

# KIC 006522800

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006522800-01	OBS	No	371.222972	291.869990	77.3	6.915	20.9	3.0	121.37	3328	112.26	1566.21
006522800-03	OBS	No	421.346818	144.772374	52.9	12.500	21.5	-1.0	121.37	3328	81.02	1322.85
006522800-05	OBS	No	337.237991	359.302089	161.8	7.874	15.3	13.4	121.37	3328	221.98	1780.12
006522800-06	OBS	No	185.434557	290.661181	251.1	15.000	88.9	-1.0	121.37	3328	176.49	3951.63

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006522800-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006522800-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS— CENT_SATURATED
006522800-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
006522800-06	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

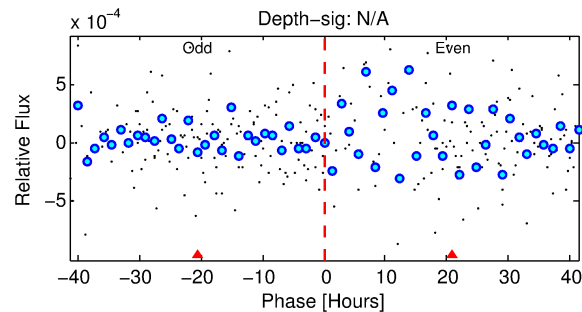
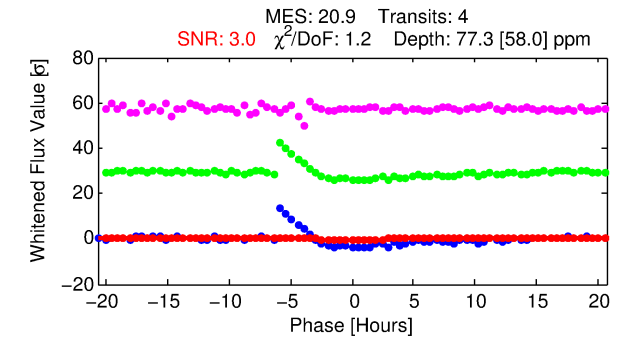
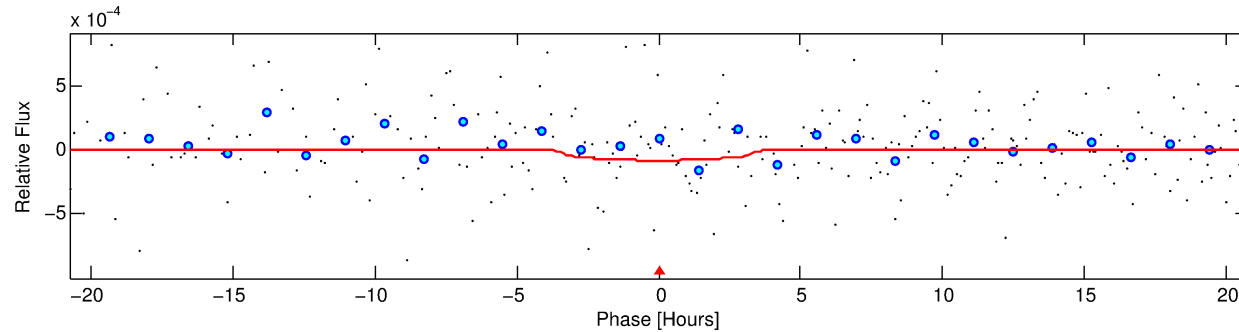
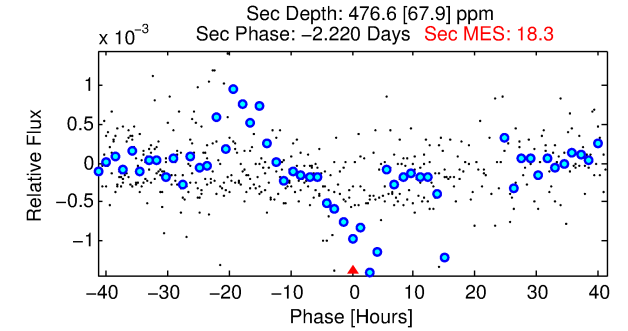
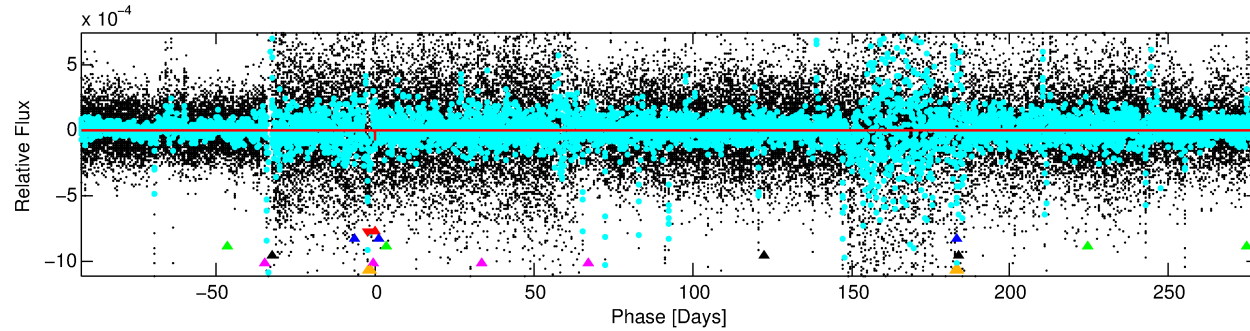
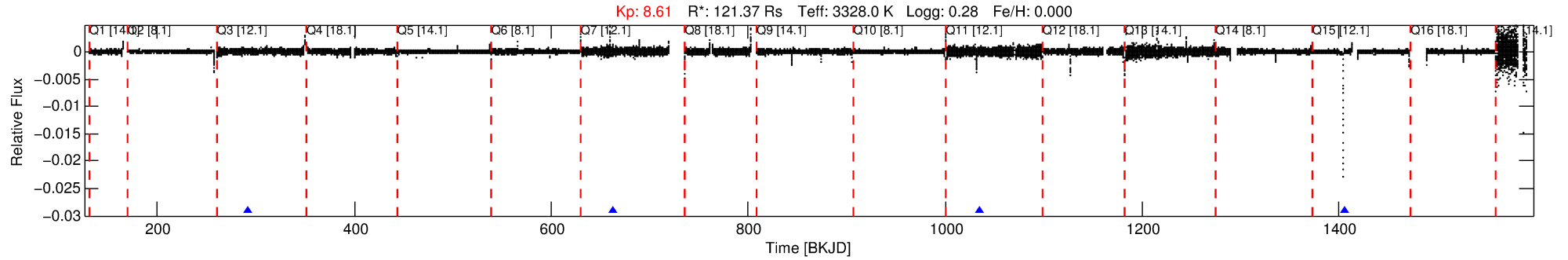
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 006522800-01

No Significant Match Found

# DV One-Page Summary

KIC: 6522800 Candidate: 1 of 6 Period: 371.223 d



## DV Fit Results:

Period = 371.22297 [0.03763] d  
Epoch = 291.8700 [0.0798] BKJD  
Rp/R\* = 0.0085 [0.0539]  
a/R\* = 309.37 [4521.68]  
b = 0.67 [12.63]  
Seff = 1566.21 [607.35]  
Teq = 1604 [156] K  
Rp = 112.26 [714.36] Re  
a = 1.0167 [0.2334] AU  
Ag = 21.51 [273.71] [0.07σ]  
Teffp = 5341 [16985] K [0.22σ]

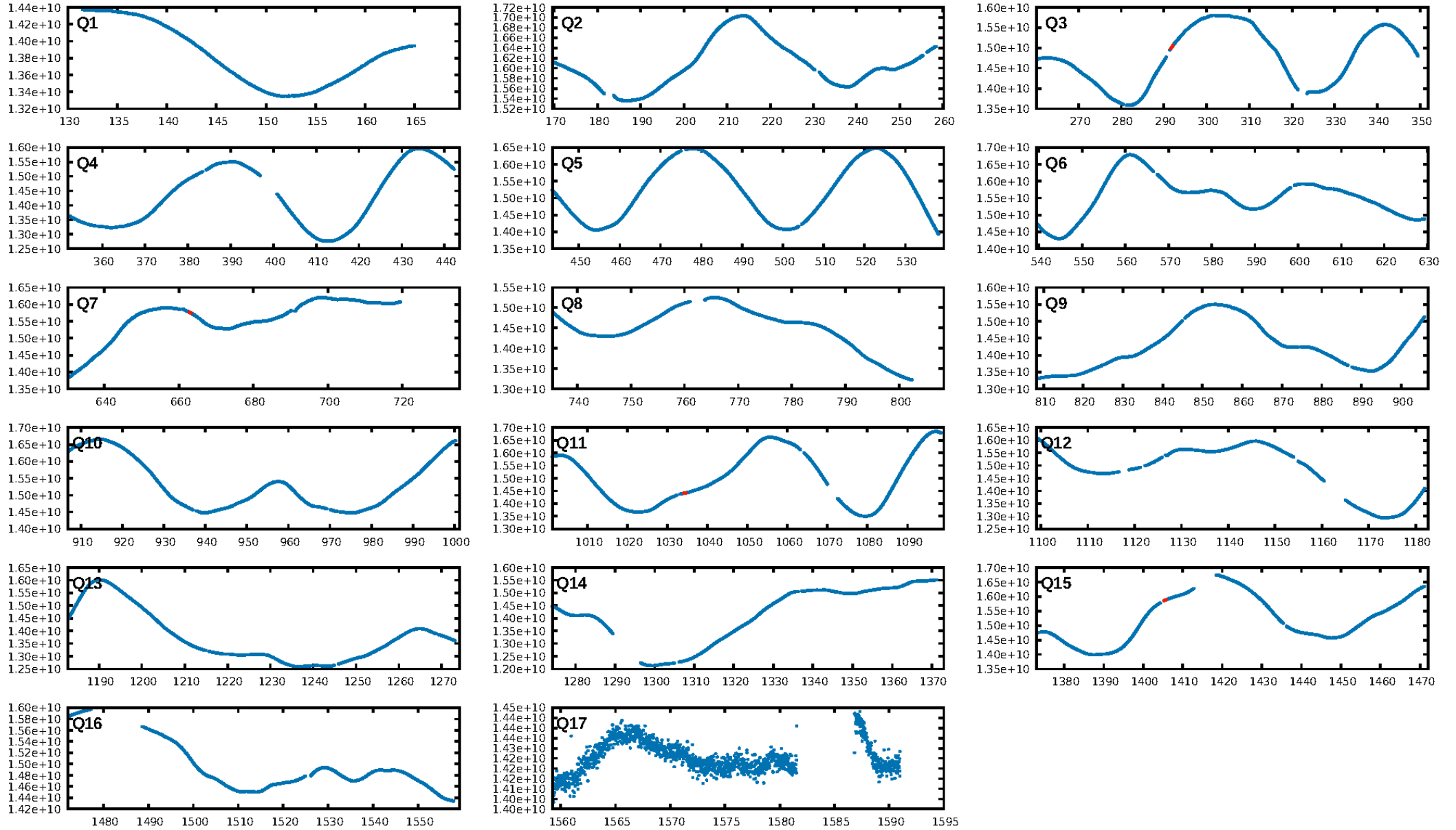
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [77.83σ]  
LongPeriod-sig: 100.0% [84.21σ]  
ModelChiSquare2-sig: 55.6%  
ModelChiSquareGof-sig: 94.3%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 0.0%  
Centroid-so: 36.233 arcsec [2.45σ]  
OotOffset-rm: N/A  
KicOffset-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]

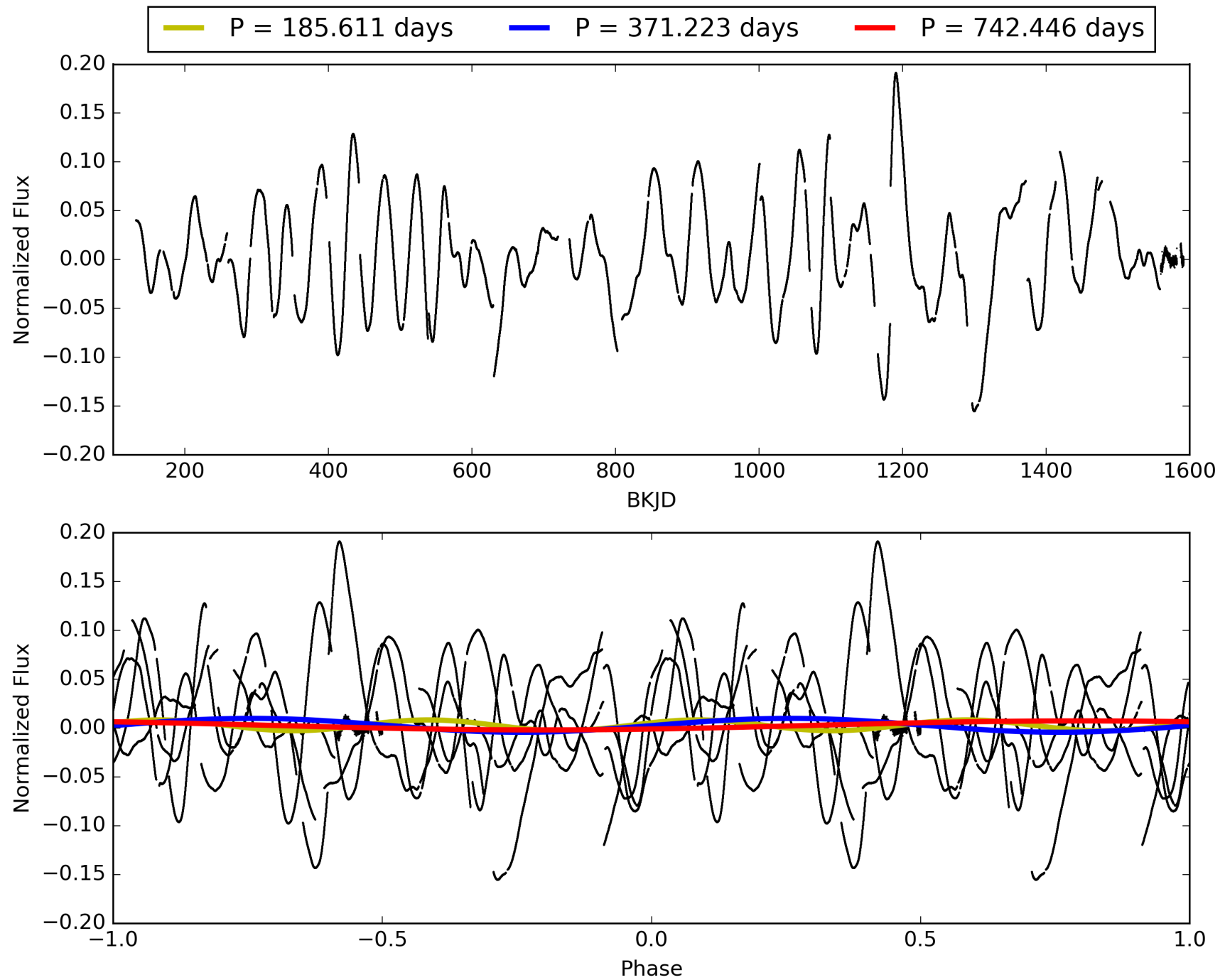
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:25:37 Z

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

# TCE 006522800-01, PDC Light Curves

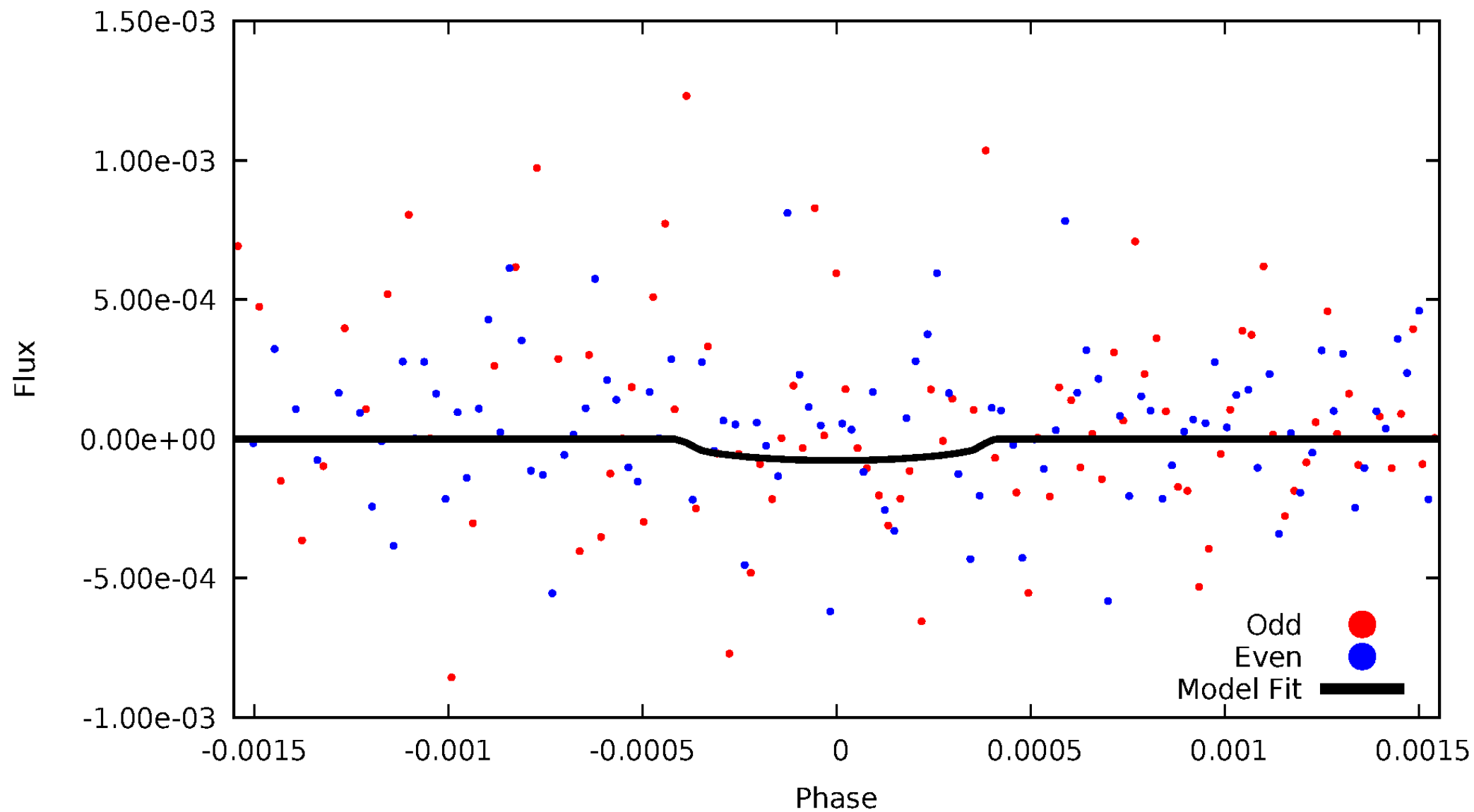


TCE 006522800-01



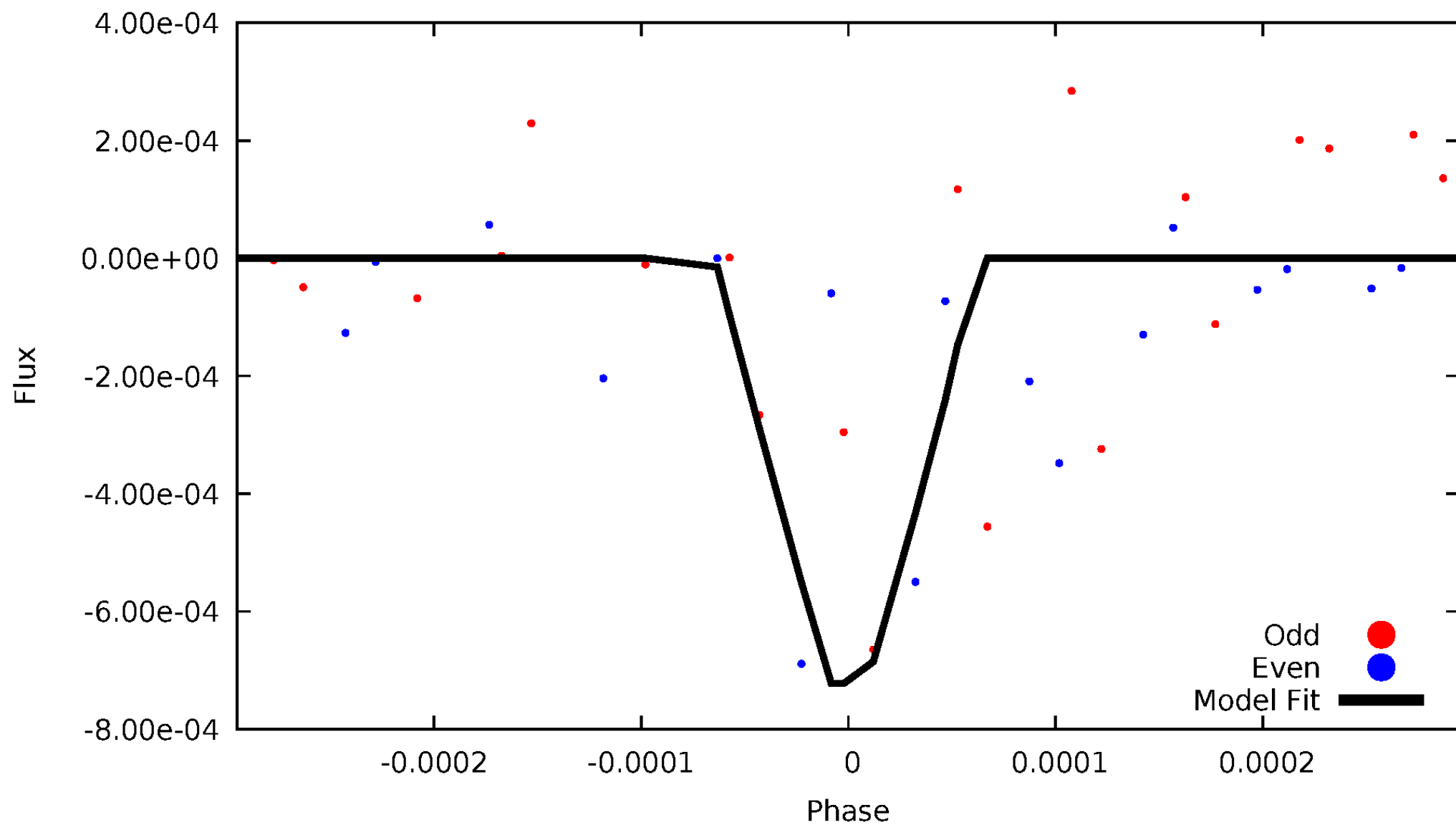
# DV Odd/Even

TCE 006522800-01



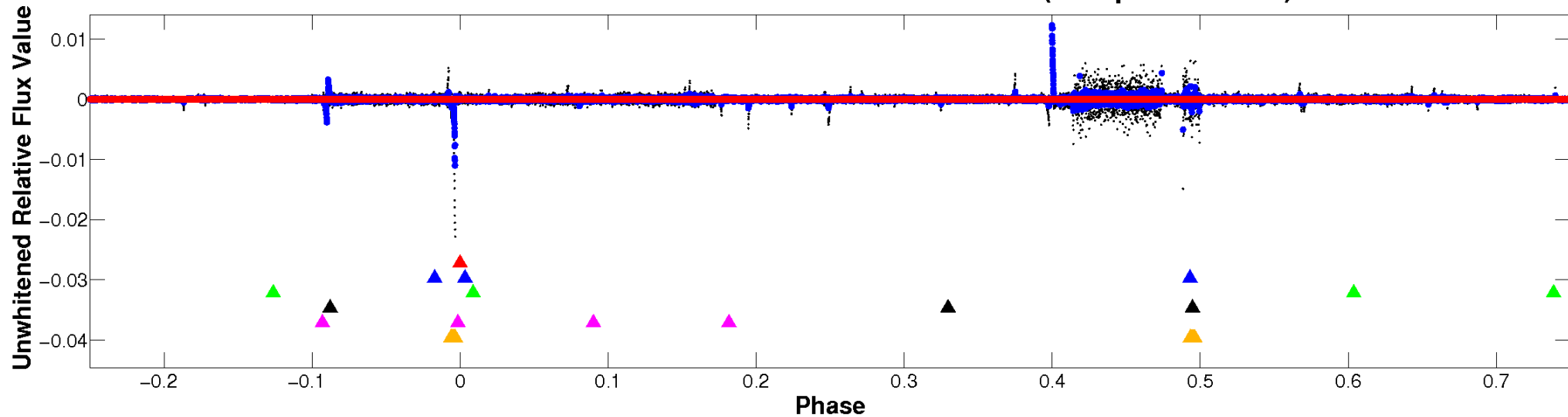
# ALT Odd/Even

TCE 006522800-01

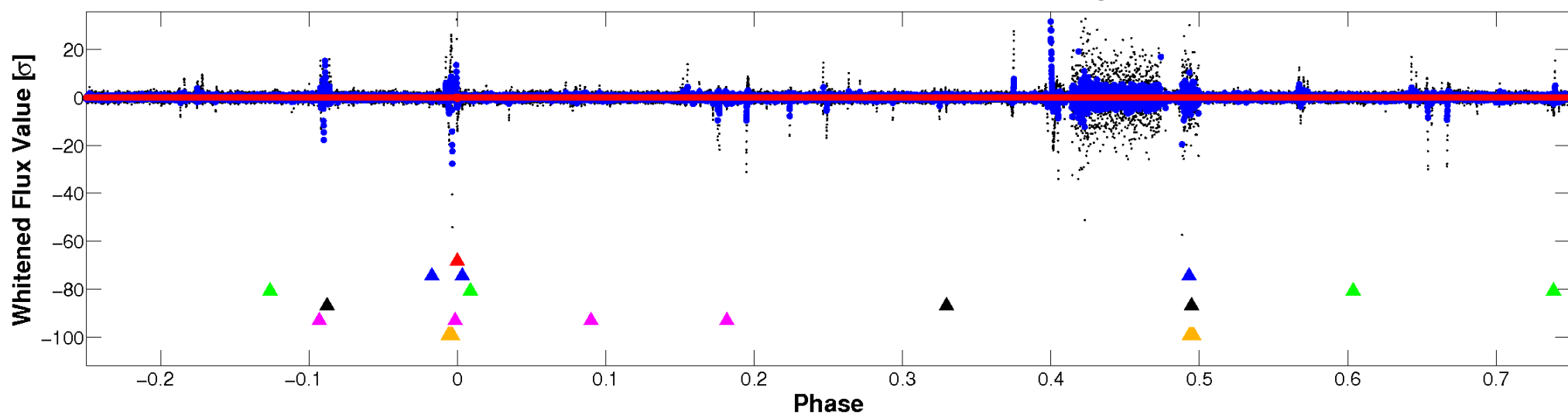


# Non-Whitened Vs. Whitened Light Curve

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

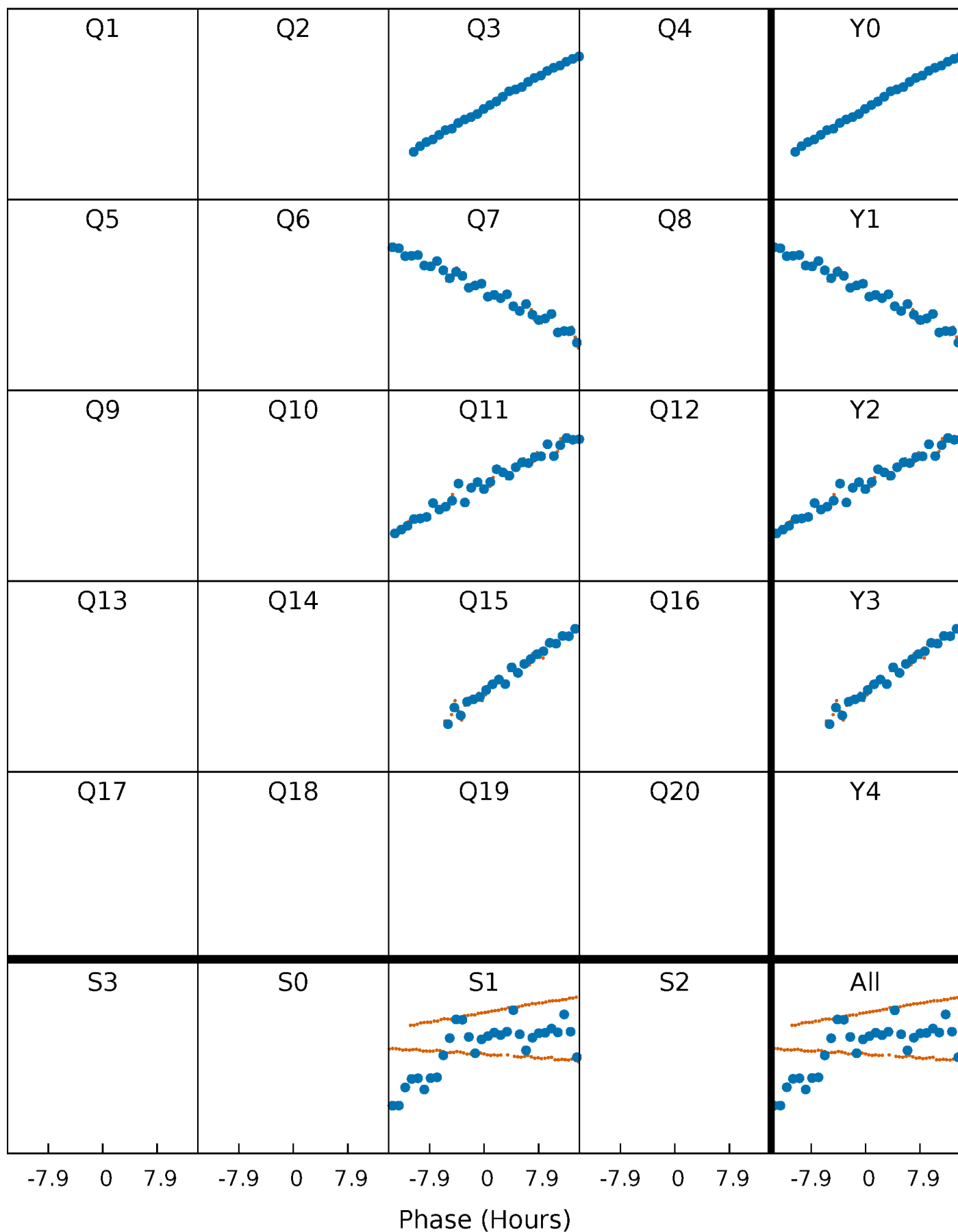


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

TCE 006522800-01 P=371.222972 Days  $T_0=291.869990$  (BKJD)





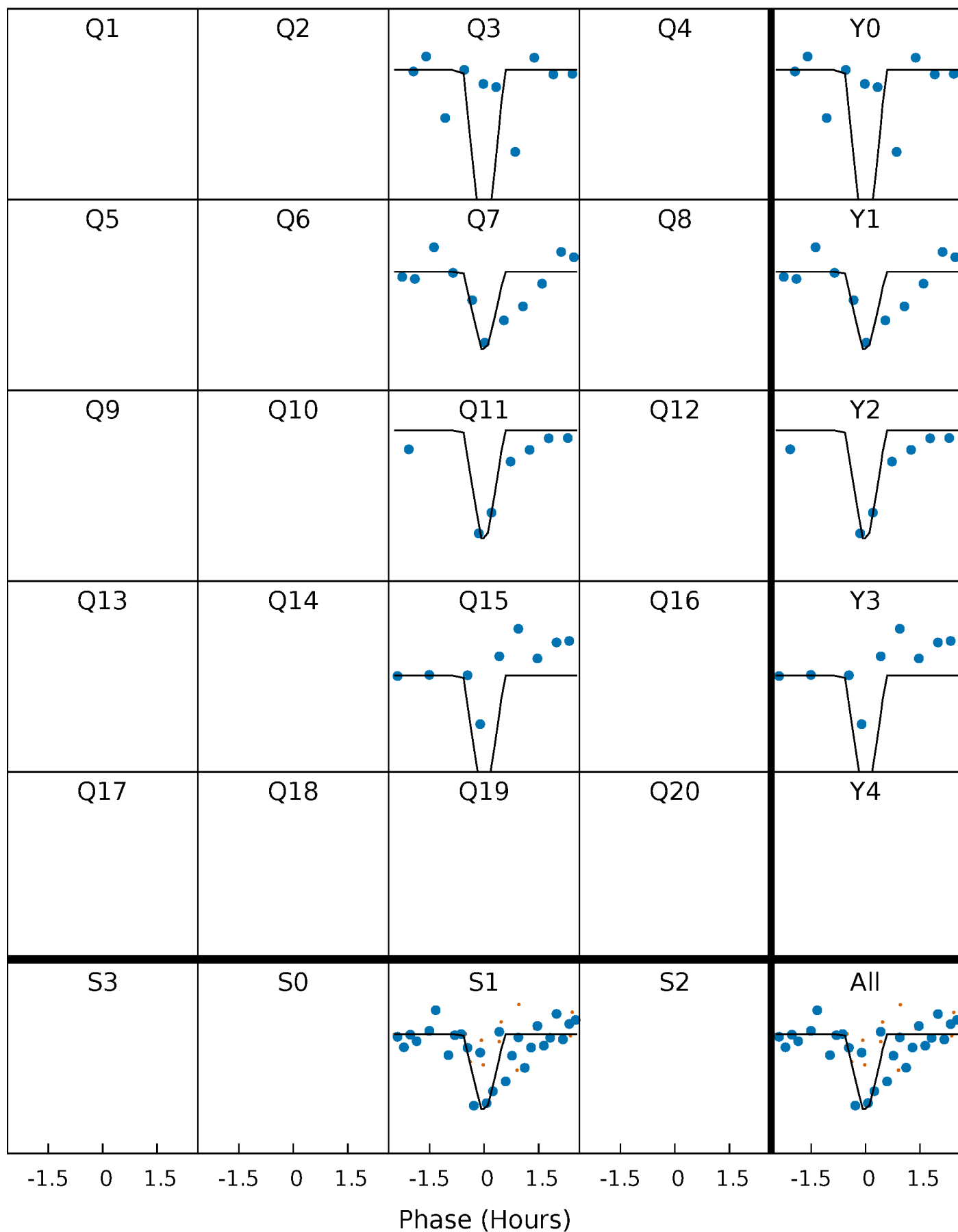
# DV Quarter-Phased Transit Curves

TCE 006522800-01 P=371.222972 Days  $T_0=291.869990$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

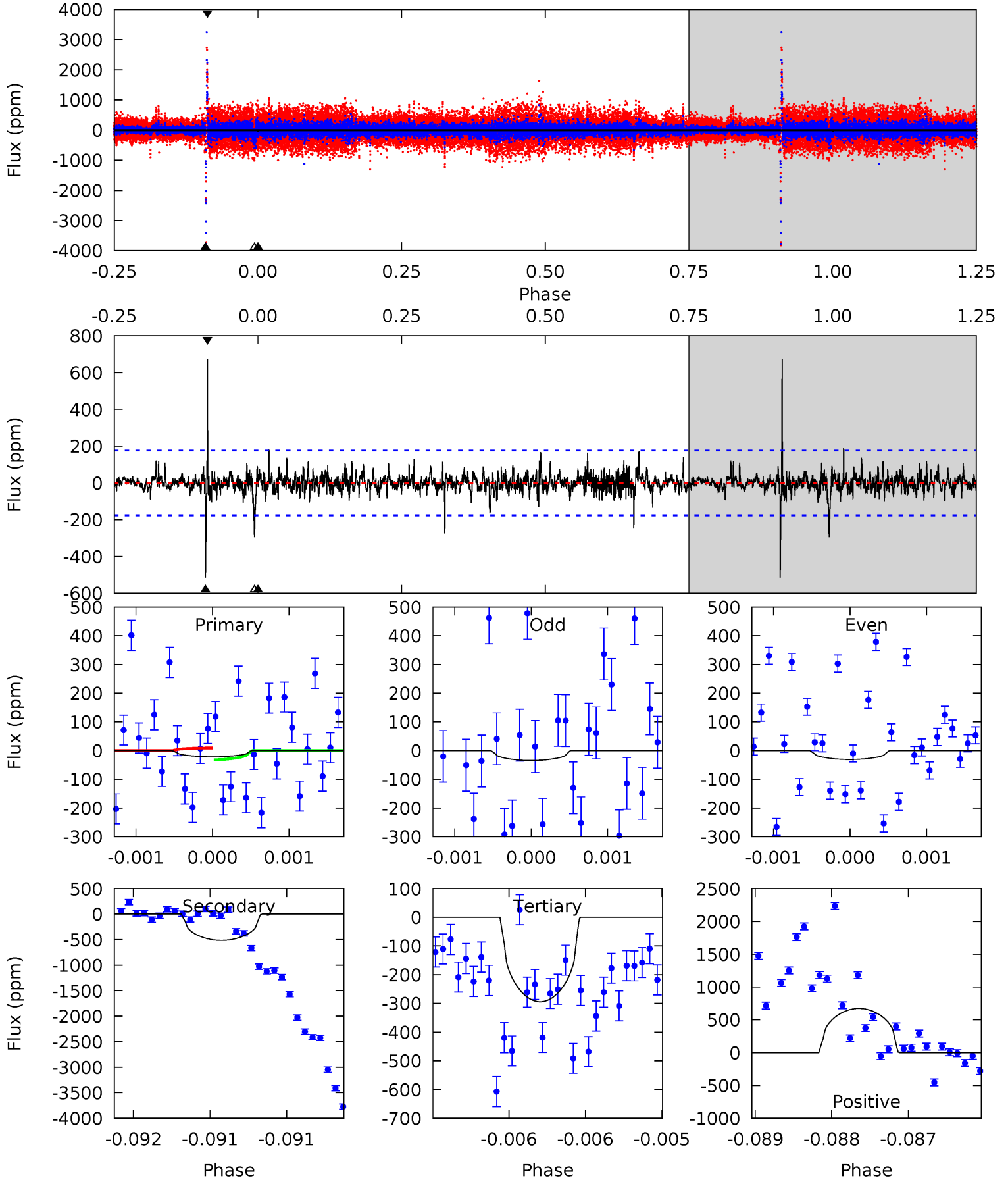
TCE 006522800-01 P=371.209673 Days  $T_0=291.776202$  (BKJD)



# DV Model-Shift Uniqueness Test

006522800-01, P = 371.222972 Days, E = 291.869990 Days

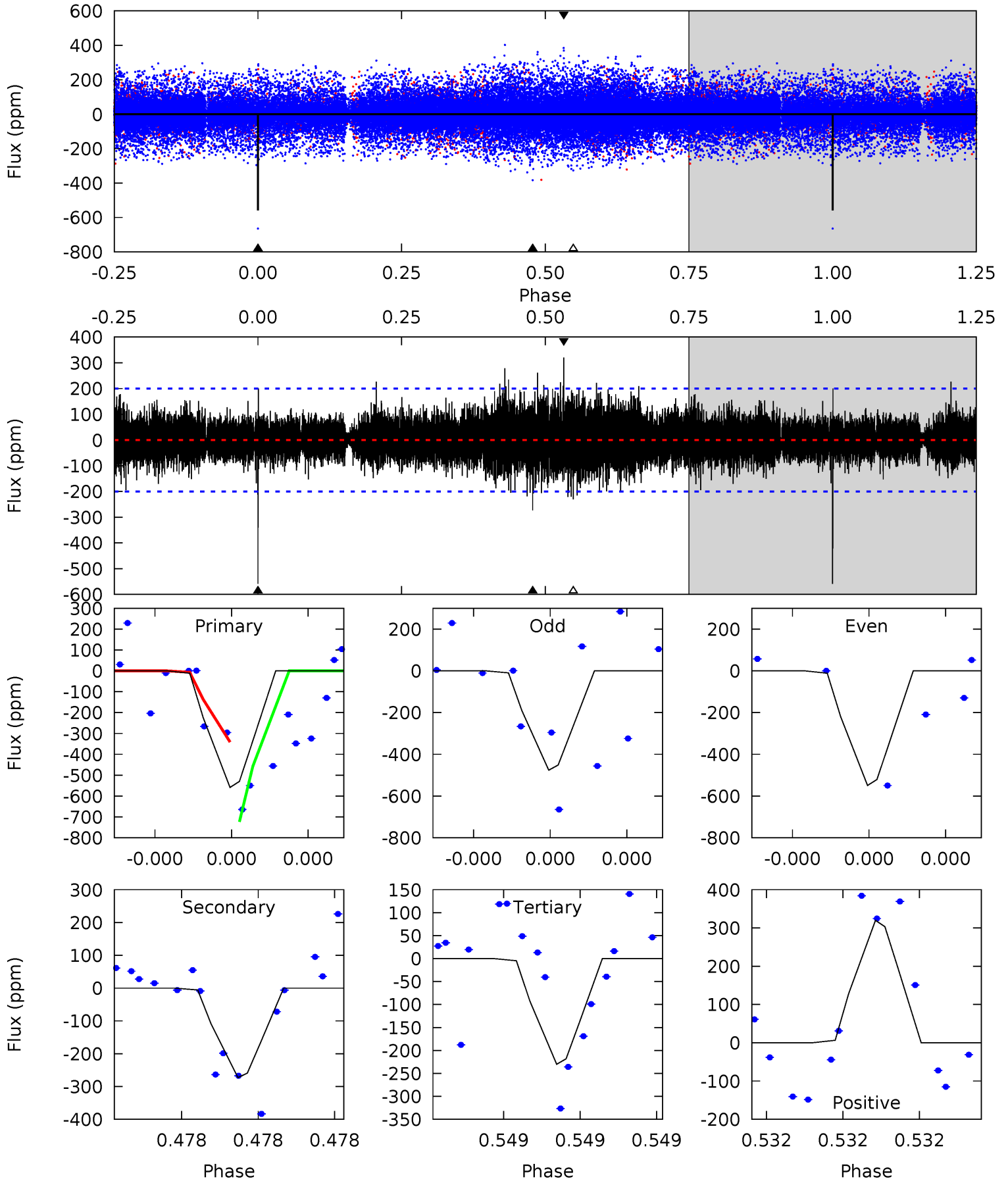
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.67	16.0	9.18	21.0	5.49	3.35	1.24	-8.51	-20.4	6.86	-4.99	0.05	1.19	0.57	0.34



# Alt Model-Shift Uniqueness Test

006522800-01, P = 371.209673 Days, E = 291.776202 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
16.3	7.95	6.70	9.32	5.82	3.85	1.38	9.57	6.96	1.25	-1.36	0.86	1.02	0.36	5.57



### Stellar Parameters For KIC 006522800

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3328^{+79}_{-72}$	$0.277^{+0.224}_{-0.112}$	$0.000^{+0.250}_{-0.150}$	$121.368^{+27.685}_{-22.651}$	$1.017^{+0.310}_{-0.058}$	$0.000^{+0.000}_{-0.000}$
	+2%/-2%	+81%/-40%	+inf%/-inf%	+23%/-19%	+30%/-6%	+102%/-38%
Source	SPE14	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 006522800-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-514 \pm 32$	$509.91^{+576.22}_{-351.85}$	$2212^{+132}_{-145}$	$2757^{+1377}_{-4681}$	$1.241^{+11.778}_{-0.979}$
Alt.	$-273 \pm 34$	$615.43^{+571.12}_{-431.69}$	$2217^{+134}_{-156}$	$2205^{+1231}_{-4486}$	$0.455^{+4.315}_{-0.344}$

$T_{max}$  = 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

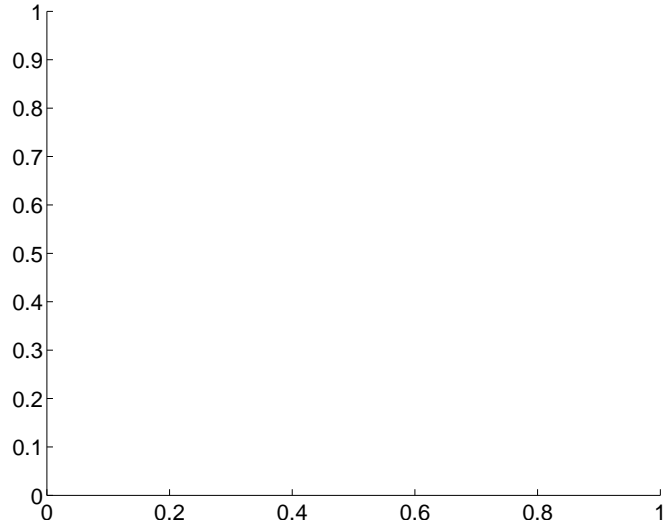
Supplemental centroid analysis for 006522800-01. **Kepler magnitude: 8.61.** Transit SNR 3.00

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

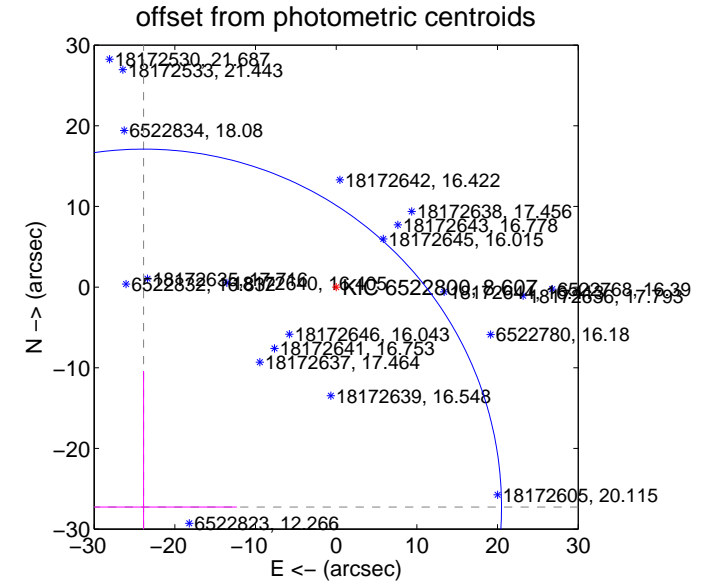
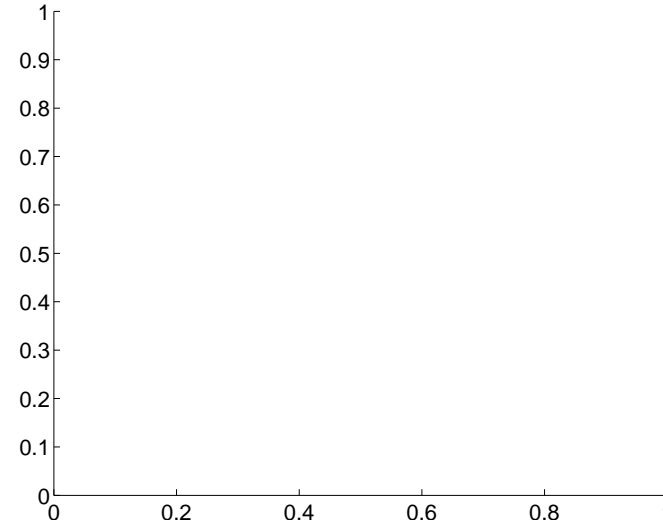
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	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	$36.23 \pm 14.79$	2.45	$23.87 \pm 11.55$	$-27.26 \pm 16.86$

**There is no PRF-fit offset from OOT-fit**



**There is no PRF-fit offset from KIC**



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



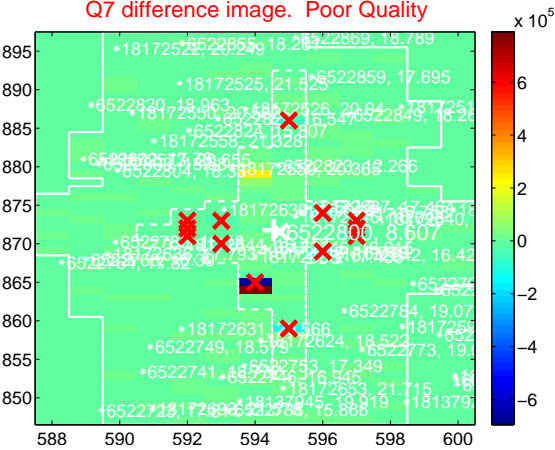
Q6 no difference image



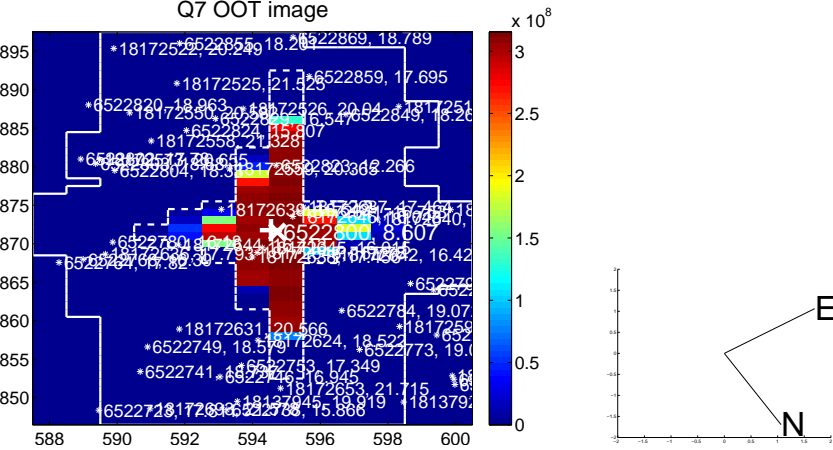
Q6 no OOT image



Q7 difference image. Poor Quality



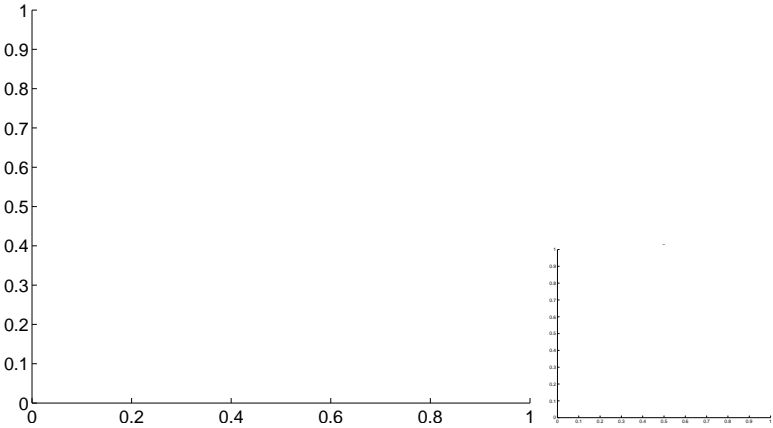
Q7 OOT image



Q8 no difference image



Q8 no OOT image





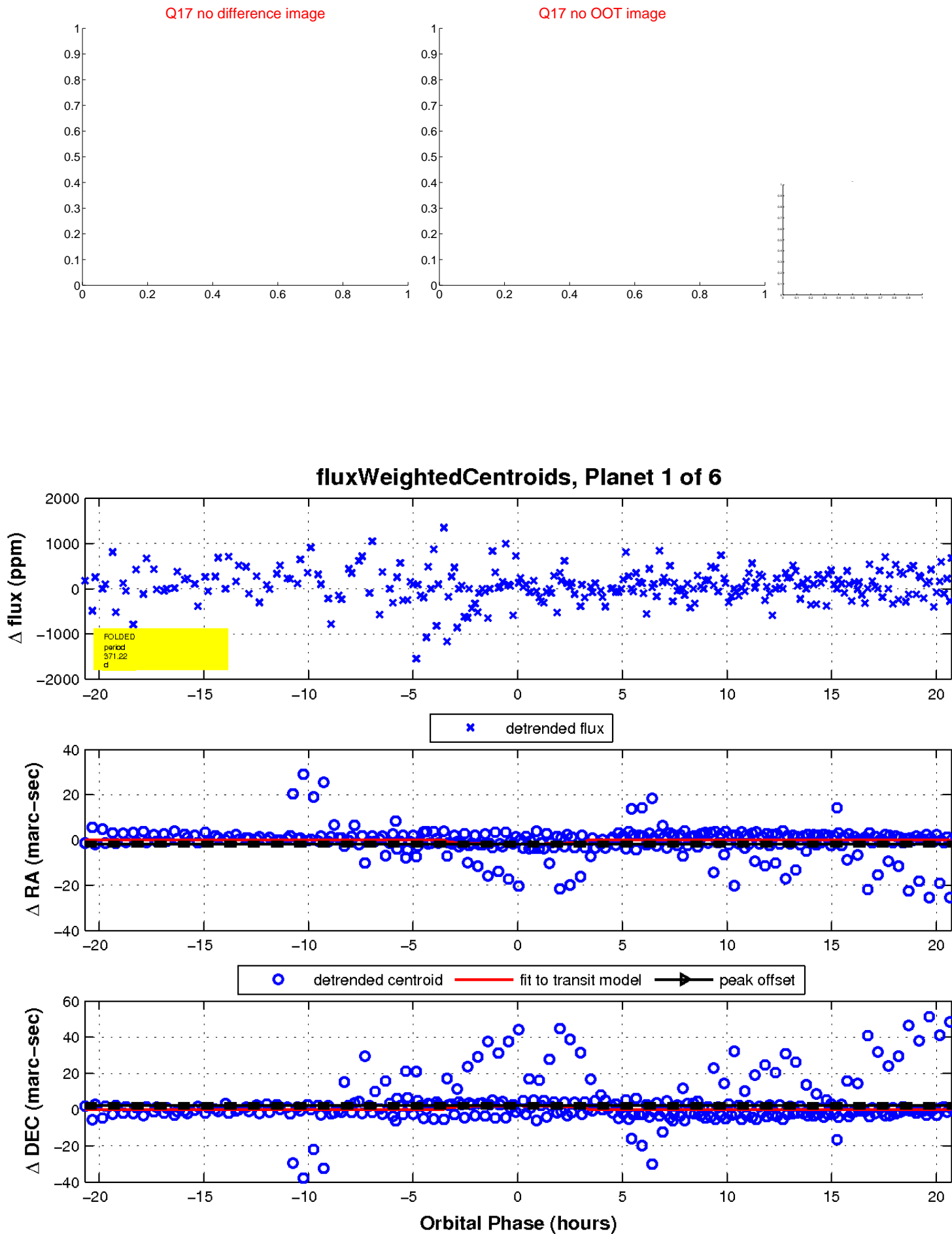
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

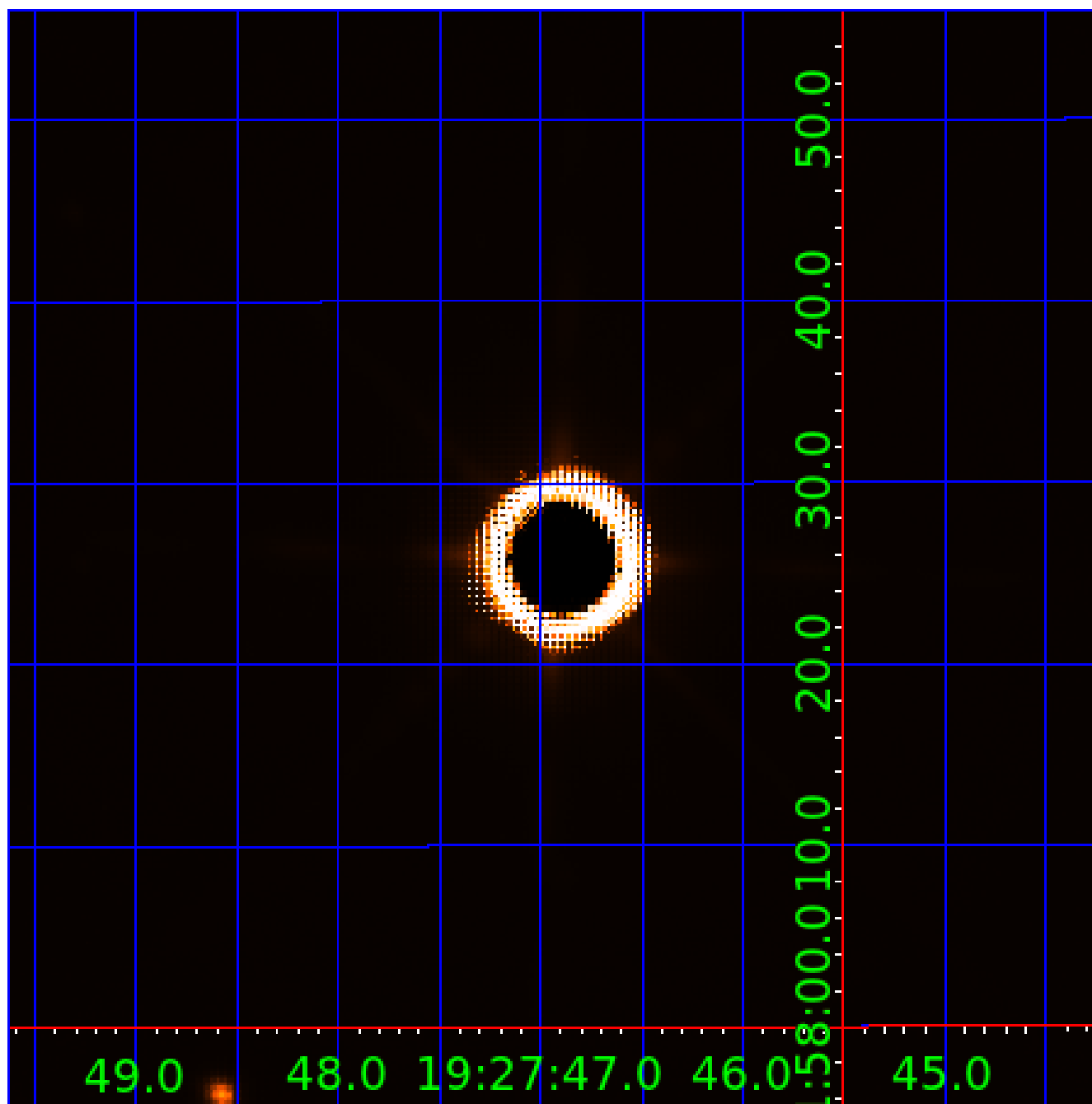


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006522800

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006522800-01	OBS	No	371.222972	291.869990	77.3	6.915	20.9	3.0	121.37	3328	112.26	1566.21
006522800-03	OBS	No	421.346818	144.772374	52.9	12.500	21.5	-1.0	121.37	3328	81.02	1322.85
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006522800-06	OBS	No	185.434557	290.661181	251.1	15.000	88.9	-1.0	121.37	3328	176.49	3951.63

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006522800-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006522800-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006522800-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
006522800-06	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

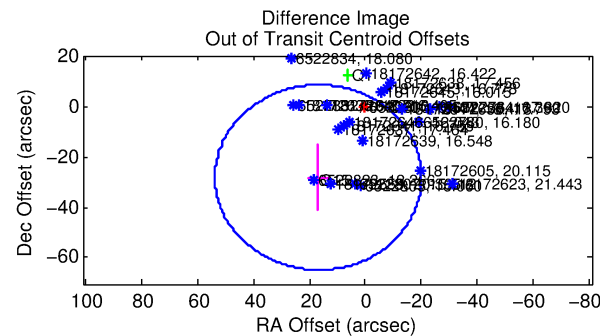
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

## Ephemeris Match Information For 006522800-03

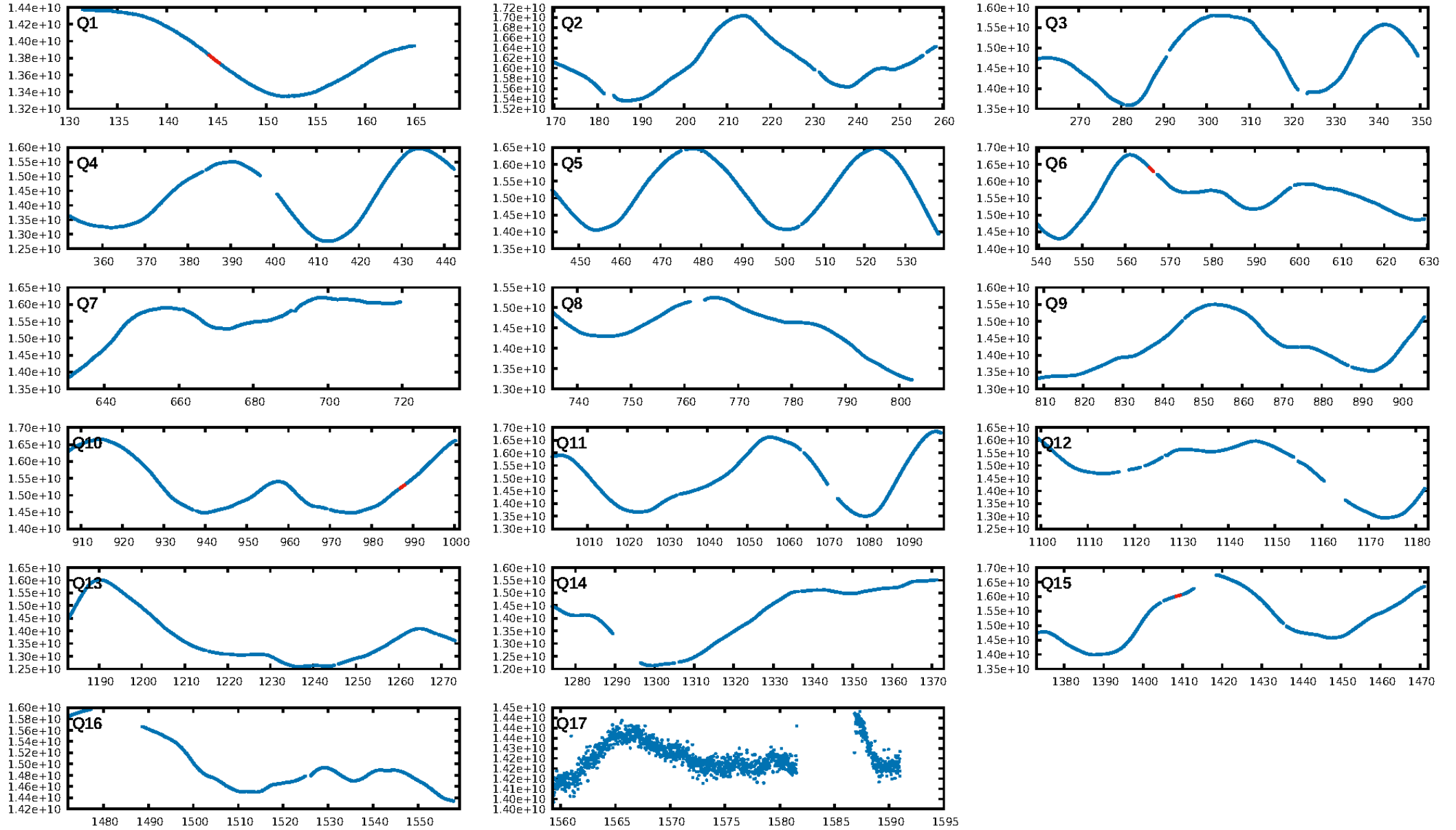
No Significant Match Found

## KIC: 6522800    Candidate: 3 of 6    Period: 421.347 d

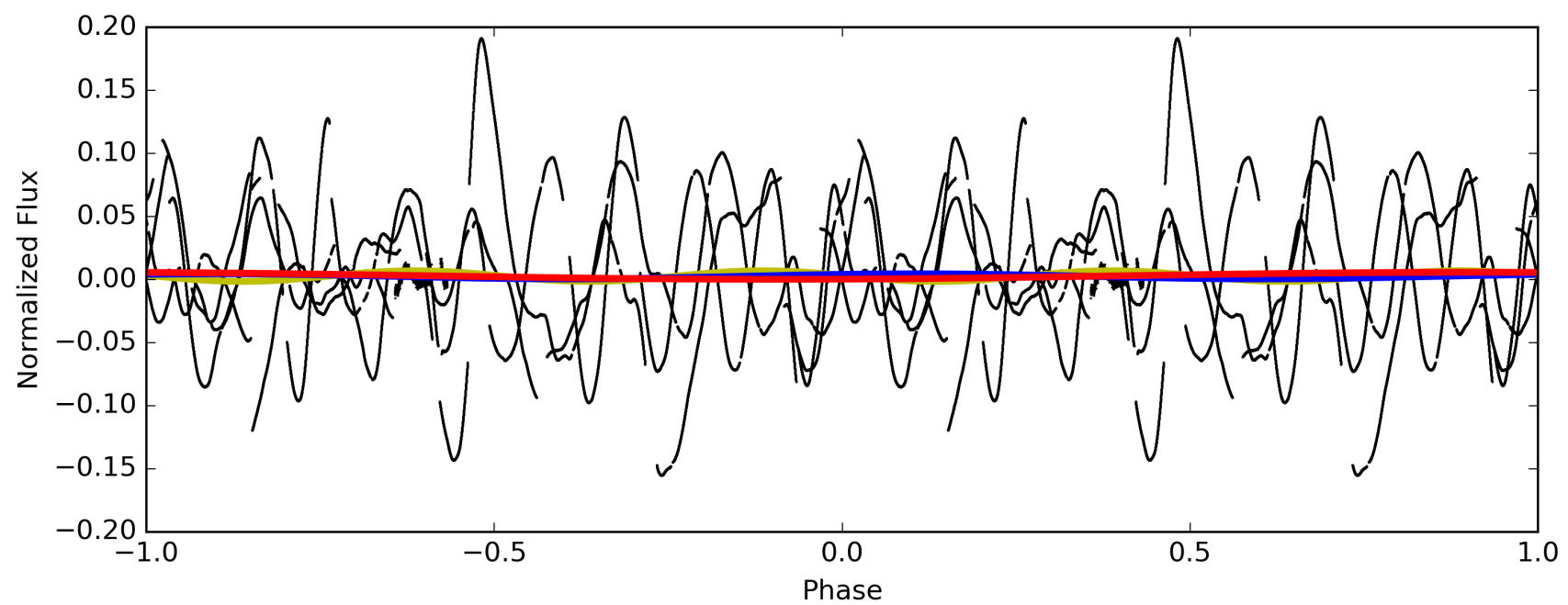
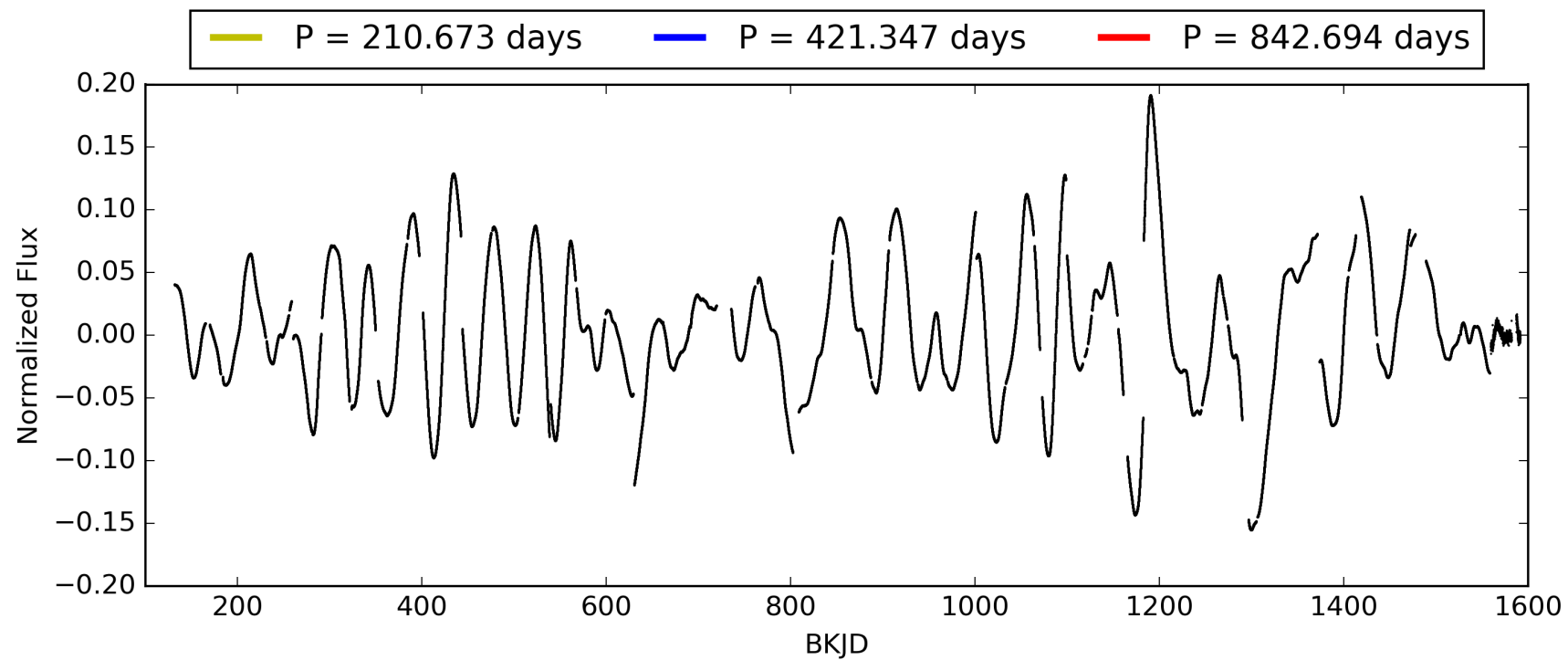


Centroid-sig: 97.9%  
Centroid-so: 0.511 arcsec [0.09σ]  
OotOffset-rm: 32.697 arcsec [2.66σ]  
KicOffset-rm: 33.723 arcsec [3.70σ]  
OotOffset-st: 1/1/0/1 [3]  
KicOffset-st: 1/1/0/1 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 006522800-03, PDC Light Curves



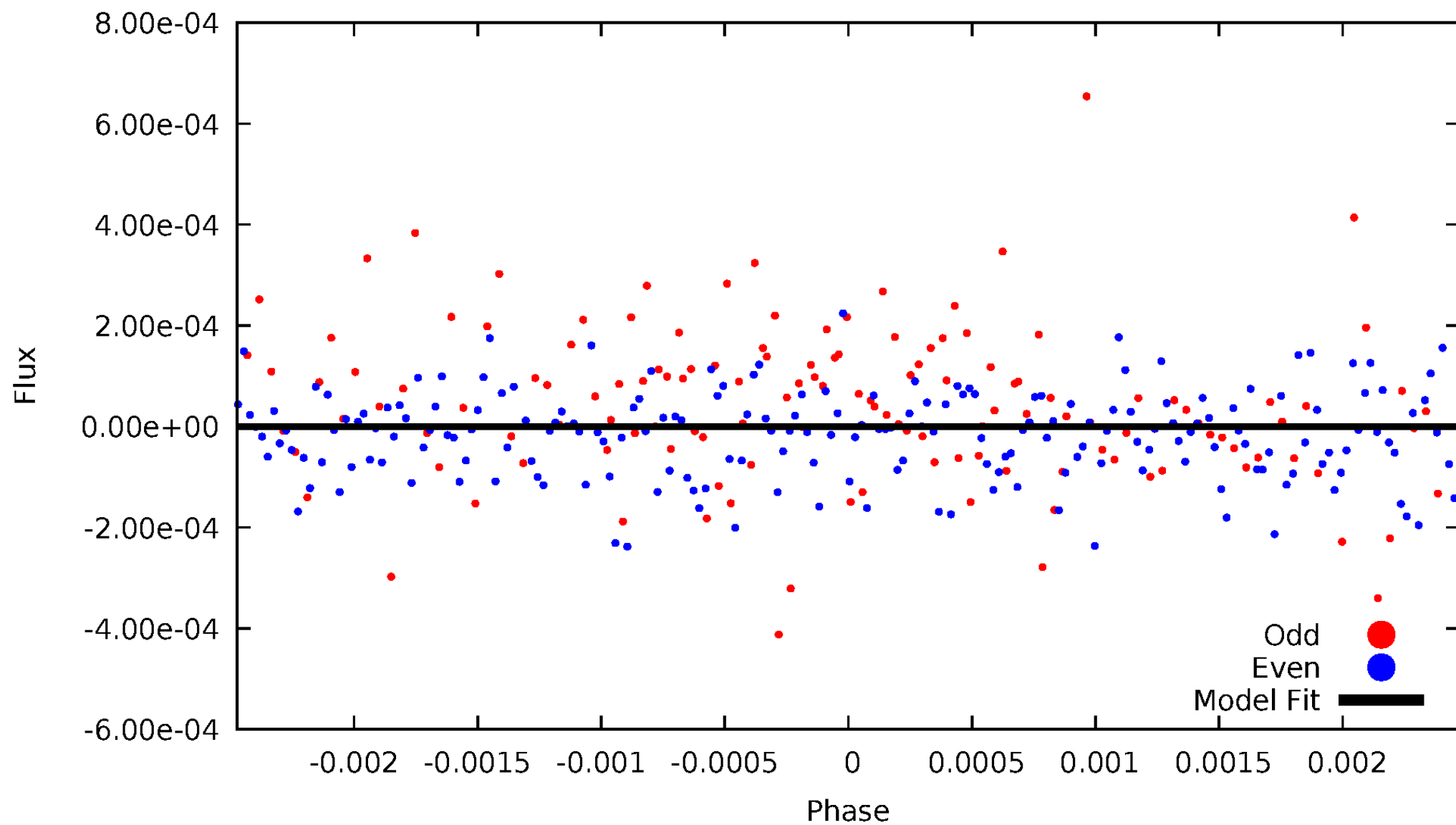
TCE 006522800-03





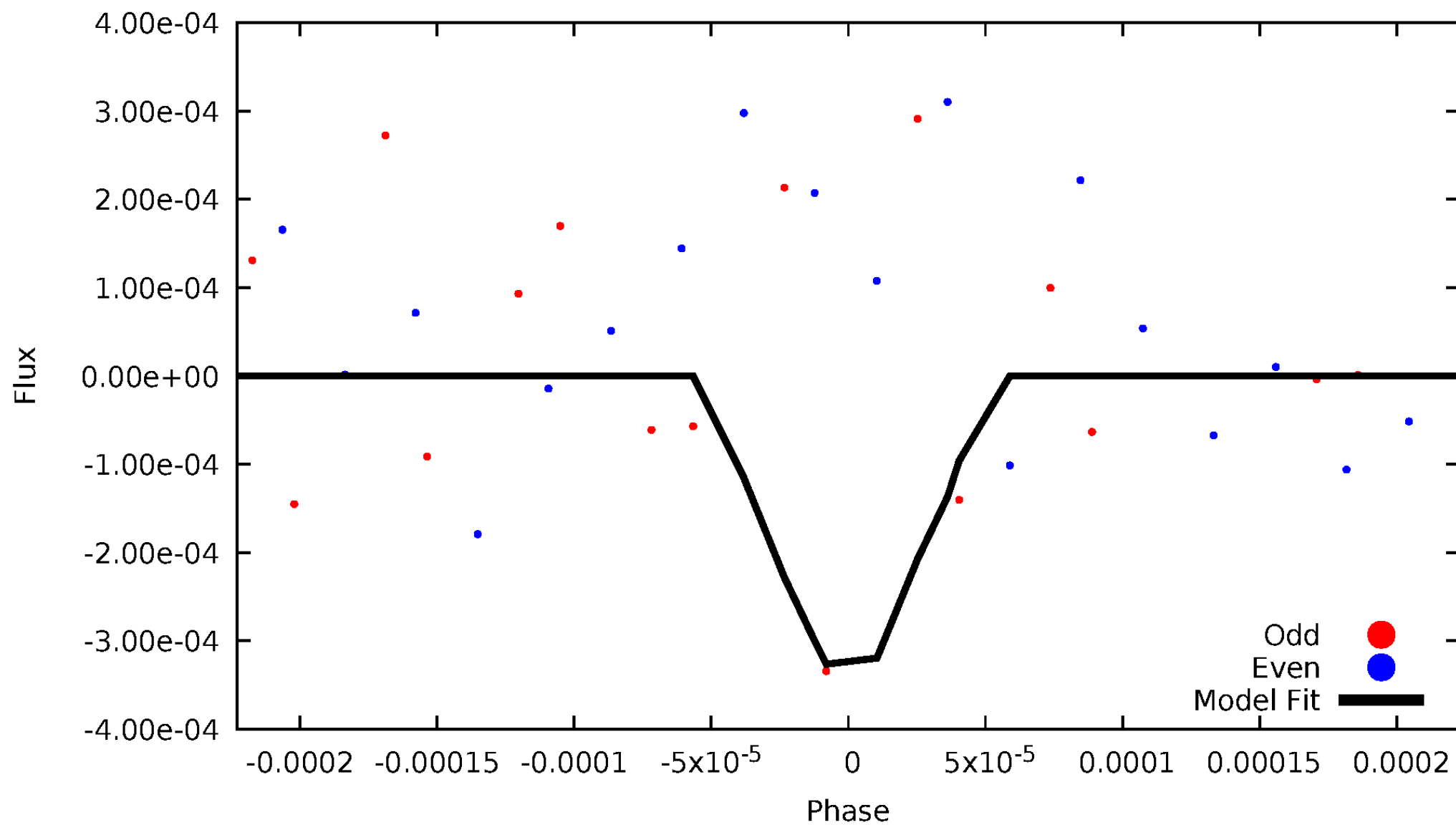
# DV Odd/Even

TCE 006522800-03



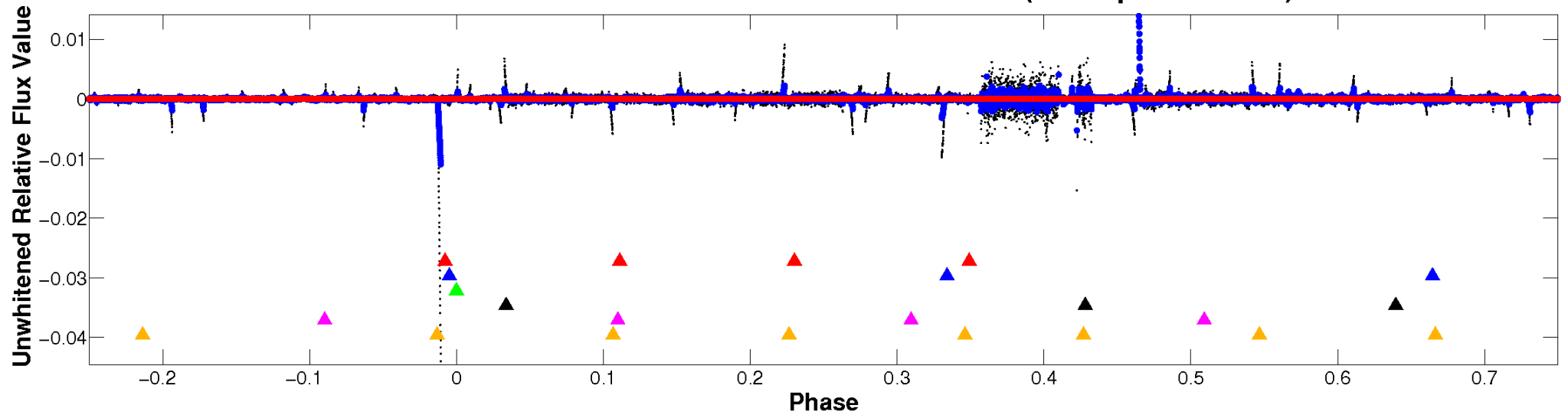
# ALT Odd/Even

TCE 006522800-03



# Non-Whitened Vs. Whitened Light Curve

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

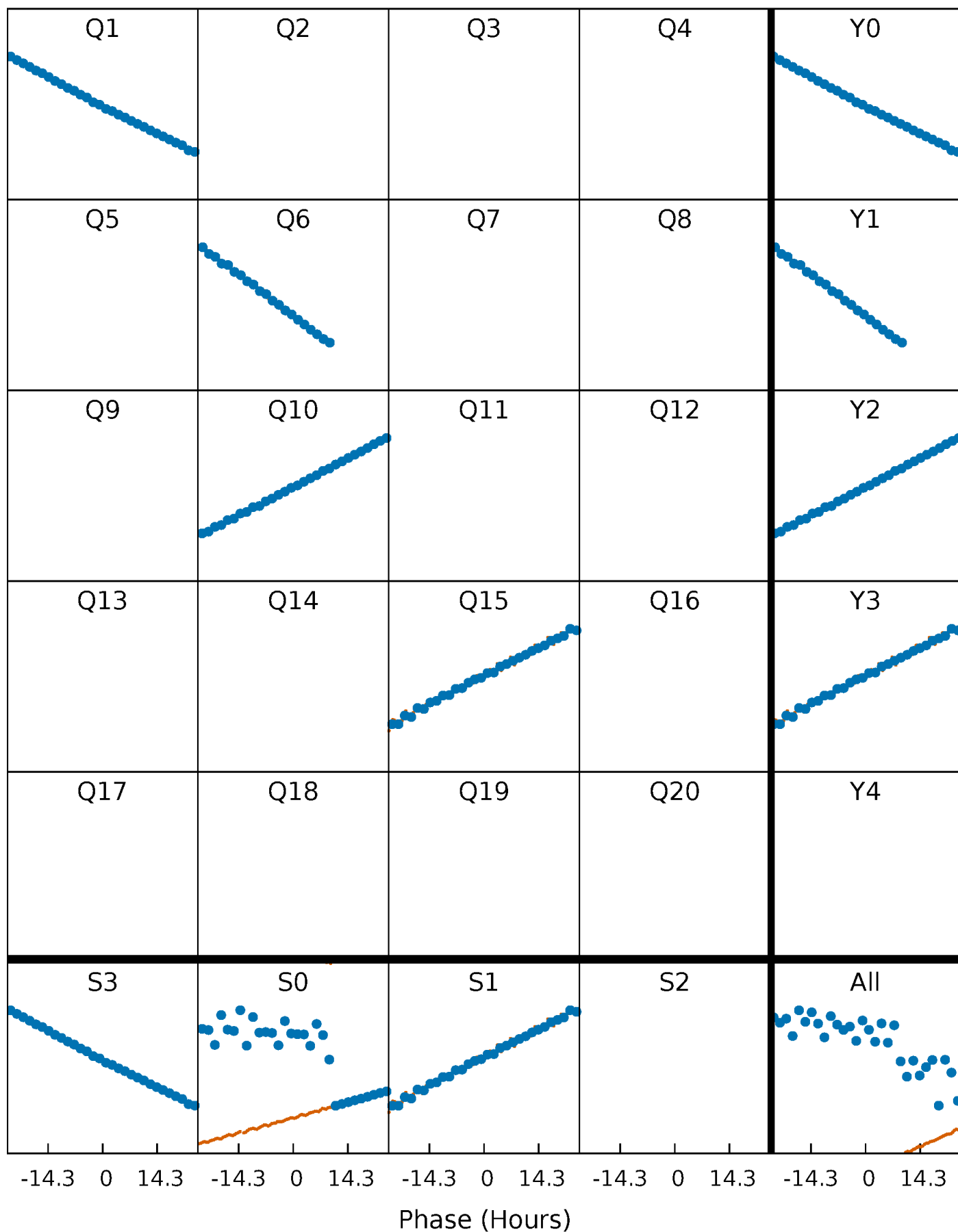


**Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



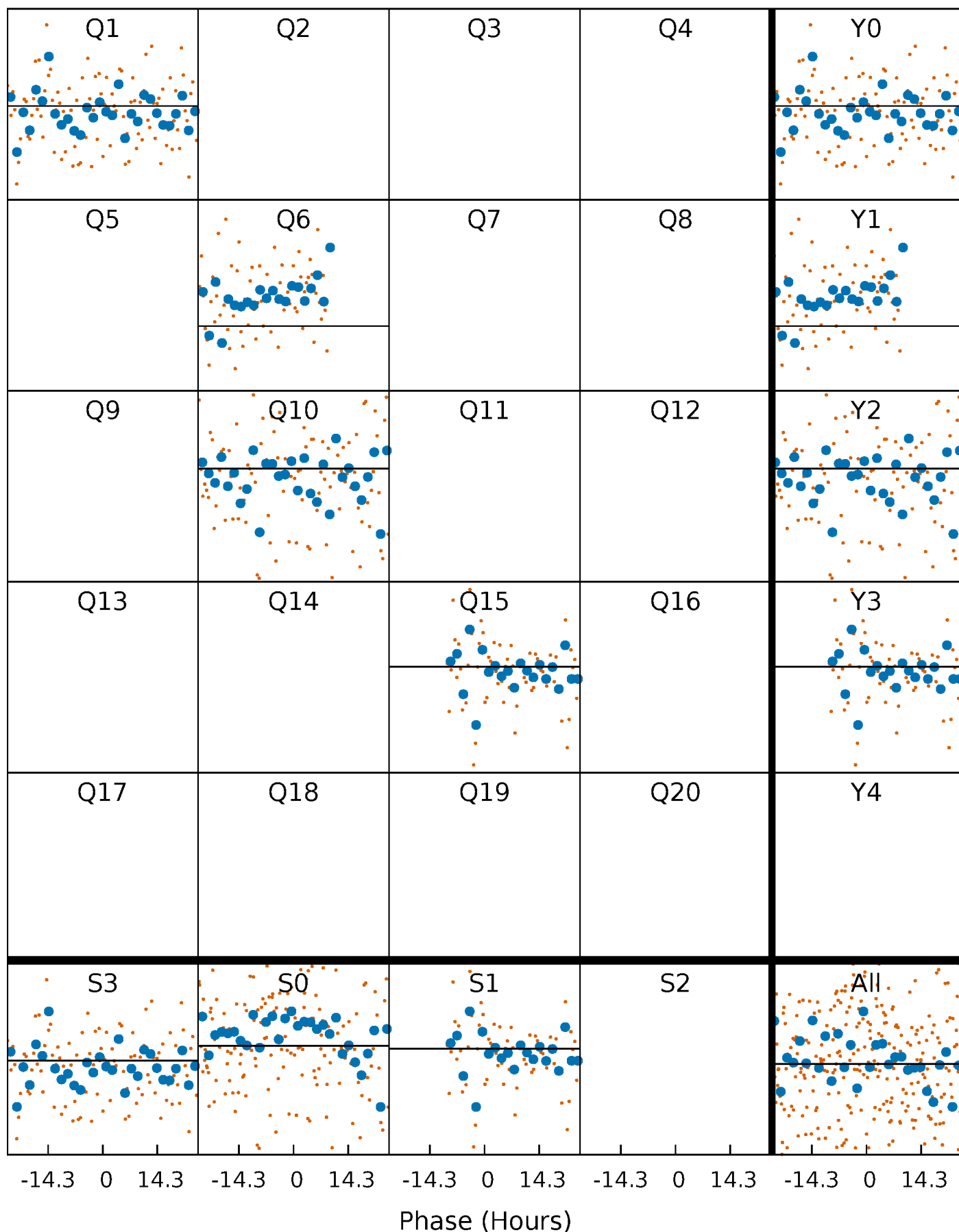
# PDC Quarter-Phased Transit Curves

TCE 006522800-03     $P=421.346818$  Days     $T_0=144.772374$  (BKJD)



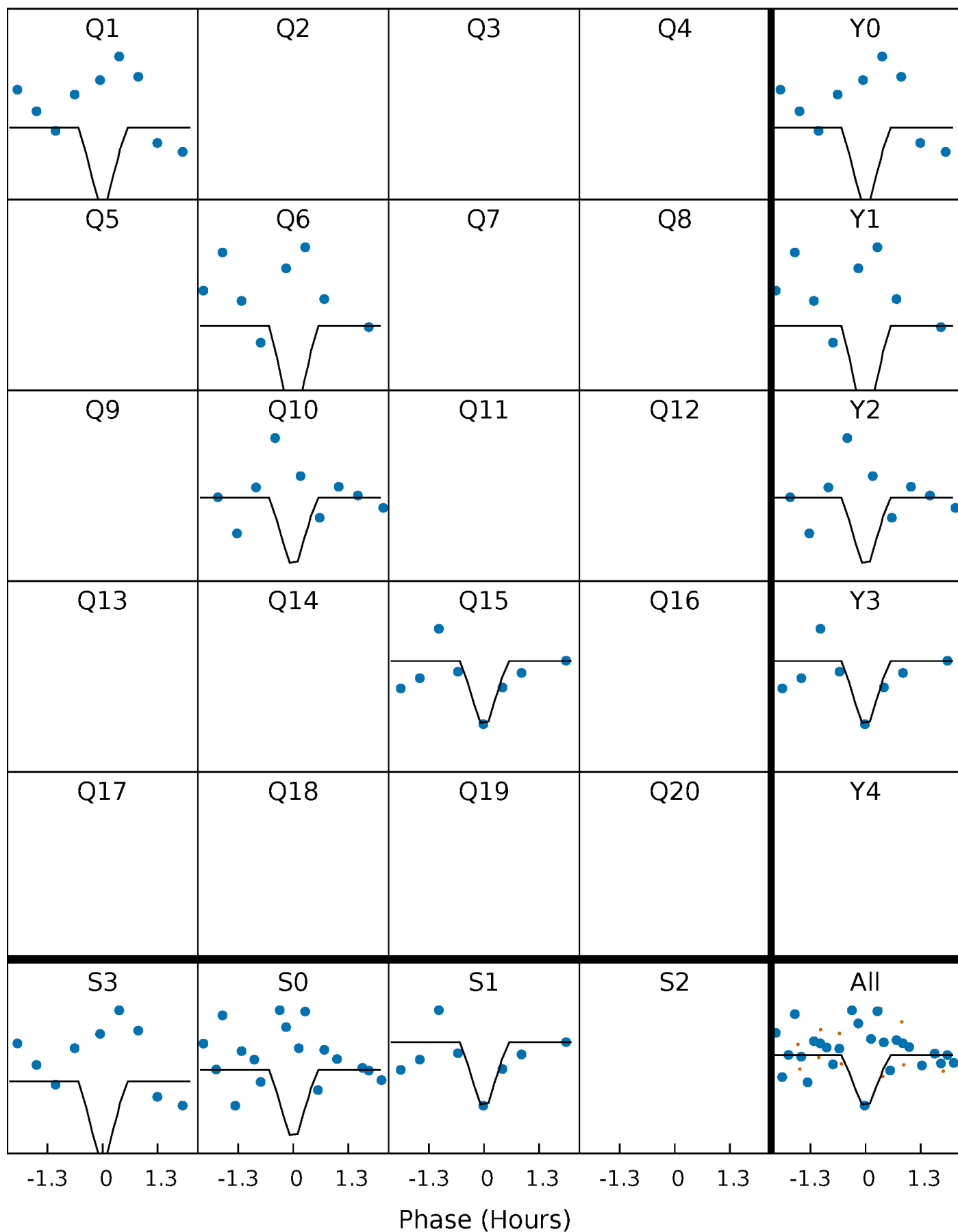
# DV Quarter-Phased Transit Curves

TCE 006522800-03 P=421.346818 Days  $T_0=144.772374$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

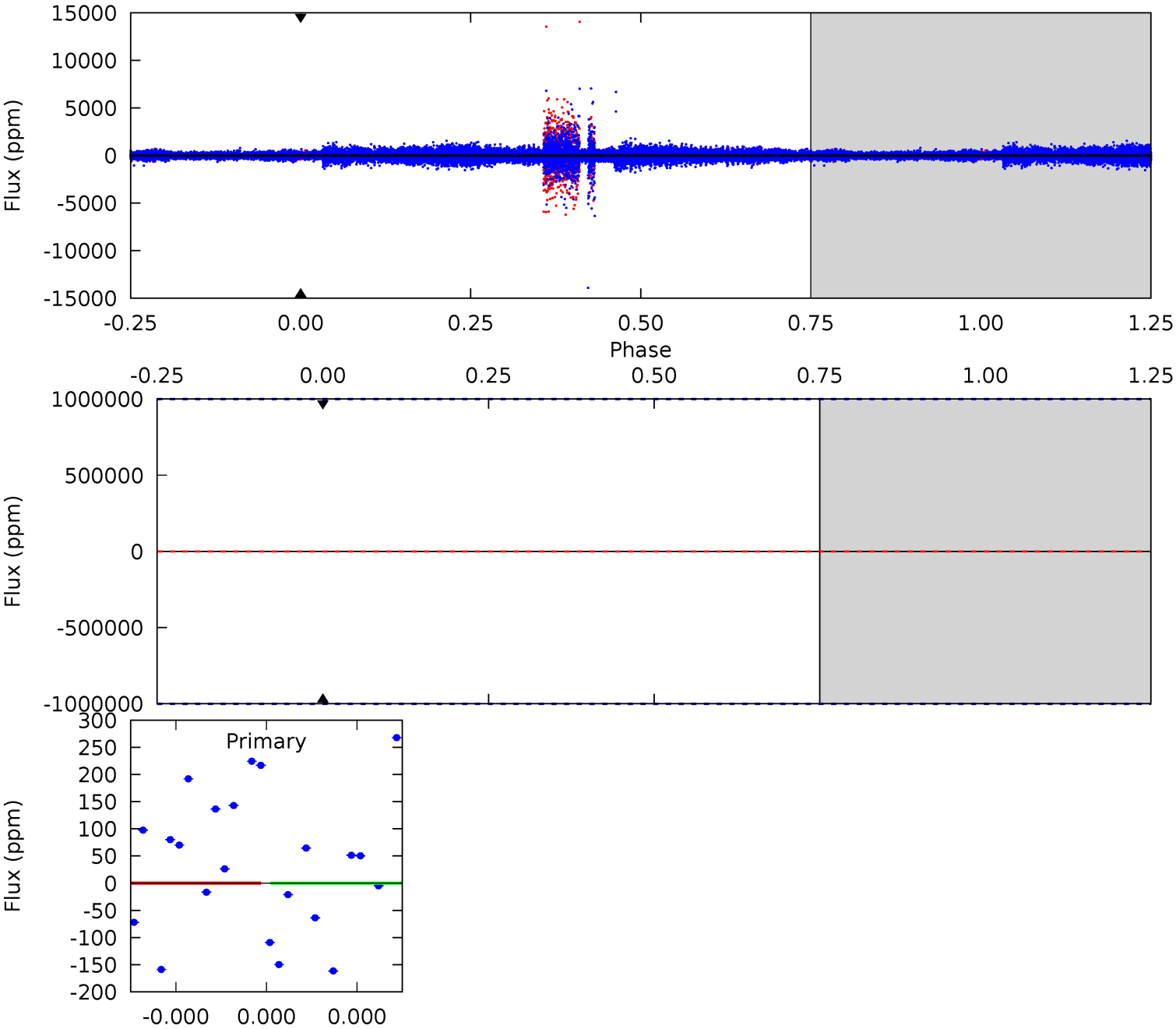
TCE 006522800-03 P=421.346818 Days  $T_0=145.106511$  (BKJD)



# DV Model-Shift Uniqueness Test

006522800-03, P = 421.346818 Days, E = 144.772374 Days

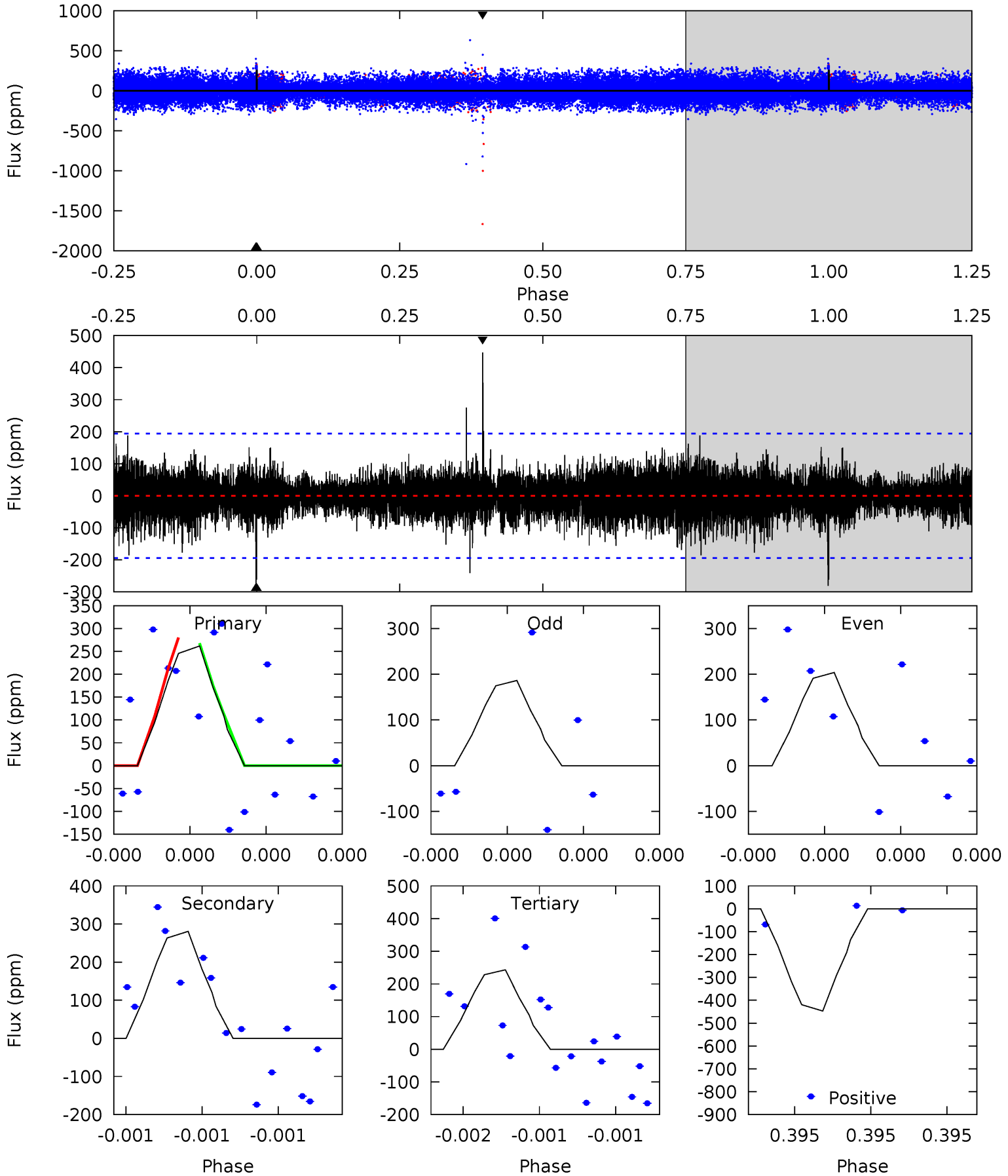
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

006522800-03, P = 421.346818 Days, E = 145.106511 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
7.93	8.51	7.37	13.6	5.88	3.94	1.13	0.56	-5.62	1.14	-5.05	0.16	0.53	0.61	0





### Stellar Parameters For KIC 006522800

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3328^{+79}_{-72}$	$0.277^{+0.224}_{-0.112}$	$0.000^{+0.250}_{-0.150}$	$121.368^{+27.685}_{-22.651}$	$1.017^{+0.310}_{-0.058}$	$0.000^{+0.000}_{-0.000}$
	+2%/-2%	+81%/-40%	+inf%/-inf%	+23%/-19%	+30%/-6%	+102%/-38%
Source	SPE14	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 006522800-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$909.26^{+998.38}_{-639.14}$	$2126^{+131}_{-141}$	$2699^{+4867}_{-9219}$	$0.818^{+224.848}_{-114.019}$
Alt.	$-281 \pm 33$	$977.46^{+1038.11}_{-701.42}$	$2117^{+127}_{-137}$	$-2020^{+5051}_{-305}$	$0.206^{+2.479}_{-0.157}$

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

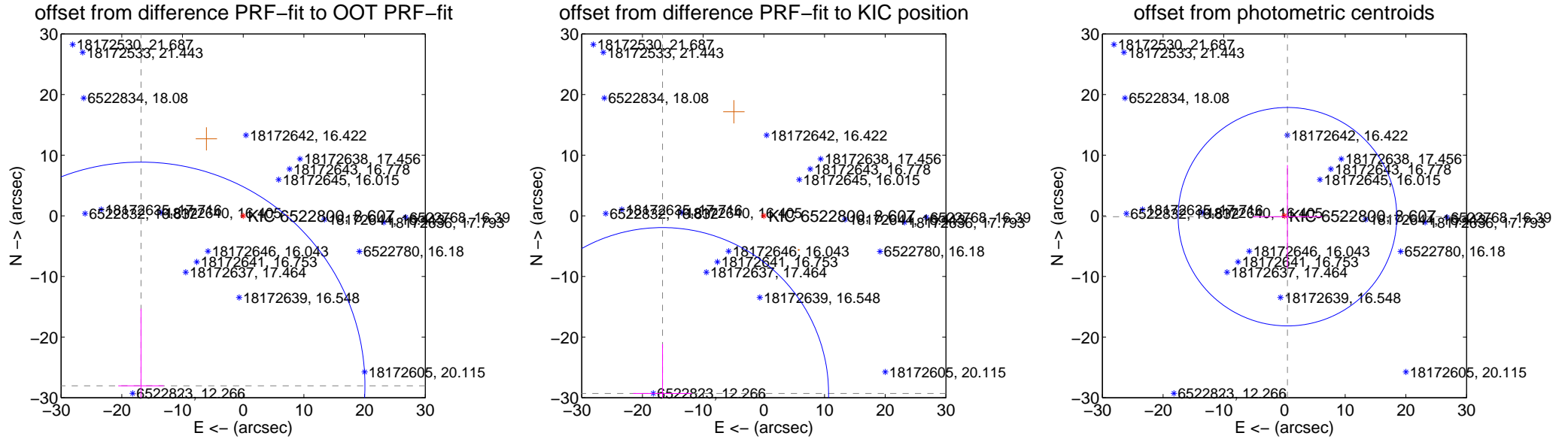
## DV Centroid Data

Supplemental centroid analysis for 006522800-03. **Kepler magnitude: 8.61.** Transit SNR -1.00

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

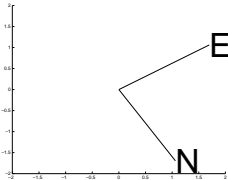
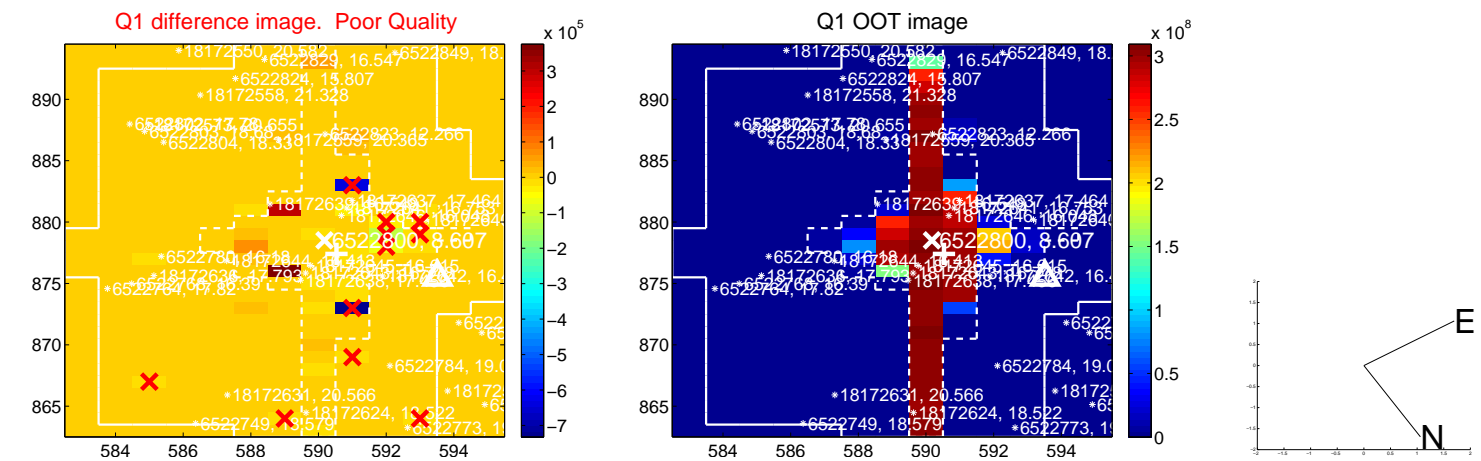
The direct PRF centroid is offset from the target star catalog position by about 1.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$32.697 \pm 12.297$	2.66	$16.832 \pm 3.747$	$-28.032 \pm 12.738$
PRF-fit source offset from KIC position	<b><math>33.723 \pm 9.121</math></b>	<b>3.70</b>	$16.694 \pm 4.844$	$-29.301 \pm 8.145$
photometric centroid source offset	$0.51 \pm 6.00$	0.09	$-0.49 \pm 5.73$	$-0.15 \pm 8.52$



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

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



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



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

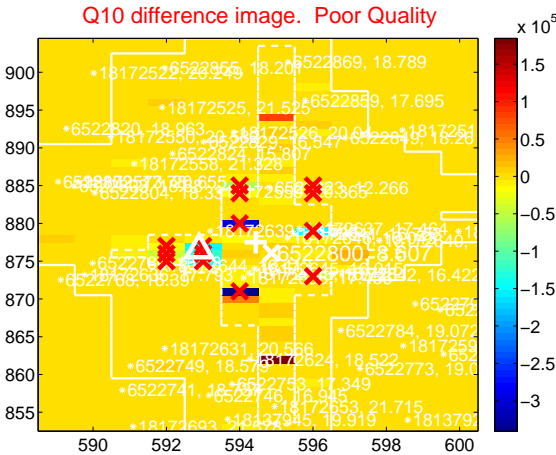
Q9 no difference image



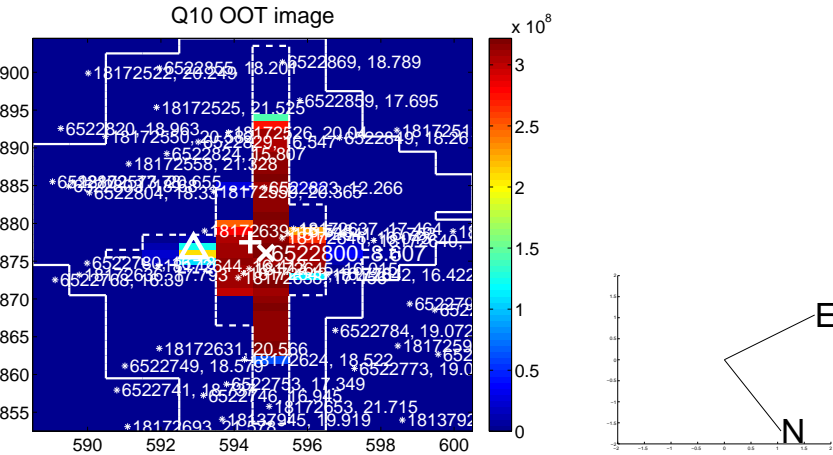
Q9 no OOT image



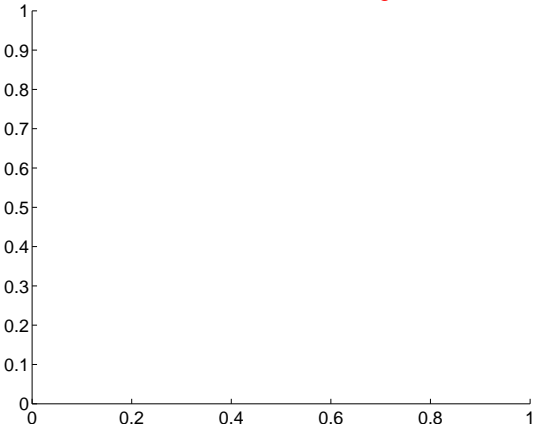
Q10 difference image. Poor Quality



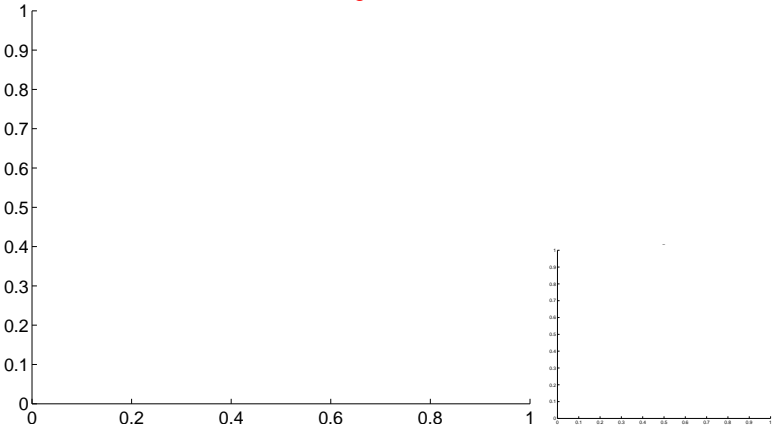
Q10 OOT image



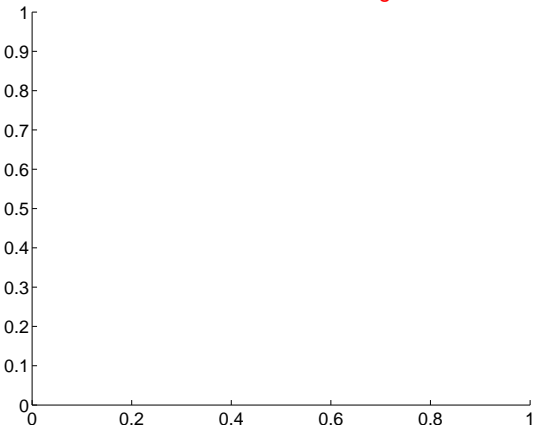
Q11 no difference image



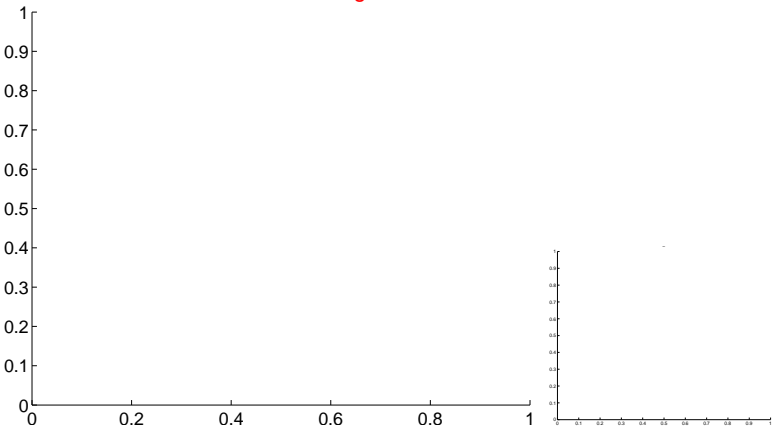
Q11 no OOT image



Q12 no difference image



Q12 no 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



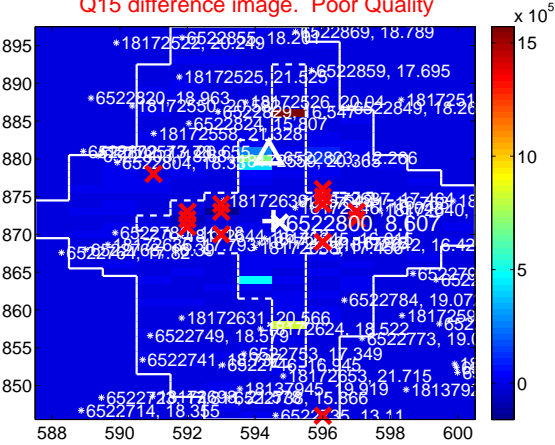
Q14 no difference image



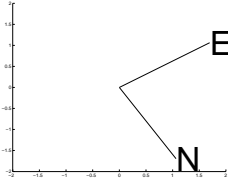
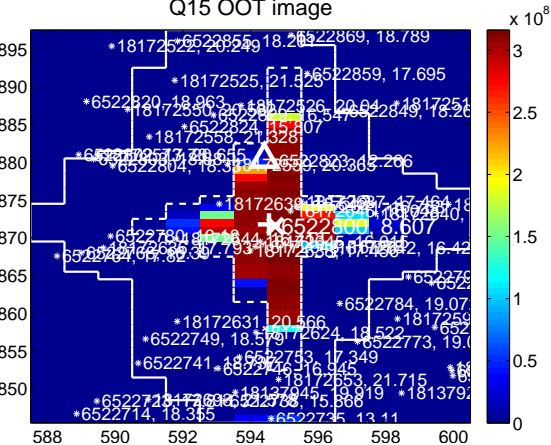
Q14 no OOT image



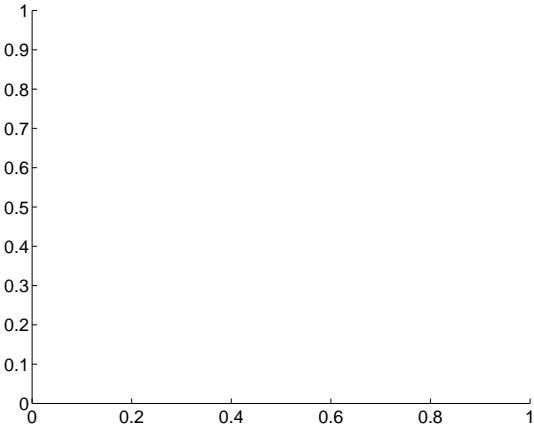
Q15 difference image. Poor Quality



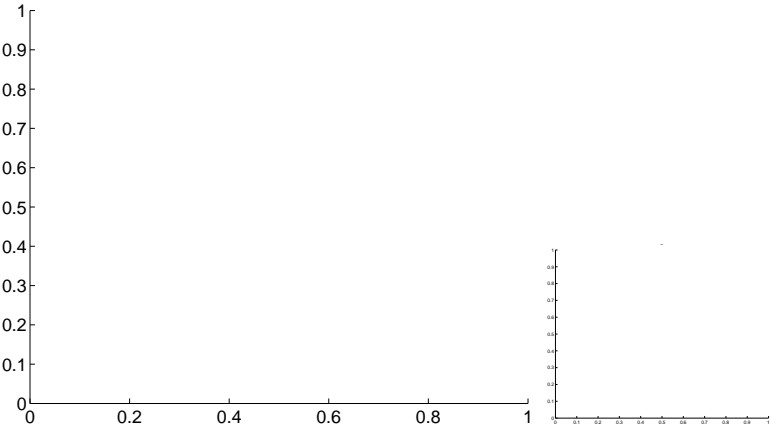
Q15 OOT image



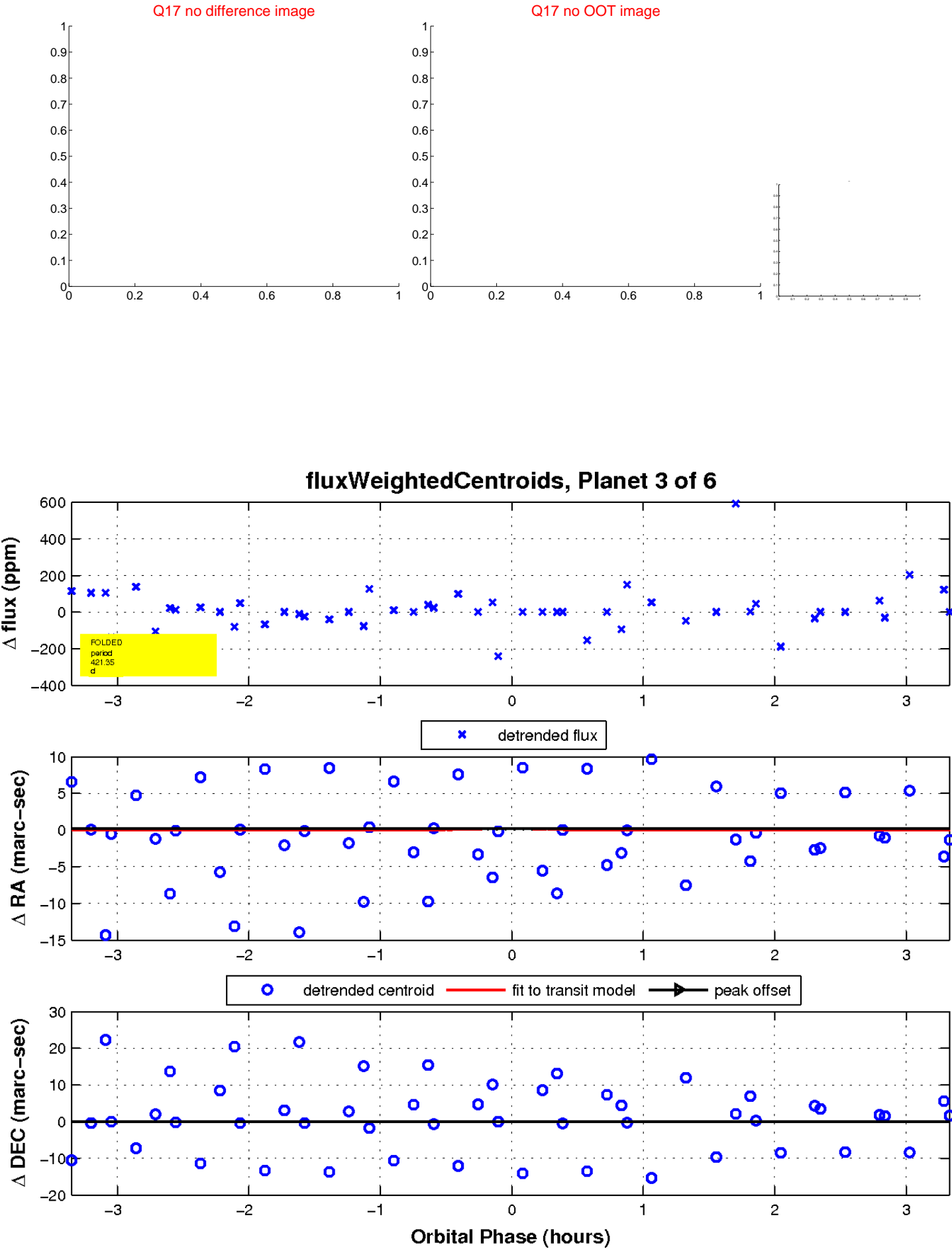
Q16 no difference image



Q16 no OOT image

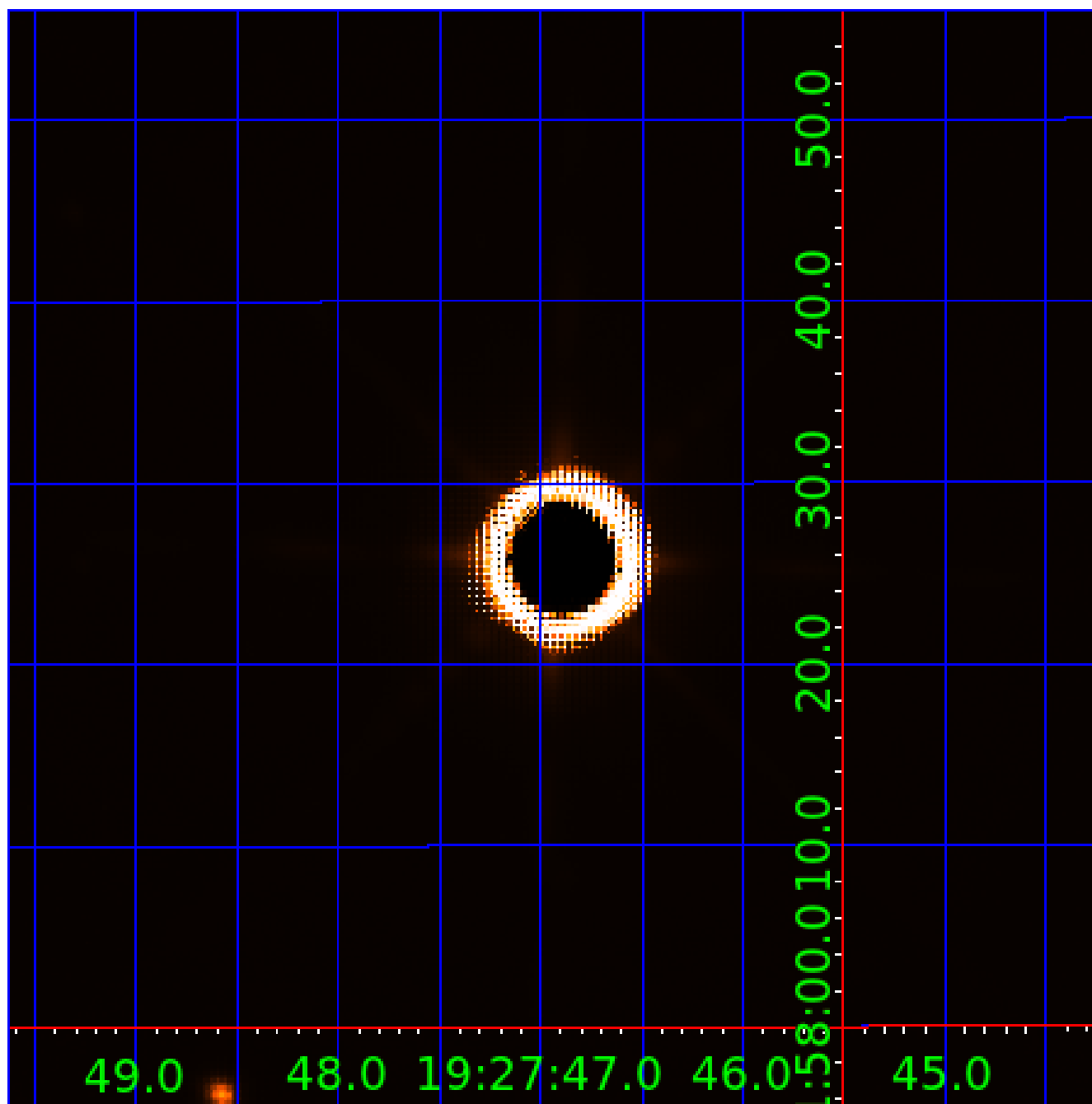


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 006522800

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006522800-01	OBS	No	371.222972	291.869990	77.3	6.915	20.9	3.0	121.37	3328	112.26	1566.21
006522800-03	OBS	No	421.346818	144.772374	52.9	12.500	21.5	-1.0	121.37	3328	81.02	1322.85
006522800-05	OBS	No	337.237991	359.302089	161.8	7.874	15.3	13.4	121.37	3328	221.98	1780.12
006522800-06	OBS	No	185.434557	290.661181	251.1	15.000	88.9	-1.0	121.37	3328	176.49	3951.63

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006522800-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006522800-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS— CENT_SATURATED
006522800-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
006522800-06	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

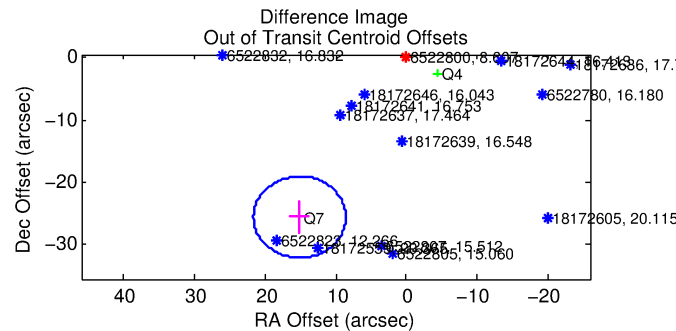
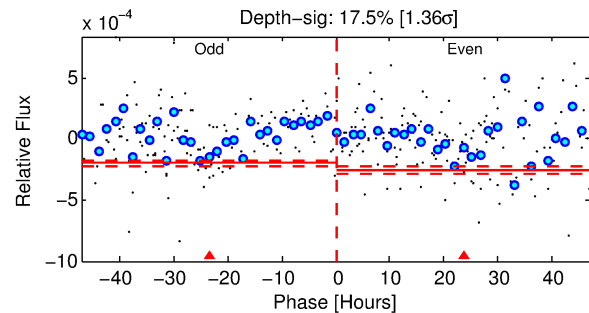
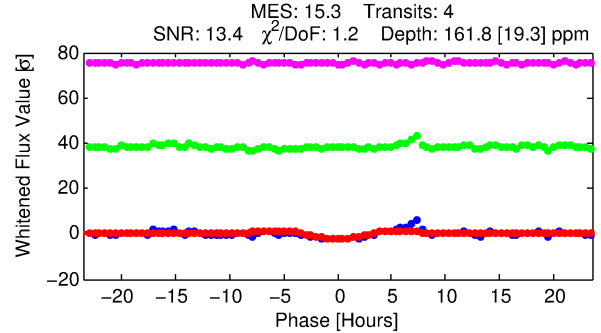
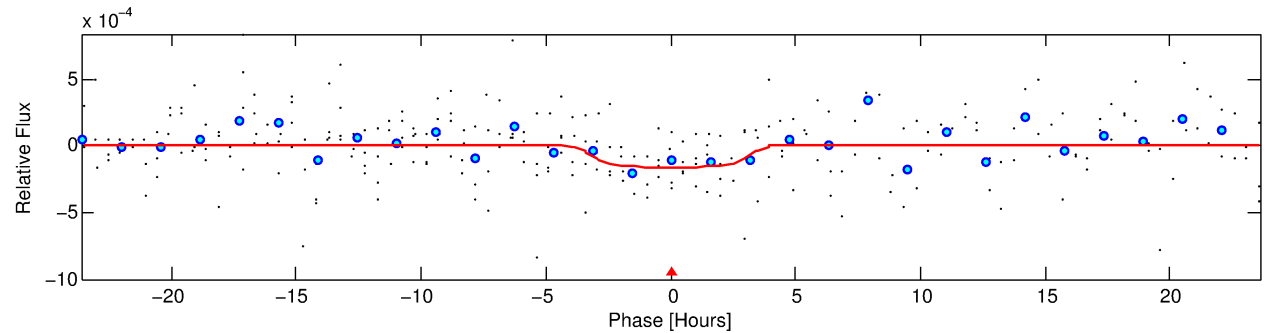
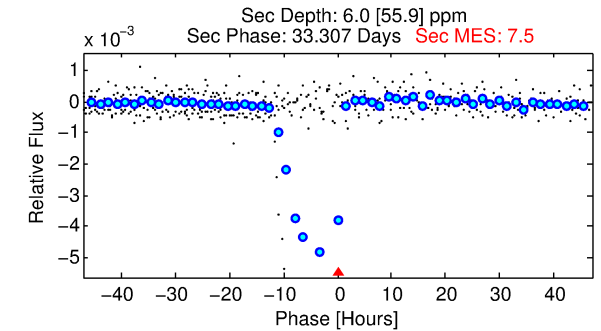
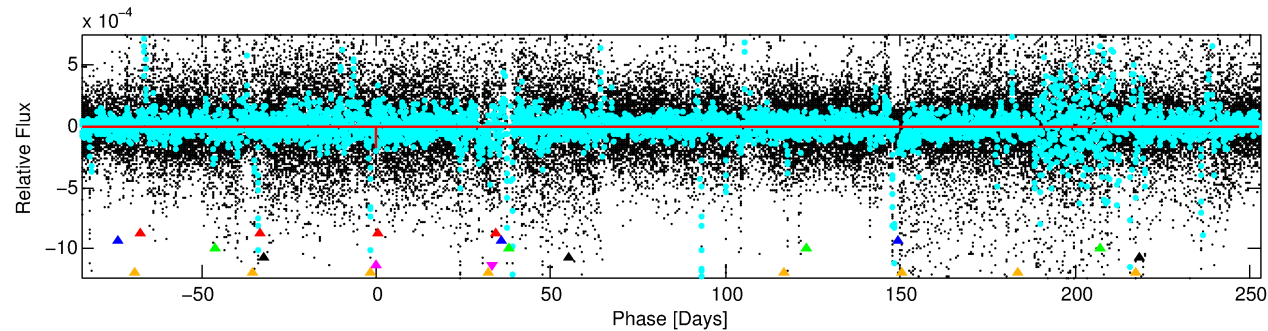
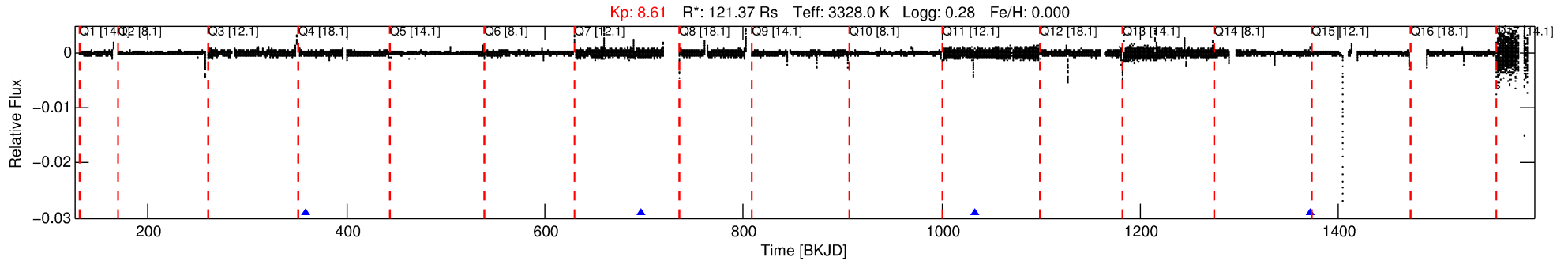
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 006522800-05

No Significant Match Found

# DV One-Page Summary

KIC: 6522800 Candidate: 5 of 6 Period: 337.238 d



## DV Fit Results:

Period = 337.23799 [0.00534] d  
Epoch = 359.3021 [0.0110] BKJD  
Rp/R\* = 0.0168 [0.0066]  
a/R\* = 113.50 [150.72]  
b = 0.96 [0.13]  
Seff = 1780.12 [690.30]  
Teff = 1656 [161] K  
Rp = 221.98 [100.72] Re  
a = 0.9537 [0.2189] AU  
Ag = 0.06 [0.57] [-1.65 $\sigma$ ]  
Teffp = 1272 [2979] K [-0.13 $\sigma$ ]

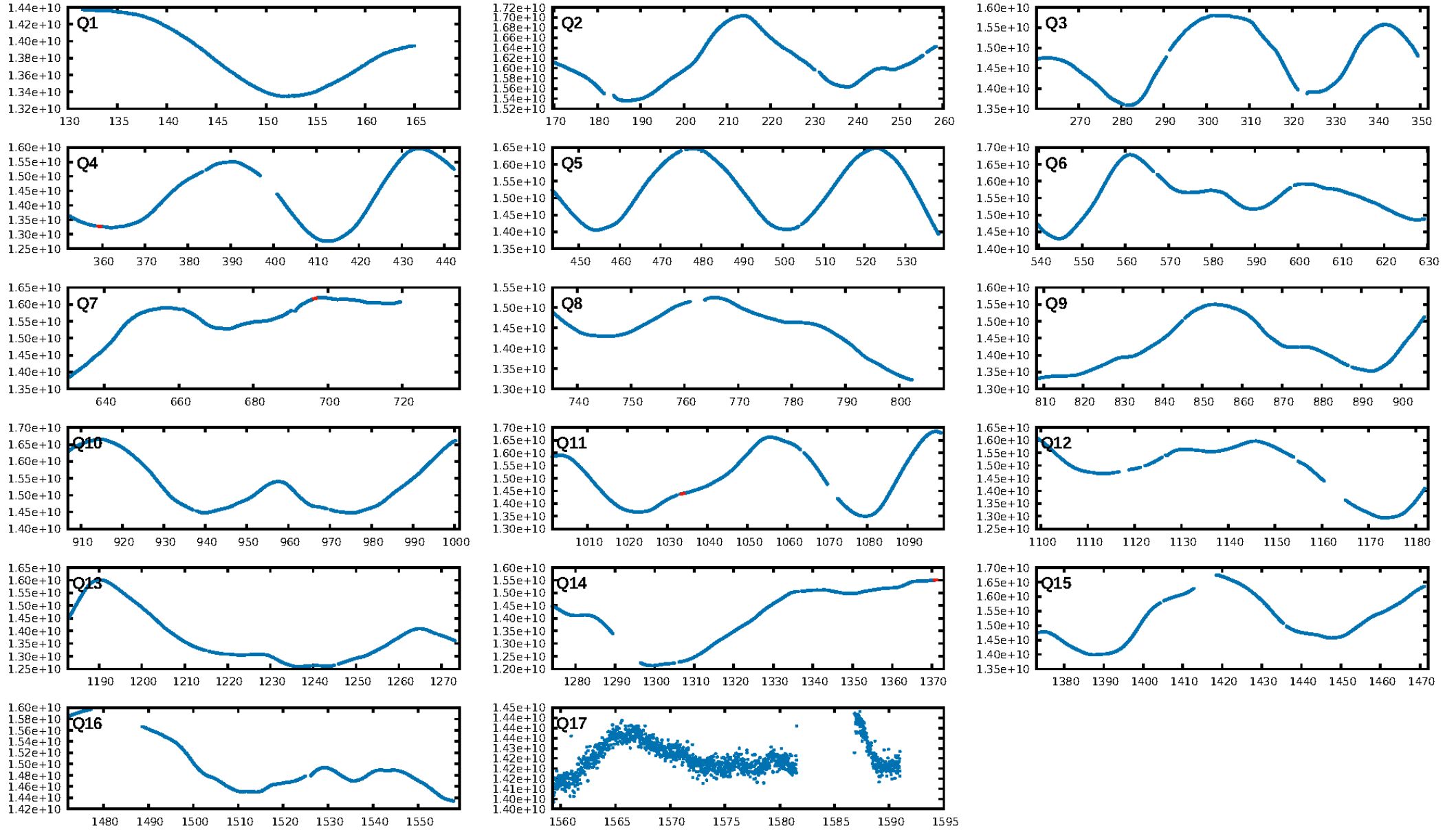
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [215.06 $\sigma$ ]  
LongPeriod-sig: 100.0% [77.83 $\sigma$ ]  
ModelChiSquare2-sig: 0.3%  
ModelChiSquareGof-sig: 79.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 7.6%  
Centroid-so: 9.114 arcsec [1.19 $\sigma$ ]  
OotOffset-rm: 29.731 arcsec [13.67 $\sigma$ ]  
KicOffset-rm: 30.774 arcsec [2.17 $\sigma$ ]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 1.00 [2/2]

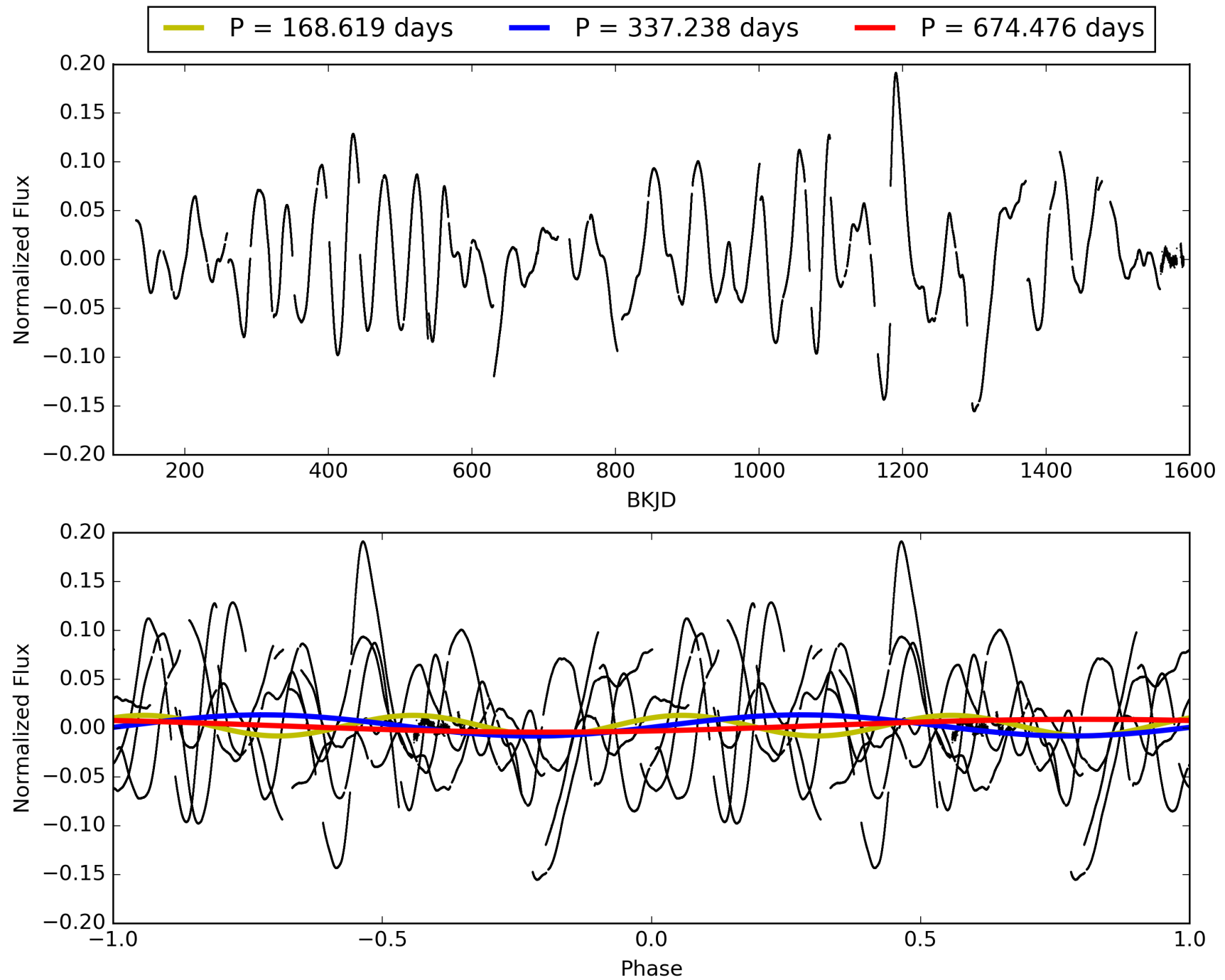
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:26:50 Z

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

# TCE 006522800-05, PDC Light Curves

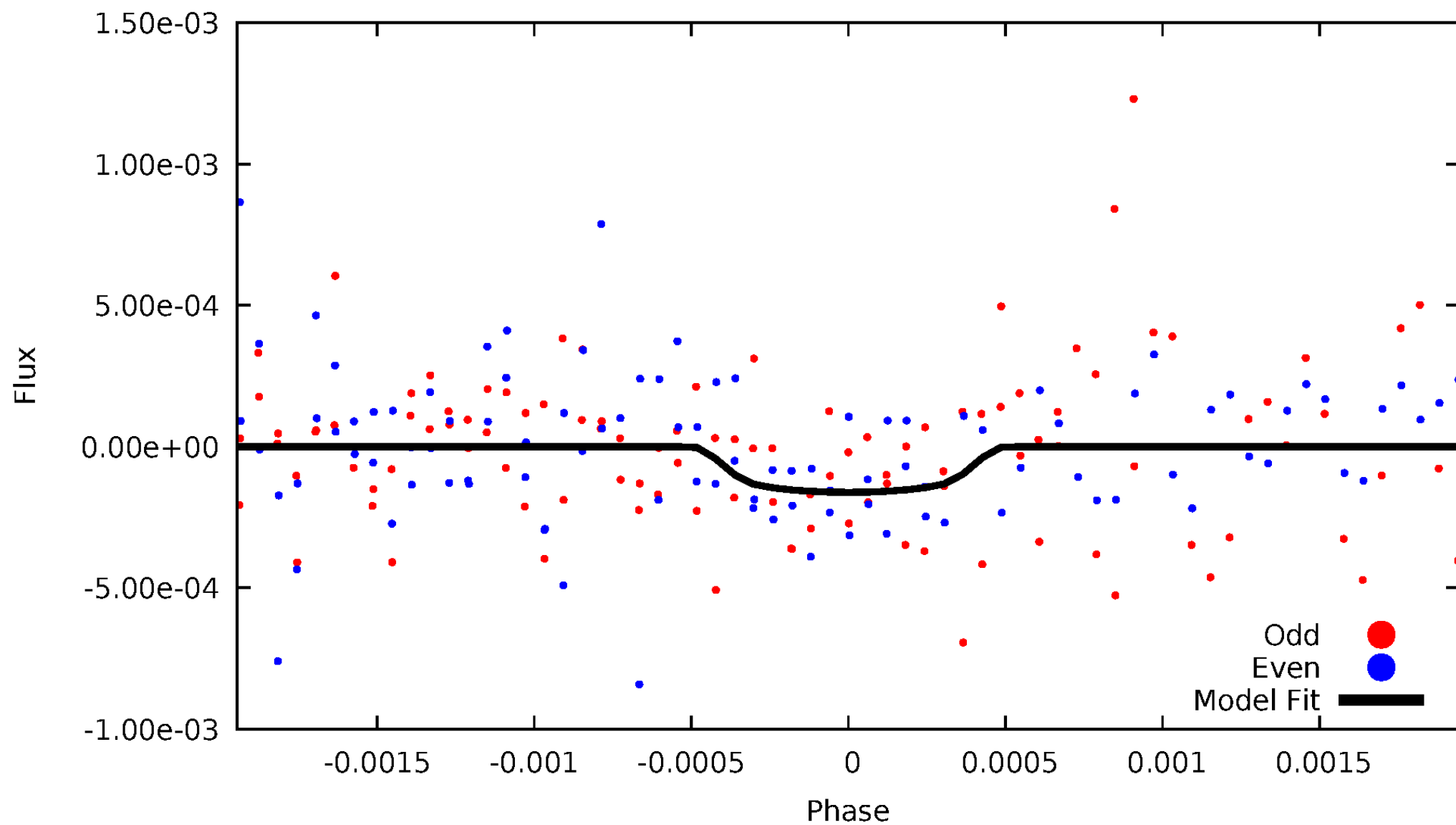


TCE 006522800-05



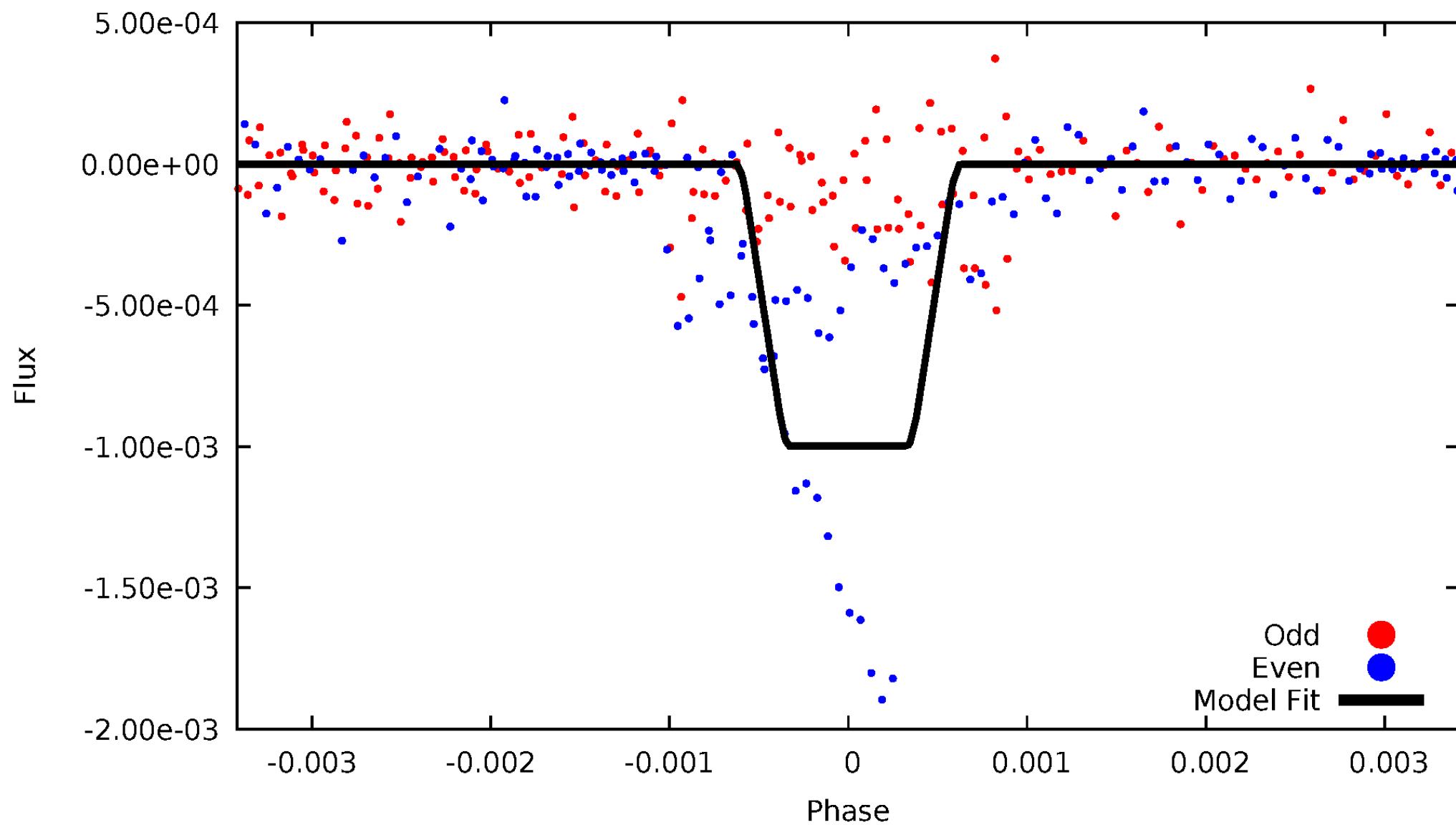
# DV Odd/Even

TCE 006522800-05



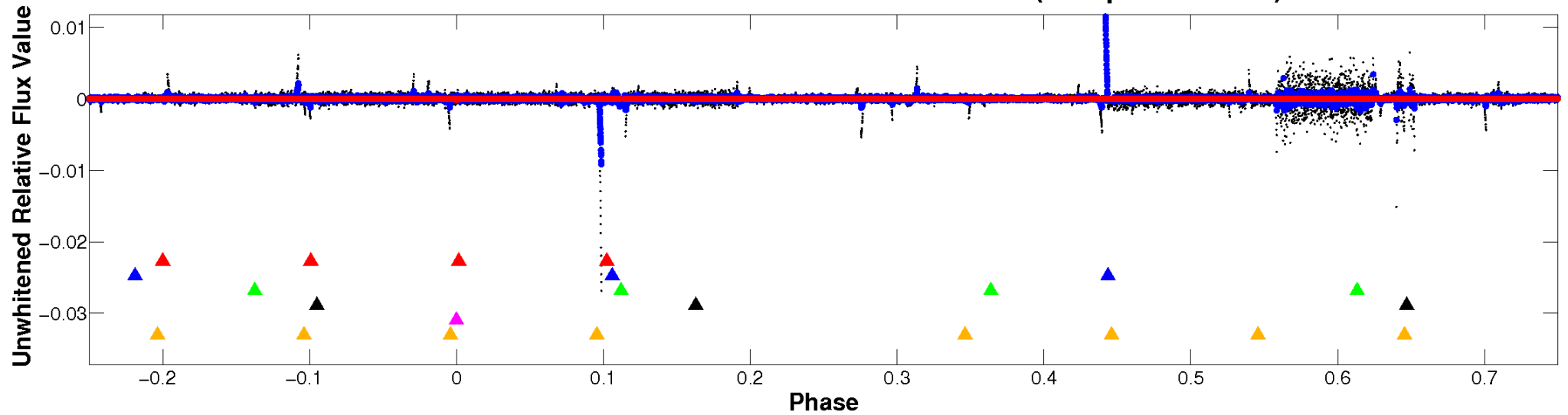
# ALT Odd/Even

TCE 006522800-05

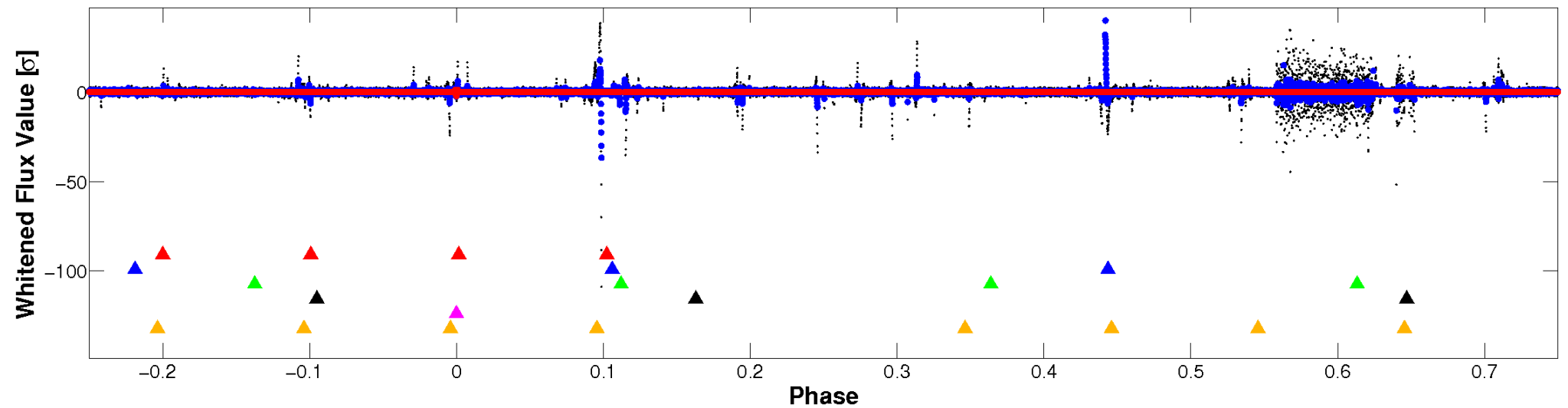


# Non-Whitened Vs. Whitened Light Curve

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

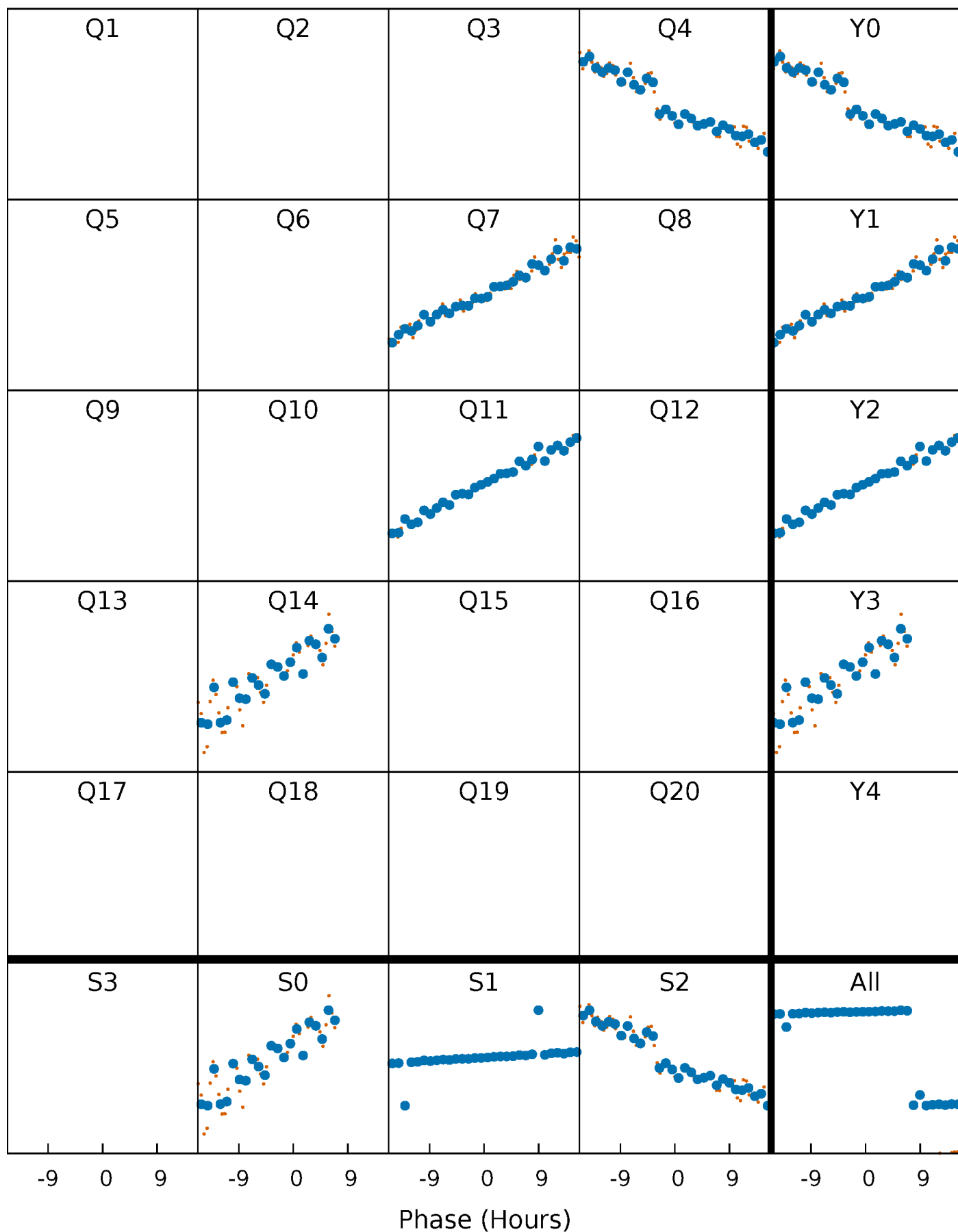


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

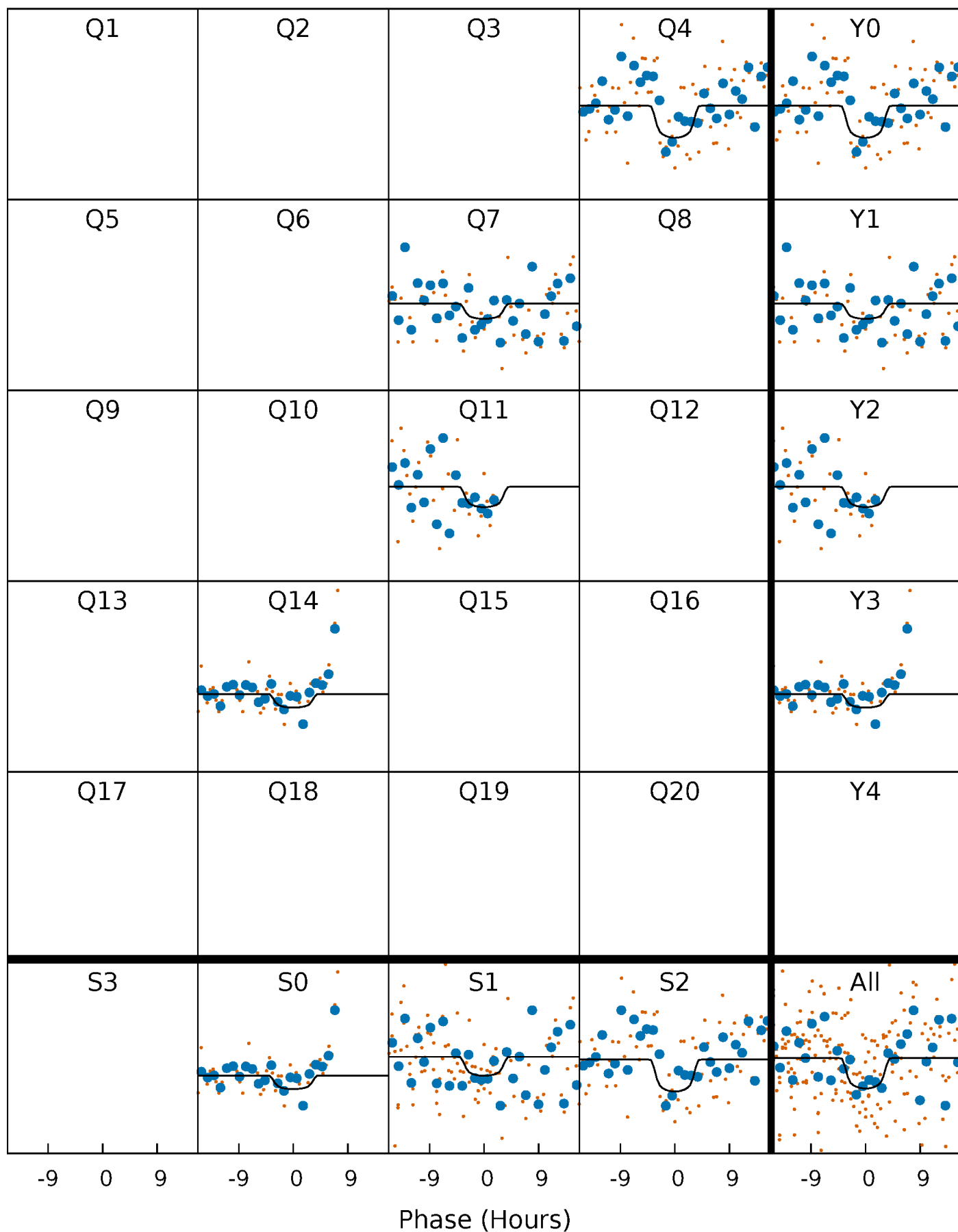
TCE 006522800-05     $P=337.237991$  Days     $T_0=359.302089$  (BKJD)





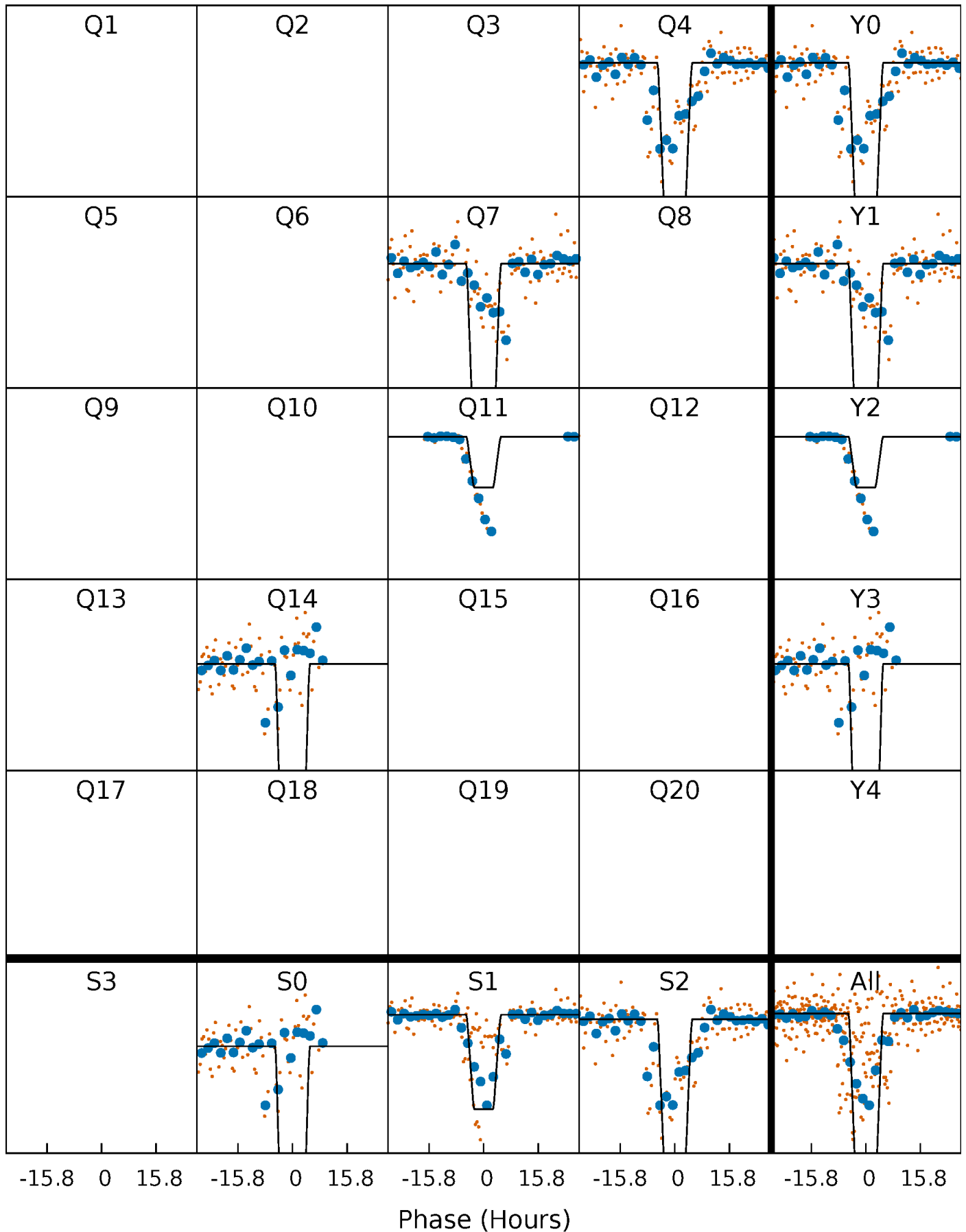
# DV Quarter-Phased Transit Curves

TCE 006522800-05     $P=337.237991$  Days     $T_0=359.302089$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

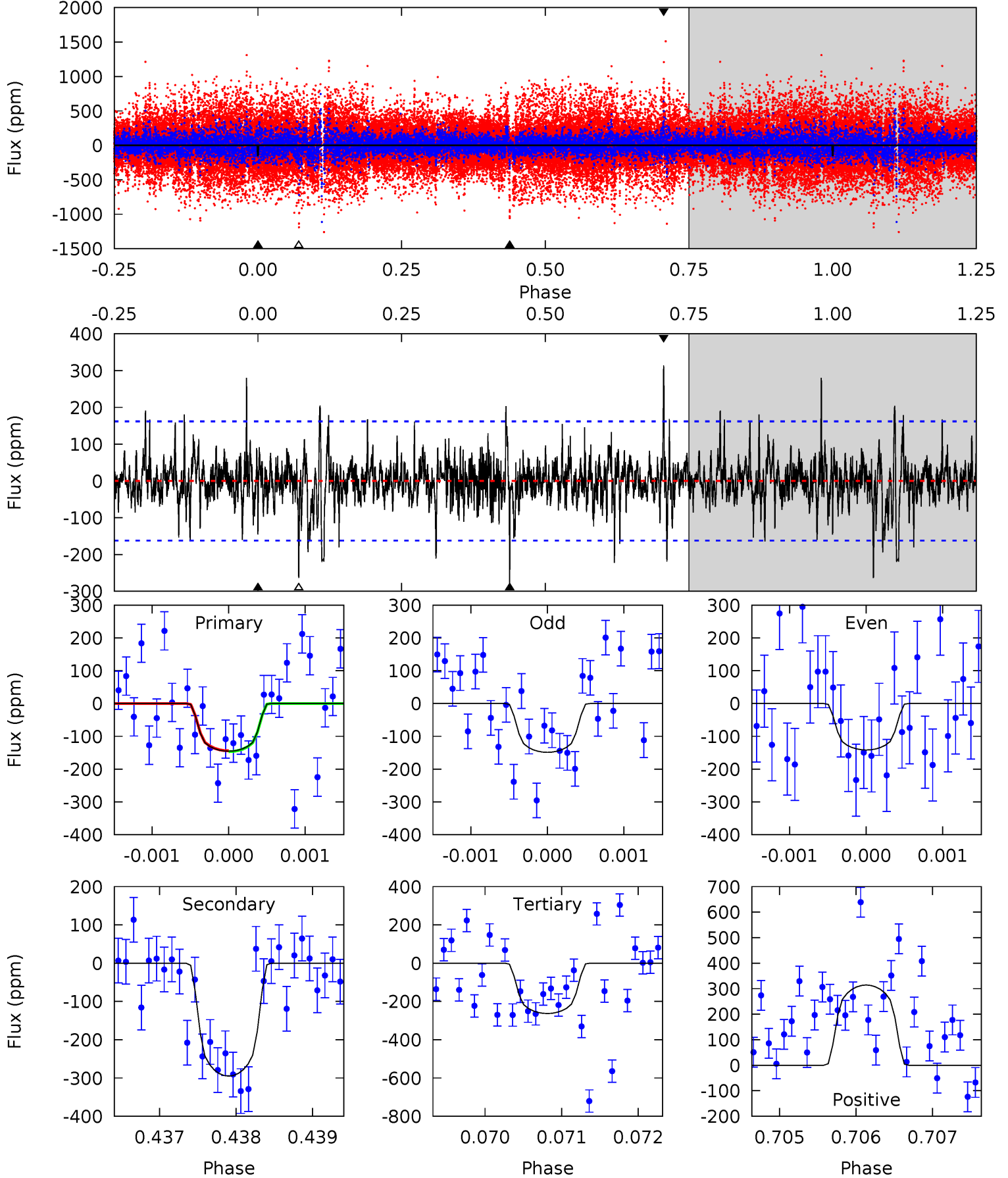
TCE 006522800-05     $P=337.208230$  Days     $T_0=359.359485$  (BKJD)



# DV Model-Shift Uniqueness Test

006522800-05, P = 337.237991 Days, E = 22.064098 Days

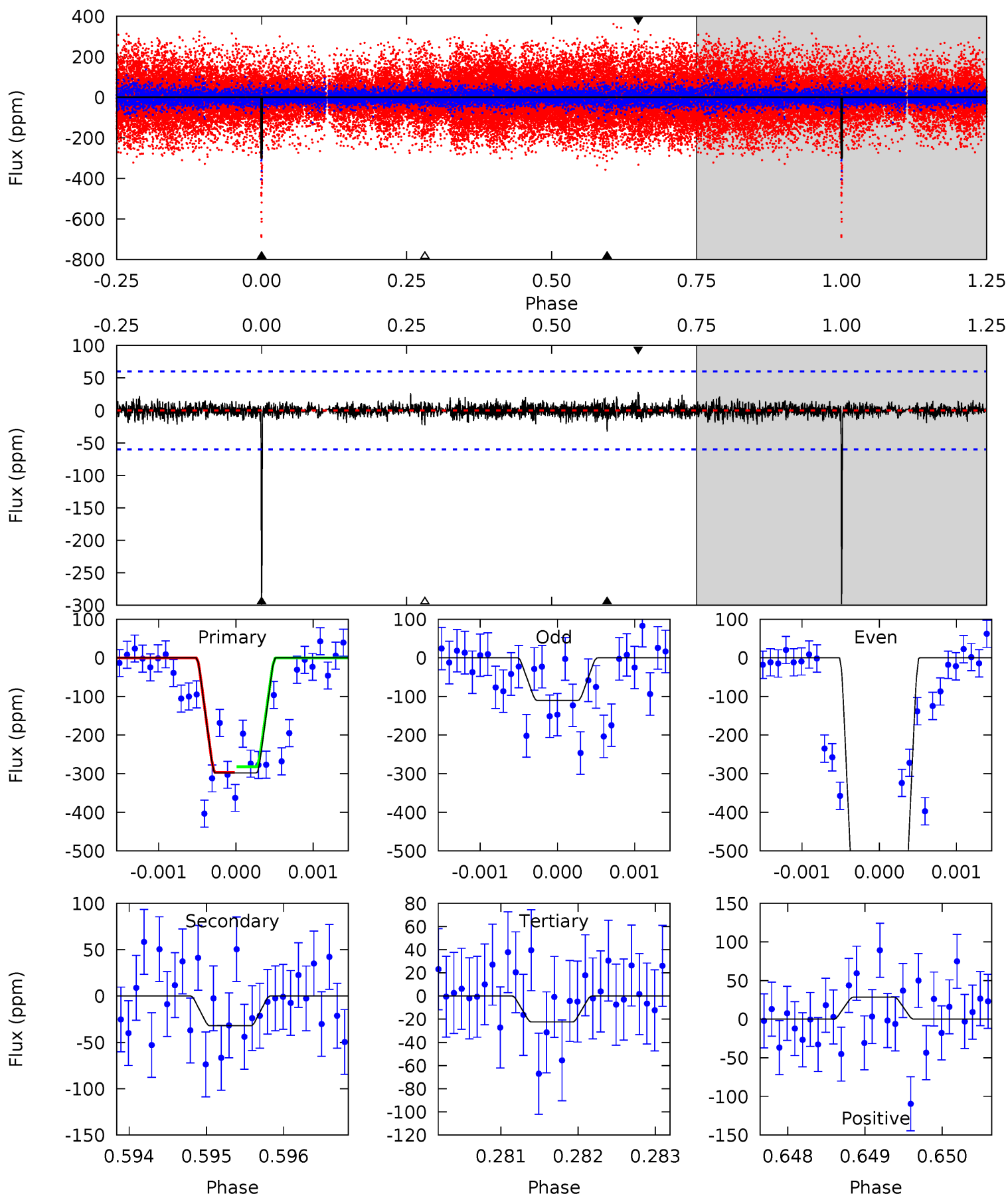
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.90	9.93	8.86	10.6	5.46	3.30	1.63	-3.96	-5.68	1.07	-0.65	0.10	1.02	0.52	0.04



# Alt Model-Shift Uniqueness Test

006522800-05, P = 337.208230 Days, E = 22.151255 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
26.8	2.89	2.02	2.56	5.42	3.23	0.50	24.8	24.3	0.87	0.33	38.8	1.54	0.09	0.67



### Stellar Parameters For KIC 006522800

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3328^{+79}_{-72}$	$0.277^{+0.224}_{-0.112}$	$0.000^{+0.250}_{-0.150}$	$121.368^{+27.685}_{-22.651}$	$1.017^{+0.310}_{-0.058}$	$0.000^{+0.000}_{-0.000}$
	+2%/-2%	+81%/-40%	+inf%/-inf%	+23%/-19%	+30%/-6%	+102%/-38%
Source	SPE14	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 006522800-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-295 \pm 30$	$214.09^{+102.00}_{-81.68}$	$2283^{+128}_{-142}$	$3301^{+623}_{-360}$	$3.340^{+5.496}_{-1.815}$
Alt.	$-32 \pm 11$	$406.32^{+106.92}_{-101.15}$	$2278^{+134}_{-141}$	$-2307^{+172}_{-118}$	$0.102^{+0.093}_{-0.049}$

$T_{max}$  = 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

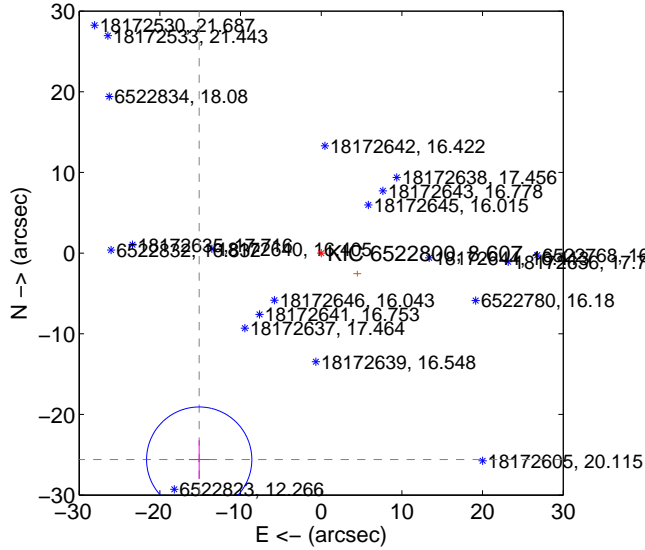
Supplemental centroid analysis for 006522800-05. **Kepler magnitude: 8.61.** Transit SNR 13.37

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

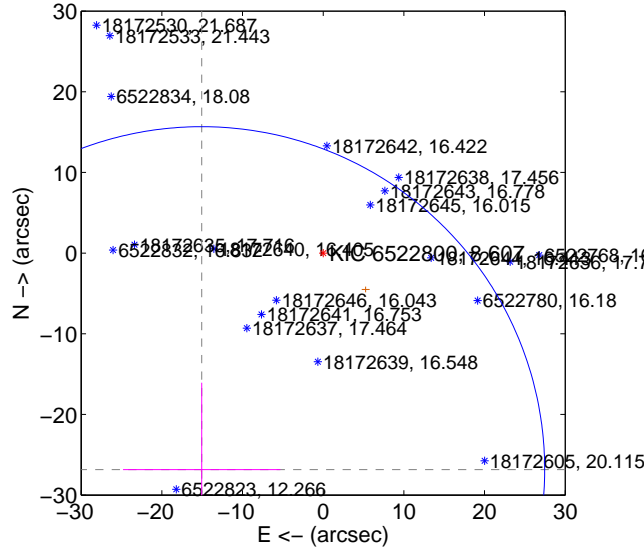
The direct PRF centroid is offset from the target star catalog position by about 1.24 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>29.731 \pm 2.174</math></b>	<b>13.67</b>	$15.124 \pm 1.279$	$-25.597 \pm 2.410$
PRF-fit source offset from KIC position	$30.774 \pm 14.170$	2.17	$15.053 \pm 9.756$	$-26.841 \pm 10.775$
photometric centroid source offset	$9.11 \pm 7.63$	1.19	$0.27 \pm 5.11$	$9.11 \pm 7.63$

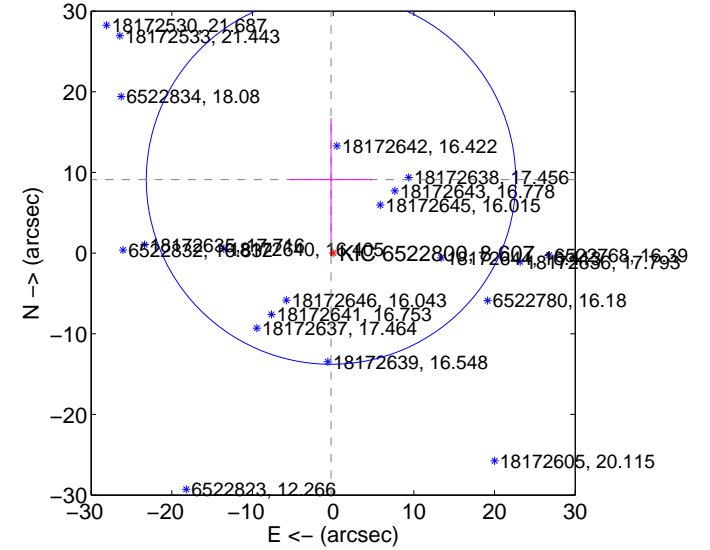
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



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

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

Q1 no difference image



Q1 no OOT image



Q2 no difference image



Q2 no OOT image



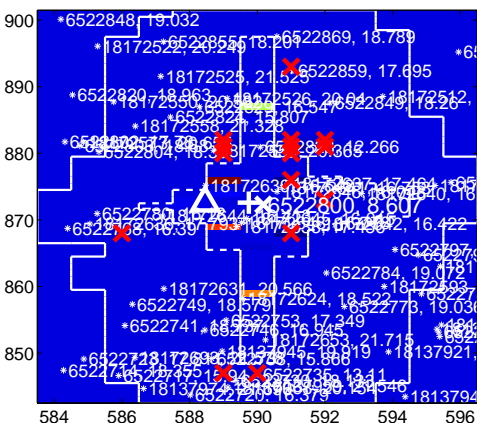
Q3 no difference image



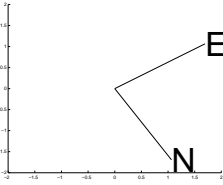
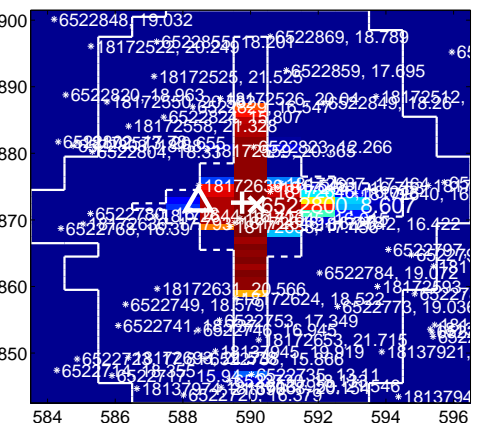
Q3 no OOT image



Q4 difference image. Poor Quality



Q4 OOT image



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

Q5 no difference image



Q5 no OOT image



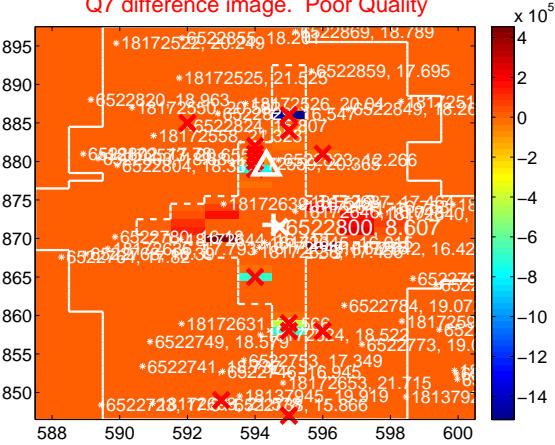
Q6 no difference image



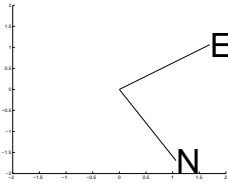
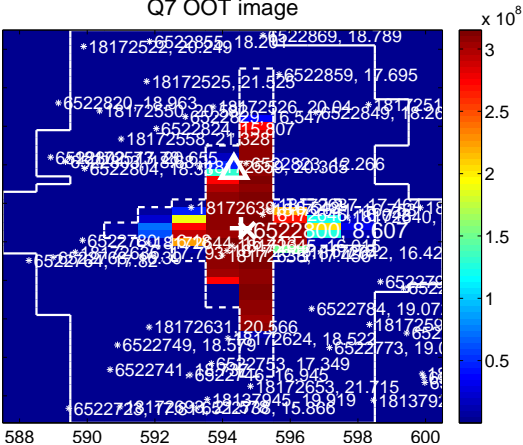
Q6 no OOT image



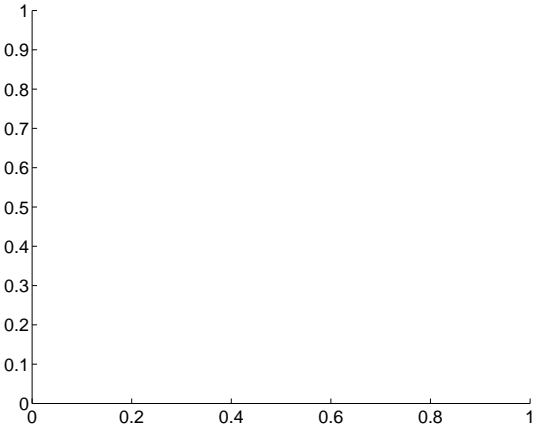
Q7 difference image. Poor Quality



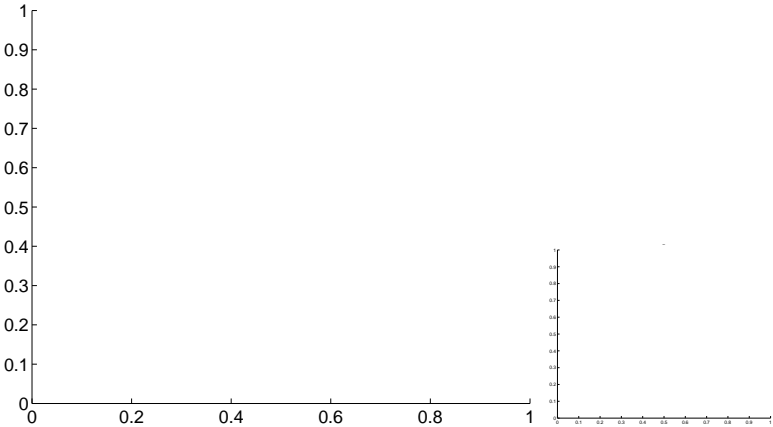
Q7 OOT image



Q8 no difference image



Q8 no OOT image





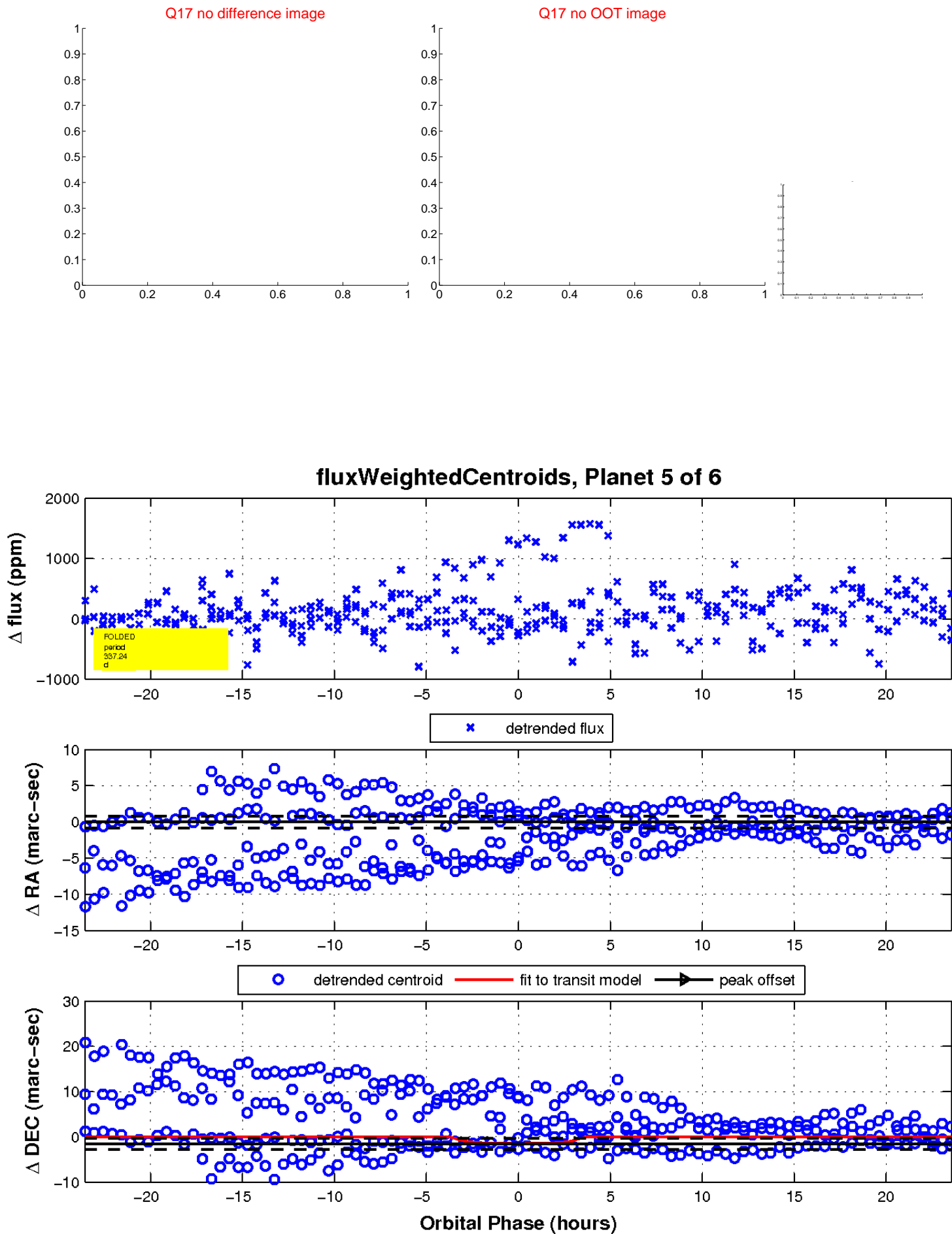
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

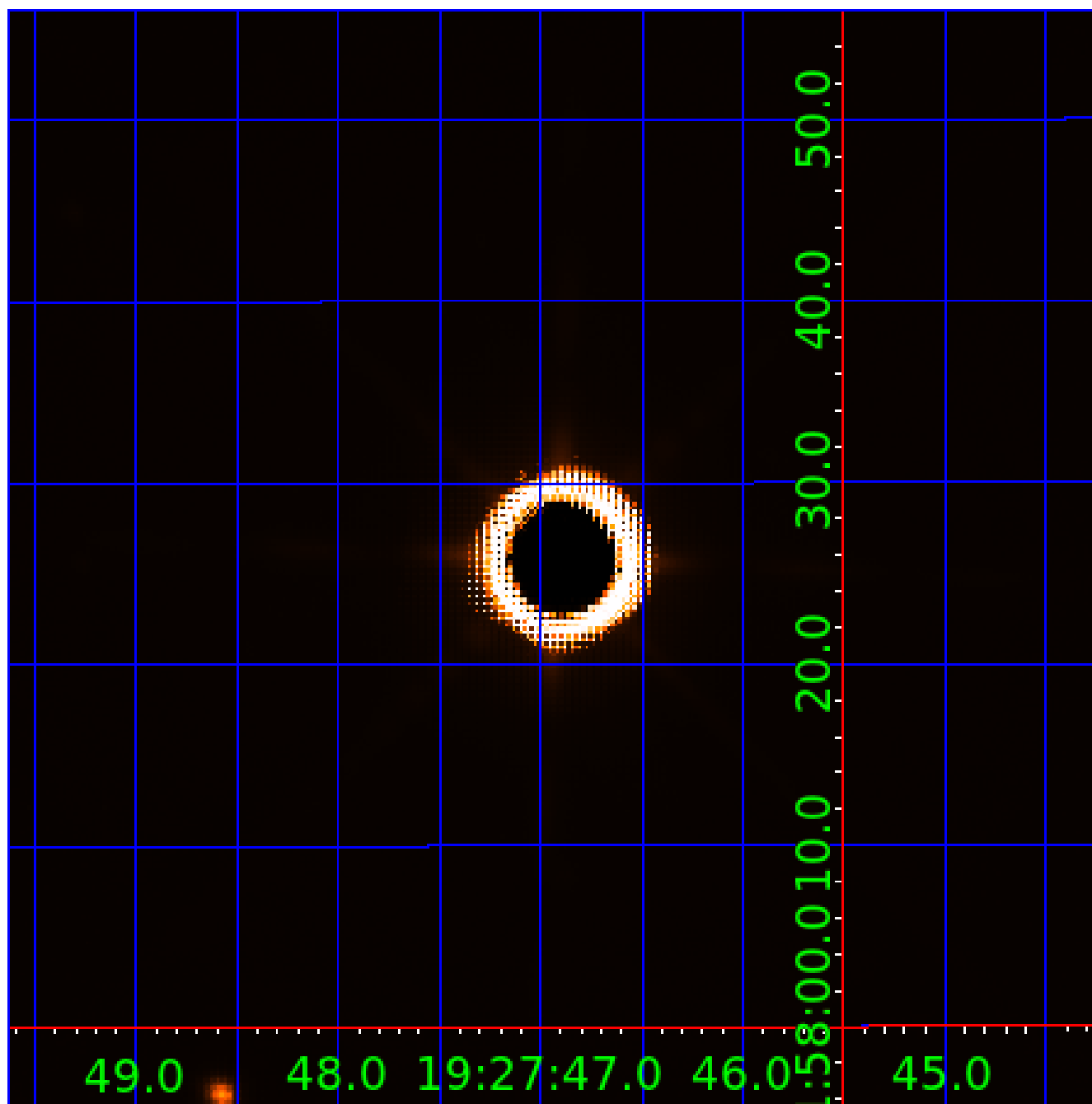


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 006522800

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
006522800-01	OBS	No	371.222972	291.869990	77.3	6.915	20.9	3.0	121.37	3328	112.26	1566.21
006522800-03	OBS	No	421.346818	144.772374	52.9	12.500	21.5	-1.0	121.37	3328	81.02	1322.85
006522800-05	OBS	No	337.237991	359.302089	161.8	7.874	15.3	13.4	121.37	3328	221.98	1780.12
006522800-06	OBS	No	185.434557	290.661181	251.1	15.000	88.9	-1.0	121.37	3328	176.49	3951.63

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006522800-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006522800-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
006522800-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_SATURATED
006522800-06	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

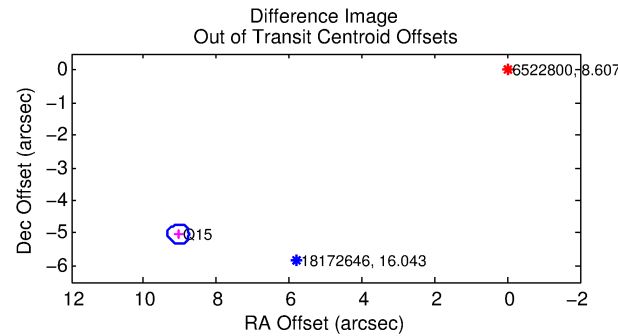
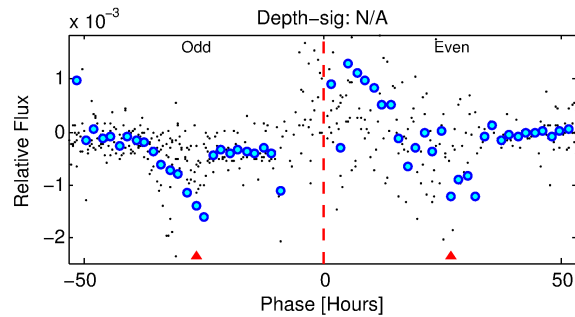
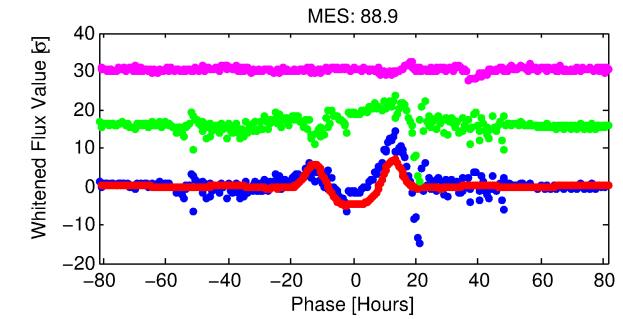
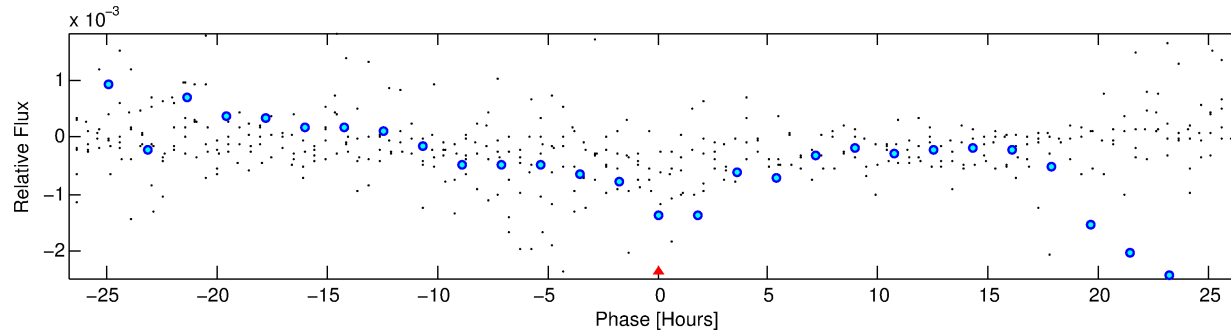
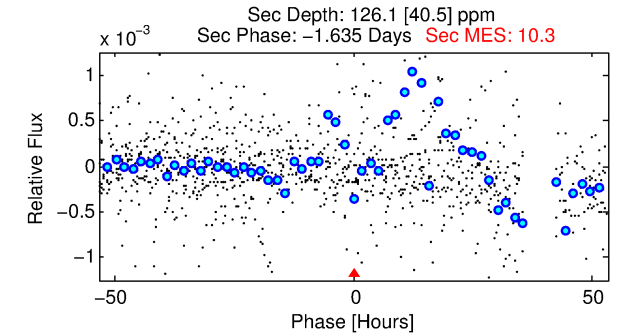
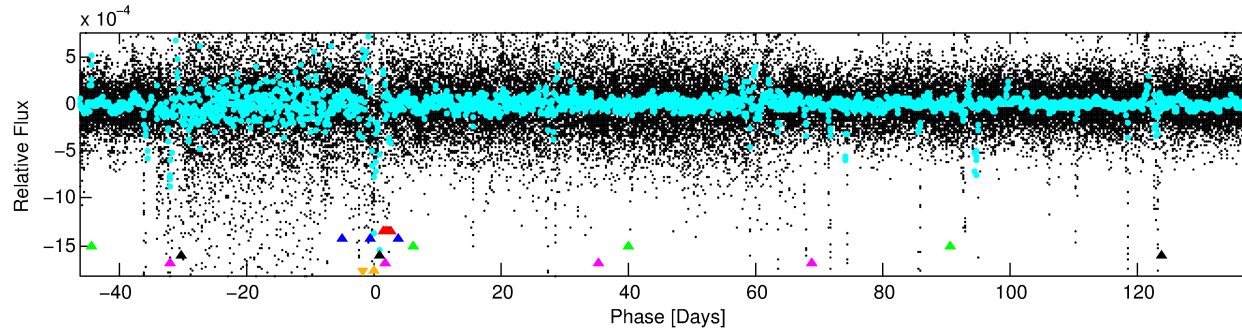
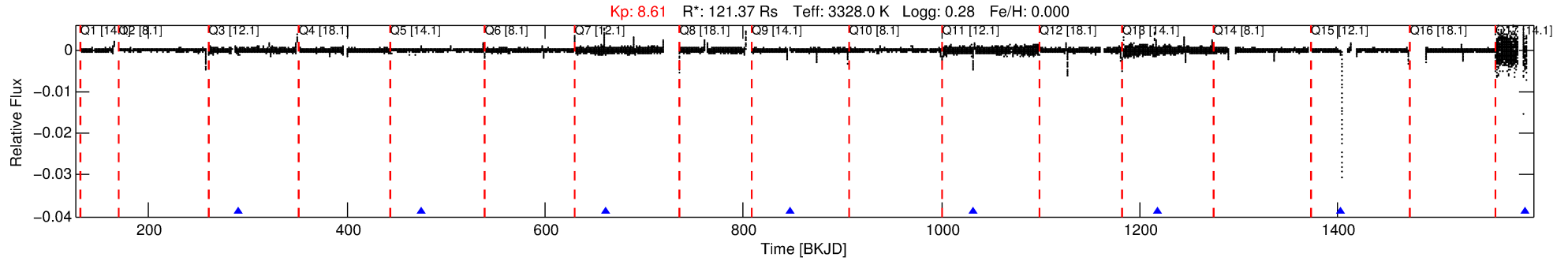
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 006522800-06

No Significant Match Found

# DV One-Page Summary

KIC: 6522800 Candidate: 6 of 6 Period: 185.435 d



## TPS TCE Results:

Period = 185.43456 d  
Epoch = 290.6612 BKJD

DV fit results are unavailable

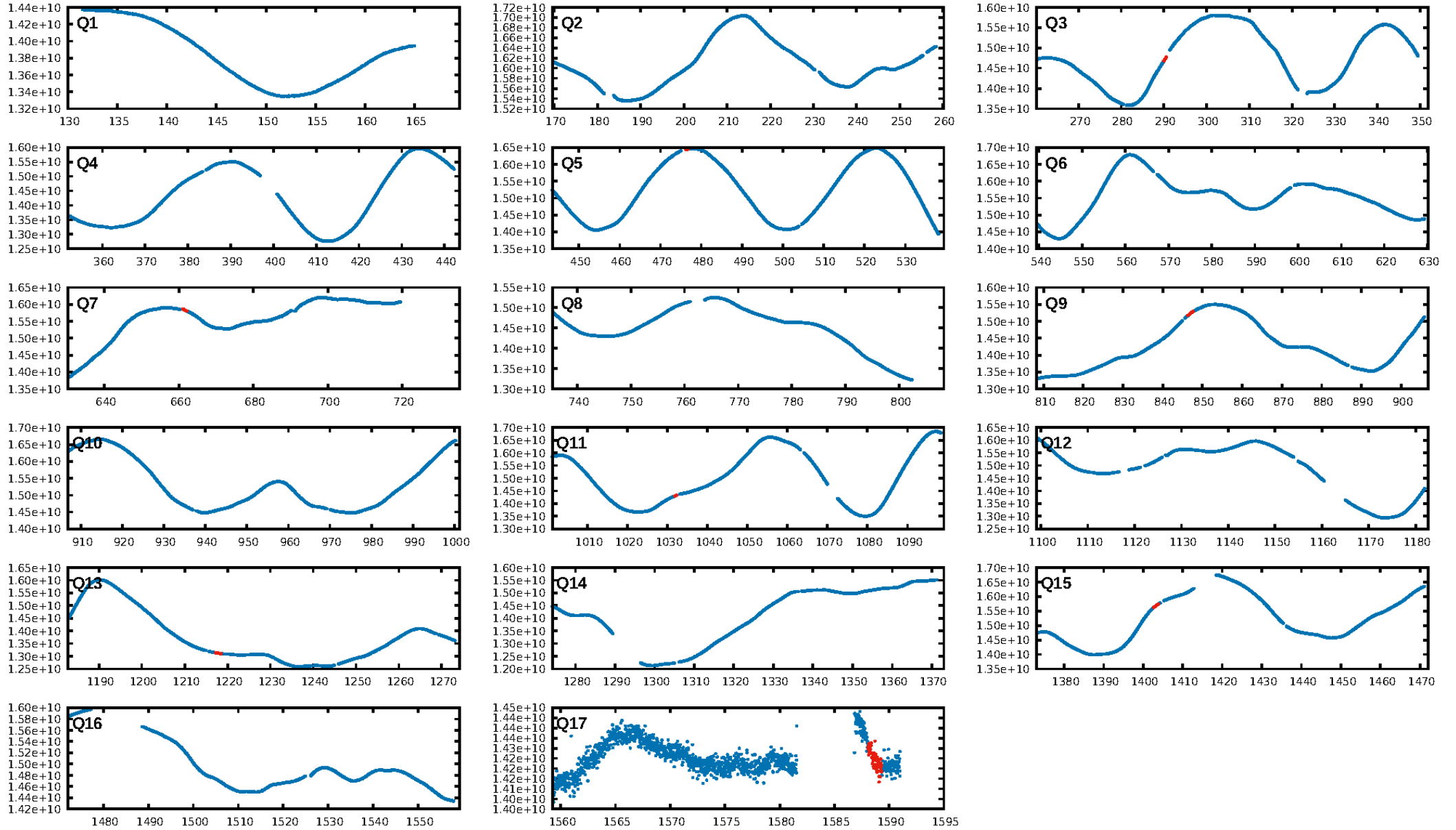
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [215.06σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 2.2%  
Centroid-so: 2.284 arcsec [1.33σ]  
OotOffset-rm: 10.360 arcsec [104.71σ]  
KicOffset-rm: 10.722 arcsec [107.46σ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 0.50 [1/2]

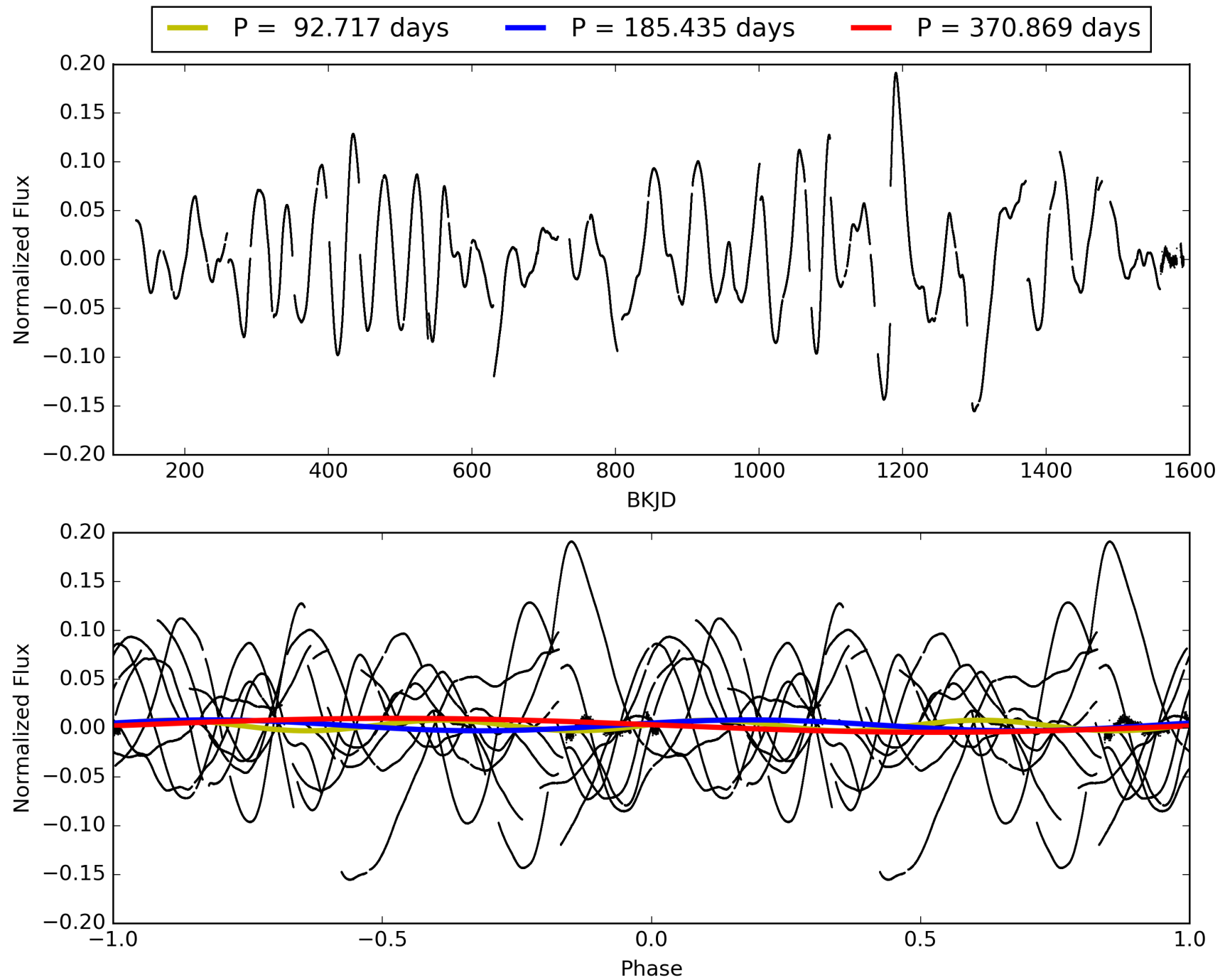
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:26:57 Z

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

# TCE 006522800-06, PDC Light Curves



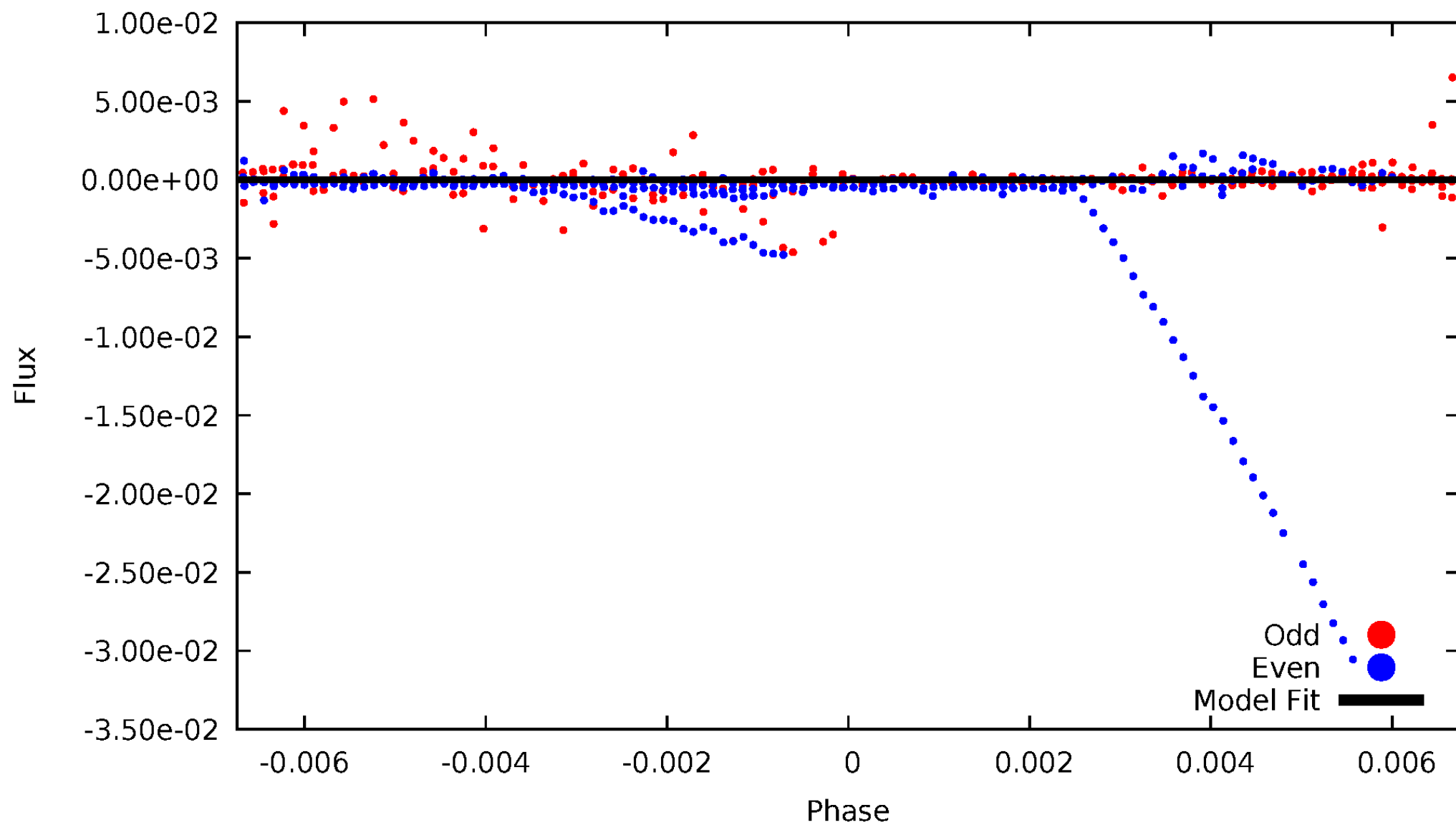
# TCE 006522800-06





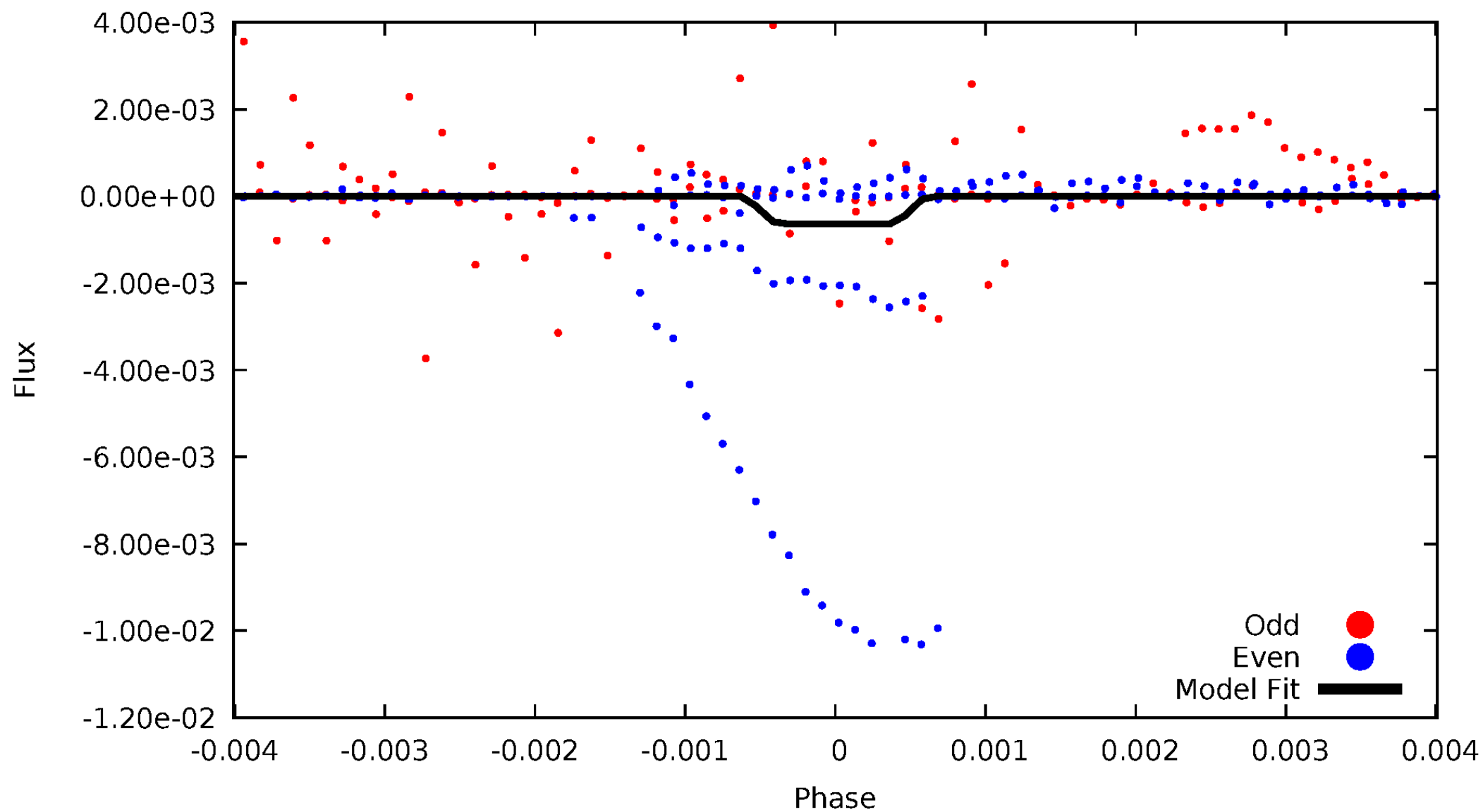
# DV Odd/Even

TCE 006522800-06



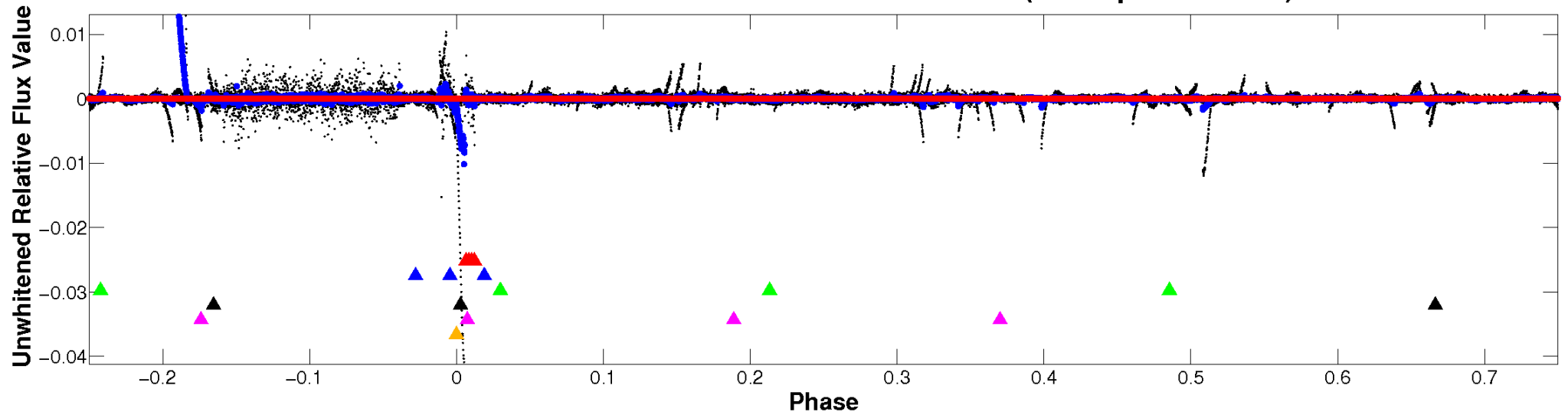
# ALT Odd/Even

TCE 006522800-06

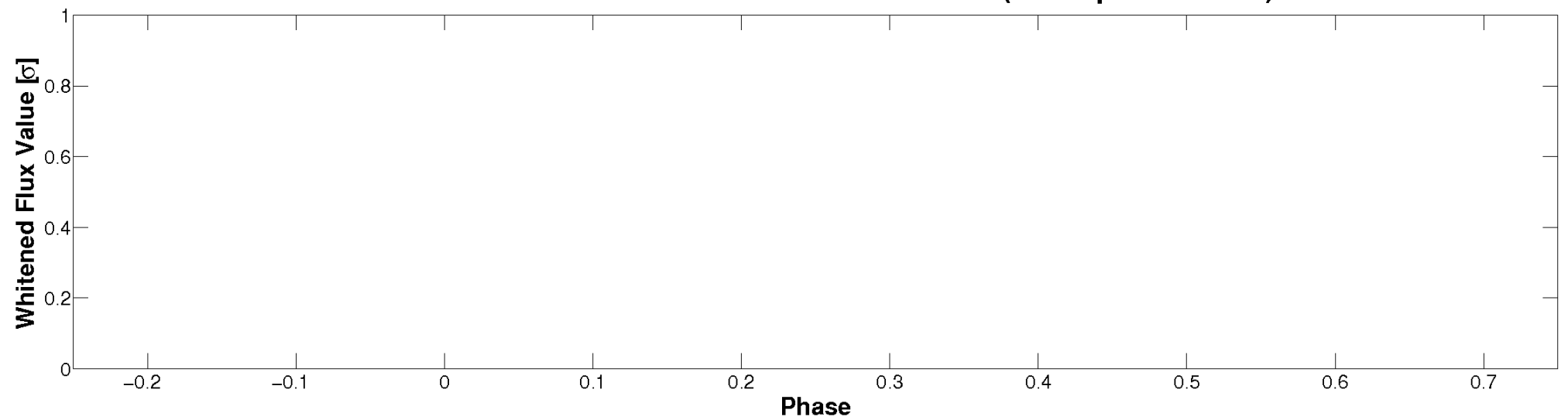


# Non-Whitened Vs. Whitened Light Curve

**Planet 6 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

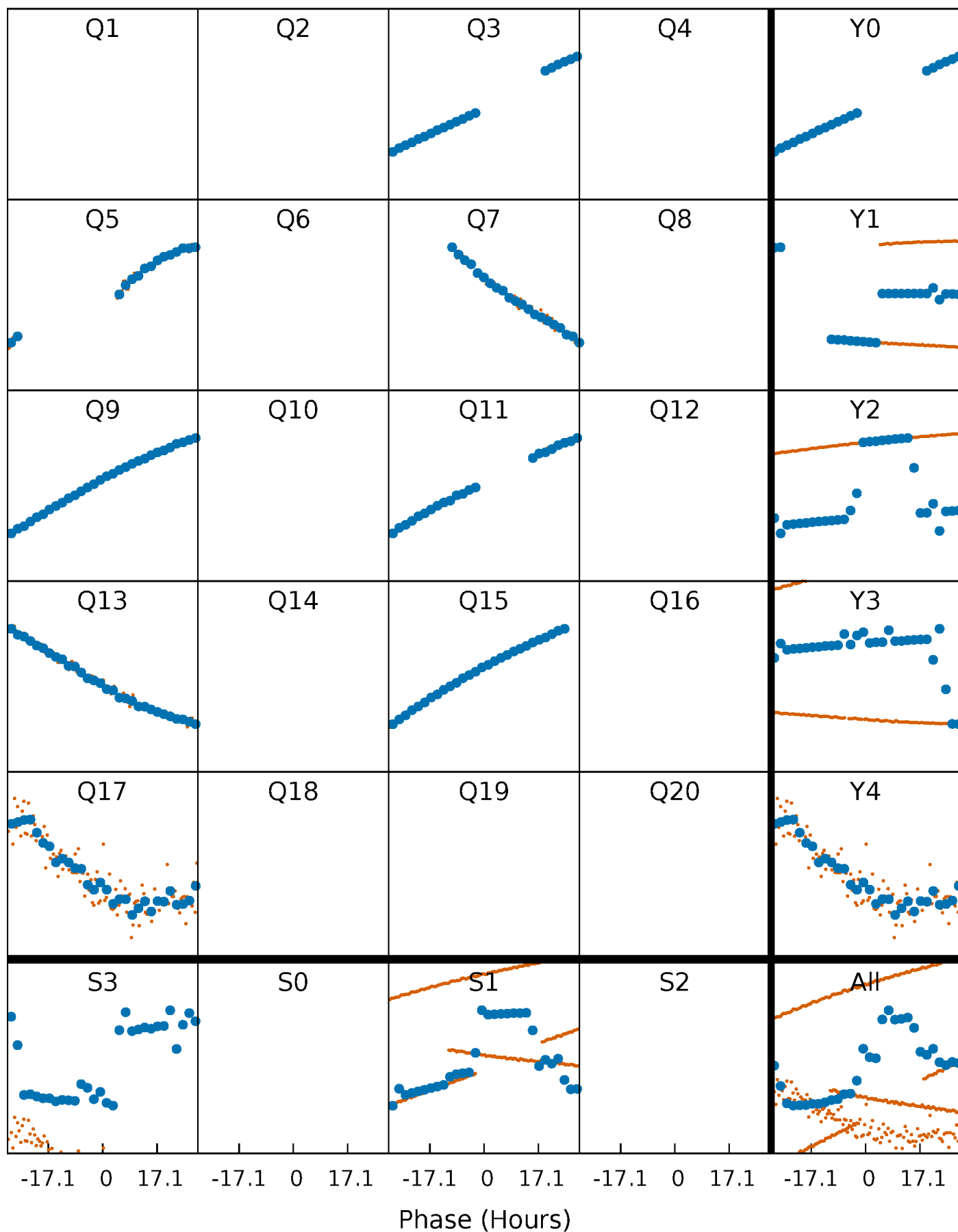


**Planet 6 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

TCE 006522800-06 P=185.434557 Days  $T_0=290.661181$  (BKJD)



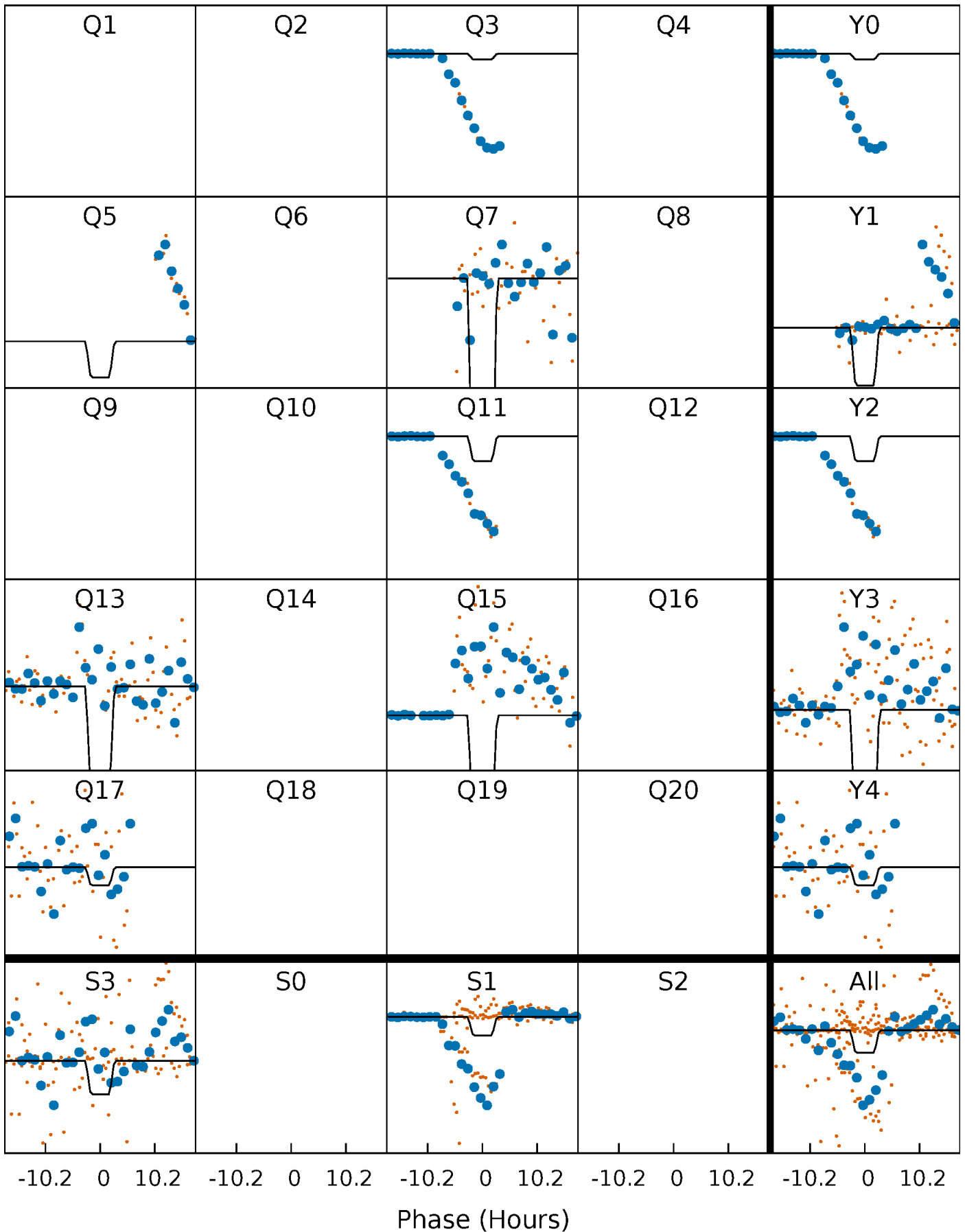
# DV Quarter-Phased Transit Curves

TCE 006522800-06     $P=185.434557$  Days     $T_0=290.661181$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

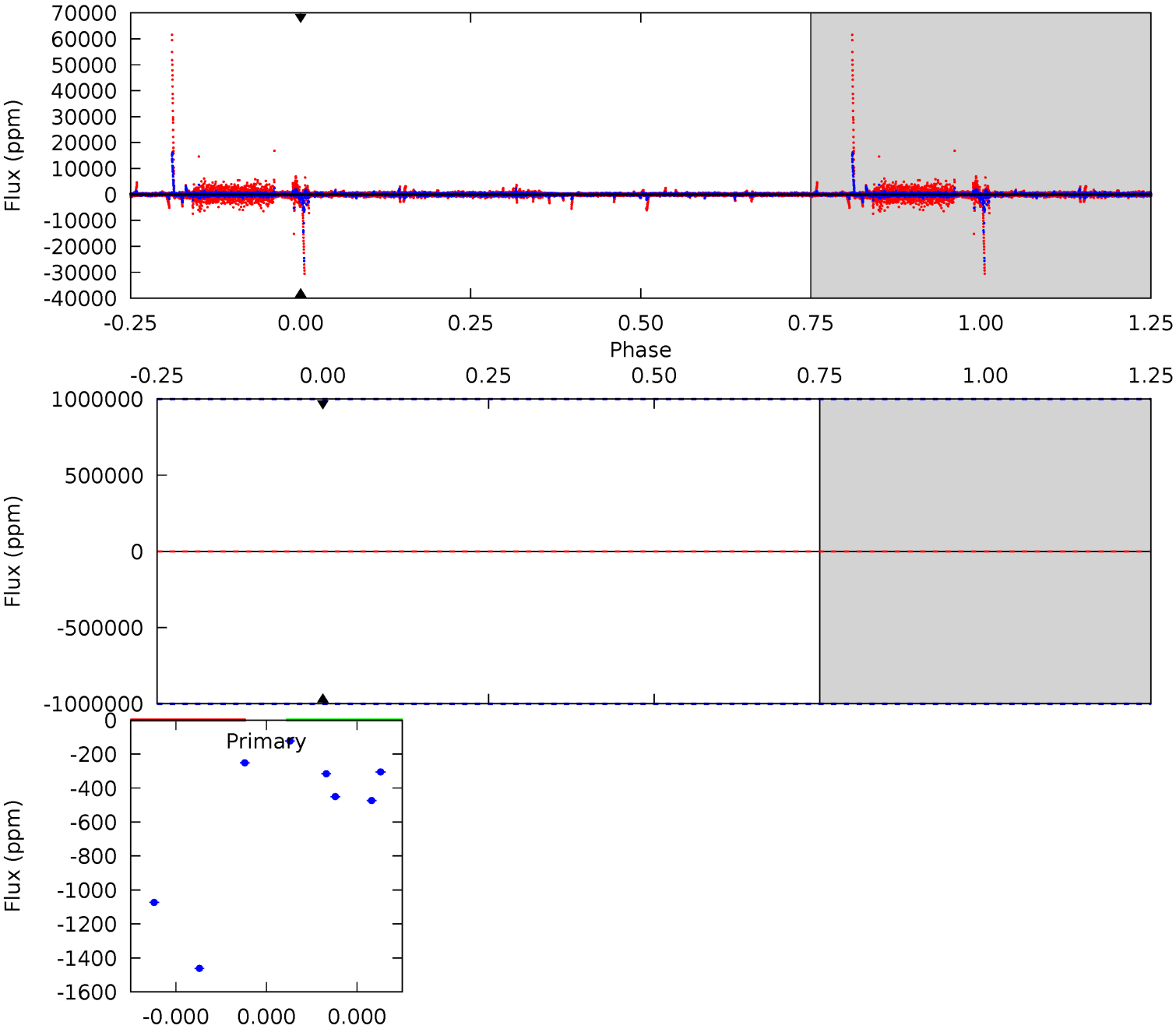
TCE 006522800-06 P=185.434557 Days  $T_0=290.420528$  (BKJD)



# DV Model-Shift Uniqueness Test

006522800-06, P = 185.434557 Days, E = 105.226624 Days

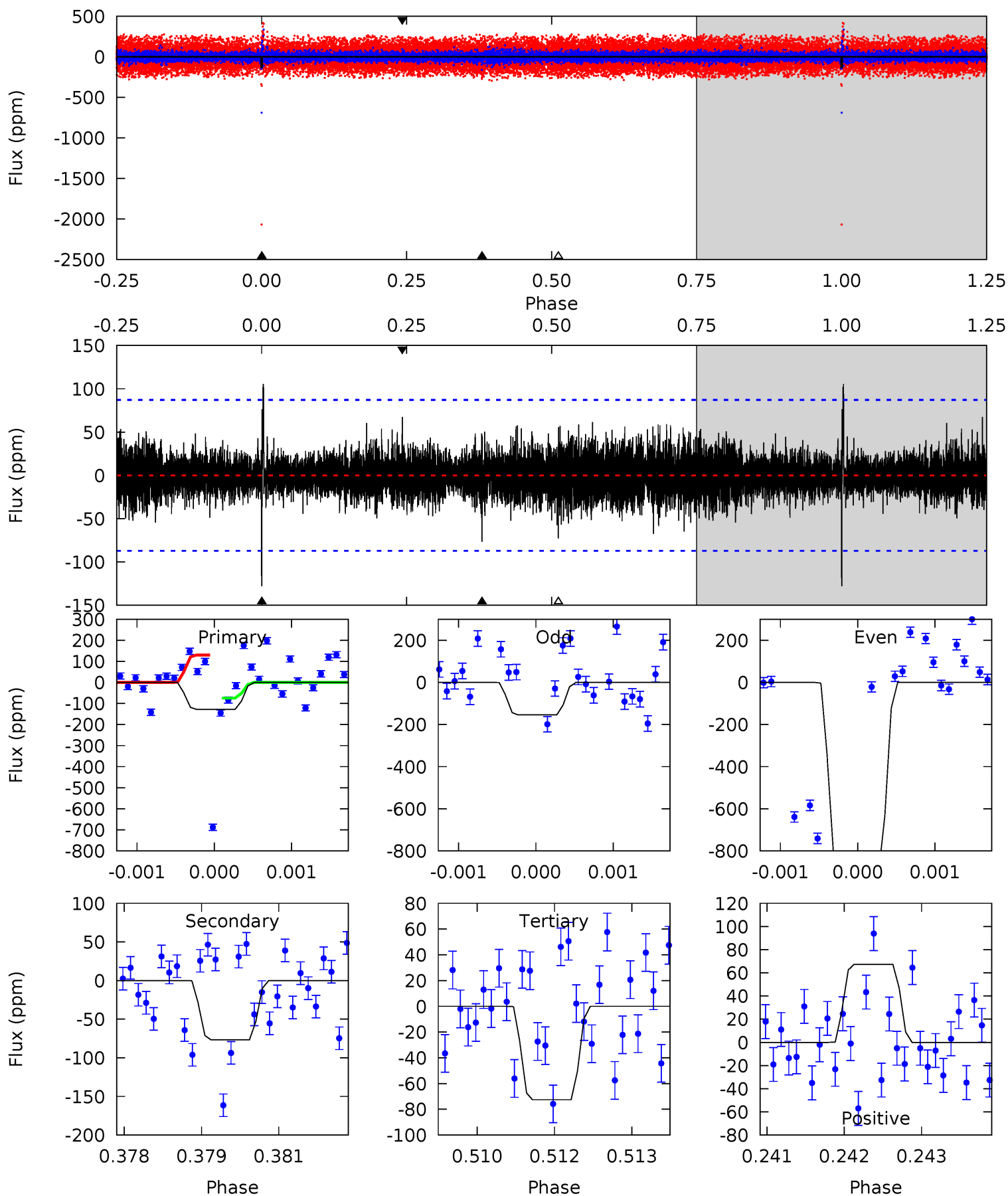
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

006522800-06, P = 185.434557 Days, E = 104.985971 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
7.92	4.75	4.50	4.17	5.40	3.21	1.00	3.43	3.75	0.25	0.58	26.2	-113.4	0.45	1.65





### Stellar Parameters For KIC 006522800

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3328^{+79}_{-72}$	$0.277^{+0.224}_{-0.112}$	$0.000^{+0.250}_{-0.150}$	$121.368^{+27.685}_{-22.651}$	$1.017^{+0.310}_{-0.058}$	$0.000^{+0.000}_{-0.000}$
	+2%/-2%	+81%/-40%	+inf%/-inf%	+23%/-19%	+30%/-6%	+102%/-38%
Source	SPE14	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 006522800-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$931.14^{+1055.38}_{-657.60}$	$2788^{+172}_{-182}$	$-2217^{+9037}_{-4284}$	$0.250^{+48.146}_{-41.185}$
Alt.	$-77 \pm 16$	$1023.05^{+955.99}_{-729.93}$	$2781^{+178}_{-175}$	$-2630^{+349}_{-123}$	$0.017^{+0.199}_{-0.012}$

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

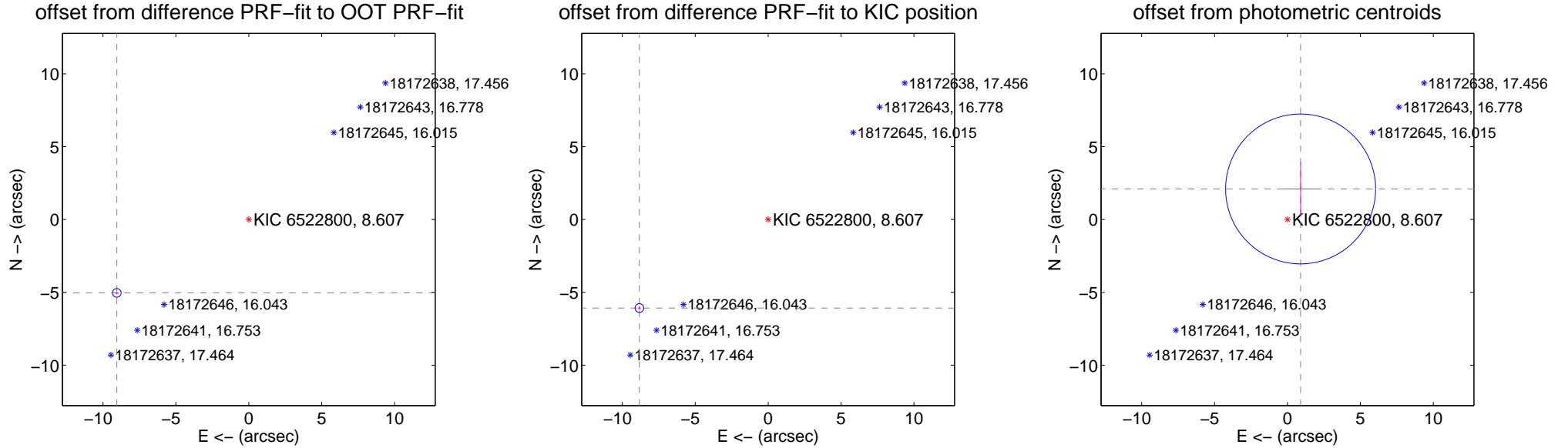
## DV Centroid Data

Supplemental centroid analysis for 006522800-06. **Kepler magnitude: 8.61.** 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 1.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b>10.360 <math>\pm</math> 0.099</b>	<b>104.71</b>	9.053 $\pm$ 0.097	-5.036 $\pm$ 0.106
PRF-fit source offset from KIC position	<b>10.722 <math>\pm</math> 0.100</b>	<b>107.46</b>	8.832 $\pm$ 0.097	-6.079 $\pm$ 0.106
photometric centroid source offset	2.28 $\pm$ 1.71	1.33	-0.90 $\pm$ 1.21	2.10 $\pm$ 1.79



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.

Q13 no difference image



Q13 no OOT image



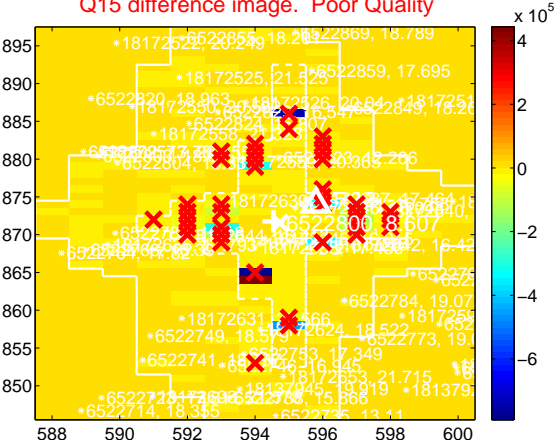
Q14 no difference image



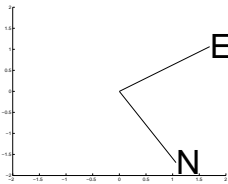
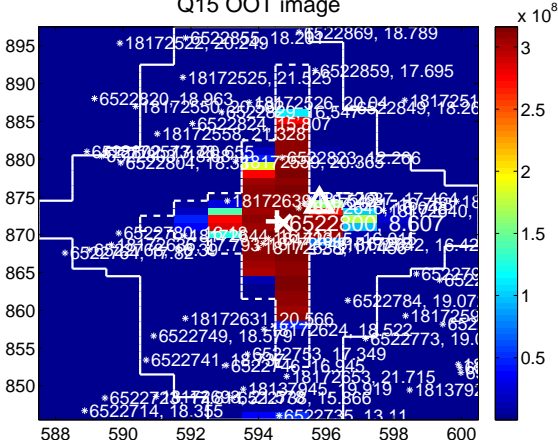
Q14 no OOT image



Q15 difference image. Poor Quality



Q15 OOT image



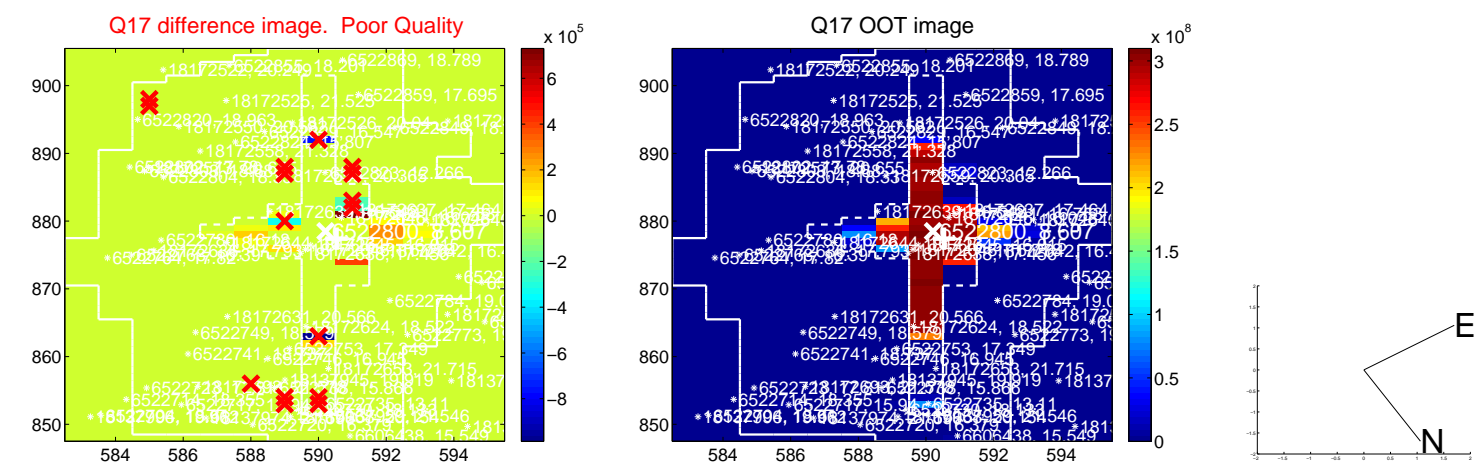
Q16 no difference image



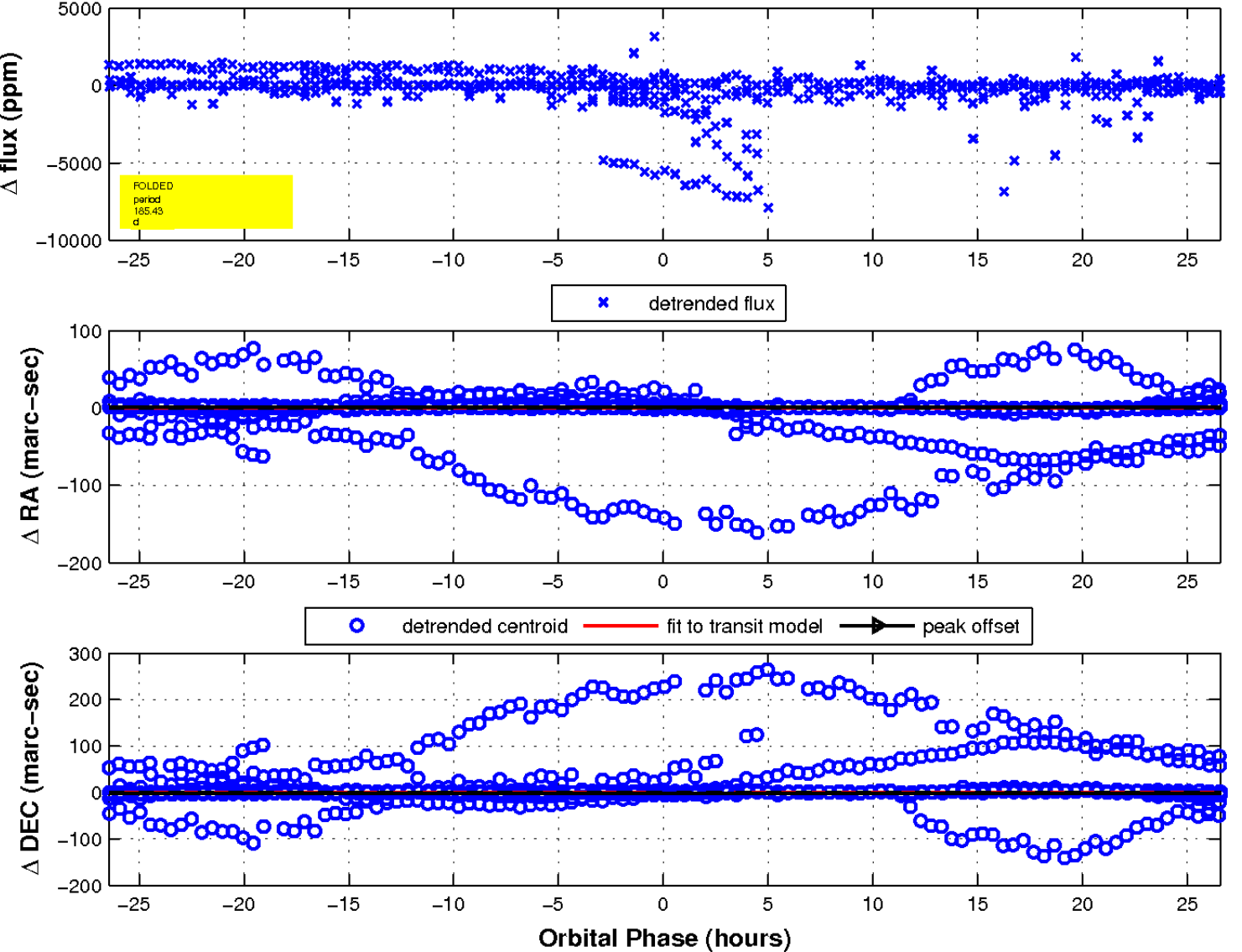
Q16 no OOT image



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



fluxWeightedCentroids, Planet 6 of 6



UKIRT Image

Declination

