

# KIC 005553183

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005553183-01	OBS	No	511.670030	373.154695	5317.7	22.115	11.0	11.1	67.80	3672	620.77	459.22
005553183-03	OBS	No	708.342085	157.308274	6100.8	5.832	17.4	16.5	67.80	3672	559.50	297.63
005553183-04	OBS	No	365.579914	148.783627	6532.5	11.542	14.2	13.8	67.80	3672	506.27	718.95
005553183-05	OBS	No	569.919233	247.549775	275.2	9.000	12.1	-1.0	67.80	3672	104.03	397.73

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005553183-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
005553183-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
005553183-04	OBS	FP	0.00	1	0	0	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005553183-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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

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

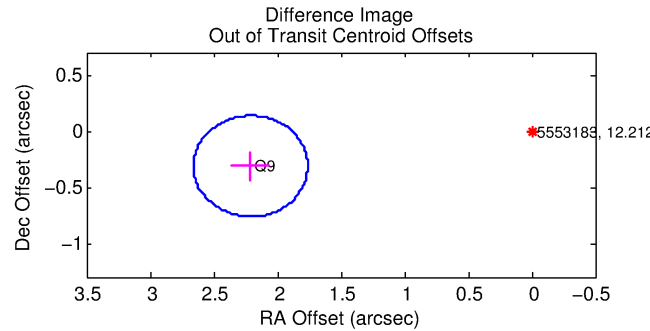
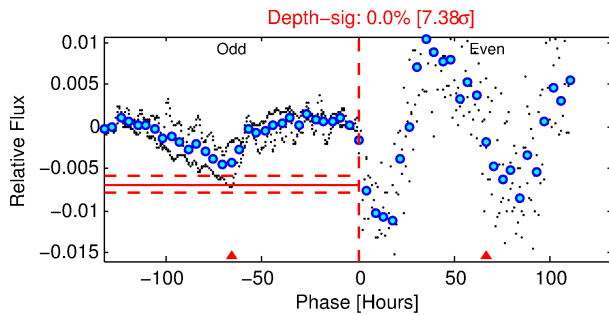
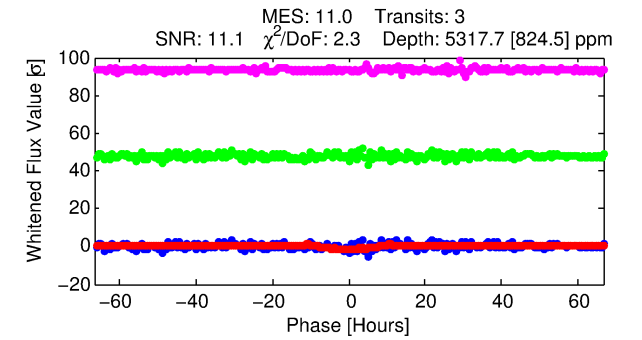
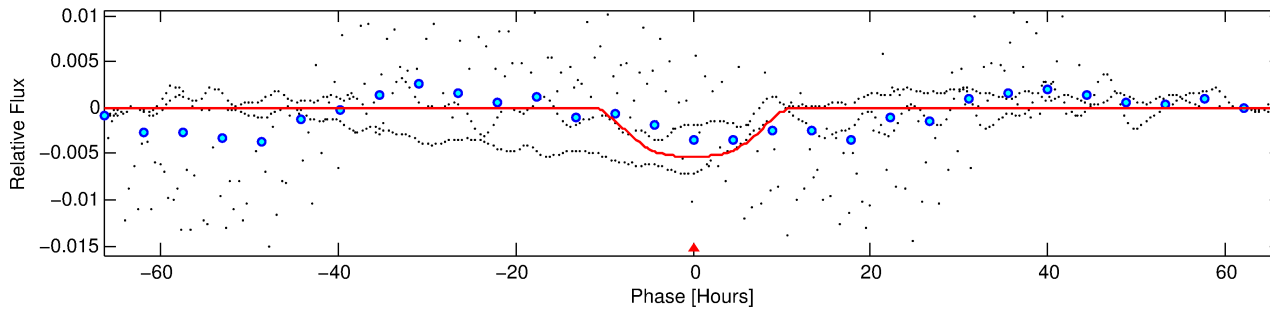
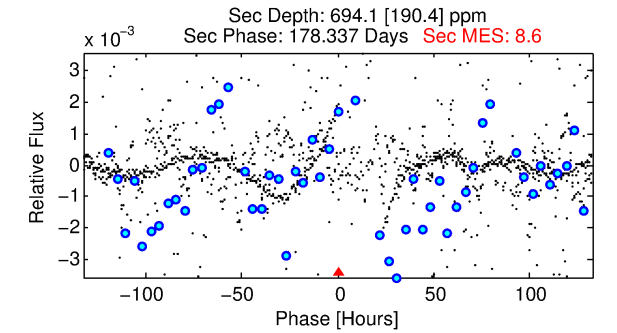
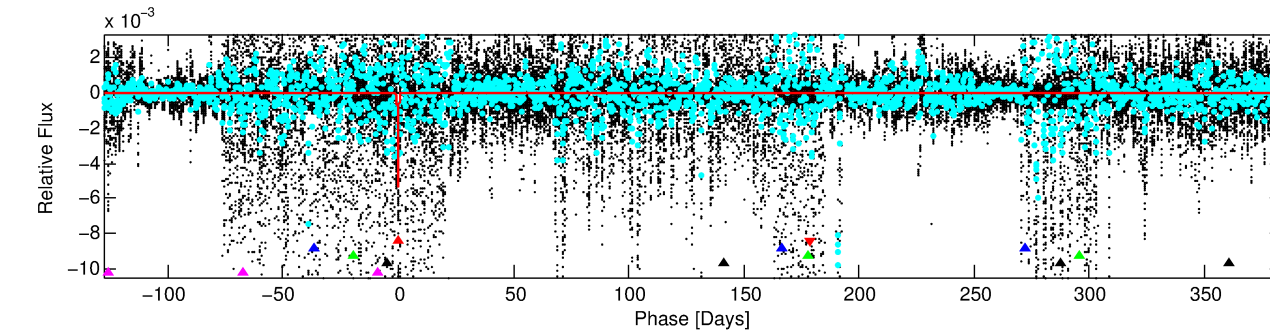
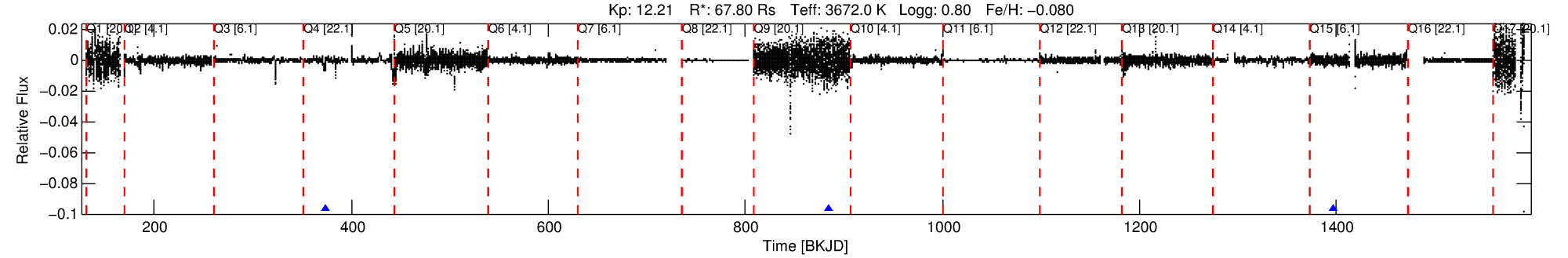
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## Ephemeris Match Information For 005553183-01

No Significant Match Found

# DV One-Page Summary

KIC: 5553183 Candidate: 1 of 5 Period: 511.670 d



## DV Fit Results:

Period = 511.67003 [0.02394] d  
Epoch = 373.1547 [0.0237] BKJD  
Rp/R\* = 0.0839 [0.0074]  
a/R\* = 110.80 [10.11]  
b = 0.88 [0.03]  
Seff = 459.22 [235.36]  
Teq = 1180 [151] K  
Rp = 620.77 [230.37] Re  
a = 1.2770 [0.4124] AU  
Ag = 1.62 [0.96] [0.64σ]  
Teffp = 2058 [182] K [3.71σ]

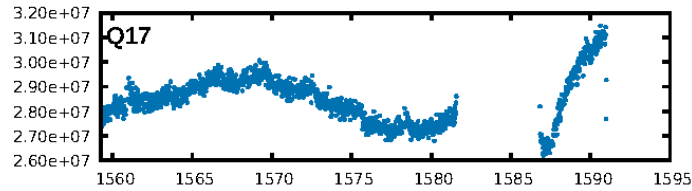
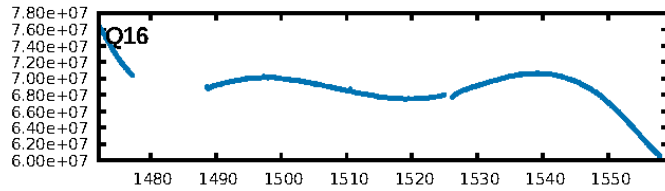
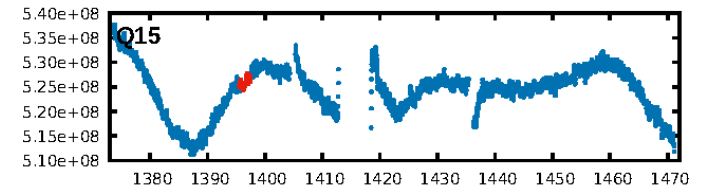
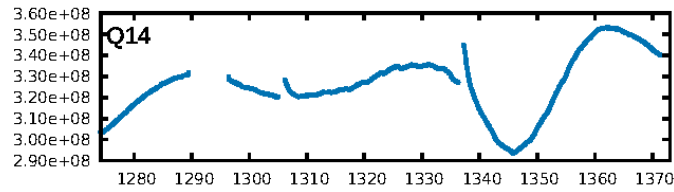
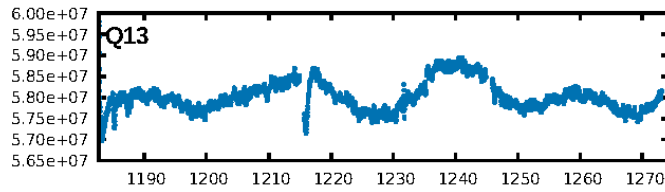
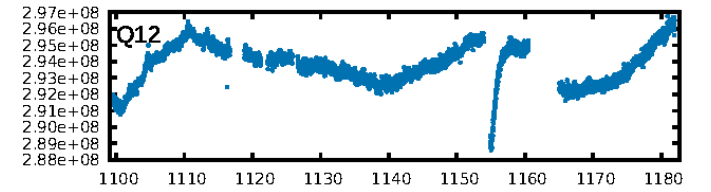
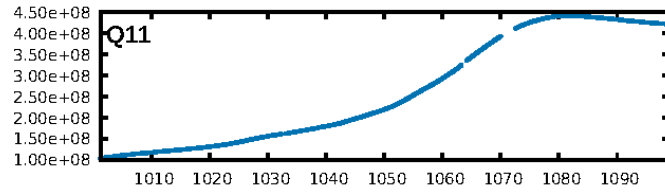
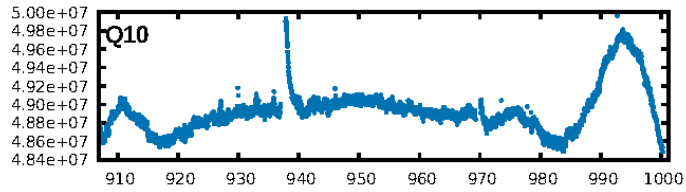
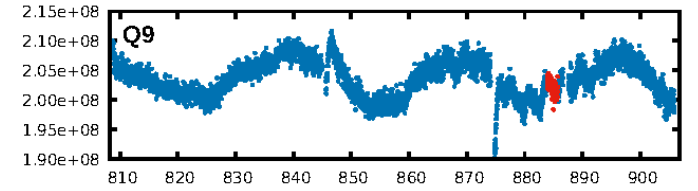
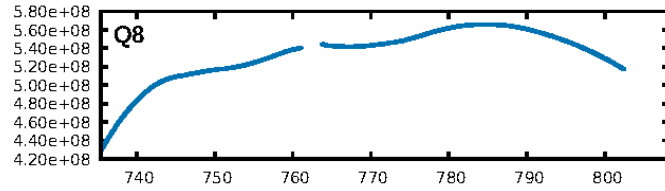
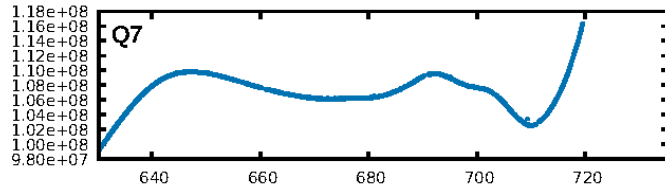
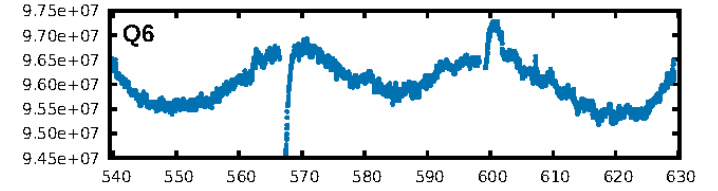
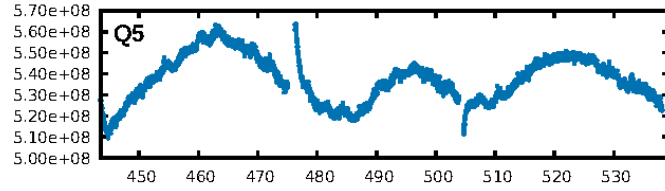
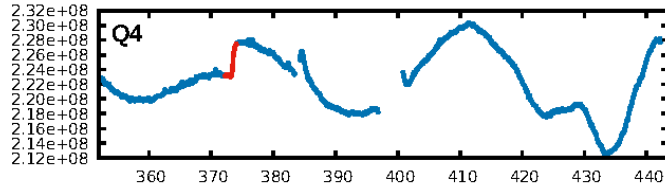
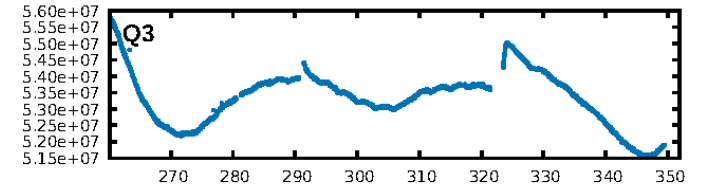
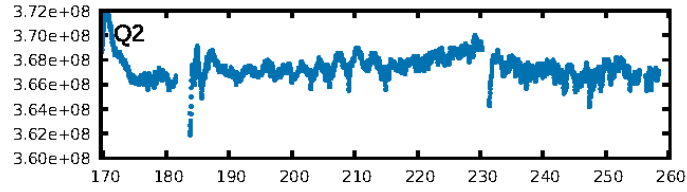
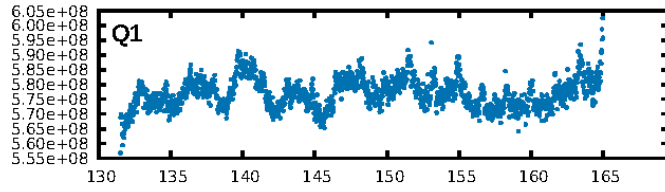
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [140.55σ]  
LongPeriod-sig: 100.0% [58.55σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.9%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -3.676  
Centroid-sig: 43.6%  
Centroid-so: 0.694 arcsec [10.18σ]  
OotOffset-rm: 2.233 arcsec [14.90σ]  
KicOffset-rm: 2.254 arcsec [15.05σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 1.00 [1/1]

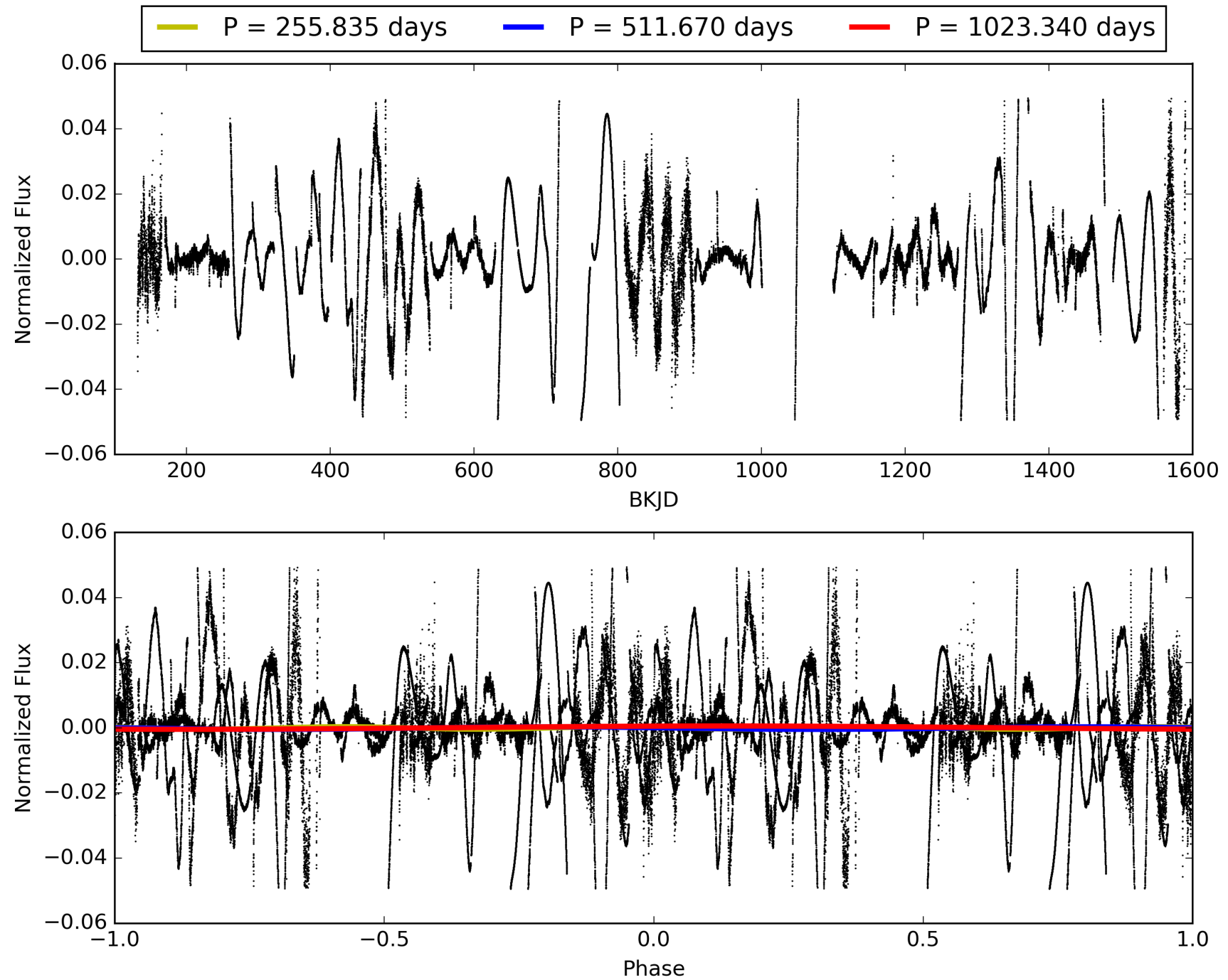
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005553183-01, PDC Light Curves

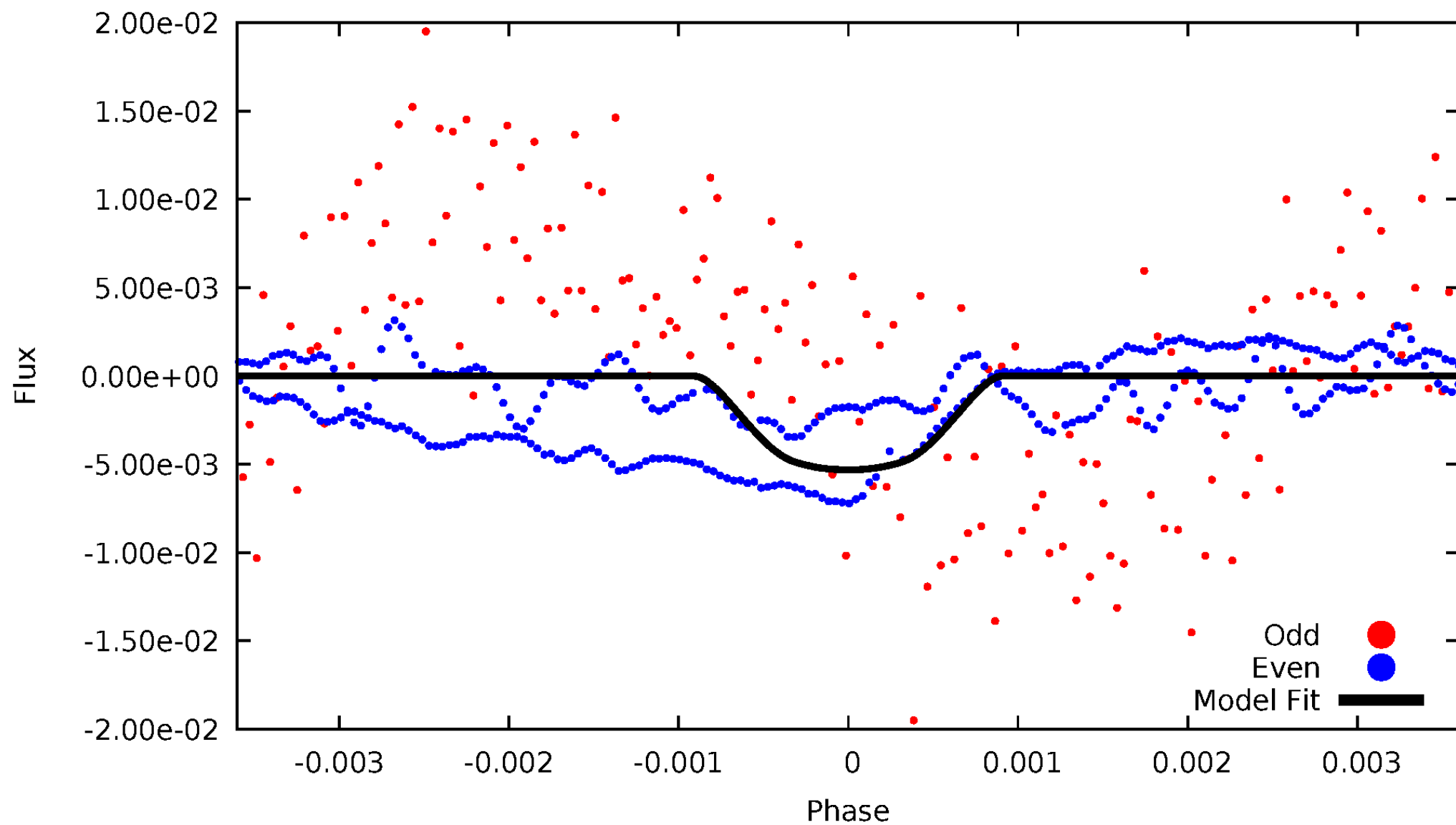


TCE 005553183-01



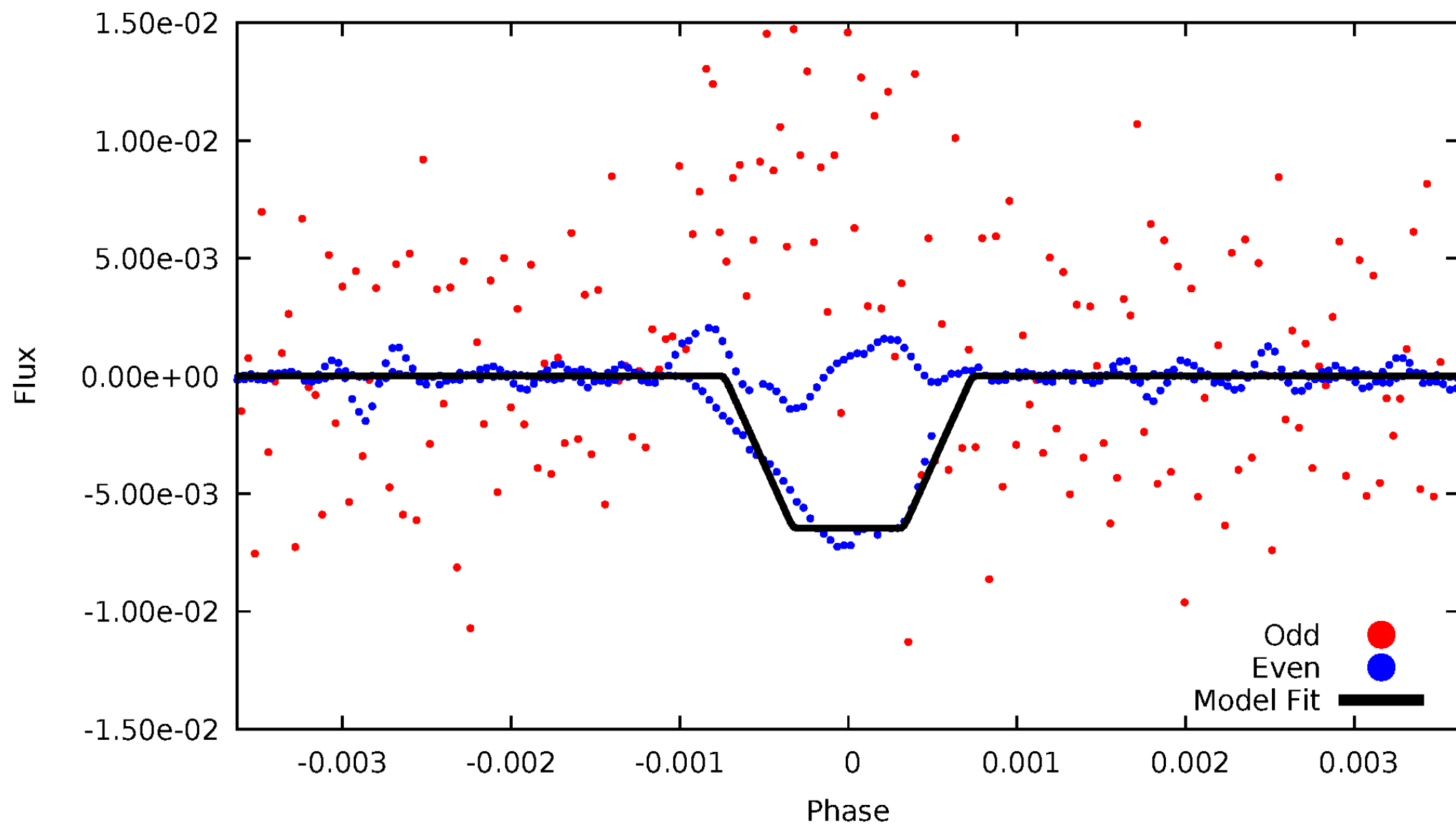
# DV Odd/Even

TCE 005553183-01



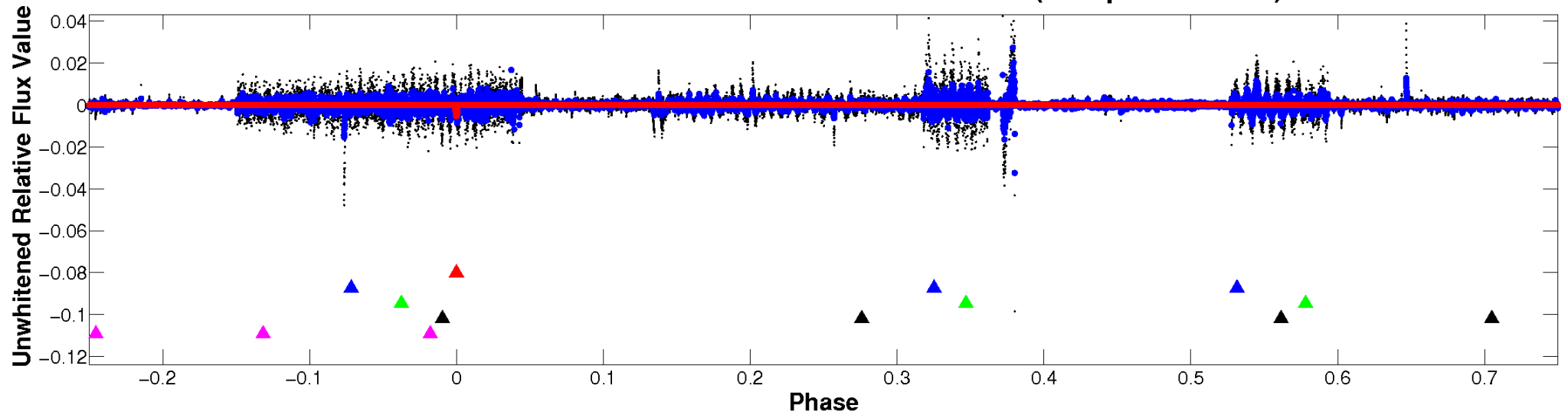
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TCE 005553183-01

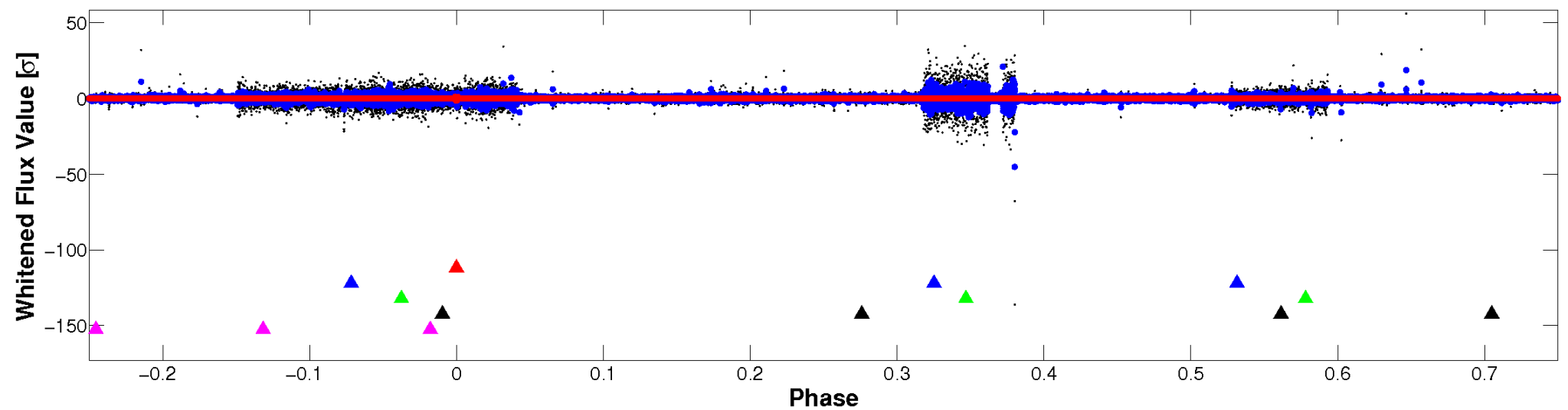


# Non-Whitened Vs. Whitened Light Curve

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

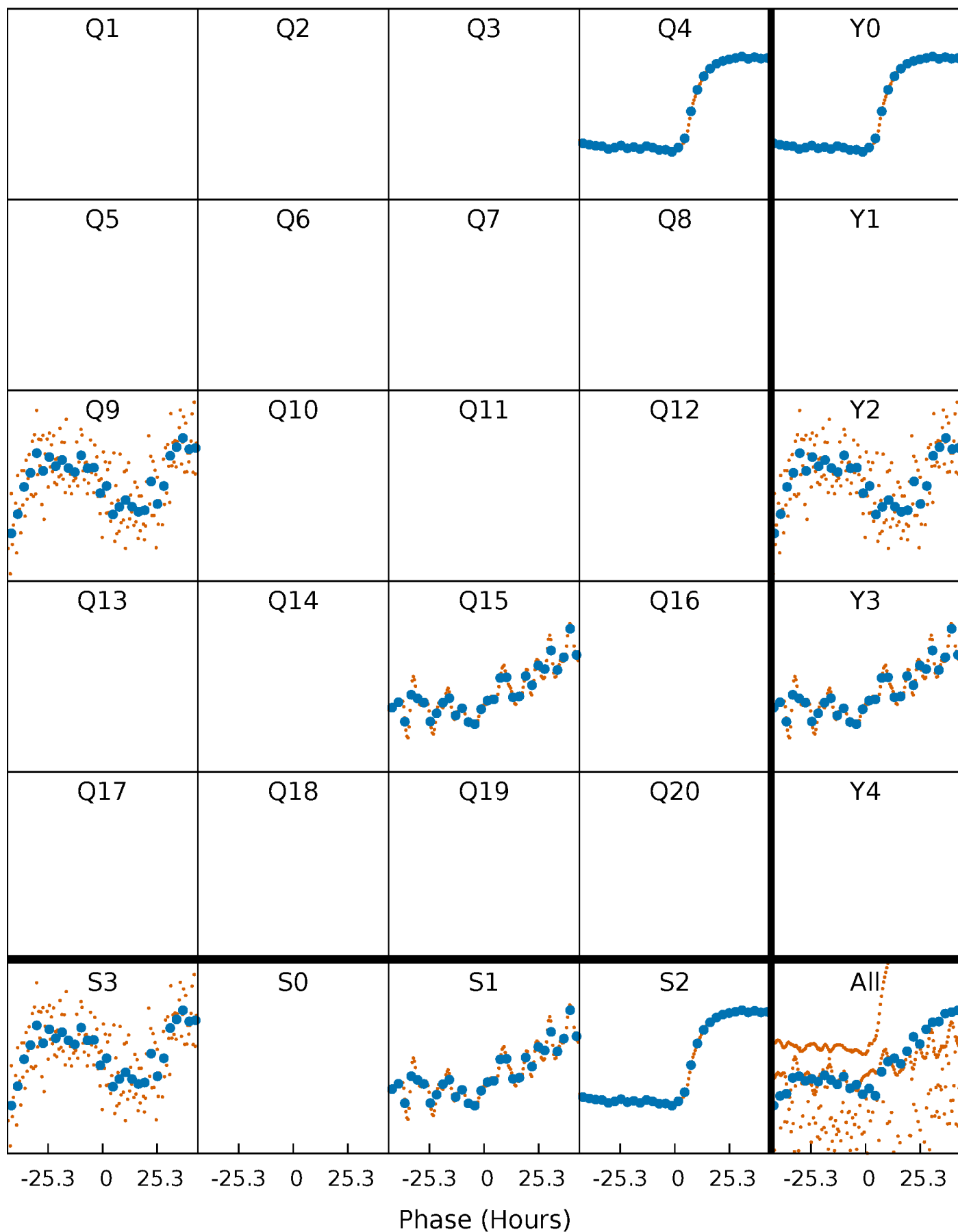


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

TCE 005553183-01 P=511.670030 Days  $T_0=373.154695$  (BKJD)





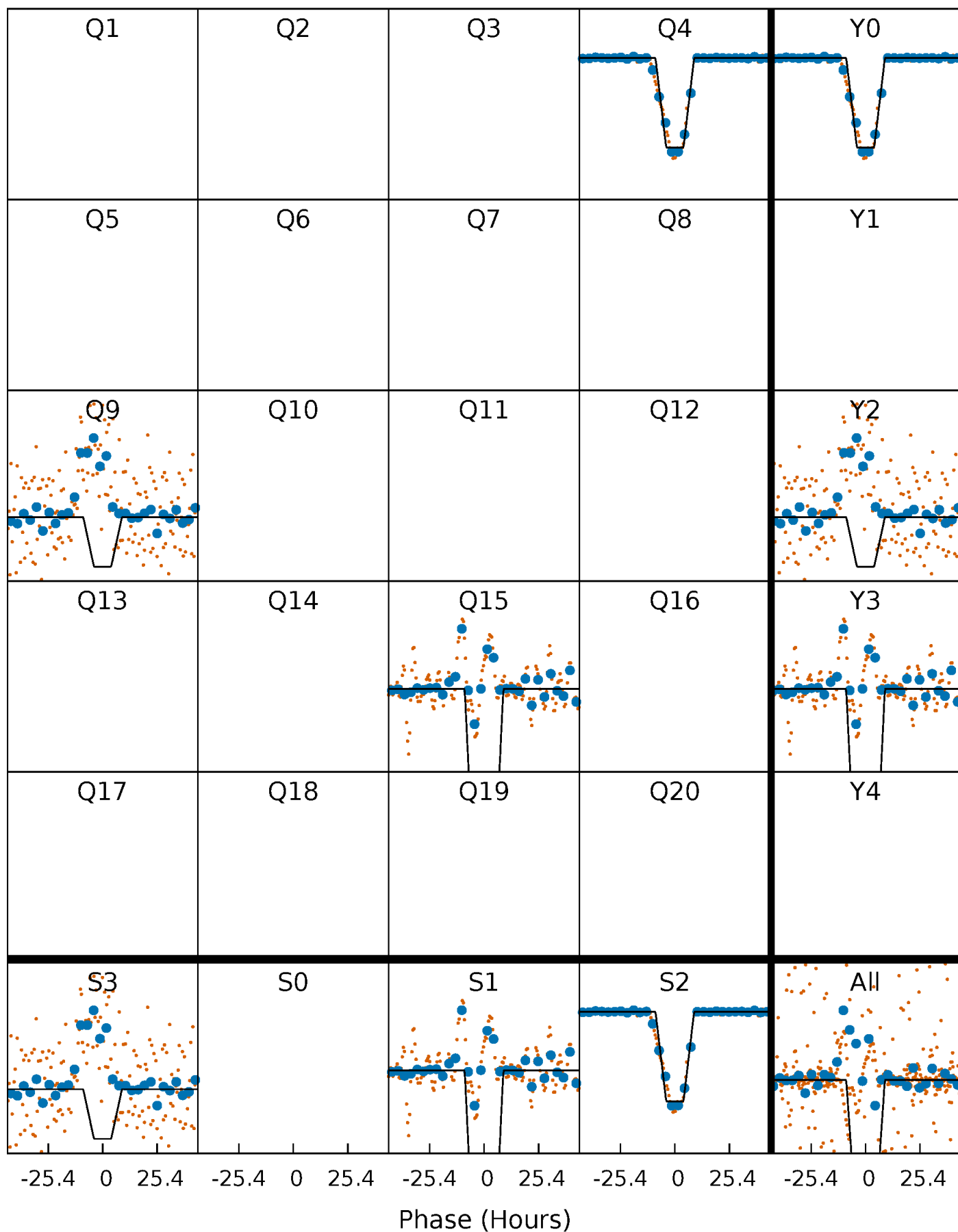
# DV Quarter-Phased Transit Curves

TCE 005553183-01 P=511.670030 Days  $T_0=373.154695$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

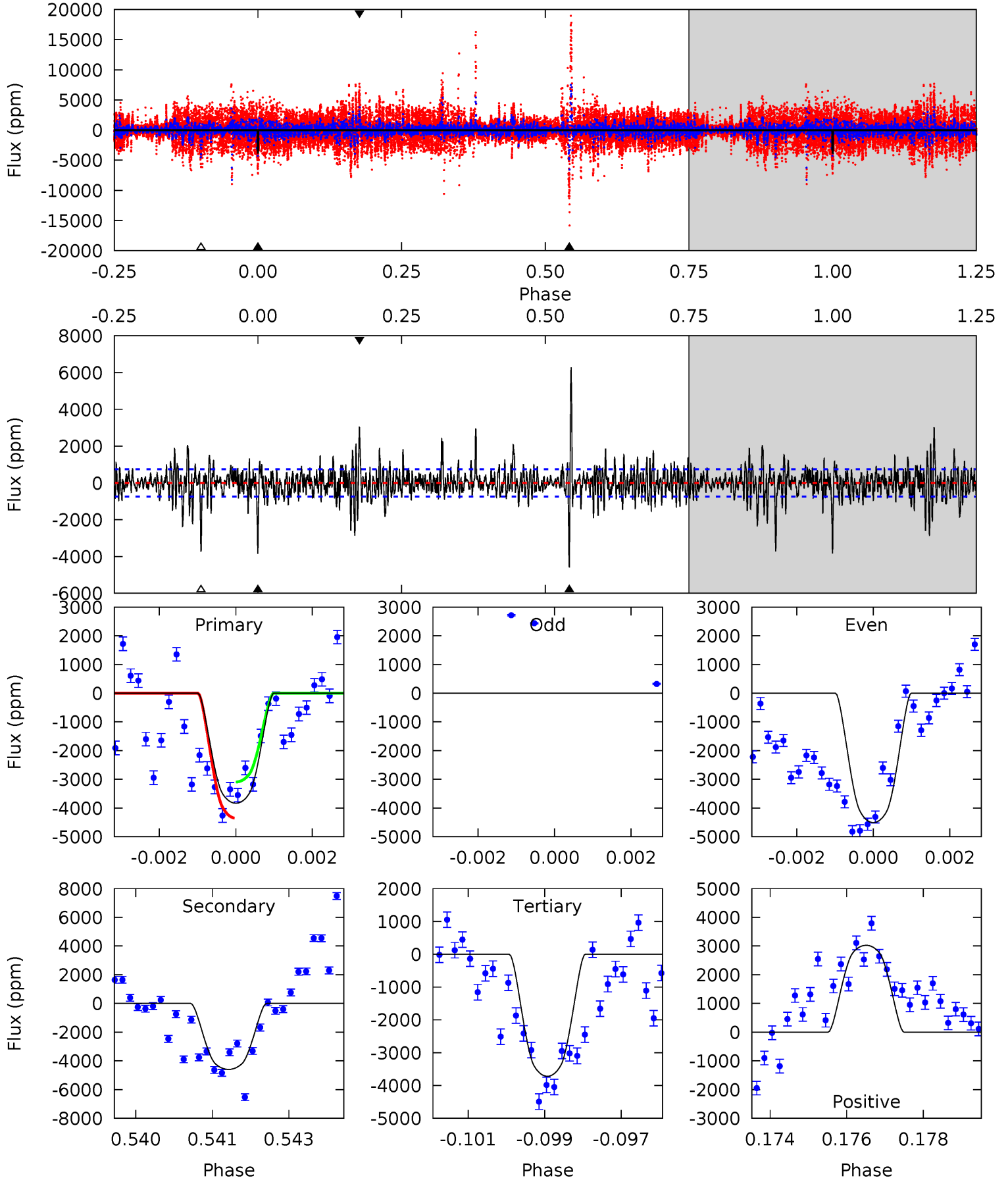
TCE 005553183-01 P=511.649531 Days  $T_0=373.190677$  (BKJD)



# DV Model-Shift Uniqueness Test

005553183-01, P = 511.670030 Days, E = 373.154695 Days

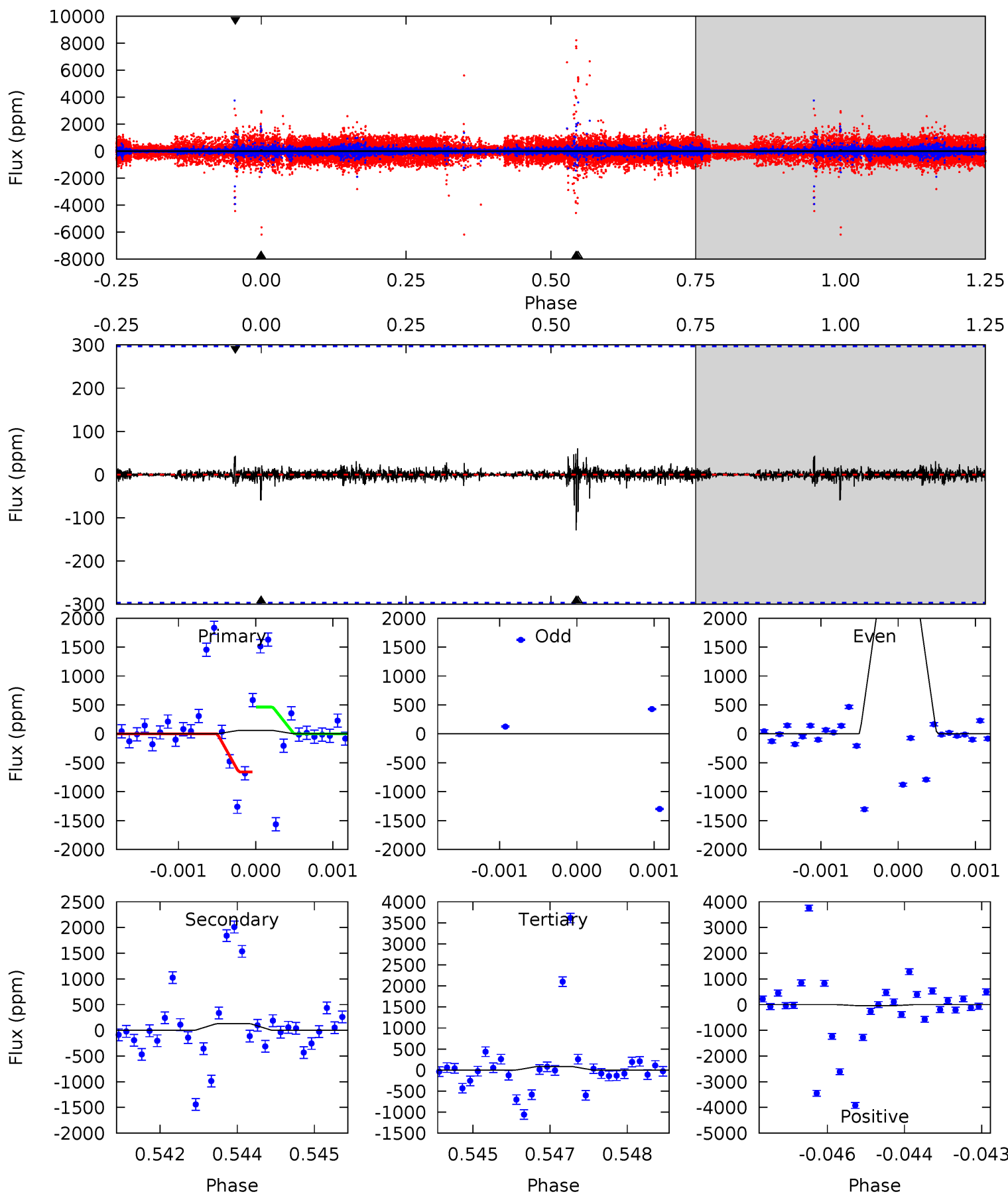
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.6	33.1	26.8	21.8	5.34	3.12	4.76	0.83	5.83	6.29	11.3	0	1.51	0.58	0



# Alt Model-Shift Uniqueness Test

005553183-01, P = 511.649531 Days, E = 373.190677 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
1.08	2.34	1.57	0.79	5.38	3.18	0.12	-0.49	0.29	0.77	1.55	0	1.64	0.32	0



### Stellar Parameters For KIC 005553183

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3672^{+126}_{-113}$	$0.801^{+0.281}_{-0.230}$	$-0.080^{+0.300}_{-0.250}$	$67.804^{+24.445}_{-16.296}$	$1.060^{+0.416}_{-0.104}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+35%/-29%	+375%/-312%	+36%/-24%	+39%/-10%	+156%/-57%
Source	PHO54	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 005553183-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-4594 \pm 139$	$620.94^{+155.02}_{-113.20}$	$1647^{+163}_{-155}$	$3419^{+162}_{-127}$	$11^{+5}_{-4}$
Alt.	$-129 \pm 55$	$602.40^{+145.73}_{-113.59}$	$1643^{+148}_{-146}$	$1686^{+391}_{-3721}$	$0.324^{+0.237}_{-0.162}$

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

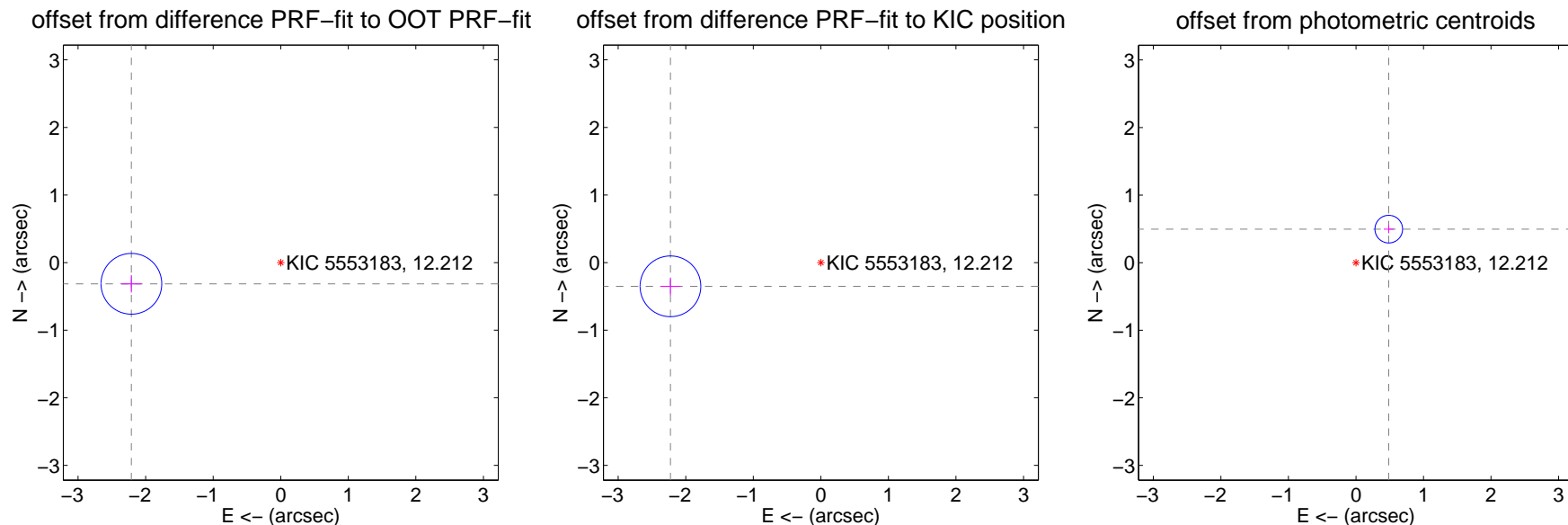
## DV Centroid Data

Supplemental centroid analysis for 005553183-01. Kepler magnitude: 12.21. Transit SNR 11.08

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.233 \pm 0.150$	14.90	$2.211 \pm 0.150$	$-0.314 \pm 0.129$
PRF-fit source offset from KIC position	$2.254 \pm 0.150$	15.05	$2.226 \pm 0.150$	$-0.351 \pm 0.129$
photometric centroid source offset	$0.69 \pm 0.07$	10.18	$-0.49 \pm 0.07$	$0.50 \pm 0.06$



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

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

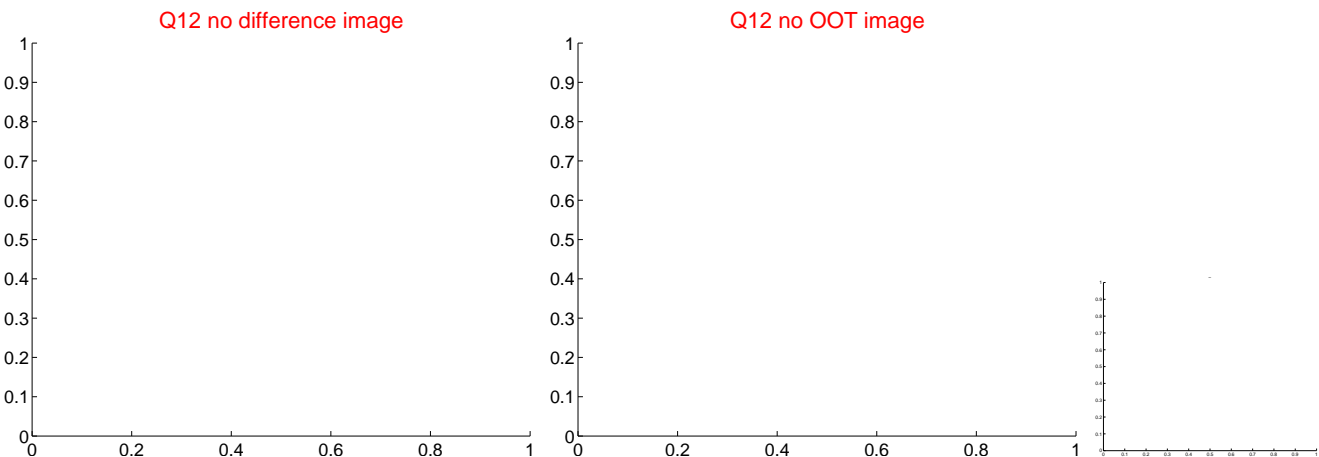
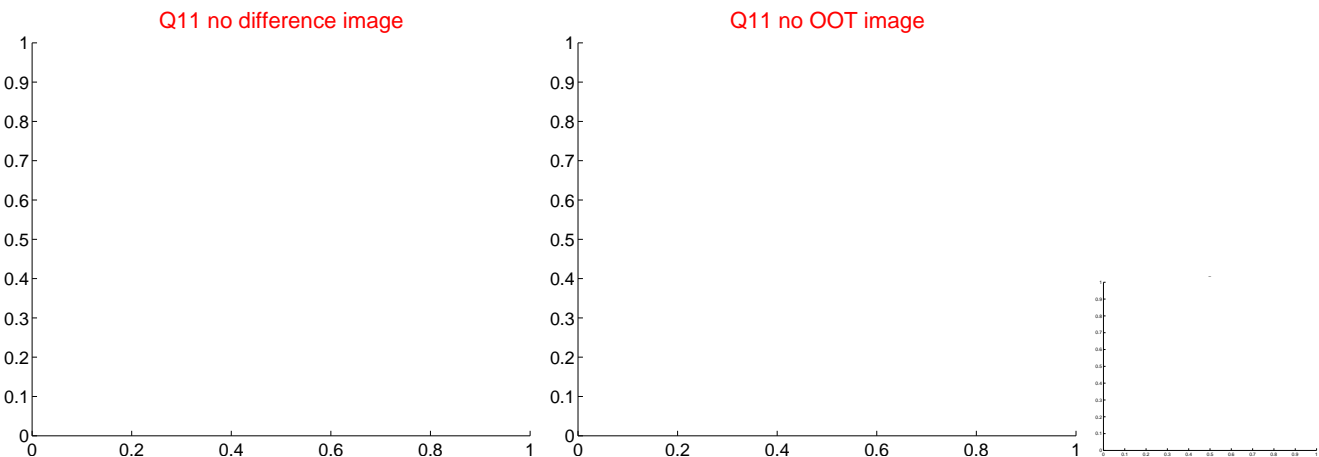
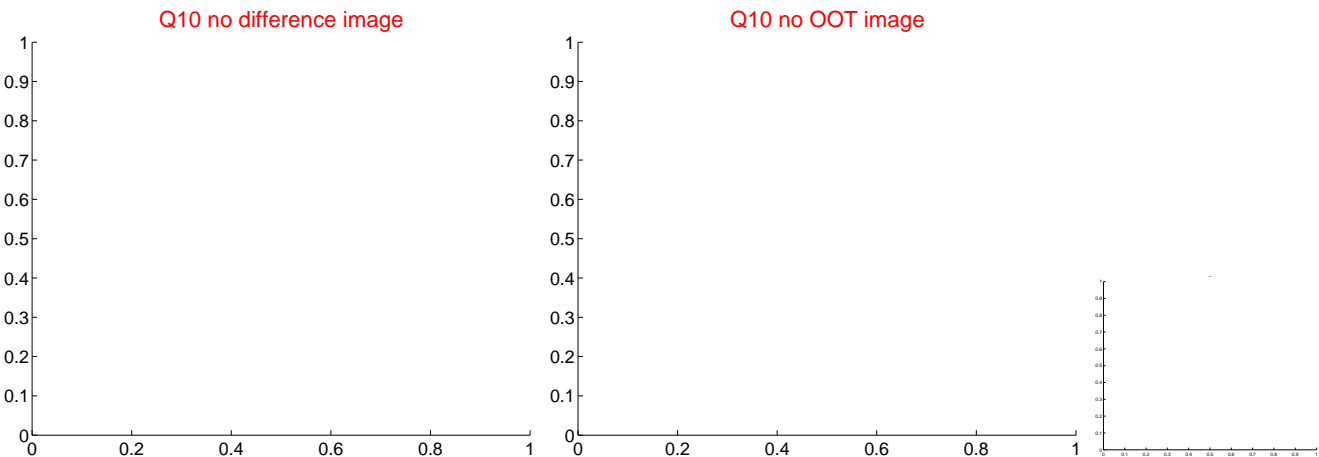
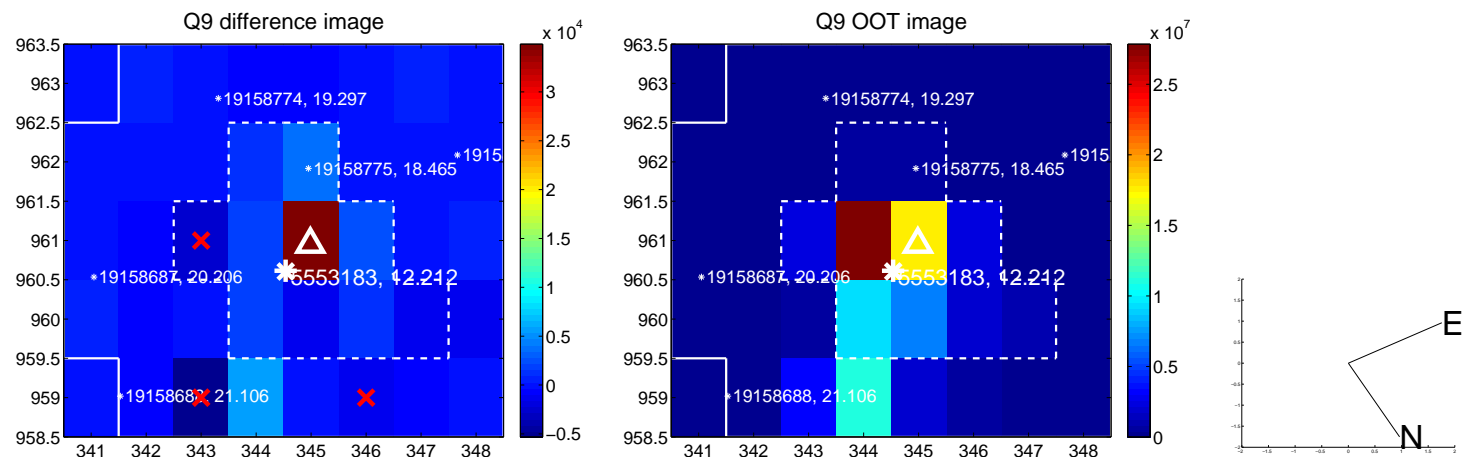


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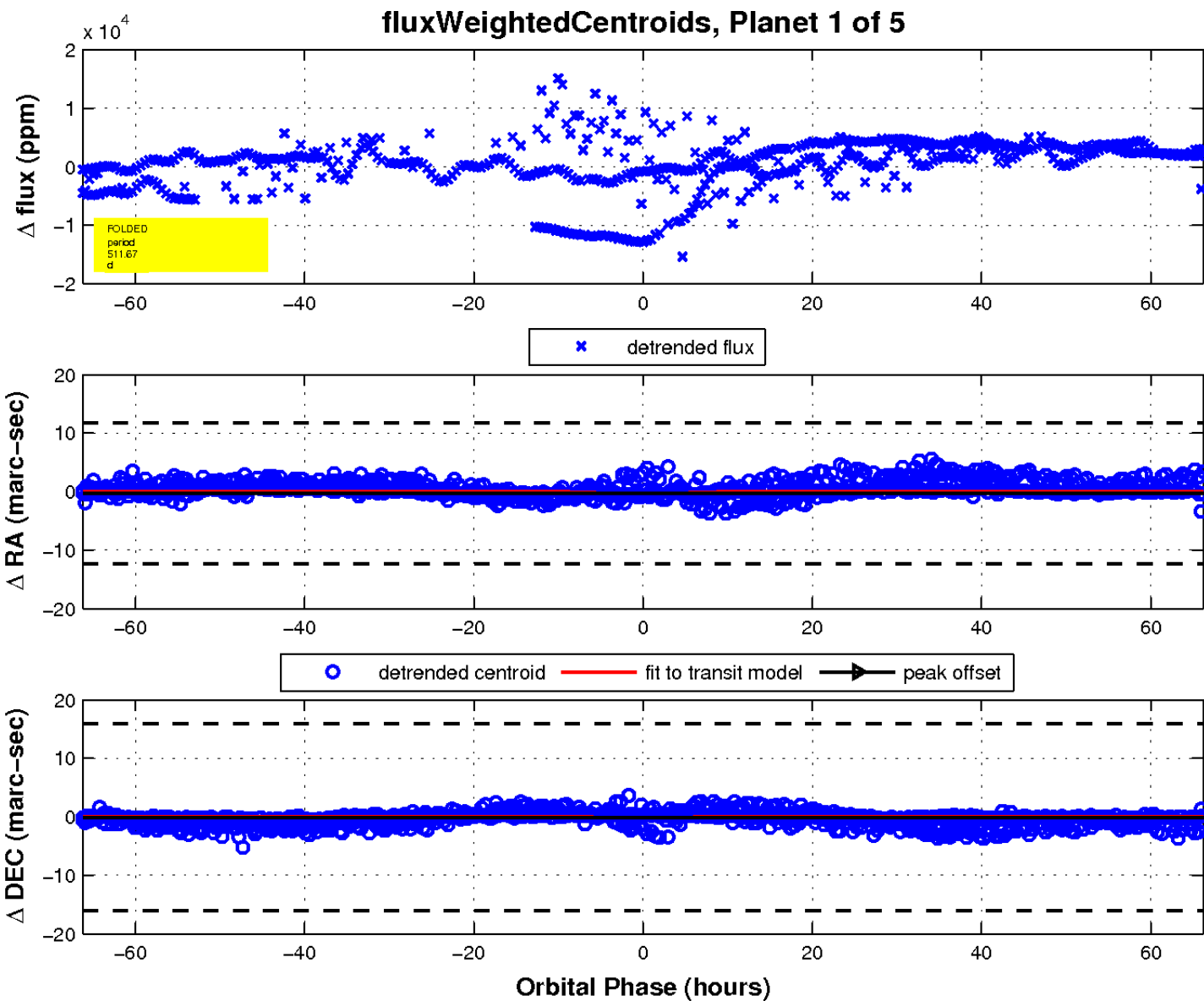
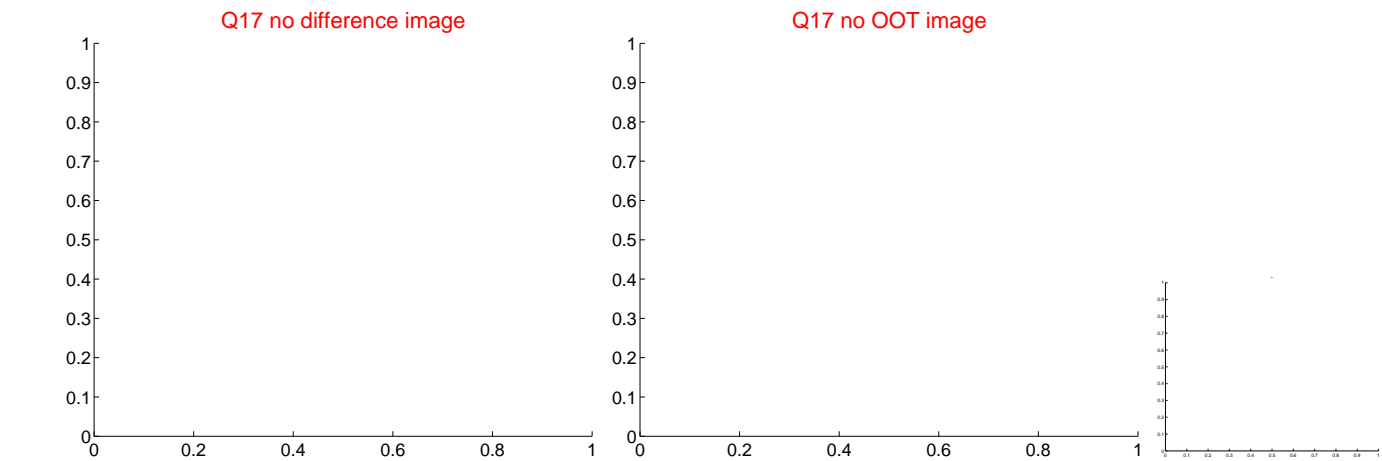
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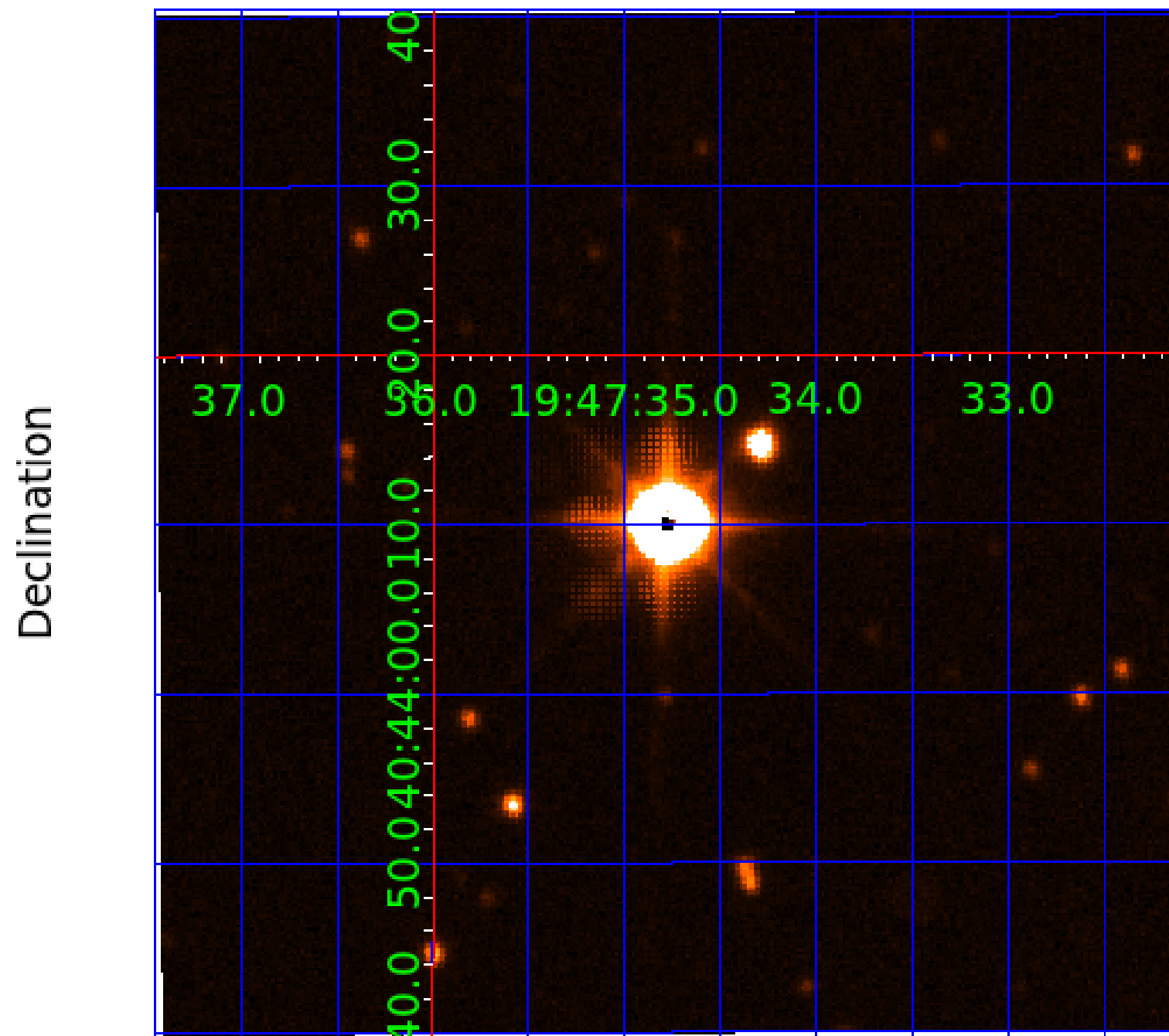
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UKIRT Image



# KIC 005553183

## 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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## Robovetter Results

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005553183-04	OBS	FP	0.00	1	0	0	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005553183-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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

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

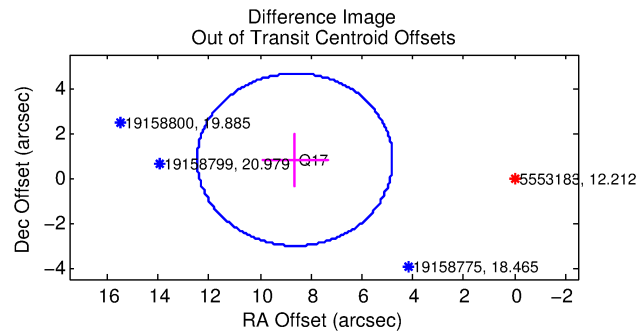
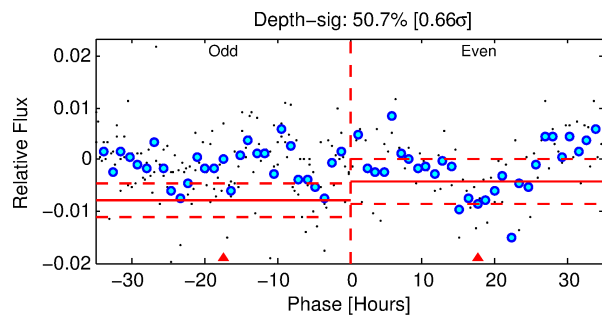
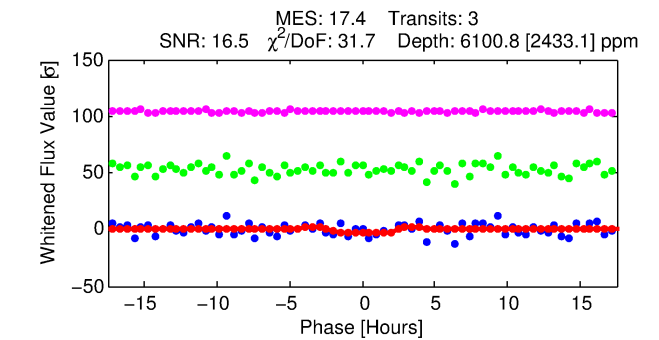
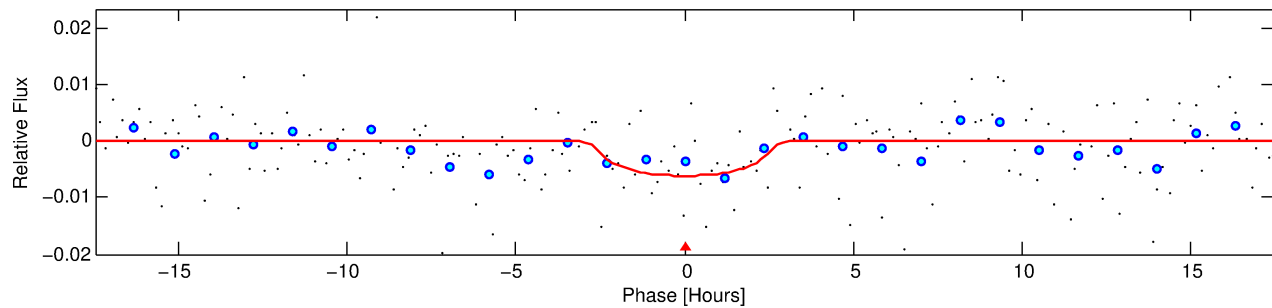
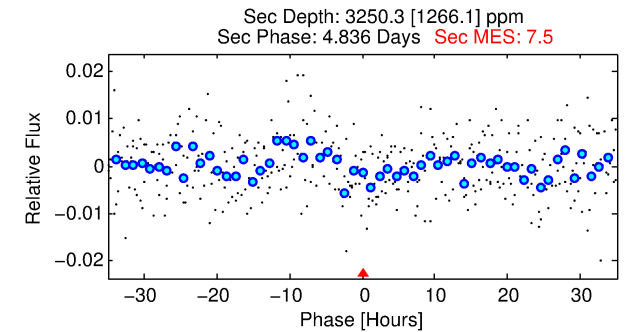
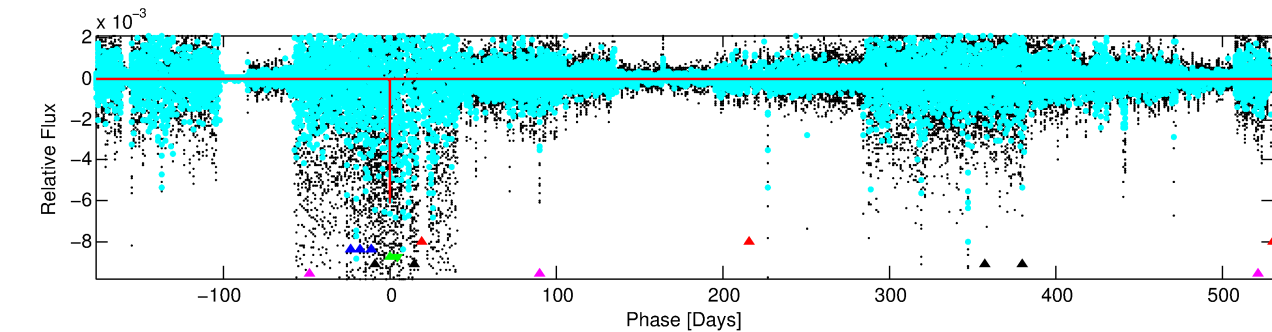
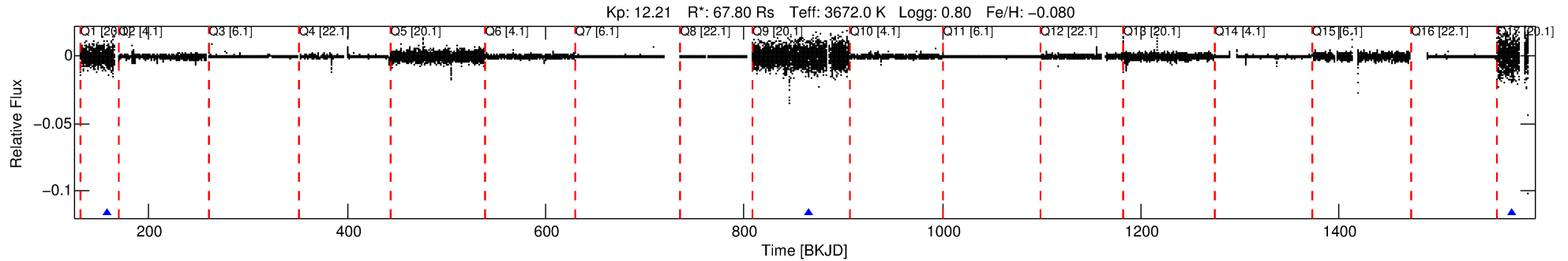
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## Ephemeris Match Information For 005553183-03

No Significant Match Found

# DV One-Page Summary

KIC: 5553183 Candidate: 3 of 5 Period: 708.342 d



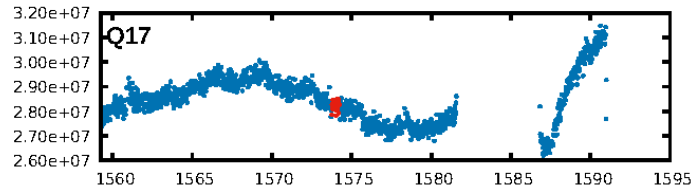
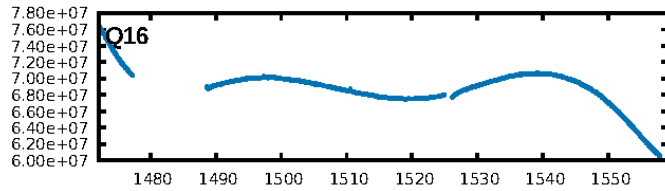
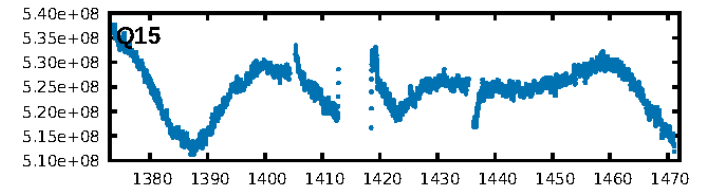
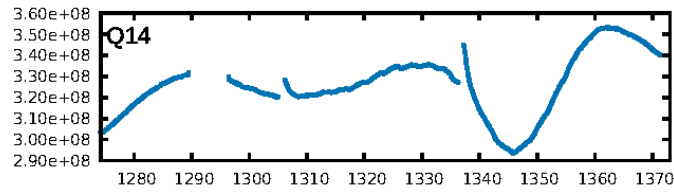
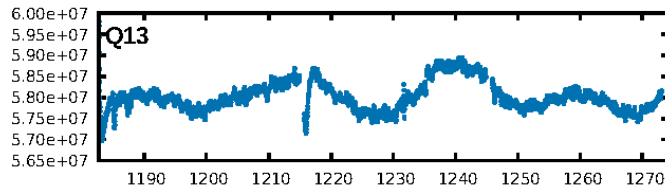
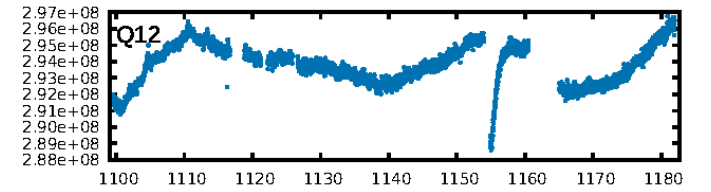
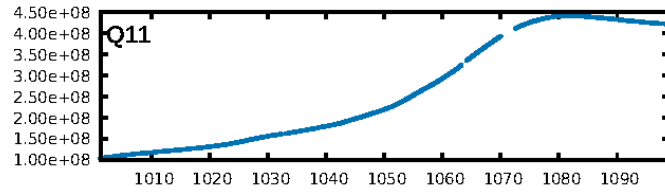
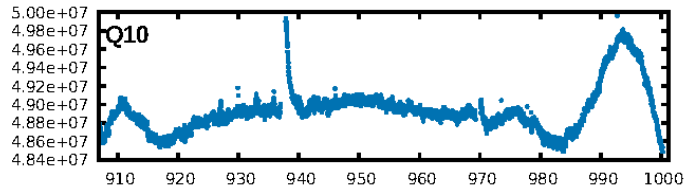
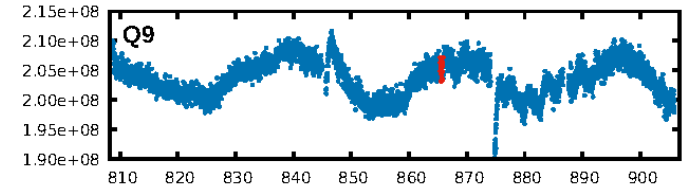
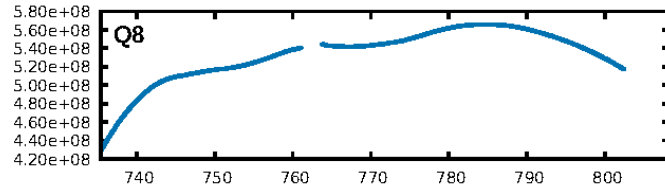
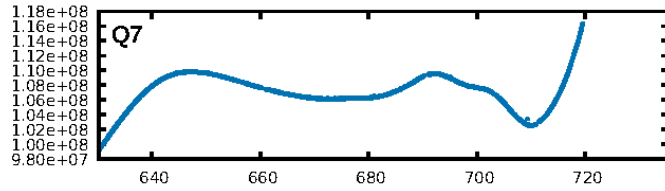
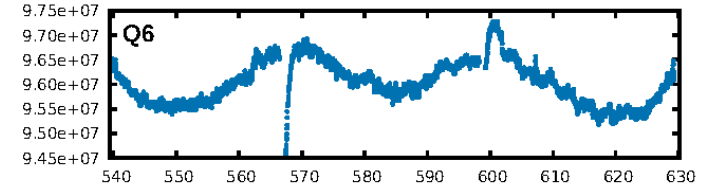
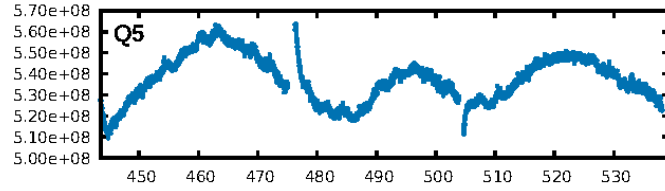
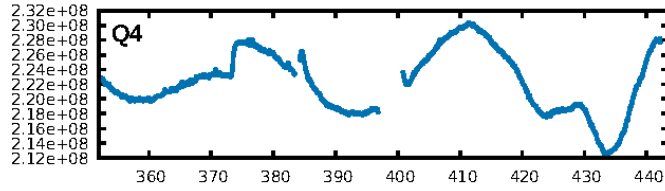
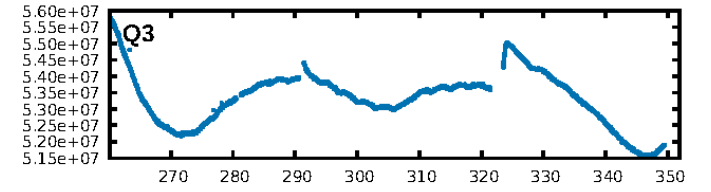
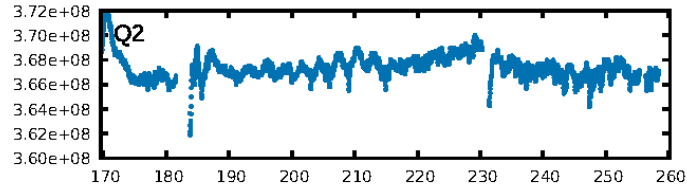
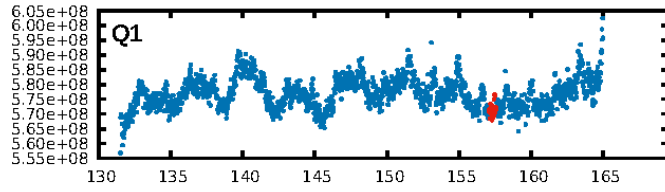
## DV Fit Results:

Period = 708.34209 [0.02091] d  
Epoch = 157.3083 [0.0300] BKJD  
Rp/R\* = 0.0756 [0.0728]  
a/R\* = 776.65 [1653.92]  
b = 0.68 [1.80]  
Seff = 297.64 [152.54]  
Teq = 1059 [136] K  
**Rp = 559.50 [575.10] Re**  
a = 1.5862 [0.5122] AU  
Ag = 14.37 [29.11] [0.46σ]  
Teffp = 3188 [1569] K [1.35σ]

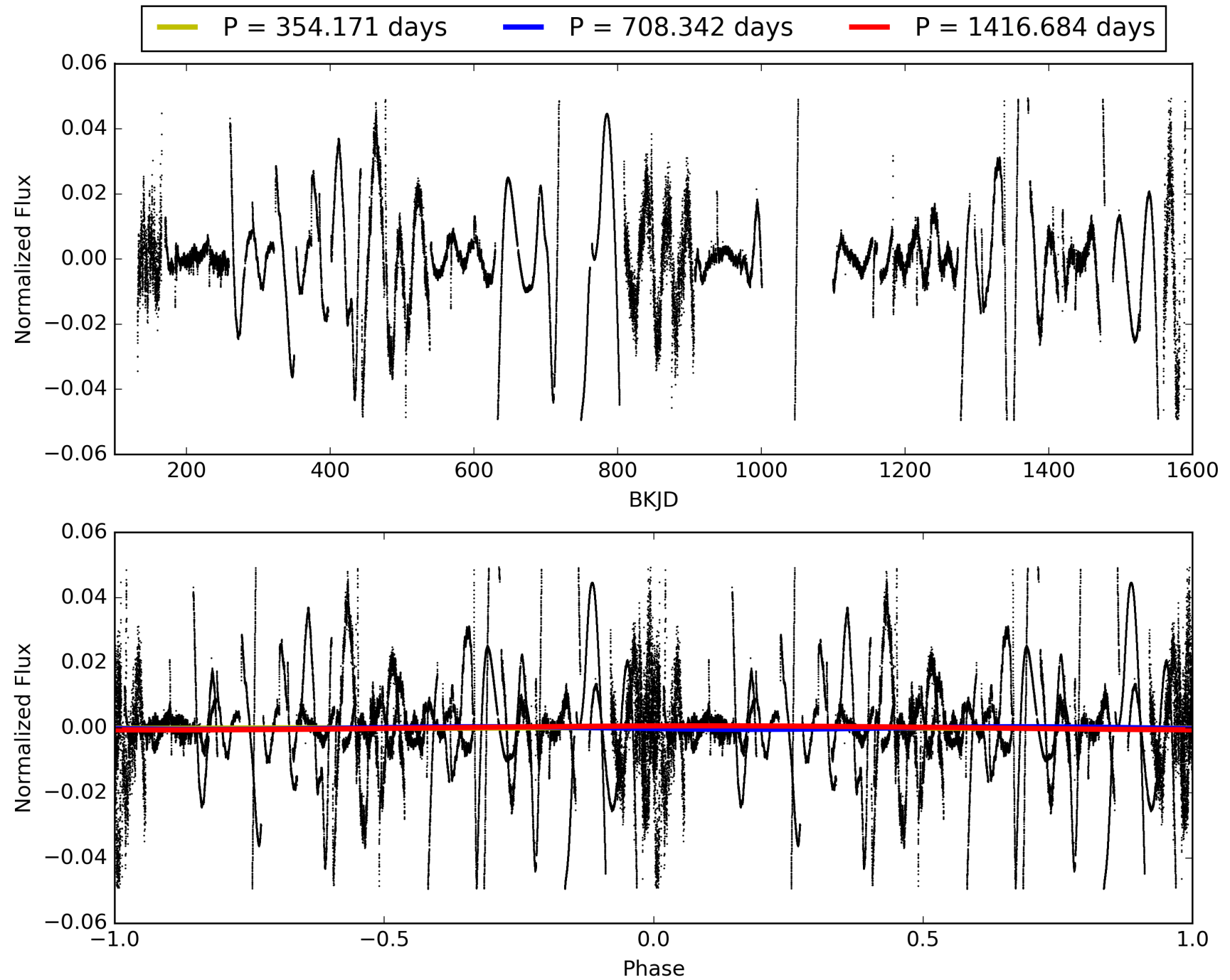
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [309.78σ]  
LongPeriod-sig: 100.0% [22.35σ]  
**ModelChiSquare2-sig: 0.2%**  
**ModelChiSquareGof-sig: 0.0%**  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1/1]  
**GhostDiagnostic-chr: 2.385**  
Centroid-sig: 52.0%  
**Centroid-so: 0.711 arcsec [12.58σ]**  
**OotOffset-rm: 8.663 arcsec [6.78σ]**  
**KicOffset-rm: 8.532 arcsec [6.67σ]**  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-figm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [3/3]

# TCE 005553183-03, PDC Light Curves



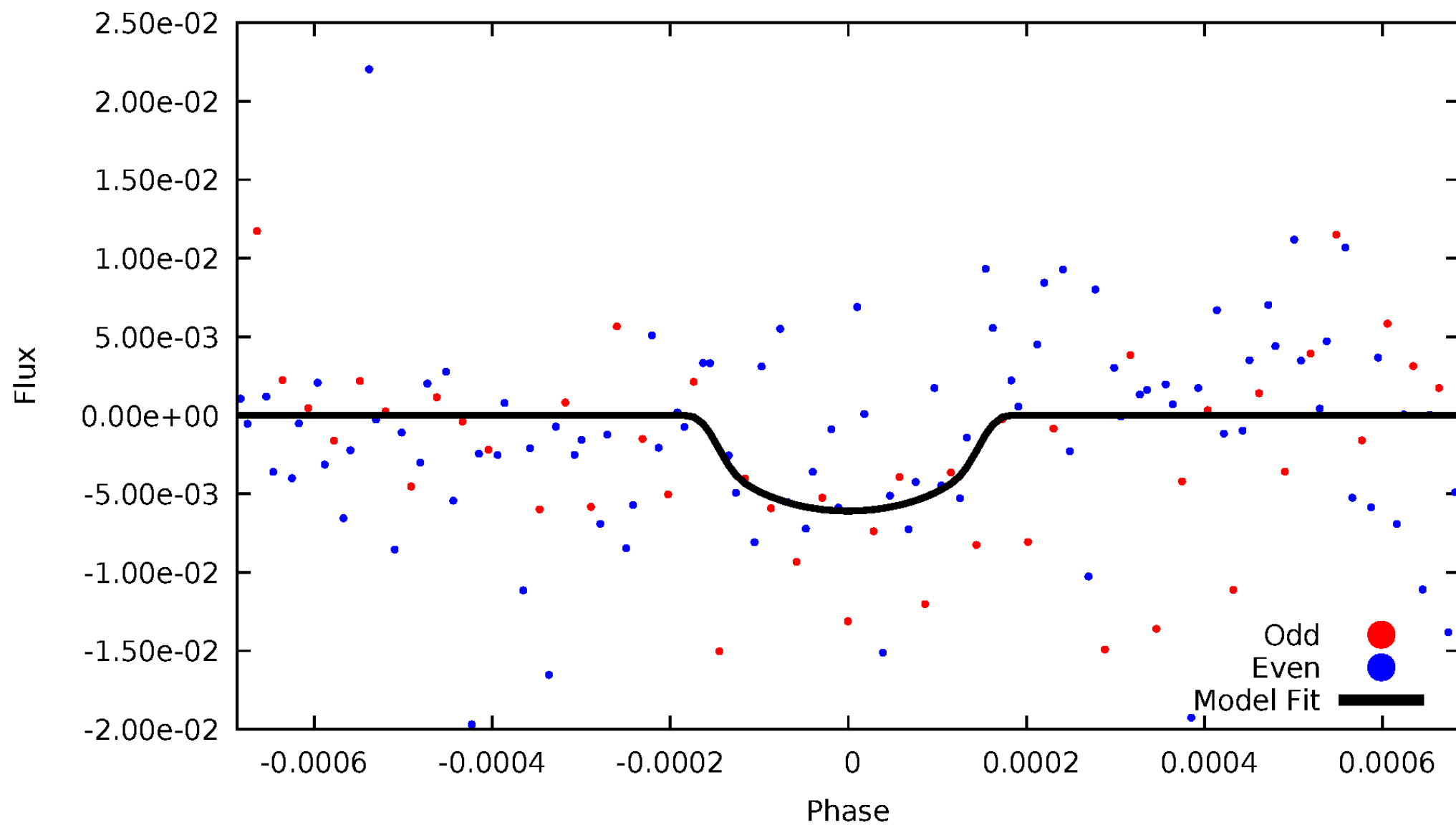
# TCE 005553183-03





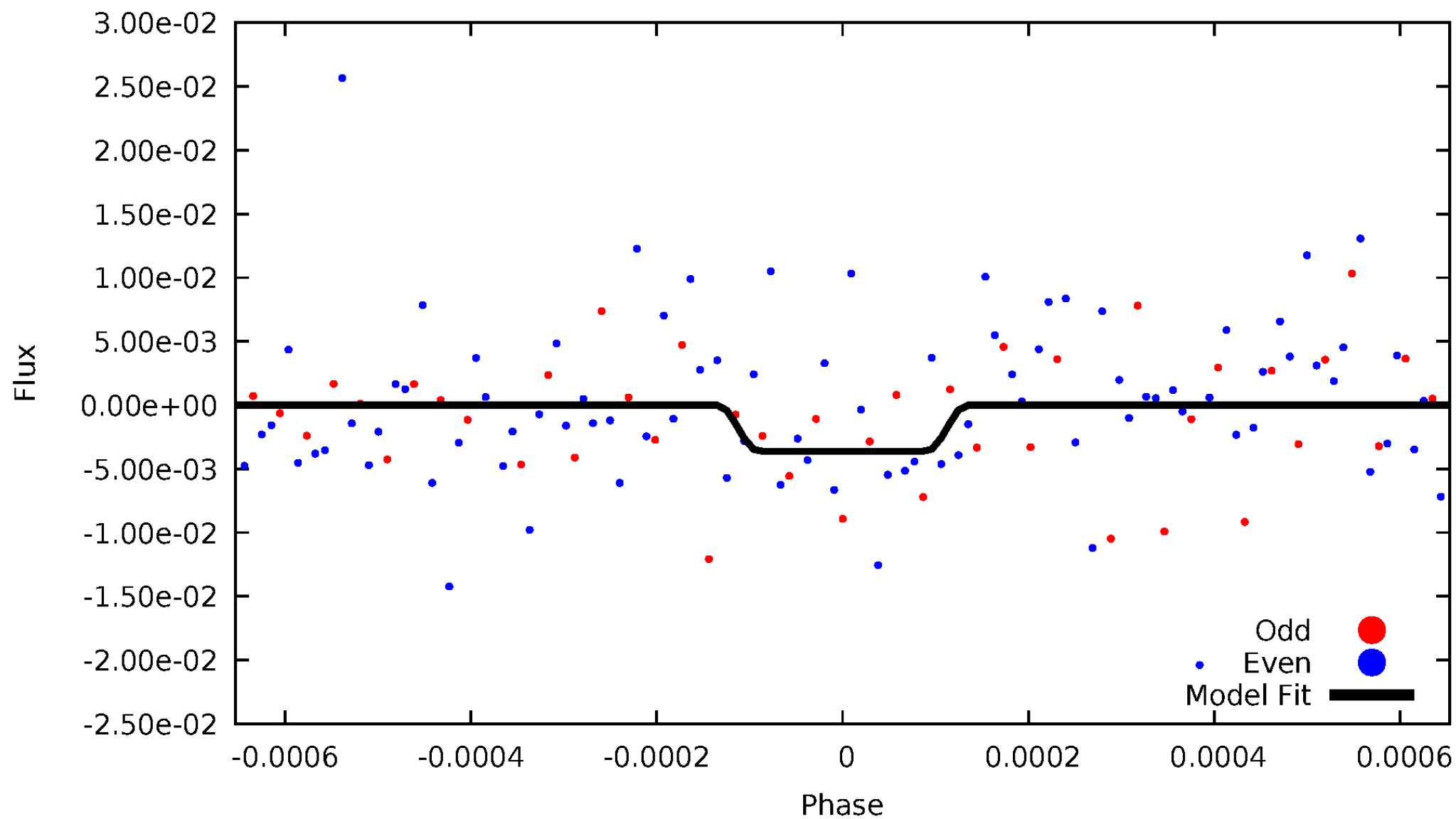
# DV Odd/Even

TCE 005553183-03



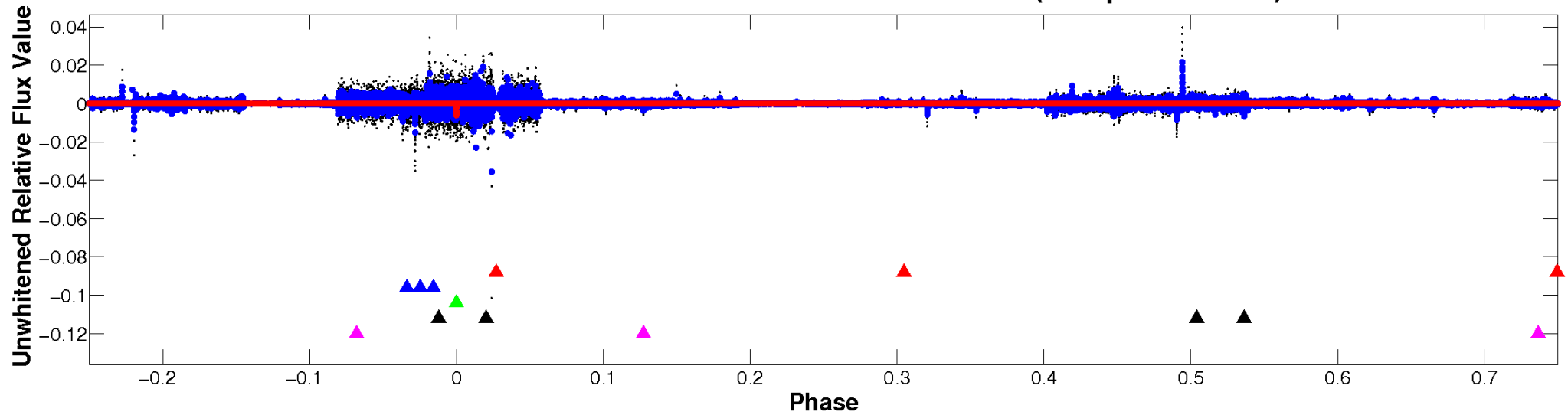
# ALT Odd/Even

TCE 005553183-03

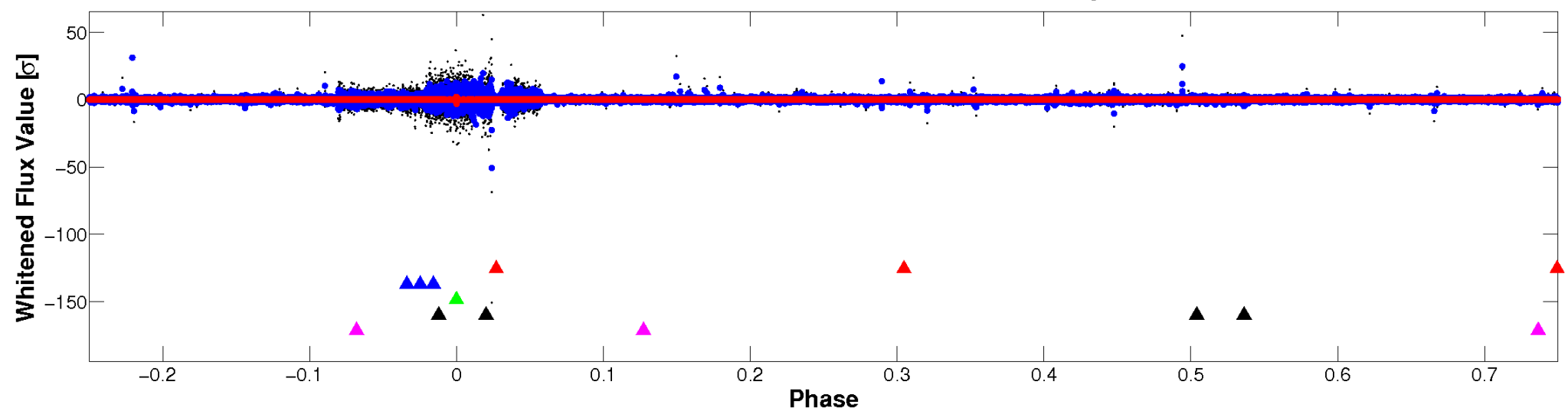


# Non-Whitened Vs. Whitened Light Curve

## Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

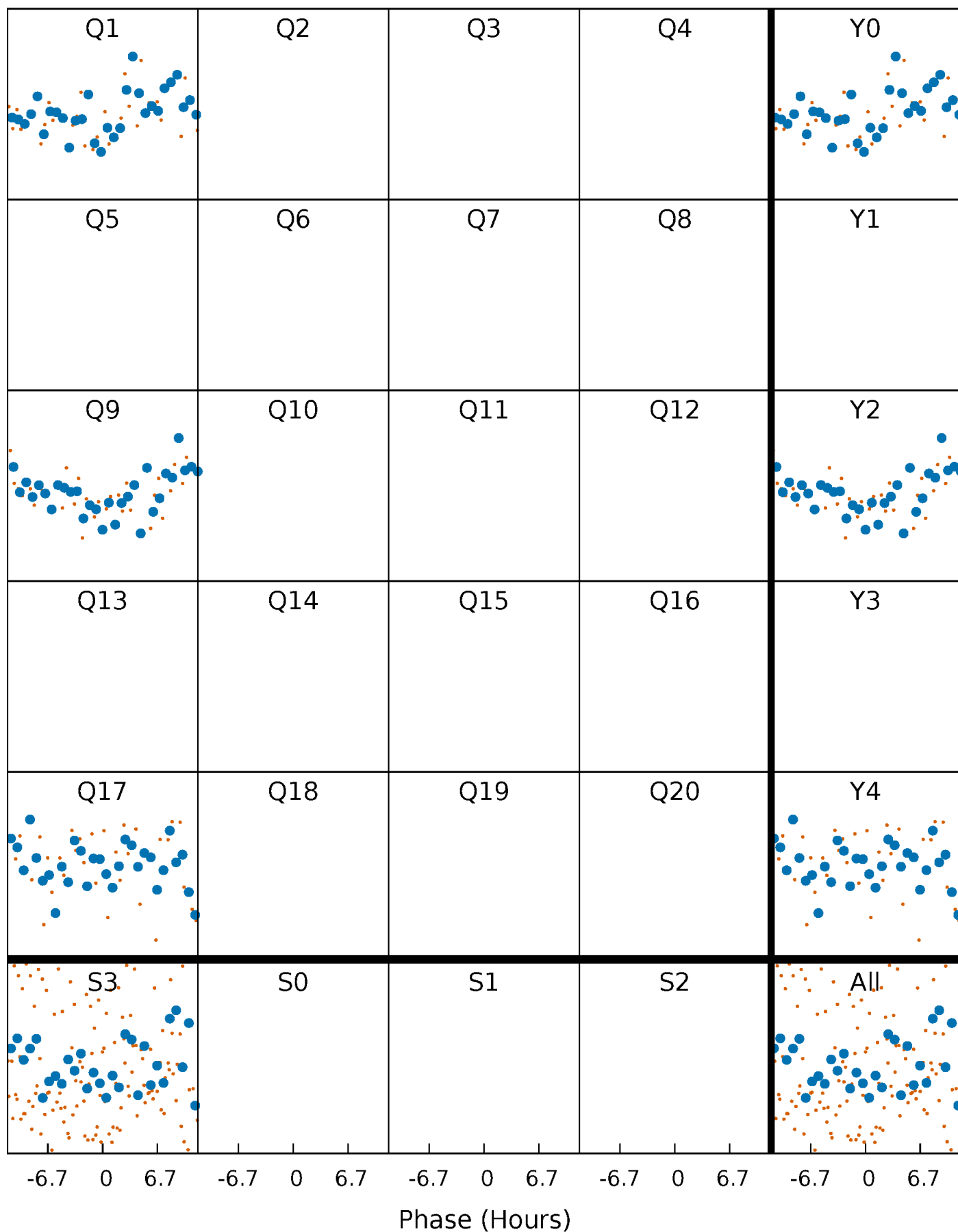


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



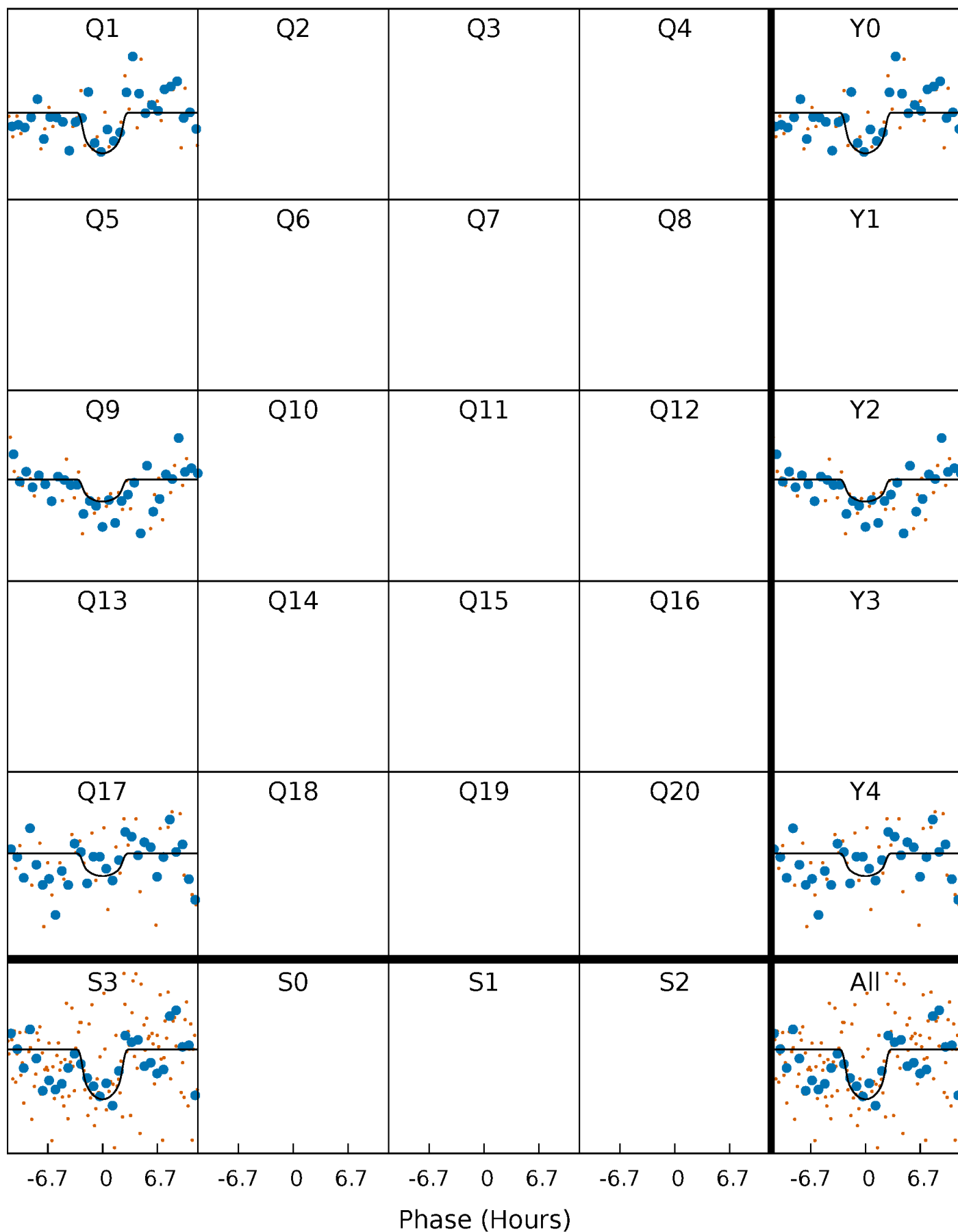
# PDC Quarter-Phased Transit Curves

TCE 005553183-03     $P=708.342086$  Days     $T_0=157.308274$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 005553183-03     $P=708.342086$  Days     $T_0=157.308274$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

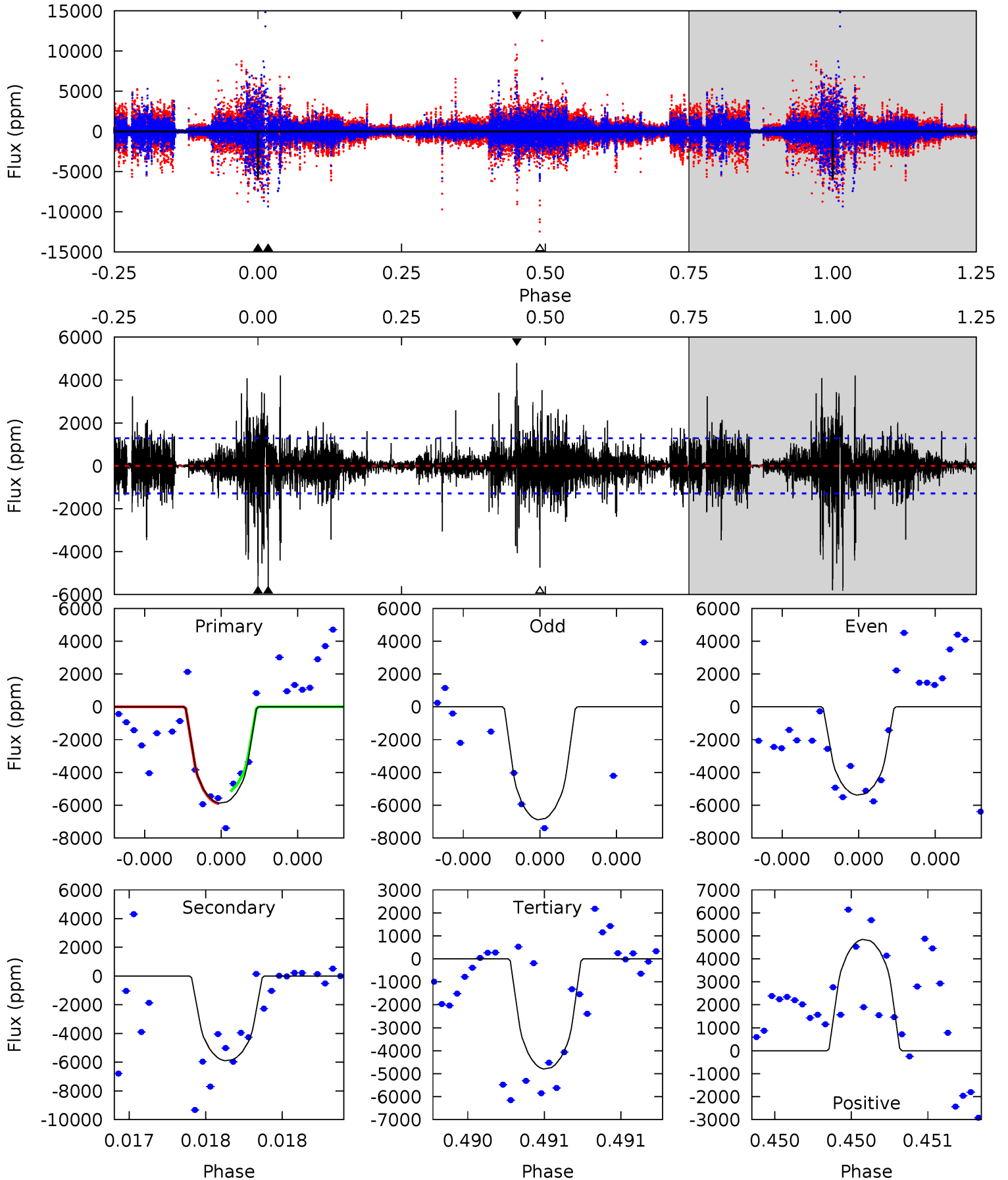
TCE 005553183-03 P=708.342980 Days  $T_0=157.306873$  (BKJD)



# DV Model-Shift Uniqueness Test

005553183-03, P = 708.342086 Days, E = 157.308274 Days

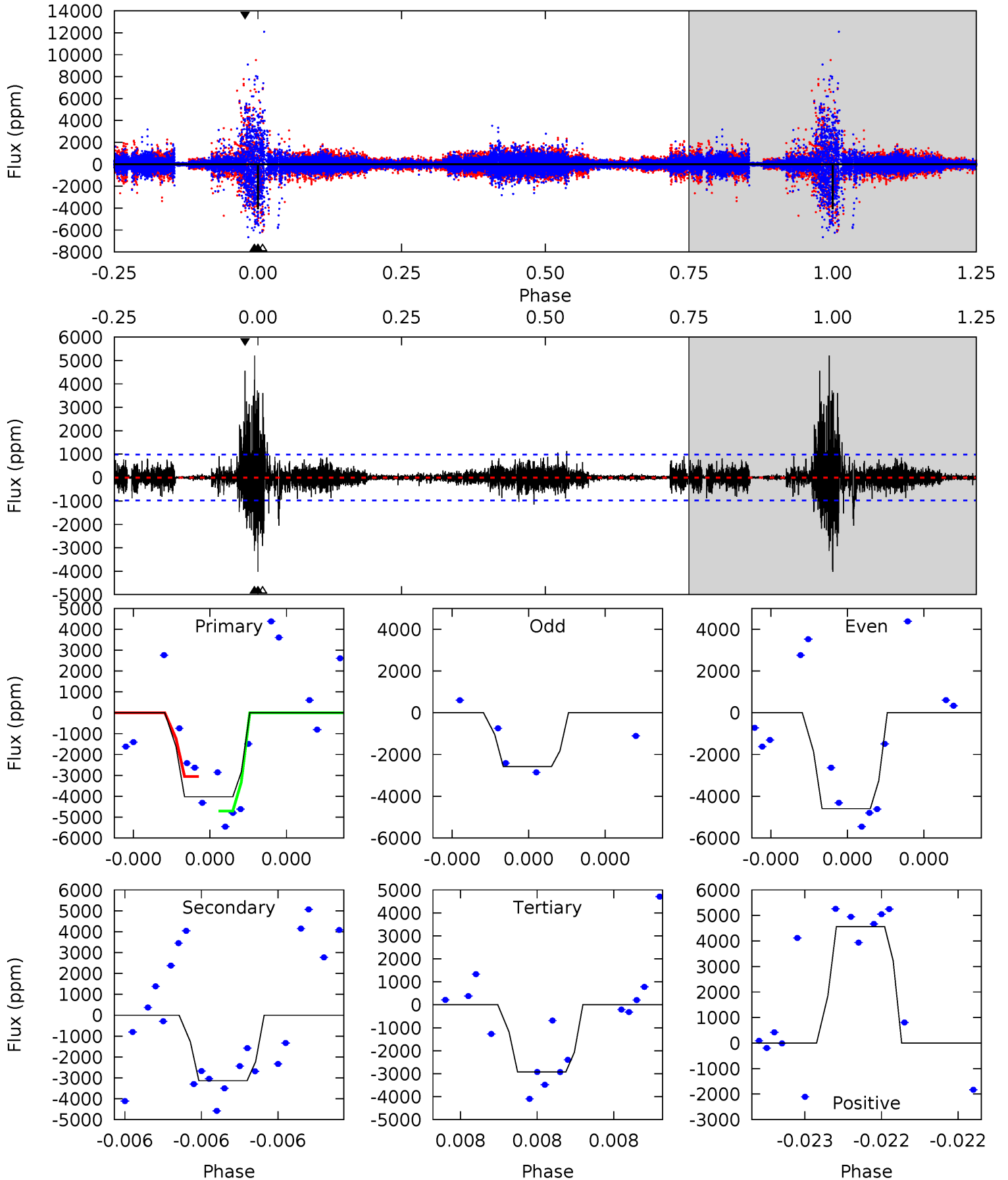
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.3	25.4	20.7	20.9	5.62	3.56	2.55	4.65	4.43	4.76	4.53	1.88	1.48	0.45	0



# Alt Model-Shift Uniqueness Test

005553183-03, P = 708.342980 Days, E = 157.306873 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
23.3	18.2	16.9	26.4	5.69	3.65	1.48	6.37	-3.11	1.23	-8.24	4.26	0.63	0.56	0





### Stellar Parameters For KIC 005553183

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3672^{+126}_{-113}$	$0.801^{+0.281}_{-0.230}$	$-0.080^{+0.300}_{-0.250}$	$67.804^{+24.445}_{-16.296}$	$1.060^{+0.416}_{-0.104}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+35%/-29%	+375%/-312%	+36%/-24%	+39%/-10%	+156%/-57%
Source	PHO54	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 005553183-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-5826 \pm 229$	$613.37^{+552.56}_{-368.17}$	$1475^{+140}_{-128}$	$3553^{+1440}_{-596}$	$22^{+122}_{-16}$
Alt.	$-3136 \pm 173$	$576.59^{+504.50}_{-356.45}$	$1470^{+141}_{-128}$	$3275^{+1357}_{-505}$	$13^{+83}_{-10}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

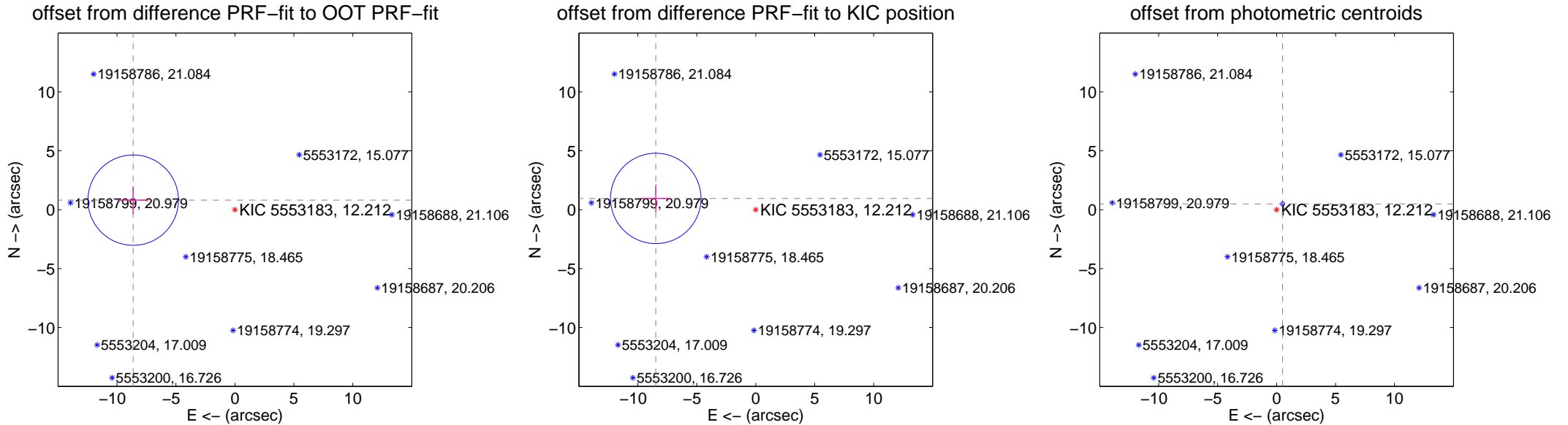
## DV Centroid Data

Supplemental centroid analysis for 005553183-03. Kepler magnitude: 12.21. Transit SNR 16.54

There are 0 quarters with good PRF difference image offsets

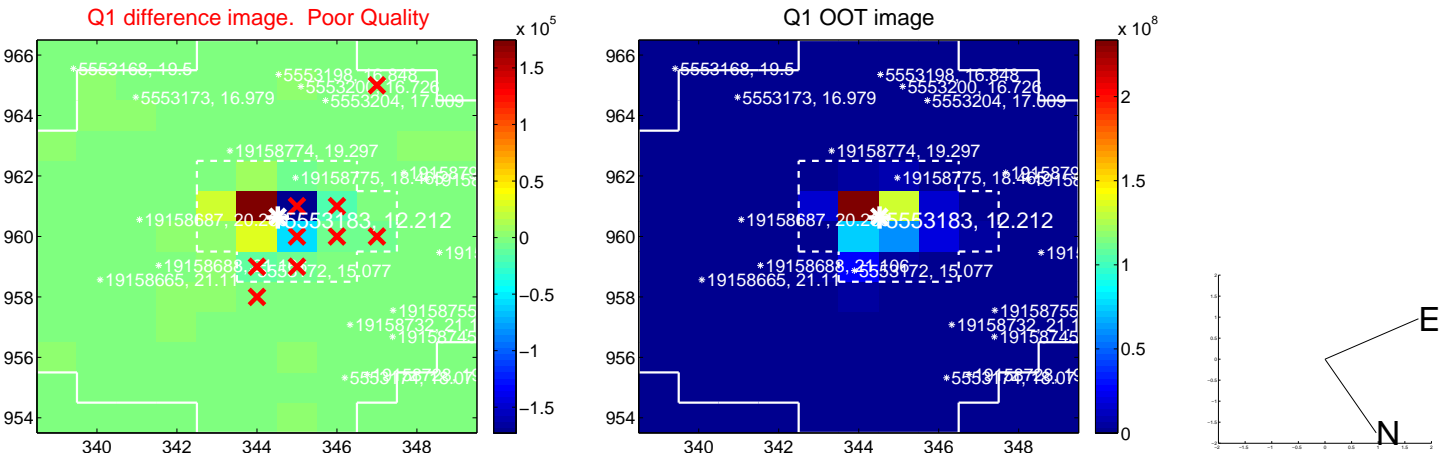
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$8.663 \pm 1.279$	6.78	$8.625 \pm 1.280$	$0.812 \pm 1.164$
PRF-fit source offset from KIC position	$8.532 \pm 1.278$	6.67	$8.478 \pm 1.280$	$0.958 \pm 1.164$
photometric centroid source offset	$0.71 \pm 0.06$	12.58	$-0.51 \pm 0.06$	$0.50 \pm 0.05$



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

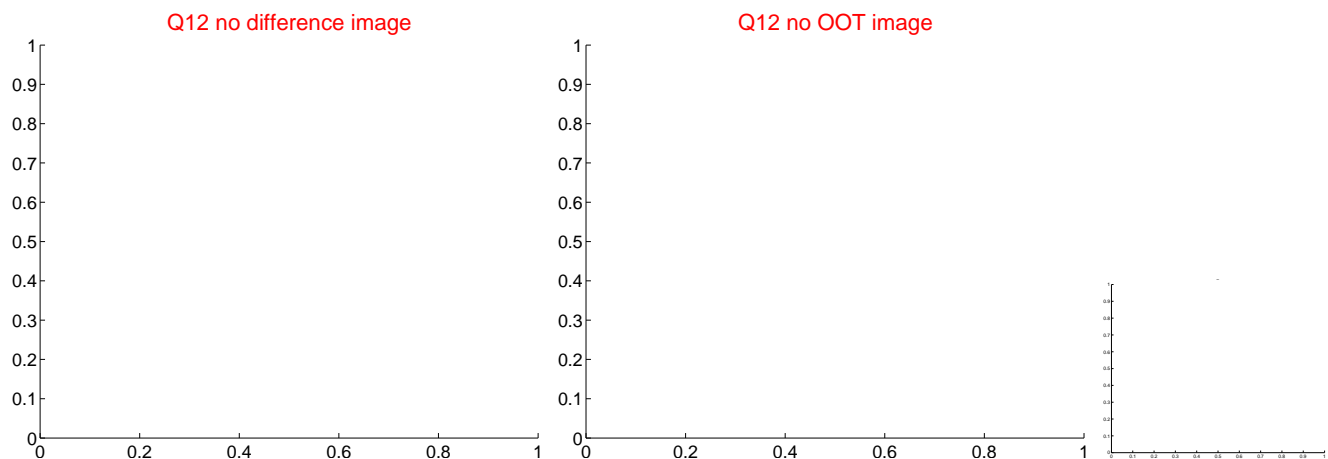
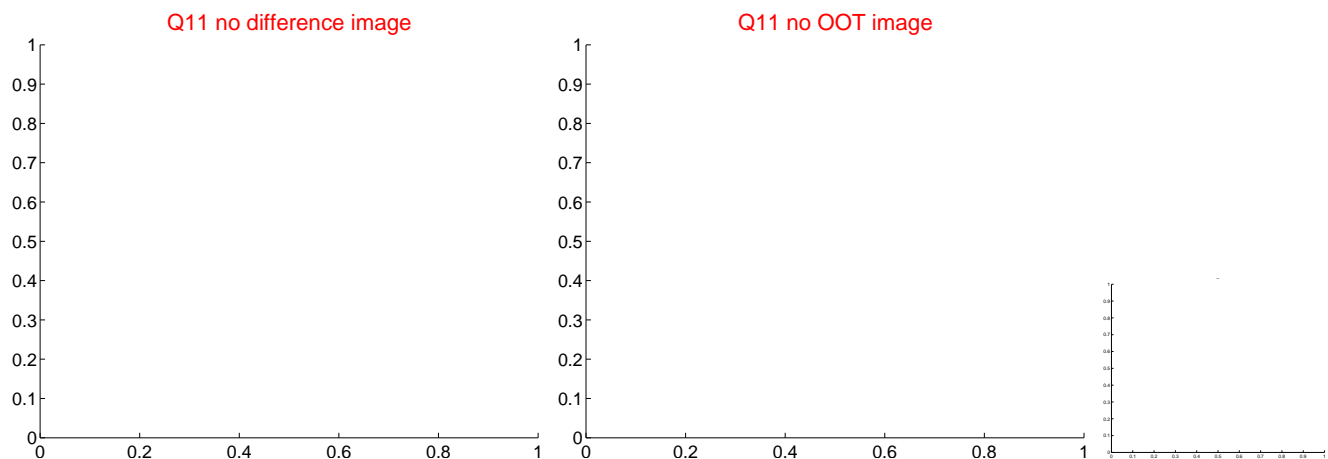
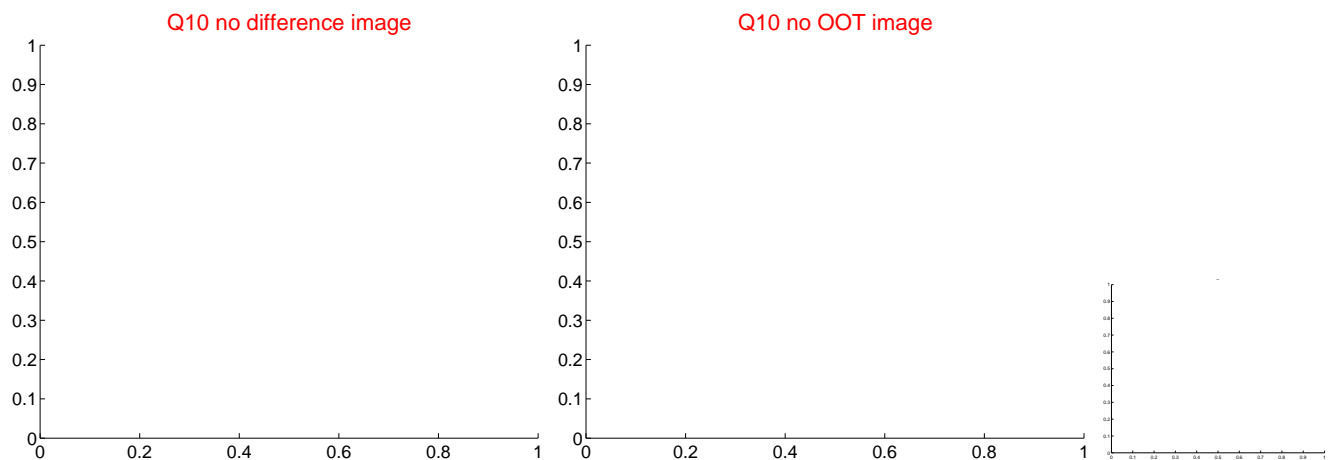
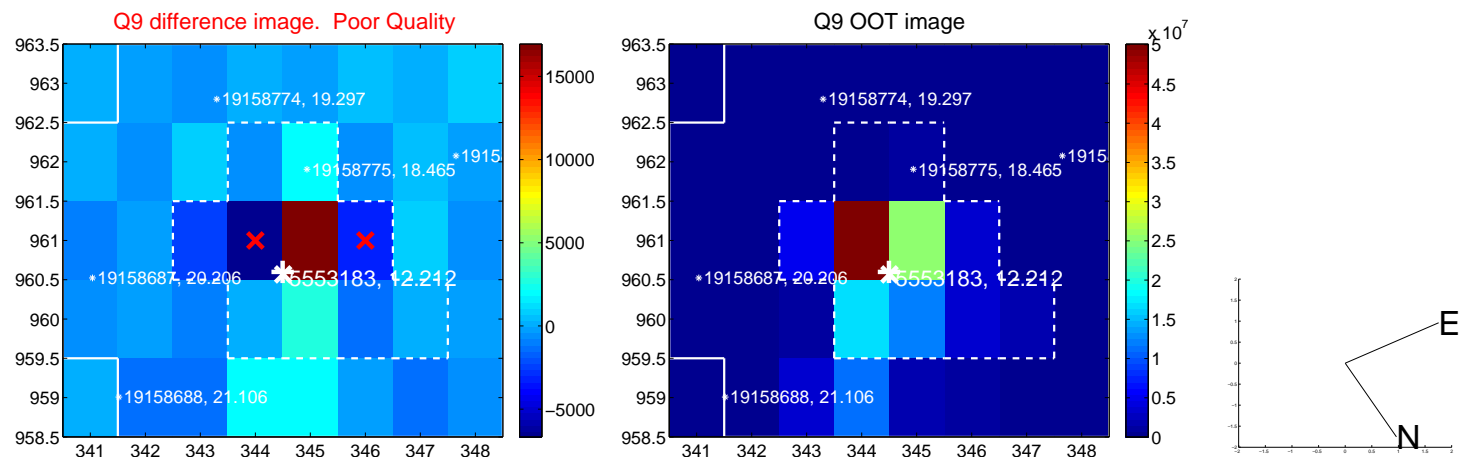
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



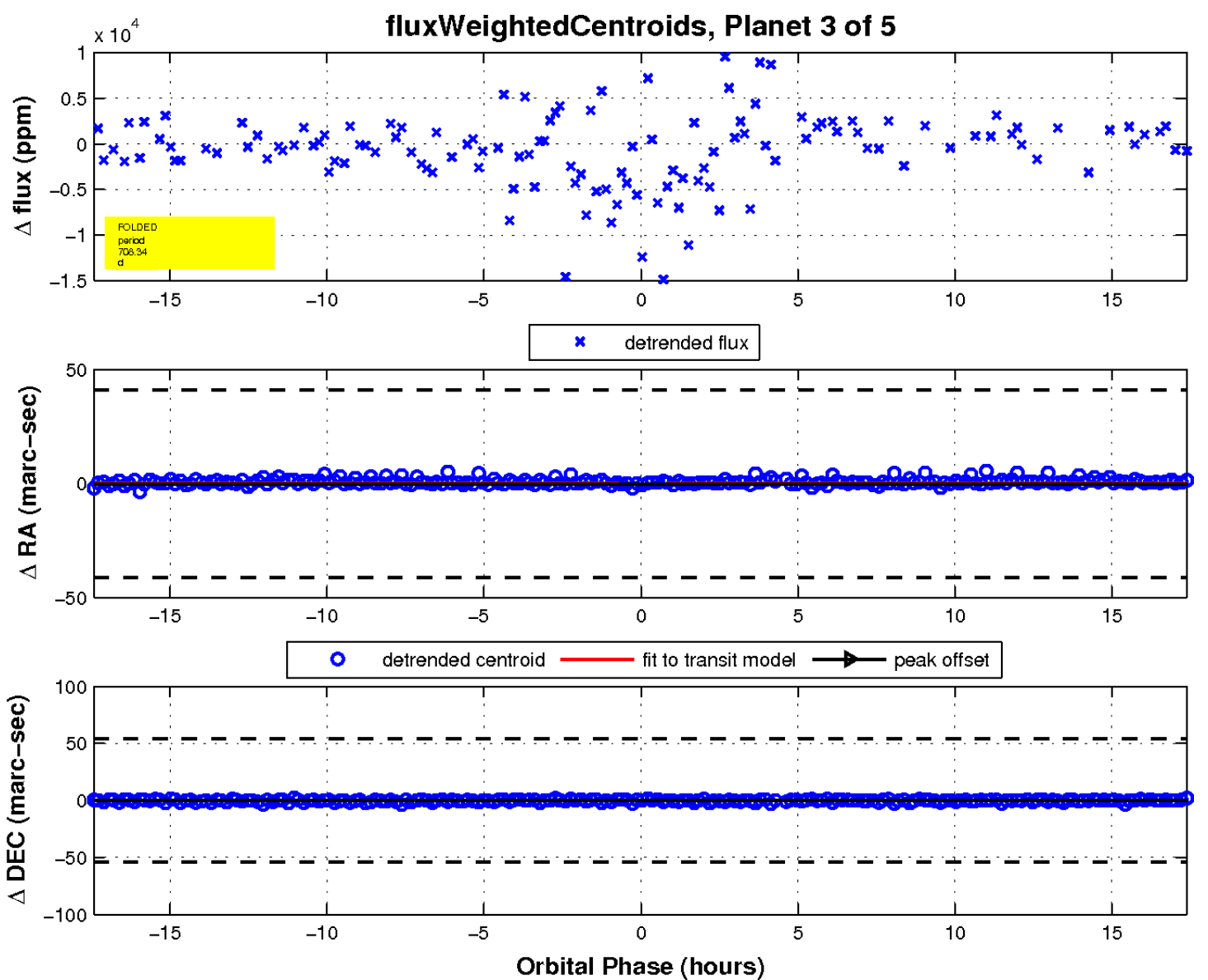
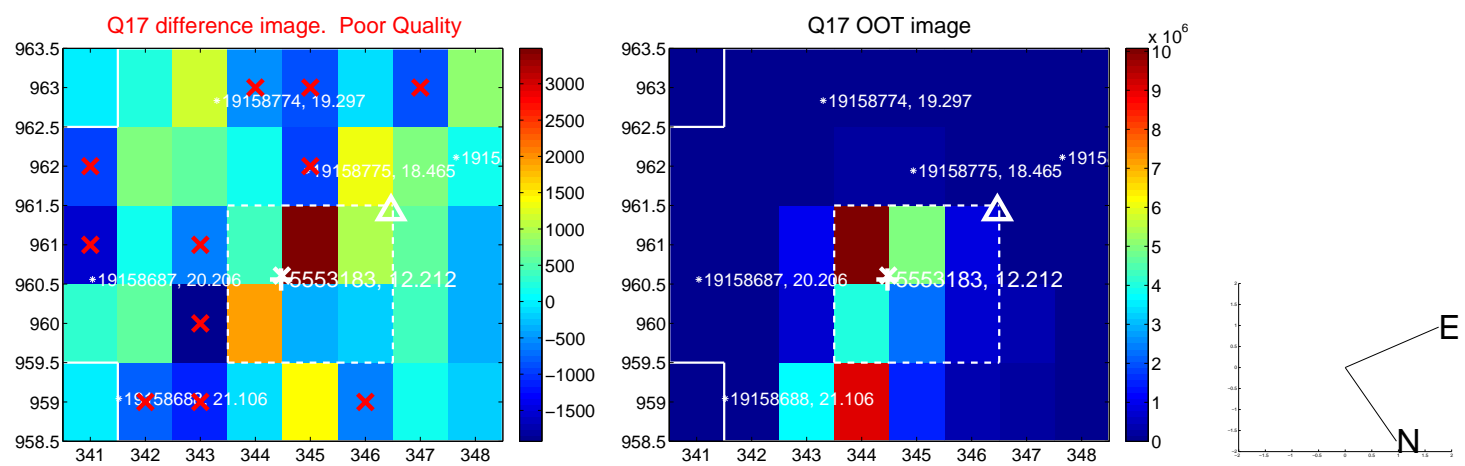
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



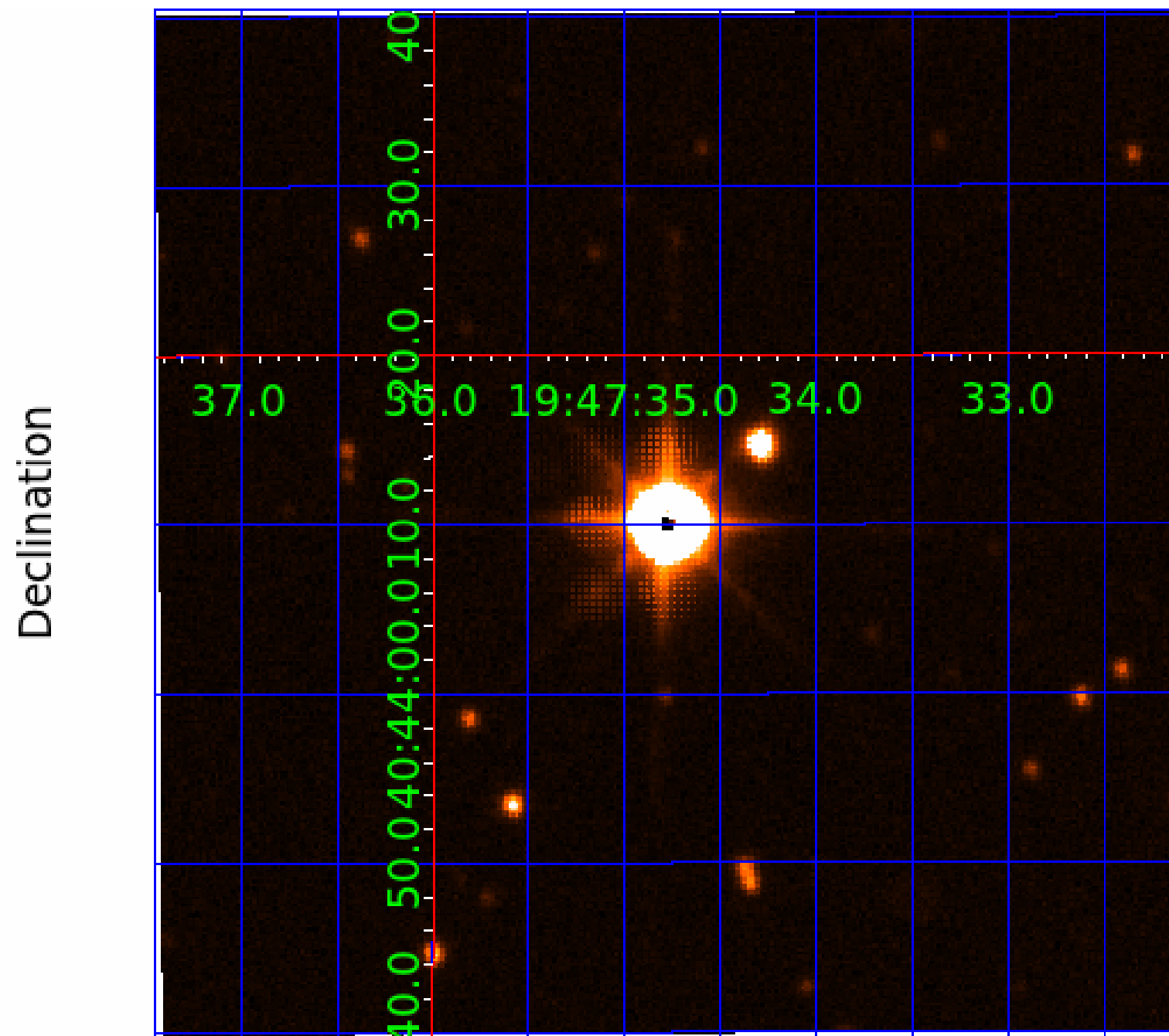
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





# KIC 005553183

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005553183-01	OBS	No	511.670030	373.154695	5317.7	22.115	11.0	11.1	67.80	3672	620.77	459.22
005553183-03	OBS	No	708.342085	157.308274	6100.8	5.832	17.4	16.5	67.80	3672	559.50	297.63
005553183-04	OBS	No	365.579914	148.783627	6532.5	11.542	14.2	13.8	67.80	3672	506.27	718.95
005553183-05	OBS	No	569.919233	247.549775	275.2	9.000	12.1	-1.0	67.80	3672	104.03	397.73

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005553183-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
005553183-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
005553183-04	OBS	FP	0.00	1	0	0	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005553183-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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

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

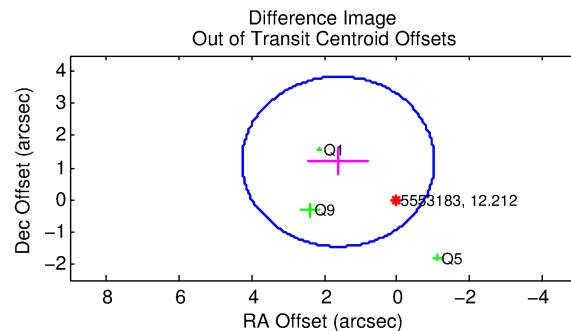
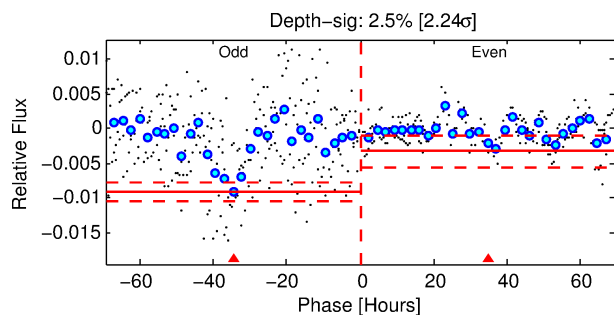
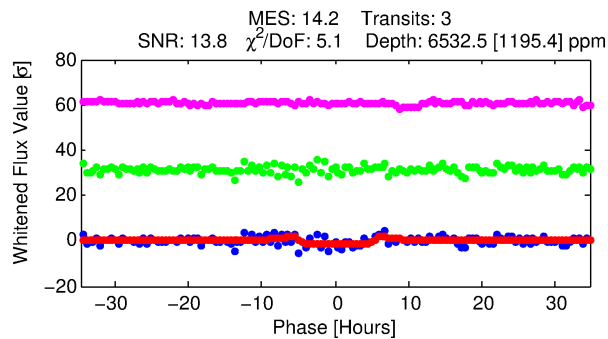
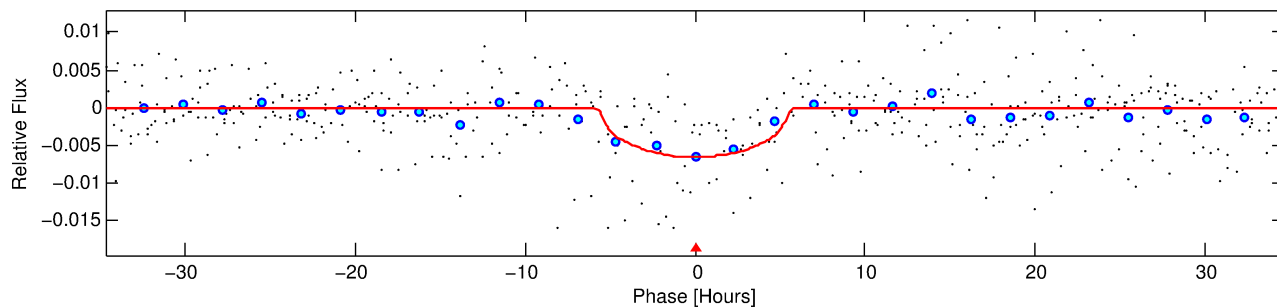
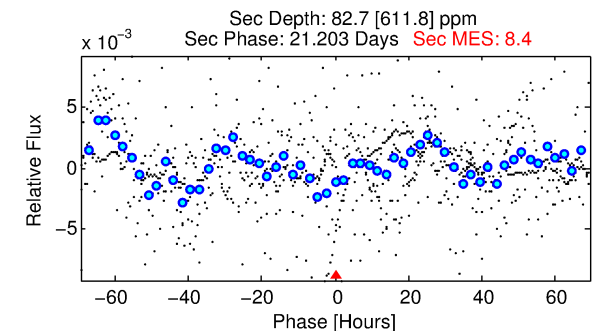
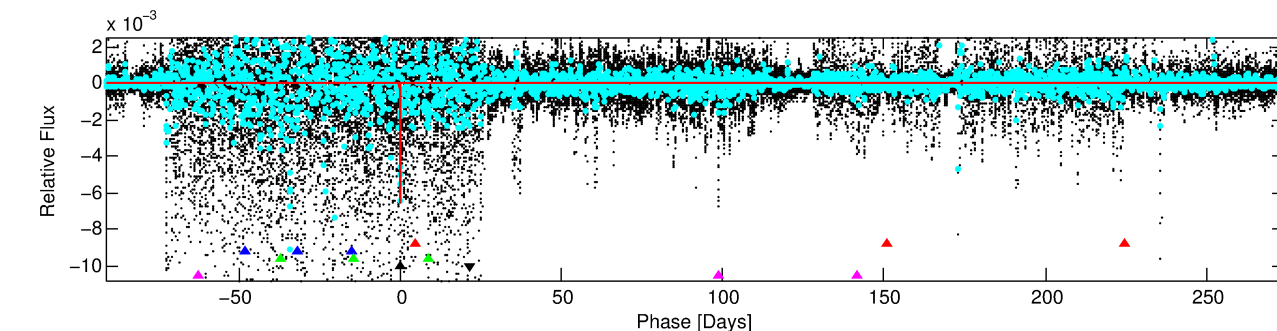
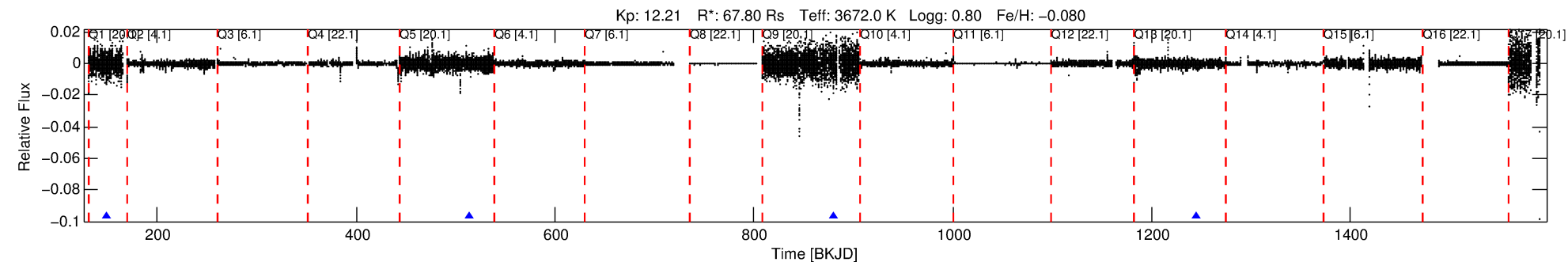
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005553183-04

No Significant Match Found

# DV One-Page Summary

KIC: 5553183 Candidate: 4 of 5 Period: 365.580 d



## DV Fit Results:

Period = 365.57991 [0.01355] d  
Epoch = 148.7836 [0.0170] BKJD  
Rp/R\* = 0.0684 [0.0377]  
a/R\* = 258.12 [296.86]  
b = 0.06 [19.72]  
Seff = 718.95 [368.47]  
Teq = 1320 [169] K  
**Rp = 506.27 [333.07] Re**  
a = 1.0206 [0.3296] AU  
Ag = 0.18 [1.39] [-0.59σ]  
Teffp = 1339 [2502] K [0.01σ]

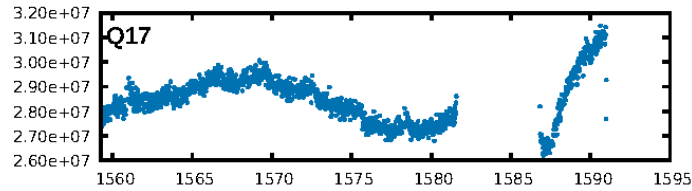
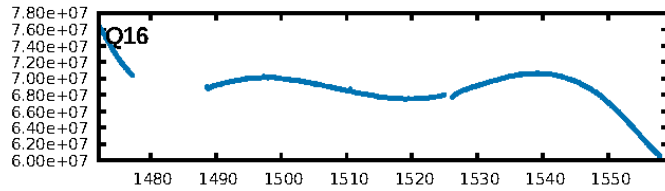
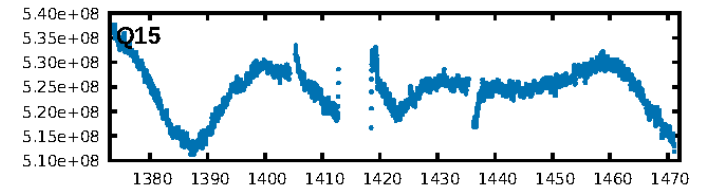
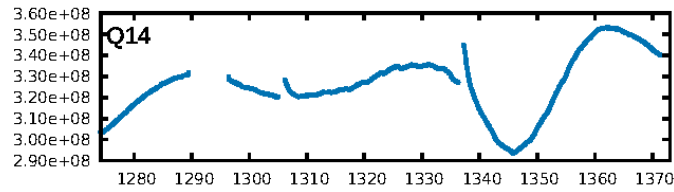
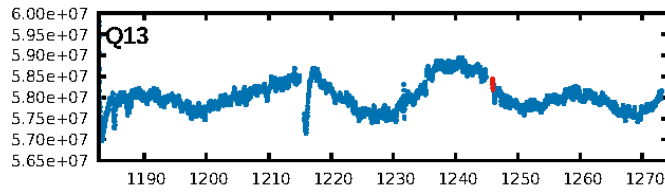
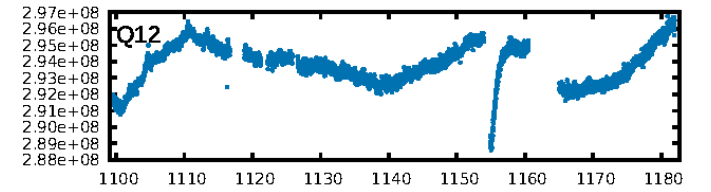
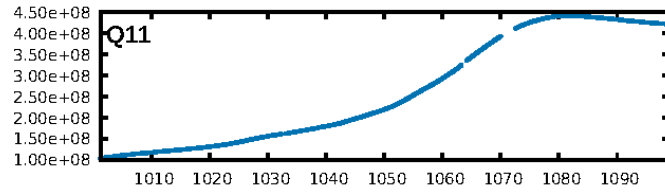
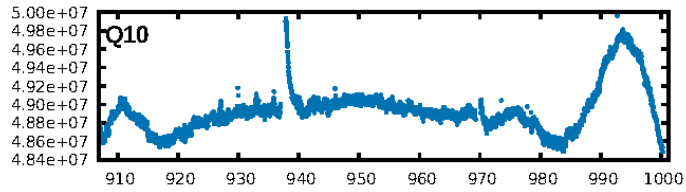
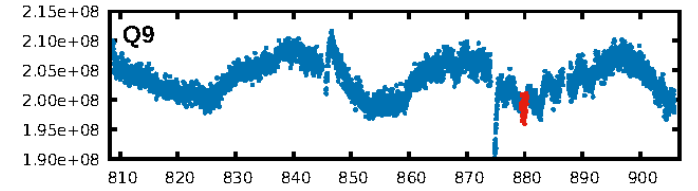
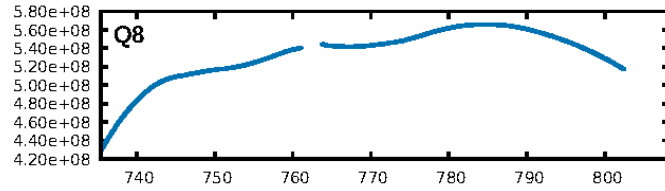
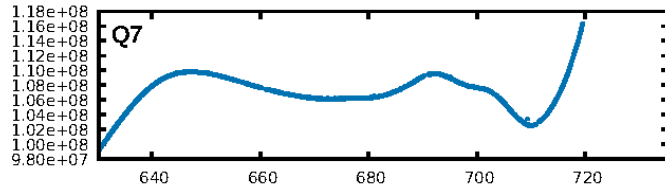
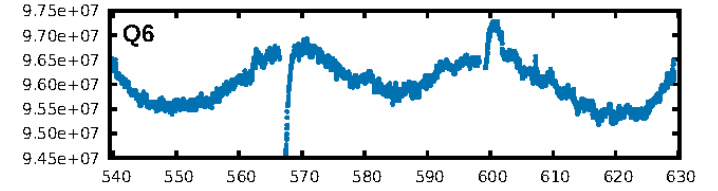
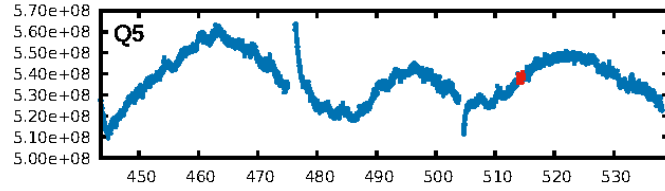
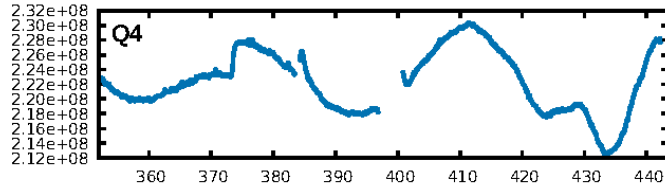
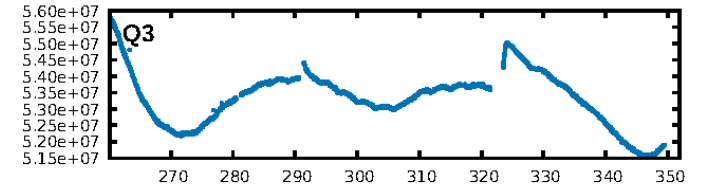
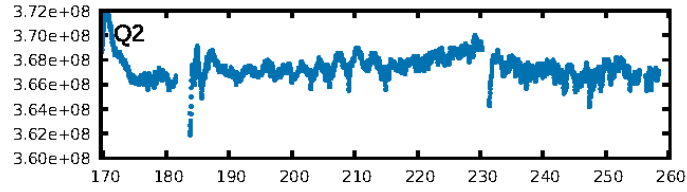
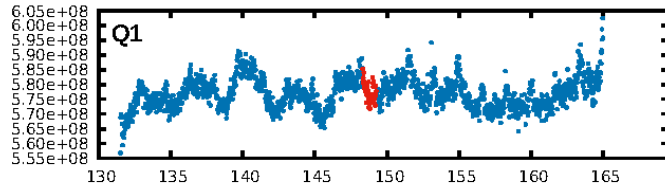
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [140.55σ]  
**ModelChiSquare2-sig: 0.0%**  
**ModelChiSquareGof-sig: 0.0%**  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: -1.569  
Centroid-sig: 11.0%  
**Centroid-so: 0.752 arcsec [20.90σ]**  
OotOffset-rm: 2.003 arcsec [2.27σ]  
OotOffset-st: 0/0/0/3 [3]  
KicOffset-rm: 2.029 arcsec [1.95σ]  
KicOffset-st: 0/0/0/3 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 1.00 [3/3]

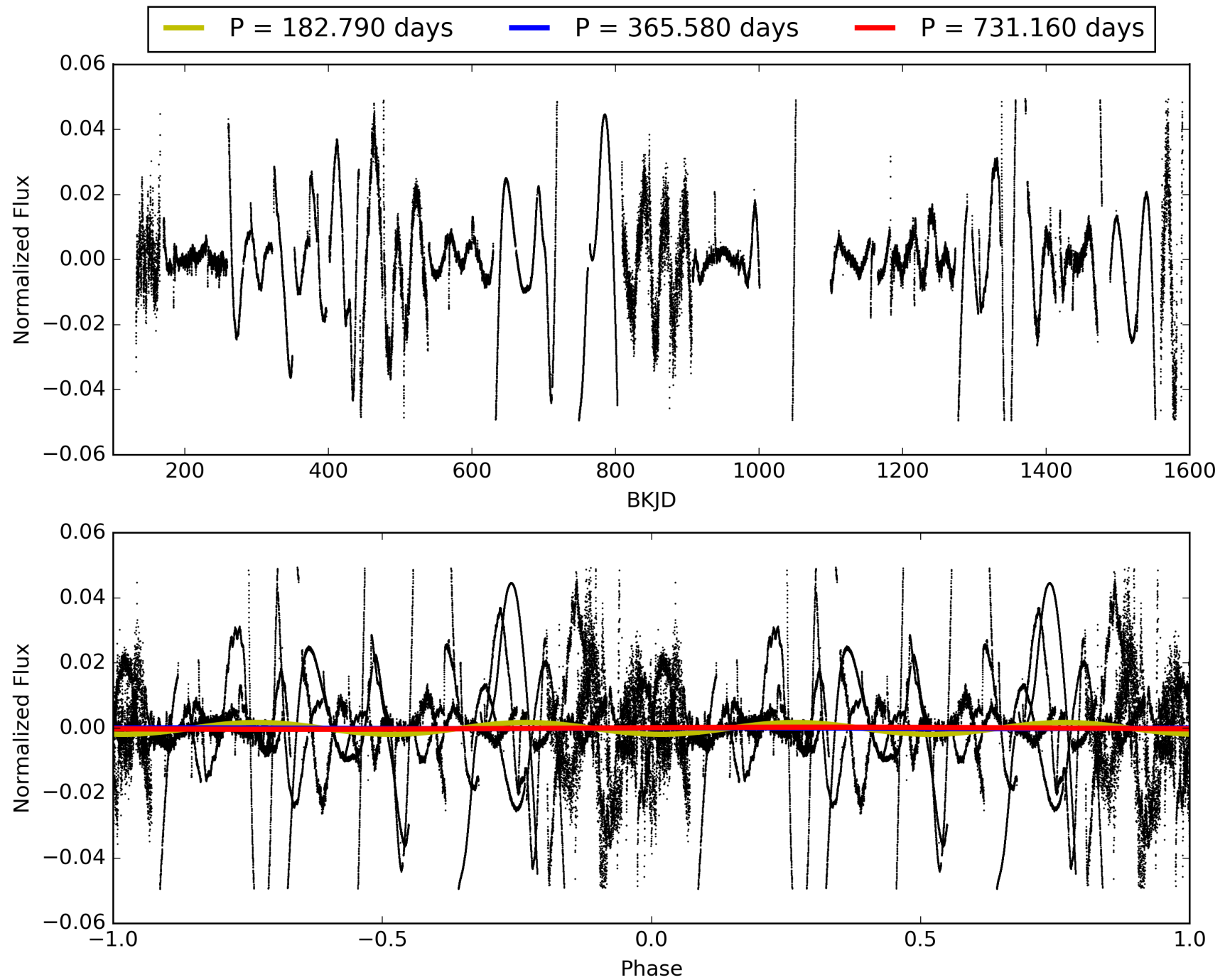
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 03-Feb-2016 08:31:09 Z

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

# TCE 005553183-04, PDC Light Curves

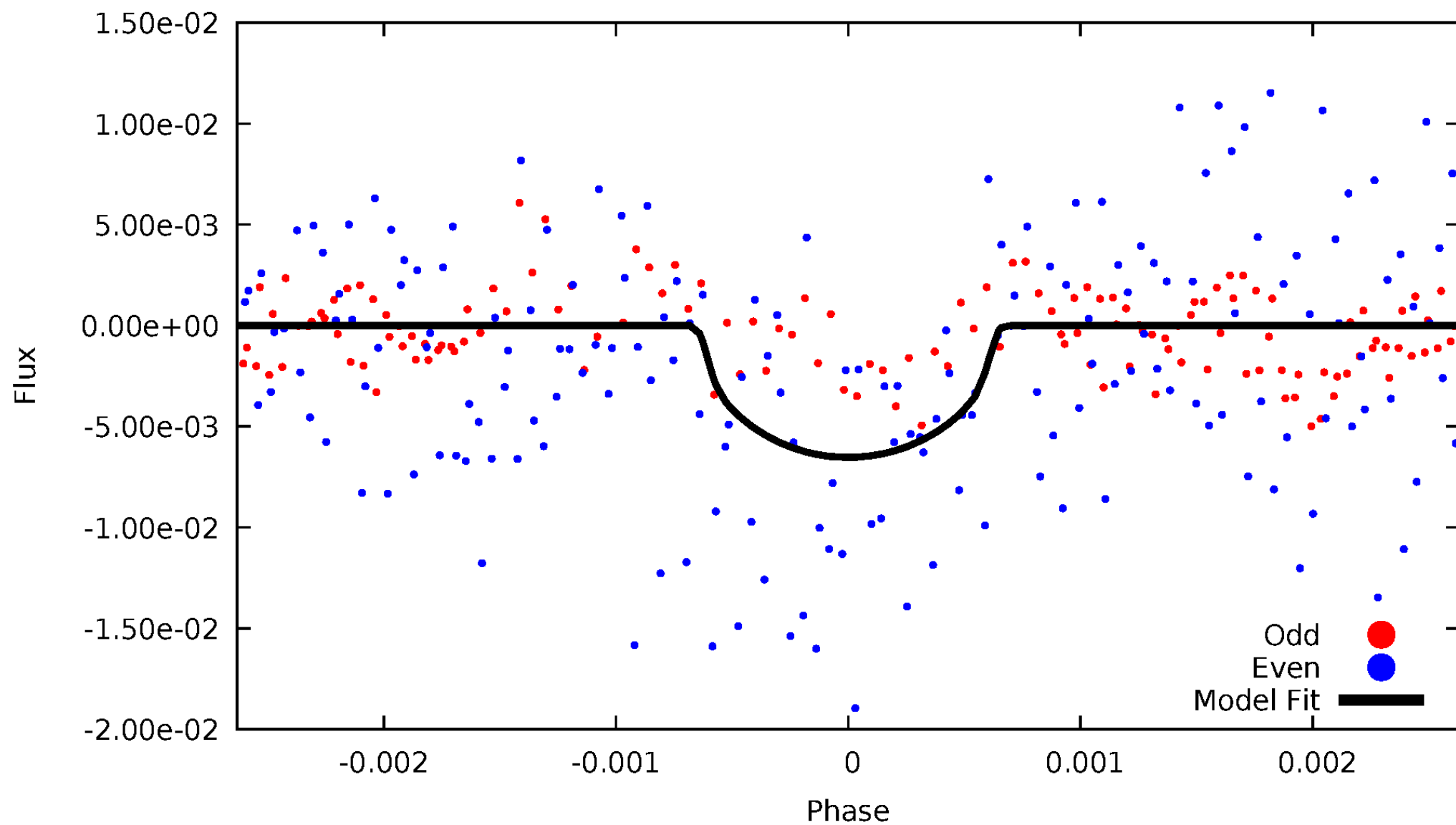


TCE 005553183-04



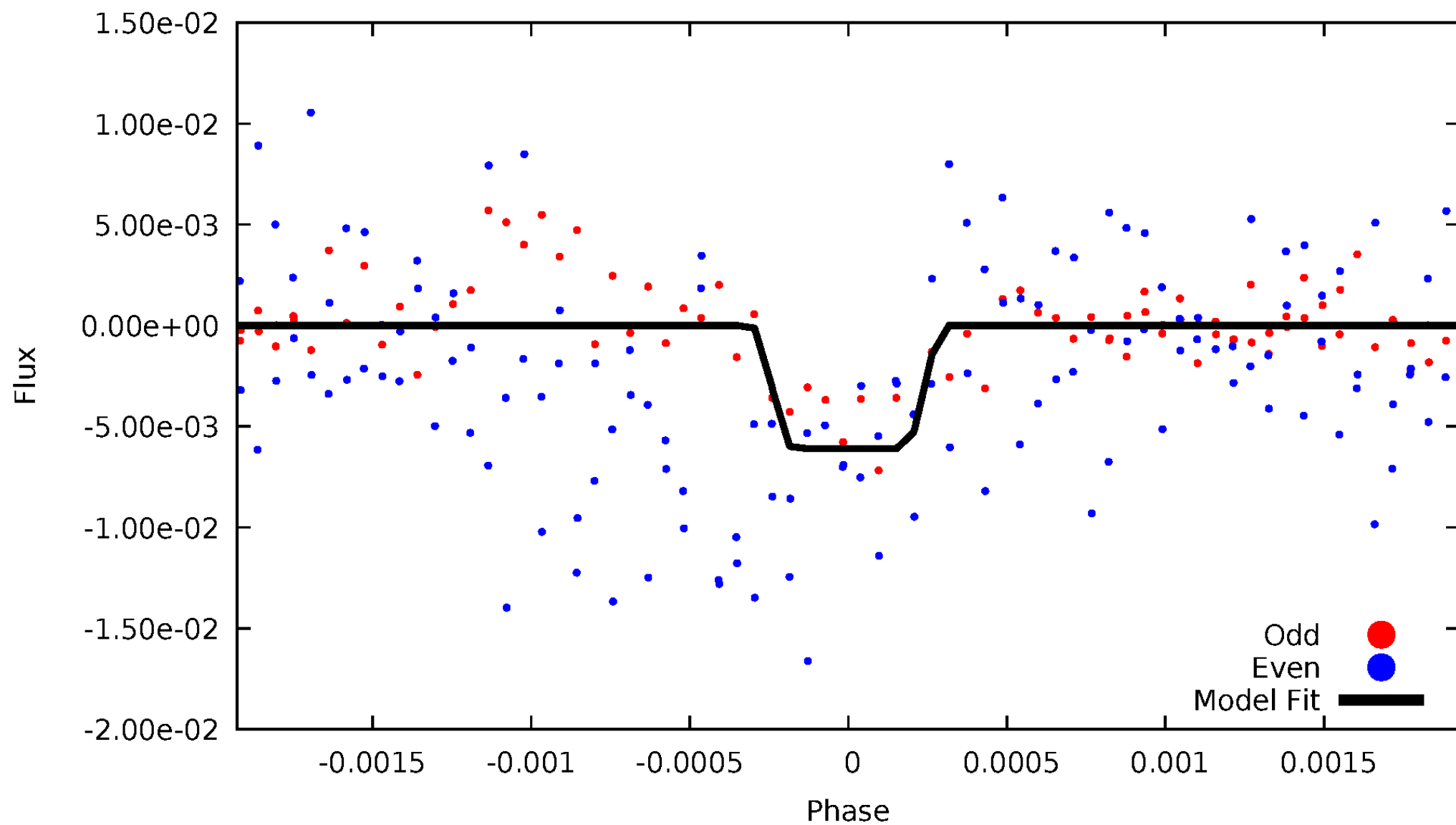
# DV Odd/Even

TCE 005553183-04



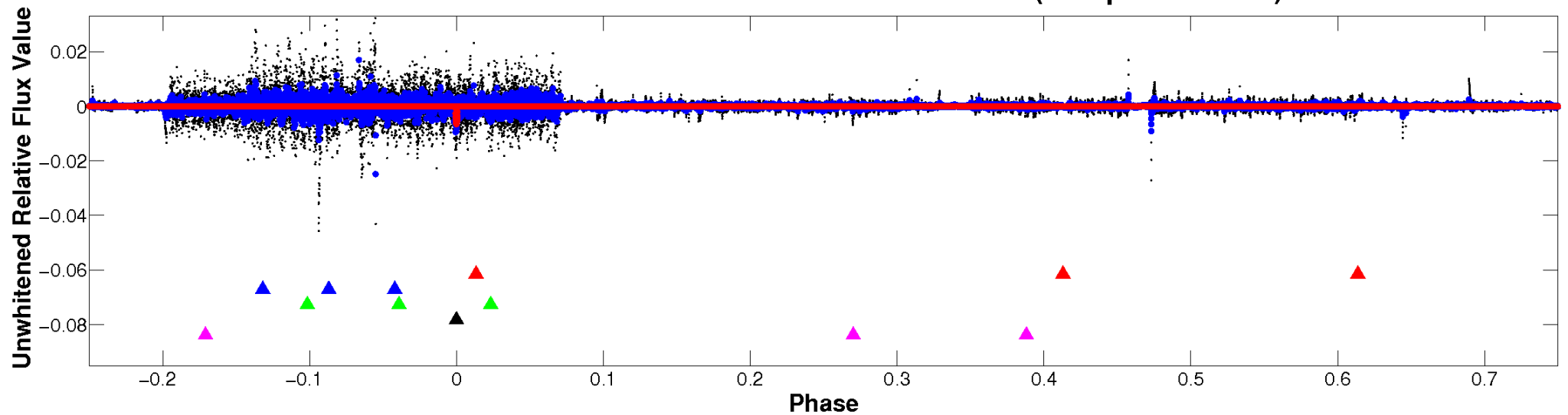
# ALT Odd/Even

TCE 005553183-04

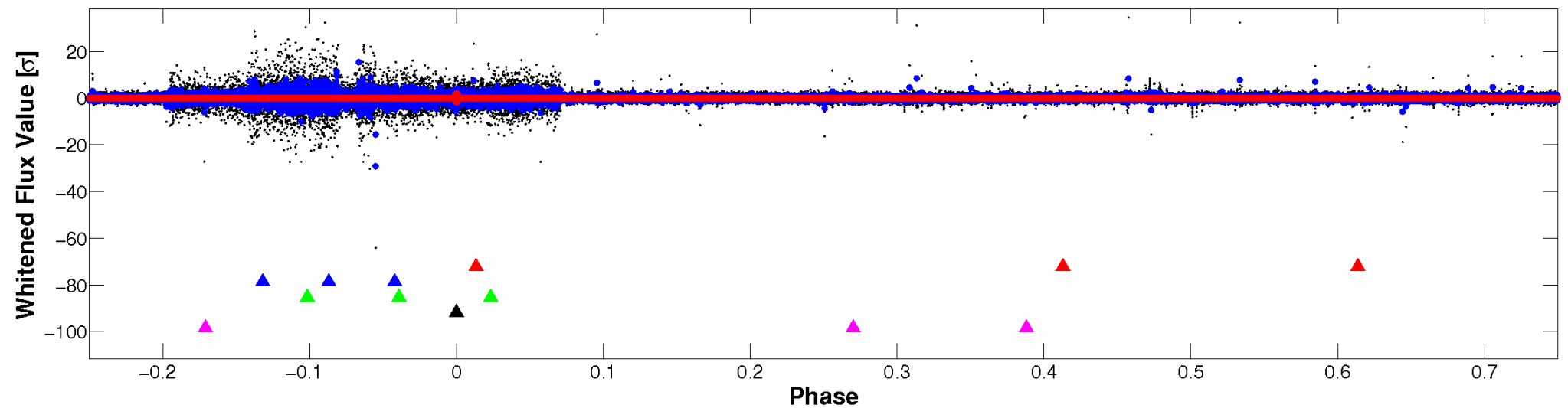


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)



## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

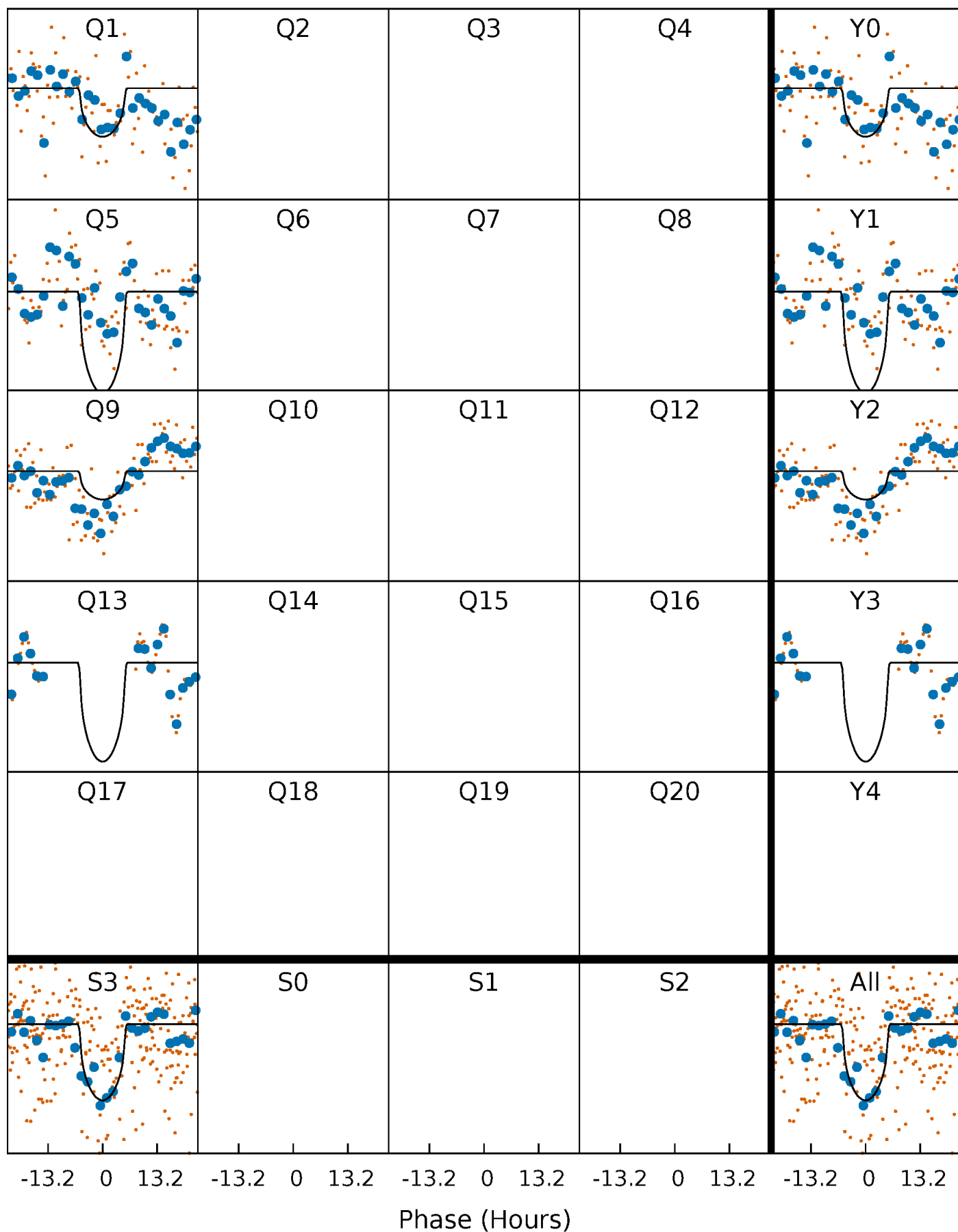
TCE 005553183-04     $P=365.579914$  Days     $T_0=148.783627$  (BKJD)





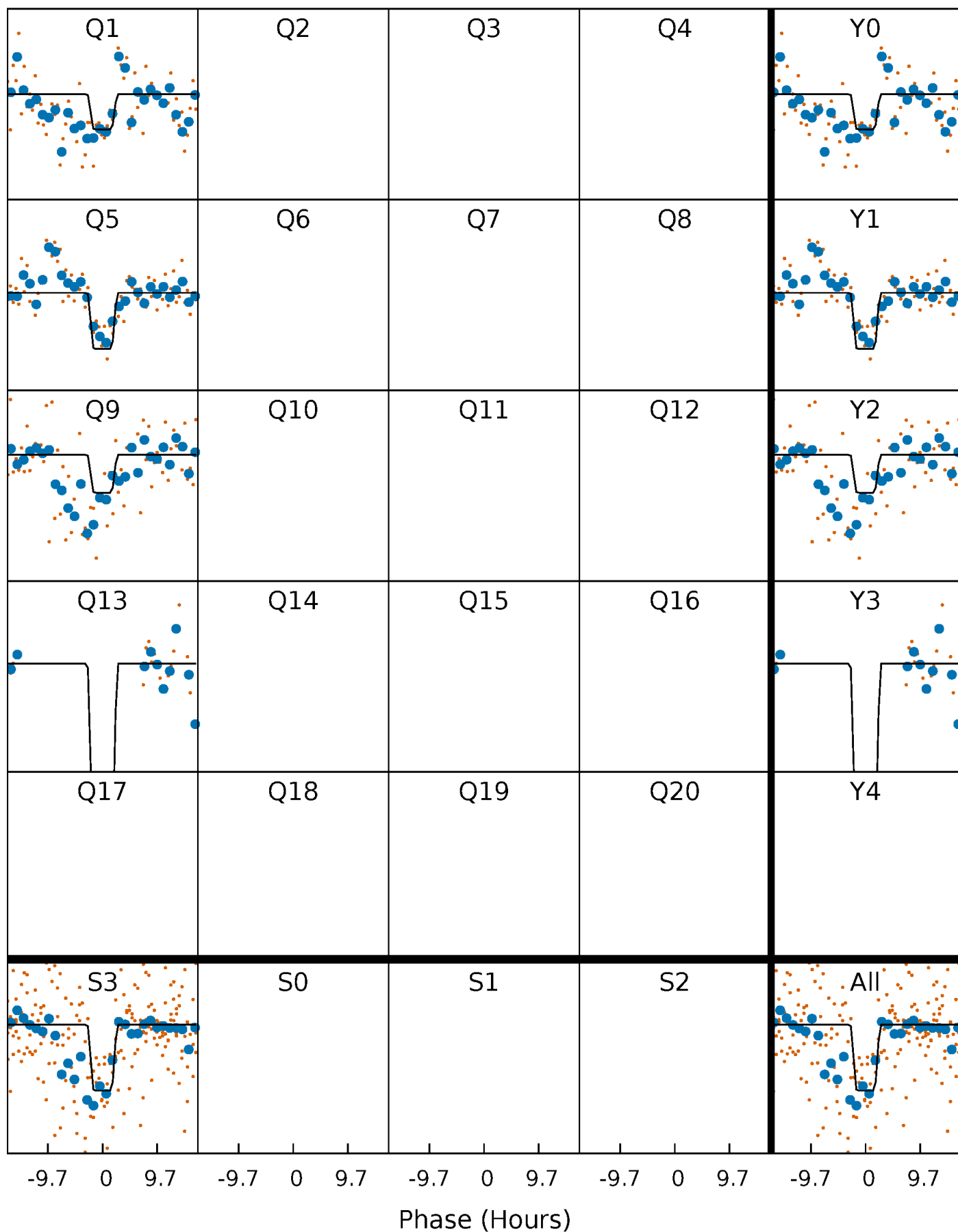
# DV Quarter-Phased Transit Curves

TCE 005553183-04     $P=365.579914$  Days     $T_0=148.783627$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

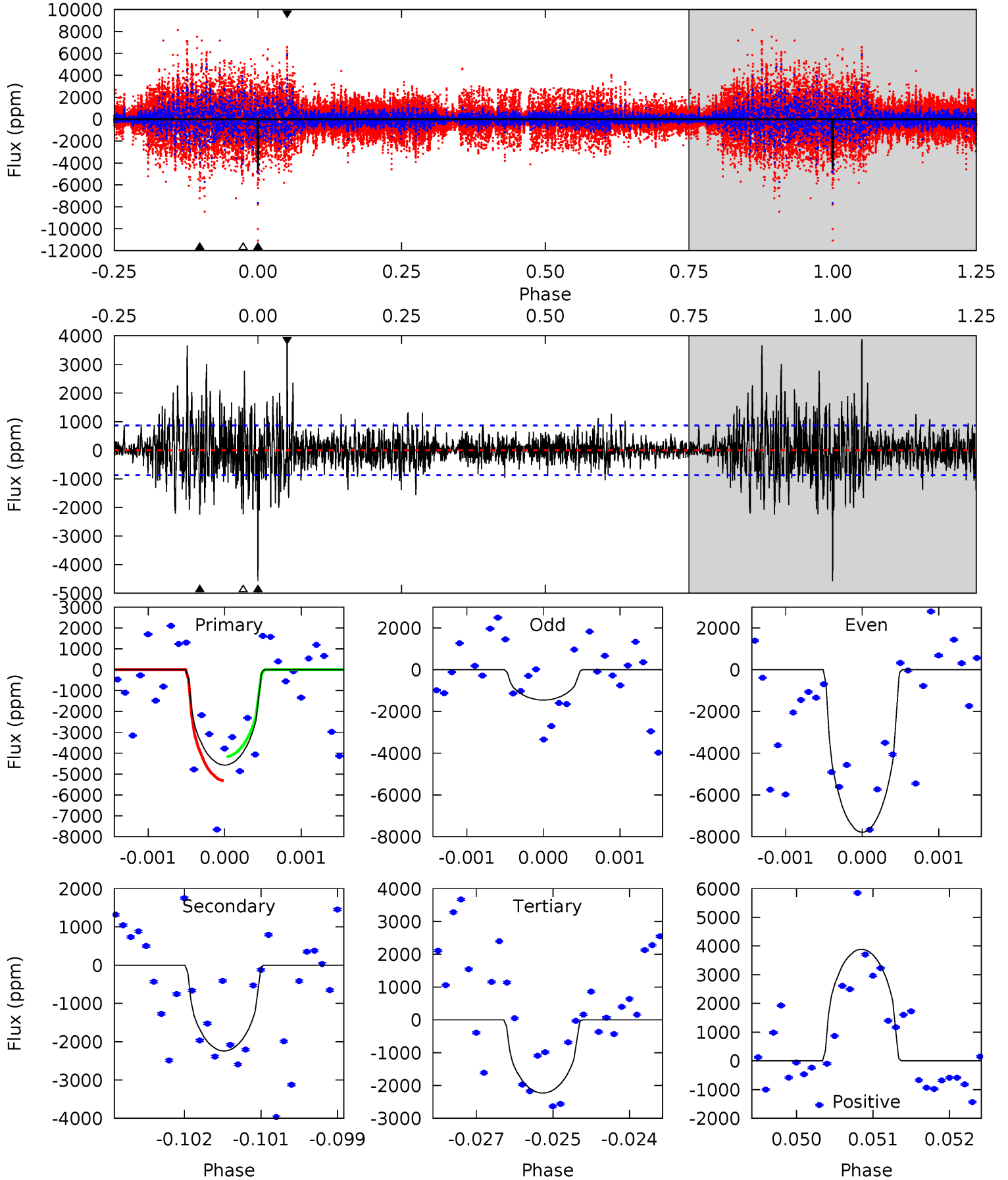
TCE 005553183-04     $P=365.556388$  Days     $T_0=148.888005$  (BKJD)



# DV Model-Shift Uniqueness Test

005553183-04, P = 365.579914 Days, E = 148.783627 Days

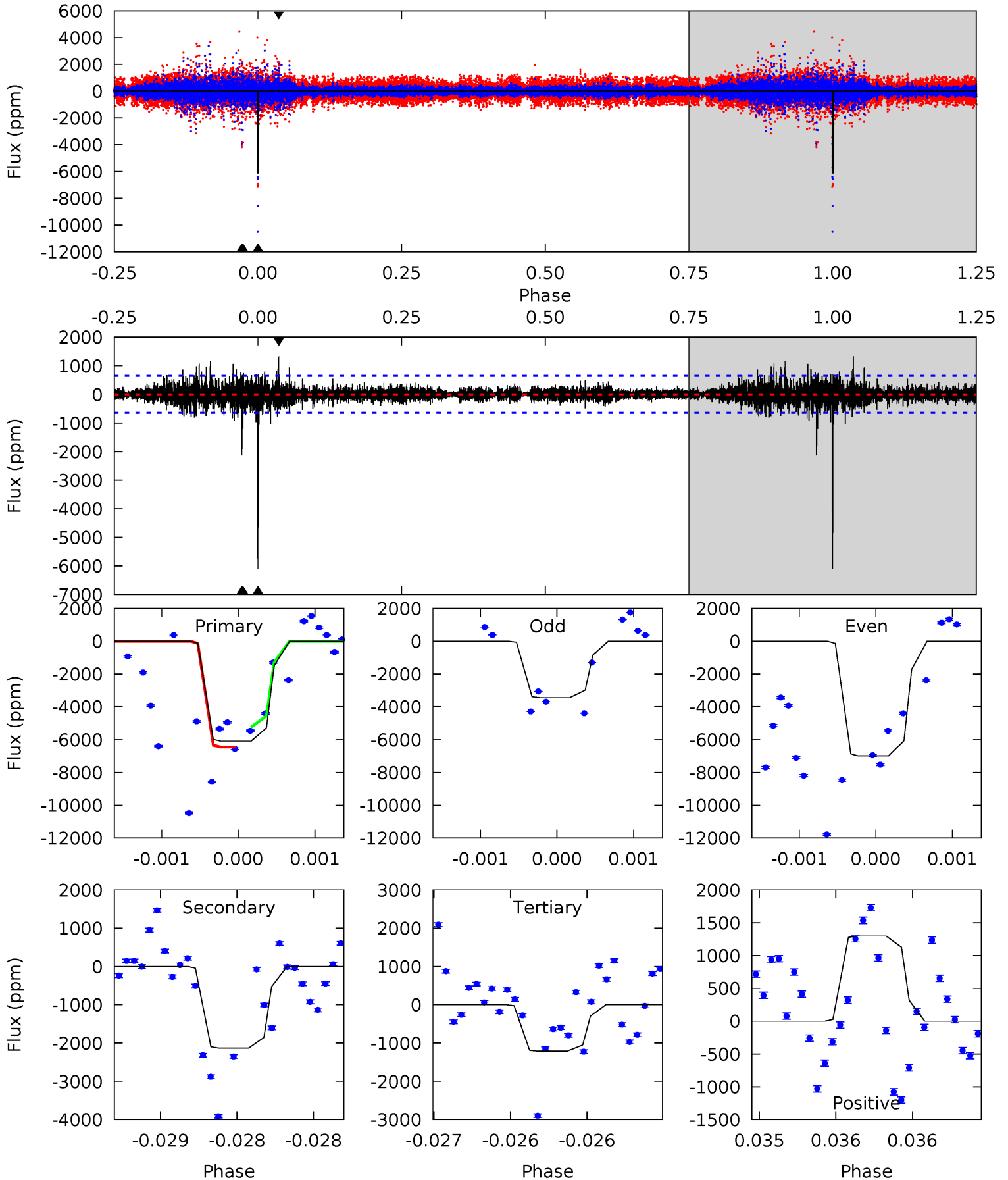
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.6	14.0	13.9	24.3	5.40	3.21	3.00	14.6	4.28	0.06	-10.3	15.3	1.37	0.46	0



# Alt Model-Shift Uniqueness Test

005553183-04, P = 365.556388 Days, E = 148.888005 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
52.5	18.4	10.4	11.2	5.55	3.45	1.21	42.0	41.3	7.94	7.19	9.16	1.02	0.18	4.97



### Stellar Parameters For KIC 005553183

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3672^{+126}_{-113}$	$0.801^{+0.281}_{-0.230}$	$-0.080^{+0.300}_{-0.250}$	$67.804^{+24.445}_{-16.296}$	$1.060^{+0.416}_{-0.104}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+35%/-29%	+375%/-312%	+36%/-24%	+39%/-10%	+156%/-57%
Source	PHO54	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 005553183-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-2241 \pm 160$	$533.79^{+290.54}_{-282.03}$	$1835^{+174}_{-154}$	$3208^{+947}_{-398}$	$4.671^{+17.606}_{-2.686}$
Alt.	$-2132 \pm 116$	$589.44^{+333.11}_{-275.96}$	$1842^{+163}_{-163}$	$3060^{+712}_{-353}$	$3.693^{+9.754}_{-2.215}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature  
 $T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )  
 $A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

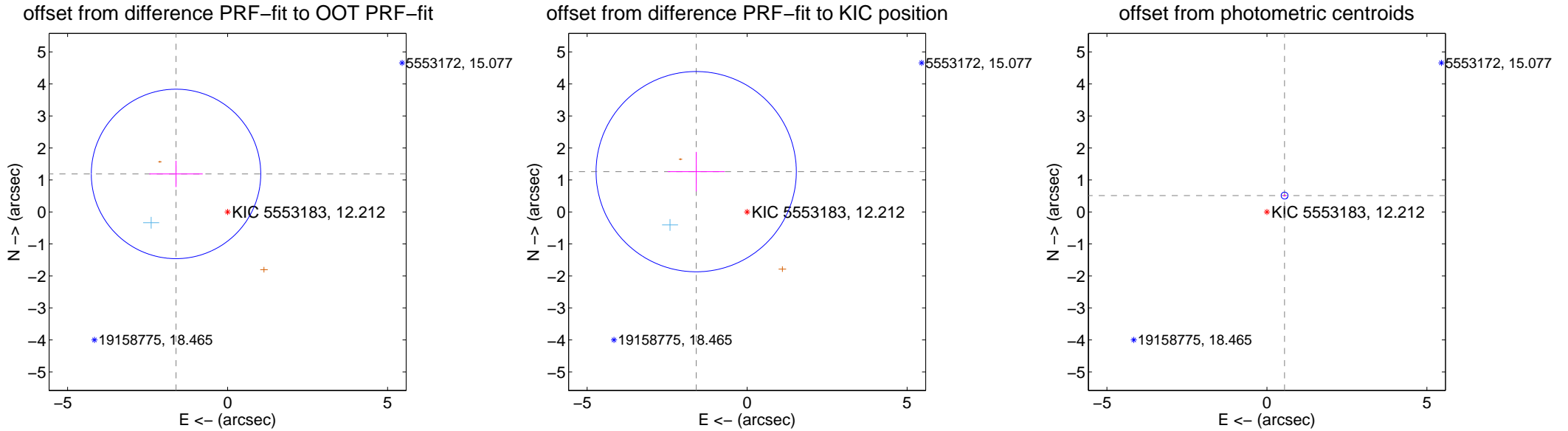
## DV Centroid Data

Supplemental centroid analysis for 005553183-04. Kepler magnitude: 12.21. Transit SNR 13.81

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

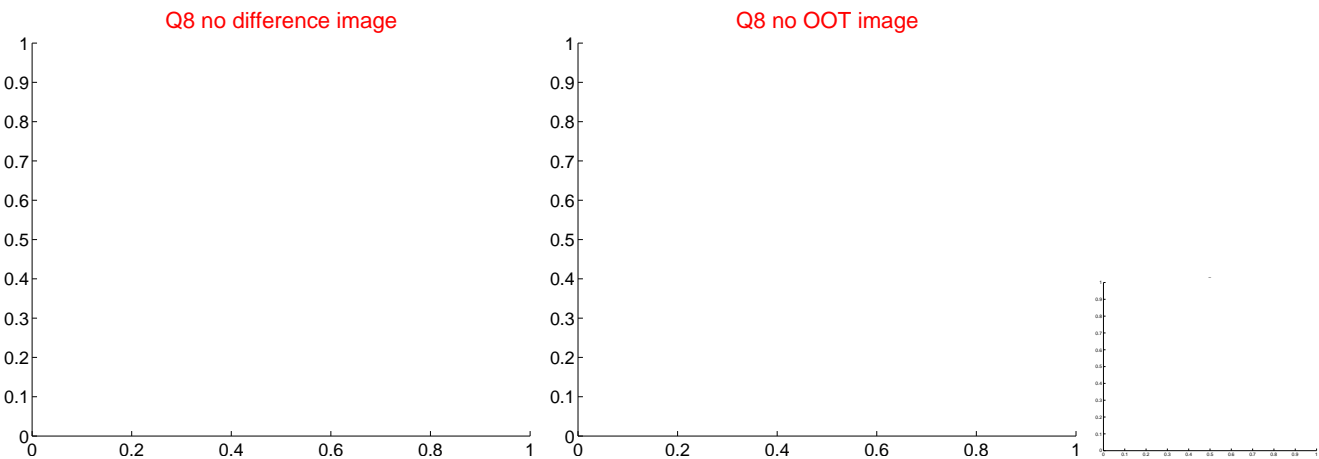
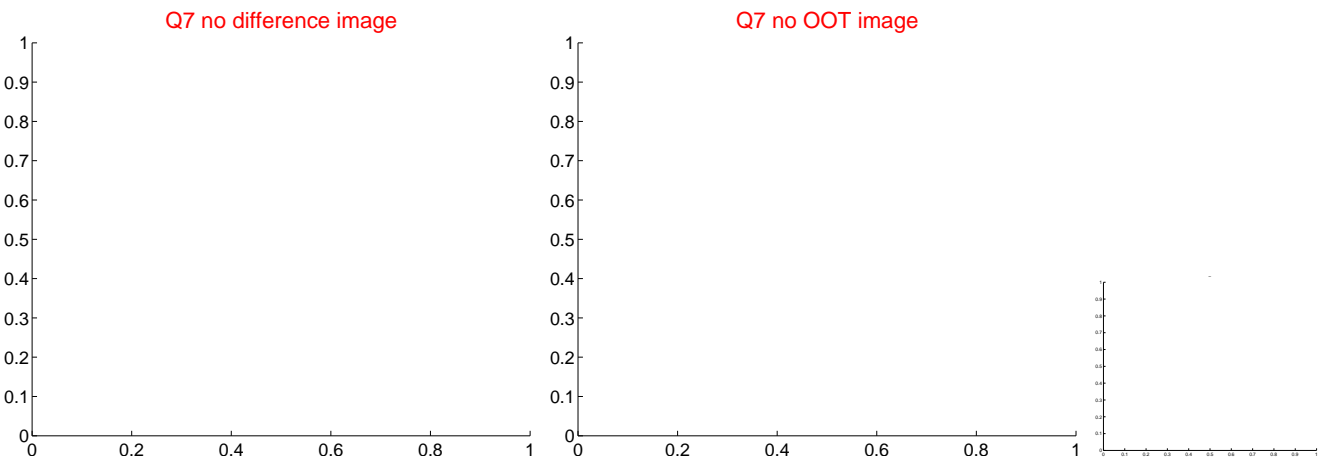
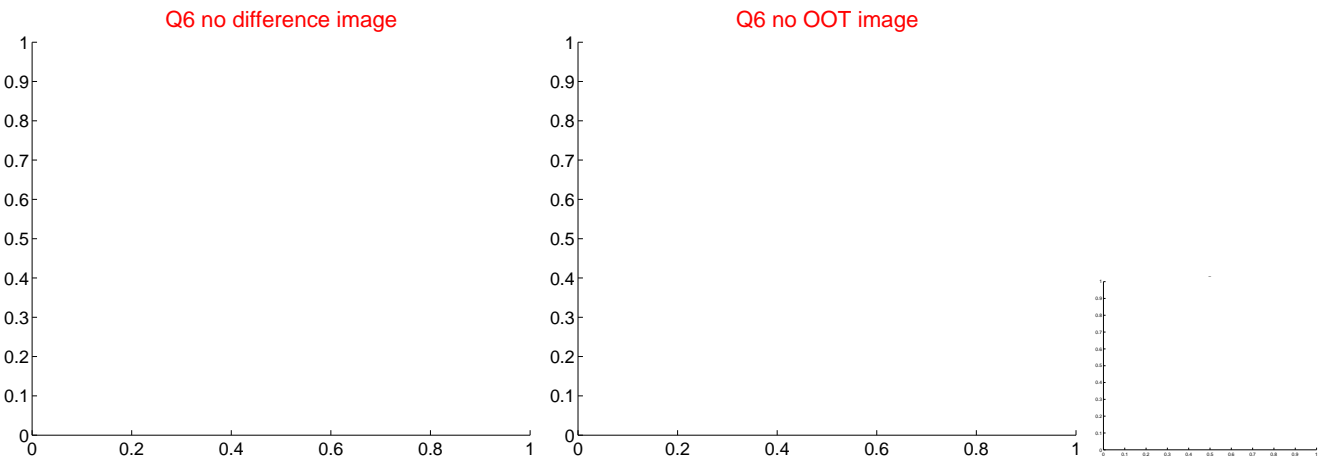
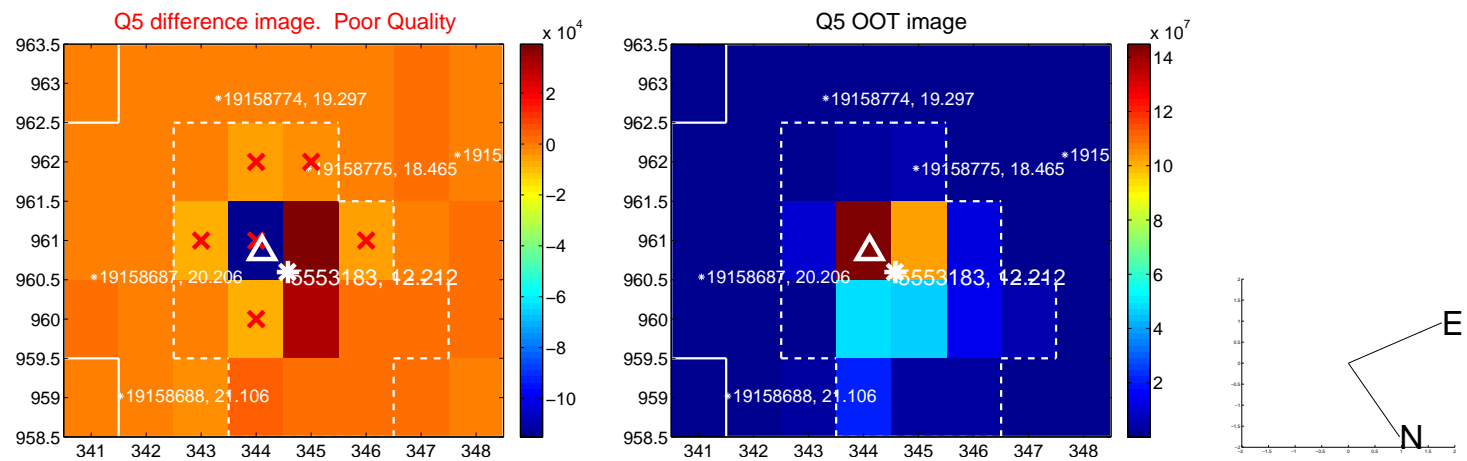
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.003 \pm 0.883$	2.27	$1.612 \pm 0.834$	$1.188 \pm 0.411$
PRF-fit source offset from KIC position	$2.029 \pm 1.043$	1.95	$1.592 \pm 0.890$	$1.259 \pm 0.618$
photometric centroid source offset	$0.75 \pm 0.04$	20.90	$-0.55 \pm 0.04$	$0.51 \pm 0.03$



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

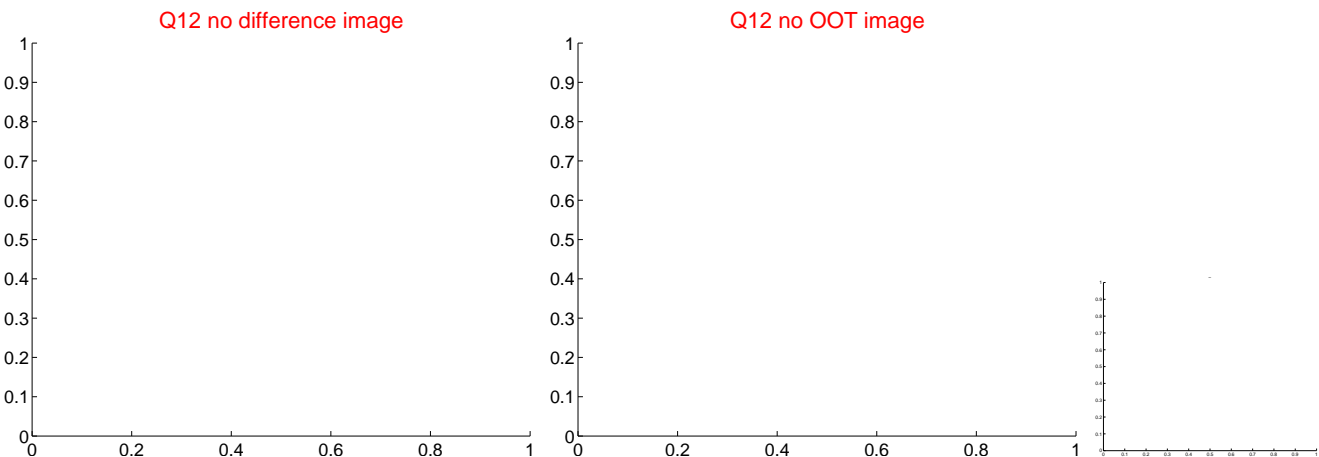
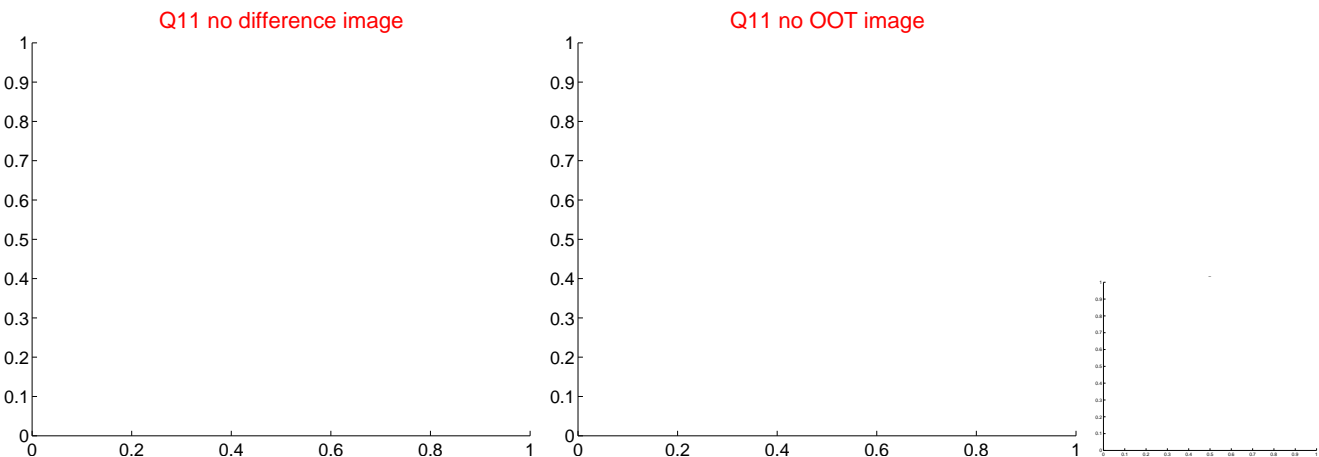
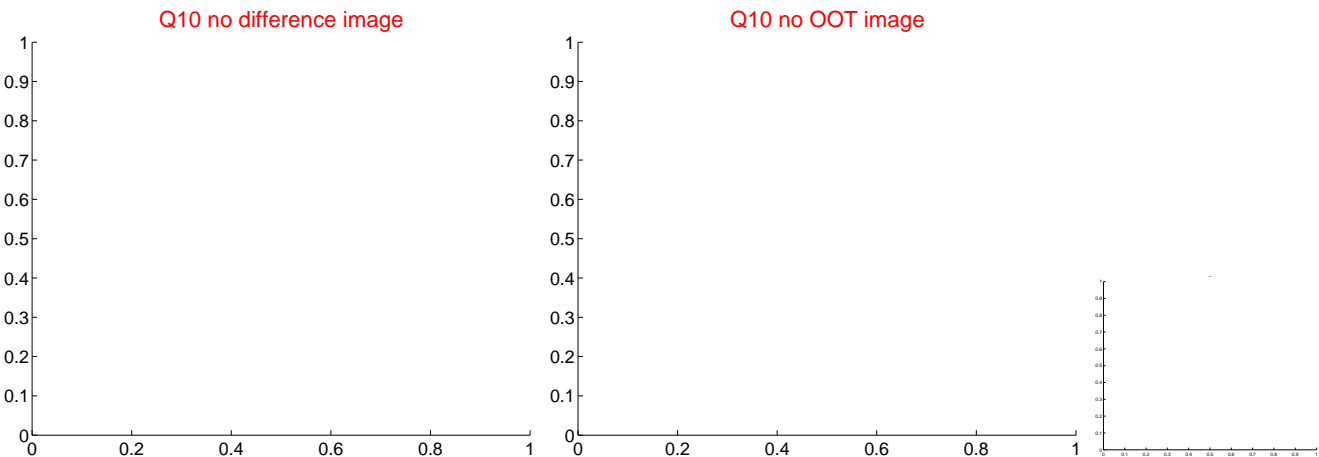
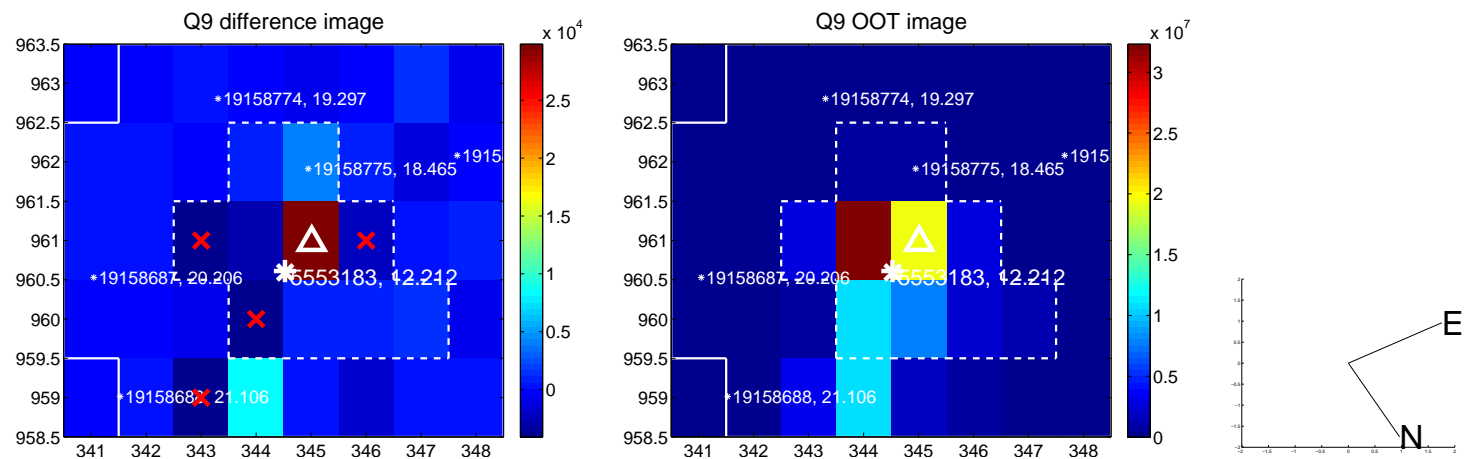


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





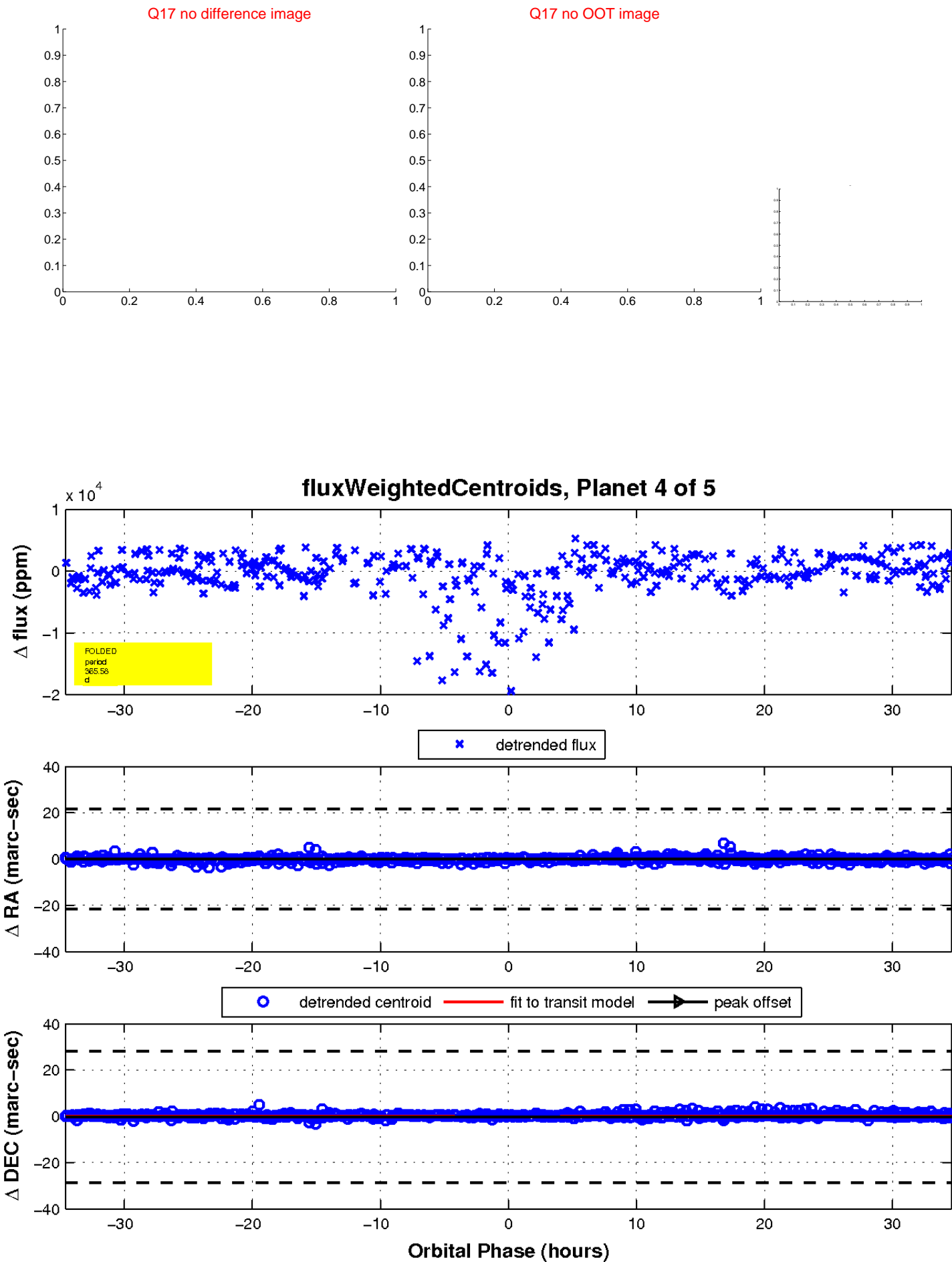
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



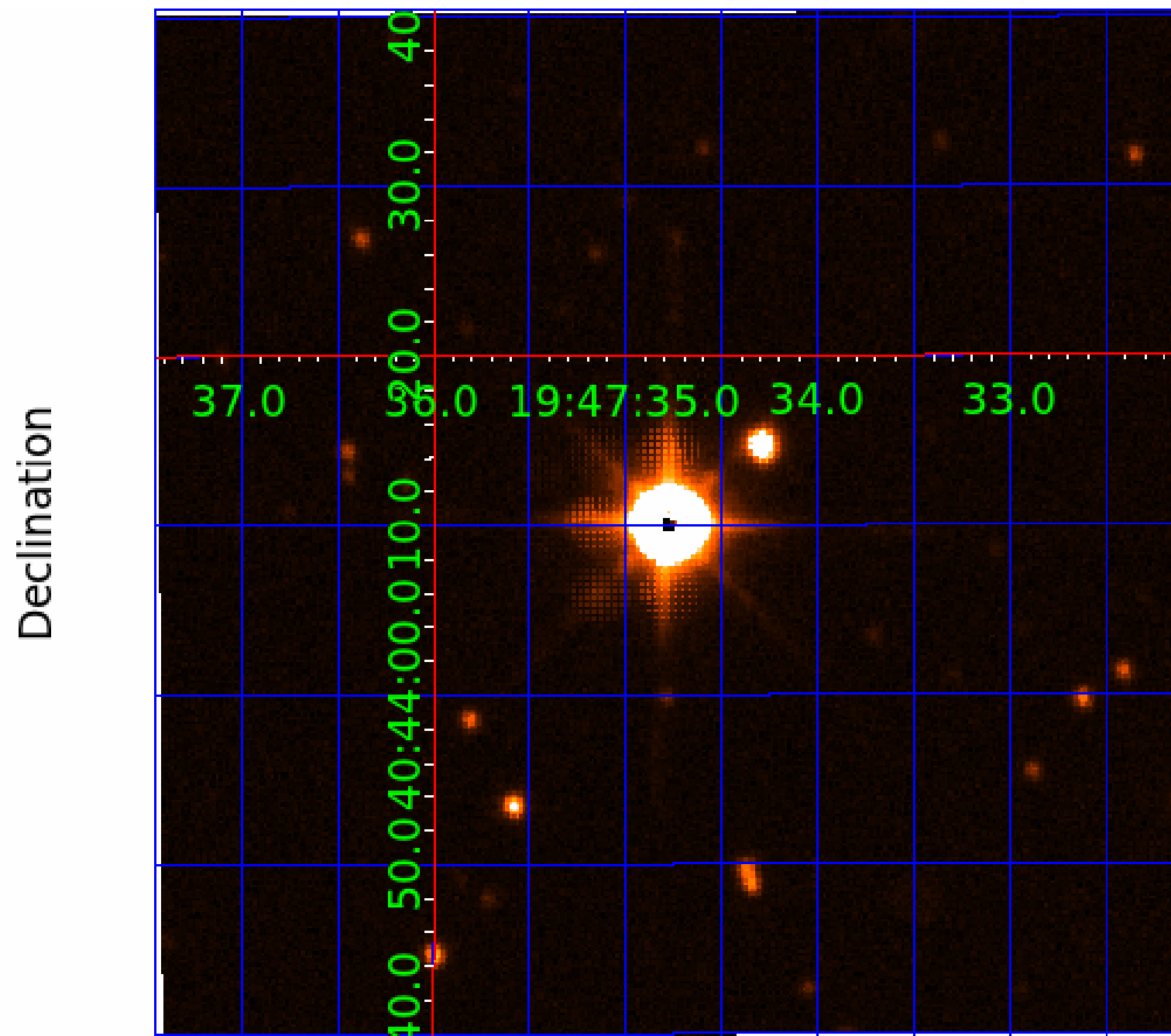
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 005553183

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005553183-01	OBS	No	511.670030	373.154695	5317.7	22.115	11.0	11.1	67.80	3672	620.77	459.22
005553183-03	OBS	No	708.342085	157.308274	6100.8	5.832	17.4	16.5	67.80	3672	559.50	297.63
005553183-04	OBS	No	365.579914	148.783627	6532.5	11.542	14.2	13.8	67.80	3672	506.27	718.95
005553183-05	OBS	No	569.919233	247.549775	275.2	9.000	12.1	-1.0	67.80	3672	104.03	397.73

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005553183-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
005553183-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
005553183-04	OBS	FP	0.00	1	0	0	0	ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005553183-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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

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

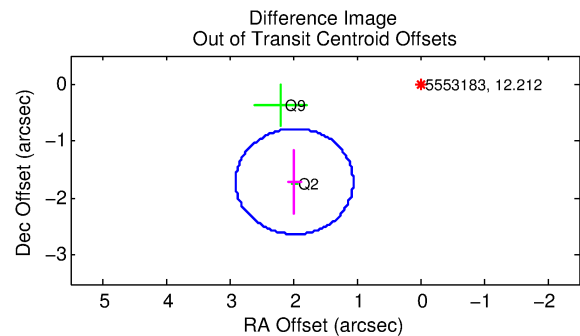
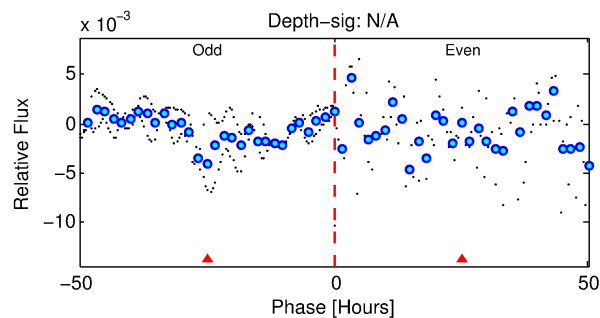
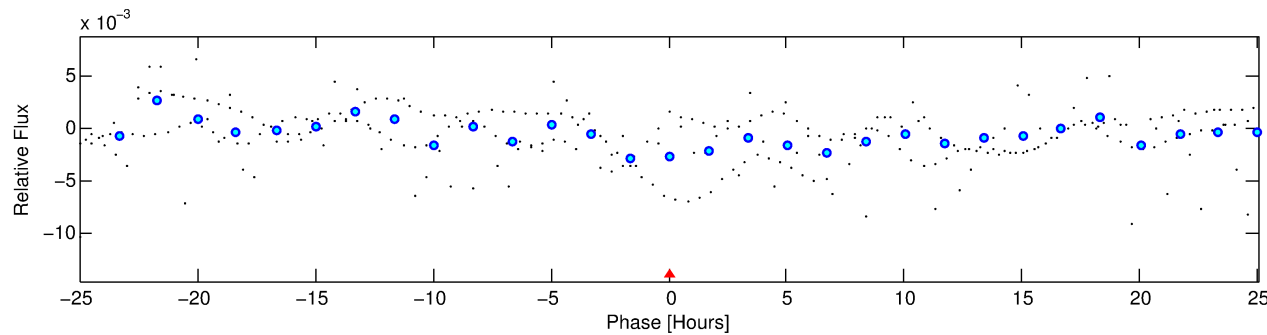
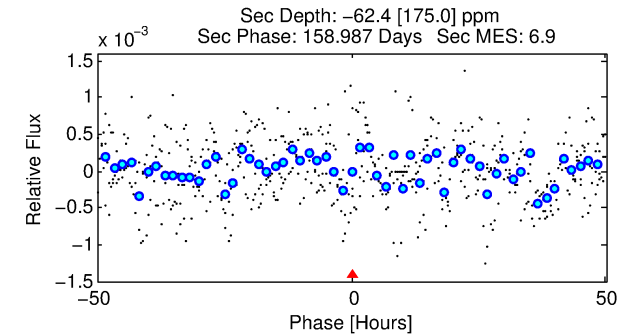
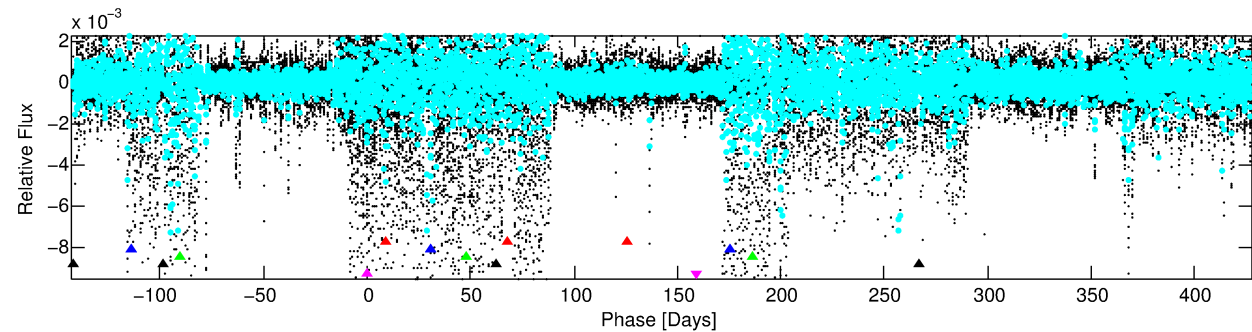
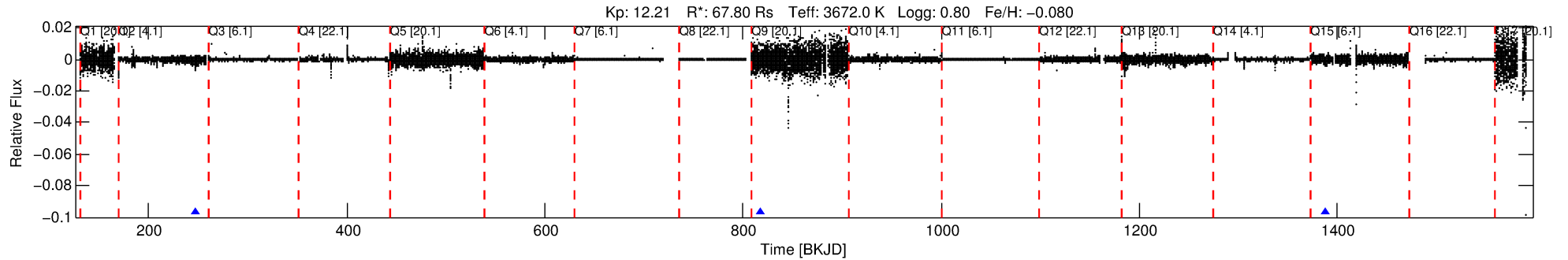
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005553183-05

No Significant Match Found

# DV One-Page Summary

KIC: 5553183 Candidate: 5 of 5 Period: 569.919 d



## TPS TCE Results:

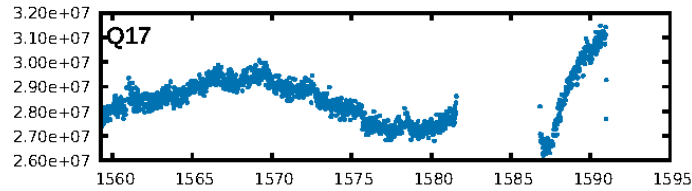
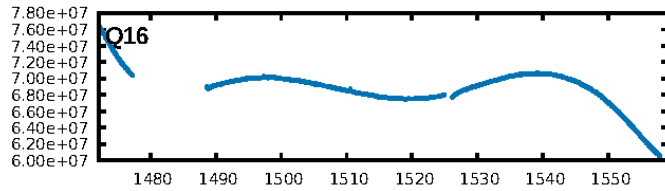
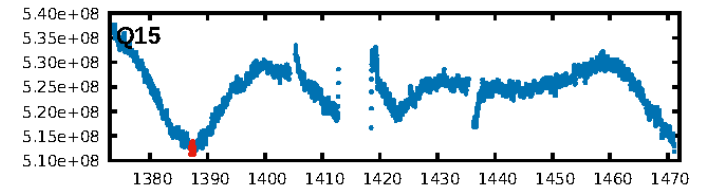
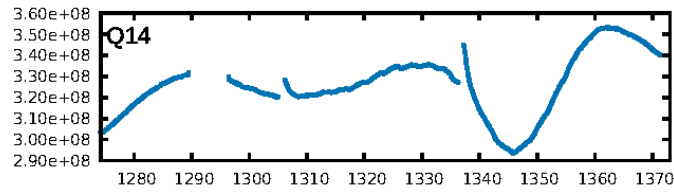
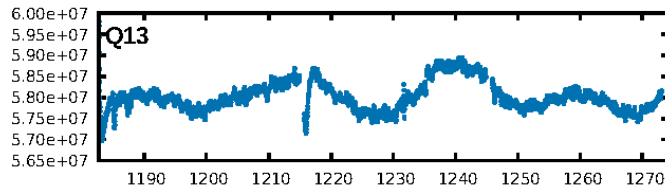
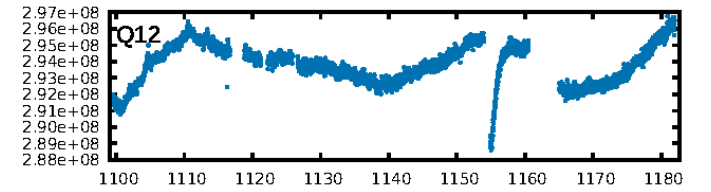
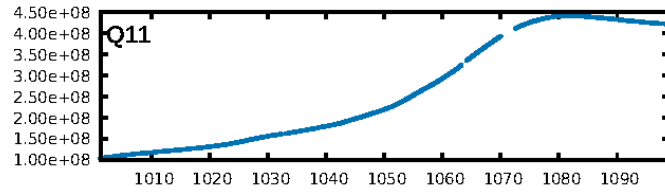
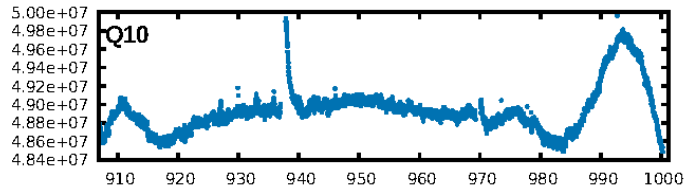
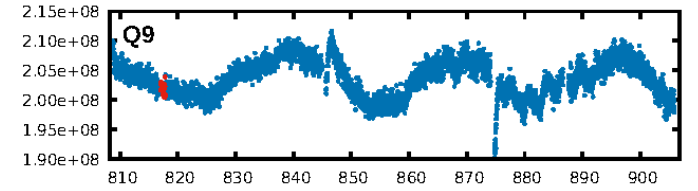
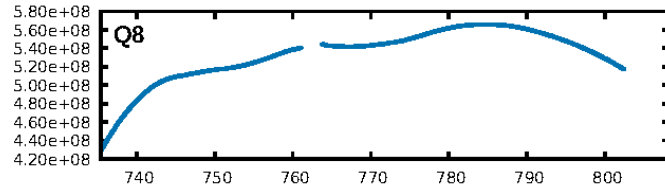
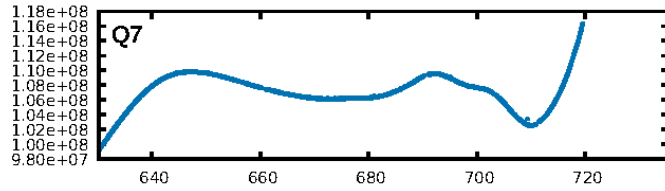
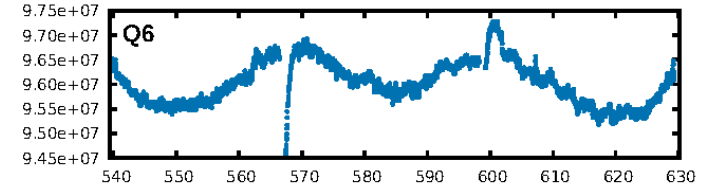
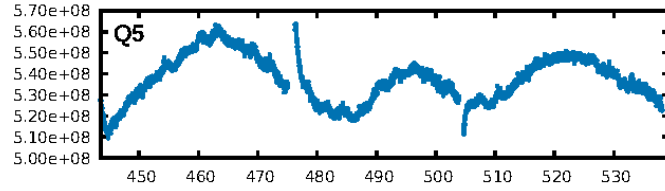
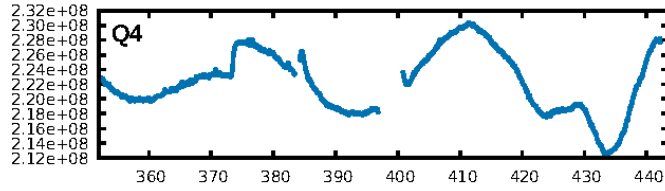
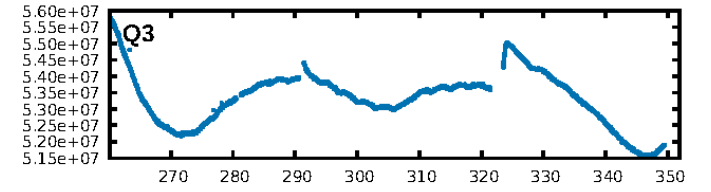
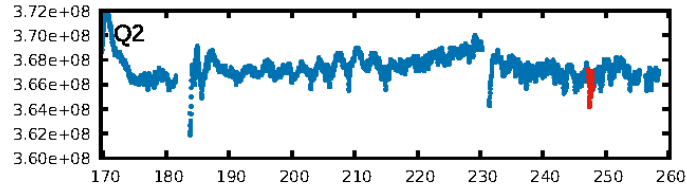
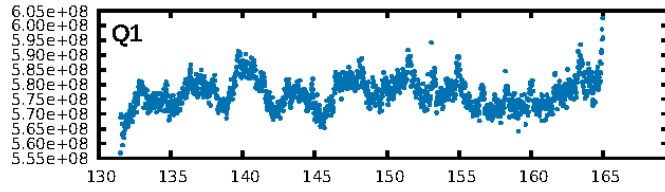
Period = 569.91923 d  
Epoch = 247.5498 BKJD

DV fit results are unavailable

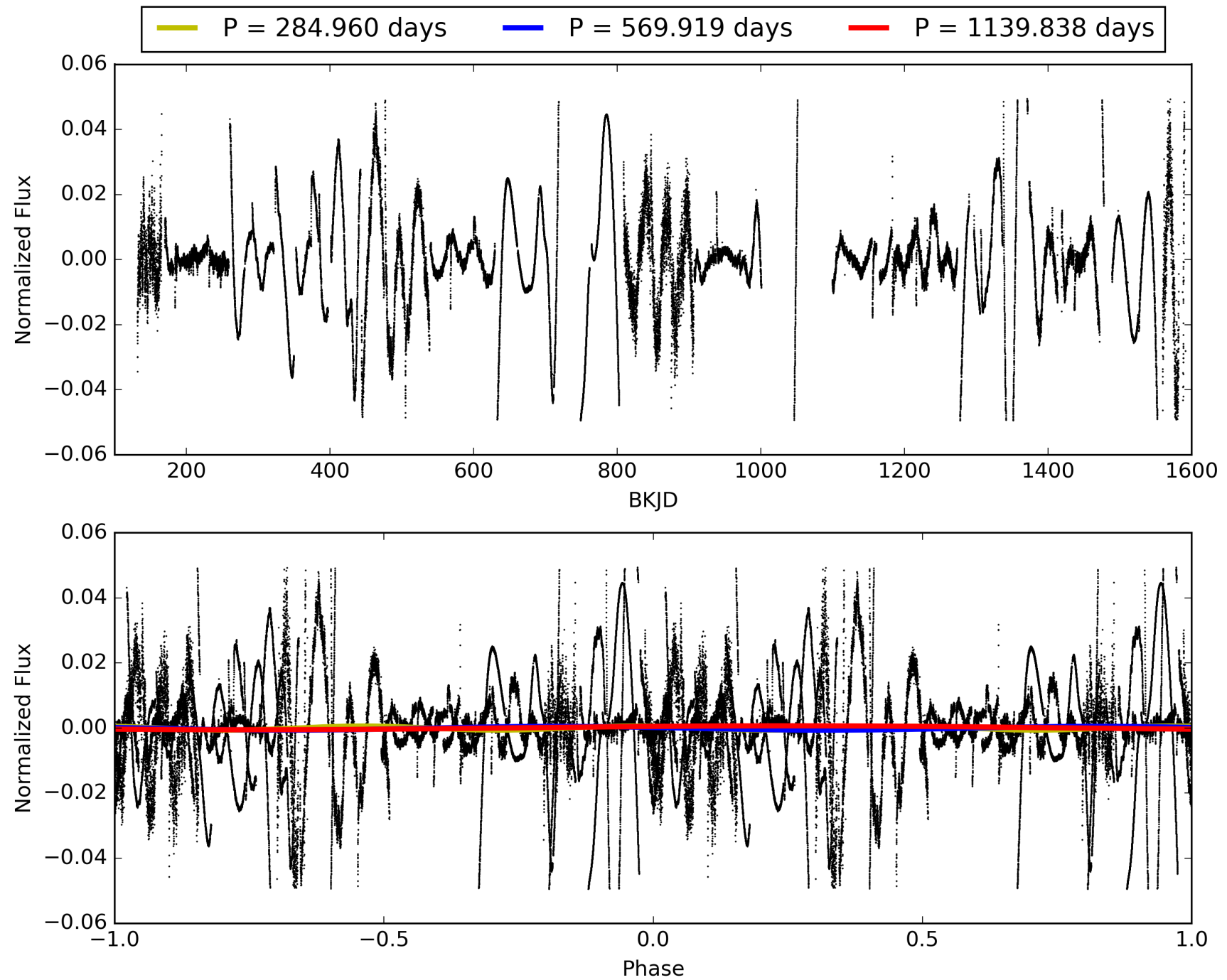
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [58.55σ]  
LongPeriod-sig: 100.0% [309.78σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGoF-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.339  
Centroid-sig: 97.0%  
Centroid-so: 0.729 arcsec [13.94σ]  
OotOffset-rm: 2.611 arcsec [8.48σ]  
KicOffset-rm: 2.618 arcsec [12.55σ]  
OotOffset-st: 1/0/0/1 [2]  
KicOffset-st: 1/0/0/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [2/2]

# TCE 005553183-05, PDC Light Curves



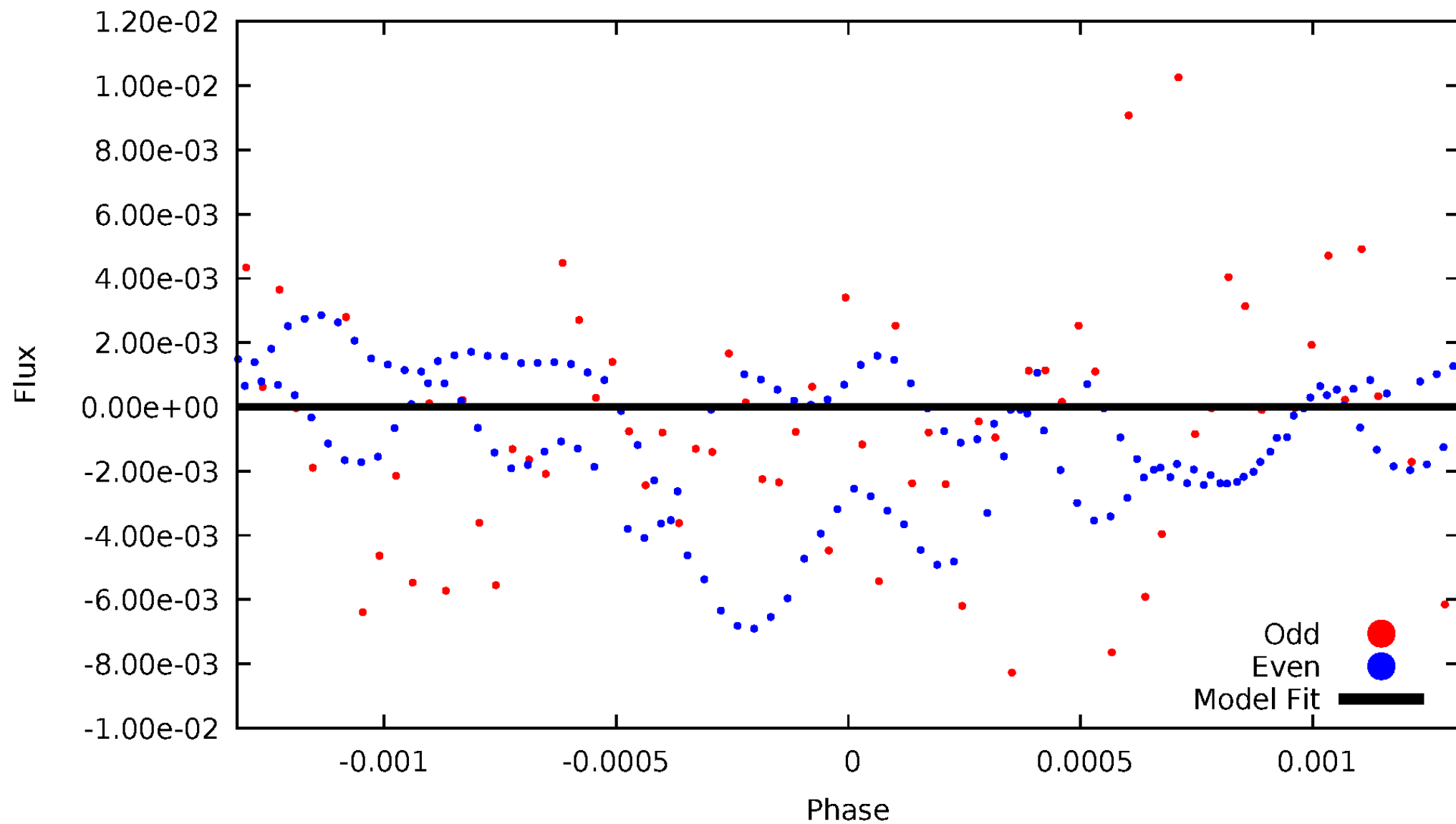
TCE 005553183-05





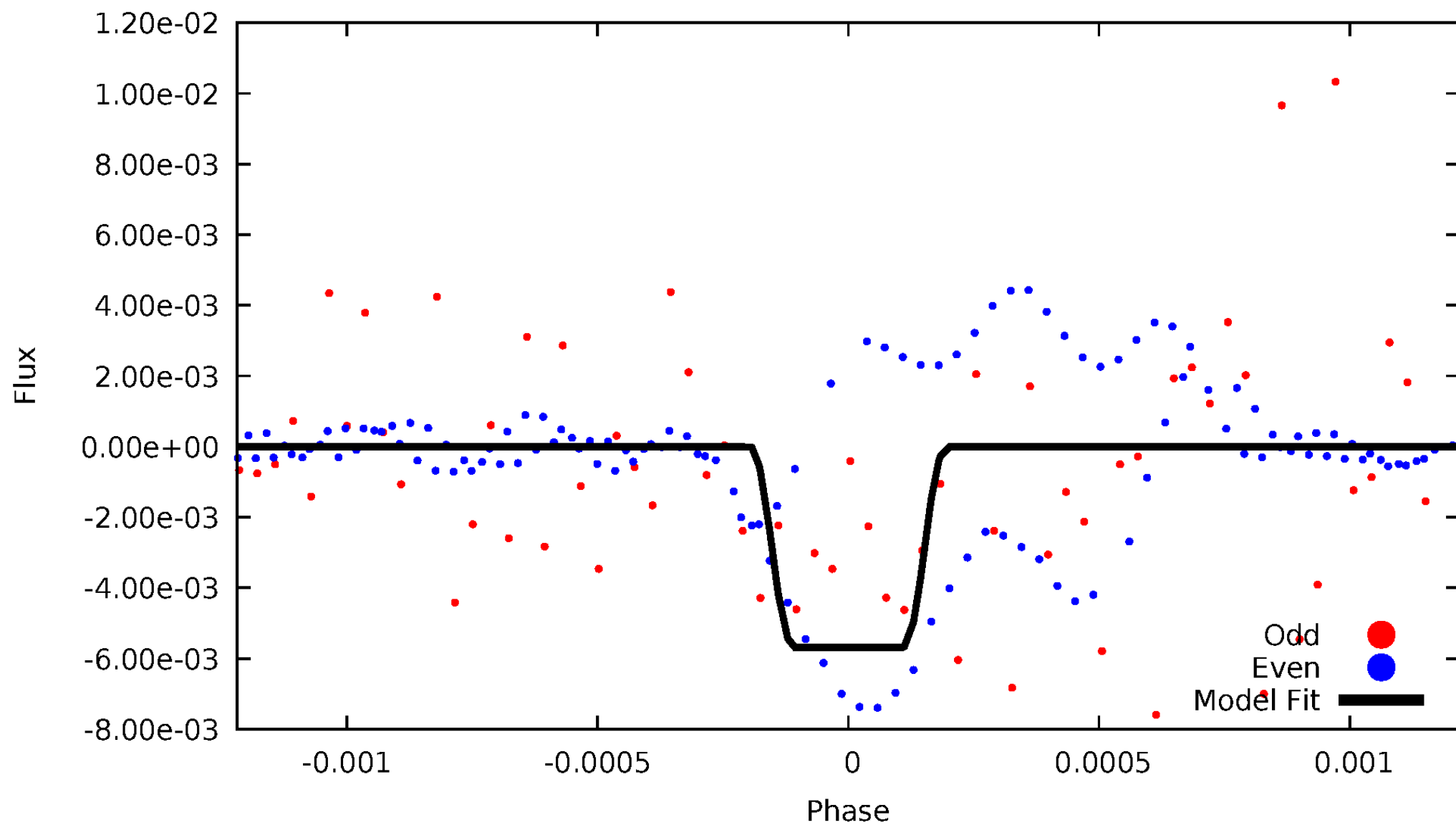
# DV Odd/Even

TCE 005553183-05



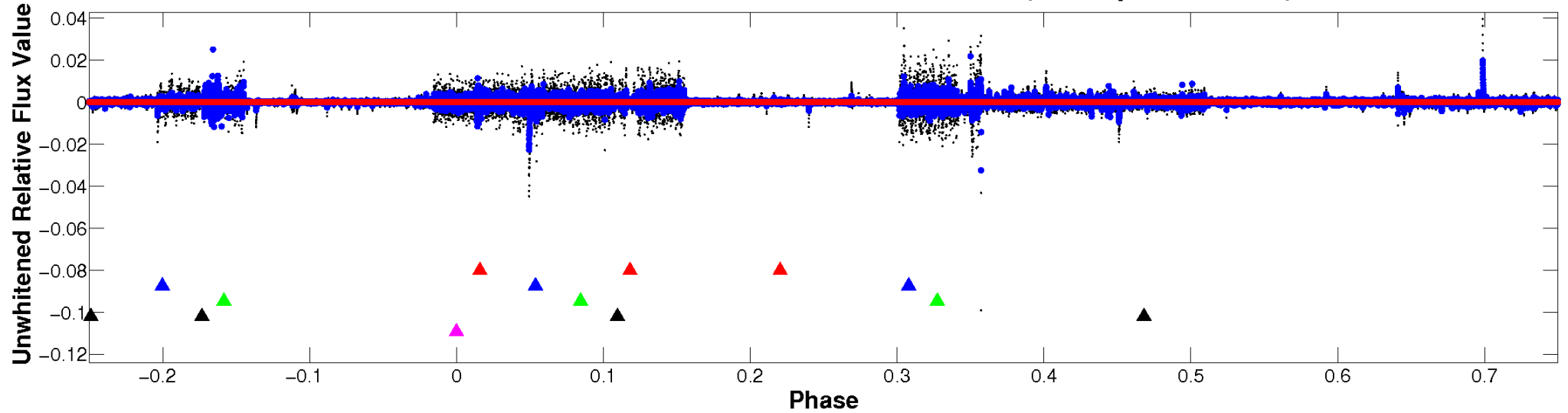
# ALT Odd/Even

TCE 005553183-05

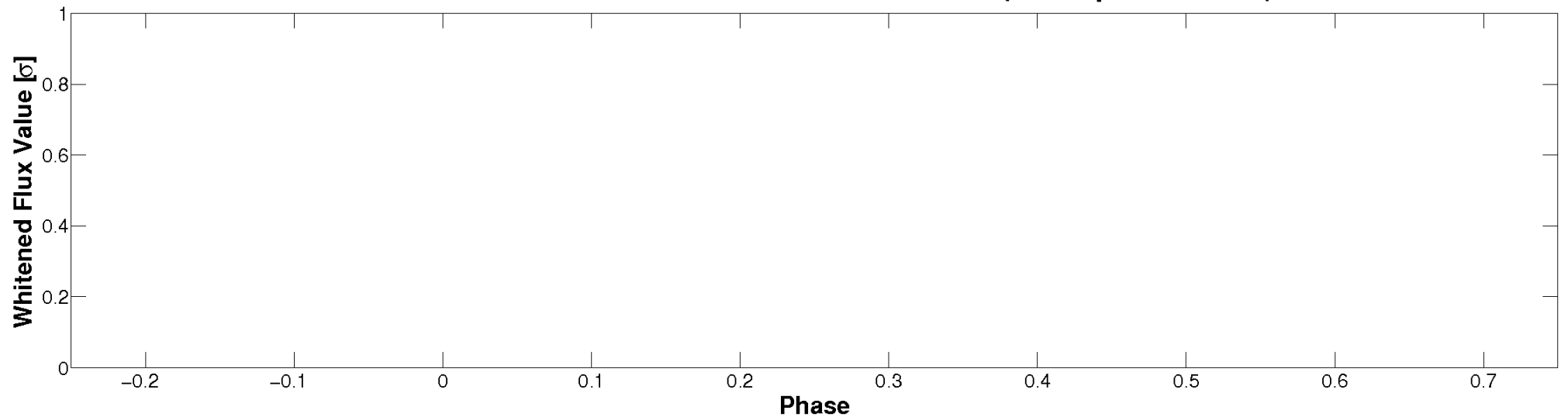


# Non-Whitened Vs. Whitened Light Curve

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

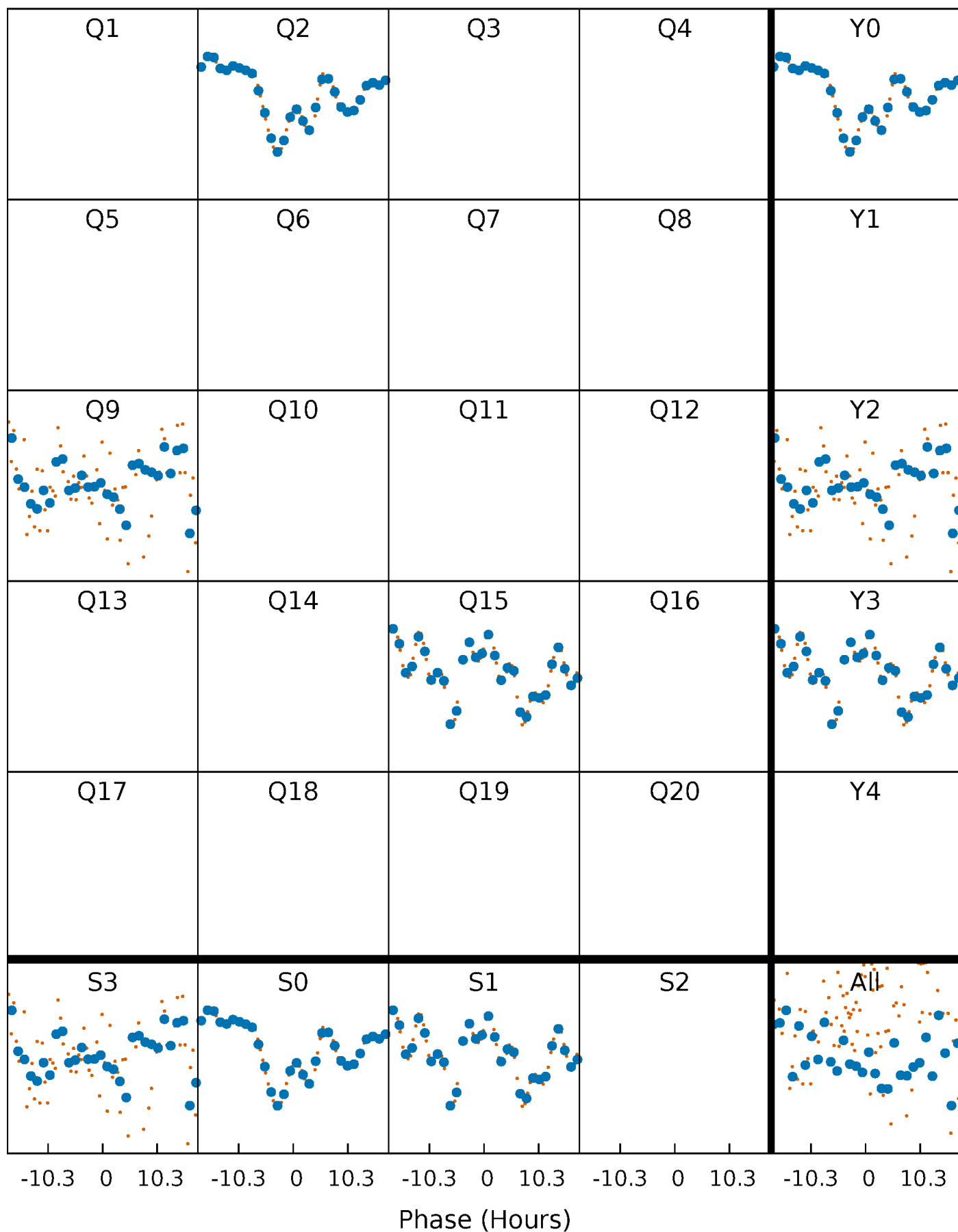


**Planet 5 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



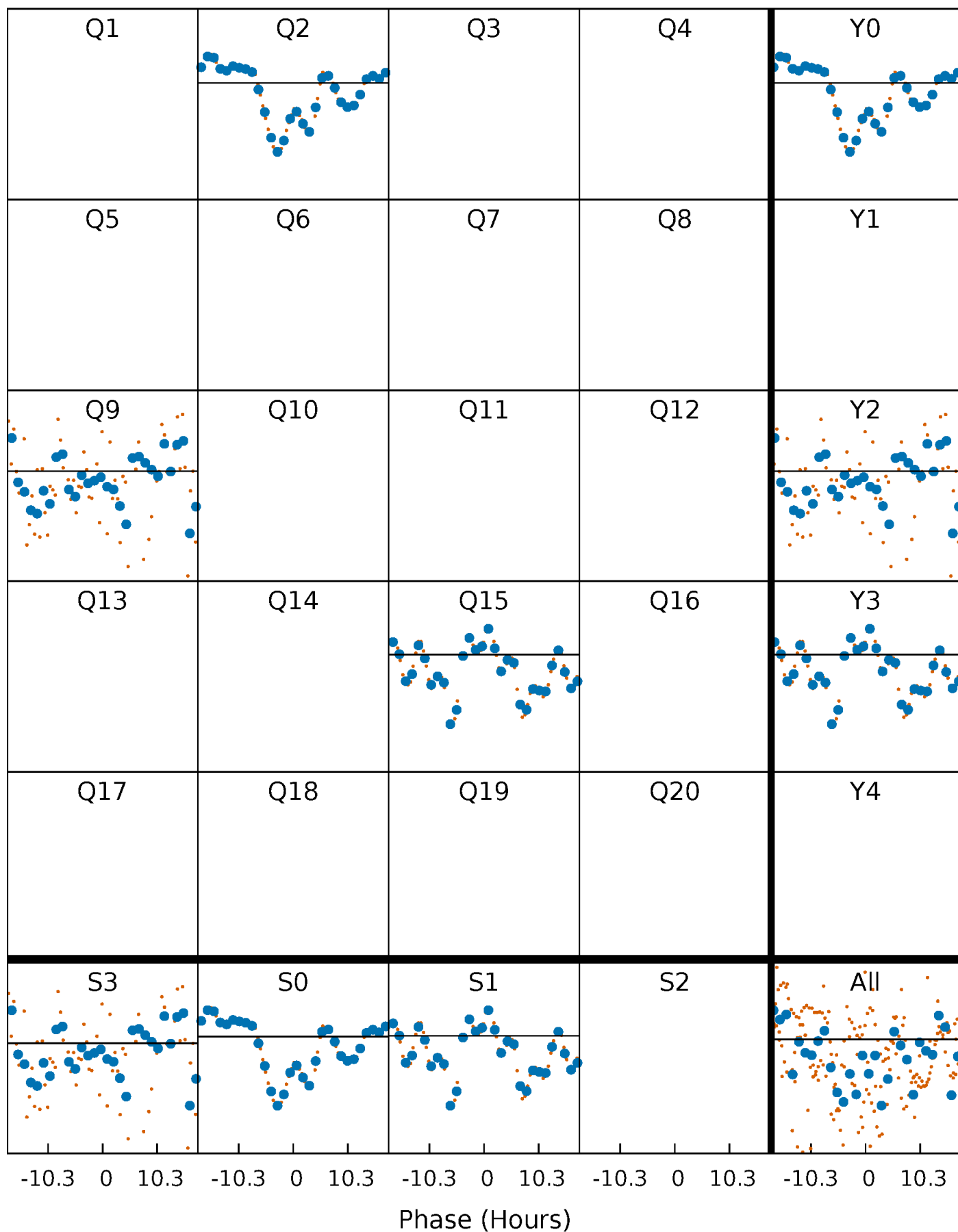
# PDC Quarter-Phased Transit Curves

TCE 005553183-05     $P=569.919233$  Days     $T_0=247.549776$  (BKJD)



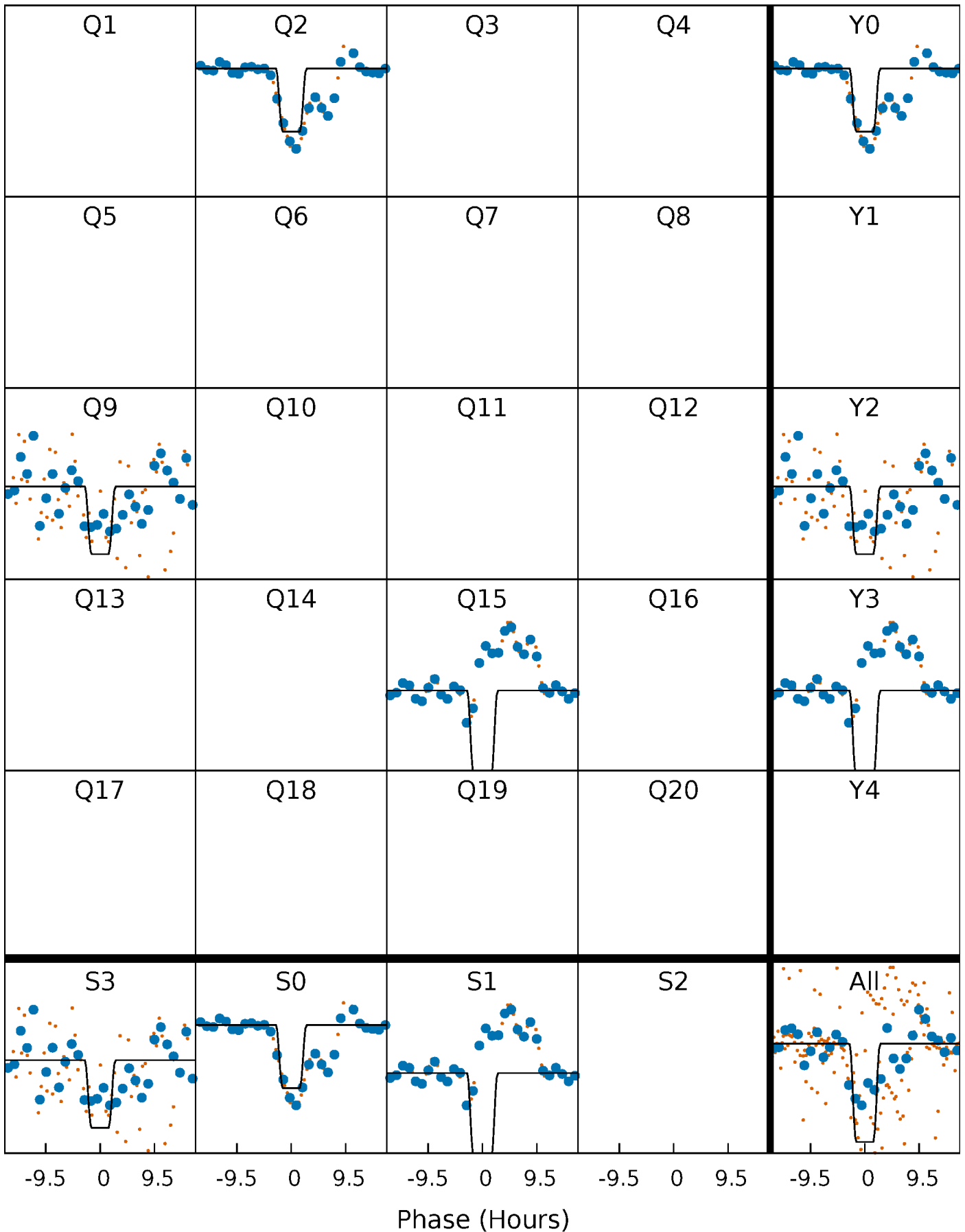
# DV Quarter-Phased Transit Curves

TCE 005553183-05     $P=569.919233$  Days     $T_0=247.549776$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

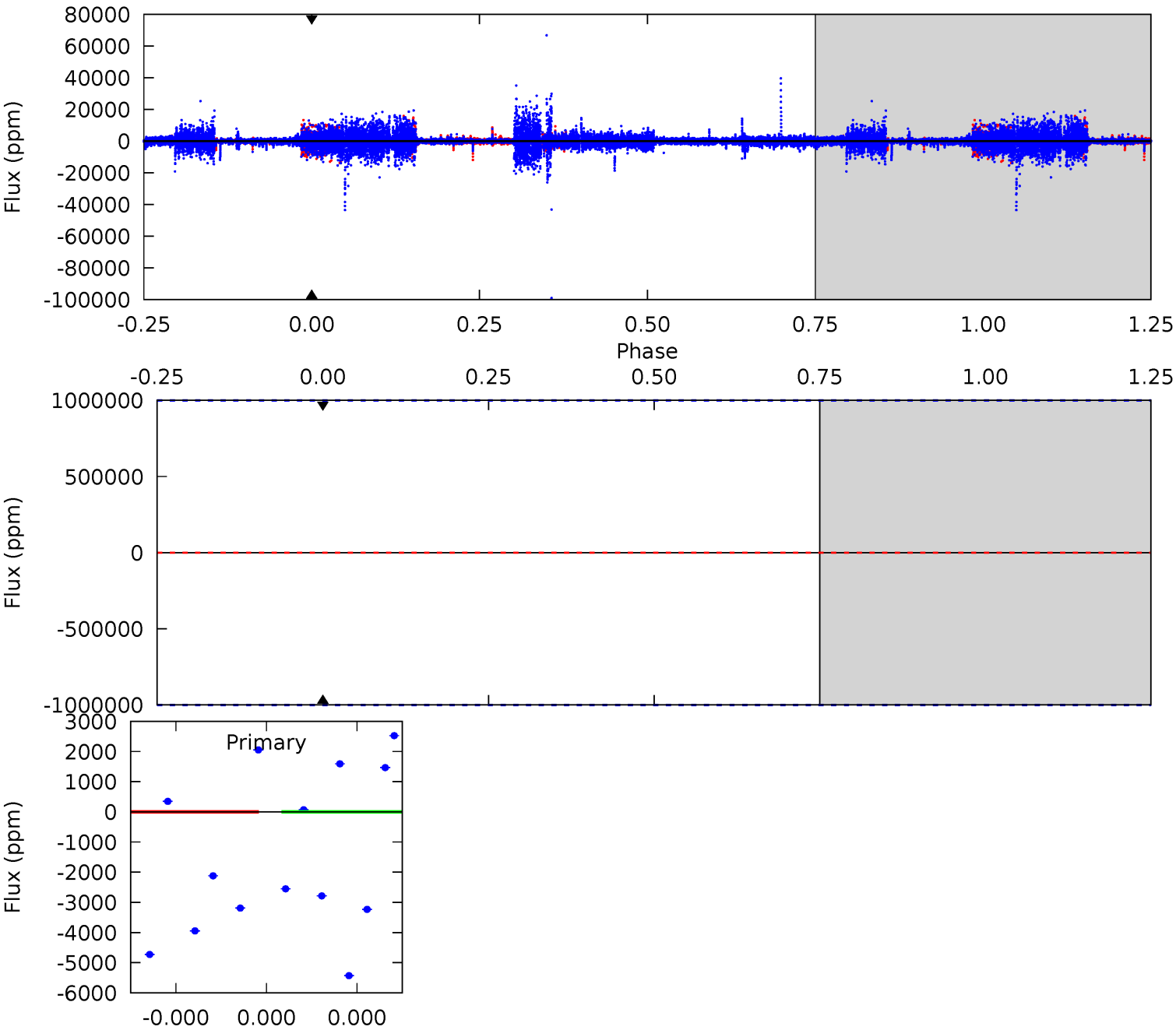
TCE 005553183-05     $P=569.919233$  Days     $T_0=247.400998$  (BKJD)



# DV Model-Shift Uniqueness Test

005553183-05, P = 569.919233 Days, E = 247.549776 Days

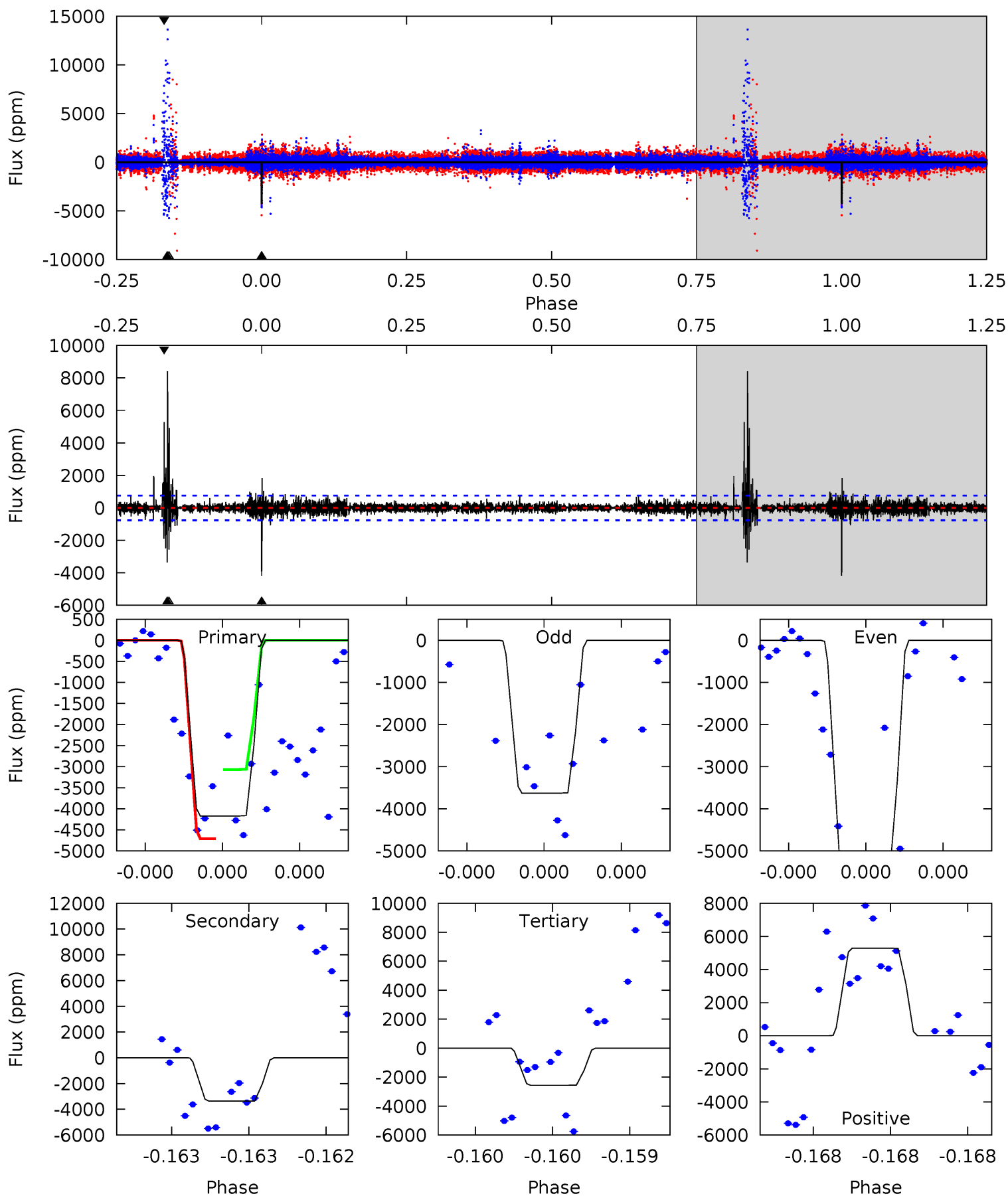
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005553183-05, P = 569.919233 Days, E = 247.400998 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
30.8	24.8	18.9	39.1	5.63	3.57	1.52	11.9	-8.26	5.92	-14.2	6.31	0.83	0.67	0





### Stellar Parameters For KIC 005553183

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3672^{+126}_{-113}$	$0.801^{+0.281}_{-0.230}$	$-0.080^{+0.300}_{-0.250}$	$67.804^{+24.445}_{-16.296}$	$1.060^{+0.416}_{-0.104}$	$0.000^{+0.000}_{-0.000}$
	+3%/-3%	+35%/-29%	+375%/-312%	+36%/-24%	+39%/-10%	+156%/-57%
Source	PHO54	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 005553183-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$502.86^{+632.63}_{-351.80}$	$1573^{+157}_{-146}$	$3334^{+6173}_{-10870}$	$10^{+1076}_{-582}$
Alt.	$-3362 \pm 135$	$771.31^{+680.04}_{-525.55}$	$1598^{+147}_{-149}$	$3091^{+1410}_{-520}$	$6.288^{+53.221}_{-4.594}$

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

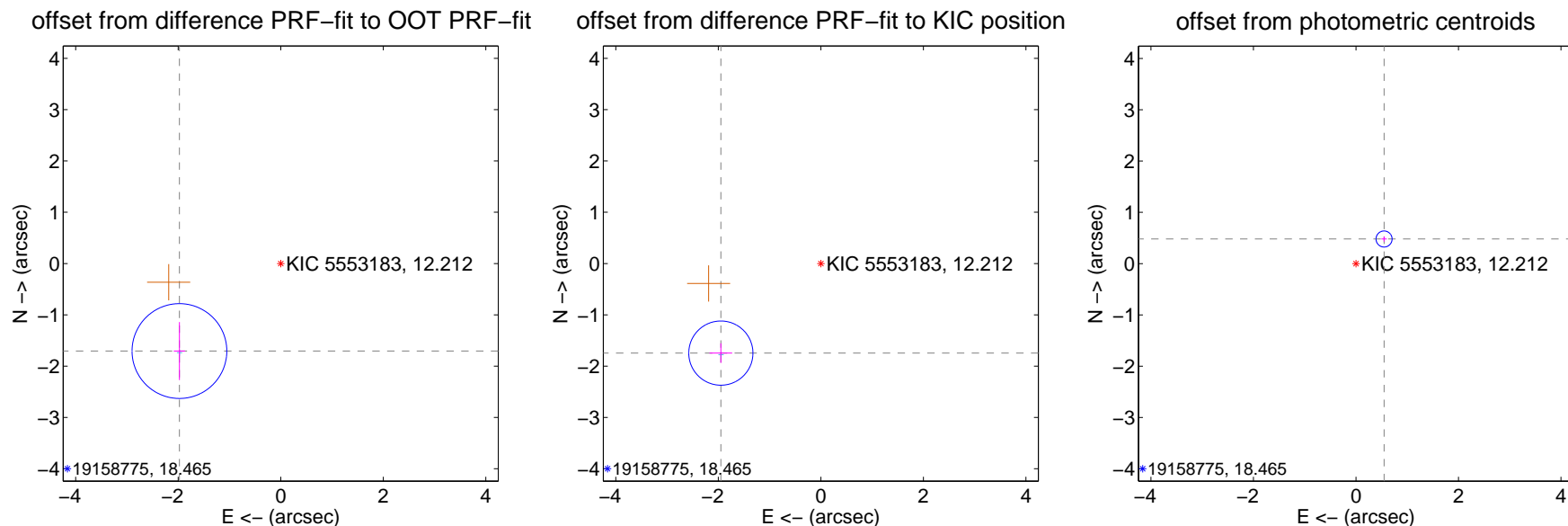
## DV Centroid Data

Supplemental centroid analysis for 005553183-05. Kepler magnitude: 12.21. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

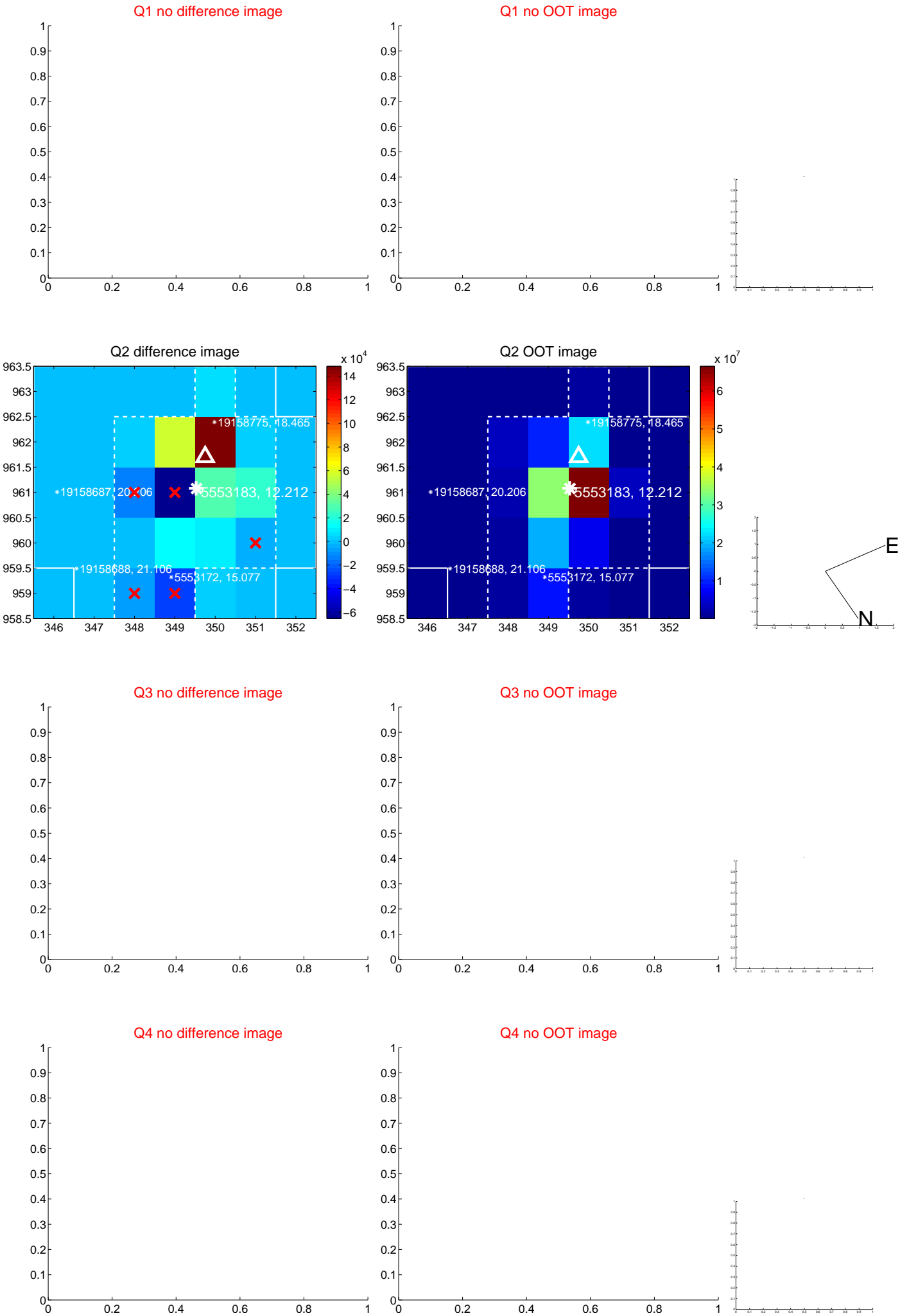
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.611 \pm 0.308$	8.48	$1.976 \pm 0.110$	$-1.706 \pm 0.565$
PRF-fit source offset from KIC position	$2.618 \pm 0.209$	12.55	$1.951 \pm 0.222$	$-1.746 \pm 0.191$
photometric centroid source offset	$0.73 \pm 0.05$	13.94	$-0.55 \pm 0.05$	$0.48 \pm 0.05$



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.

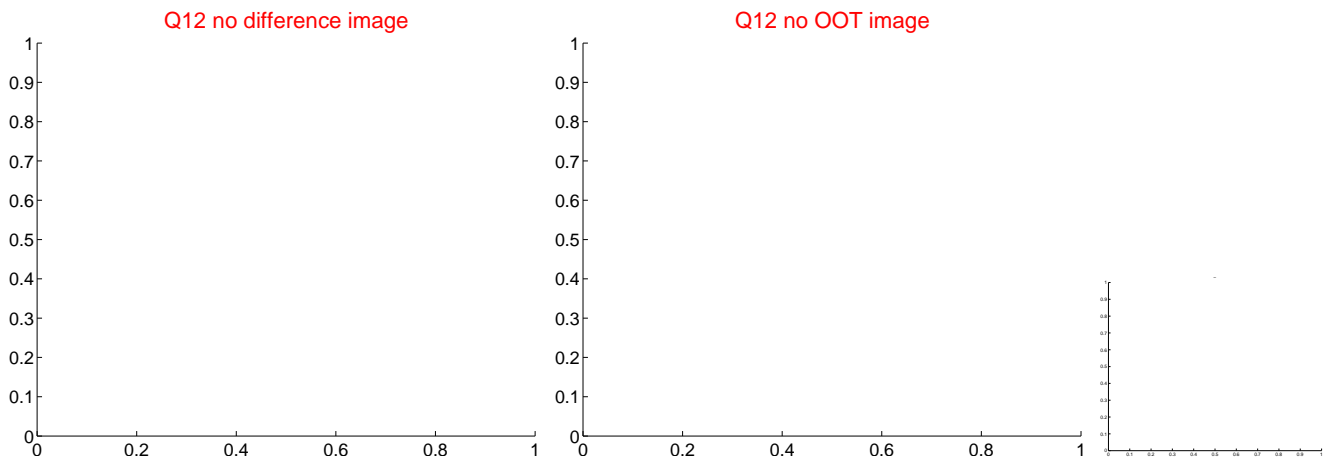
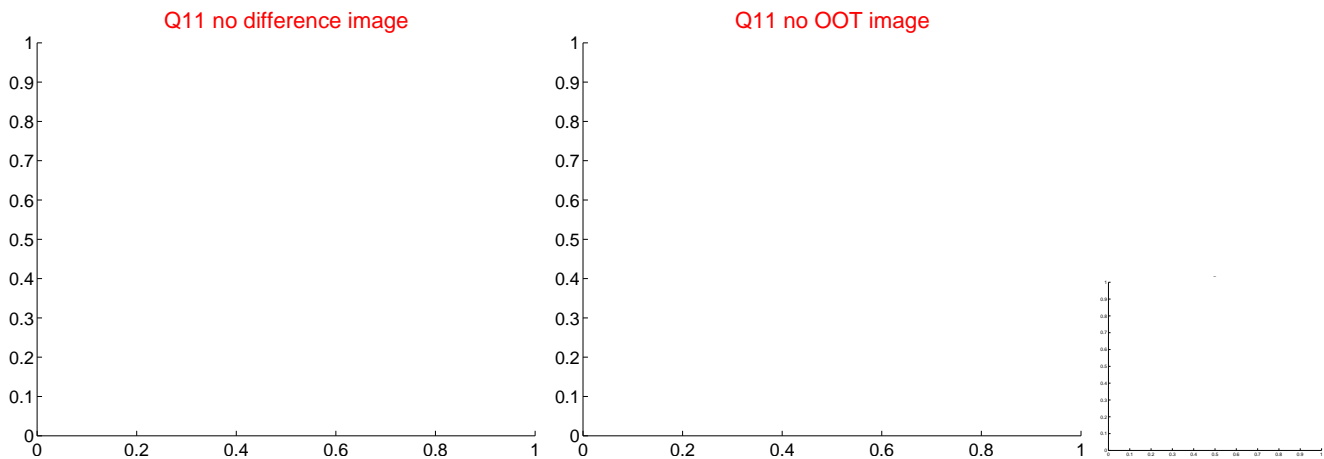
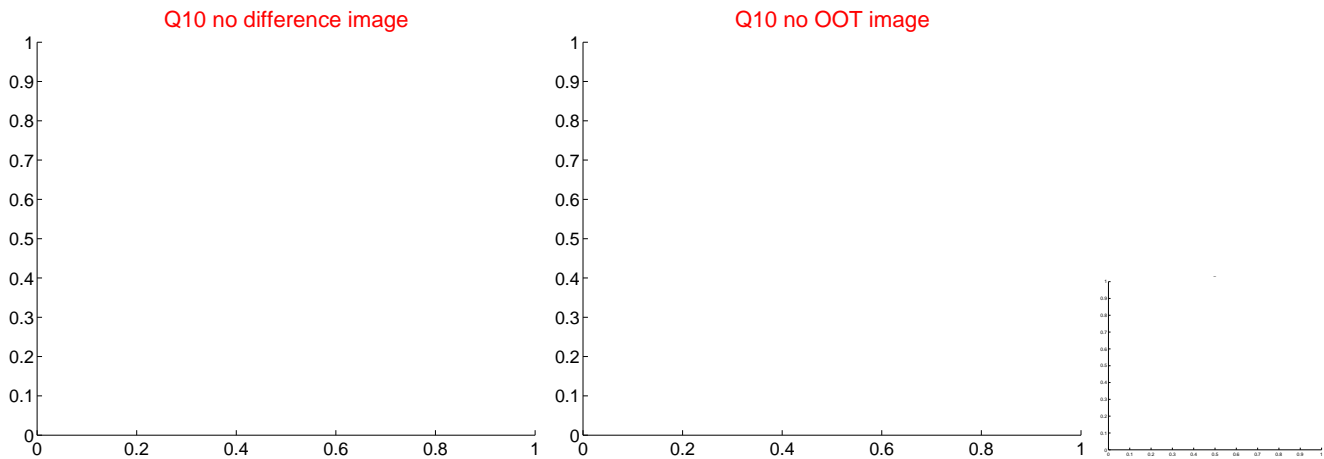
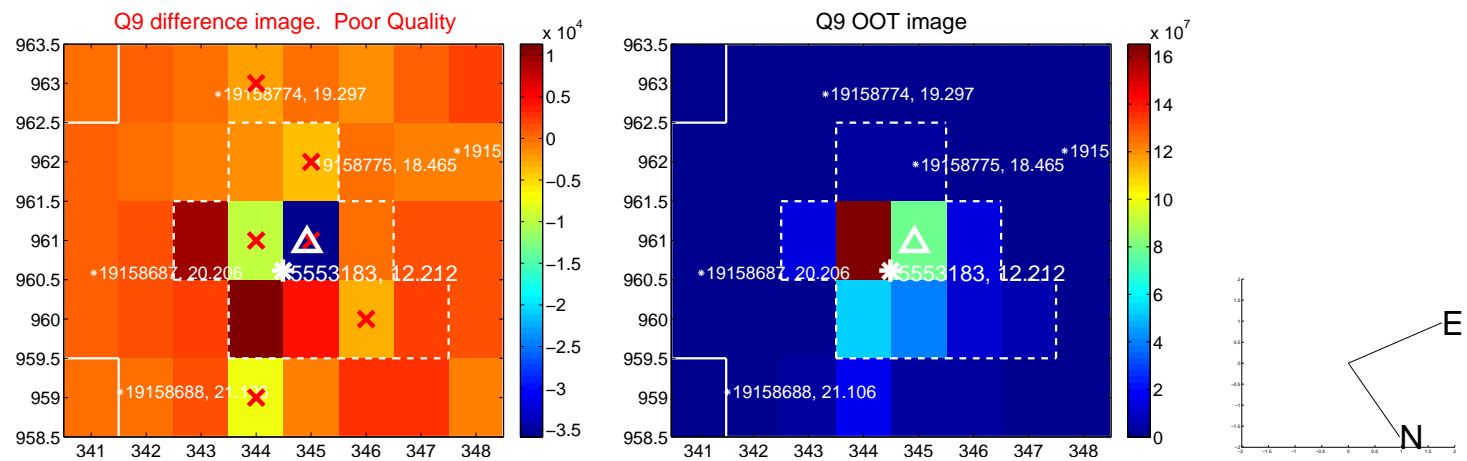
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



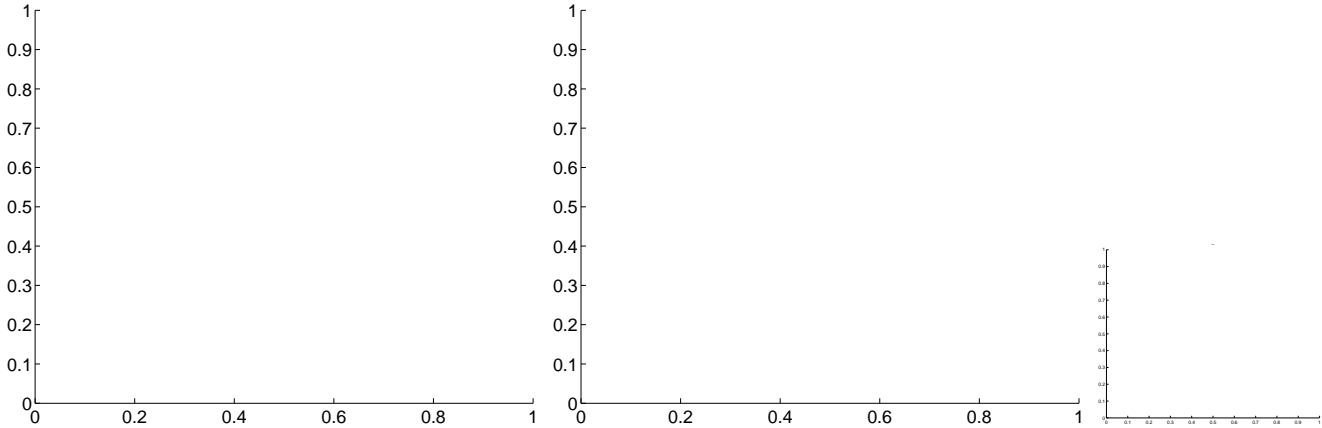
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



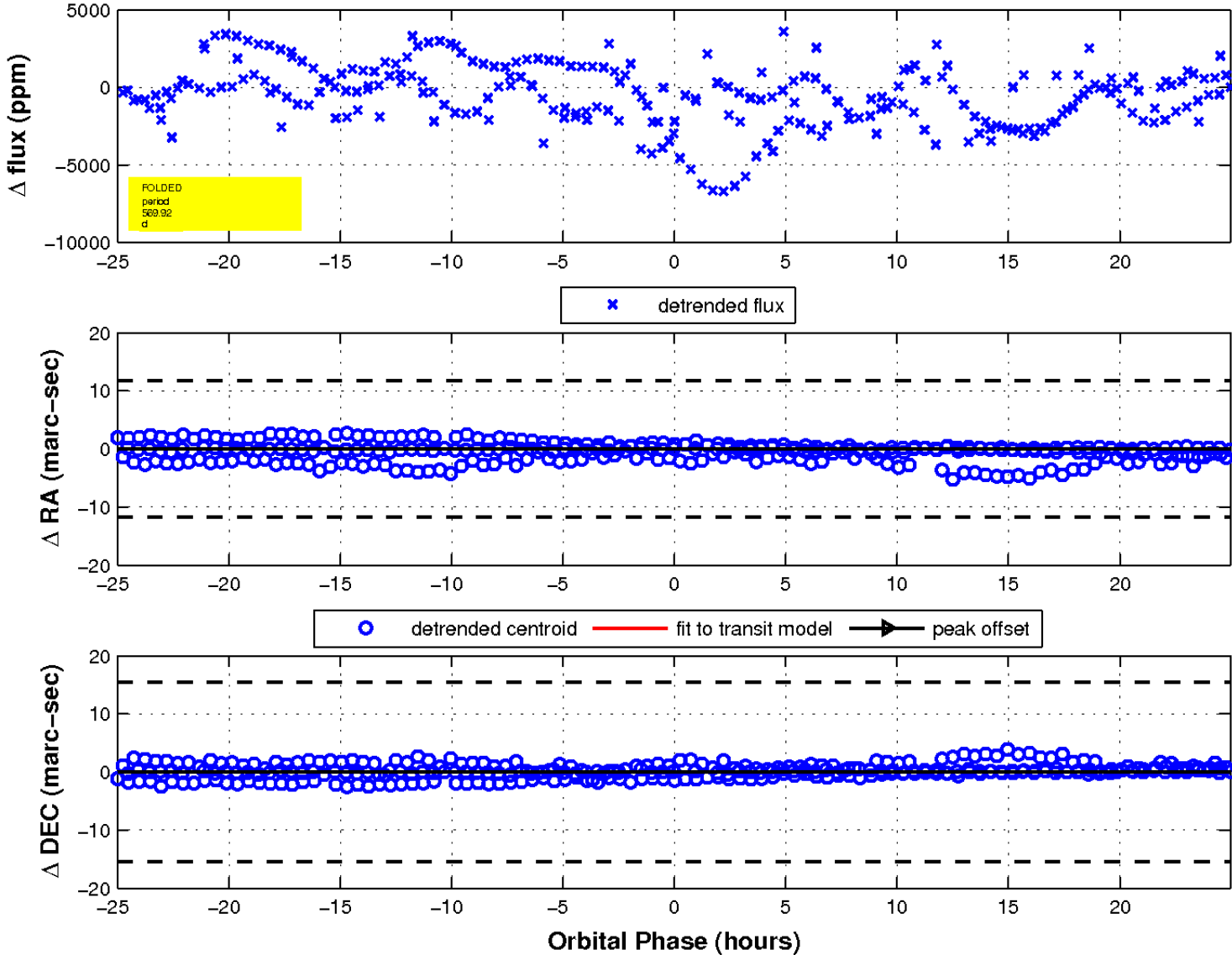
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

Q17 no difference image

Q17 no OOT image



fluxWeightedCentroids, Planet 5 of 5



UKIRT Image

