

# KIC 005217733

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005217733-01	OBS	3155.01	161.254247	189.097302	93658.6	24.218	129.6	196.1	1.87	9341	58.73	42.89
005217733-02	OBS	No	161.256074	216.383861	43200.5	49.395	33.3	152.3	1.87	9341	40.69	42.89

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005217733-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—CENT_SATURATED
005217733-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—CENT_SATURATED

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

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

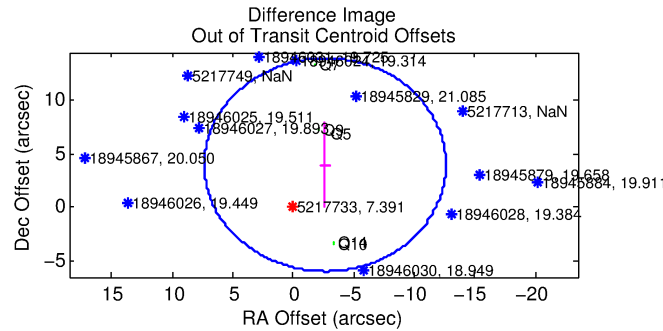
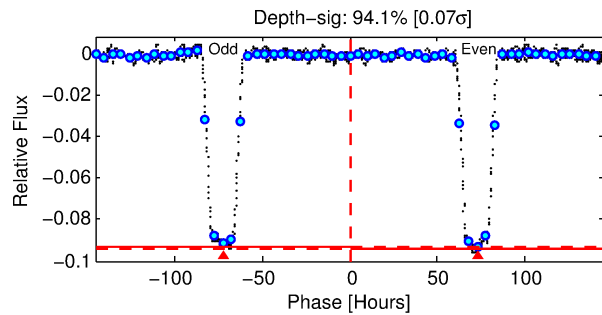
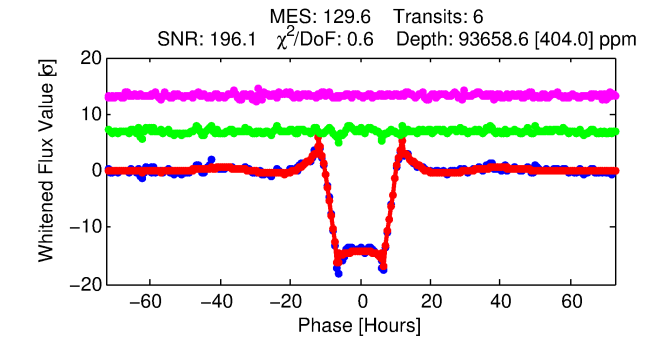
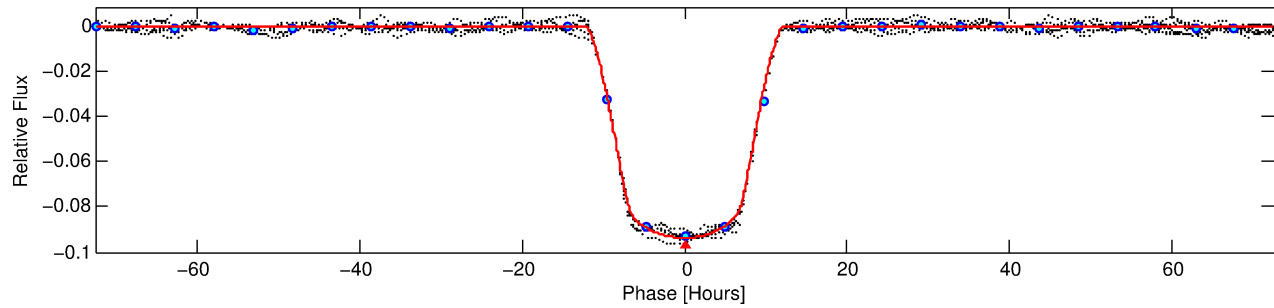
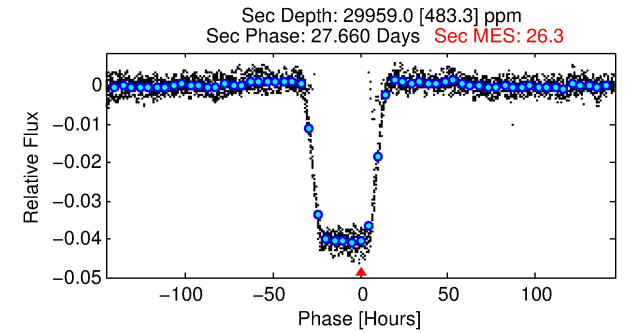
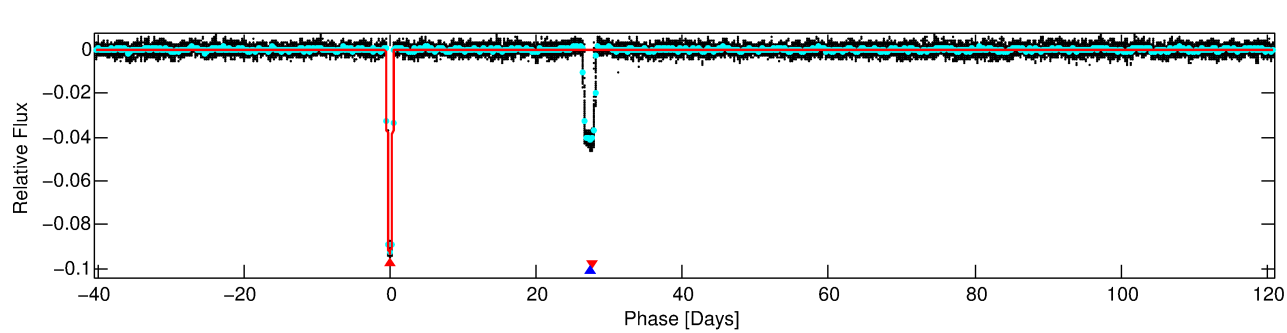
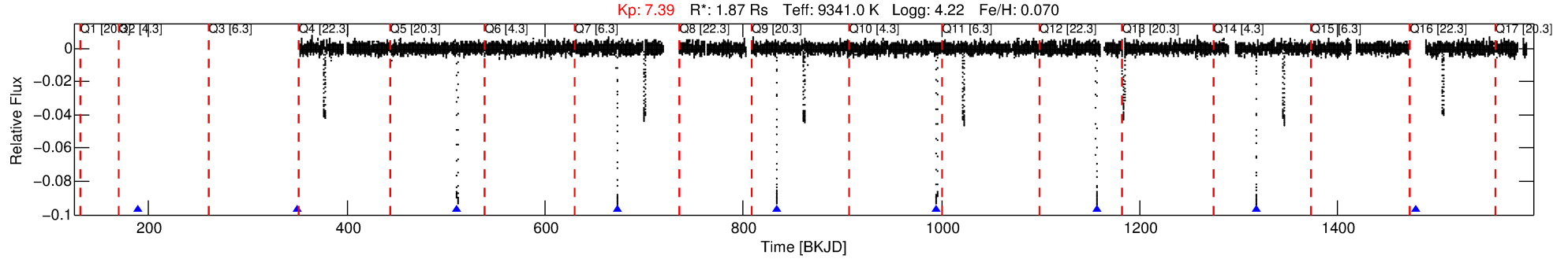
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005217733-01

No Significant Match Found

# DV One-Page Summary

KIC: 5217733    Candidate: 1 of 2    Period: 161.254 d  
KOI: K03155.01    Corr: 0.880



DV Fit Results:

Period = 161.25425 [0.00034] d  
Epoch = 189.0973 [0.0017] BKJD  
Rp/R\* = 0.2878 [0.0006]  
a/R\* = 65.18 [0.22]  
b = 0.13 [0.02]  
  
Seff = 42.89 [22.48]  
Teq = 653 [86] K  
**Rp = 58.73 [27.29] Re**  
a = 0.7458 [0.2703] AU  
  
Ag = 2657.37 [1295.59] [2.05σ]  
**Teffp = 7244 [351] K [18.24σ]**

DV Diagnostic Results:

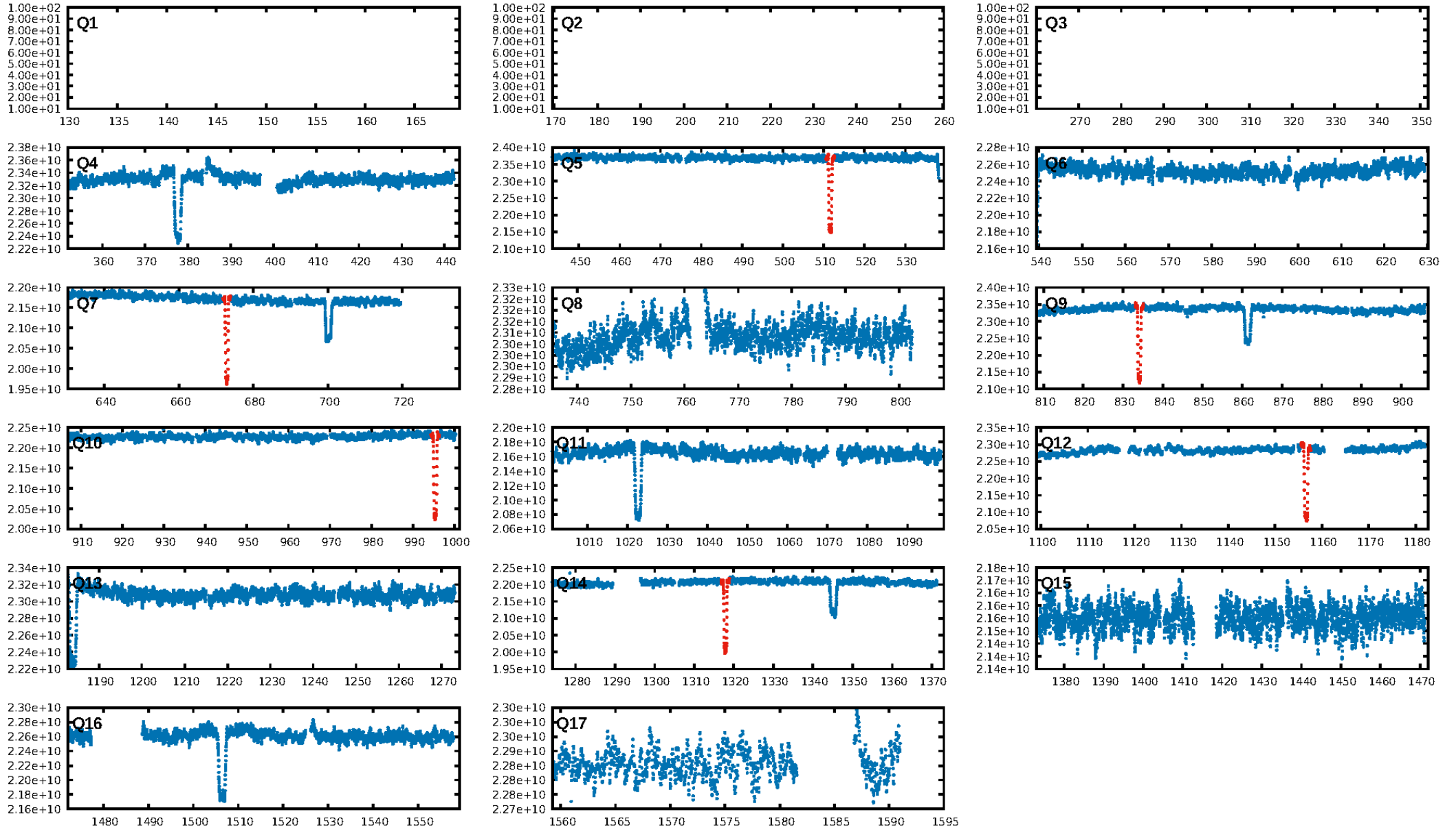
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ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 97.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: N/A

Centroid-sig: 0.0%
Centroid-so: 1.136 arcsec [36.73σ]
OotOffset-rm: 4.779 arcsec [1.44σ]
KicOffset-rm: 2.380 arcsec [0.61σ]
OotOffset-st: 2/1/0/2 [5]
KicOffset-st: 2/1/0/2 [5]
DiffImageQuality-fgm: 0.00 [0/5]
DiffImageOverlap-fno: 1.00 [5/5]
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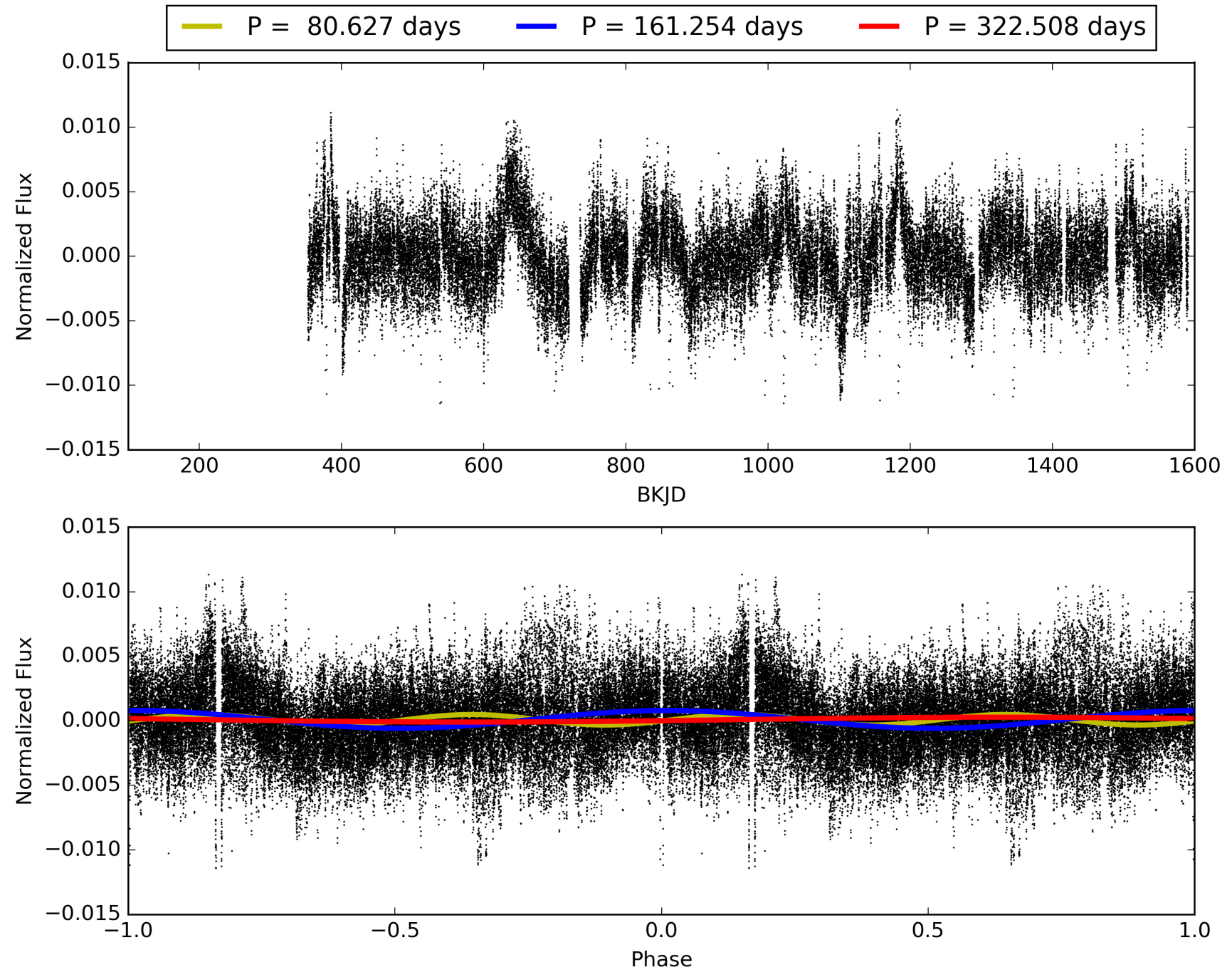
**Software Revision:** <svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958> -- **Date Generated:** 30-Jan-2016 04:31:06 Z

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

# TCE 005217733-01, PDC Light Curves

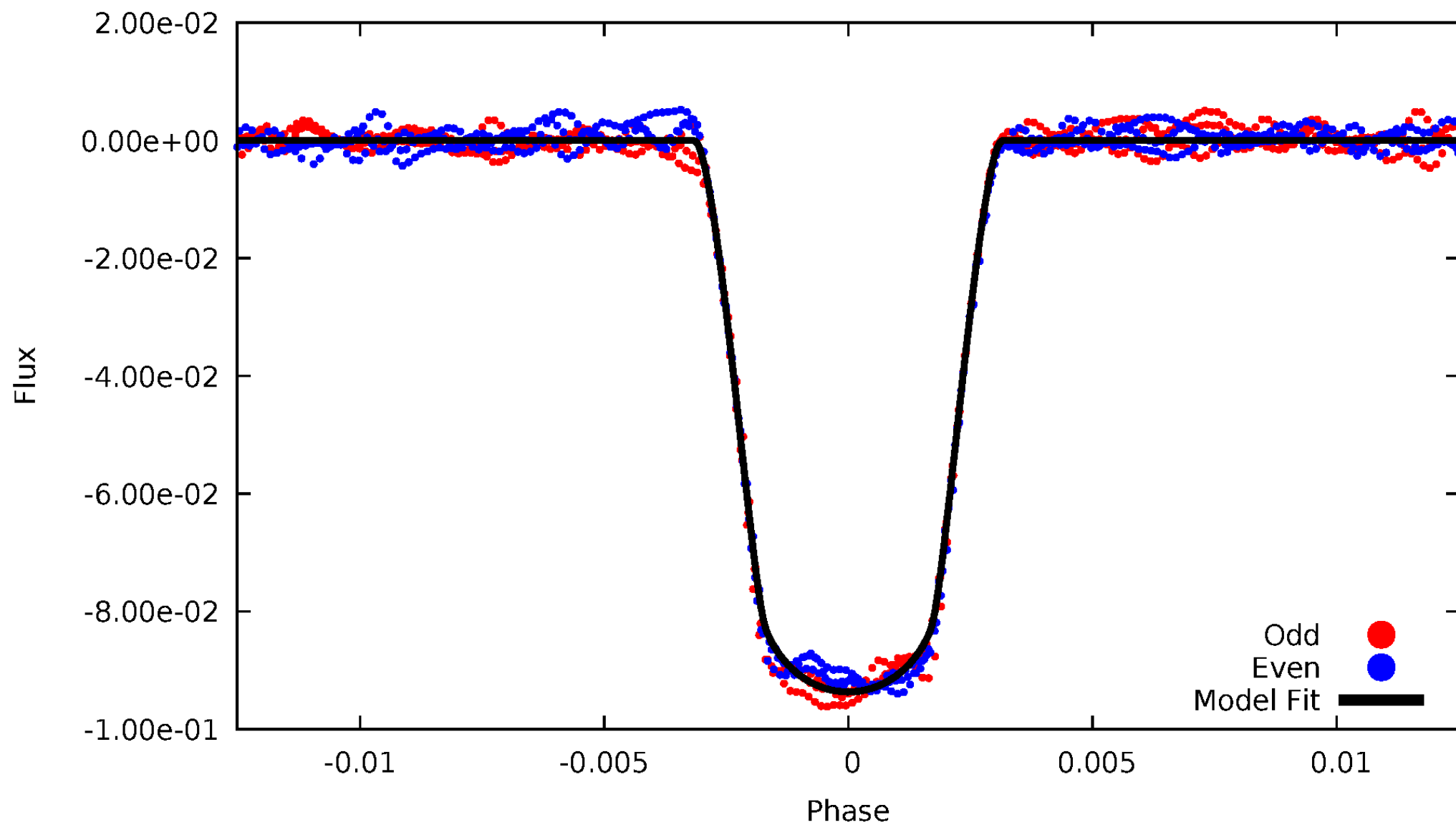


# TCE 005217733-01



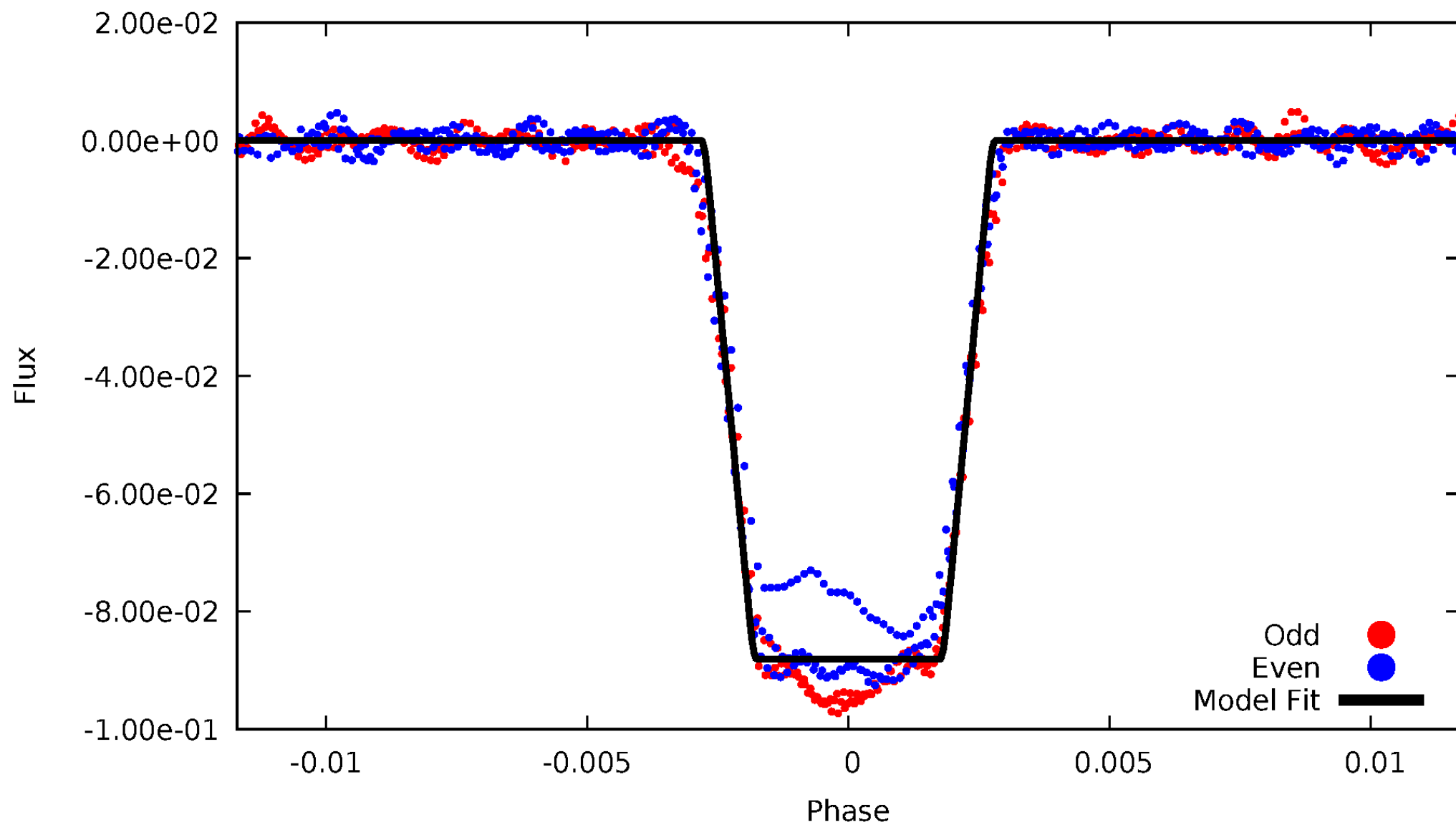
# DV Odd/Even

TCE 005217733-01



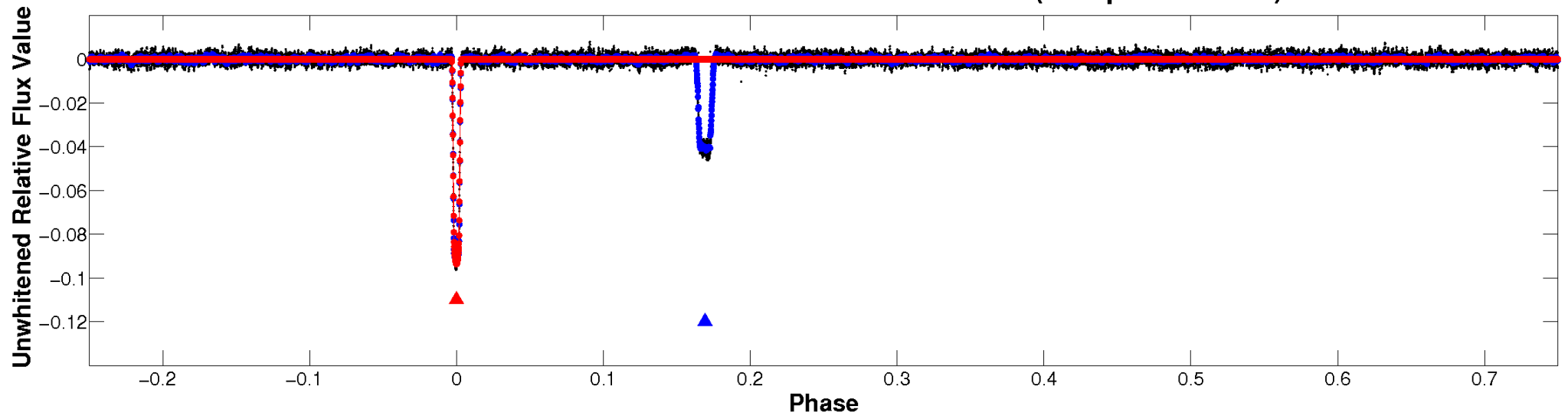
# ALT Odd/Even

TCE 005217733-01

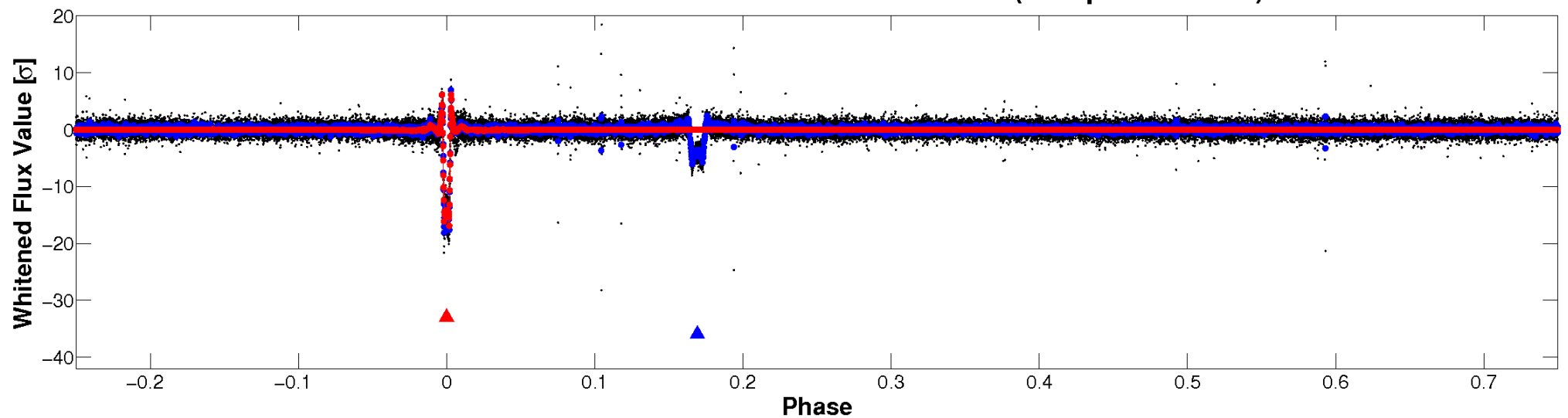


# Non-Whitened Vs. Whitened Light Curve

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

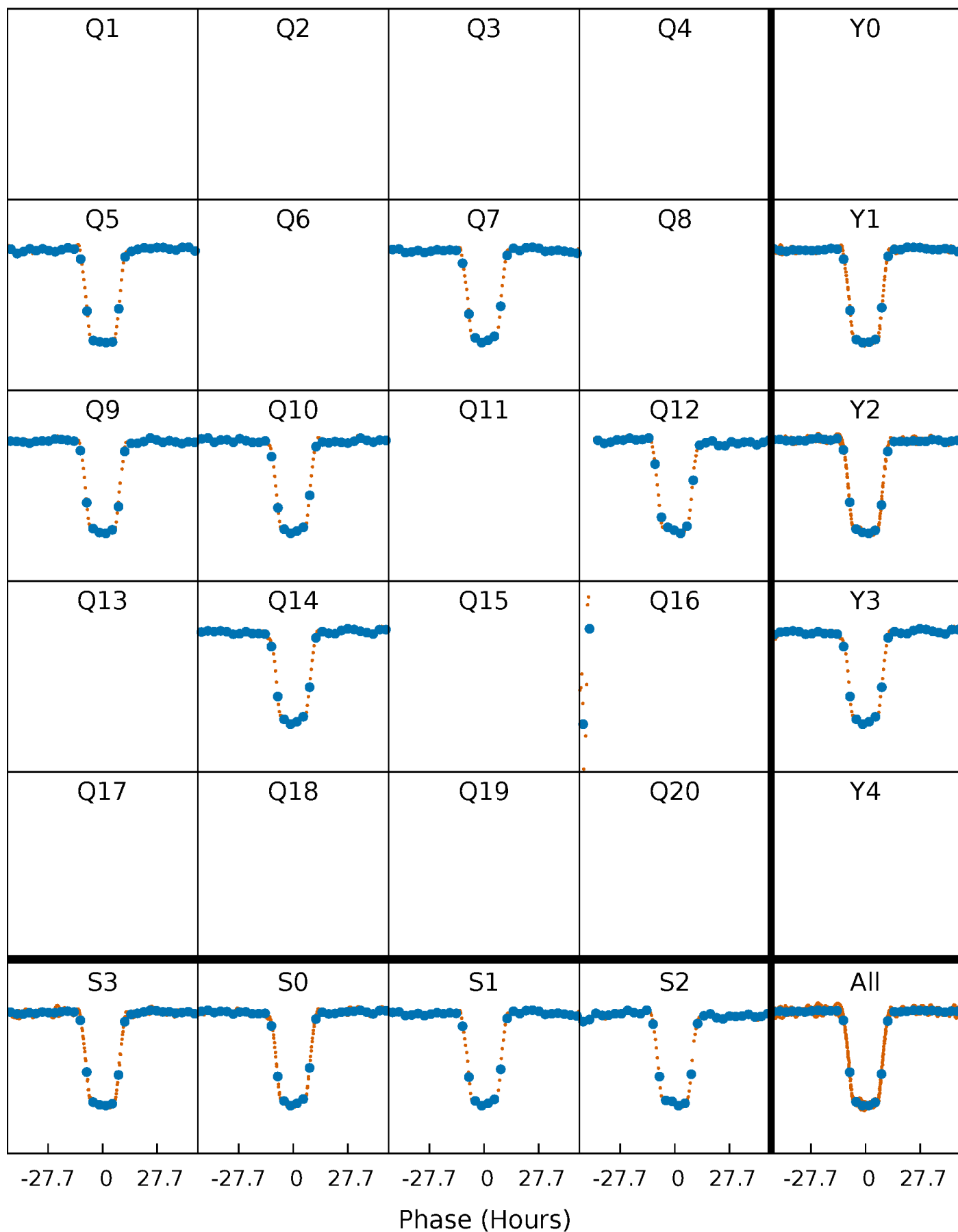


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

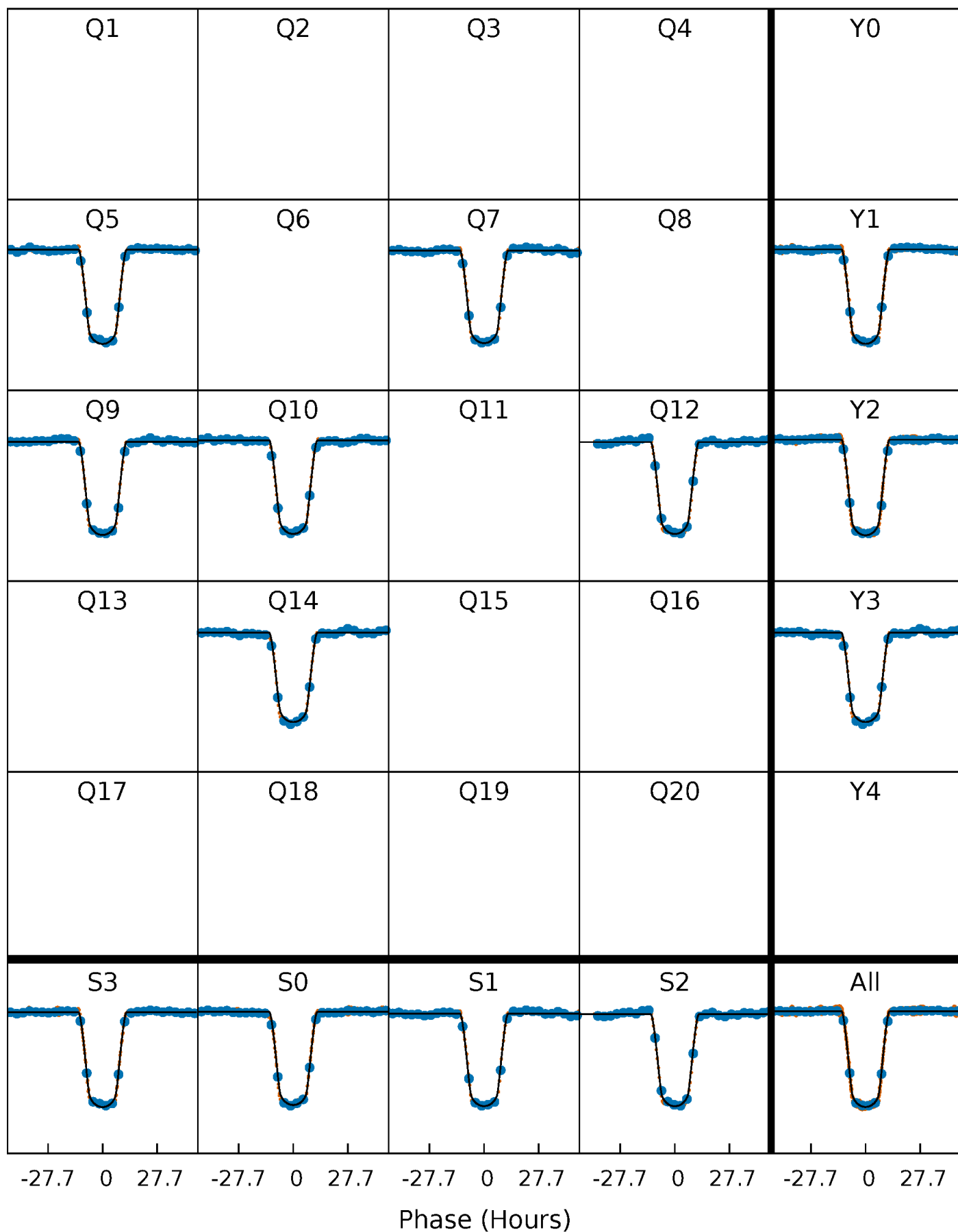
TCE 005217733-01 P=161.254246 Days  $T_0=189.097302$  (BKJD)





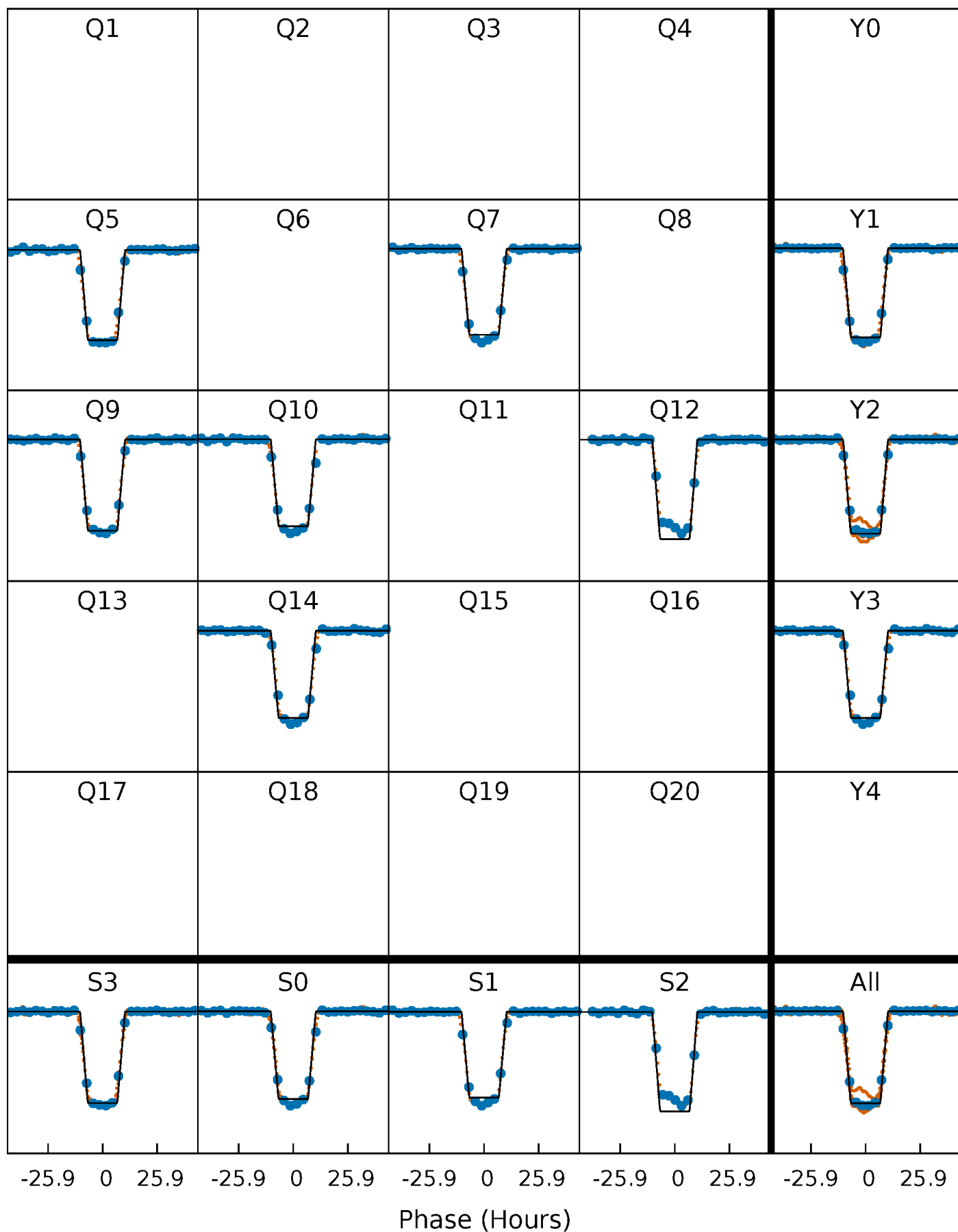
# DV Quarter-Phased Transit Curves

TCE 005217733-01 P=161.254246 Days  $T_0=189.097302$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

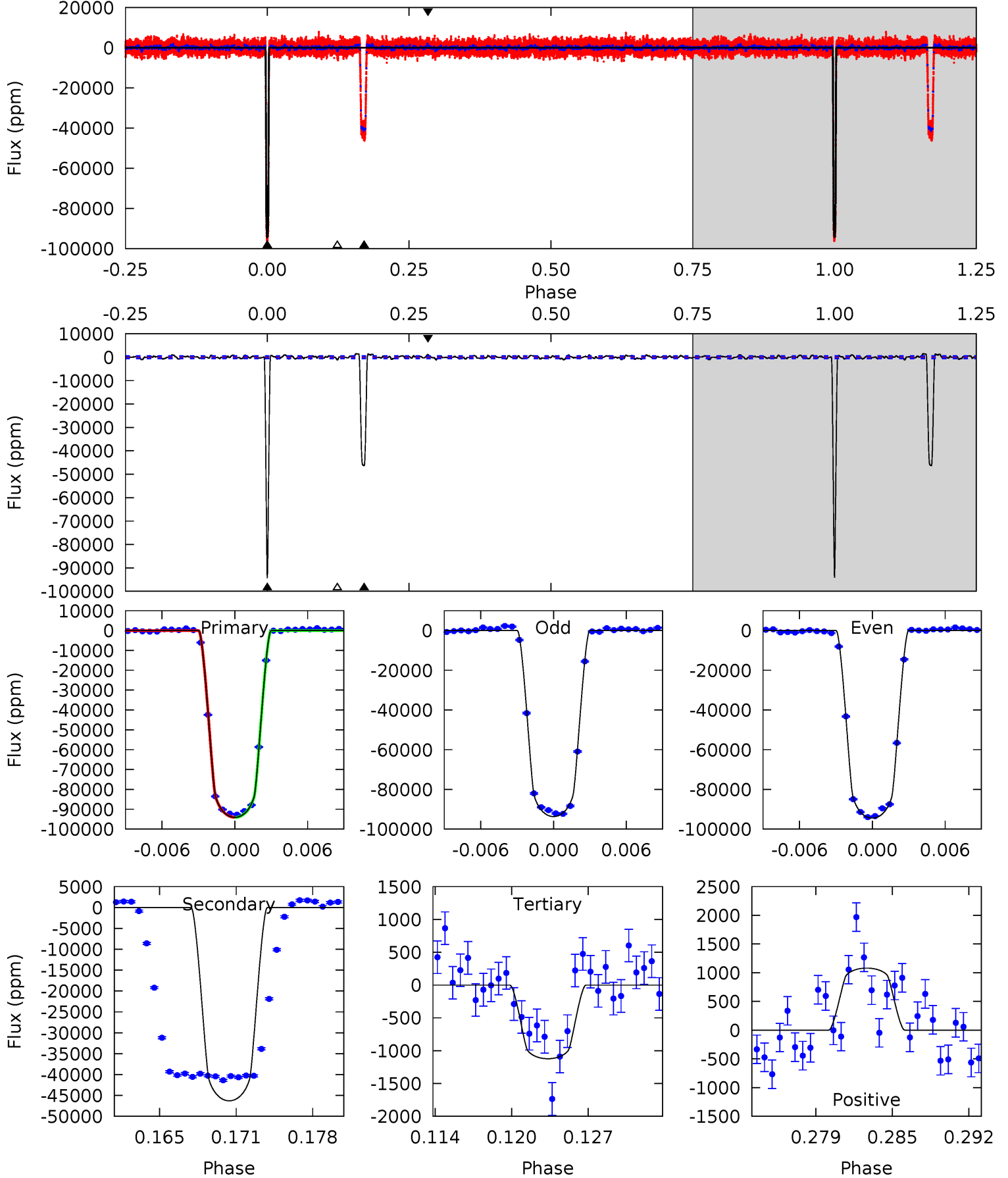
TCE 005217733-01 P=161.248033 Days  $T_0=189.126826$  (BKJD)



# DV Model-Shift Uniqueness Test

005217733-01, P = 161.254246 Days, E = 189.097302 Days

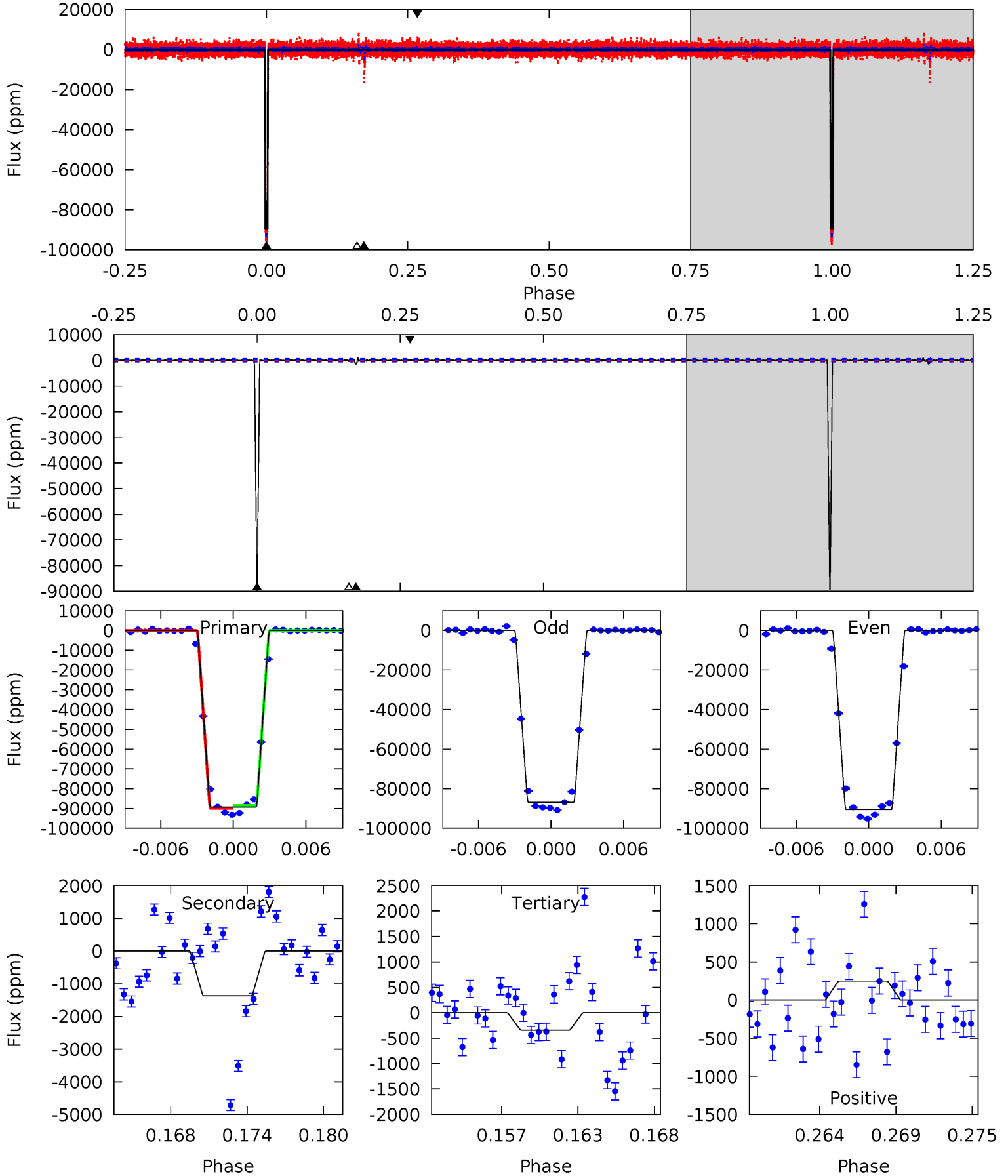
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
888.6	437.1	10.6	10.2	5.11	2.73	6.32	878.0	878.4	426.5	426.9	3.74	1.00	0.02	0.14



# Alt Model-Shift Uniqueness Test

005217733-01, P = 161.248033 Days, E = 189.126826 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
913.3	14.0	3.51	2.54	5.14	2.77	0.91	909.8	910.7	10.5	11.5	19.0	0.99	0.01	7.47



### Stellar Parameters For KIC 005217733

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$9341^{+263}_{-451}$	$4.222^{+0.105}_{-0.245}$	$0.070^{+0.150}_{-0.650}$	$1.870^{+0.869}_{-0.373}$	$2.128^{+0.424}_{-0.471}$	$0.458^{+0.278}_{-0.265}$
	+3%/-5%	+2%/-6%	+214%/-929%	+46%/-20%	+20%/-22%	+61%/-58%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 005217733-01 / KOI 3155.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-46293 \pm 106$	$59.61^{+14.43}_{-7.68}$	$923^{+94}_{-69}$	$7860^{+200}_{-357}$	$4057^{+1027}_{-1208}$
Alt.	$-1369 \pm 98$	$61.24^{+13.71}_{-7.01}$	$923^{+87}_{-65}$	$3551^{+71}_{-86}$	$107^{+28}_{-32}$

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

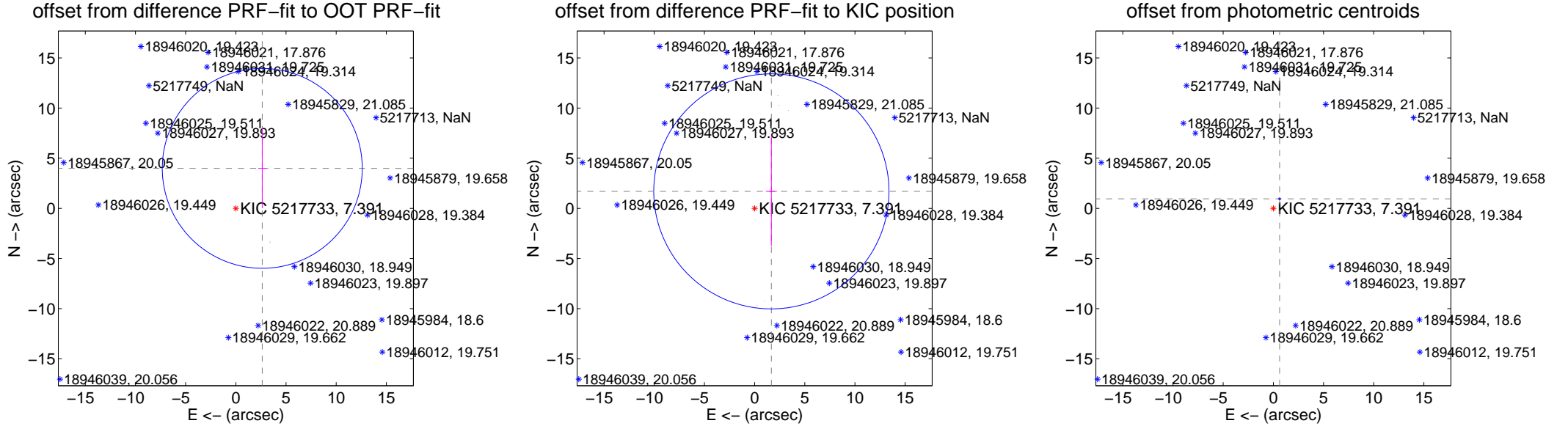
## DV Centroid Data

Supplemental centroid analysis for 005217733-01. **Kepler magnitude: 7.39.** Transit SNR 196.05

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 7.12 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.779 \pm 3.322$	1.44	$-2.635 \pm 0.401$	$3.988 \pm 3.972$
PRF-fit source offset from KIC position	$2.380 \pm 3.907$	0.61	$-1.671 \pm 0.546$	$1.695 \pm 5.459$
photometric centroid source offset	$1.14 \pm 0.03$	<b>36.73</b>	$-0.62 \pm 0.02$	$0.95 \pm 0.03$

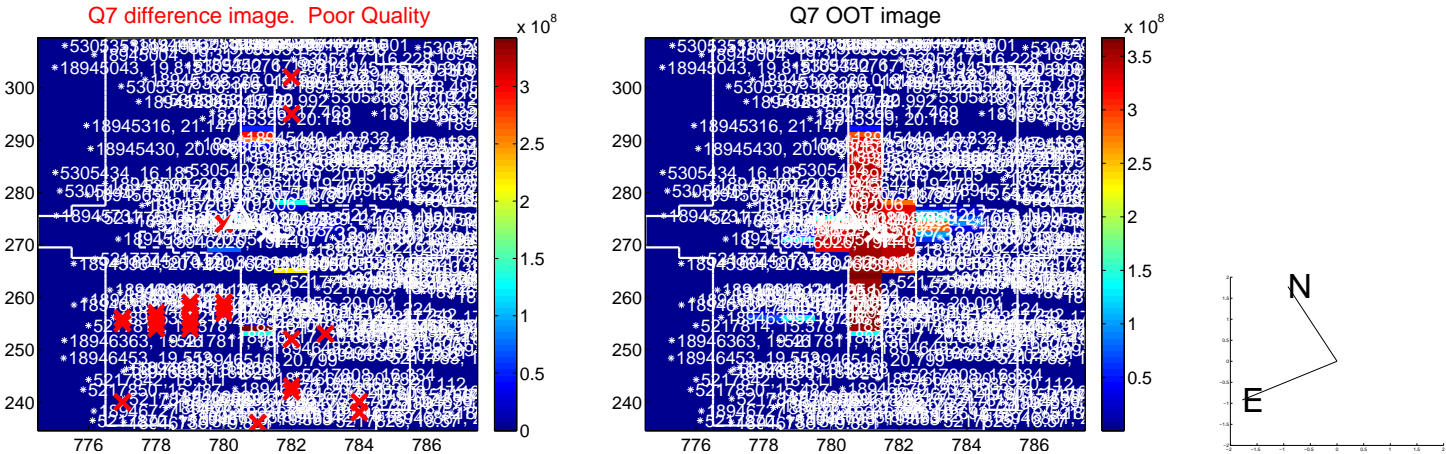
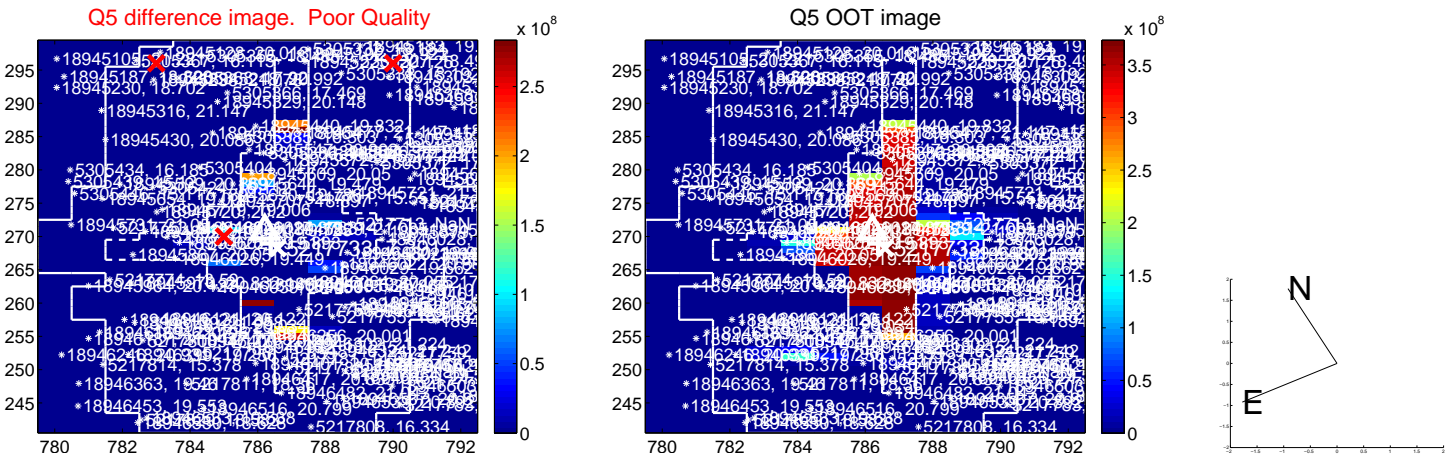


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

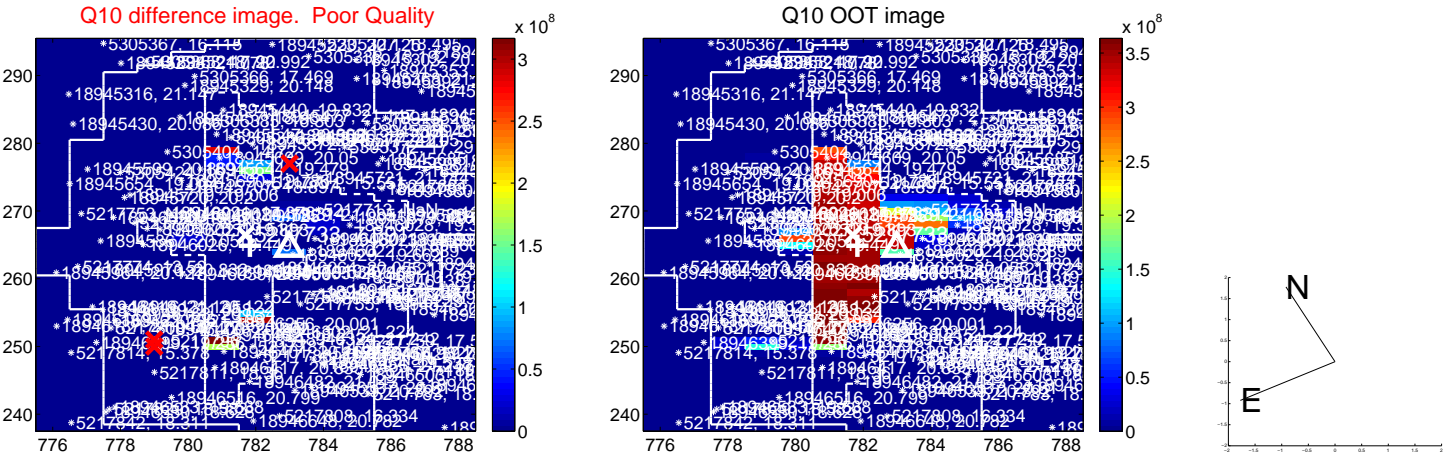
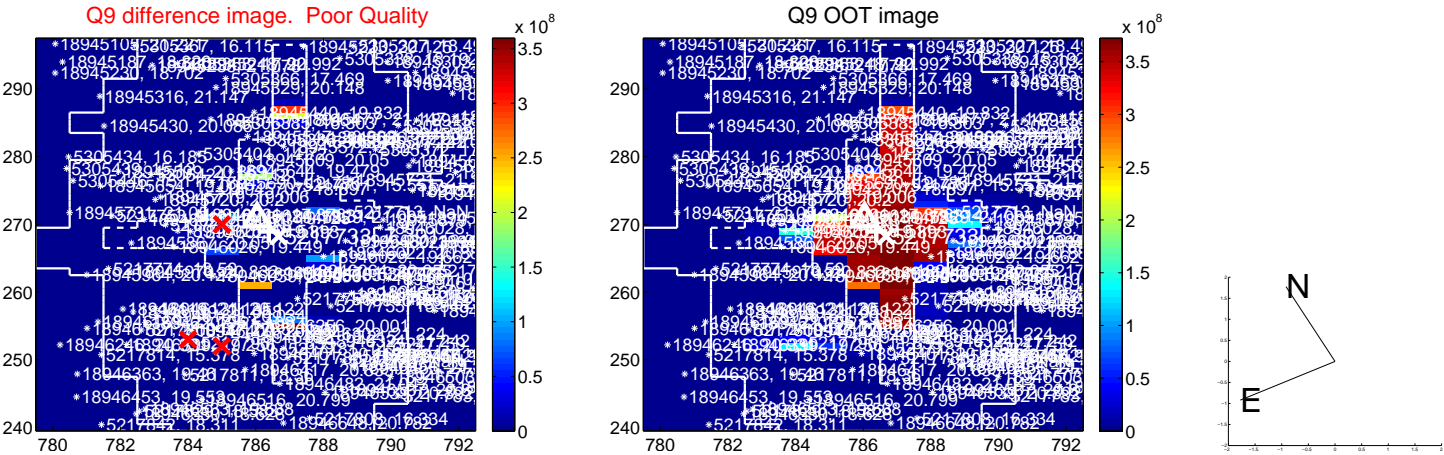


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

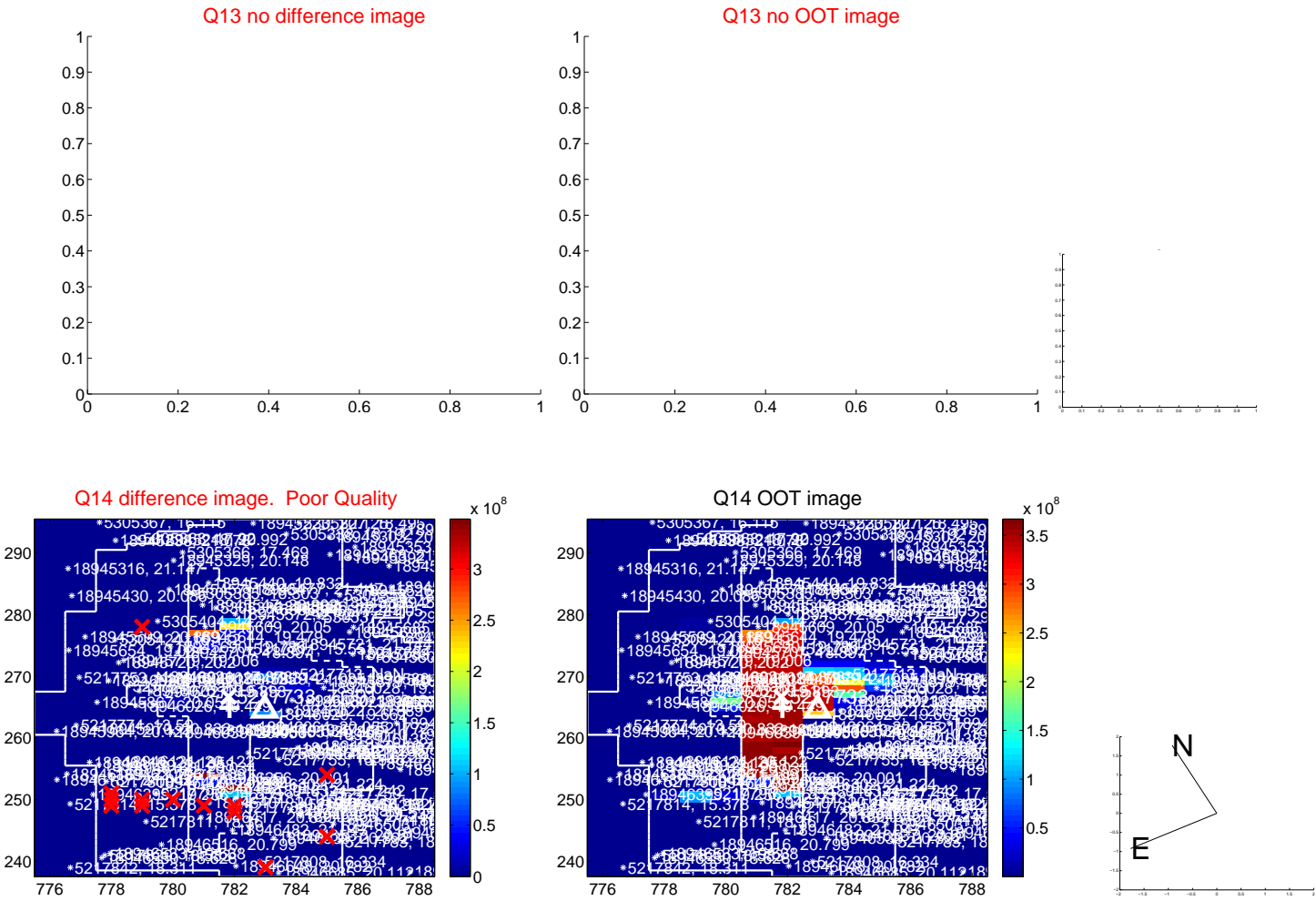




white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



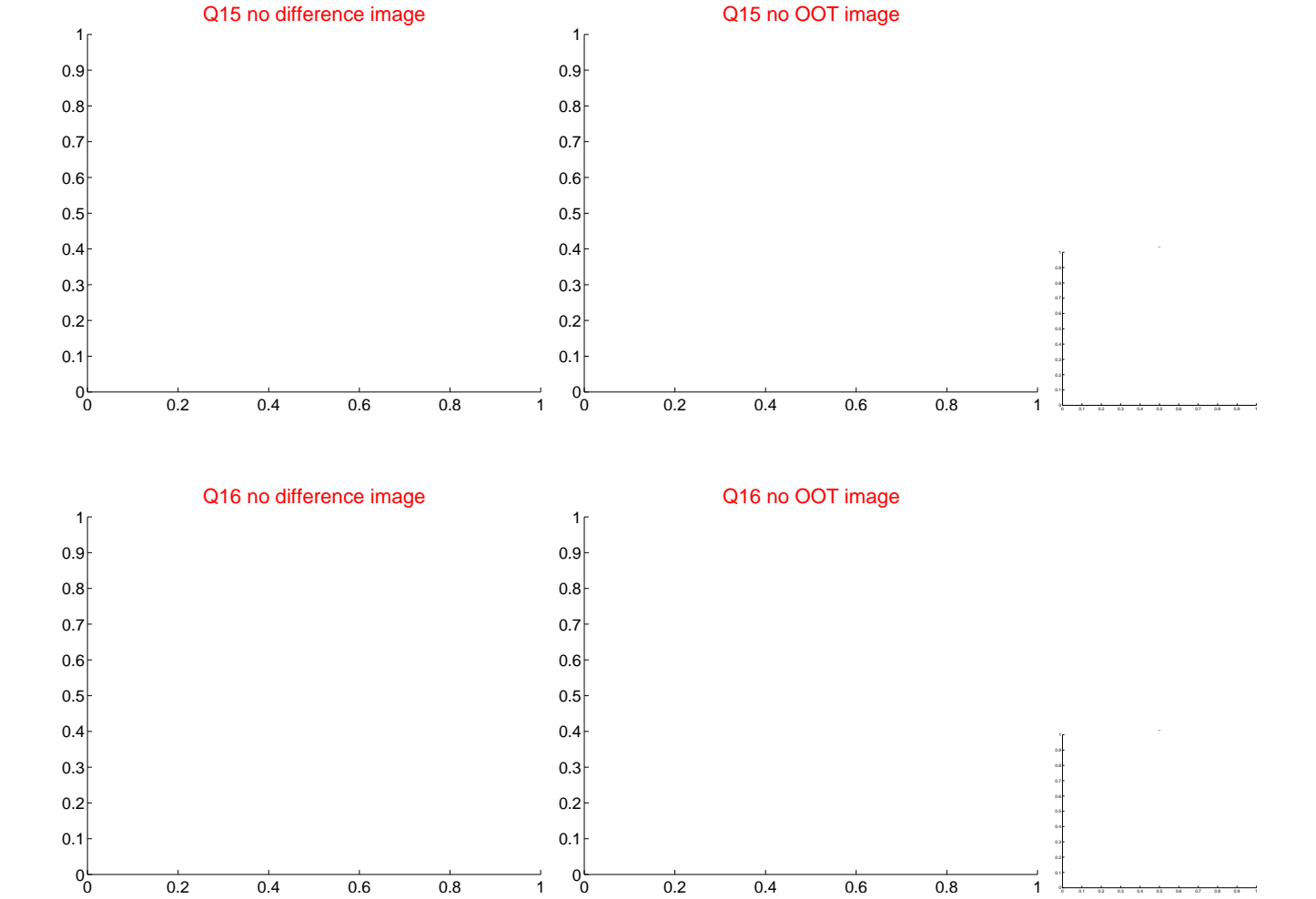
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



Q14 difference image. Poor Quality

Q14 OOT image

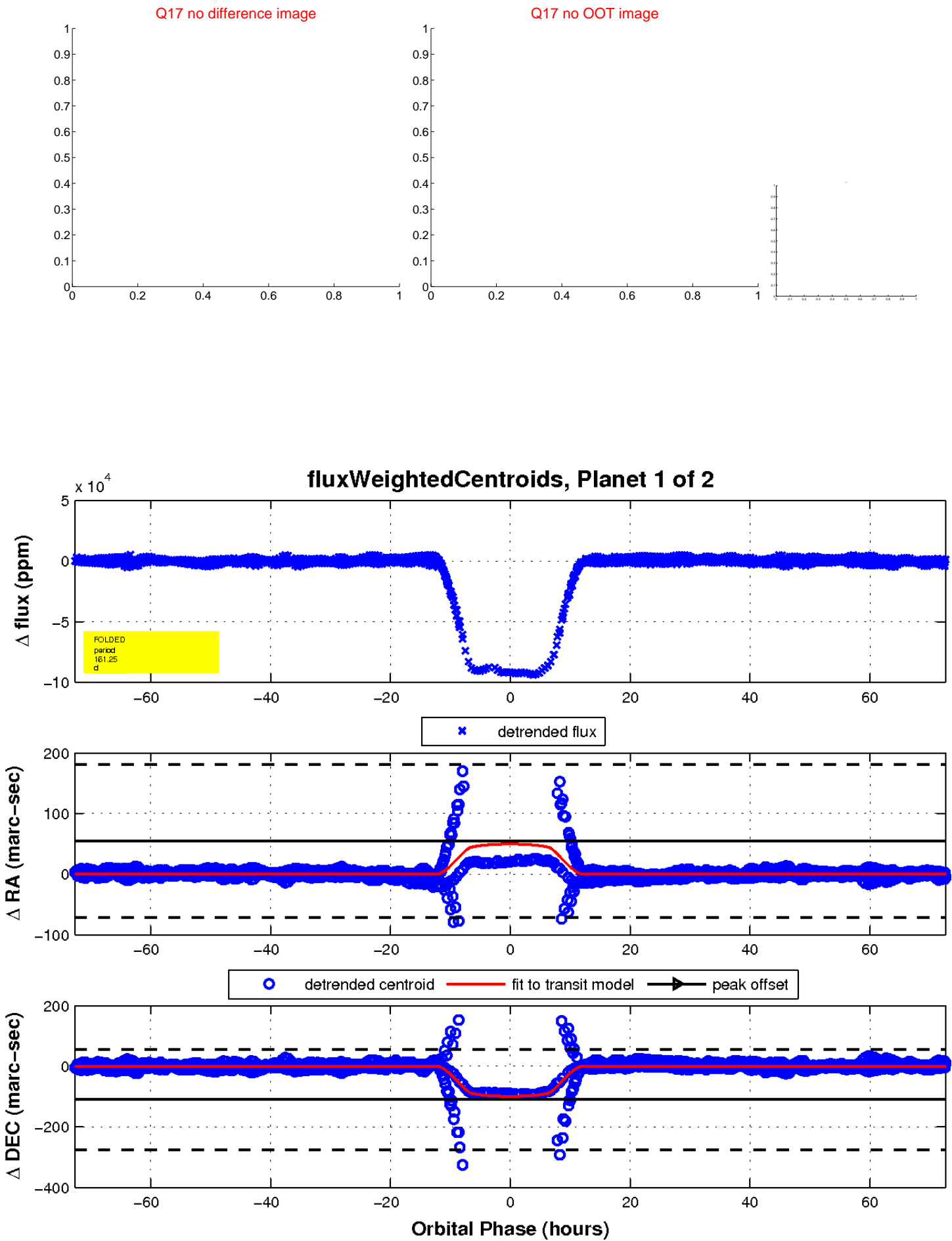
Q14 OOT image



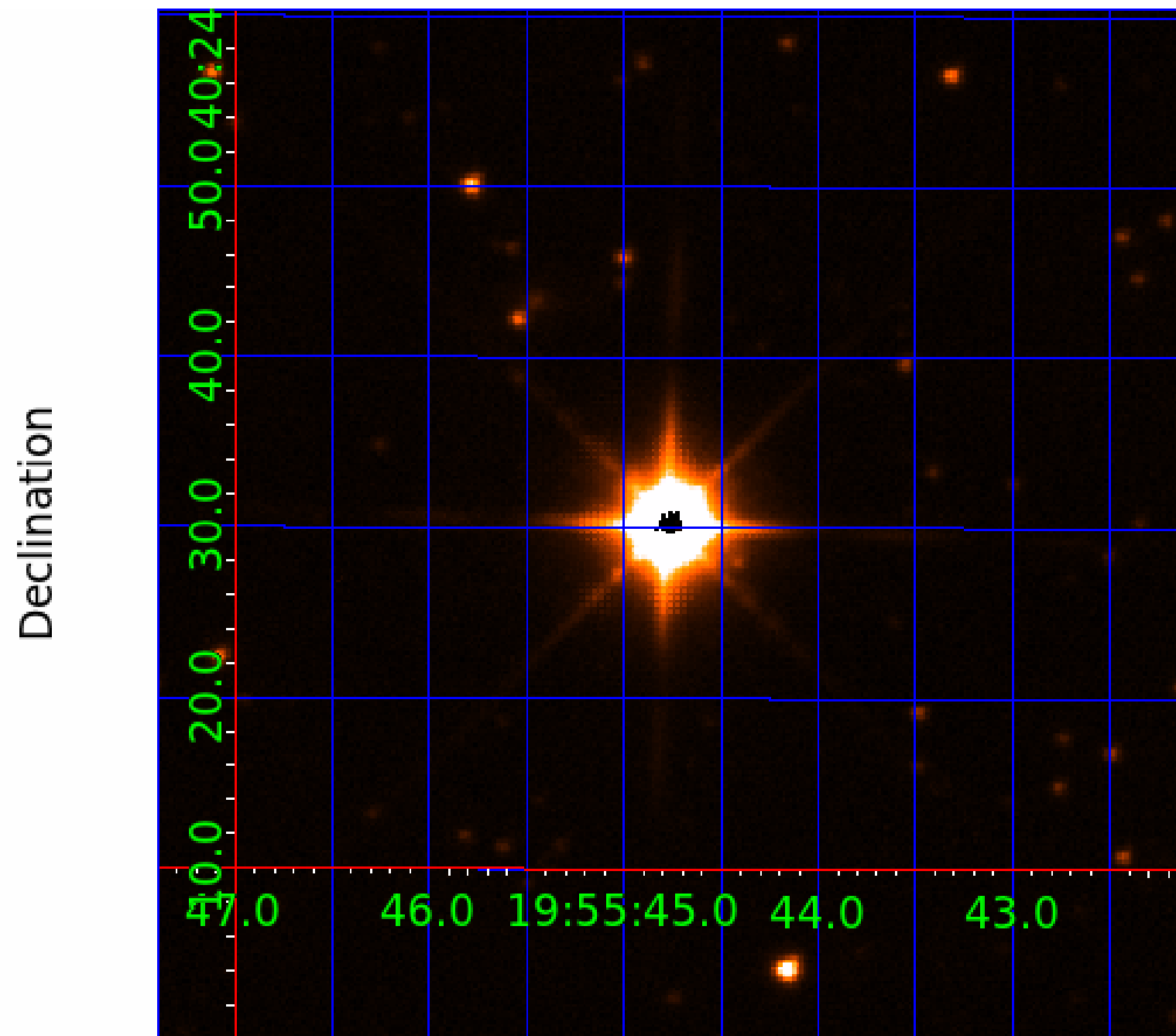
Q16 no difference image

Q16 no OOT image

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



UKIRT Image



# KIC 005217733

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005217733-01	OBS	3155.01	161.254247	189.097302	93658.6	24.218	129.6	196.1	1.87	9341	58.73	42.89
005217733-02	OBS	No	161.256074	216.383861	43200.5	49.395	33.3	152.3	1.87	9341	40.69	42.89

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005217733-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—CENT_SATURATED
005217733-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—CENT_SATURATED

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

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

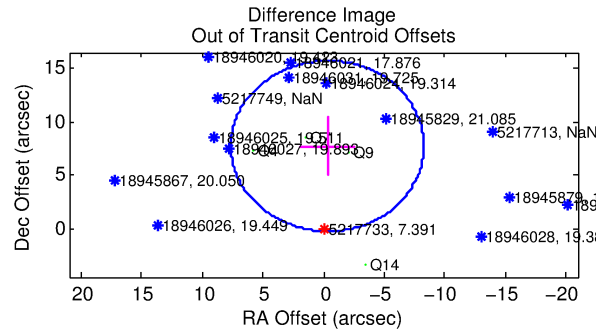
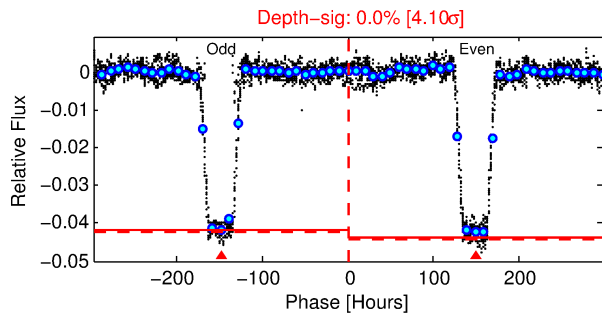
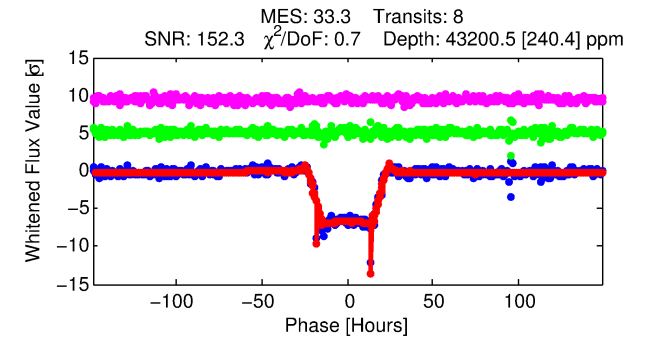
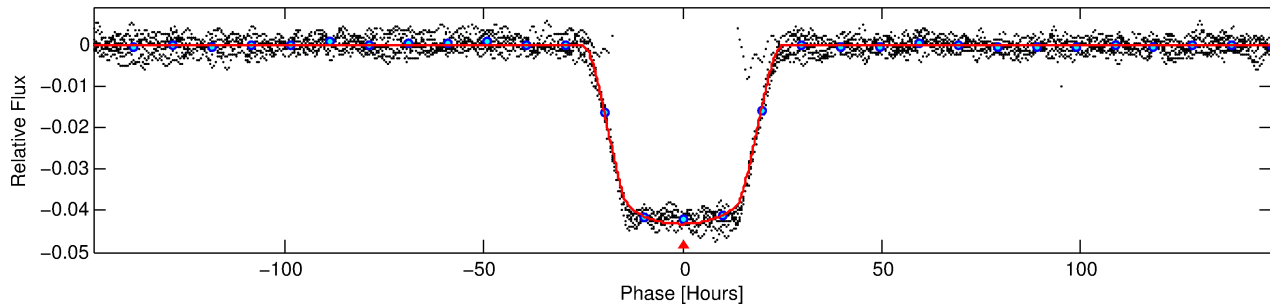
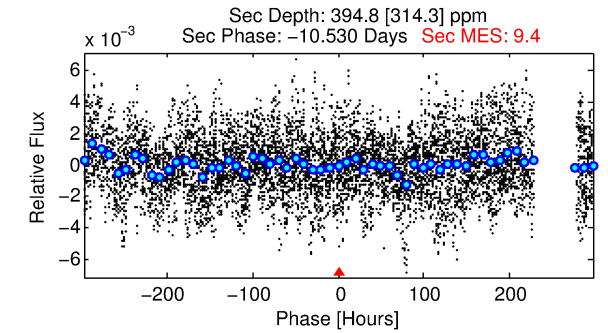
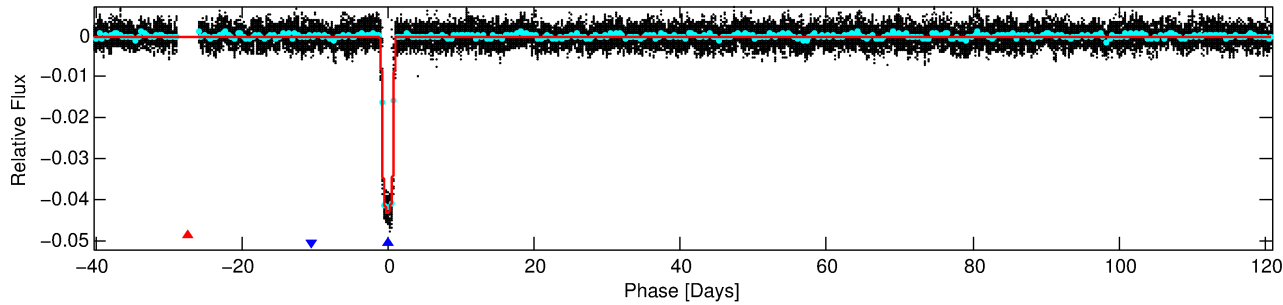
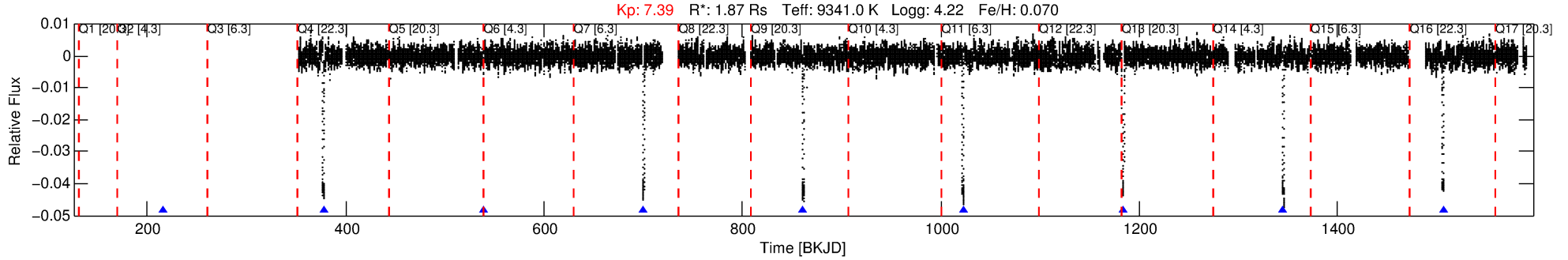
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005217733-02

No Significant Match Found

# DV One-Page Summary

KIC: 5217733 Candidate: 2 of 2 Period: 161.256 d  
KOI: K03155 Corr: No Ephemeris Match



DV Fit Results:

Period = 161.25607 [0.00096] d  
 Epoch = 216.3839 [0.0045] BKJD  
 Rp/R\* = 0.1994 [0.0006]  
 a/R\* = 27.16 [0.20]  
 b = 0.50 [0.01]  
 Seff = 42.89 [22.48]  
 Teq = 653 [86] K  
 Rp = 40.69 [18.91] Re  
 a = 0.7458 [0.2703] AU  
 Ag = 72.94 [68.09] [1.06σ]  
 Teffp = 2948 [604] K [3.76σ]

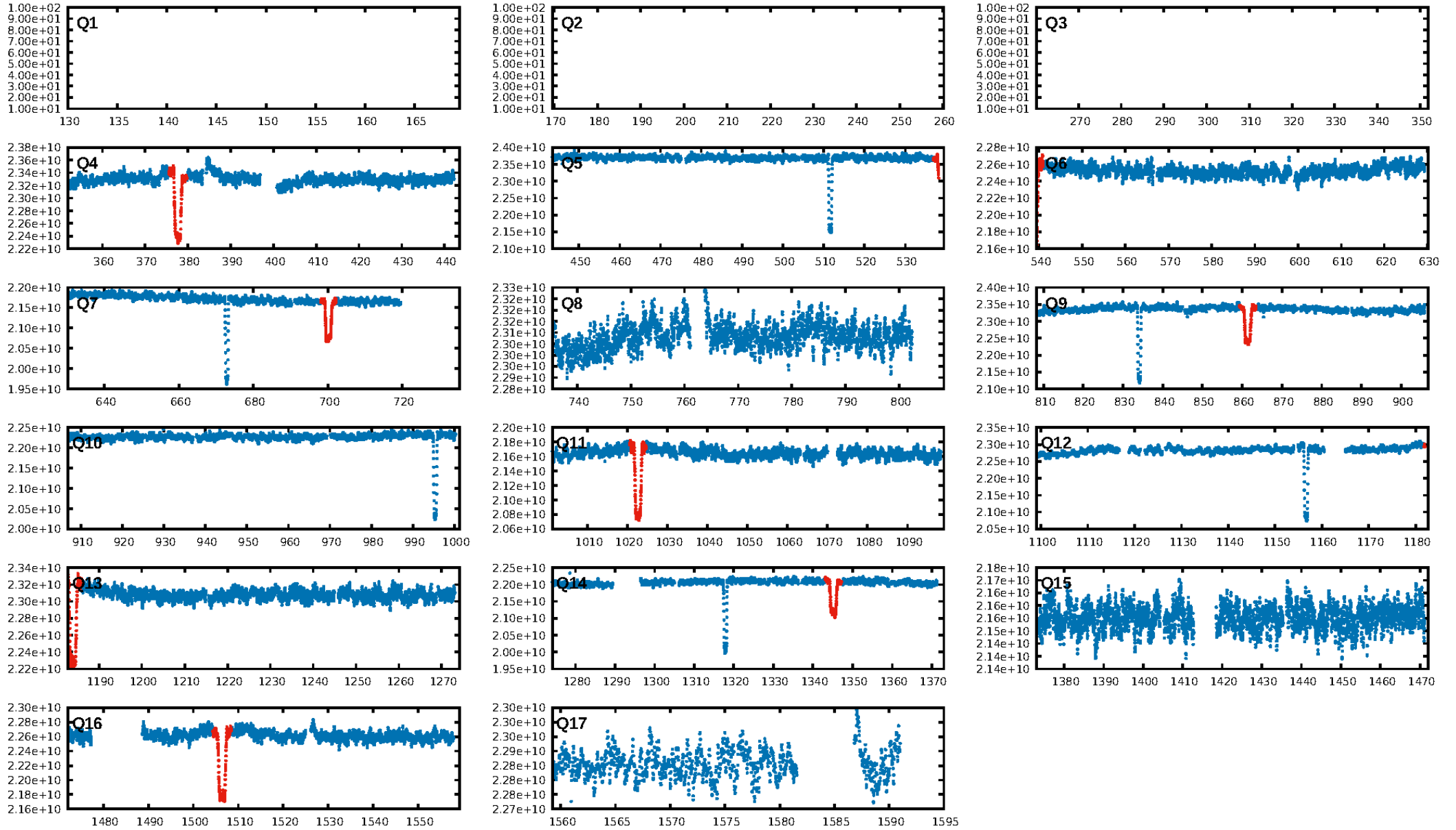
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]  
 LongPeriod-sig: N/A  
 ModelChiSquare2-sig: 0.0%  
 ModelChiSquareGof-sig: 100.0%  
 Bootstrap-pfa: 2.92e-56  
 RollingBand-fgt: 1.00 [8/8]  
 GhostDiagnostic-chr: N/A  
 Centroid-sig: 0.0%  
 Centroid-so: 2.306 arcsec [41.39σ]  
 OotOffset-rm: 7.749 arcsec [2.92σ]  
 KicOffset-rm: 1.018 arcsec [0.19σ]  
 OotOffset-st: 1/1/1/1 [4]  
 KicOffset-st: 1/1/1/1 [4]  
 DiffImageQuality-fgm: 0.00 [0/4]  
 DiffImageOverlap-fno: 1.00 [4/4]

**Software Revision: [svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958](https://murzim.repo.soc/tags/release/9.3.42@60958) -- Date Generated: 30-Jan-2016 04:31:13 Z**

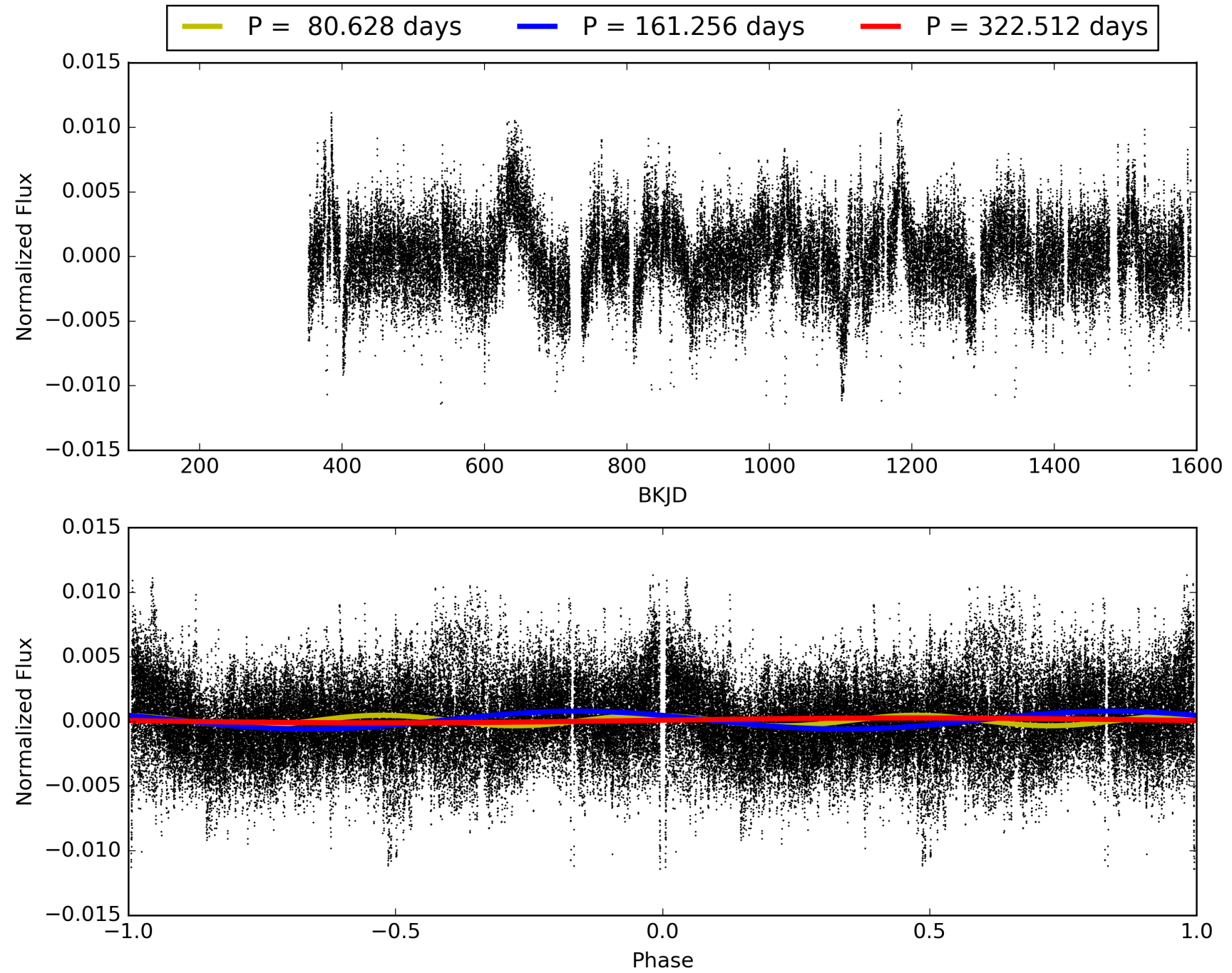
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005217733-02, PDC Light Curves





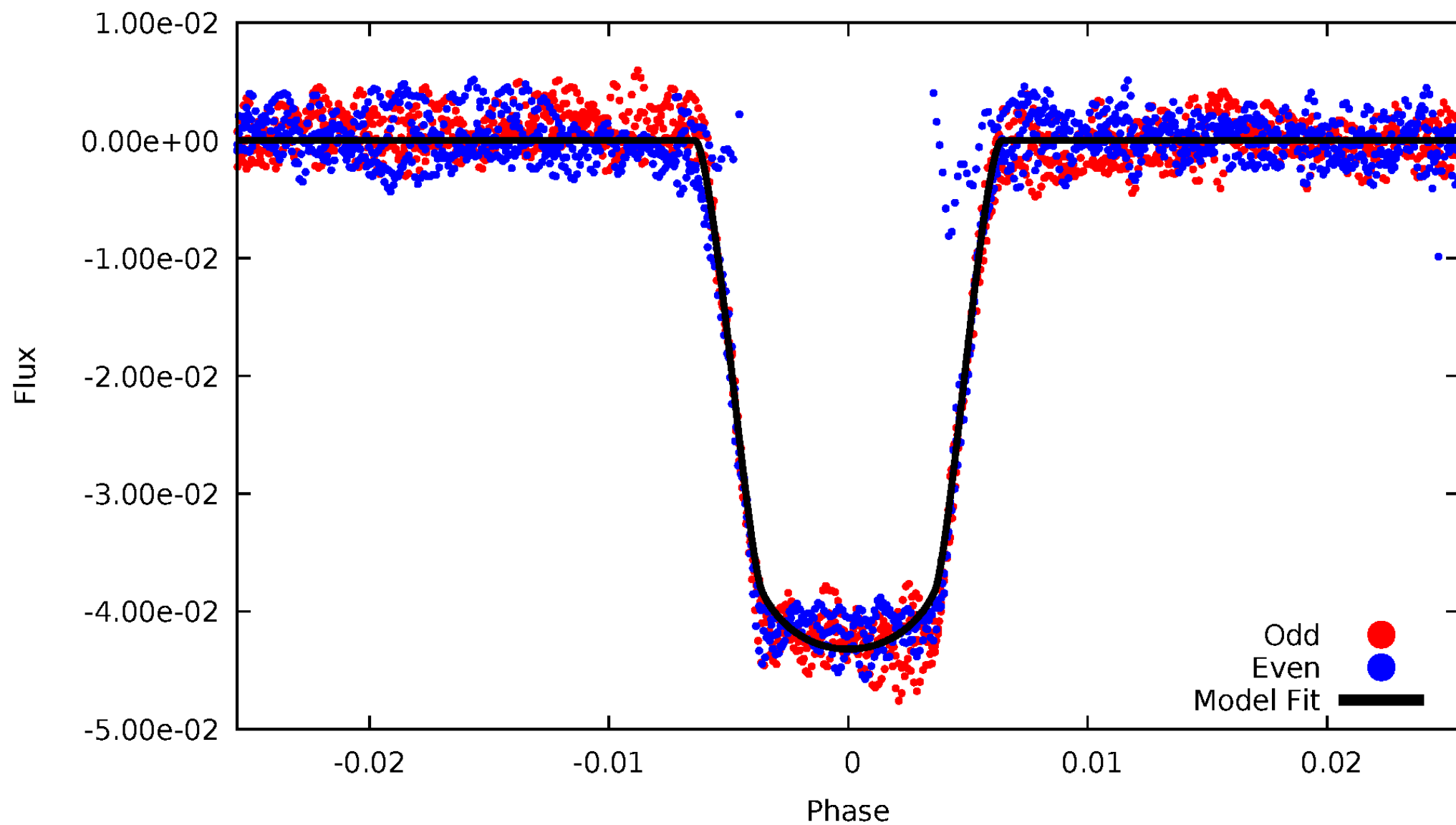
TCE 005217733-02





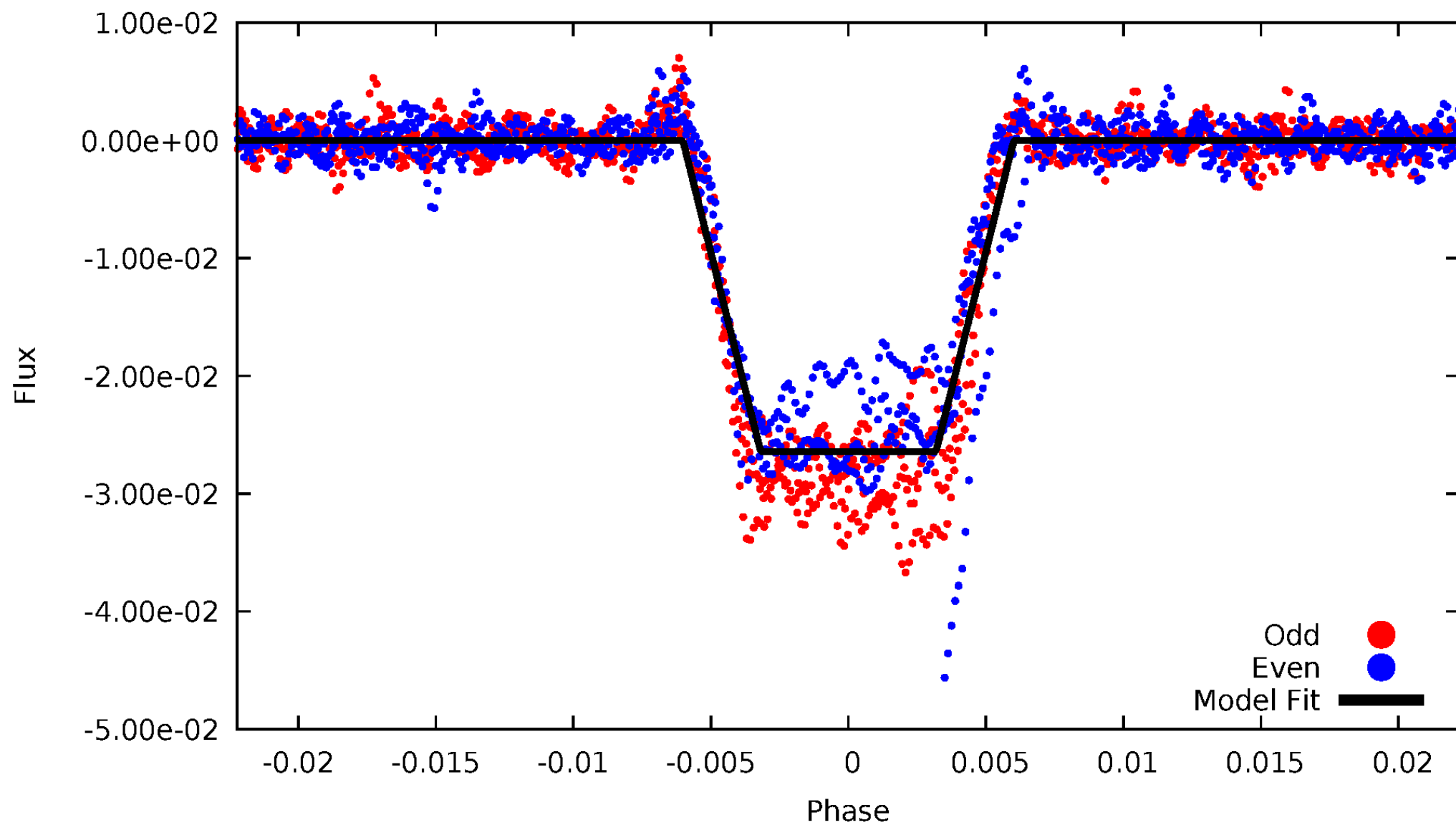
# DV Odd/Even

TCE 005217733-02



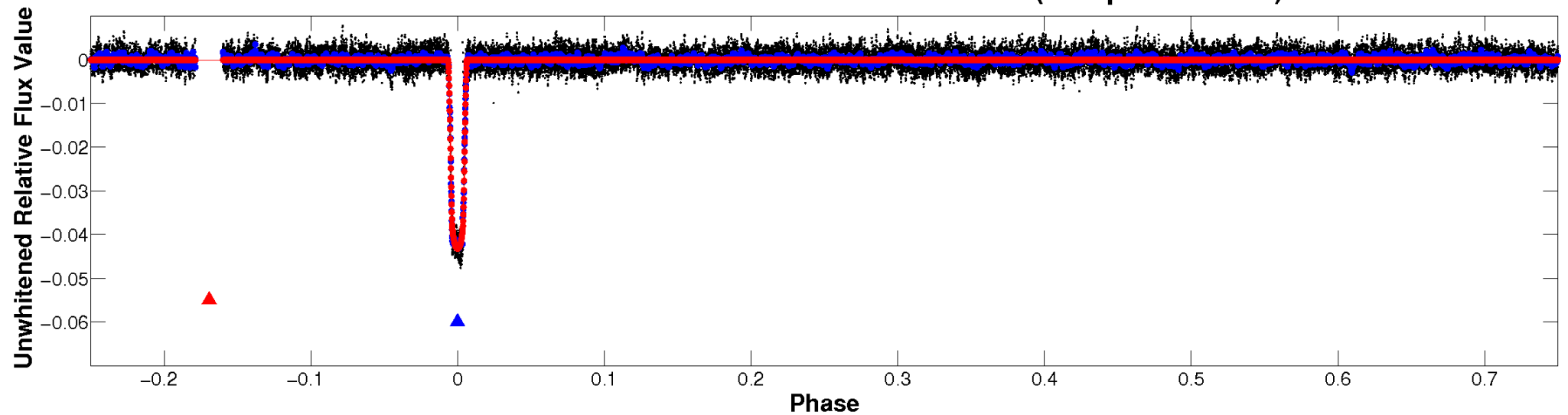
# ALT Odd/Even

TCE 005217733-02

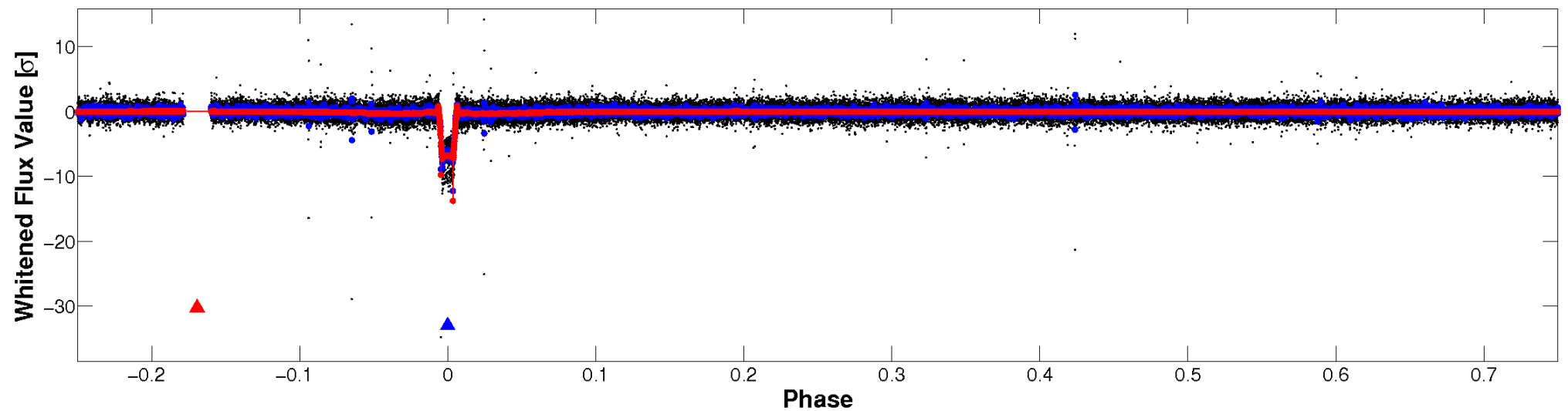


# Non-Whitened Vs. Whitened Light Curve

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

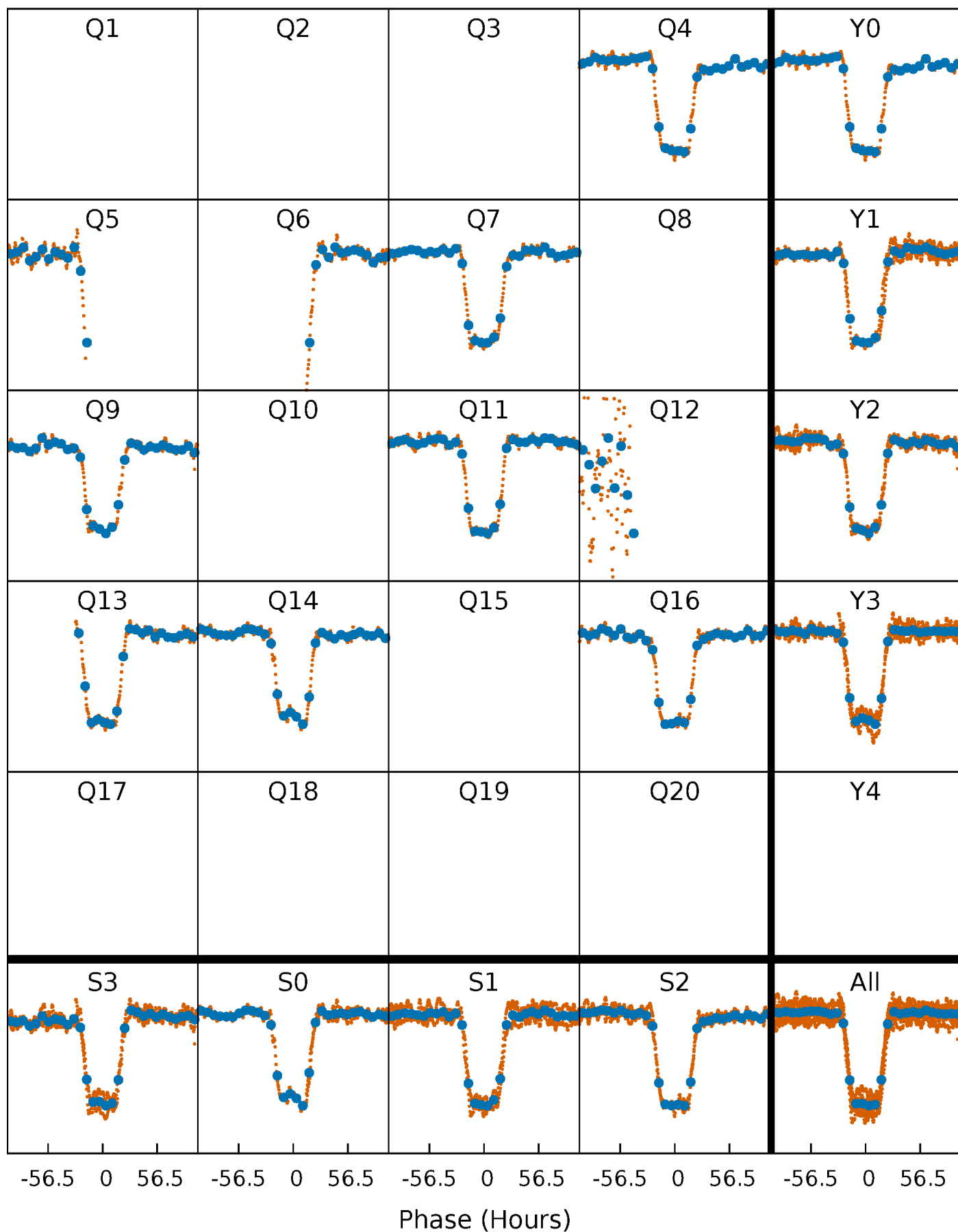


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



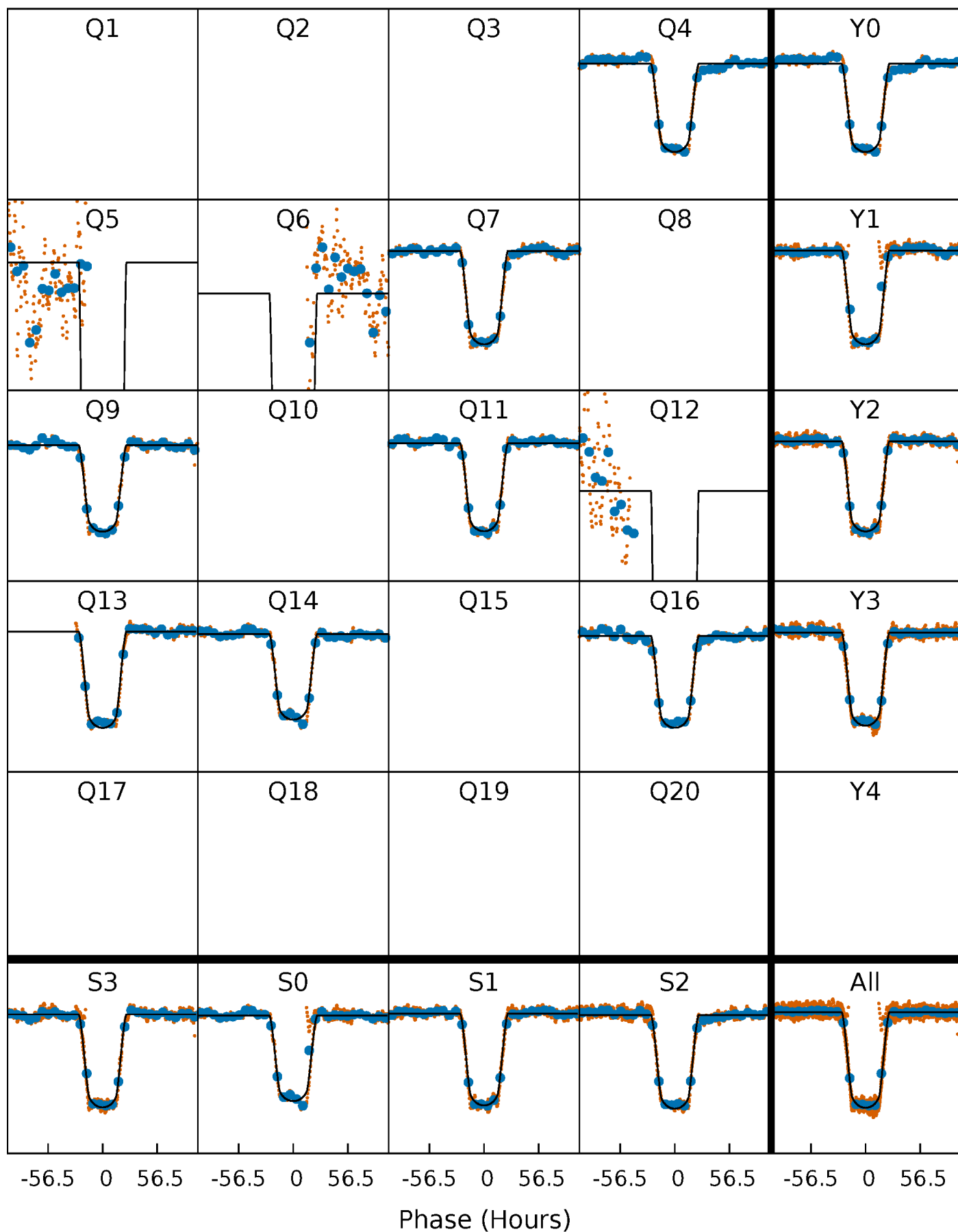
# PDC Quarter-Phased Transit Curves

TCE 005217733-02 P=161.256074 Days  $T_0=216.383861$  (BKJD)



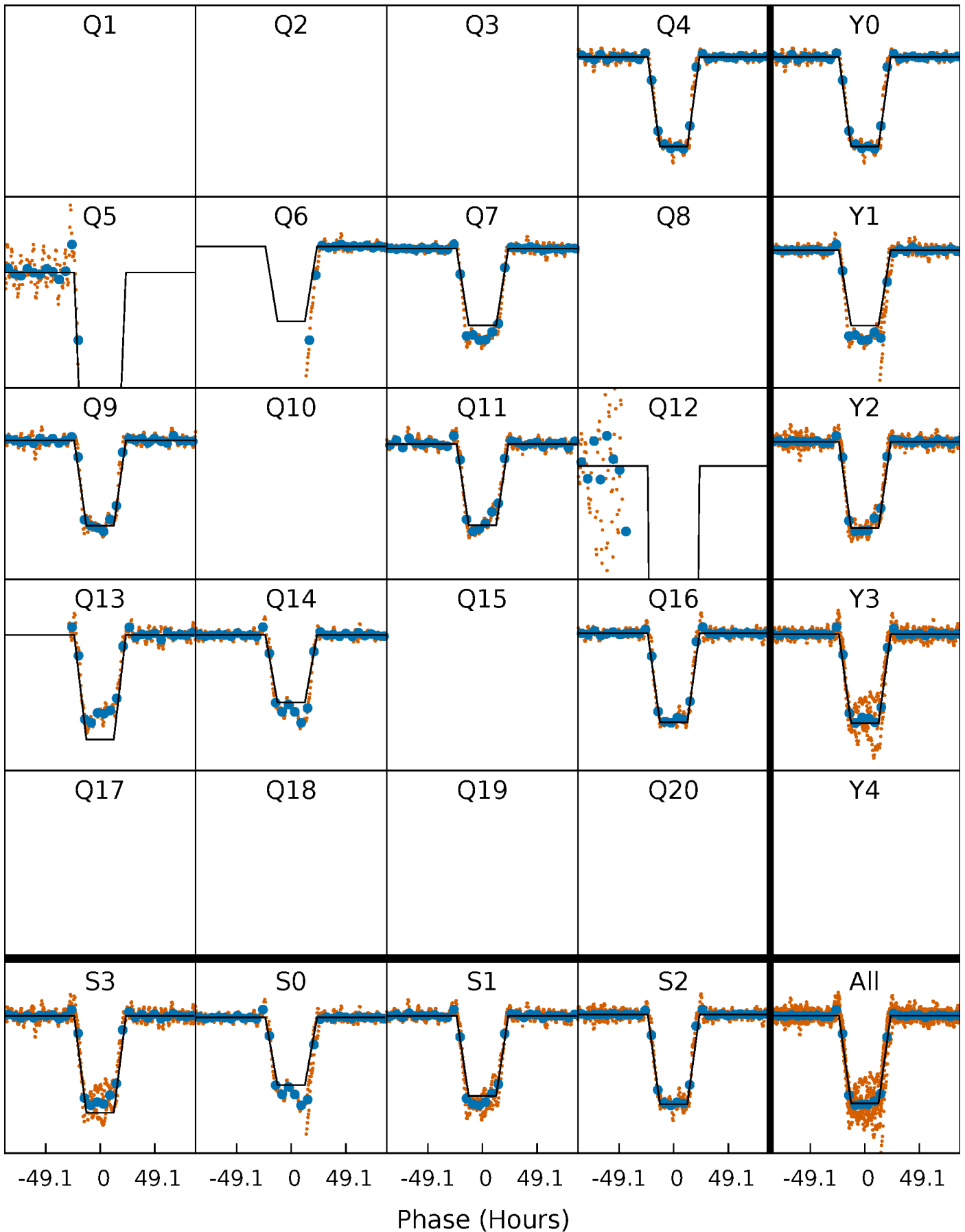
# DV Quarter-Phased Transit Curves

TCE 005217733-02 P=161.256074 Days  $T_0=216.383861$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

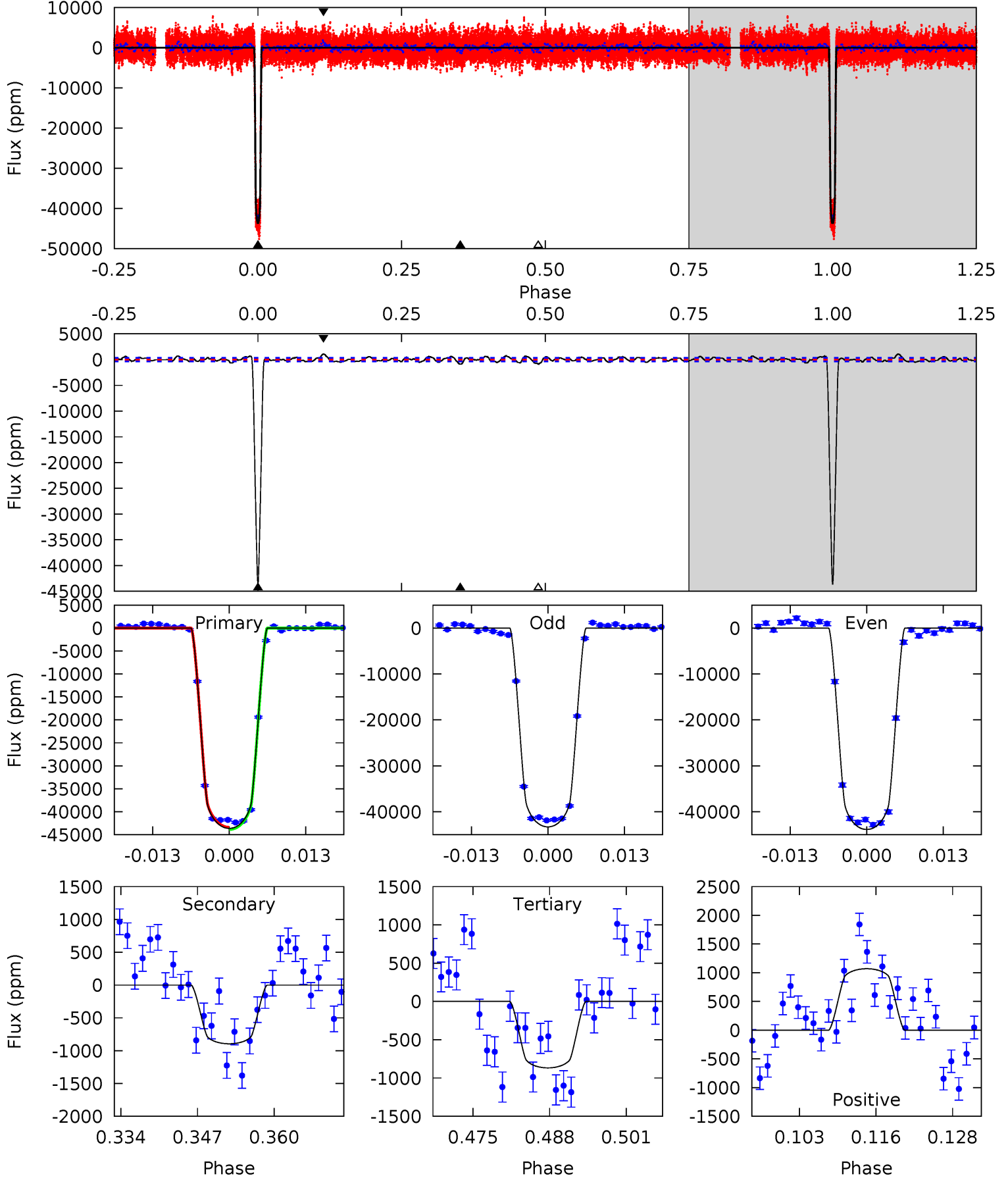
TCE 005217733-02 P=161.254844 Days  $T_0=216.396259$  (BKJD)



# DV Model-Shift Uniqueness Test

005217733-02, P = 161.256074 Days, E = 216.383861 Days

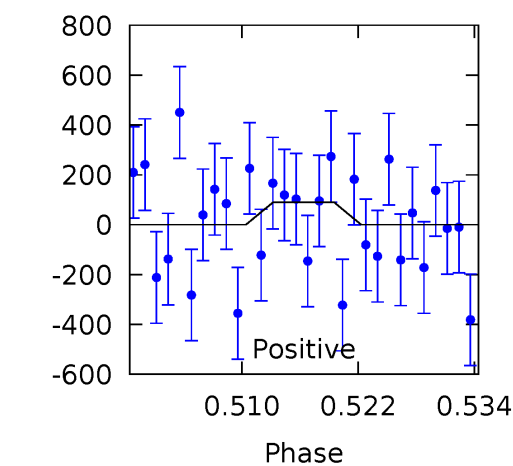
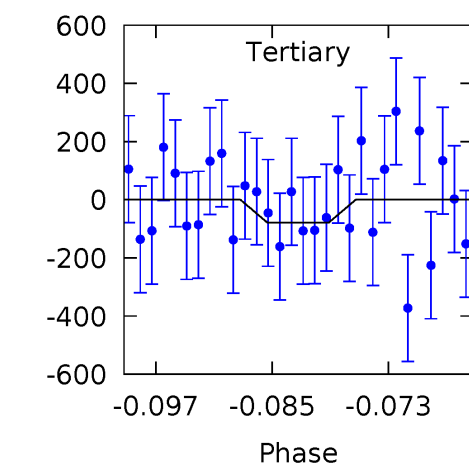
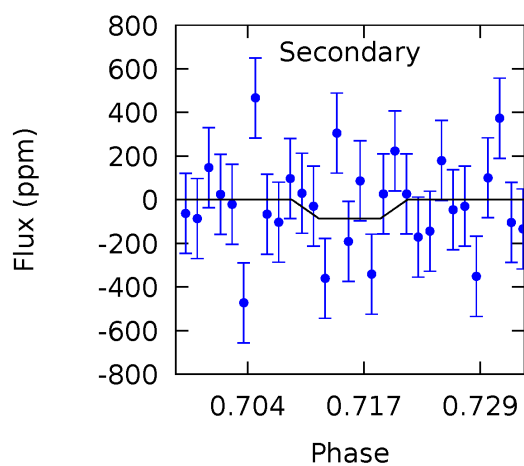
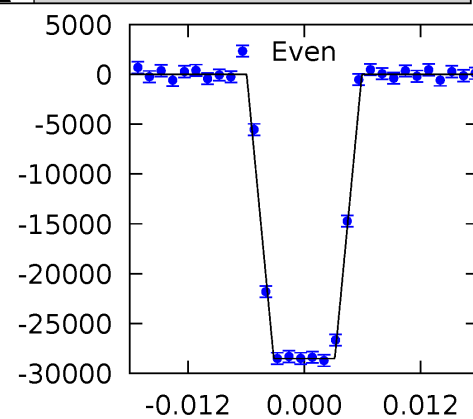
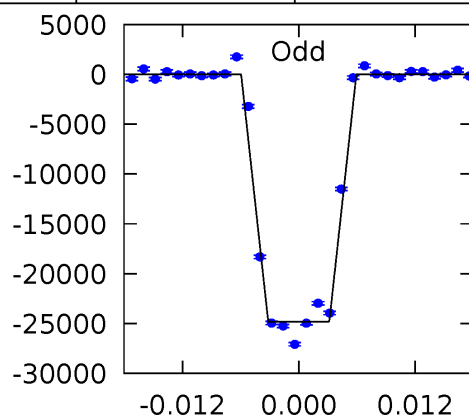
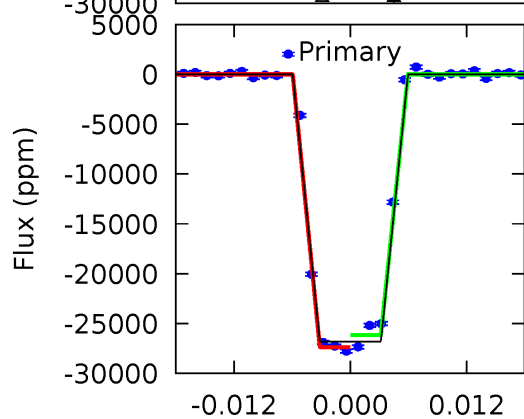
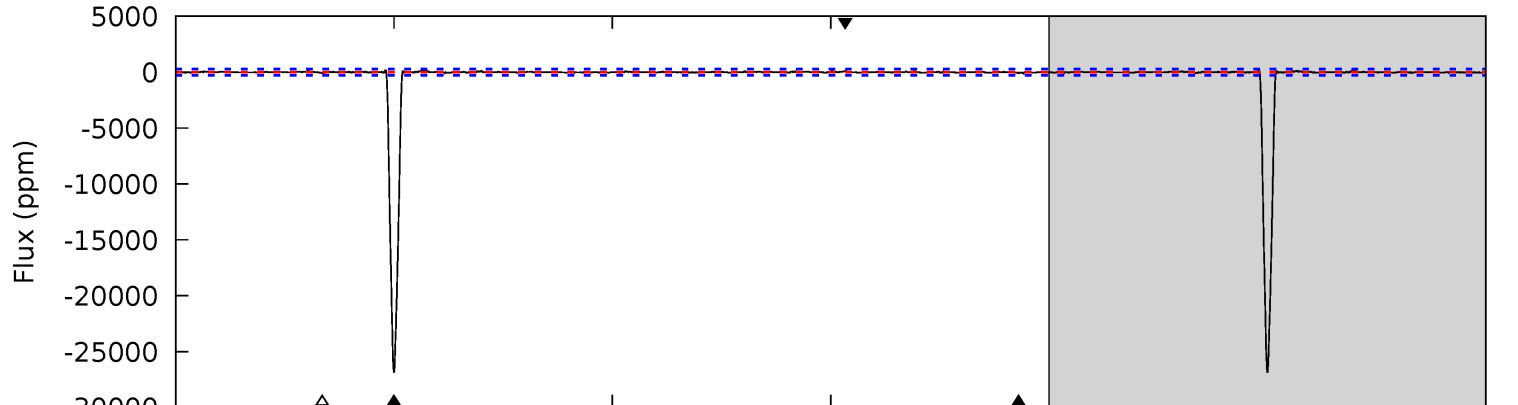
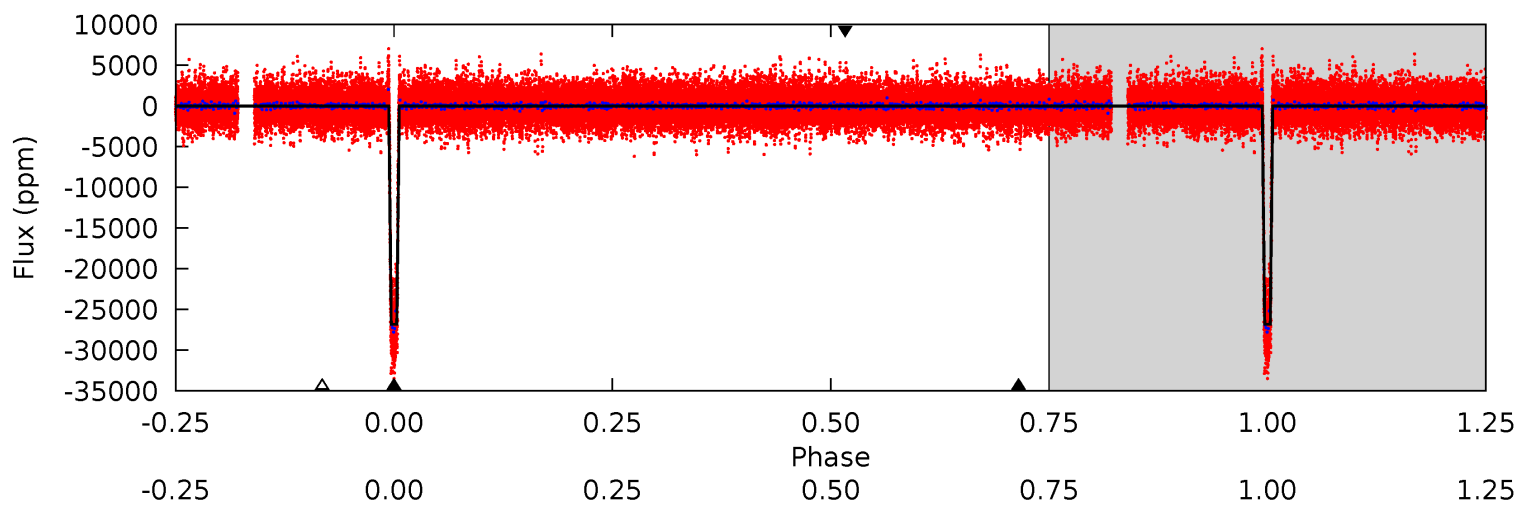
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
637.4	13.1	12.7	15.6	4.98	2.49	4.73	624.8	621.8	0.40	-2.56	4.15	0.89	0.02	3.46



# Alt Model-Shift Uniqueness Test

005217733-02, P = 161.254844 Days, E = 216.396259 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
469.7	1.52	1.39	1.57	4.99	2.51	0.52	468.3	468.1	0.13	-0.05	32.9	1.13	0.01	10.5





### Stellar Parameters For KIC 005217733

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$9341^{+263}_{-451}$	$4.222^{+0.105}_{-0.245}$	$0.070^{+0.150}_{-0.650}$	$1.870^{+0.869}_{-0.373}$	$2.128^{+0.424}_{-0.471}$	$0.458^{+0.278}_{-0.265}$
	+3%/-5%	+2%/-6%	+214%/-929%	+46%/-20%	+20%/-22%	+61%/-58%
Source	KIC0	KIC0	KIC0	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 005217733-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-895 \pm 68$	$42.09^{+9.95}_{-5.54}$	$930^{+90}_{-70}$	$3772^{+83}_{-87}$	$151^{+42}_{-47}$
Alt.	$-87 \pm 57$	$33.74^{+8.00}_{-4.19}$	$924^{+93}_{-64}$	$2825^{+218}_{-367}$	$21^{+17}_{-14}$

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

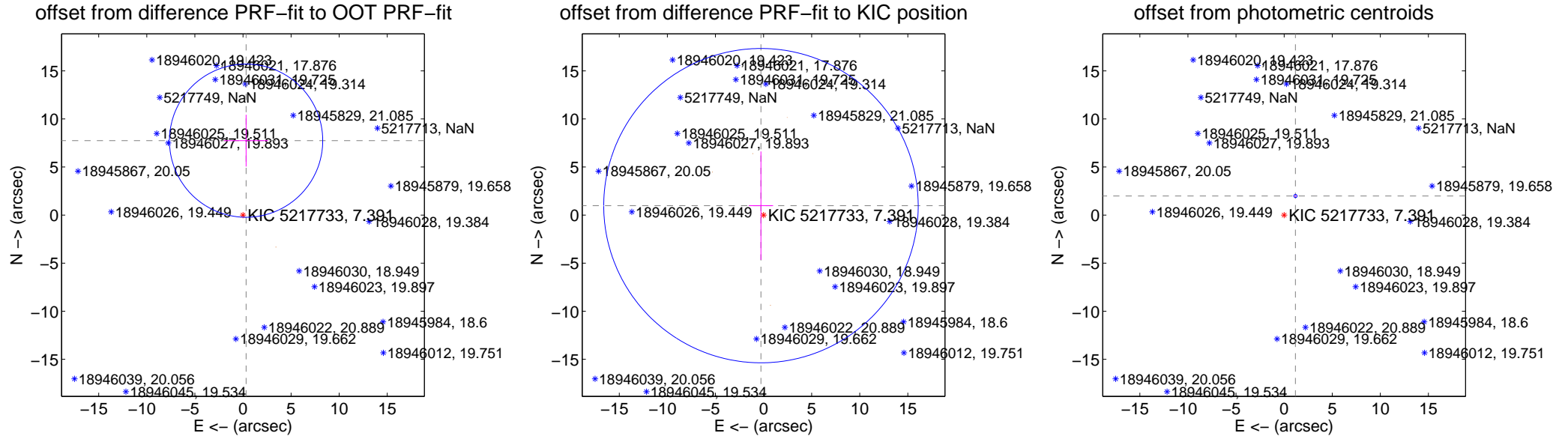
## DV Centroid Data

Supplemental centroid analysis for 005217733-02. **Kepler magnitude: 7.39.** Transit SNR 152.26

There are 0 quarters with good PRF difference image offsets

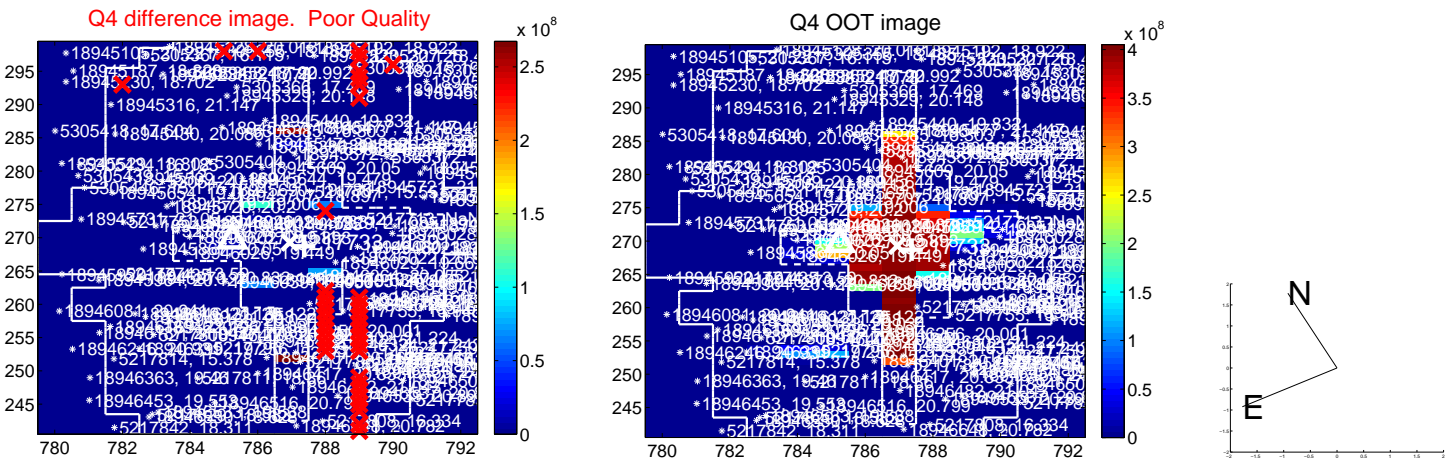
The OOT PRF centroid is offset from the target star catalog position by about 6.63 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$7.749 \pm 2.656$	2.92	$-0.323 \pm 2.297$	$7.743 \pm 2.693$
PRF-fit source offset from KIC position	$1.018 \pm 5.450$	0.19	$0.269 \pm 1.262$	$0.981 \pm 5.641$
photometric centroid source offset	<b><math>2.31 \pm 0.06</math></b>	<b>41.39</b>	$-1.18 \pm 0.03$	$1.98 \pm 0.06$



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

Q5 no difference image



Q5 no OOT image



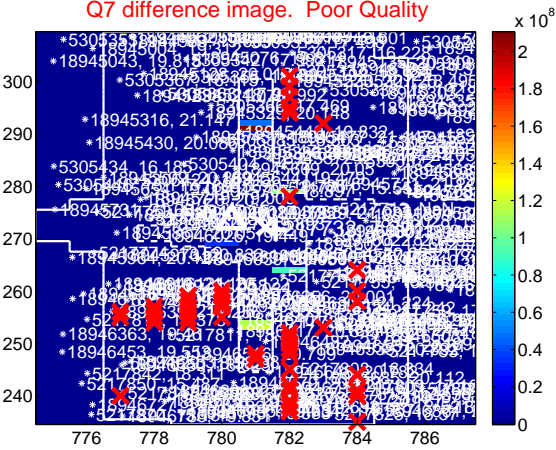
Q6 no difference image



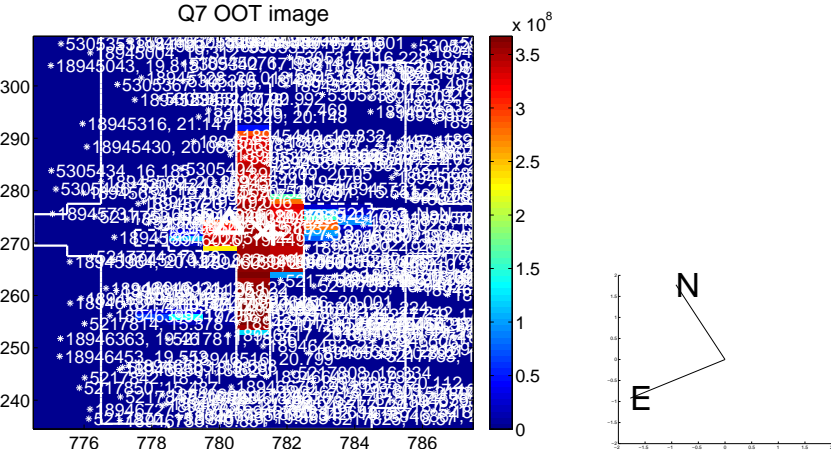
Q6 no OOT image



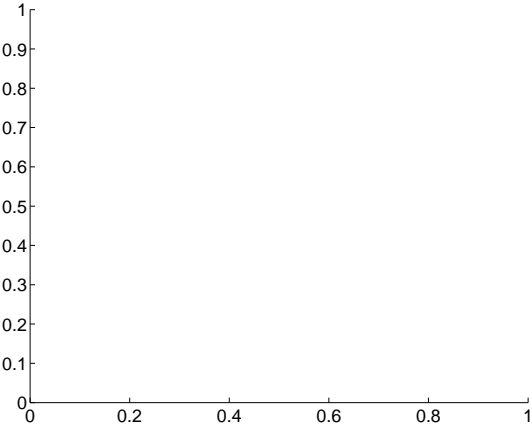
Q7 difference image. Poor Quality



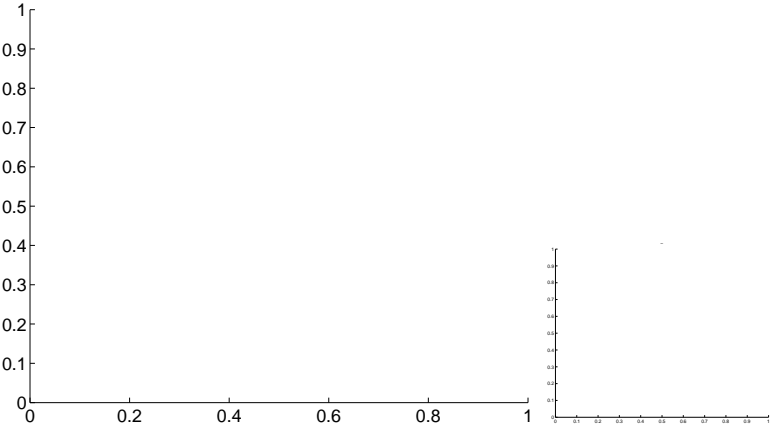
Q7 OOT image



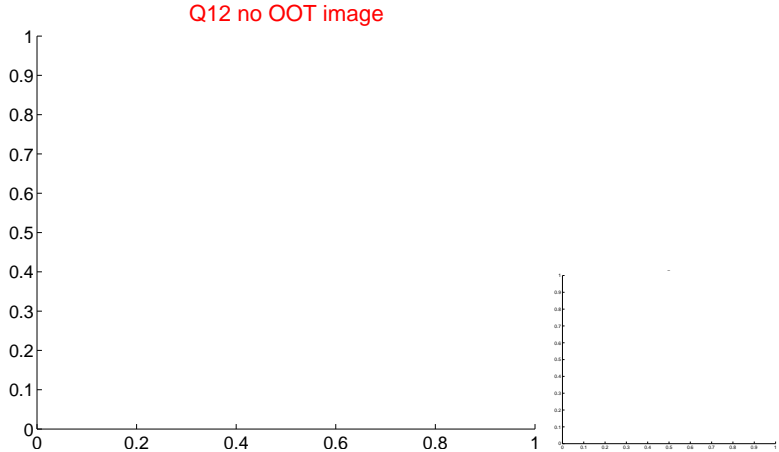
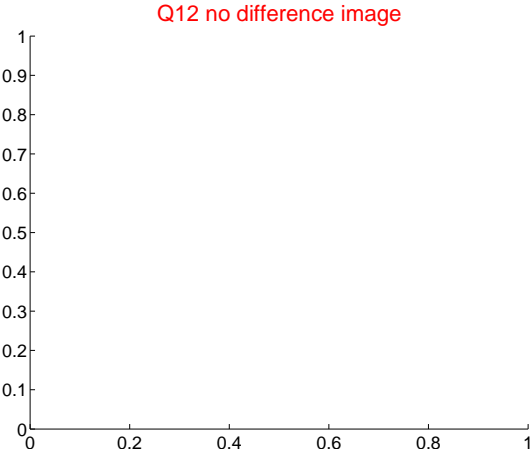
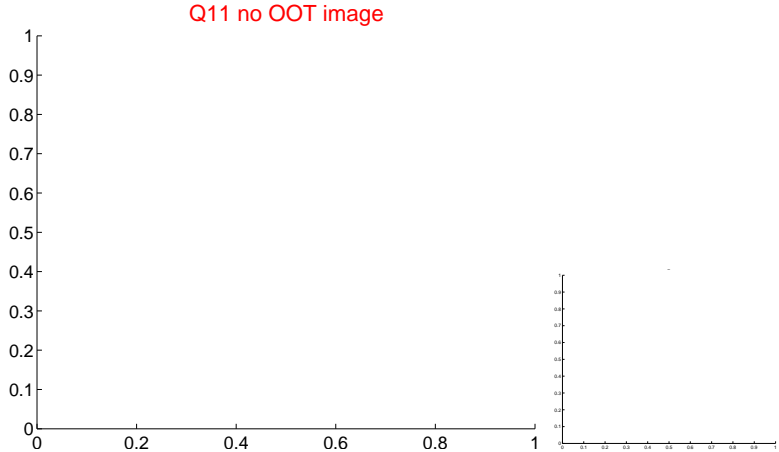
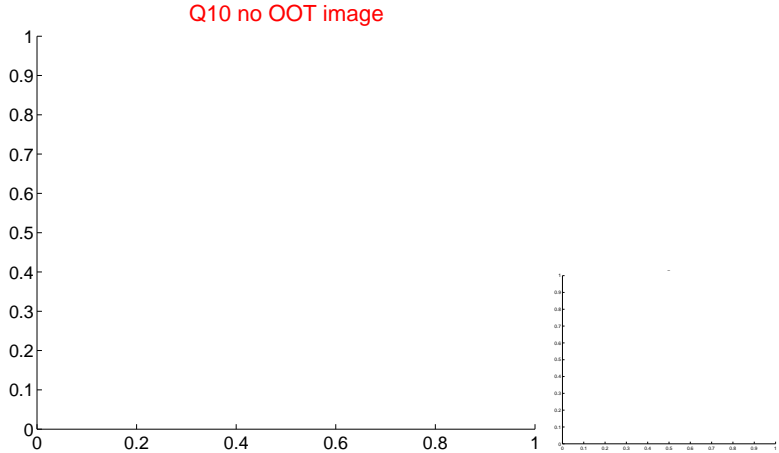
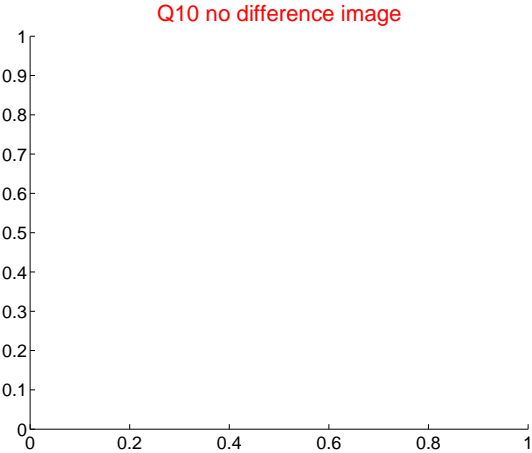
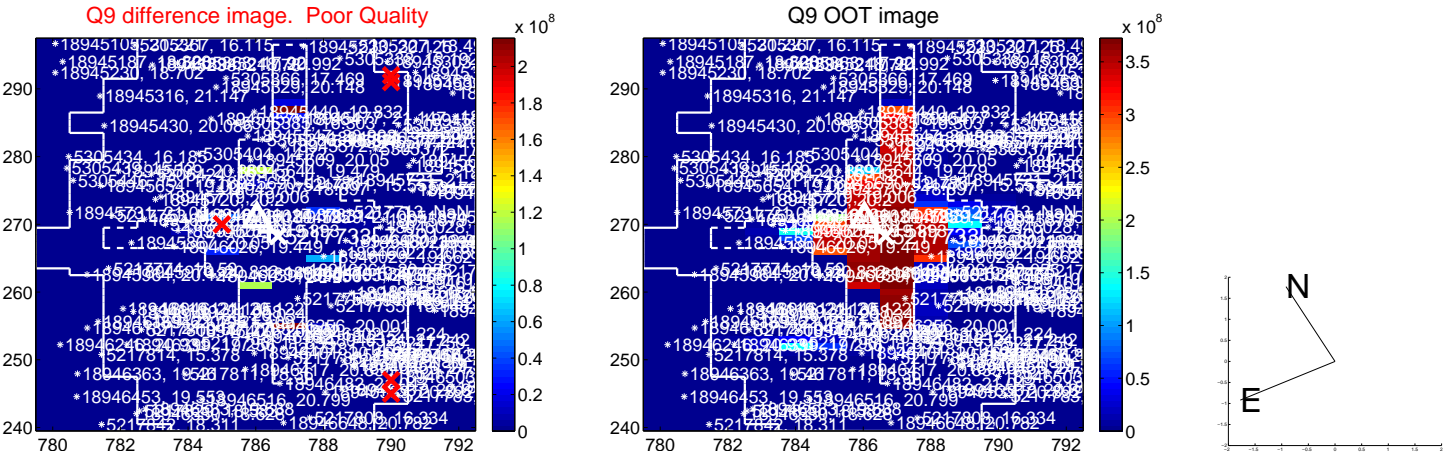
Q8 no difference image



Q8 no OOT image



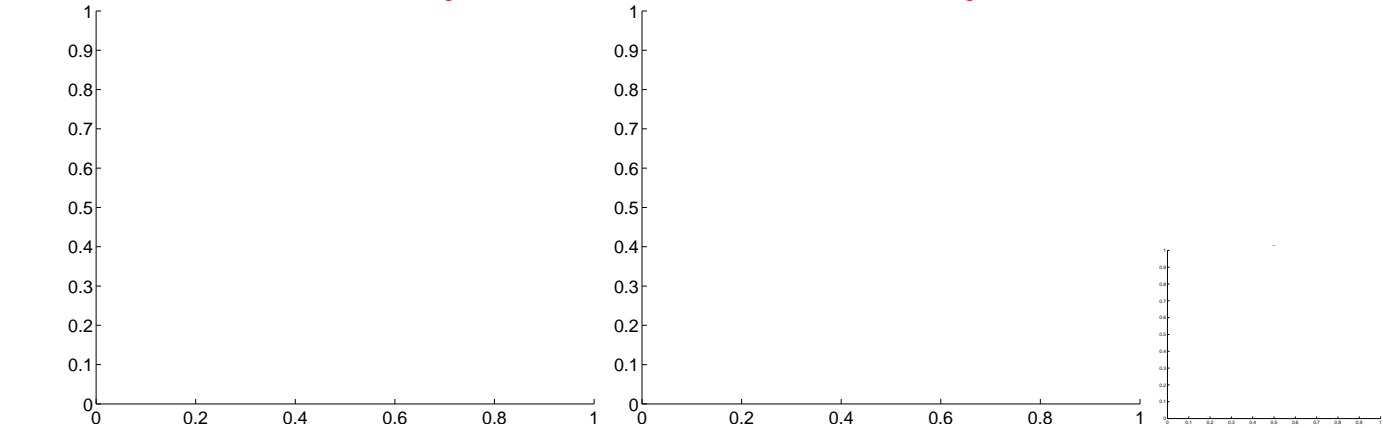
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

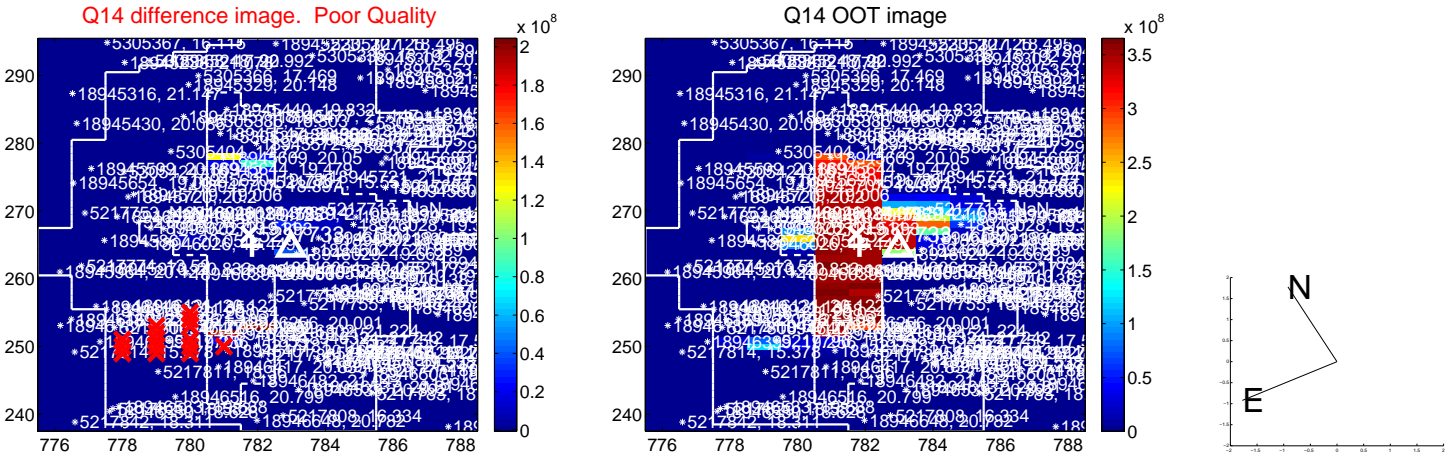
Q13 no difference image

Q13 no OOT image



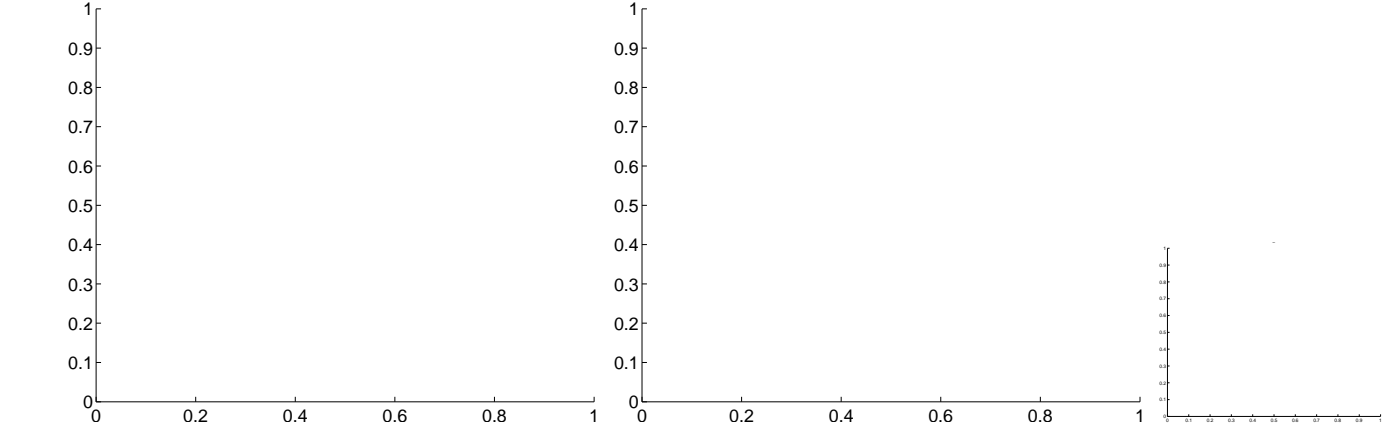
Q14 difference image. Poor Quality

Q14 OOT image



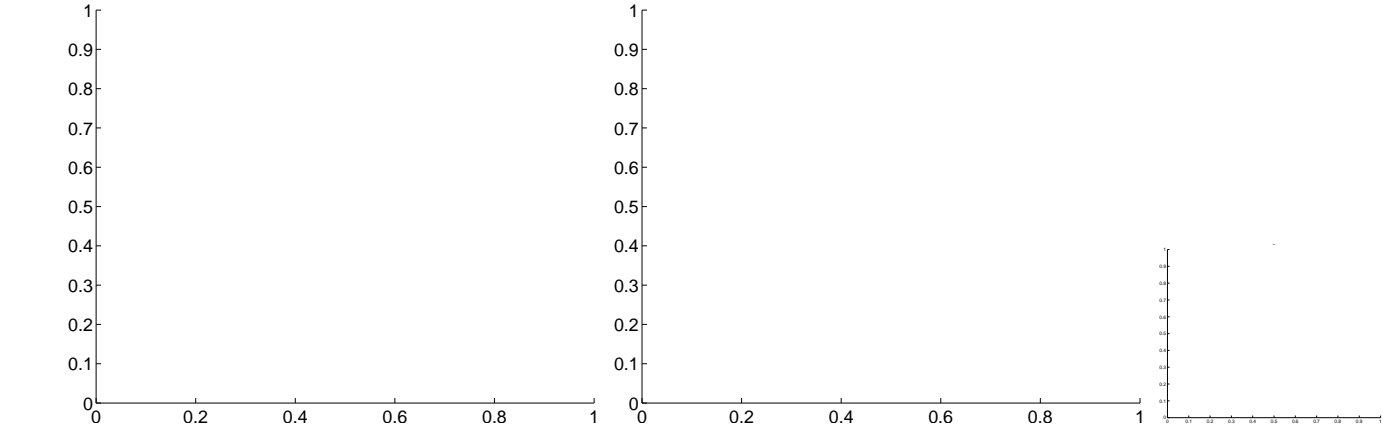
Q15 no difference image

Q15 no OOT image

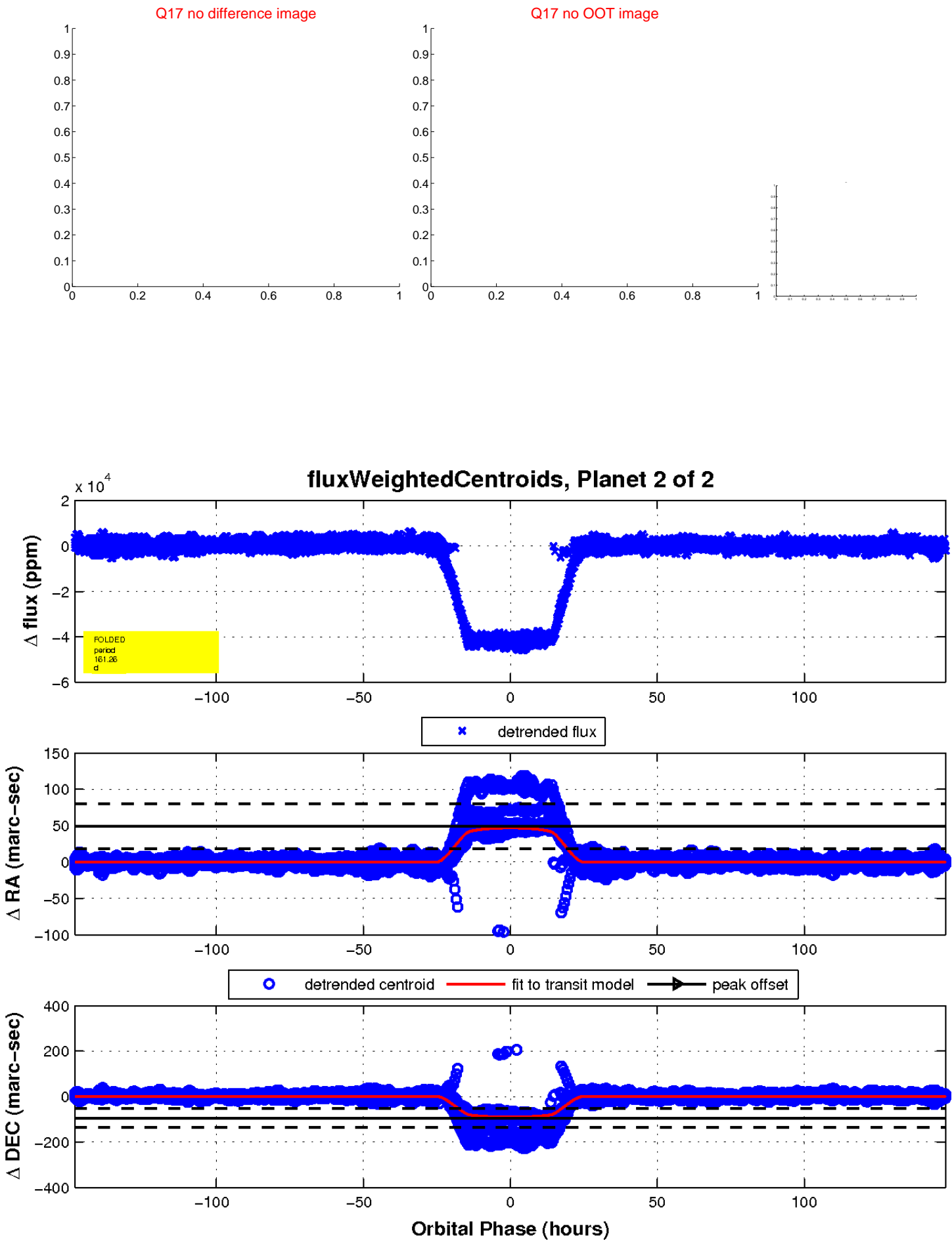


Q16 no difference image

Q16 no OOT image



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



UKIRT Image

