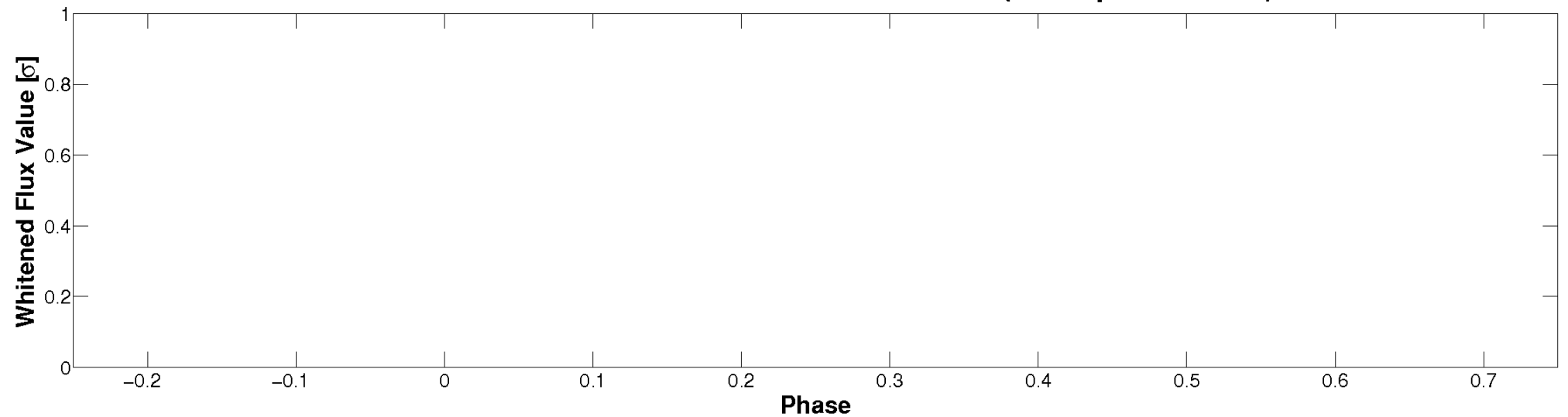


# Non-Whitened Vs. Whitened Light Curve

**Planet 8 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

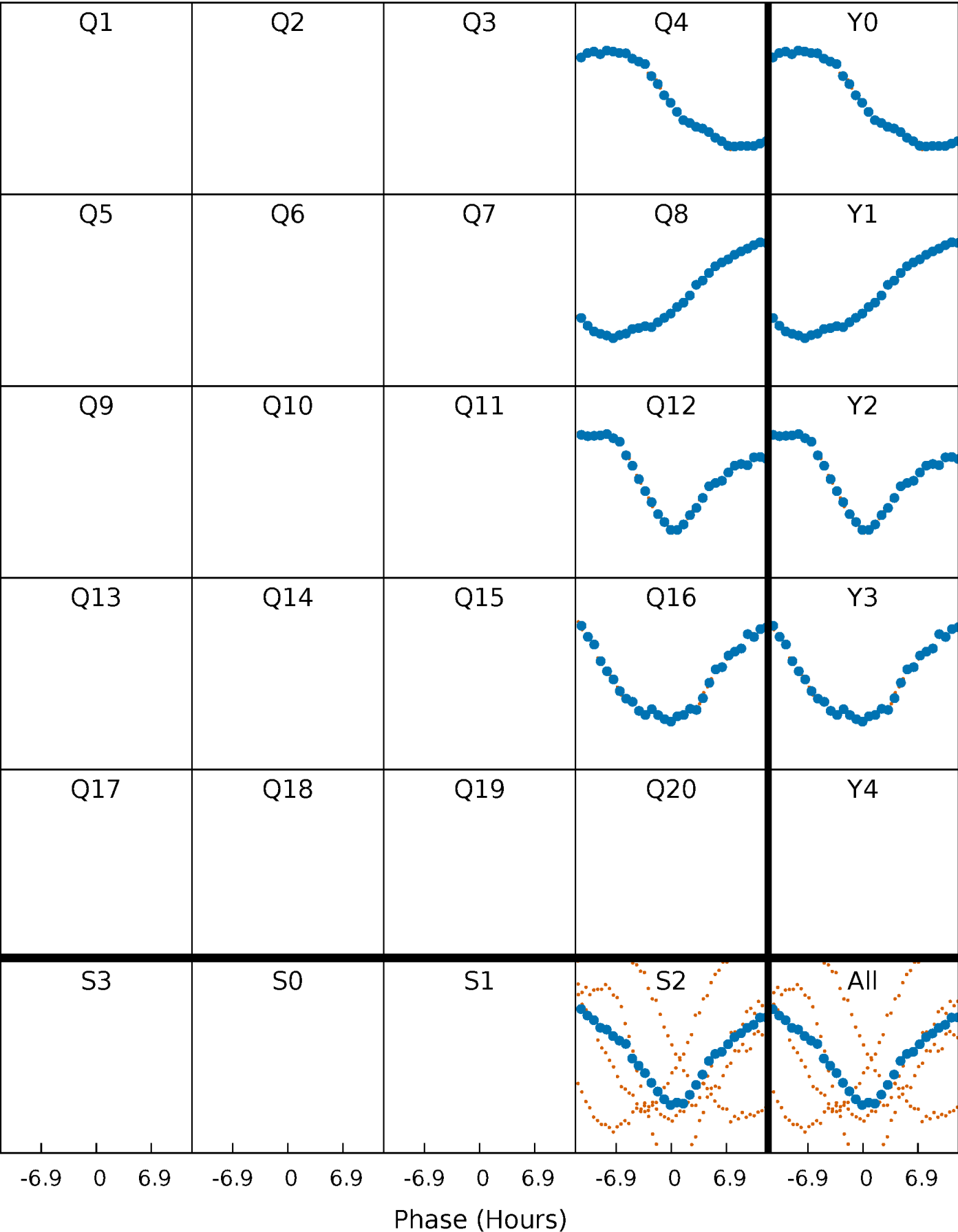


**Planet 8 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



PDC Quarter-Phased Transit Curves

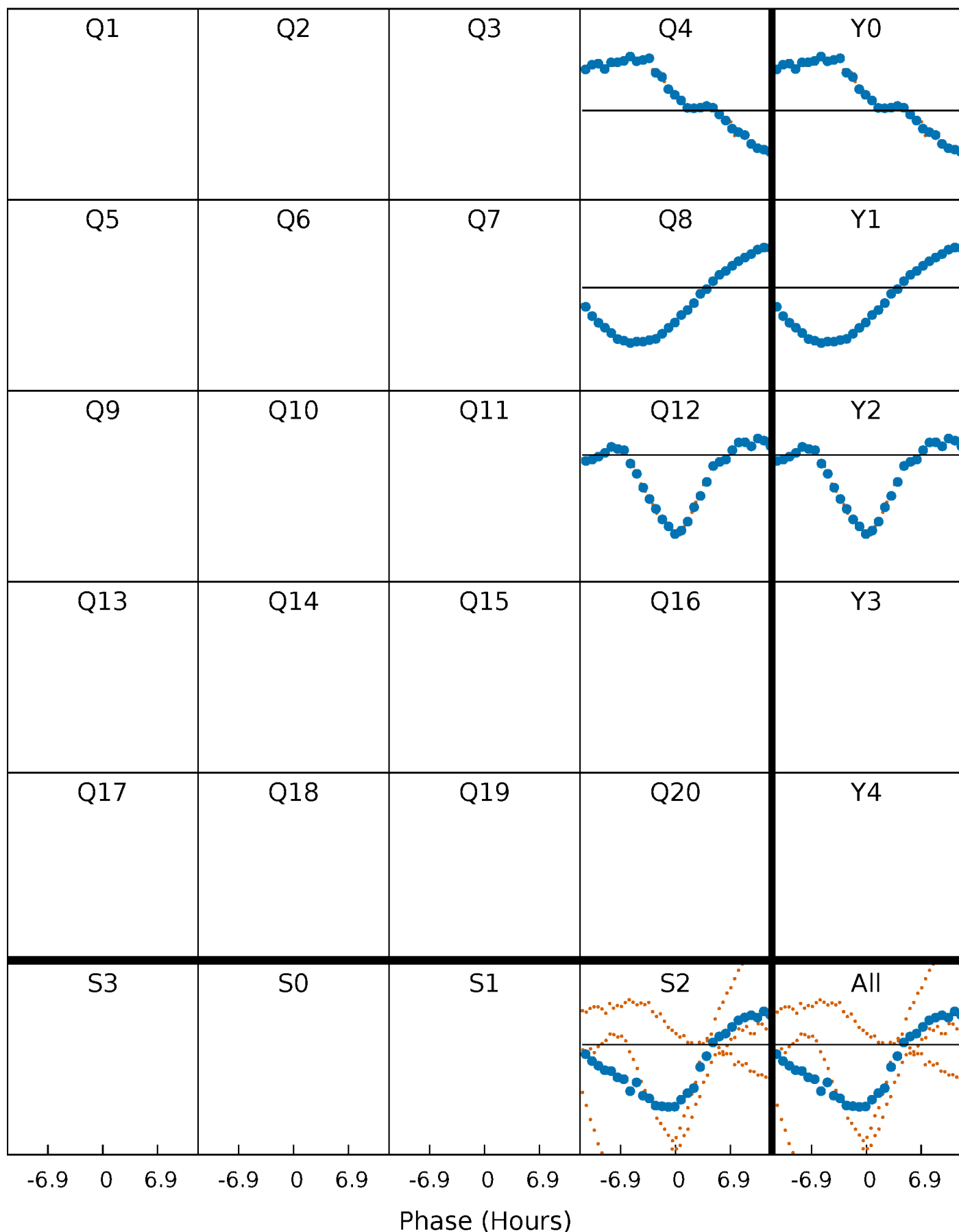
TCE 010199218-08    P=367.170640 Days    T<sub>0</sub>=371.172814 (BKJD)





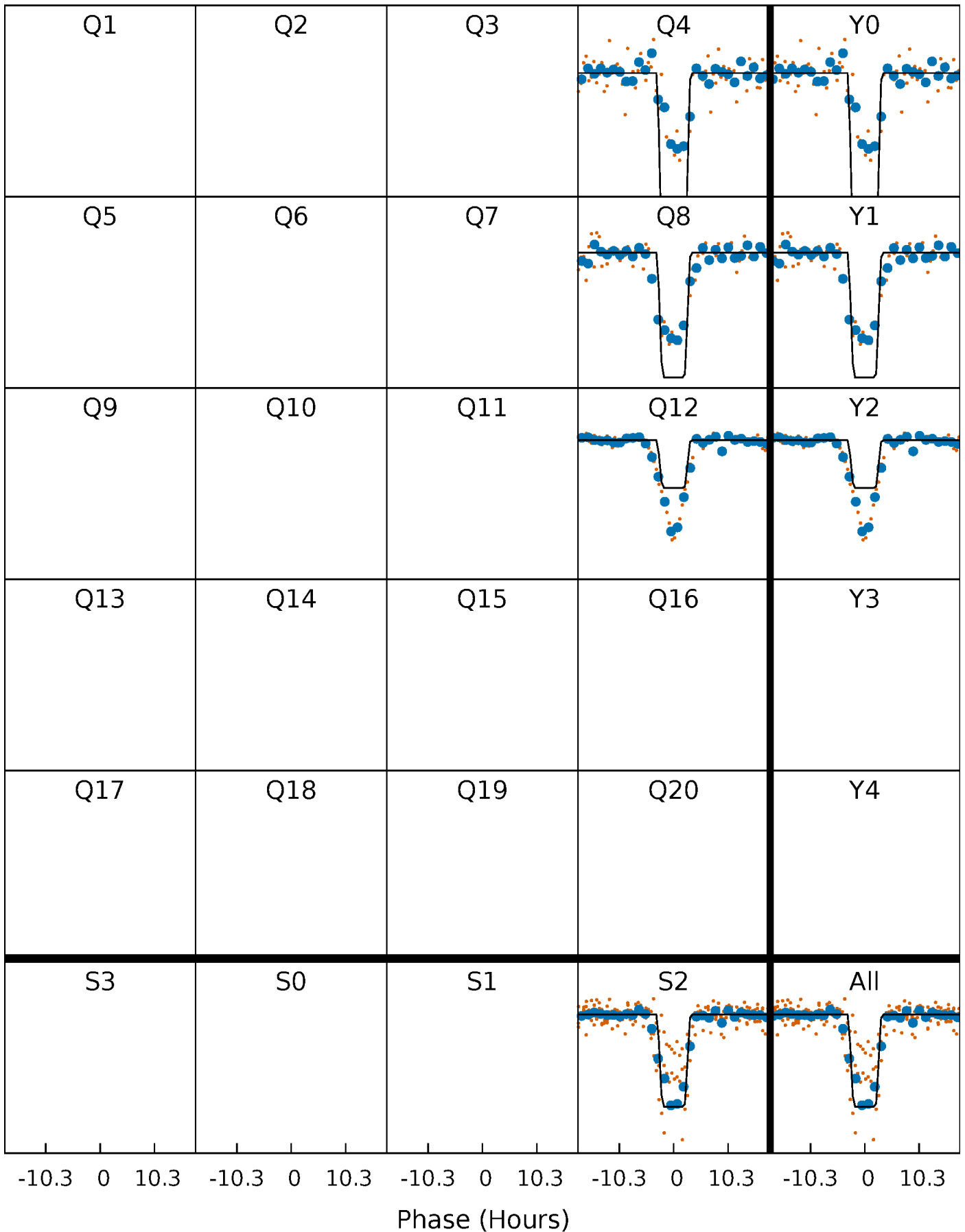
# DV Quarter-Phased Transit Curves

TCE 010199218-08 P=367.170640 Days  $T_0=371.172814$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

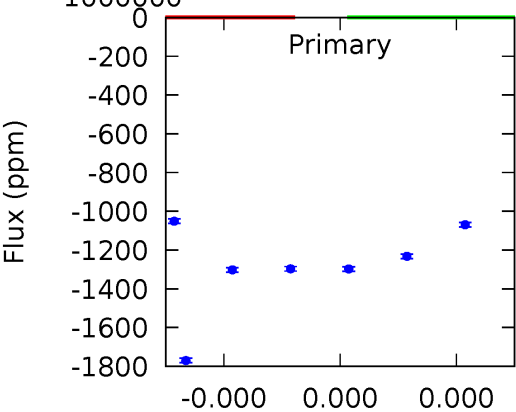
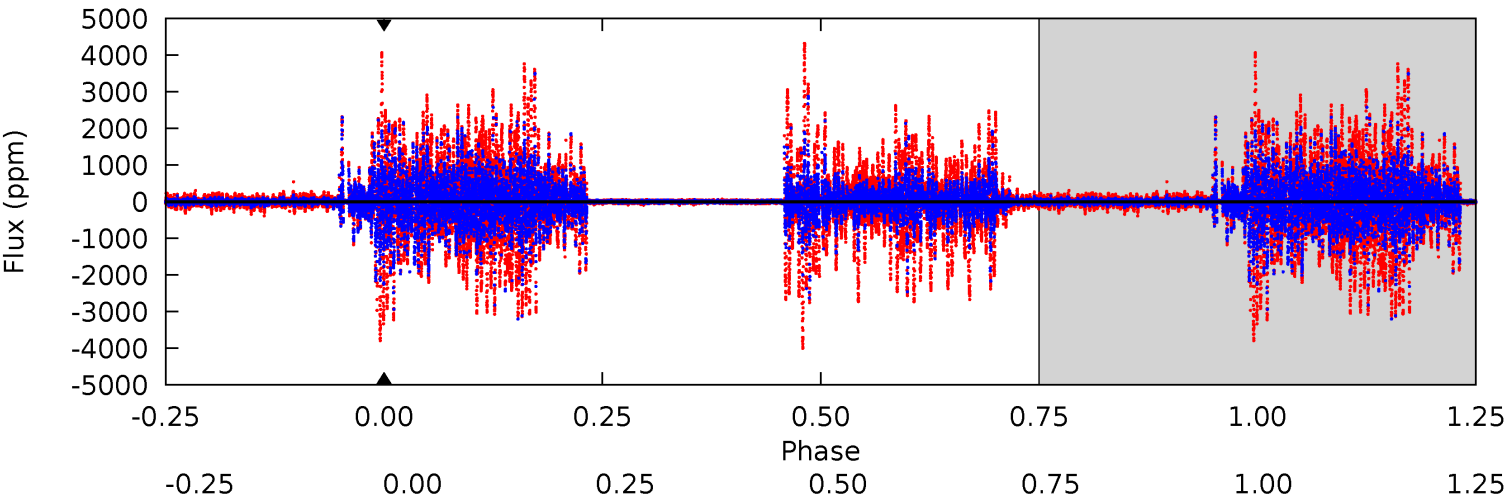
TCE 010199218-08 P=367.170640 Days  $T_0=371.189940$  (BKJD)



# DV Model-Shift Uniqueness Test

010199218-08, P = 367.170640 Days, E = 4.002174 Days

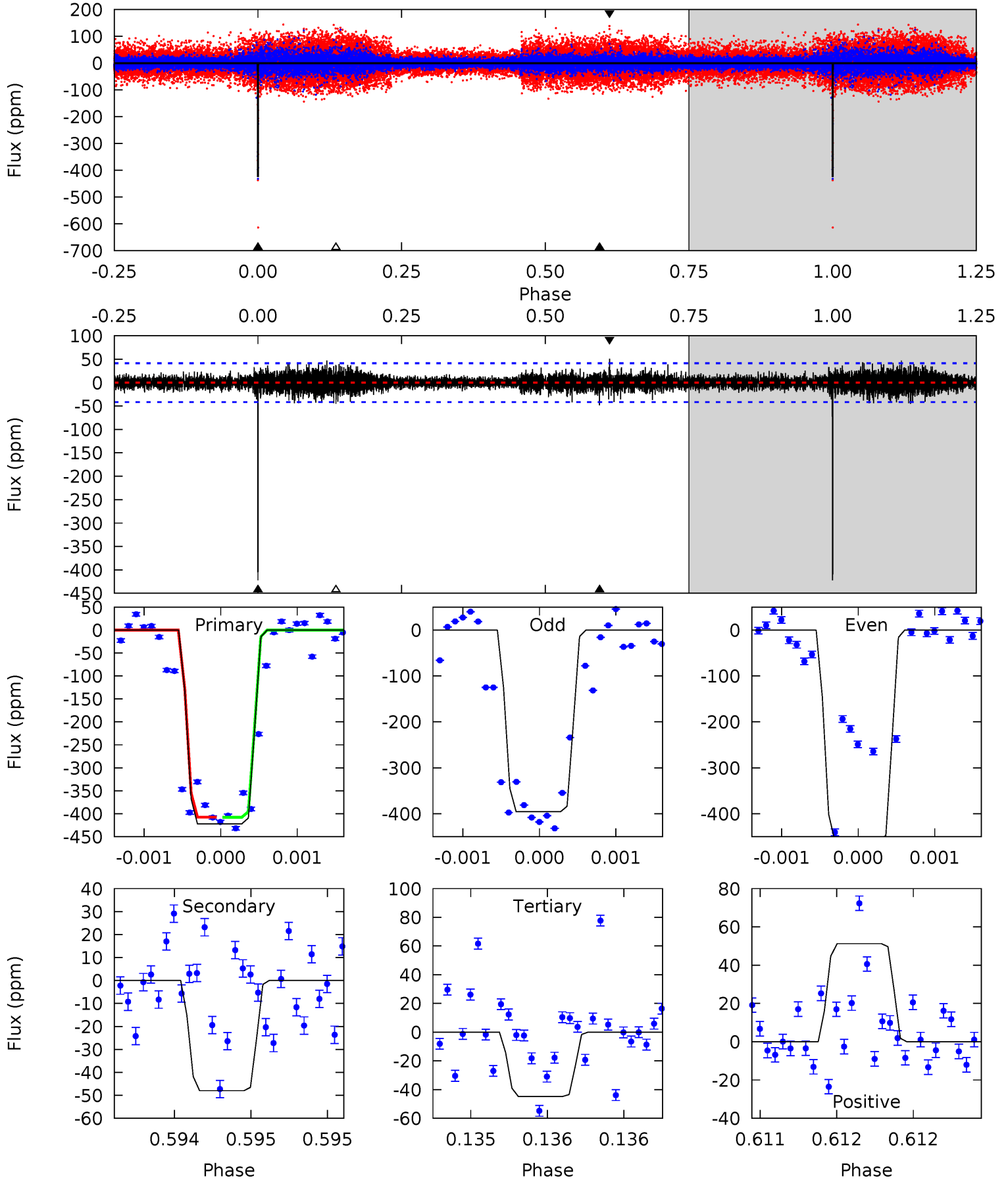
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

010199218-08, P = 367.170640 Days, E = 4.019300 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
56.1	6.38	5.96	6.81	5.52	3.40	1.15	50.2	49.3	0.42	-0.43	5.60	1.31	0.11	0



### Stellar Parameters For KIC 010199218

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6935^{+214}_{-309}$	$4.099^{+0.165}_{-0.135}$	$-0.180^{+0.250}_{-0.300}$	$1.747^{+0.393}_{-0.393}$	$1.403^{+0.168}_{-0.252}$	$0.371^{+0.333}_{-0.152}$
	+3%/-4%	+4%/-3%	+139%/-167%	+22%/-22%	+12%/-18%	+90%/-41%
Source	KIC0	FLK73	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 010199218-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$14.00^{+14.70}_{-9.60}$	$531^{+36}_{-36}$	$5820^{+32886}_{-33364}$	$10810^{+828259}_{-482323}$
Alt.	$-48 \pm 8$	$14.51^{+15.71}_{-9.96}$	$531^{+34}_{-38}$	$2812^{+1168}_{-475}$	$160^{+1387}_{-125}$

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

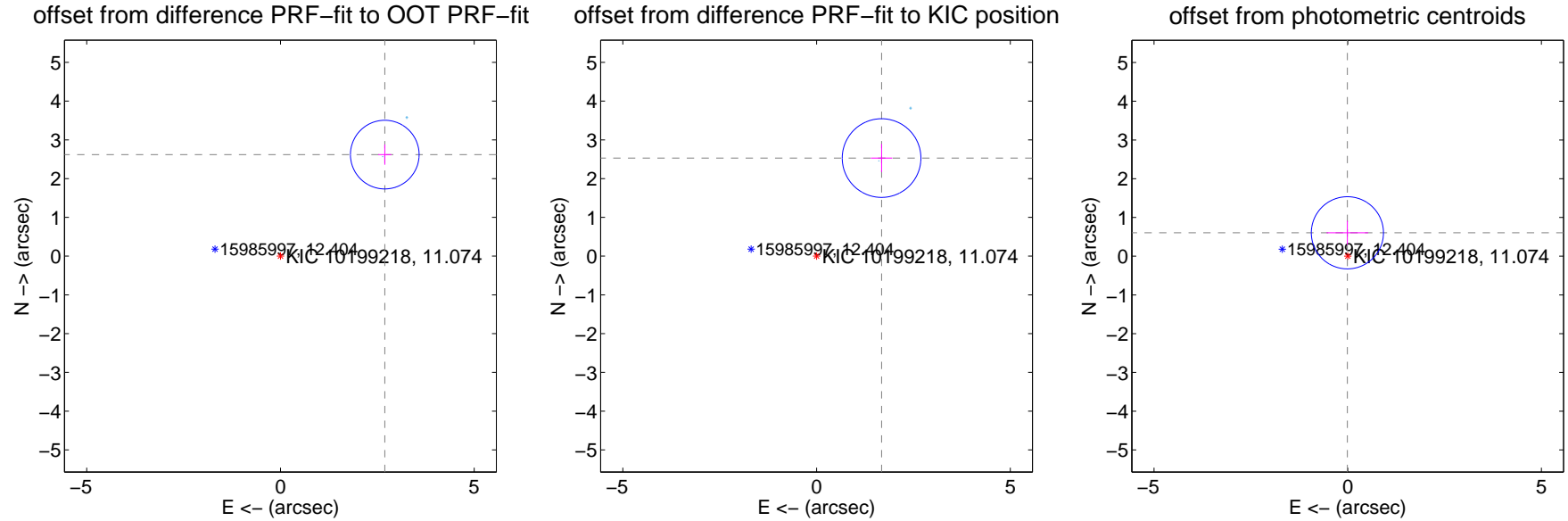
## DV Centroid Data

Supplemental centroid analysis for 010199218-08. **Kepler magnitude: 11.07.** Transit SNR -1.00

**There are 2 quarters with good PRF difference image offsets**

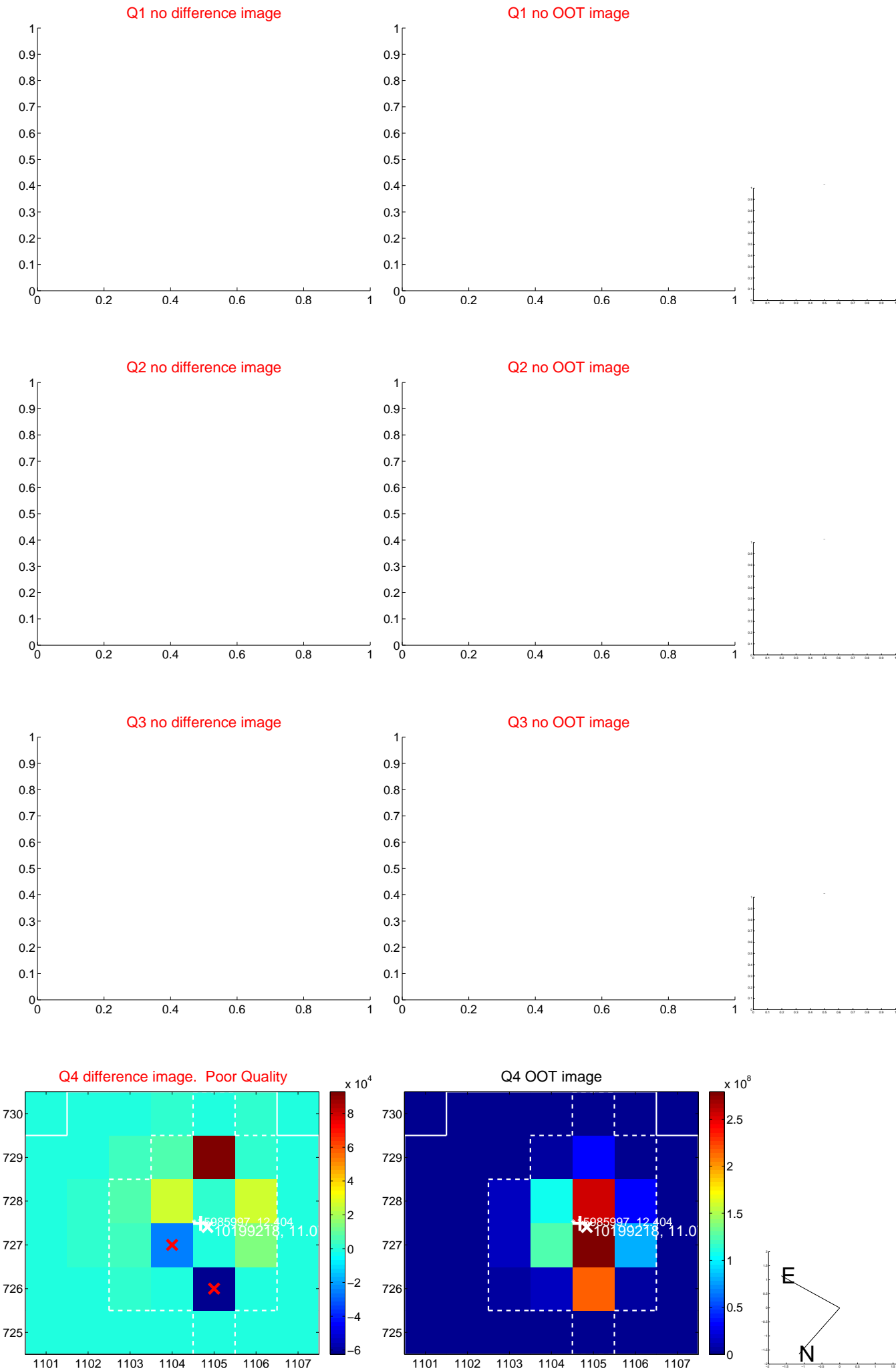
The direct PRF centroid is offset from the target star catalog position by about 1.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>3.757 \pm 0.295</math></b>	<b>12.72</b>	$-2.692 \pm 0.169$	$2.620 \pm 0.261$
PRF-fit source offset from KIC position	<b><math>3.036 \pm 0.338</math></b>	<b>8.97</b>	$-1.678 \pm 0.276$	$2.531 \pm 0.362$
photometric centroid source offset	$0.60 \pm 0.31$	1.95	$0.01 \pm 0.54$	$0.60 \pm 0.31$

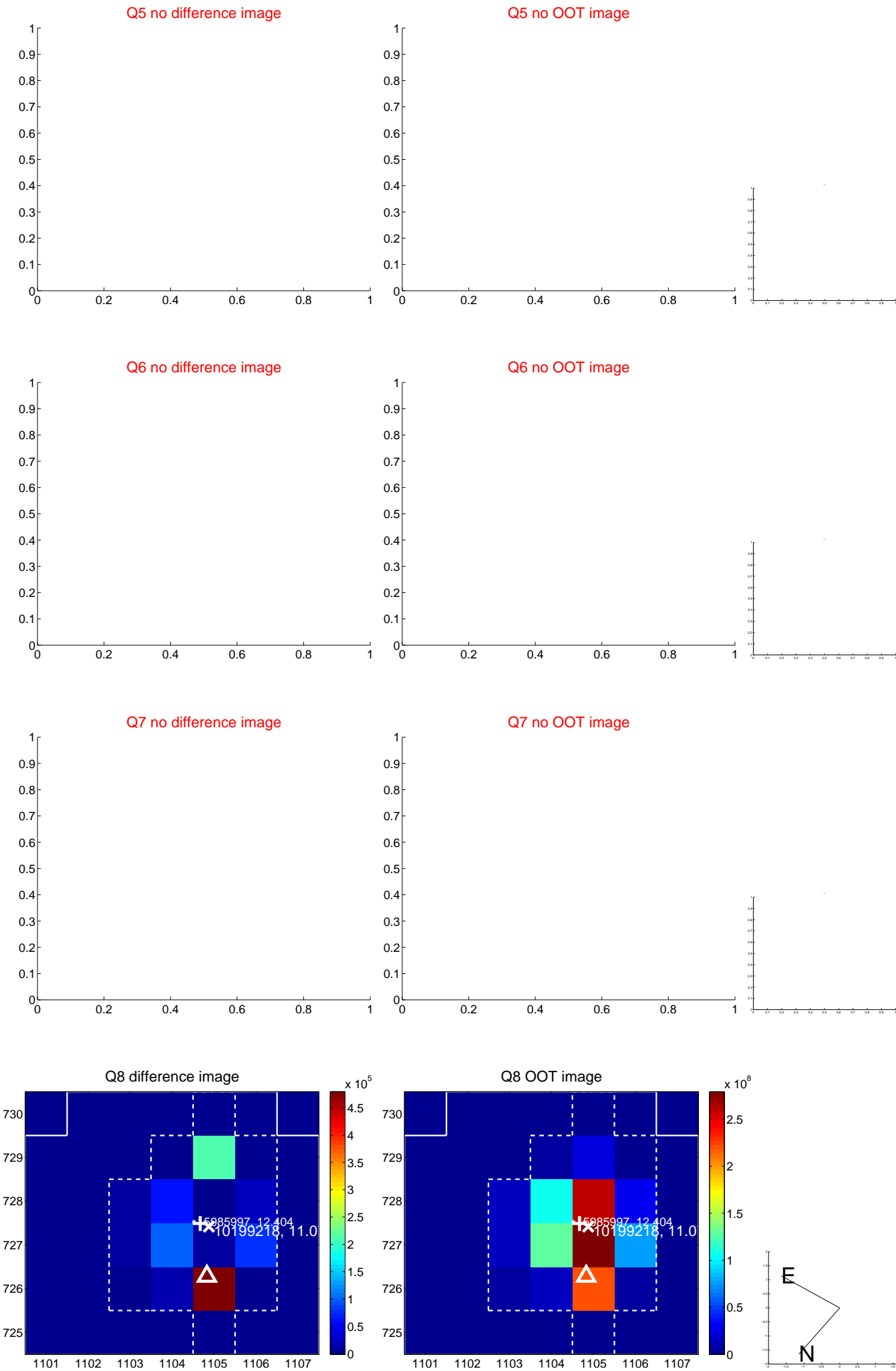


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

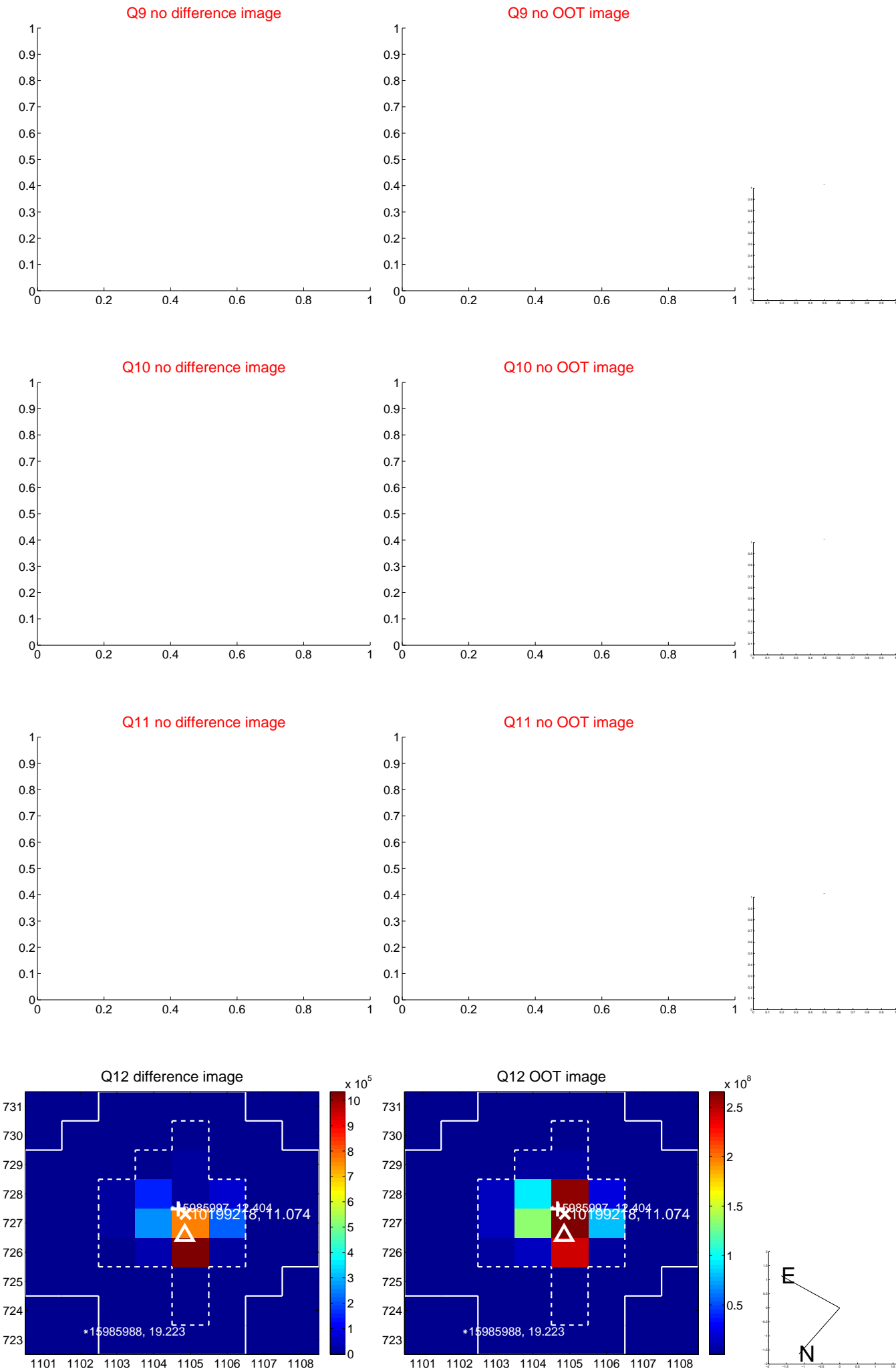


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





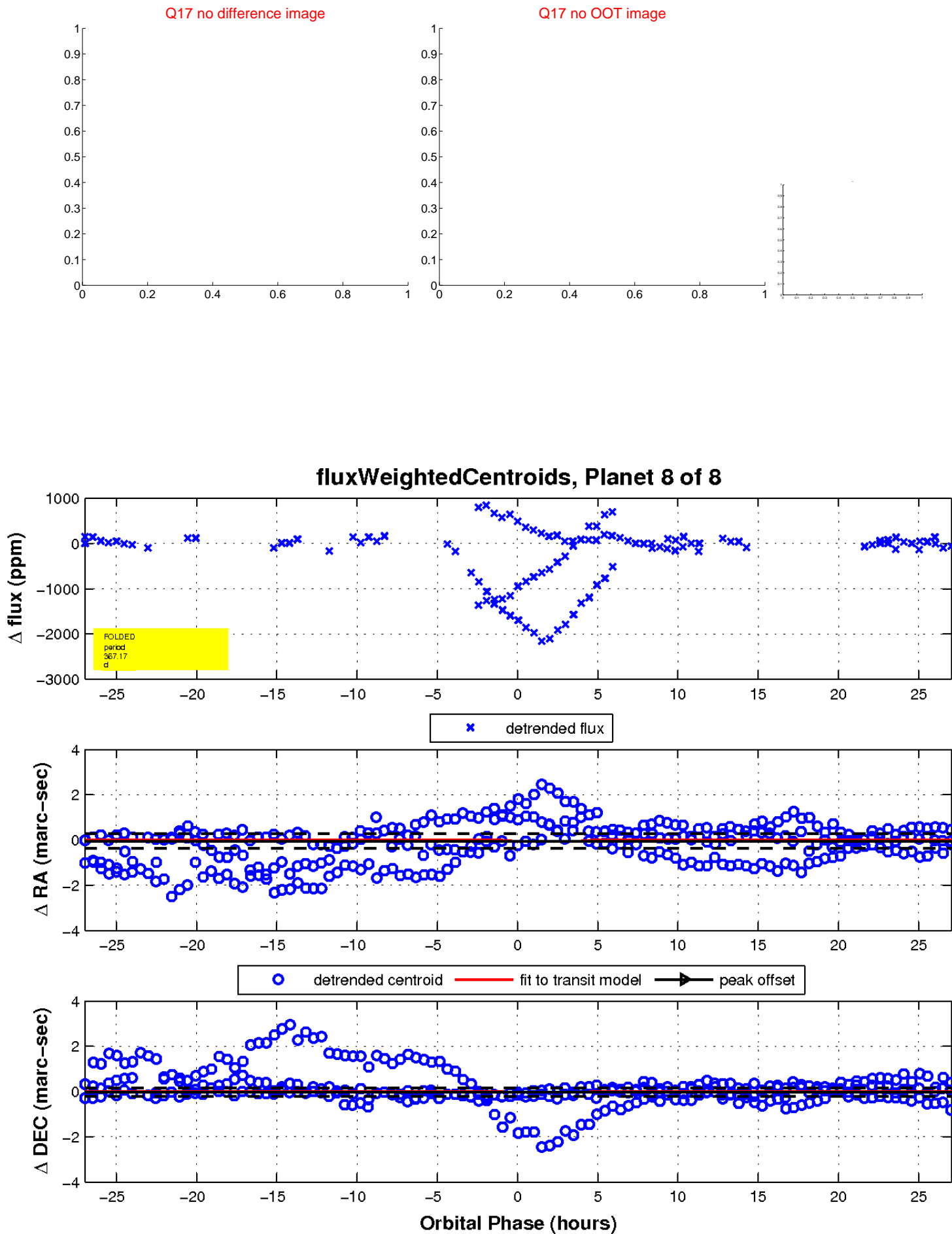
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

