

# KIC 010537061

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010537061-01	OBS	No	684.759525	209.216744	237.9	2.022	17.9	0.8	1.83	5262	2.86	1.12
010537061-02	OBS	No	222.752735	241.810066	2802.2	19.233	10.8	4.8	1.83	5262	18.46	5.00
010537061-03	OBS	No	431.146697	242.345122	2456.1	4.194	14.5	7.4	1.83	5262	9.01	2.07

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010537061-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010537061-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
010537061-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS— HALO_GHOST

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

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

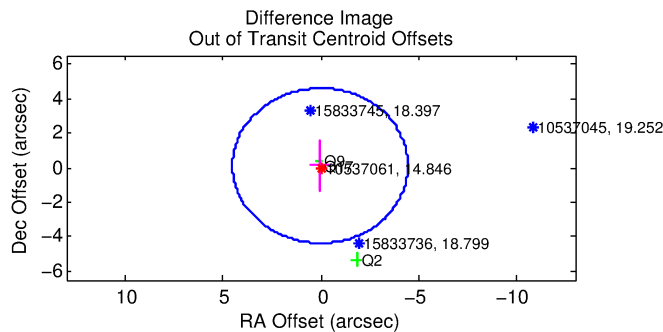
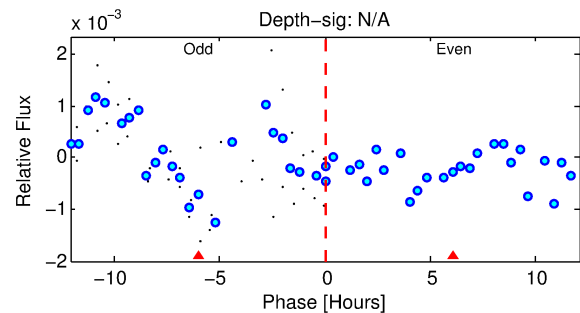
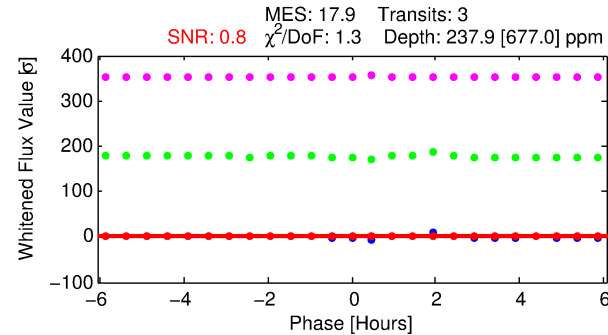
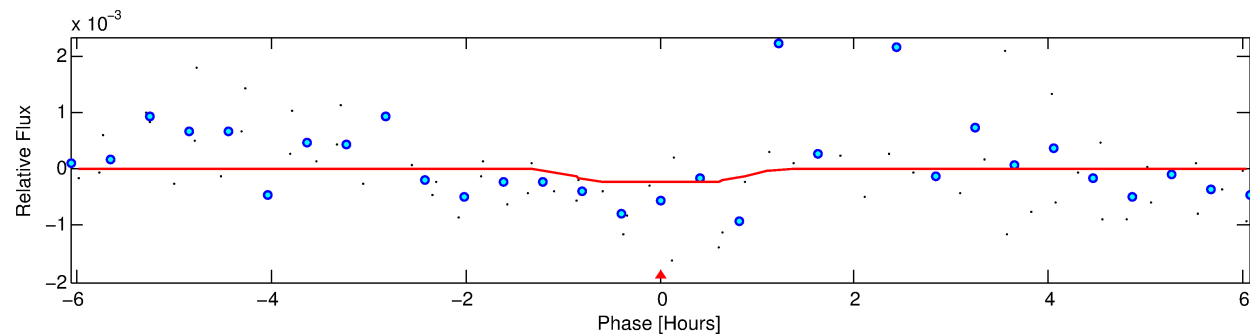
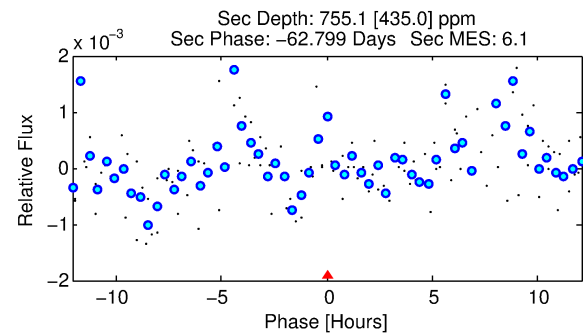
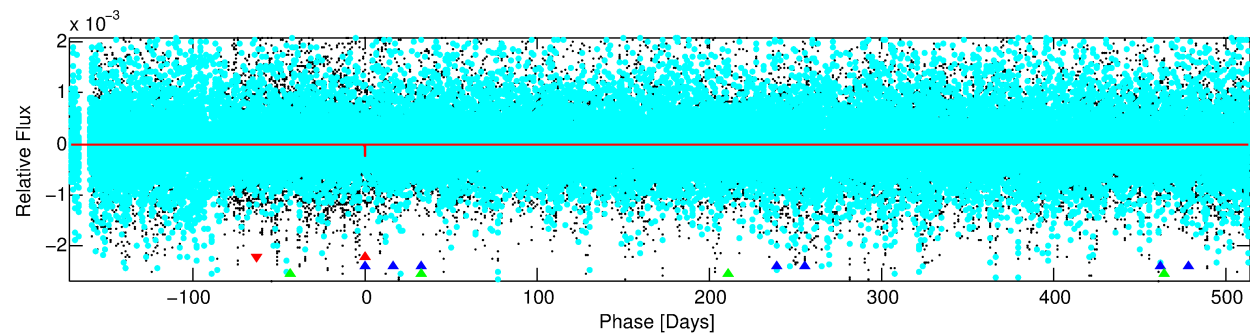
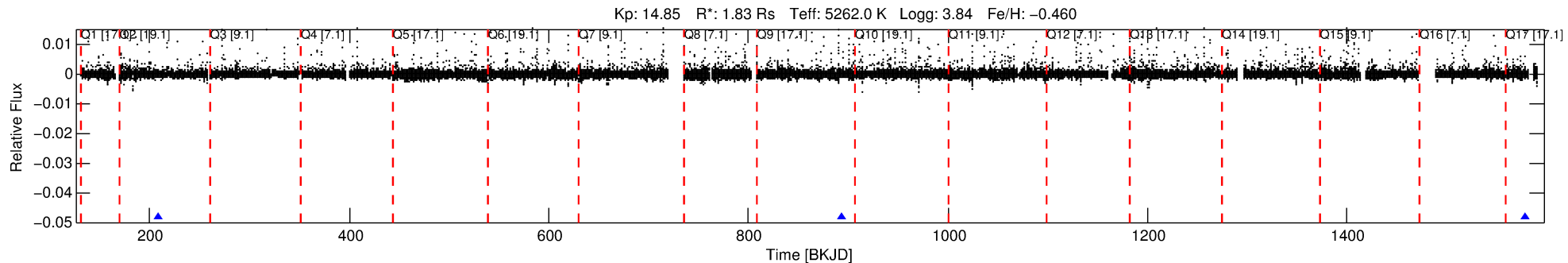
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010537061-01

No Significant Match Found

# DV One-Page Summary

KIC: 10537061 Candidate: 1 of 3 Period: 684.760 d



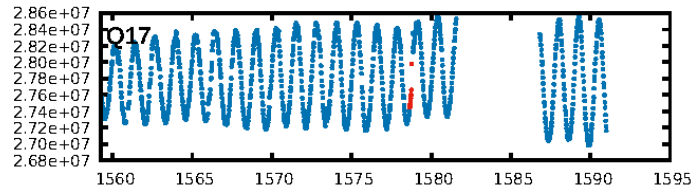
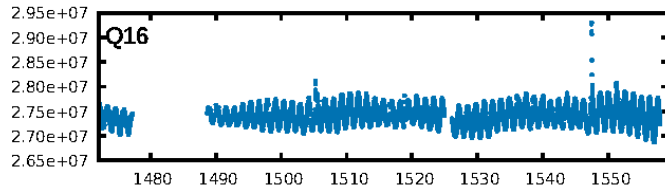
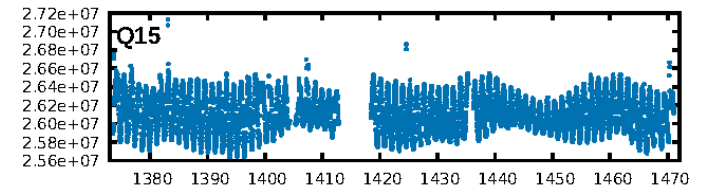
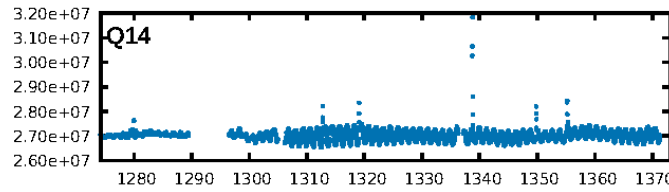
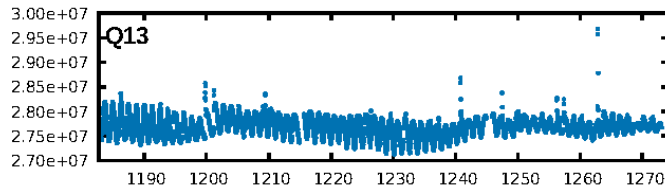
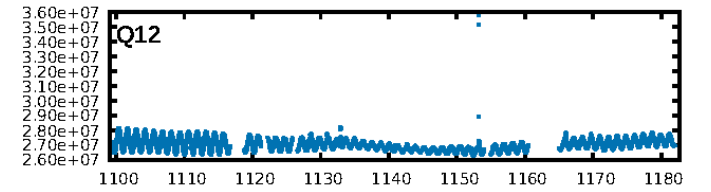
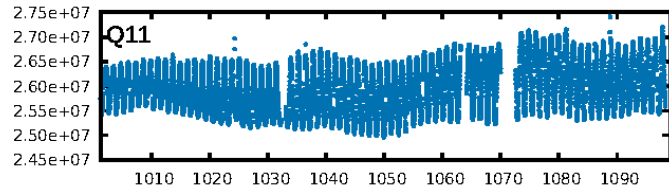
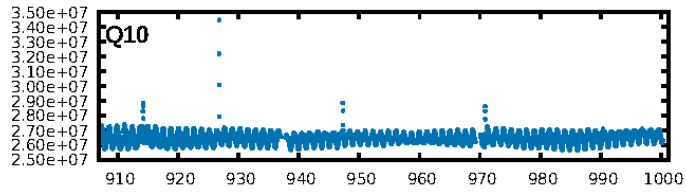
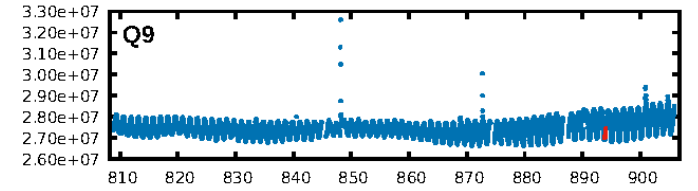
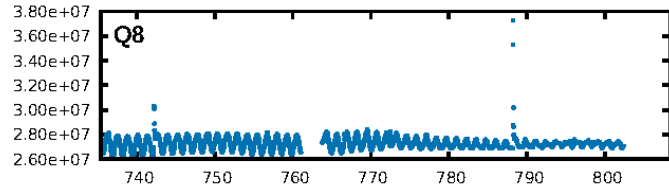
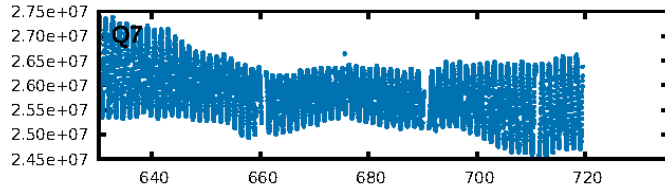
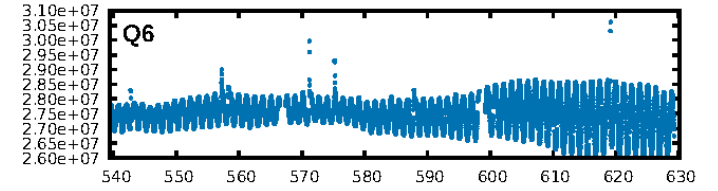
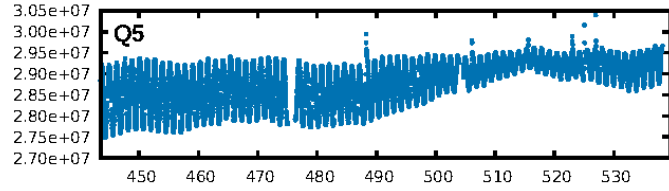
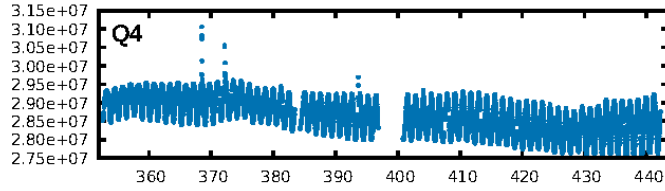
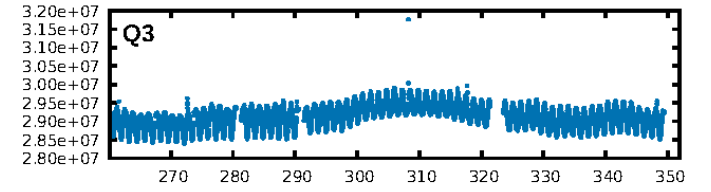
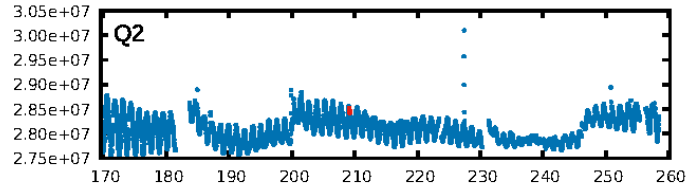
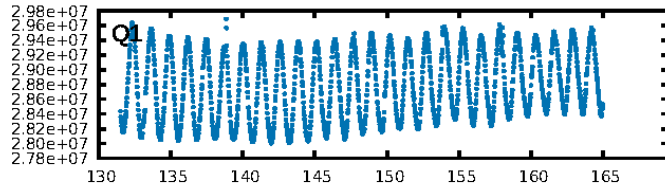
## DV Fit Results:

Period = 684.75952 [0.07039] d  
Epoch = 209.2167 [0.0766] BKJD  
Rp/R\* = 0.0144 [0.6345]  
a/R\* = 2325.26 [404434.22]  
b = 0.47 [295.07]  
Seff = 1.12 [1.48]  
Teq = 262 [87] K  
Rp = 2.86 [126.44] Re  
a = 1.4313 [1.0672] AU  
Ag = 103920.37 [9183980.63] [0.01σ]  
Teffp = 7279 [160796] K [0.04σ]

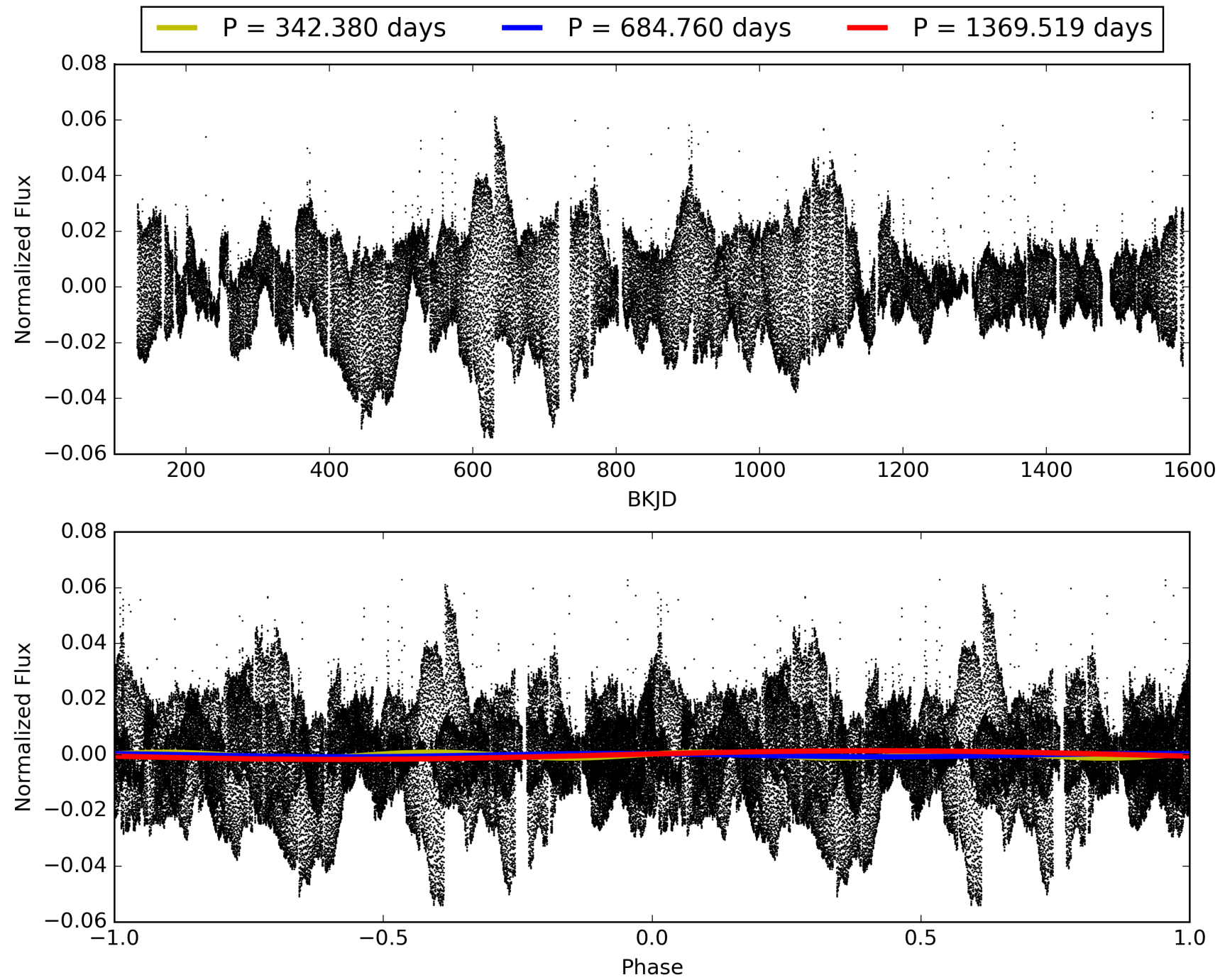
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1307.22σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 66.1%  
ModelChiSquareGoF-sig: 93.1%  
**Bootstrap-pfa: 9.99e-11**  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 5.843  
Centroid-sig: 7.4%  
Centroid-so: 8.725 arcsec [1.55σ]  
OotOffset-rm: 0.119 arcsec [0.08σ]  
OotOffset-st: 1/0/0/2 [3]  
KicOffset-rm: 0.140 arcsec [0.10σ]  
KicOffset-st: 1/0/0/2 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 0.67 [2/3]

# TCE 010537061-01, PDC Light Curves

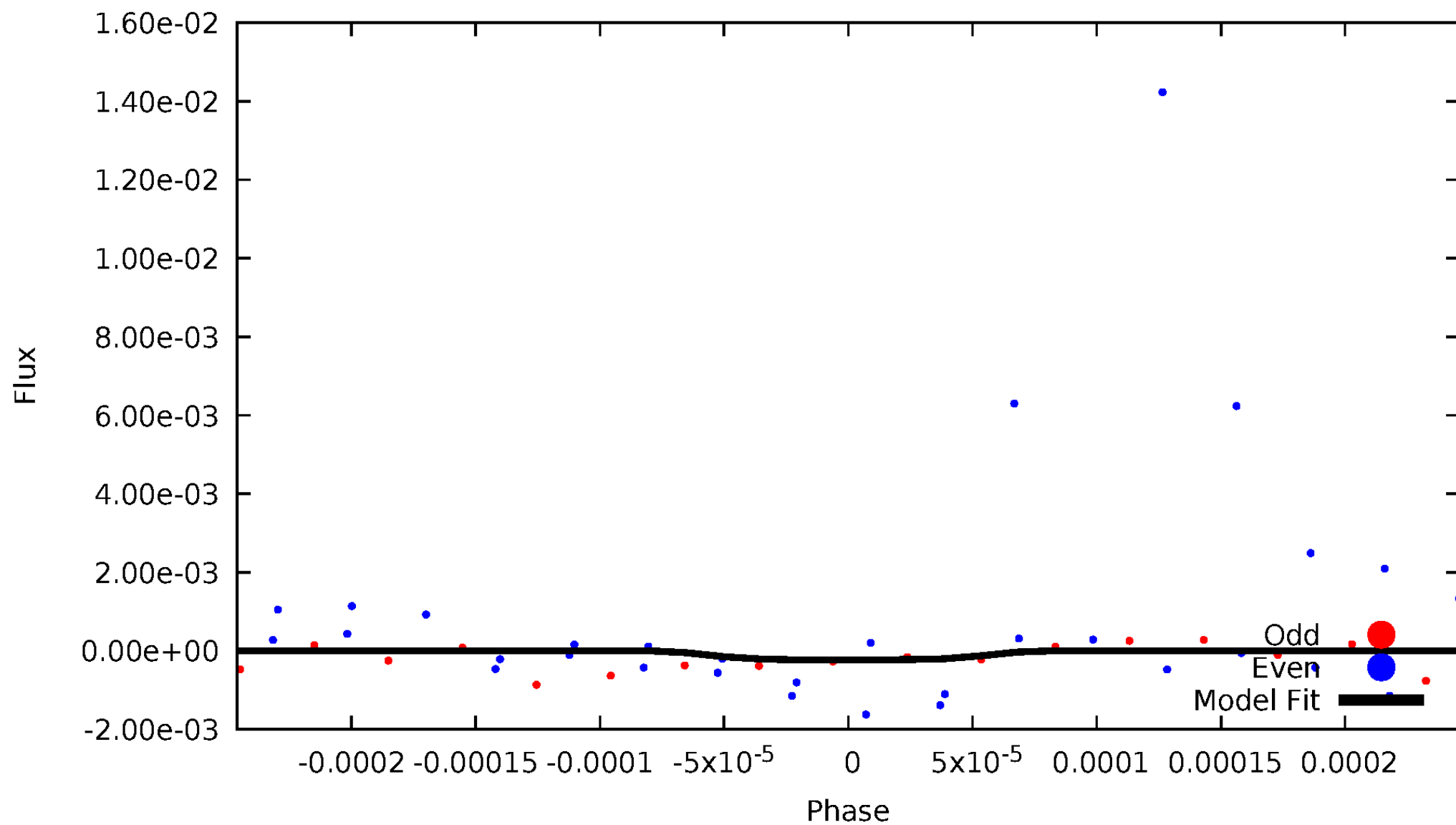


TCE 010537061-01



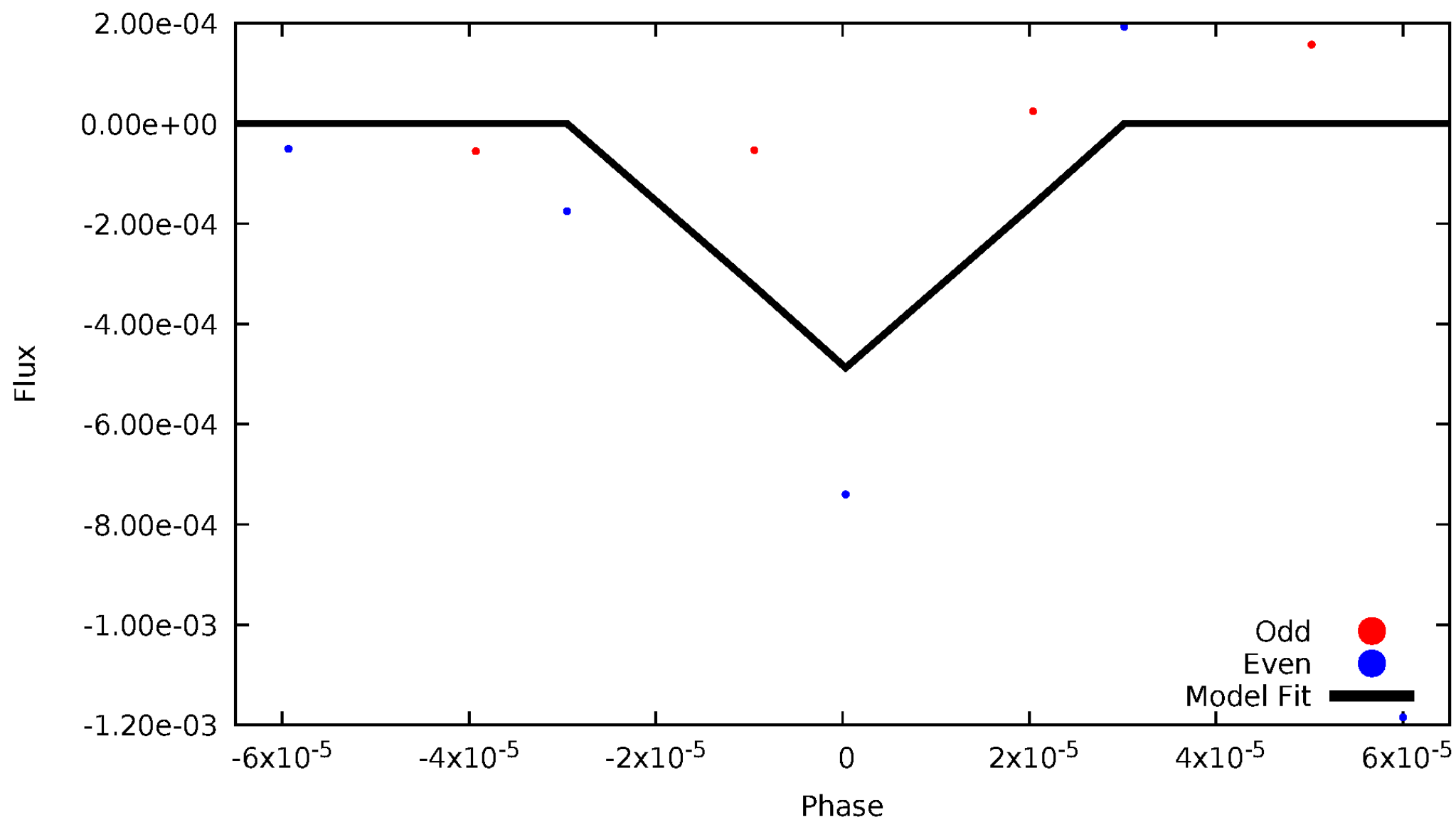
# DV Odd/Even

TCE 010537061-01



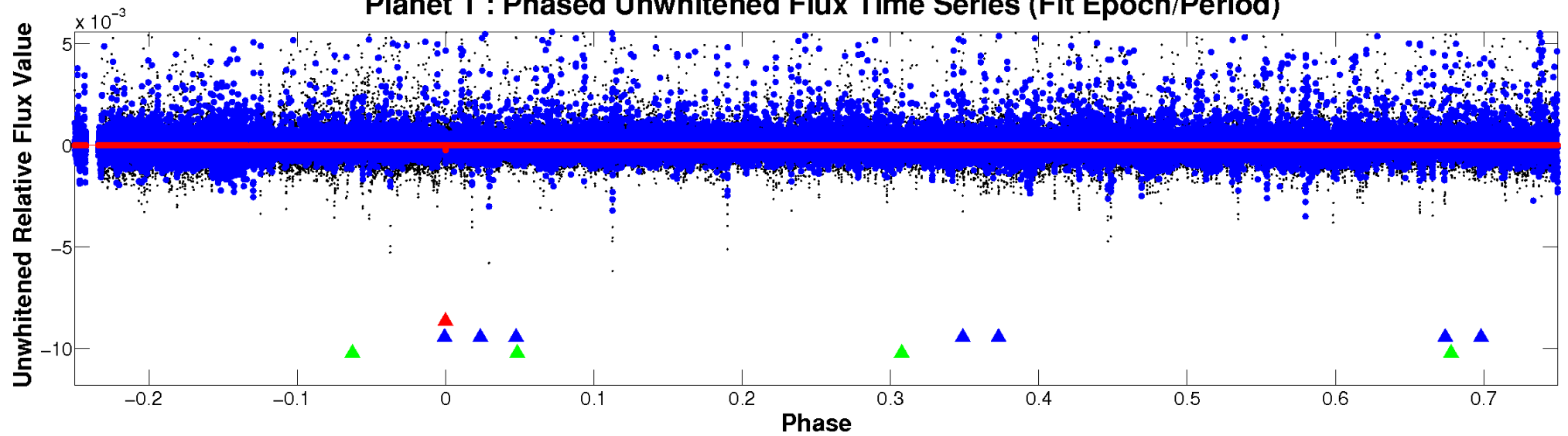
# ALT Odd/Even

TCE 010537061-01

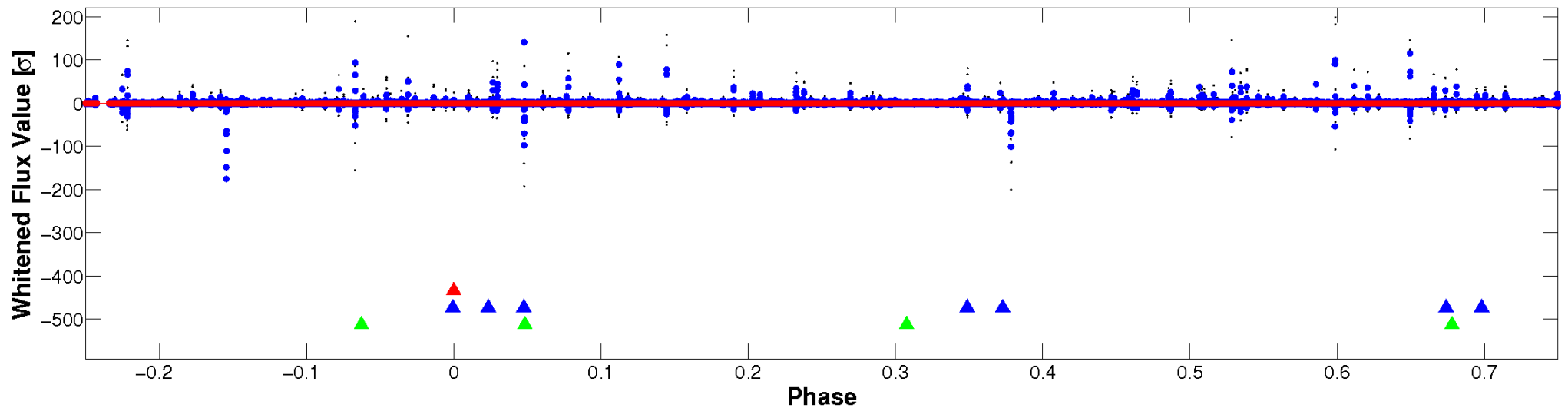


# Non-Whitened Vs. Whitened Light Curve

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

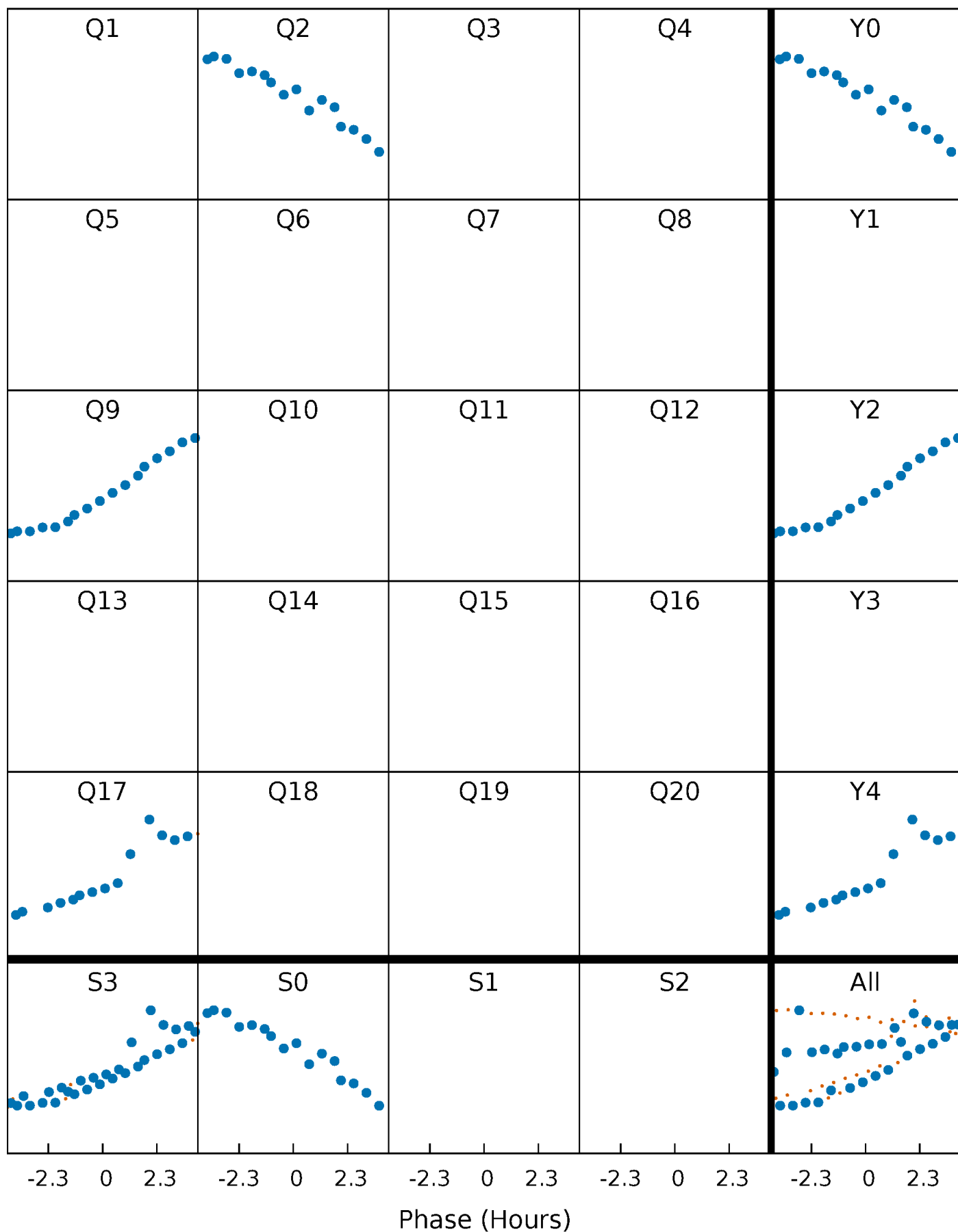


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

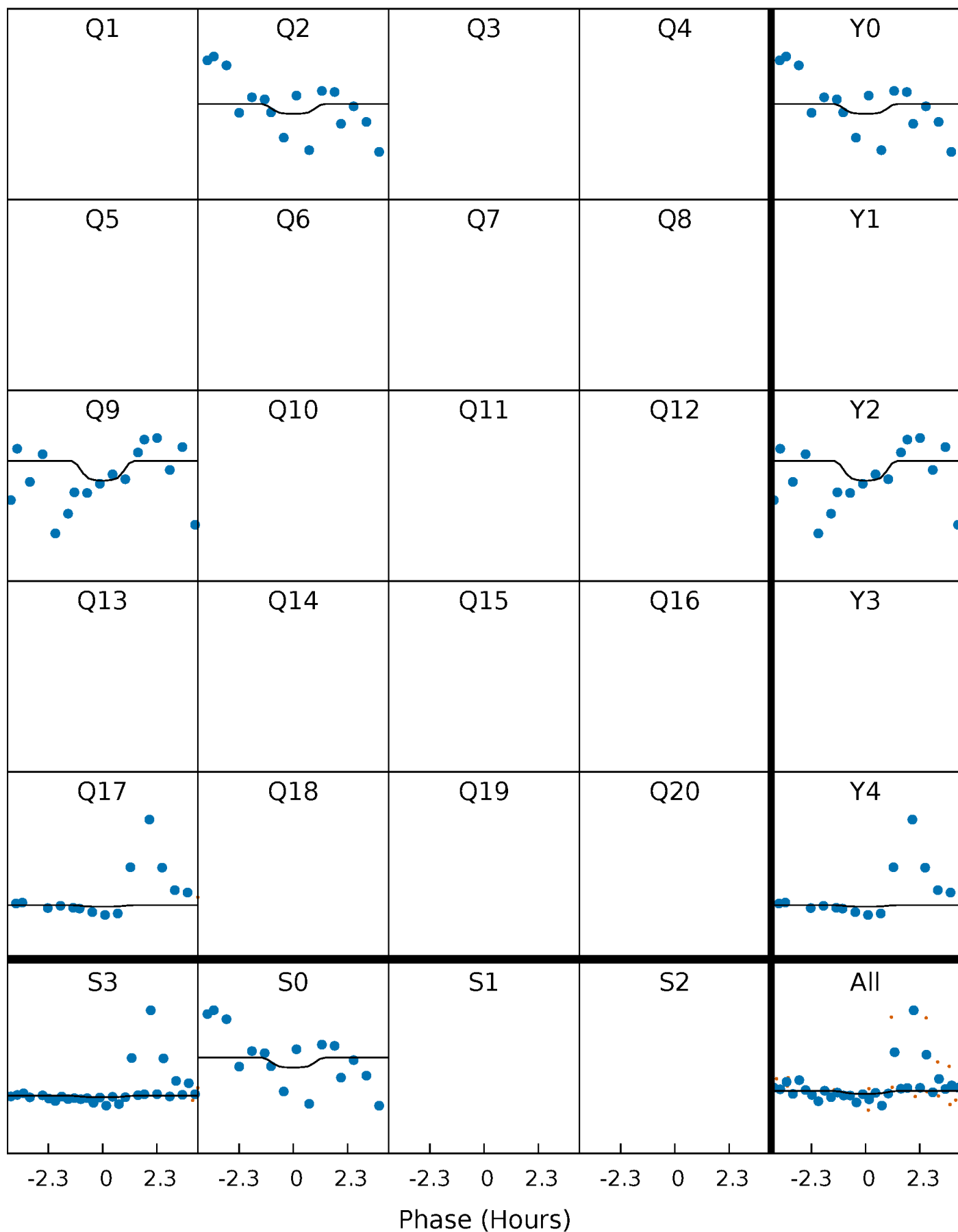
TCE 010537061-01 P=684.759525 Days  $T_0=209.216744$  (BKJD)





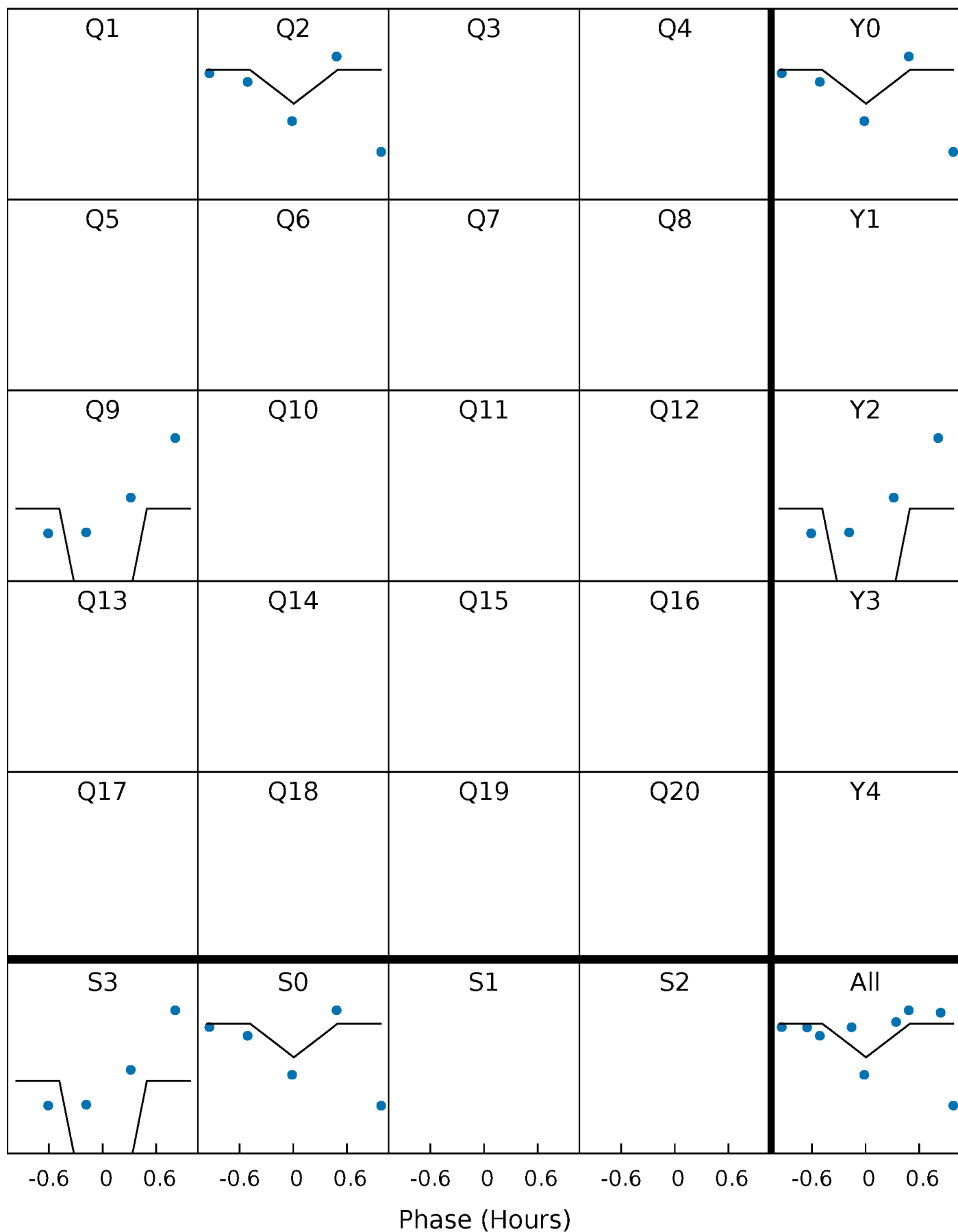
# DV Quarter-Phased Transit Curves

TCE 010537061-01 P=684.759525 Days  $T_0=209.216744$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

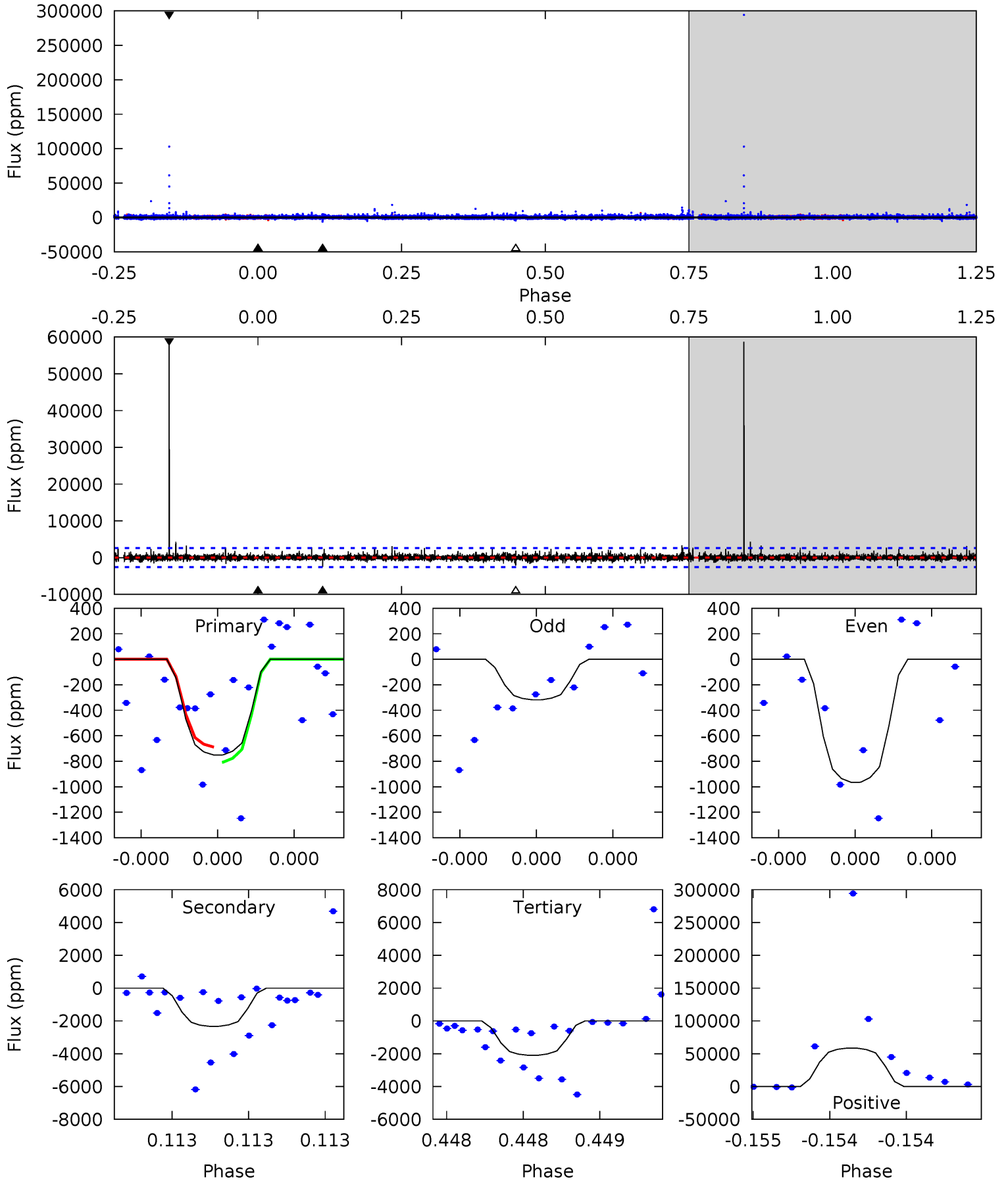
TCE 010537061-01 P=684.755840 Days  $T_0=209.202245$  (BKJD)



# DV Model-Shift Uniqueness Test

010537061-01, P = 684.759525 Days, E = 209.216744 Days

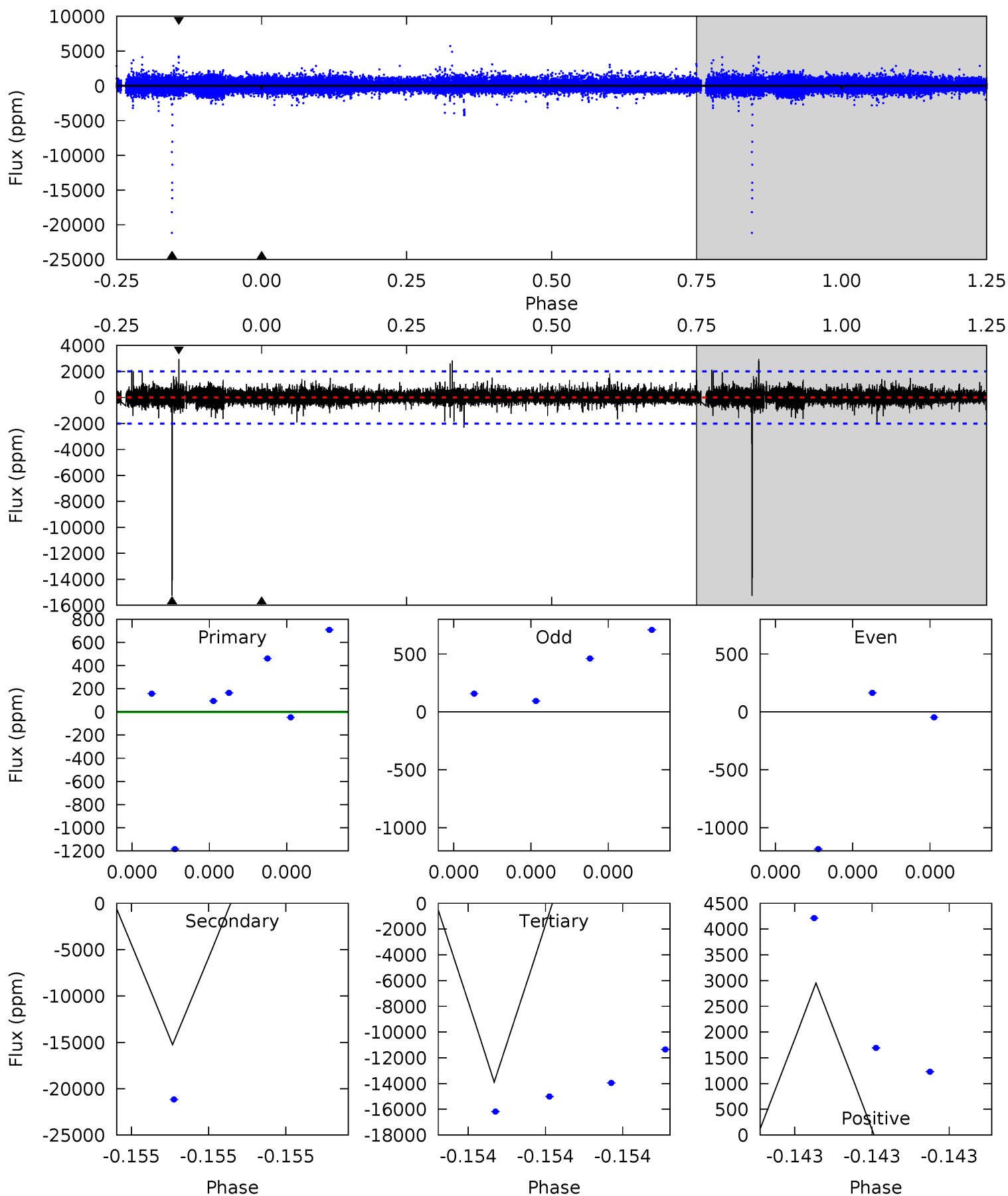
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.69	5.25	4.72	131.8	5.82	3.84	1.80	-3.03	-130.1	0.53	-126.6	0.32	1.19	0.96	0.13



# Alt Model-Shift Uniqueness Test

010537061-01, P = 684.755840 Days, E = 209.202245 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.47	45.6	41.5	8.81	6.00	4.11	0.83	-40.0	-7.34	4.08	36.7	0.90	1.00	0.16	0.00



### Stellar Parameters For KIC 010537061

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5262^{+158}_{-158}$	$3.836^{+0.817}_{-0.327}$	$-0.460^{+0.300}_{-0.300}$	$1.826^{+1.105}_{-1.105}$	$0.834^{+0.124}_{-0.137}$	$0.193^{+3.096}_{-0.143}$
	+3%/-3%	+21%/-9%	+65%/-65%	+61%/-61%	+15%/-16%	+1605%/-74%
Source	PHO1	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 010537061-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-2335 \pm 445$	$78.69^{+97.47}_{-55.79}$	$359^{+58}_{-61}$	$2565^{+1077}_{-416}$	$431^{+4853}_{-351}$
Alt.	$-15255 \pm 335$	$84.33^{+91.68}_{-62.64}$	$358^{+56}_{-68}$	$3288^{+1841}_{-588}$	$2405^{+35058}_{-1844}$

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

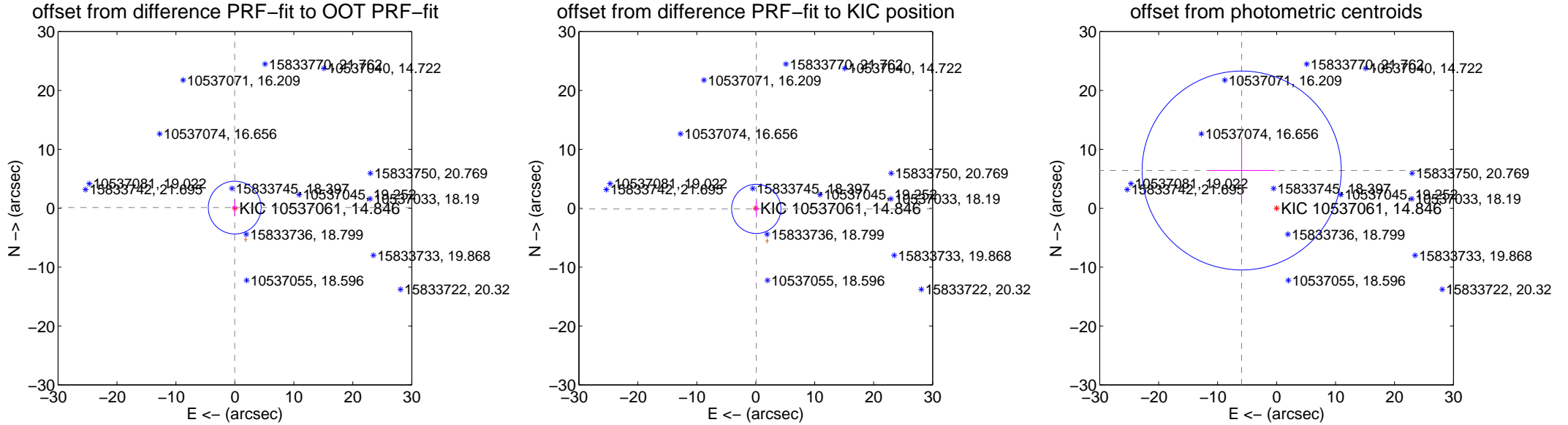
## DV Centroid Data

Supplemental centroid analysis for 010537061-01. Kepler magnitude: 14.85. Transit SNR 0.85

There are 2 quarters with good PRF difference image offsets

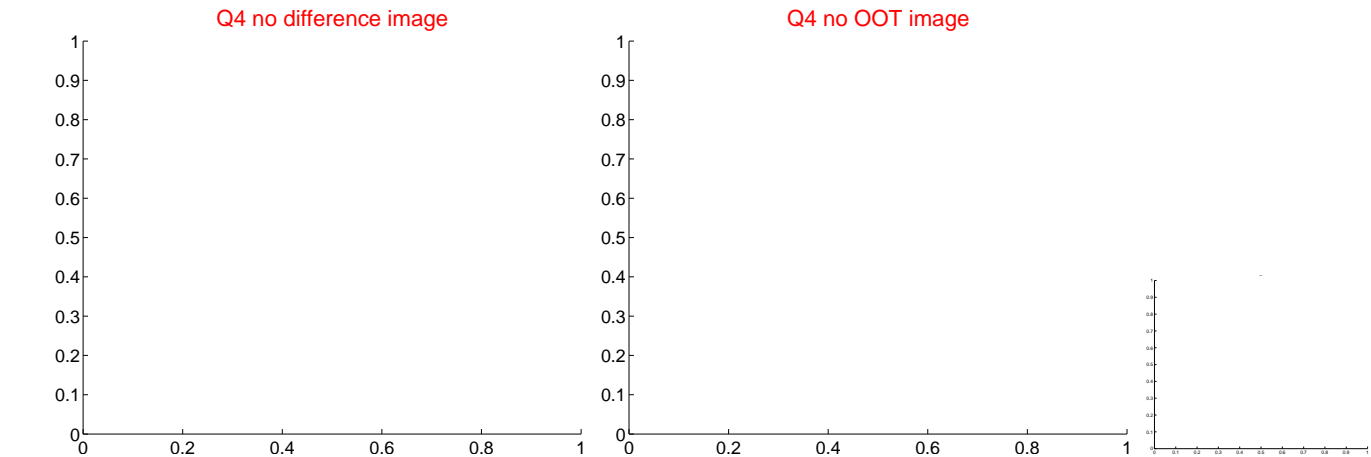
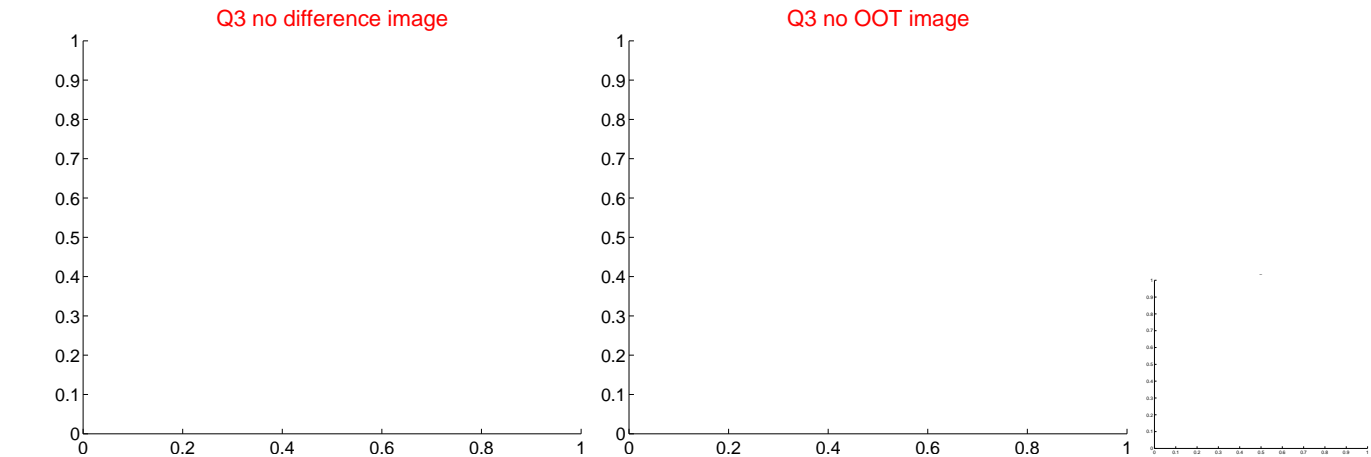
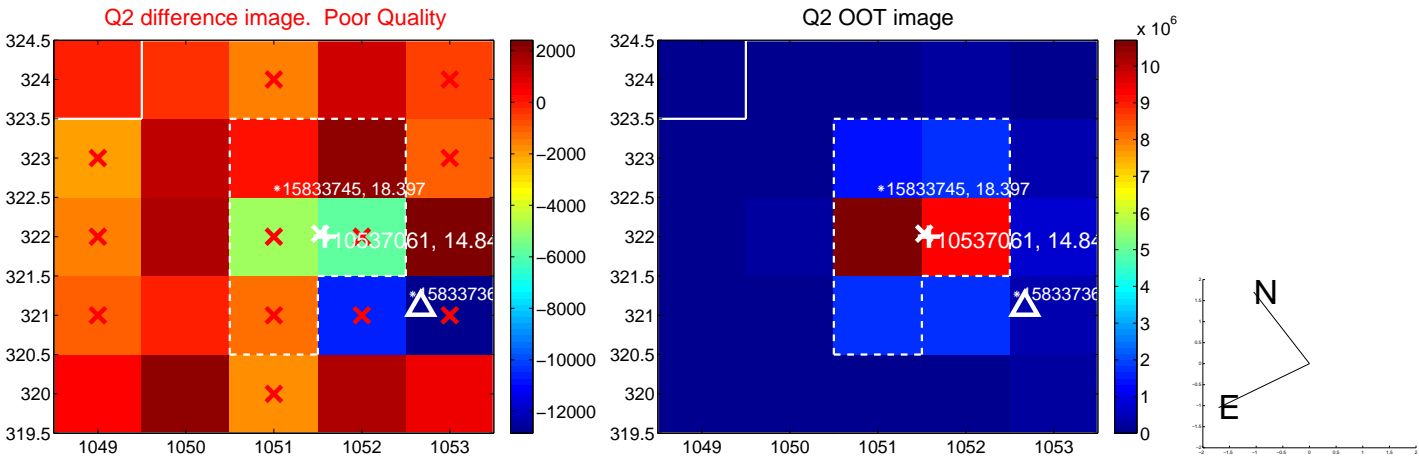
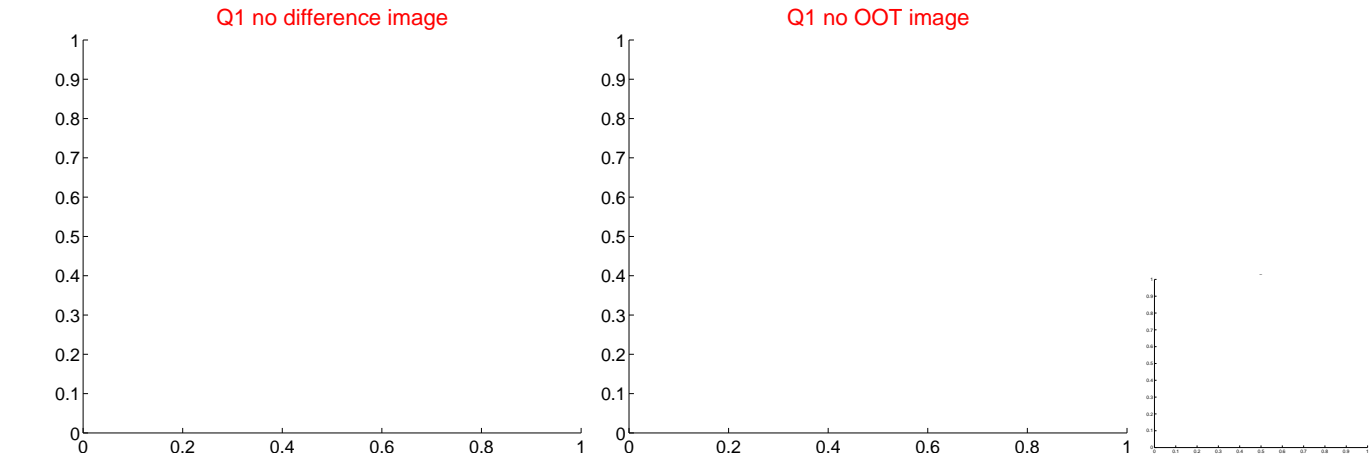
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.119 \pm 1.493$	0.08	$0.034 \pm 0.485$	$0.114 \pm 1.415$
PRF-fit source offset from KIC position	$0.140 \pm 1.392$	0.10	$-0.087 \pm 0.454$	$-0.110 \pm 1.419$
photometric centroid source offset	$8.73 \pm 5.63$	1.55	$5.92 \pm 5.63$	$6.41 \pm 5.63$



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.

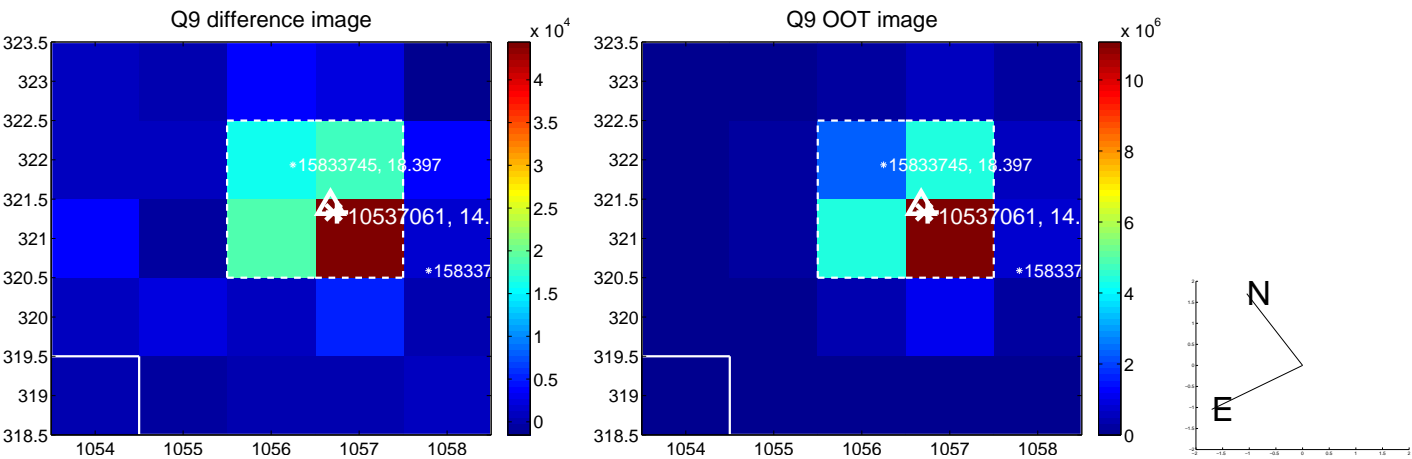


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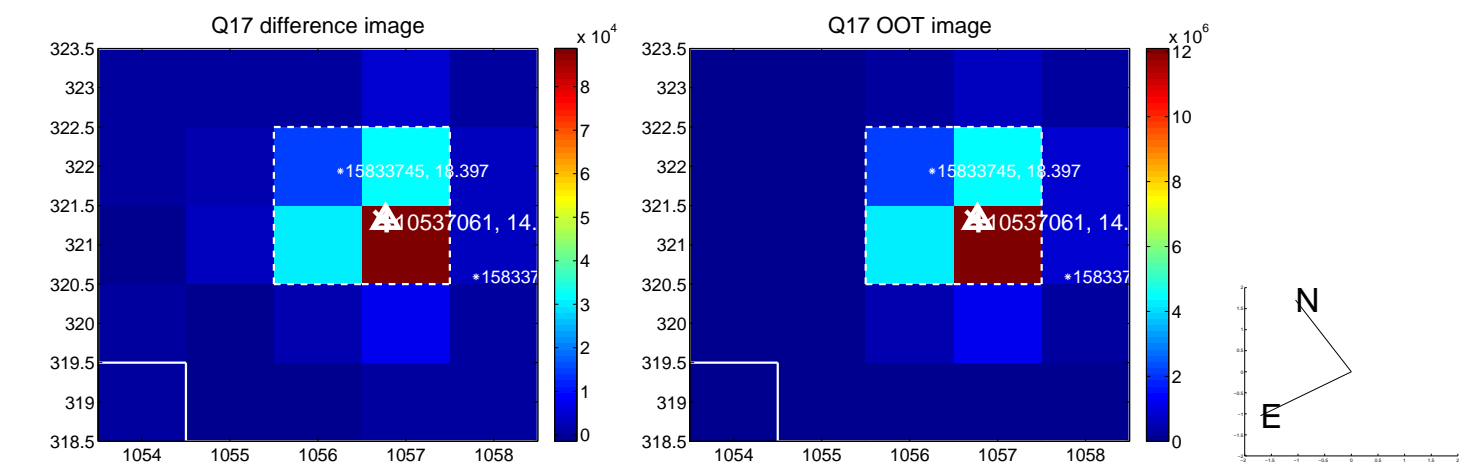
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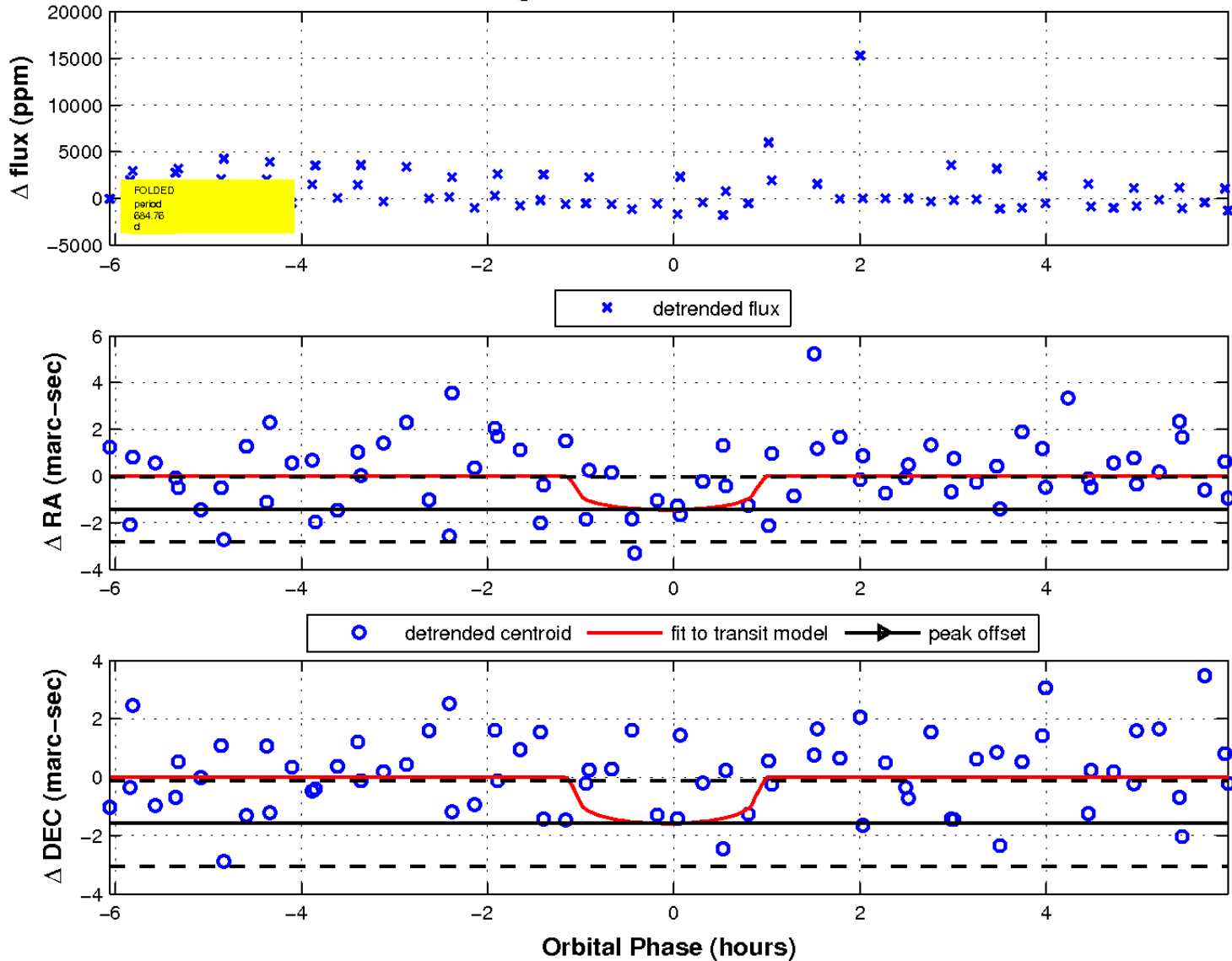
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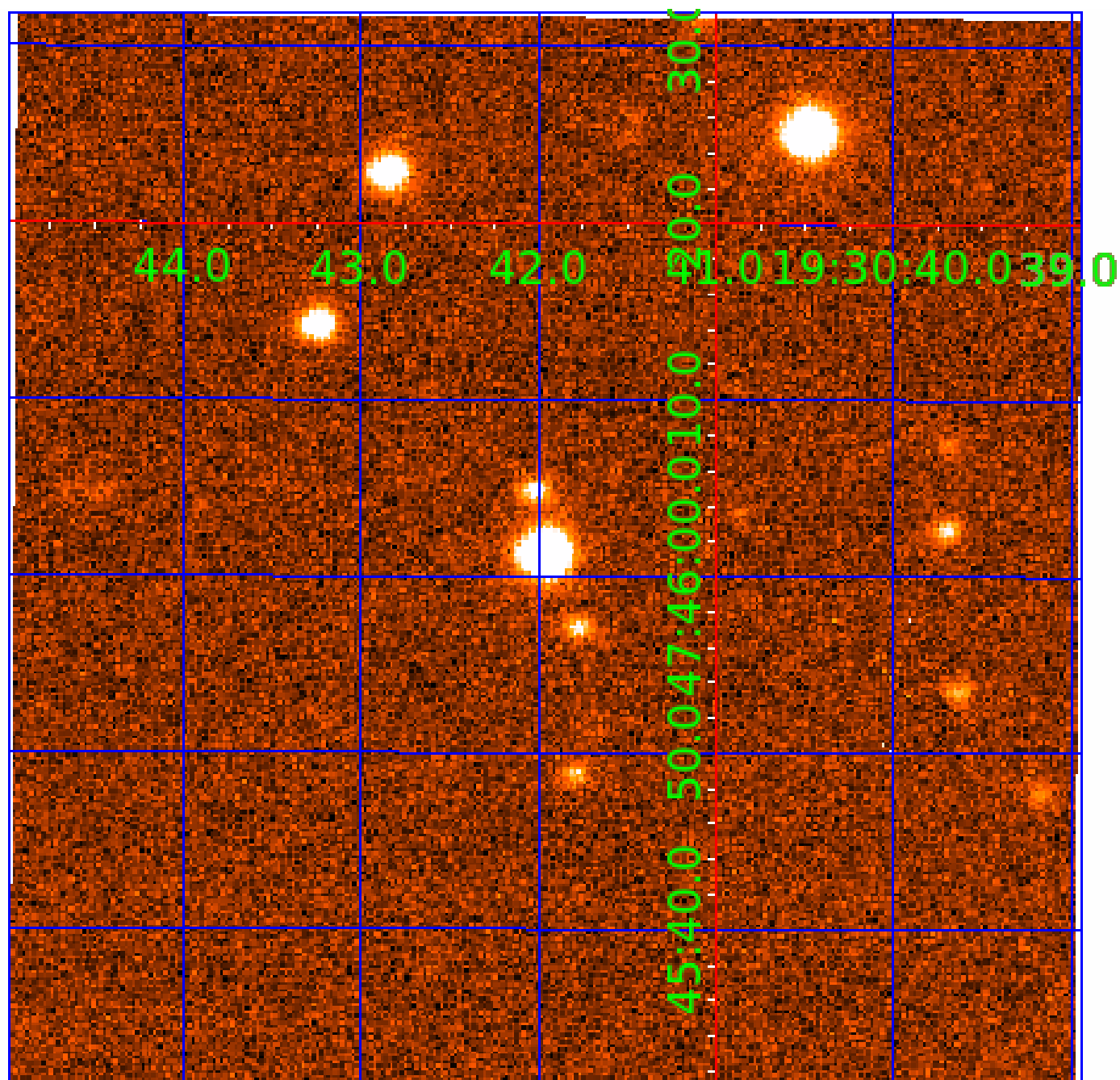


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



# KIC 010537061

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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010537061-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
010537061-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST

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

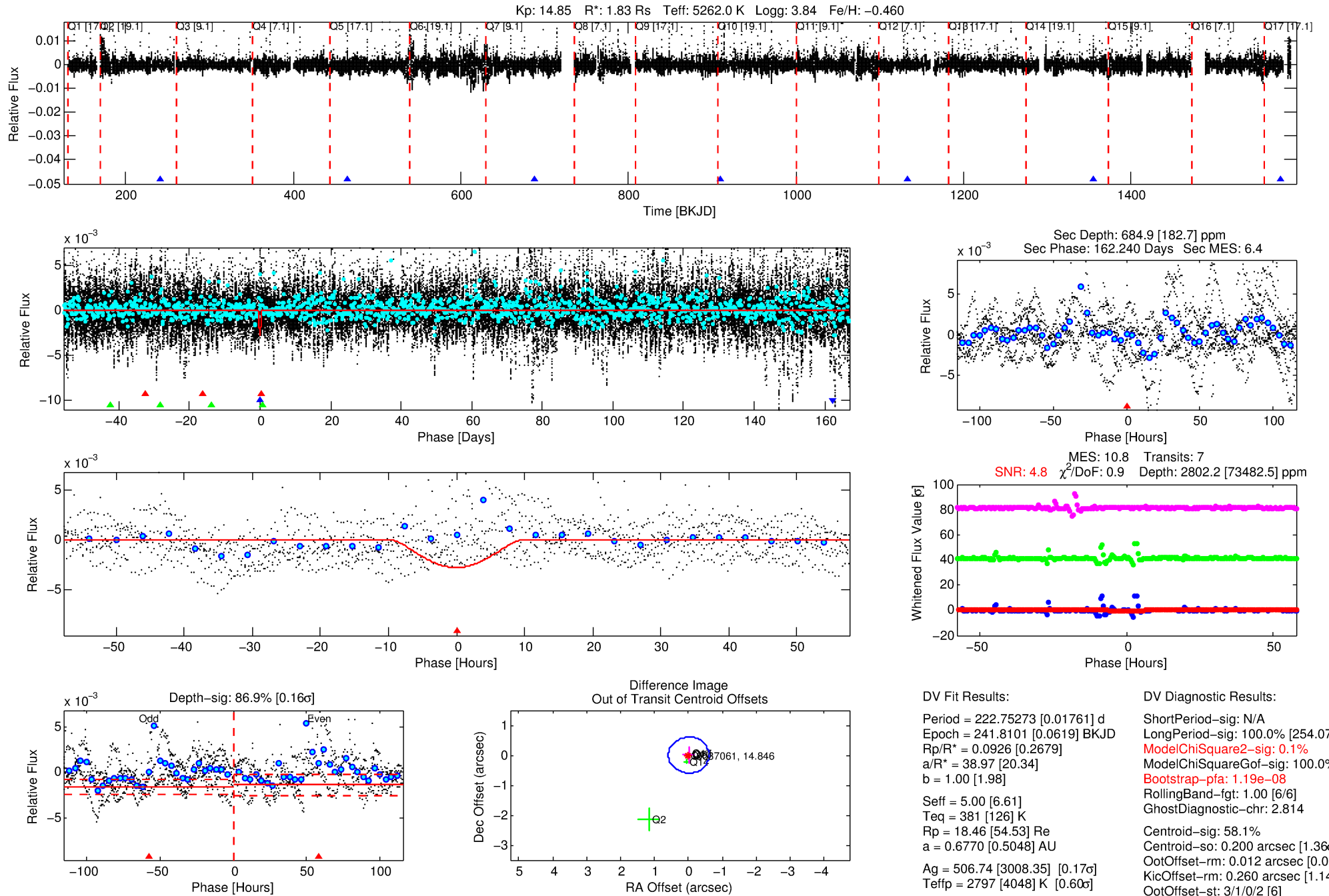
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010537061-02

No Significant Match Found

# DV One-Page Summary

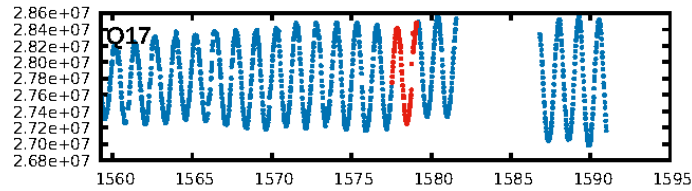
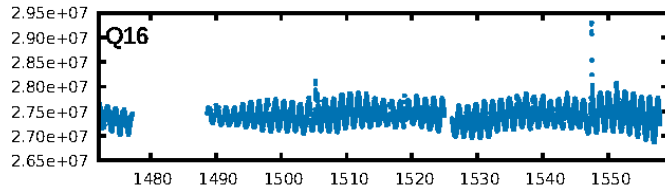
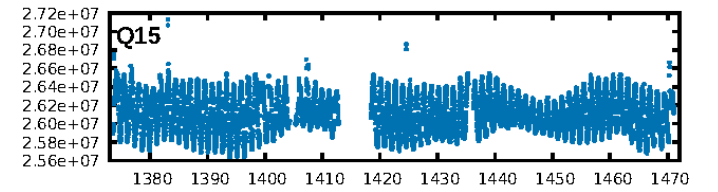
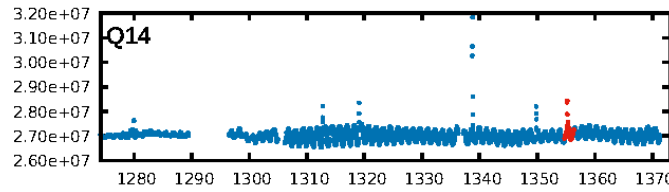
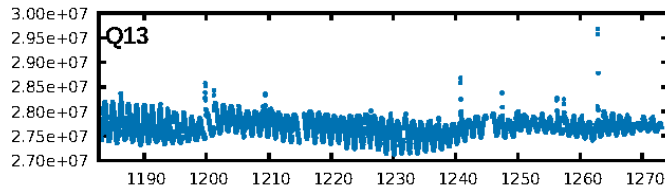
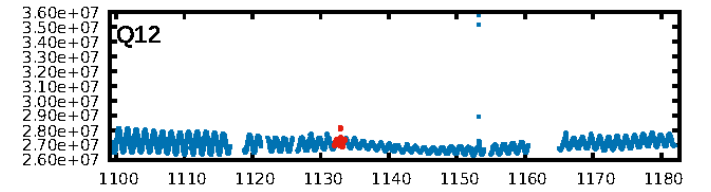
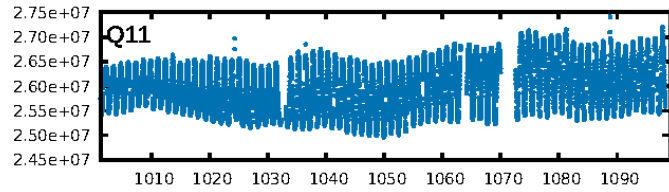
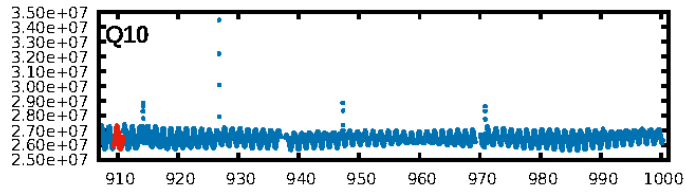
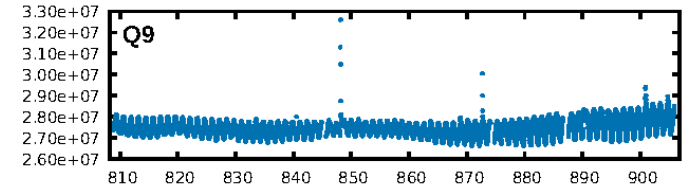
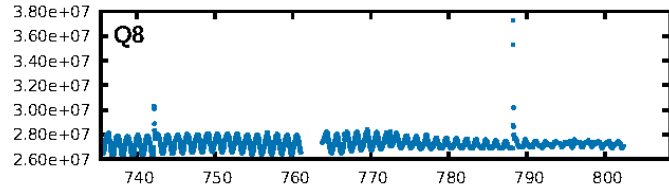
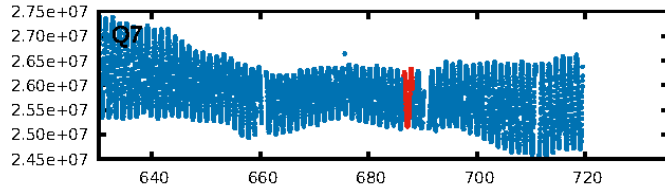
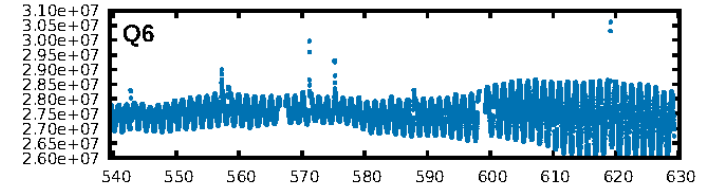
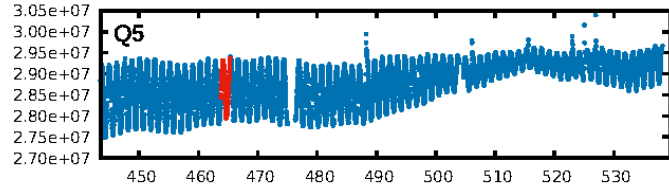
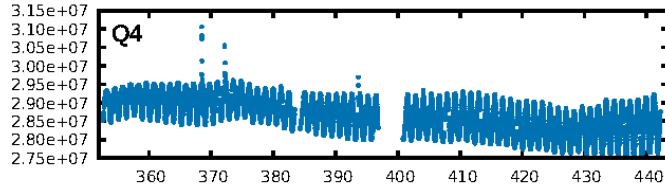
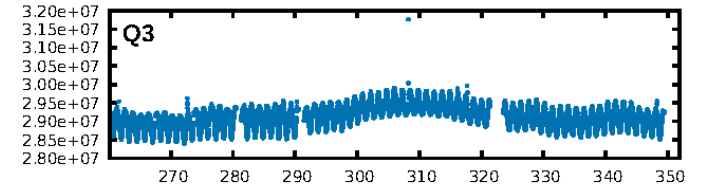
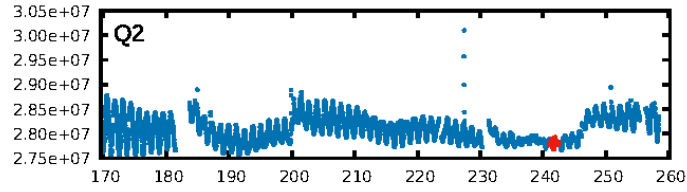
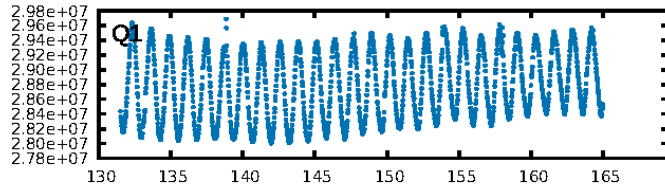
KIC: 10537061 Candidate: 2 of 3 Period: 222.753 d



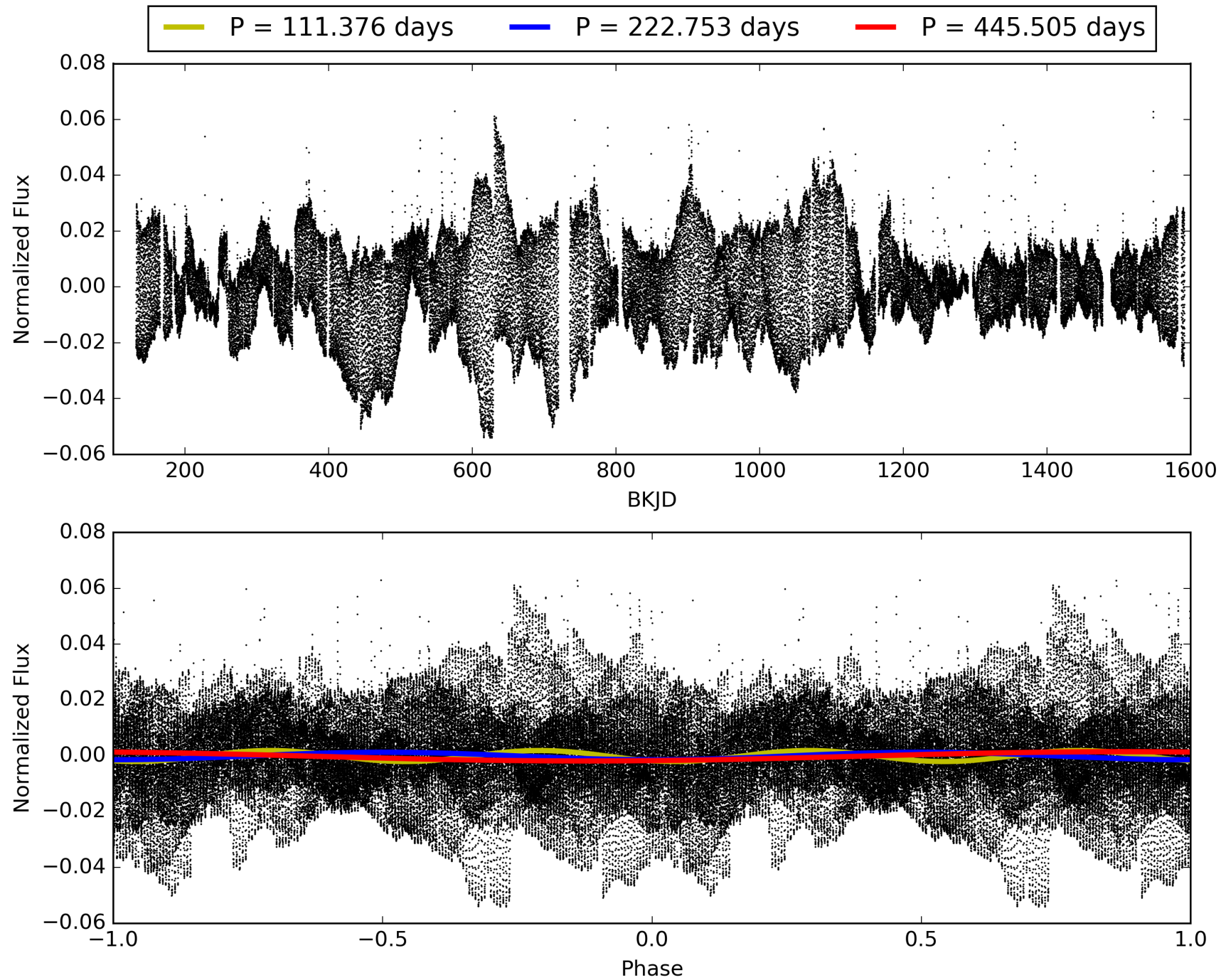
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:24:59 Z

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

# TCE 010537061-02, PDC Light Curves



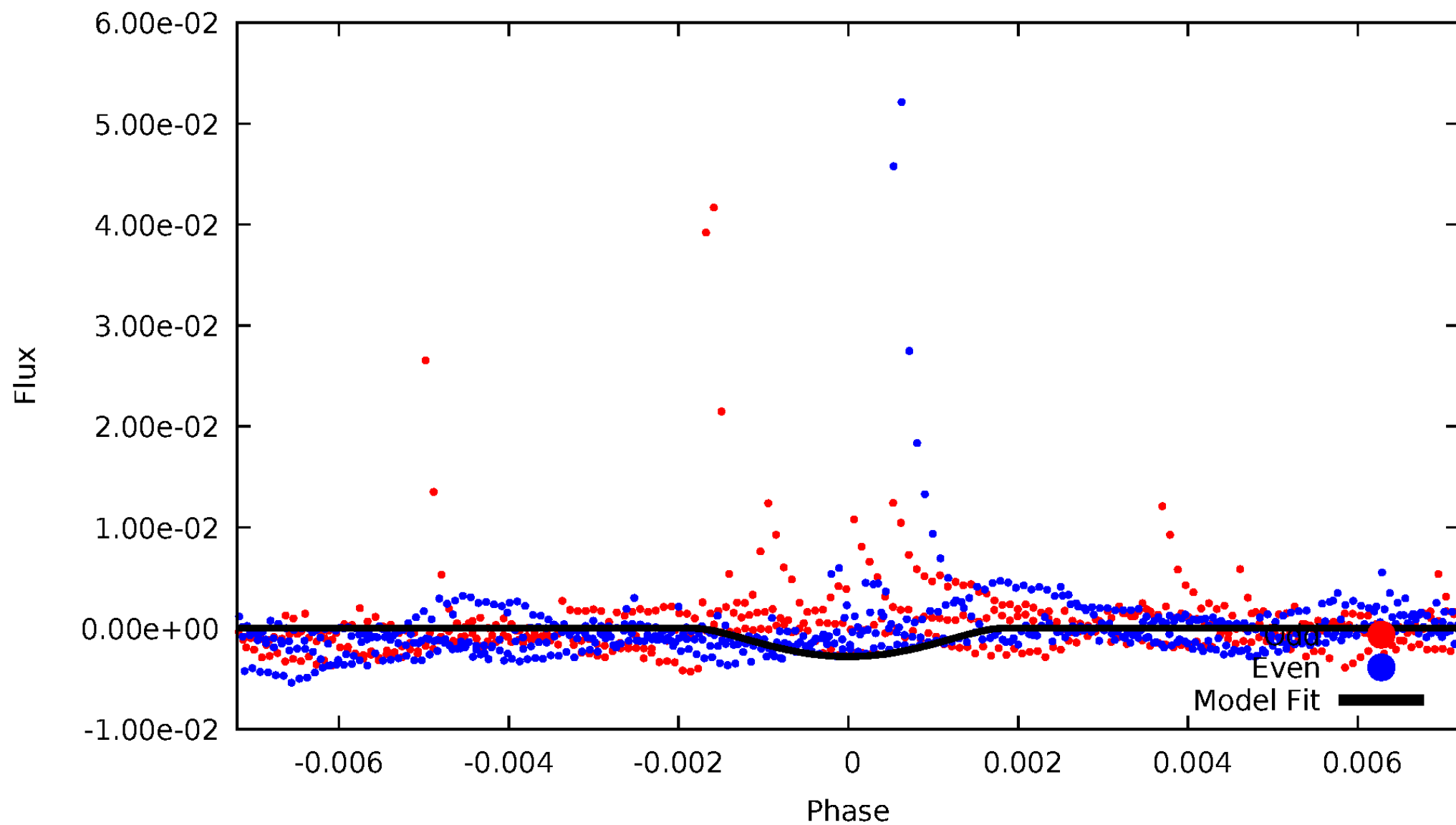
TCE 010537061-02





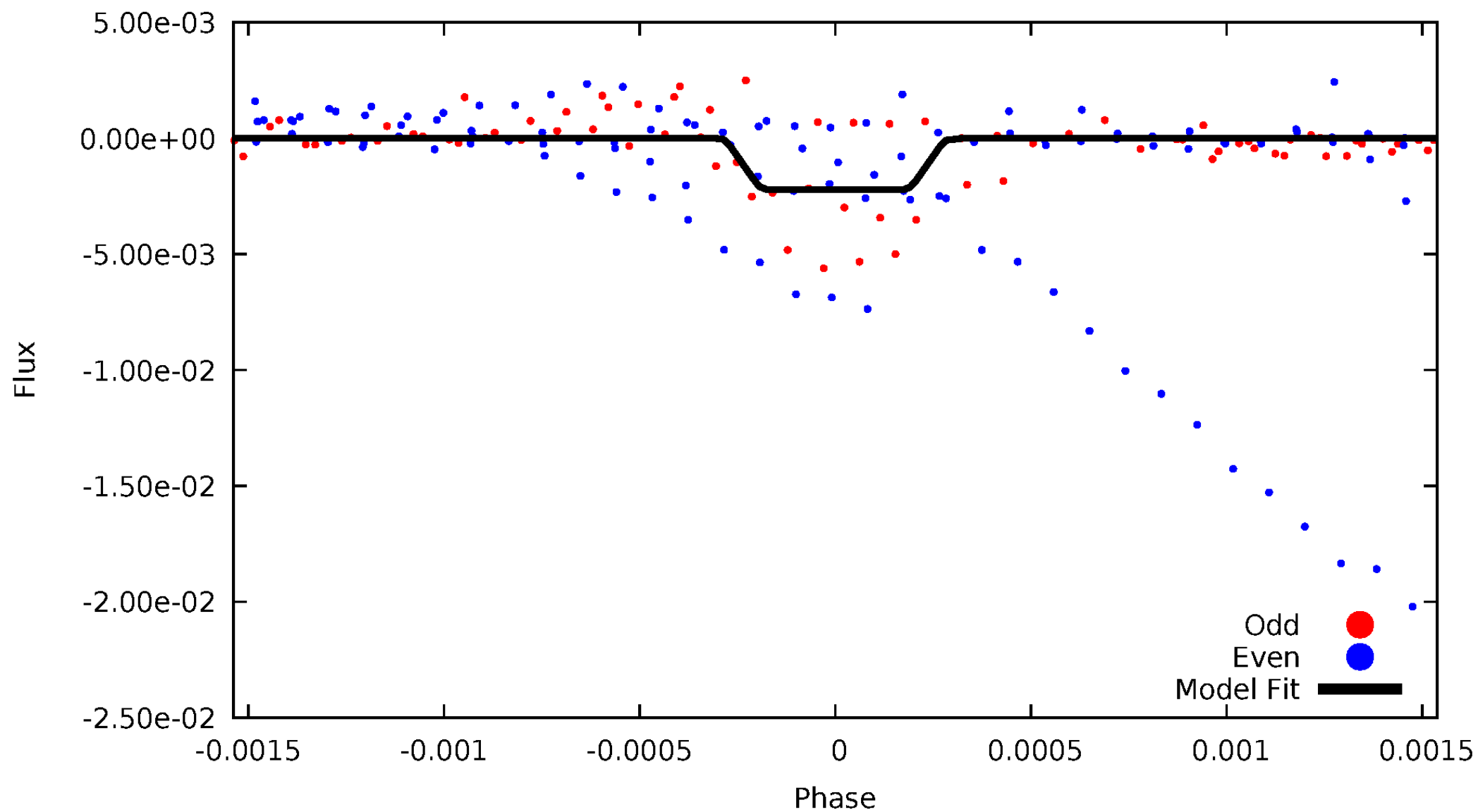
# DV Odd/Even

TCE 010537061-02



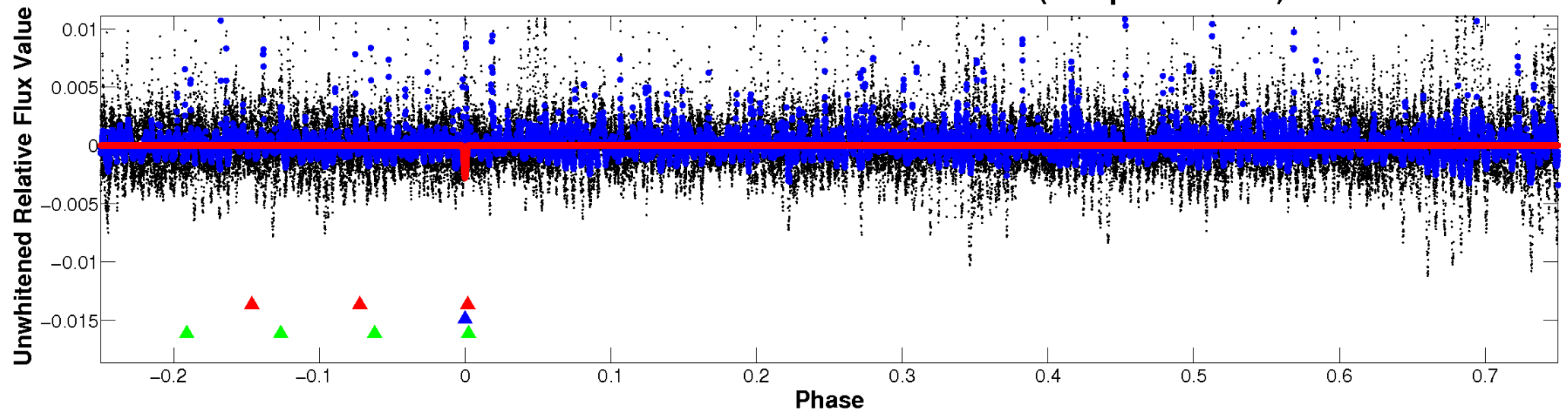
# ALT Odd/Even

TCE 010537061-02

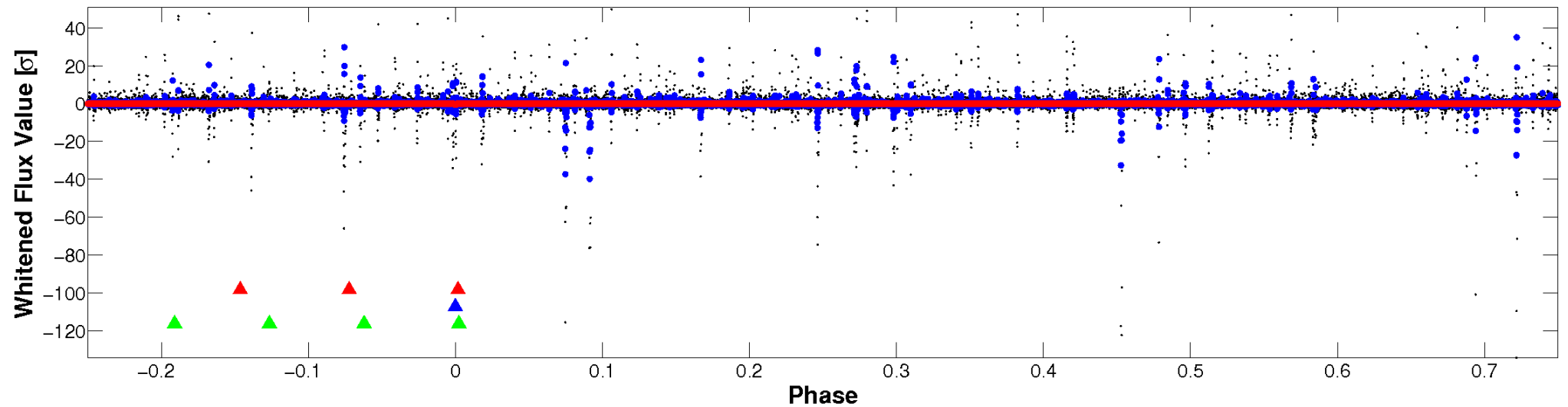


# Non-Whitened Vs. Whitened Light Curve

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

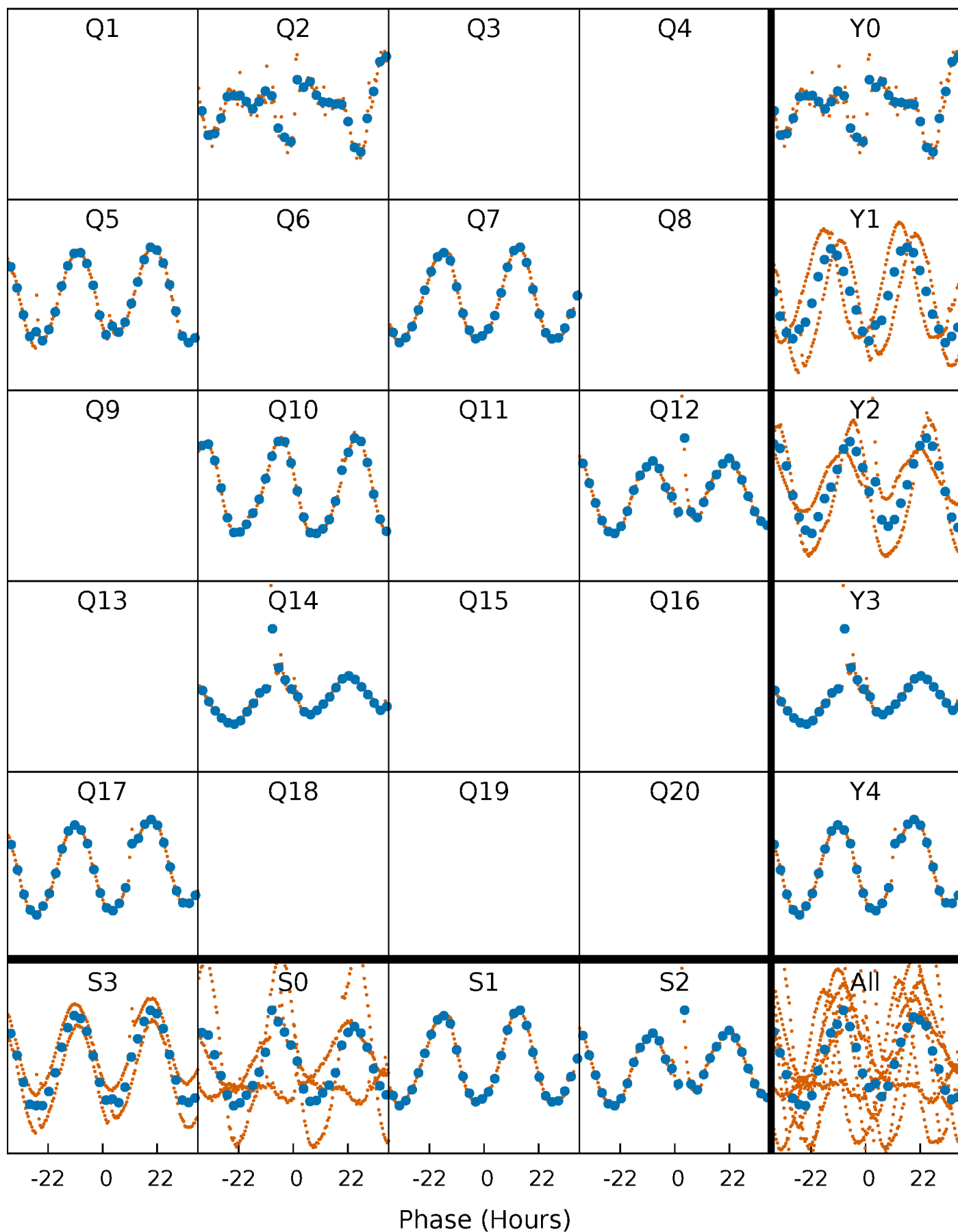


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



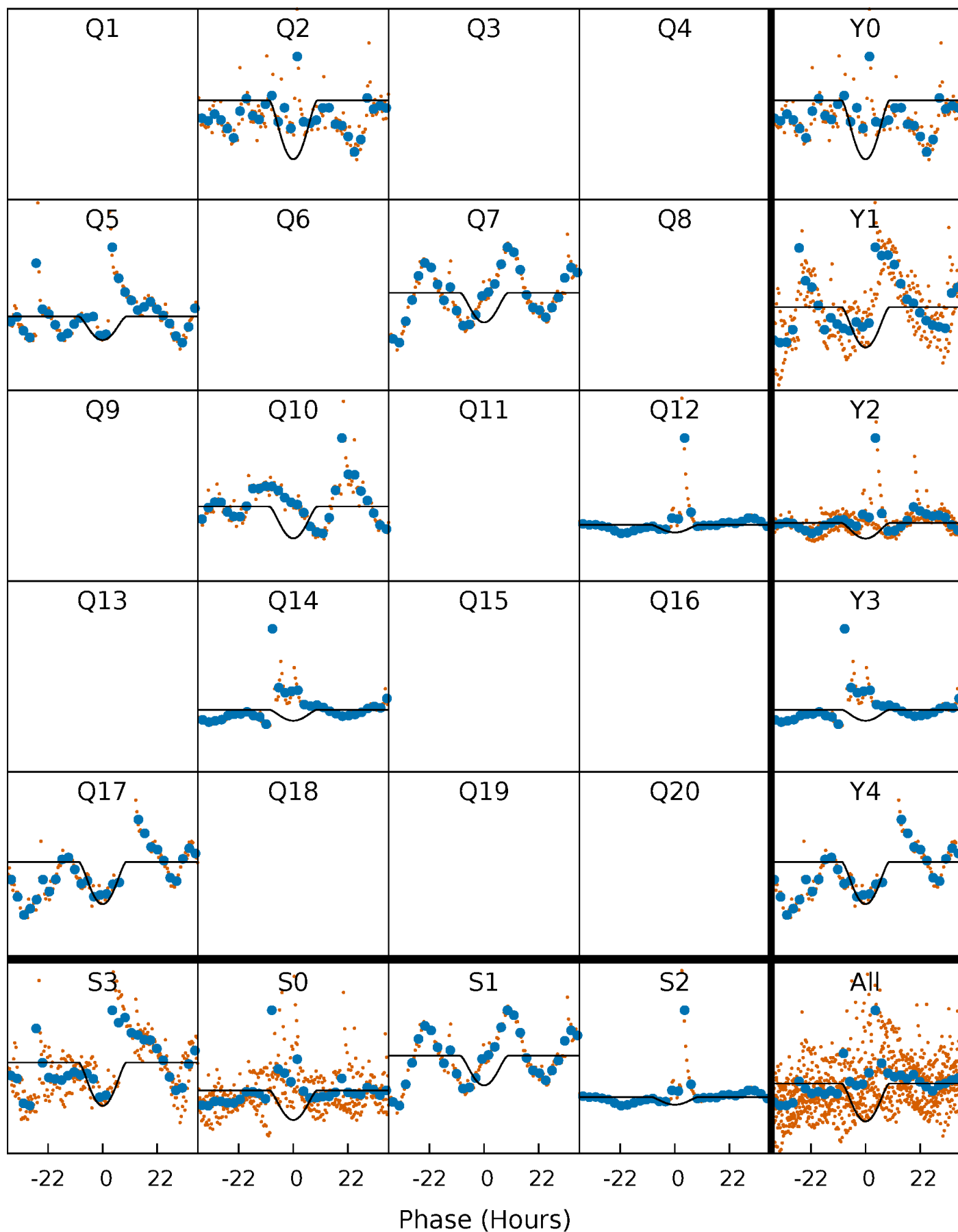
# PDC Quarter-Phased Transit Curves

TCE 010537061-02     $P=222.752735$  Days     $T_0=241.810066$  (BKJD)



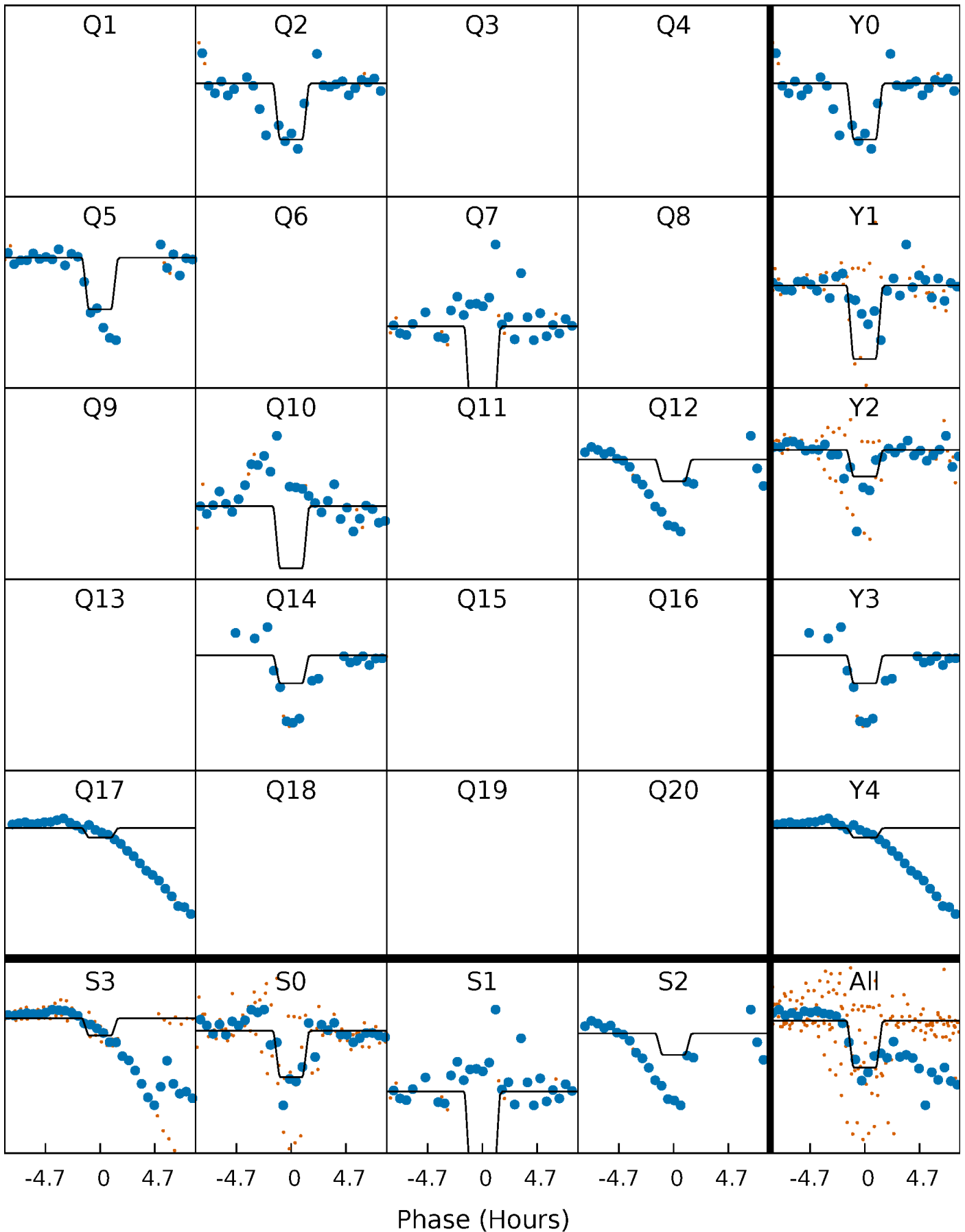
# DV Quarter-Phased Transit Curves

TCE 010537061-02     $P=222.752735$  Days     $T_0=241.810066$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

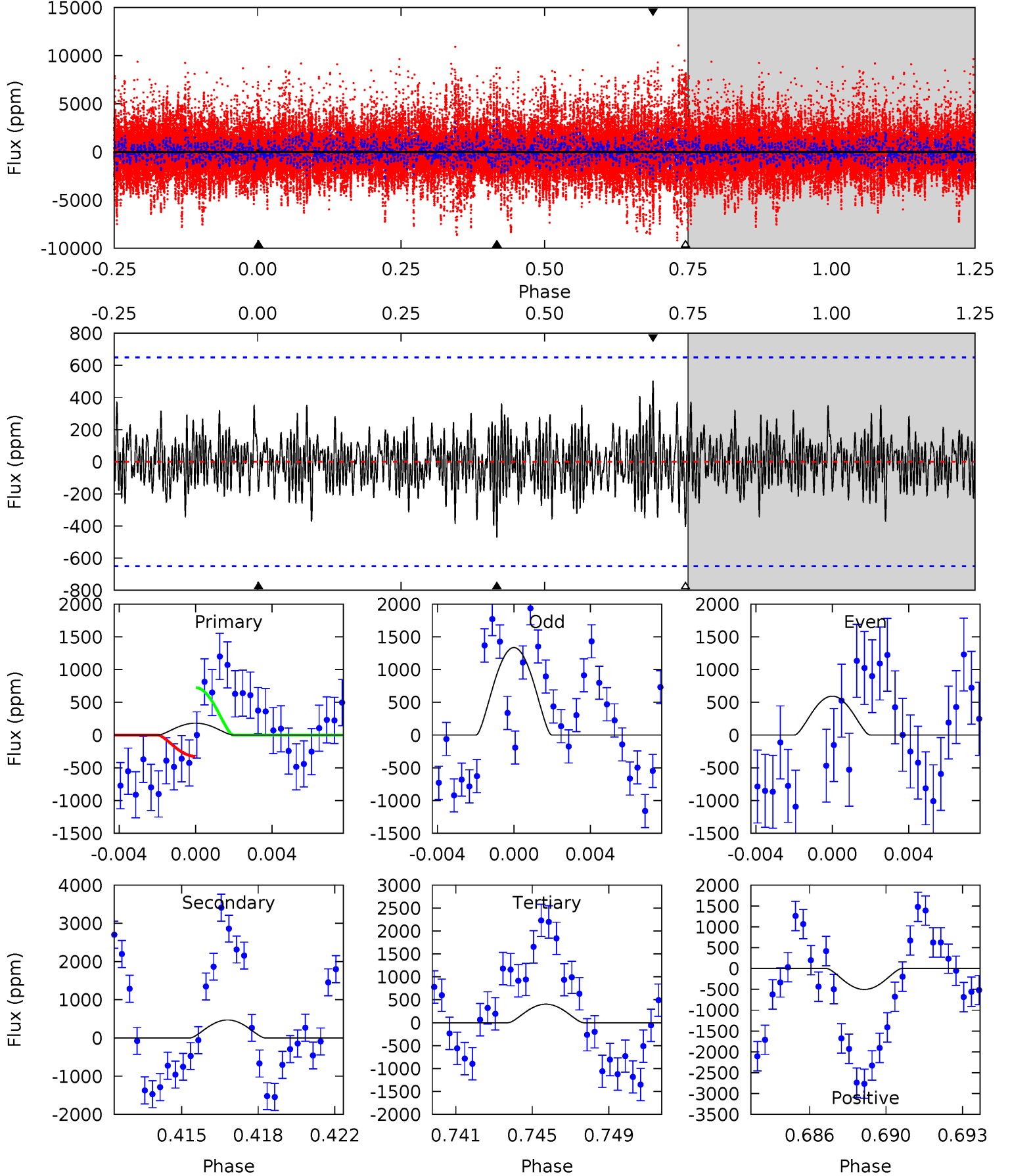
TCE 010537061-02 P=222.735077 Days  $T_0=241.797221$  (BKJD)



# DV Model-Shift Uniqueness Test

010537061-02,  $P = 222.752735$  Days,  $E = 19.057331$  Days

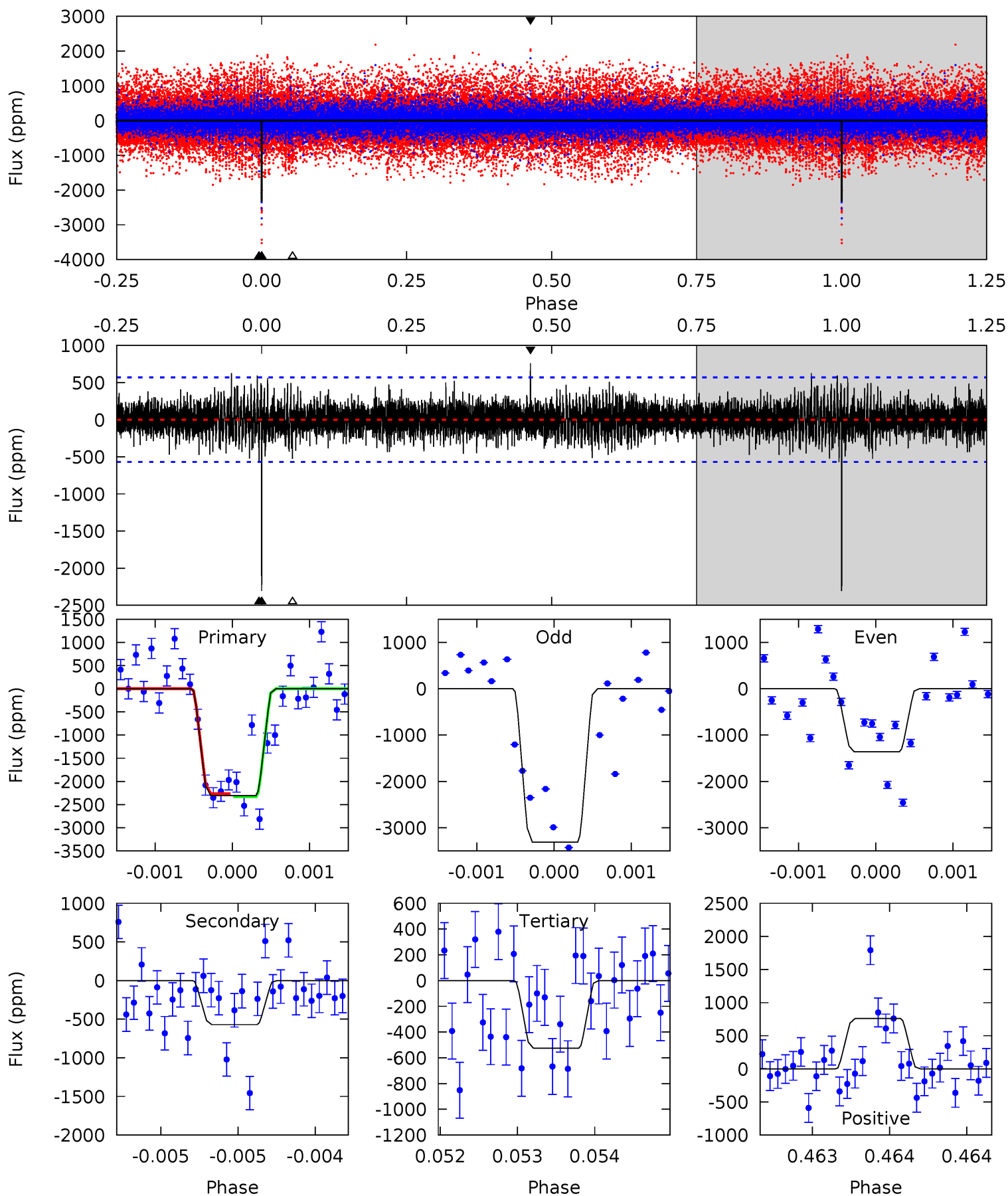
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.46	3.78	3.24	4.04	5.22	2.91	1.09	-1.78	-2.58	0.54	-0.26	2.92	7.41	0.52	1.62



# Alt Model-Shift Uniqueness Test

010537061-02, P = 222.735077 Days, E = 19.062144 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
22.5	5.56	5.13	7.42	5.55	3.45	1.34	17.3	15.1	0.43	-1.86	10.3	1.12	0.25	0





### Stellar Parameters For KIC 010537061

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5262^{+158}_{-158}$	$3.836^{+0.817}_{-0.327}$	$-0.460^{+0.300}_{-0.300}$	$1.826^{+1.105}_{-1.105}$	$0.834^{+0.124}_{-0.137}$	$0.193^{+3.096}_{-0.143}$
	+3%/-3%	+21%/-9%	+65%/-65%	+61%/-61%	+15%/-16%	+1605%/-74%
Source	PHO1	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 010537061-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-471 \pm 125$	$38.33^{+50.03}_{-26.93}$	$515^{+78}_{-90}$	$2481^{+872}_{-388}$	$77^{+796}_{-63}$
Alt.	$-571 \pm 103$	$35.72^{+47.68}_{-25.09}$	$518^{+86}_{-87}$	$2600^{+1018}_{-421}$	$105^{+1139}_{-84}$

$T_{max}$  = 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

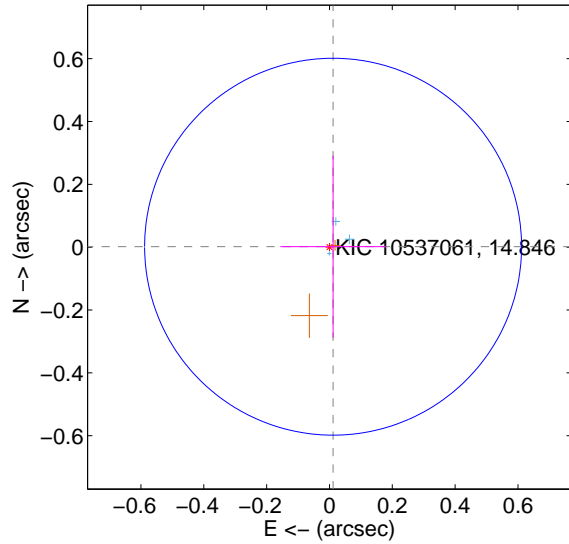
Supplemental centroid analysis for 010537061-02. Kepler magnitude: 14.85. Transit SNR 4.79

There are 4 quarters with good PRF difference image offsets

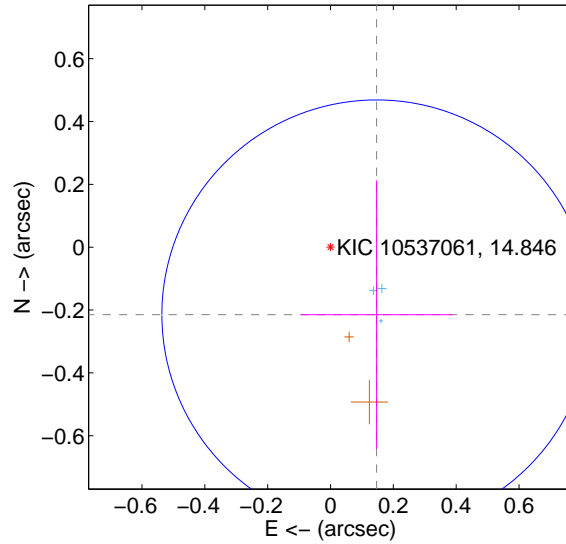
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.012 \pm 0.200$	0.06	$-0.012 \pm 0.168$	$0.001 \pm 0.290$
PRF-fit source offset from KIC position	$0.260 \pm 0.228$	1.14	$-0.147 \pm 0.242$	$-0.215 \pm 0.427$
photometric centroid source offset	$0.20 \pm 0.15$	1.36	$-0.05 \pm 0.15$	$-0.19 \pm 0.15$

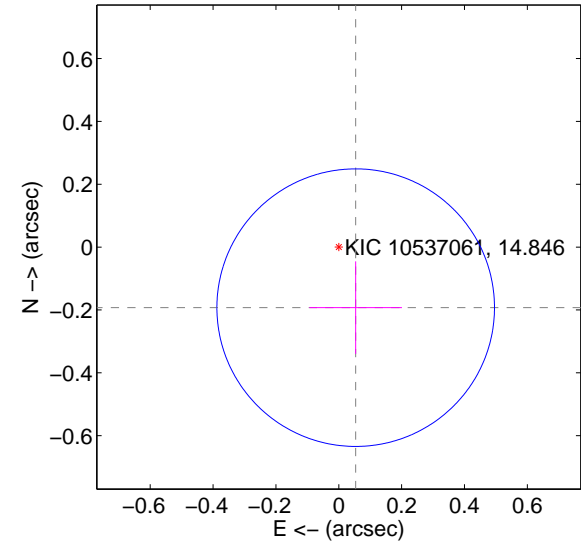
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

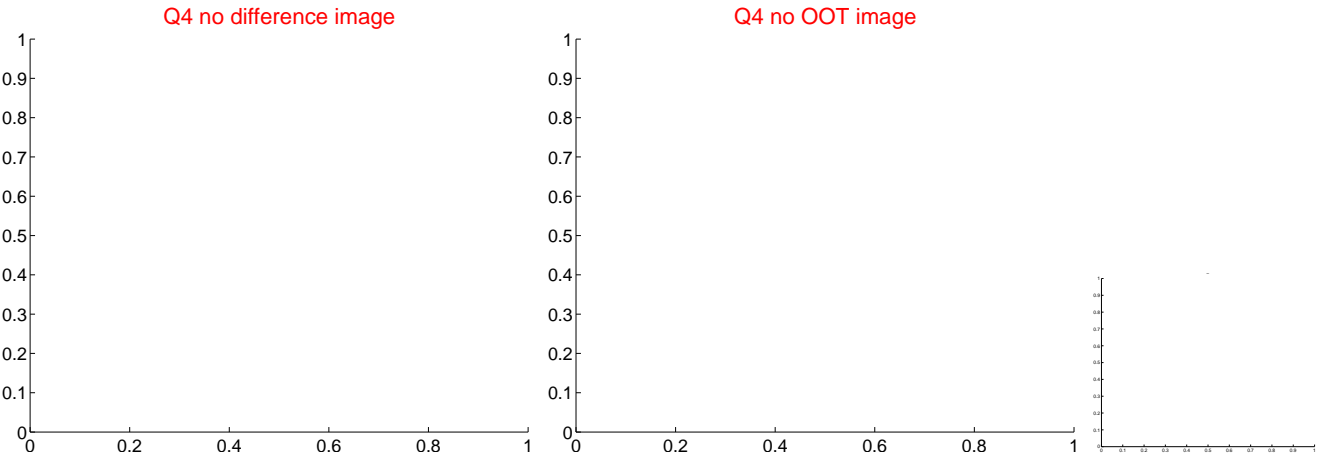
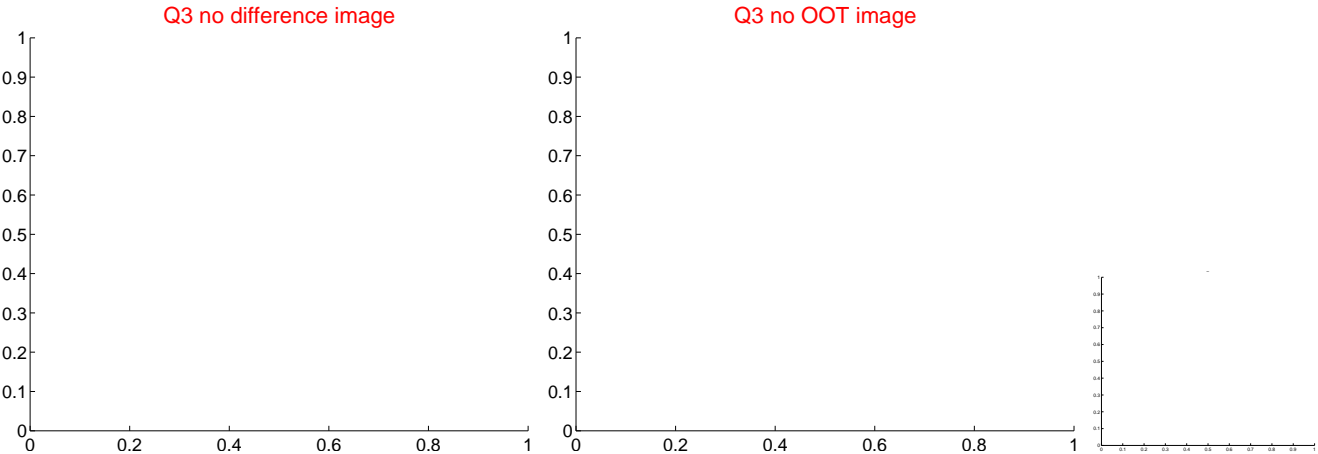
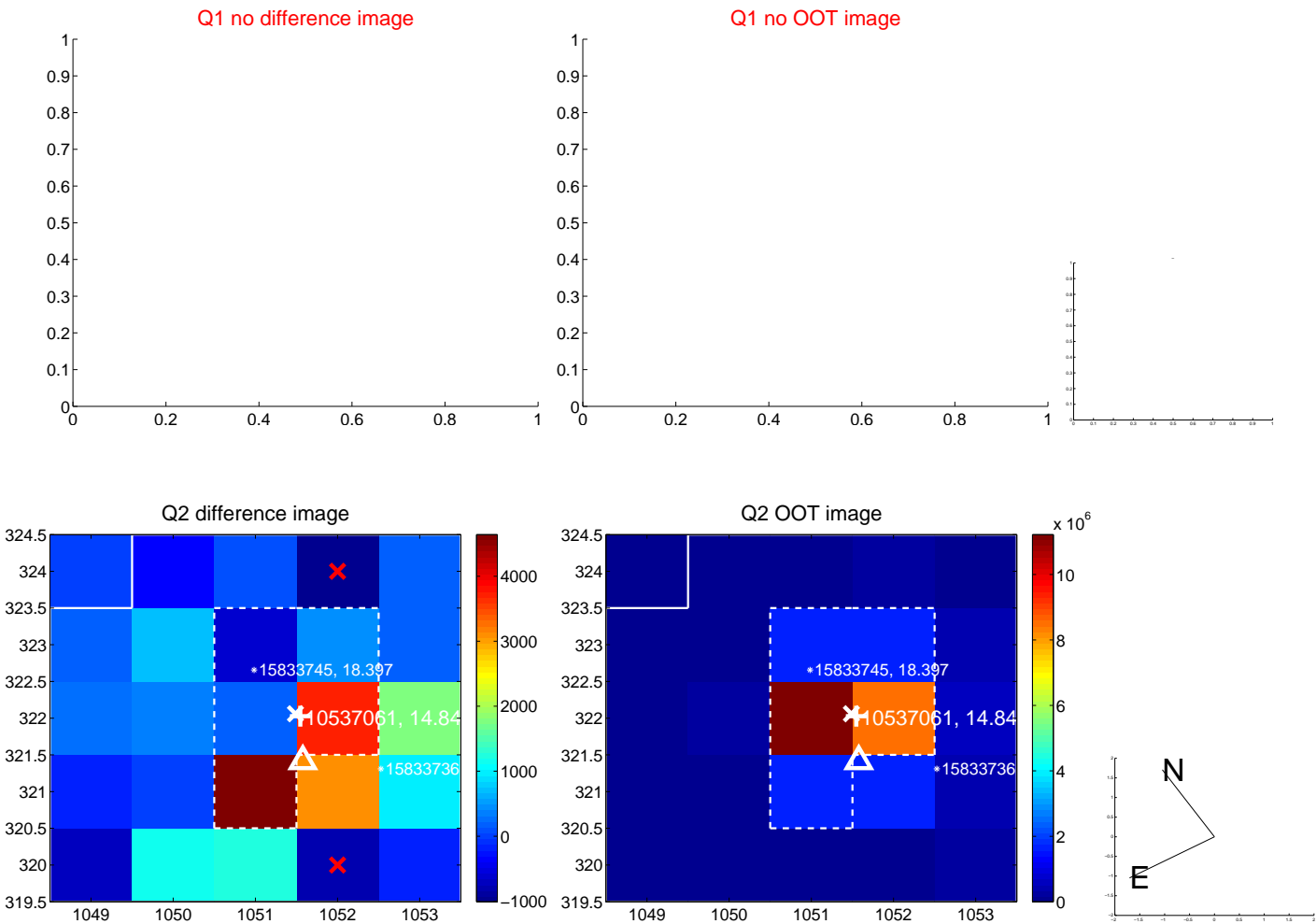


offset from photometric centroids

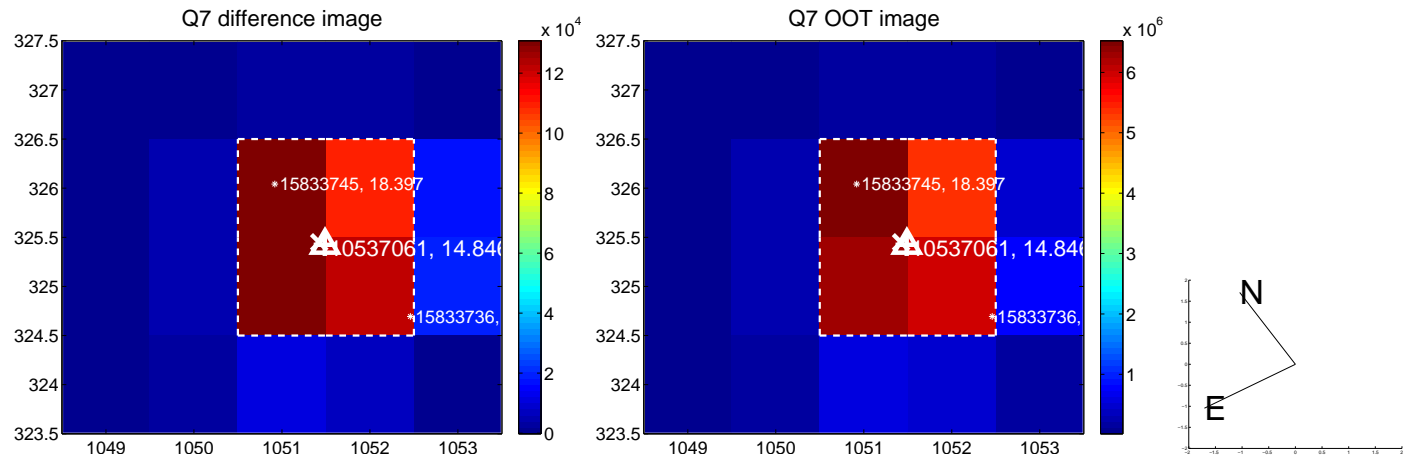
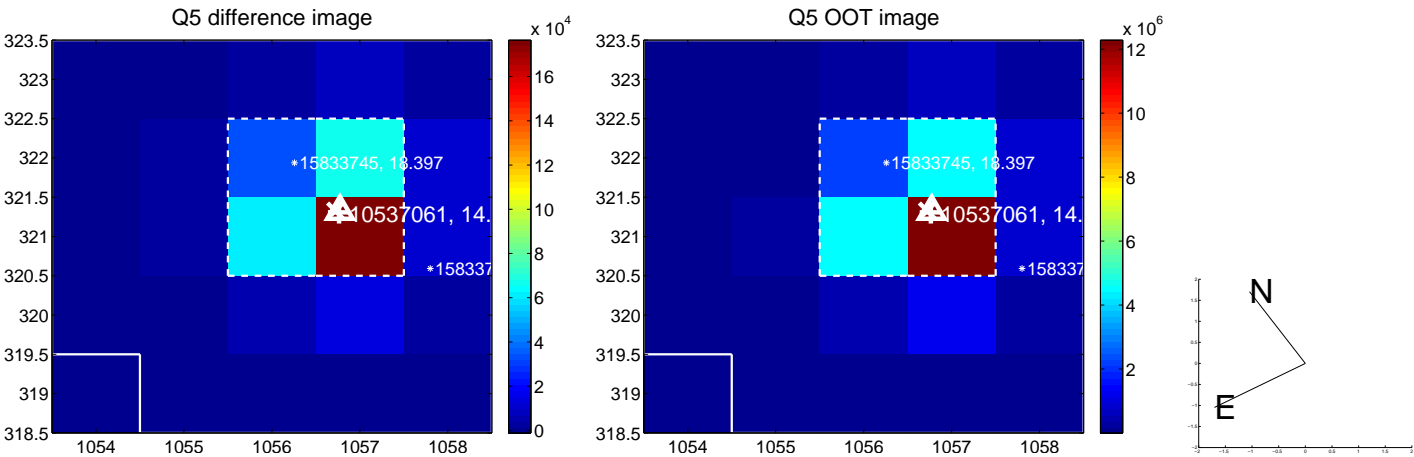


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

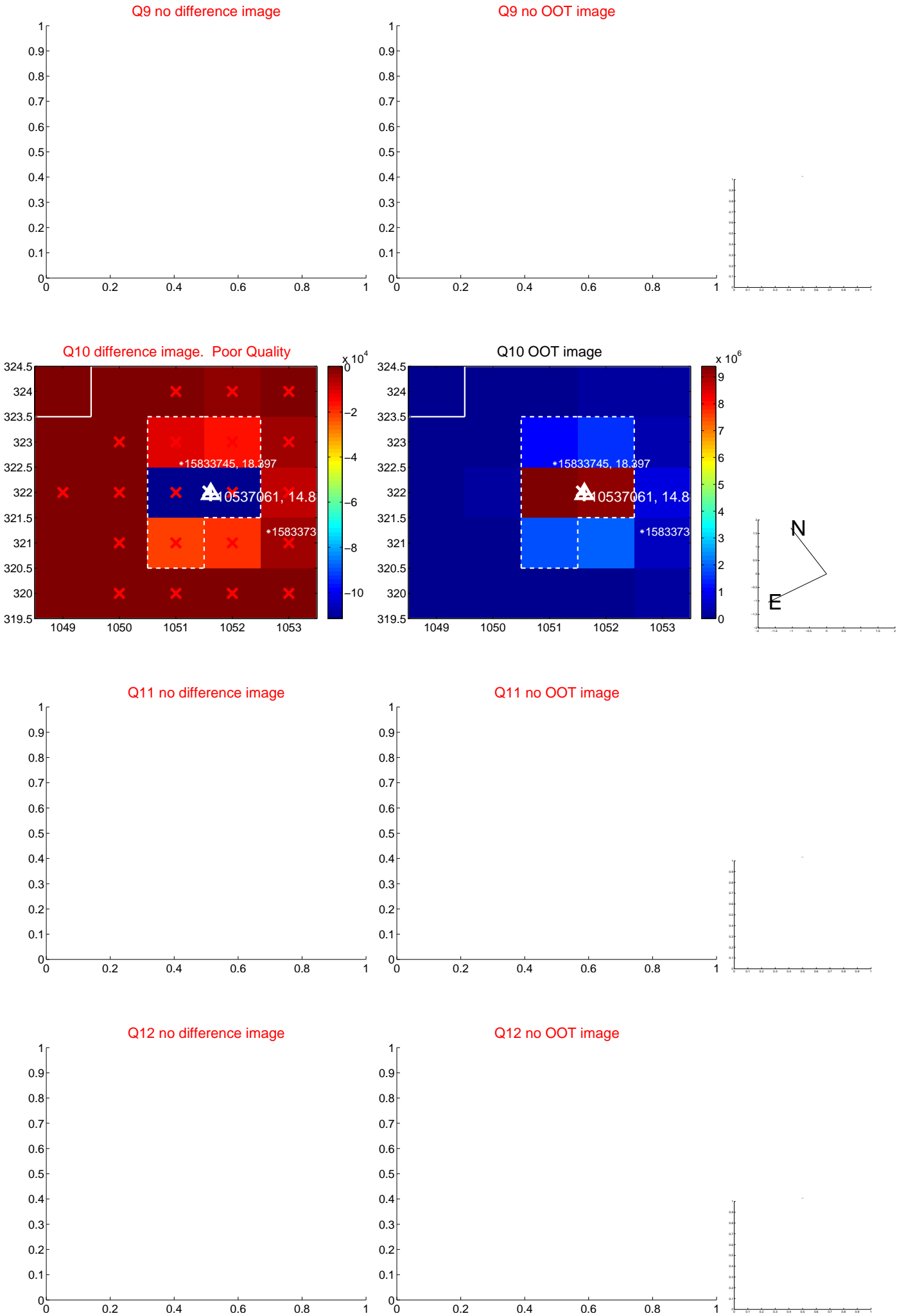
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



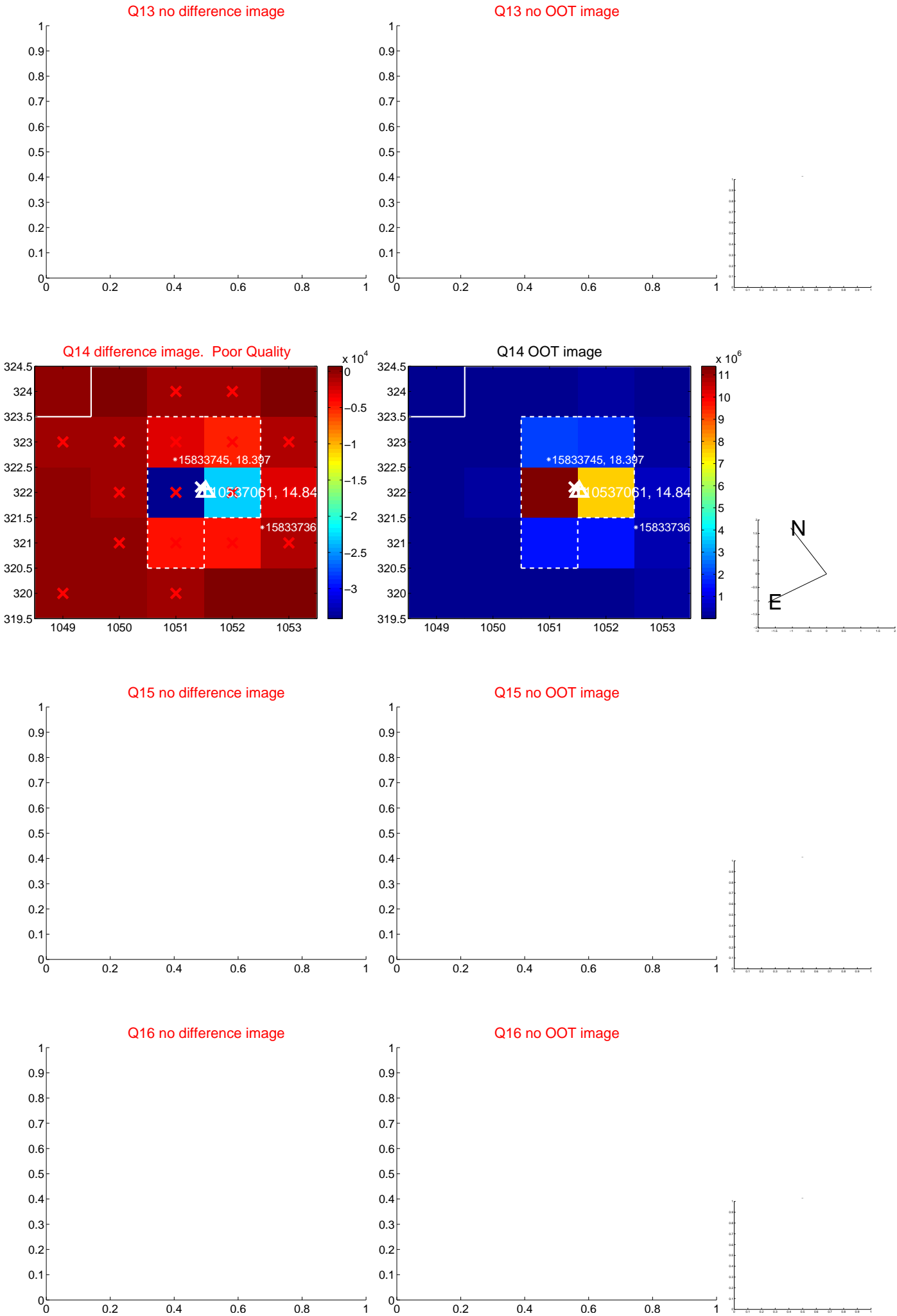
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



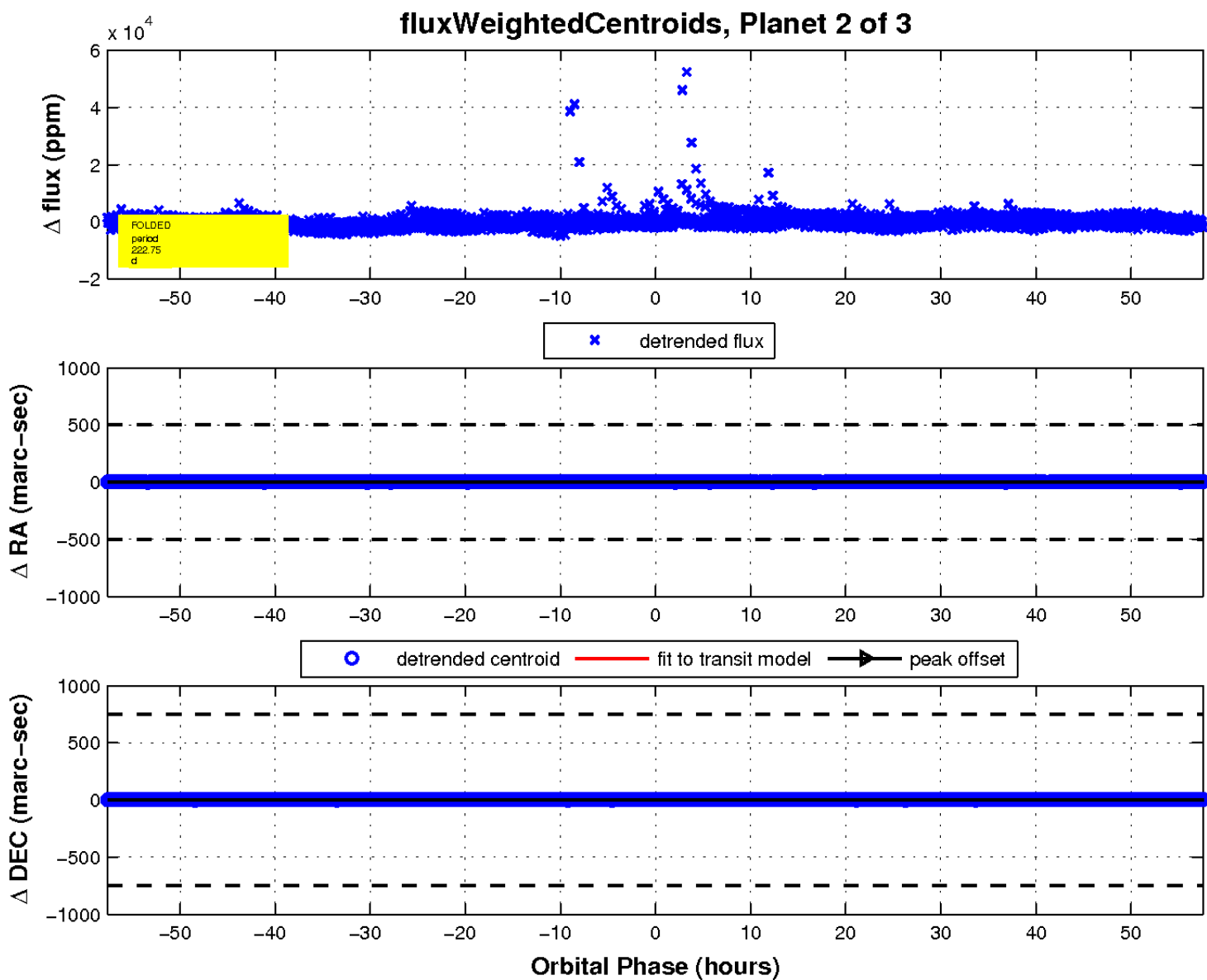
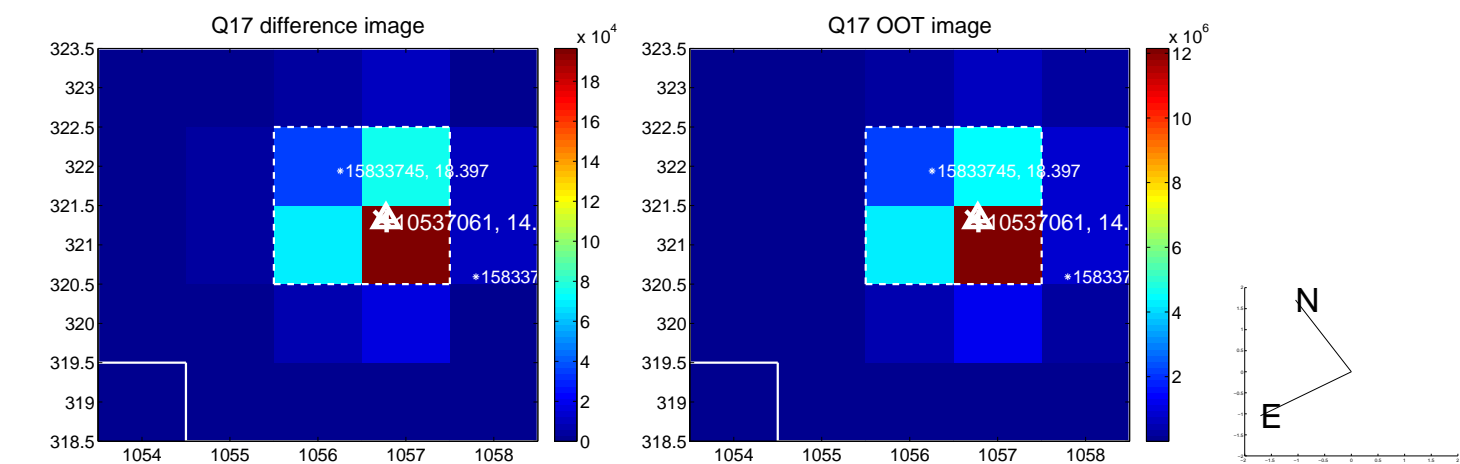
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

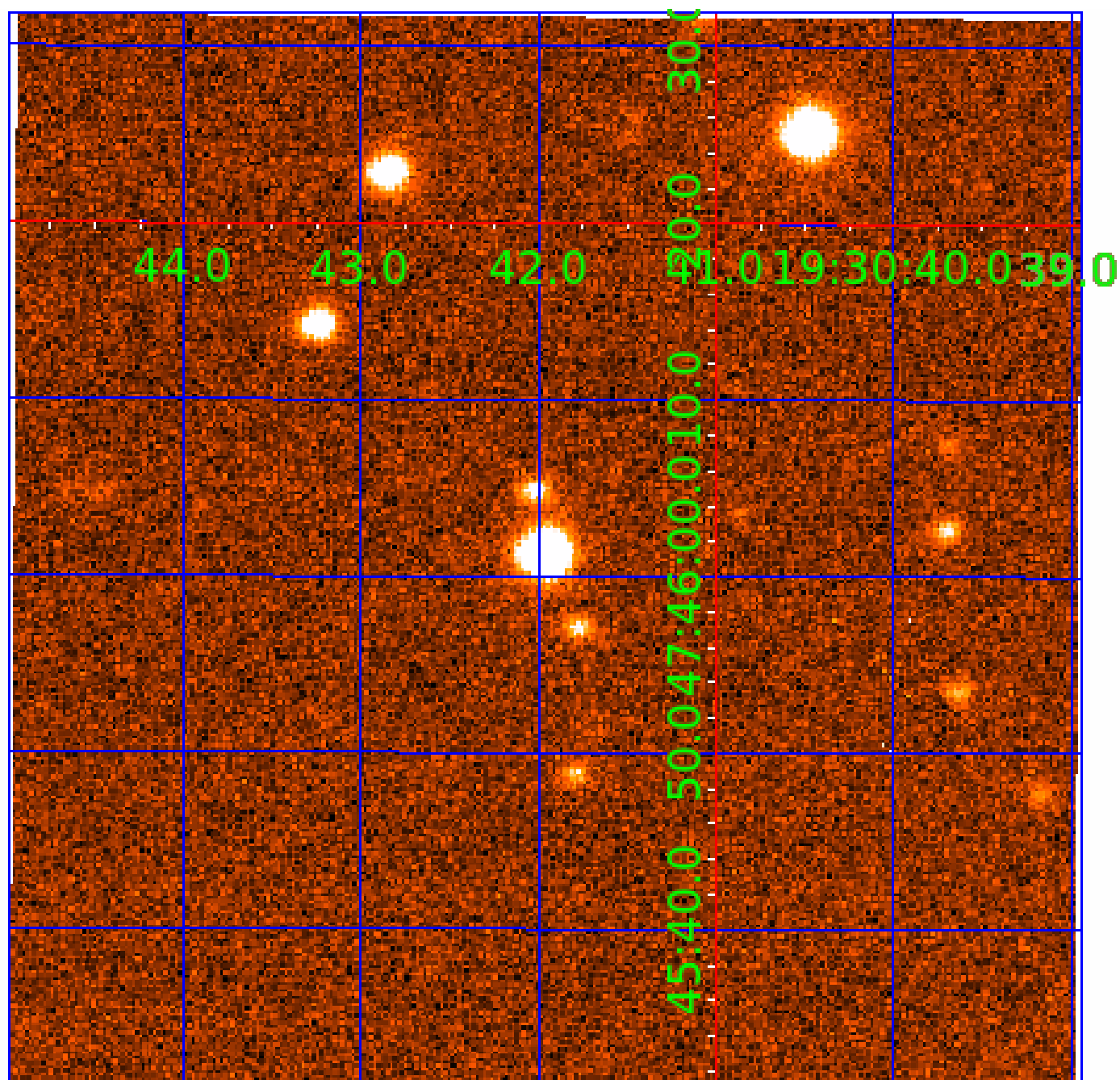


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 010537061

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010537061-01	OBS	No	684.759525	209.216744	237.9	2.022	17.9	0.8	1.83	5262	2.86	1.12
010537061-02	OBS	No	222.752735	241.810066	2802.2	19.233	10.8	4.8	1.83	5262	18.46	5.00
010537061-03	OBS	No	431.146697	242.345122	2456.1	4.194	14.5	7.4	1.83	5262	9.01	2.07

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010537061-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010537061-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
010537061-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—HALO_GHOST

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

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

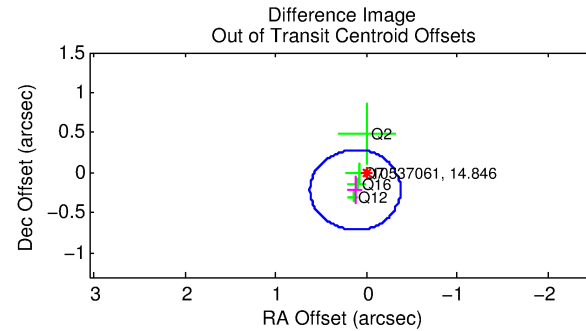
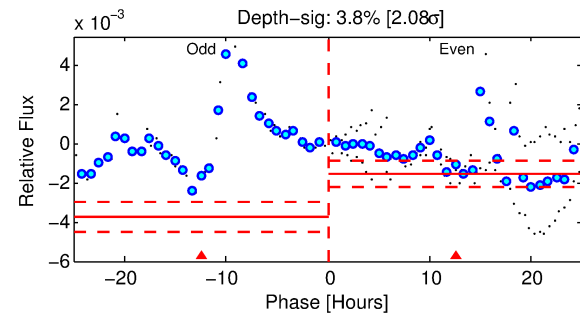
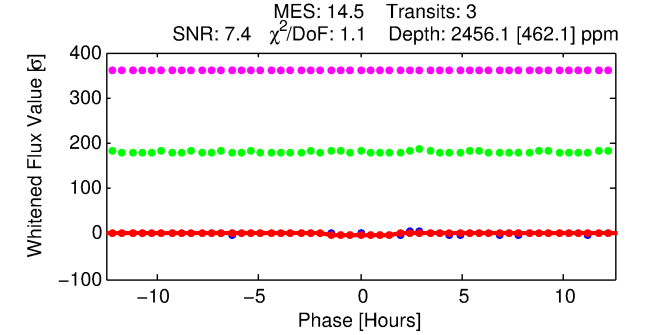
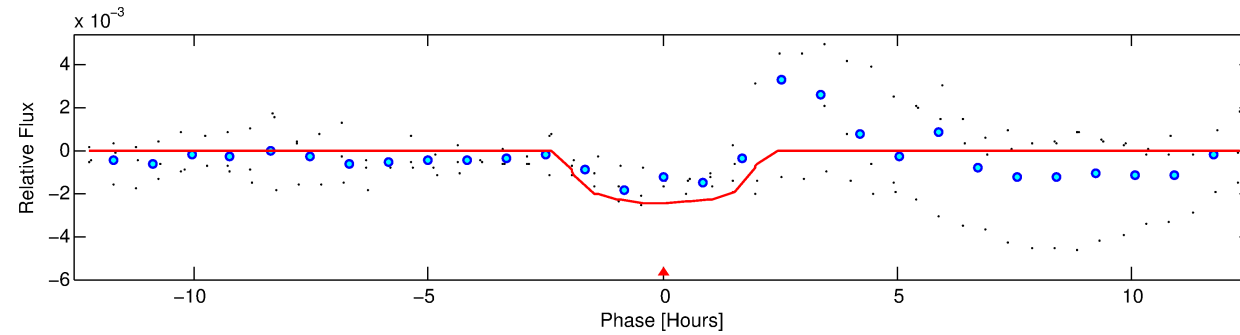
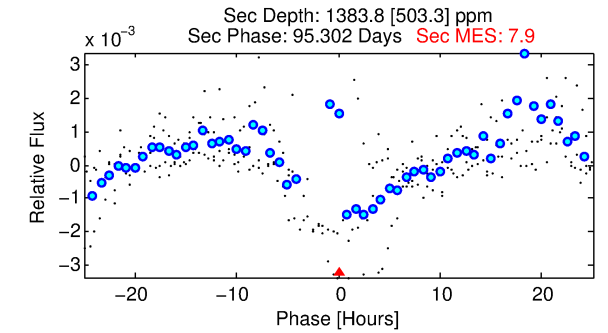
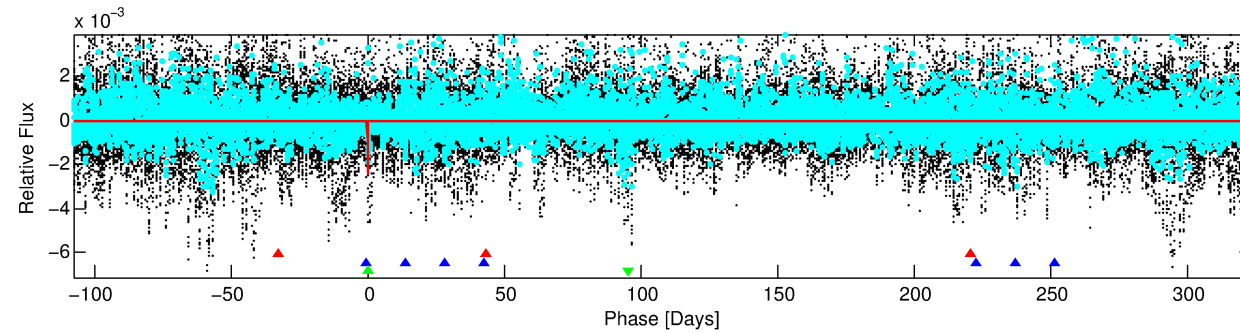
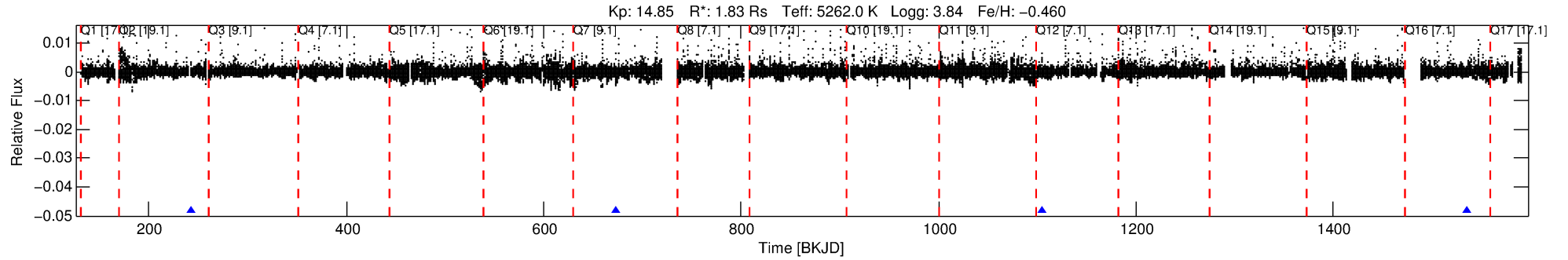
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010537061-03

No Significant Match Found

# DV One-Page Summary

KIC: 10537061 Candidate: 3 of 3 Period: 431.147 d



## DV Fit Results:

Period = 431.14670 [0.00380] d  
Epoch = 242.3451 [0.0085] BKJD  
Rp/R\* = 0.0452 [0.2612]  
a/R\* = 780.00 [17906.48]  
b = 0.33 [63.91]  
Seff = 2.07 [2.74]  
Teff = 306 [101] K  
Rp = 9.01 [52.32] Re  
a = 1.0514 [0.7840] AU  
Ag = 10365.71 [120563.42] [0.09σ]  
Teffp = 4773 [13789] K [0.32σ]

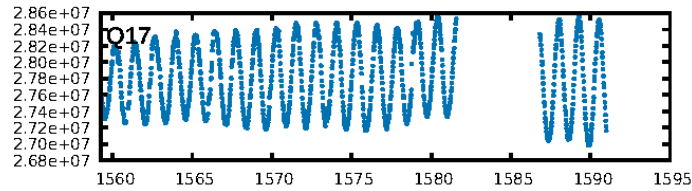
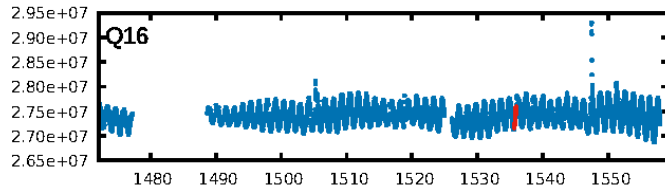
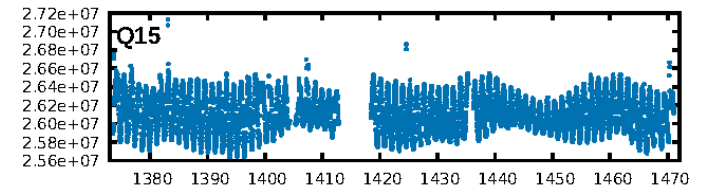
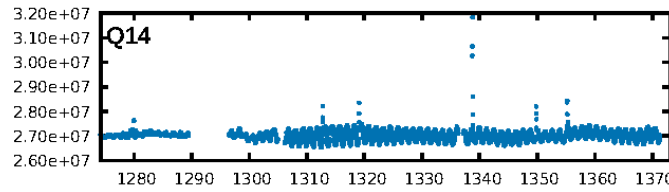
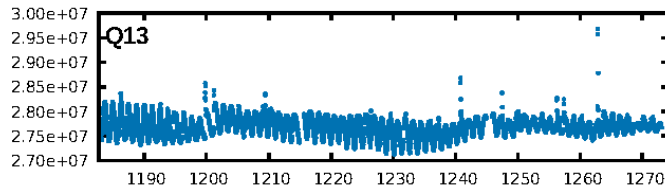
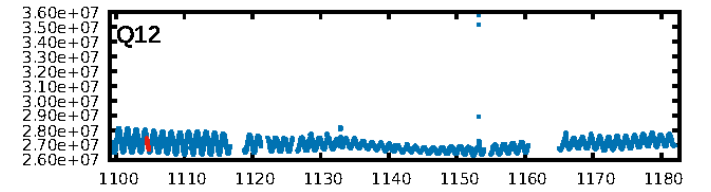
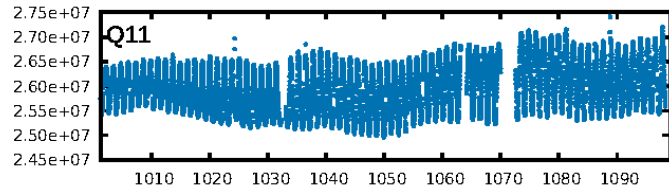
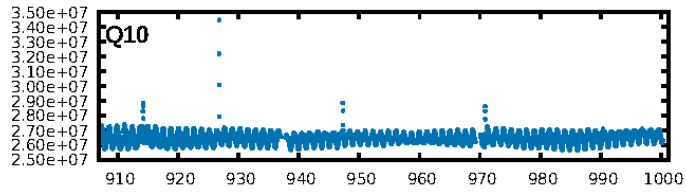
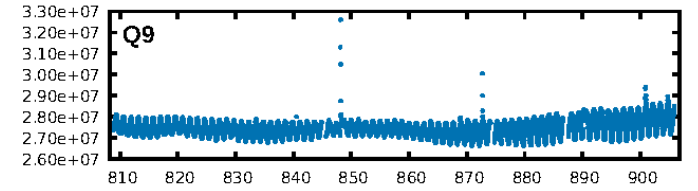
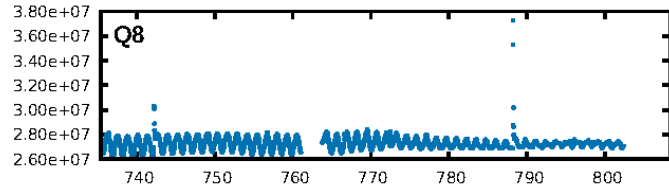
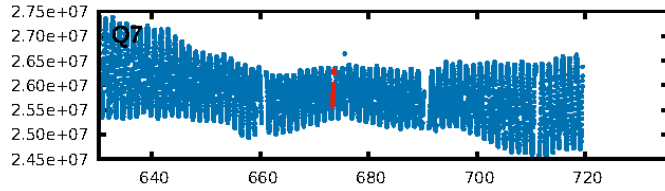
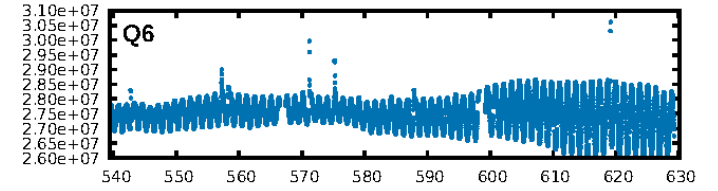
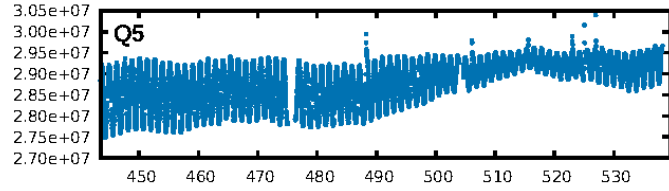
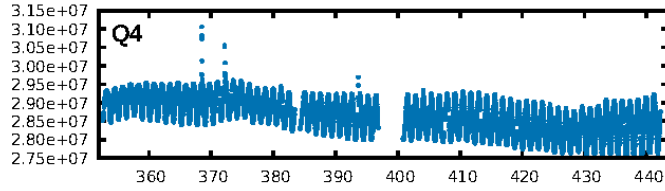
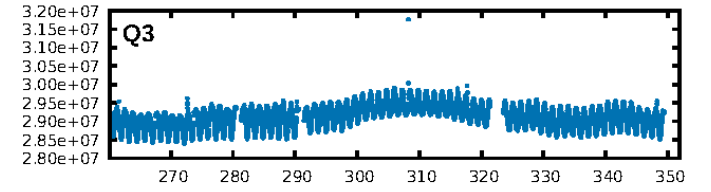
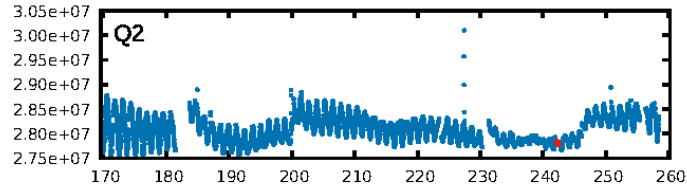
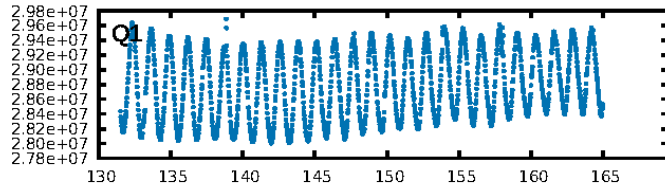
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [254.07σ]  
LongPeriod-sig: 100.0% [1307.22σ]  
ModelChiSquare2-sig: 1.5%  
ModelChiSquareGof-sig: 83.9%  
**Bootstrap-pfa: 2.23e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -0.06736  
Centroid-sig: 7.1%  
Centroid-so: 0.204 arcsec [0.63σ]  
OotOffset-rm: 0.247 arcsec [1.48σ]  
OotOffset-st: 1/1/2/0 [4]  
KicOffset-rm: 0.438 arcsec [2.84σ]  
KicOffset-st: 1/1/2/0 [4]  
DiffImageQuality-fgm: 0.75 [3/4]  
DiffImageOverlap-fno: 0.75 [3/4]

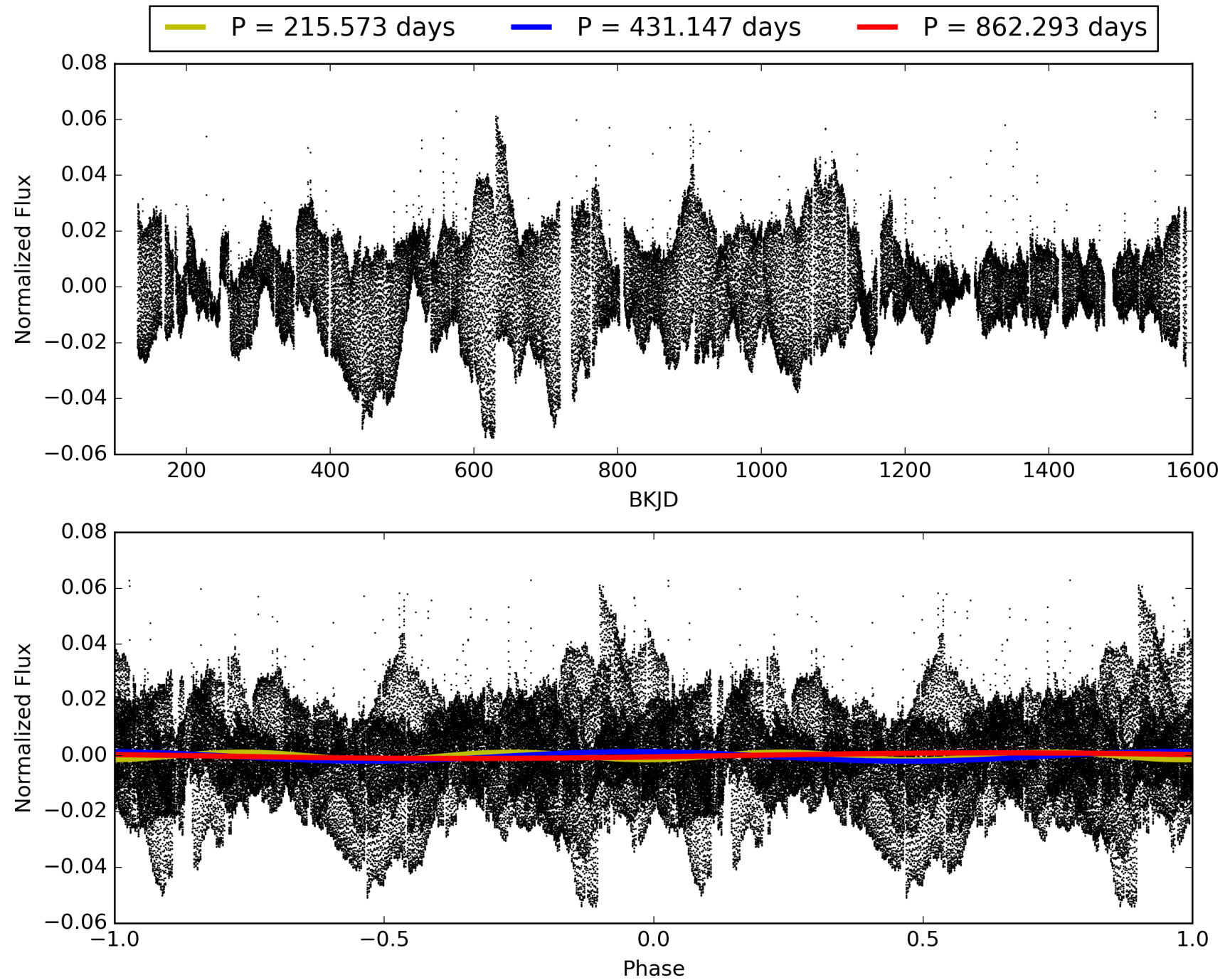
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 05:25:14 Z

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

# TCE 010537061-03, PDC Light Curves

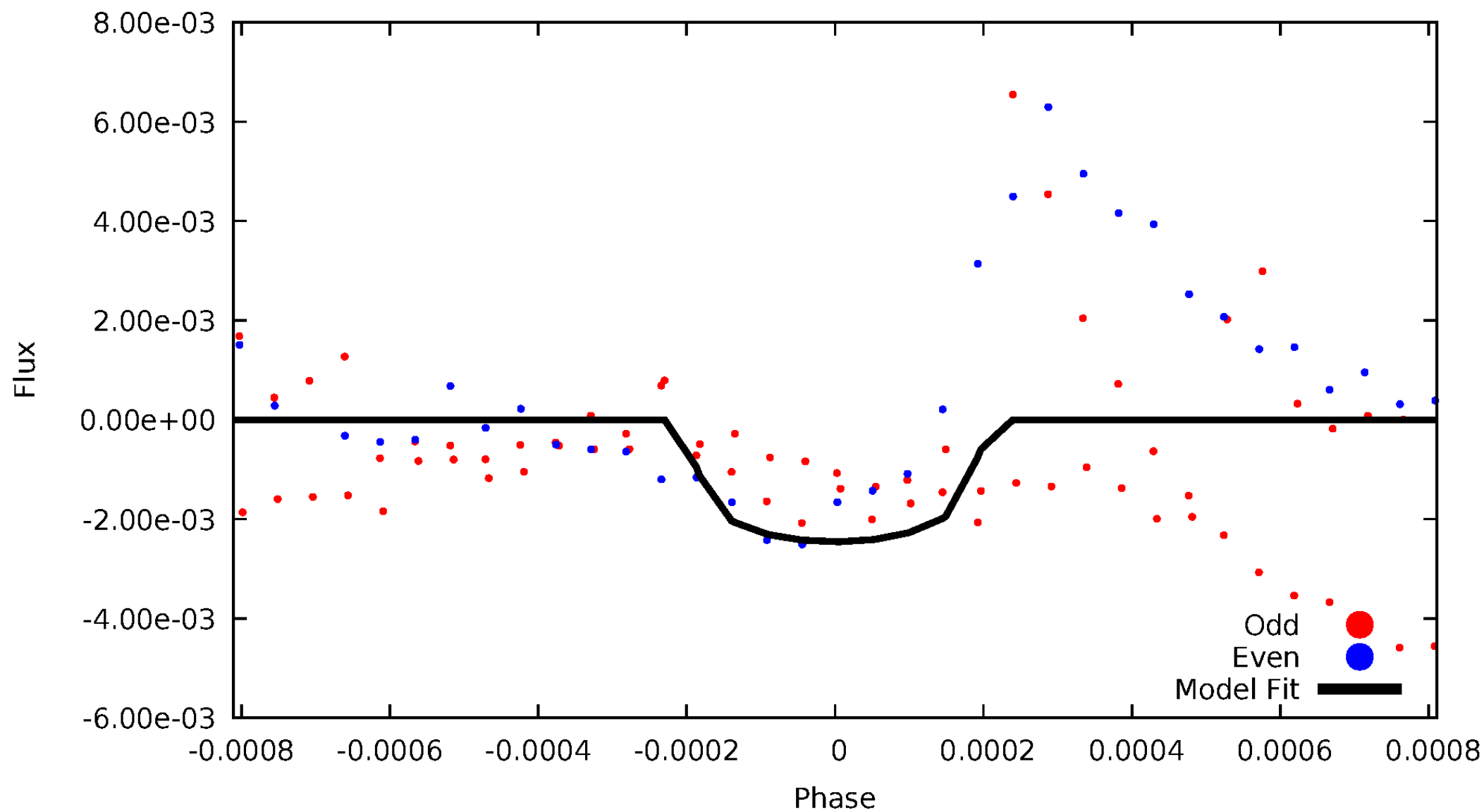


# TCE 010537061-03



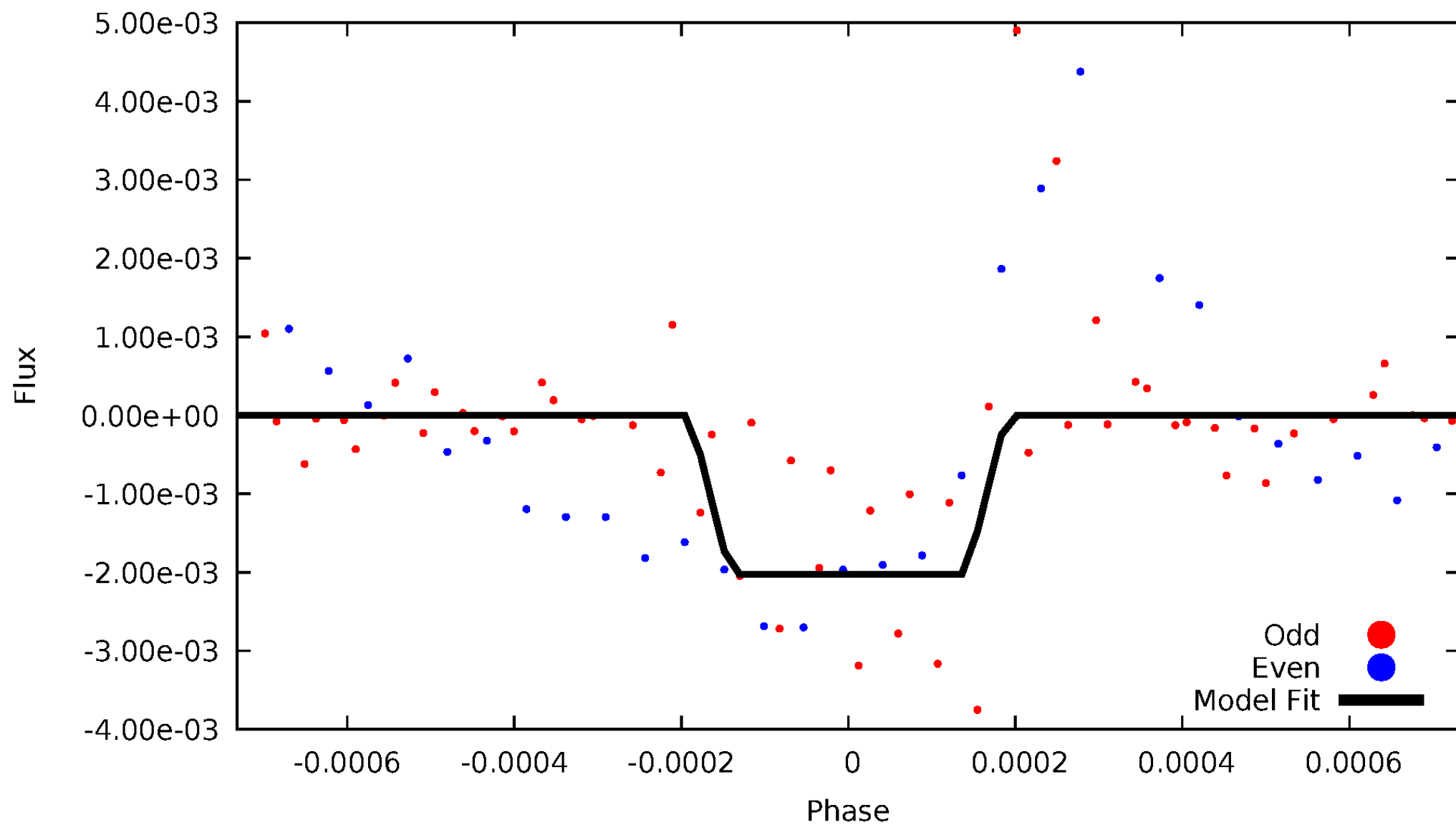
# DV Odd/Even

TCE 010537061-03

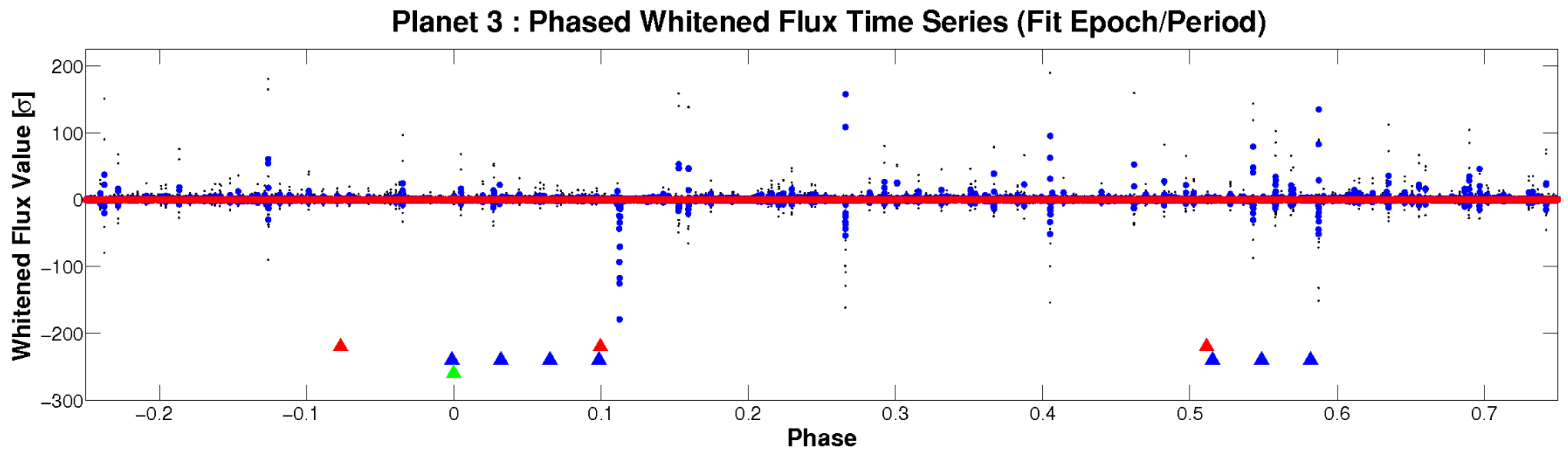
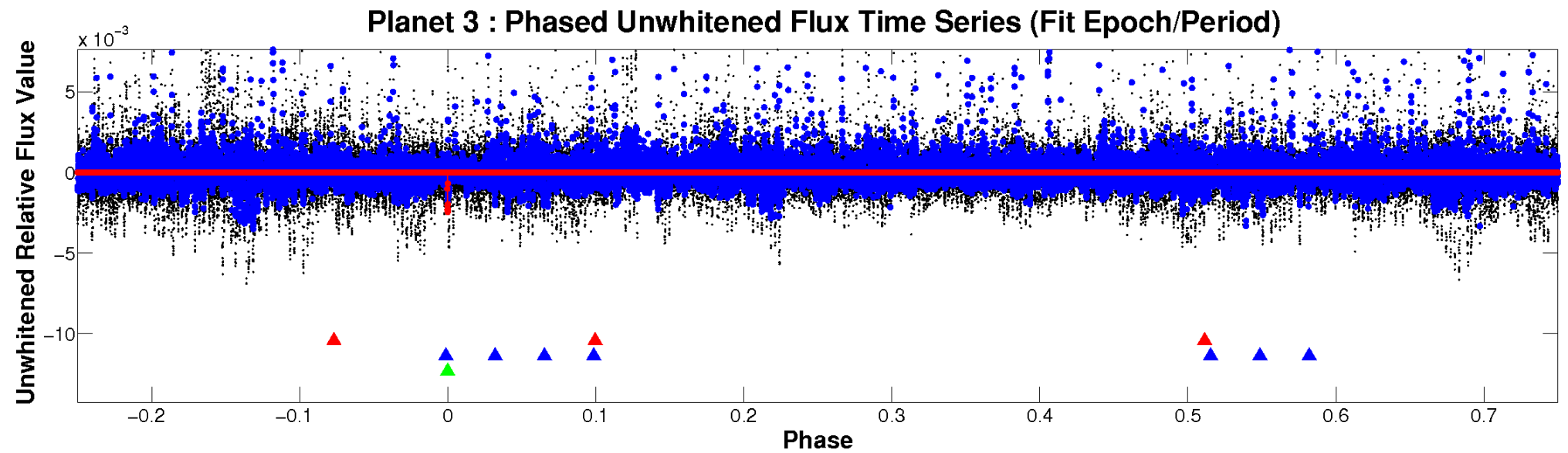


# ALT Odd/Even

TCE 010537061-03

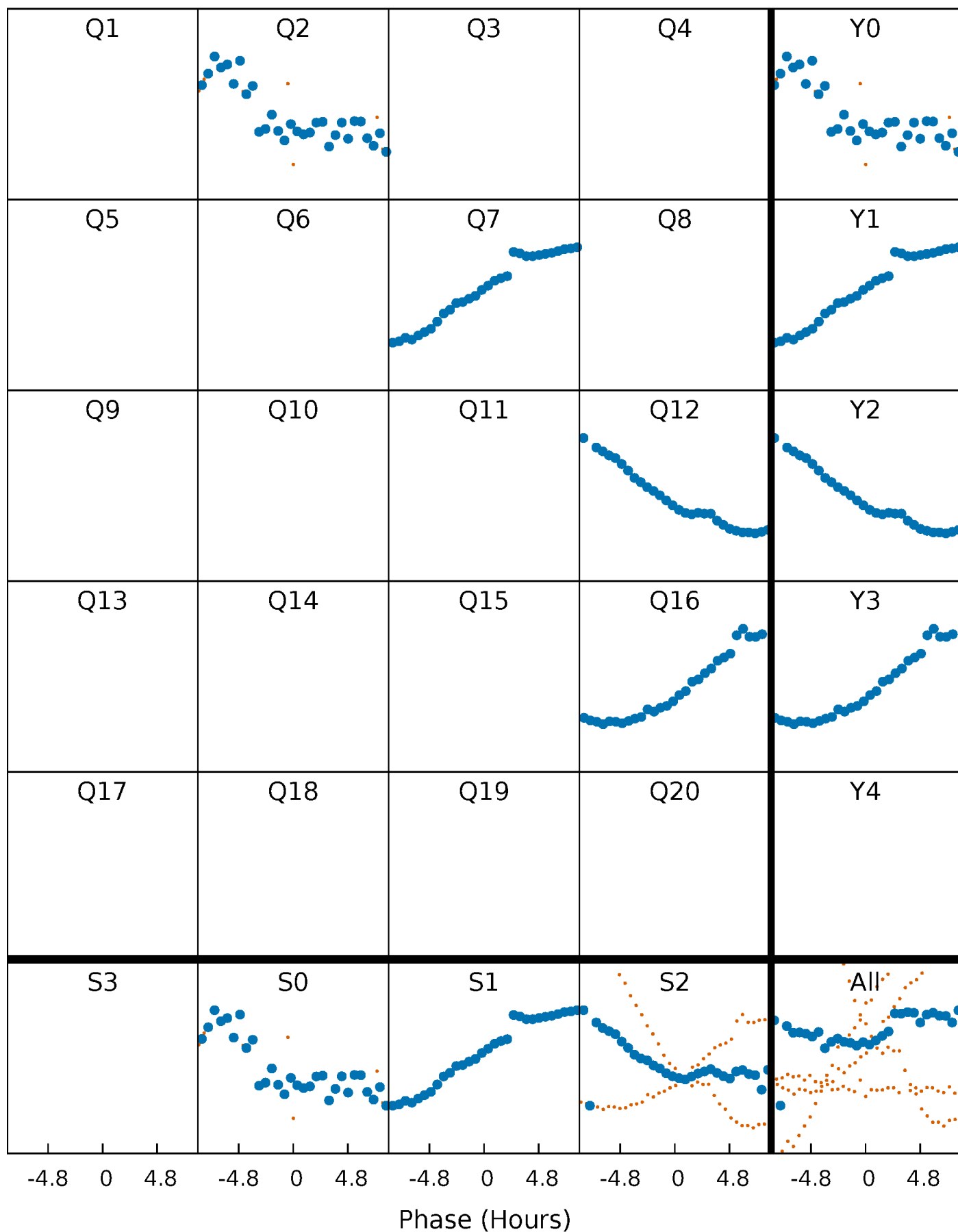


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

TCE 010537061-03 P=431.146697 Days  $T_0=242.345122$  (BKJD)





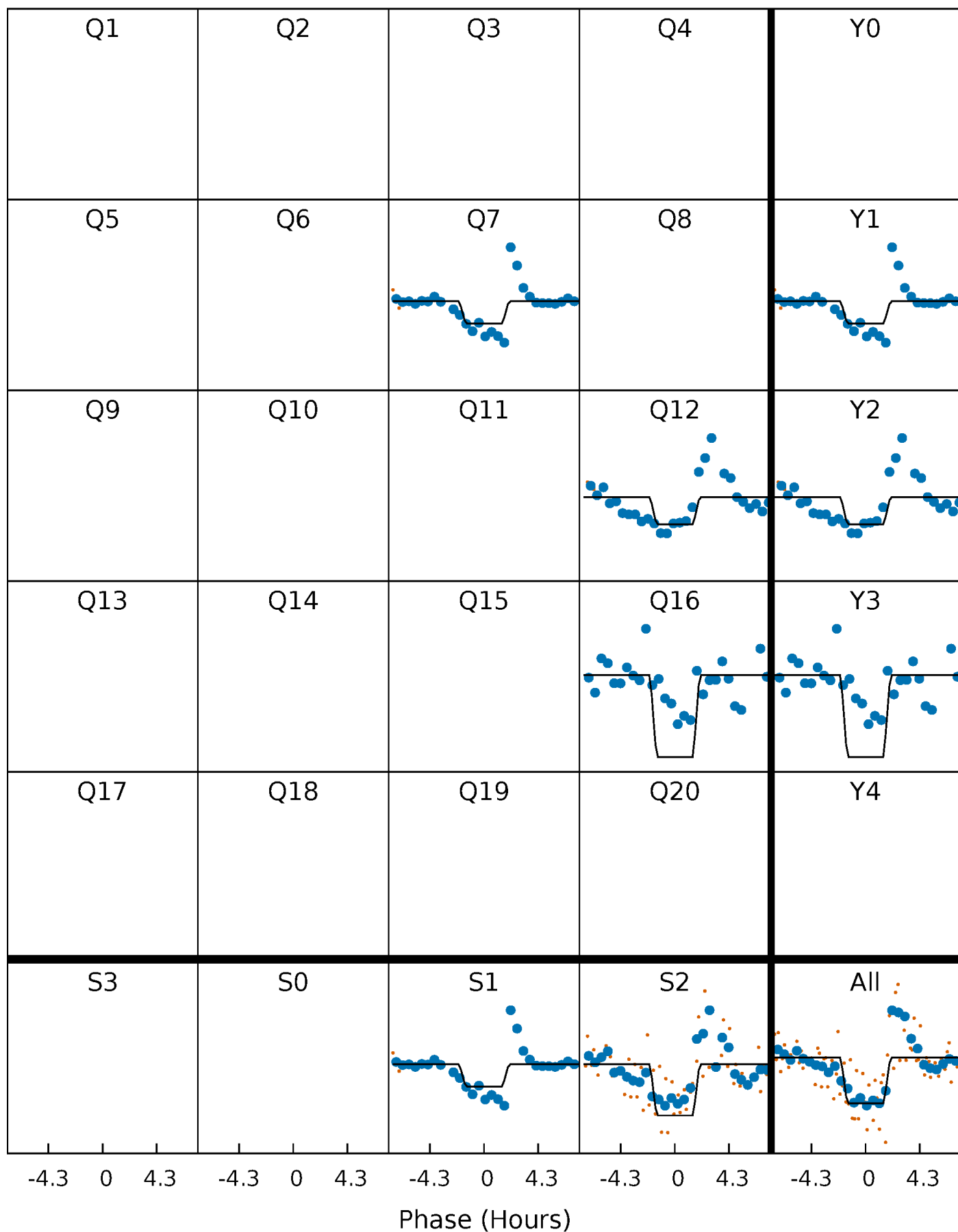
# DV Quarter-Phased Transit Curves

TCE 010537061-03     $P=431.146697$  Days     $T_0=242.345122$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

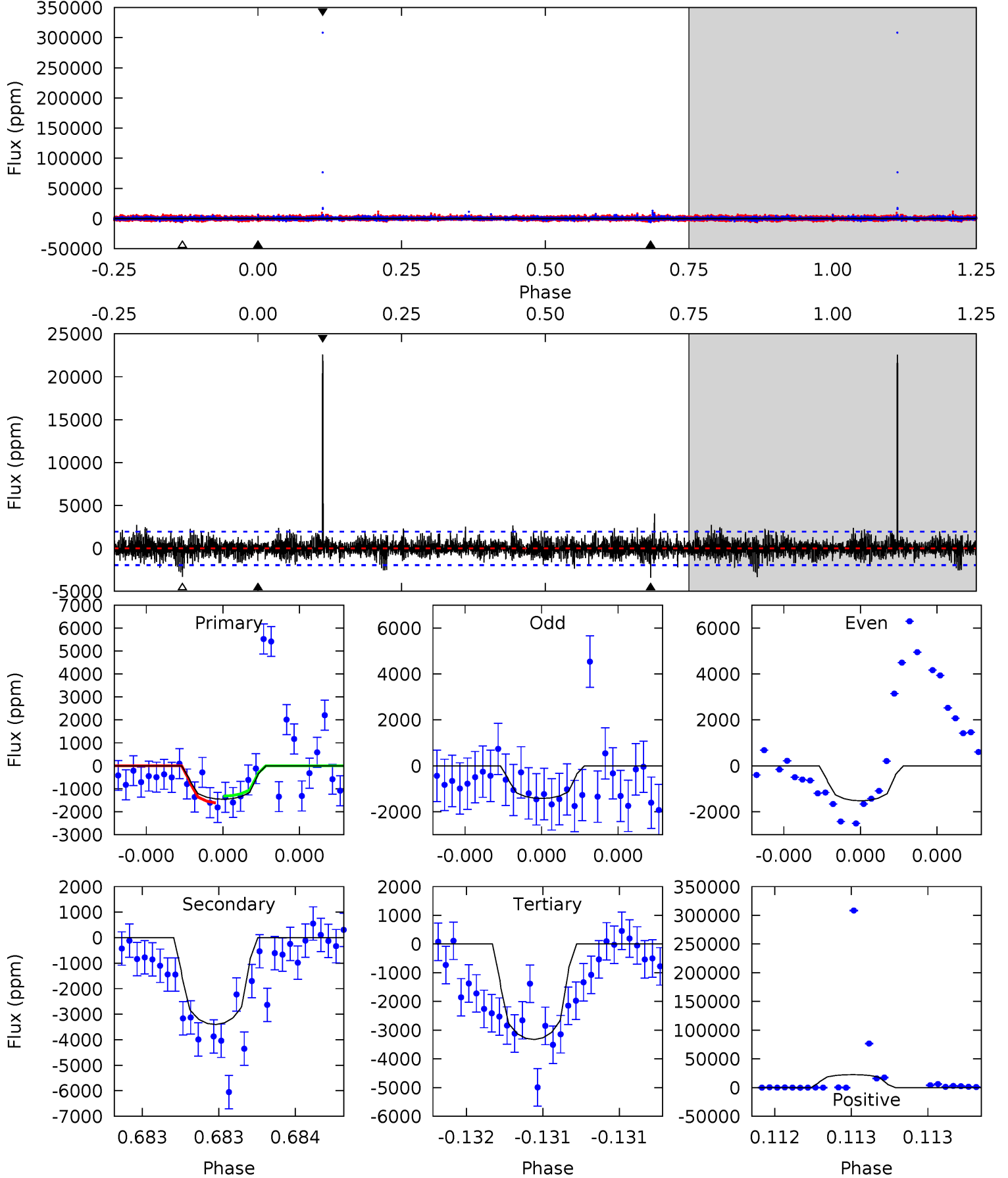
TCE 010537061-03     $P=431.134494$  Days     $T_0=242.373557$  (BKJD)



# DV Model-Shift Uniqueness Test

010537061-03, P = 431.146697 Days, E = 242.345122 Days

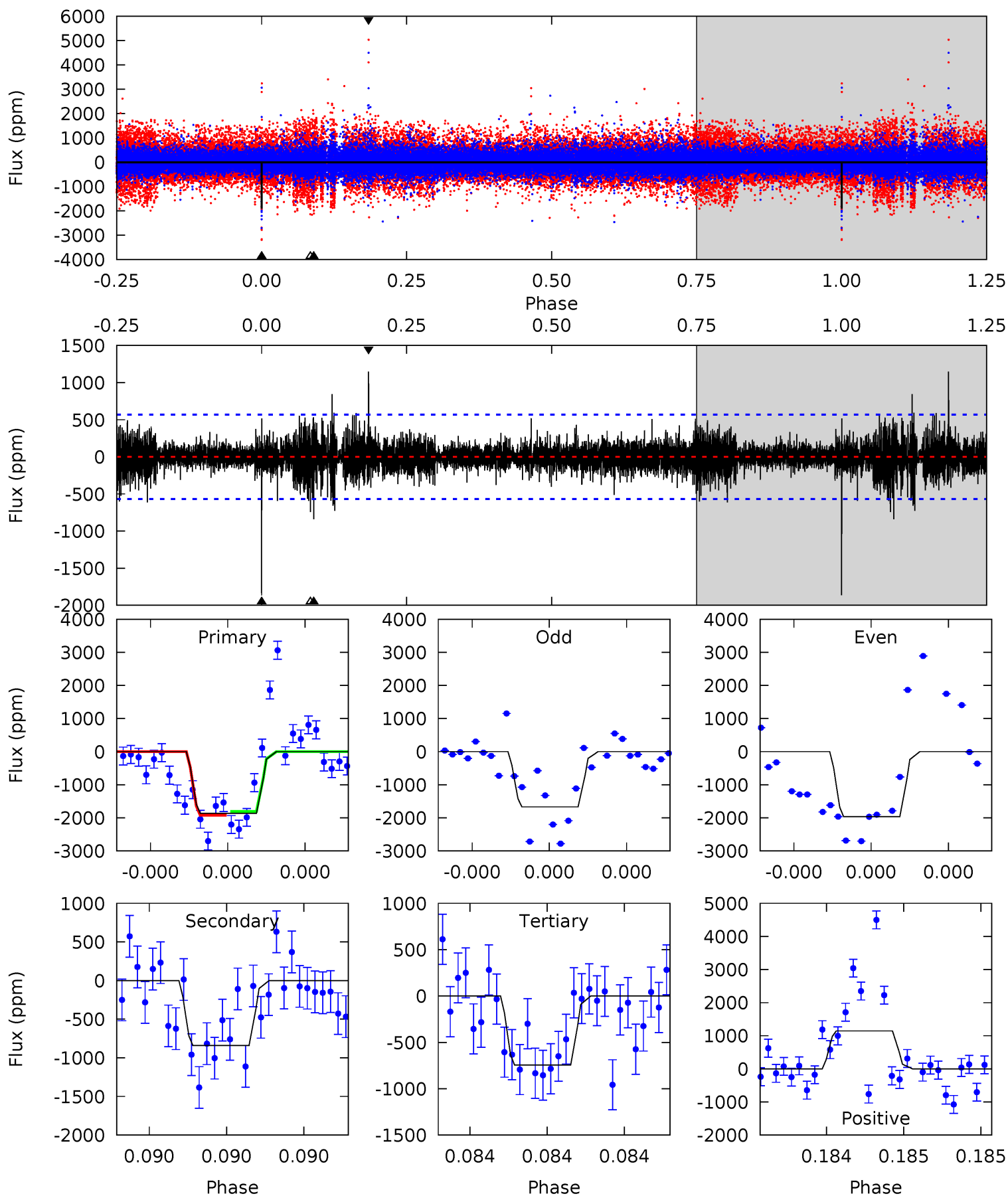
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.16	9.73	9.51	64.6	5.60	3.52	2.19	-5.35	-60.4	0.22	-54.8	0.08	0.96	0.87	0.43



# Alt Model-Shift Uniqueness Test

010537061-03, P = 431.134494 Days, E = 242.373557 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
18.5	8.32	7.36	11.3	5.63	3.56	1.37	11.1	7.13	0.96	-3.02	1.17	0.94	0.38	0.56



### Stellar Parameters For KIC 010537061

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5262^{+158}_{-158}$	$3.836^{+0.817}_{-0.327}$	$-0.460^{+0.300}_{-0.300}$	$1.826^{+1.105}_{-1.105}$	$0.834^{+0.124}_{-0.137}$	$0.193^{+3.096}_{-0.143}$
	+3%/-3%	+21%/-9%	+65%/-65%	+61%/-61%	+15%/-16%	+1605%/-74%
Source	PHO1	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 010537061-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-3402 \pm 350$	$34.15^{+43.55}_{-24.07}$	$414^{+65}_{-73}$	$3389^{+1849}_{-627}$	$1792^{+18104}_{-1443}$
Alt.	$-840 \pm 101$	$34.89^{+45.73}_{-25.15}$	$417^{+67}_{-74}$	$2781^{+1225}_{-463}$	$405^{+5453}_{-323}$

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

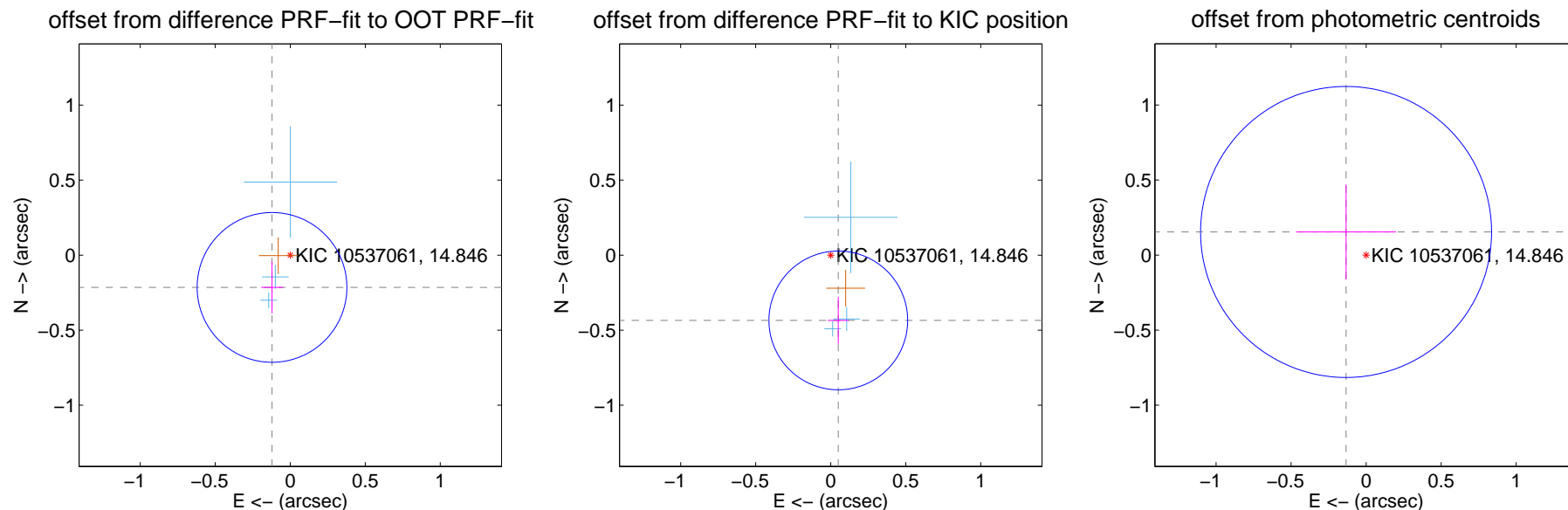
## DV Centroid Data

Supplemental centroid analysis for 010537061-03. Kepler magnitude: 14.85. Transit SNR 7.42

There are 3 quarters with good PRF difference image offsets

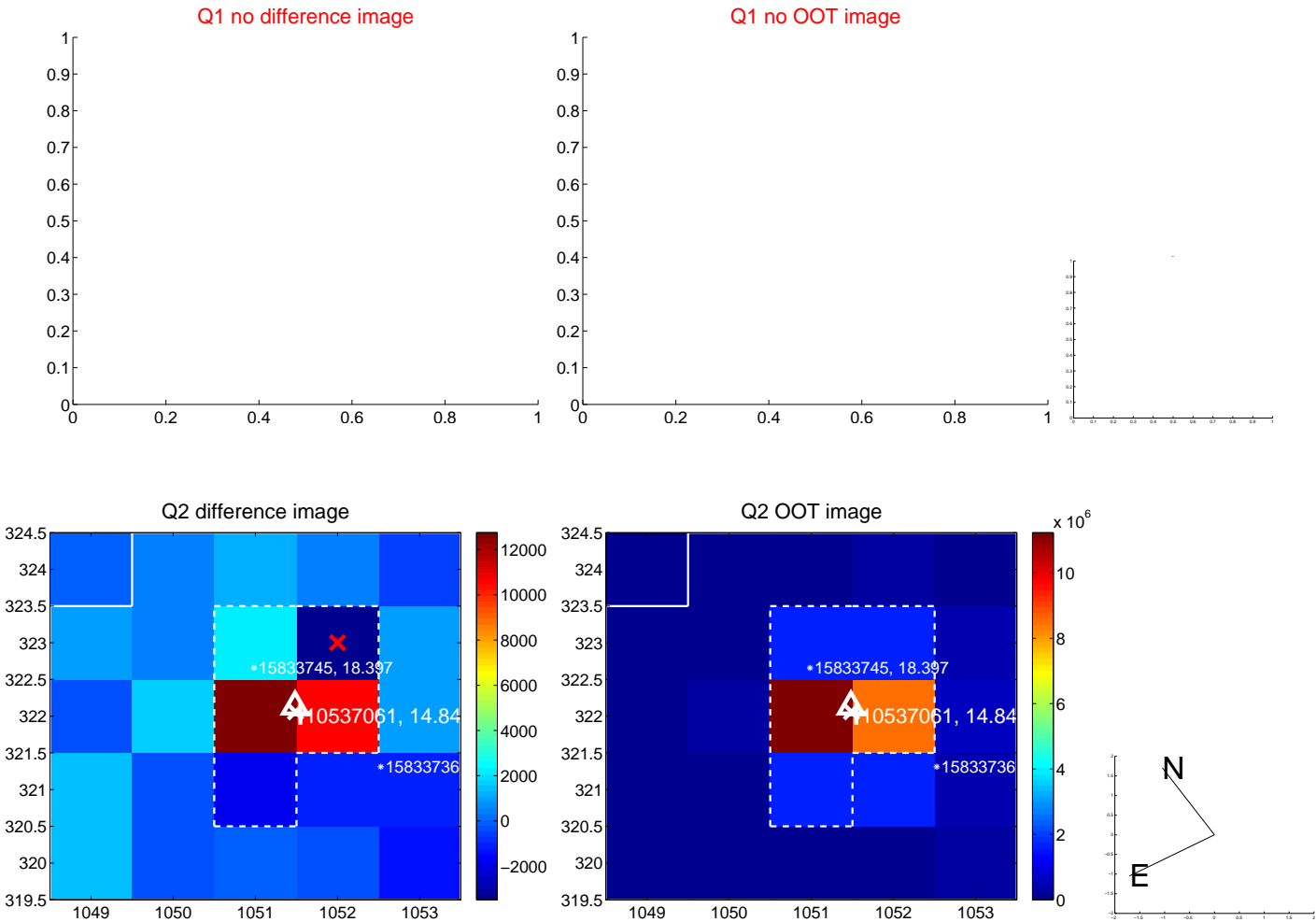
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.247 \pm 0.166$	1.48	$0.122 \pm 0.072$	$-0.215 \pm 0.173$
PRF-fit source offset from KIC position	$0.438 \pm 0.154$	2.84	$-0.051 \pm 0.070$	$-0.435 \pm 0.157$
photometric centroid source offset	$0.20 \pm 0.32$	0.63	$0.13 \pm 0.33$	$0.15 \pm 0.32$



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



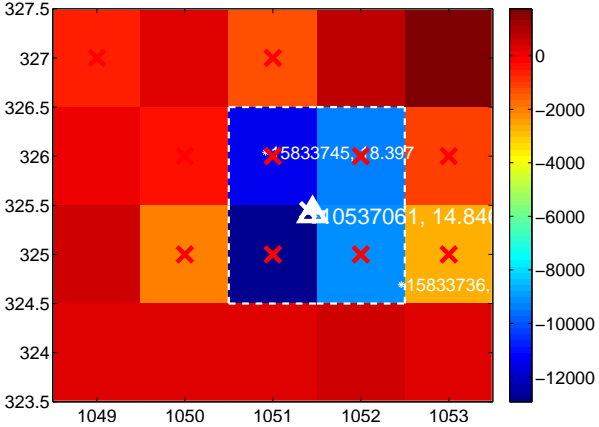
Q6 no difference image



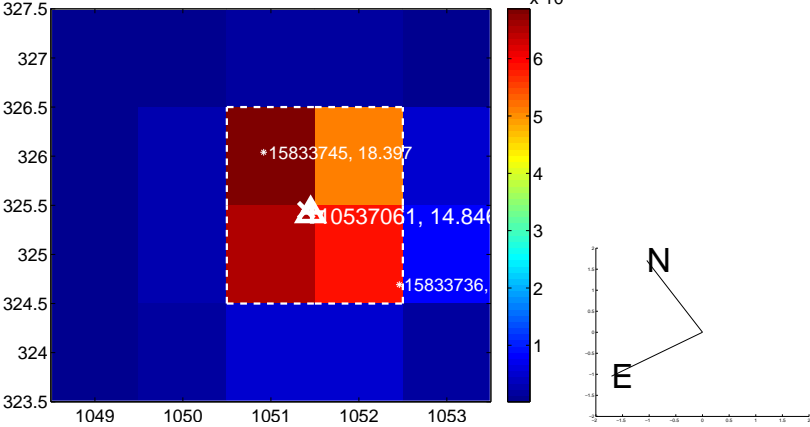
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image

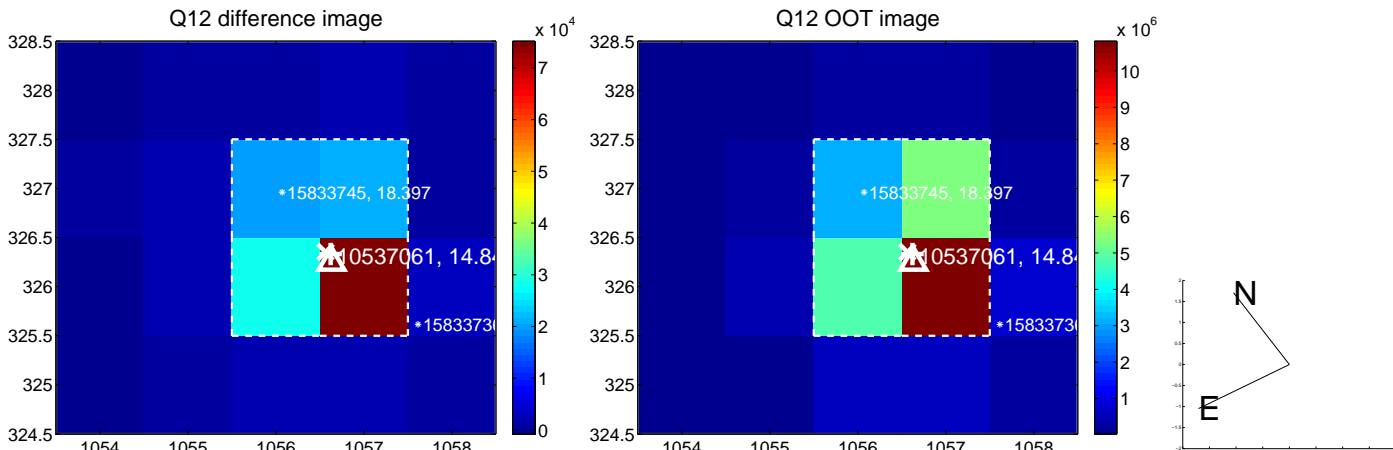
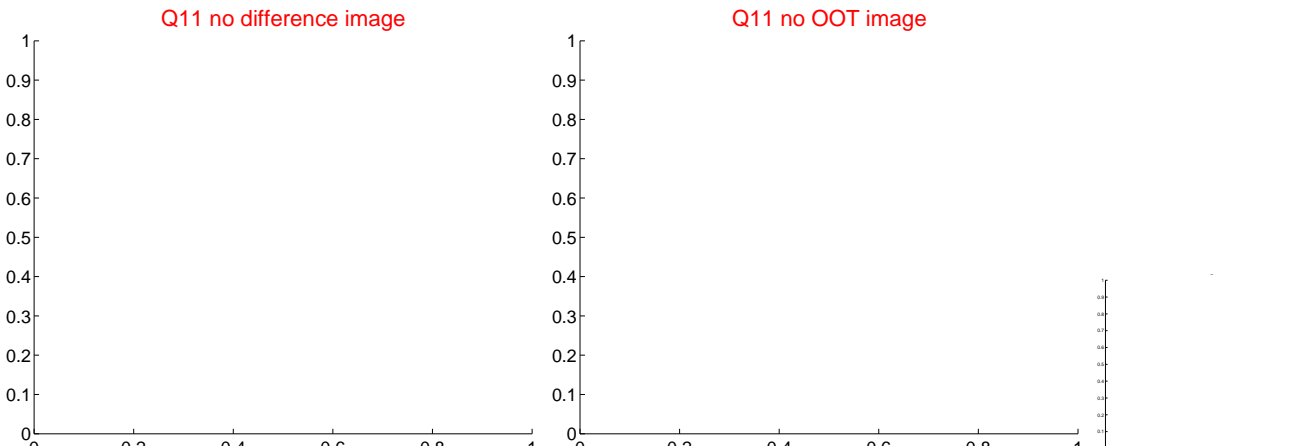
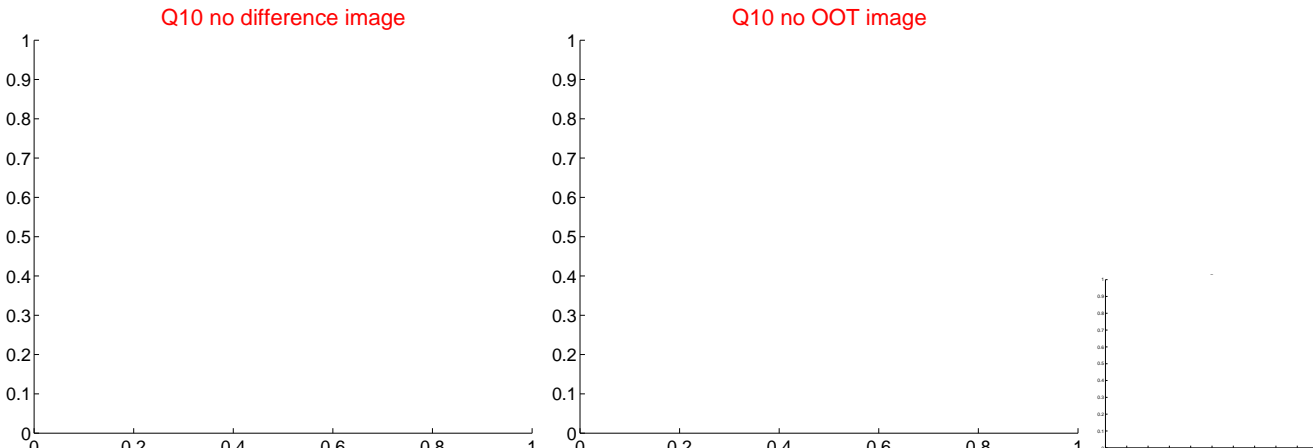
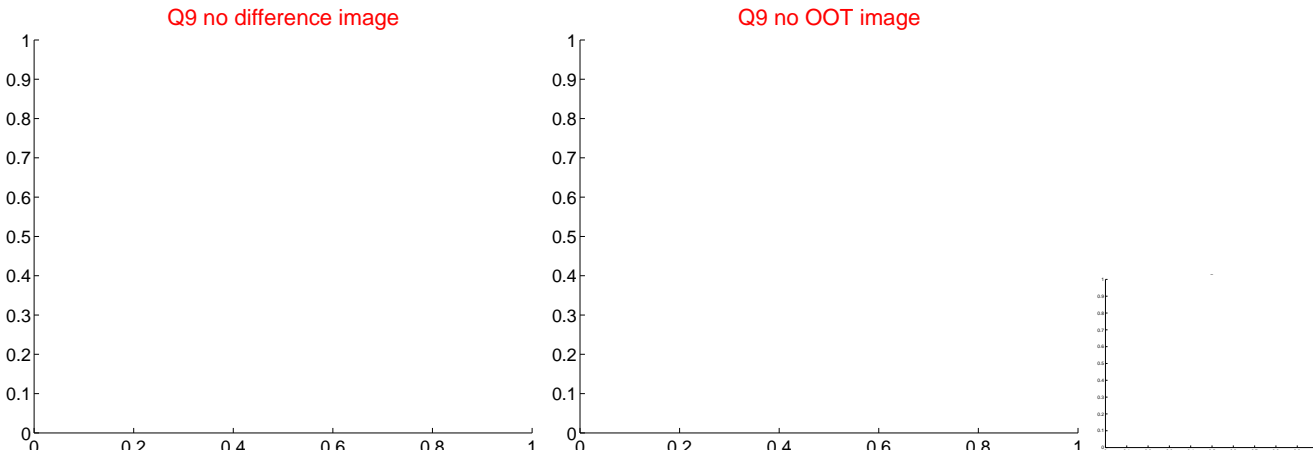


Q8 no OOT image

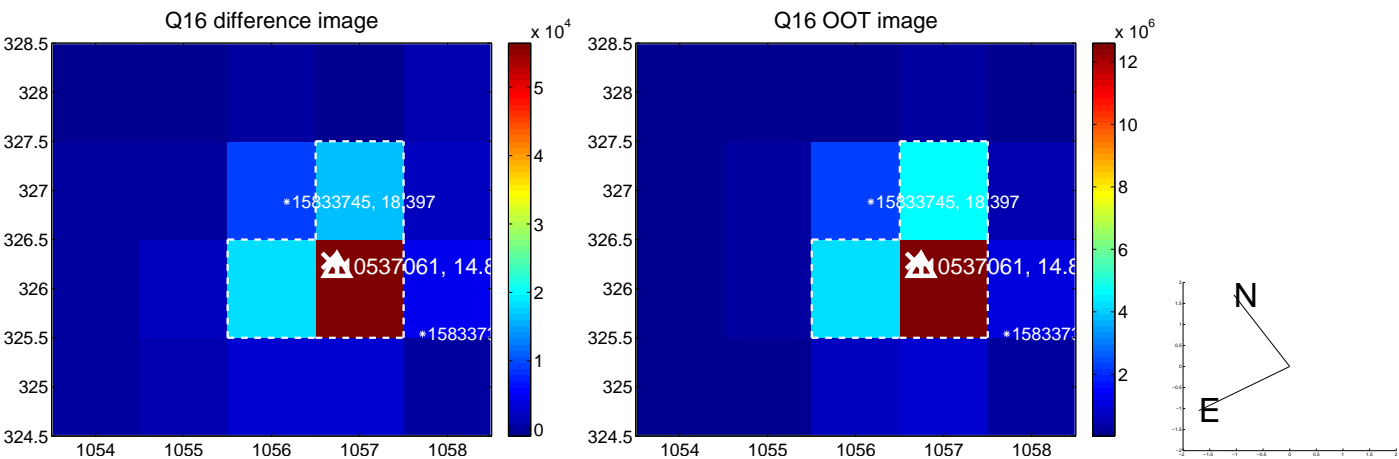
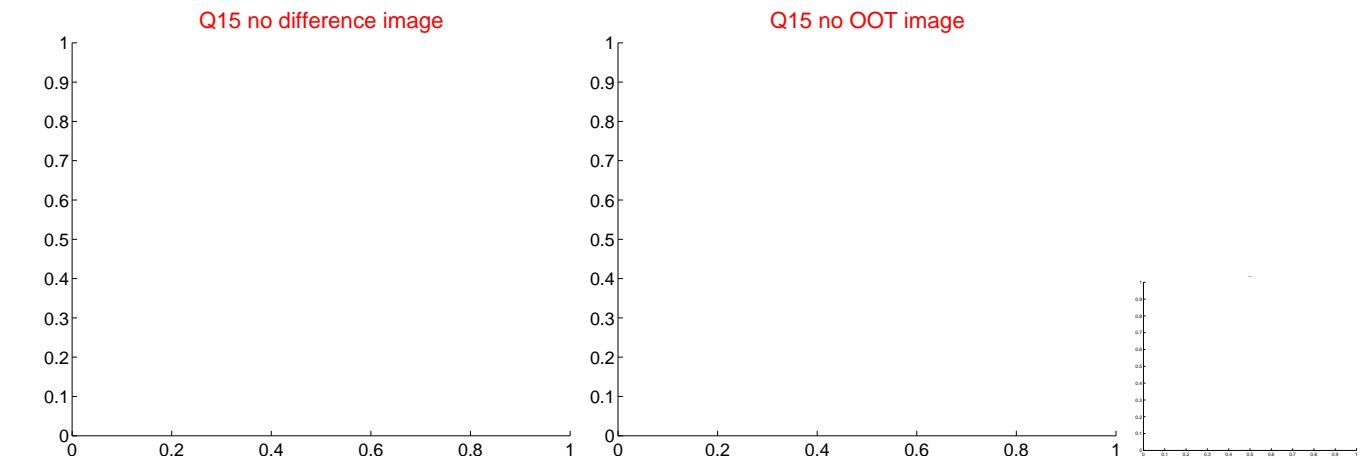
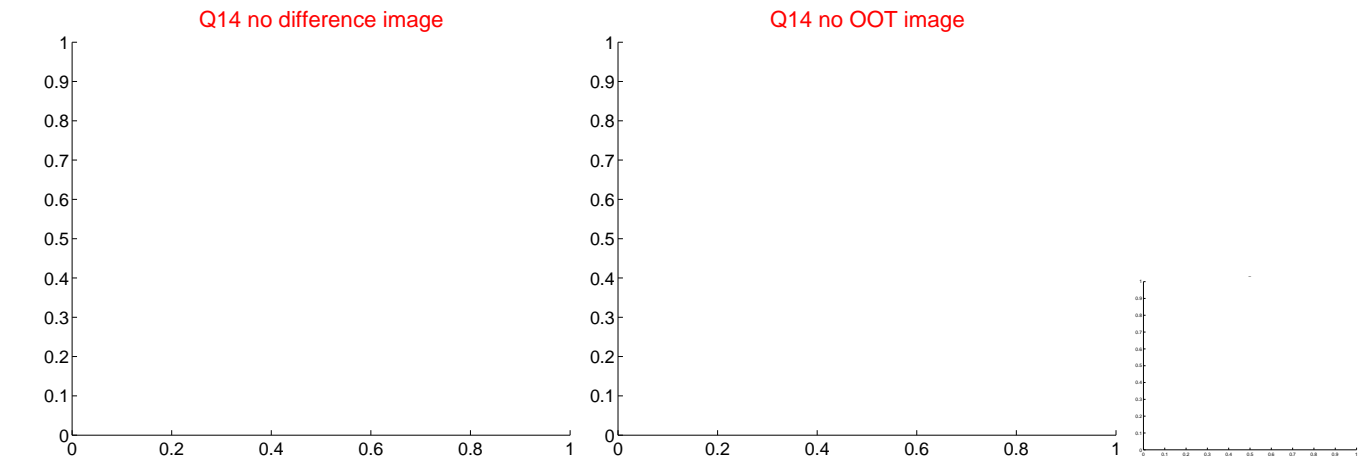
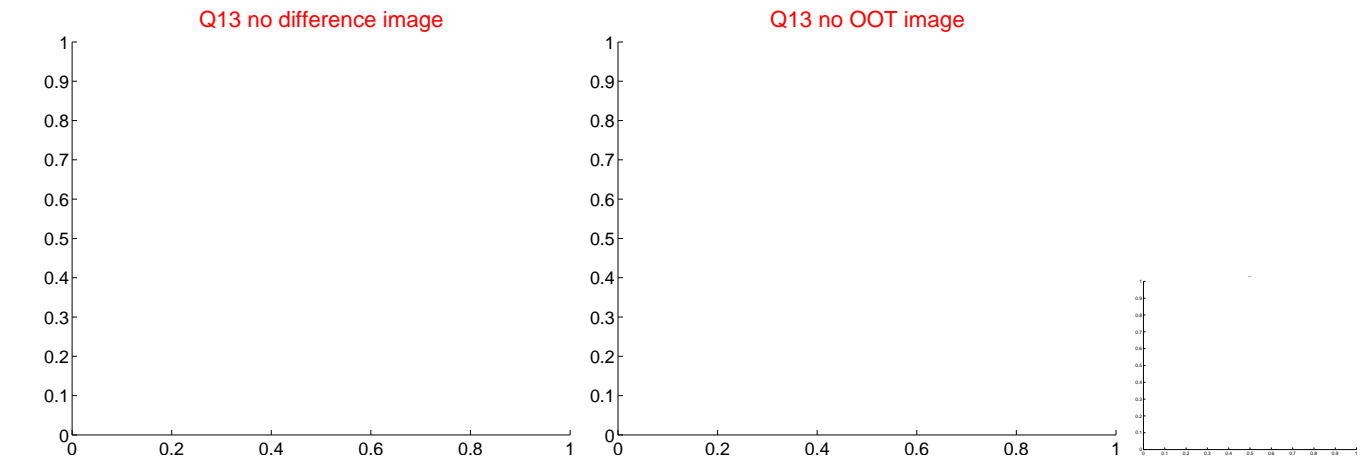




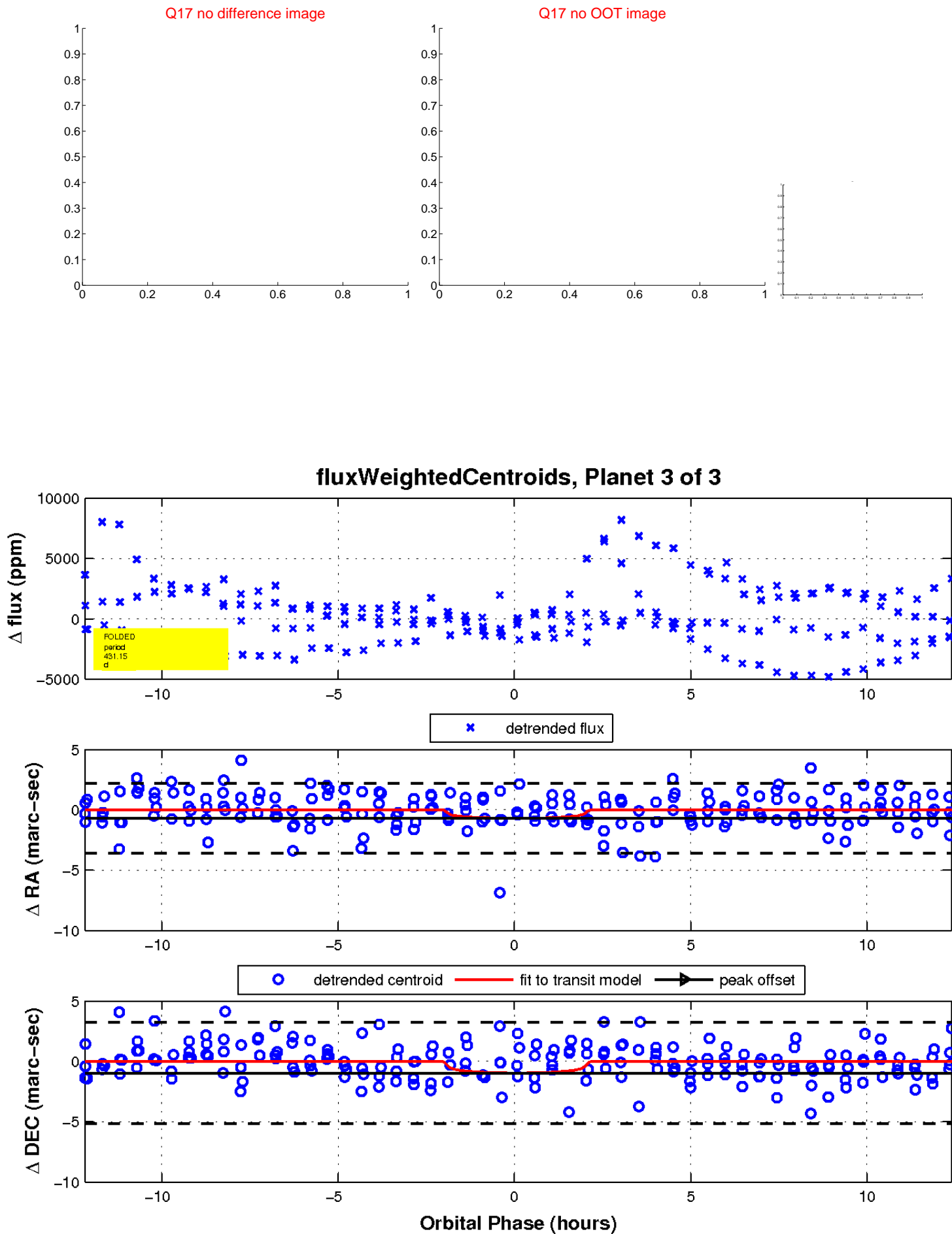
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



white ×: 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.



UKIRT Image

Declination

