

# KIC 004847832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004847832-01	OBS	6459.01	30.960463	156.150462	345106.1	9.000	42138.4	-1.0	0.93	5291	44.68	18.32
004847832-02	OBS	No	30.960315	139.432404	393288.9	3.500	36936.7	-1.0	0.93	5291	50.52	18.32
004847832-03	OBS	No	7.739982	139.200824	21547.3	15.000	2213.4	-1.0	0.93	5291	13.28	116.36
004847832-04	OBS	No	30.959678	158.285769	3486.2	15.000	606.0	-1.0	0.93	5291	5.34	18.33
004847832-05	OBS	No	30.956537	151.837184	4006.4	69.085	156.8	171.5	0.93	5291	11.15	18.33
004847832-06	OBS	No	82.271289	157.223223	4839.8	7.500	192.6	-1.0	0.93	5291	6.29	4.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004847832-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
004847832-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
004847832-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
004847832-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
004847832-05	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
004847832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

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

## Ephemeris Match Information For 004847832-01

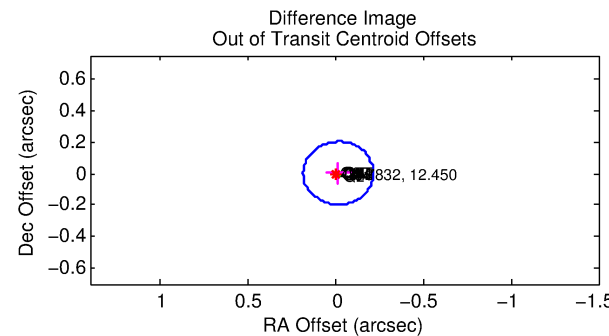
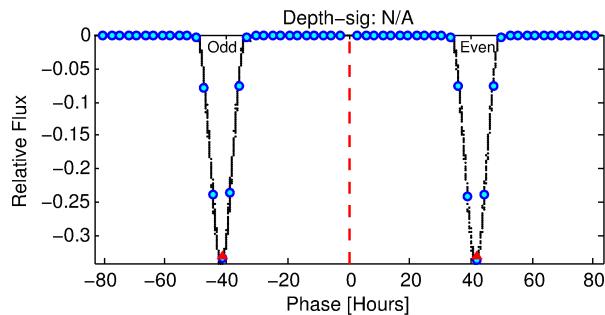
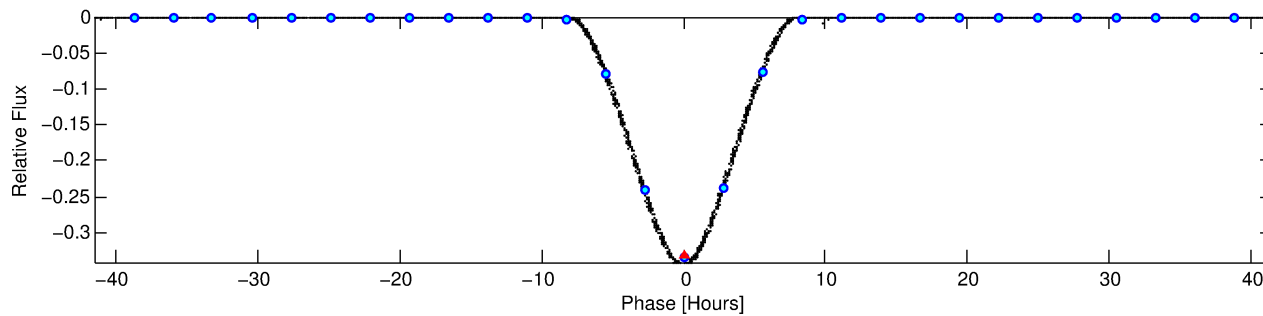
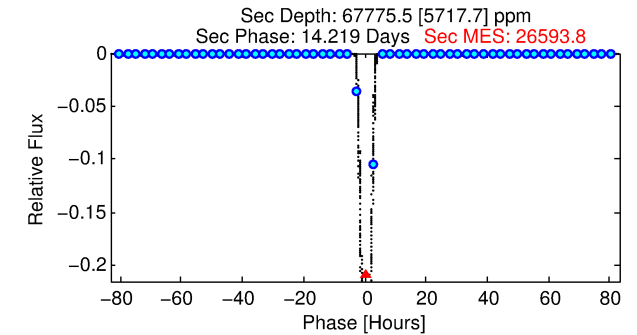
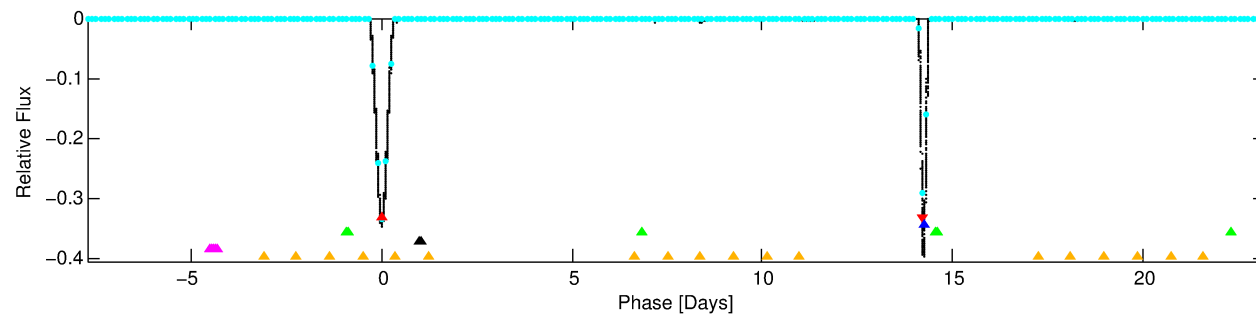
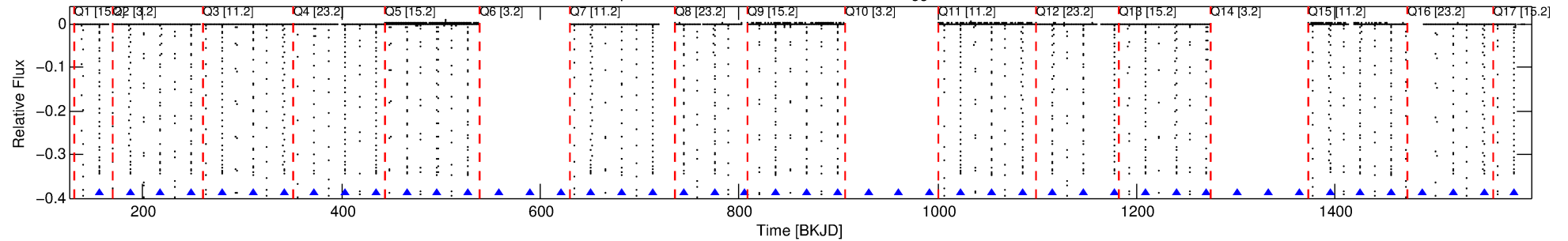
No Significant Match Found

# DV One-Page Summary

KIC: 4847832 Candidate: 1 of 6 Period: 30.960 d

KOI: K06459.01 Corr: 0.764

Kp: 12.45 R\*: 0.93 Rs Teff: 5291.0 K Logg: 4.42 Fe/H: 0.060



TPS TCE Results:

Period = 30.96046 d

Epoch = 156.1505 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]

LongPeriod-sig: 100.0% [105.11σ]

ModelChiSquare2-sig: N/A

ModelChiSquareGof-sig: N/A

Bootstrap-pfa: N/A

RollingBand-fgt: 1.00 [34/34]

GhostDiagnostic-chr: 5.768

Centroid-sig: N/A

Centroid-so: 0.089 arcsec [286.71σ]

OotOffset-rm: 0.016 arcsec [0.24σ]

KicOffset-rm: 0.084 arcsec [1.24σ]

OotOffset-st: 1/4/4/5 [14]

KicOffset-st: 1/4/4/5 [14]

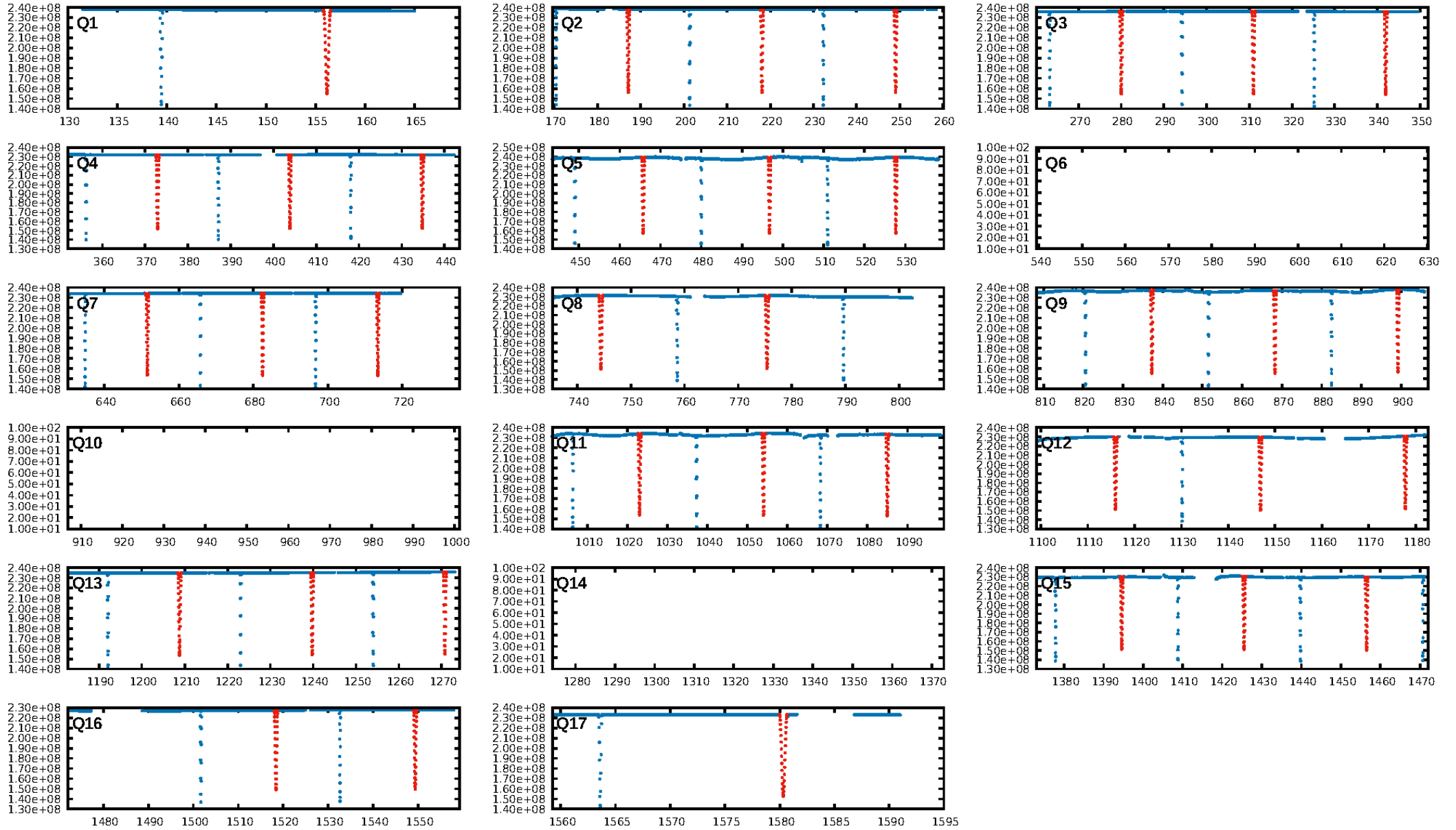
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DiffImageOverlap-fno: 0.00 [0/14]

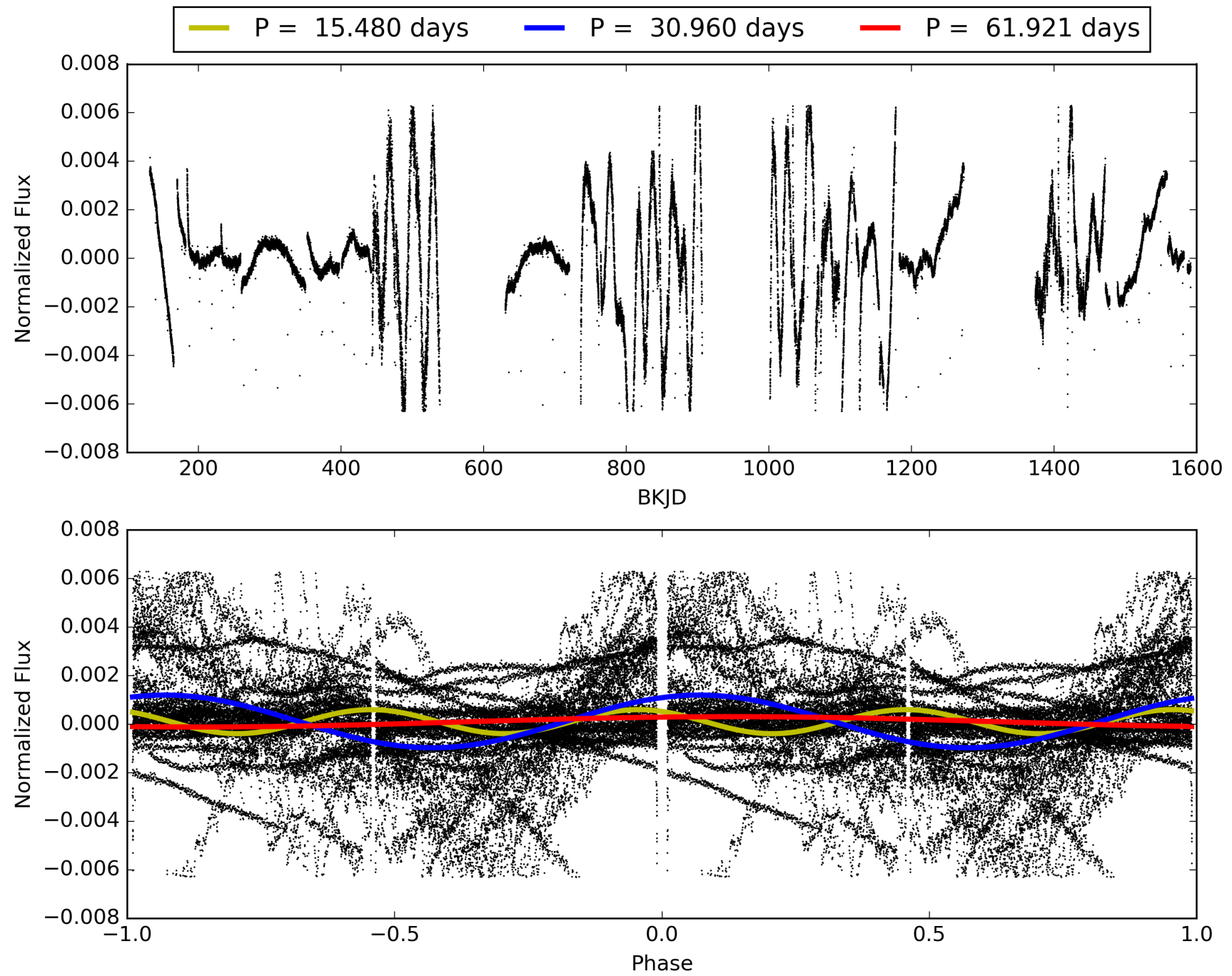
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:27:46 Z

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

# TCE 004847832-01, PDC Light Curves



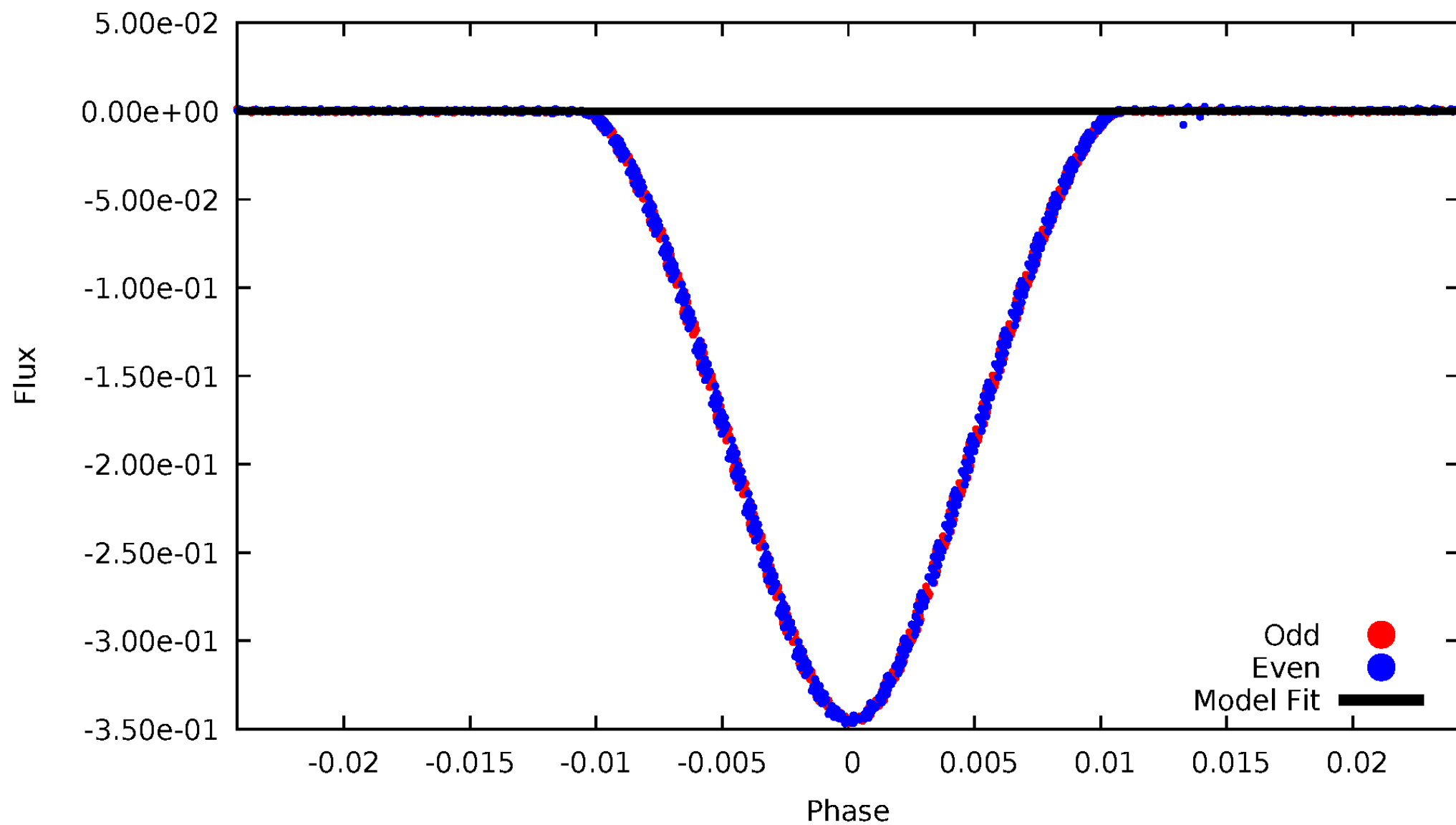
TCE 004847832-01





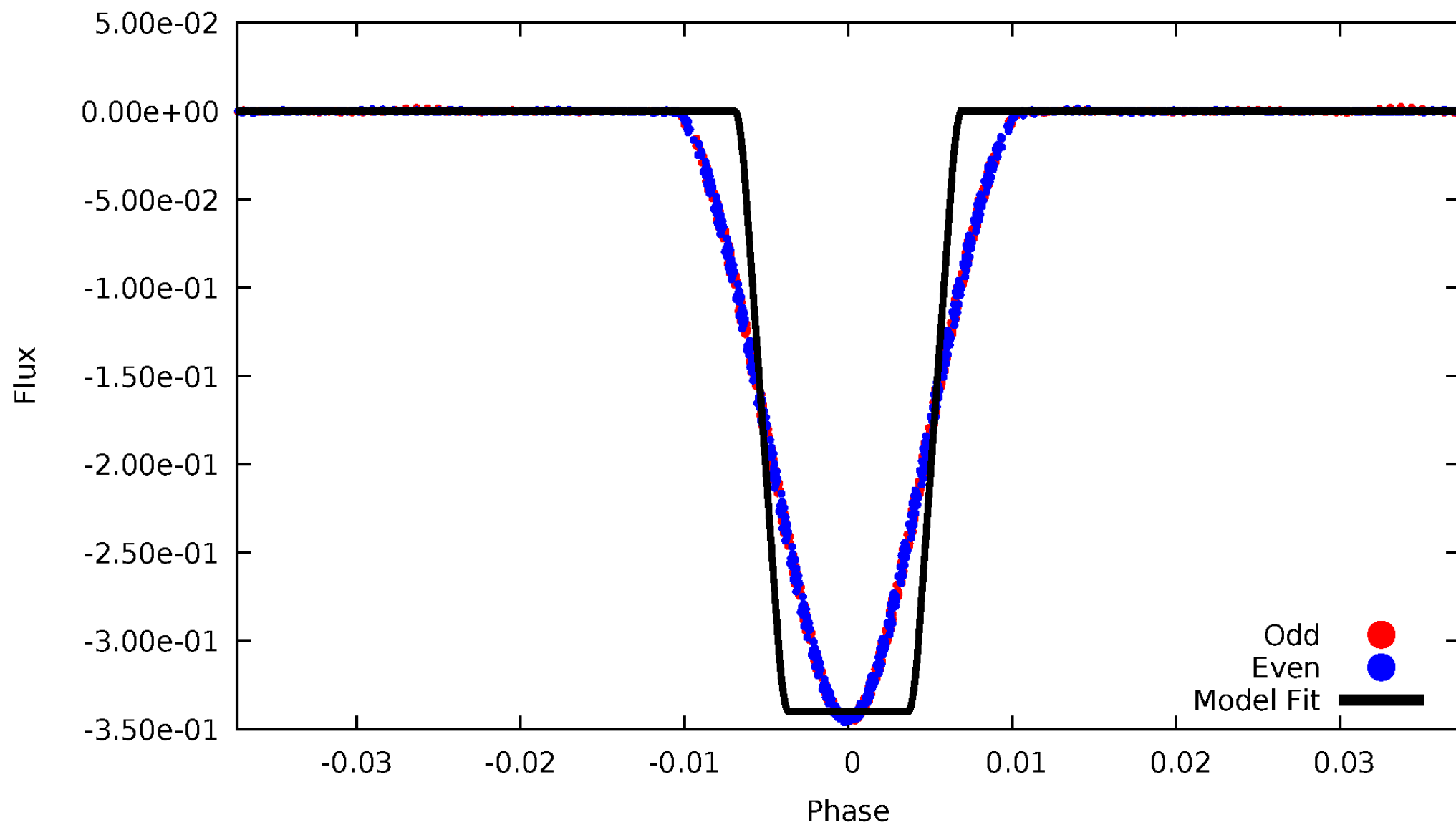
# DV Odd/Even

TCE 004847832-01



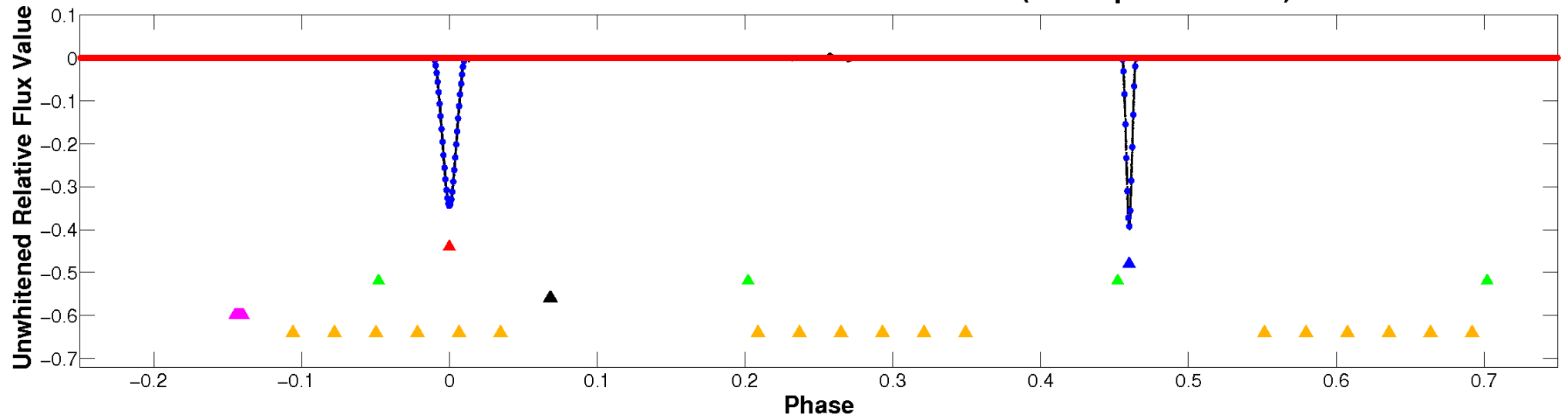
# ALT Odd/Even

TCE 004847832-01



# Non-Whitened Vs. Whitened Light Curve

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

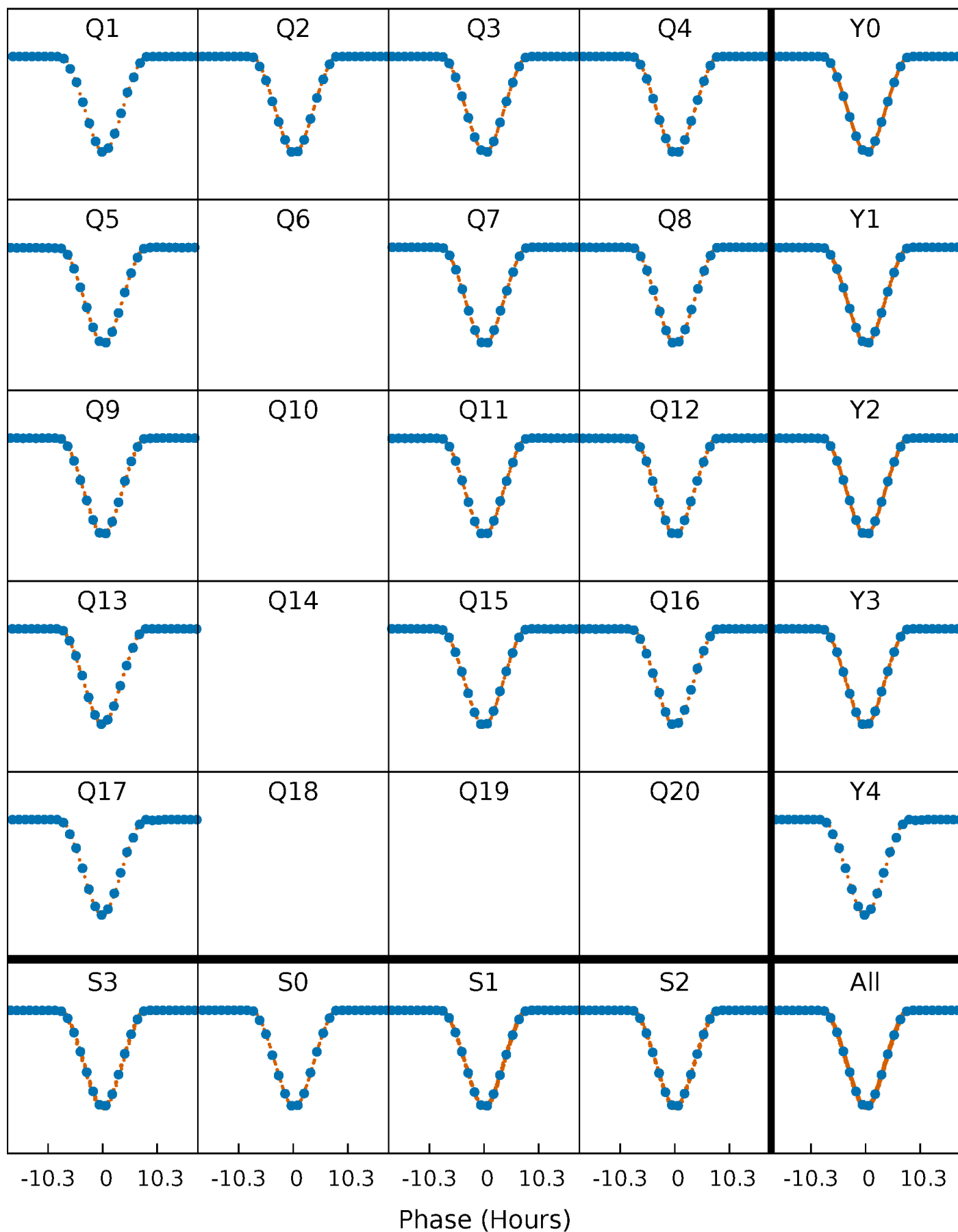


**Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



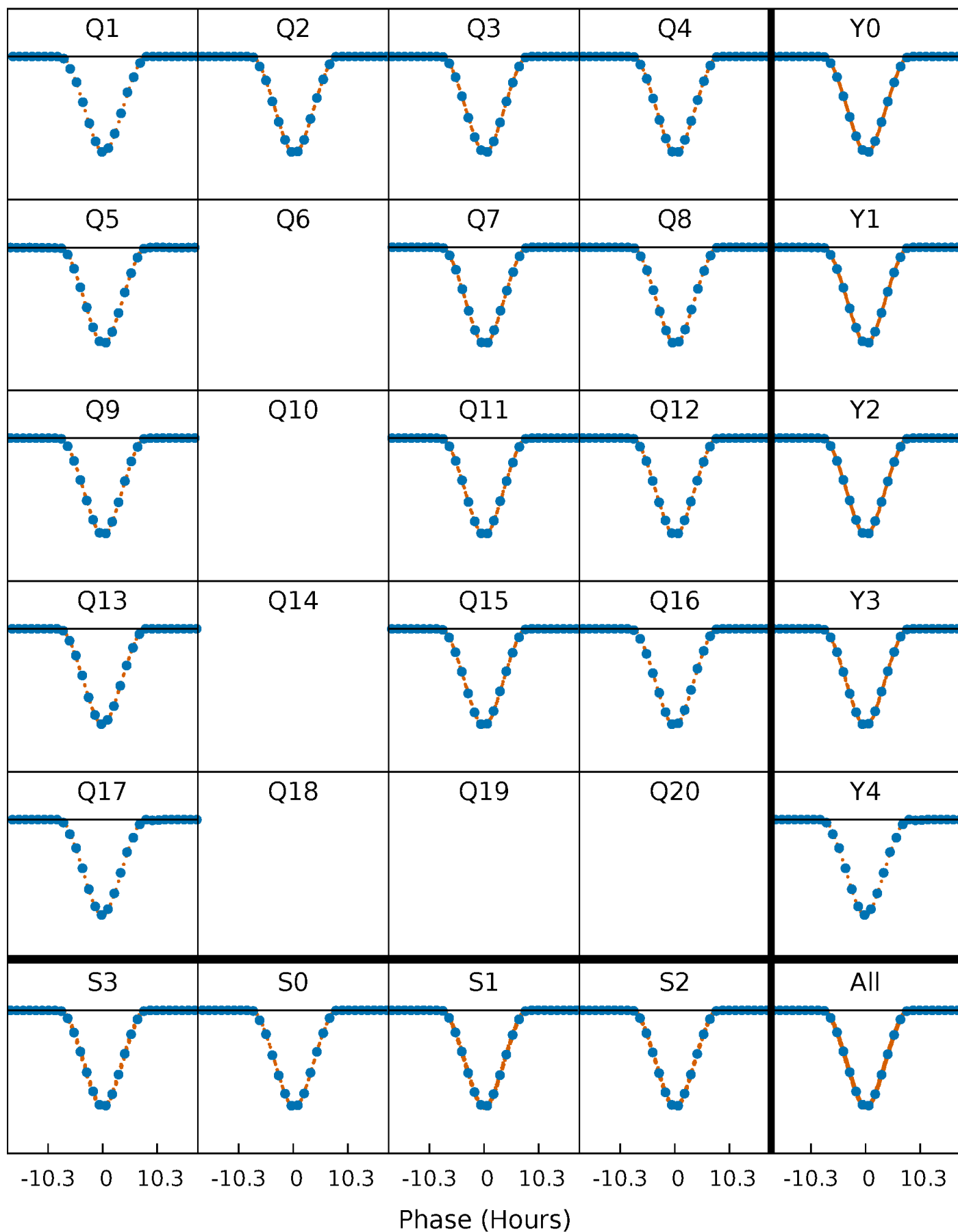
# PDC Quarter-Phased Transit Curves

TCE 004847832-01 P= 30.960463 Days  $T_0=156.150462$  (BKJD)



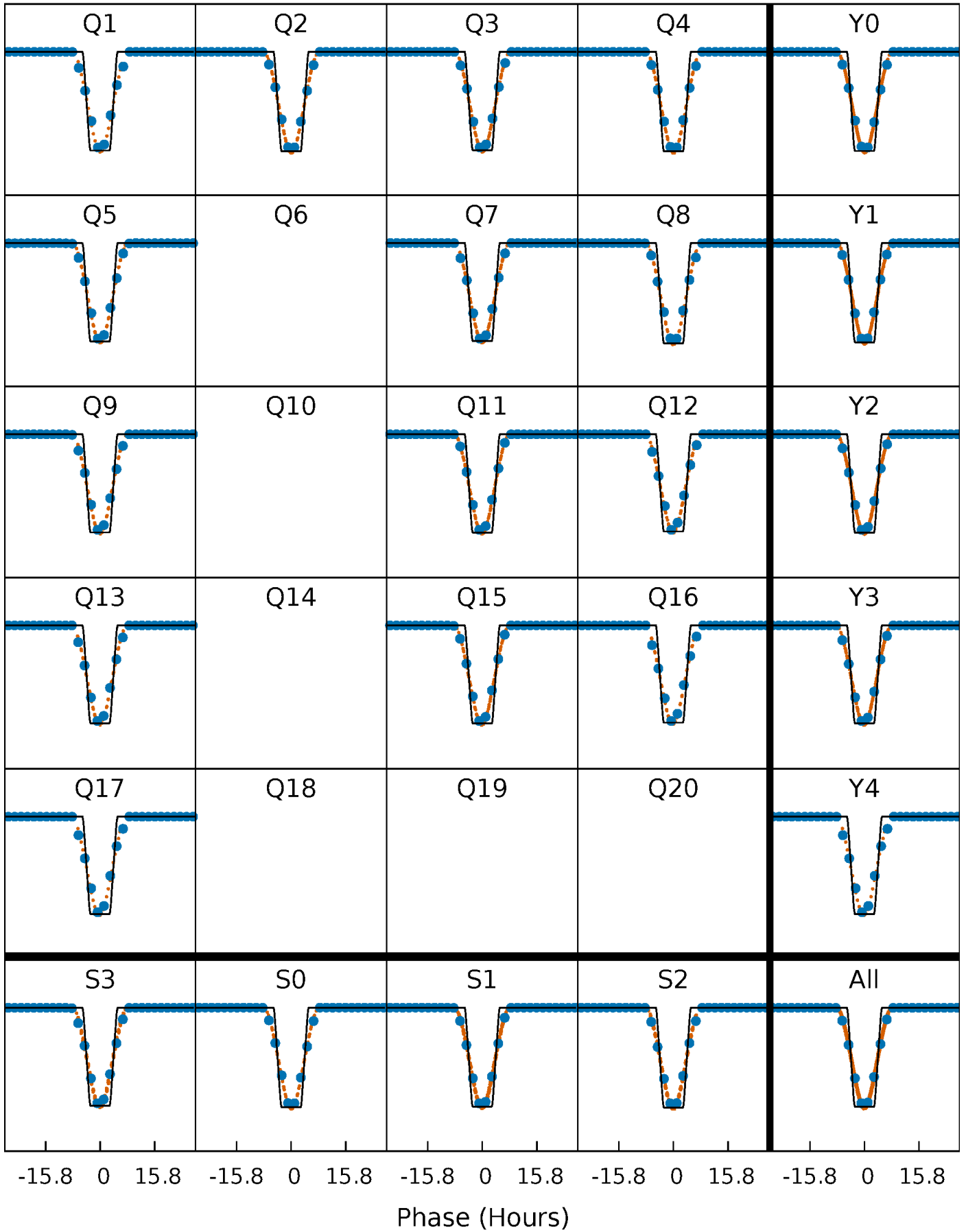
# DV Quarter-Phased Transit Curves

TCE 004847832-01 P= 30.960463 Days  $T_0=156.150462$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 004847832-01 P= 30.960463 Days  $T_0=156.154762$  (BKJD)

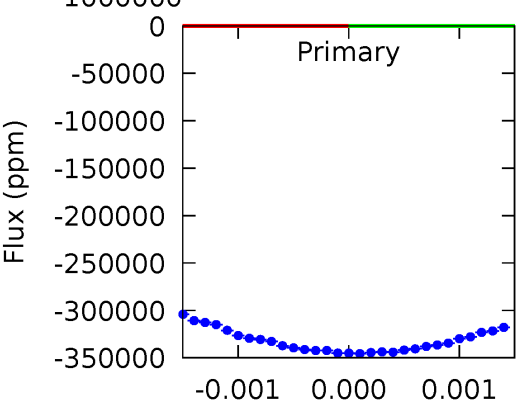
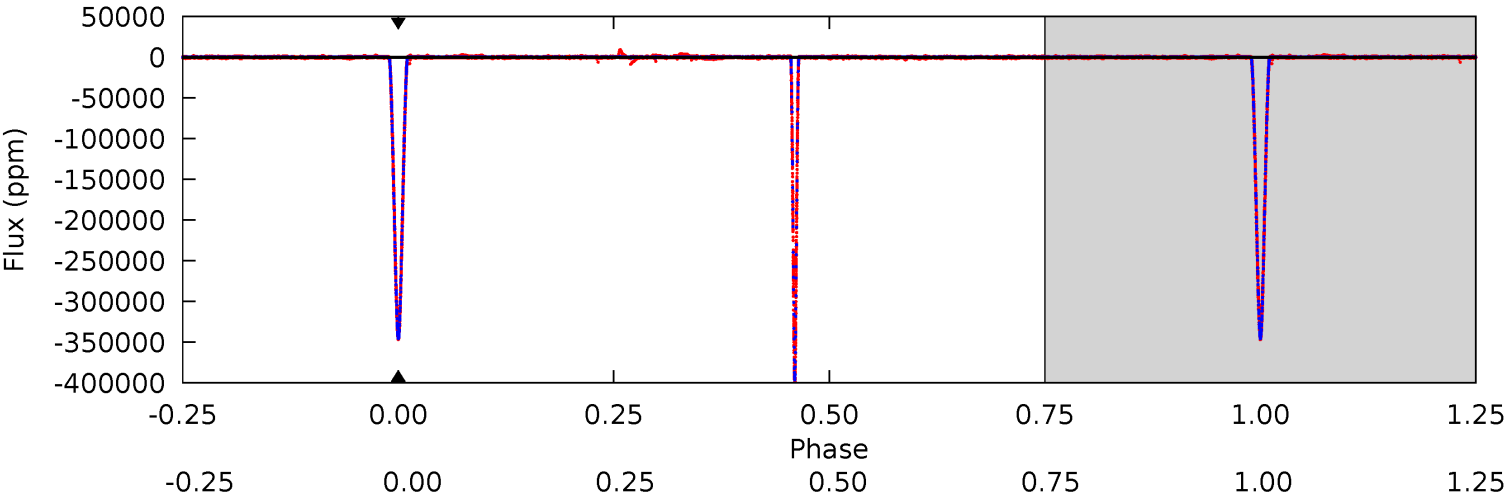




# DV Model-Shift Uniqueness Test

004847832-01, P = 30.960463 Days, E = 125.189999 Days

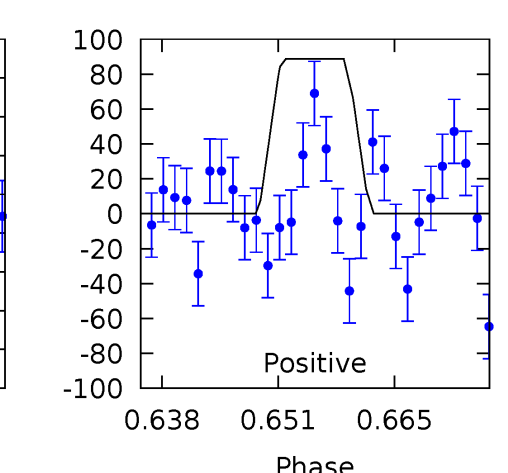
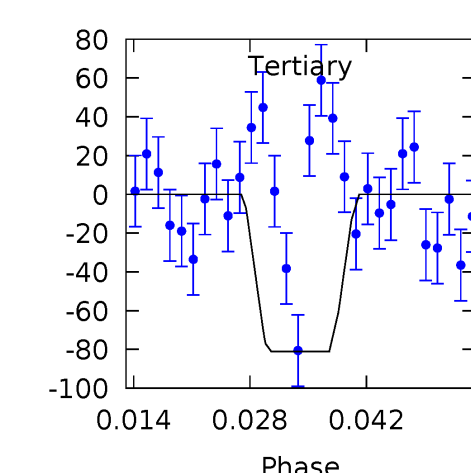
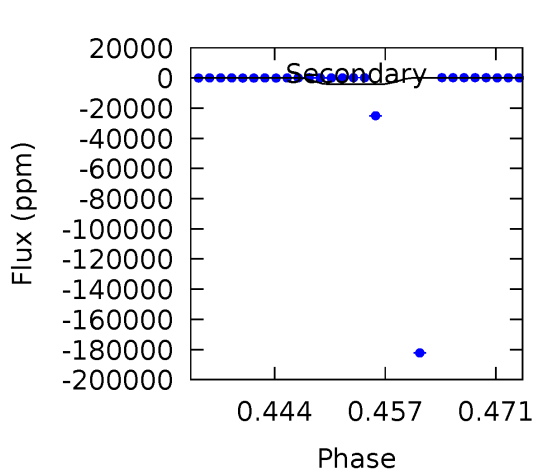
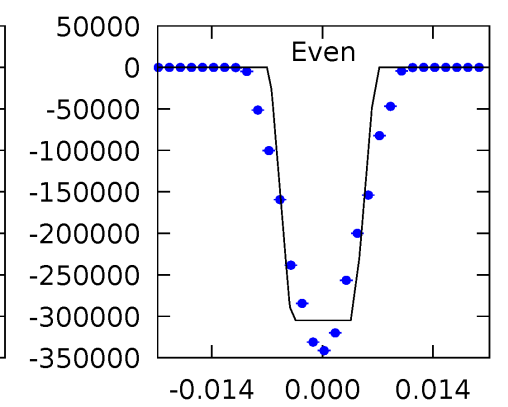
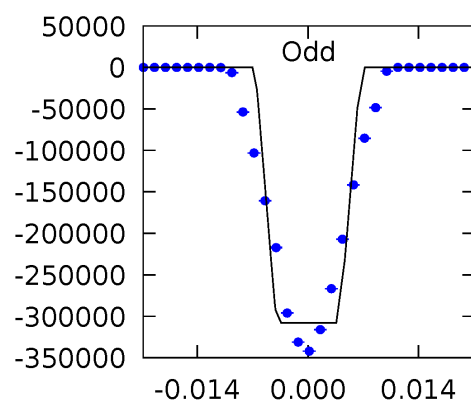
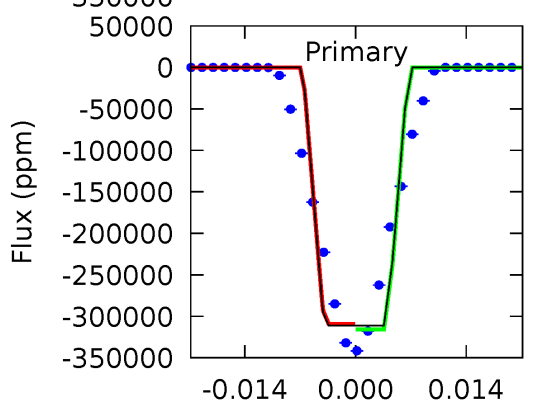
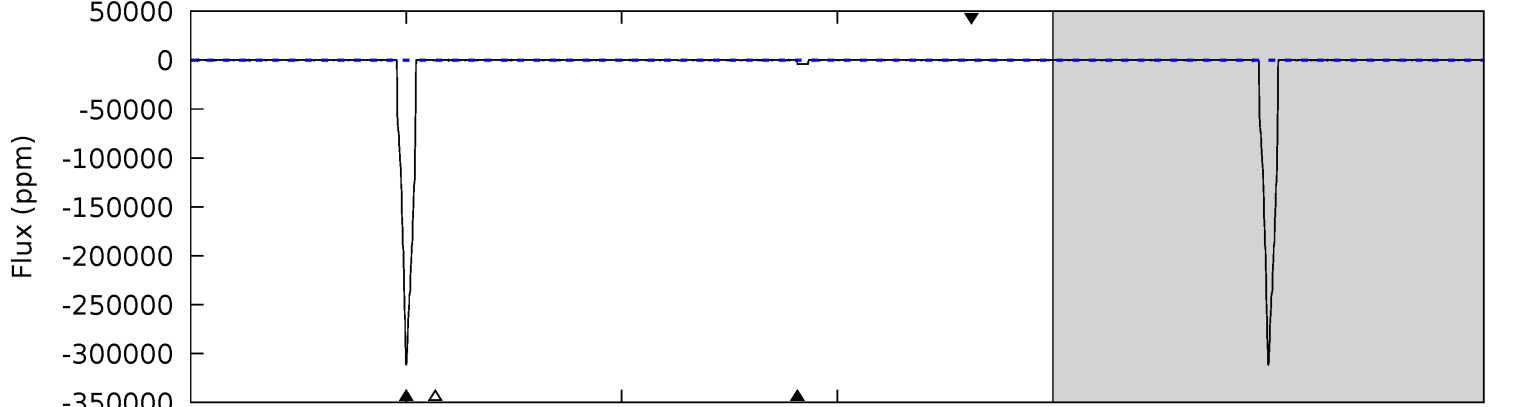
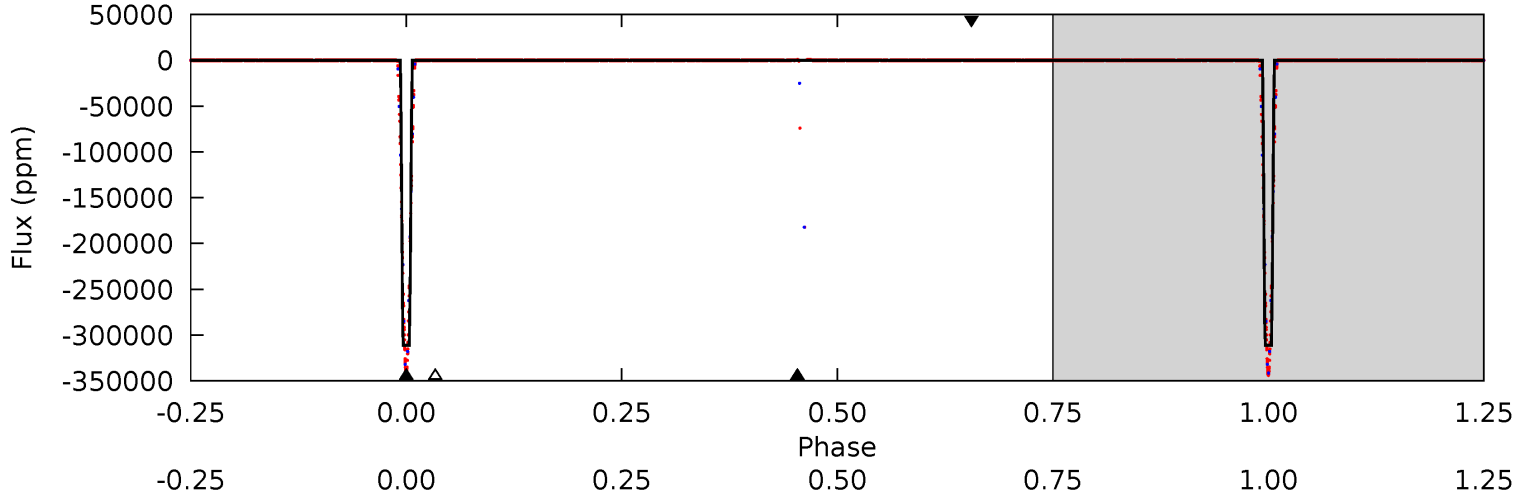
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

004847832-01, P = 30.960463 Days, E = 125.194299 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
17674	233.9	4.61	5.04	4.96	2.46	1.47	17670	17669	229.3	228.9	104.0	1.00	0.00	0



### Stellar Parameters For KIC 004847832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5291^{+211}_{-232}$	$4.423^{+0.136}_{-0.204}$	$0.060^{+0.250}_{-0.250}$	$0.926^{+0.274}_{-0.148}$	$0.828^{+0.103}_{-0.069}$	$1.467^{+0.893}_{-0.745}$
	+4%/-4%	+3%/-5%	+417%/-417%	+30%/-16%	+12%/-8%	+61%/-51%
Source	PHO1	FLK73	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 004847832-01 / KOI 6459.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$45.30^{+12.84}_{-10.70}$	$744^{+60}_{-51}$	$1918^{+2905}_{-6436}$	$1.364^{+1100.080}_{-810.188}$
Alt.	$-4117 \pm 18$	$60.07^{+13.33}_{-12.34}$	$737^{+63}_{-44}$	$2566^{+140}_{-127}$	$21^{+11}_{-7}$

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

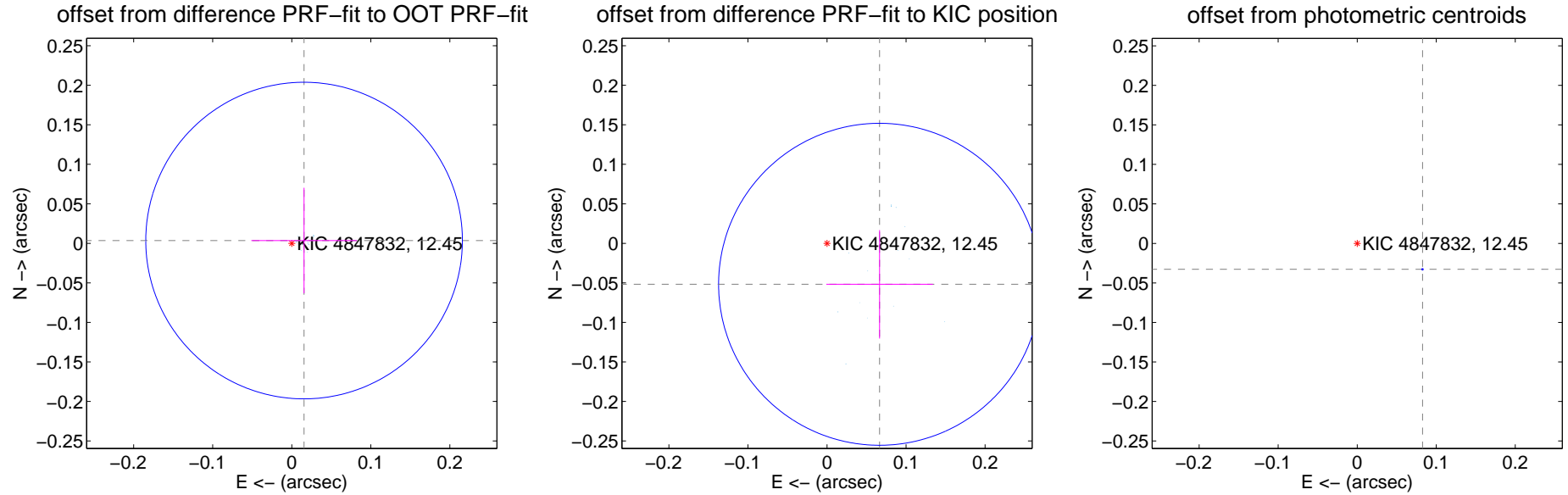
## DV Centroid Data

Supplemental centroid analysis for 004847832-01. Kepler magnitude: 12.45. Transit SNR -1.00

There are 14 quarters with good PRF difference image offsets

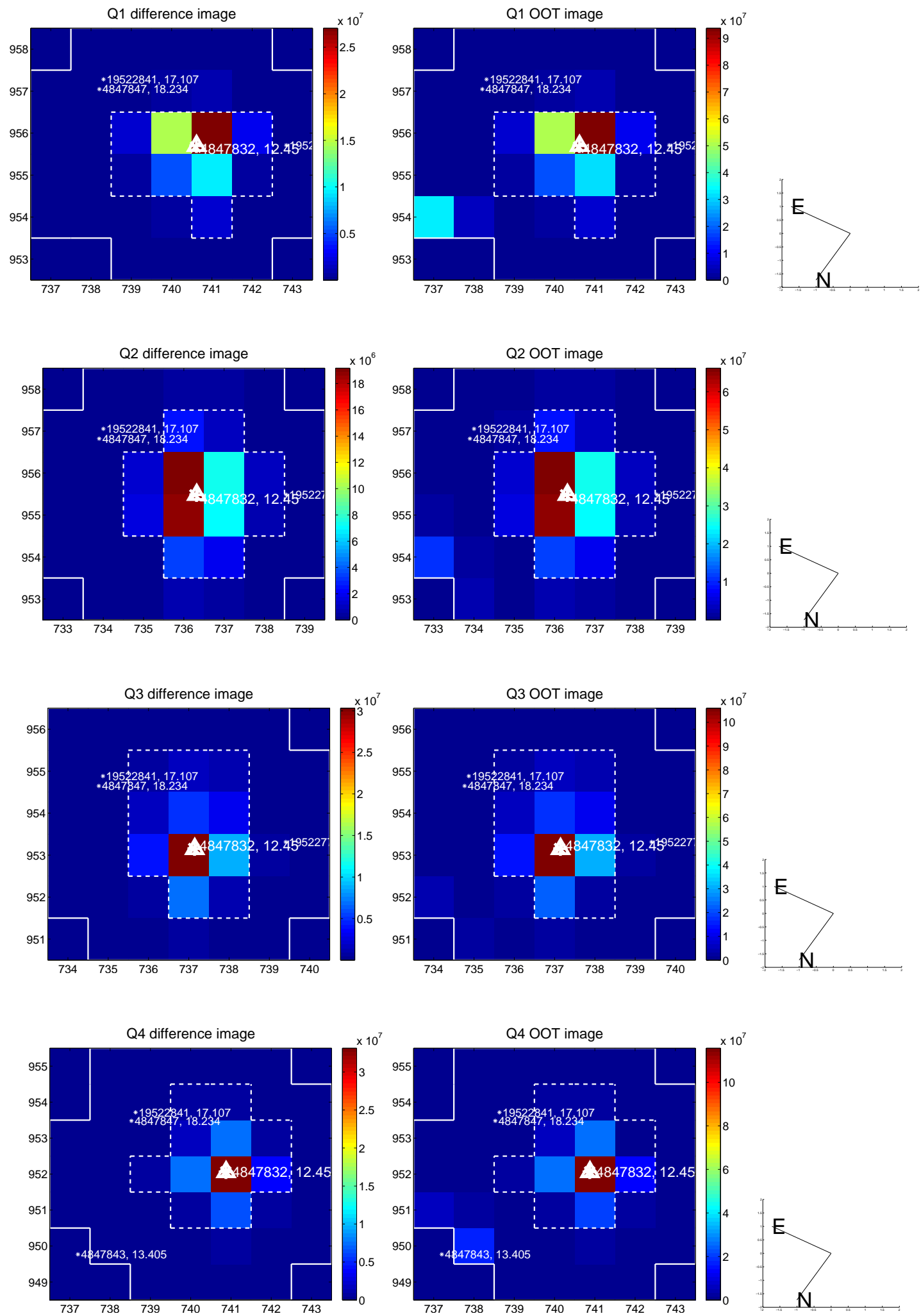
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.016 \pm 0.067$	0.24	$-0.016 \pm 0.067$	$0.004 \pm 0.067$
PRF-fit source offset from KIC position	$0.084 \pm 0.068$	1.24	$-0.067 \pm 0.067$	$-0.052 \pm 0.069$
photometric centroid source offset	$0.09 \pm 0.00$	286.71	$-0.08 \pm 0.00$	$-0.03 \pm 0.00$

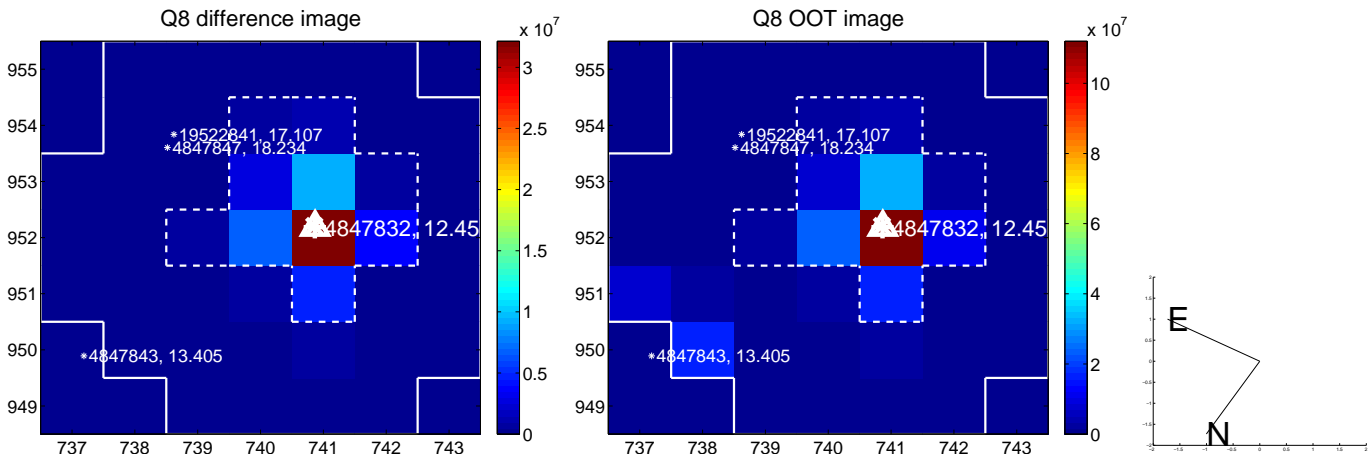
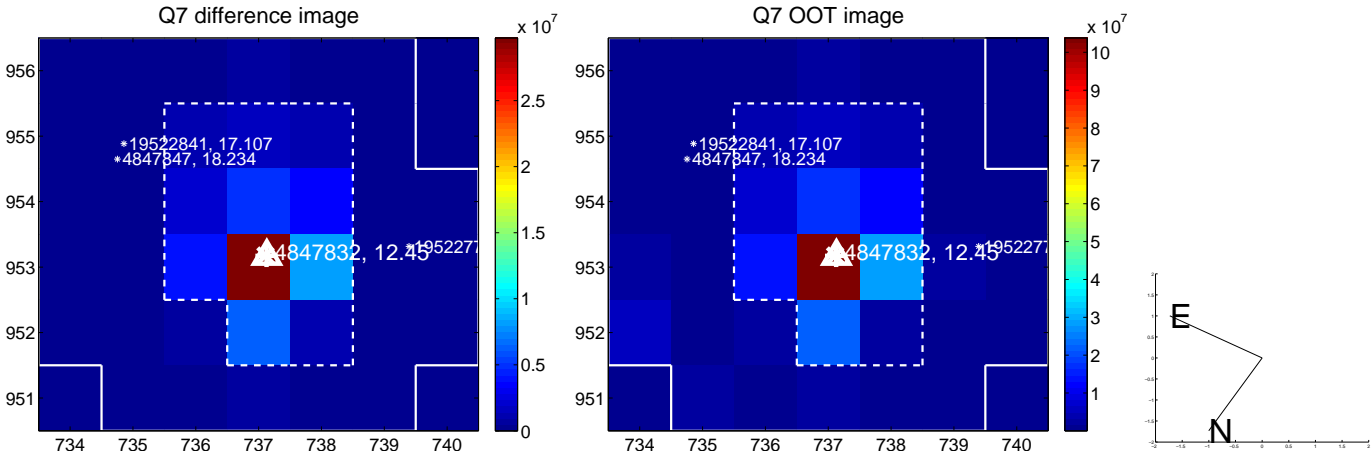
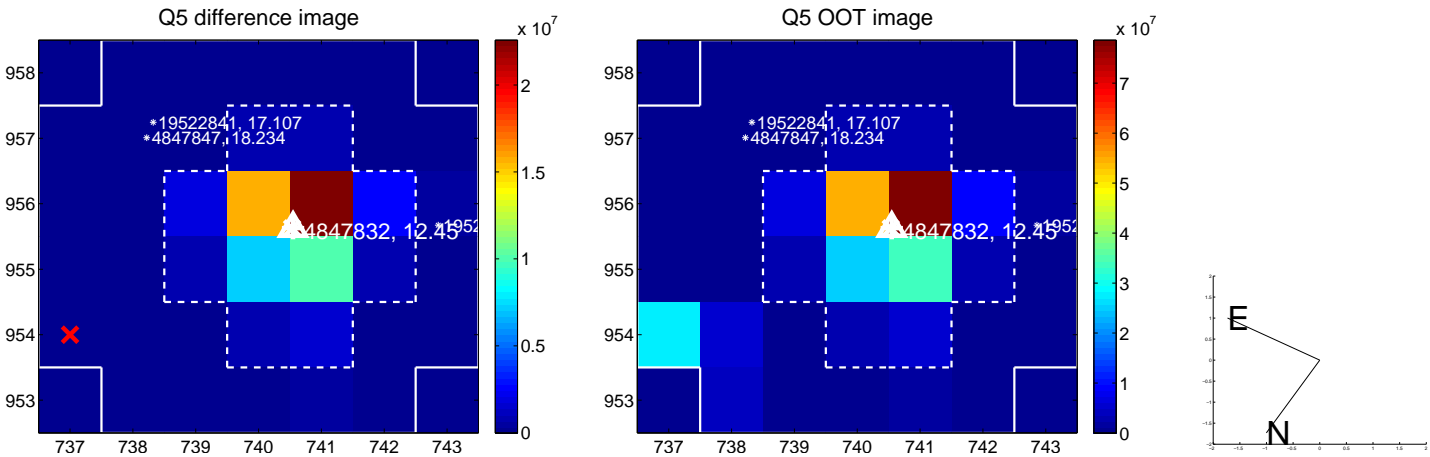


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

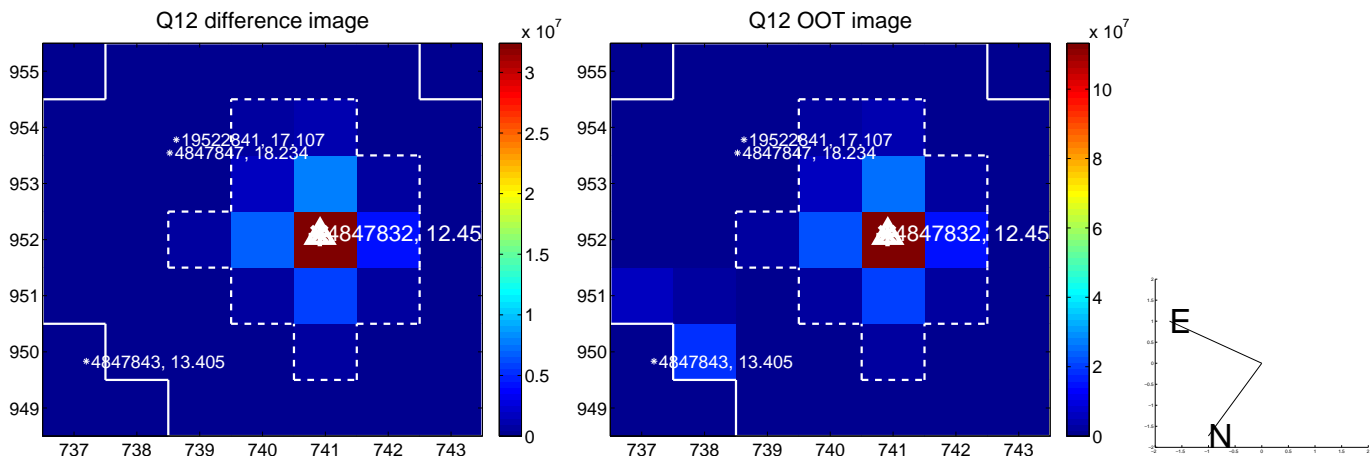
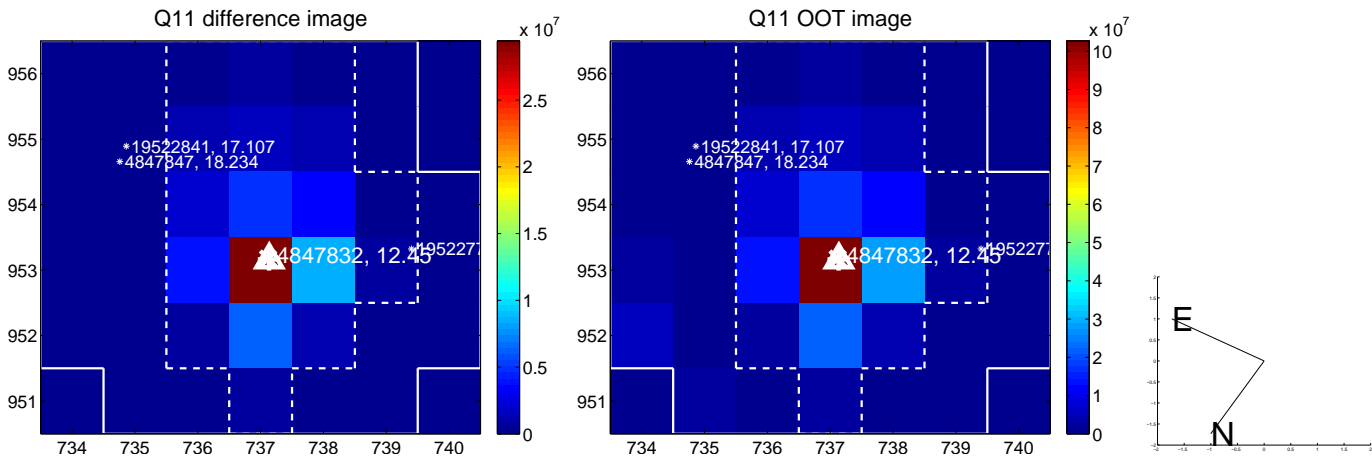
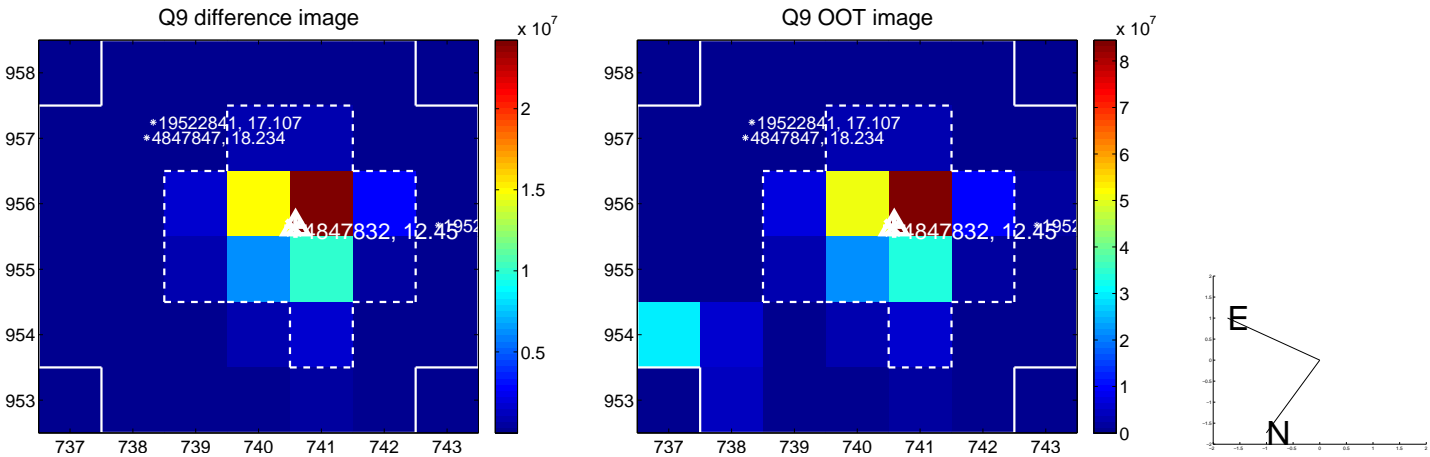


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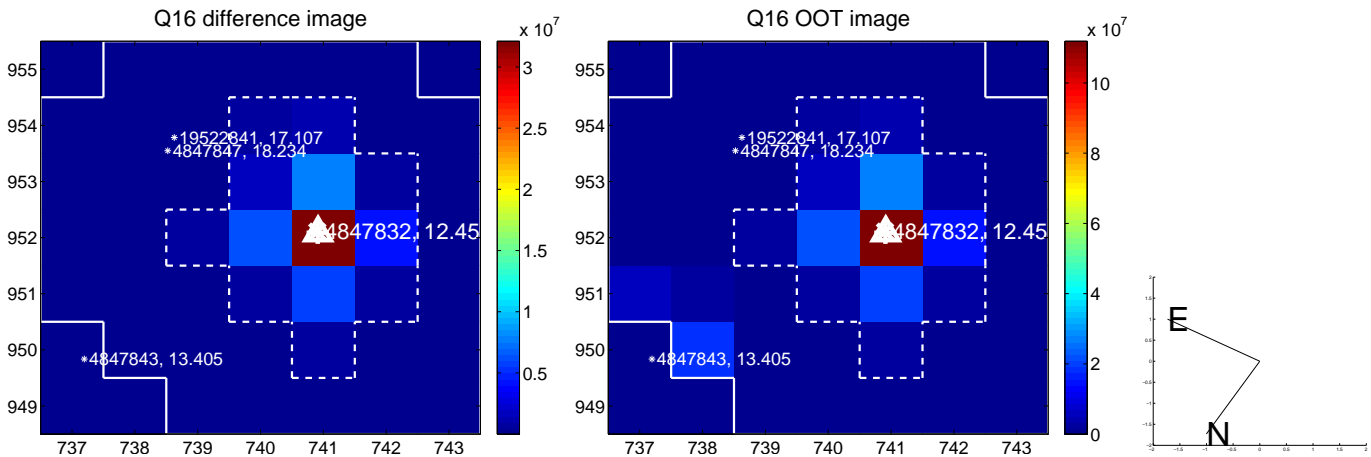
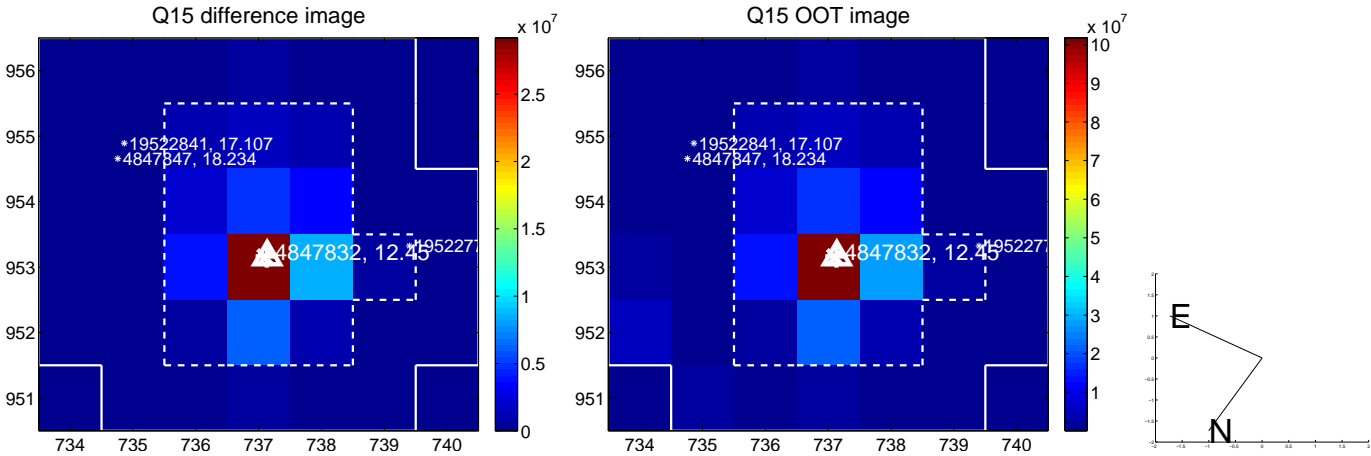
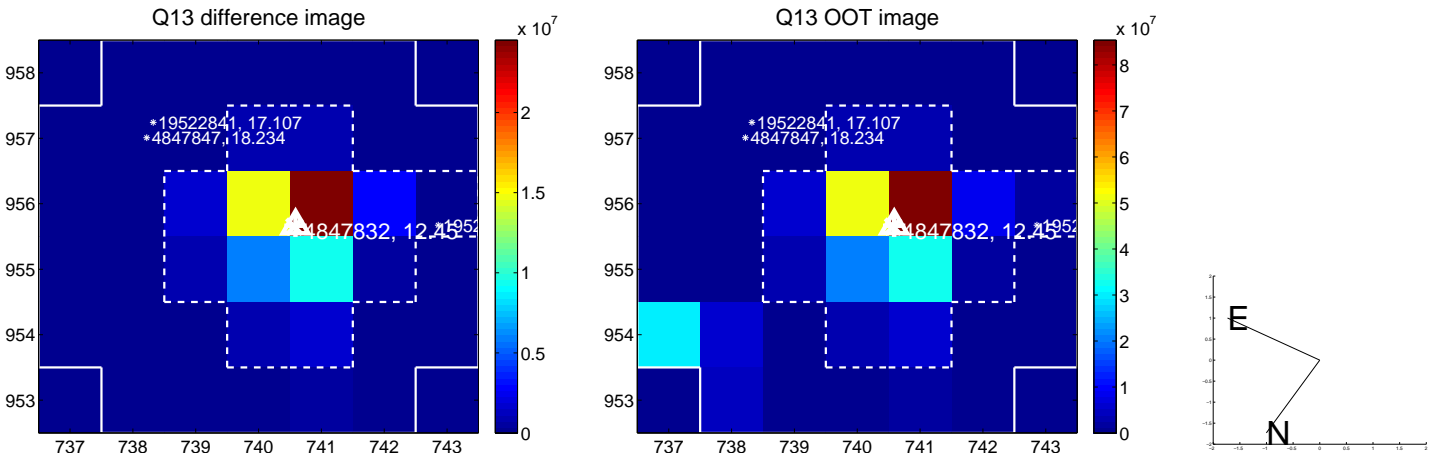




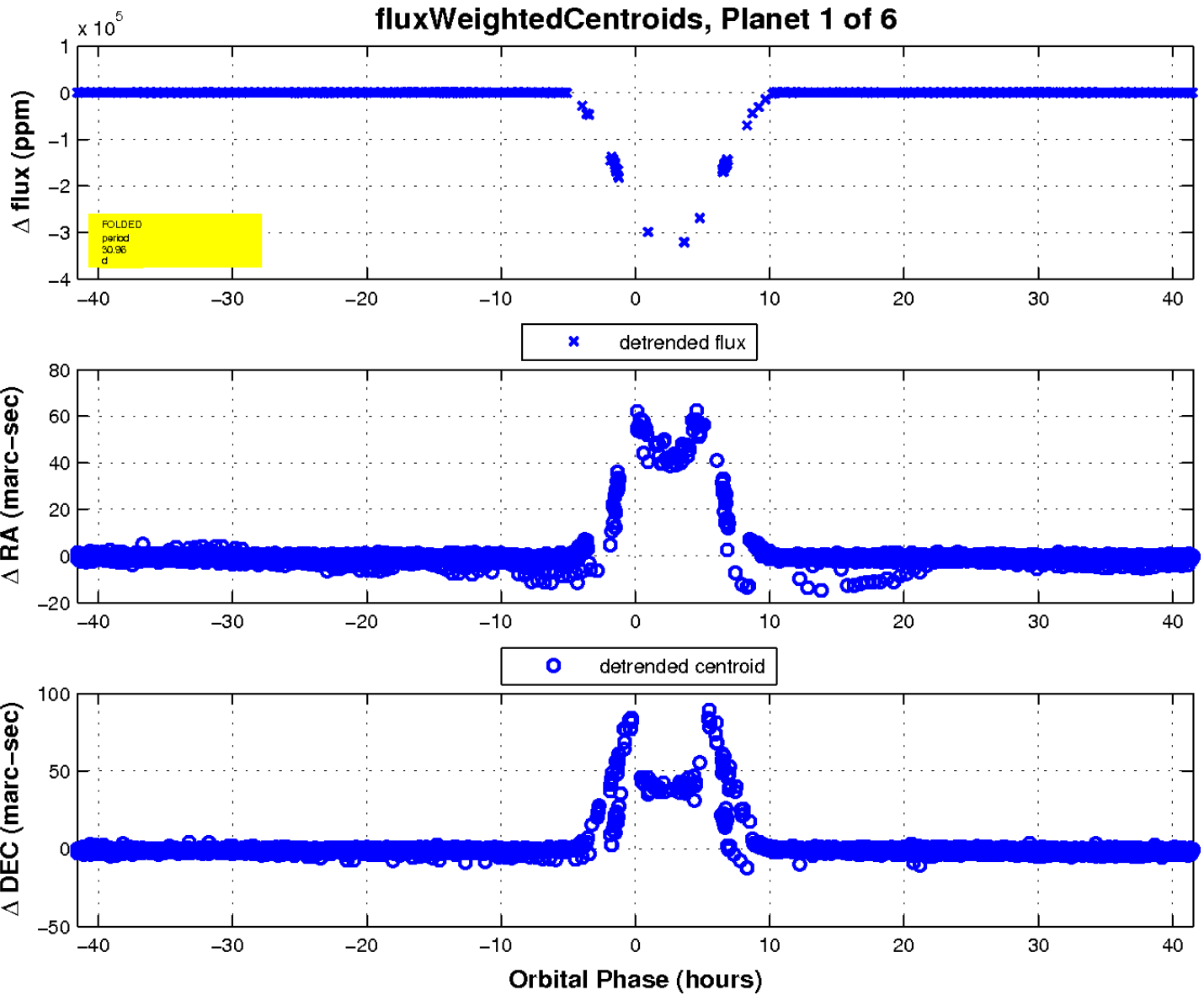
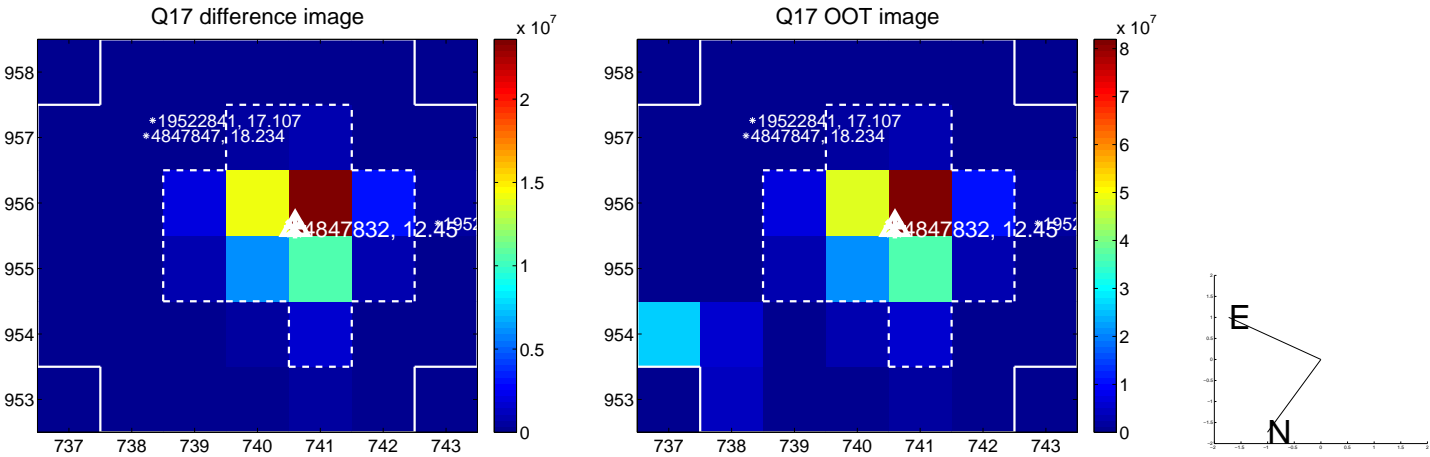
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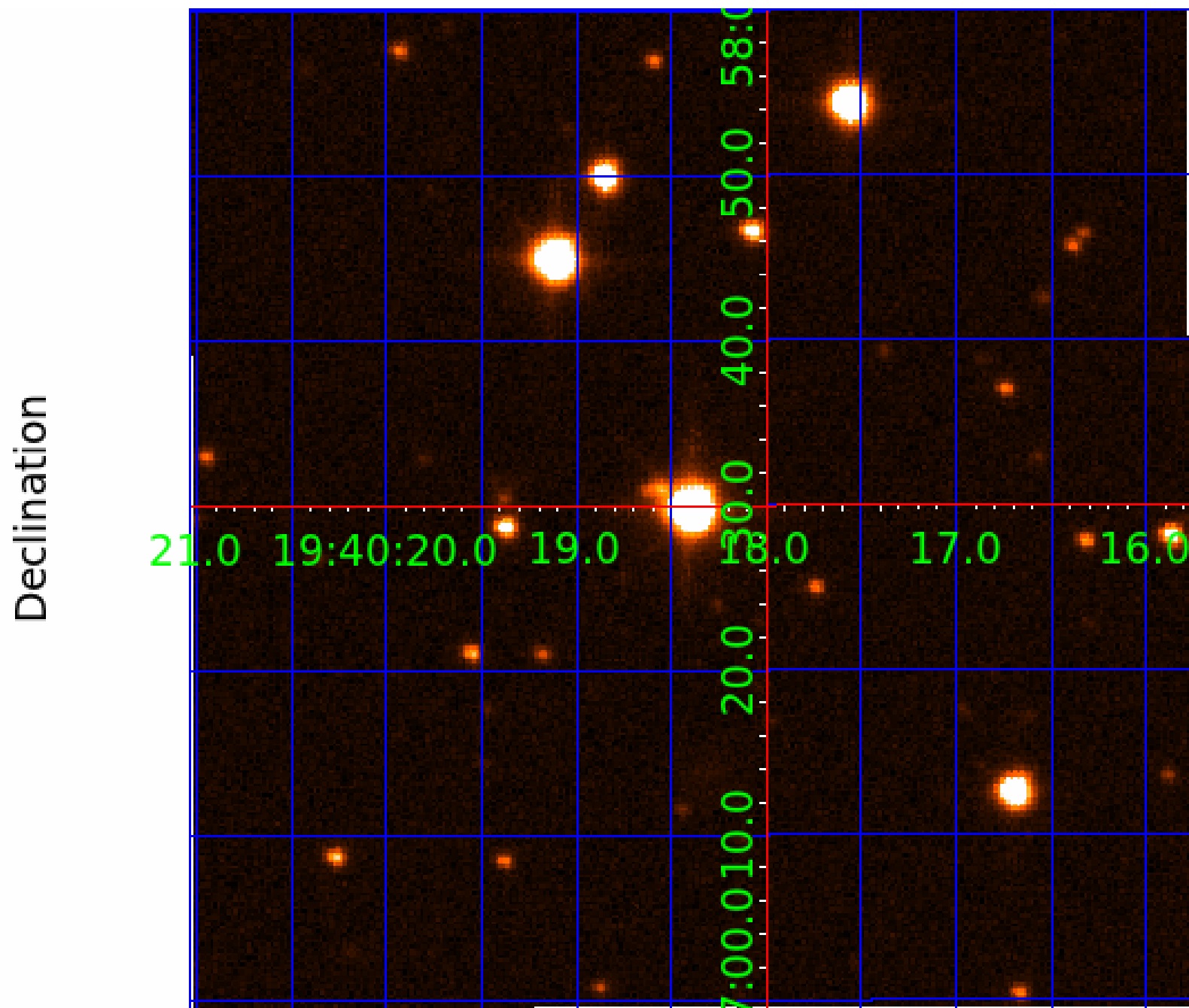
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 004847832

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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004847832-04	OBS	No	30.959678	158.285769	3486.2	15.000	606.0	-1.0	0.93	5291	5.34	18.33
004847832-05	OBS	No	30.956537	151.837184	4006.4	69.085	156.8	171.5	0.93	5291	11.15	18.33
004847832-06	OBS	No	82.271289	157.223223	4839.8	7.500	192.6	-1.0	0.93	5291	6.29	4.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004847832-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
004847832-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
004847832-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
004847832-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
004847832-05	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
004847832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

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

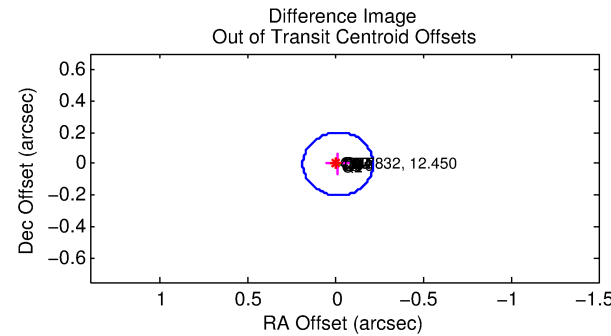
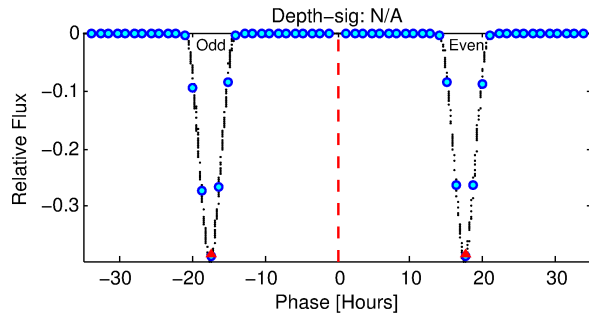
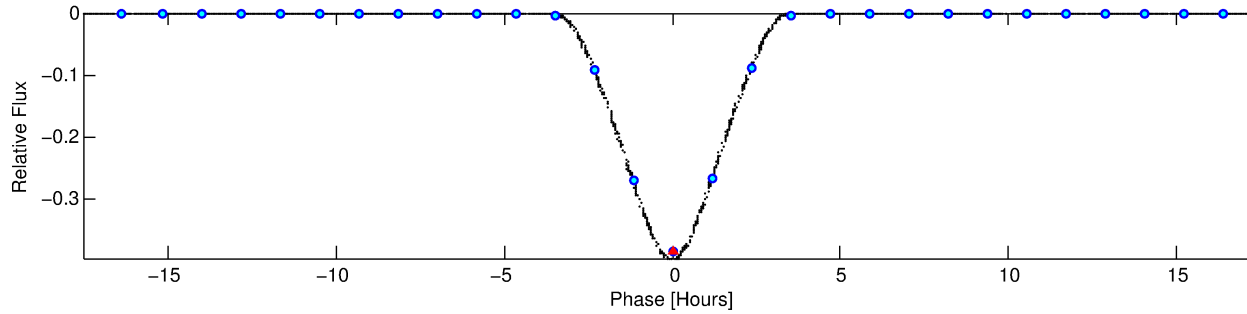
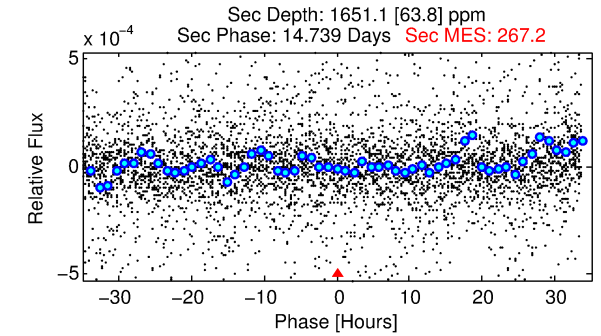
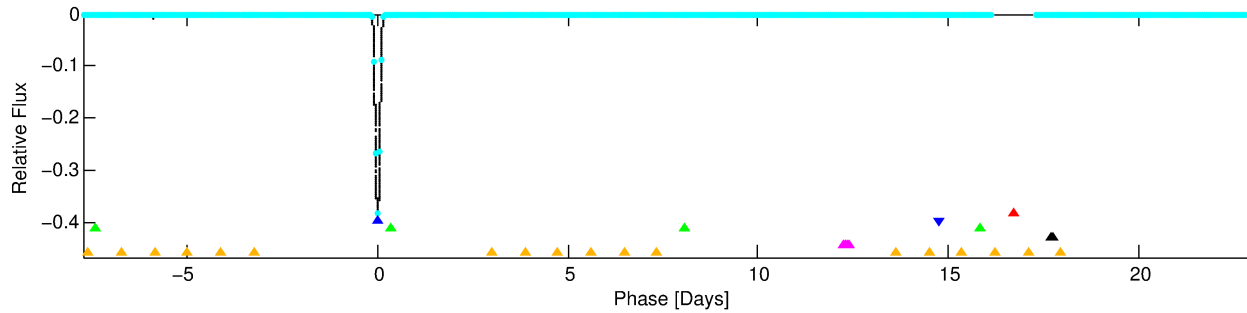
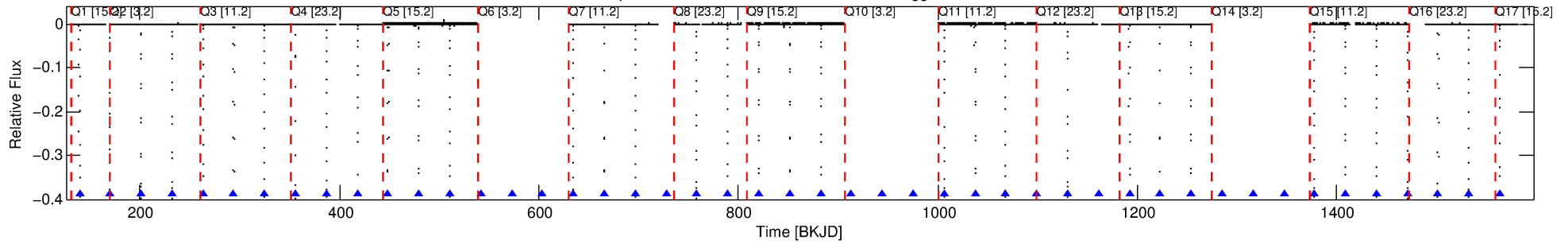
## Ephemeris Match Information For 004847832-02

No Significant Match Found

# DV One-Page Summary

KIC: 4847832 Candidate: 2 of 6 Period: 30.960 d  
KOI: K06459 Corr: No Ephemeris Match

Kp: 12.45 R\*: 0.93 Rs Teff: 5291.0 K Logg: 4.42 Fe/H: 0.060



TPS TCE Results:

Period = 30.96031 d  
Epoch = 139.4324 BKJD

DV fit results are unavailable

DV Diagnostic Results:

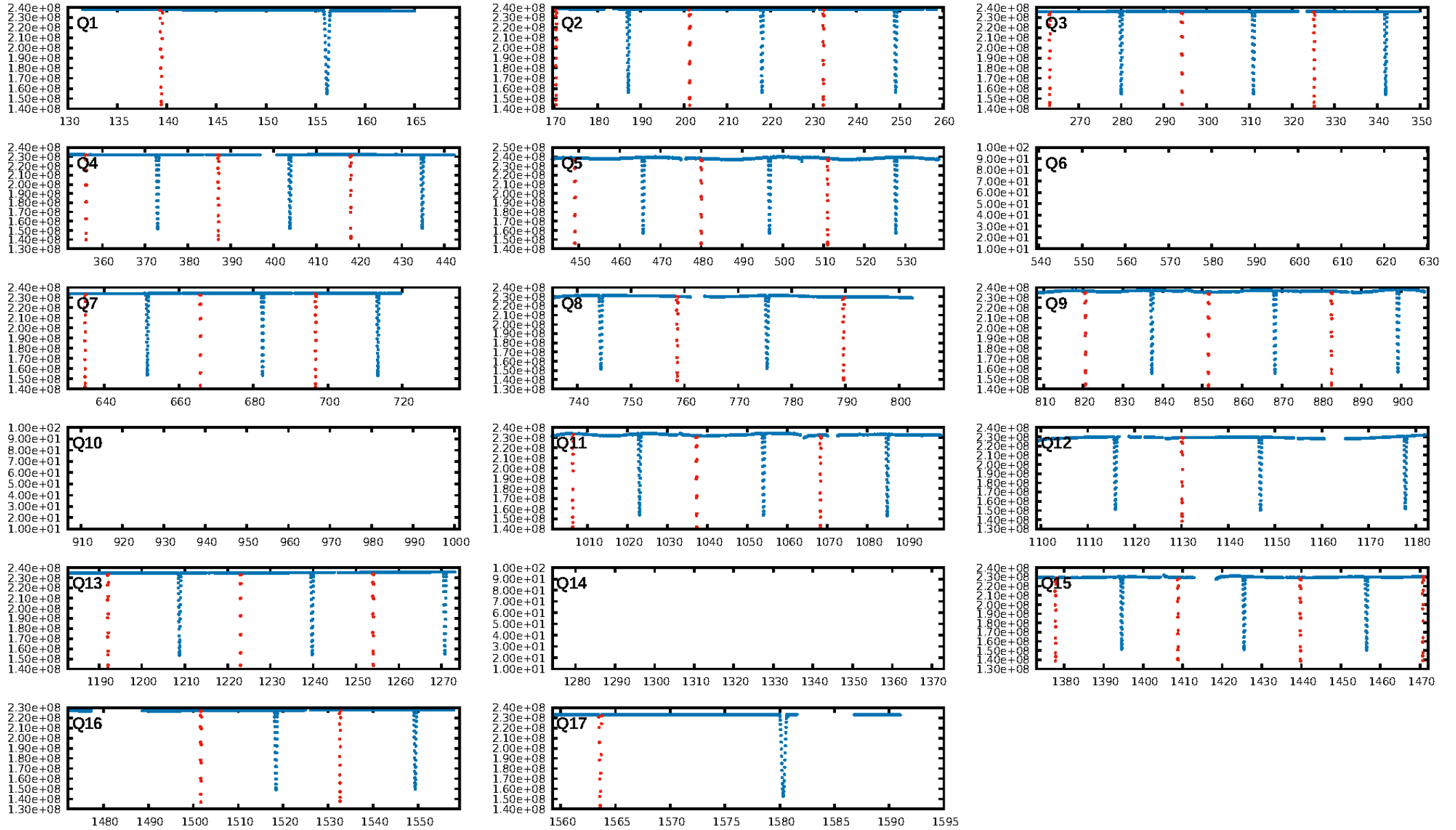
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LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [33/33]  
GhostDiagnostic-chr: 17.84  
Centroid-sig: N/A  
Centroid-so: 0.104 arcsec [324.59σ]  
OotOffset-rm: 0.014 arcsec [0.21σ]  
KicOffset-rm: 0.076 arcsec [1.13σ]  
OotOffset-st: 1/4/3/5 [13]  
KicOffset-st: 1/4/3/5 [13]  
DiffImageQuality-fgm: 1.00 [13/13]  
DiffImageOverlap-fno: 0.00 [0/13]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:27:50 Z

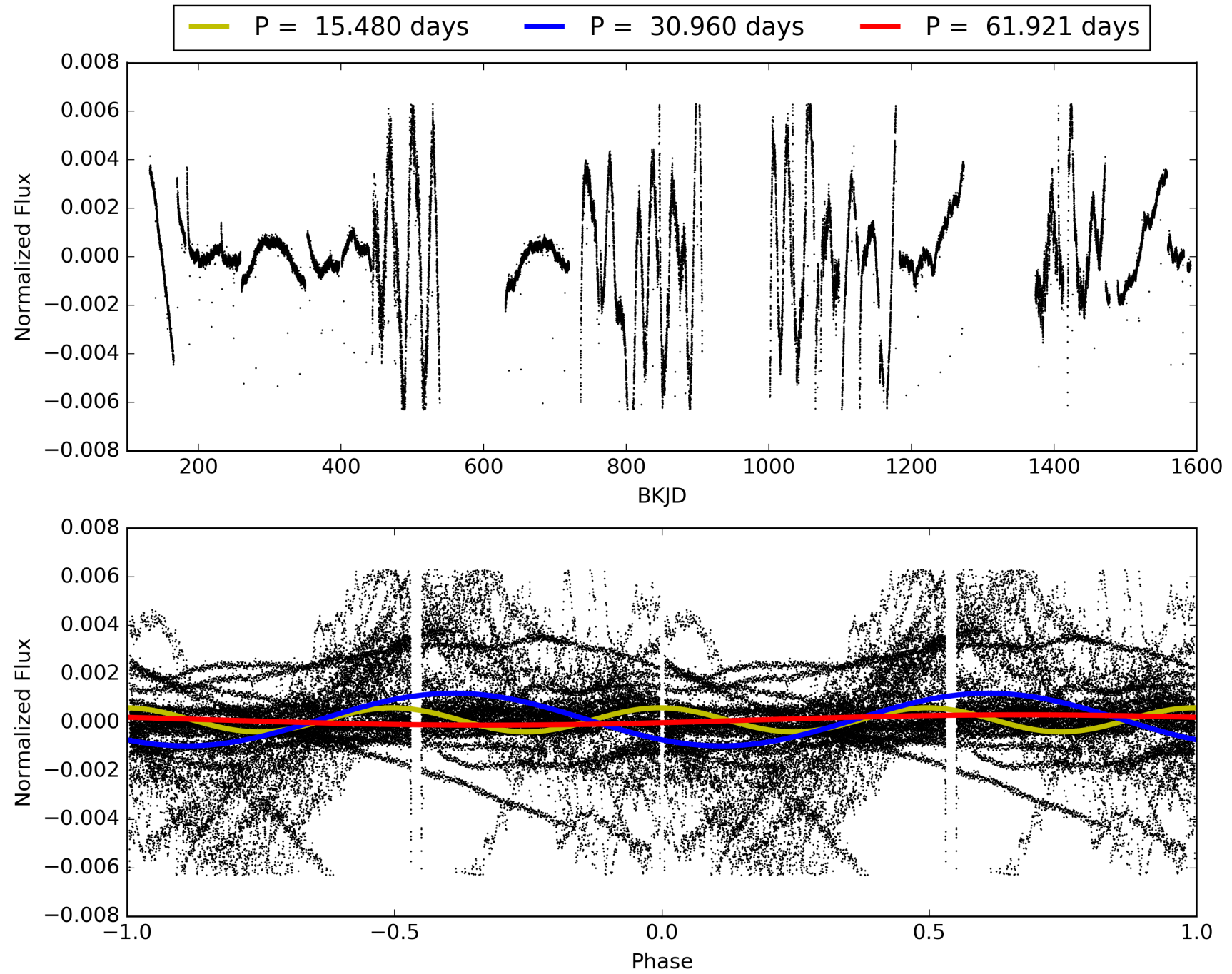
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 004847832-02, PDC Light Curves

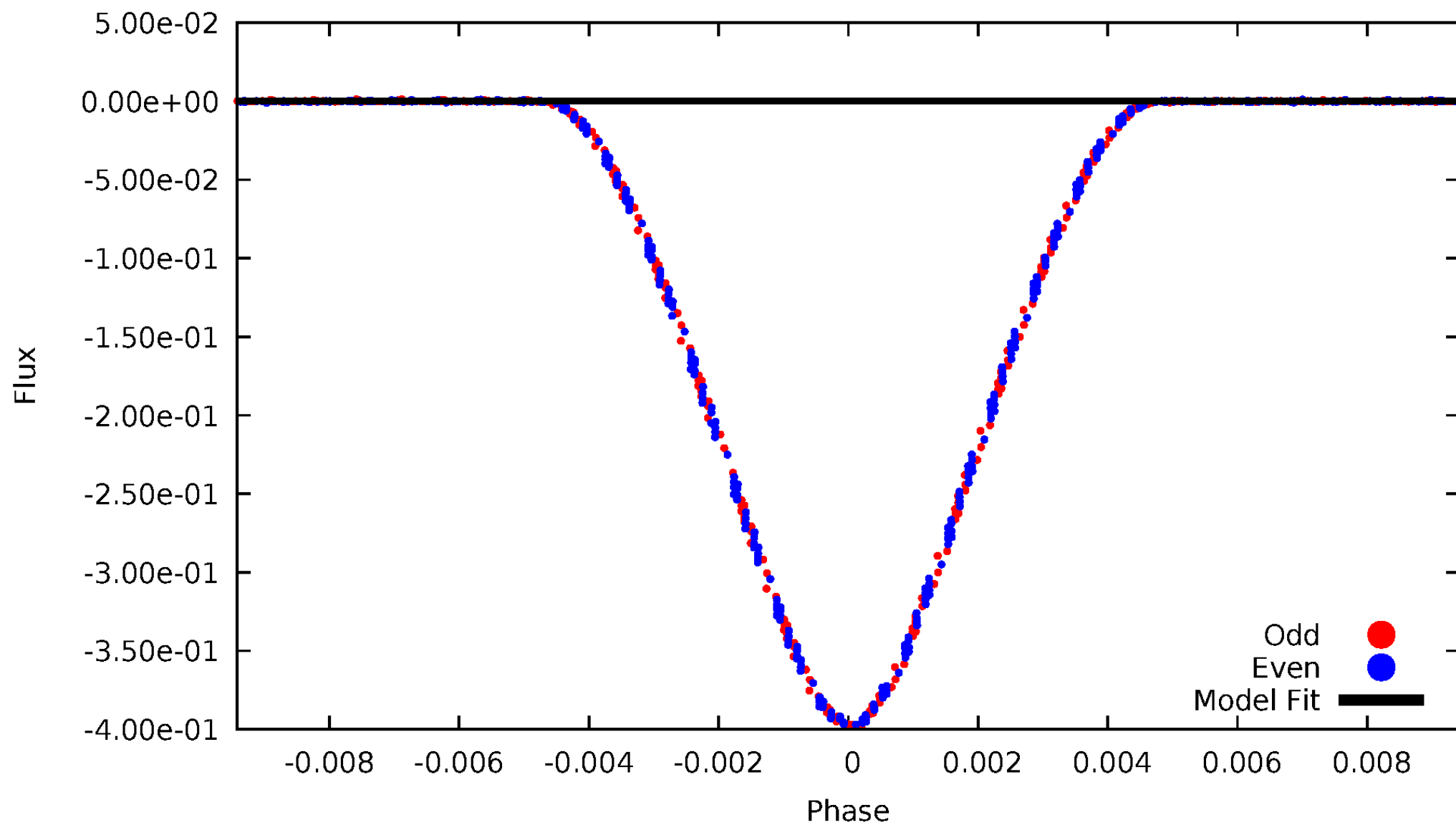


TCE 004847832-02



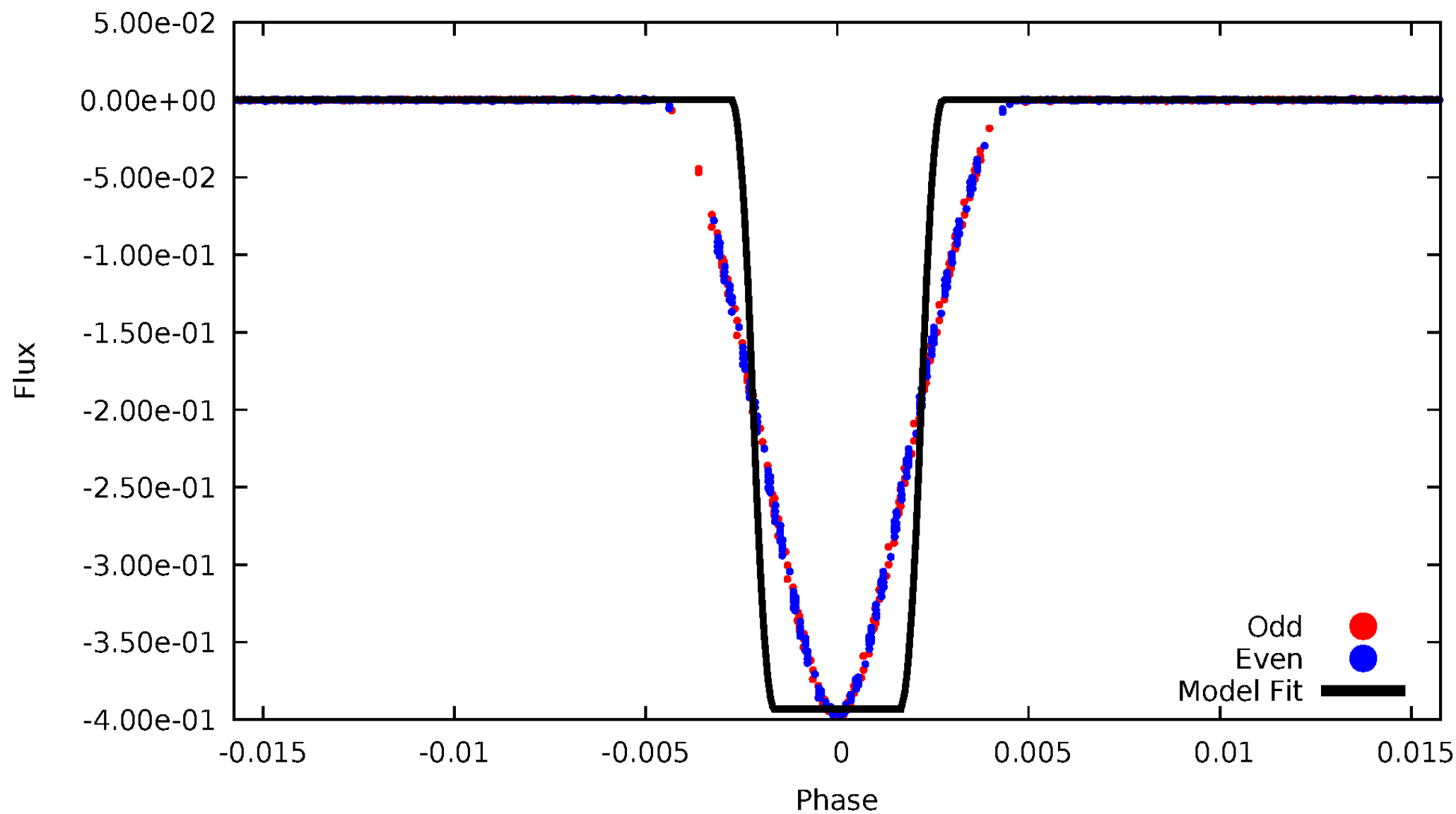
# DV Odd/Even

TCE 004847832-02



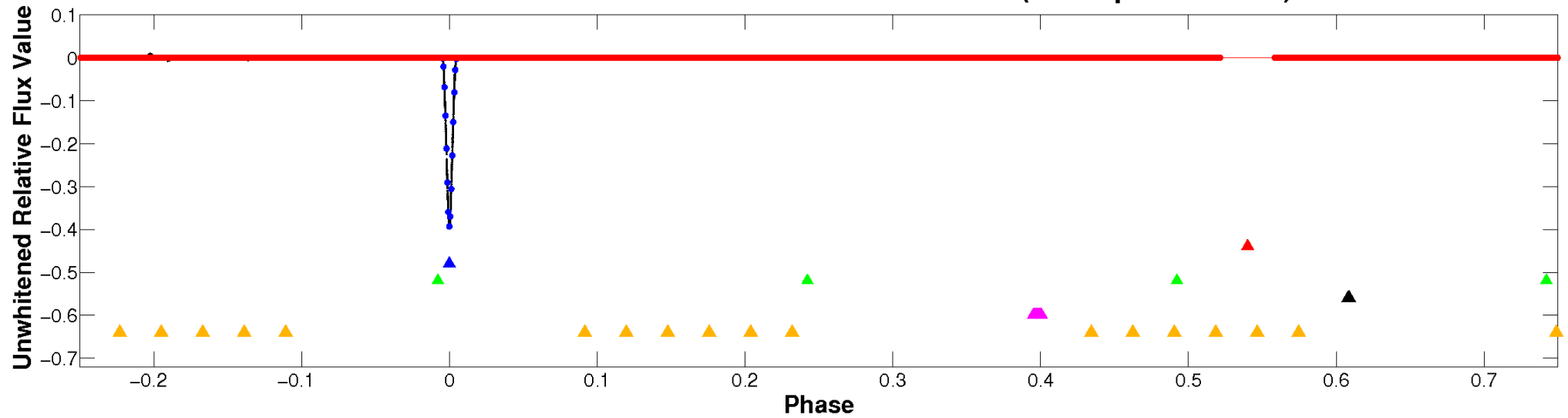
# ALT Odd/Even

TCE 004847832-02

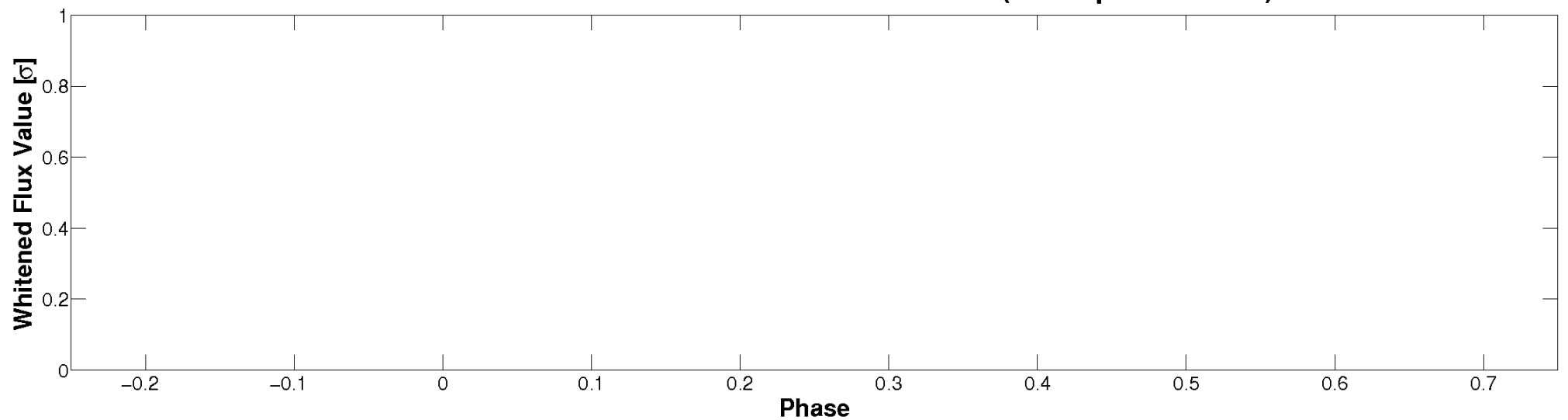


# Non-Whitened Vs. Whitened Light Curve

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

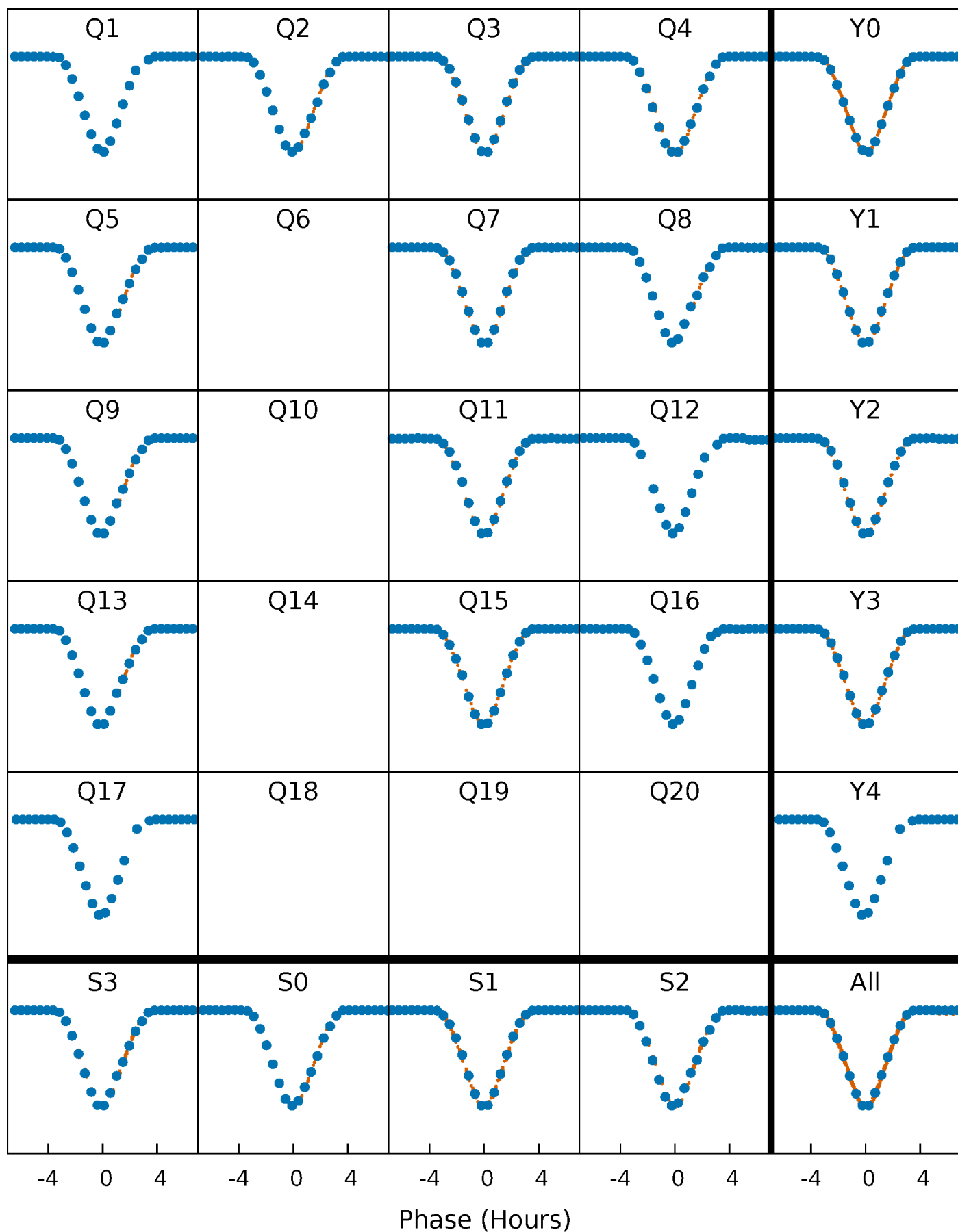


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

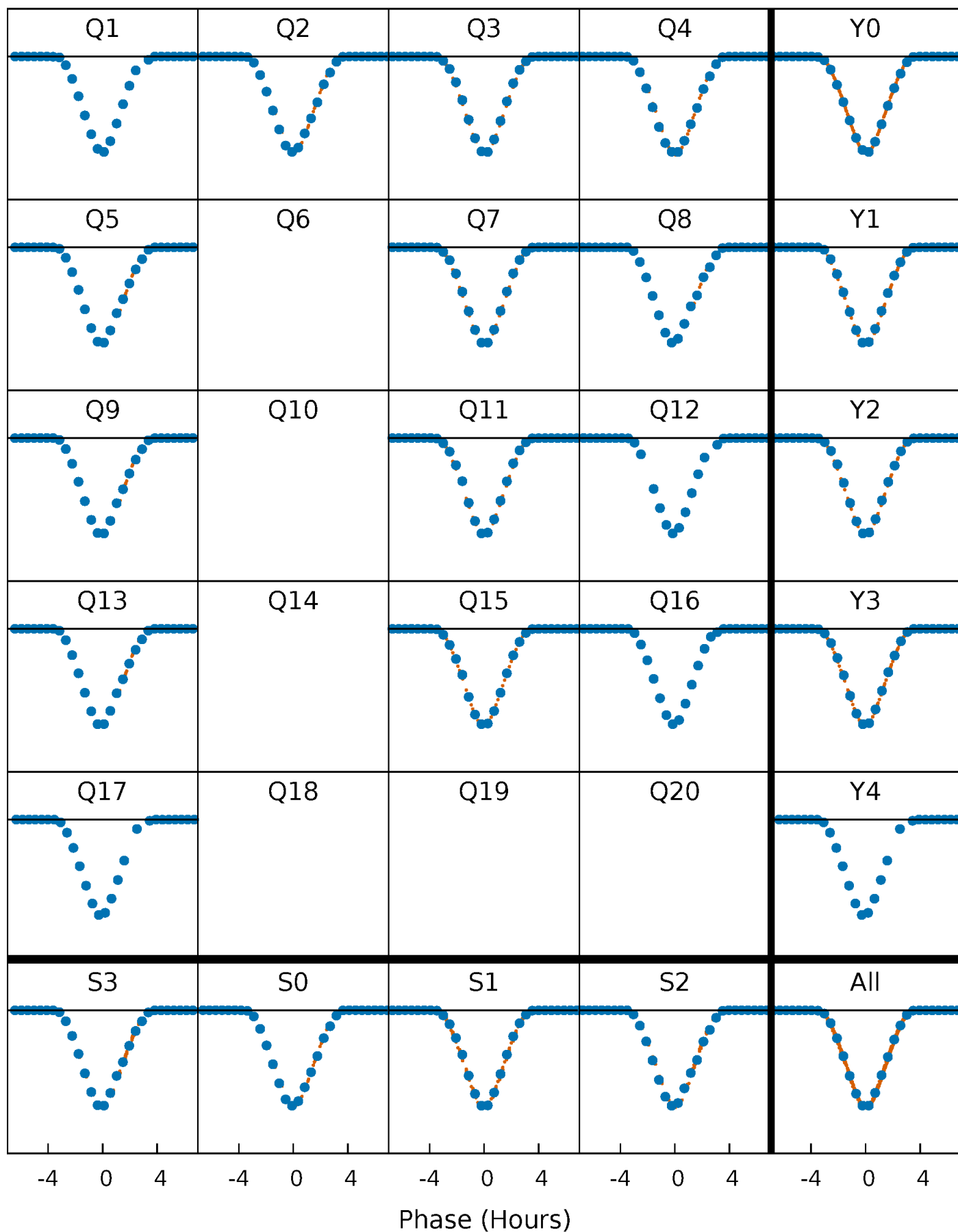
TCE 004847832-02 P= 30.960315 Days  $T_0=139.432404$  (BKJD)





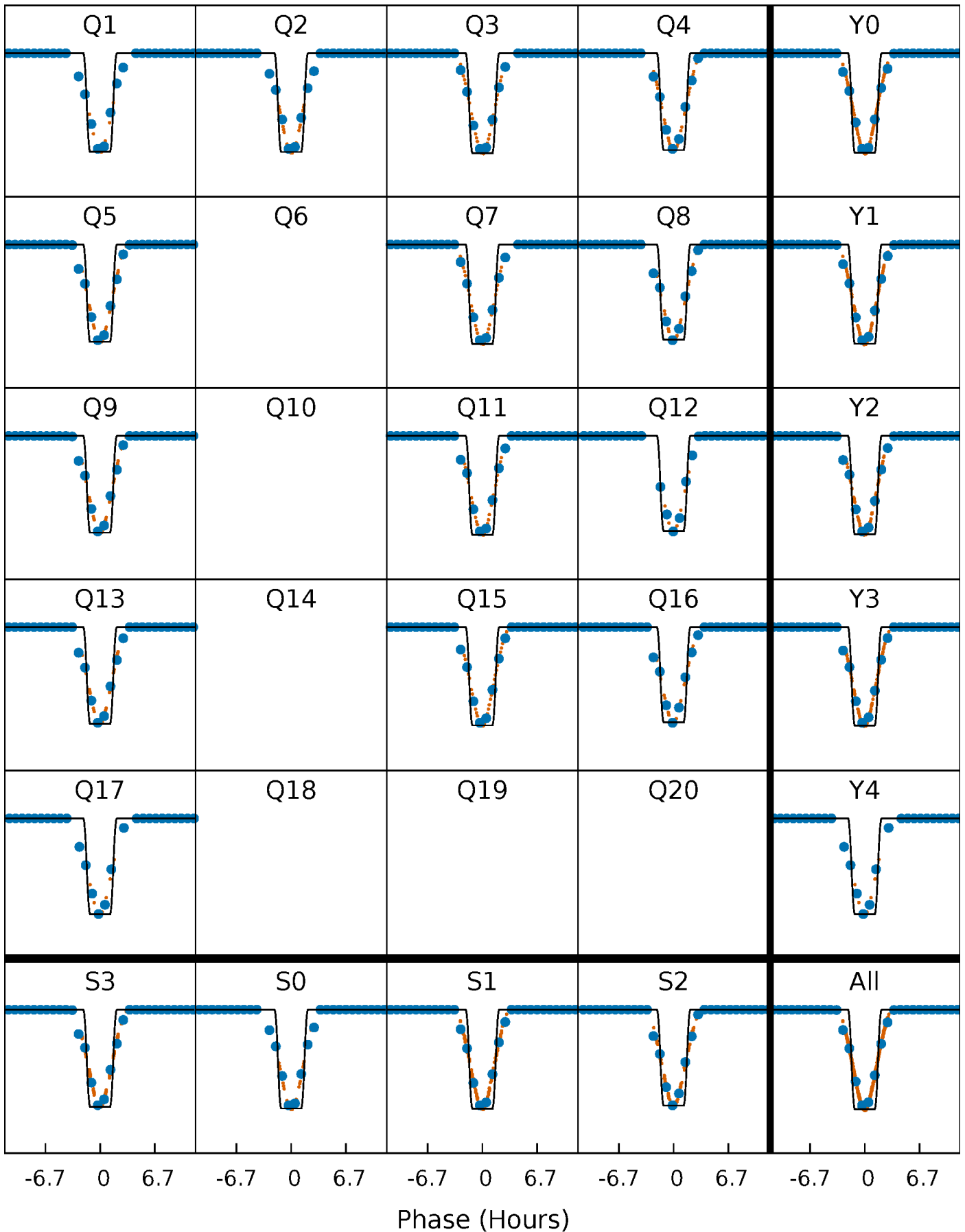
# DV Quarter-Phased Transit Curves

TCE 004847832-02 P= 30.960315 Days  $T_0=139.432404$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

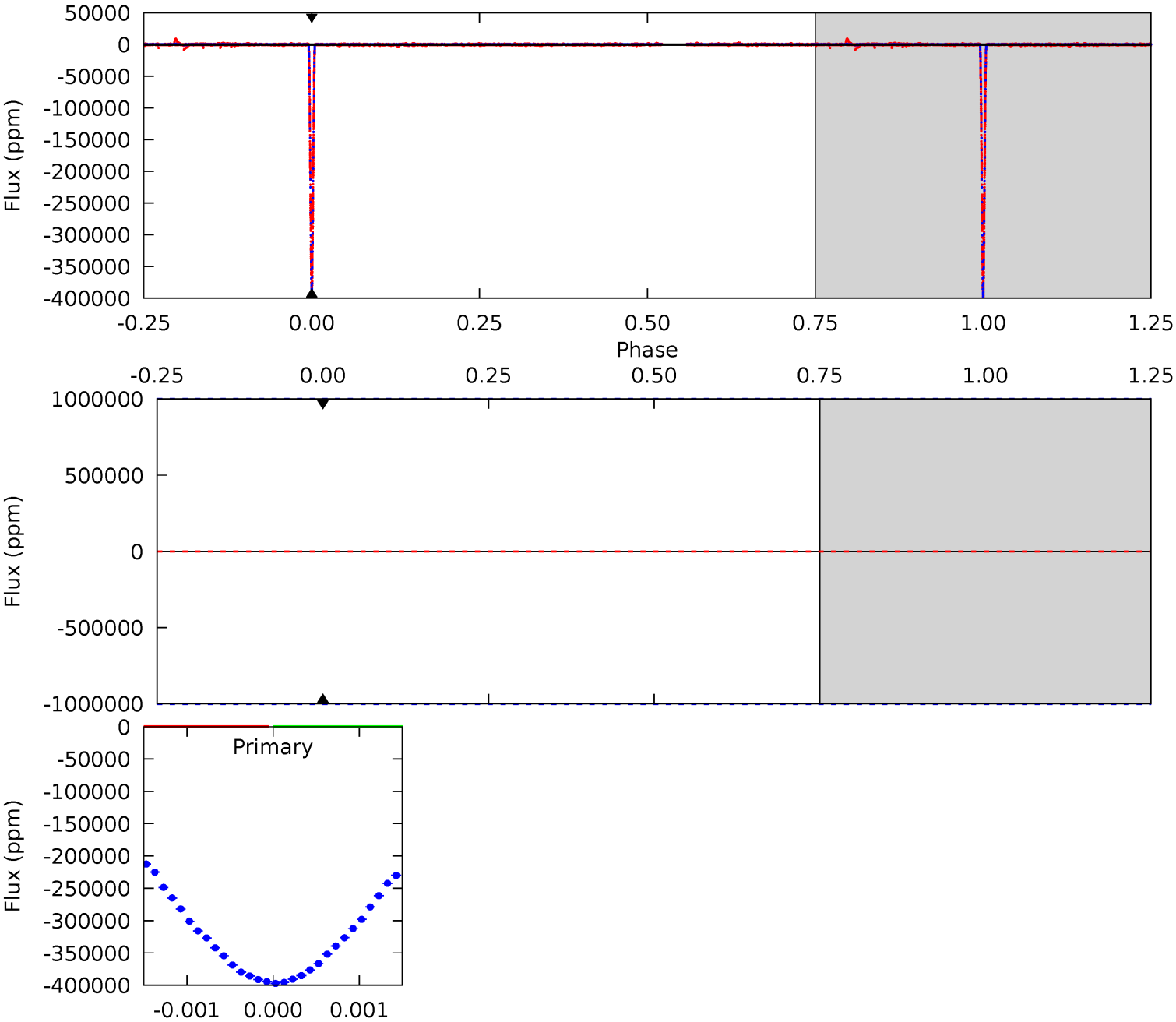
TCE 004847832-02 P= 30.960315 Days  $T_0=139.433615$  (BKJD)



# DV Model-Shift Uniqueness Test

004847832-02, P = 30.960315 Days, E = 108.472089 Days

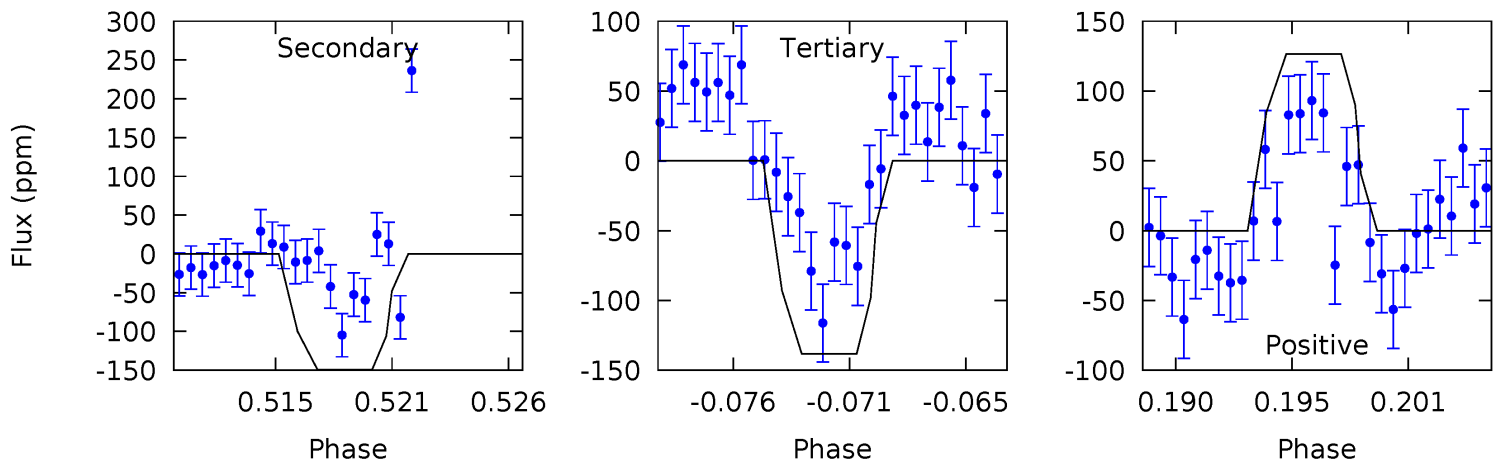
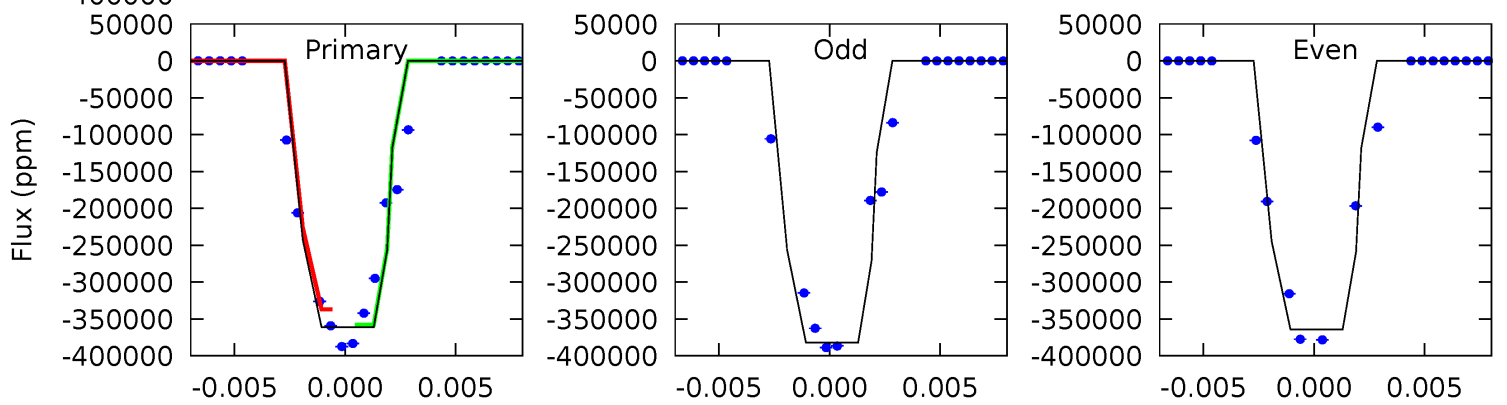
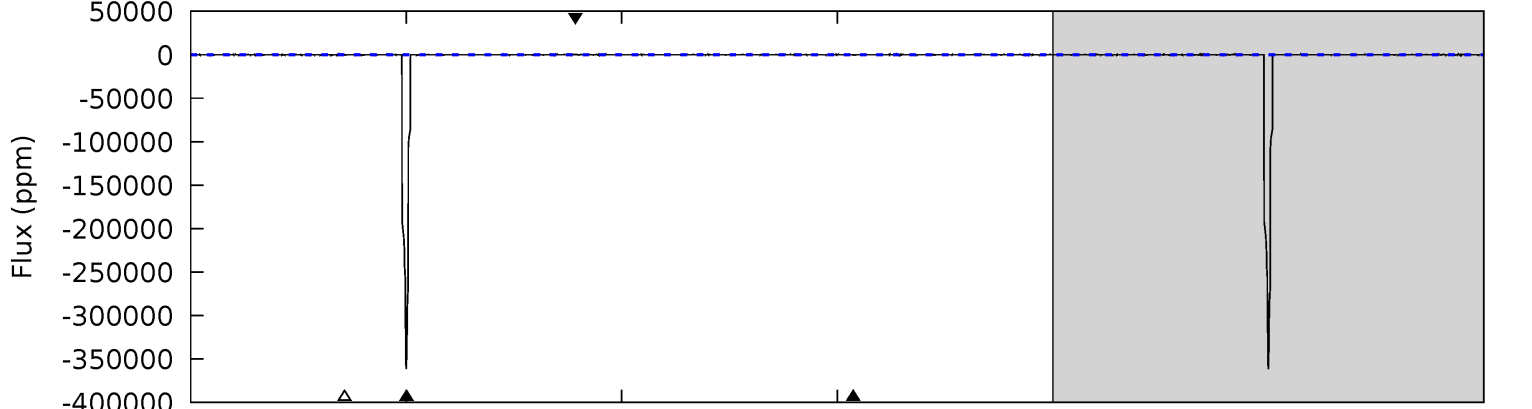
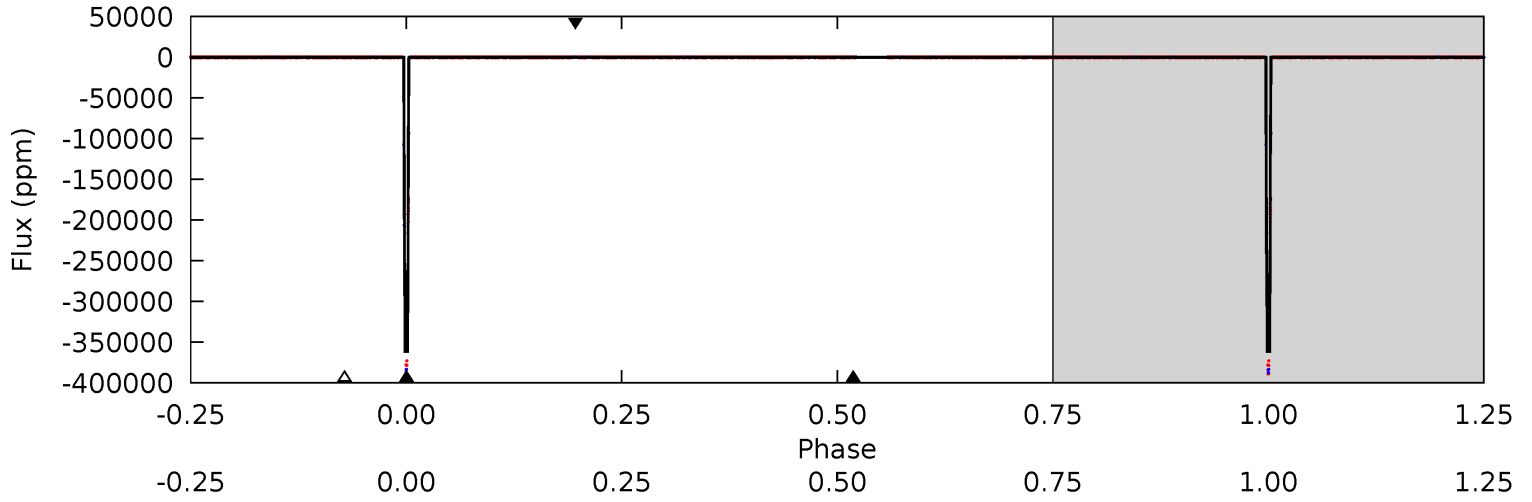
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

004847832-02, P = 30.960315 Days, E = 108.473300 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
12337	5.09	4.73	4.32	5.14	2.78	12.8	12332	12332	0.36	0.76	331.0	1.00	0.00	0



### Stellar Parameters For KIC 004847832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5291^{+211}_{-232}$	$4.423^{+0.136}_{-0.204}$	$0.060^{+0.250}_{-0.250}$	$0.926^{+0.274}_{-0.148}$	$0.828^{+0.103}_{-0.069}$	$1.467^{+0.893}_{-0.745}$
	+4%/-4%	+3%/-5%	+417%/-417%	+30%/-16%	+12%/-8%	+61%/-51%
Source	PHO1	FLK73	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 004847832-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$51.12^{+13.93}_{-11.08}$	$743^{+55}_{-51}$	$-2444^{+6901}_{-1865}$	$-15.544^{+772.458}_{-615.710}$
Alt.	$-149 \pm 29$	$64.85^{+16.21}_{-13.18}$	$741^{+57}_{-48}$	$1669^{+115}_{-148}$	$0.649^{+0.389}_{-0.253}$

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

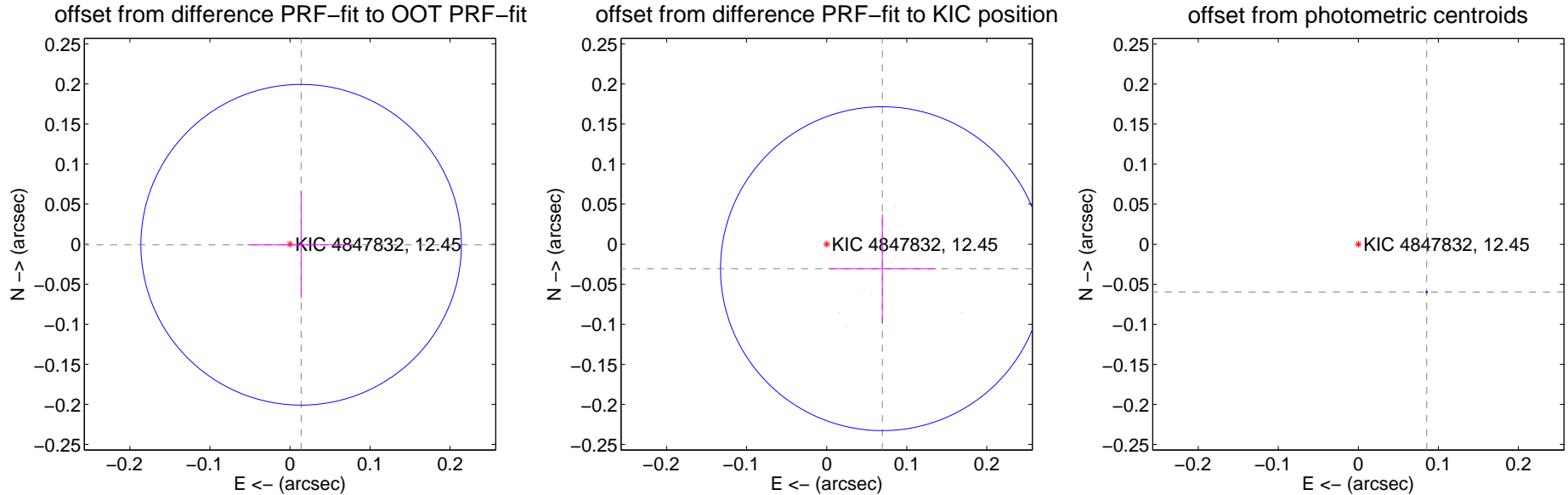
## DV Centroid Data

Supplemental centroid analysis for 004847832-02. Kepler magnitude: 12.45. Transit SNR -1.00

There are 13 quarters with good PRF difference image offsets

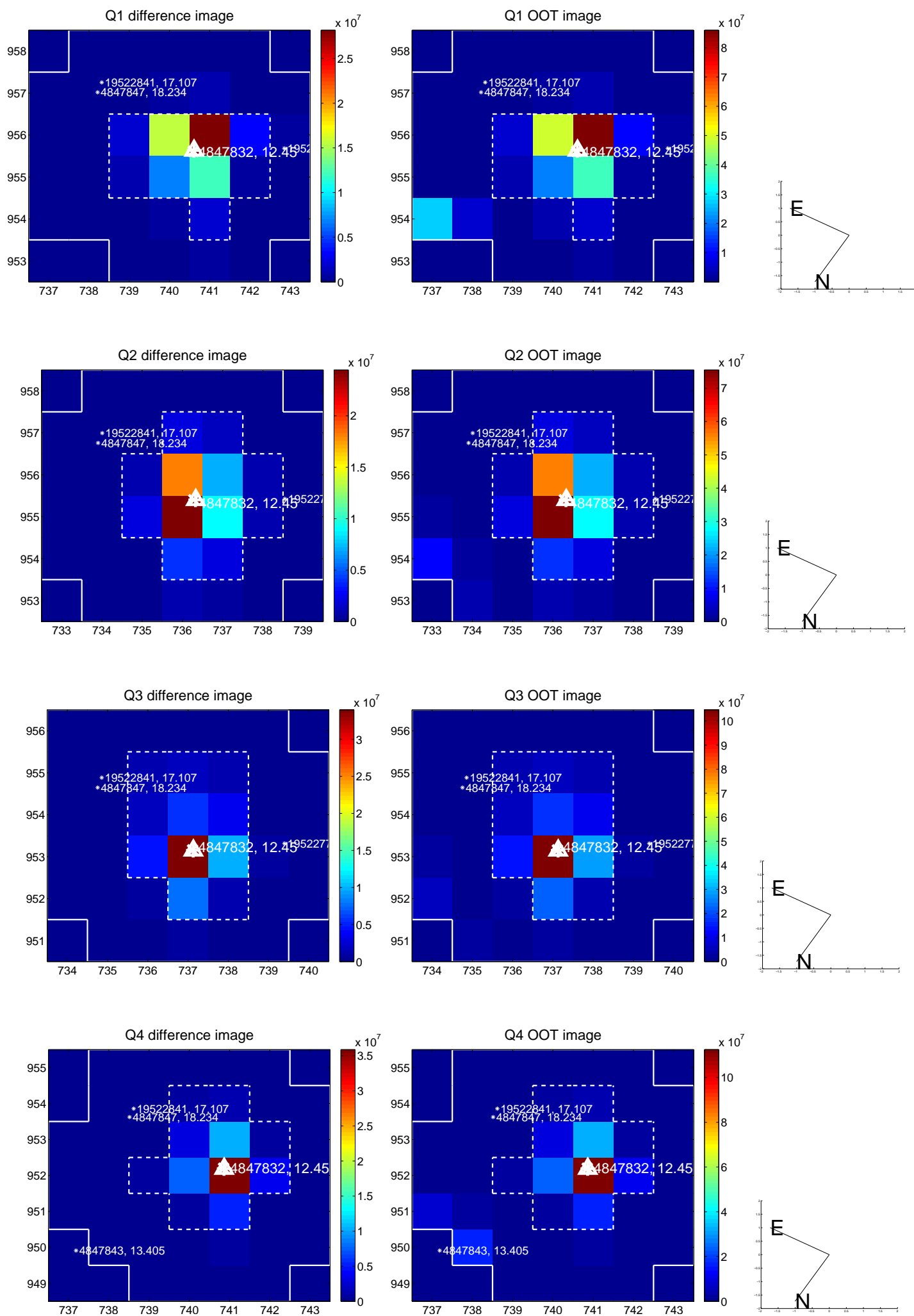
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.014 \pm 0.067$	0.21	$-0.014 \pm 0.067$	$-0.001 \pm 0.067$
PRF-fit source offset from KIC position	$0.076 \pm 0.067$	1.13	$-0.070 \pm 0.067$	$-0.031 \pm 0.068$
photometric centroid source offset	$0.10 \pm 0.00$	<b>324.59</b>	$-0.09 \pm 0.00$	$-0.06 \pm 0.00$

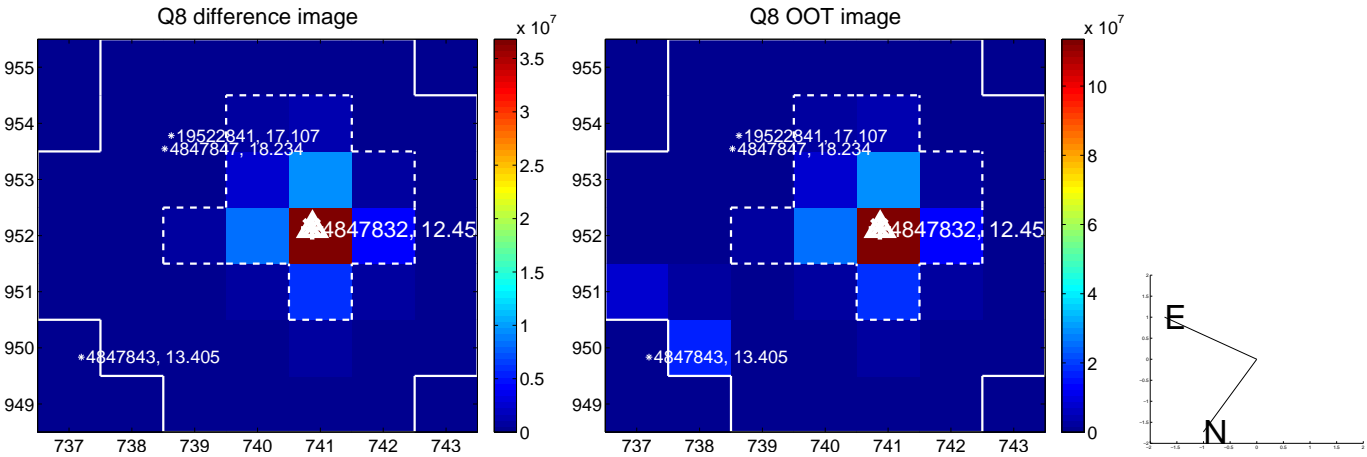
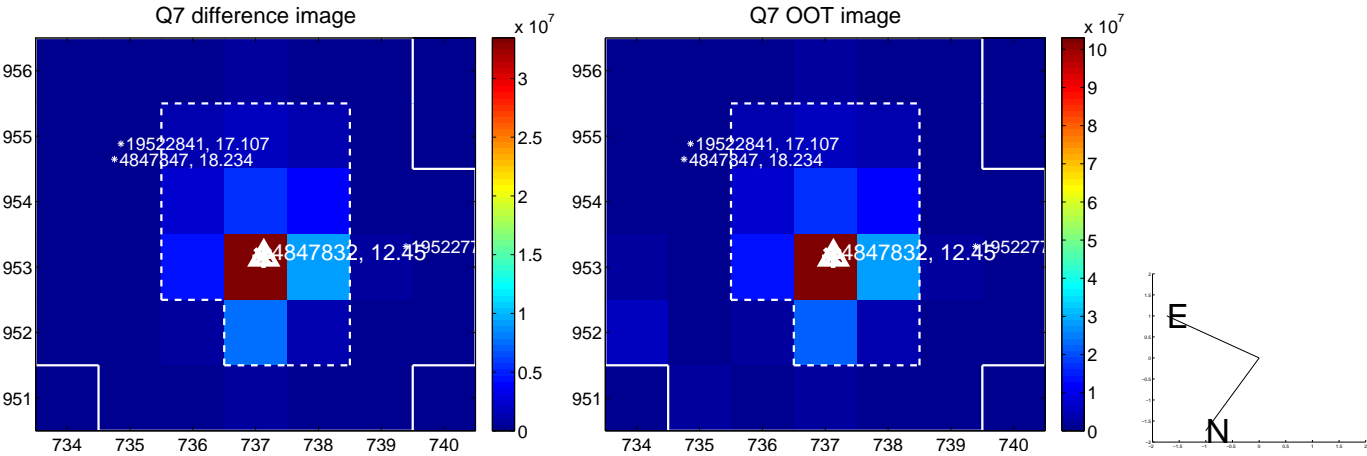
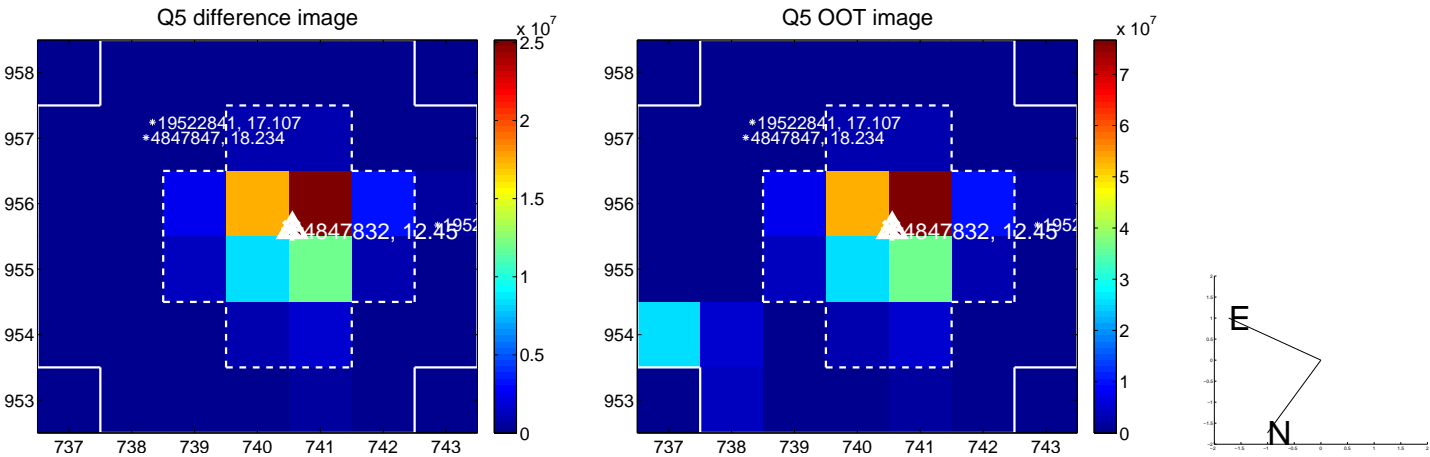


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

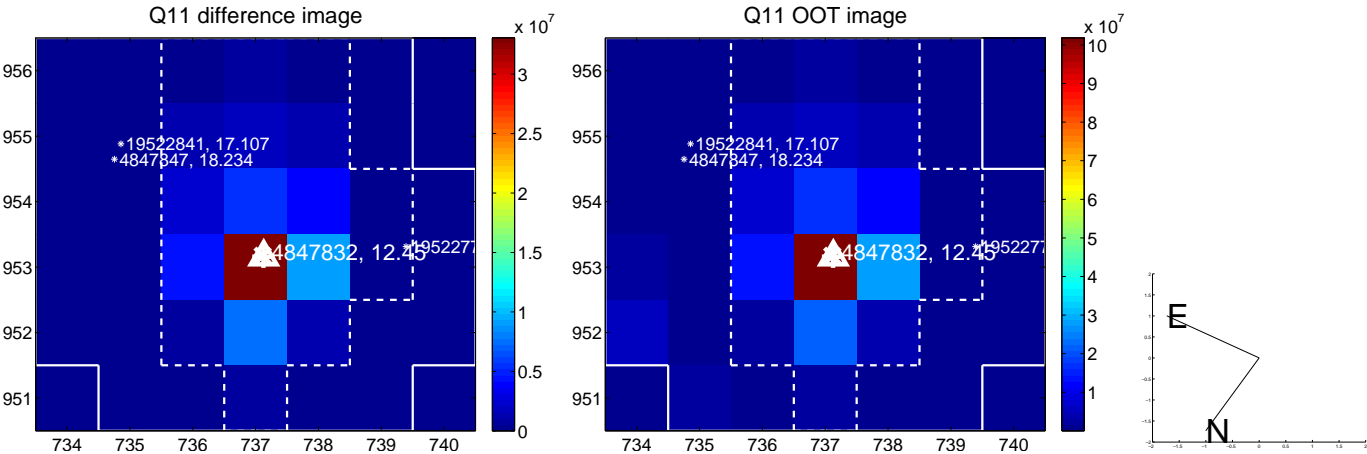
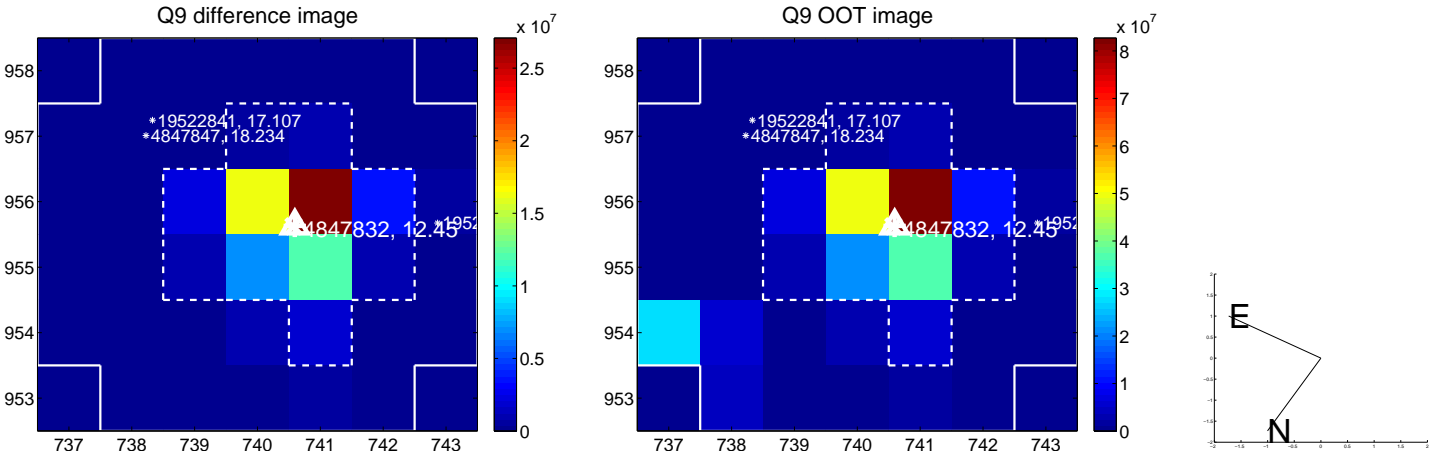


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

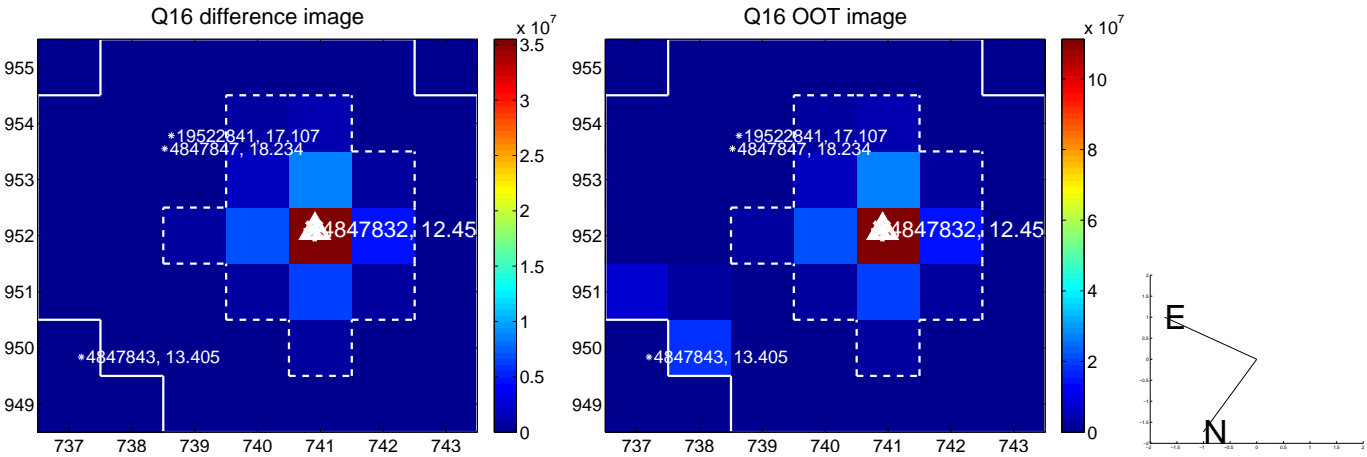
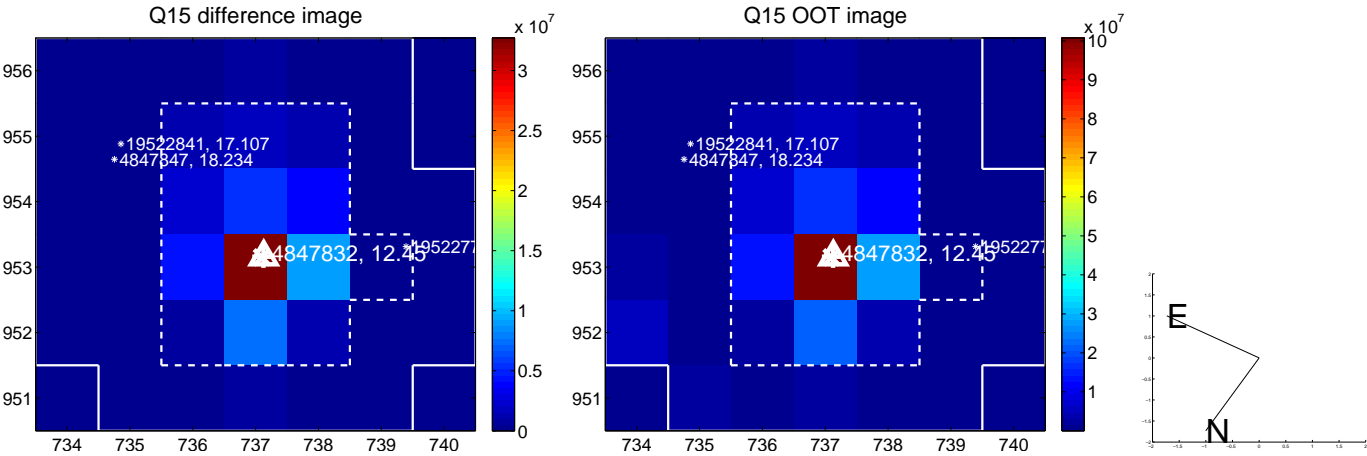
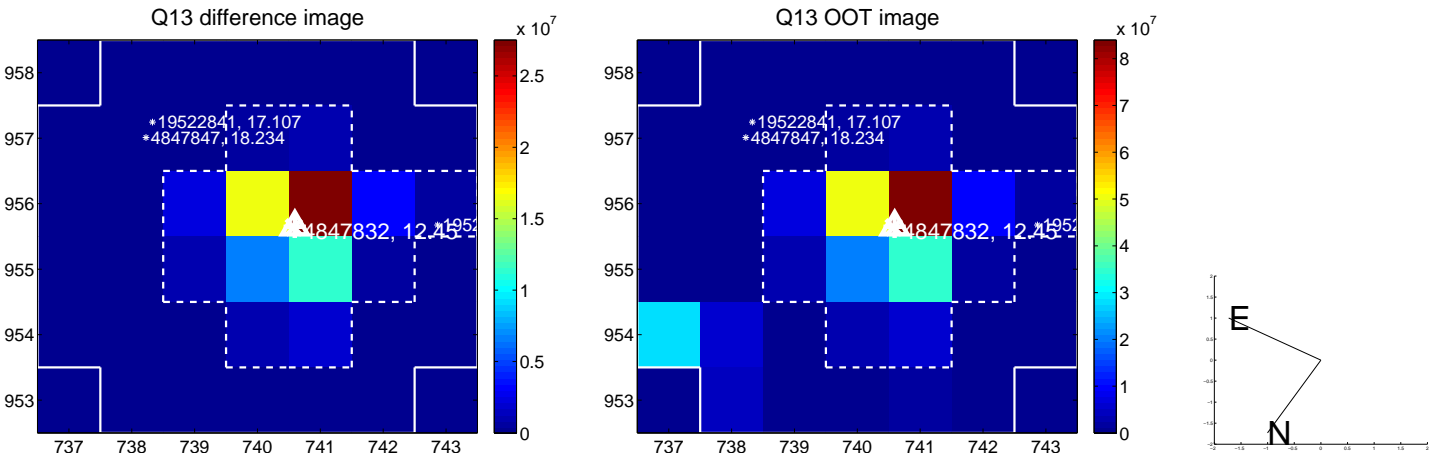




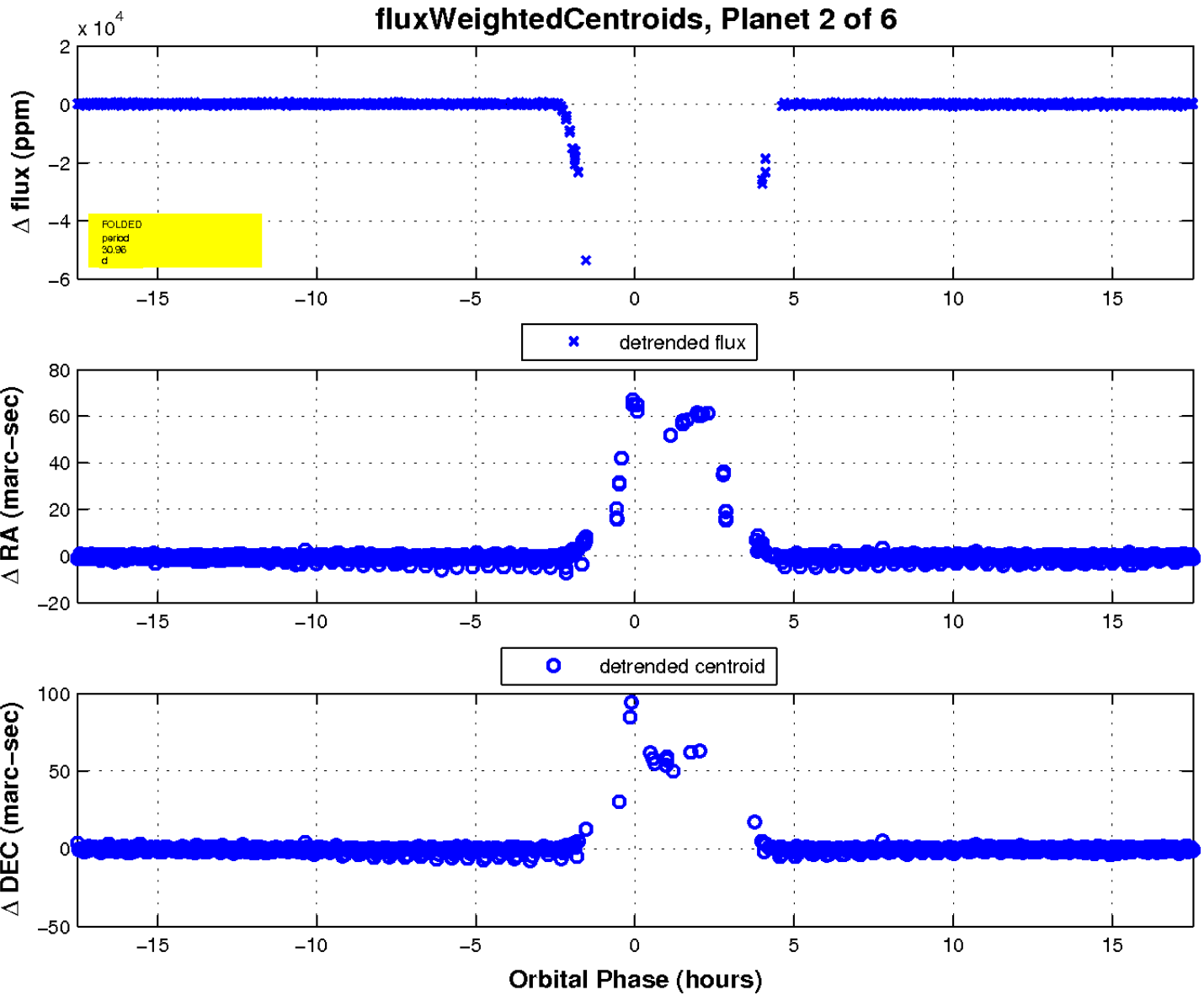
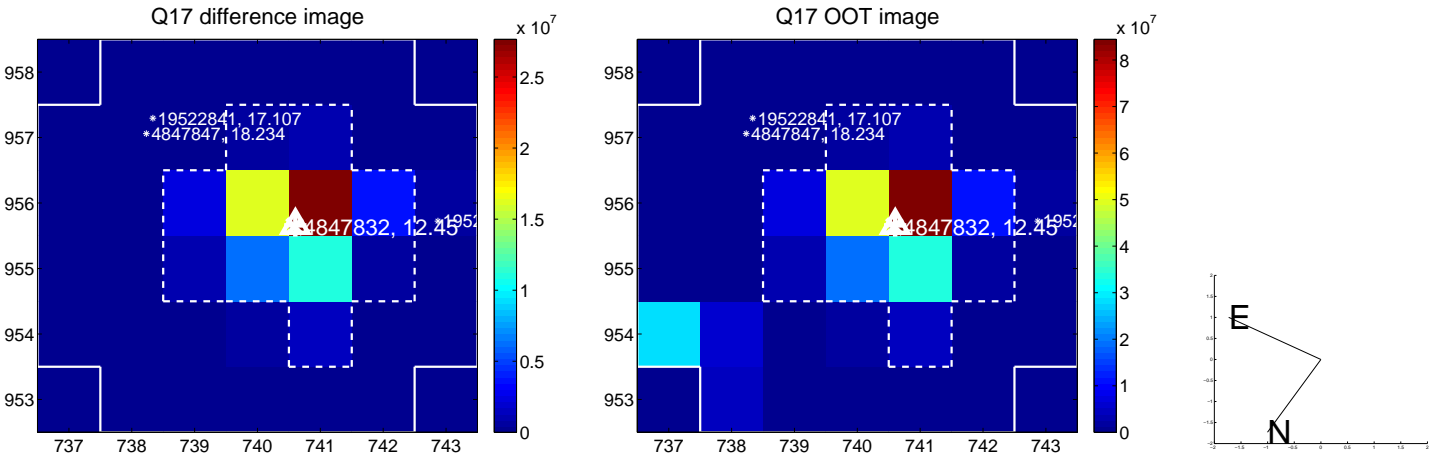
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



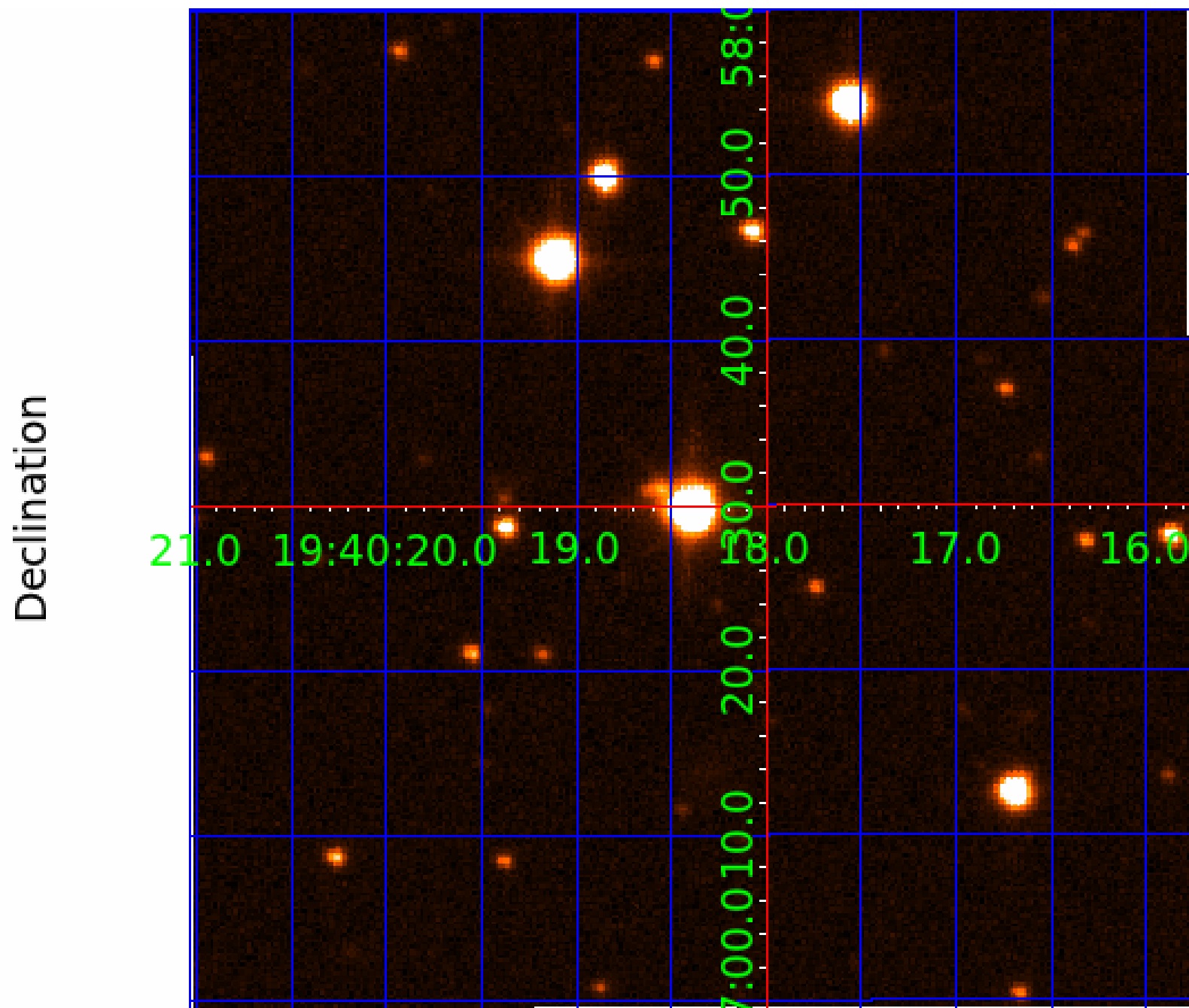
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 004847832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004847832-01	OBS	6459.01	30.960463	156.150462	345106.1	9.000	42138.4	-1.0	0.93	5291	44.68	18.32
004847832-02	OBS	No	30.960315	139.432404	393288.9	3.500	36936.7	-1.0	0.93	5291	50.52	18.32
004847832-03	OBS	No	7.739982	139.200824	21547.3	15.000	2213.4	-1.0	0.93	5291	13.28	116.36
004847832-04	OBS	No	30.959678	158.285769	3486.2	15.000	606.0	-1.0	0.93	5291	5.34	18.33
004847832-05	OBS	No	30.956537	151.837184	4006.4	69.085	156.8	171.5	0.93	5291	11.15	18.33
004847832-06	OBS	No	82.271289	157.223223	4839.8	7.500	192.6	-1.0	0.93	5291	6.29	4.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004847832-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
004847832-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
004847832-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
004847832-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
004847832-05	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
004847832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

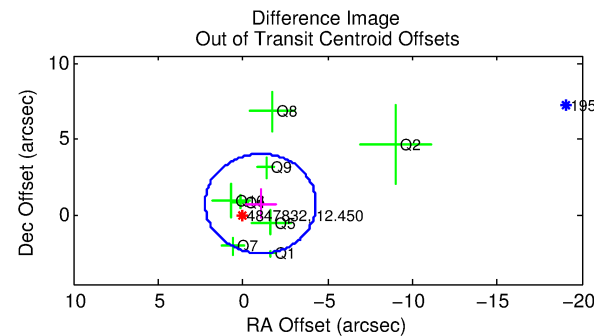
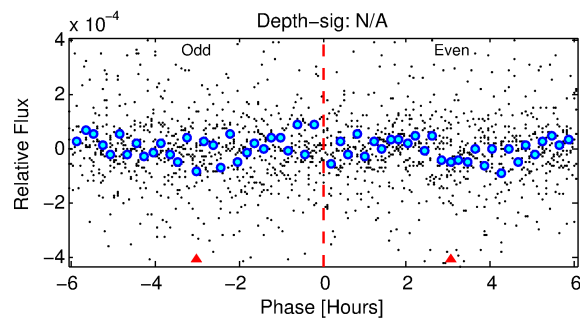
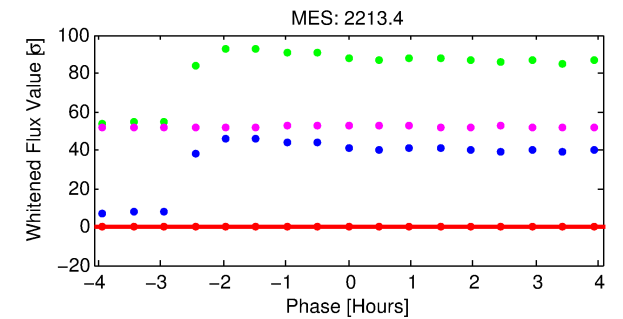
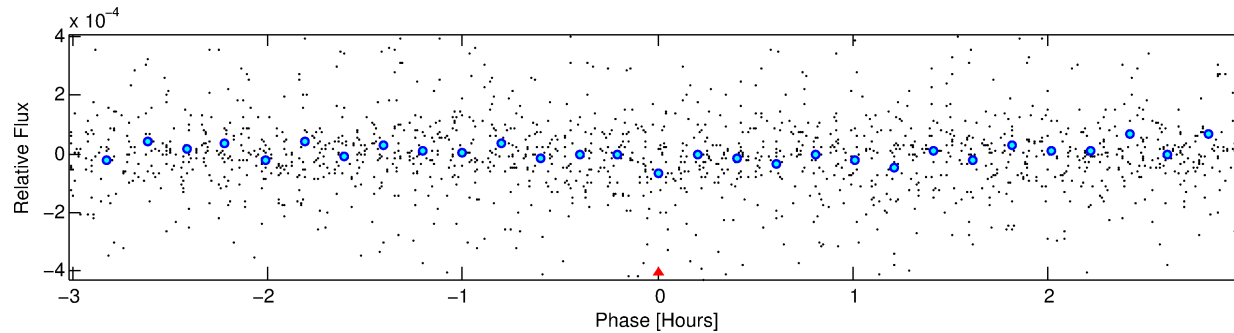
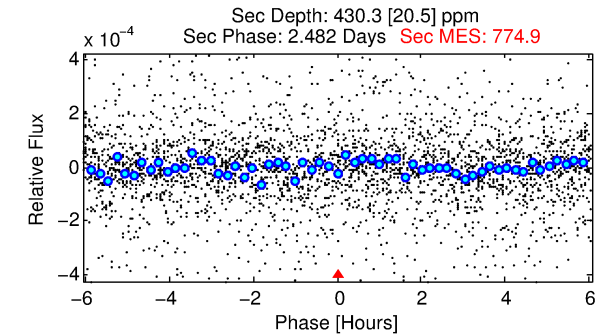
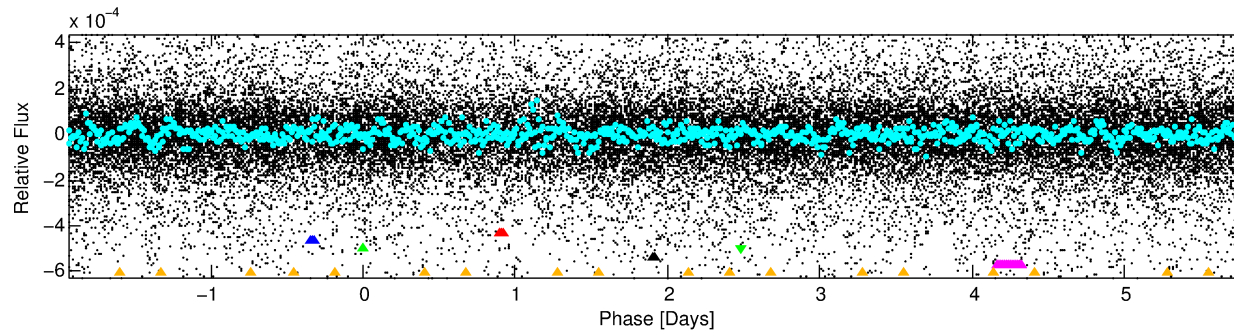
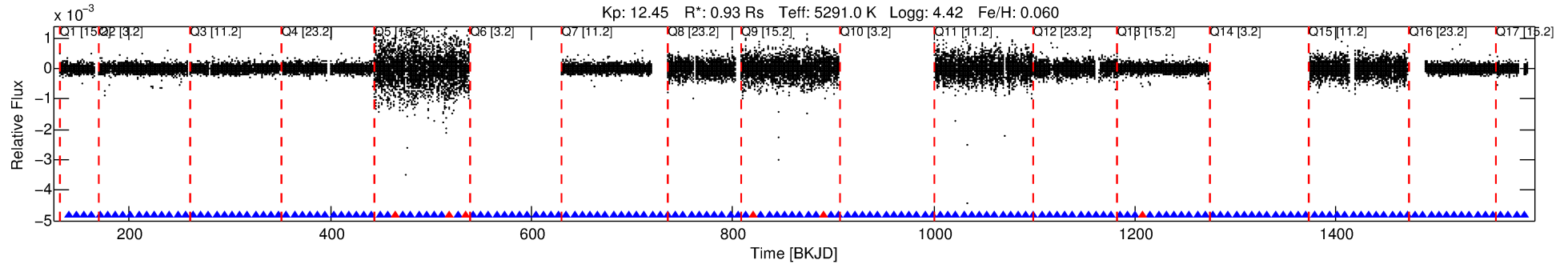
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004847832-03

No Significant Match Found

# DV One-Page Summary

KIC: 4847832 Candidate: 3 of 6 Period: 7.740 d  
KOI: K06459 Corr: No Ephemeris Match



TPS TCE Results:

Period = 7.73998 d  
Epoch = 139.2008 BKJD

DV fit results are unavailable

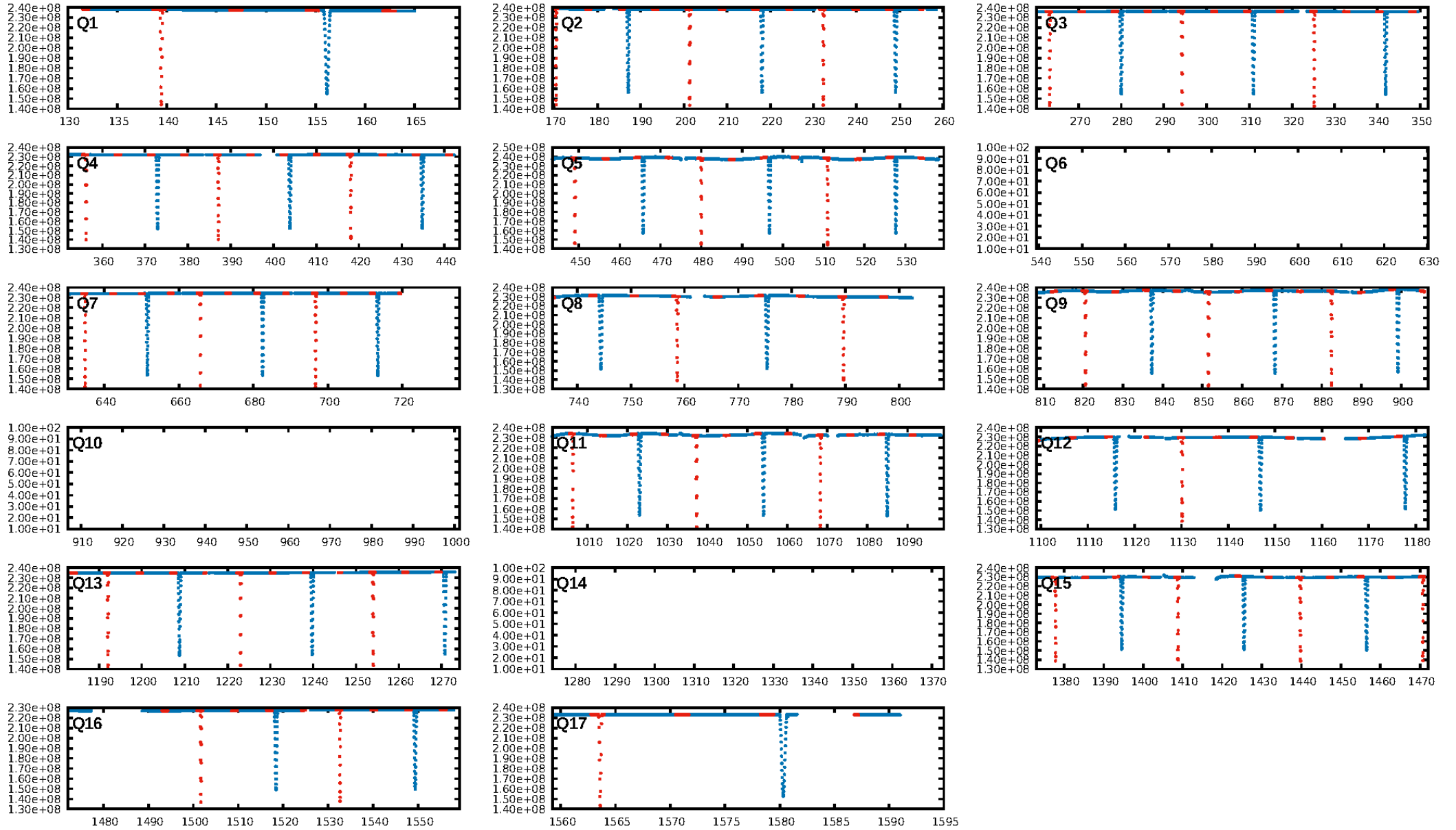
DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [7.88σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.95 [126/132]  
GhostDiagnostic-chr: 9.113  
Centroid-sig: N/A  
Centroid-so: 14.254 arcsec [2.05σ]  
OotOffset-rm: 1.305 arcsec [1.20σ]  
KicOffset-rm: 1.319 arcsec [1.22σ]  
OotOffset-st: 1/1/3/3 [8]  
KicOffset-st: 1/1/3/3 [8]  
DiffImageQuality-fgm: 0.12 [1/8]  
DiffImageOverlap-fno: 1.00 [14/14]

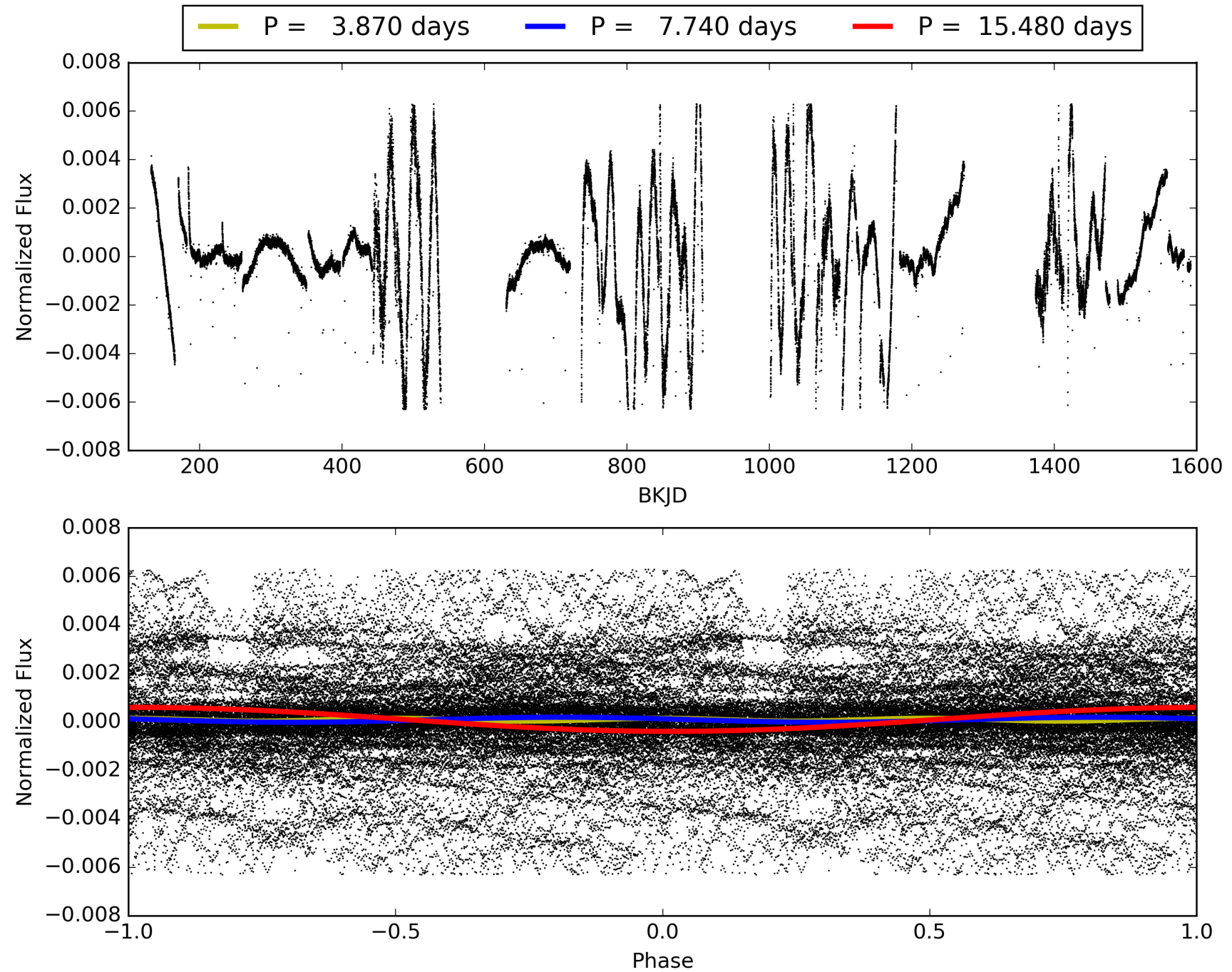
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:27:54 Z

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

# TCE 004847832-03, PDC Light Curves



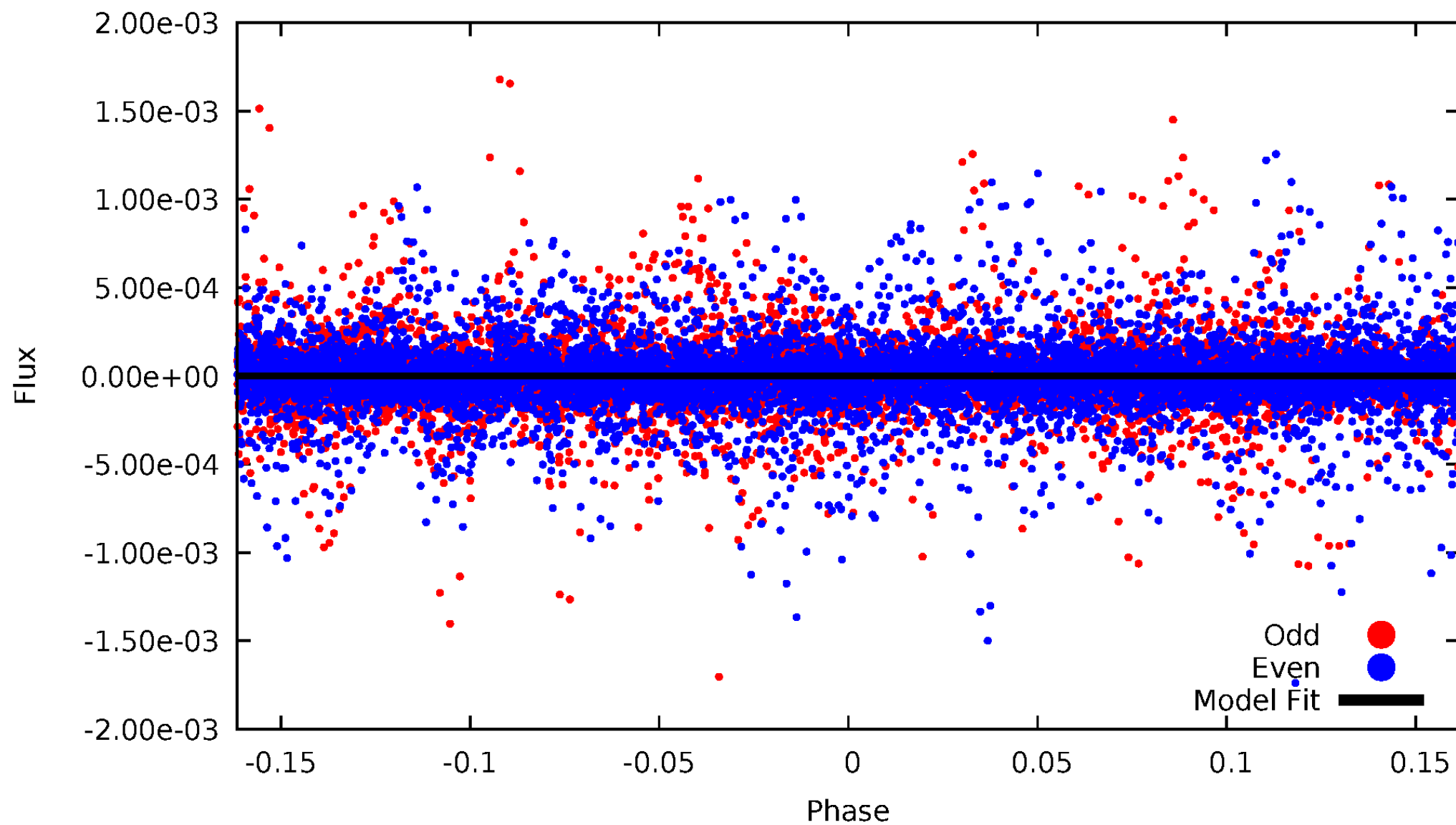
TCE 004847832-03





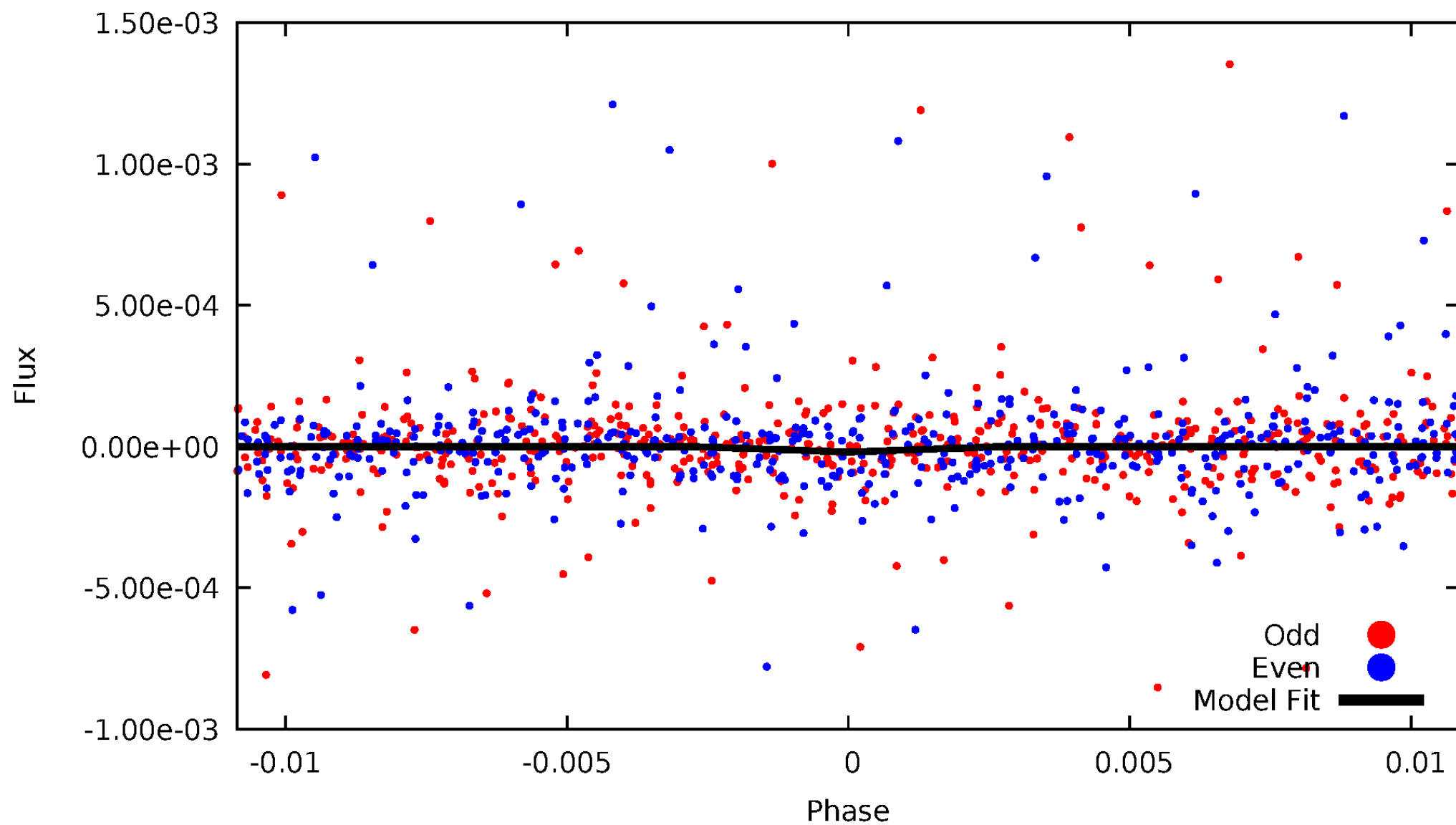
# DV Odd/Even

TCE 004847832-03

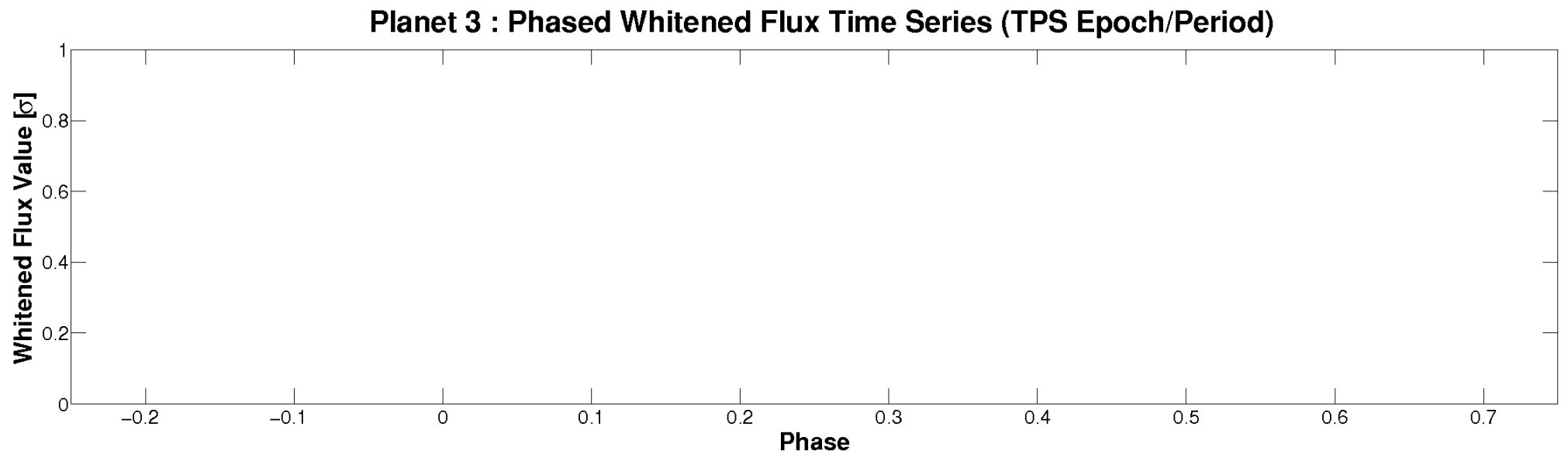
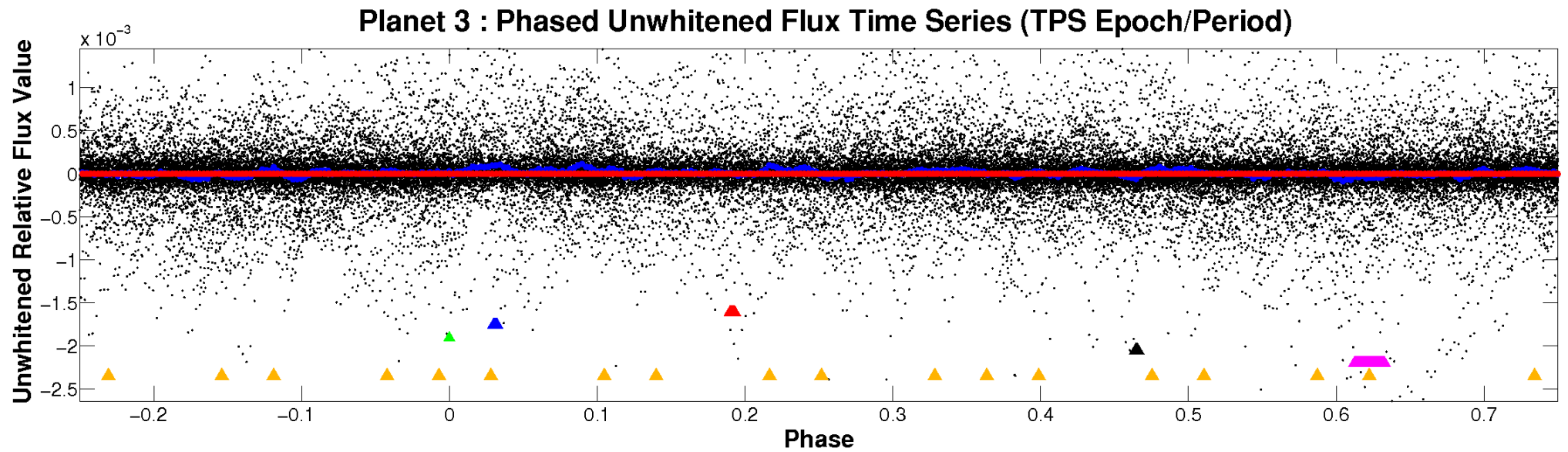


# ALT Odd/Even

TCE 004847832-03

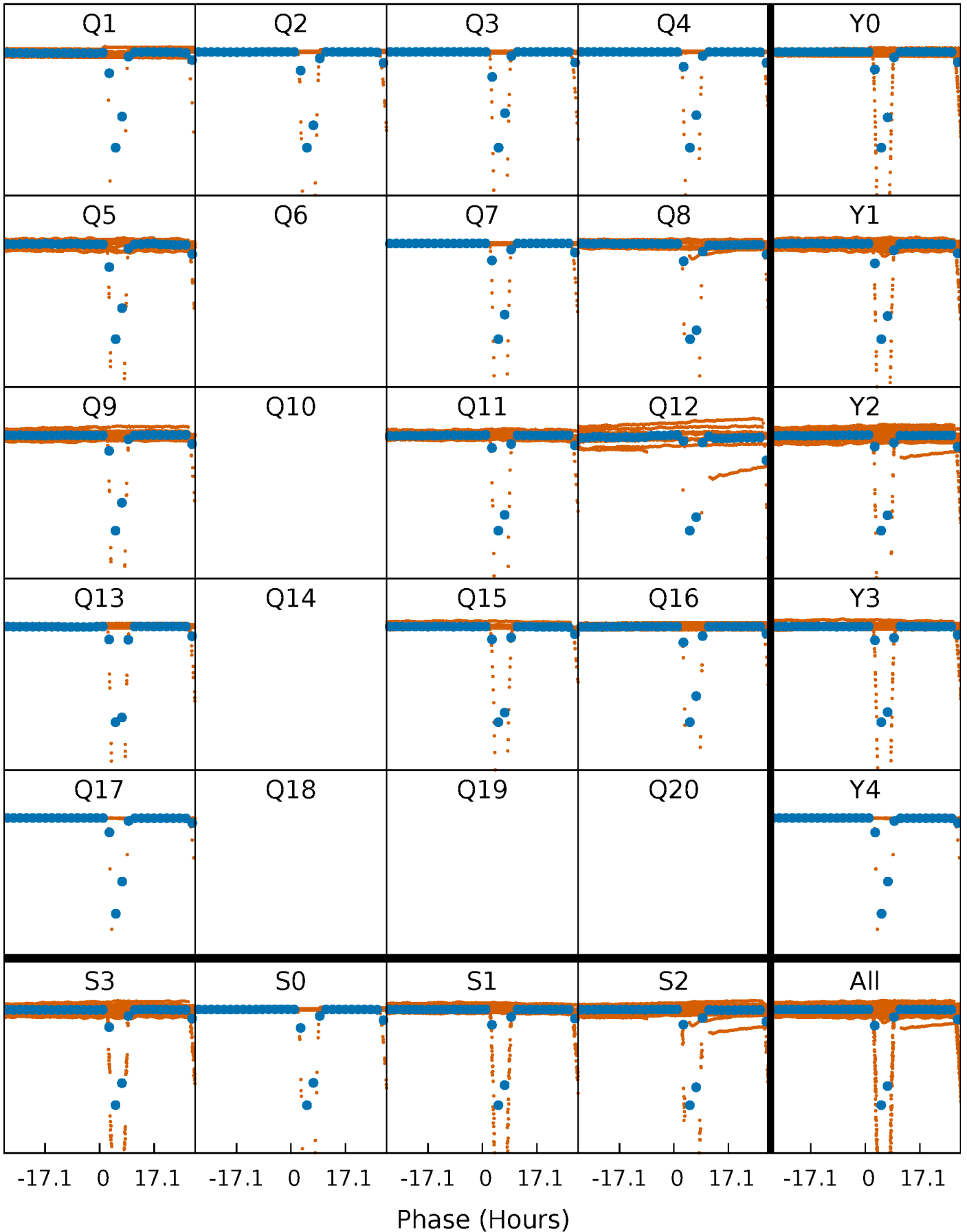


# Non-Whitened Vs. Whitened Light Curve



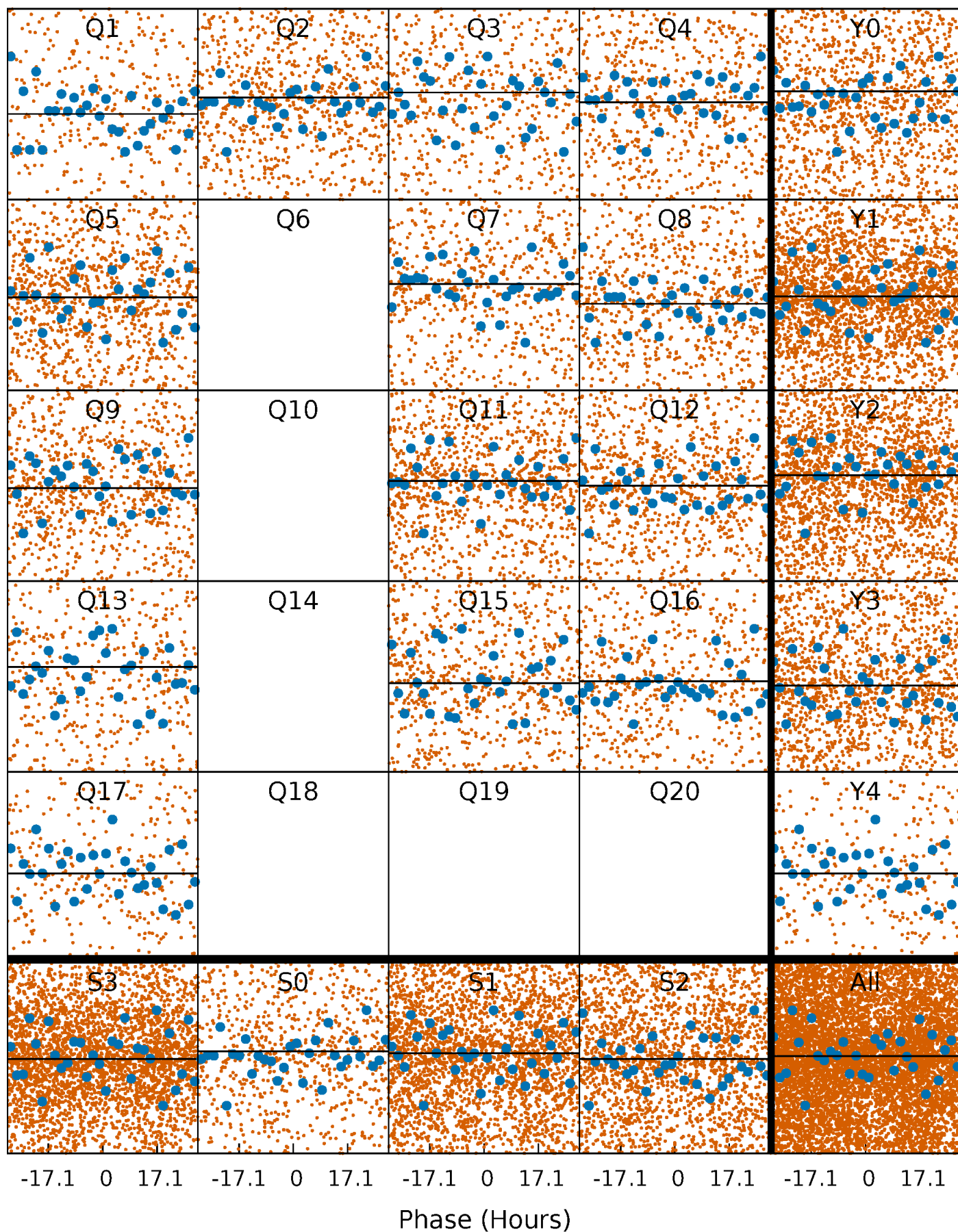
# PDC Quarter-Phased Transit Curves

TCE 004847832-03   P= 7.739982 Days    $T_0=139.200824$  (BKJD)



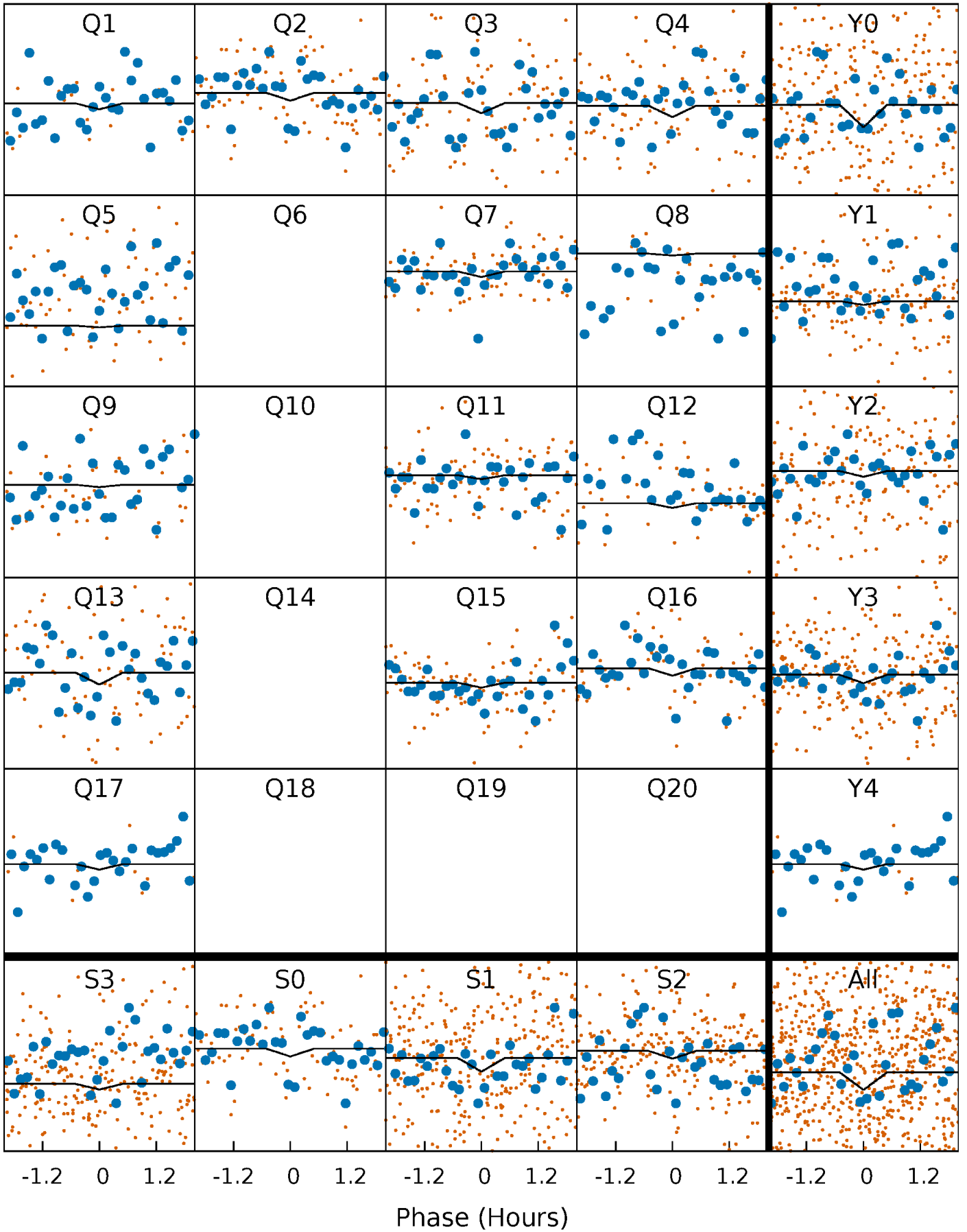
# DV Quarter-Phased Transit Curves

TCE 004847832-03     $P = 7.739982$  Days     $T_0 = 139.200824$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

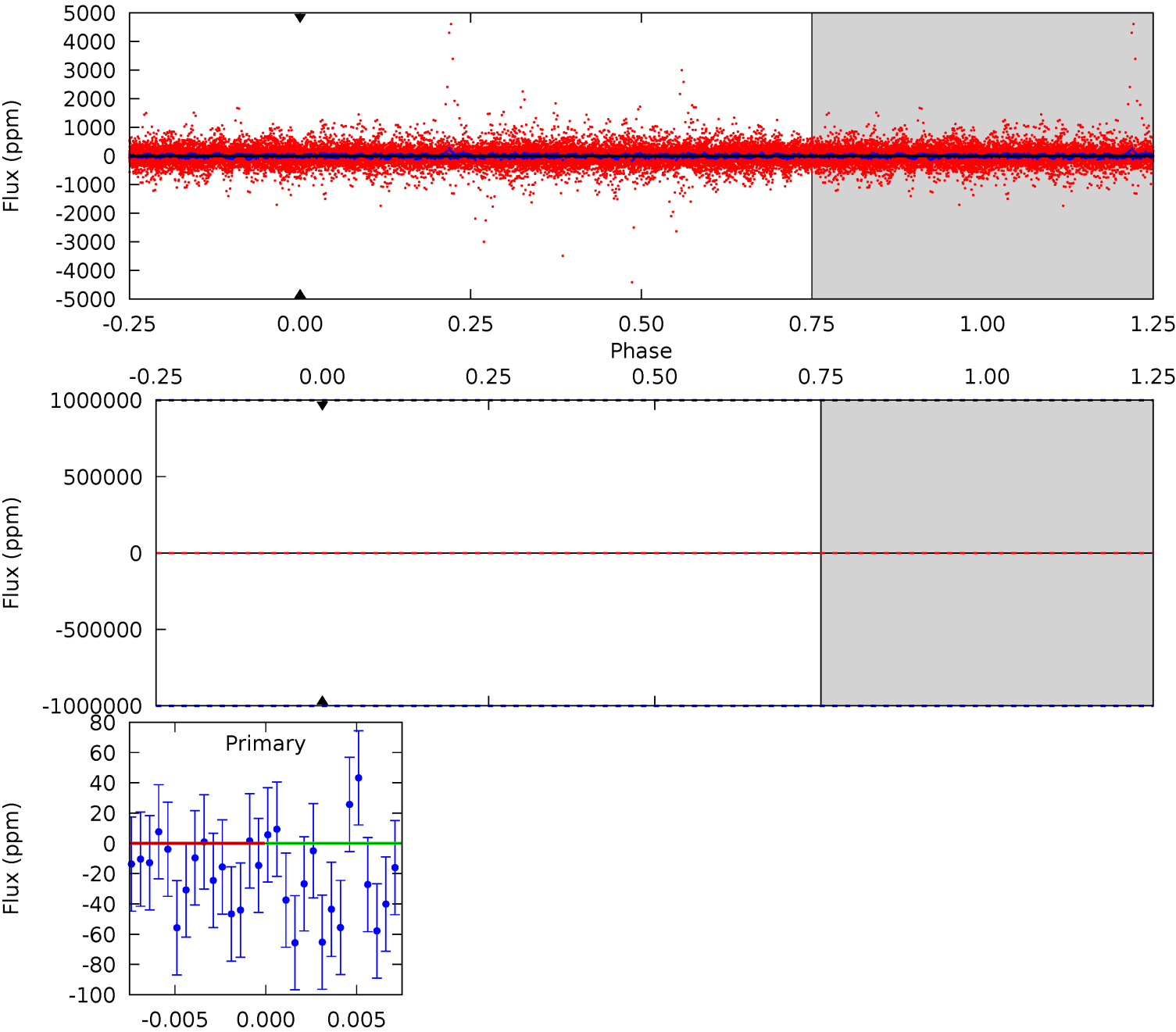
TCE 004847832-03     $P = 7.739982$  Days     $T_0 = 139.771849$  (BKJD)



DV Model-Shift Uniqueness Test

004847832-03, P = 7.739982 Days, E = 131.460842 Days

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

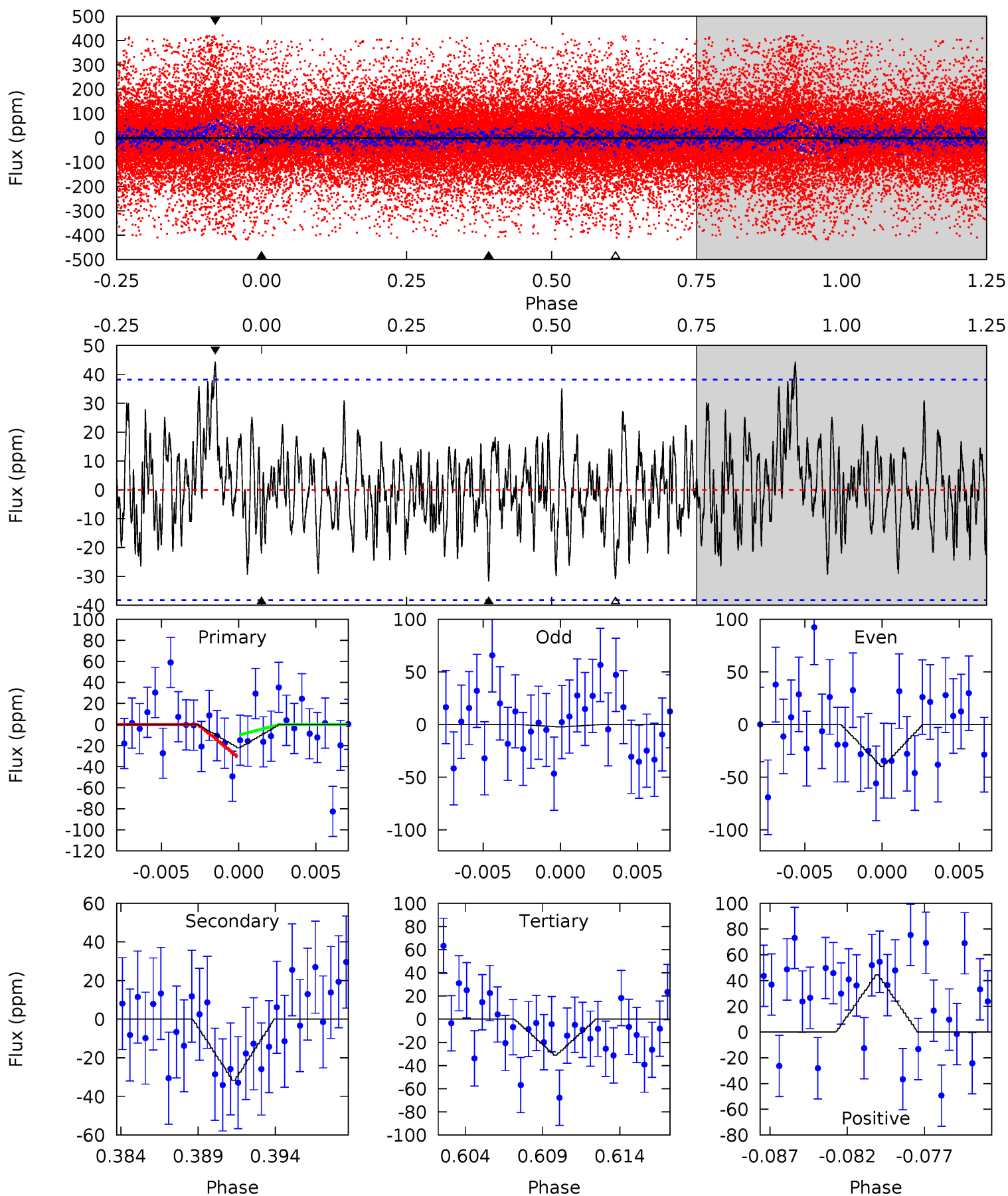




# Alt Model-Shift Uniqueness Test

004847832-03, P = 7.739982 Days, E = 124.291885 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.97	4.28	4.18	5.98	5.15	2.80	1.62	-1.22	-3.02	0.10	-1.70	2.56	0.87	0.58	1.43





### Stellar Parameters For KIC 004847832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5291^{+211}_{-232}$	$4.423^{+0.136}_{-0.204}$	$0.060^{+0.250}_{-0.250}$	$0.926^{+0.274}_{-0.148}$	$0.828^{+0.103}_{-0.069}$	$1.467^{+0.893}_{-0.745}$
	+4%/-4%	+3%/-5%	+417%/-417%	+30%/-16%	+12%/-8%	+61%/-51%
Source	PHO1	FLK73	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 004847832-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$15.15^{+10.51}_{-8.60}$	$1179^{+106}_{-86}$	$-2043^{+11011}_{-6569}$	$0.010^{+1920.182}_{-1582.903}$
Alt.	$-32 \pm 7$	$7.50^{+8.32}_{-5.17}$	$1181^{+89}_{-82}$	$2285^{+917}_{-641}$	$1.558^{+14.652}_{-1.213}$

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

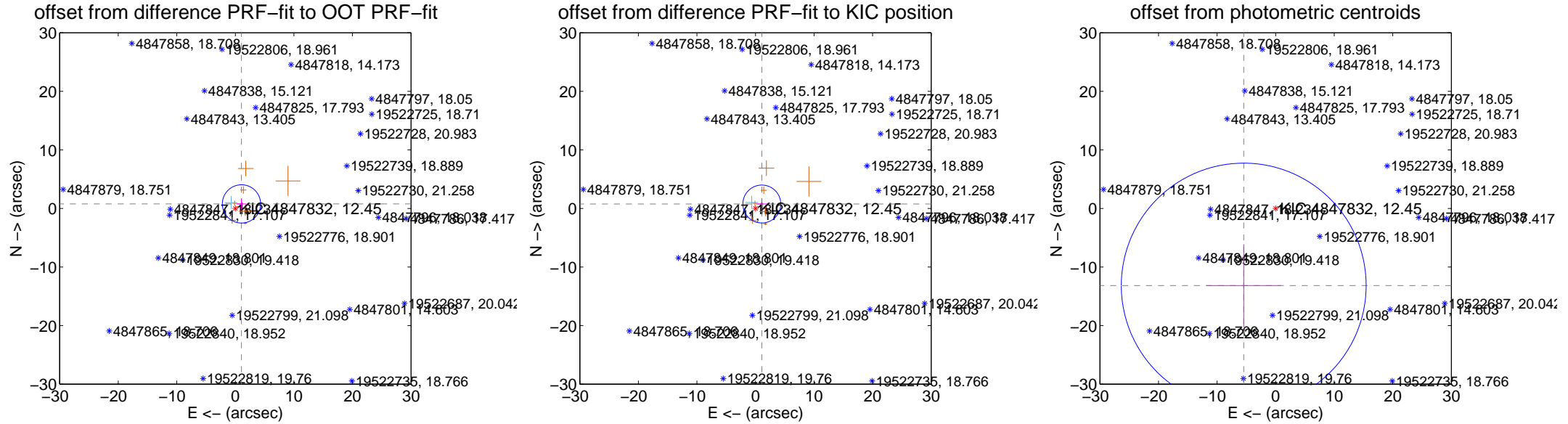
# DV Centroid Data

Supplemental centroid analysis for 004847832-03. Kepler magnitude: 12.45. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

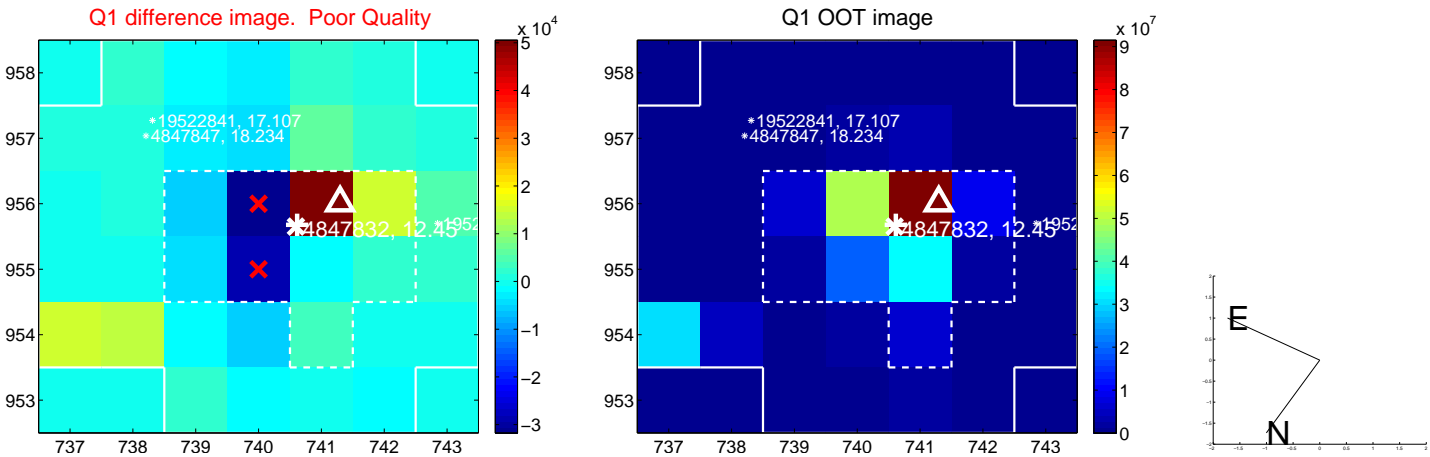
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.305 \pm 1.089$	1.20	$-1.050 \pm 0.863$	$0.775 \pm 0.957$
PRF-fit source offset from KIC position	$1.319 \pm 1.079$	1.22	$-1.081 \pm 0.944$	$0.755 \pm 0.978$
photometric centroid source offset	$14.25 \pm 6.97$	2.05	$5.45 \pm 6.40$	$-13.17 \pm 7.06$

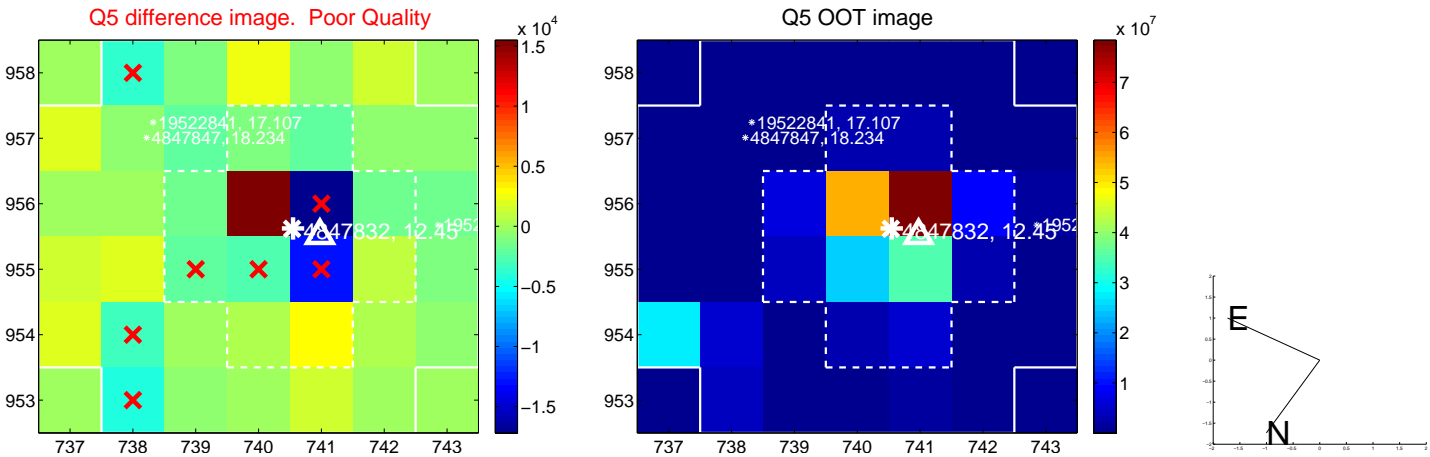


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

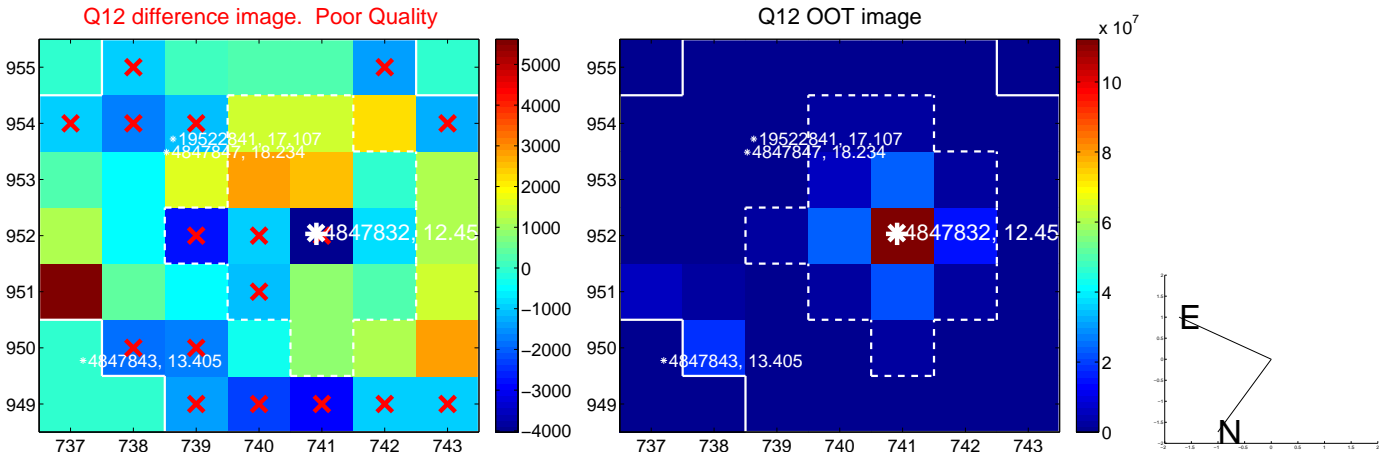
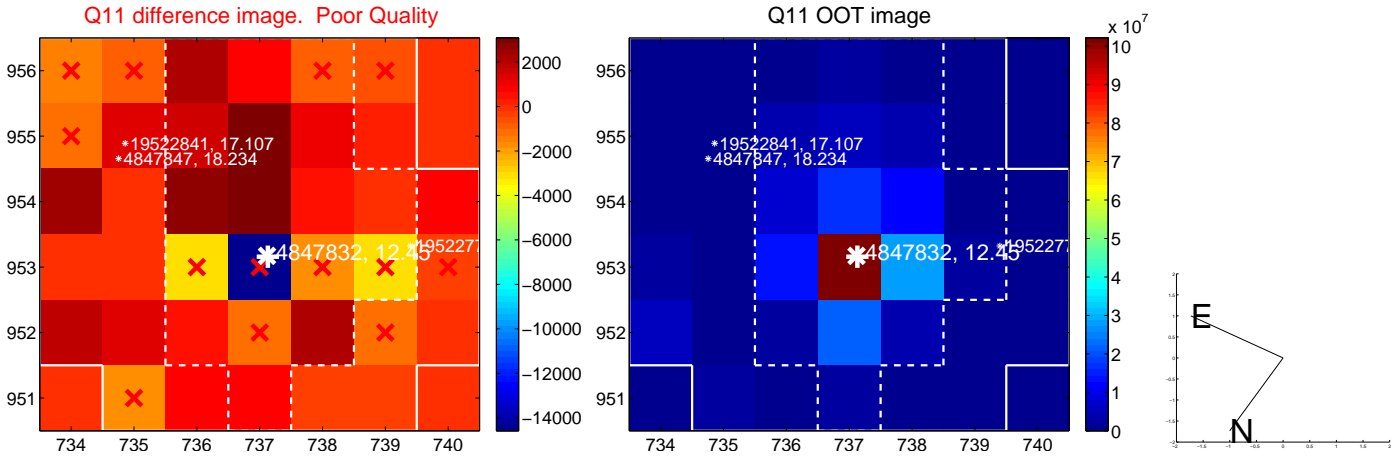
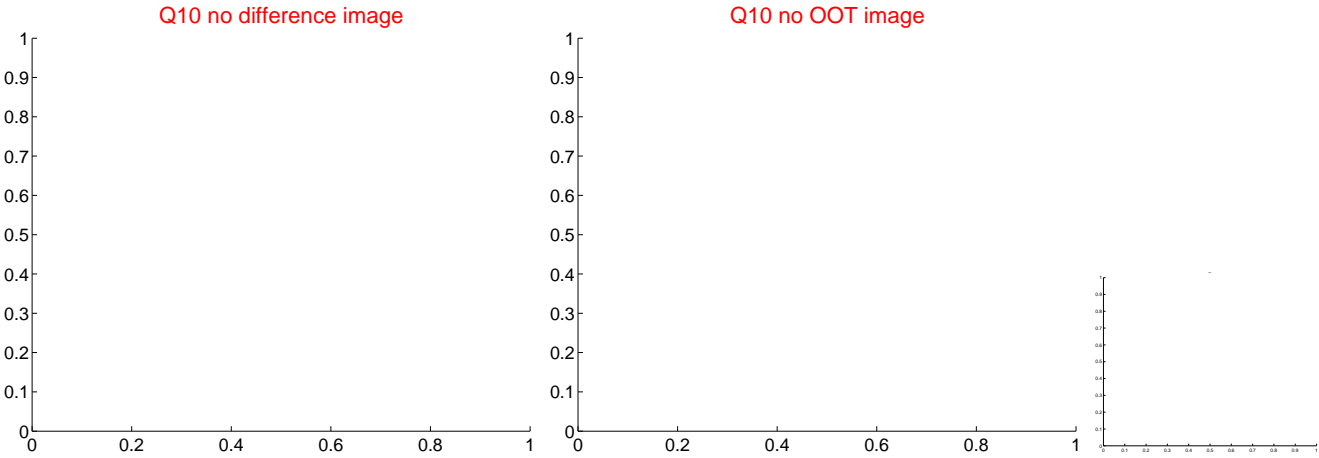
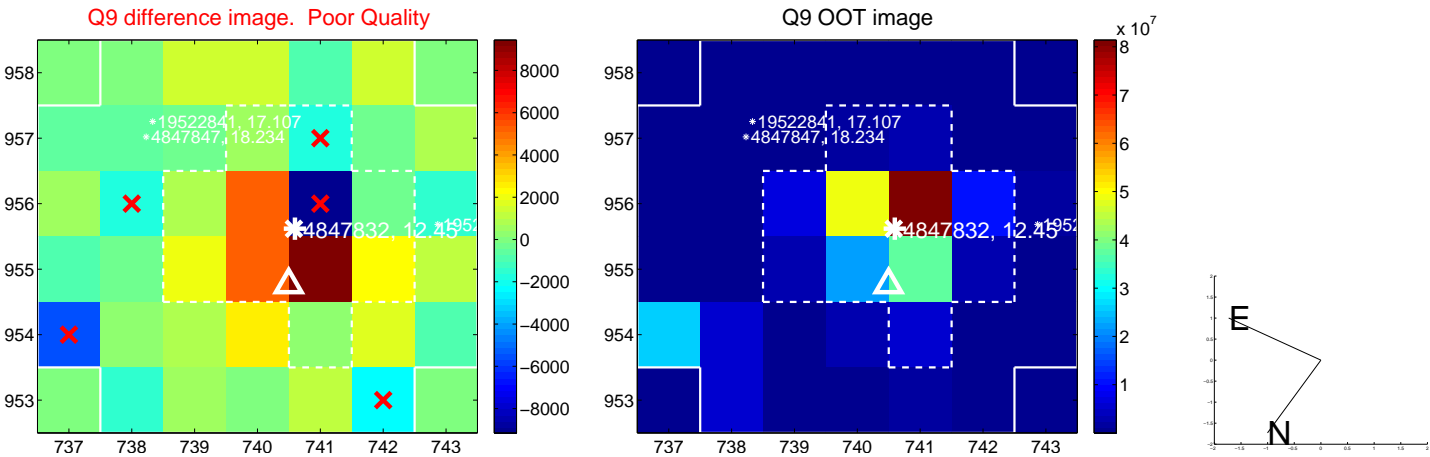
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



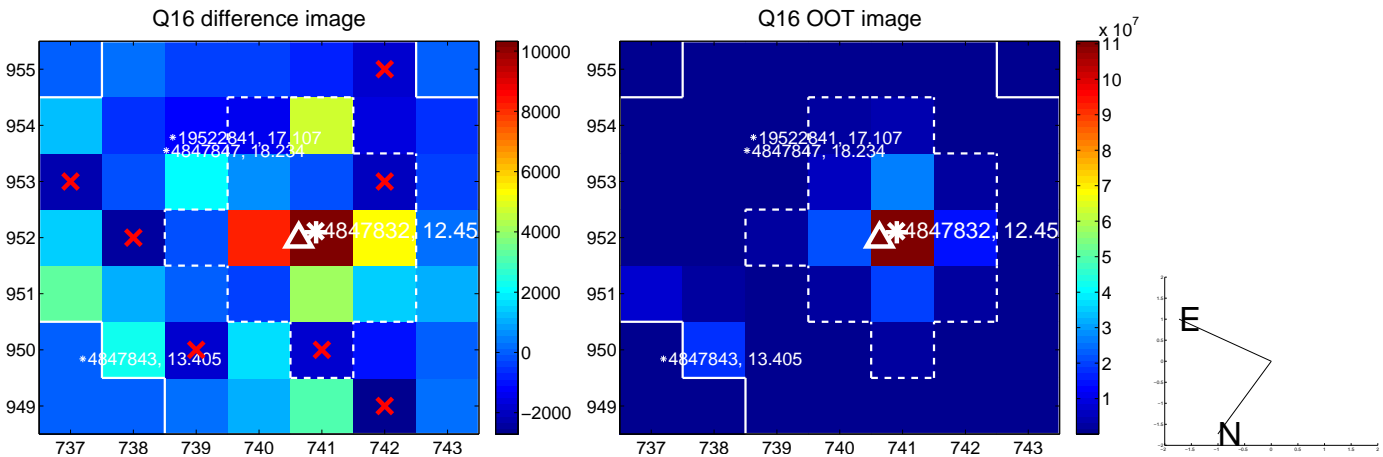
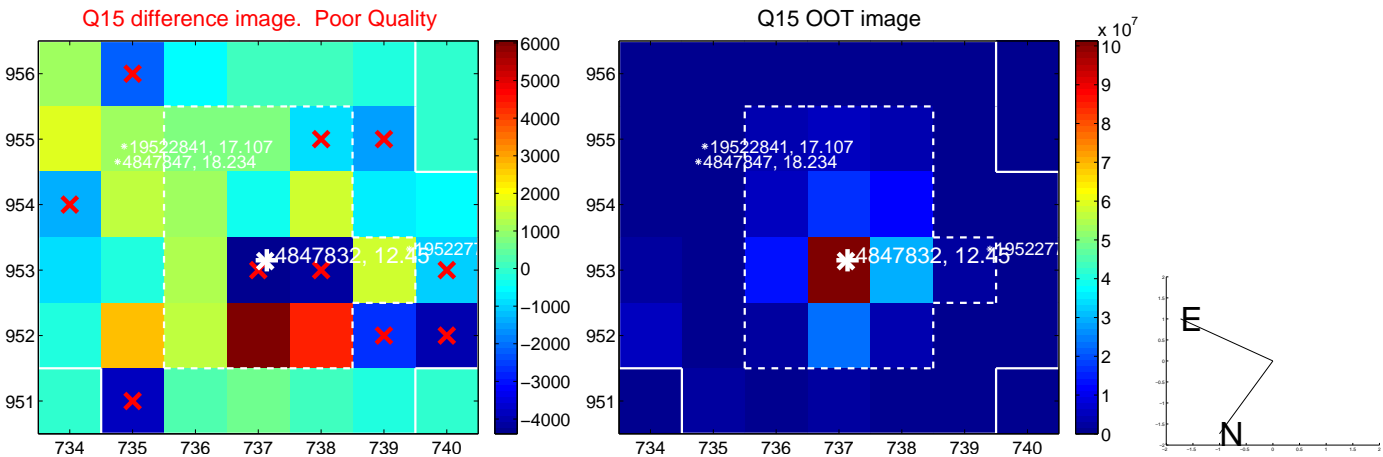
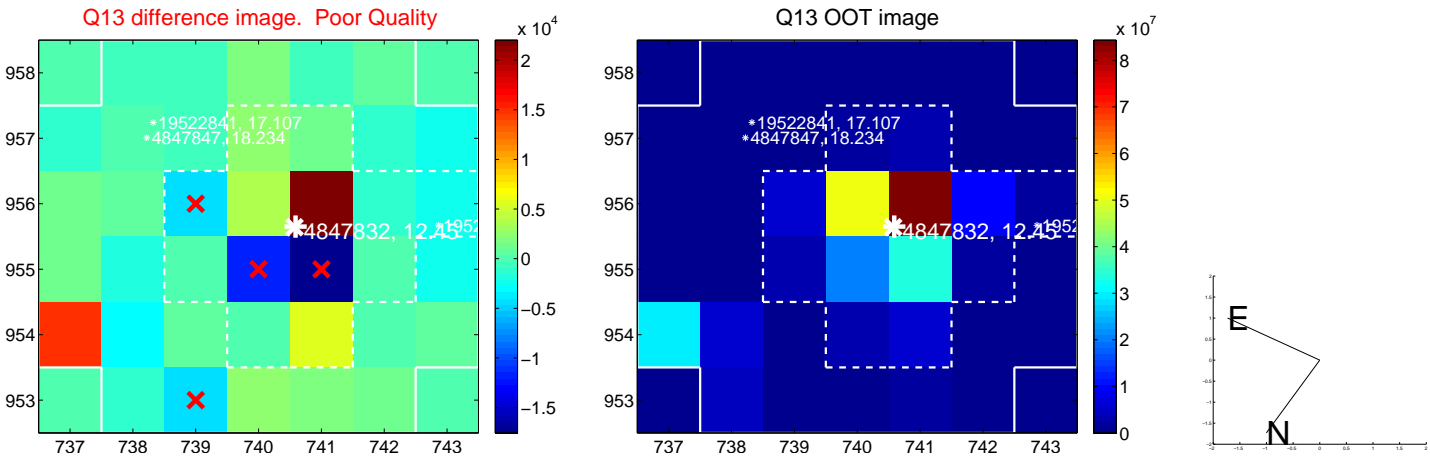
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



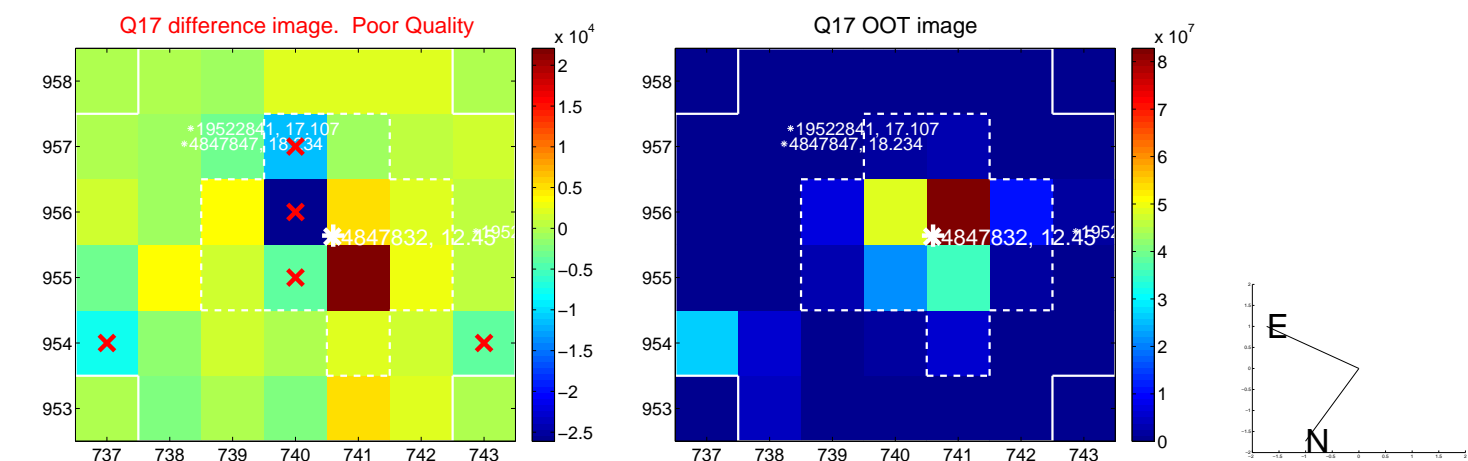
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



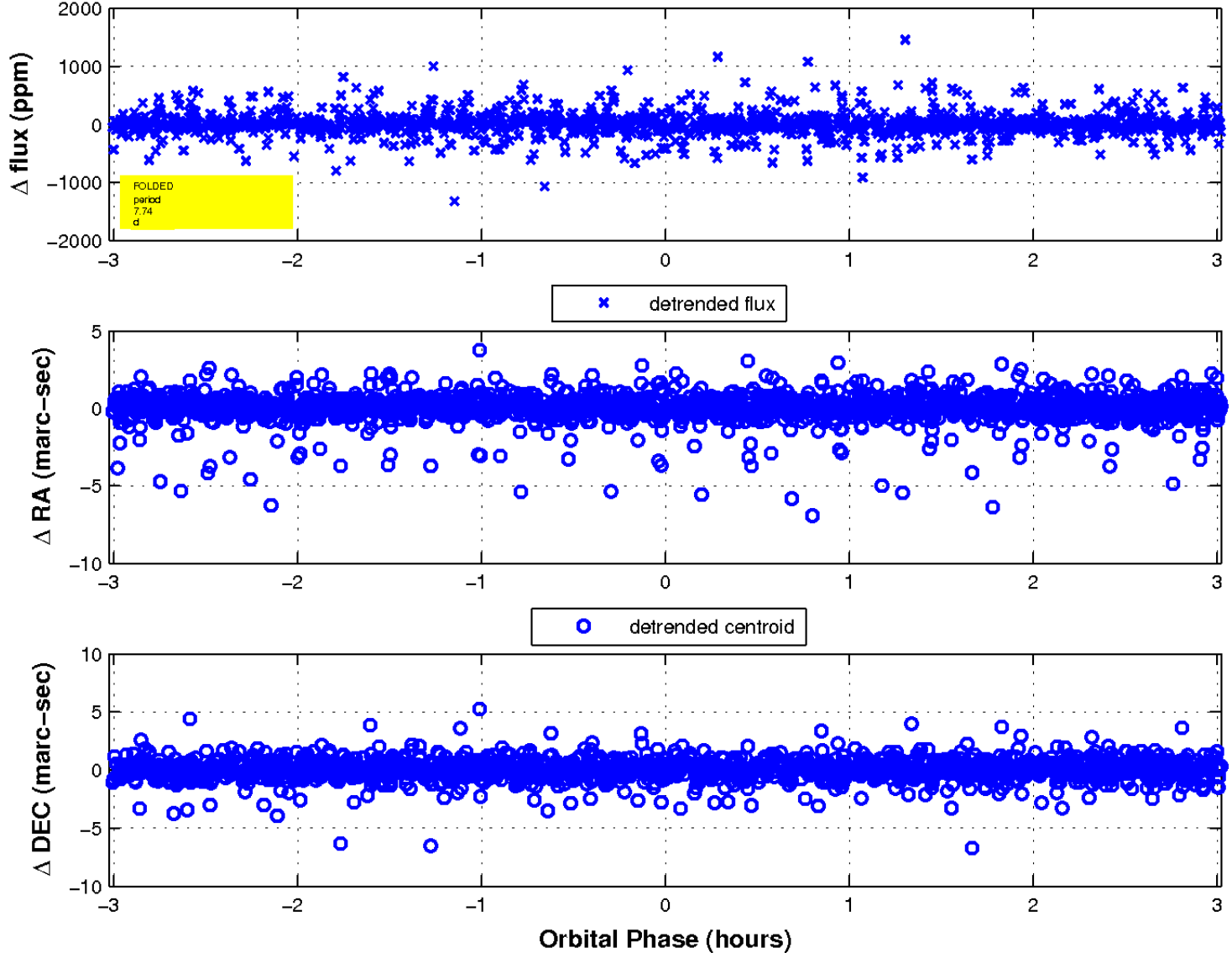
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



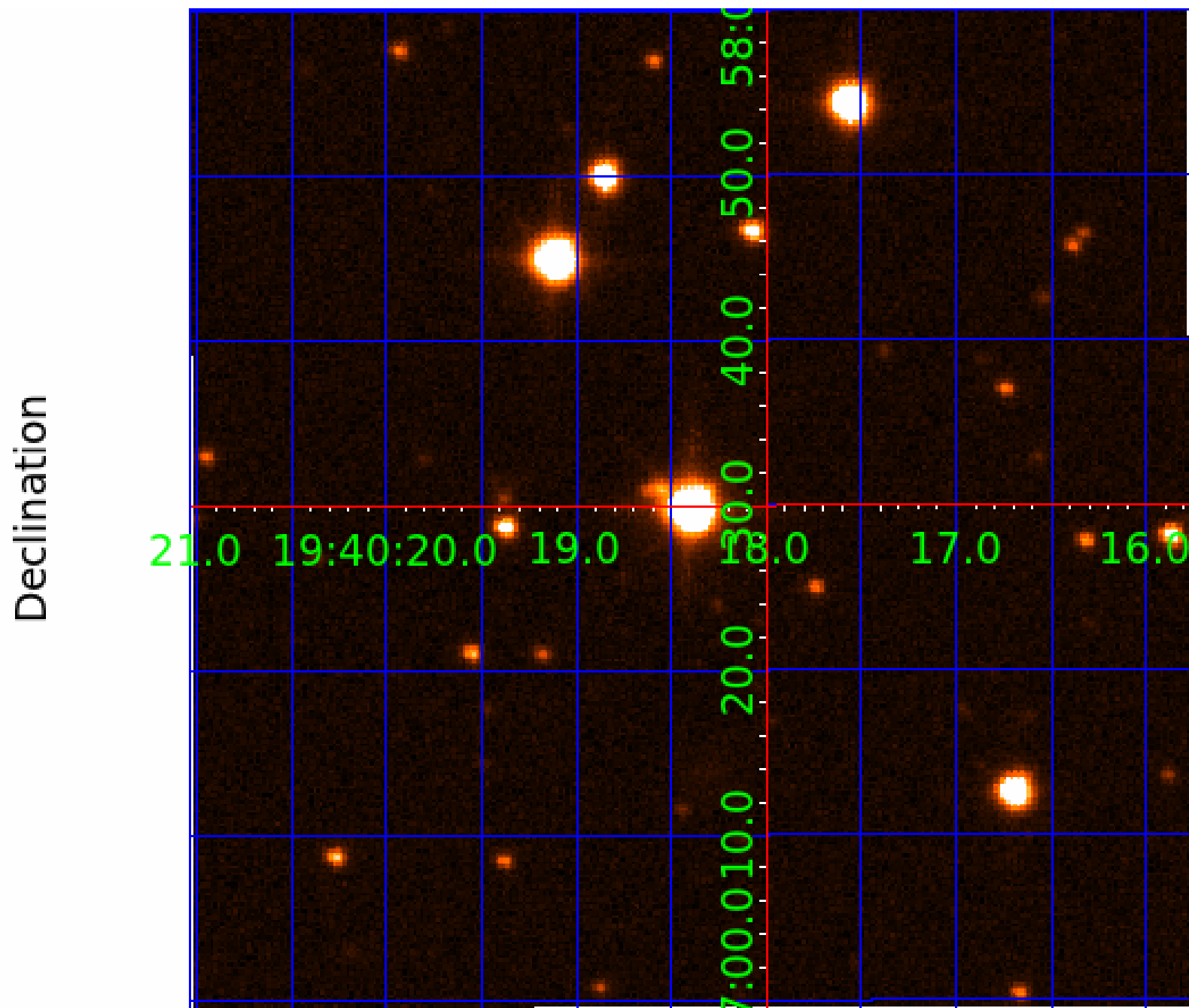
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 6



UKIRT Image





# KIC 004847832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004847832-01	OBS	6459.01	30.960463	156.150462	345106.1	9.000	42138.4	-1.0	0.93	5291	44.68	18.32
004847832-02	OBS	No	30.960315	139.432404	393288.9	3.500	36936.7	-1.0	0.93	5291	50.52	18.32
004847832-03	OBS	No	7.739982	139.200824	21547.3	15.000	2213.4	-1.0	0.93	5291	13.28	116.36
004847832-04	OBS	No	30.959678	158.285769	3486.2	15.000	606.0	-1.0	0.93	5291	5.34	18.33
004847832-05	OBS	No	30.956537	151.837184	4006.4	69.085	156.8	171.5	0.93	5291	11.15	18.33
004847832-06	OBS	No	82.271289	157.223223	4839.8	7.500	192.6	-1.0	0.93	5291	6.29	4.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004847832-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
004847832-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
004847832-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
004847832-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
004847832-05	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
004847832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

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

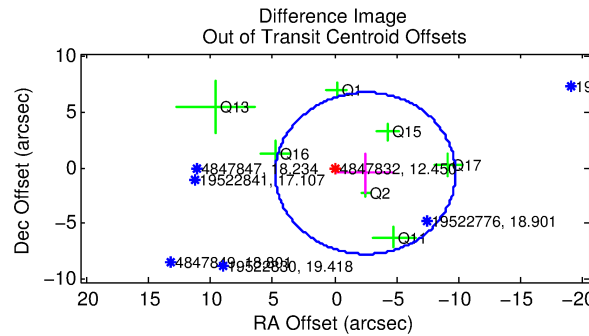
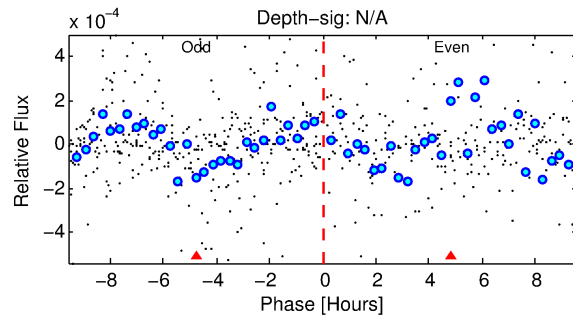
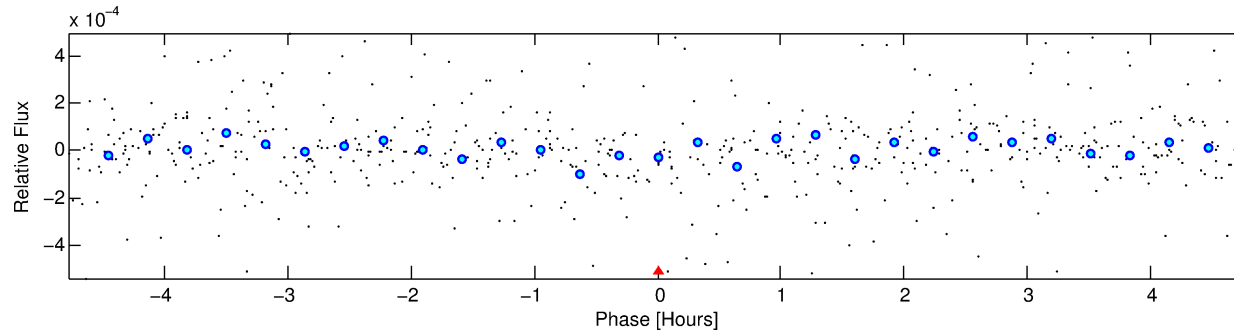
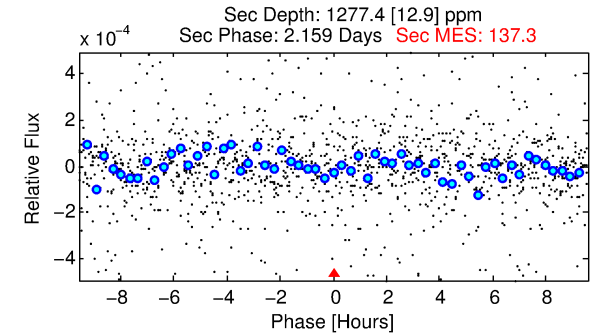
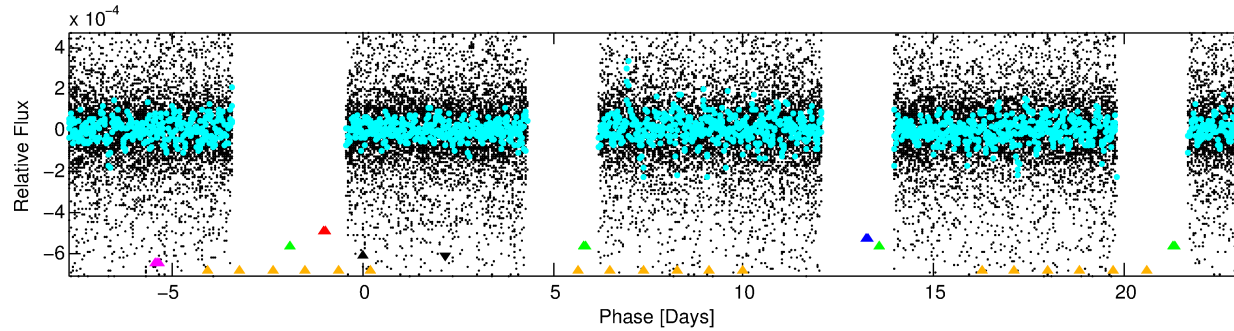
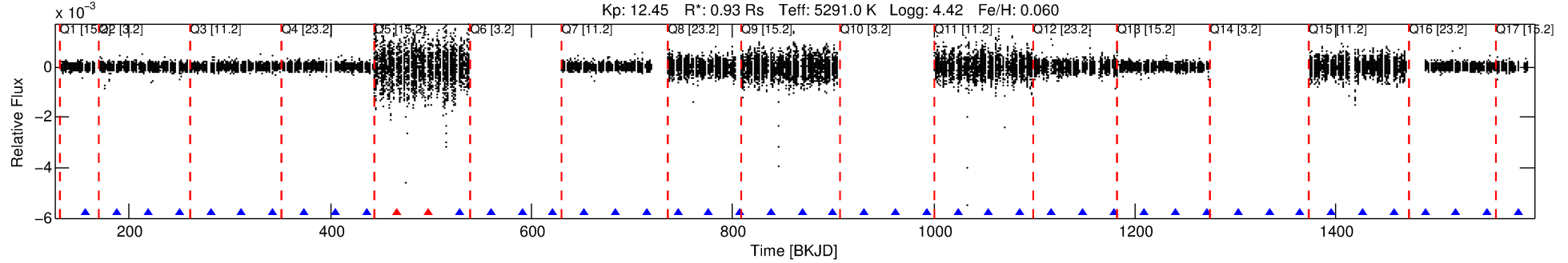
## Ephemeris Match Information For 004847832-04

No Significant Match Found

# DV One-Page Summary

KIC: 4847832 Candidate: 4 of 6 Period: 30.960 d  
KOI: K06459 Corr: No Ephemeris Match

Kp: 12.45 R\*: 0.93 Rs Teff: 5291.0 K Logg: 4.42 Fe/H: 0.060



TPS TCE Results:

Period = 30.95968 d  
Epoch = 158.2858 BKJD

DV fit results are unavailable

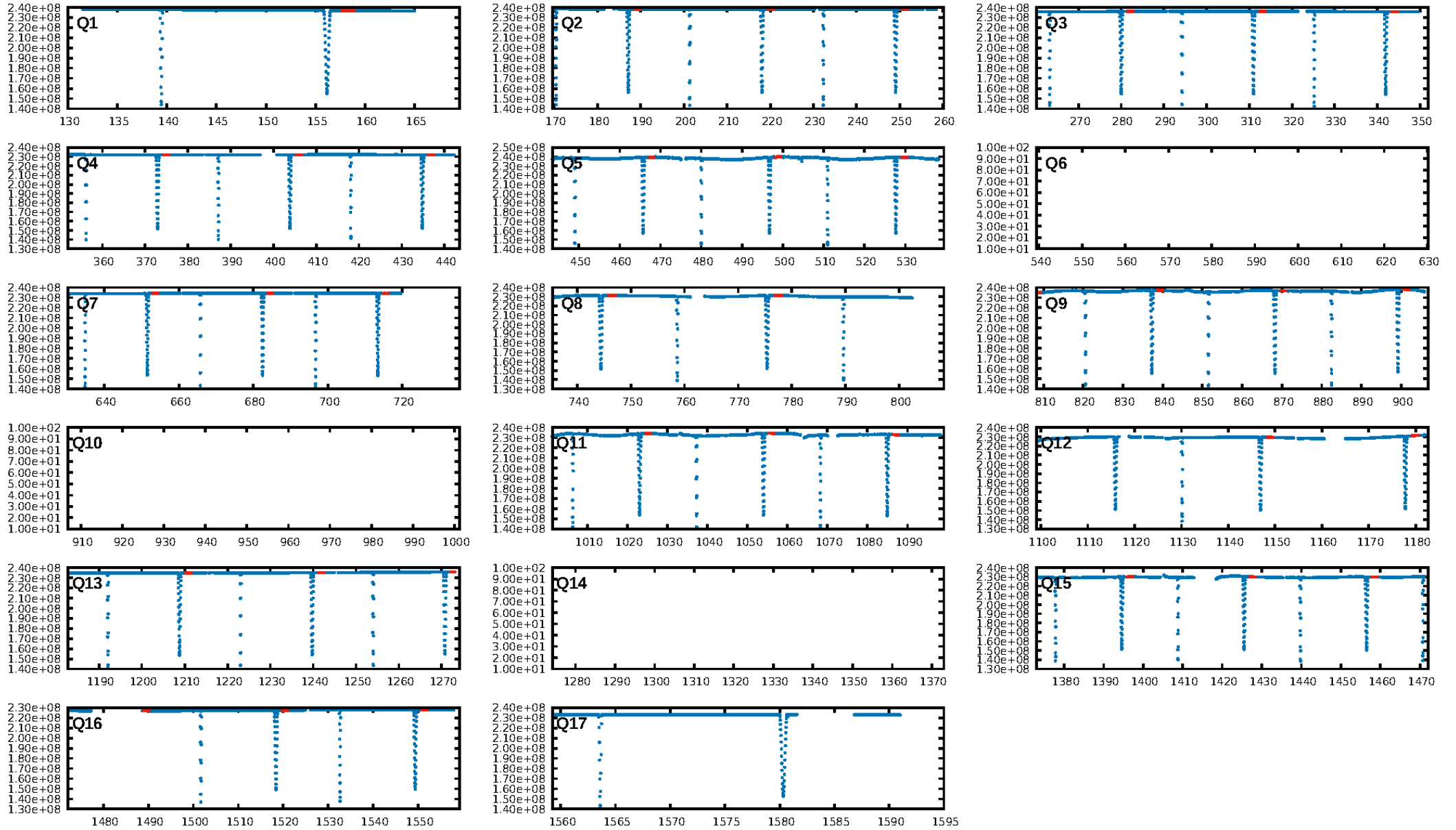
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.94 [29/31]  
GhostDiagnostic-chr: -15.57  
Centroid-sig: N/A  
Centroid-so: 15.737 arcsec [3.12σ]  
OotOffset-rm: 2.541 arcsec [1.05σ]  
KicOffset-rm: 2.654 arcsec [1.21σ]  
OotOffset-st: 1/2/1/3 [7]  
KicOffset-st: 1/2/1/3 [7]  
DiffImageQuality-fgm: 0.00 [0/7]  
DiffImageOverlap-fno: 0.93 [13/14]

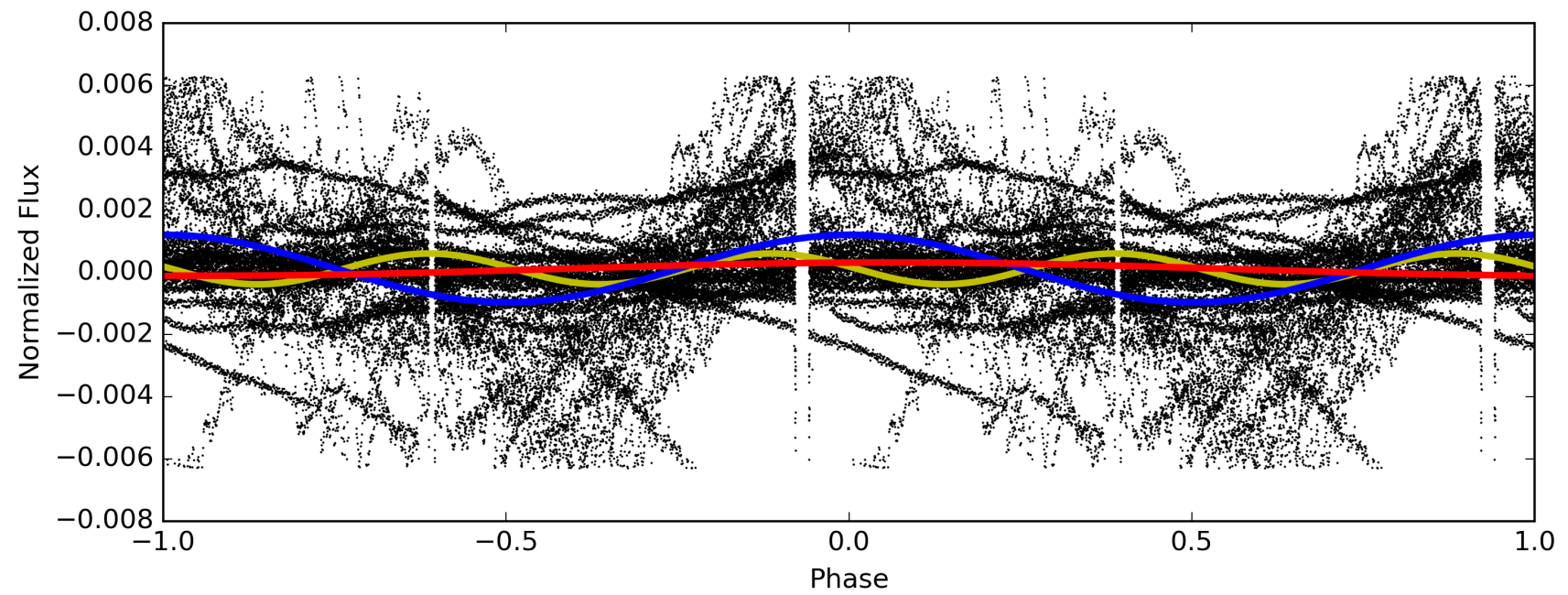
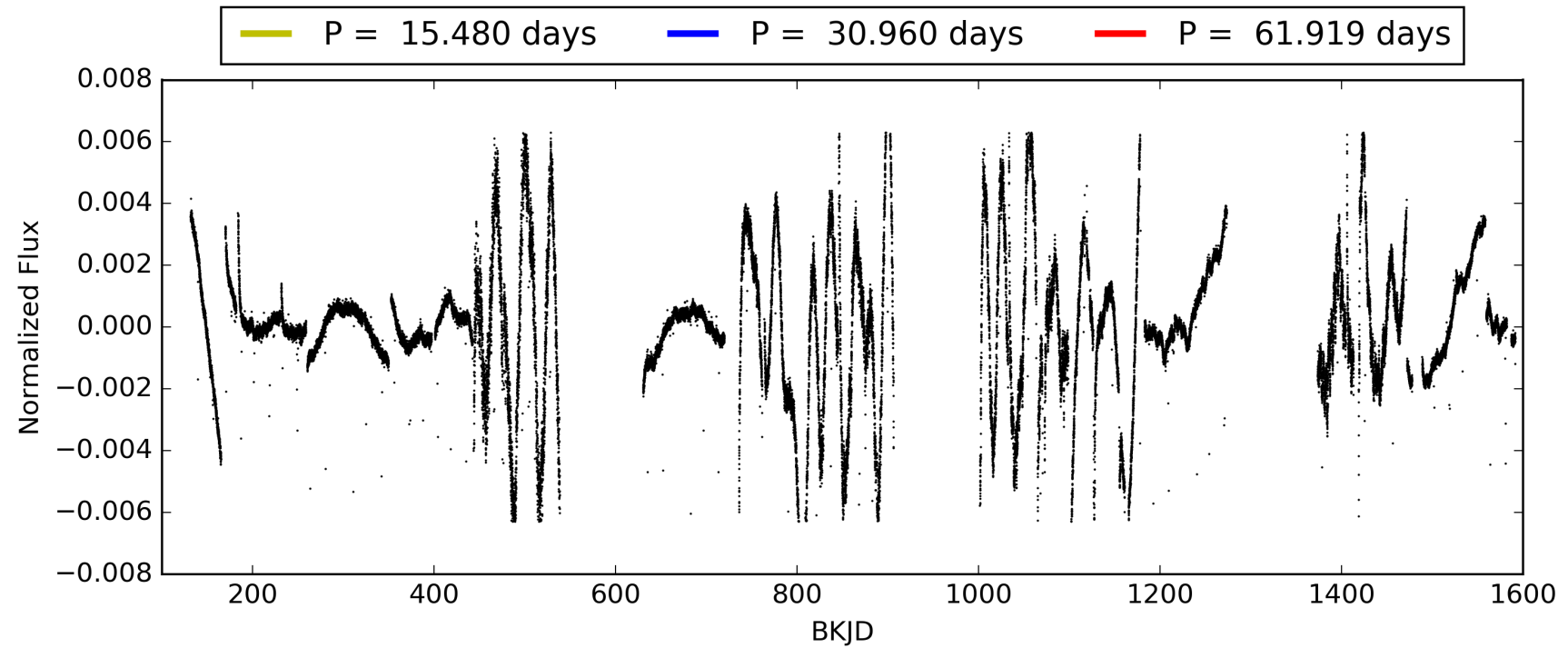
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:27:59 Z

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

# TCE 004847832-04, PDC Light Curves

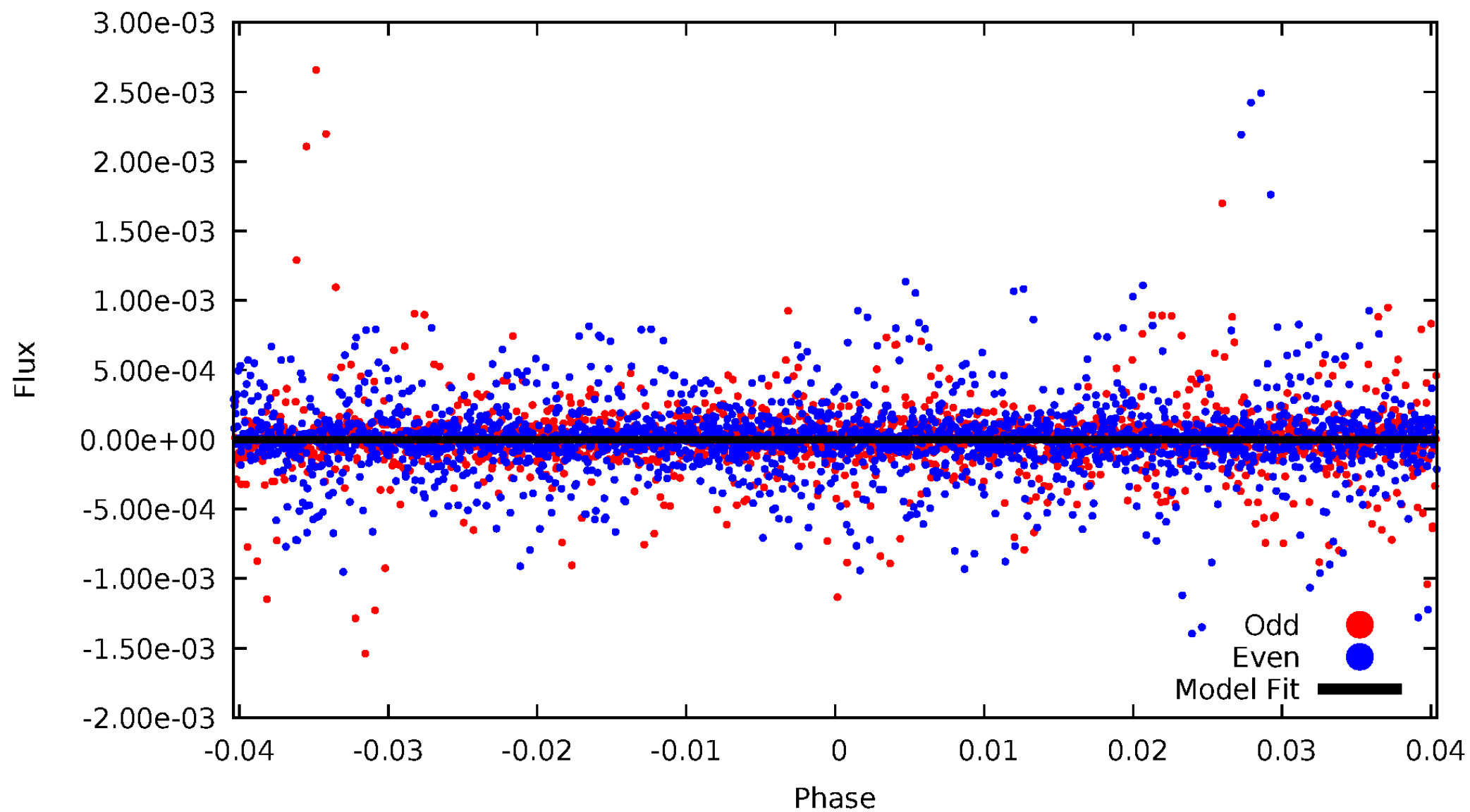


TCE 004847832-04



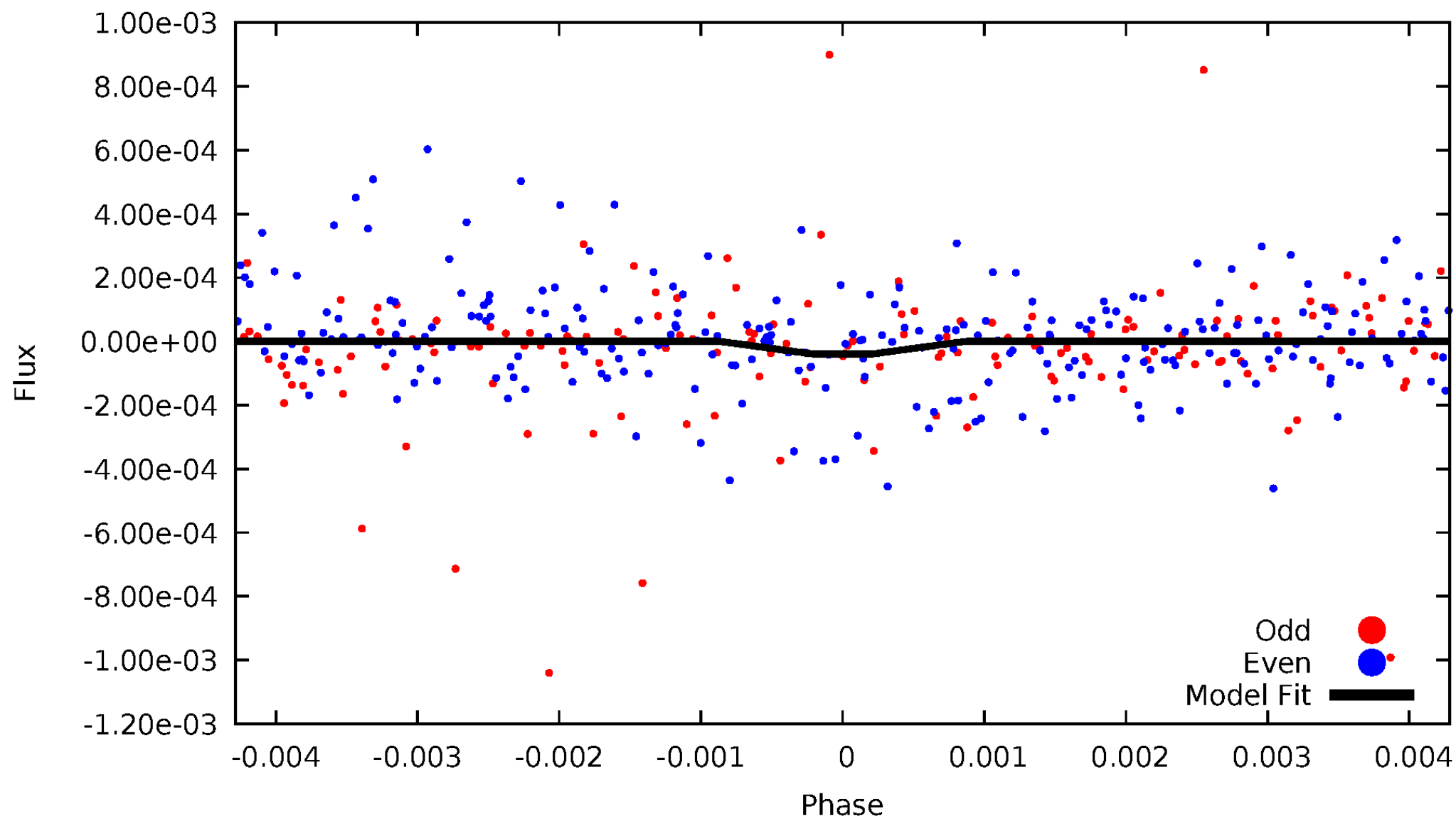
# DV Odd/Even

TCE 004847832-04



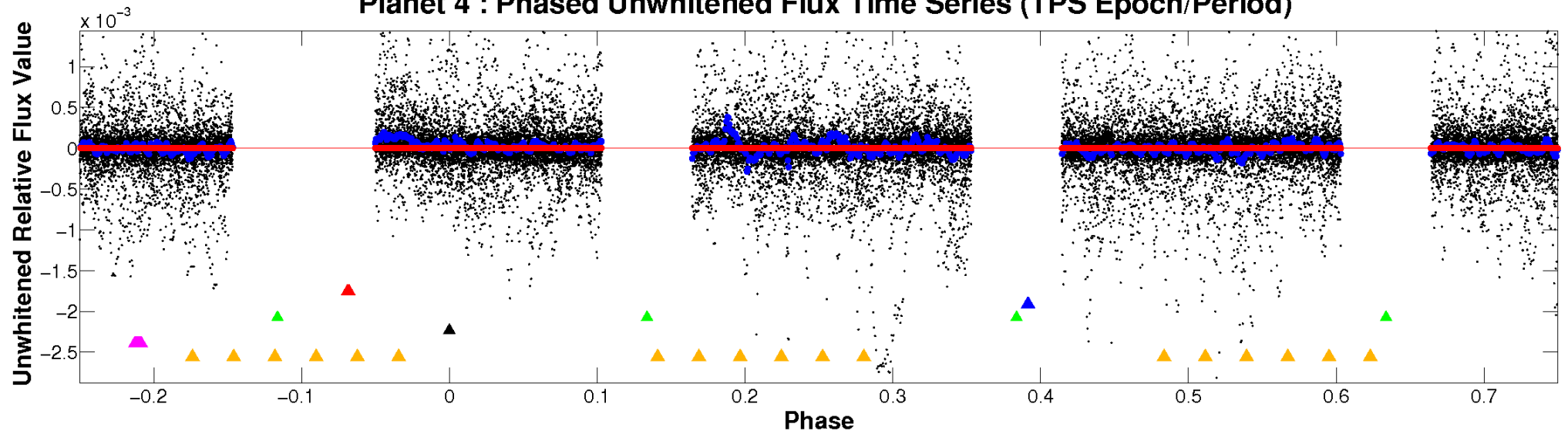
# ALT Odd/Even

TCE 004847832-04

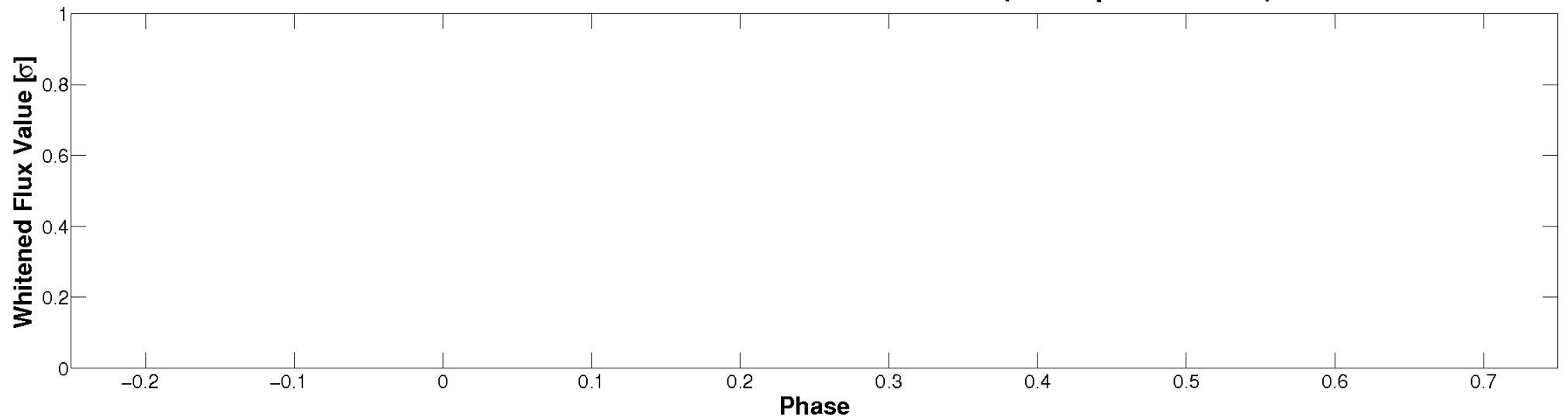


# Non-Whitened Vs. Whitened Light Curve

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

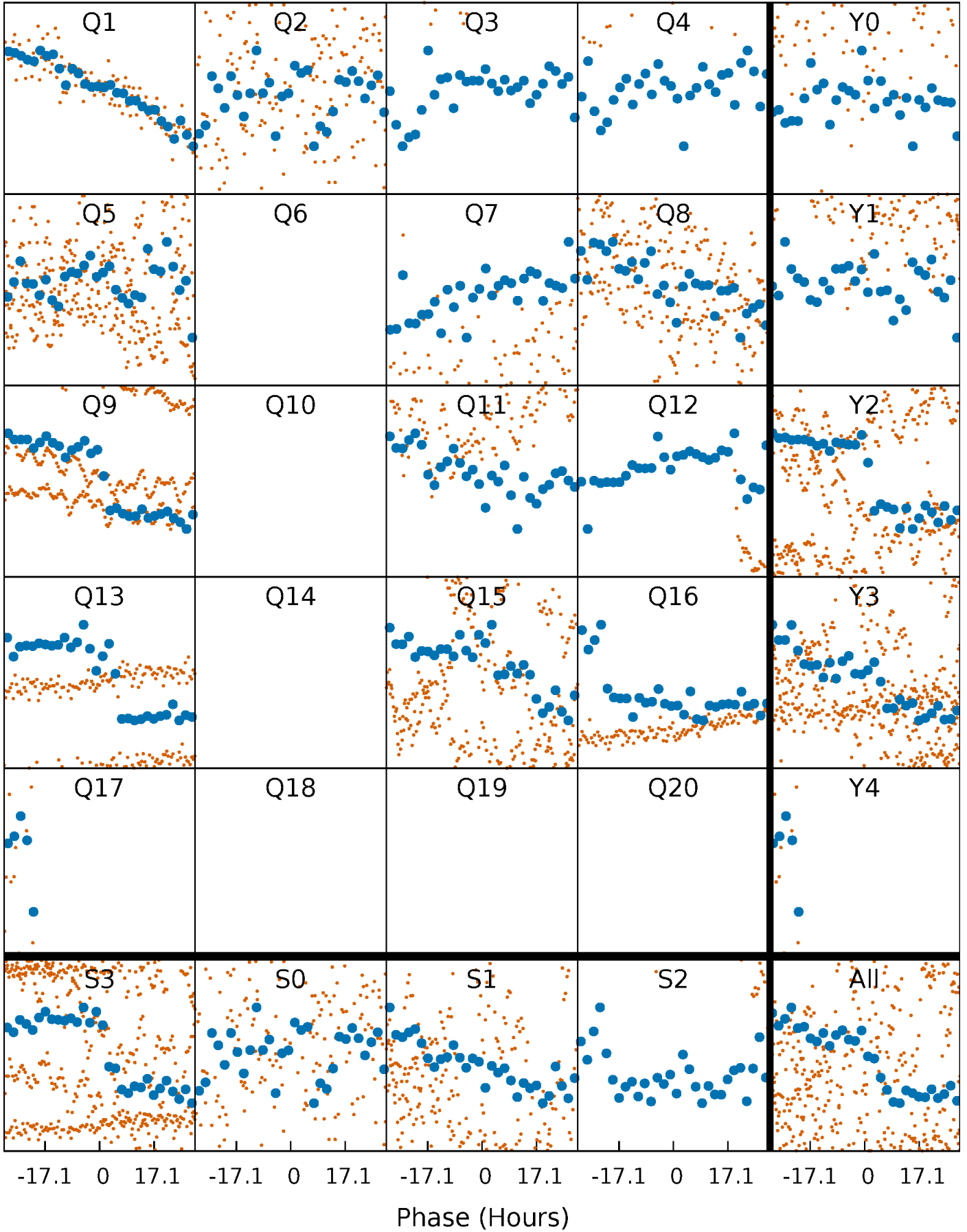


**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

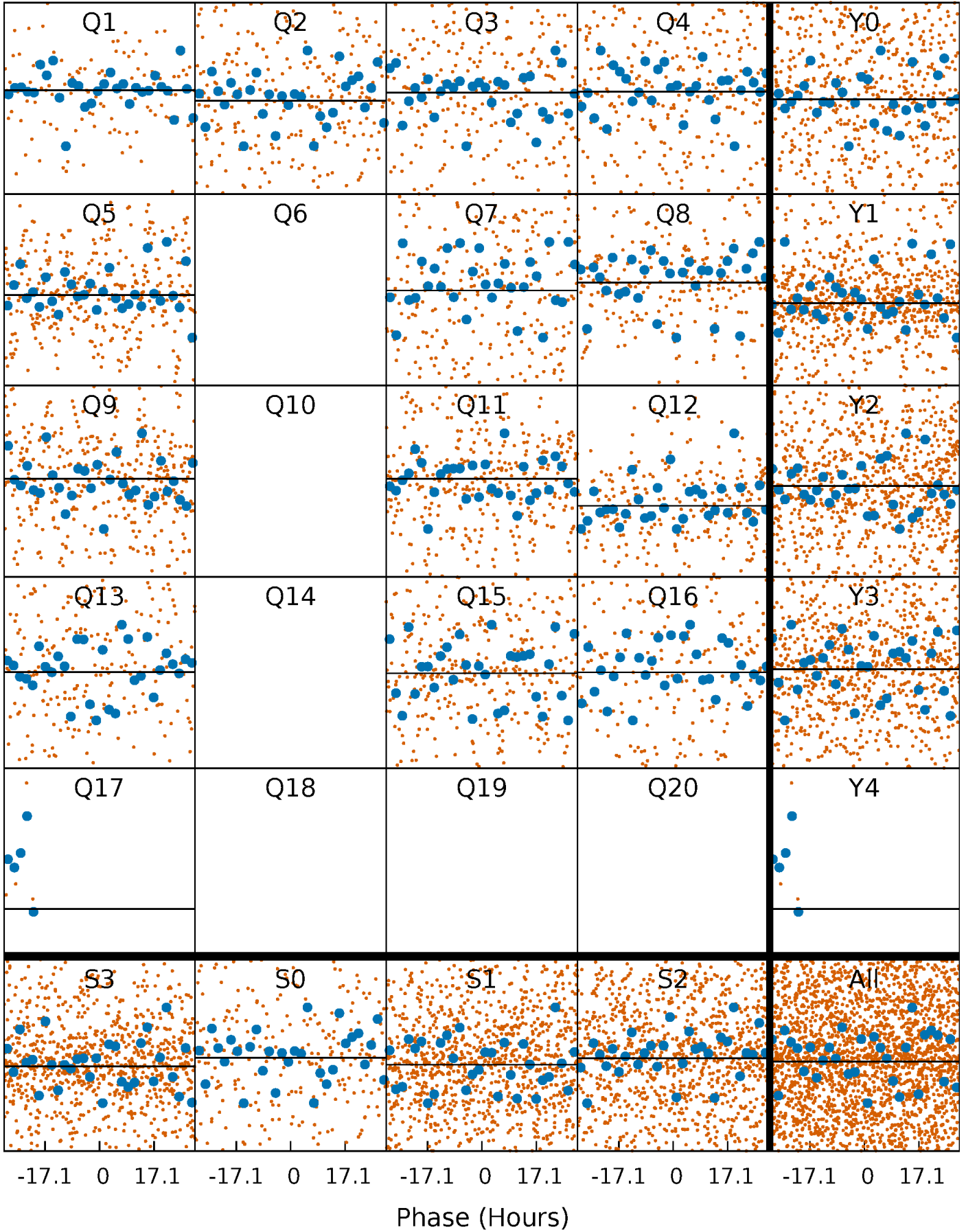
TCE 004847832-04     $P = 30.959678$  Days     $T_0 = 158.285769$  (BKJD)





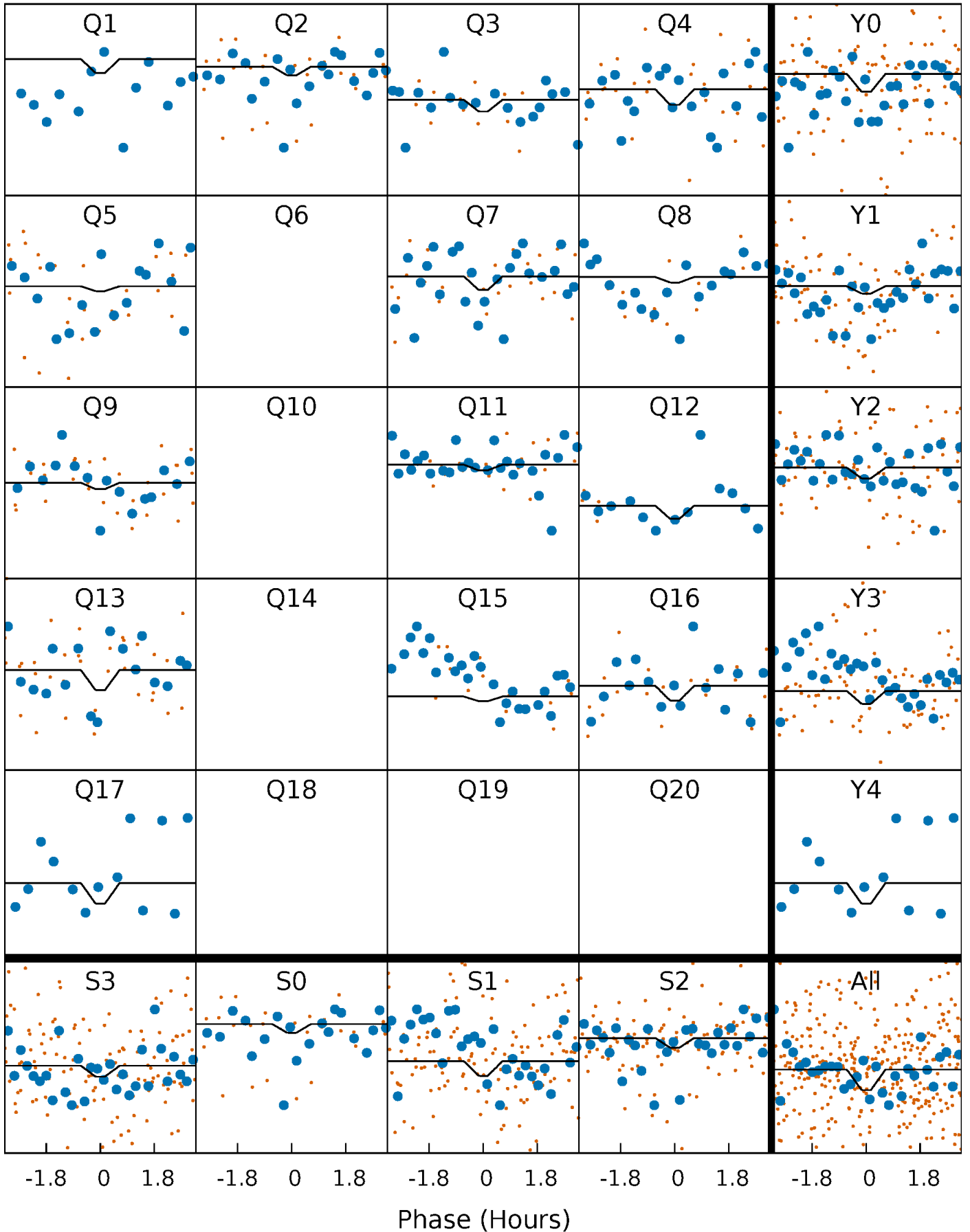
# DV Quarter-Phased Transit Curves

TCE 004847832-04     $P = 30.959678$  Days     $T_0 = 158.285769$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

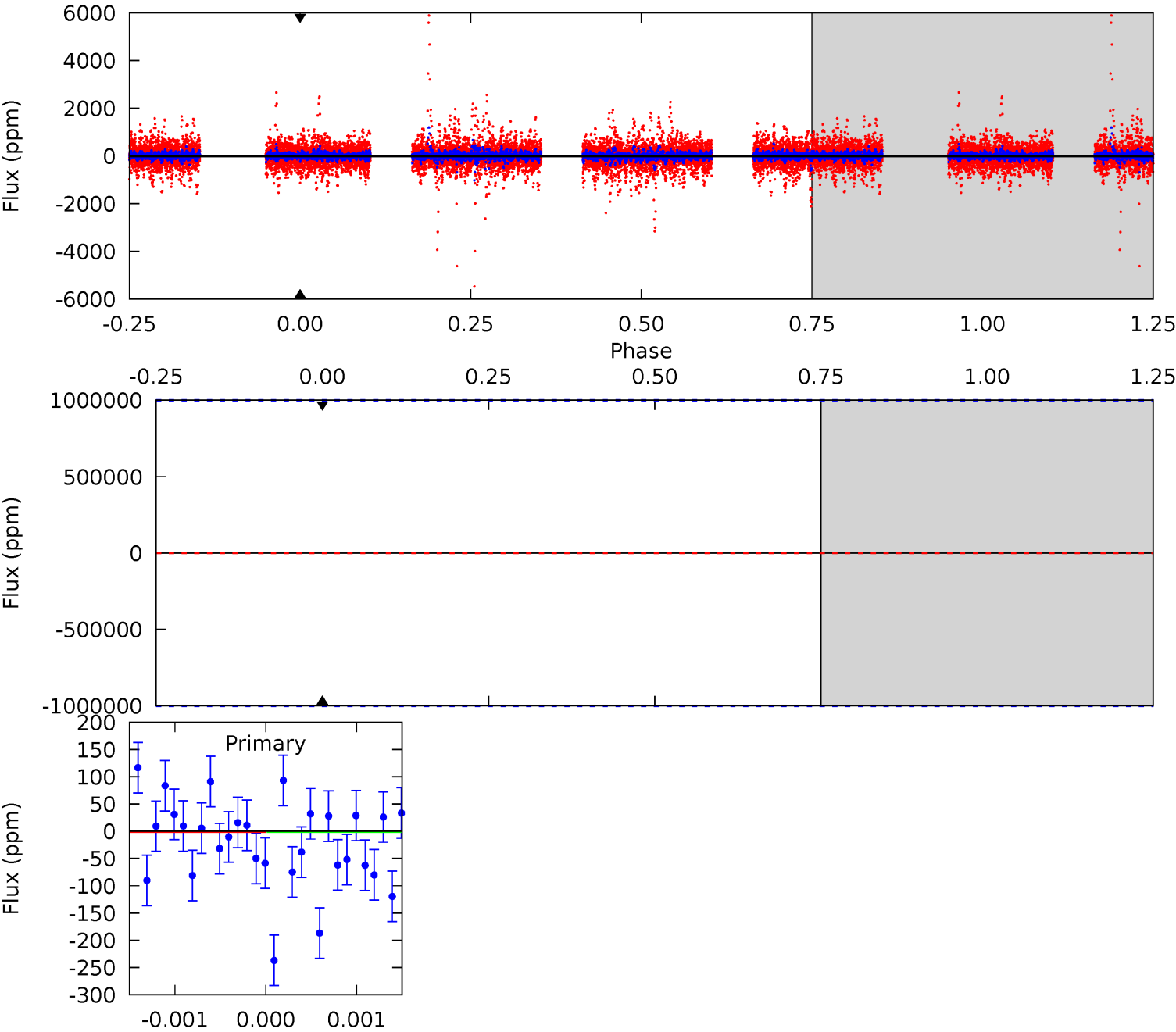
TCE 004847832-04 P= 30.959678 Days  $T_0=157.169396$  (BKJD)



DV Model-Shift Uniqueness Test

004847832-04, P = 30.959678 Days, E = 127.326091 Days

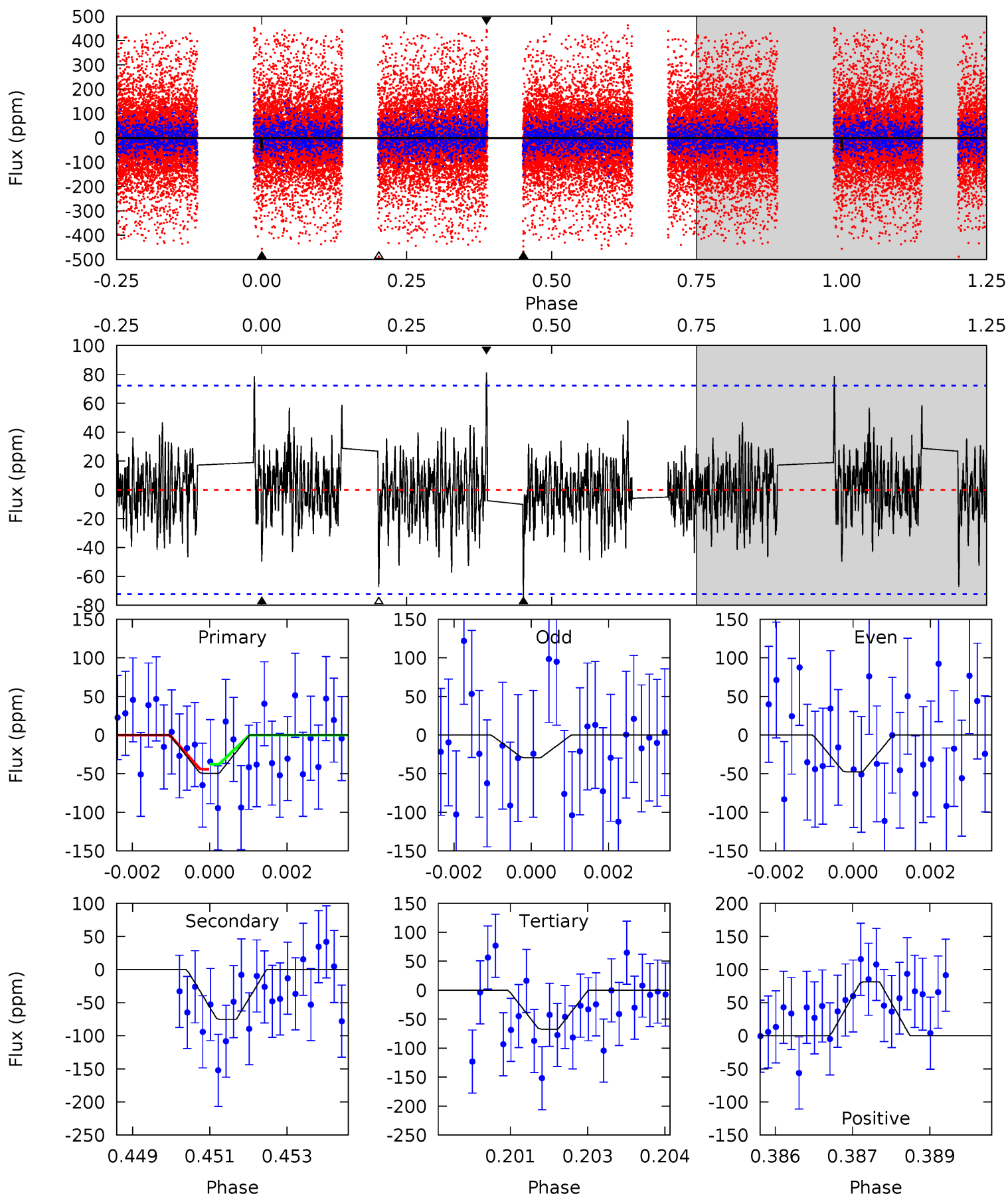
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

004847832-04, P = 30.959678 Days, E = 126.209718 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.68	5.61	5.00	6.03	5.36	3.14	1.31	-1.31	-2.35	0.61	-0.43	0.67	0.72	0.52	0.25



### Stellar Parameters For KIC 004847832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5291^{+211}_{-232}$	$4.423^{+0.136}_{-0.204}$	$0.060^{+0.250}_{-0.250}$	$0.926^{+0.274}_{-0.148}$	$0.828^{+0.103}_{-0.069}$	$1.467^{+0.893}_{-0.745}$
	+4%/-4%	+3%/-5%	+417%/-417%	+30%/-16%	+12%/-8%	+61%/-51%
Source	PHO1	FLK73	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 004847832-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$9.54^{+8.99}_{-6.73}$	$739^{+64}_{-47}$	$2428^{+12846}_{-13932}$	$12^{+42474}_{-25097}$
Alt.	$-76 \pm 13$	$6.96^{+8.17}_{-5.02}$	$744^{+61}_{-52}$	$2661^{+1246}_{-434}$	$27^{+328}_{-21}$

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

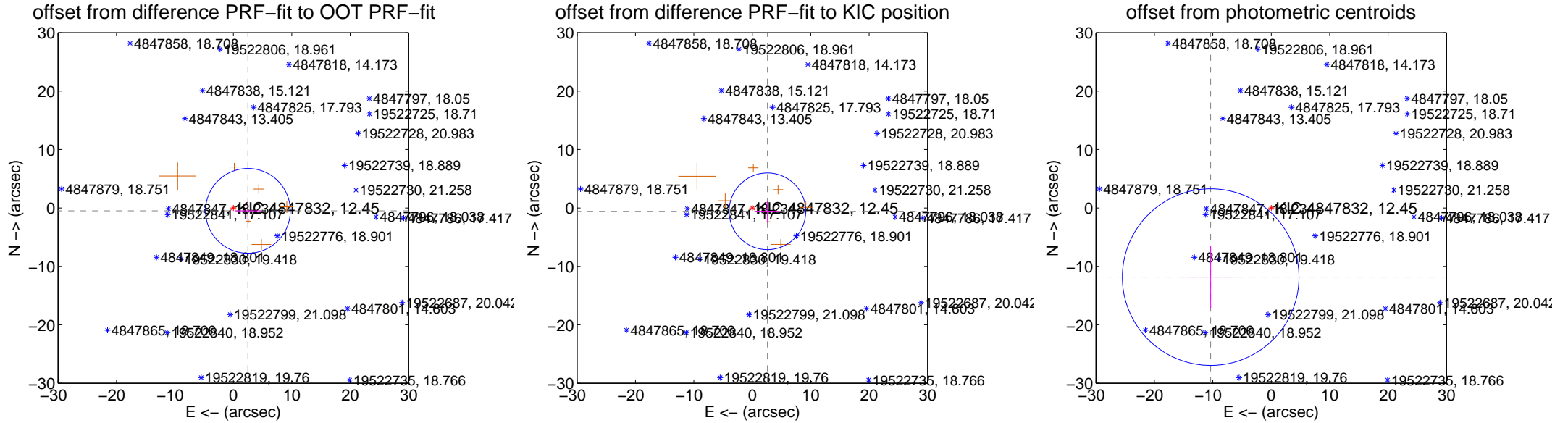
## DV Centroid Data

Supplemental centroid analysis for 004847832-04. Kepler magnitude: 12.45. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

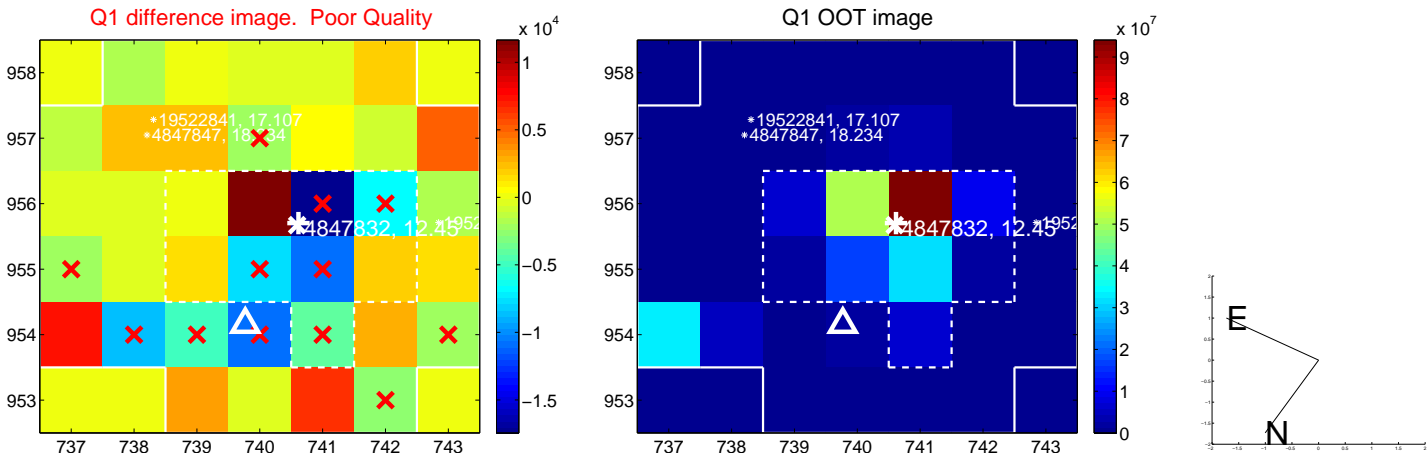
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.541 \pm 2.418$	1.05	$-2.492 \pm 2.248$	$-0.497 \pm 1.782$
PRF-fit source offset from KIC position	$2.654 \pm 2.186$	1.21	$-2.591 \pm 2.032$	$-0.573 \pm 1.829$
photometric centroid source offset	$15.74 \pm 5.04$	3.12	$10.37 \pm 4.71$	$-11.84 \pm 5.28$

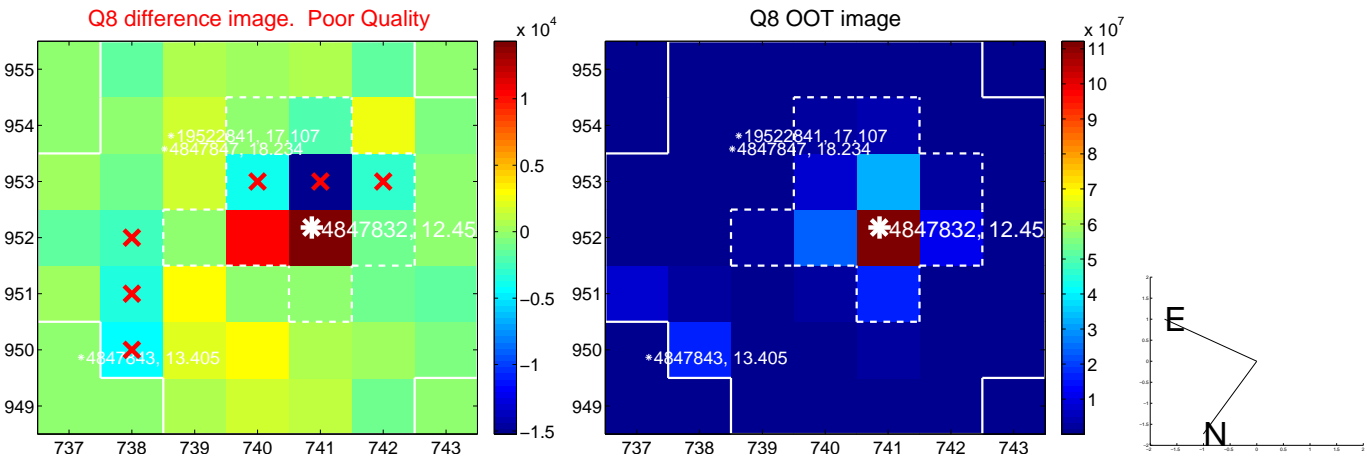
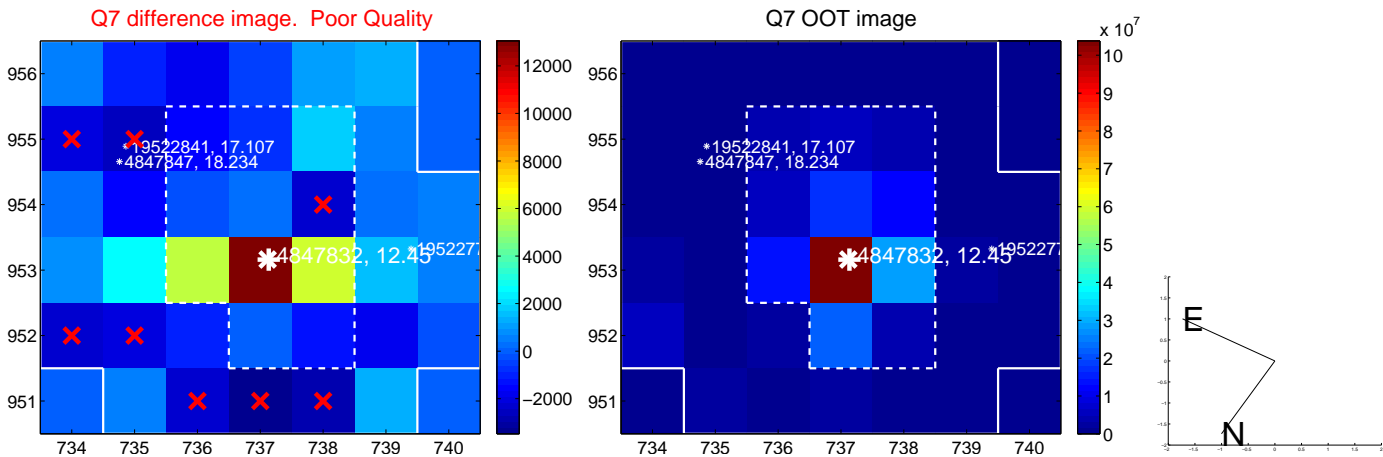
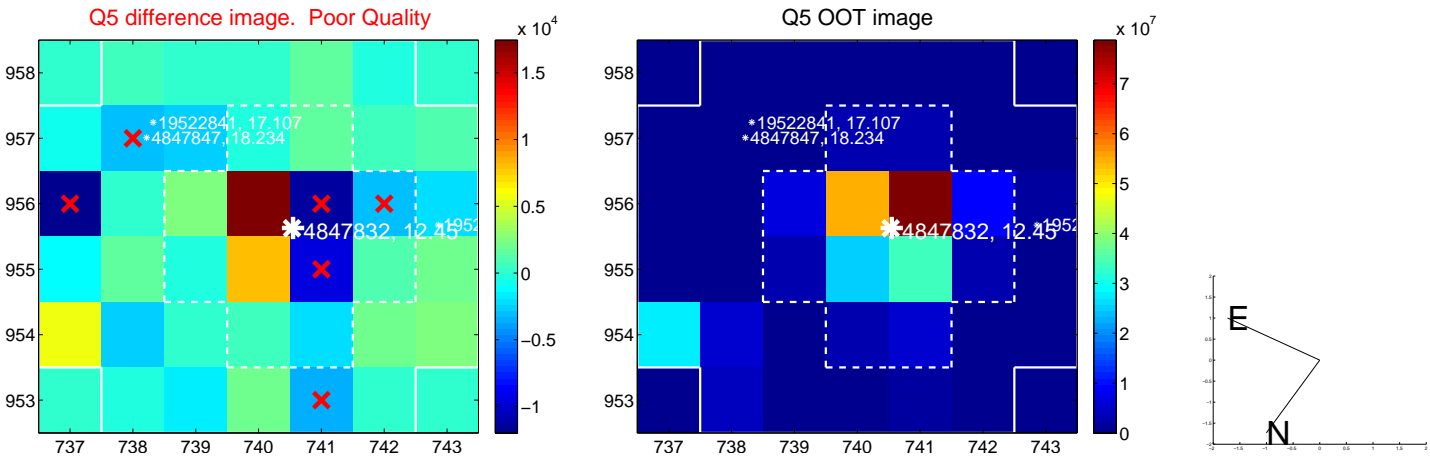


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

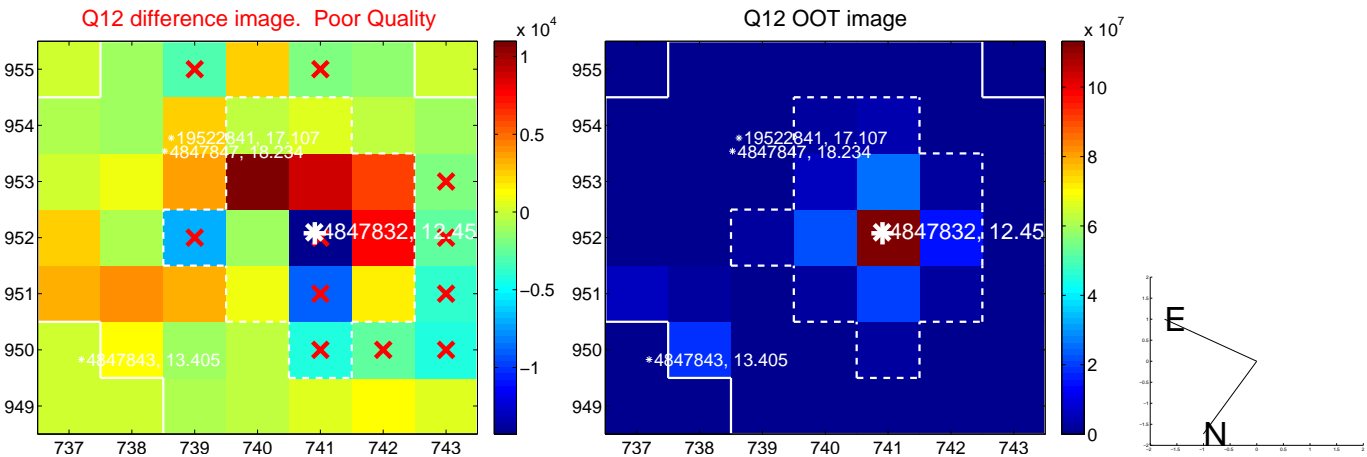
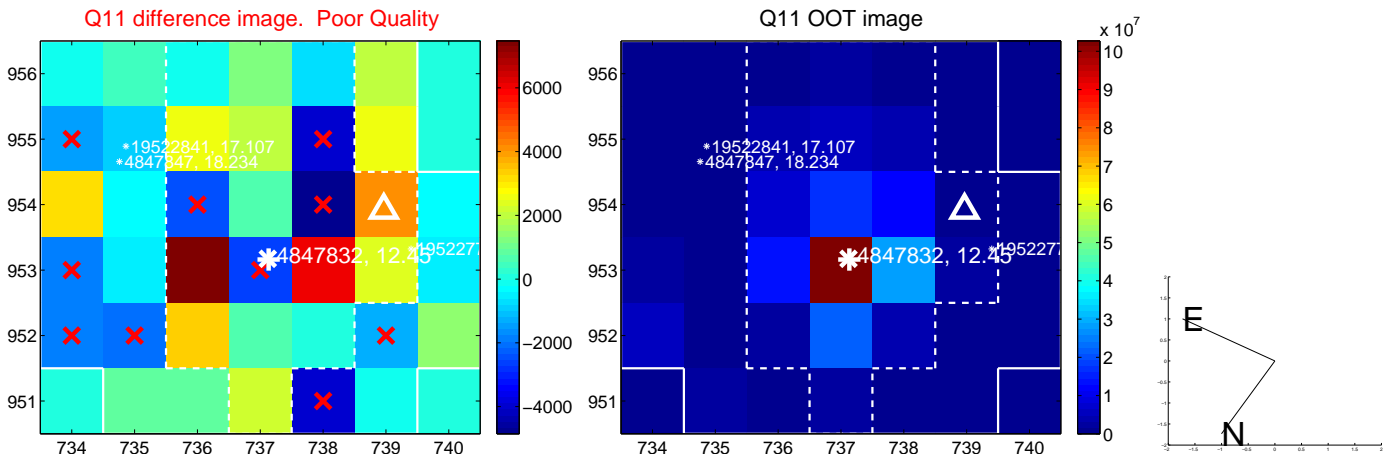
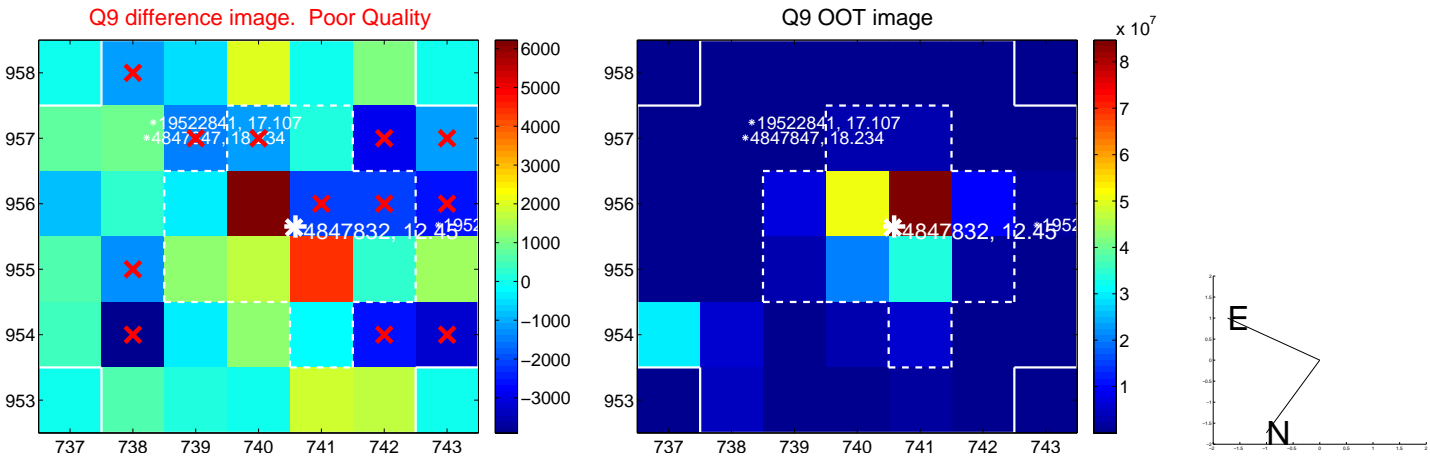


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

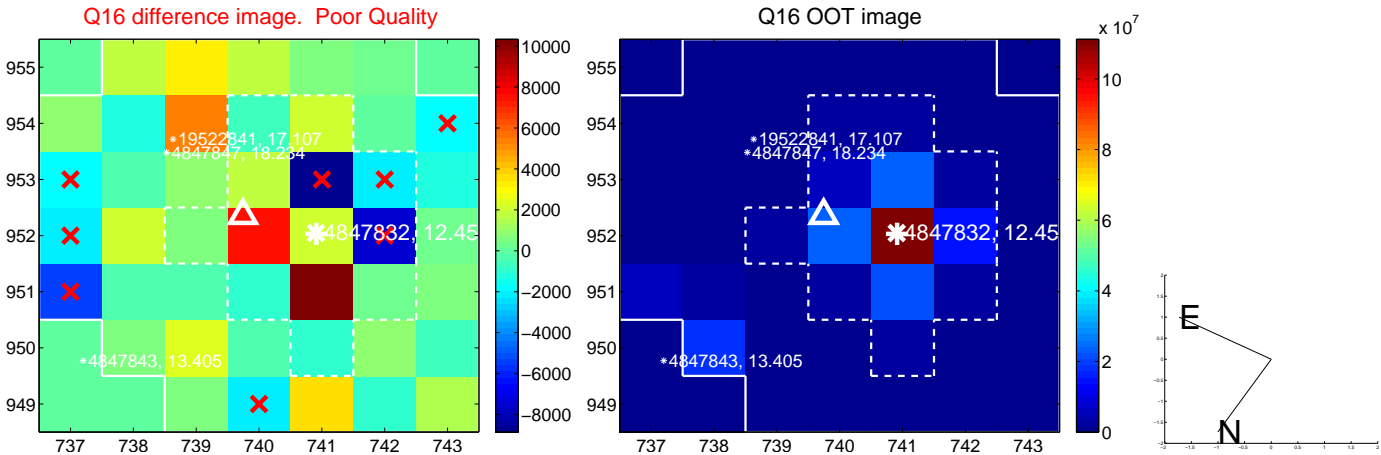
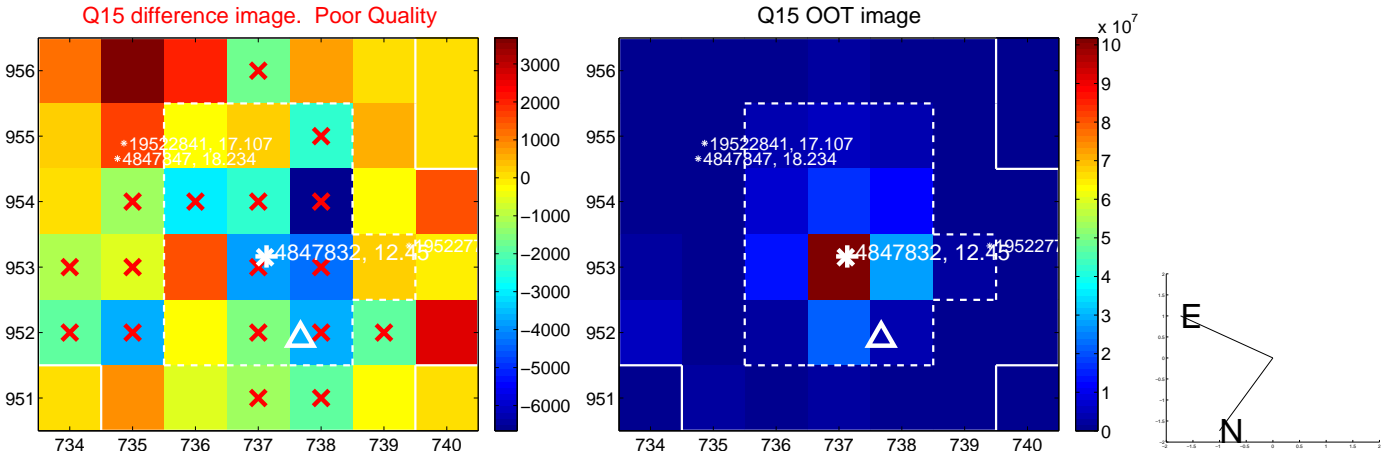
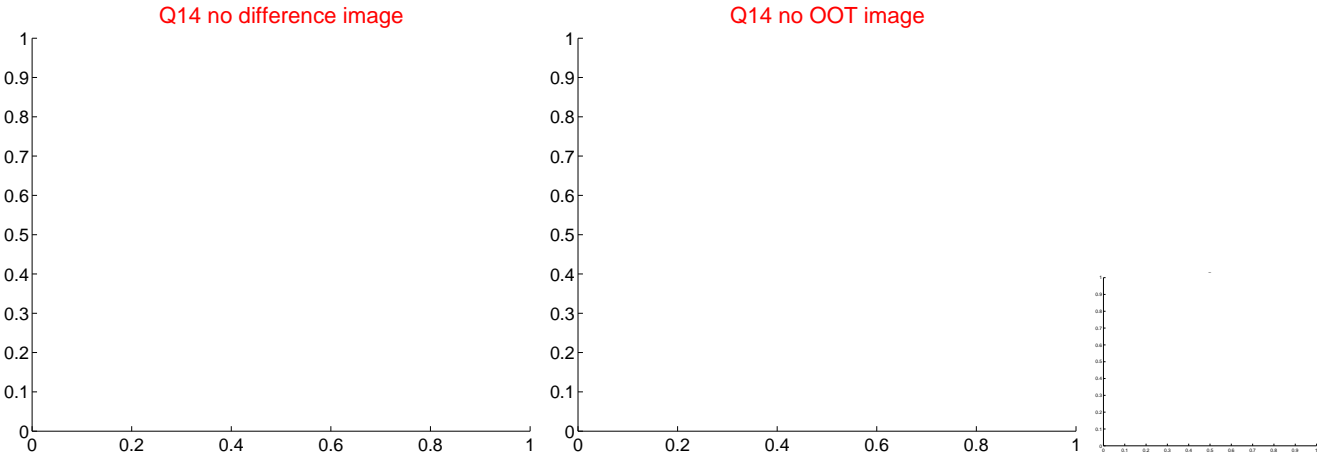
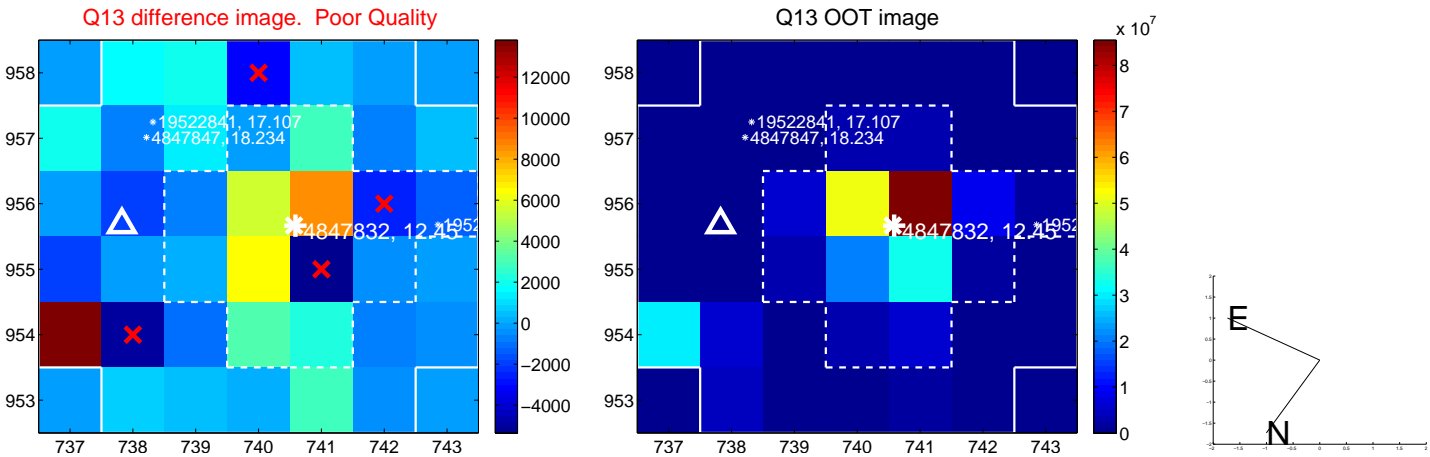




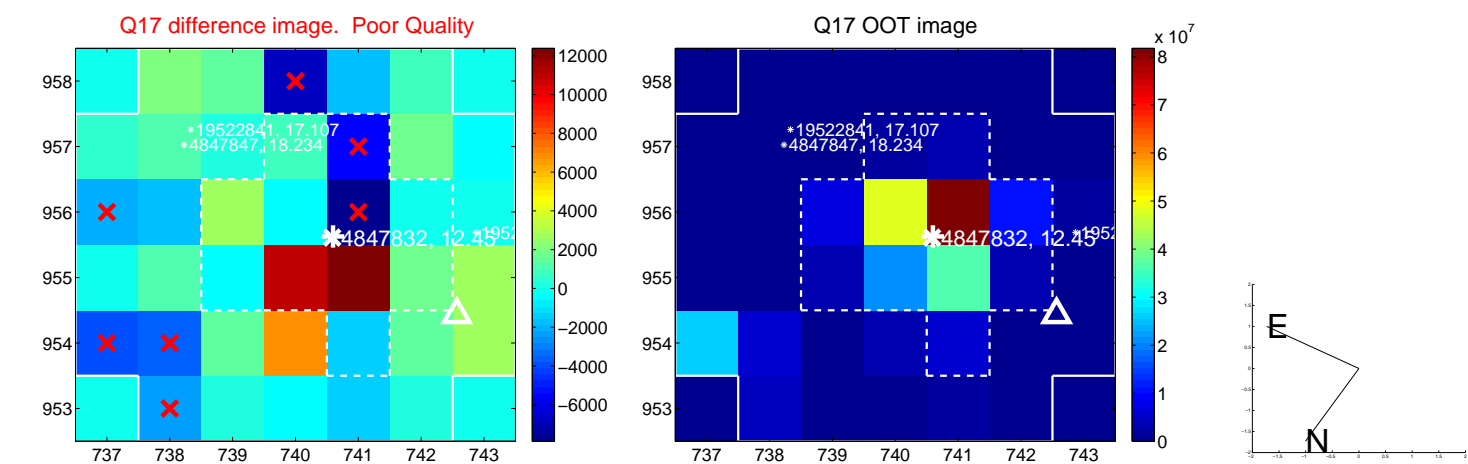
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



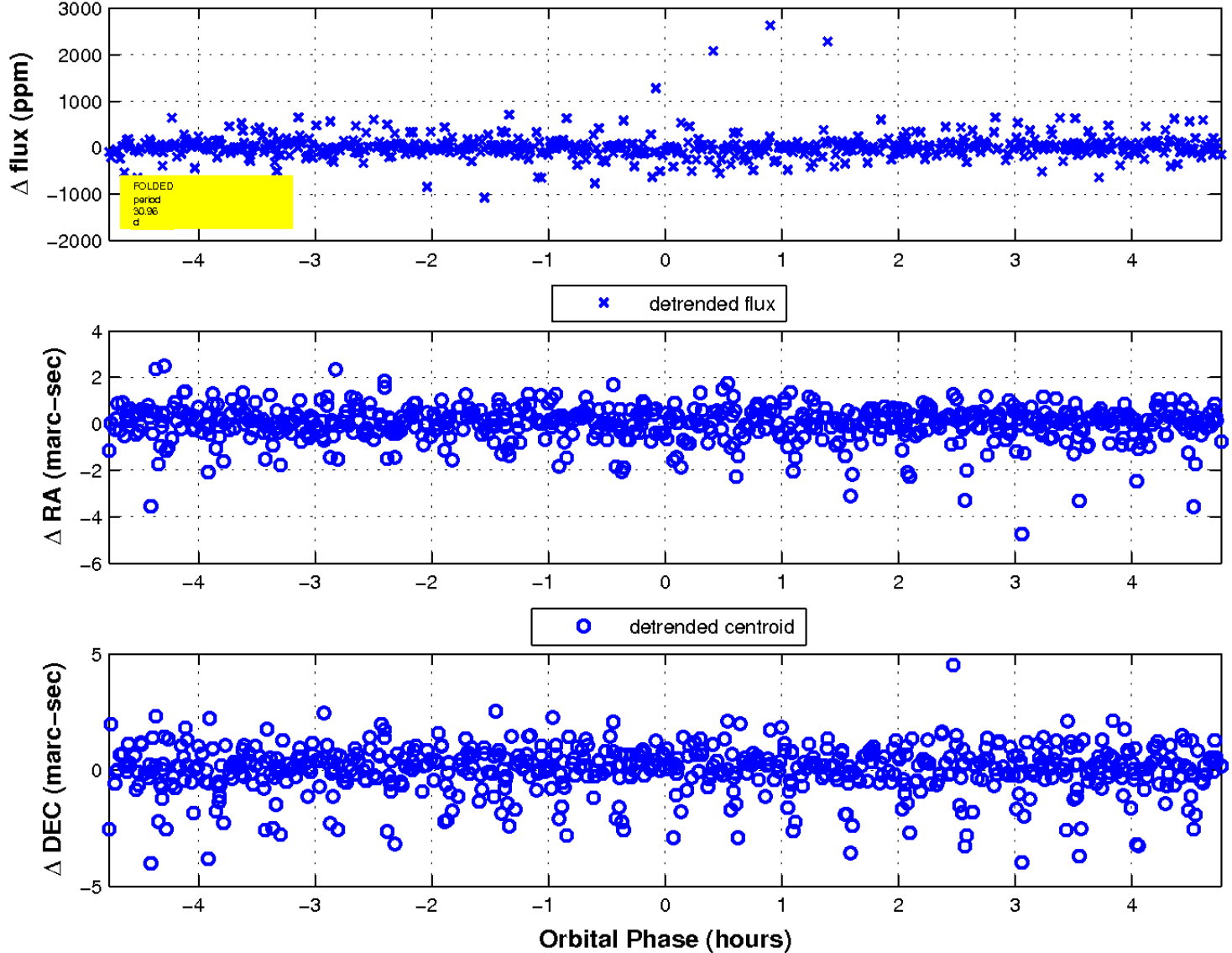
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



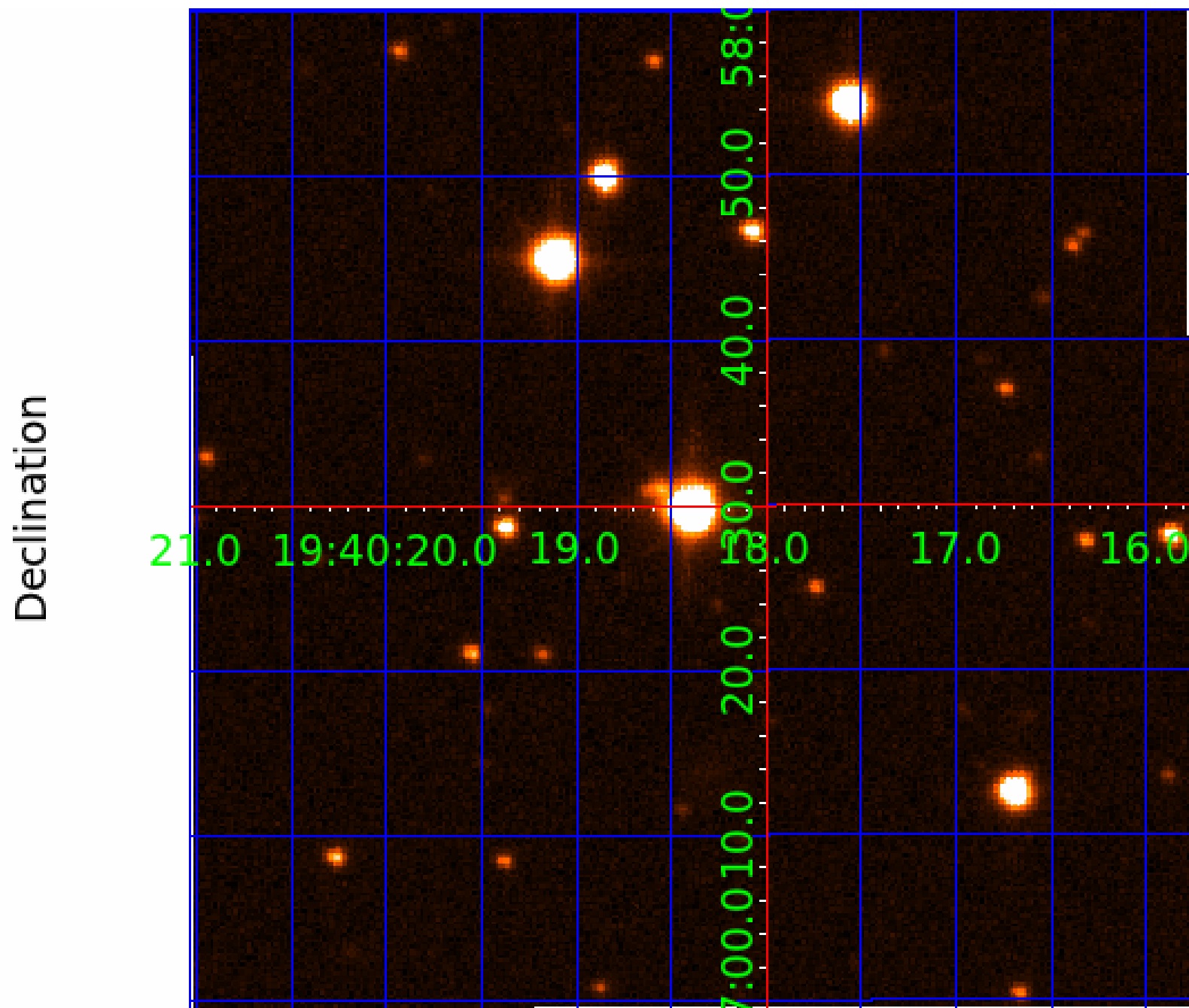
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 4 of 6



UKIRT Image



# KIC 004847832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004847832-01	OBS	6459.01	30.960463	156.150462	345106.1	9.000	42138.4	-1.0	0.93	5291	44.68	18.32
004847832-02	OBS	No	30.960315	139.432404	393288.9	3.500	36936.7	-1.0	0.93	5291	50.52	18.32
004847832-03	OBS	No	7.739982	139.200824	21547.3	15.000	2213.4	-1.0	0.93	5291	13.28	116.36
004847832-04	OBS	No	30.959678	158.285769	3486.2	15.000	606.0	-1.0	0.93	5291	5.34	18.33
004847832-05	OBS	No	30.956537	151.837184	4006.4	69.085	156.8	171.5	0.93	5291	11.15	18.33
004847832-06	OBS	No	82.271289	157.223223	4839.8	7.500	192.6	-1.0	0.93	5291	6.29	4.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004847832-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
004847832-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
004847832-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
004847832-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
004847832-05	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
004847832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

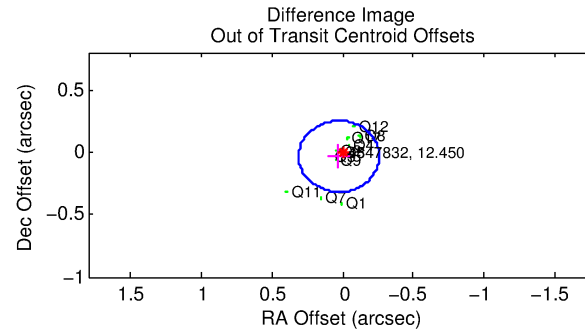
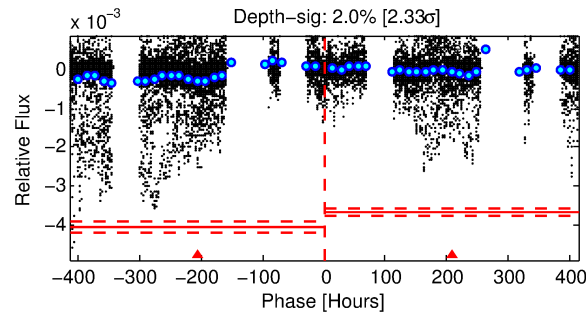
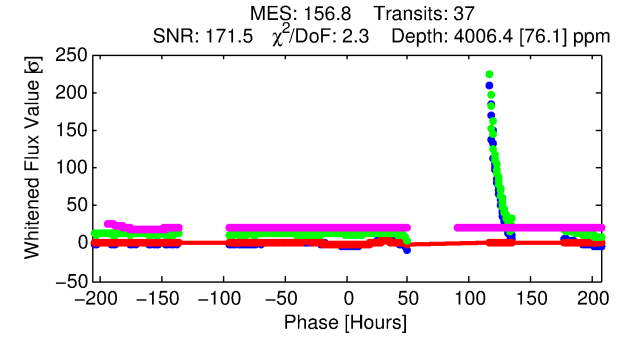
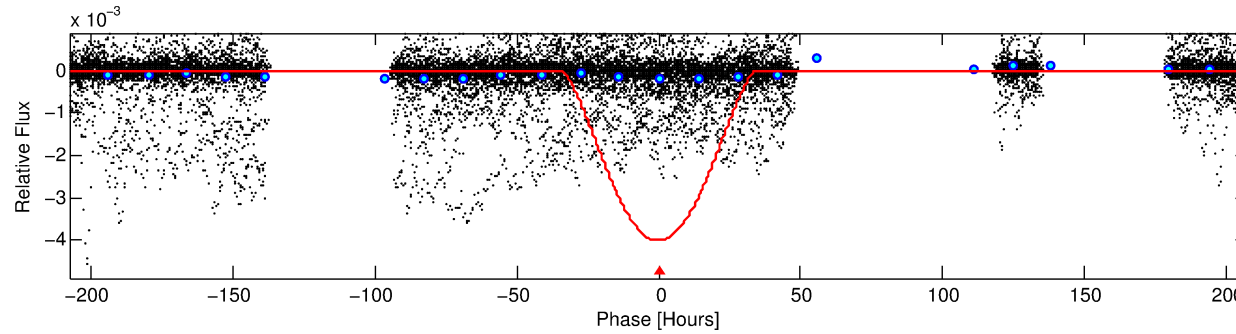
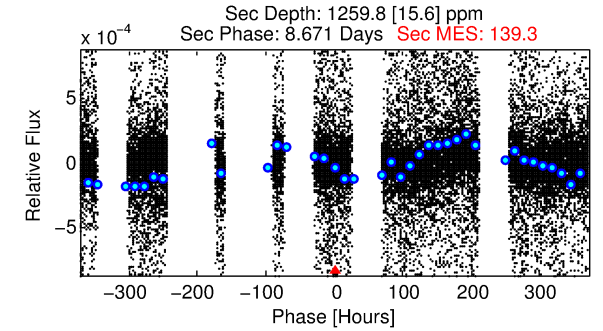
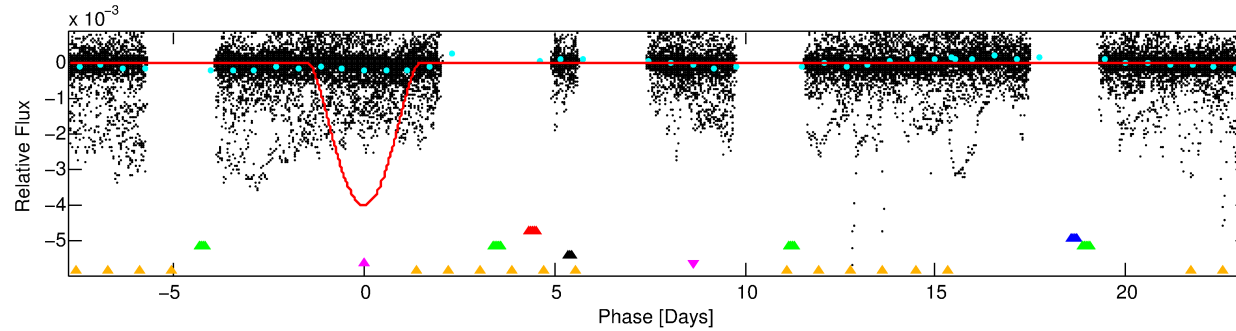
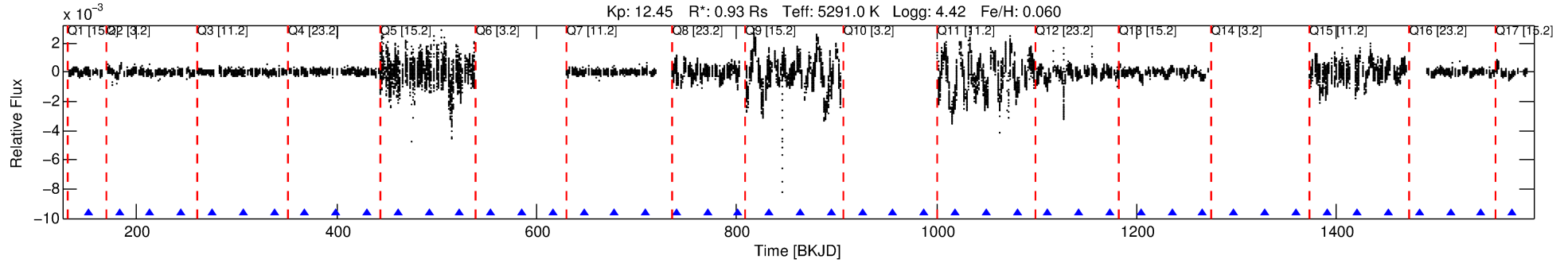
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004847832-05

No Significant Match Found

# DV One-Page Summary

KIC: 4847832 Candidate: 5 of 6 Period: 30.957 d  
KOI: K06459 Corr: No Ephemeris Match



## DV Fit Results:

Period = 30.95654 [0.00028] d  
Epoch = 151.8372 [0.0065] BKJD  
Rp/R\* = 0.1104 [0.0117]  
a/R\* = 1.95 [0.02]  
b = 1.00 [0.02]  
Seff = 18.33 [7.51]  
Teq = 528 [54] K  
Rp = 11.15 [3.51] Re  
a = 0.1812 [0.0456] AU  
Ag = 183.10 [78.13] [2.33 $\sigma$ ]  
Teffp = 3001 [207] K [11.58 $\sigma$ ]

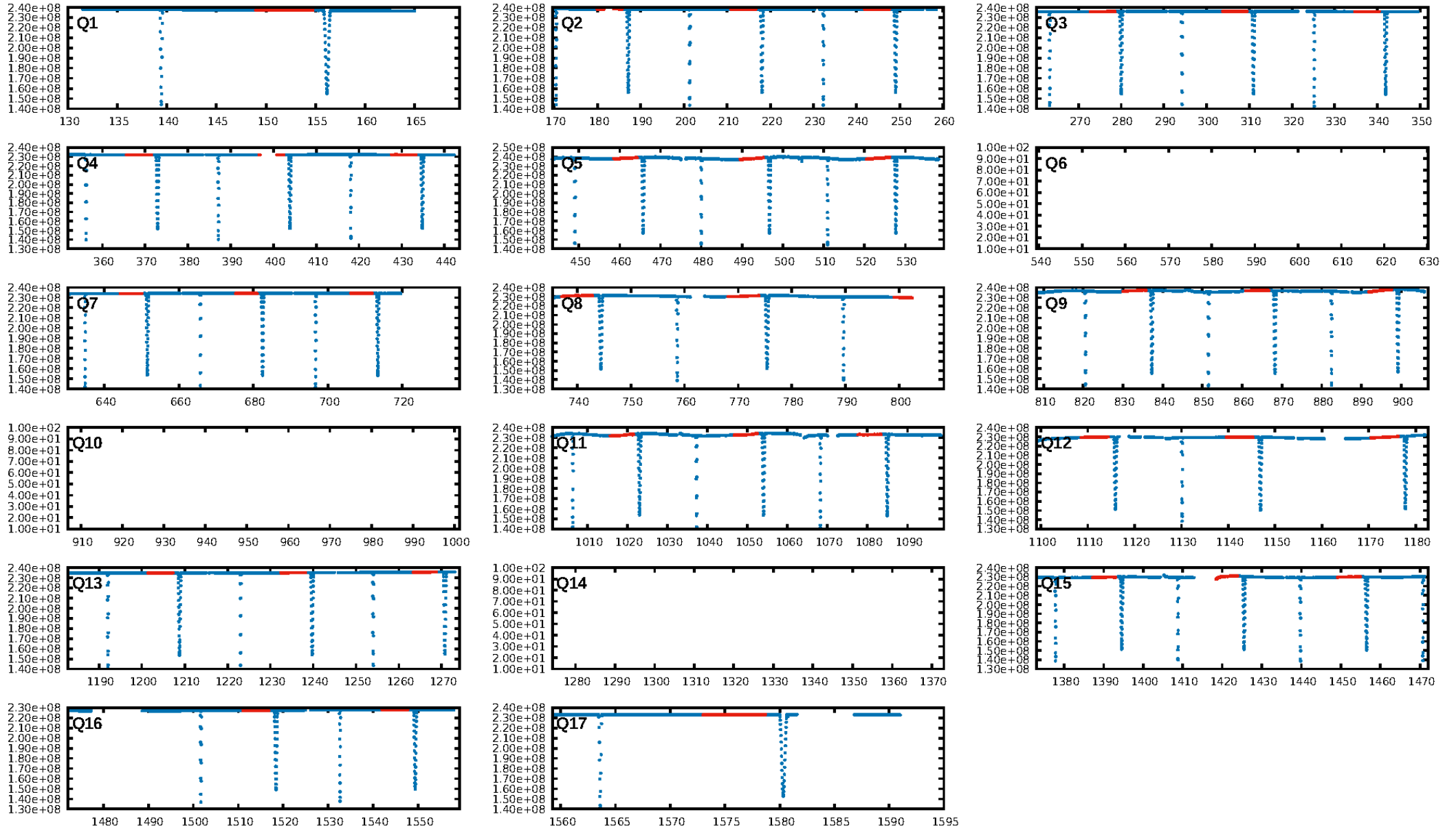
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.88 $\sigma$ ]  
LongPeriod-sig: 0.1% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [35/35]  
GhostDiagnostic-chr: 0.1568  
Centroid-sig: N/A  
Centroid-so: 0.164 arcsec [4.50 $\sigma$ ]  
OotOffset-rm: 0.043 arcsec [0.46 $\sigma$ ]  
KicOffset-rm: 0.080 arcsec [0.93 $\sigma$ ]  
OotOffset-st: 1/3/3/4 [11]  
KicOffset-st: 1/3/3/4 [11]  
DiffImageQuality-fgm: 0.00 [0/11]  
DiffImageOverlap-fno: 0.00 [0/11]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:28:07 Z

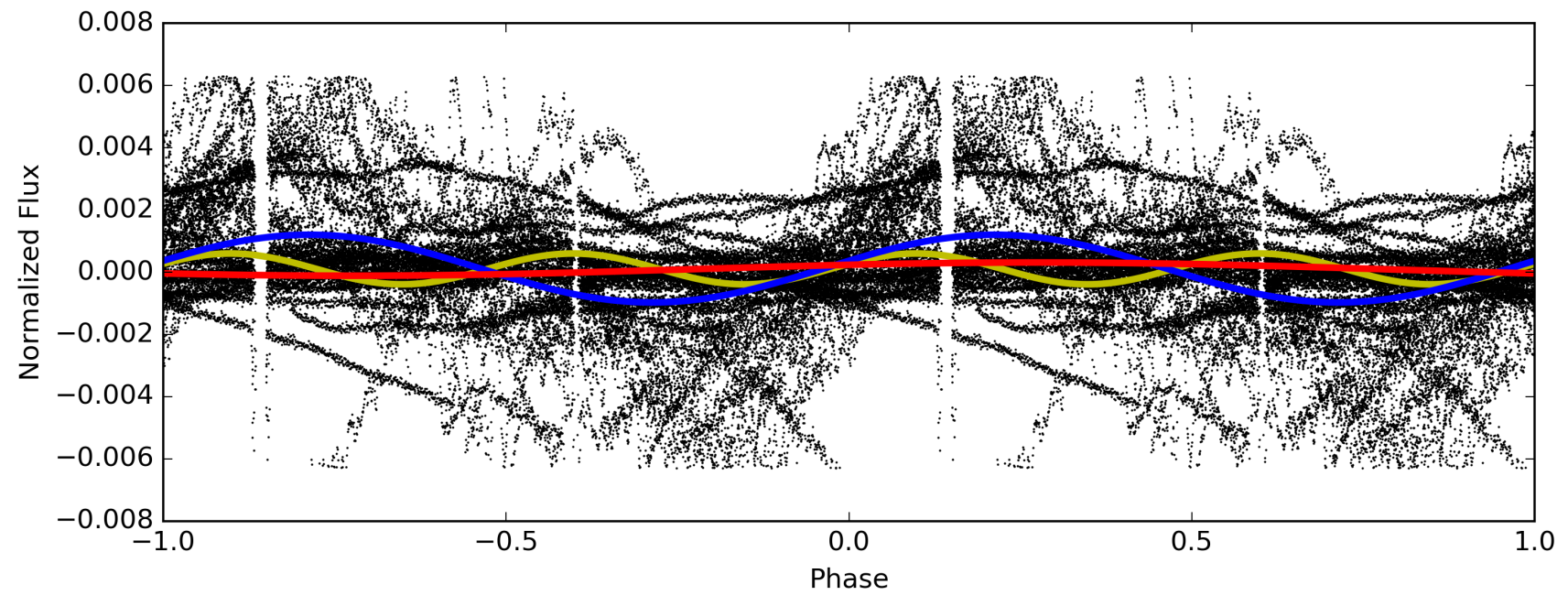
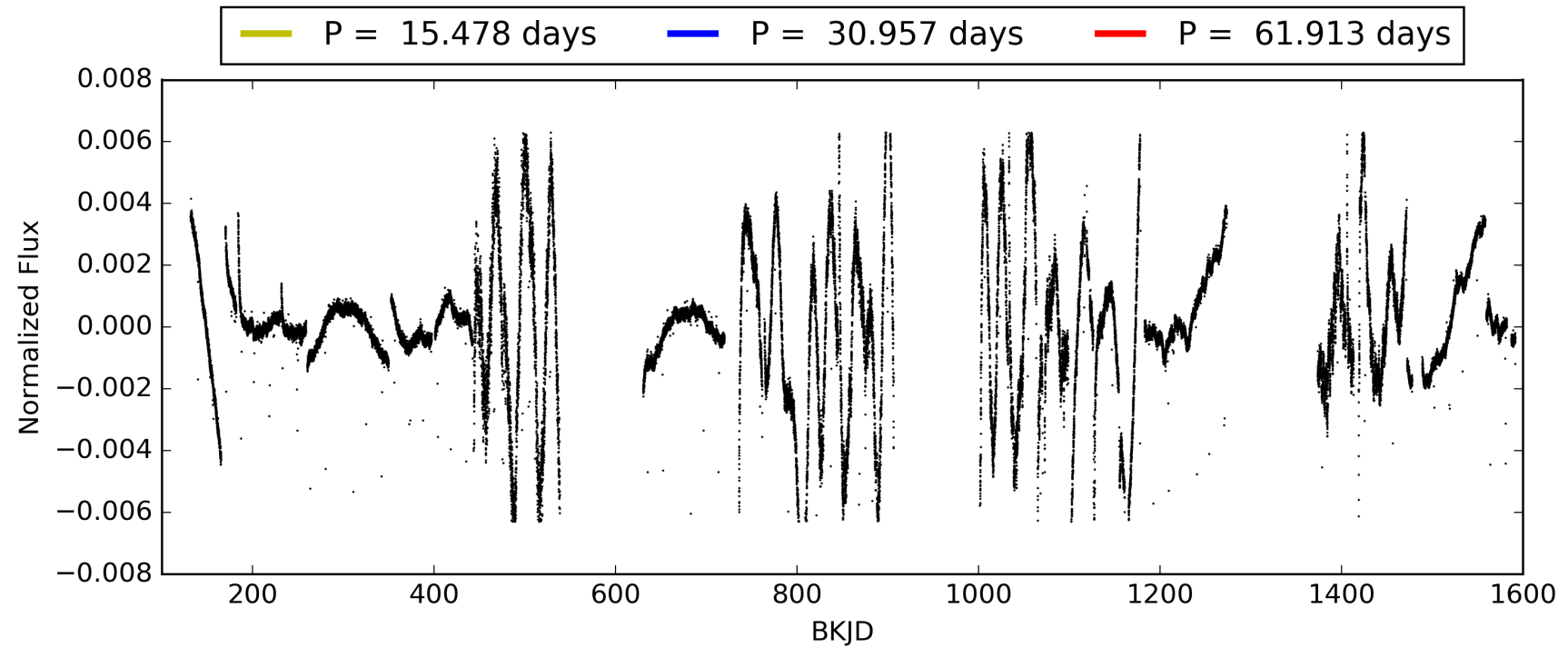
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 004847832-05, PDC Light Curves





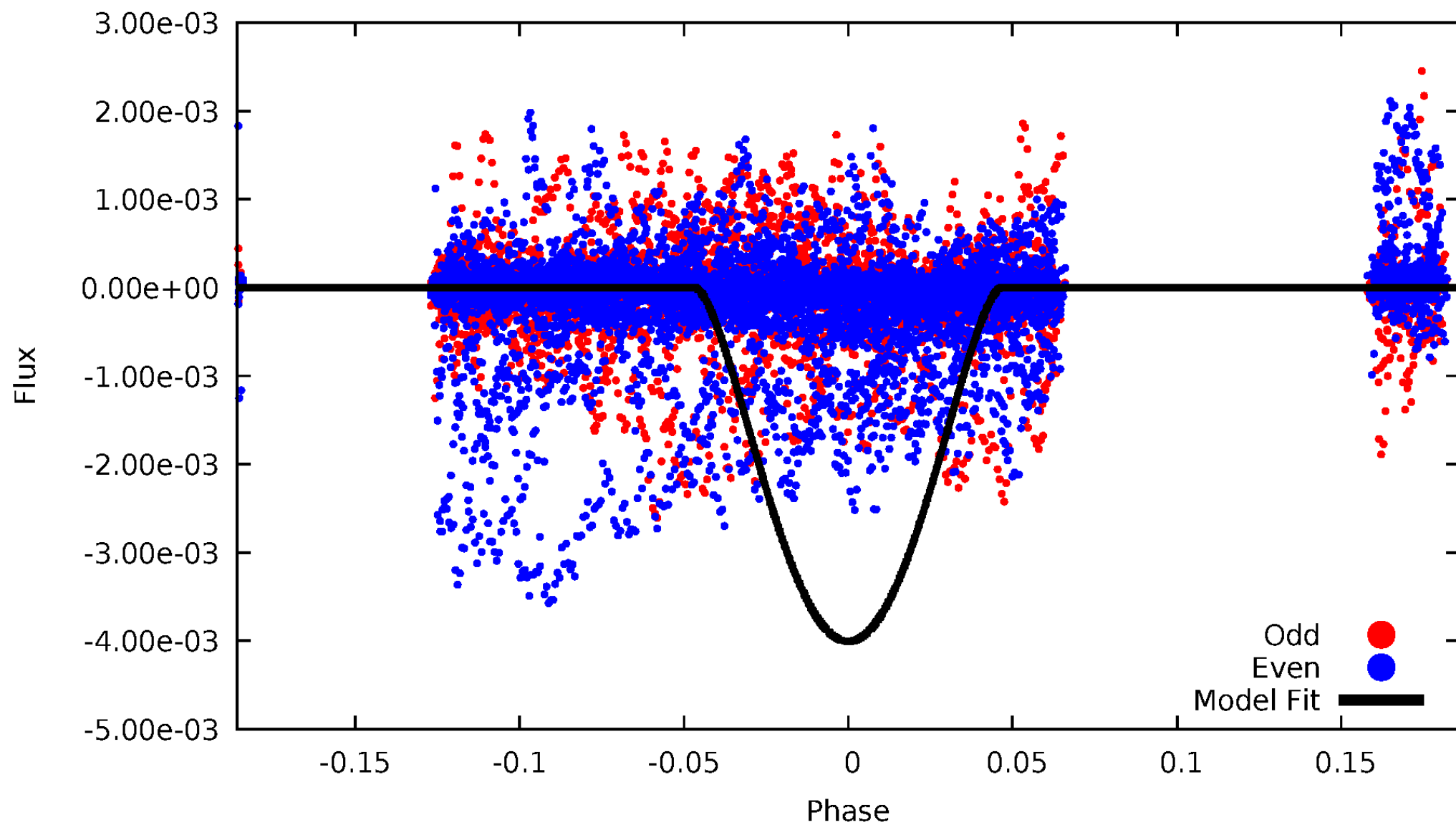
TCE 004847832-05





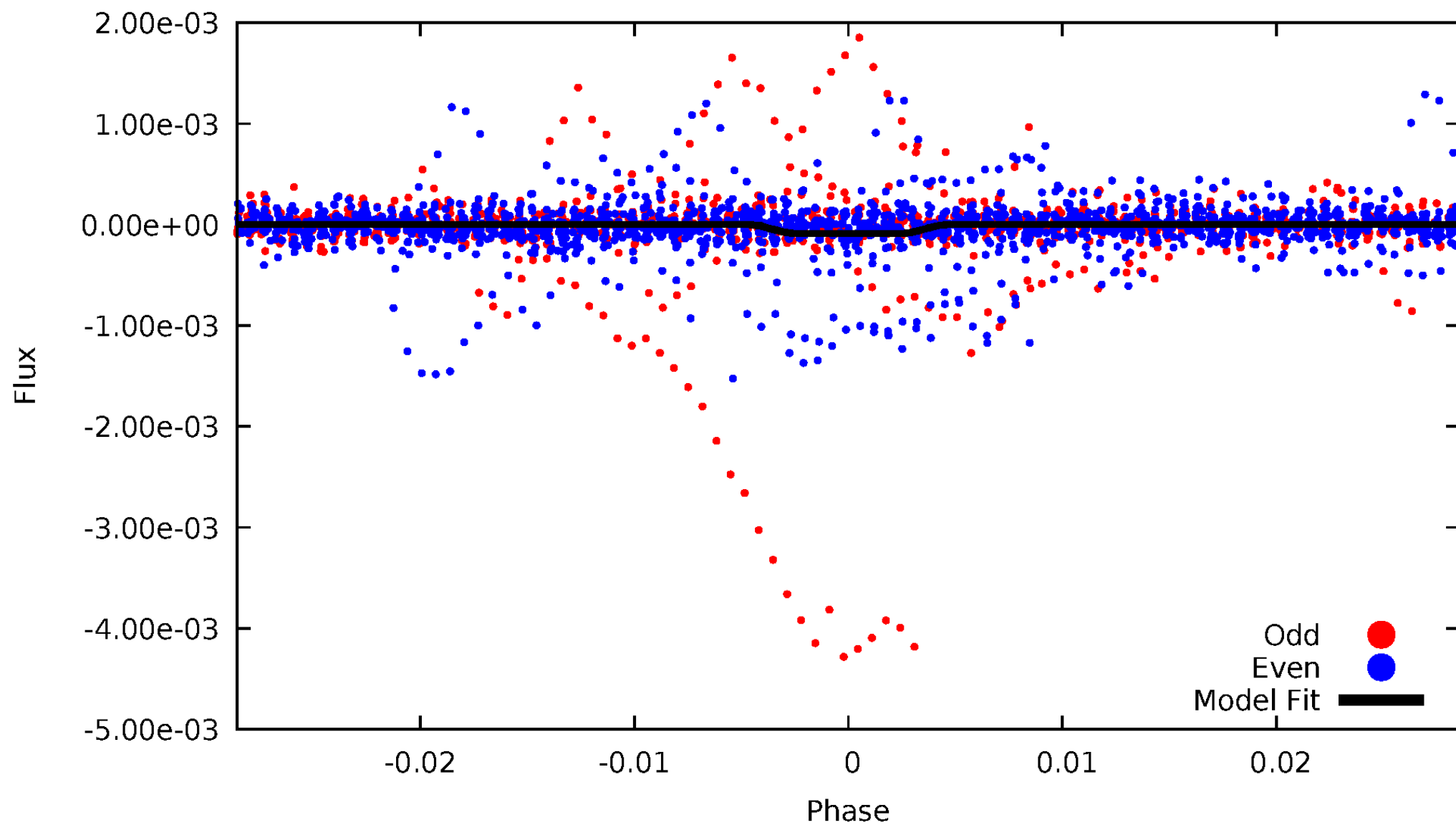
# DV Odd/Even

TCE 004847832-05



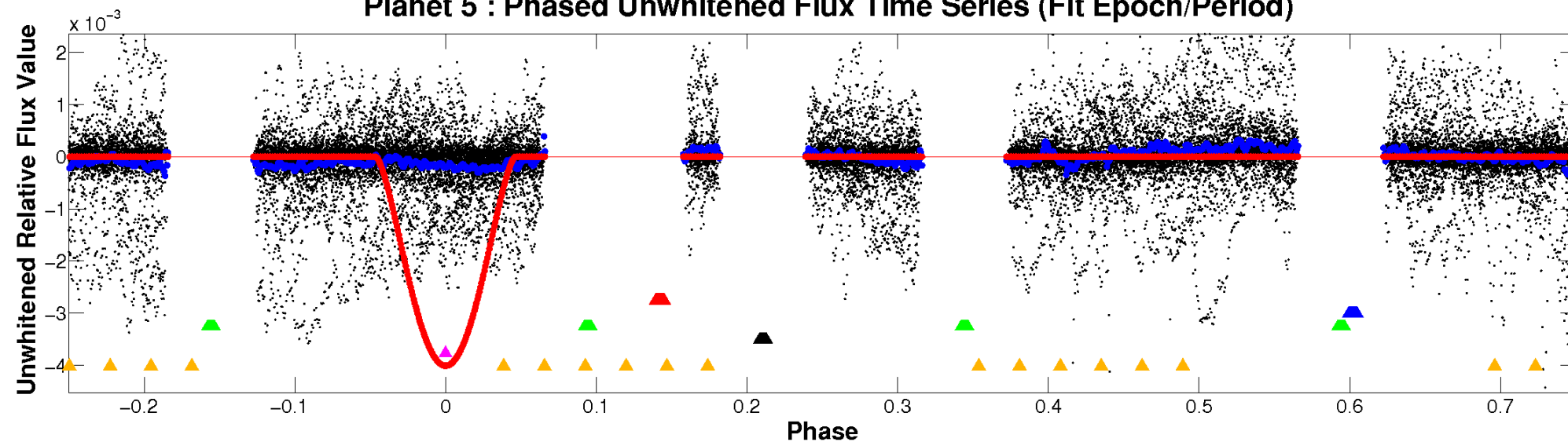
# ALT Odd/Even

TCE 004847832-05

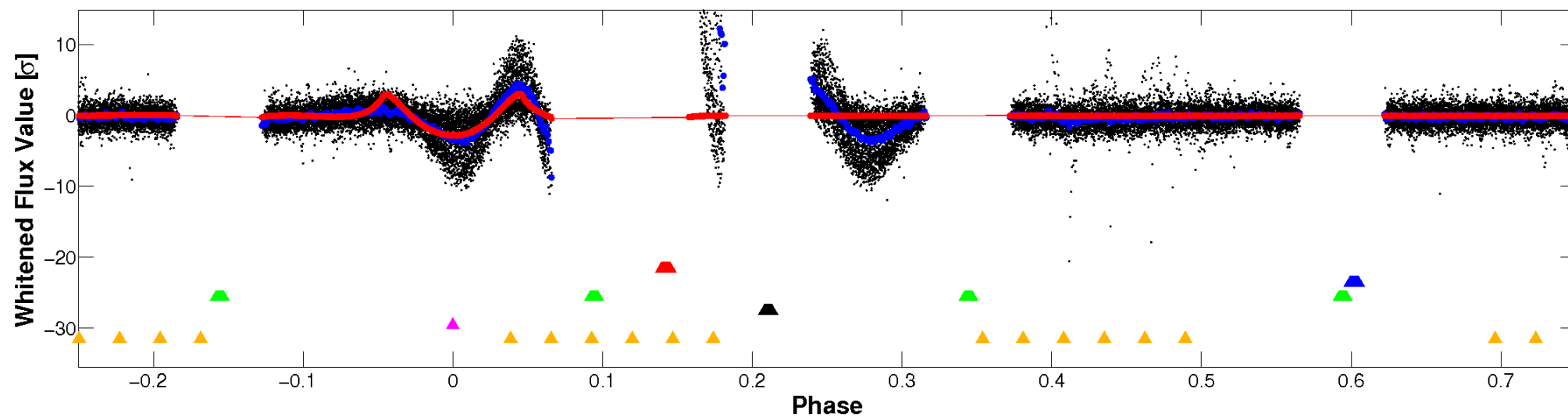


# Non-Whitened Vs. Whitened Light Curve

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

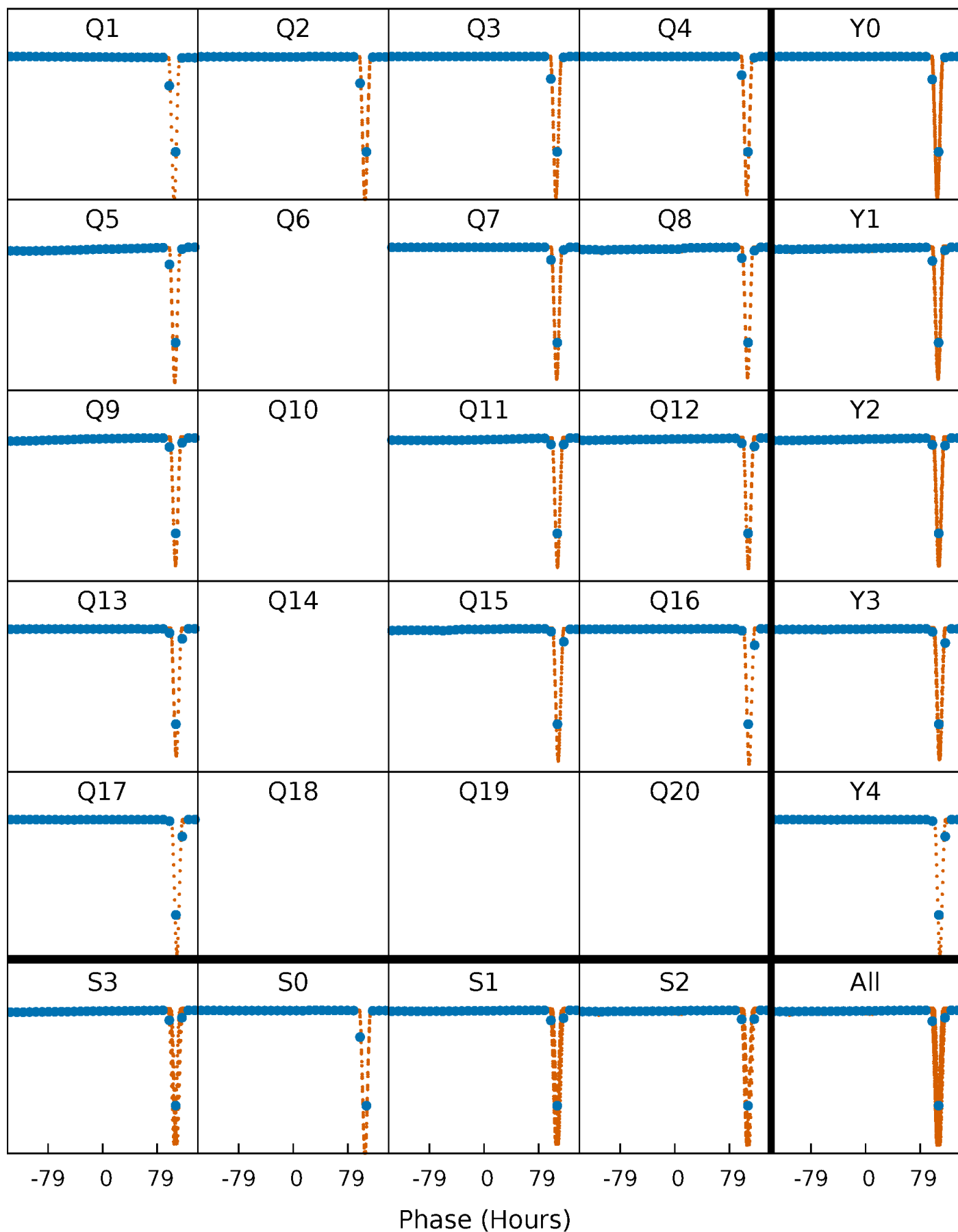


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



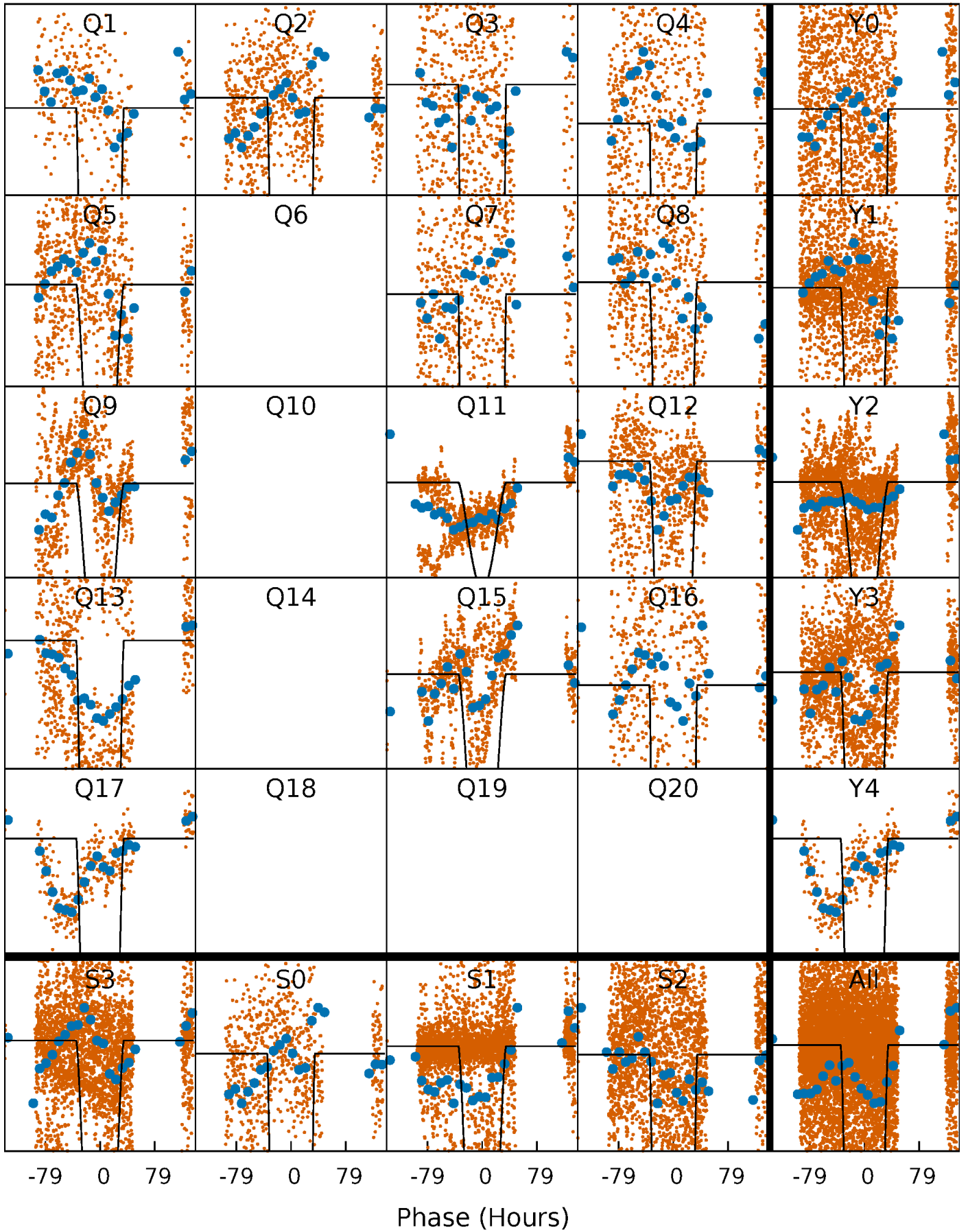
# PDC Quarter-Phased Transit Curves

TCE 004847832-05     $P = 30.956537$  Days     $T_0 = 151.837184$  (BKJD)



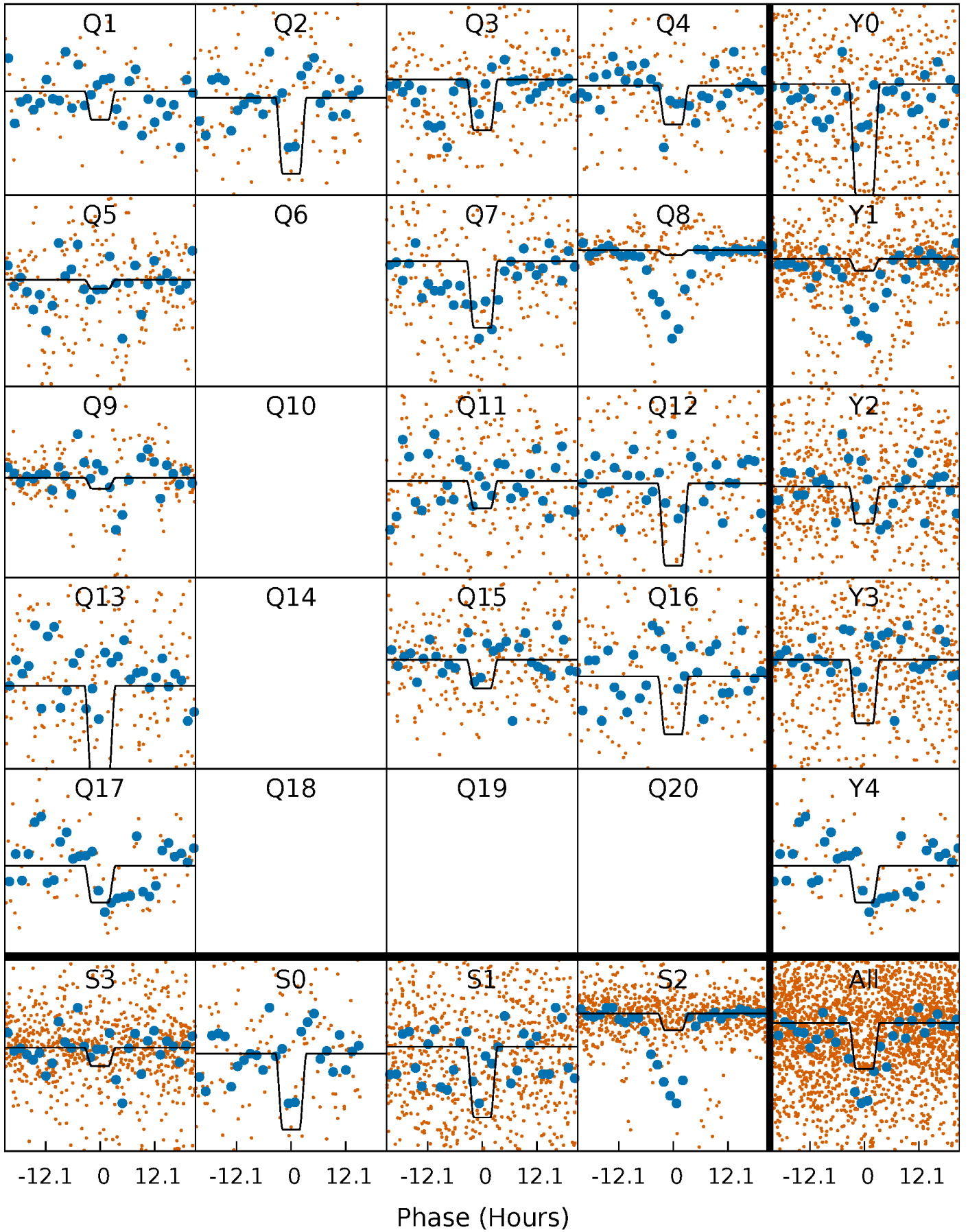
# DV Quarter-Phased Transit Curves

TCE 004847832-05   P= 30.956537 Days    $T_0=151.837184$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

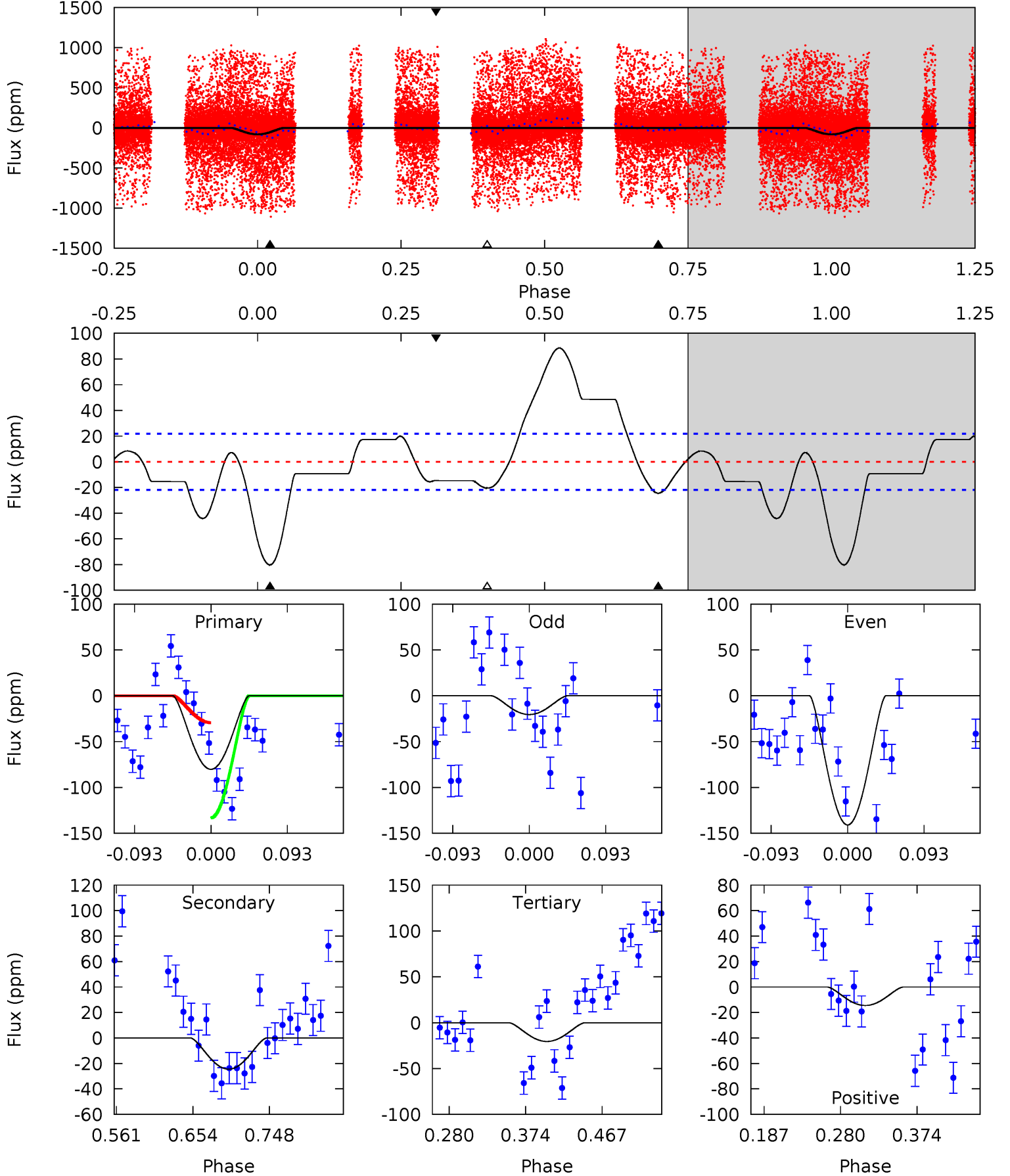
TCE 004847832-05     $P = 30.957074$  Days     $T_0 = 152.109556$  (BKJD)



# DV Model-Shift Uniqueness Test

004847832-05, P = 30.956537 Days, E = 120.880647 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
16.9	5.14	4.30	-3.05	4.58	1.68	8.18	12.6	19.9	0.84	8.18	13.1	2.74	0.52	11.0

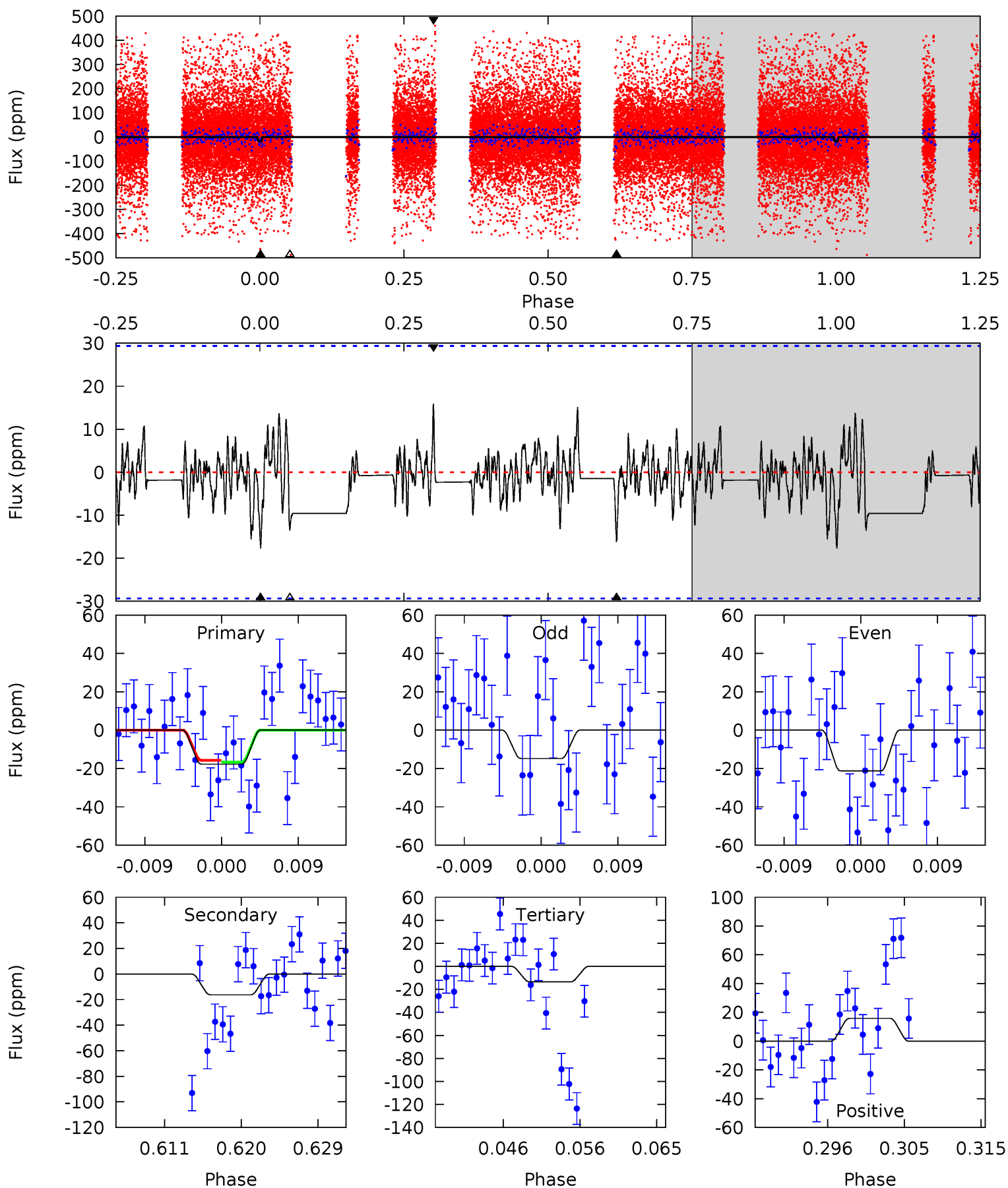




# Alt Model-Shift Uniqueness Test

004847832-05, P = 30.957074 Days, E = 121.152482 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.04	2.79	2.32	2.72	5.04	2.60	0.80	0.72	0.32	0.46	0.06	0.56	7.60	0.47	0.08





### Stellar Parameters For KIC 004847832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5291^{+211}_{-232}$	$4.423^{+0.136}_{-0.204}$	$0.060^{+0.250}_{-0.250}$	$0.926^{+0.274}_{-0.148}$	$0.828^{+0.103}_{-0.069}$	$1.467^{+0.893}_{-0.745}$
	+4%/-4%	+3%/-5%	+417%/-417%	+30%/-16%	+12%/-8%	+61%/-51%
Source	PHO1	FLK73	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 004847832-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-24 \pm 5$	$11.26^{+2.24}_{-1.55}$	$742^{+61}_{-48}$	$2064^{+86}_{-83}$	$3.396^{+1.513}_{-1.156}$
Alt.	$-16 \pm 6$	$1.32^{+1.08}_{-0.85}$	$740^{+59}_{-47}$	$3420^{+1709}_{-606}$	$162^{+1223}_{-118}$

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

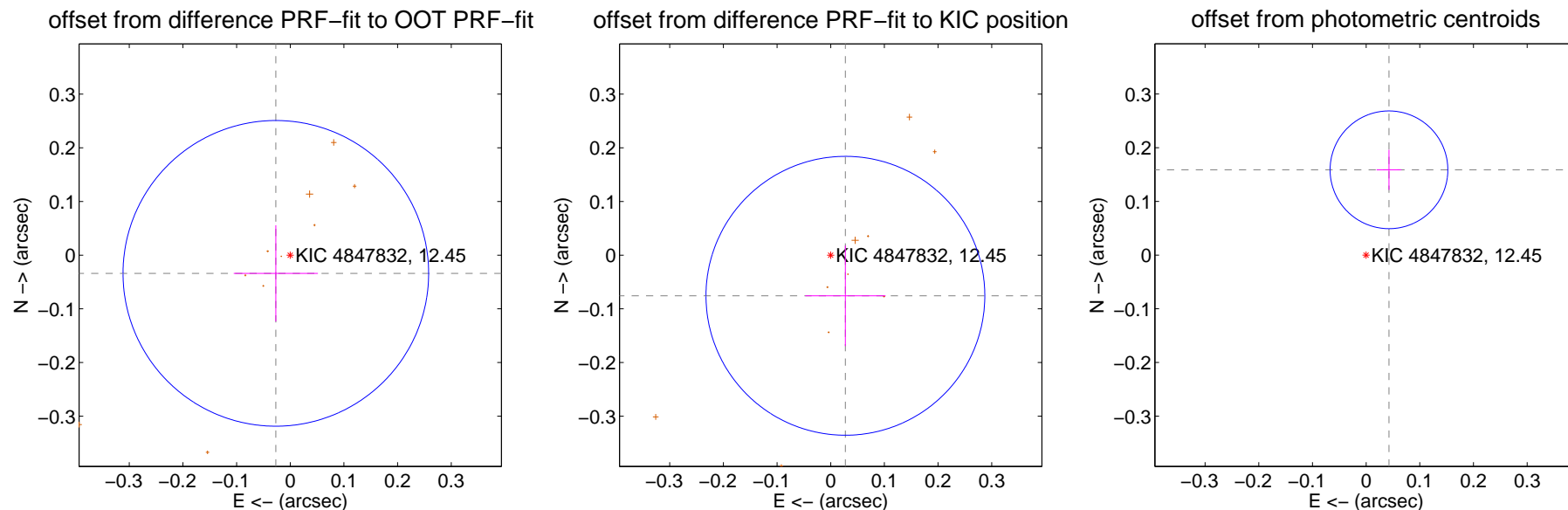
## DV Centroid Data

Supplemental centroid analysis for 004847832-05. Kepler magnitude: 12.45. Transit SNR 171.46

There are 0 quarters with good PRF difference image offsets

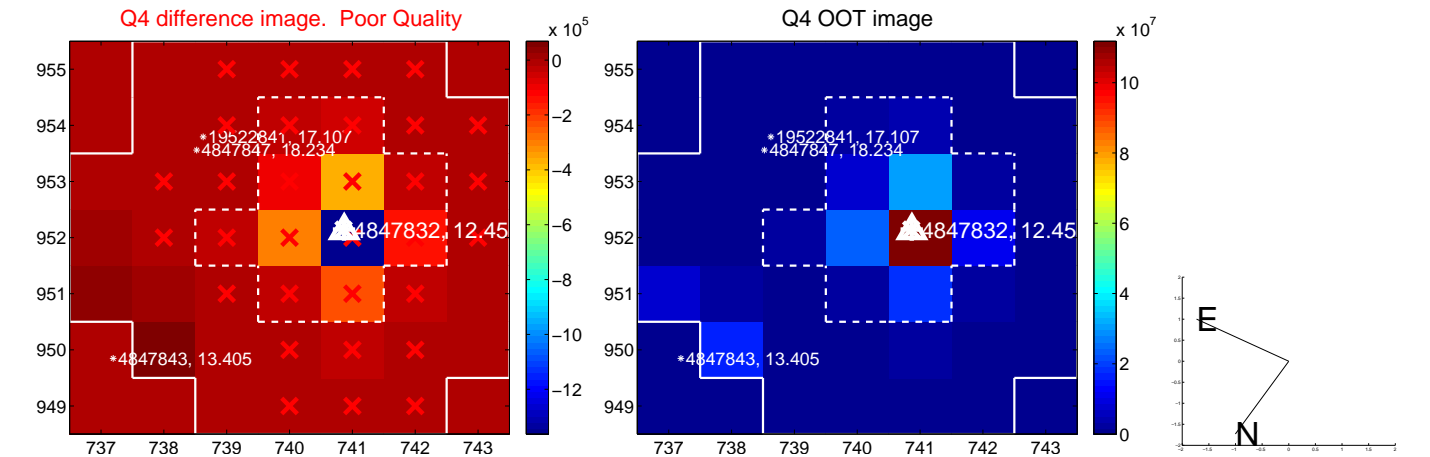
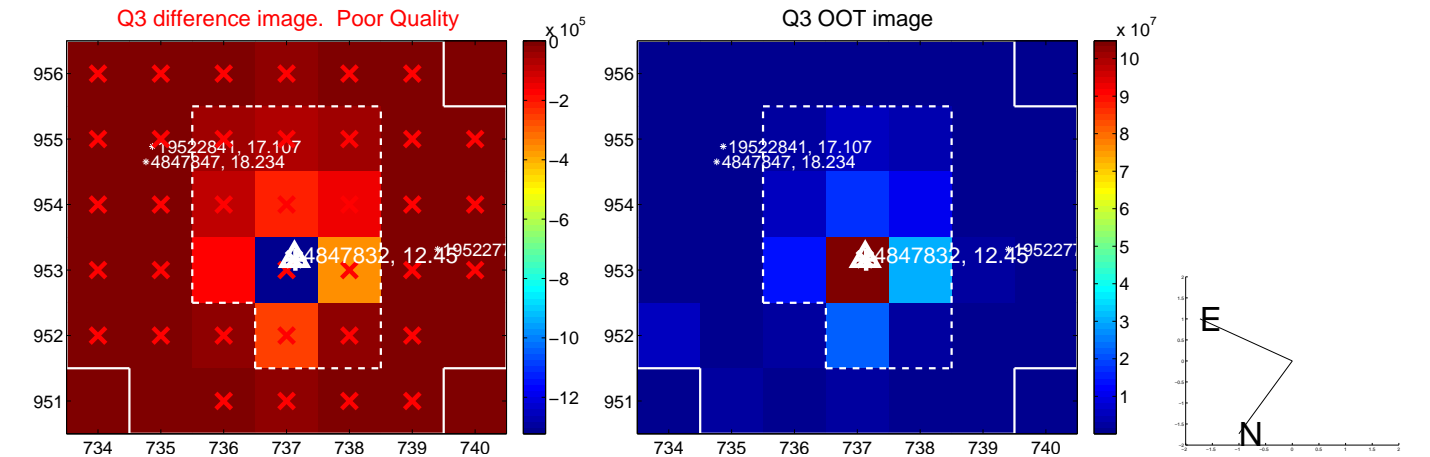
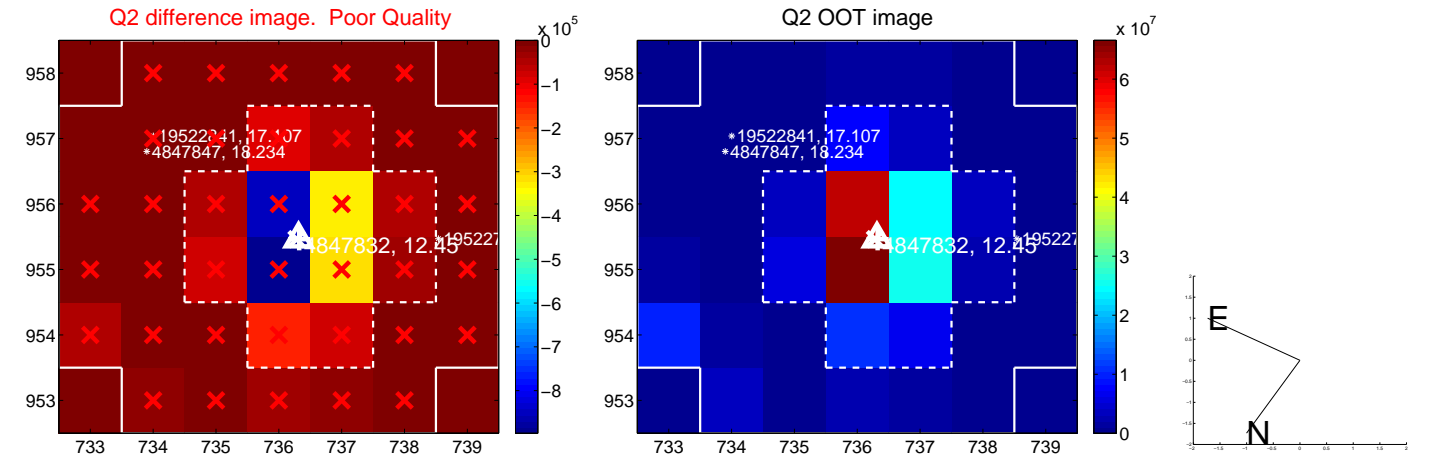
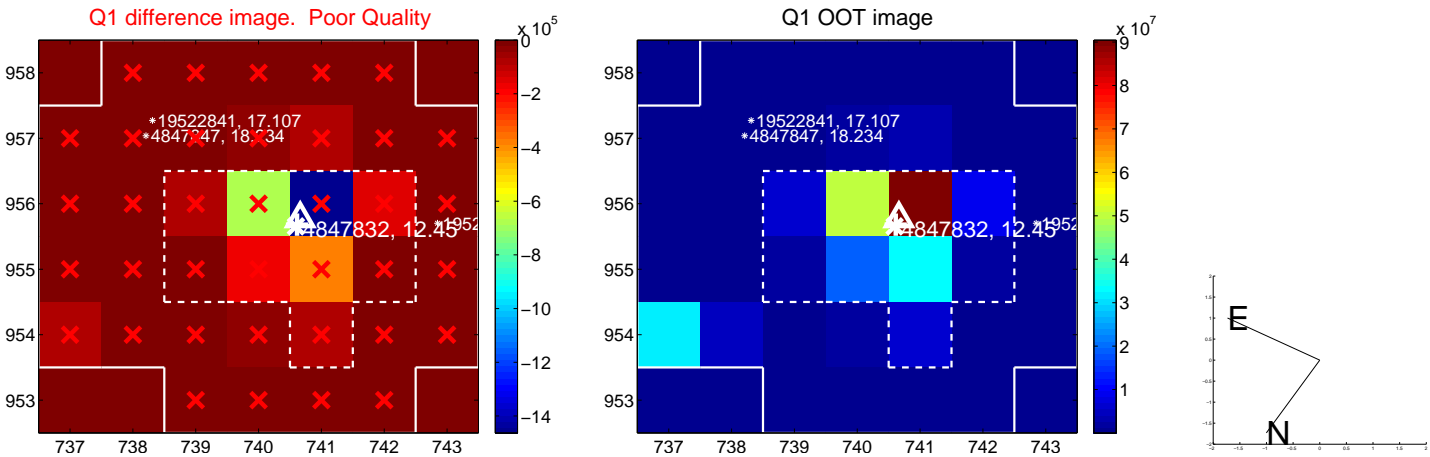
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.043 \pm 0.095$	0.46	$0.027 \pm 0.078$	$-0.034 \pm 0.090$
PRF-fit source offset from KIC position	$0.080 \pm 0.087$	0.93	$-0.027 \pm 0.075$	$-0.076 \pm 0.094$
photometric centroid source offset	$0.16 \pm 0.04$	4.50	$-0.04 \pm 0.02$	$0.16 \pm 0.04$

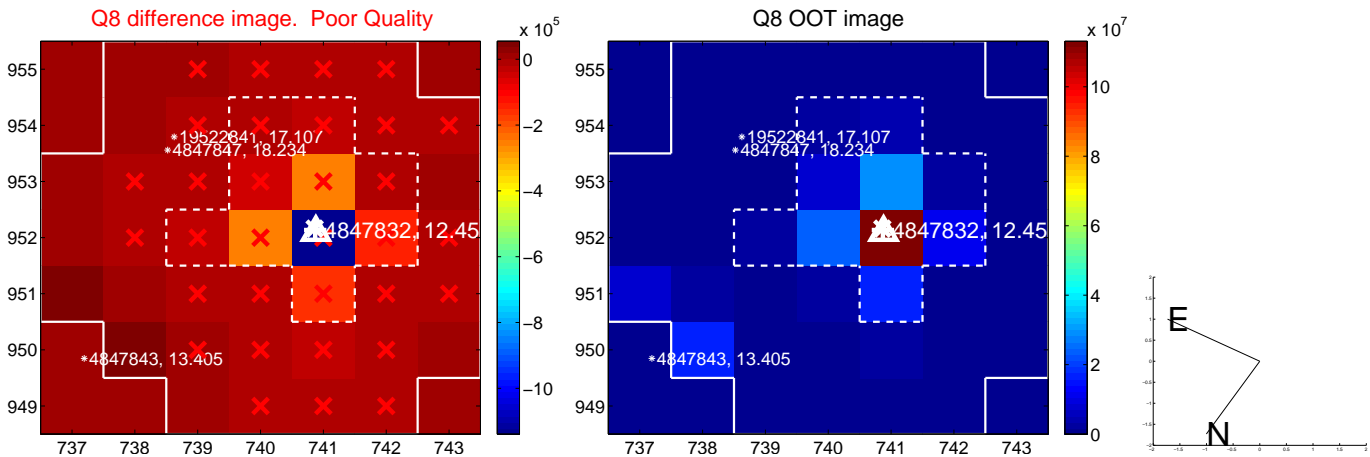
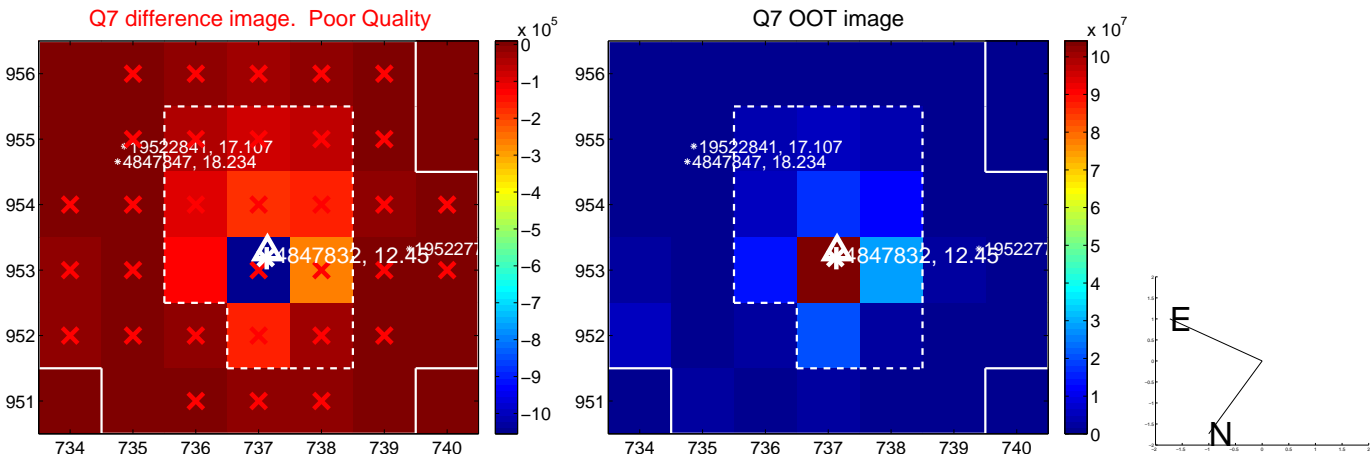
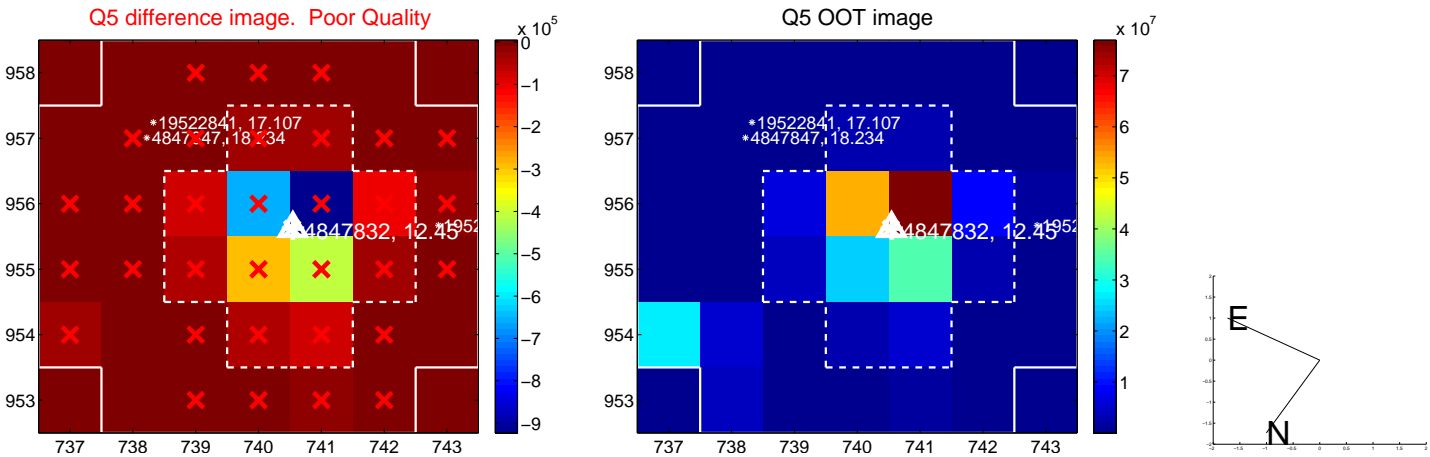


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

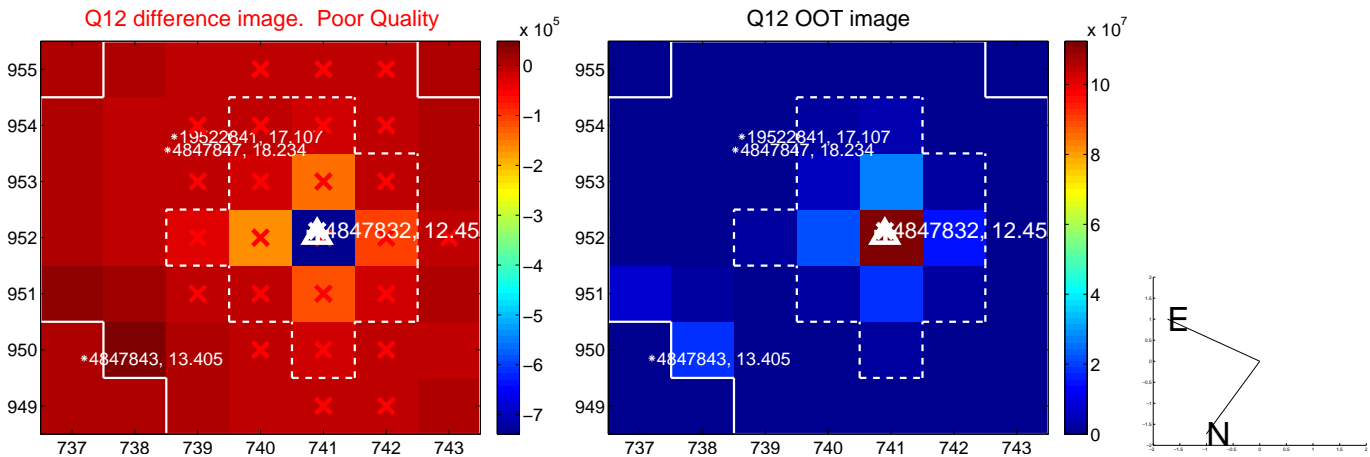
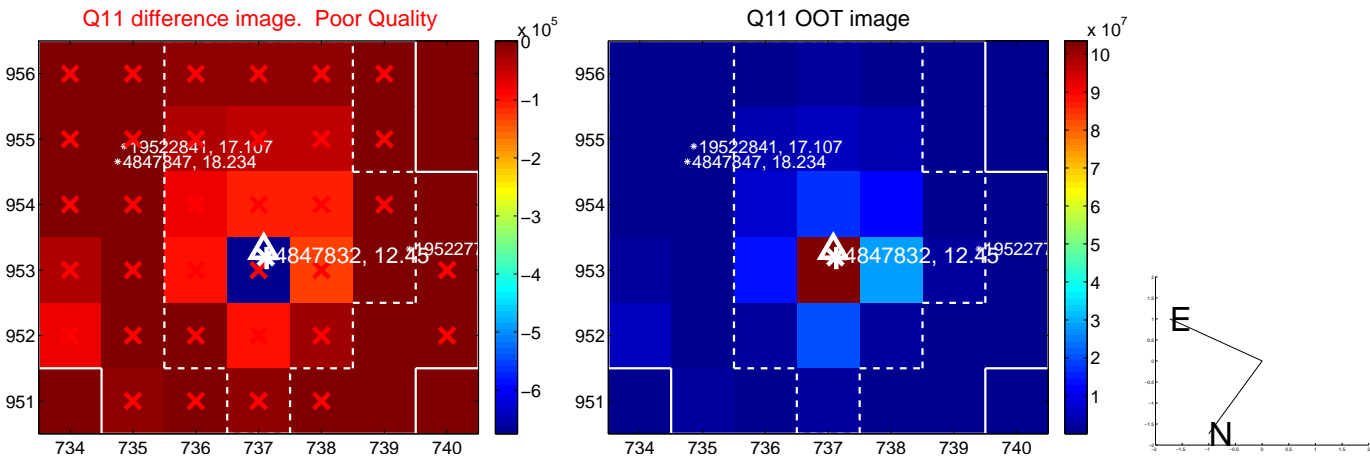
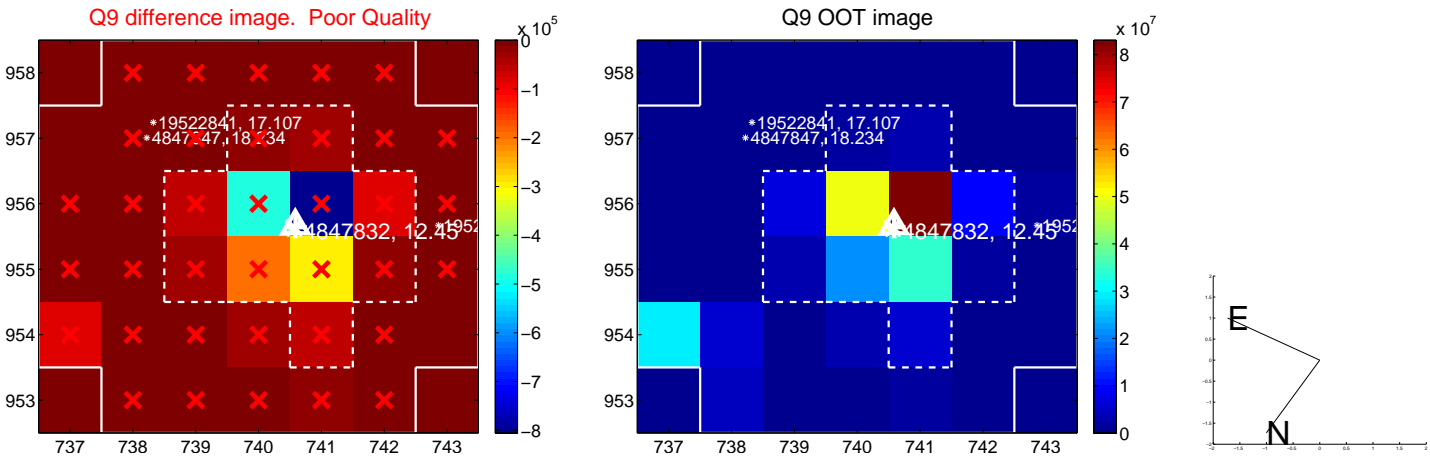
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



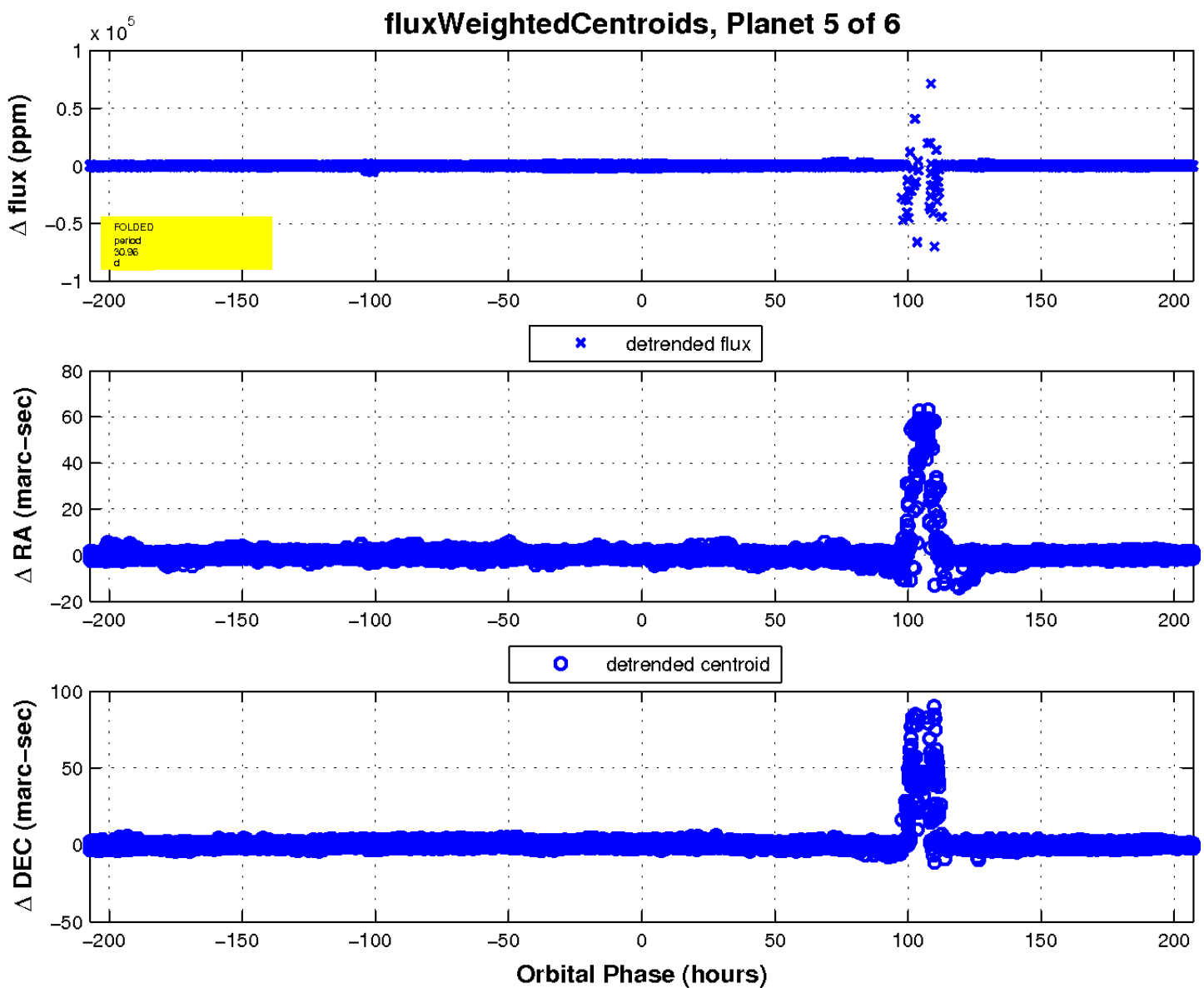
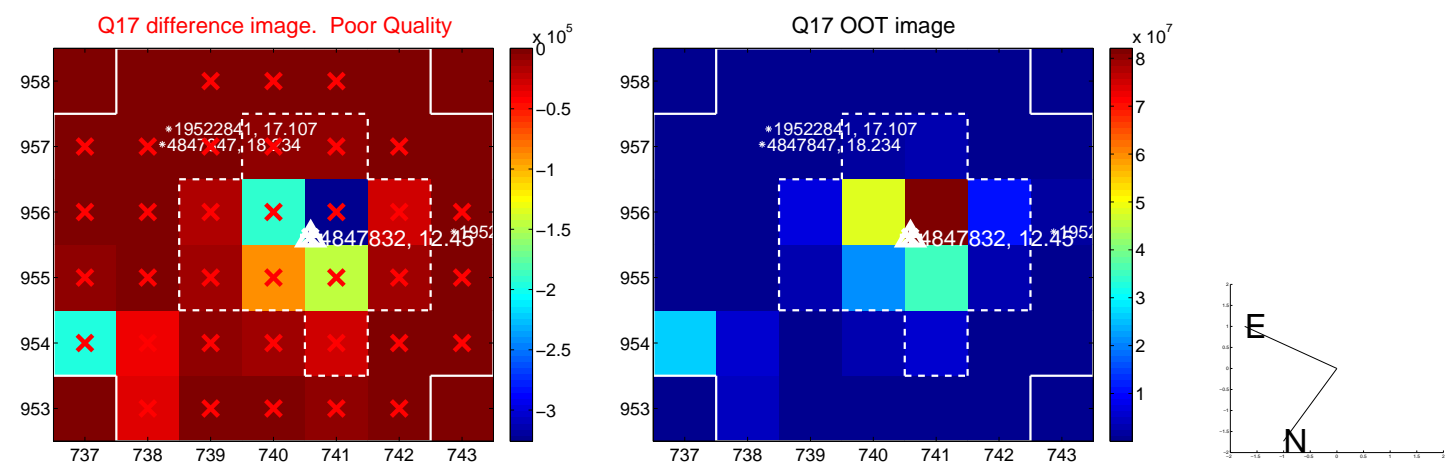
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



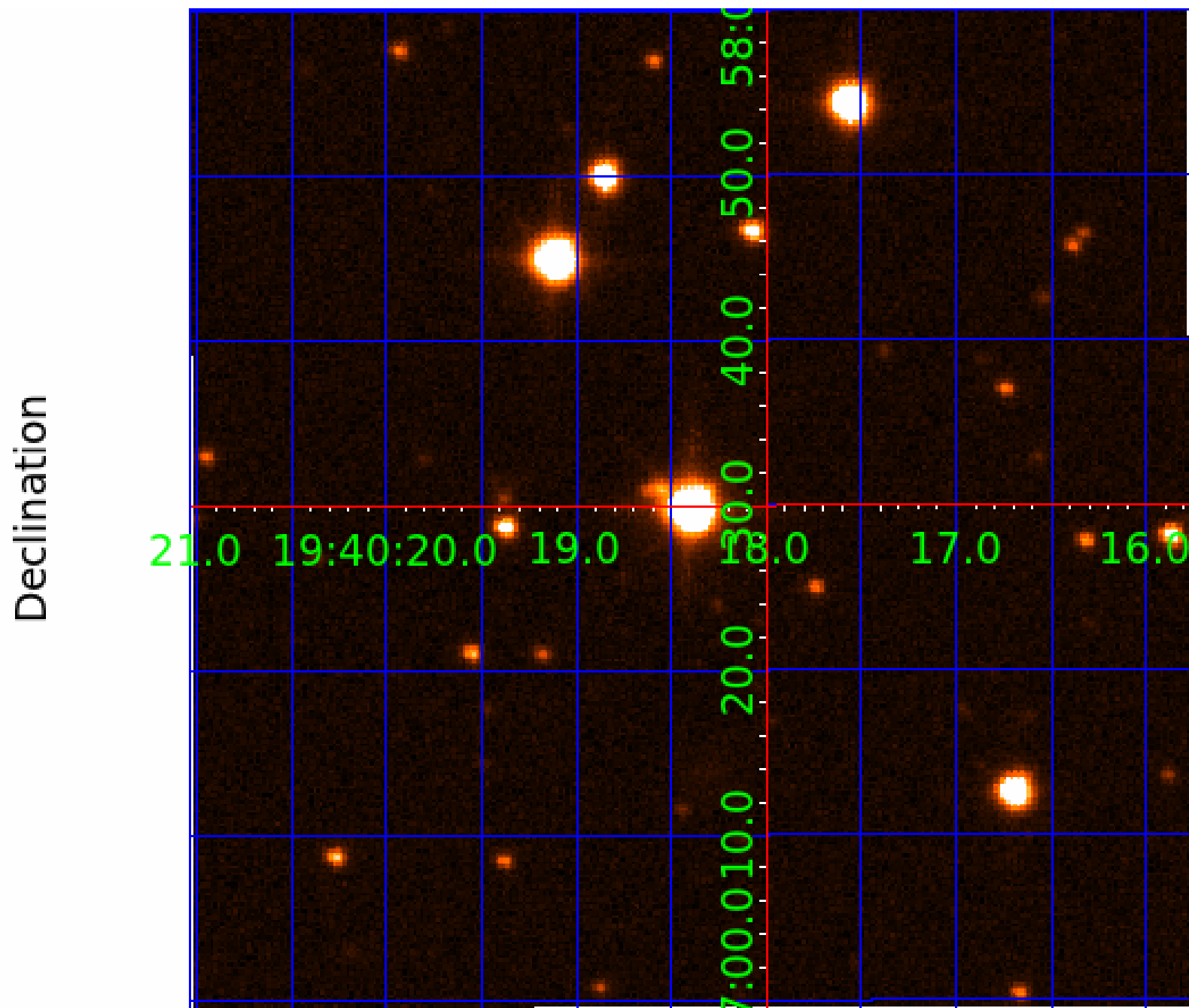
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





# KIC 004847832

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004847832-01	OBS	6459.01	30.960463	156.150462	345106.1	9.000	42138.4	-1.0	0.93	5291	44.68	18.32
004847832-02	OBS	No	30.960315	139.432404	393288.9	3.500	36936.7	-1.0	0.93	5291	50.52	18.32
004847832-03	OBS	No	7.739982	139.200824	21547.3	15.000	2213.4	-1.0	0.93	5291	13.28	116.36
004847832-04	OBS	No	30.959678	158.285769	3486.2	15.000	606.0	-1.0	0.93	5291	5.34	18.33
004847832-05	OBS	No	30.956537	151.837184	4006.4	69.085	156.8	171.5	0.93	5291	11.15	18.33
004847832-06	OBS	No	82.271289	157.223223	4839.8	7.500	192.6	-1.0	0.93	5291	6.29	4.98

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004847832-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_NOFITS
004847832-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
004847832-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
004847832-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_NOFITS
004847832-05	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—SAME_NTL_PERIOD—CENT_FEW_DIFFS—HALO_GHOST
004847832-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_NOFITS

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

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

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

## Ephemeris Match Information For 004847832-06

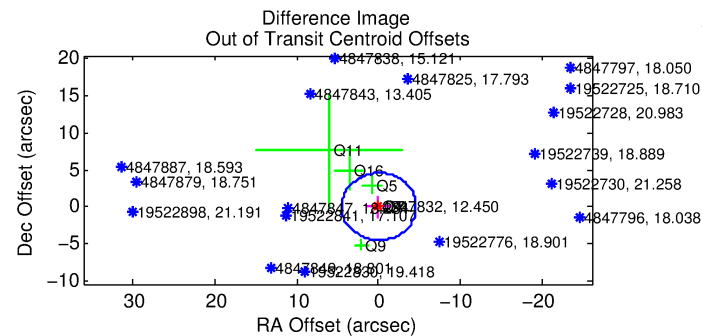
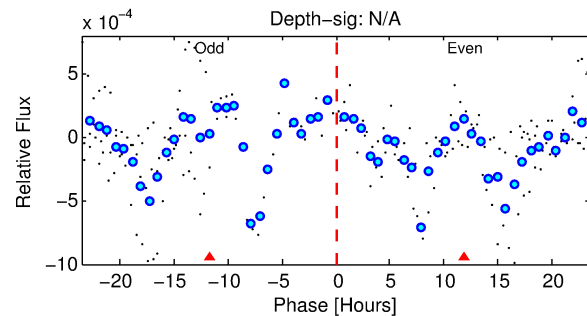
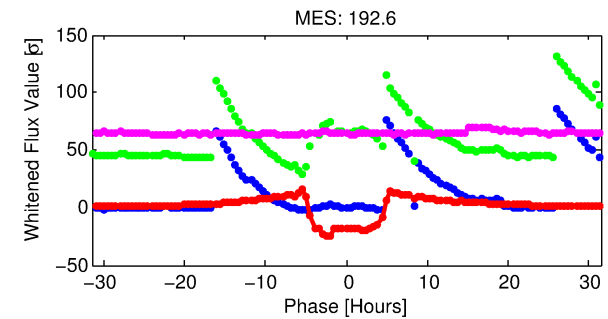
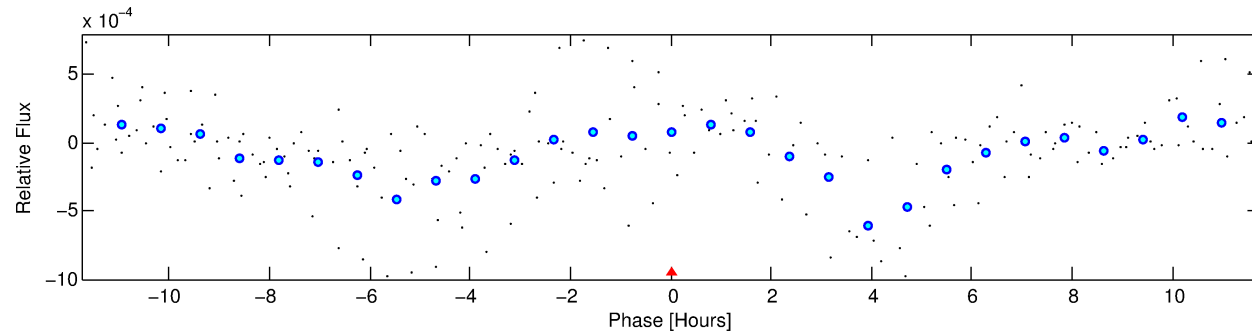
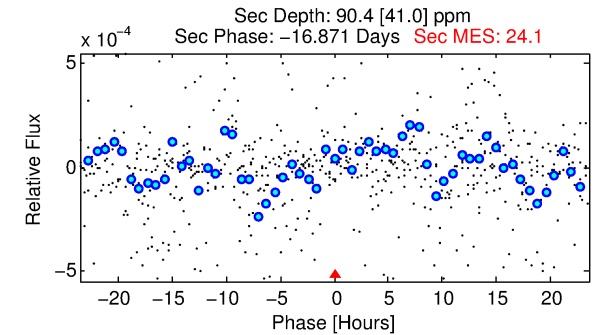
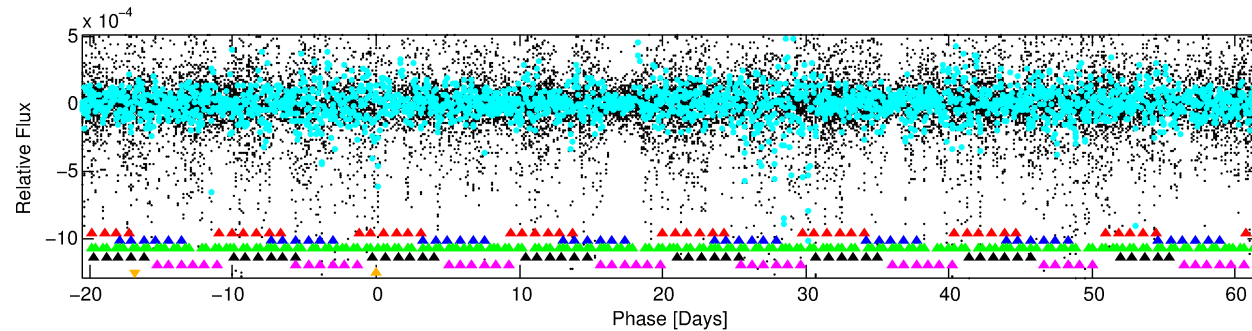
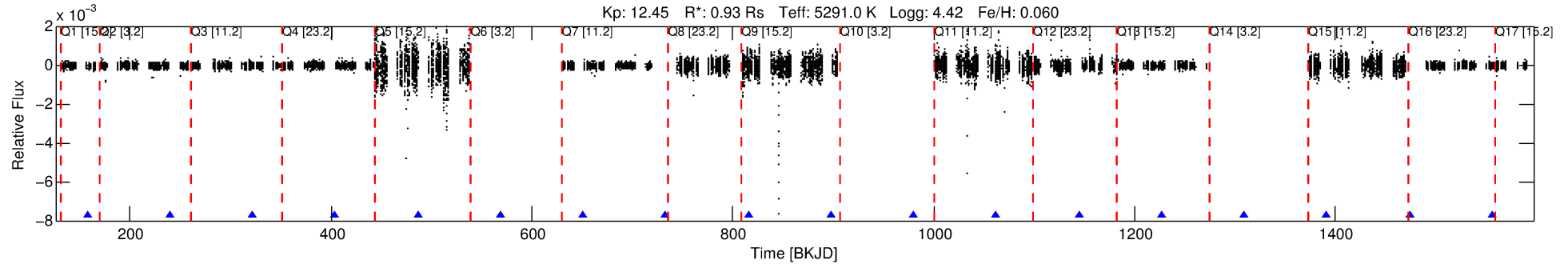
No Significant Match Found

# DV One-Page Summary

KIC: 4847832 Candidate: 6 of 6 Period: 82.271 d

KOI: K06459 Corr: No Ephemeris Match

Kp: 12.45 R\*: 0.93 Rs Teff: 5291.0 K Logg: 4.42 Fe/H: 0.060



TPS TCE Results:

Period = 82.27129 d  
Epoch = 157.2232 BKJD

DV fit results are unavailable

DV Diagnostic Results:

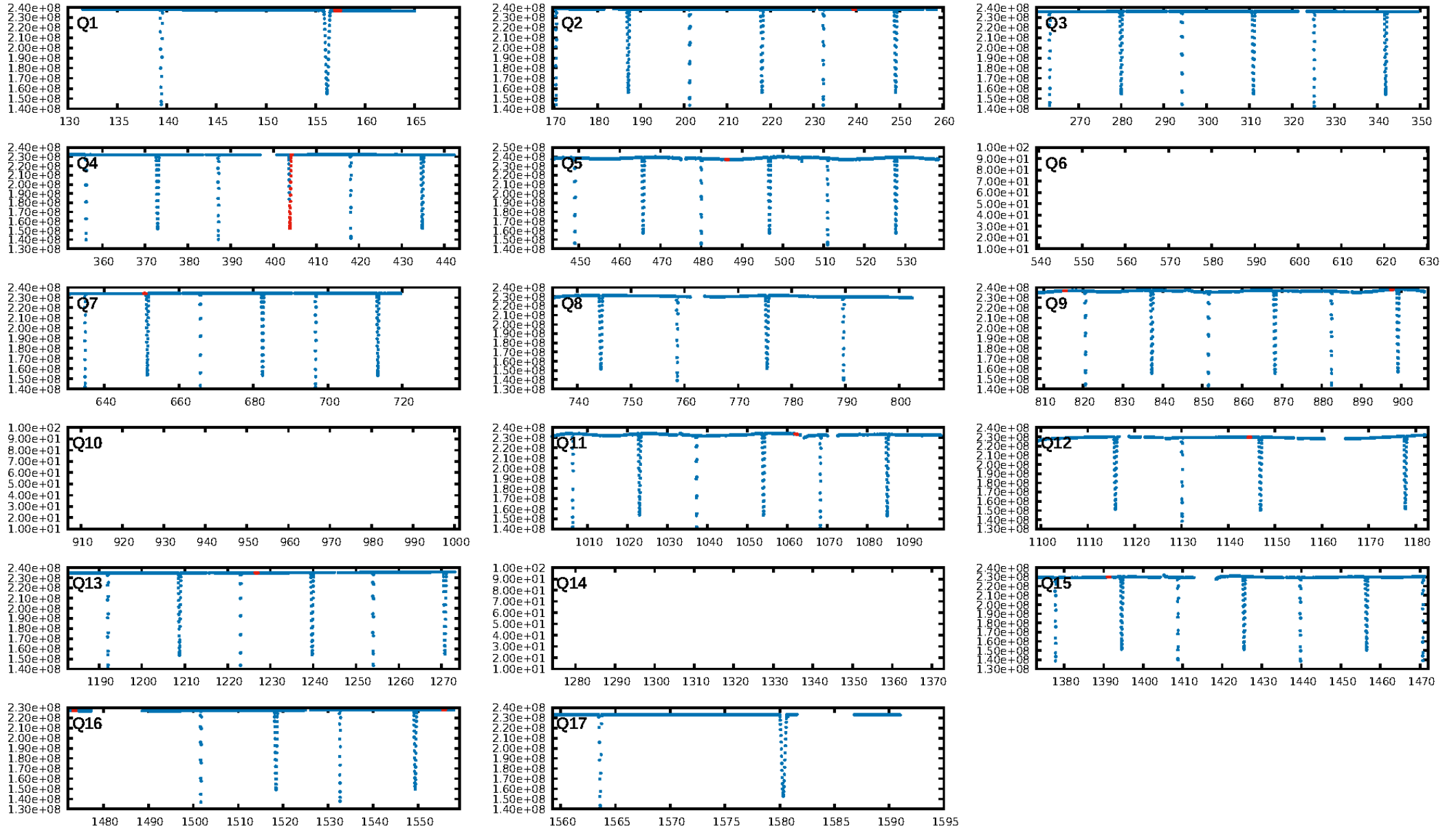
ShortPeriod-sig: 100.0% [105.11σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -0.4146

Centroid-sig: N/A  
Centroid-so: 0.357 arcsec [0.96σ]  
OotOffset-rm: 0.015 arcsec [0.01σ]  
KicOffset-rm: 0.033 arcsec [0.02σ]  
OotOffset-st: 0/2/2 [6]  
KicOffset-st: 0/2/2 [6]  
DiffImageQuality-fgm: 0.00 [0/6]  
DiffImageOverlap-fno: 0.50 [5/10]

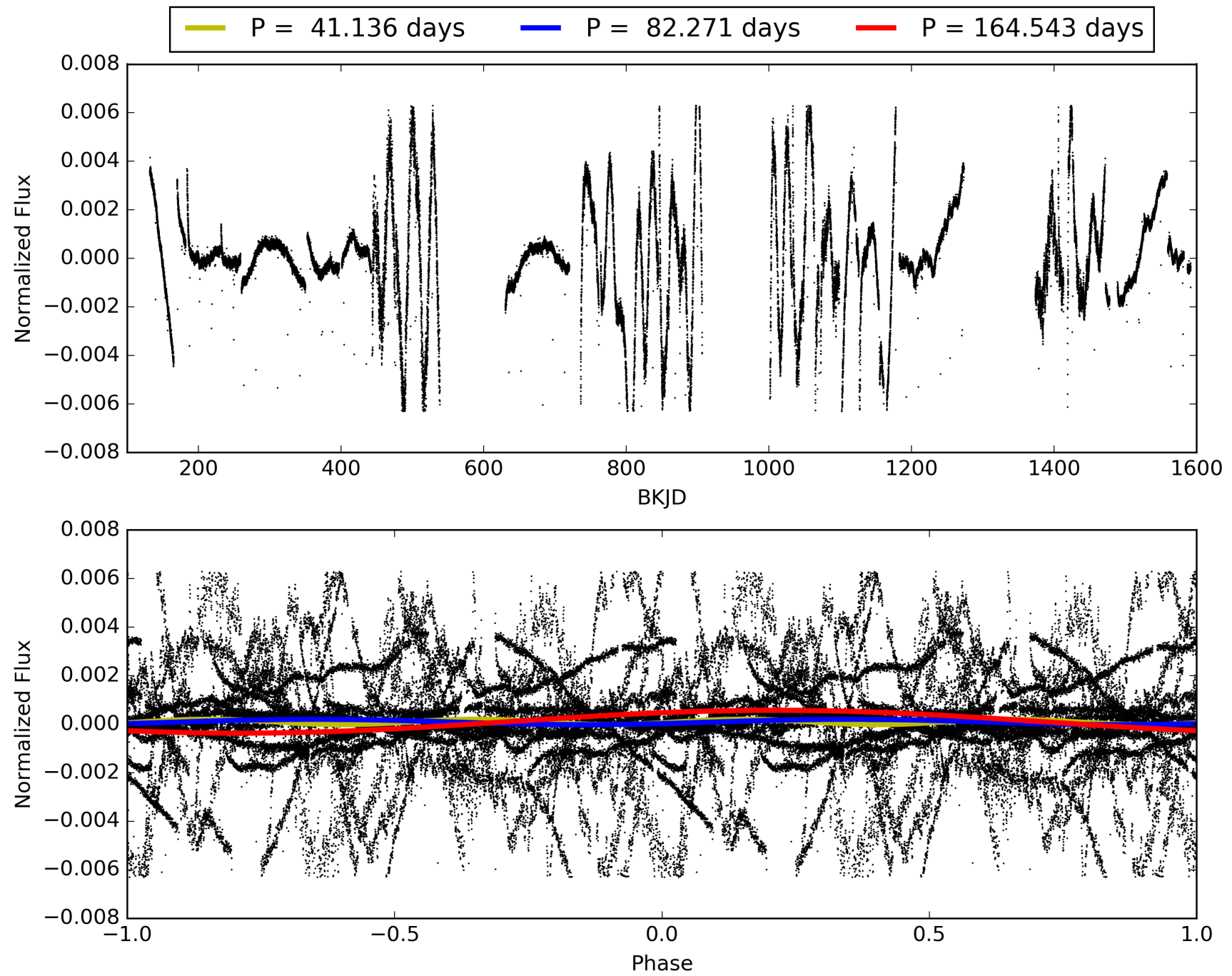
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 06:28:14 Z

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

# TCE 004847832-06, PDC Light Curves

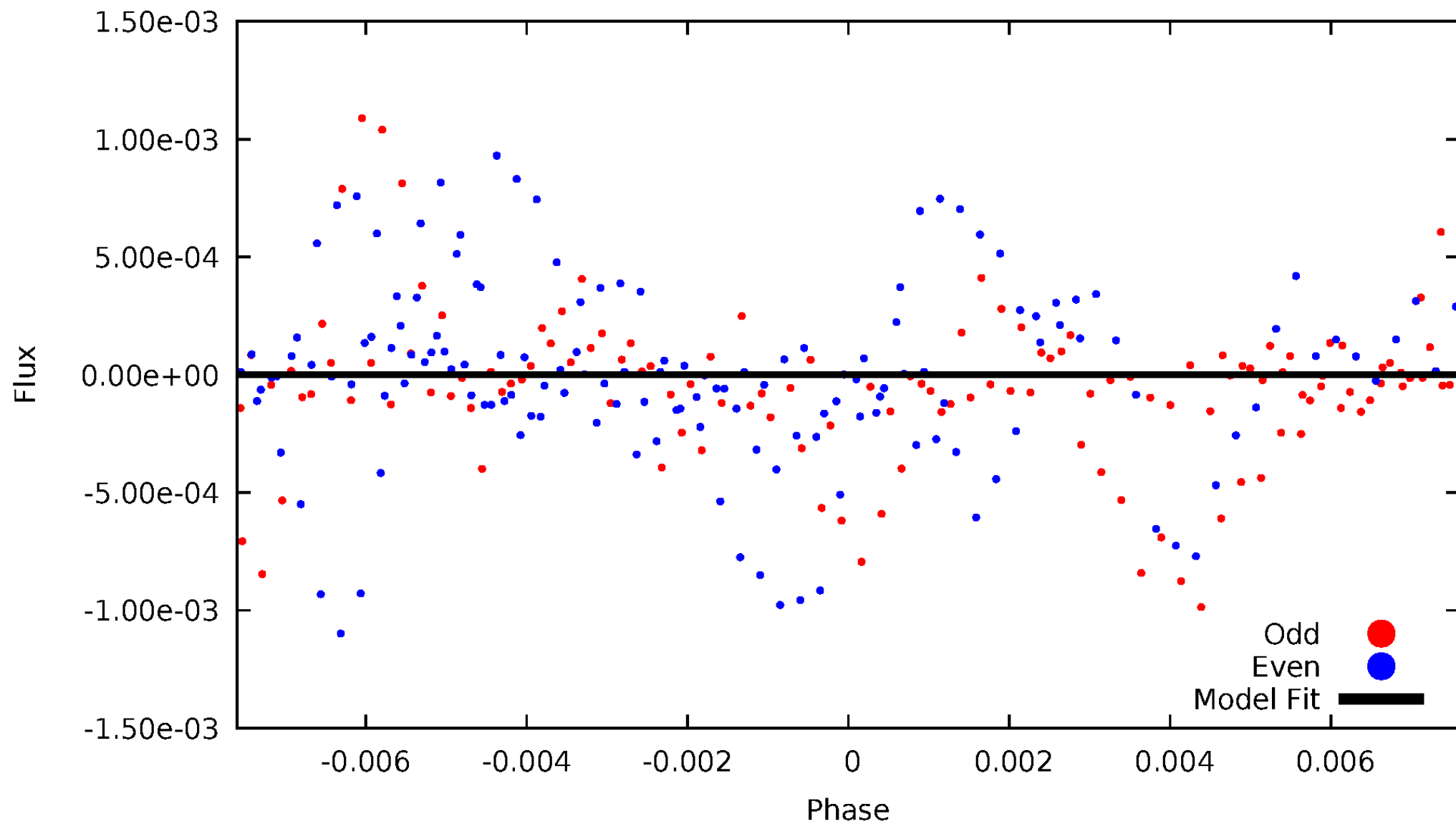


TCE 004847832-06



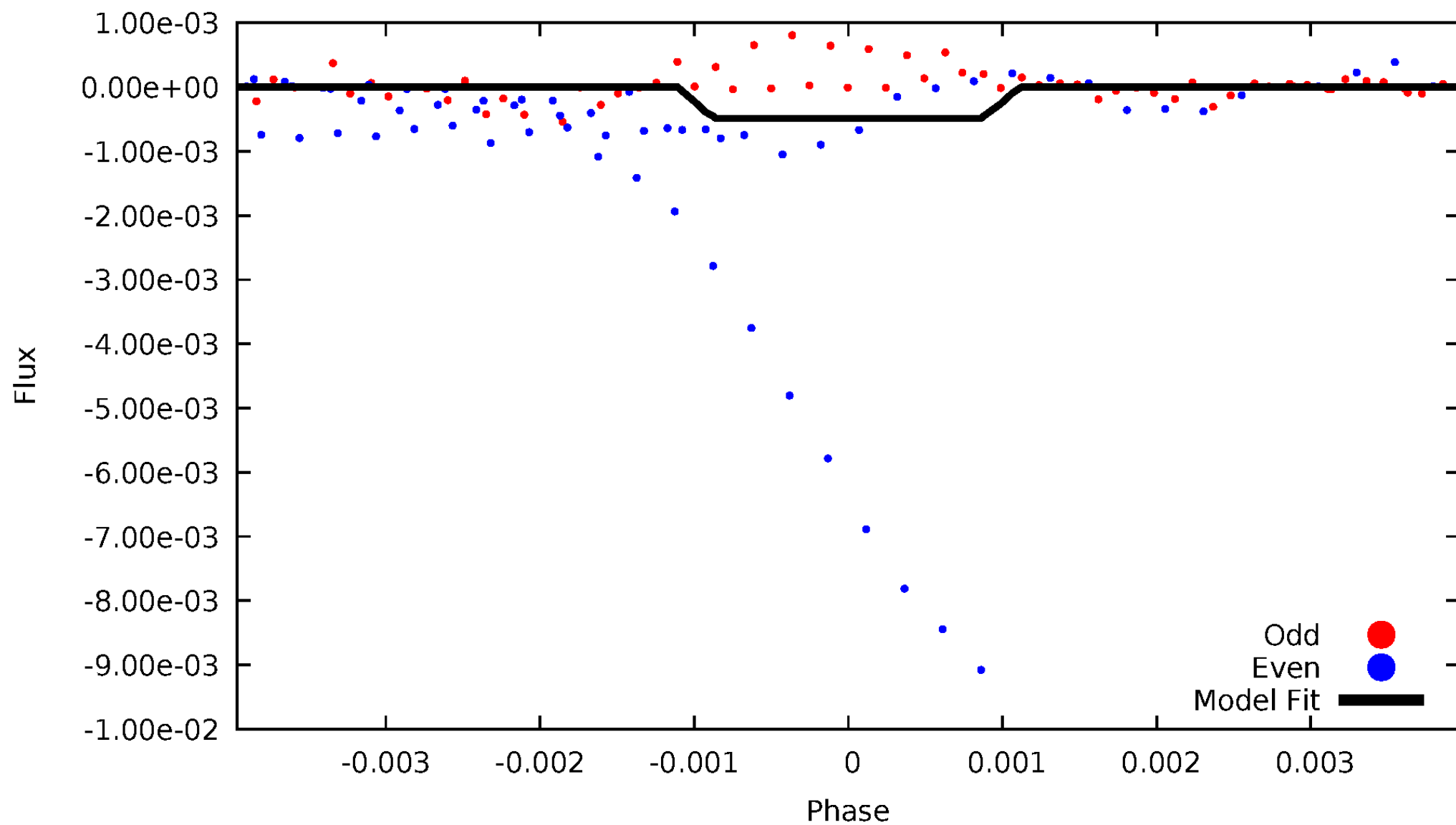
# DV Odd/Even

TCE 004847832-06



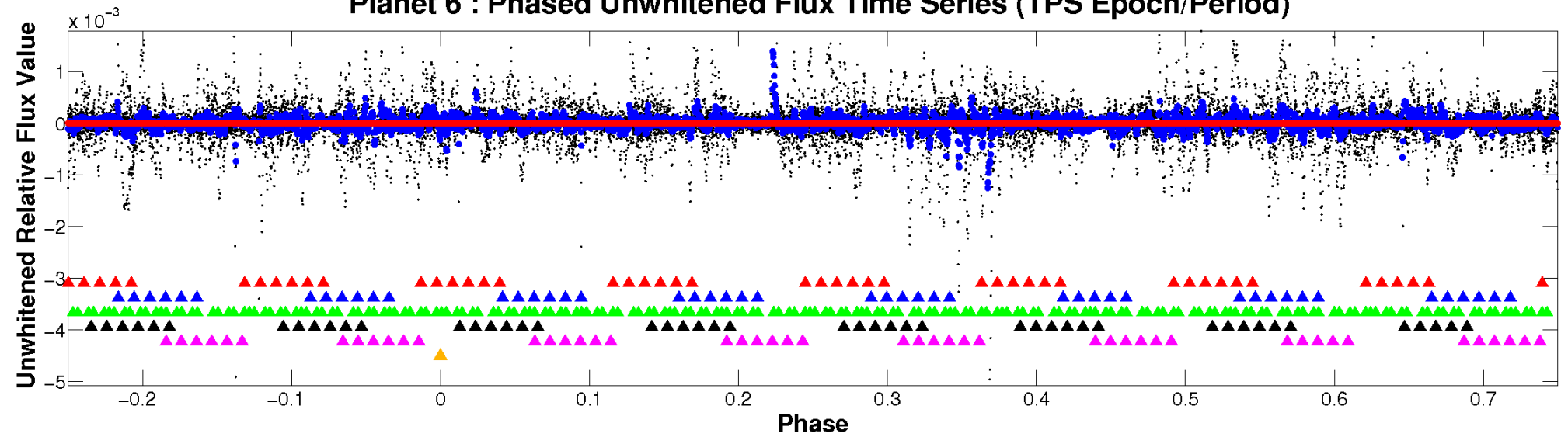
# ALT Odd/Even

TCE 004847832-06



# Non-Whitened Vs. Whitened Light Curve

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

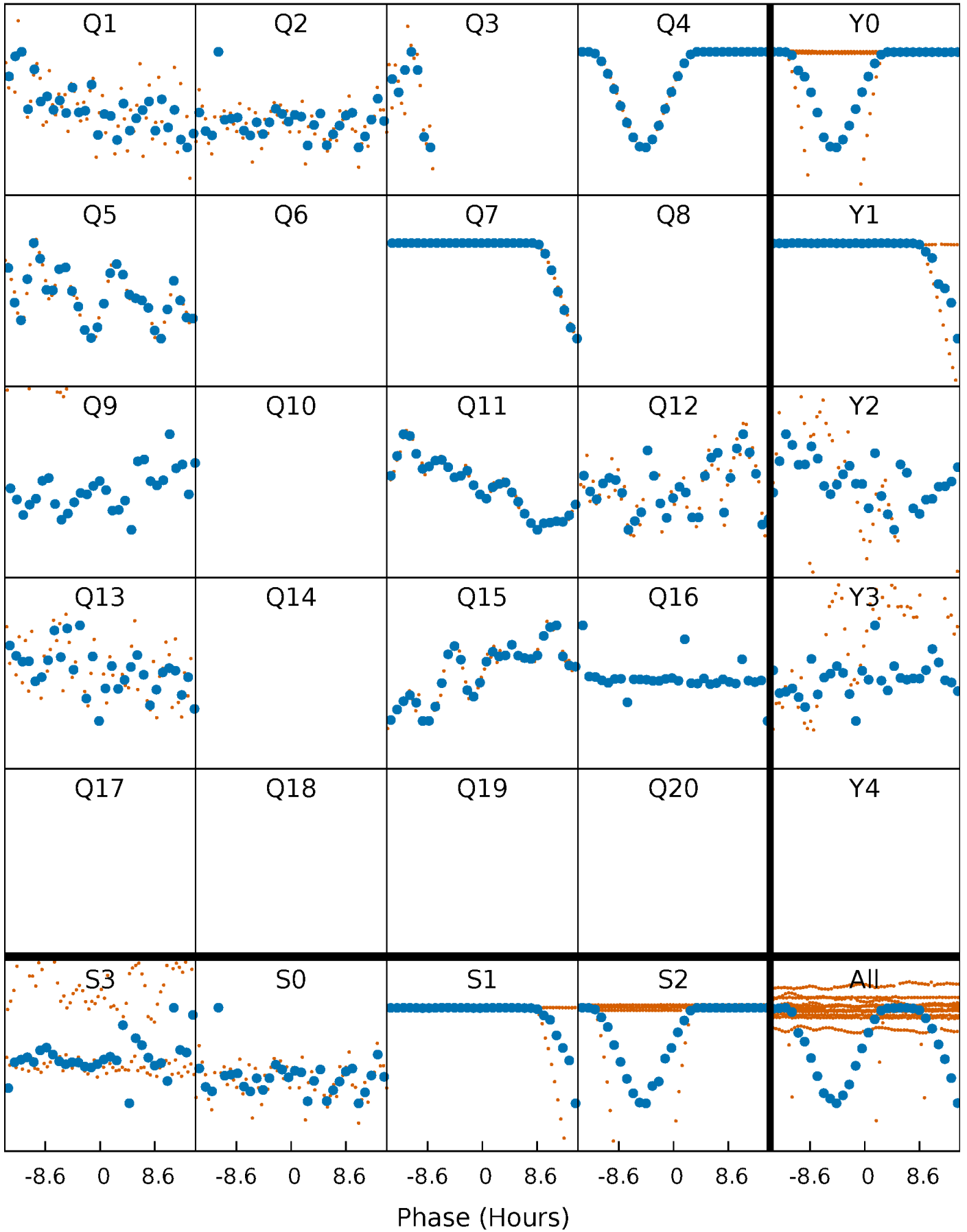


Planet 6 : Phased Whitened Flux Time Series (TPS Epoch/Period)



# PDC Quarter-Phased Transit Curves

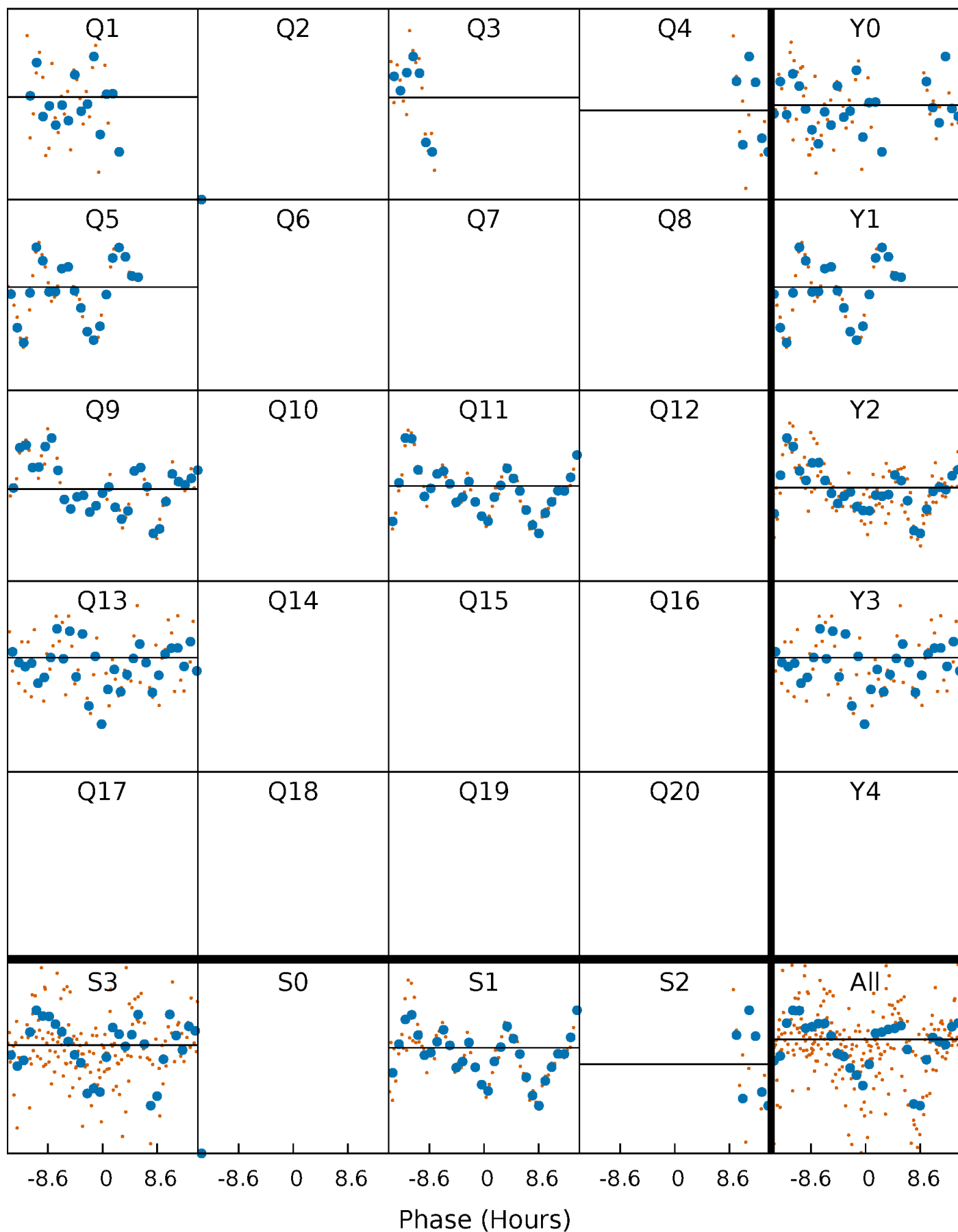
TCE 004847832-06   P= 82.271289 Days    $T_0=157.223223$  (BKJD)





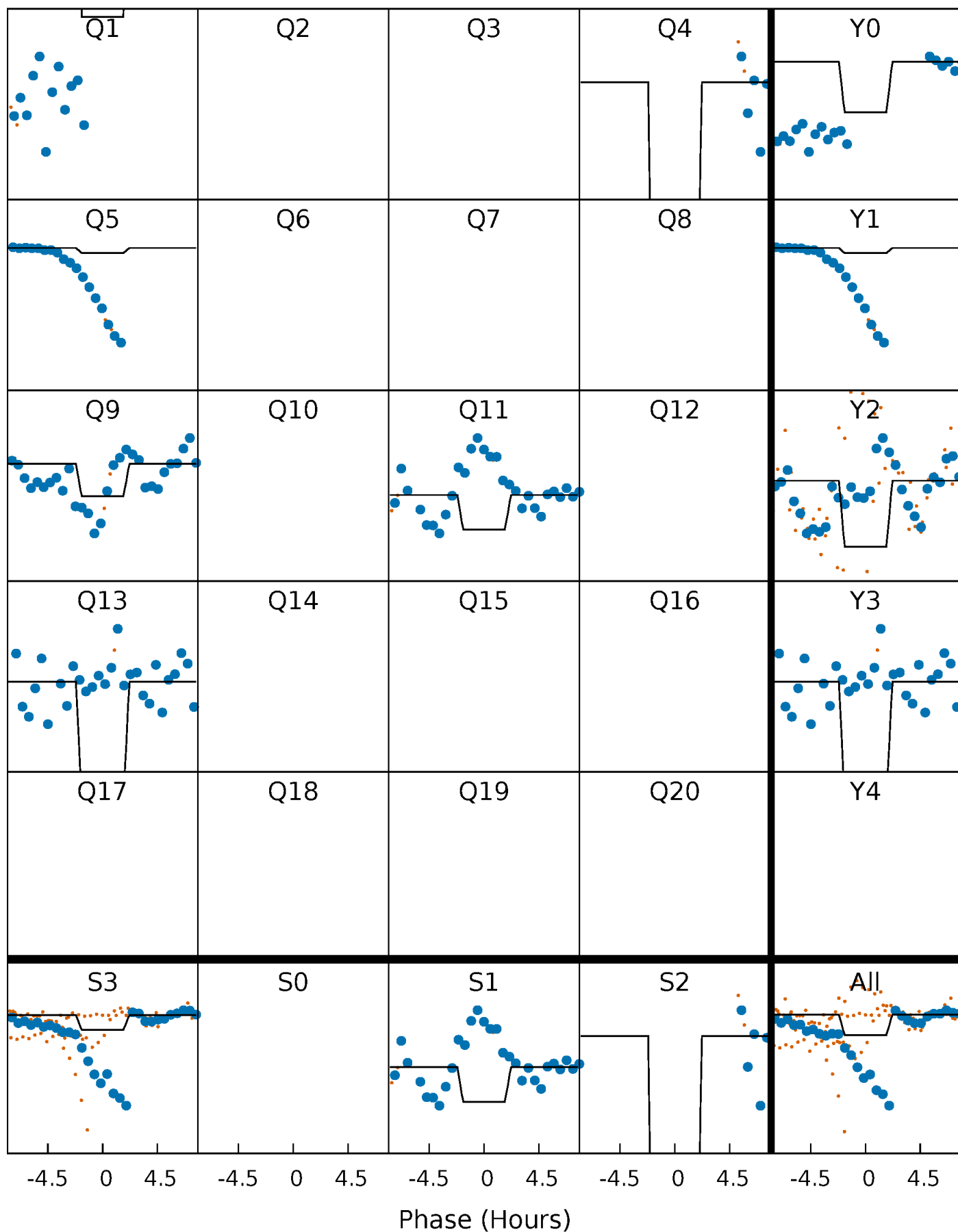
# DV Quarter-Phased Transit Curves

TCE 004847832-06     $P = 82.271289$  Days     $T_0 = 157.223223$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

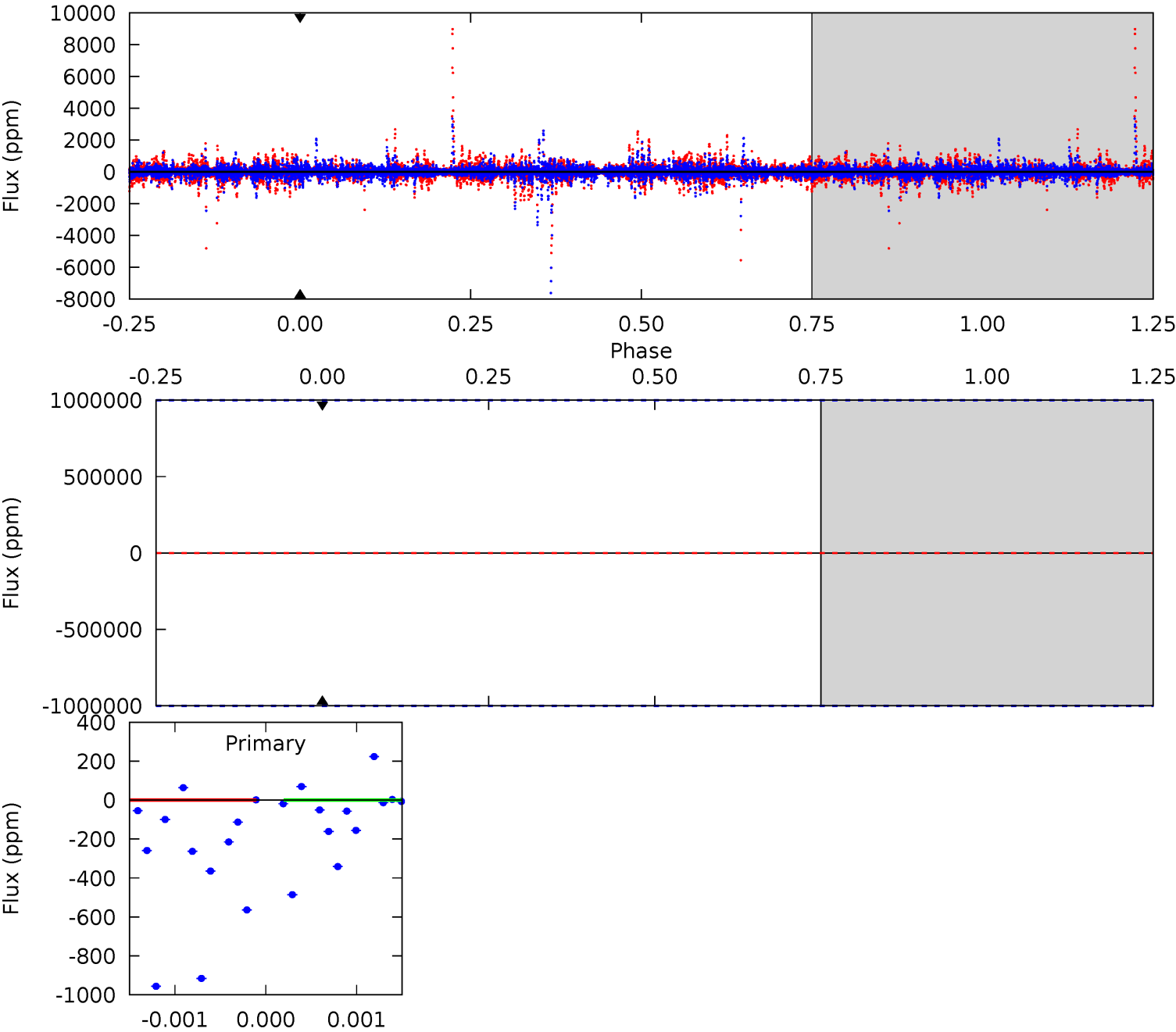
TCE 004847832-06 P= 82.271289 Days  $T_0=157.389252$  (BKJD)



# DV Model-Shift Uniqueness Test

004847832-06, P = 82.271289 Days, E = 74.951934 Days

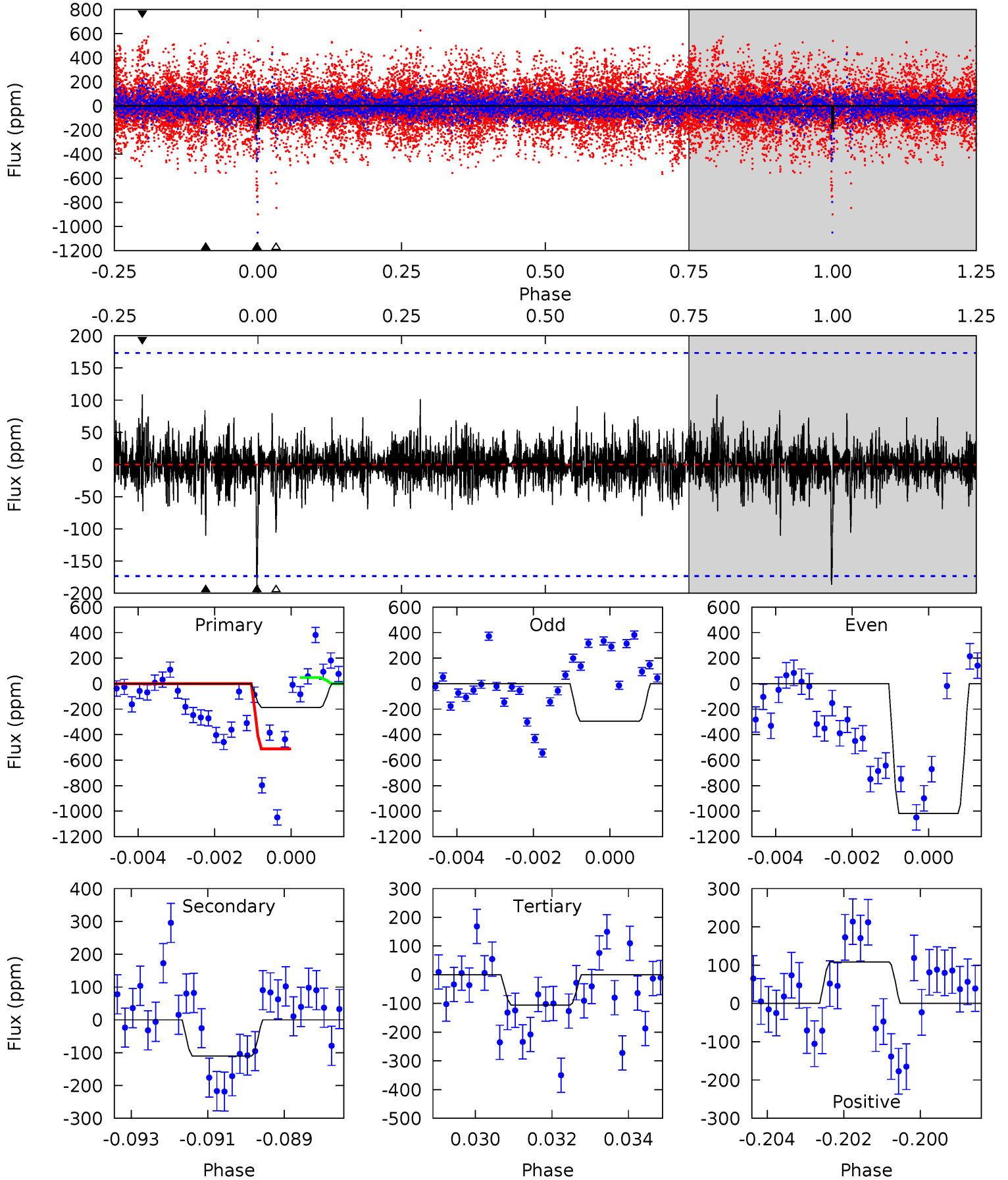
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

004847832-06, P = 82.271289 Days, E = 75.117963 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.72	3.39	3.24	3.33	5.32	3.07	0.71	2.48	2.38	0.15	0.06	9.58	2.75	0.37	6.79



### Stellar Parameters For KIC 004847832

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5291^{+211}_{-232}$	$4.423^{+0.136}_{-0.204}$	$0.060^{+0.250}_{-0.250}$	$0.926^{+0.274}_{-0.148}$	$0.828^{+0.103}_{-0.069}$	$1.467^{+0.893}_{-0.745}$
	+4%/-4%	+3%/-5%	+417%/-417%	+30%/-16%	+12%/-8%	+61%/-51%
Source	PHO1	FLK73	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 004847832-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$9.71^{+9.23}_{-6.48}$	$537^{+39}_{-37}$	$4081^{+10069}_{-15846}$	$1752^{+128669}_{-98862}$
Alt.	$-111 \pm 33$	$7.85^{+8.03}_{-5.76}$	$535^{+43}_{-34}$	$2710^{+1333}_{-431}$	$114^{+1539}_{-87}$

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

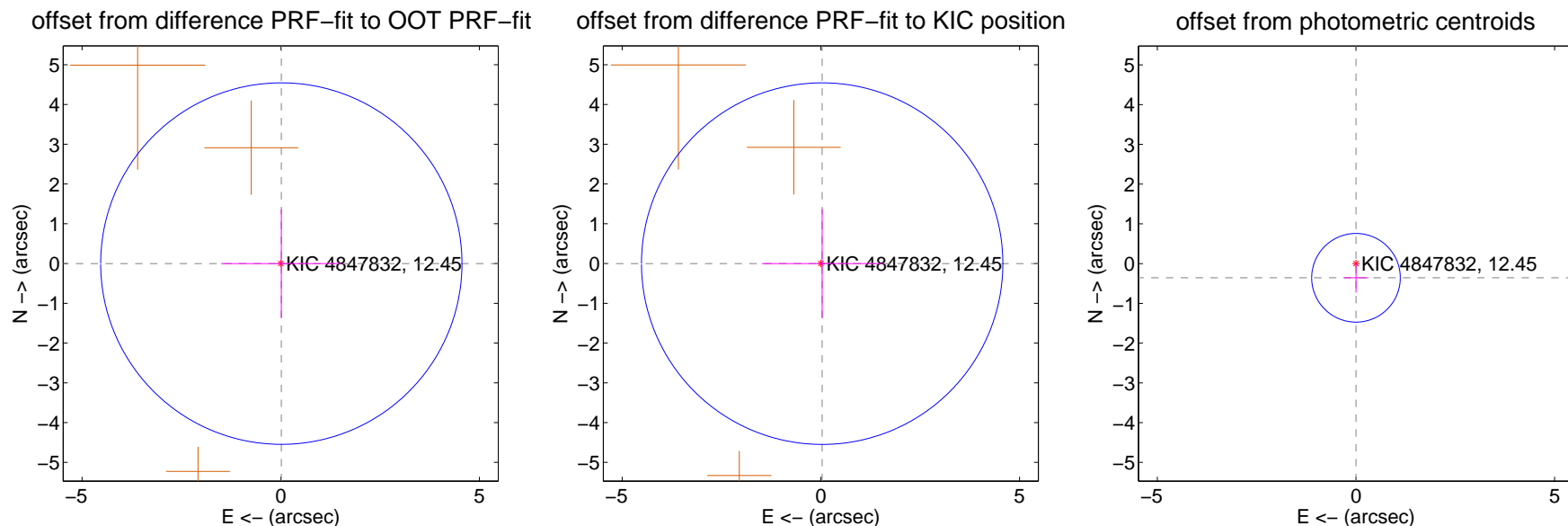
## DV Centroid Data

Supplemental centroid analysis for 004847832-06. Kepler magnitude: 12.45. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

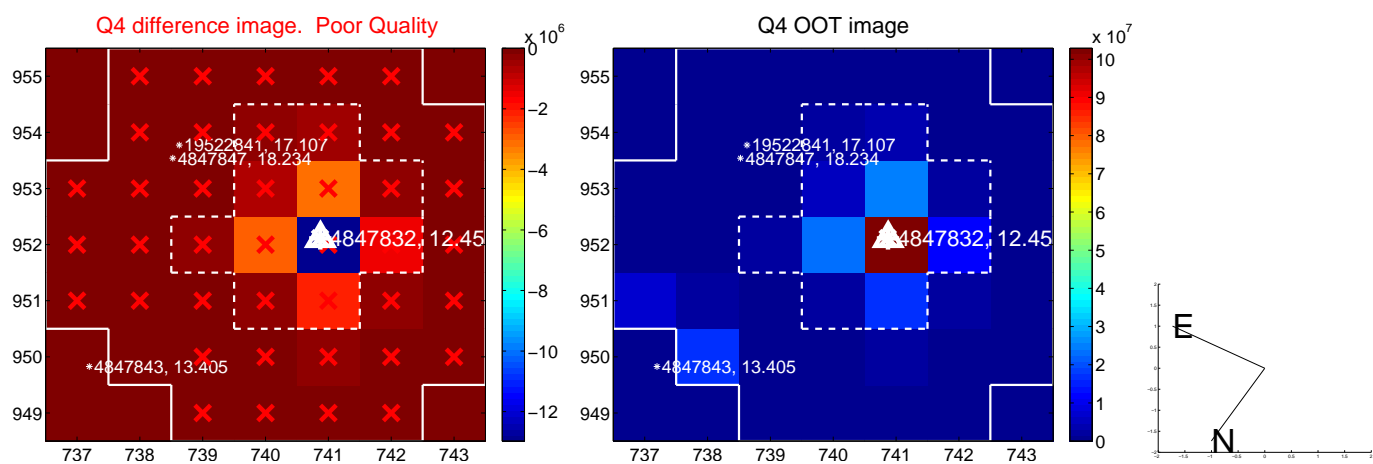
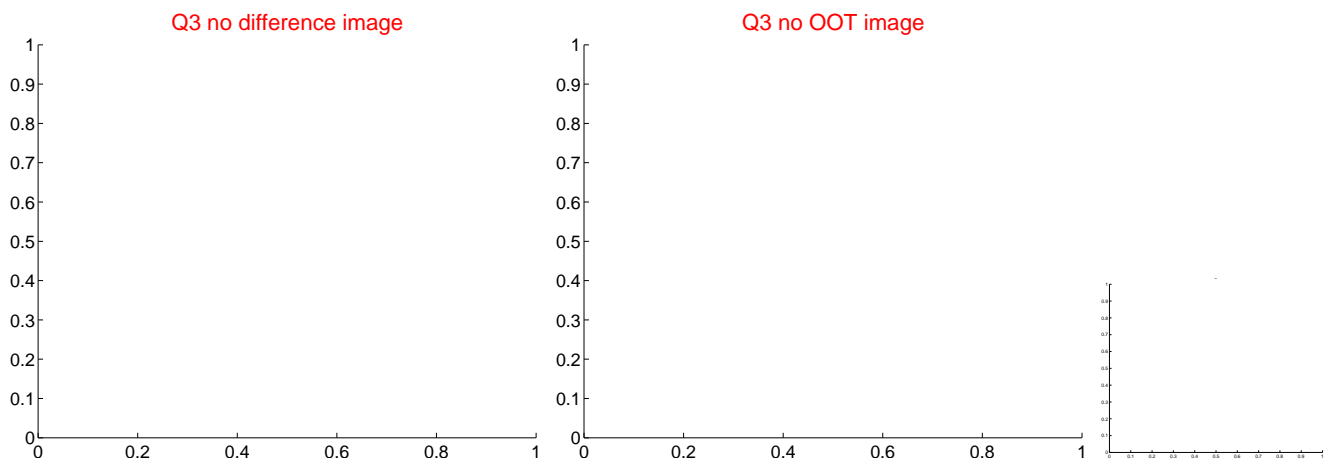
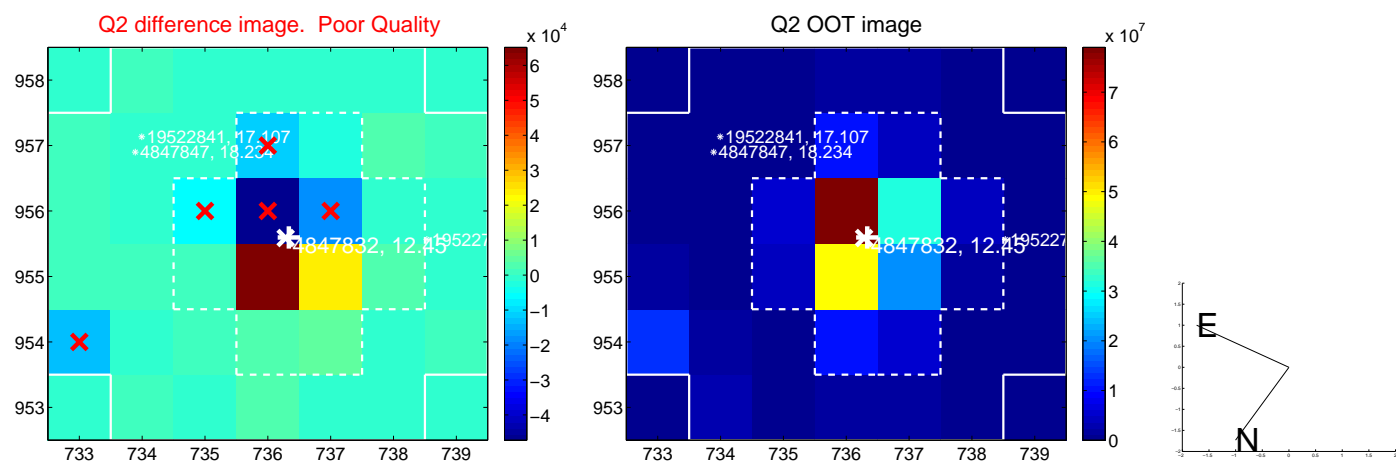
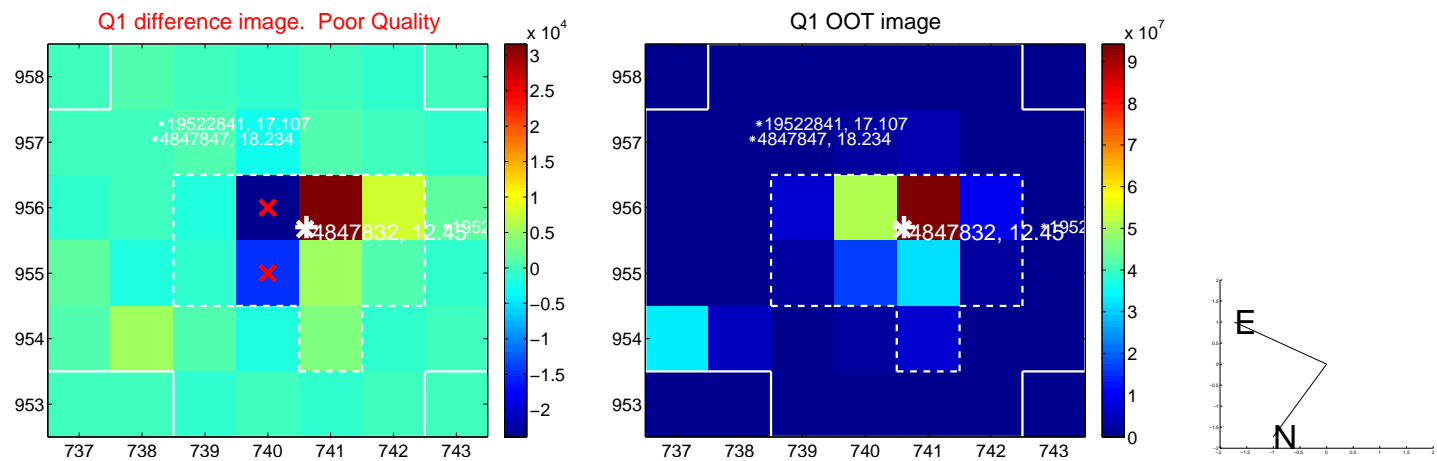
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.015 \pm 1.516$	0.01	$-0.015 \pm 1.517$	$-0.001 \pm 1.369$
PRF-fit source offset from KIC position	$0.033 \pm 1.516$	0.02	$-0.033 \pm 1.517$	$-0.002 \pm 1.369$
photometric centroid source offset	$0.36 \pm 0.37$	0.96	$-0.00 \pm 0.31$	$-0.36 \pm 0.37$

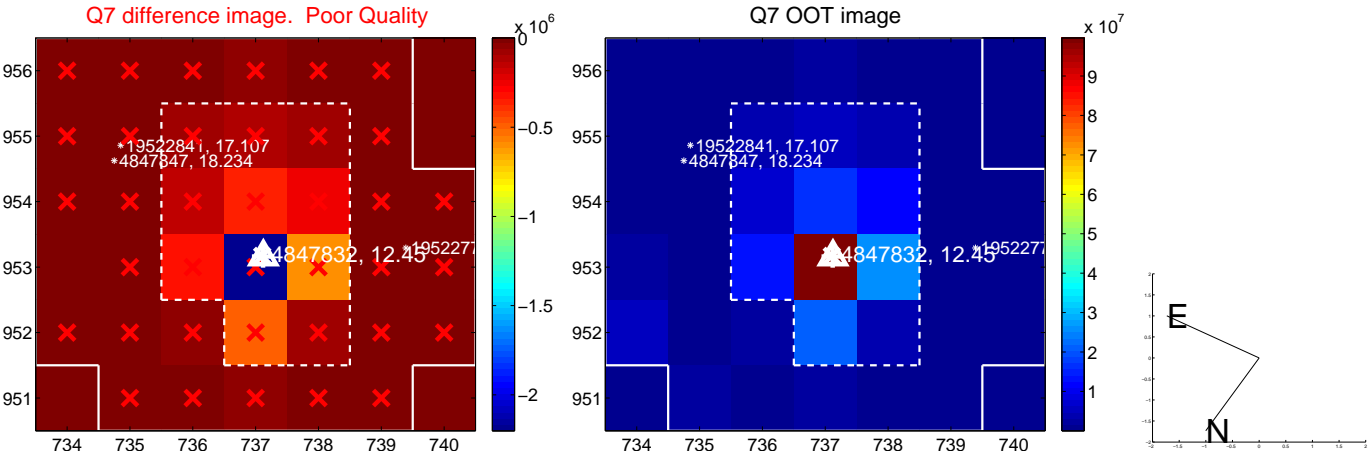
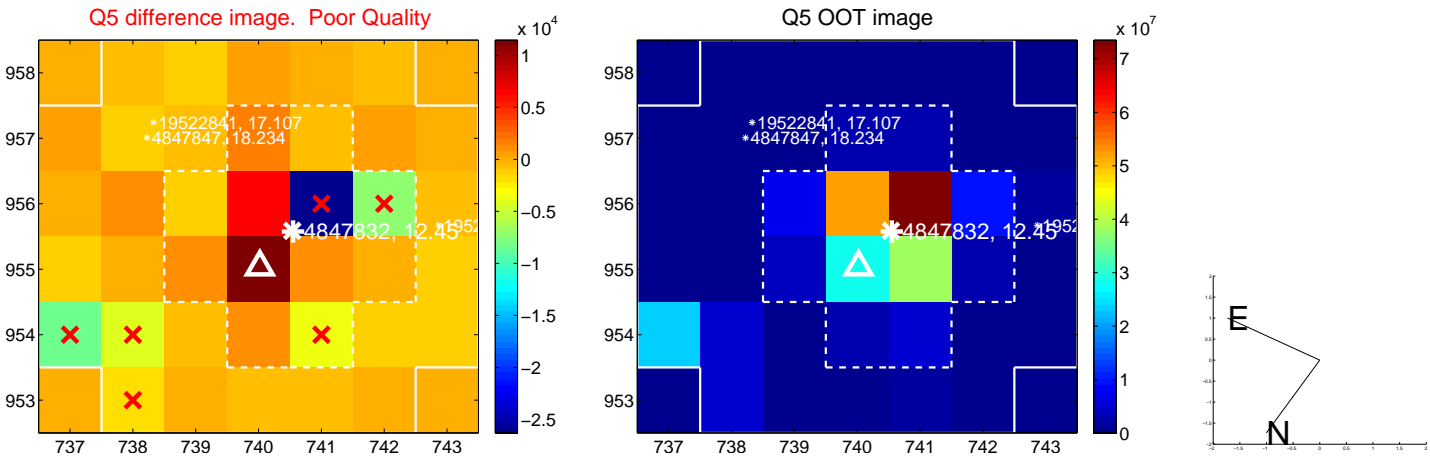


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

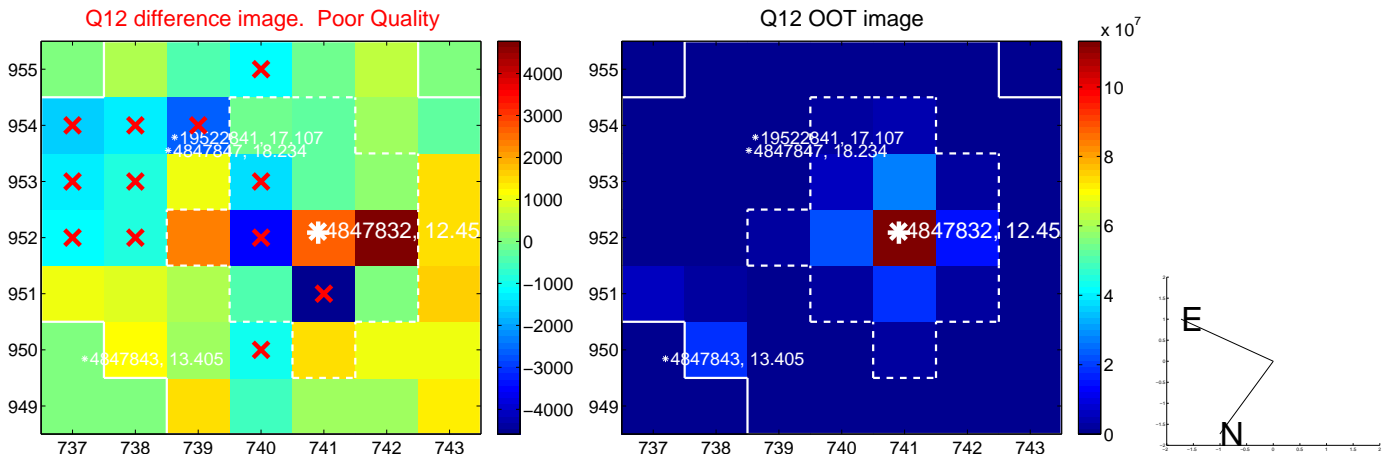
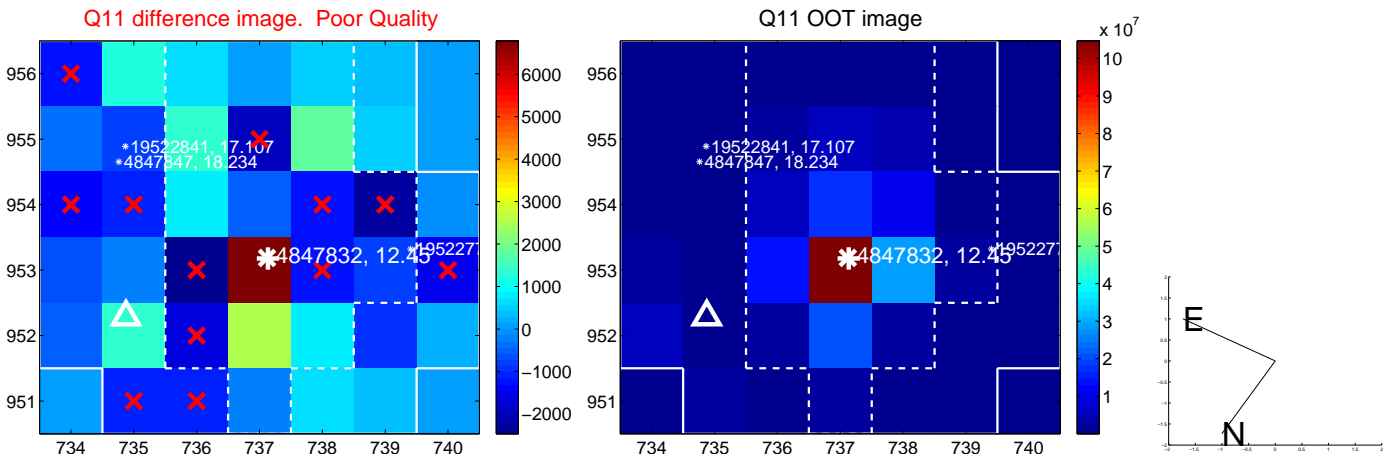
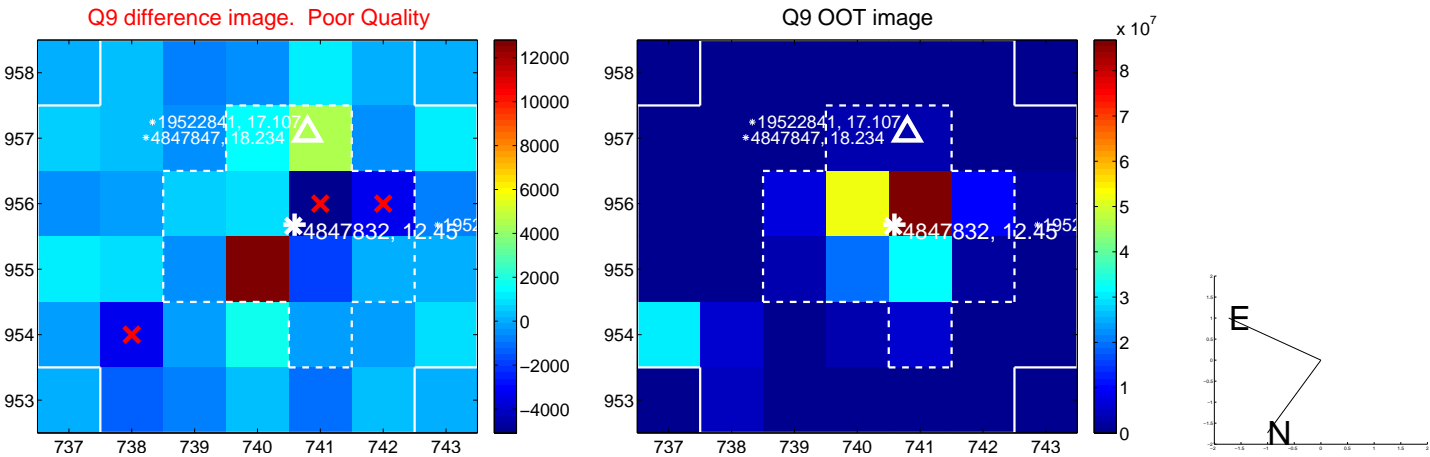


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

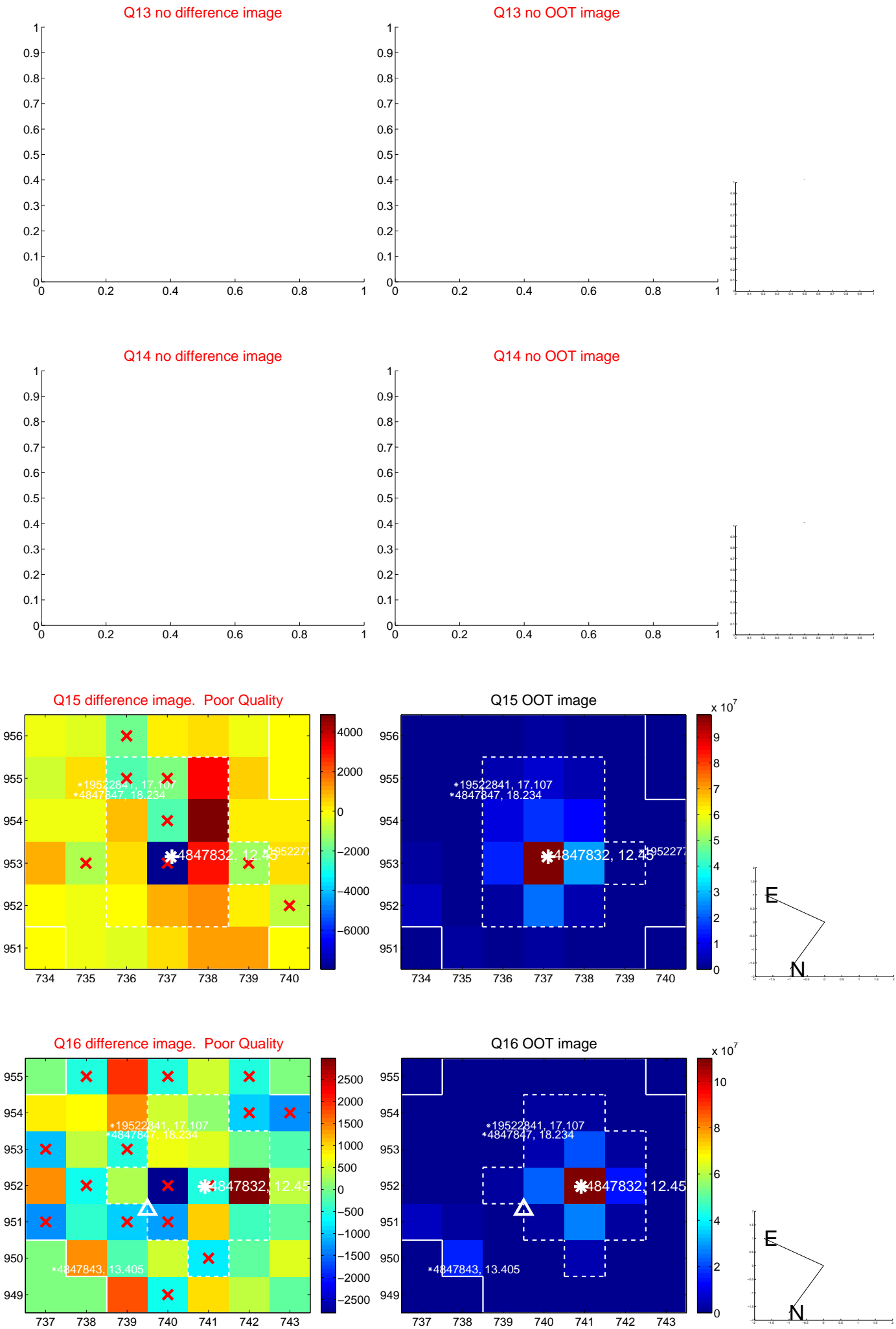




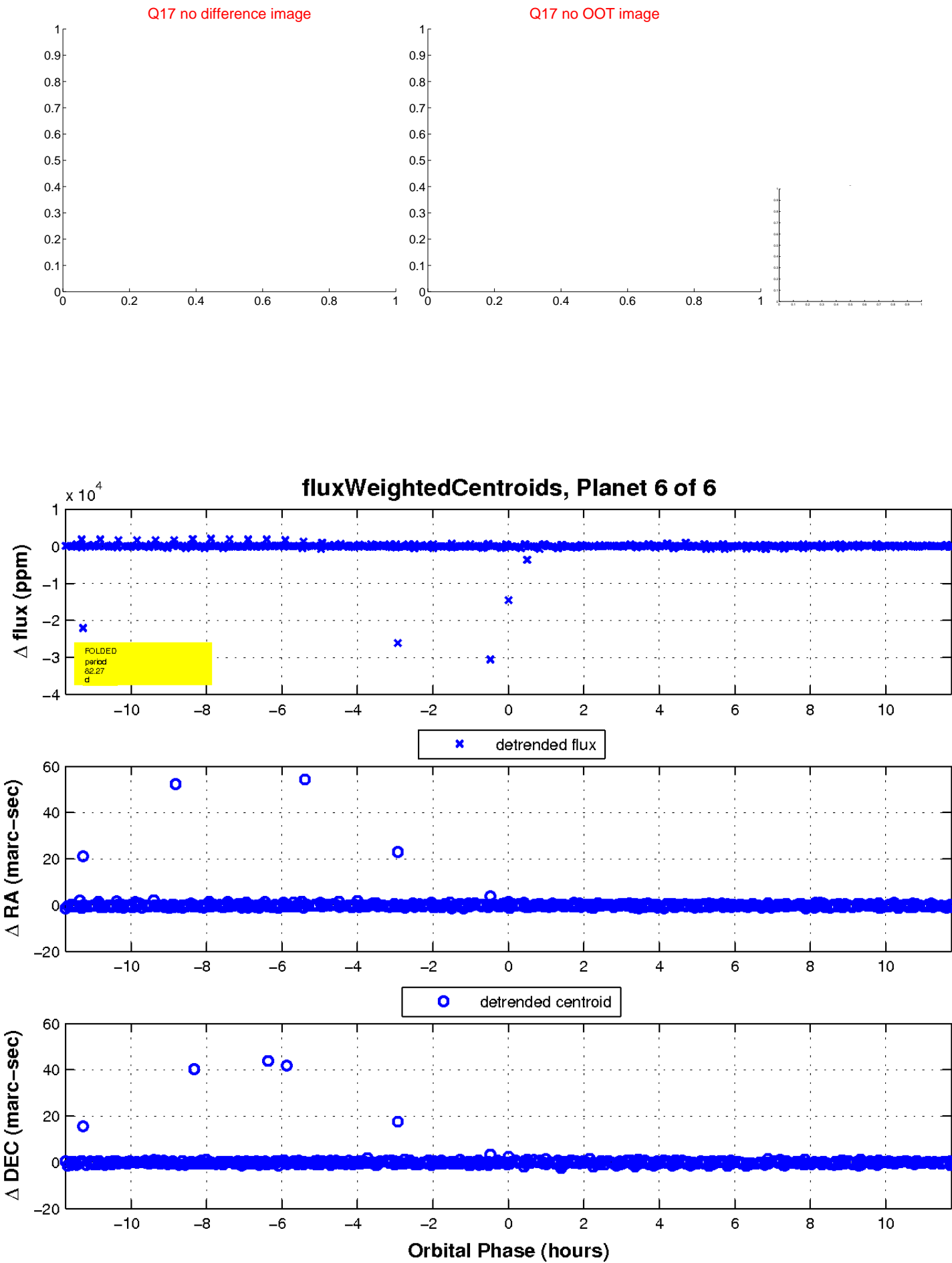
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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UKIRT Image

