

# KIC 007104854

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007104854-01	OBS	No	2.397508	131.996734	71.4	10.601	9.1	9.2	0.80	5546	0.80	512.99
007104854-02	OBS	No	297.750151	161.536212	278.4	5.336	11.4	2.3	0.80	5546	1.49	0.83
007104854-03	OBS	No	346.077779	466.475224	400.4	1.779	9.8	2.3	0.80	5546	1.75	0.68
007104854-04	OBS	No	346.049150	465.967504	653.3	10.500	9.9	-1.0	0.80	5546	2.02	0.68

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007104854-01	OBS	FP	0.00	1	0	0	0	LPP_DV
007104854-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007104854-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007104854-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— SAME_NTL_PERIOD—CENT_NOFITS

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

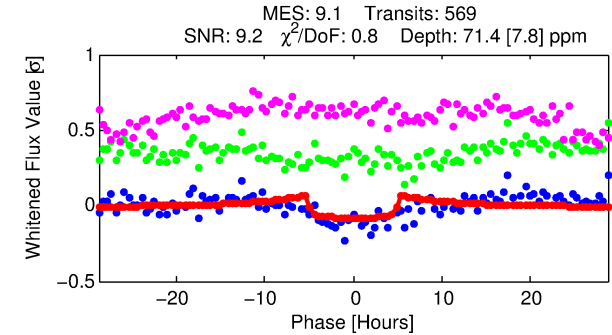
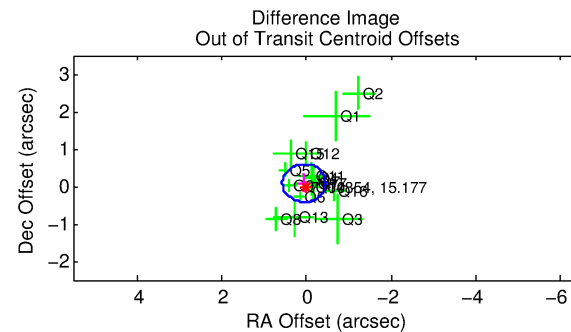
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

## Ephemeris Match Information For 007104854-01

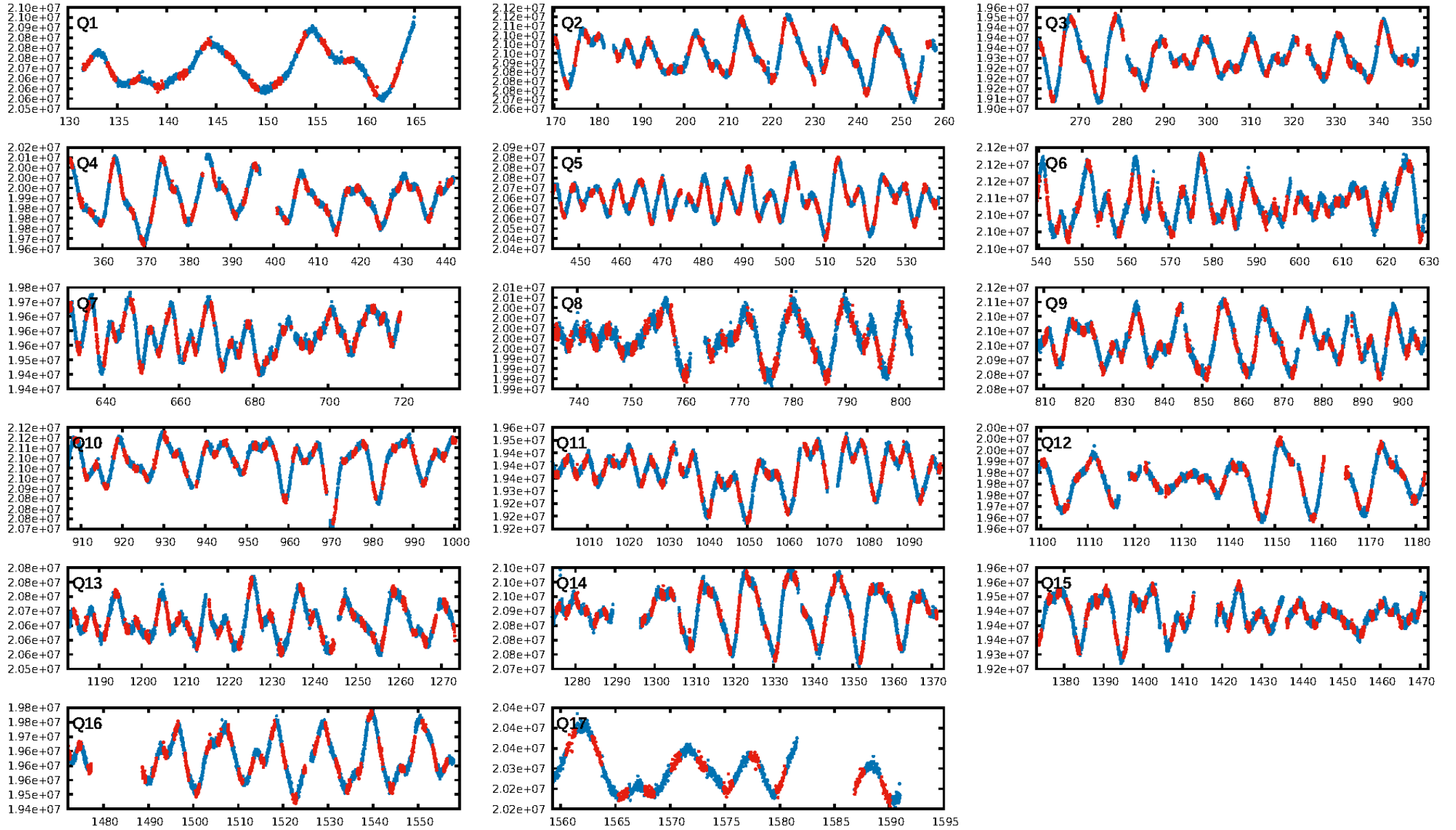
No Significant Match Found

## KIC: 7104854    Candidate: 1 of 4    Period: 2.398 d

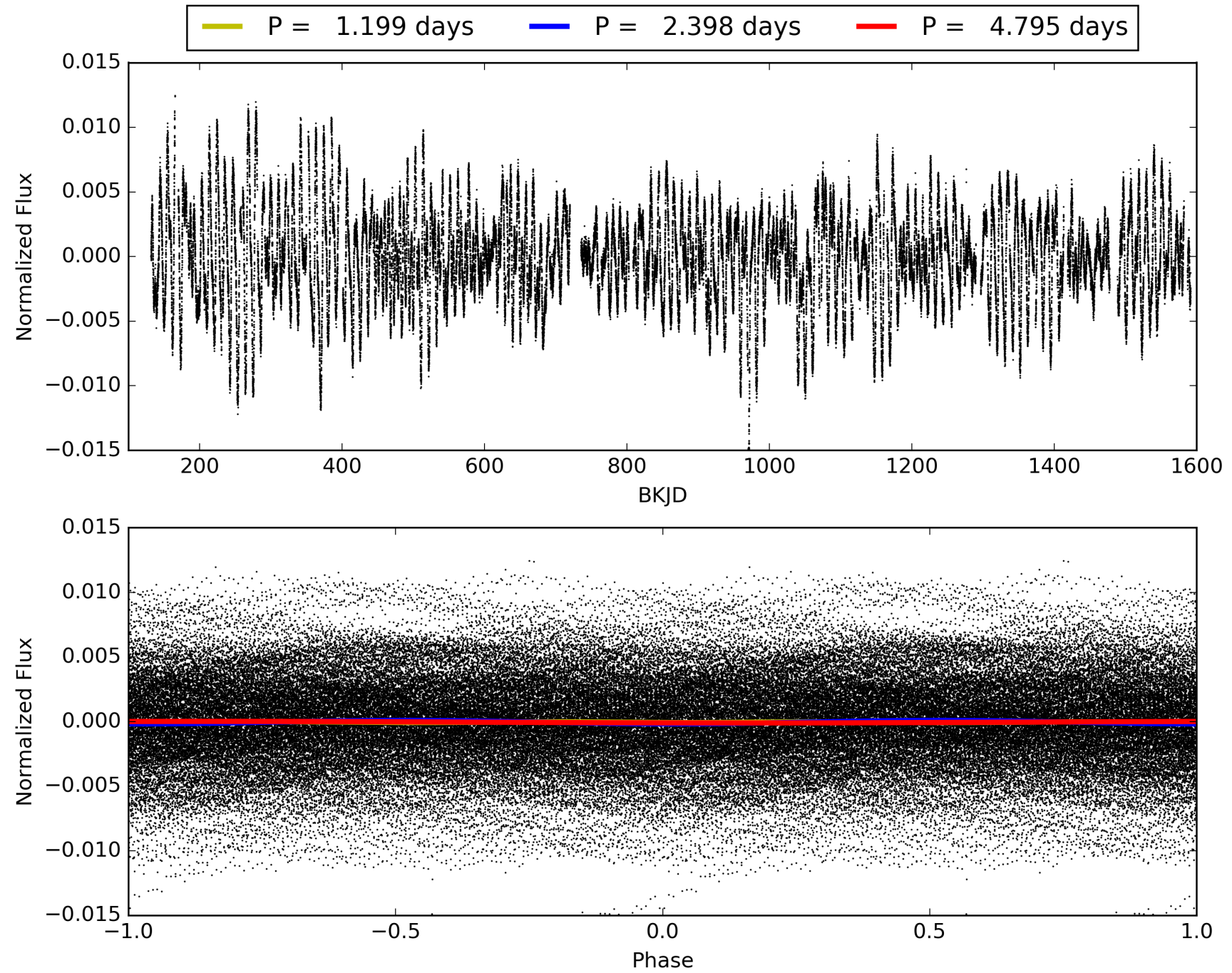


ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [597.26σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 2.69e-14  
RollingBand-fgt: 1.00 [544/544]  
**GhostDiagnostic-chr: 0.27**  
  
Centroid-sig: 9.9%  
Centroid-so: 0.948 arcsec [1.11σ]  
OotOffset-rm: 0.105 arcsec [0.62σ]  
KicOffset-rm: 0.183 arcsec [1.28σ]  
OotOffset-st: 3/4/4/5 [16]  
KicOffset-st: 3/4/4/5 [16]  
DiffImageQuality-fgm: 1.00 [16/16]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007104854-01, PDC Light Curves



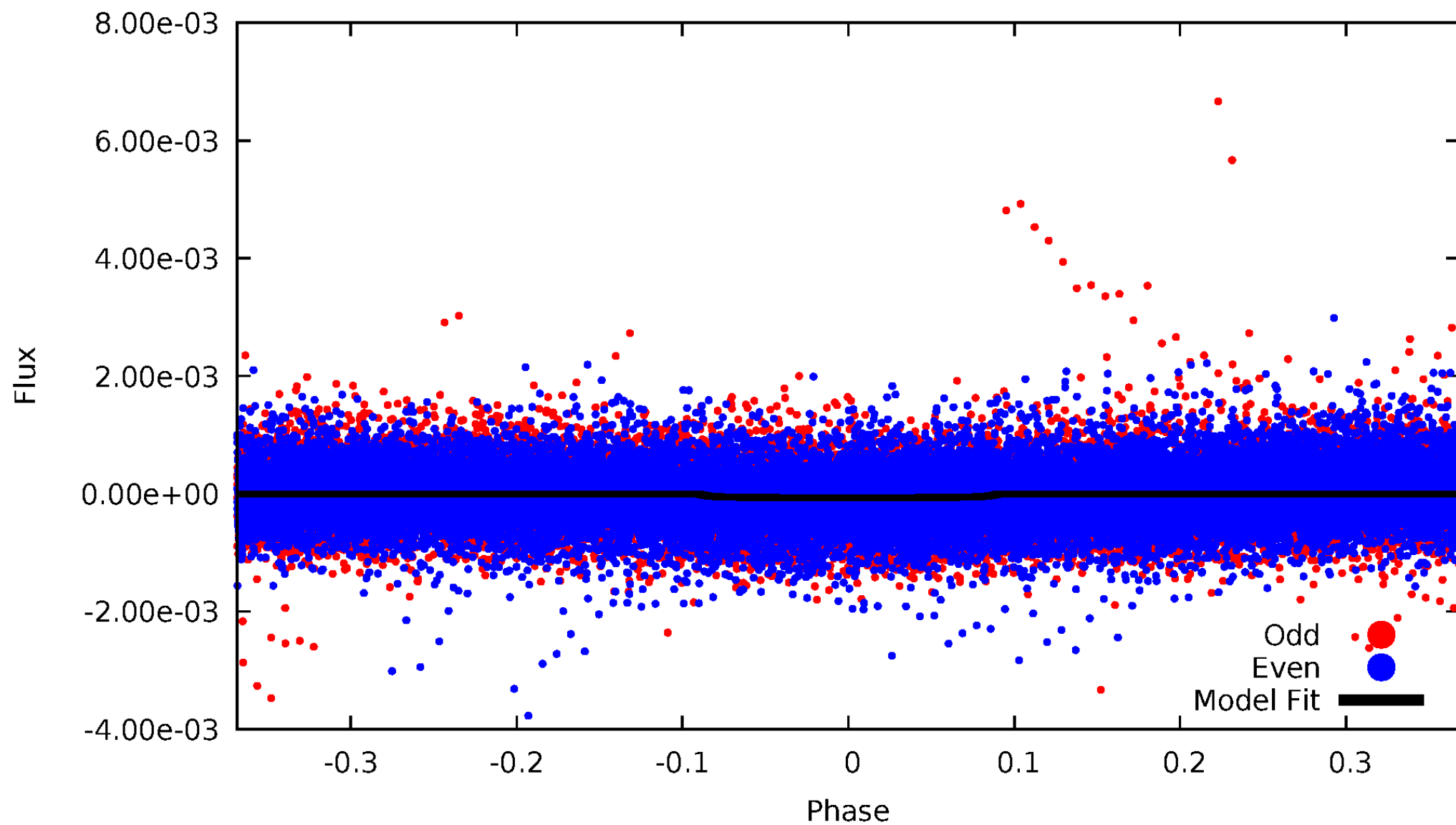
TCE 007104854-01





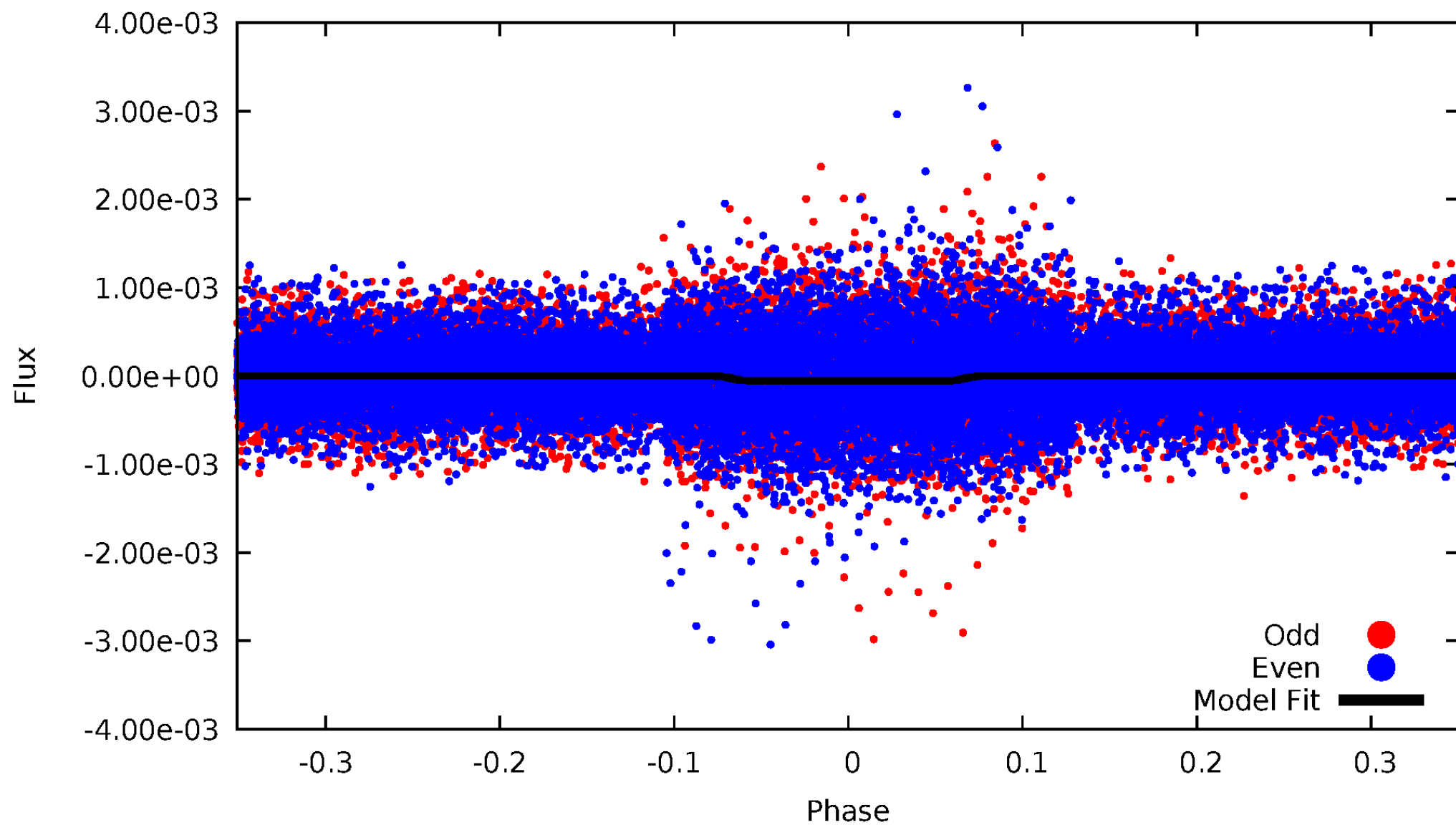
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TCE 007104854-01

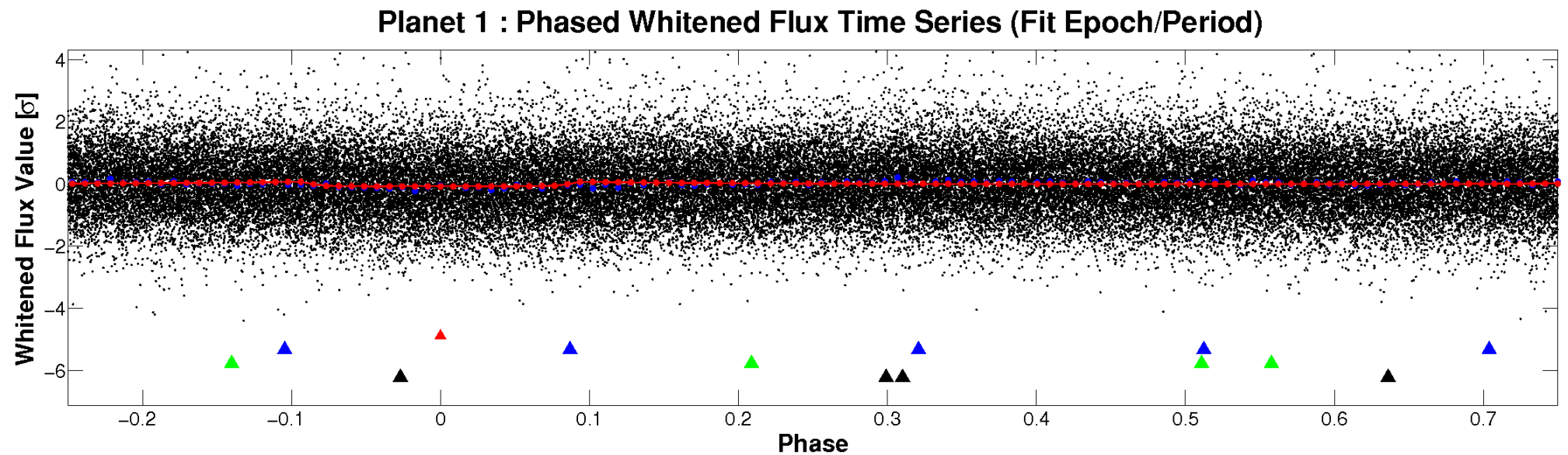
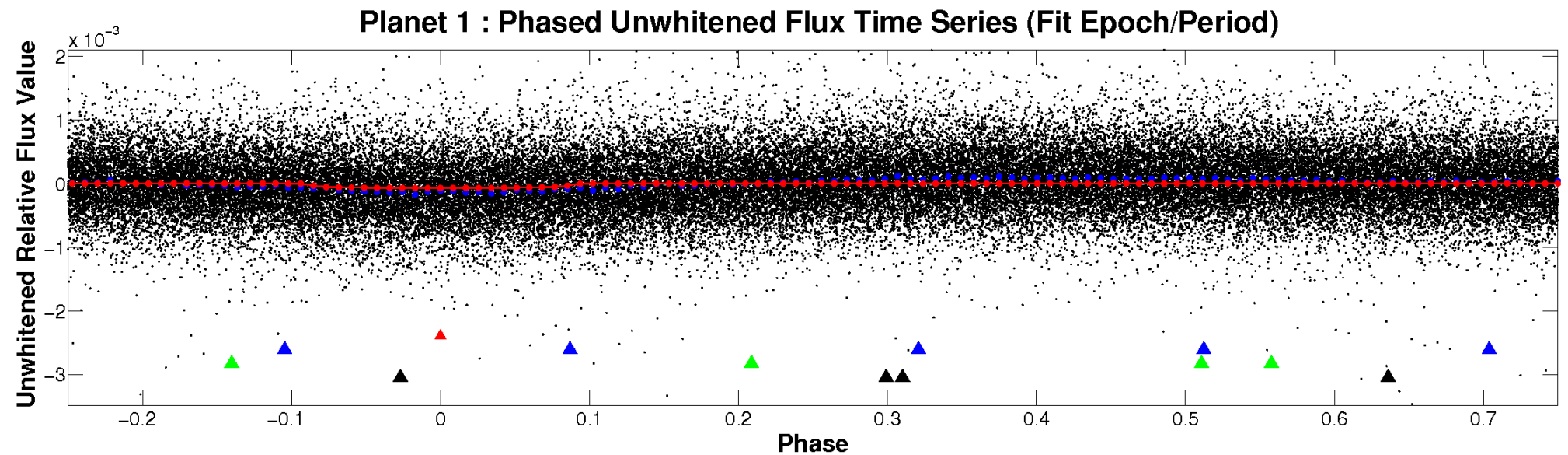


# ALT Odd/Even

TCE 007104854-01

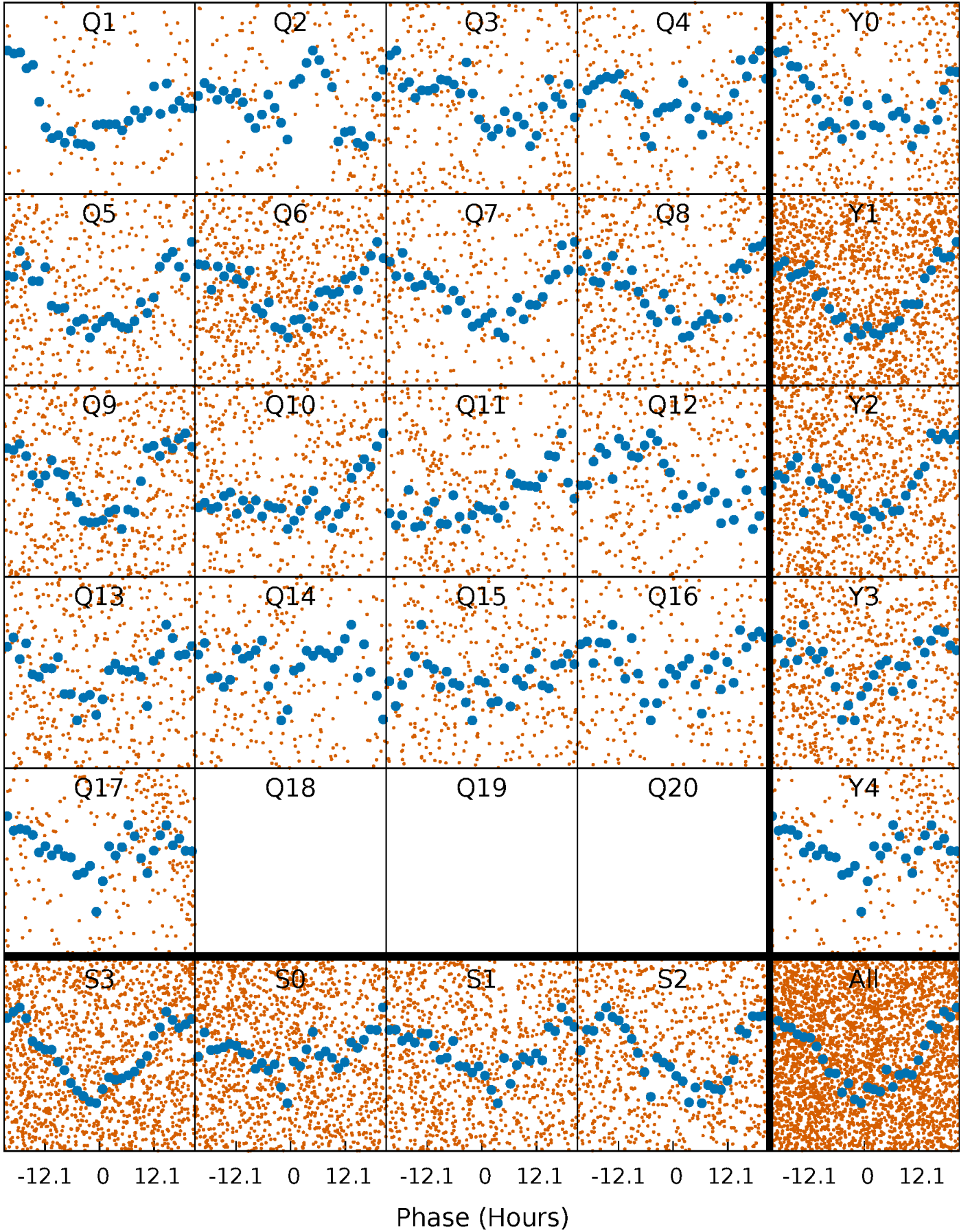


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

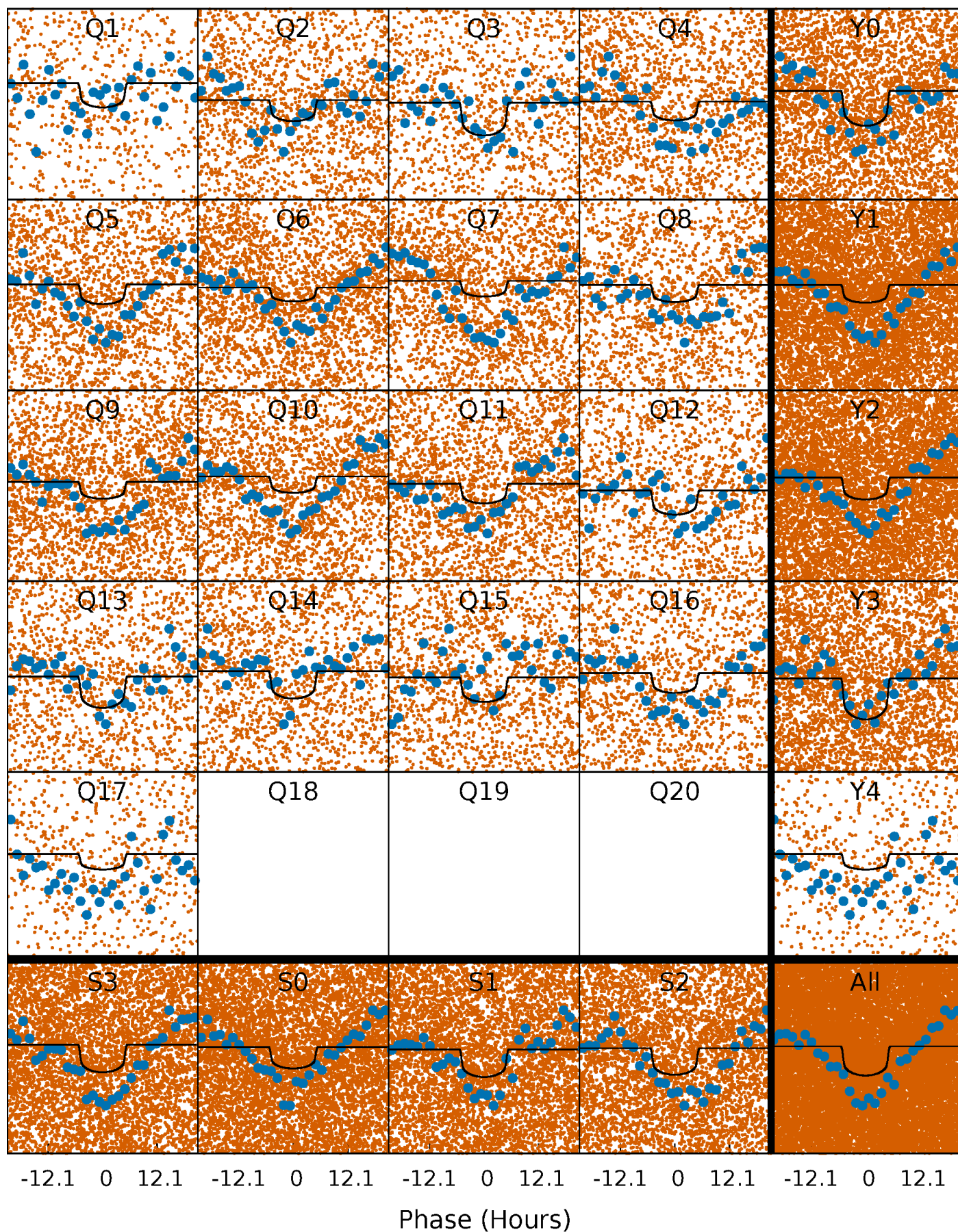
TCE 007104854-01   P= 2.397508 Days    $T_0=131.996734$  (BKJD)





# DV Quarter-Phased Transit Curves

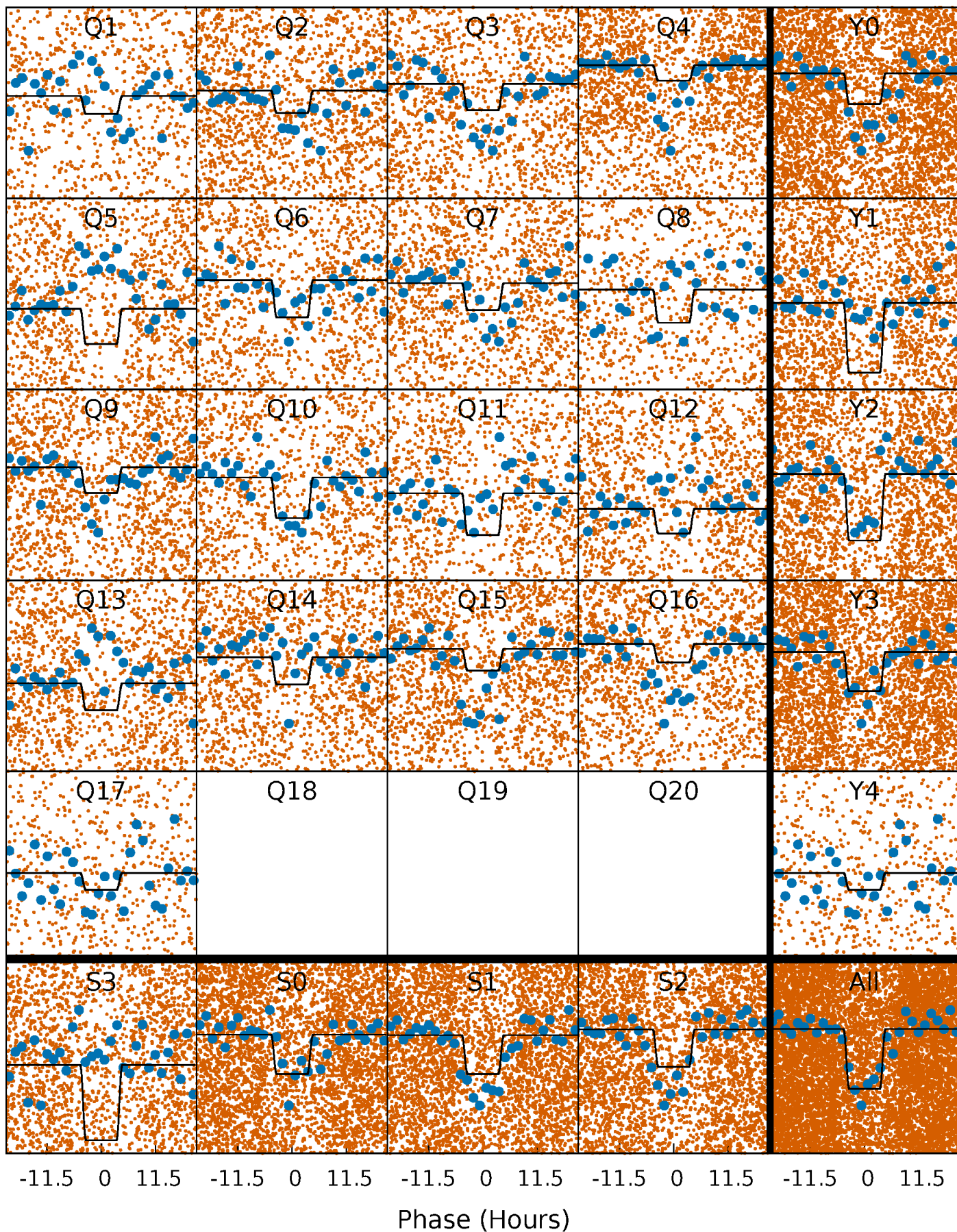
TCE 007104854-01 P= 2.397508 Days  $T_0=131.996734$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

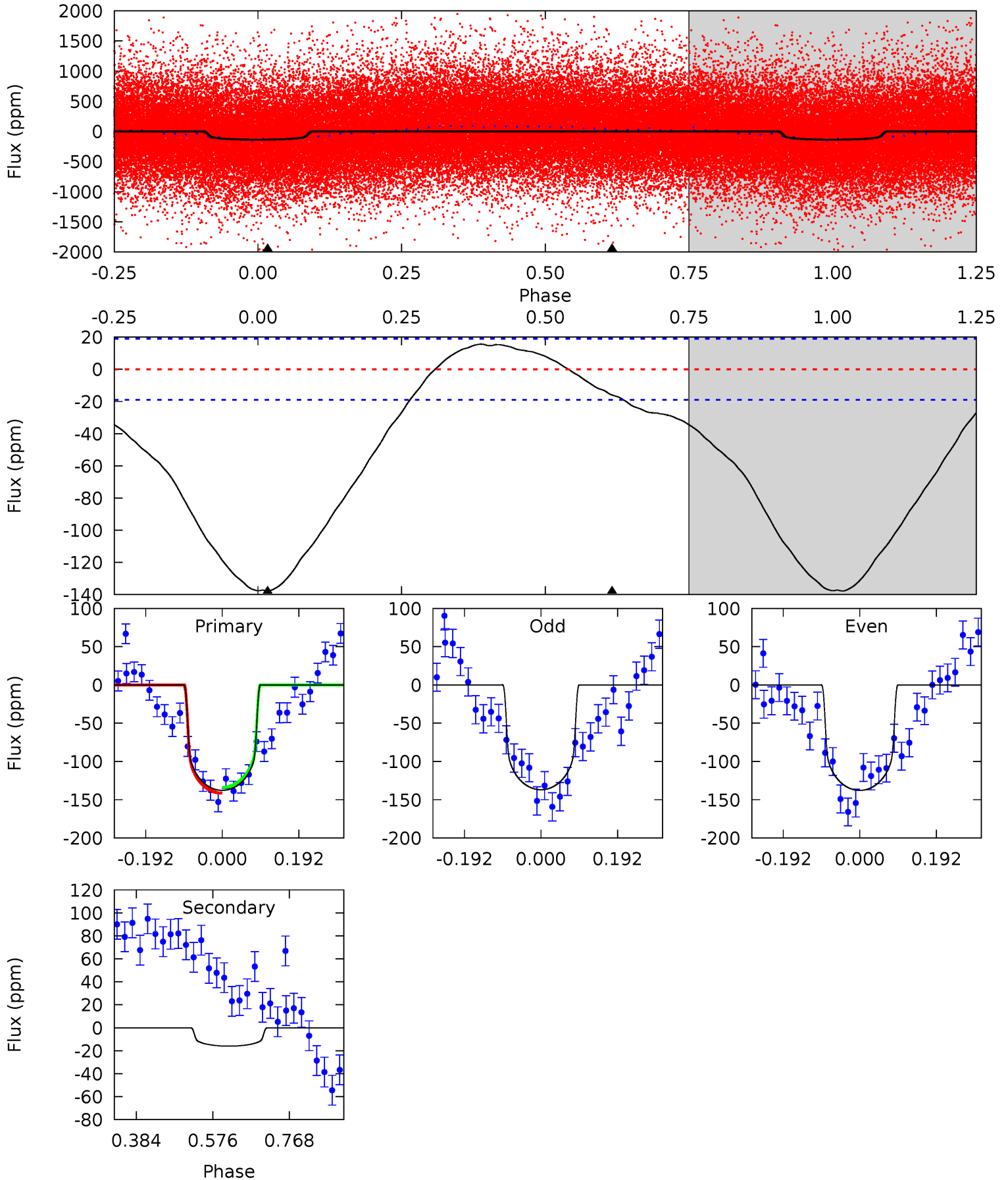
TCE 007104854-01 P= 2.397424 Days  $T_0=131.996526$  (BKJD)



# DV Model-Shift Uniqueness Test

007104854-01, P = 2.397508 Days, E = 129.599226 Days

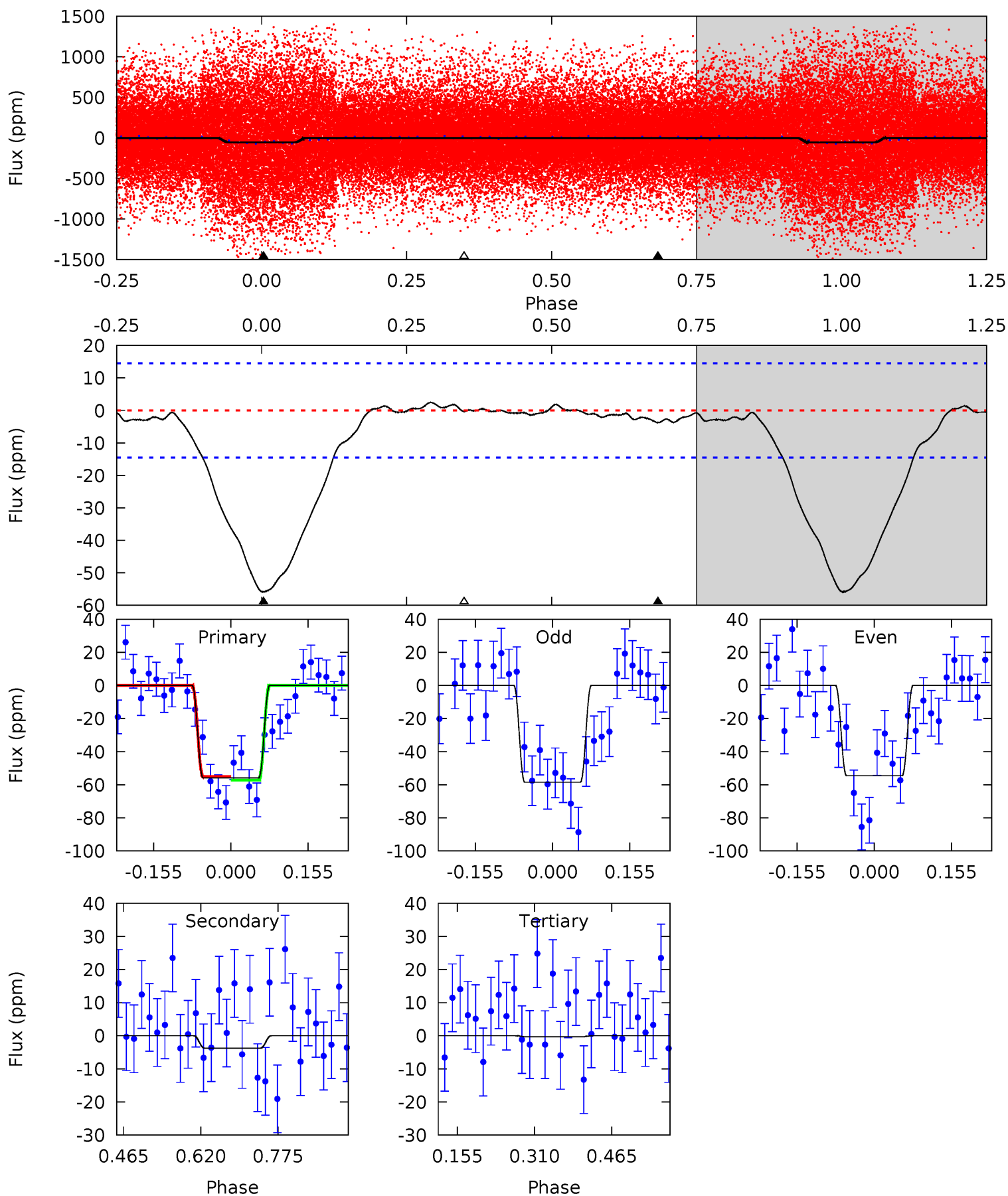
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.1	3.73	0	0	4.43	1.30	5.38	32.1	32.1	3.73	3.73	0.10	1.05	0.10	0.89



# Alt Model-Shift Uniqueness Test

007104854-01, P = 2.397424 Days, E = 129.599102 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.2	1.16	0.10	0	4.47	1.42	0.46	17.1	17.2	1.06	1.16	0.61	0.54	0.04	0.32





### Stellar Parameters For KIC 007104854

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5546^{+166}_{-149}$	$4.532^{+0.067}_{-0.124}$	$-0.400^{+0.300}_{-0.300}$	$0.797^{+0.163}_{-0.082}$	$0.788^{+0.105}_{-0.065}$	$2.196^{+0.742}_{-0.774}$
	+3%/-3%	+1%/-3%	+75%/-75%	+20%/-10%	+13%/-8%	+34%/-35%
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 007104854-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-16 \pm 4$	$0.81^{+0.18}_{-0.15}$	$1710^{+90}_{-70}$	$3961^{+356}_{-312}$	$14^{+9}_{-5}$
Alt.	$-4 \pm 3$	$0.66^{+0.15}_{-0.15}$	$1710^{+84}_{-69}$	$3331^{+514}_{-830}$	$5.116^{+6.618}_{-4.198}$

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

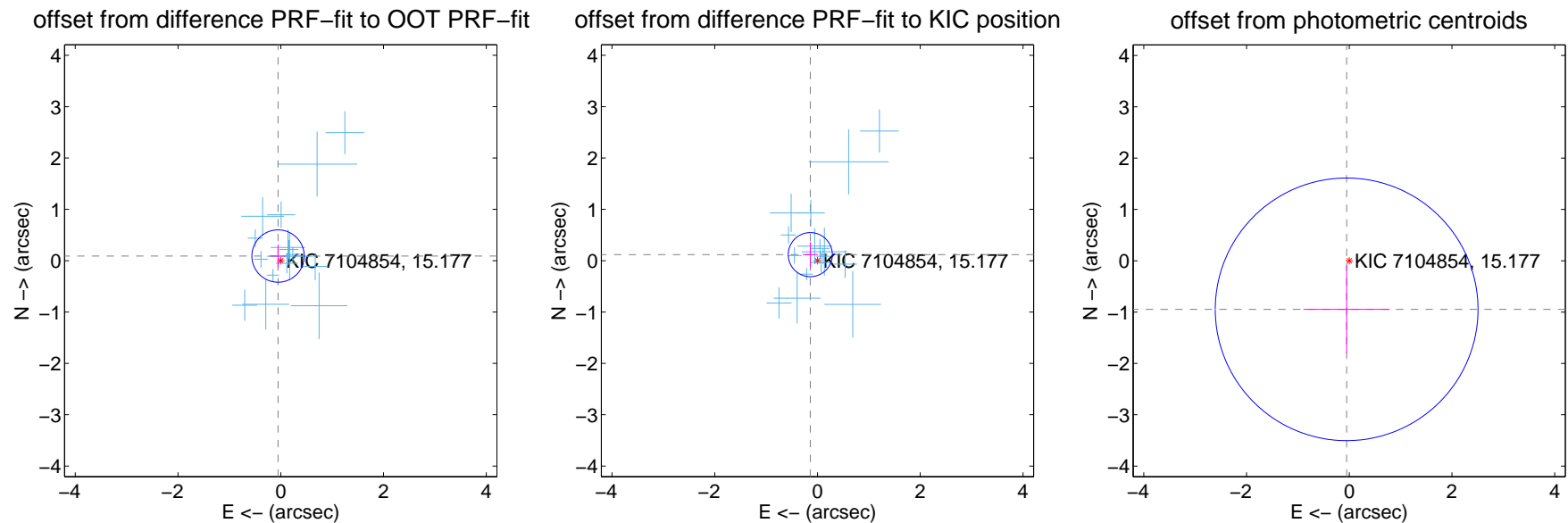
## DV Centroid Data

Supplemental centroid analysis for 007104854-01. Kepler magnitude: 15.18. Transit SNR 9.21

There are 16 quarters with good PRF difference image offsets

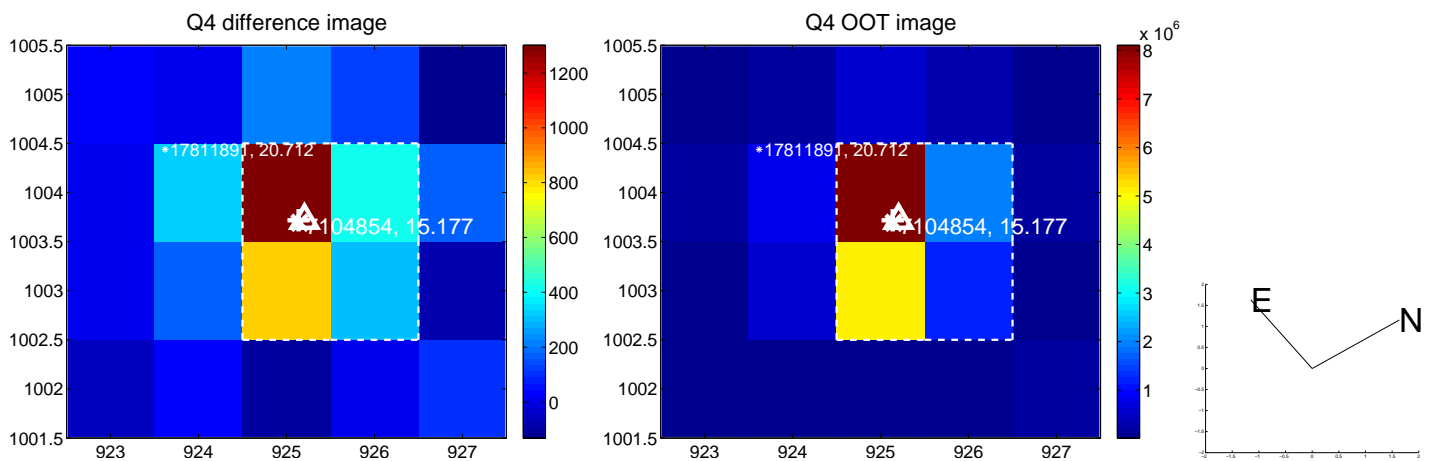
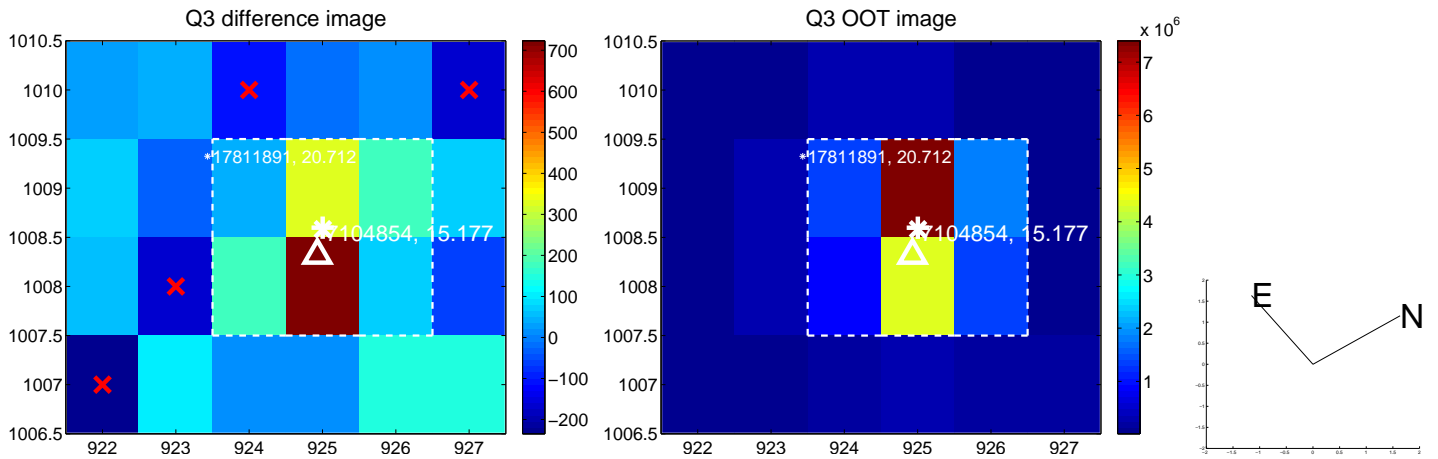
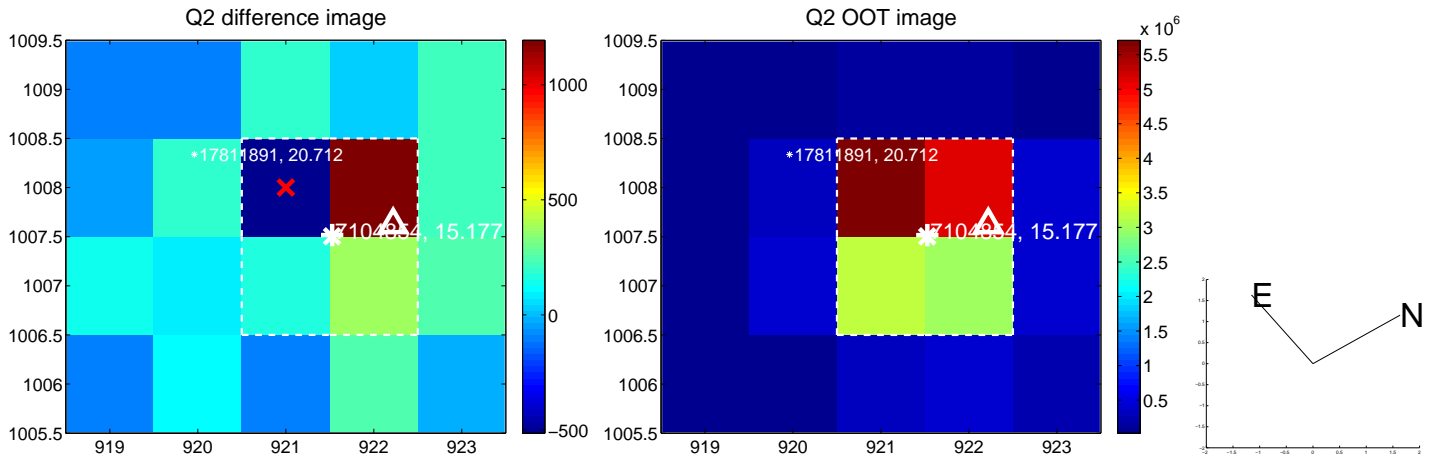
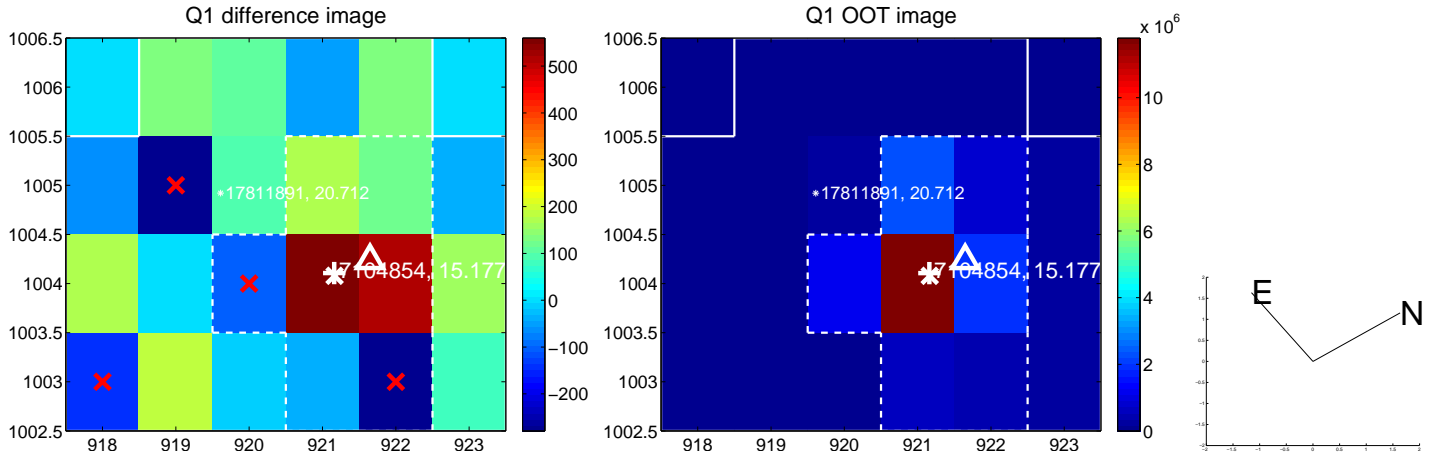
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.105 \pm 0.170$	0.62	$0.053 \pm 0.145$	$0.091 \pm 0.225$
PRF-fit source offset from KIC position	$0.183 \pm 0.143$	1.28	$0.140 \pm 0.149$	$0.118 \pm 0.244$
photometric centroid source offset	$0.95 \pm 0.85$	1.11	$0.05 \pm 0.84$	$-0.95 \pm 0.85$

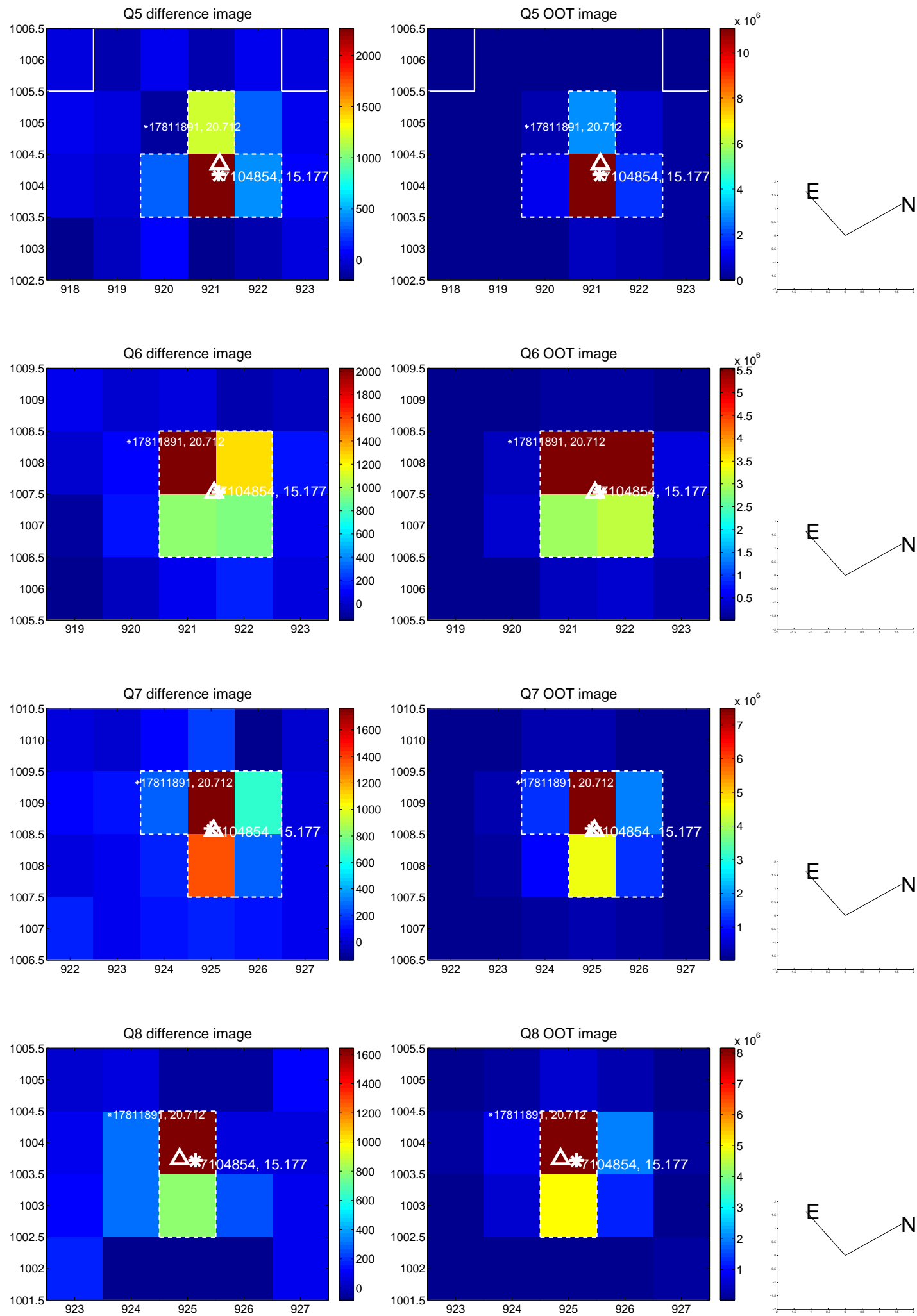


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

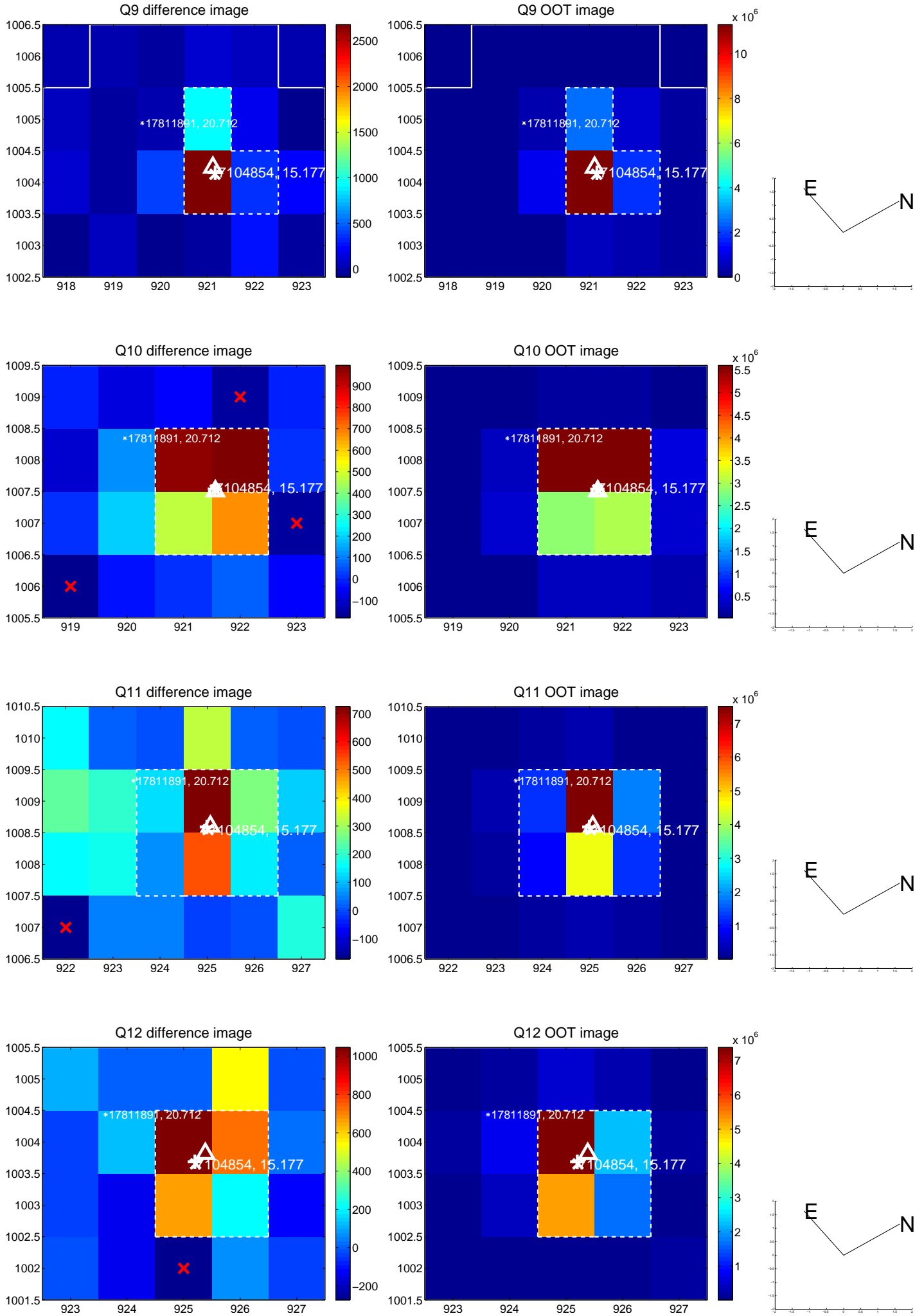


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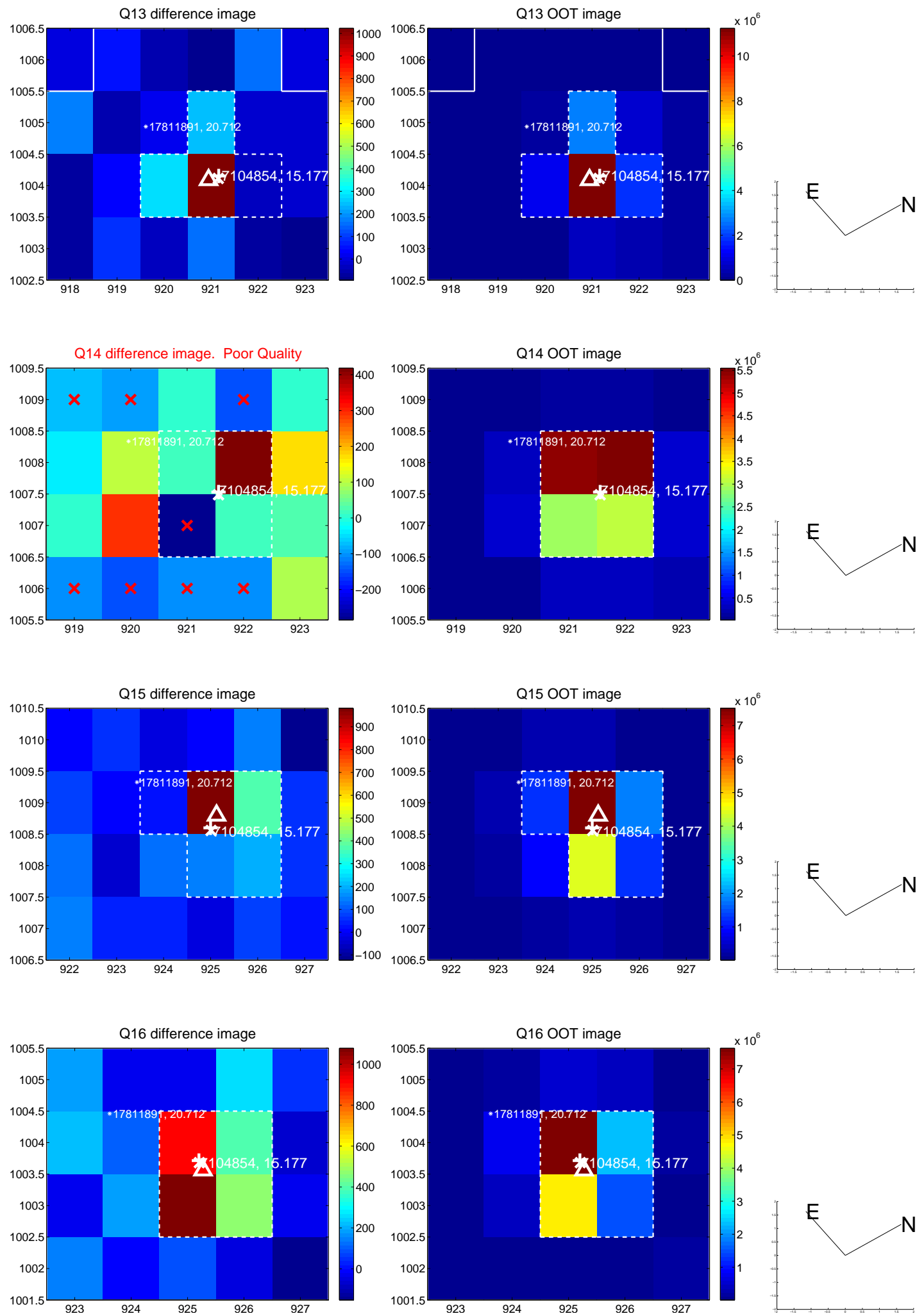




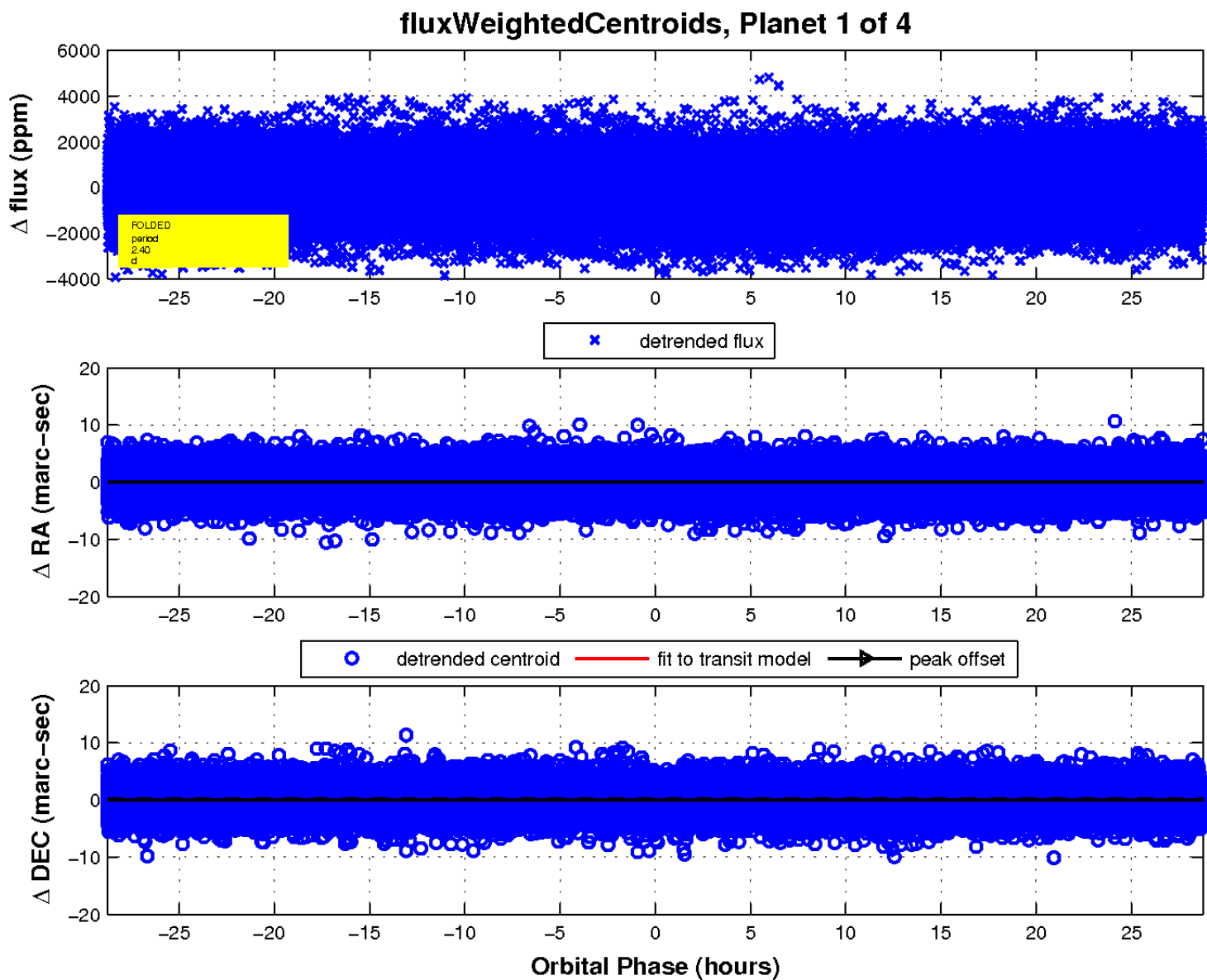
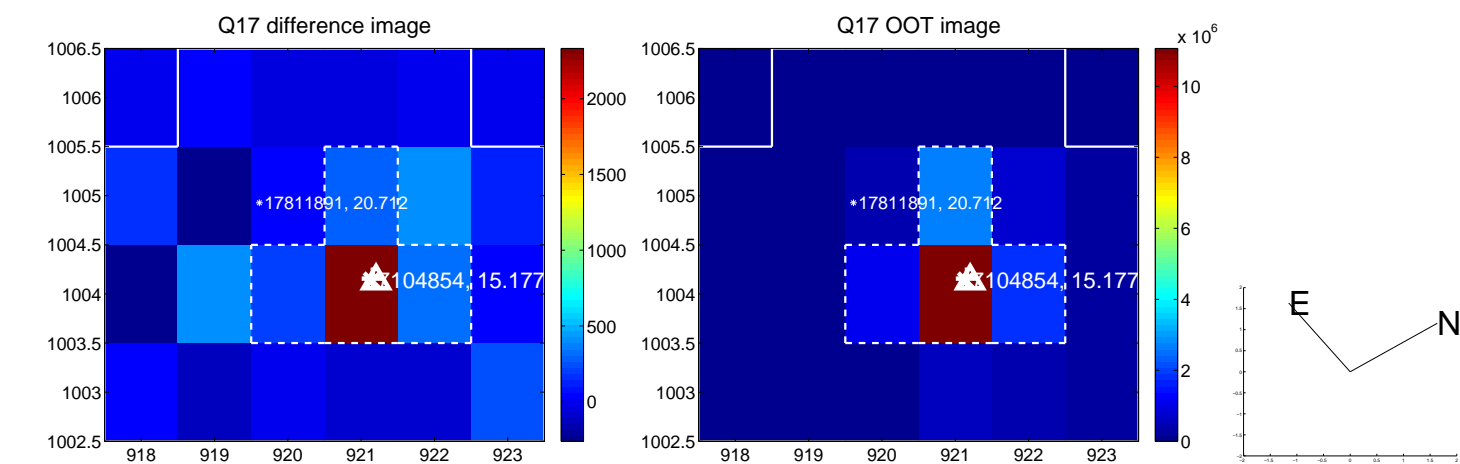
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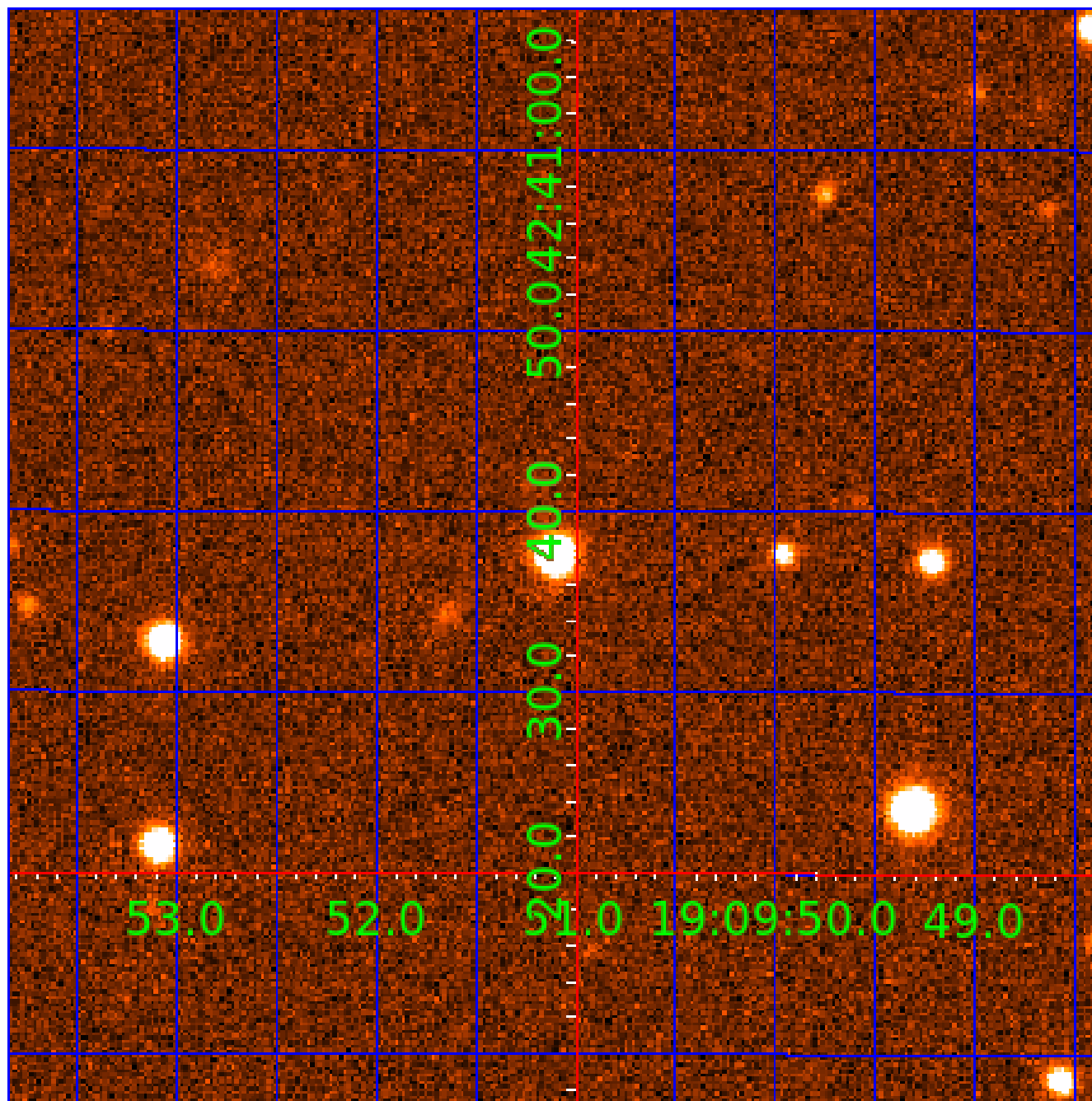


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UKIRT Image

Declination





# KIC 007104854

## 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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007104854-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007104854-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007104854-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— SAME_NTL_PERIOD—CENT_NOFITS

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

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

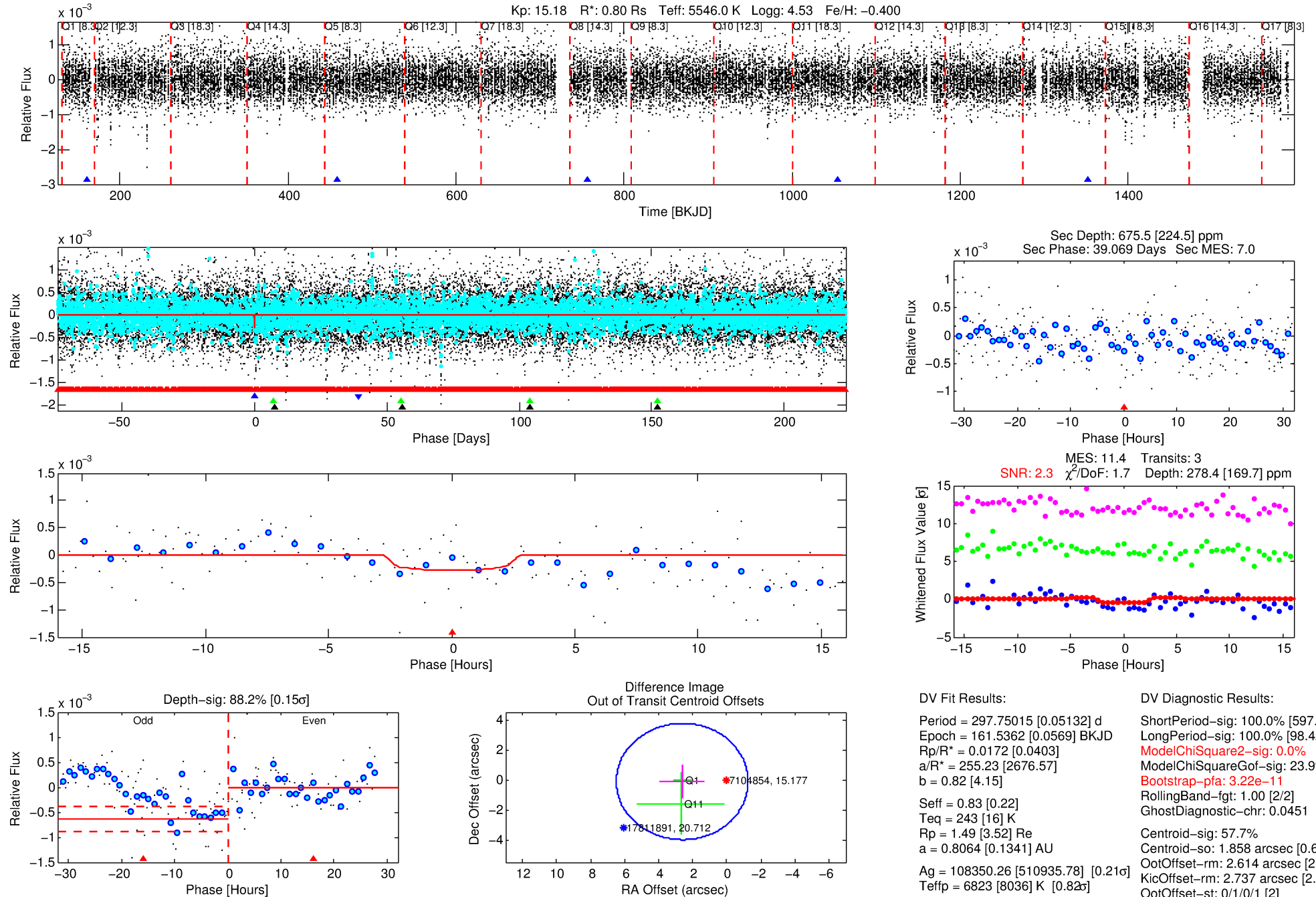
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007104854-02

No Significant Match Found

# DV One-Page Summary

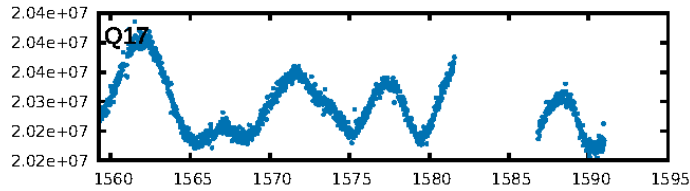
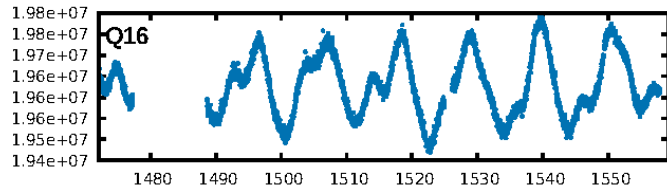
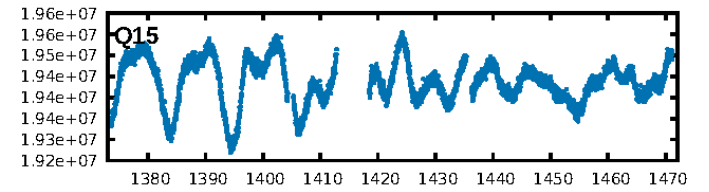
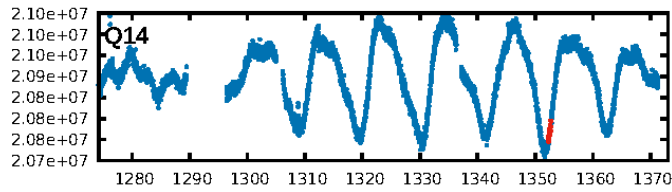
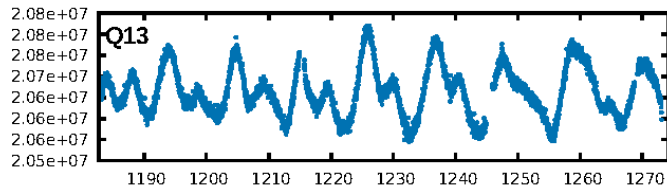
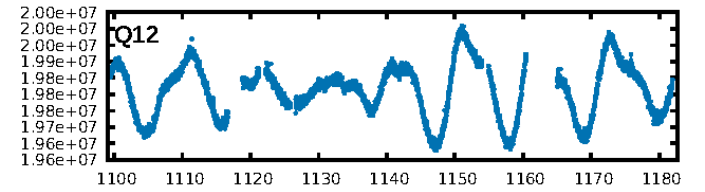
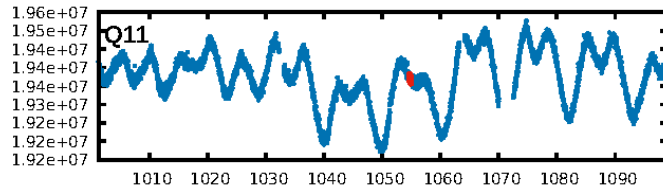
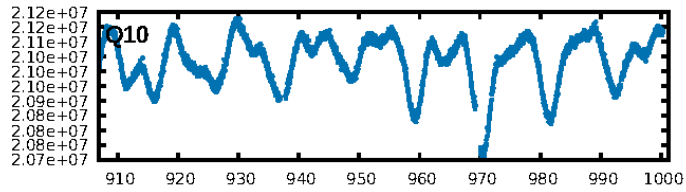
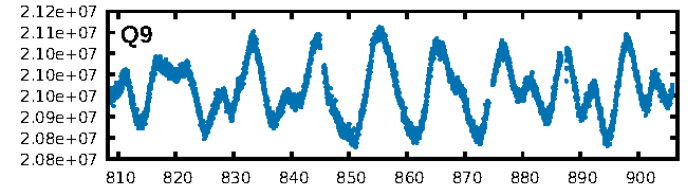
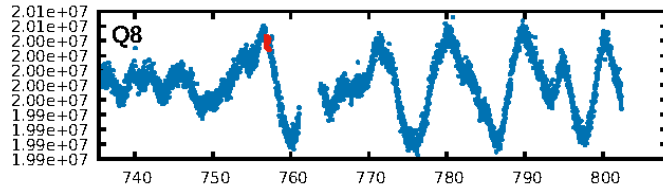
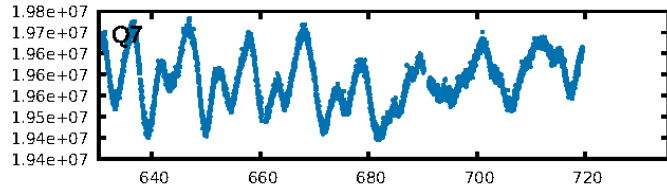
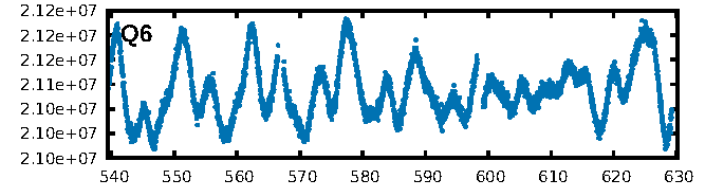
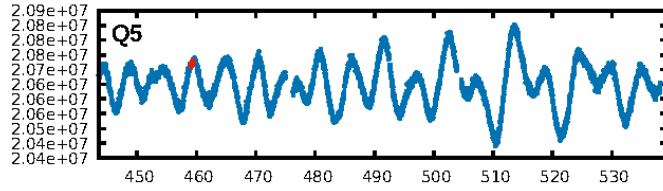
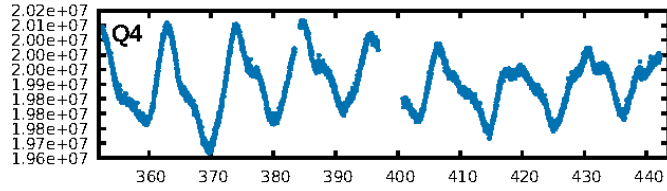
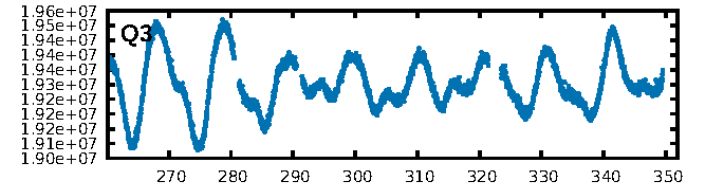
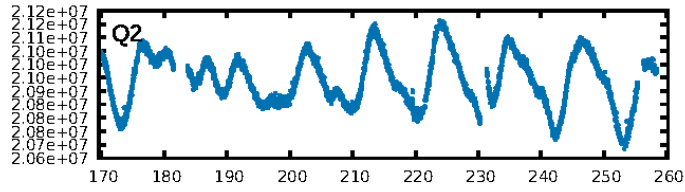
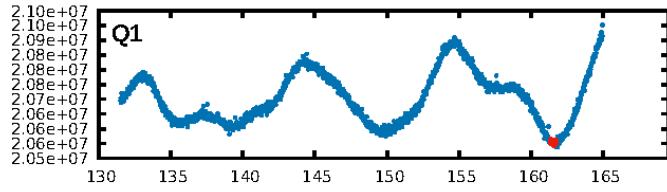
KIC: 7104854 Candidate: 2 of 4 Period: 297.750 d



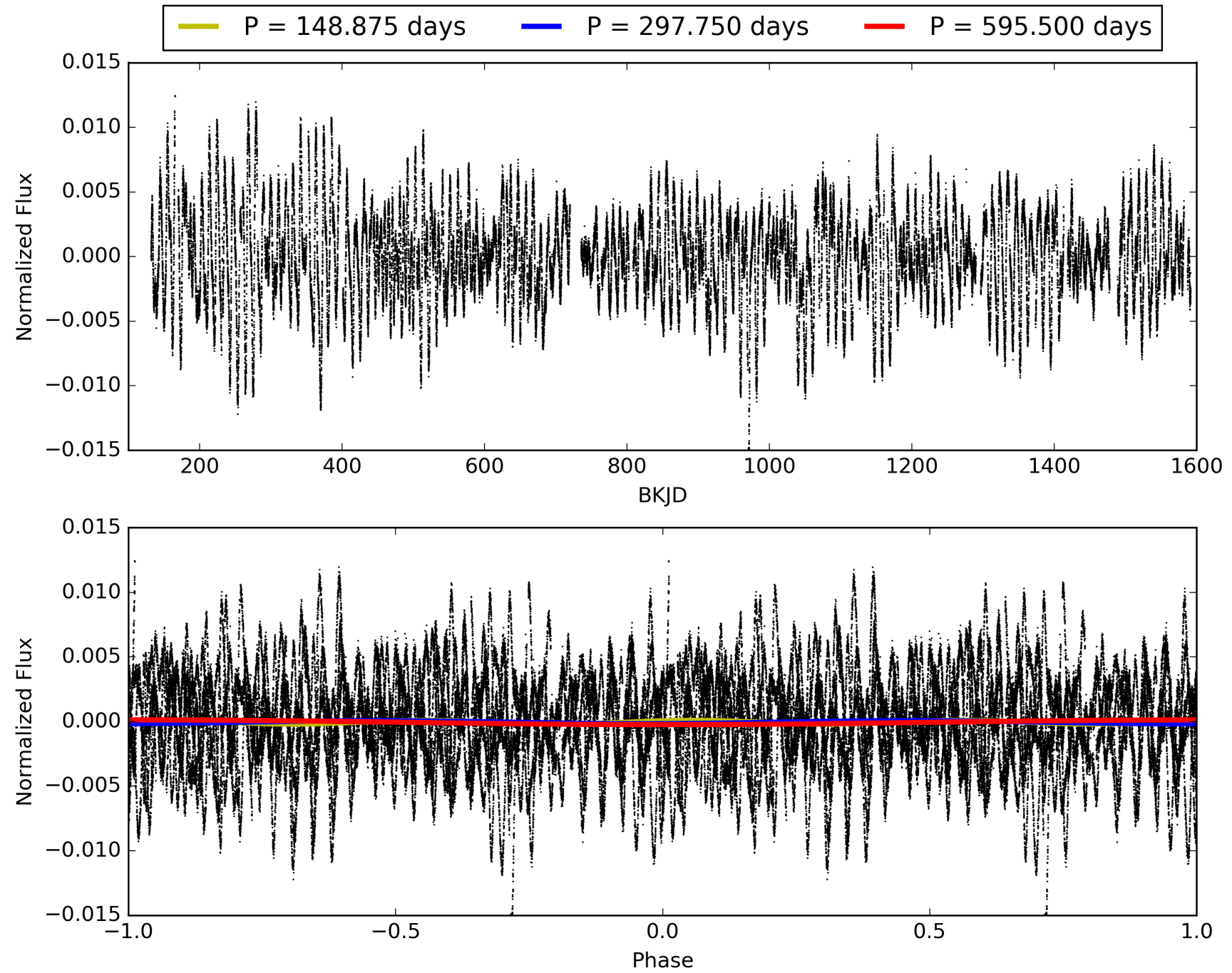
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007104854-02, PDC Light Curves

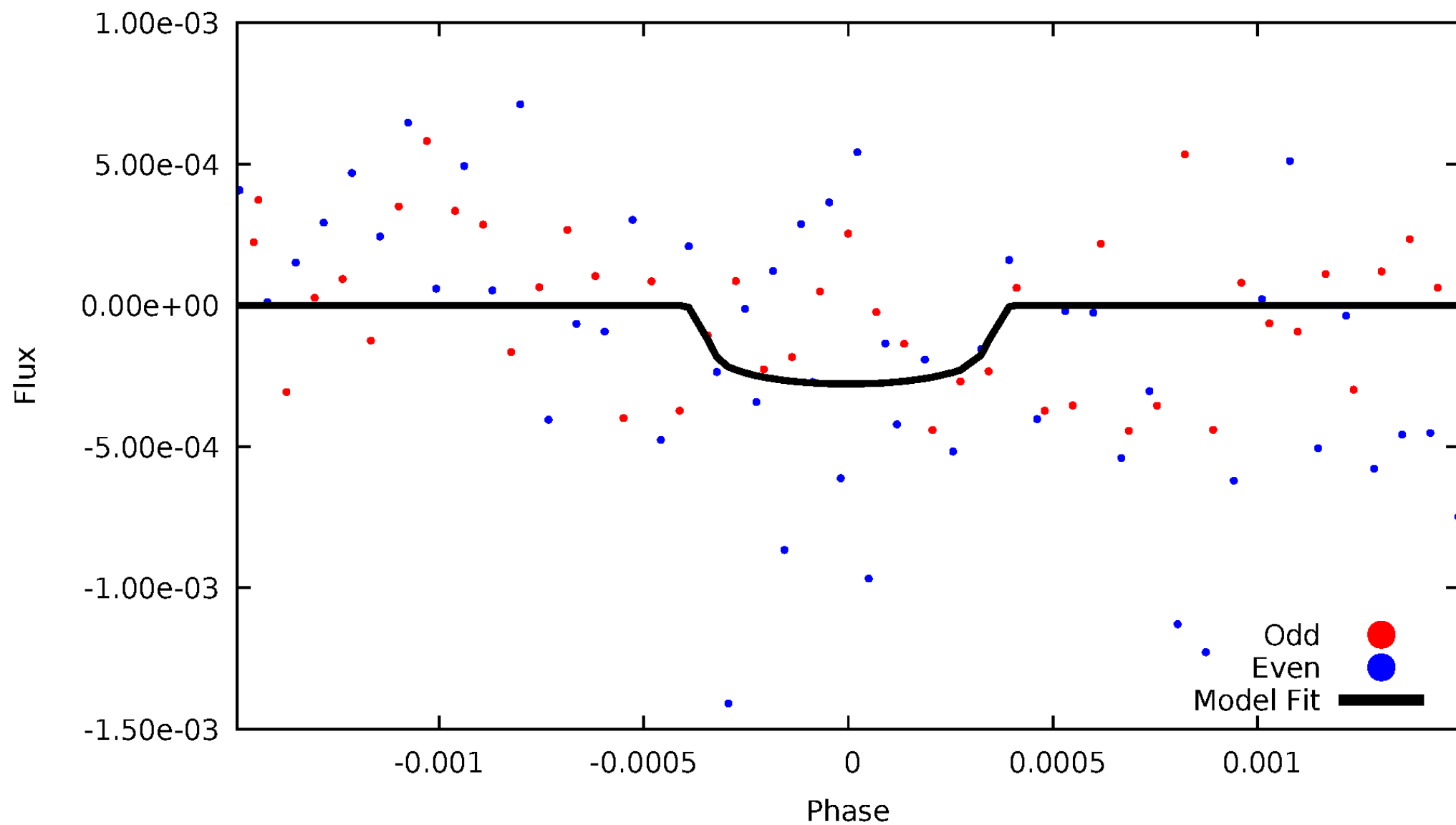


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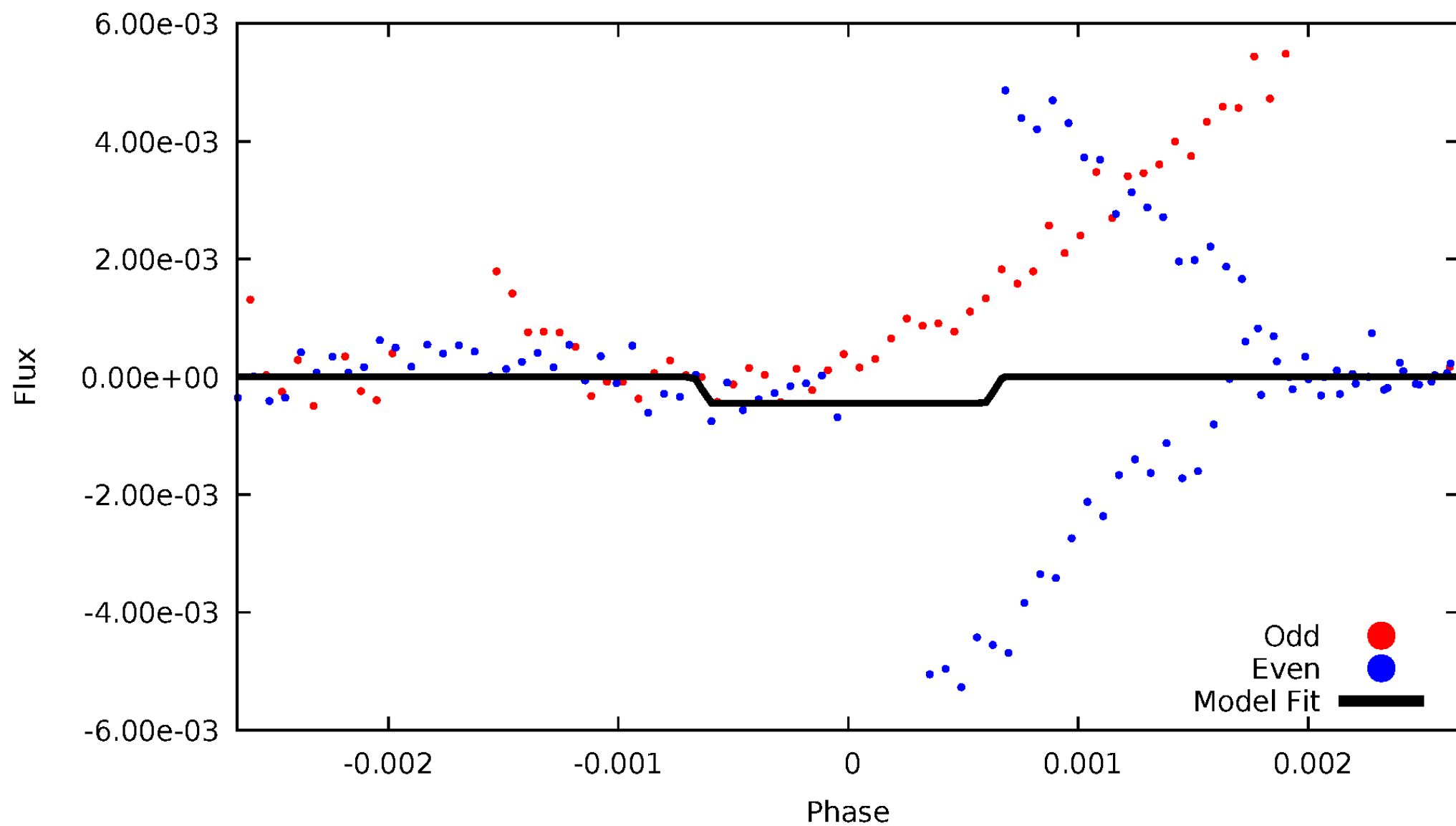
# DV Odd/Even

TCE 007104854-02



# ALT Odd/Even

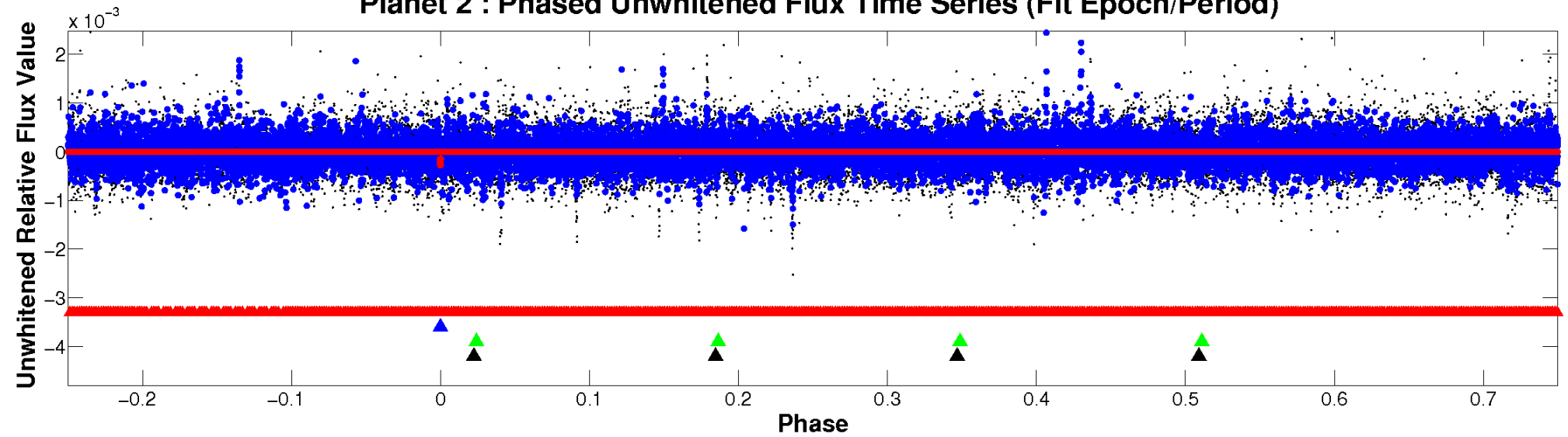
TCE 007104854-02



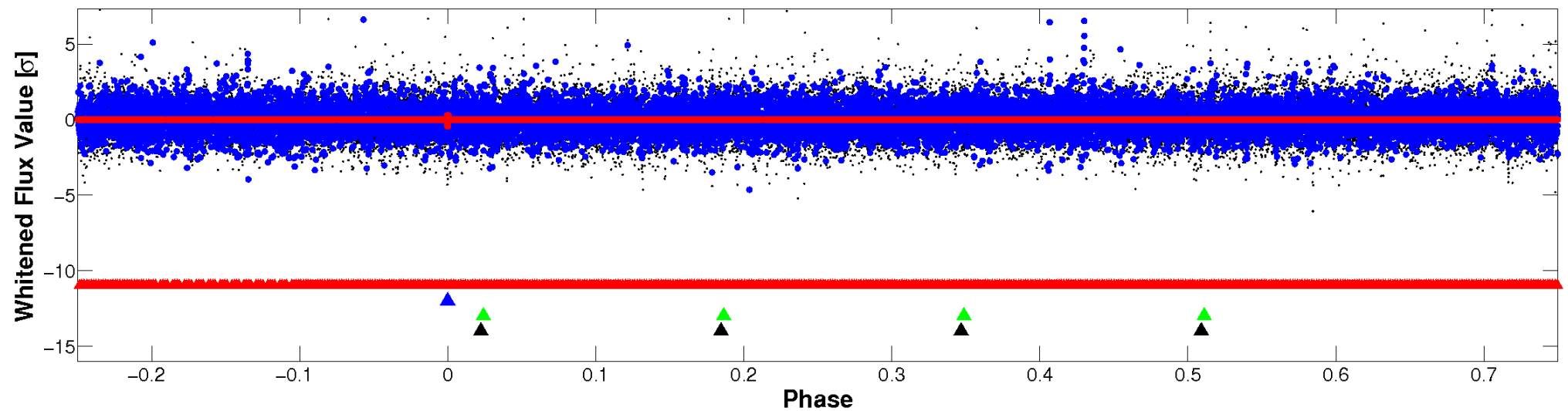


# Non-Whitened Vs. Whitened Light Curve

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

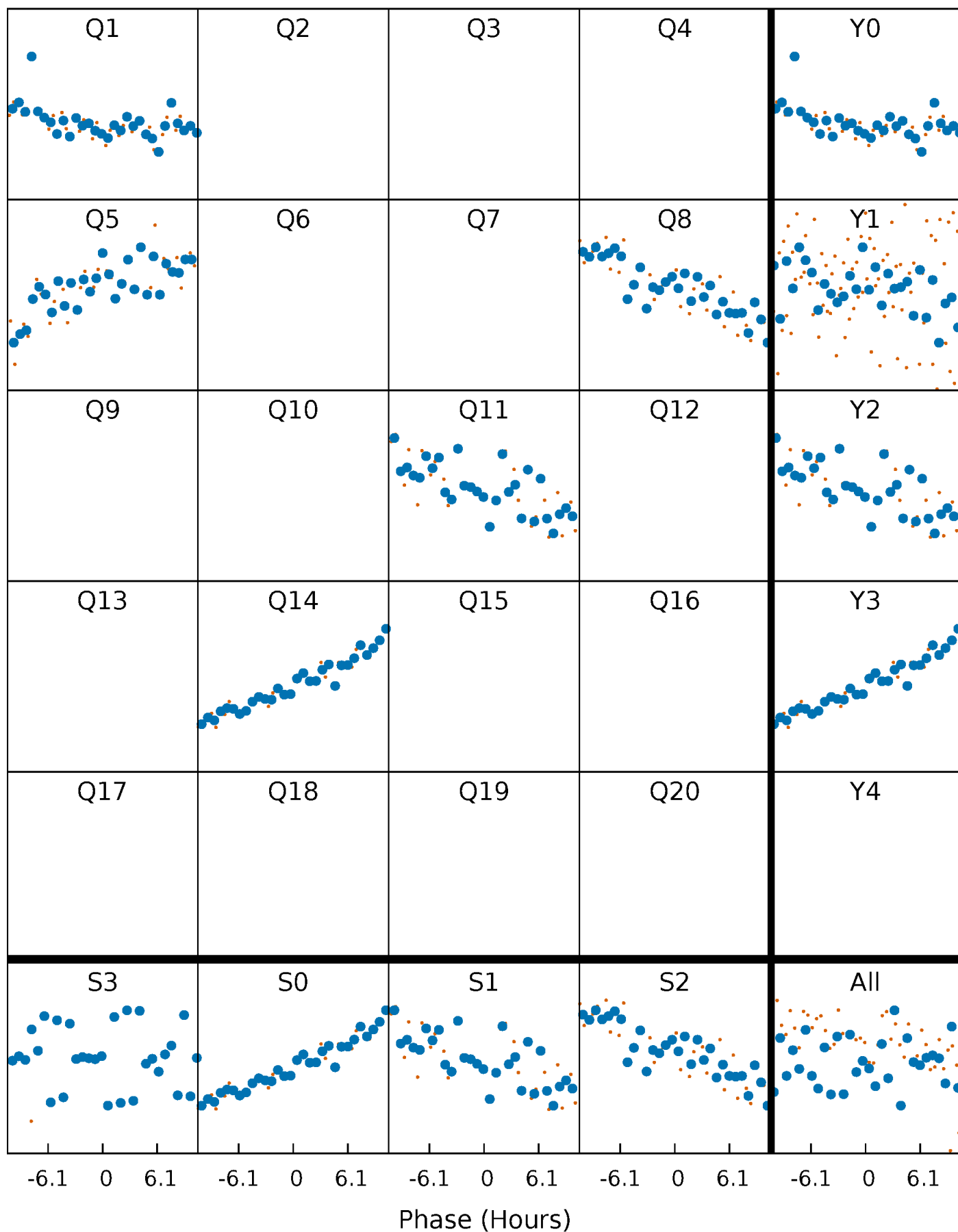


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



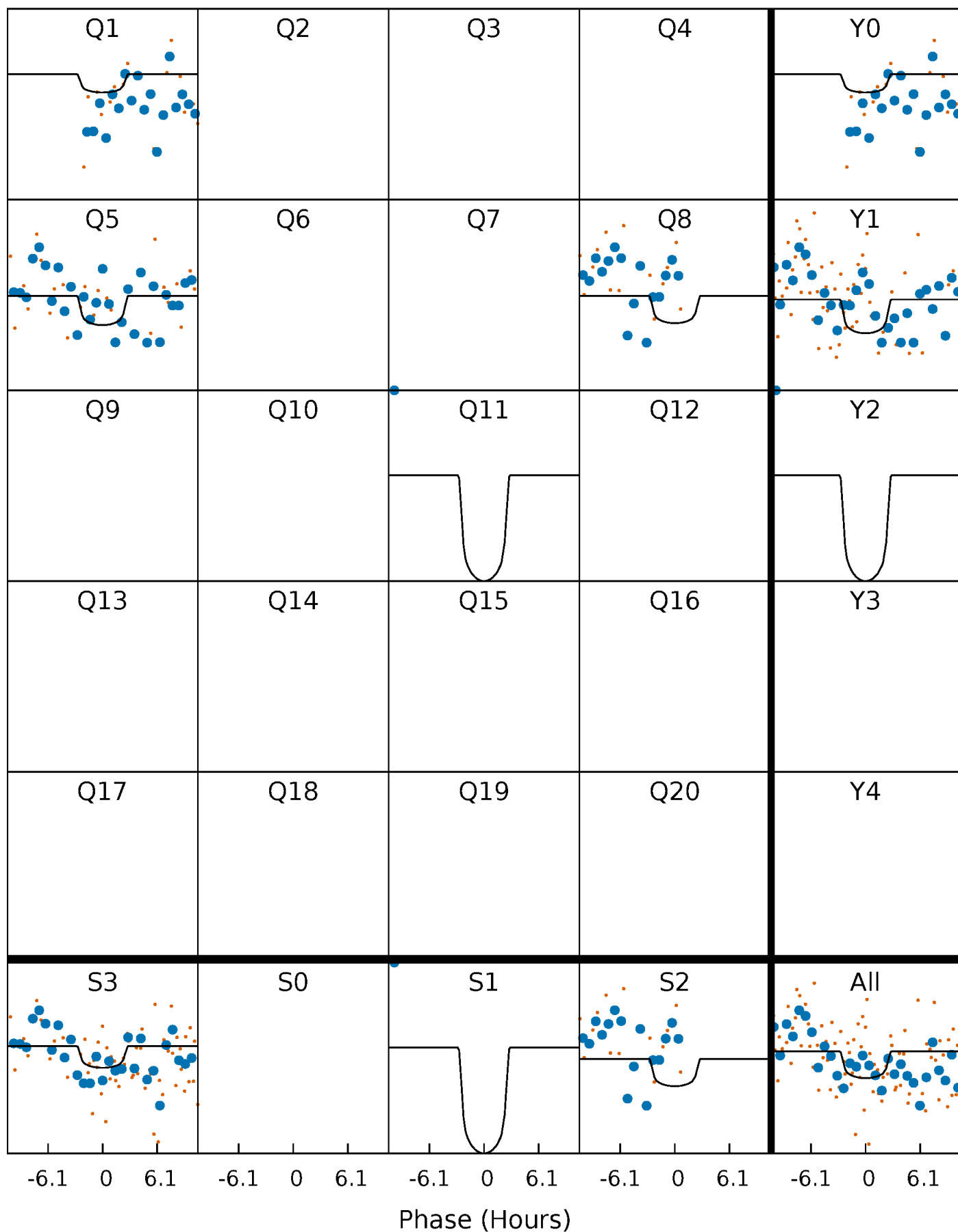
# PDC Quarter-Phased Transit Curves

TCE 007104854-02     $P=297.750151$  Days     $T_0=161.536212$  (BKJD)



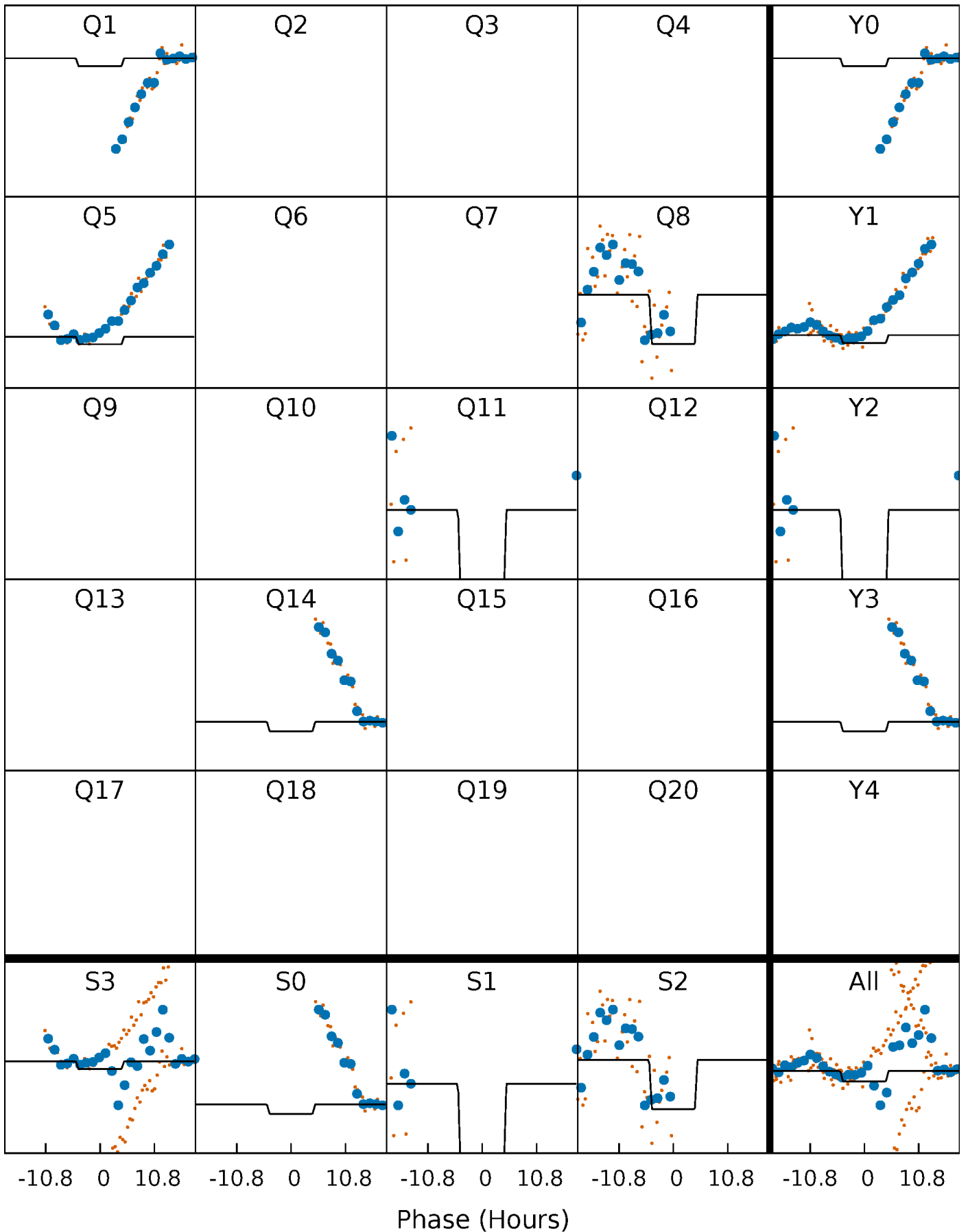
# DV Quarter-Phased Transit Curves

TCE 007104854-02     $P=297.750151$  Days     $T_0=161.536212$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

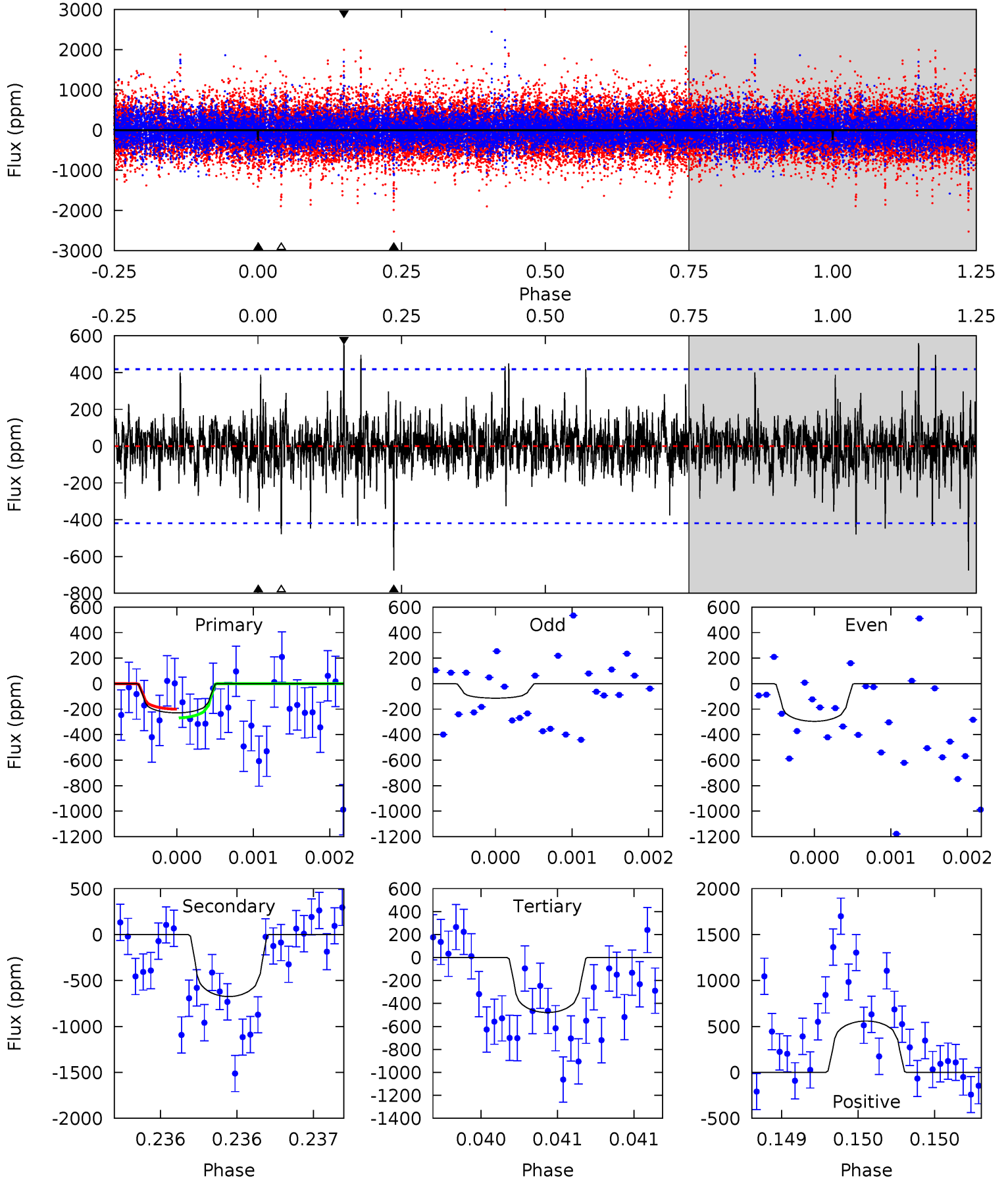
TCE 007104854-02 P=297.866815 Days  $T_0=161.343638$  (BKJD)



# DV Model-Shift Uniqueness Test

007104854-02,  $P = 297.750151$  Days,  $E = 161.536212$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.01	8.86	6.29	7.33	5.49	3.36	1.26	-3.28	-4.32	2.57	1.53	1.18	1.69	0.45	0.45

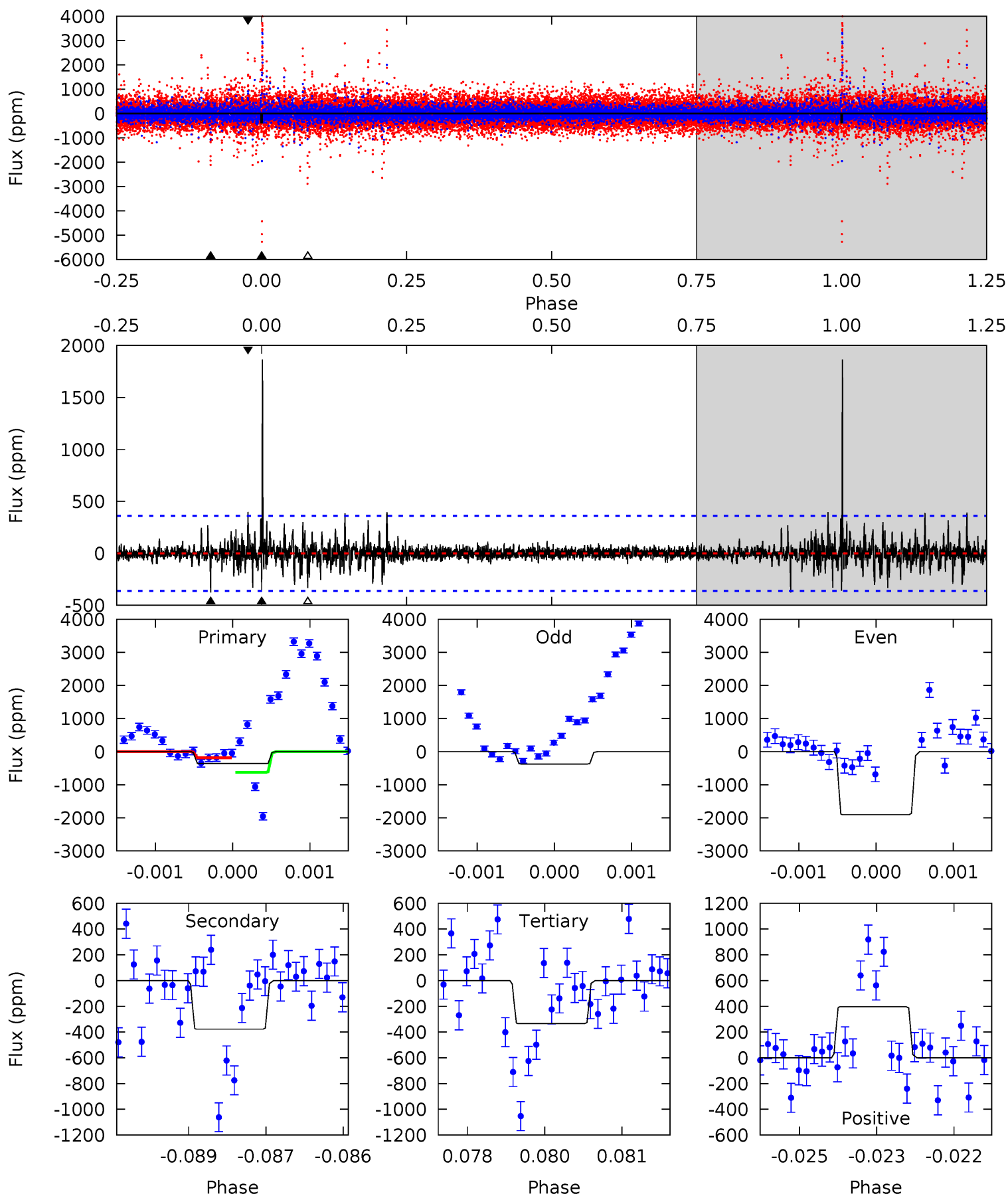




# Alt Model-Shift Uniqueness Test

007104854-02, P = 297.866815 Days, E = 161.343638 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
5.40	5.65	5.00	5.93	5.40	3.22	1.03	0.40	-0.53	0.66	-0.28	11.4	5.11	0.83	3.24



### Stellar Parameters For KIC 007104854

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5546^{+166}_{-149}$	$4.532^{+0.067}_{-0.124}$	$-0.400^{+0.300}_{-0.300}$	$0.797^{+0.163}_{-0.082}$	$0.788^{+0.105}_{-0.065}$	$2.196^{+0.742}_{-0.774}$
	+3%/-3%	+1%/-3%	+75%/-75%	+20%/-10%	+13%/-8%	+34%/-35%
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 007104854-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-675 \pm 76$	$3.15^{+3.18}_{-2.15}$	$343^{+18}_{-14}$	$4872^{+3903}_{-1115}$	$24575^{+213089}_{-18230}$
Alt.	$-377 \pm 67$	$3.19^{+3.12}_{-2.12}$	$342^{+18}_{-13}$	$4336^{+2767}_{-931}$	$12937^{+104796}_{-9732}$

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

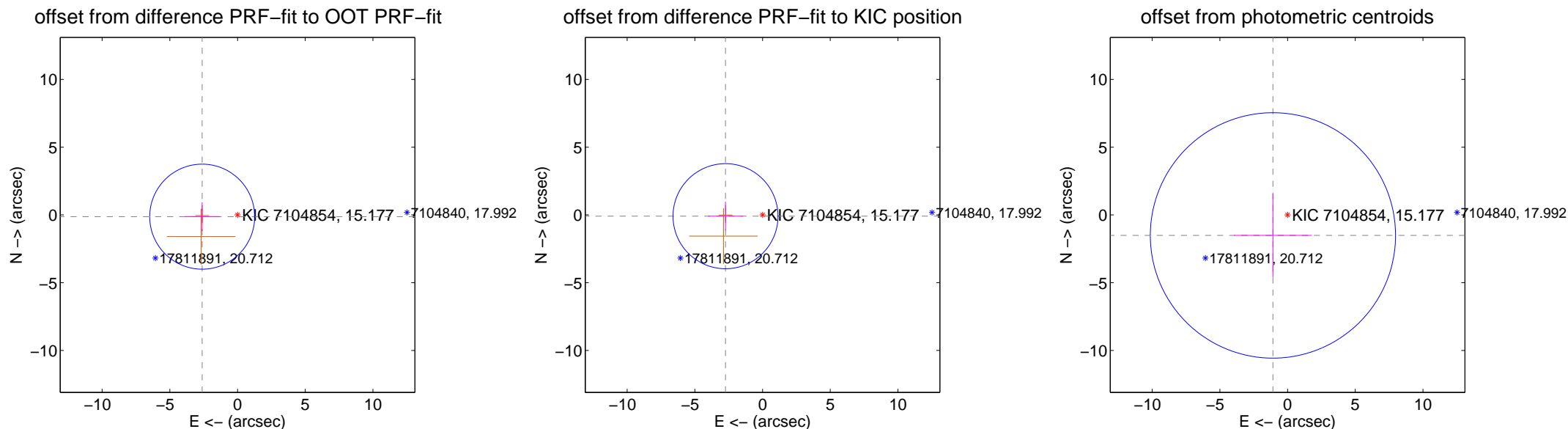
## DV Centroid Data

Supplemental centroid analysis for 007104854-02. Kepler magnitude: 15.18. Transit SNR 2.28

There are 0 quarters with good PRF difference image offsets

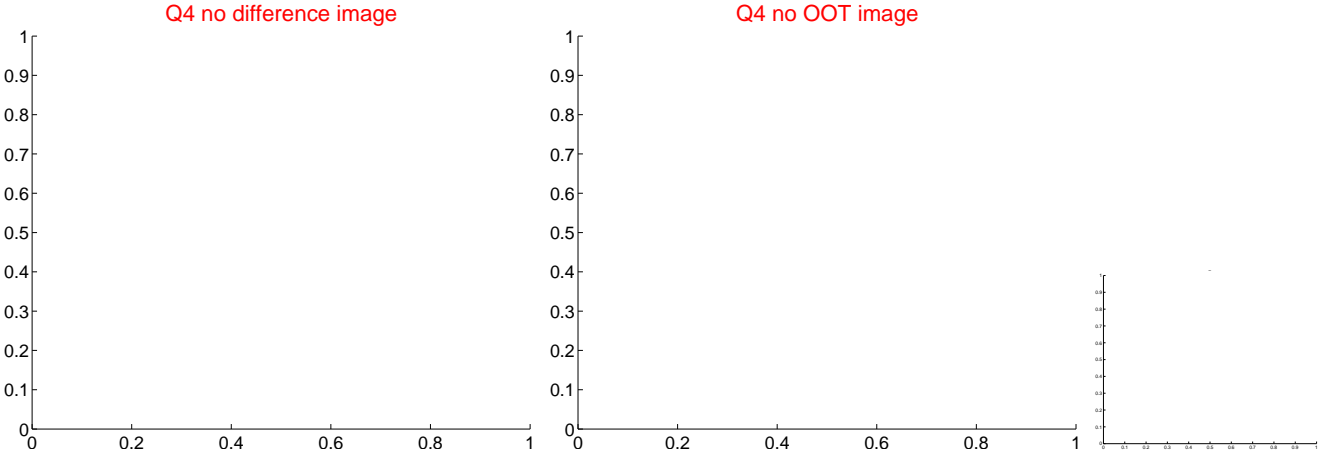
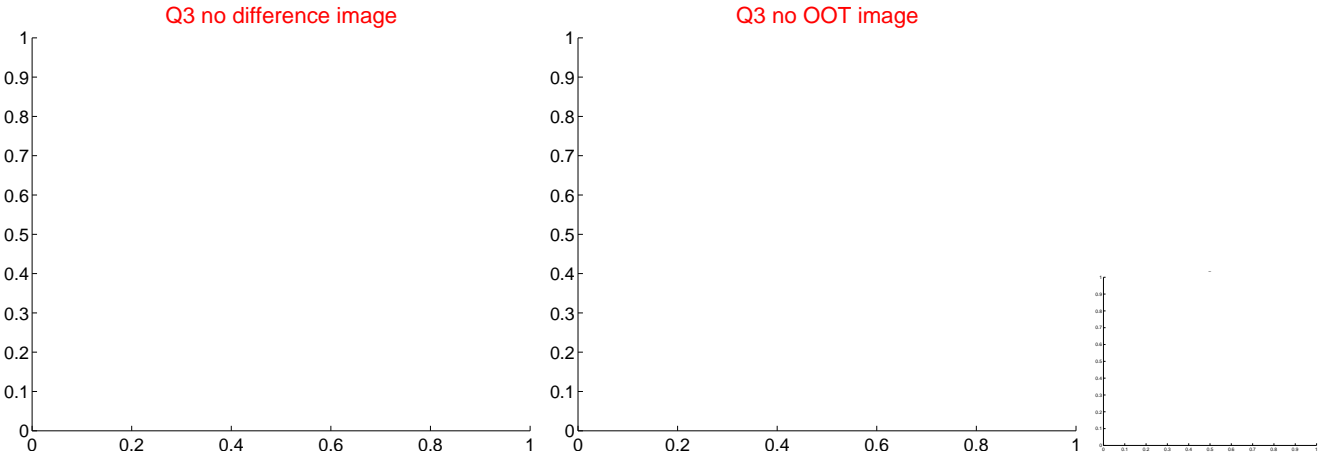
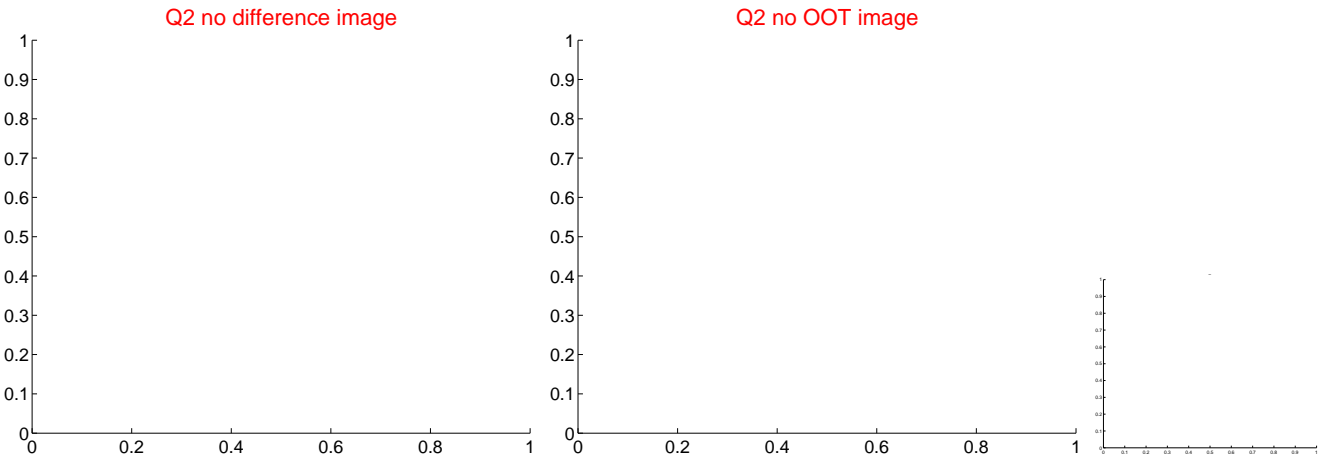
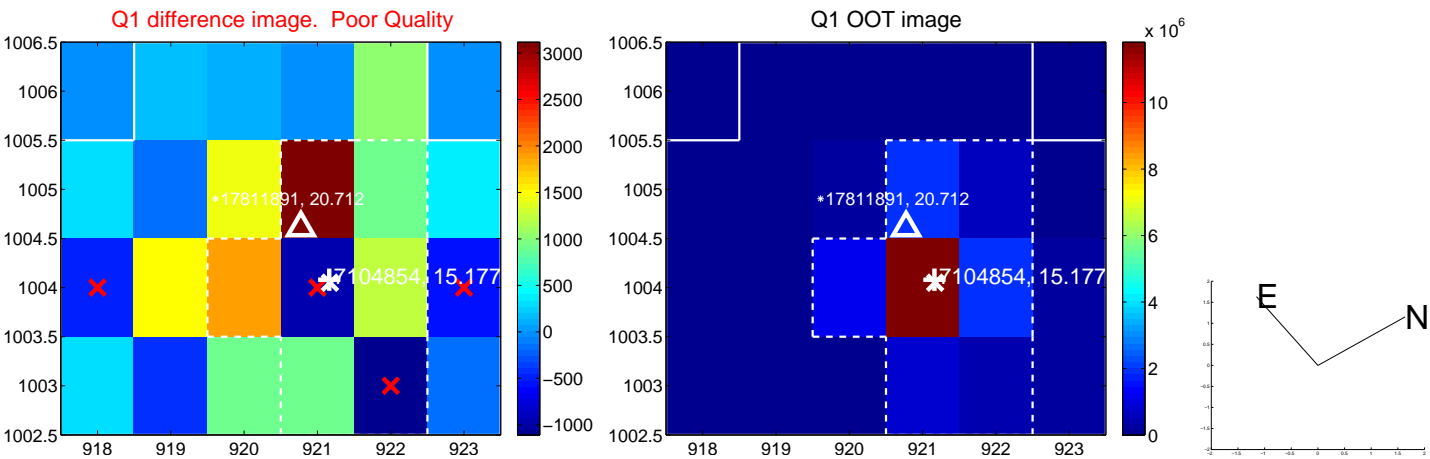
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.614 \pm 1.292$	2.02	$2.611 \pm 1.292$	$-0.128 \pm 1.062$
PRF-fit source offset from KIC position	$2.737 \pm 1.292$	2.12	$2.735 \pm 1.292$	$-0.093 \pm 1.062$
photometric centroid source offset	$1.86 \pm 3.02$	0.62	$1.08 \pm 2.87$	$-1.51 \pm 3.09$

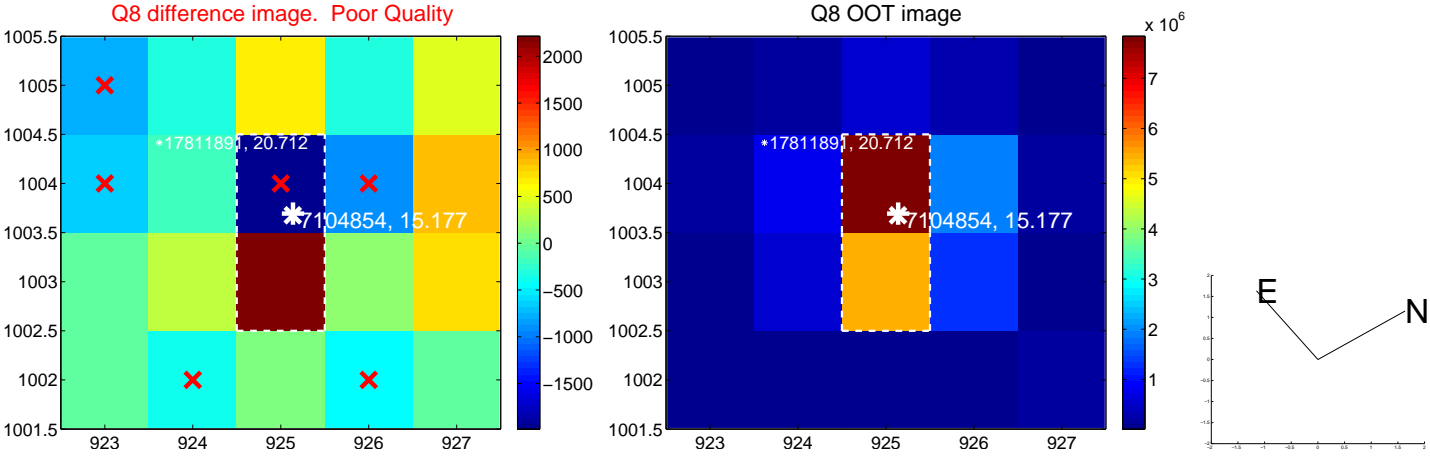
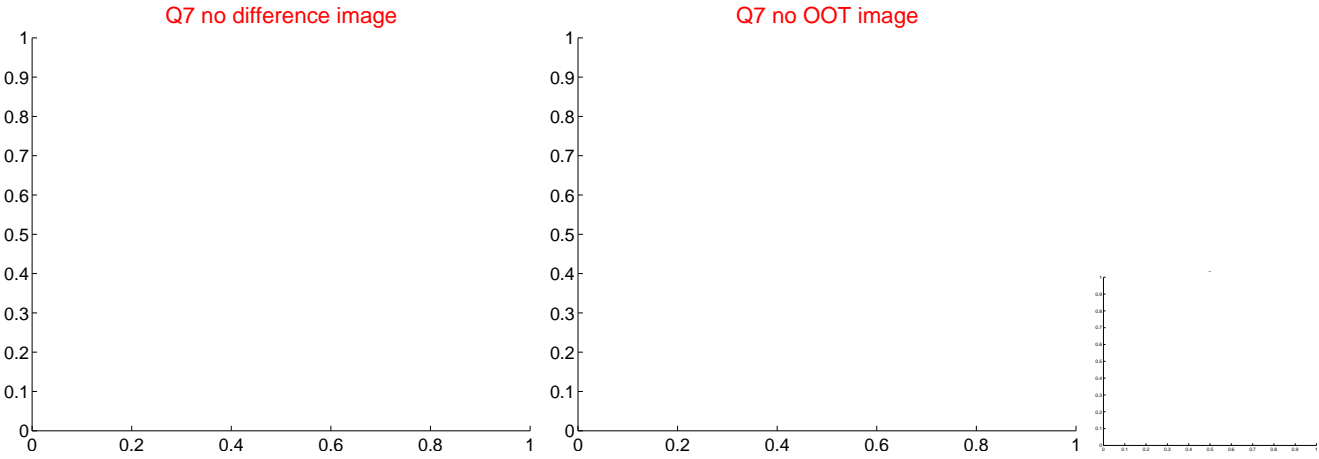
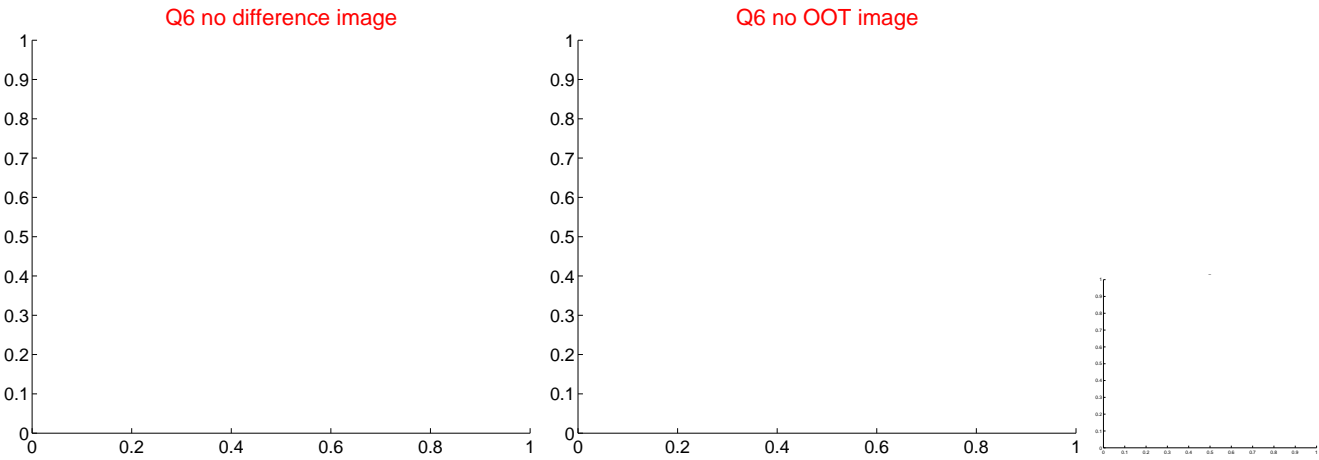
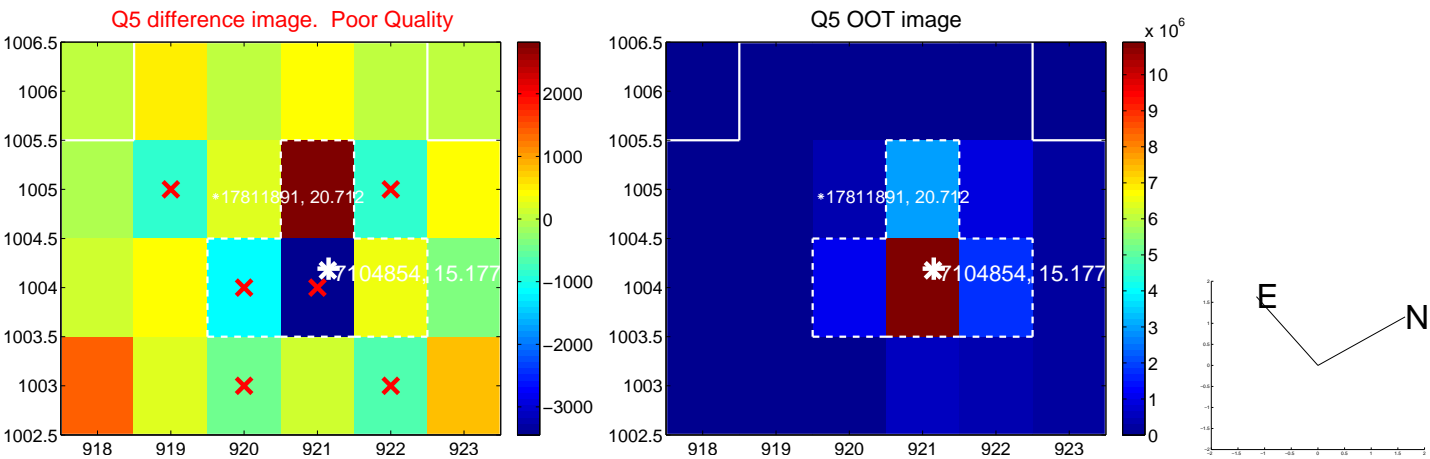


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



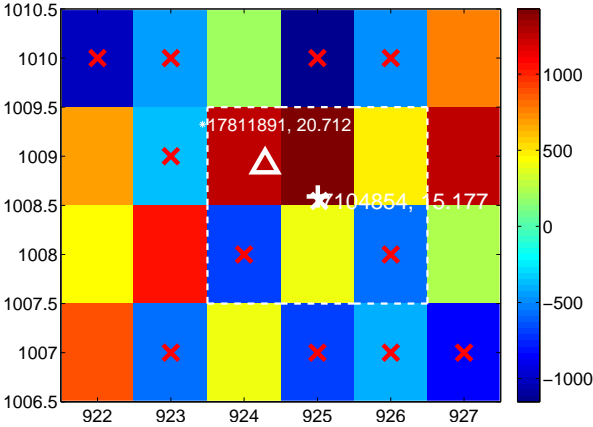
Q10 no difference image



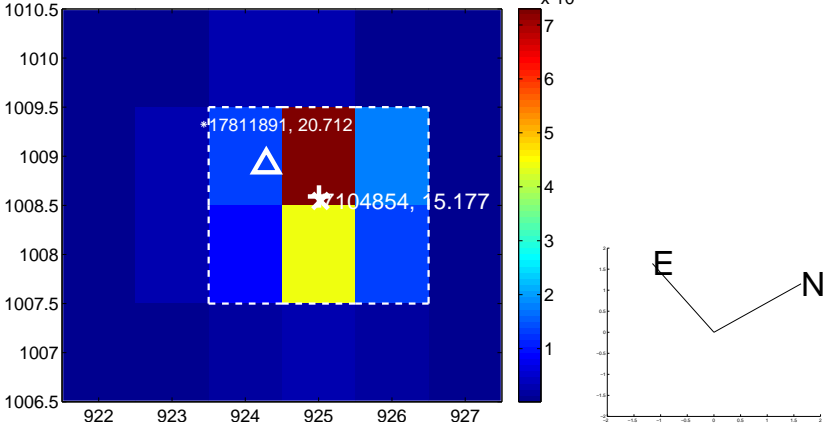
Q10 no OOT image



Q11 difference image. Poor Quality



Q11 OOT image



Q12 no difference image



Q12 no OOT image



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

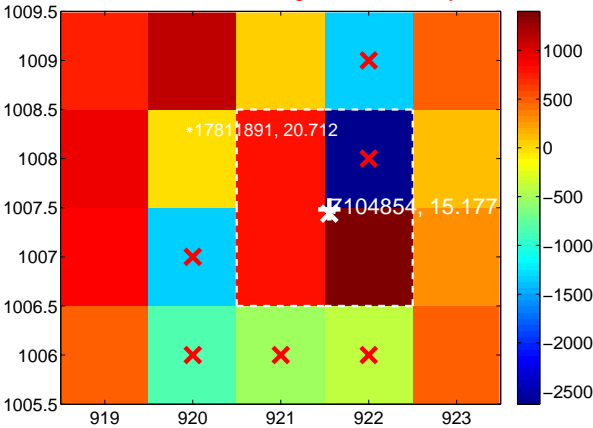
Q13 no difference image



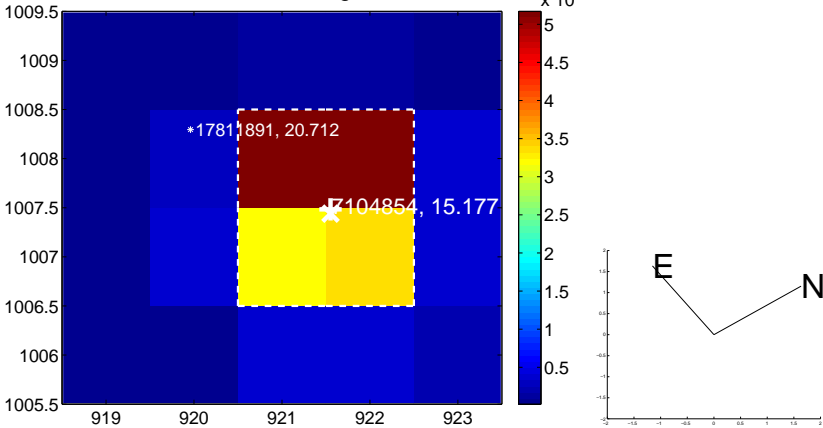
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



Q15 no difference image



Q15 no OOT image



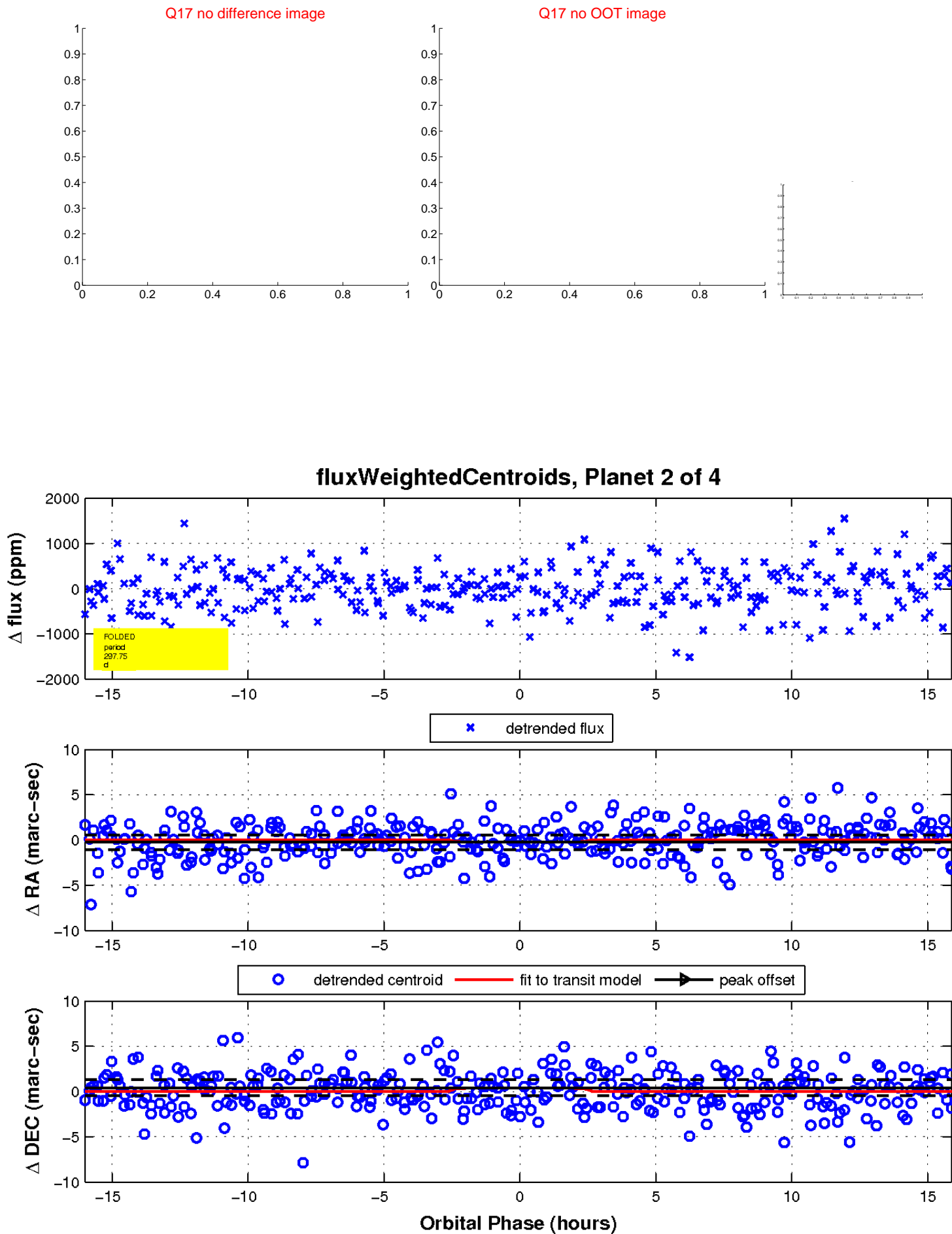
Q16 no difference image



Q16 no OOT image

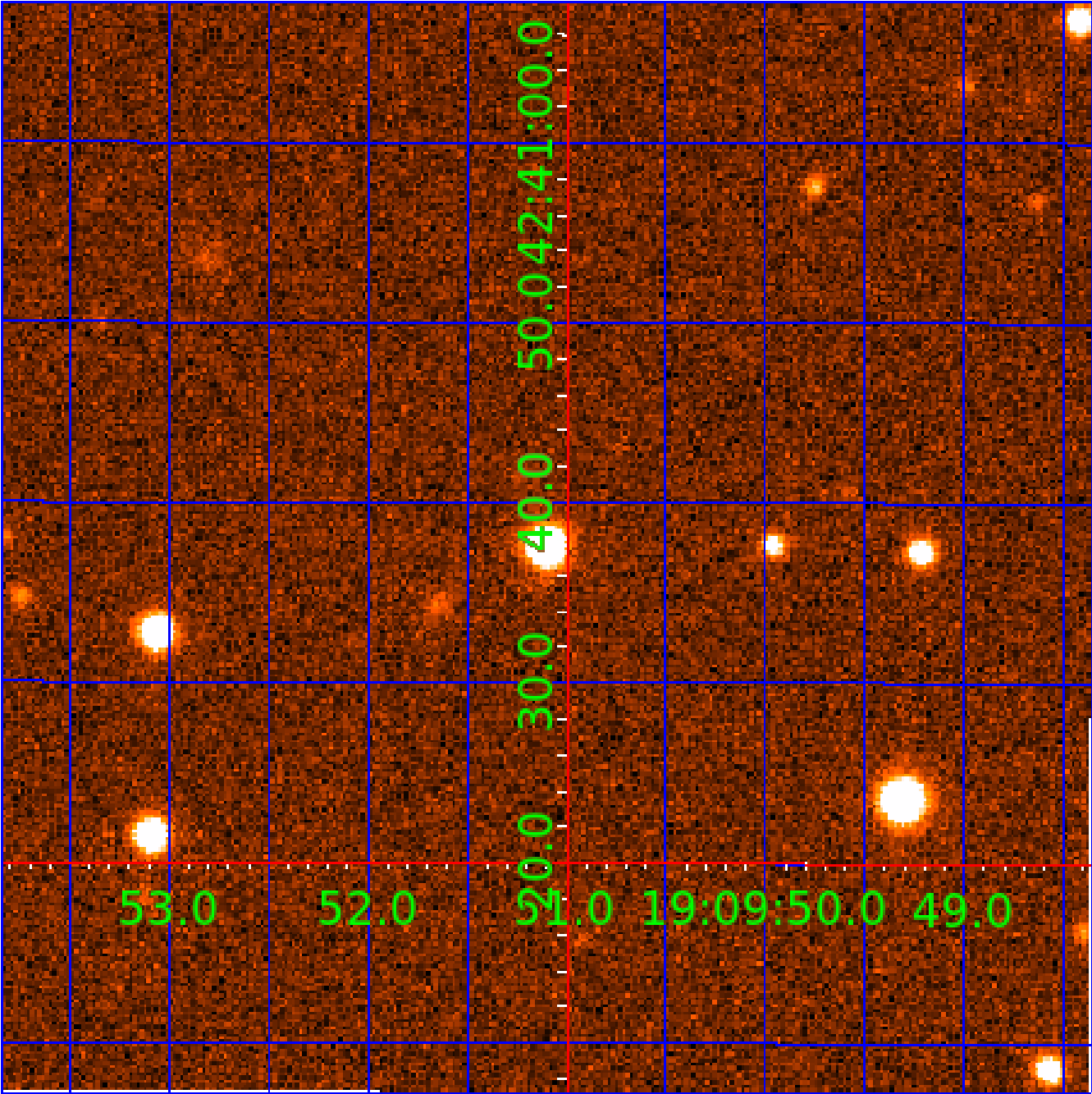


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007104854

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007104854-01	OBS	No	2.397508	131.996734	71.4	10.601	9.1	9.2	0.80	5546	0.80	512.99
007104854-02	OBS	No	297.750151	161.536212	278.4	5.336	11.4	2.3	0.80	5546	1.49	0.83
007104854-03	OBS	No	346.077779	466.475224	400.4	1.779	9.8	2.3	0.80	5546	1.75	0.68
007104854-04	OBS	No	346.049150	465.967504	653.3	10.500	9.9	-1.0	0.80	5546	2.02	0.68

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007104854-01	OBS	FP	0.00	1	0	0	0	LPP_DV
007104854-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007104854-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007104854-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— SAME_NTL_PERIOD—CENT_NOFITS

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

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

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

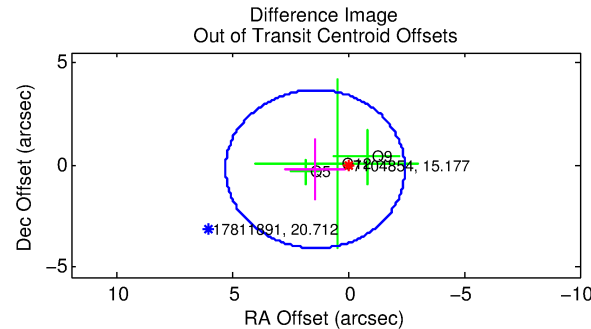
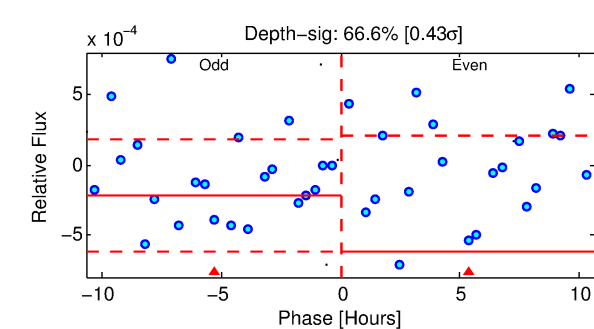
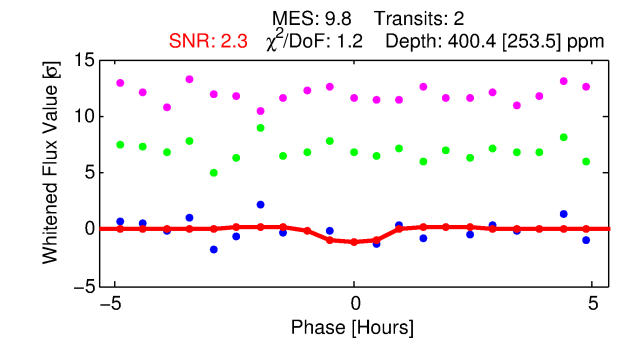
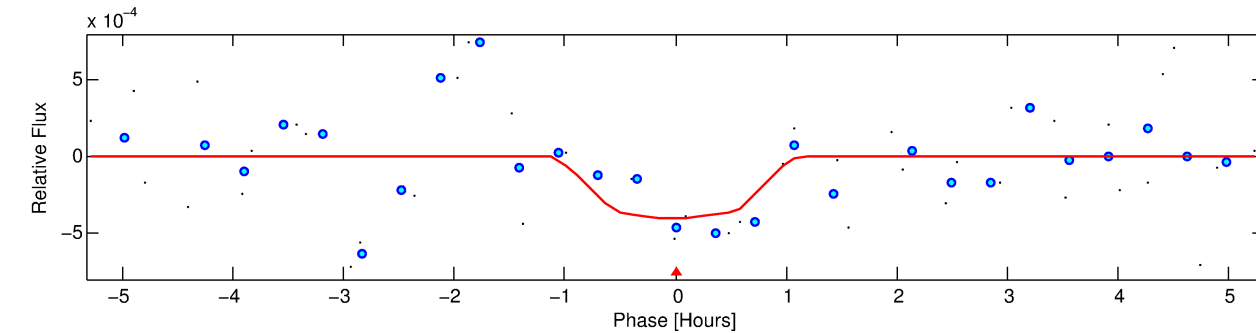
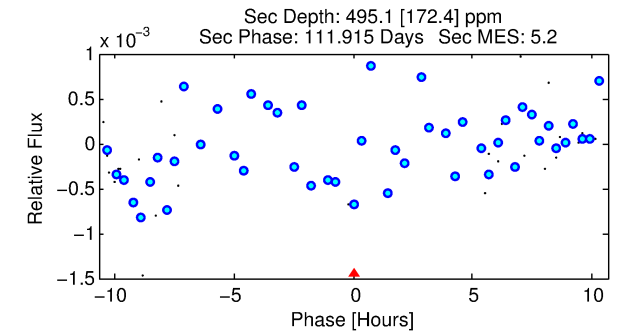
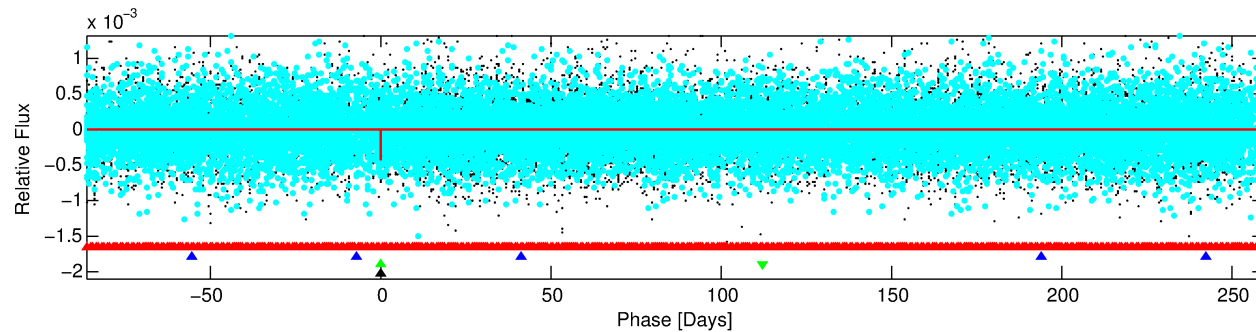
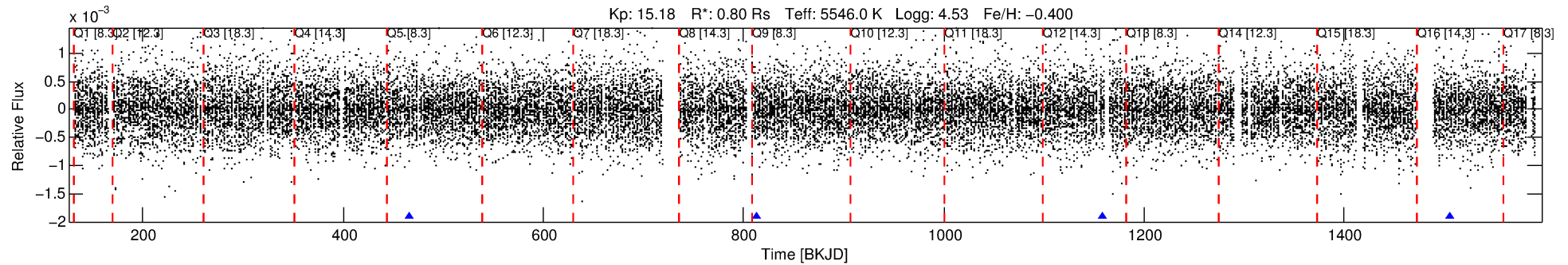
## Ephemeris Match Information For 007104854-03

No Significant Match Found



# DV One-Page Summary

KIC: 7104854 Candidate: 3 of 4 Period: 346.078 d



## DV Fit Results:

Period = 346.07778 [0.01545] d  
Epoch = 466.4752 [0.0243] BKJD  
Rp/R\* = 0.0201 [0.1384]  
a/R\* = 997.46 [29616.77]  
b = 0.77 [16.14]  
Seff = 0.68 [0.18]  
Teq = 231 [15] K  
Rp = 1.75 [12.04] Re  
a = 0.8915 [0.1482] AU  
Ag = 70690.47 [972836.12] [0.07 $\sigma$ ]  
Teff = 5832 [20063] K [0.28 $\sigma$ ]

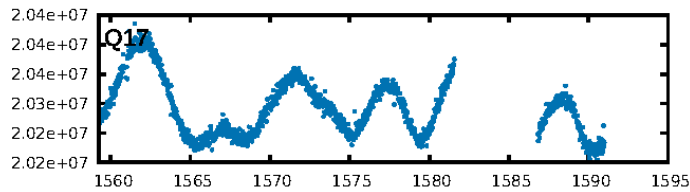
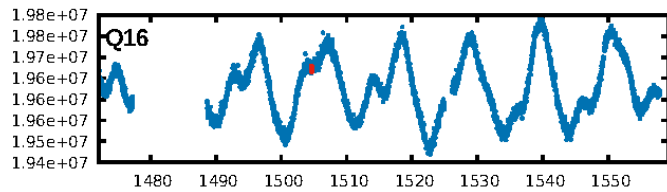
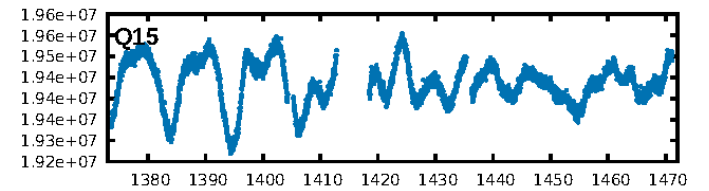
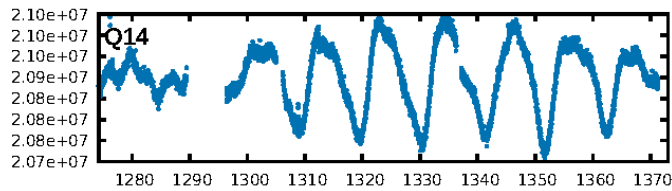
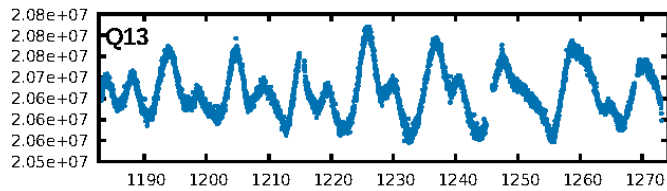
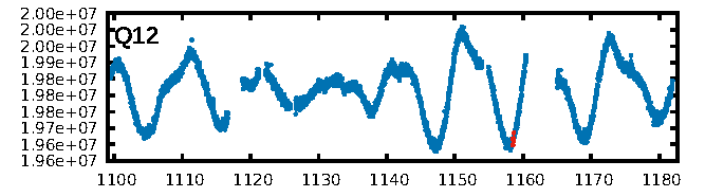
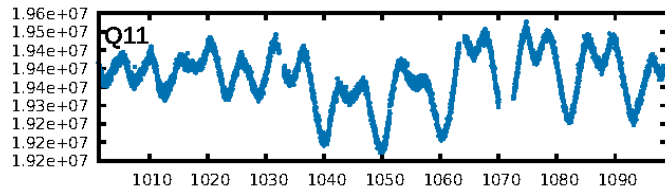
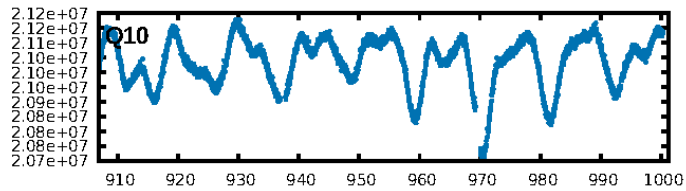
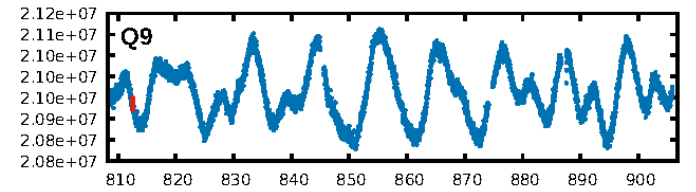
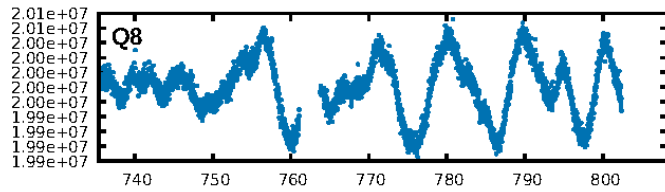
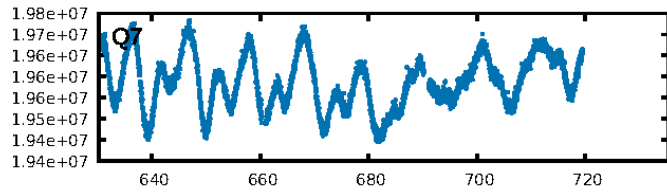
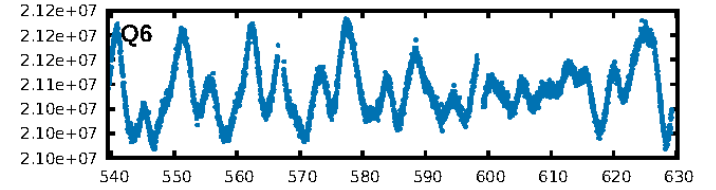
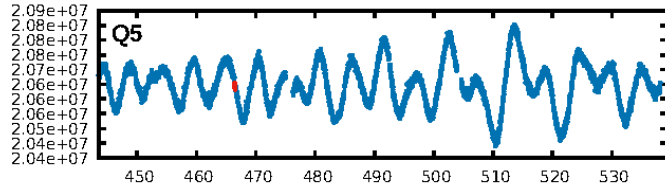
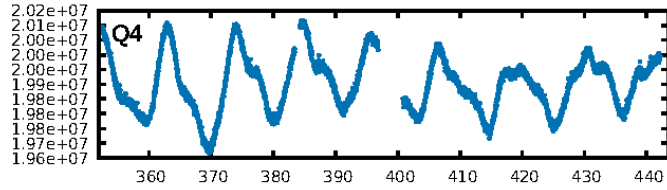
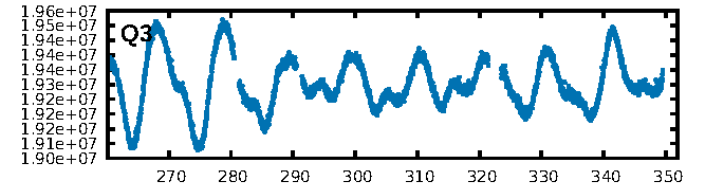
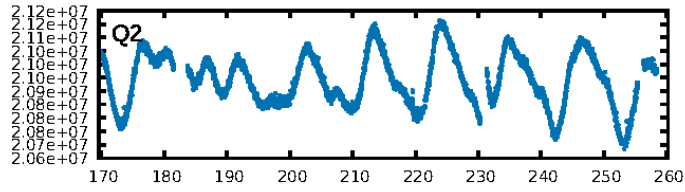
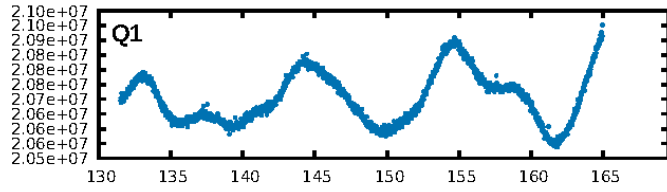
## DV Diagnostic Results:

ShortPeriod-sig: 5.1% [0.06 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 42.4%  
ModelChiSquareGof-sig: 99.7%  
**Bootstrap-pfa: 6.11e-09**  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: -1.409  
Centroid-sig: 25.5%  
Centroid-so: 4.490 arcsec [1.01 $\sigma$ ]  
OotOffset-rm: 1.455 arcsec [1.13 $\sigma$ ]  
KicOffset-rm: 1.485 arcsec [1.15 $\sigma$ ]  
OotOffset-st: 0/0/1/2 [3]  
KicOffset-st: 0/0/1/2 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 0.00 [0/4]

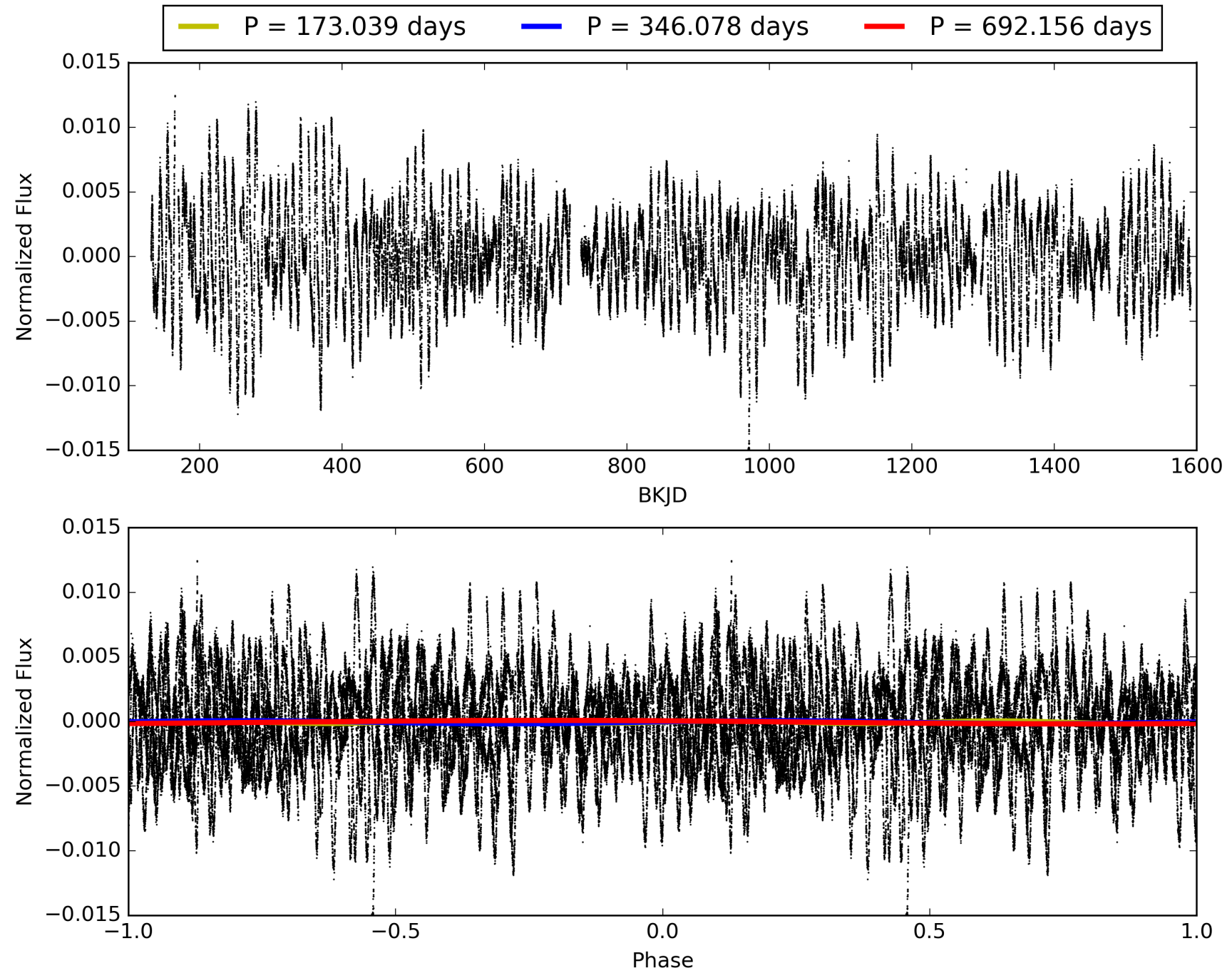
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:30:51 Z

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

# TCE 007104854-03, PDC Light Curves

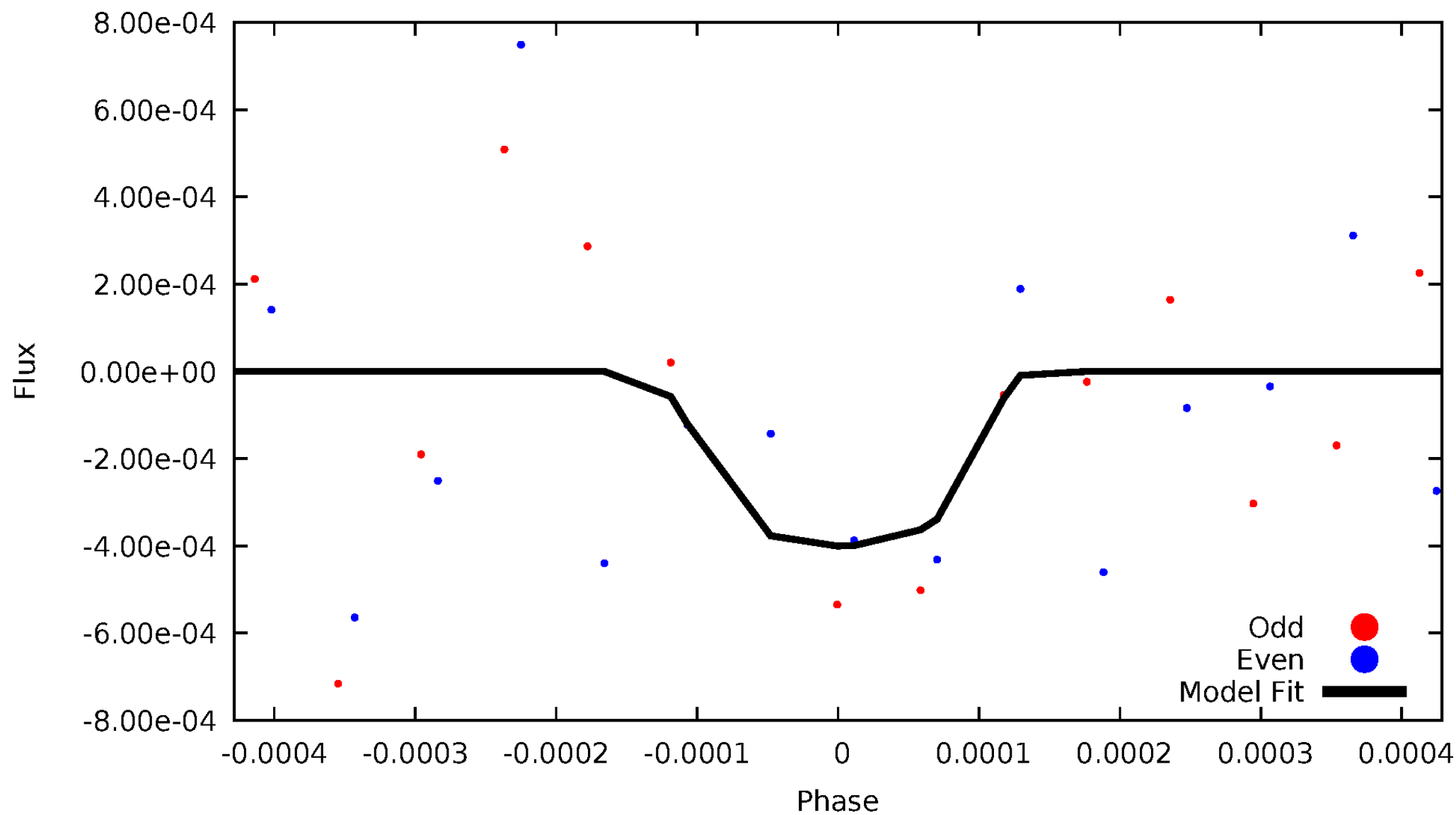


# TCE 007104854-03



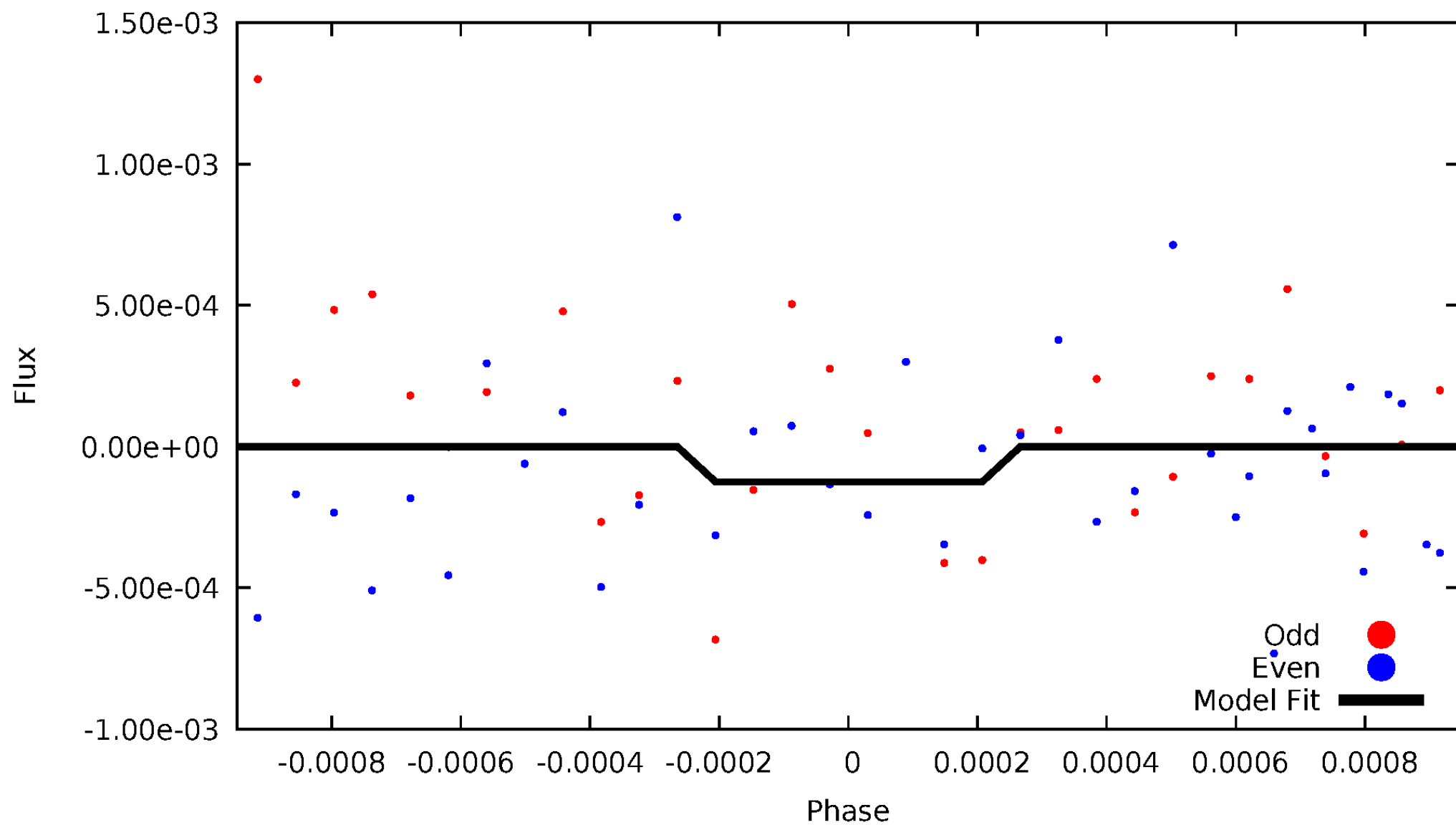
# DV Odd/Even

TCE 007104854-03



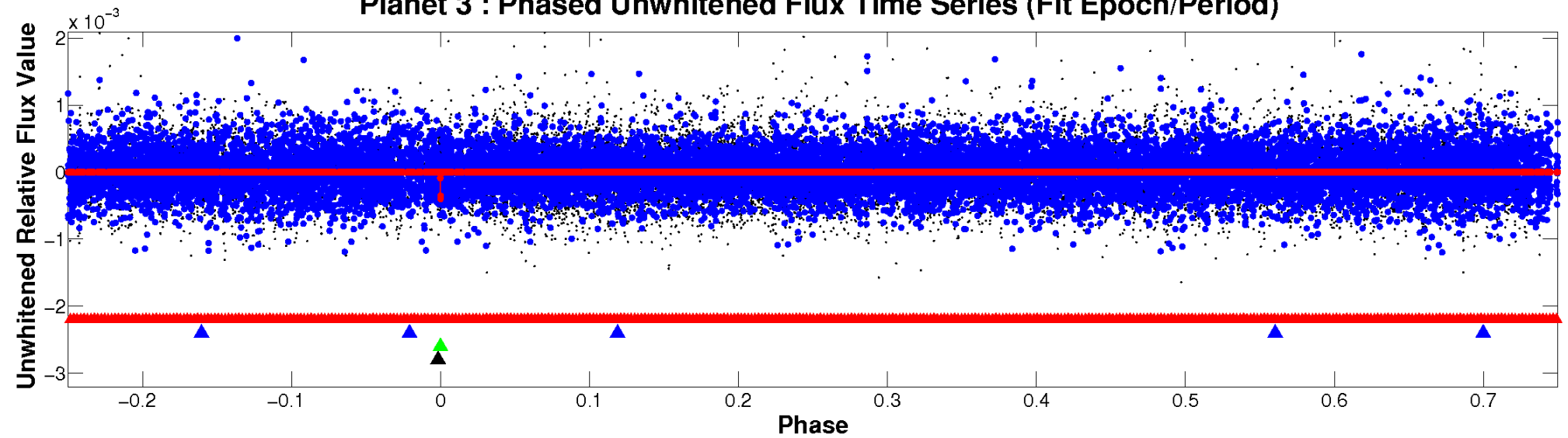
# ALT Odd/Even

TCE 007104854-03

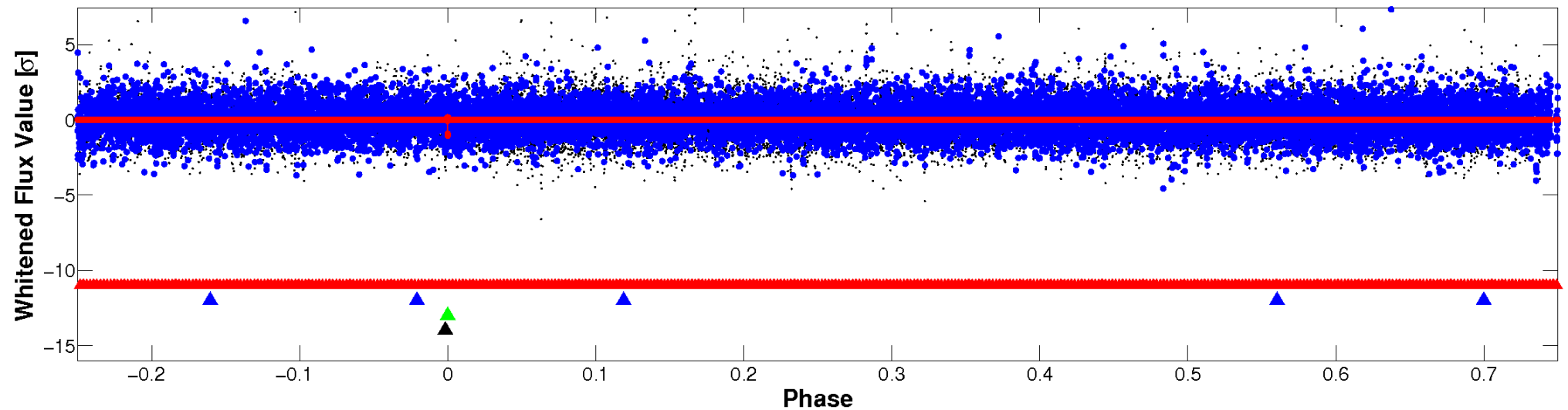


# Non-Whitened Vs. Whitened Light Curve

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



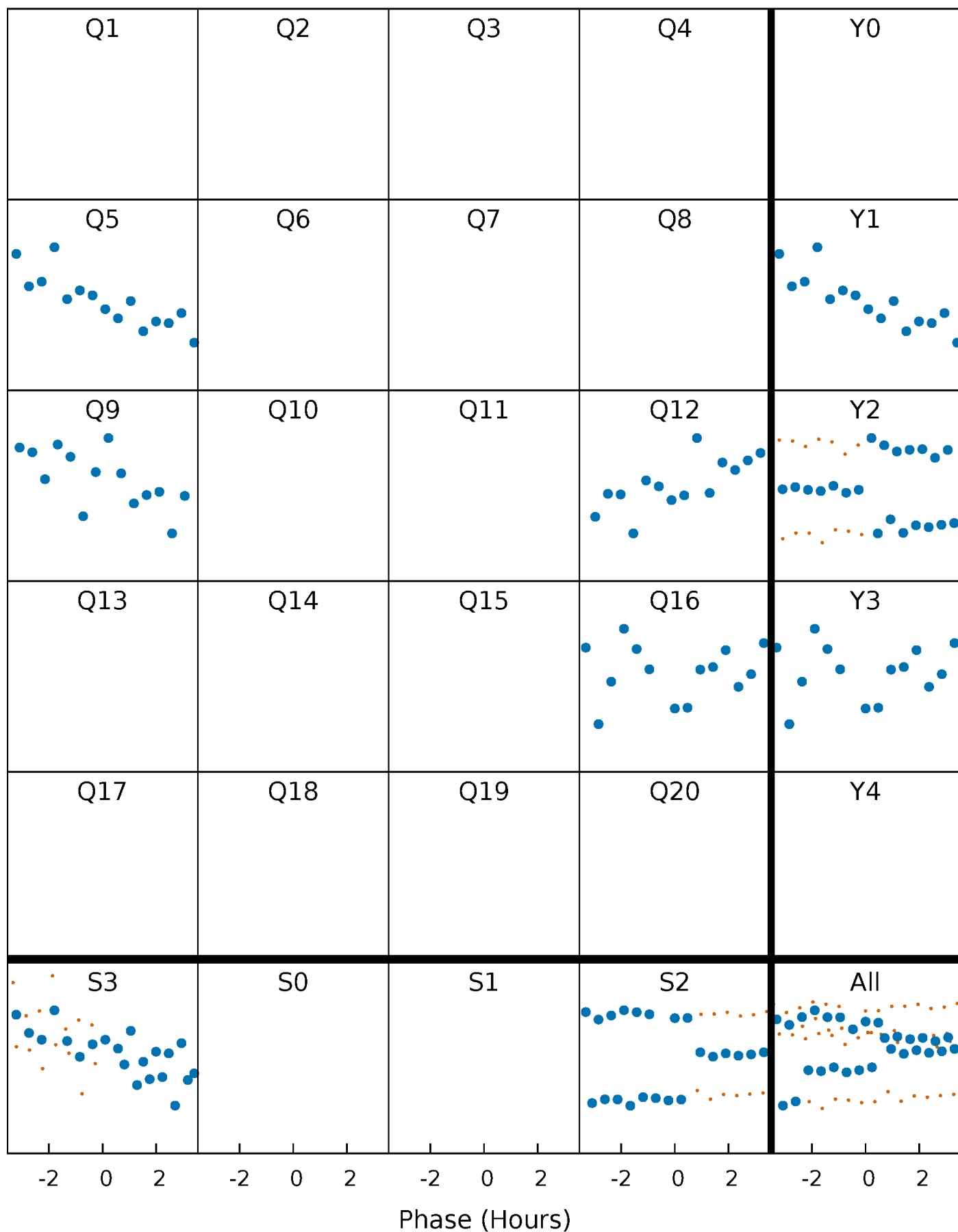
Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





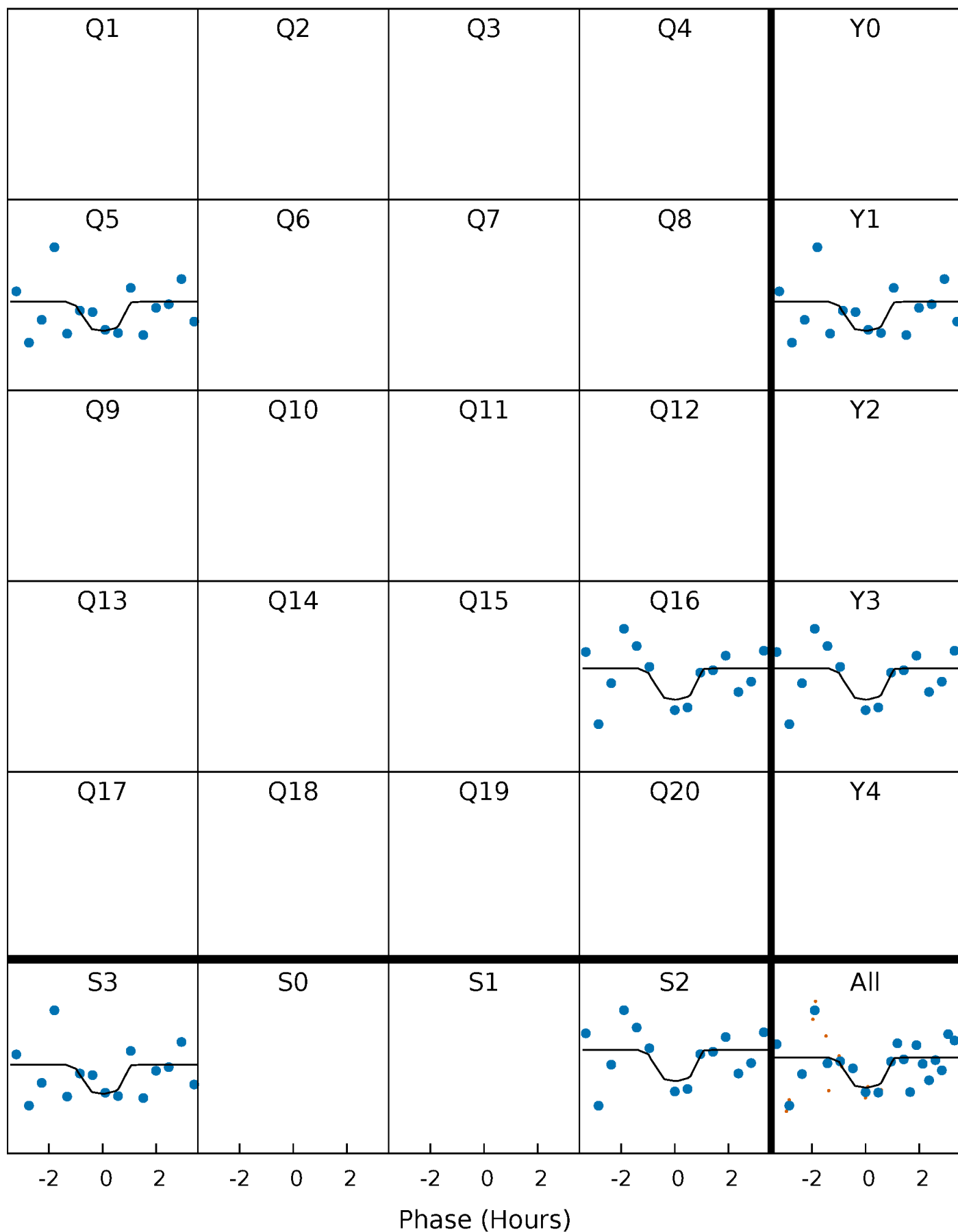
# PDC Quarter-Phased Transit Curves

TCE 007104854-03 P=346.077779 Days  $T_0=466.475224$  (BKJD)



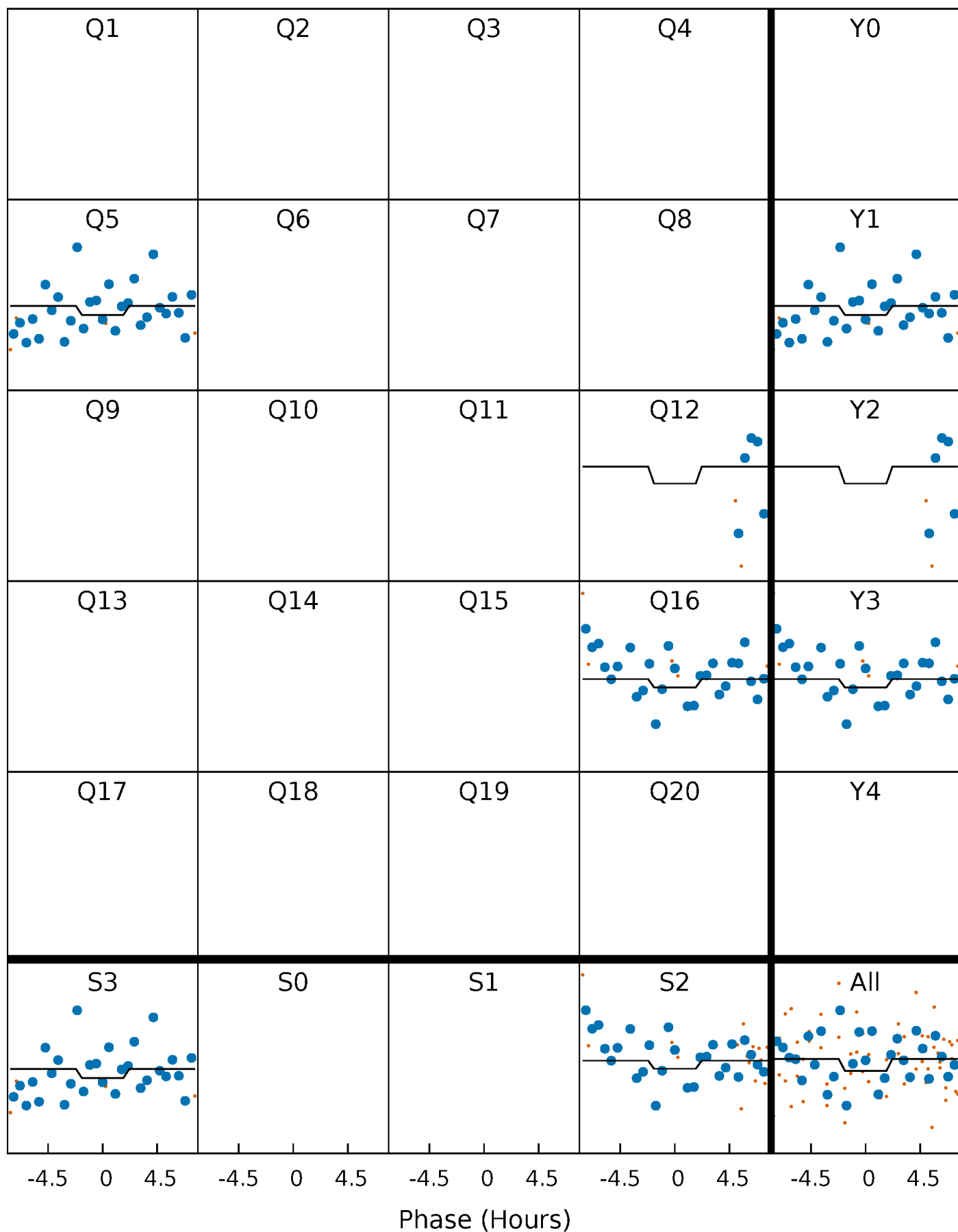
# DV Quarter-Phased Transit Curves

TCE 007104854-03 P=346.077779 Days  $T_0=466.475224$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

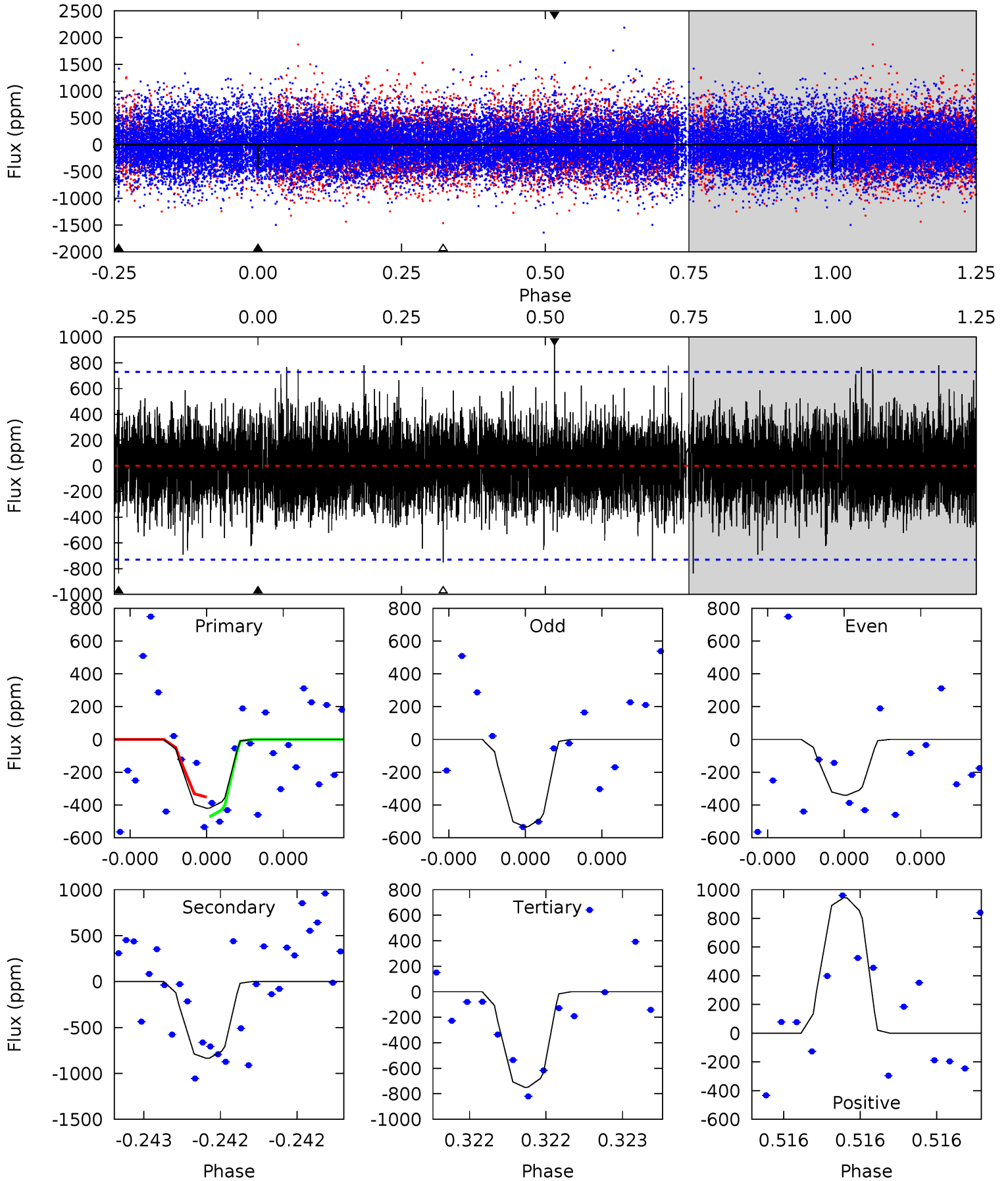
TCE 007104854-03 P=346.055961 Days  $T_0=466.489090$  (BKJD)



# DV Model-Shift Uniqueness Test

007104854-03, P = 346.077779 Days, E = 120.397445 Days

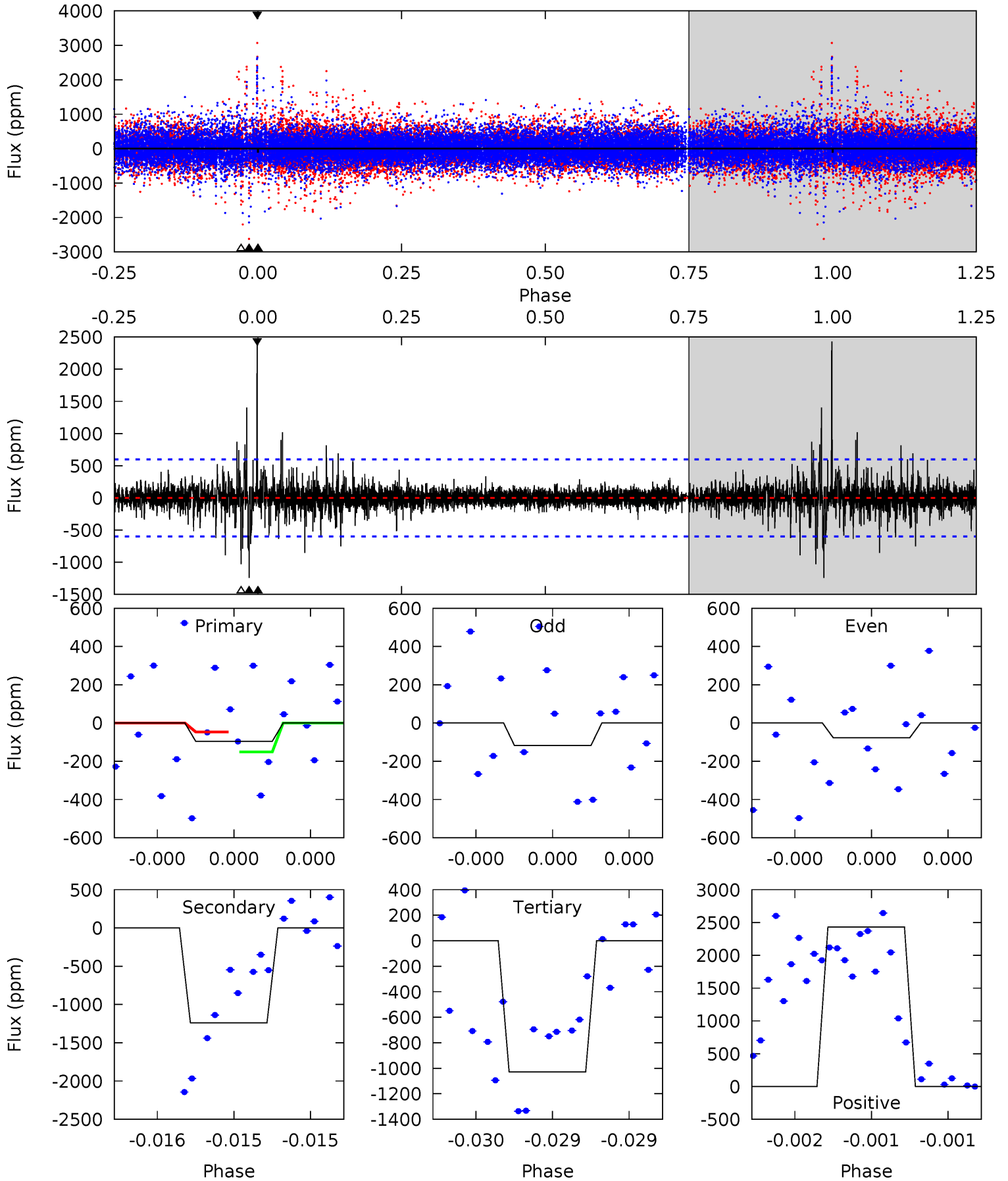
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.26	6.50	5.82	7.34	5.66	3.62	1.34	-2.56	-4.07	0.67	-0.84	0.72	1.00	0.53	0.45



# Alt Model-Shift Uniqueness Test

007104854-03, P = 346.055961 Days, E = 120.433129 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.90	11.6	9.65	22.8	5.61	3.53	1.29	-8.76	-21.9	1.98	-11.2	0.18	1.00	0.66	0.49



### Stellar Parameters For KIC 007104854

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5546^{+166}_{-149}$	$4.532^{+0.067}_{-0.124}$	$-0.400^{+0.300}_{-0.300}$	$0.797^{+0.163}_{-0.082}$	$0.788^{+0.105}_{-0.065}$	$2.196^{+0.742}_{-0.774}$
	+3%/-3%	+1%/-3%	+75%/-75%	+20%/-10%	+13%/-8%	+34%/-35%
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 007104854-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-837 \pm 129$	$8.81^{+10.48}_{-5.92}$	$326^{+17}_{-14}$	$3472^{+1727}_{-705}$	$4838^{+38708}_{-3850}$
Alt.	$-1240 \pm 107$	$8.51^{+9.15}_{-6.09}$	$326^{+17}_{-14}$	$3766^{+2411}_{-783}$	$7609^{+80045}_{-5879}$

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

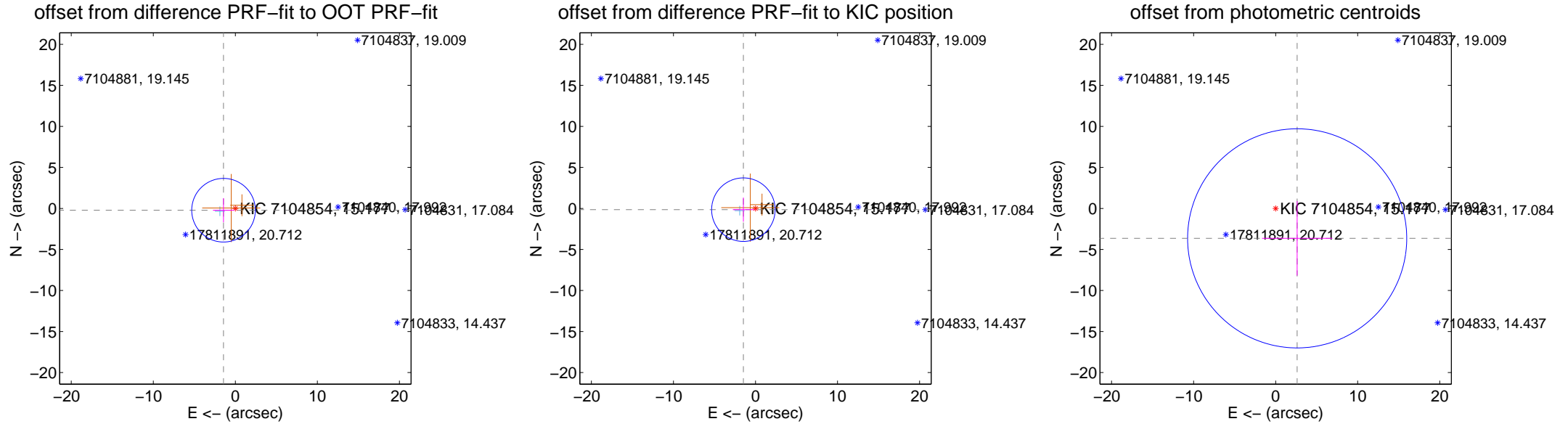
## DV Centroid Data

Supplemental centroid analysis for 007104854-03. Kepler magnitude: 15.18. Transit SNR 2.26

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.455 \pm 1.292$	1.13	$1.439 \pm 1.288$	$-0.216 \pm 1.467$
PRF-fit source offset from KIC position	$1.485 \pm 1.290$	1.15	$1.478 \pm 1.288$	$-0.148 \pm 1.467$
photometric centroid source offset	$4.49 \pm 4.45$	1.01	$-2.62 \pm 4.28$	$-3.64 \pm 4.54$



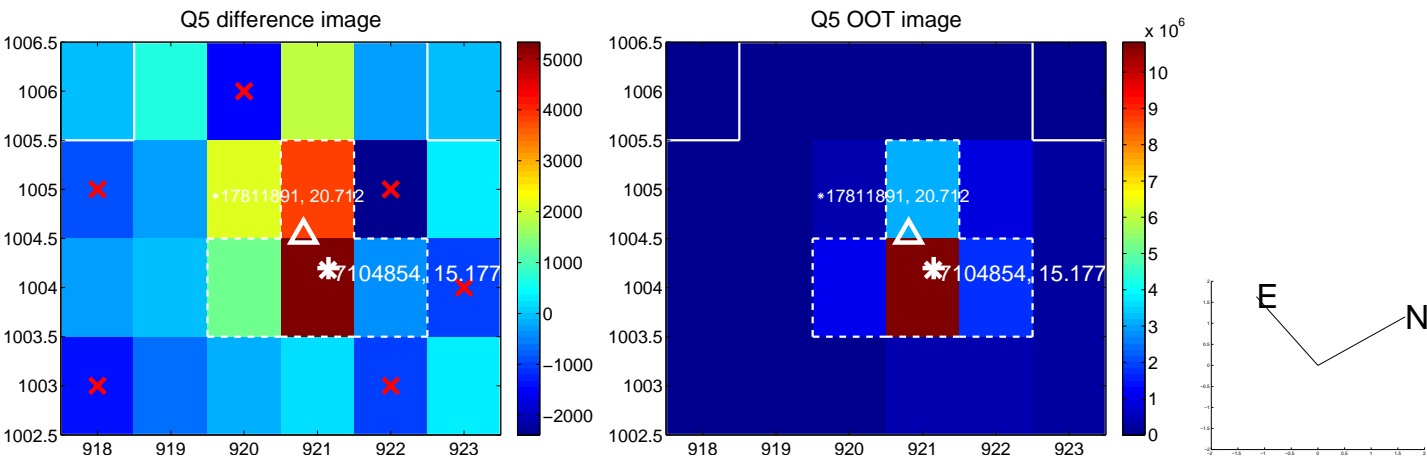
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



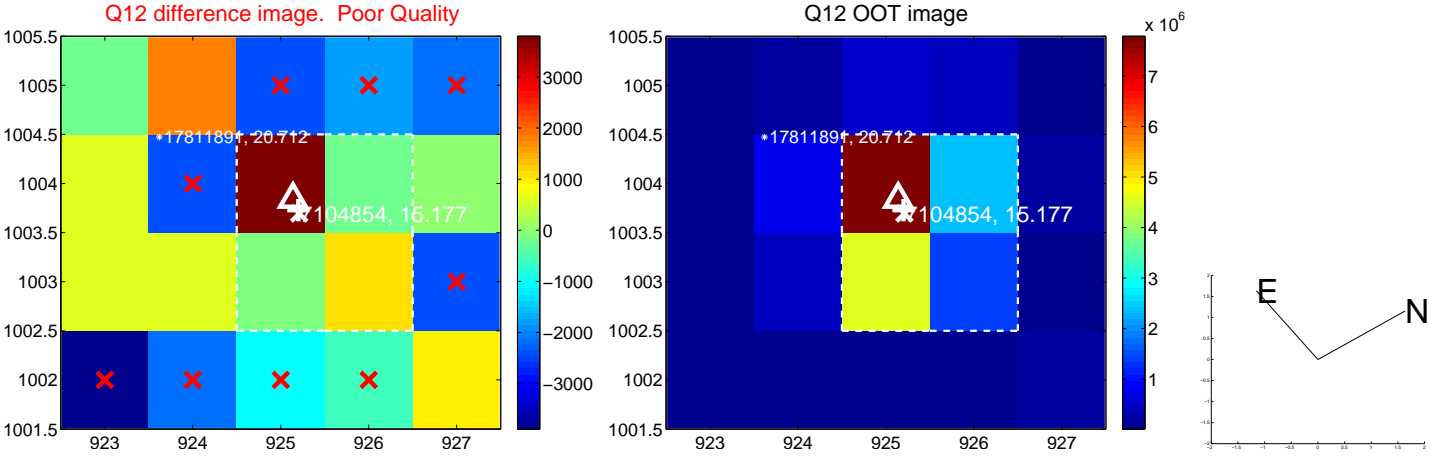
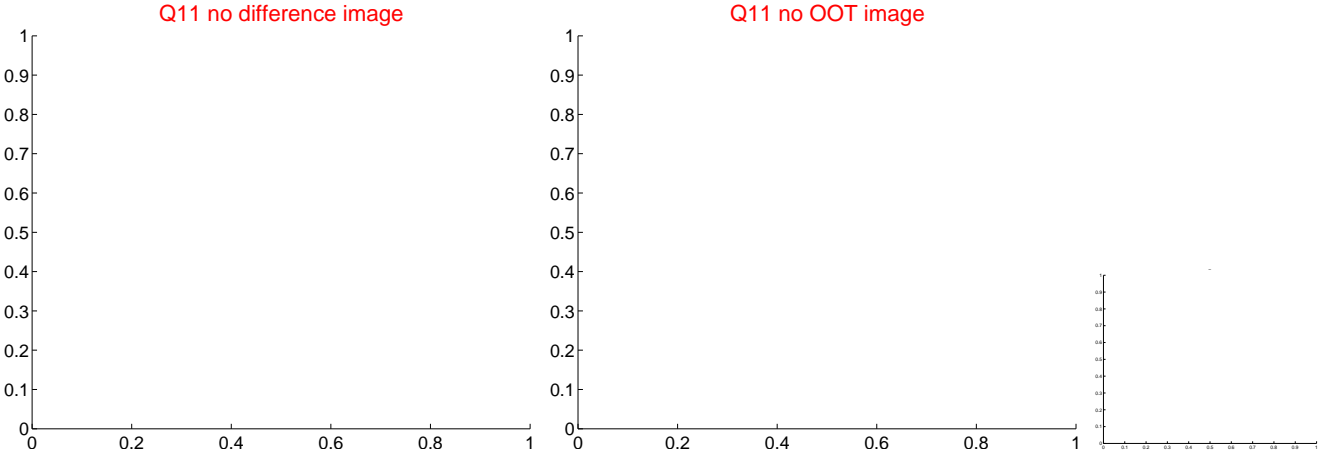
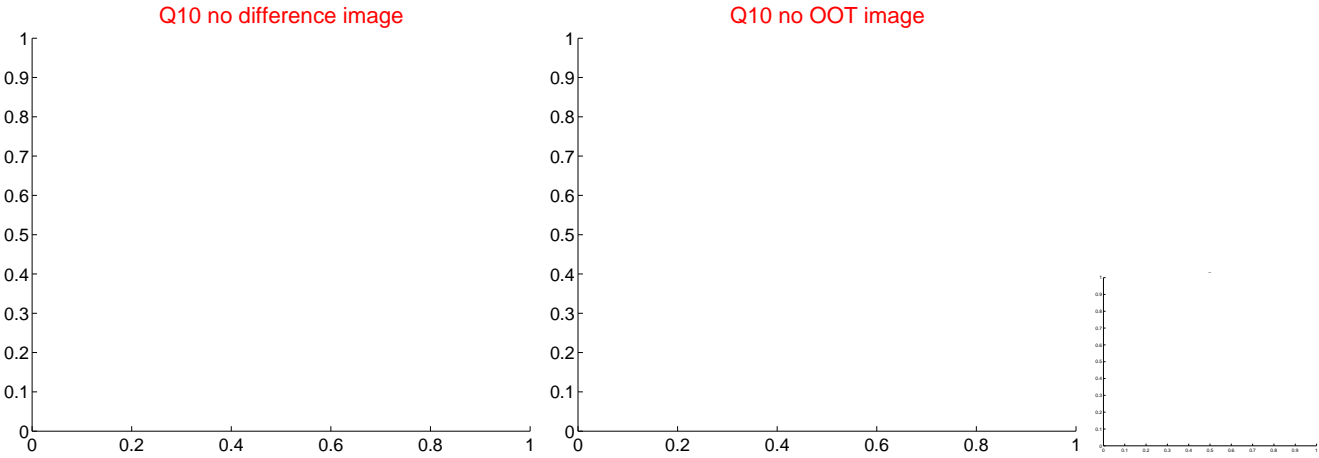
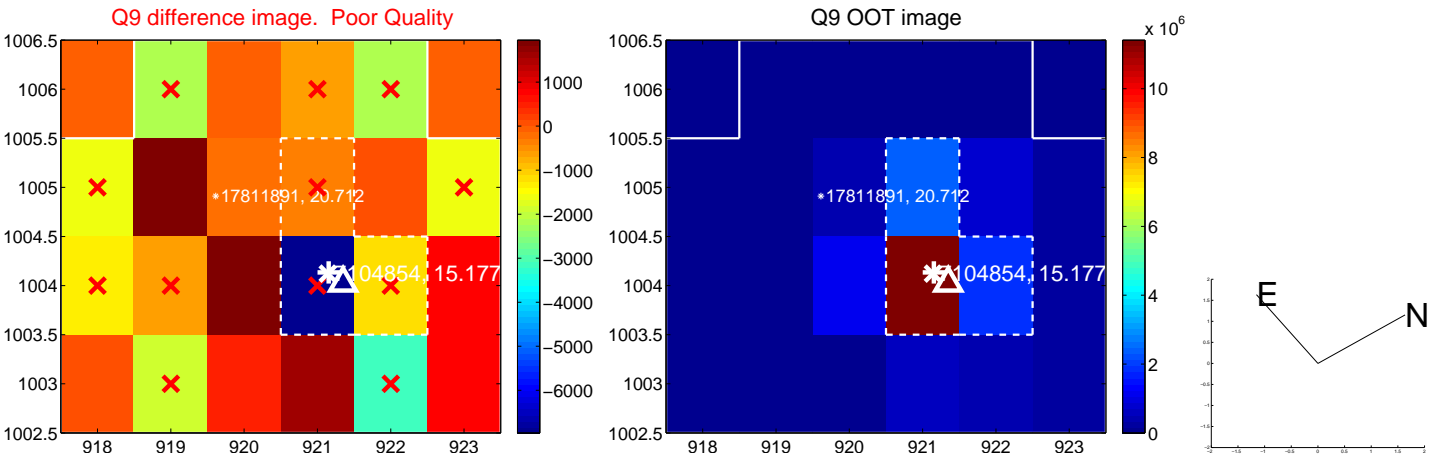
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



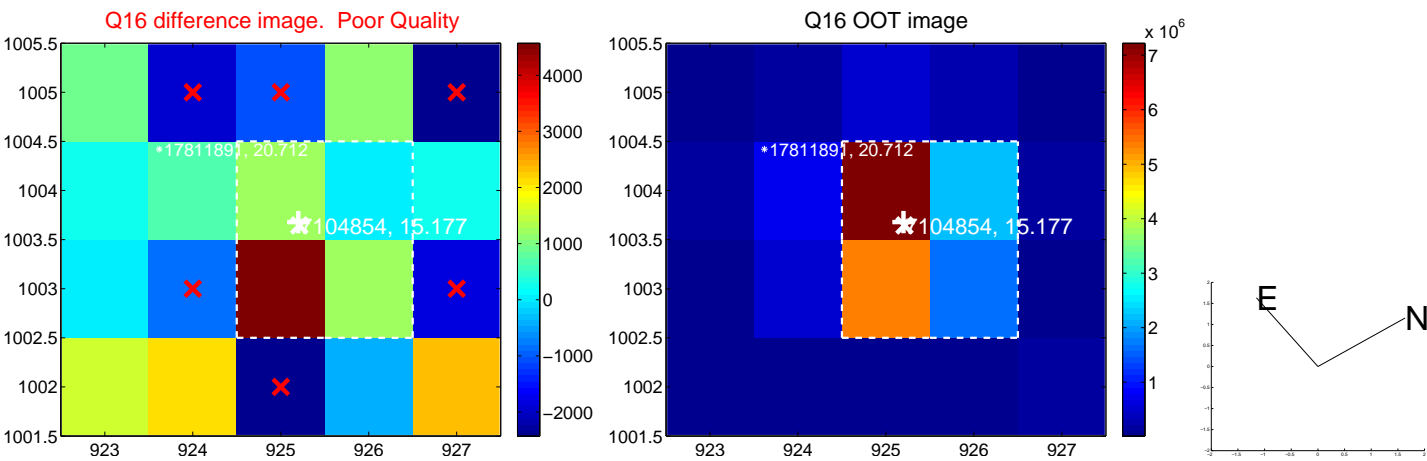
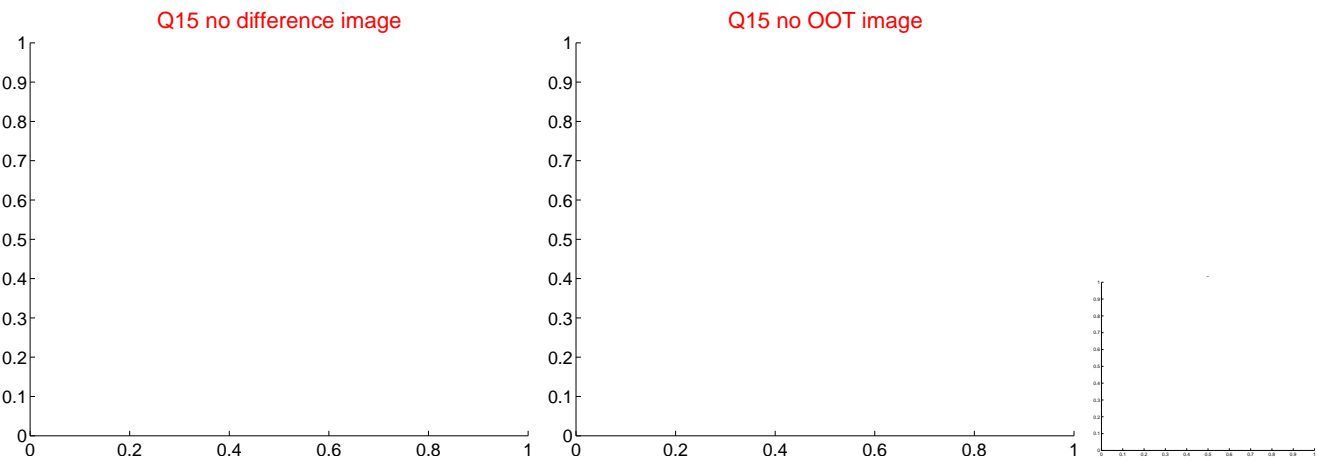
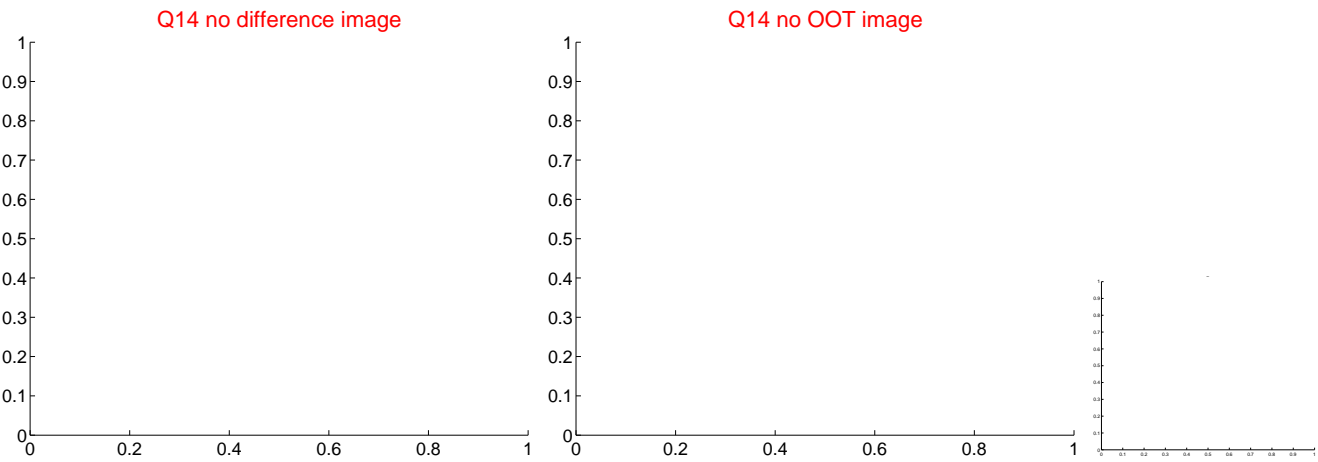
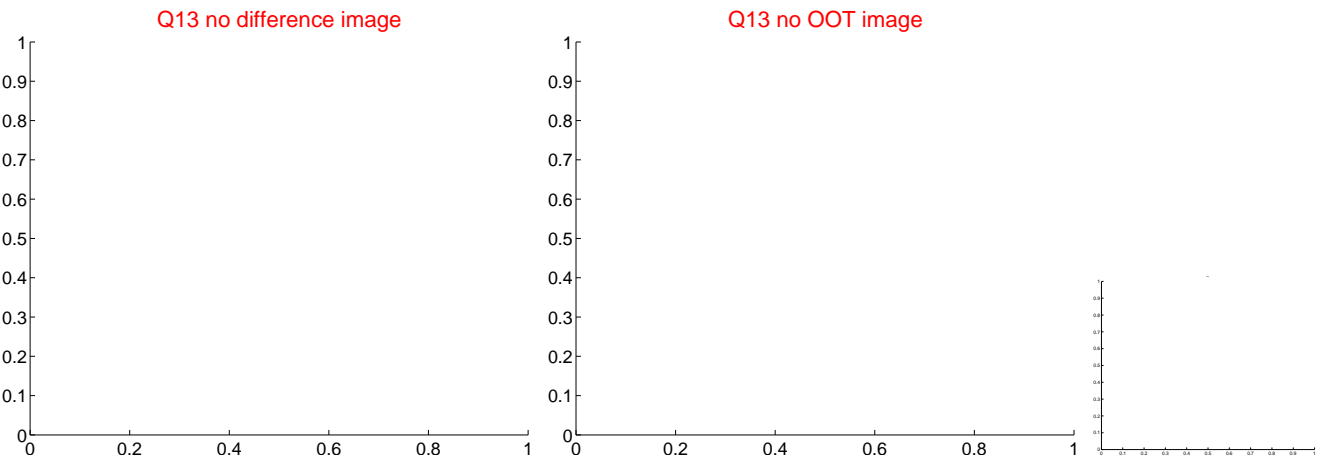
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



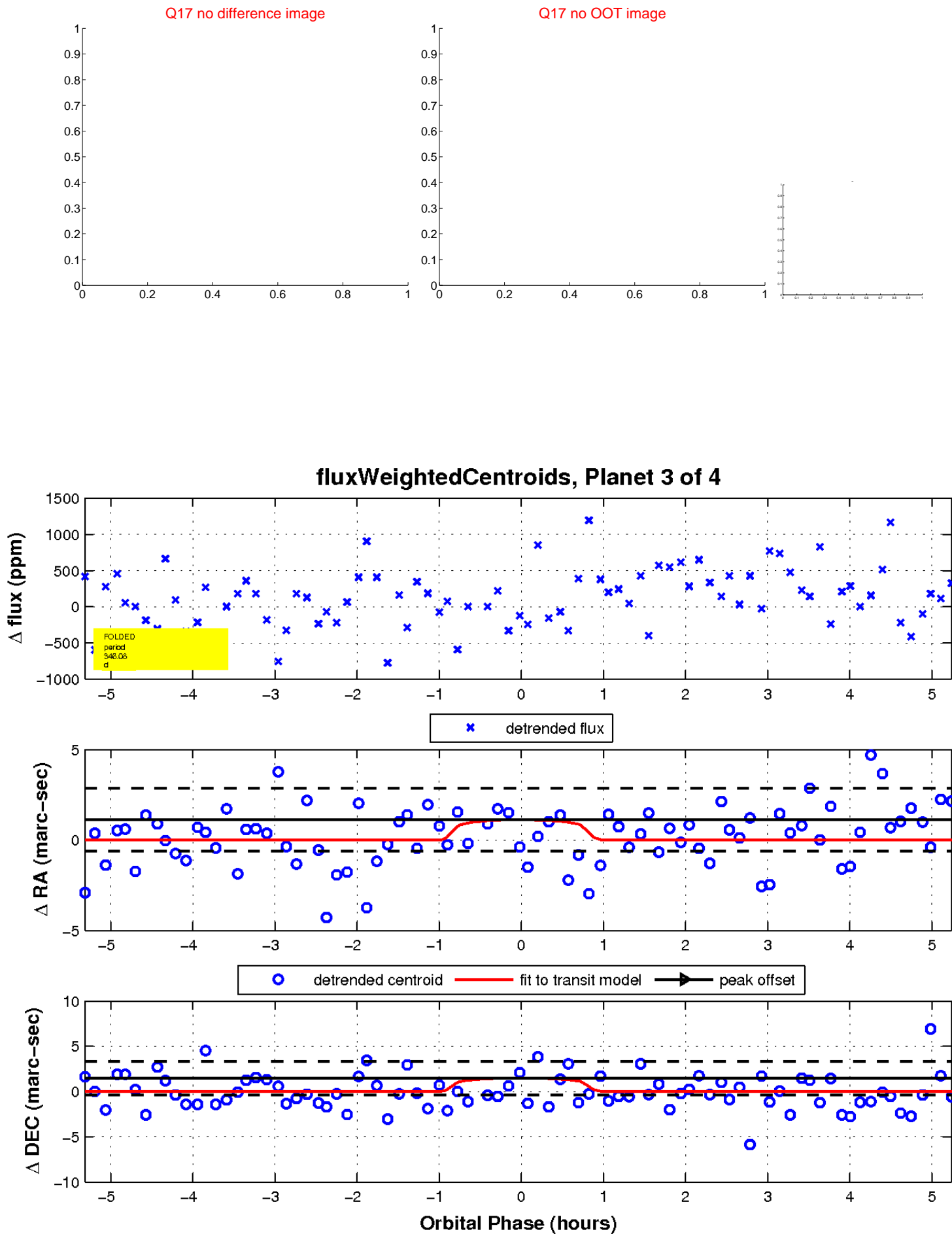
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

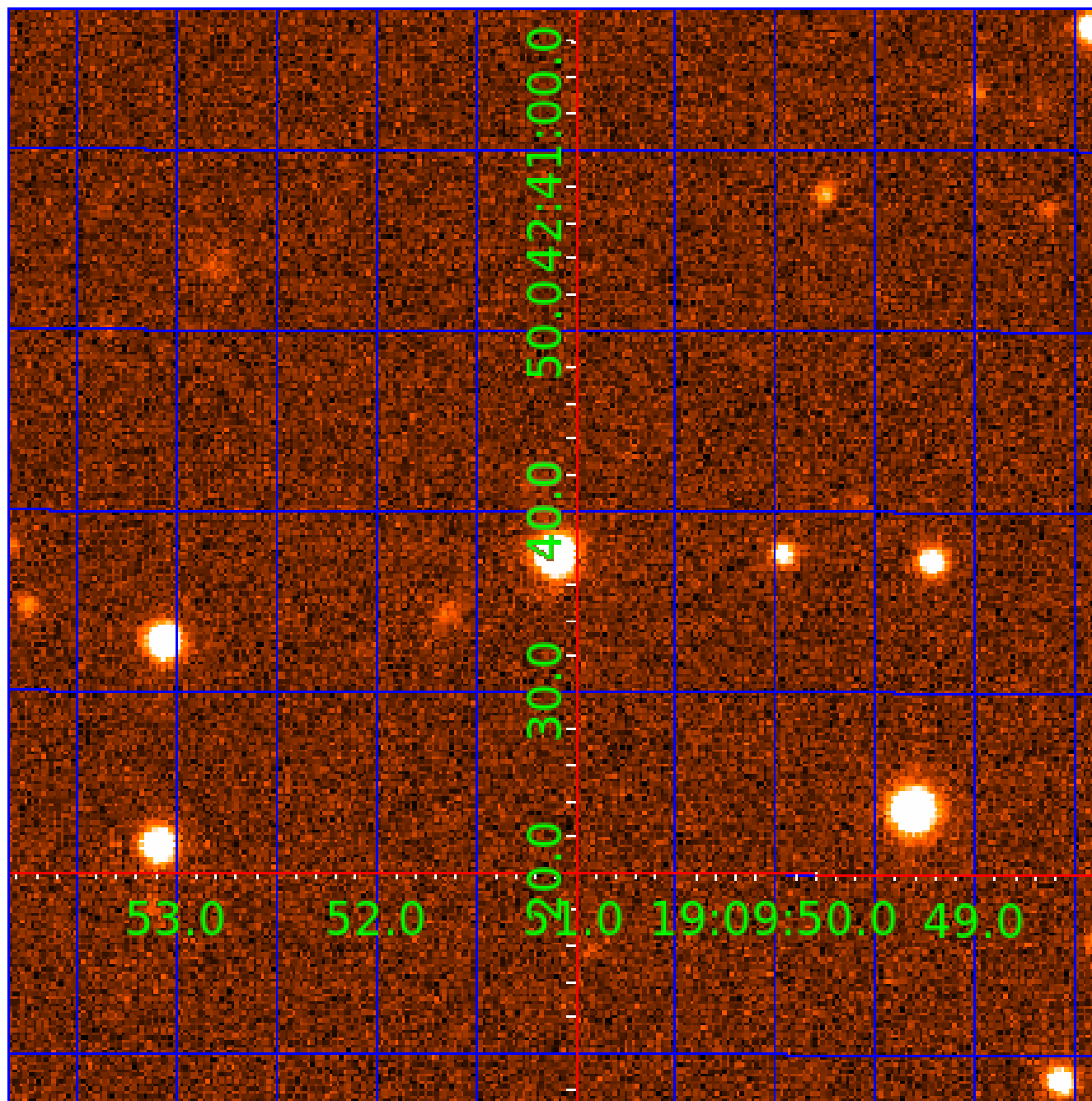


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007104854

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007104854-01	OBS	No	2.397508	131.996734	71.4	10.601	9.1	9.2	0.80	5546	0.80	512.99
007104854-02	OBS	No	297.750151	161.536212	278.4	5.336	11.4	2.3	0.80	5546	1.49	0.83
007104854-03	OBS	No	346.077779	466.475224	400.4	1.779	9.8	2.3	0.80	5546	1.75	0.68
007104854-04	OBS	No	346.049150	465.967504	653.3	10.500	9.9	-1.0	0.80	5546	2.02	0.68

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007104854-01	OBS	FP	0.00	1	0	0	0	LPP_DV
007104854-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007104854-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007104854-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— SAME_NTL_PERIOD—CENT_NOFITS

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

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

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

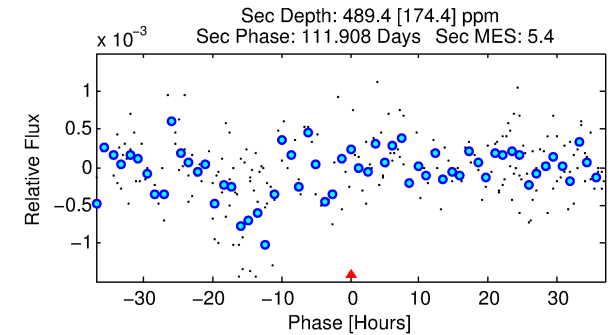
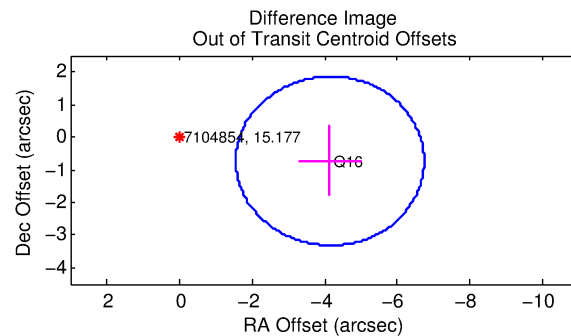
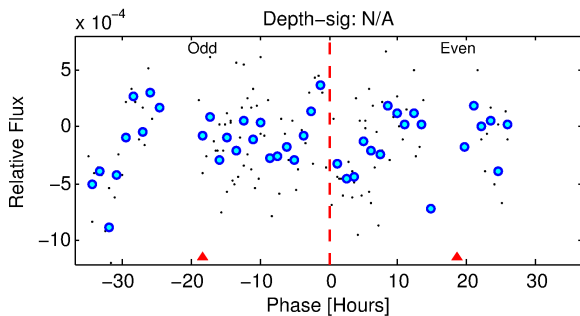
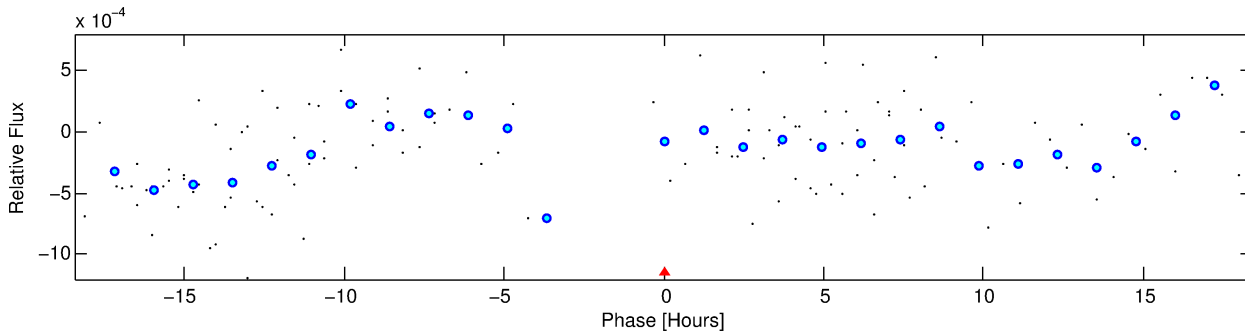
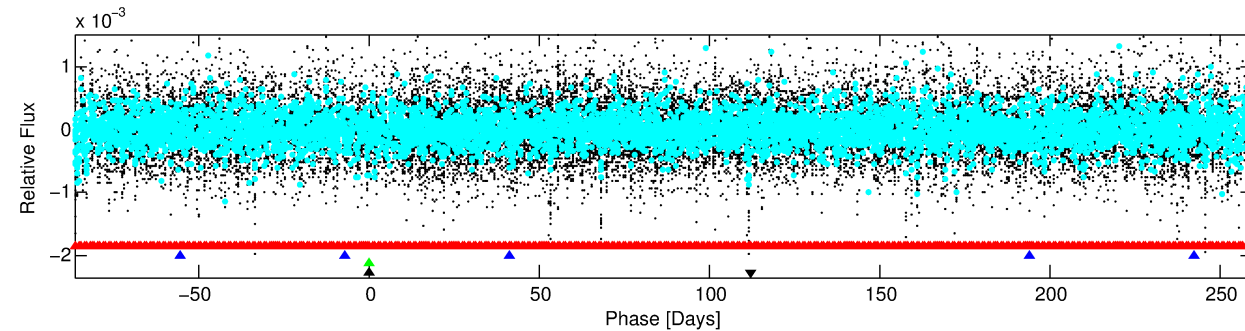
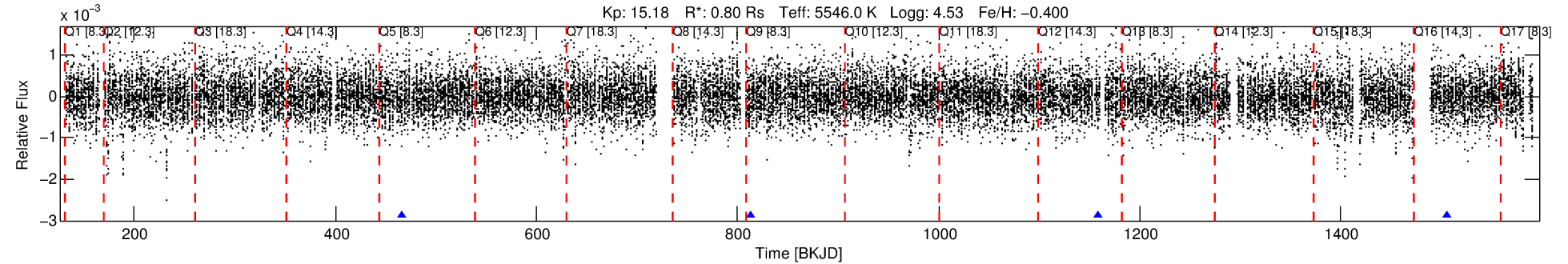
## Ephemeris Match Information For 007104854-04

No Significant Match Found



# DV One-Page Summary

KIC: 7104854 Candidate: 4 of 4 Period: 346.049 d



## TPS TCE Results:

Period = 346.04915 d  
Epoch = 465.9675 BKJD

DV fit results are unavailable

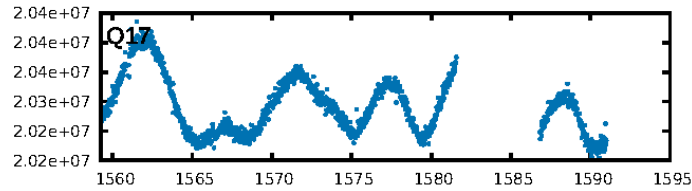
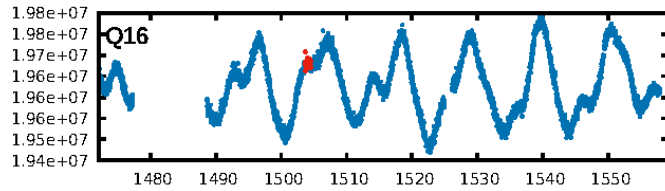
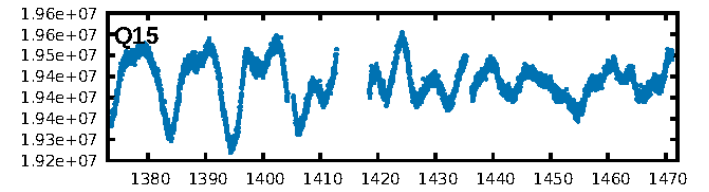
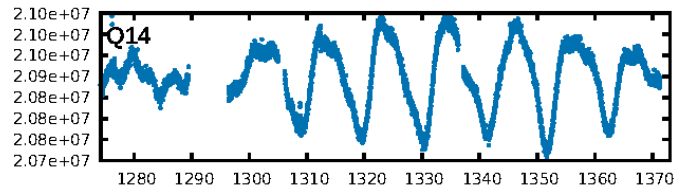
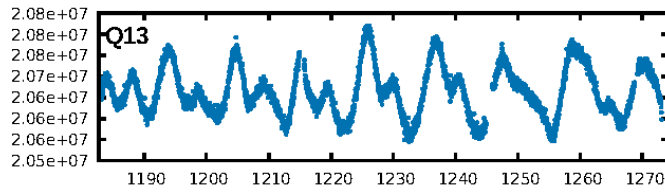
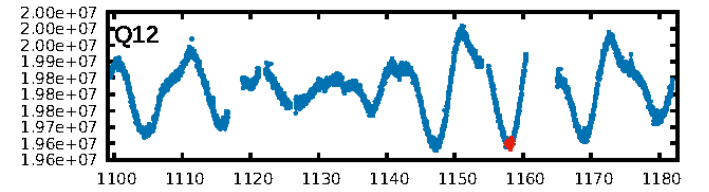
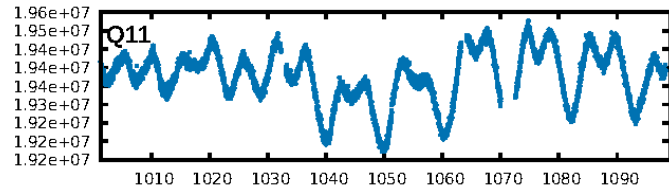
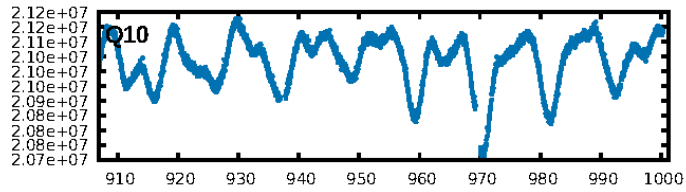
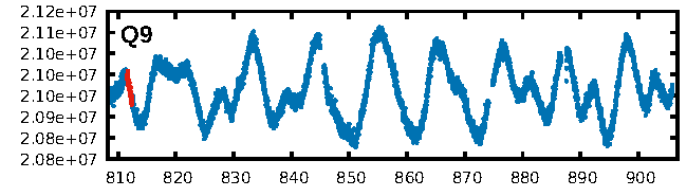
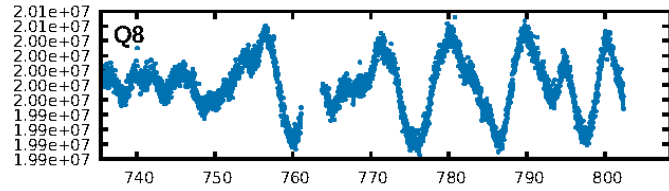
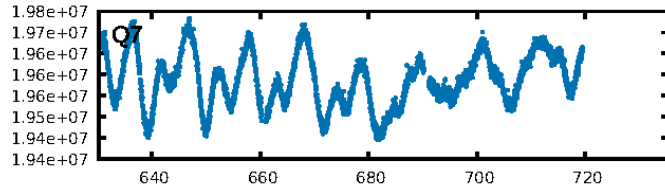
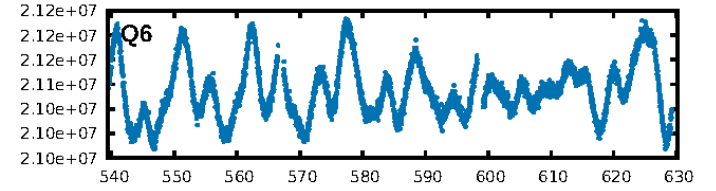
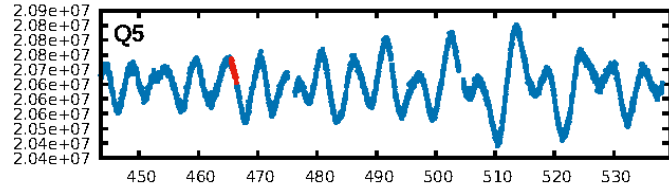
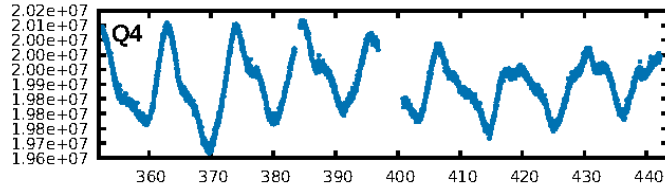
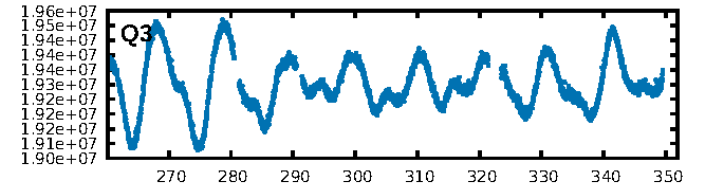
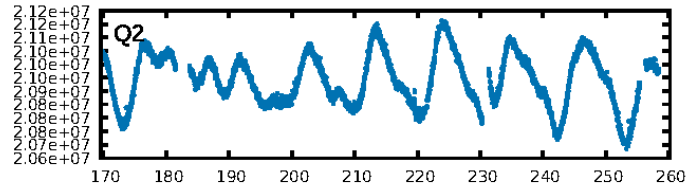
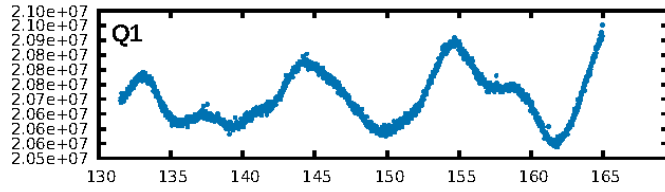
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [98.42 $\sigma$ ]  
LongPeriod-sig: 5.1% [0.06 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.55e-09  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -6.087  
Centroid-sig: 59.5%  
Centroid-so: 1.653 arcsec [0.62 $\sigma$ ]  
OotOffset-rm: 4.211 arcsec [4.88 $\sigma$ ]  
KicOffset-rm: 4.071 arcsec [4.72 $\sigma$ ]  
OotOffset-st: 0/0/1/0 [1]  
KicOffset-st: 0/0/1/0 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 0.00 [0/4]

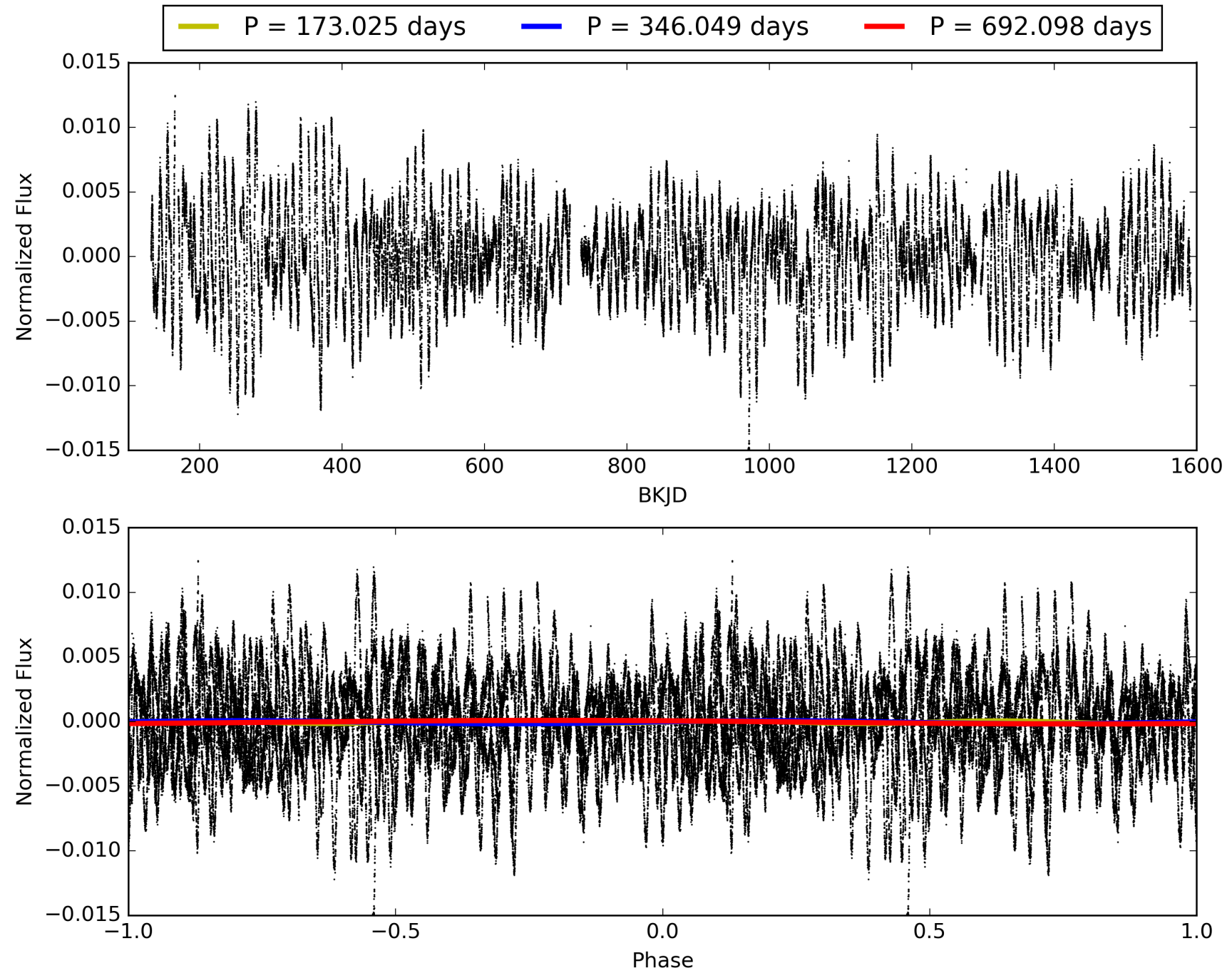
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:30:58 Z

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

# TCE 007104854-04, PDC Light Curves

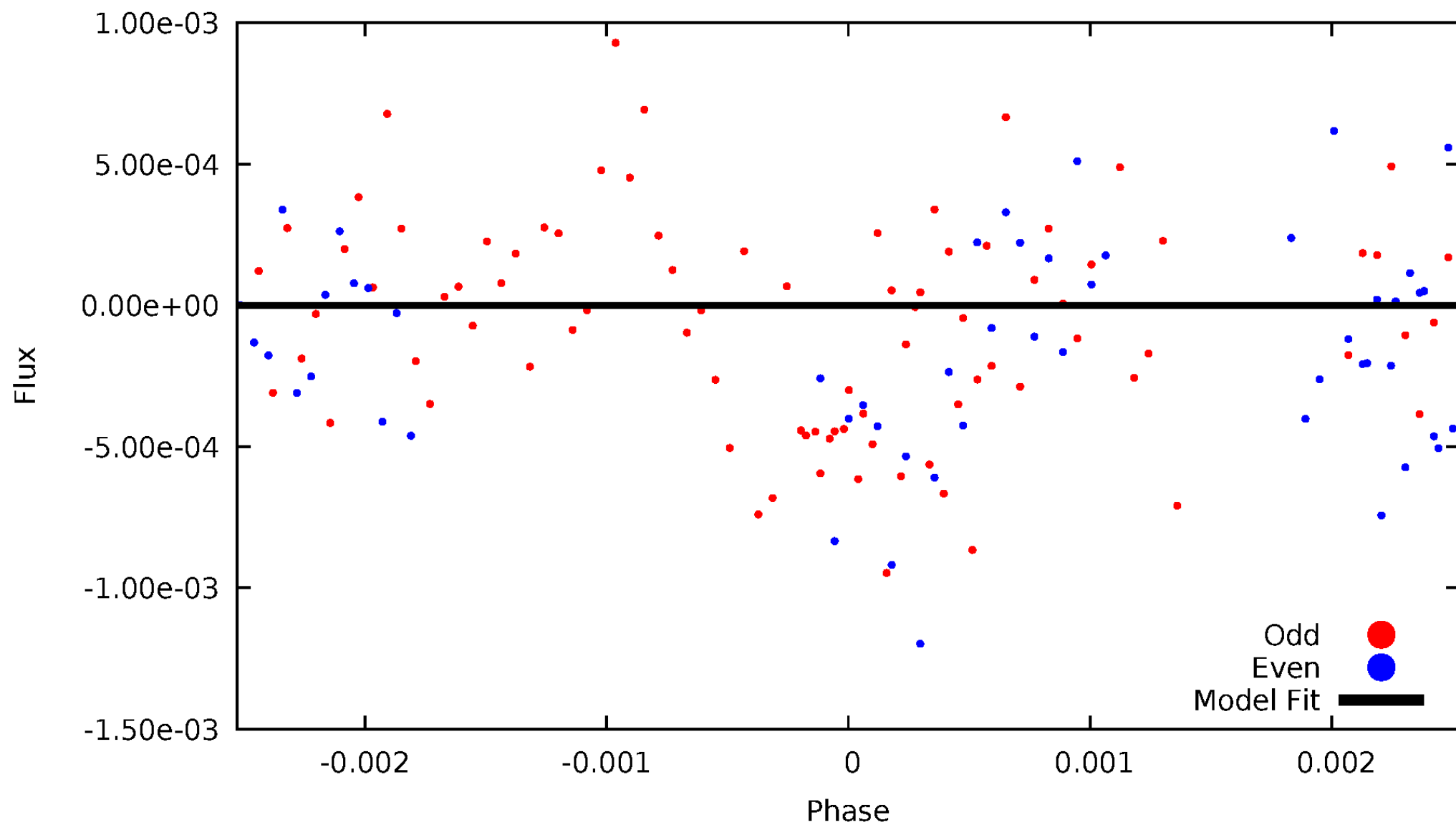


# TCE 007104854-04



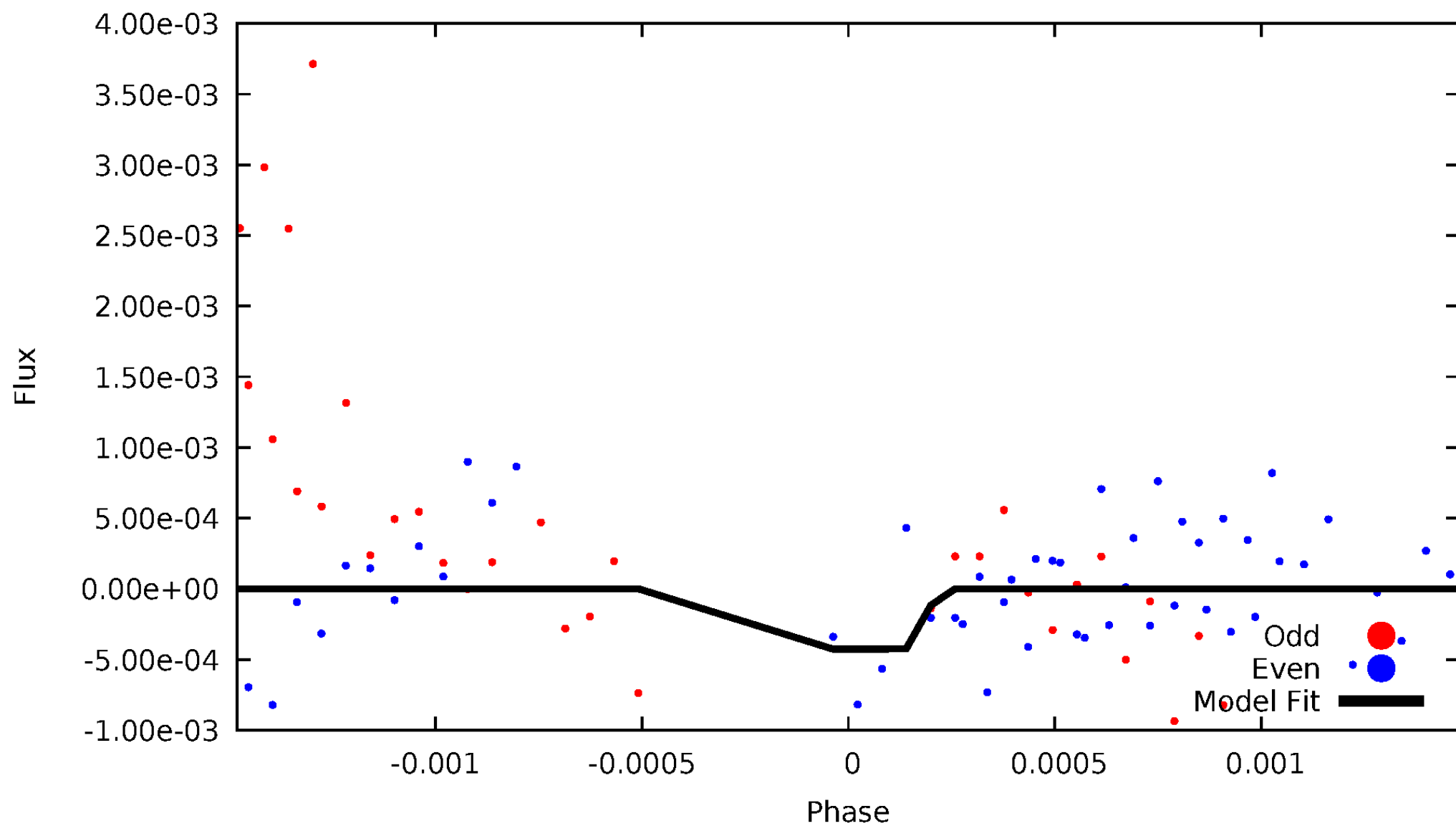
# DV Odd/Even

TCE 007104854-04



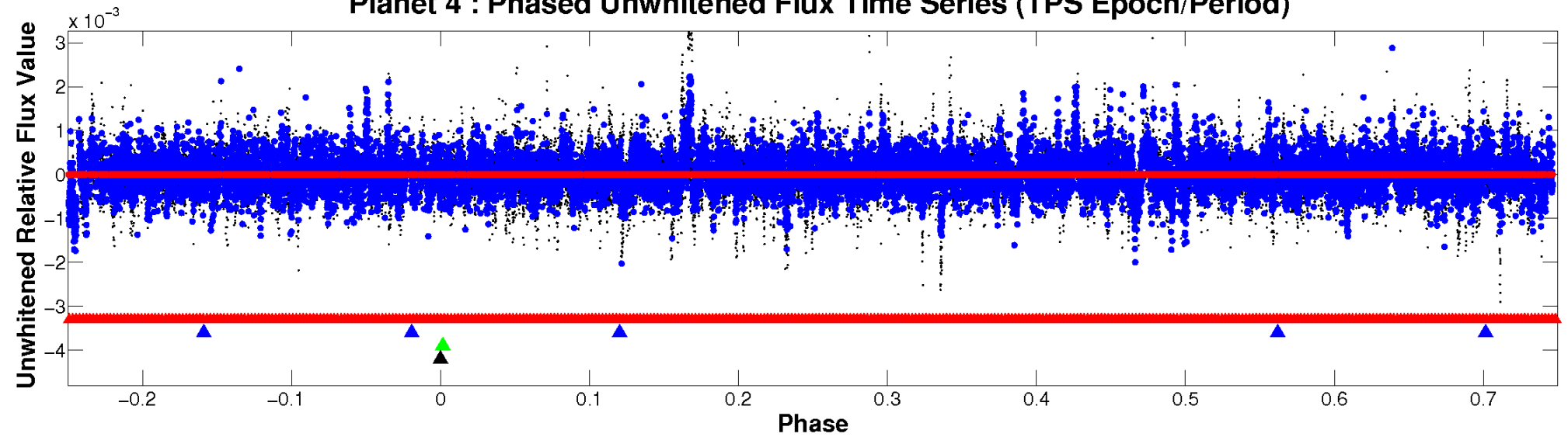
# ALT Odd/Even

TCE 007104854-04

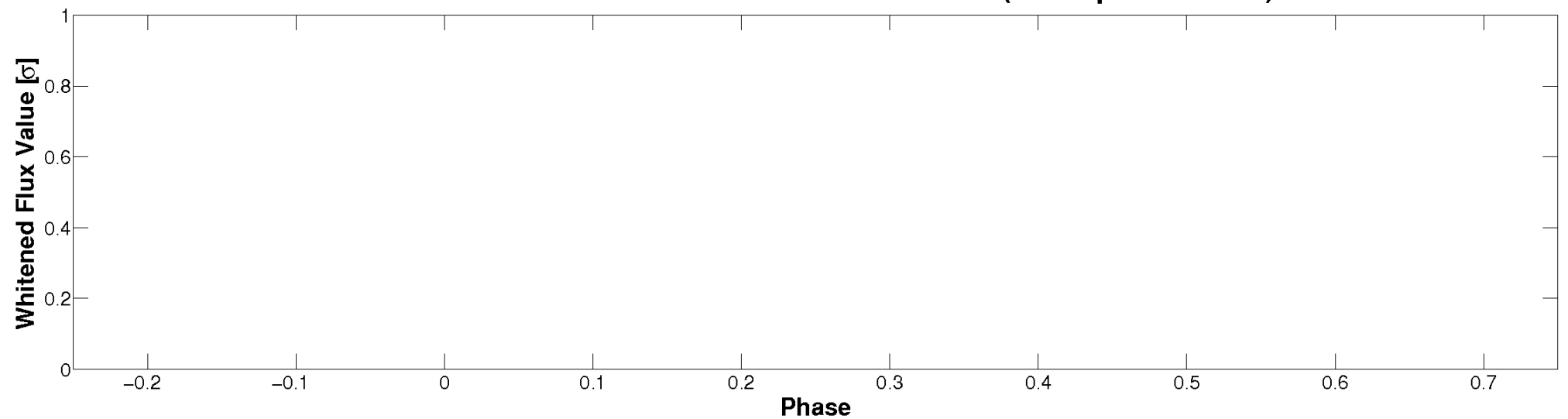


# Non-Whitened Vs. Whitened Light Curve

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

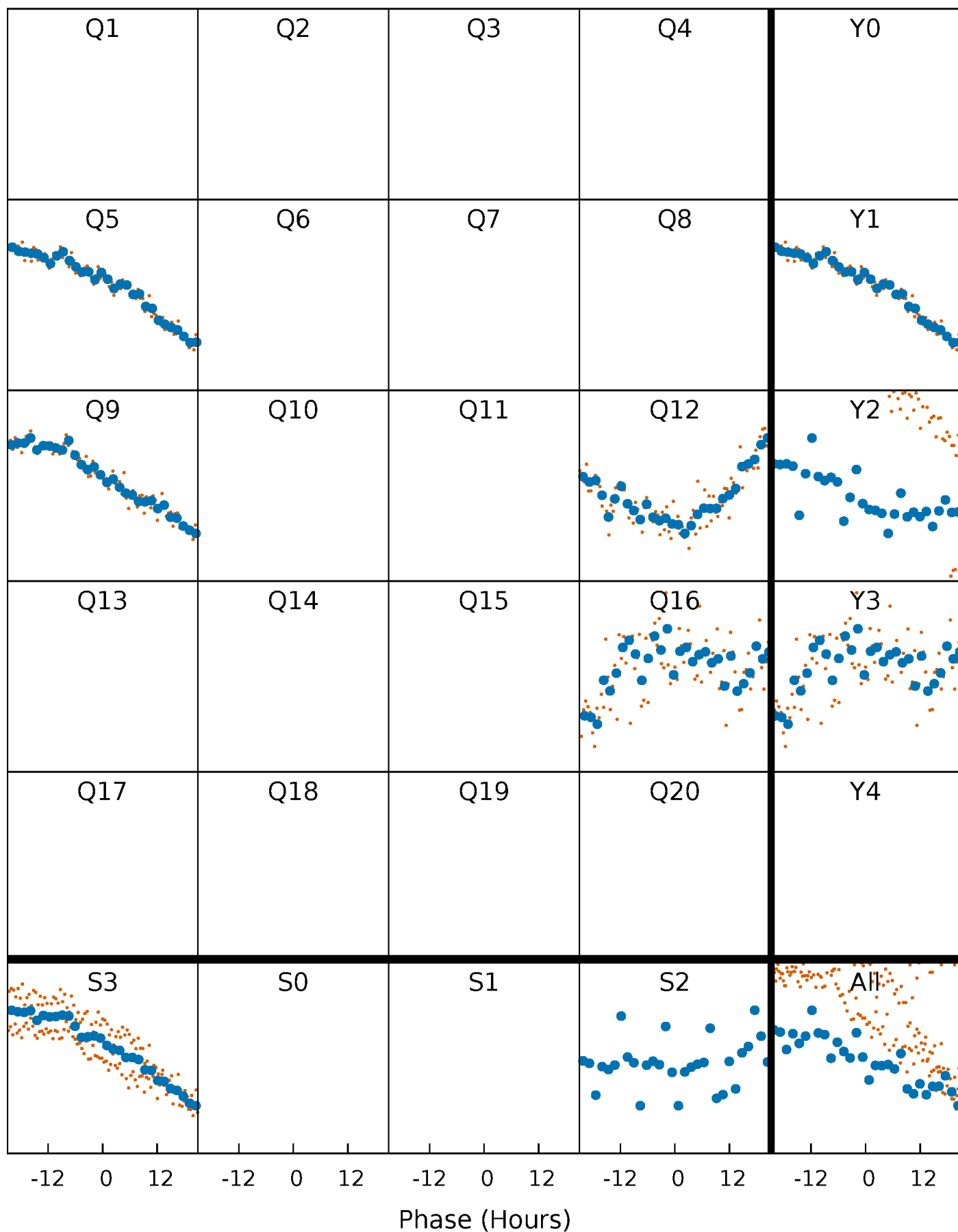


**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

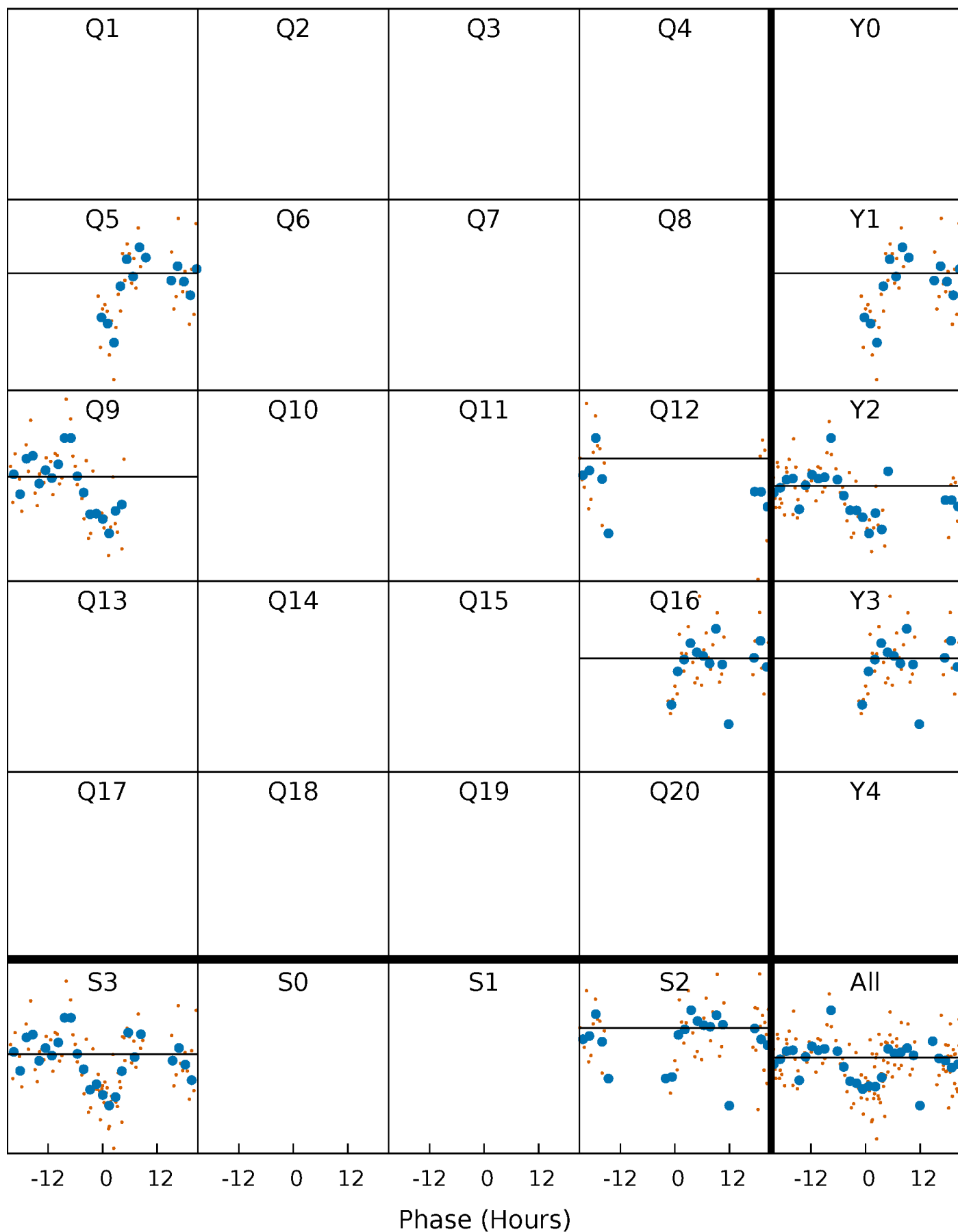
TCE 007104854-04     $P=346.049150$  Days     $T_0=465.967504$  (BKJD)





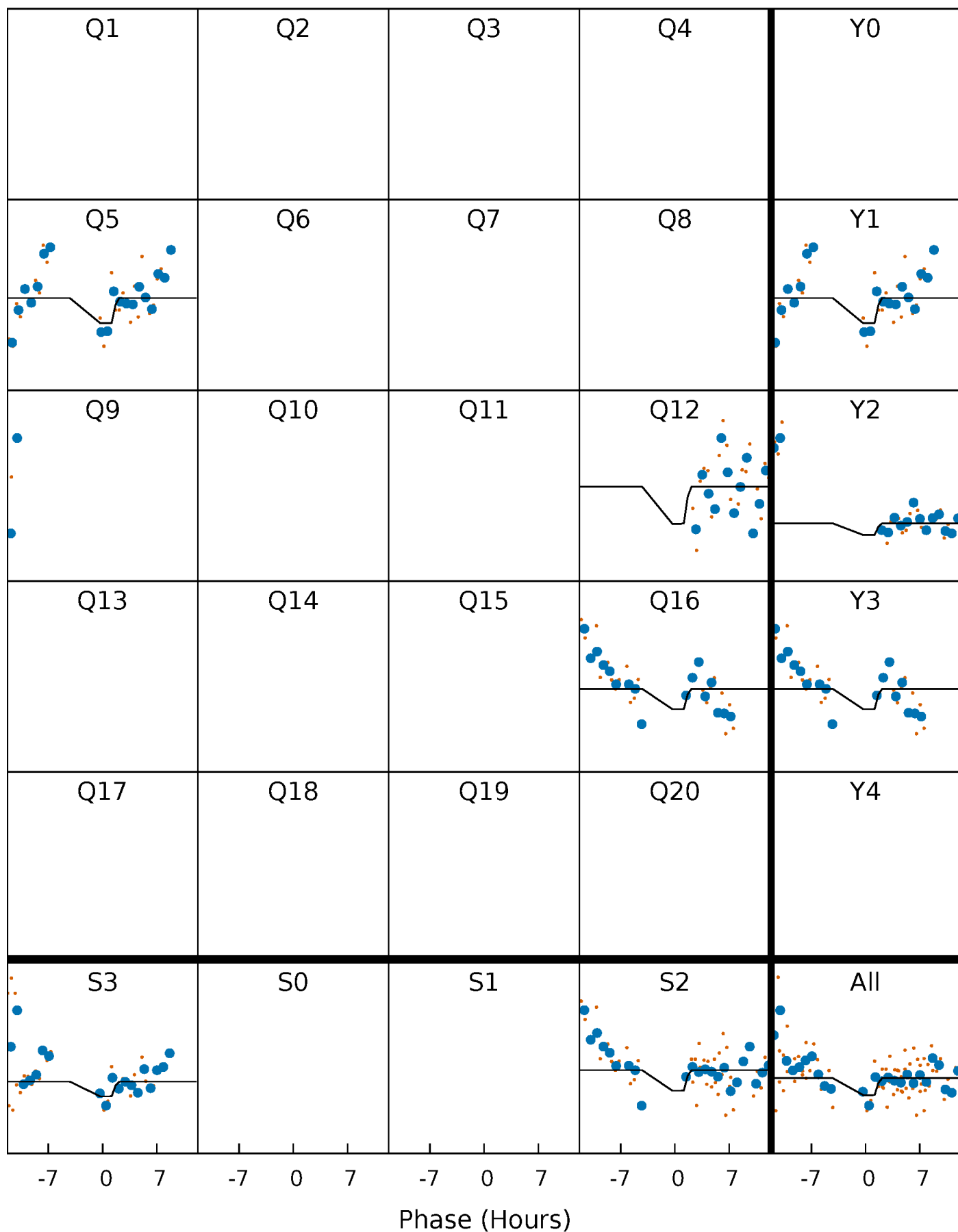
# DV Quarter-Phased Transit Curves

TCE 007104854-04     $P=346.049150$  Days     $T_0=465.967504$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

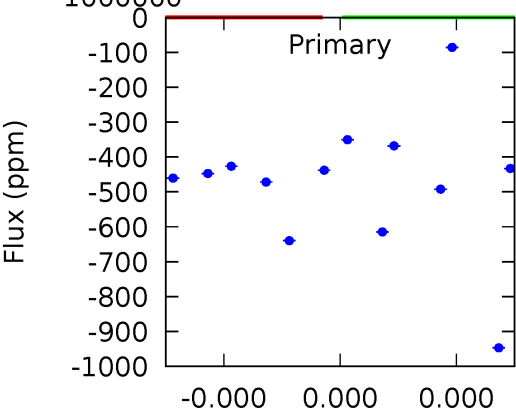
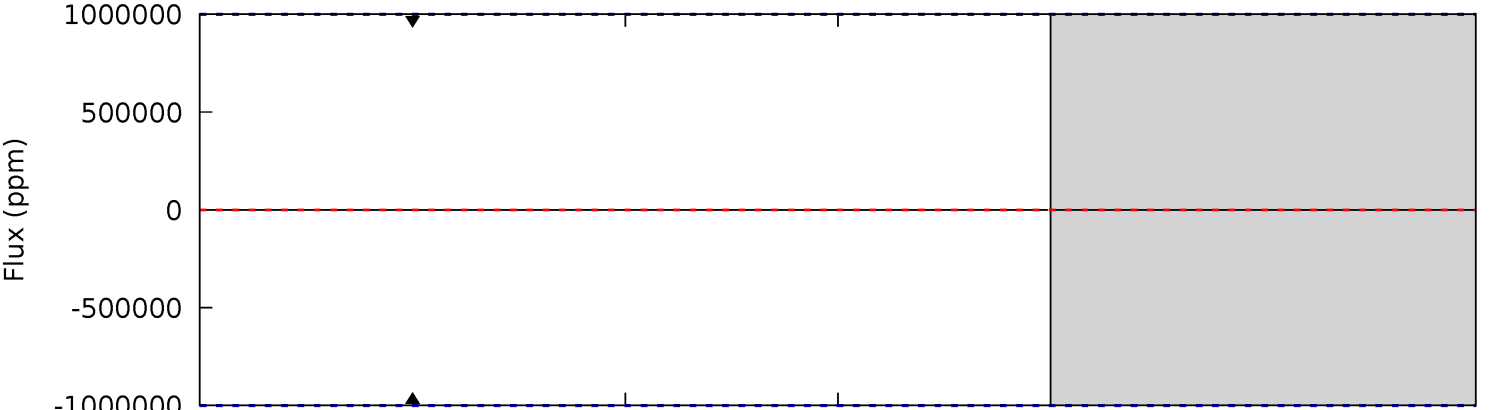
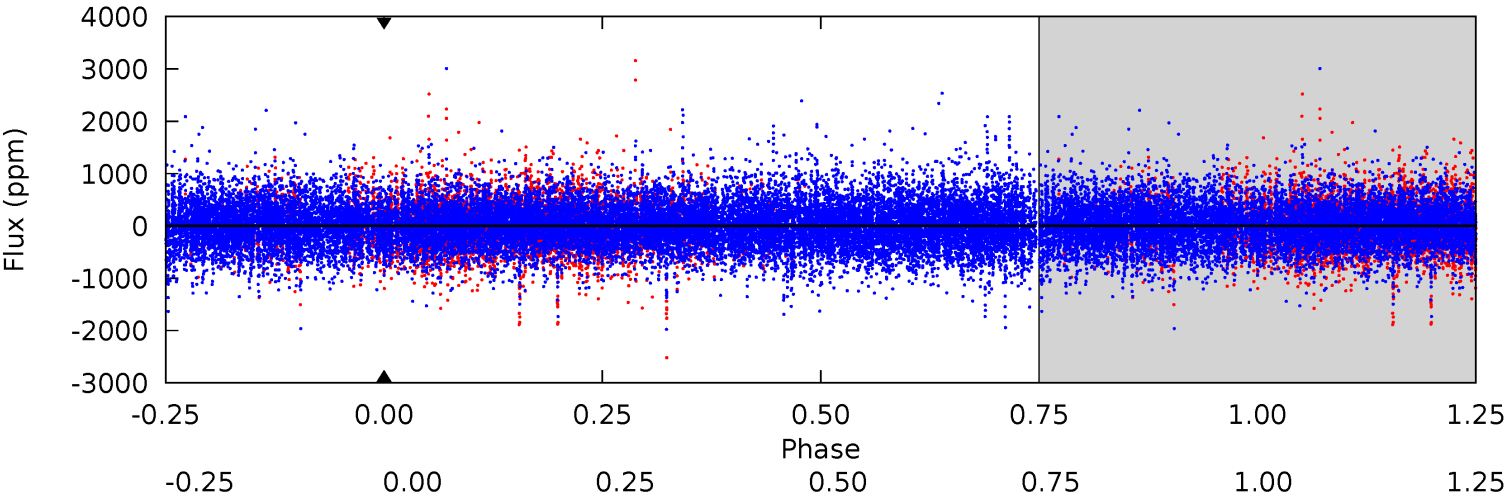
TCE 007104854-04     $P=346.049150$  Days     $T_0=466.614390$  (BKJD)



# DV Model-Shift Uniqueness Test

007104854-04, P = 346.049150 Days, E = 119.918354 Days

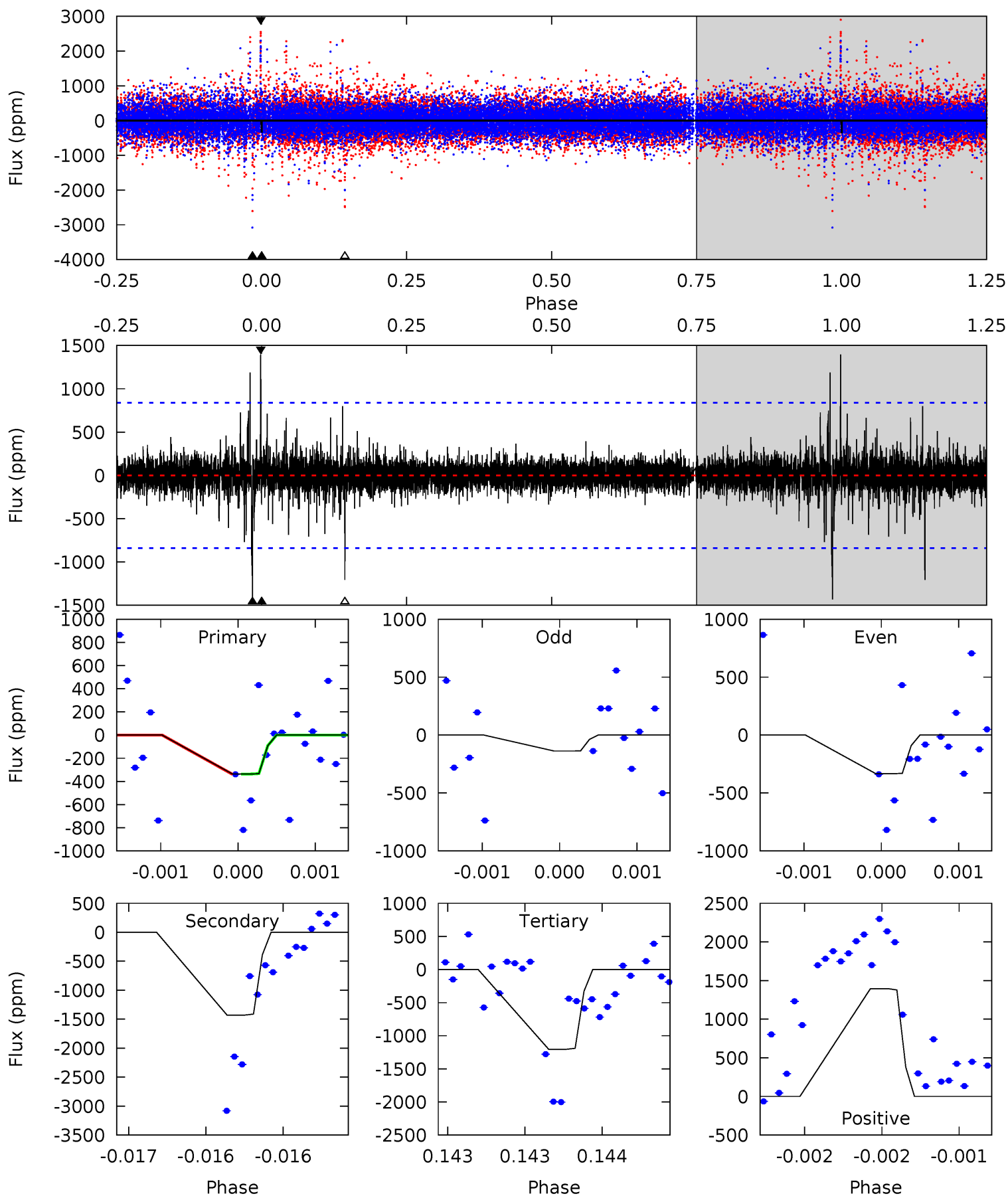
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

007104854-04, P = 346.049150 Days, E = 120.565240 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
2.24	9.48	7.99	9.25	5.57	3.47	0.74	-5.75	-7.02	1.50	0.23	0.46	1.00	0.49	0.01



### Stellar Parameters For KIC 007104854

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5546^{+166}_{-149}$	$4.532^{+0.067}_{-0.124}$	$-0.400^{+0.300}_{-0.300}$	$0.797^{+0.163}_{-0.082}$	$0.788^{+0.105}_{-0.065}$	$2.196^{+0.742}_{-0.774}$
	+3%/-3%	+1%/-3%	+75%/-75%	+20%/-10%	+13%/-8%	+34%/-35%
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 007104854-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$6.75^{+7.50}_{-4.51}$	$326^{+17}_{-14}$	$4991^{+16906}_{-18995}$	$31317^{+2075563}_{-1045075}$
Alt.	$-1430 \pm 151$	$6.80^{+7.19}_{-4.66}$	$327^{+18}_{-14}$	$4147^{+2740}_{-863}$	$13177^{+115429}_{-10046}$

$T_{\text{max}}$  = 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

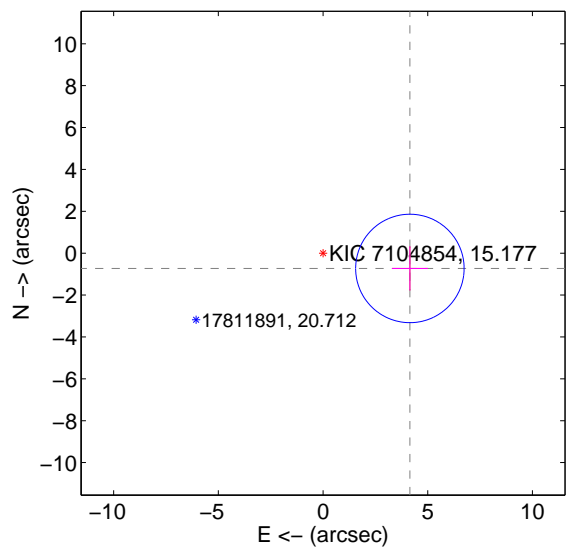
Supplemental centroid analysis for 007104854-04. Kepler magnitude: 15.18. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

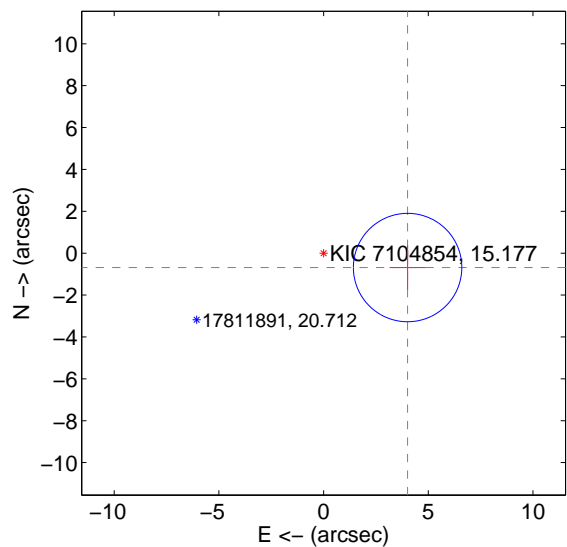
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.211 \pm 0.863$	4.88	$-4.147 \pm 0.857$	$-0.730 \pm 1.053$
PRF-fit source offset from KIC position	$4.071 \pm 0.863$	4.72	$-4.012 \pm 0.857$	$-0.686 \pm 1.053$
photometric centroid source offset	$1.65 \pm 2.66$	0.62	$-1.65 \pm 2.66$	$0.14 \pm 2.81$

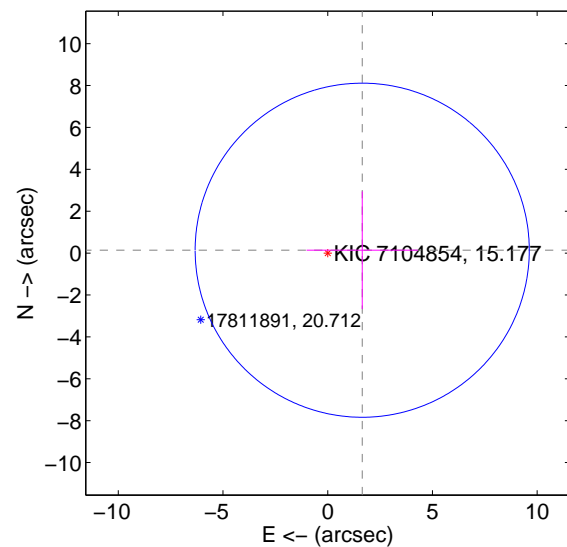
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

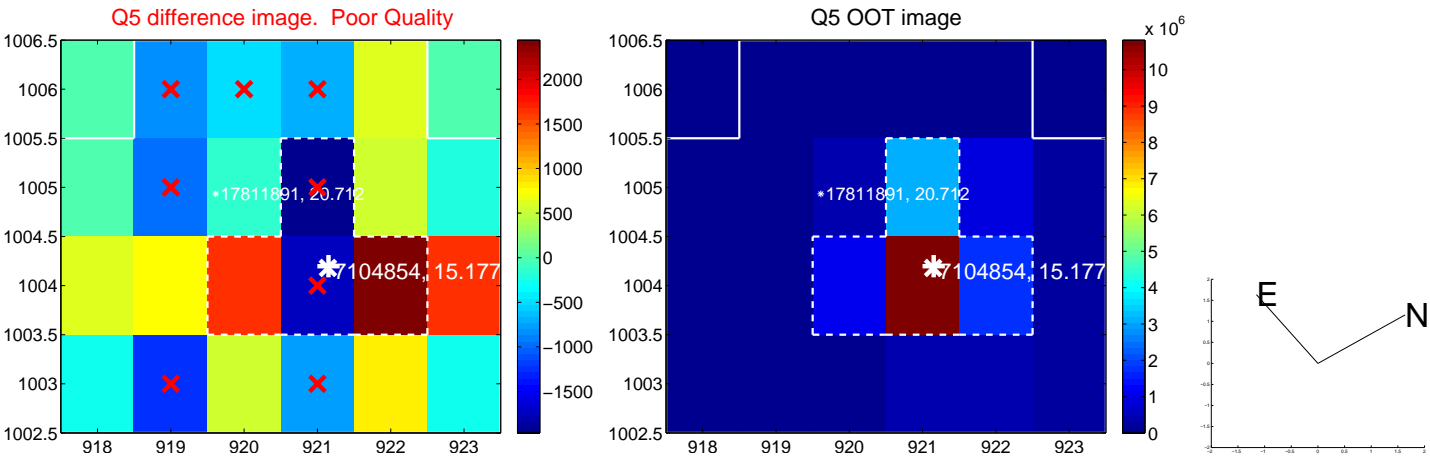


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

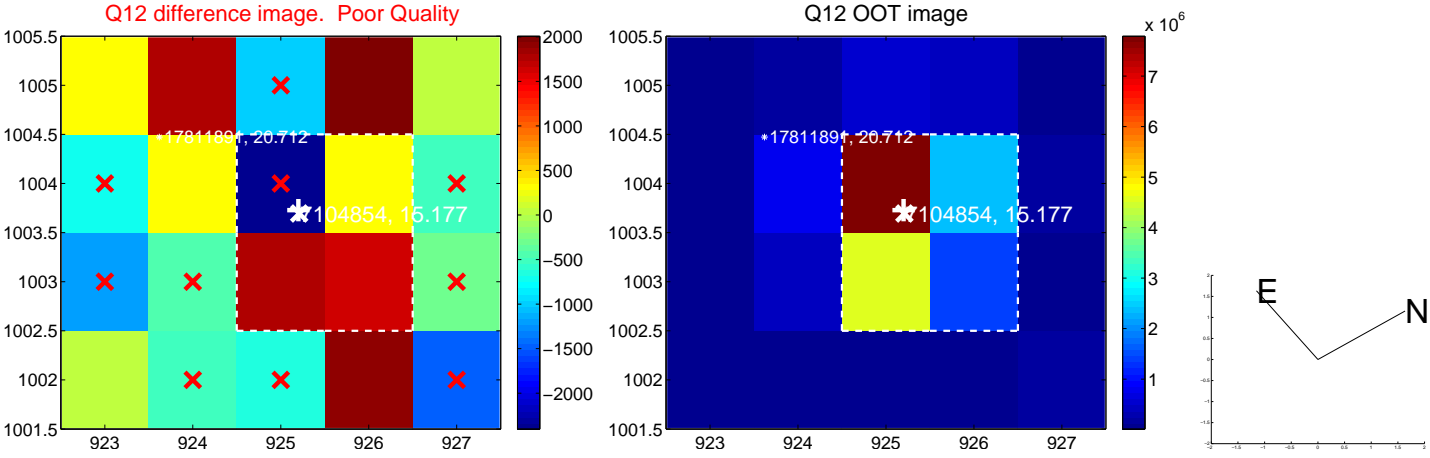
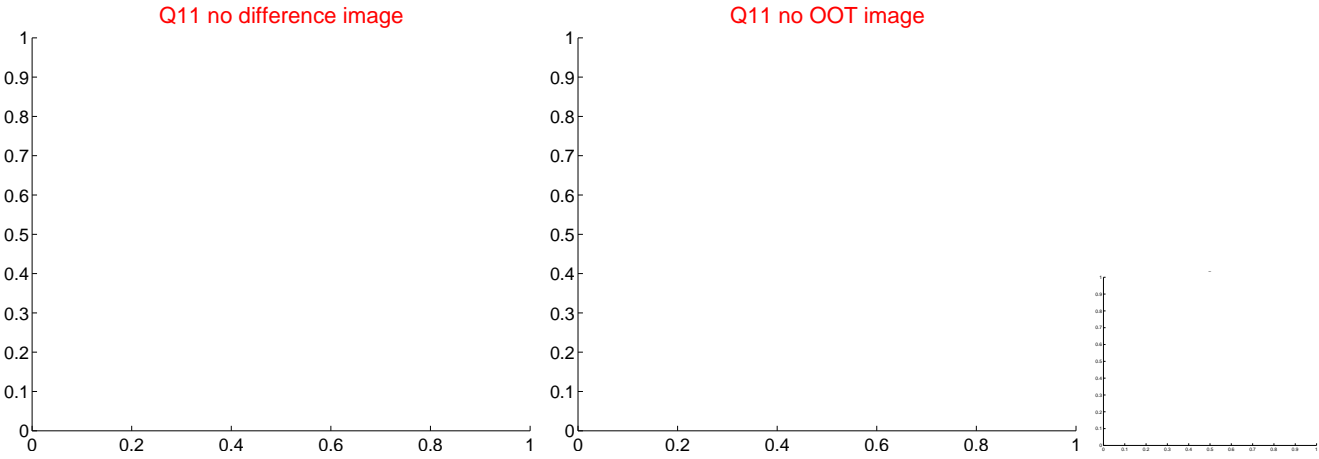
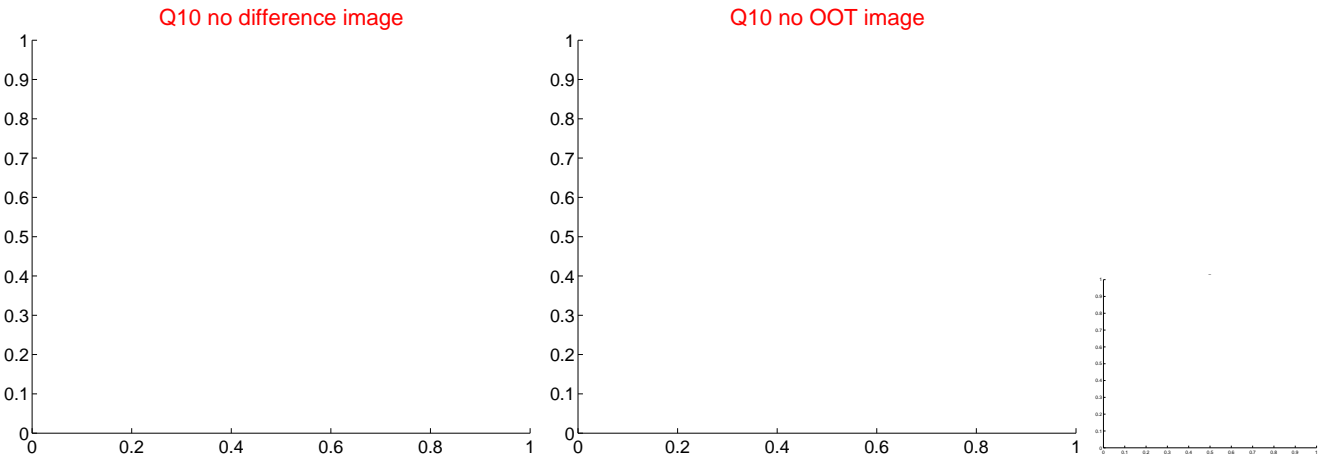
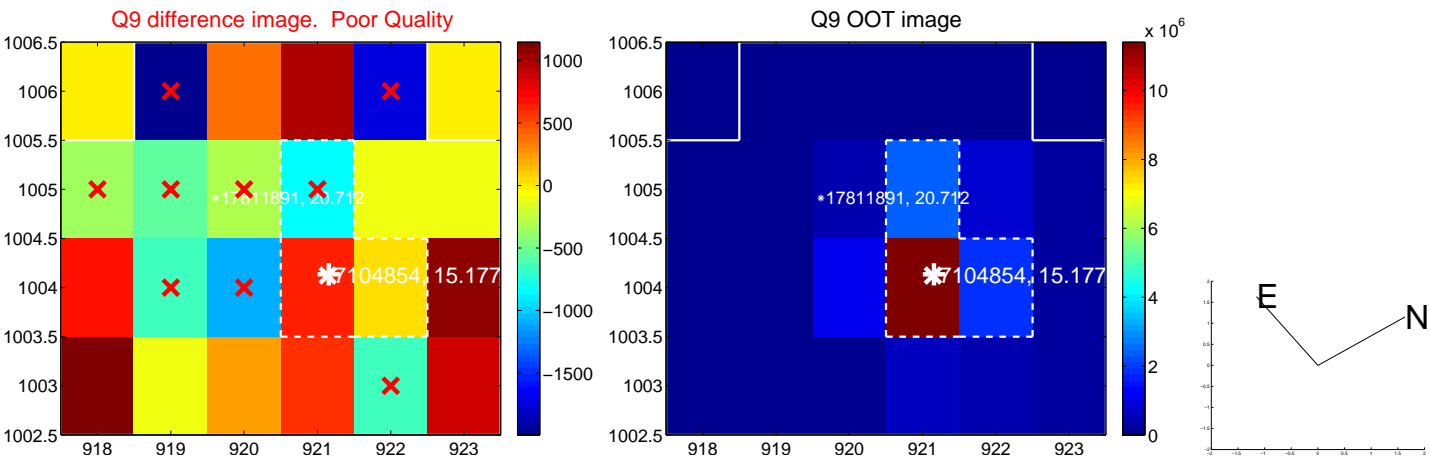


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.





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



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

Q13 no difference image



Q13 no OOT image



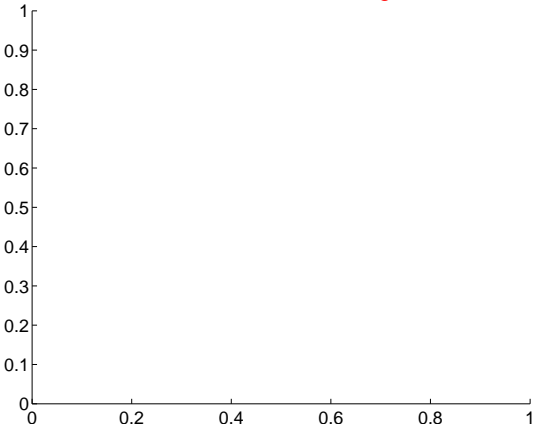
Q14 no difference image



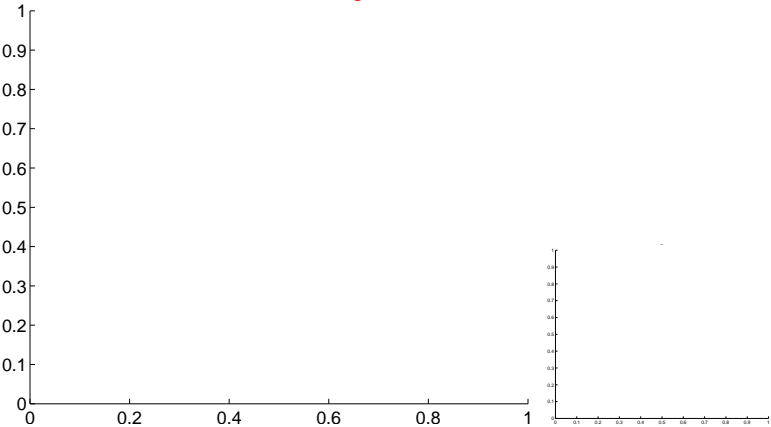
Q14 no OOT image



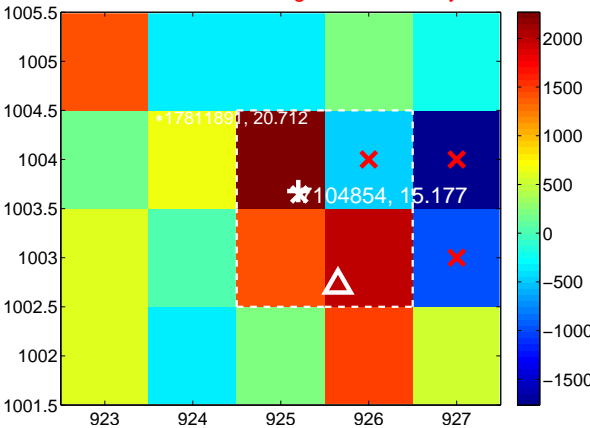
Q15 no difference image



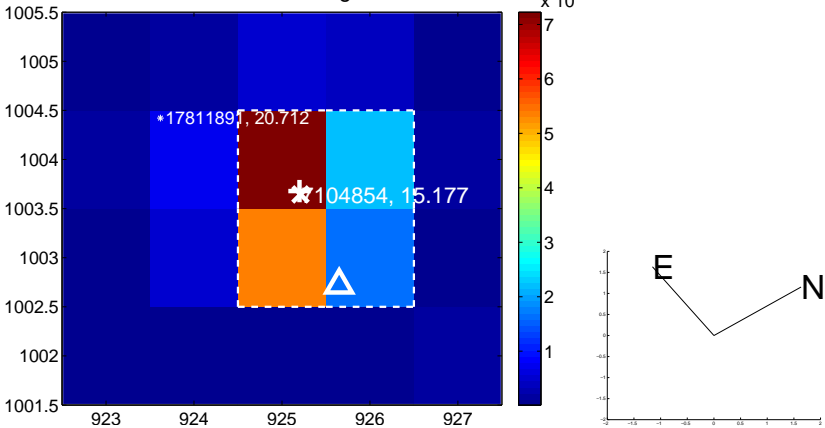
Q15 no OOT image



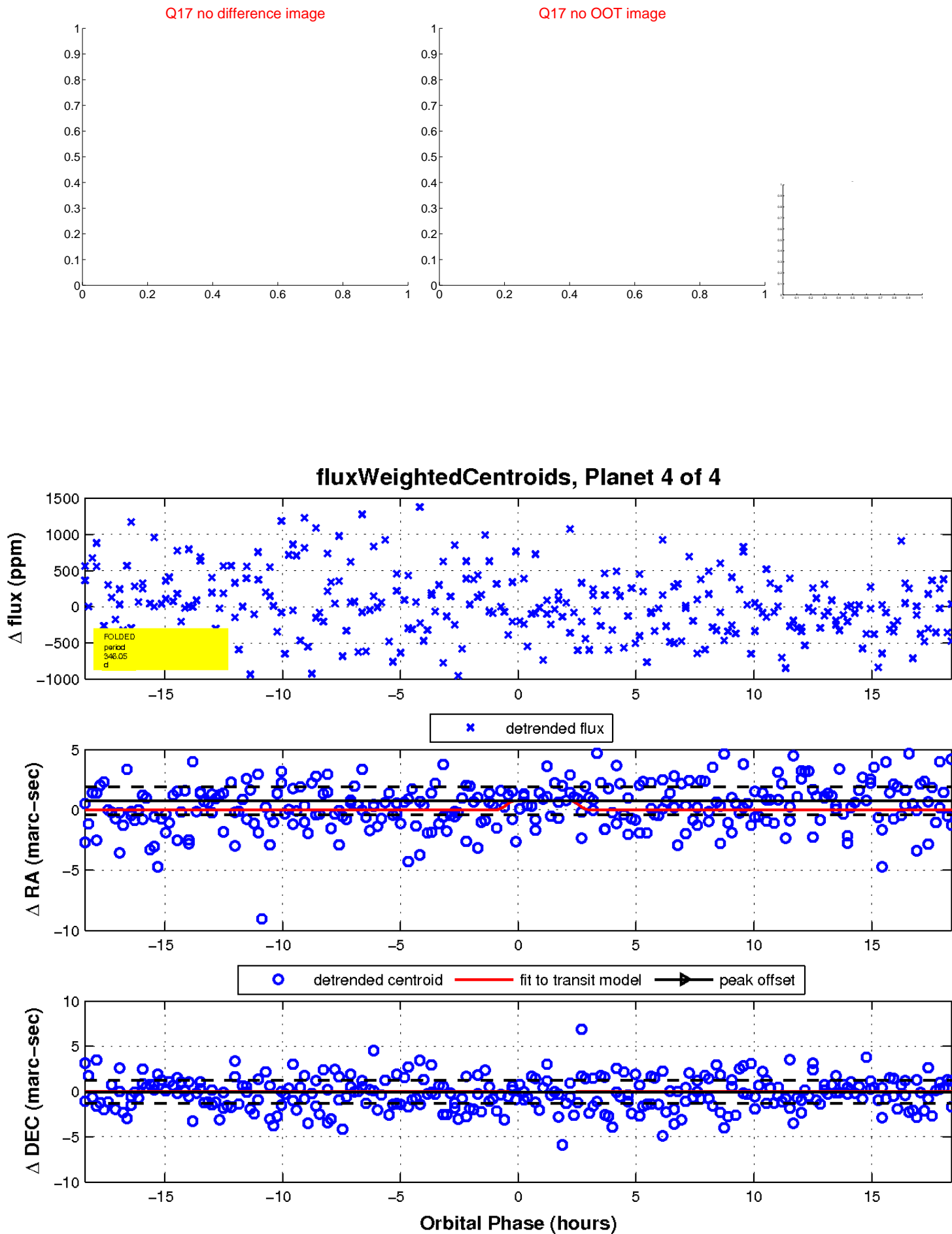
Q16 difference image. Poor Quality



Q16 OOT image



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



UKIRT Image

Declination

