

# KIC 009026866

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009026866-01	OBS	No	317.708874	158.057634	71.8	2.977	8.9	6.1	153.06	3286	167.46	2708.71
009026866-02	OBS	No	279.578779	162.266907	84.3	12.000	12.5	-1.0	153.06	3286	128.91	3212.15
009026866-03	OBS	No	280.355254	160.707145	79.1	9.000	11.5	-1.0	153.06	3286	124.89	3200.30

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009026866-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009026866-02	OBS	FP	0.00	1	0	0	0	MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009026866-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

**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.

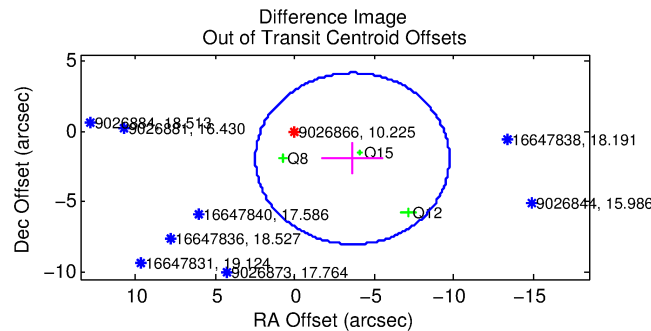
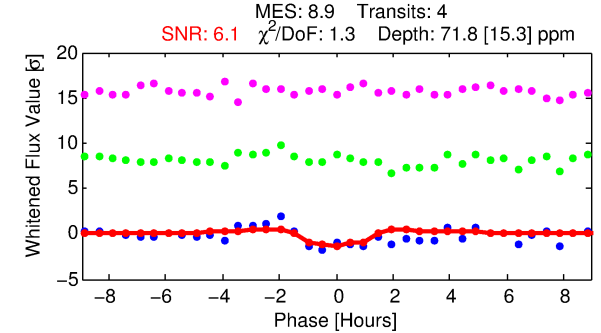
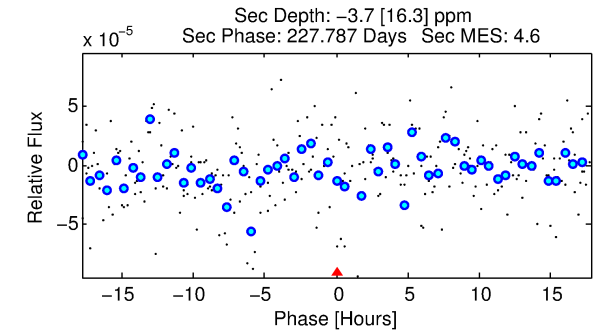
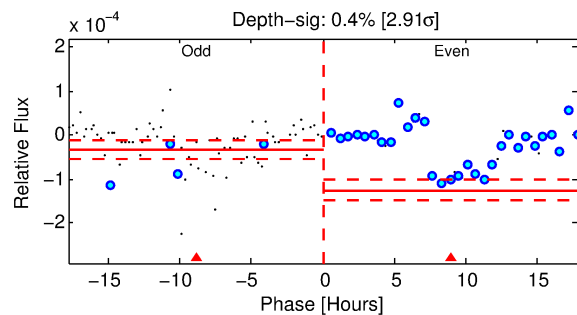
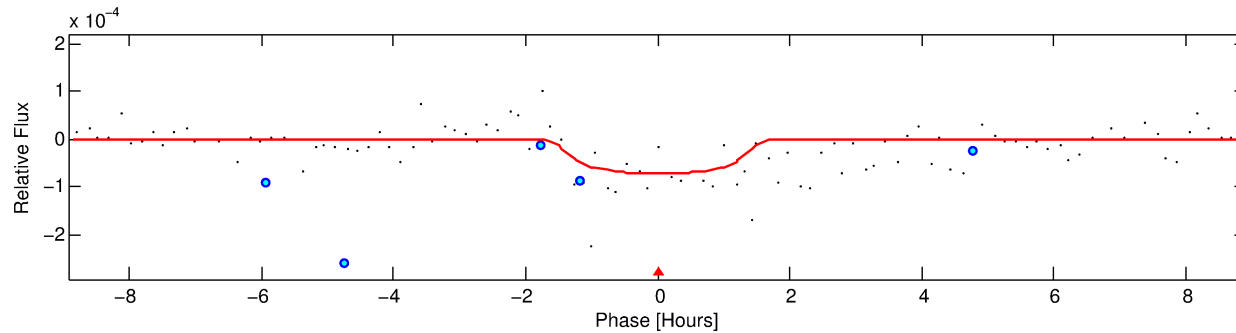
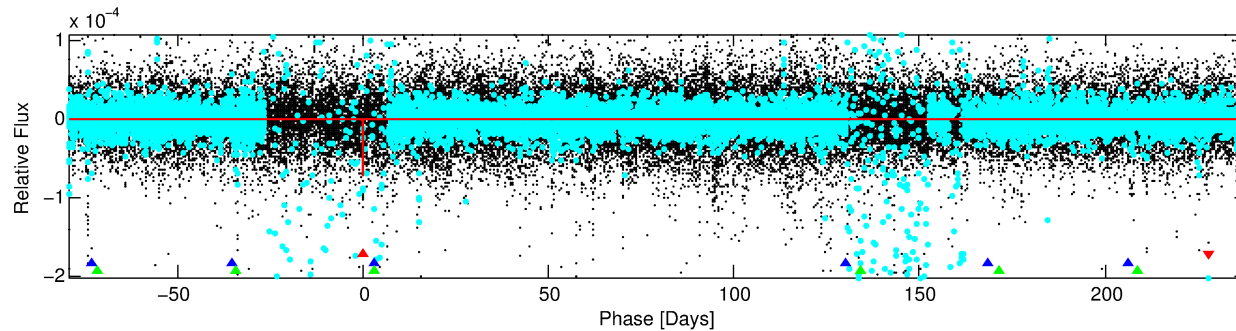
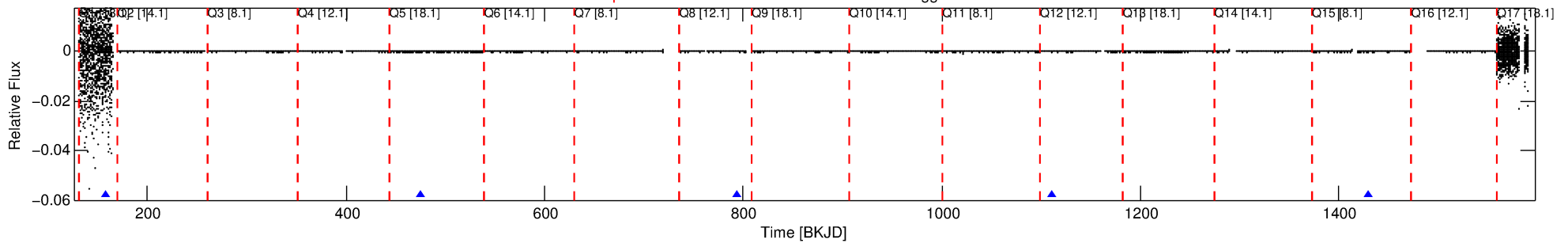
Ephemeris Match Information For 009026866-01

No Significant Match Found

# DV One-Page Summary

KIC: 9026866 Candidate: 1 of 3 Period: 317.709 d

Kp: 10.23 R\*: 153.06 Rs Teff: 3286.0 K Logg: 0.12 Fe/H: -0.080



## DV Fit Results:

Period = 317.70887 [0.00479] d  
Epoch = 158.0576 [0.0152] BKJD  
Rp/R\* = 0.0100 [0.0142]  
a/R\* = 369.07 [1664.36]  
b = 0.90 [0.96]  
Seff = 2708.71 [972.75]  
Teq = 1840 [165] K  
Rp = 167.46 [239.21] Re  
a = 0.9505 [0.1853] AU  
Ag = N/A  
Teffp = N/A

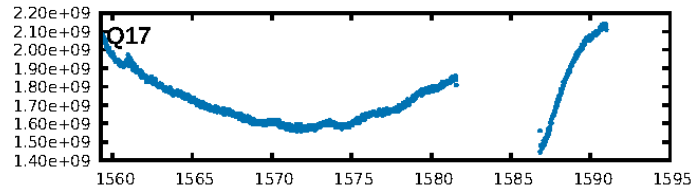
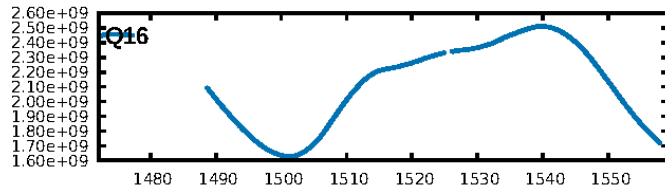
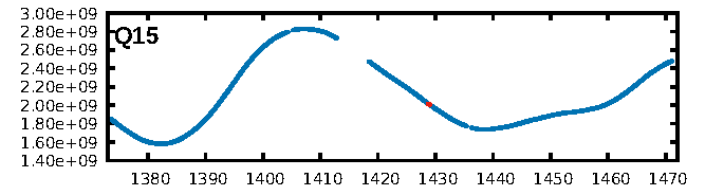
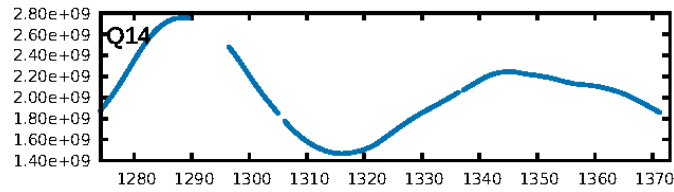
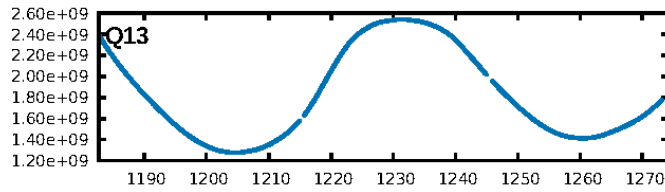
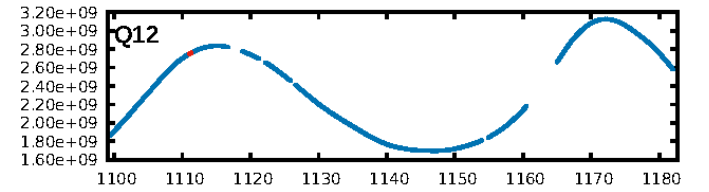
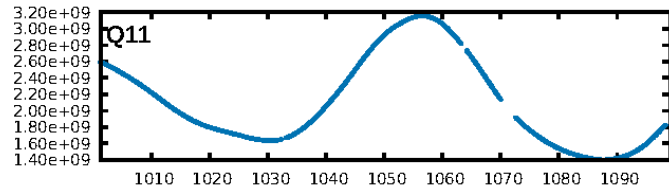
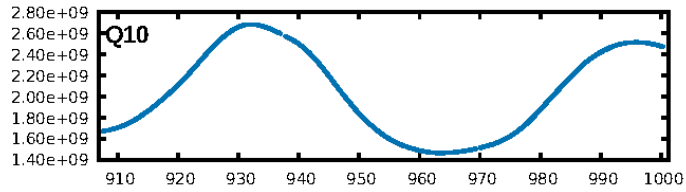
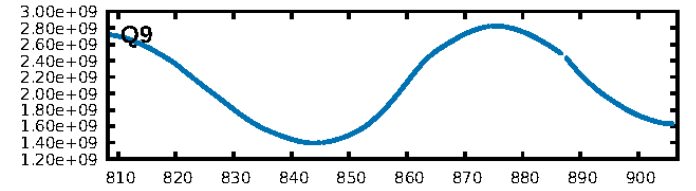
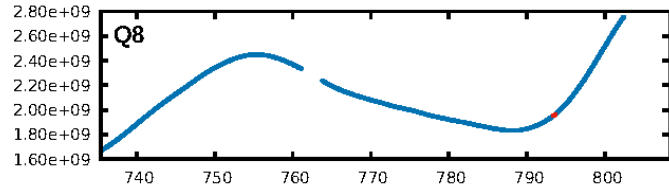
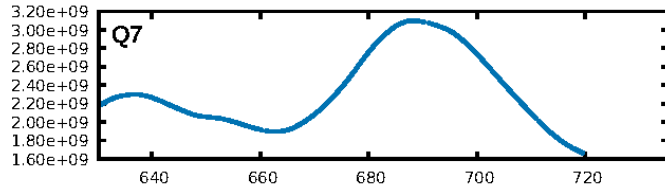
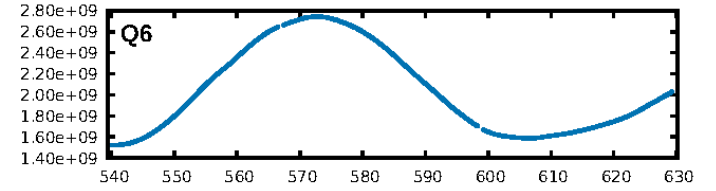
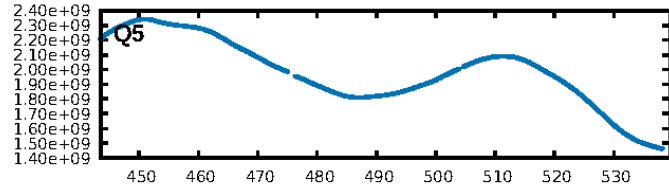
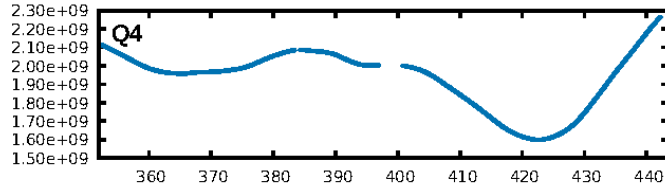
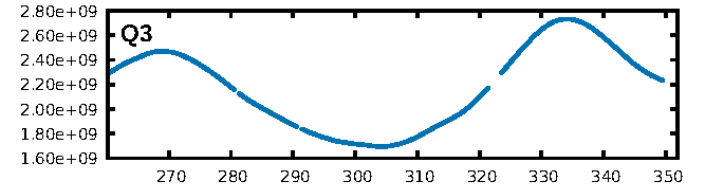
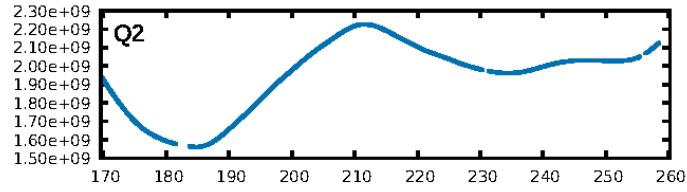
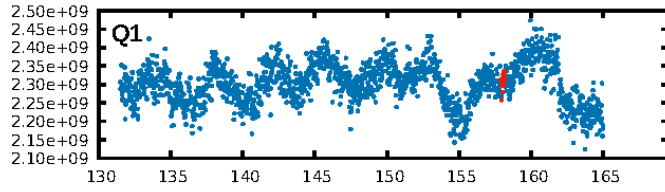
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [94.57σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.2%  
ModelChiSquareGof-sig: 68.8%  
Bootstrap-pfa: 7.26e-04  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.114  
Centroid-sig: 28.2%  
Centroid-so: 13.002 arcsec [0.90σ]  
OotOffset-rm: 4.101 arcsec [2.02σ]  
KicOffset-rm: 3.815 arcsec [1.80σ]  
OotOffset-st: 0/1/2/0 [3]  
KicOffset-st: 0/1/2/0 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [4/4]

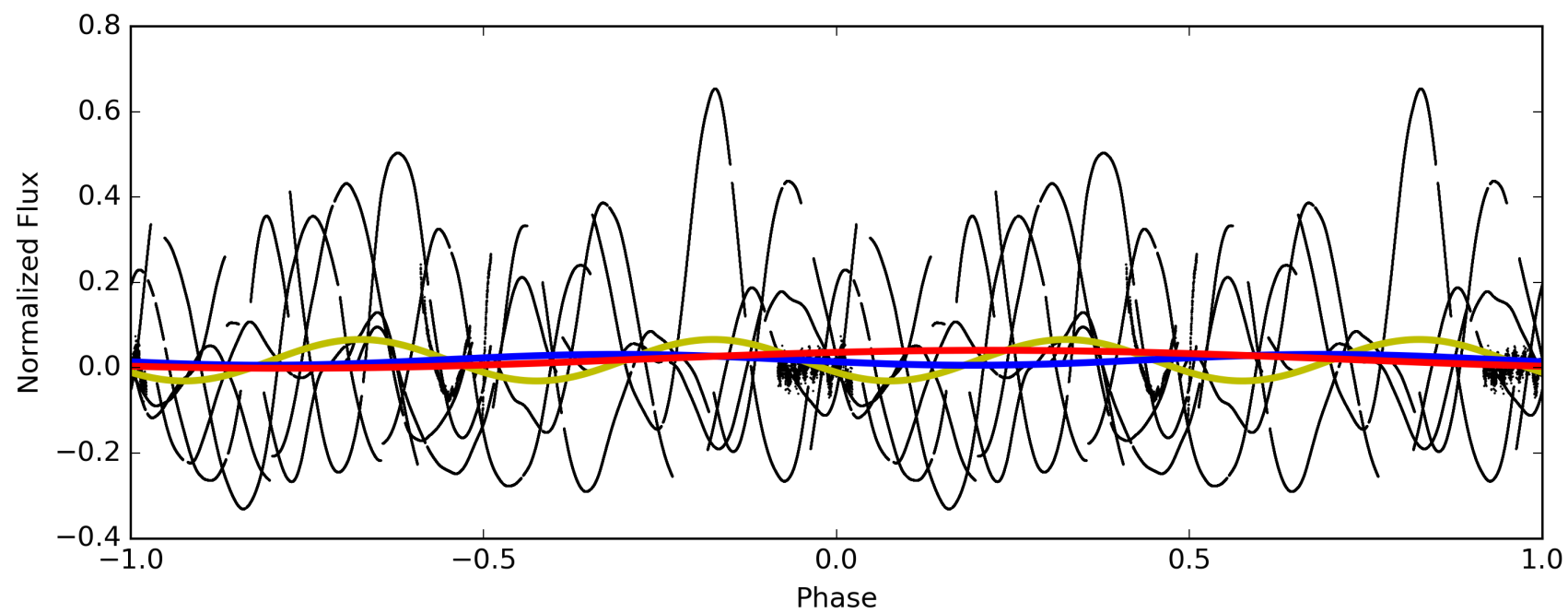
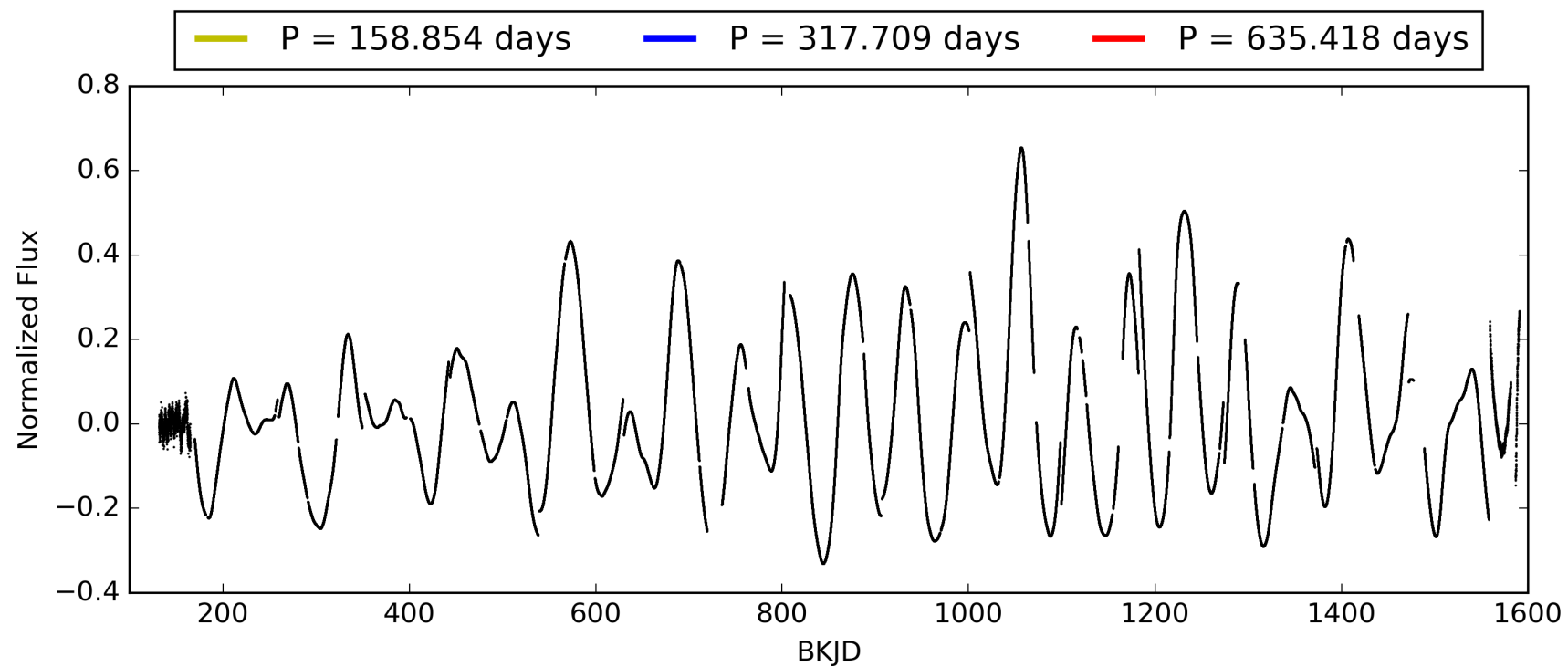
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009026866-01, PDC Light Curves

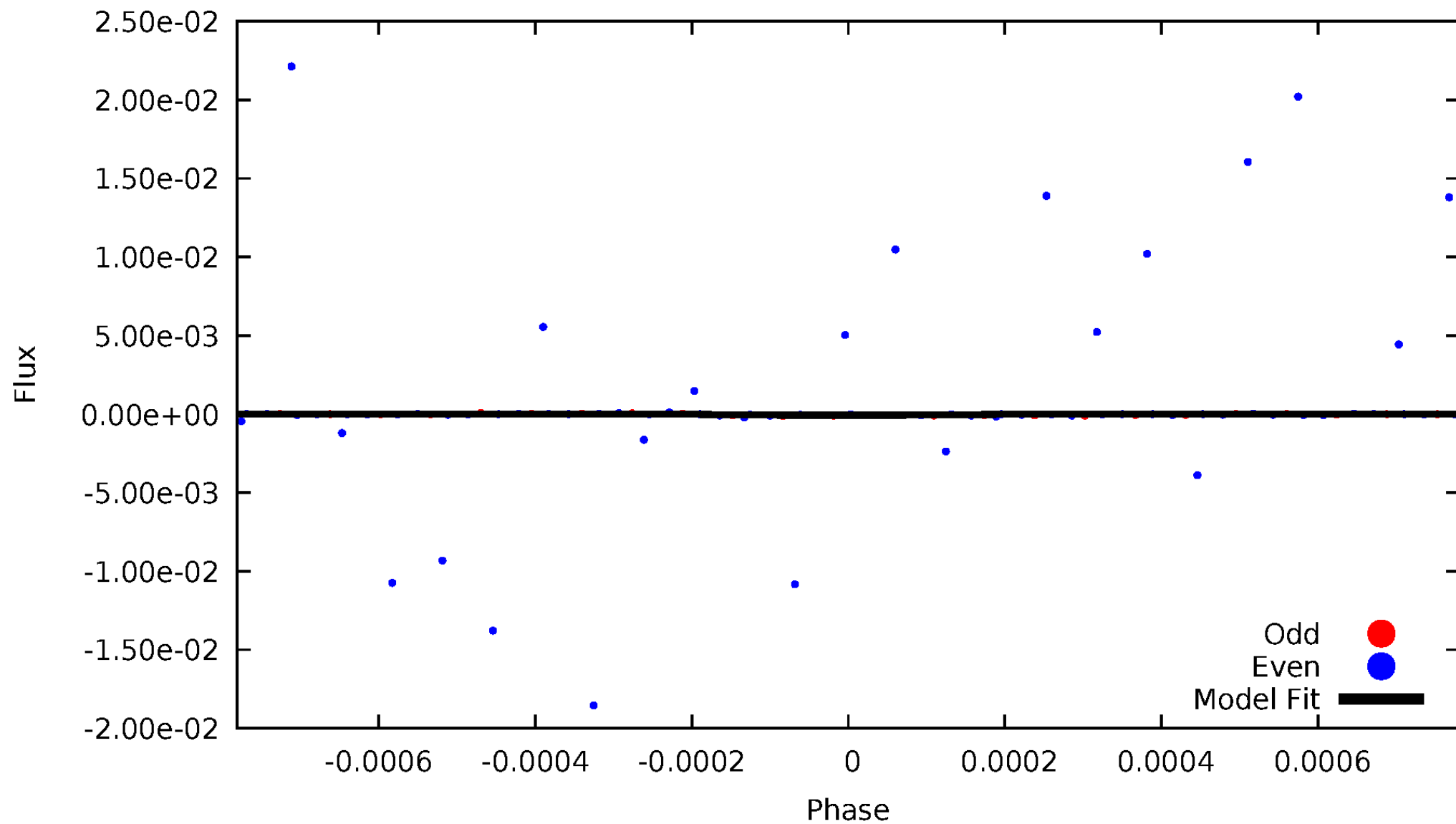


TCE 009026866-01



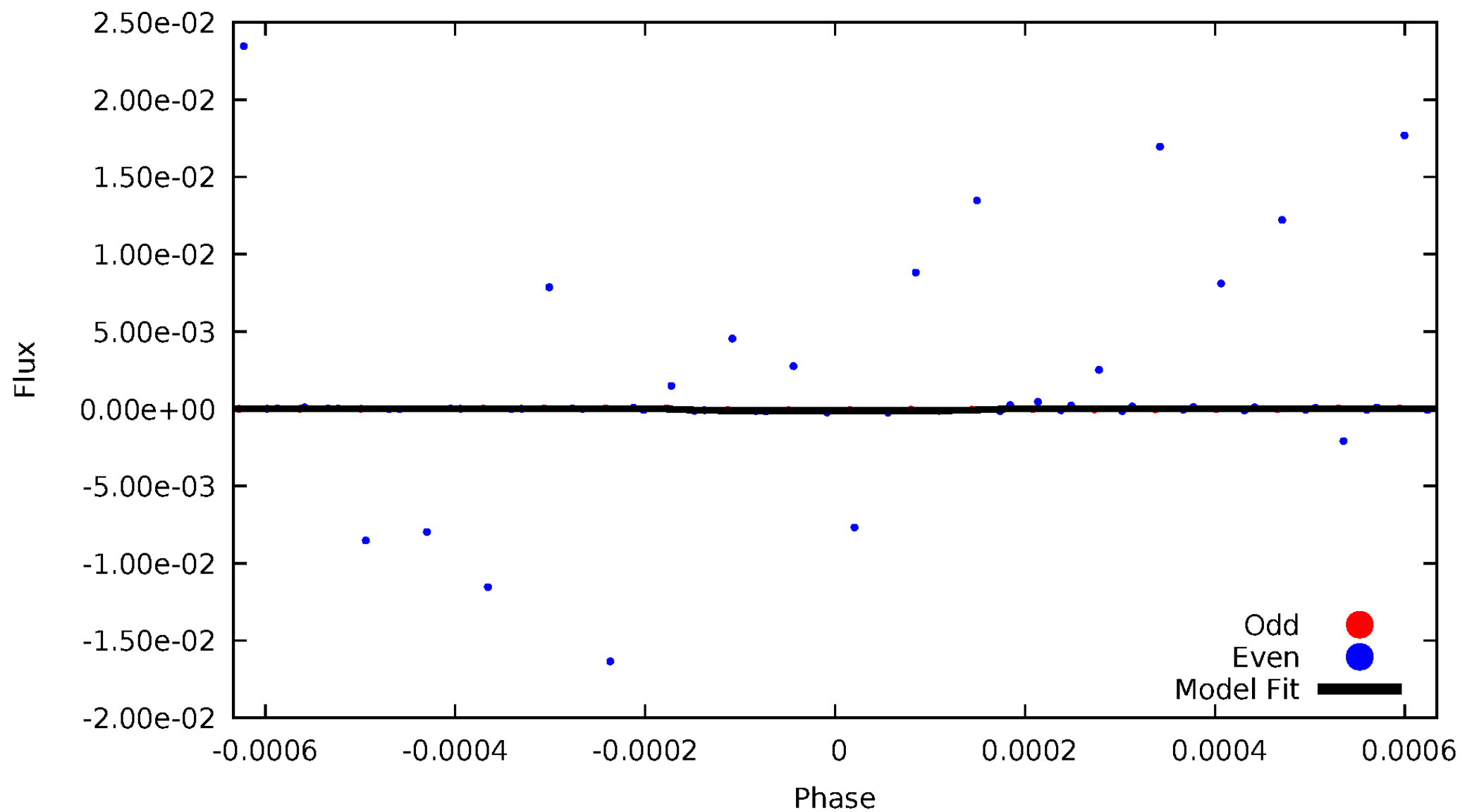
# DV Odd/Even

TCE 009026866-01



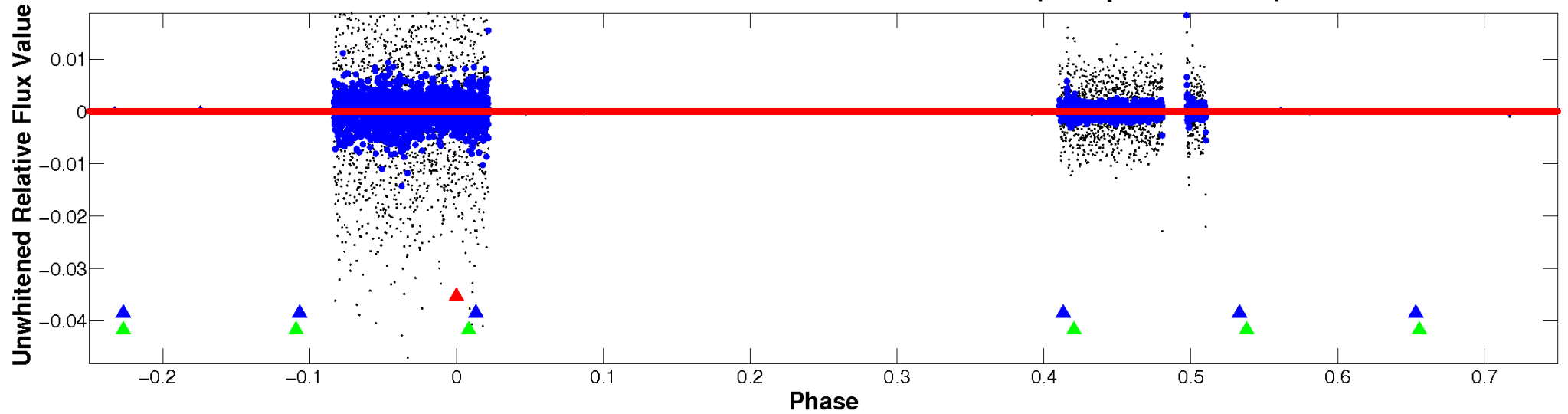
# ALT Odd/Even

TCE 009026866-01

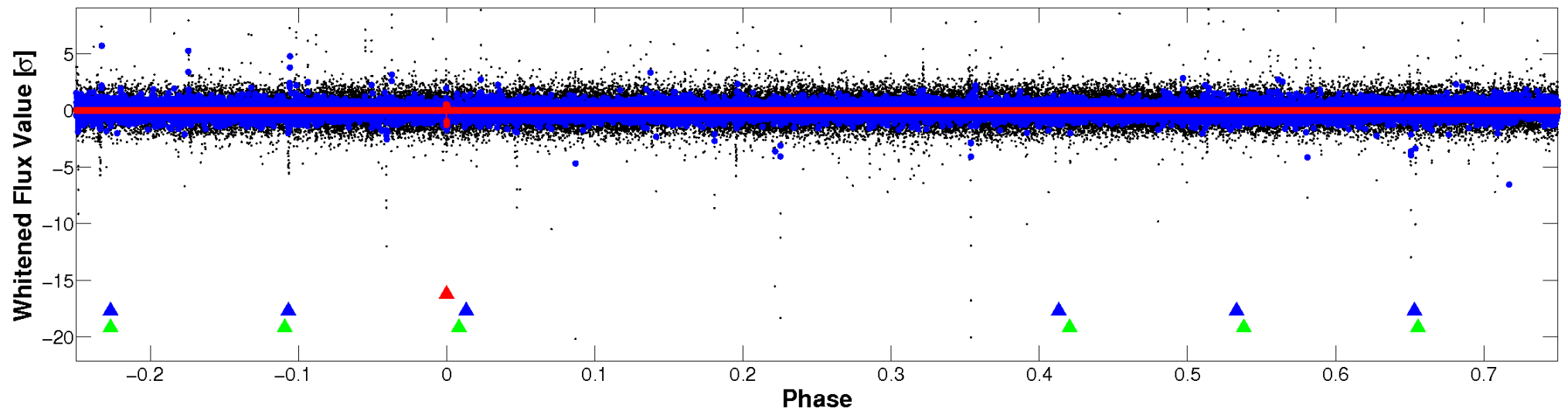


# Non-Whitened Vs. Whitened Light Curve

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

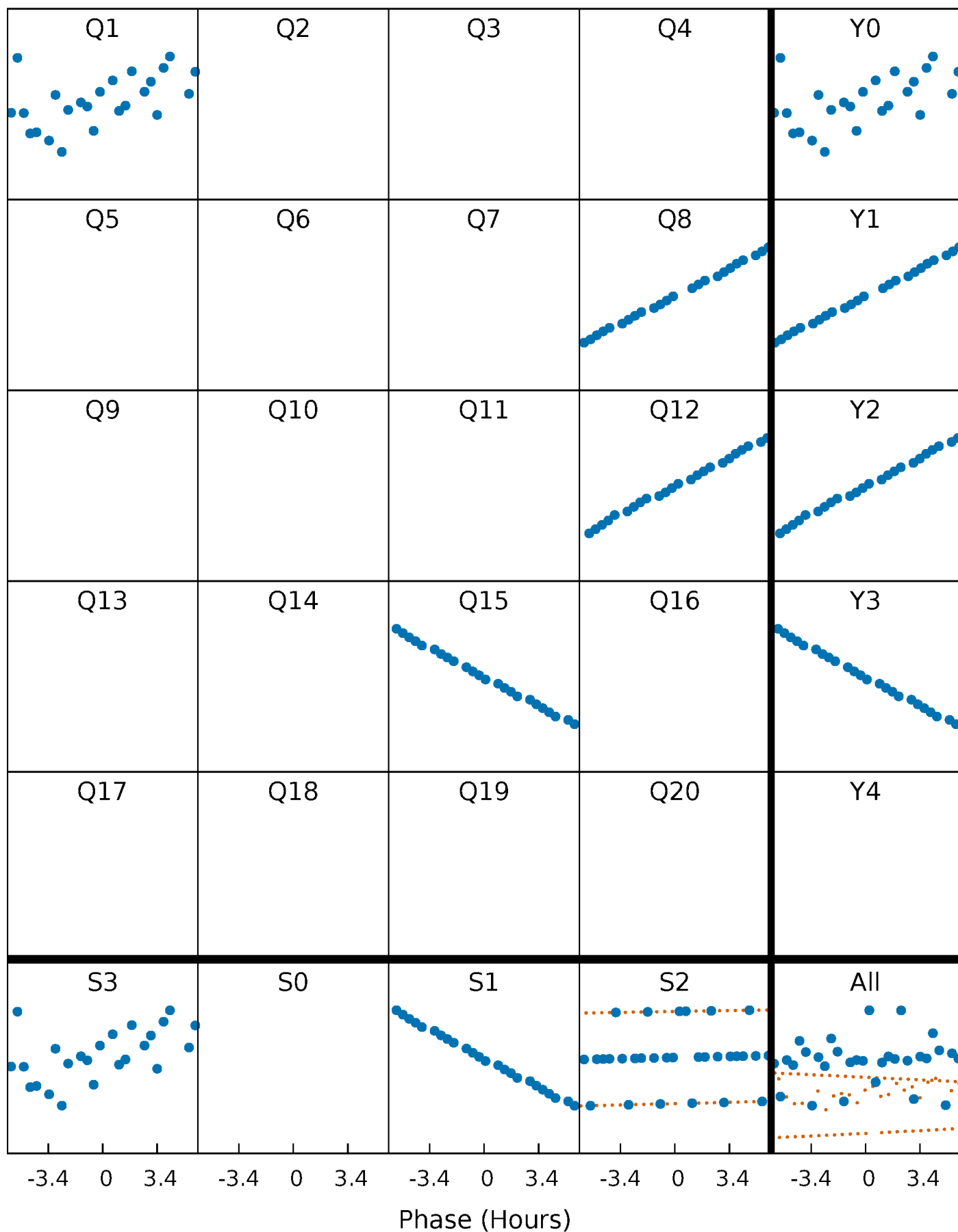


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

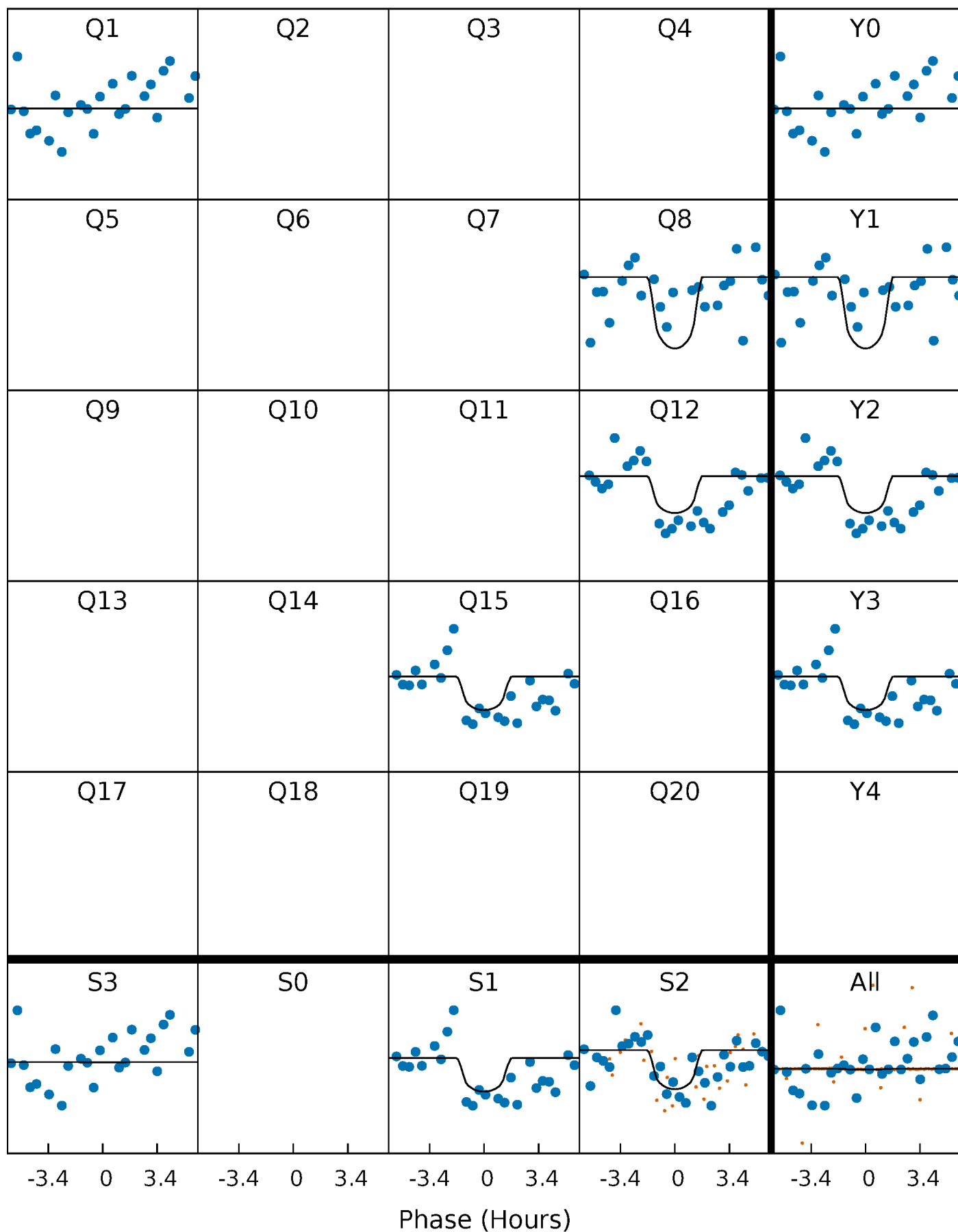
TCE 009026866-01 P=317.708874 Days  $T_0=158.057635$  (BKJD)





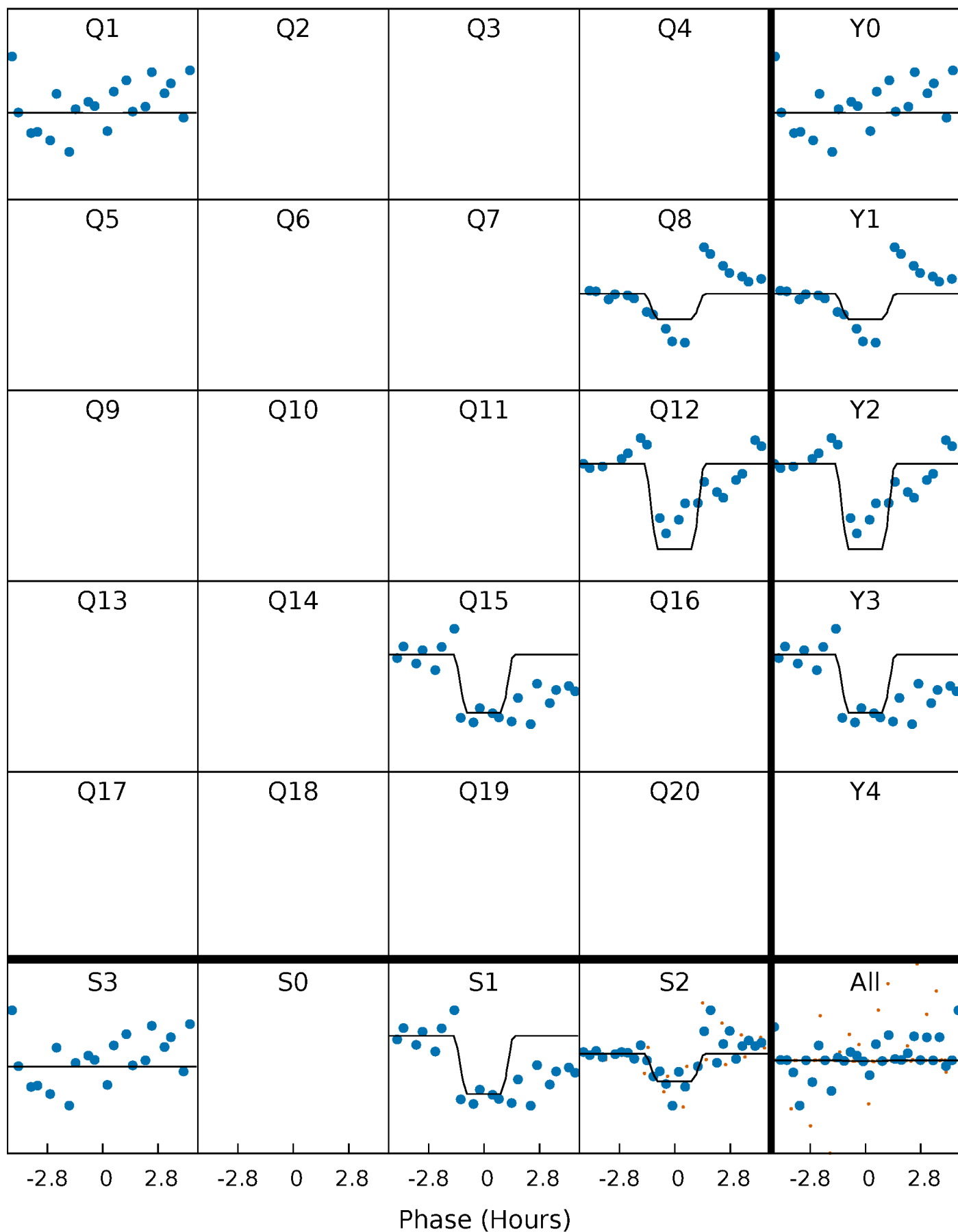
# DV Quarter-Phased Transit Curves

TCE 009026866-01 P=317.708874 Days  $T_0=158.057635$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

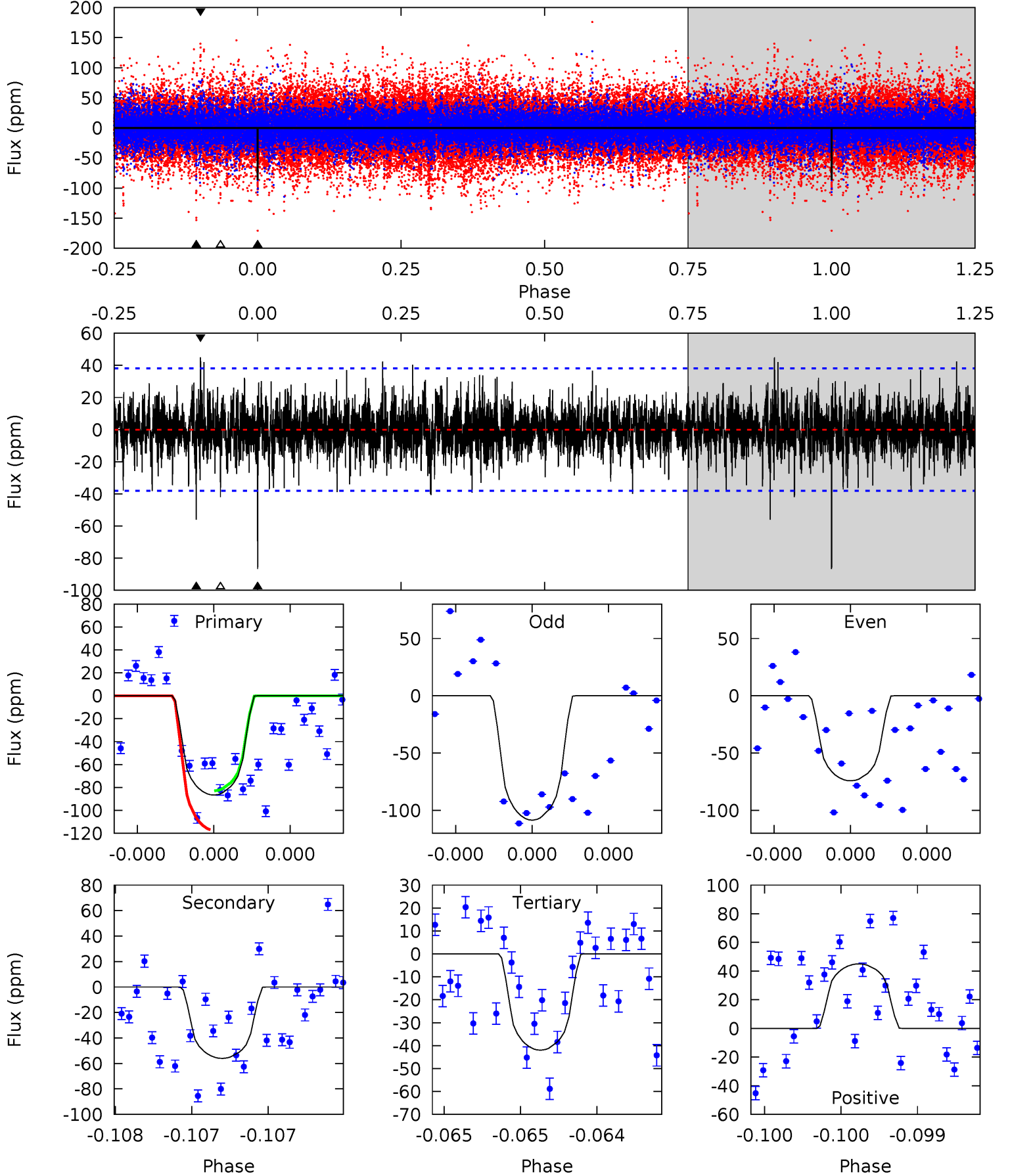
TCE 009026866-01 P=317.714613 Days  $T_0=158.029394$  (BKJD)



# DV Model-Shift Uniqueness Test

009026866-01, P = 317.708874 Days, E = 158.057635 Days

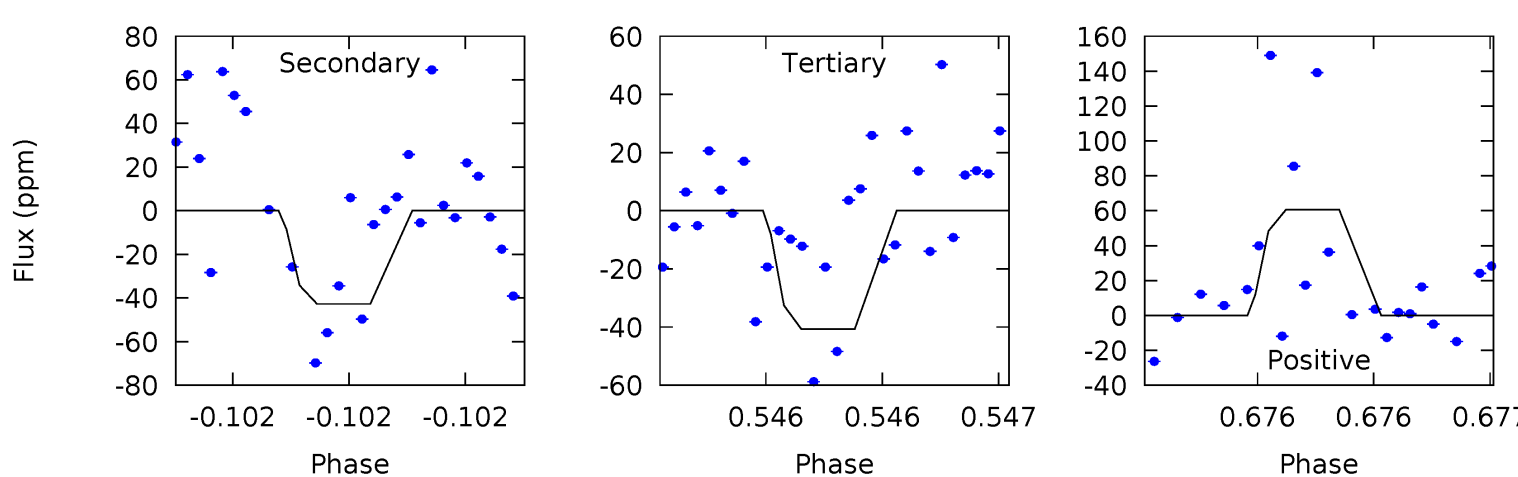
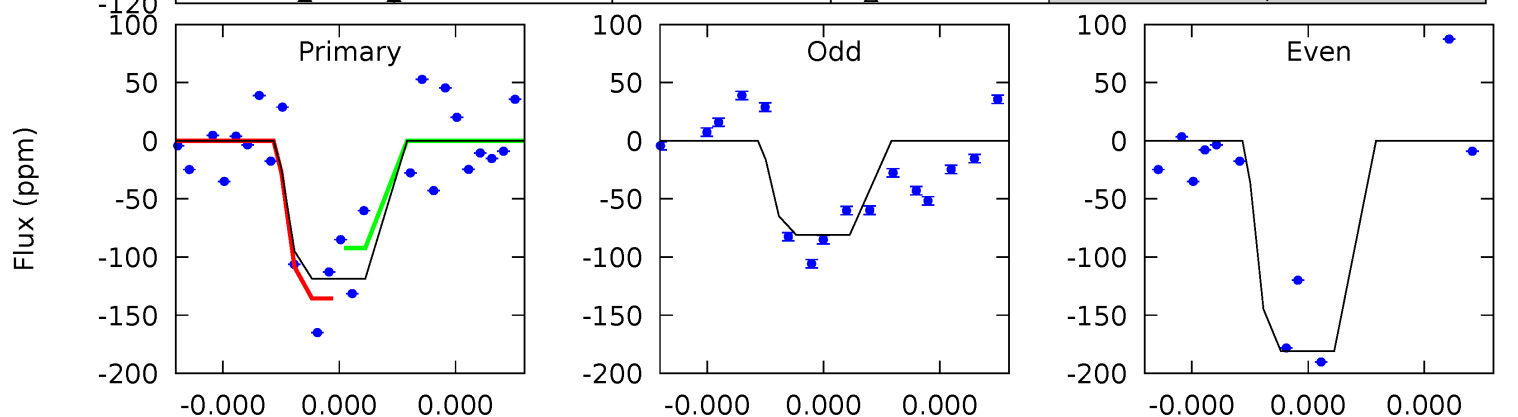
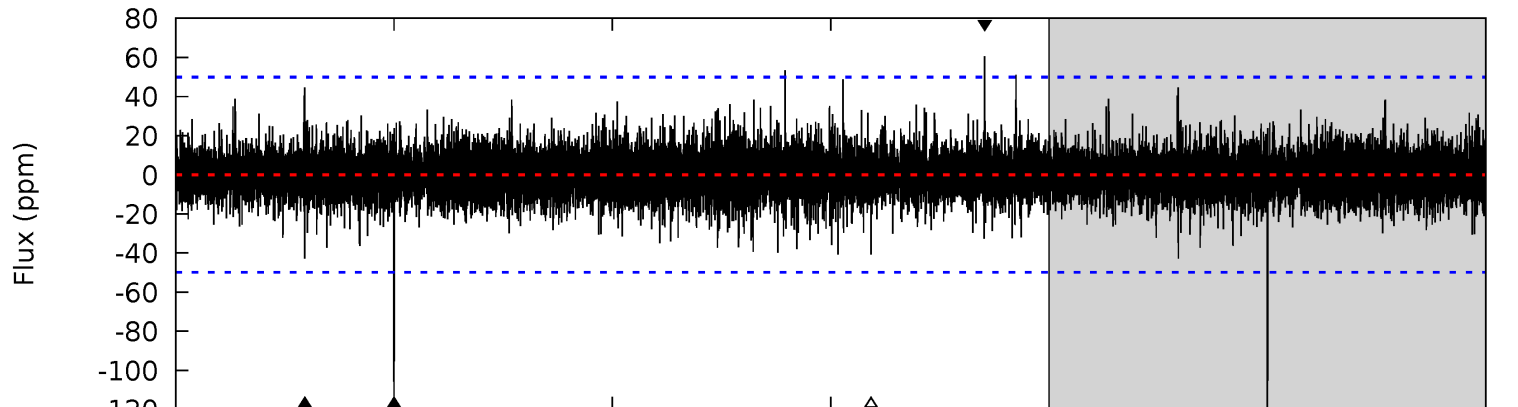
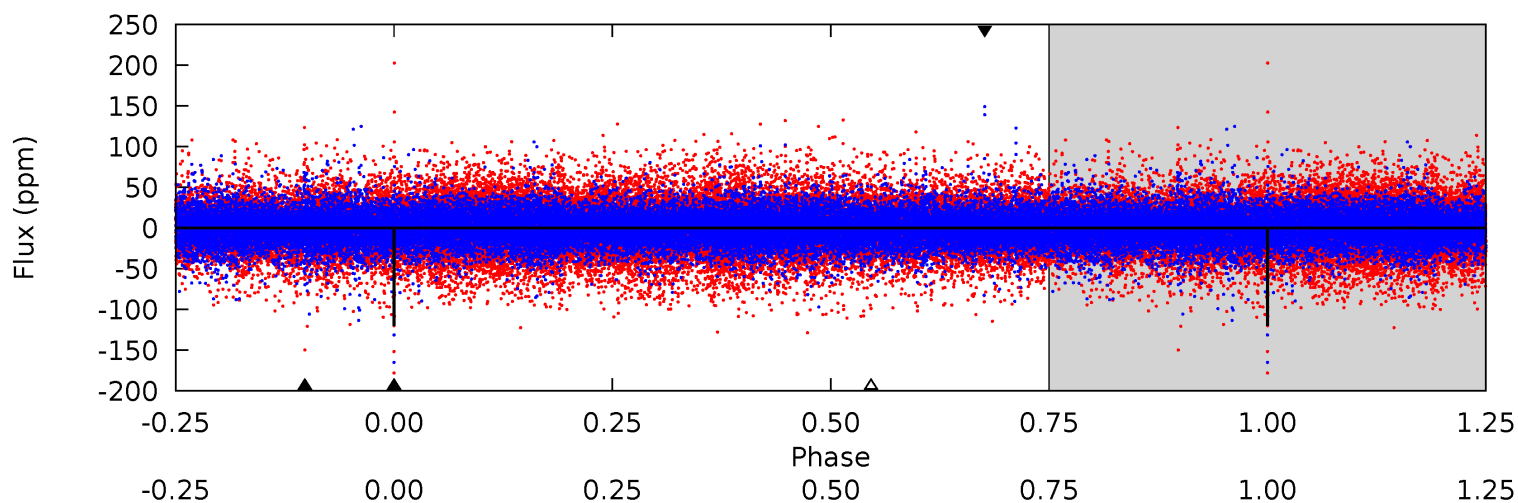
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	8.25	6.18	6.63	5.60	3.53	1.42	6.57	6.12	2.07	1.62	0.60	-1.64	0.34	0



# Alt Model-Shift Uniqueness Test

009026866-01, P = 317.714613 Days, E = 158.029394 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
13.4	4.83	4.60	6.84	5.63	3.57	0.94	8.80	6.56	0.23	-2.01	0.93	-7.31	0.34	0



### Stellar Parameters For KIC 009026866

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3286^{+117}_{-88}$	$0.123^{+0.200}_{-0.050}$	$-0.080^{+0.250}_{-0.150}$	$153.058^{+9.192}_{-27.576}$	$1.134^{+0.189}_{-0.155}$	$0.000^{+0.000}_{-0.000}$
	+4%/-3%	+163%/-41%	+312%/-188%	+6%/-18%	+17%/-14%	+93%/-14%
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 009026866-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-56 \pm 7$	$230.00^{+204.11}_{-144.02}$	$2521^{+116}_{-143}$	$2457^{+1153}_{-4797}$	$0.529^{+3.496}_{-0.374}$
Alt.	$-43 \pm 9$	$255.97^{+199.05}_{-173.92}$	$2532^{+114}_{-136}$	$1951^{+1552}_{-4381}$	$0.328^{+2.956}_{-0.224}$

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

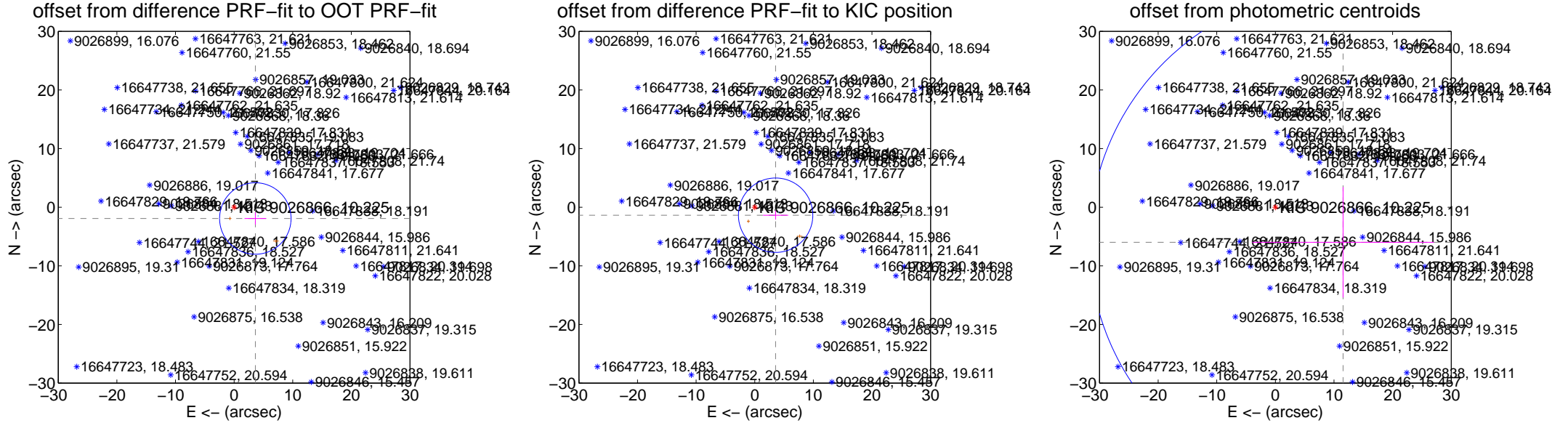
## DV Centroid Data

Supplemental centroid analysis for 009026866-01. **Kepler magnitude: 10.22.** Transit SNR 6.09

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

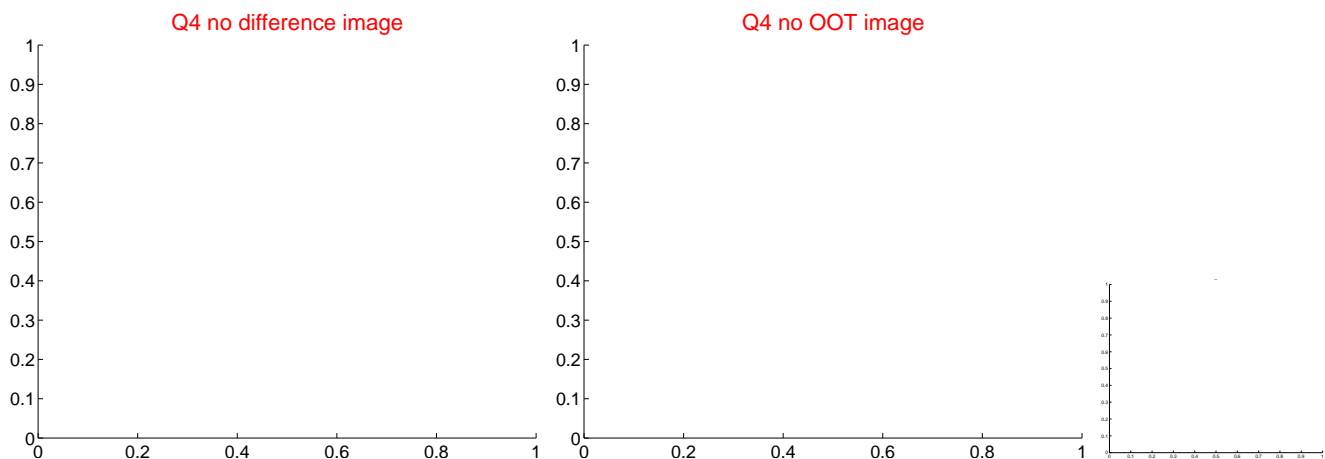
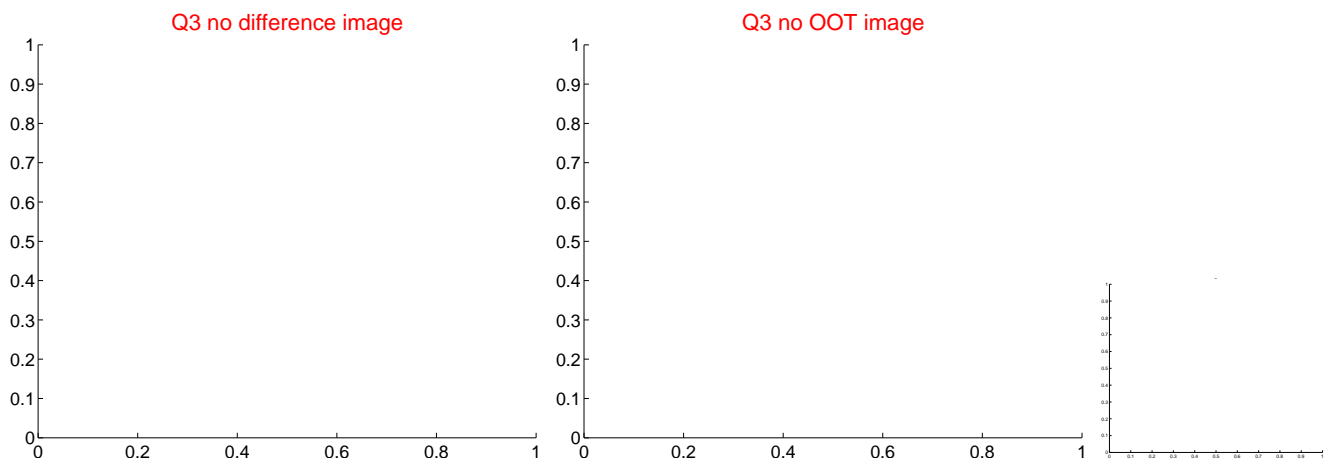
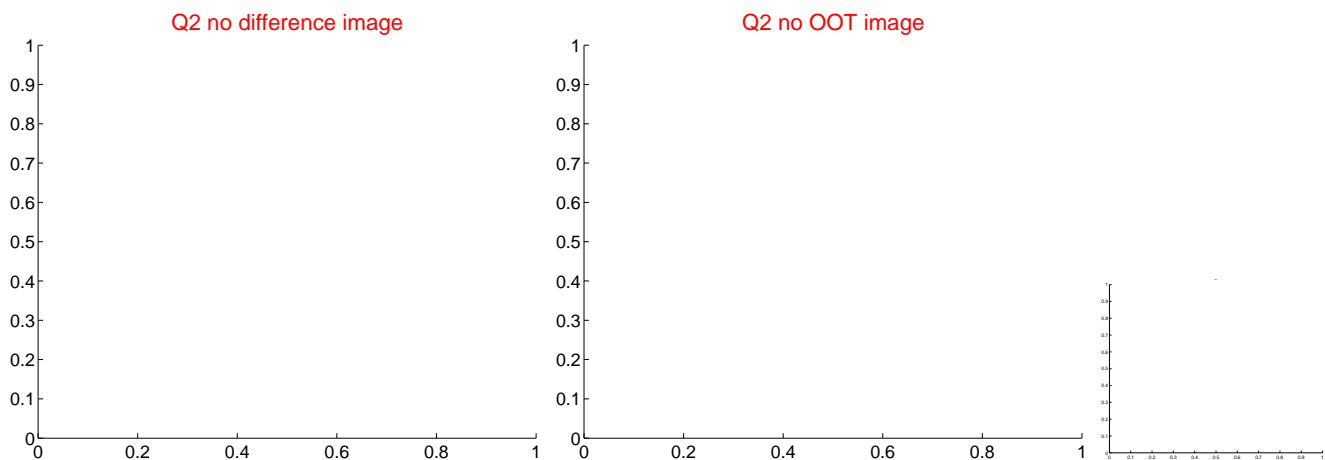
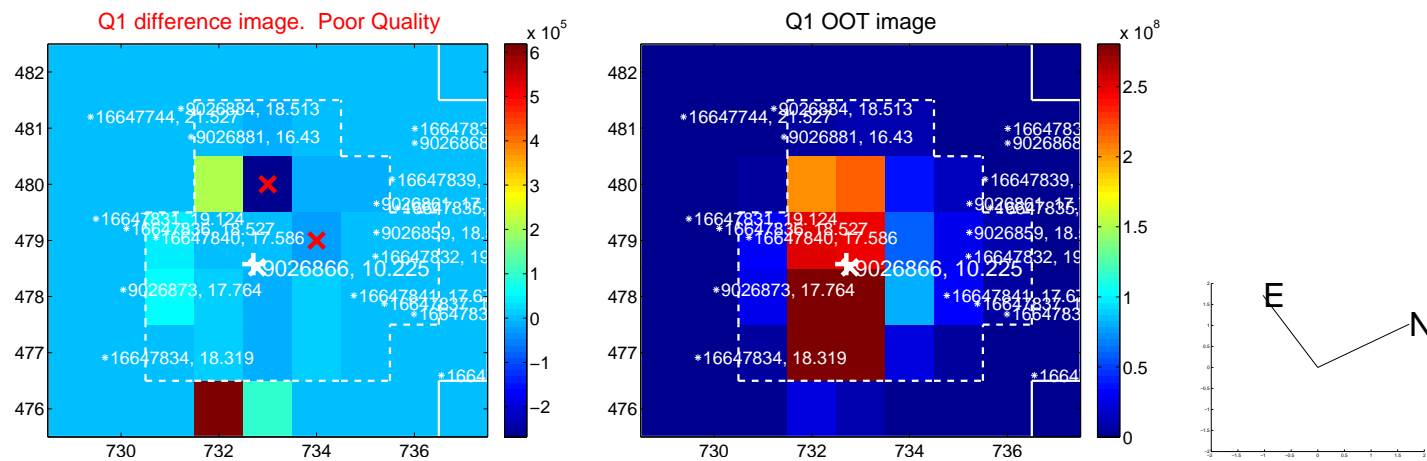
The direct PRF centroid is offset from the target star catalog position by about 0.68 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.101 \pm 2.032$	2.02	$-3.621 \pm 1.836$	$-1.925 \pm 1.054$
PRF-fit source offset from KIC position	$3.815 \pm 2.115$	1.80	$-3.564 \pm 2.149$	$-1.363 \pm 0.764$
photometric centroid source offset	$13.00 \pm 14.43$	0.90	$-11.54 \pm 15.50$	$-5.98 \pm 9.40$



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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



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

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



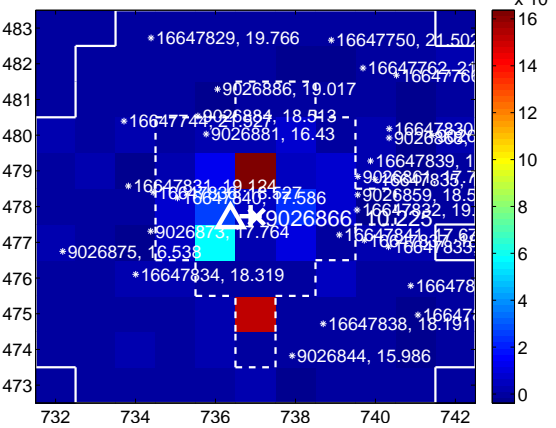
Q7 no difference image



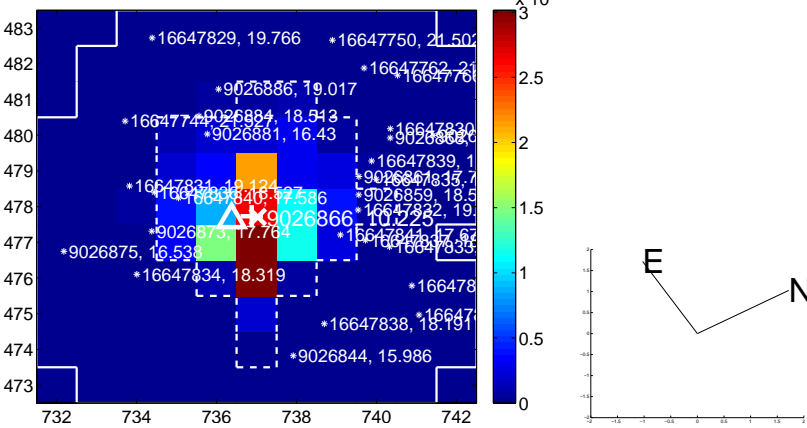
Q7 no OOT image



Q8 difference image. Poor Quality



Q8 OOT image





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

Q9 no difference image



Q9 no OOT image



Q10 no difference image



Q10 no OOT image



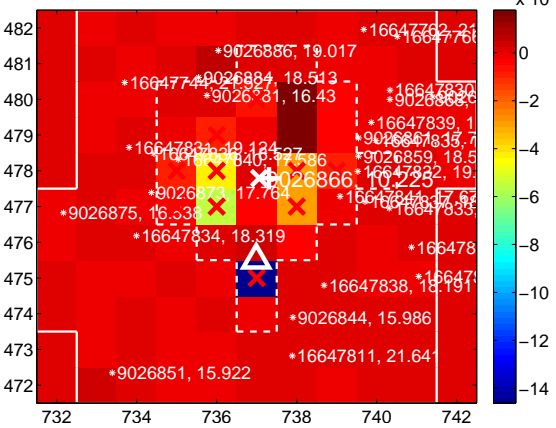
Q11 no difference image



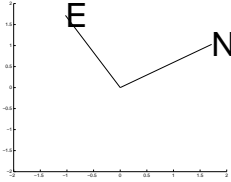
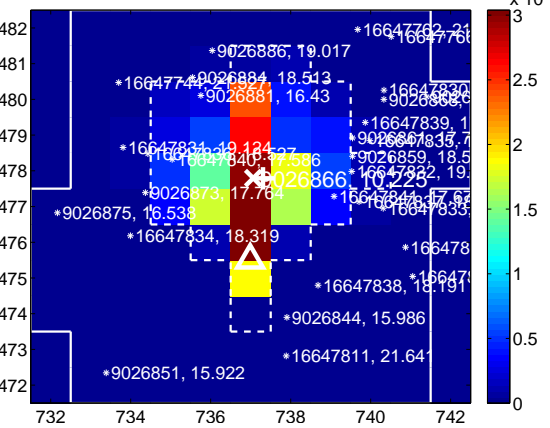
Q11 no OOT image



Q12 difference image. Poor Quality



Q12 OOT image



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

Q13 no difference image



Q13 no OOT image



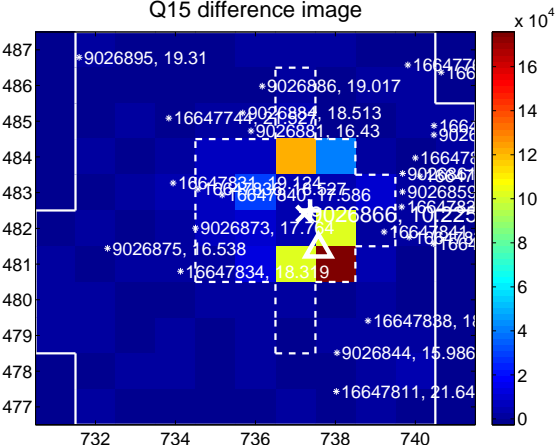
Q14 no difference image



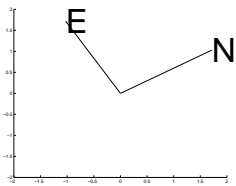
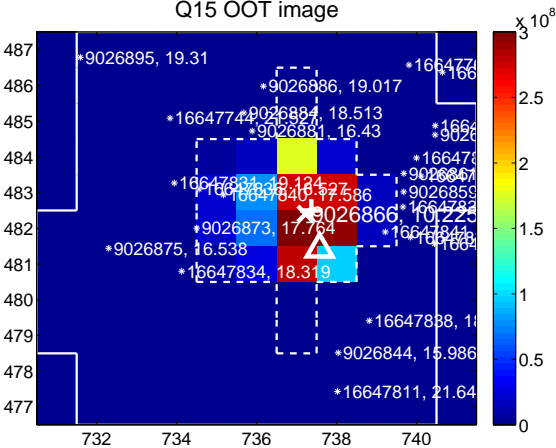
Q14 no OOT image



Q15 difference image



Q15 OOT image



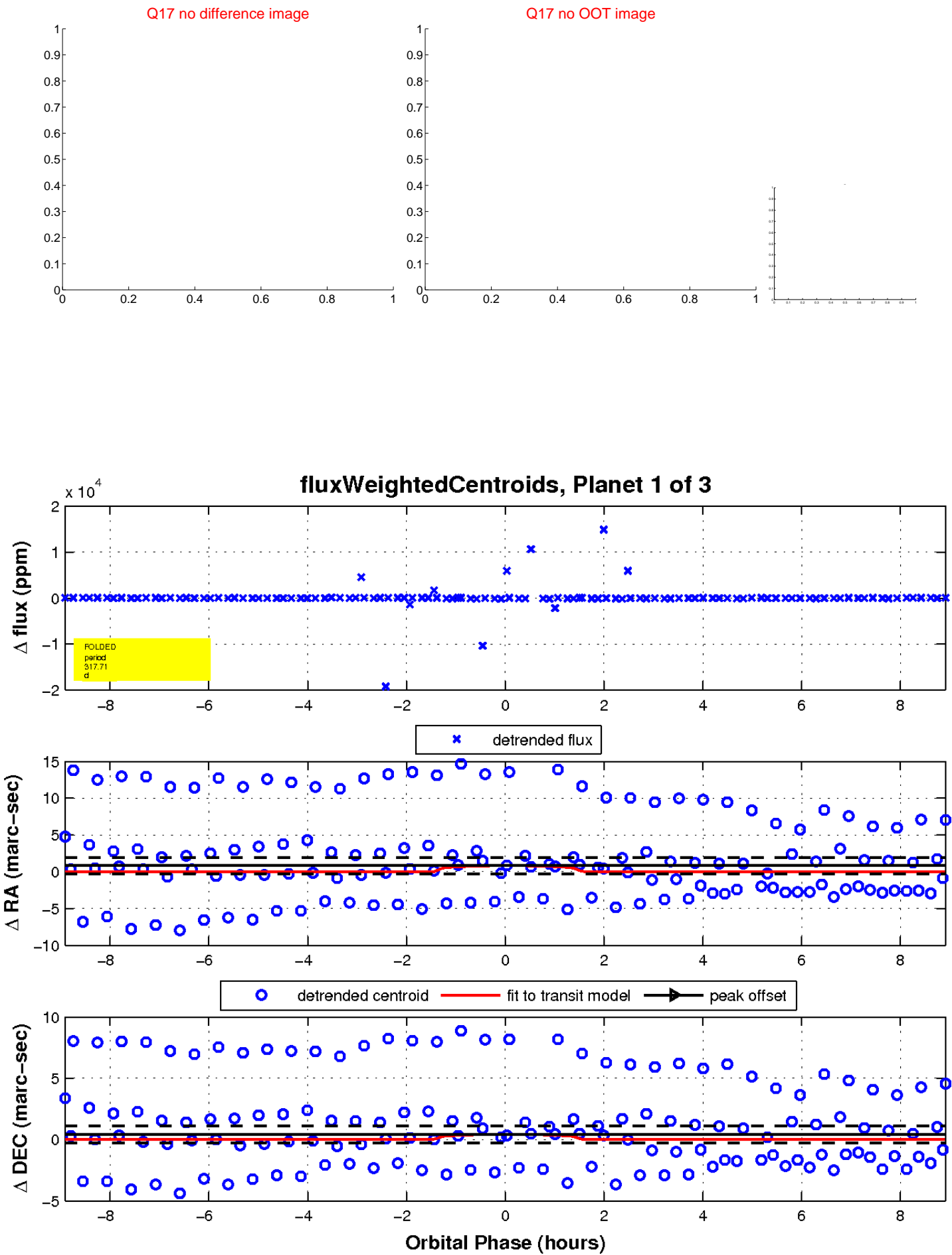
Q16 no difference image



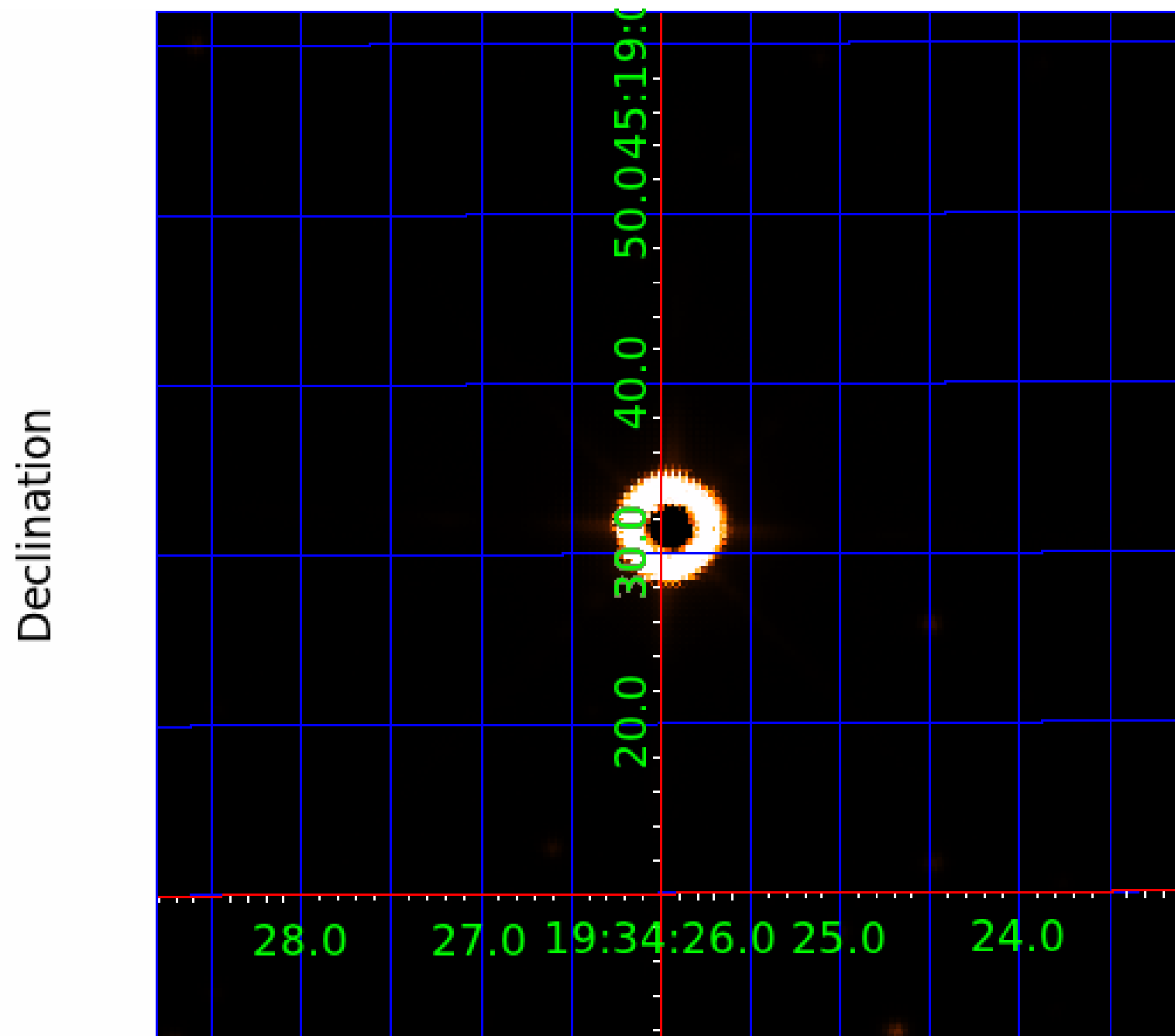
Q16 no OOT image



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



UKIRT Image



# KIC 009026866

## Q1-17 DR25 TCE Parameters

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009026866-03	OBS	No	280.355254	160.707145	79.1	9.000	11.5	-1.0	153.06	3286	124.89	3200.30

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009026866-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009026866-02	OBS	FP	0.00	1	0	0	0	MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009026866-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

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

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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.

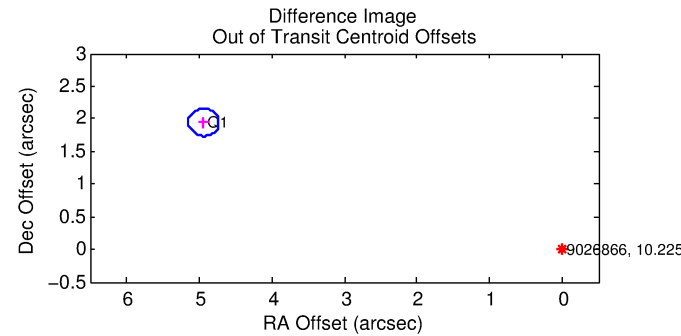
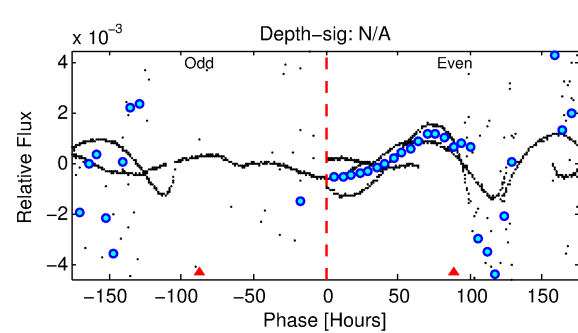
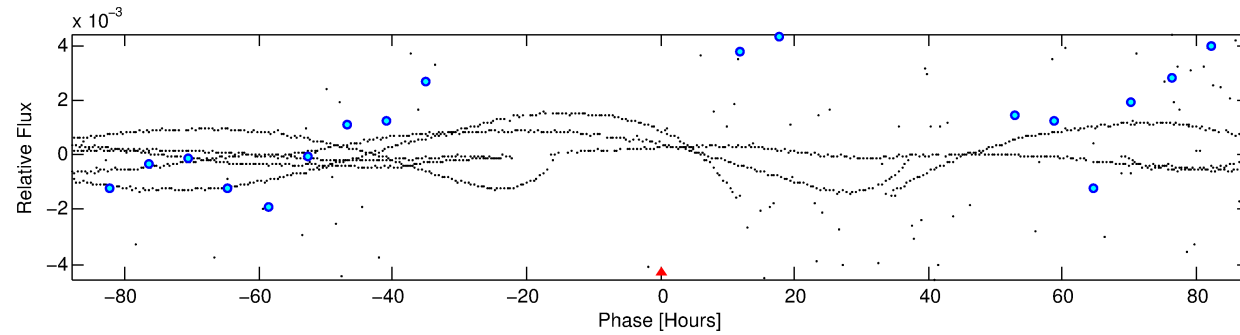
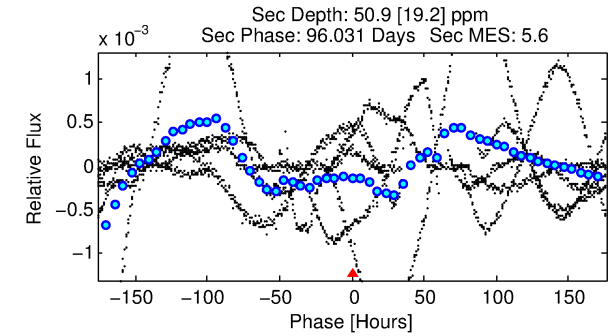
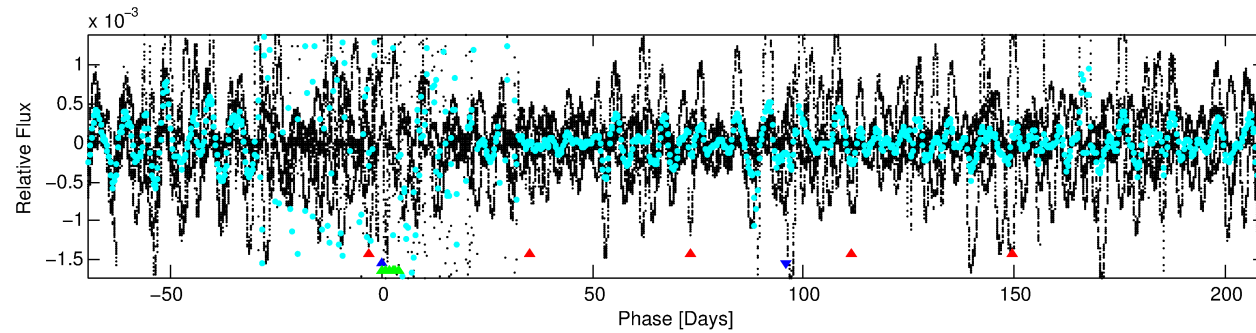
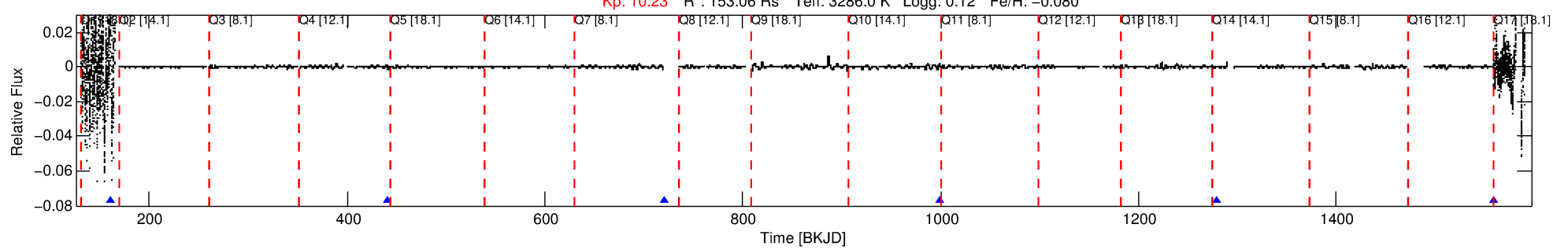
## Ephemeris Match Information For 009026866-02

No Significant Match Found

# DV One-Page Summary

KIC: 9026866 Candidate: 2 of 3 Period: 279.579 d

Kp: 10.23 R\*: 153.06 Rs Teff: 3286.0 K Logg: 0.12 Fe/H: -0.080



## TPS TCE Results:

Period = 279.57878 d  
Epoch = 162.2669 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

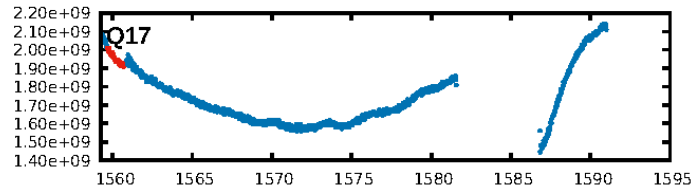
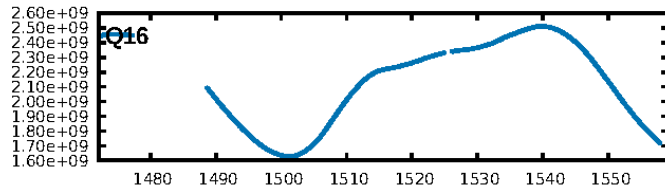
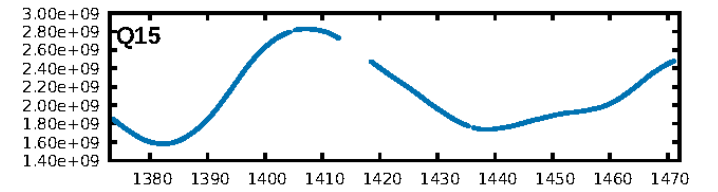
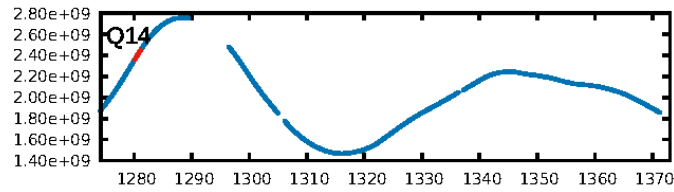
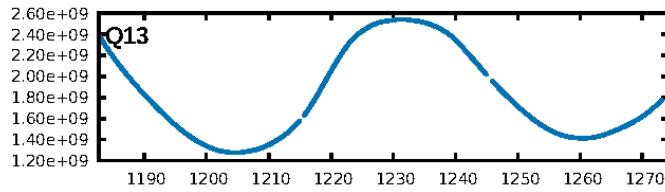
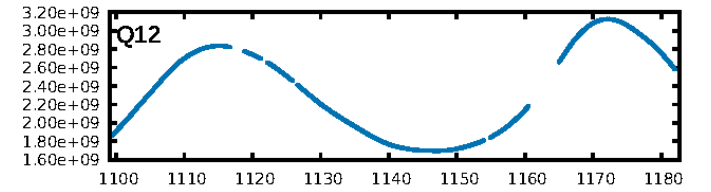
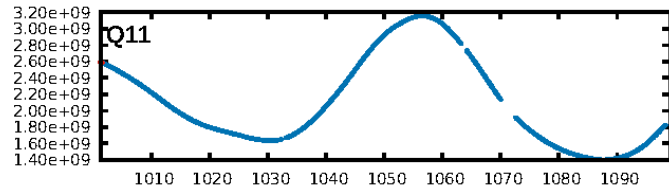
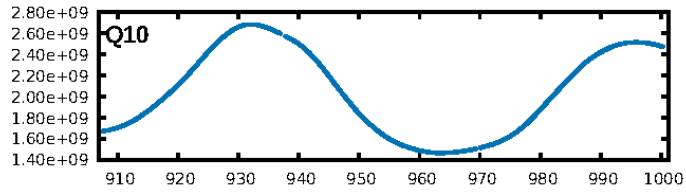
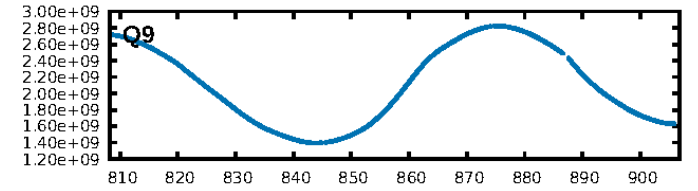
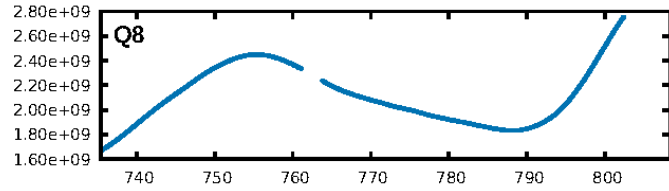
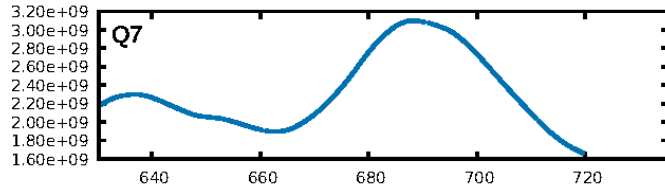
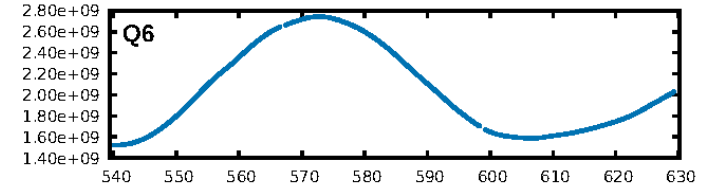
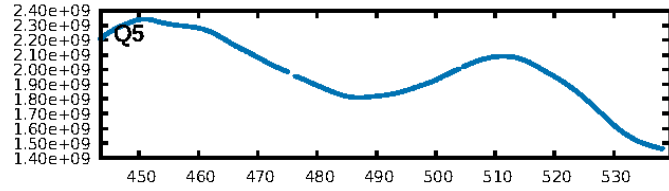
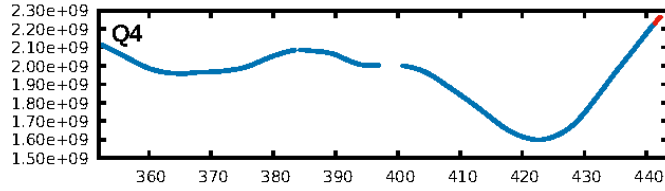
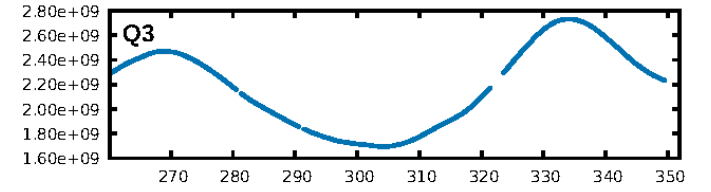
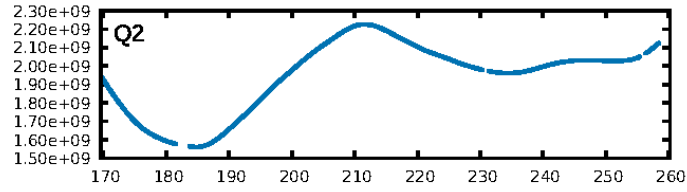
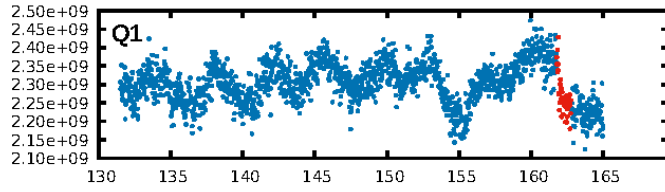
ShortPeriod-sig: N/A  
LongPeriod-sig: 78.6% [1.24σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 9.05e-08  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.759

Centroid-sig: 6.3%  
Centroid-so: 11.904 arcsec [1.25σ]  
OotOffset-rm: 5.305 arcsec [76.56σ]  
KicOffset-rm: 5.578 arcsec [80.49σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 0.00 [0/1]

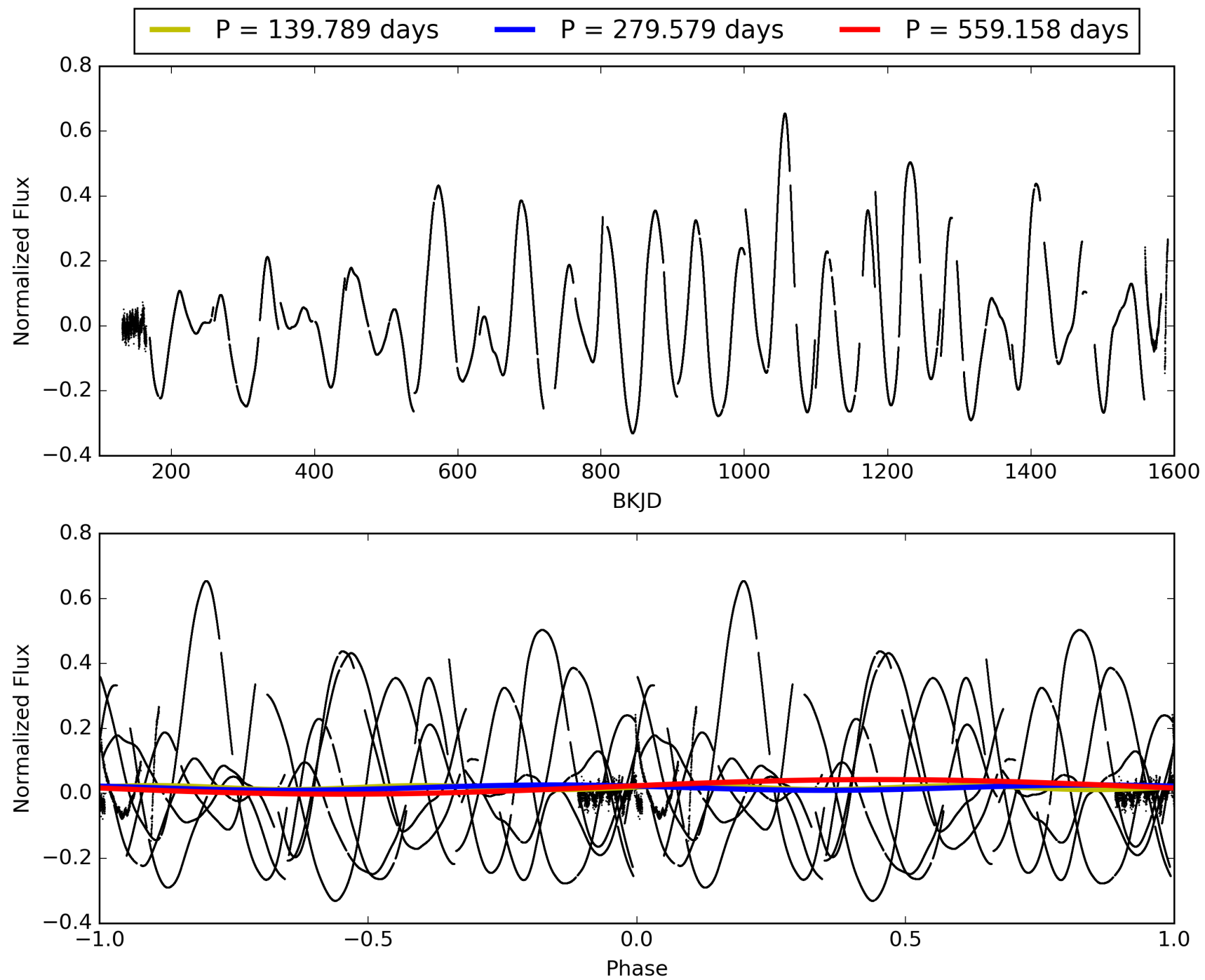
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:02:13 Z

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

# TCE 009026866-02, PDC Light Curves



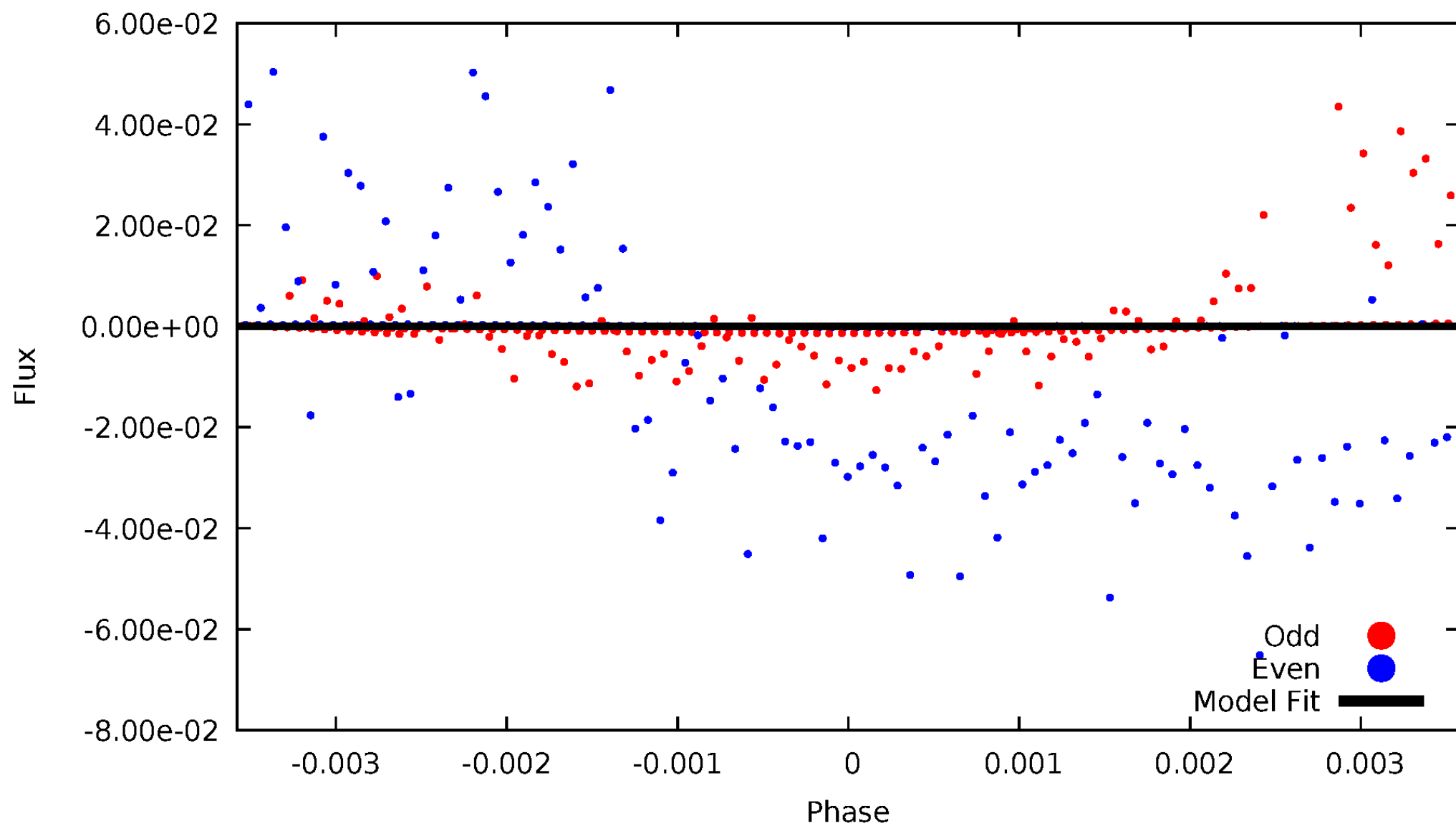
TCE 009026866-02





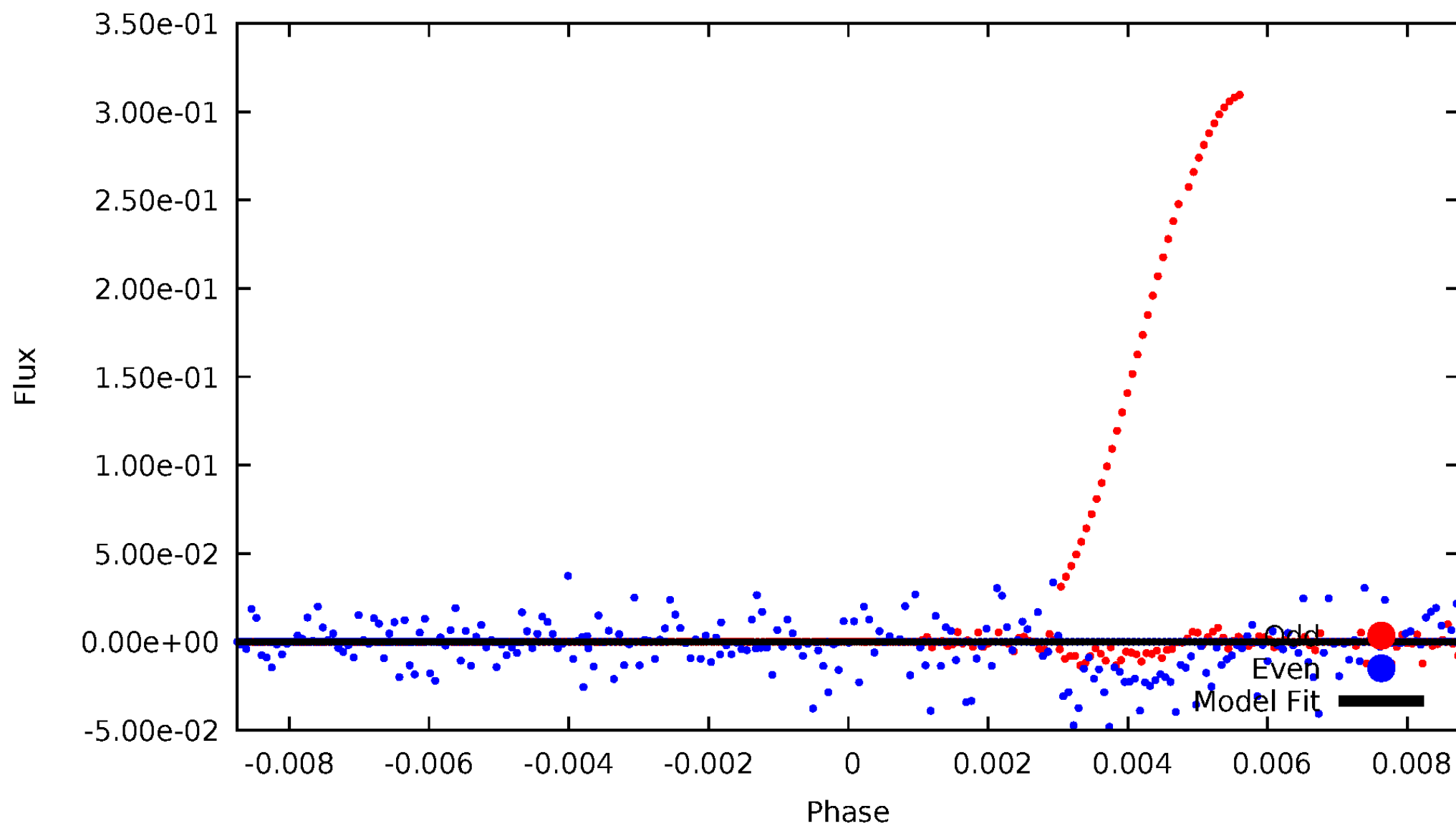
# DV Odd/Even

TCE 009026866-02



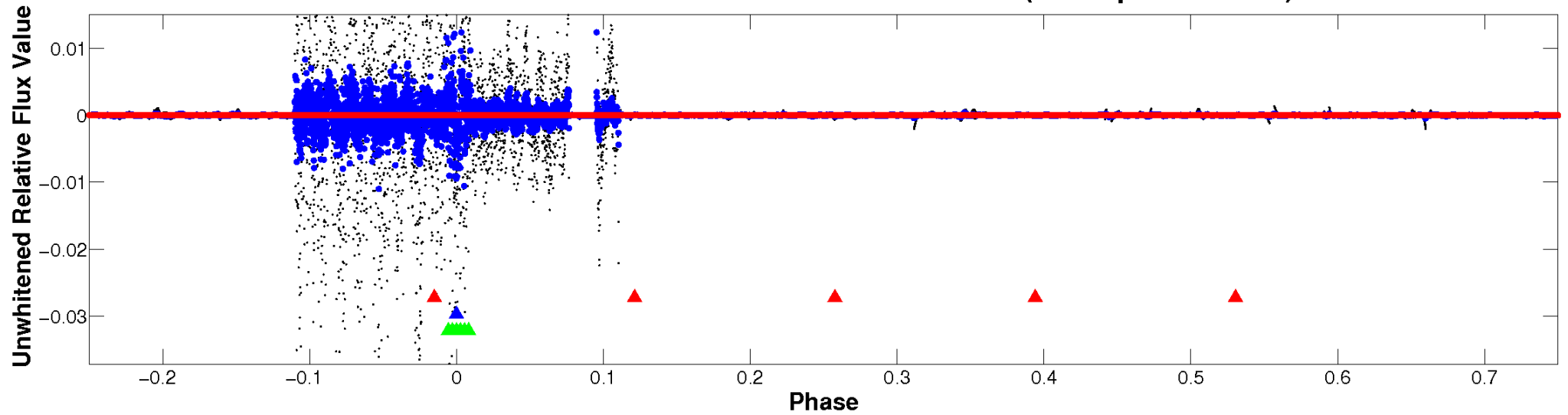
# ALT Odd/Even

TCE 009026866-02



# Non-Whitened Vs. Whitened Light Curve

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

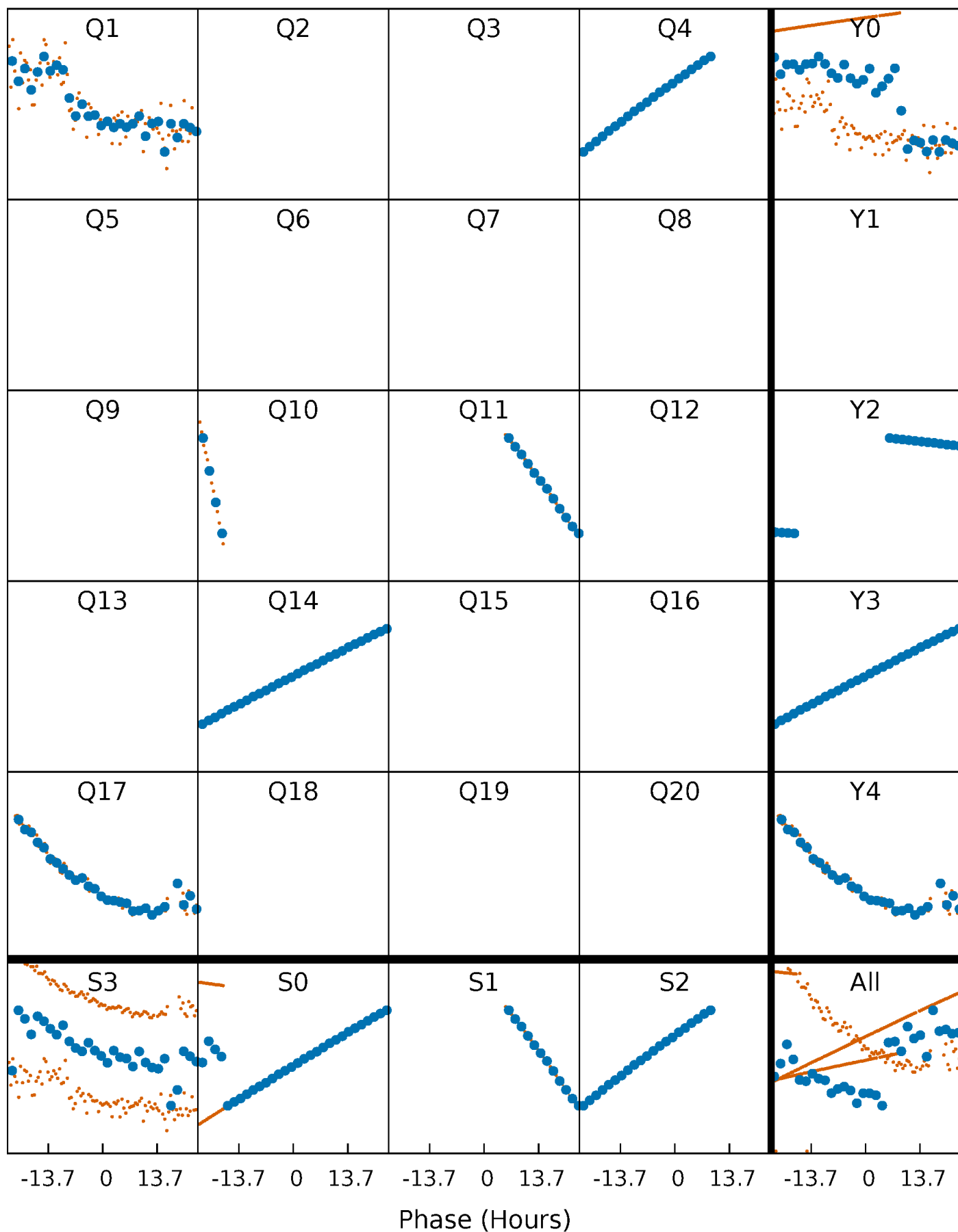


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



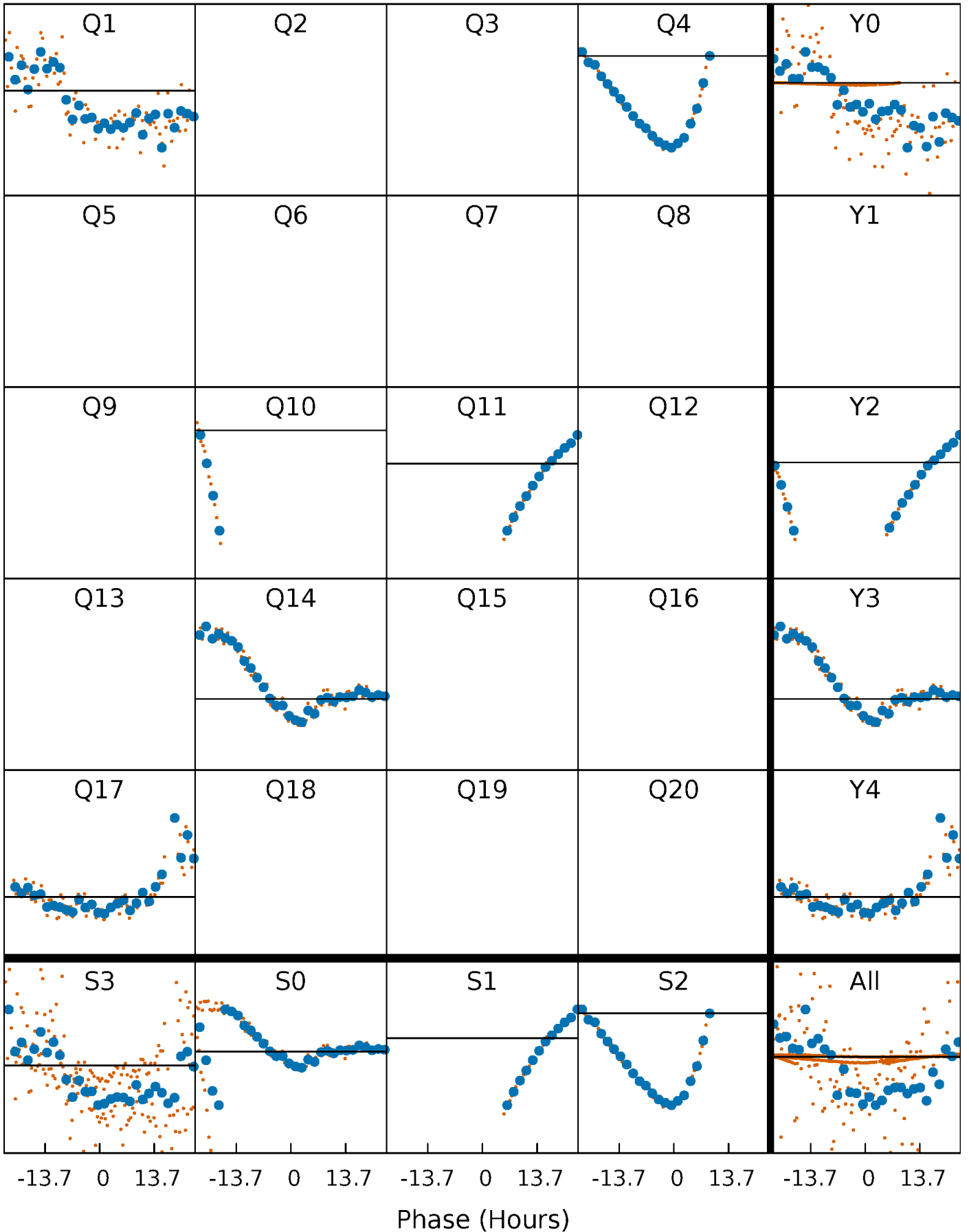
# PDC Quarter-Phased Transit Curves

TCE 009026866-02 P=279.578779 Days  $T_0=162.266907$  (BKJD)



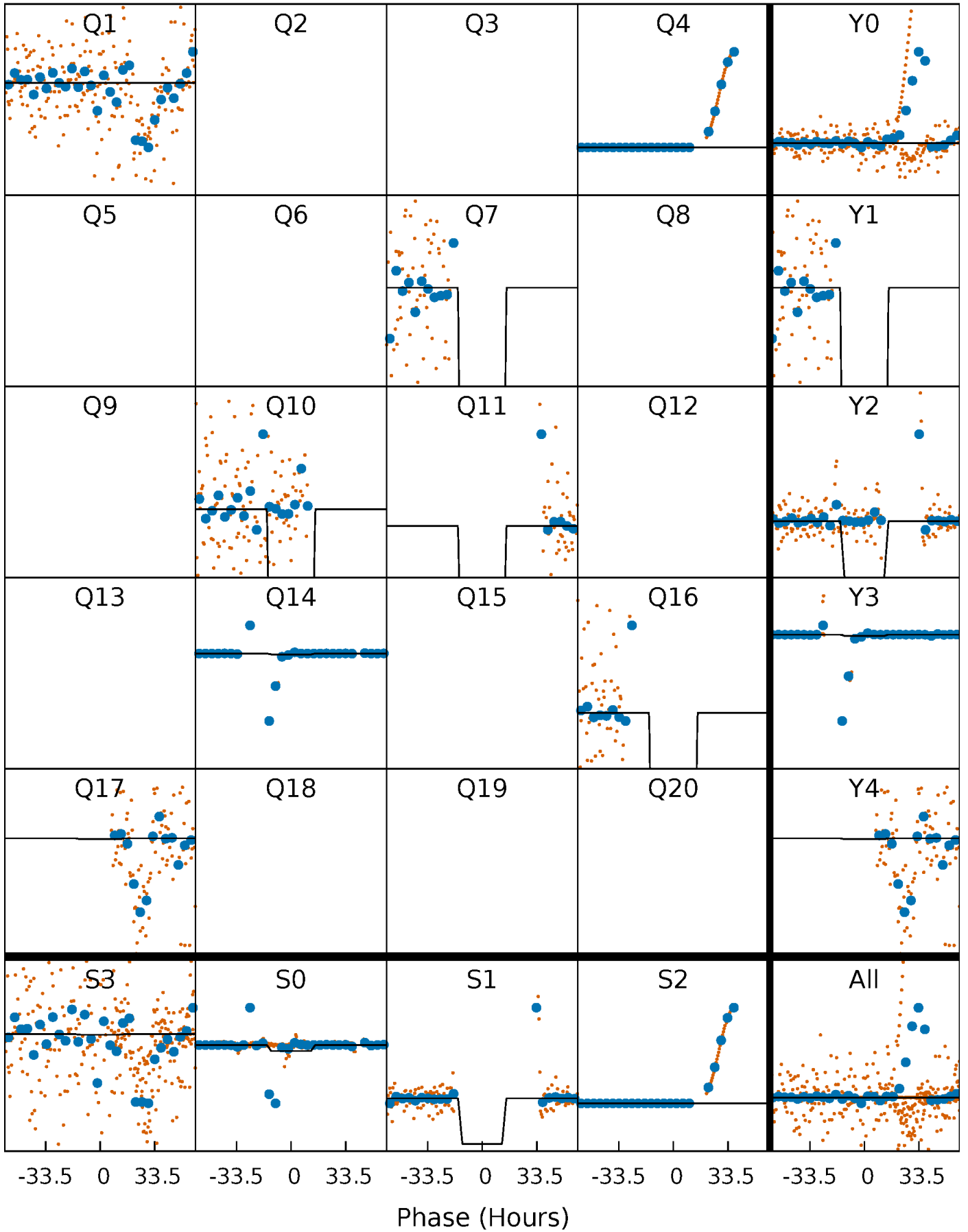
# DV Quarter-Phased Transit Curves

TCE 009026866-02     $P=279.578779$  Days     $T_0=162.266907$  (BKJD)



## Alt. Detrend Quarter-Phased Transit Curves

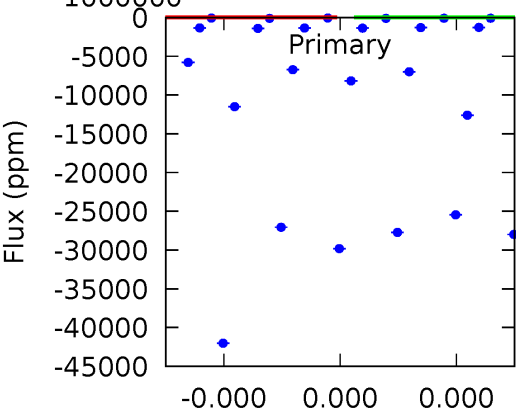
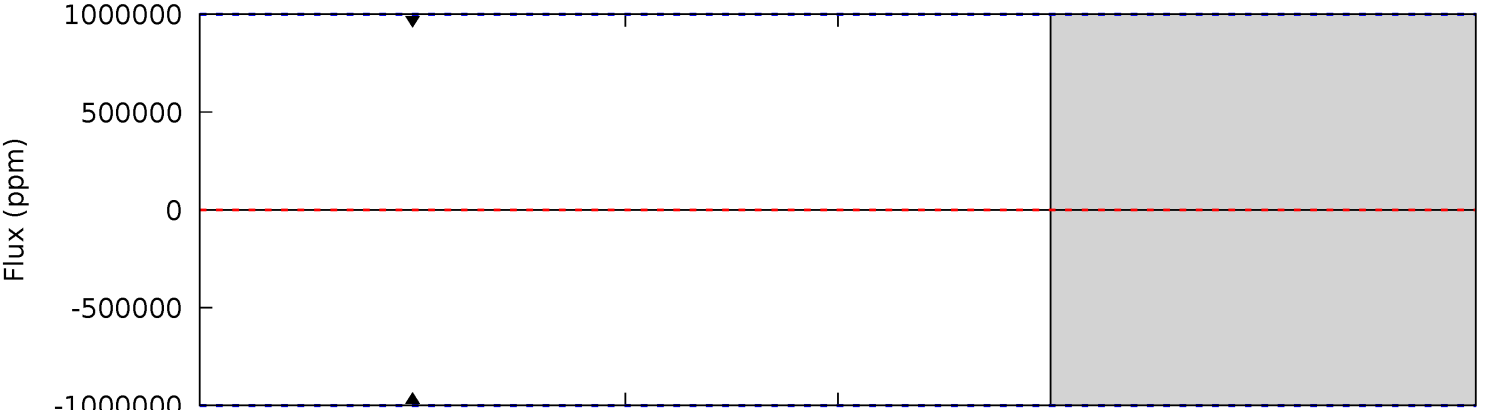
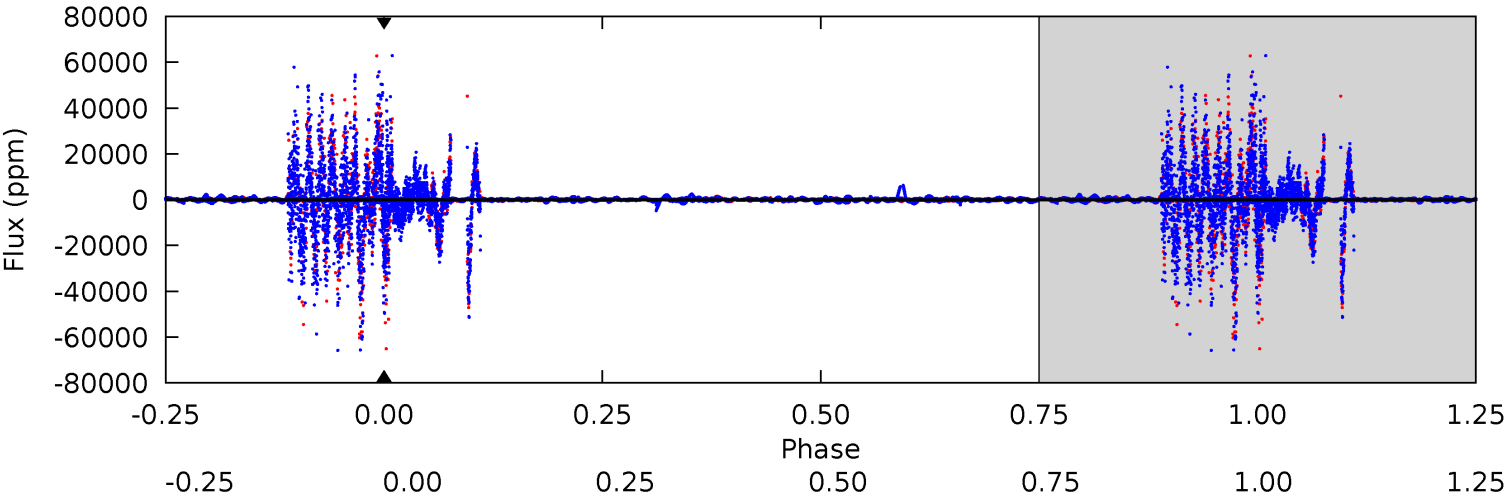
TCE 009026866-02     $P=279.578779$  Days     $T_0=161.058154$  (BKJD)



# DV Model-Shift Uniqueness Test

009026866-02, P = 279.578779 Days, E = 162.266907 Days

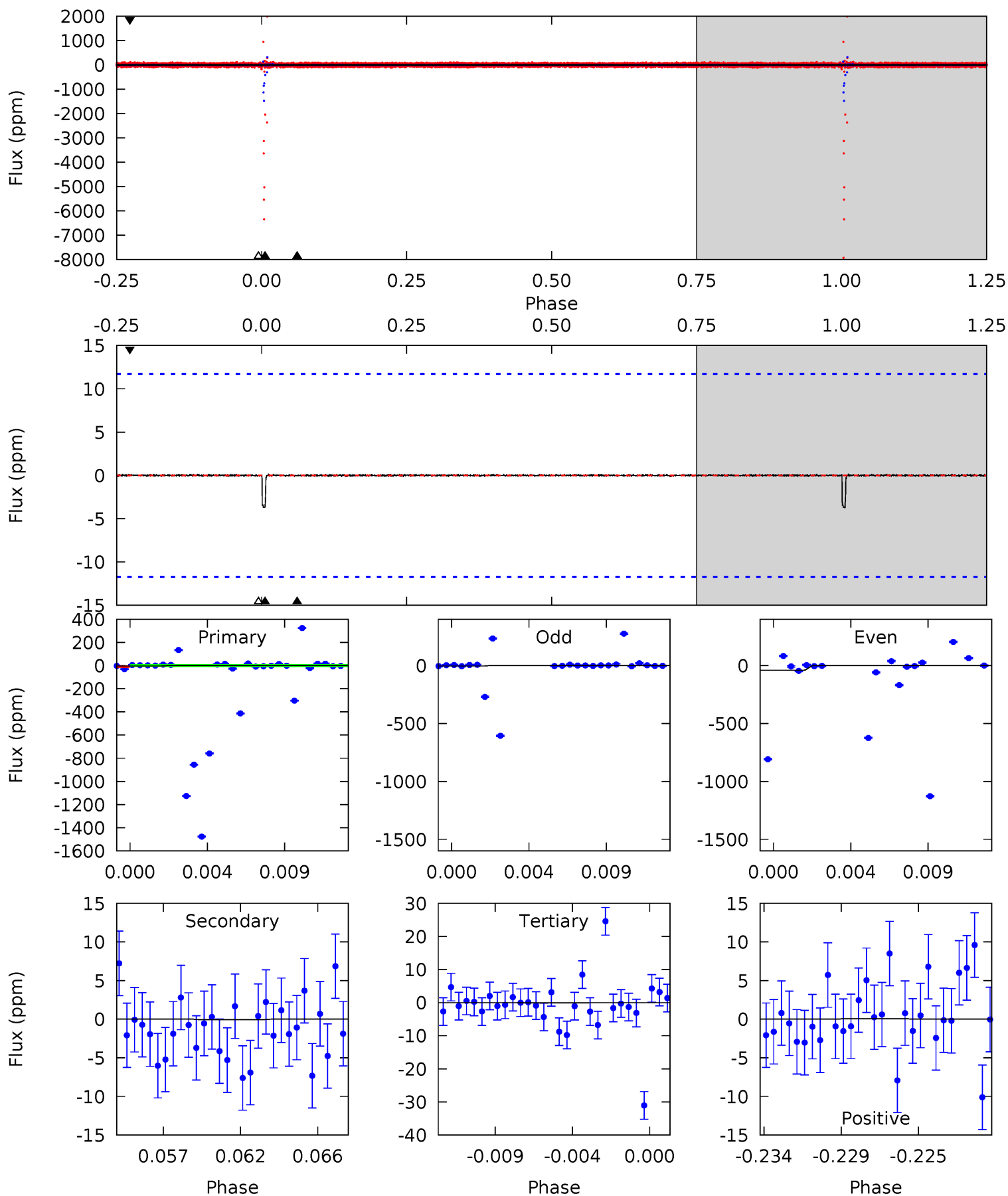
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

009026866-02, P = 279.578779 Days, E = 161.058154 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
1.64	0.03	0.03	0.03	5.18	2.85	0.03	1.62	1.62	0.00	0.00	0.51	373.2	0.04	1.90





### Stellar Parameters For KIC 009026866

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3286^{+117}_{-88}$	$0.123^{+0.200}_{-0.050}$	$-0.080^{+0.250}_{-0.150}$	$153.058^{+9.192}_{-27.576}$	$1.134^{+0.189}_{-0.155}$	$0.000^{+0.000}_{-0.000}$
	+4%/-3%	+163%/-41%	+312%/-188%	+6%/-18%	+17%/-14%	+93%/-14%
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 009026866-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$1054.26^{+1222.86}_{-703.95}$	$2635^{+117}_{-142}$	$-2935^{+10330}_{-3738}$	$-0.360^{+82.868}_{-56.921}$
Alt.	$-0 \pm 2$	$1173.75^{+1181.45}_{-776.48}$	$2643^{+120}_{-150}$	$-2606^{+87}_{-94}$	$-0.000^{+0.001}_{-0.001}$

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

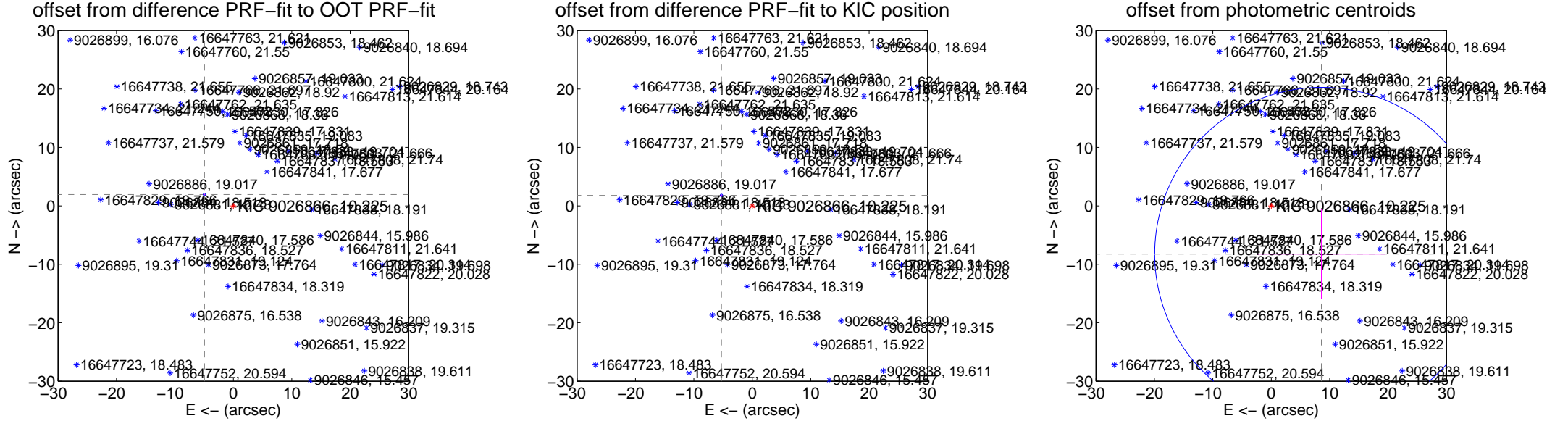
## DV Centroid Data

Supplemental centroid analysis for 009026866-02. **Kepler magnitude: 10.22**. Transit SNR -1.00

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

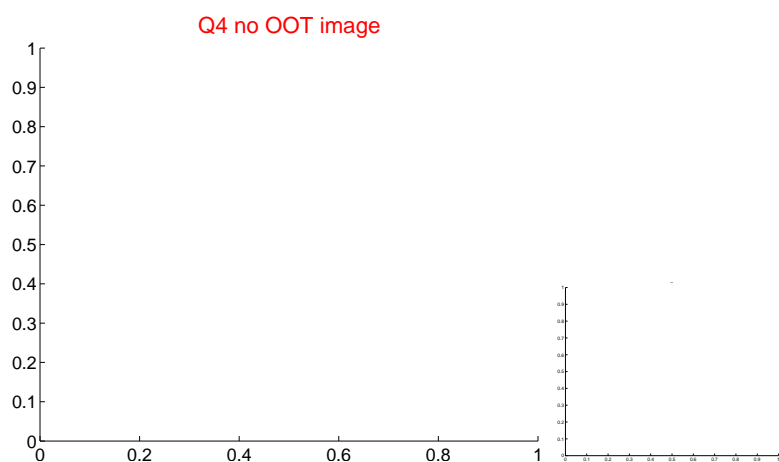
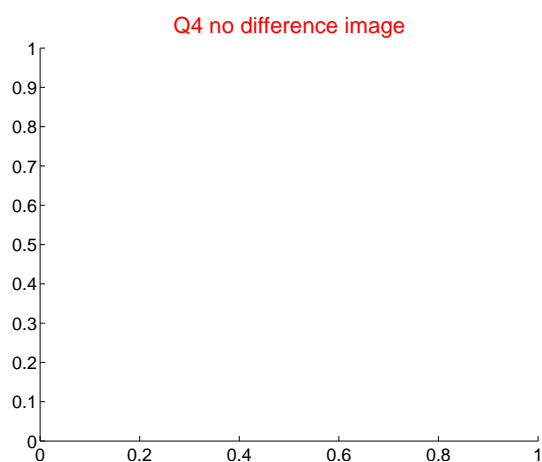
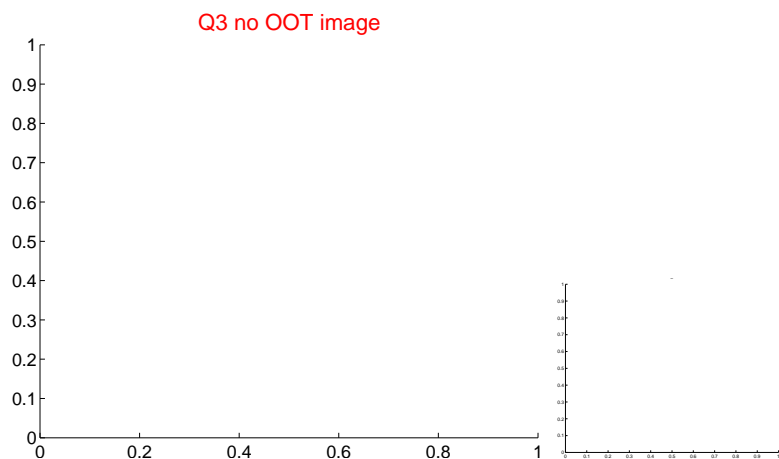
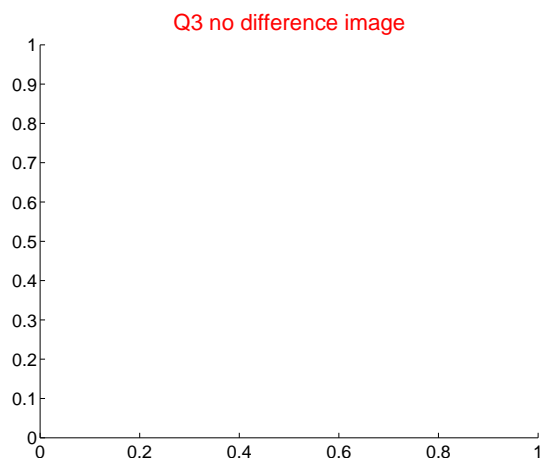
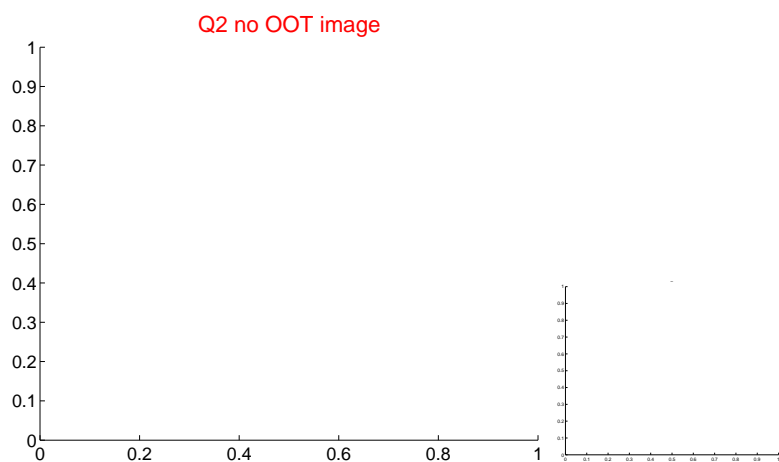
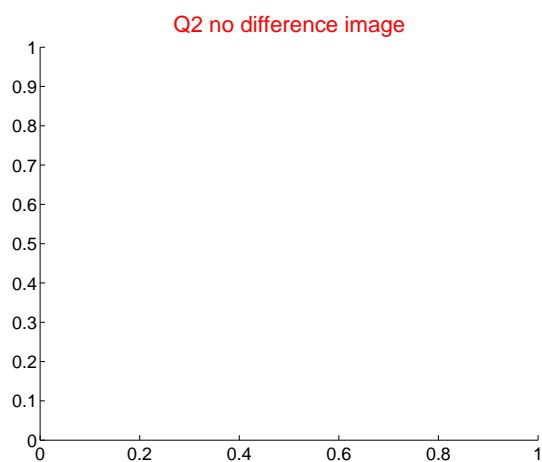
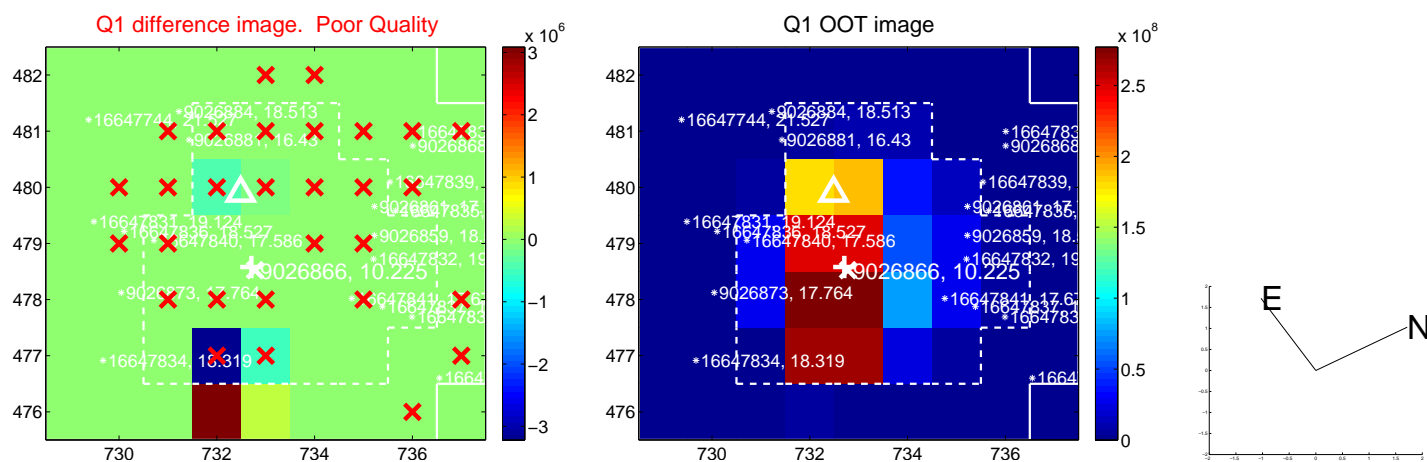
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>5.305 <math>\pm</math> 0.069</b>	<b>76.56</b>	4.936 $\pm$ 0.069	1.944 $\pm$ 0.069
PRF-fit source offset from KIC position	<b>5.578 <math>\pm</math> 0.069</b>	<b>80.49</b>	5.279 $\pm$ 0.069	1.802 $\pm$ 0.069
photometric centroid source offset	11.90 $\pm$ 9.51	1.25	-8.58 $\pm$ 10.93	-8.25 $\pm$ 7.68



Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three- $\sigma$ . Red \*: target star. Blue \*: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

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



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



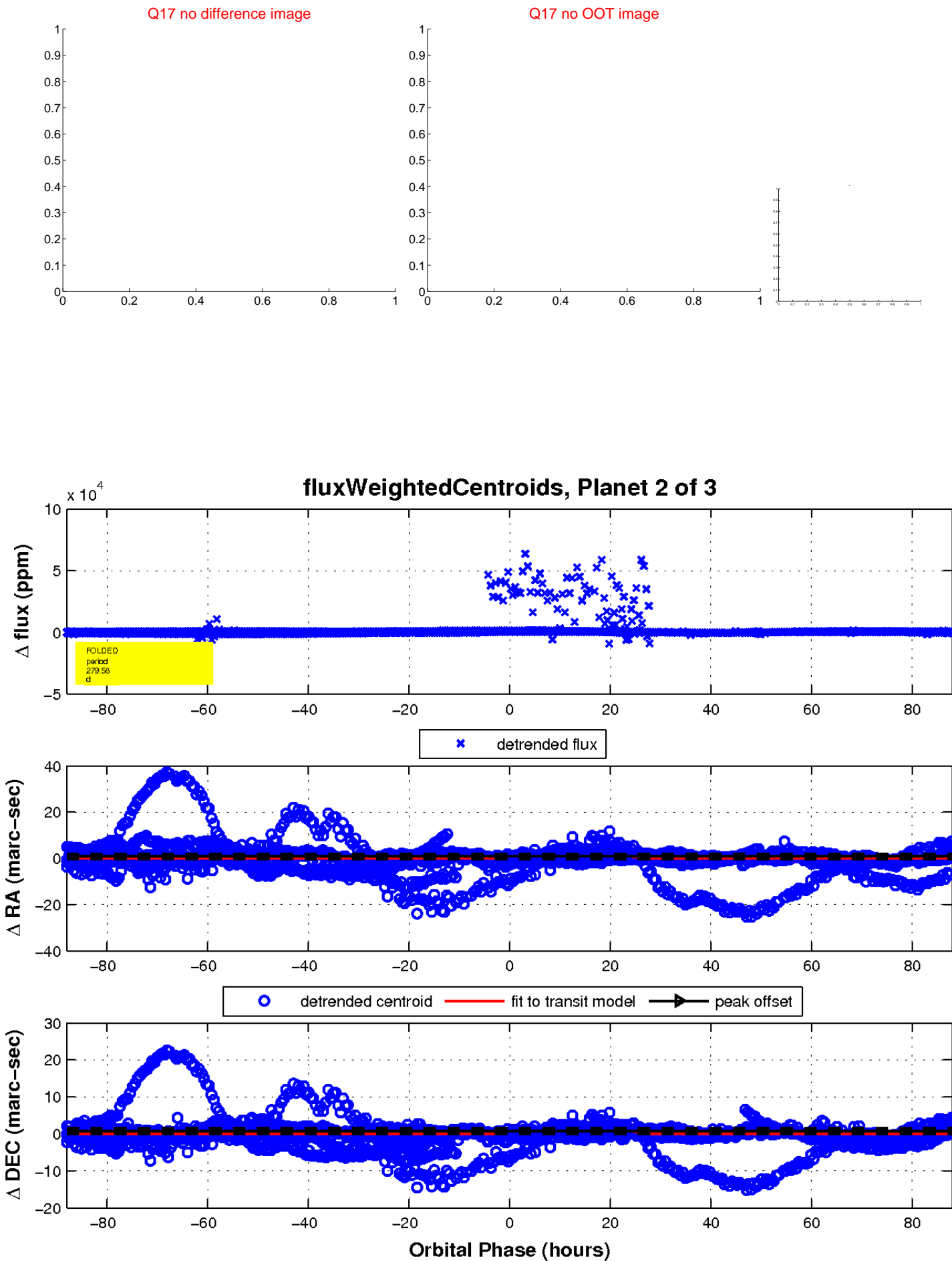
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



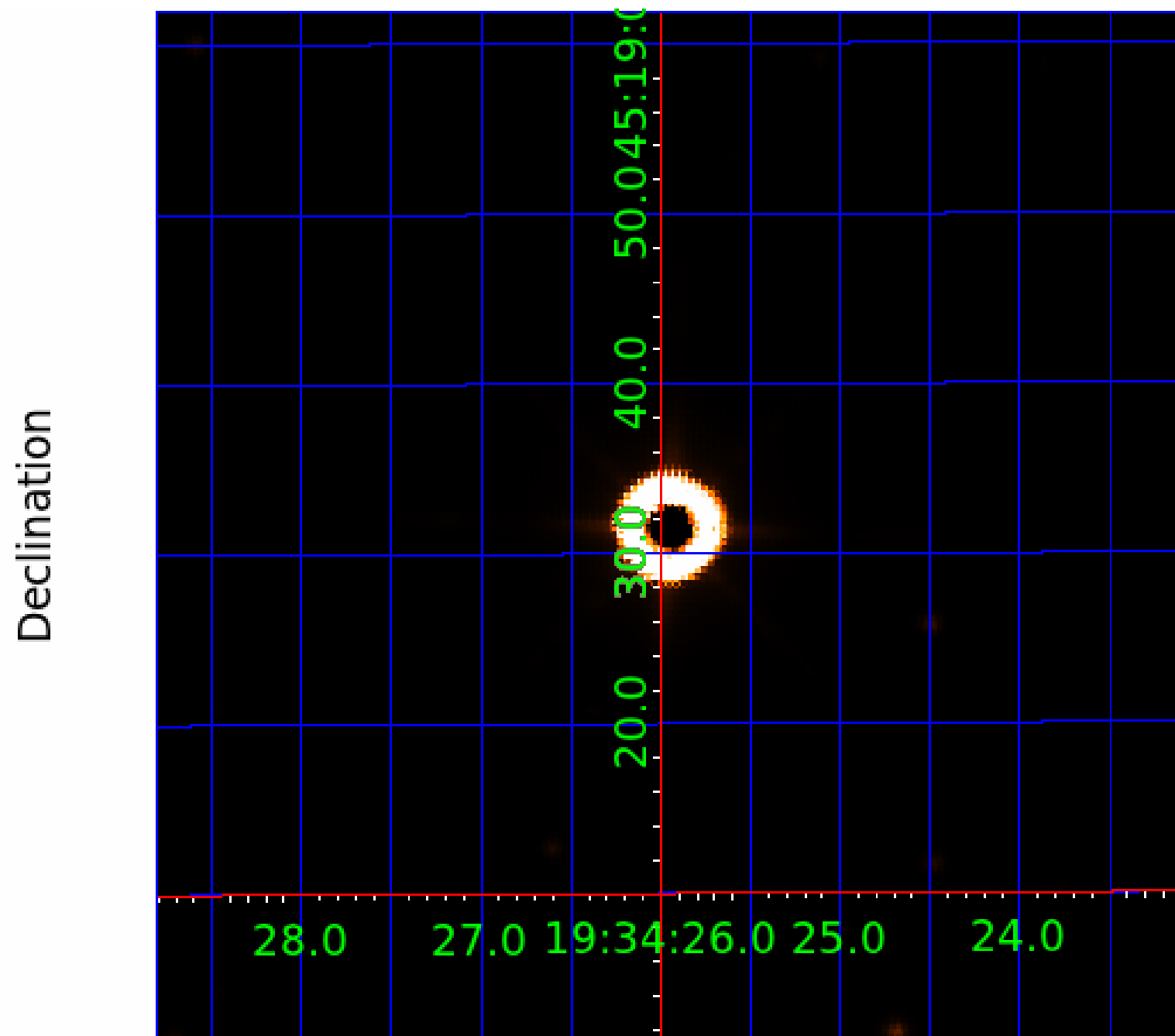
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





# KIC 009026866

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009026866-01	OBS	No	317.708874	158.057634	71.8	2.977	8.9	6.1	153.06	3286	167.46	2708.71
009026866-02	OBS	No	279.578779	162.266907	84.3	12.000	12.5	-1.0	153.06	3286	128.91	3212.15
009026866-03	OBS	No	280.355254	160.707145	79.1	9.000	11.5	-1.0	153.06	3286	124.89	3200.30

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009026866-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009026866-02	OBS	FP	0.00	1	0	0	0	MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009026866-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST

**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.

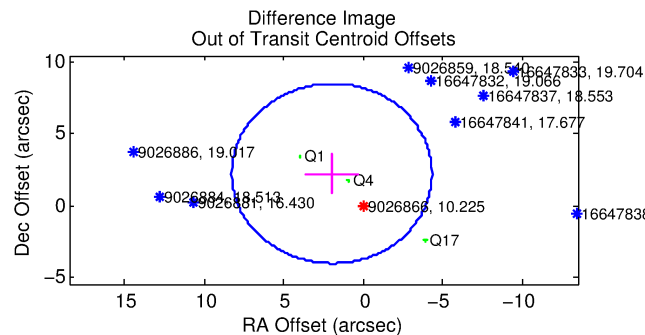
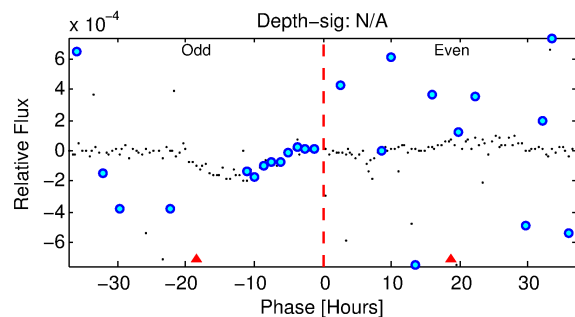
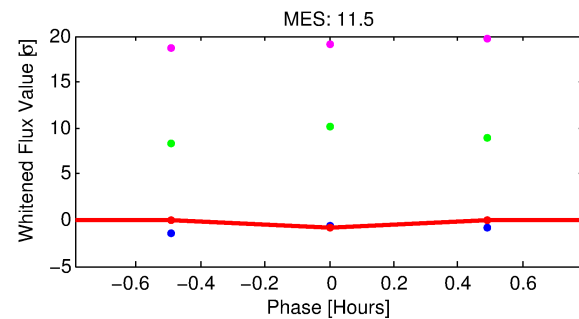
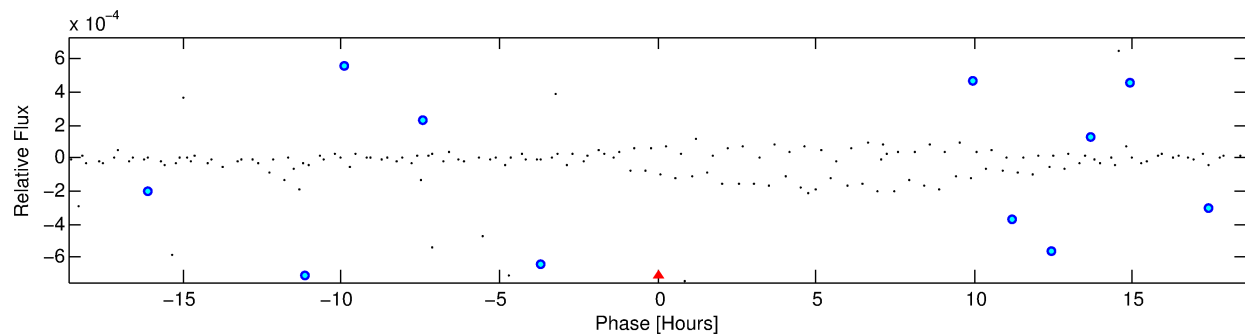
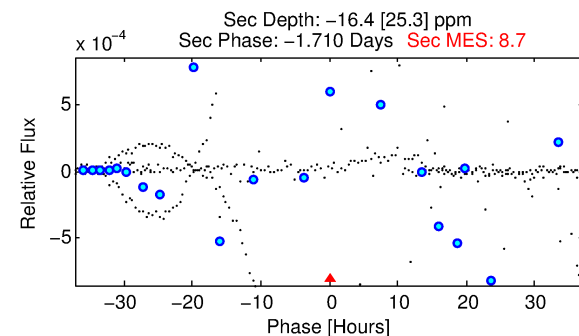
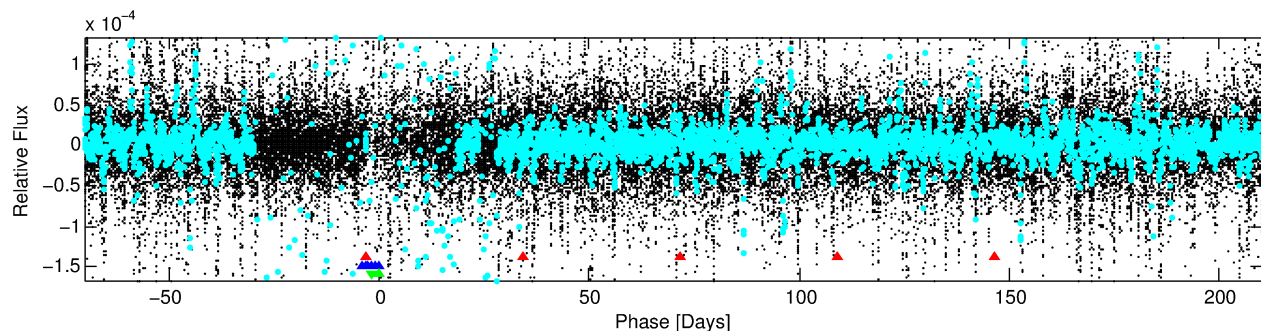
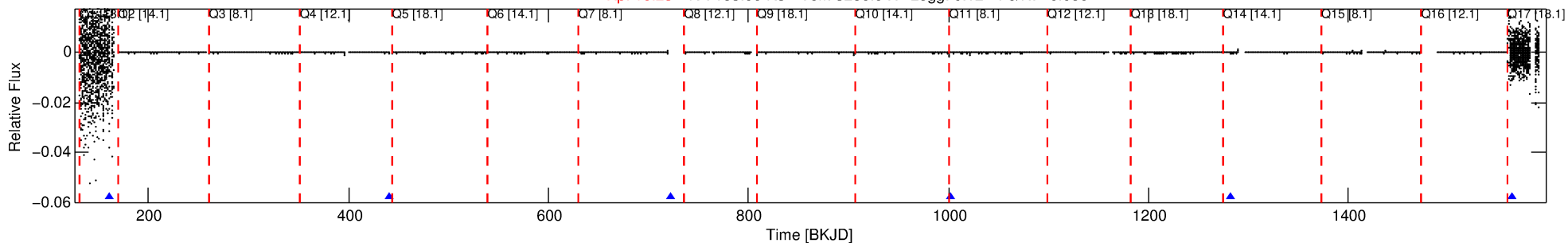
## Ephemeris Match Information For 009026866-03

No Significant Match Found

# DV One-Page Summary

KIC: 9026866 Candidate: 3 of 3 Period: 280.355 d

Kp: 10.23 R\*: 153.06 Rs Teff: 3286.0 K Logg: 0.12 Fe/H: -0.080



## TPS TCE Results:

Period = 280.35525 d  
Epoch = 160.7071 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

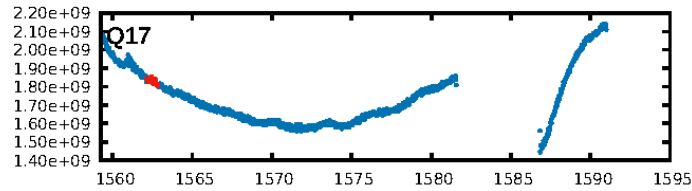
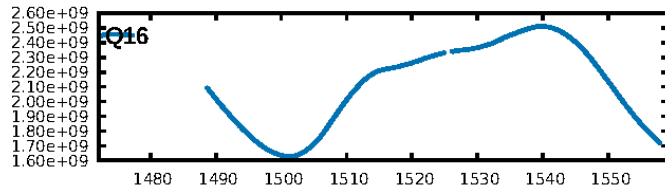
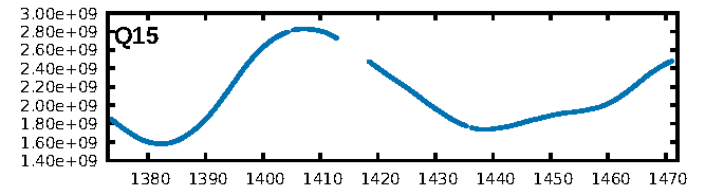
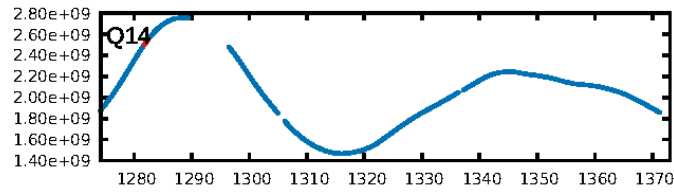
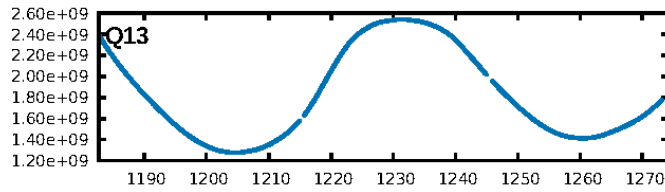
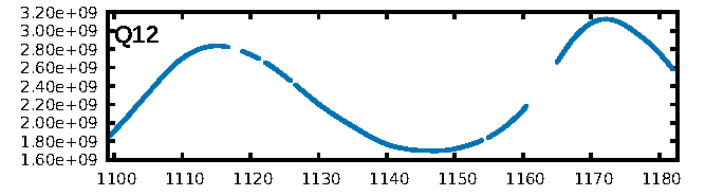
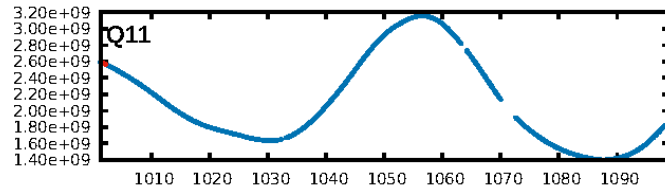
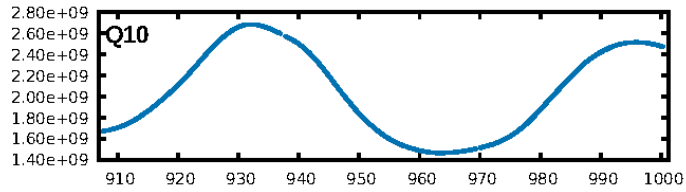
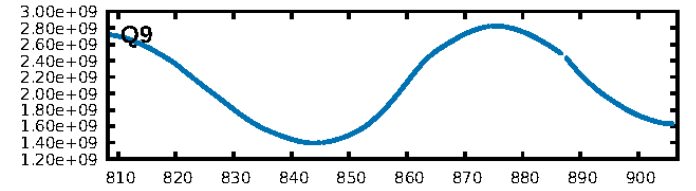
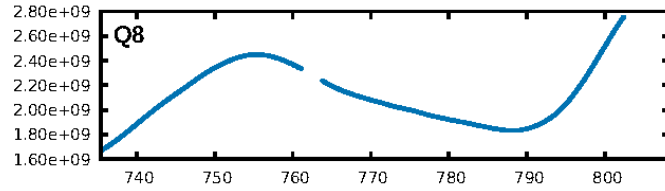
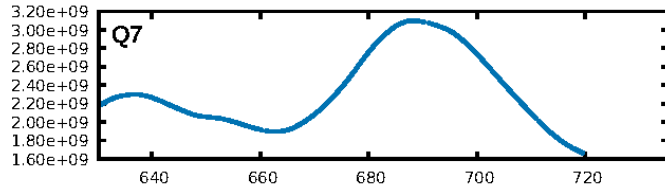
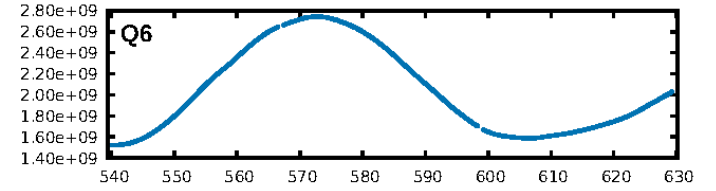
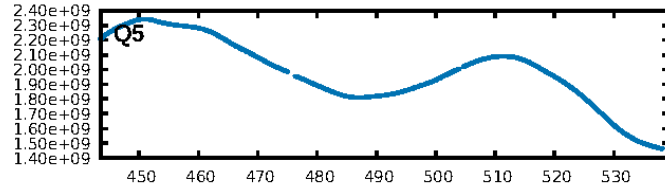
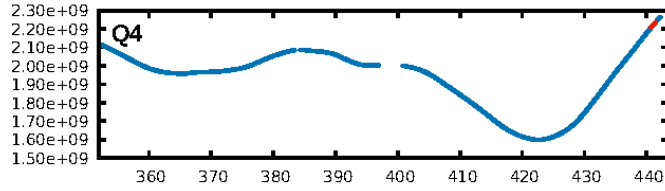
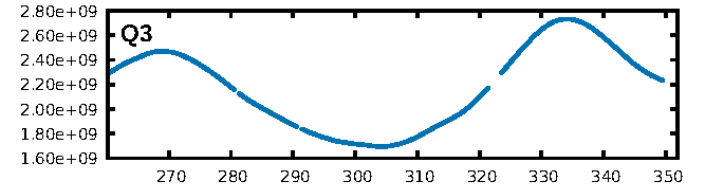
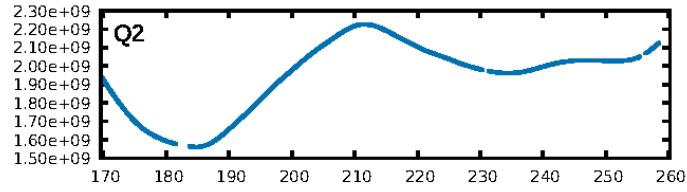
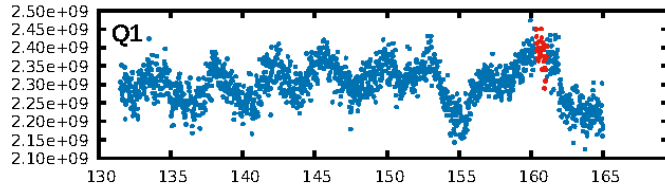
ShortPeriod-sig: 78.6% [1.24σ]  
LongPeriod-sig: 100.0% [94.57σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.57e-08  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 0.05566

Centroid-sig: 90.6%  
Centroid-so: 19.226 arcsec [0.31σ]  
OotOffset-rm: 2.979 arcsec [1.42σ]  
KicOffset-rm: 3.076 arcsec [1.40σ]  
OotOffset-st: 0/0/1/2 [3]  
KicOffset-st: 0/0/1/2 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 0.33 [1/3]

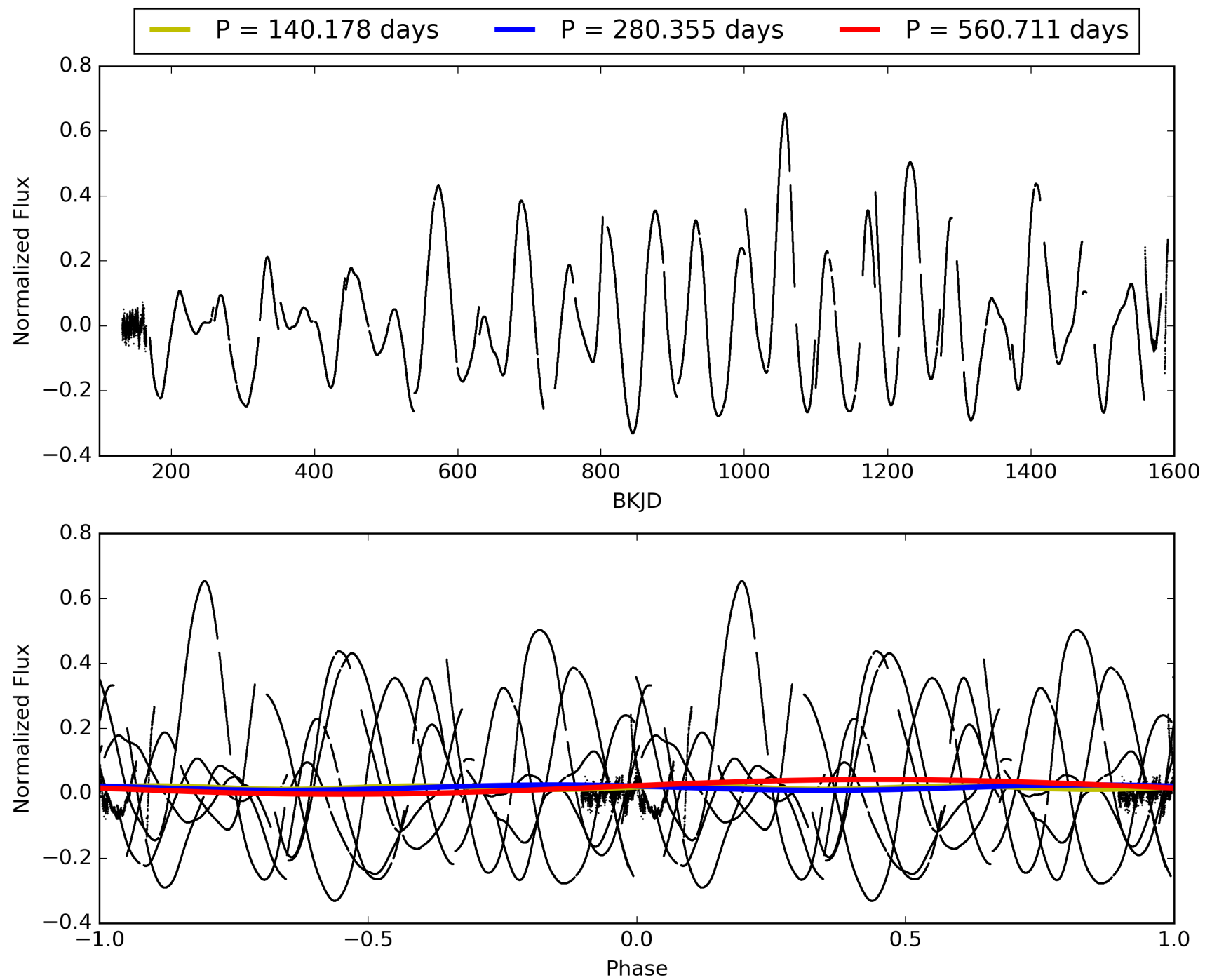
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:02:21 Z

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

# TCE 009026866-03, PDC Light Curves

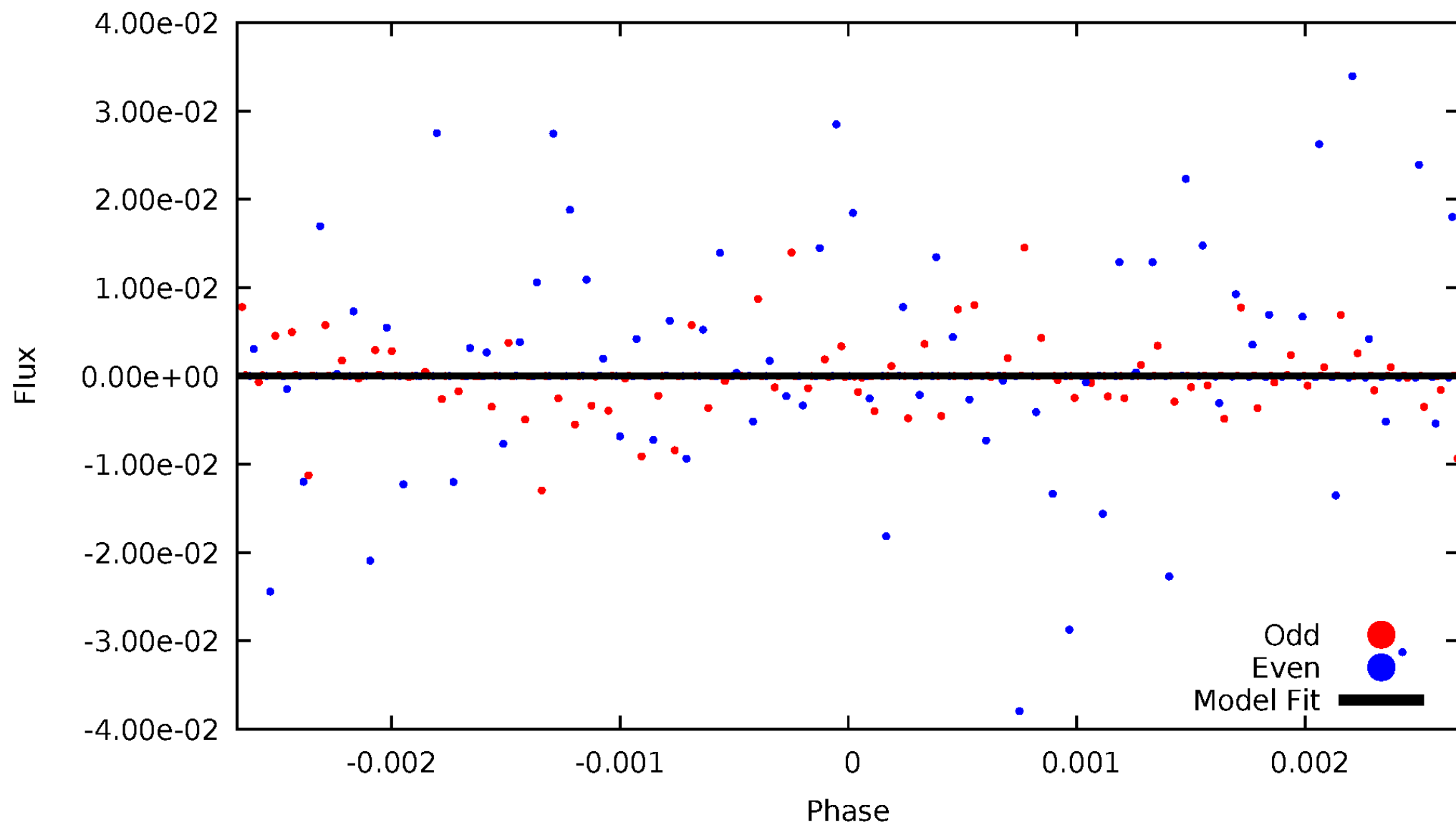


TCE 009026866-03



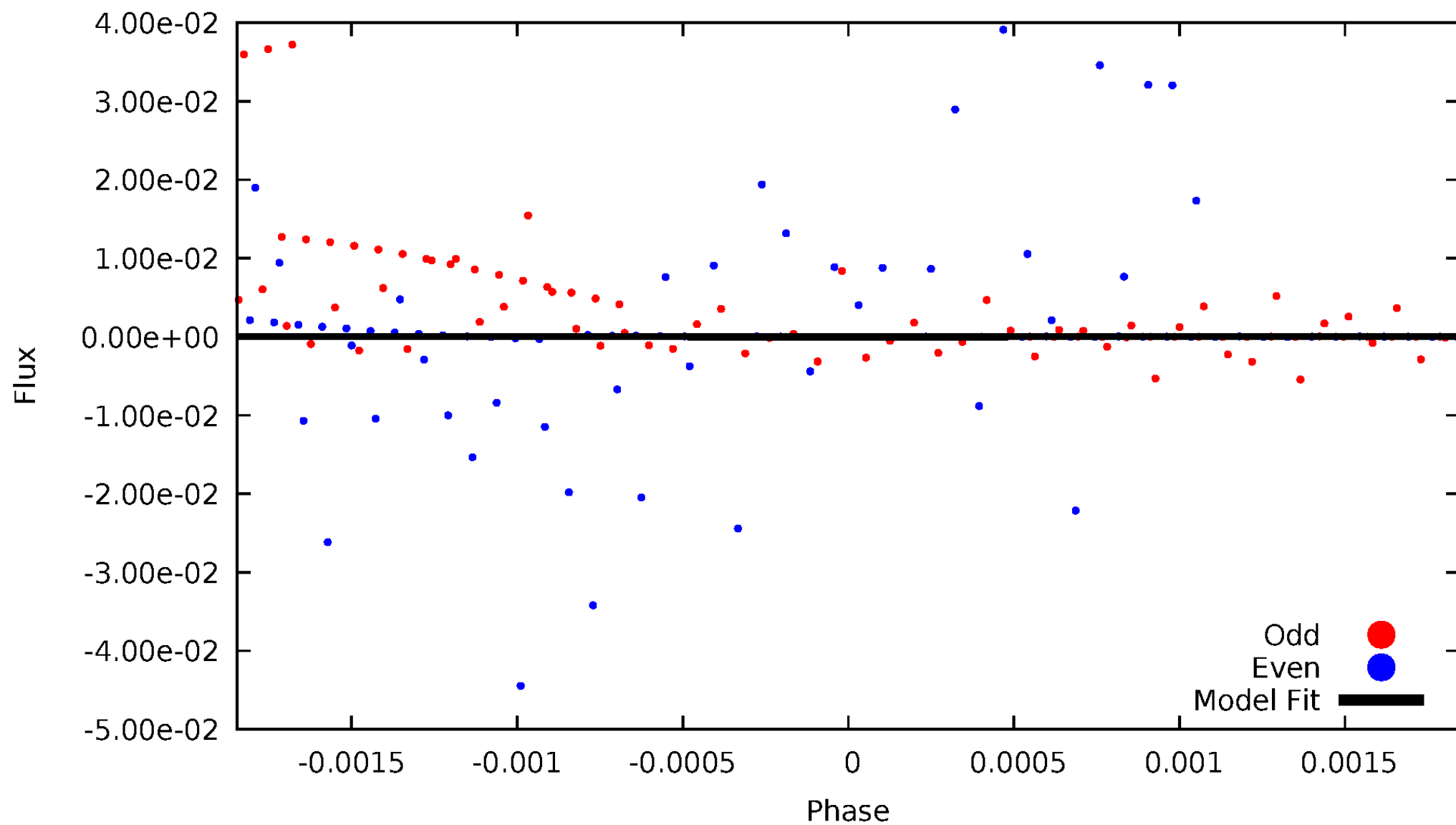
# DV Odd/Even

TCE 009026866-03



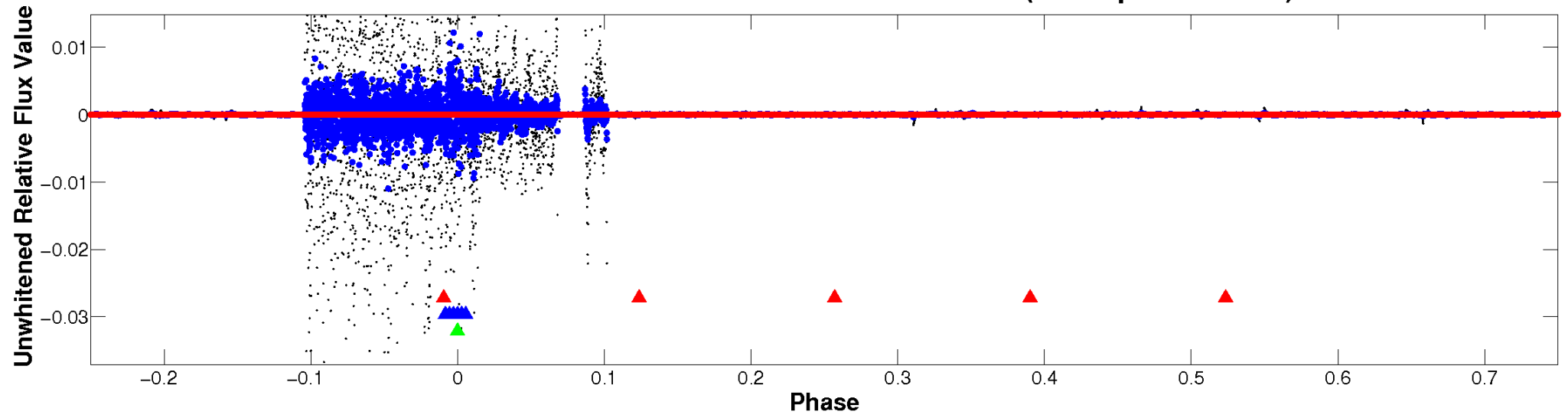
# ALT Odd/Even

TCE 009026866-03

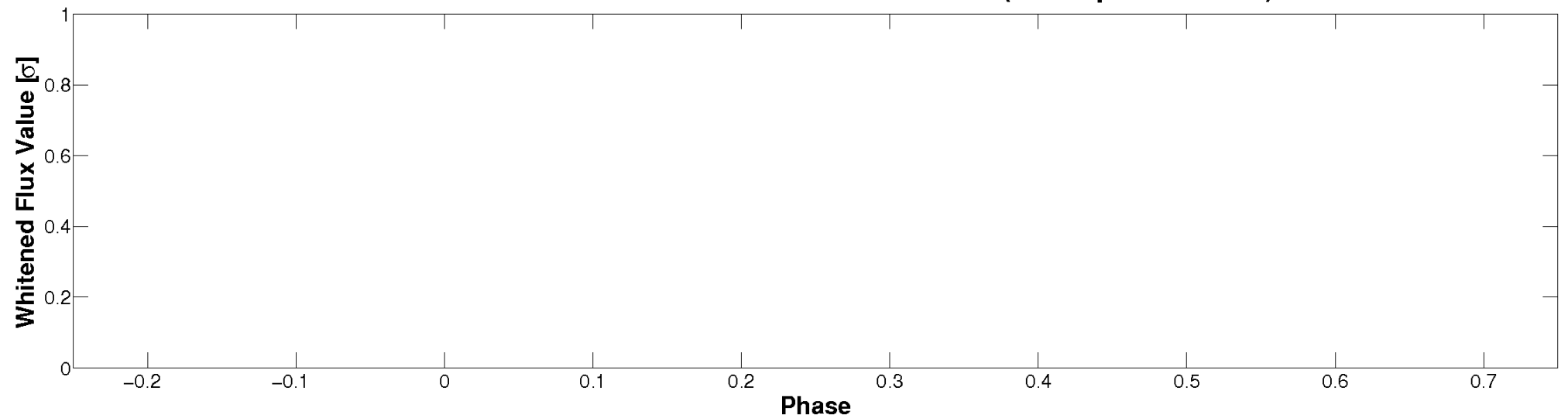


# Non-Whitened Vs. Whitened Light Curve

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

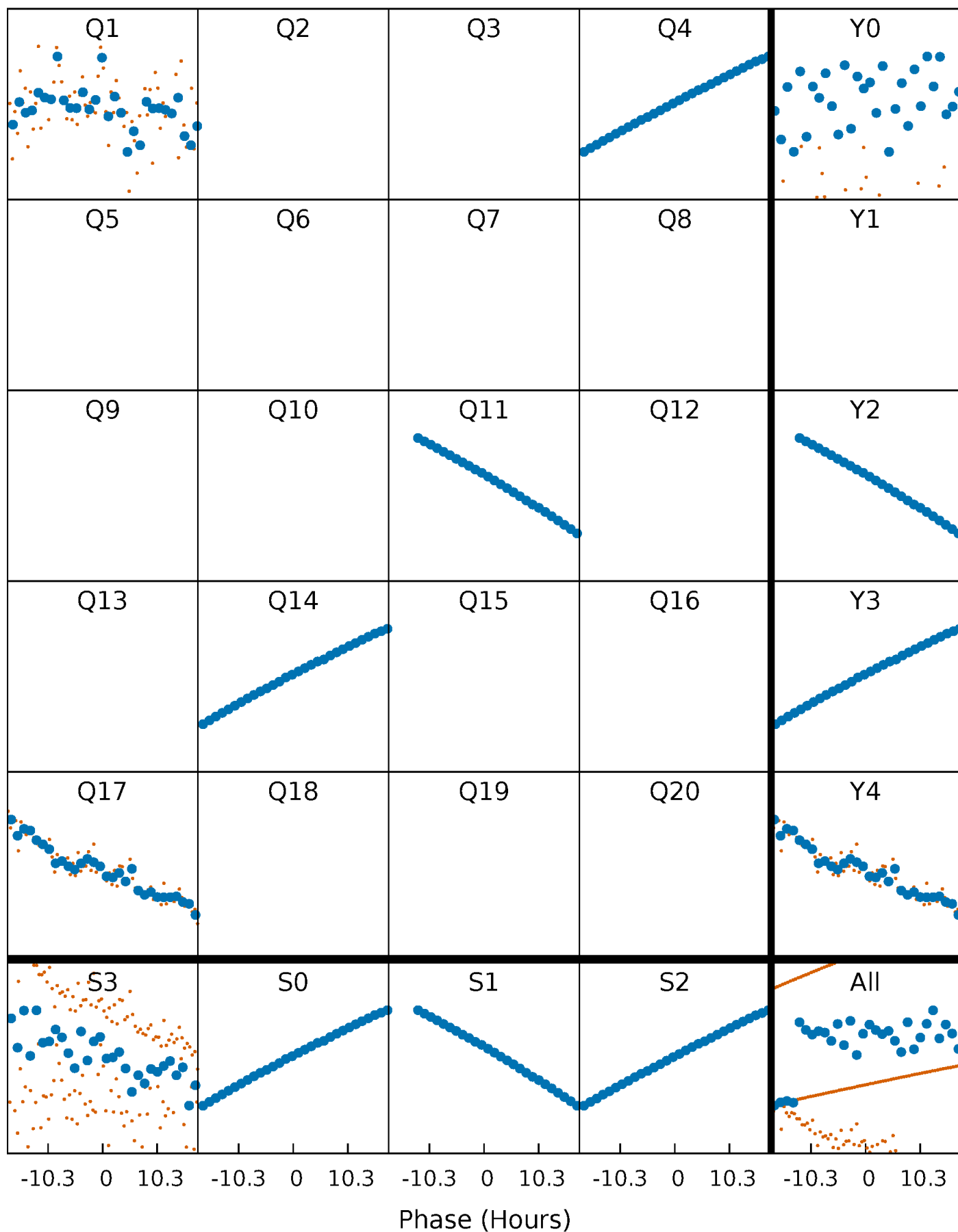


**Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

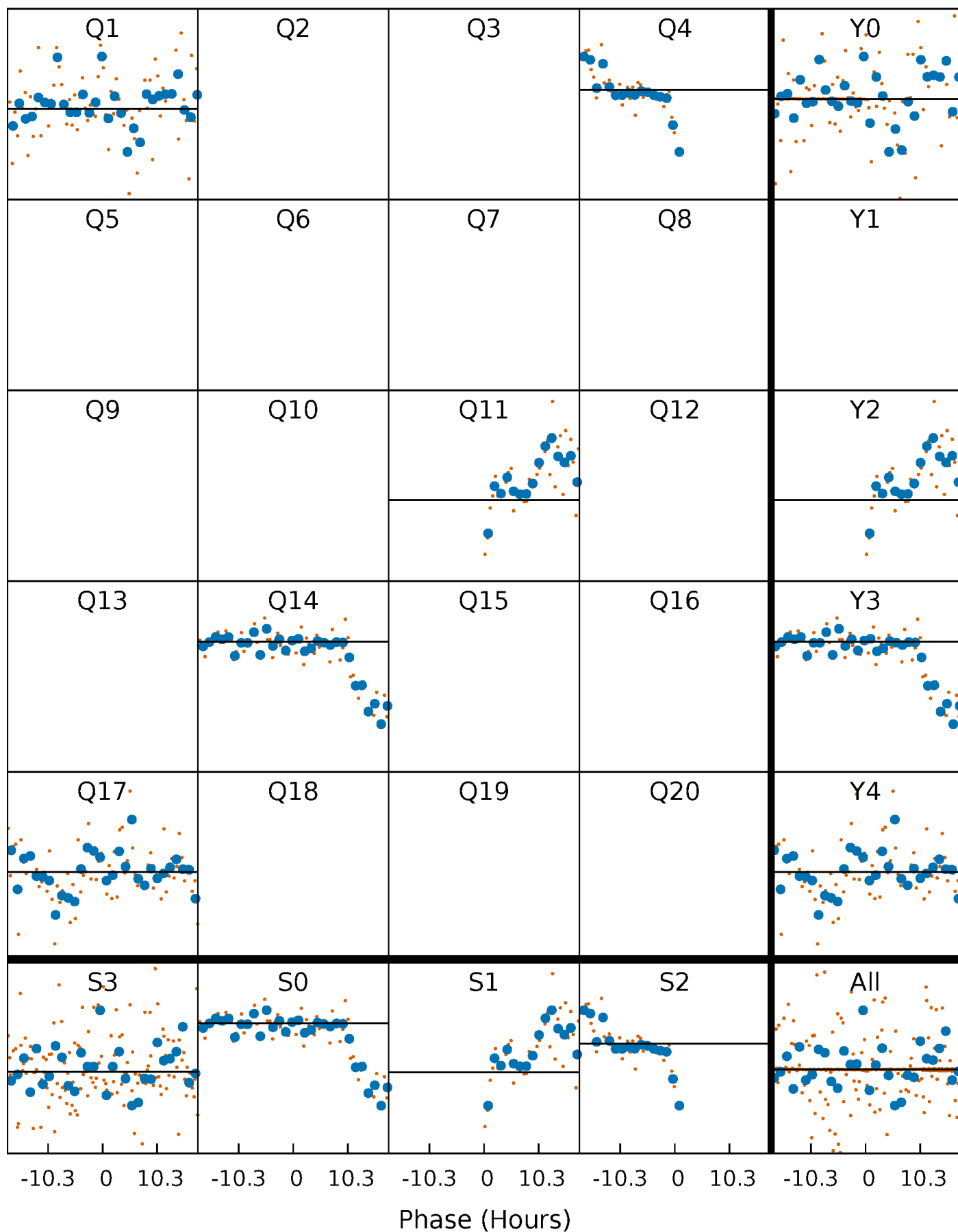
TCE 009026866-03     $P=280.355254$  Days     $T_0=160.707145$  (BKJD)





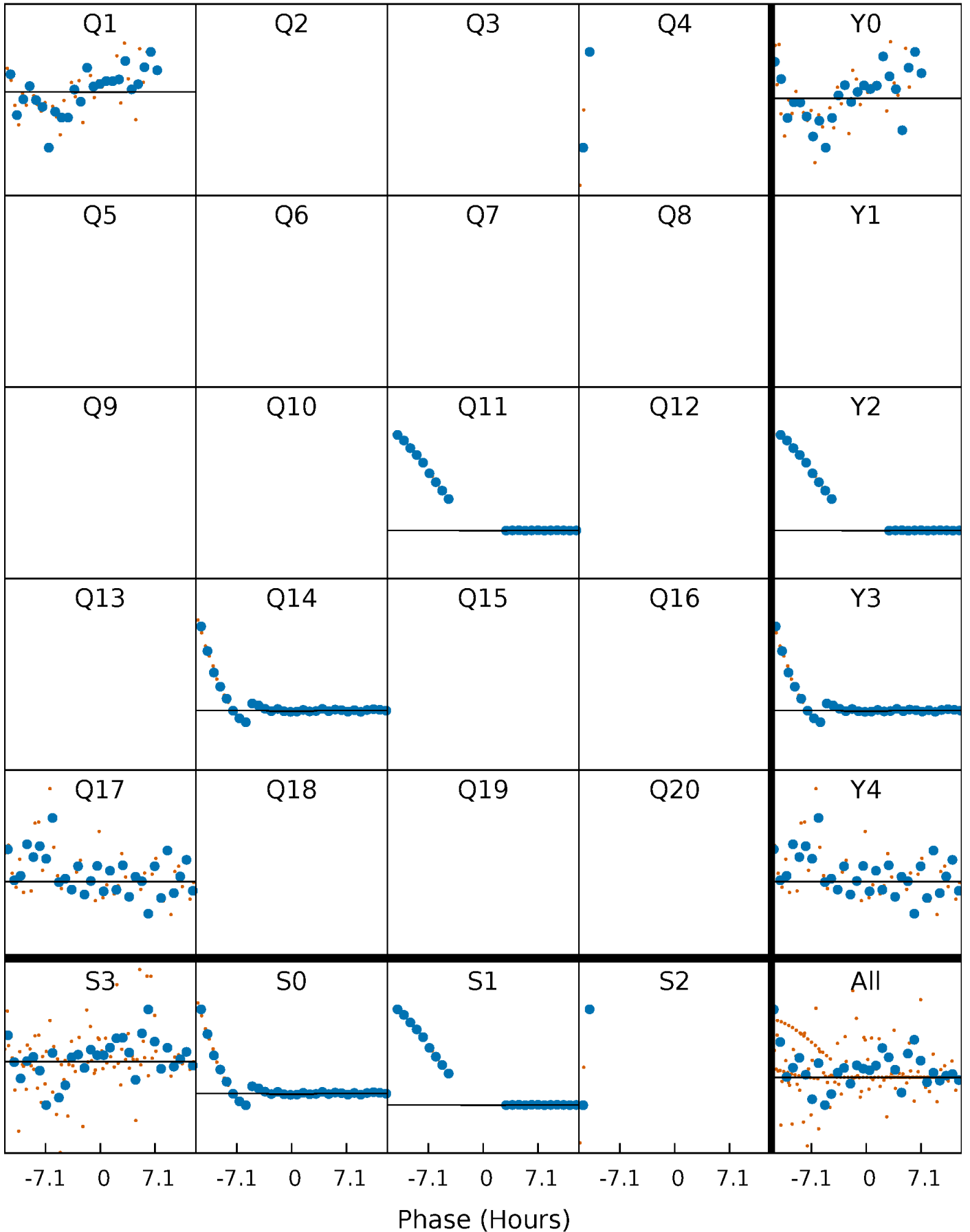
# DV Quarter-Phased Transit Curves

TCE 009026866-03     $P=280.355254$  Days     $T_0=160.707145$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

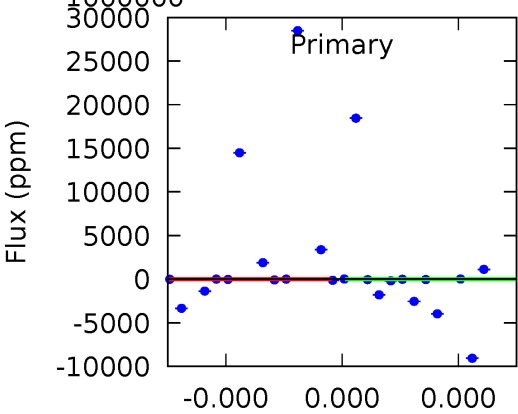
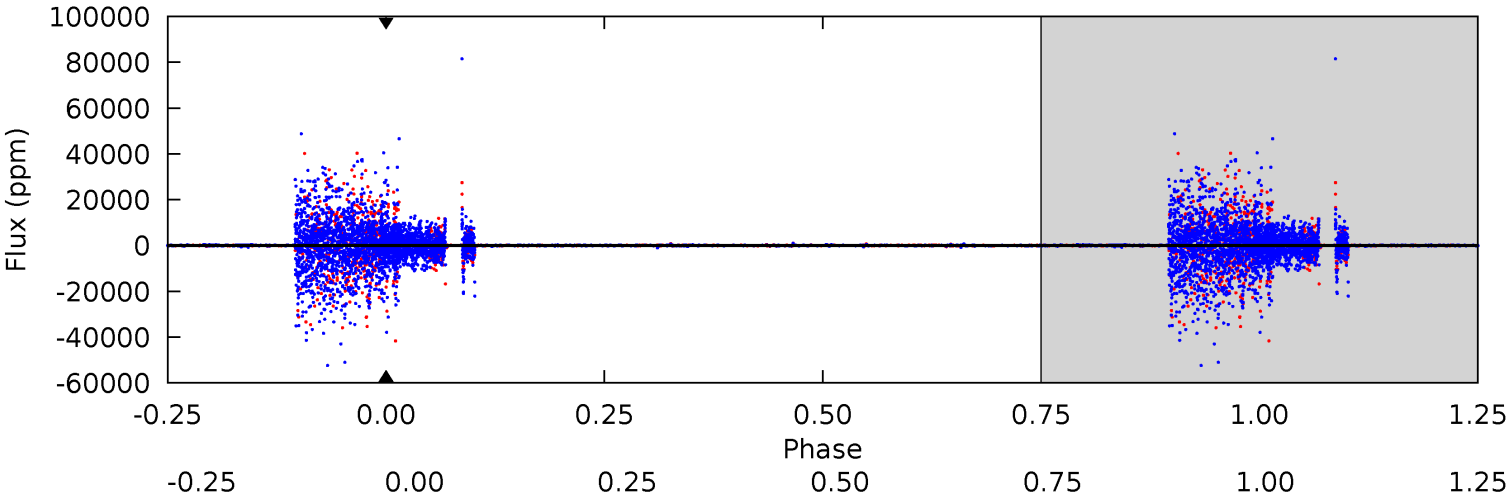
TCE 009026866-03 P=280.355254 Days  $T_0=161.194602$  (BKJD)



# DV Model-Shift Uniqueness Test

009026866-03, P = 280.355254 Days, E = 160.707145 Days

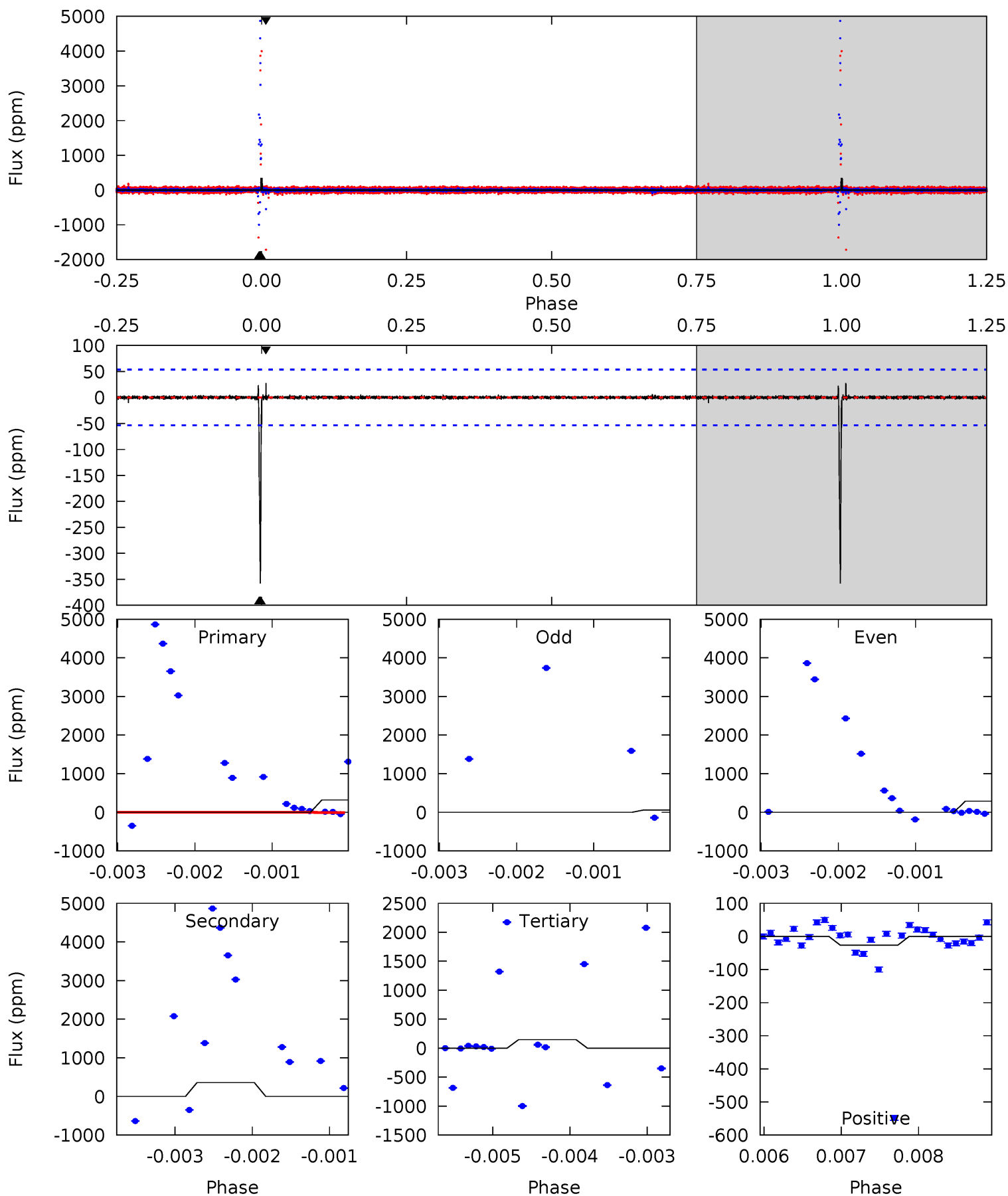
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

009026866-03, P = 280.355254 Days, E = 161.194602 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
32.7	36.5	15.1	2.72	5.45	3.30	0.20	17.7	30.0	21.4	33.7	2.31	5.57	0.07	0



### Stellar Parameters For KIC 009026866

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3286^{+117}_{-88}$	$0.123^{+0.200}_{-0.050}$	$-0.080^{+0.250}_{-0.150}$	$153.058^{+9.192}_{-27.576}$	$1.134^{+0.189}_{-0.155}$	$0.000^{+0.000}_{-0.000}$
	+4%/-3%	+163%/-41%	+312%/-188%	+6%/-18%	+17%/-14%	+93%/-14%
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 009026866-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$1166.84^{+1244.10}_{-791.48}$	$2639^{+132}_{-132}$	$-2404^{+9069}_{-4044}$	$0.151^{+58.002}_{-51.710}$
Alt.	$-358 \pm 10$	$1166.35^{+1133.15}_{-784.90}$	$2643^{+109}_{-146}$	$-2432^{+5374}_{-165}$	$0.116^{+0.945}_{-0.087}$

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

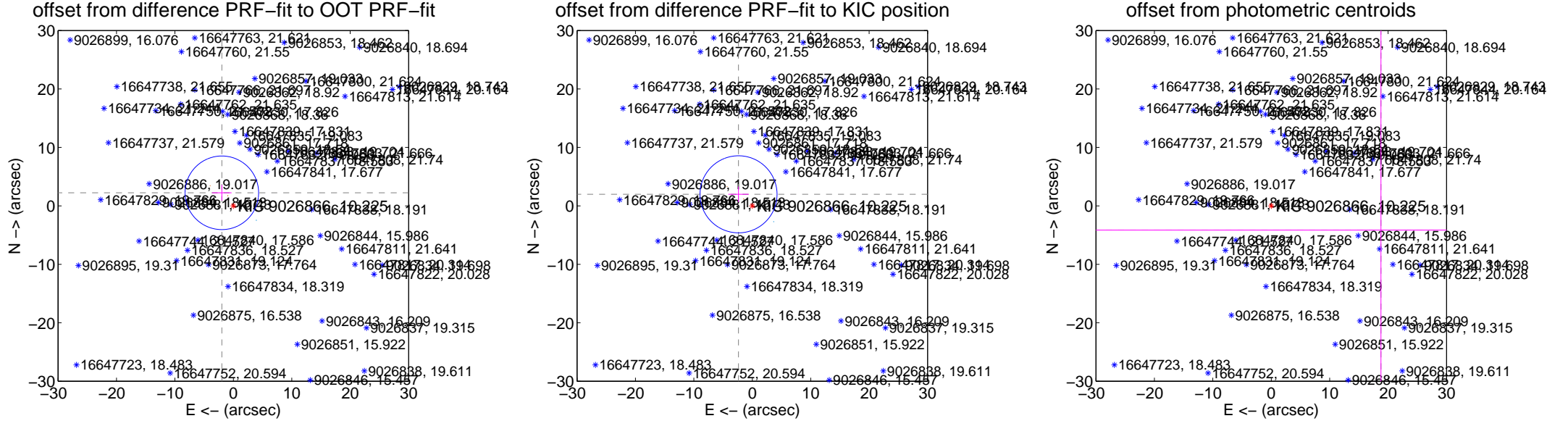
## DV Centroid Data

Supplemental centroid analysis for 009026866-03. **Kepler magnitude: 10.22.** Transit SNR -1.00

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

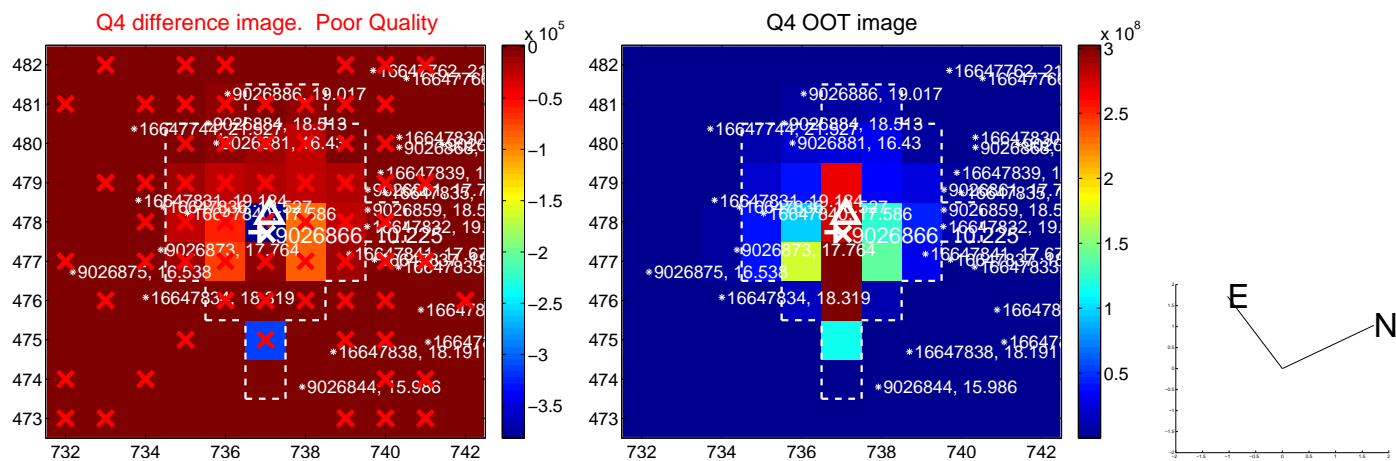
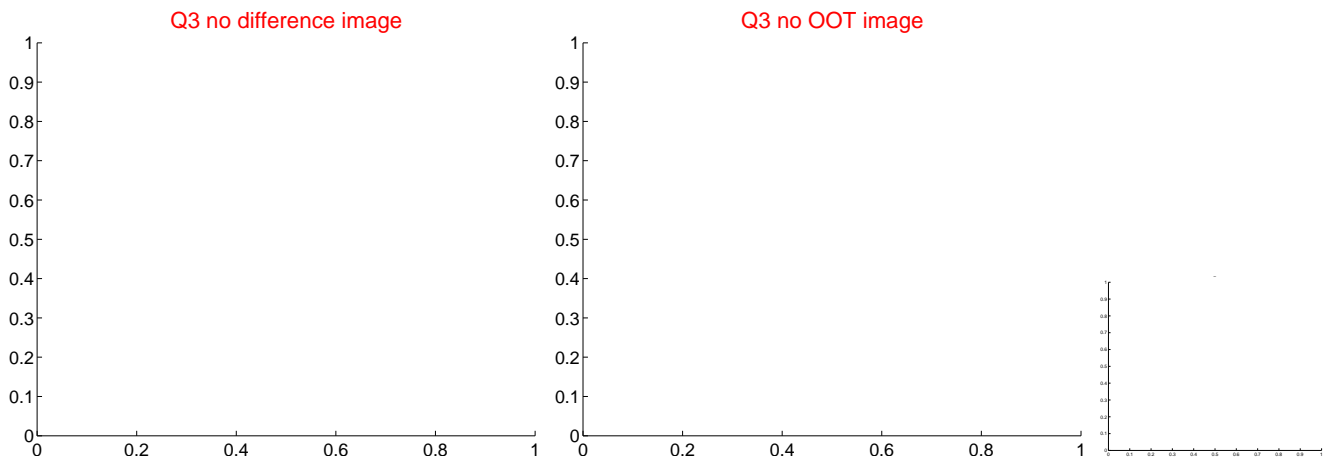
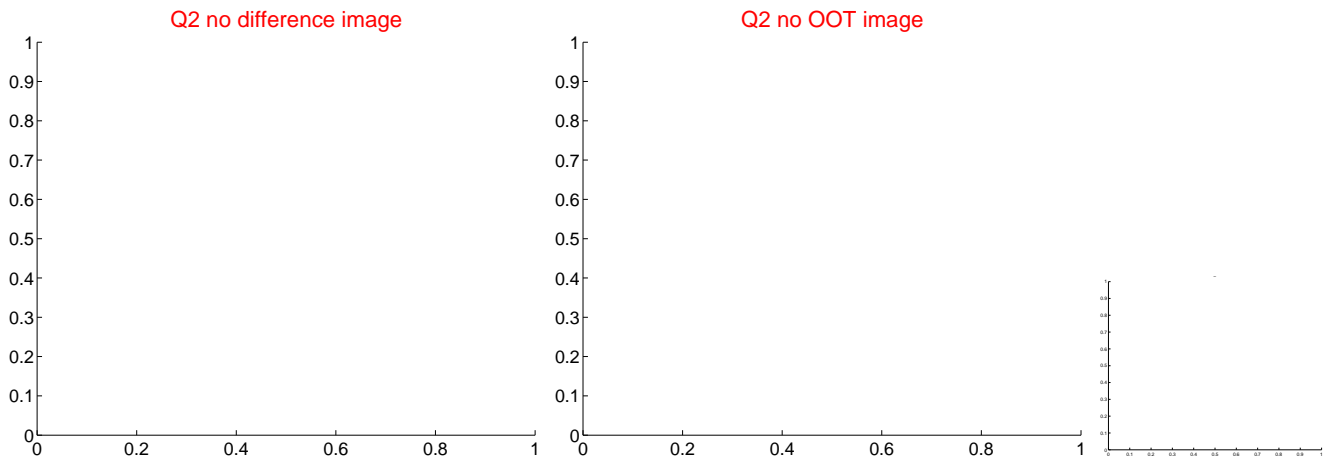
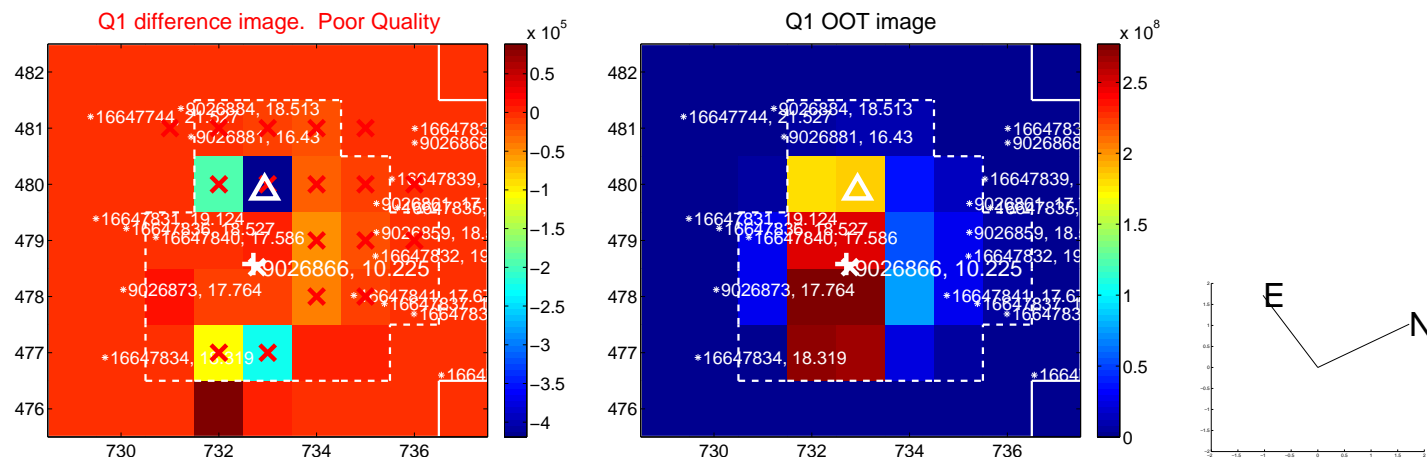
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.979 \pm 2.099$	1.42	$1.969 \pm 1.665$	$2.235 \pm 1.333$
PRF-fit source offset from KIC position	$3.076 \pm 2.197$	1.40	$2.357 \pm 1.758$	$1.977 \pm 1.324$
photometric centroid source offset	$19.23 \pm 61.23$	0.31	$-18.78 \pm 62.04$	$-4.14 \pm 41.46$



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.





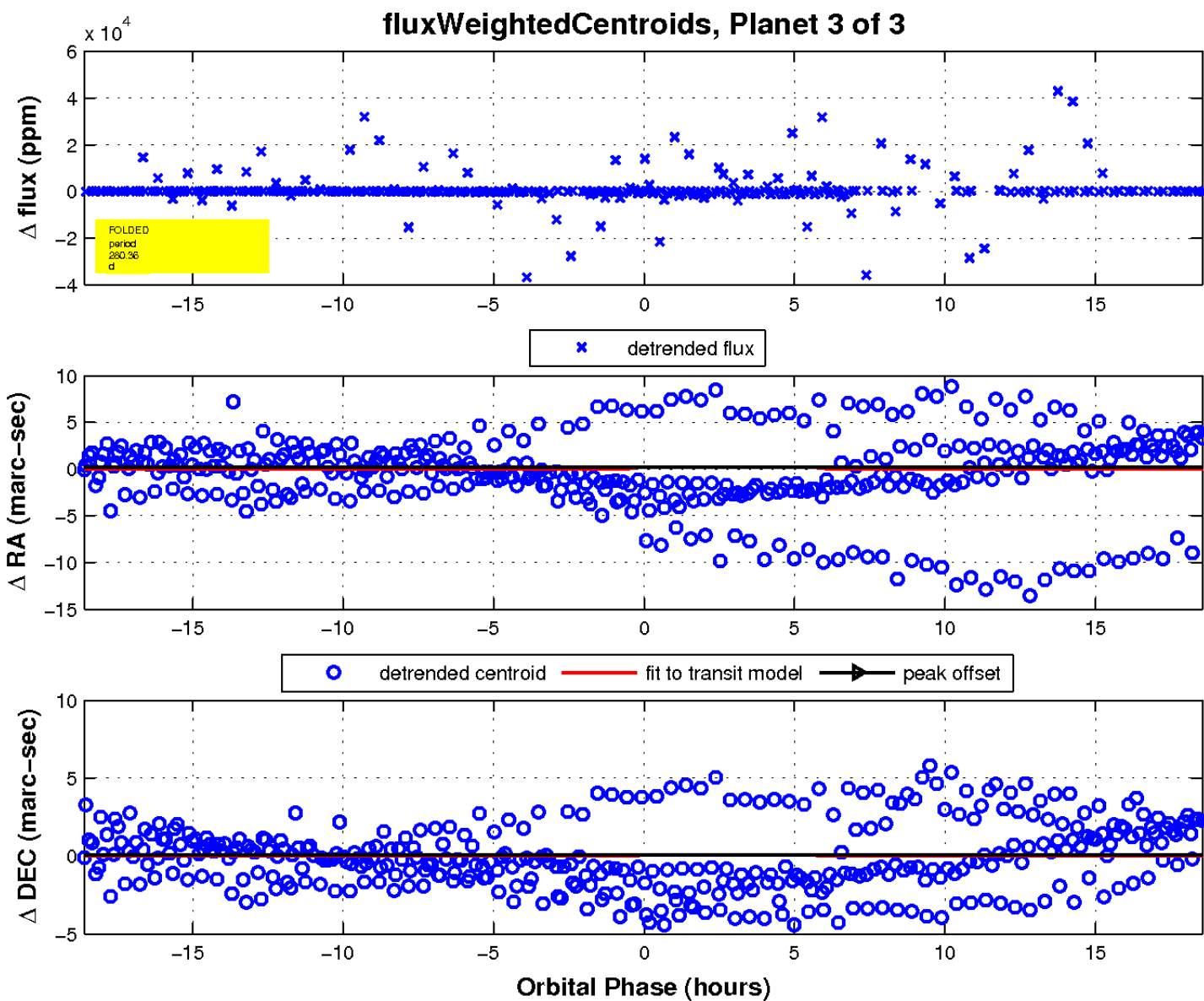
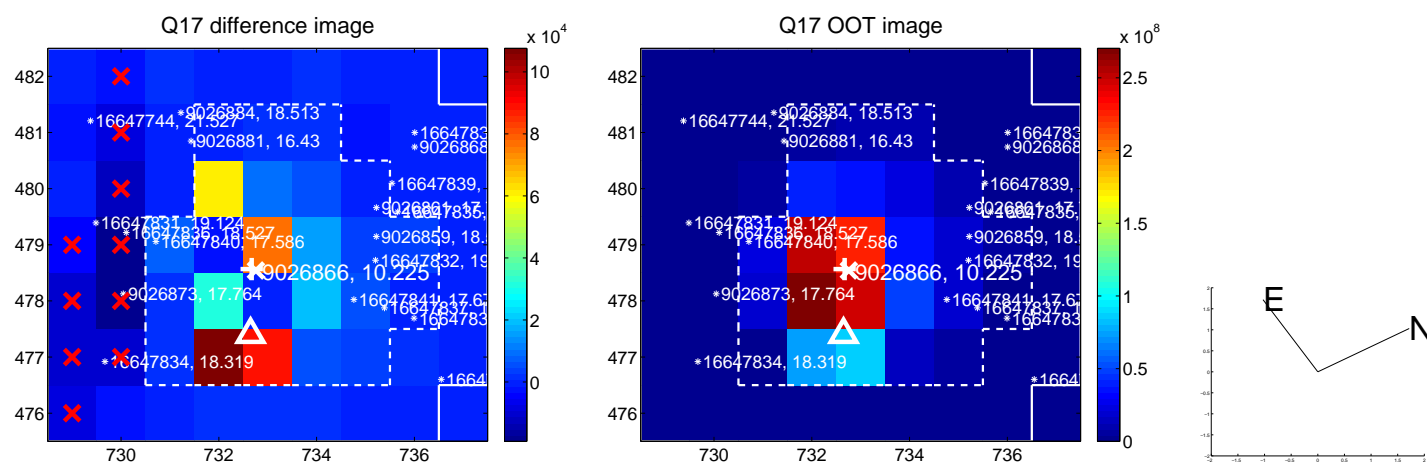
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

