

# KIC 005185153

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005185153-01	OBS	No	3.251795	134.277121	95.4	19.167	8.3	11.8	0.85	5615	0.89	363.99
005185153-02	OBS	No	74.543609	147.350518	527.5	28.583	12.9	8.5	0.85	5615	2.51	5.59
005185153-03	OBS	No	403.397418	229.731815	780.5	25.882	12.1	8.0	0.85	5615	2.73	0.59
005185153-04	OBS	No	93.564944	140.645833	480.7	5.660	8.5	7.4	0.85	5615	1.99	4.13
005185153-05	OBS	No	177.092844	258.280919	850.0	2.735	8.2	8.0	0.85	5615	2.86	1.76
005185153-06	OBS	No	122.609683	225.633037	456.5	16.195	7.8	6.3	0.85	5615	2.03	2.88
005185153-07	OBS	No	105.338904	148.221922	187.4	13.735	7.4	3.8	0.85	5615	1.33	3.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005185153-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005185153-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005185153-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005185153-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005185153-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

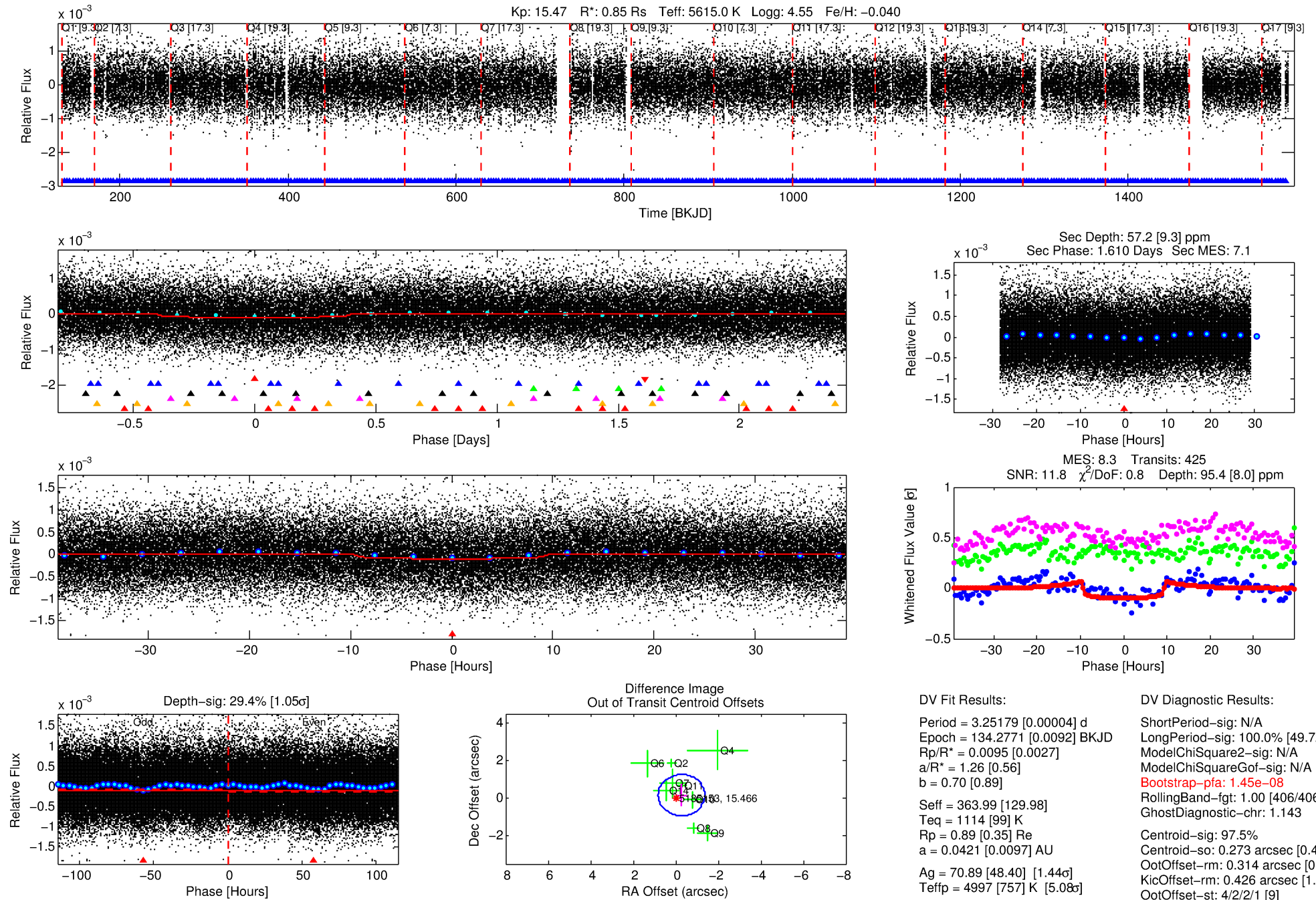
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005185153-01

No Significant Match Found

# DV One-Page Summary

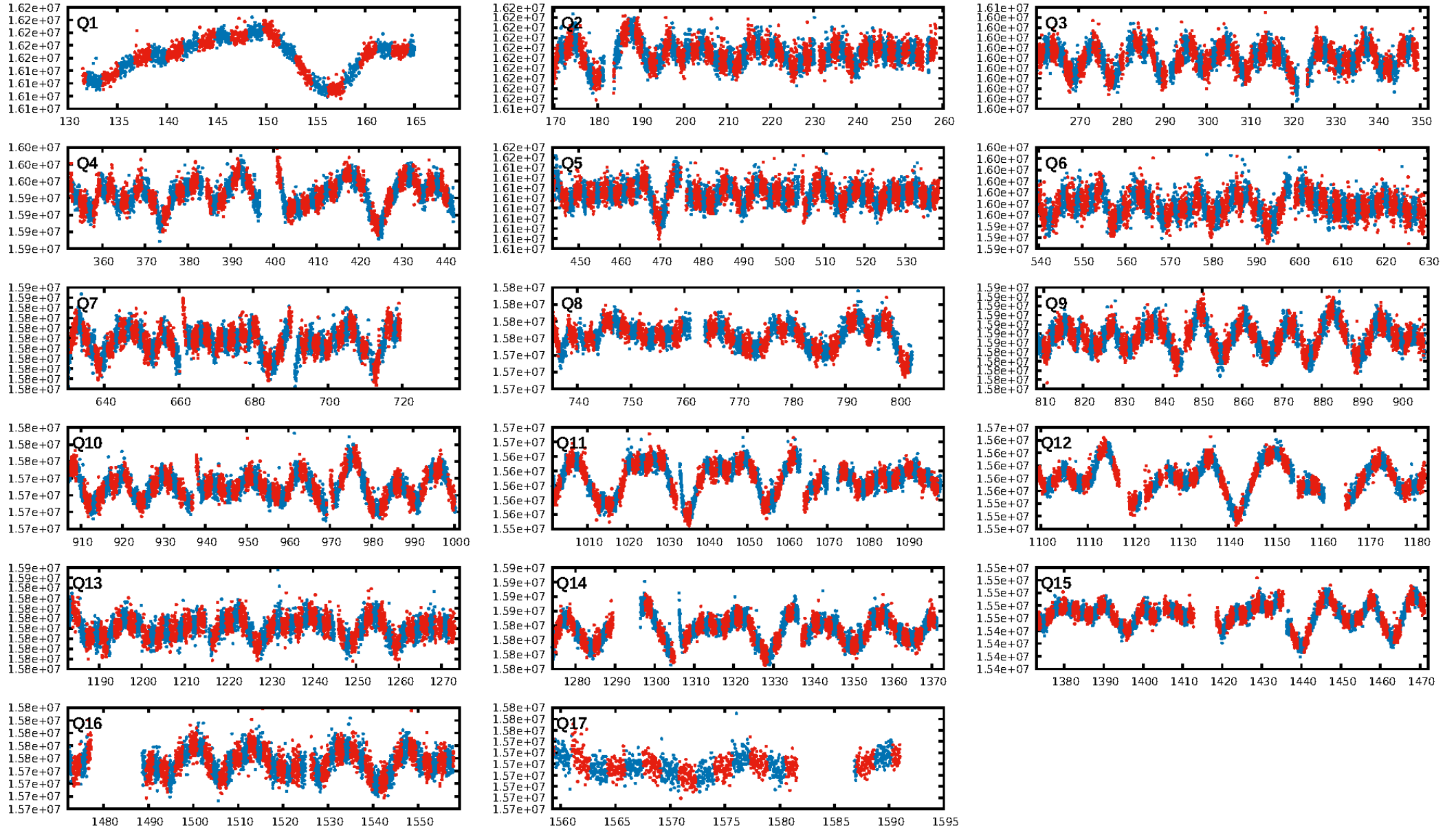
KIC: 5185153 Candidate: 1 of 7 Period: 3.252 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:02:30 Z

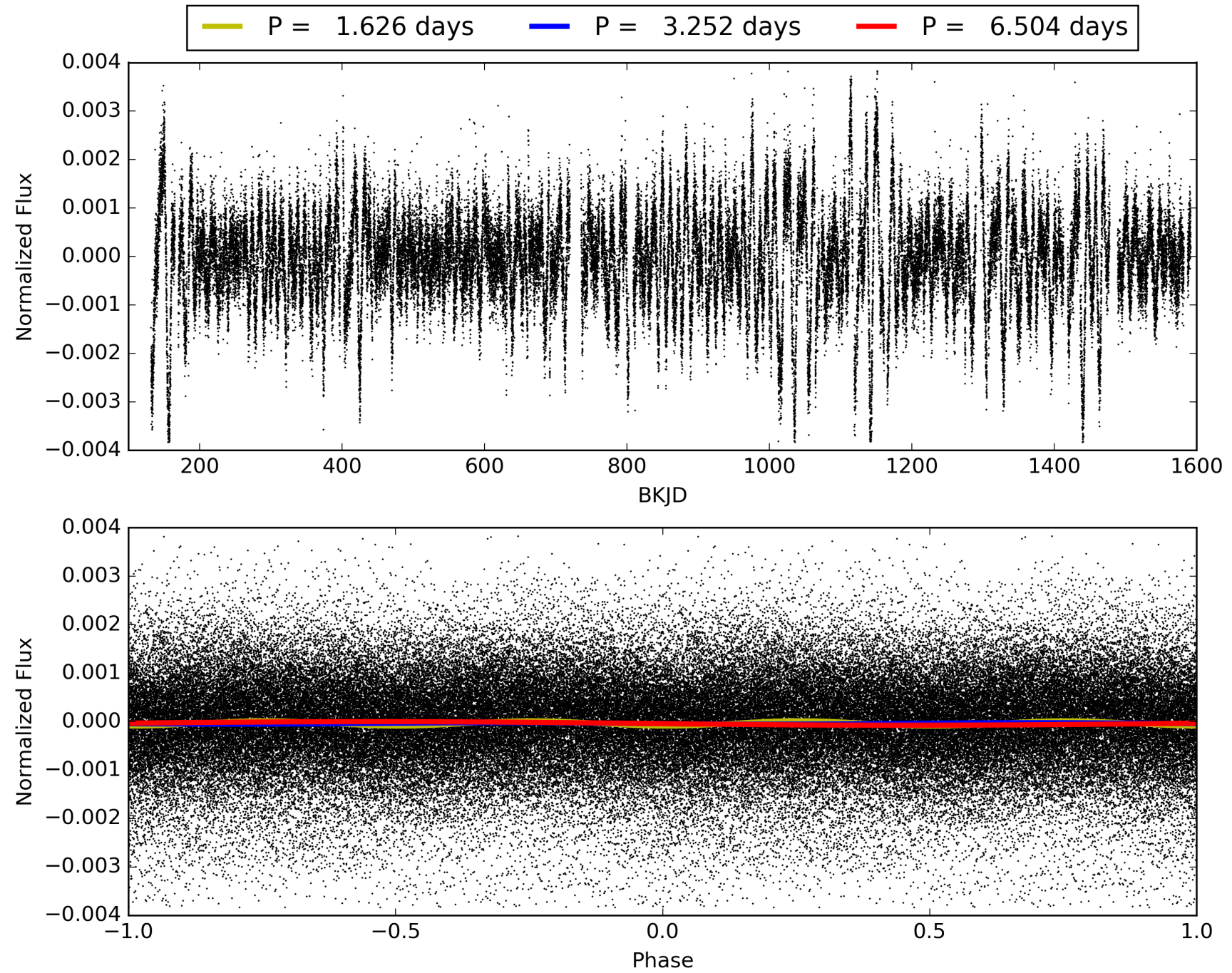
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005185153-01, PDC Light Curves





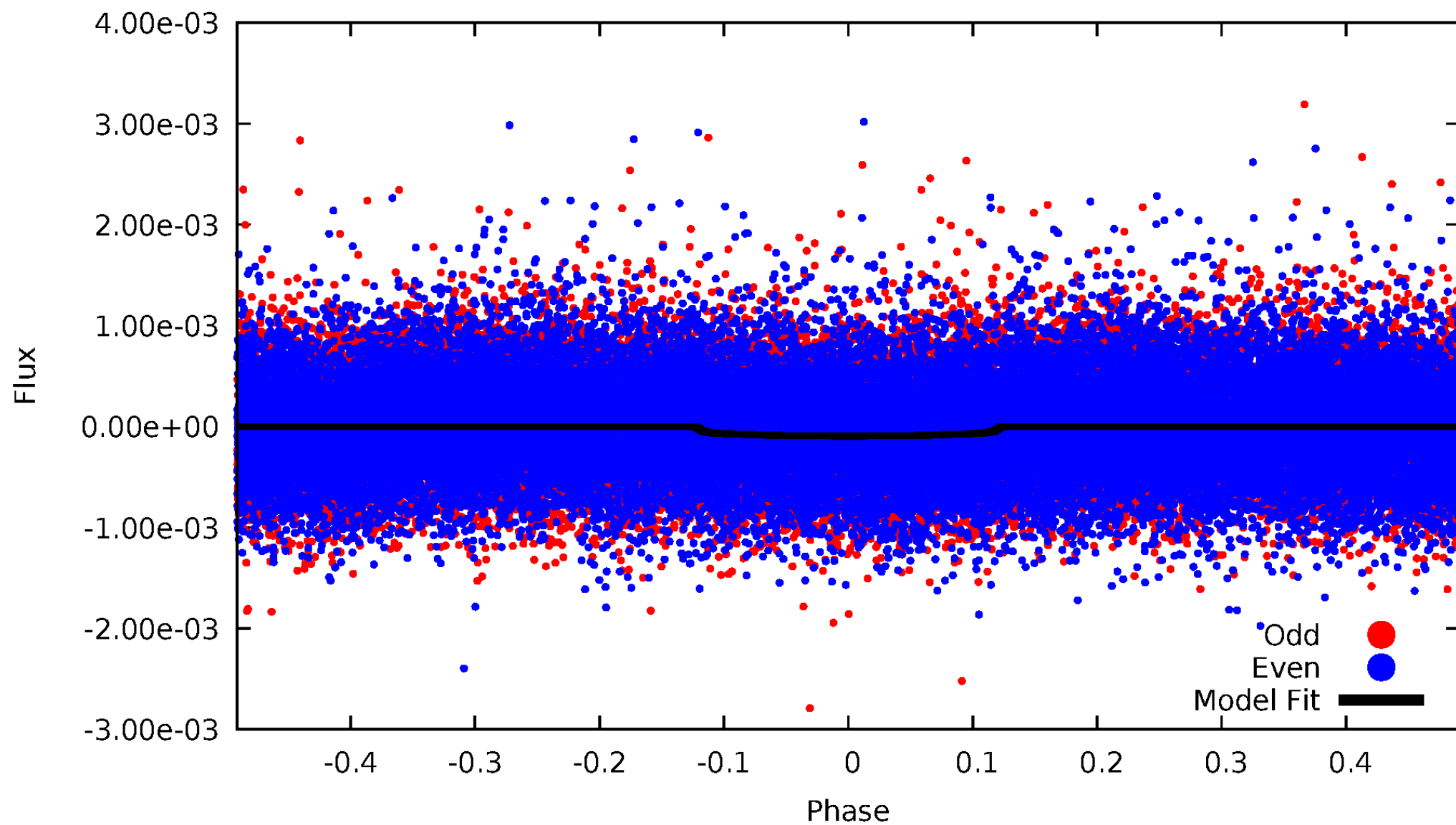
# TCE 005185153-01





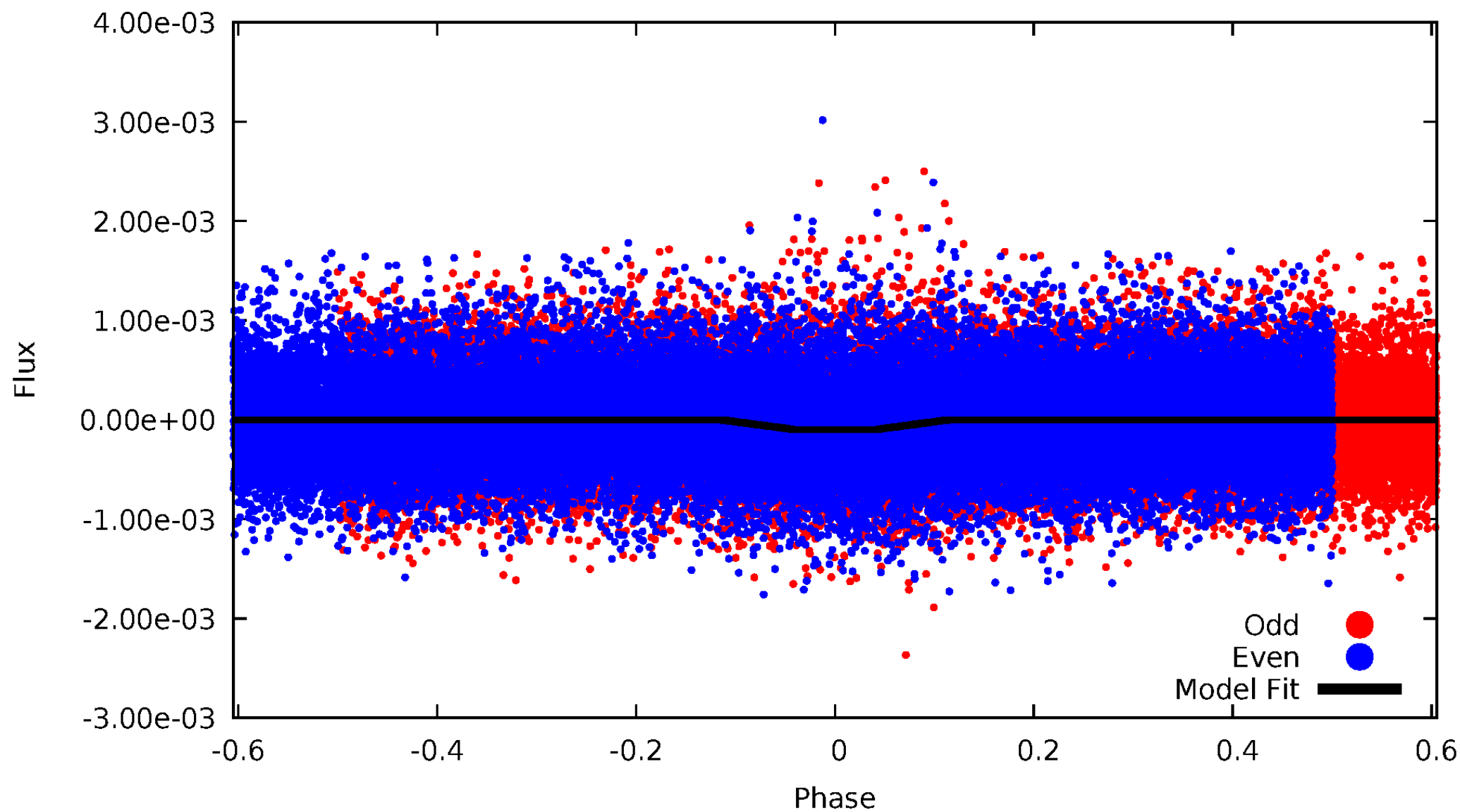
# DV Odd/Even

TCE 005185153-01

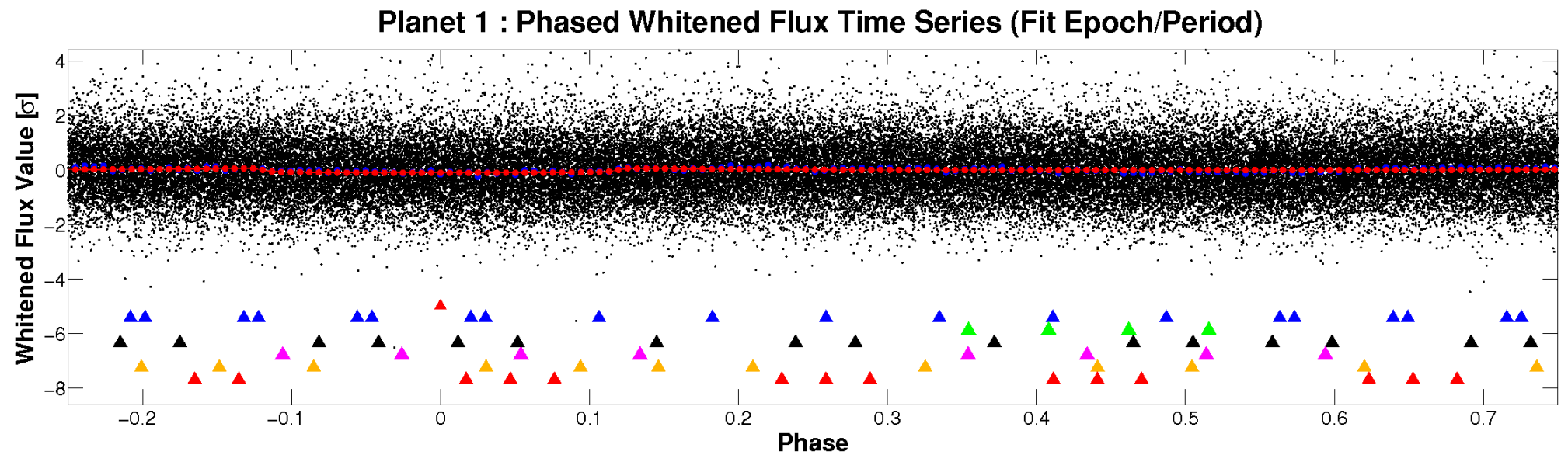
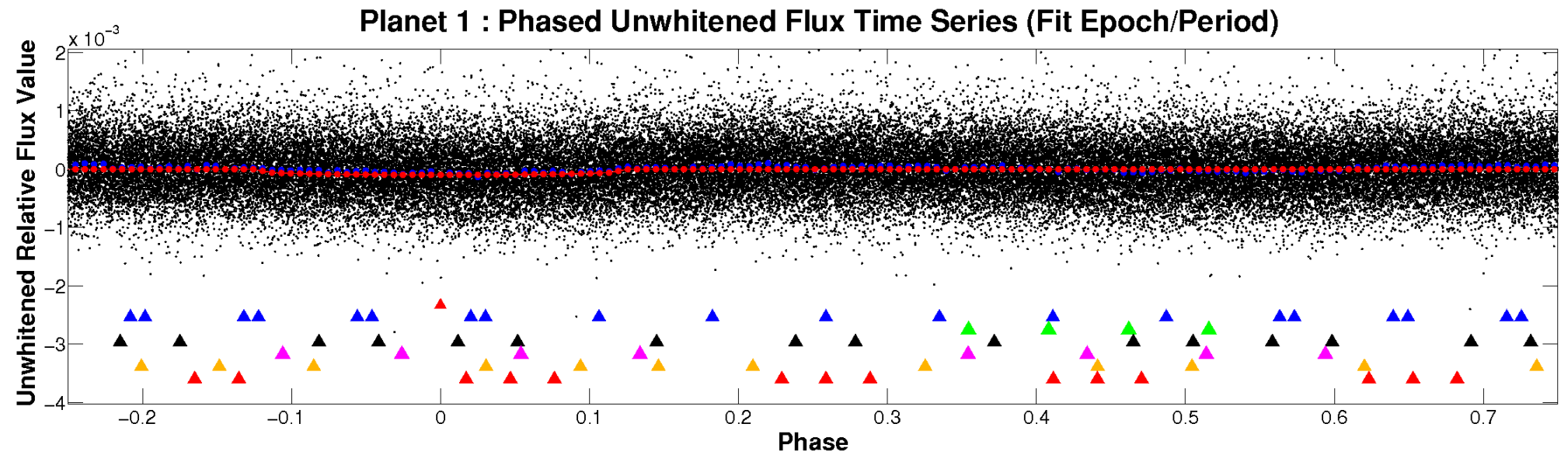


# ALT Odd/Even

TCE 005185153-01



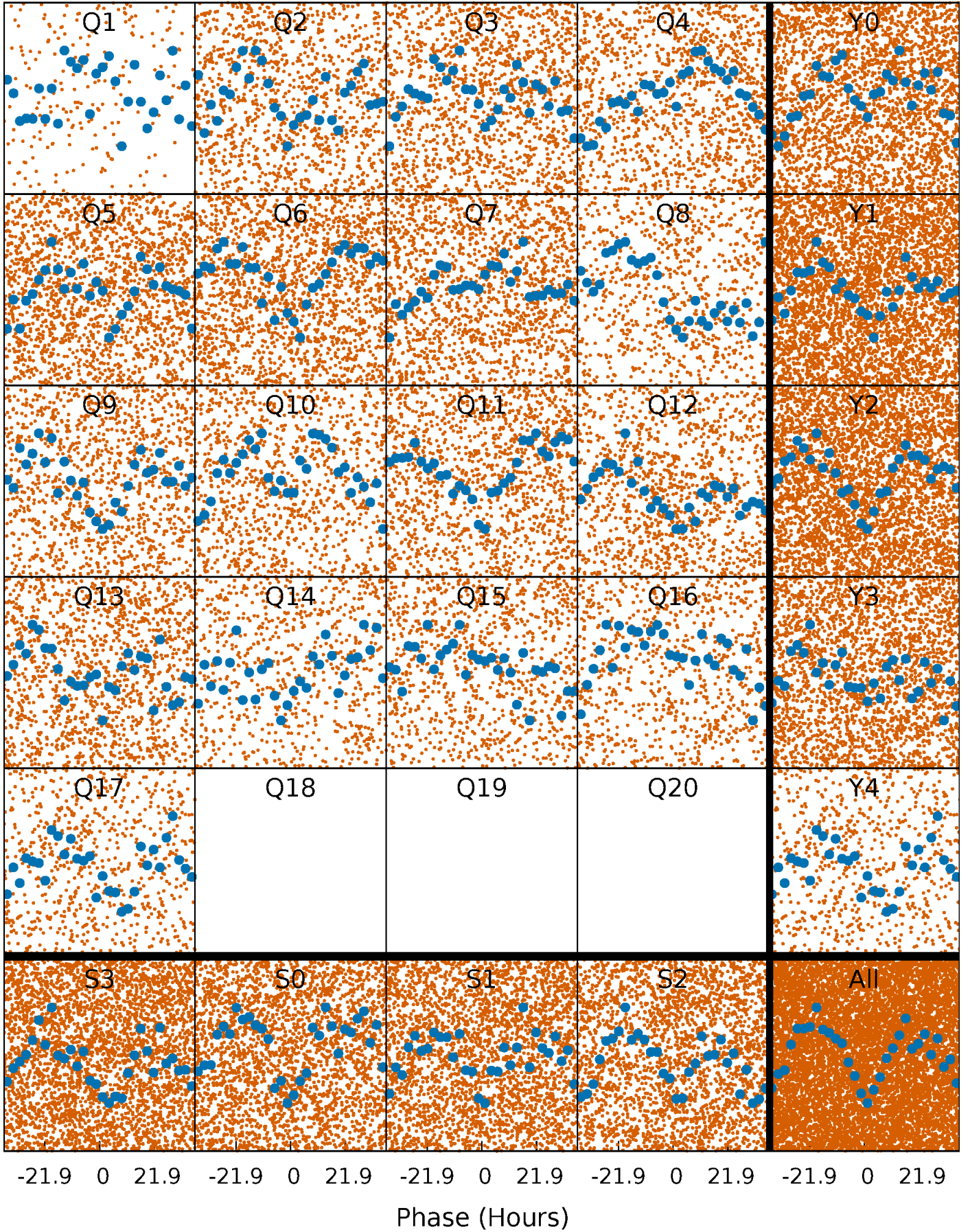
# Non-Whitened Vs. Whitened Light Curve





# PDC Quarter-Phased Transit Curves

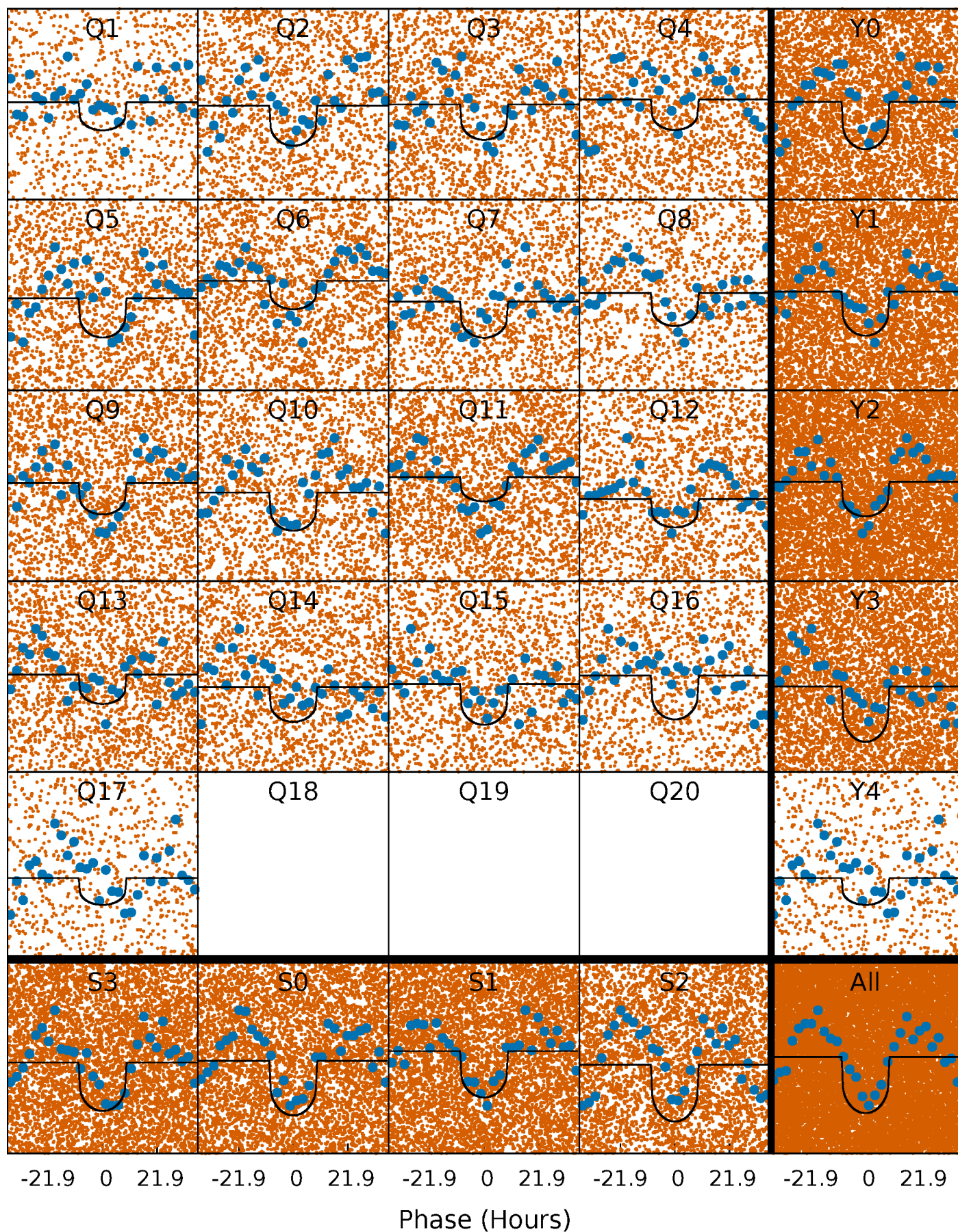
TCE 005185153-01 P= 3.251795 Days  $T_0=134.277121$  (BKJD)





# DV Quarter-Phased Transit Curves

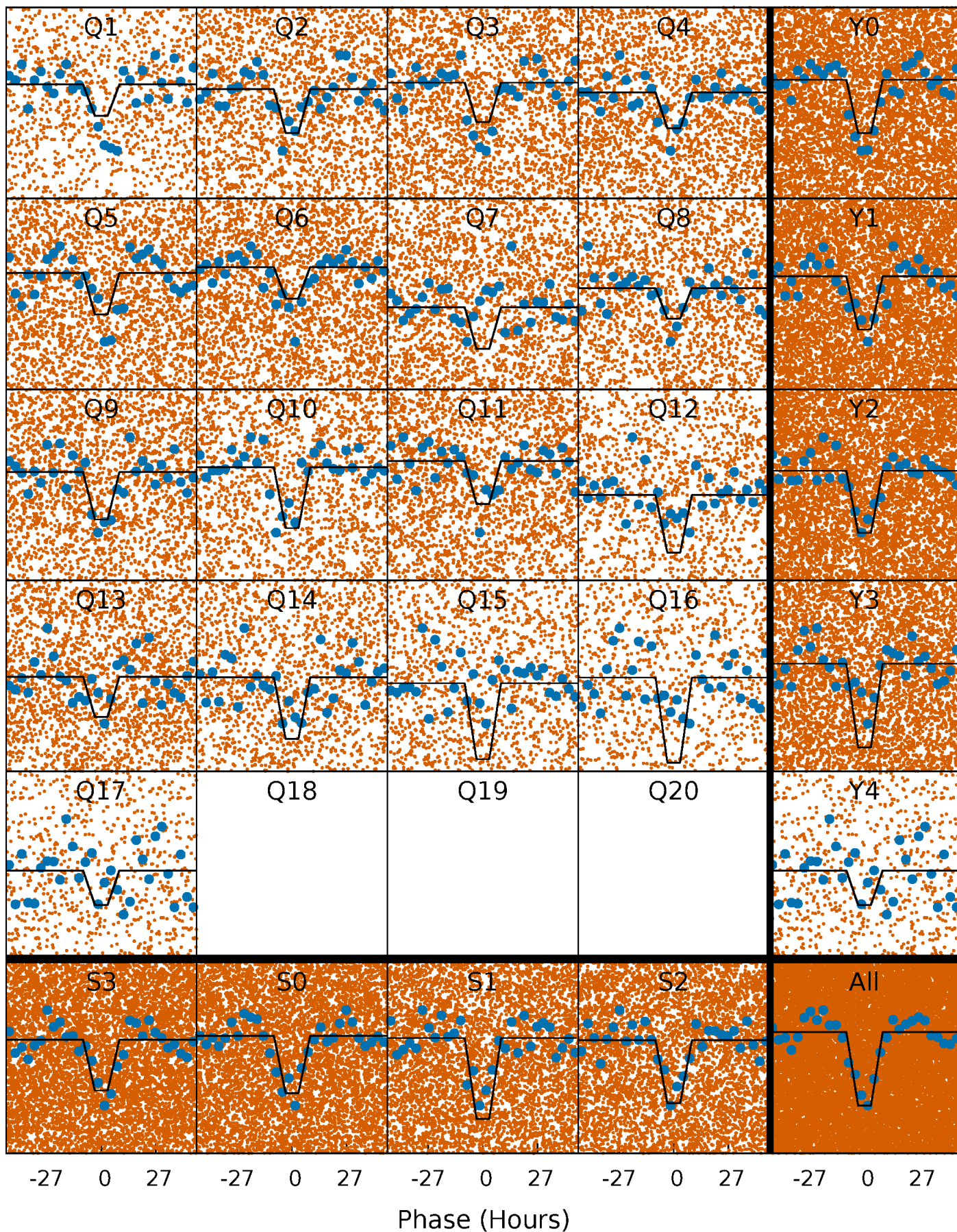
TCE 005185153-01 P= 3.251795 Days  $T_0=134.277121$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 005185153-01 P= 3.251541 Days  $T_0=134.395754$  (BKJD)

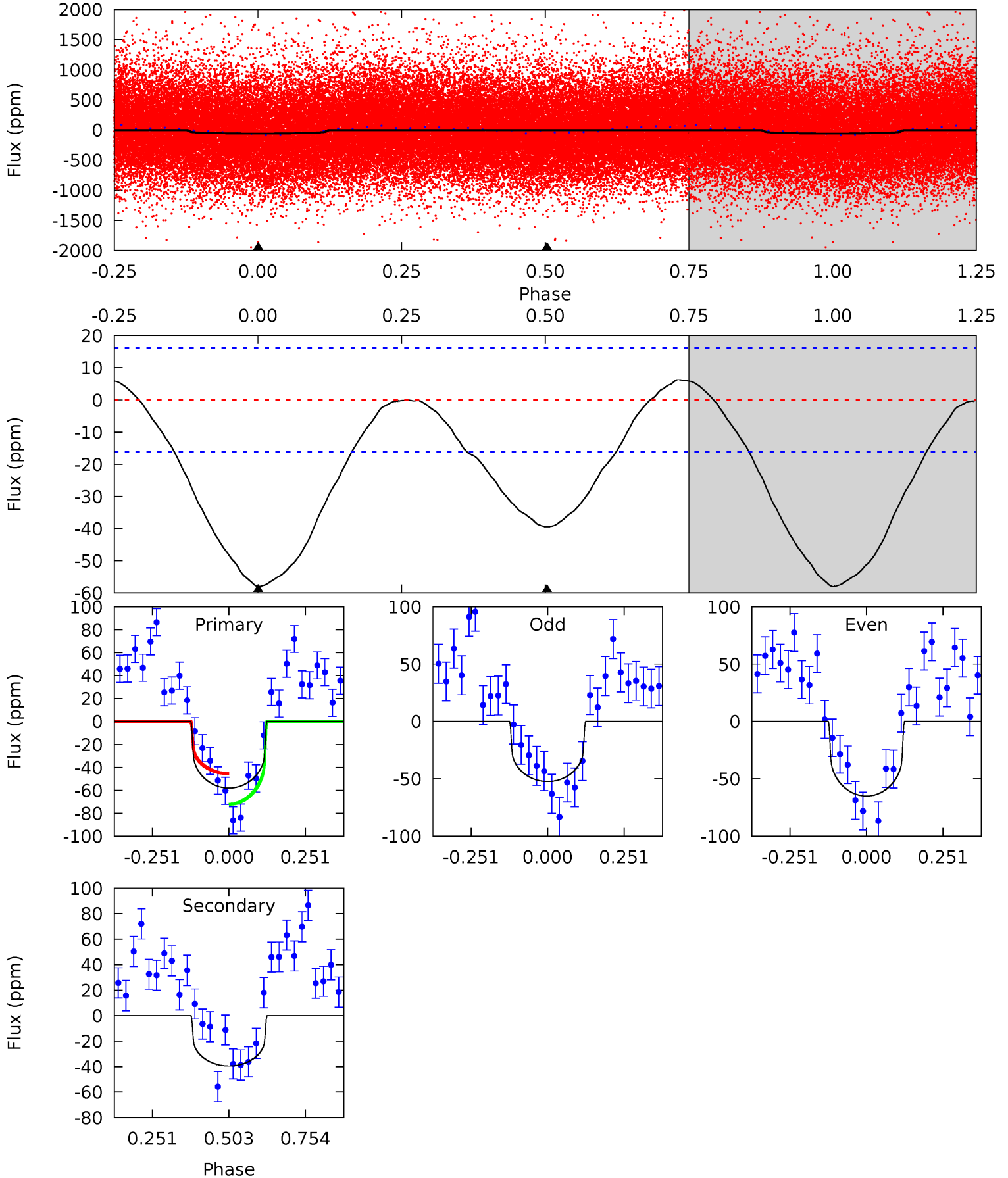




# DV Model-Shift Uniqueness Test

005185153-01, P = 3.251795 Days, E = 131.025326 Days

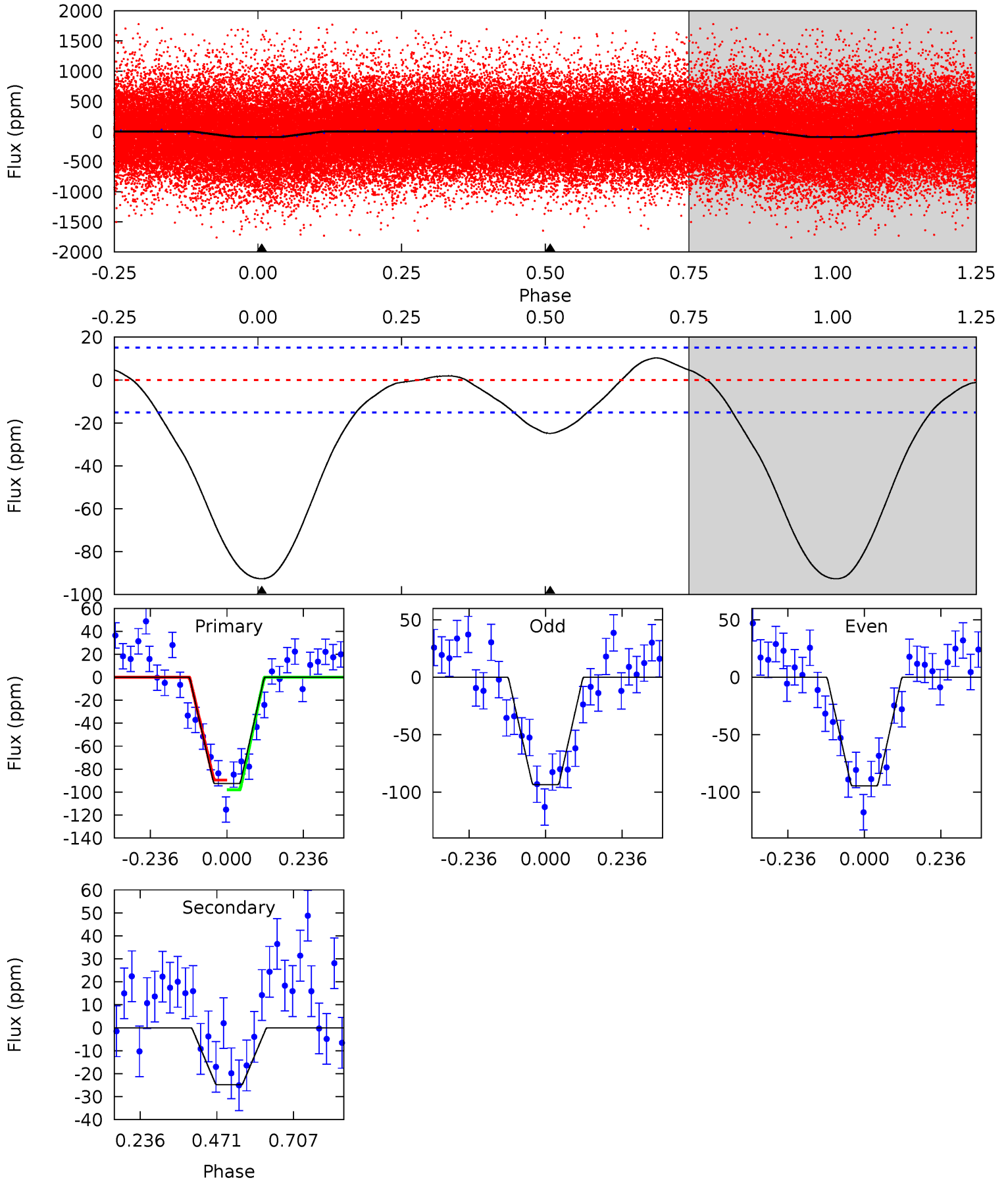
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.7	10.7	0	0	4.37	1.15	0.80	15.7	15.7	10.7	10.7	1.71	1.07	0.10	3.64



# Alt Model-Shift Uniqueness Test

005185153-01, P = 3.251541 Days, E = 131.144213 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.8	7.18	0	0	4.38	1.19	0.77	26.8	26.8	7.18	7.18	0.16	0.69	0.10	1.22



### Stellar Parameters For KIC 005185153

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5615^{+169}_{-169}$	$4.552^{+0.035}_{-0.184}$	$-0.040^{+0.300}_{-0.300}$	$0.852^{+0.233}_{-0.078}$	$0.942^{+0.094}_{-0.104}$	$2.149^{+0.380}_{-1.022}$
	+3%/-3%	+1%/-4%	+750%/-750%	+27%/-9%	+10%/-11%	+18%/-48%
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 005185153-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-39 \pm 4$	$0.92^{+0.29}_{-0.26}$	$1595^{+99}_{-74}$	$4678^{+724}_{-449}$	$43^{+41}_{-18}$
Alt.	$-25 \pm 3$	$0.96^{+0.30}_{-0.26}$	$1593^{+107}_{-70}$	$4227^{+584}_{-418}$	$25^{+22}_{-11}$

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



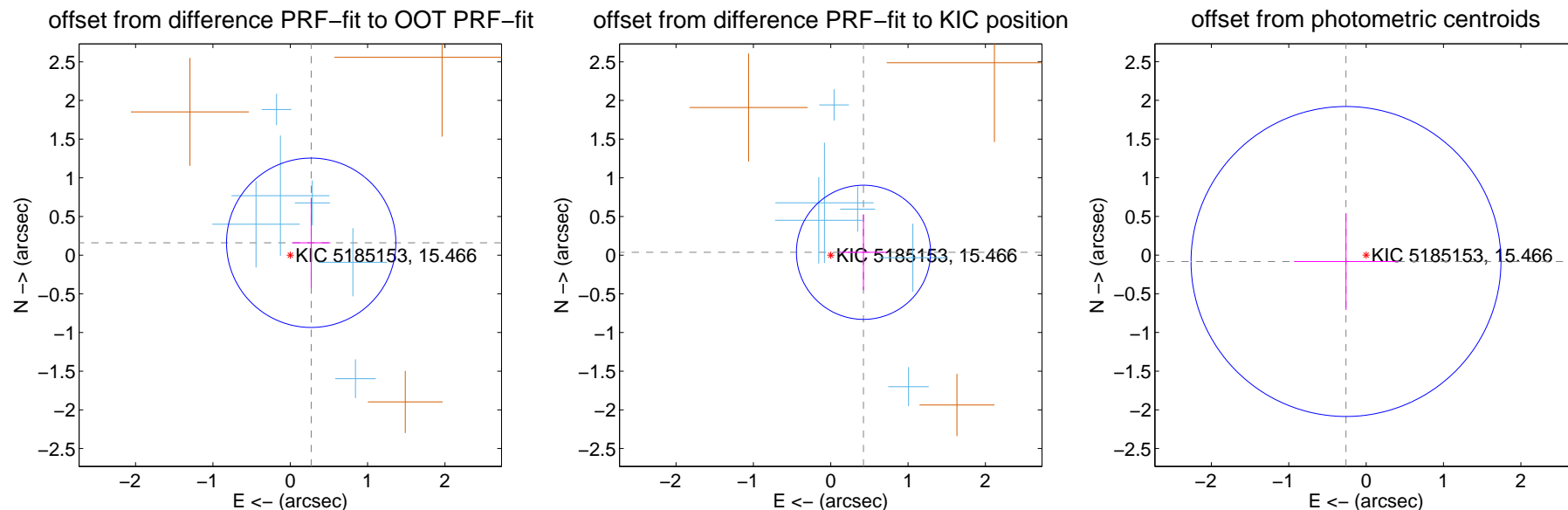
## DV Centroid Data

Supplemental centroid analysis for 005185153-01. Kepler magnitude: 15.47. Transit SNR 11.82

There are 6 quarters with good PRF difference image offsets

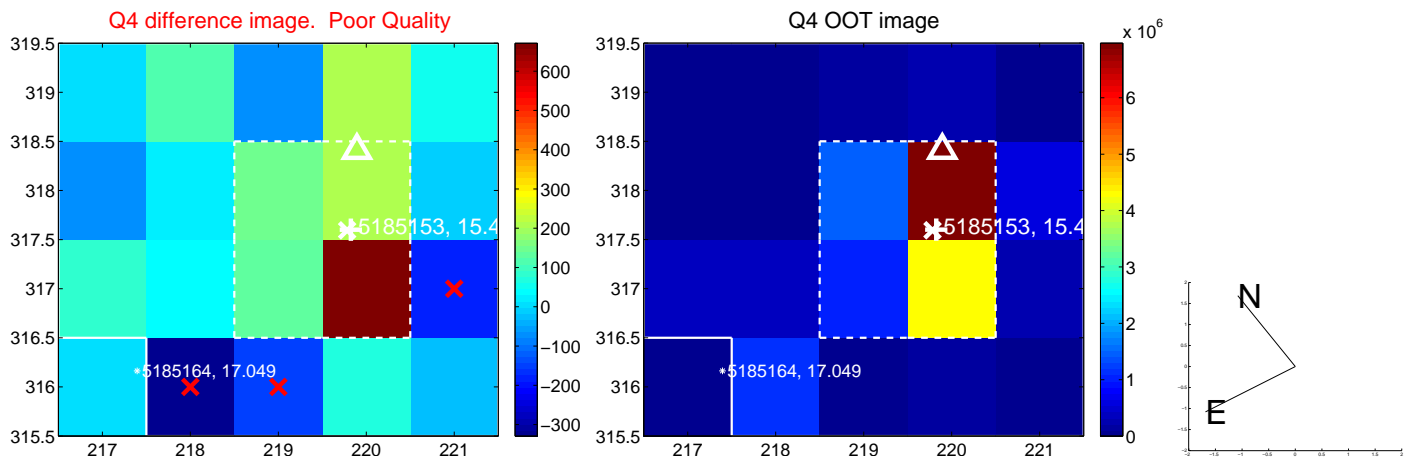
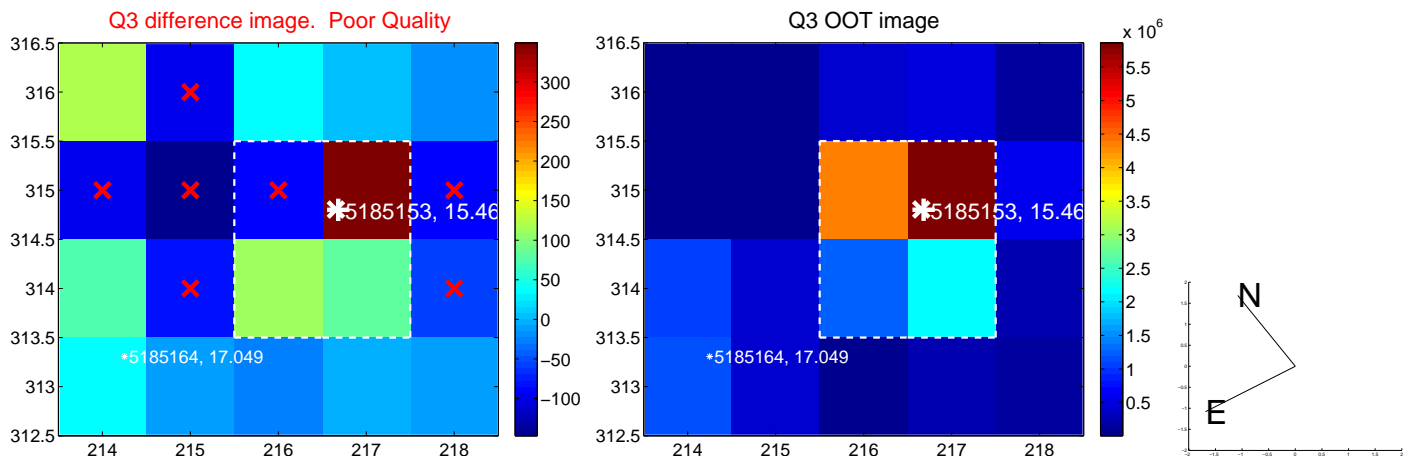
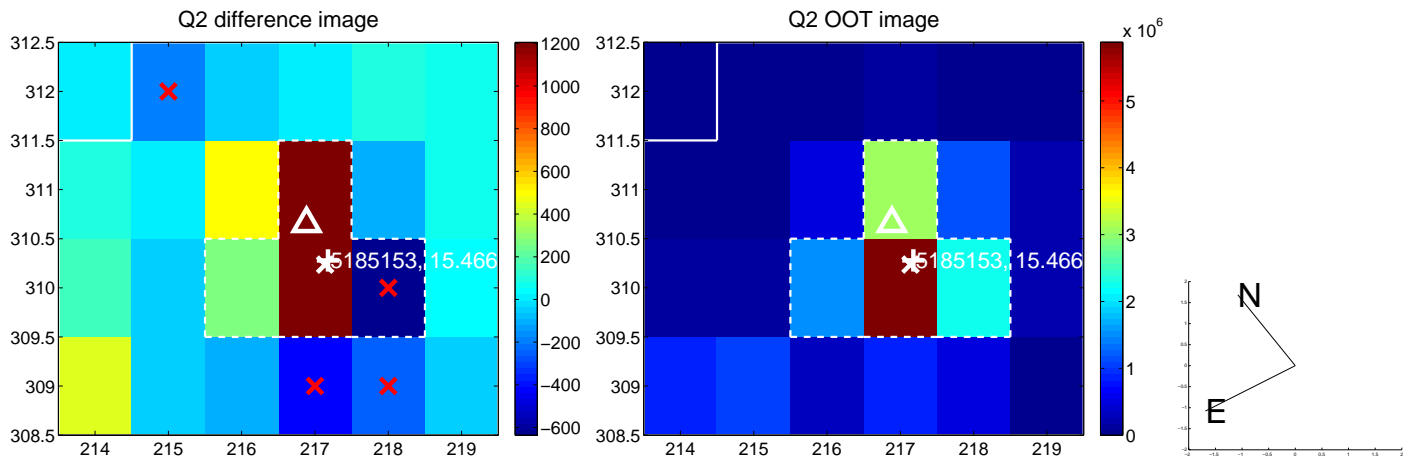
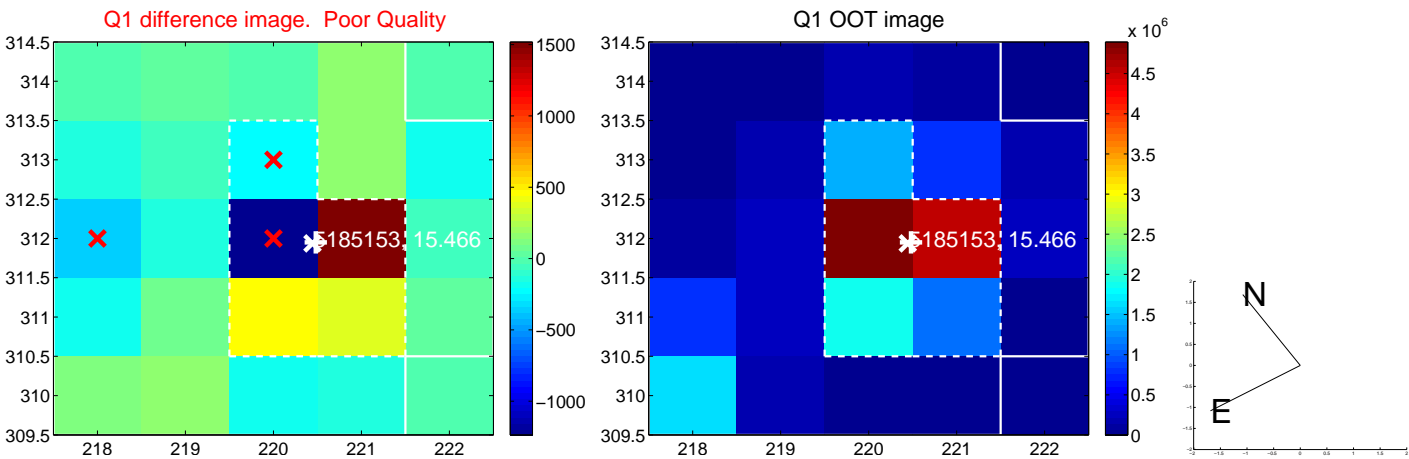
The direct PRF centroid is offset from the target star catalog position by about 0.29 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.314 \pm 0.365$	0.86	$-0.271 \pm 0.248$	$0.160 \pm 0.581$
PRF-fit source offset from KIC position	$0.426 \pm 0.289$	1.47	$-0.424 \pm 0.303$	$0.037 \pm 0.488$
photometric centroid source offset	$0.27 \pm 0.67$	0.41	$0.26 \pm 0.67$	$-0.08 \pm 0.63$

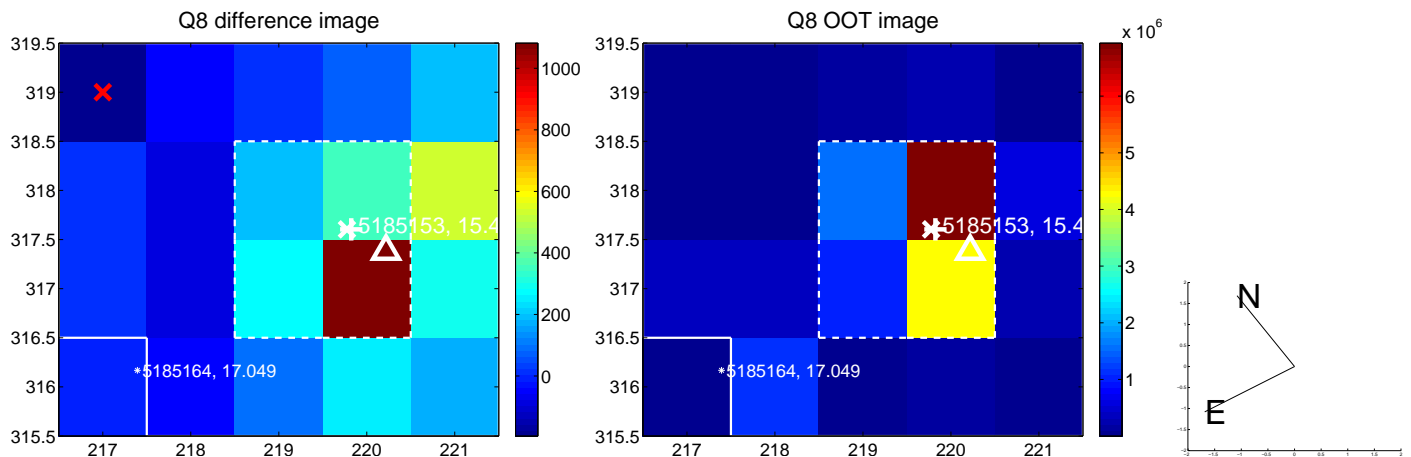
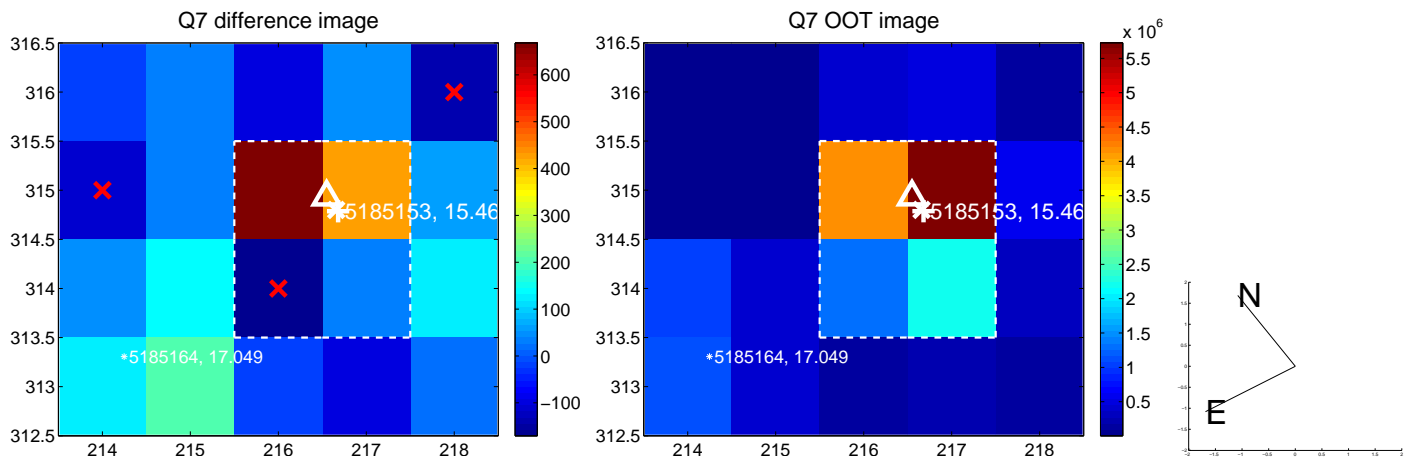
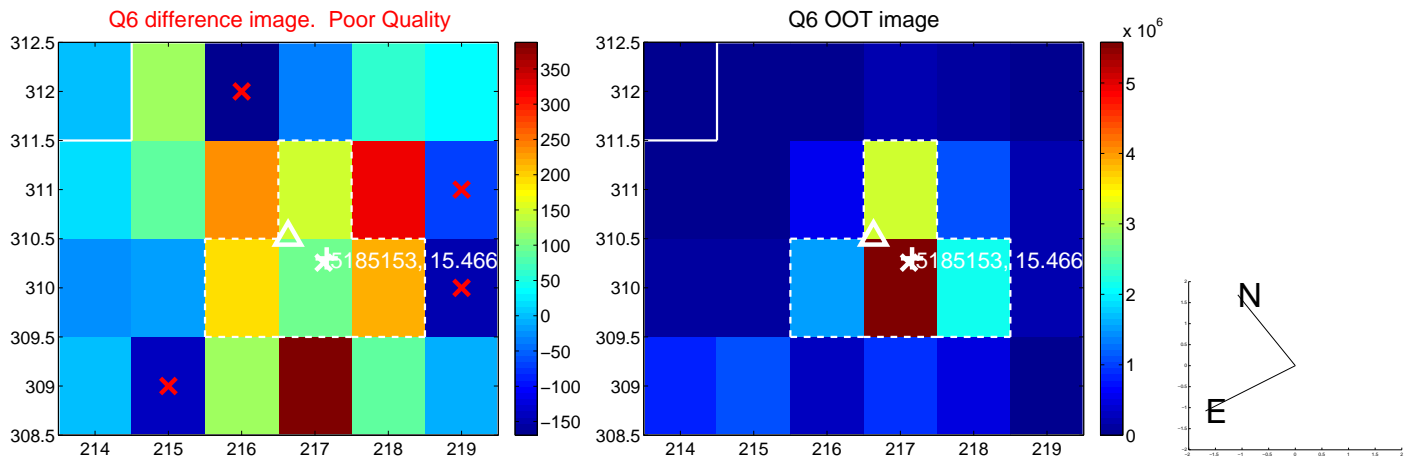
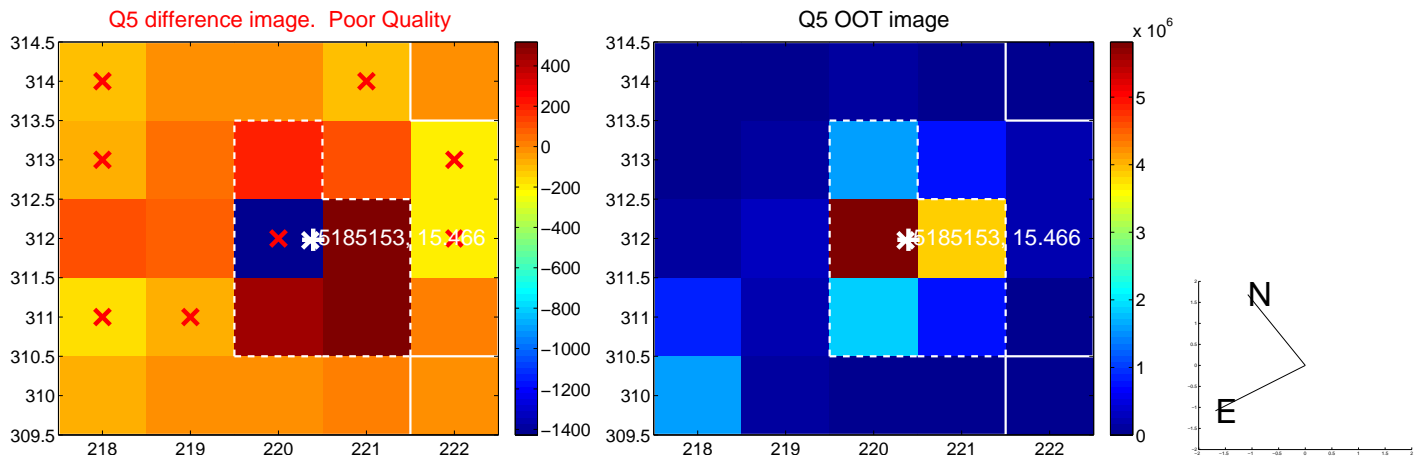


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

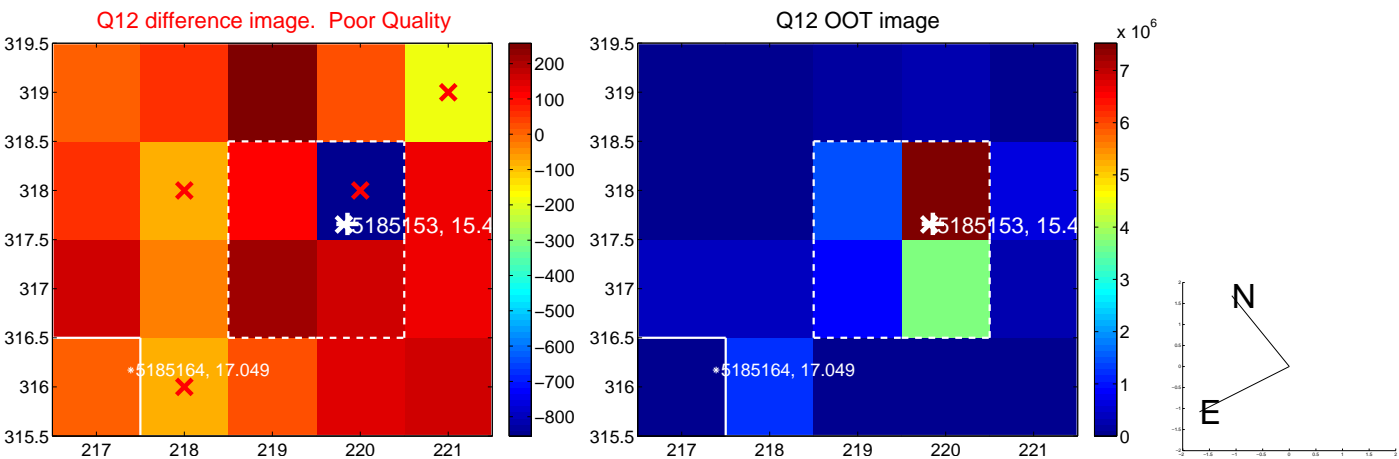
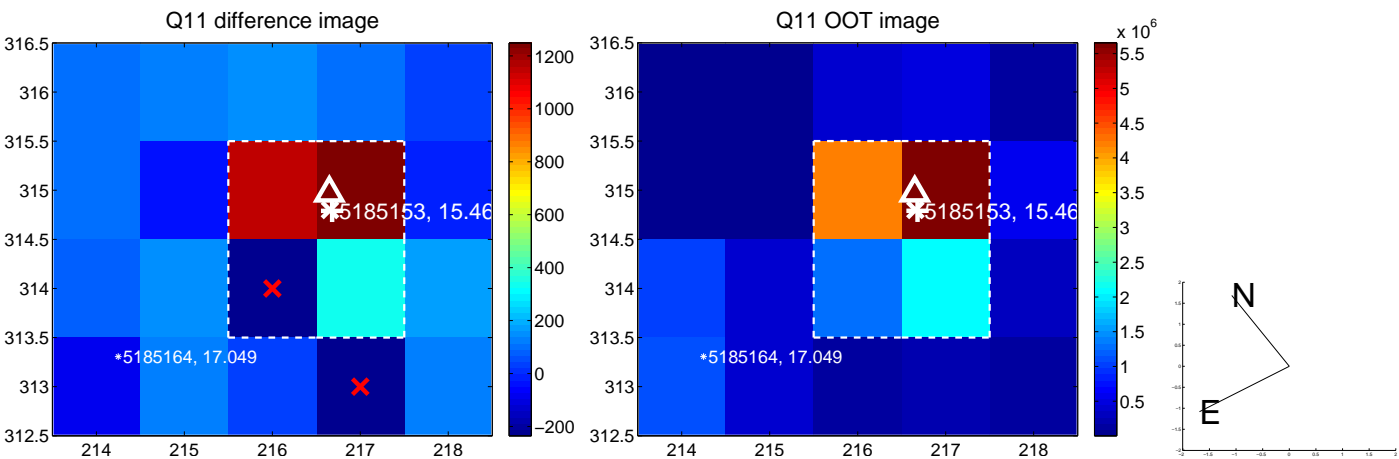
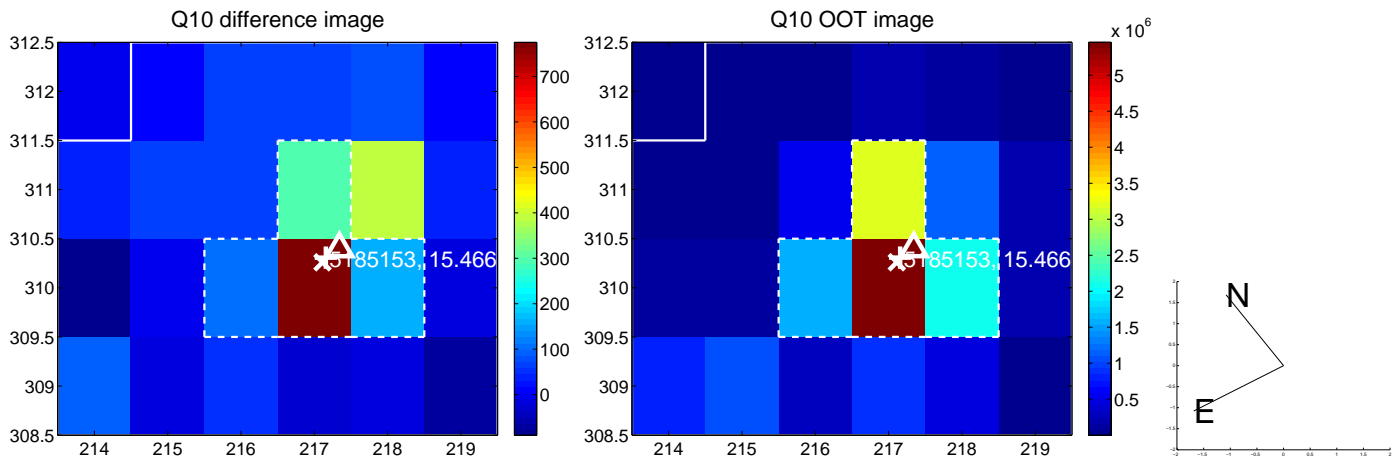
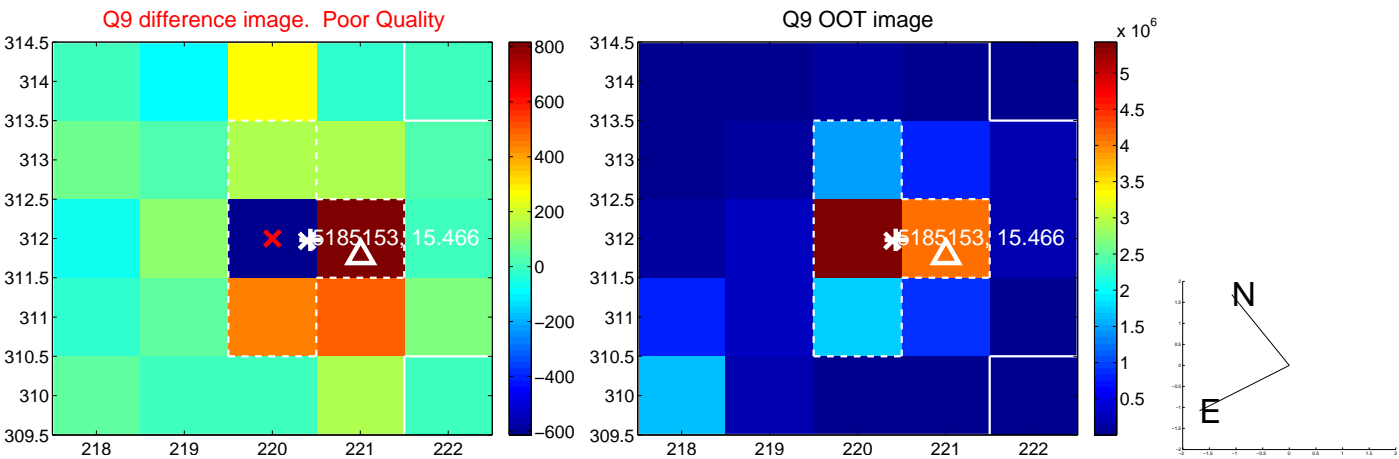


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

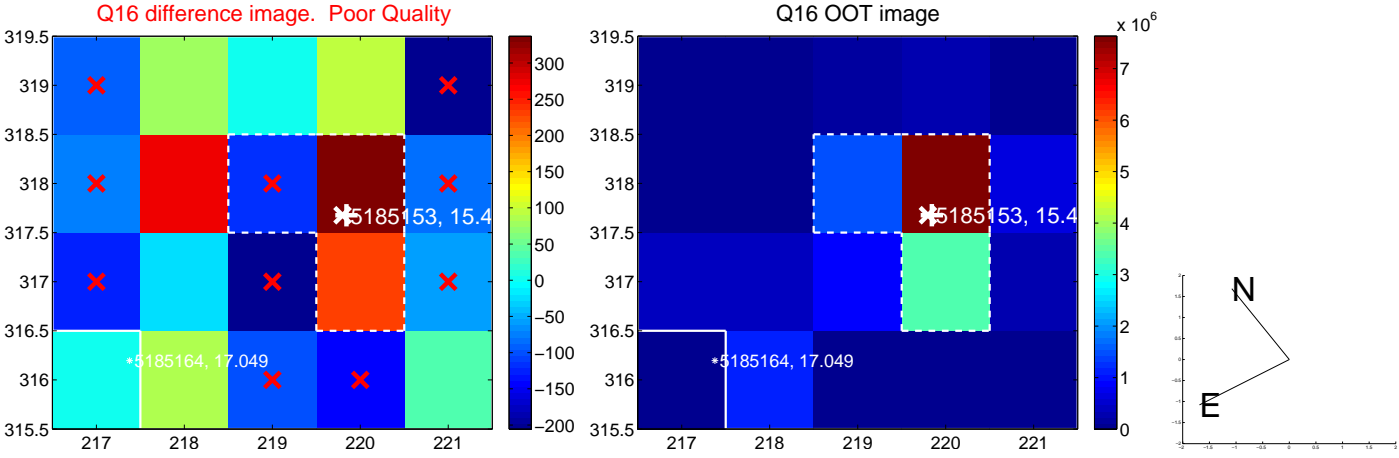
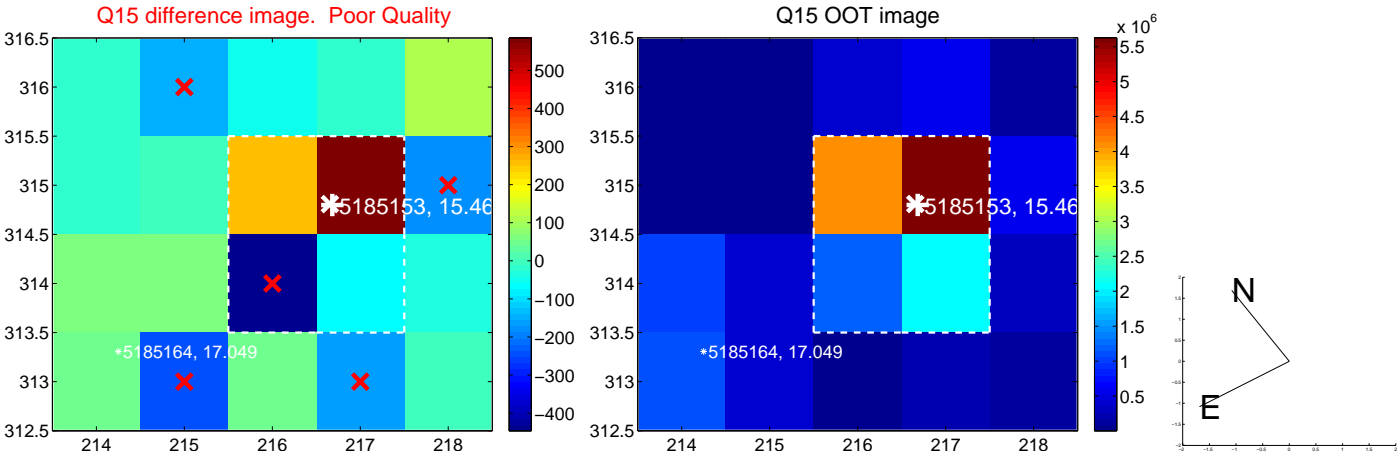
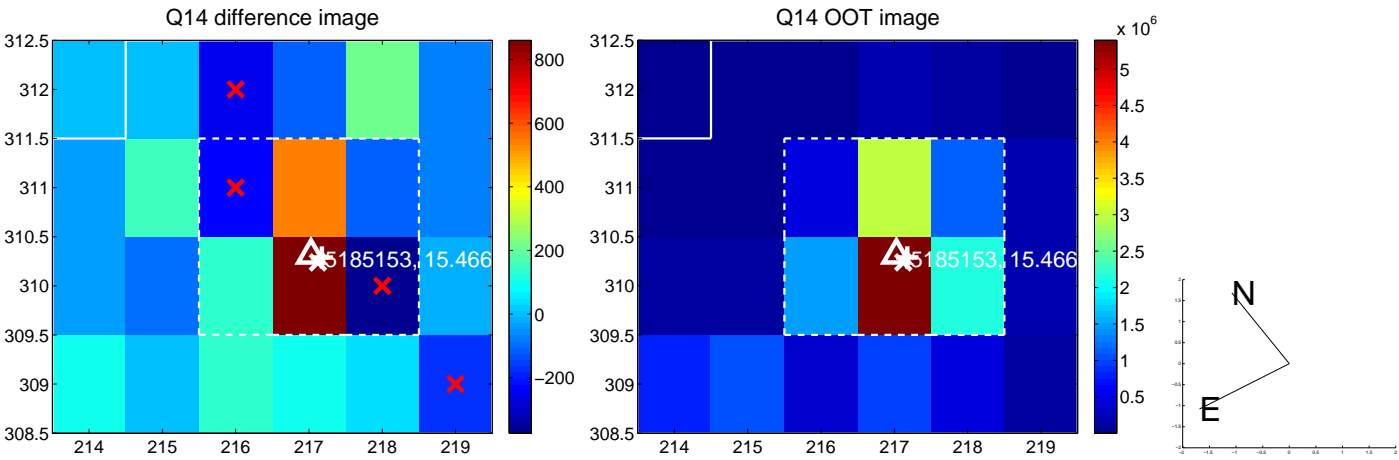
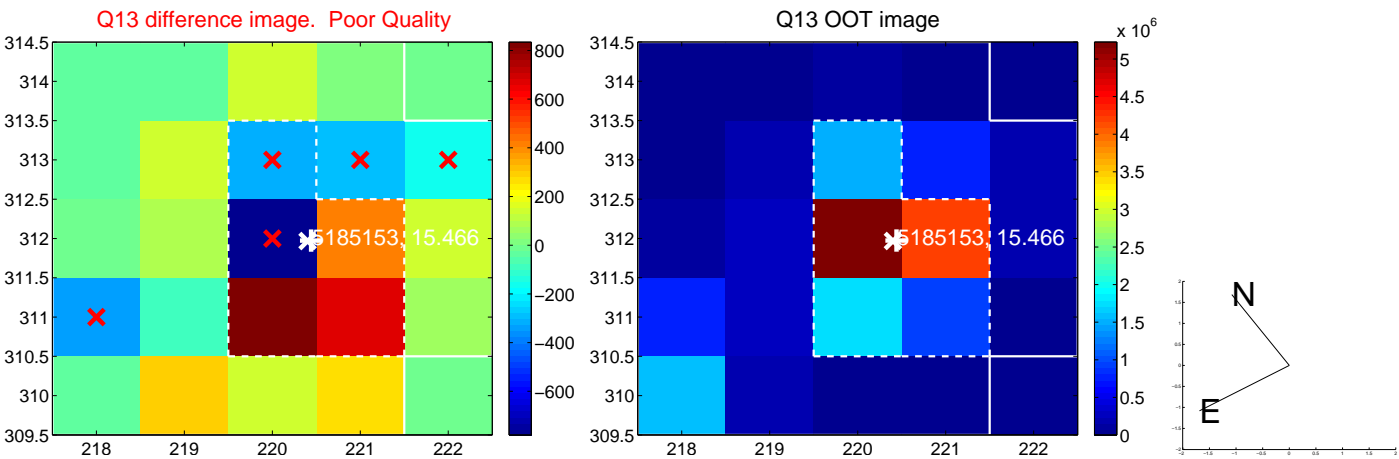




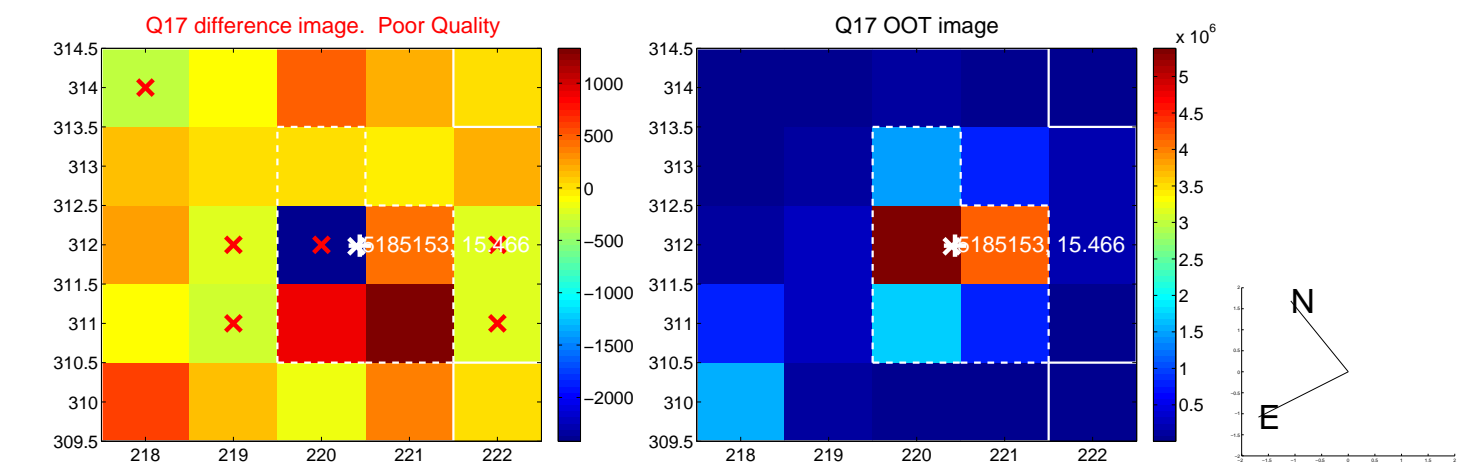
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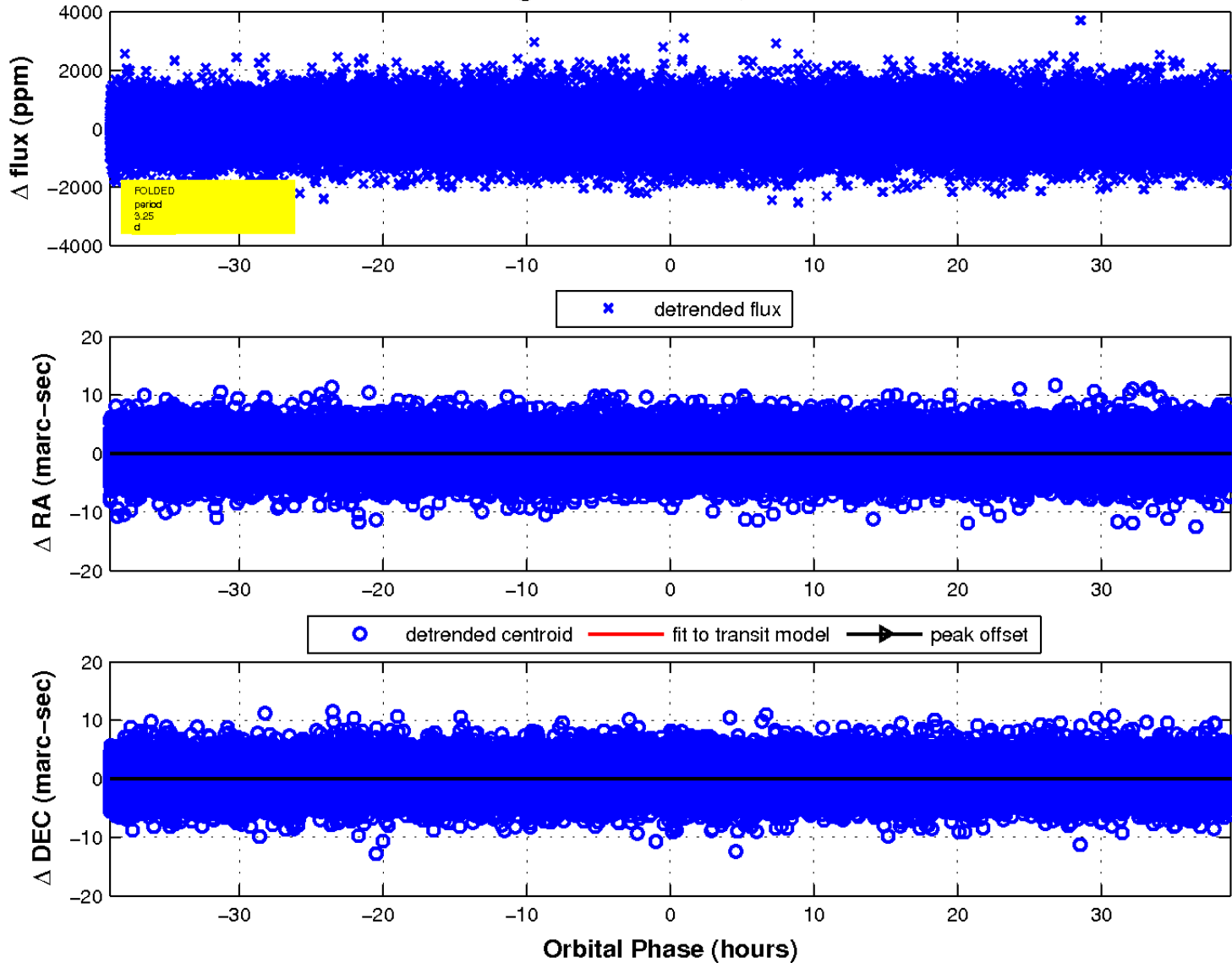
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white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

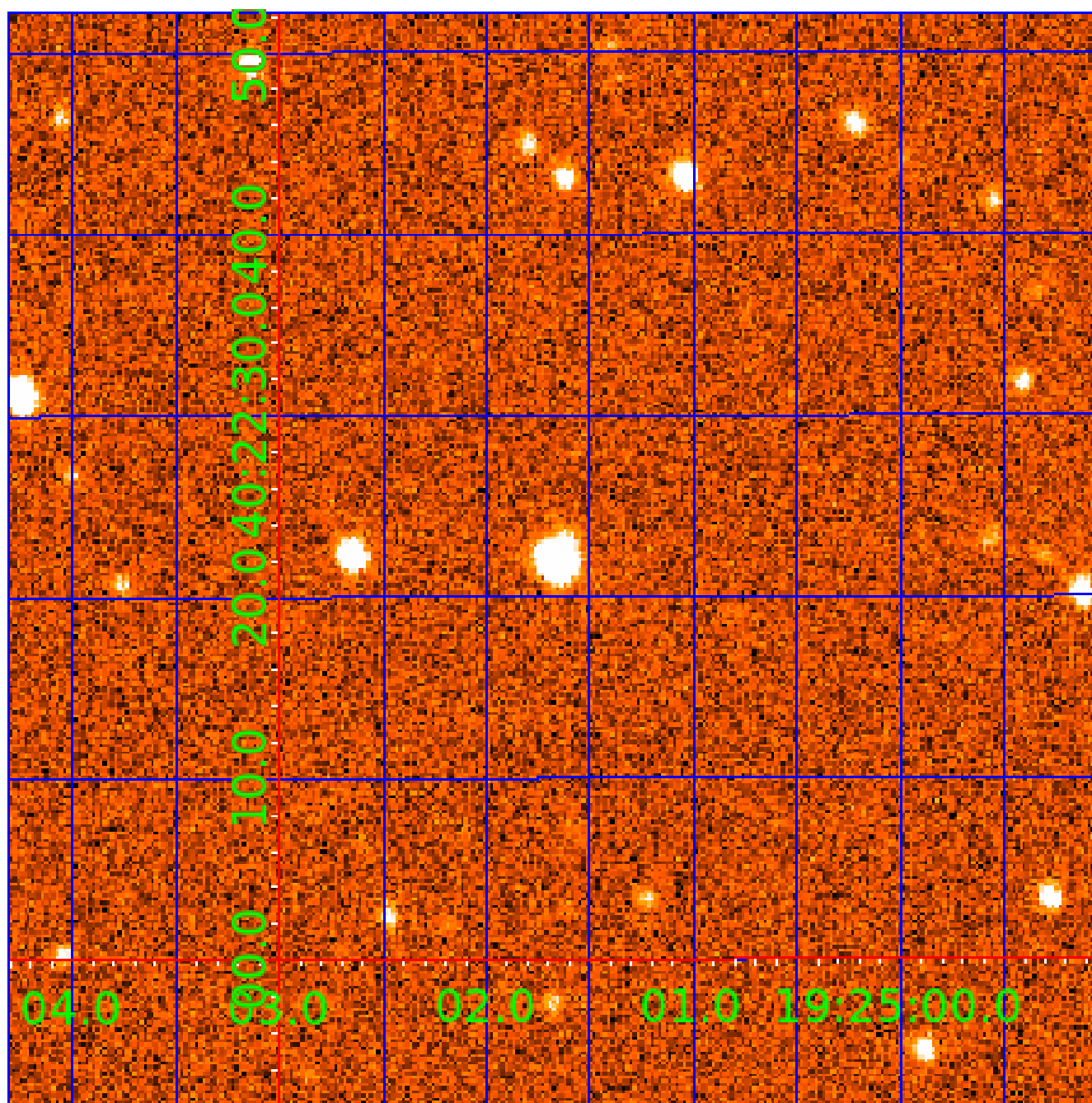


fluxWeightedCentroids, Planet 1 of 7



UKIRT Image

Declination



# KIC 005185153

## 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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005185153-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005185153-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005185153-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005185153-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

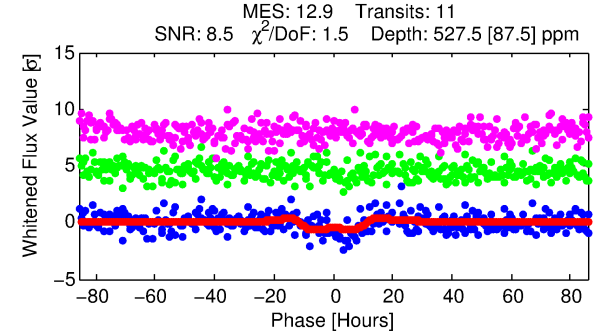
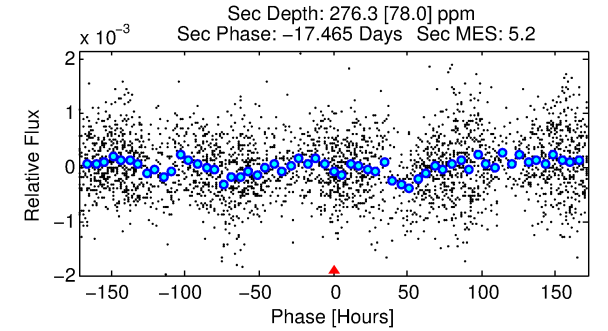
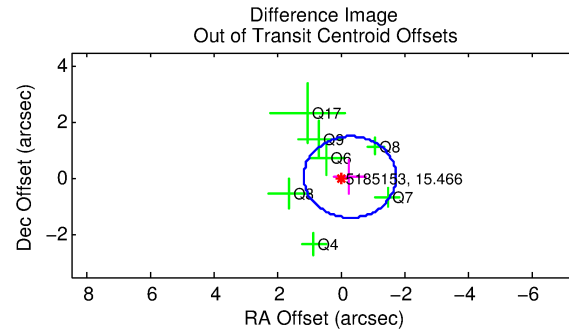
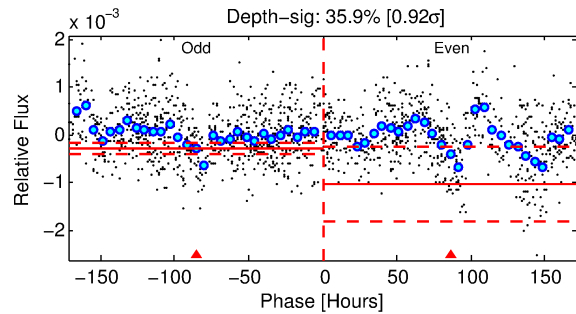
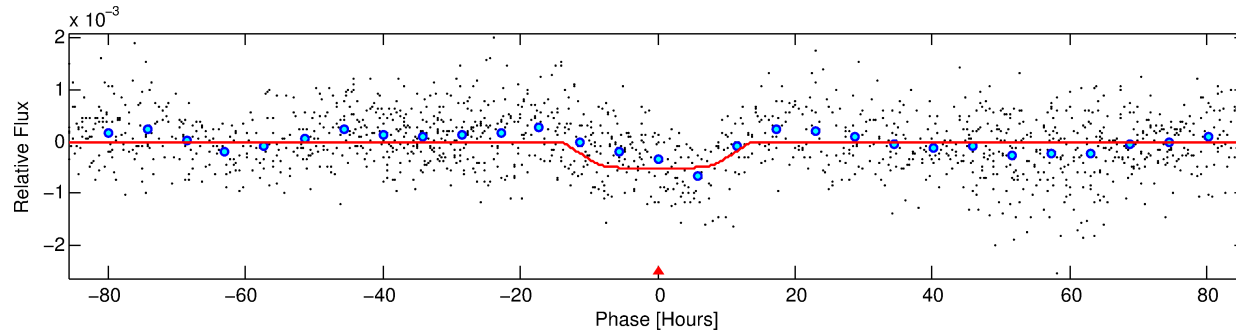
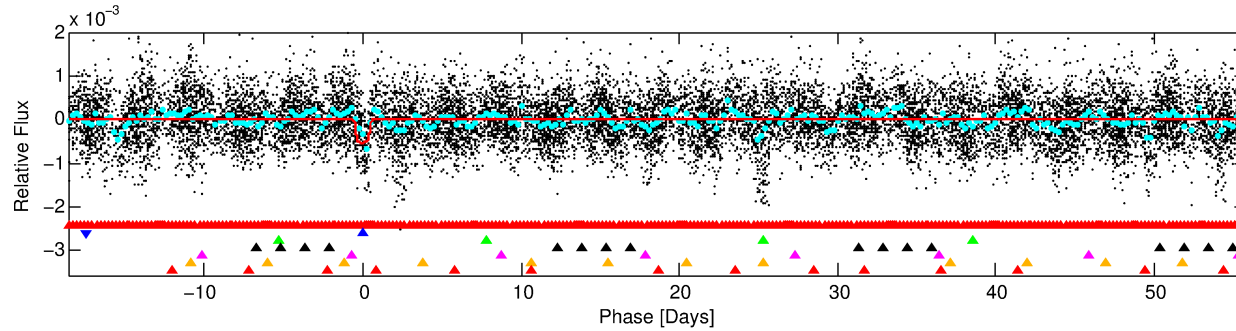
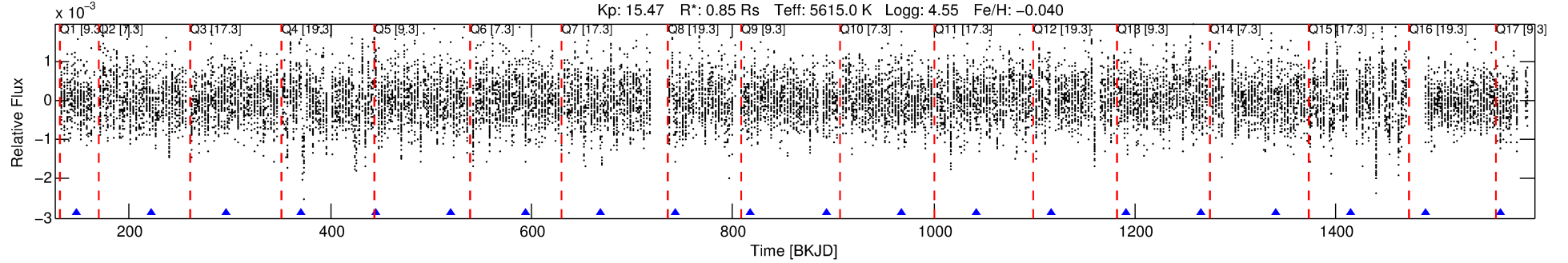
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005185153-02

No Significant Match Found

# DV One-Page Summary

KIC: 5185153 Candidate: 2 of 7 Period: 74.544 d



## DV Fit Results:

Period = 74.54361 [0.00649] d  
Epoch = 147.3505 [0.0710] BKJD  
Rp/R\* = 0.0270 [0.0029]  
a/R\* = 7.78 [1.88]  
b = 0.95 [0.03]  
Seff = 5.59 [2.00]  
Teq = 392 [35] K  
Rp = 2.51 [0.74] Re  
a = 0.3401 [0.0784] AU  
Ag = 2792.76 [1361.46] [2.05 $\sigma$ ]  
Teffp = 4407 [411] K [9.73 $\sigma$ ]

## DV Diagnostic Results:

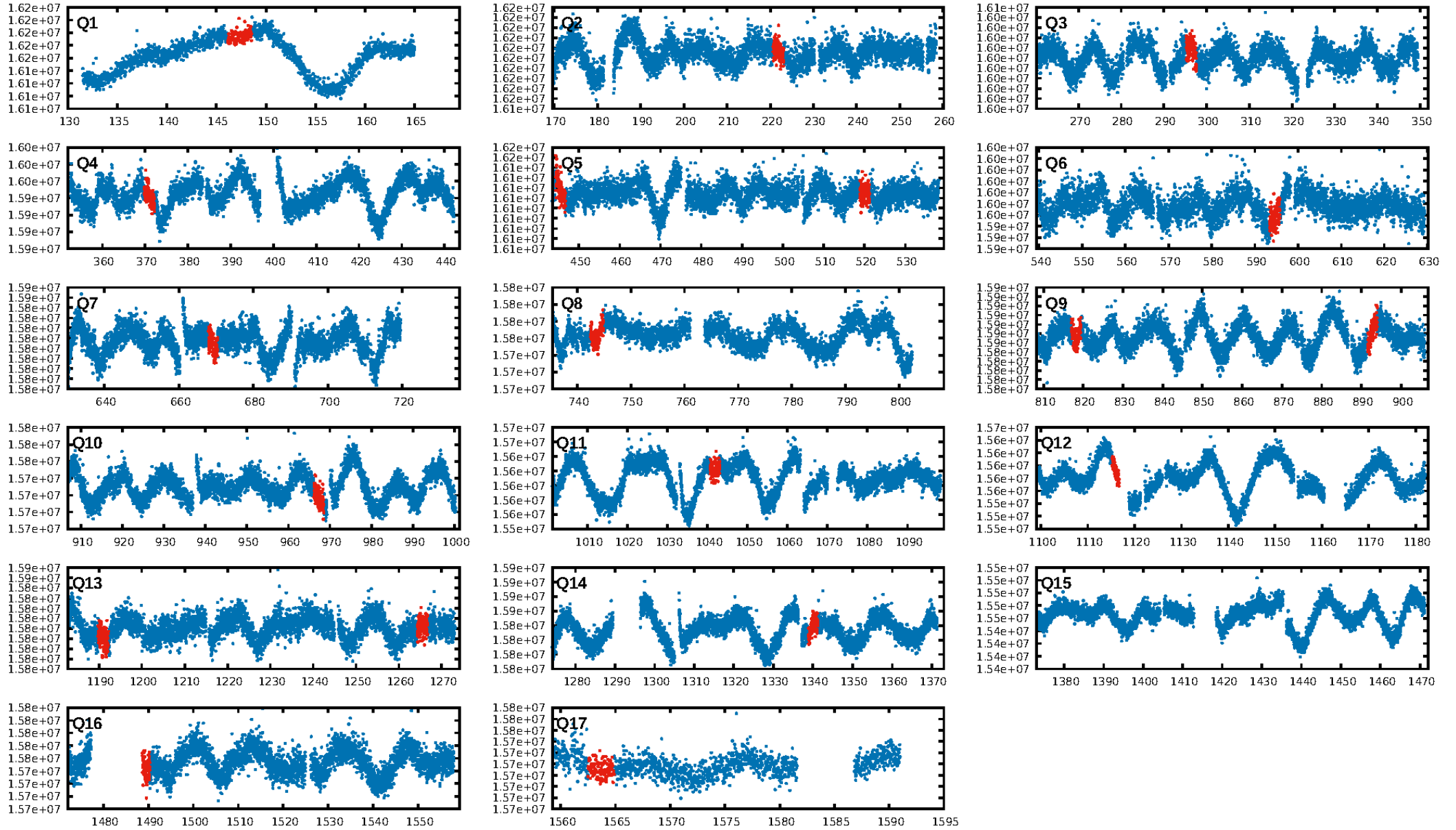
ShortPeriod-sig: 100.0% [49.72 $\sigma$ ]  
LongPeriod-sig: 100.0% [15.67 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.51e-18  
RollingBand-fgt: 1.00 [10/10]  
GhostDiagnostic-chr: 0.1416  
Centroid-sig: 31.0%  
Centroid-so: 0.247 arcsec [0.48 $\sigma$ ]  
OotOffset-rm: 0.271 arcsec [0.56 $\sigma$ ]  
KicOffset-rm: 0.392 arcsec [0.84 $\sigma$ ]  
OotOffset-st: 1/2/2/2 [7]  
KicOffset-st: 1/2/2/2 [7]  
DiffImageQuality-fgm: 0.57 [4/7]  
DiffImageOverlap-fno: 0.00 [0/10]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:02:44 Z

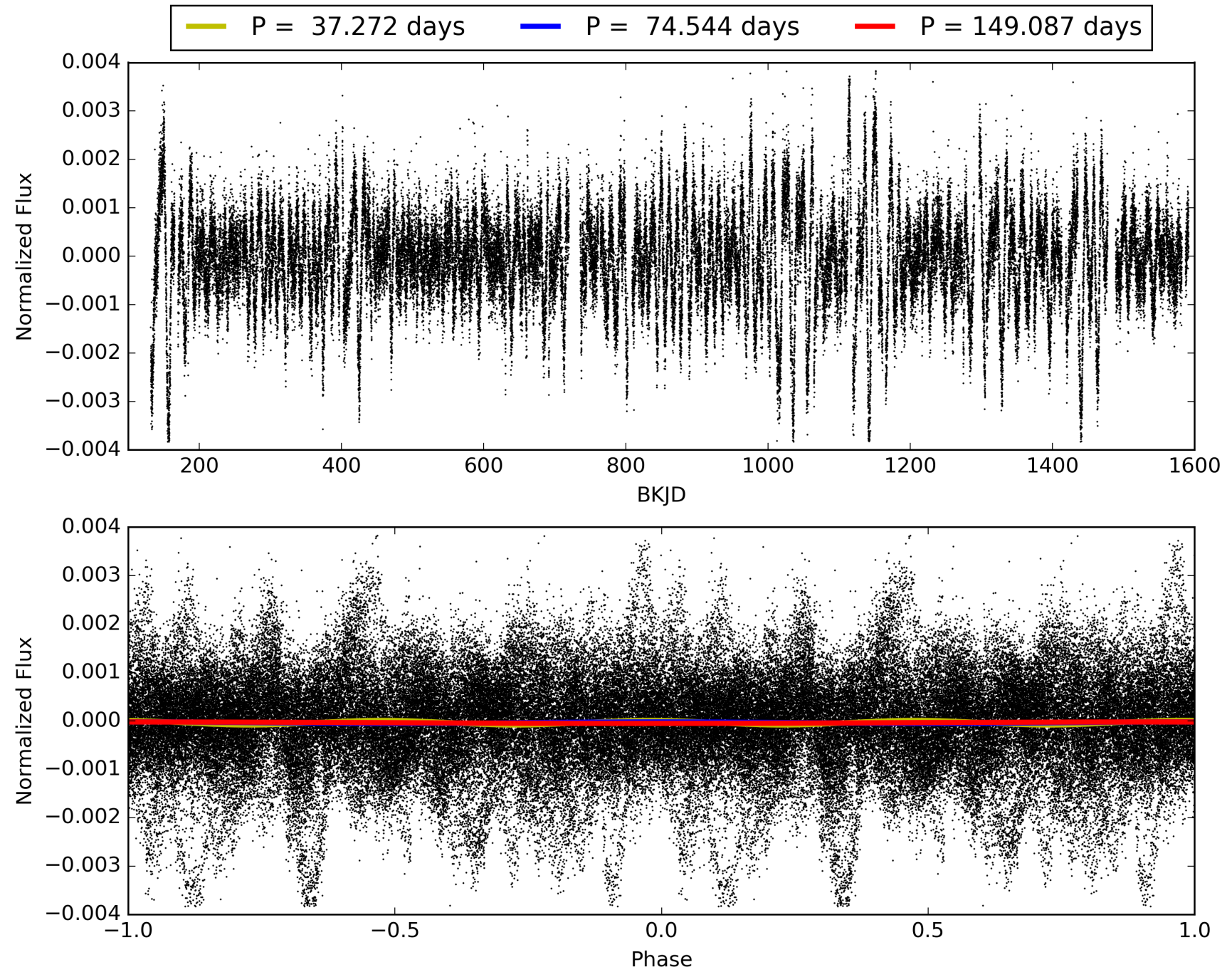
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005185153-02, PDC Light Curves

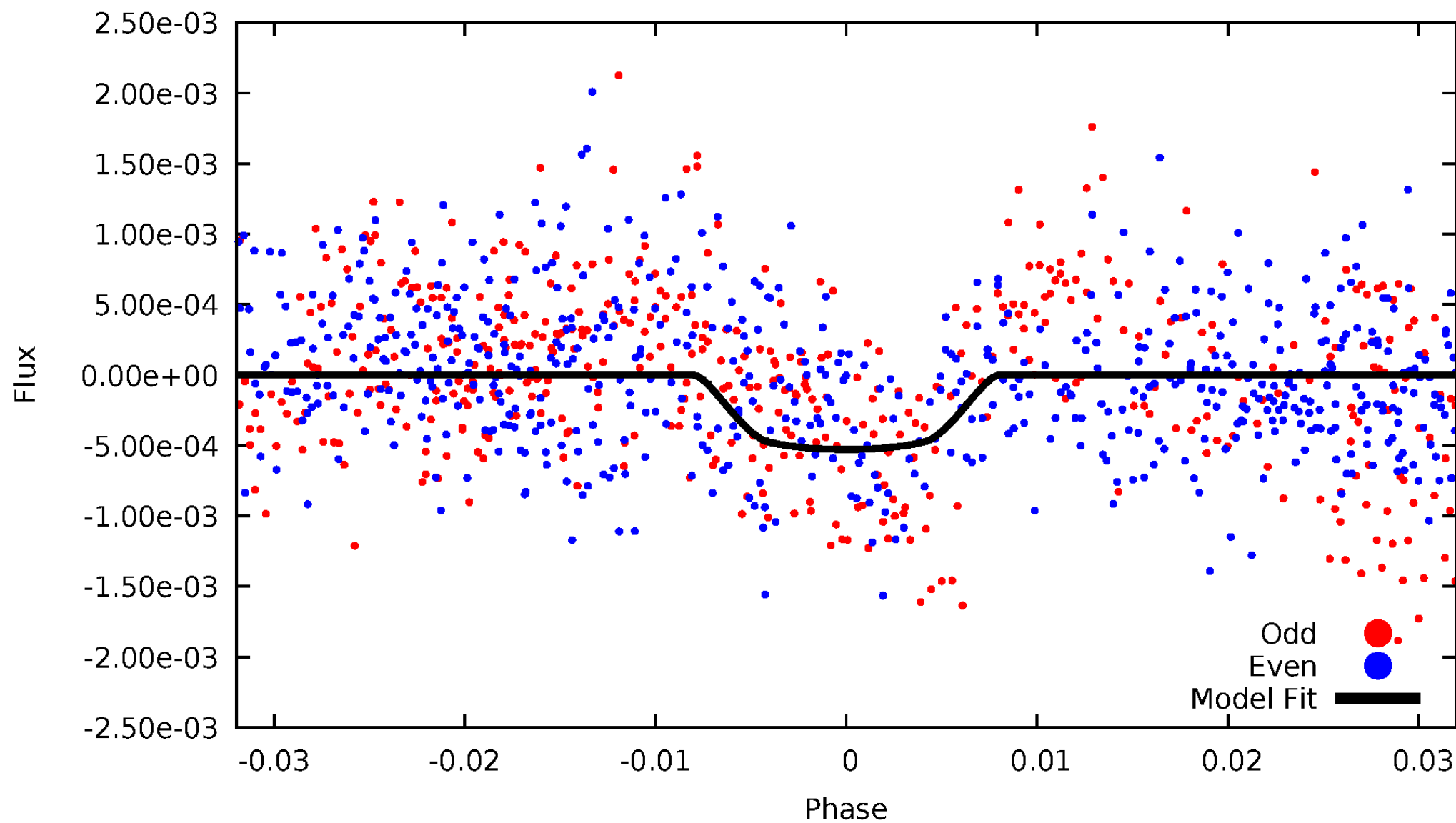


# TCE 005185153-02



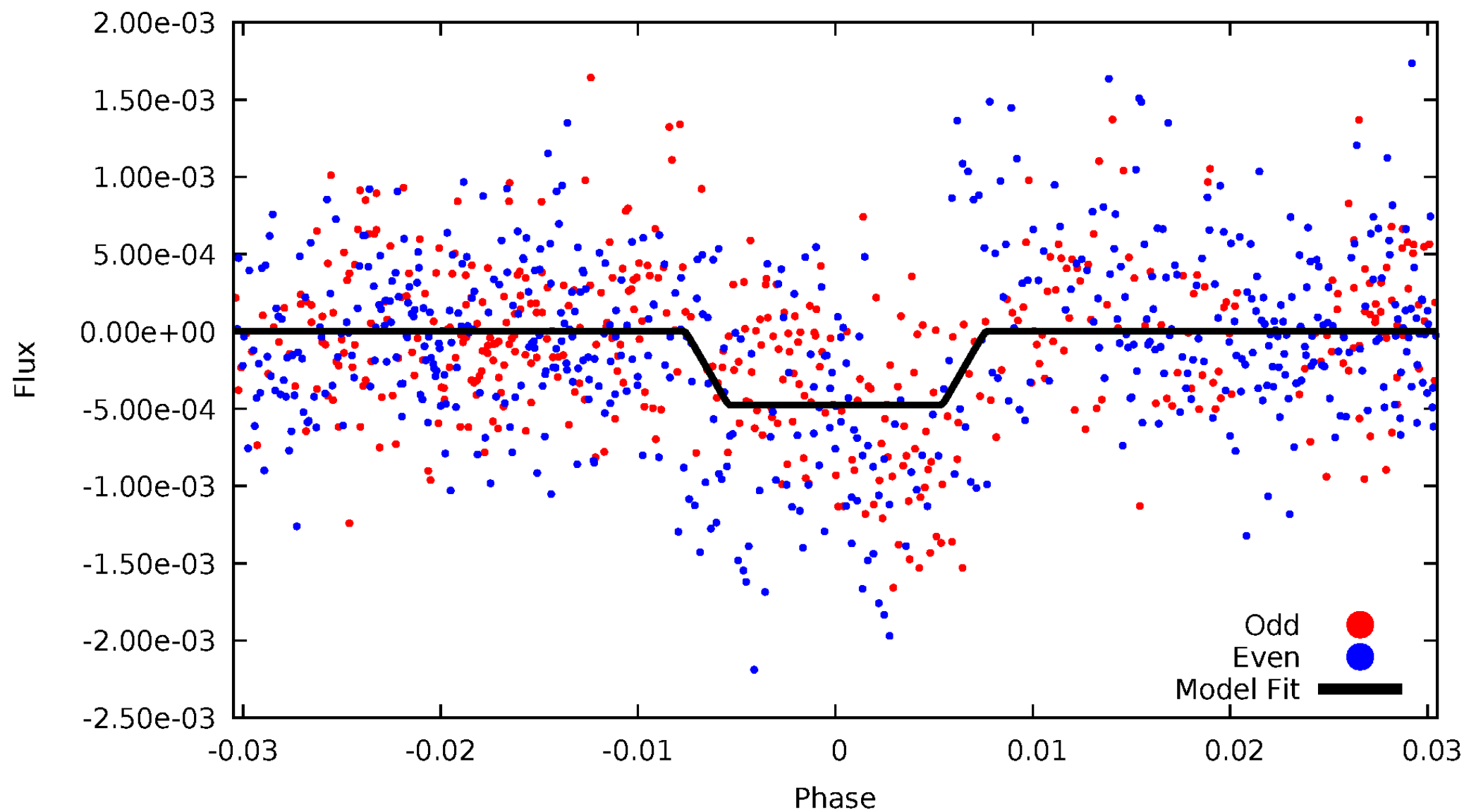
# DV Odd/Even

TCE 005185153-02



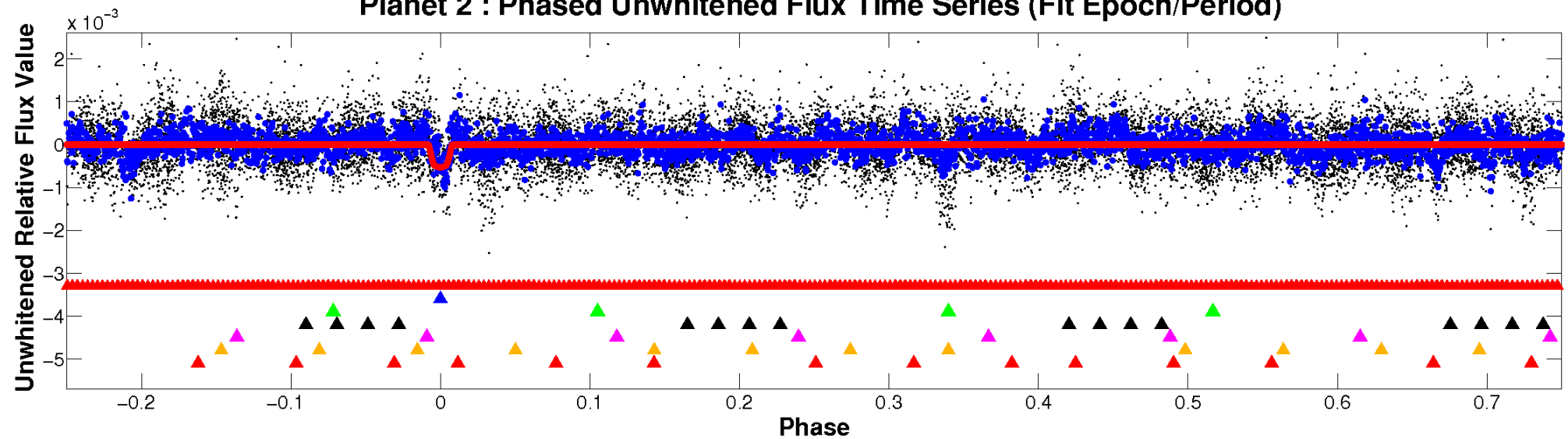
# ALT Odd/Even

TCE 005185153-02

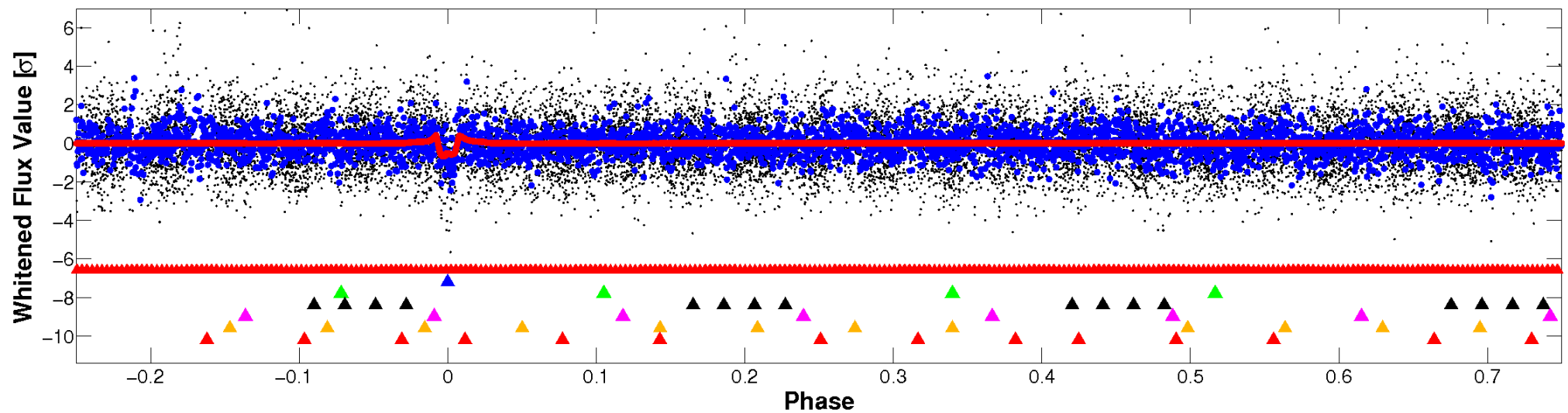


# Non-Whitened Vs. Whitened Light Curve

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



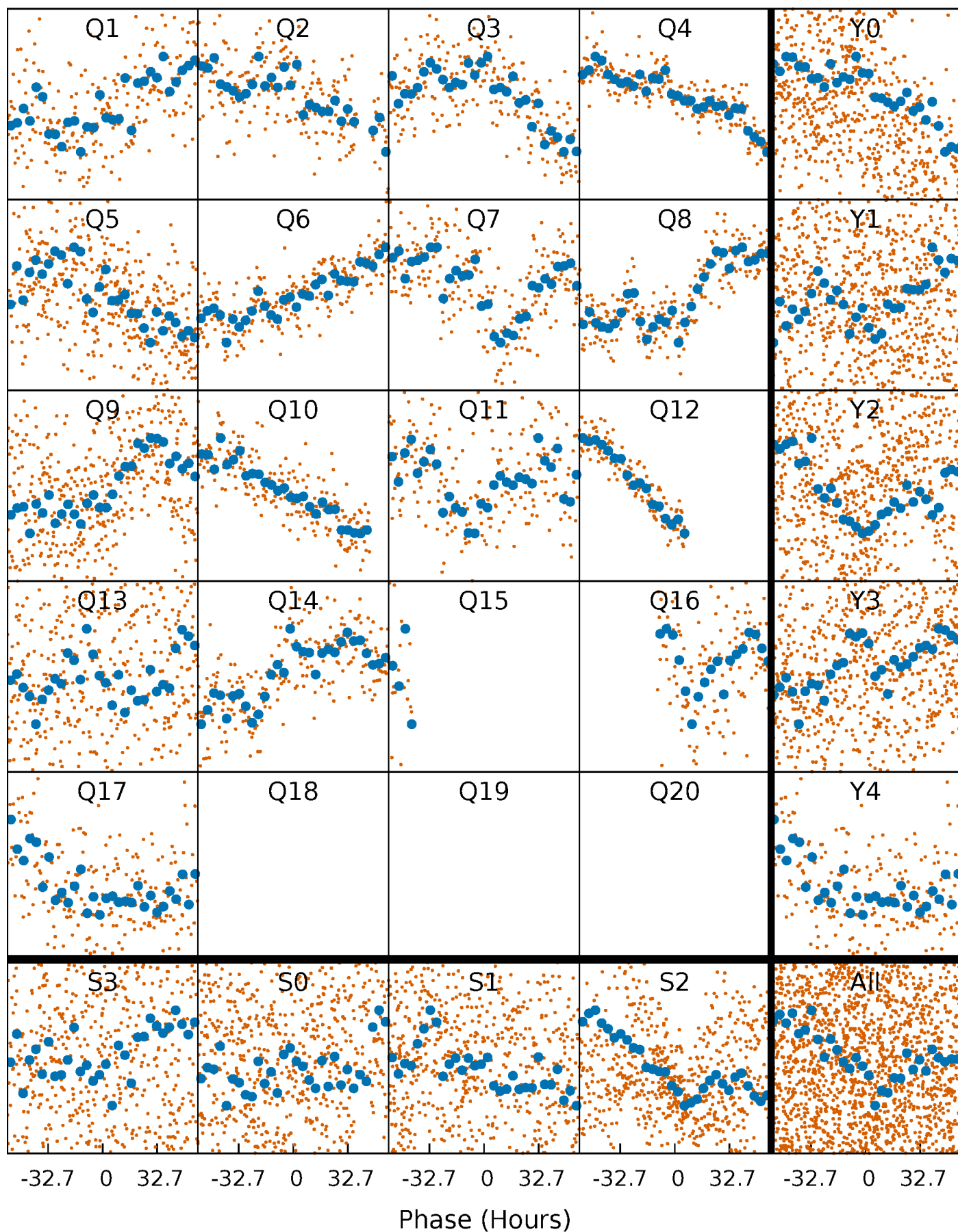
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

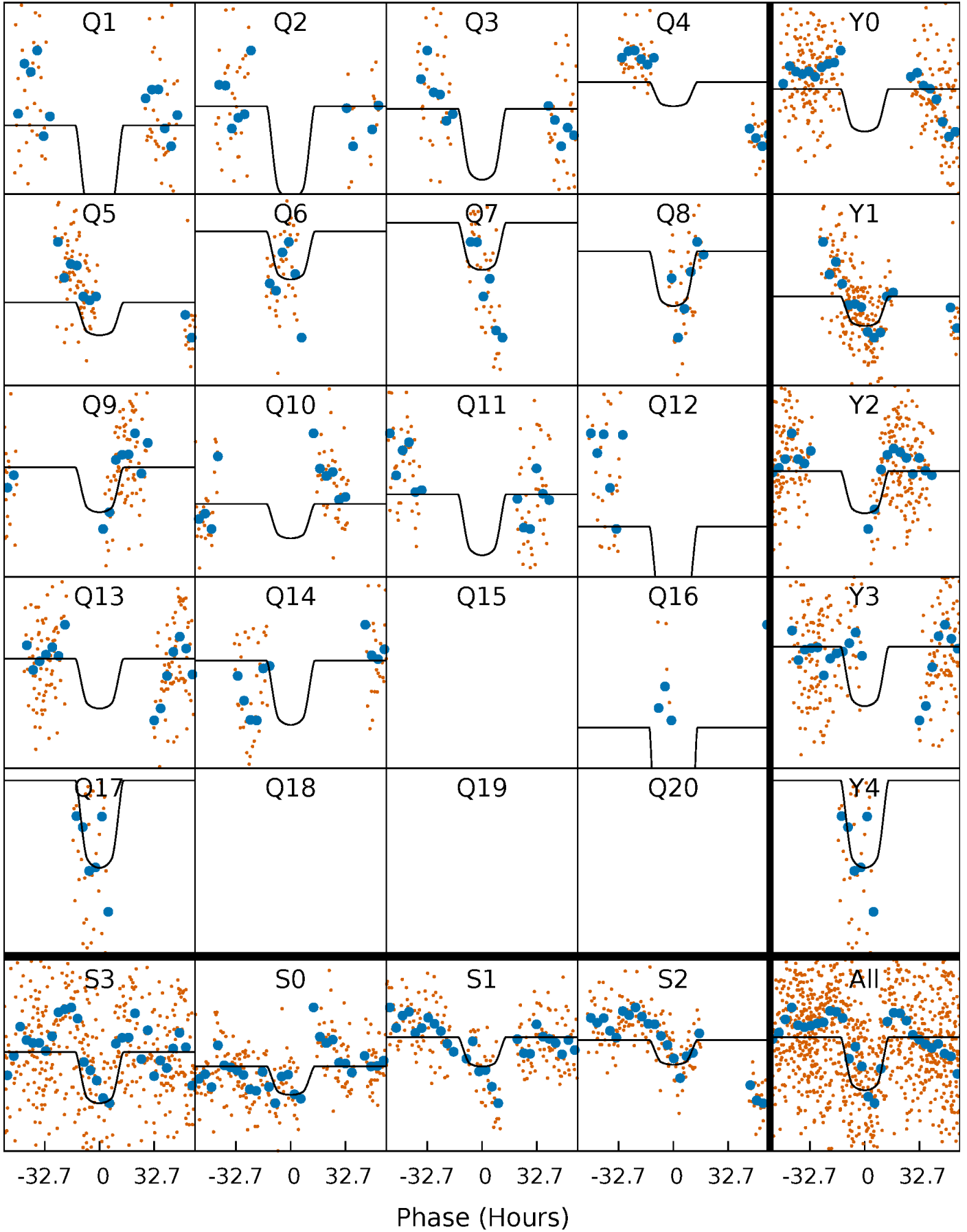
TCE 005185153-02 P= 74.543609 Days  $T_0=147.350518$  (BKJD)





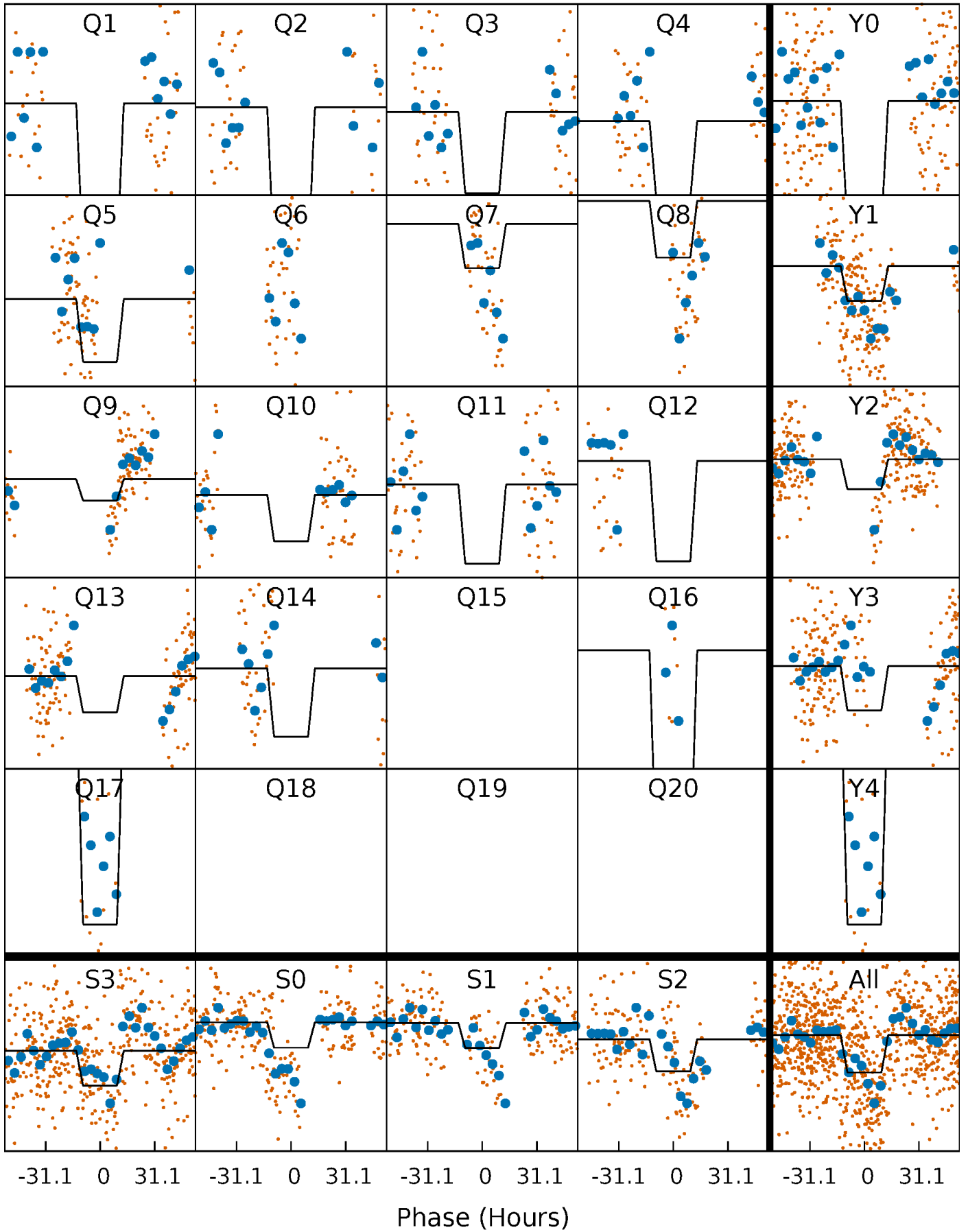
# DV Quarter-Phased Transit Curves

TCE 005185153-02   P= 74.543609 Days    $T_0=147.350518$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

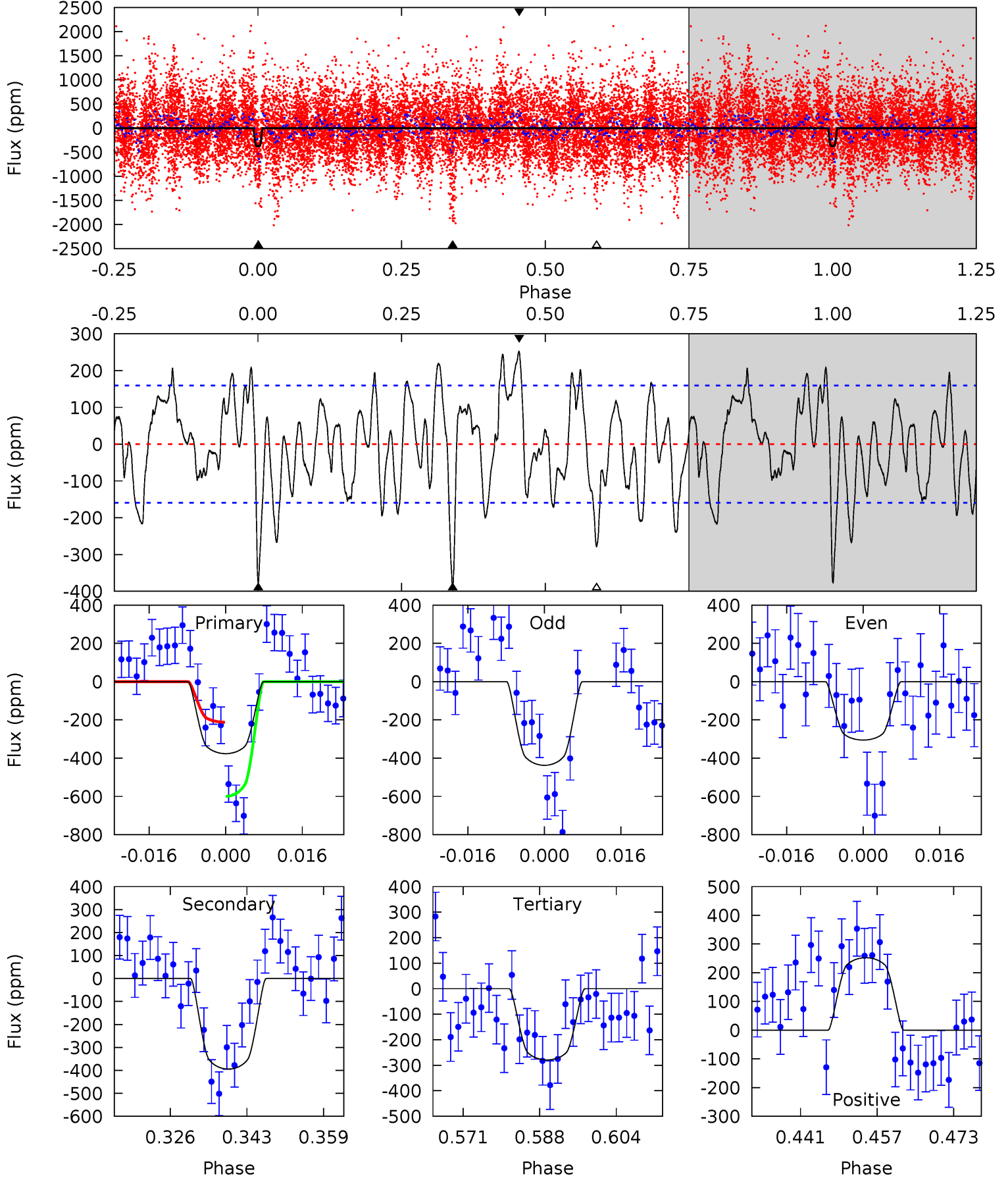
TCE 005185153-02 P= 74.528661 Days  $T_0=147.428965$  (BKJD)



# DV Model-Shift Uniqueness Test

005185153-02, P = 74.543609 Days, E = 72.806909 Days

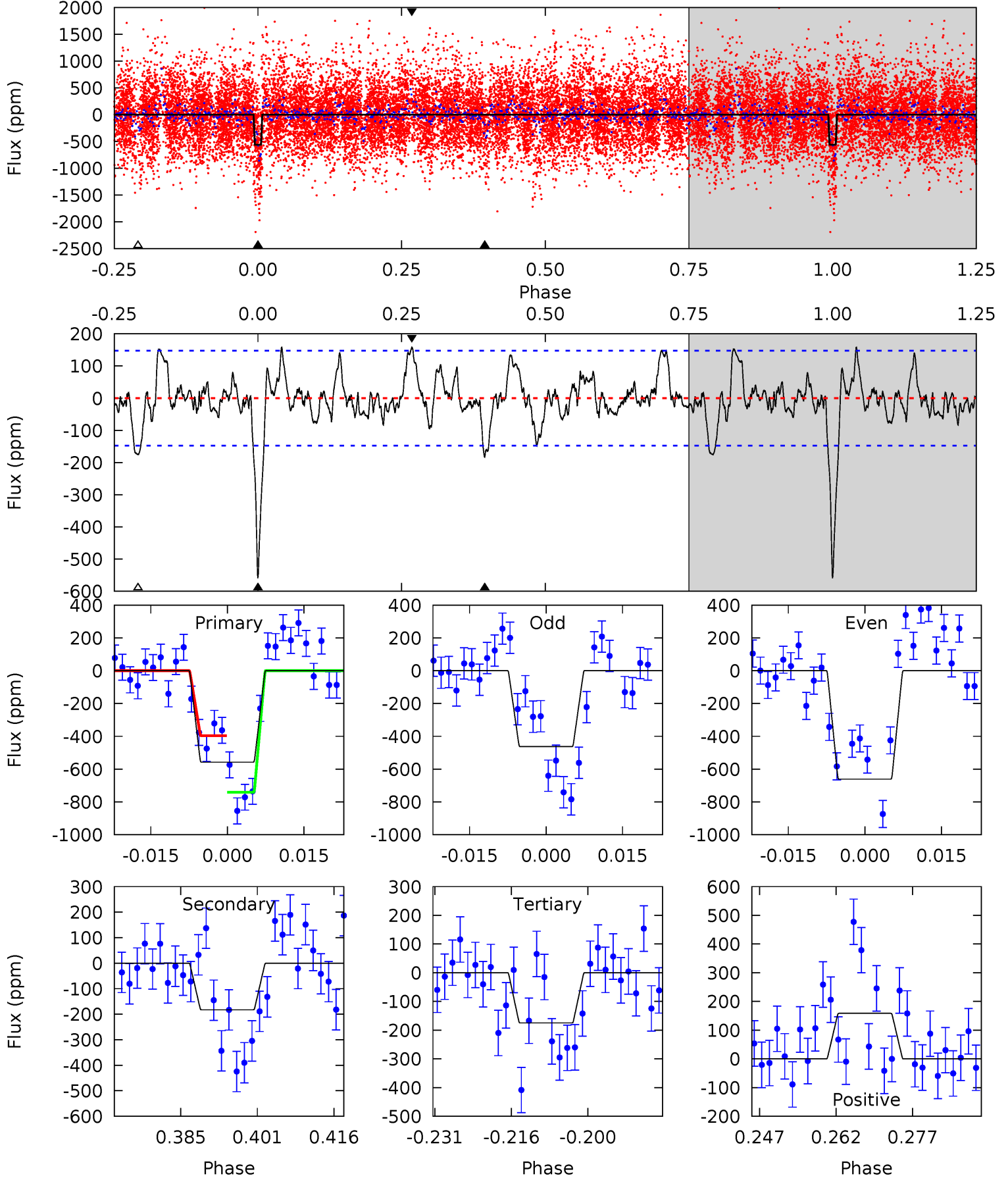
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	12.2	8.64	7.81	4.93	2.40	3.49	3.01	3.84	3.56	4.39	2.05	3.18	0.39	5.88



# Alt Model-Shift Uniqueness Test

005185153-02, P = 74.528661 Days, E = 72.900304 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
18.7	6.12	5.86	5.31	4.94	2.42	1.68	12.8	13.4	0.26	0.80	3.33	0.51	0.22	5.80





### Stellar Parameters For KIC 005185153

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5615^{+169}_{-169}$	$4.552^{+0.035}_{-0.184}$	$-0.040^{+0.300}_{-0.300}$	$0.852^{+0.233}_{-0.078}$	$0.942^{+0.094}_{-0.104}$	$2.149^{+0.380}_{-1.022}$
	+3%/-3%	+1%/-4%	+750%/-750%	+27%/-9%	+10%/-11%	+18%/-48%
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 005185153-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-394 \pm 32$	$2.59^{+0.43}_{-0.32}$	$562^{+33}_{-26}$	$4925^{+271}_{-263}$	$3622^{+1147}_{-883}$
Alt.	$-183 \pm 30$	$2.10^{+0.36}_{-0.32}$	$562^{+37}_{-25}$	$4594^{+333}_{-282}$	$2589^{+1060}_{-788}$

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

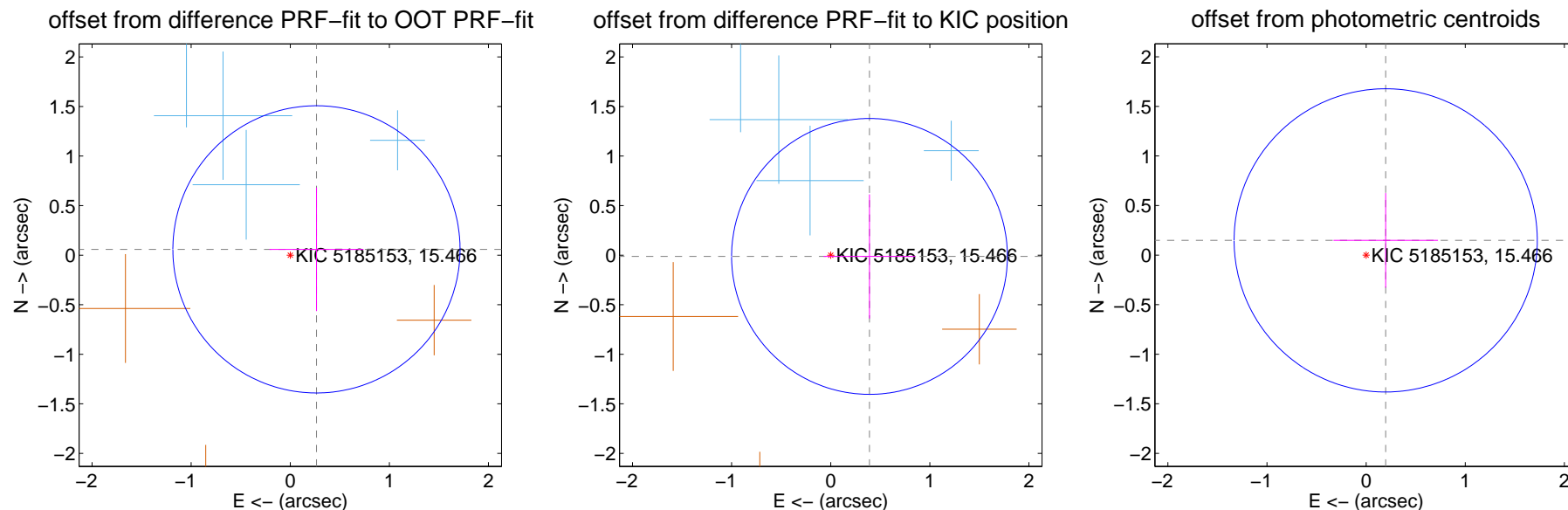
## DV Centroid Data

Supplemental centroid analysis for 005185153-02. Kepler magnitude: 15.47. Transit SNR 8.53

There are 4 quarters with good PRF difference image offsets

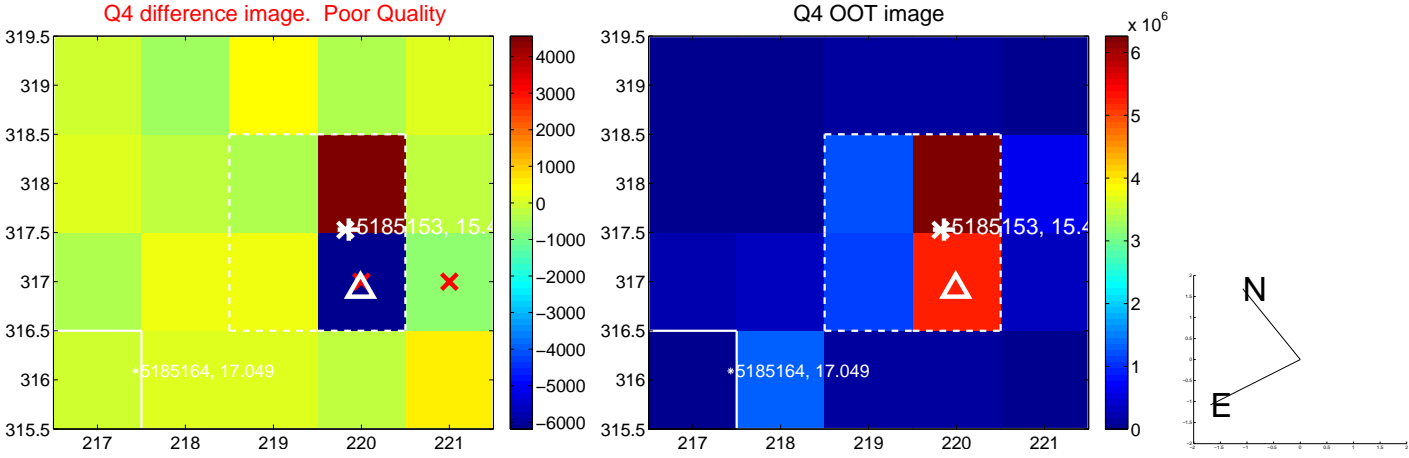
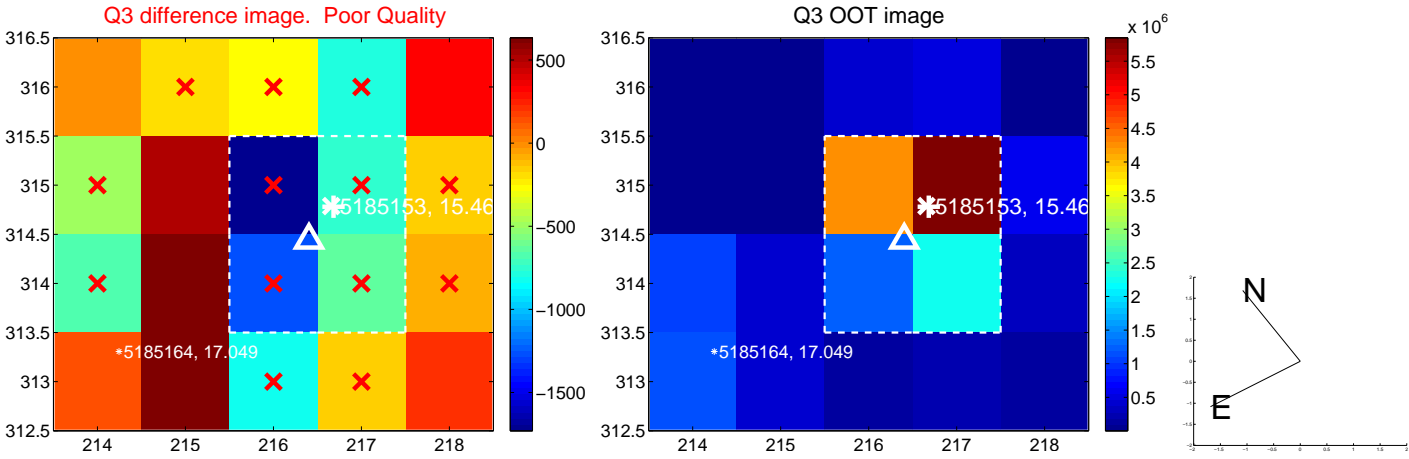
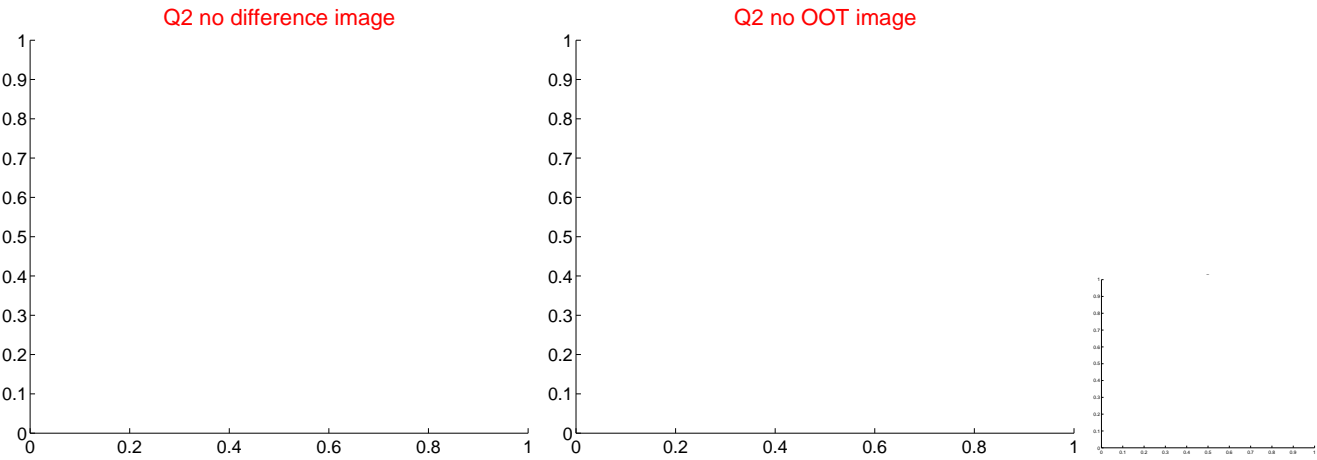
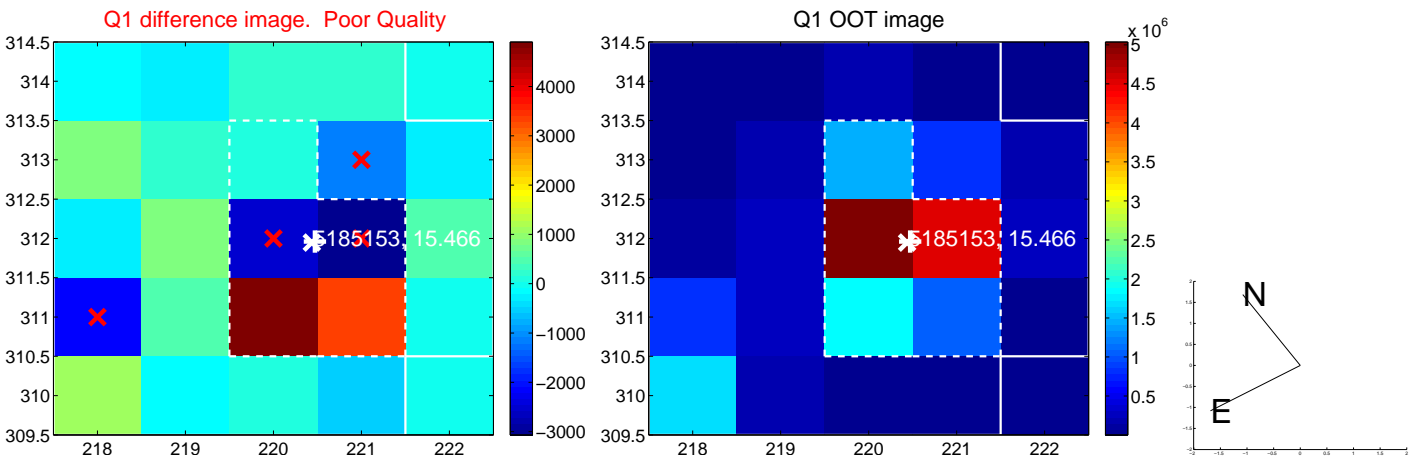
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.271 \pm 0.483$	0.56	$-0.264 \pm 0.475$	$0.059 \pm 0.623$
PRF-fit source offset from KIC position	$0.392 \pm 0.464$	0.84	$-0.391 \pm 0.464$	$-0.013 \pm 0.626$
photometric centroid source offset	$0.25 \pm 0.51$	0.48	$-0.20 \pm 0.53$	$0.15 \pm 0.48$

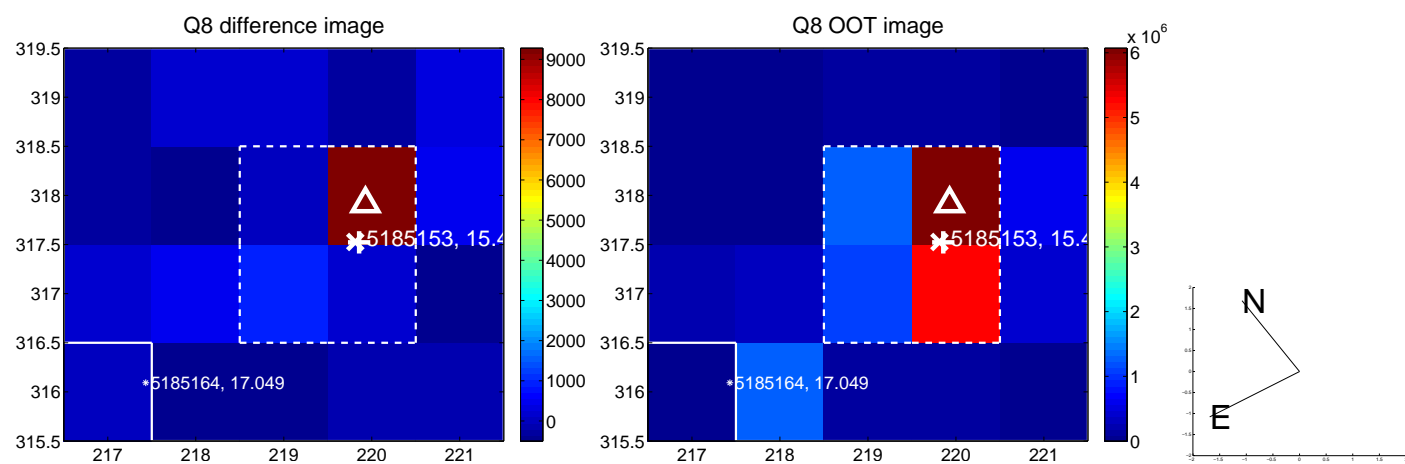
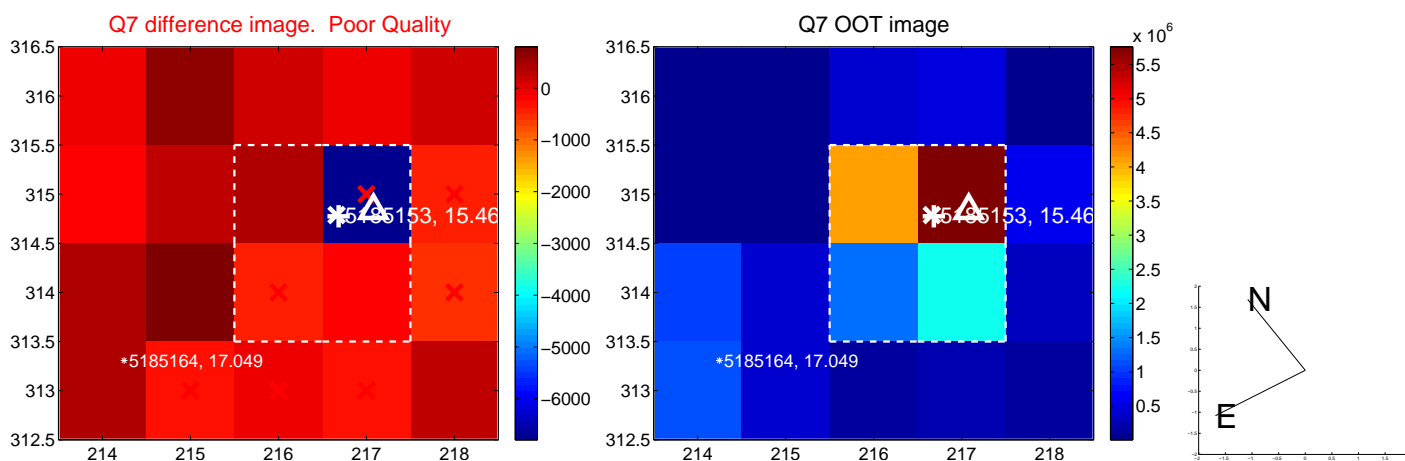
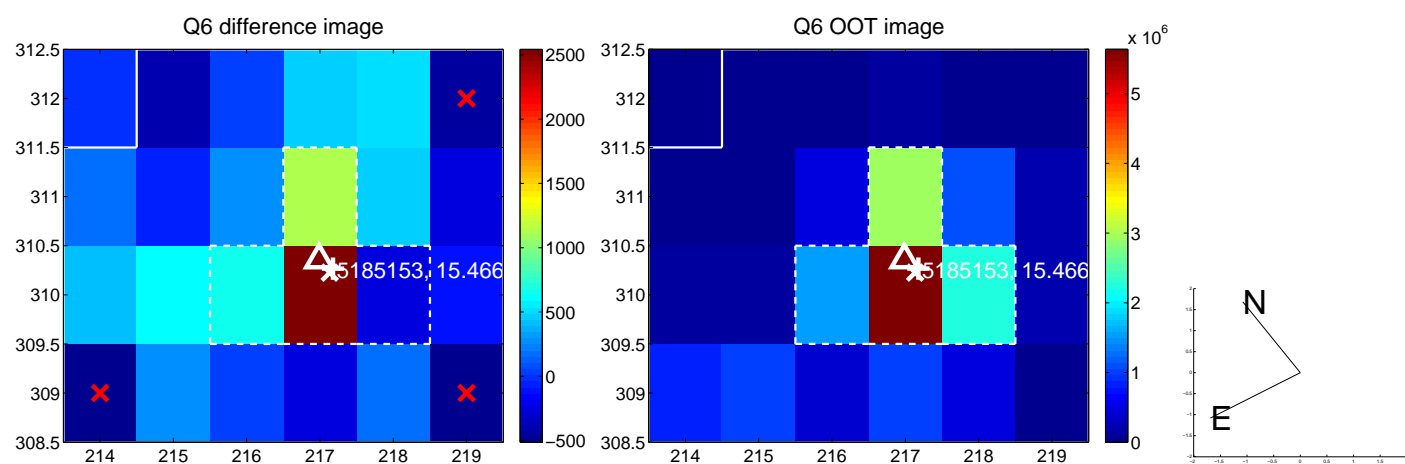
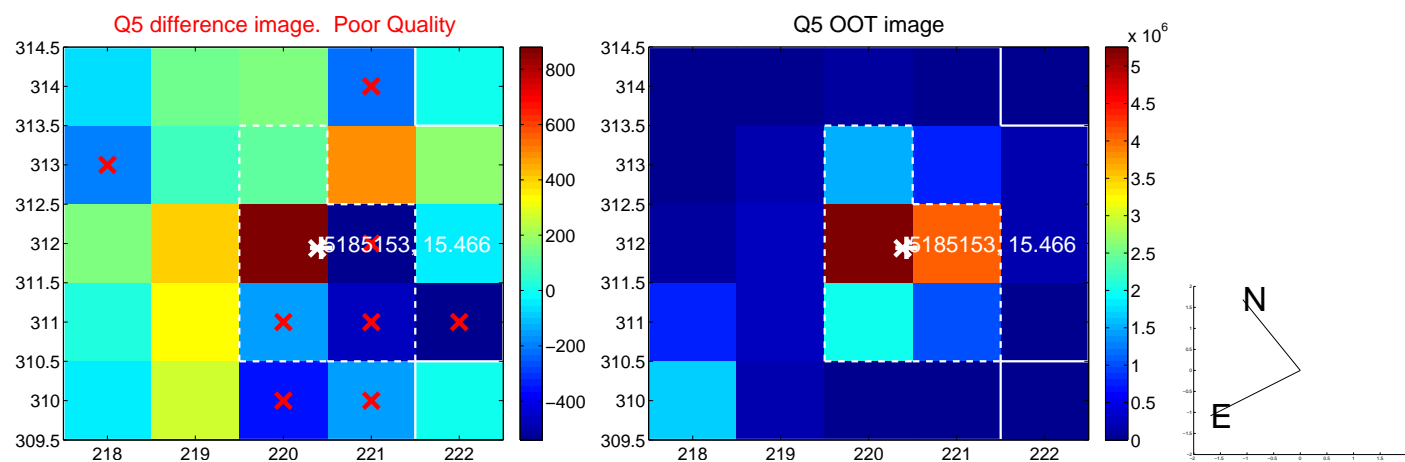


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

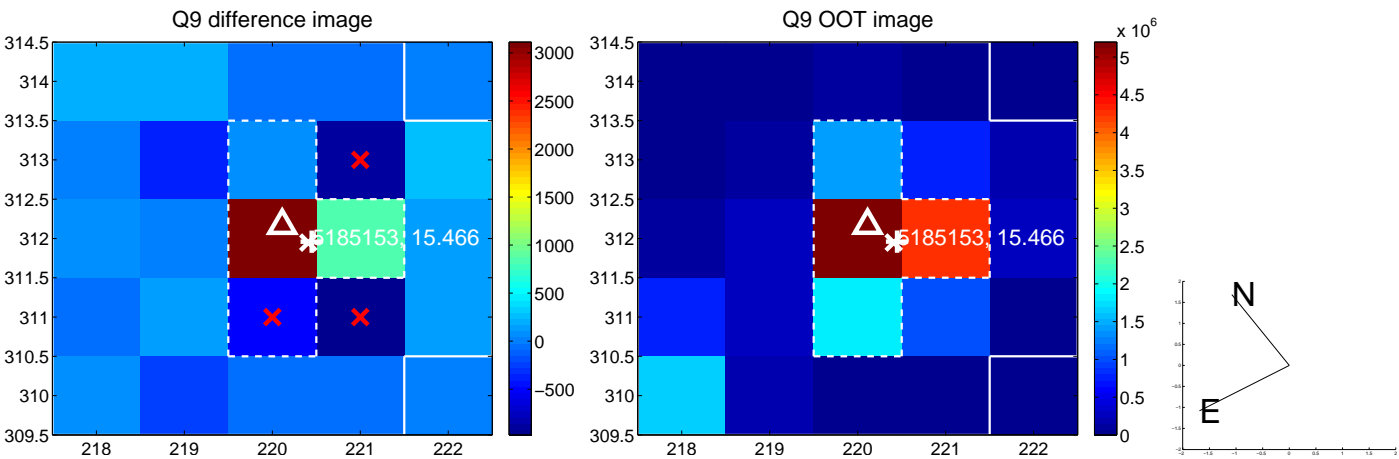


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

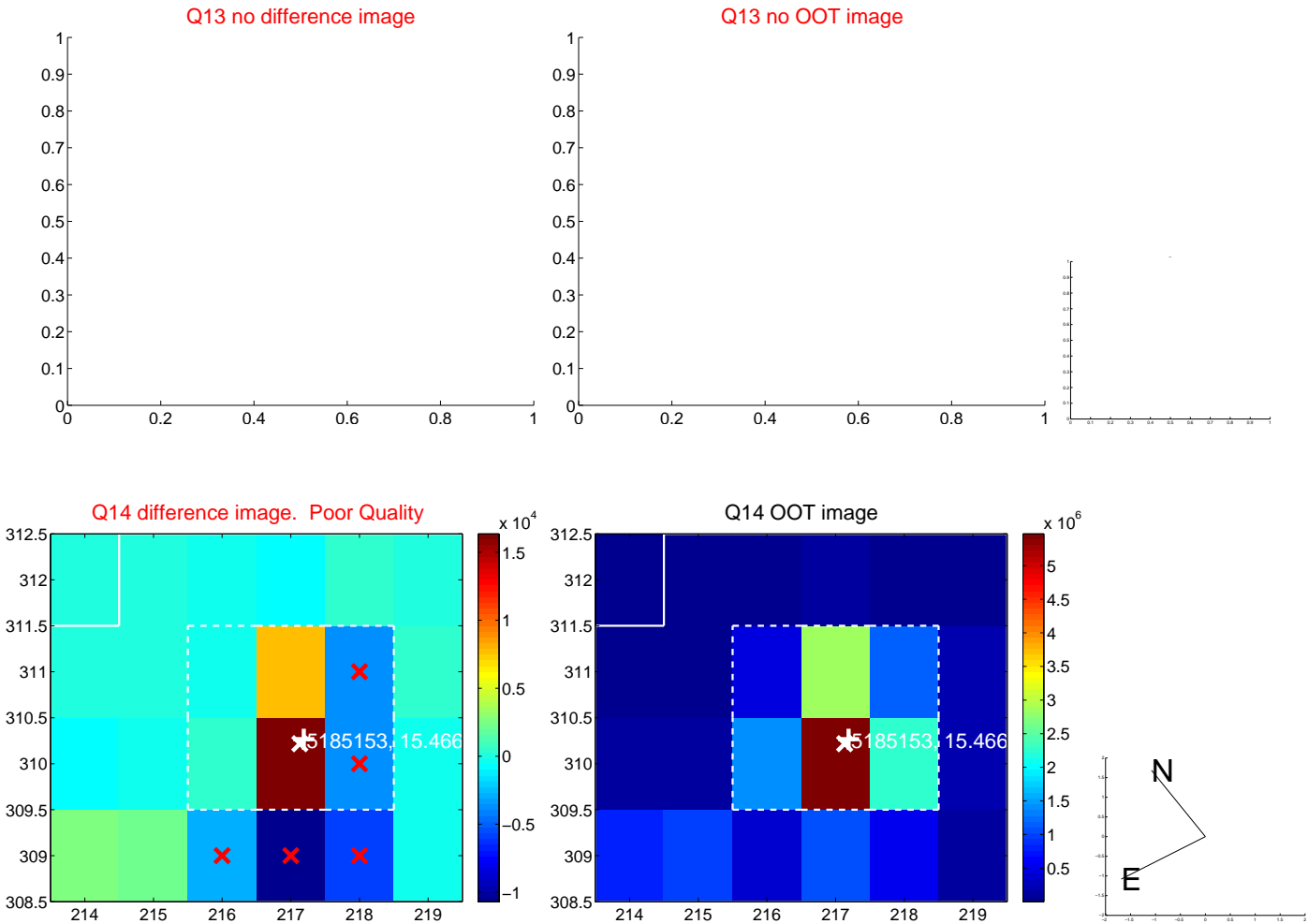




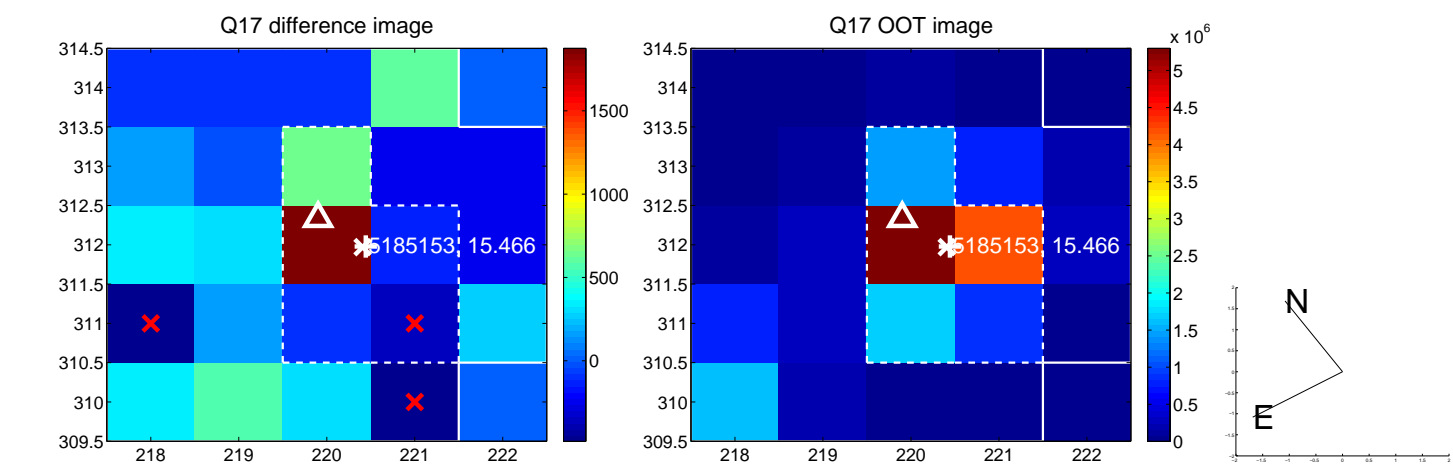
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



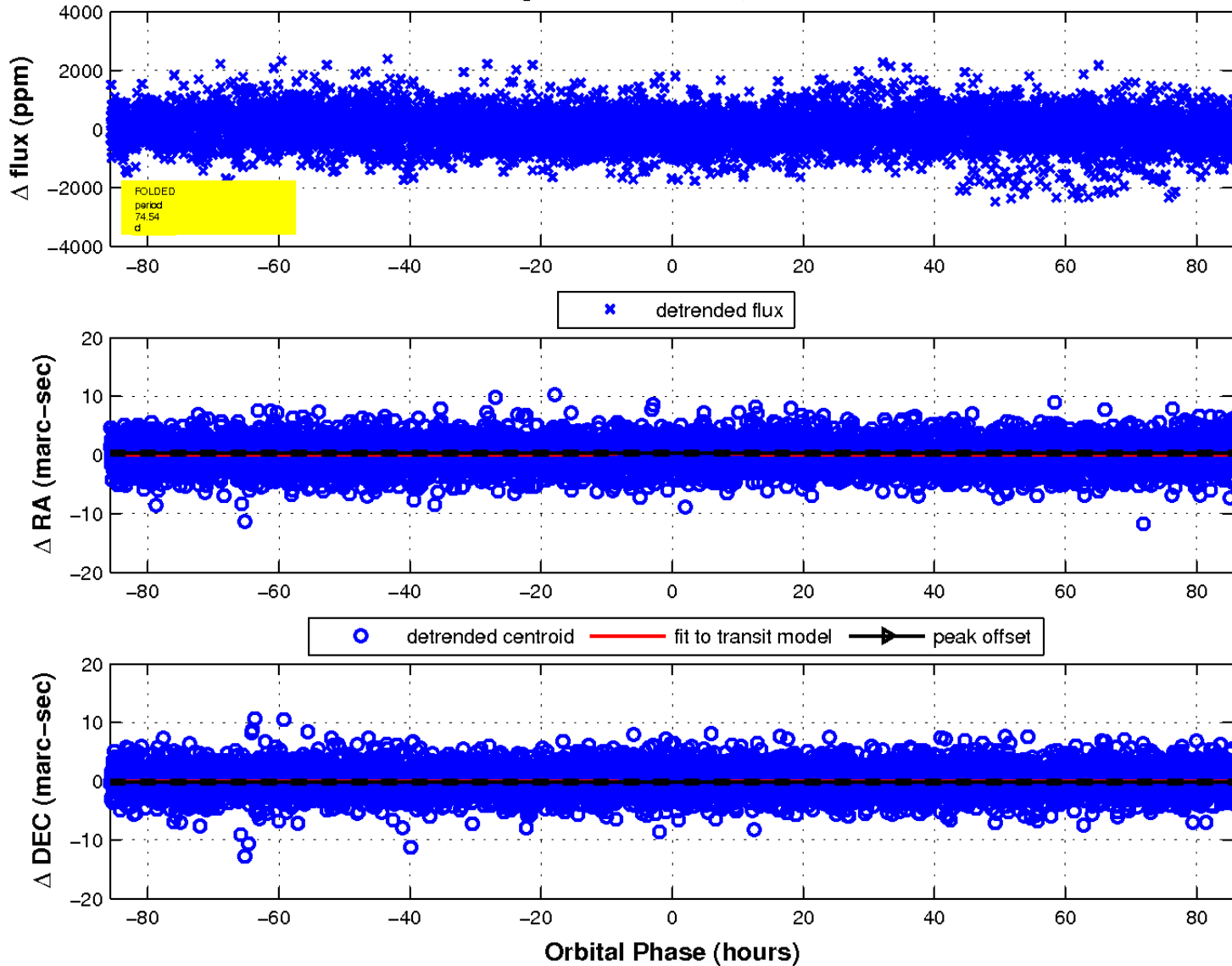
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

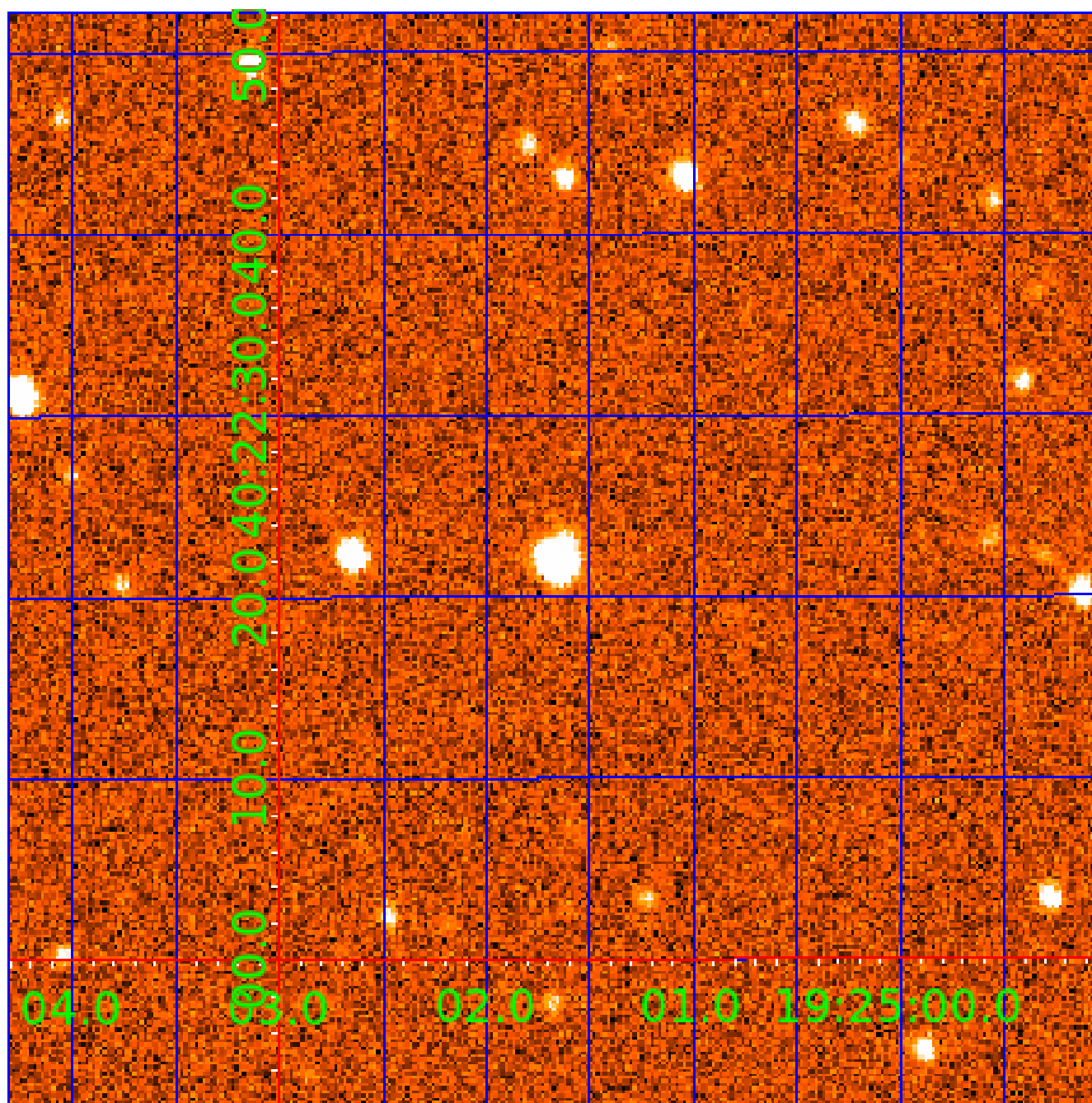


fluxWeightedCentroids, Planet 2 of 7



UKIRT Image

Declination



# KIC 005185153

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005185153-01	OBS	No	3.251795	134.277121	95.4	19.167	8.3	11.8	0.85	5615	0.89	363.99
005185153-02	OBS	No	74.543609	147.350518	527.5	28.583	12.9	8.5	0.85	5615	2.51	5.59
005185153-03	OBS	No	403.397418	229.731815	780.5	25.882	12.1	8.0	0.85	5615	2.73	0.59
005185153-04	OBS	No	93.564944	140.645833	480.7	5.660	8.5	7.4	0.85	5615	1.99	4.13
005185153-05	OBS	No	177.092844	258.280919	850.0	2.735	8.2	8.0	0.85	5615	2.86	1.76
005185153-06	OBS	No	122.609683	225.633037	456.5	16.195	7.8	6.3	0.85	5615	2.03	2.88
005185153-07	OBS	No	105.338904	148.221922	187.4	13.735	7.4	3.8	0.85	5615	1.33	3.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005185153-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005185153-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005185153-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005185153-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005185153-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

**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.

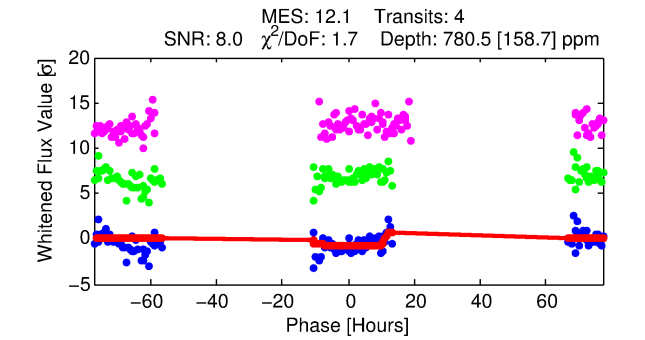
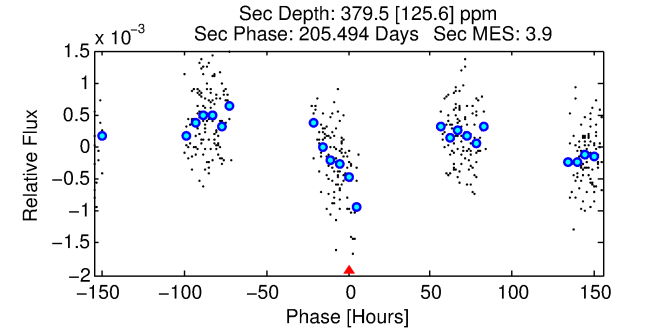
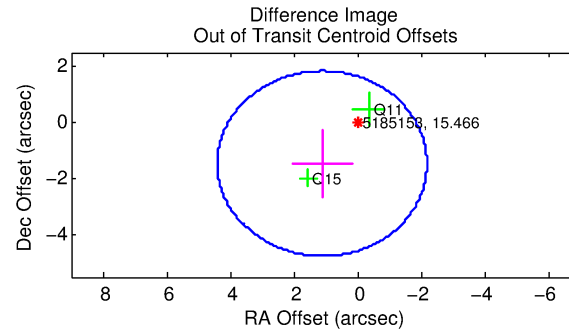
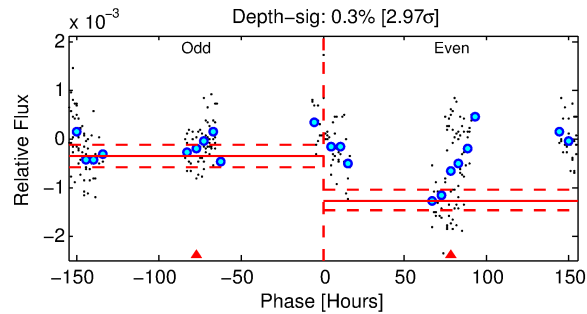
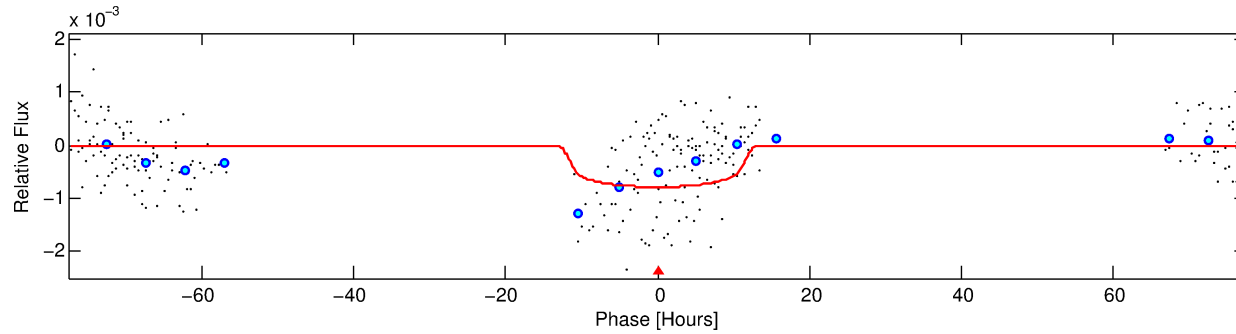
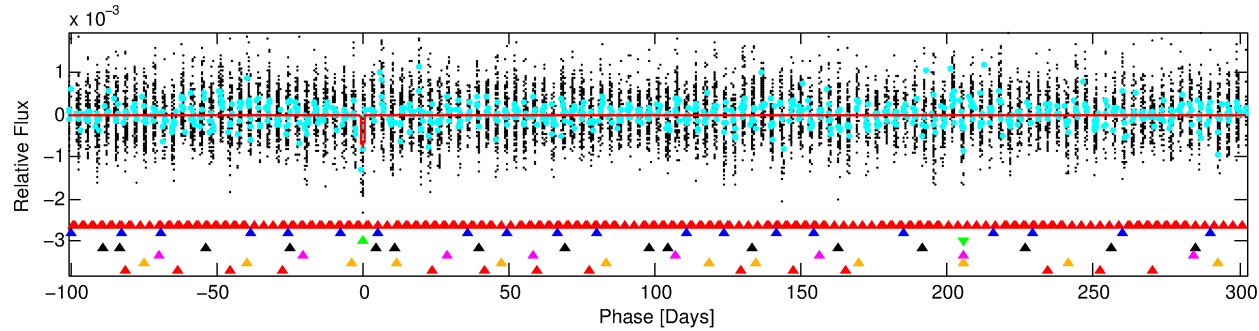
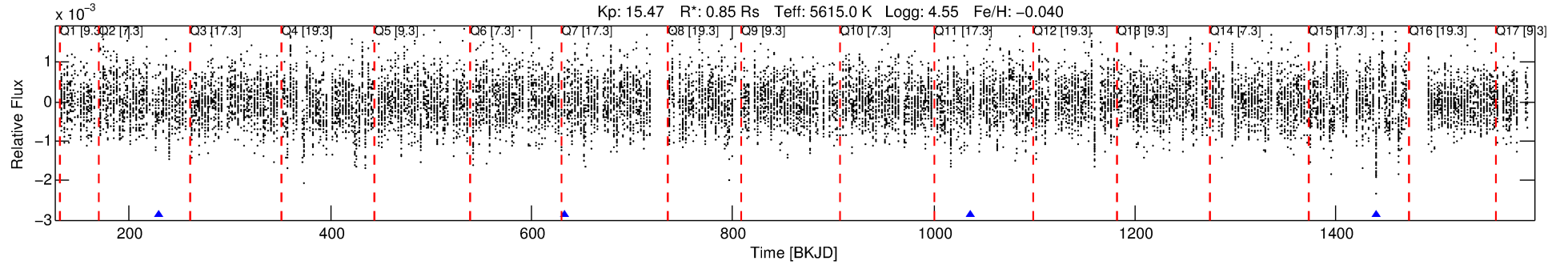
## Ephemeris Match Information For 005185153-03

No Significant Match Found



# DV One-Page Summary

KIC: 5185153 Candidate: 3 of 7 Period: 403.397 d



## DV Fit Results:

Period = 403.39742 [0.03064] d  
Epoch = 229.7318 [0.0745] BKJD  
Rp/R\* = 0.0294 [0.0050]  
a/R\* = 68.26 [36.68]  
b = 0.86 [0.16]  
Seff = 0.59 [0.21]  
Teq = 223 [20] K  
Rp = 2.74 [0.88] Re  
a = 1.0483 [0.2418] AU  
Ag = 30667.75 [17785.05] [1.72 $\sigma$ ]  
Teffp = 4569 [557] K [7.80 $\sigma$ ]

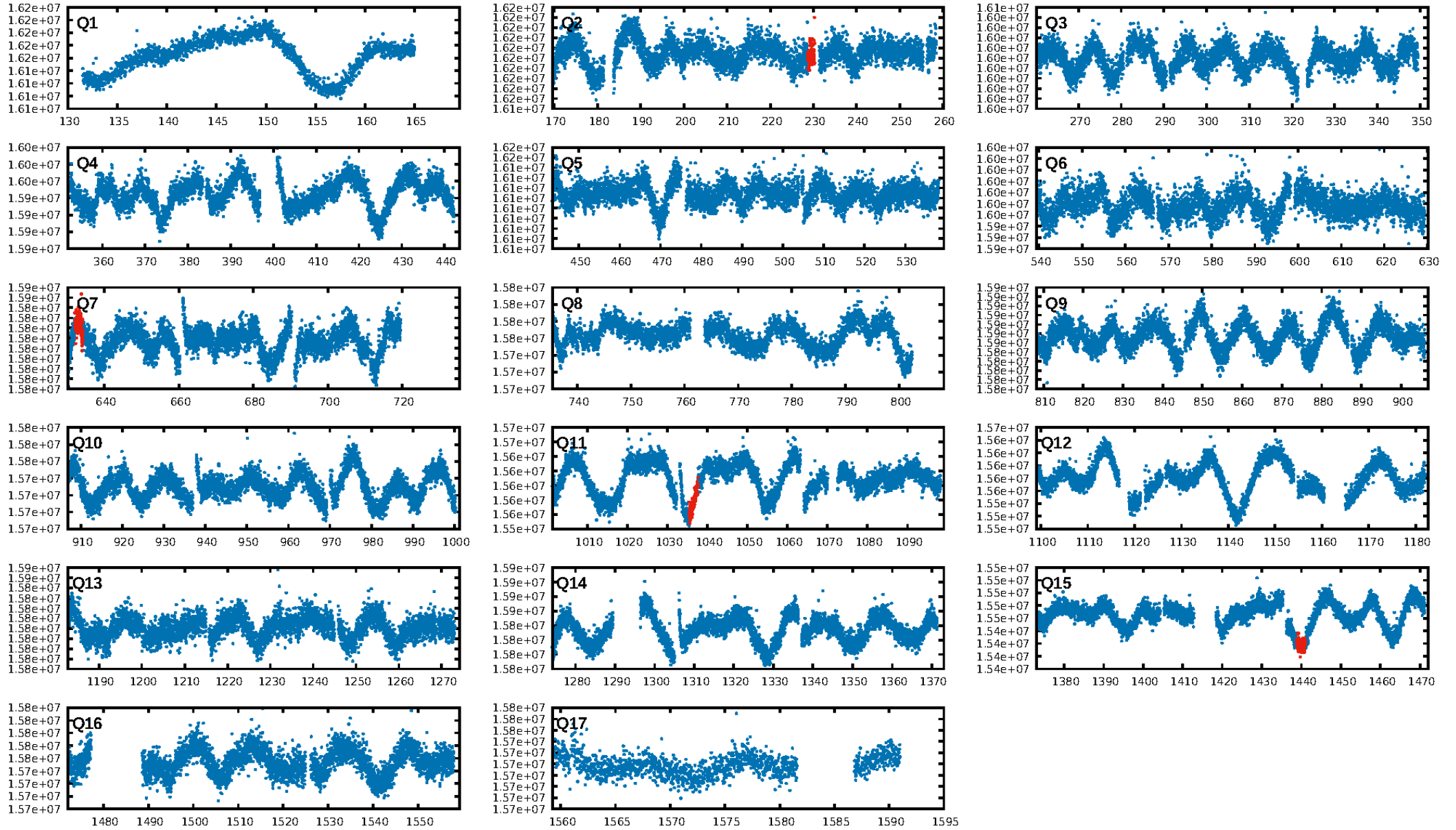
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [208.69 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 5.02e-13  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 0.005642  
Centroid-sig: 0.1%  
Centroid-so: 1.792 arcsec [2.46 $\sigma$ ]  
OotOffset-rm: 1.834 arcsec [1.67 $\sigma$ ]  
KicOffset-rm: 1.831 arcsec [1.04 $\sigma$ ]  
OotOffset-st: 0/2/0/0 [2]  
KicOffset-st: 0/2/0/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 0.00 [0/2]

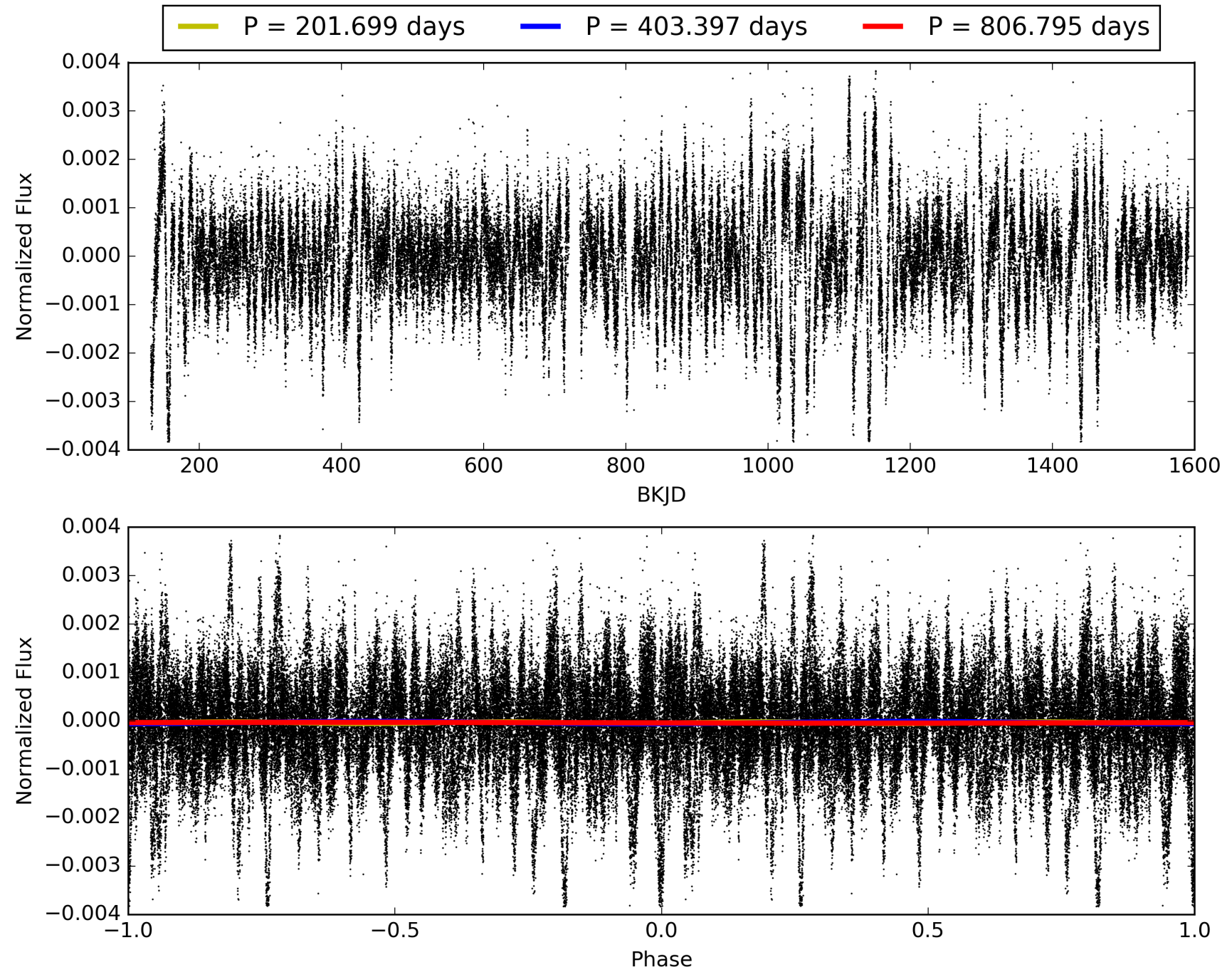
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:02:53 Z

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

# TCE 005185153-03, PDC Light Curves

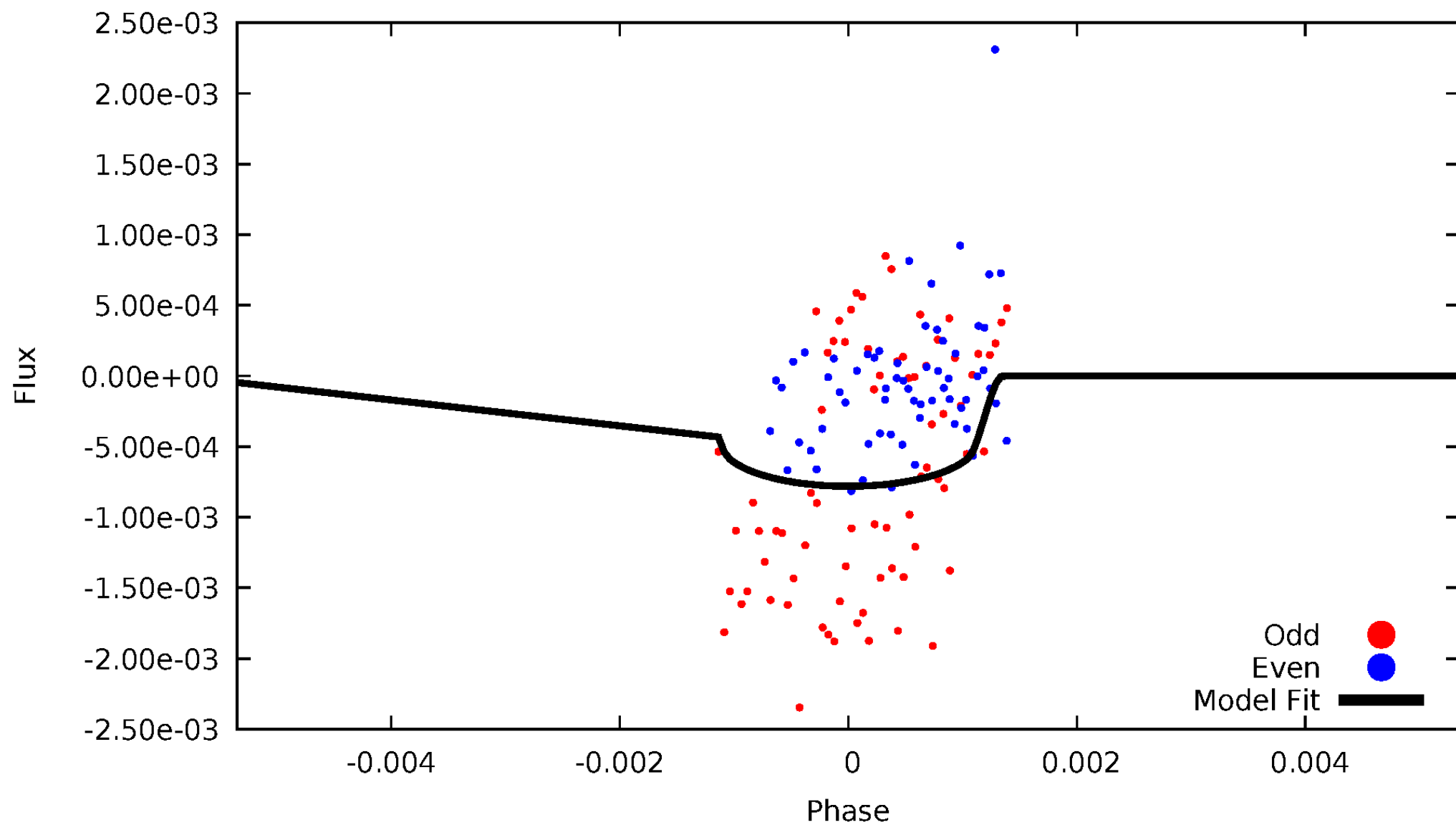


# TCE 005185153-03



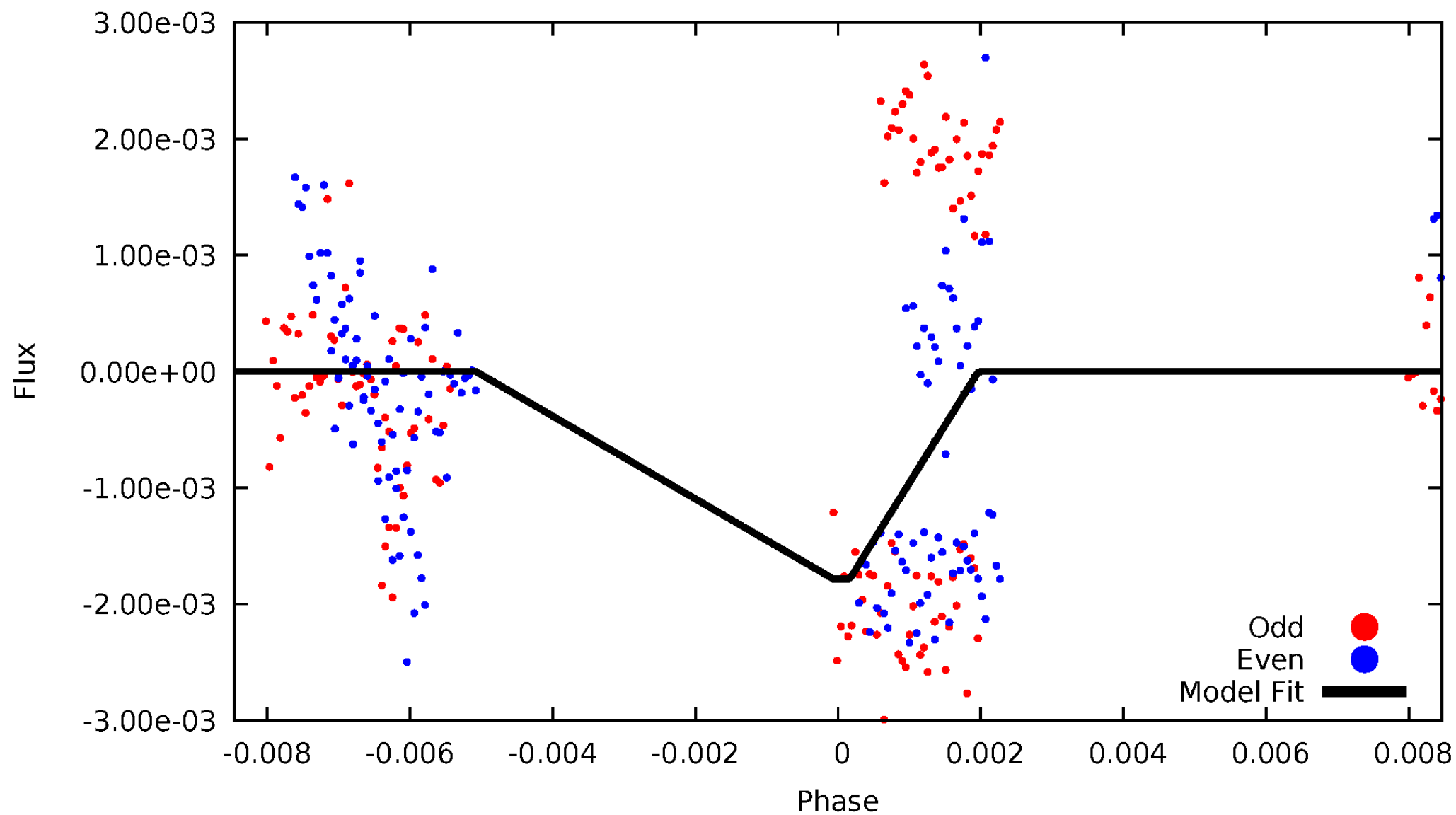
# DV Odd/Even

TCE 005185153-03



# ALT Odd/Even

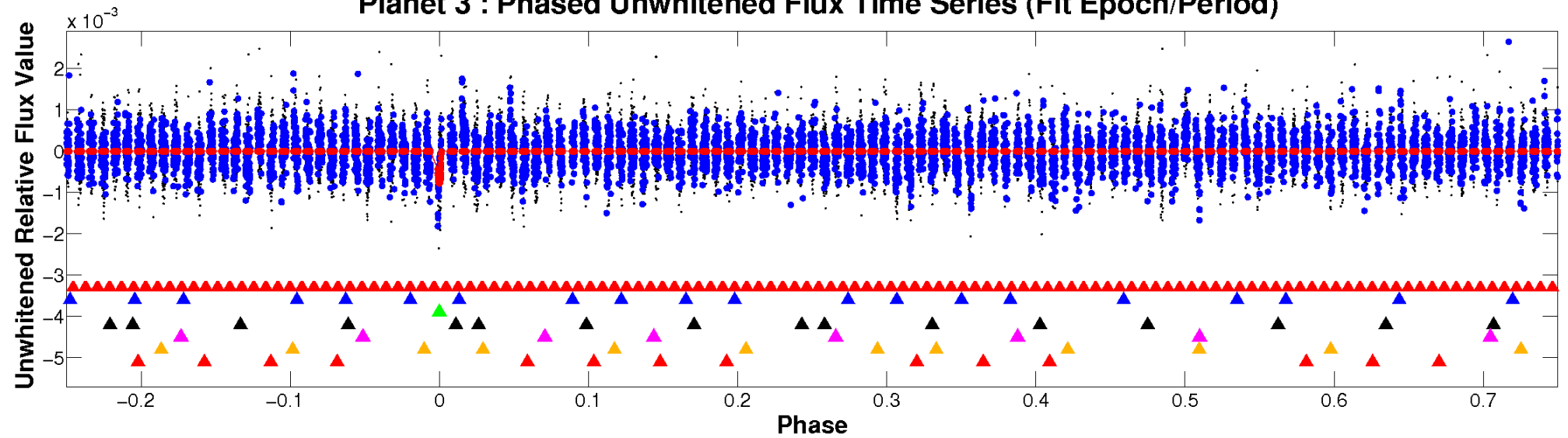
TCE 005185153-03



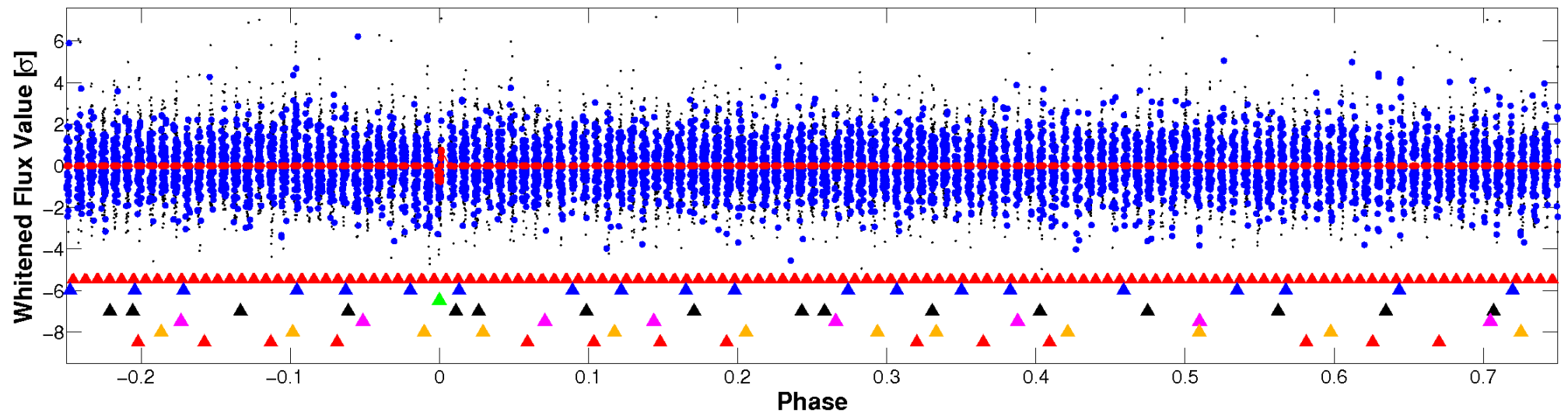


# Non-Whitened Vs. Whitened Light Curve

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

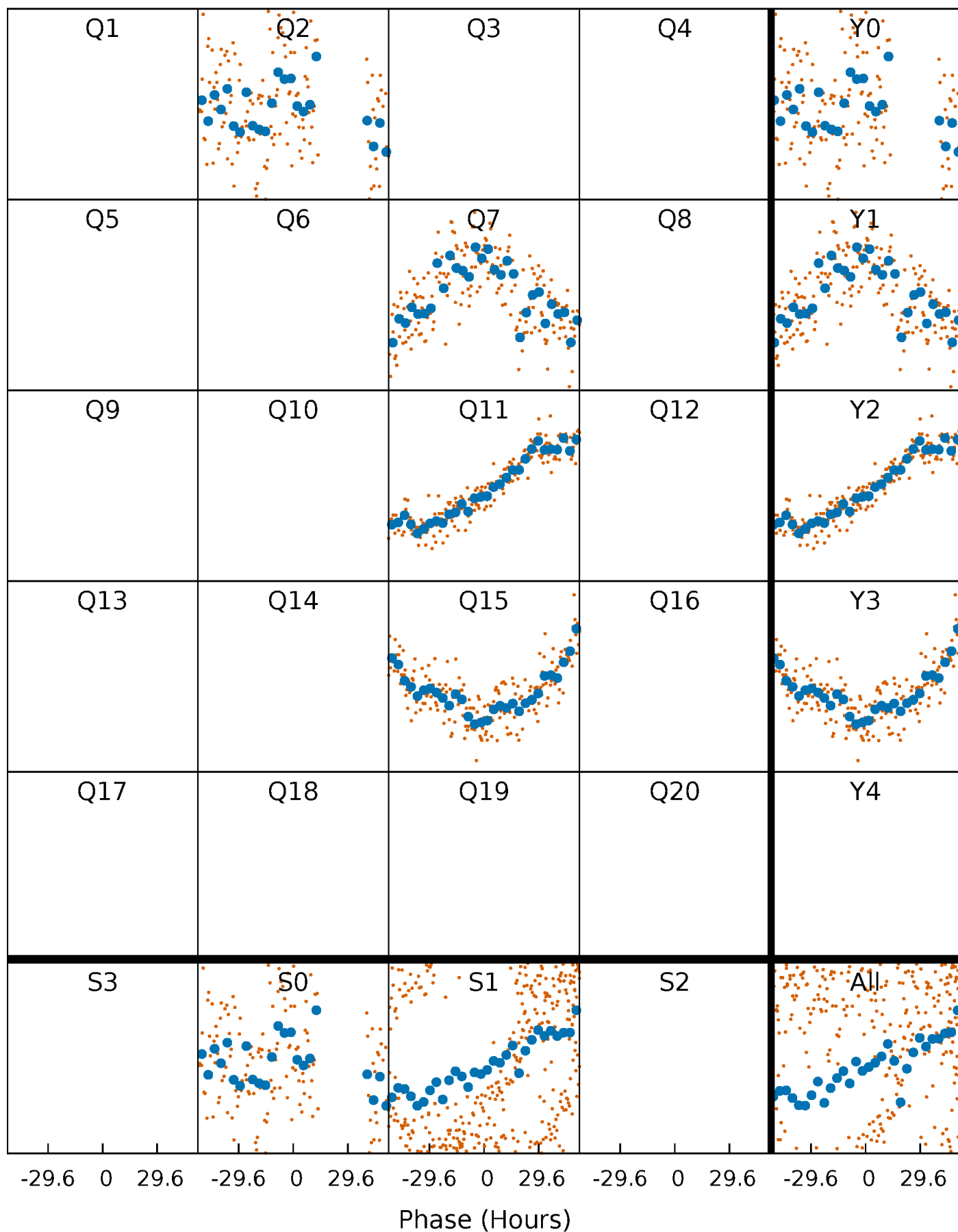


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



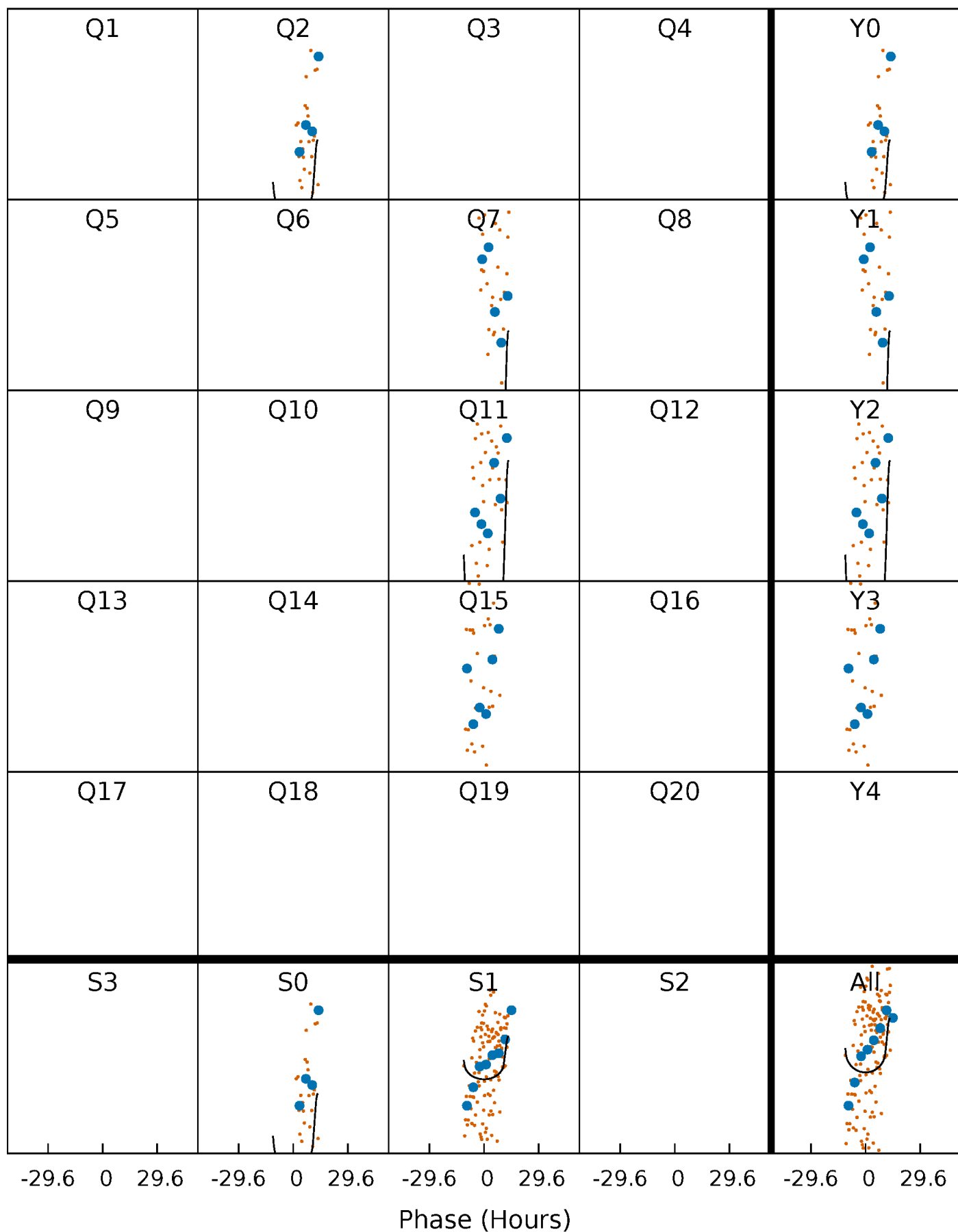
# PDC Quarter-Phased Transit Curves

TCE 005185153-03 P=403.397418 Days  $T_0=229.731815$  (BKJD)



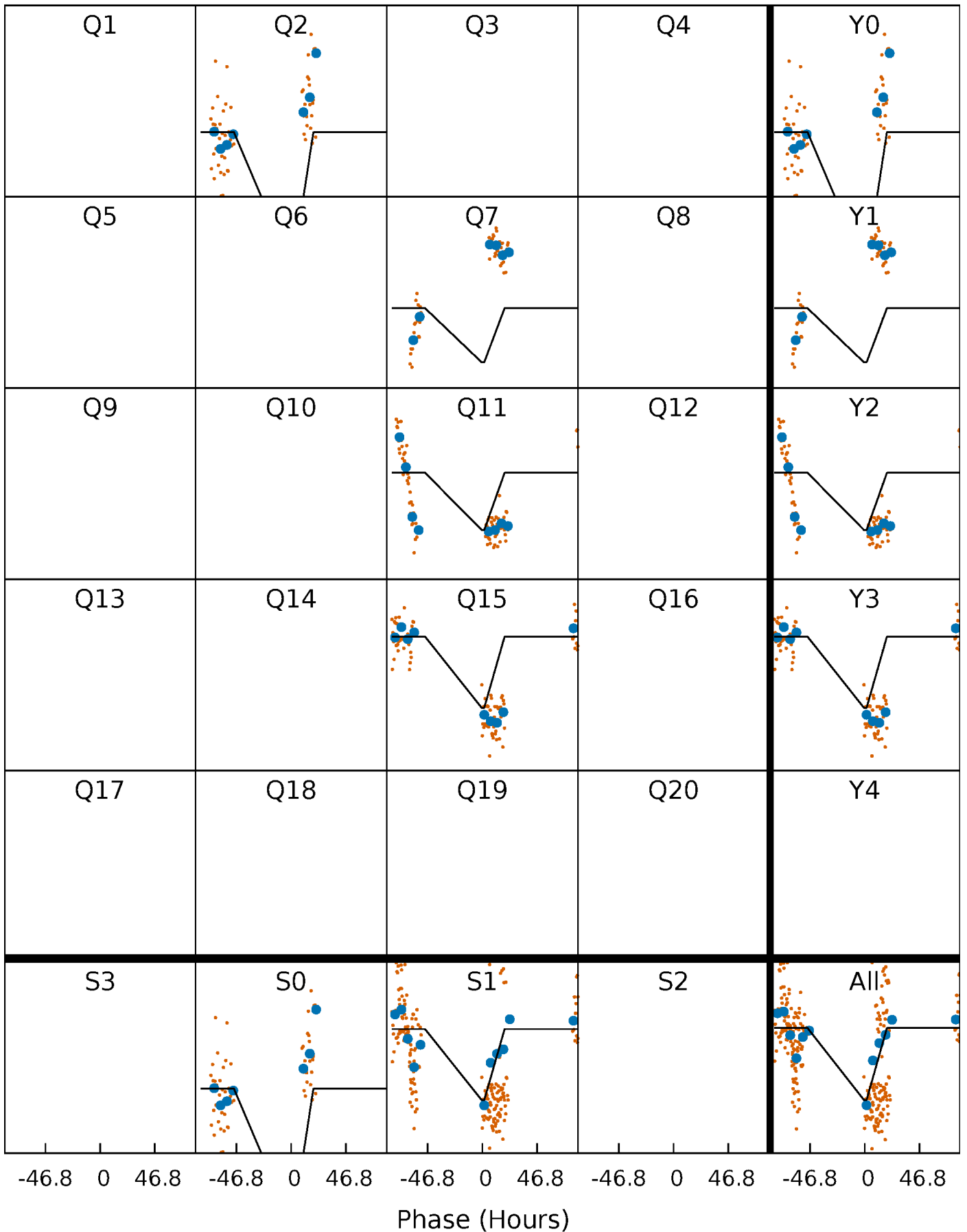
# DV Quarter-Phased Transit Curves

TCE 005185153-03 P=403.397418 Days  $T_0=229.731815$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

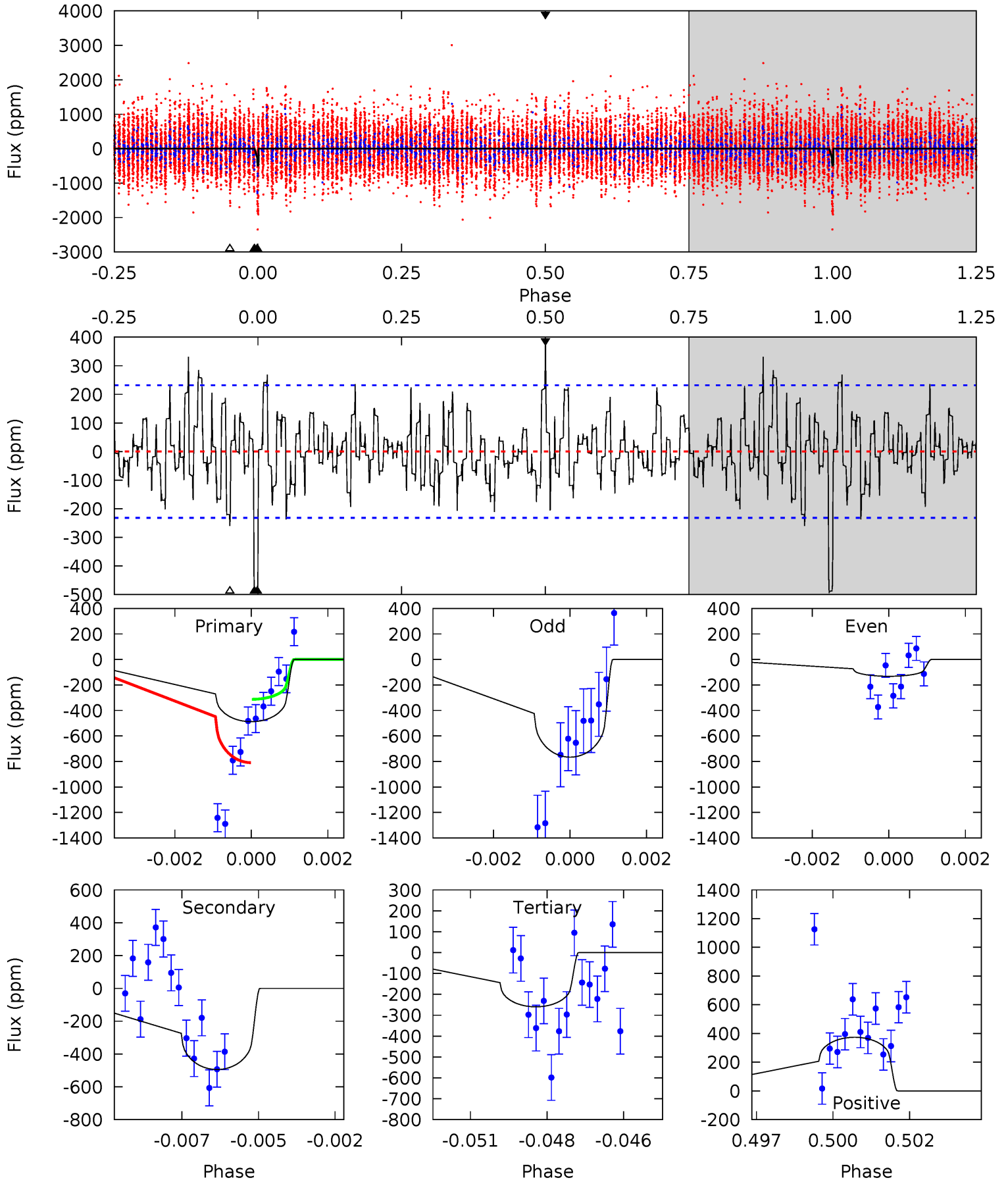
TCE 005185153-03 P=403.358474 Days  $T_0=229.415775$  (BKJD)



# DV Model-Shift Uniqueness Test

005185153-03, P = 403.397418 Days, E = 229.731815 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
11.1	11.3	5.93	8.52	5.29	3.03	2.25	5.21	2.62	5.36	2.76	7.26	4.04	0.43	5.27

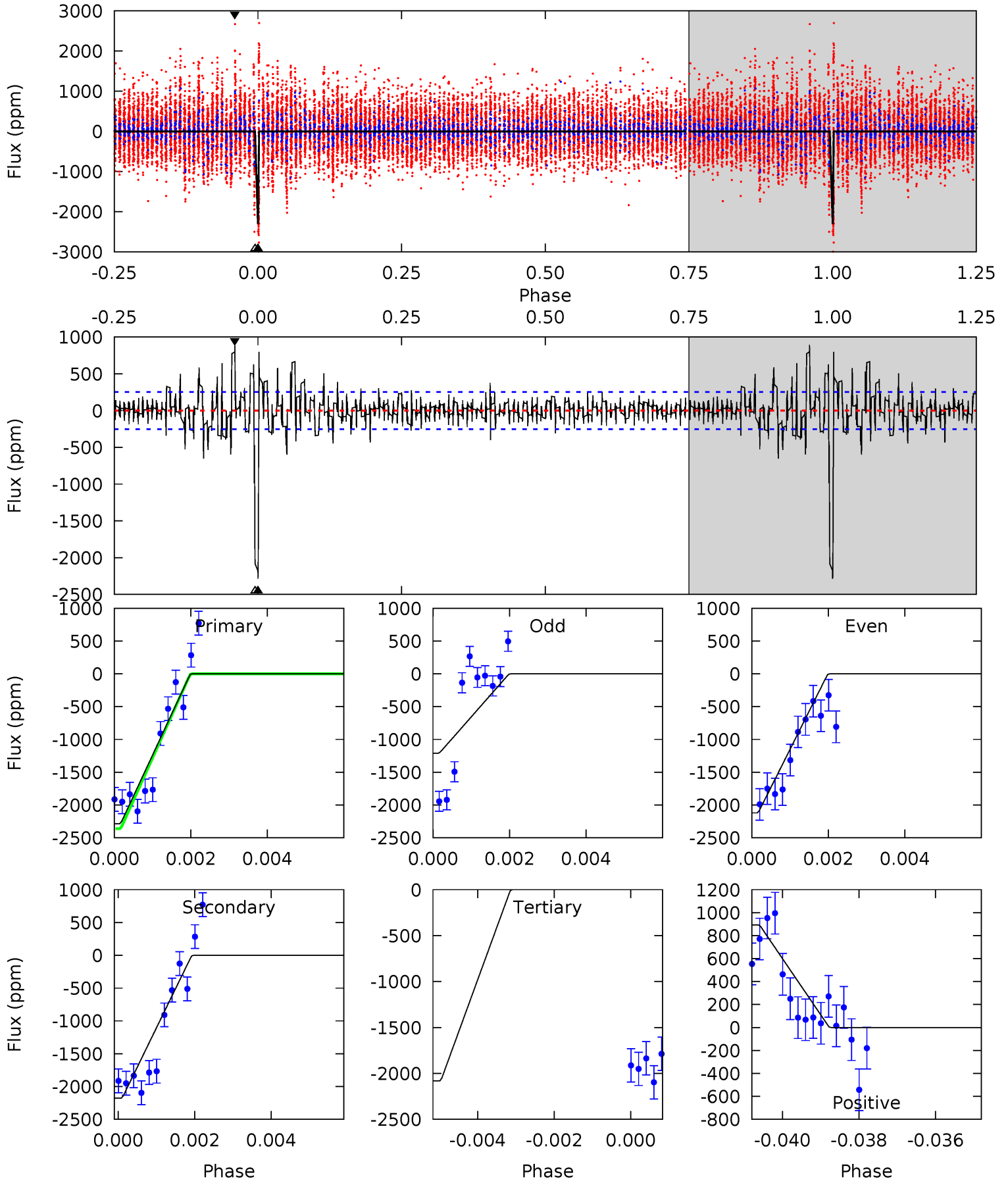




# Alt Model-Shift Uniqueness Test

005185153-03, P = 403.358474 Days, E = 229.415775 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
48.1	45.9	43.8	18.8	5.33	3.09	3.62	4.28	29.3	2.05	27.1	10.1	0.17	0.28	0.00



### Stellar Parameters For KIC 005185153

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5615^{+169}_{-169}$	$4.552^{+0.035}_{-0.184}$	$-0.040^{+0.300}_{-0.300}$	$0.852^{+0.233}_{-0.078}$	$0.942^{+0.094}_{-0.104}$	$2.149^{+0.380}_{-1.022}$
	+3%/-3%	+1%/-4%	+750%/-750%	+27%/-9%	+10%/-11%	+18%/-48%
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 005185153-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-494 \pm 44$	$2.91^{+0.61}_{-0.53}$	$320^{+20}_{-15}$	$4945^{+452}_{-355}$	$34388^{+17561}_{-10825}$
Alt.	$-2179 \pm 47$	$4.14^{+0.67}_{-0.59}$	$320^{+21}_{-15}$	$5882^{+427}_{-343}$	$75382^{+26086}_{-18135}$

$T_{\text{max}}$  = 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

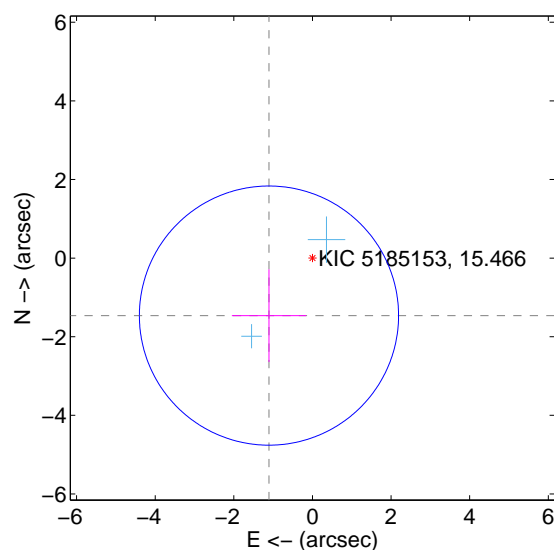
Supplemental centroid analysis for 005185153-03. Kepler magnitude: 15.47. Transit SNR 7.97

There are 2 quarters with good PRF difference image offsets

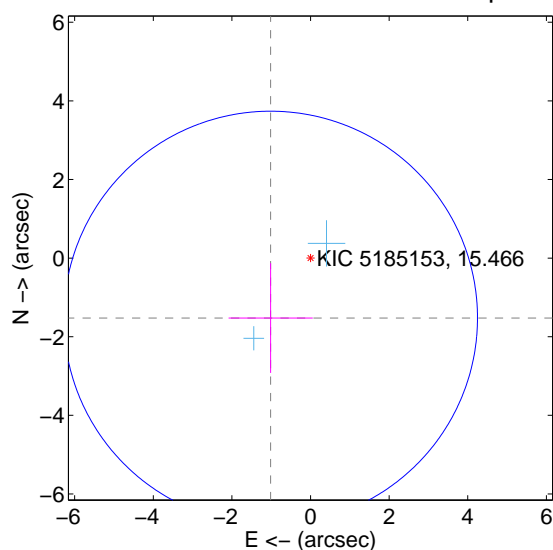
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.834 \pm 1.099$	1.67	$1.106 \pm 0.943$	$-1.463 \pm 1.179$
PRF-fit source offset from KIC position	$1.831 \pm 1.754$	1.04	$1.014 \pm 1.071$	$-1.524 \pm 1.395$
photometric centroid source offset	$1.79 \pm 0.73$	2.46	$-1.69 \pm 0.74$	$0.61 \pm 0.68$

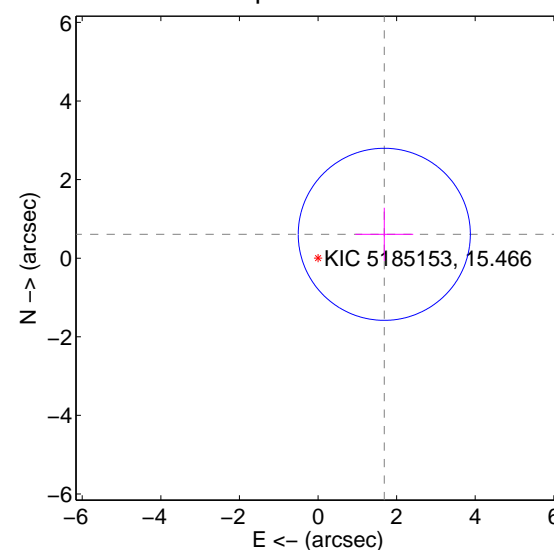
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

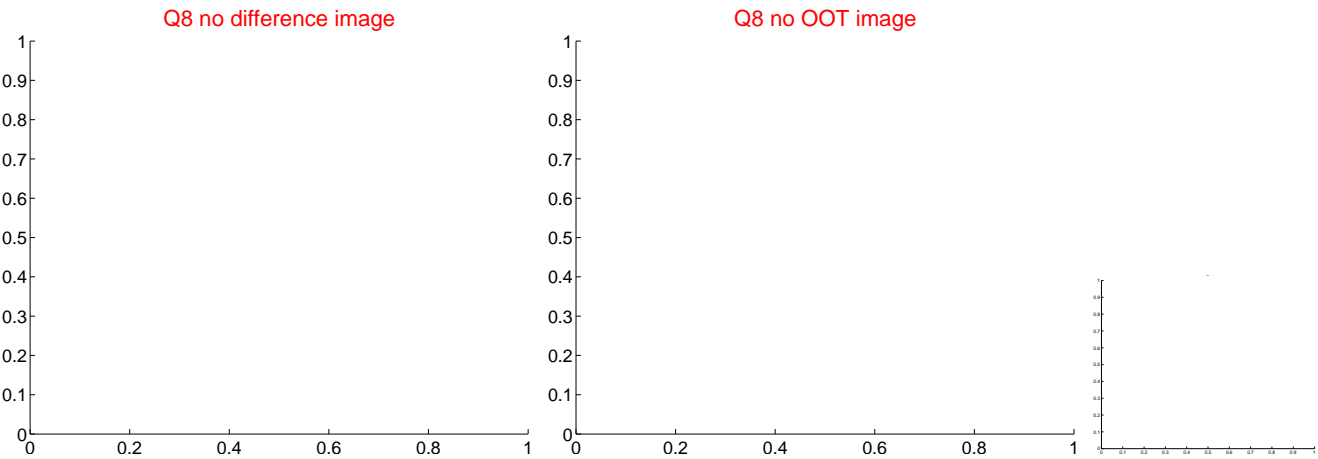
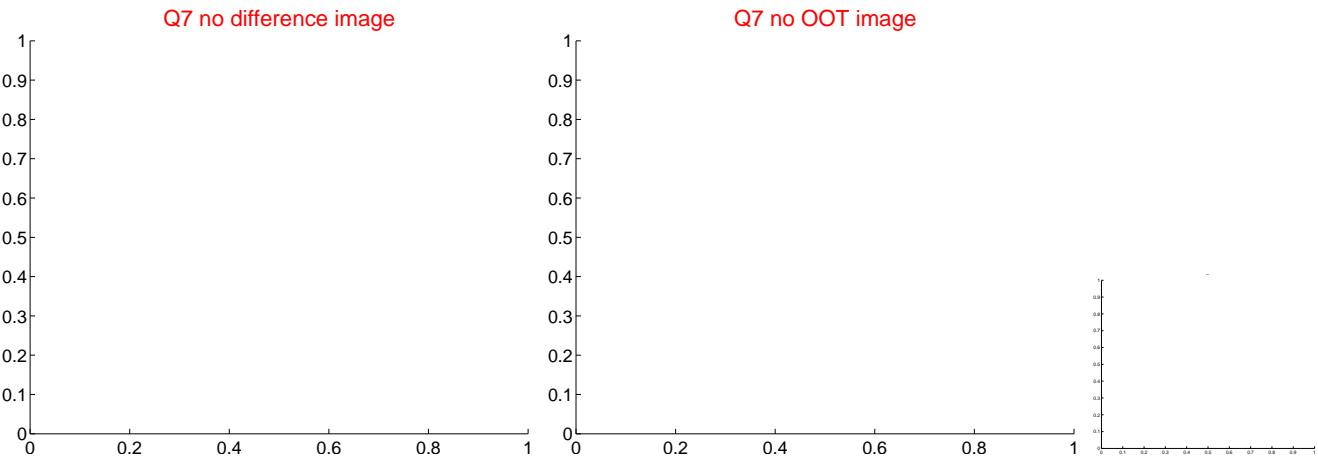
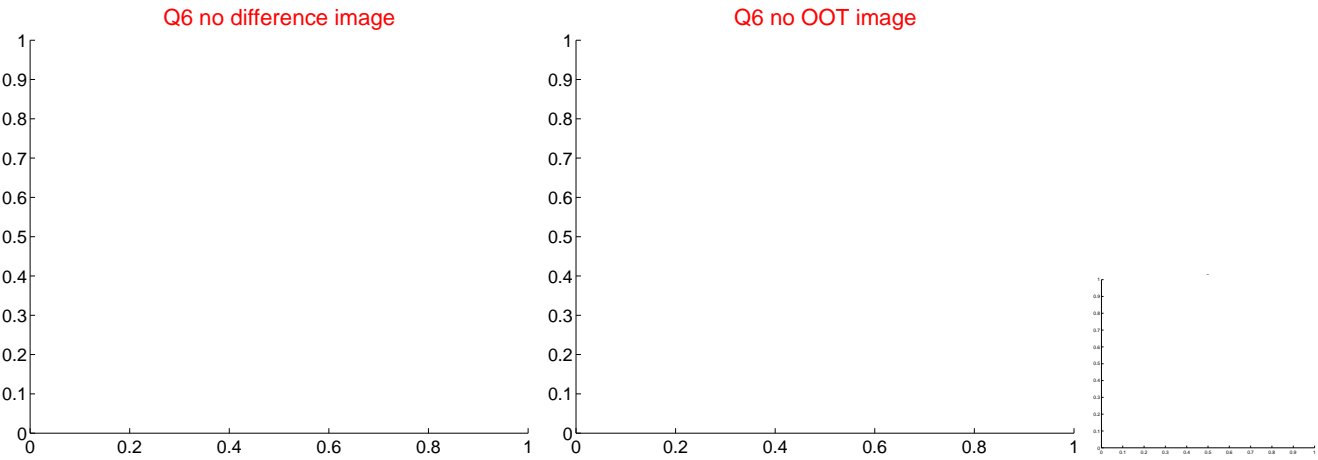
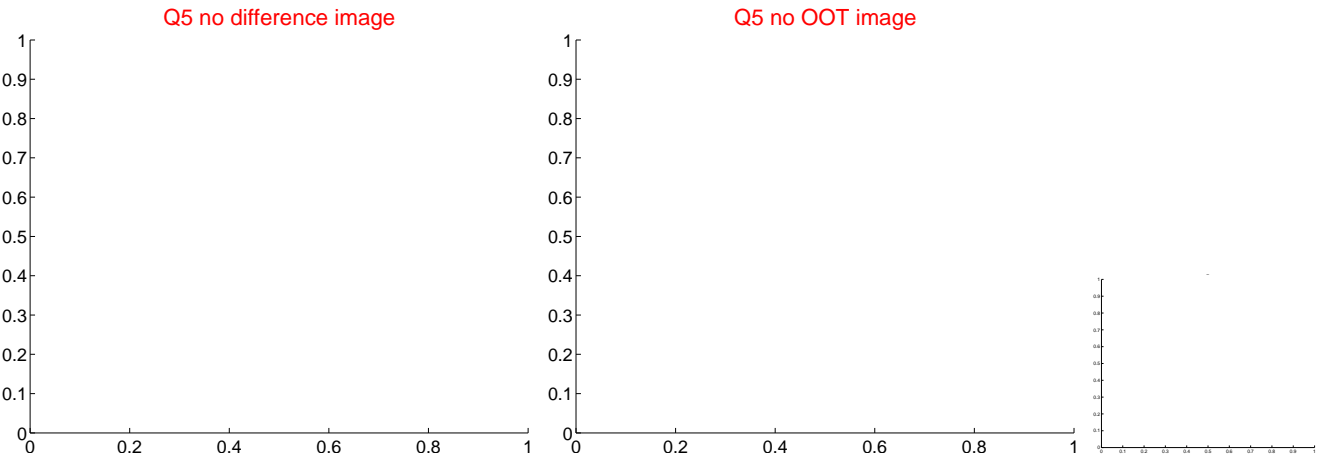


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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



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.

Q9 no difference image



Q9 no OOT image



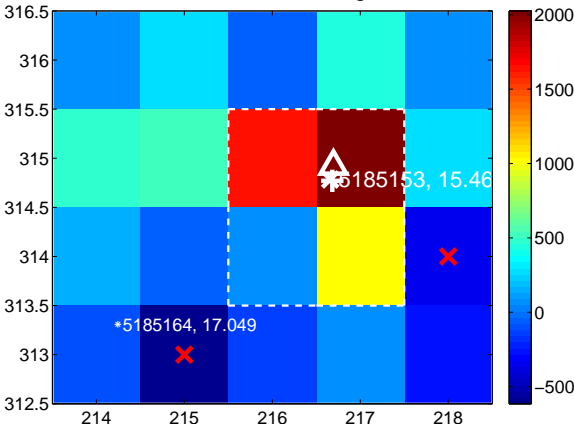
Q10 no difference image



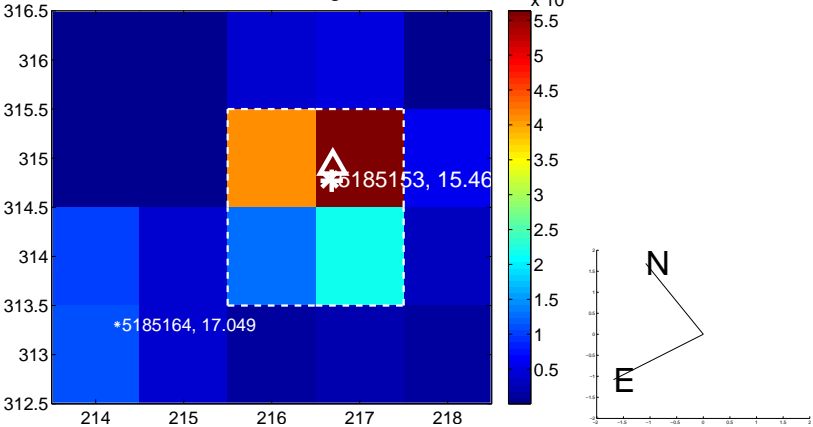
Q10 no OOT image



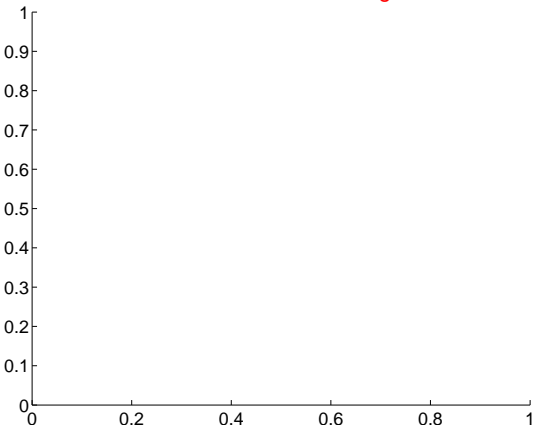
Q11 difference image



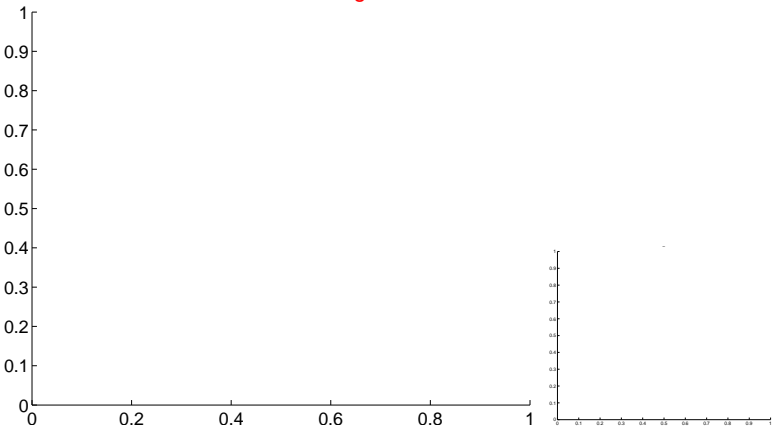
Q11 OOT image



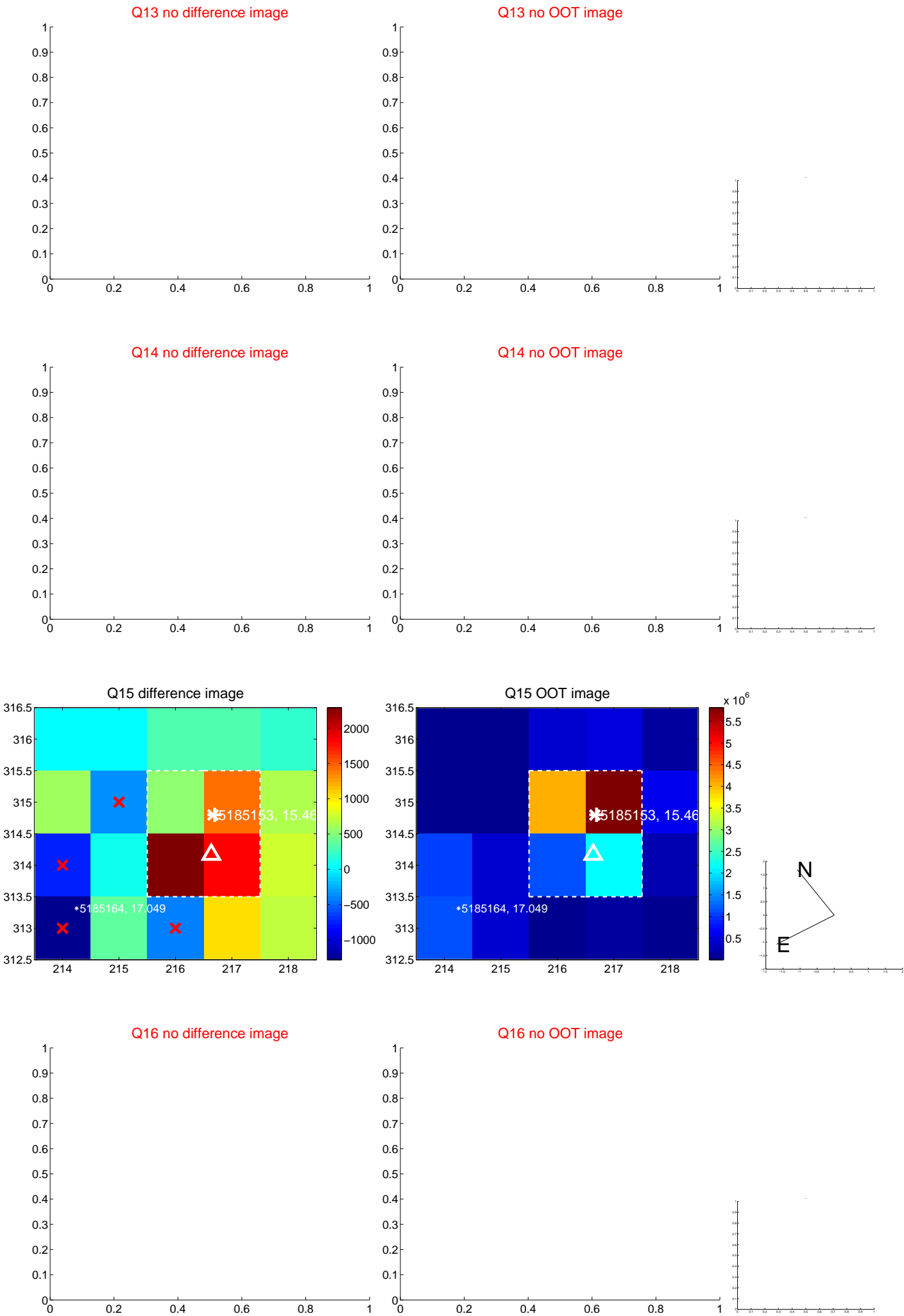
Q12 no difference image



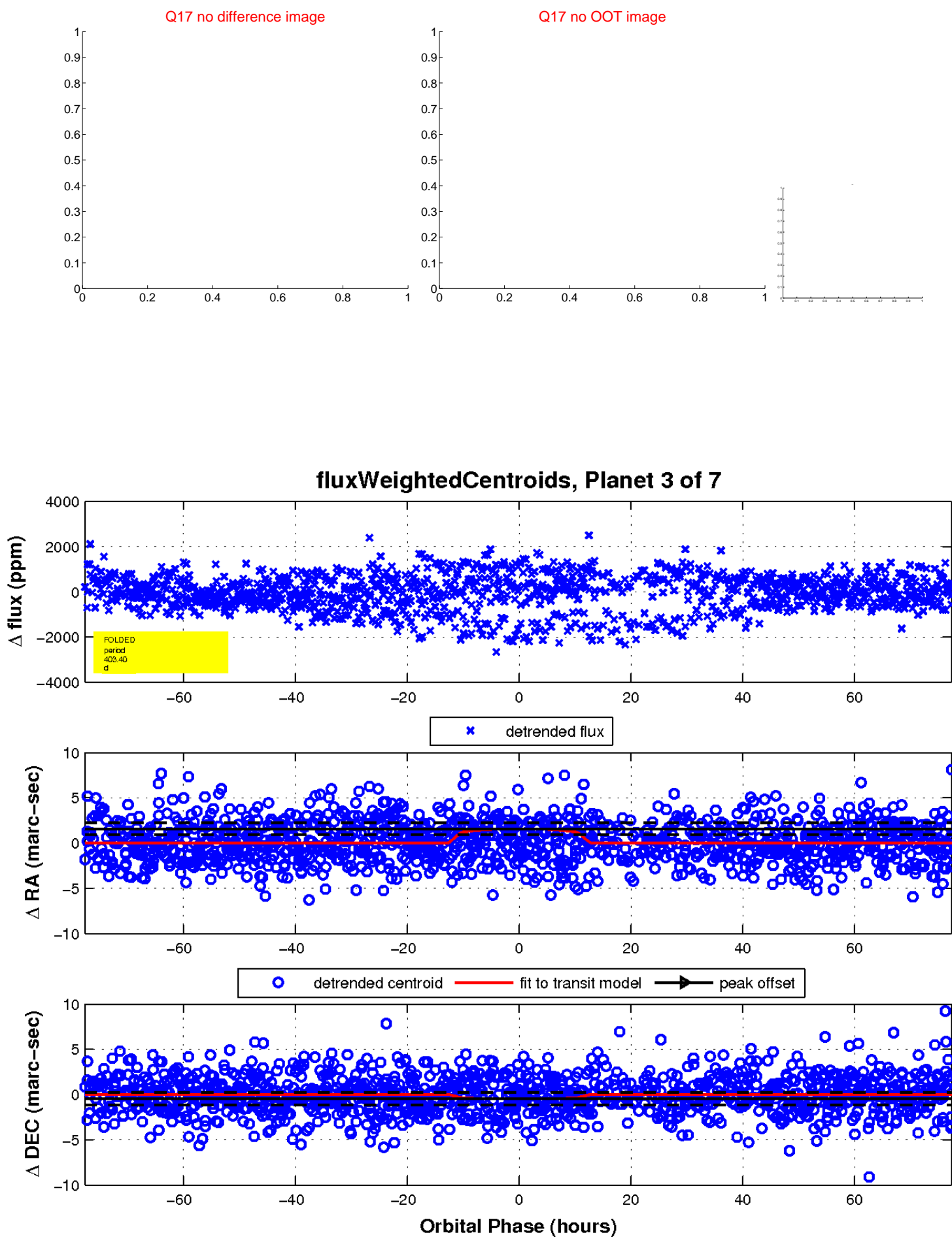
Q12 no OOT image



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

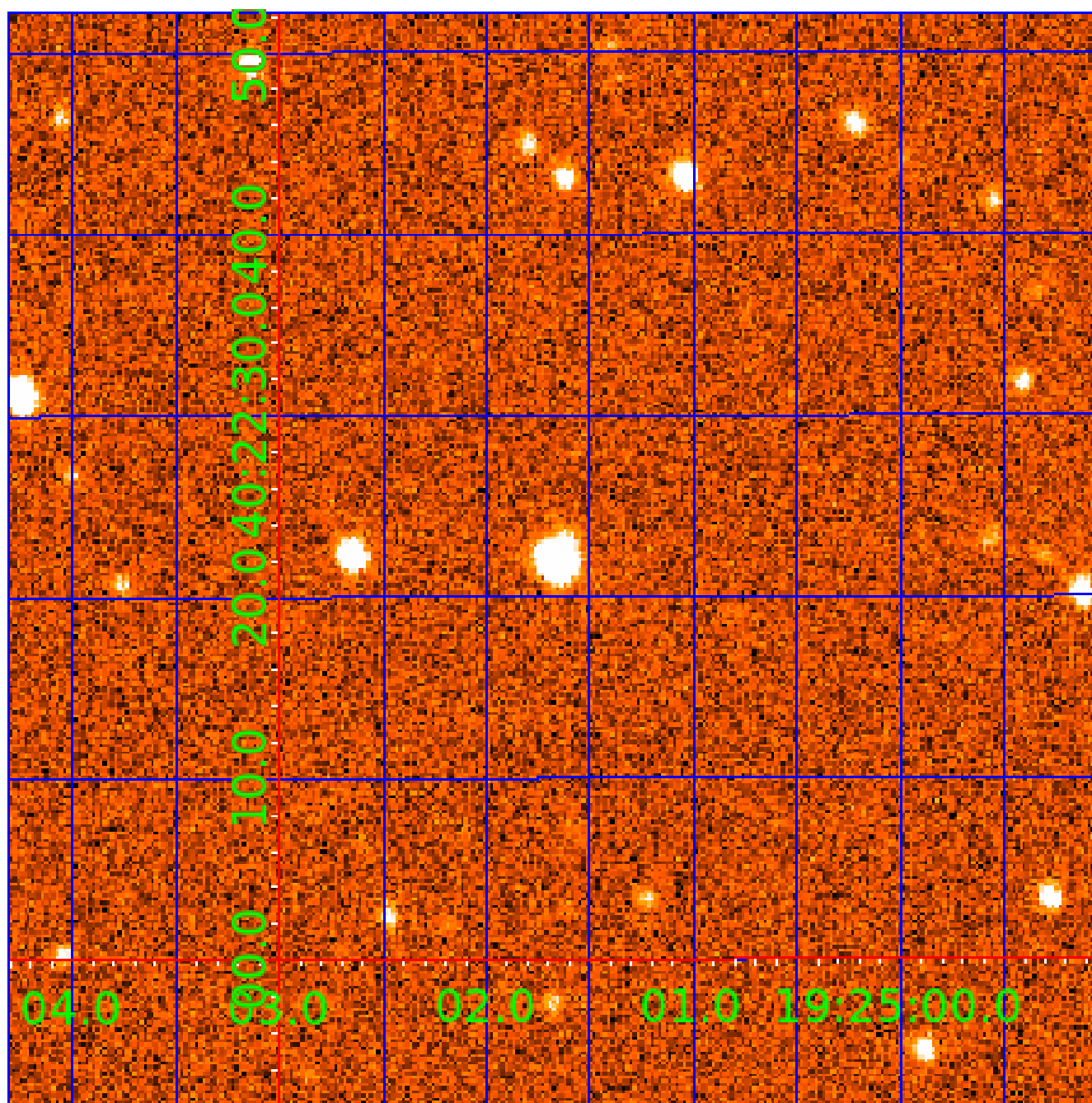


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 005185153

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005185153-01	OBS	No	3.251795	134.277121	95.4	19.167	8.3	11.8	0.85	5615	0.89	363.99
005185153-02	OBS	No	74.543609	147.350518	527.5	28.583	12.9	8.5	0.85	5615	2.51	5.59
005185153-03	OBS	No	403.397418	229.731815	780.5	25.882	12.1	8.0	0.85	5615	2.73	0.59
005185153-04	OBS	No	93.564944	140.645833	480.7	5.660	8.5	7.4	0.85	5615	1.99	4.13
005185153-05	OBS	No	177.092844	258.280919	850.0	2.735	8.2	8.0	0.85	5615	2.86	1.76
005185153-06	OBS	No	122.609683	225.633037	456.5	16.195	7.8	6.3	0.85	5615	2.03	2.88
005185153-07	OBS	No	105.338904	148.221922	187.4	13.735	7.4	3.8	0.85	5615	1.33	3.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005185153-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005185153-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005185153-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005185153-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005185153-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

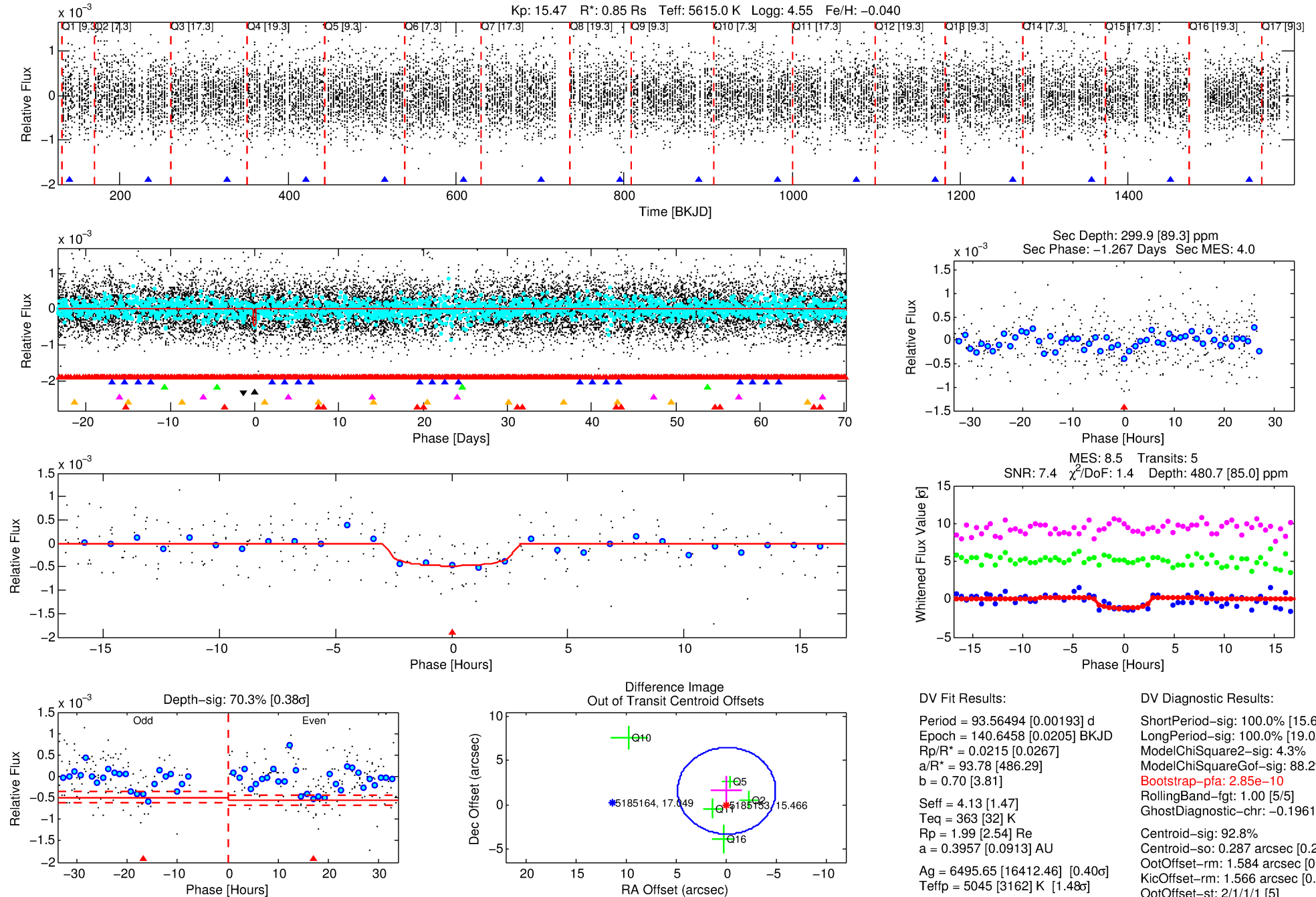
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005185153-04

No Significant Match Found

# DV One-Page Summary

KIC: 5185153 Candidate: 4 of 7 Period: 93.565 d

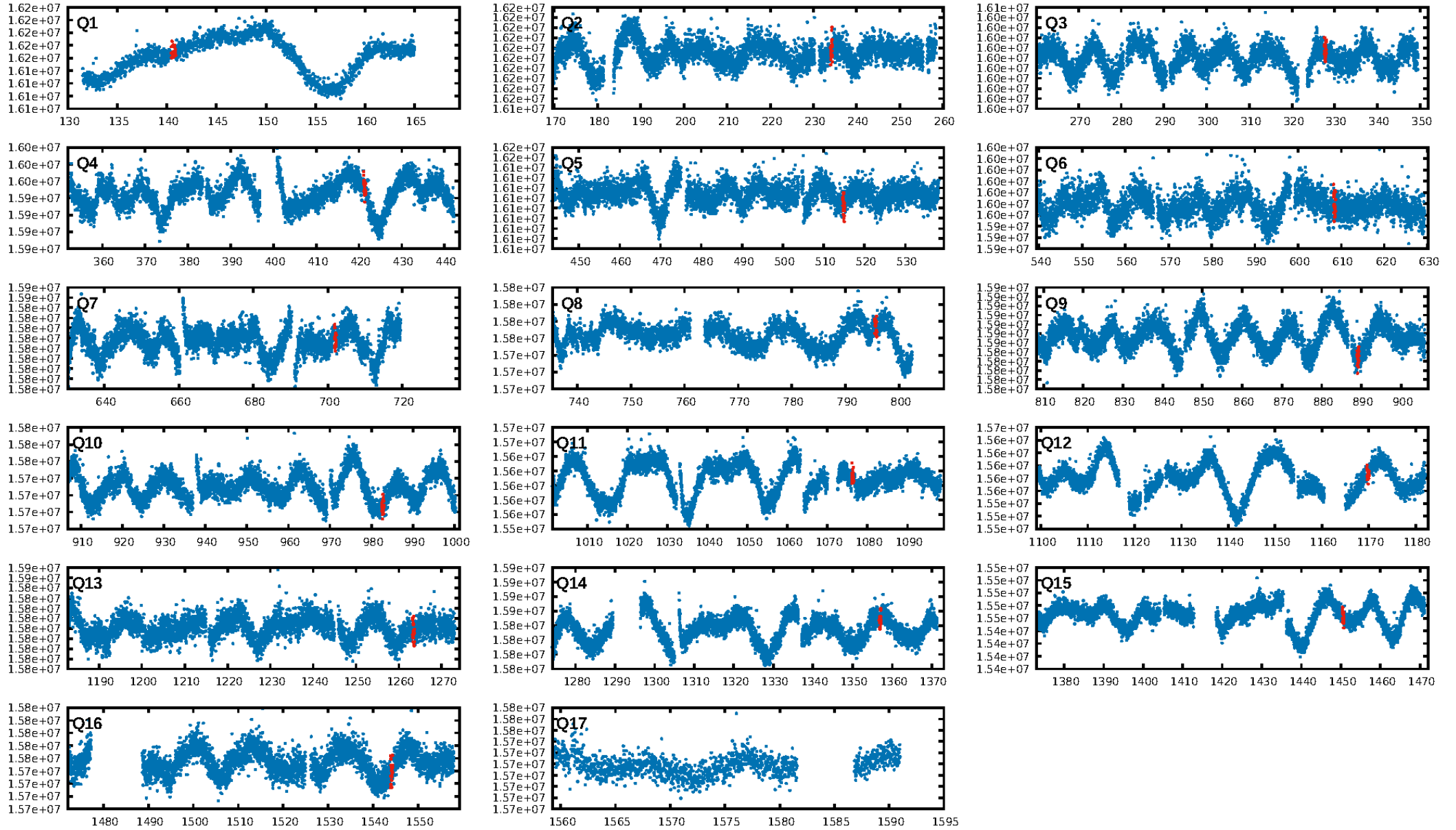


Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:03:01 Z

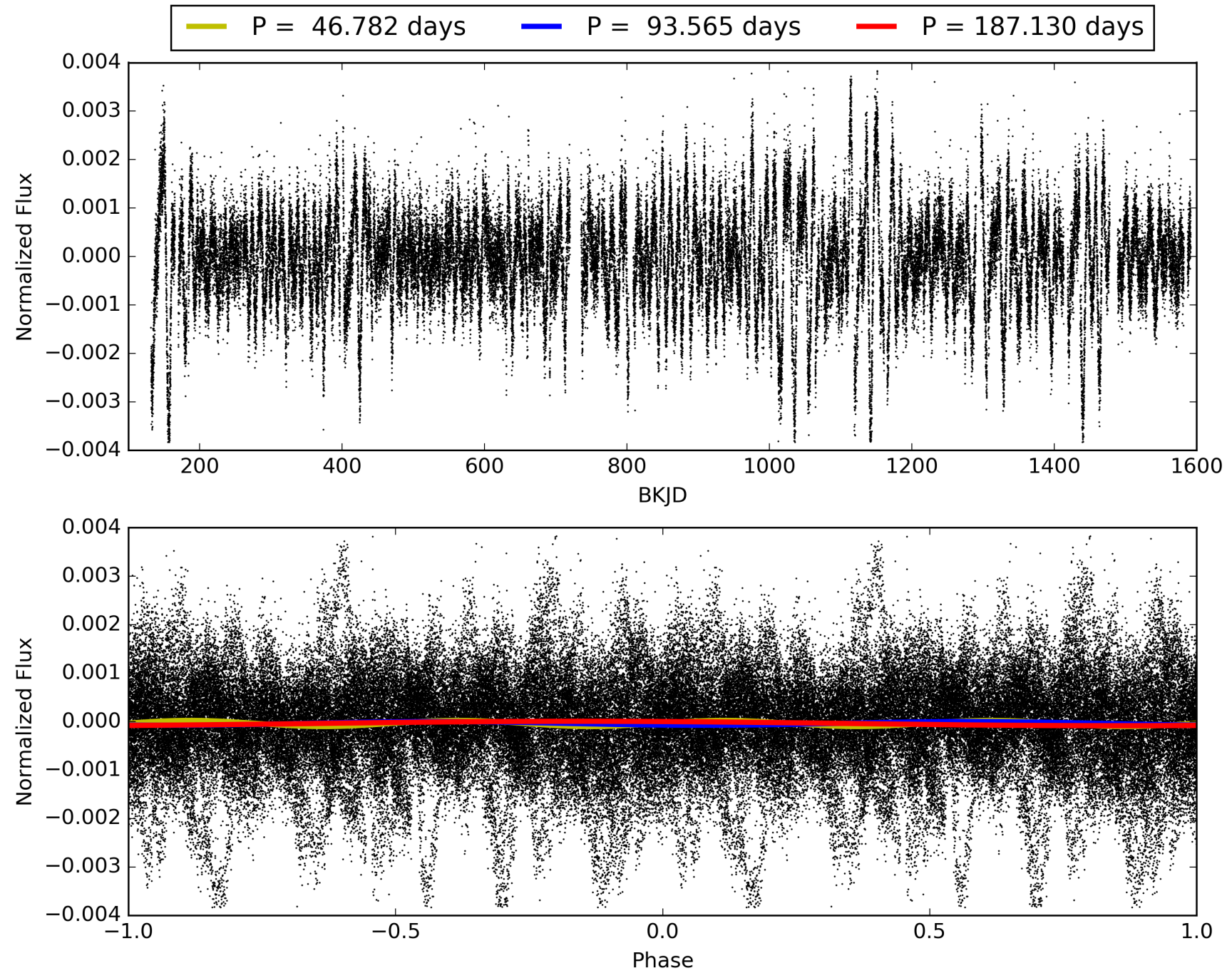
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005185153-04, PDC Light Curves

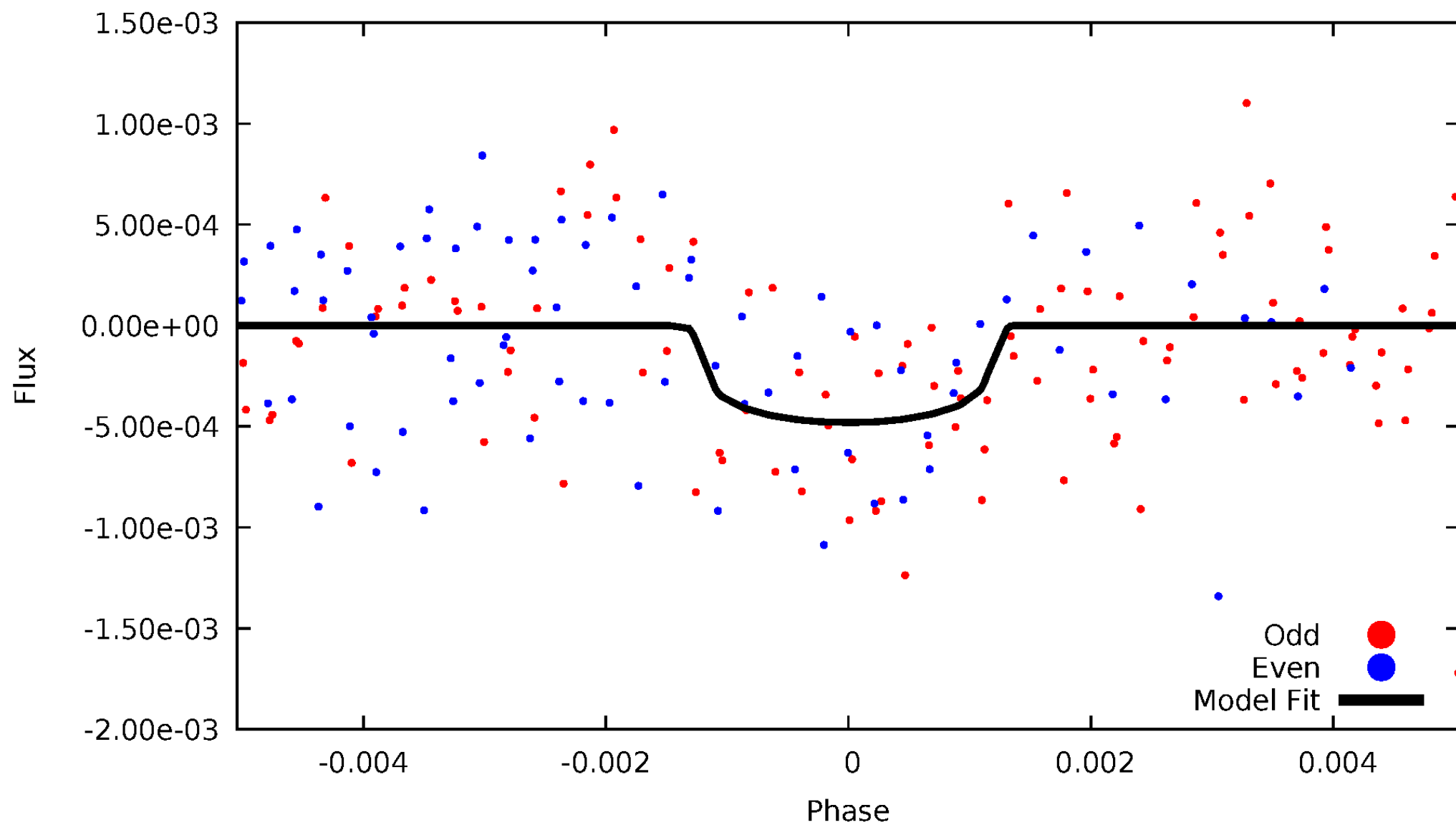


TCE 005185153-04



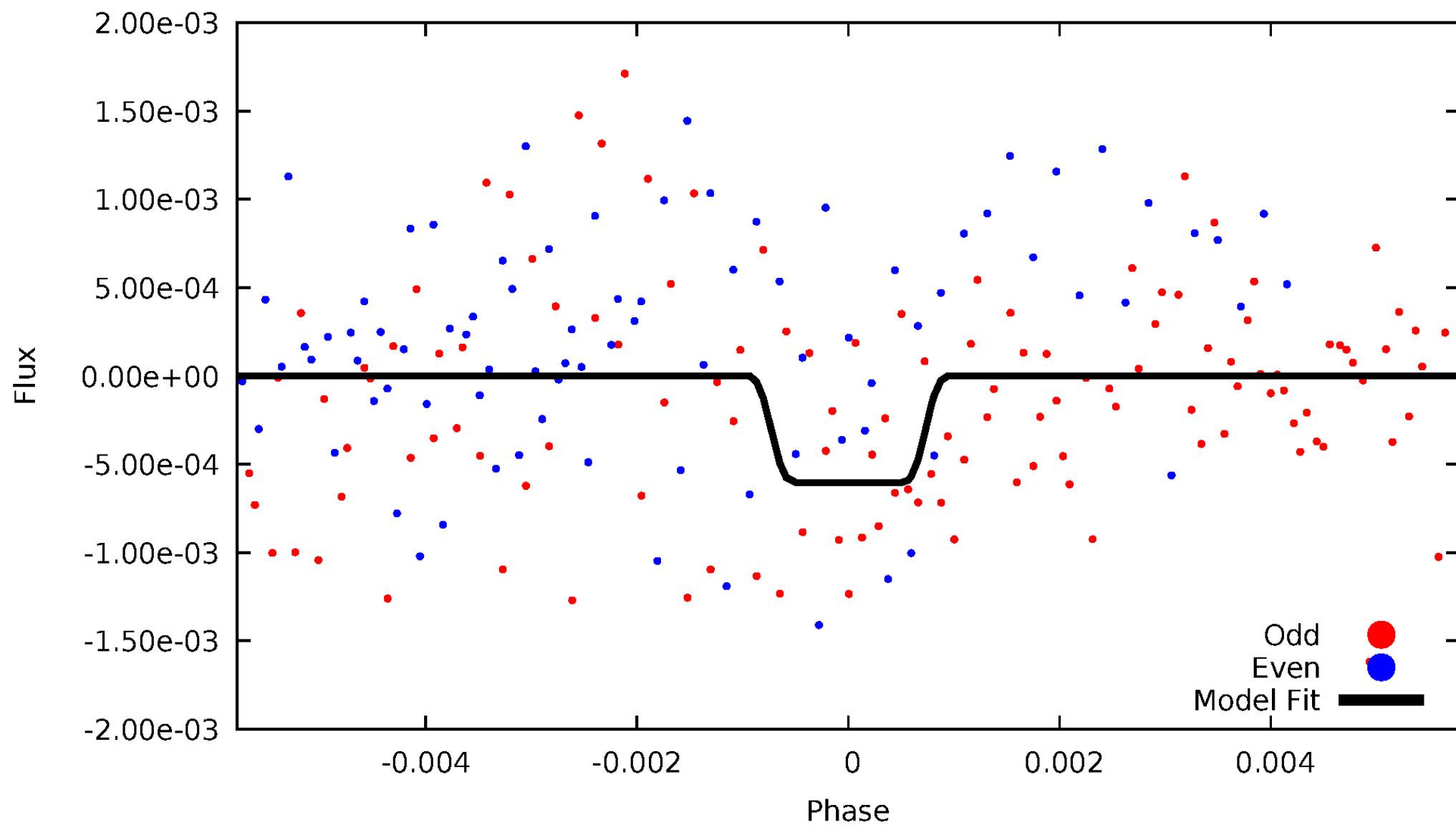
# DV Odd/Even

TCE 005185153-04



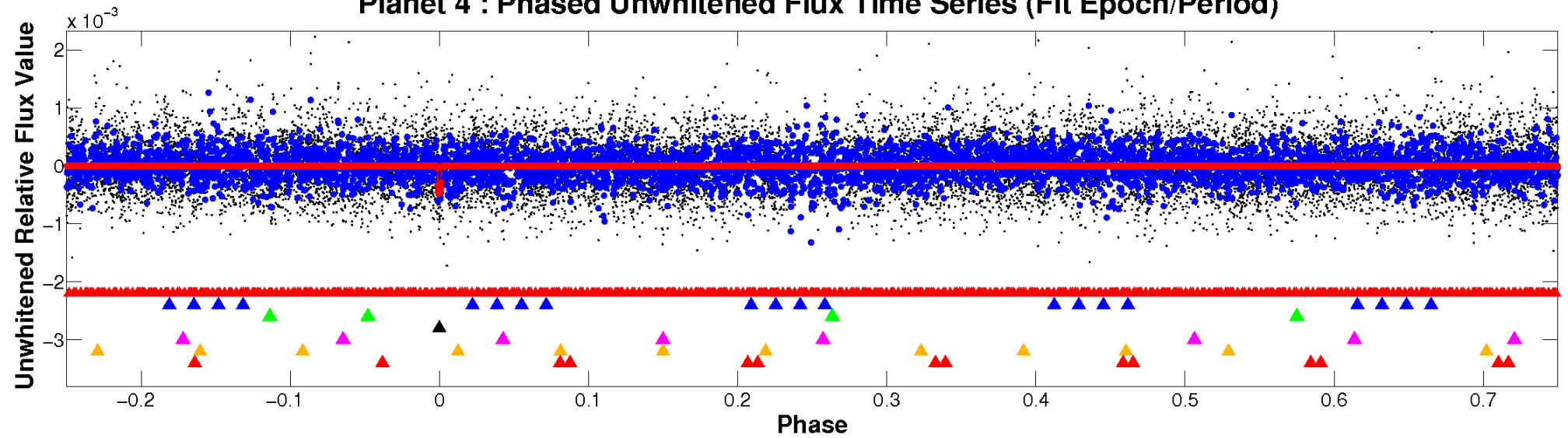
# ALT Odd/Even

TCE 005185153-04

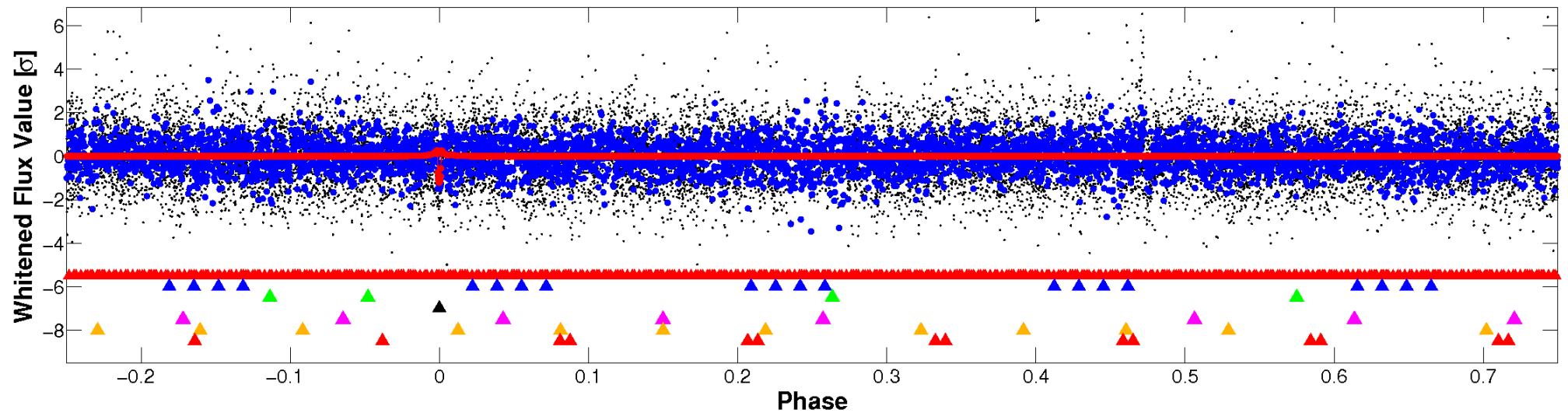


# Non-Whitened Vs. Whitened Light Curve

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

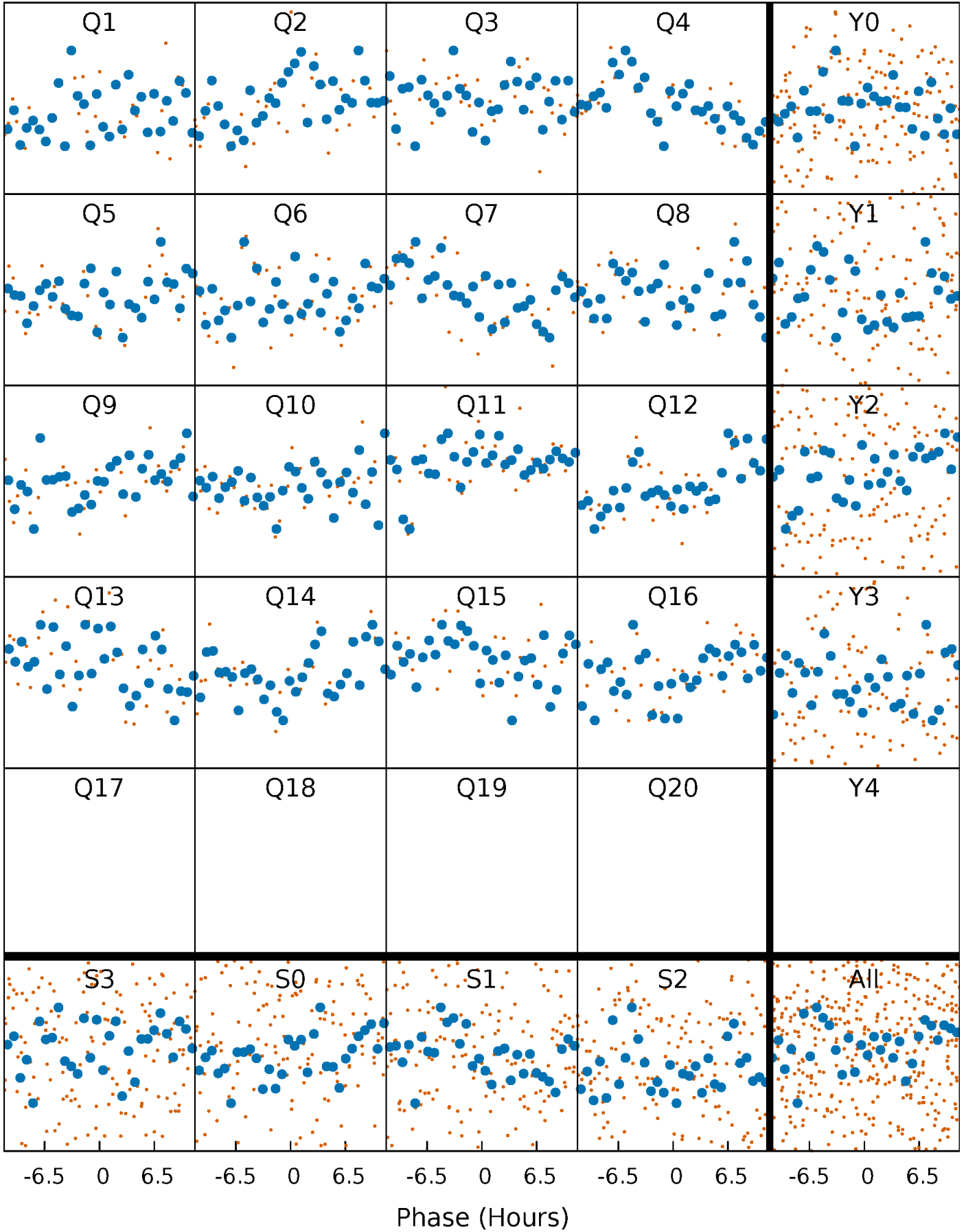


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



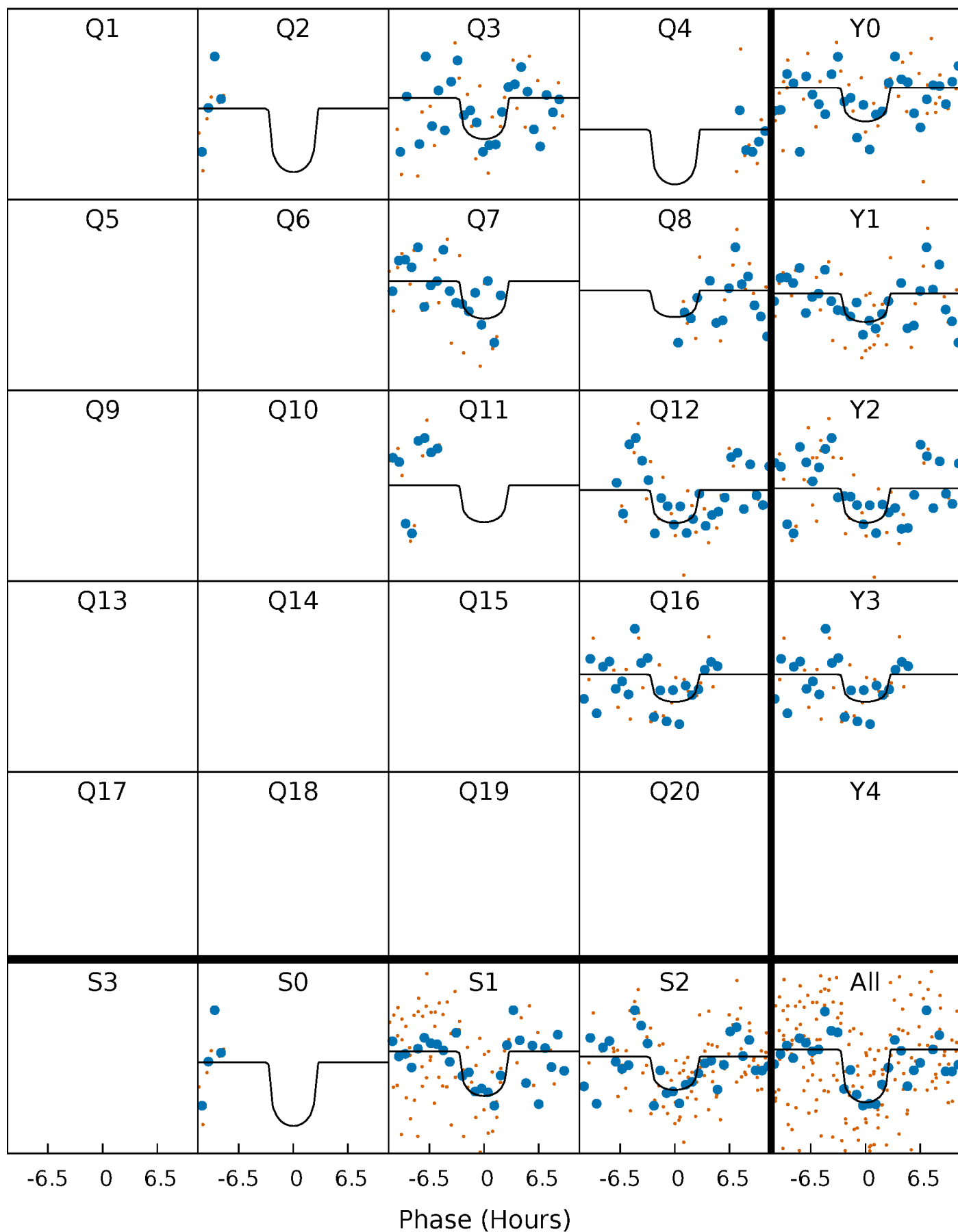
# PDC Quarter-Phased Transit Curves

TCE 005185153-04   P= 93.564944 Days    $T_0=140.645833$  (BKJD)



# DV Quarter-Phased Transit Curves

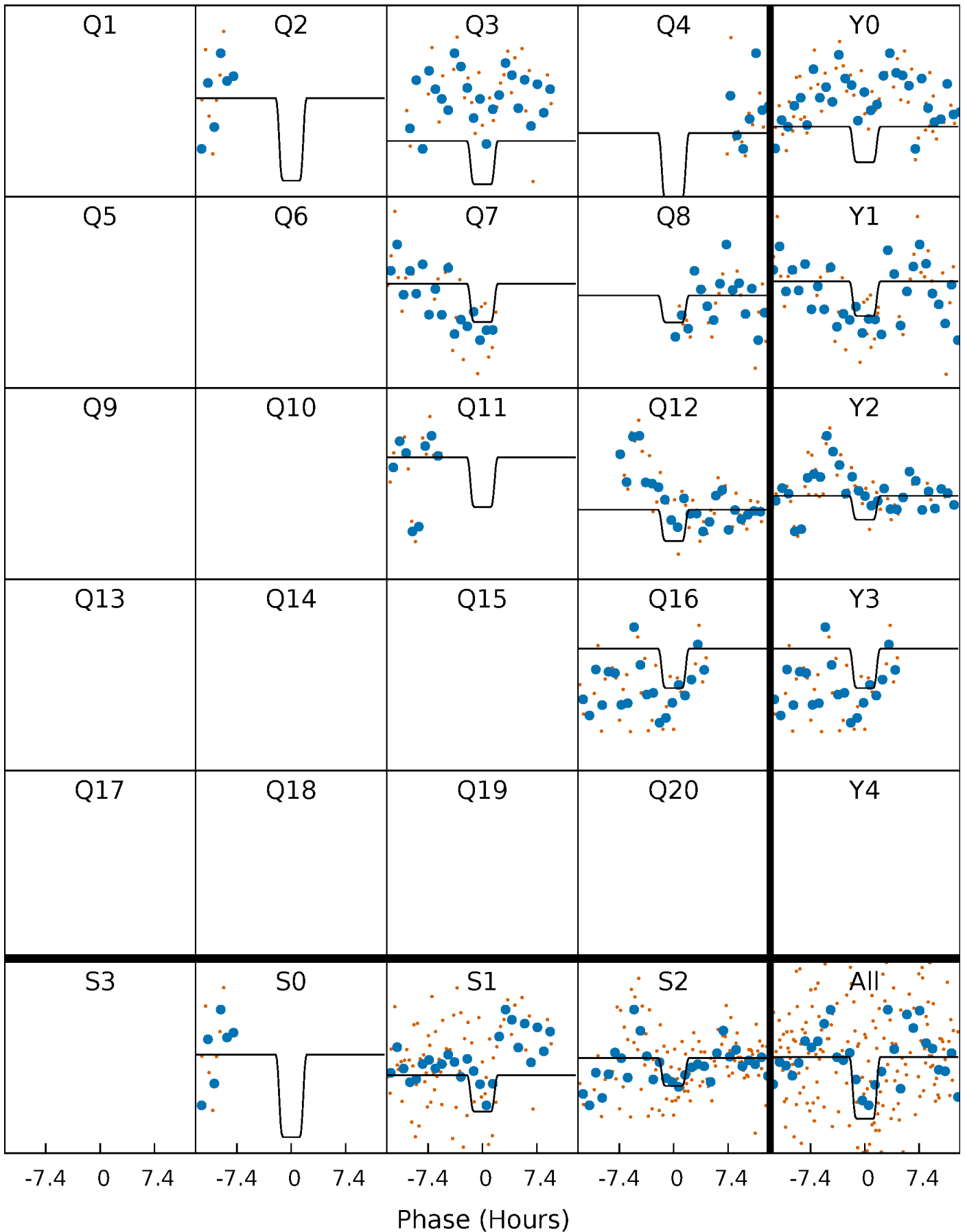
TCE 005185153-04 P= 93.564944 Days  $T_0=140.645833$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

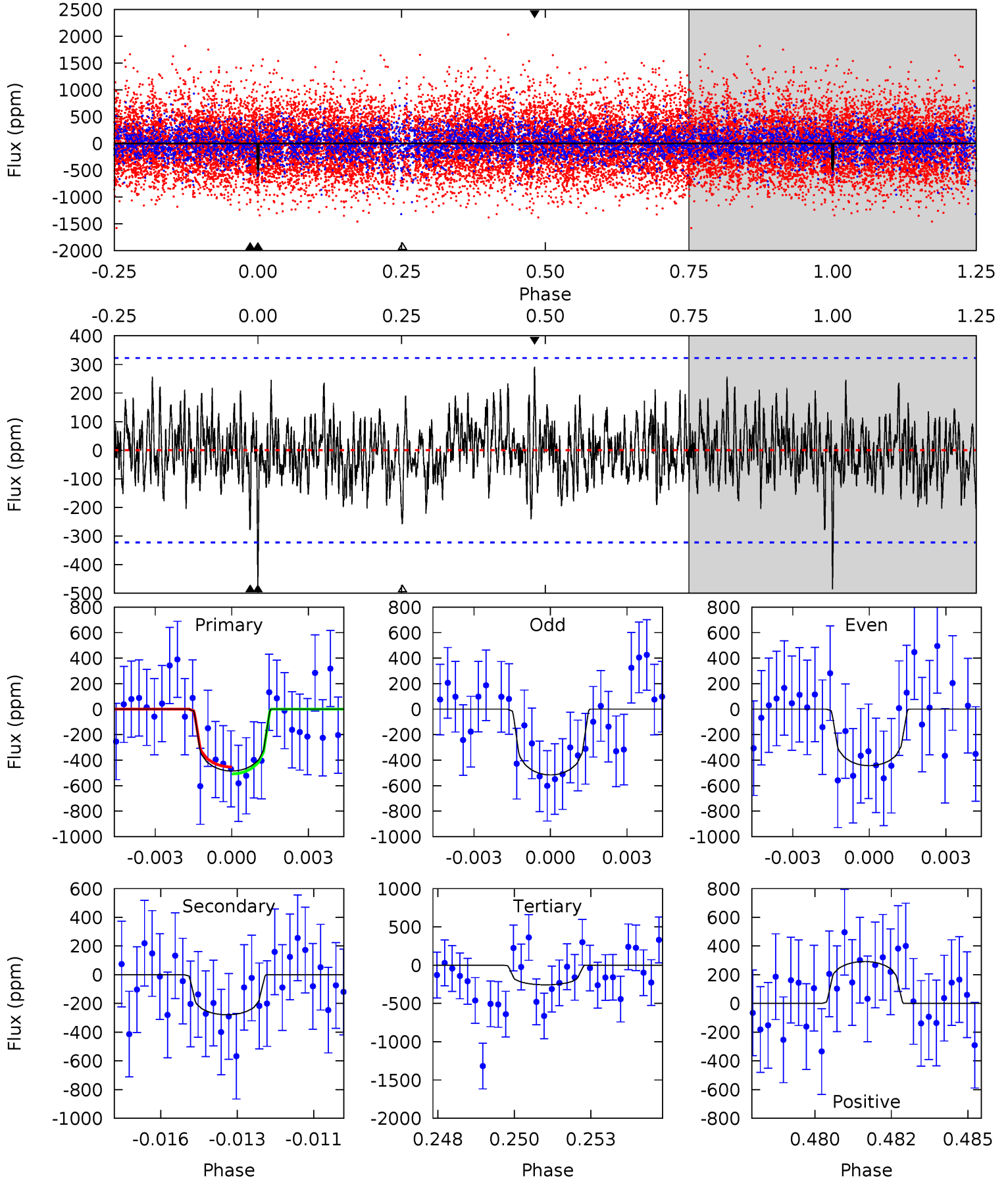
TCE 005185153-04     $P = 93.566909$  Days     $T_0 = 140.641236$  (BKJD)



# DV Model-Shift Uniqueness Test

005185153-04, P = 93.564944 Days, E = 47.080889 Days

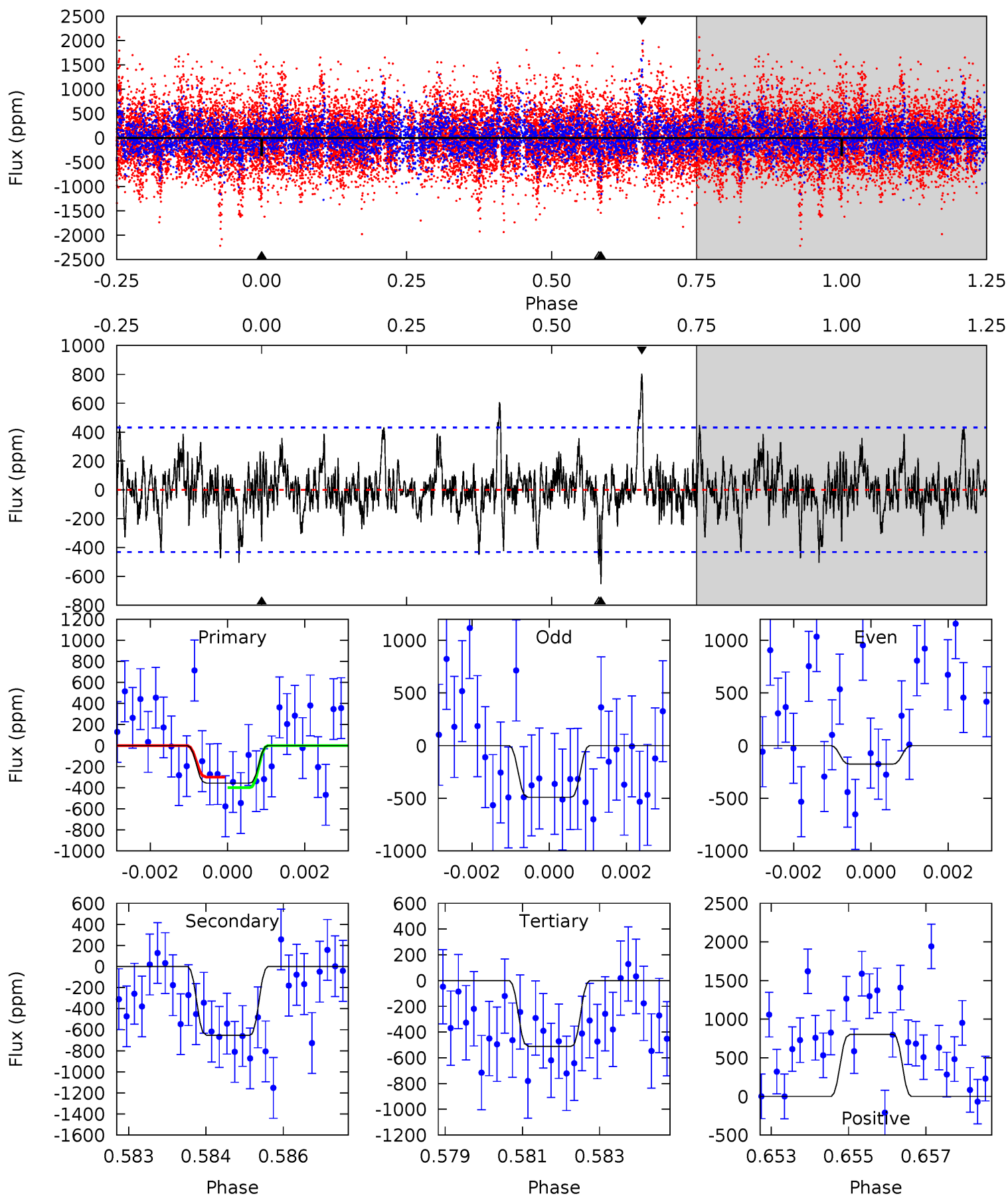
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.95	4.57	4.21	4.78	5.28	3.01	1.34	3.74	3.17	0.36	-0.21	0.58	1.06	0.38	0.44



# Alt Model-Shift Uniqueness Test

005185153-04, P = 93.566909 Days, E = 47.074327 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
4.42	8.09	6.32	9.96	5.34	3.12	1.77	-1.90	-5.53	1.76	-1.87	1.92	0.54	0.55	0.61



### Stellar Parameters For KIC 005185153

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5615^{+169}_{-169}$	$4.552^{+0.035}_{-0.184}$	$-0.040^{+0.300}_{-0.300}$	$0.852^{+0.233}_{-0.078}$	$0.942^{+0.094}_{-0.104}$	$2.149^{+0.380}_{-1.022}$
	+3%/-3%	+1%/-4%	+750%/-750%	+27%/-9%	+10%/-11%	+18%/-48%
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 005185153-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-279 \pm 61$	$2.82^{+2.49}_{-1.91}$	$520^{+34}_{-22}$	$4384^{+3250}_{-777}$	$2923^{+27248}_{-2064}$
Alt.	$-653 \pm 81$	$2.92^{+2.35}_{-1.90}$	$521^{+33}_{-22}$	$5242^{+4283}_{-1071}$	$6658^{+49844}_{-4701}$

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

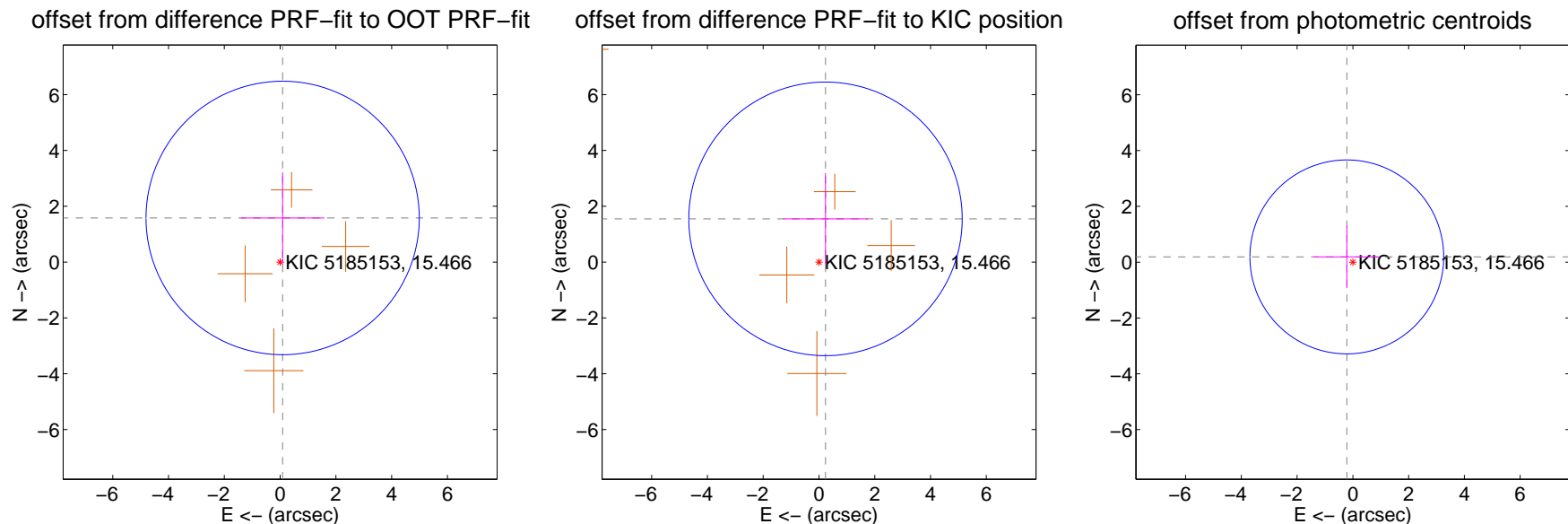
## DV Centroid Data

Supplemental centroid analysis for 005185153-04. Kepler magnitude: 15.47. Transit SNR 7.35

There are 0 quarters with good PRF difference image offsets

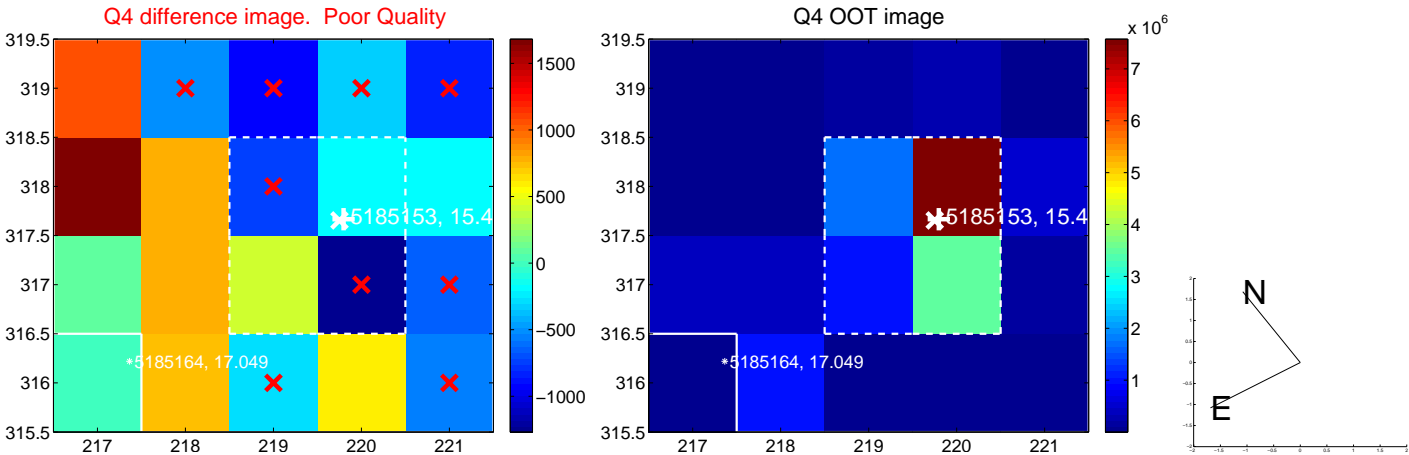
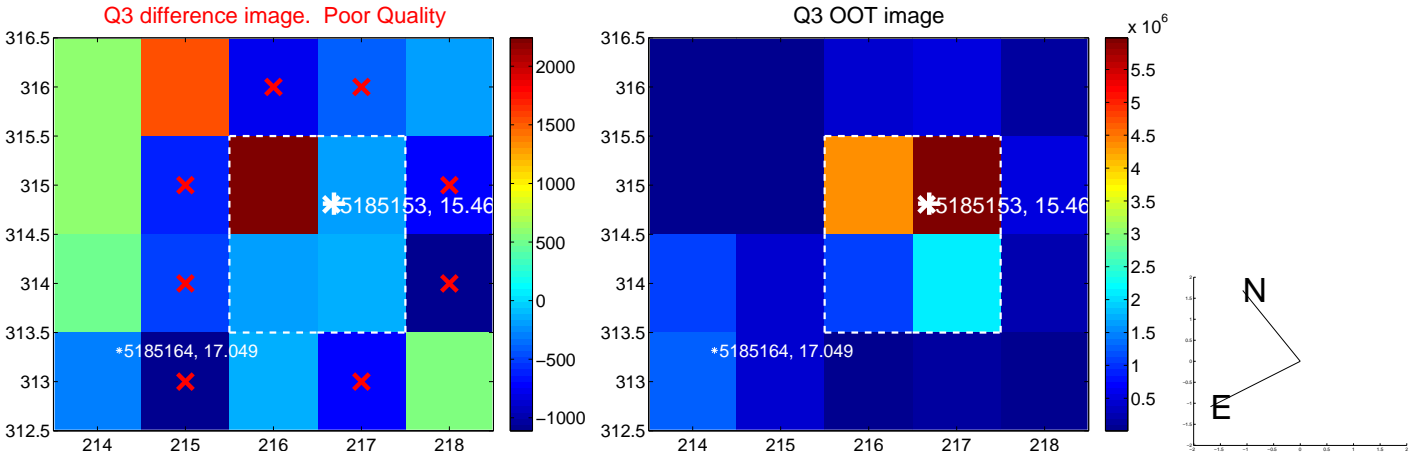
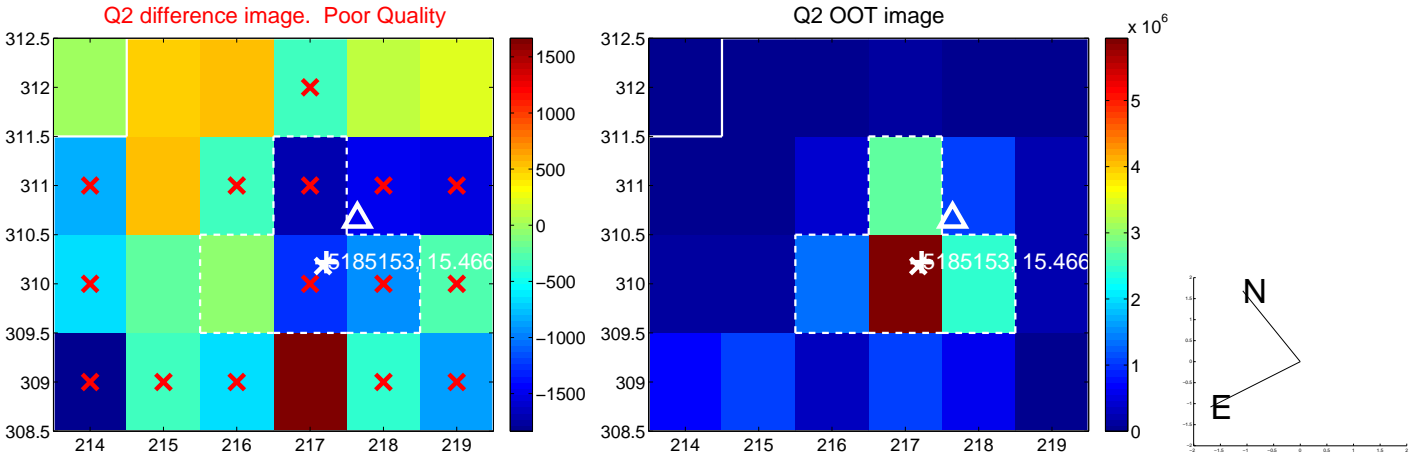
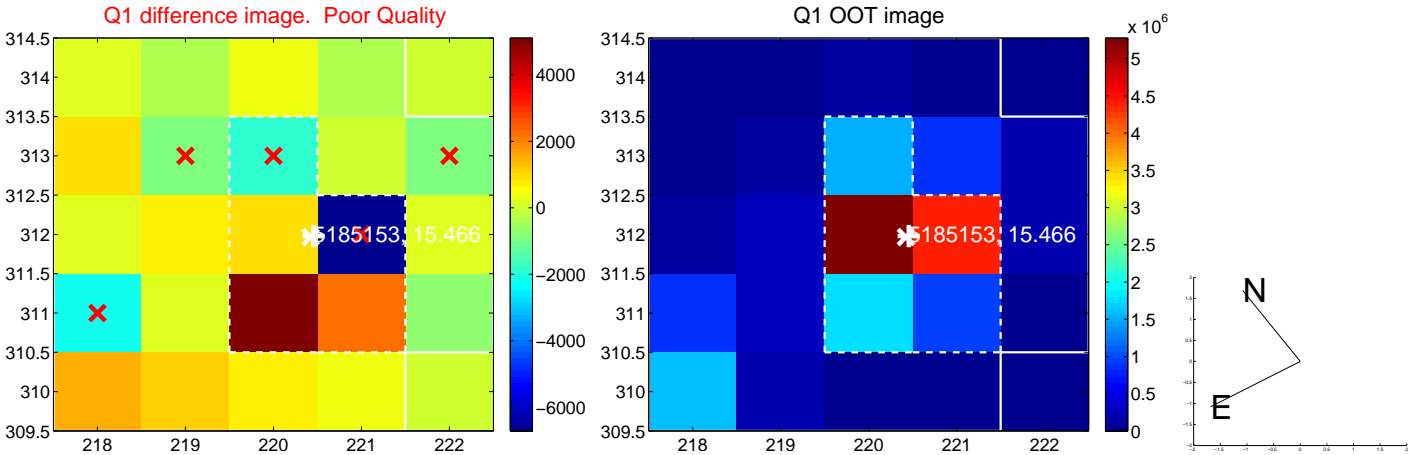
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.584 \pm 1.633$	0.97	$-0.091 \pm 1.495$	$1.581 \pm 1.634$
PRF-fit source offset from KIC position	$1.566 \pm 1.634$	0.96	$-0.234 \pm 1.517$	$1.549 \pm 1.637$
photometric centroid source offset	$0.29 \pm 1.16$	0.25	$0.22 \pm 1.18$	$0.19 \pm 1.12$

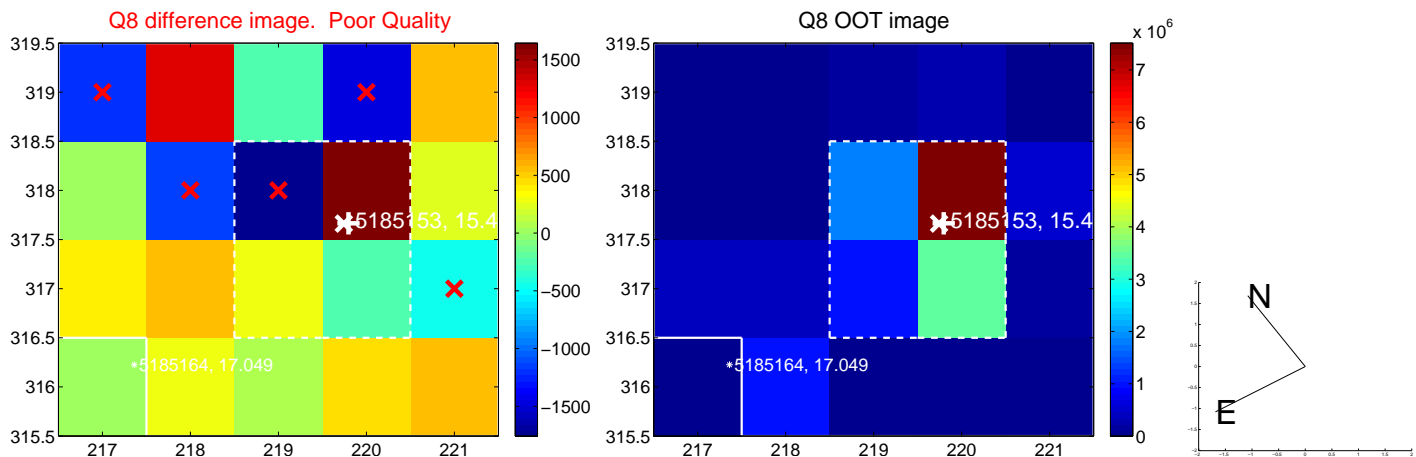
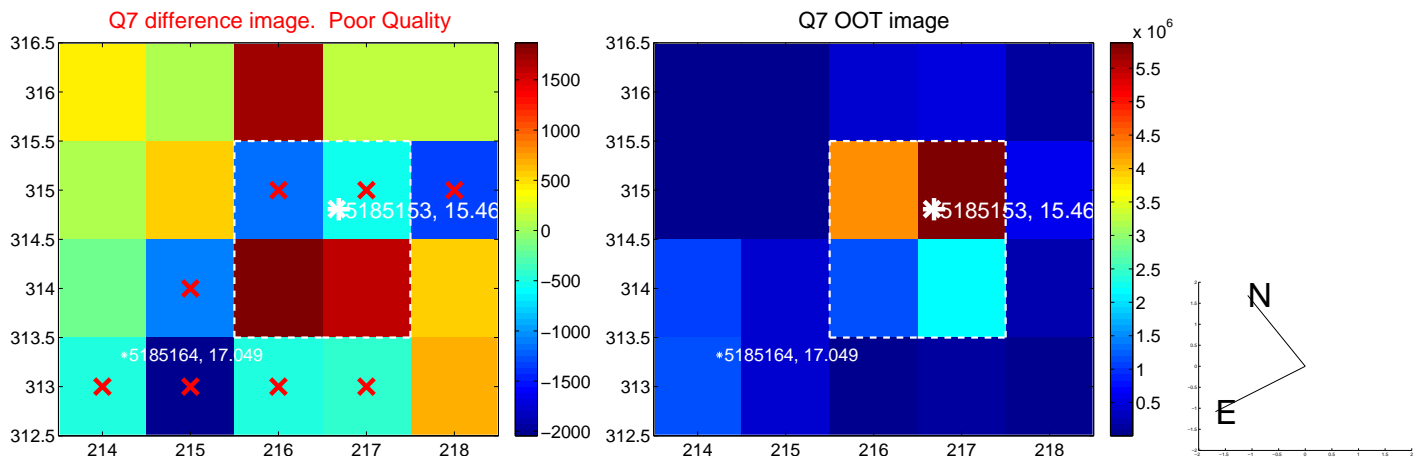
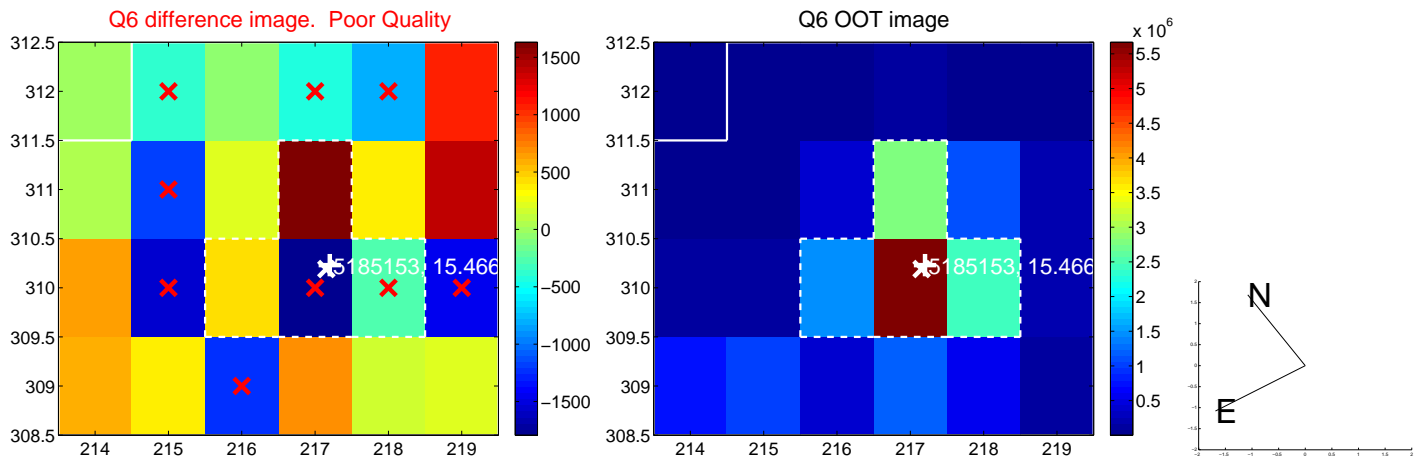
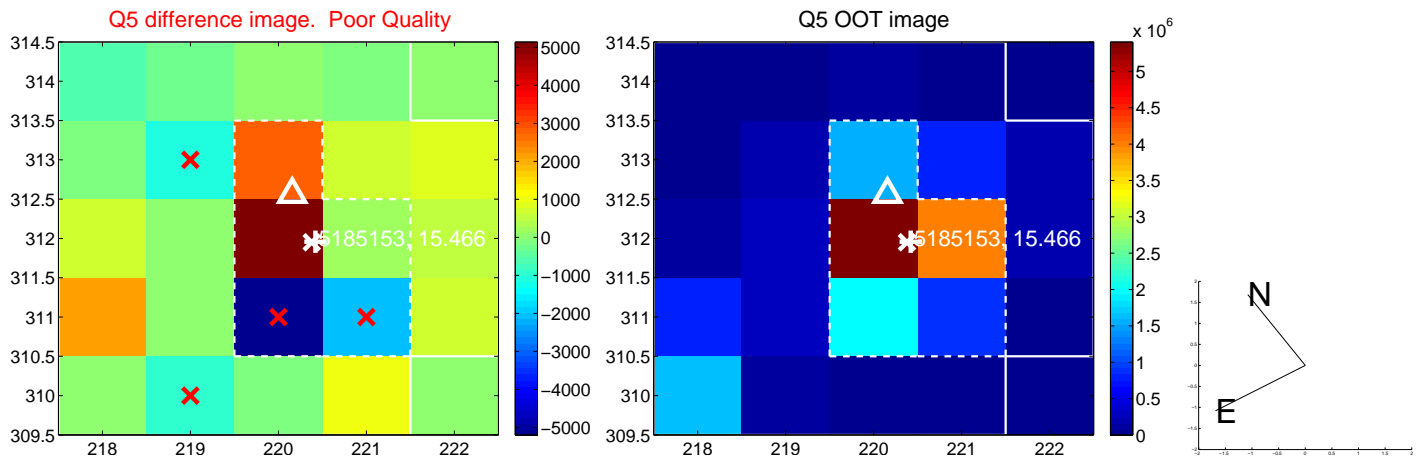


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

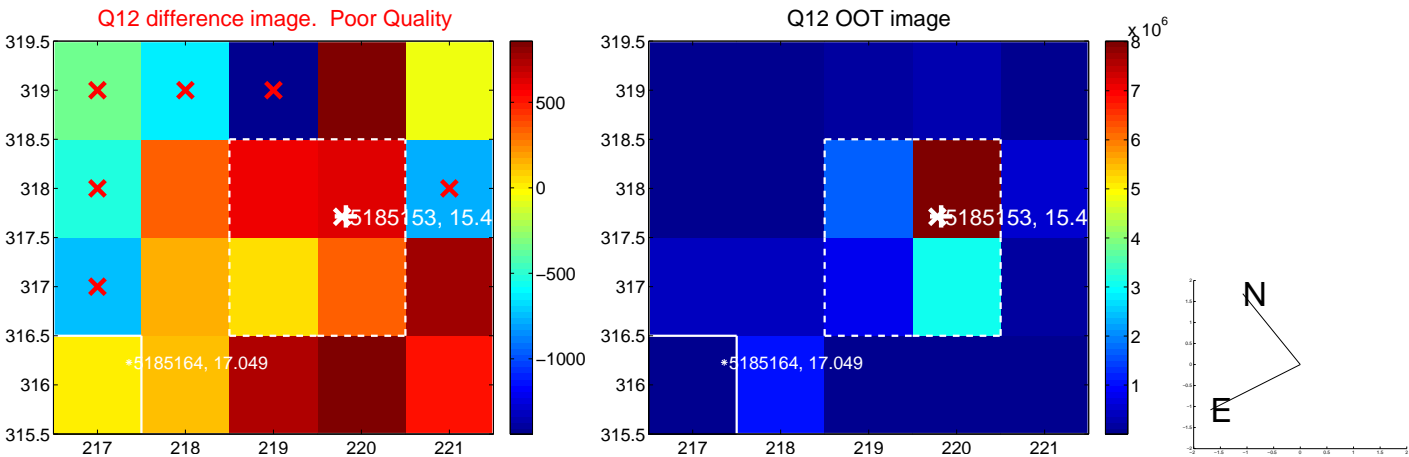
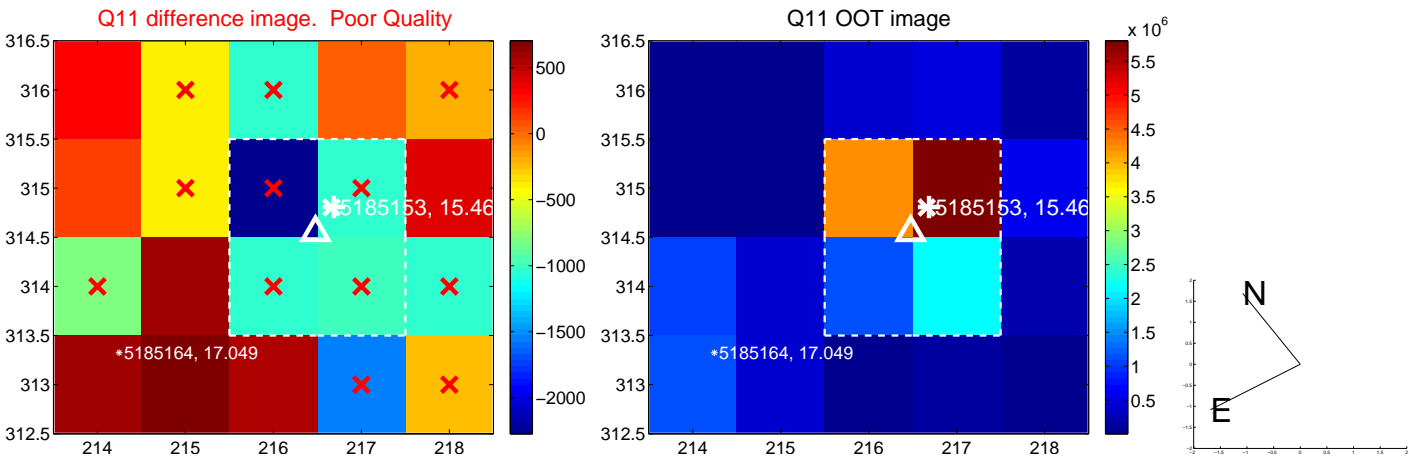
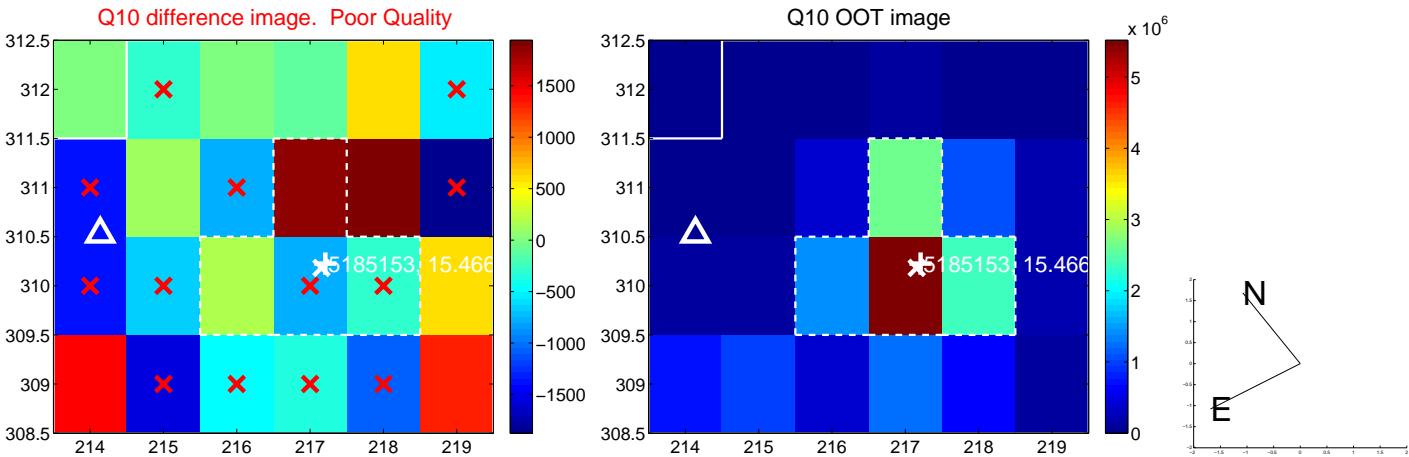
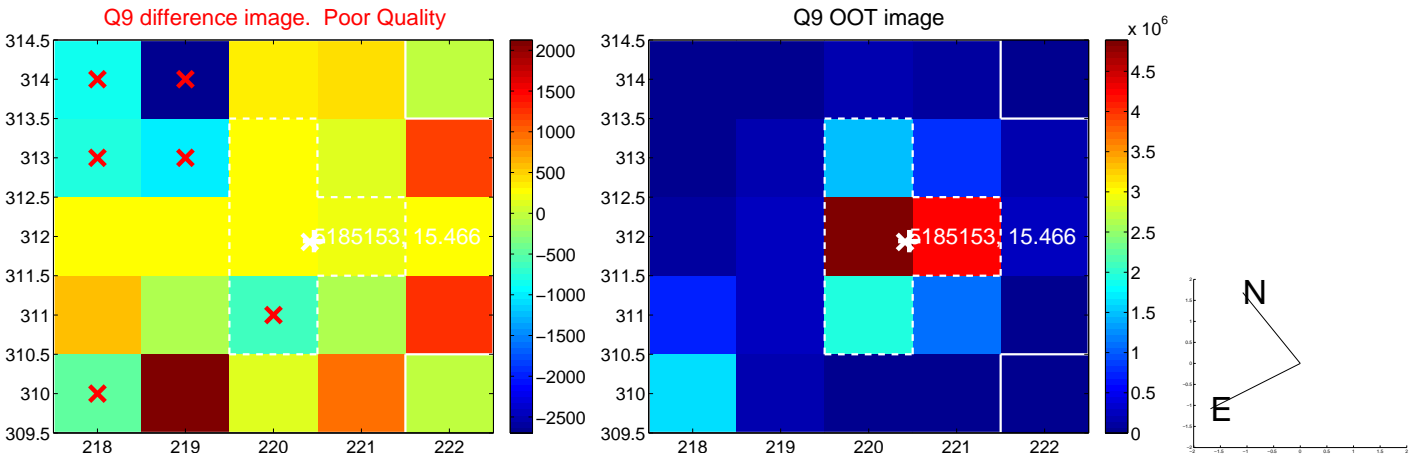


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

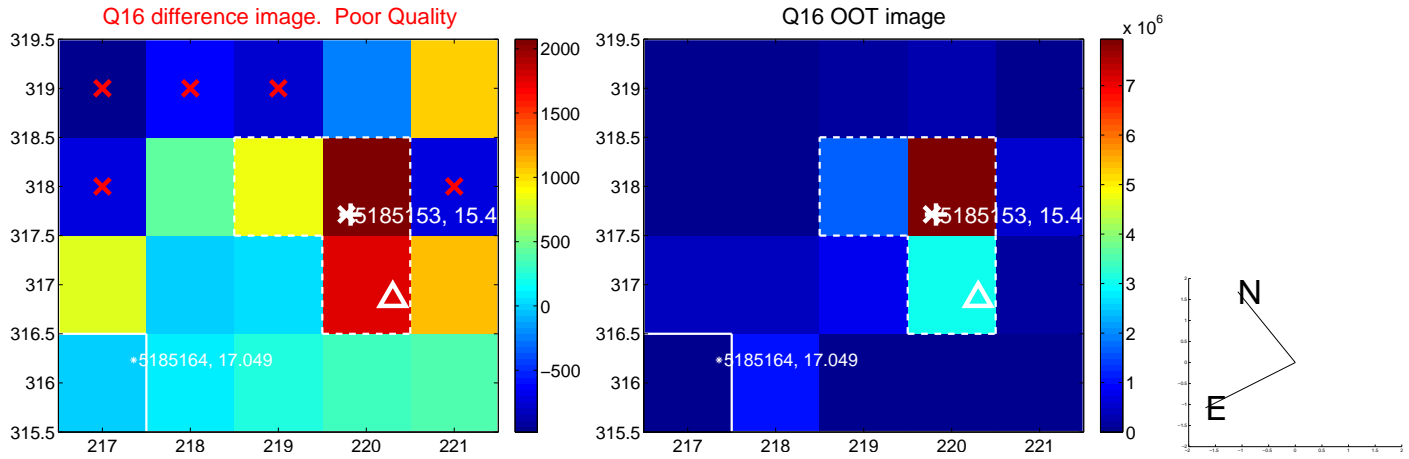
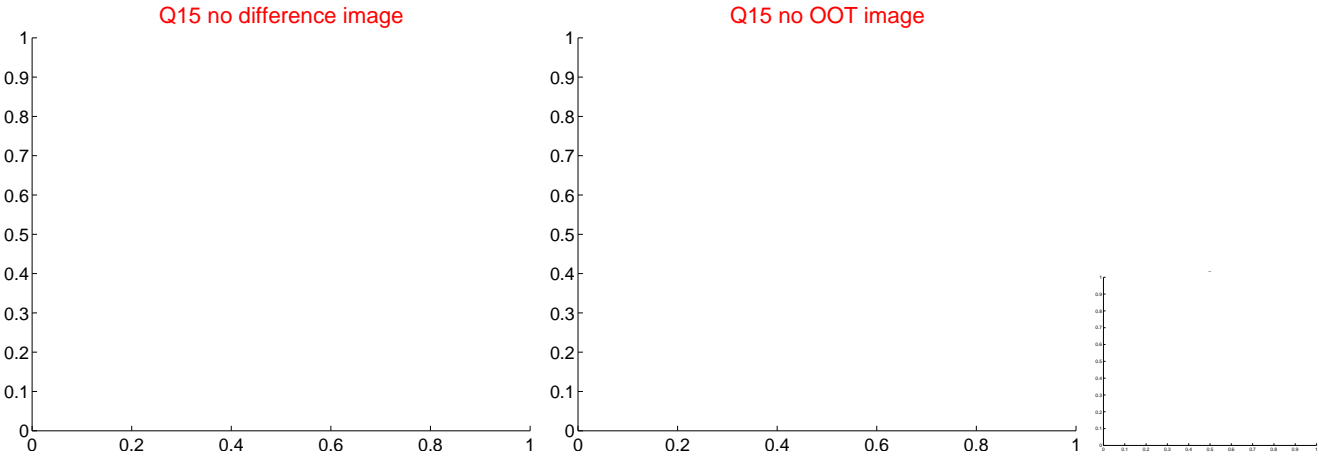
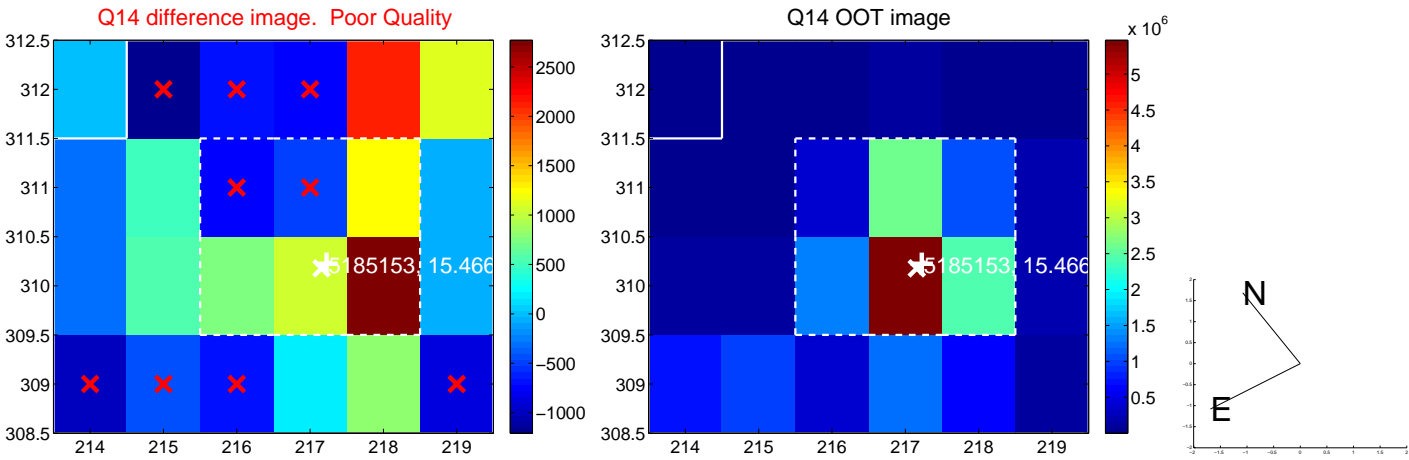
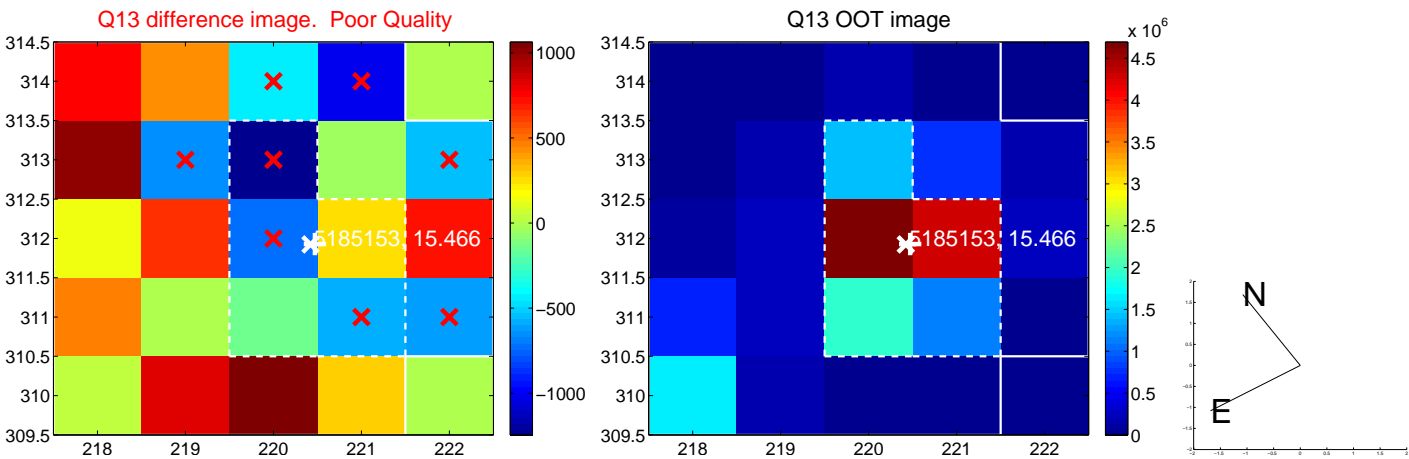




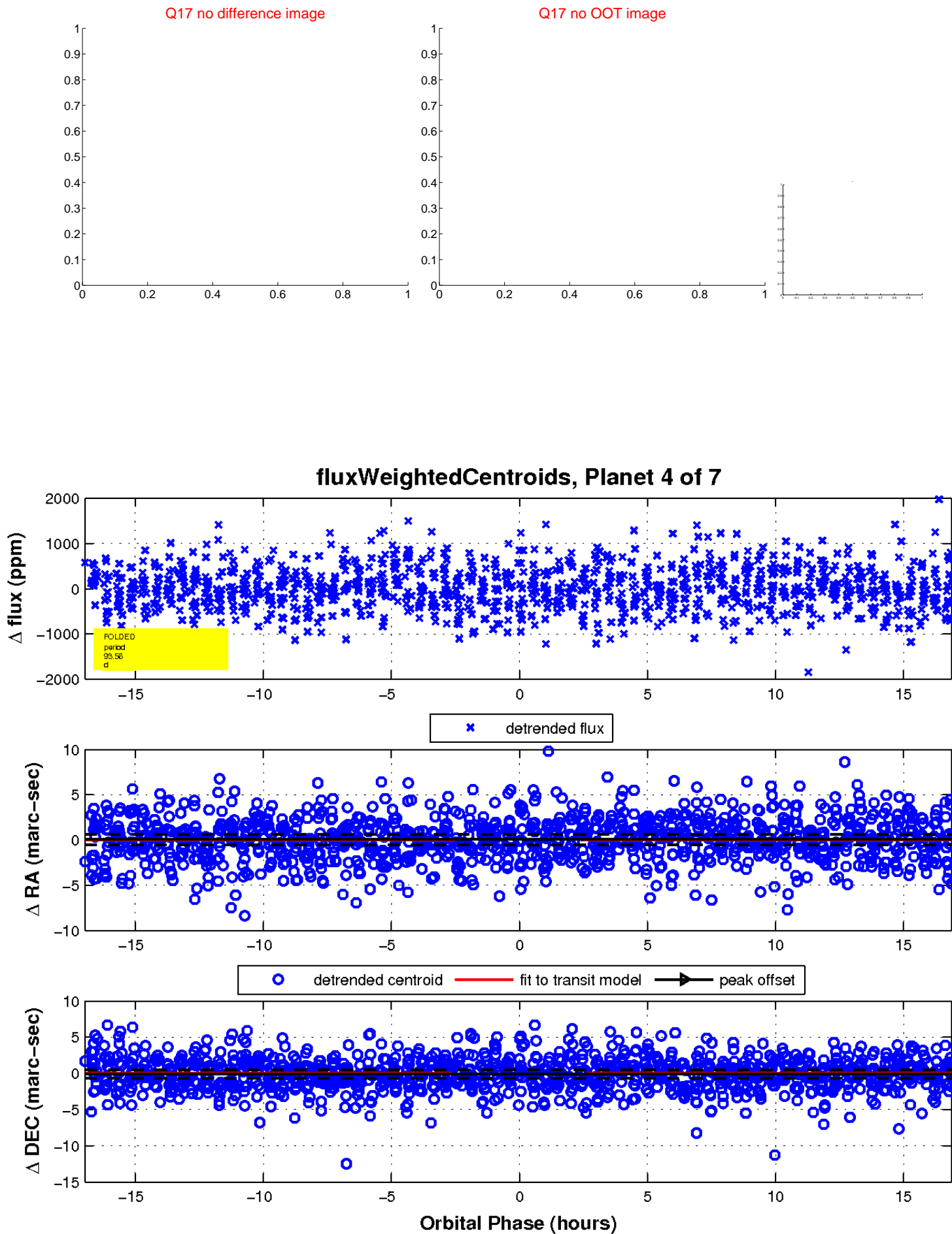
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

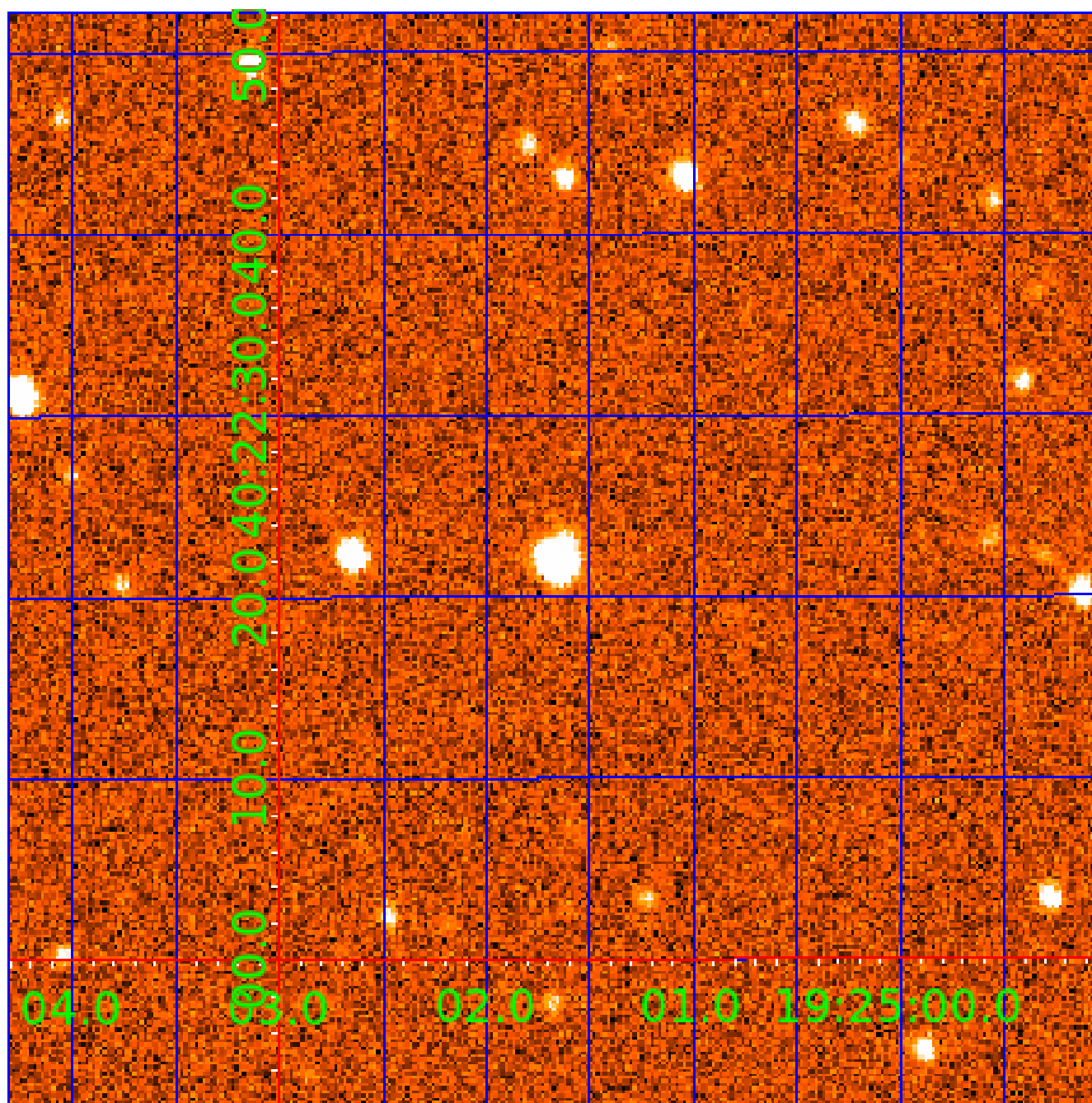


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005185153

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005185153-01	OBS	No	3.251795	134.277121	95.4	19.167	8.3	11.8	0.85	5615	0.89	363.99
005185153-02	OBS	No	74.543609	147.350518	527.5	28.583	12.9	8.5	0.85	5615	2.51	5.59
005185153-03	OBS	No	403.397418	229.731815	780.5	25.882	12.1	8.0	0.85	5615	2.73	0.59
005185153-04	OBS	No	93.564944	140.645833	480.7	5.660	8.5	7.4	0.85	5615	1.99	4.13
005185153-05	OBS	No	177.092844	258.280919	850.0	2.735	8.2	8.0	0.85	5615	2.86	1.76
005185153-06	OBS	No	122.609683	225.633037	456.5	16.195	7.8	6.3	0.85	5615	2.03	2.88
005185153-07	OBS	No	105.338904	148.221922	187.4	13.735	7.4	3.8	0.85	5615	1.33	3.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005185153-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005185153-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005185153-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005185153-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005185153-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

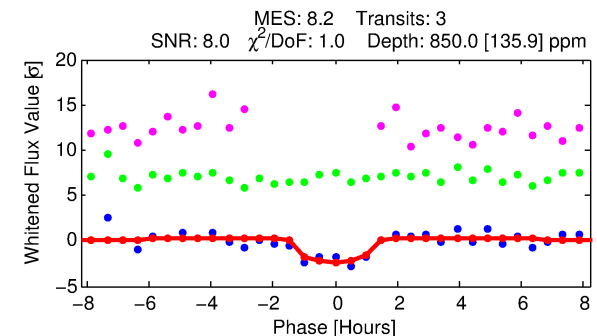
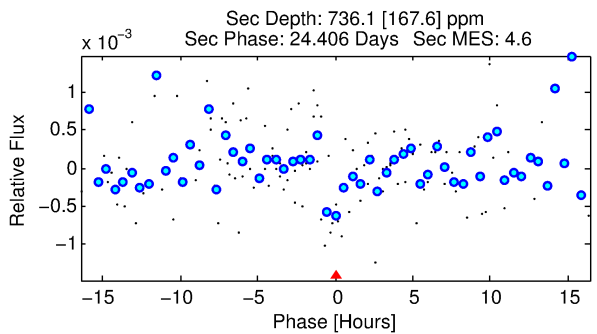
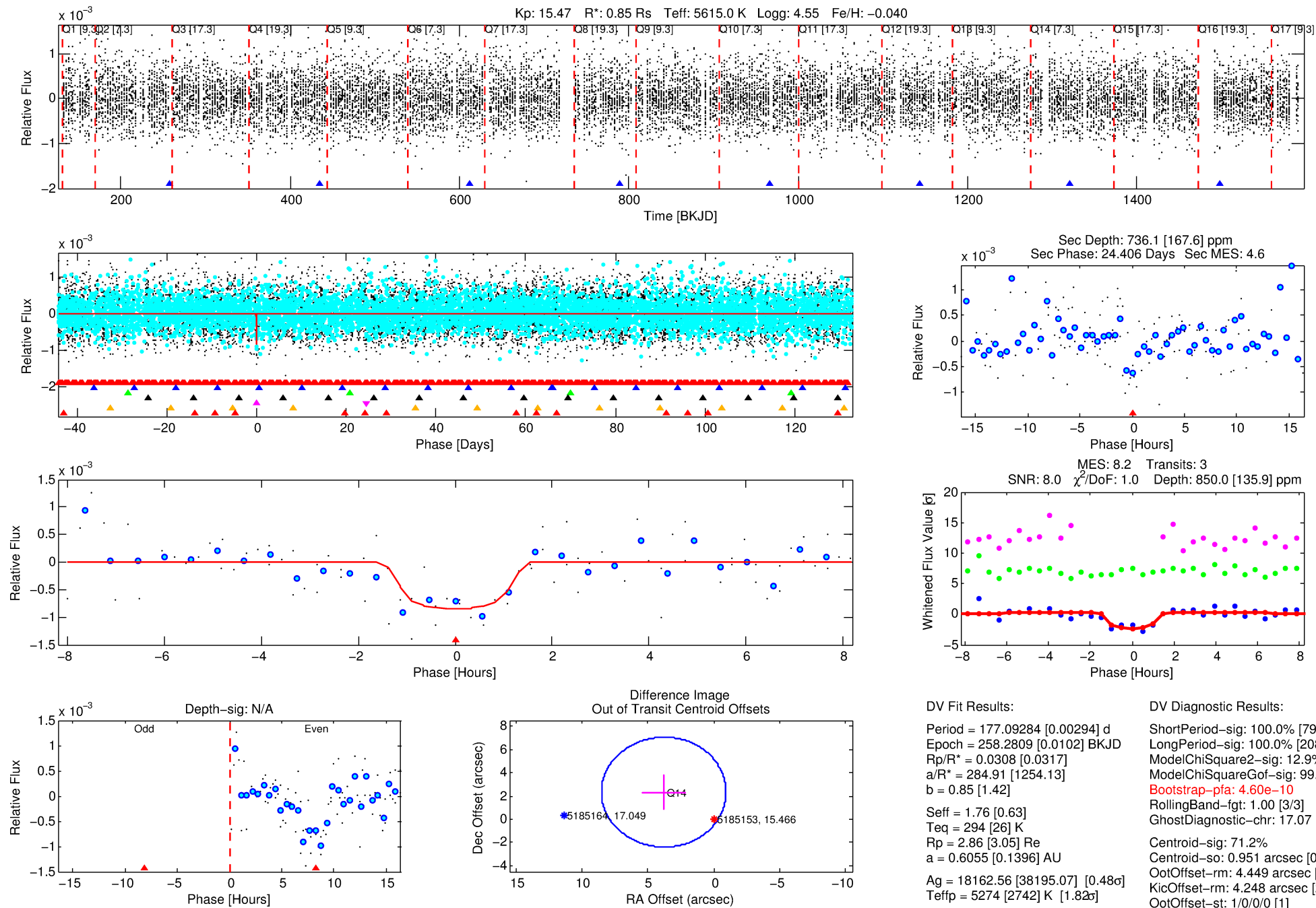
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005185153-05

No Significant Match Found

# DV One-Page Summary

KIC: 5185153 Candidate: 5 of 7 Period: 177.093 d



## DV Fit Results:

Period = 177.09284 [0.00294] d  
Epoch = 258.2809 [0.0102] BKJD  
Rp/R\* = 0.0308 [0.0317]  
a/R\* = 284.91 [1254.13]  
b = 0.85 [1.42]  
Seff = 1.76 [0.63]  
Teff = 294 [26] K  
Rp = 2.86 [3.05] Re  
a = 0.6055 [0.1396] AU  
Ag = 18162.56 [38195.07] [0.48] $\sigma$   
Teffp = 5274 [2742] K [1.82] $\sigma$

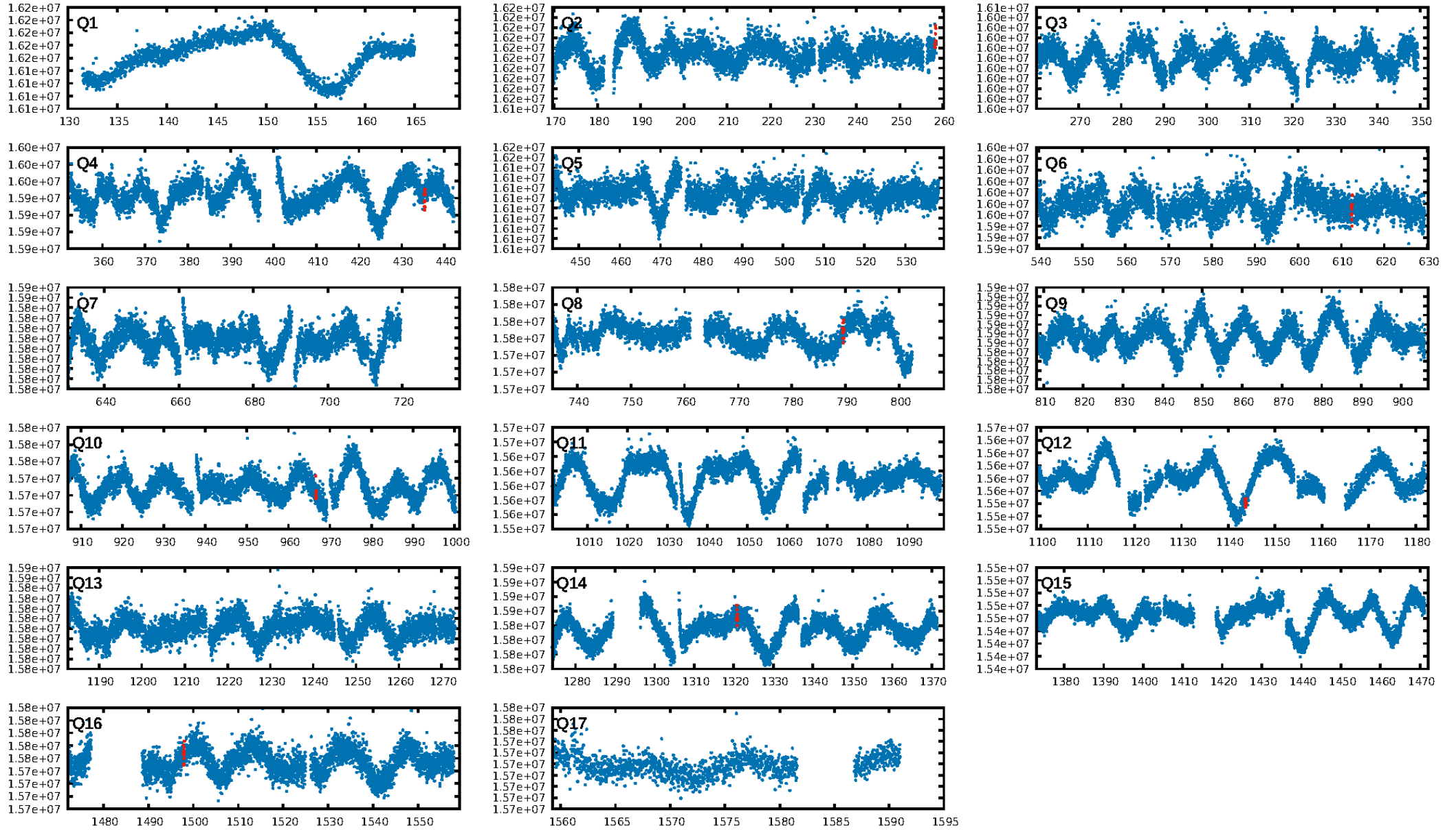
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [79.61] $\sigma$   
LongPeriod-sig: 100.0% [208.69] $\sigma$   
ModelChiSquare2-sig: 12.9%  
ModelChiSquareGof-sig: 99.2%  
**Bootstrap-pfa: 4.60e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 17.07  
Centroid-sig: 71.2%  
Centroid-so: 0.951 arcsec [0.68] $\sigma$   
OotOffset-rm: 4.449 arcsec [2.82] $\sigma$   
KicOffset-rm: 4.248 arcsec [2.70] $\sigma$   
OotOffset-st: 1/0/0/0 [1]  
KicOffset-st: 1/0/0/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 0.67 [4/6]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:03:06 Z

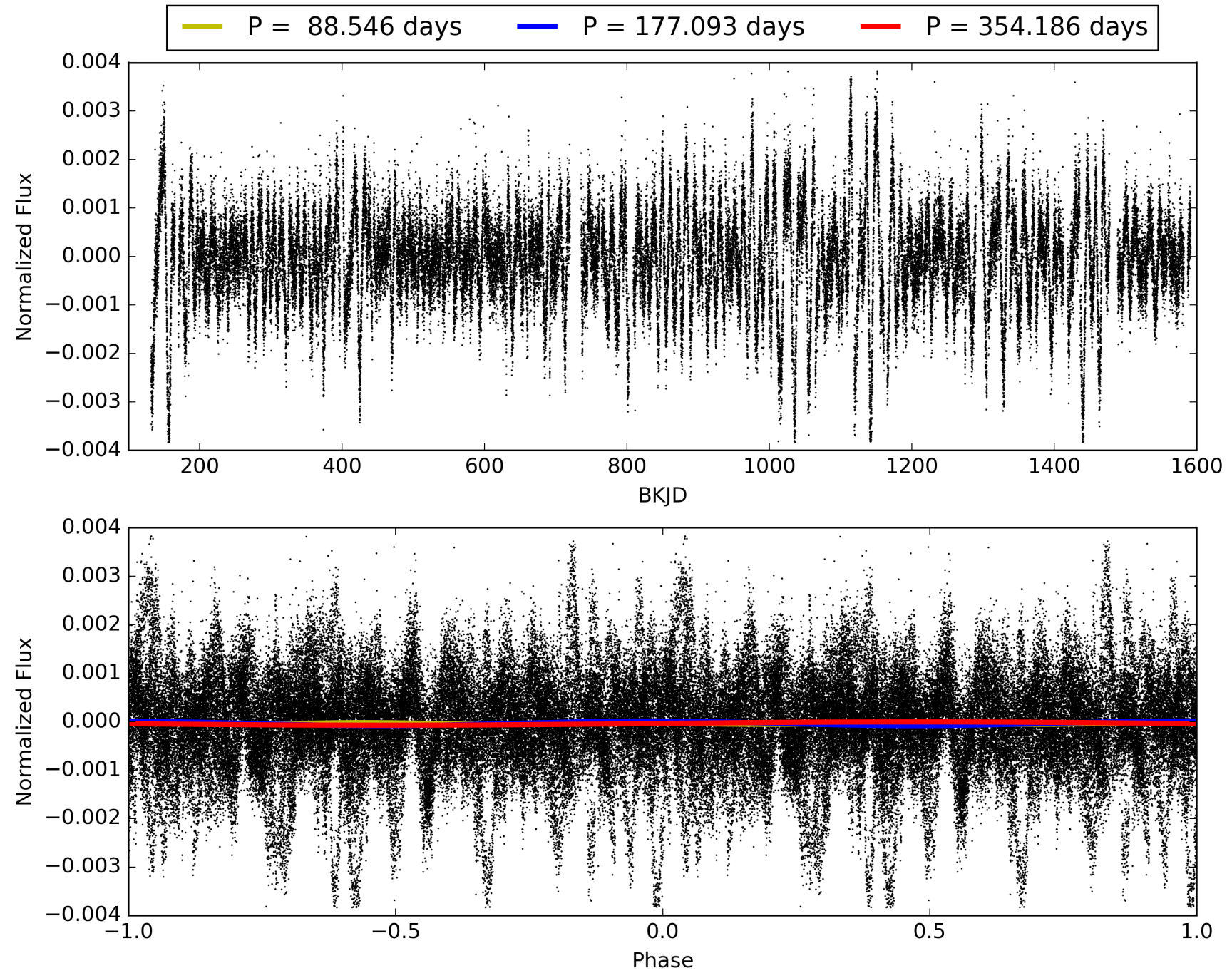
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005185153-05, PDC Light Curves



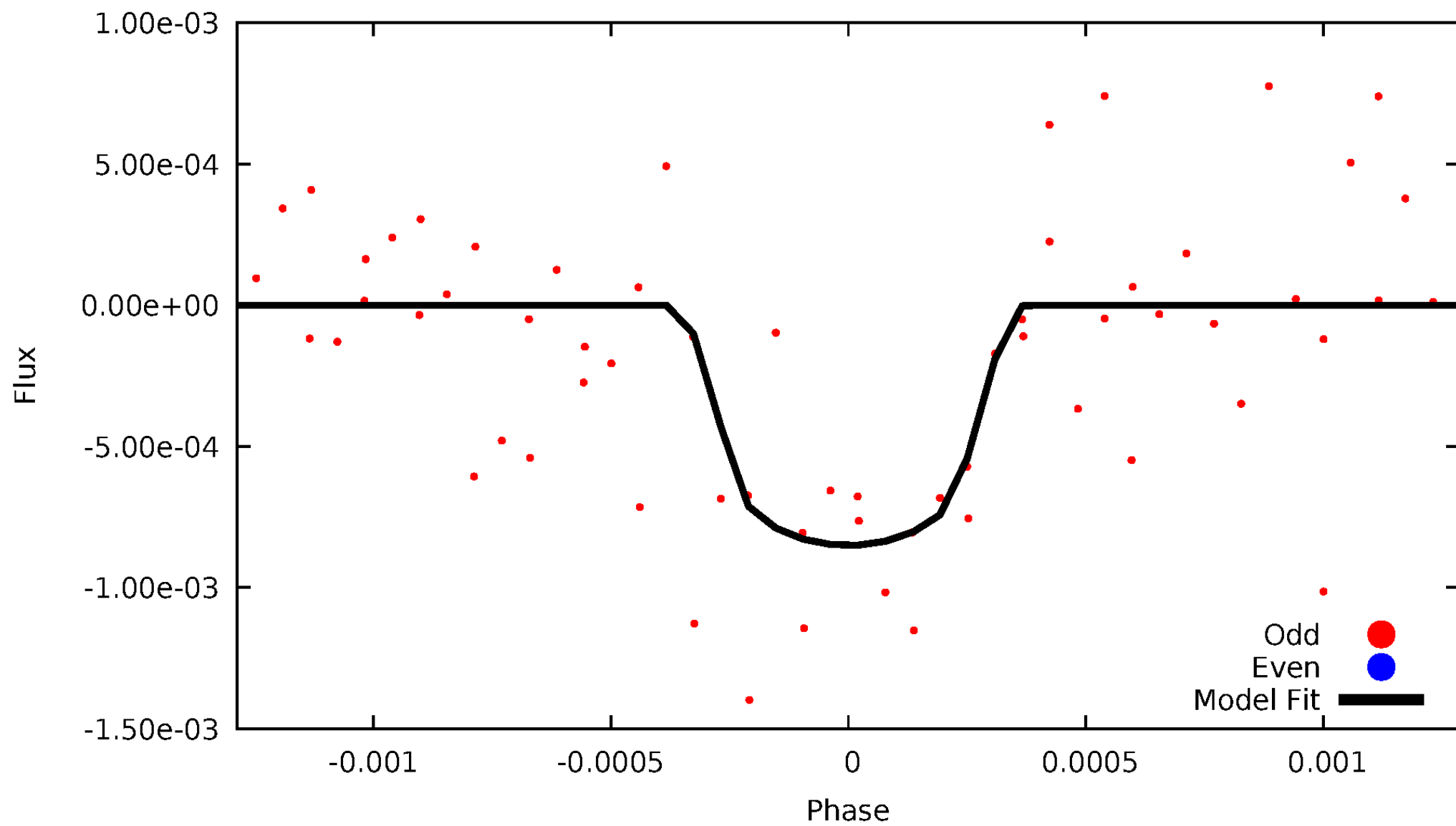


TCE 005185153-05



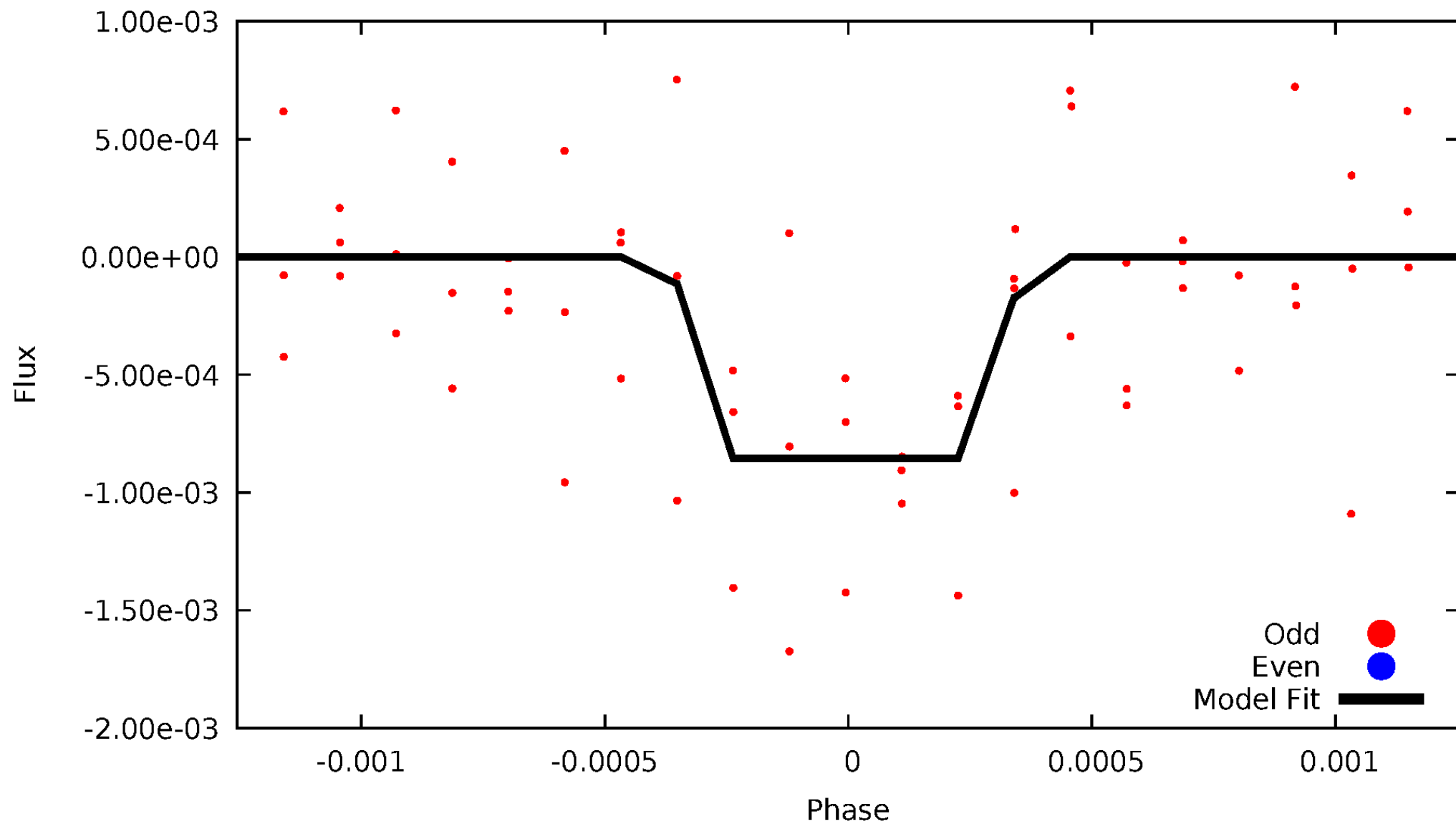
# DV Odd/Even

TCE 005185153-05



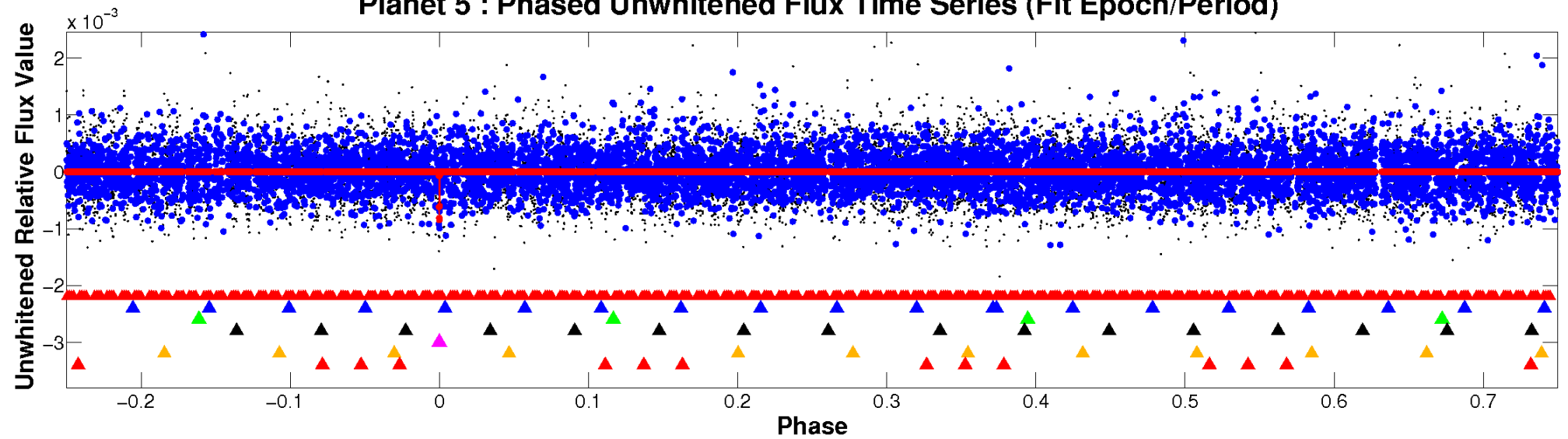
# ALT Odd/Even

TCE 005185153-05

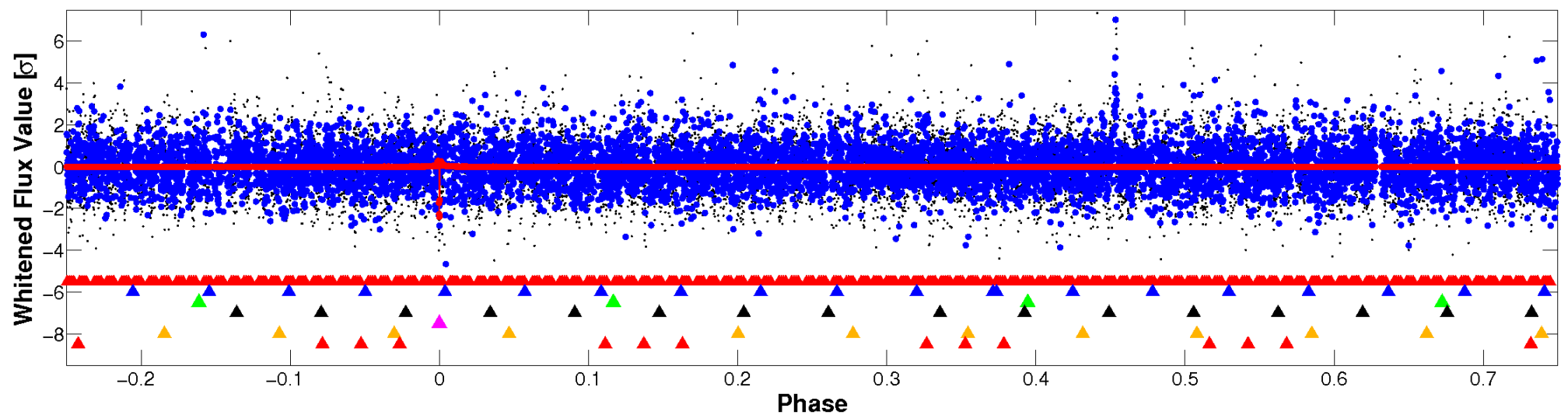


# Non-Whitened Vs. Whitened Light Curve

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

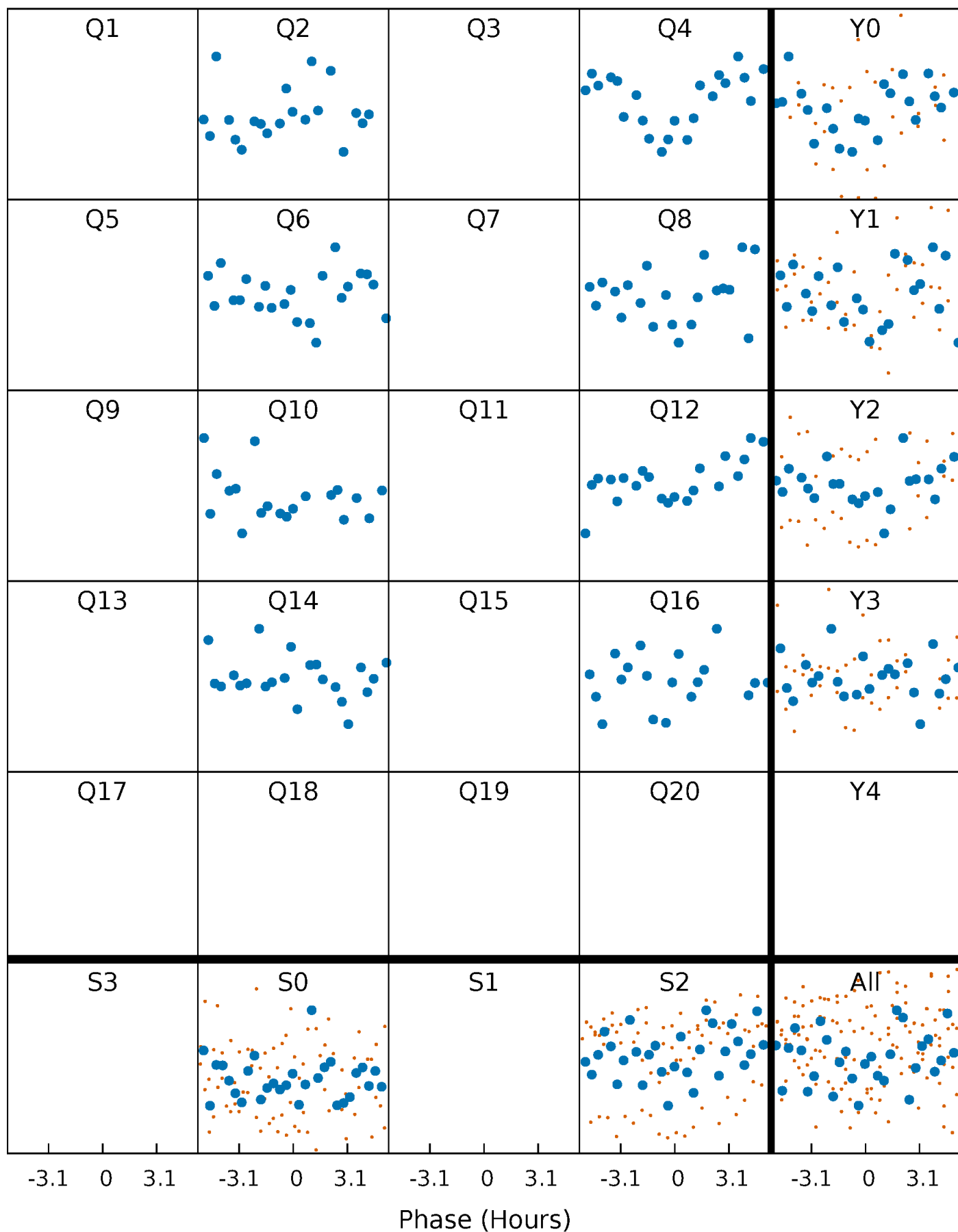


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



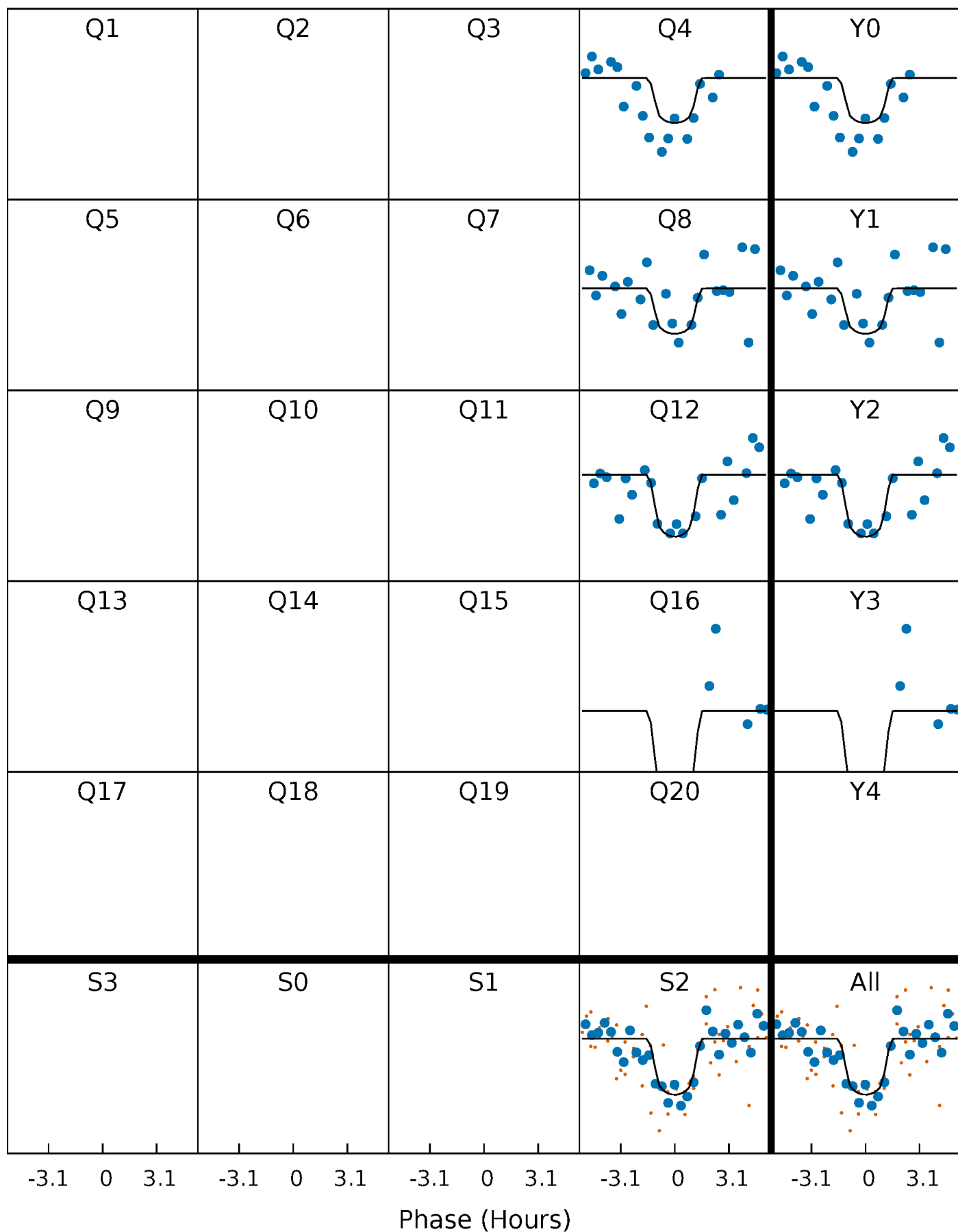
# PDC Quarter-Phased Transit Curves

TCE 005185153-05 P=177.092844 Days  $T_0=258.280919$  (BKJD)



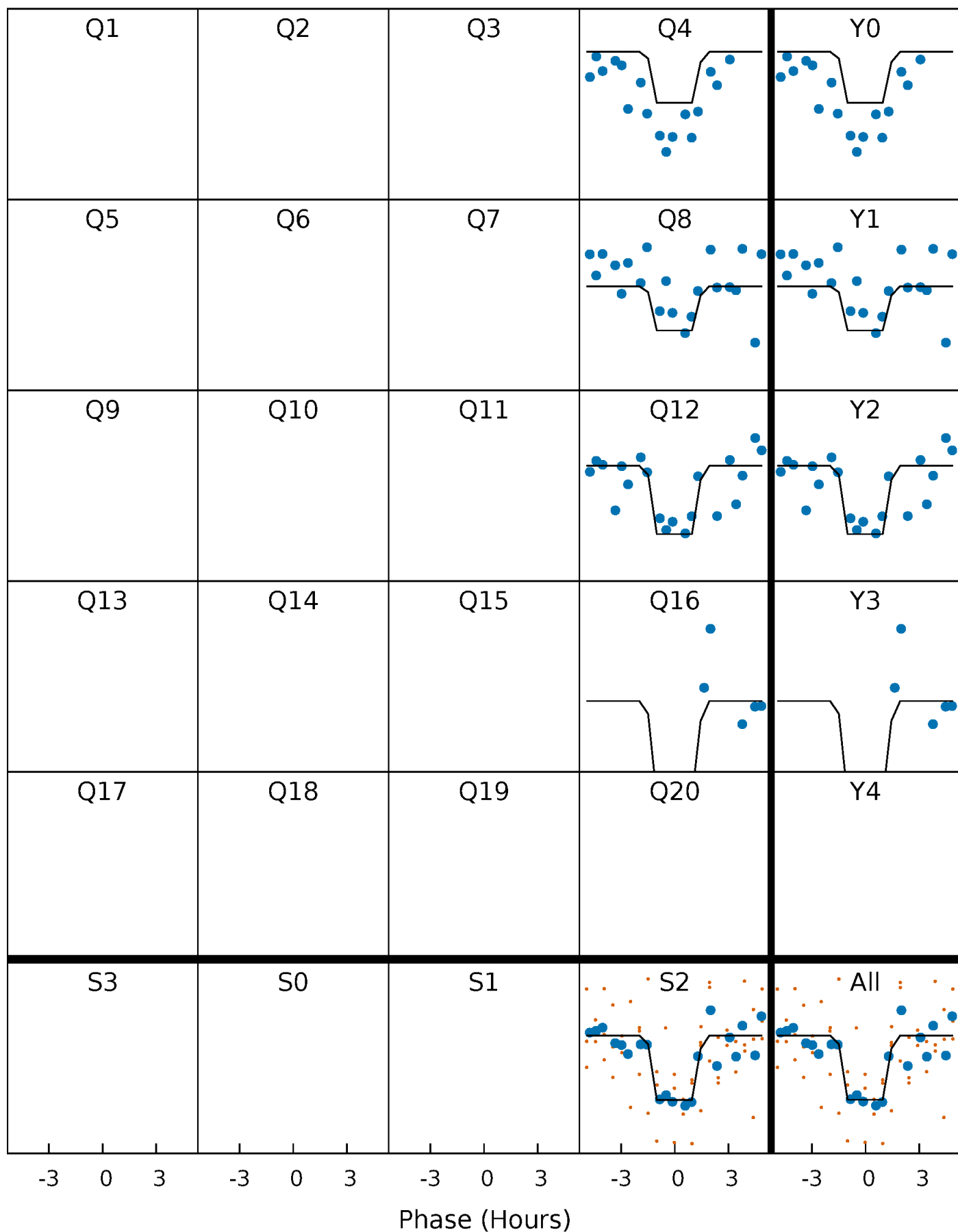
# DV Quarter-Phased Transit Curves

TCE 005185153-05 P=177.092844 Days  $T_0=258.280919$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005185153-05 P=177.097831 Days  $T_0=258.260378$  (BKJD)

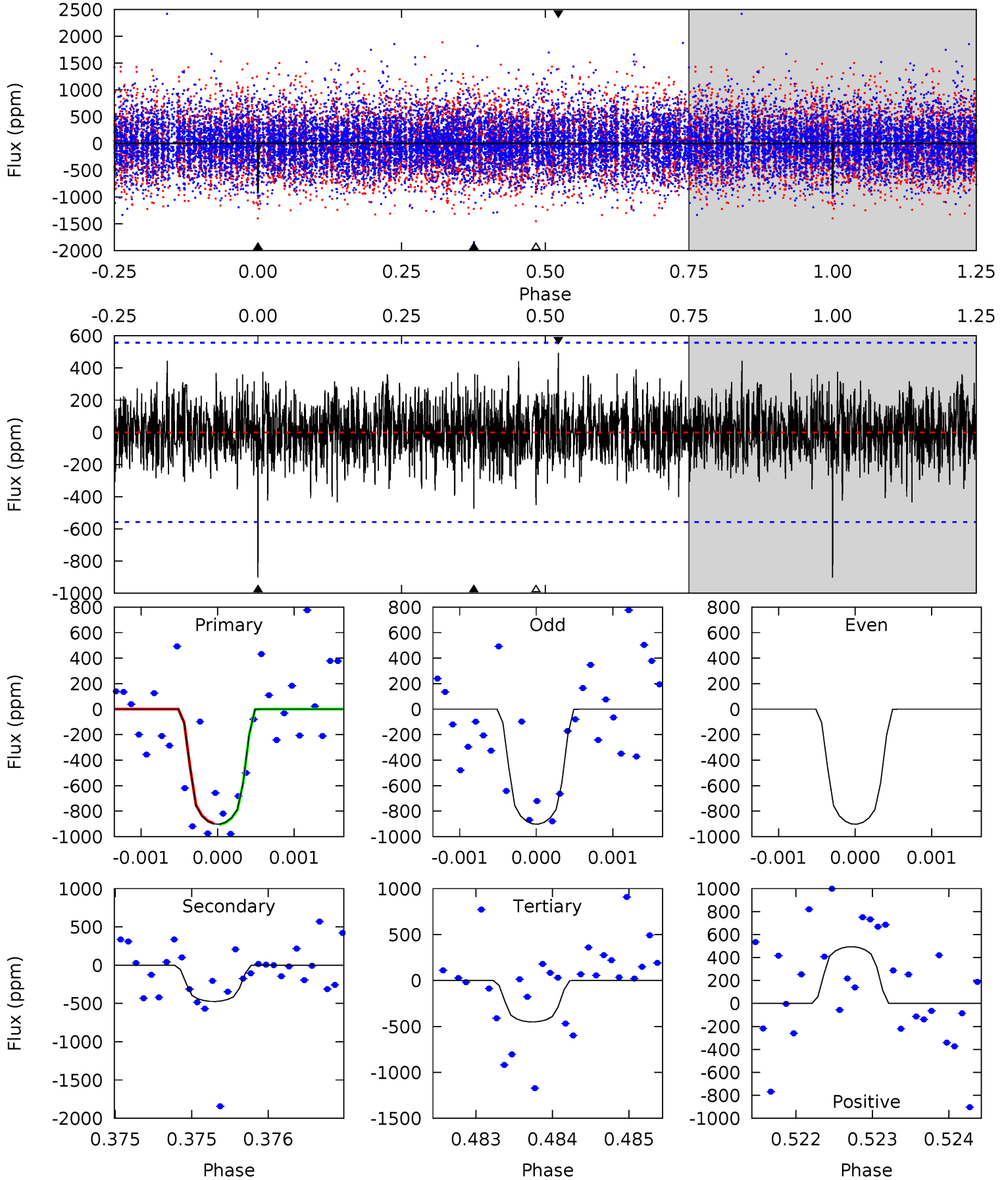




# DV Model-Shift Uniqueness Test

005185153-05, P = 177.092844 Days, E = 81.188075 Days

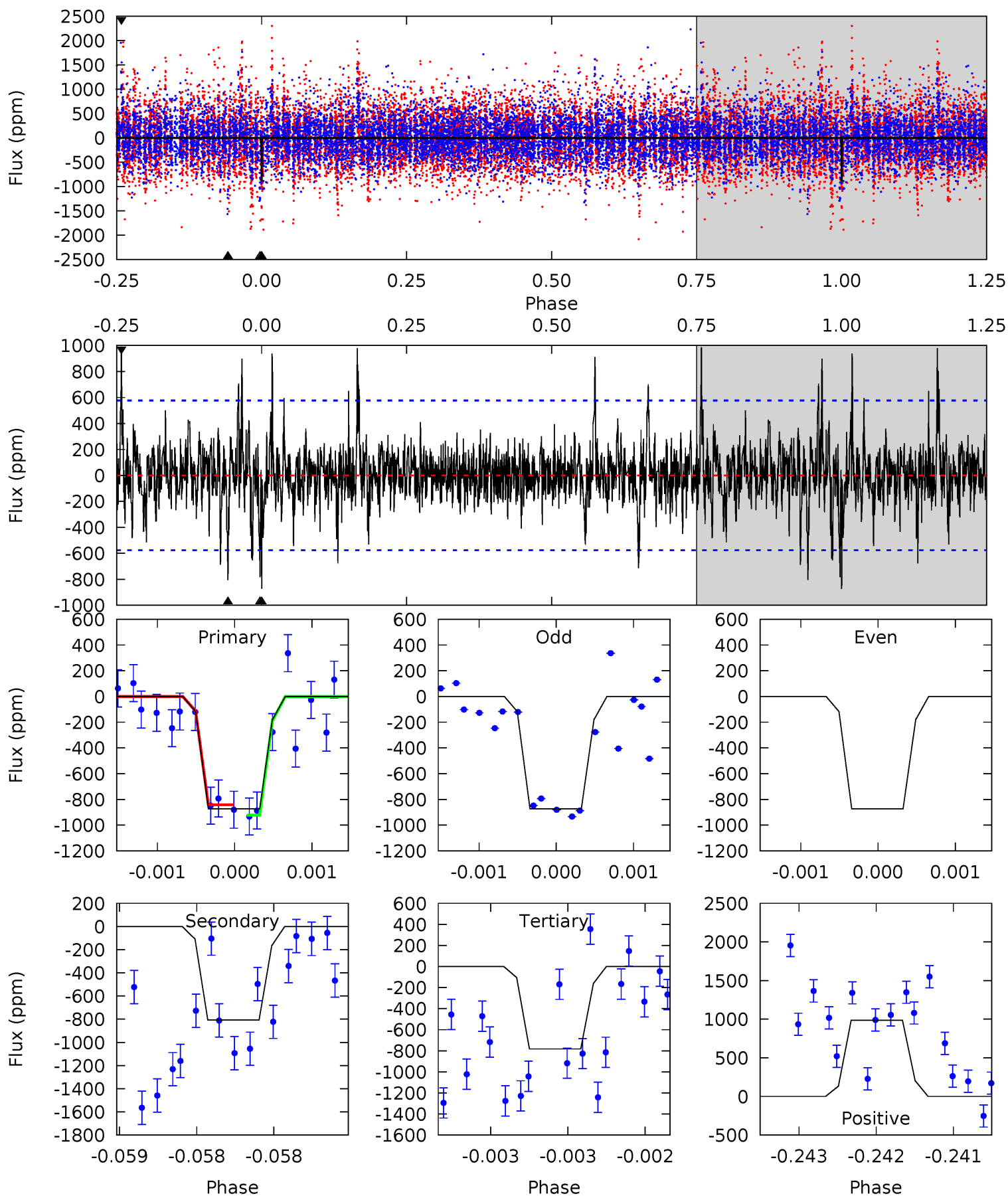
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.91	4.68	4.45	4.88	5.50	3.37	1.24	4.45	4.03	0.23	-0.20	0	1.13	0.35	0.05



# Alt Model-Shift Uniqueness Test

005185153-05,  $P = 177.097831$  Days,  $E = 81.162547$  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
8.36	7.72	7.49	9.43	5.52	3.39	1.65	0.87	-1.07	0.22	-1.72	0	1.21	0.53	0.39



### Stellar Parameters For KIC 005185153

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5615^{+169}_{-169}$	$4.552^{+0.035}_{-0.184}$	$-0.040^{+0.300}_{-0.300}$	$0.852^{+0.233}_{-0.078}$	$0.942^{+0.094}_{-0.104}$	$2.149^{+0.380}_{-1.022}$
	+3%/-3%	+1%/-4%	+750%/-750%	+27%/-9%	+10%/-11%	+18%/-48%
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 005185153-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-474 \pm 101$	$3.52^{+2.99}_{-2.33}$	$420^{+26}_{-19}$	$4512^{+2925}_{-905}$	$7789^{+54632}_{-5635}$
Alt.	$-806 \pm 104$	$3.55^{+2.80}_{-2.21}$	$421^{+29}_{-19}$	$5009^{+3333}_{-983}$	$12394^{+79292}_{-8623}$

$T_{max}$  = 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

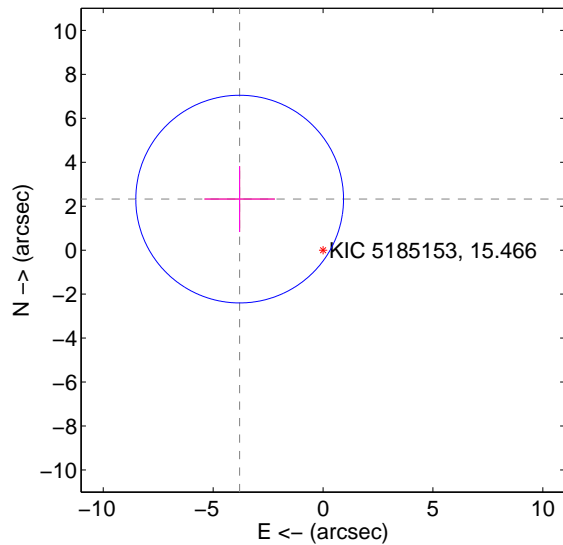
Supplemental centroid analysis for 005185153-05. Kepler magnitude: 15.47. Transit SNR 8.05

There are 0 quarters with good PRF difference image offsets

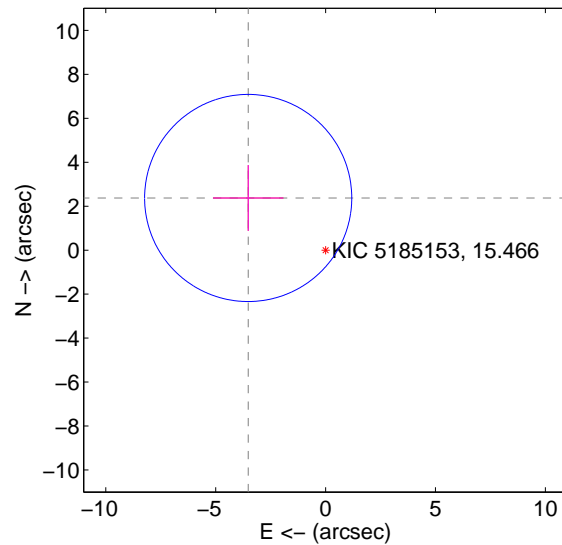
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.449 \pm 1.575$	2.82	$3.793 \pm 1.603$	$2.324 \pm 1.497$
PRF-fit source offset from KIC position	$4.248 \pm 1.571$	2.70	$3.522 \pm 1.603$	$2.375 \pm 1.497$
photometric centroid source offset	$0.95 \pm 1.39$	0.68	$0.87 \pm 1.40$	$0.38 \pm 1.33$

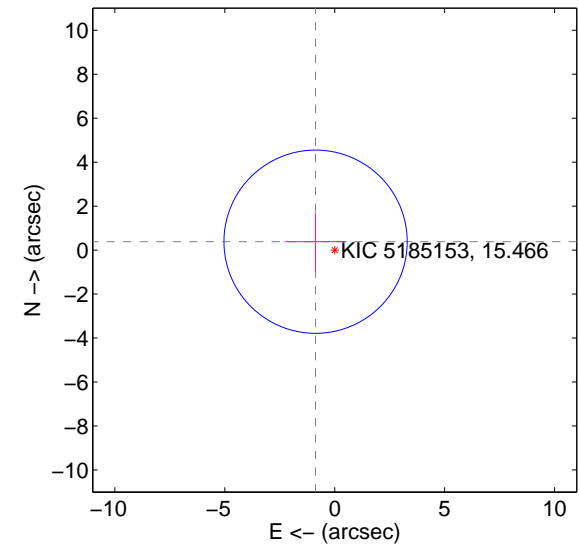
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

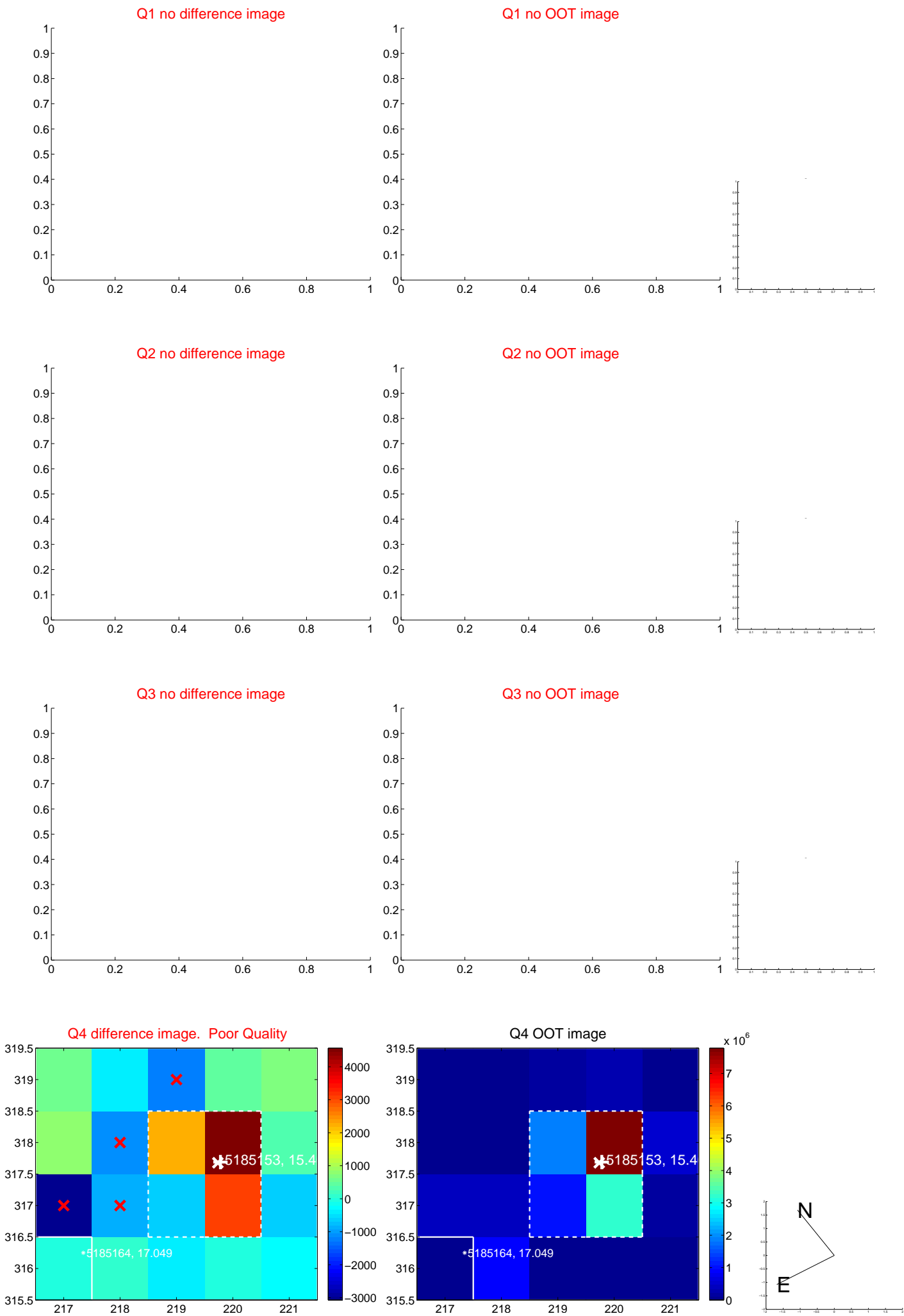


offset from photometric centroids

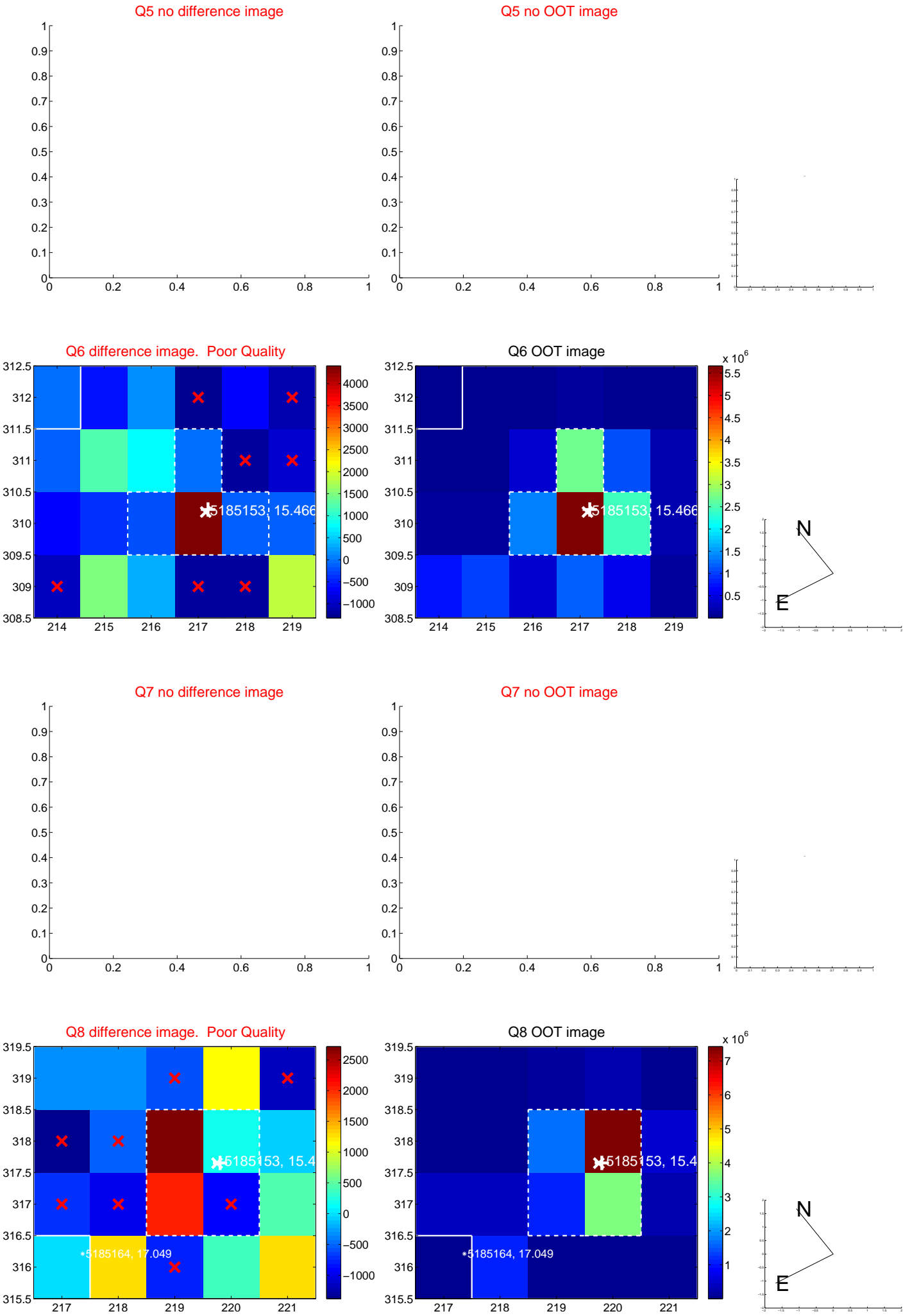


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

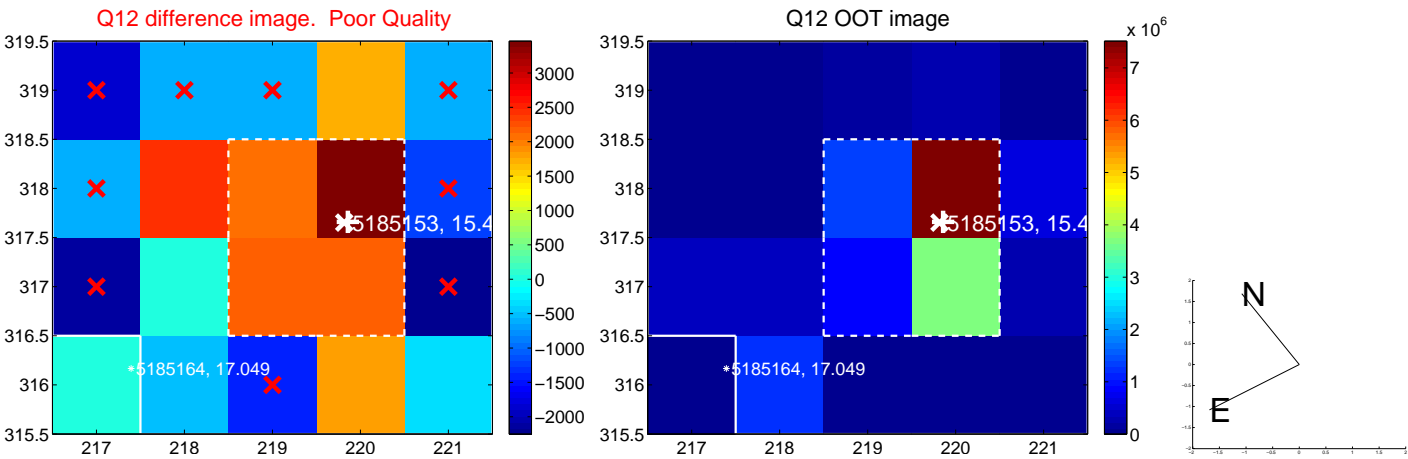
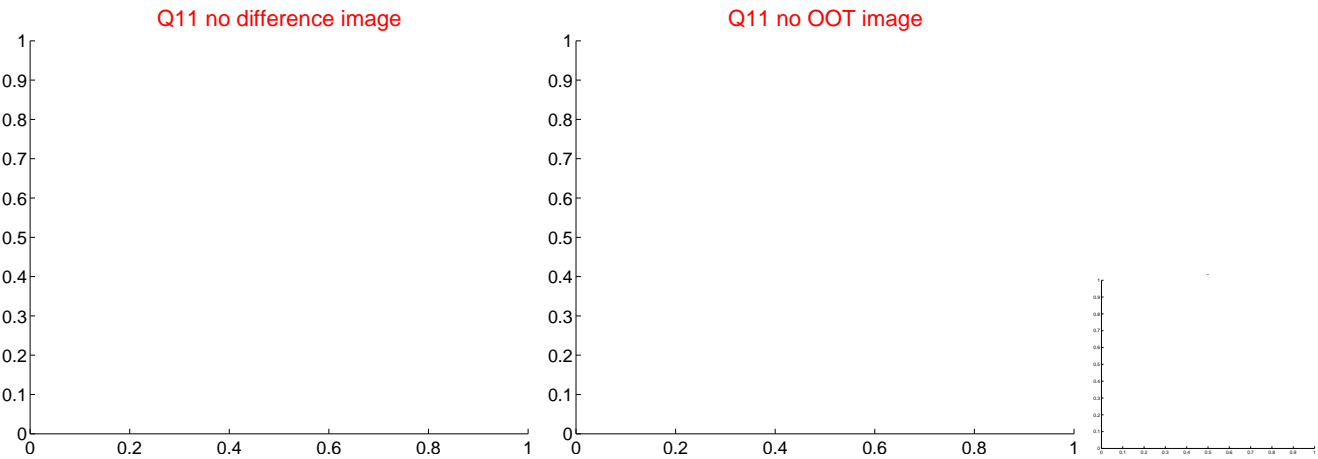
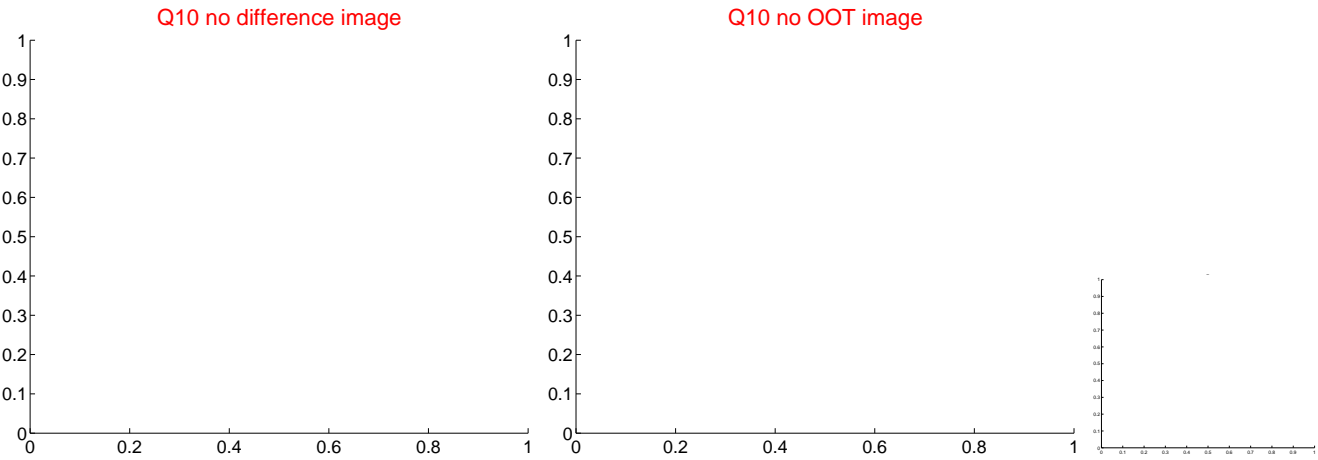
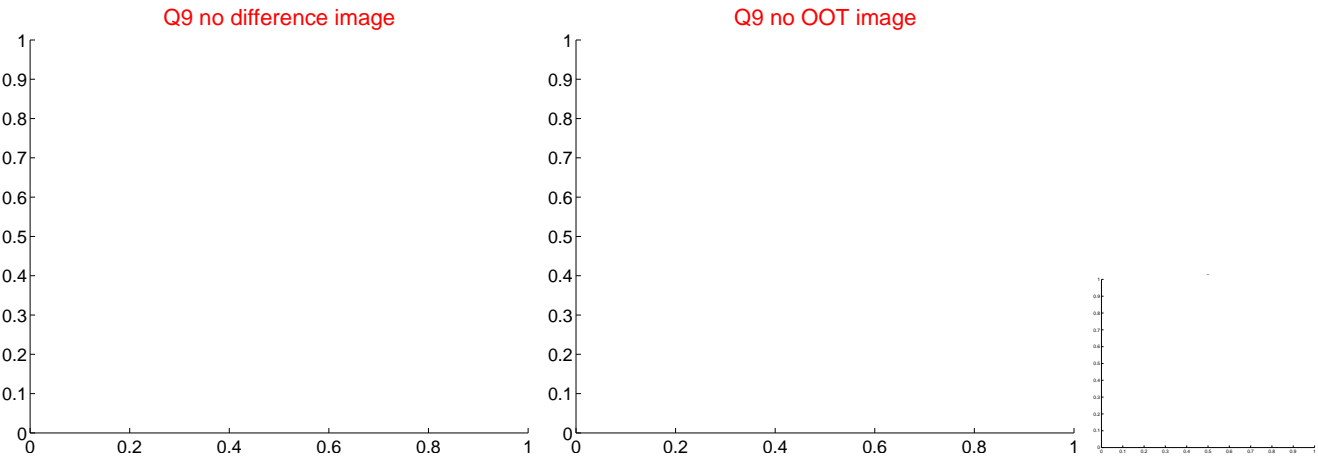
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

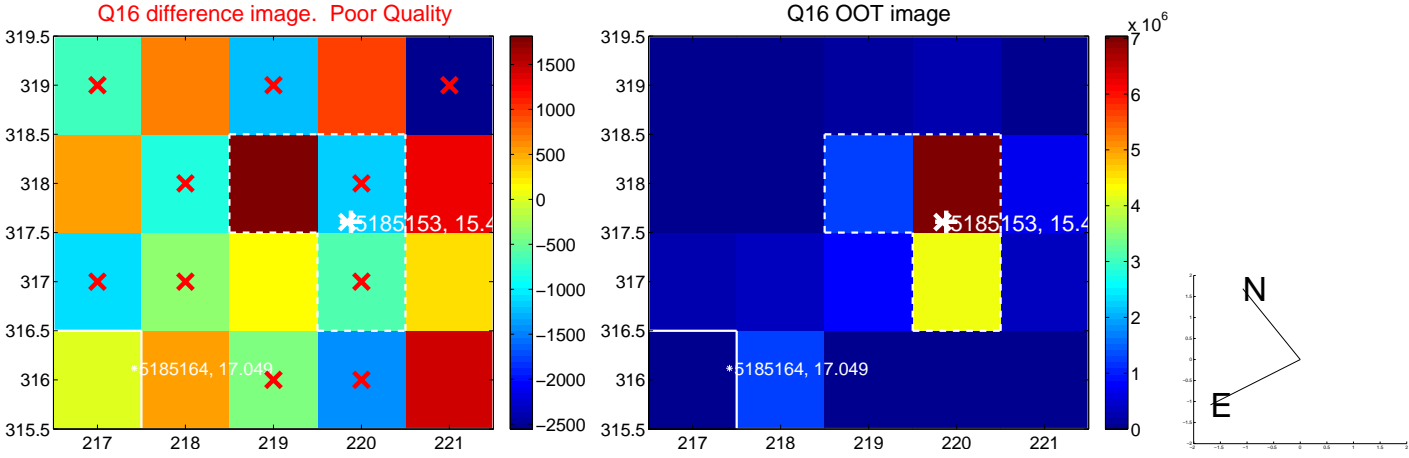
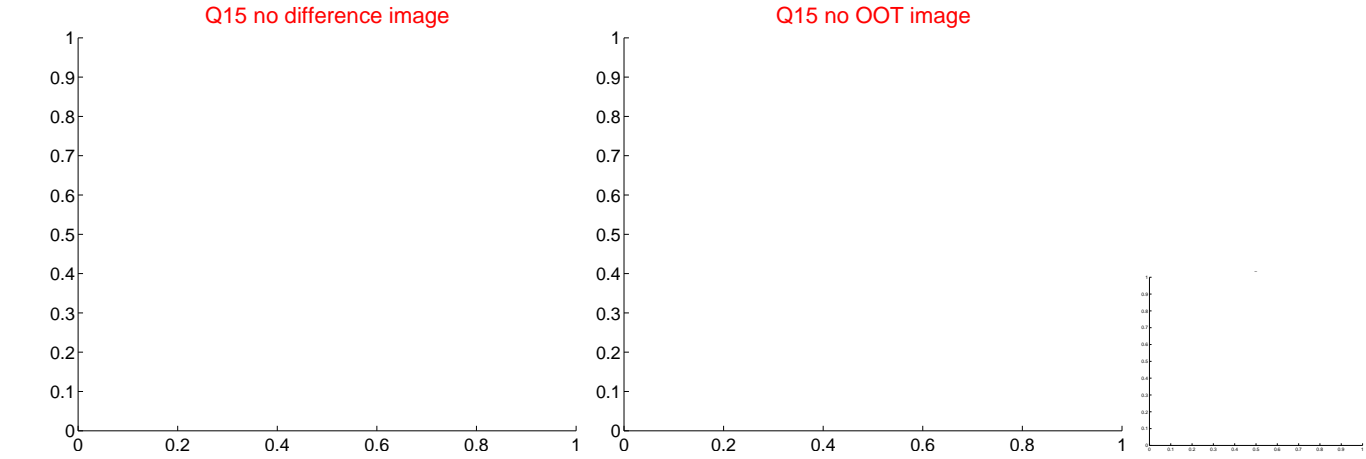
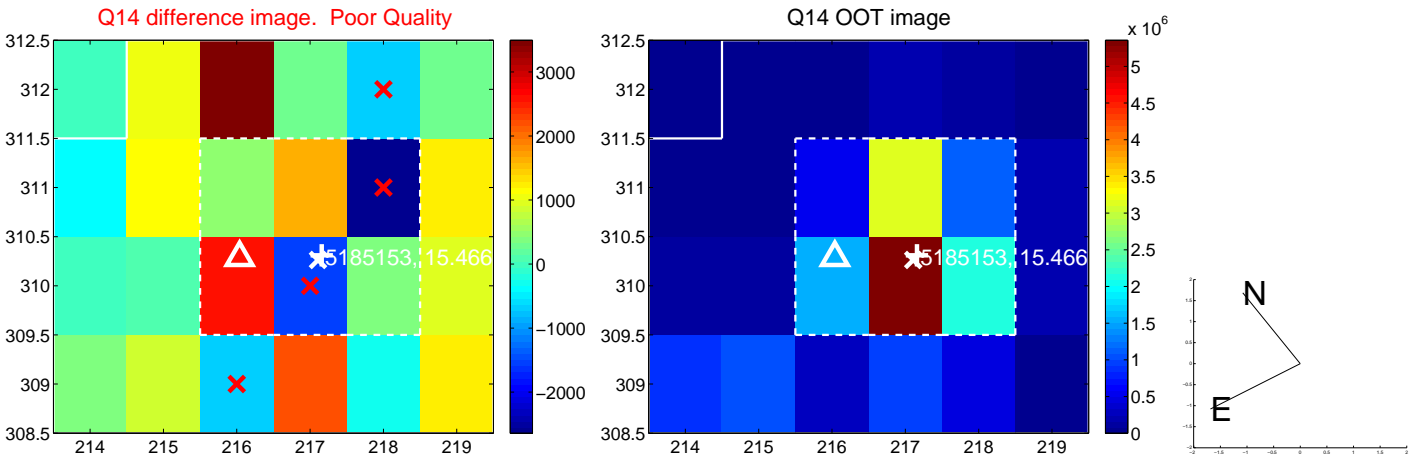
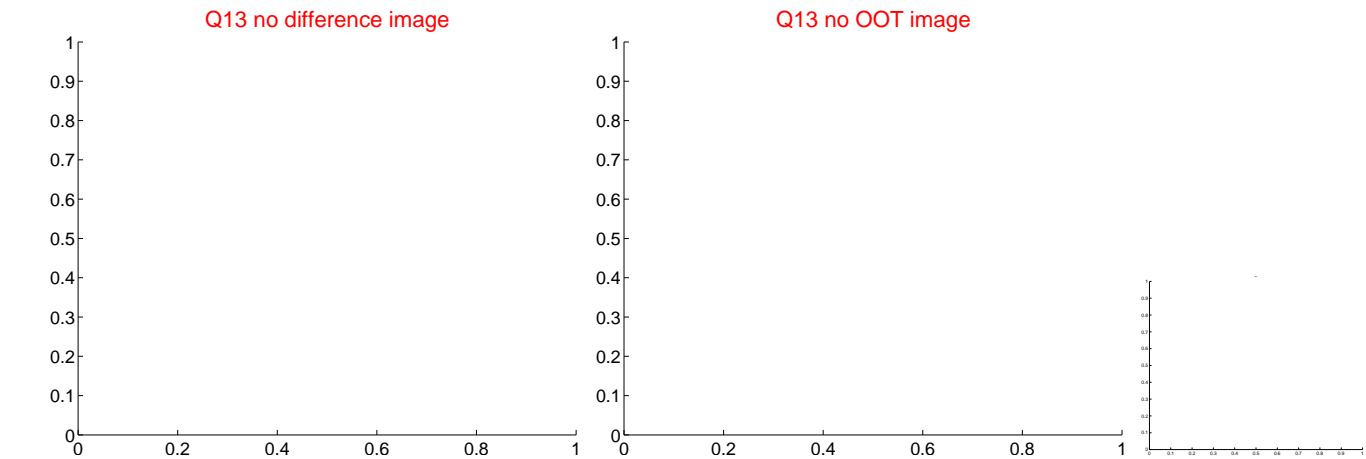


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

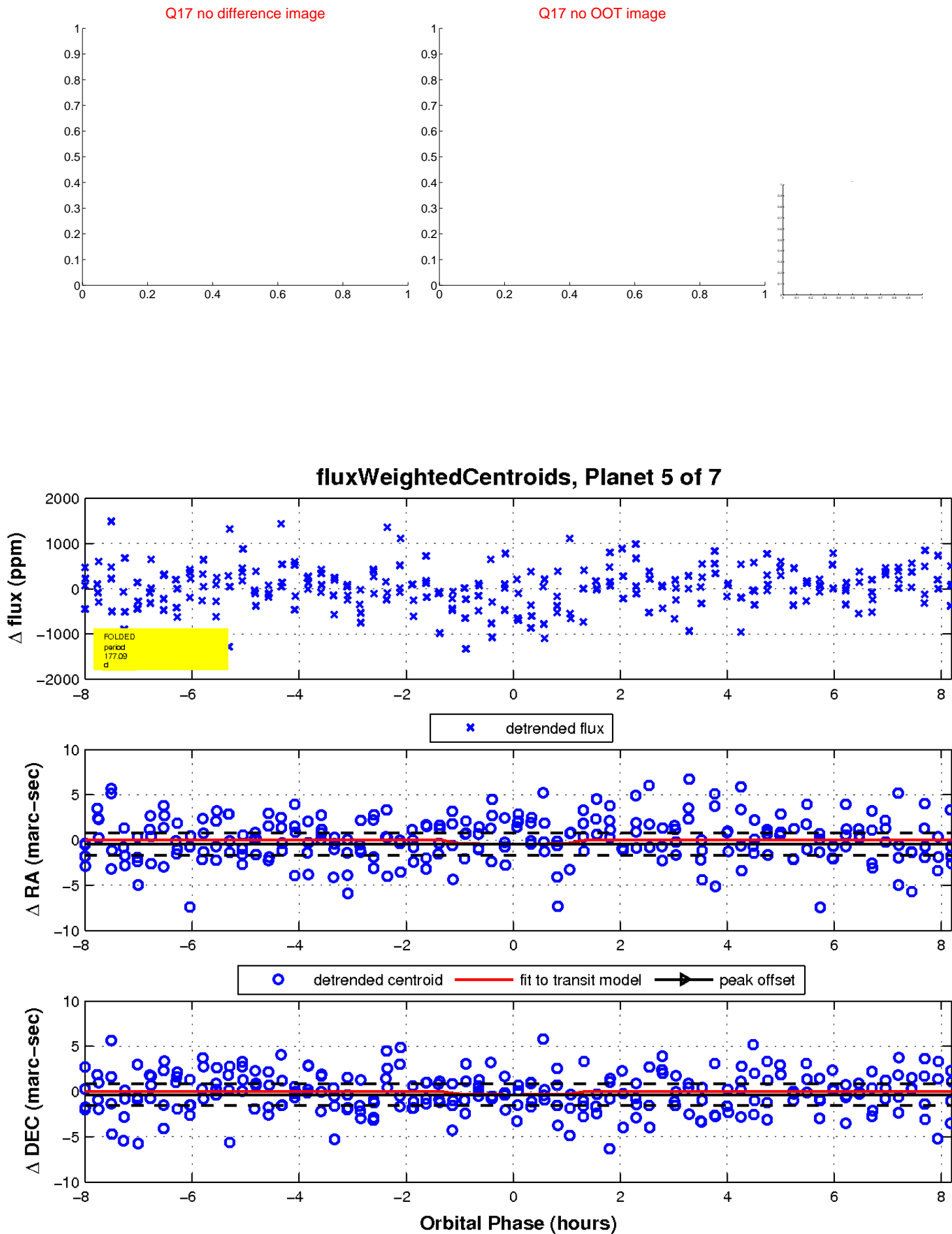




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

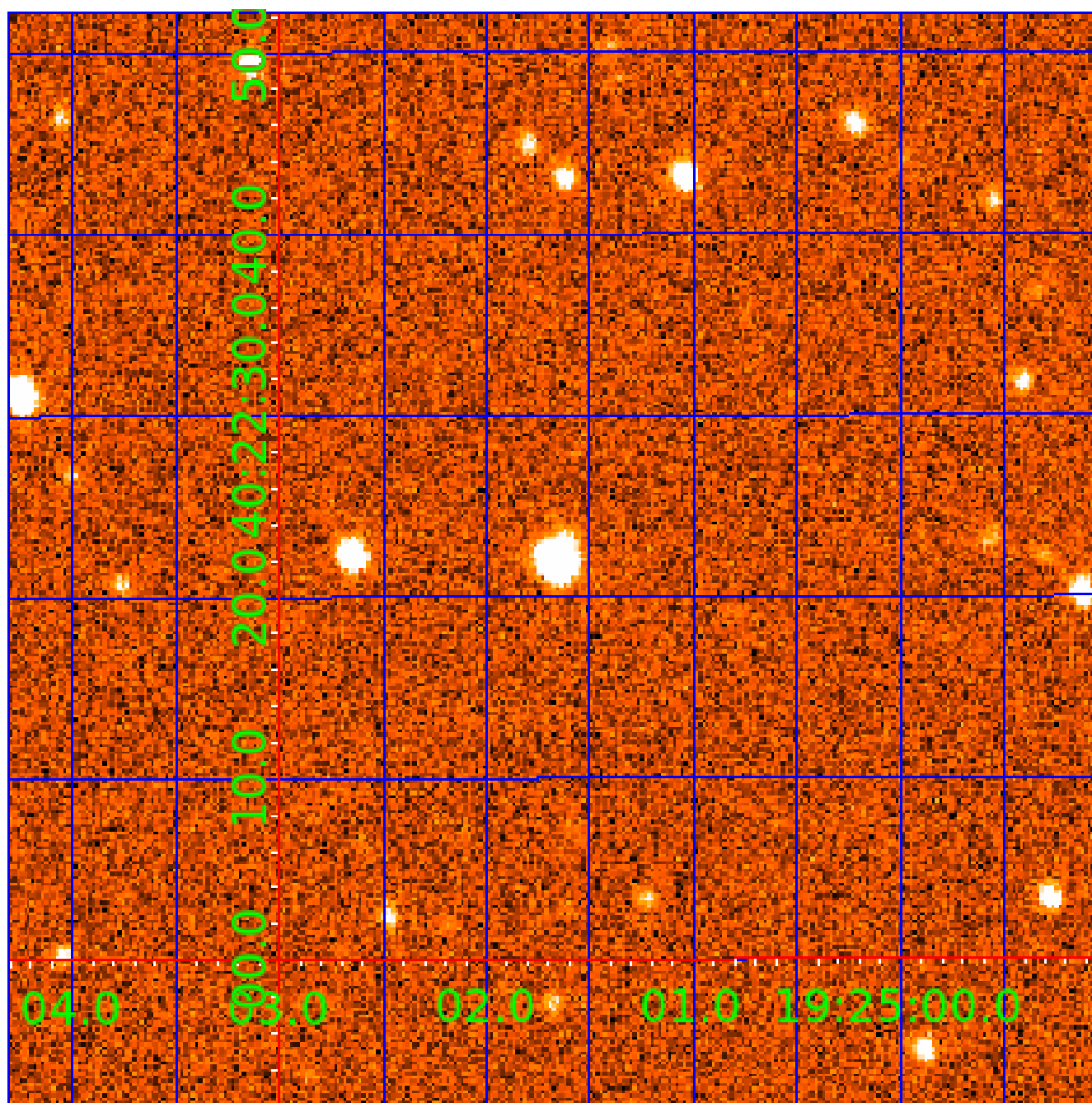


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination



# KIC 005185153

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005185153-01	OBS	No	3.251795	134.277121	95.4	19.167	8.3	11.8	0.85	5615	0.89	363.99
005185153-02	OBS	No	74.543609	147.350518	527.5	28.583	12.9	8.5	0.85	5615	2.51	5.59
005185153-03	OBS	No	403.397418	229.731815	780.5	25.882	12.1	8.0	0.85	5615	2.73	0.59
005185153-04	OBS	No	93.564944	140.645833	480.7	5.660	8.5	7.4	0.85	5615	1.99	4.13
005185153-05	OBS	No	177.092844	258.280919	850.0	2.735	8.2	8.0	0.85	5615	2.86	1.76
005185153-06	OBS	No	122.609683	225.633037	456.5	16.195	7.8	6.3	0.85	5615	2.03	2.88
005185153-07	OBS	No	105.338904	148.221922	187.4	13.735	7.4	3.8	0.85	5615	1.33	3.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005185153-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005185153-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005185153-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005185153-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005185153-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

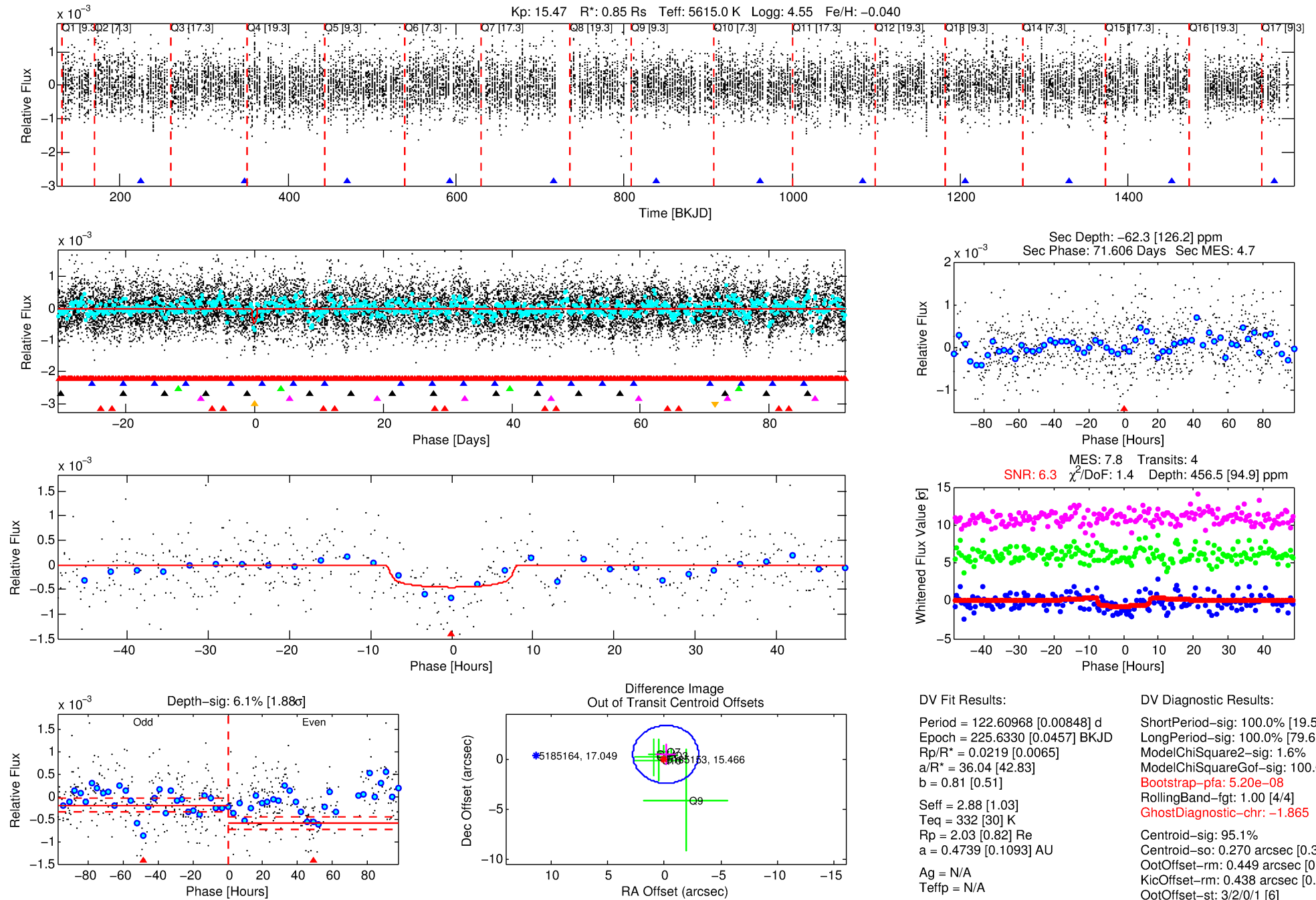
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005185153-06

No Significant Match Found

# DV One-Page Summary

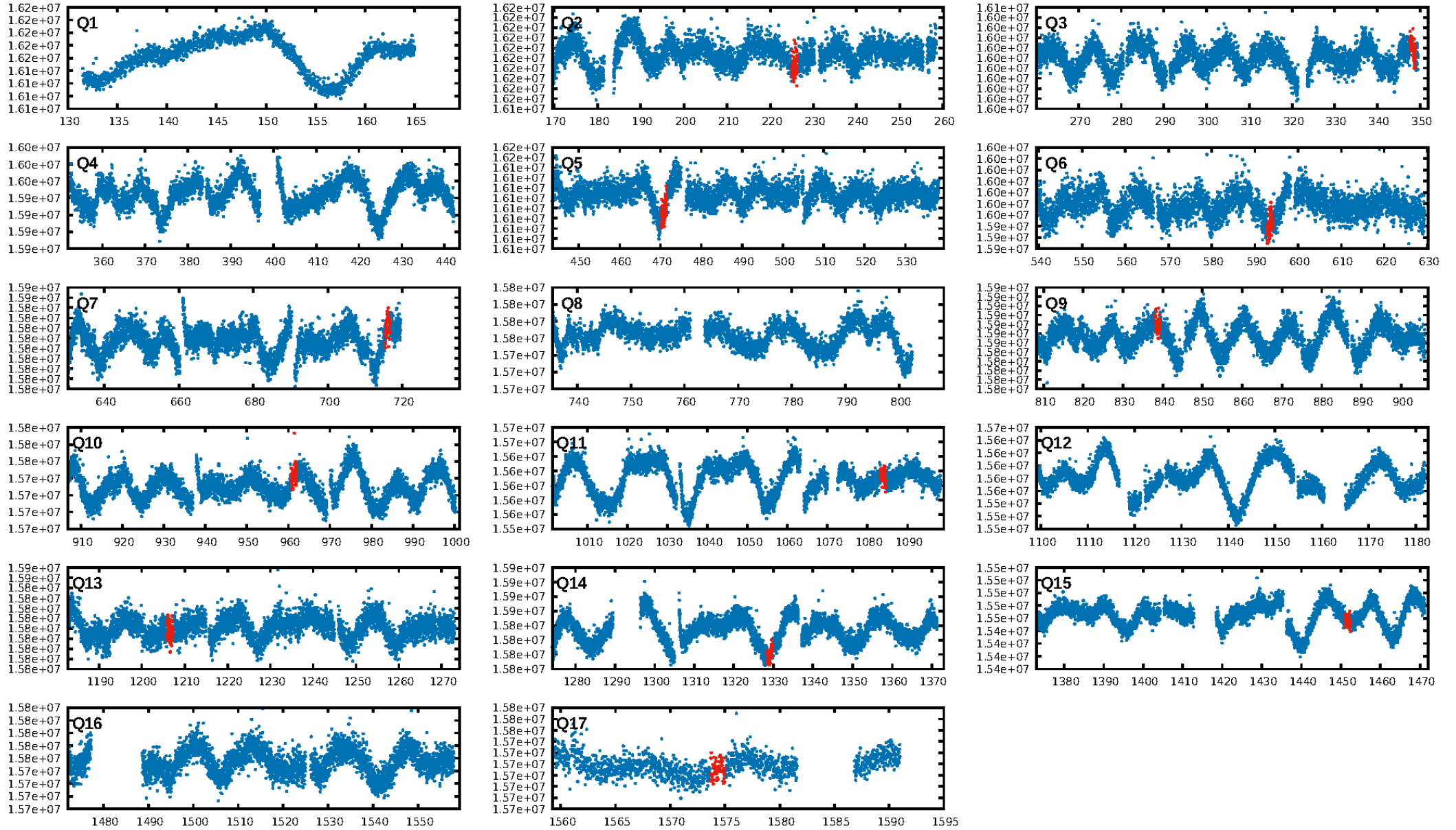
KIC: 5185153 Candidate: 6 of 7 Period: 122.610 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:03:11 Z

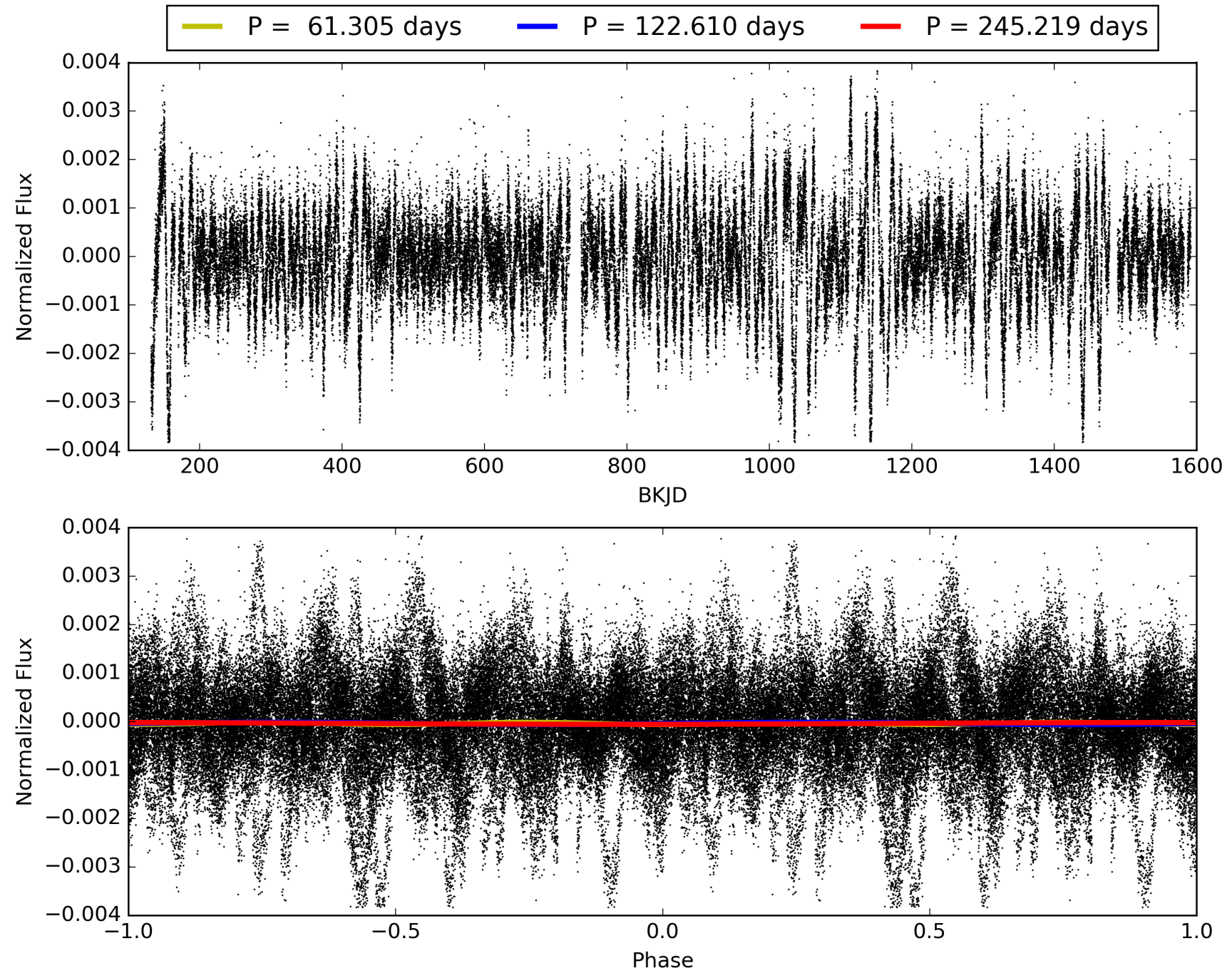
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005185153-06, PDC Light Curves





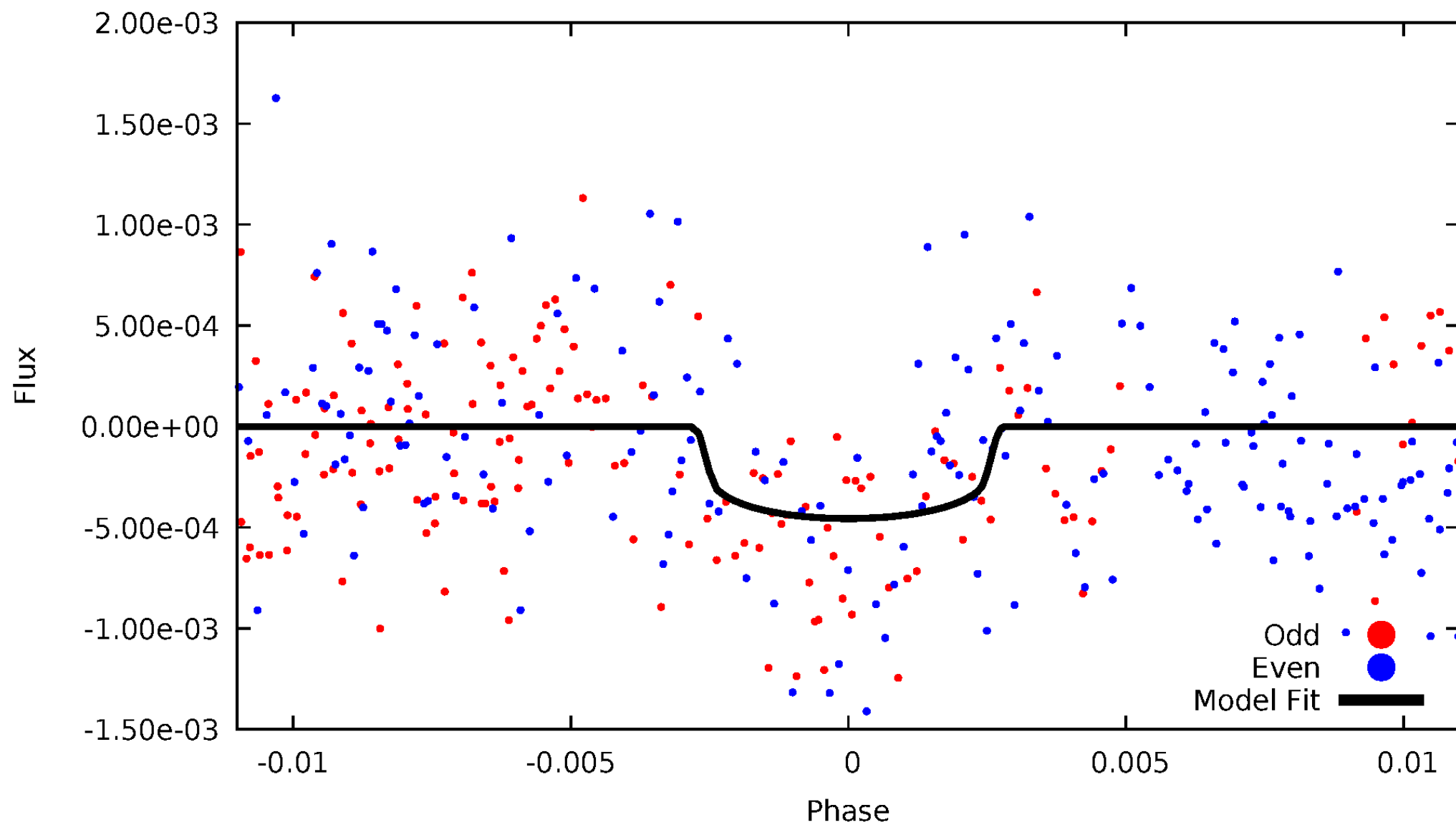
# TCE 005185153-06





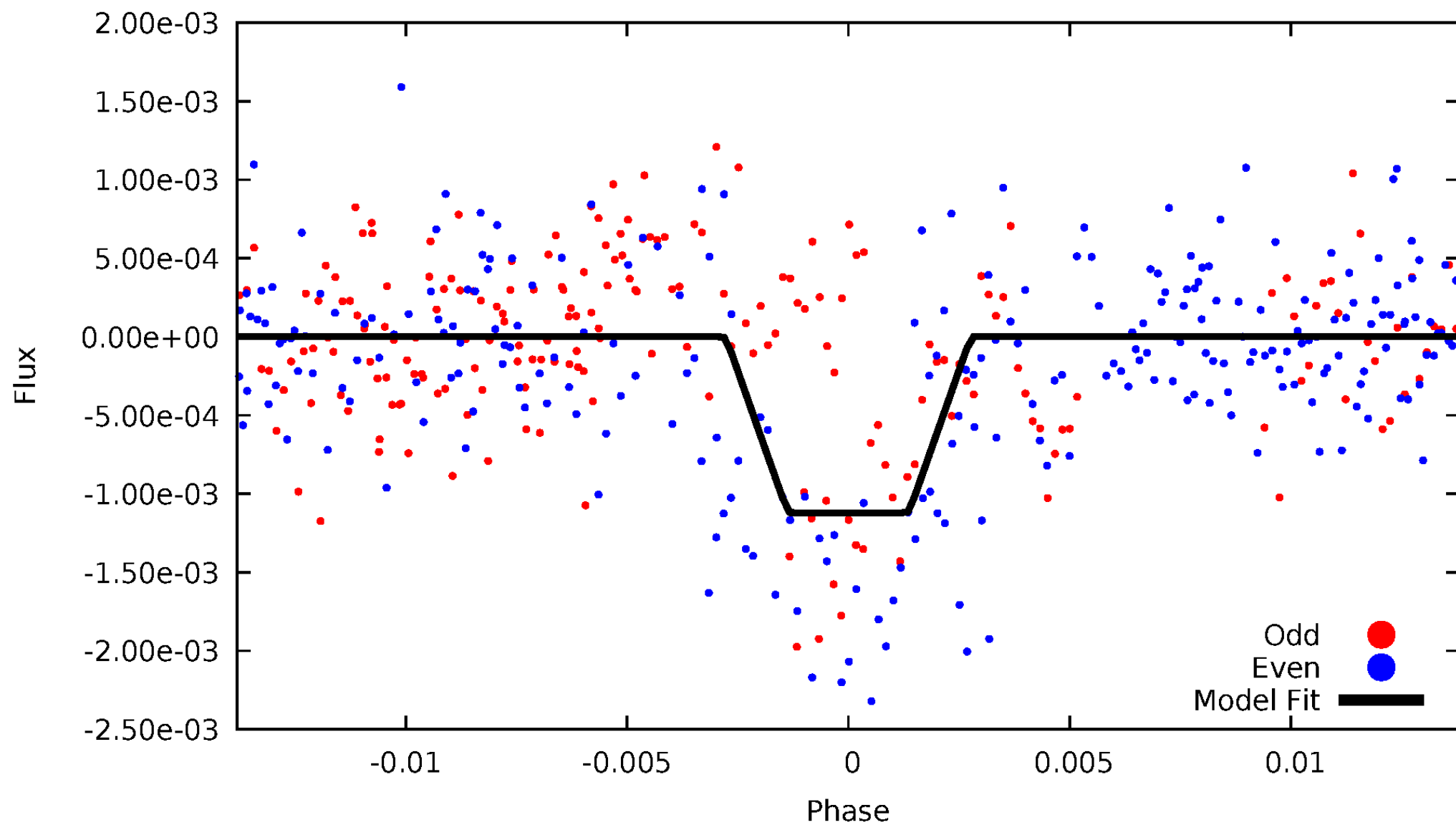
# DV Odd/Even

TCE 005185153-06



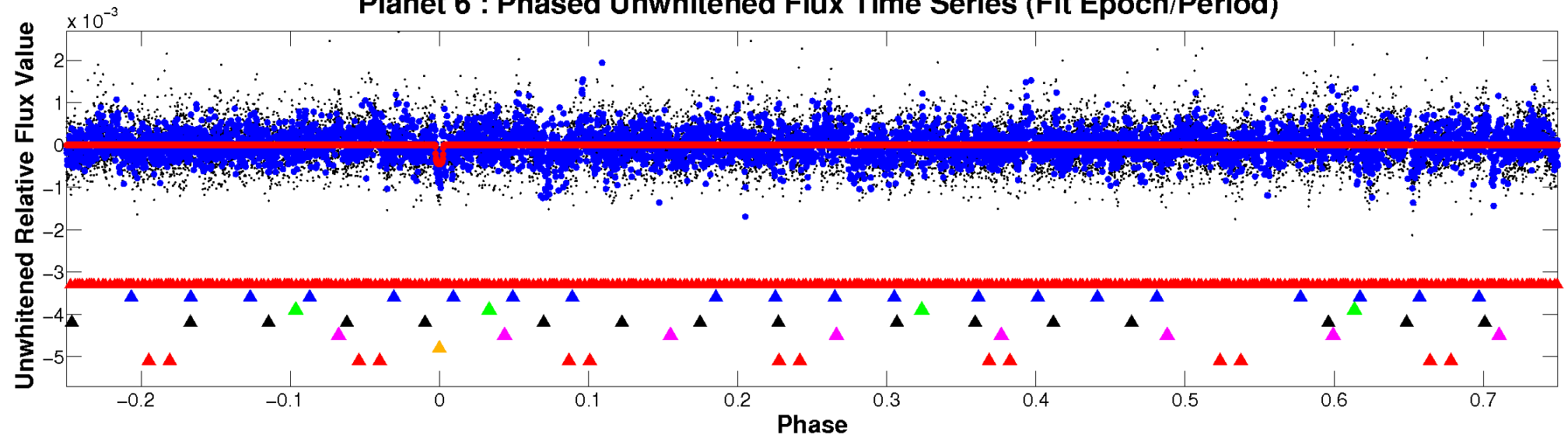
# ALT Odd/Even

TCE 005185153-06

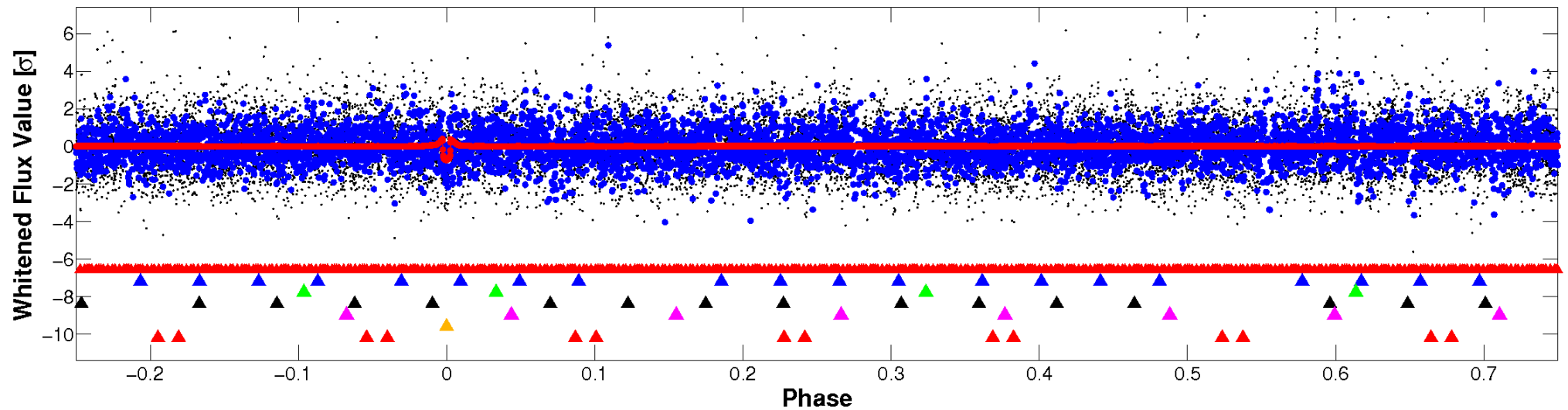


# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

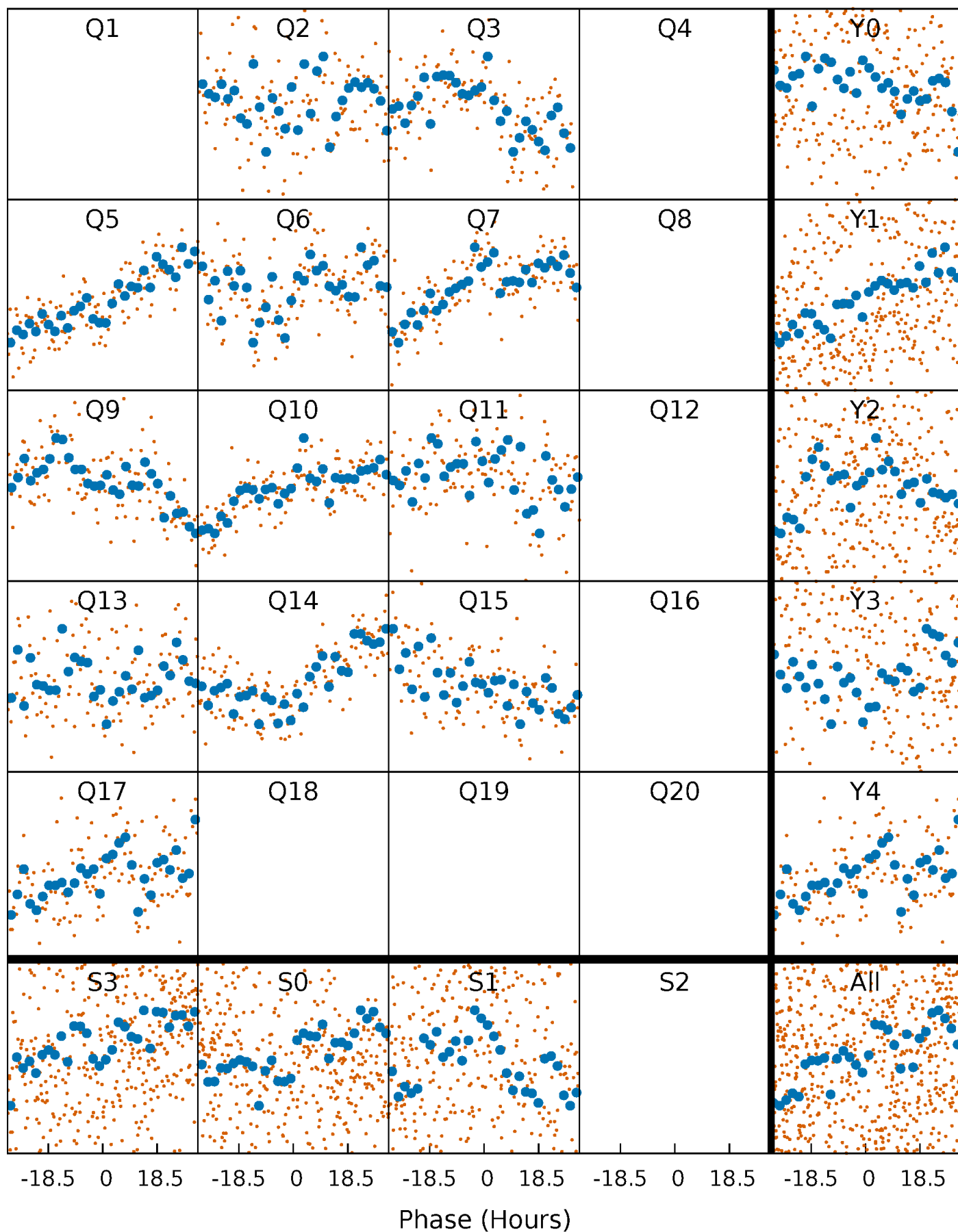


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



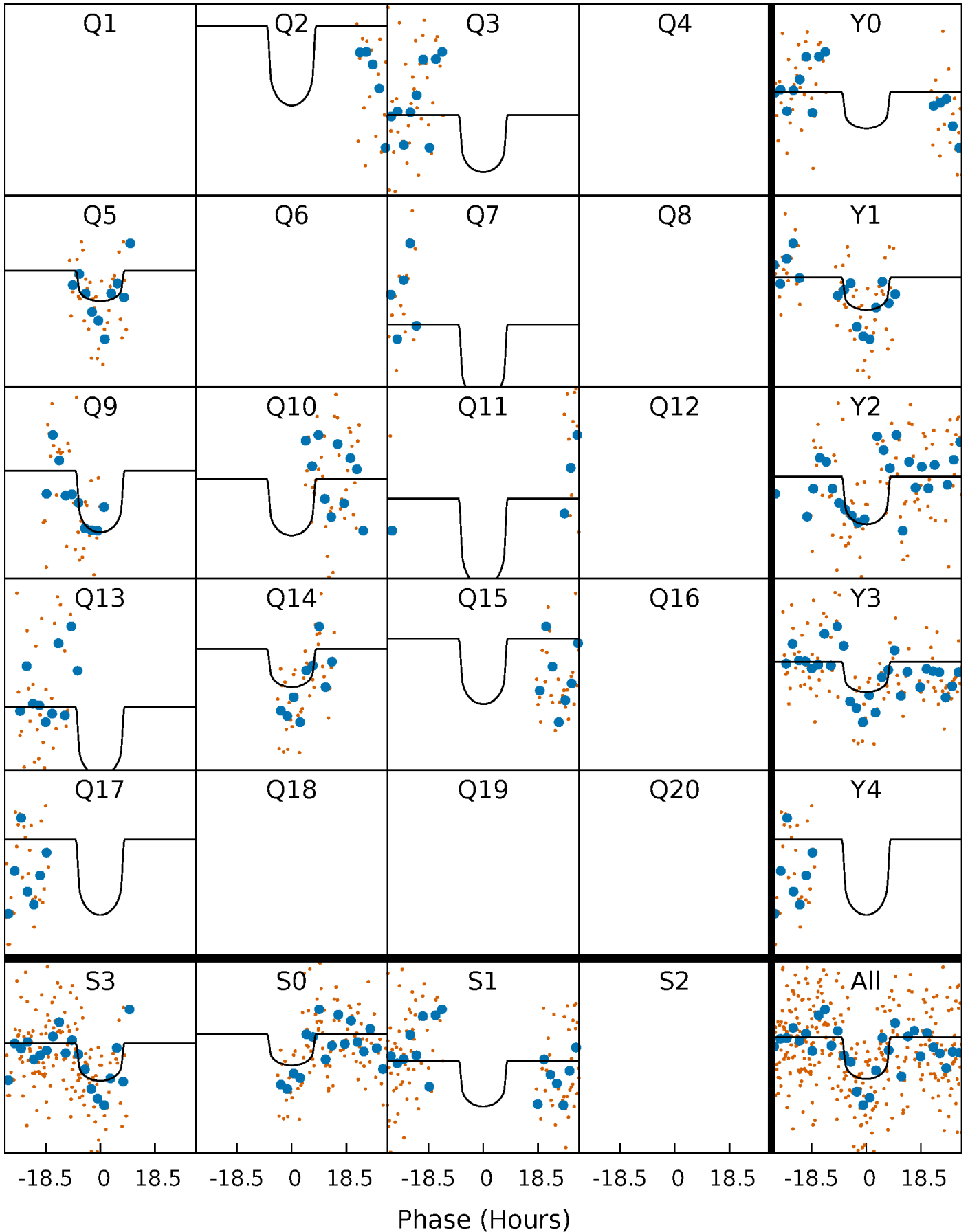
# PDC Quarter-Phased Transit Curves

TCE 005185153-06 P=122.609683 Days  $T_0=225.633037$  (BKJD)



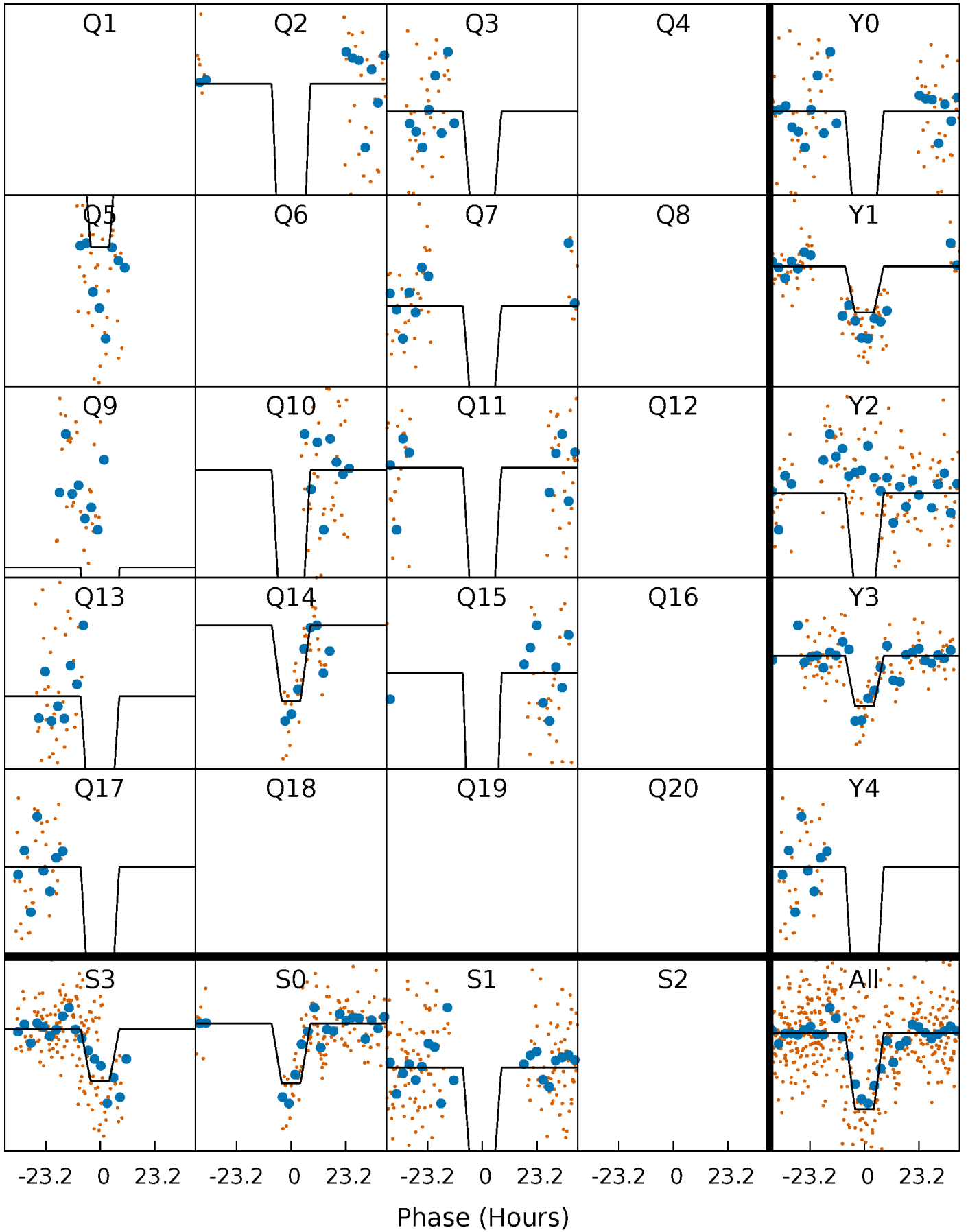
# DV Quarter-Phased Transit Curves

TCE 005185153-06 P=122.609683 Days  $T_0=225.633037$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

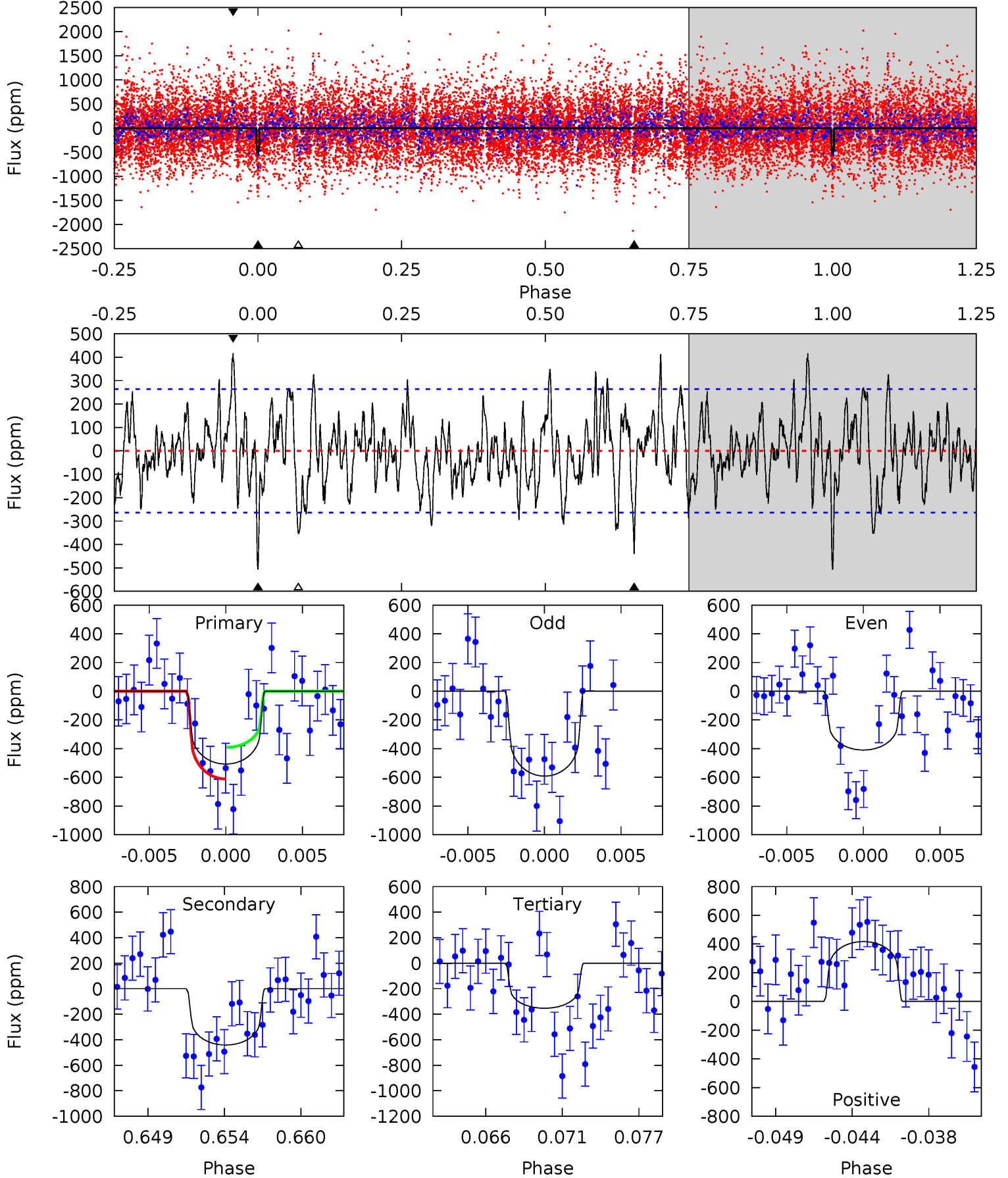
TCE 005185153-06 P=122.608171 Days  $T_0=225.613158$  (BKJD)



# DV Model-Shift Uniqueness Test

005185153-06, P = 122.609683 Days, E = 103.023354 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
9.88	8.58	6.88	8.11	5.14	2.78	2.51	3.00	1.76	1.71	0.47	1.76	0.66	0.45	2.14

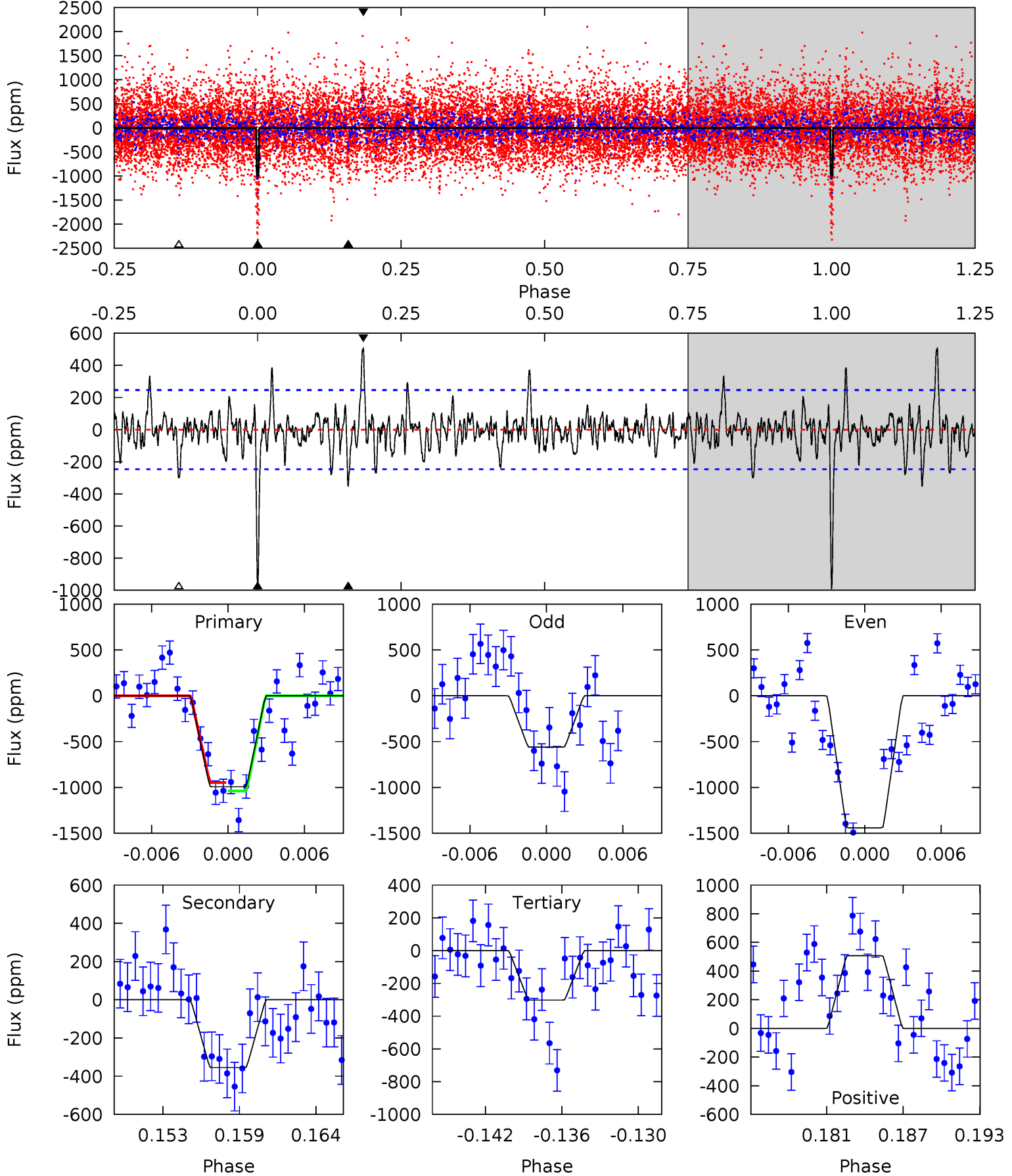




# Alt Model-Shift Uniqueness Test

005185153-06, P = 122.608171 Days, E = 103.004987 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
20.7	7.40	6.29	10.6	5.13	2.77	1.88	14.4	10.1	1.10	-3.17	9.34	-0.21	0.34	0.95



### Stellar Parameters For KIC 005185153

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5615^{+169}_{-169}$	$4.552^{+0.035}_{-0.184}$	$-0.040^{+0.300}_{-0.300}$	$0.852^{+0.233}_{-0.078}$	$0.942^{+0.094}_{-0.104}$	$2.149^{+0.380}_{-1.022}$
	+3%/-3%	+1%/-4%	+750%/-750%	+27%/-9%	+10%/-11%	+18%/-48%
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 005185153-06 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-441 \pm 51$	$2.11^{+0.68}_{-0.68}$	$474^{+29}_{-20}$	$5540^{+1139}_{-670}$	$11936^{+13341}_{-5154}$
Alt.	$-355 \pm 48$	$3.28^{+0.77}_{-0.71}$	$476^{+29}_{-22}$	$4406^{+439}_{-330}$	$4023^{+2560}_{-1390}$

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

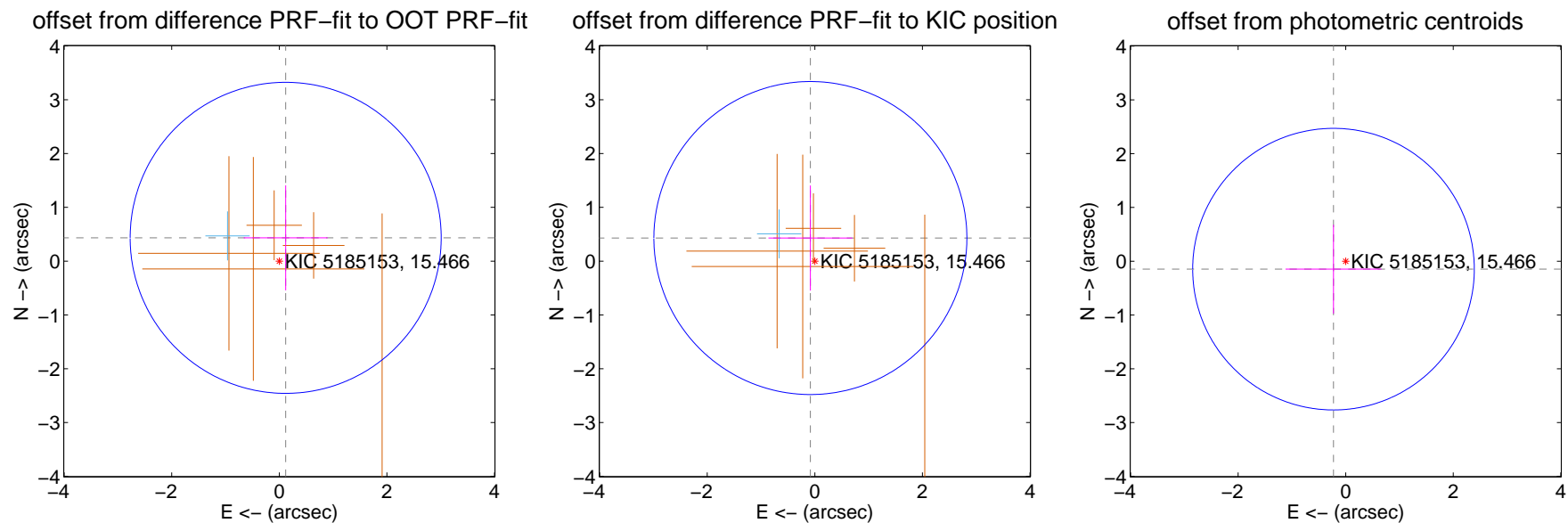
## DV Centroid Data

Supplemental centroid analysis for 005185153-06. Kepler magnitude: 15.47. Transit SNR 6.28

There are 1 quarters with good PRF difference image offsets

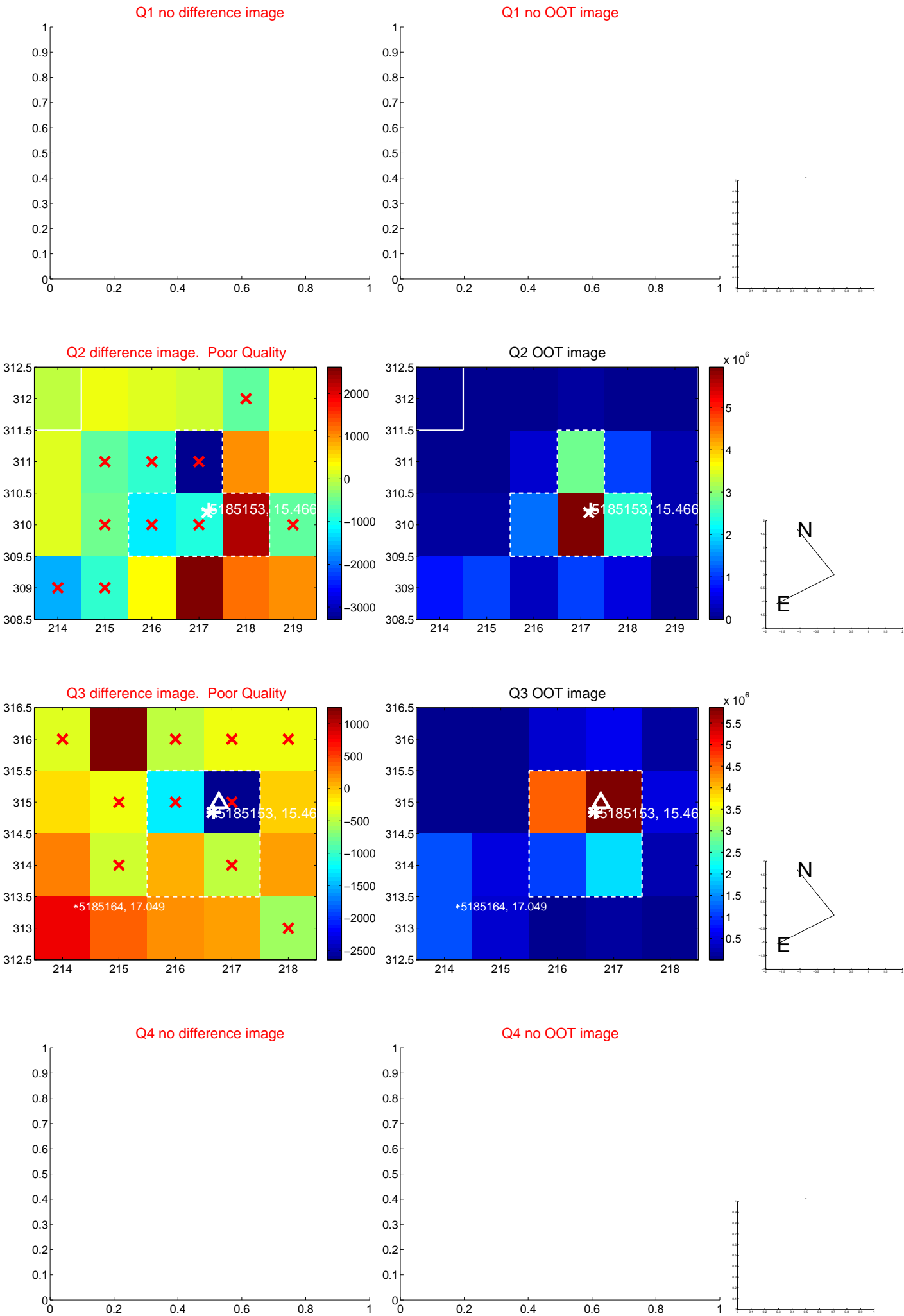
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.449 \pm 0.964$	0.47	$-0.119 \pm 0.779$	$0.433 \pm 0.976$
PRF-fit source offset from KIC position	$0.438 \pm 0.970$	0.45	$0.083 \pm 0.779$	$0.430 \pm 0.976$
photometric centroid source offset	$0.27 \pm 0.87$	0.31	$0.23 \pm 0.89$	$-0.15 \pm 0.83$

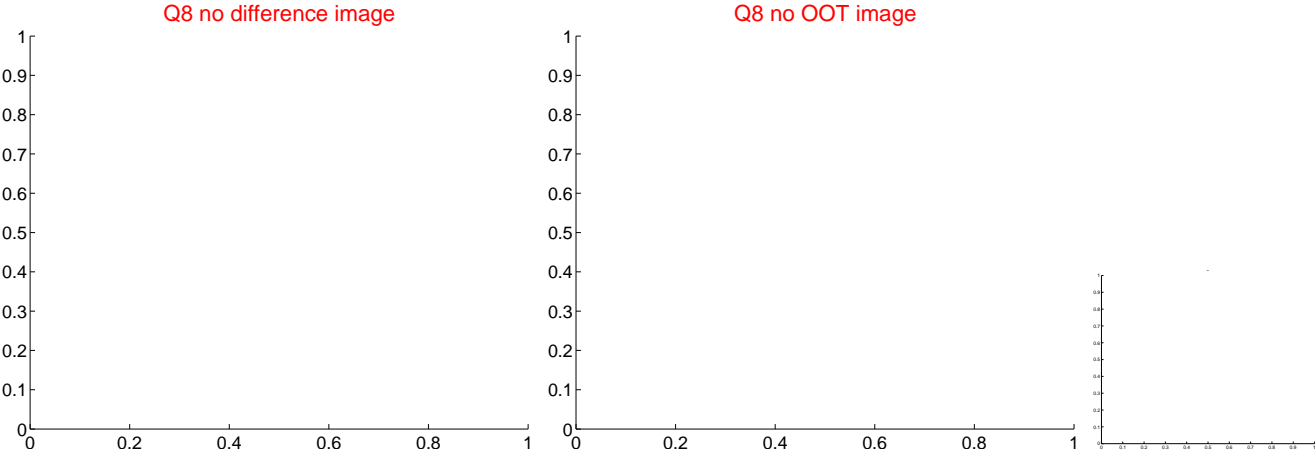
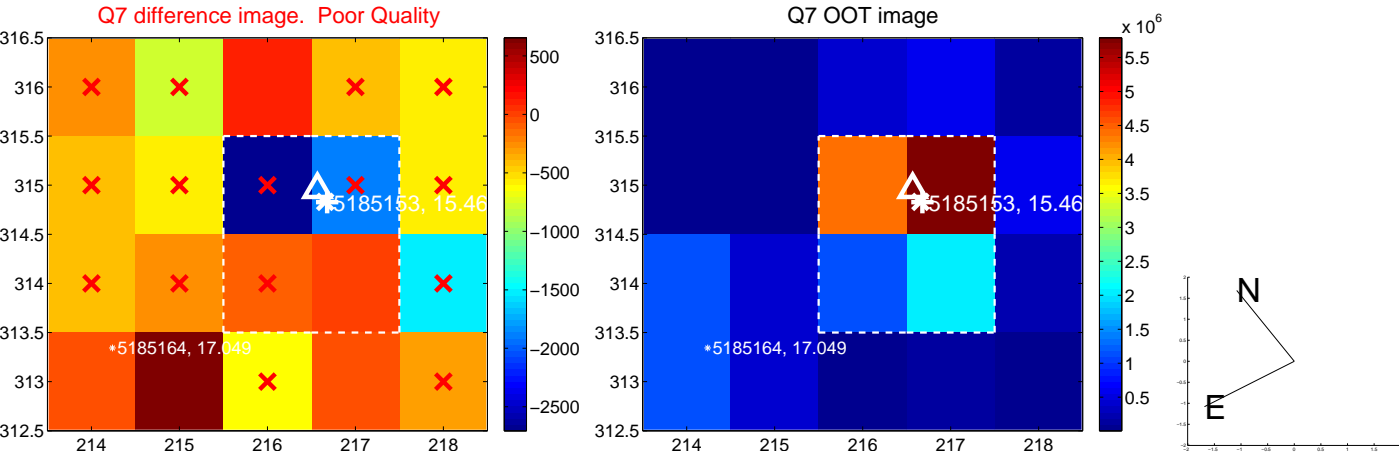
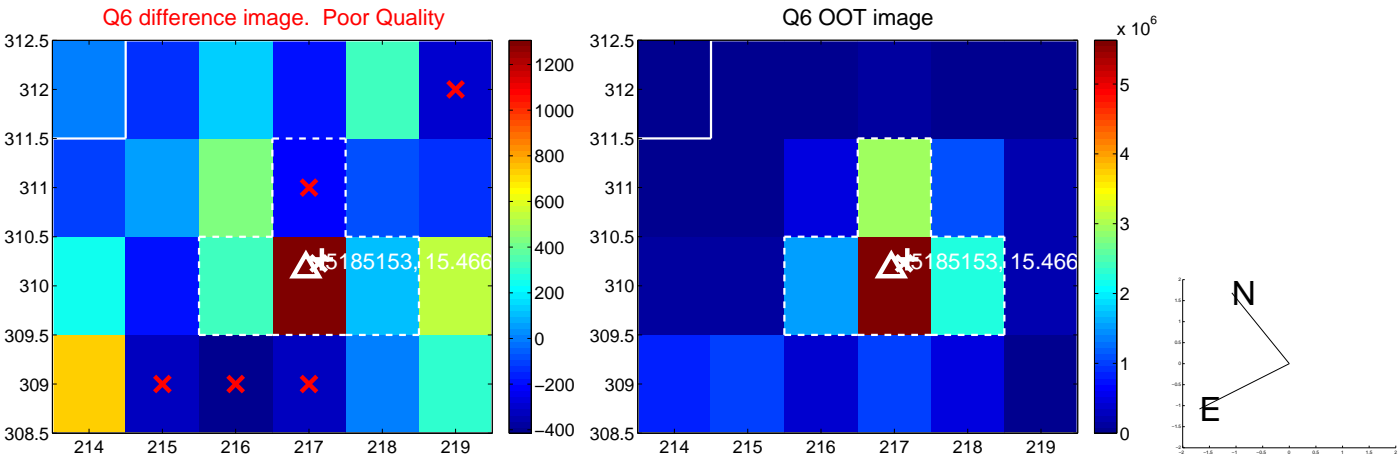
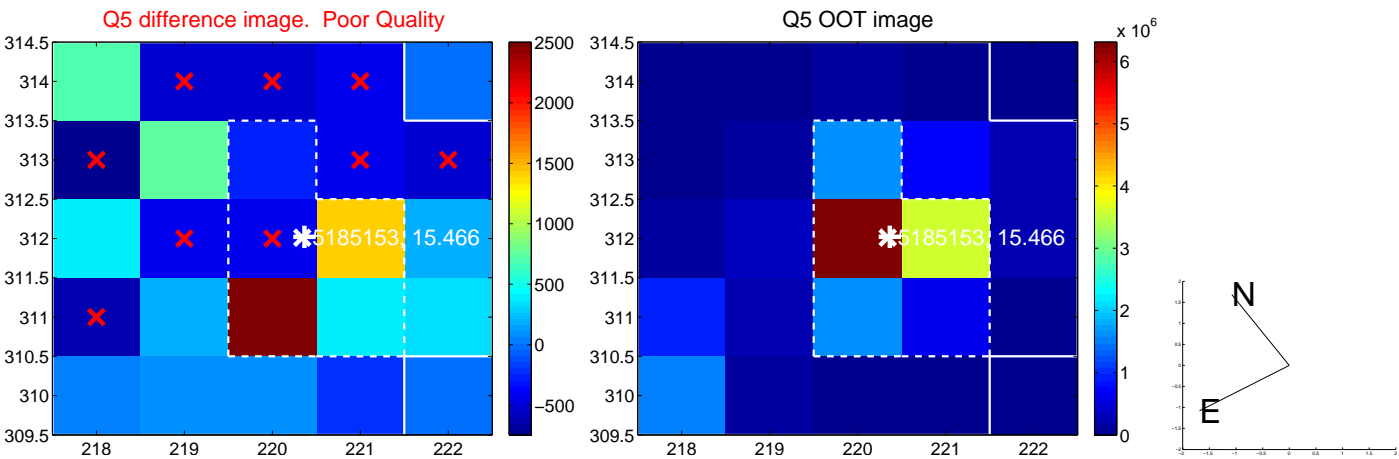


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

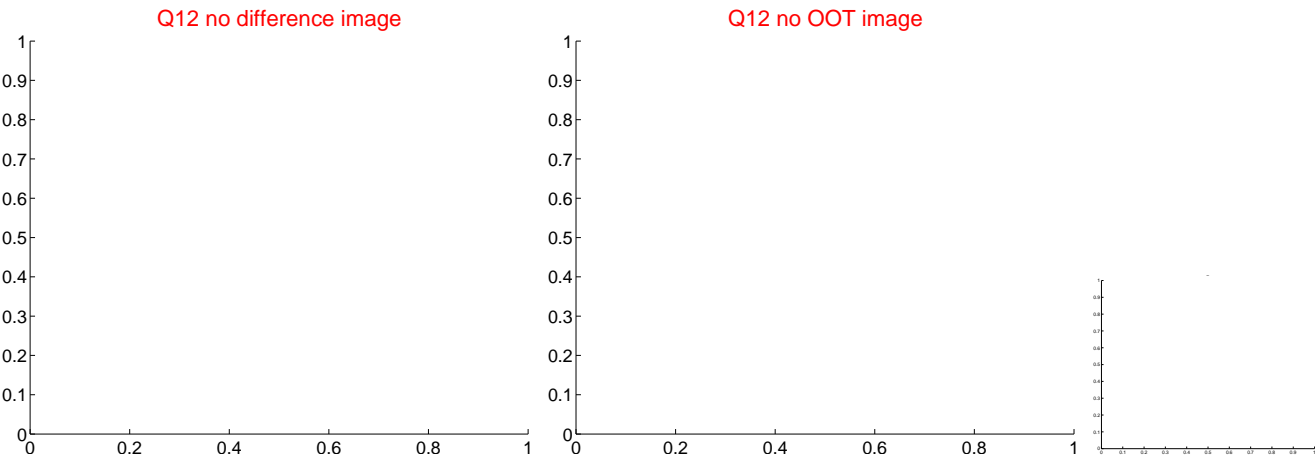
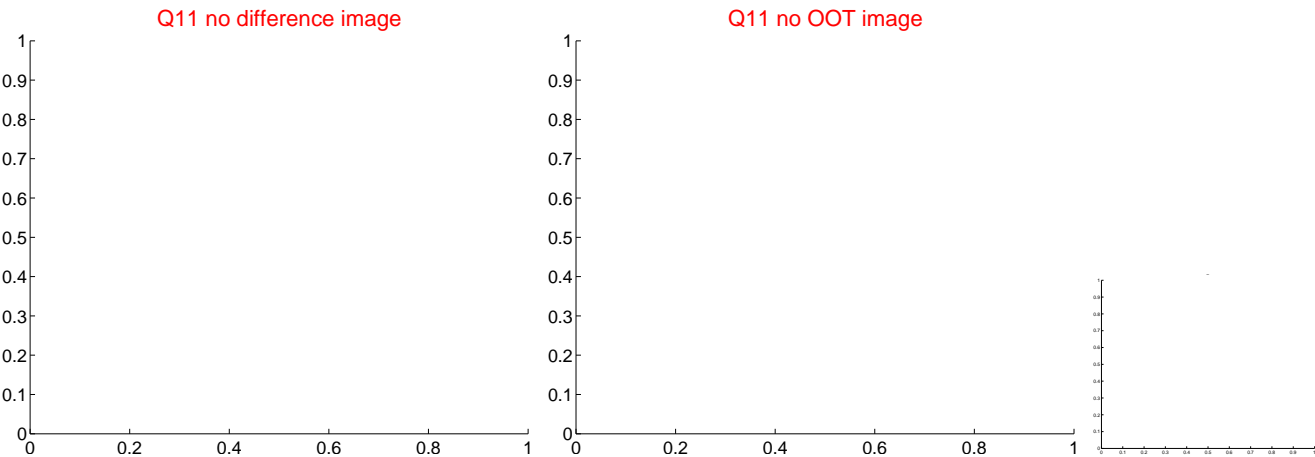
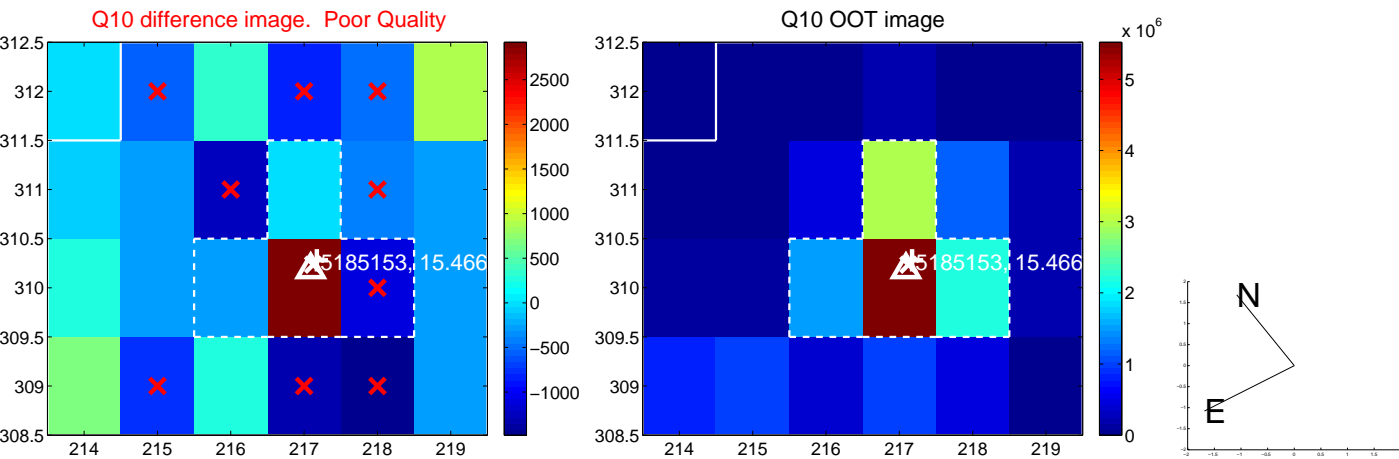
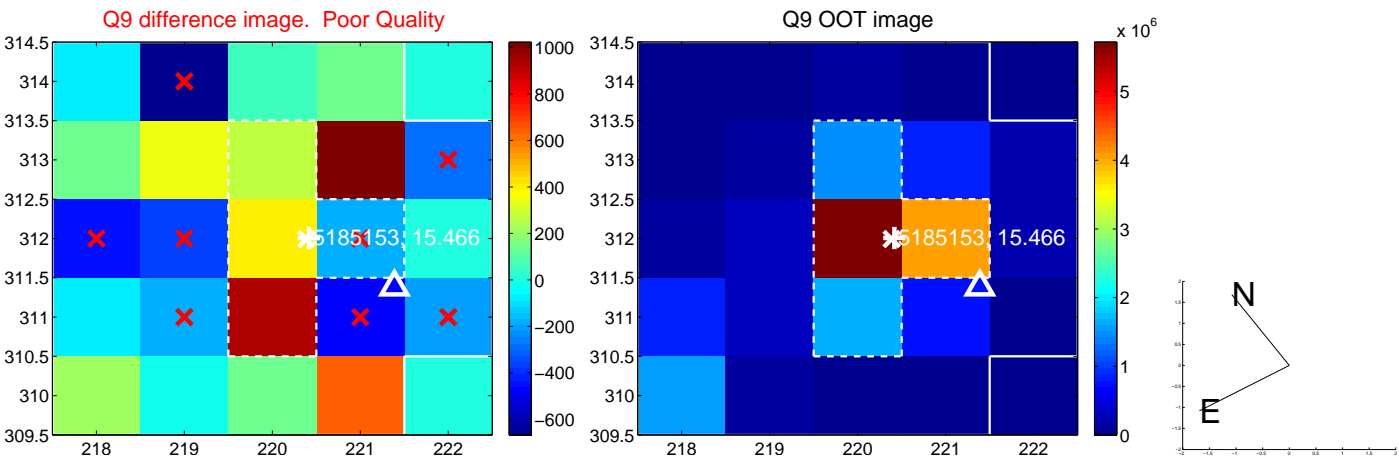
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



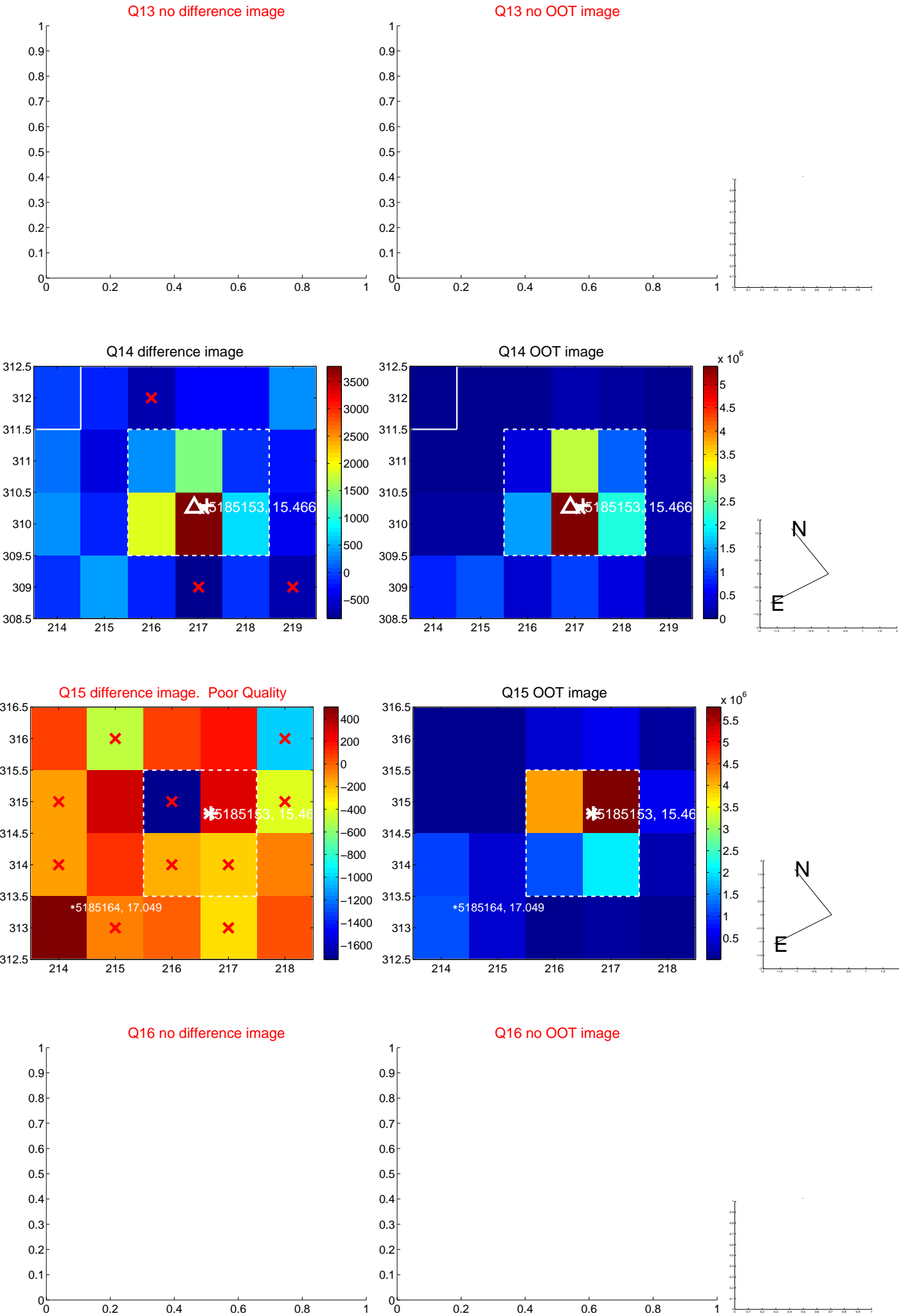
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

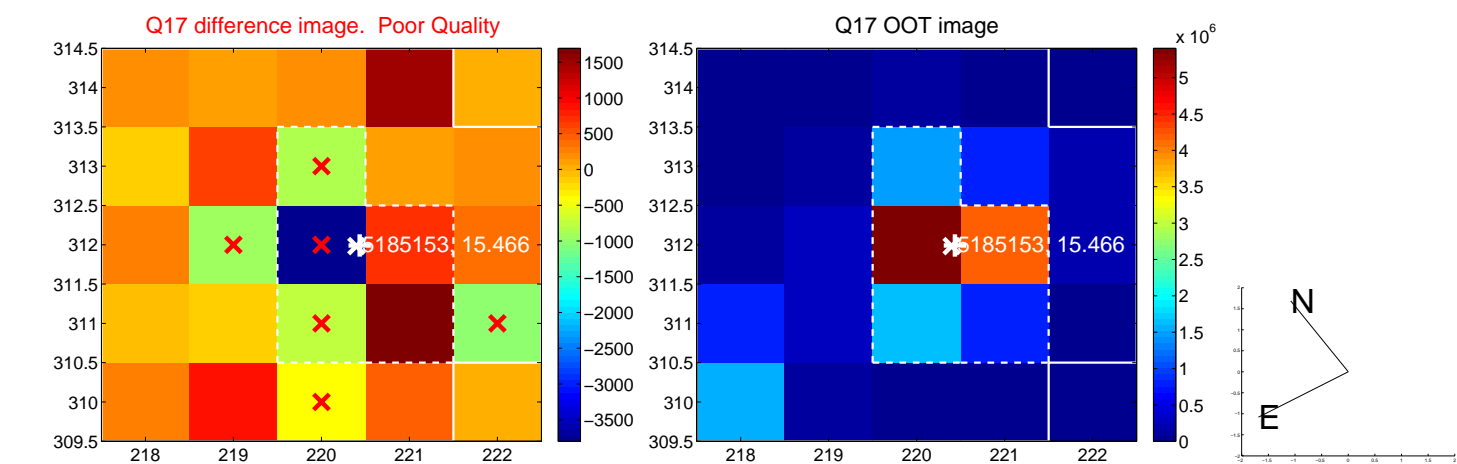


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

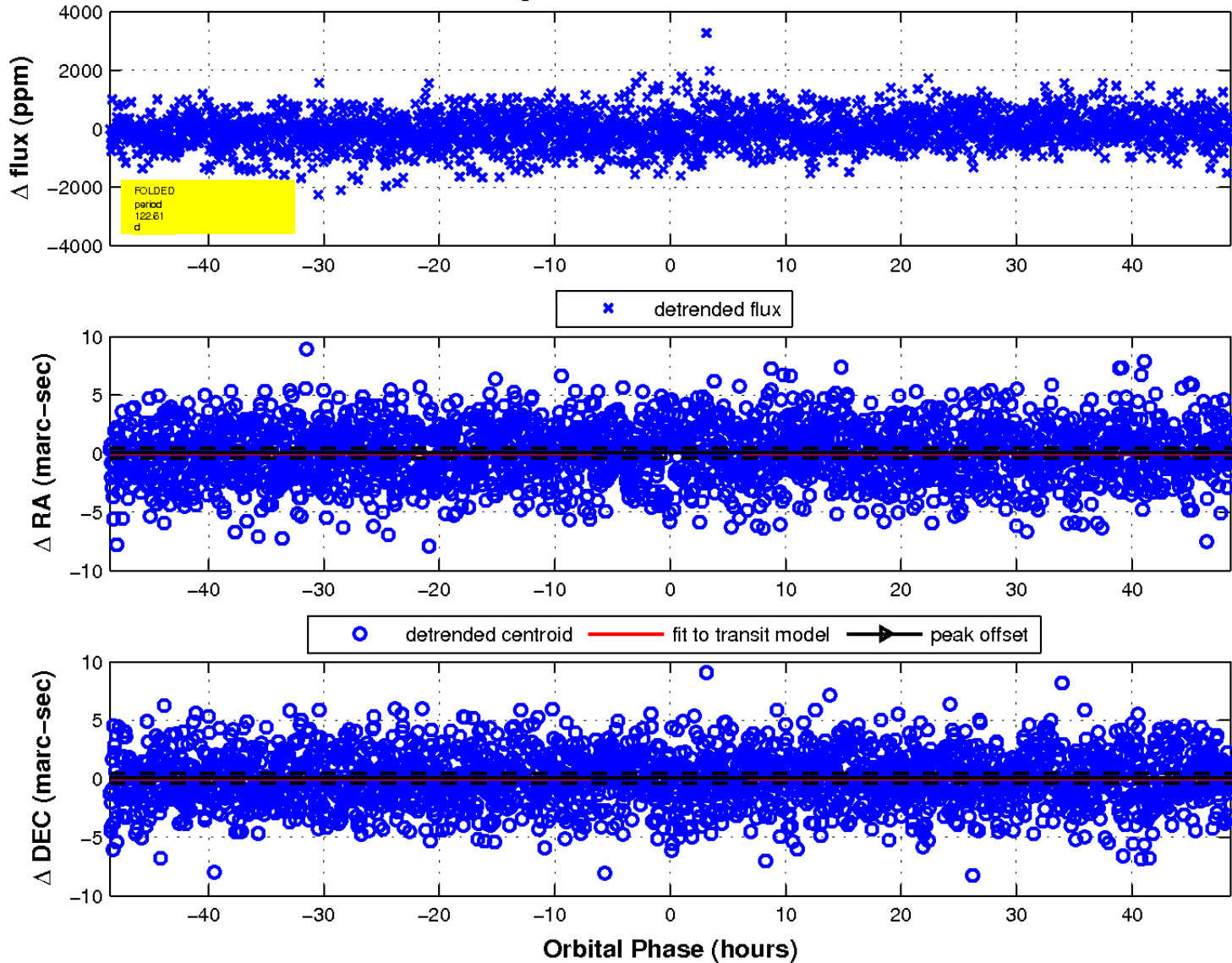




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

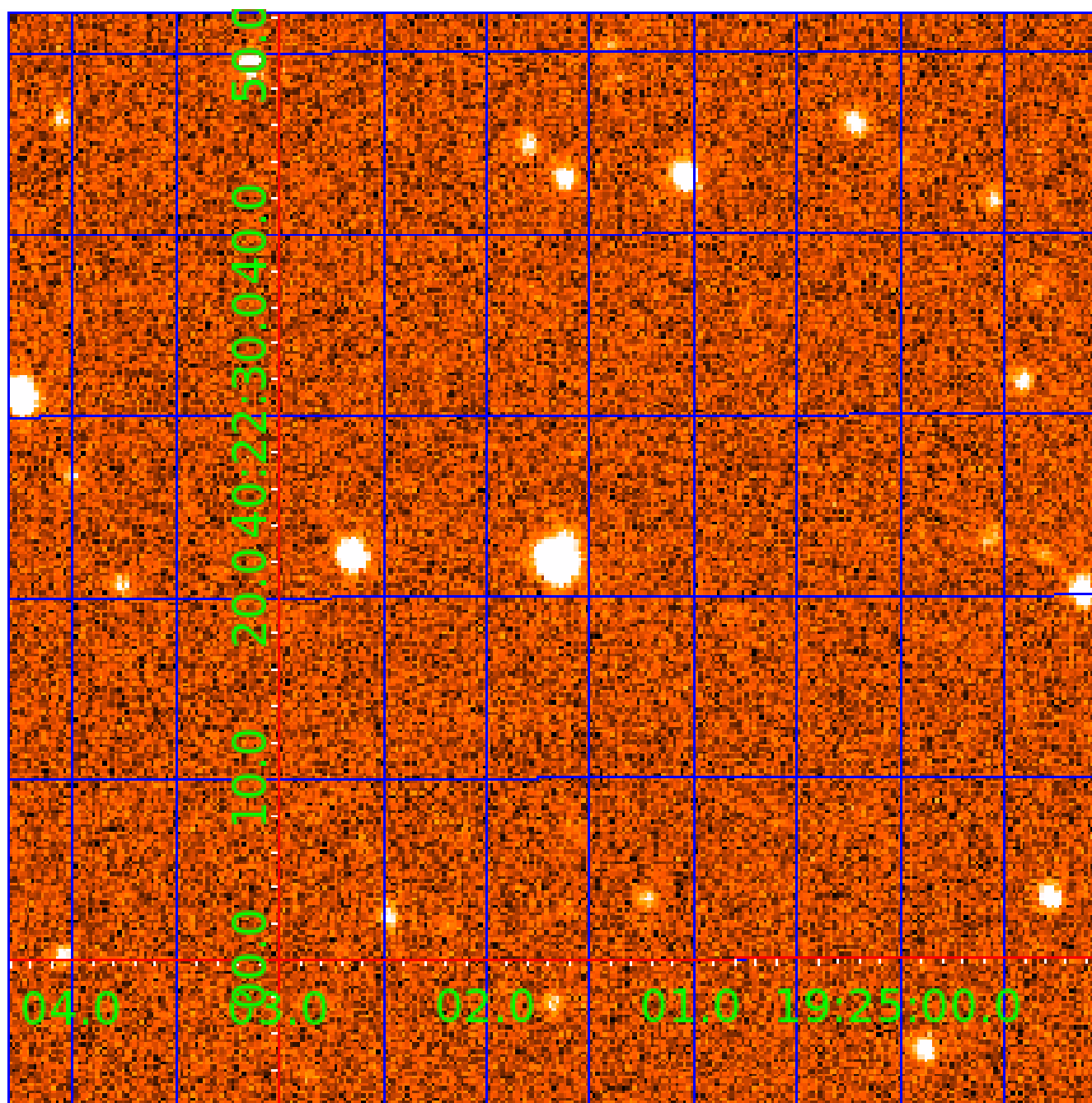


fluxWeightedCentroids, Planet 6 of 7



# UKIRT Image

Declination



# KIC 005185153

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005185153-01	OBS	No	3.251795	134.277121	95.4	19.167	8.3	11.8	0.85	5615	0.89	363.99
005185153-02	OBS	No	74.543609	147.350518	527.5	28.583	12.9	8.5	0.85	5615	2.51	5.59
005185153-03	OBS	No	403.397418	229.731815	780.5	25.882	12.1	8.0	0.85	5615	2.73	0.59
005185153-04	OBS	No	93.564944	140.645833	480.7	5.660	8.5	7.4	0.85	5615	1.99	4.13
005185153-05	OBS	No	177.092844	258.280919	850.0	2.735	8.2	8.0	0.85	5615	2.86	1.76
005185153-06	OBS	No	122.609683	225.633037	456.5	16.195	7.8	6.3	0.85	5615	2.03	2.88
005185153-07	OBS	No	105.338904	148.221922	187.4	13.735	7.4	3.8	0.85	5615	1.33	3.52

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005185153-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005185153-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005185153-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
005185153-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005185153-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
005185153-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

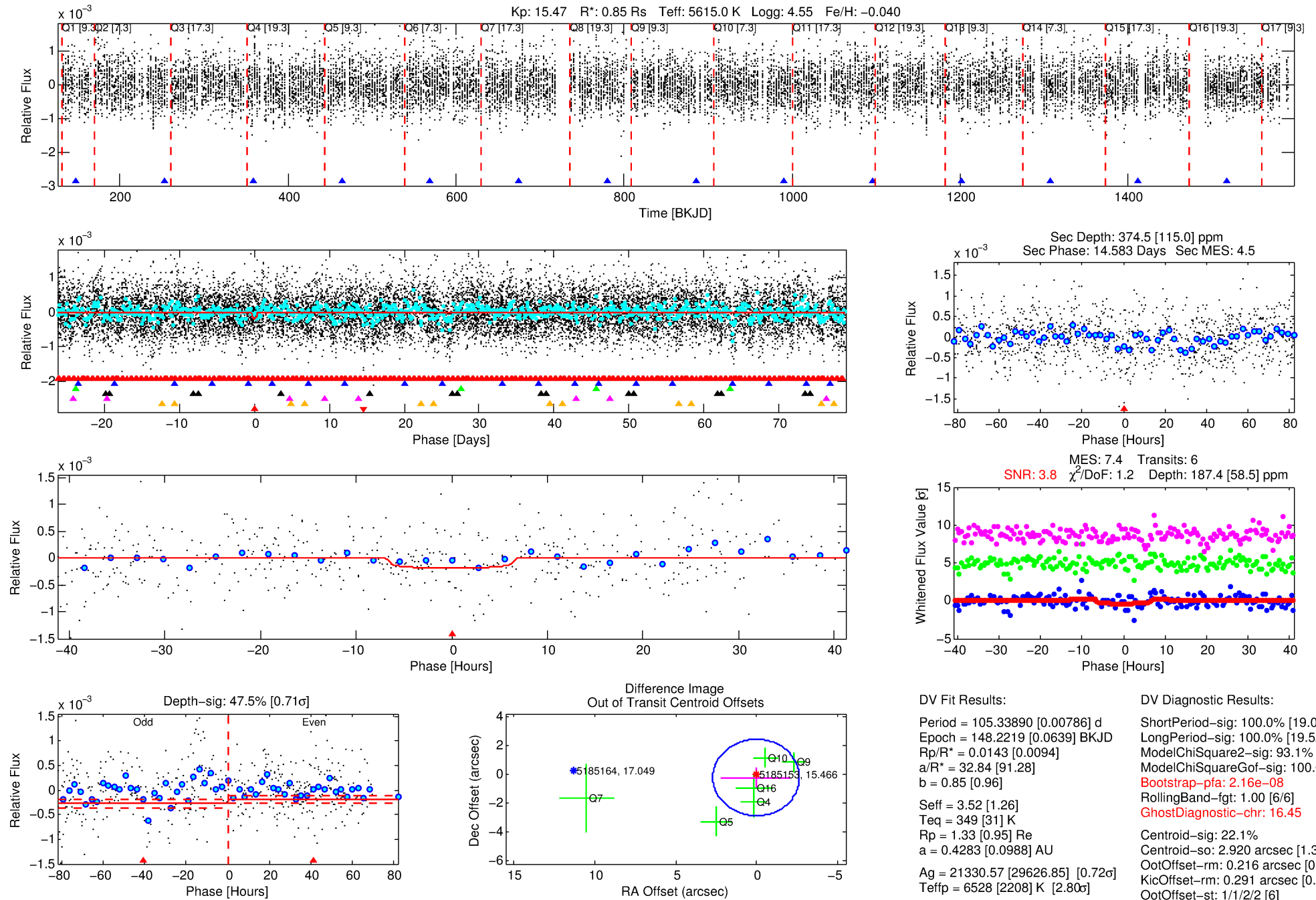
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005185153-07

No Significant Match Found

# DV One-Page Summary

KIC: 5185153 Candidate: 7 of 7 Period: 105.339 d



## DV Fit Results:

Period = 105.33890 [0.00786] d  
Epoch = 148.2219 [0.0639] BKJD  
Rp/R\* = 0.0143 [0.0094]  
a/R\* = 32.84 [91.28]  
b = 0.85 [0.96]  
Seff = 3.52 [1.26]  
Teq = 349 [31] K  
Rp = 1.33 [0.95] Re  
a = 0.4283 [0.0988] AU  
Ag = 21330.57 [29626.85] [0.72 $\sigma$ ]  
Teffp = 6528 [2208] K [2.80 $\sigma$ ]

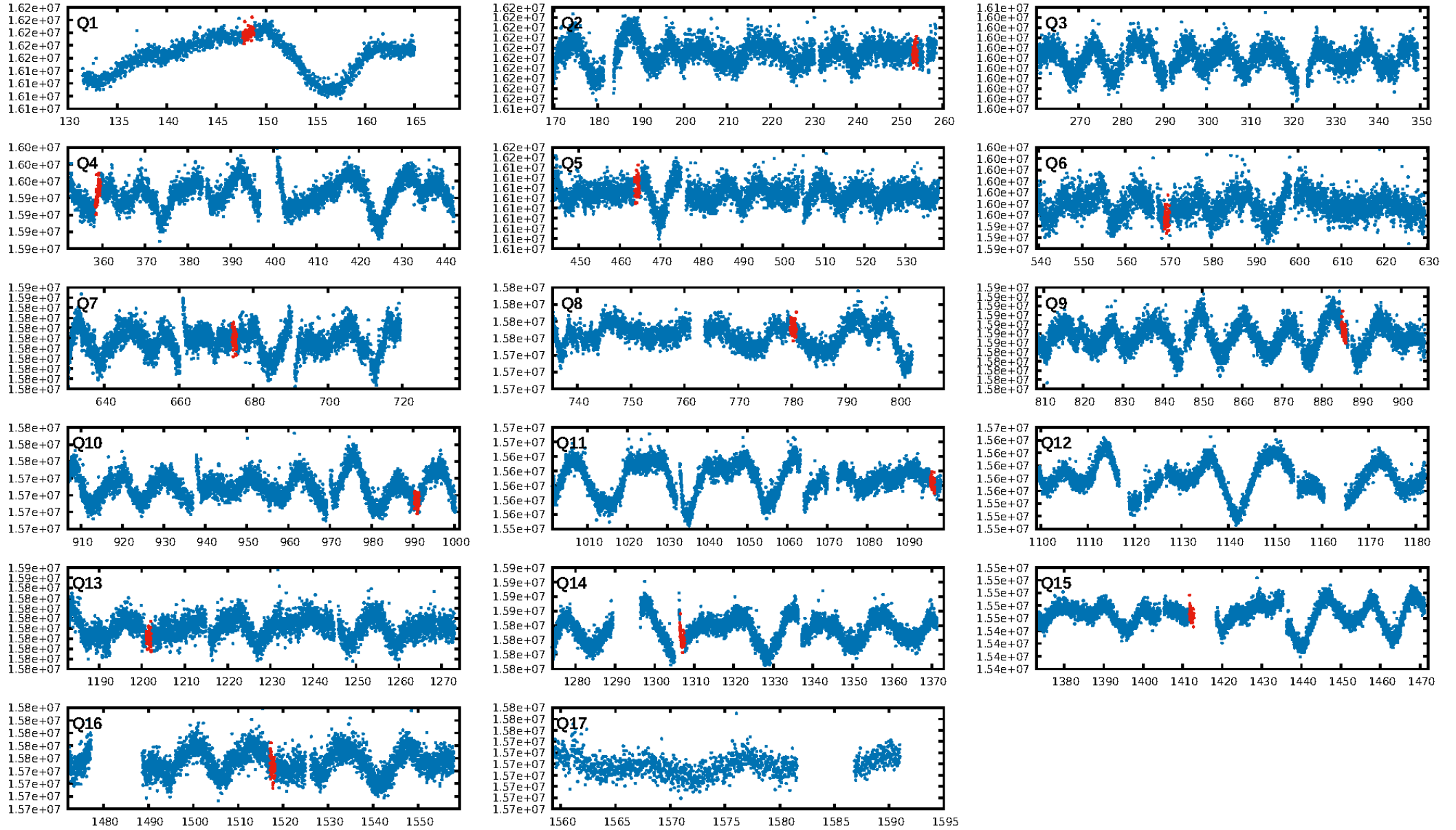
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [19.02 $\sigma$ ]  
LongPeriod-sig: 100.0% [19.52 $\sigma$ ]  
ModelChiSquare2-sig: 93.1%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 2.16e-08**  
RollingBand-fgt: 1.00 [6/6]  
**GhostDiagnostic-chr: 16.45**  
Centroid-sig: 22.1%  
Centroid-so: 2.920 arcsec [1.33 $\sigma$ ]  
OotOffset-rm: 0.216 arcsec [0.24 $\sigma$ ]  
KicOffset-rm: 0.291 arcsec [0.31 $\sigma$ ]  
OotOffset-st: 1/1/2/2 [6]  
KicOffset-st: 1/1/2/2 [6]  
DiffImageQuality-fgm: 0.33 [2/6]  
DiffImageOverlap-fno: 0.20 [2/10]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:03:15 Z

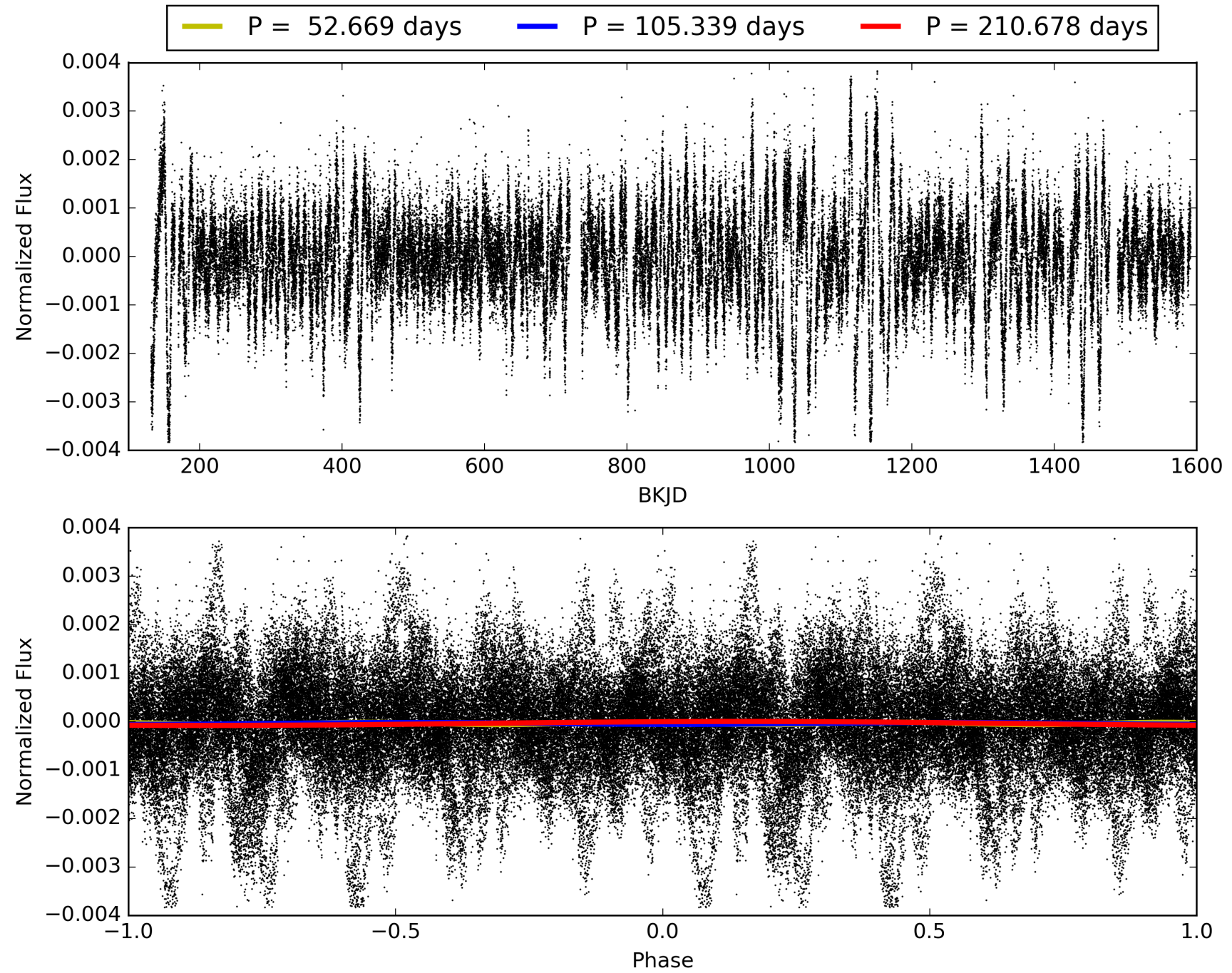
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005185153-07, PDC Light Curves



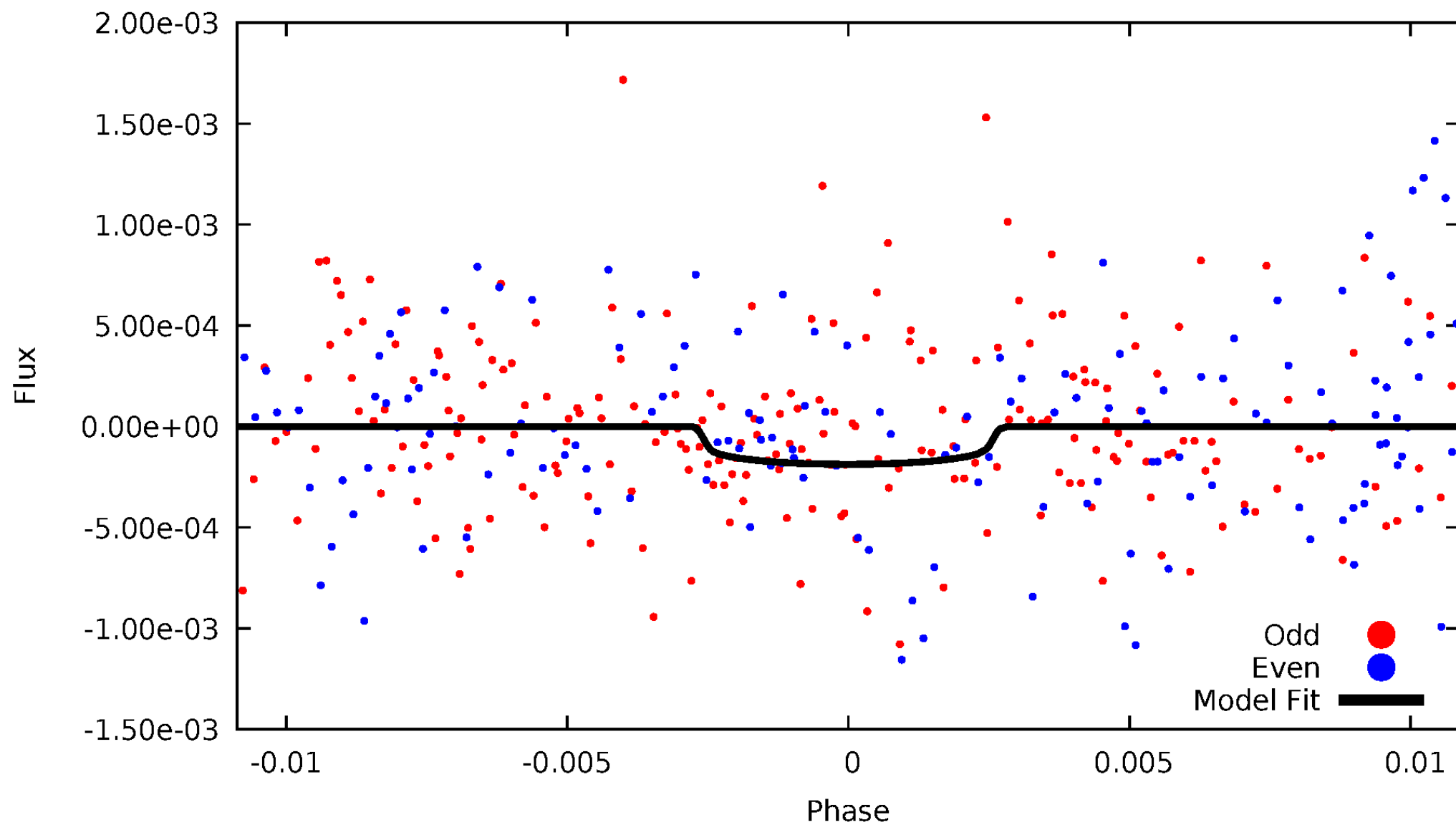


# TCE 005185153-07



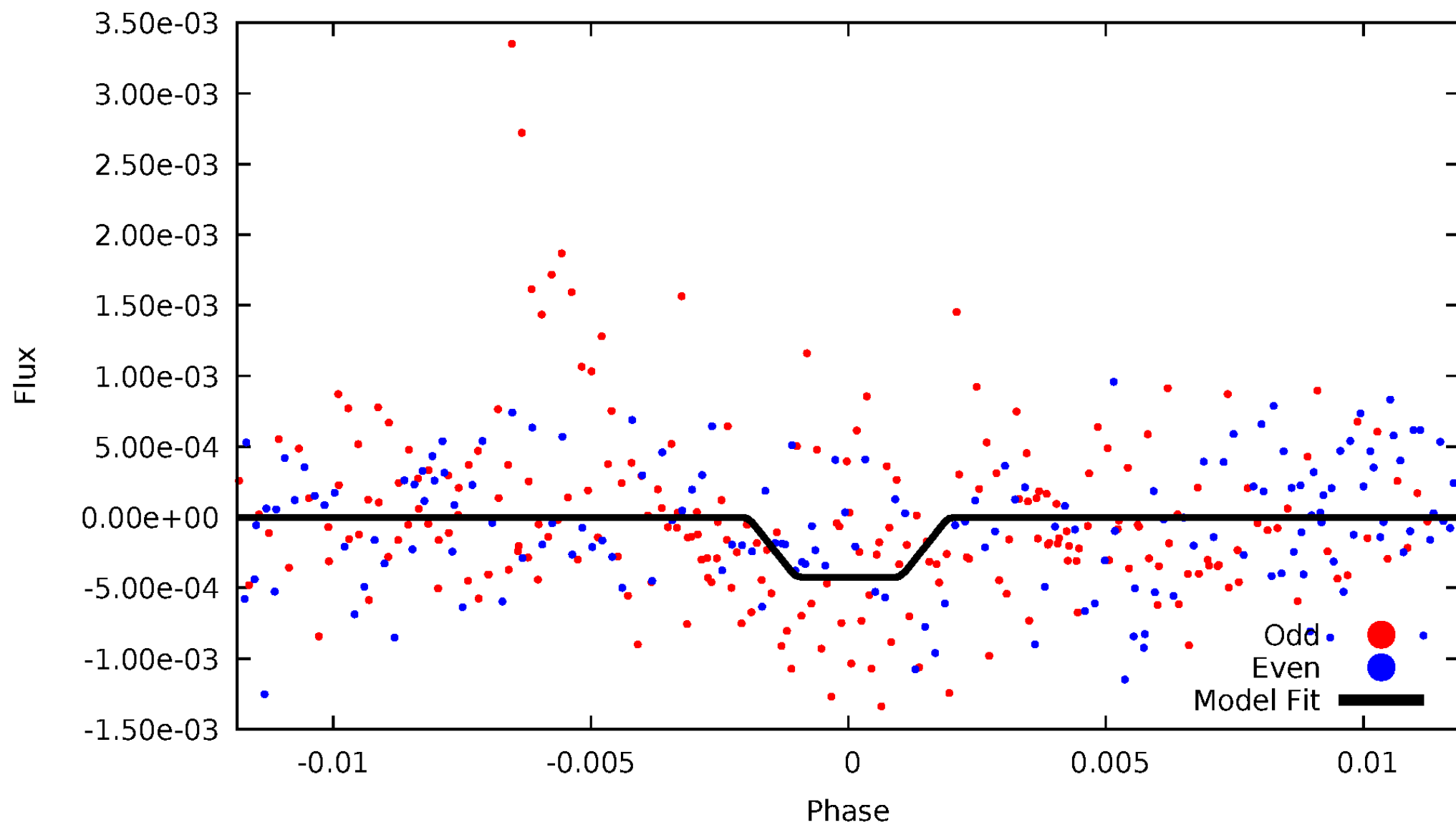
# DV Odd/Even

TCE 005185153-07



# ALT Odd/Even

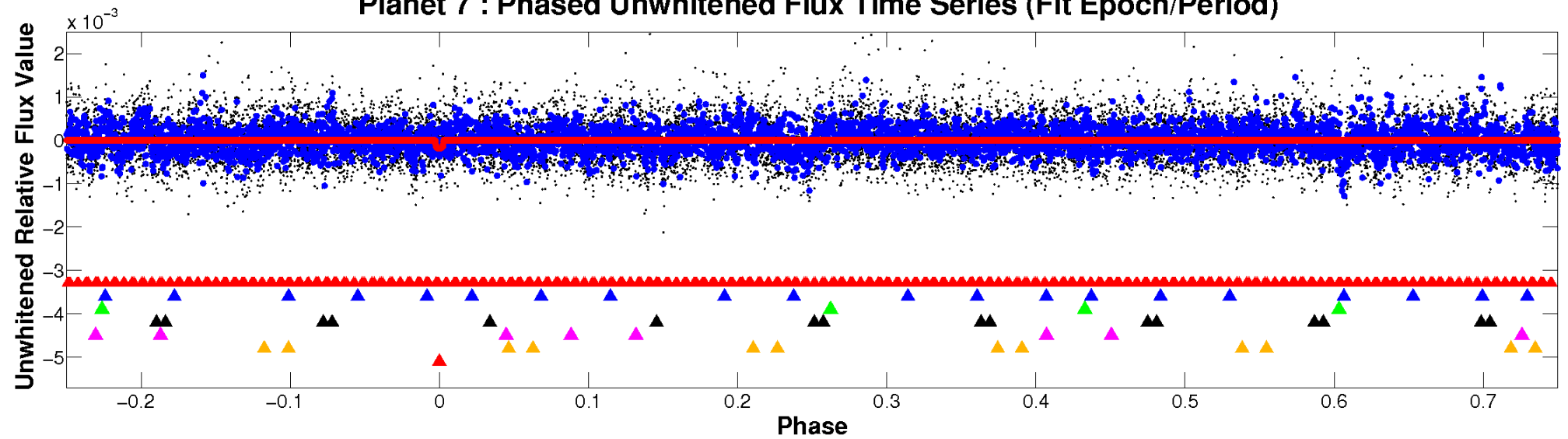
TCE 005185153-07



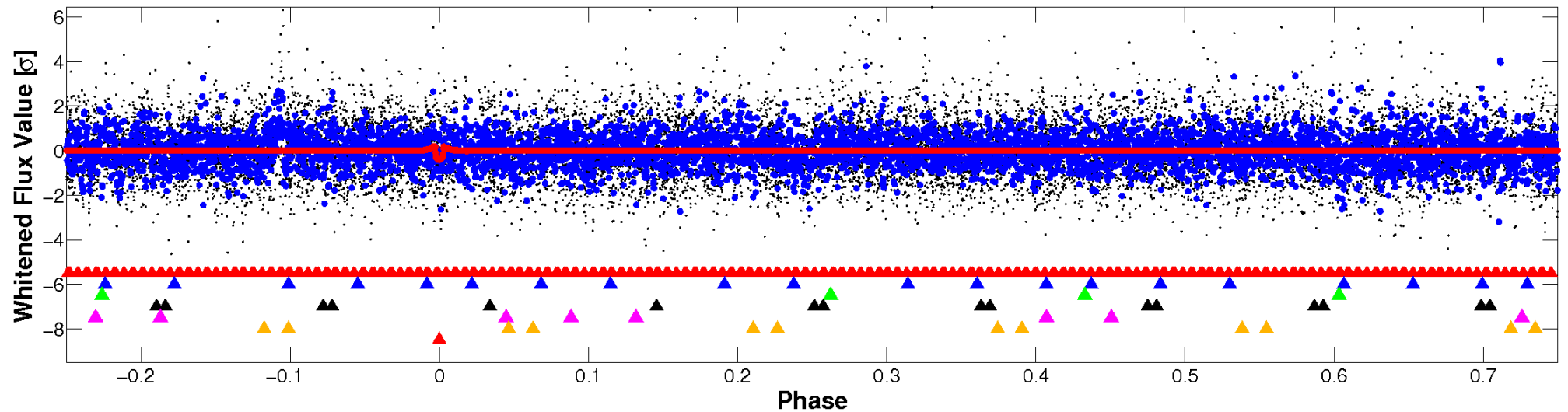


# Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

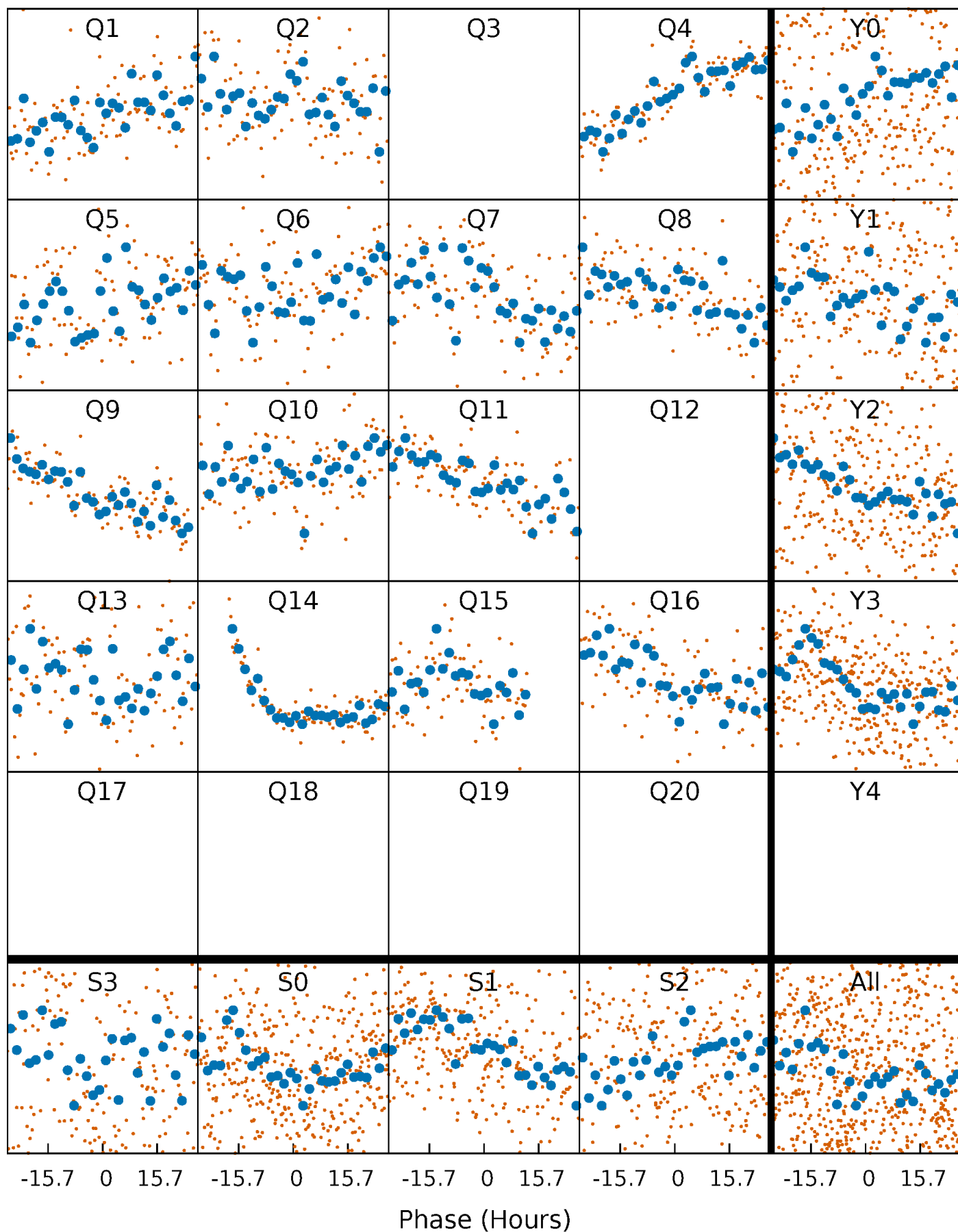


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



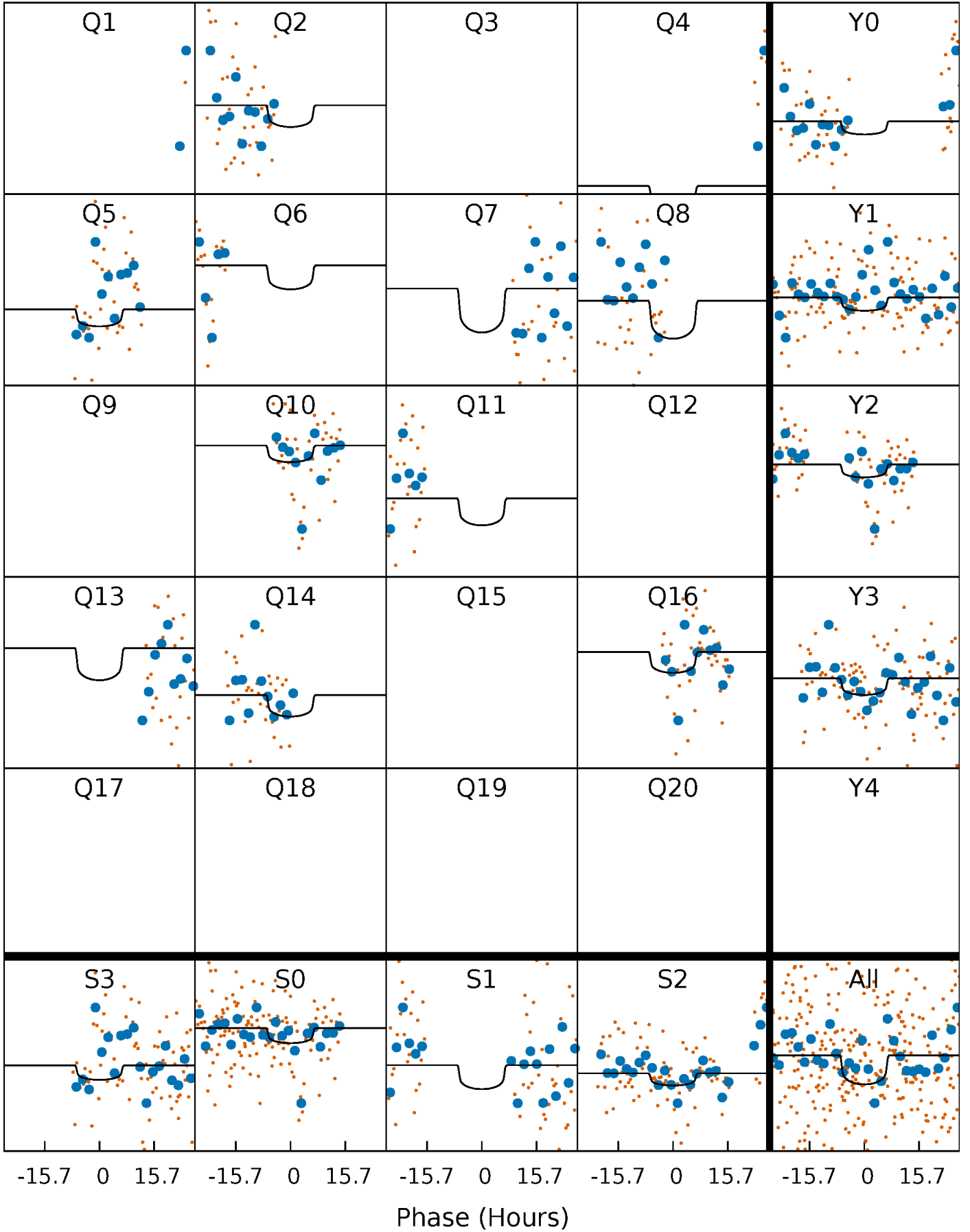
# PDC Quarter-Phased Transit Curves

TCE 005185153-07 P=105.338904 Days  $T_0=148.221922$  (BKJD)



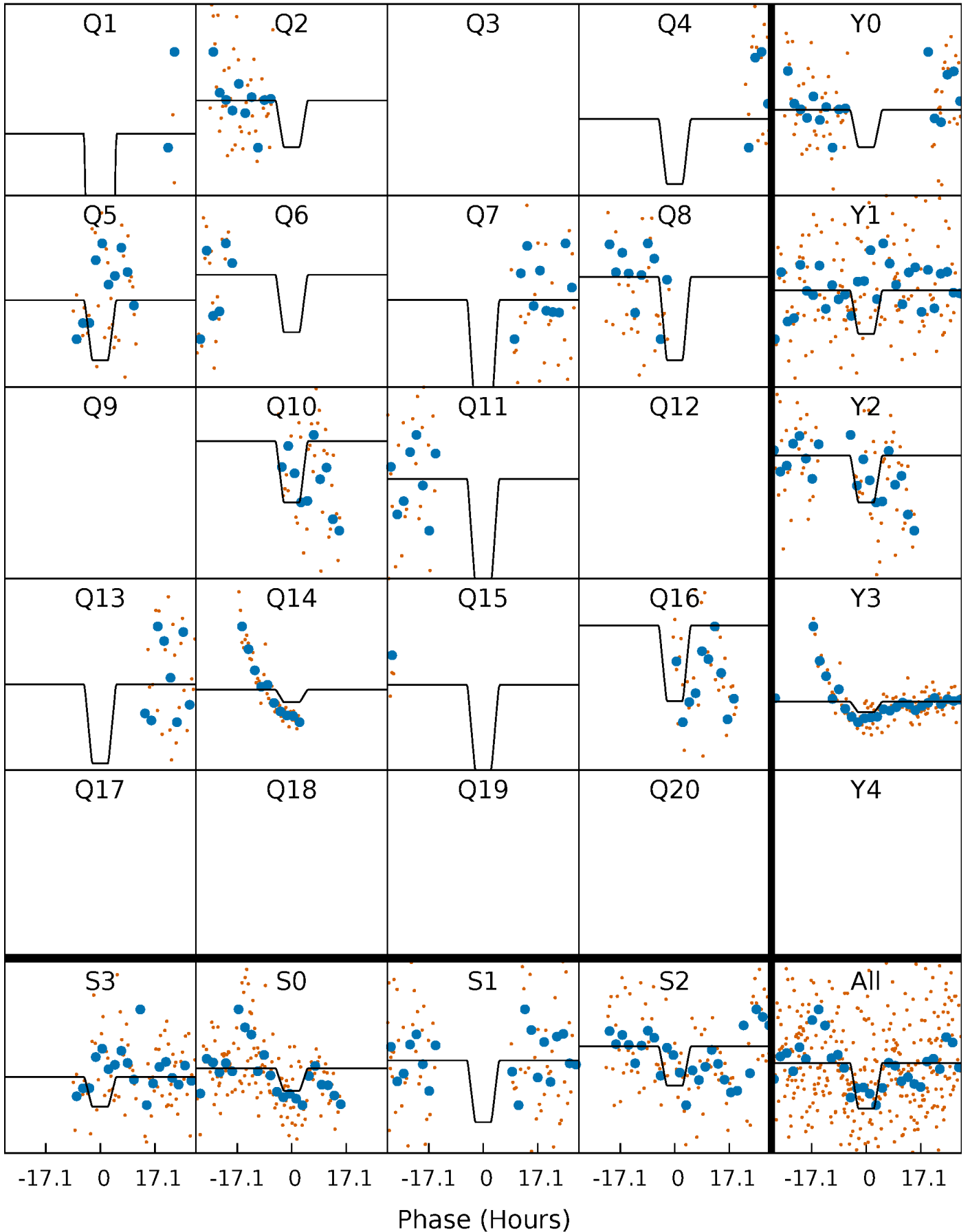
# DV Quarter-Phased Transit Curves

TCE 005185153-07     $P=105.338904$  Days     $T_0=148.221922$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

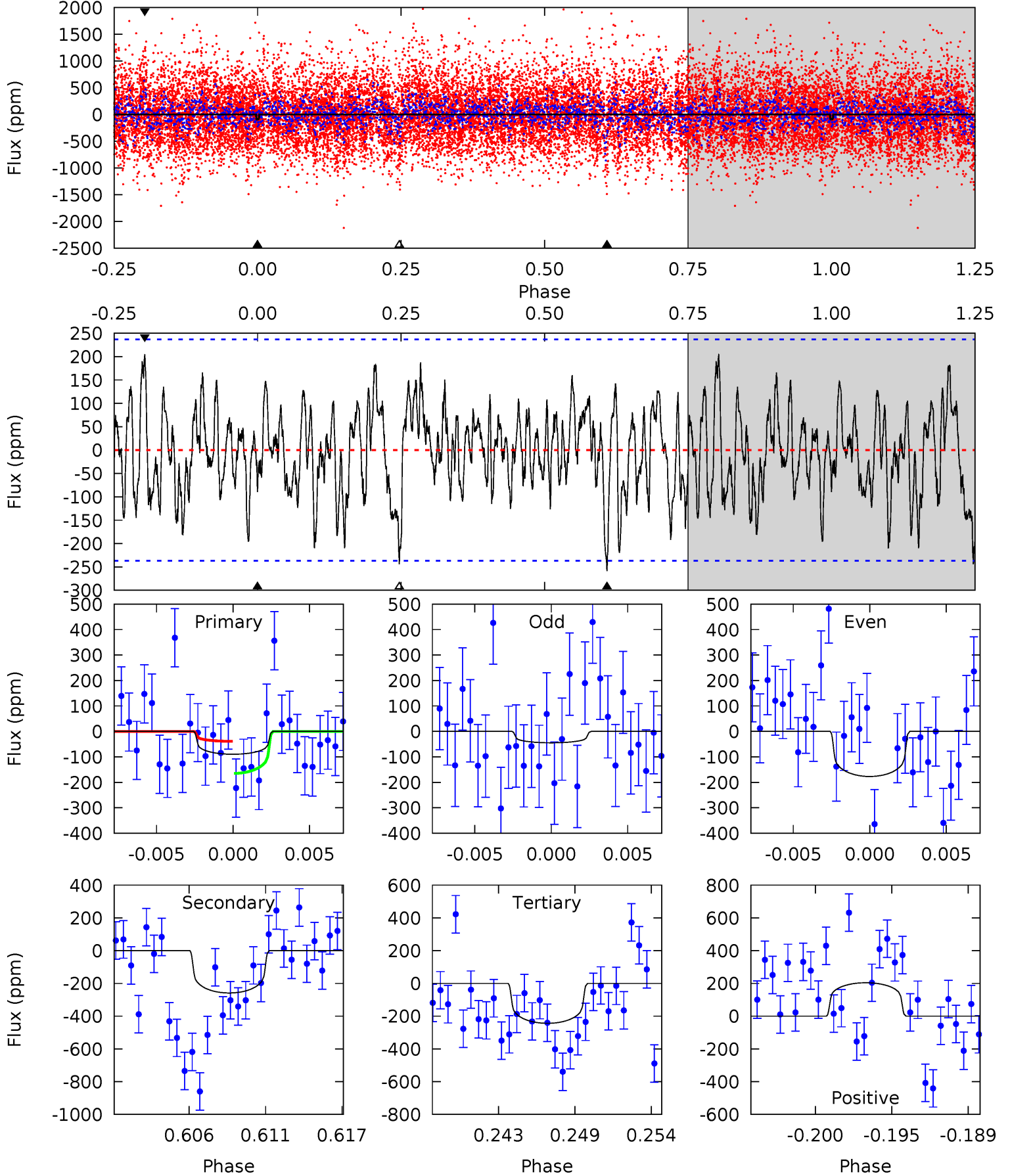
TCE 005185153-07 P=105.324288 Days  $T_0=148.302152$  (BKJD)



# DV Model-Shift Uniqueness Test

005185153-07,  $P = 105.338904$  Days,  $E = 42.883018$  Days

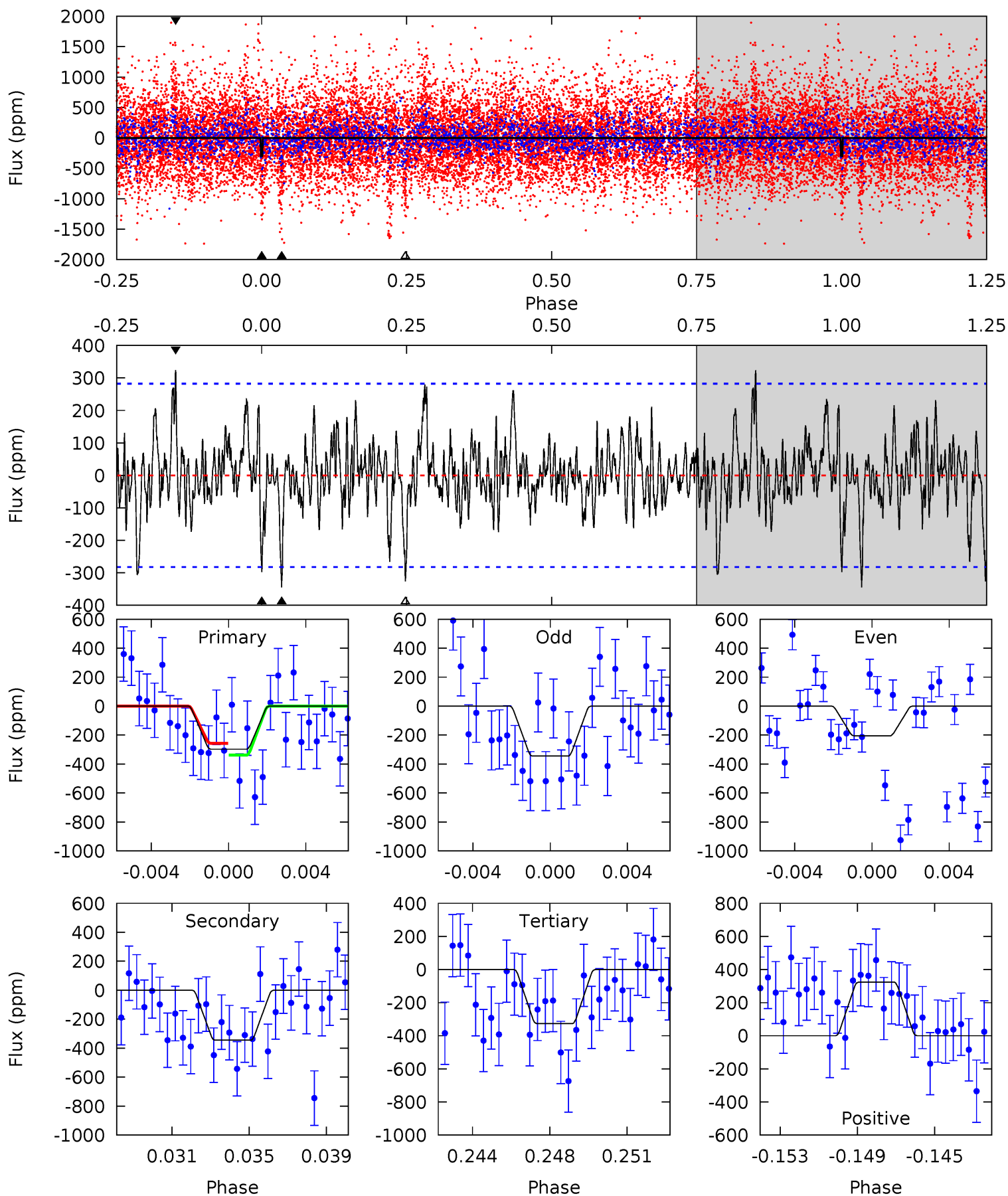
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.95	5.61	5.29	4.42	5.14	2.78	1.72	-3.34	-2.48	0.32	1.19	1.34	1.05	0.44	1.35



# Alt Model-Shift Uniqueness Test

005185153-07,  $P = 105.324288$  Days,  $E = 42.977864$  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
5.48	6.35	6.01	5.96	5.20	2.88	1.65	-0.53	-0.48	0.35	0.39	1.26	1.24	0.48	0.75



### Stellar Parameters For KIC 005185153

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5615^{+169}_{-169}$	$4.552^{+0.035}_{-0.184}$	$-0.040^{+0.300}_{-0.300}$	$0.852^{+0.233}_{-0.078}$	$0.942^{+0.094}_{-0.104}$	$2.149^{+0.380}_{-1.022}$
	+3%/-3%	+1%/-4%	+750%/-750%	+27%/-9%	+10%/-11%	+18%/-48%
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 005185153-07 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-259 \pm 46$	$1.44^{+0.97}_{-0.82}$	$500^{+33}_{-23}$	$5834^{+3636}_{-1184}$	$12265^{+52958}_{-7937}$
Alt.	$-345 \pm 54$	$2.05^{+0.98}_{-0.92}$	$501^{+31}_{-24}$	$5300^{+1760}_{-805}$	$8049^{+17208}_{-4419}$

$T_{\text{max}}$  = 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

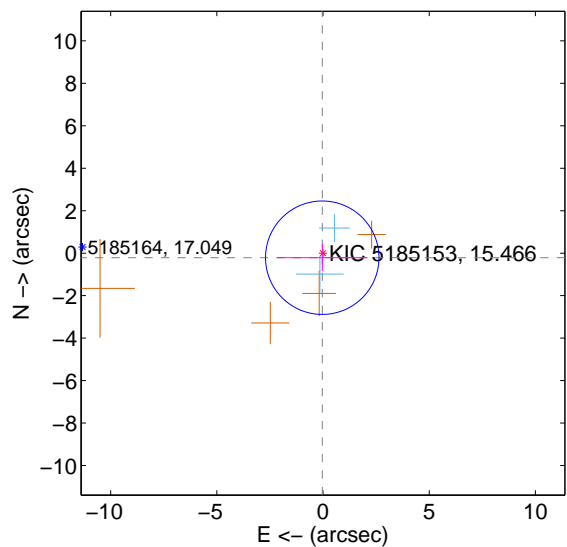
Supplemental centroid analysis for 005185153-07. Kepler magnitude: 15.47. Transit SNR 3.80

There are 2 quarters with good PRF difference image offsets

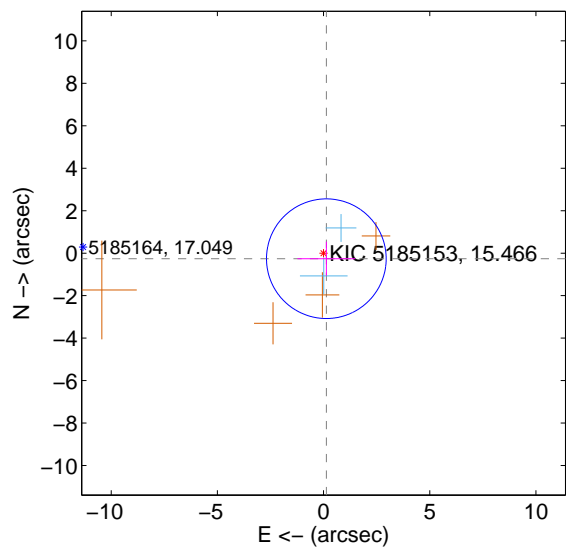
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.216 \pm 0.890$	0.24	$0.038 \pm 2.134$	$-0.213 \pm 0.634$
PRF-fit source offset from KIC position	$0.291 \pm 0.939$	0.31	$-0.130 \pm 1.360$	$-0.260 \pm 0.800$
photometric centroid source offset	$2.92 \pm 2.19$	1.33	$2.86 \pm 2.20$	$0.60 \pm 1.98$

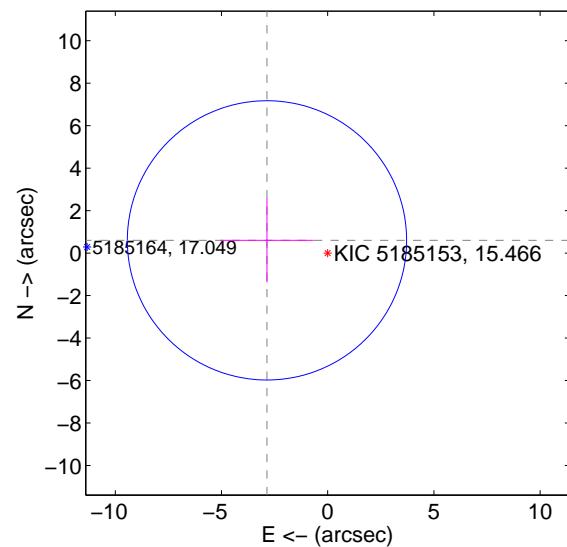
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



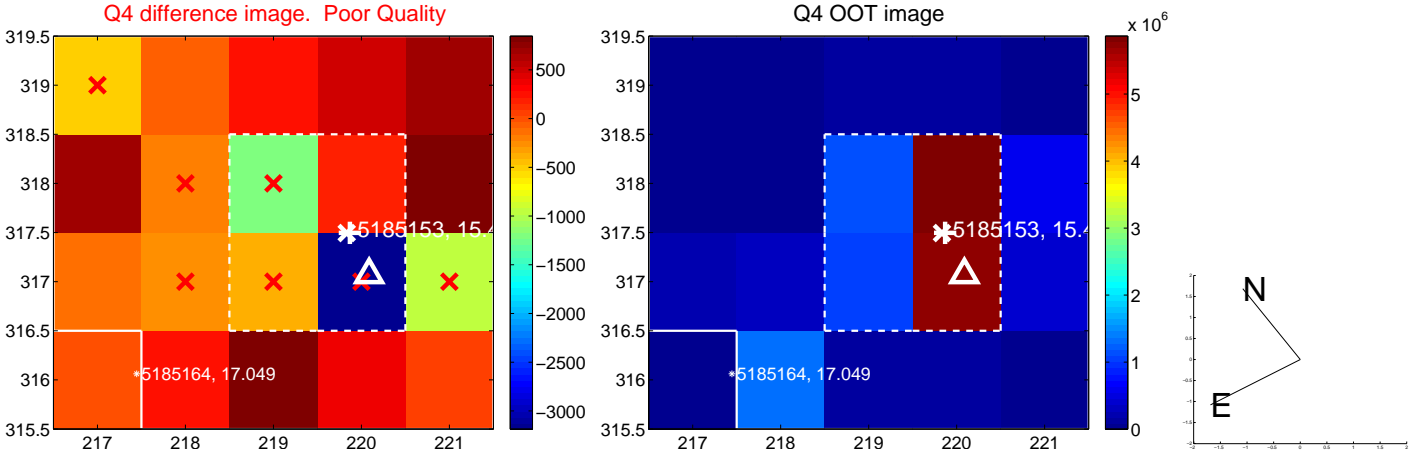
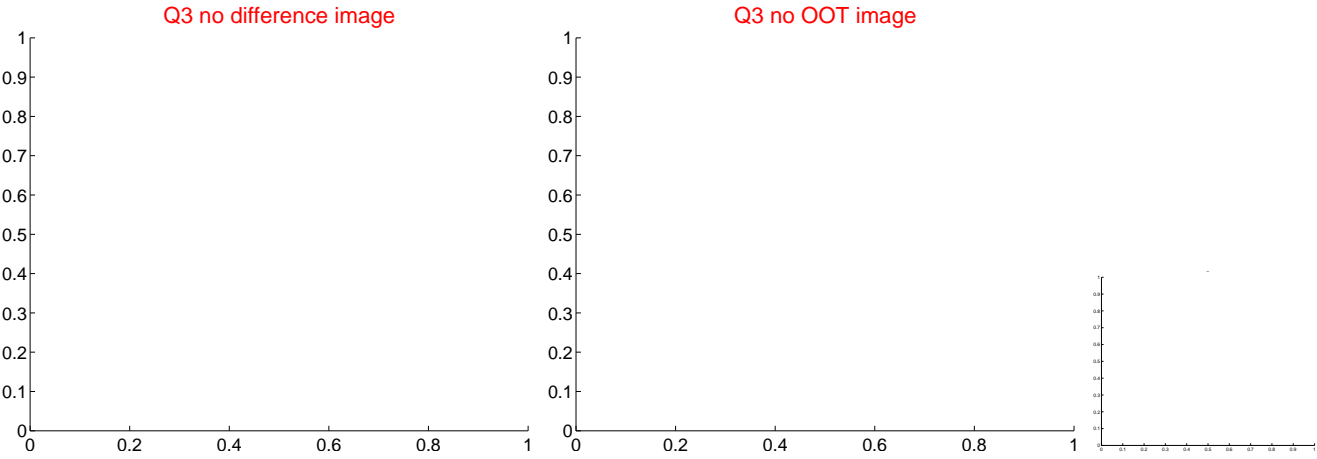
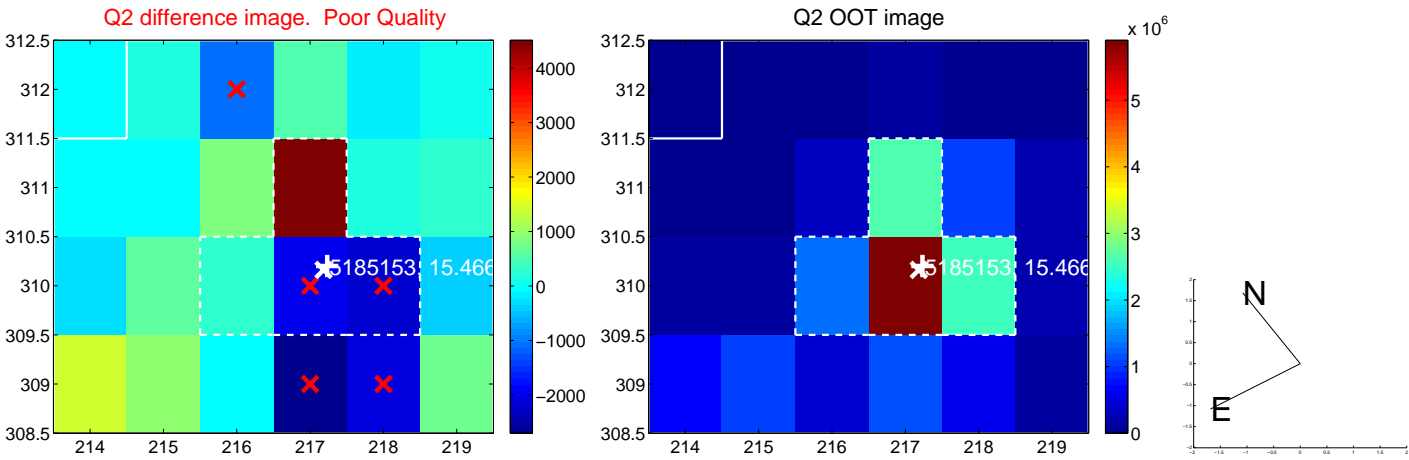
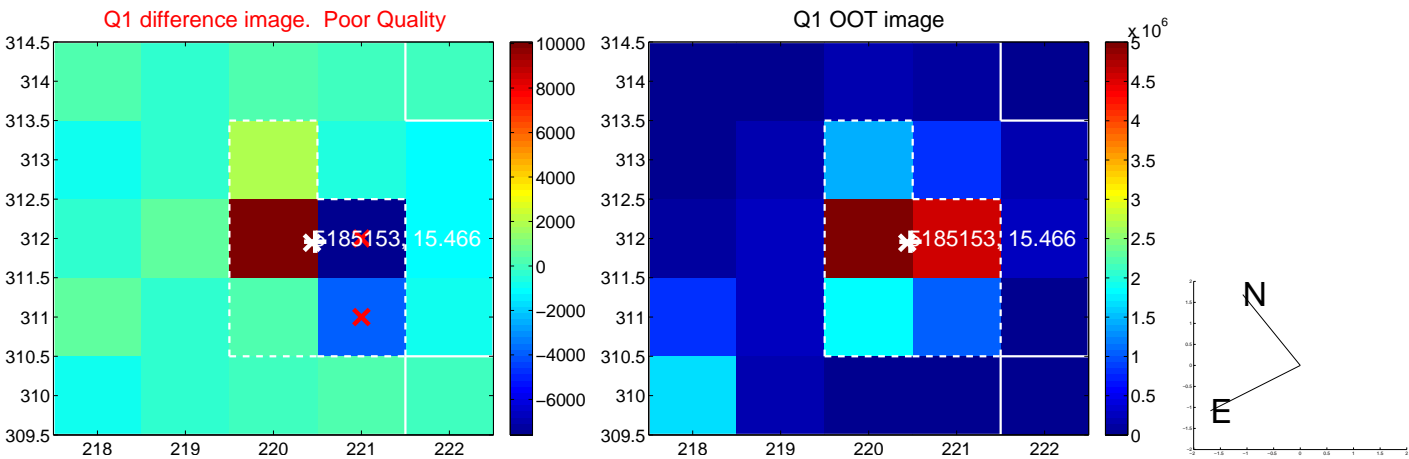
offset from photometric centroids



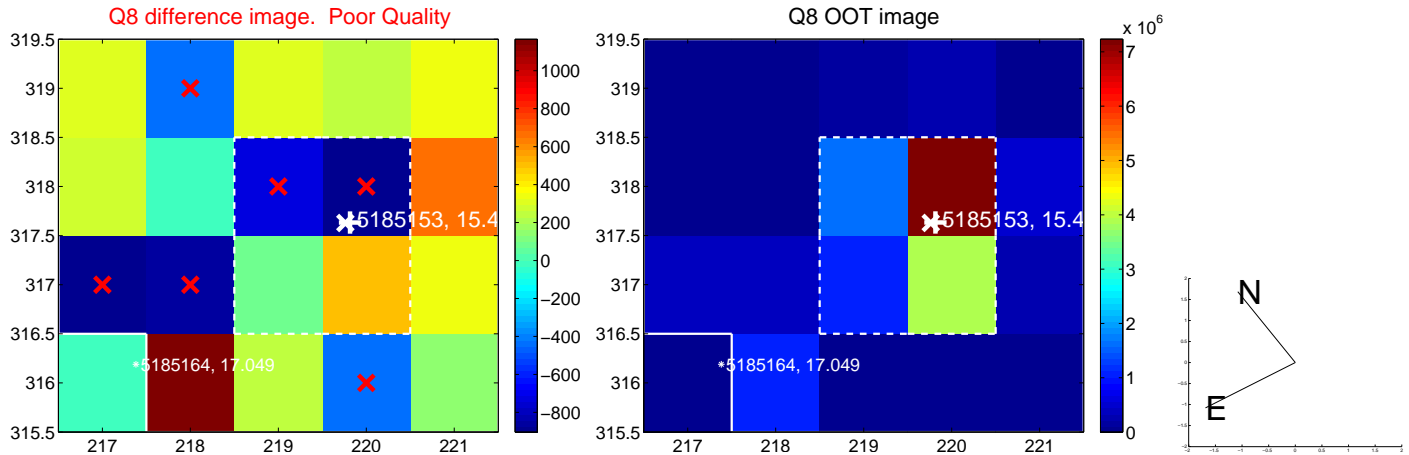
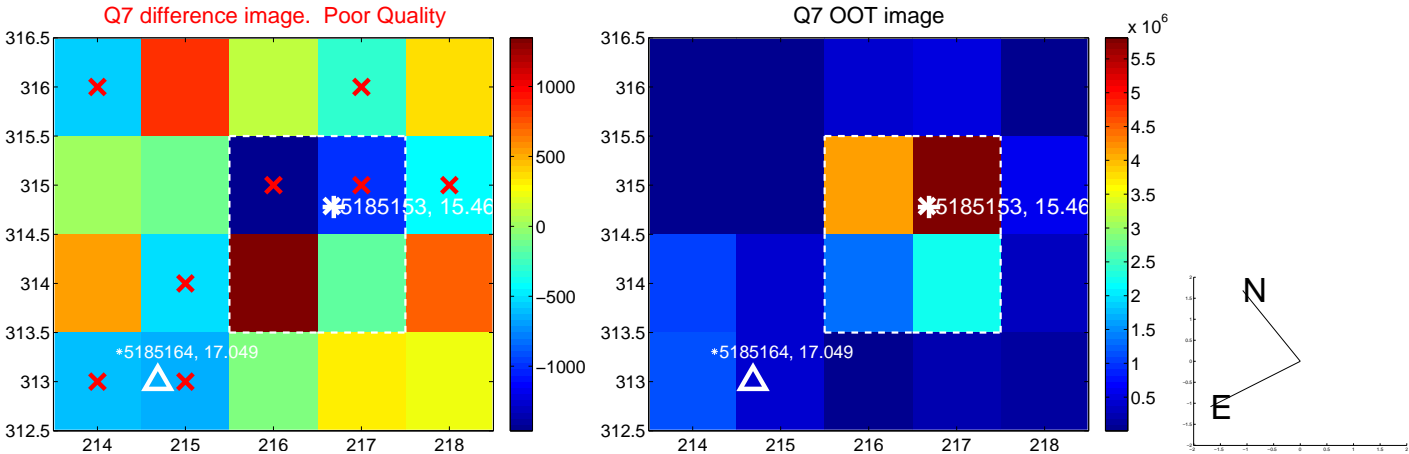
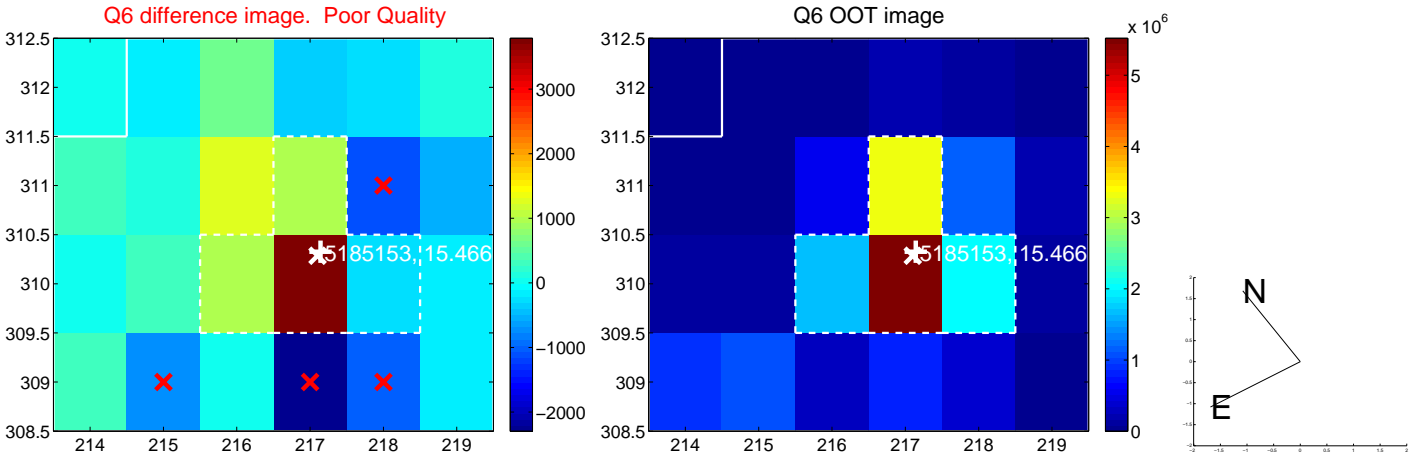
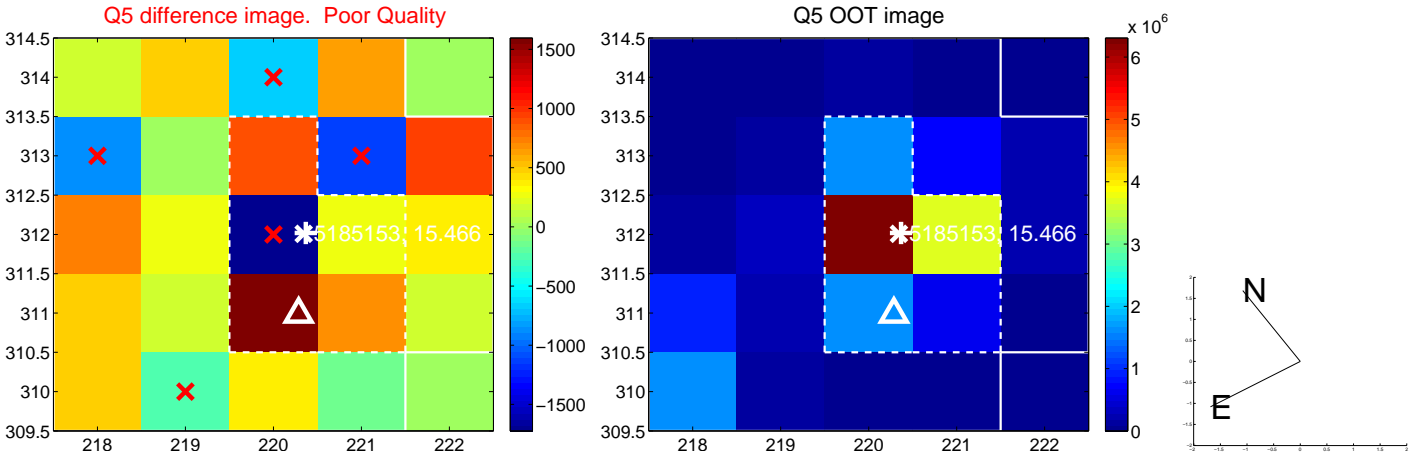
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



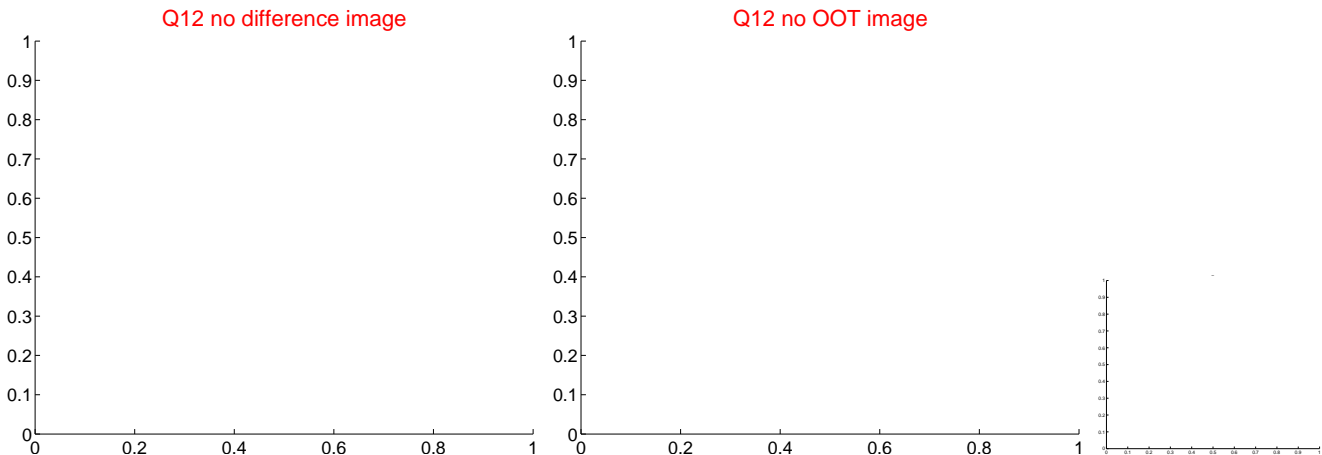
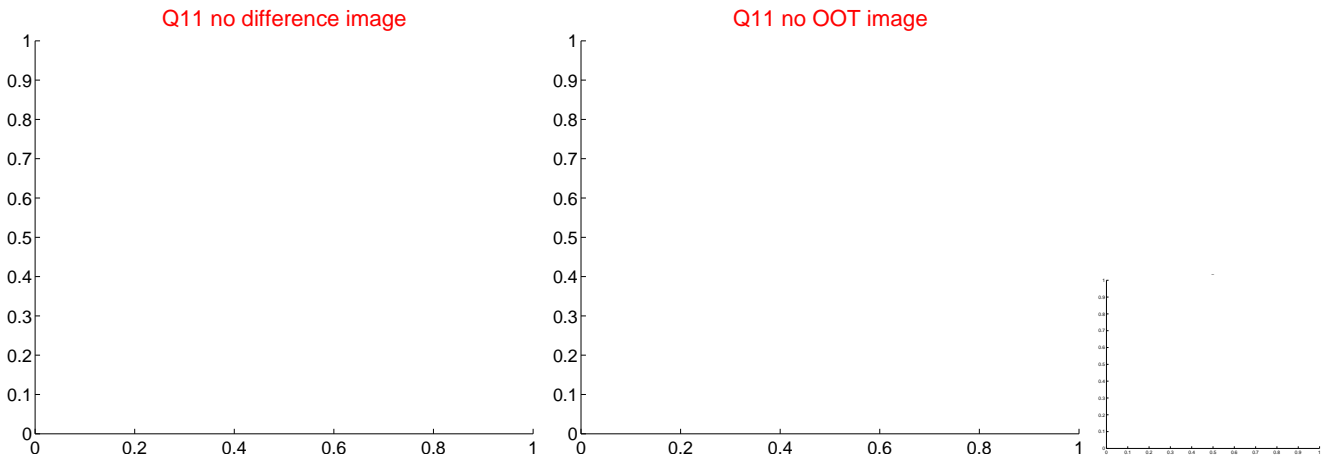
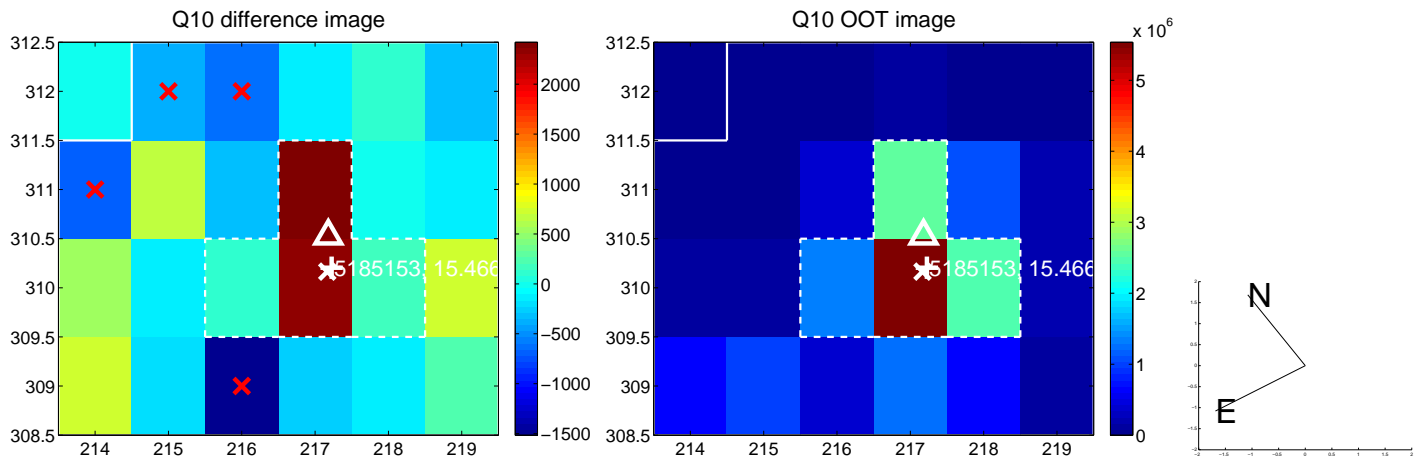
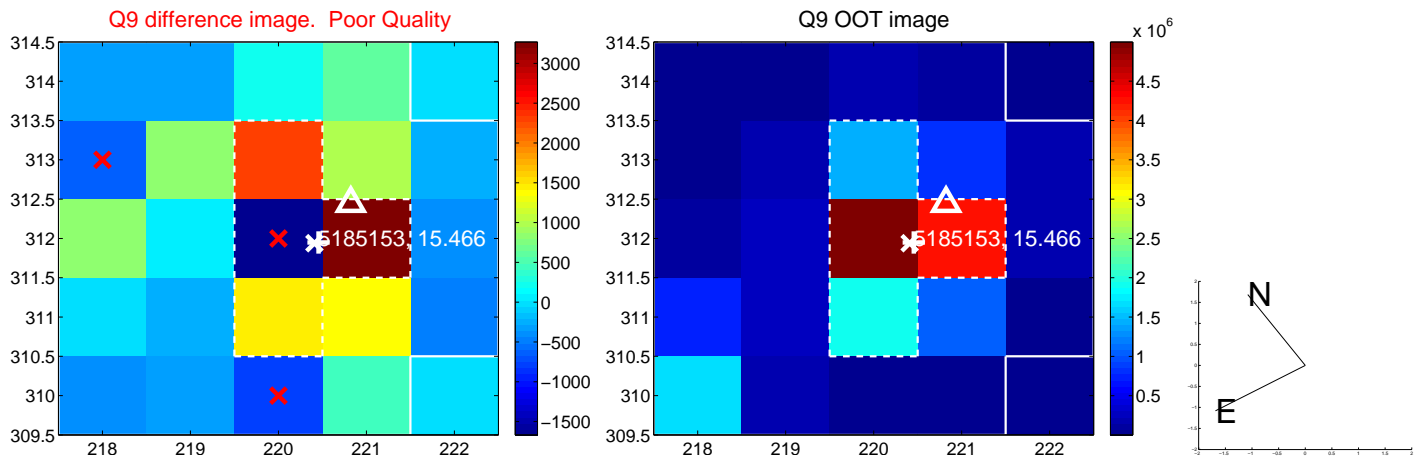
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



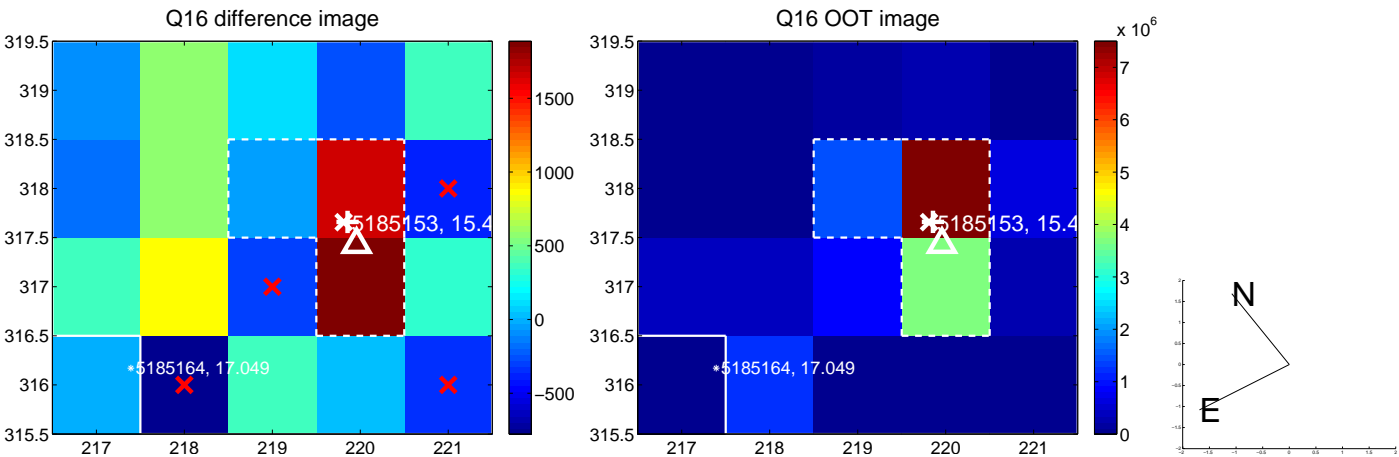
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



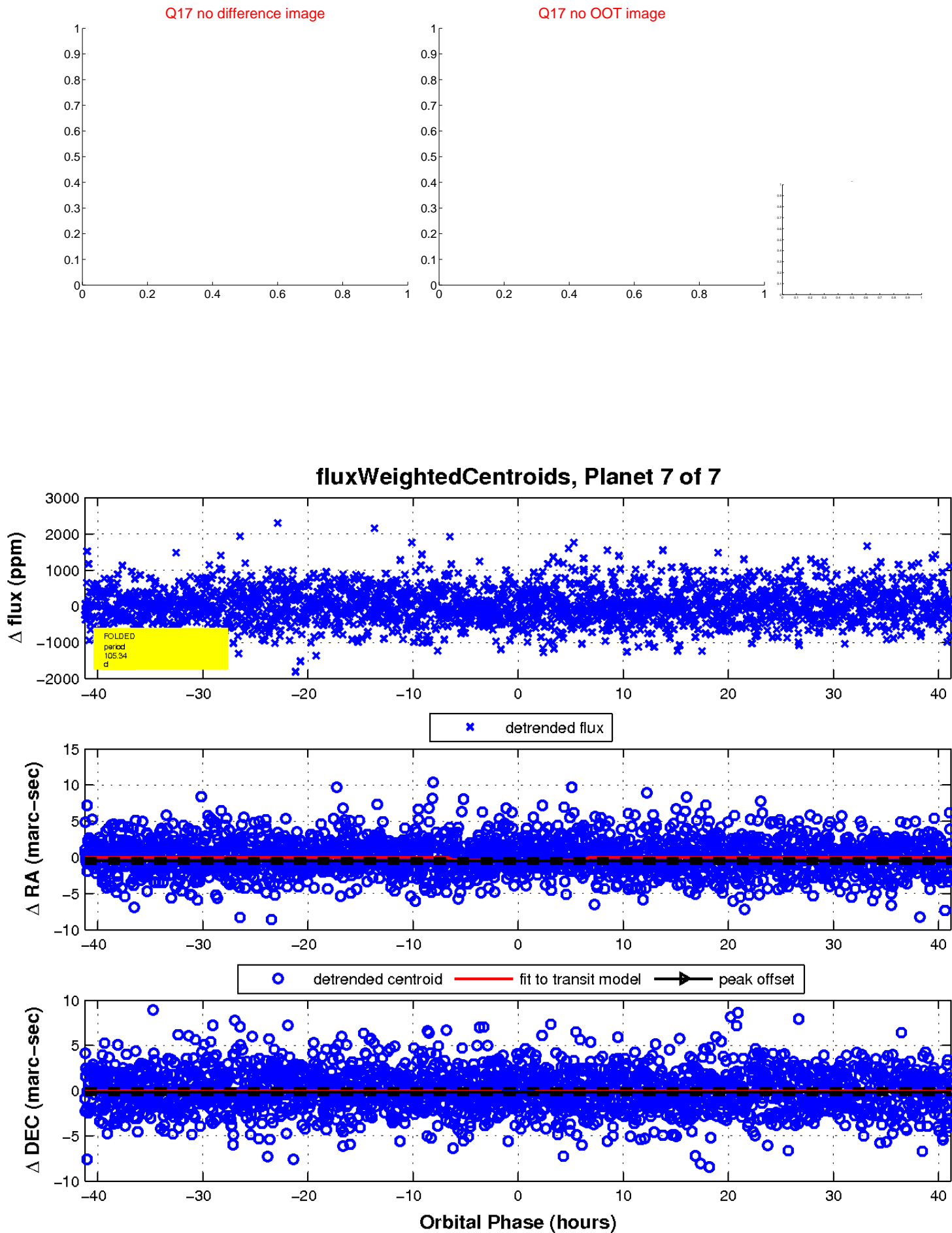
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

