

# KIC 007446835

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007446835-01	OBS	No	0.665312	131.604464	26.4	2.801	10.7	10.6	0.94	5620	0.58	4153.88
007446835-02	OBS	No	516.924337	518.509150	1728.7	8.874	16.8	8.8	0.94	5620	4.18	0.58
007446835-03	OBS	No	103.604968	190.389829	183.0	4.207	14.0	3.3	0.94	5620	1.49	4.96
007446835-04	OBS	No	310.189912	268.907487	158.4	3.896	10.2	1.7	0.94	5620	1.41	1.15
007446835-05	OBS	No	151.446877	220.609254	489.3	15.350	9.6	3.8	0.94	5620	2.67	2.99
007446835-06	OBS	No	93.995704	202.923269	368.4	9.747	8.9	5.1	0.94	5620	2.14	5.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007446835-01	OBS	FP	0.00	1	0	0	0	LPP_DV
007446835-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007446835-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—HALO_GHOST
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007446835-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS
007446835-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES

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

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

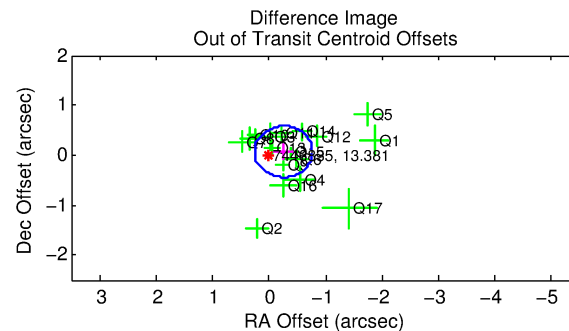
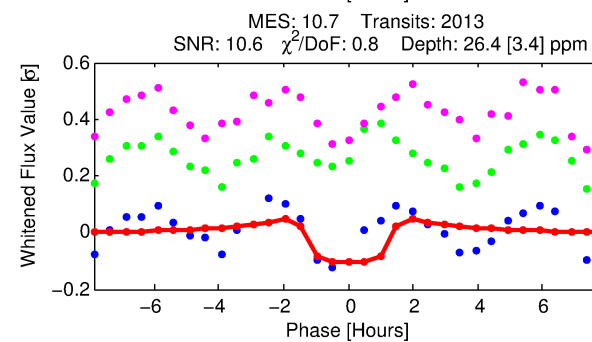
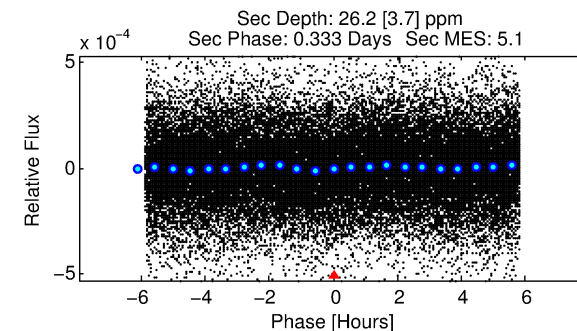
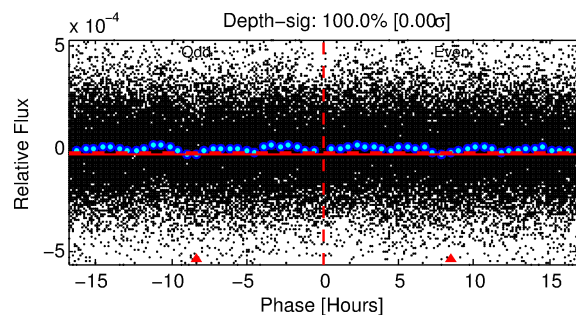
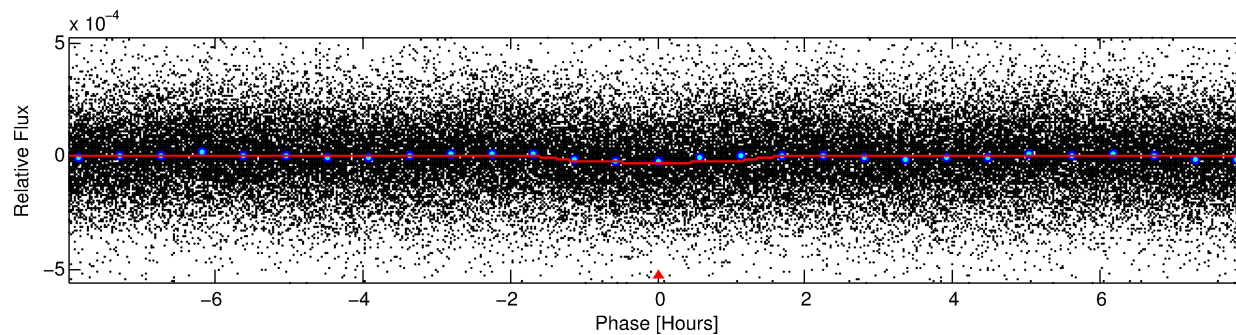
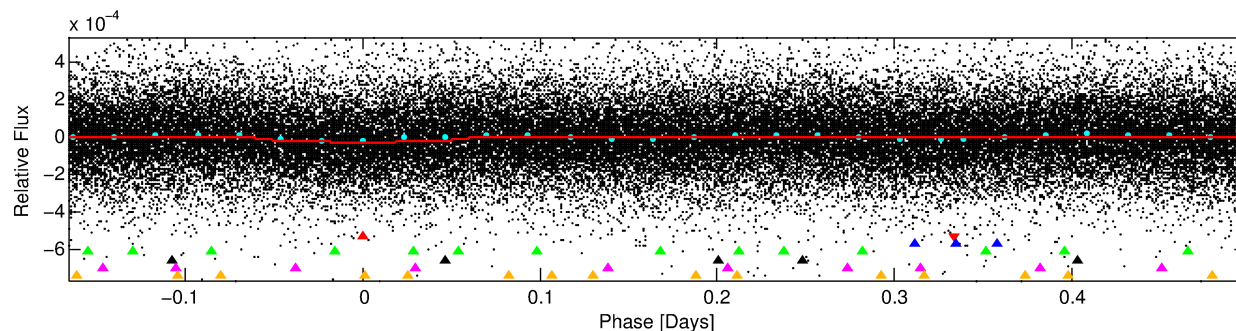
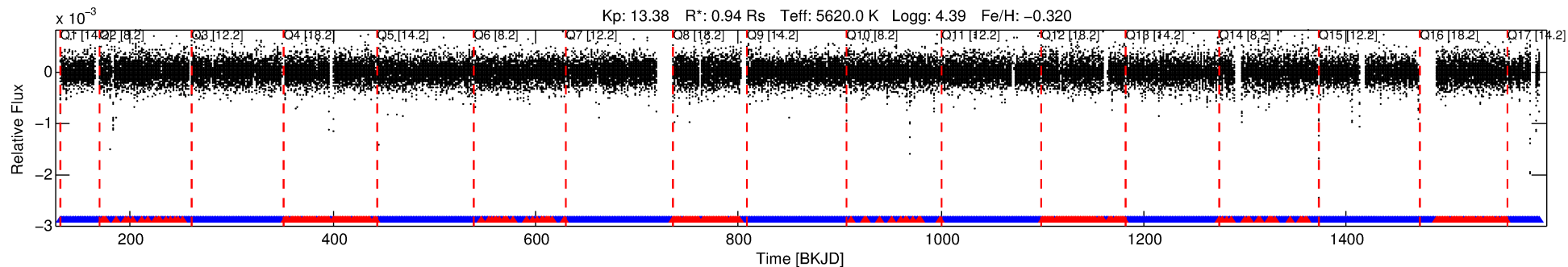
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007446835-01

No Significant Match Found

# DV One-Page Summary

KIC: 7446835 Candidate: 1 of 6 Period: 0.665 d



## DV Fit Results:

Period = 0.66531 [0.00001] d  
Epoch = 131.6045 [0.0022] BKJD  
Rp/R\* = 0.0056 [0.0018]  
a/R\* = 1.24 [0.69]  
b = 0.90 [0.34]  
Seff = 4153.87 [1530.50]  
Teq = 2047 [189] K  
Rp = 0.58 [0.24] Re  
a = 0.0138 [0.0032] AU  
Ag = 8.29 [6.29] [1.16σ]  
Teffp = 5371 [913] K [3.56σ]

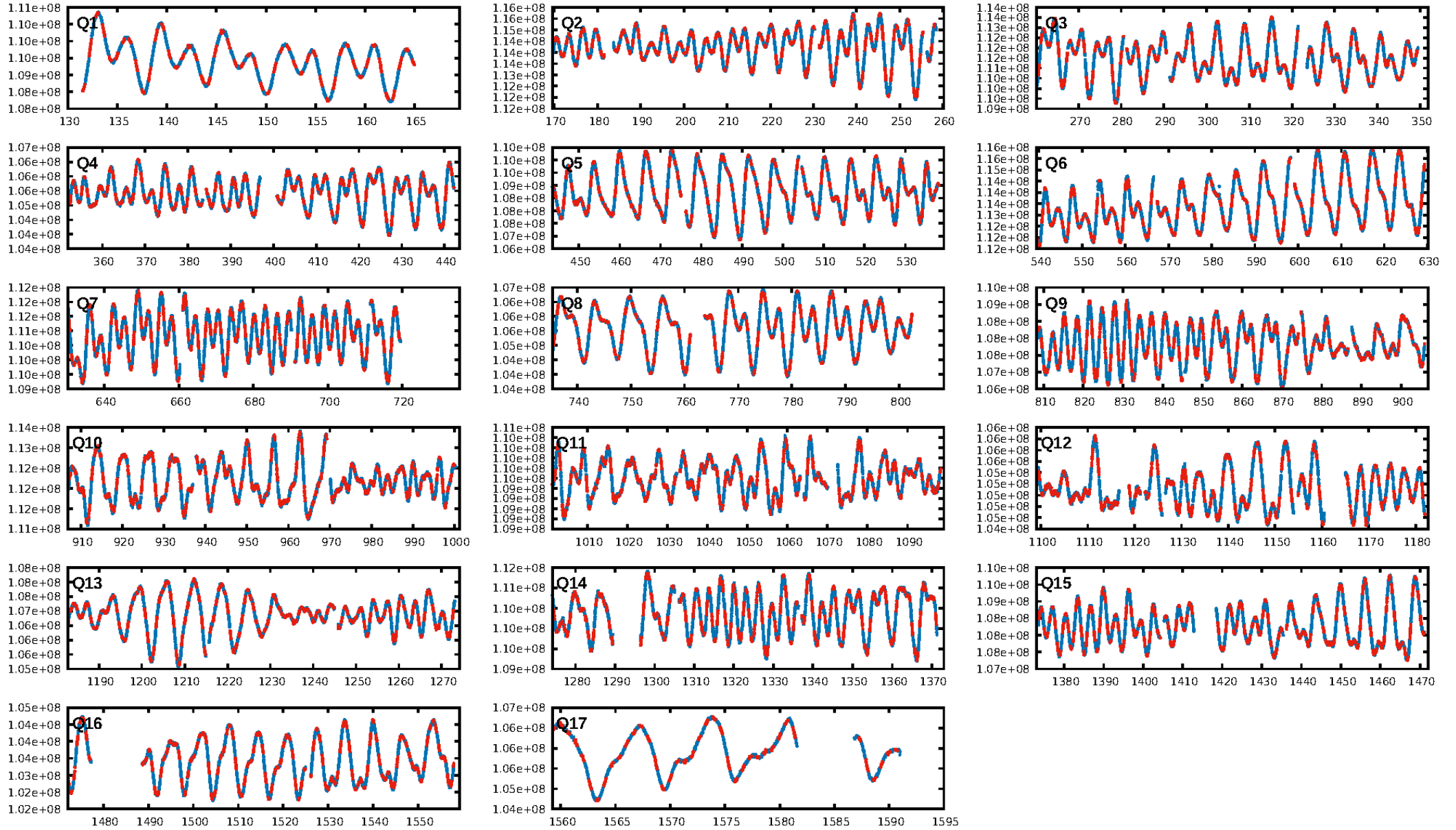
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [220.87σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.37e-28  
RollingBand-fgt: 0.81 [1566/1922]  
GhostDiagnostic-chr: 3.479  
Centroid-sig: 0.0%  
Centroid-so: 1.606 arcsec [2.14σ]  
OotOffset-rm: 0.266 arcsec [1.56σ]  
KicOffset-rm: 0.193 arcsec [1.08σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

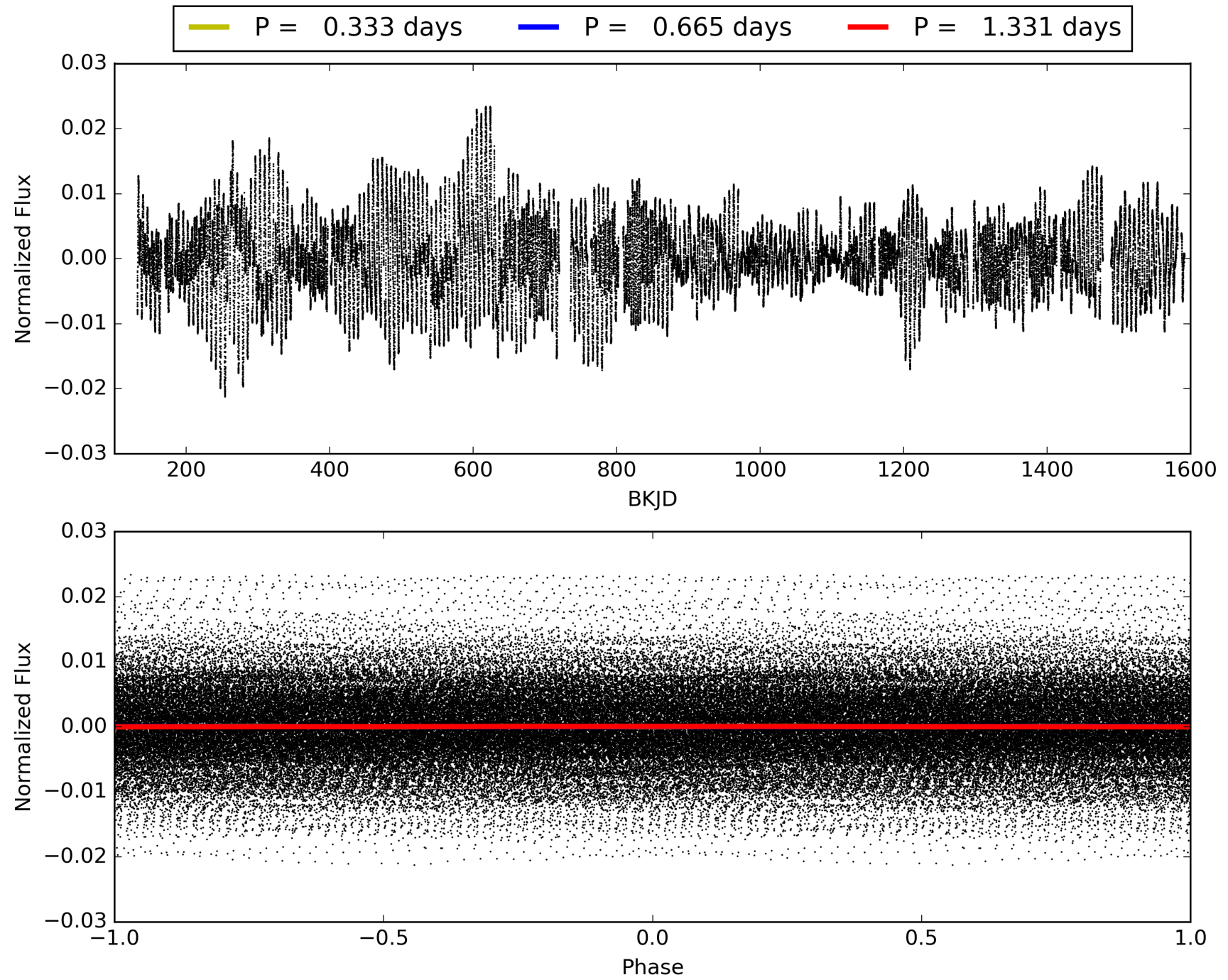
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:57:00 Z

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

# TCE 007446835-01, PDC Light Curves

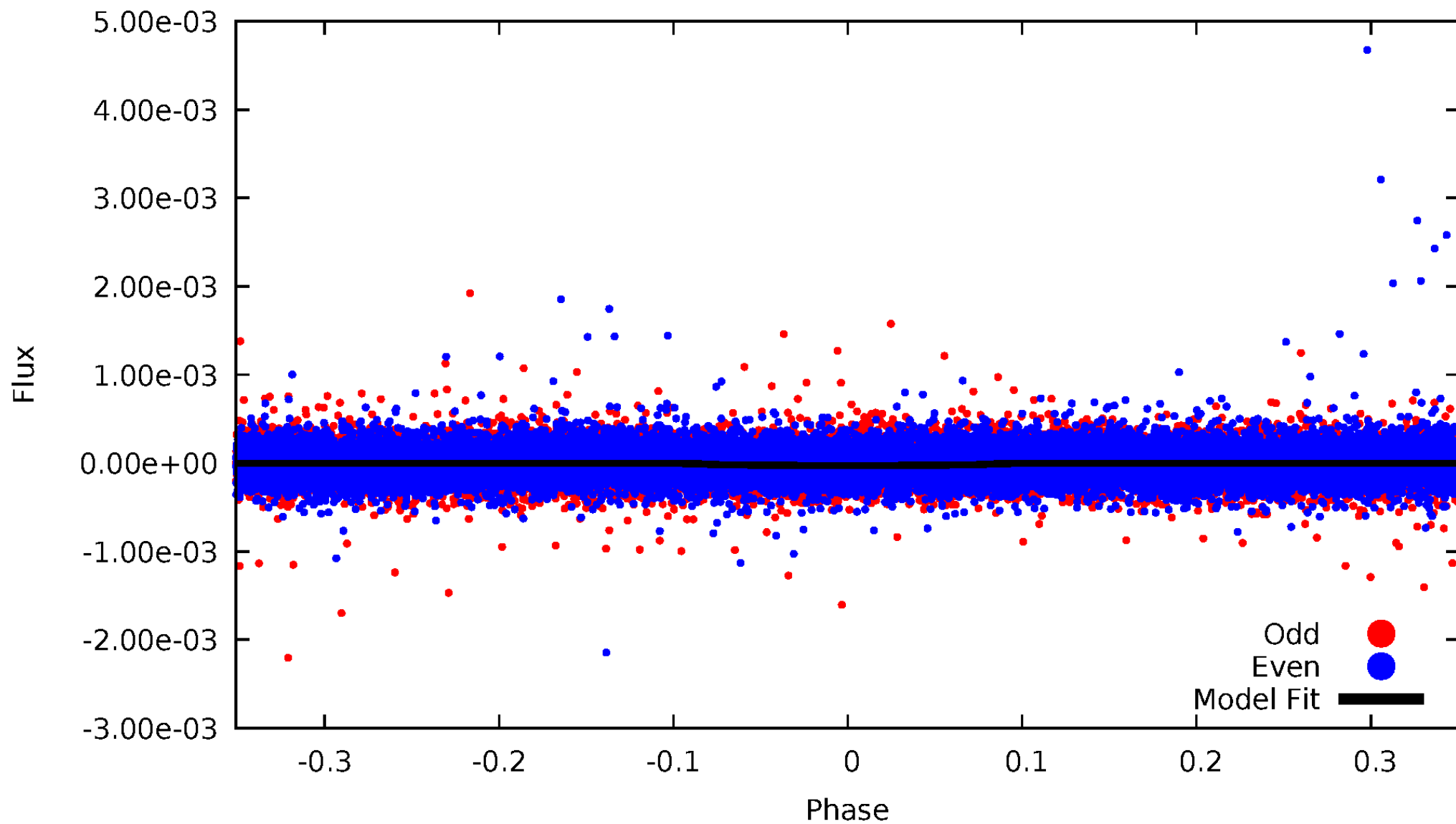


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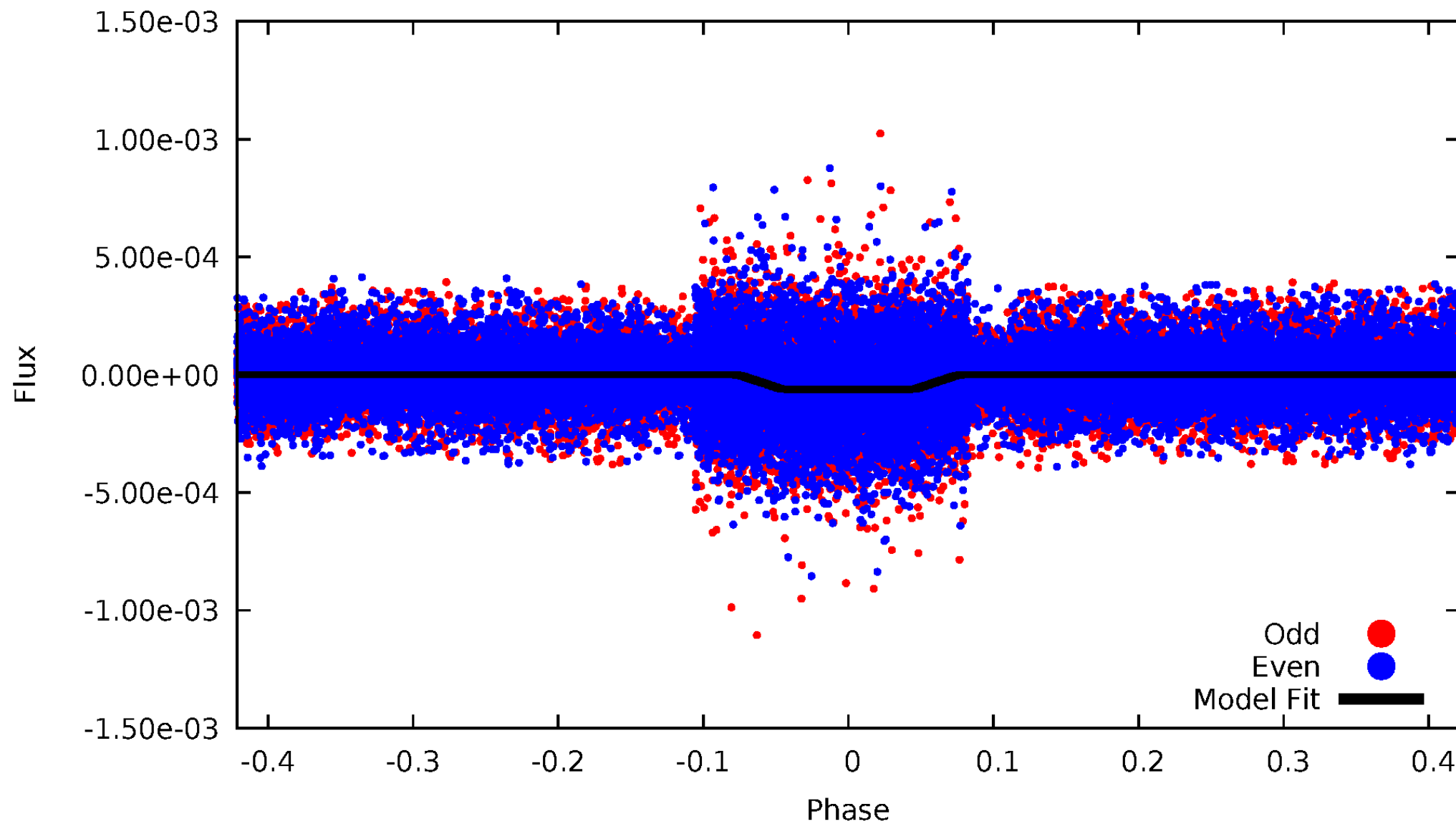
# DV Odd/Even

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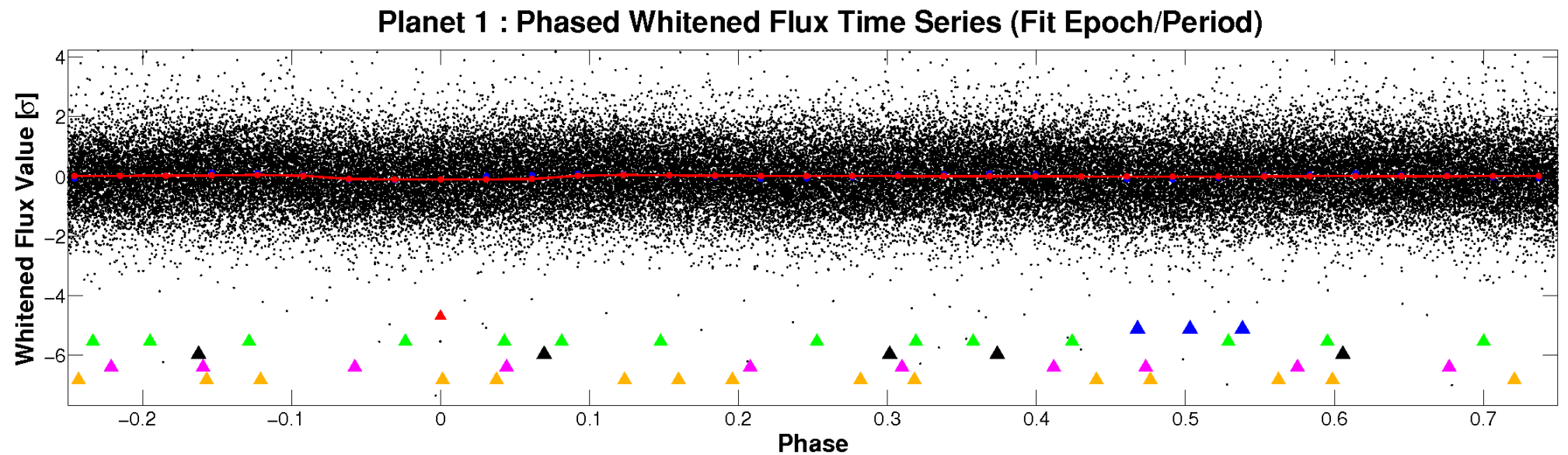
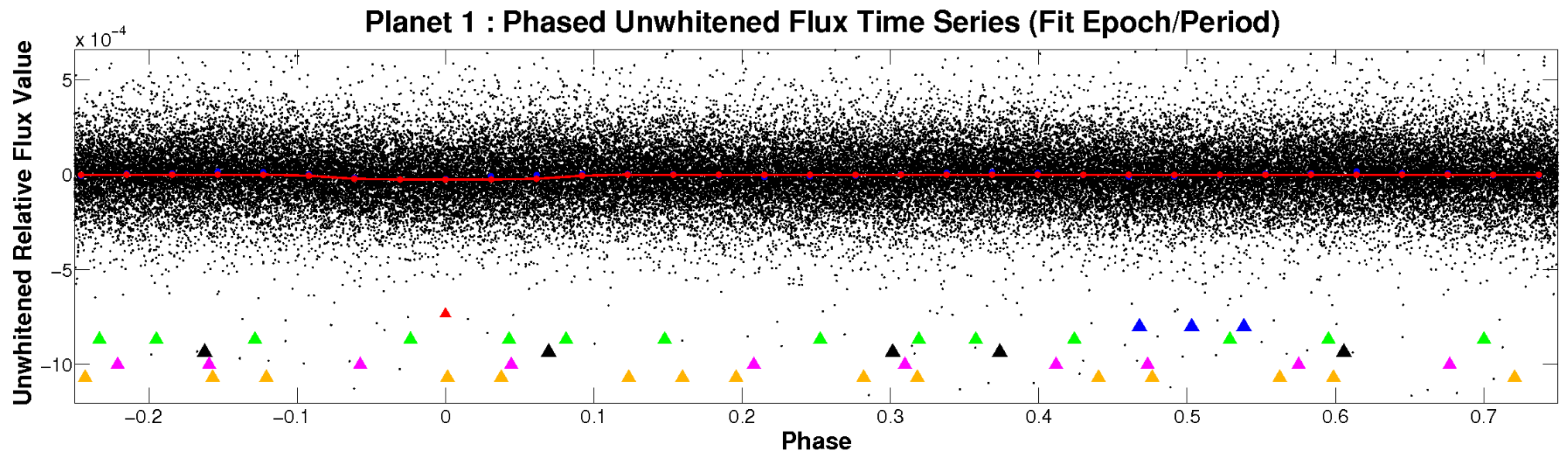


# ALT Odd/Even

TCE 007446835-01

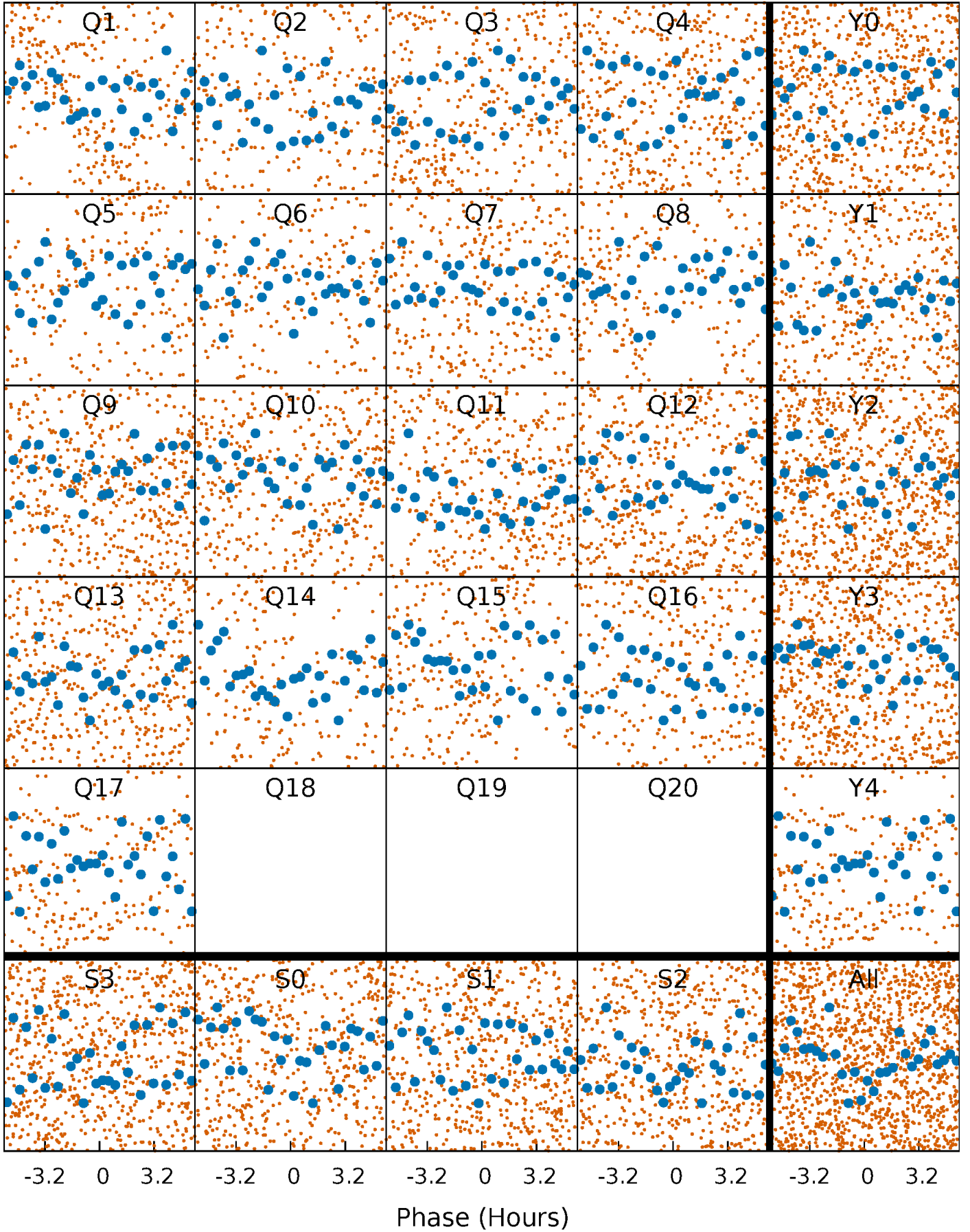


# Non-Whitened Vs. Whitened Light Curve



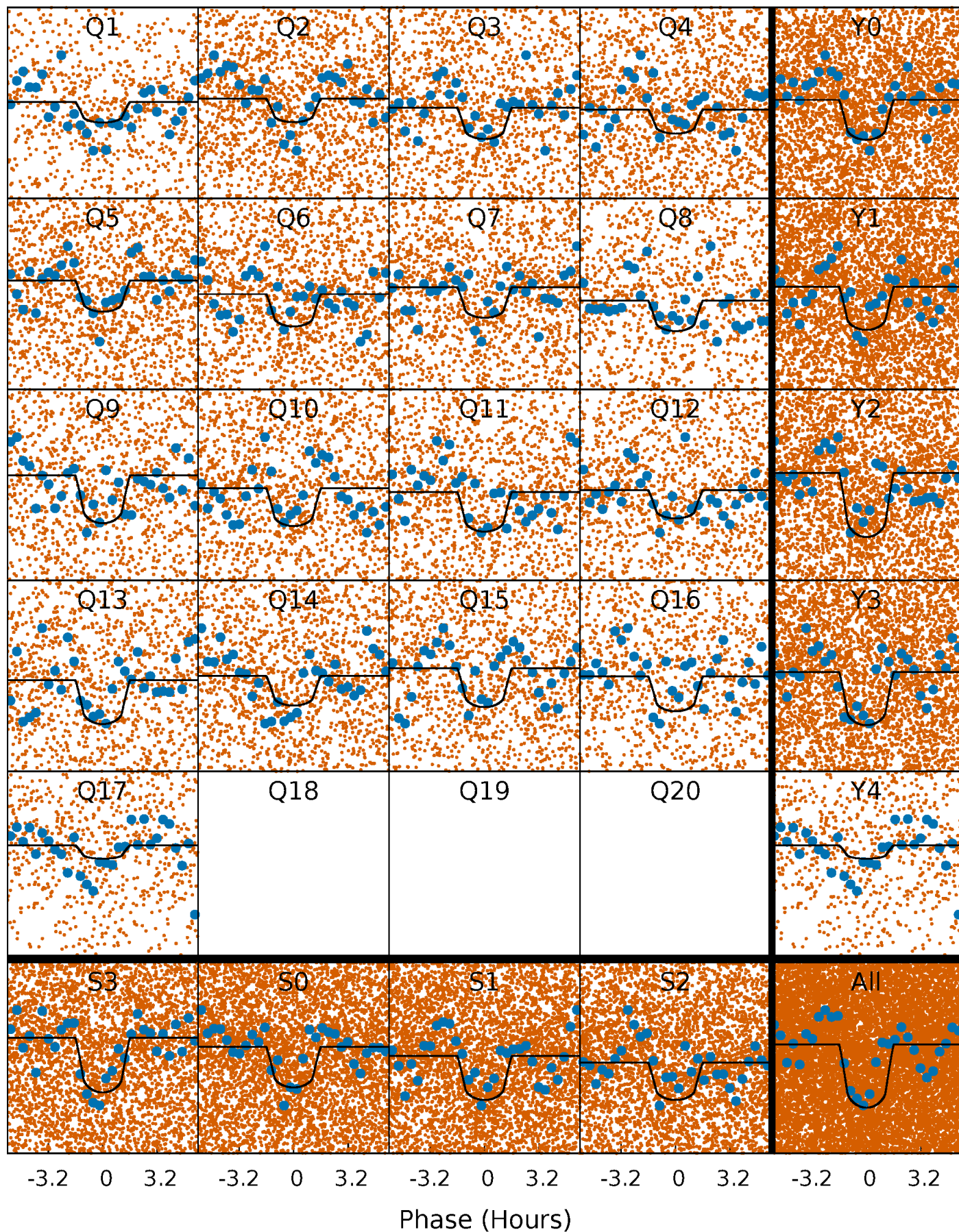
# PDC Quarter-Phased Transit Curves

TCE 007446835-01 P= 0.665312 Days  $T_0=131.604464$  (BKJD)



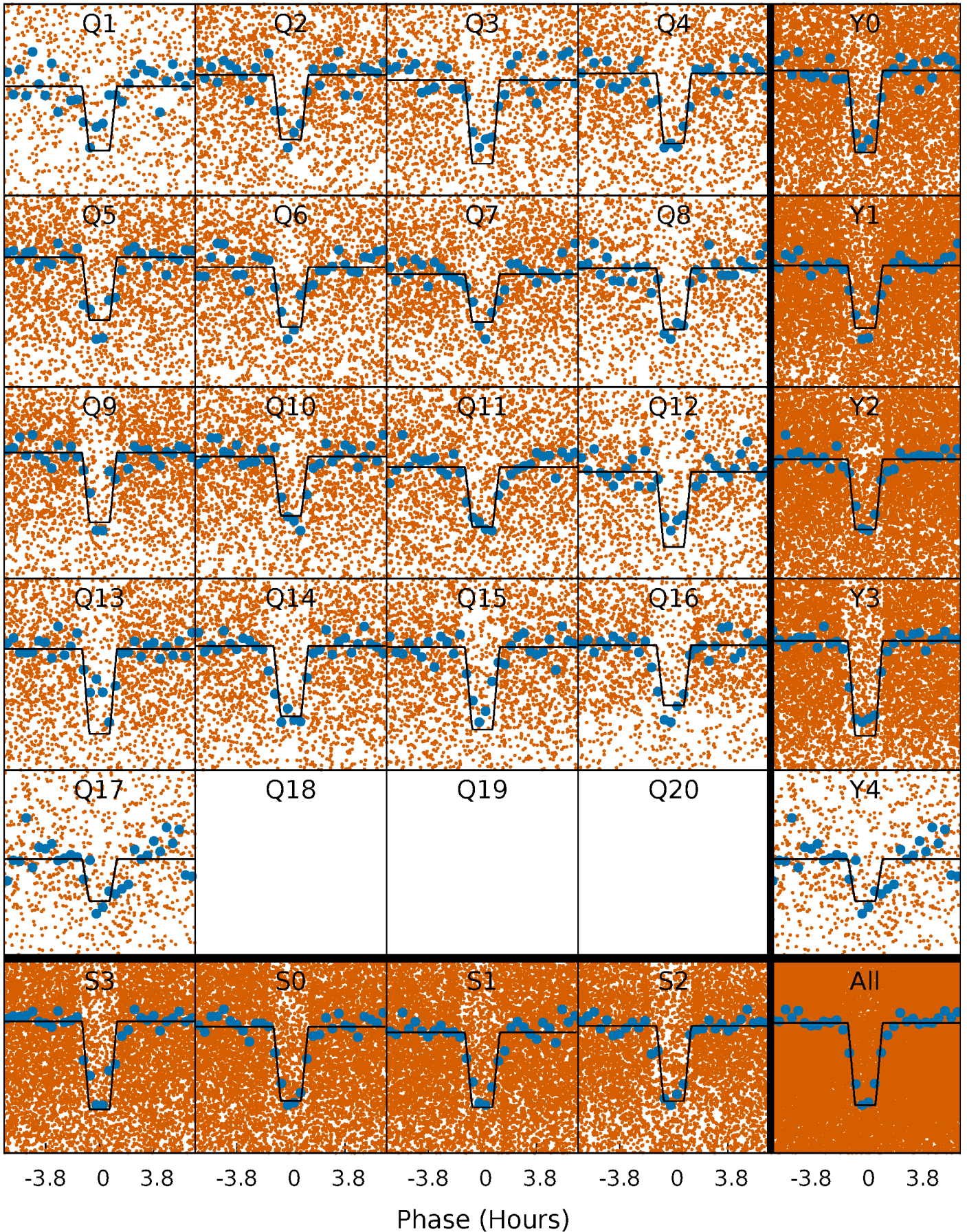
# DV Quarter-Phased Transit Curves

TCE 007446835-01   P= 0.665312 Days    $T_0=131.604464$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

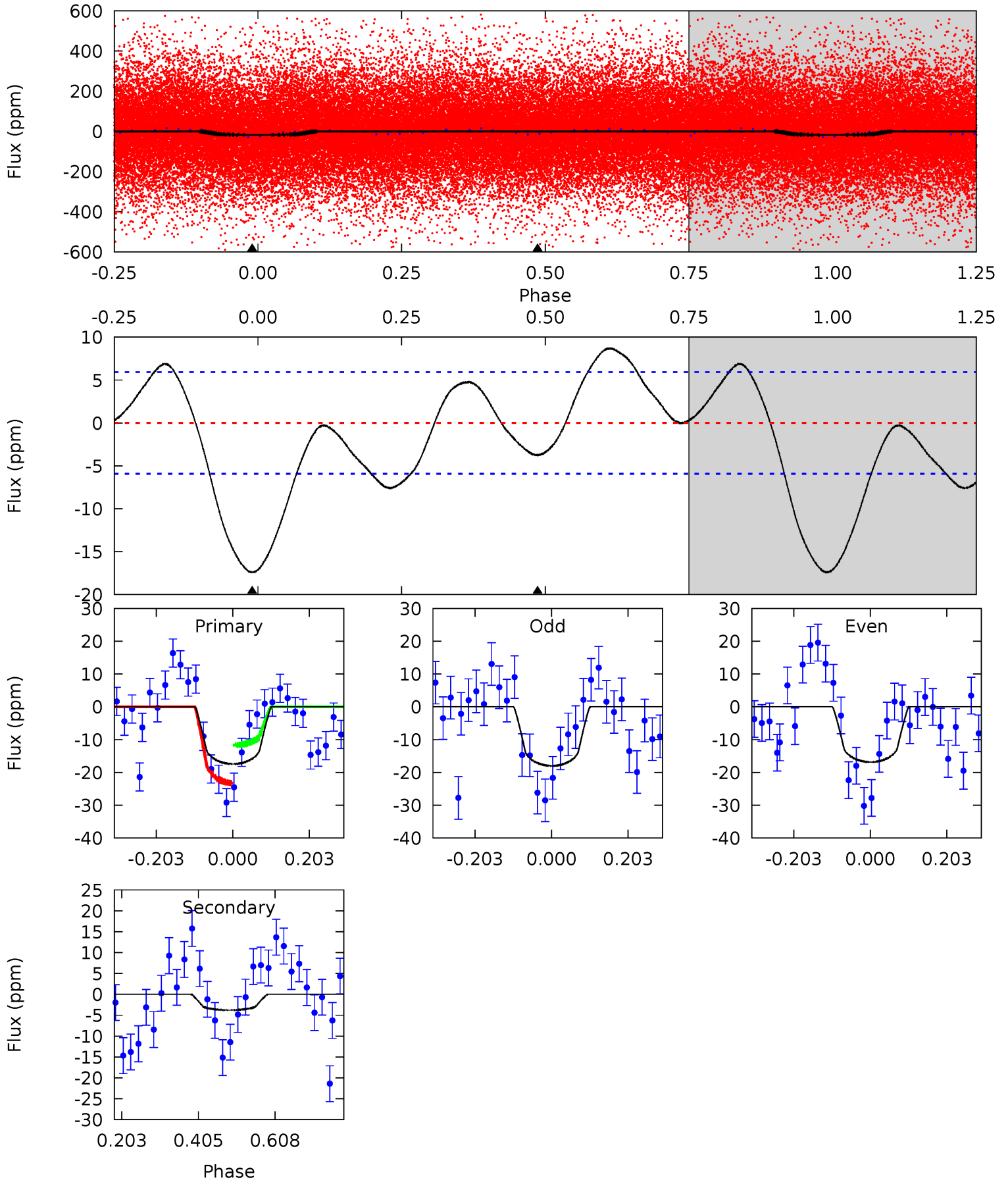
TCE 007446835-01 P= 0.665297 Days  $T_0=131.601727$  (BKJD)



# DV Model-Shift Uniqueness Test

007446835-01, P = 0.665312 Days, E = 130.939152 Days

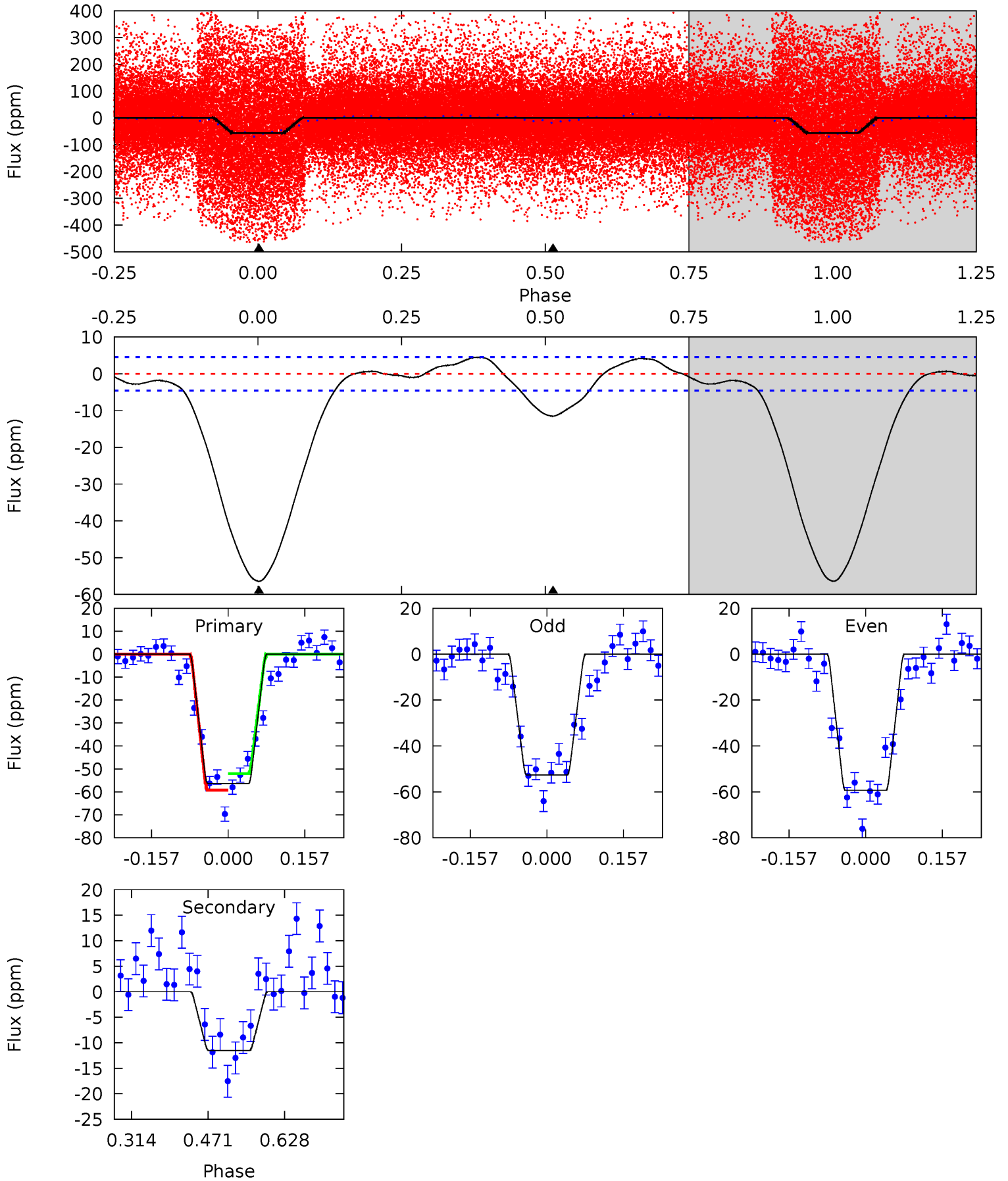
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.0	2.82	0	0	4.41	1.27	2.95	13.0	13.0	2.82	2.82	0.44	0.76	0.33	4.37



# Alt Model-Shift Uniqueness Test

007446835-01, P = 0.665297 Days, E = 130.936430 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
55.3	11.3	0	0	4.47	1.42	1.84	55.3	55.3	11.3	11.3	3.26	1.03	0.07	3.55



### Stellar Parameters For KIC 007446835

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5620^{+152}_{-152}$	$4.391^{+0.162}_{-0.198}$	$-0.320^{+0.300}_{-0.250}$	$0.944^{+0.252}_{-0.168}$	$0.800^{+0.124}_{-0.062}$	$1.339^{+0.984}_{-0.650}$
	+3%/-3%	+4%/-5%	+94%/-78%	+27%/-18%	+16%/-8%	+73%/-49%
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 007446835-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-4 \pm 1$	$0.58^{+0.21}_{-0.19}$	$2869^{+235}_{-171}$	$3511^{+655}_{-642}$	$1.127^{+1.528}_{-0.616}$
Alt.	$-12 \pm 1$	$0.83^{+0.25}_{-0.21}$	$2884^{+210}_{-178}$	$3885^{+437}_{-368}$	$1.802^{+1.367}_{-0.736}$

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

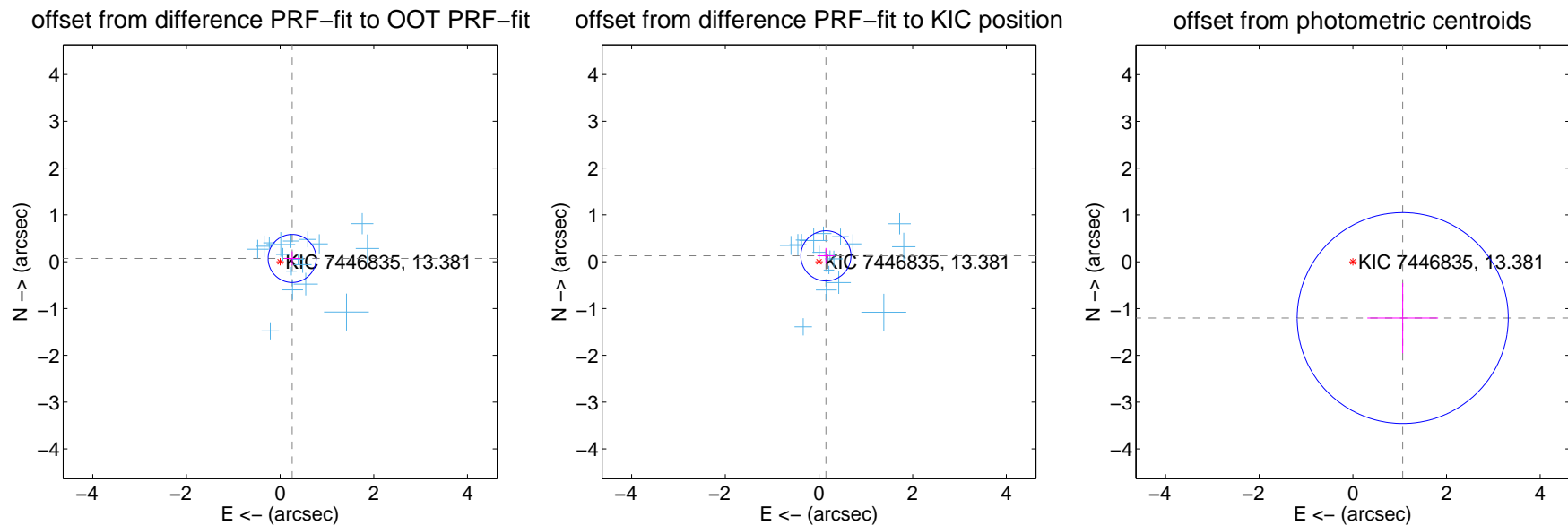
## DV Centroid Data

Supplemental centroid analysis for 007446835-01. Kepler magnitude: 13.38. Transit SNR 10.61

There are 17 quarters with good PRF difference image offsets

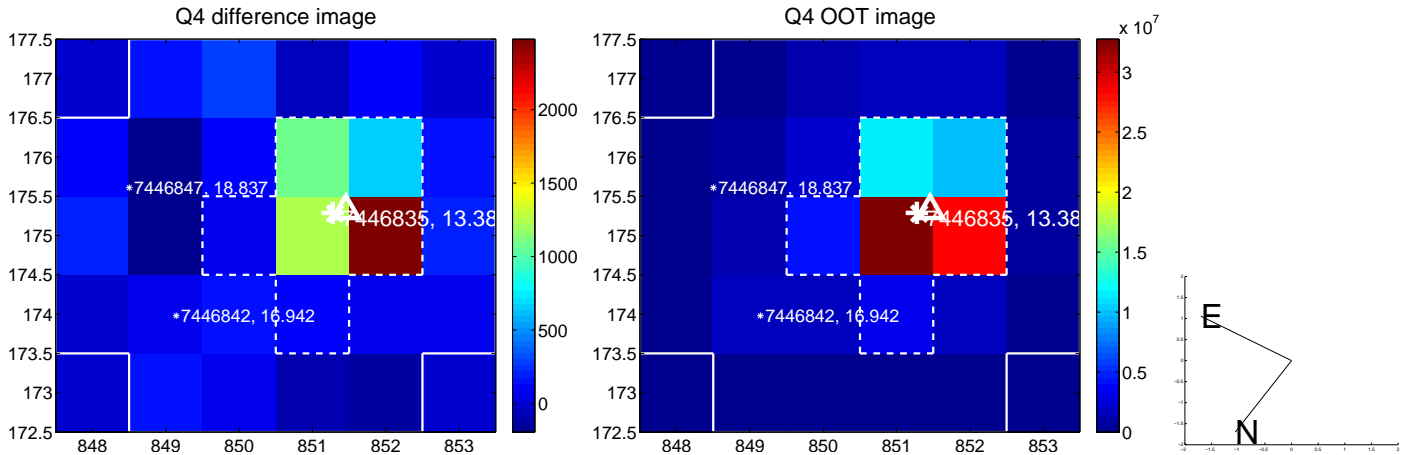
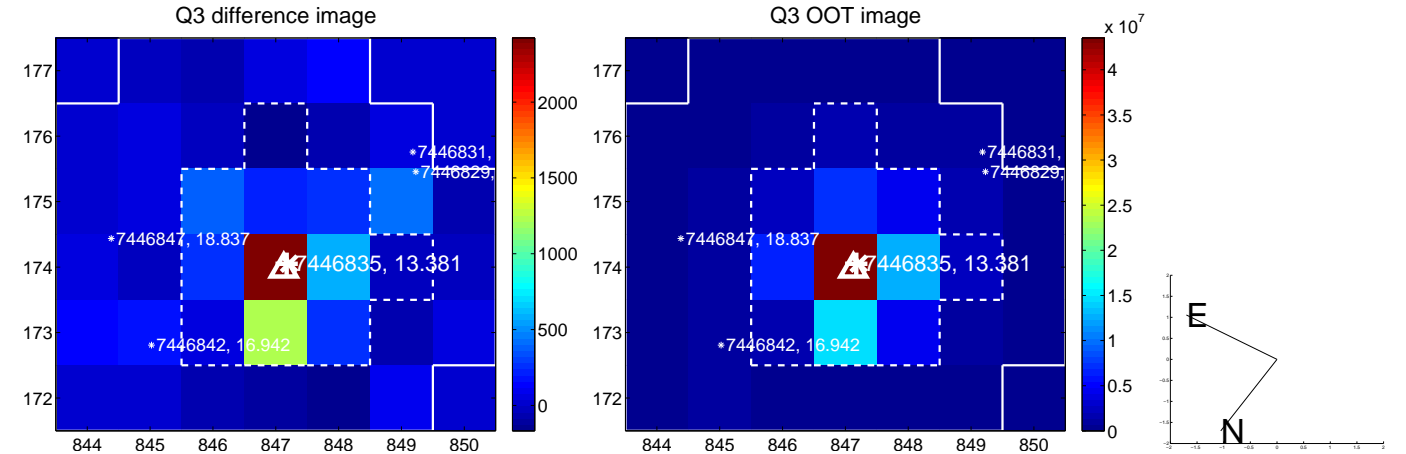
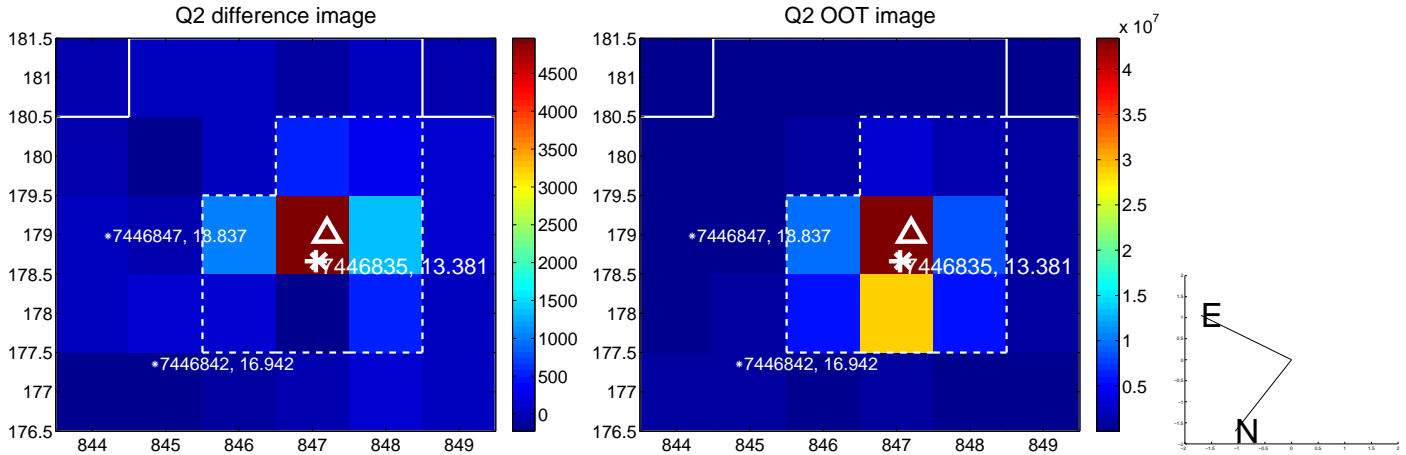
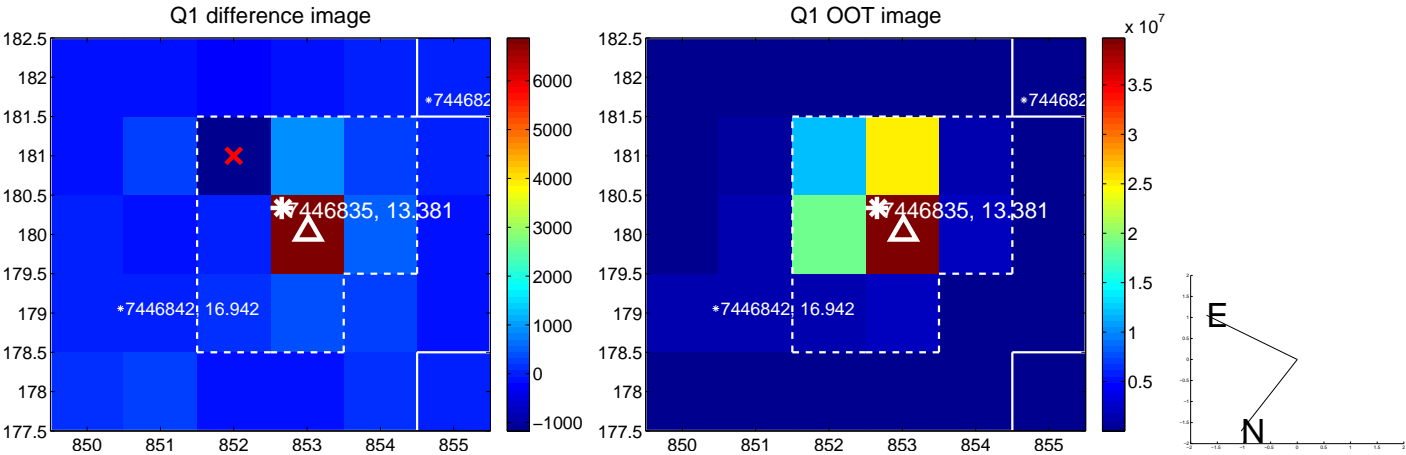
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.266 \pm 0.171$	1.56	$-0.257 \pm 0.170$	$0.069 \pm 0.150$
PRF-fit source offset from KIC position	$0.193 \pm 0.178$	1.08	$-0.148 \pm 0.182$	$0.125 \pm 0.167$
photometric centroid source offset	$1.61 \pm 0.75$	2.14	$-1.06 \pm 0.75$	$-1.20 \pm 0.75$

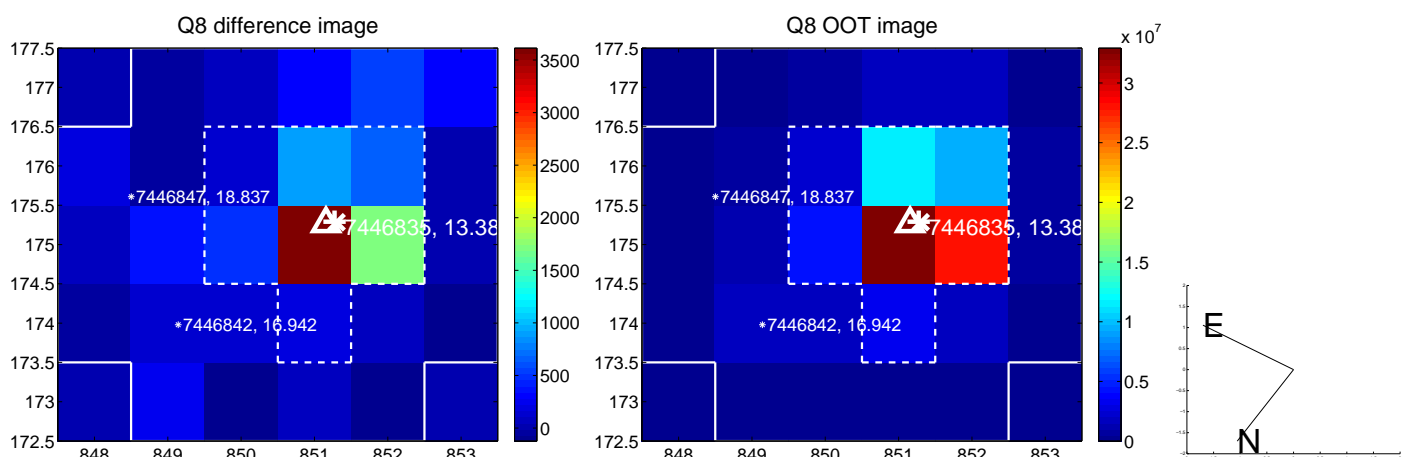
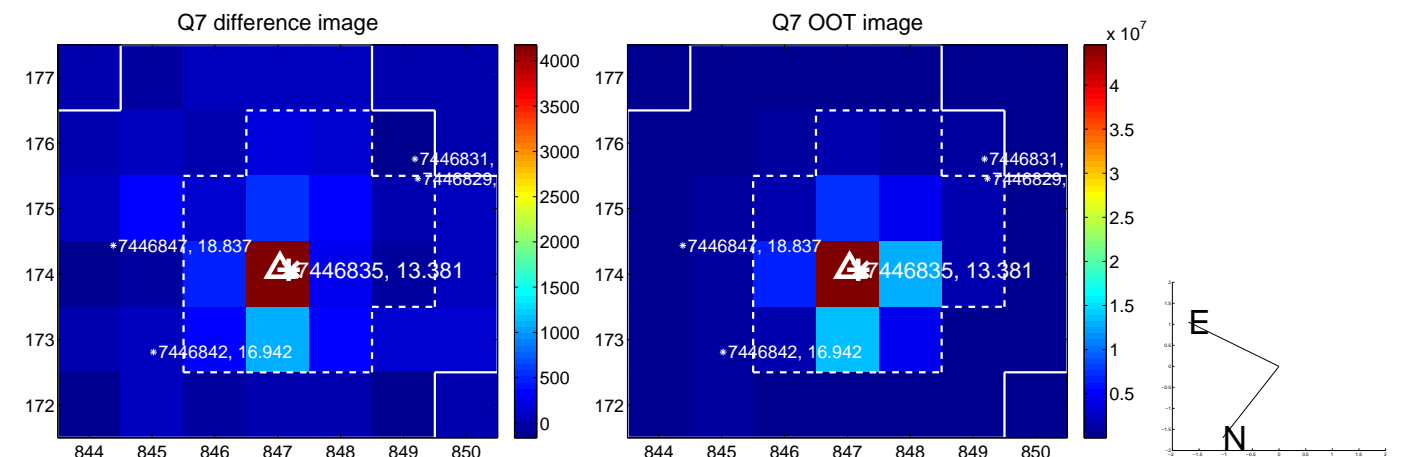
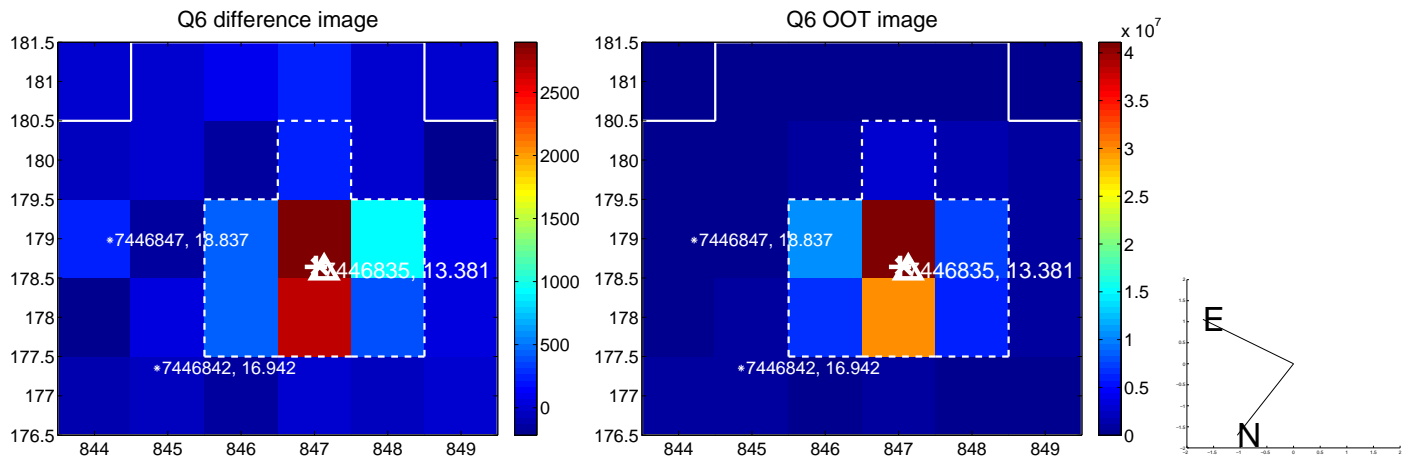
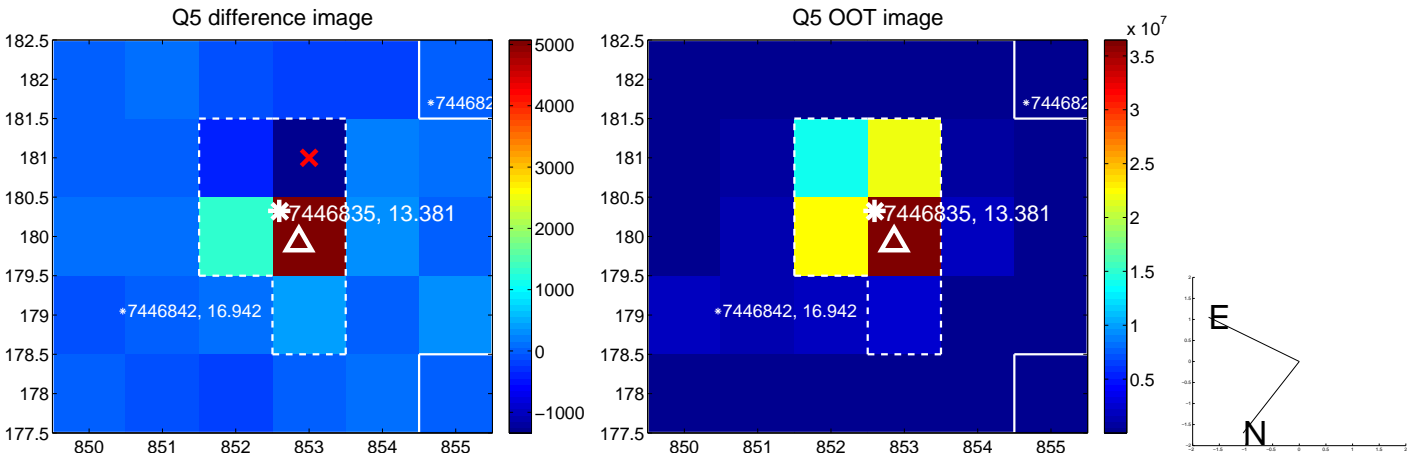


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

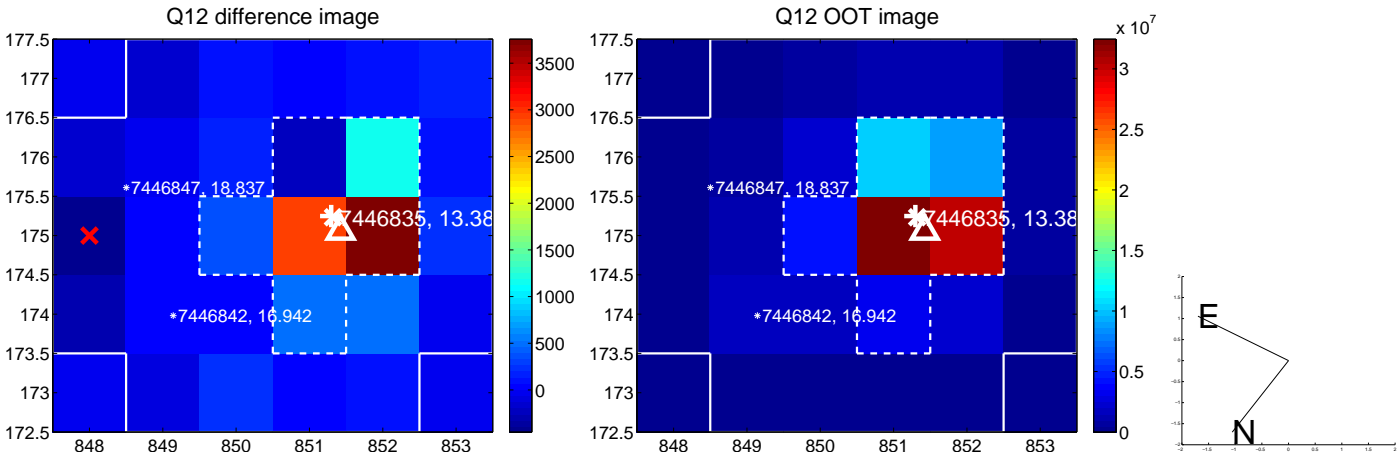
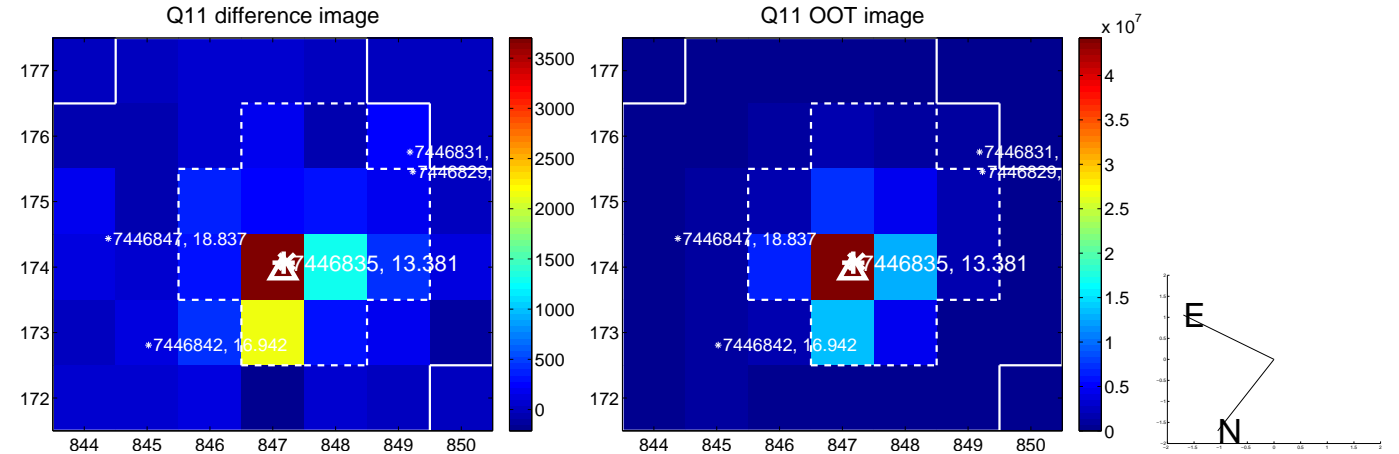
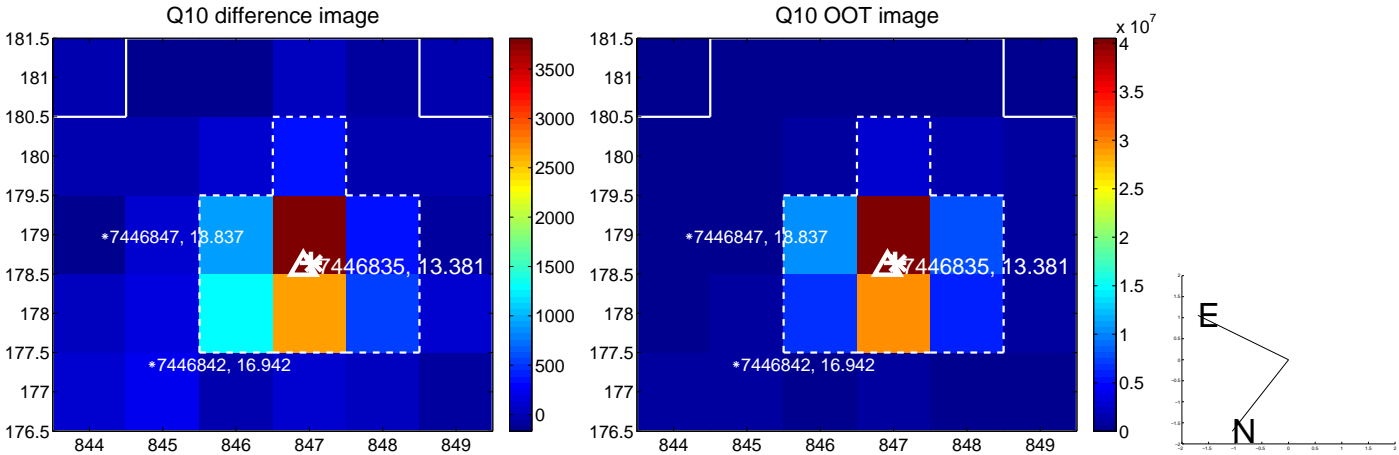
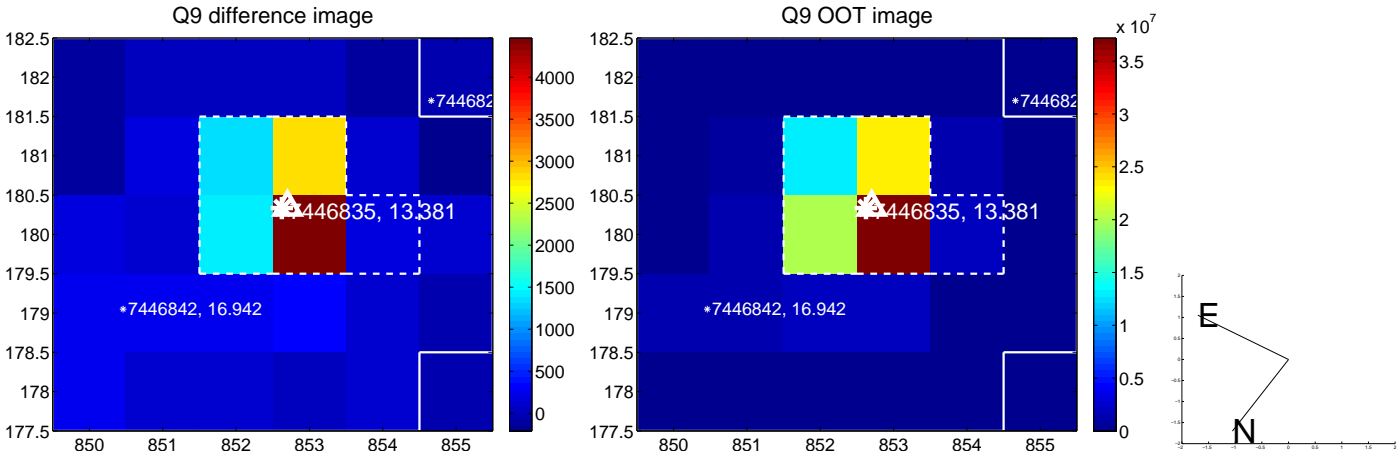
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



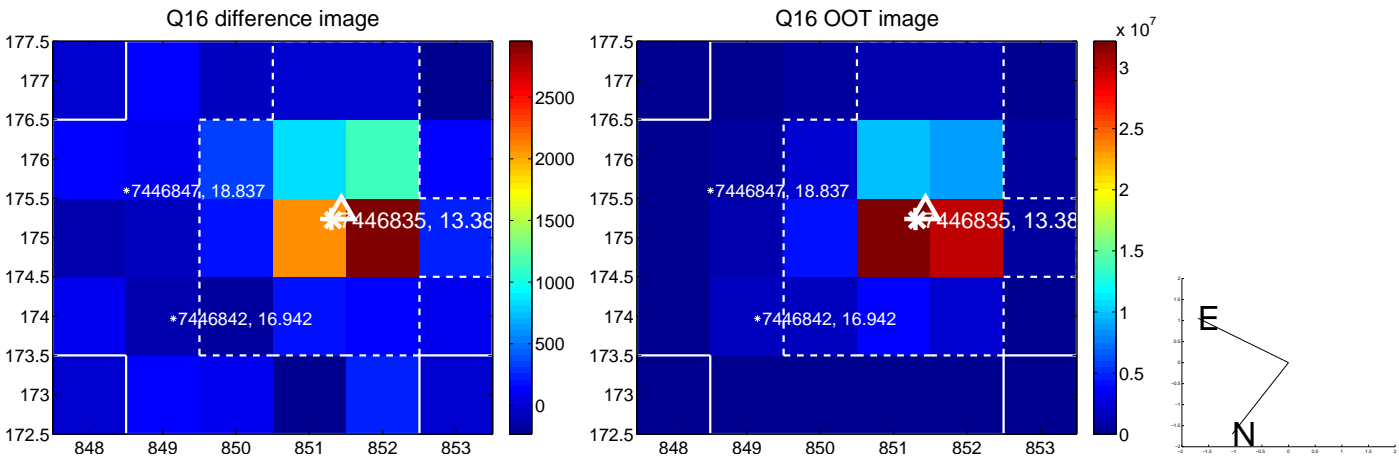
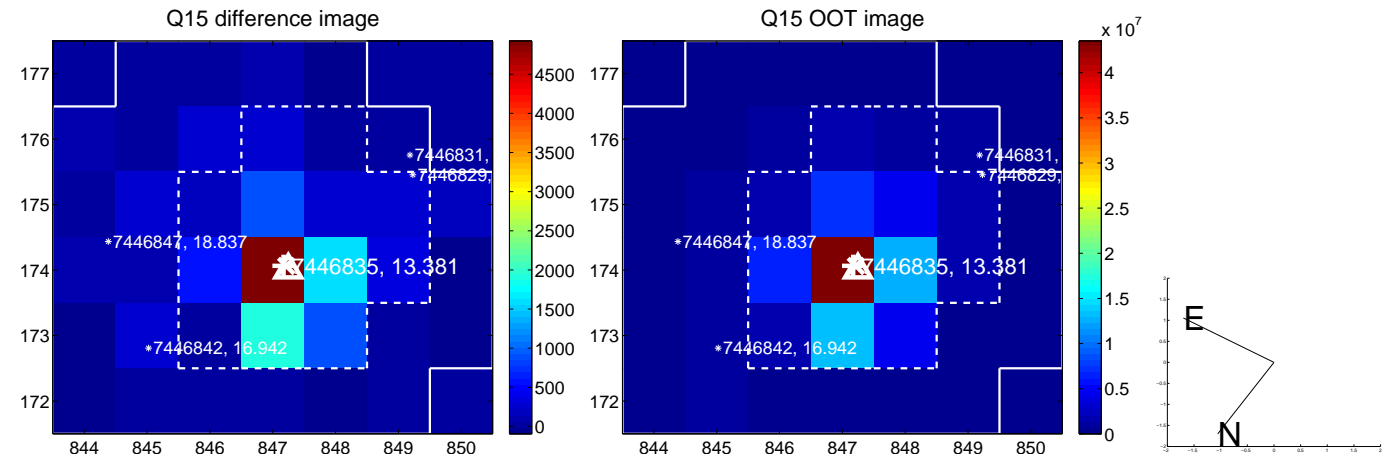
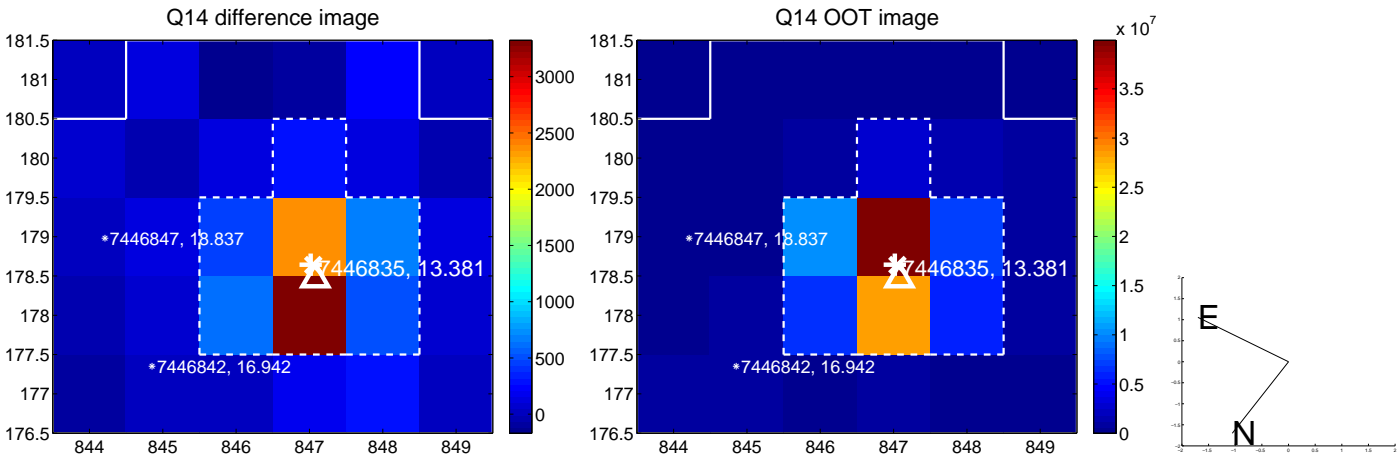
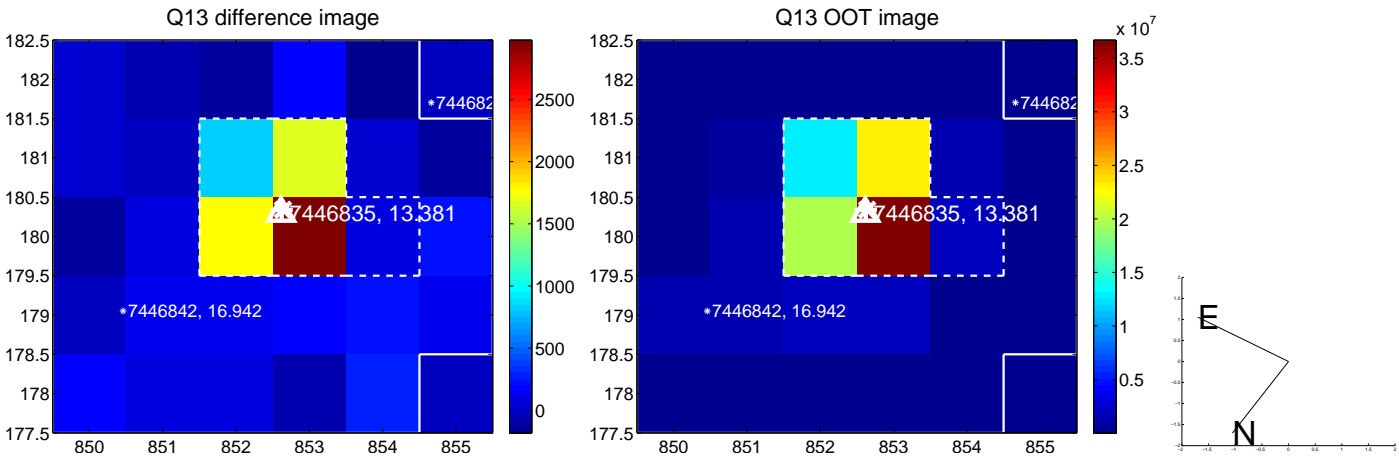
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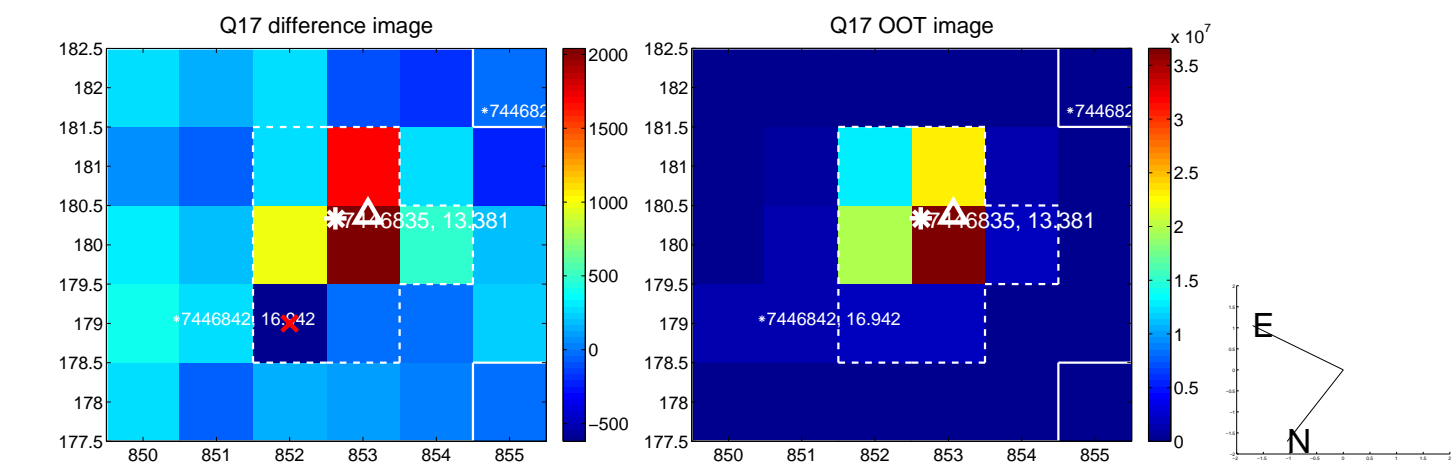
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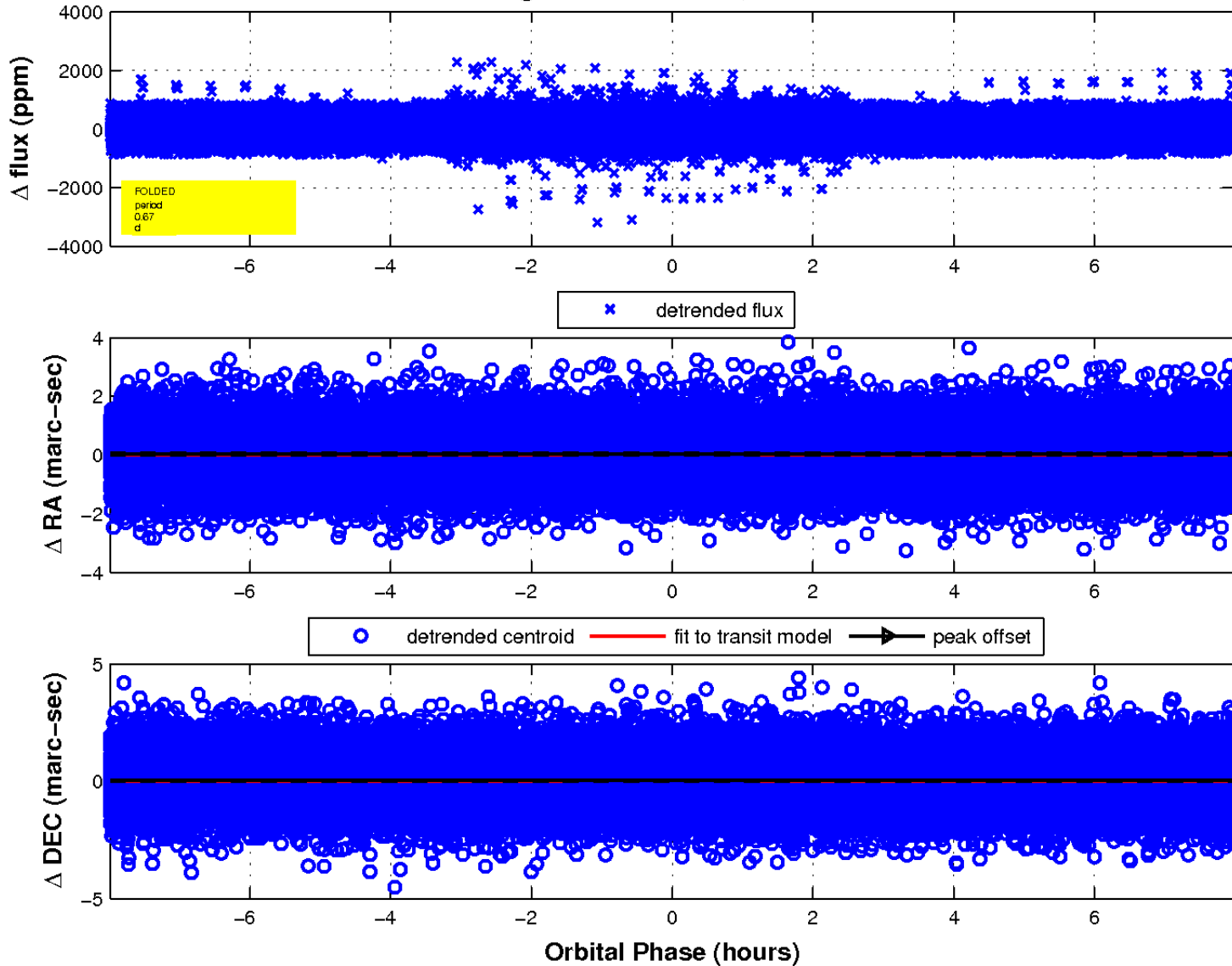
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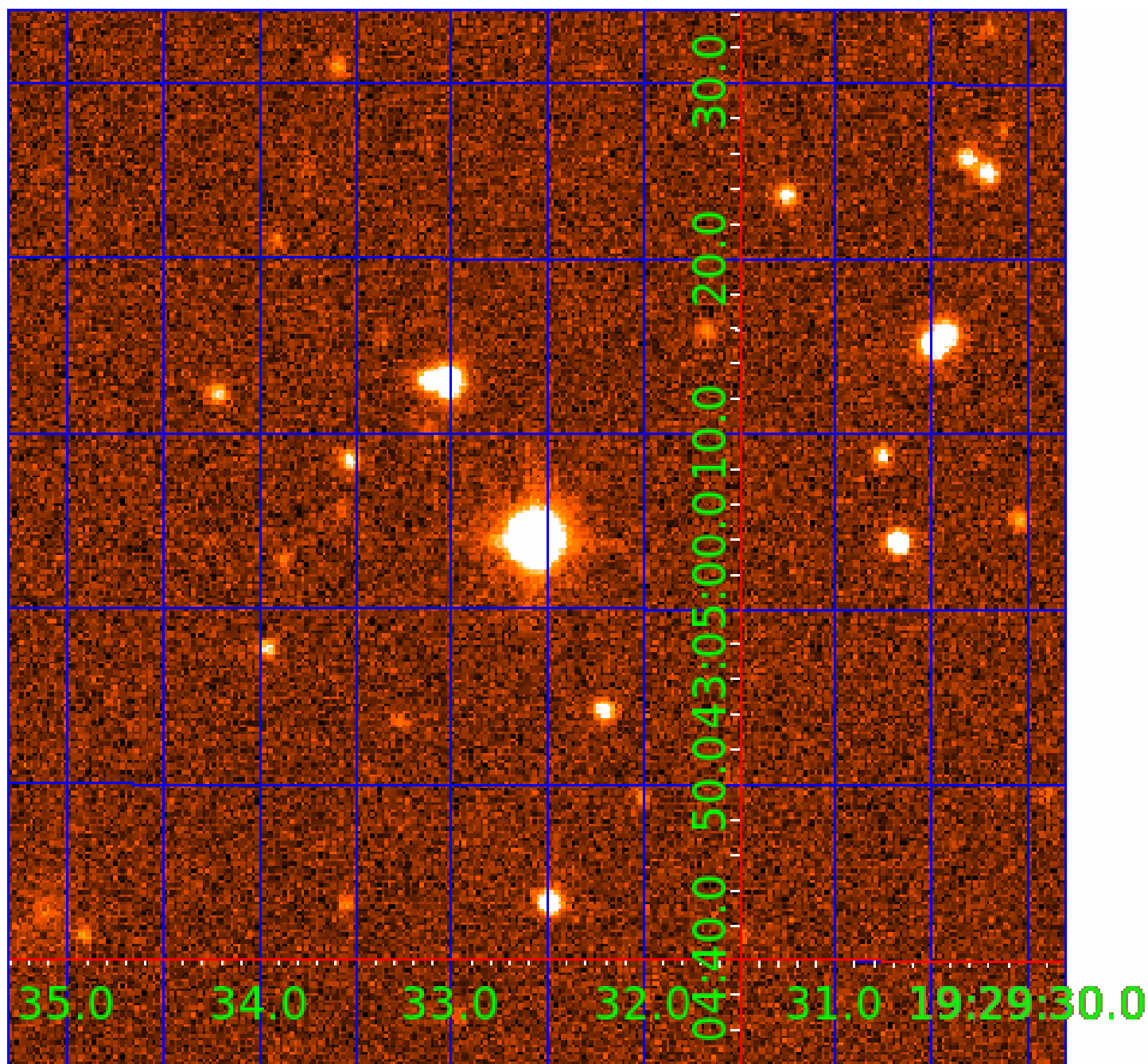


fluxWeightedCentroids, Planet 1 of 6



UKIRT Image

Declination



# KIC 007446835

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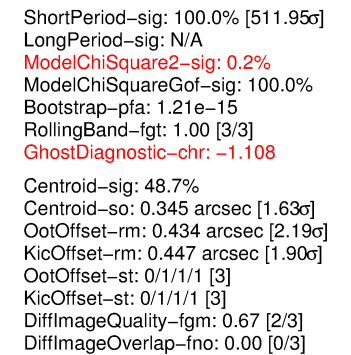
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See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

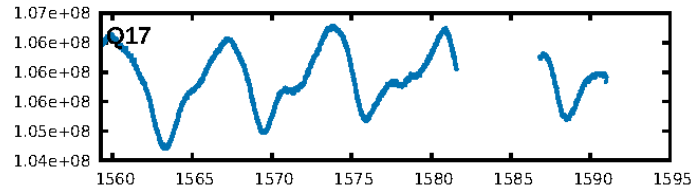
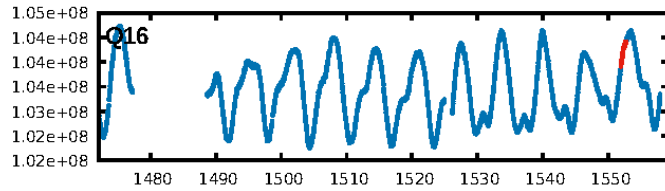
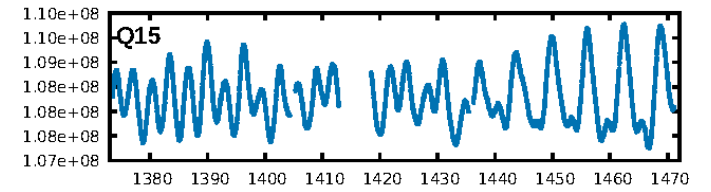
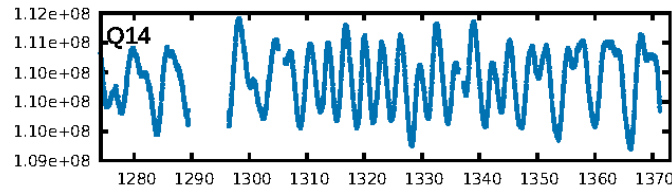
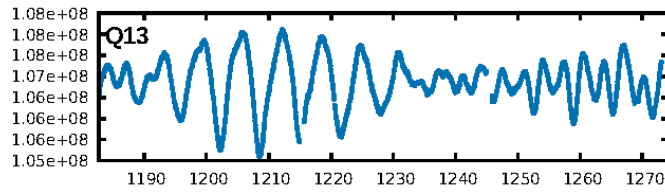
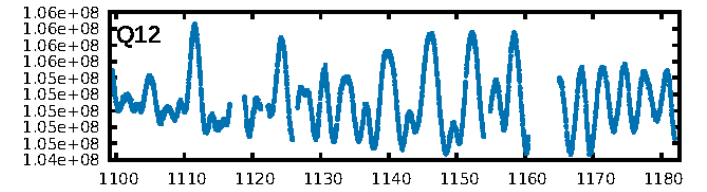
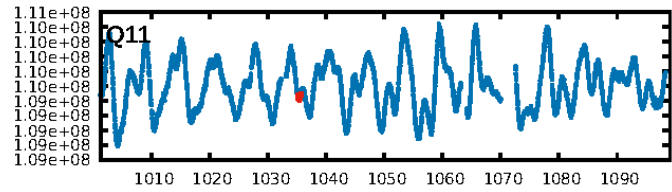
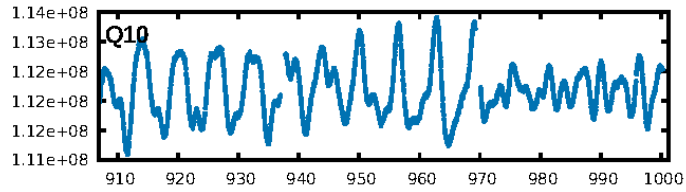
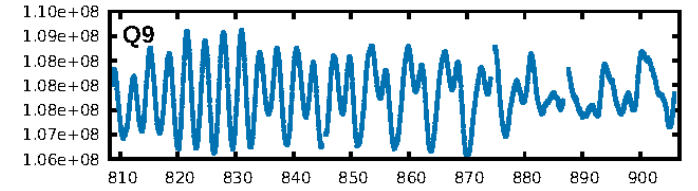
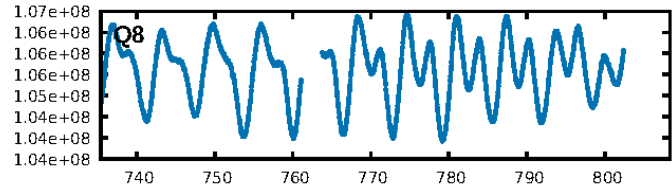
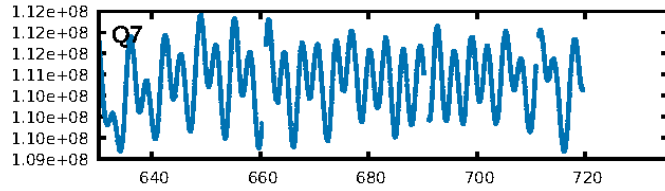
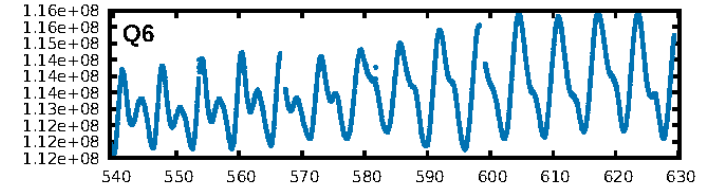
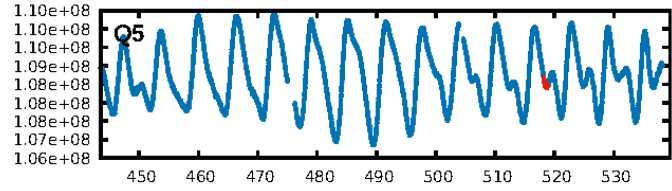
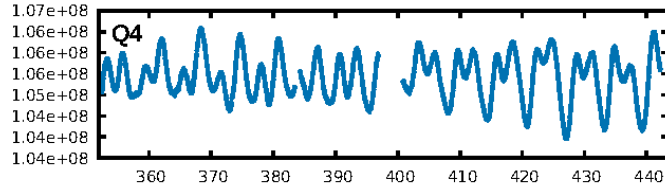
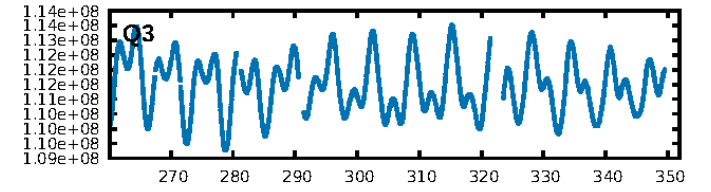
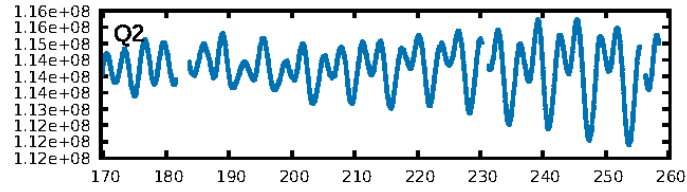
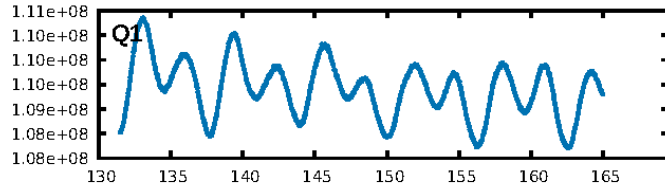
## Ephemeris Match Information For 007446835-02

No Significant Match Found

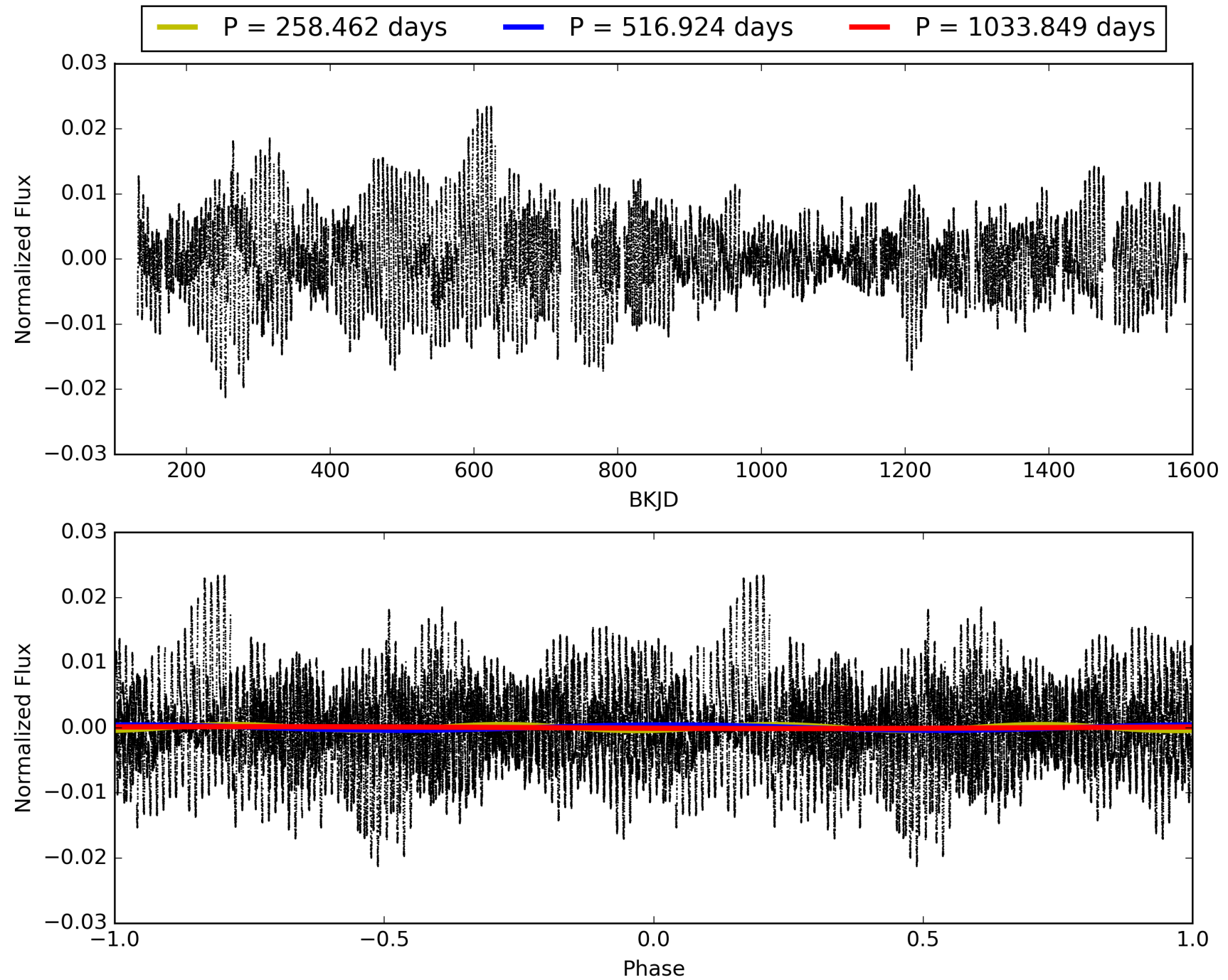
## KIC: 7446835    Candidate: 2 of 6    Period: 516.924 d



# TCE 007446835-02, PDC Light Curves

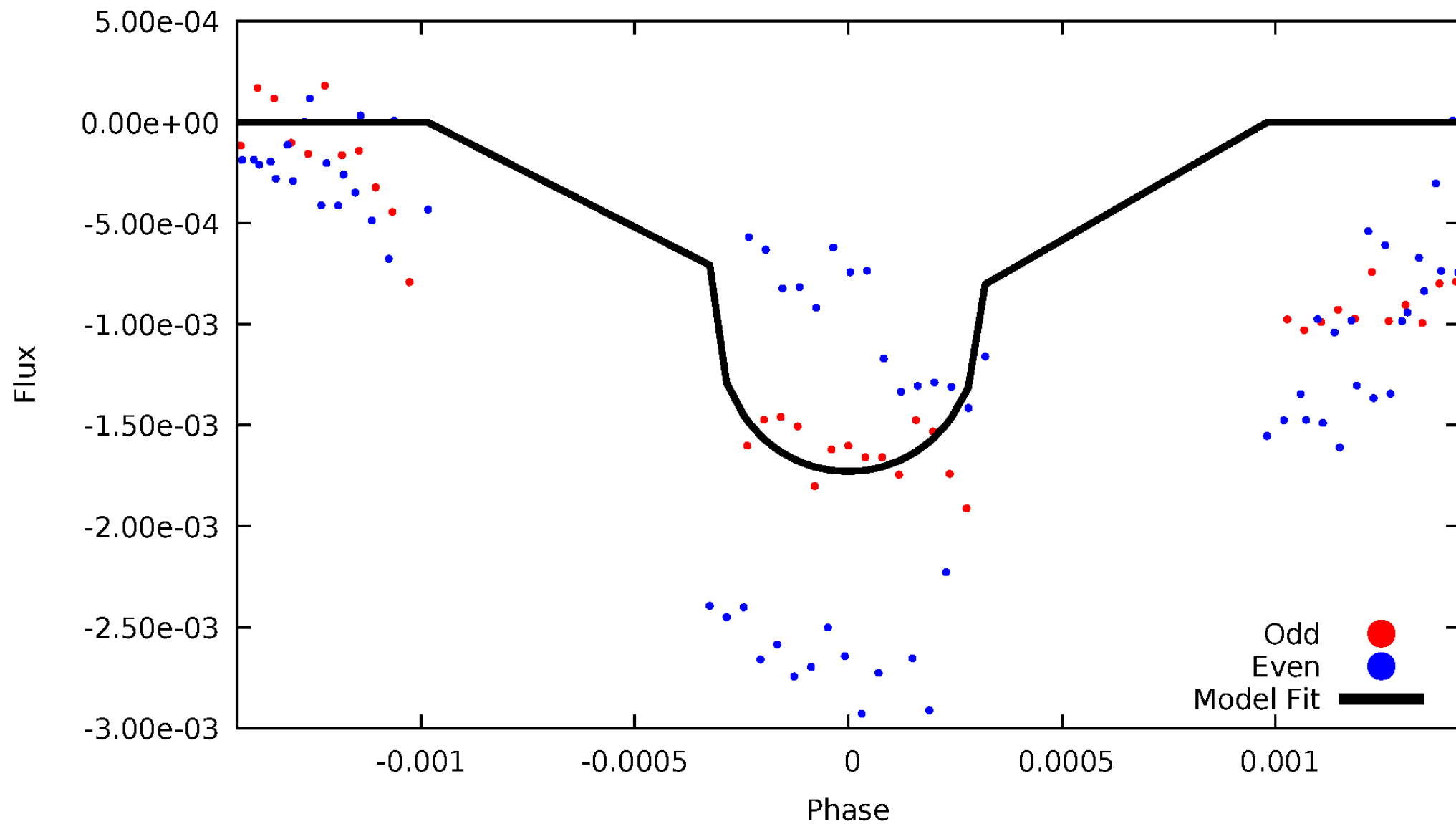


# TCE 007446835-02



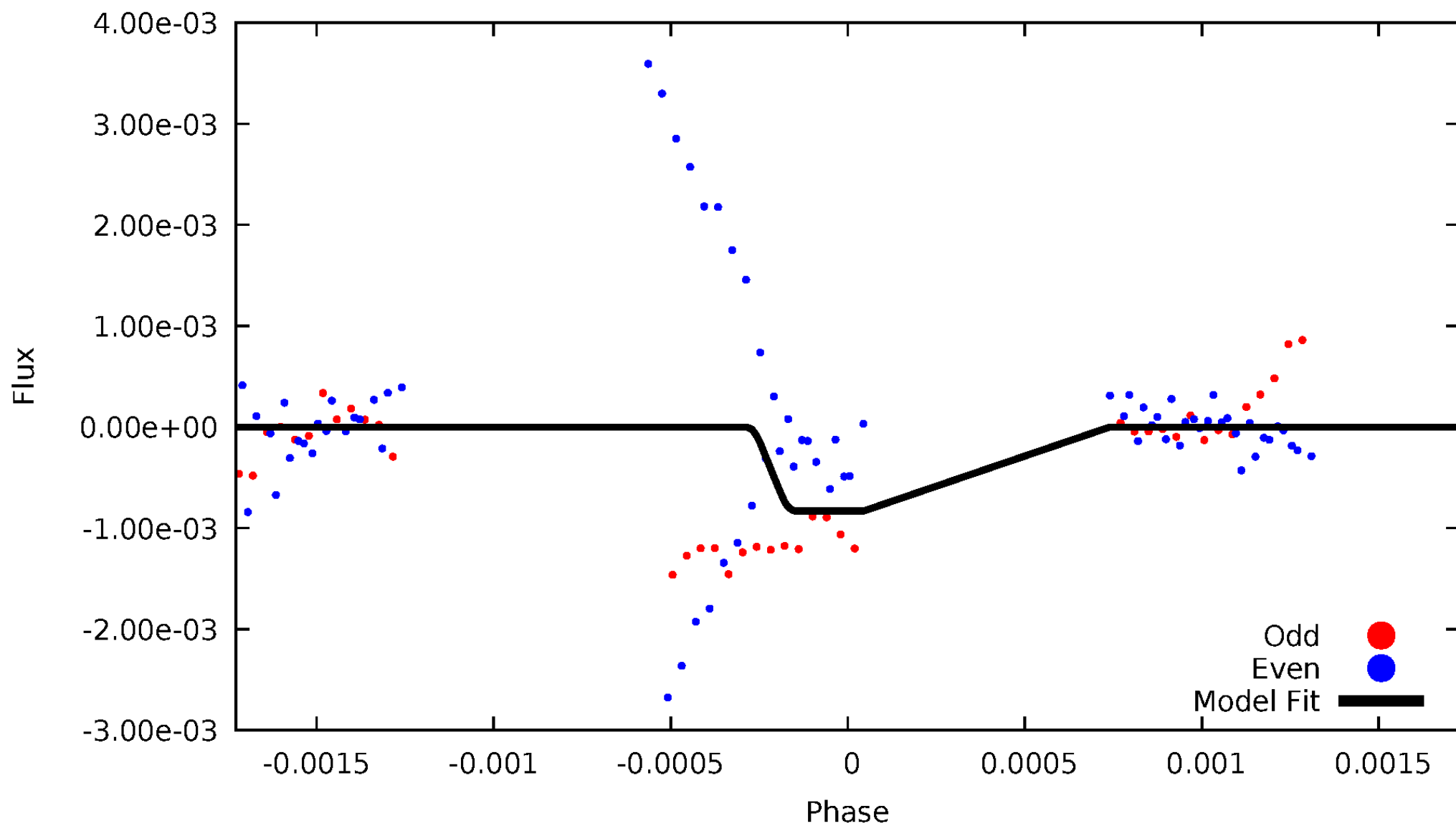
# DV Odd/Even

TCE 007446835-02



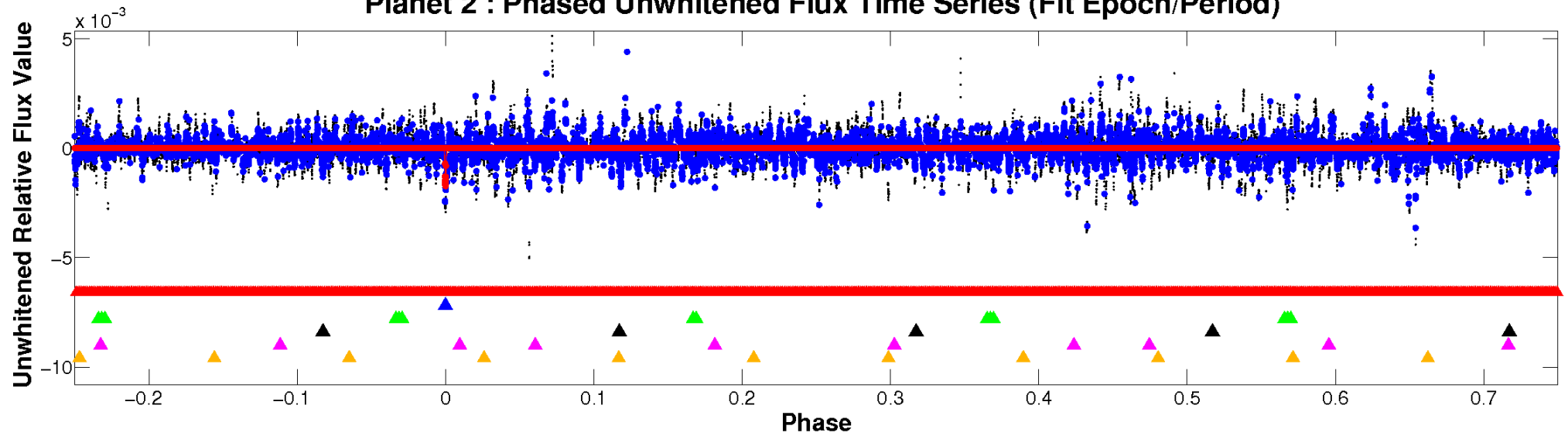
# ALT Odd/Even

TCE 007446835-02

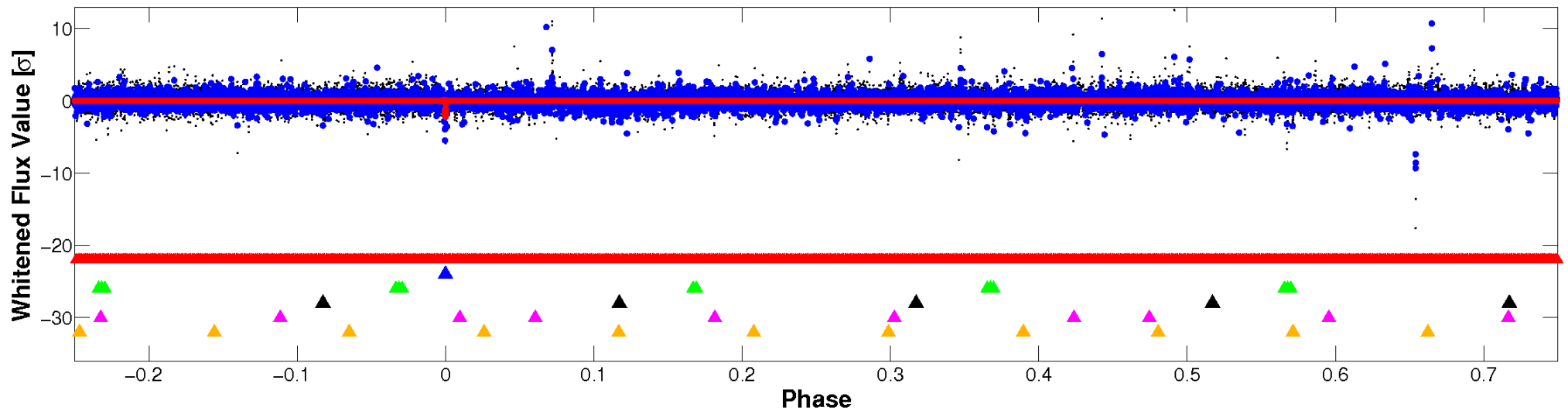


# Non-Whitened Vs. Whitened Light Curve

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

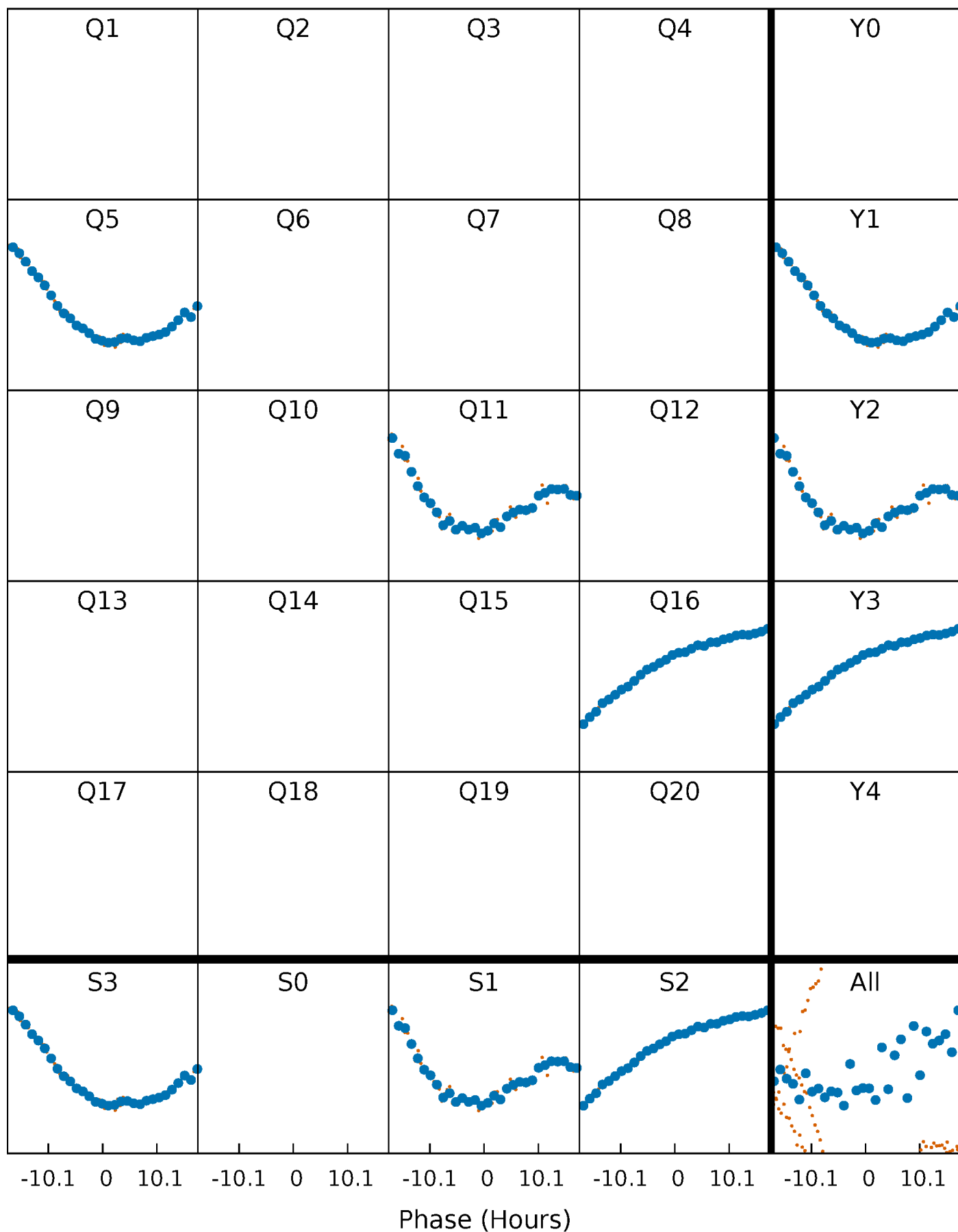


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



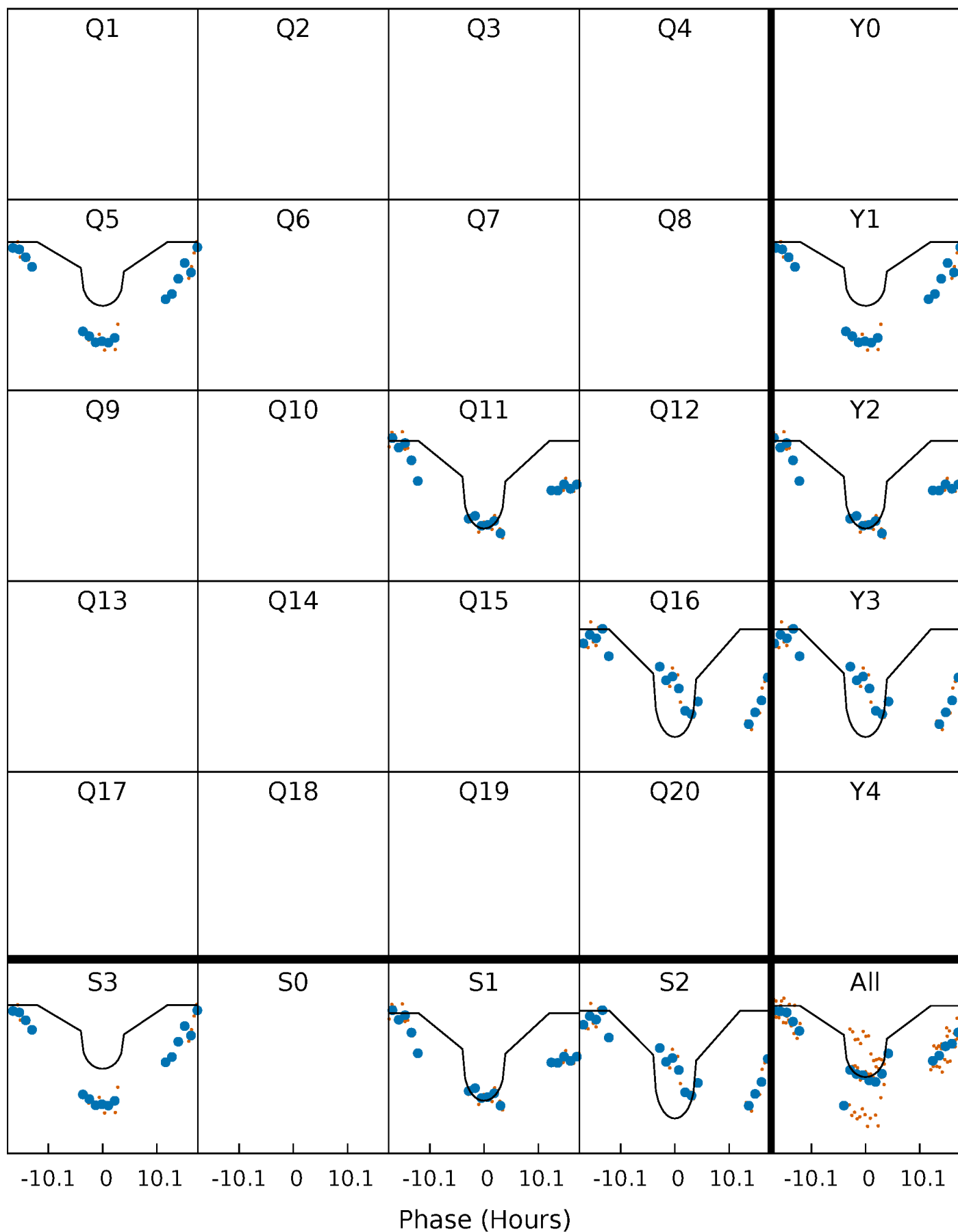
# PDC Quarter-Phased Transit Curves

TCE 007446835-02 P=516.924337 Days  $T_0=518.509151$  (BKJD)



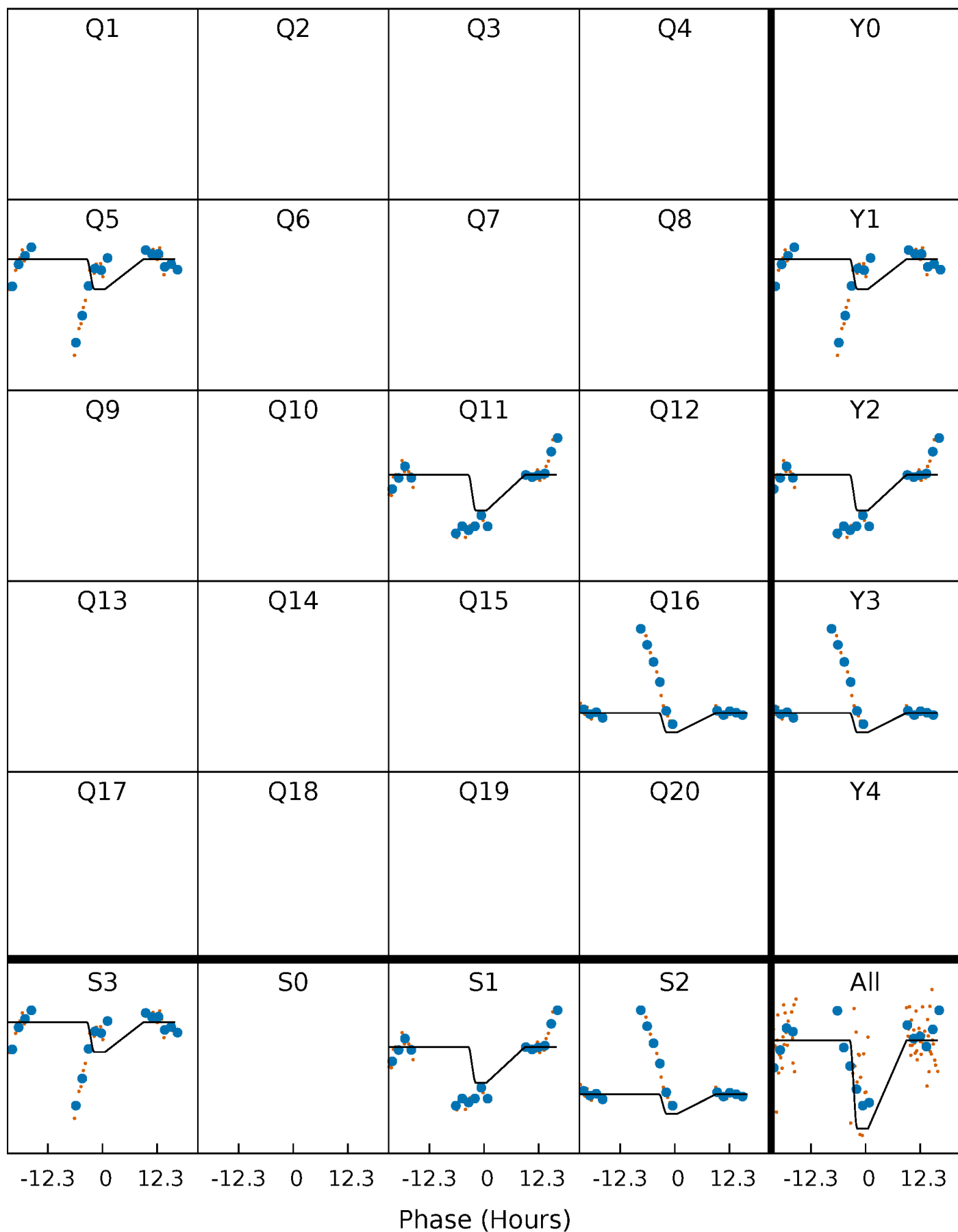
# DV Quarter-Phased Transit Curves

TCE 007446835-02 P=516.924337 Days  $T_0=518.509151$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

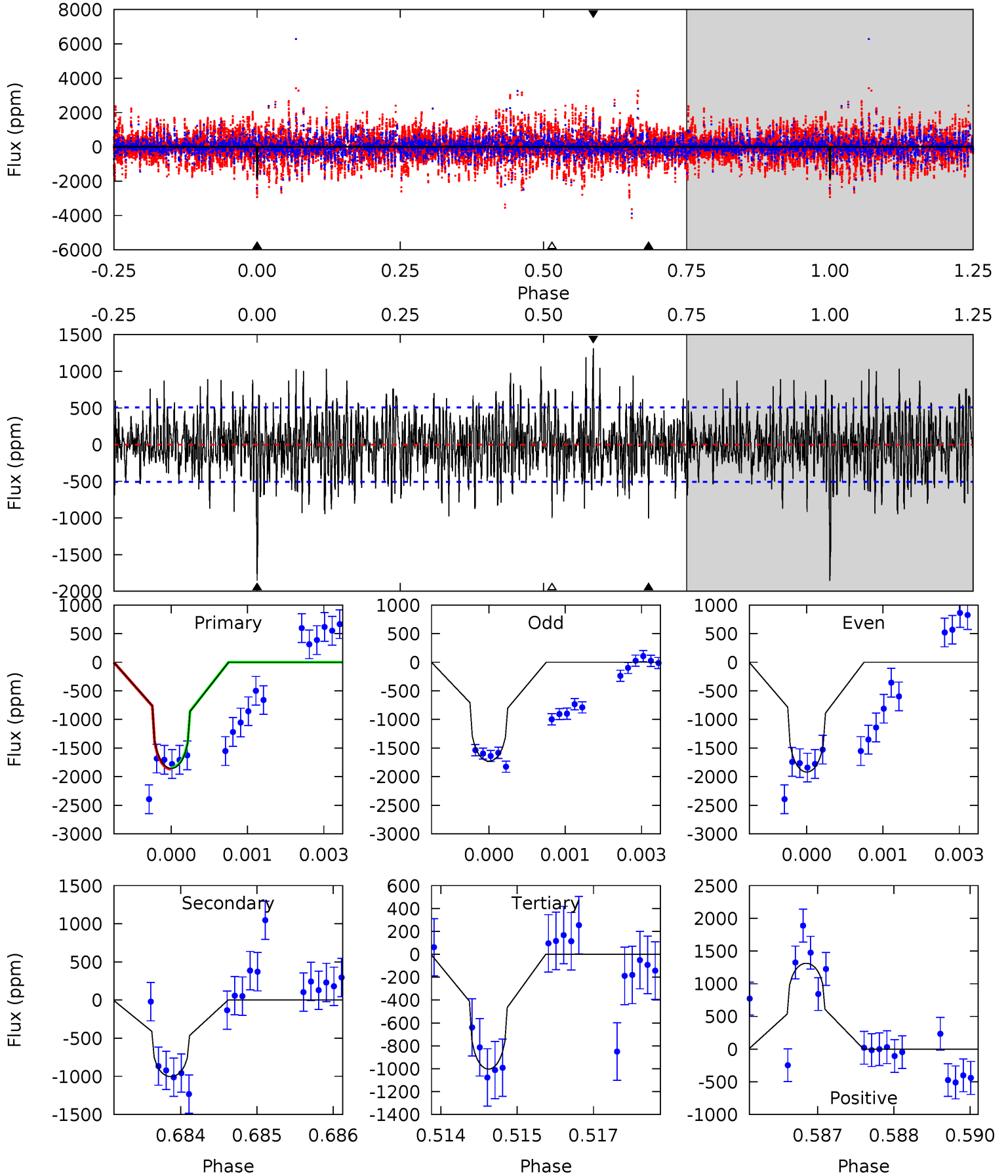
TCE 007446835-02 P=516.962257 Days  $T_0=518.604334$  (BKJD)



# DV Model-Shift Uniqueness Test

007446835-02, P = 516.924337 Days, E = 1.584814 Days

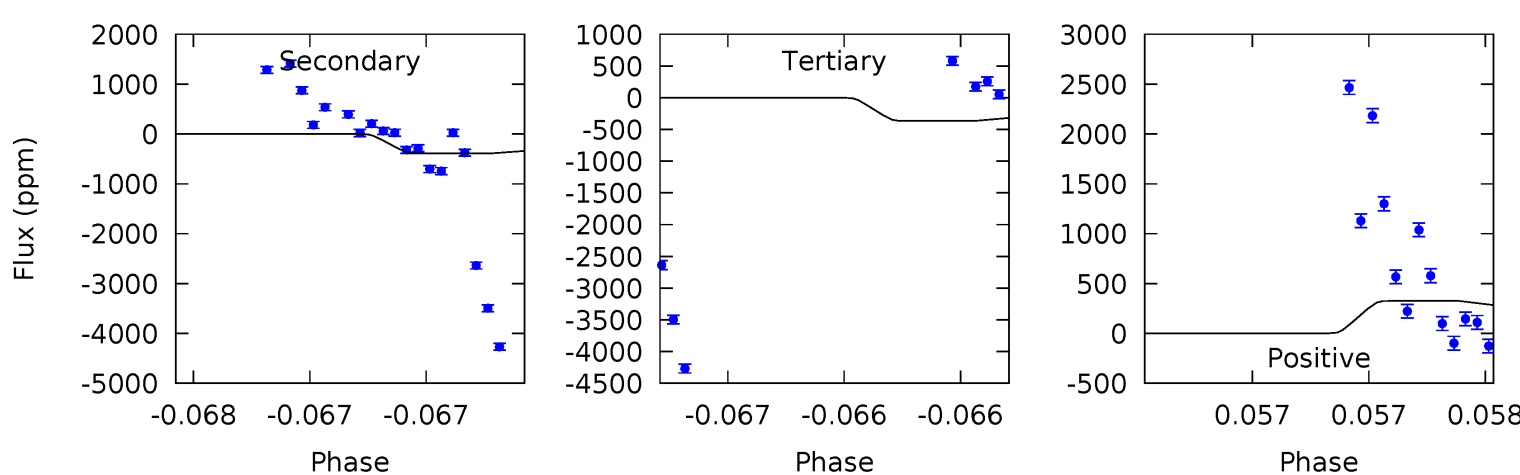
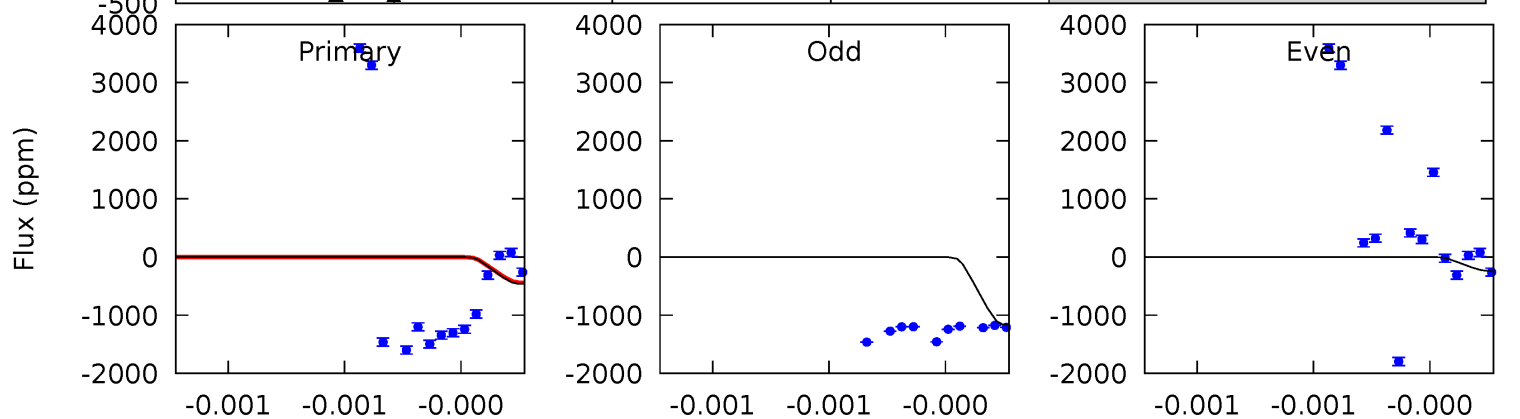
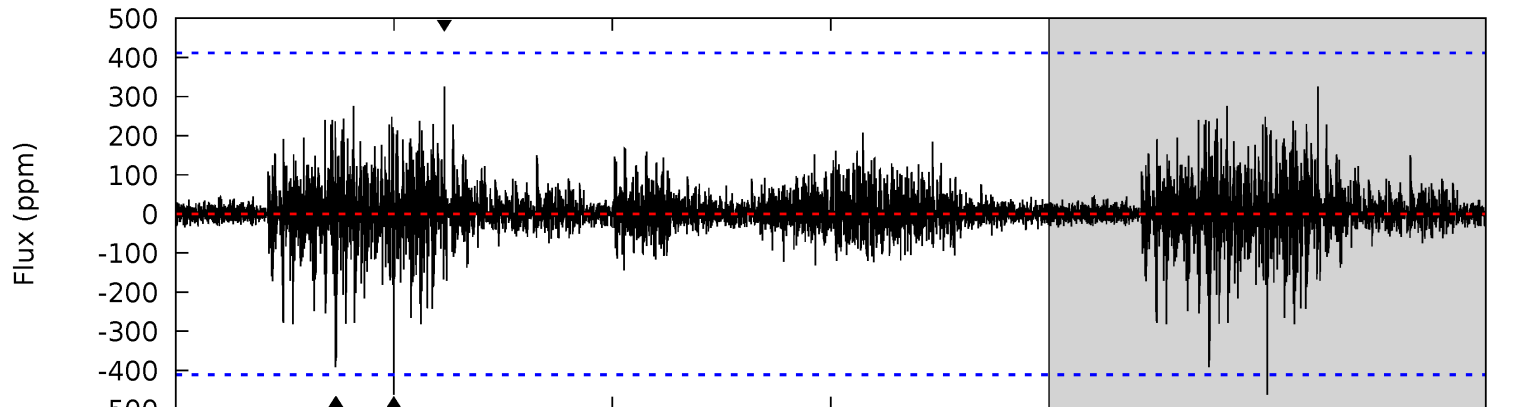
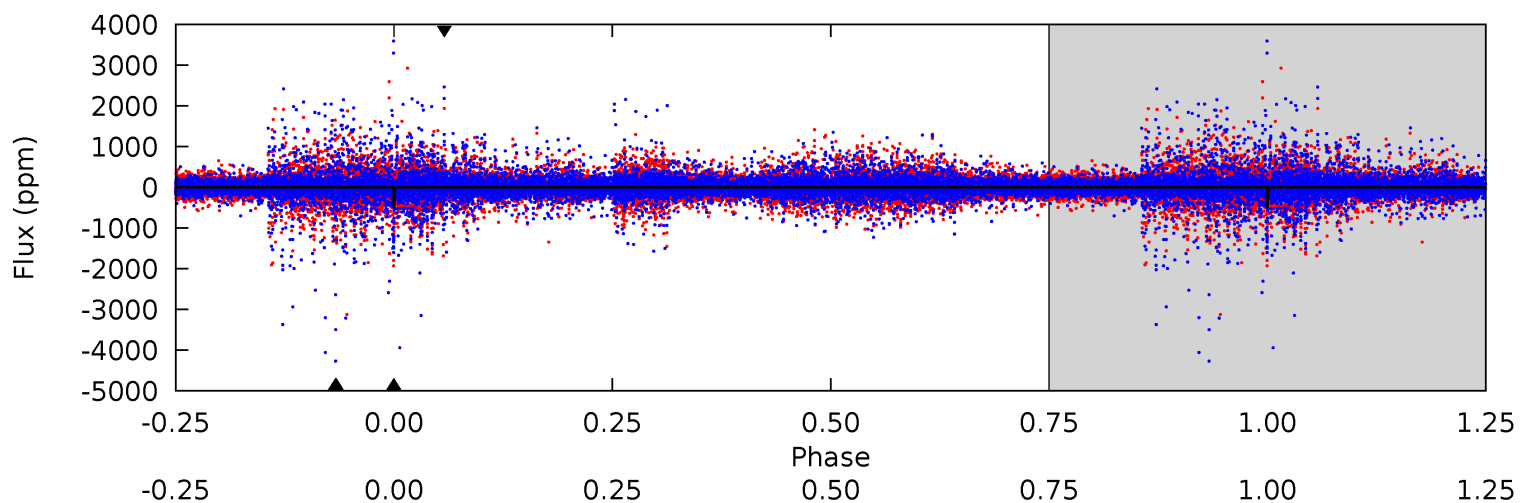
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.7	10.7	10.7	14.0	5.40	3.21	3.37	9.06	5.78	0.00	-3.28	0.87	1.09	0.41	0.15



# Alt Model-Shift Uniqueness Test

007446835-02, P = 516.962257 Days, E = 1.642077 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
6.36	5.39	5.03	4.47	5.66	3.61	0.59	1.33	1.89	0.36	0.91	6.35	2.19	0.41	0.53



### Stellar Parameters For KIC 007446835

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5620^{+152}_{-152}$	$4.391^{+0.162}_{-0.198}$	$-0.320^{+0.300}_{-0.250}$	$0.944^{+0.252}_{-0.168}$	$0.800^{+0.124}_{-0.062}$	$1.339^{+0.984}_{-0.650}$
	+3%/-3%	+4%/-5%	+94%/-78%	+27%/-18%	+16%/-8%	+73%/-49%
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 007446835-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1004 \pm 94$	$5.14^{+4.16}_{-3.32}$	$311^{+23}_{-20}$	$4704^{+2844}_{-938}$	$29672^{+196111}_{-20472}$
Alt.	$-391 \pm 73$	$4.25^{+3.91}_{-2.72}$	$311^{+24}_{-19}$	$4165^{+2496}_{-817}$	$16848^{+108008}_{-12338}$

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

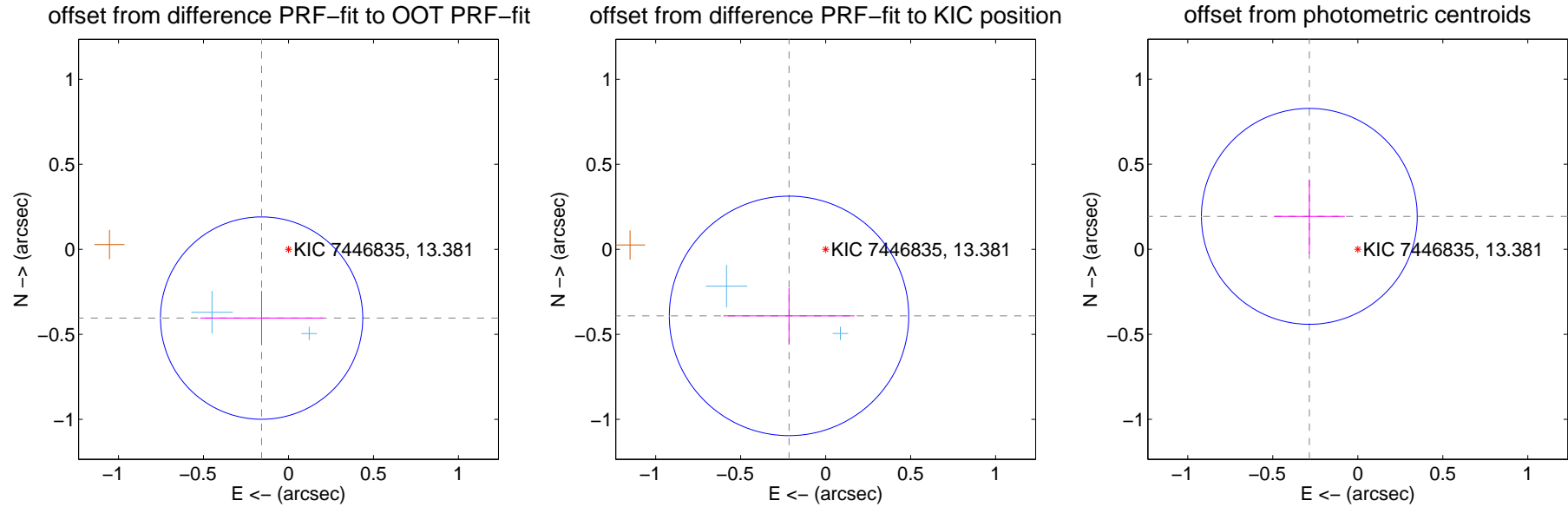
## DV Centroid Data

Supplemental centroid analysis for 007446835-02. Kepler magnitude: 13.38. Transit SNR 8.80

There are 2 quarters with good PRF difference image offsets

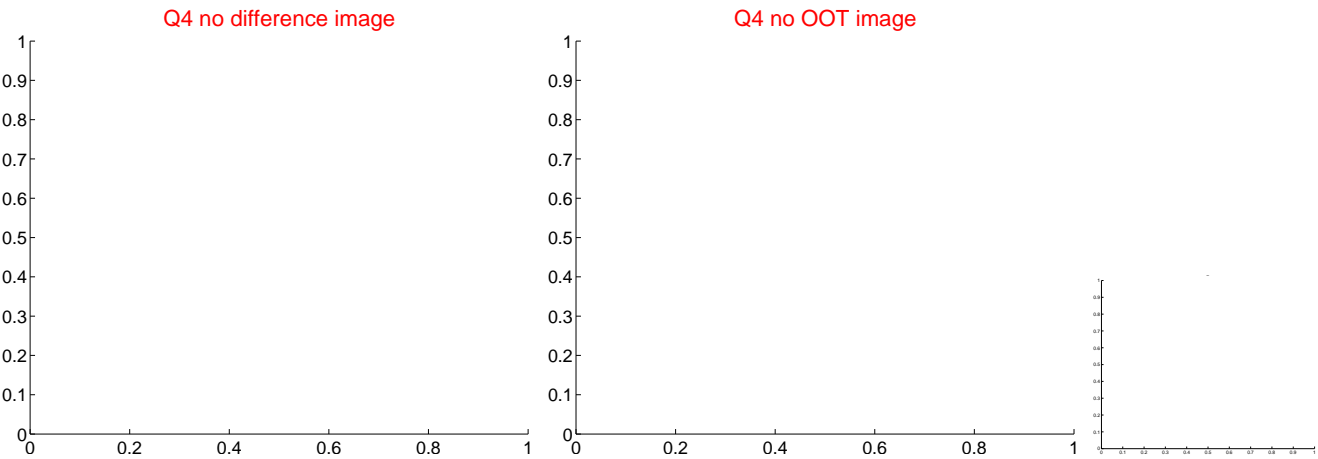
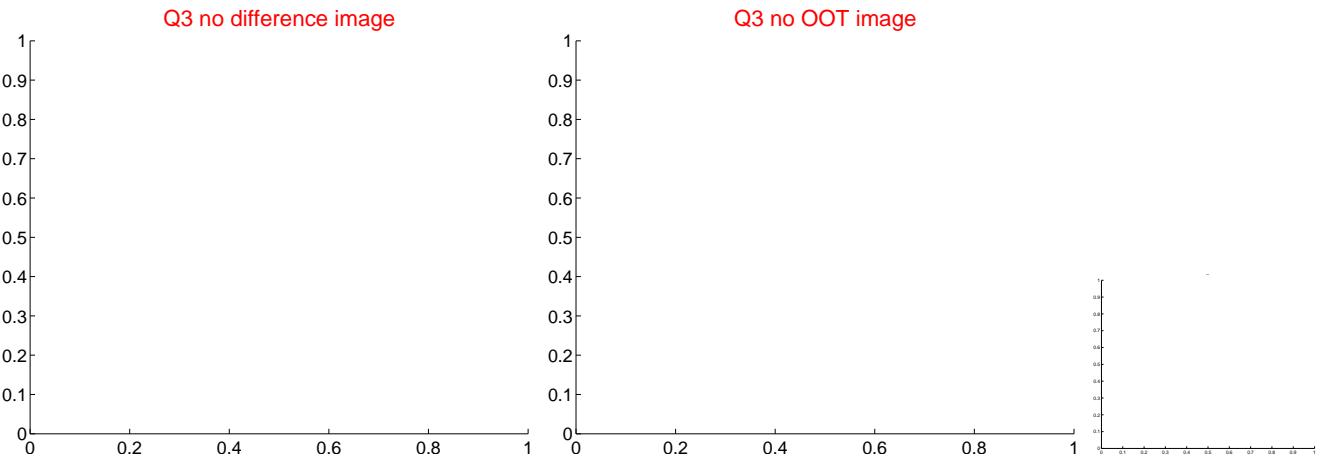
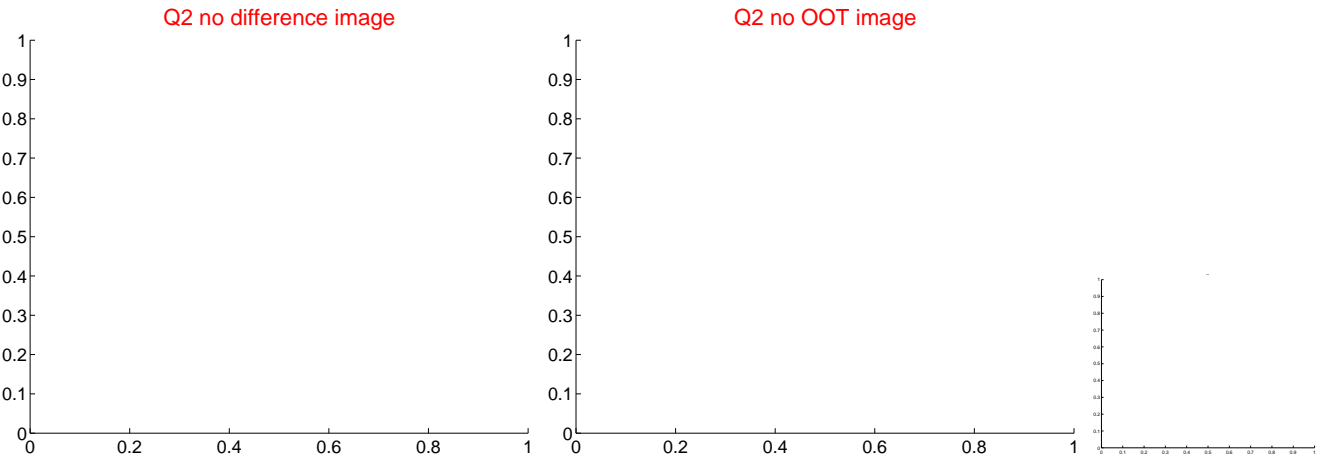
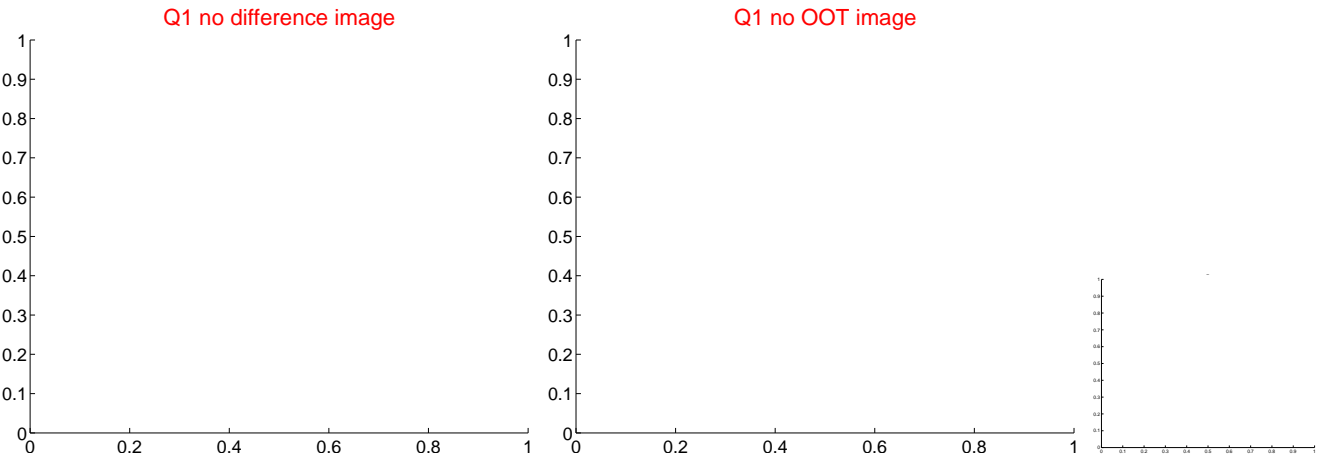
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.434 \pm 0.198$	2.19	$0.158 \pm 0.361$	$-0.405 \pm 0.159$
PRF-fit source offset from KIC position	$0.447 \pm 0.235$	1.90	$0.216 \pm 0.386$	$-0.392 \pm 0.164$
photometric centroid source offset	$0.34 \pm 0.21$	1.63	$0.29 \pm 0.21$	$0.19 \pm 0.22$

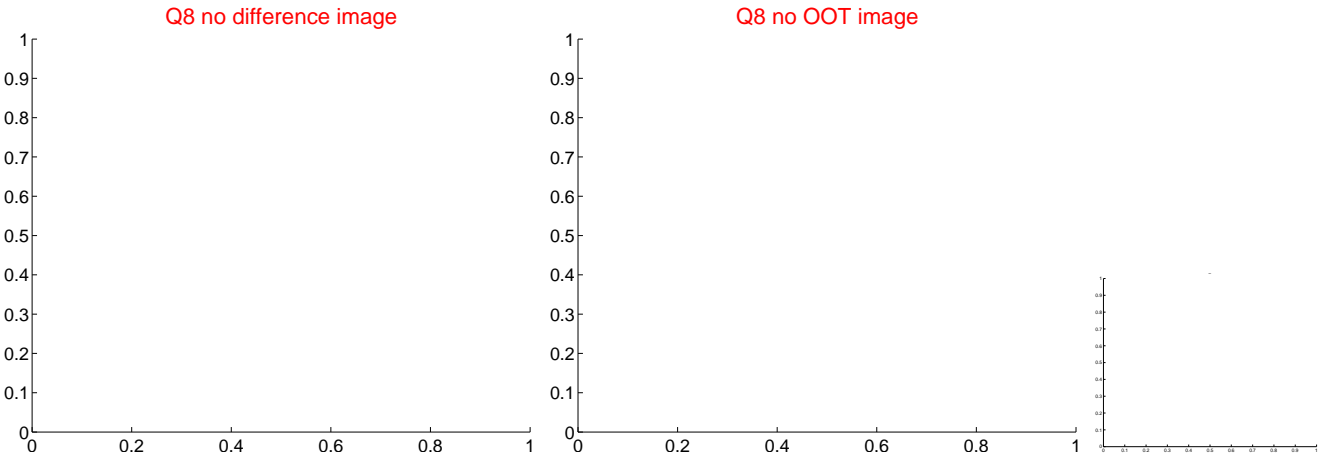
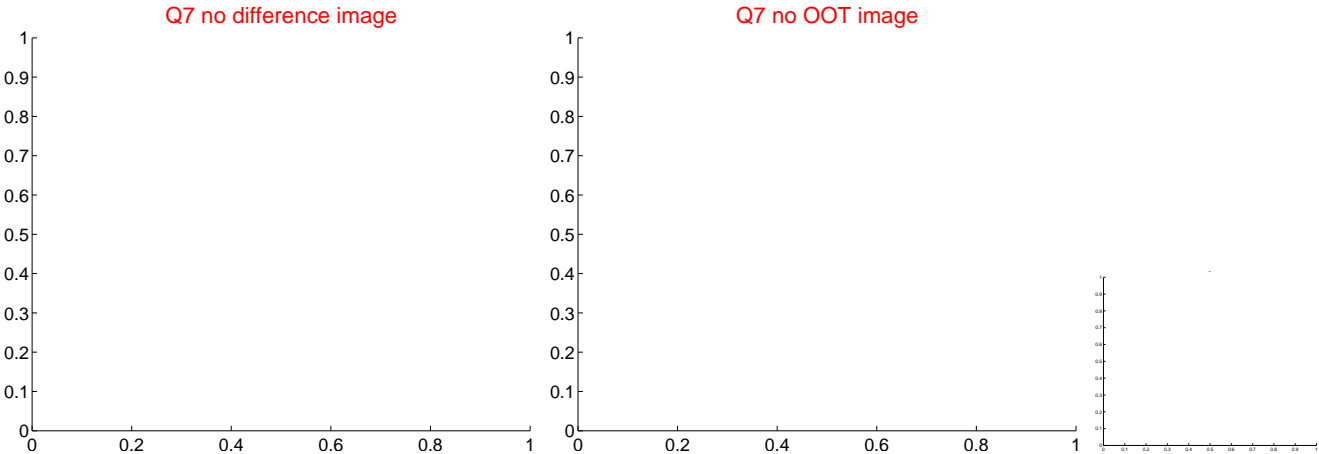
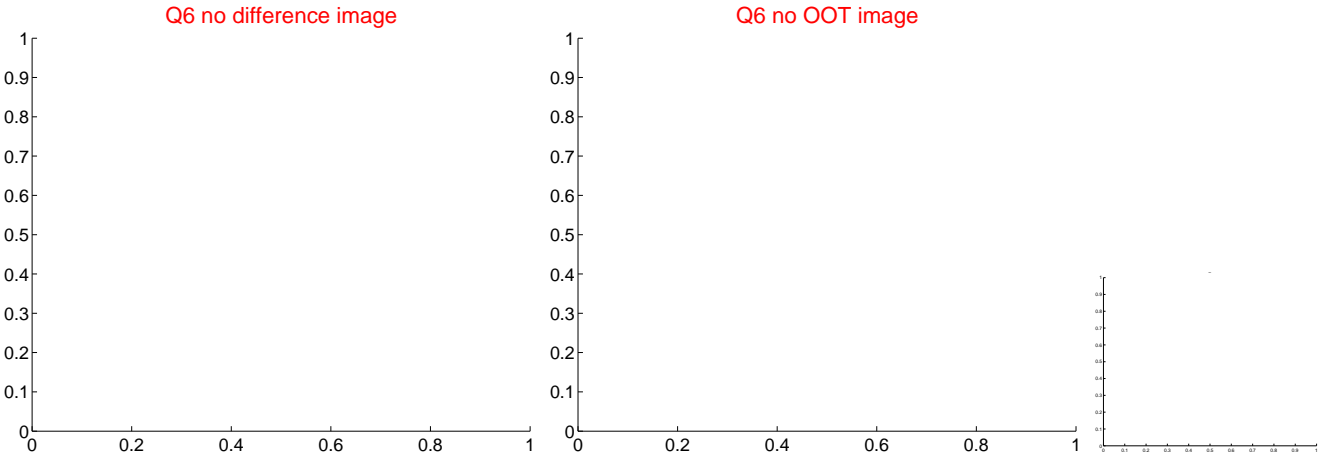
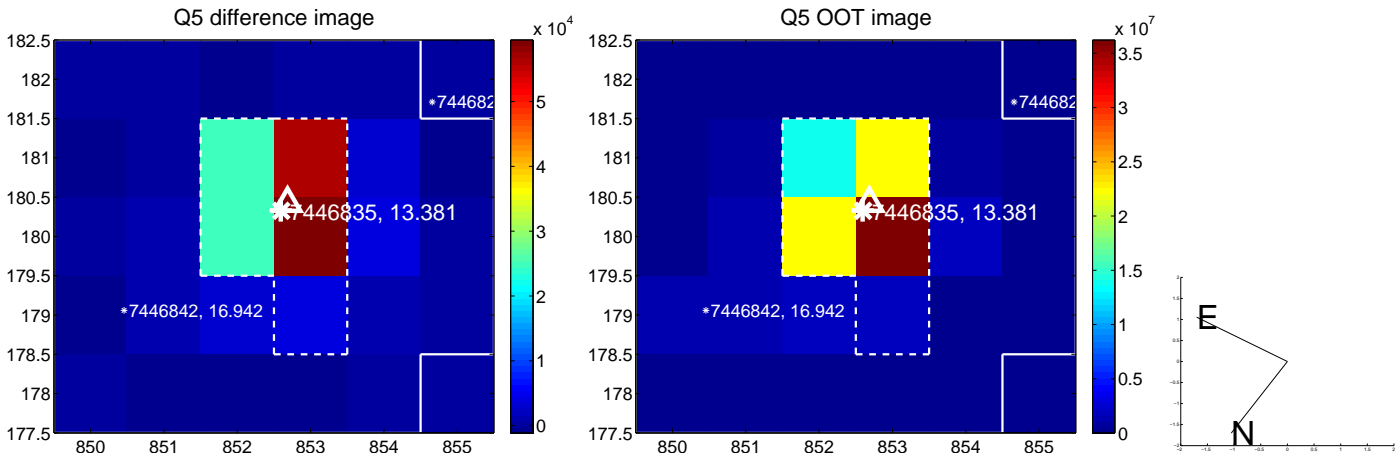


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

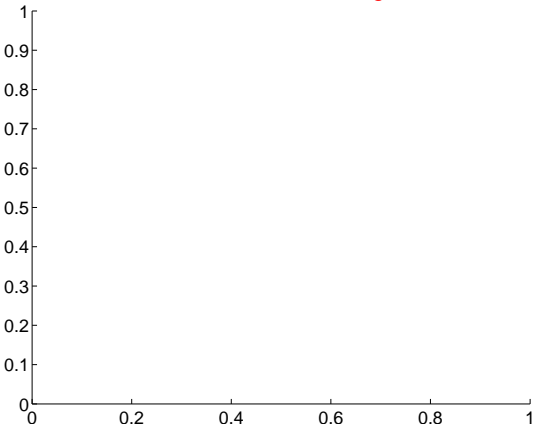


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

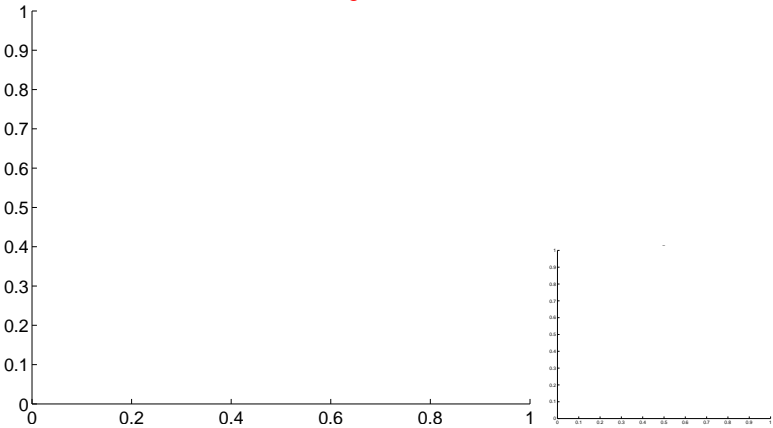


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

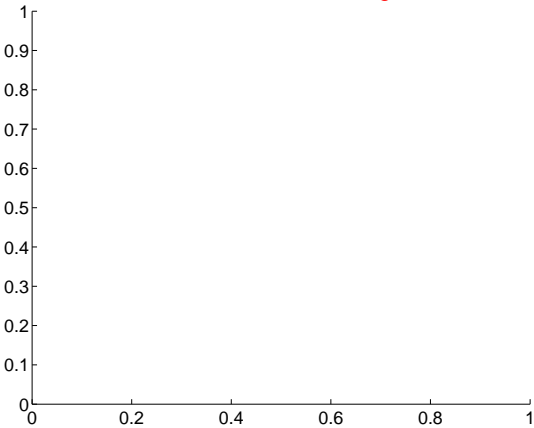
Q9 no difference image



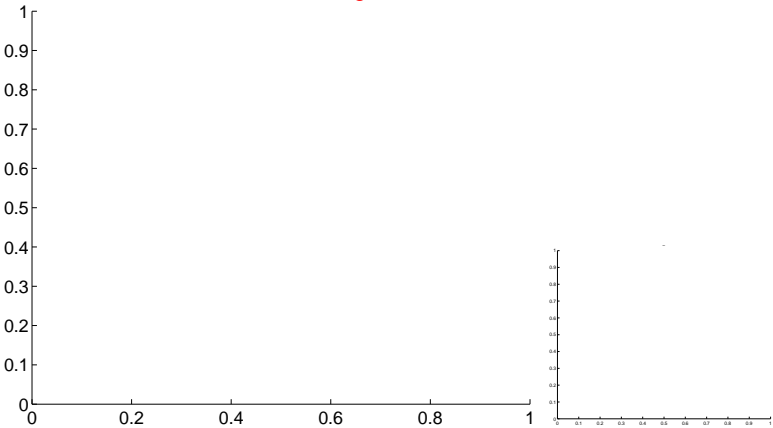
Q9 no OOT image



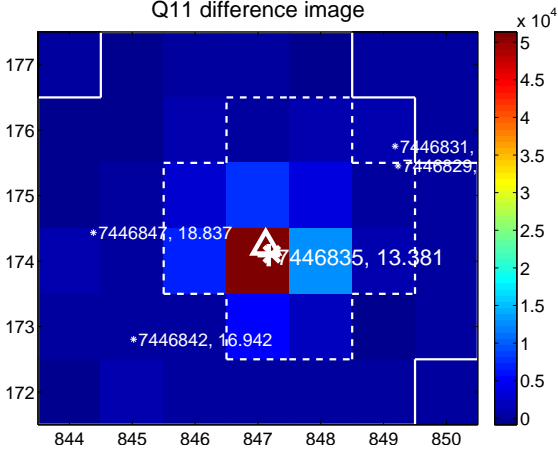
Q10 no difference image



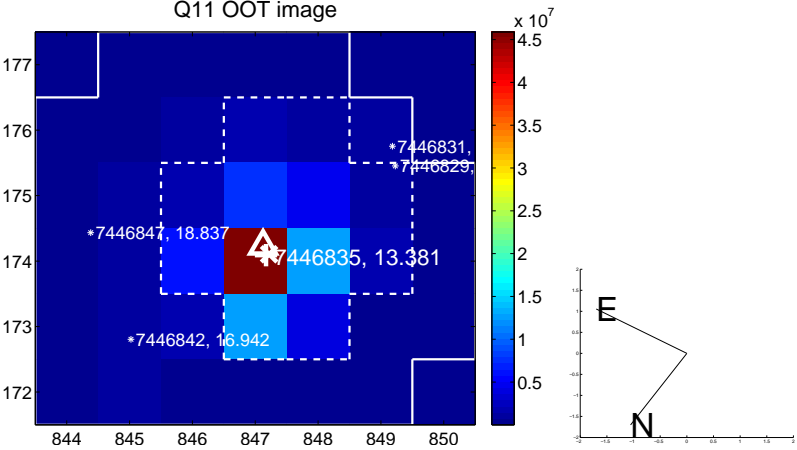
Q10 no OOT image



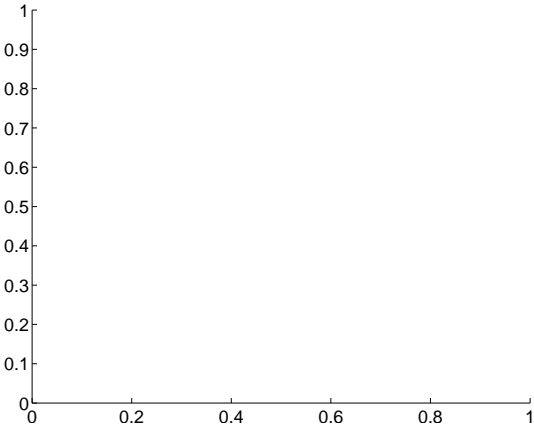
Q11 difference image



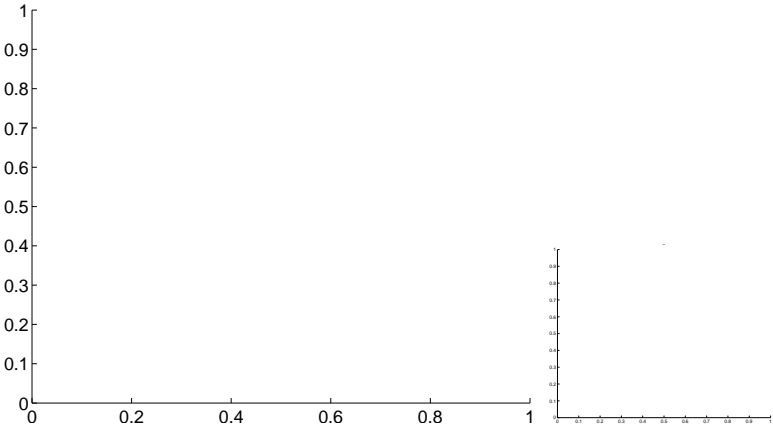
Q11 OOT image



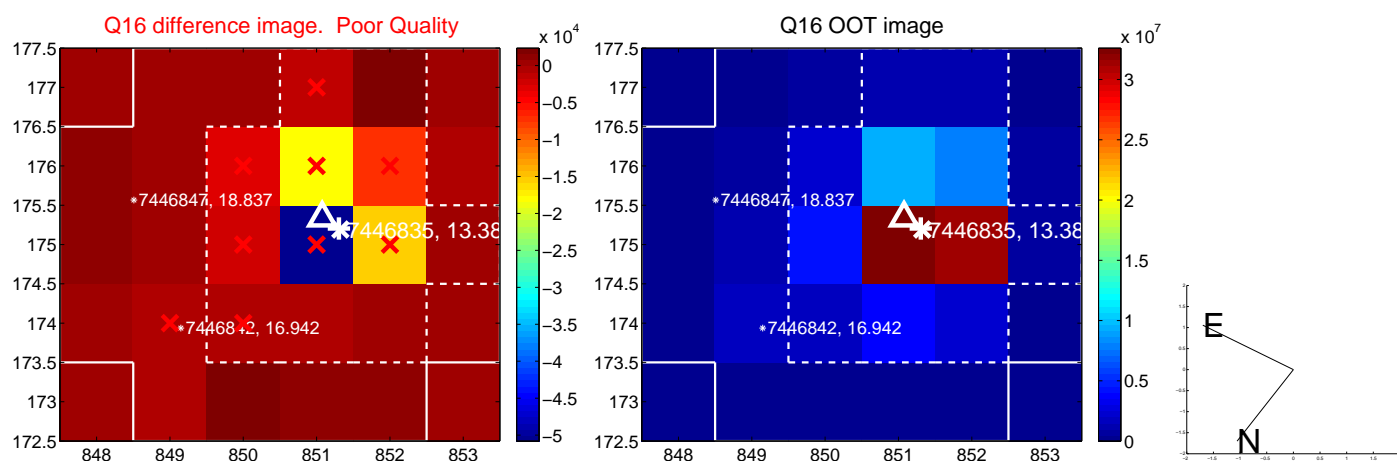
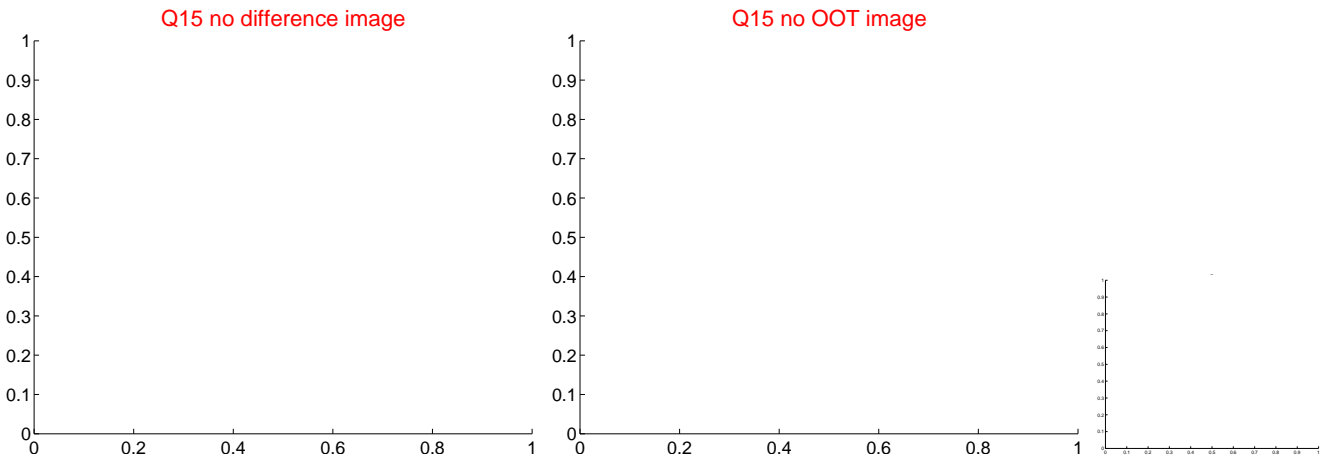
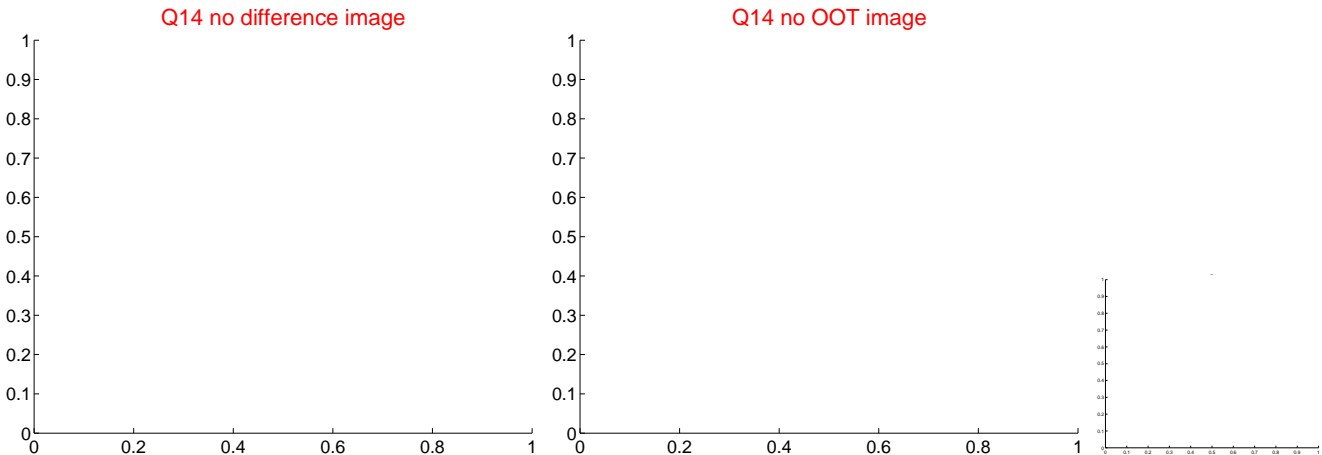
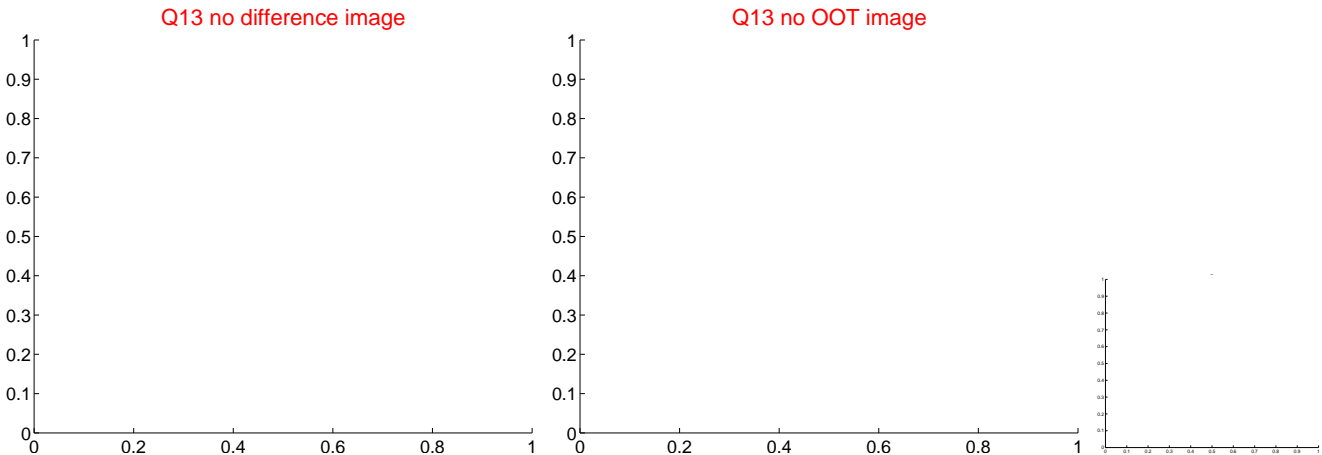
Q12 no difference image



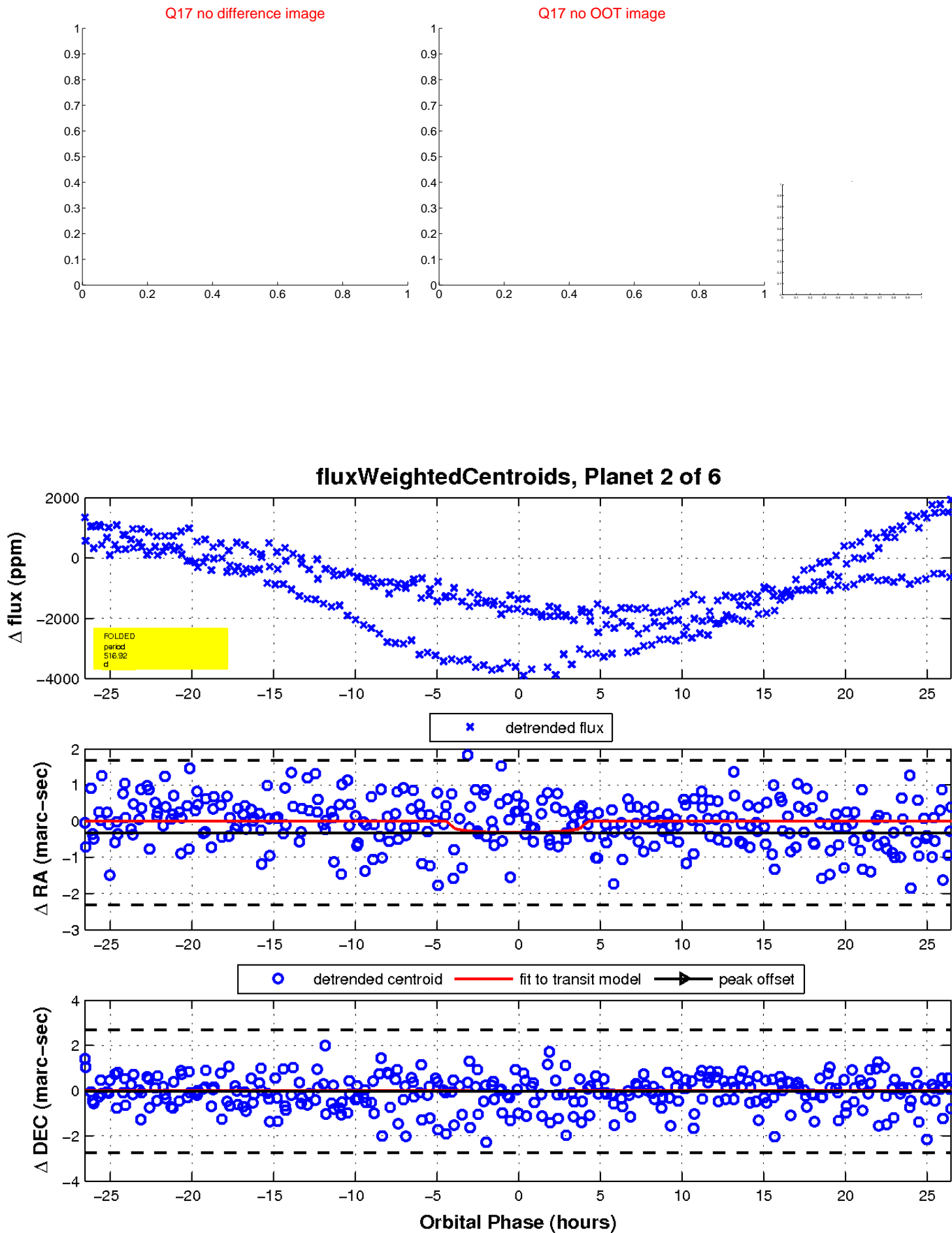
Q12 no OOT image



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

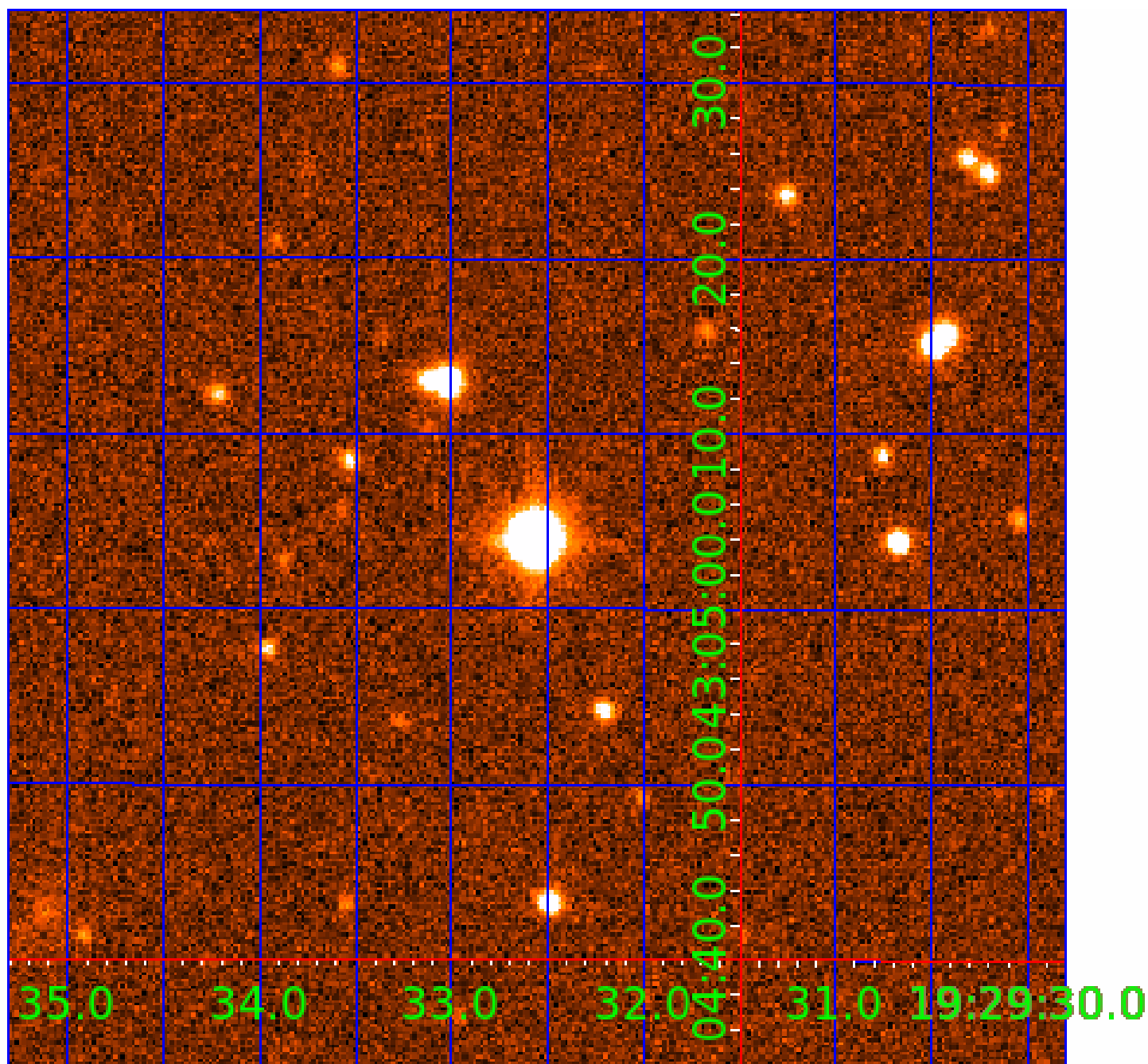


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007446835

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007446835-01	OBS	No	0.665312	131.604464	26.4	2.801	10.7	10.6	0.94	5620	0.58	4153.88
007446835-02	OBS	No	516.924337	518.509150	1728.7	8.874	16.8	8.8	0.94	5620	4.18	0.58
007446835-03	OBS	No	103.604968	190.389829	183.0	4.207	14.0	3.3	0.94	5620	1.49	4.96
007446835-04	OBS	No	310.189912	268.907487	158.4	3.896	10.2	1.7	0.94	5620	1.41	1.15
007446835-05	OBS	No	151.446877	220.609254	489.3	15.350	9.6	3.8	0.94	5620	2.67	2.99
007446835-06	OBS	No	93.995704	202.923269	368.4	9.747	8.9	5.1	0.94	5620	2.14	5.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007446835-01	OBS	FP	0.00	1	0	0	0	LPP_DV
007446835-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007446835-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—HALO_GHOST
007446835-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—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
007446835-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS
007446835-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES

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

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

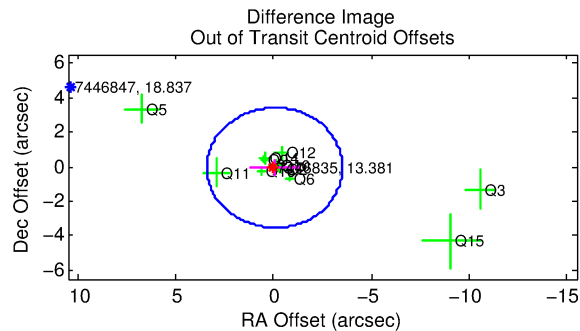
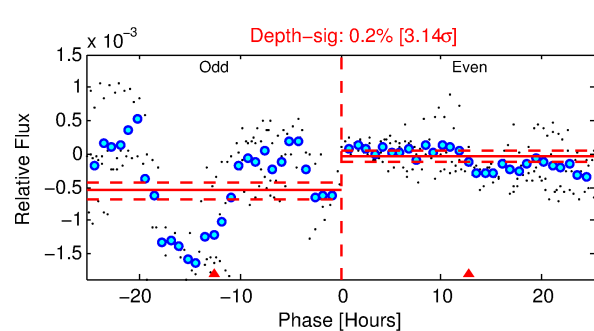
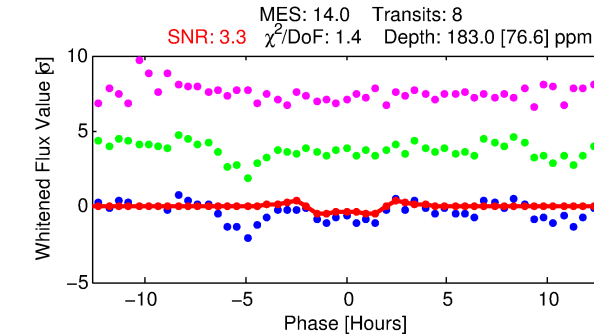
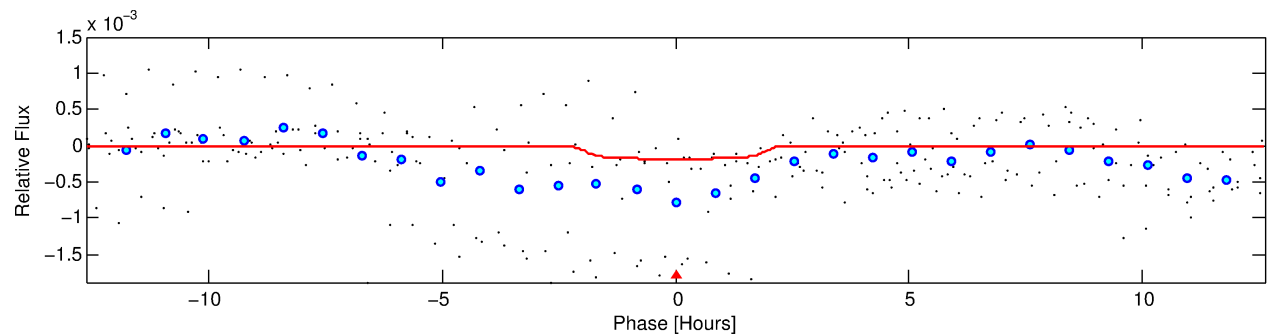
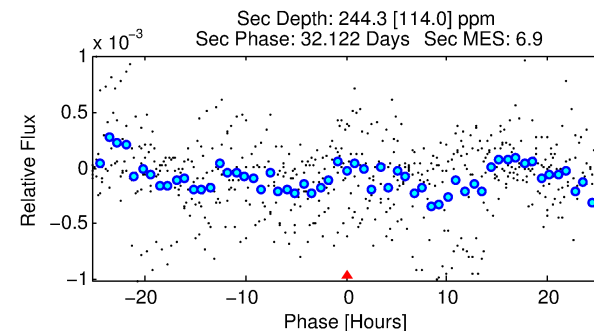
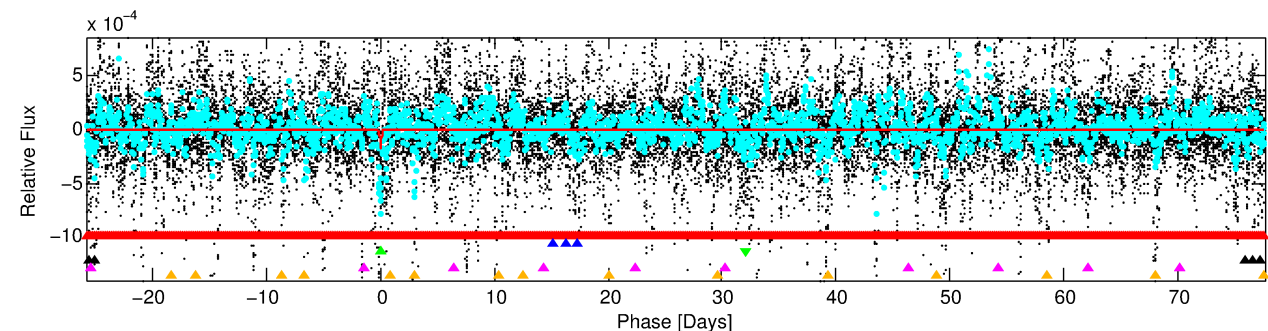
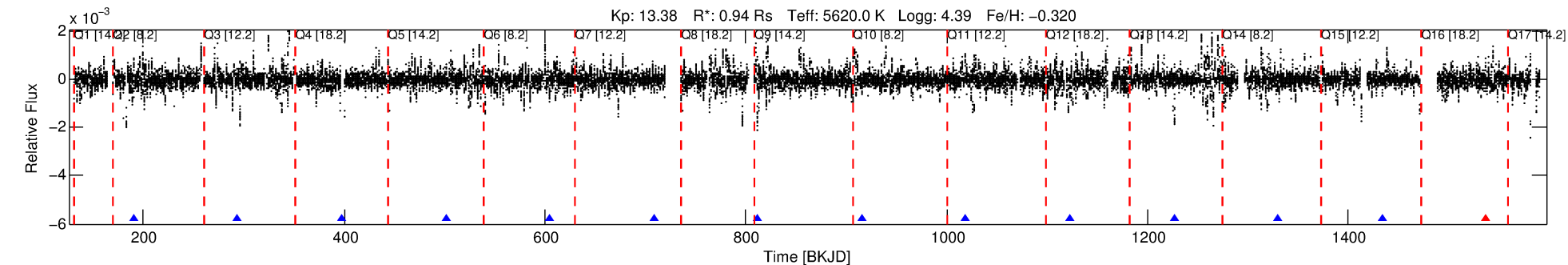
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007446835-03

No Significant Match Found

# DV One-Page Summary

KIC: 7446835 Candidate: 3 of 6 Period: 103.605 d



## DV Fit Results:

Period = 103.60497 [0.00299] d  
Epoch = 190.3898 [0.0234] BKJD  
Rp/R\* = 0.0145 [0.0152]  
a/R\* = 95.39 [443.35]  
b = 0.88 [1.21]  
Seff = 4.96 [1.83]  
Teff = 380 [35] K  
Rp = 1.49 [1.61] Re  
a = 0.4008 [0.0938] AU  
Ag = 9735.43 [21241.45] [0.46σ]  
Teffp = 5844 [3150] K [1.73σ]

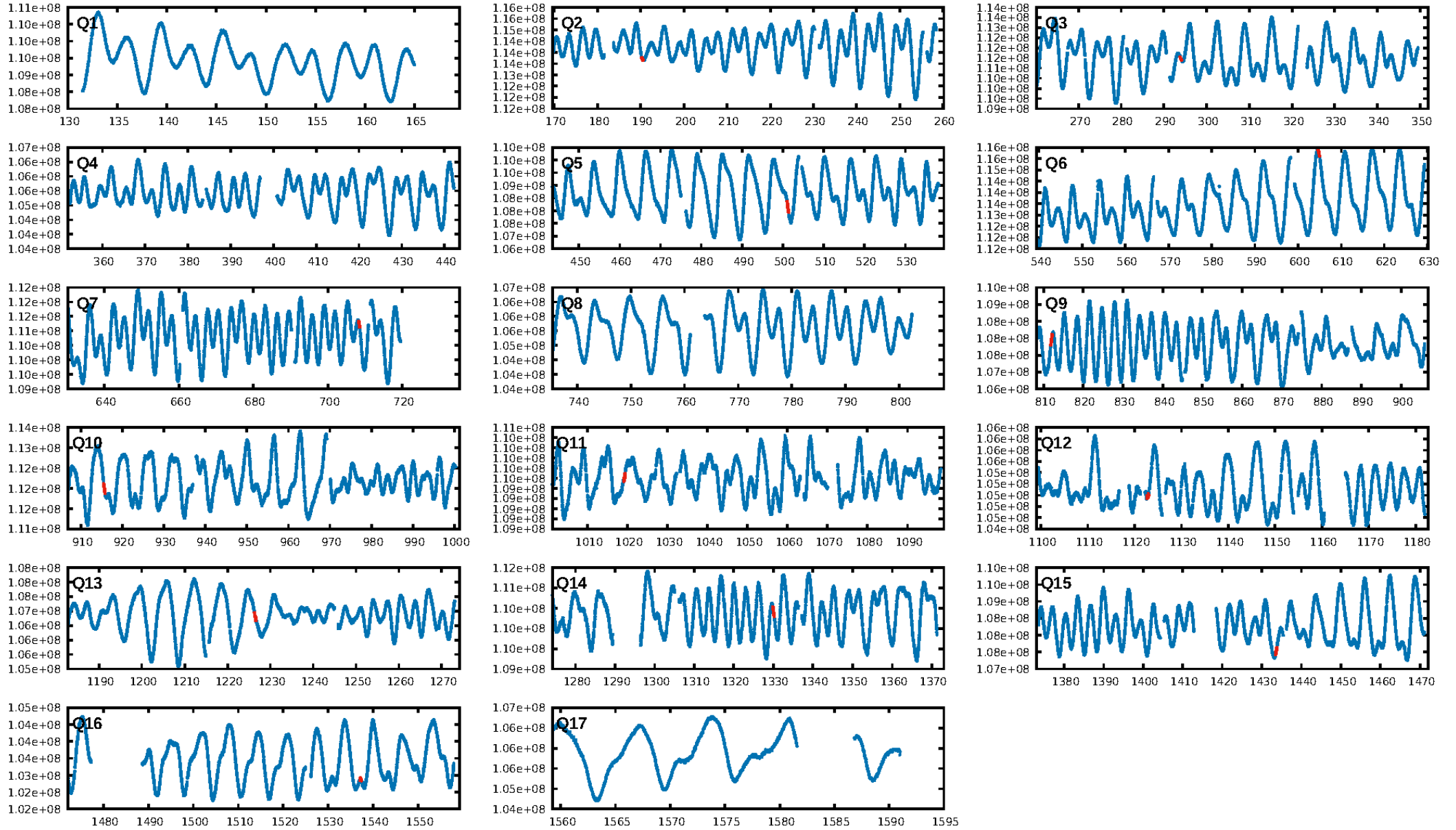
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [21.72σ]  
LongPeriod-sig: 100.0% [72.14σ]  
ModelChiSquare2-sig: 0.1%  
ModelChiSquareGof-sig: 96.3%  
Bootstrap-pfa: 1.31e-15  
RollingBand-fgt: 0.88 [7/8]  
GhostDiagnostic-chr: 0.2311  
Centroid-sig: 6.1%  
Centroid-so: 2.307 arcsec [1.87σ]  
OotOffset-rm: 0.083 arcsec [0.07σ]  
KicOffset-rm: 0.064 arcsec [0.06σ]  
OotOffset-st: 4/4/2/2 [12]  
KicOffset-st: 4/4/2/2 [12]  
DiffImageQuality-fgm: 0.25 [3/12]  
DiffImageOverlap-fno: 0.00 [0/12]

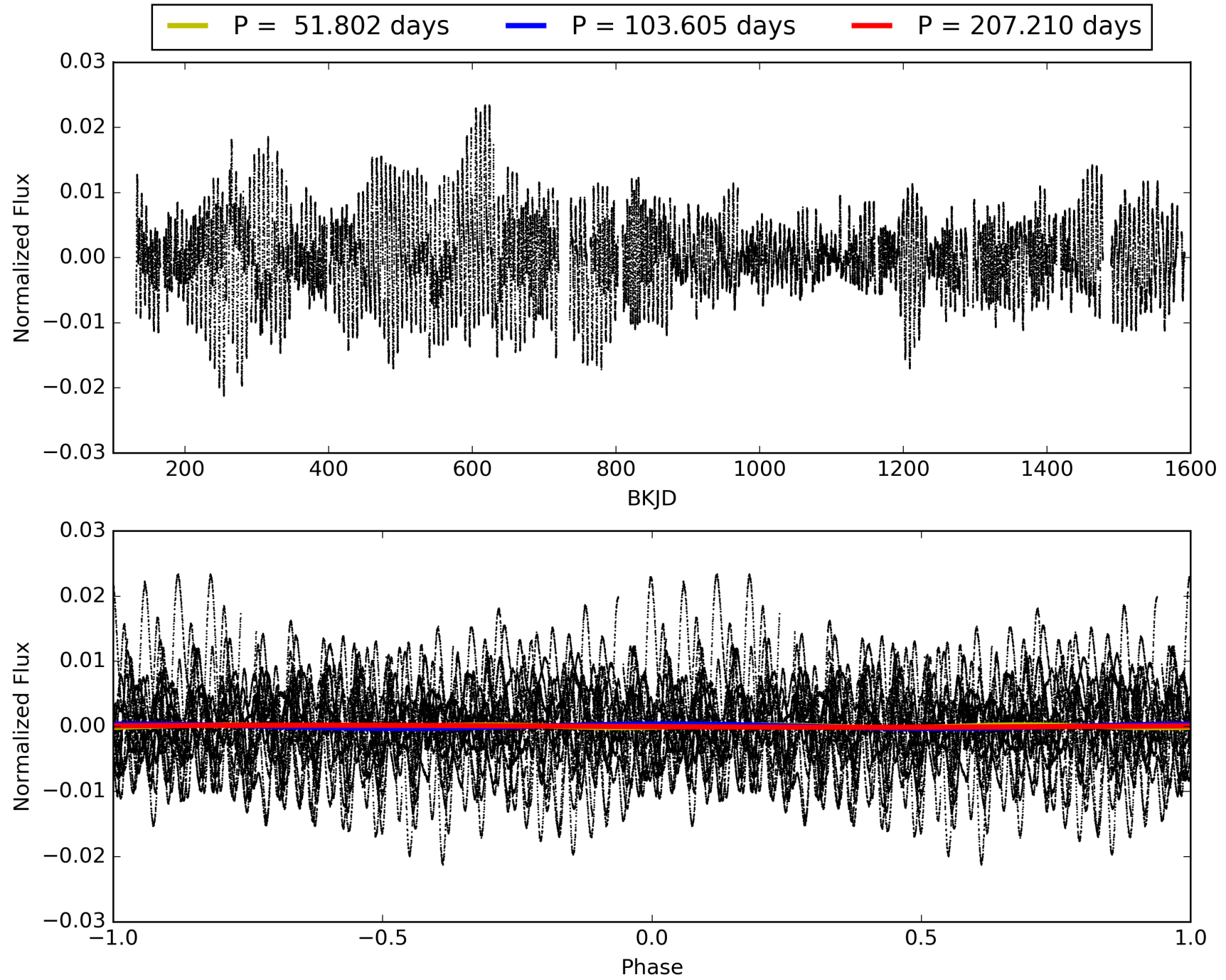
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:57:18 Z

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

# TCE 007446835-03, PDC Light Curves

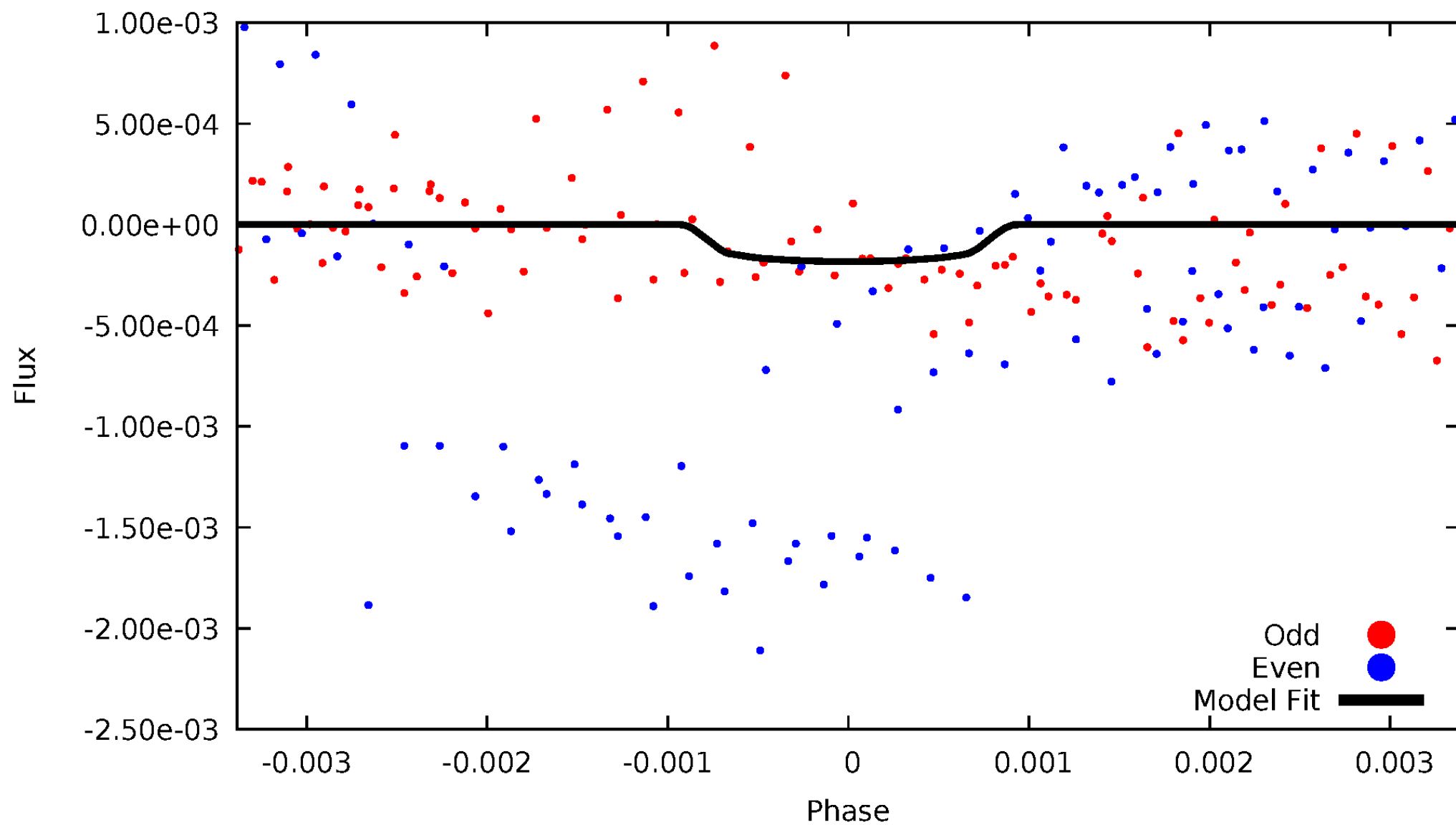


TCE 007446835-03



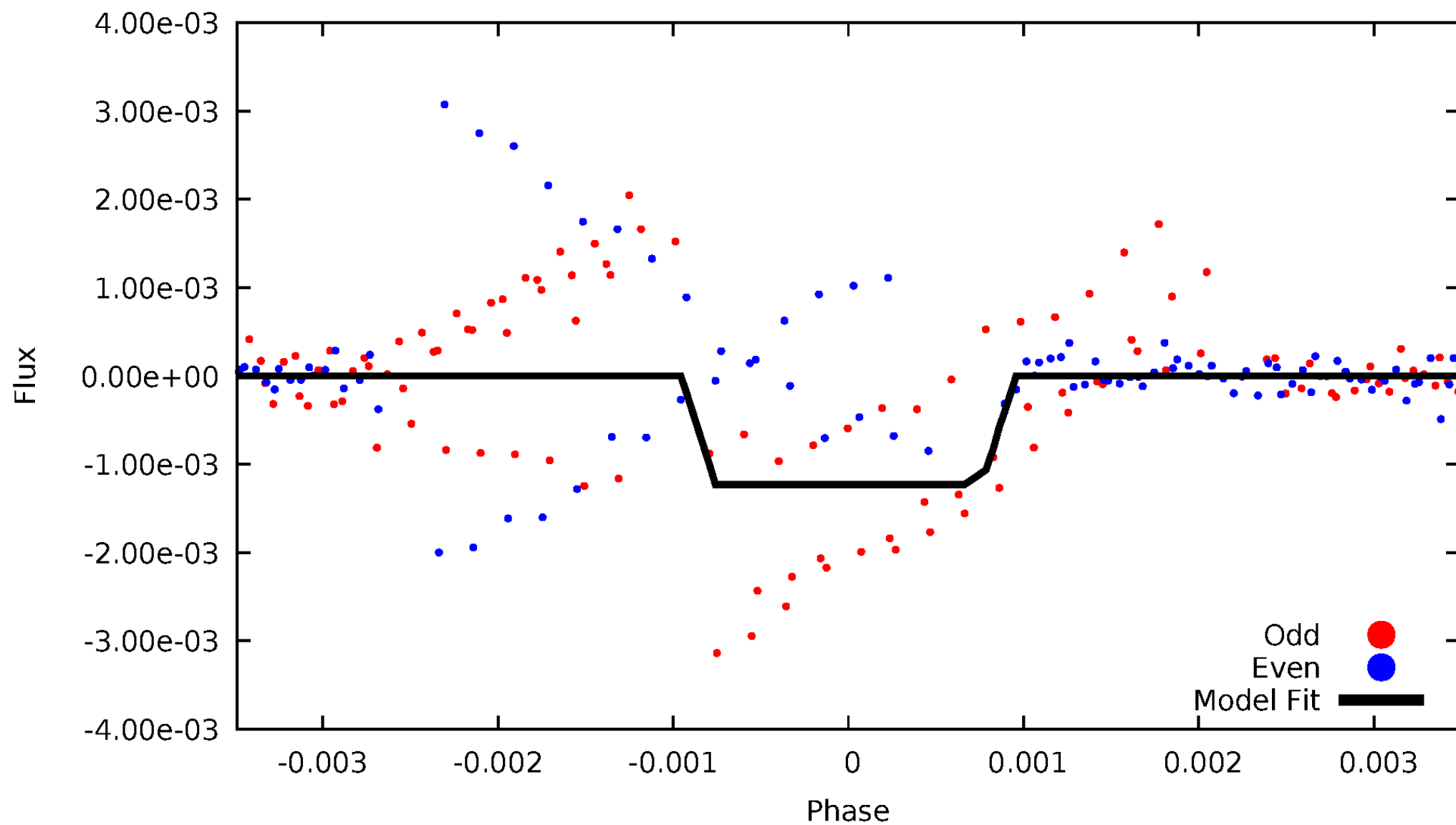
# DV Odd/Even

TCE 007446835-03



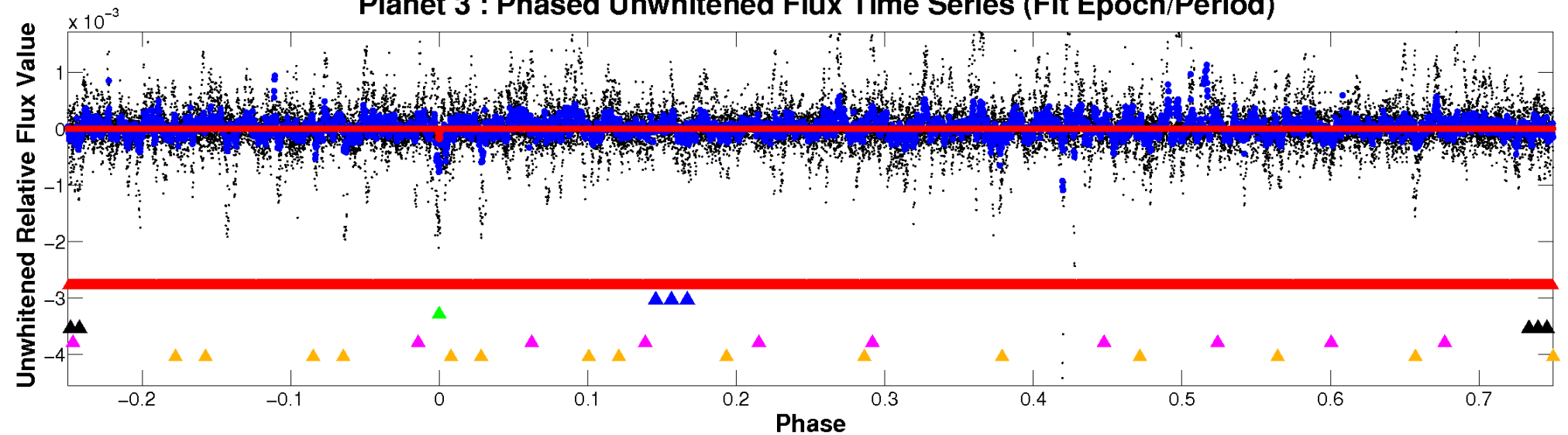
# ALT Odd/Even

TCE 007446835-03

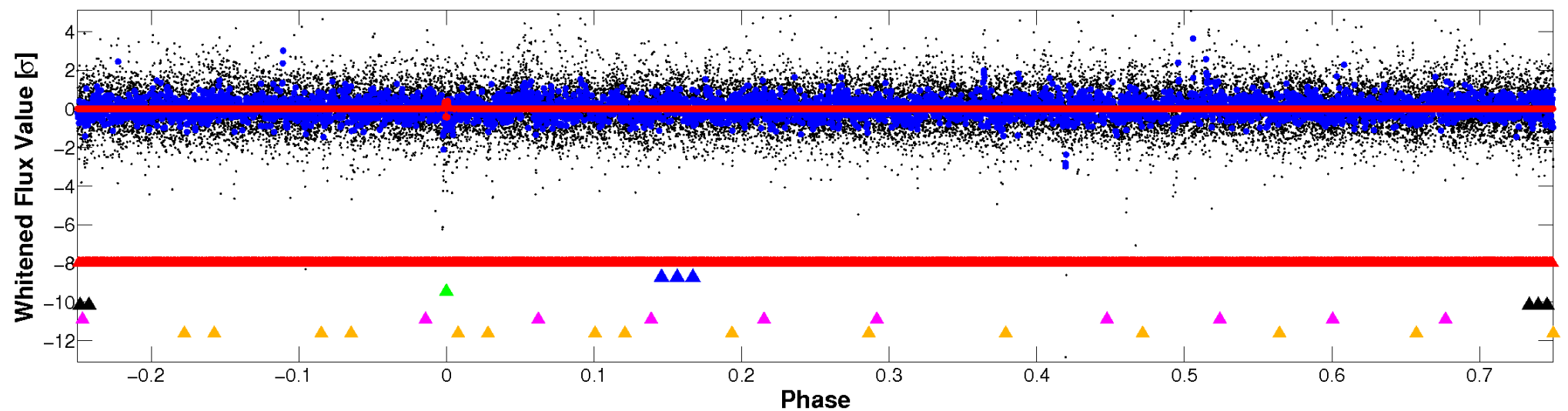


# Non-Whitened Vs. Whitened Light Curve

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

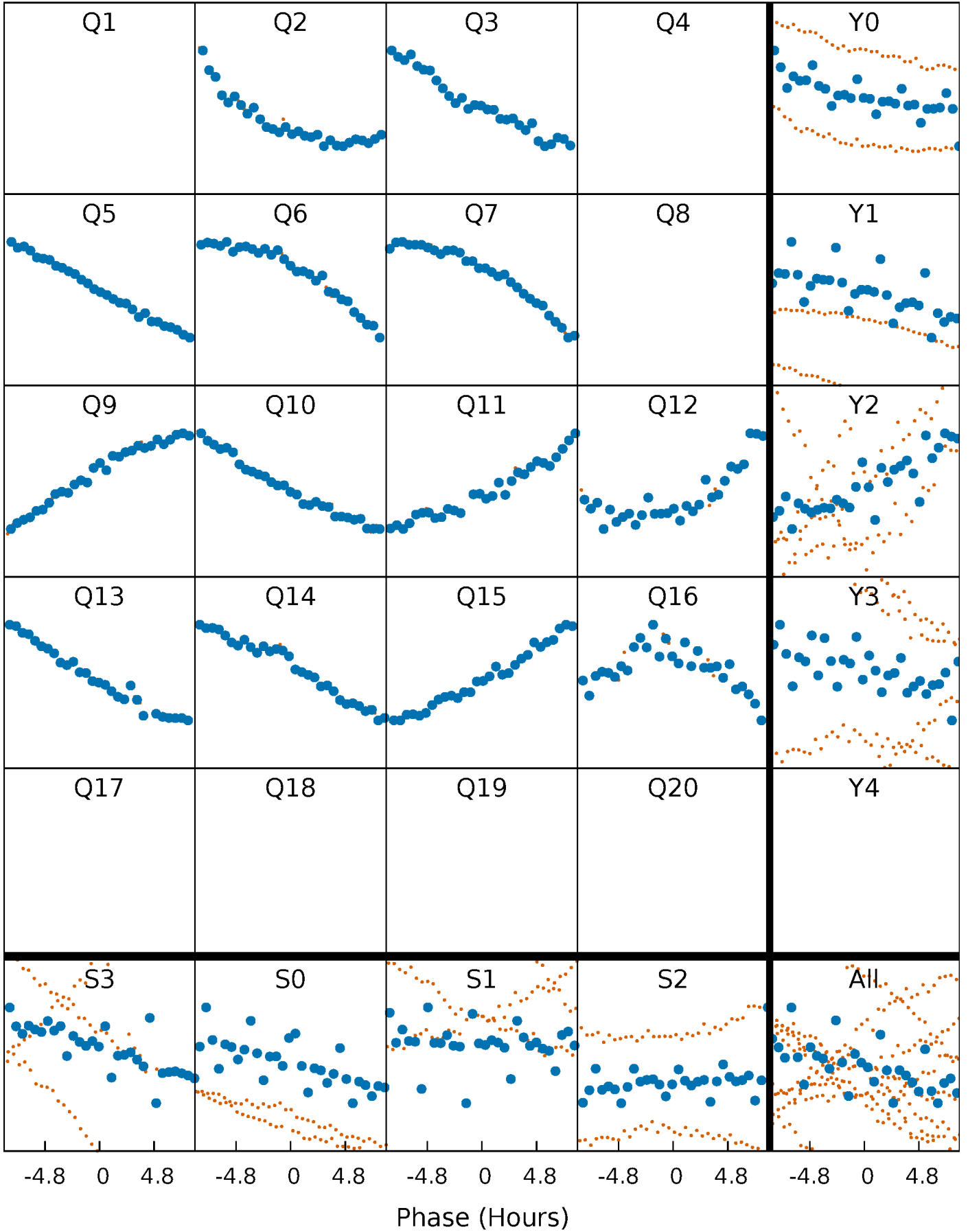


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



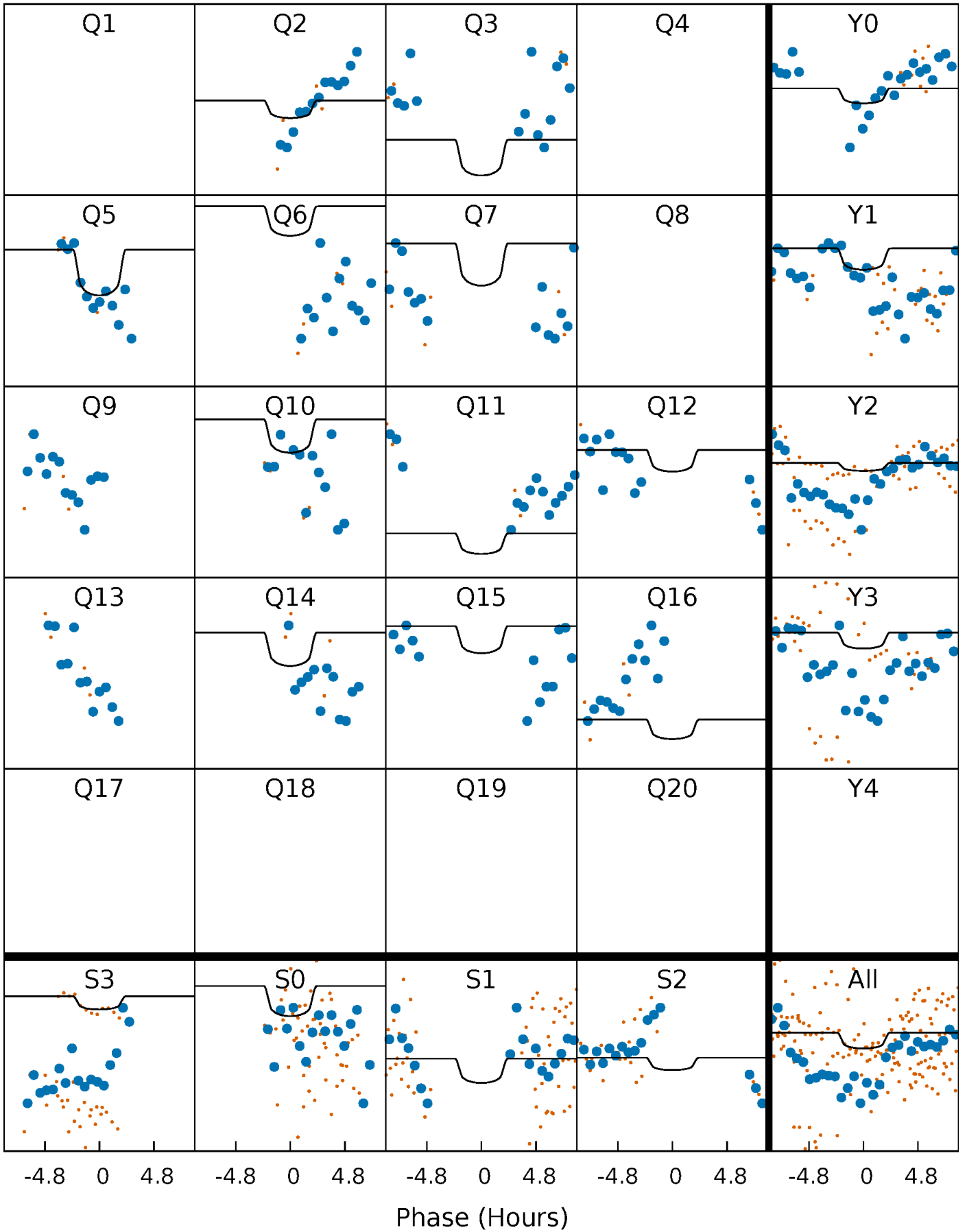
# PDC Quarter-Phased Transit Curves

TCE 007446835-03 P=103.604968 Days  $T_0=190.389829$  (BKJD)



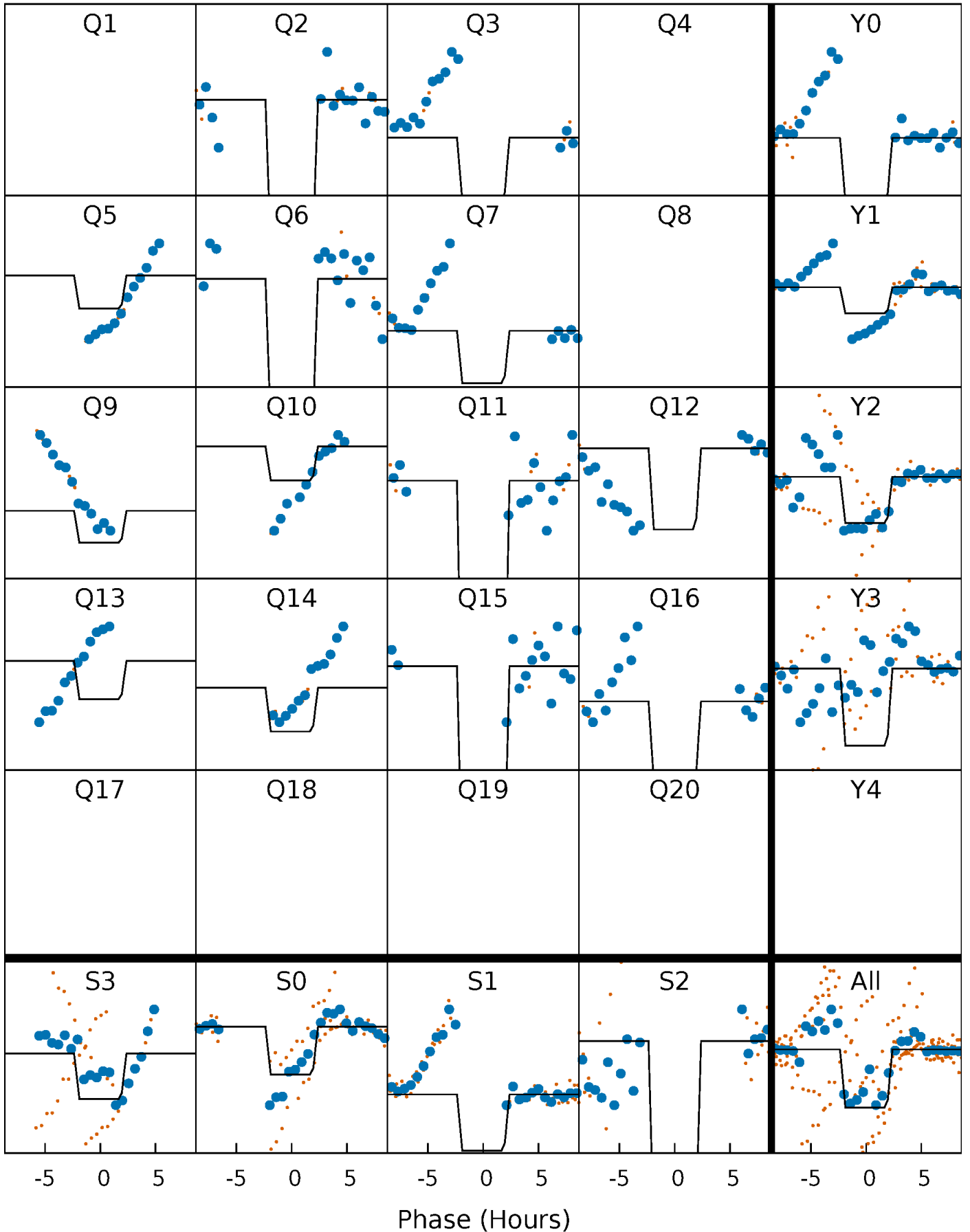
# DV Quarter-Phased Transit Curves

TCE 007446835-03 P=103.604968 Days  $T_0=190.389829$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

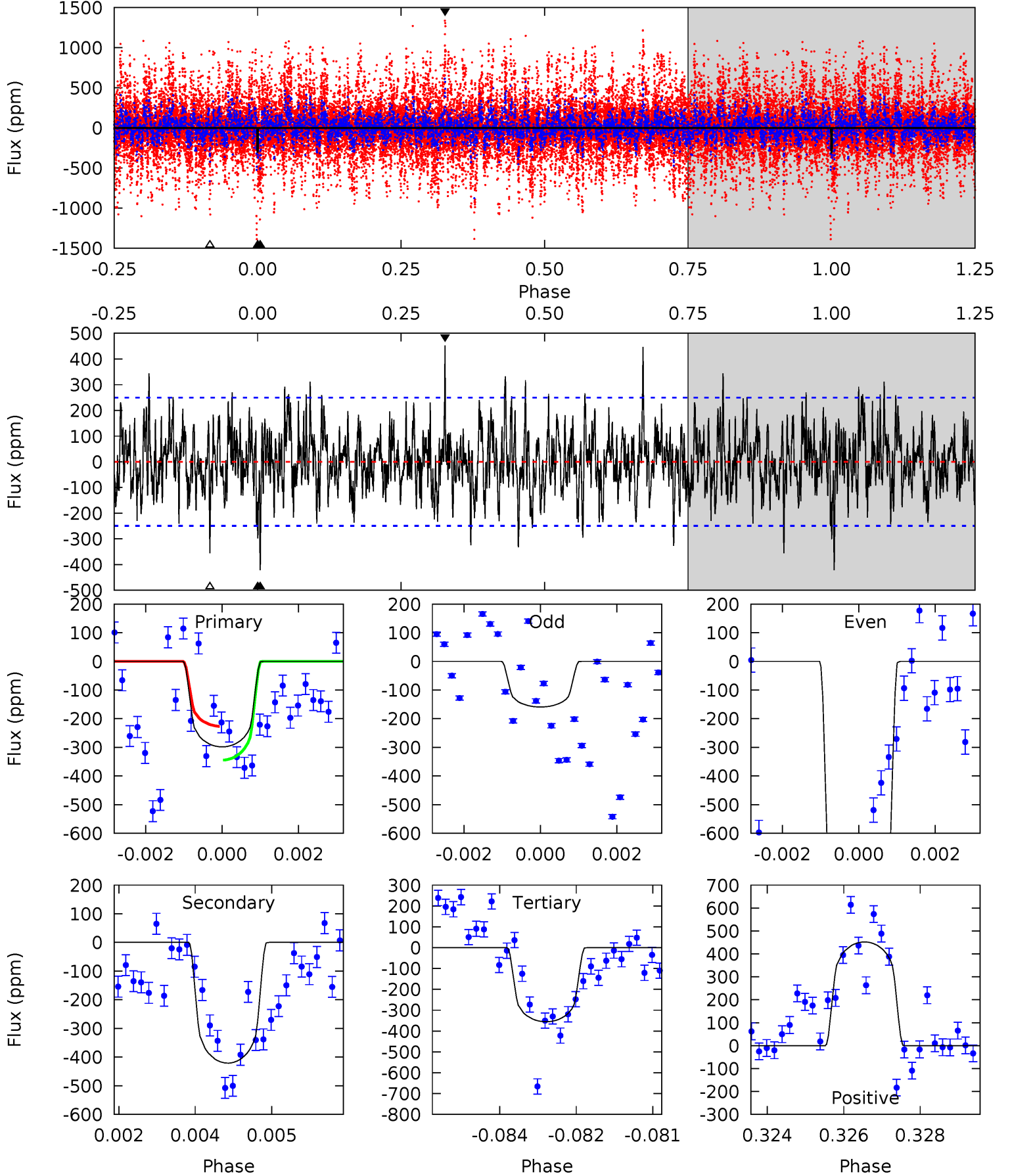
TCE 007446835-03 P=103.625139 Days  $T_0=190.232263$  (BKJD)



# DV Model-Shift Uniqueness Test

007446835-03, P = 103.604968 Days, E = 86.784861 Days

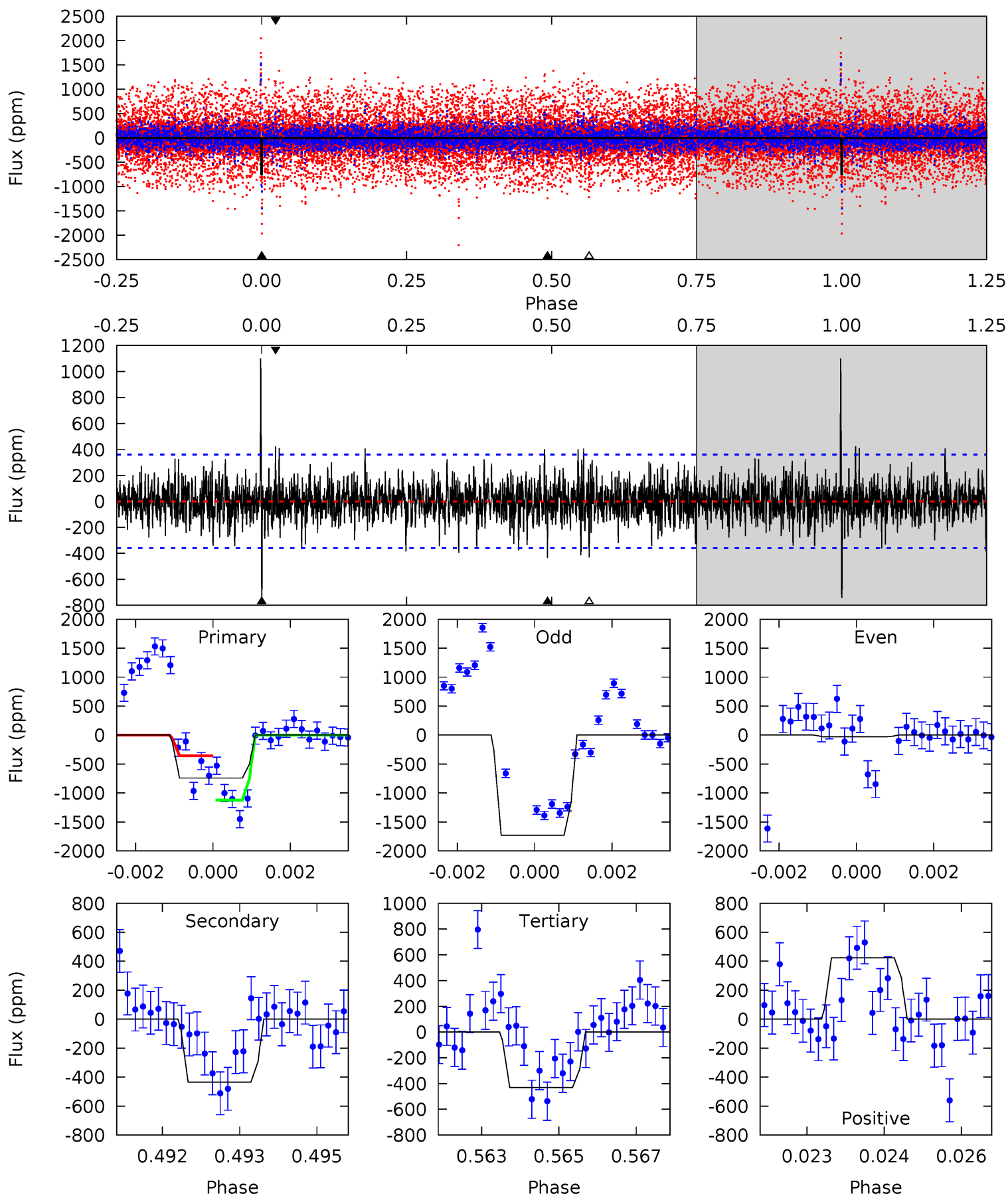
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.38	9.01	7.61	9.67	5.34	3.12	2.19	-1.22	-3.29	1.40	-0.66	13.3	1.88	0.52	1.23



# Alt Model-Shift Uniqueness Test

007446835-03, P = 103.625139 Days, E = 86.607124 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
11.0	6.46	6.39	6.29	5.35	3.13	1.66	4.65	4.74	0.07	0.17	11.5	1.81	0.60	5.78



### Stellar Parameters For KIC 007446835

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5620^{+152}_{-152}$	$4.391^{+0.162}_{-0.198}$	$-0.320^{+0.300}_{-0.250}$	$0.944^{+0.252}_{-0.168}$	$0.800^{+0.124}_{-0.062}$	$1.339^{+0.984}_{-0.650}$
	+3%/-3%	+4%/-5%	+94%/-78%	+27%/-18%	+16%/-8%	+73%/-49%
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 007446835-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-421 \pm 47$	$1.89^{+1.55}_{-1.15}$	$531^{+43}_{-34}$	$5950^{+4827}_{-1348}$	$10687^{+59934}_{-7520}$
Alt.	$-435 \pm 67$	$3.71^{+1.71}_{-1.64}$	$535^{+40}_{-34}$	$4473^{+1326}_{-549}$	$2835^{+6463}_{-1551}$

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

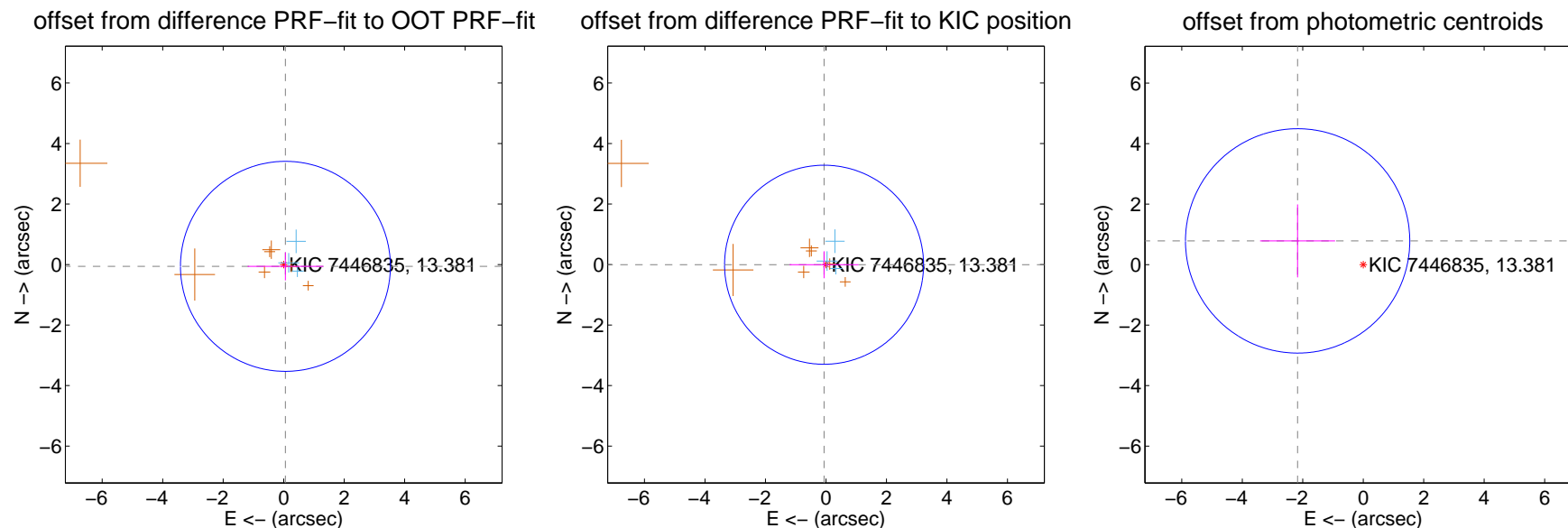
## DV Centroid Data

Supplemental centroid analysis for 007446835-03. Kepler magnitude: 13.38. Transit SNR 3.29

There are 3 quarters with good PRF difference image offsets

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

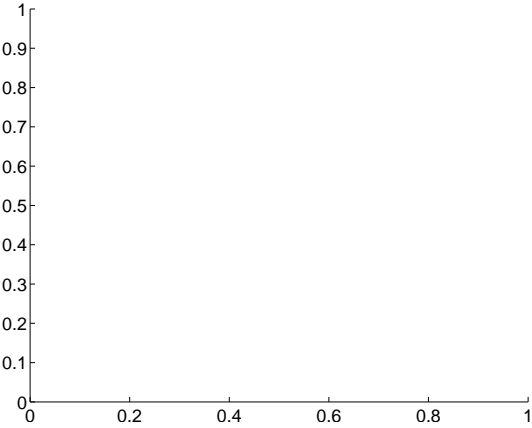
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.083 \pm 1.157$	0.07	$-0.058 \pm 1.252$	$-0.059 \pm 0.466$
PRF-fit source offset from KIC position	$0.064 \pm 1.096$	0.06	$0.064 \pm 1.139$	$-0.007 \pm 0.445$
photometric centroid source offset	$2.31 \pm 1.24$	1.87	$2.17 \pm 1.24$	$0.78 \pm 1.21$



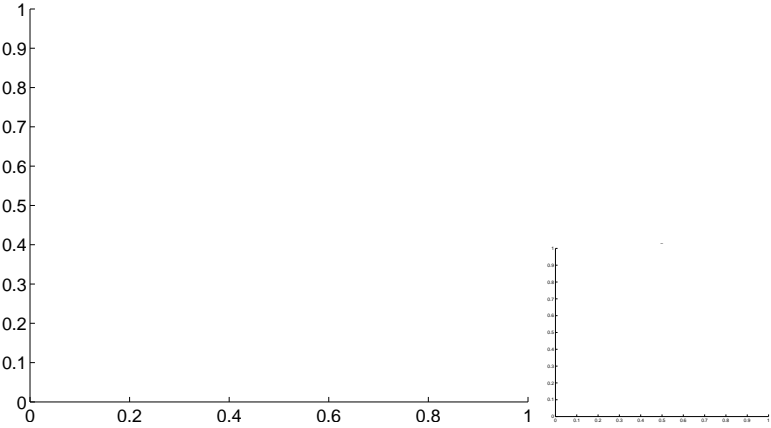
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

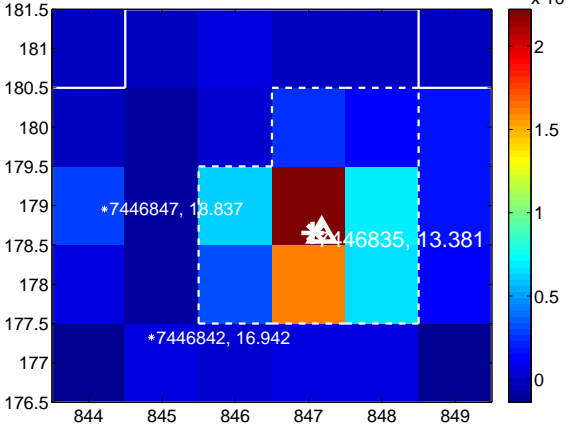
Q1 no difference image



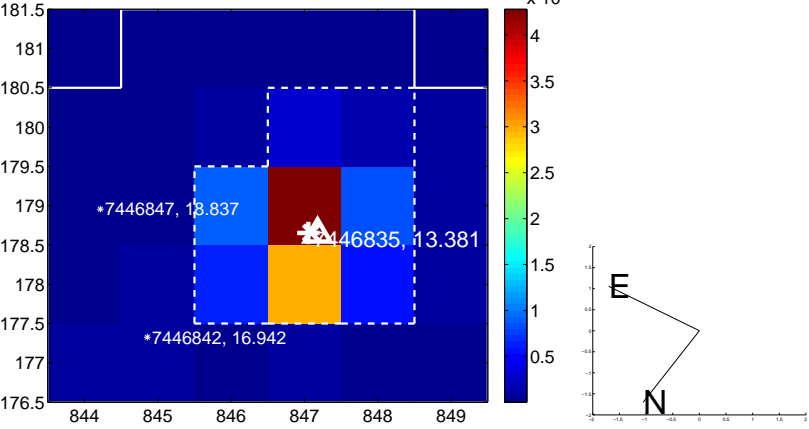
Q1 no OOT image



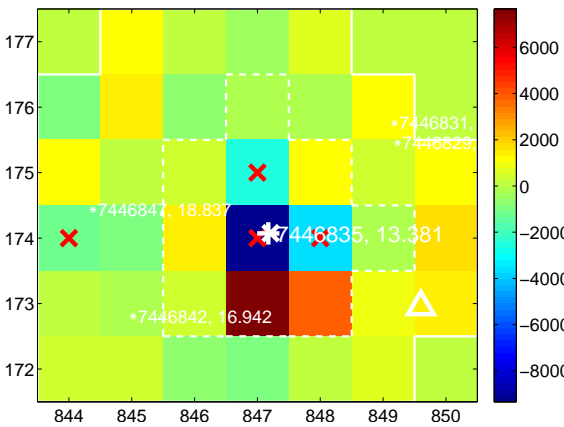
Q2 difference image



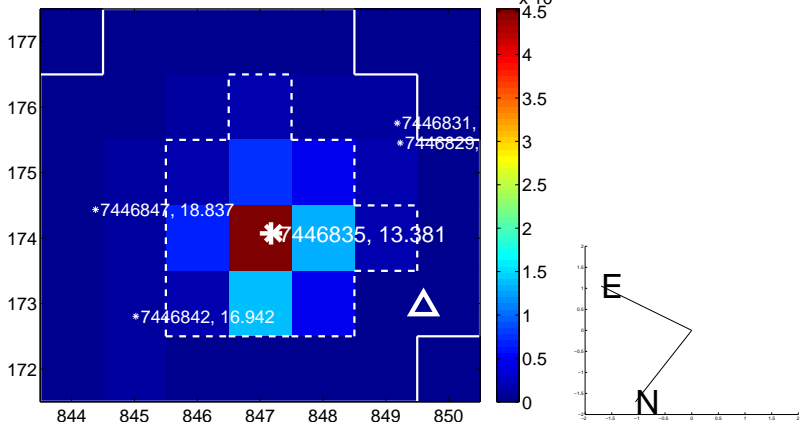
Q2 OOT image



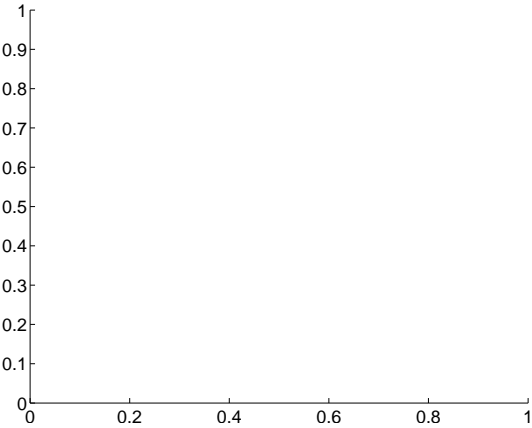
Q3 difference image. Poor Quality



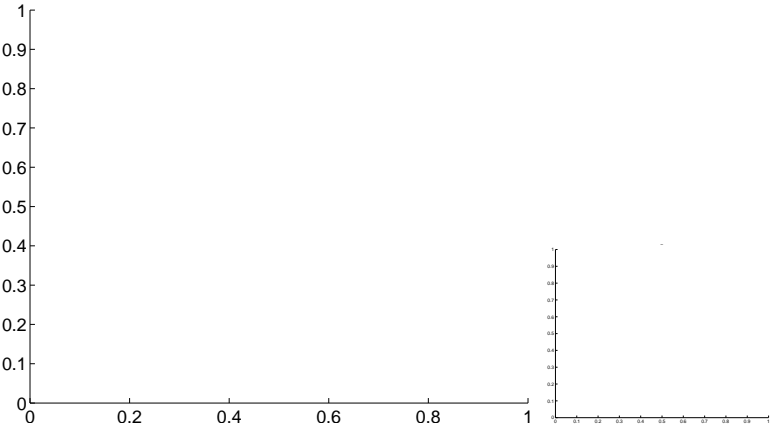
Q3 OOT image



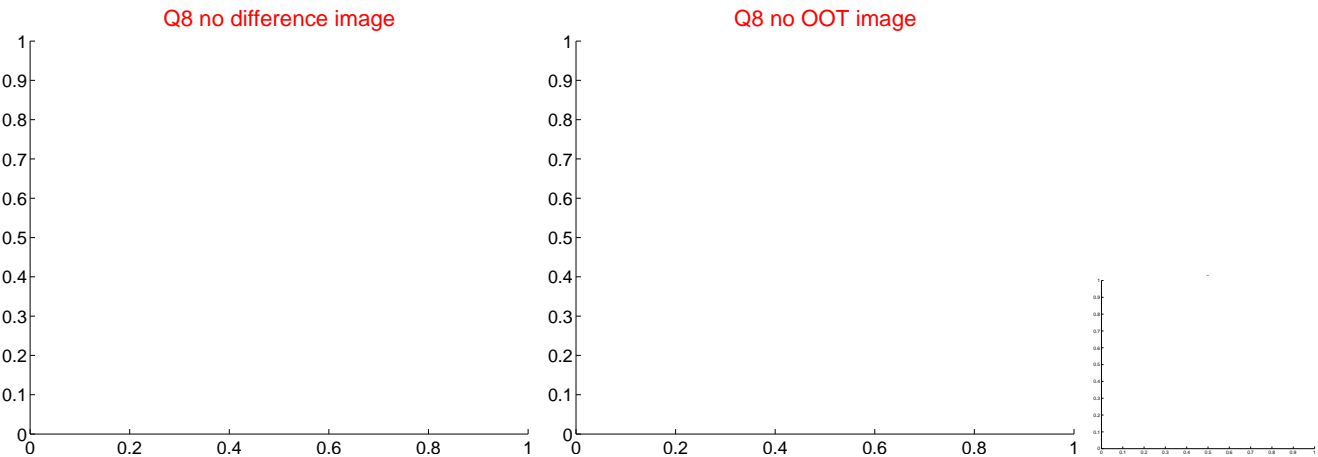
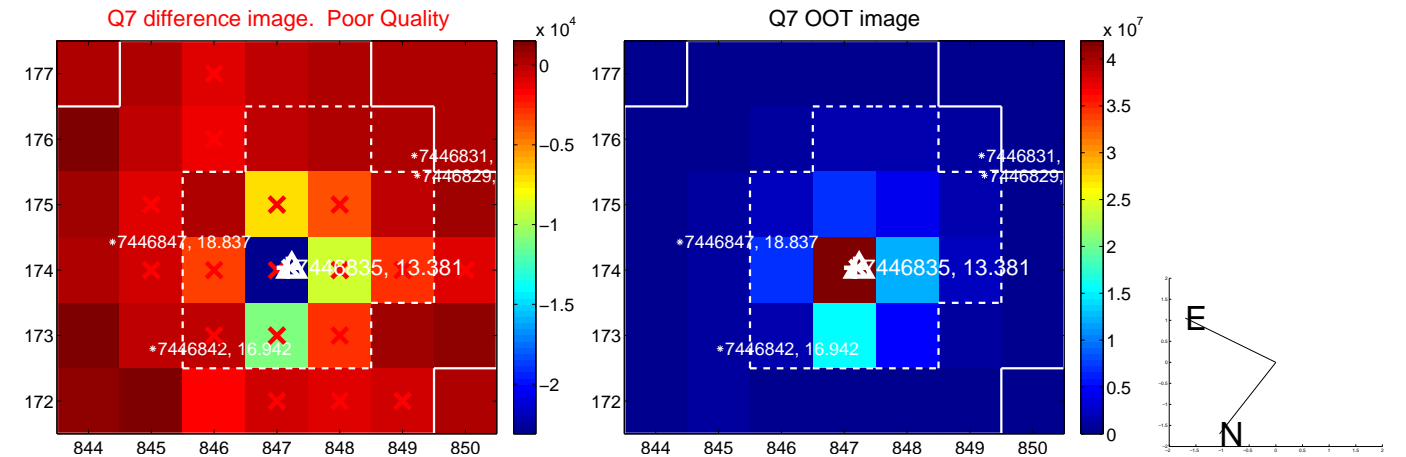
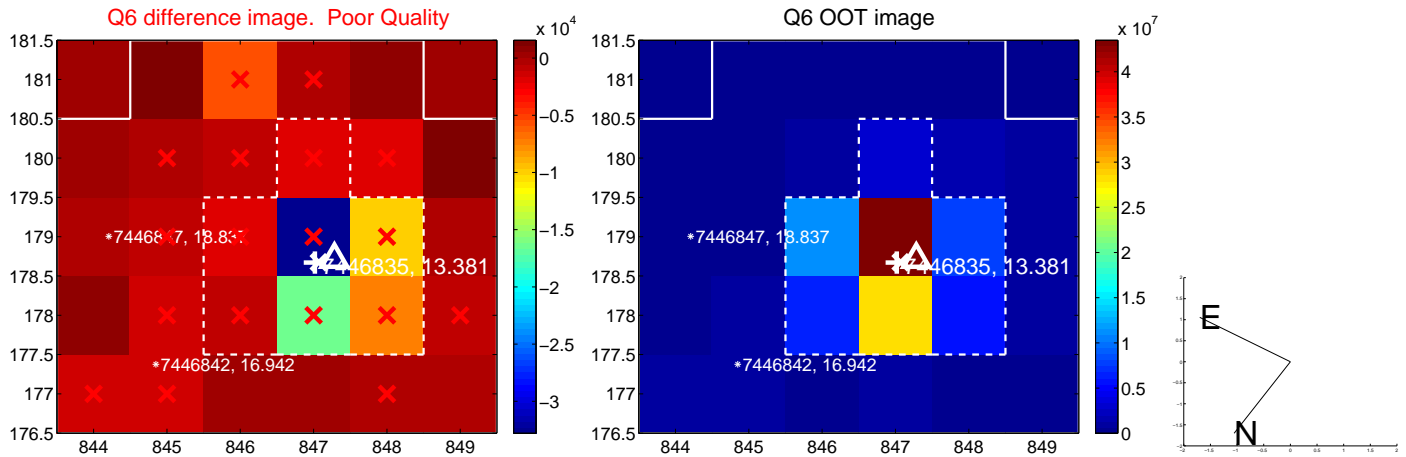
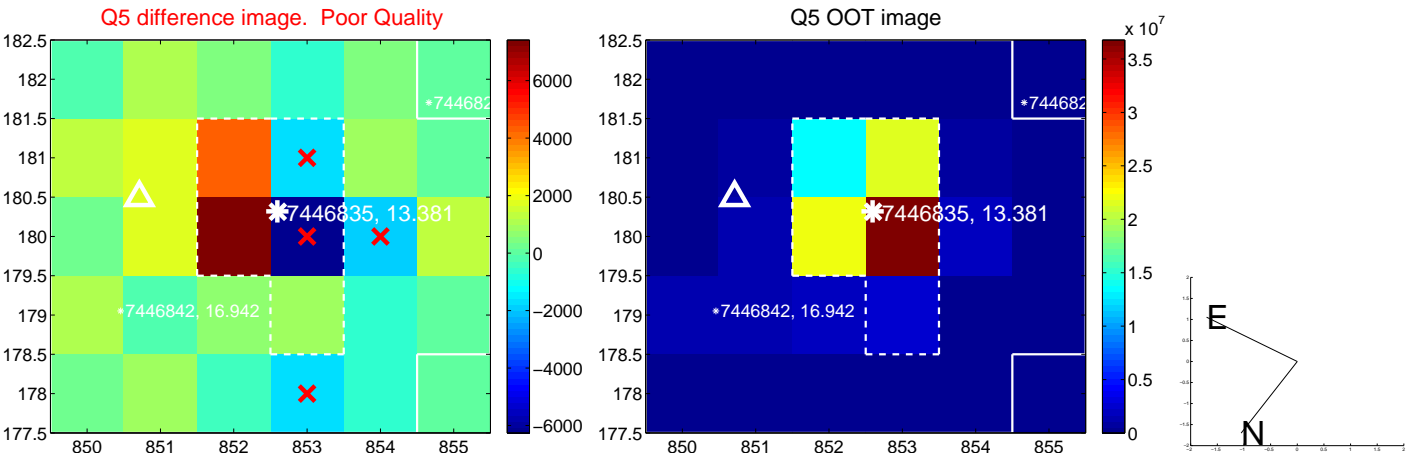
Q4 no difference image



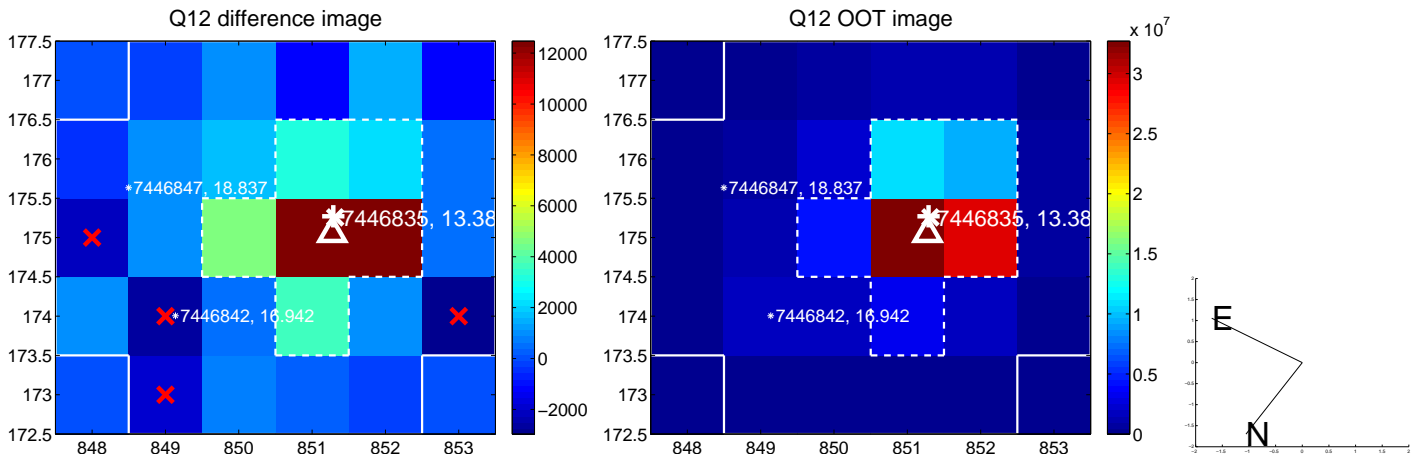
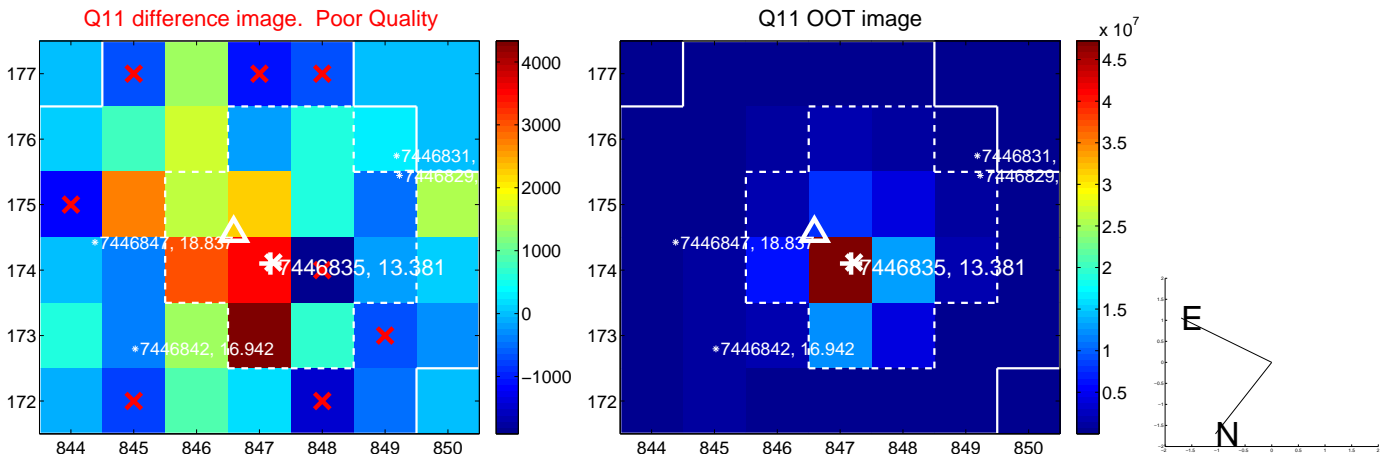
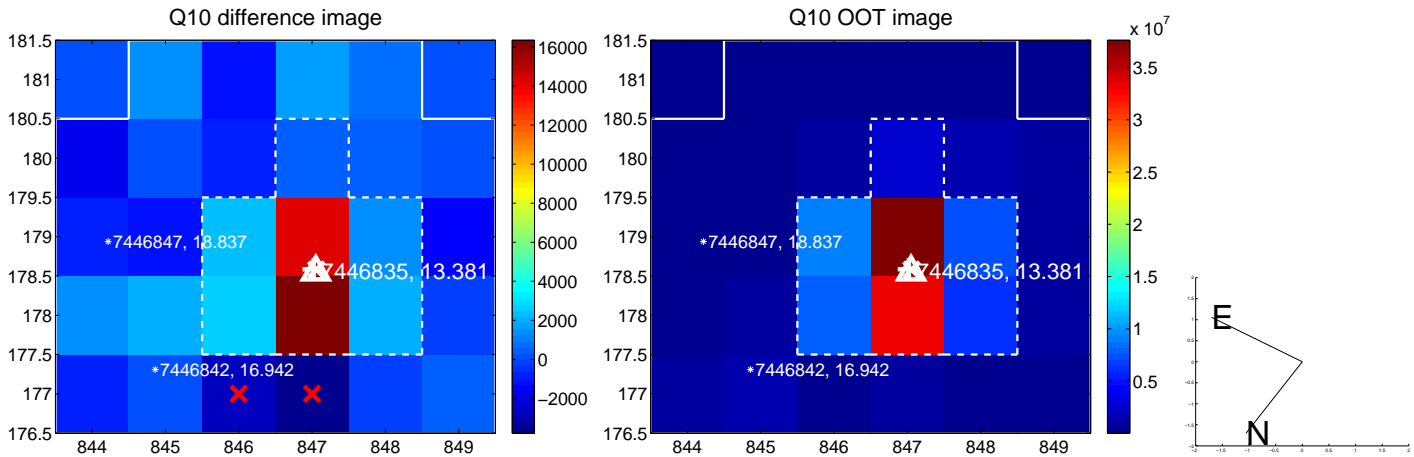
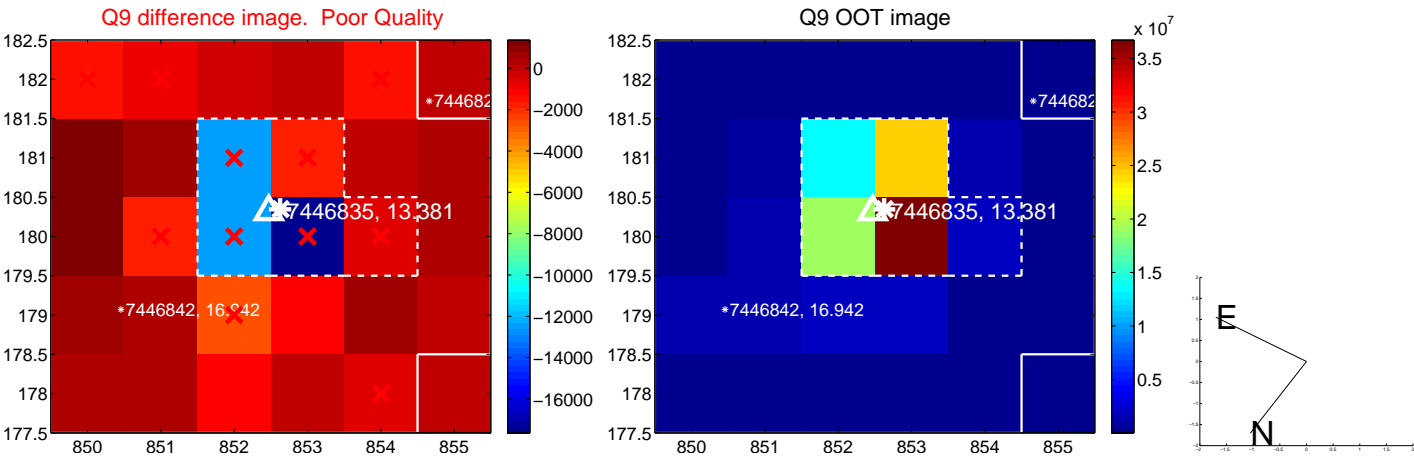
Q4 no OOT image



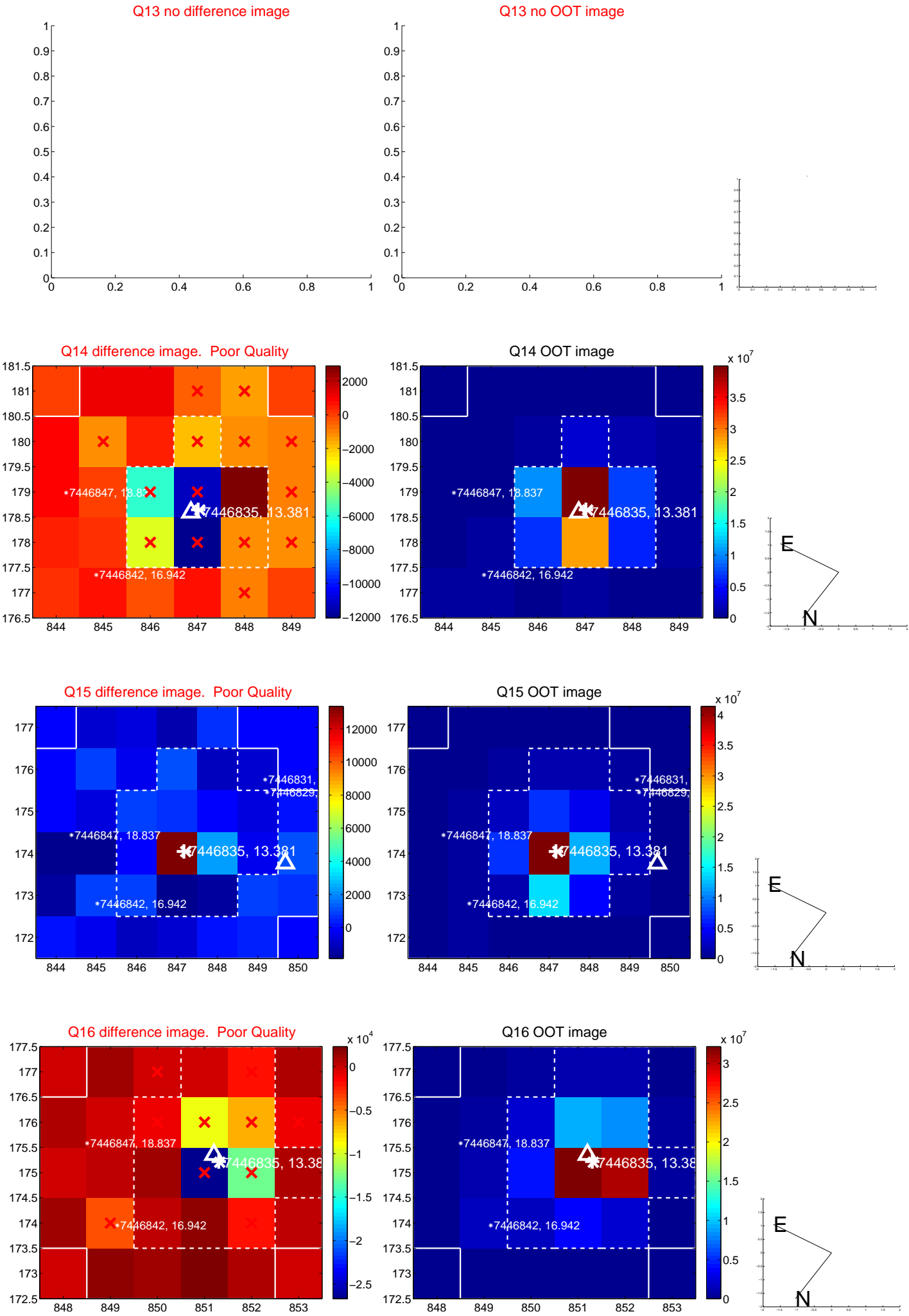
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



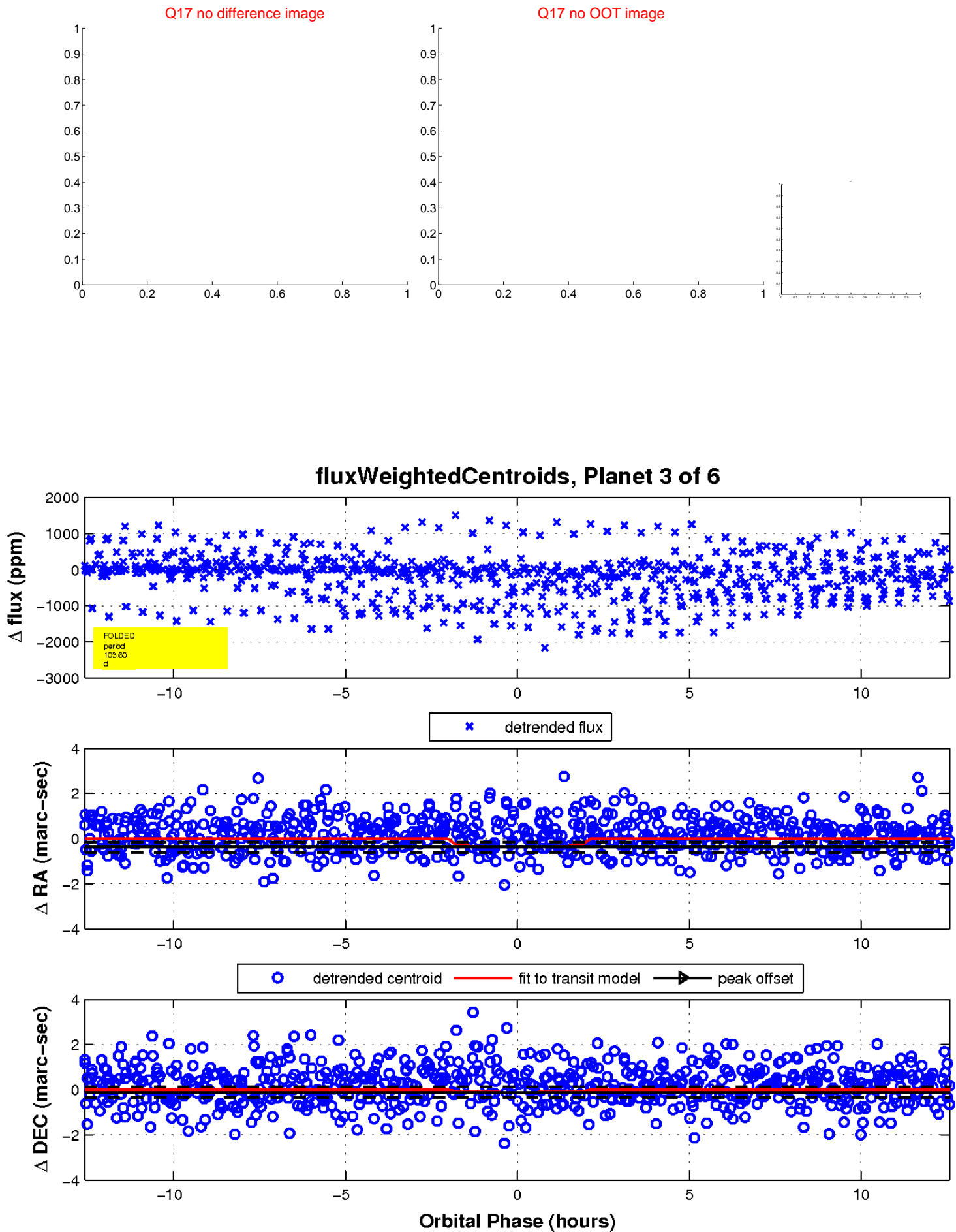
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

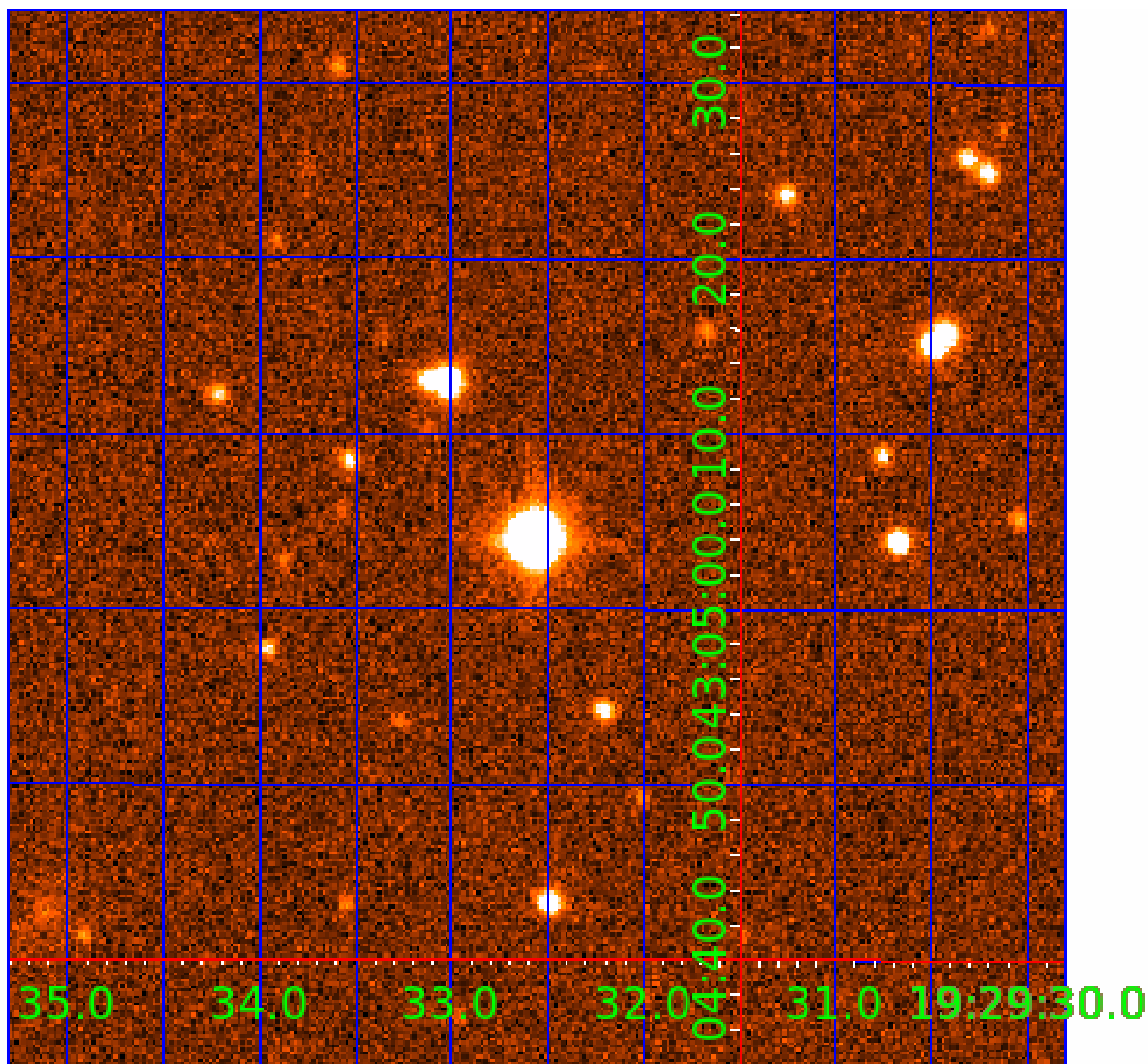


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007446835

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007446835-01	OBS	No	0.665312	131.604464	26.4	2.801	10.7	10.6	0.94	5620	0.58	4153.88
007446835-02	OBS	No	516.924337	518.509150	1728.7	8.874	16.8	8.8	0.94	5620	4.18	0.58
007446835-03	OBS	No	103.604968	190.389829	183.0	4.207	14.0	3.3	0.94	5620	1.49	4.96
007446835-04	OBS	No	310.189912	268.907487	158.4	3.896	10.2	1.7	0.94	5620	1.41	1.15
007446835-05	OBS	No	151.446877	220.609254	489.3	15.350	9.6	3.8	0.94	5620	2.67	2.99
007446835-06	OBS	No	93.995704	202.923269	368.4	9.747	8.9	5.1	0.94	5620	2.14	5.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007446835-01	OBS	FP	0.00	1	0	0	0	LPP_DV
007446835-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007446835-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—HALO_GHOST
007446835-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—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
007446835-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS
007446835-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES

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

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

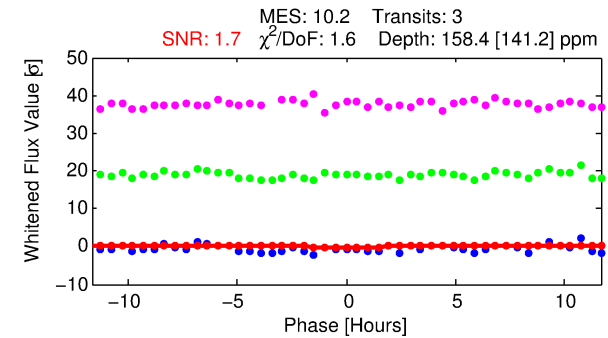
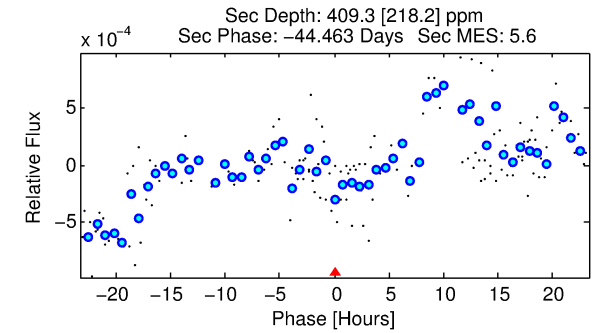
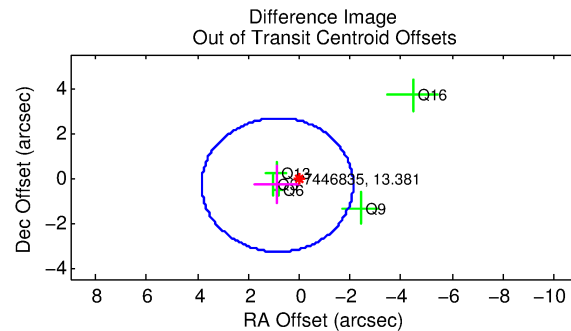
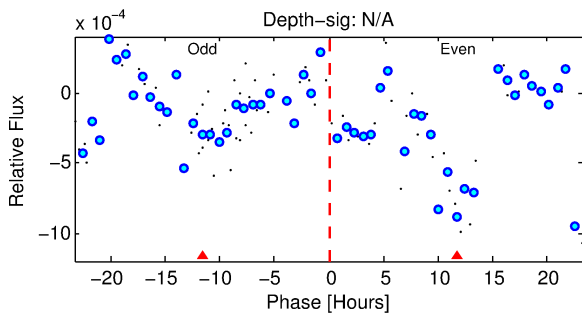
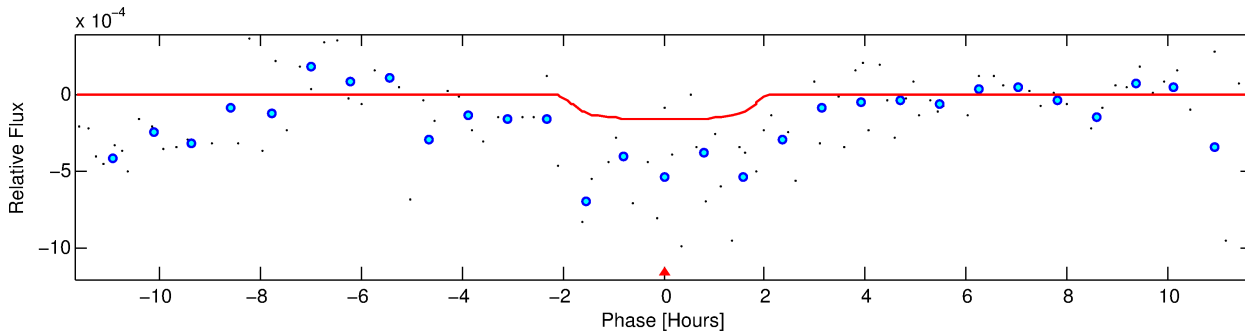
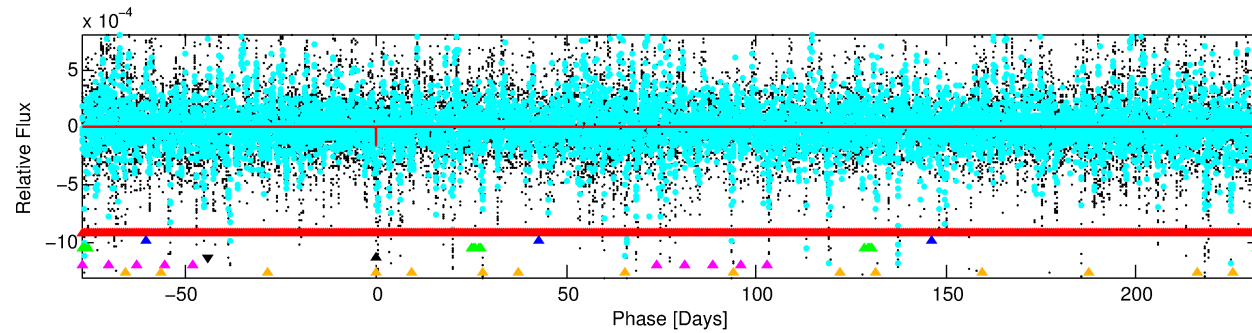
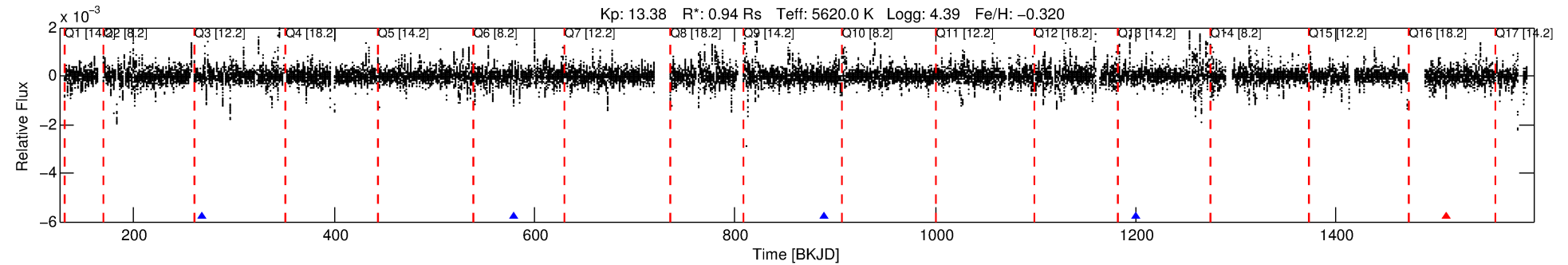
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007446835-04

No Significant Match Found

# DV One-Page Summary

KIC: 7446835 Candidate: 4 of 6 Period: 310.190 d



## DV Fit Results:

Period = 310.18991 [0.01701] d  
Epoch = 268.9075 [0.0414] BKJD  
Rp/R\* = 0.0137 [0.0364]  
a/R\* = 285.39 [3541.68]  
b = 0.90 [2.67]  
Seff = 1.15 [0.42]  
Teq = 264 [24] K  
Rp = 1.41 [3.77] Re  
a = 0.8326 [0.1948] AU  
Ag = 78530.43 [420508.28] [0.19 $\sigma$ ]  
Teffp = 6833 [9129] K [0.72 $\sigma$ ]

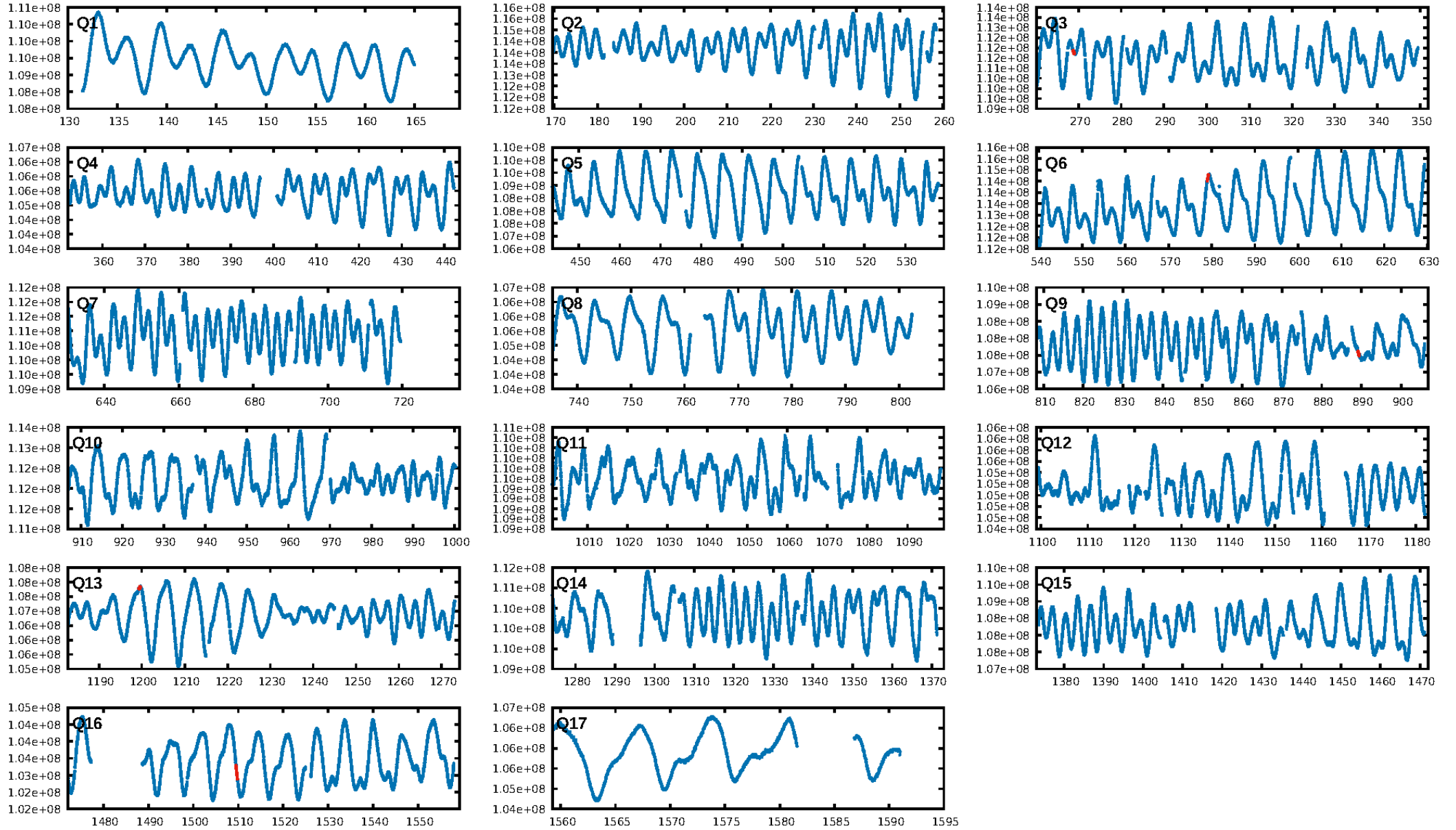
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [240.57 $\sigma$ ]  
LongPeriod-sig: 100.0% [511.95 $\sigma$ ]  
ModelChiSquare2-sig: 35.8%  
ModelChiSquareGof-sig: 90.6%  
**Bootstrap-pfa: 9.20e-10**  
**RollingBand-fgt: 0.67 [2/3]**  
GhostDiagnostic-chr: -8.534  
Centroid-sig: 63.6%  
Centroid-so: 1.613 arcsec [0.72 $\sigma$ ]  
OotOffset-rm: 0.913 arcsec [0.92 $\sigma$ ]  
OotOffset-st: 1/1/1/2 [5]  
KicOffset-rm: 1.015 arcsec [0.97 $\sigma$ ]  
KicOffset-st: 1/1/1/2 [5]  
DiffImageQuality-fgm: 0.20 [1/5]  
DiffImageOverlap-fno: 0.00 [0/5]

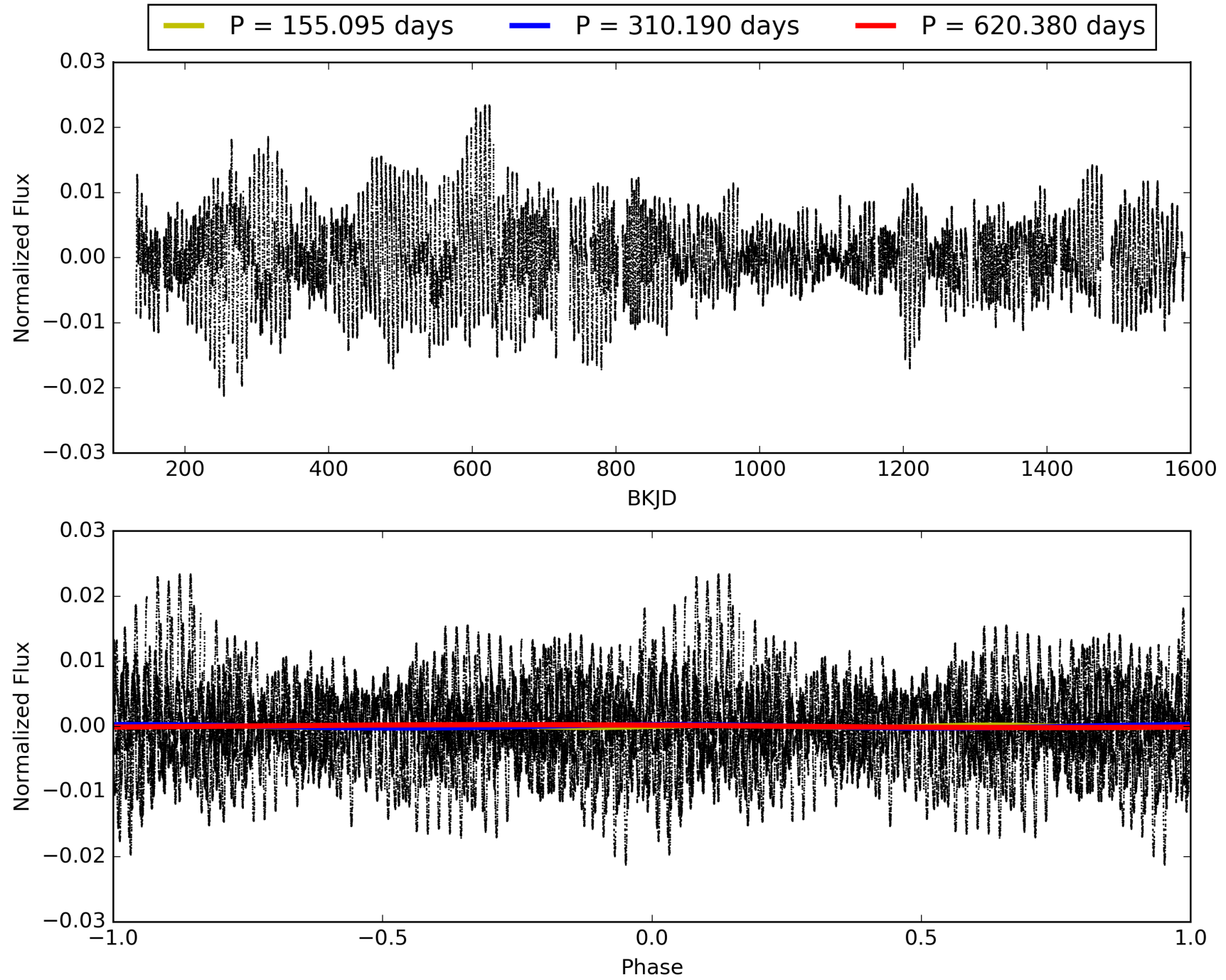
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:57:25 Z

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

# TCE 007446835-04, PDC Light Curves

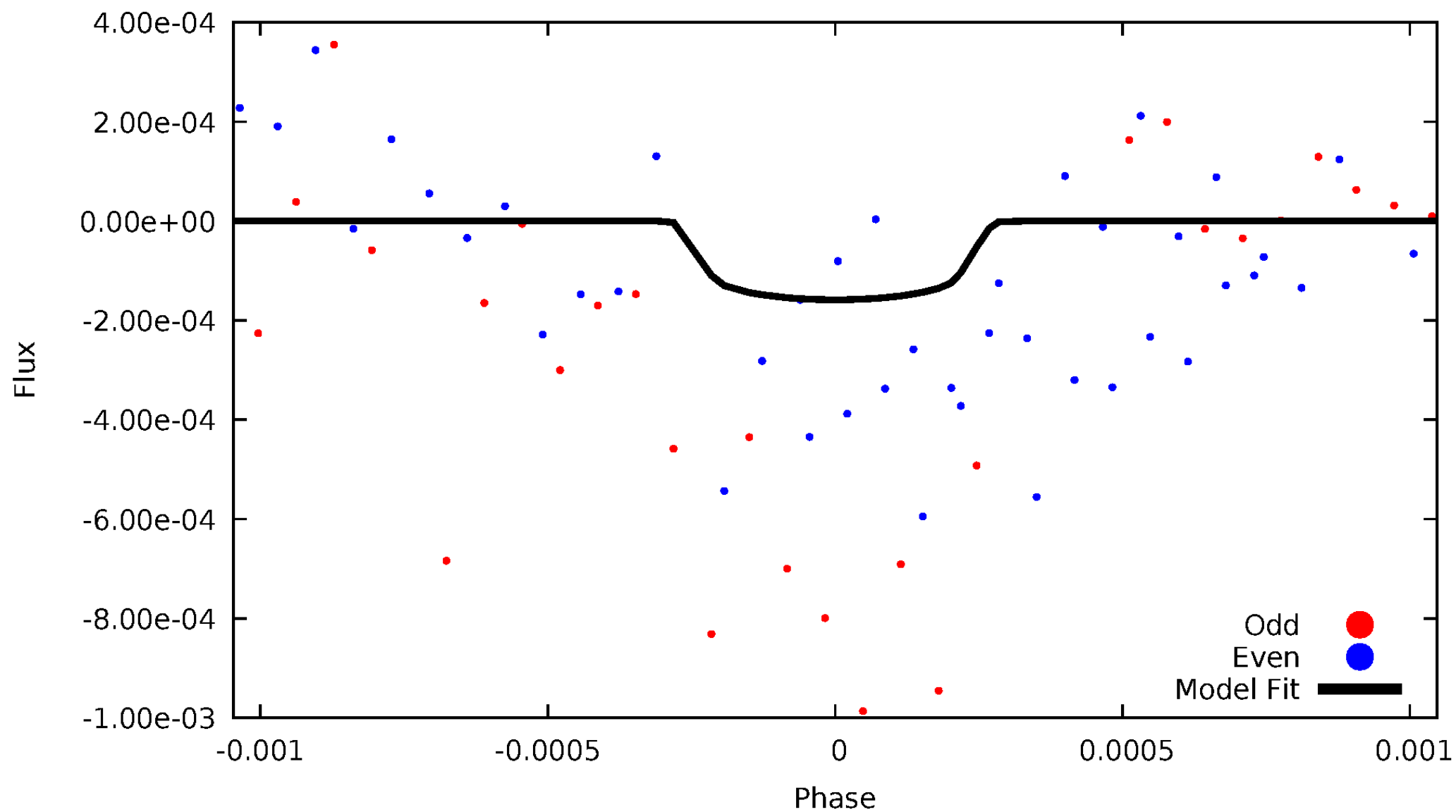


TCE 007446835-04



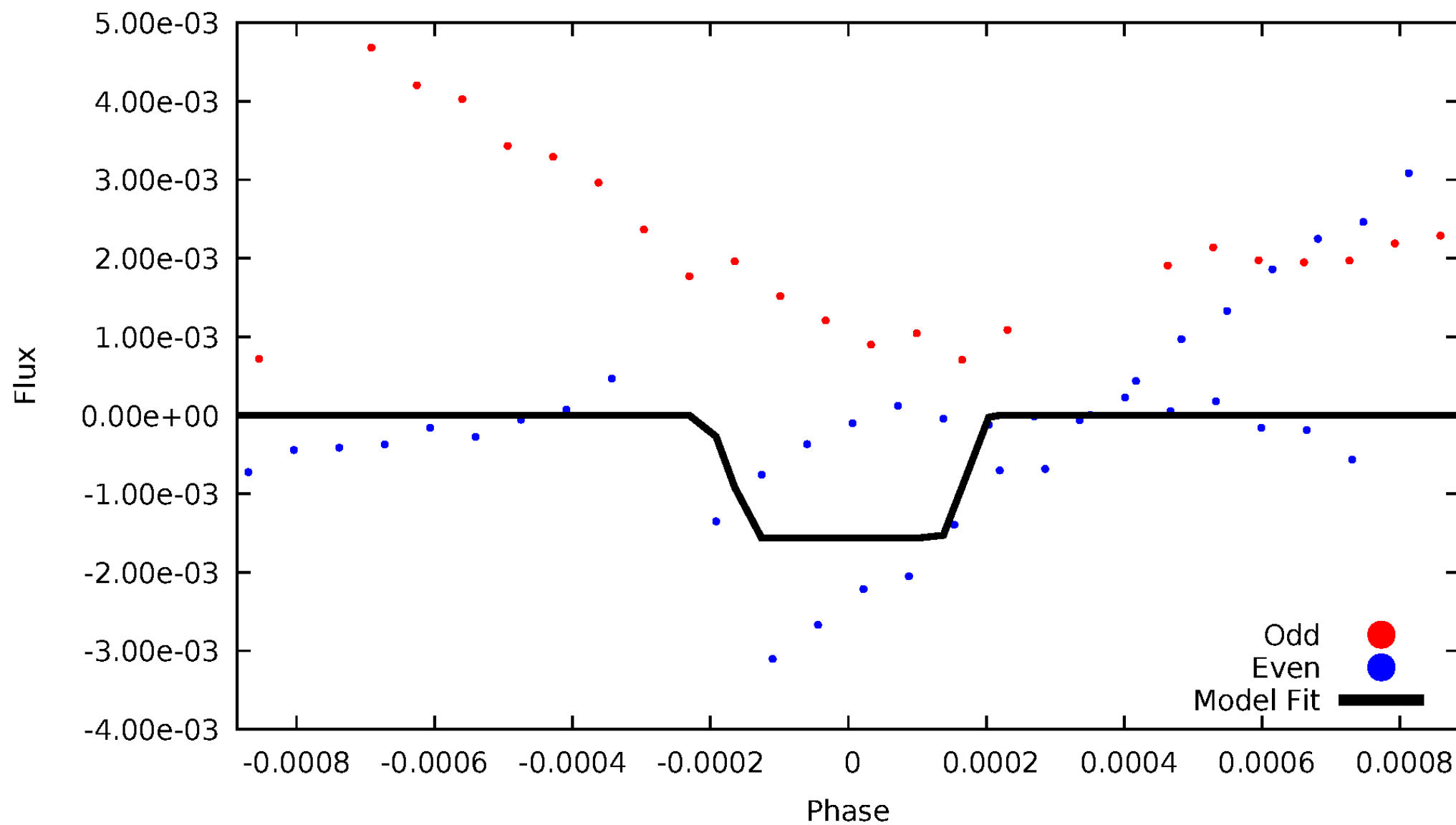
# DV Odd/Even

TCE 007446835-04



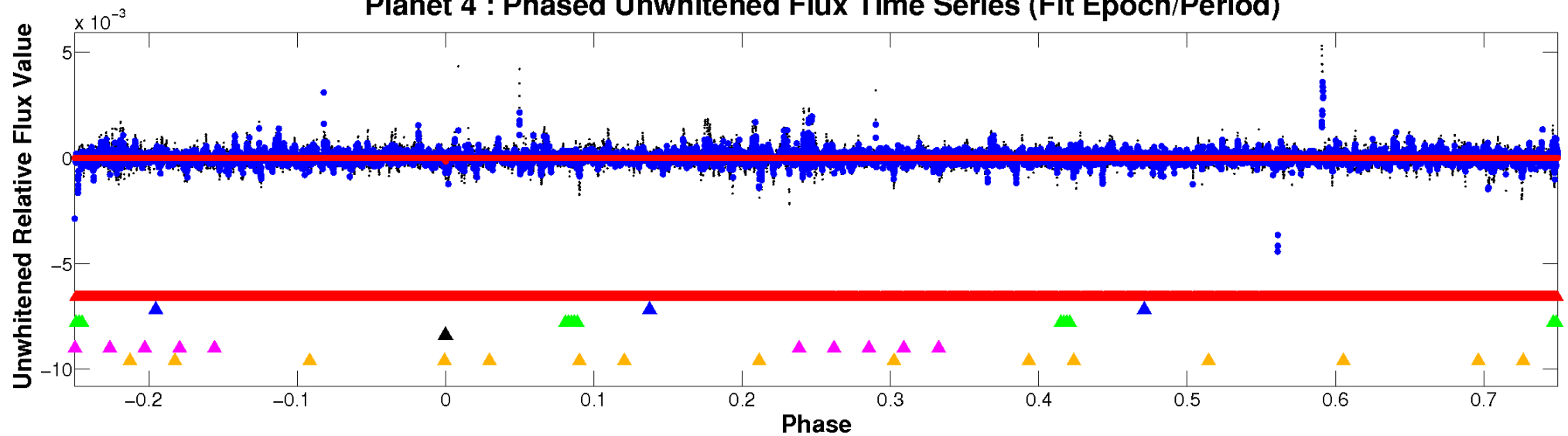
# ALT Odd/Even

TCE 007446835-04

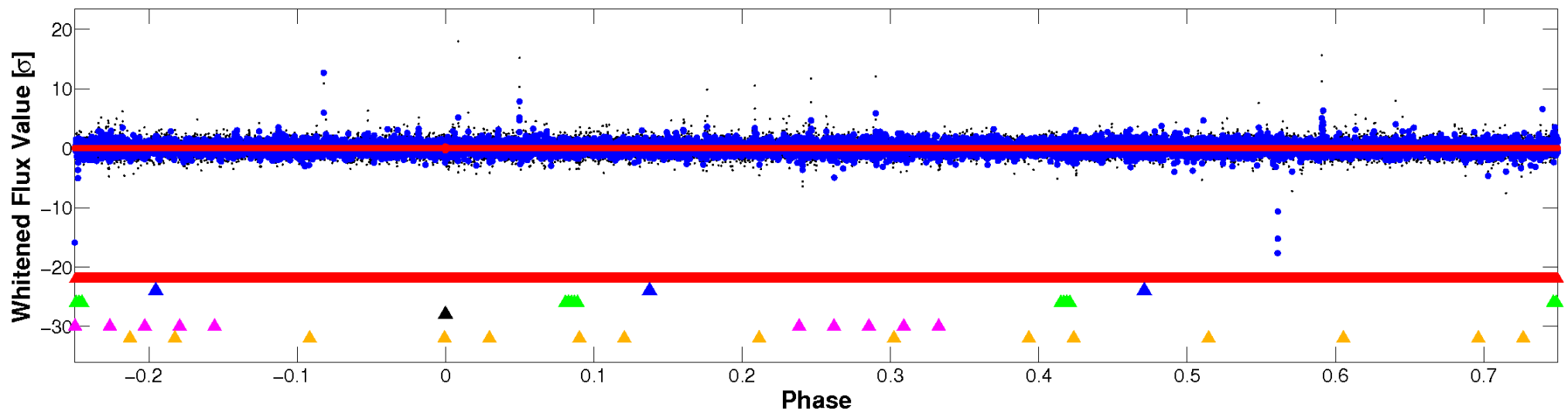


# Non-Whitened Vs. Whitened Light Curve

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

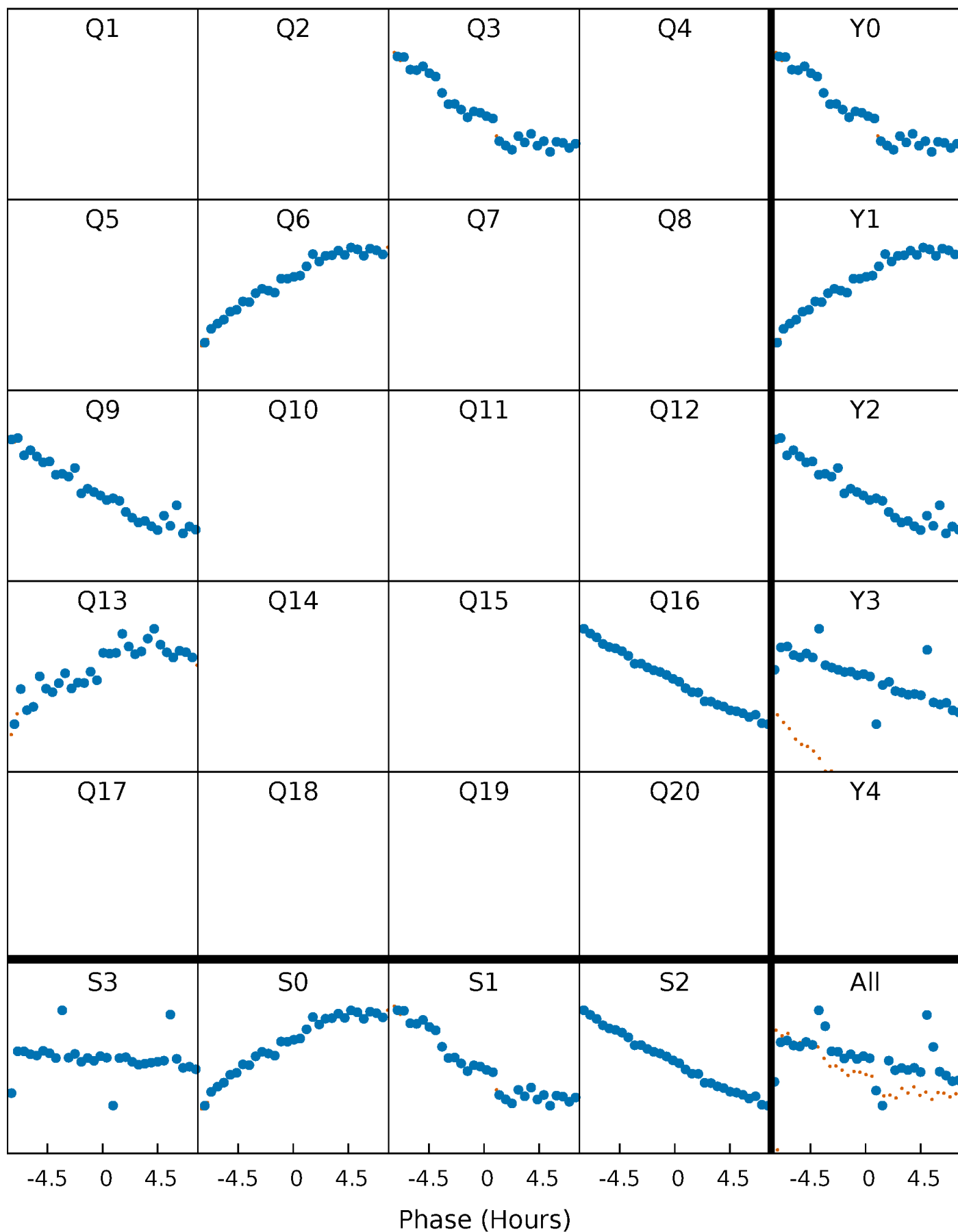


**Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



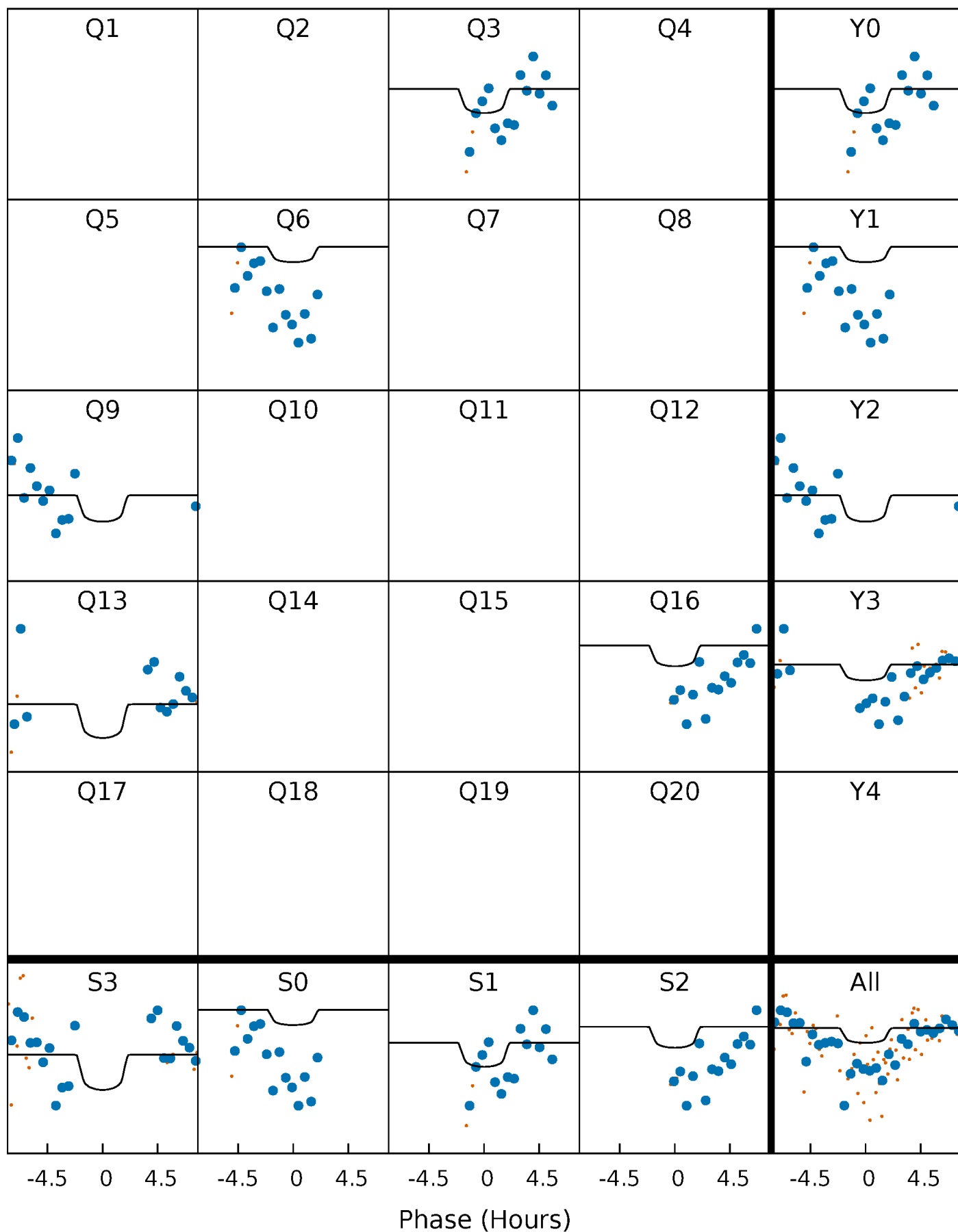
# PDC Quarter-Phased Transit Curves

TCE 007446835-04 P=310.189912 Days  $T_0=268.907487$  (BKJD)



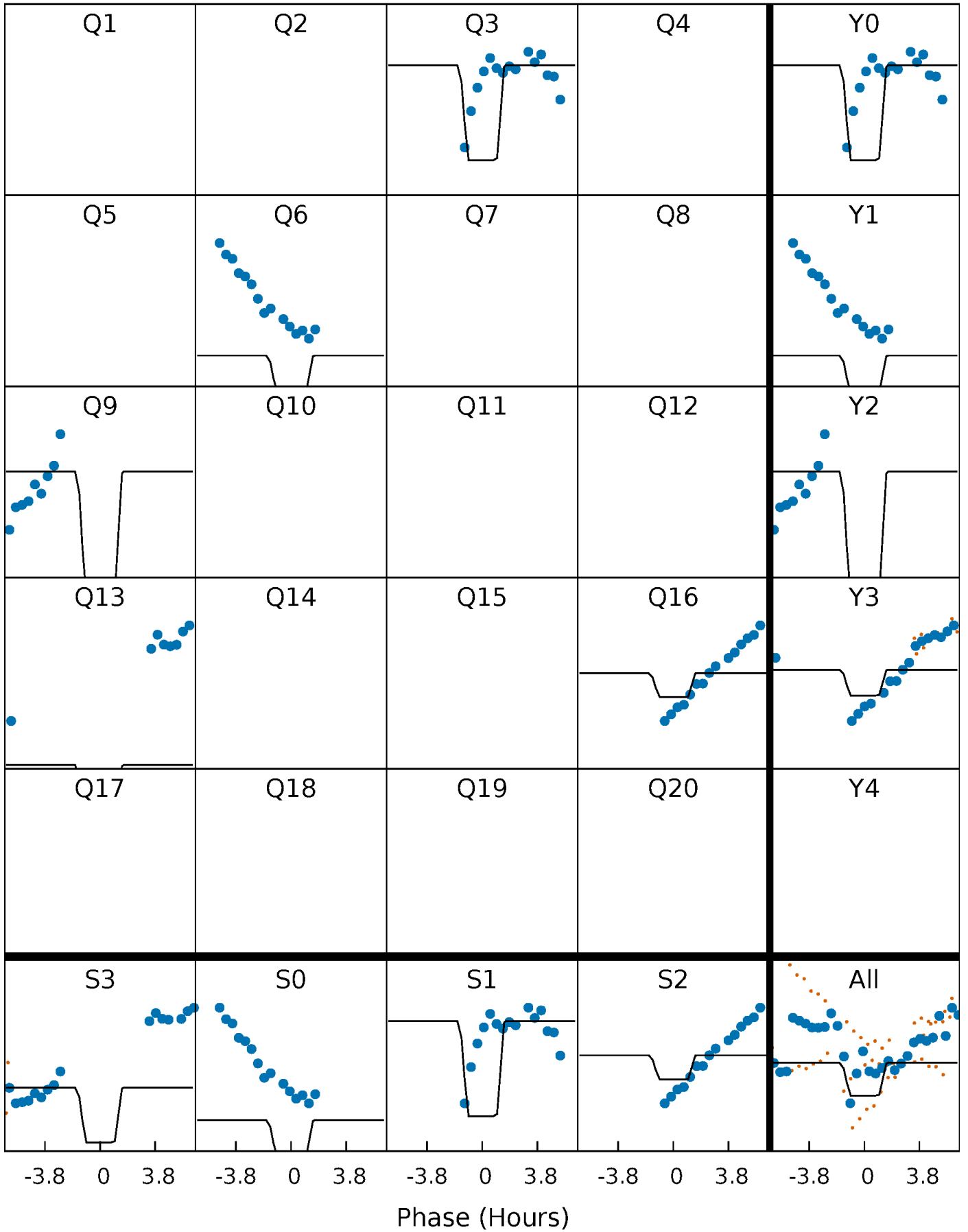
# DV Quarter-Phased Transit Curves

TCE 007446835-04 P=310.189912 Days  $T_0=268.907487$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

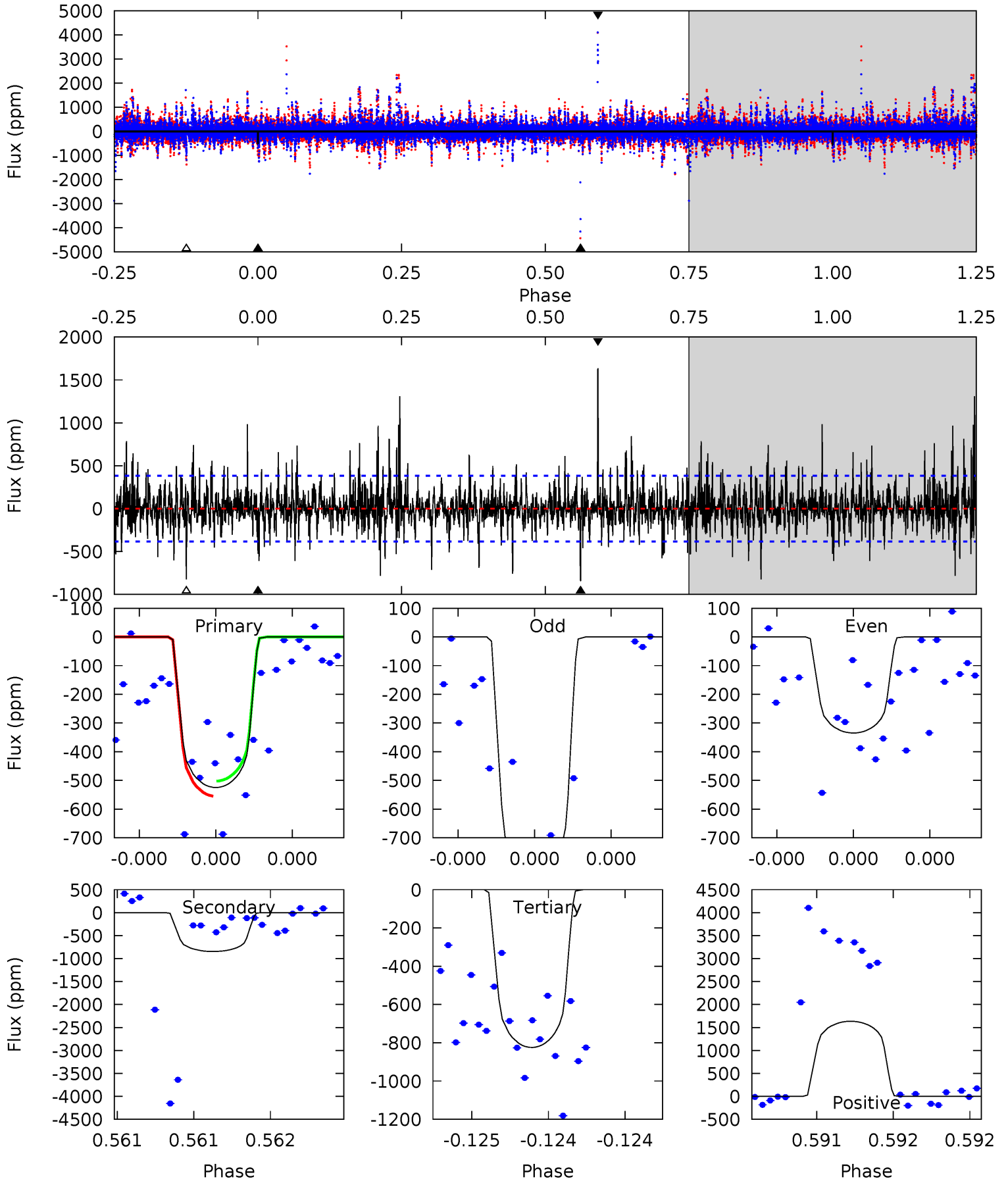
TCE 007446835-04 P=310.195063 Days  $T_0=268.907037$  (BKJD)



# DV Model-Shift Uniqueness Test

007446835-04, P = 310.189912 Days, E = 268.907487 Days

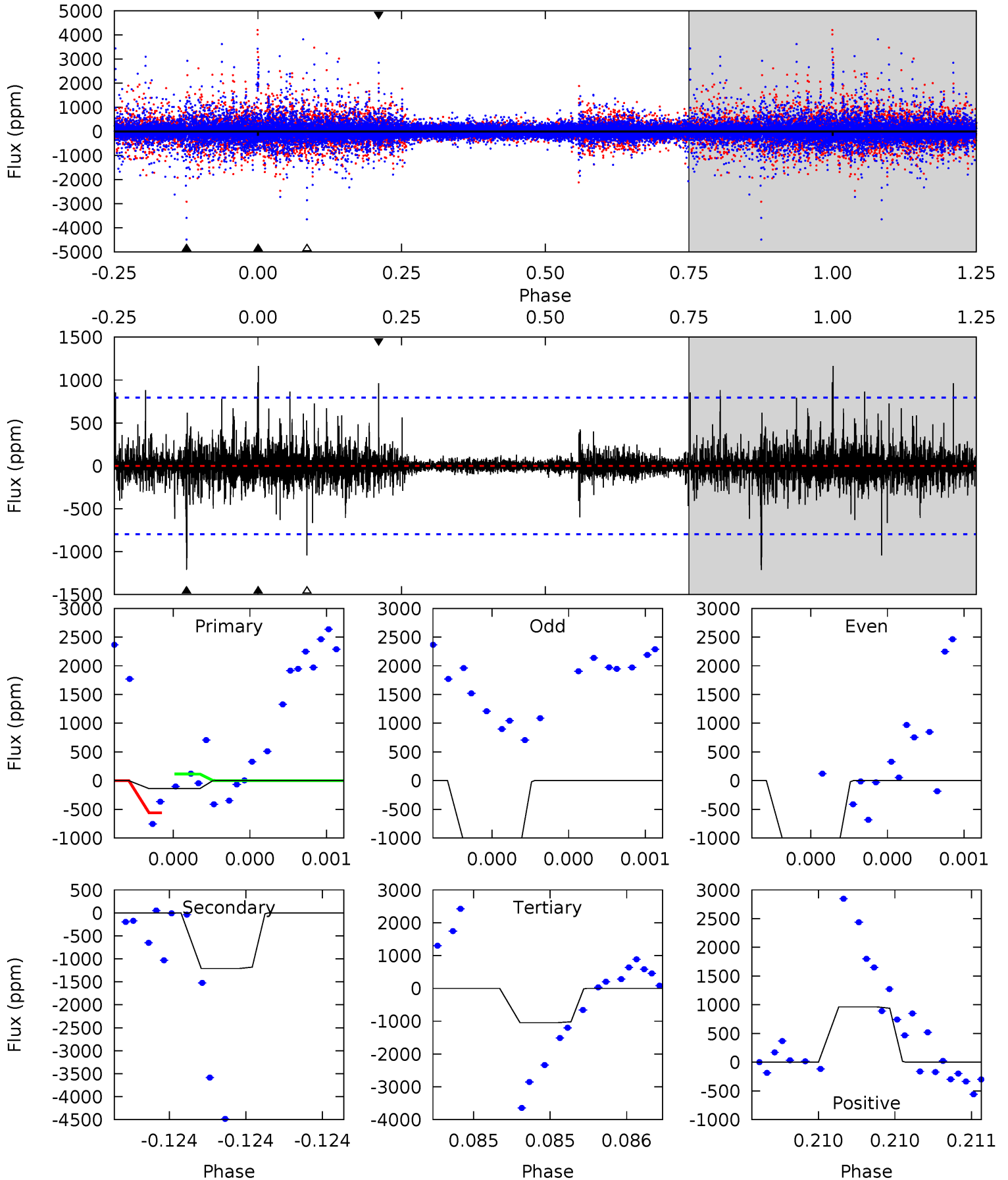
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.63	12.3	12.0	23.8	5.57	3.48	2.61	-4.36	-16.1	0.32	-11.5	3.25	1.12	0.66	0.37



# Alt Model-Shift Uniqueness Test

007446835-04, P = 310.195063 Days, E = 268.907037 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
0.99	8.54	7.36	6.79	5.61	3.54	0.72	-6.37	-5.80	1.18	1.75	0.23	1.65	0.49	0



### Stellar Parameters For KIC 007446835

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5620^{+152}_{-152}$	$4.391^{+0.162}_{-0.198}$	$-0.320^{+0.300}_{-0.250}$	$0.944^{+0.252}_{-0.168}$	$0.800^{+0.124}_{-0.062}$	$1.339^{+0.984}_{-0.650}$
	+3%/-3%	+4%/-5%	+94%/-78%	+27%/-18%	+16%/-8%	+73%/-49%
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 007446835-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-846 \pm 69$	$3.12^{+3.19}_{-2.16}$	$369^{+28}_{-23}$	$5513^{+5759}_{-1370}$	$33159^{+328806}_{-24923}$
Alt.	$-1211 \pm 142$	$4.71^{+3.69}_{-2.86}$	$371^{+28}_{-24}$	$5044^{+3186}_{-1027}$	$20404^{+118056}_{-13892}$

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

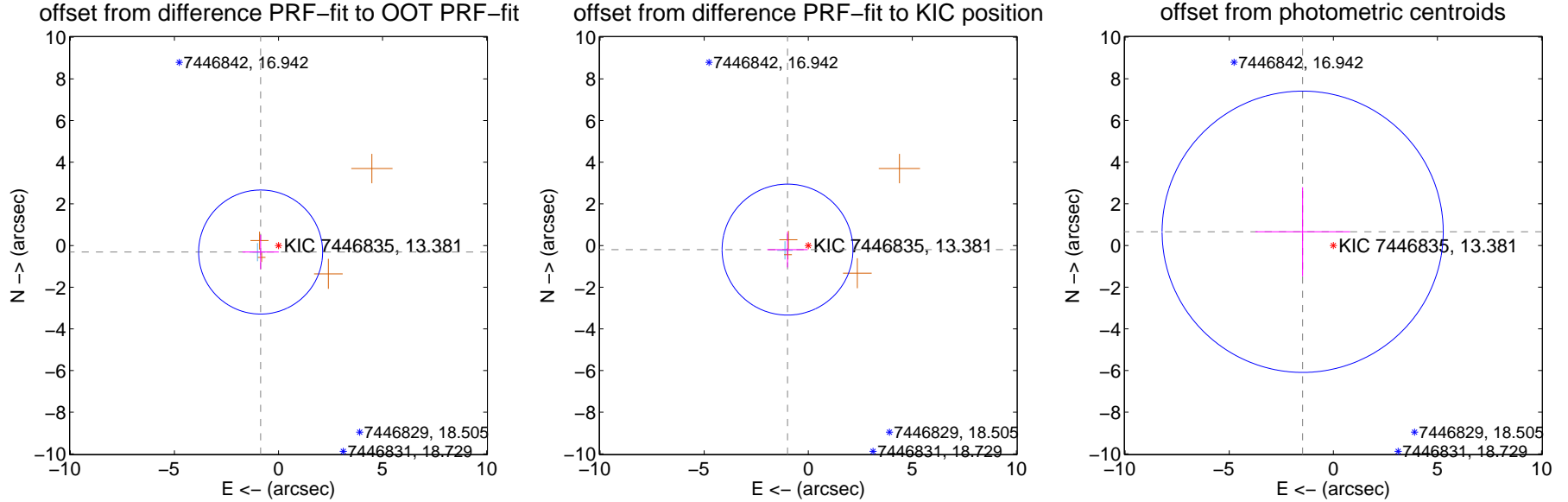
## DV Centroid Data

Supplemental centroid analysis for 007446835-04. Kepler magnitude: 13.38. Transit SNR 1.65

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

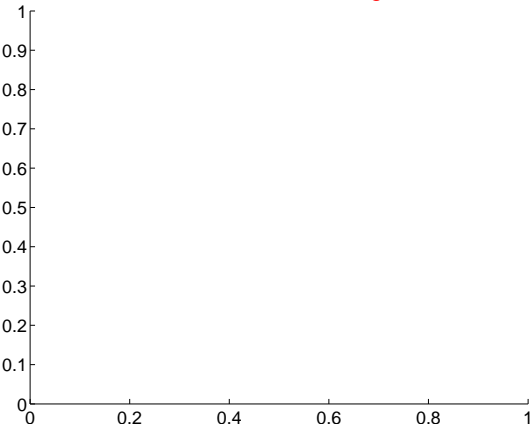
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.913 \pm 0.993$	0.92	$0.858 \pm 0.874$	$-0.312 \pm 0.822$
PRF-fit source offset from KIC position	$1.015 \pm 1.048$	0.97	$0.996 \pm 0.971$	$-0.196 \pm 0.854$
photometric centroid source offset	$1.61 \pm 2.25$	0.72	$1.47 \pm 2.27$	$0.66 \pm 2.14$



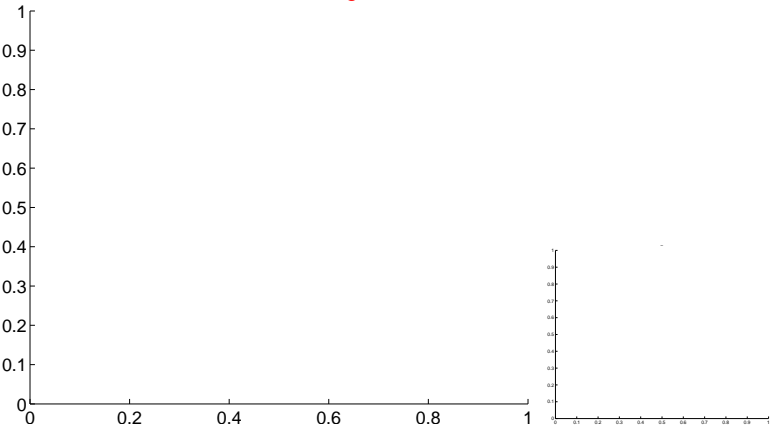
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

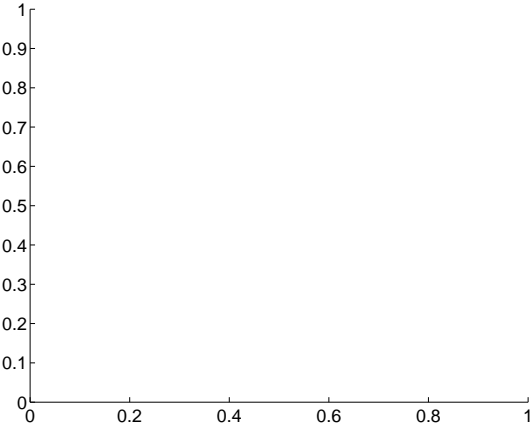
Q1 no difference image



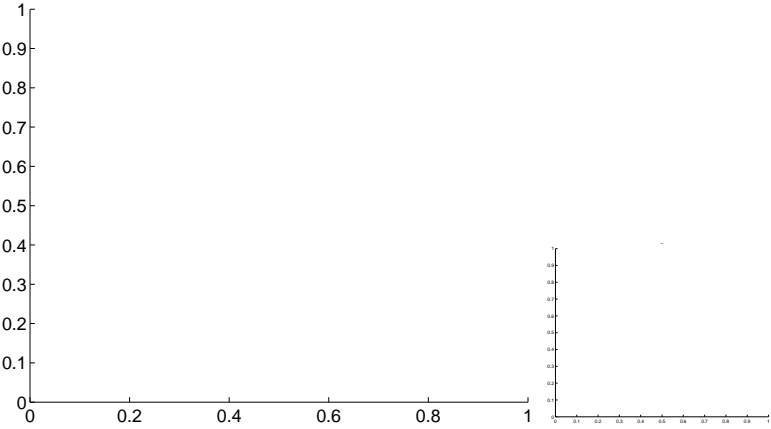
Q1 no OOT image



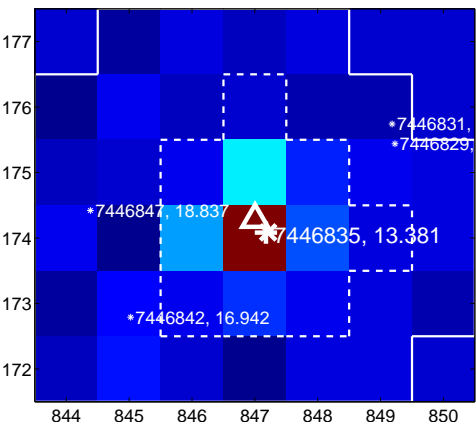
Q2 no difference image



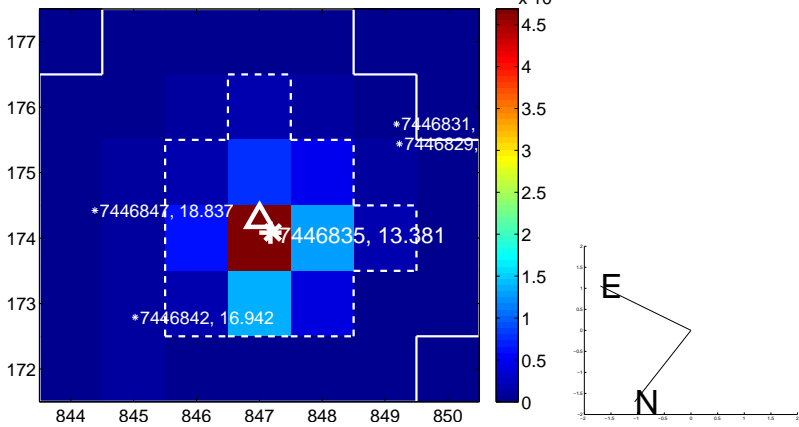
Q2 no OOT image



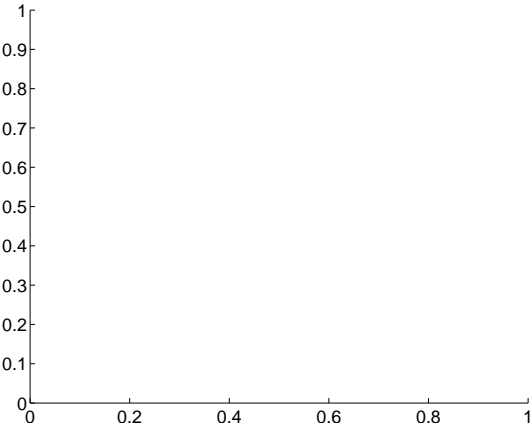
Q3 difference image



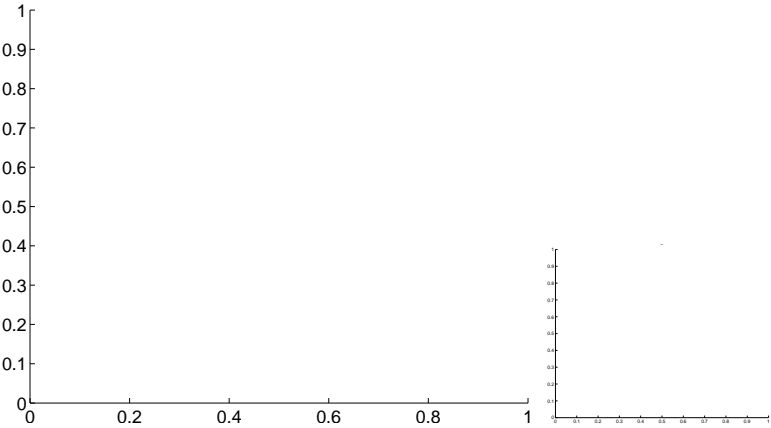
Q3 OOT image



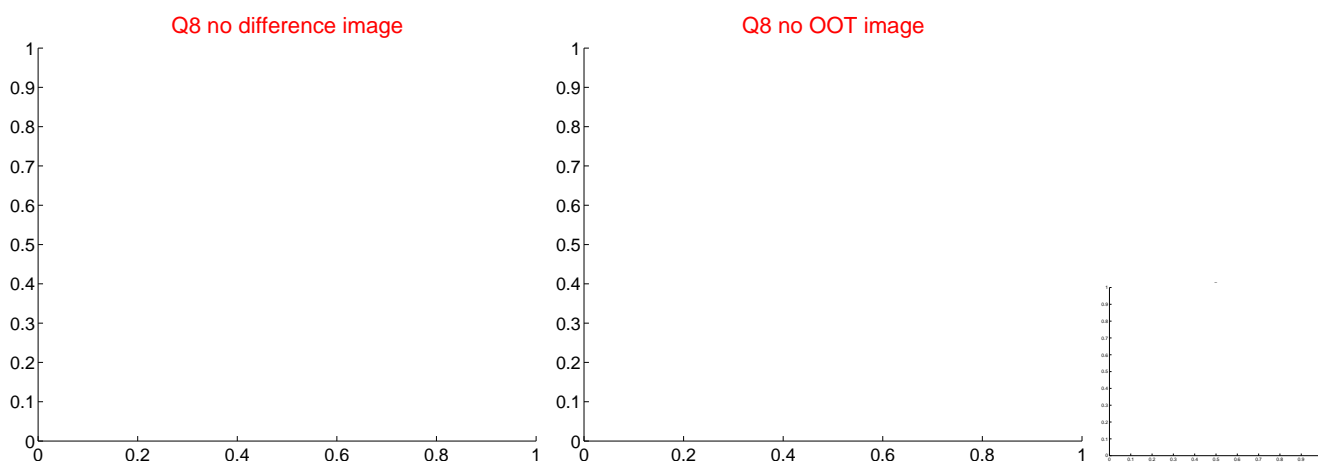
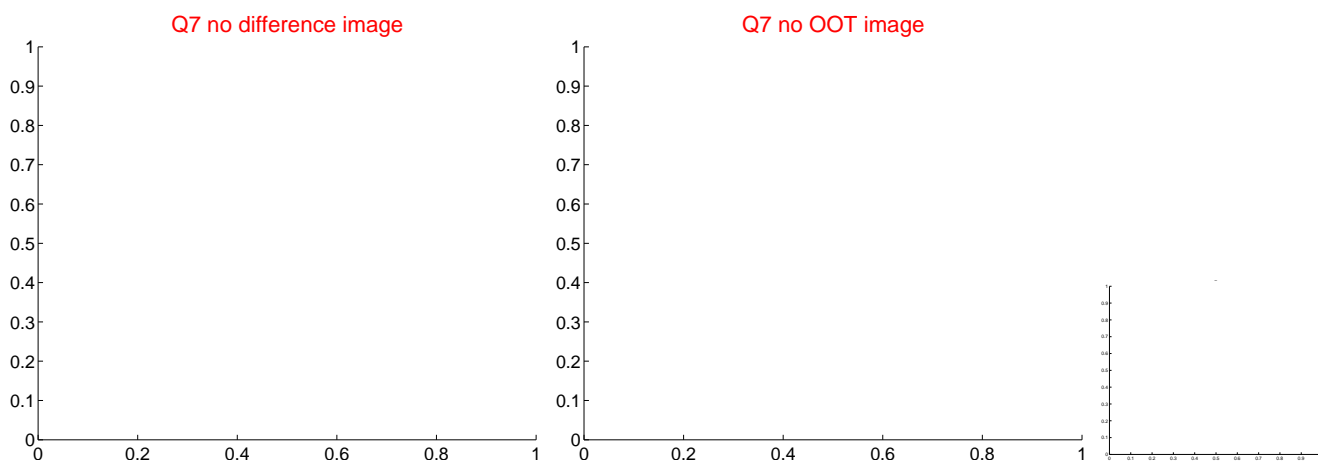
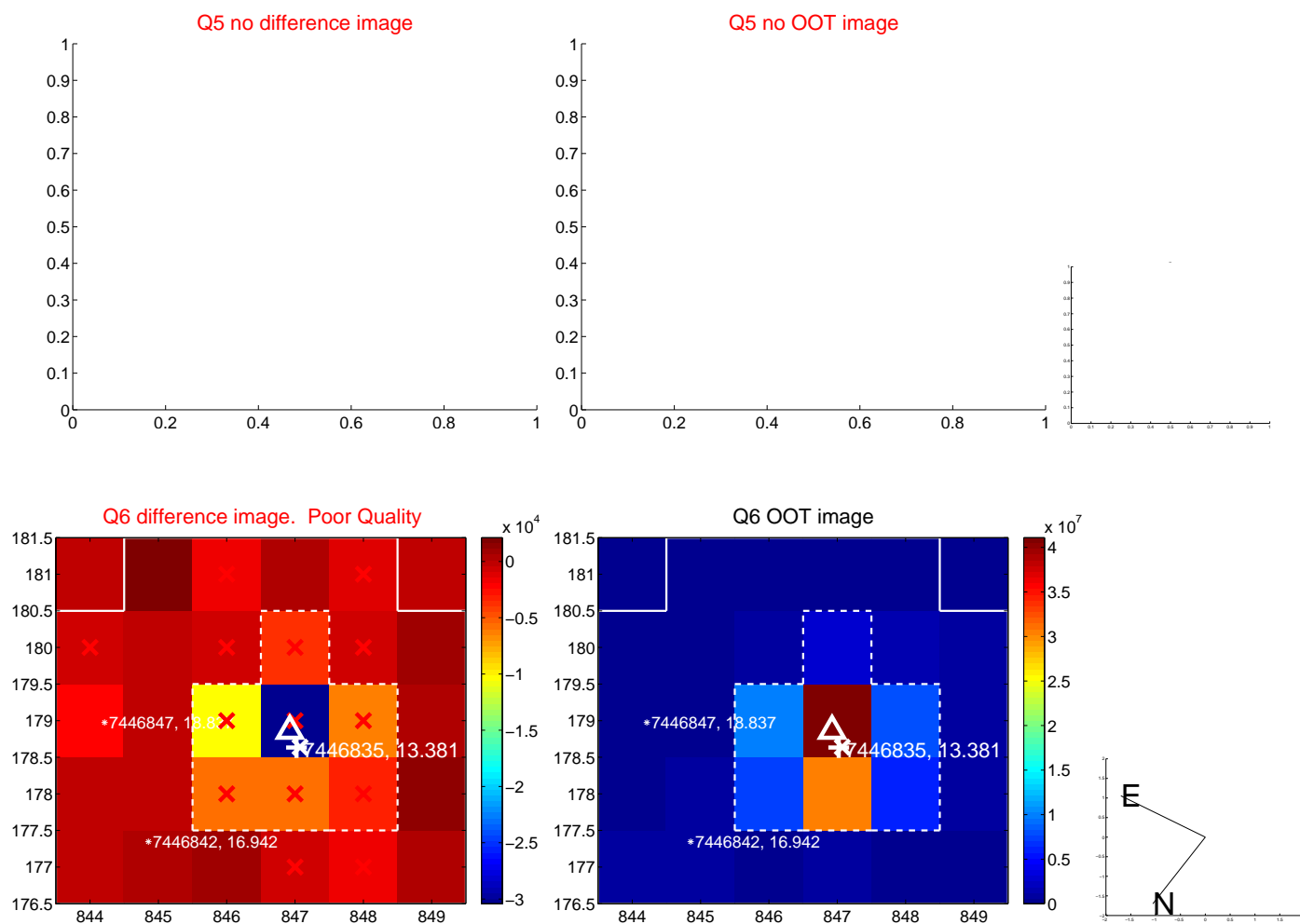
Q4 no difference image



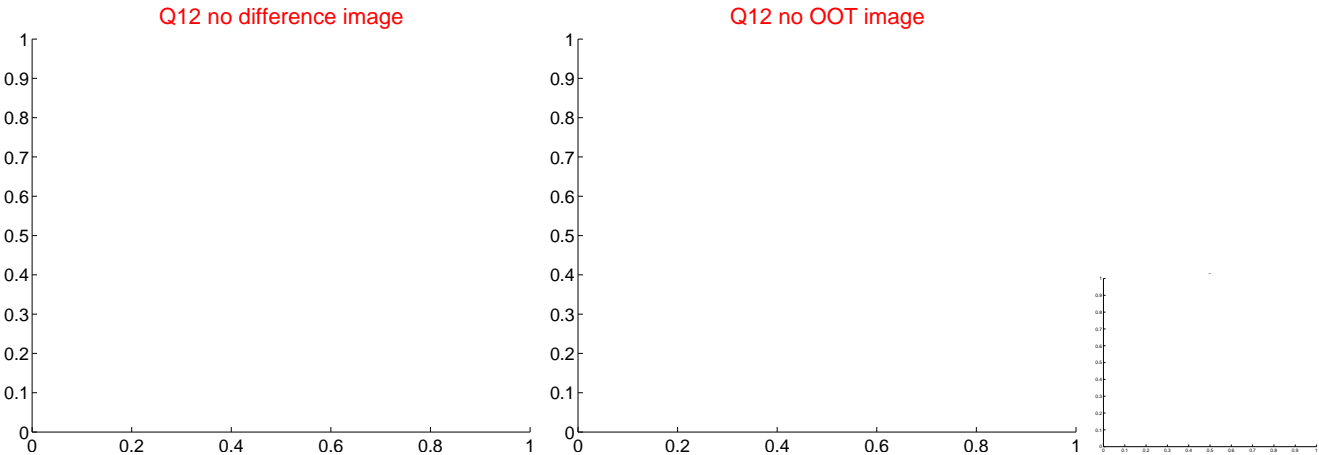
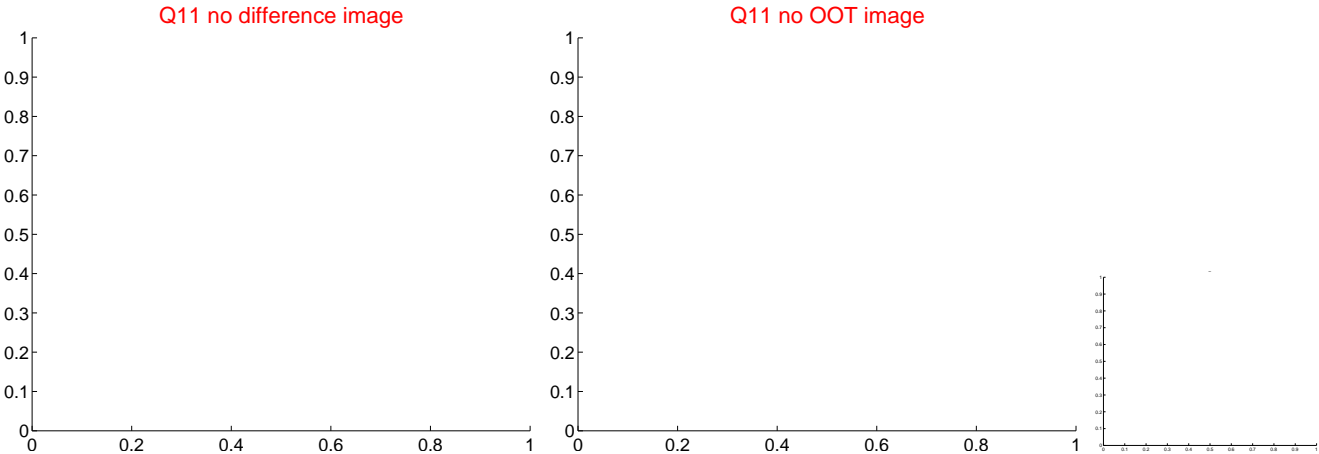
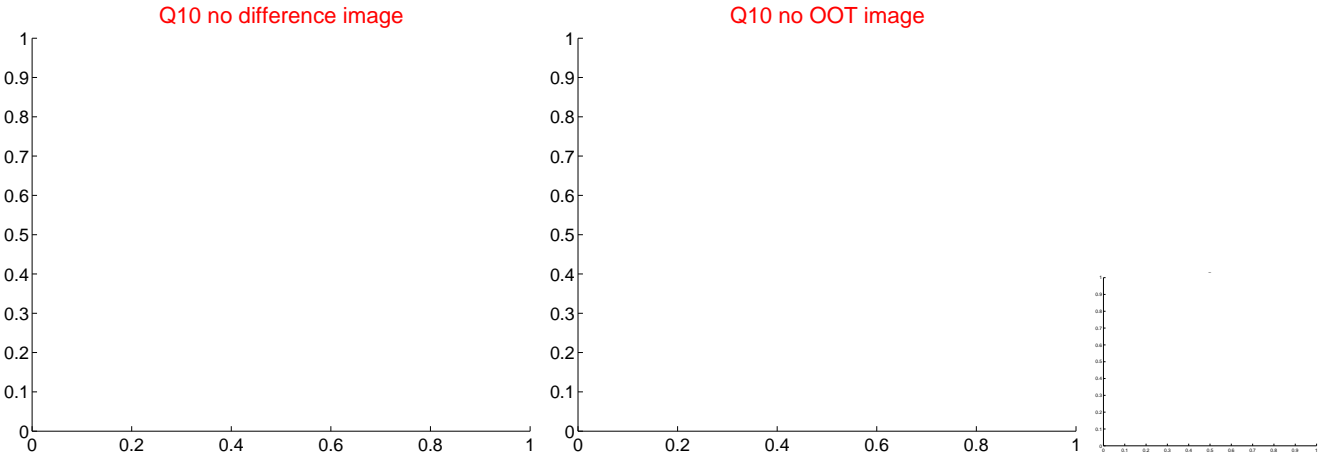
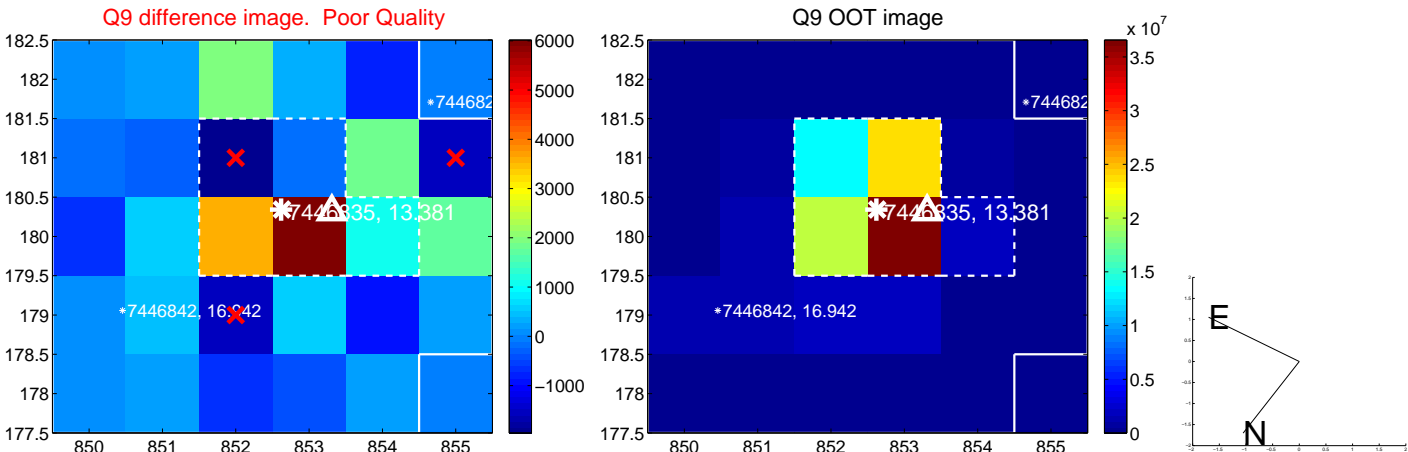
Q4 no OOT image



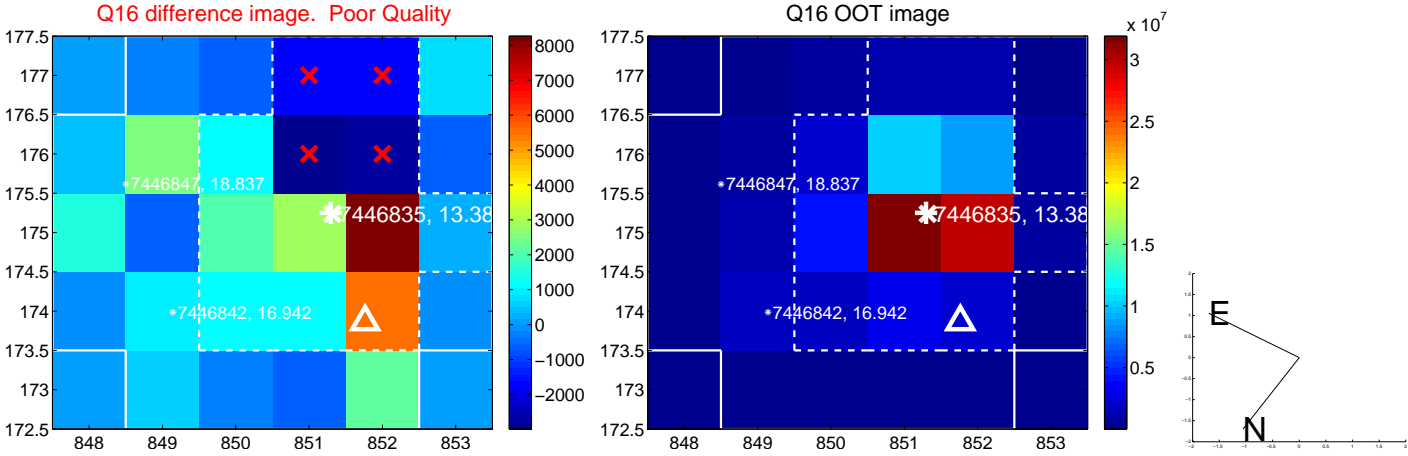
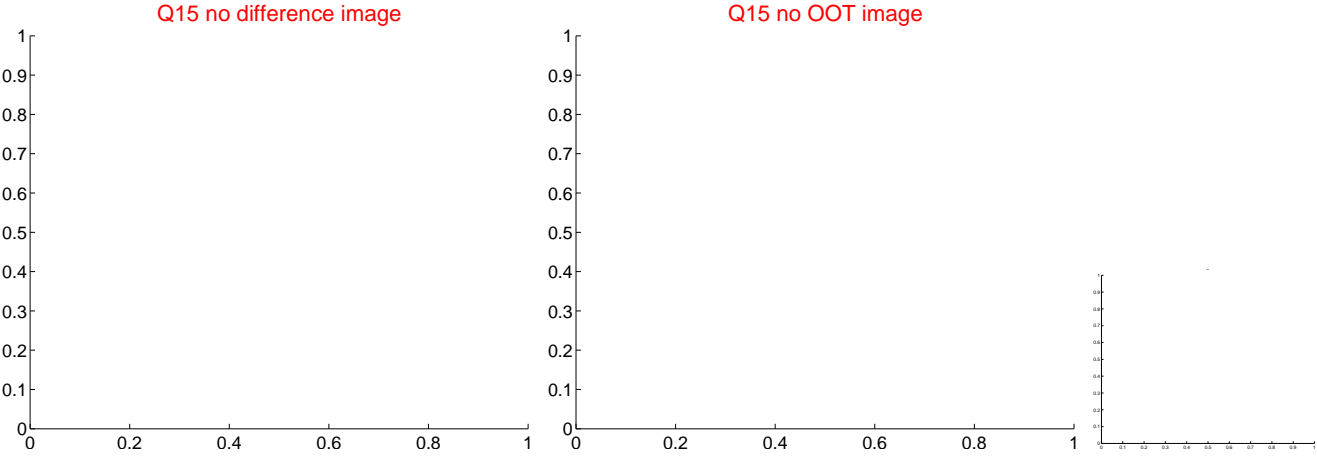
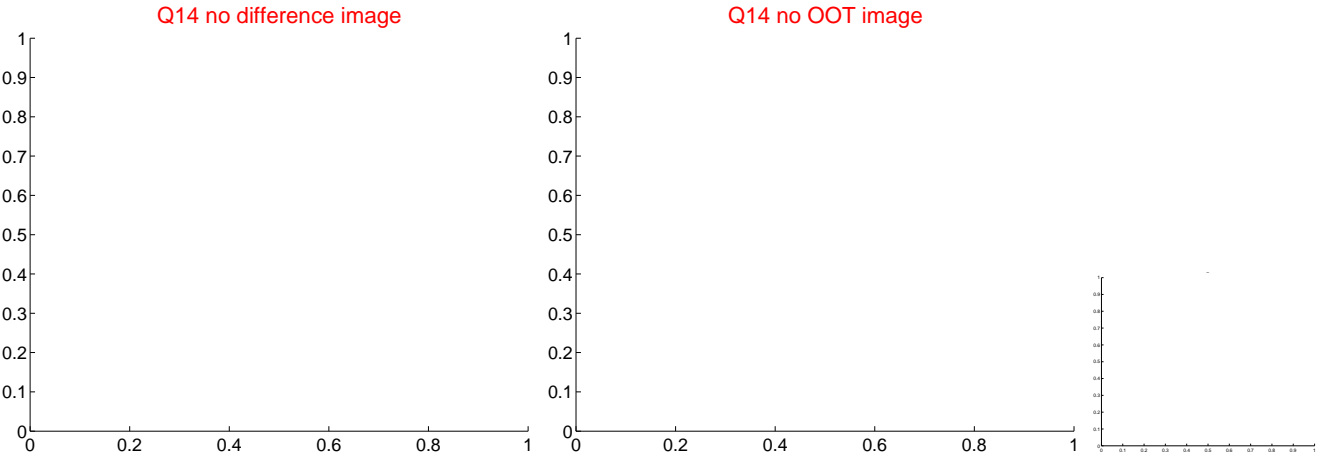
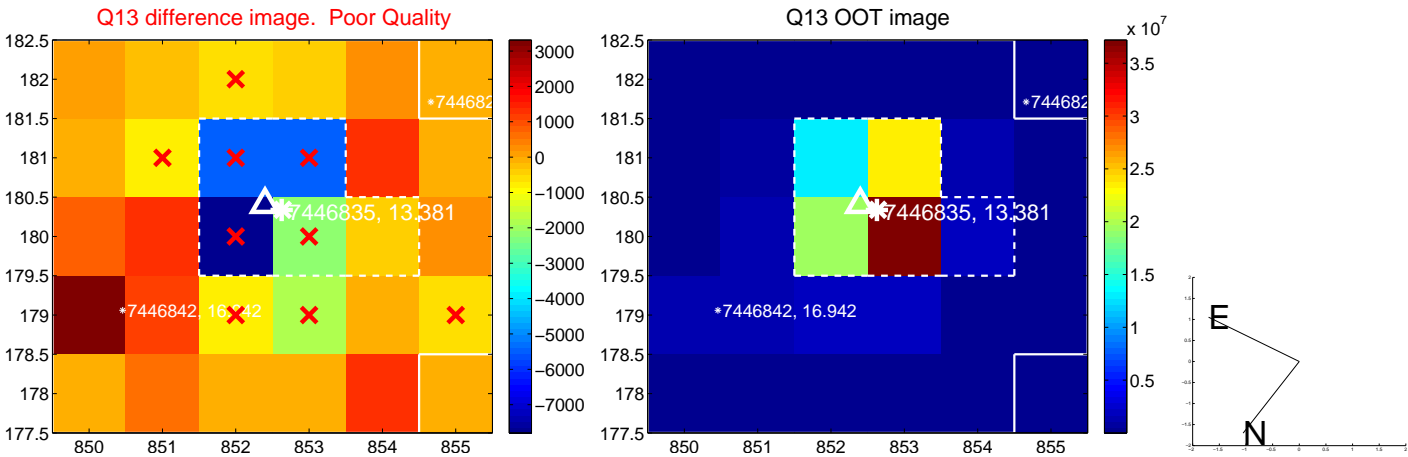
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



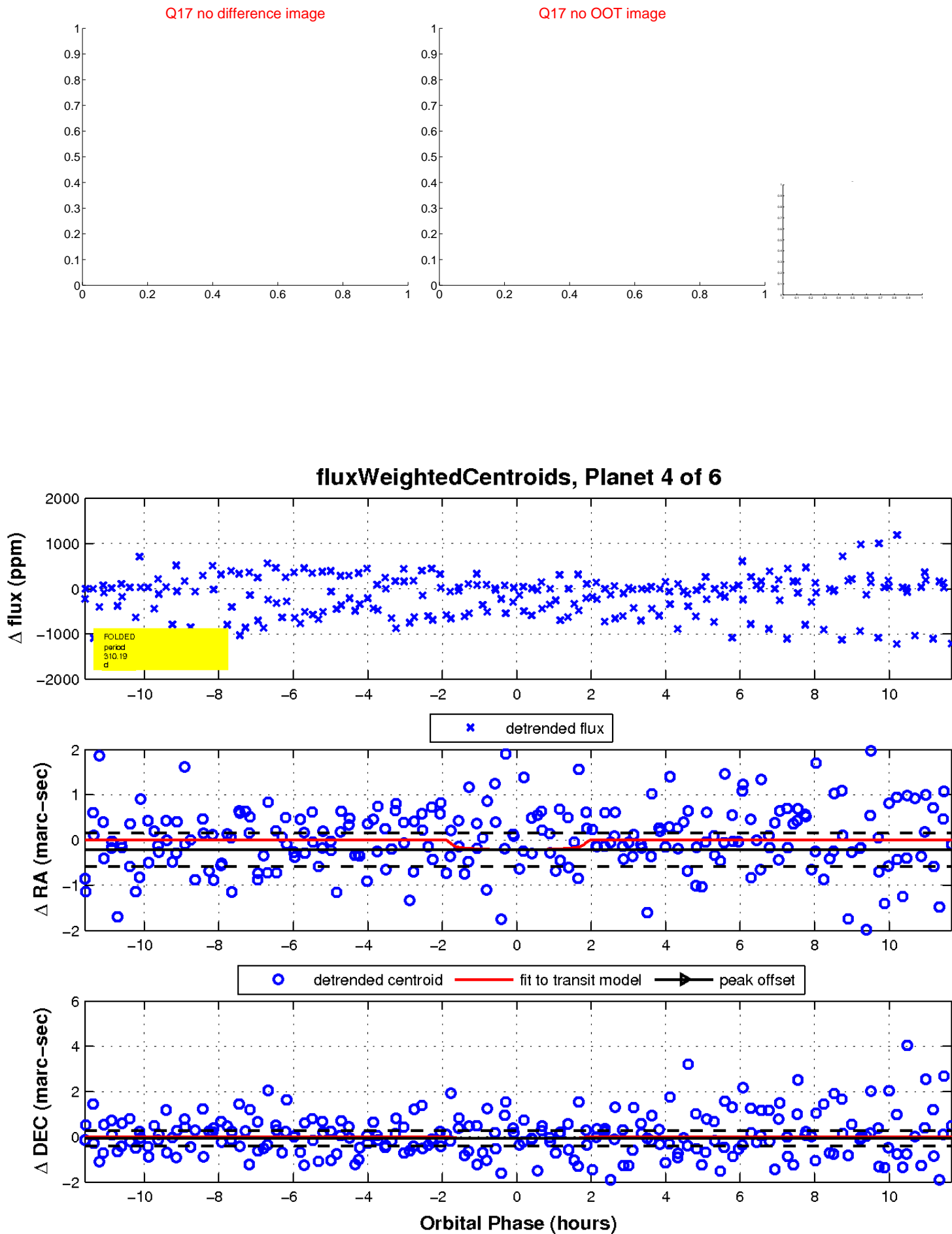
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

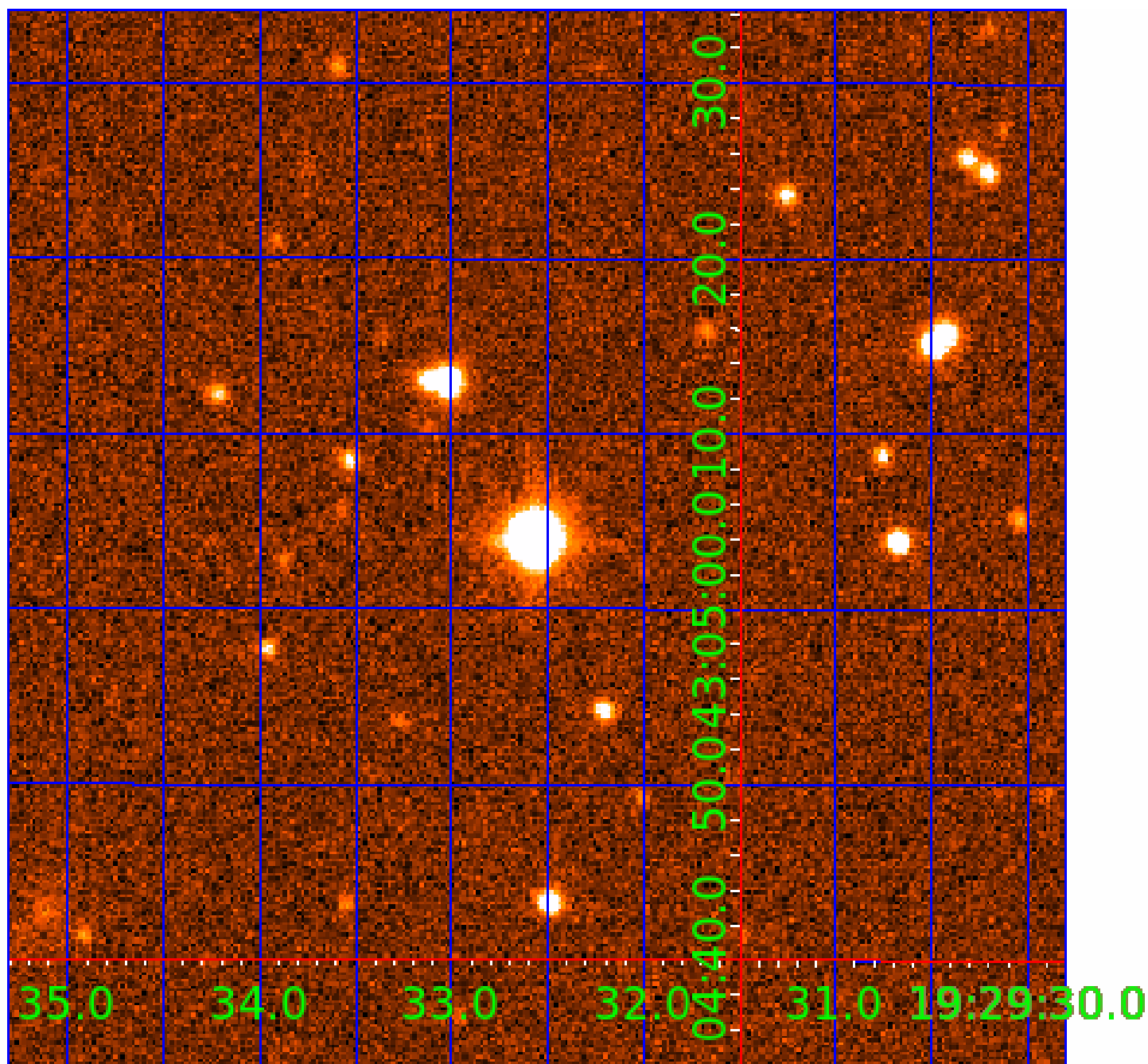


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007446835

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007446835-01	OBS	No	0.665312	131.604464	26.4	2.801	10.7	10.6	0.94	5620	0.58	4153.88
007446835-02	OBS	No	516.924337	518.509150	1728.7	8.874	16.8	8.8	0.94	5620	4.18	0.58
007446835-03	OBS	No	103.604968	190.389829	183.0	4.207	14.0	3.3	0.94	5620	1.49	4.96
007446835-04	OBS	No	310.189912	268.907487	158.4	3.896	10.2	1.7	0.94	5620	1.41	1.15
007446835-05	OBS	No	151.446877	220.609254	489.3	15.350	9.6	3.8	0.94	5620	2.67	2.99
007446835-06	OBS	No	93.995704	202.923269	368.4	9.747	8.9	5.1	0.94	5620	2.14	5.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007446835-01	OBS	FP	0.00	1	0	0	0	LPP_DV
007446835-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007446835-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—HALO_GHOST
007446835-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—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
007446835-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS
007446835-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES

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

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

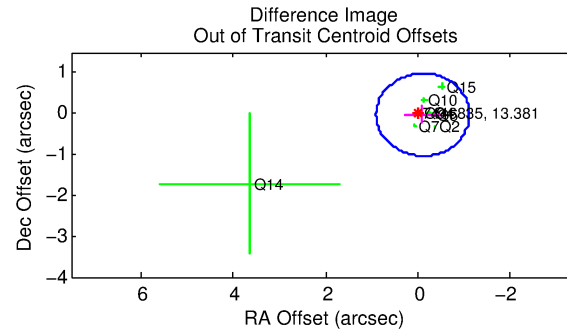
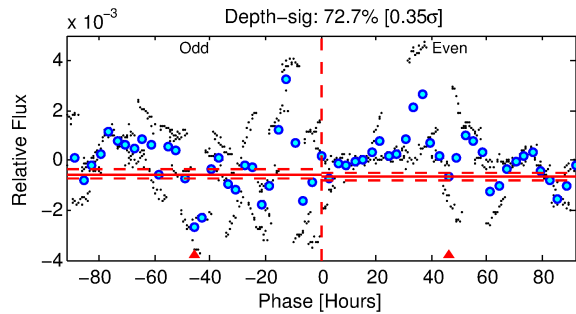
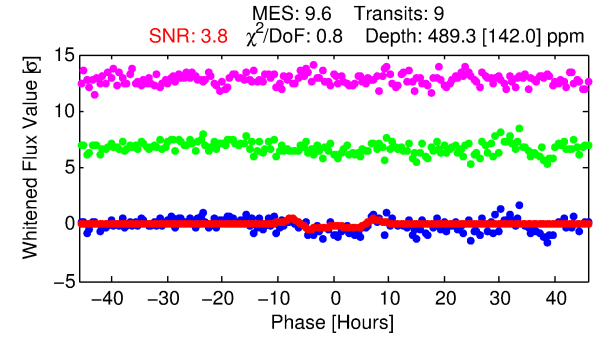
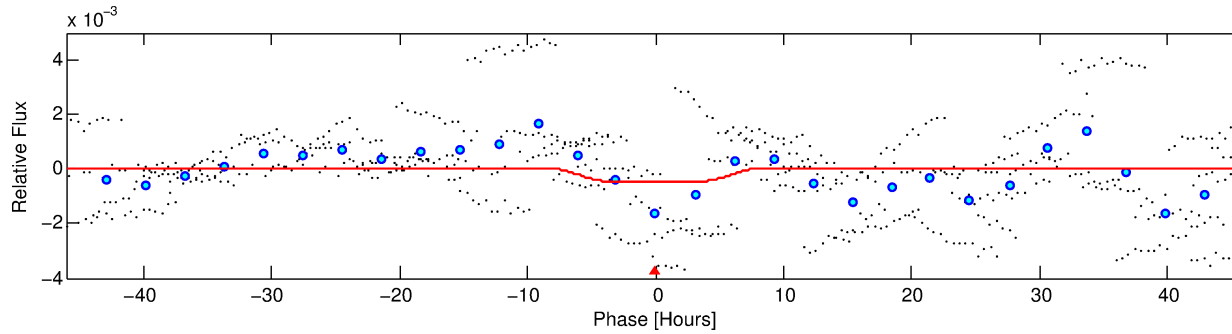
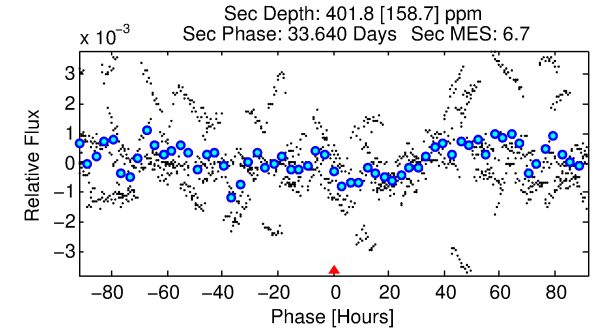
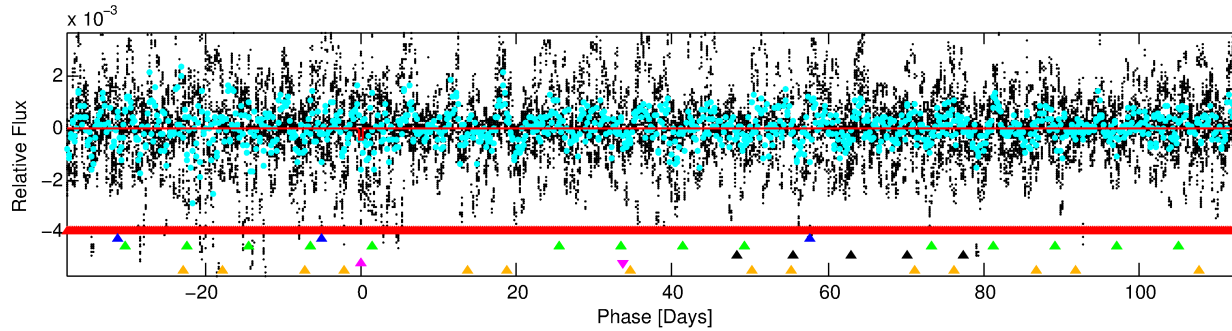
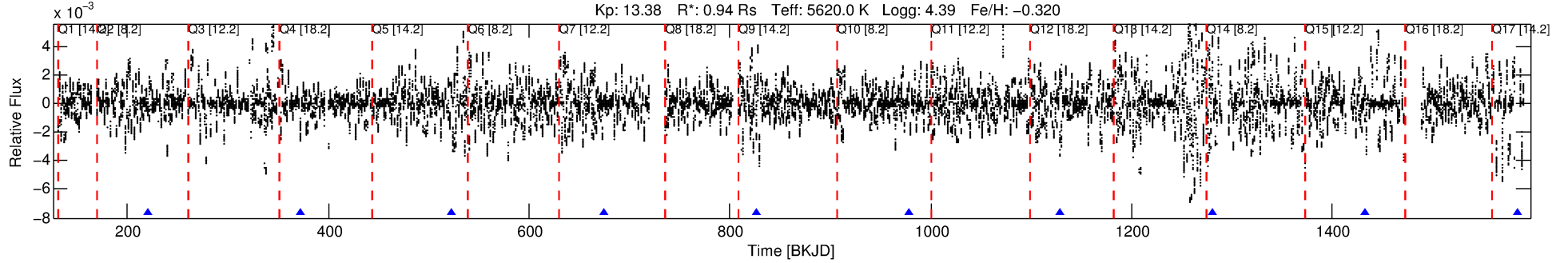
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007446835-05

No Significant Match Found

# DV One-Page Summary

KIC: 7446835 Candidate: 5 of 6 Period: 151.447 d



## DV Fit Results:

Period = 151.44688 [0.00570] d  
Epoch = 220.6093 [0.0310] BKJD  
Rp/R\* = 0.0260 [0.0040]  
a/R\* = 28.49 [4.03]  
b = 0.95 [0.02]  
Seff = 2.99 [1.10]  
Teq = 335 [31] K  
Rp = 2.67 [0.82] Re  
a = 0.5162 [0.1208] AU  
Ag = 8236.87 [5035.85] [1.64σ]  
Teffp = 4938 [631] K [7.28σ]

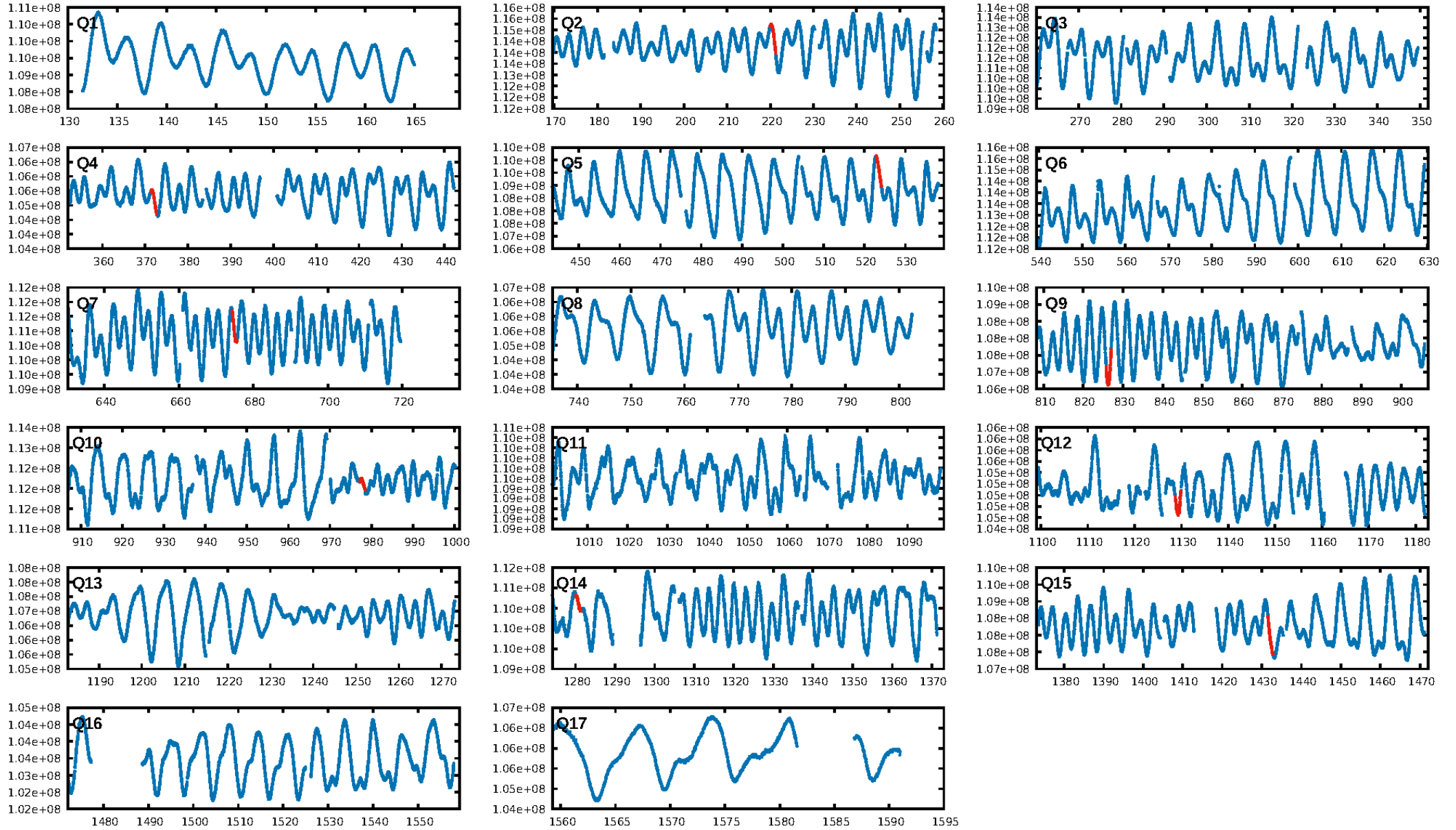
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [72.14σ]  
LongPeriod-sig: 100.0% [240.57σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.88e-09  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -0.6058  
Centroid-sig: 48.7%  
Centroid-so: 0.210 arcsec [0.51σ]  
OotOffset-rm: 0.104 arcsec [0.31σ]  
OotOffset-st: 3/2/1/2 [8]  
KicOffset-rm: 0.058 arcsec [0.12σ]  
KicOffset-st: 3/2/1/2 [8]  
DiffImageQuality-fgm: 0.38 [3/8]  
DiffImageOverlap-fno: 0.00 [0/8]

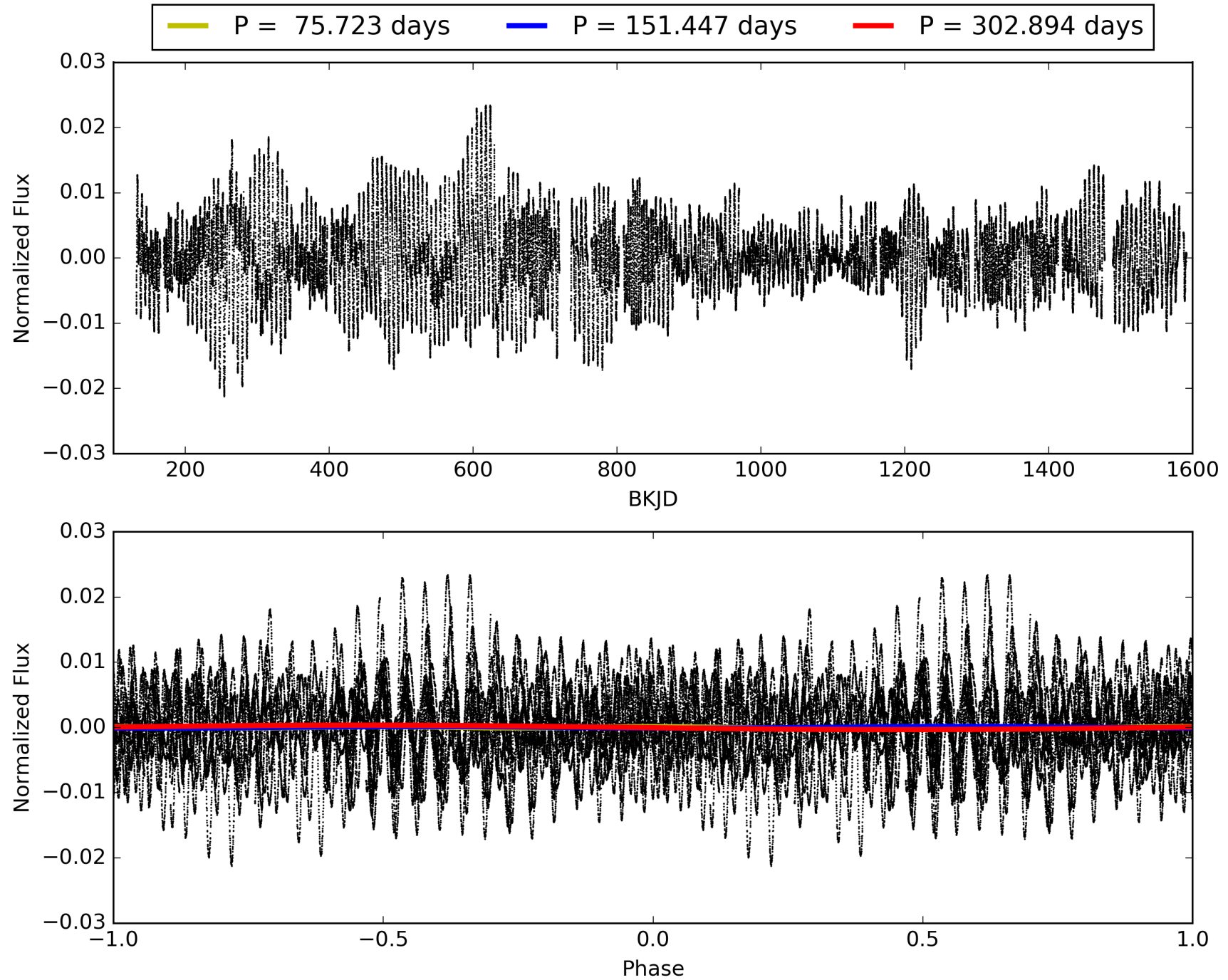
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:57:31 Z

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

# TCE 007446835-05, PDC Light Curves

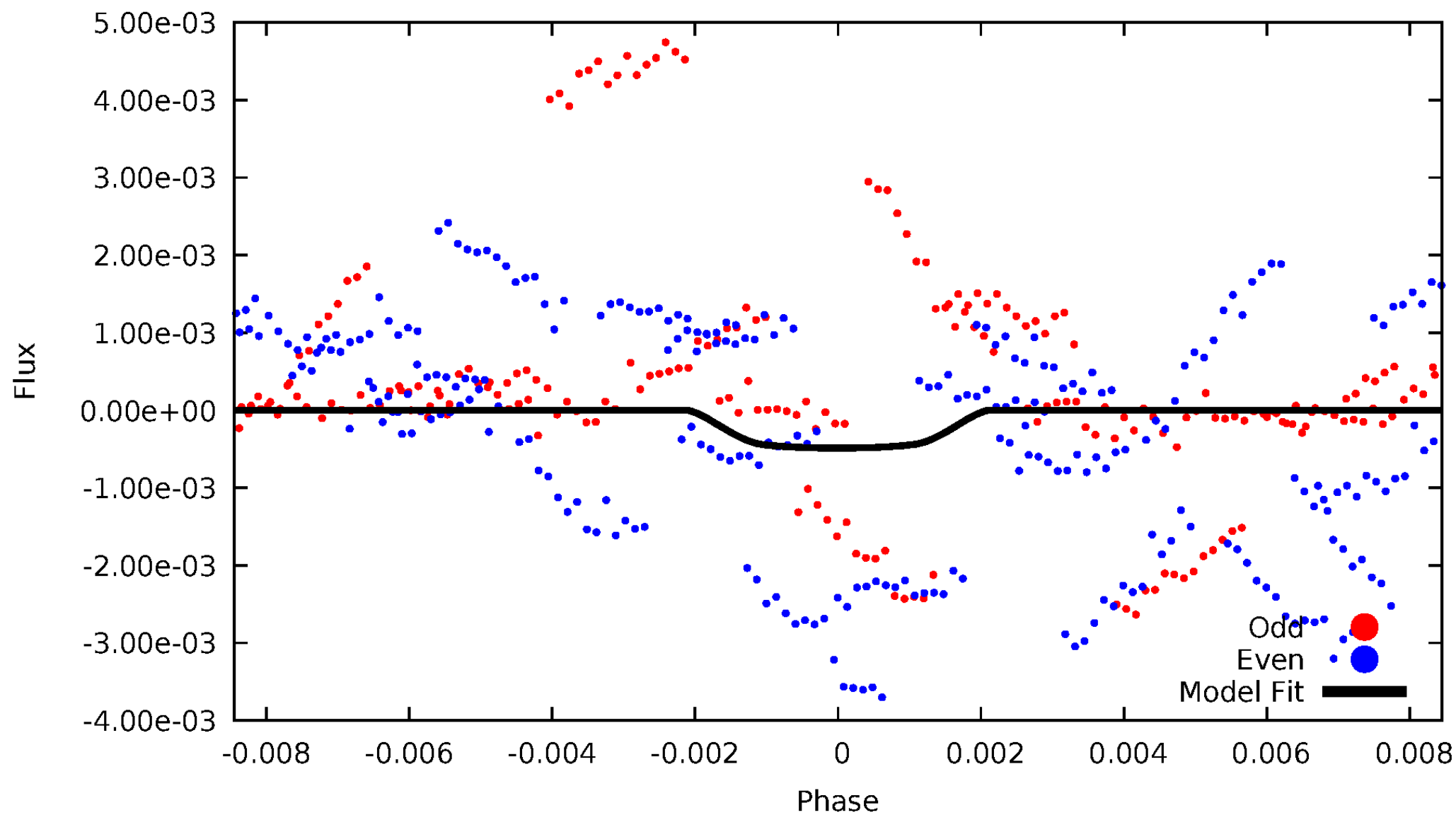


TCE 007446835-05



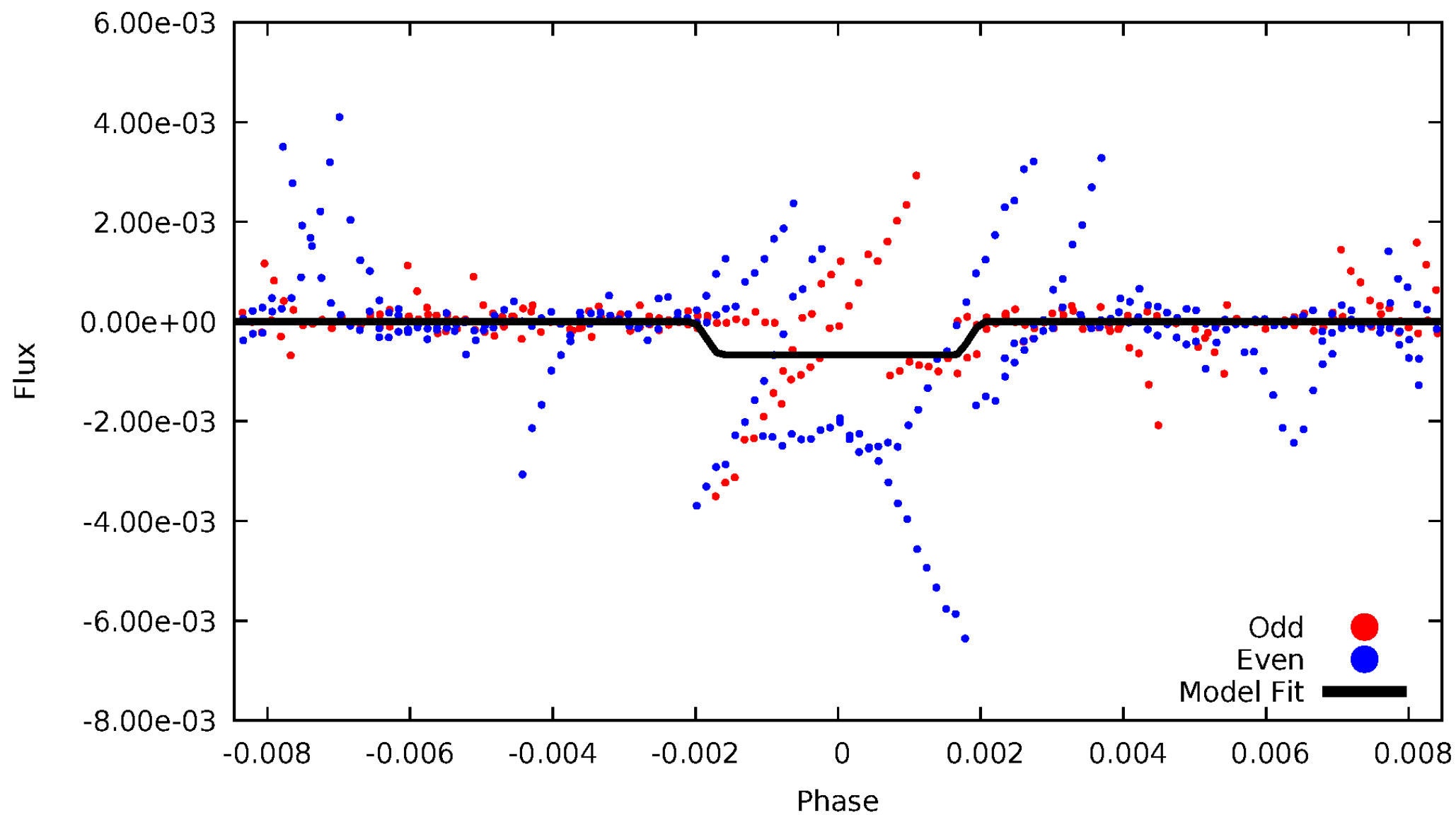
# DV Odd/Even

TCE 007446835-05



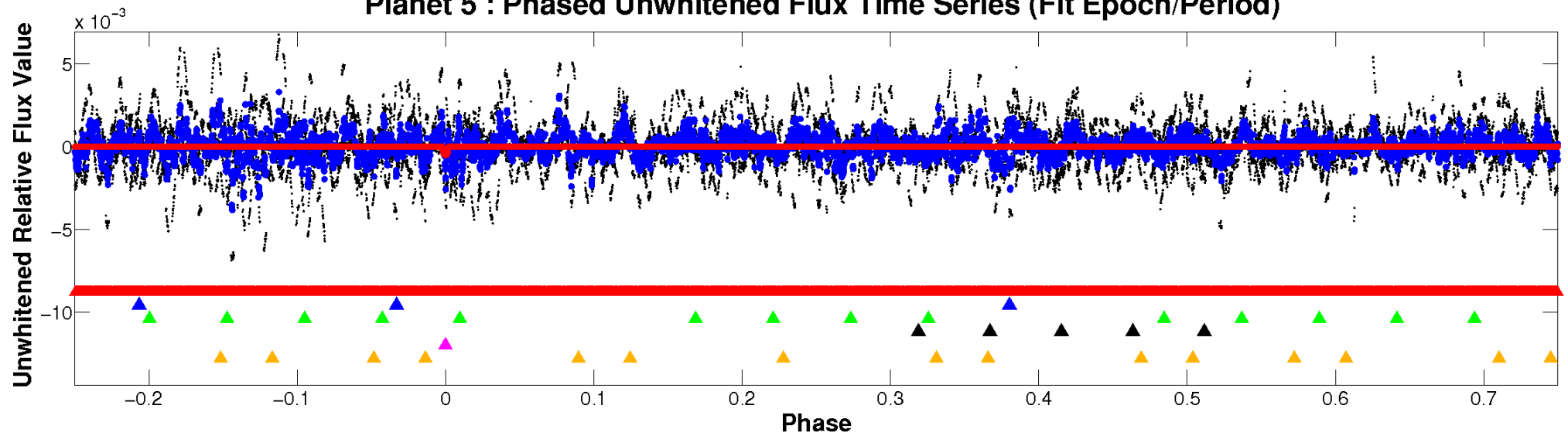
# ALT Odd/Even

TCE 007446835-05

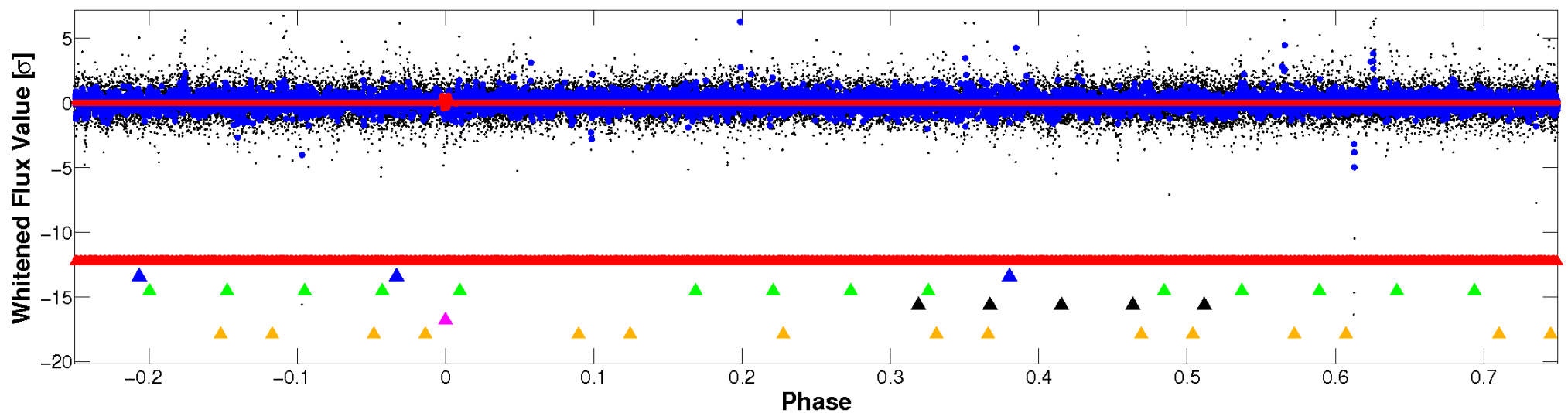


# Non-Whitened Vs. Whitened Light Curve

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

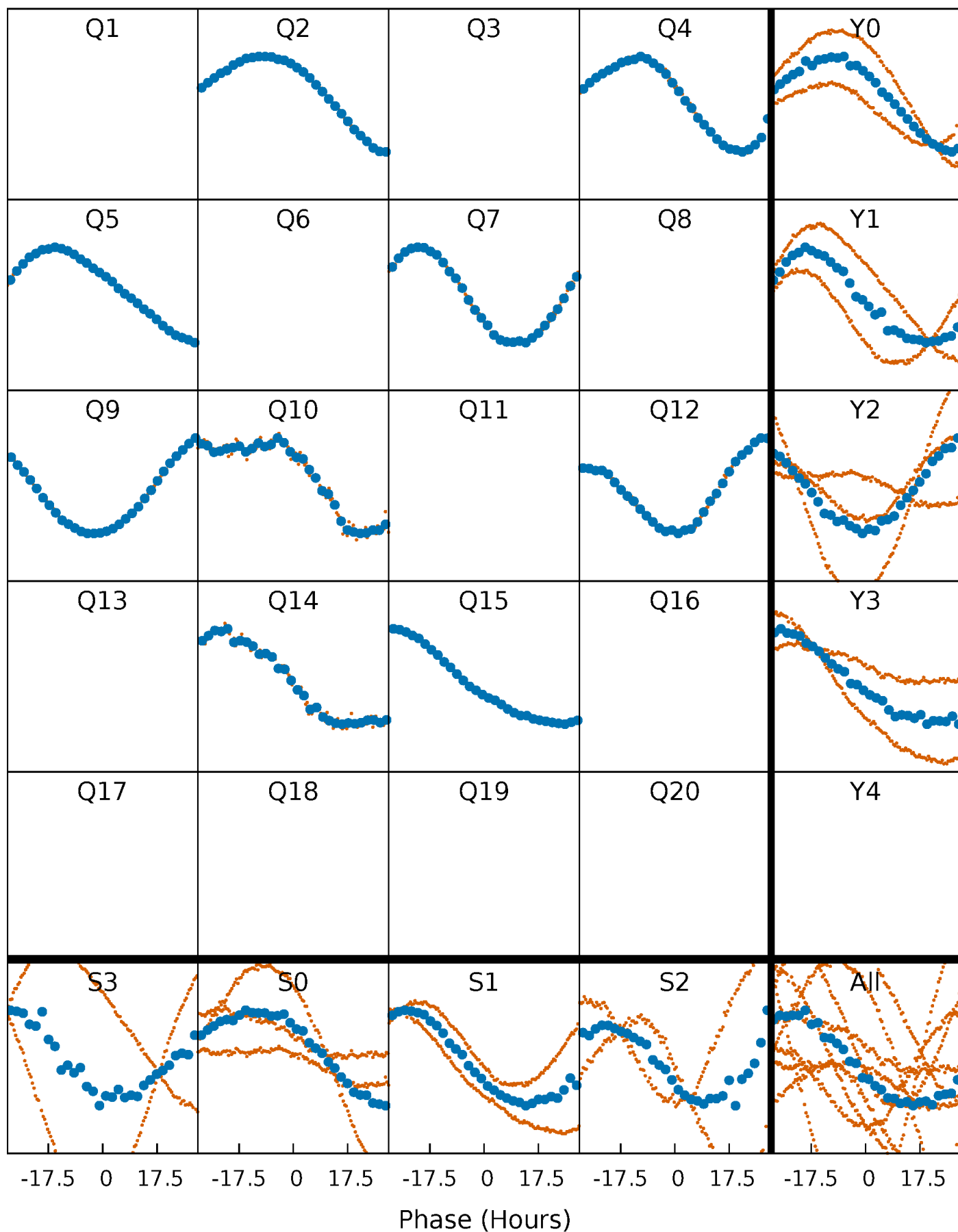


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



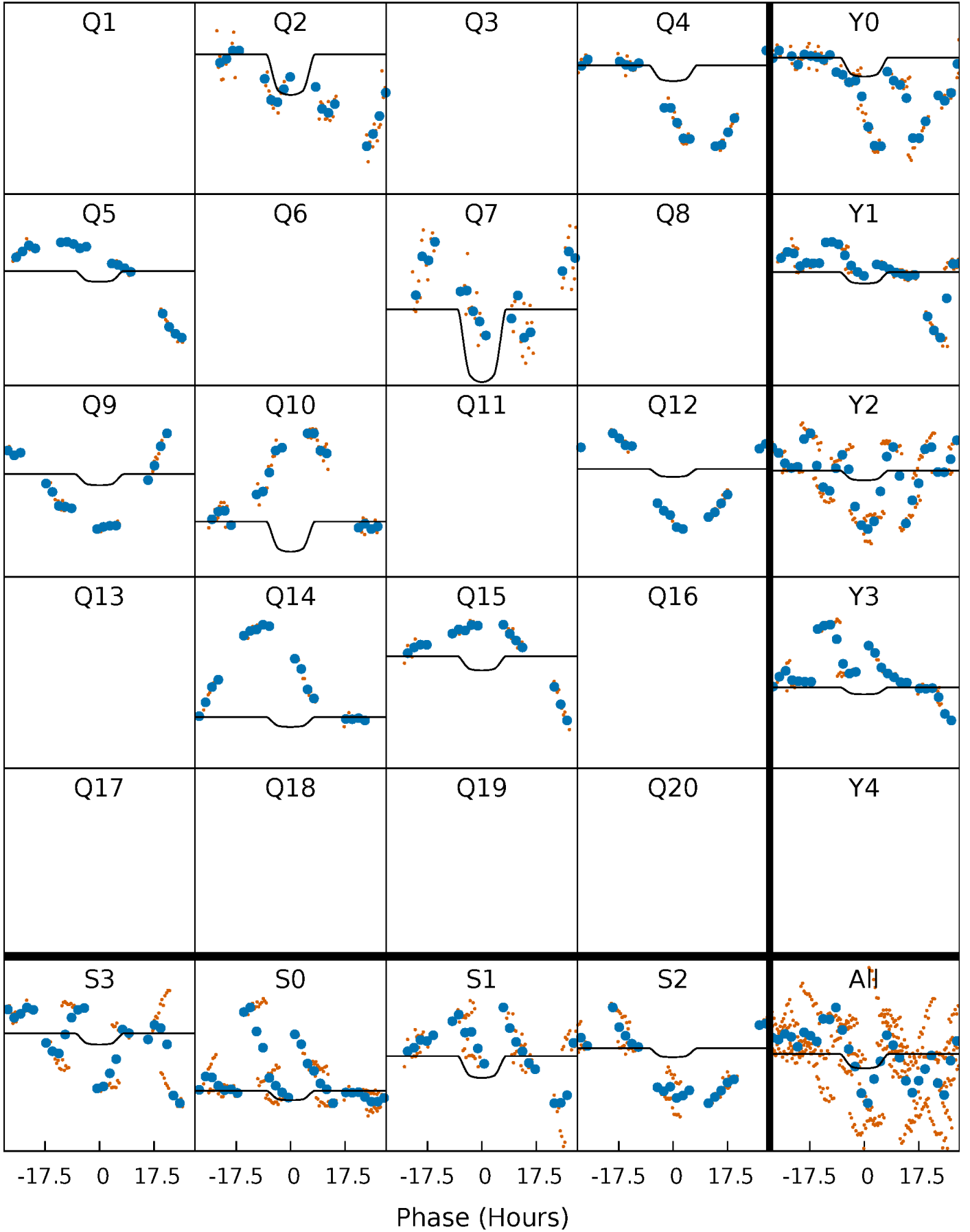
# PDC Quarter-Phased Transit Curves

TCE 007446835-05 P=151.446877 Days  $T_0=220.609254$  (BKJD)



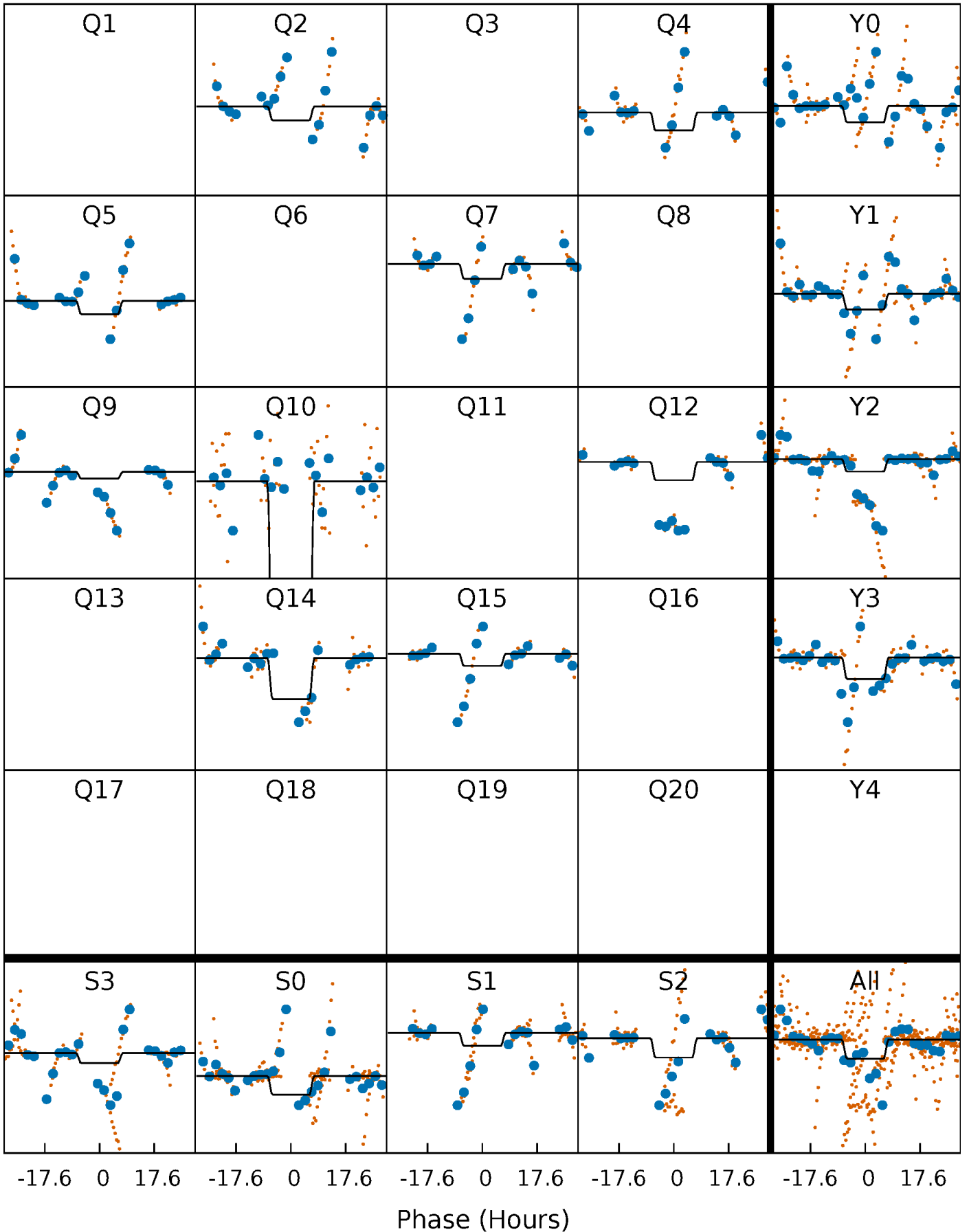
# DV Quarter-Phased Transit Curves

TCE 007446835-05     $P=151.446877$  Days     $T_0=220.609254$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

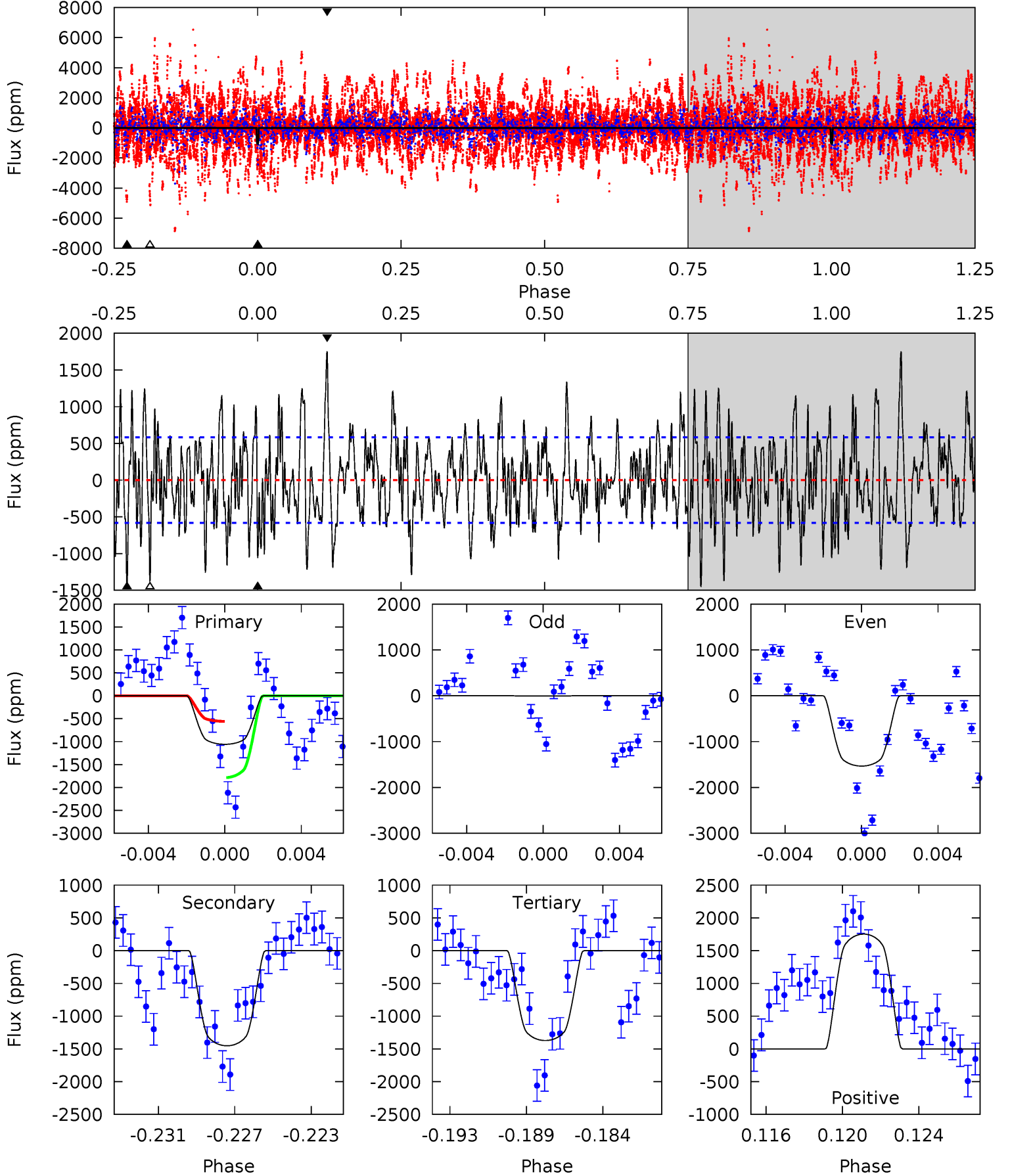
TCE 007446835-05     $P=151.433113$  Days     $T_0=220.658904$  (BKJD)



# DV Model-Shift Uniqueness Test

007446835-05,  $P = 151.446877$  Days,  $E = 69.162377$  Days

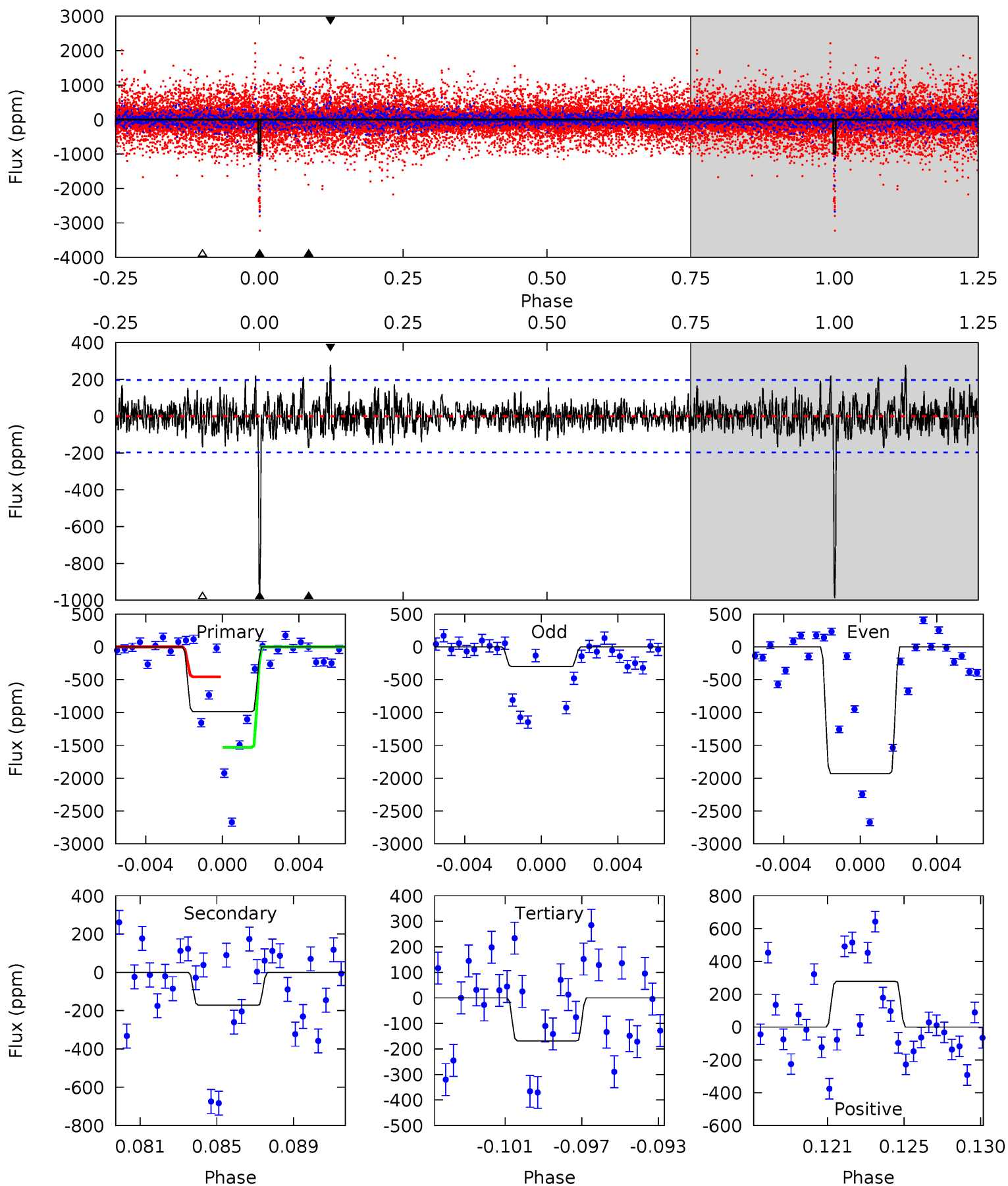
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.43	12.9	12.2	15.6	5.19	2.86	4.31	-2.79	-6.17	0.71	-2.67	6.65	12.8	0.55	5.50



# Alt Model-Shift Uniqueness Test

007446835-05, P = 151.433113 Days, E = 69.225791 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
26.1	4.54	4.45	7.35	5.20	2.87	1.43	21.7	18.8	0.08	-2.81	18.3	1.01	0.22	14.1



### Stellar Parameters For KIC 007446835

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5620^{+152}_{-152}$	$4.391^{+0.162}_{-0.198}$	$-0.320^{+0.300}_{-0.250}$	$0.944^{+0.252}_{-0.168}$	$0.800^{+0.124}_{-0.062}$	$1.339^{+0.984}_{-0.650}$
	+3%/-3%	+4%/-5%	+94%/-78%	+27%/-18%	+16%/-8%	+73%/-49%
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 007446835-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	-1453 $\pm$ 112	$2.70^{+0.58}_{-0.53}$	$467^{+39}_{-30}$	$6798^{+752}_{-549}$	$29408^{+15695}_{-9815}$
Alt.	-172 $\pm$ 38	$2.71^{+0.57}_{-0.53}$	$469^{+37}_{-28}$	$4247^{+346}_{-321}$	$3483^{+2078}_{-1329}$

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

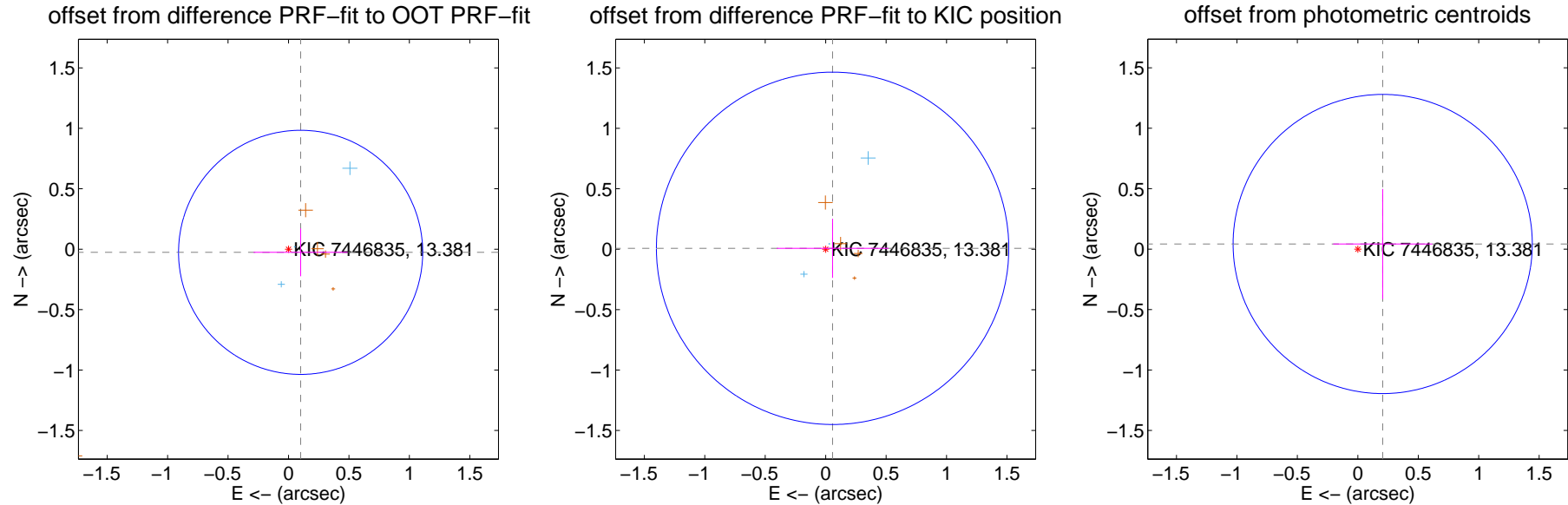
## DV Centroid Data

Supplemental centroid analysis for 007446835-05. Kepler magnitude: 13.38. Transit SNR 3.82

There are 3 quarters with good PRF difference image offsets

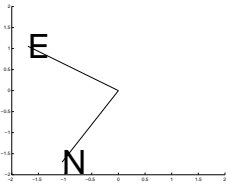
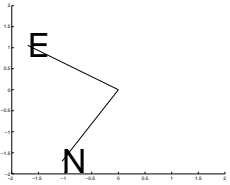
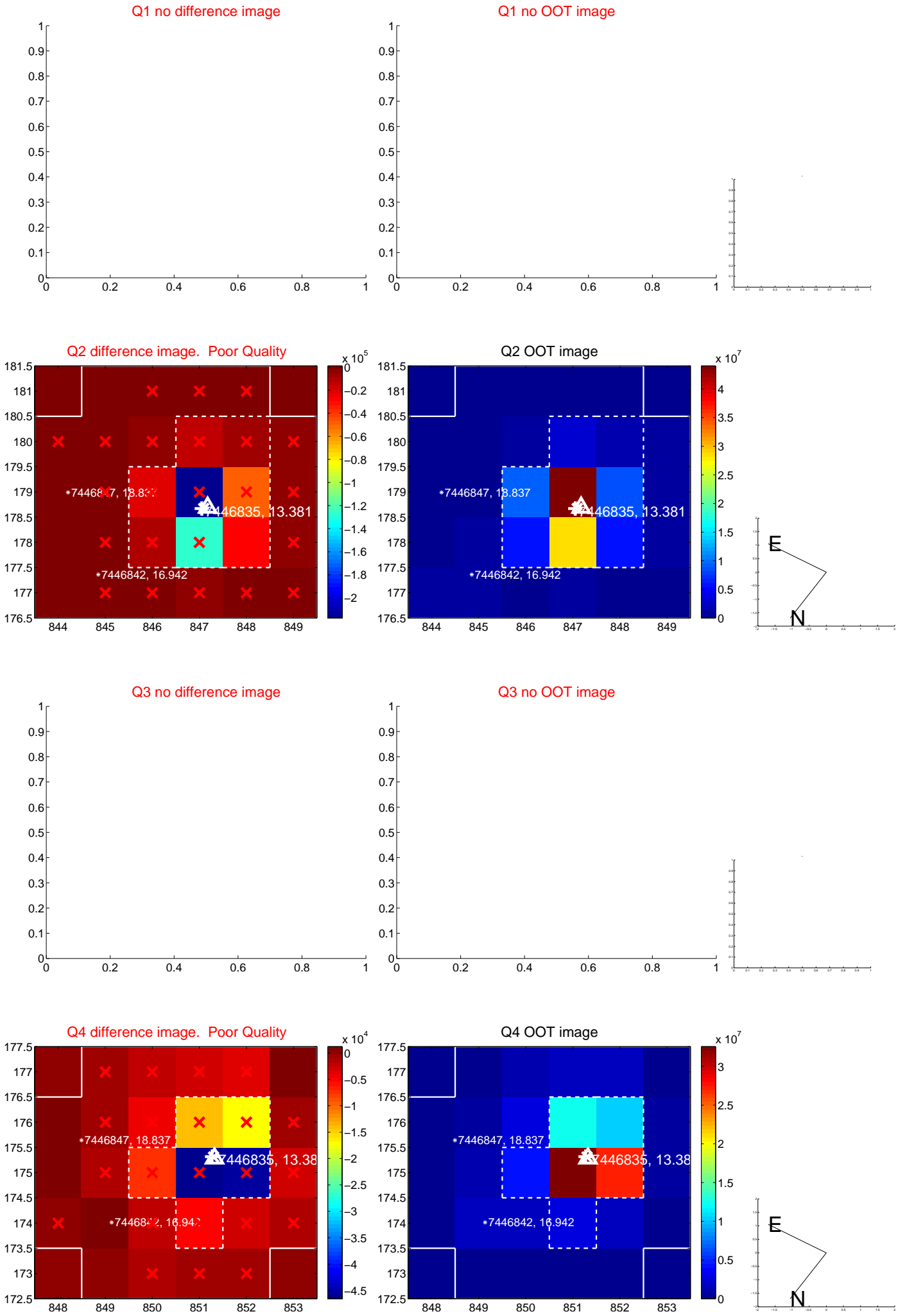
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.104 \pm 0.337$	0.31	$-0.100 \pm 0.389$	$-0.026 \pm 0.198$
PRF-fit source offset from KIC position	$0.058 \pm 0.486$	0.12	$-0.057 \pm 0.463$	$0.007 \pm 0.245$
photometric centroid source offset	$0.21 \pm 0.41$	0.51	$-0.21 \pm 0.41$	$0.04 \pm 0.46$

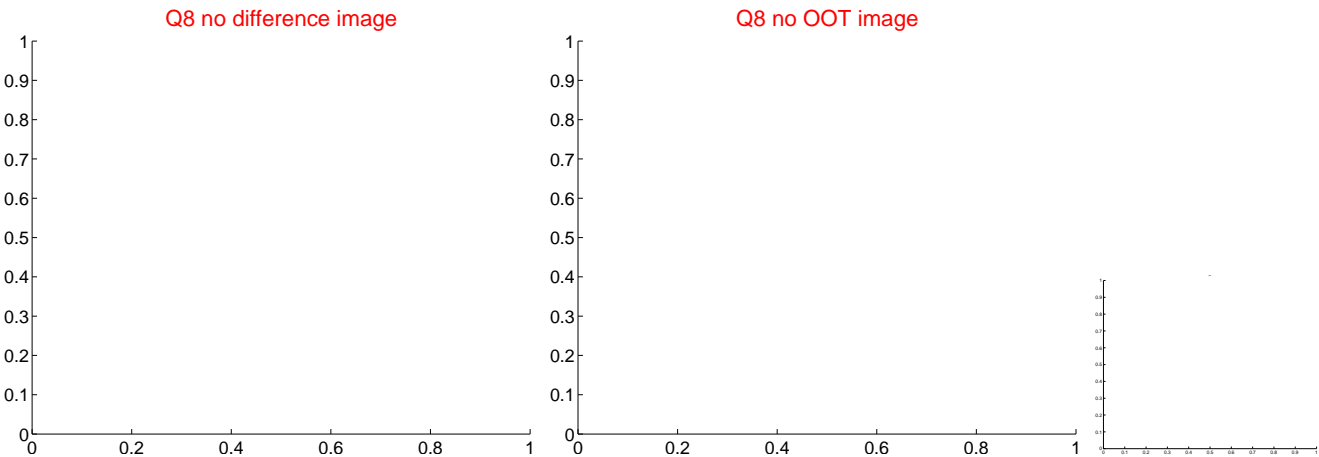
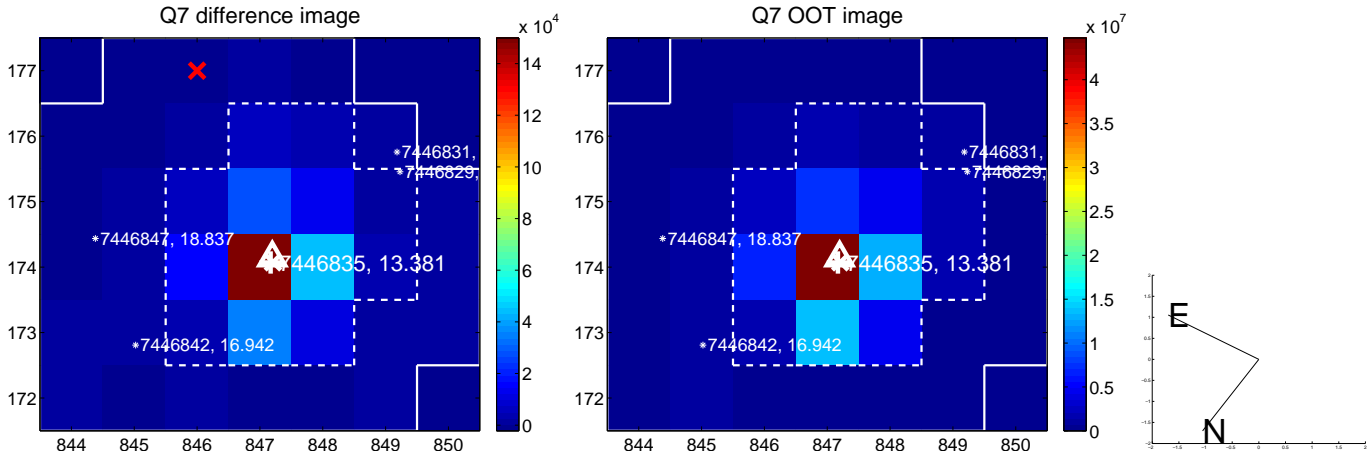
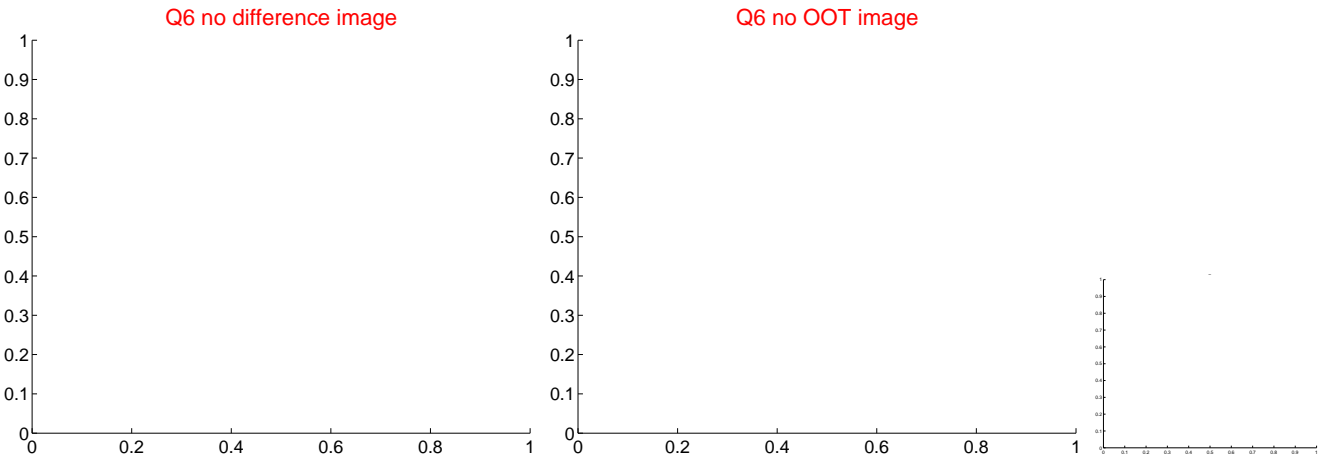
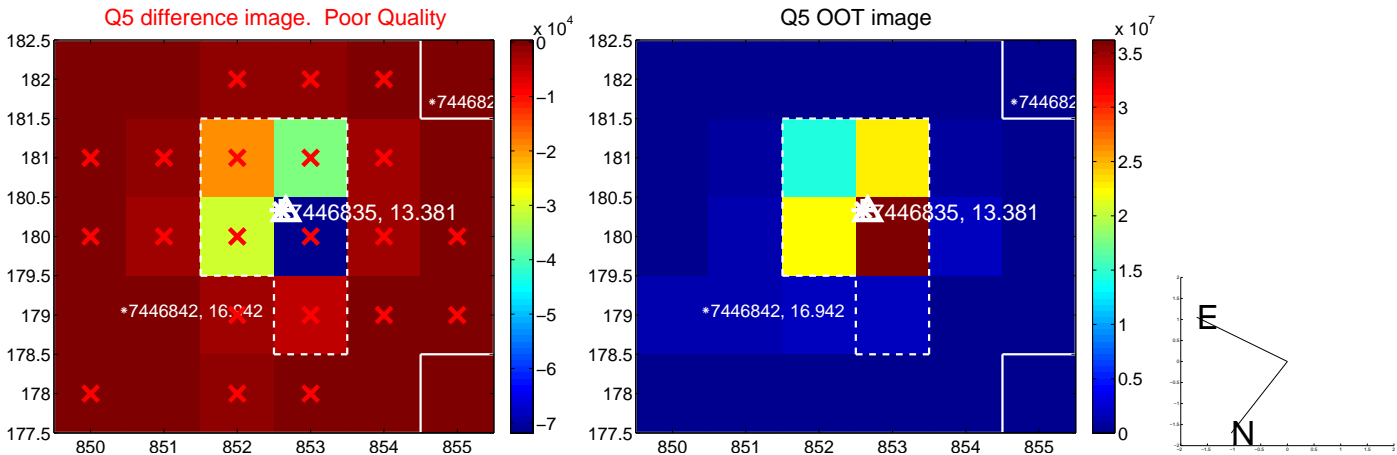


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

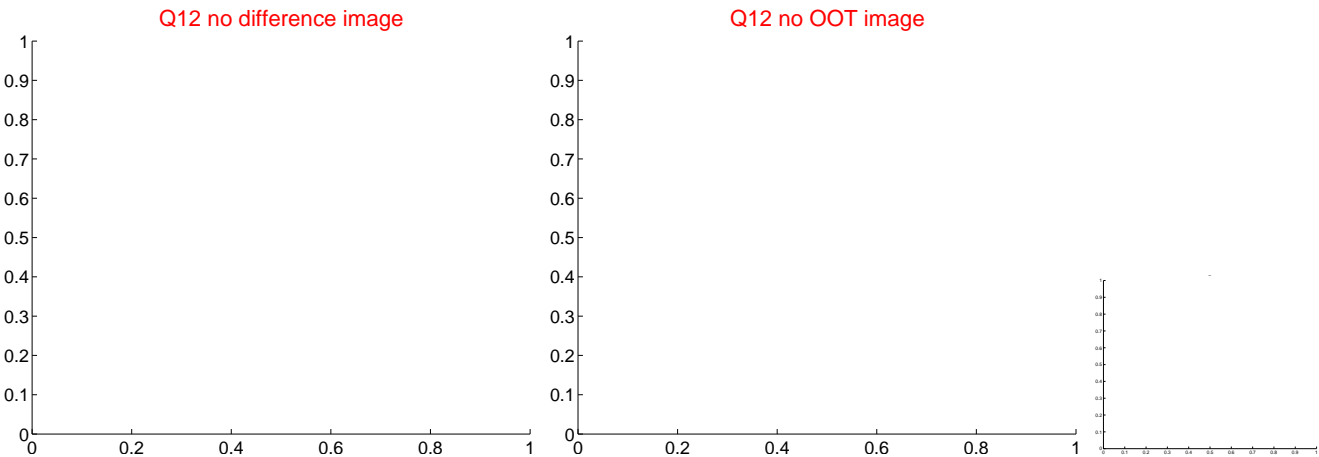
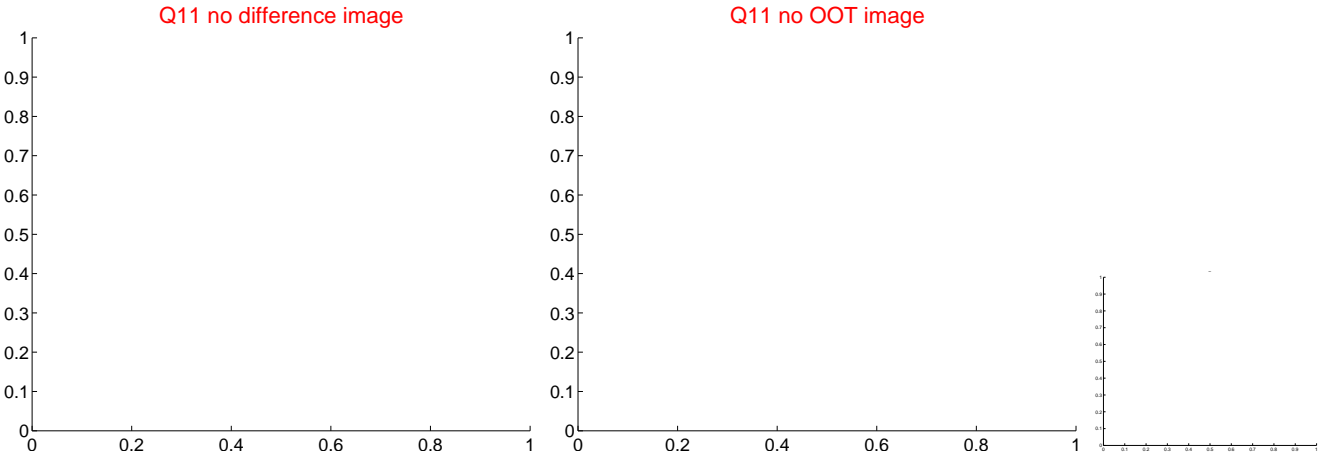
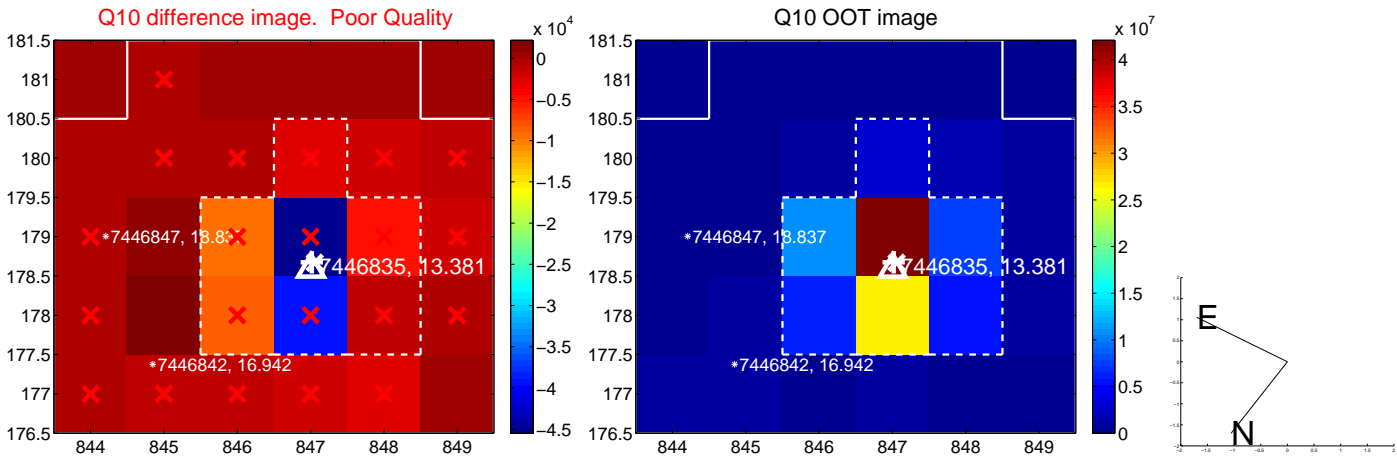
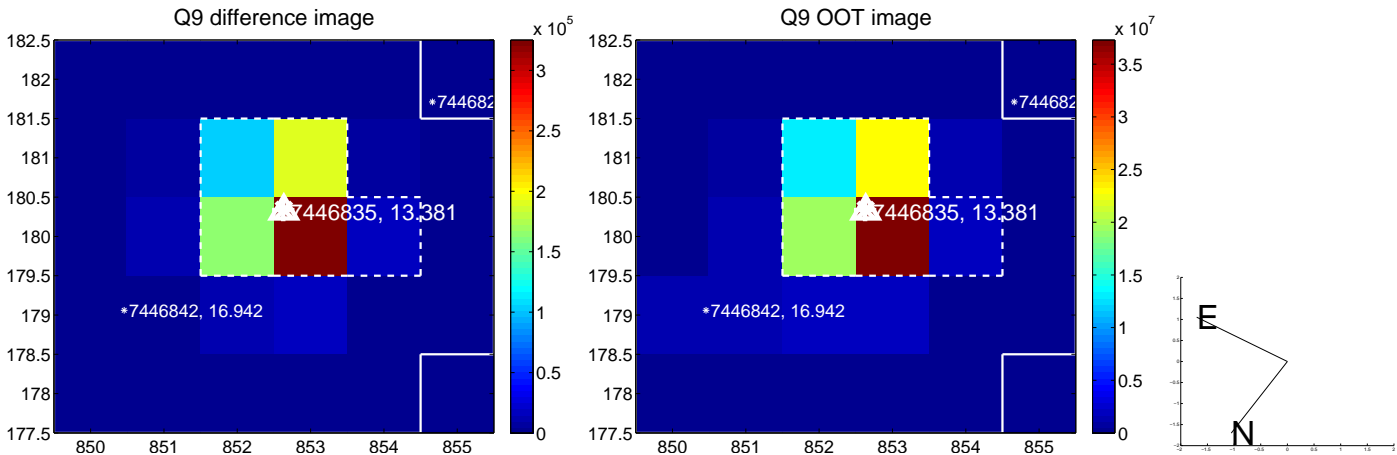
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

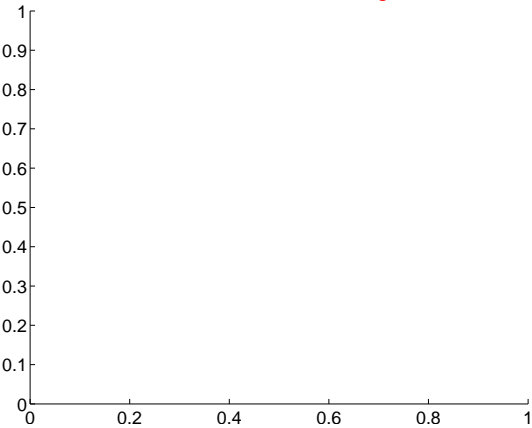


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

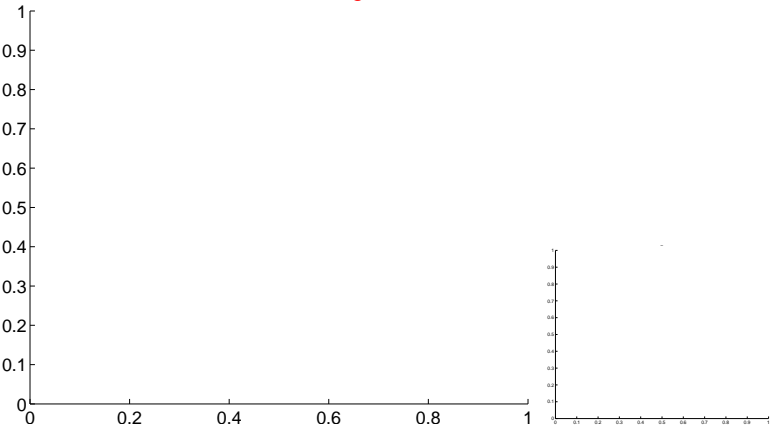


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

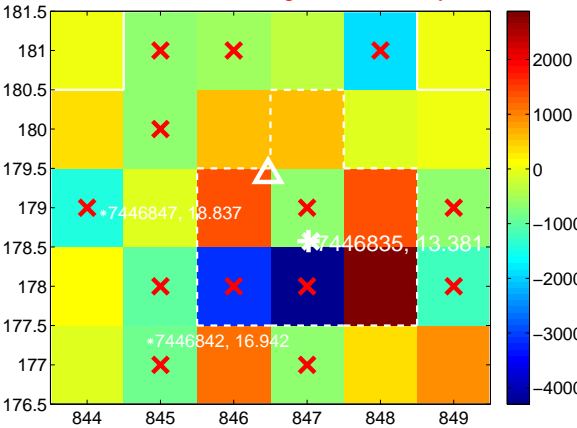
Q13 no difference image



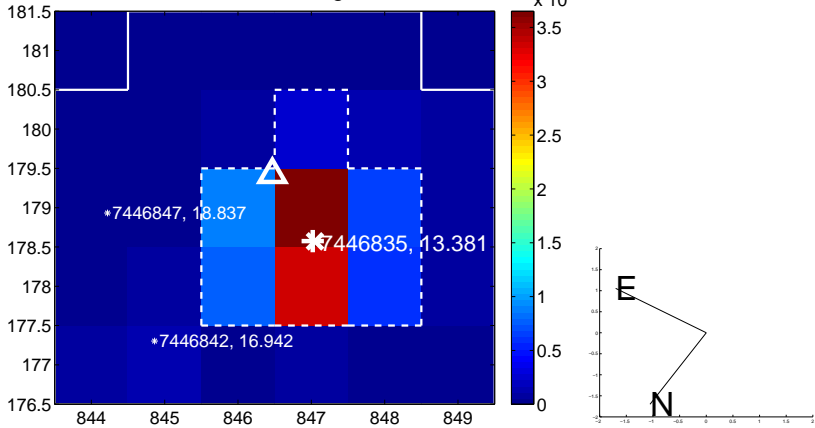
Q13 no OOT image



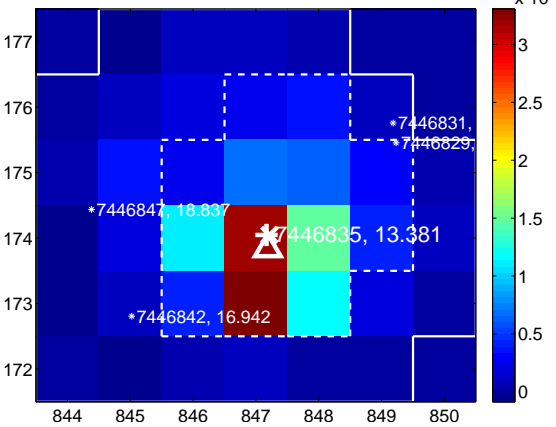
Q14 difference image. Poor Quality



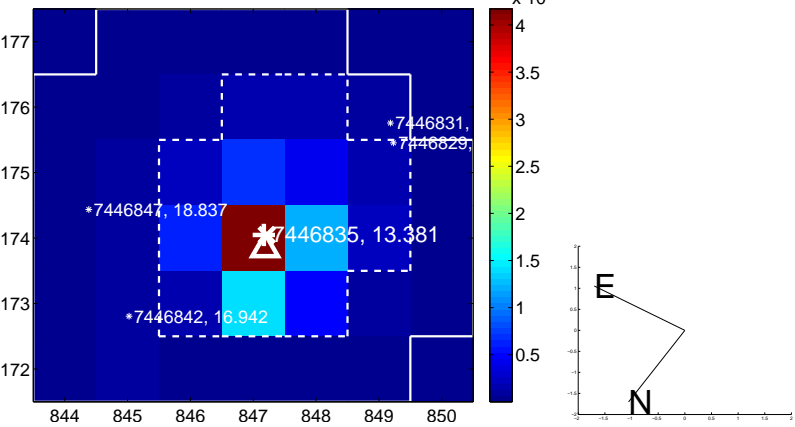
Q14 OOT image



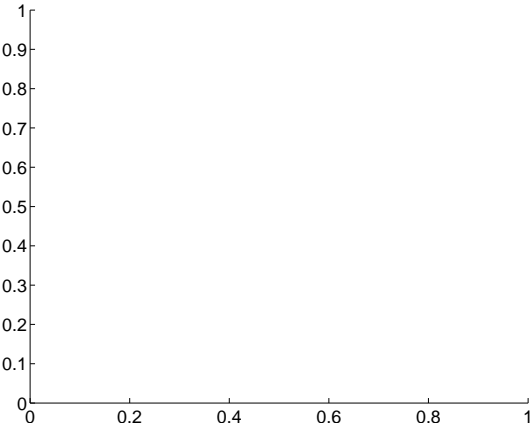
Q15 difference image



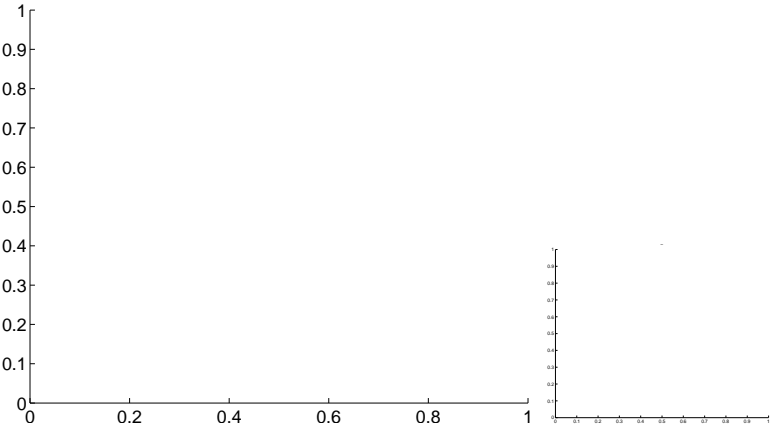
Q15 OOT image



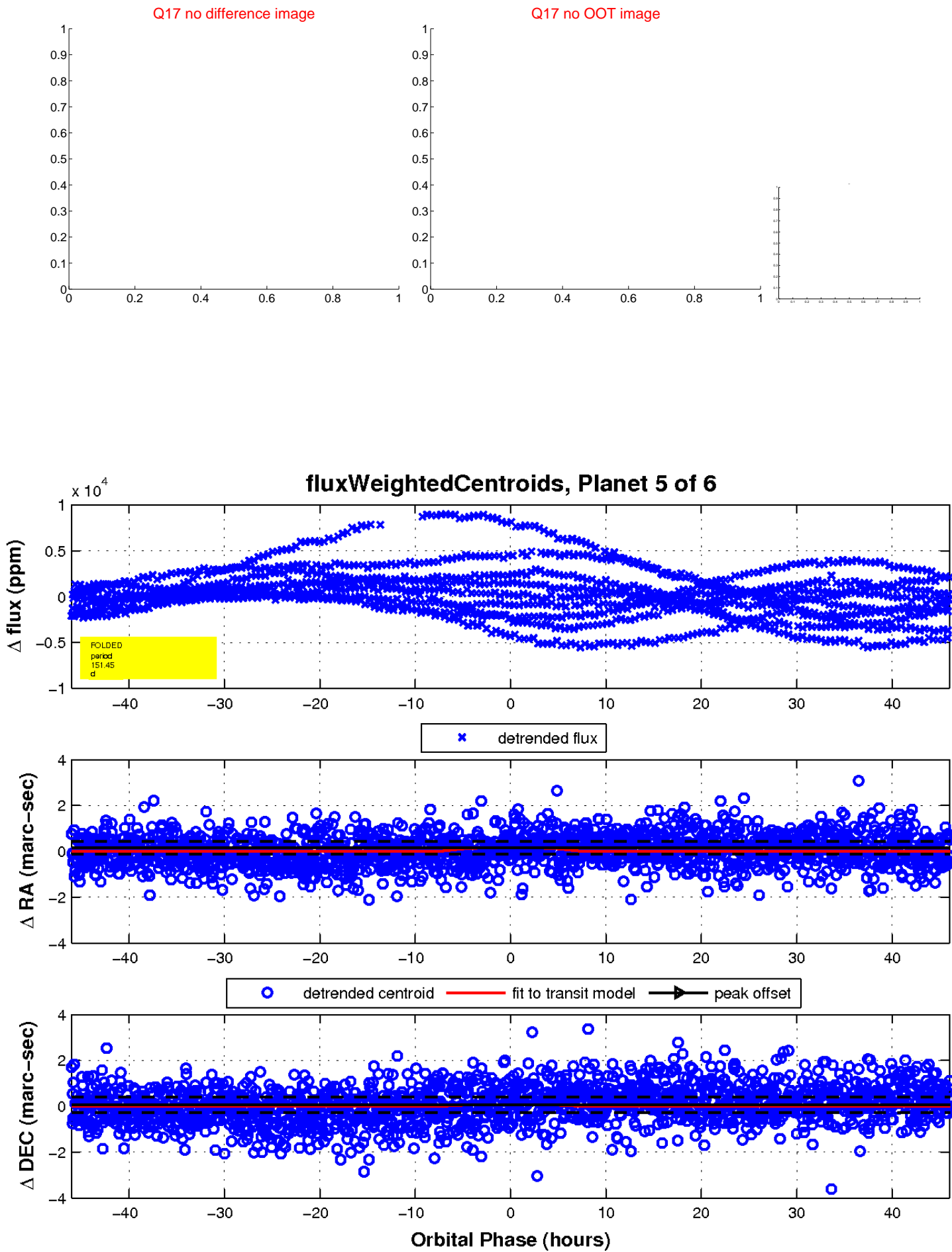
Q16 no difference image



Q16 no OOT image

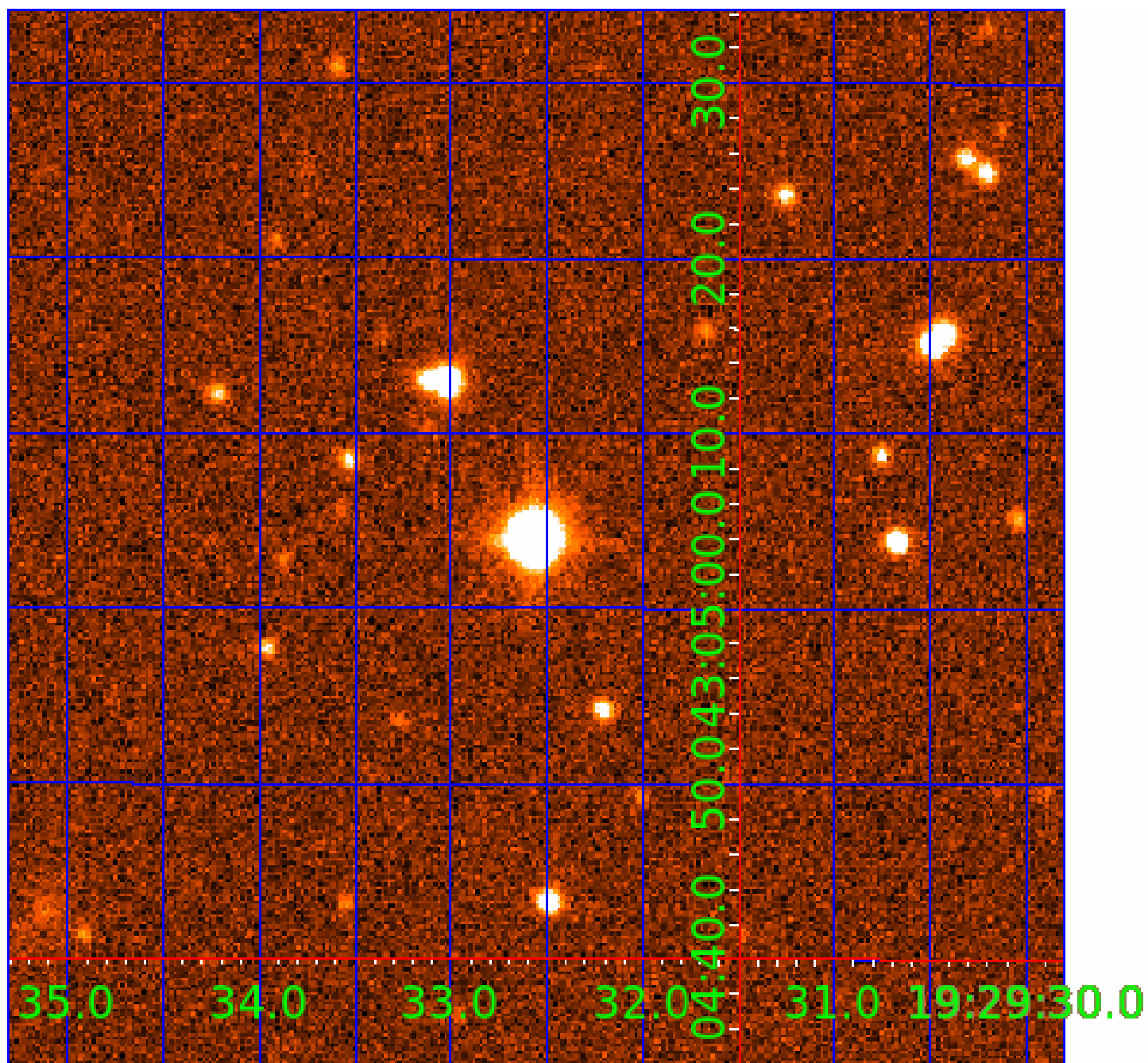


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007446835

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007446835-01	OBS	No	0.665312	131.604464	26.4	2.801	10.7	10.6	0.94	5620	0.58	4153.88
007446835-02	OBS	No	516.924337	518.509150	1728.7	8.874	16.8	8.8	0.94	5620	4.18	0.58
007446835-03	OBS	No	103.604968	190.389829	183.0	4.207	14.0	3.3	0.94	5620	1.49	4.96
007446835-04	OBS	No	310.189912	268.907487	158.4	3.896	10.2	1.7	0.94	5620	1.41	1.15
007446835-05	OBS	No	151.446877	220.609254	489.3	15.350	9.6	3.8	0.94	5620	2.67	2.99
007446835-06	OBS	No	93.995704	202.923269	368.4	9.747	8.9	5.1	0.94	5620	2.14	5.64

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007446835-01	OBS	FP	0.00	1	0	0	0	LPP_DV
007446835-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007446835-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE_TRACKER—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS—HALO_GHOST
007446835-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—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
007446835-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV— INCONSISTENT_TRANS
007446835-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES

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

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

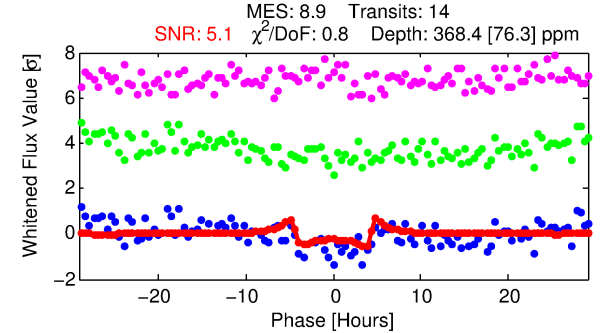
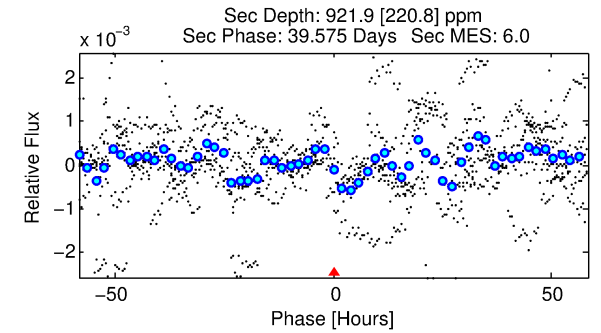
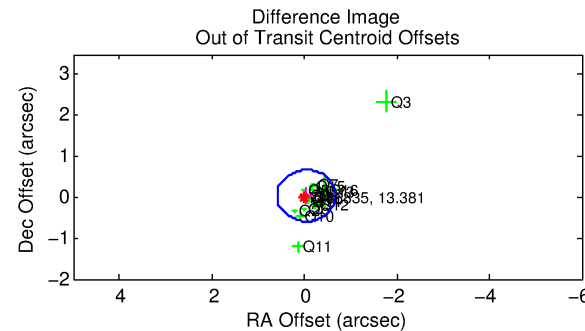
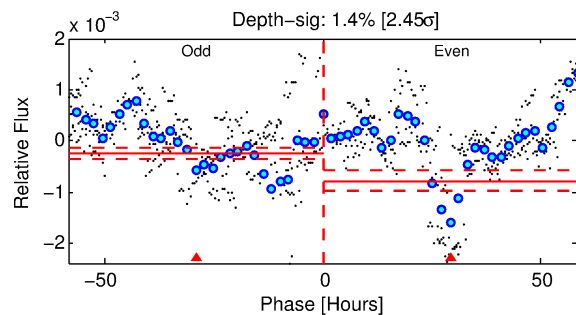
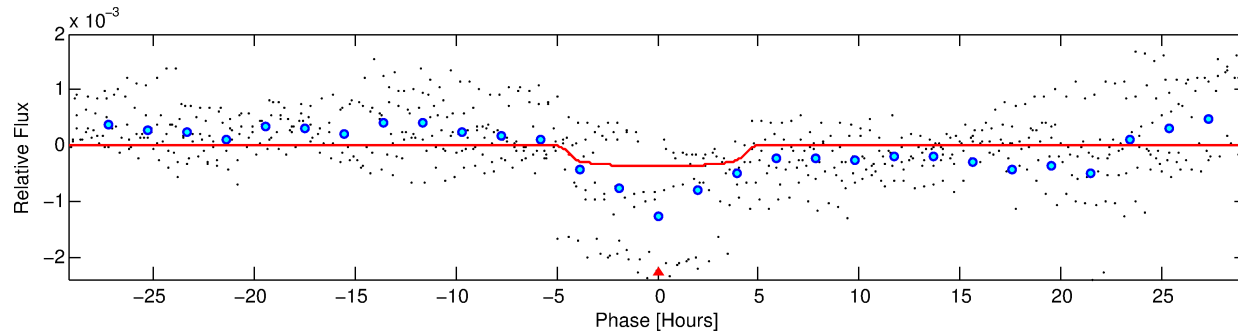
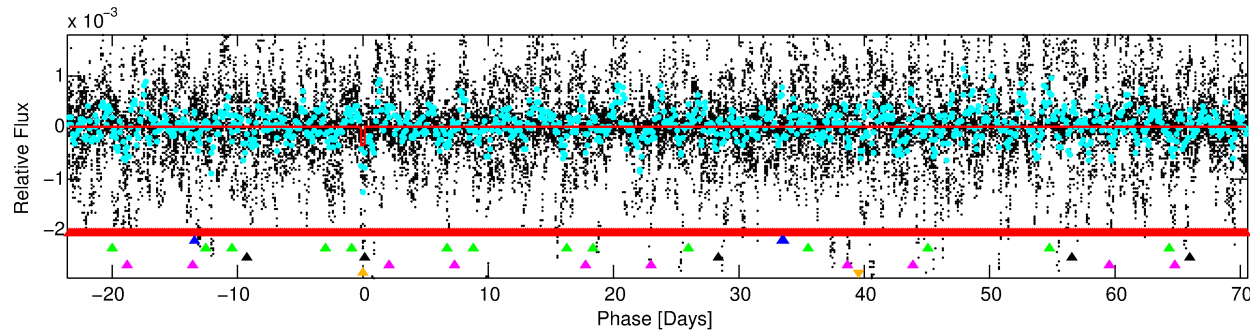
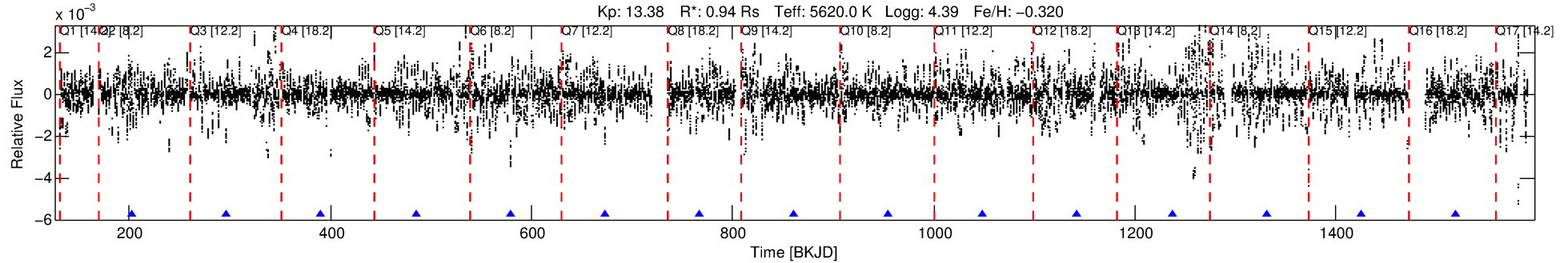
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007446835-06

No Significant Match Found

# DV One-Page Summary

KIC: 7446835 Candidate: 6 of 6 Period: 93.996 d



## DV Fit Results:

Period = 93.99570 [0.00147] d  
Epoch = 202.9233 [0.0134] BKJD  
Rp/R\* = 0.0207 [0.0030]  
a/R\* = 36.57 [13.72]  
b = 0.89 [0.09]  
Seff = 5.65 [2.08]  
Teq = 393 [36] K  
Rp = 2.14 [0.65] Re  
a = 0.3756 [0.0879] AU  
Ag = 15674.62 [8049.93] [1.95 $\sigma$ ]  
Teffp = 6800 [661] K [9.67 $\sigma$ ]

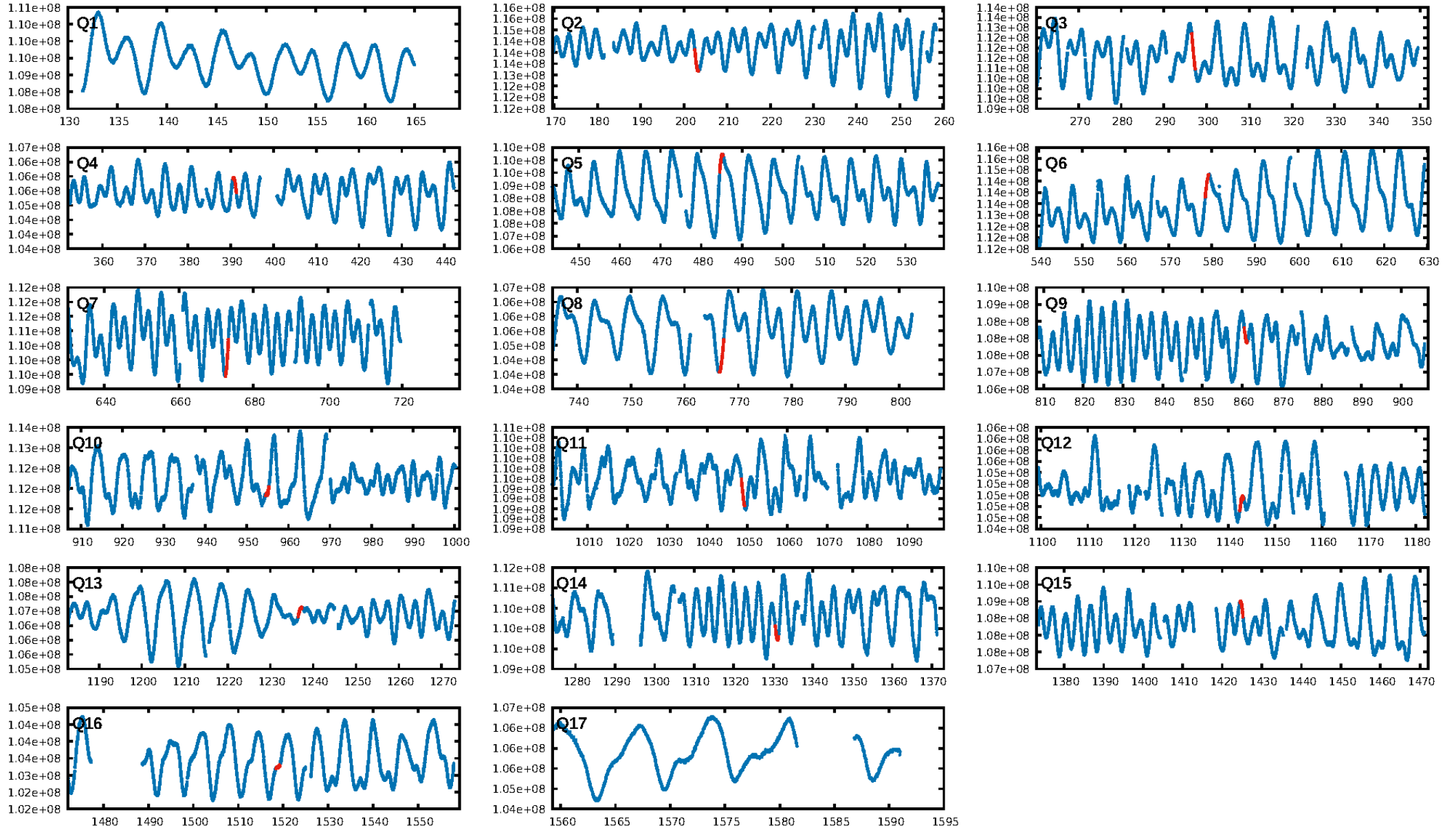
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [220.87 $\sigma$ ]  
LongPeriod-sig: 100.0% [21.72 $\sigma$ ]  
ModelChiSquare2-sig: 1.1%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 6.70e-09**  
RollingBand-fgt: 1.00 [14/14]  
GhostDiagnostic-chr: -0.7715  
Centroid-sig: 72.0%  
Centroid-so: 0.430 arcsec [0.93 $\sigma$ ]  
OotOffset-rm: 0.055 arcsec [0.26 $\sigma$ ]  
OotOffset-st: 4/4/4/3 [15]  
KicOffset-rm: 0.085 arcsec [0.60 $\sigma$ ]  
KicOffset-st: 4/4/4/3 [15]  
DiffImageQuality-fgm: 0.53 [8/15]  
DiffImageOverlap-fno: 0.00 [0/15]

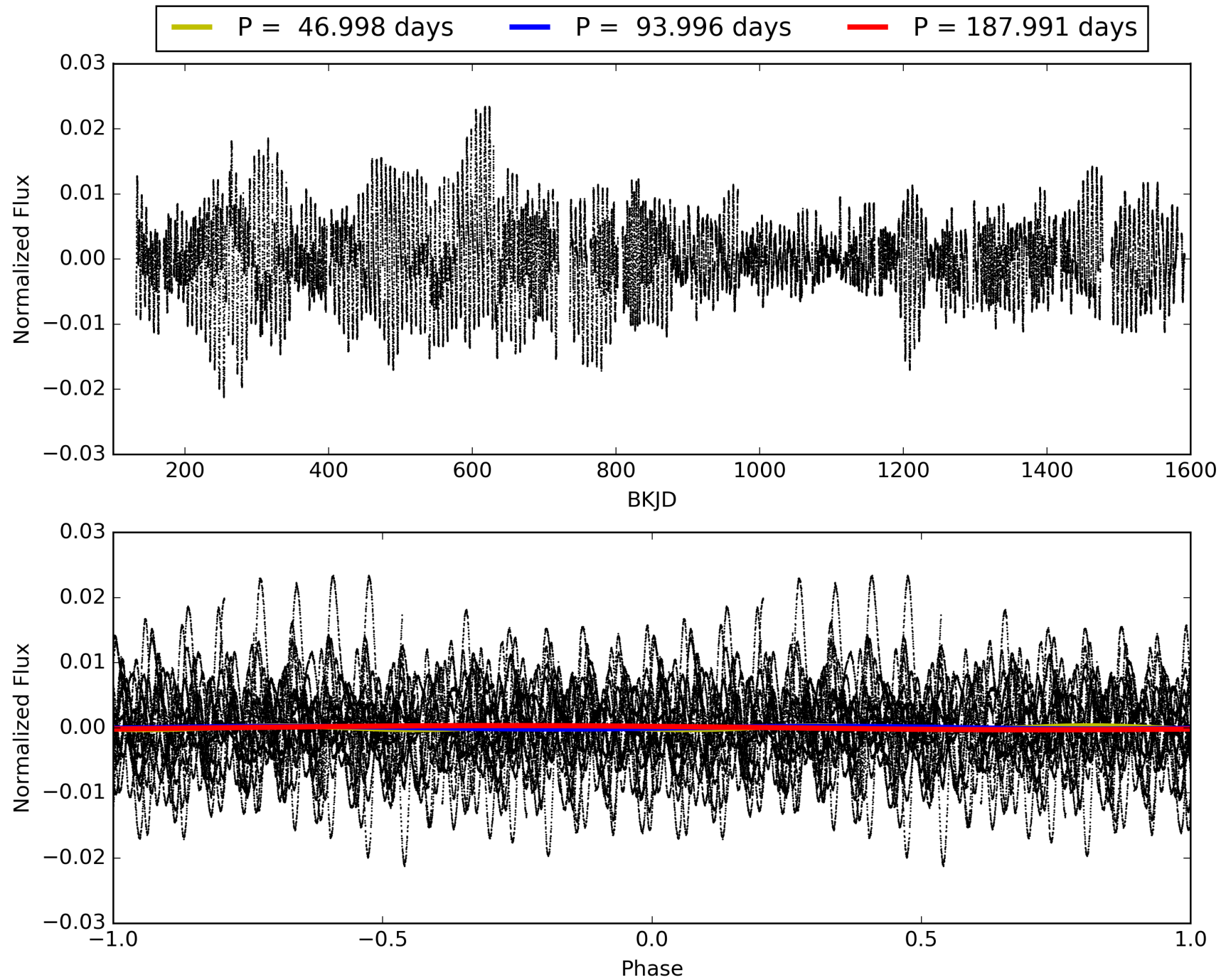
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 09:57:35 Z

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

# TCE 007446835-06, PDC Light Curves

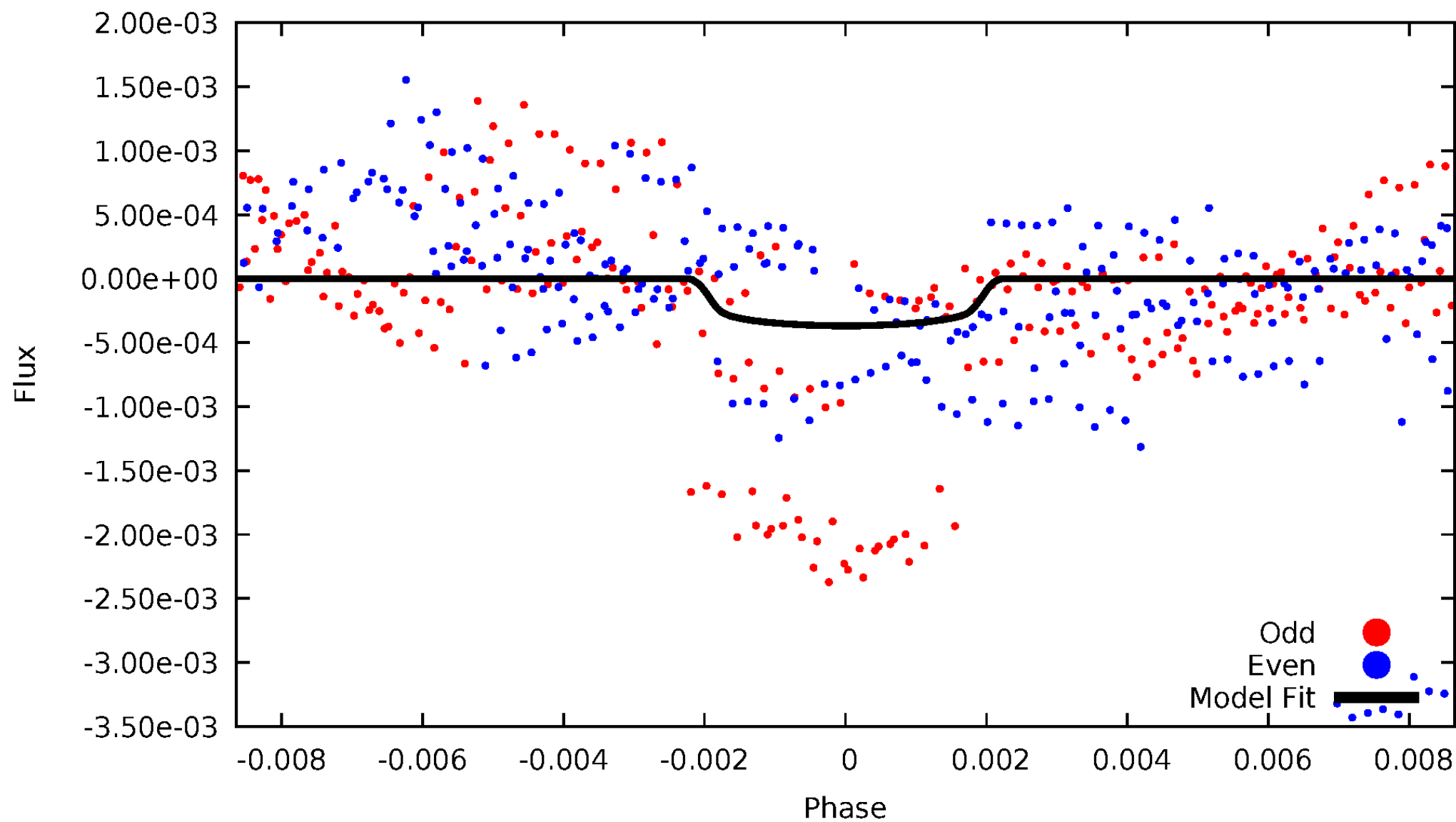


TCE 007446835-06



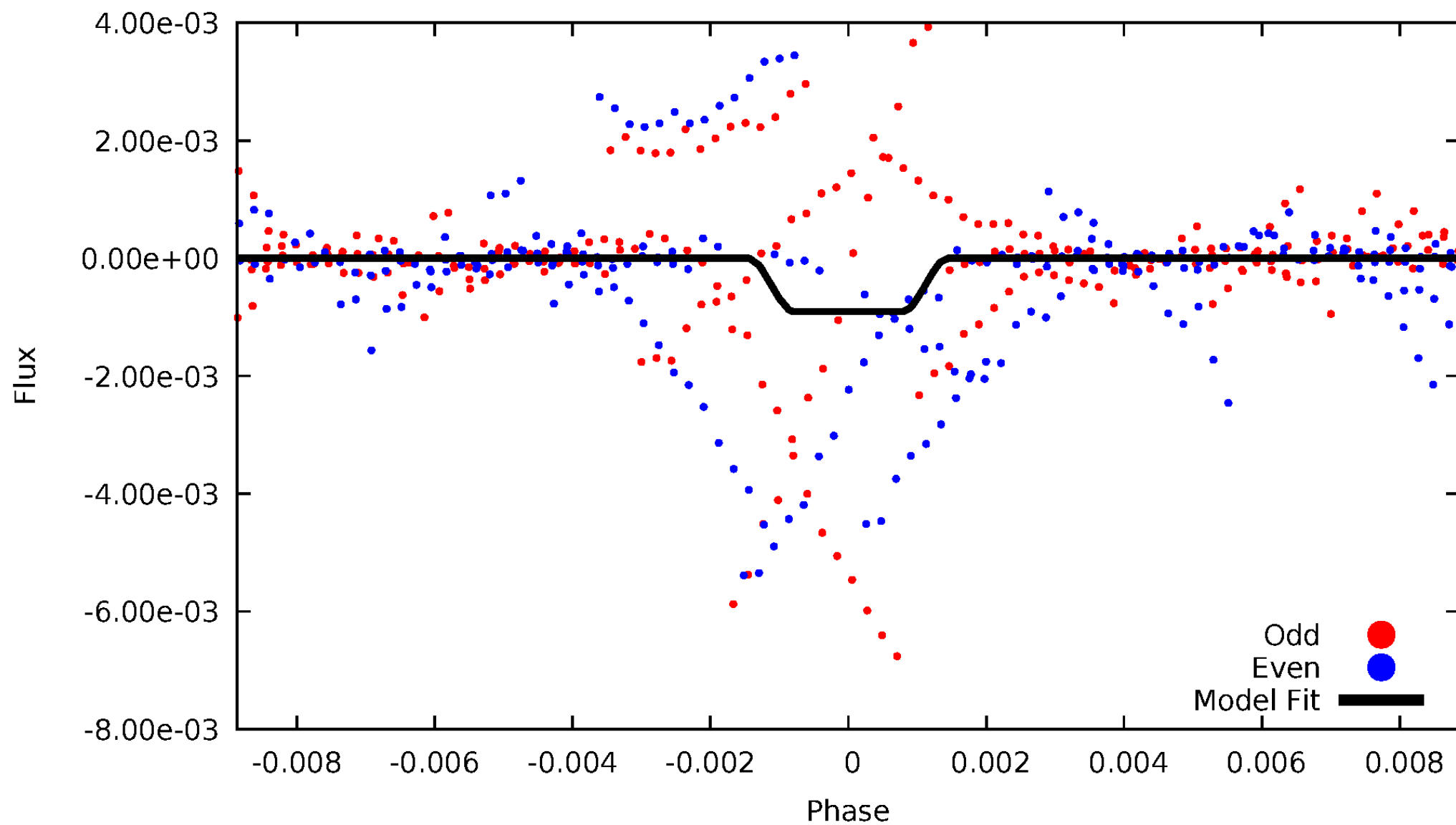
# DV Odd/Even

TCE 007446835-06



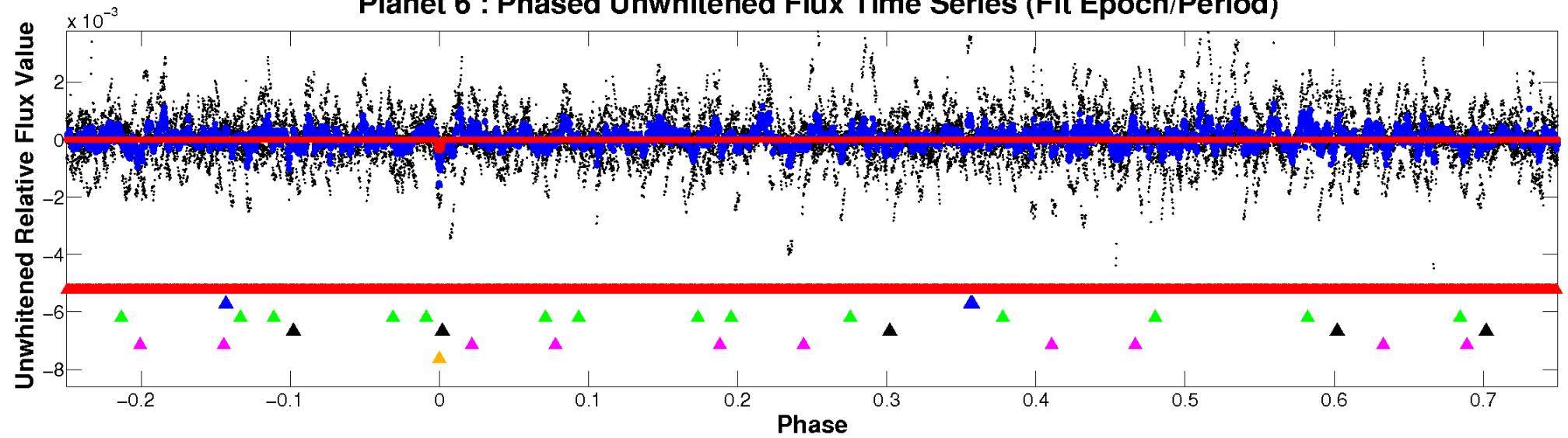
# ALT Odd/Even

TCE 007446835-06

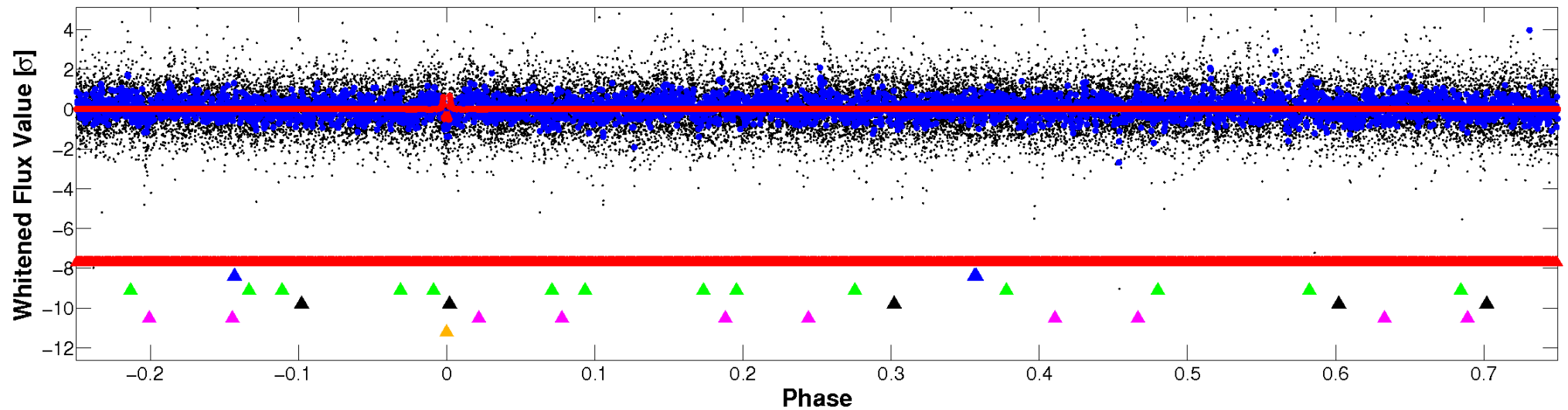


# Non-Whitened Vs. Whitened Light Curve

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

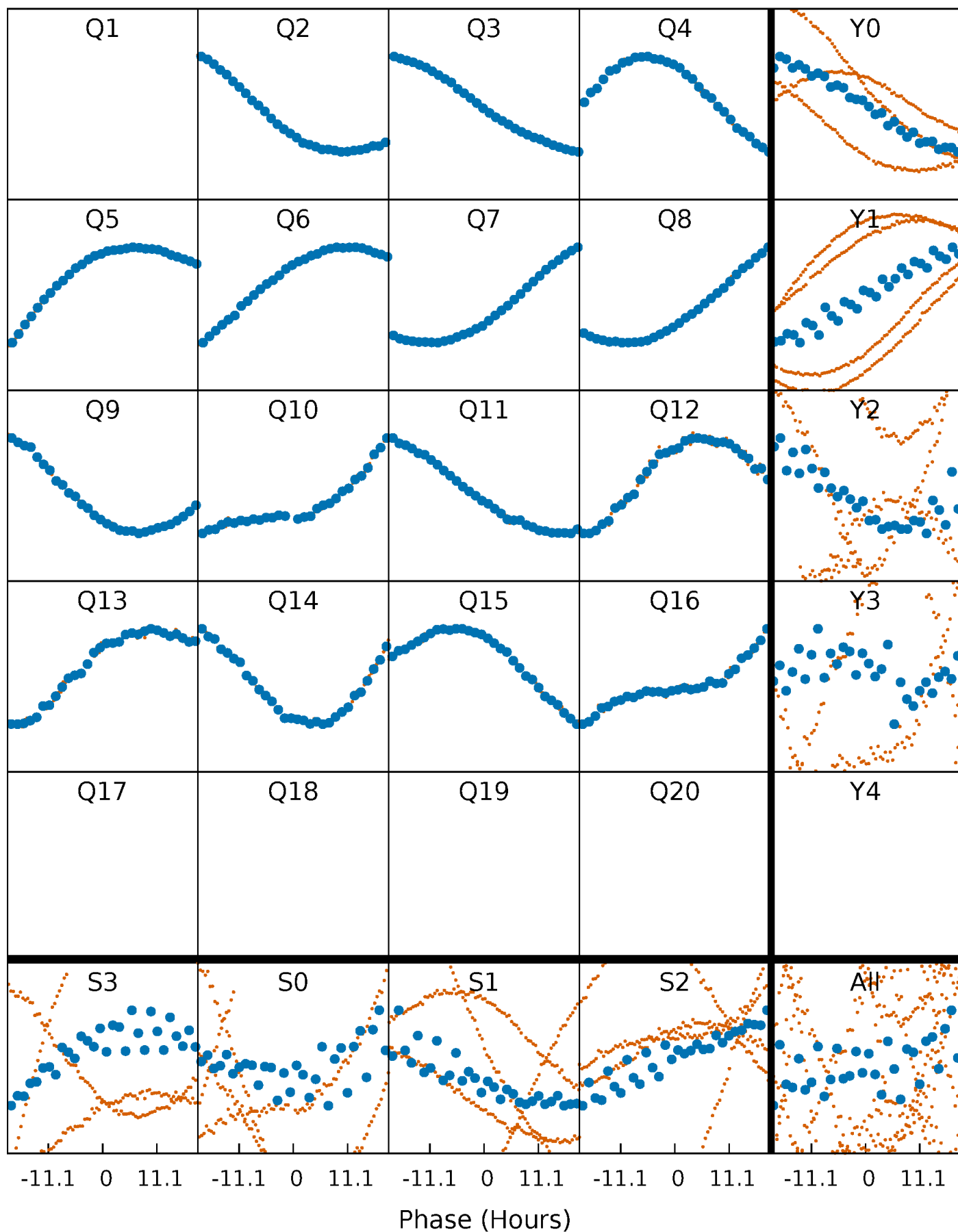


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



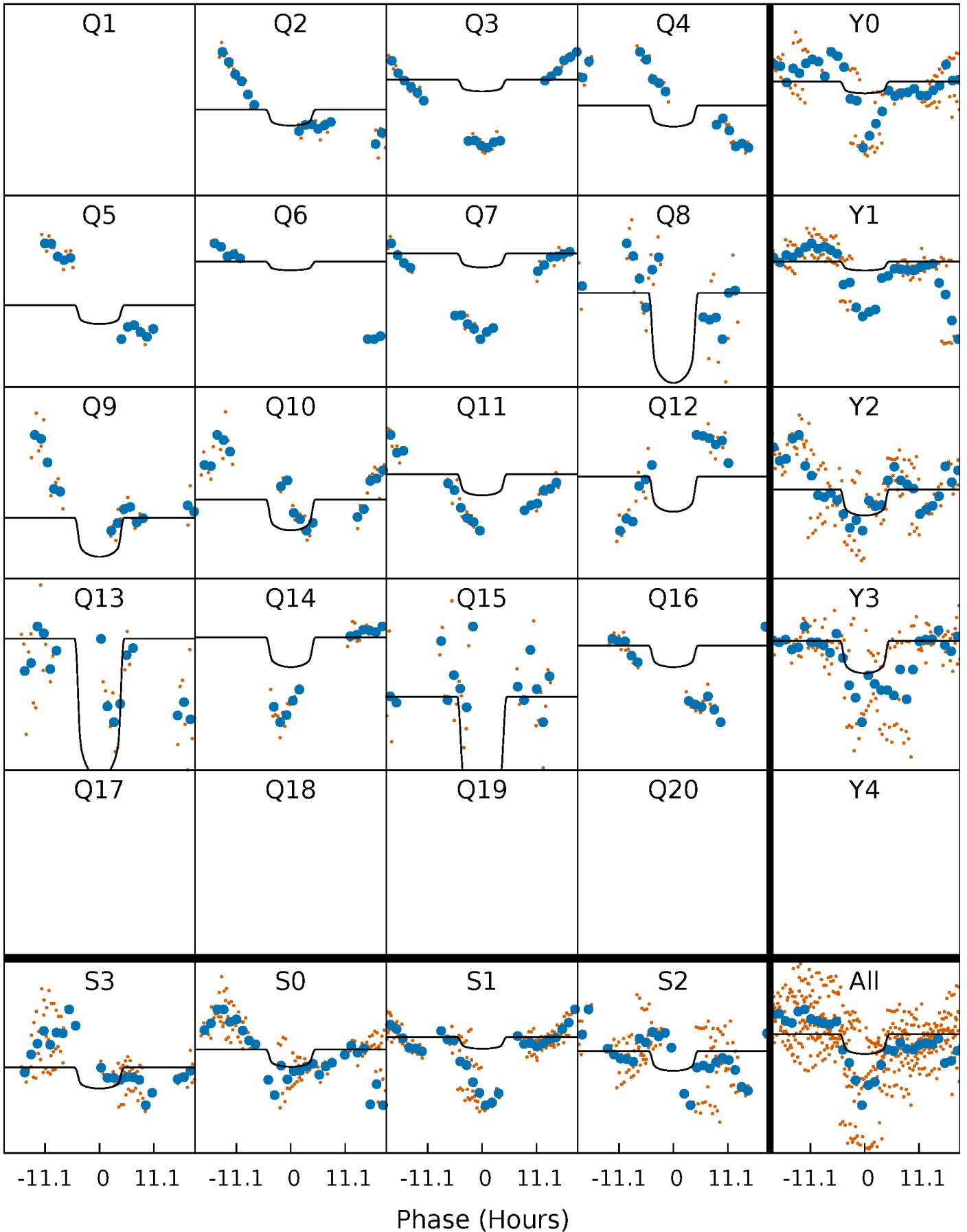
# PDC Quarter-Phased Transit Curves

TCE 007446835-06 P= 93.995704 Days  $T_0=202.923269$  (BKJD)



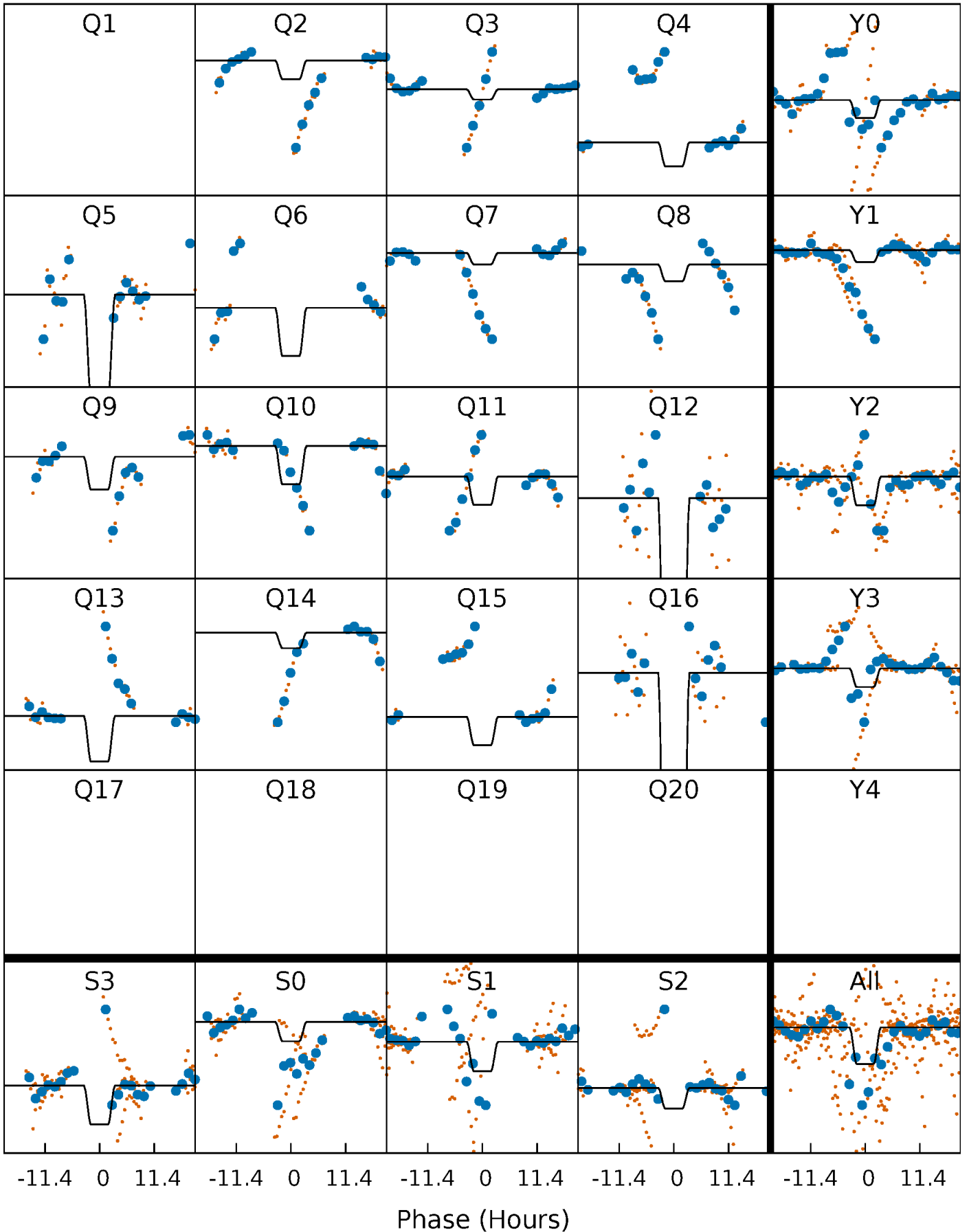
# DV Quarter-Phased Transit Curves

TCE 007446835-06 P= 93.995704 Days  $T_0=202.923269$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

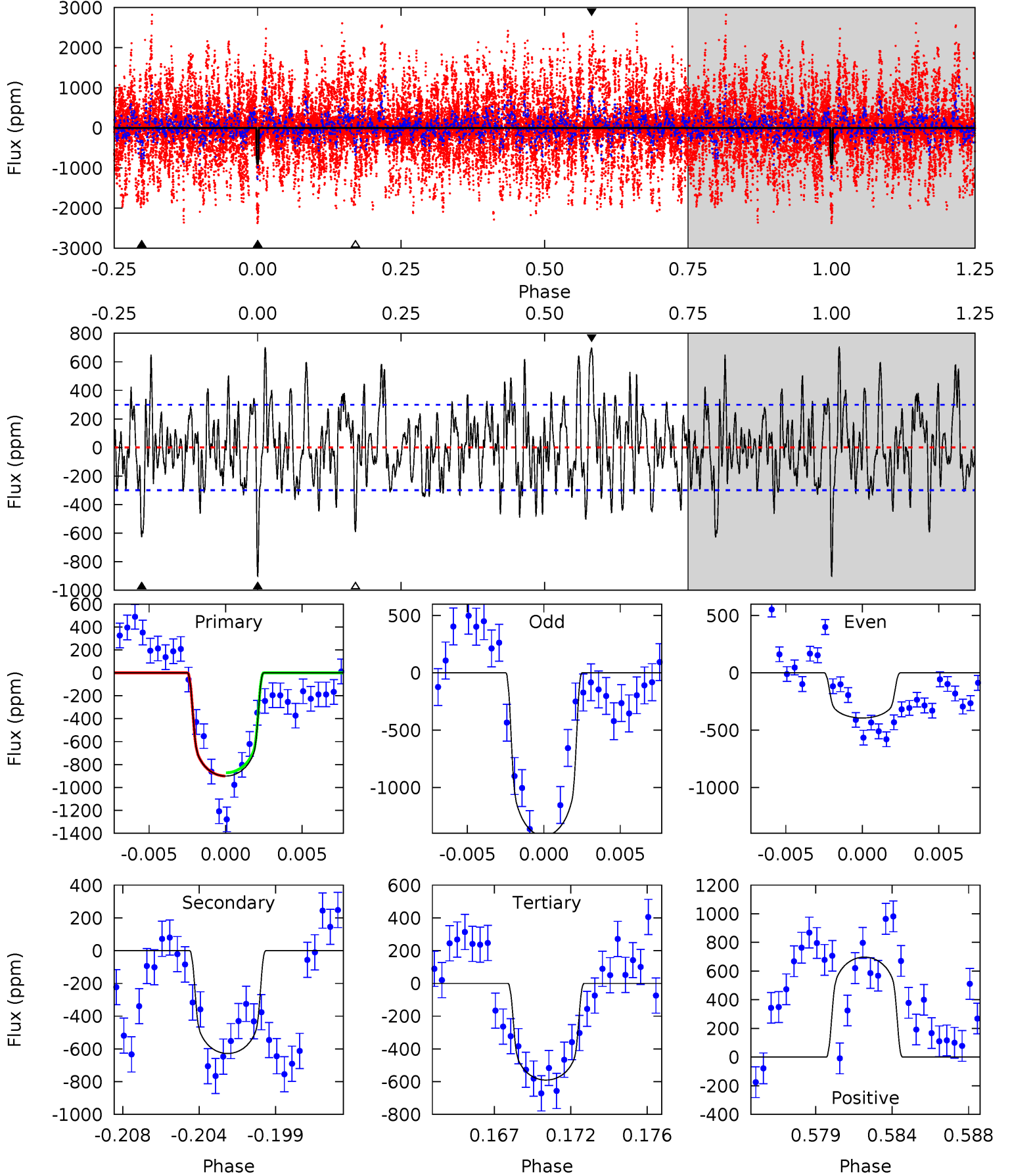
TCE 007446835-06 P= 93.989712 Days  $T_0=202.966840$  (BKJD)



# DV Model-Shift Uniqueness Test

007446835-06, P = 93.995704 Days, E = 108.927565 Days

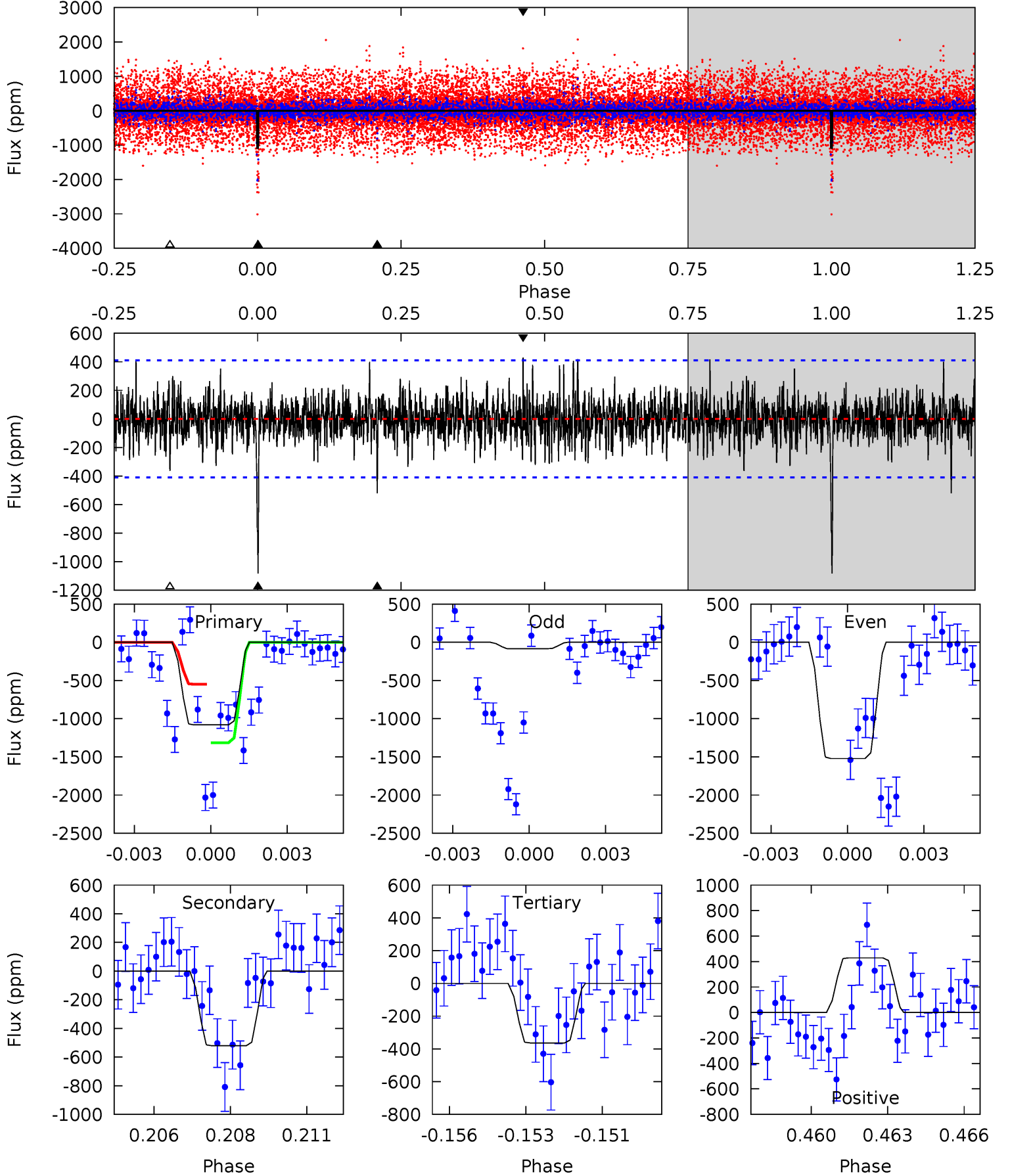
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	10.9	10.2	12.1	5.18	2.84	3.79	5.37	3.52	0.65	-1.20	8.35	1.48	0.44	0.24



# Alt Model-Shift Uniqueness Test

007446835-06,  $P = 93.989712$  Days,  $E = 108.977128$  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
13.9	6.68	4.66	5.49	5.26	2.98	1.35	9.21	8.37	2.02	1.18	10.2	3.26	0.28	4.84



### Stellar Parameters For KIC 007446835

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5620^{+152}_{-152}$	$4.391^{+0.162}_{-0.198}$	$-0.320^{+0.300}_{-0.250}$	$0.944^{+0.252}_{-0.168}$	$0.800^{+0.124}_{-0.062}$	$1.339^{+0.984}_{-0.650}$
	+3%/-3%	+4%/-5%	+94%/-78%	+27%/-18%	+16%/-8%	+73%/-49%
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 007446835-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-628 \pm 58$	$2.15^{+0.48}_{-0.33}$	$550^{+46}_{-34}$	$6146^{+568}_{-428}$	$10413^{+4886}_{-3333}$
Alt.	$-521 \pm 78$	$3.13^{+0.57}_{-0.46}$	$551^{+42}_{-35}$	$4966^{+320}_{-288}$	$4167^{+1734}_{-1280}$

$T_{\text{max}}$  = 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

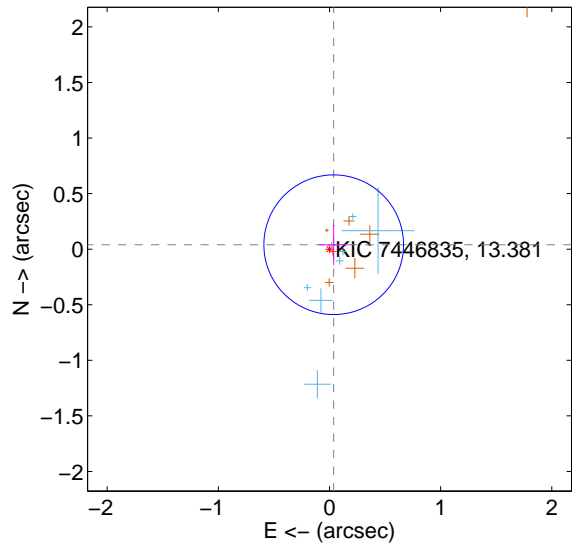
Supplemental centroid analysis for 007446835-06. Kepler magnitude: 13.38. Transit SNR 5.08

There are 8 quarters with good PRF difference image offsets

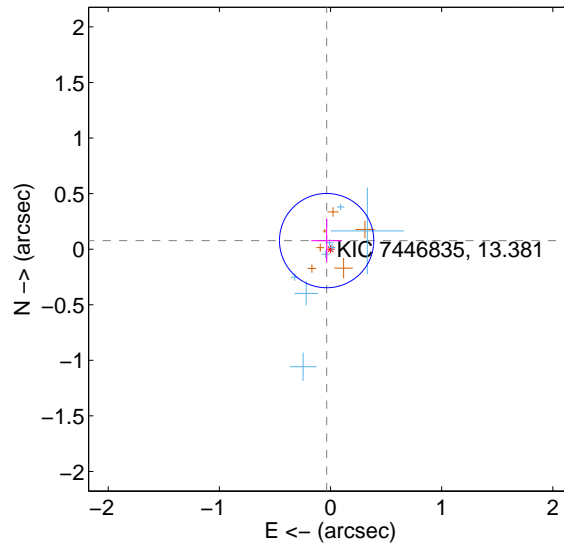
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.055 \pm 0.209$	0.26	$-0.038 \pm 0.133$	$0.040 \pm 0.182$
PRF-fit source offset from KIC position	$0.085 \pm 0.141$	0.60	$0.035 \pm 0.138$	$0.077 \pm 0.198$
photometric centroid source offset	$0.43 \pm 0.46$	0.93	$0.25 \pm 0.45$	$0.35 \pm 0.47$

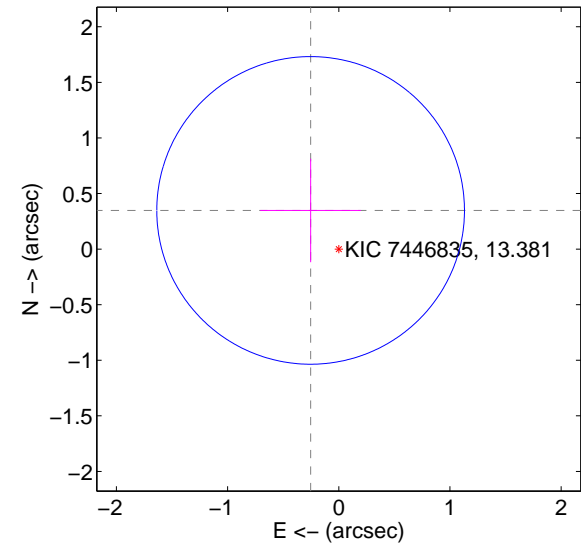
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

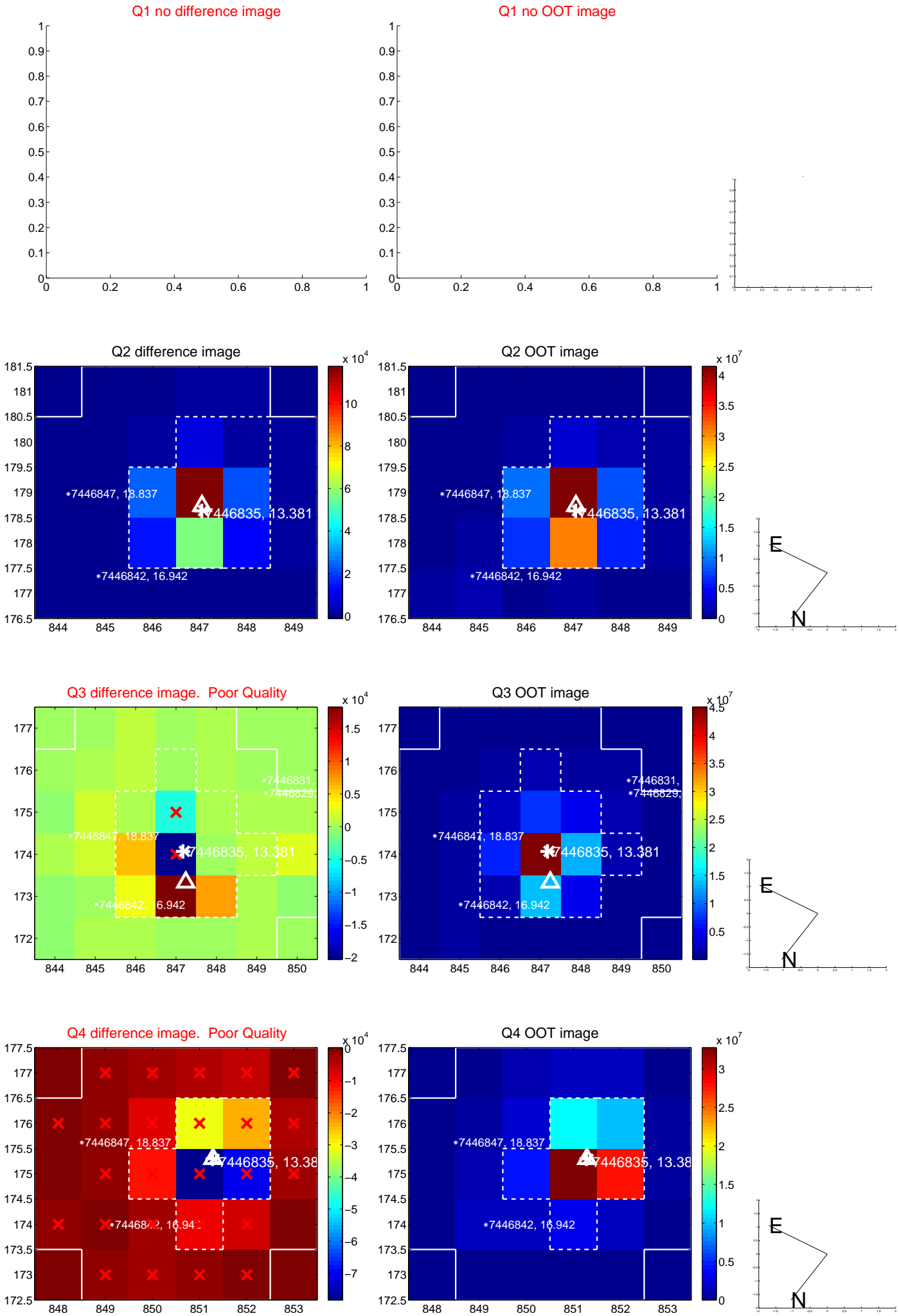


offset from photometric centroids

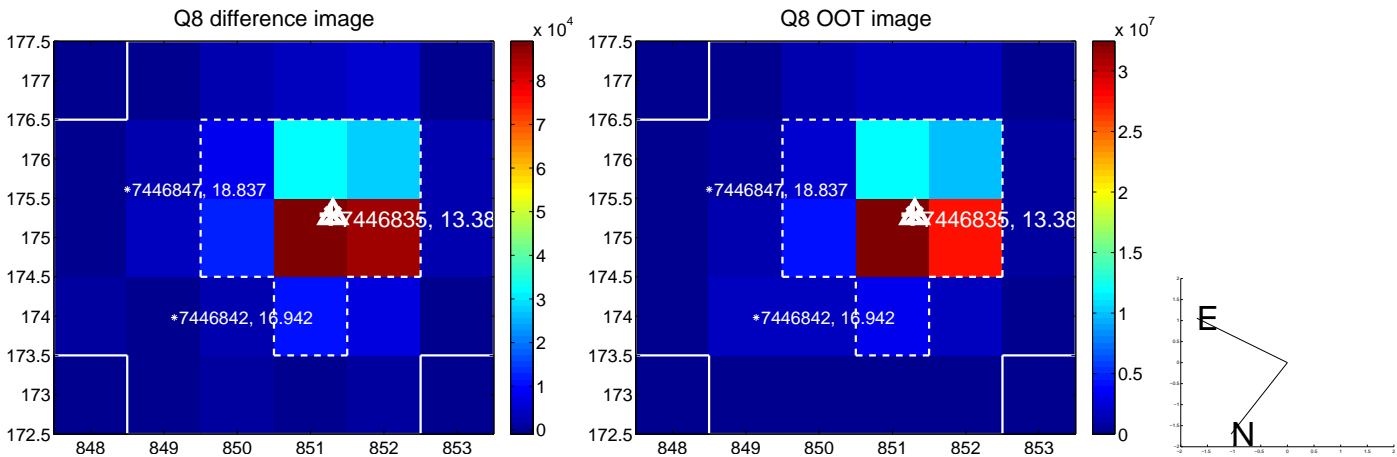
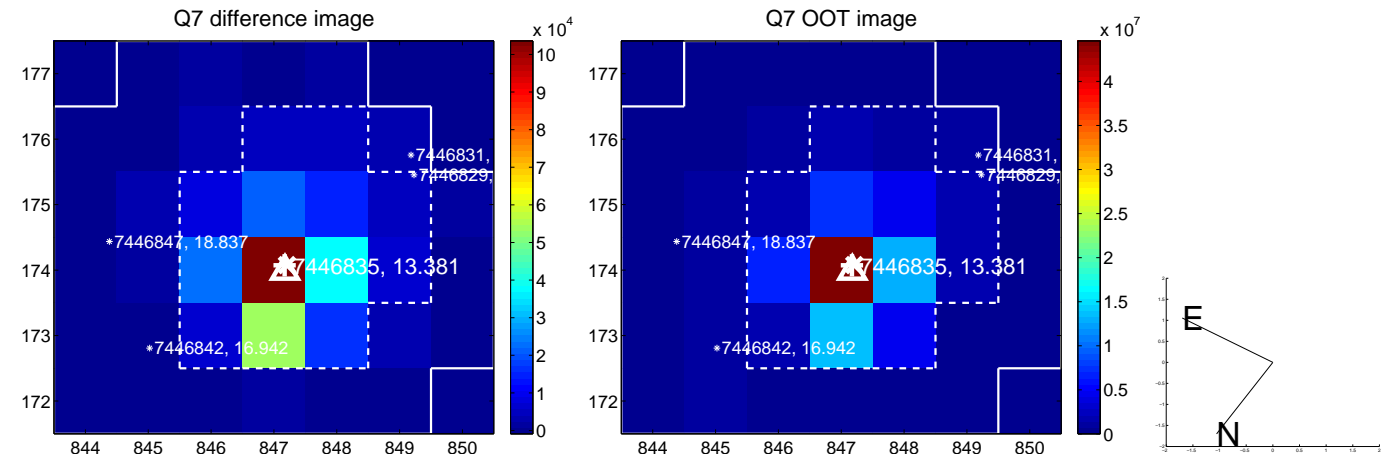
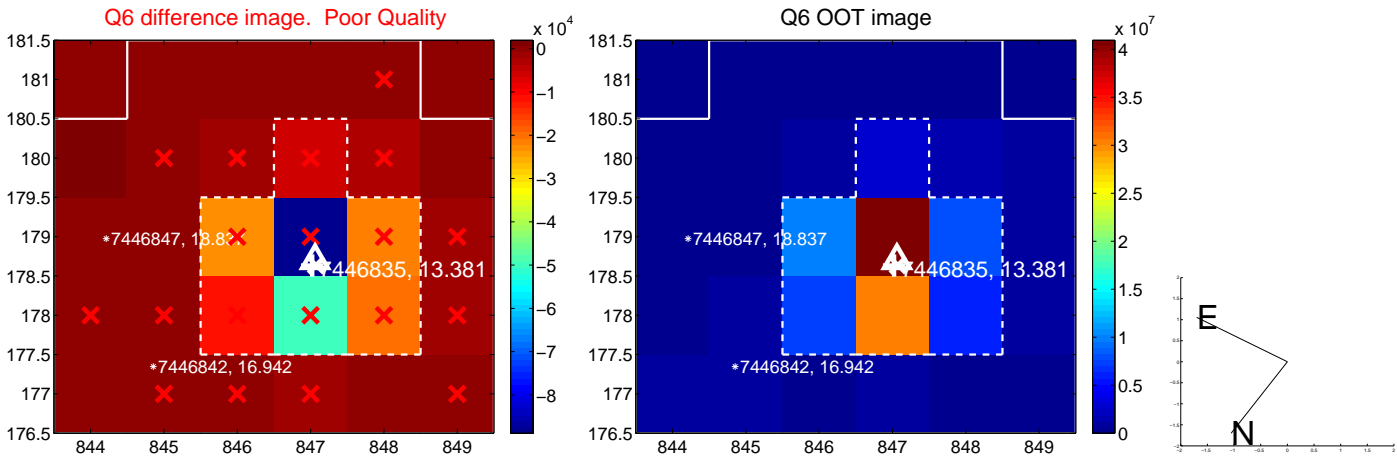
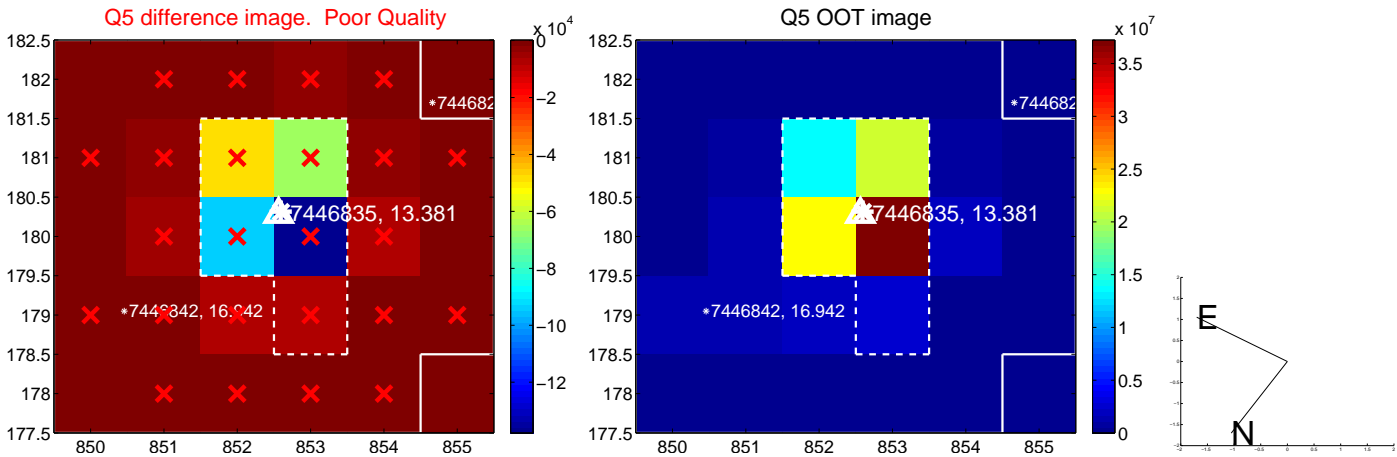


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

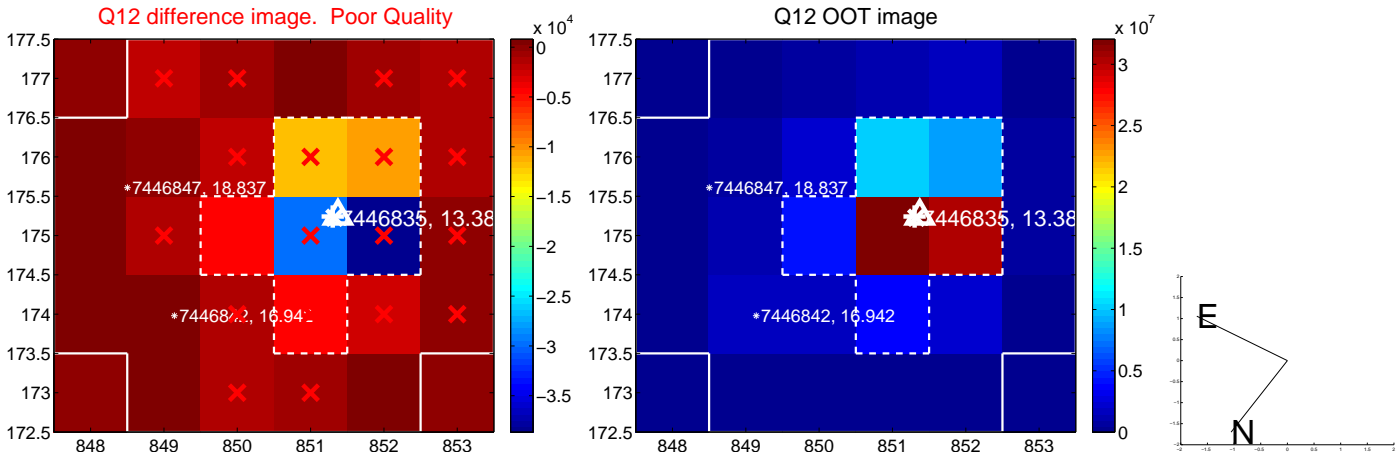
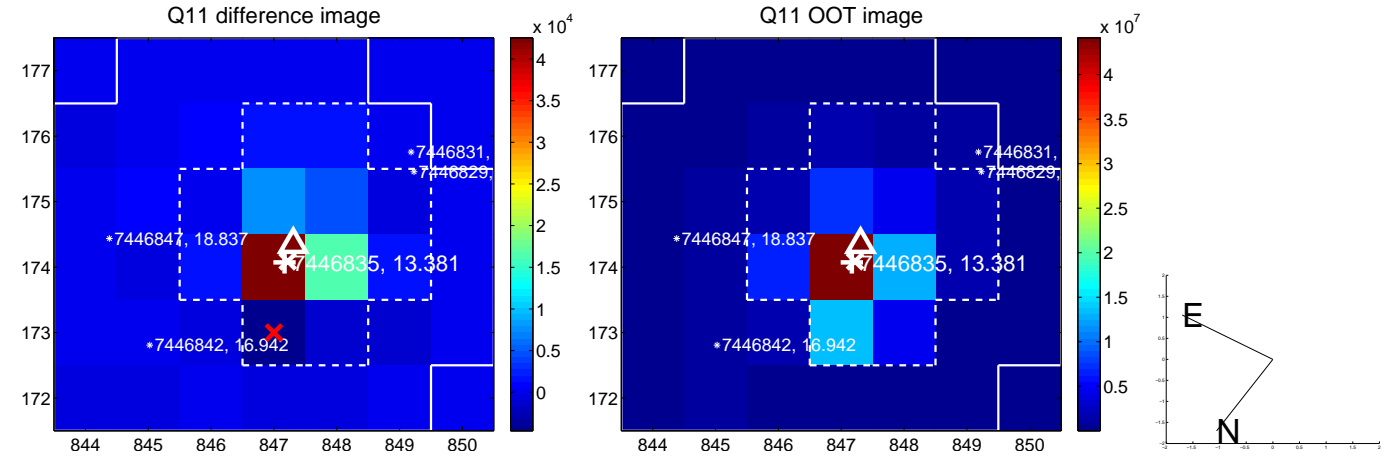
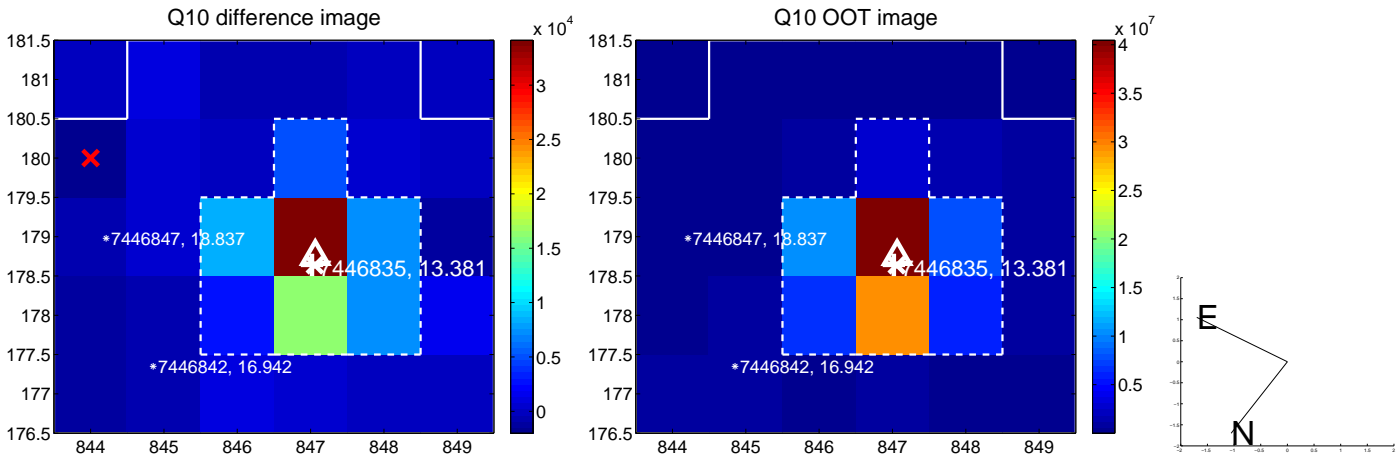
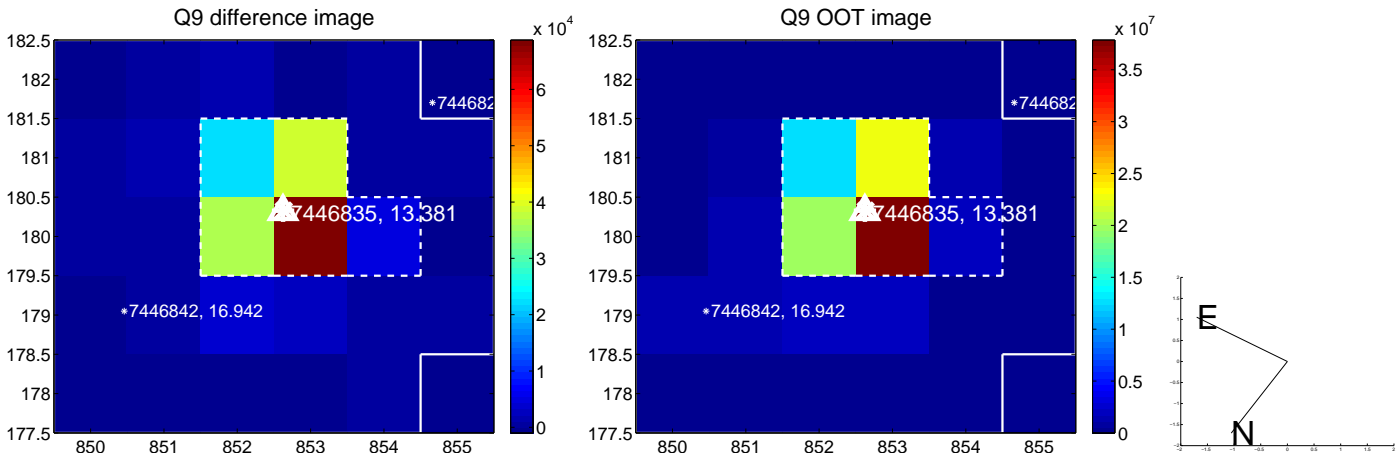
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



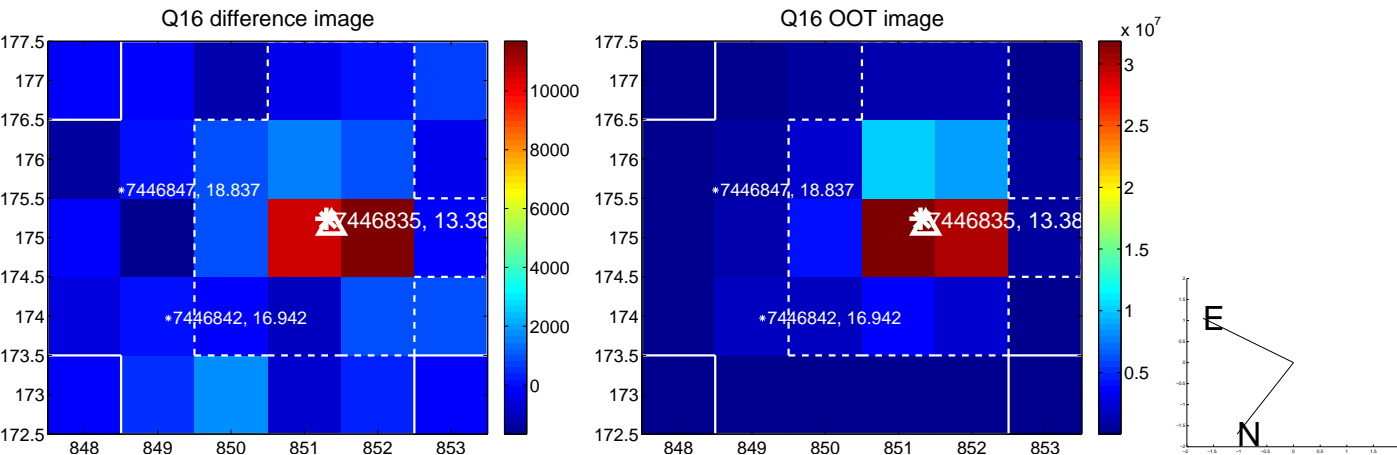
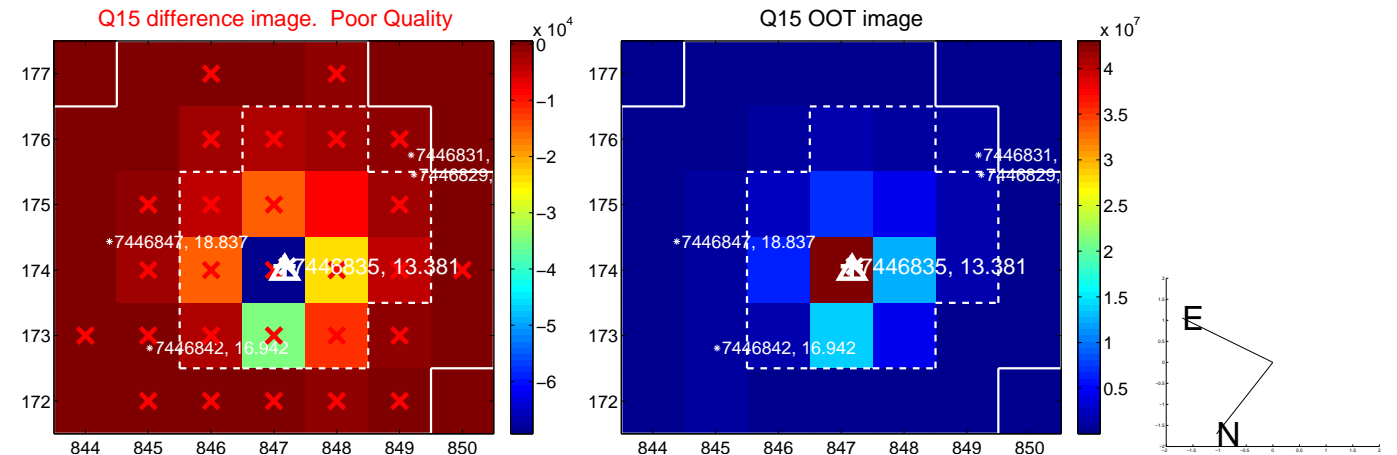
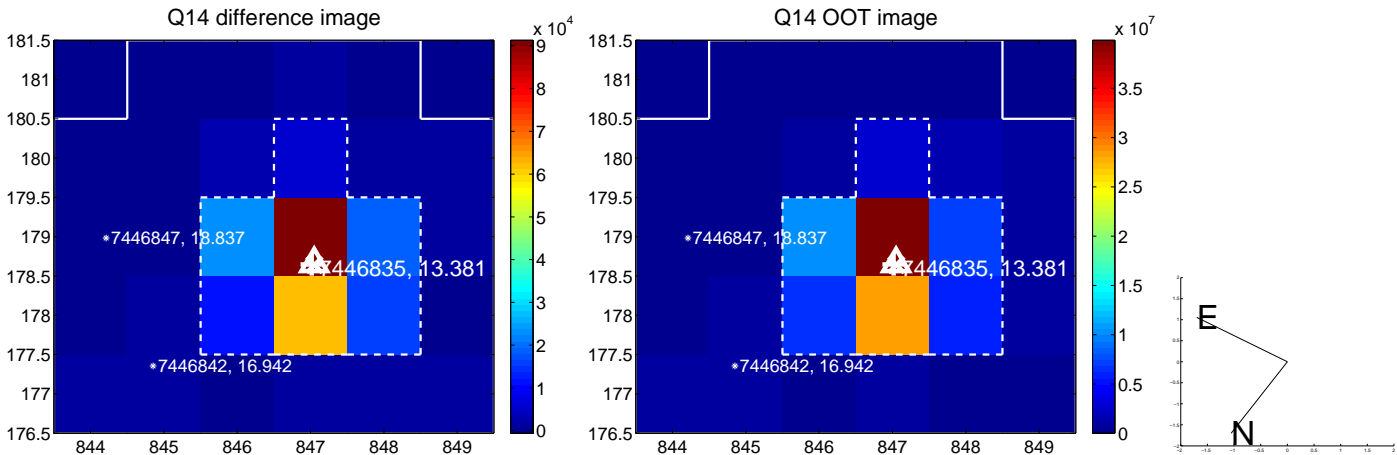
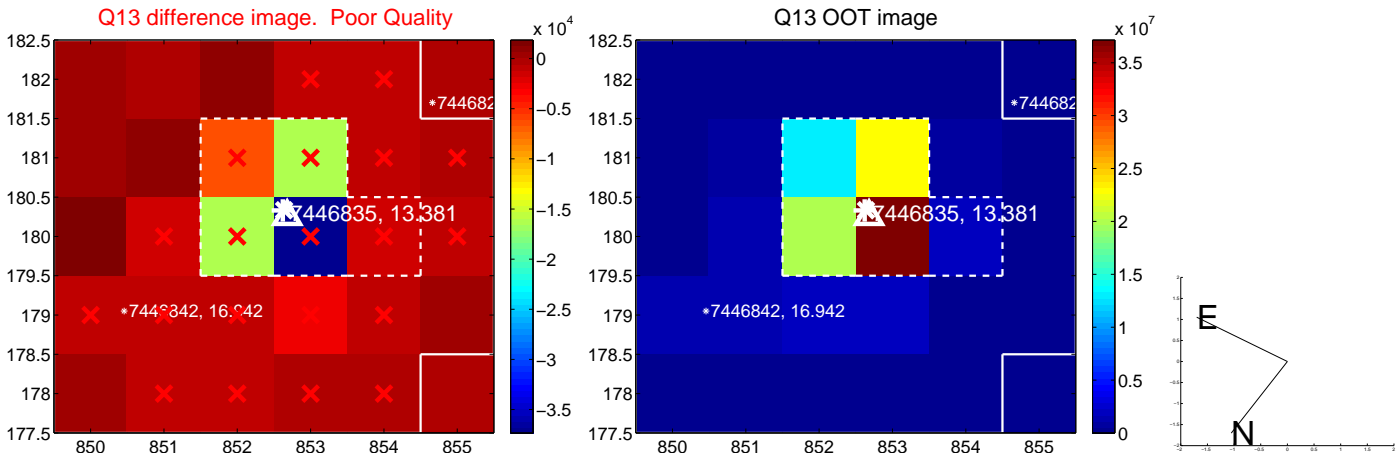
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



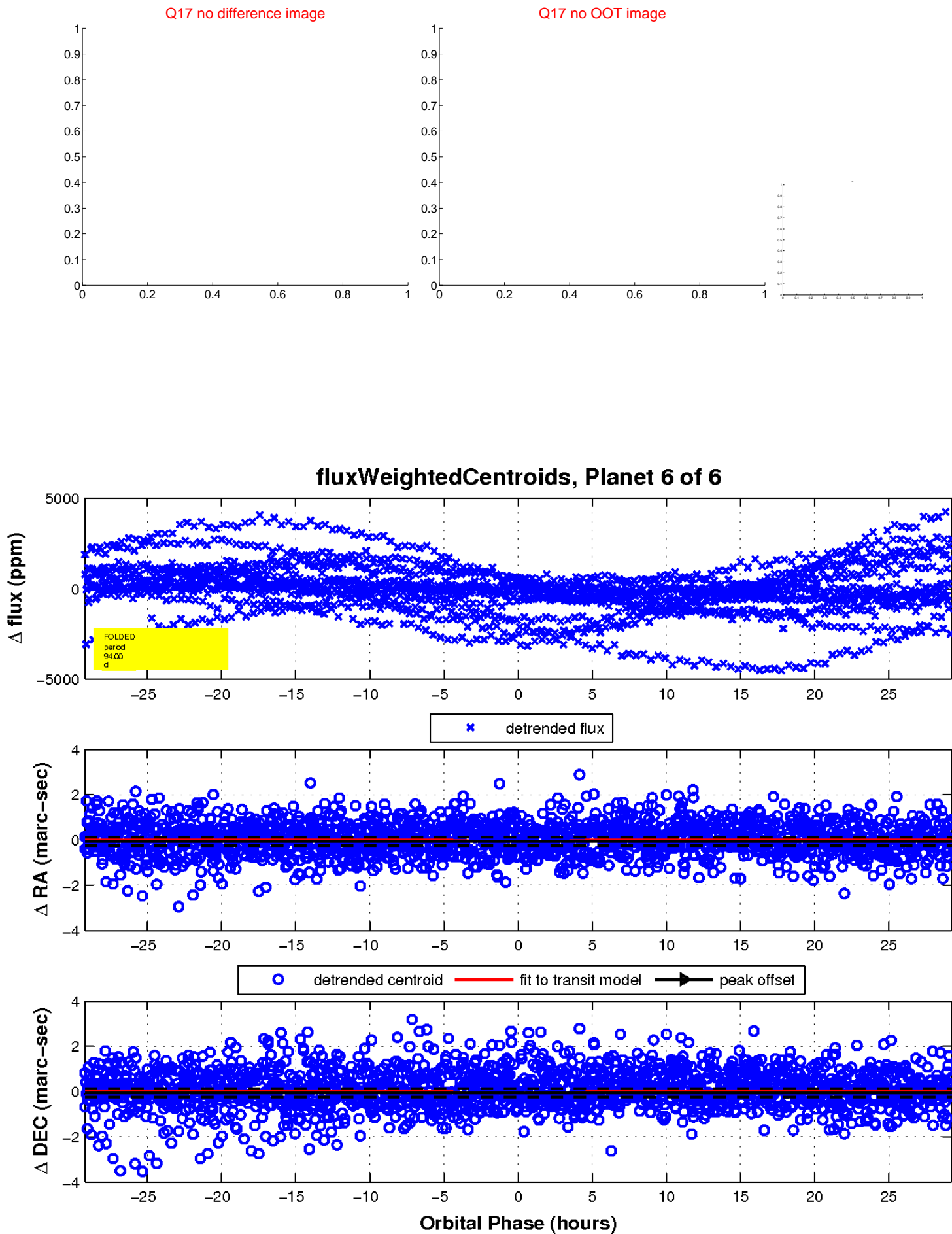
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

