

# KIC 010526648

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010526648-01	OBS	No	557.967552	450.374100	114.7	21.428	17.4	18.1	2.89	8806	3.35	16.26
010526648-02	OBS	No	365.853380	149.657090	664.2	6.028	214.0	63.4	2.89	8806	7.60	28.55
010526648-04	OBS	No	341.860270	138.121250	3699.4	5.000	222.2	-1.0	2.89	8806	17.90	31.25
010526648-05	OBS	No	390.962115	460.099667	3181.0	5.000	158.0	-1.0	2.89	8806	16.59	26.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010526648-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010526648-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010526648-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010526648-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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.

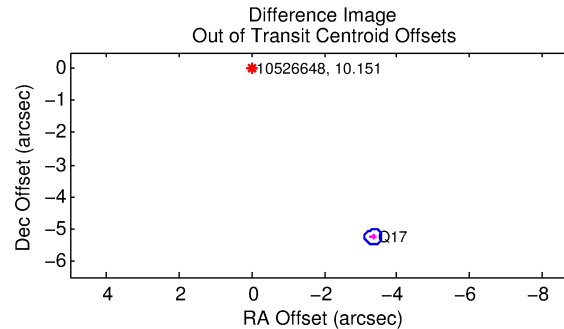
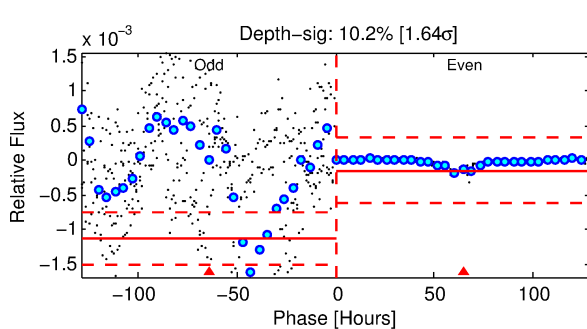
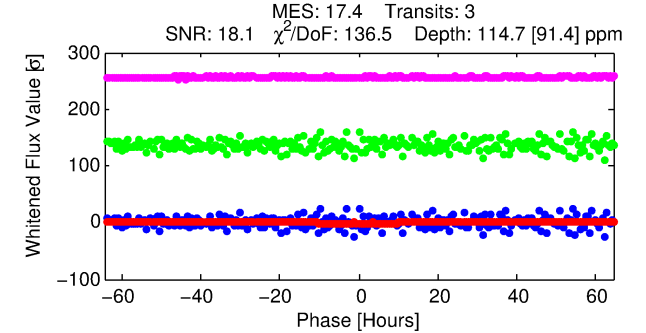
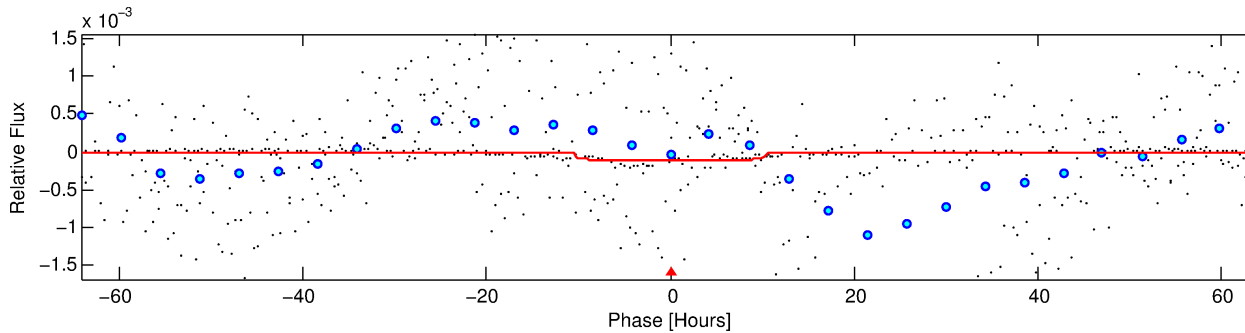
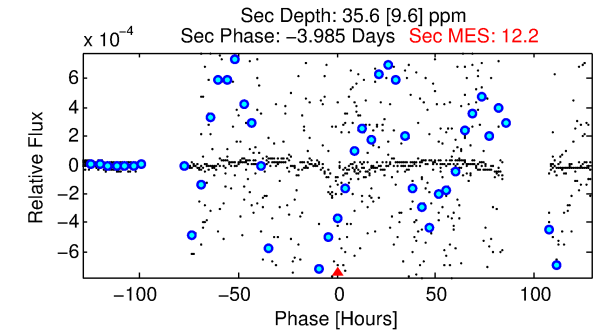
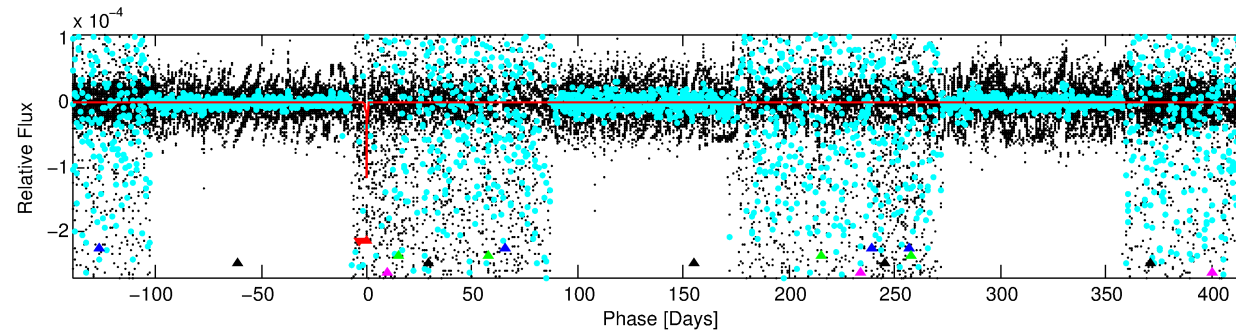
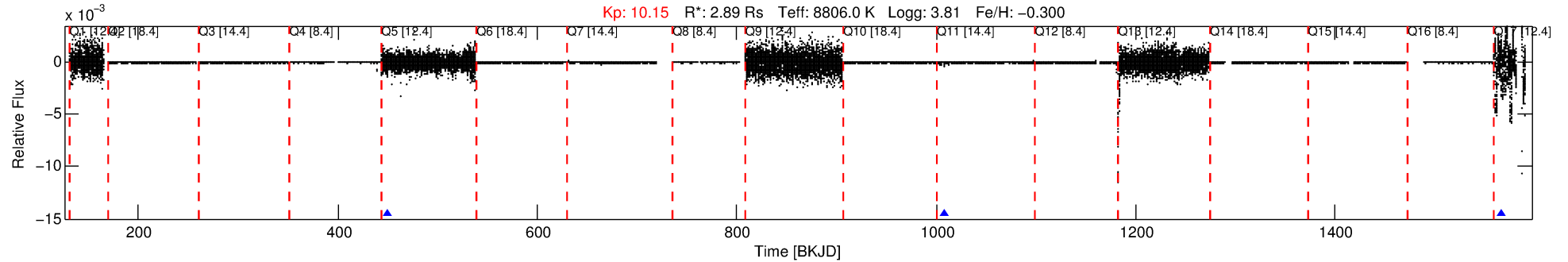
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010526648-01

No Significant Match Found

# DV One-Page Summary

KIC: 10526648 Candidate: 1 of 5 Period: 557.968 d



## DV Fit Results:

Period = 557.96755 [0.04976] d  
Epoch = 450.3741 [0.0648] BKJD  
Rp/R\* = 0.0106 [0.0069]  
a/R\* = 137.22 [427.06]  
b = 0.74 [1.90]  
Seff = 16.26 [11.22]  
Teq = 512 [88] K  
Rp = 3.35 [2.58] Re  
a = 1.6635 [0.6810] AU  
Ag = 4830.06 [7203.73] [0.67σ]  
Teffp = 6600 [2219] K [2.74σ]

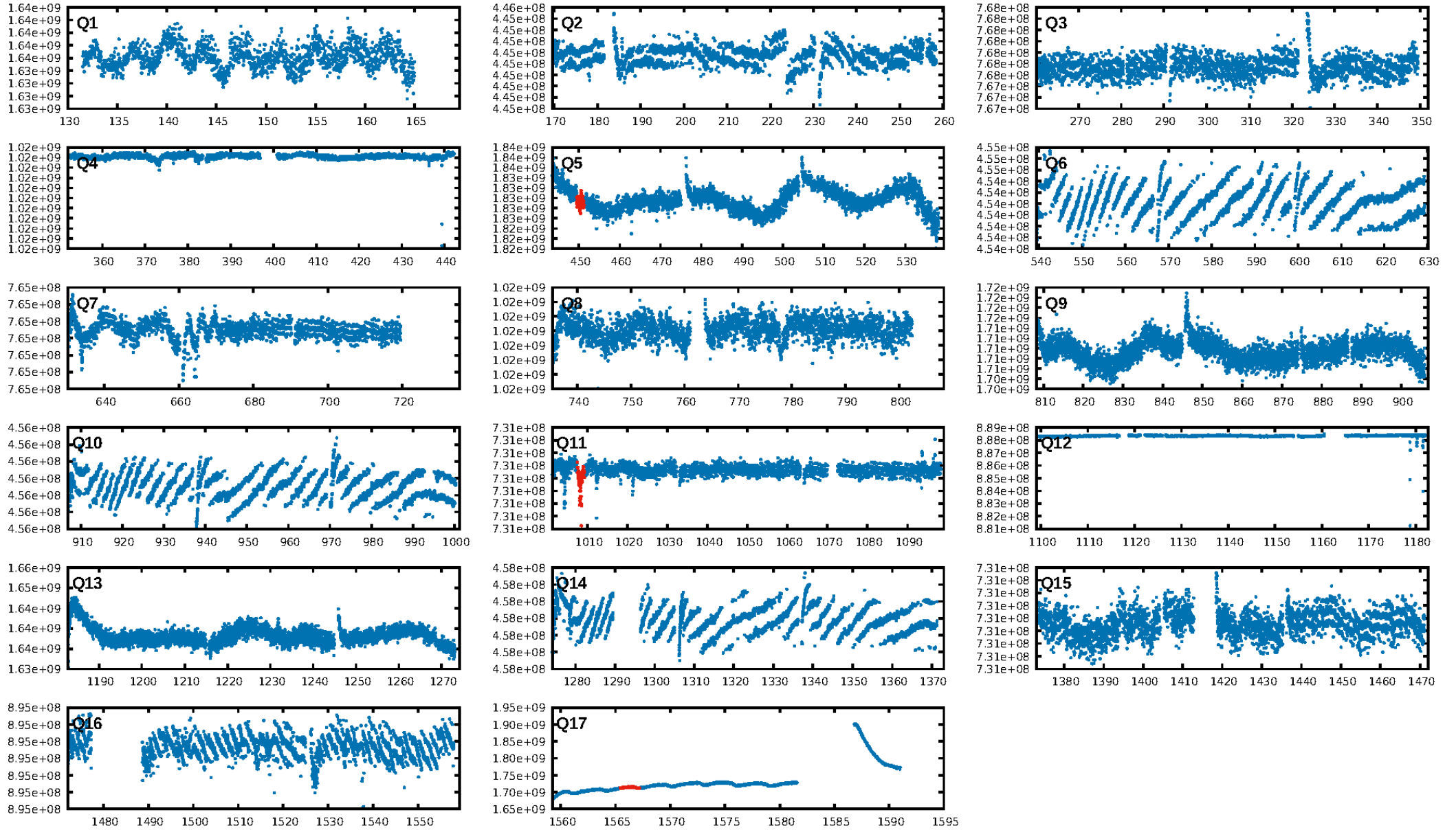
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [182.16σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: 2.196 arcsec [3.20σ]  
OotOffset-rm: 6.231 arcsec [78.57σ]  
KicOffset-rm: 5.183 arcsec [64.01σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

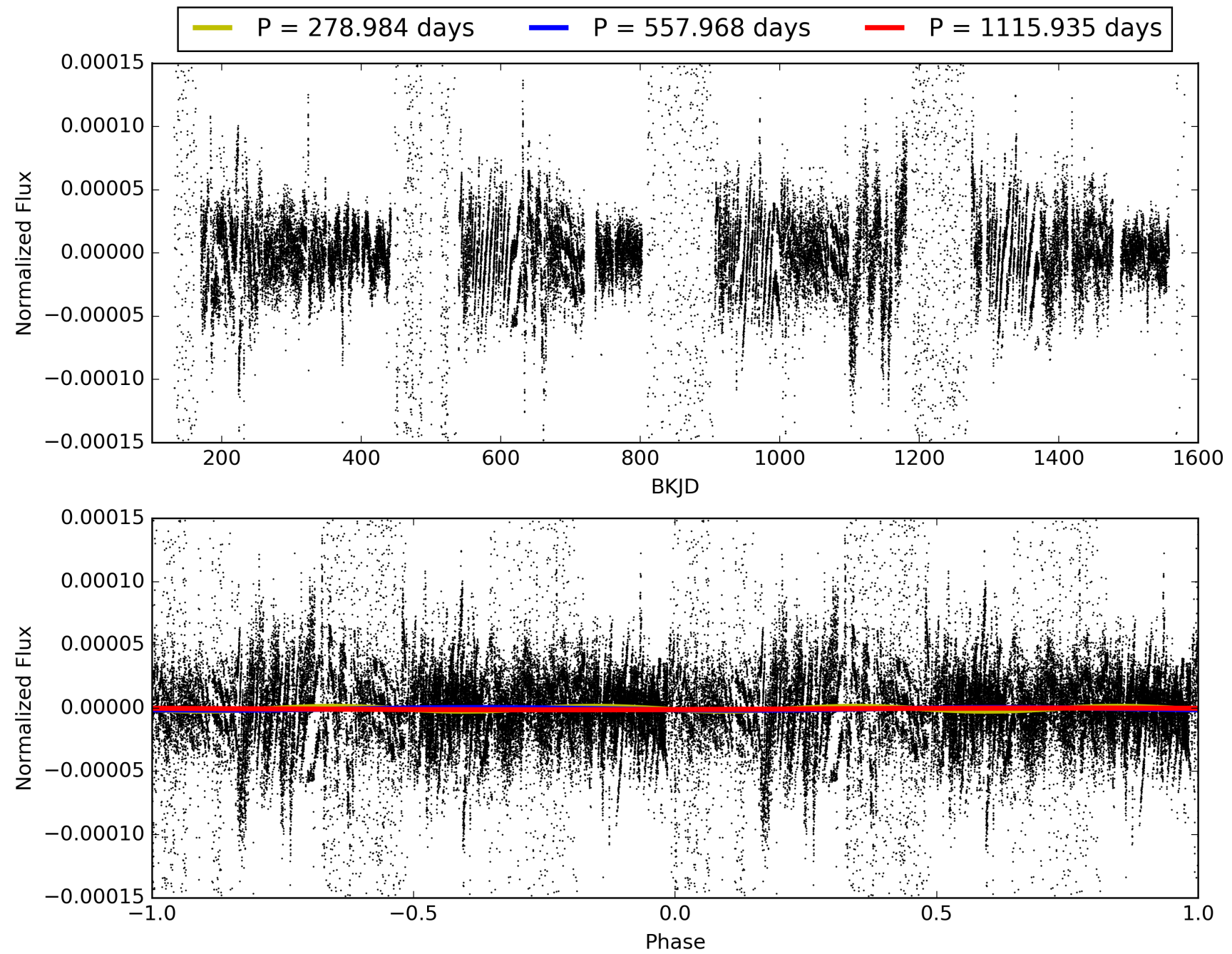
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:15:04 Z

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

# TCE 010526648-01, PDC Light Curves

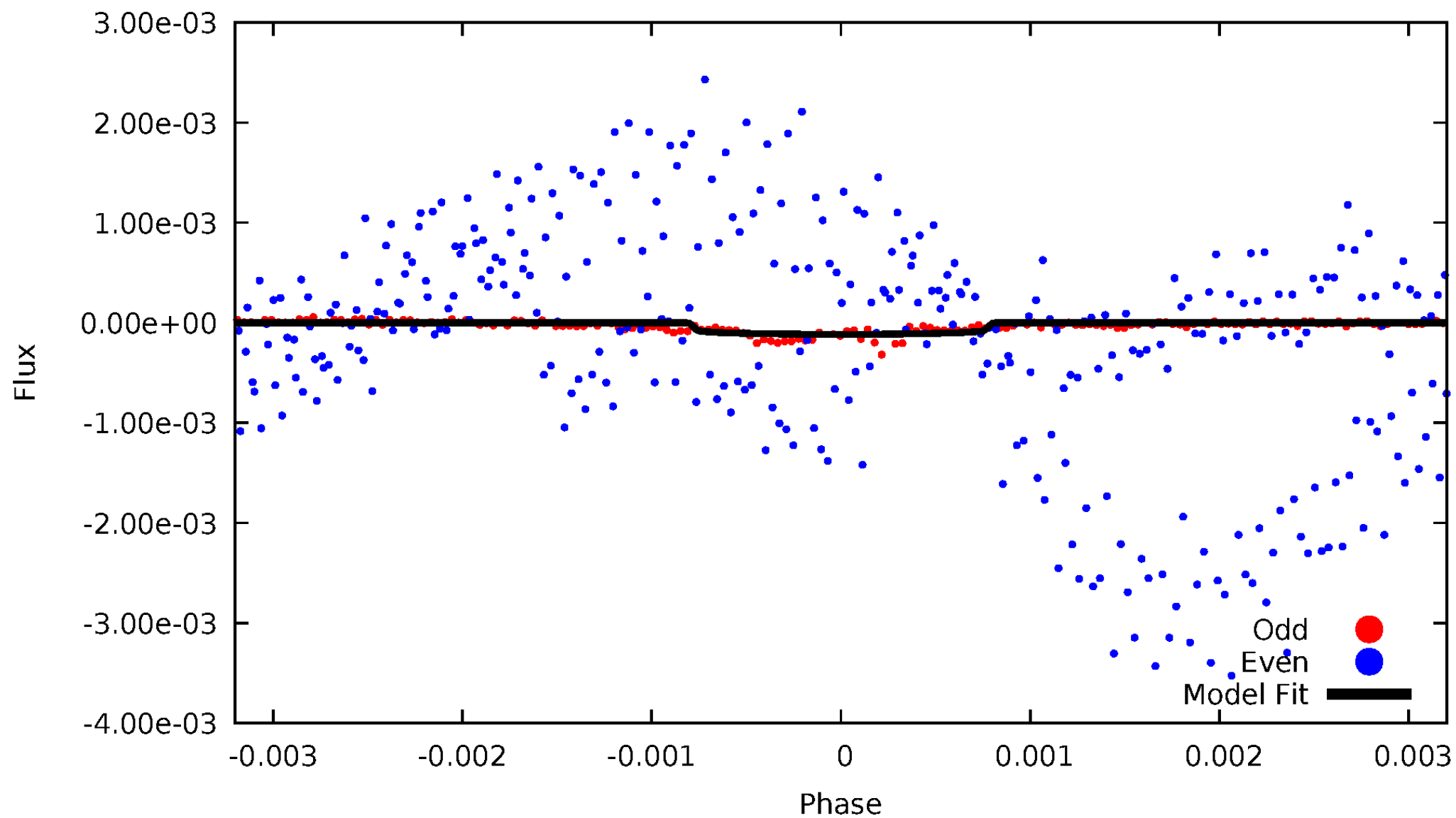


# TCE 010526648-01



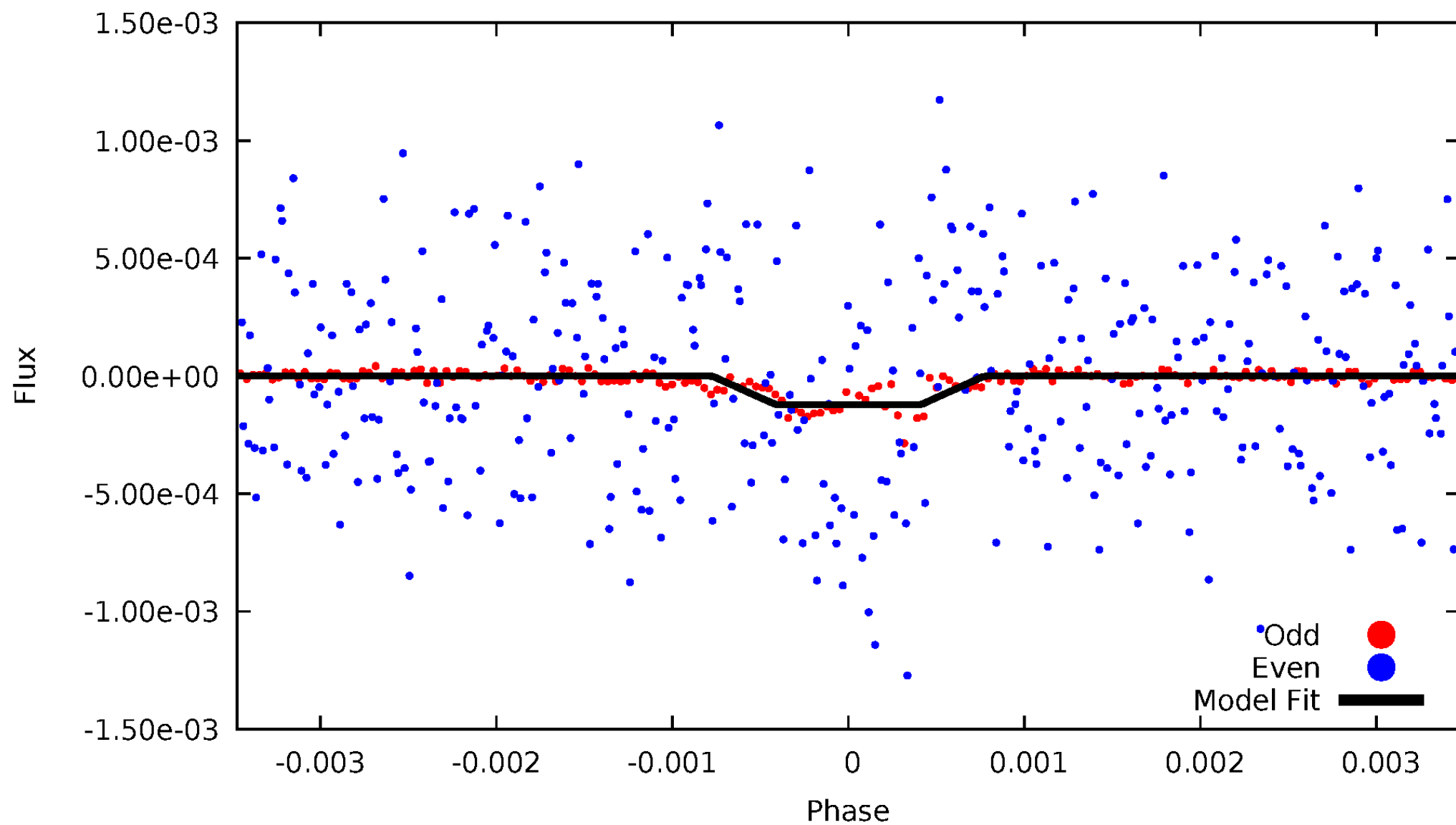
# DV Odd/Even

TCE 010526648-01



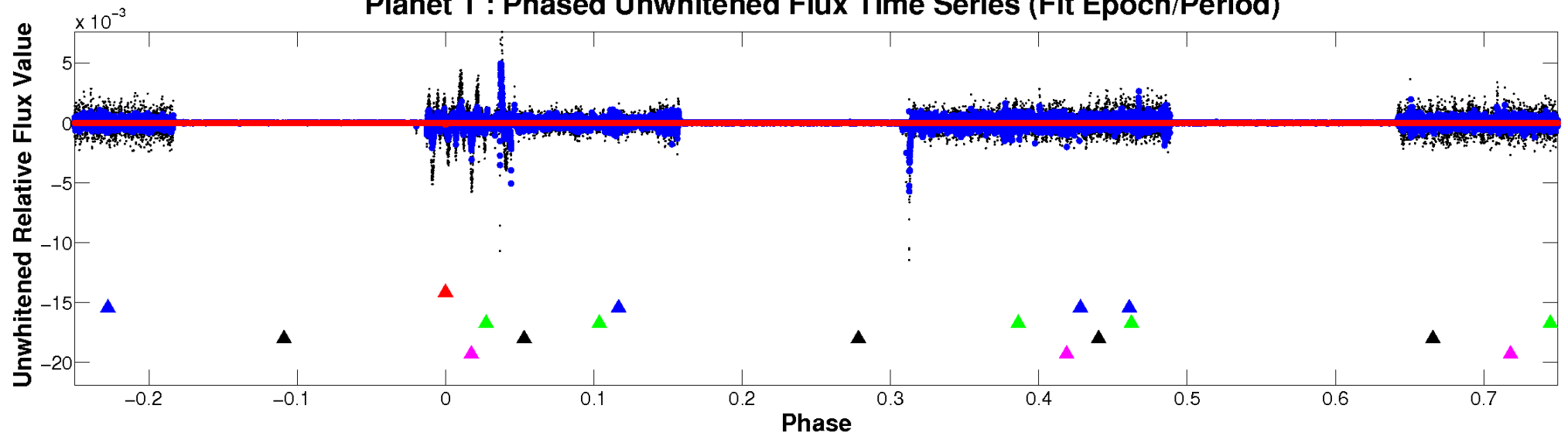
# ALT Odd/Even

TCE 010526648-01

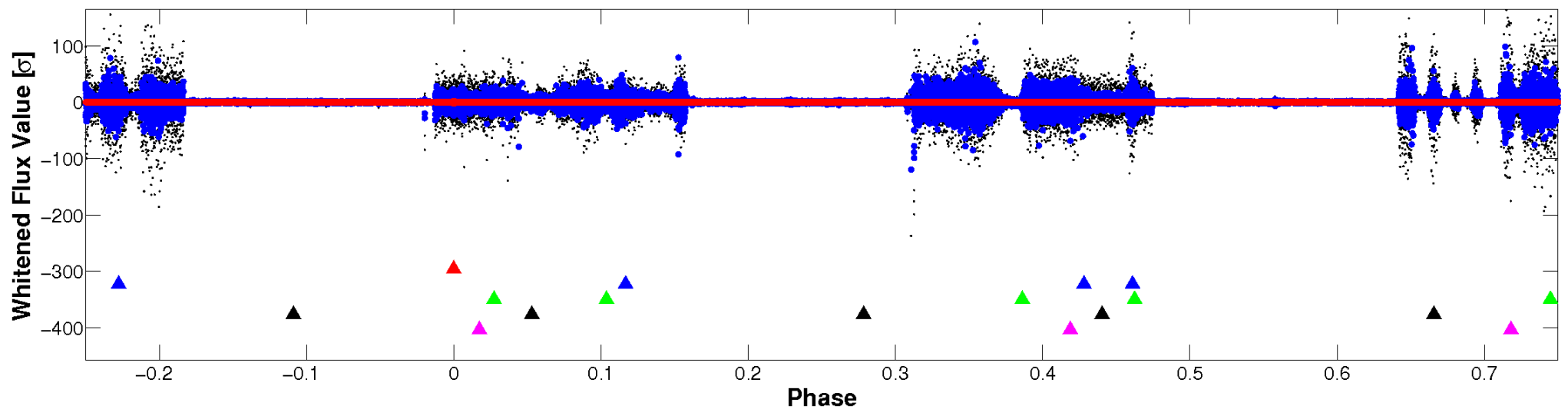


# Non-Whitened Vs. Whitened Light Curve

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

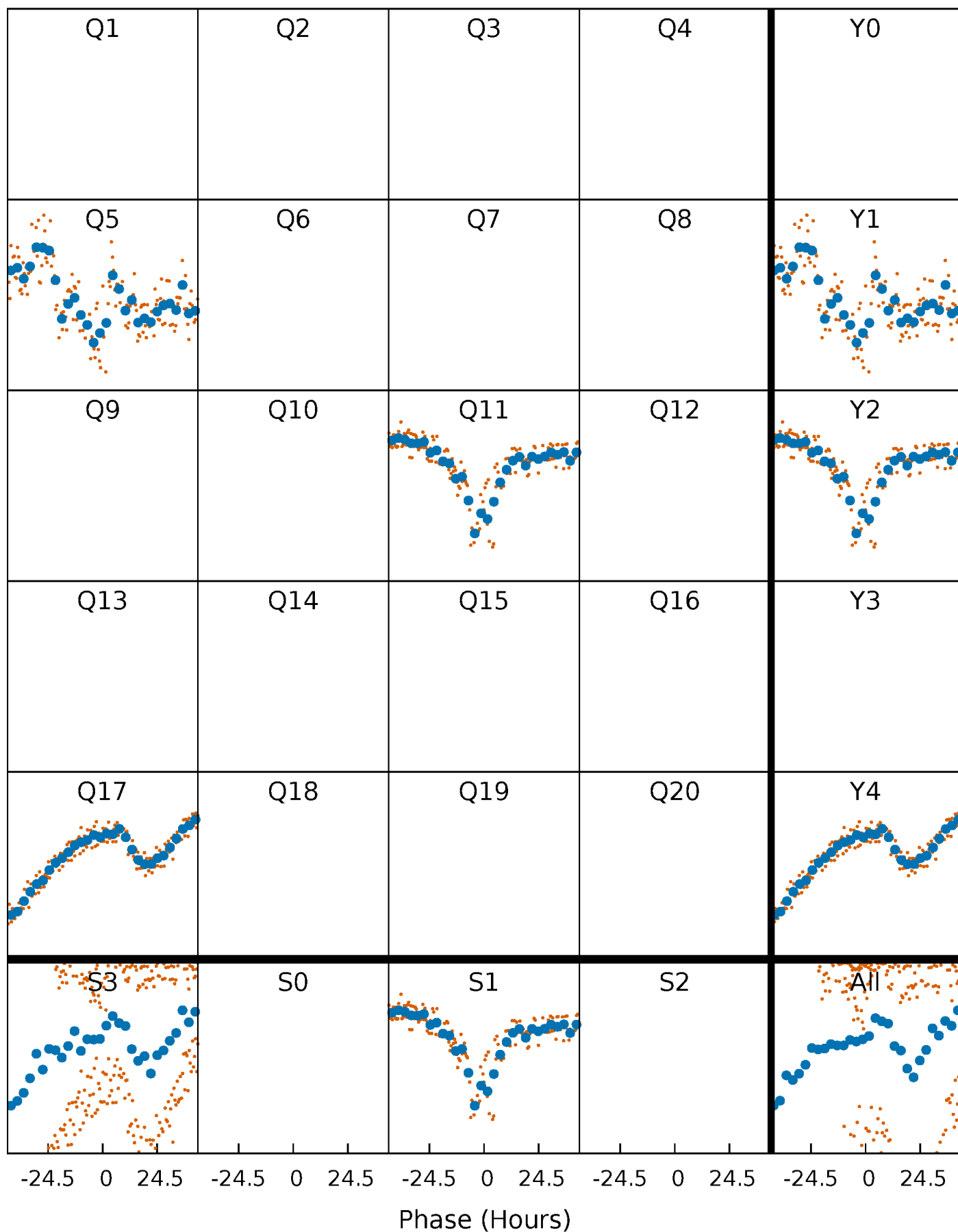


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

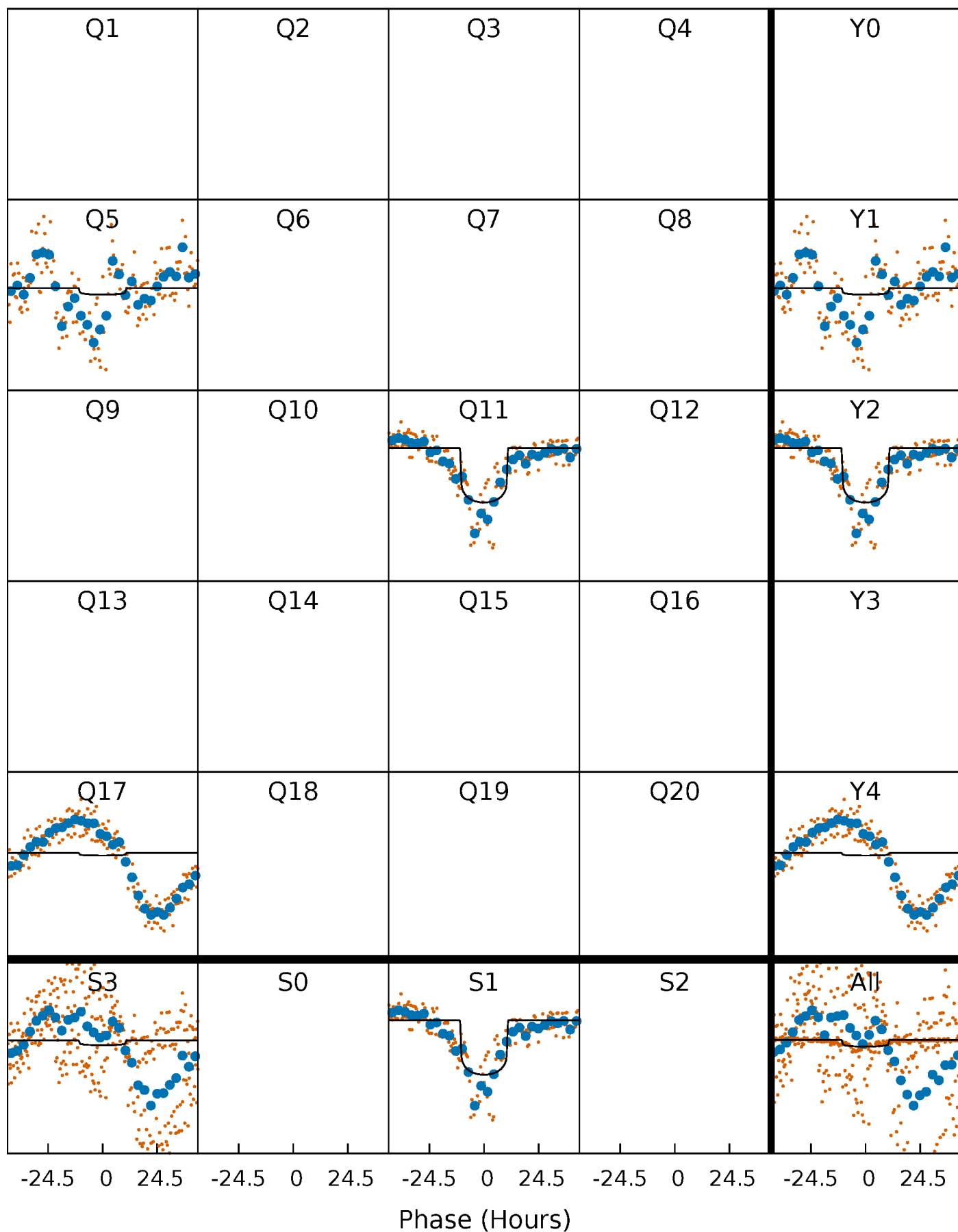
TCE 010526648-01 P=557.967552 Days  $T_0=450.374100$  (BKJD)





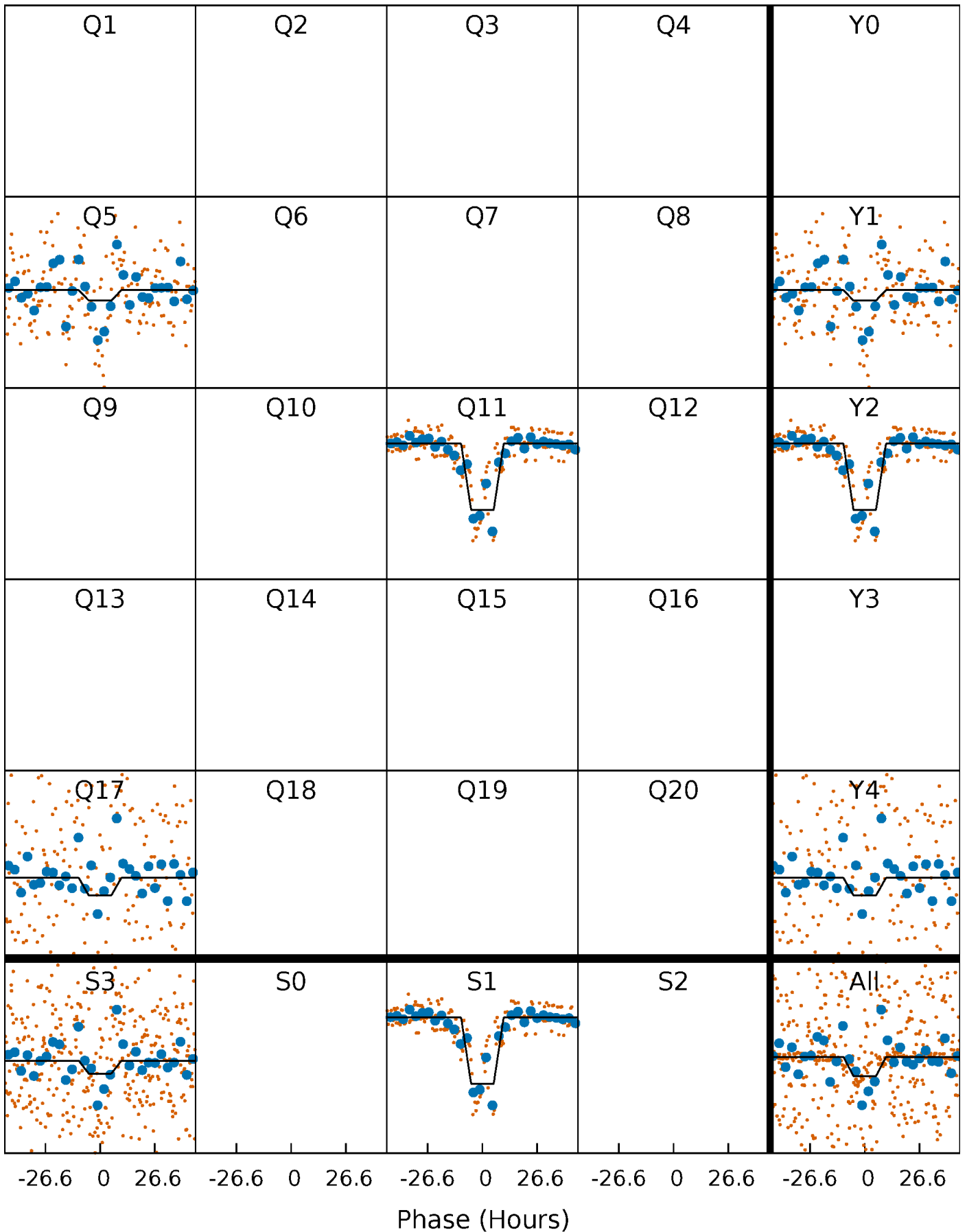
# DV Quarter-Phased Transit Curves

TCE 010526648-01     $P=557.967552$  Days     $T_0=450.374100$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

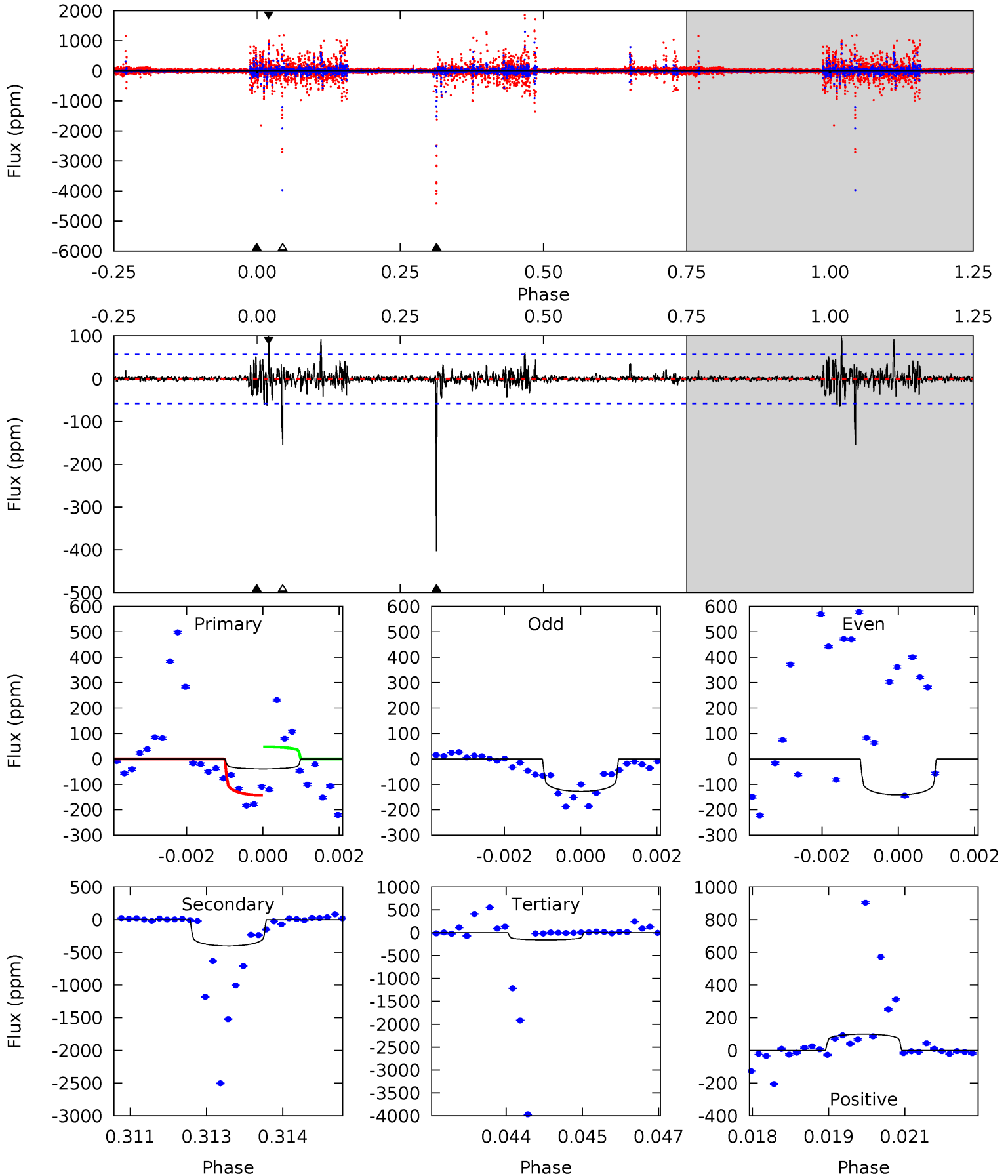
TCE 010526648-01 P=558.033712 Days  $T_0=450.251103$  (BKJD)



# DV Model-Shift Uniqueness Test

010526648-01, P = 557.967552 Days, E = 450.374100 Days

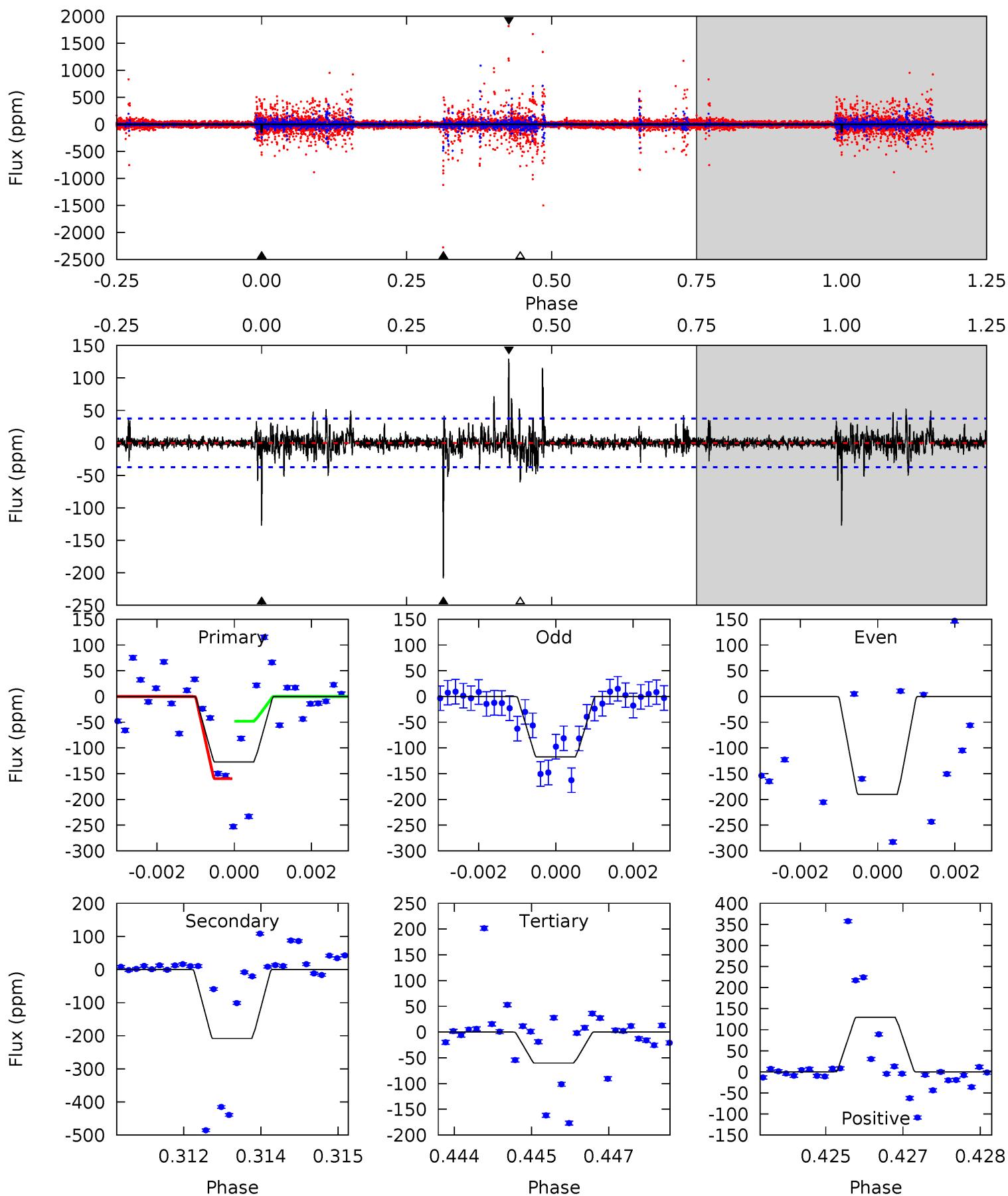
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.64	37.3	14.4	9.17	5.36	3.15	0.85	-10.7	-5.53	22.9	28.1	0.25	-1.11	0.20	3.29



# Alt Model-Shift Uniqueness Test

010526648-01, P = 558.033712 Days, E = 450.251103 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
18.3	29.9	8.65	18.5	5.37	3.17	1.34	9.61	-0.29	21.2	11.3	1.98	1.16	0.38	0



### Stellar Parameters For KIC 010526648

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8806^{+277}_{-381}$	$3.811^{+0.397}_{-0.132}$	$-0.300^{+0.450}_{-0.350}$	$2.890^{+0.790}_{-1.185}$	$1.971^{+0.445}_{-0.405}$	$0.115^{+0.411}_{-0.046}$
	+3%/-4%	+10%/-3%	+150%/-117%	+27%/-41%	+23%/-21%	+357%/-40%
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 010526648-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-403 \pm 11$	$3.29^{+2.06}_{-1.77}$	$688^{+64}_{-77}$	$13257^{+16781}_{-3863}$	$57464^{+214766}_{-36491}$
Alt.	$-208 \pm 7$	$3.30^{+2.33}_{-1.75}$	$697^{+55}_{-77}$	$10344^{+10340}_{-2816}$	$29639^{+113405}_{-19816}$

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

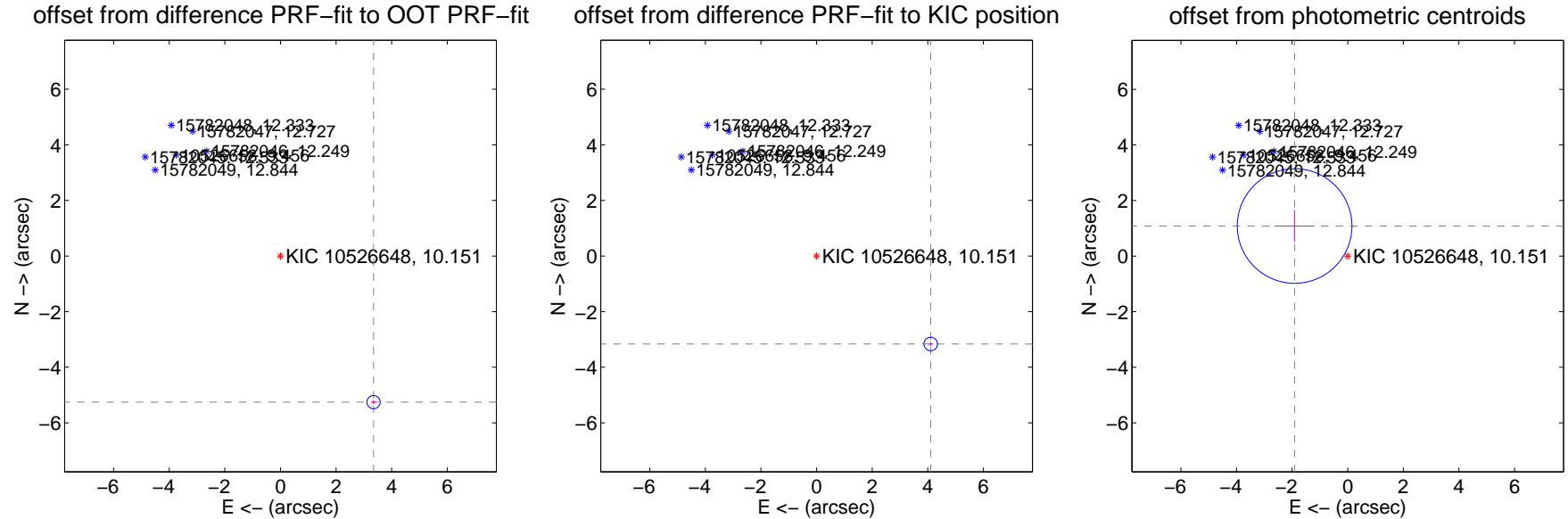
## DV Centroid Data

Supplemental centroid analysis for 010526648-01. **Kepler magnitude: 10.15.** Transit SNR 18.14

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 2.22 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	<b><math>6.231 \pm 0.079</math></b>	<b>78.57</b>	$-3.348 \pm 0.083$	$-5.255 \pm 0.078$
PRF-fit source offset from KIC position	<b><math>5.183 \pm 0.081</math></b>	<b>64.01</b>	$-4.105 \pm 0.083$	$-3.164 \pm 0.078$
photometric centroid source offset	<b><math>2.20 \pm 0.69</math></b>	<b>3.20</b>	$1.91 \pm 0.72$	$1.08 \pm 0.58$

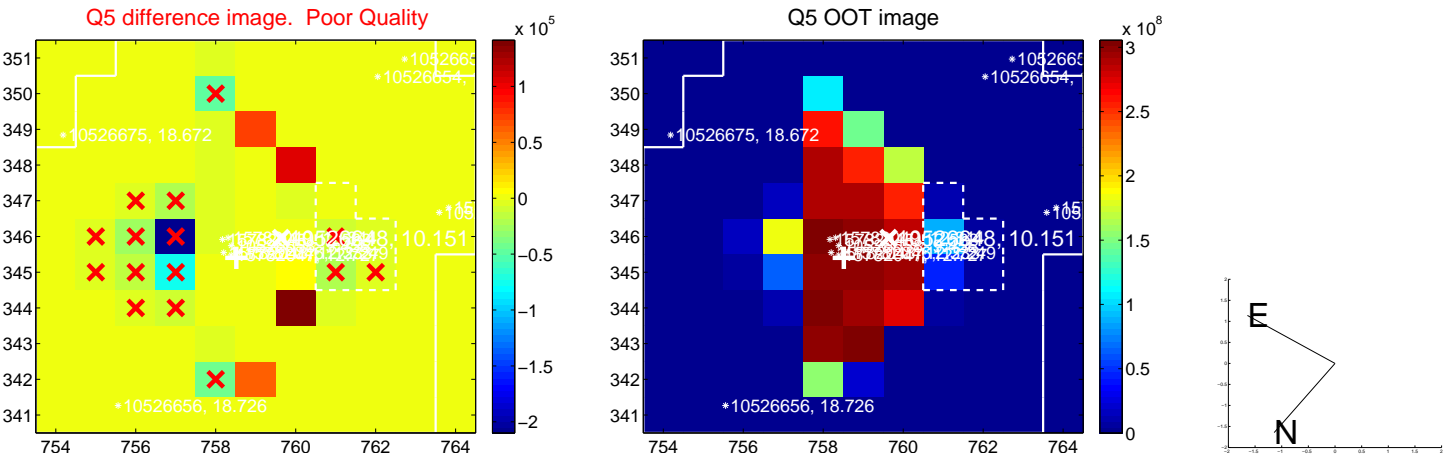


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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





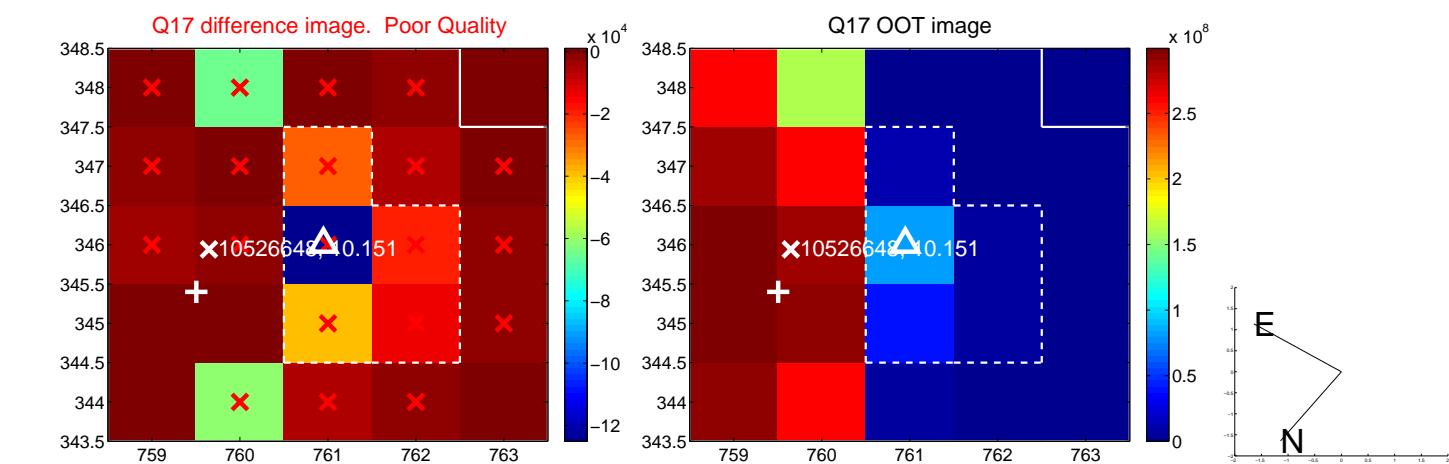
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



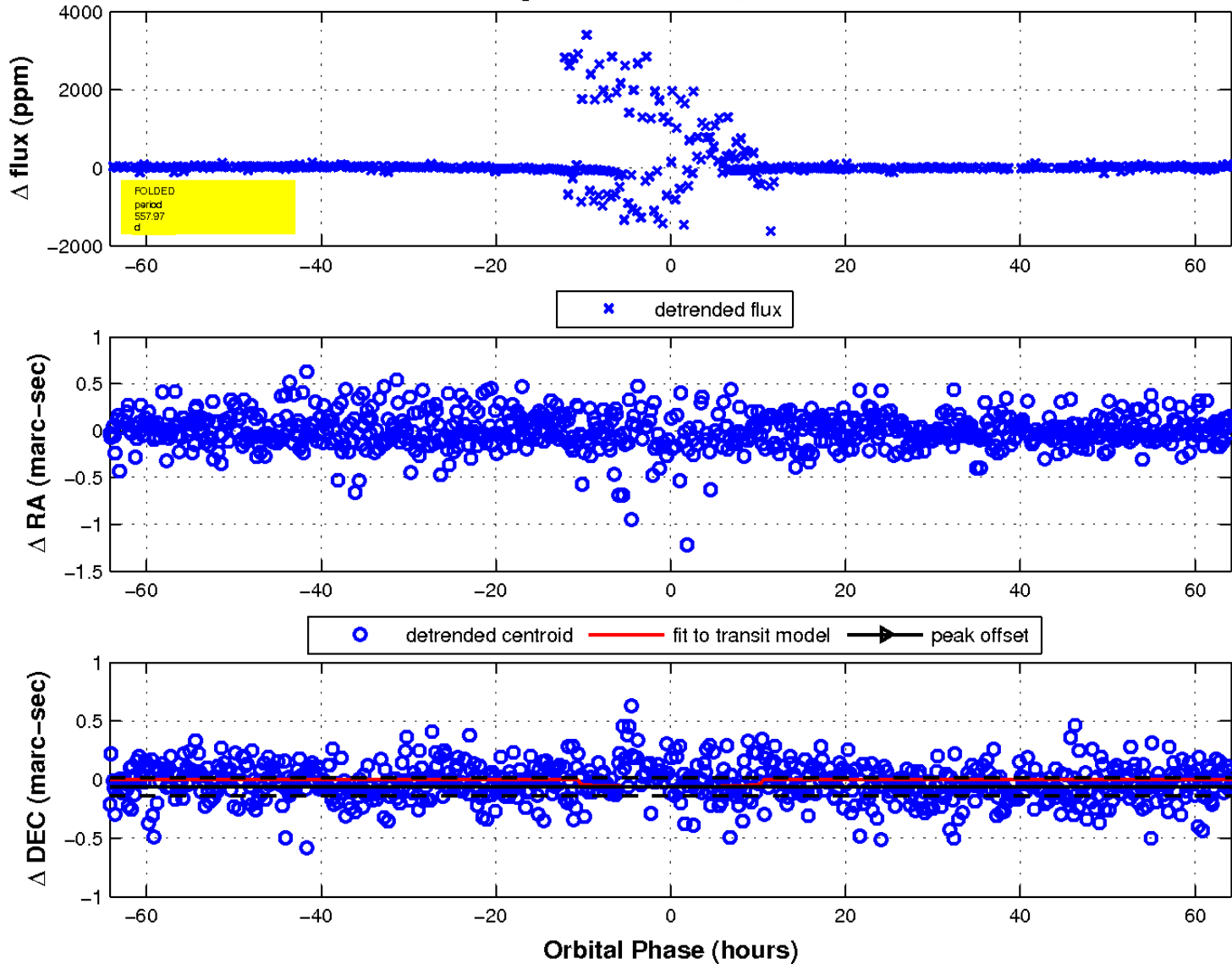
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



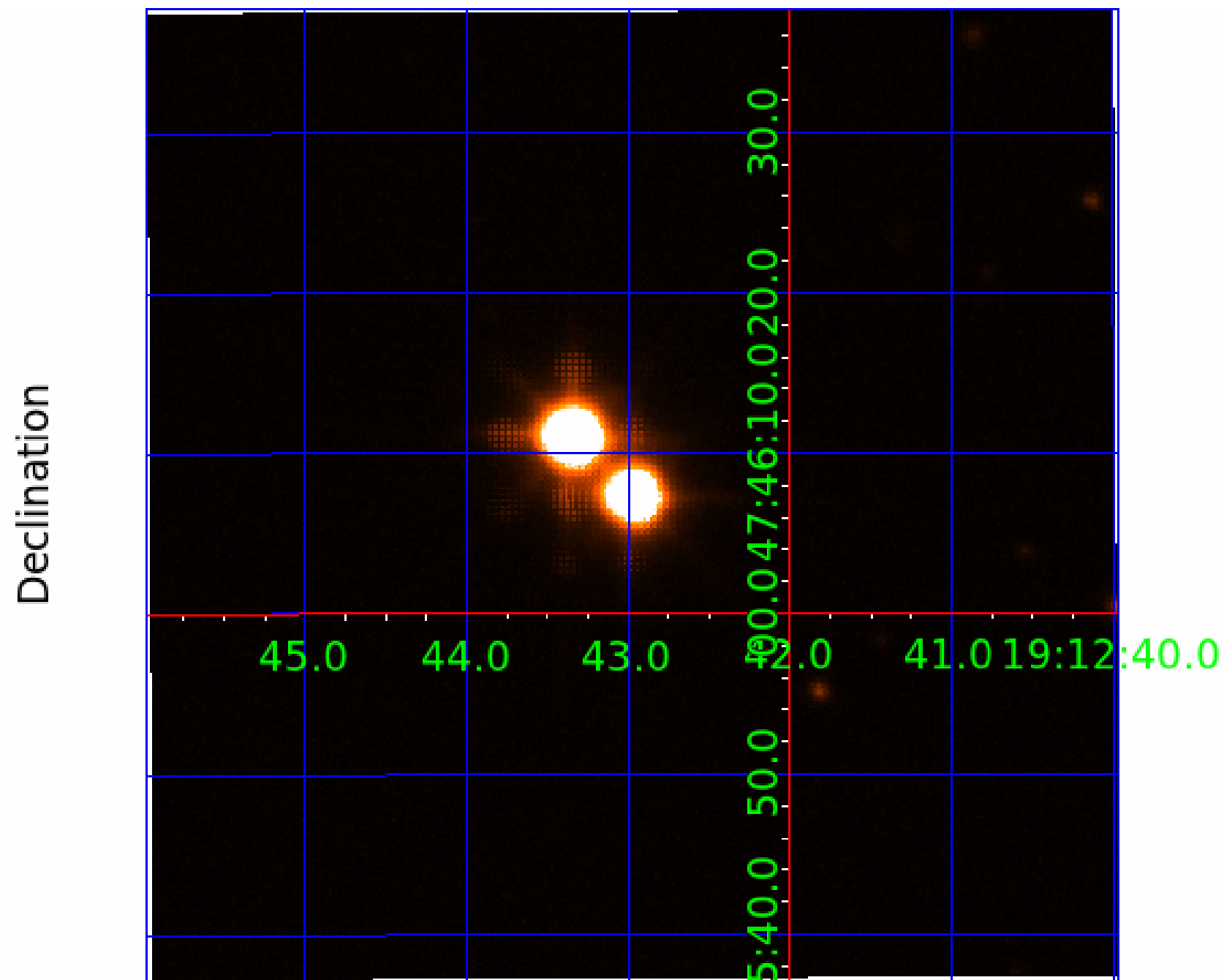
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 5



UKIRT Image



# KIC 010526648

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010526648-01	OBS	No	557.967552	450.374100	114.7	21.428	17.4	18.1	2.89	8806	3.35	16.26
010526648-02	OBS	No	365.853380	149.657090	664.2	6.028	214.0	63.4	2.89	8806	7.60	28.55
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010526648-05	OBS	No	390.962115	460.099667	3181.0	5.000	158.0	-1.0	2.89	8806	16.59	26.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010526648-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010526648-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010526648-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010526648-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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.

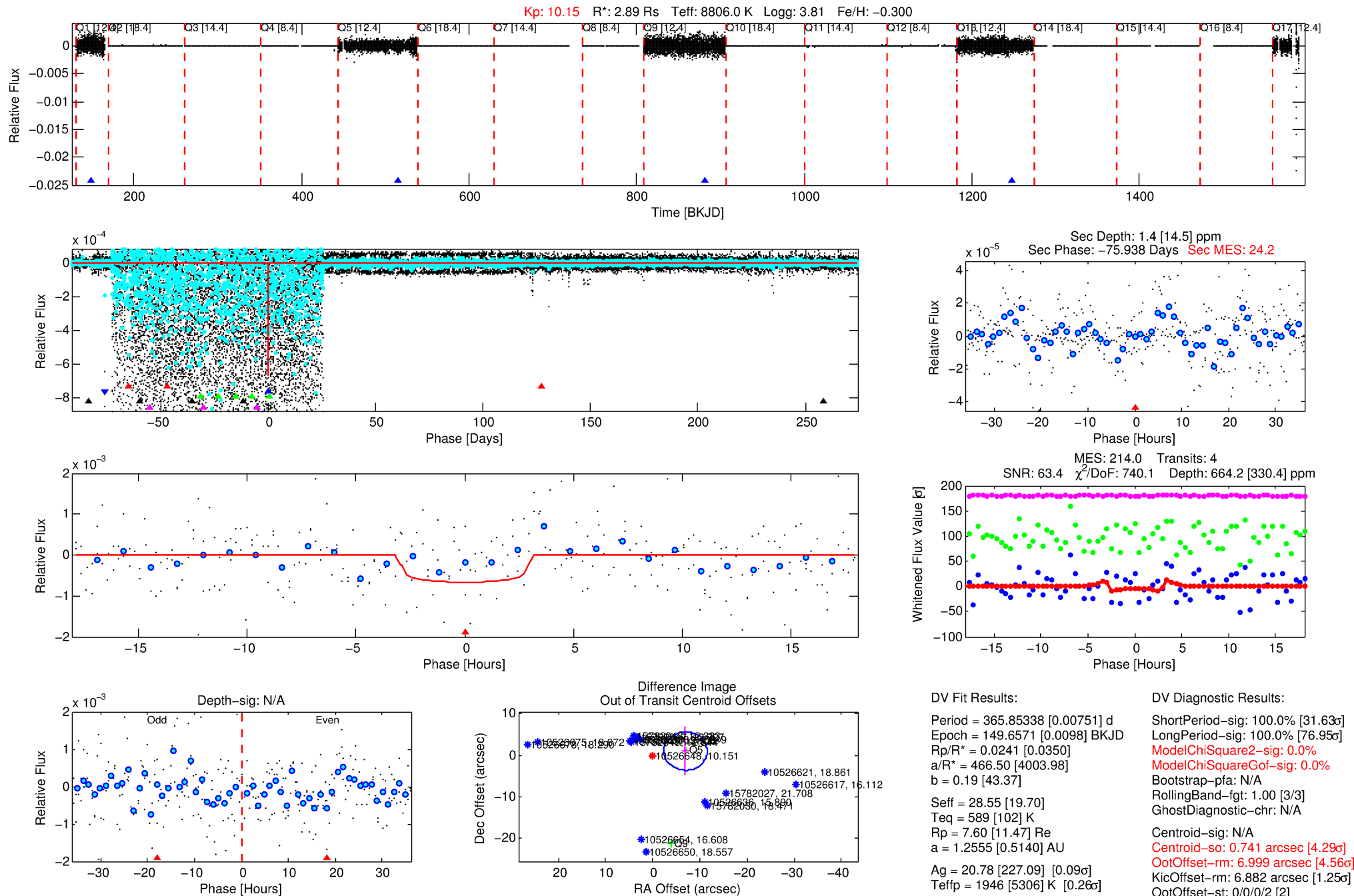
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010526648-02

No Significant Match Found

# DV One-Page Summary

KIC: 10526648 Candidate: 2 of 5 Period: 365.853 d



## DV Fit Results:

Period = 365.85338 [0.00751] d  
Epoch = 149.6571 [0.0098] BKJD  
Rp/R\* = 0.0241 [0.0350]  
a/R\* = 466.50 [4003.98]  
b = 0.19 [43.37]  
Seff = 28.55 [19.70]  
Teq = 589 [102] K  
Rp = 7.60 [11.47] Re  
a = 1.2555 [0.5140] AU  
Ag = 20.78 [227.09] [0.09σ]  
Teff = 1946 [5306] K [0.26σ]

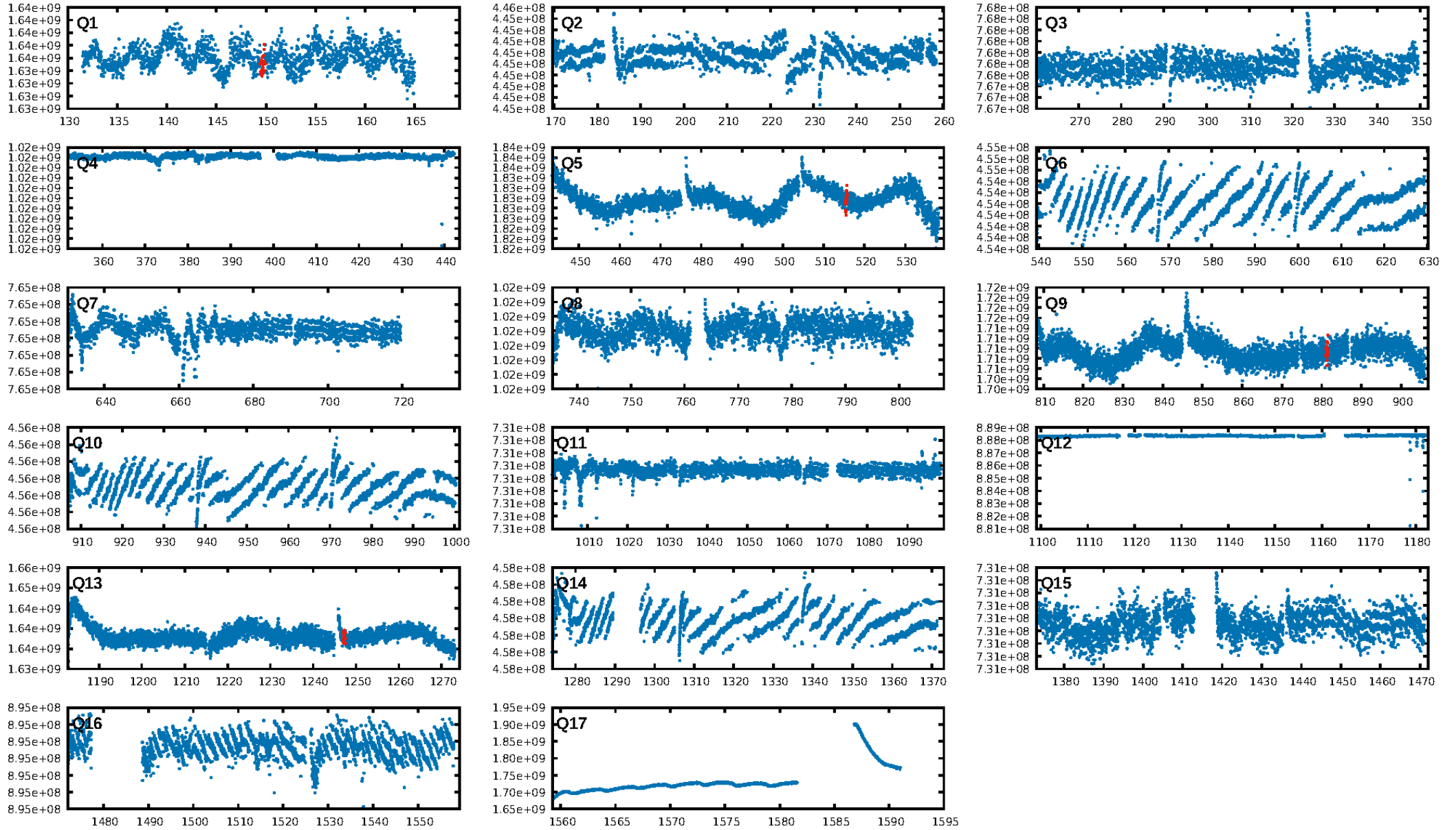
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [31.63σ]  
LongPeriod-sig: 100.0% [76.95σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: N/A  
RollingBand-igt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: 0.741 arcsec [4.29σ]  
OotOffset-rm: 6.999 arcsec [4.56σ]  
KicOffset-rm: 6.882 arcsec [1.25σ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [3/3]

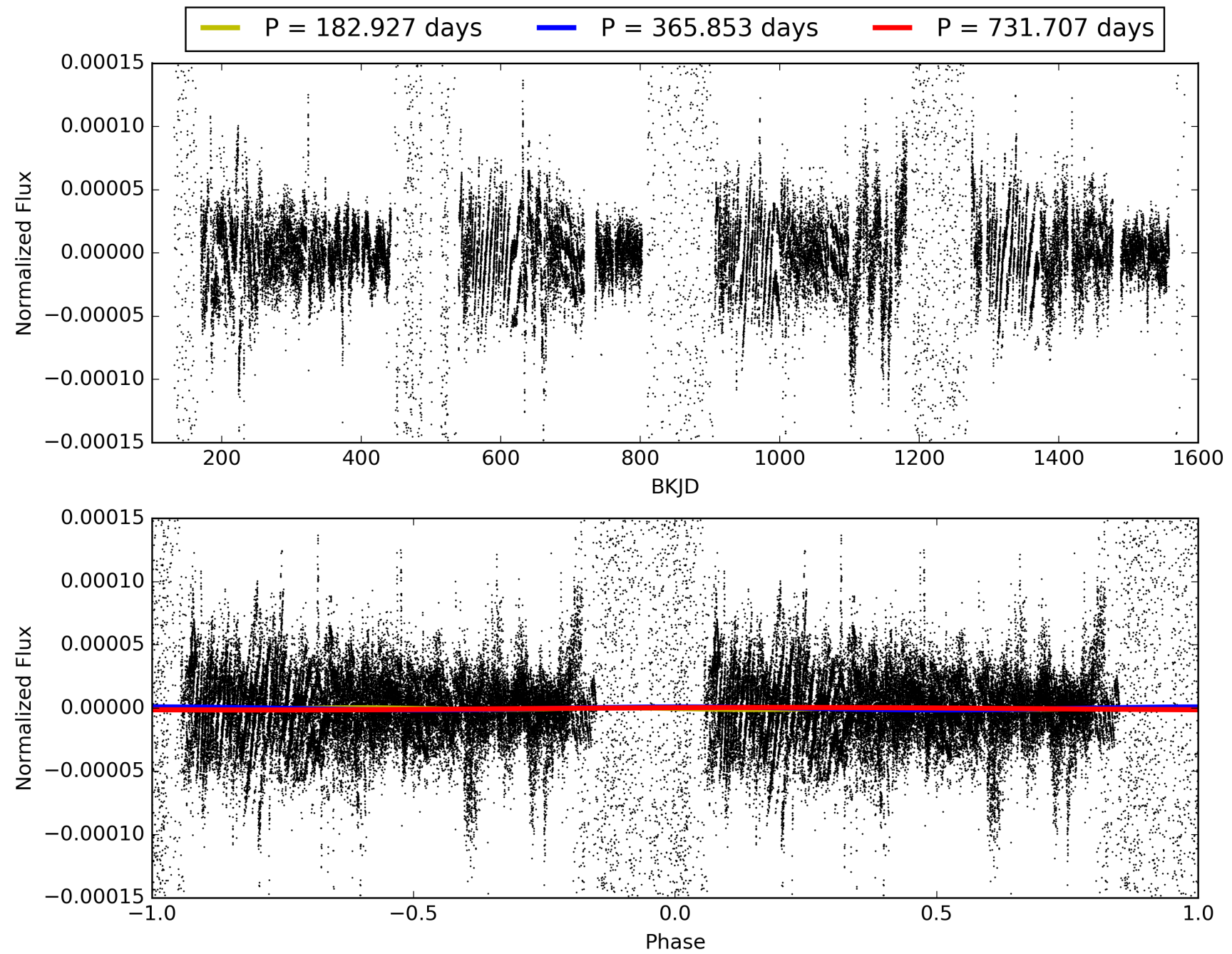
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:15:14 Z

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

# TCE 010526648-02, PDC Light Curves



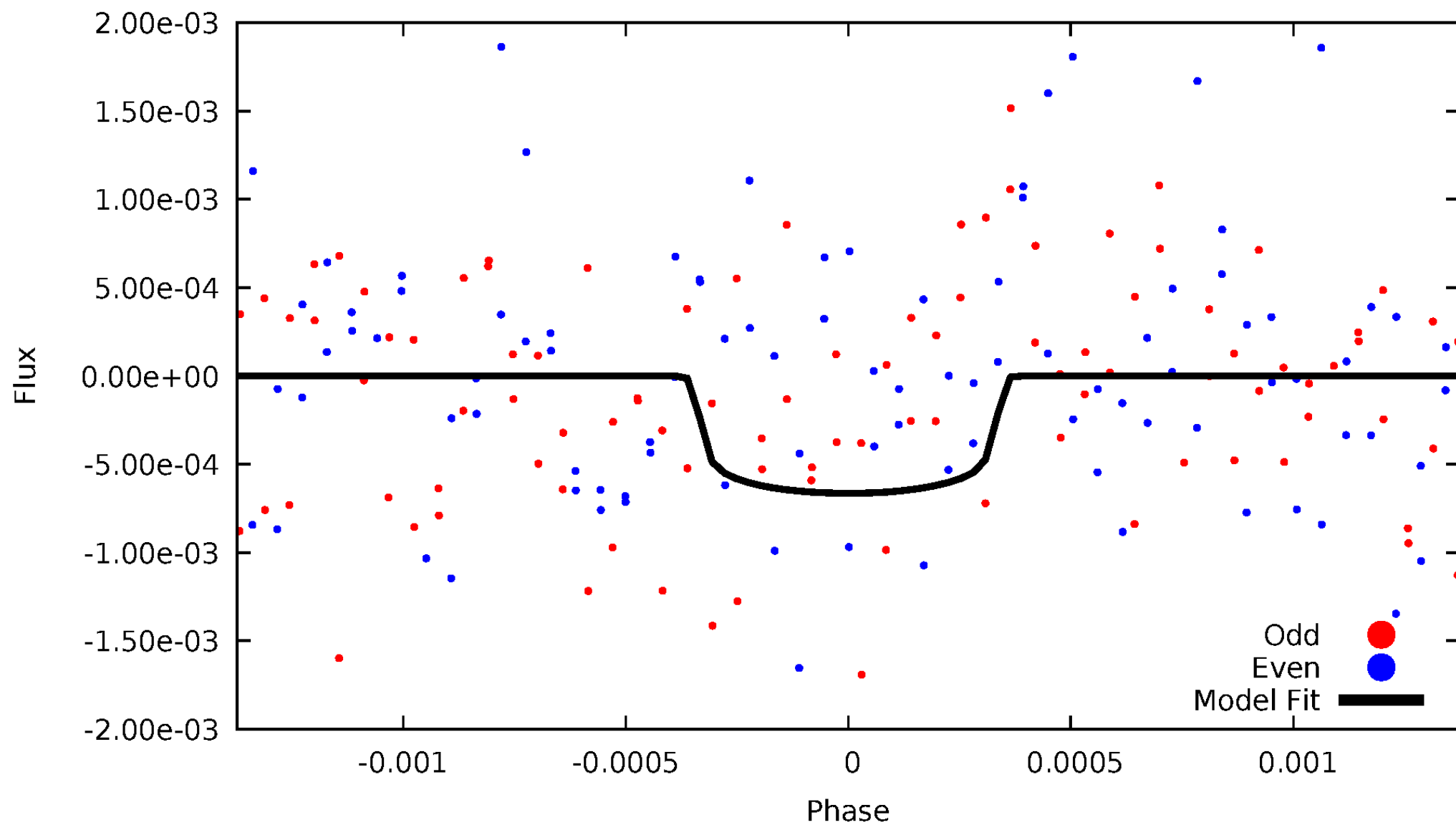
# TCE 010526648-02





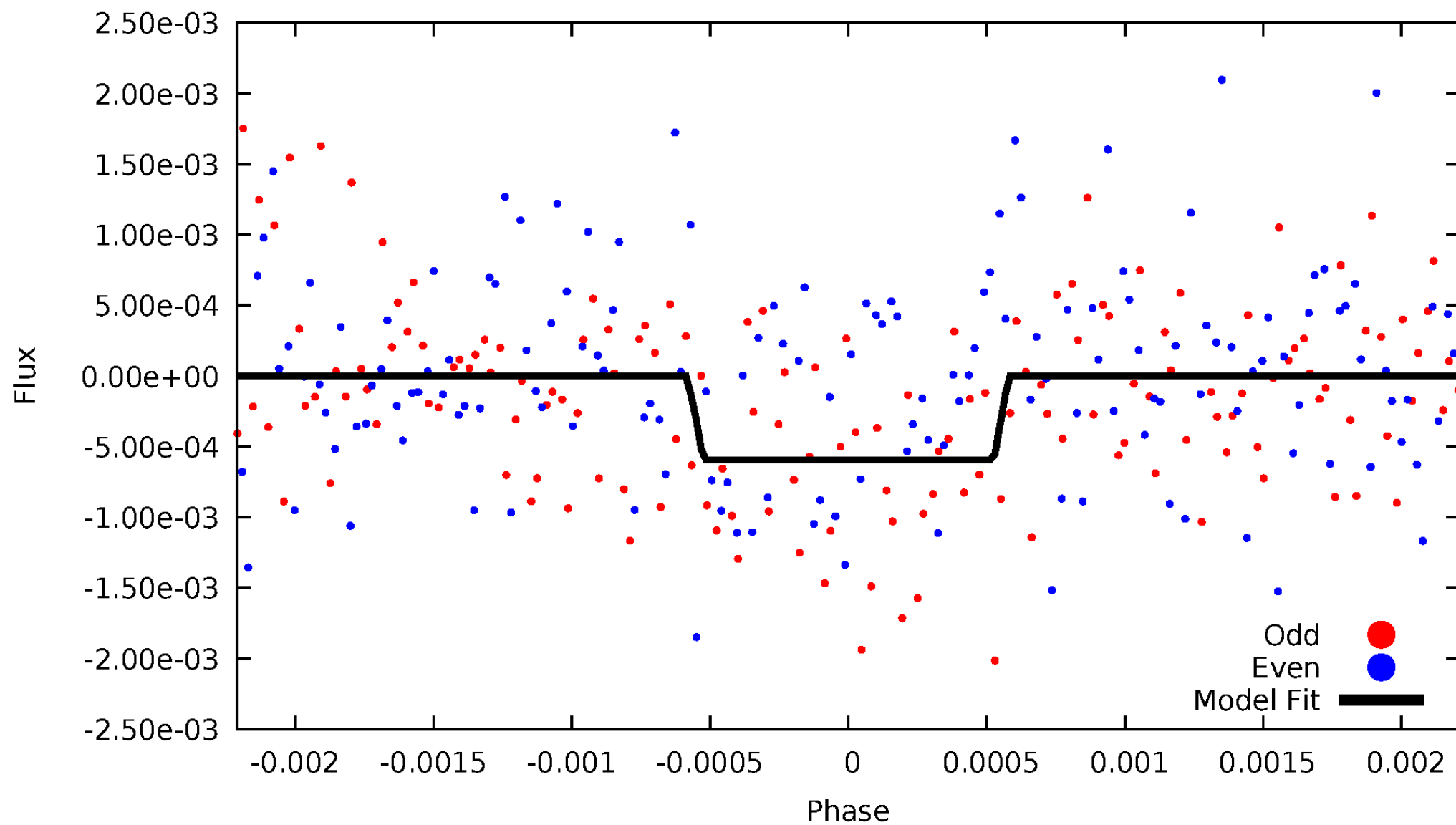
# DV Odd/Even

TCE 010526648-02



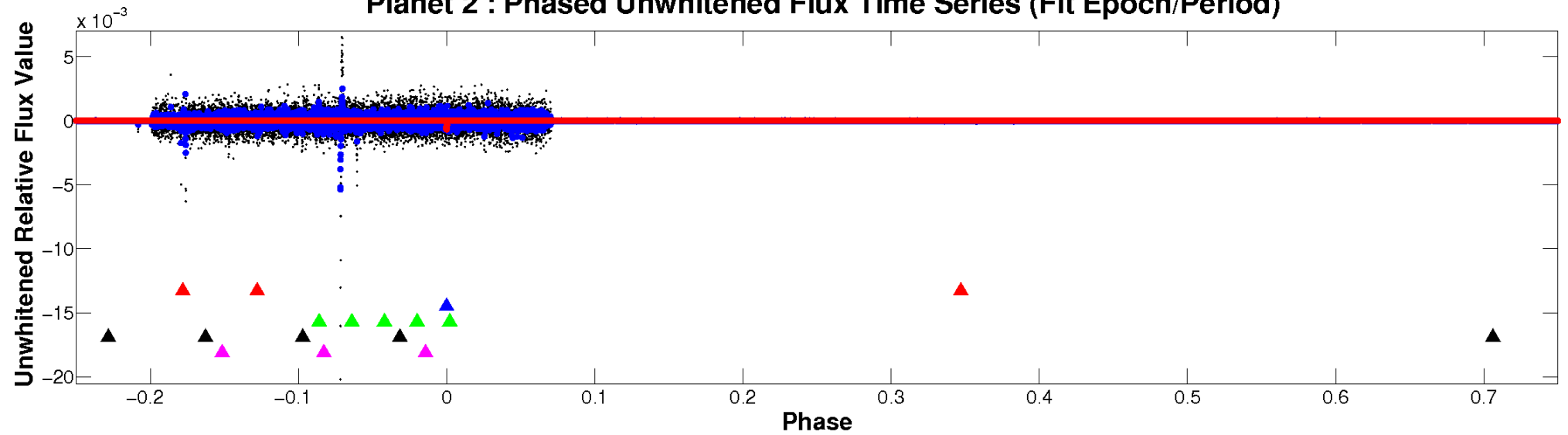
# ALT Odd/Even

TCE 010526648-02

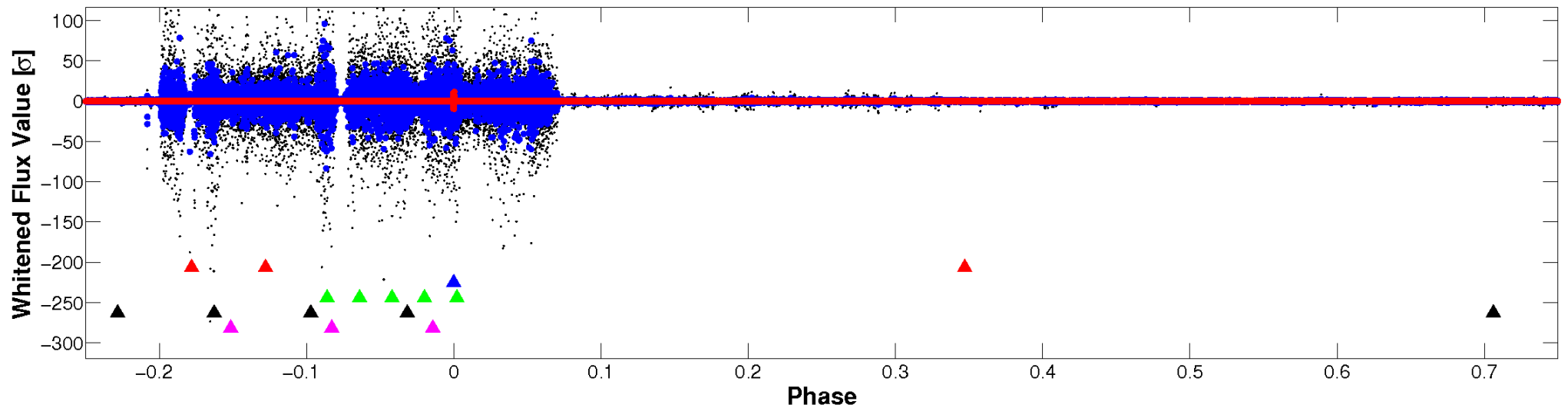


# Non-Whitened Vs. Whitened Light Curve

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

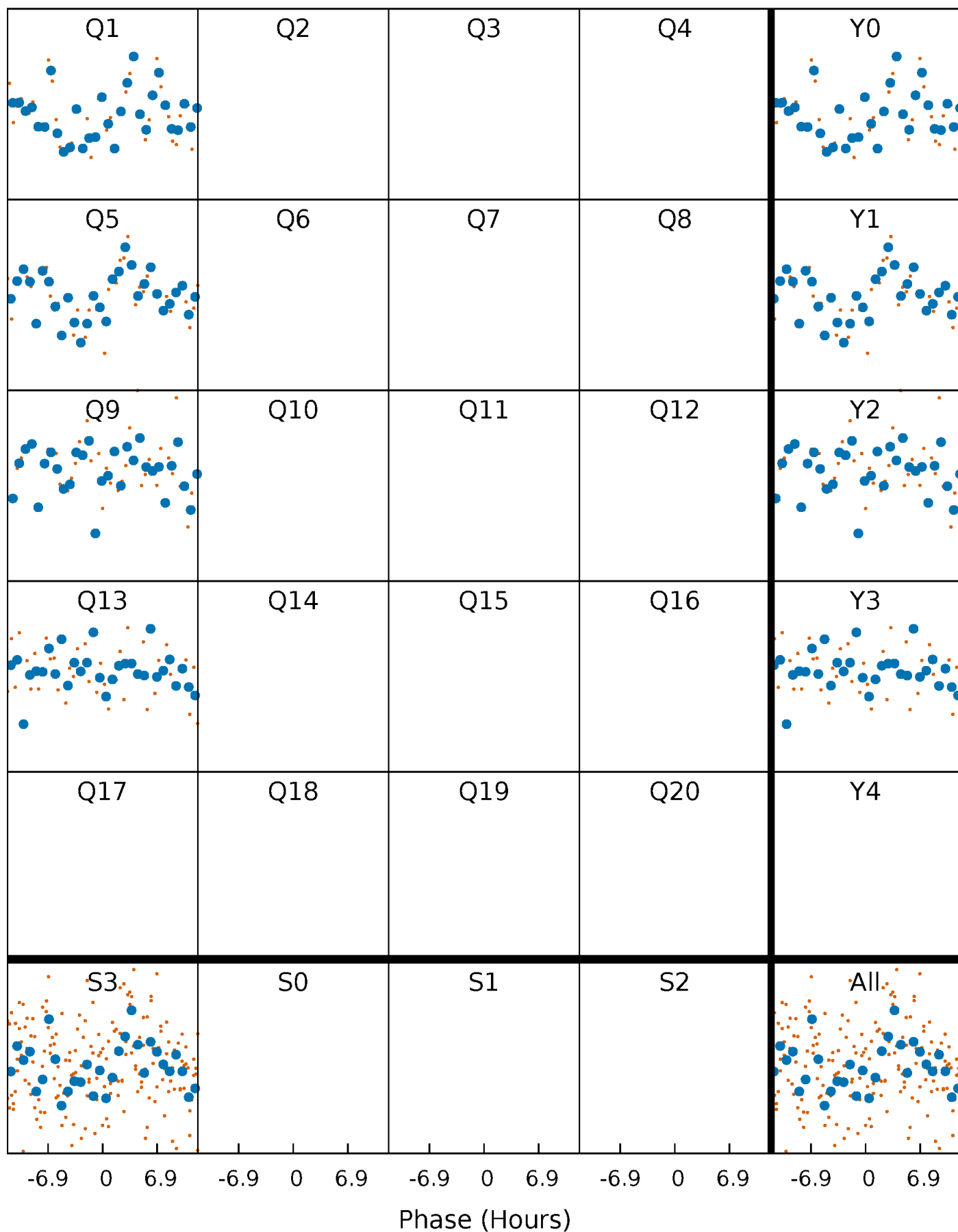


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



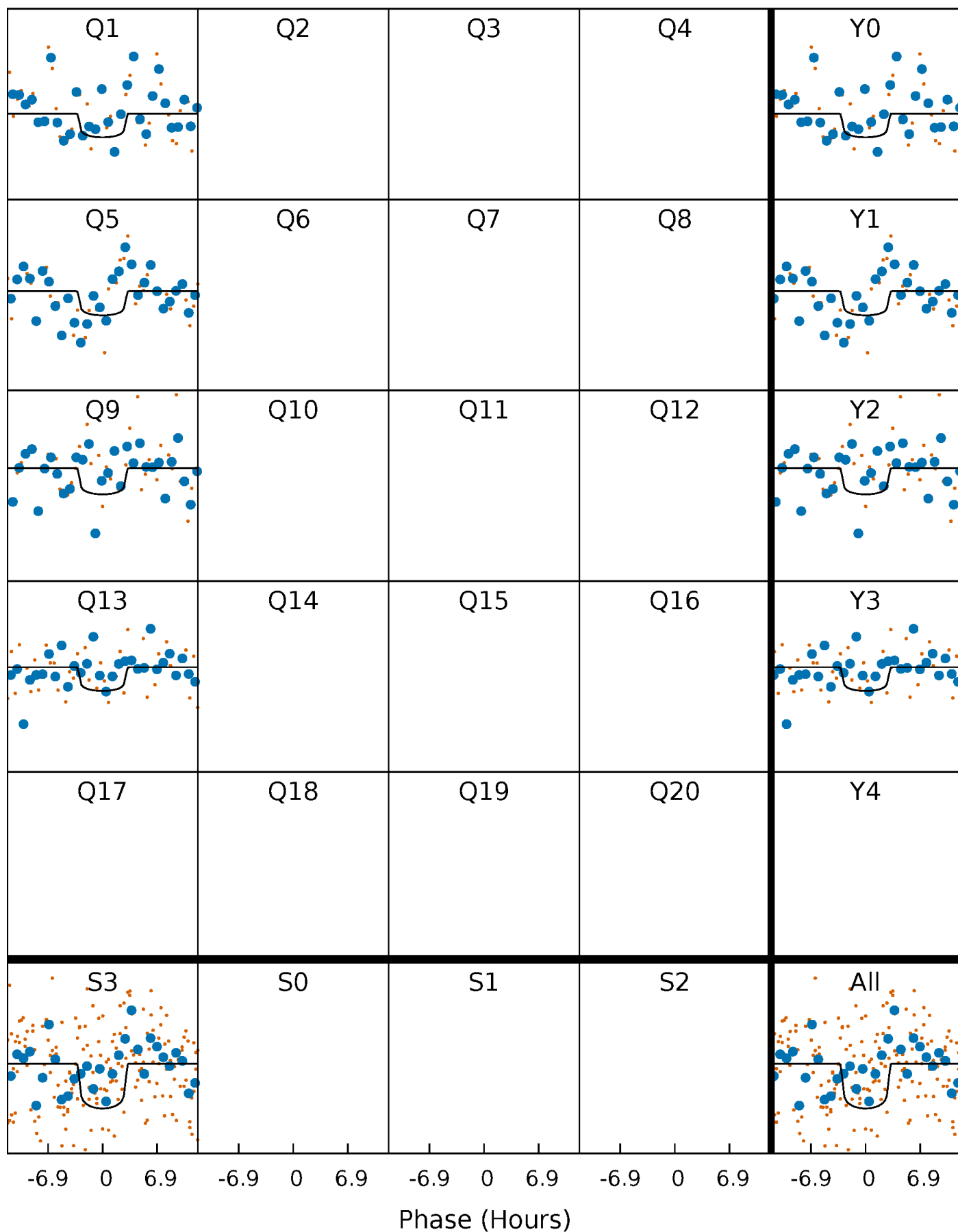
# PDC Quarter-Phased Transit Curves

TCE 010526648-02     $P=365.853380$  Days     $T_0=149.657090$  (BKJD)



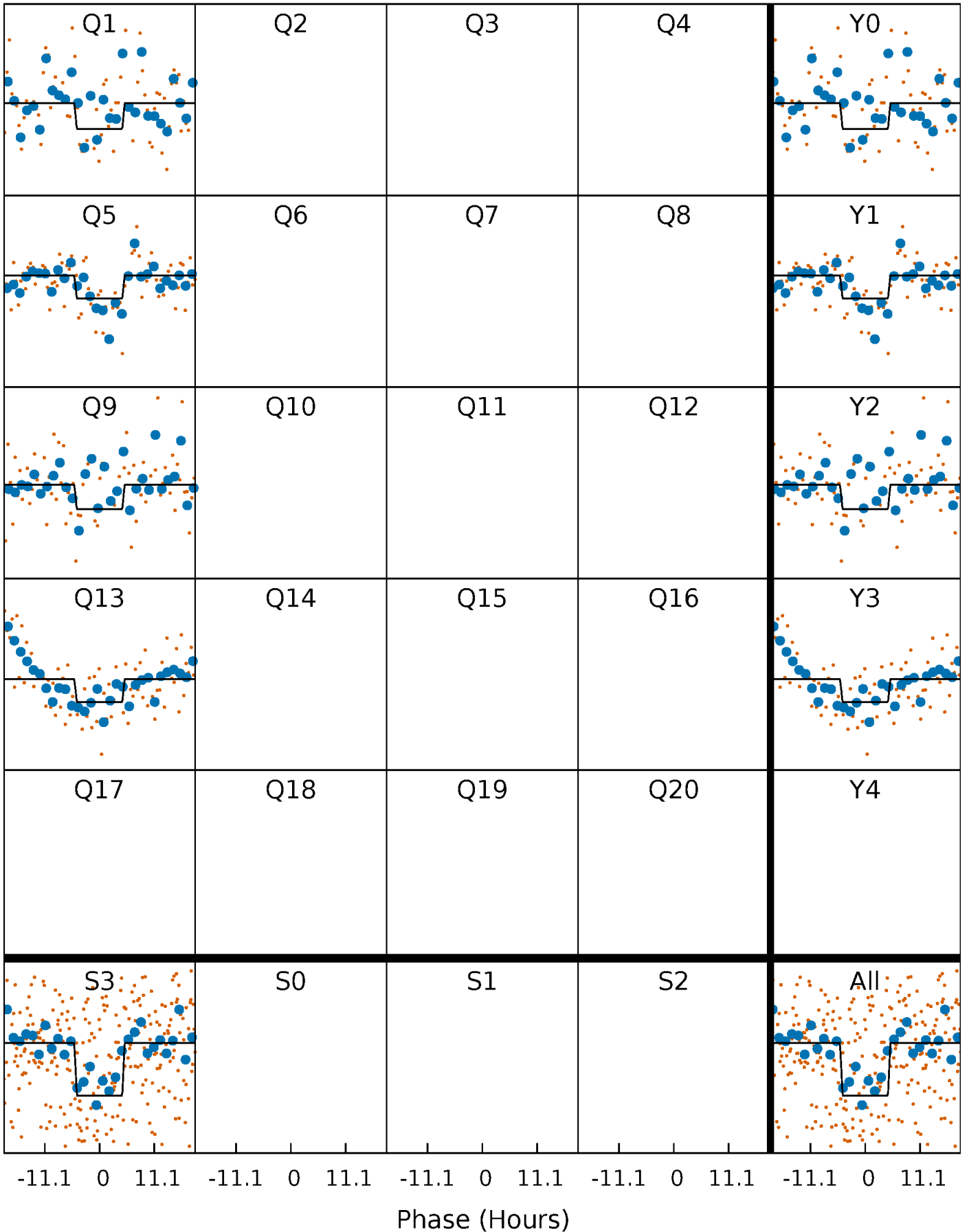
# DV Quarter-Phased Transit Curves

TCE 010526648-02     $P=365.853380$  Days     $T_0=149.657090$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

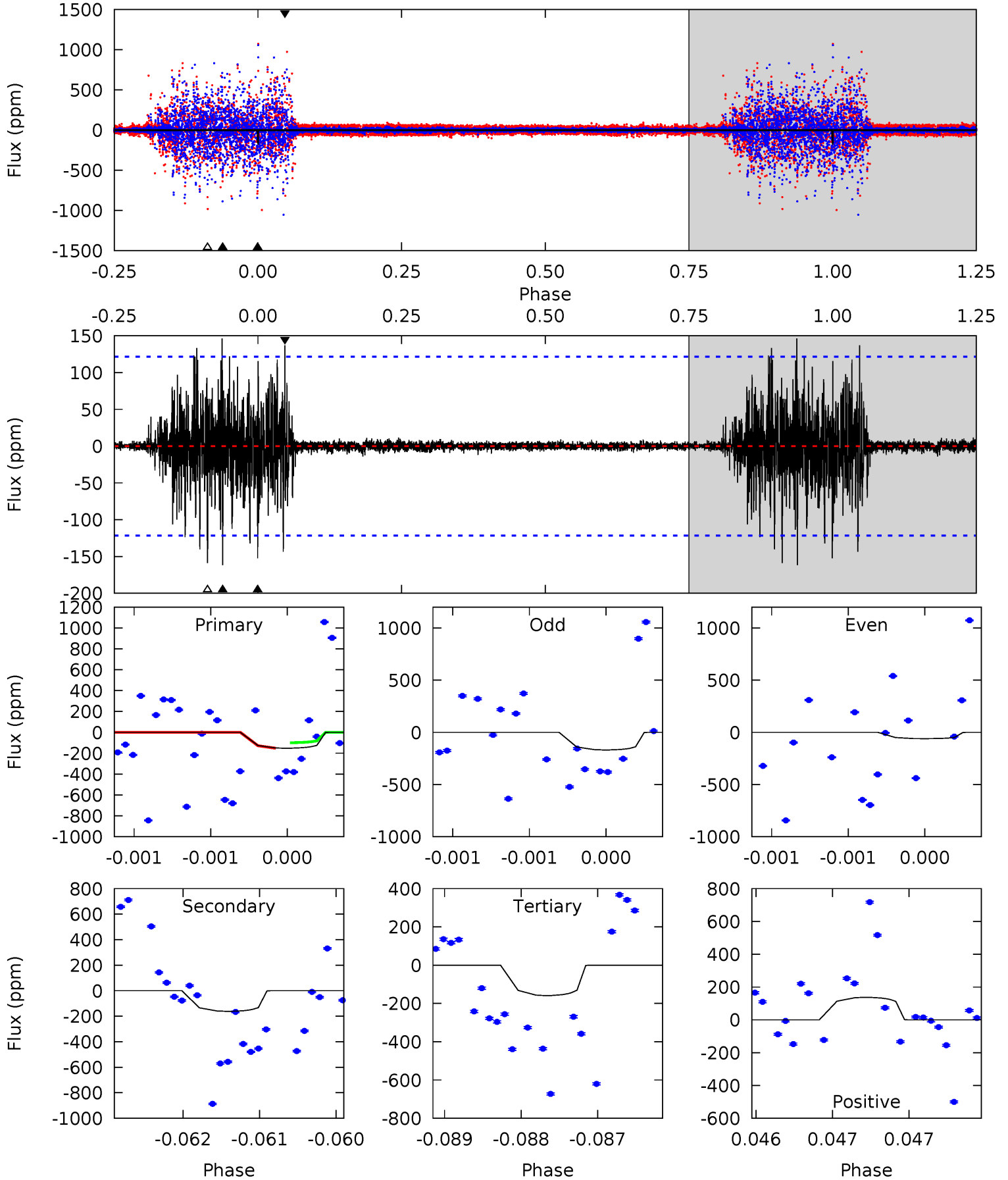
TCE 010526648-02     $P=365.726668$  Days     $T_0=149.600919$  (BKJD)



# DV Model-Shift Uniqueness Test

010526648-02, P = 365.853380 Days, E = 149.657090 Days

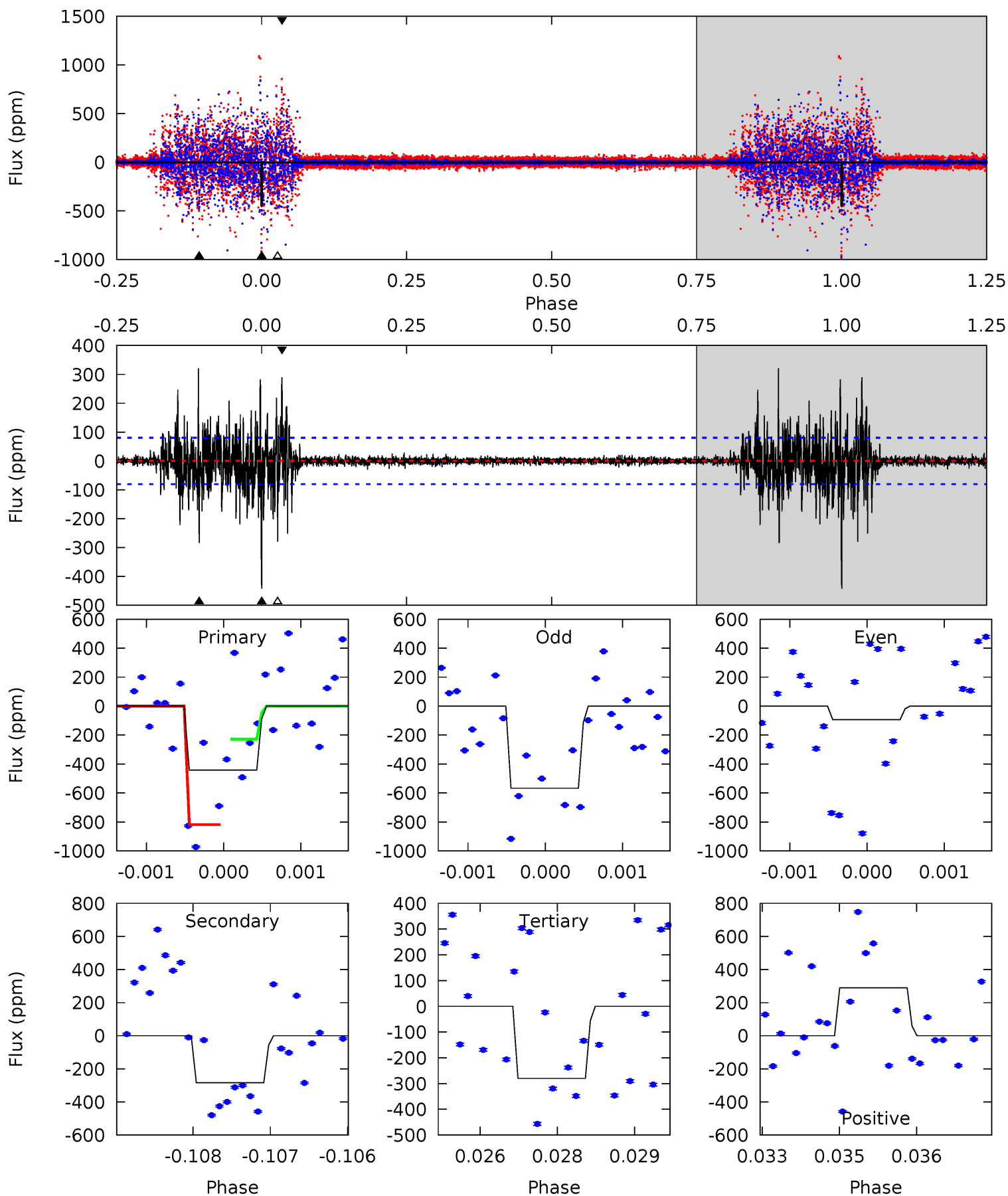
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.89	7.32	7.20	6.21	5.51	3.38	0.50	-0.31	0.68	0.12	1.11	1.83	1.30	0.47	0



# Alt Model-Shift Uniqueness Test

010526648-02, P = 365.726668 Days, E = 149.600919 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
29.8	19.2	18.9	19.6	5.43	3.25	1.49	10.9	10.3	0.27	-0.36	11.8	0.98	0.42	0





### Stellar Parameters For KIC 010526648

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8806^{+277}_{-381}$	$3.811^{+0.397}_{-0.132}$	$-0.300^{+0.450}_{-0.350}$	$2.890^{+0.790}_{-1.185}$	$1.971^{+0.445}_{-0.405}$	$0.115^{+0.411}_{-0.046}$
	+3%/-4%	+10%/-3%	+150%/-117%	+27%/-41%	+23%/-21%	+357%/-40%
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 010526648-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-162 \pm 22$	$9.91^{+9.36}_{-6.62}$	$798^{+69}_{-89}$	$5157^{+4173}_{-1132}$	$1459^{+11387}_{-1103}$
Alt.	$-284 \pm 15$	$10.41^{+10.53}_{-6.71}$	$801^{+68}_{-89}$	$5772^{+4317}_{-1361}$	$2255^{+14622}_{-1674}$

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

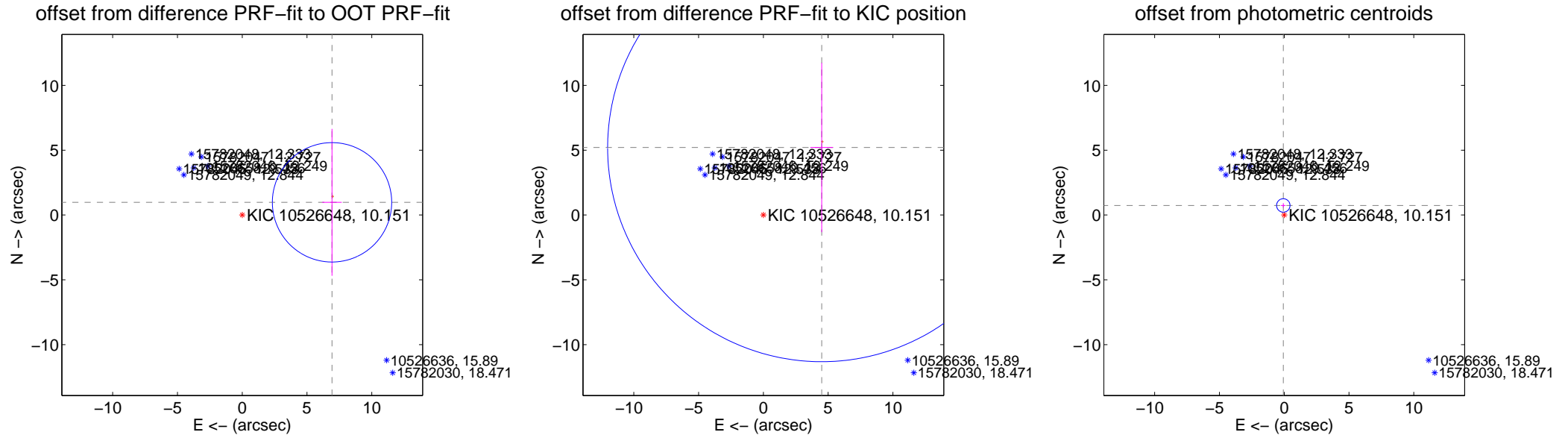
## DV Centroid Data

Supplemental centroid analysis for 010526648-02. **Kepler magnitude: 10.15.** Transit SNR 63.41

There are 0 quarters with good PRF difference image offsets

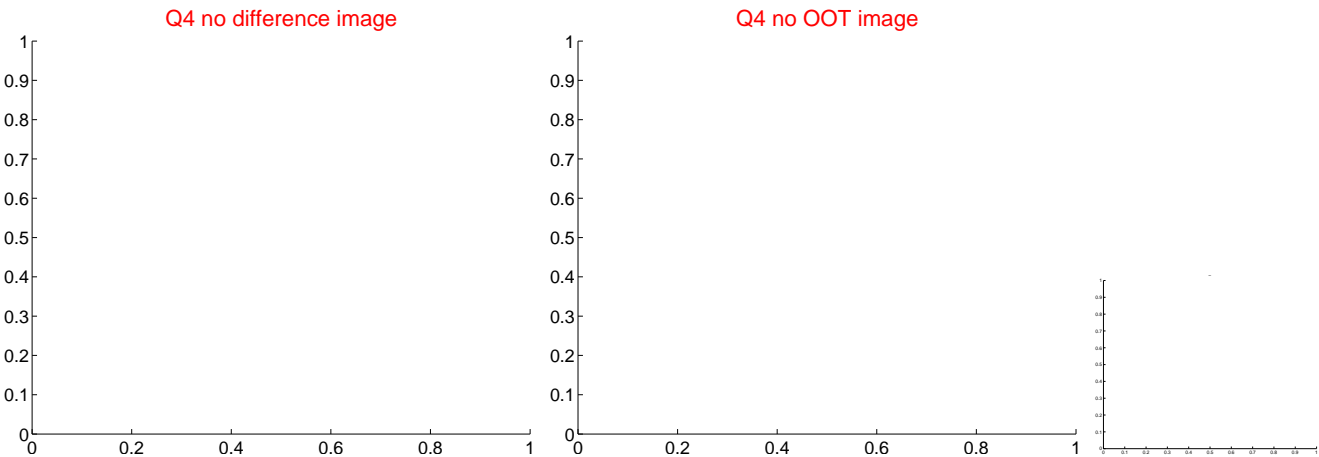
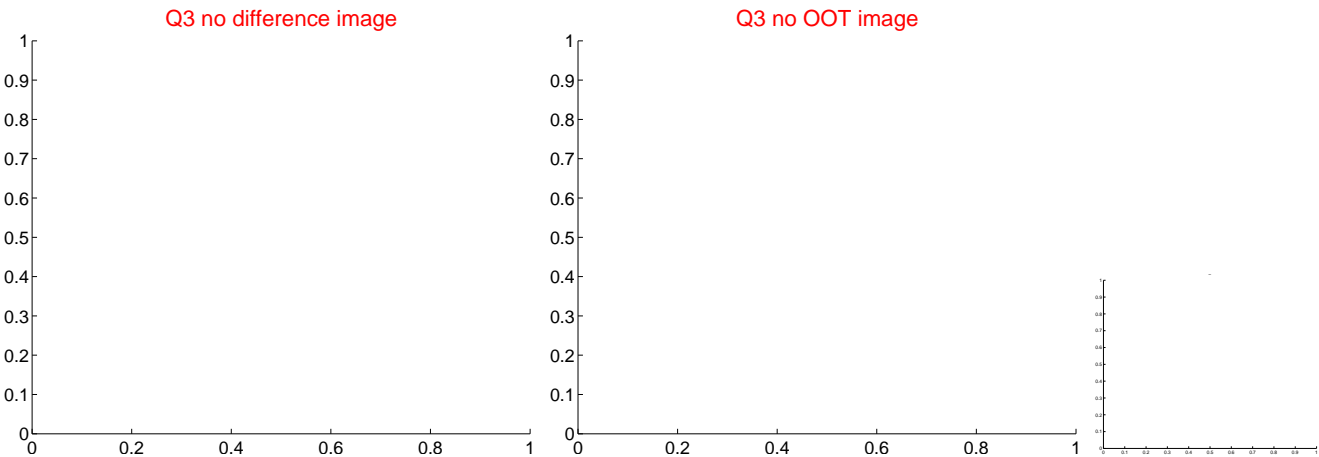
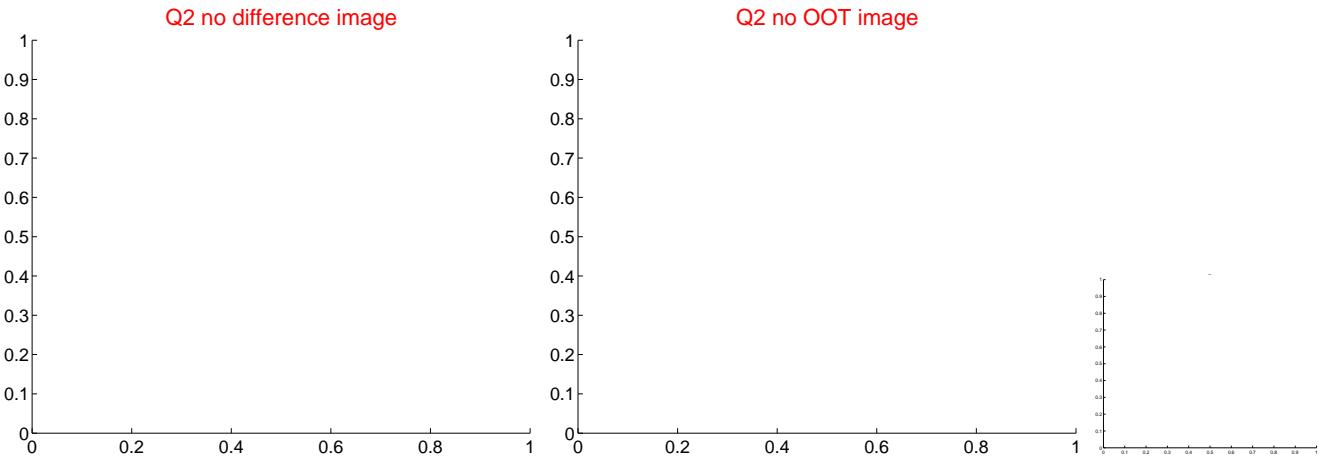
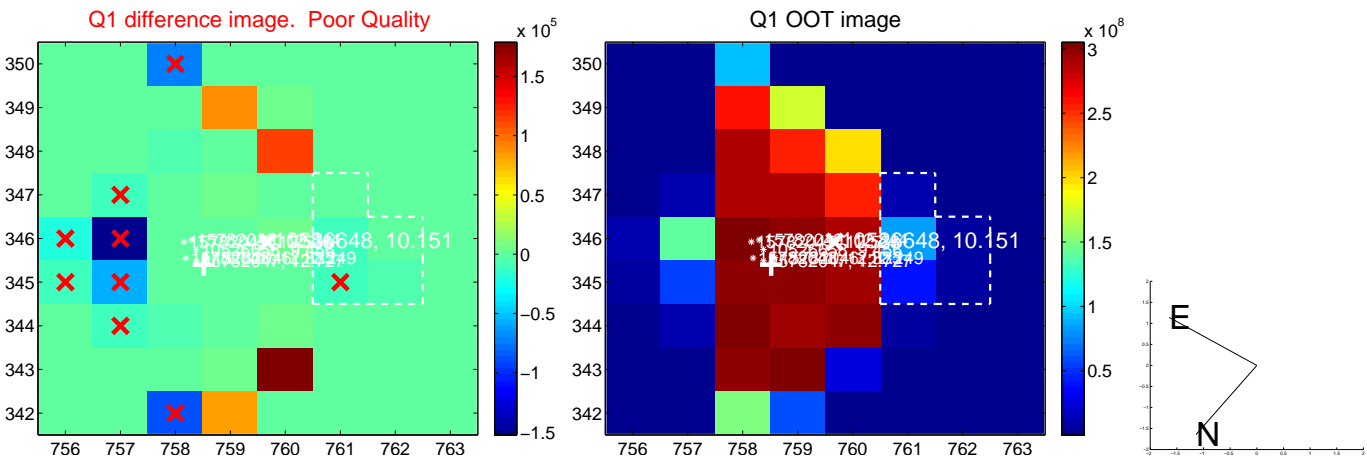
The OOT PRF centroid is offset from the target star catalog position by about 4.94 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>6.999 \pm 1.535</math></b>	<b>4.56</b>	$-6.930 \pm 0.751$	$0.979 \pm 5.667$
PRF-fit source offset from KIC position	$6.882 \pm 5.507$	1.25	$-4.501 \pm 0.875$	$5.206 \pm 6.525$
photometric centroid source offset	<b><math>0.74 \pm 0.17</math></b>	<b>4.29</b>	$0.07 \pm 0.18$	$0.74 \pm 0.17$

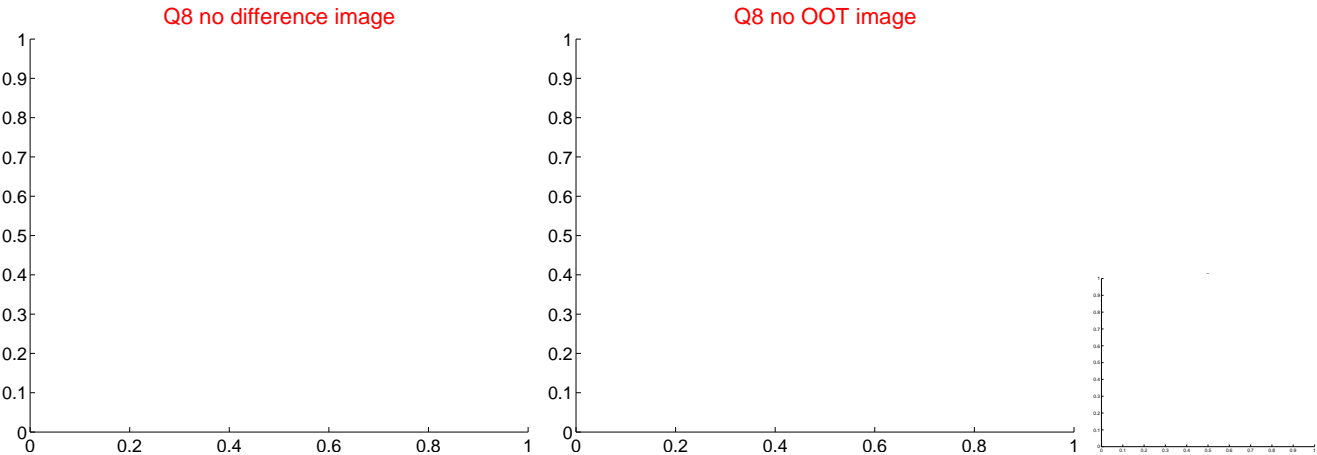
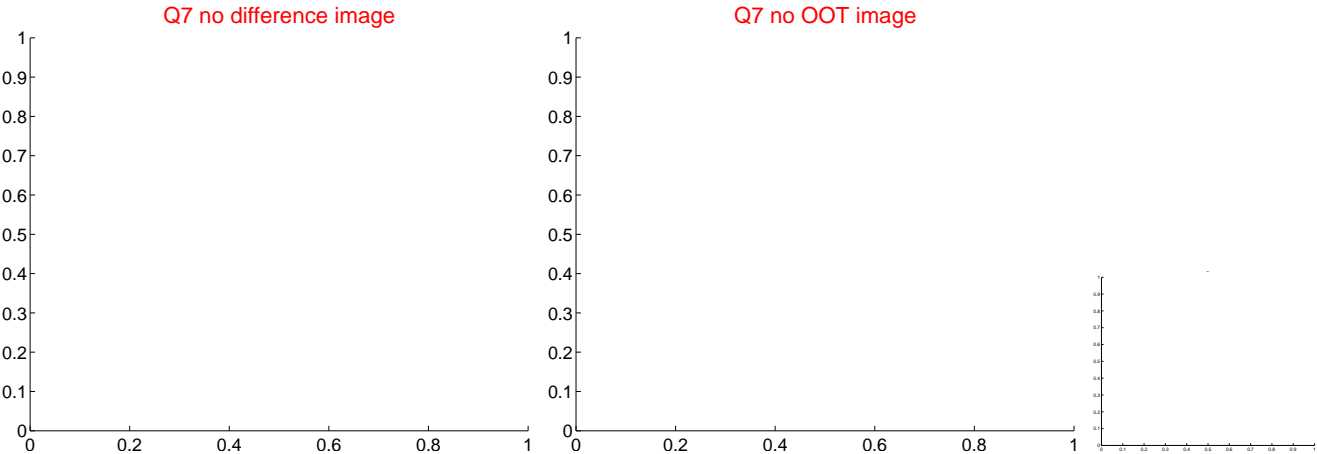
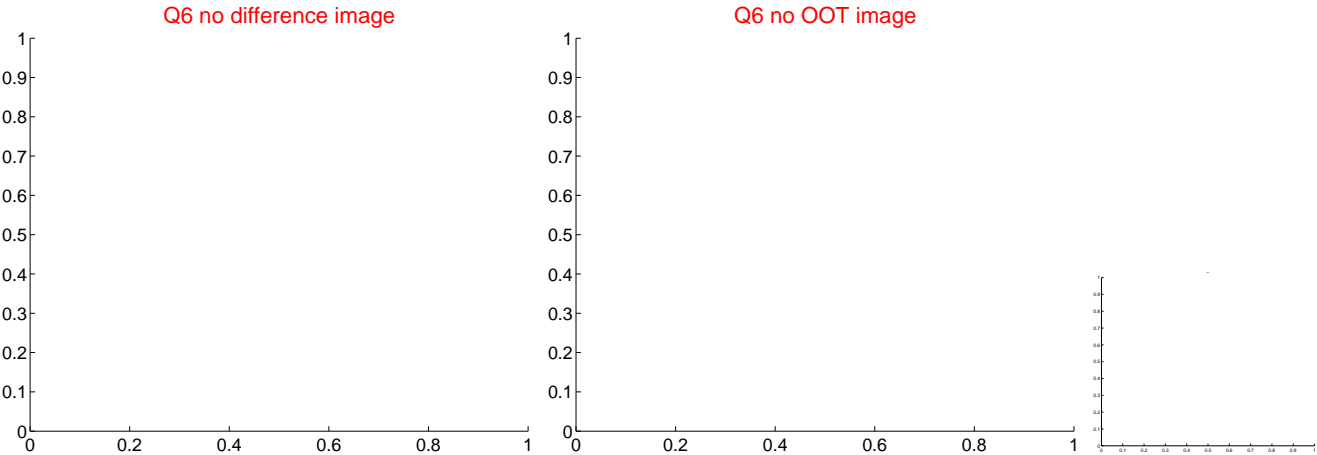
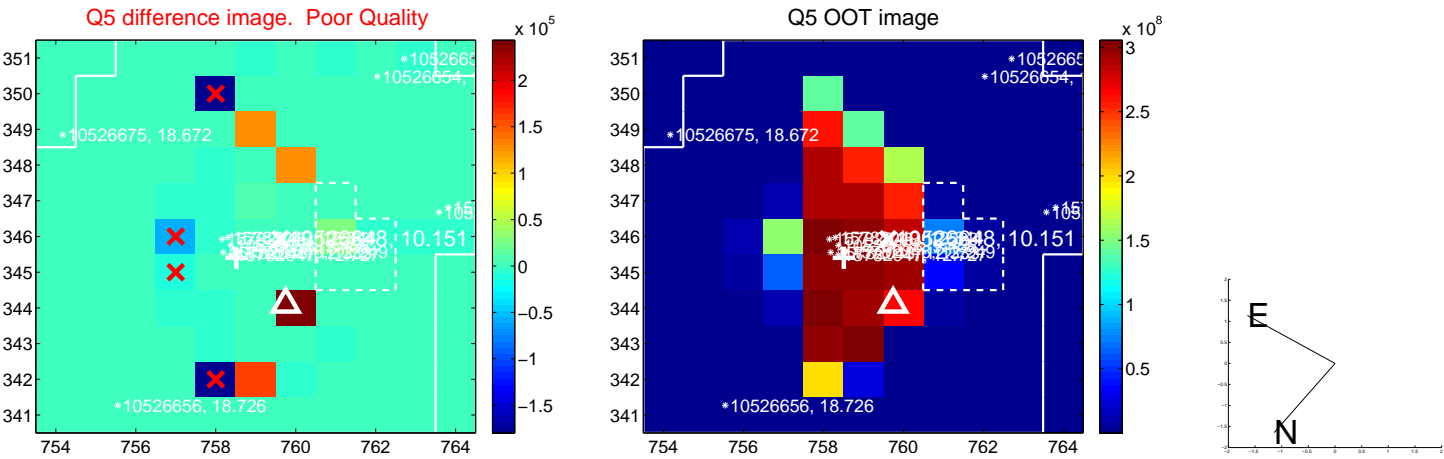


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

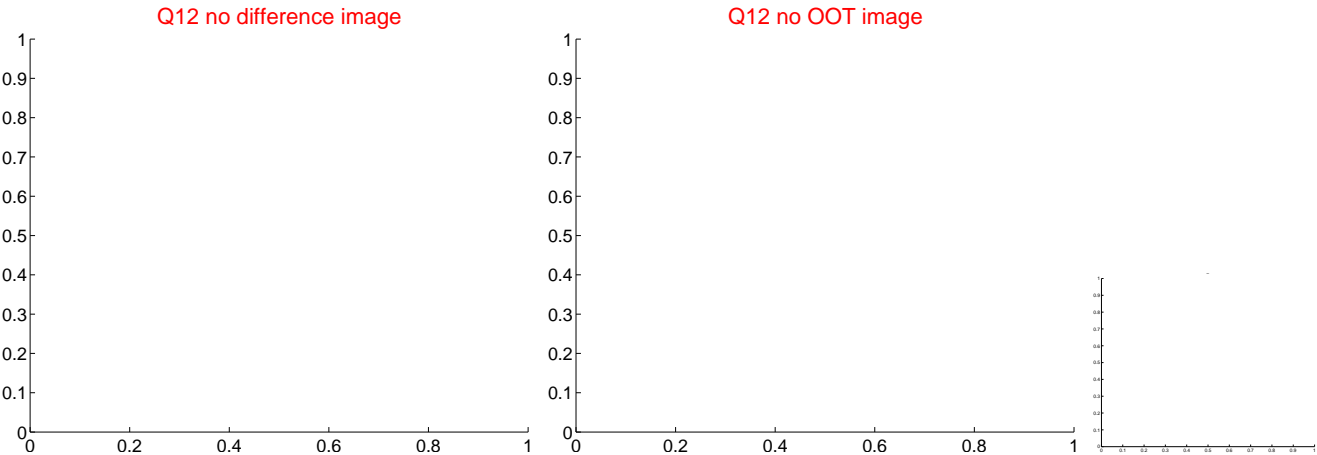
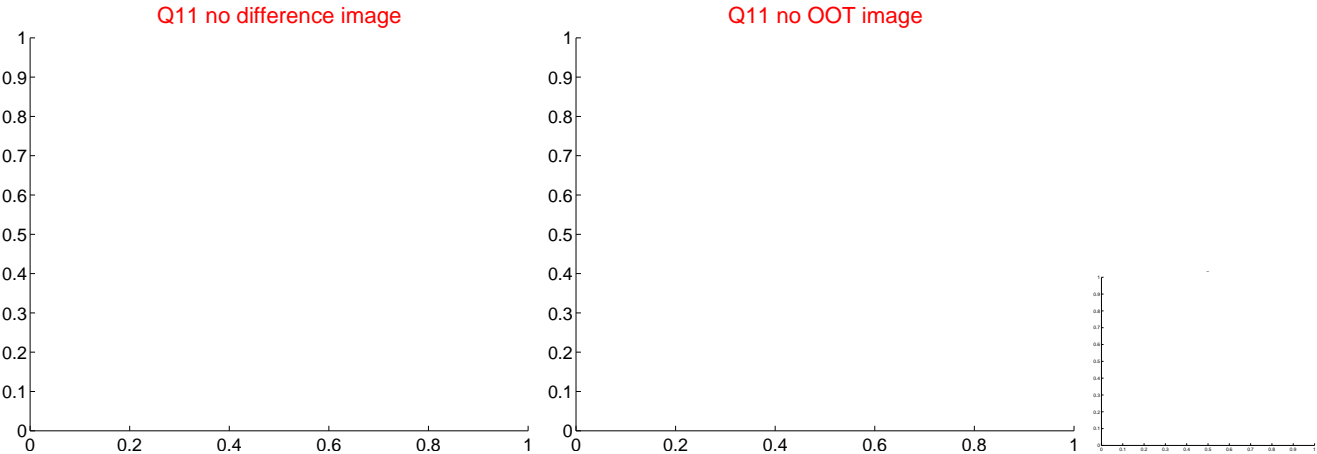
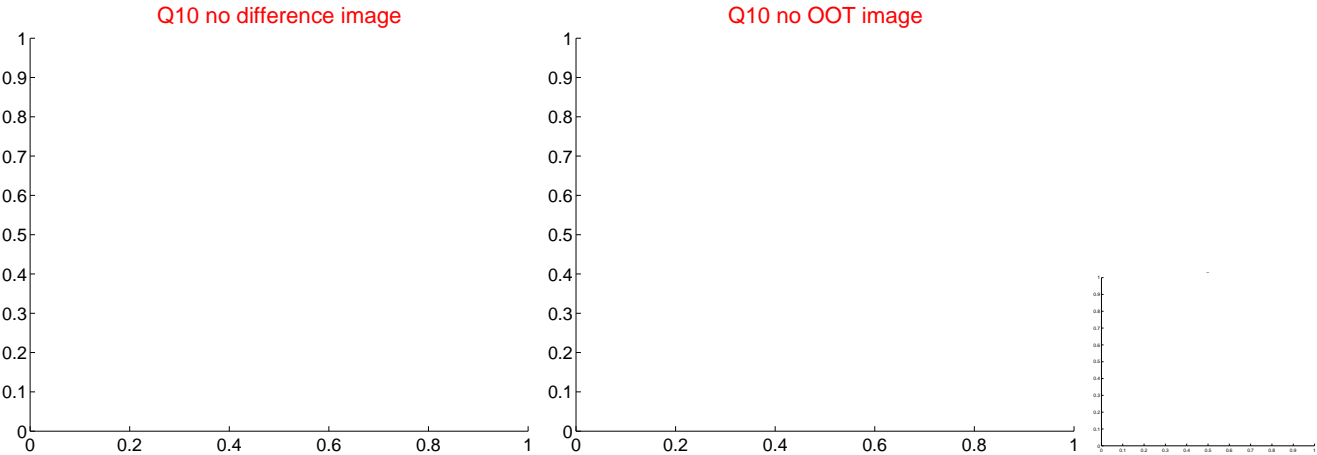
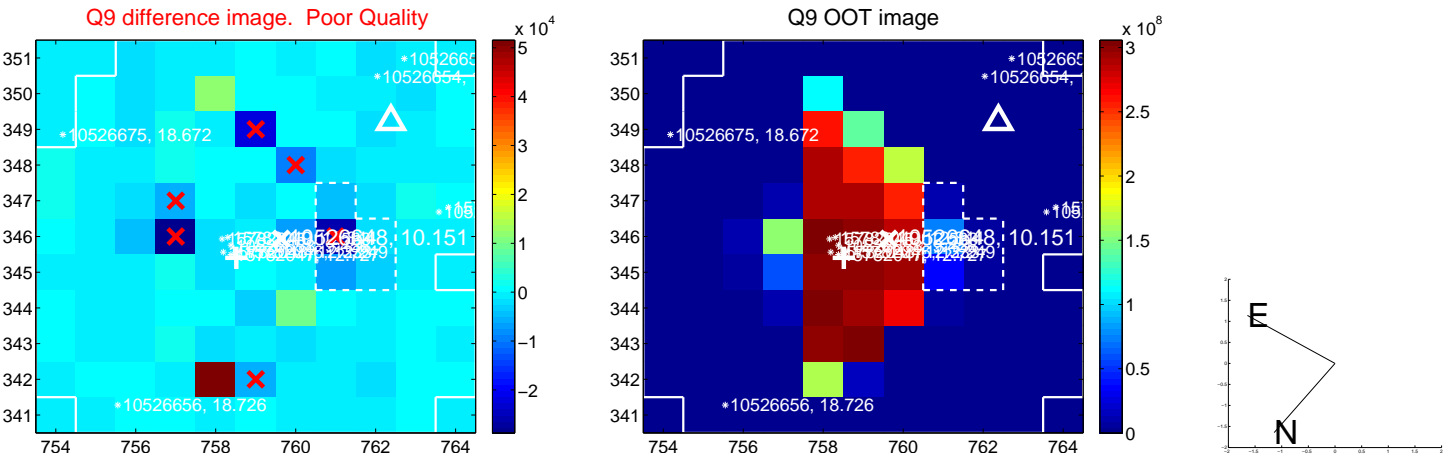
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



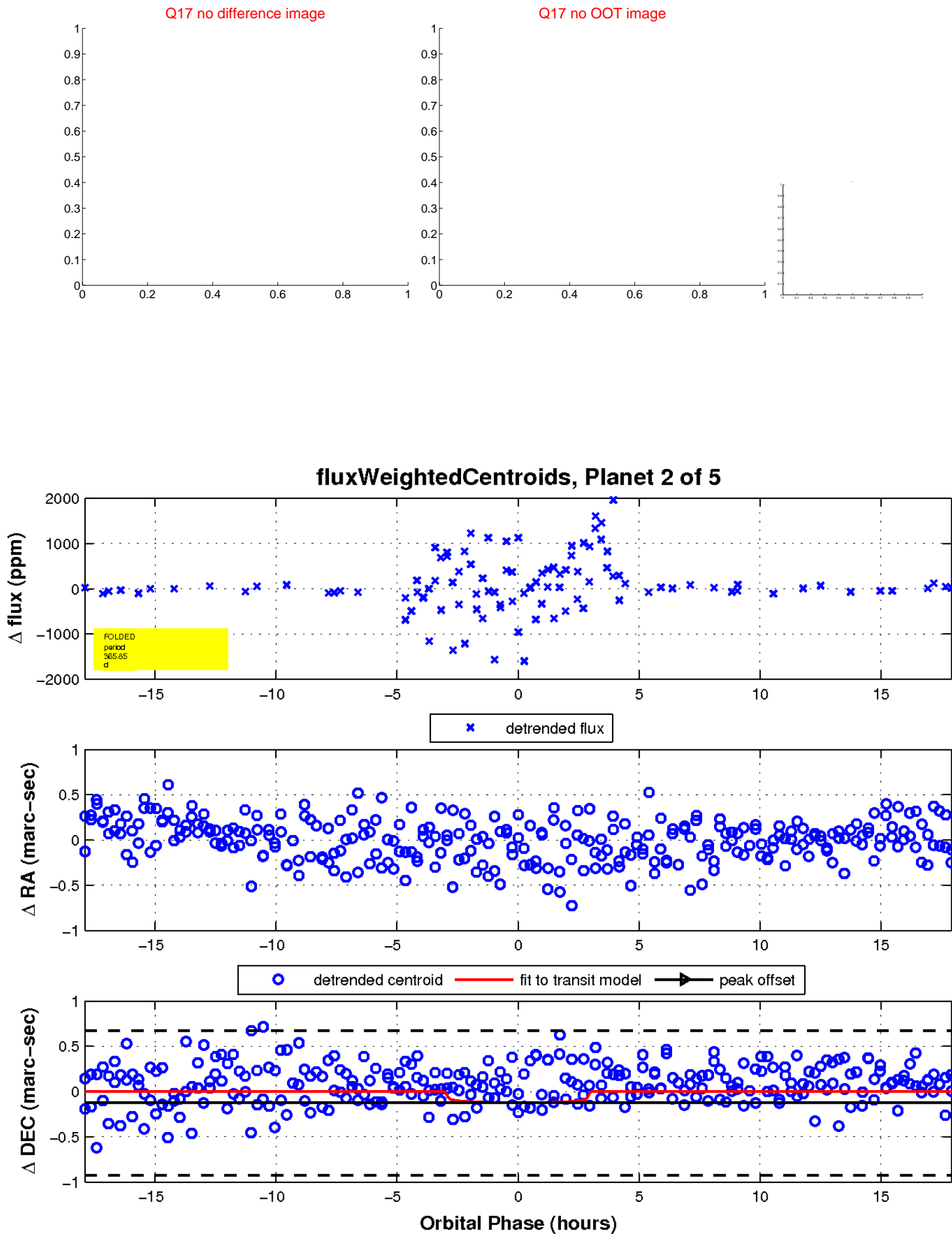
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



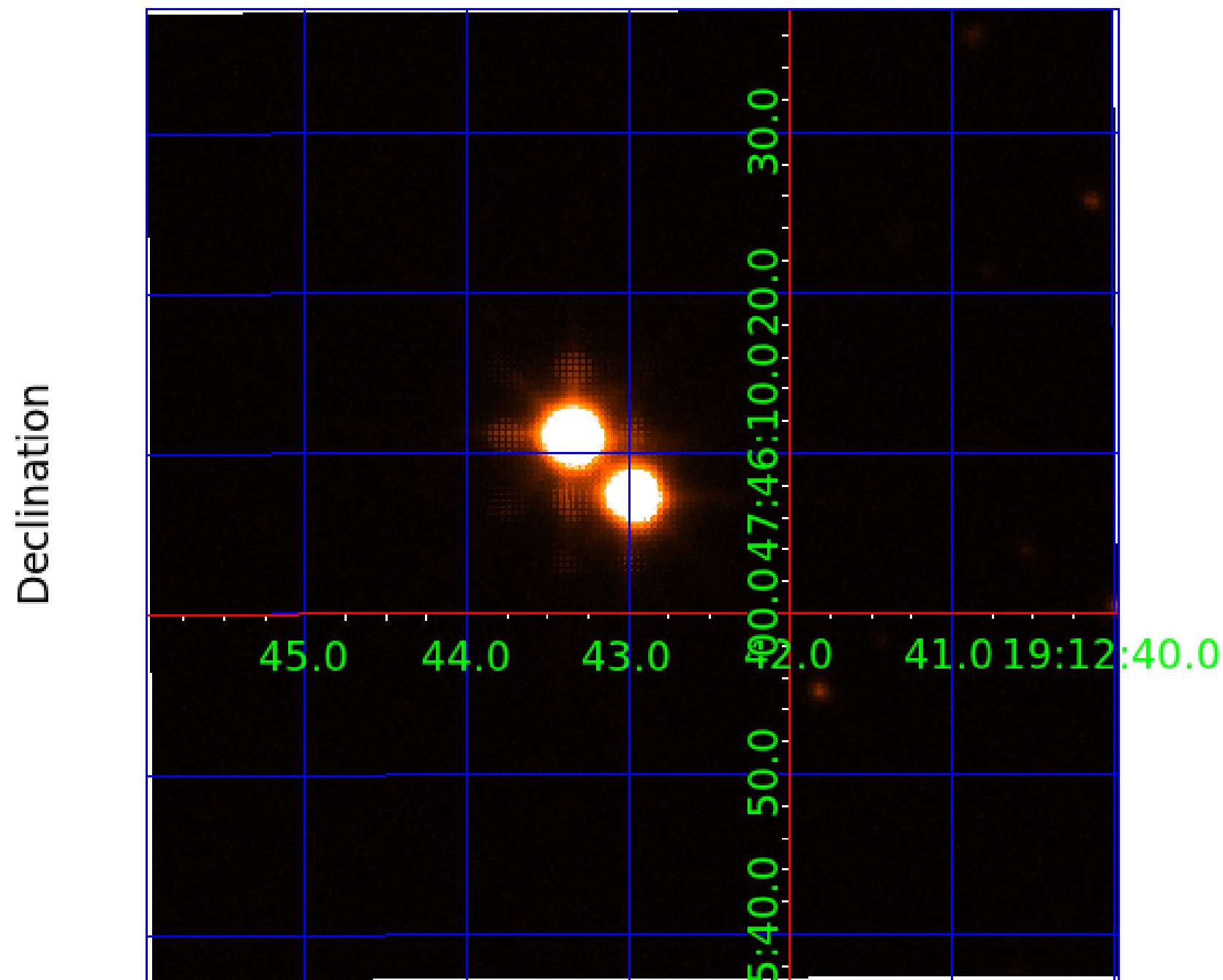
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





# KIC 010526648

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010526648-01	OBS	No	557.967552	450.374100	114.7	21.428	17.4	18.1	2.89	8806	3.35	16.26
010526648-02	OBS	No	365.853380	149.657090	664.2	6.028	214.0	63.4	2.89	8806	7.60	28.55
010526648-04	OBS	No	341.860270	138.121250	3699.4	5.000	222.2	-1.0	2.89	8806	17.90	31.25
010526648-05	OBS	No	390.962115	460.099667	3181.0	5.000	158.0	-1.0	2.89	8806	16.59	26.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010526648-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010526648-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010526648-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010526648-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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.

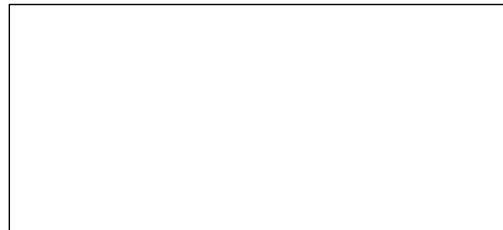
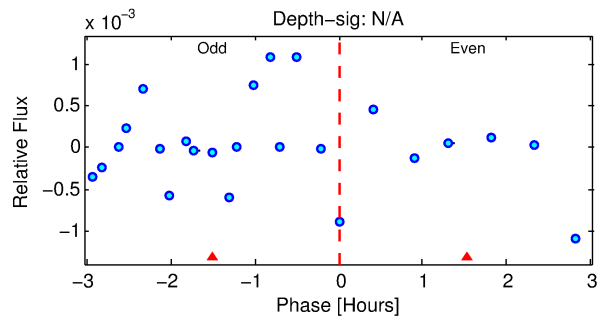
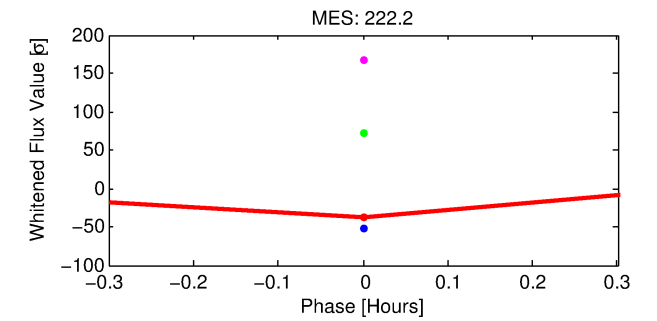
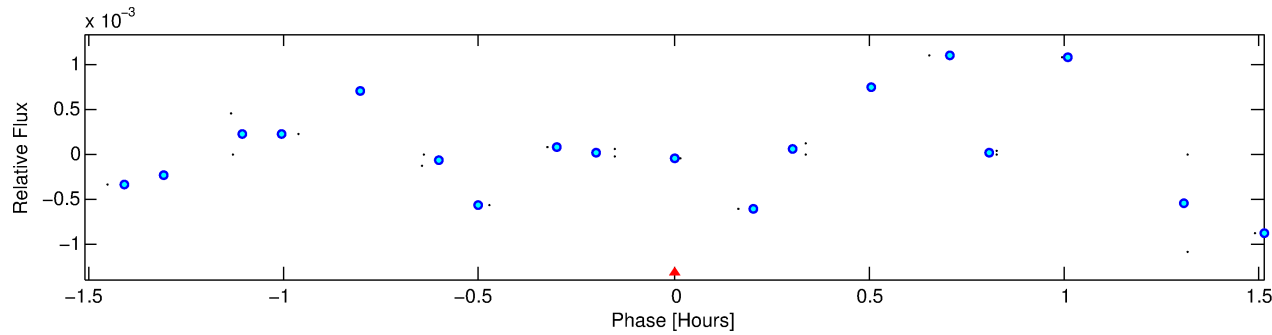
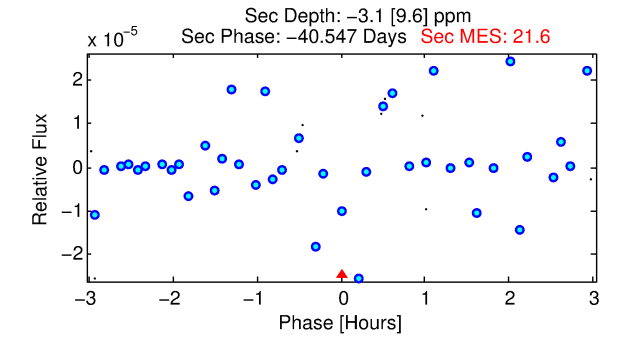
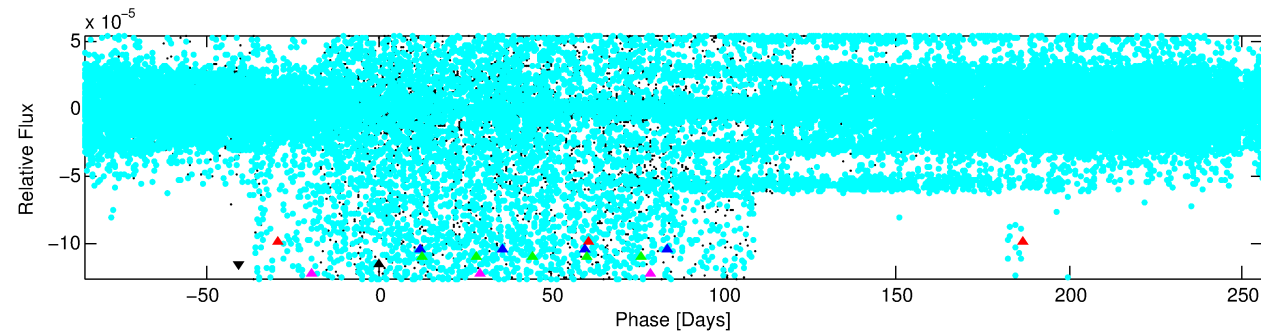
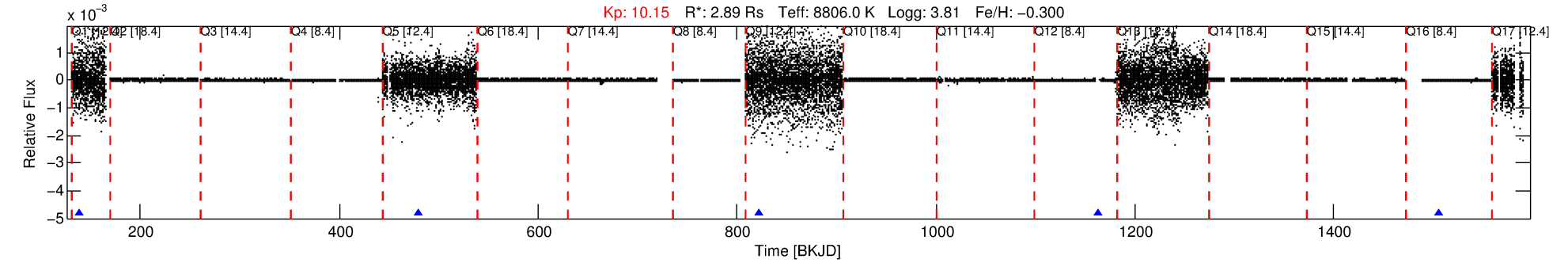
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010526648-04

No Significant Match Found

# DV One-Page Summary

KIC: 10526648 Candidate: 4 of 5 Period: 341.860 d



## TPS TCE Results:

Period = 341.86027 d  
Epoch = 138.1213 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

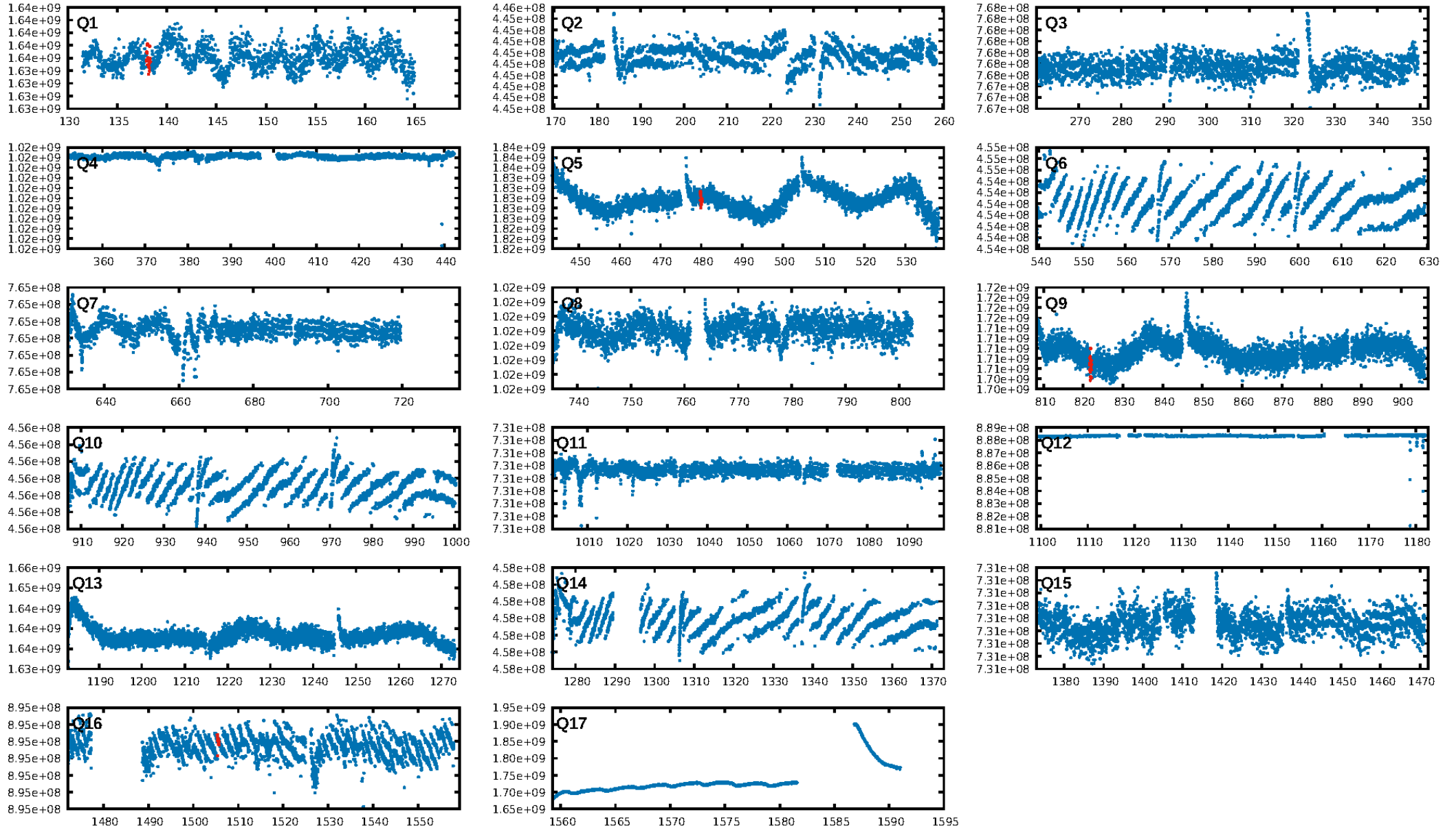
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [74.83 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A

Centroid-sig: N/A  
Centroid-so: 1.355 arcsec [0.22 $\sigma$ ]  
OotOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 1.00 [1/1]

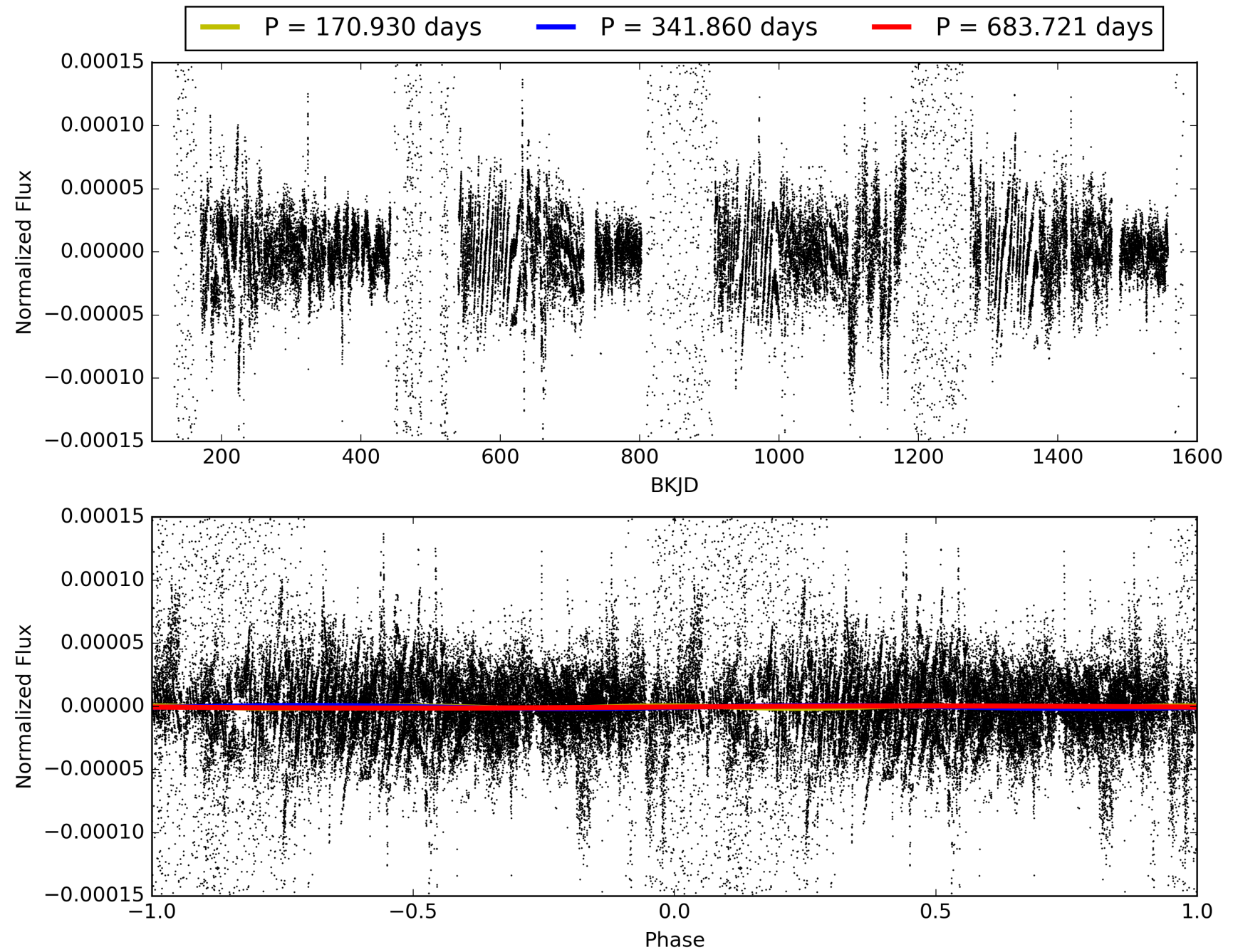
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:17:03 Z

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

# TCE 010526648-04, PDC Light Curves

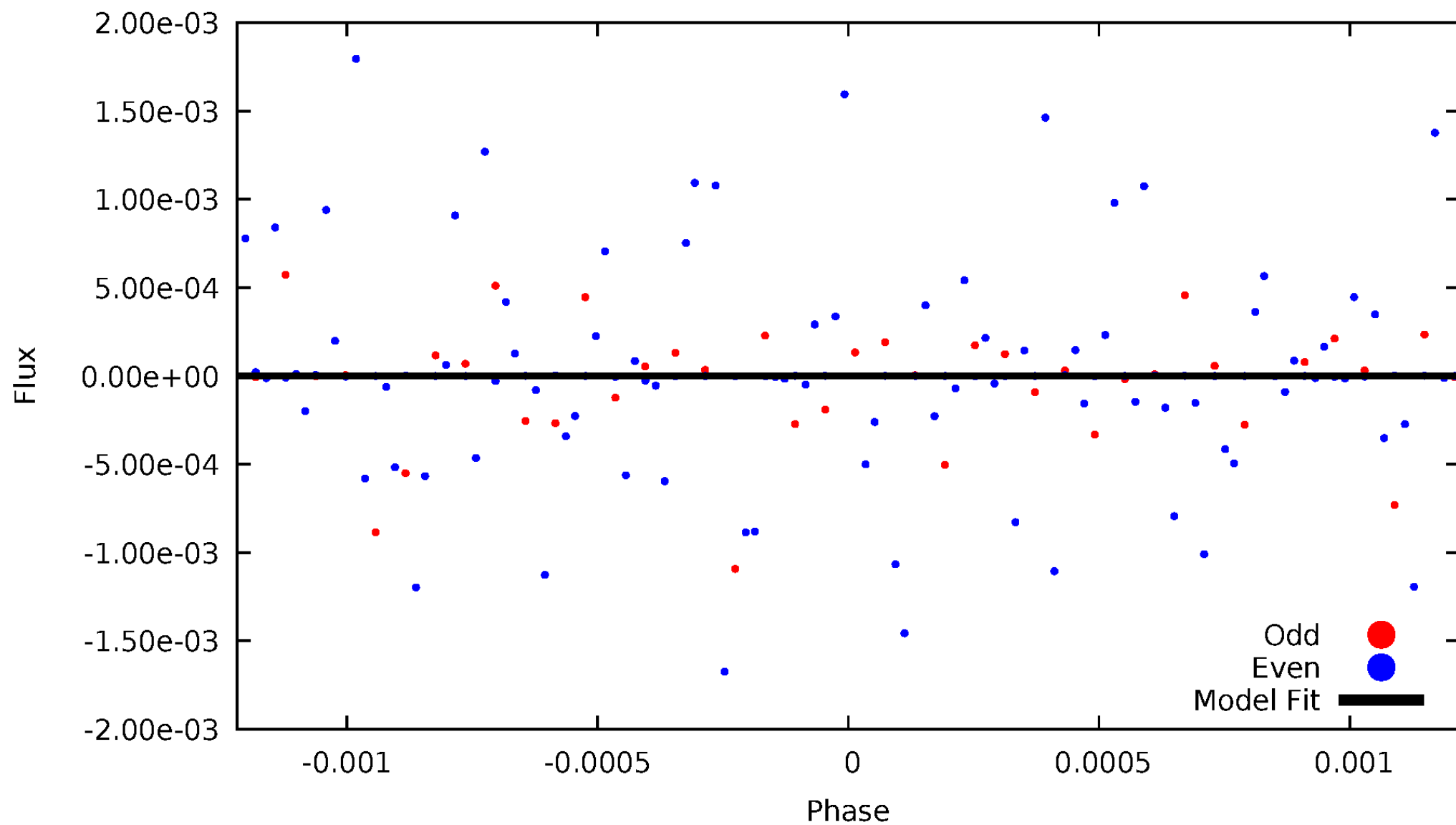


TCE 010526648-04



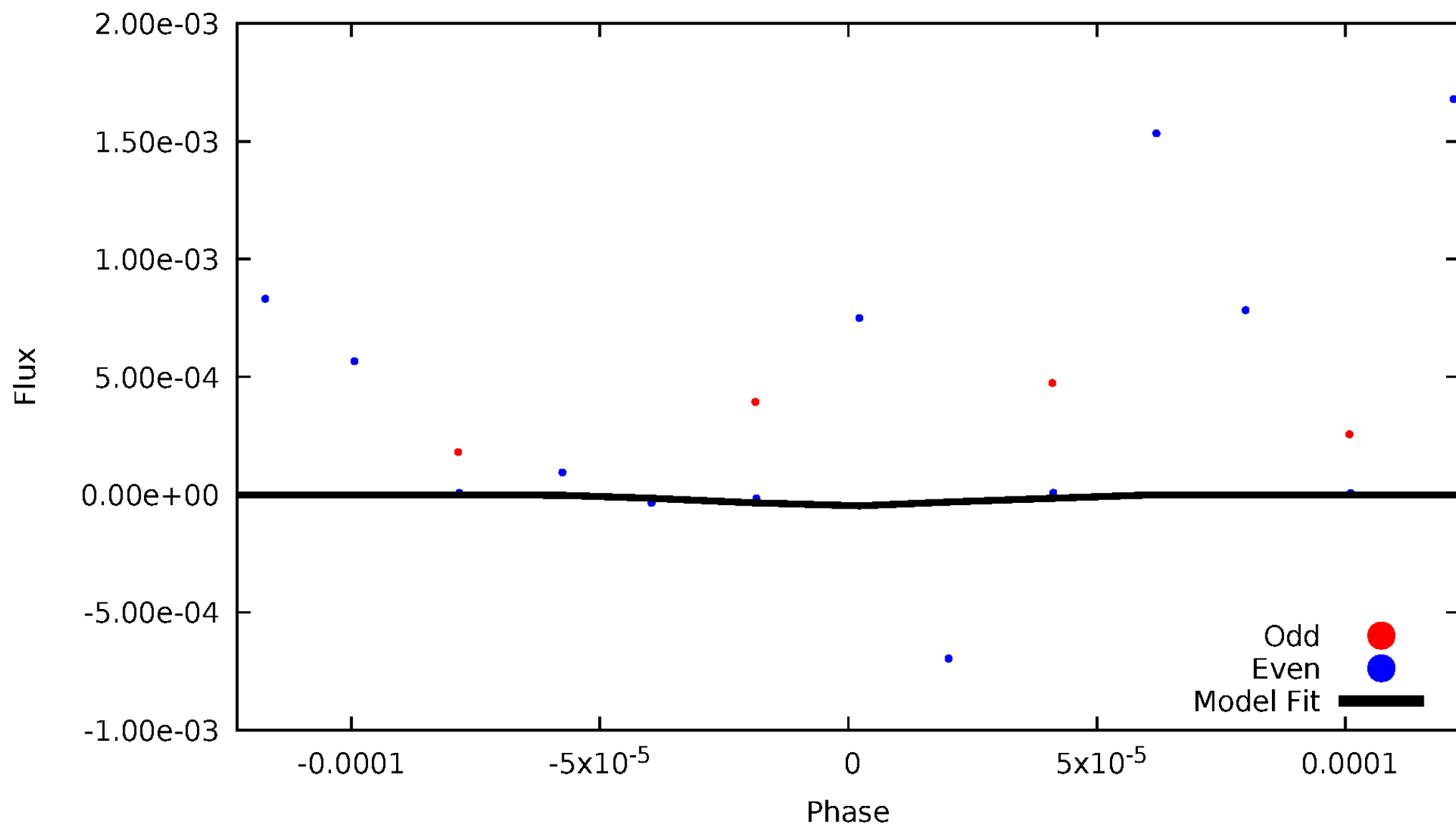
# DV Odd/Even

TCE 010526648-04



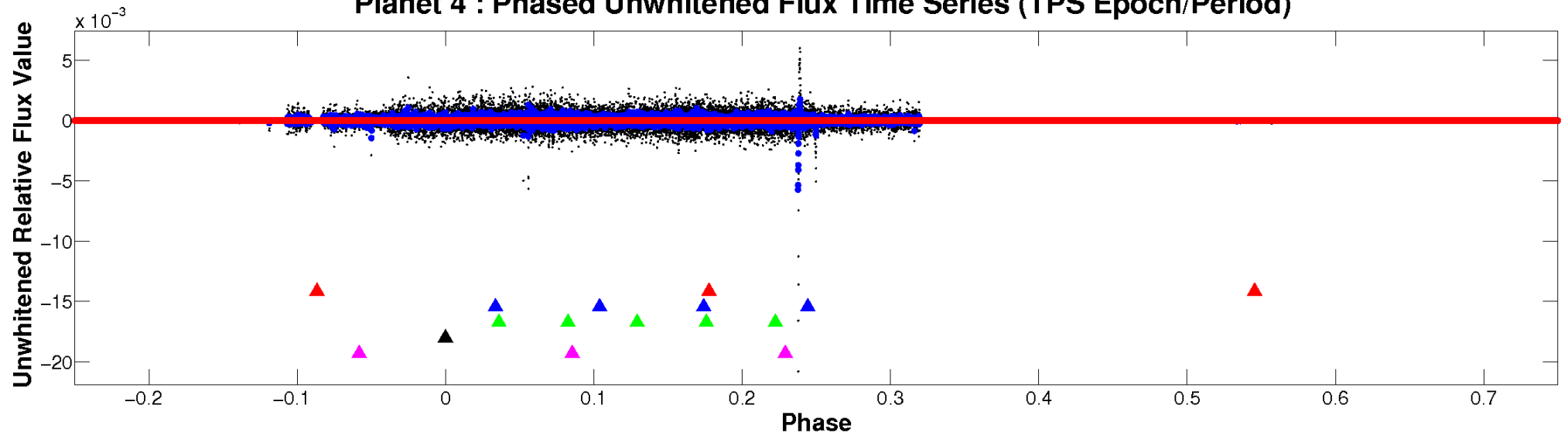
# ALT Odd/Even

TCE 010526648-04

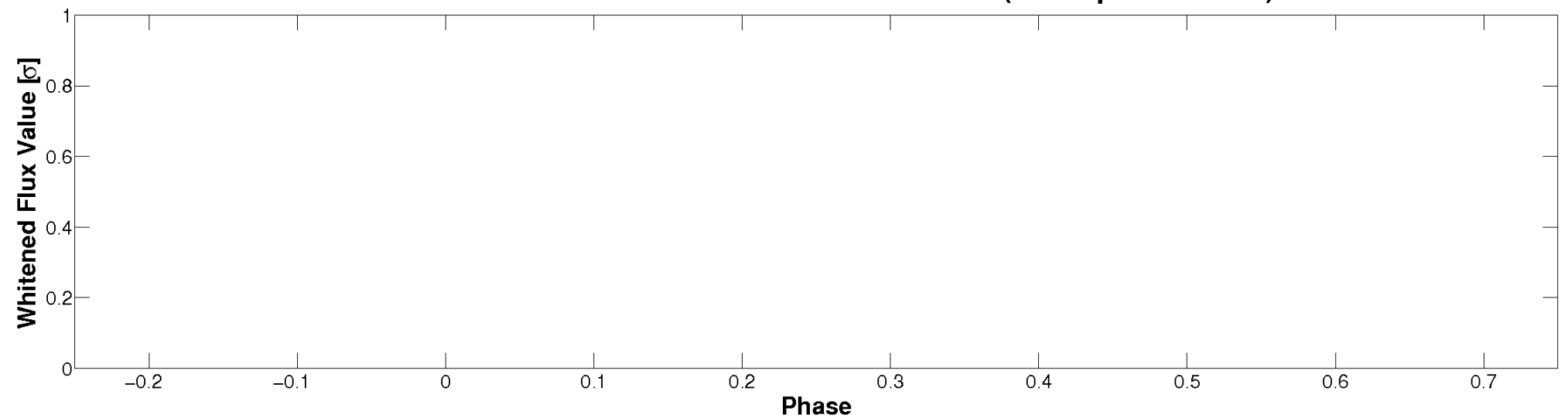


# Non-Whitened Vs. Whitened Light Curve

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

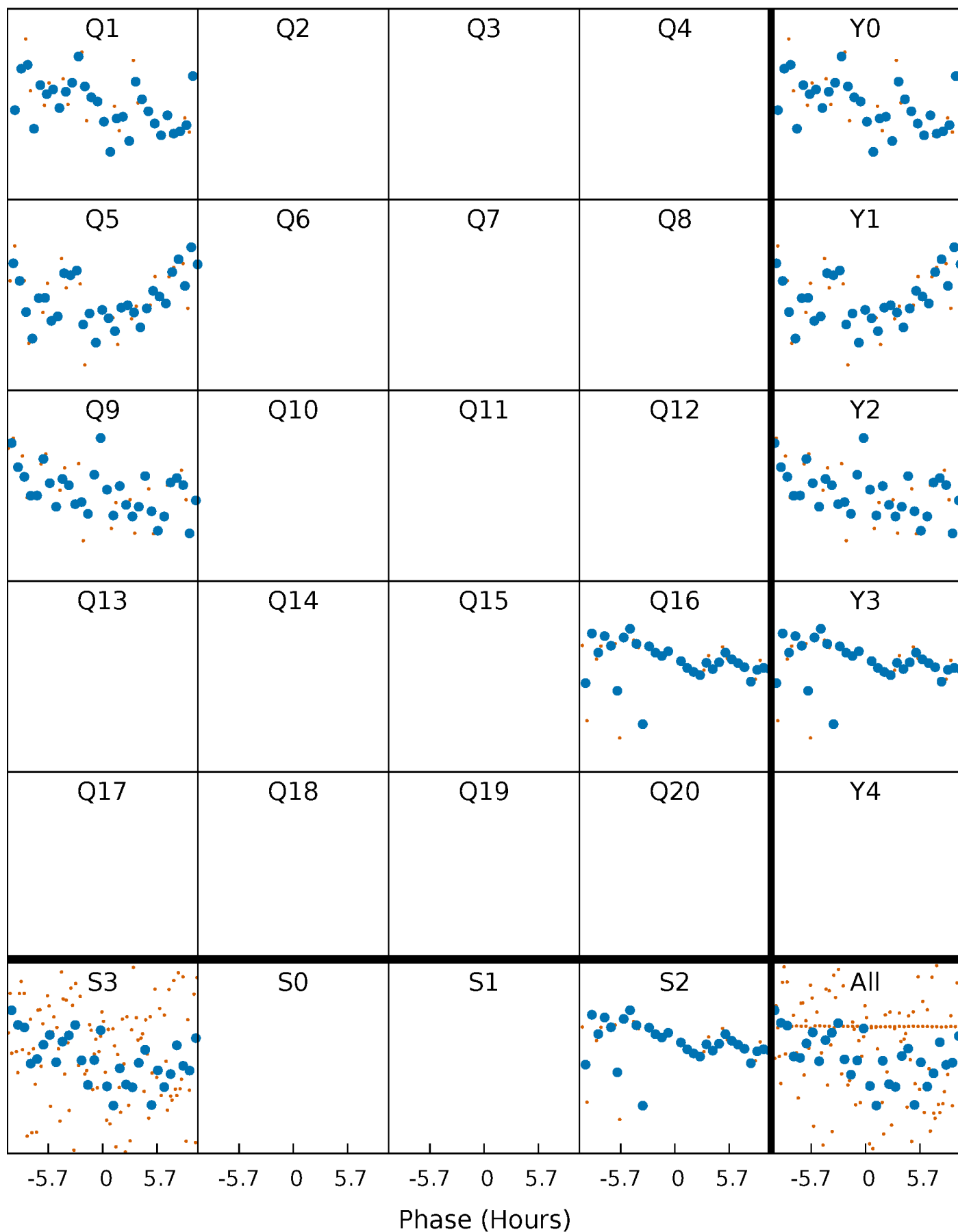


**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

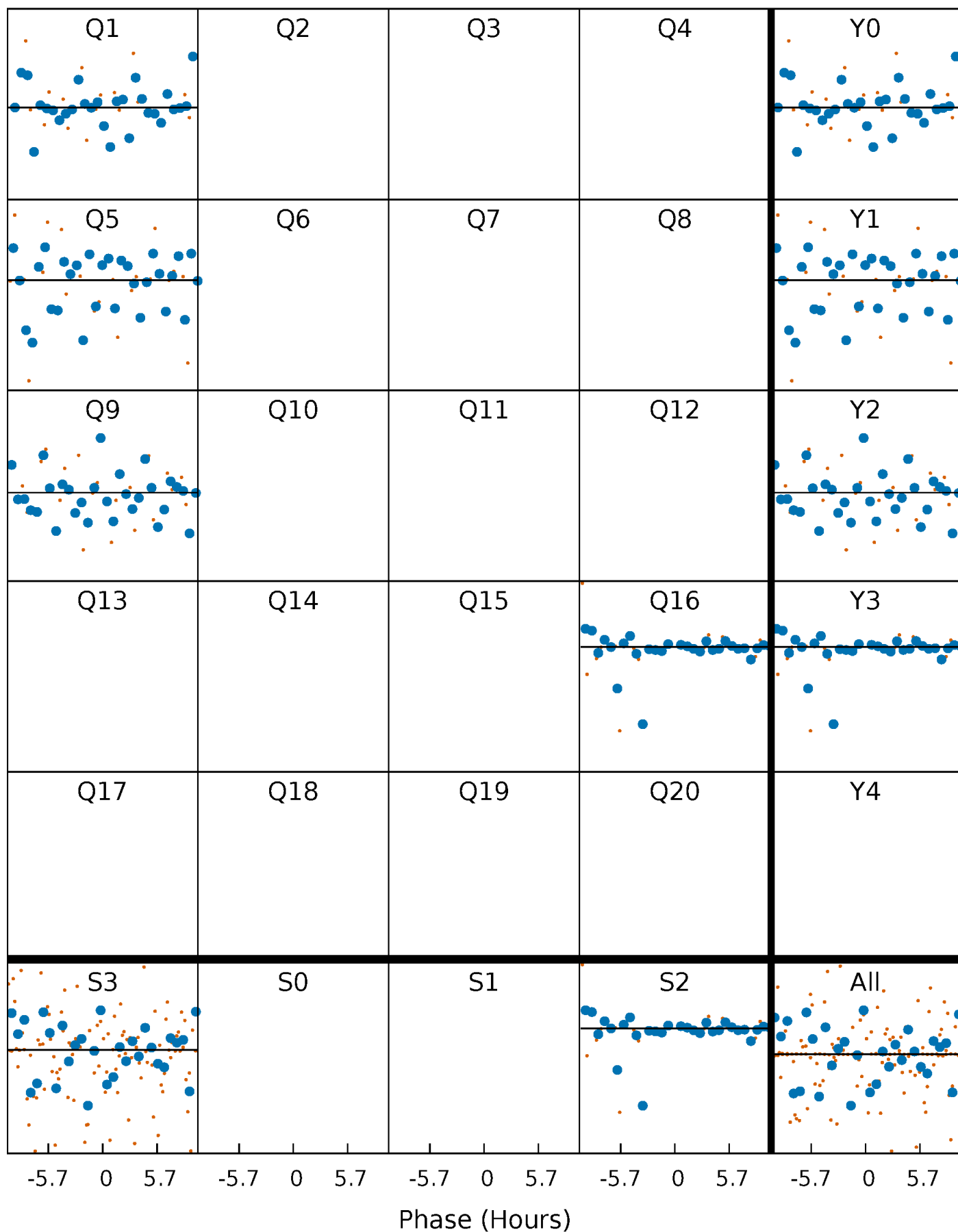
TCE 010526648-04     $P=341.860270$  Days     $T_0=138.121251$  (BKJD)





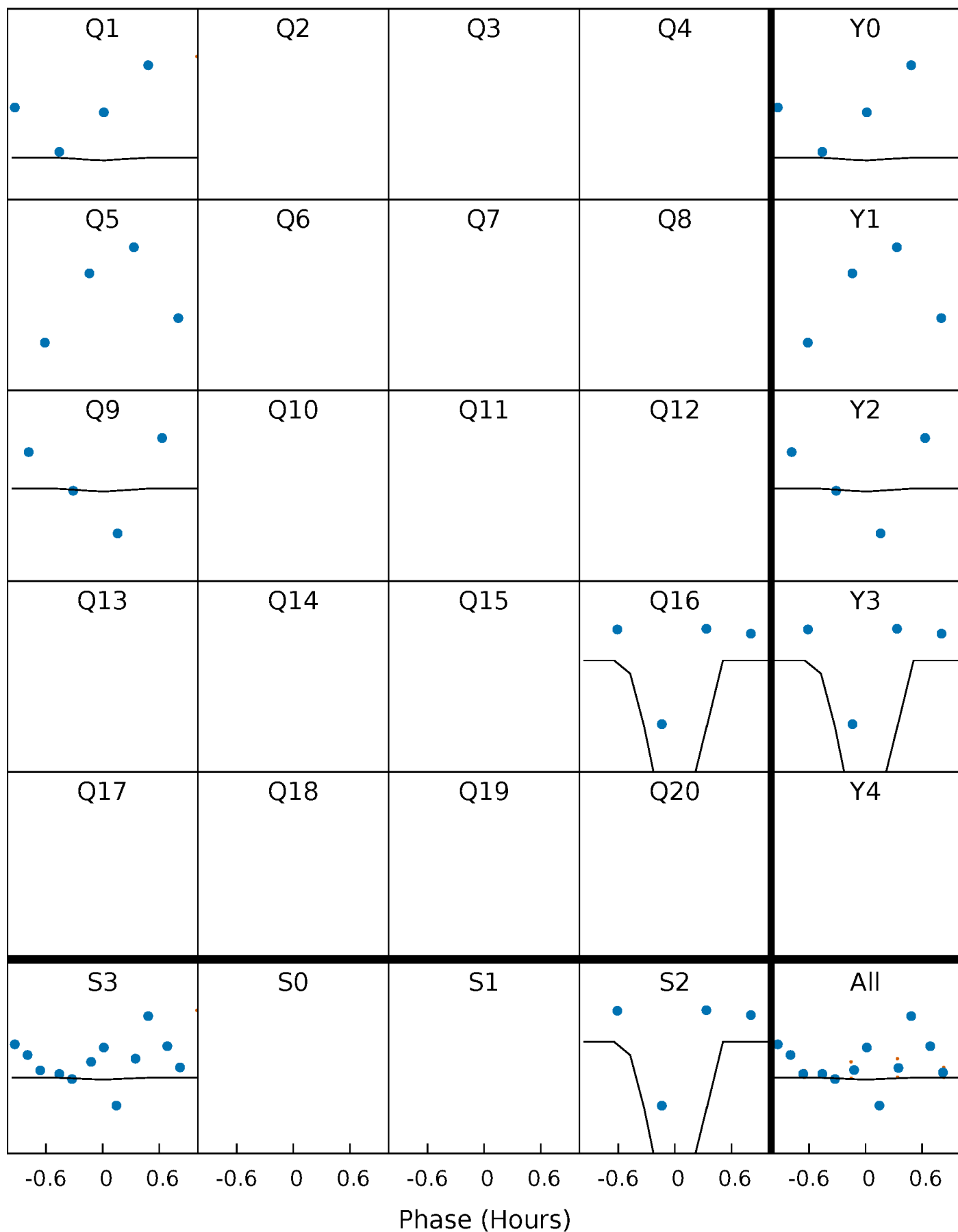
# DV Quarter-Phased Transit Curves

TCE 010526648-04     $P=341.860270$  Days     $T_0=138.121251$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

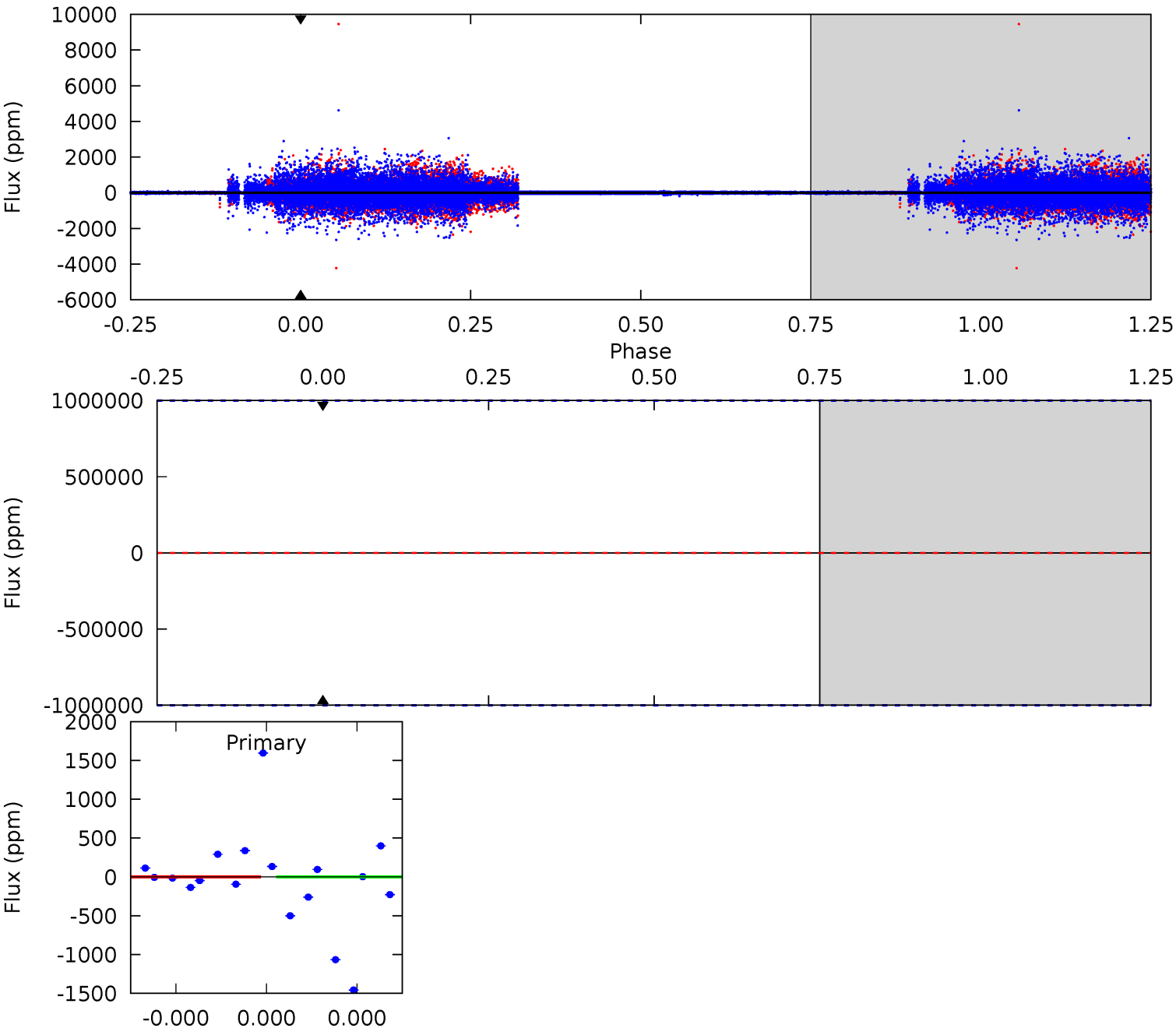
TCE 010526648-04 P=341.860270 Days  $T_0=137.989202$  (BKJD)



# DV Model-Shift Uniqueness Test

010526648-04, P = 341.860270 Days, E = 138.121251 Days

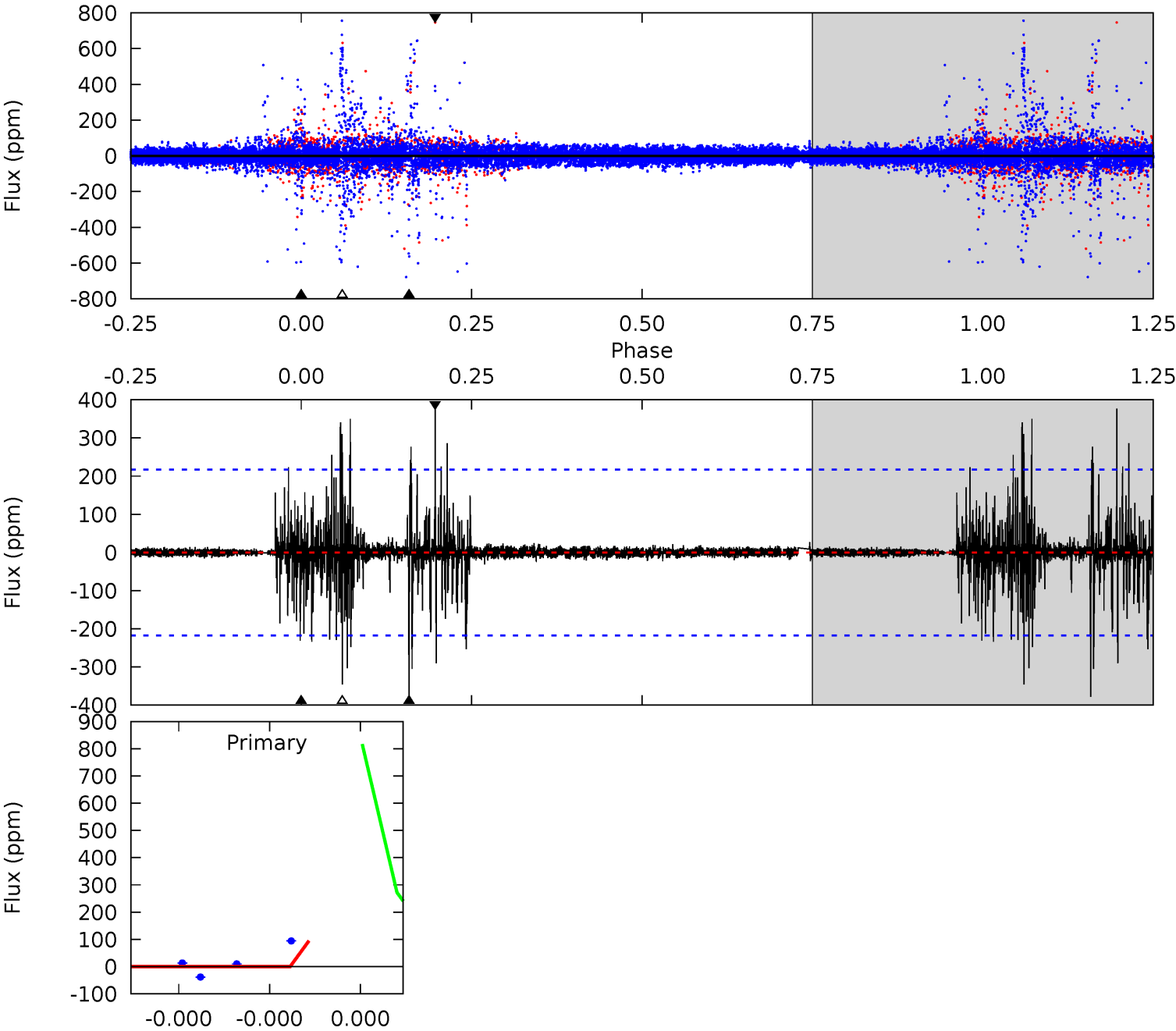
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

010526648-04, P = 341.860270 Days, E = 137.989202 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
0.16	10.2	9.30	10.1	5.84	3.89	0.56	-9.13	-9.96	0.85	0.03	5.21	0.42	0.50	0



### Stellar Parameters For KIC 010526648

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8806^{+277}_{-381}$	$3.811^{+0.397}_{-0.132}$	$-0.300^{+0.450}_{-0.350}$	$2.890^{+0.790}_{-1.185}$	$1.971^{+0.445}_{-0.405}$	$0.115^{+0.411}_{-0.046}$
	+3%/-4%	+10%/-3%	+150%/-117%	+27%/-41%	+23%/-21%	+357%/-40%
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 010526648-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$28.10^{+24.64}_{-18.46}$	$817^{+66}_{-84}$	$-4853^{+44393}_{-27110}$	$-1059.156^{+214459.943}_{-140151.122}$
Alt.	$-0 \pm 37$	$20.29^{+23.90}_{-14.33}$	$820^{+71}_{-89}$	$1962^{+1385}_{-5272}$	$1.561^{+123.881}_{-107.780}$

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

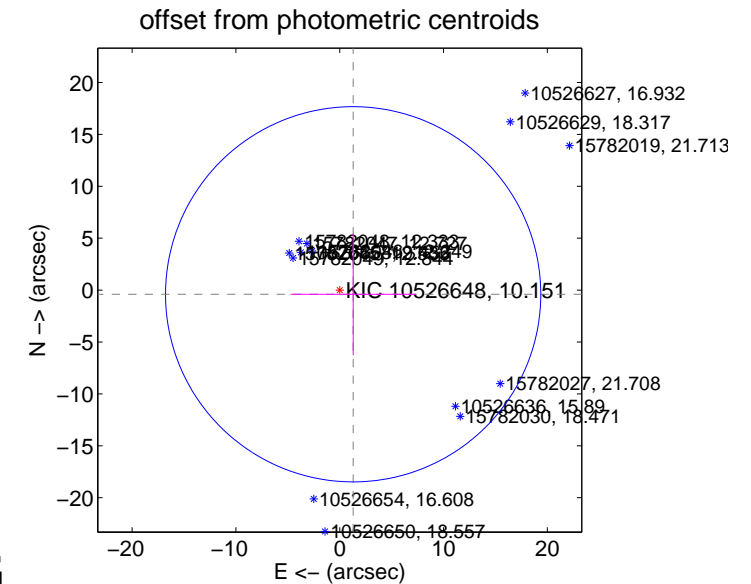
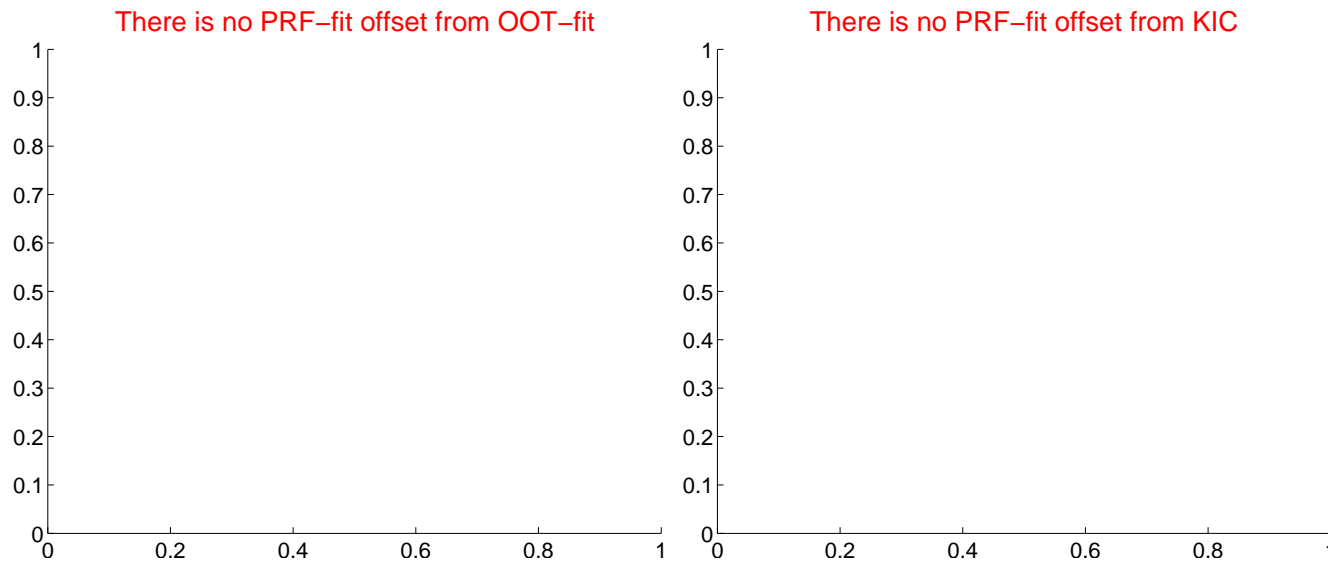
## DV Centroid Data

Supplemental centroid analysis for 010526648-04. **Kepler magnitude: 10.15.** Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

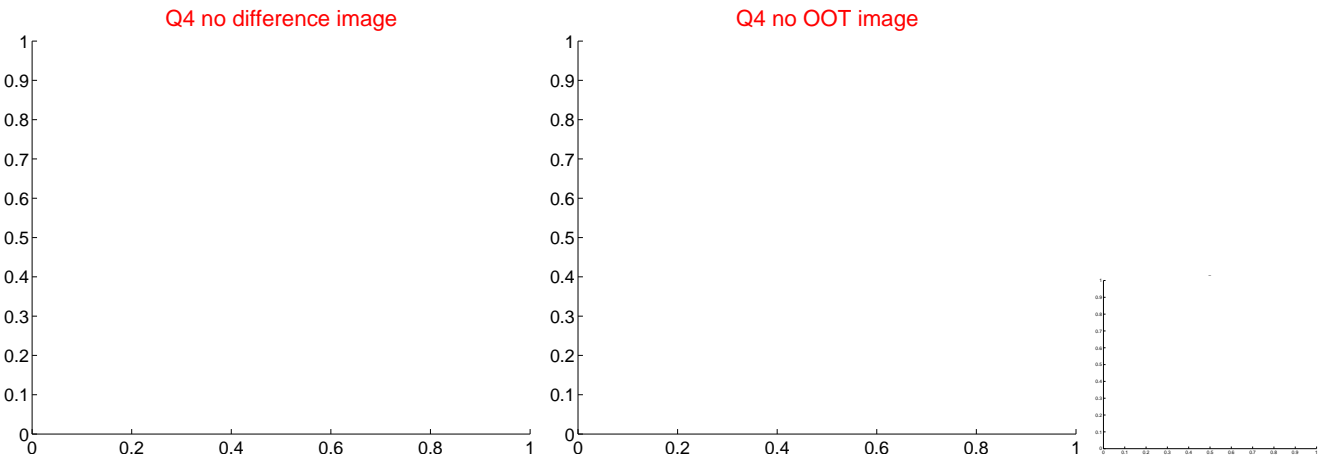
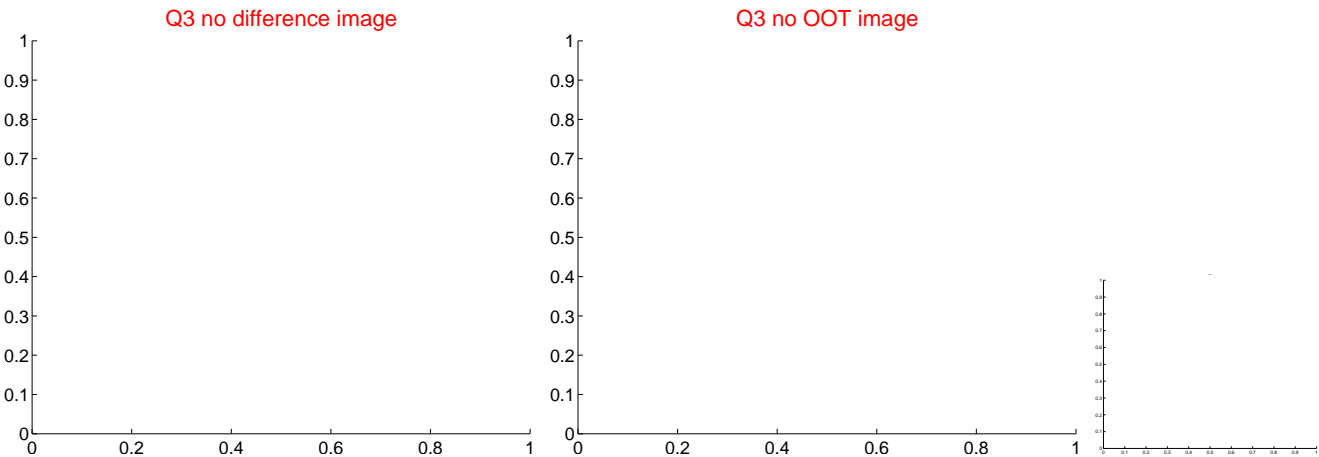
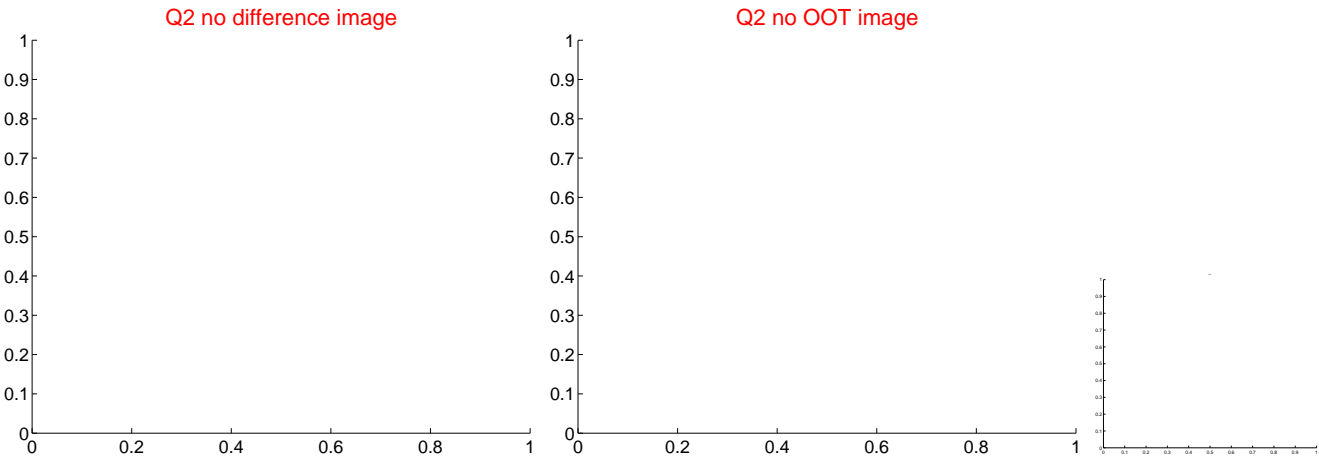
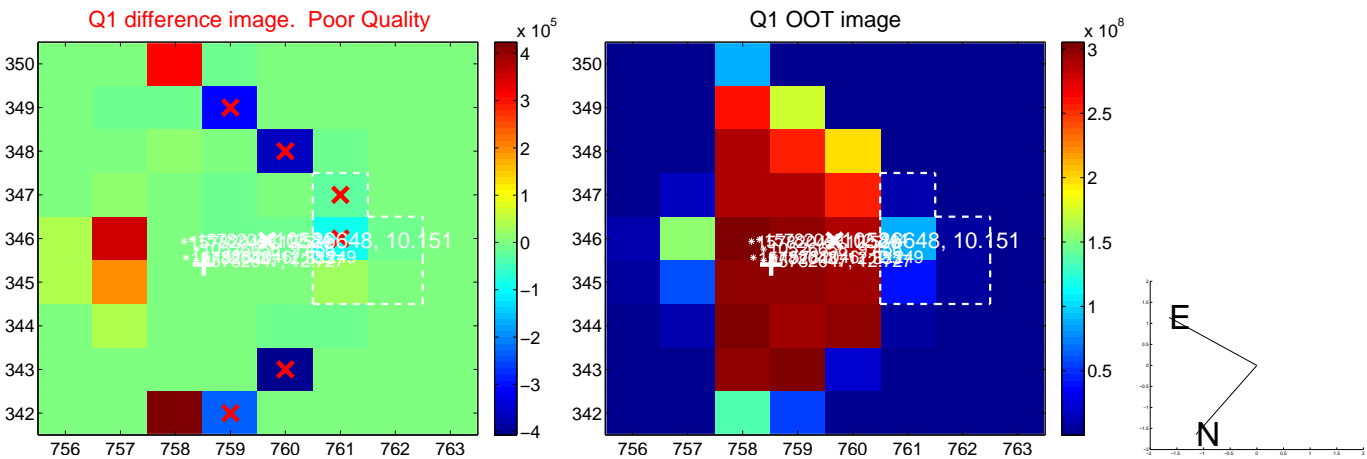
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$1.35 \pm 6.02$	0.22	$-1.29 \pm 6.04$	$-0.40 \pm 5.88$



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.

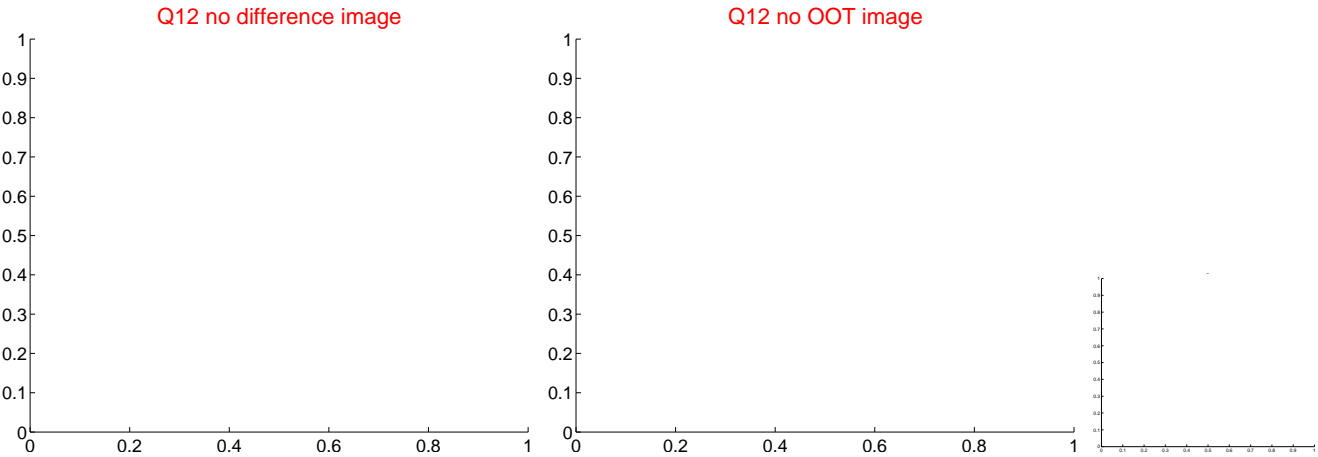
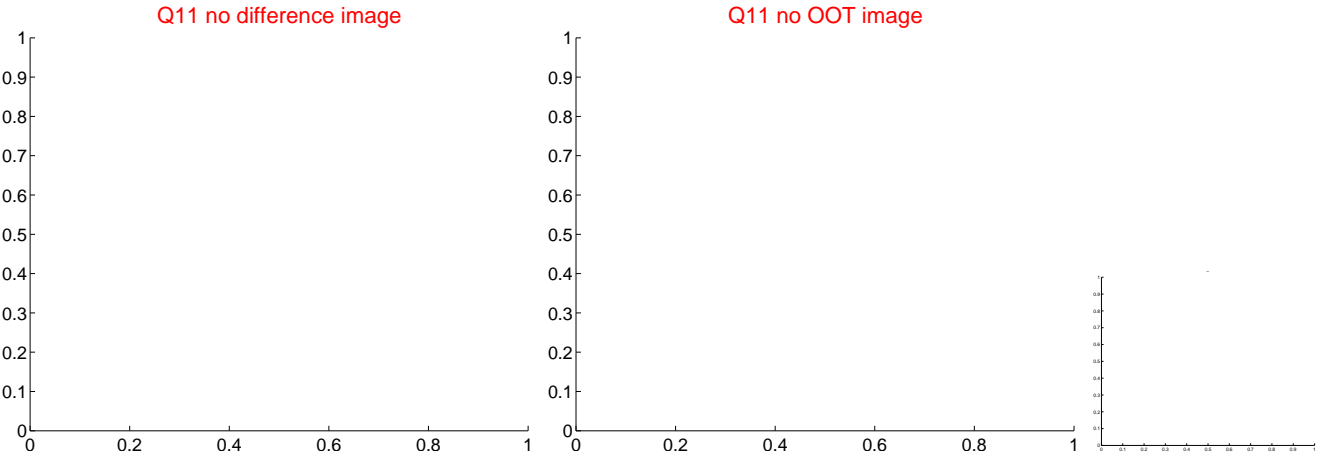
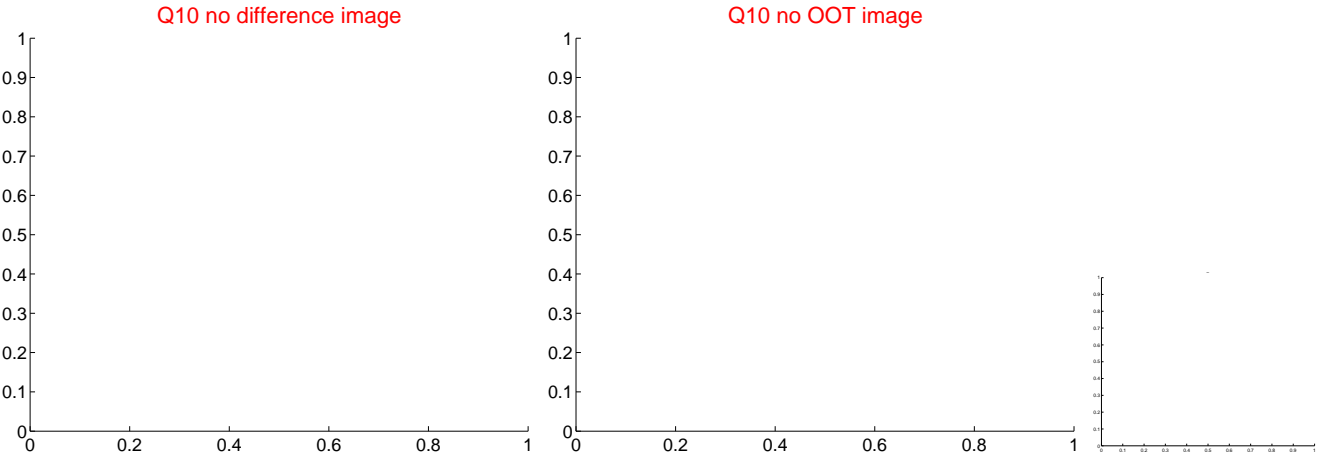
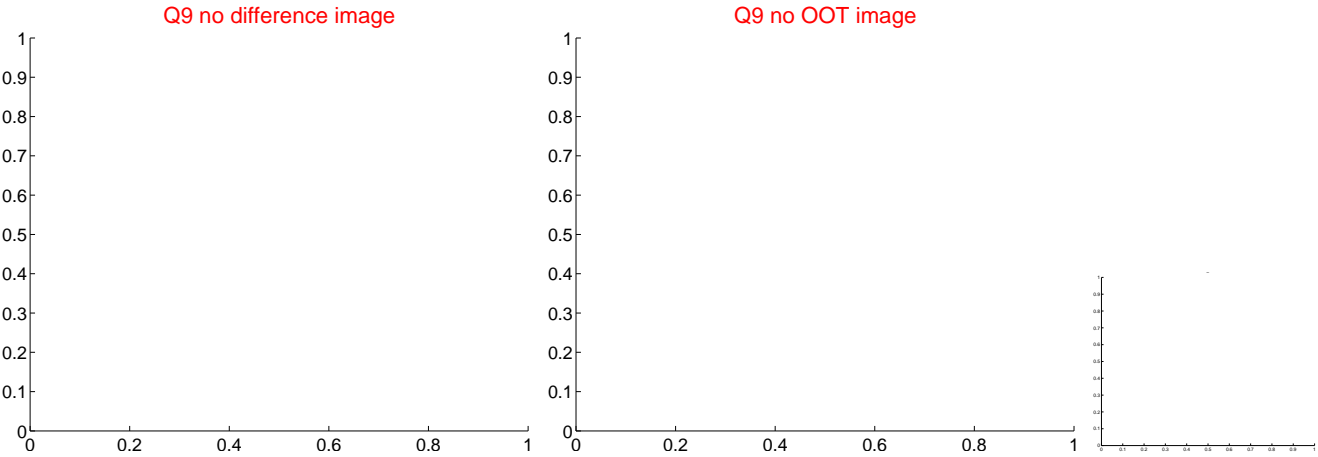


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





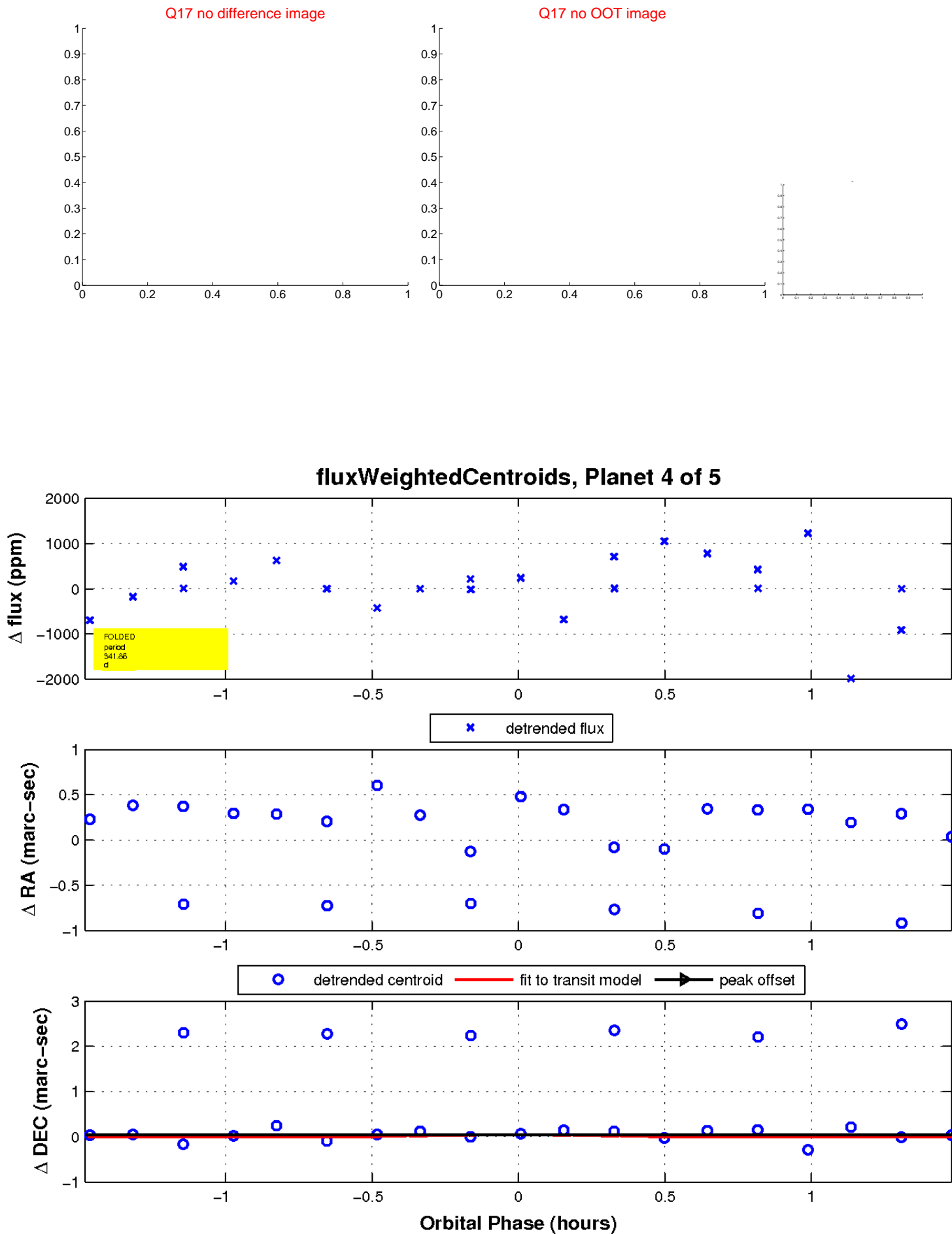
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



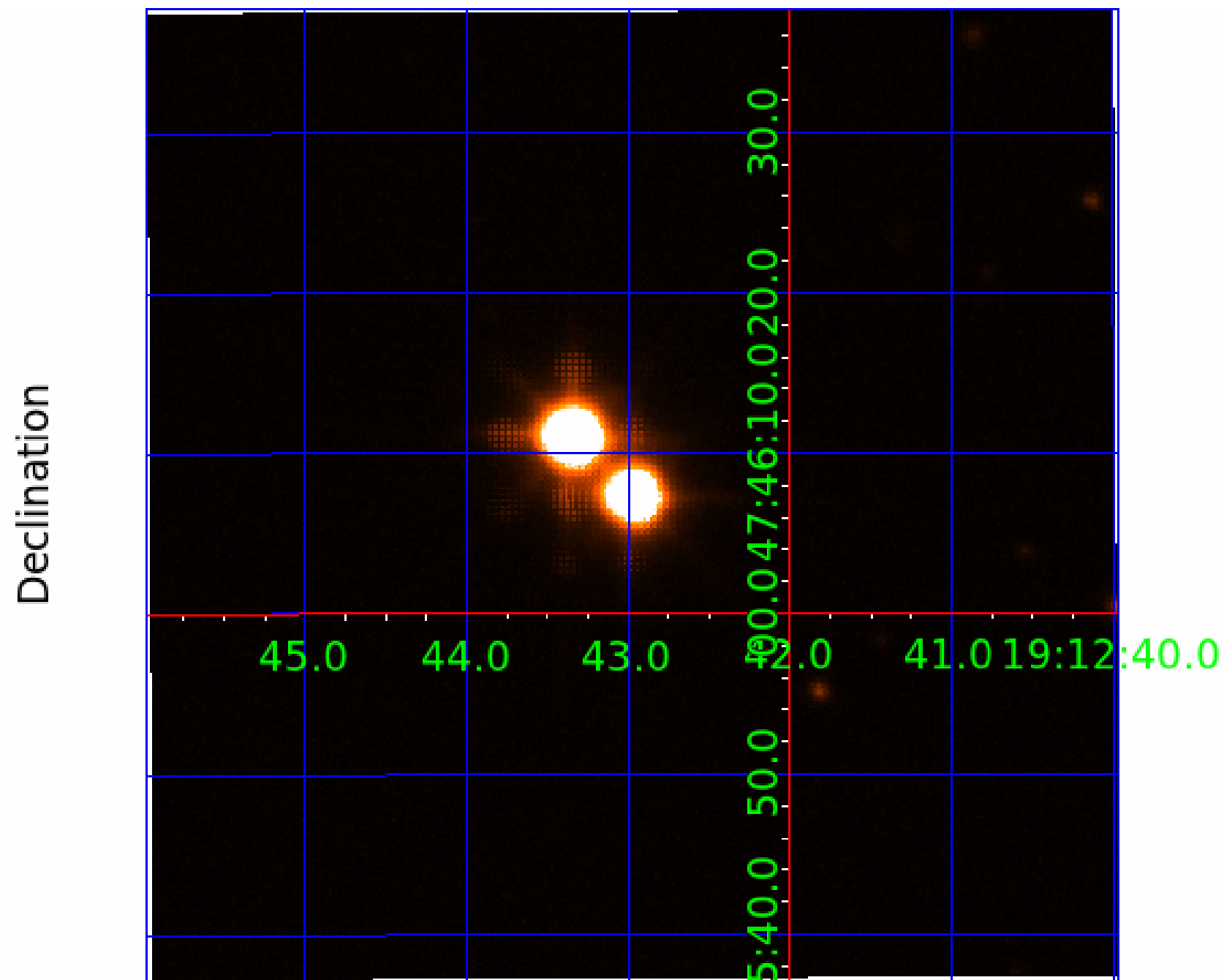
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 010526648

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010526648-01	OBS	No	557.967552	450.374100	114.7	21.428	17.4	18.1	2.89	8806	3.35	16.26
010526648-02	OBS	No	365.853380	149.657090	664.2	6.028	214.0	63.4	2.89	8806	7.60	28.55
010526648-04	OBS	No	341.860270	138.121250	3699.4	5.000	222.2	-1.0	2.89	8806	17.90	31.25
010526648-05	OBS	No	390.962115	460.099667	3181.0	5.000	158.0	-1.0	2.89	8806	16.59	26.13

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010526648-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010526648-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010526648-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
010526648-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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.

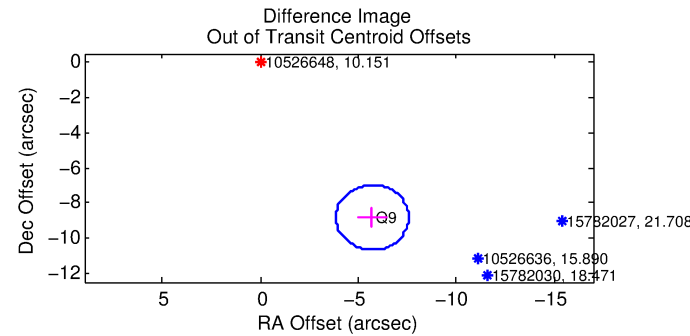
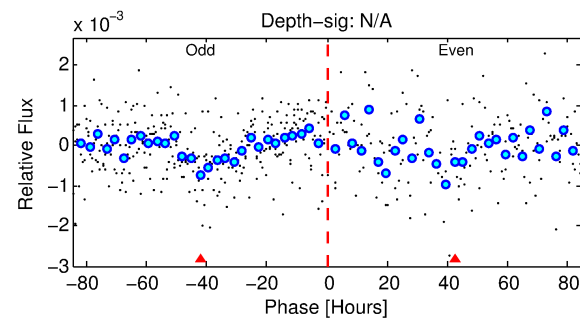
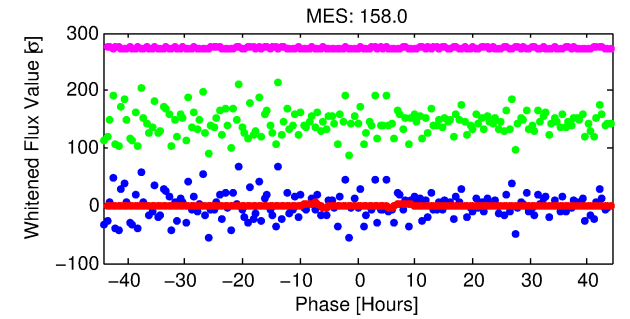
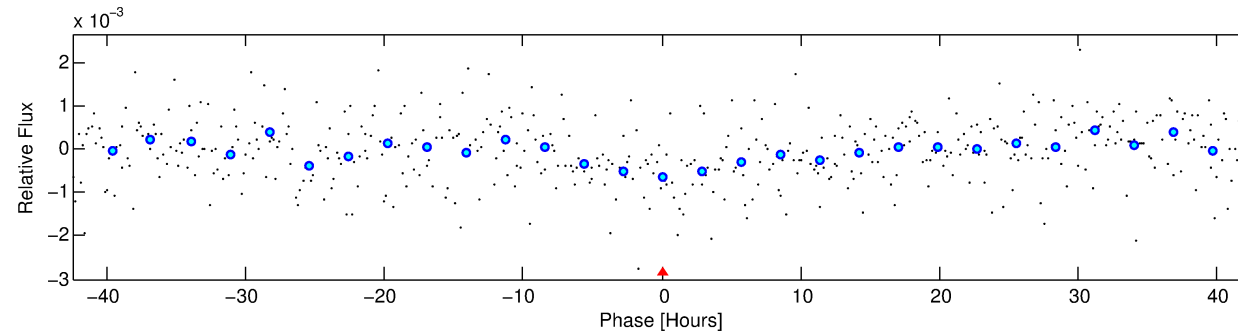
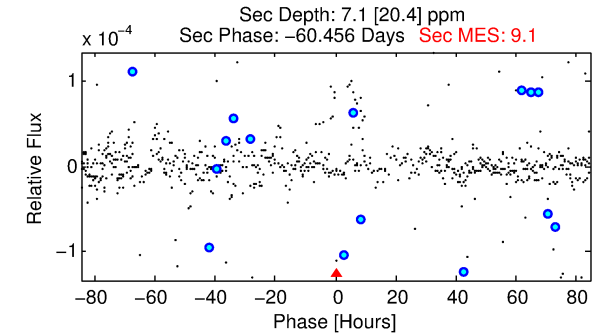
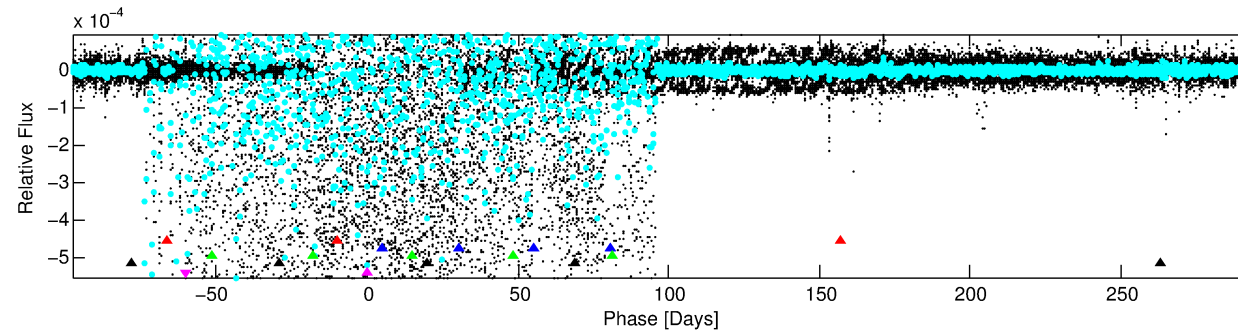
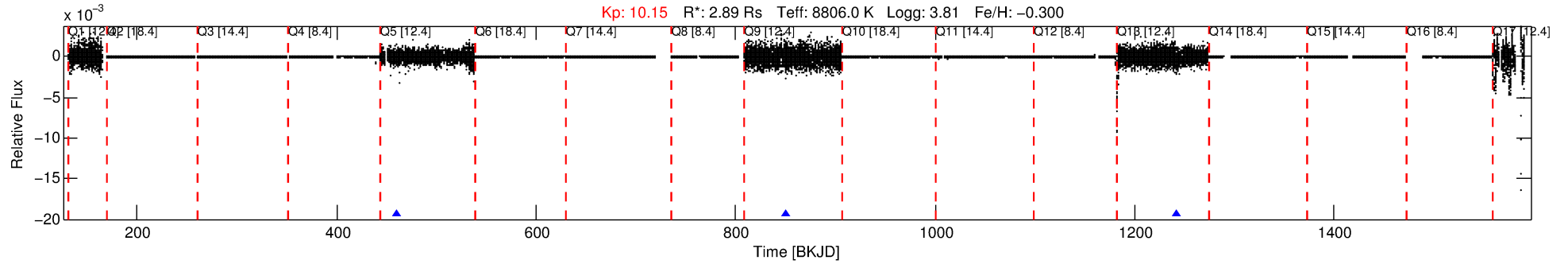
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010526648-05

No Significant Match Found

# DV One-Page Summary

KIC: 10526648 Candidate: 5 of 5 Period: 390.962 d



## TPS TCE Results:

Period = 390.96211 d  
Epoch = 460.0997 BKJD

DV fit results are unavailable

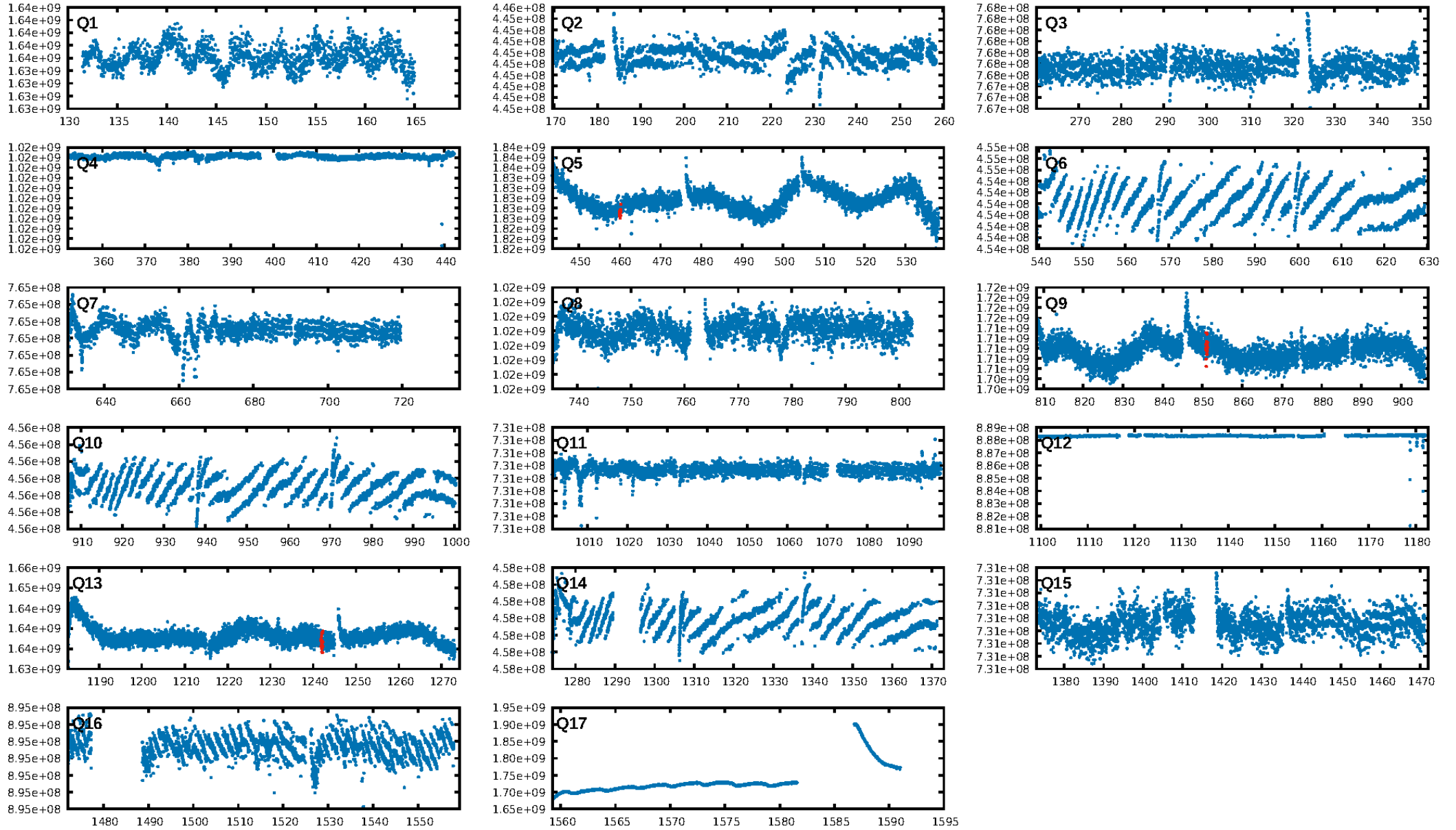
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [76.95σ]  
LongPeriod-sig: 100.0% [182.16σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: 0.520 arcsec [1.44σ]  
OotOffset-rm: 10.517 arcsec [17.04σ]  
KicOffset-rm: 5.497 arcsec [8.74σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [2/2]

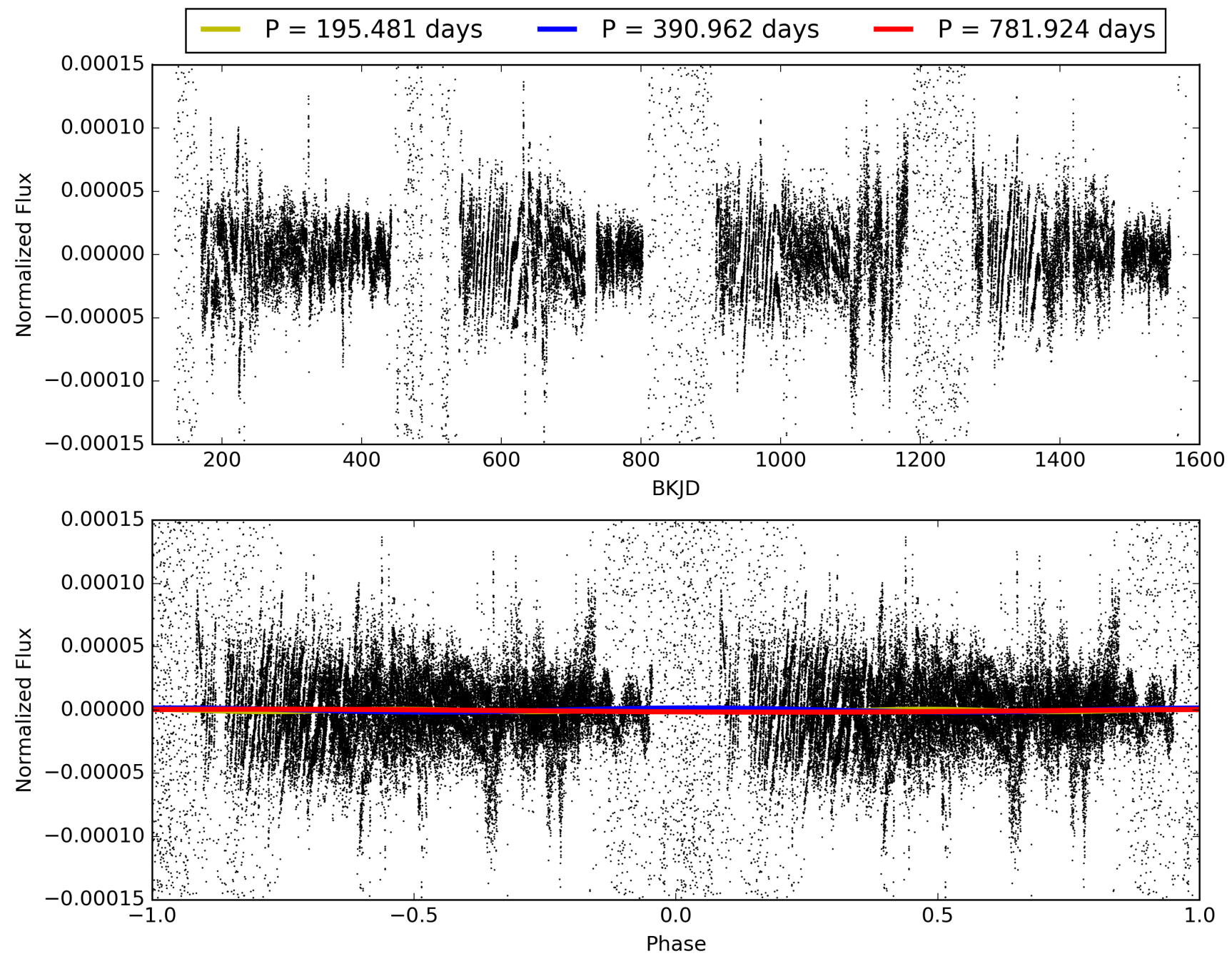
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:17:13 Z

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

# TCE 010526648-05, PDC Light Curves



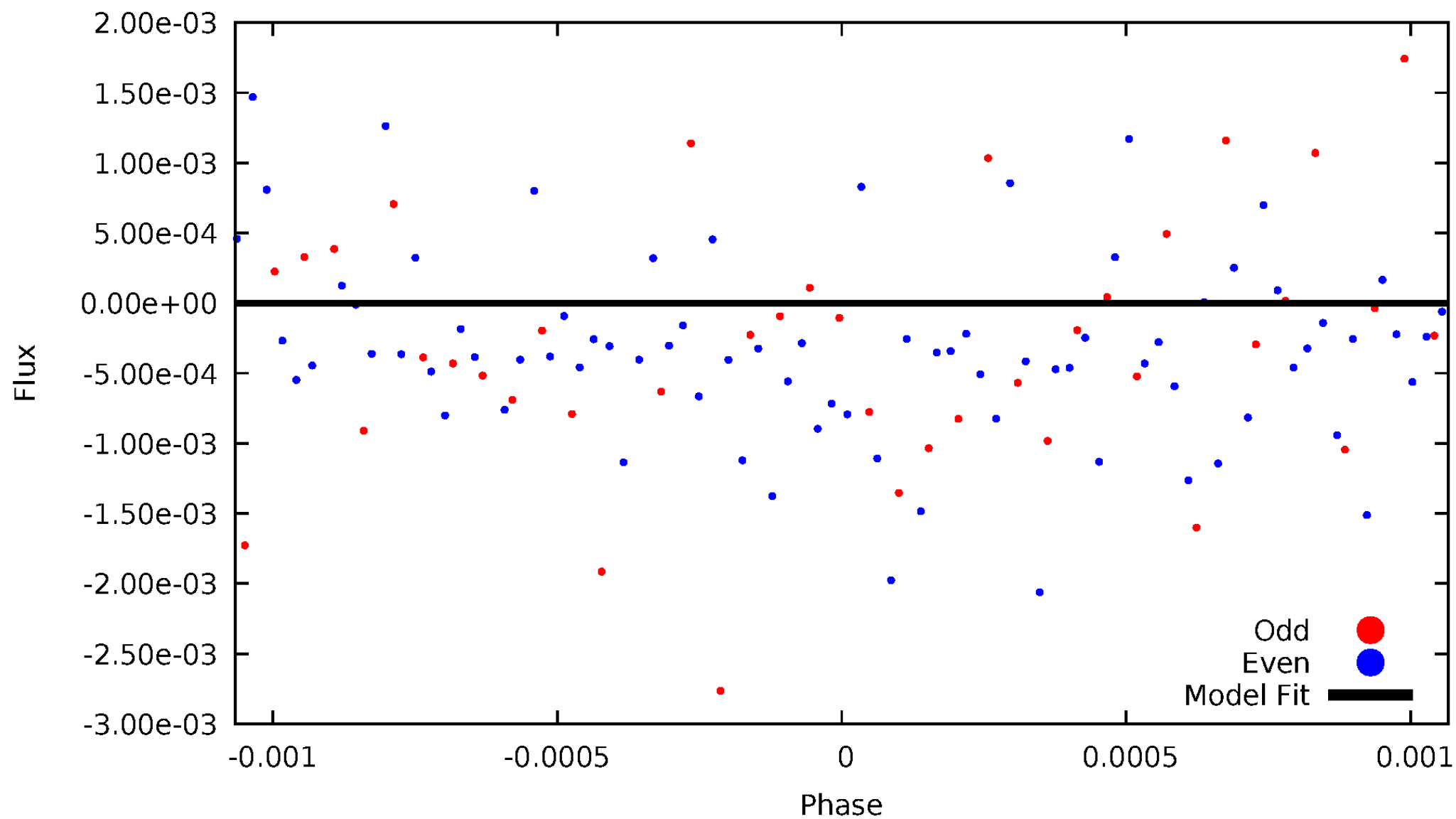
# TCE 010526648-05





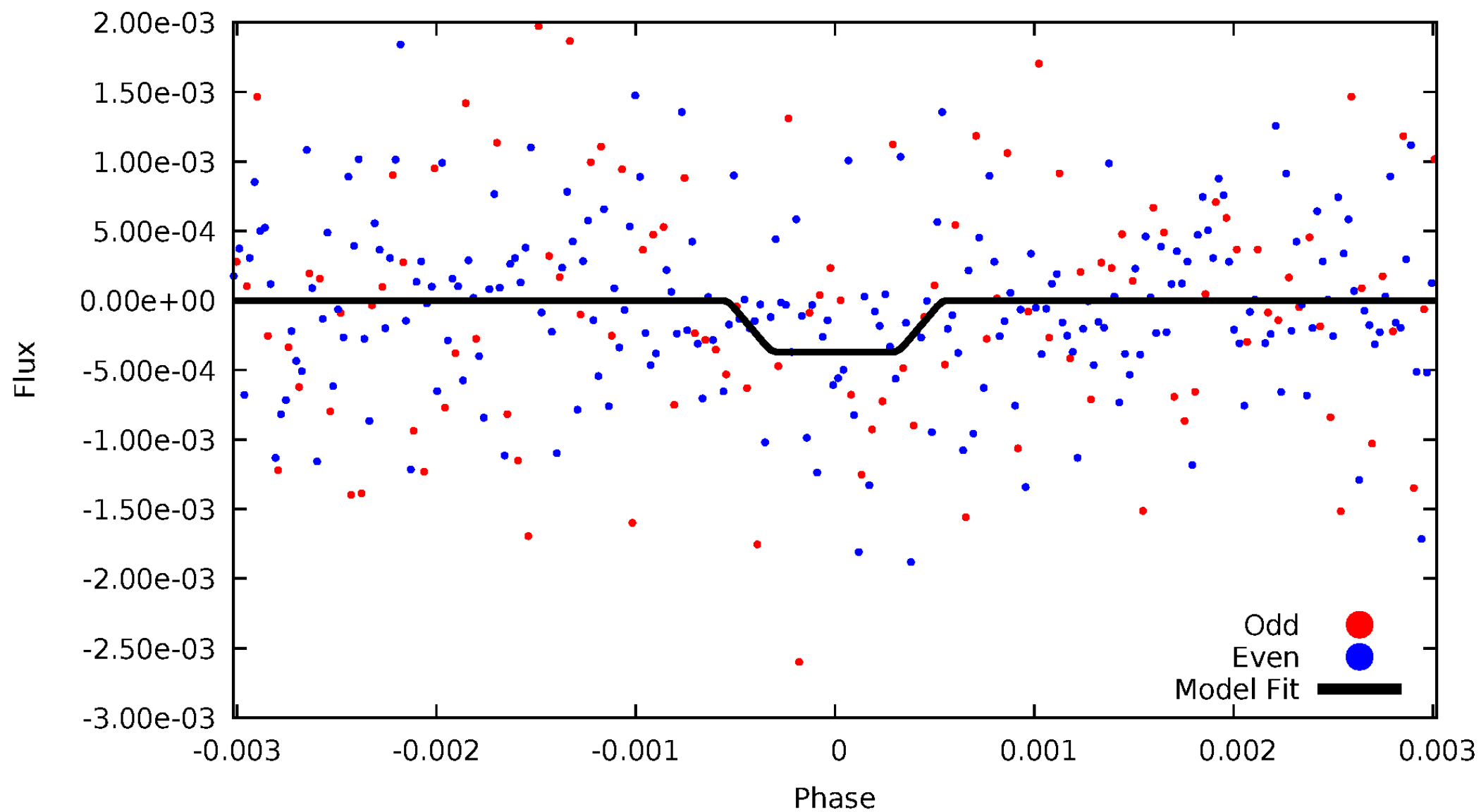
# DV Odd/Even

TCE 010526648-05



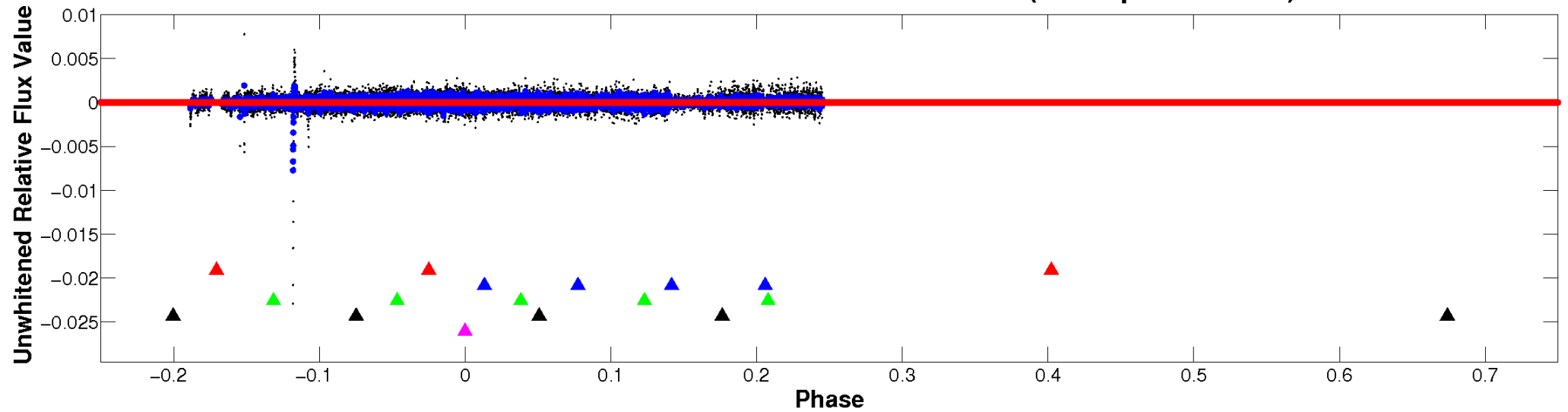
# ALT Odd/Even

TCE 010526648-05

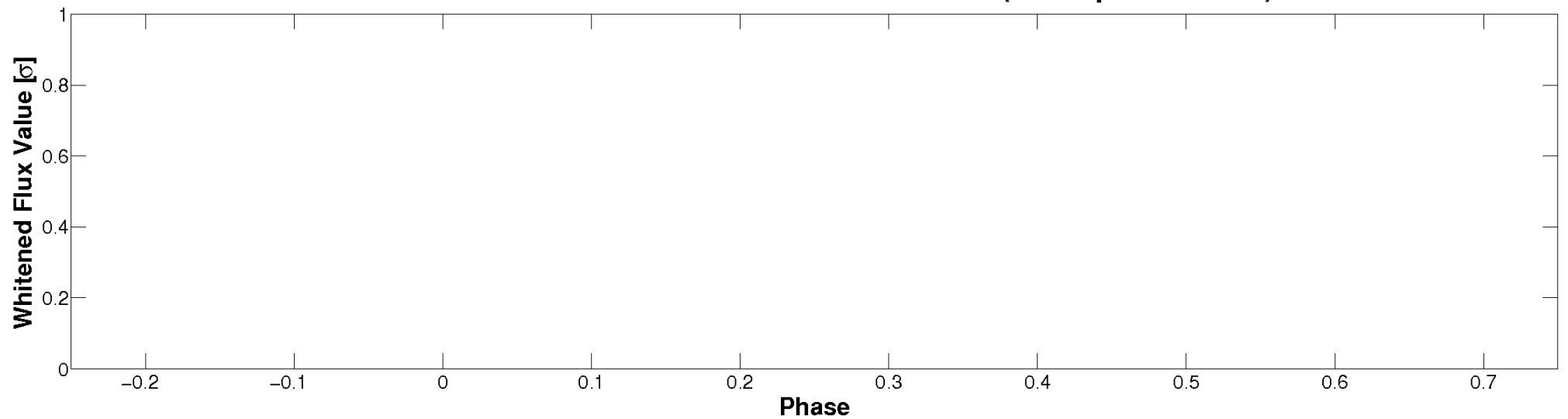


# Non-Whitened Vs. Whitened Light Curve

**Planet 5 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

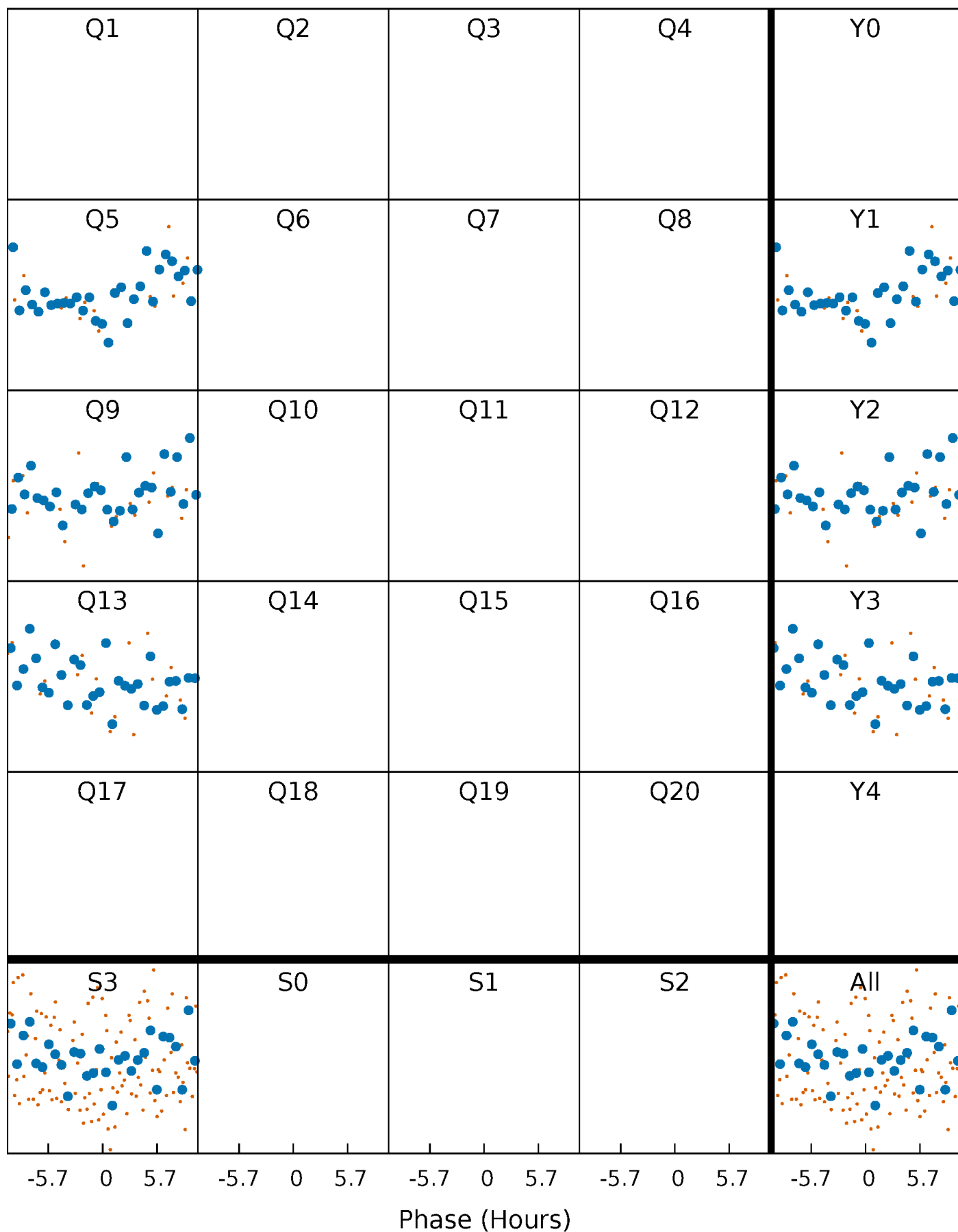


**Planet 5 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



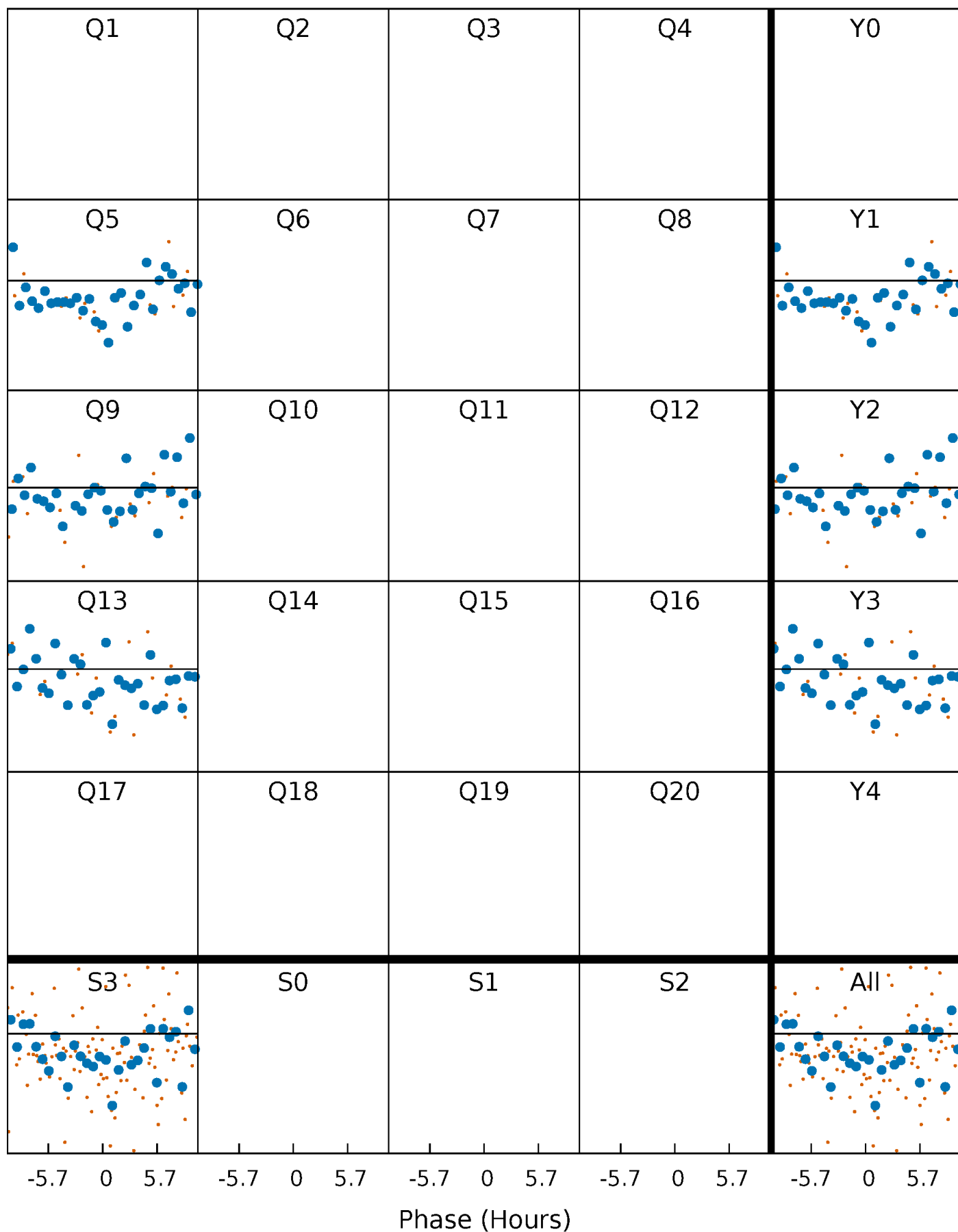
# PDC Quarter-Phased Transit Curves

TCE 010526648-05     $P=390.962115$  Days     $T_0=460.099667$  (BKJD)



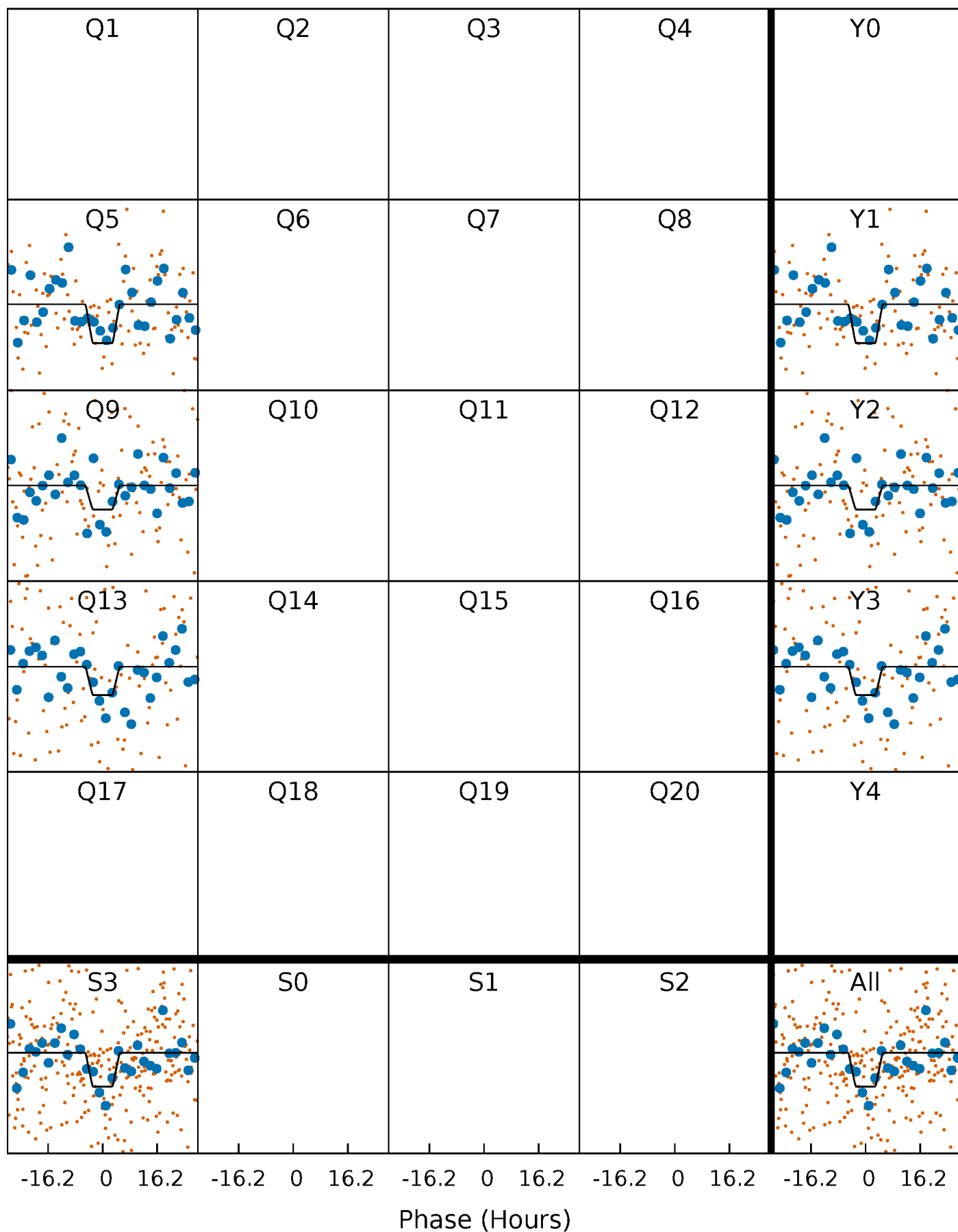
# DV Quarter-Phased Transit Curves

TCE 010526648-05     $P=390.962115$  Days     $T_0=460.099667$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

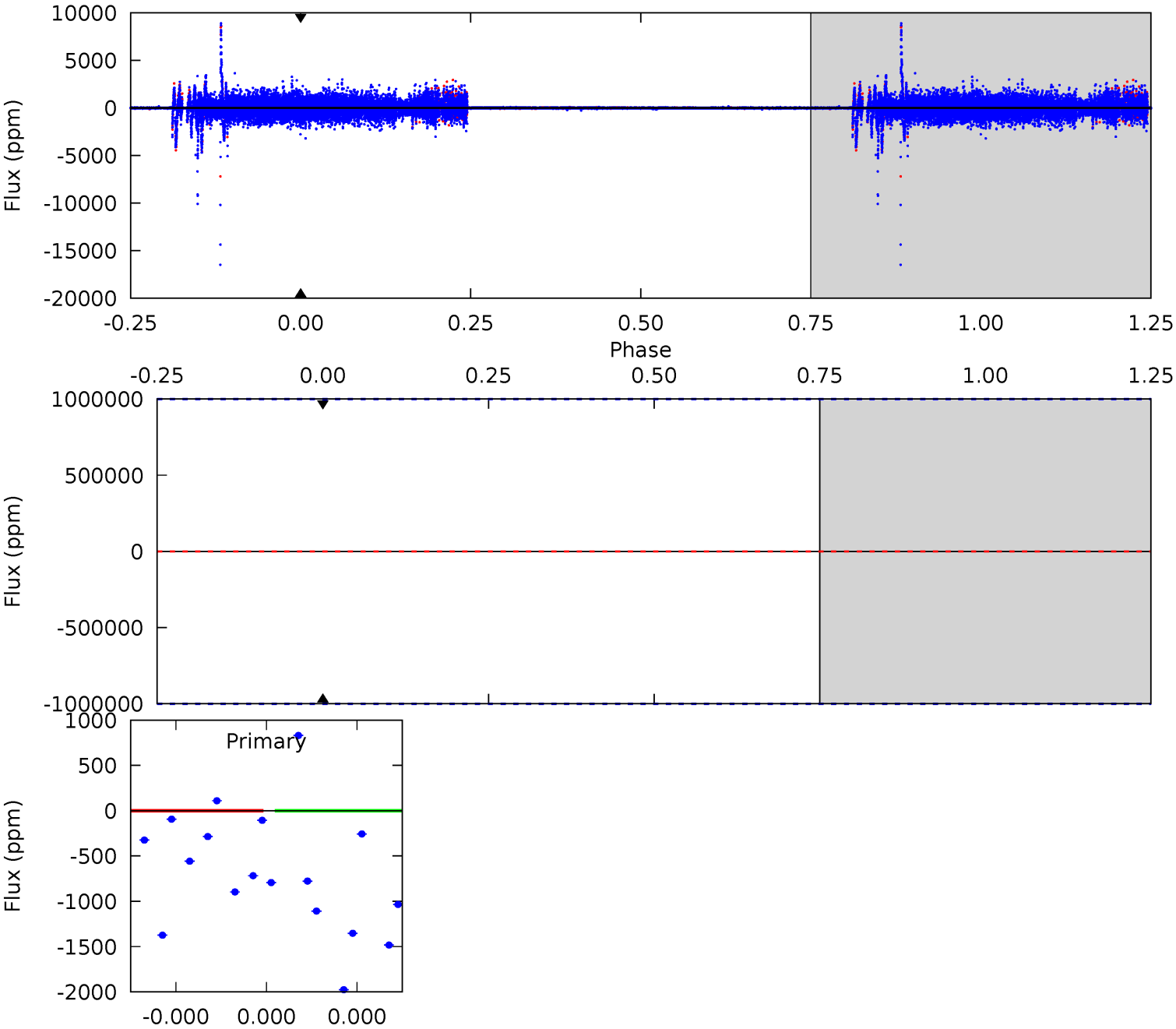
TCE 010526648-05     $P=390.962115$  Days     $T_0=460.086734$  (BKJD)



# DV Model-Shift Uniqueness Test

010526648-05, P = 390.962115 Days, E = 69.137552 Days

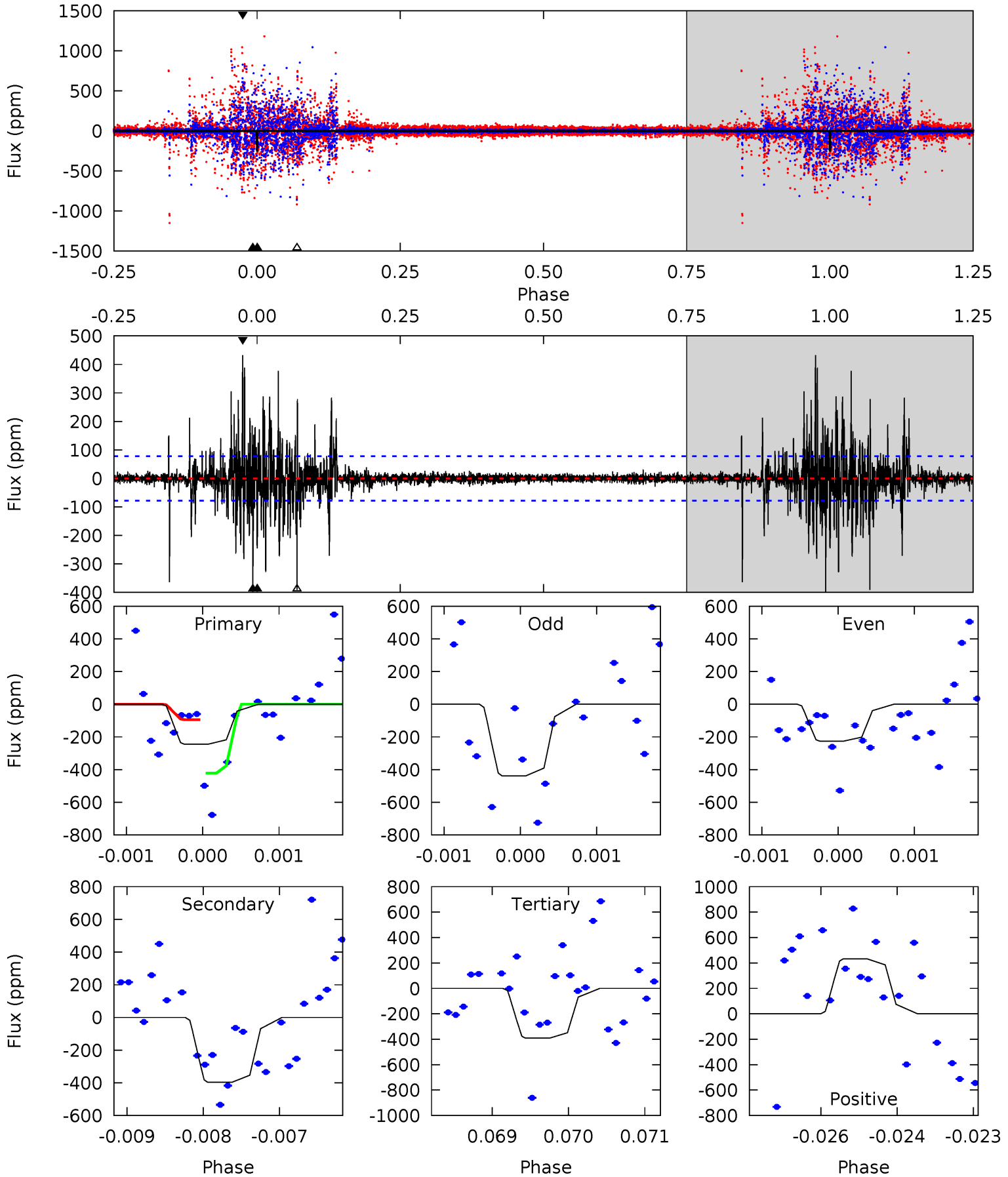
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

010526648-05, P = 390.962115 Days, E = 69.124619 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
17.0	27.6	27.2	30.0	5.43	3.26	1.87	-10.2	-13.0	0.39	-2.44	2.99	0.92	0.52	0





### Stellar Parameters For KIC 010526648

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8806^{+277}_{-381}$	$3.811^{+0.397}_{-0.132}$	$-0.300^{+0.450}_{-0.350}$	$2.890^{+0.790}_{-1.185}$	$1.971^{+0.445}_{-0.405}$	$0.115^{+0.411}_{-0.046}$
	+3%/-4%	+10%/-3%	+150%/-117%	+27%/-41%	+23%/-21%	+357%/-40%
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 010526648-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$27.48^{+25.51}_{-19.17}$	$780^{+64}_{-82}$	$-7260^{+41041}_{-28537}$	$-5399.055^{+202704.962}_{-215775.510}$
Alt.	$-397 \pm 14$	$21.80^{+24.39}_{-16.04}$	$783^{+67}_{-83}$	$4536^{+3679}_{-1034}$	$788^{+9202}_{-607}$

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

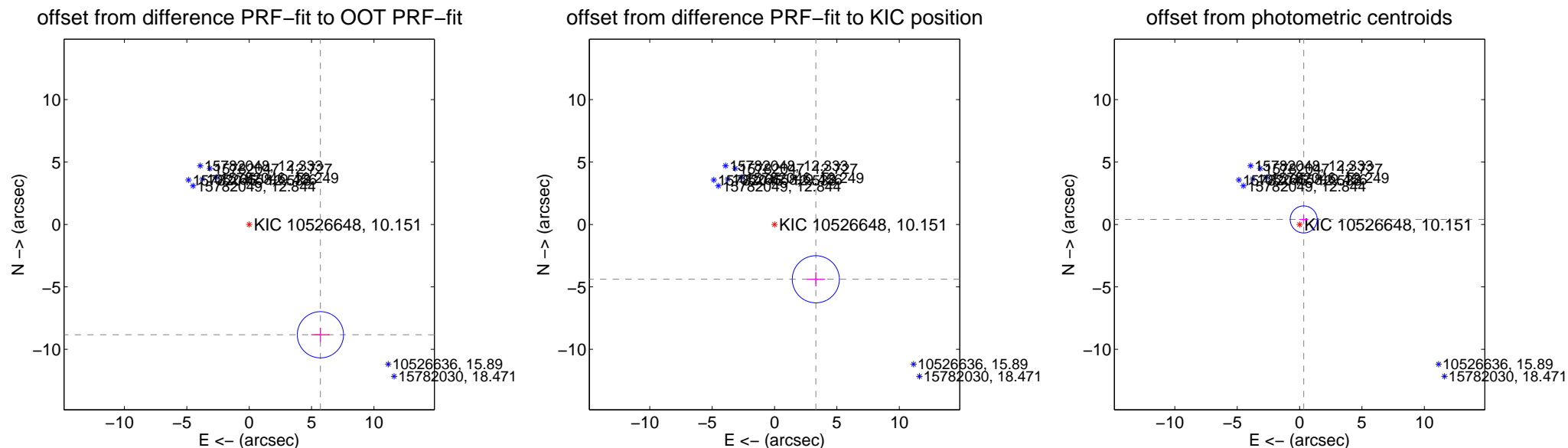
## DV Centroid Data

Supplemental centroid analysis for 010526648-05. **Kepler magnitude: 10.15.** Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

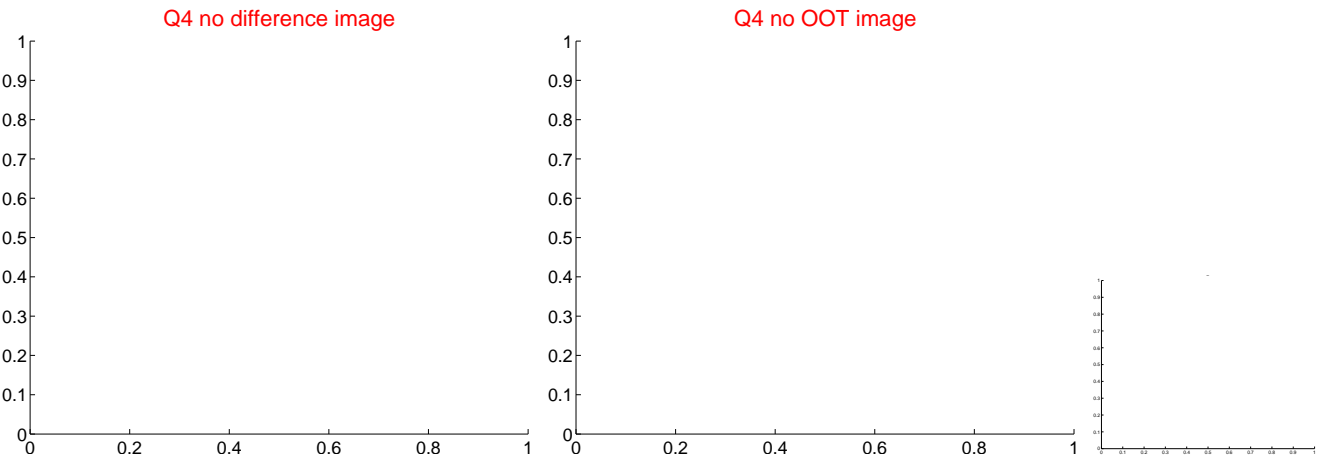
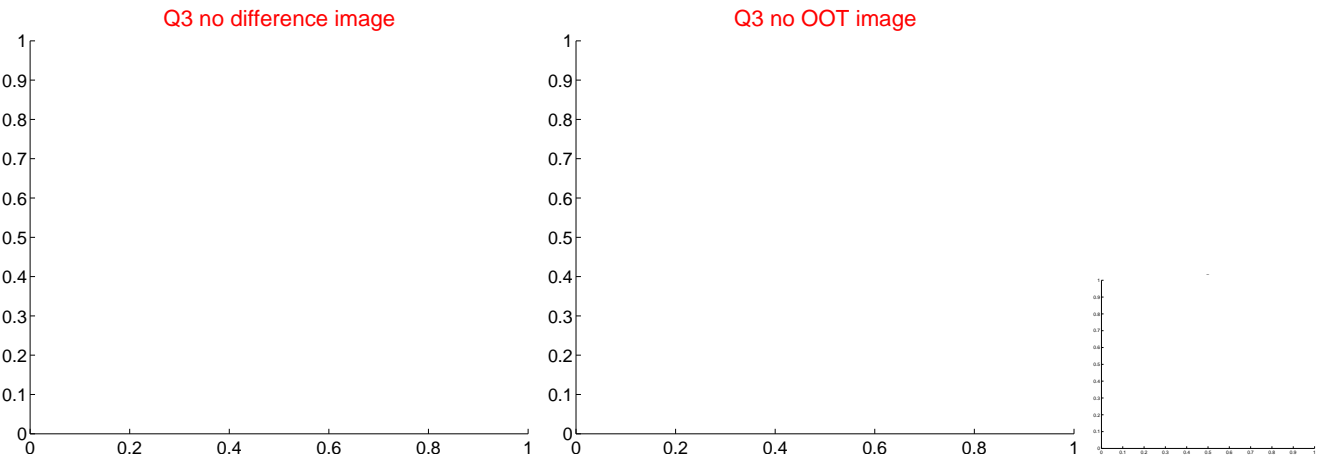
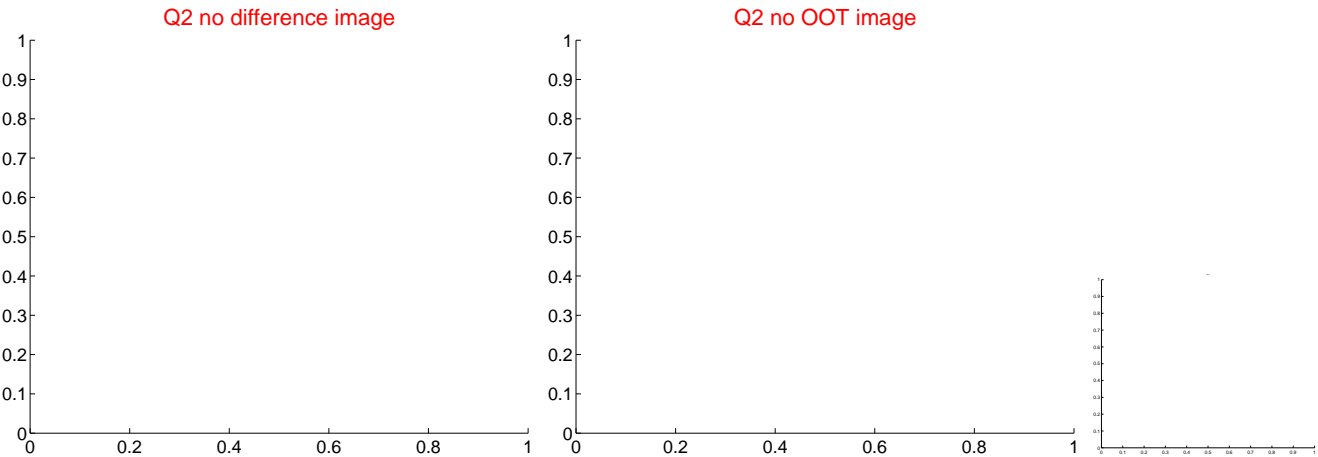
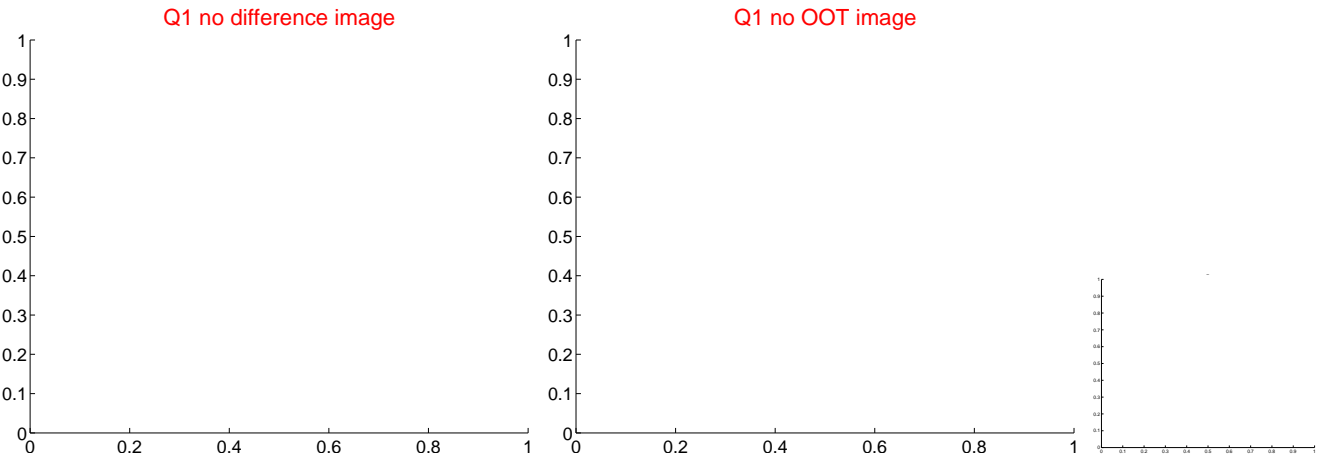
The OOT PRF centroid is offset from the target star catalog position by about 5.05 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$10.517 \pm 0.617$	17.04	$-5.709 \pm 0.730$	$-8.833 \pm 0.564$
PRF-fit source offset from KIC position	$5.497 \pm 0.629$	8.74	$-3.309 \pm 0.730$	$-4.389 \pm 0.564$
photometric centroid source offset	$0.52 \pm 0.36$	1.44	$-0.33 \pm 0.36$	$0.40 \pm 0.36$

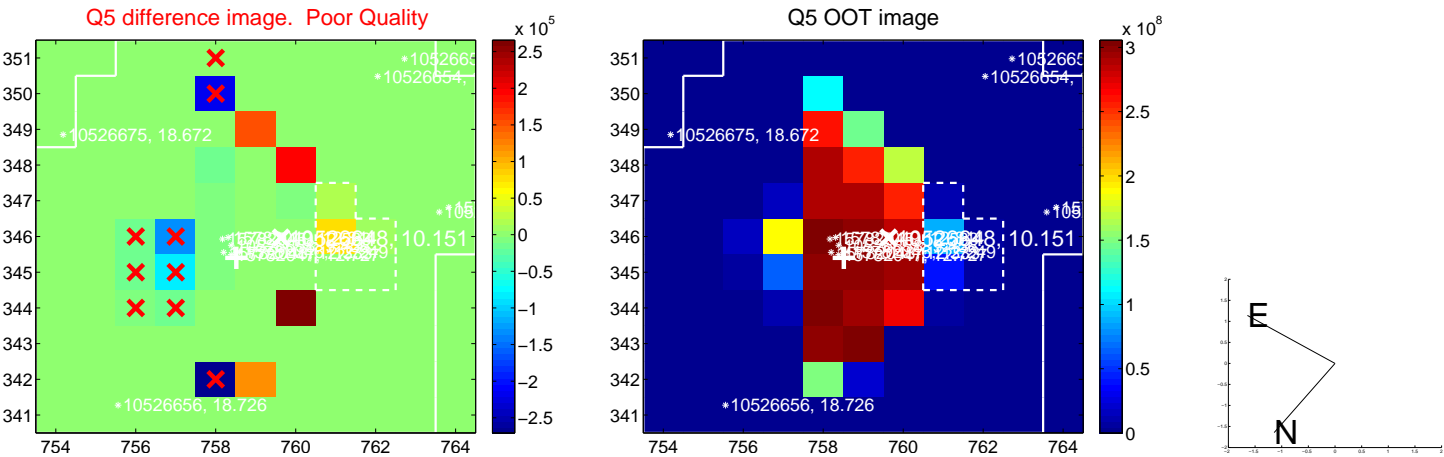


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

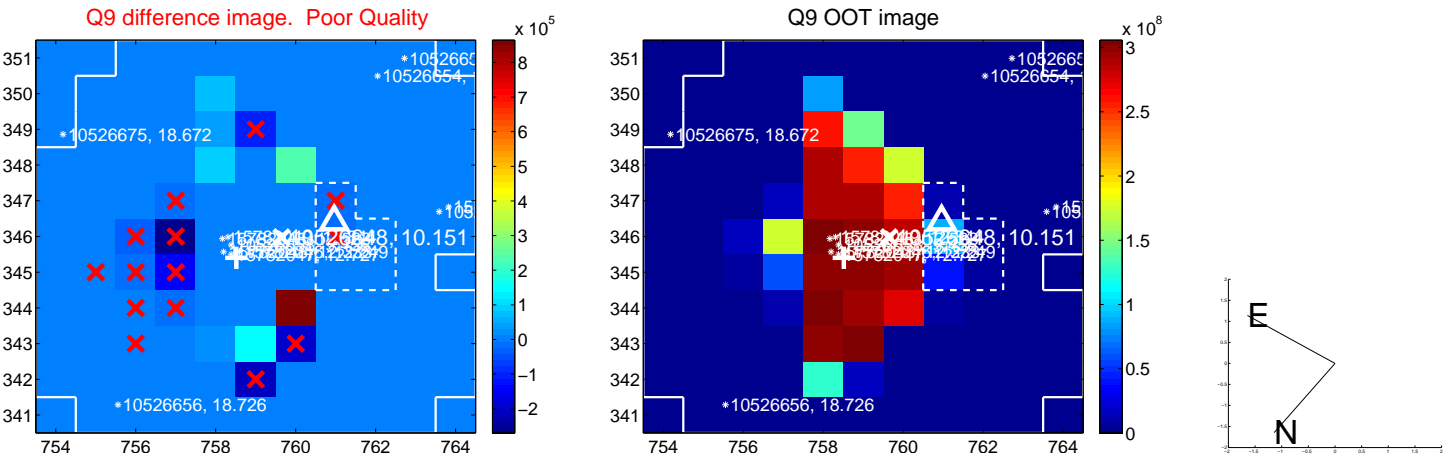
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



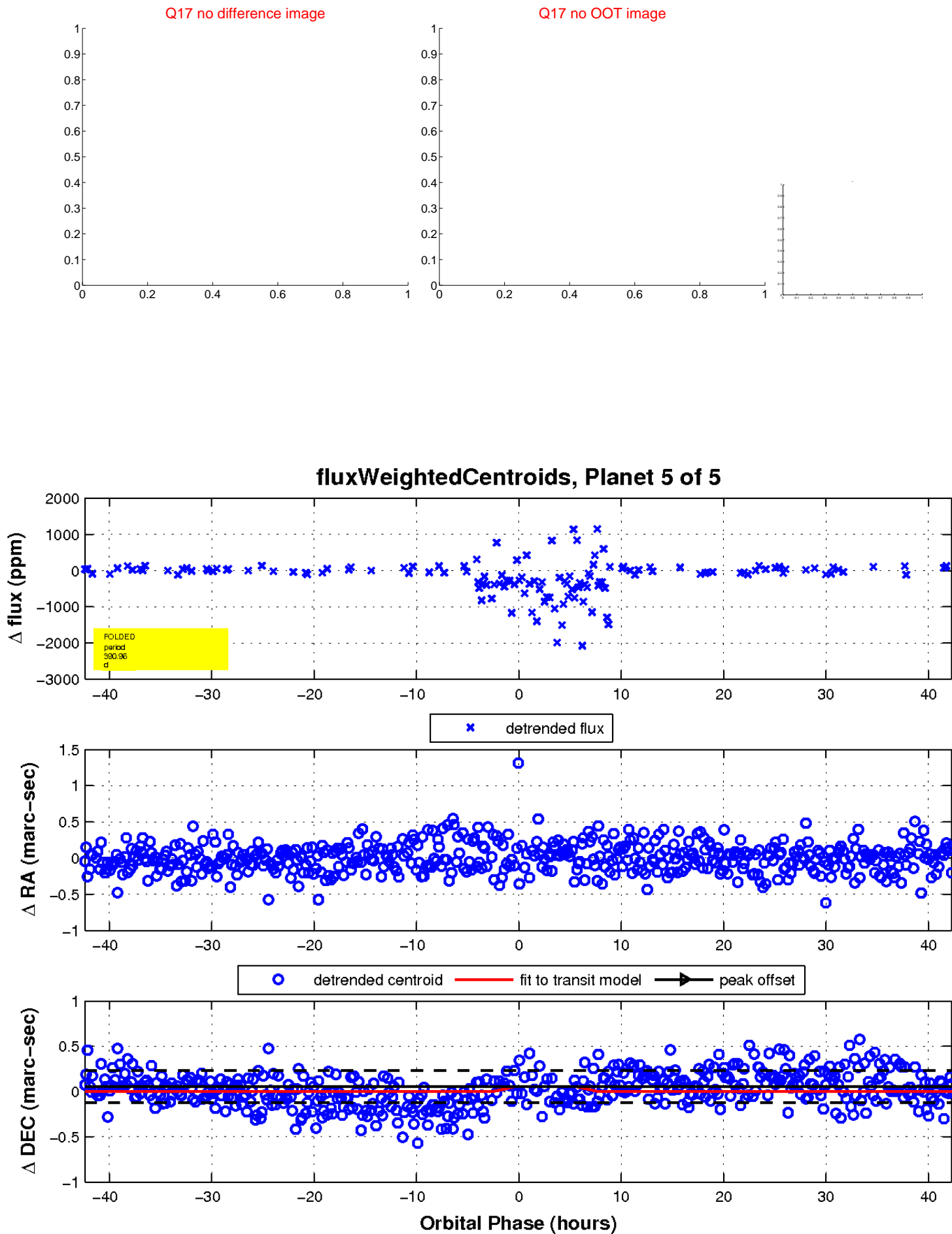
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

