

# KIC 008760135

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008760135-01	OBS	3524.01	184.644459	151.988827	424552.9	12.000	6016.8	-1.0	1.02	5713	55.82	2.50
008760135-02	OBS	No	184.644459	214.876513	441284.4	9.000	4578.3	-1.0	1.02	5713	55.82	2.50
008760135-03	OBS	No	553.955377	216.966291	2897.5	29.072	34.3	20.7	1.02	5713	10.37	0.58
008760135-05	OBS	No	437.680044	139.064600	2197.0	15.000	26.2	-1.0	1.02	5713	4.73	0.79
008760135-06	OBS	No	614.478016	274.232599	3990.5	3.500	17.5	-1.0	1.02	5713	6.39	0.50
008760135-07	OBS	No	281.983128	309.664392	1366.0	15.000	16.0	-1.0	1.02	5713	3.73	1.42
008760135-08	OBS	No	623.443297	264.789931	3624.4	52.688	23.3	16.1	1.02	5713	11.56	0.49
008760135-09	OBS	No	308.710224	216.283023	1491.6	15.000	20.5	-1.0	1.02	5713	3.90	1.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008760135-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—CENT_NOFITS
008760135-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
008760135-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS
008760135-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008760135-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—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.

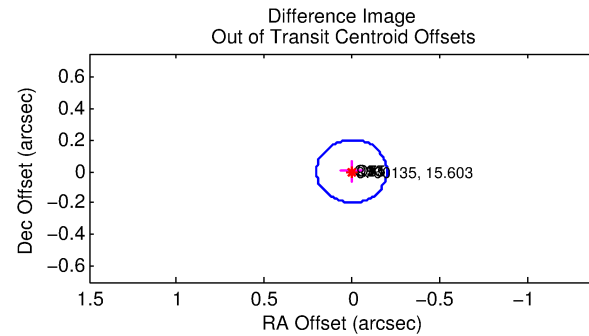
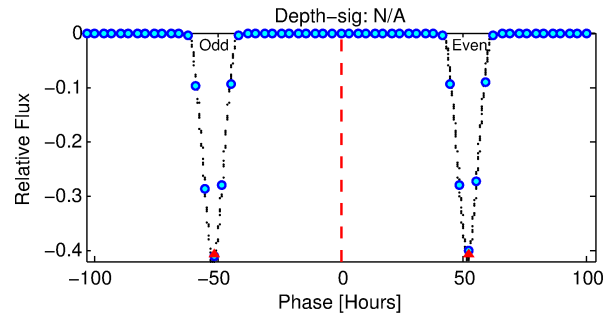
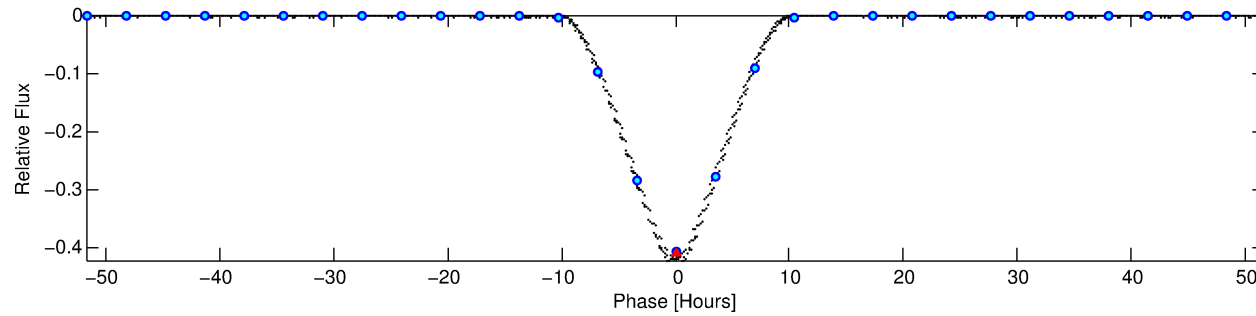
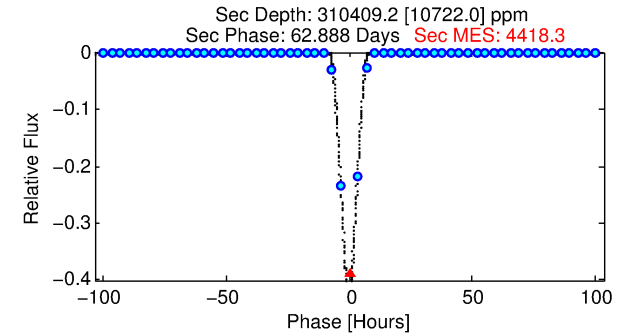
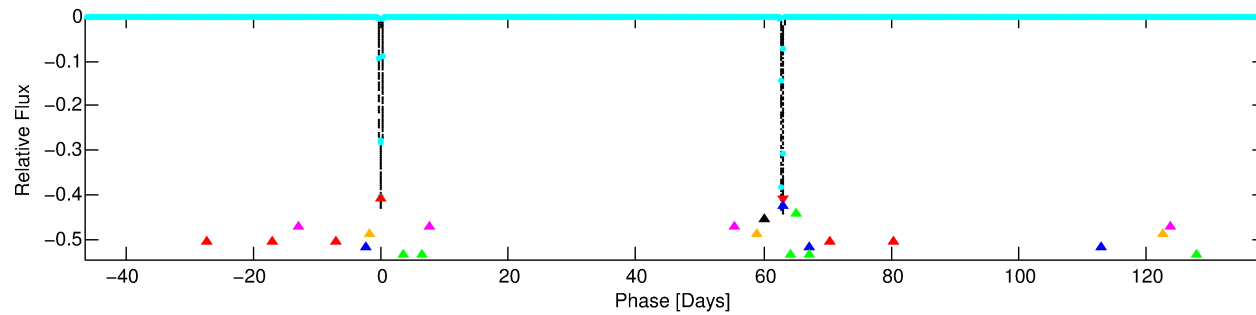
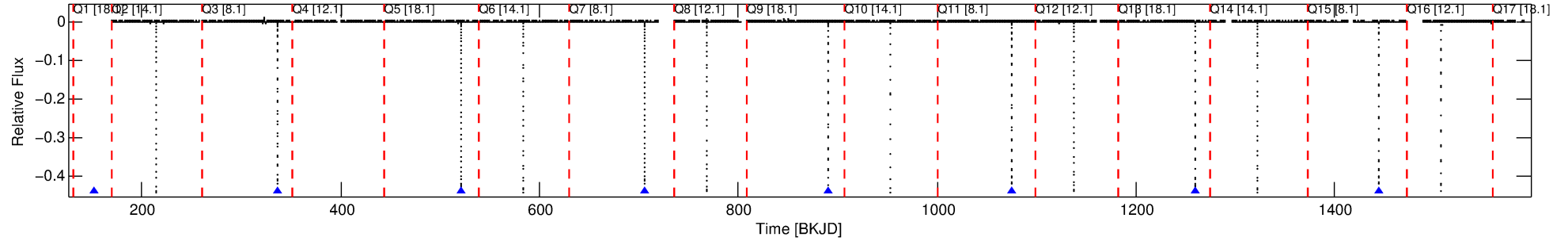
Ephemeris Match Information For 008760135-01

No Significant Match Found

# DV One-Page Summary

KIC: 8760135 Candidate: 1 of 9 Period: 184.644 d  
KOI: K03524.01 Corr: 0.793

Kp: 15.60 R\*: 1.02 Rs Teff: 5713.0 K Logg: 4.41 Fe/H: 0.120



## TPS TCE Results:

Period = 184.64446 d  
Epoch = 151.9888 BKJD

DV fit results are unavailable

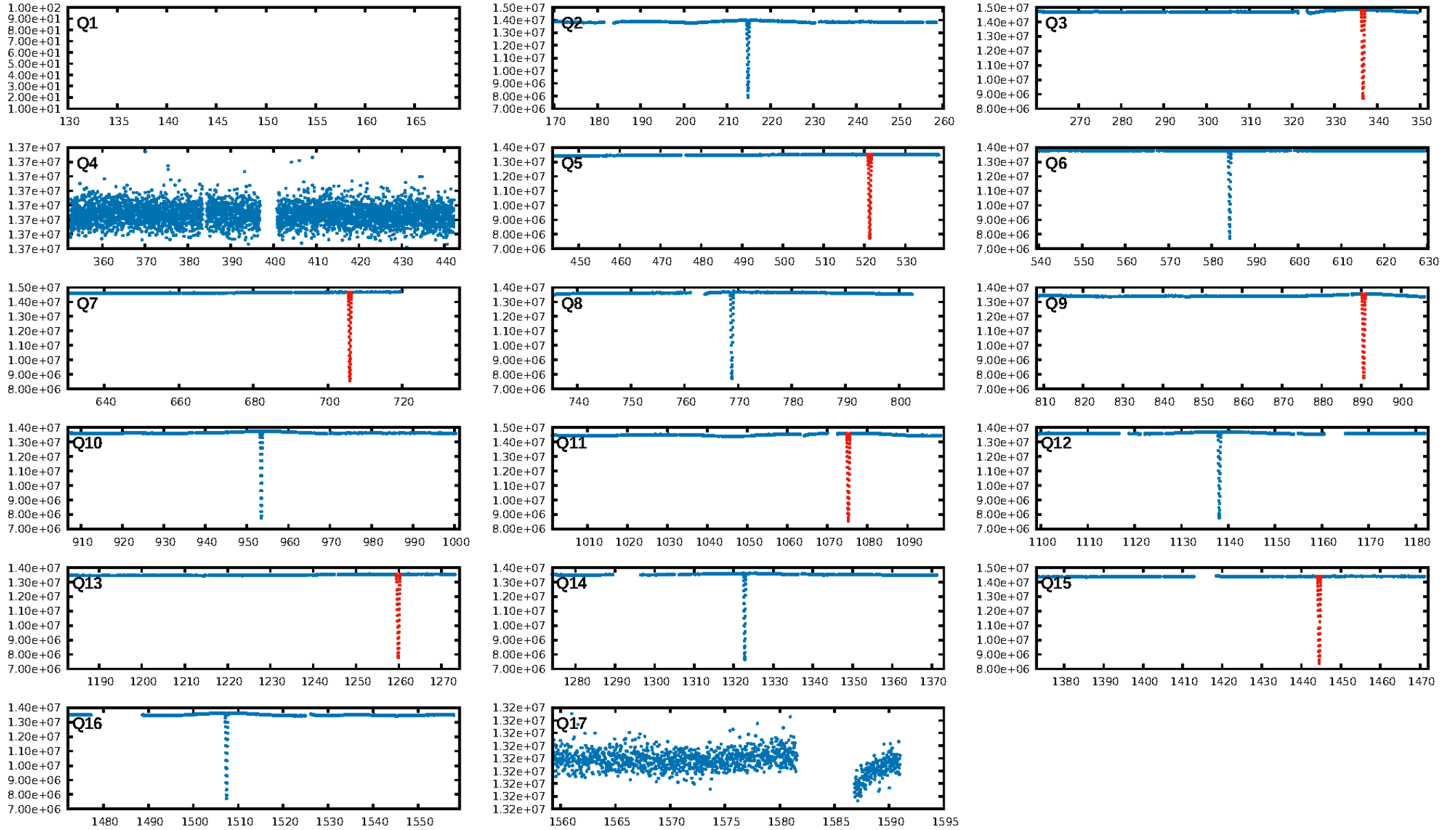
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: 5.295  
Centroid-sig: N/A  
Centroid-so: 0.169 arcsec [93.65σ]  
OotOffset-rm: 0.004 arcsec [0.06σ]  
KicOffset-rm: 0.079 arcsec [1.14σ]  
OotOffset-st: 0/4/0/3 [7]  
KicOffset-st: 0/4/0/3 [7]  
DiffImageQuality-fgm: 1.00 [7/7]  
DiffImageOverlap-fno: 1.00 [7/7]

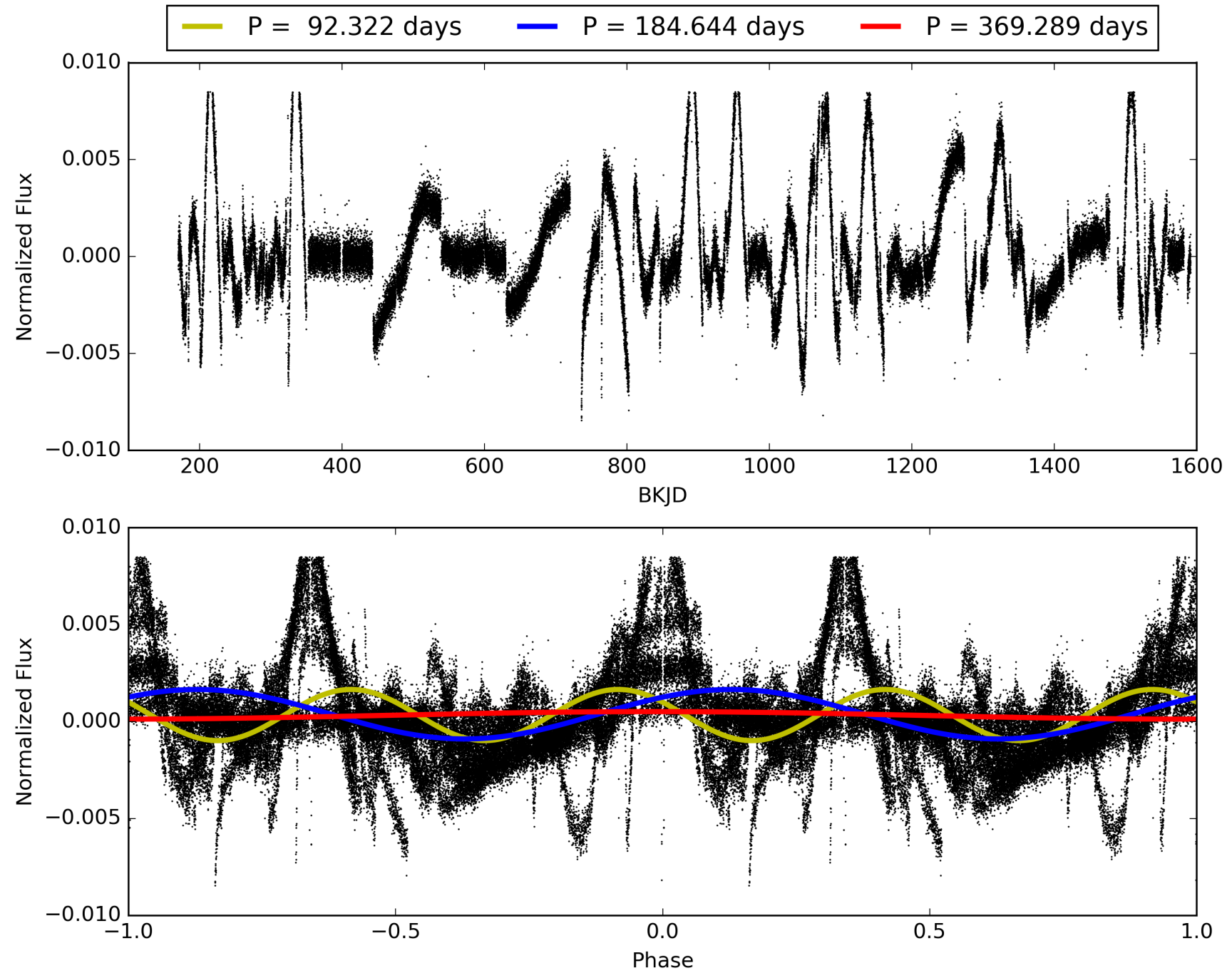
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:34:47 Z

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

# TCE 008760135-01, PDC Light Curves



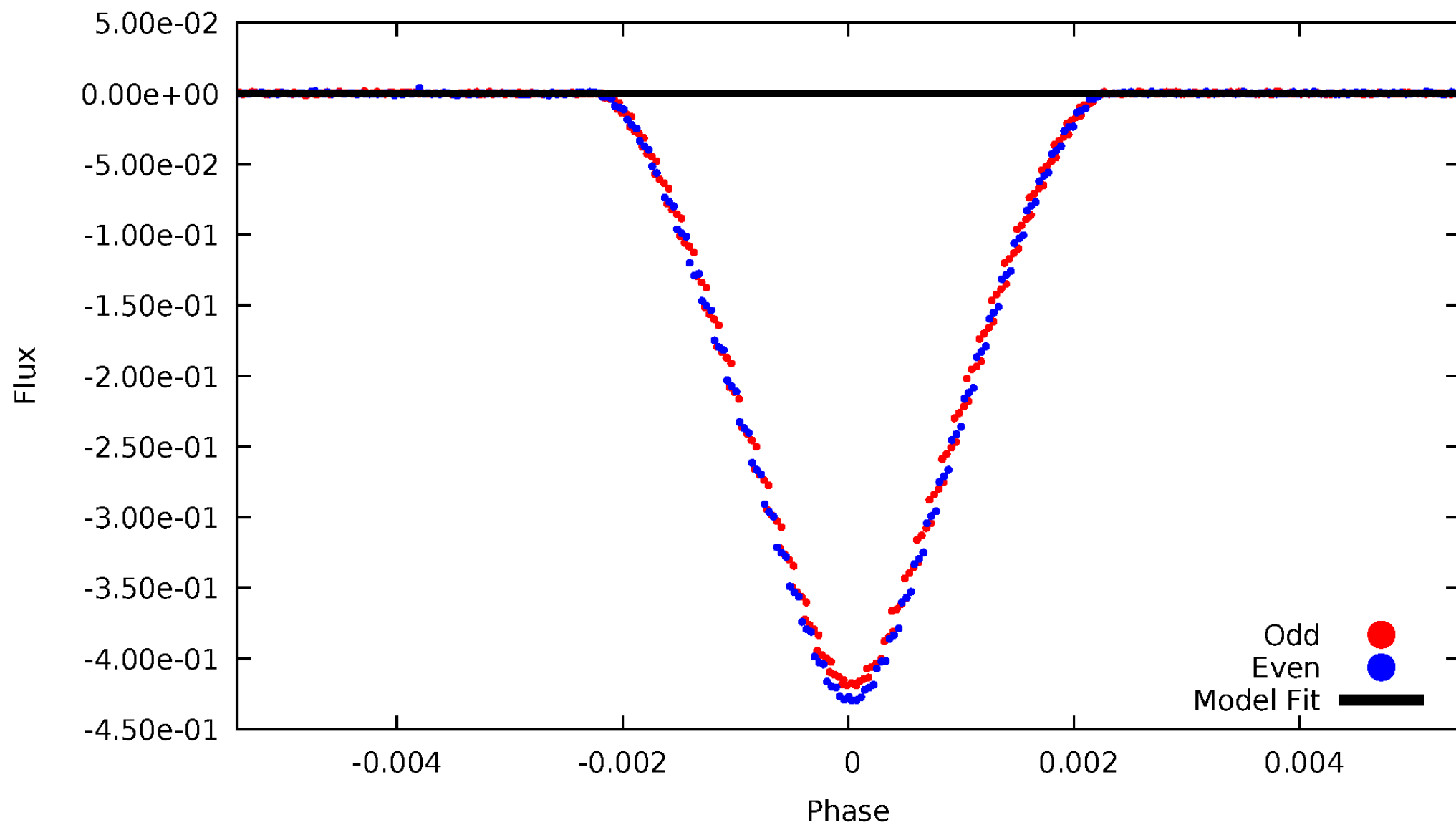
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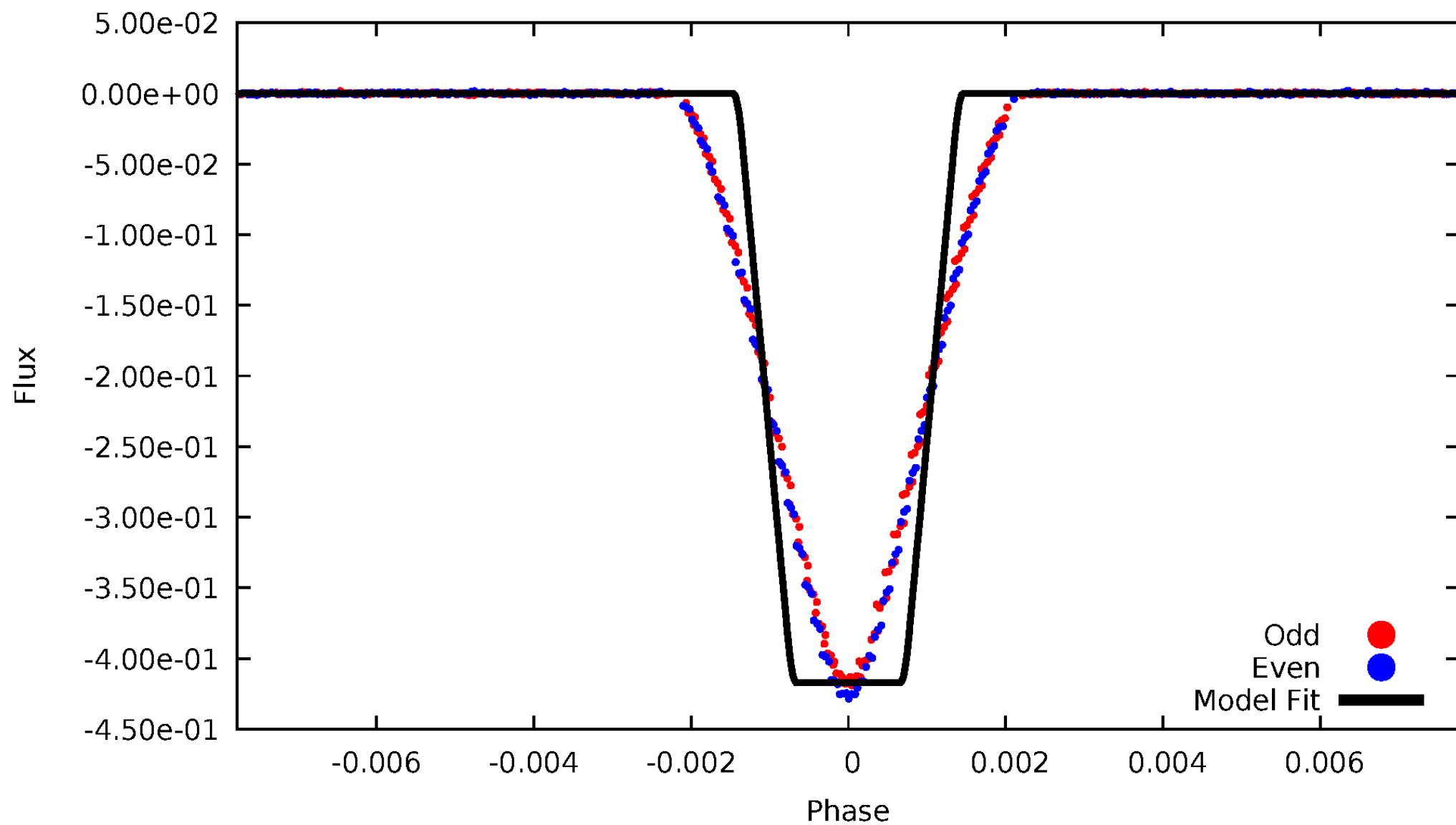
# DV Odd/Even

TCE 008760135-01



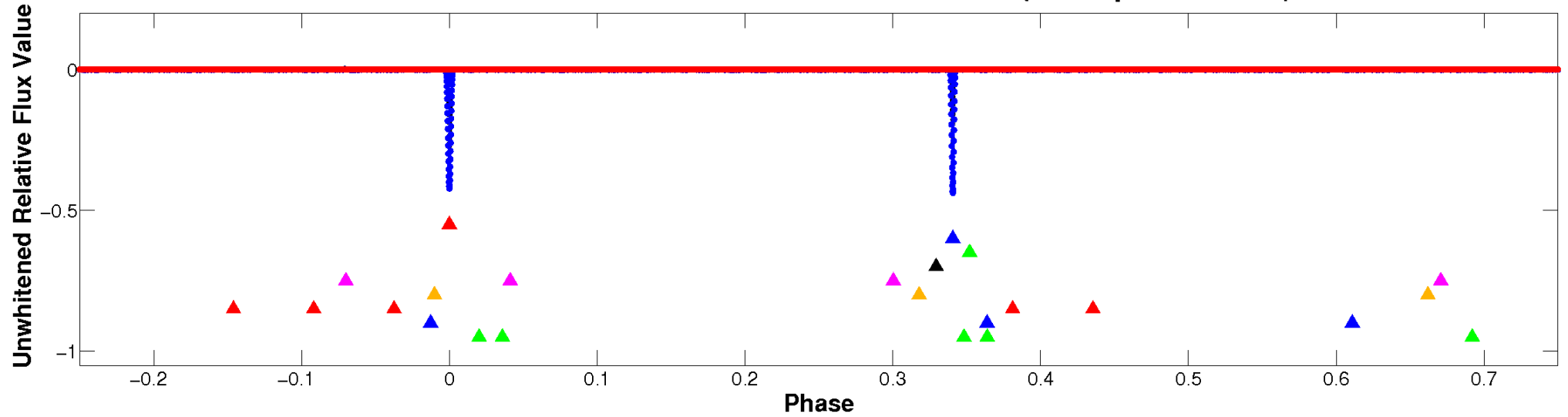
# ALT Odd/Even

TCE 008760135-01



# Non-Whitened Vs. Whitened Light Curve

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

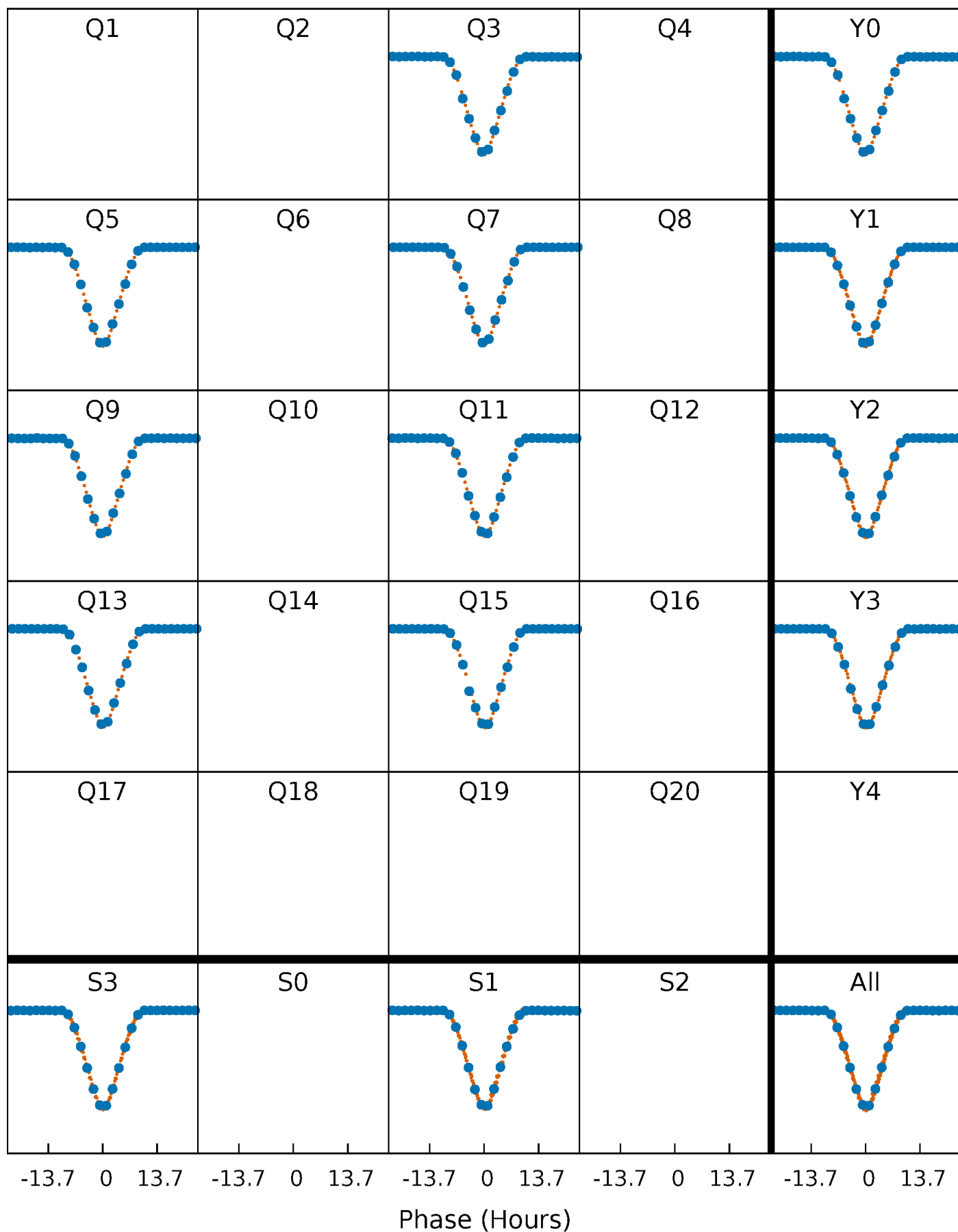


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



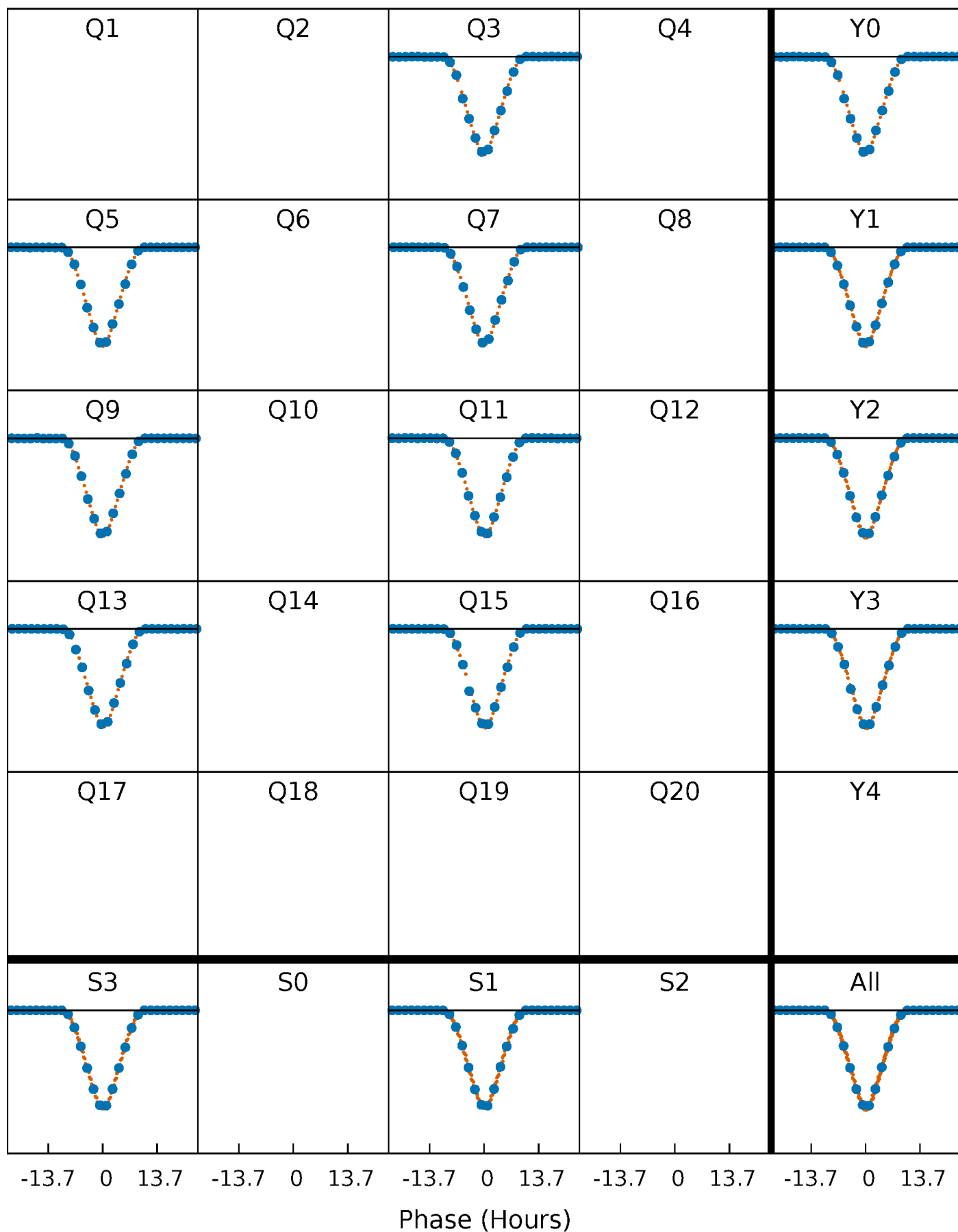
# PDC Quarter-Phased Transit Curves

TCE 008760135-01 P=184.644459 Days  $T_0=151.988826$  (BKJD)



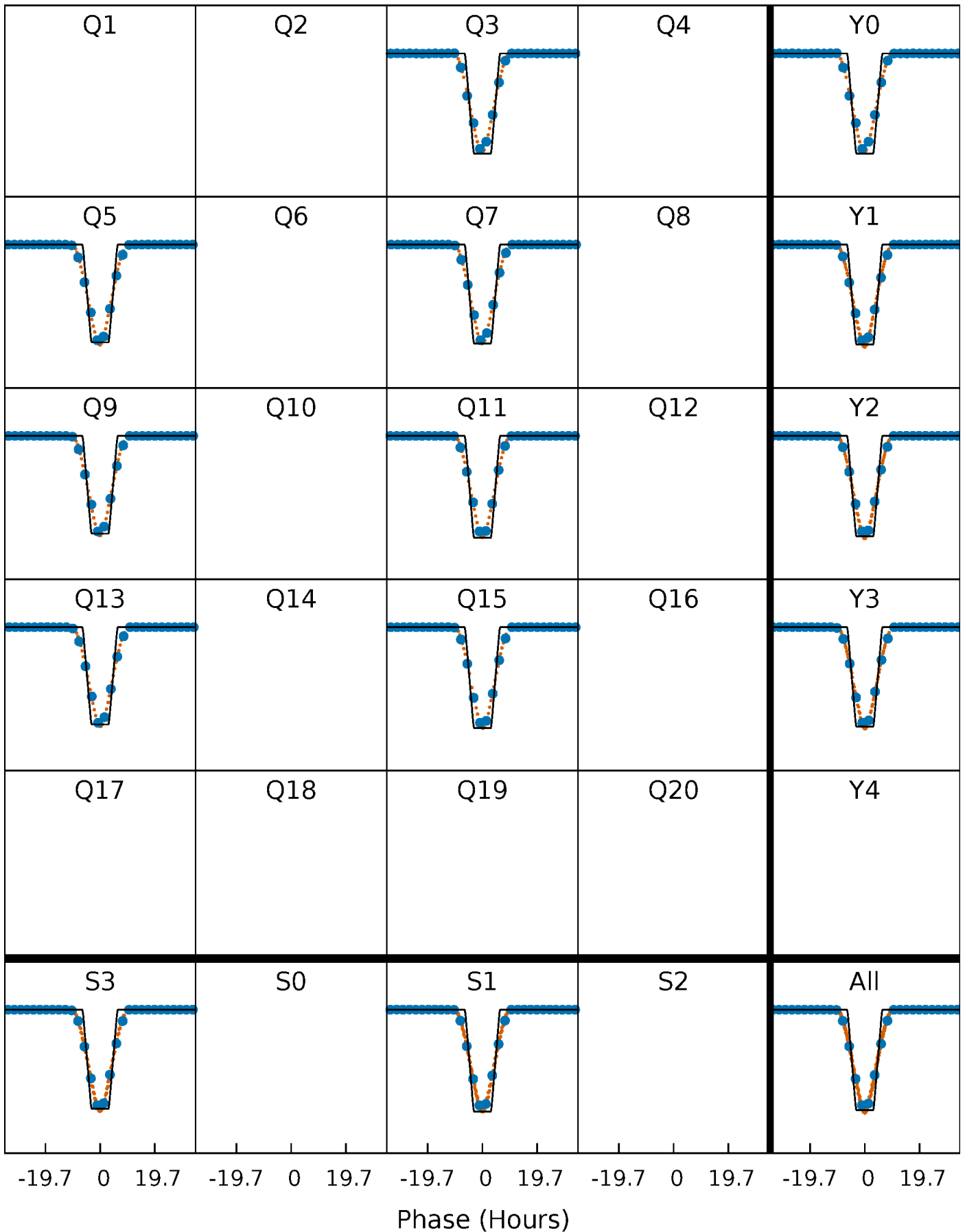
# DV Quarter-Phased Transit Curves

TCE 008760135-01 P=184.644459 Days  $T_0=151.988826$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

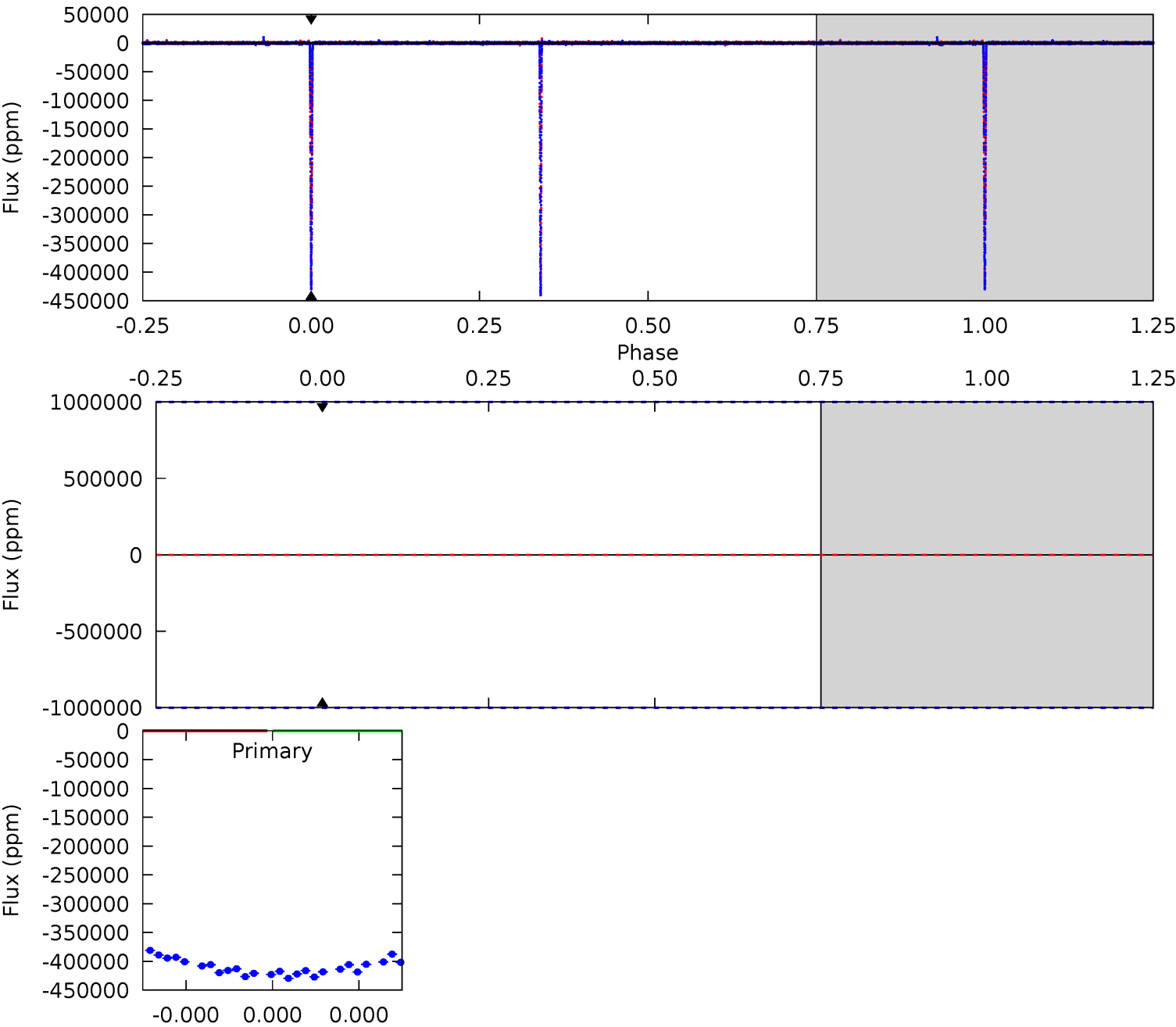
TCE 008760135-01 P=184.644459 Days  $T_0=151.993993$  (BKJD)



# DV Model-Shift Uniqueness Test

008760135-01, P = 184.644459 Days, E = 151.988826 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

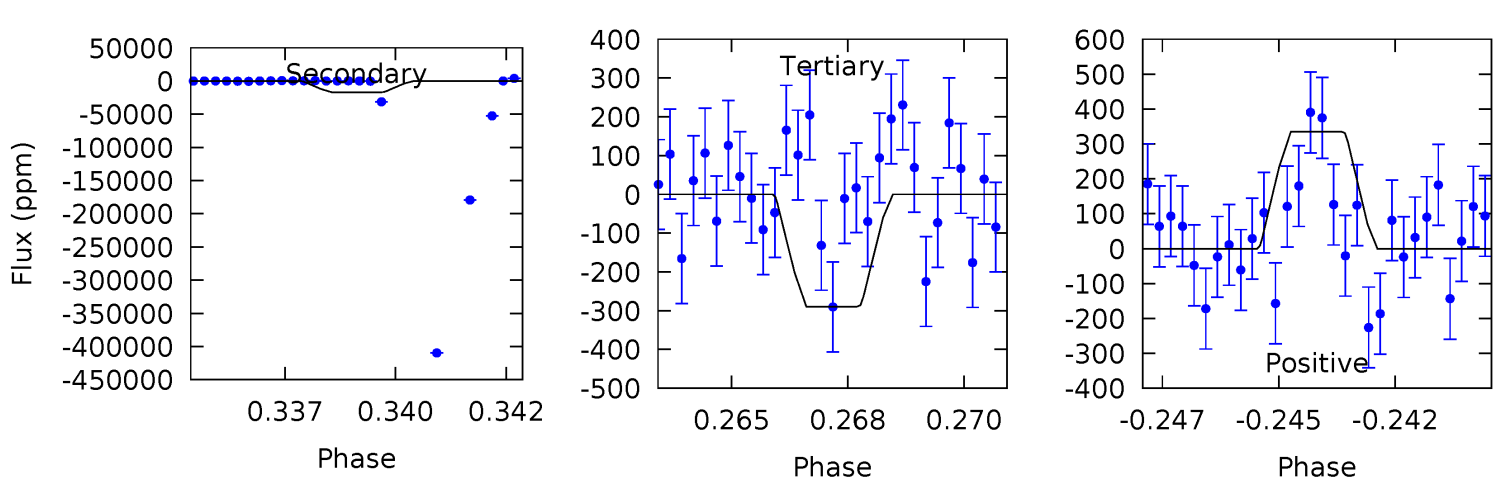
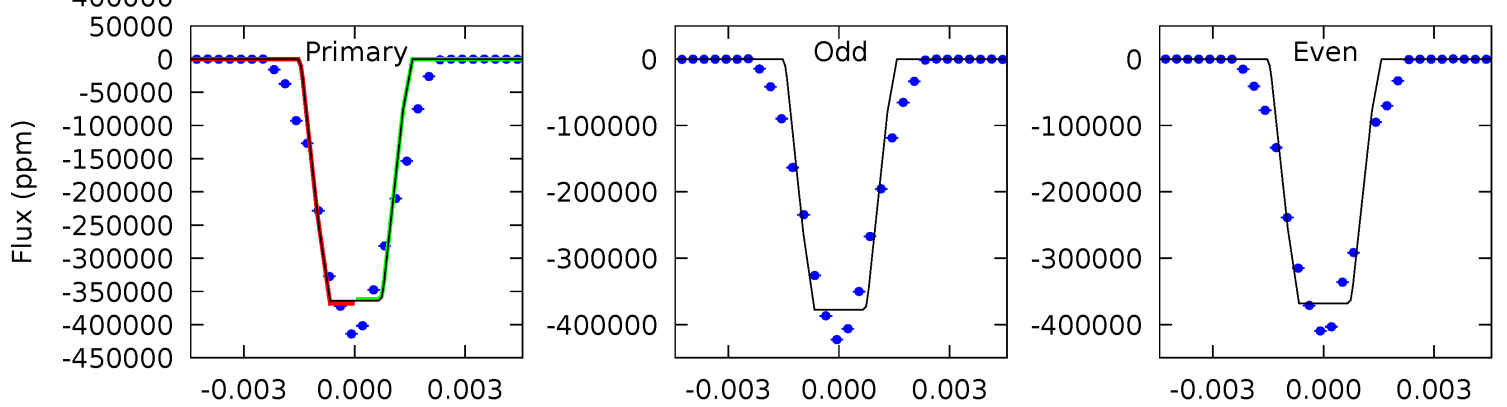
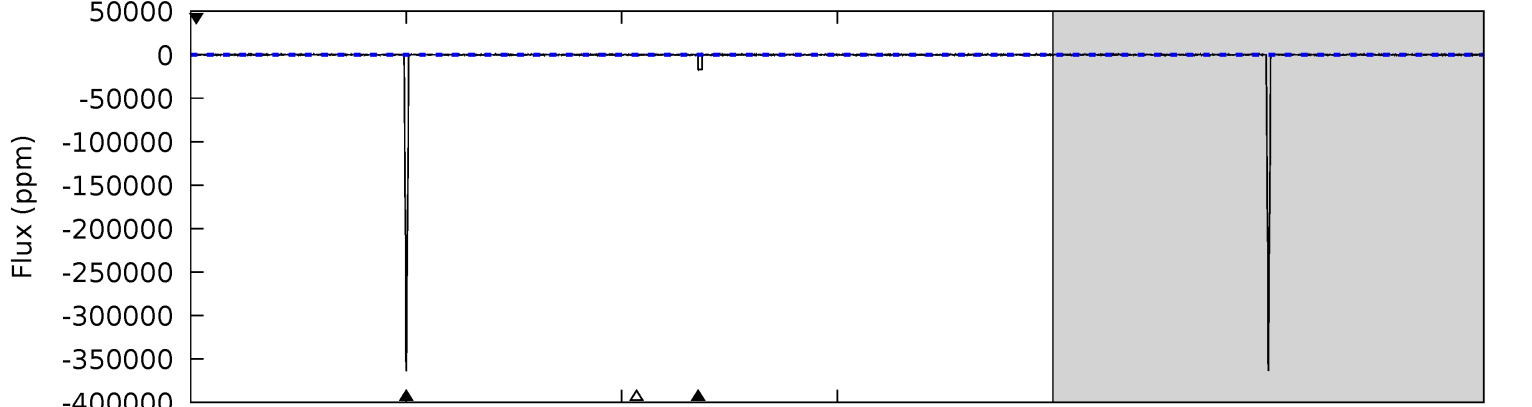
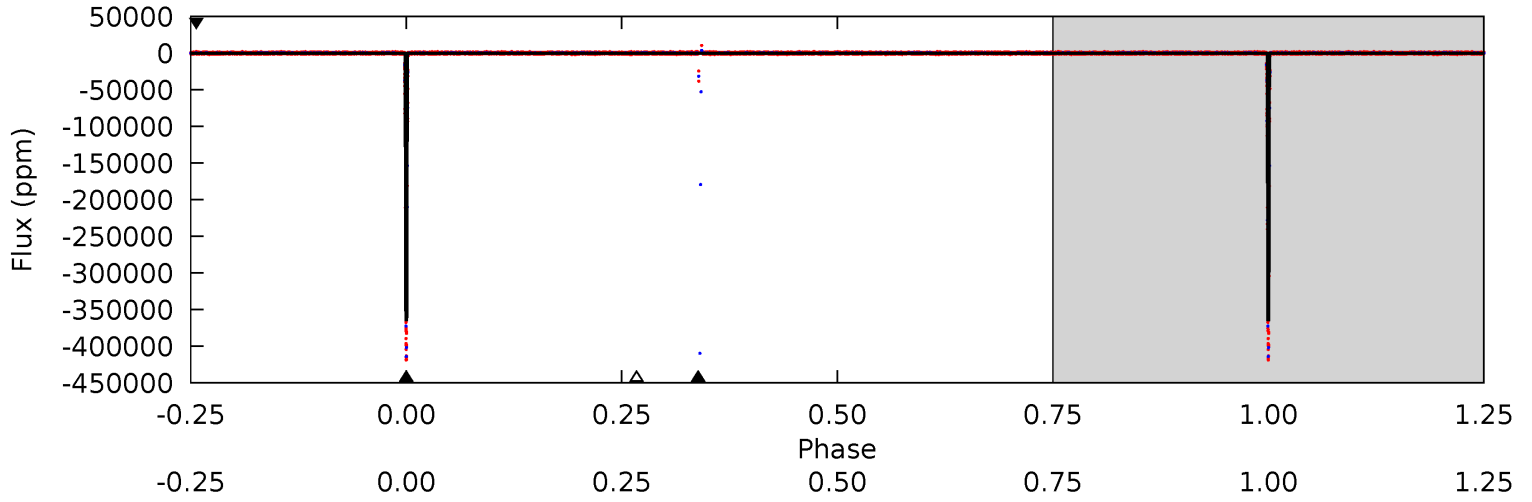




# Alt Model-Shift Uniqueness Test

008760135-01, P = 184.644459 Days, E = 151.993993 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
2815	131.8	2.24	2.59	5.26	2.98	2.52	2813	2812	129.6	129.2	71.8	1.00	0.00	11.9



### Stellar Parameters For KIC 008760135

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5713^{+154}_{-188}$	$4.414^{+0.098}_{-0.196}$	$0.120^{+0.250}_{-0.300}$	$1.023^{+0.289}_{-0.124}$	$0.990^{+0.111}_{-0.100}$	$1.301^{+0.572}_{-0.634}$
	+3%/-3%	+2%/-4%	+208%/-250%	+28%/-12%	+11%/-10%	+44%/-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 008760135-01 / KOI 3524.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$56.90^{+14.21}_{-11.64}$	$452^{+33}_{-26}$	$-2386^{+7186}_{-2278}$	$-106.245^{+7792.371}_{-6604.769}$
Alt.	$-17039 \pm 129$	$73.56^{+15.57}_{-12.79}$	$452^{+33}_{-24}$	$3178^{+182}_{-139}$	$703^{+319}_{-222}$

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

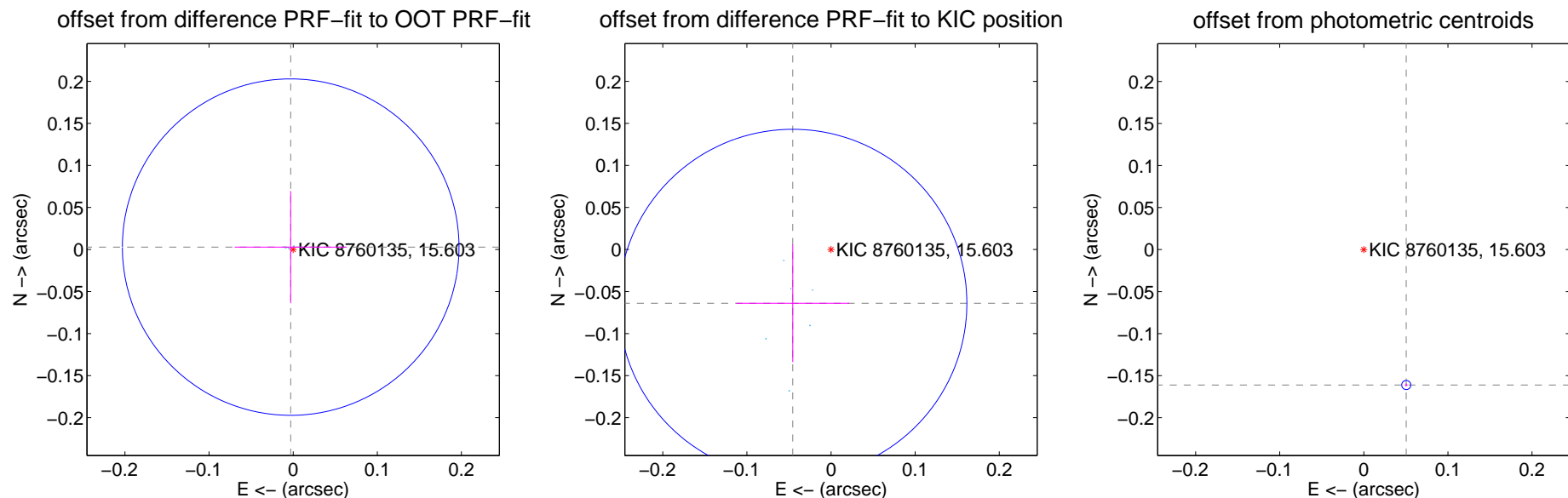
## DV Centroid Data

Supplemental centroid analysis for 008760135-01. Kepler magnitude: 15.60. Transit SNR -1.00

There are 7 quarters with good PRF difference image offsets

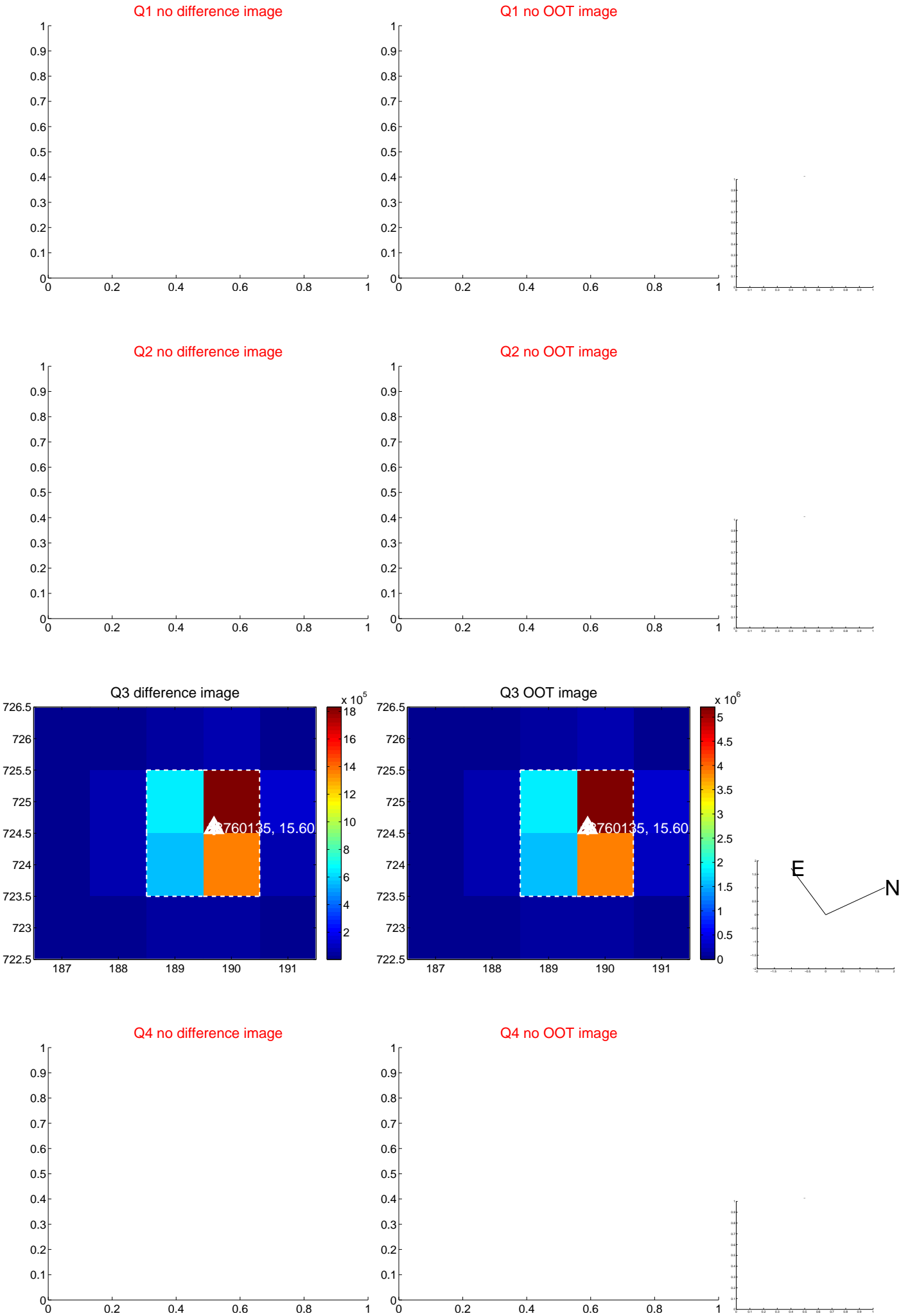
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.004 \pm 0.067$	0.06	$0.003 \pm 0.067$	$0.003 \pm 0.067$
PRF-fit source offset from KIC position	$0.079 \pm 0.069$	1.14	$0.046 \pm 0.067$	$-0.064 \pm 0.070$
photometric centroid source offset	$0.17 \pm 0.00$	<b>93.65</b>	$-0.05 \pm 0.00$	$-0.16 \pm 0.00$

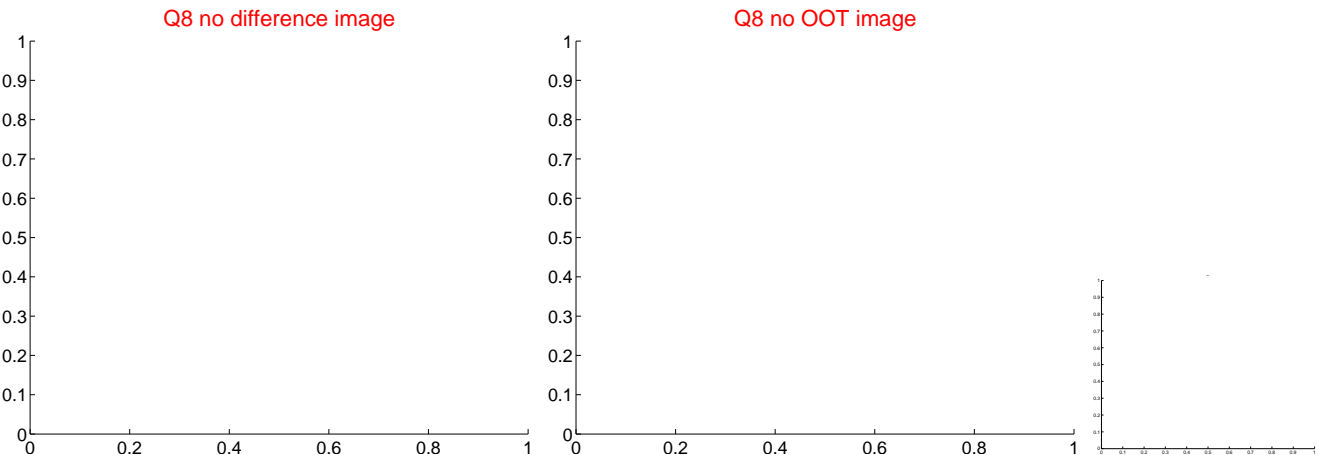
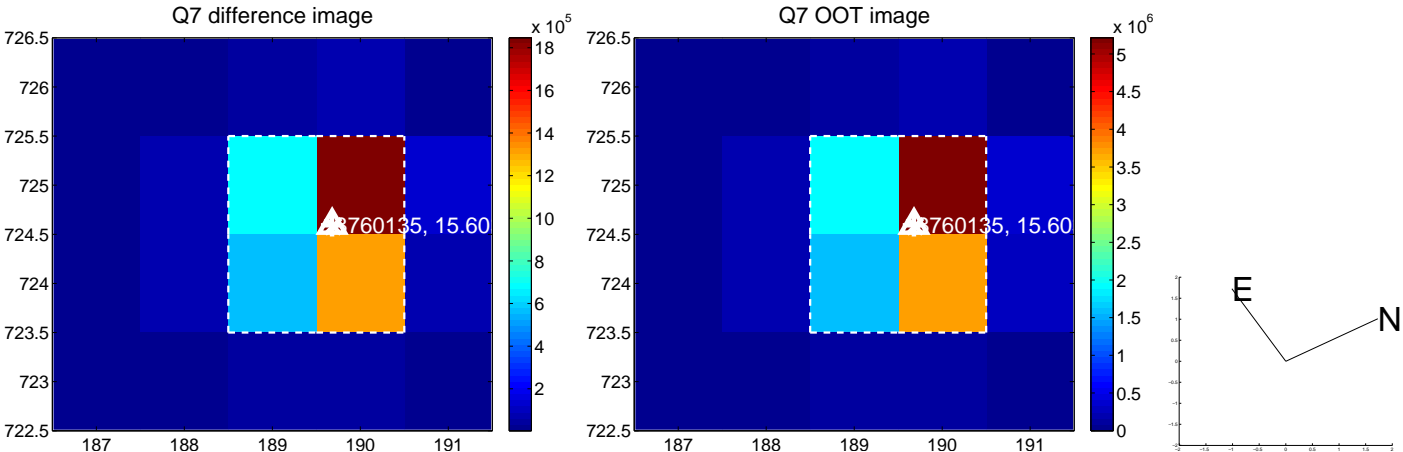
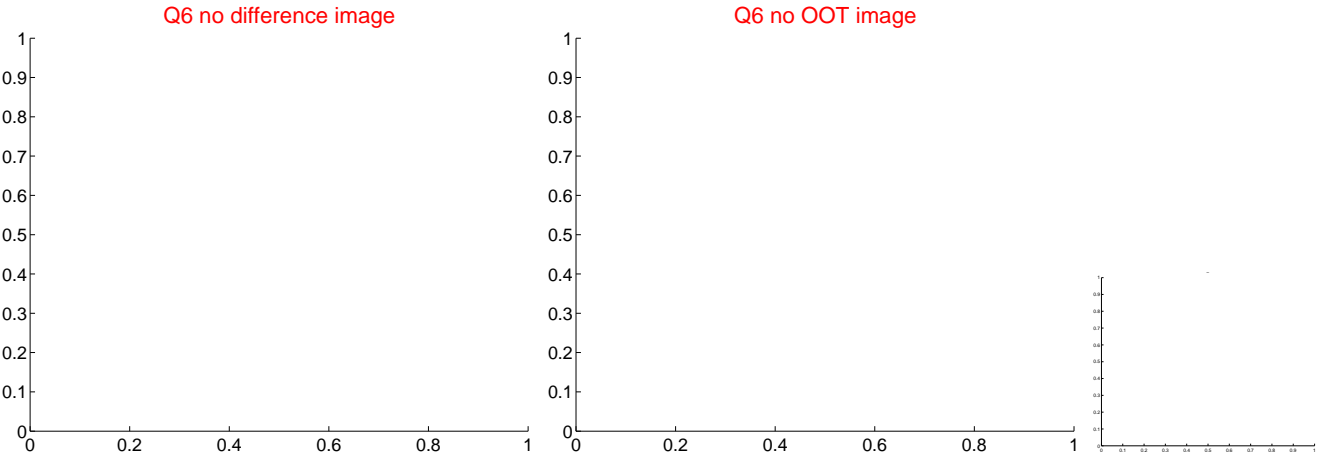
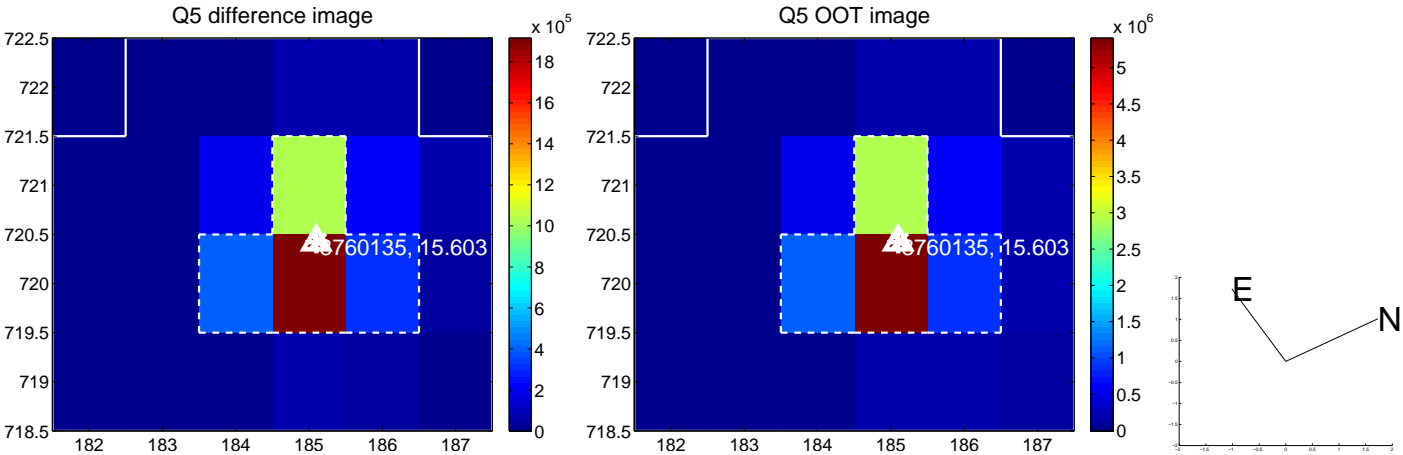


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

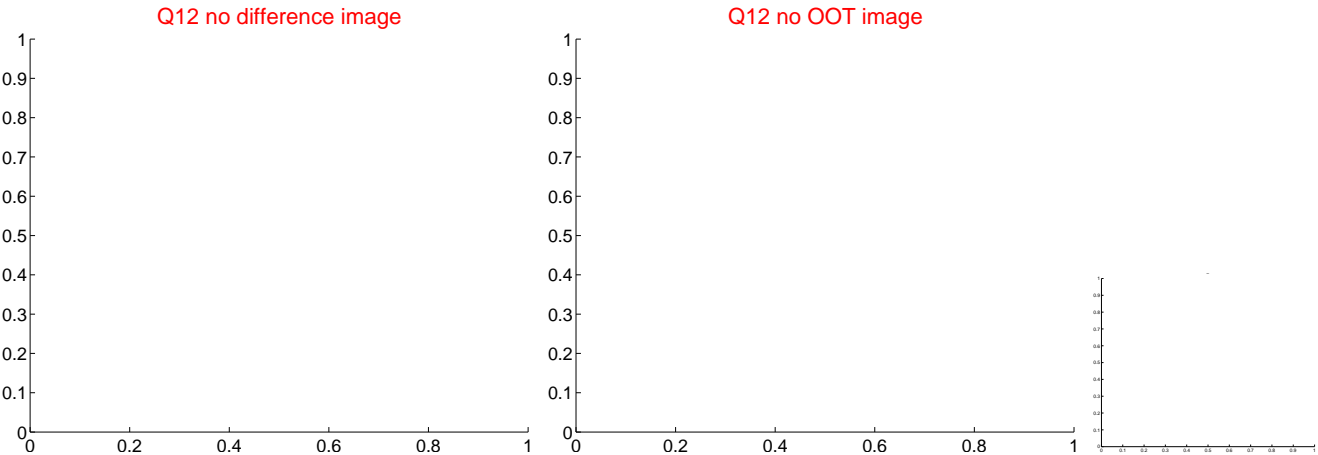
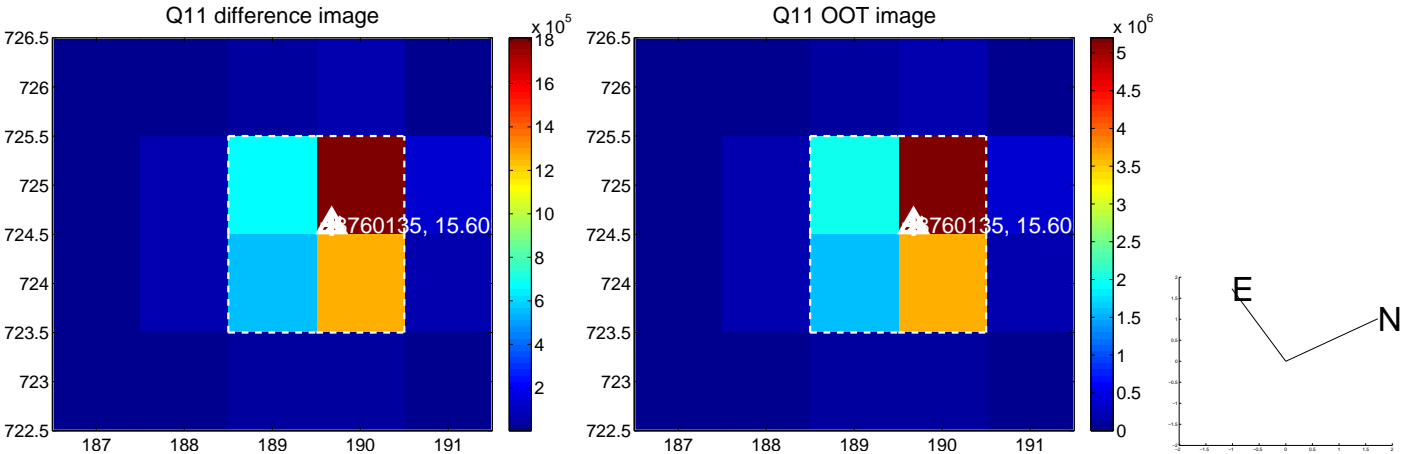
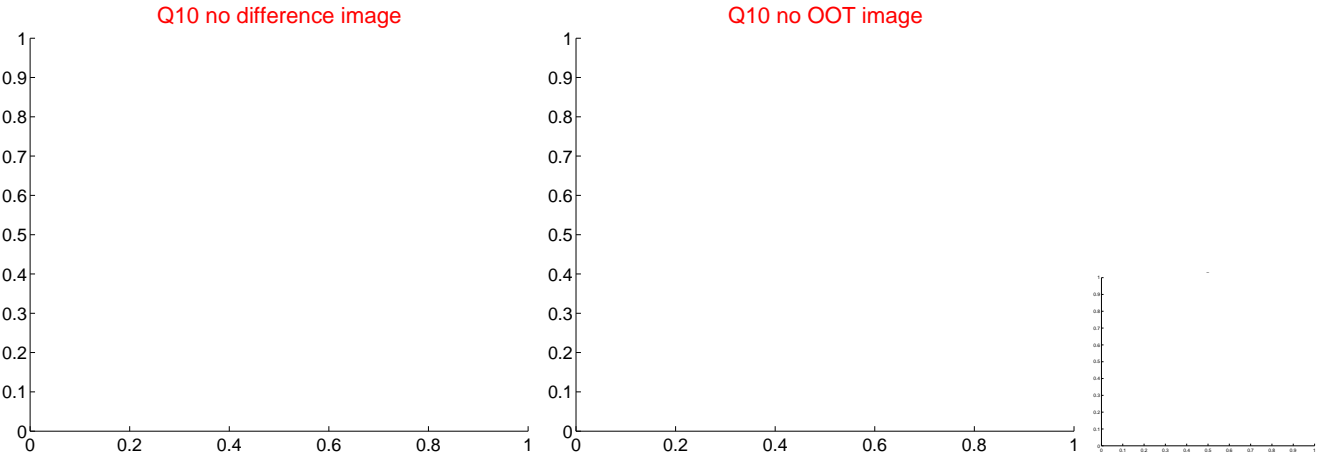
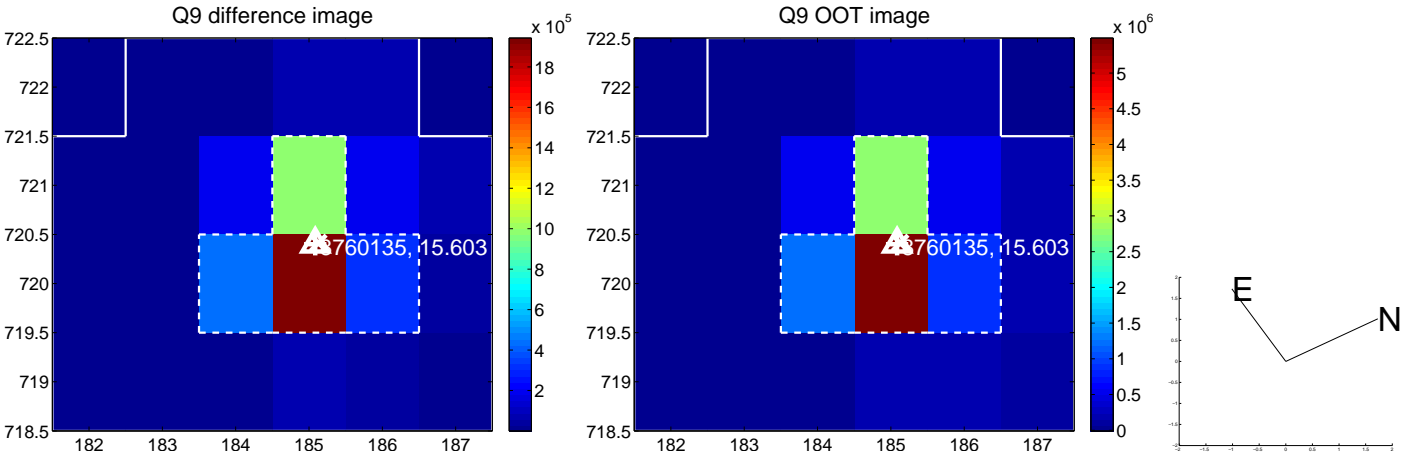
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



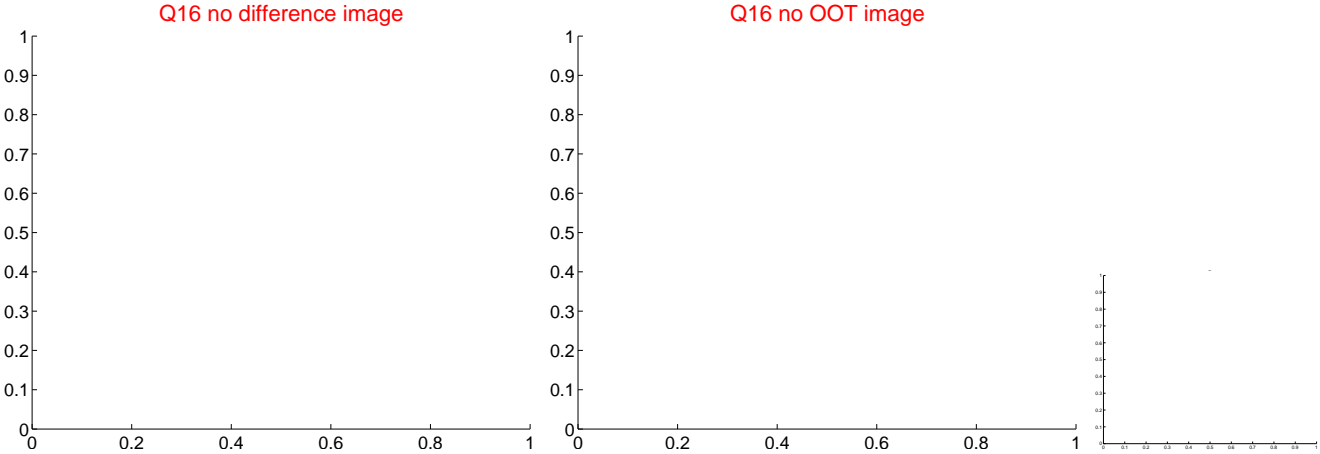
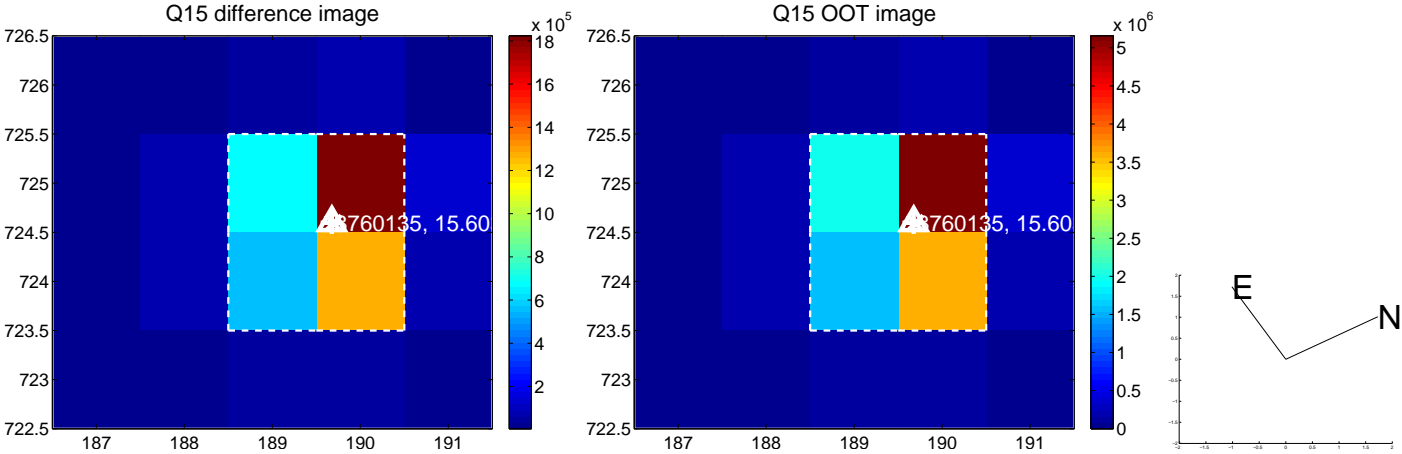
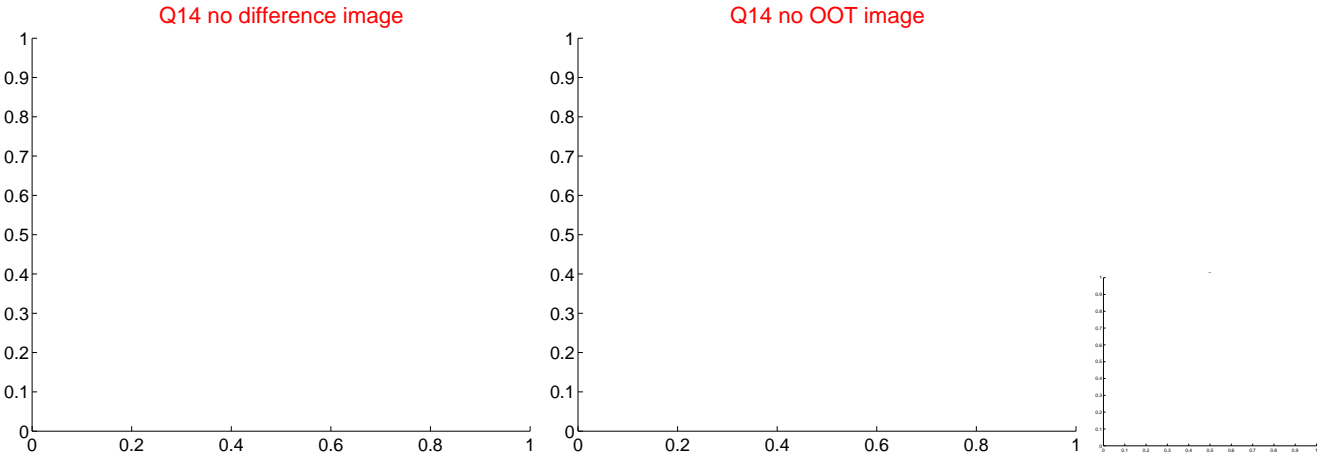
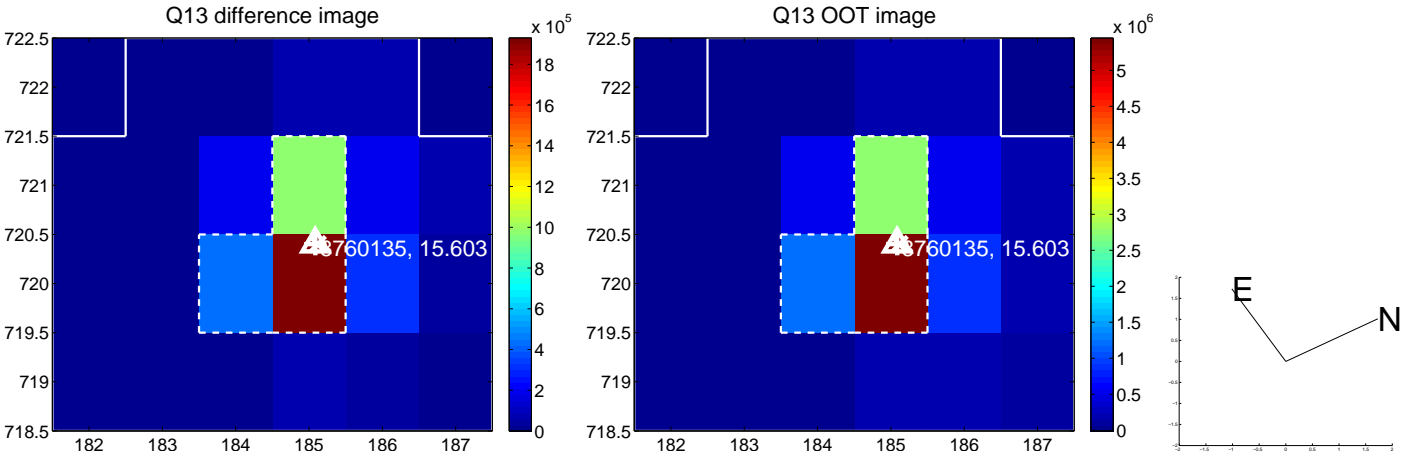
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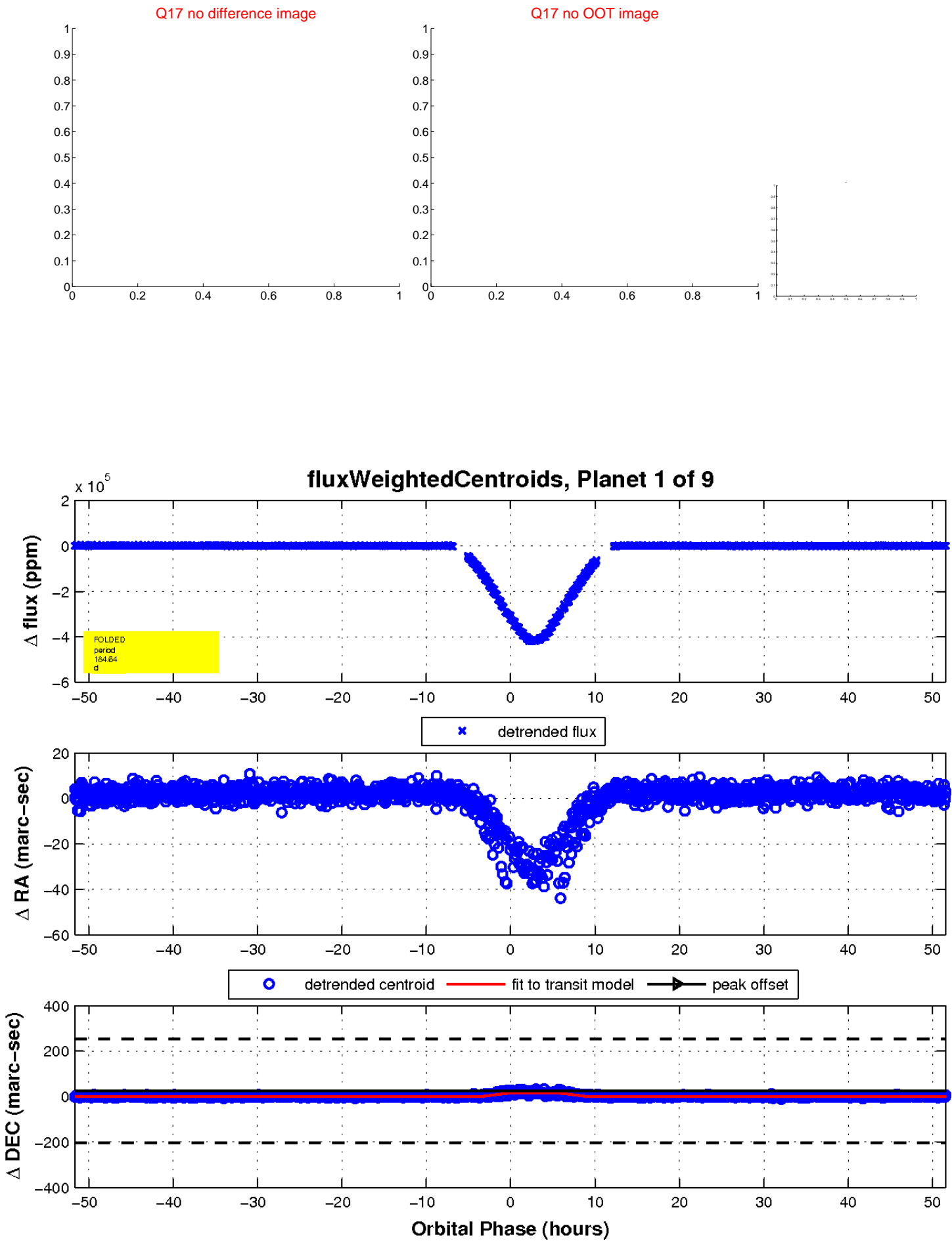


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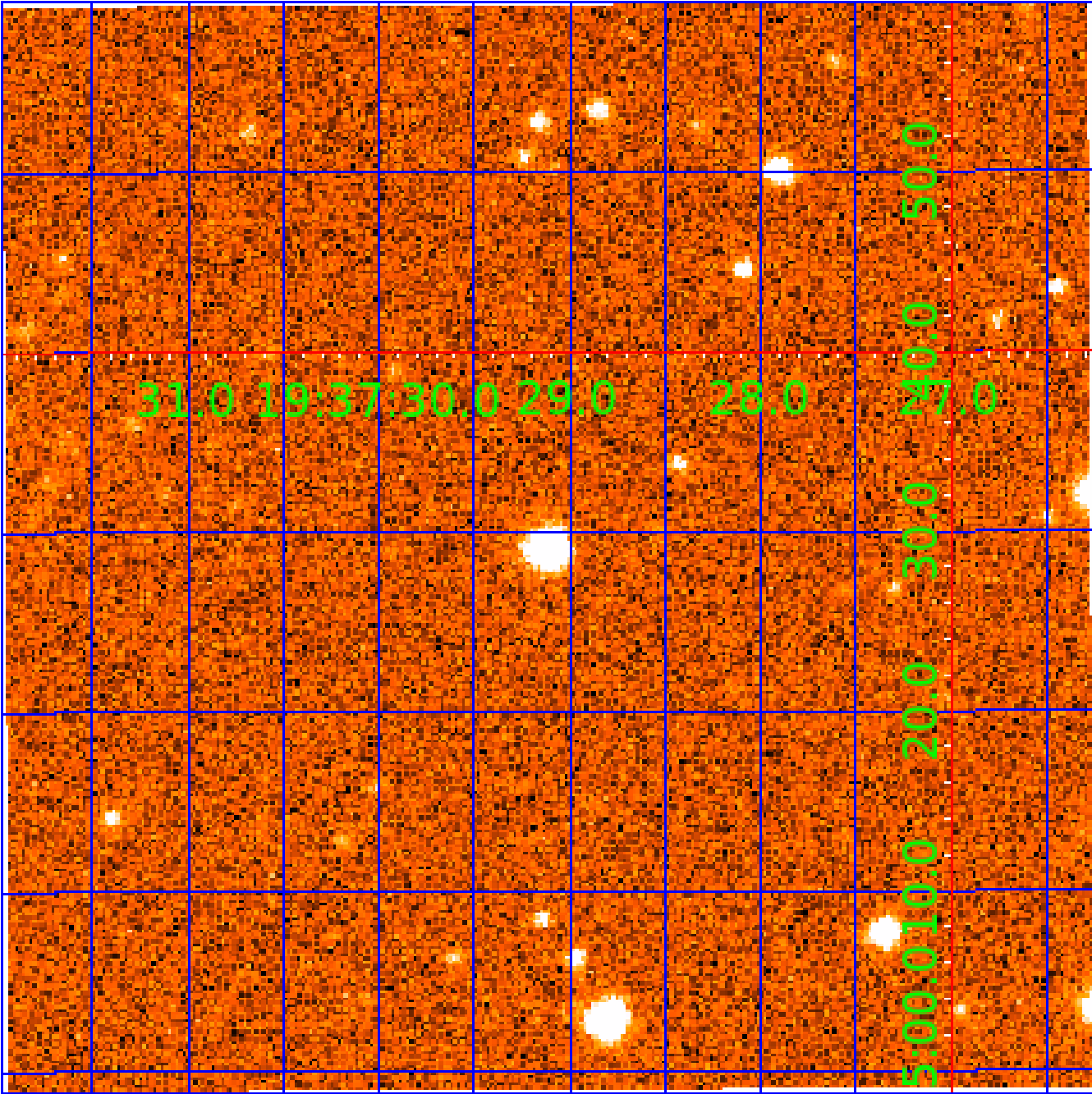


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UKIRT Image

Declination



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008760135-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
008760135-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS
008760135-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008760135-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS

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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.

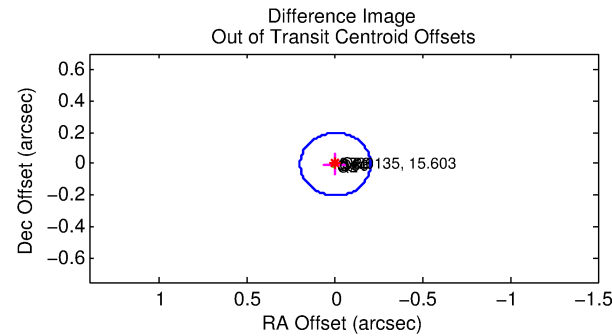
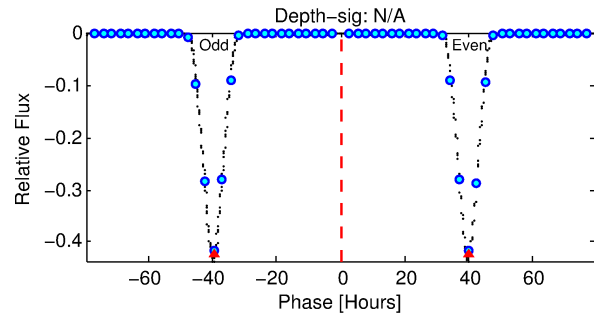
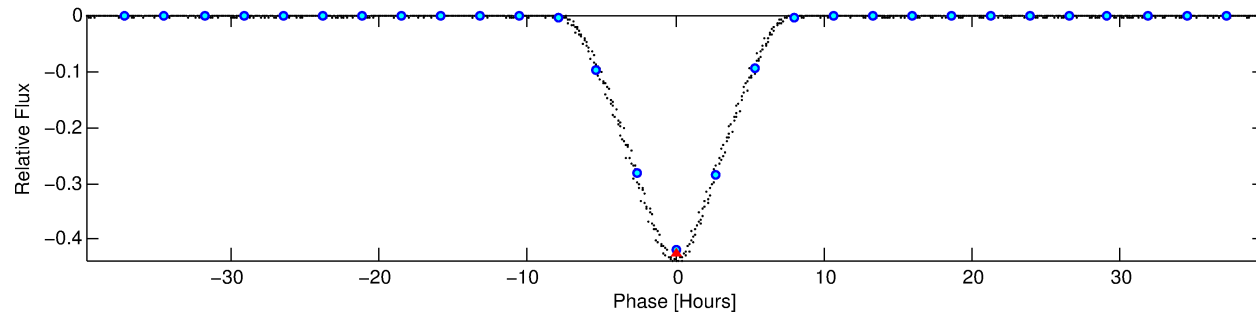
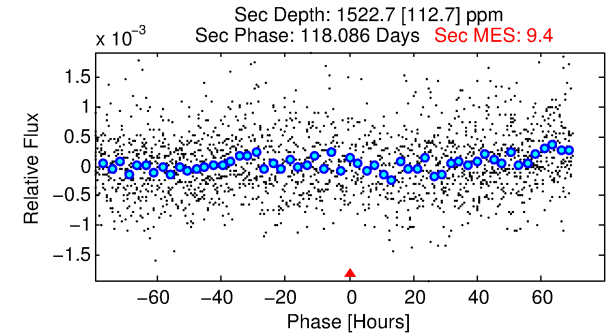
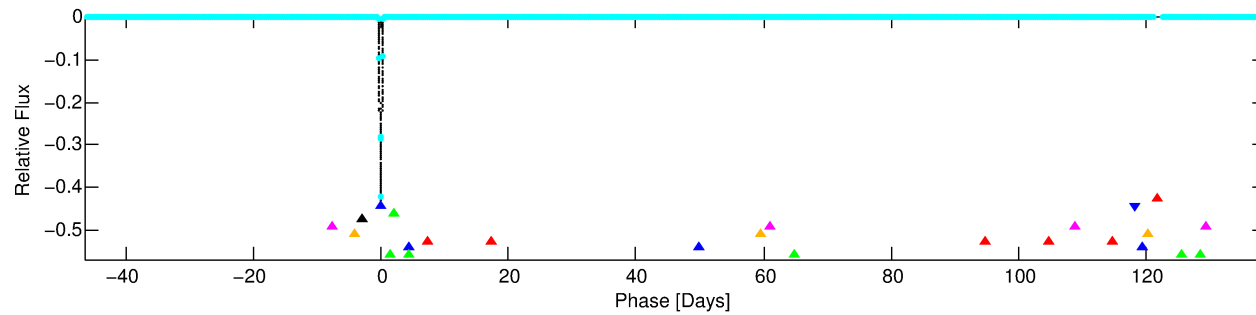
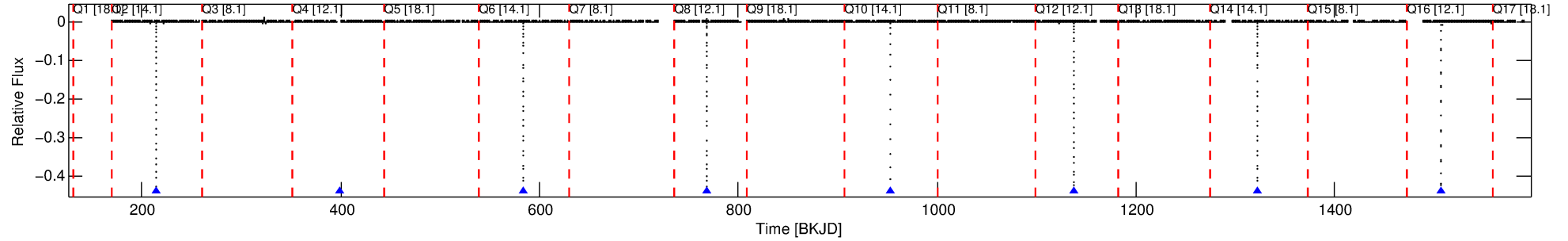
## Ephemeris Match Information For 008760135-02

No Significant Match Found

# DV One-Page Summary

KIC: 8760135 Candidate: 2 of 9 Period: 184.644 d  
KOI: K03524 Corr: No Ephemeris Match

Kp: 15.60 R\*: 1.02 Rs Teff: 5713.0 K Logg: 4.41 Fe/H: 0.120



## TPS TCE Results:

Period = 184.64446 d  
Epoch = 214.8765 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

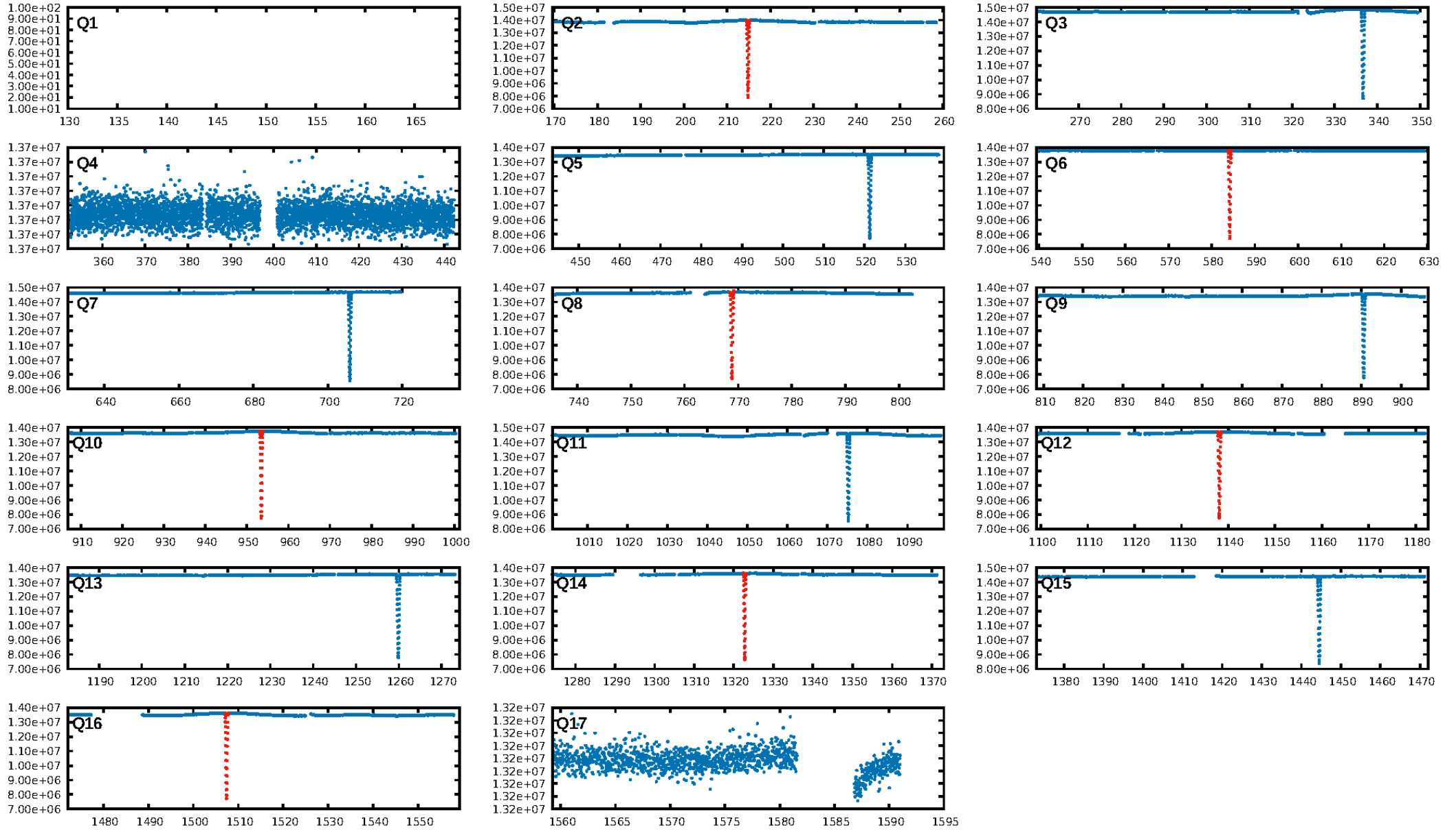
ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [133.55σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: 6.258

Centroid-sig: N/A  
Centroid-so: 0.172 arcsec [90.00σ]  
OotOffset-rm: 0.004 arcsec [0.06σ]  
KicOffset-rm: 0.083 arcsec [1.20σ]  
OotOffset-st: 4/0/3/0 [7]  
KicOffset-st: 4/0/3/0 [7]  
DiffImageQuality-fgm: 1.00 [7/7]  
DiffImageOverlap-fno: 0.86 [6/7]

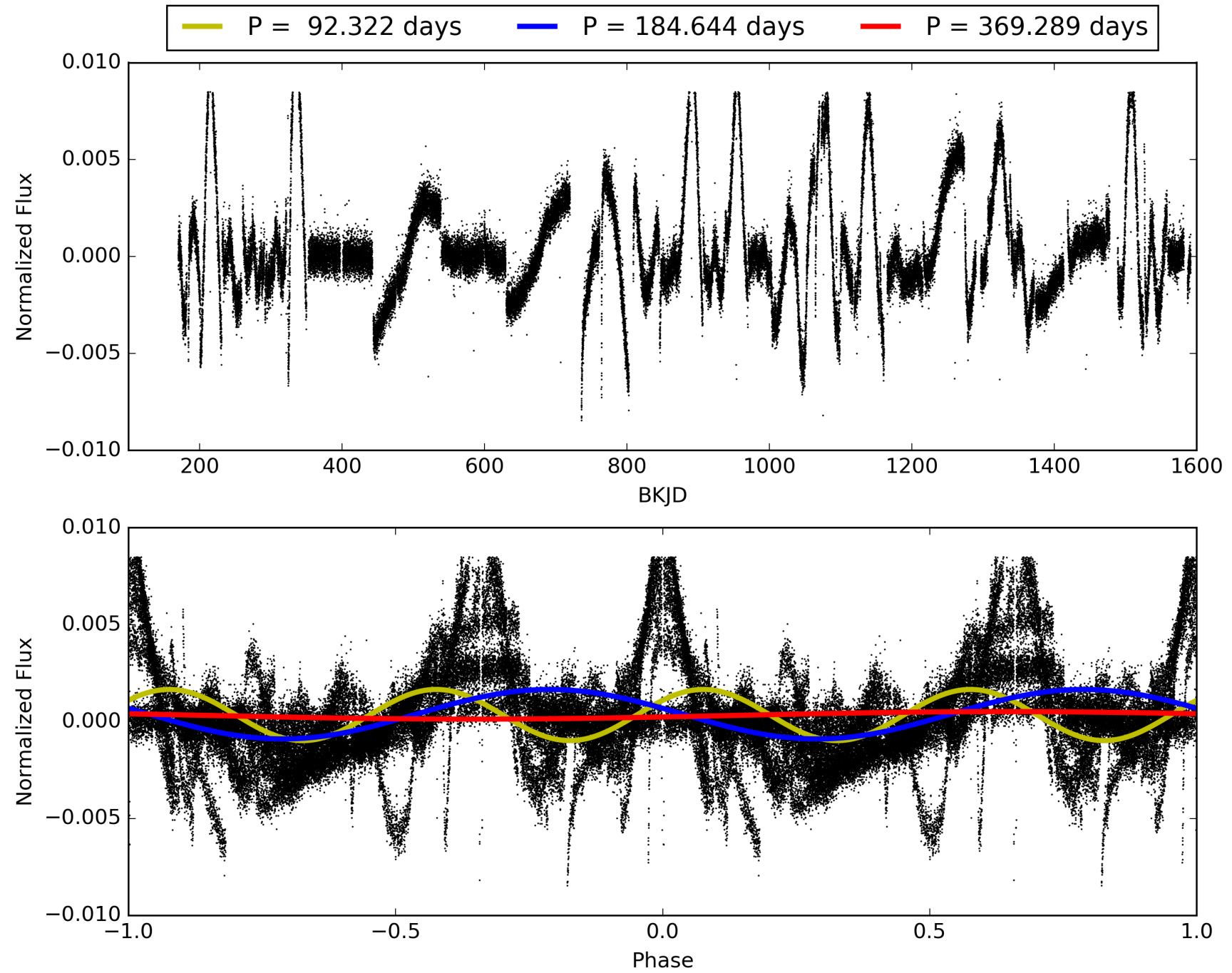
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:34:51 Z

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

# TCE 008760135-02, PDC Light Curves

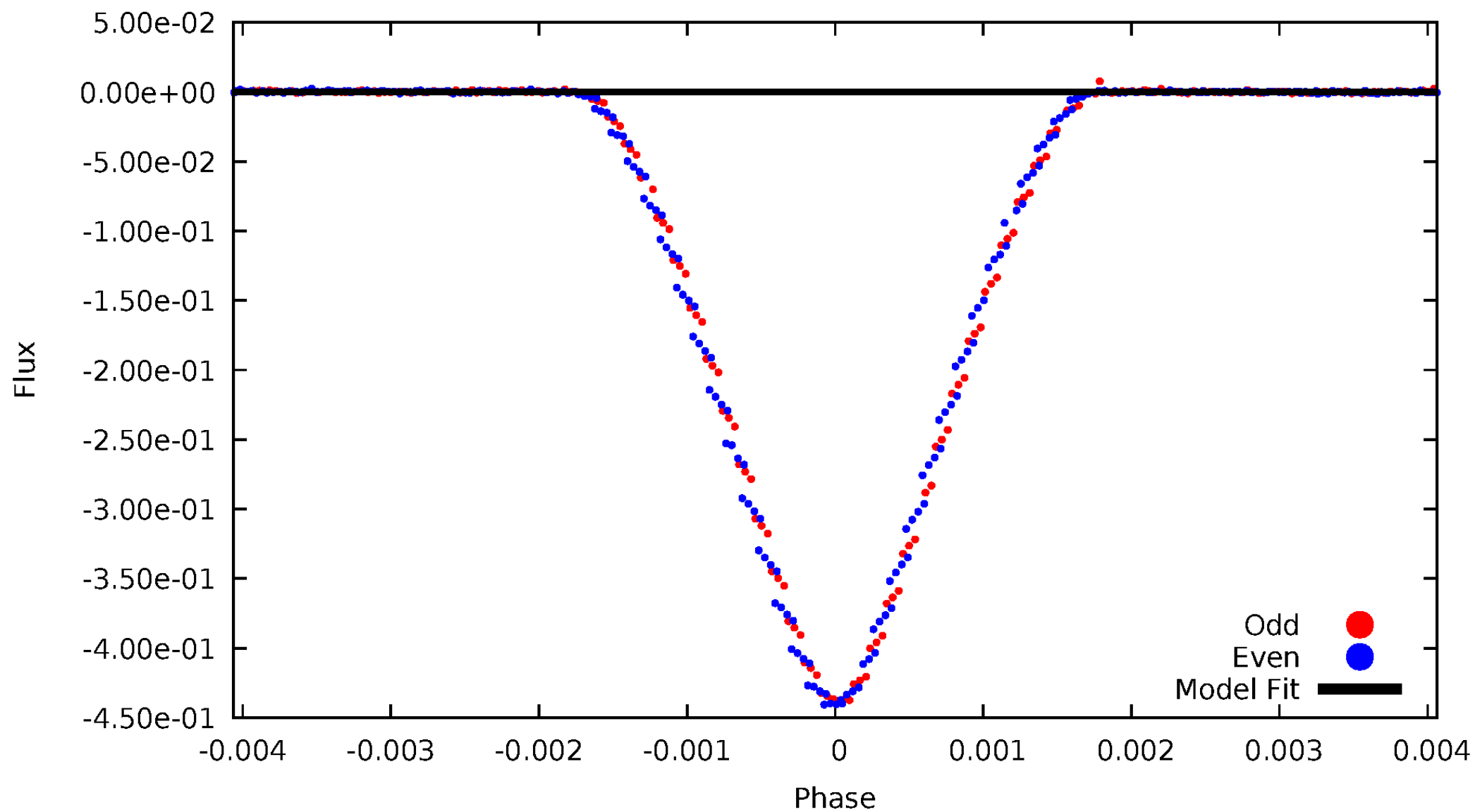


TCE 008760135-02



# DV Odd/Even

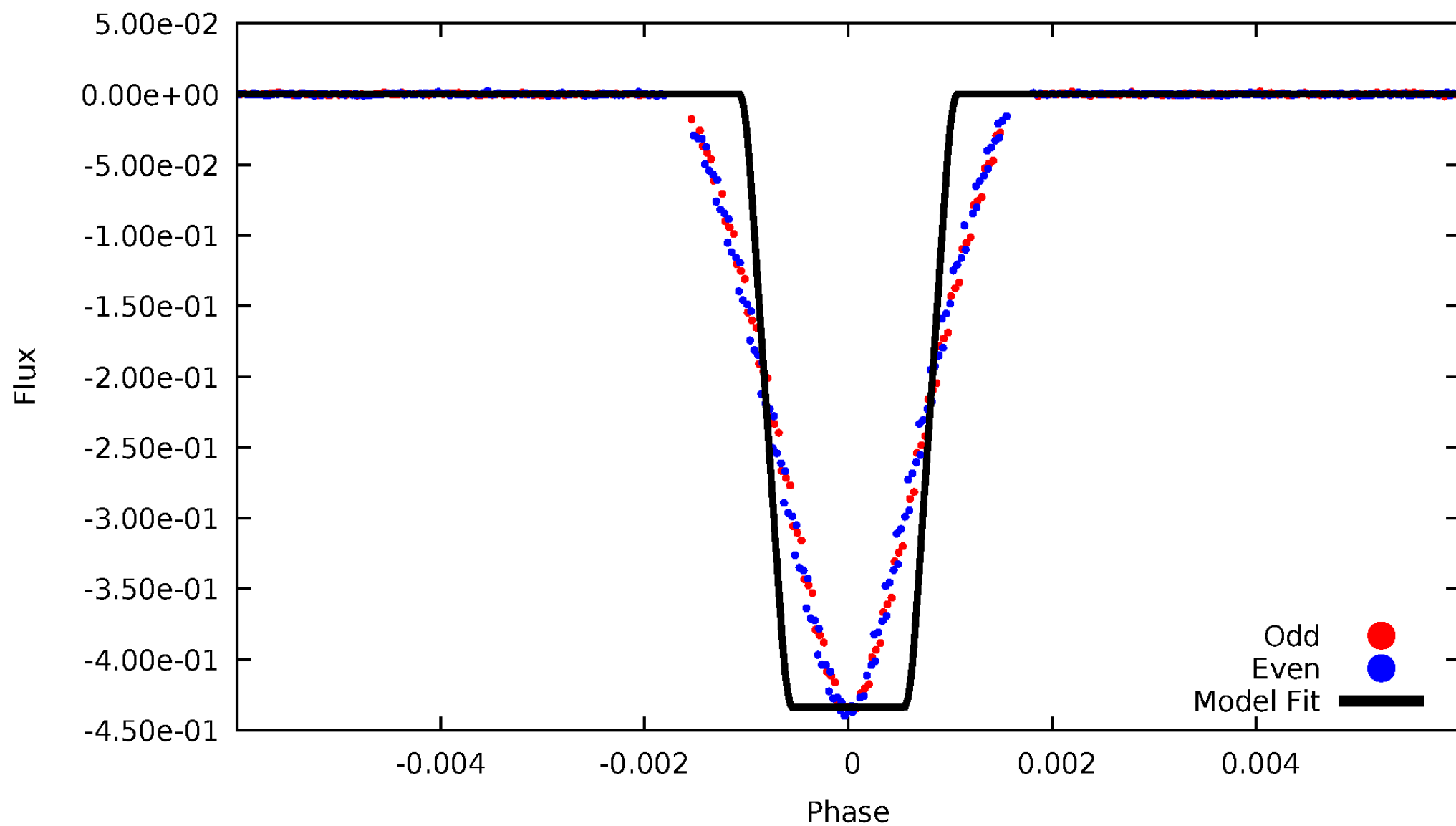
TCE 008760135-02





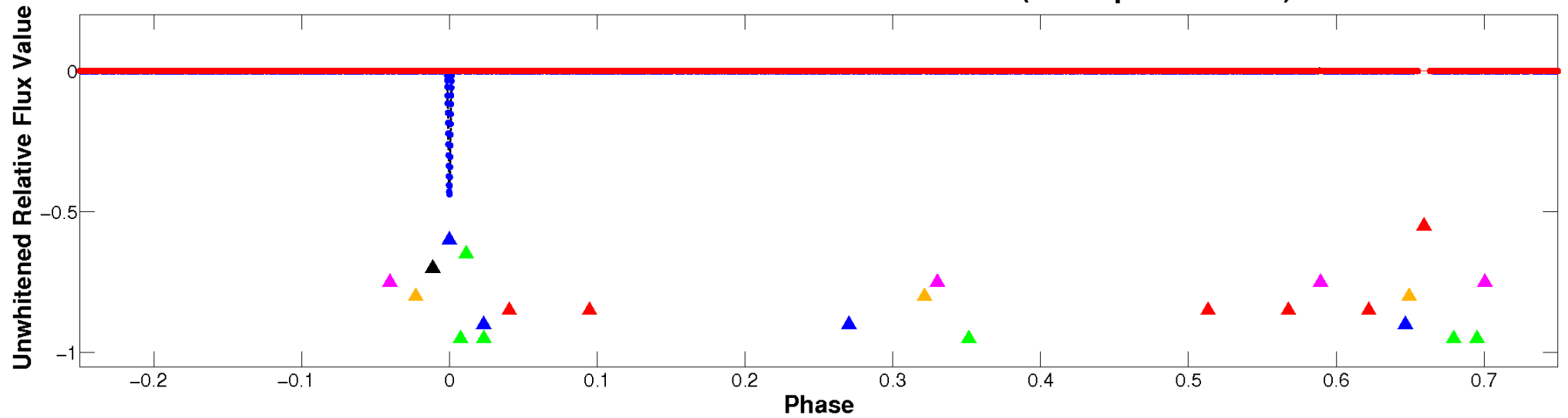
# ALT Odd/Even

TCE 008760135-02

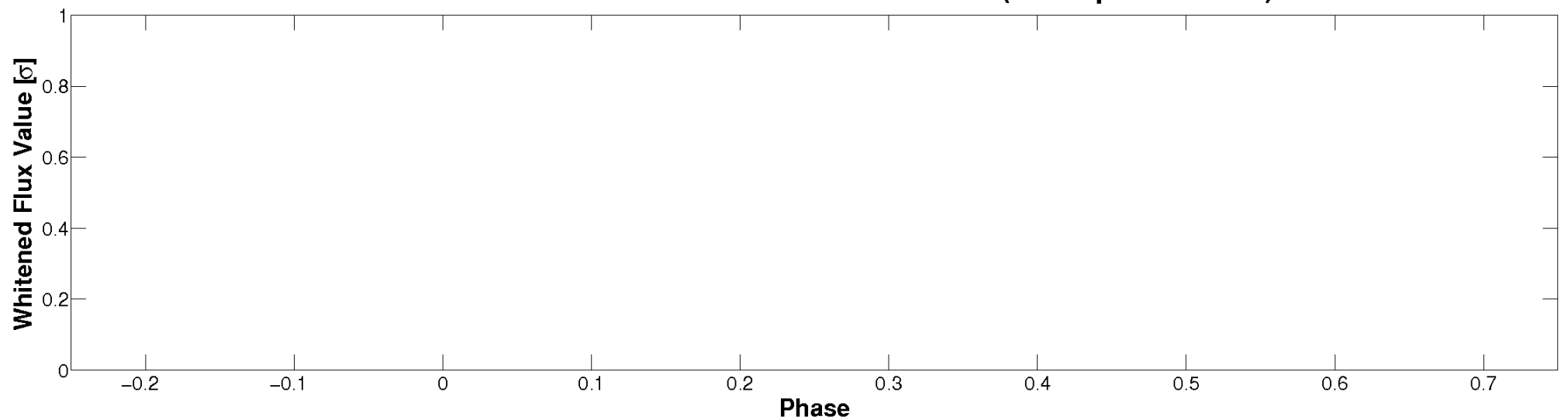


# Non-Whitened Vs. Whitened Light Curve

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

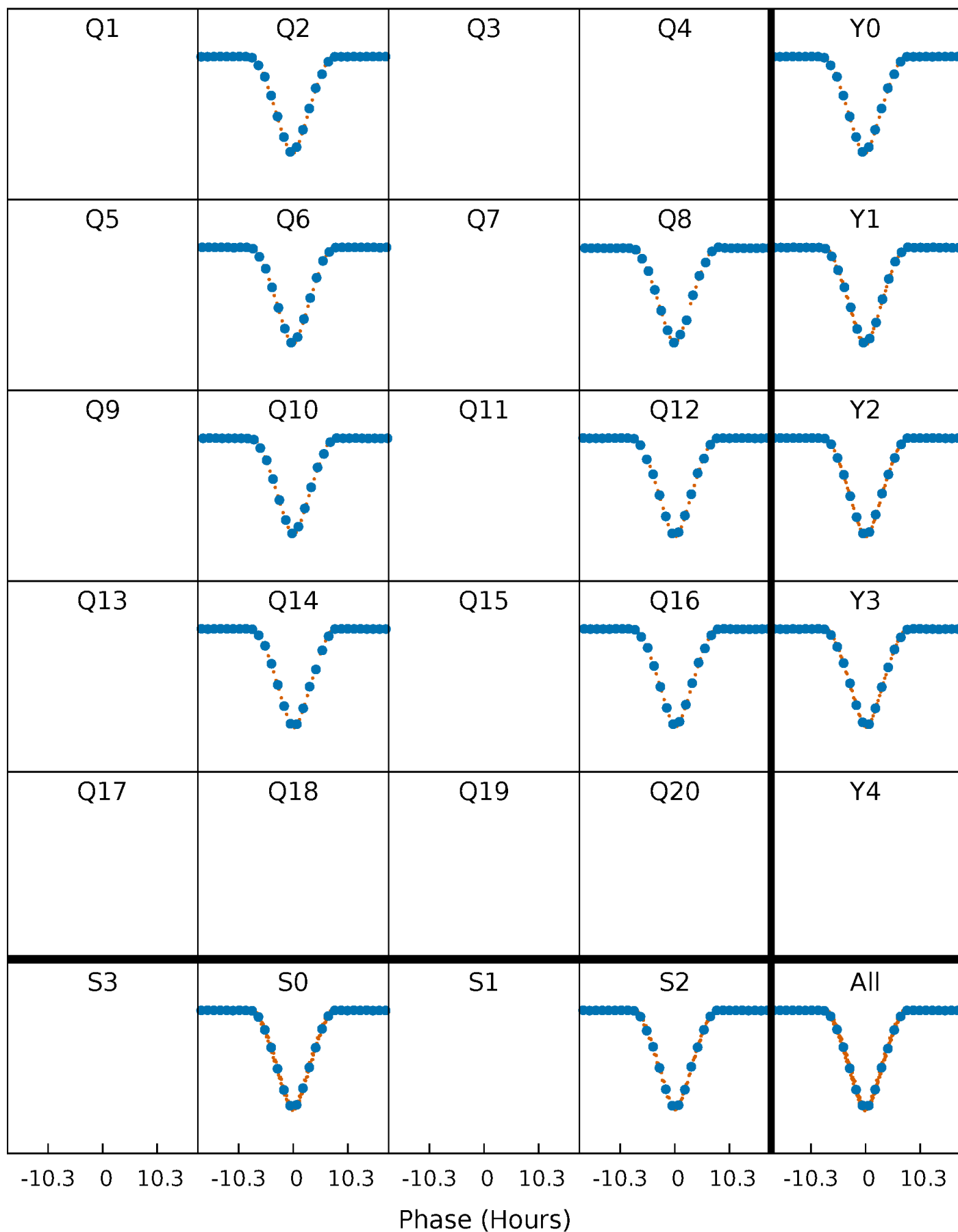


**Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



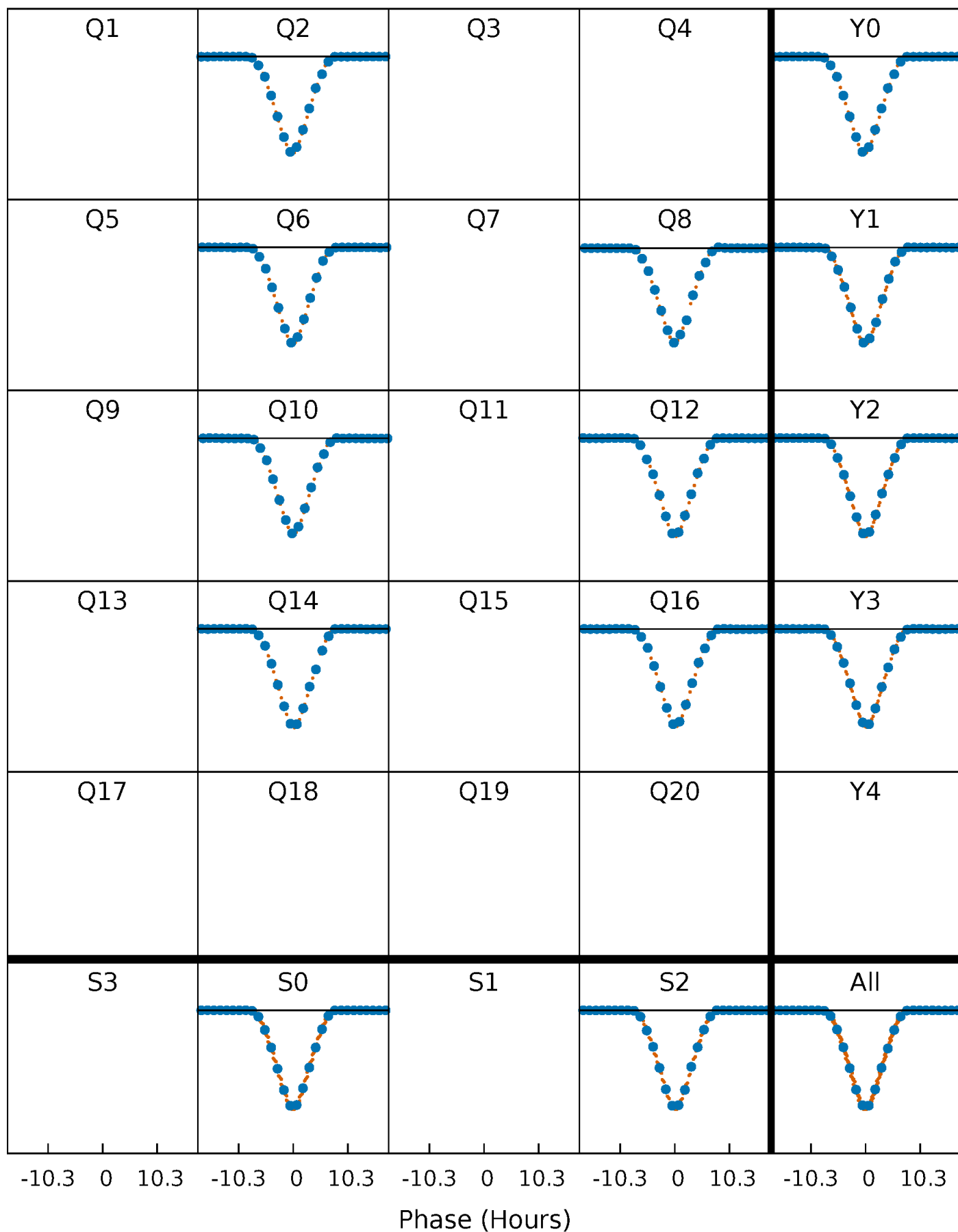
# PDC Quarter-Phased Transit Curves

TCE 008760135-02 P=184.644459 Days  $T_0=214.876513$  (BKJD)



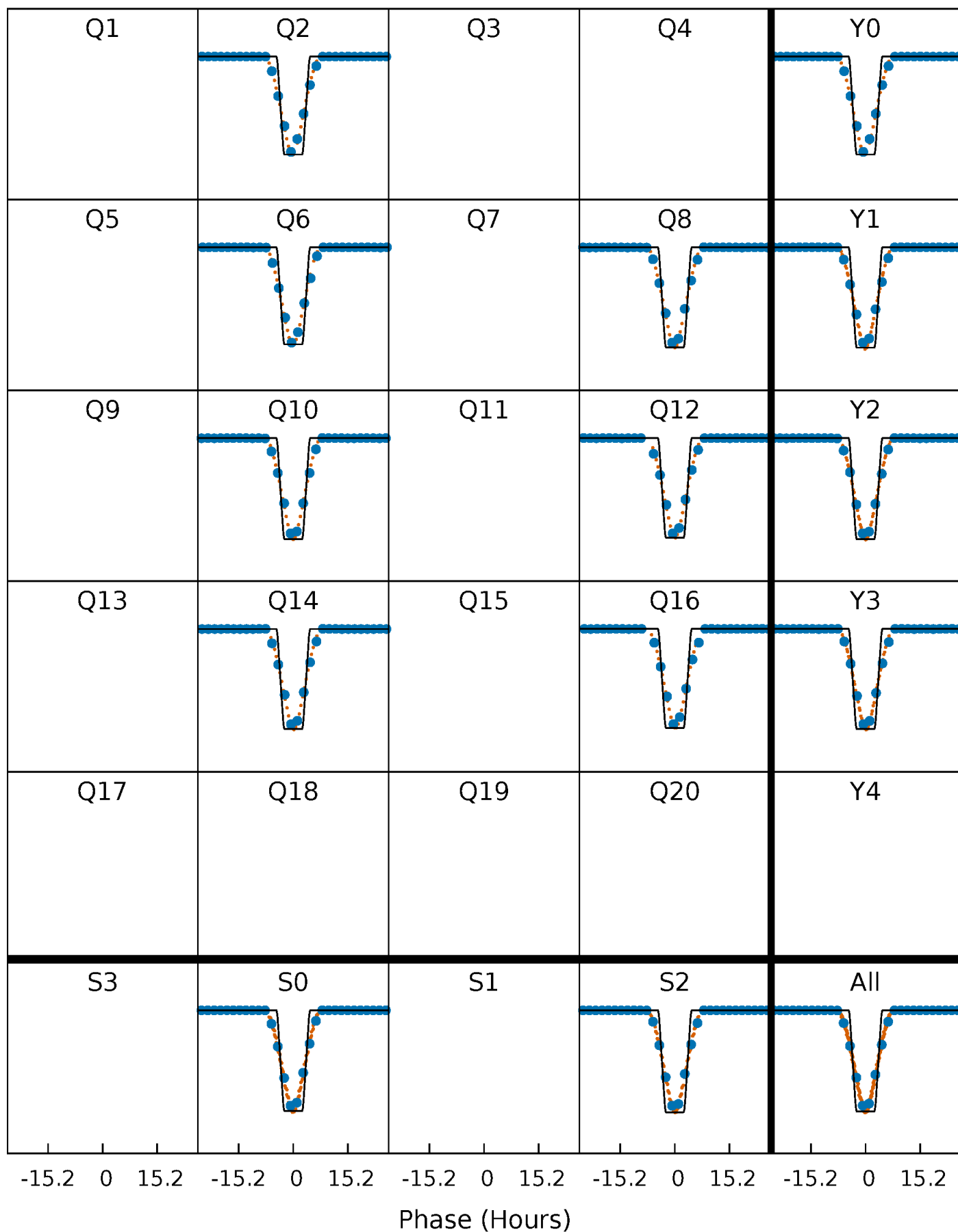
# DV Quarter-Phased Transit Curves

TCE 008760135-02 P=184.644459 Days  $T_0=214.876513$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

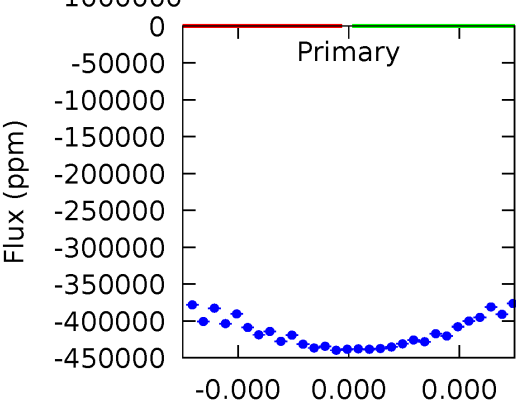
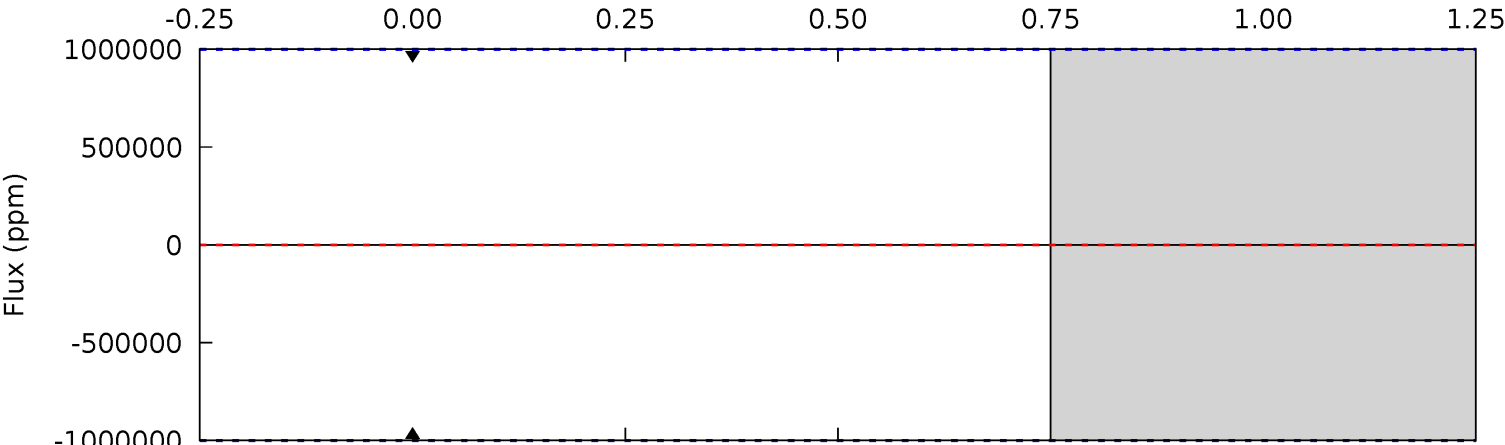
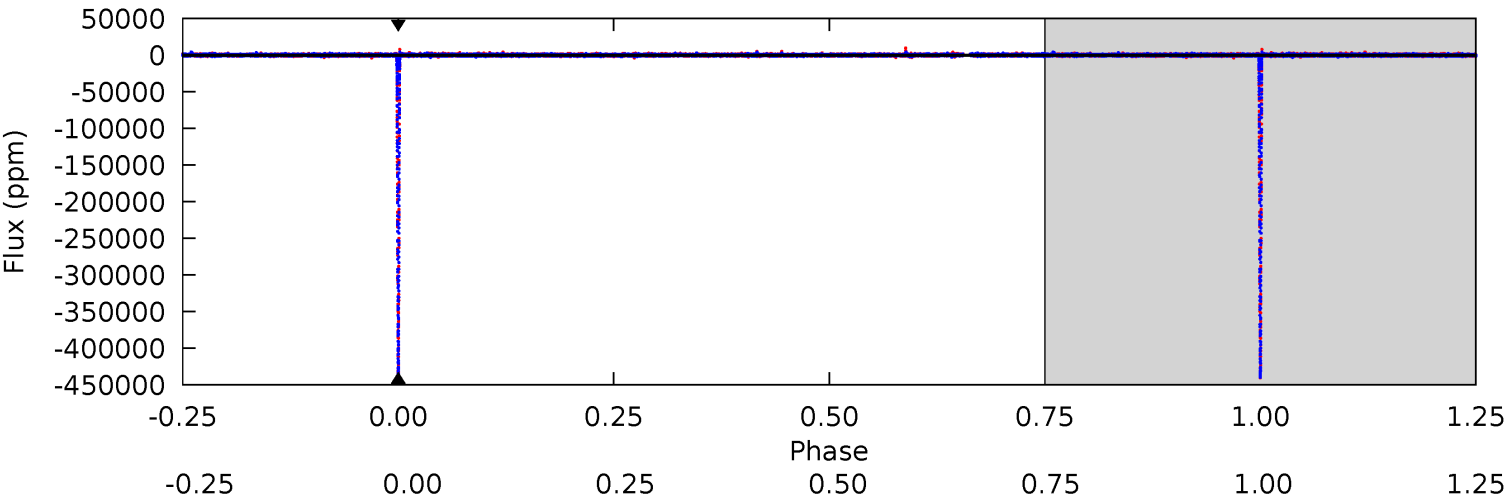
TCE 008760135-02 P=184.644459 Days  $T_0=214.877384$  (BKJD)



# DV Model-Shift Uniqueness Test

008760135-02, P = 184.644459 Days, E = 30.232054 Days

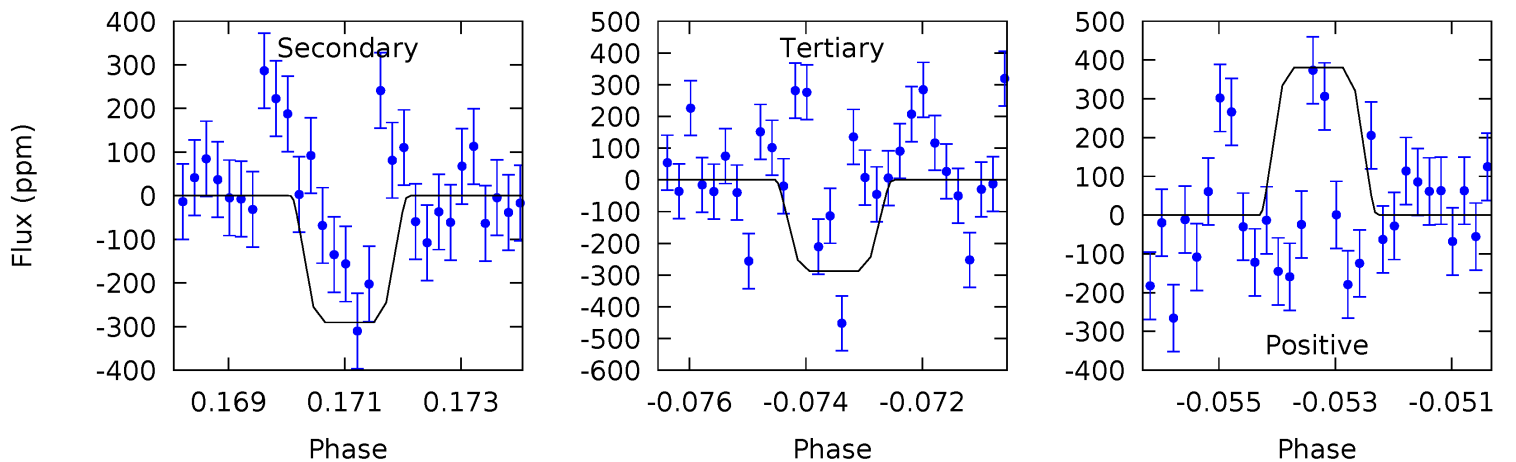
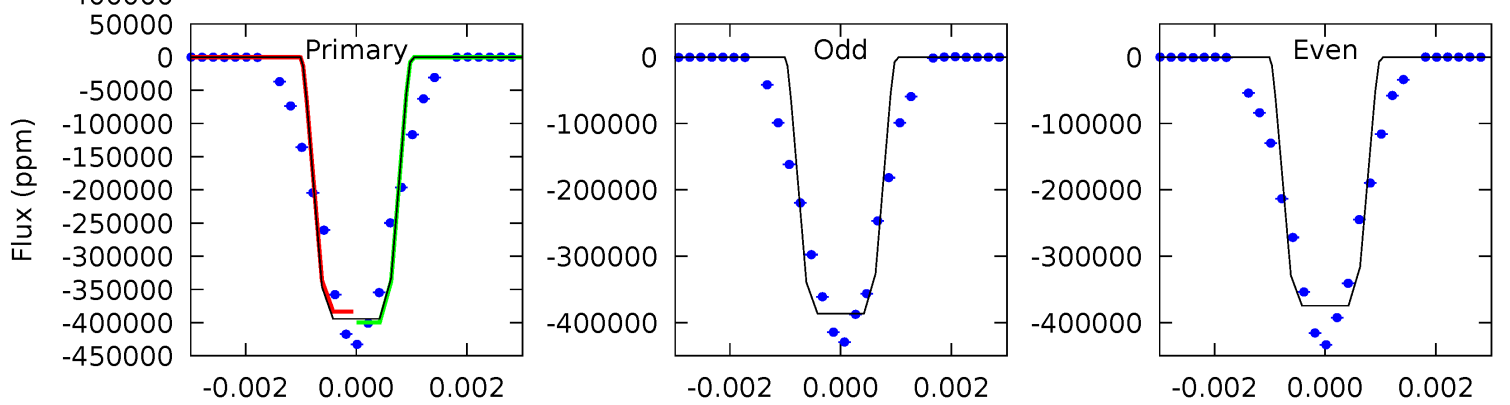
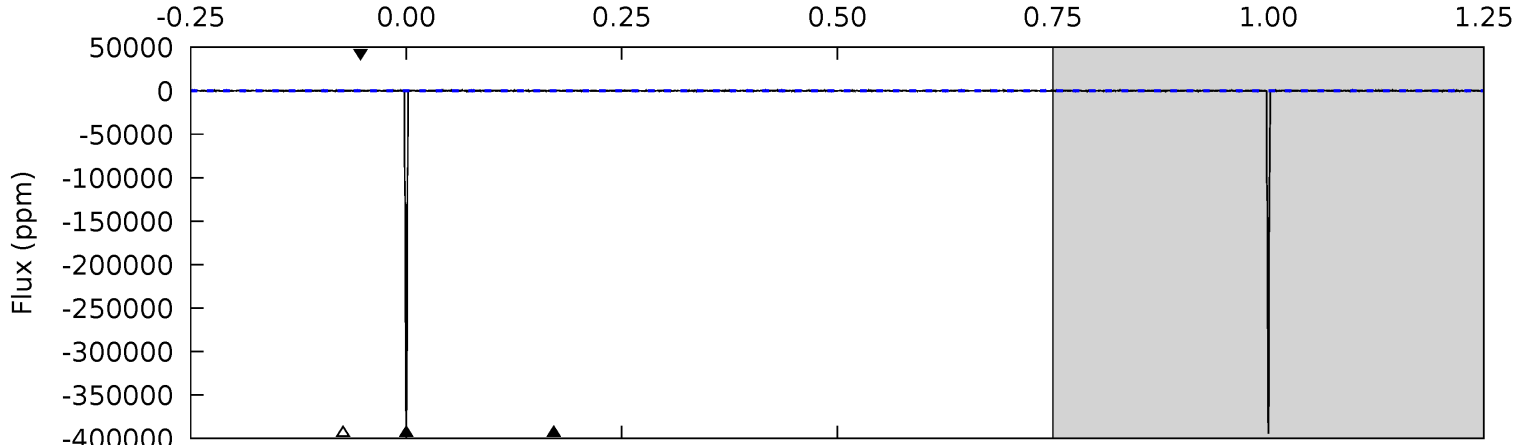
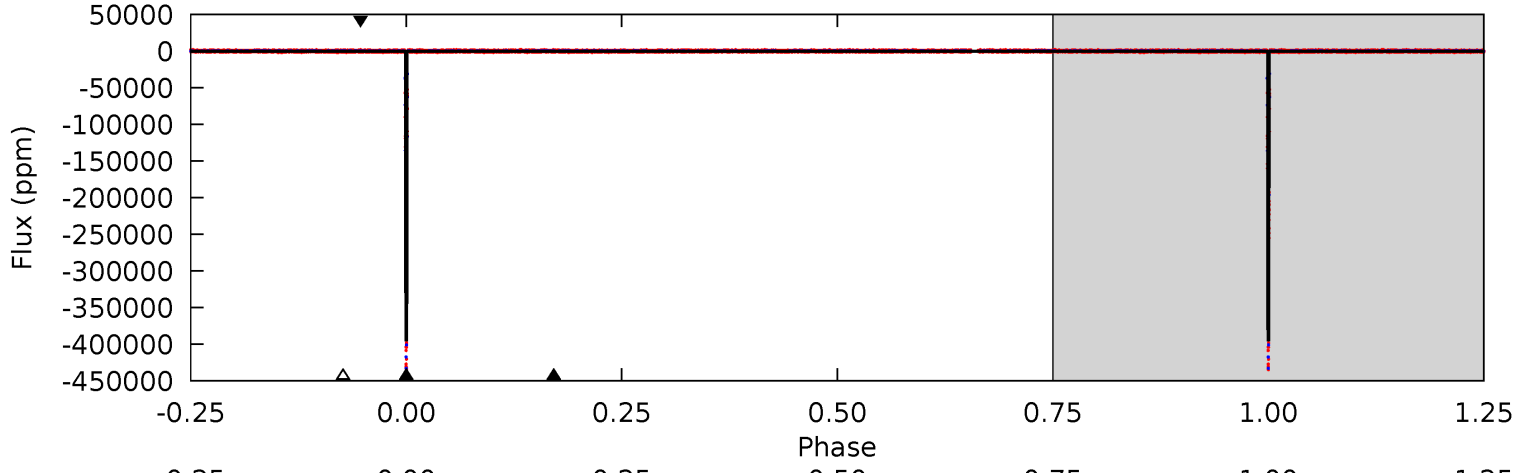
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008760135-02, P = 184.644459 Days, E = 30.232925 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
6236	4.59	4.56	6.02	5.32	3.07	1.82	6232	6230	0.03	-1.43	109.8	1.00	0.00	0





### Stellar Parameters For KIC 008760135

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5713^{+154}_{-188}$	$4.414^{+0.098}_{-0.196}$	$0.120^{+0.250}_{-0.300}$	$1.023^{+0.289}_{-0.124}$	$0.990^{+0.111}_{-0.100}$	$1.301^{+0.572}_{-0.634}$
	+3%/-3%	+2%/-4%	+208%/-250%	+28%/-12%	+11%/-10%	+44%/-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 008760135-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$56.75^{+13.47}_{-12.43}$	$450^{+36}_{-22}$	$-2439^{+7323}_{-2201}$	$-96.518^{+8592.878}_{-6434.999}$
Alt.	$-290 \pm 63$	$75.89^{+15.91}_{-13.26}$	$453^{+34}_{-24}$	$1925^{+76}_{-73}$	$11^{+5}_{-4}$

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

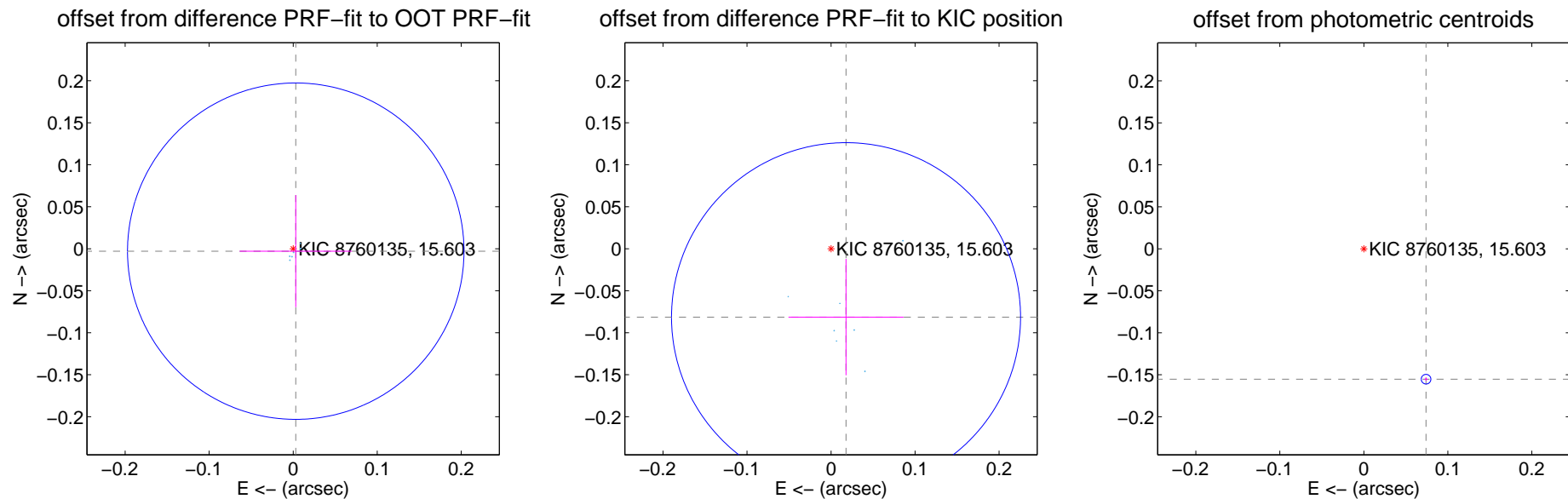
## DV Centroid Data

Supplemental centroid analysis for 008760135-02. Kepler magnitude: 15.60. Transit SNR -1.00

There are 7 quarters with good PRF difference image offsets

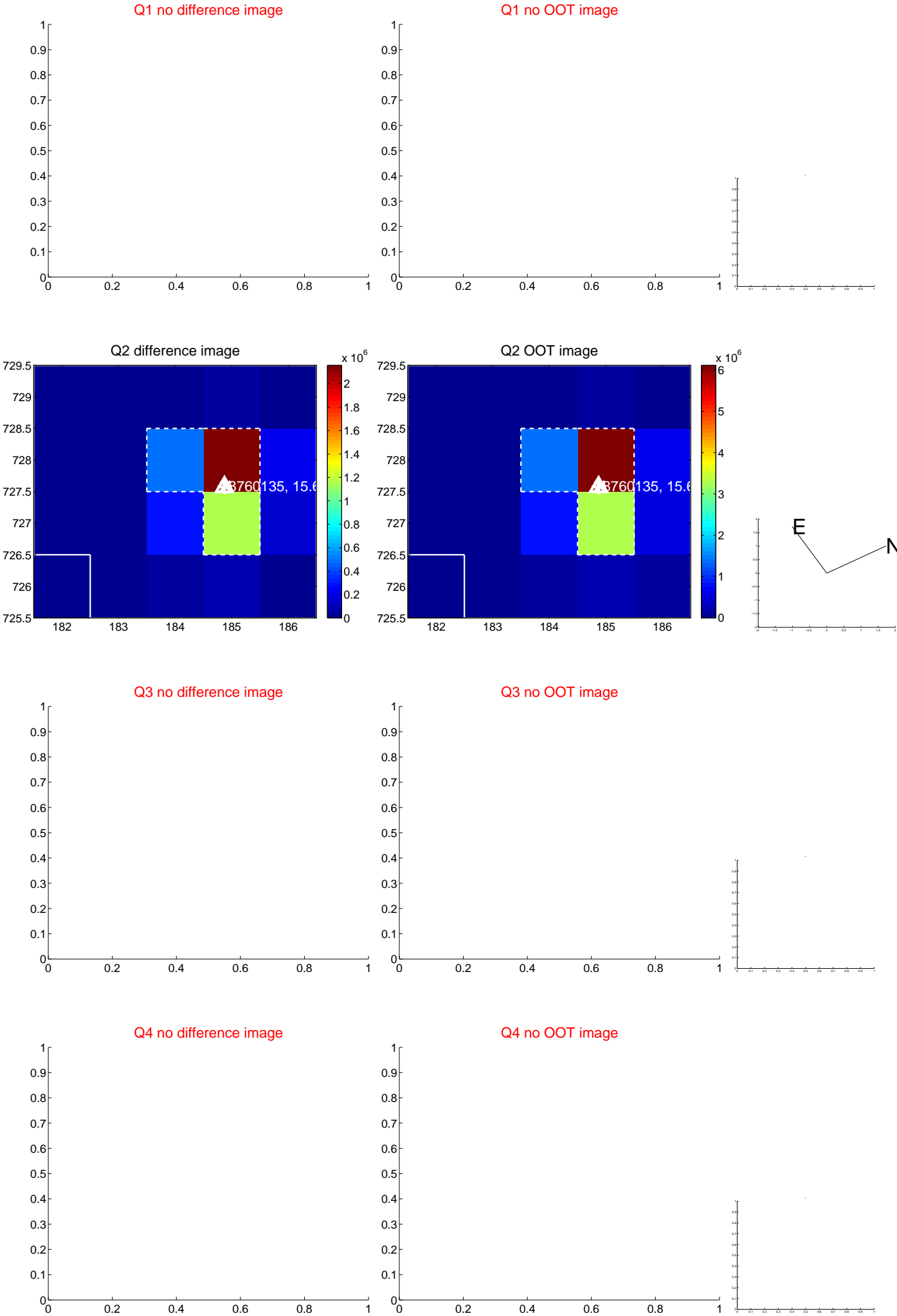
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.004 \pm 0.067$	0.06	$-0.003 \pm 0.067$	$-0.003 \pm 0.067$
PRF-fit source offset from KIC position	$0.083 \pm 0.069$	1.20	$-0.018 \pm 0.069$	$-0.081 \pm 0.069$
photometric centroid source offset	$0.17 \pm 0.00$	90.00	$-0.07 \pm 0.00$	$-0.16 \pm 0.00$

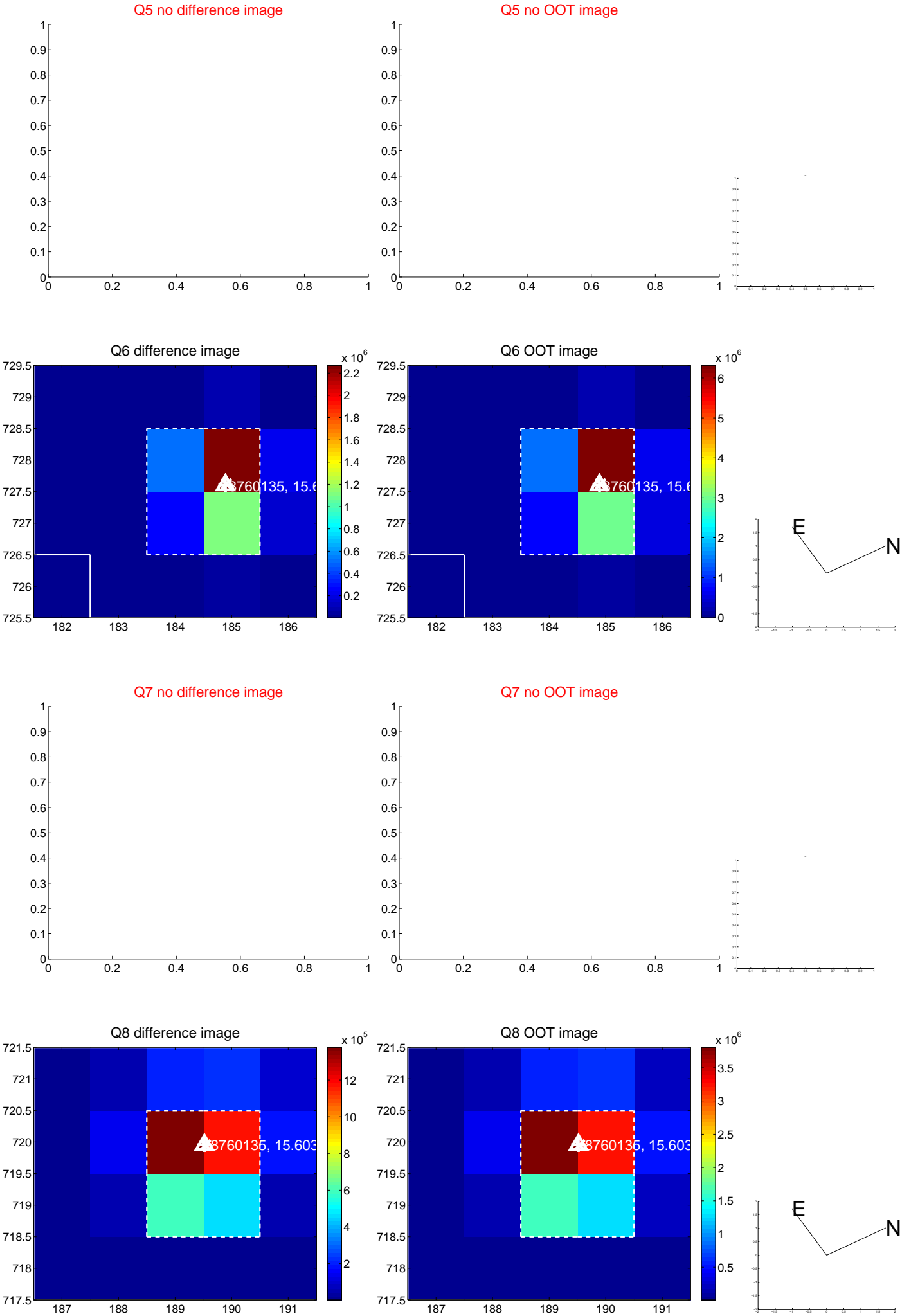


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

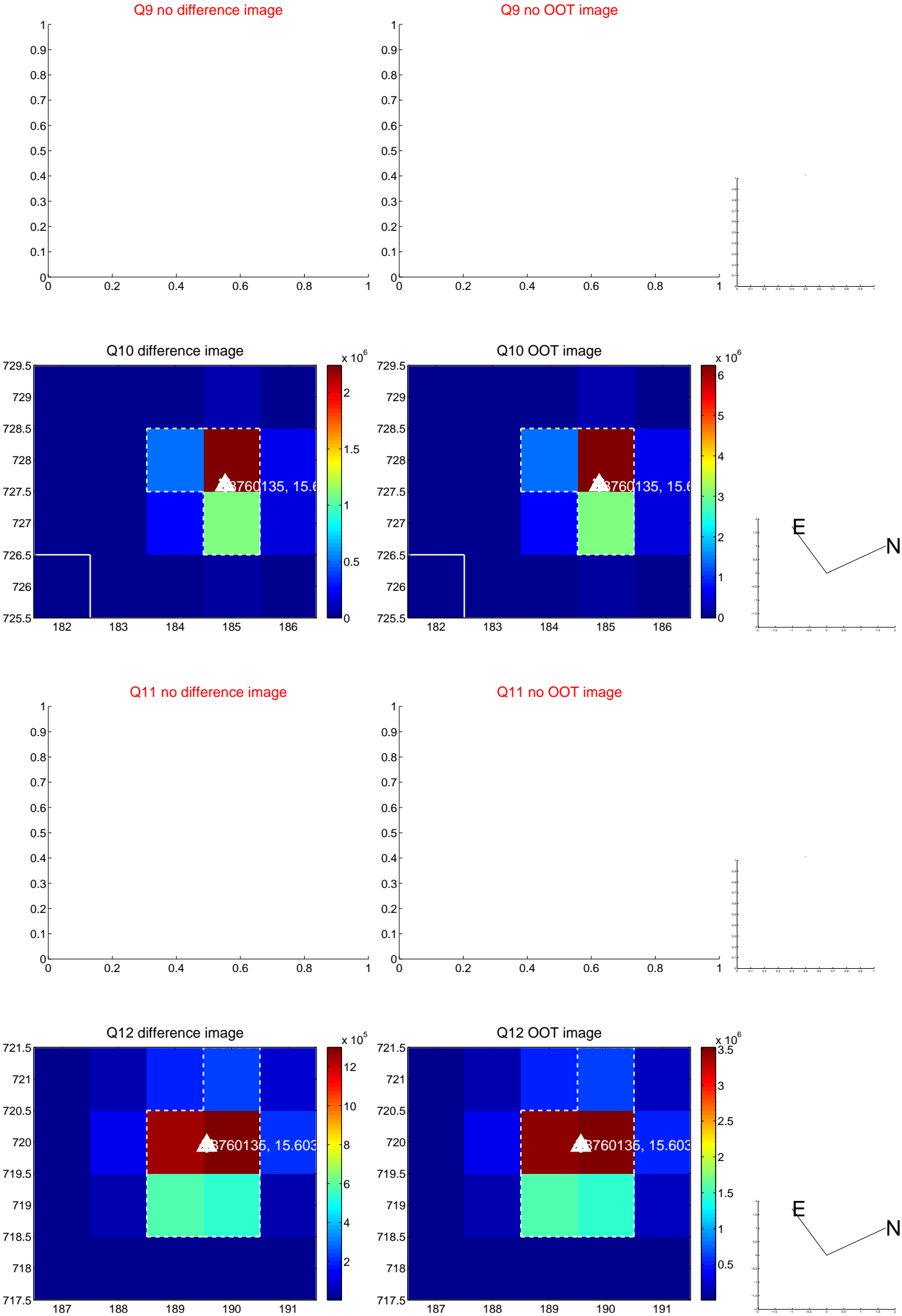
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



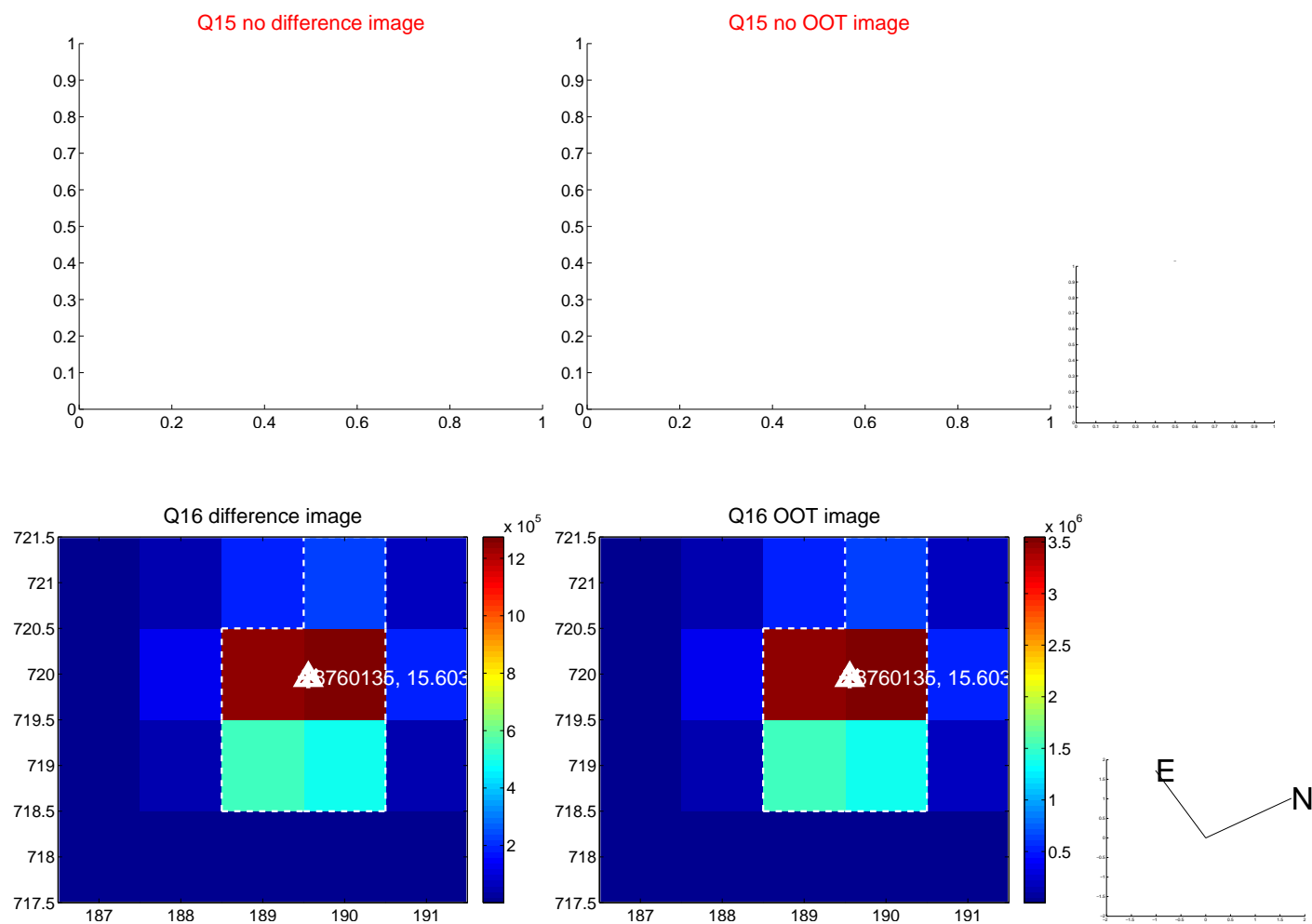
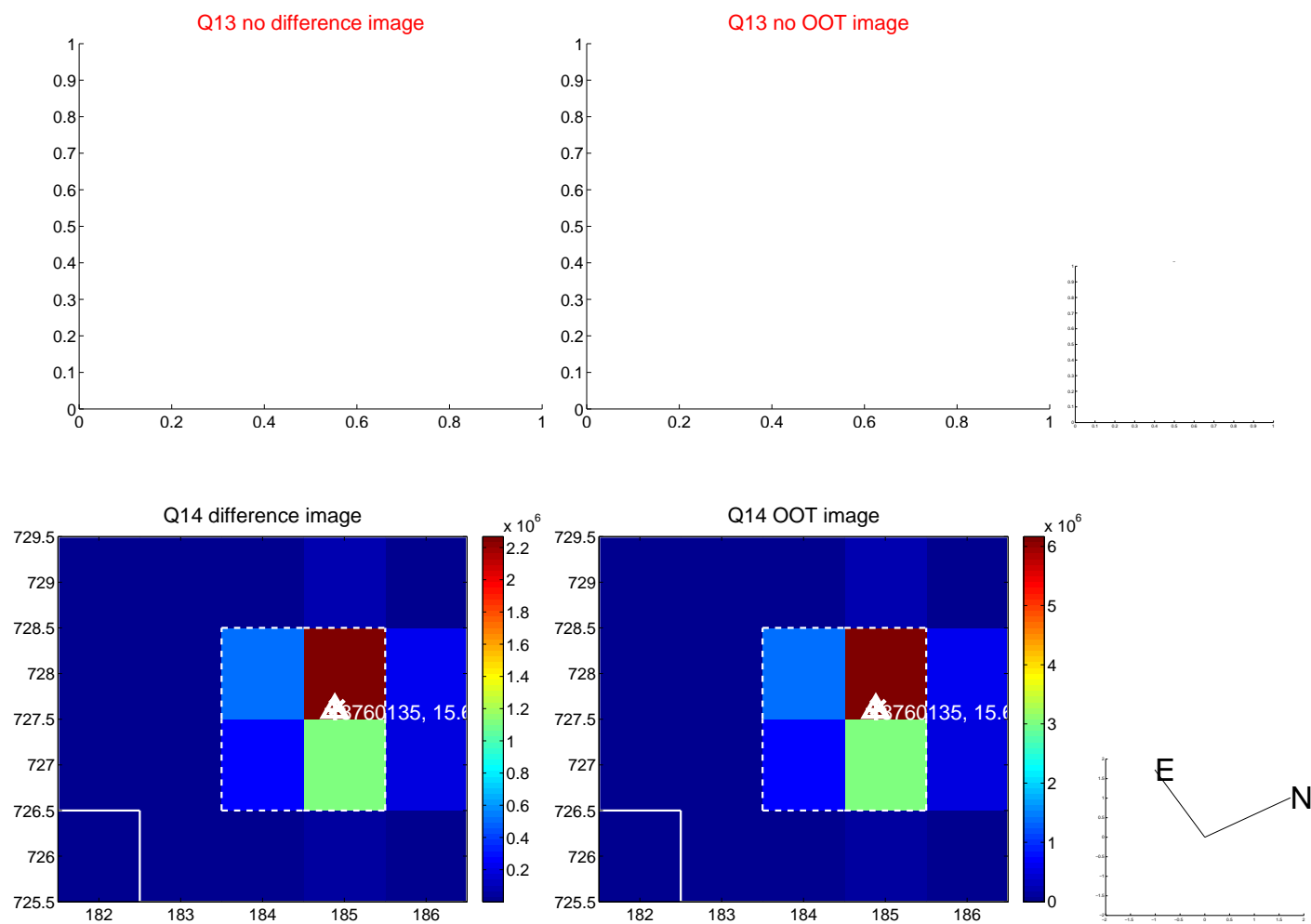
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



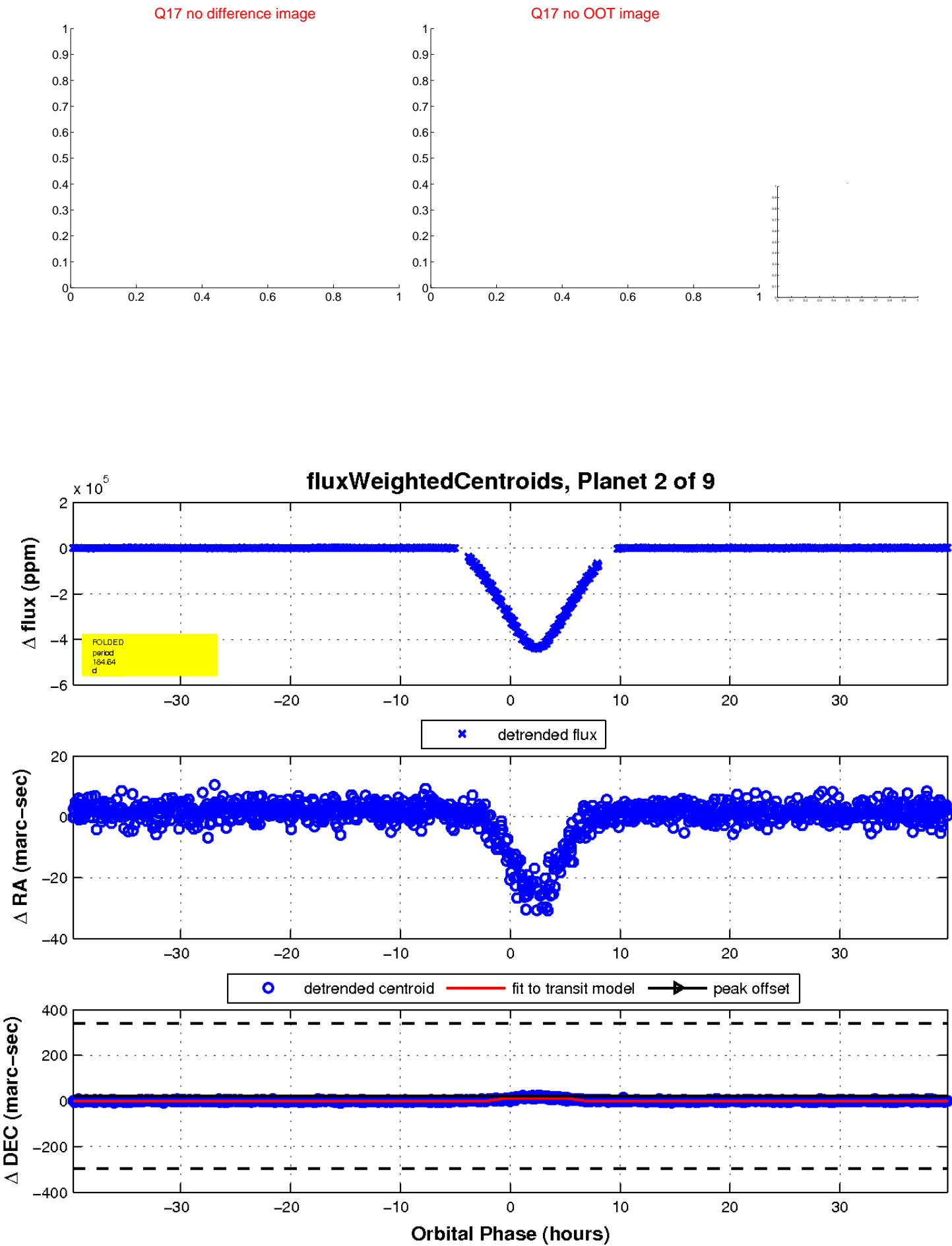
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

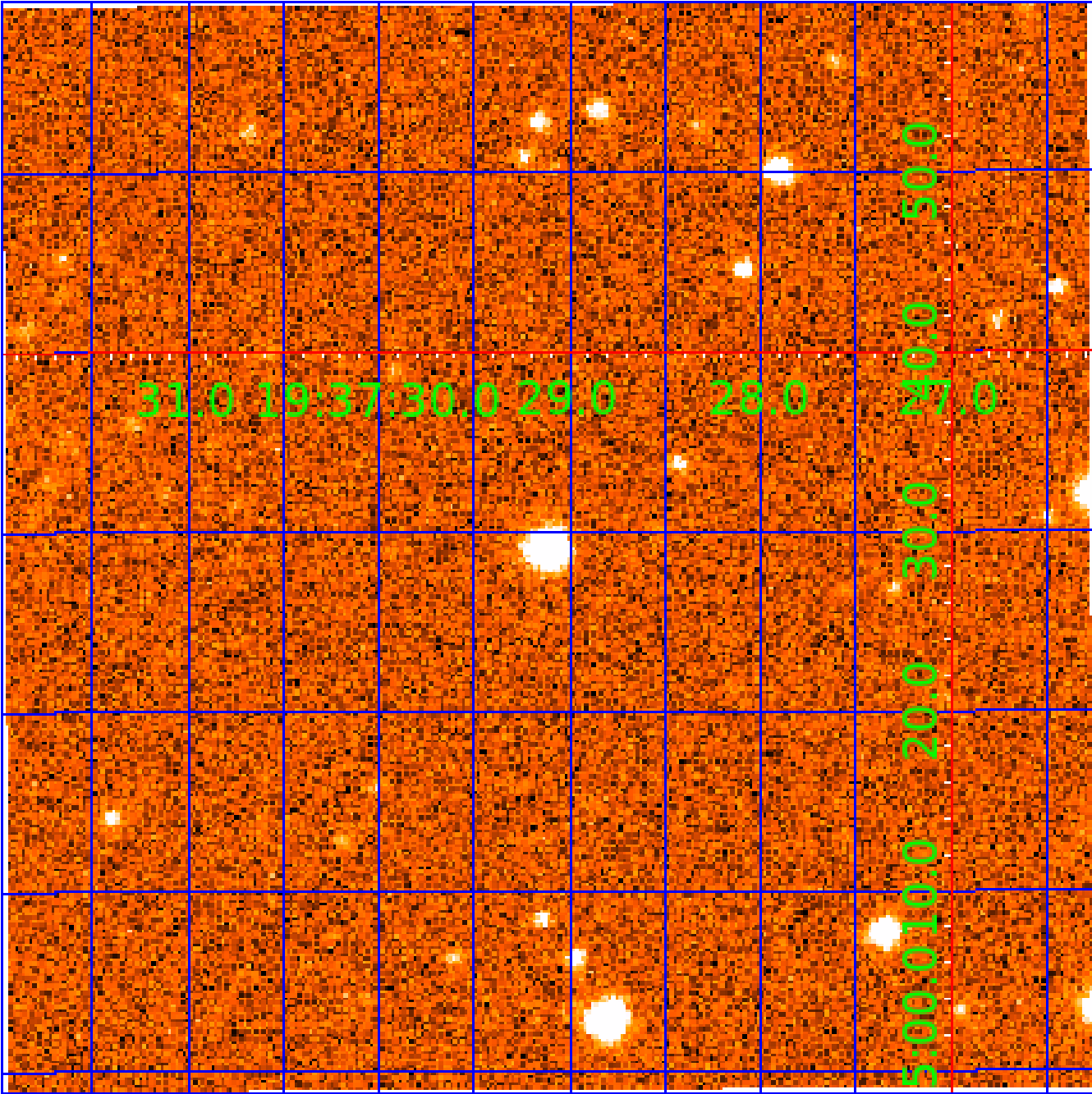


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008760135

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008760135-01	OBS	3524.01	184.644459	151.988827	424552.9	12.000	6016.8	-1.0	1.02	5713	55.82	2.50
008760135-02	OBS	No	184.644459	214.876513	441284.4	9.000	4578.3	-1.0	1.02	5713	55.82	2.50
008760135-03	OBS	No	553.955377	216.966291	2897.5	29.072	34.3	20.7	1.02	5713	10.37	0.58
008760135-05	OBS	No	437.680044	139.064600	2197.0	15.000	26.2	-1.0	1.02	5713	4.73	0.79
008760135-06	OBS	No	614.478016	274.232599	3990.5	3.500	17.5	-1.0	1.02	5713	6.39	0.50
008760135-07	OBS	No	281.983128	309.664392	1366.0	15.000	16.0	-1.0	1.02	5713	3.73	1.42
008760135-08	OBS	No	623.443297	264.789931	3624.4	52.688	23.3	16.1	1.02	5713	11.56	0.49
008760135-09	OBS	No	308.710224	216.283023	1491.6	15.000	20.5	-1.0	1.02	5713	3.90	1.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008760135-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—CENT_NOFITS
008760135-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
008760135-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS
008760135-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008760135-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—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 008760135-03

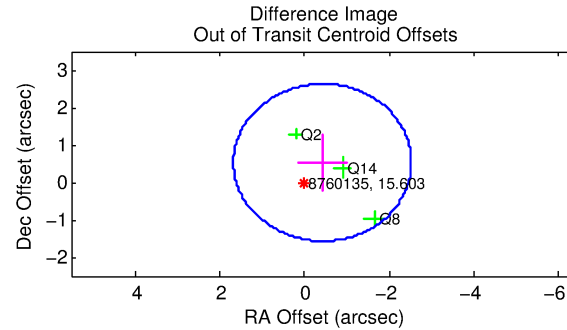
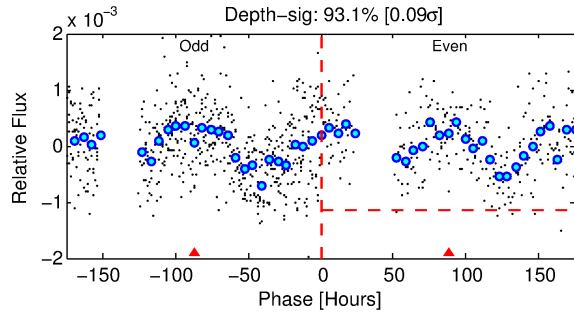
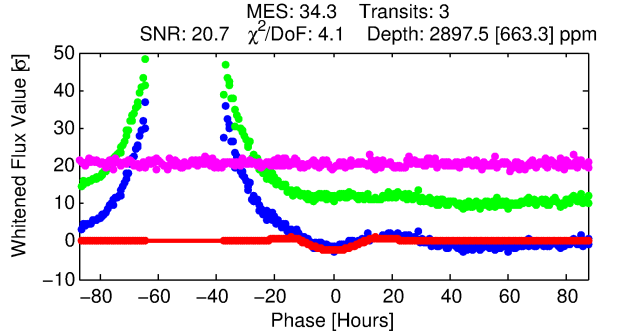
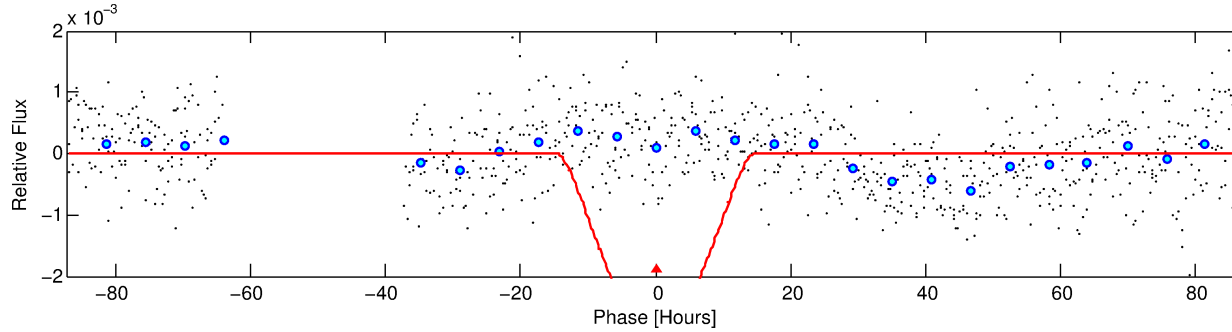
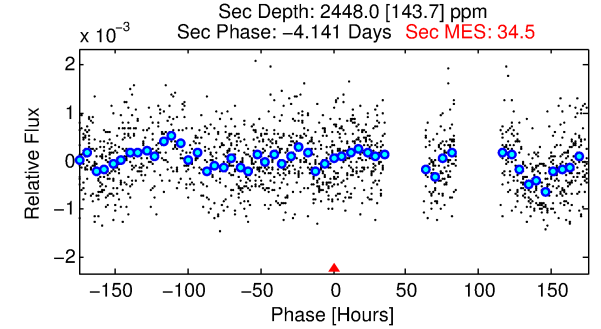
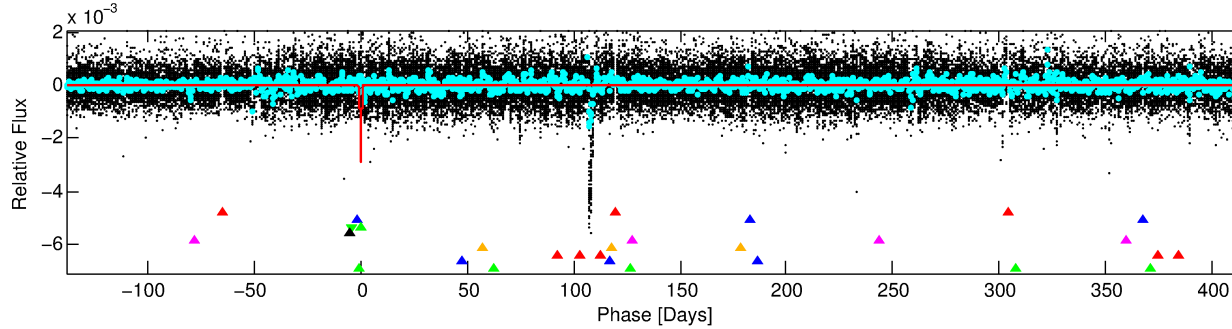
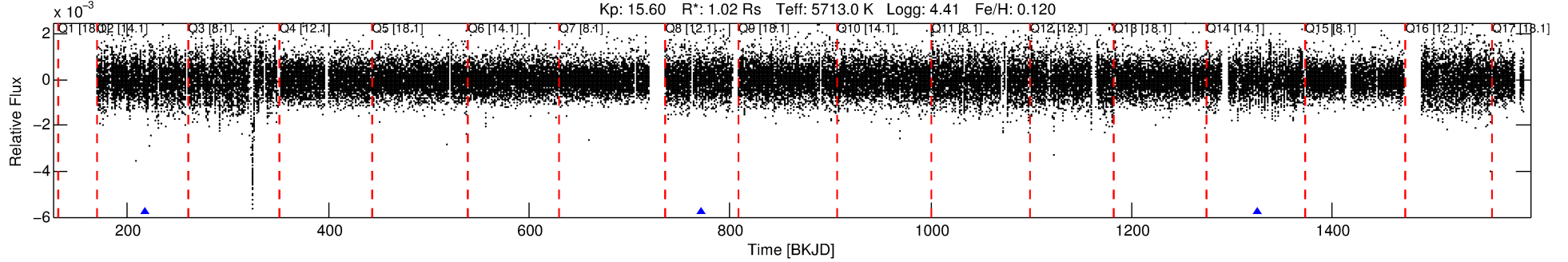
No Significant Match Found

# DV One-Page Summary

KIC: 8760135 Candidate: 3 of 9 Period: 553.955 d

KOI: K03524 Corr: No Ephemeris Match

Kp: 15.60 R\*: 1.02 Rs Teff: 5713.0 K Logg: 4.41 Fe/H: 0.120



## DV Fit Results:

Period = 553.95538 [0.04278] d  
Epoch = 216.9663 [0.0537] BKJD  
Rp/R\* = 0.0929 [0.2685]  
a/R\* = 64.40 [37.58]  
b = 1.00 [0.39]  
Seff = 0.58 [0.22]  
Teq = 222 [21] K  
Rp = 10.37 [30.12] Re  
a = 1.3160 [0.3172] AU  
Ag = 21699.11 [125725.58] [0.17σ]  
Teffp = 4170 [6030] K [0.65σ]

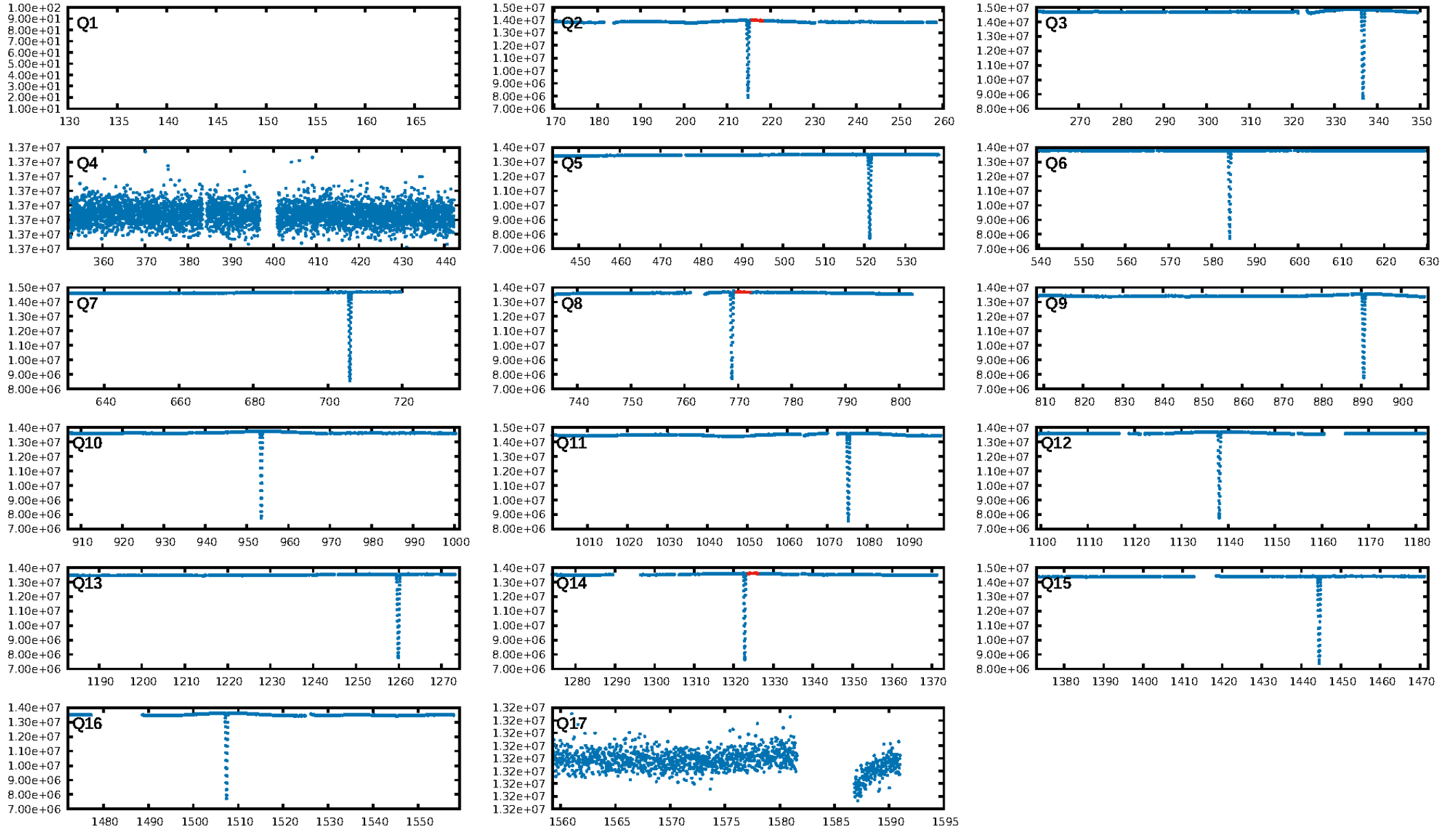
## DV Diagnostic Results:

ShortPeriod-sig: 0.9% [0.01σ]  
LongPeriod-sig: 100.0% [49.61σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -0.6846  
Centroid-sig: N/A  
Centroid-so: 0.519 arcsec [1.75σ]  
OotOffset-rm: 0.680 arcsec [0.97σ]  
OotOffset-st: 2/0/1/0 [3]  
KicOffset-rm: 0.622 arcsec [0.92σ]  
KicOffset-st: 2/0/1/0 [3]  
DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 0.00 [0/3]

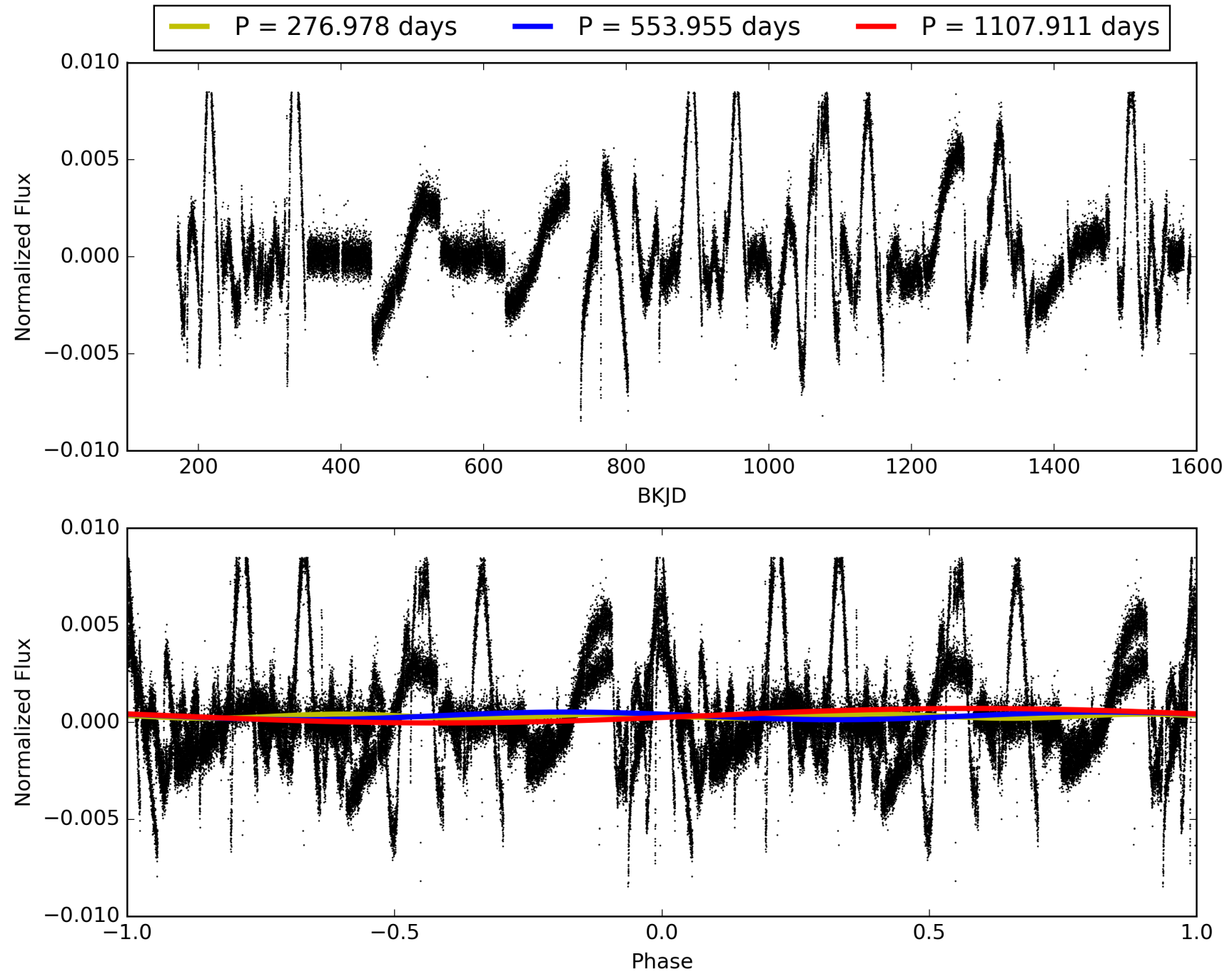
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:34:57 Z

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

# TCE 008760135-03, PDC Light Curves

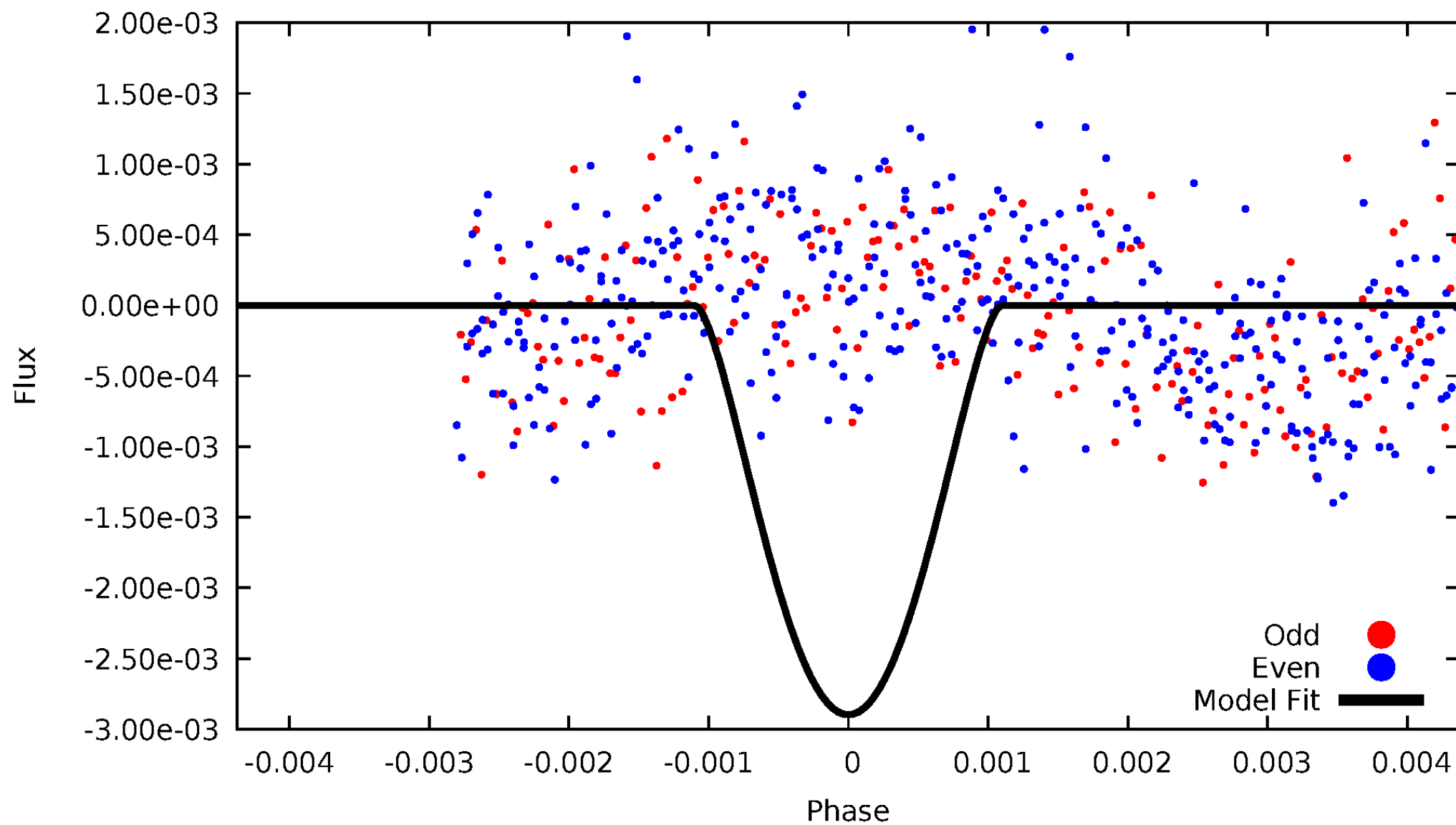


TCE 008760135-03



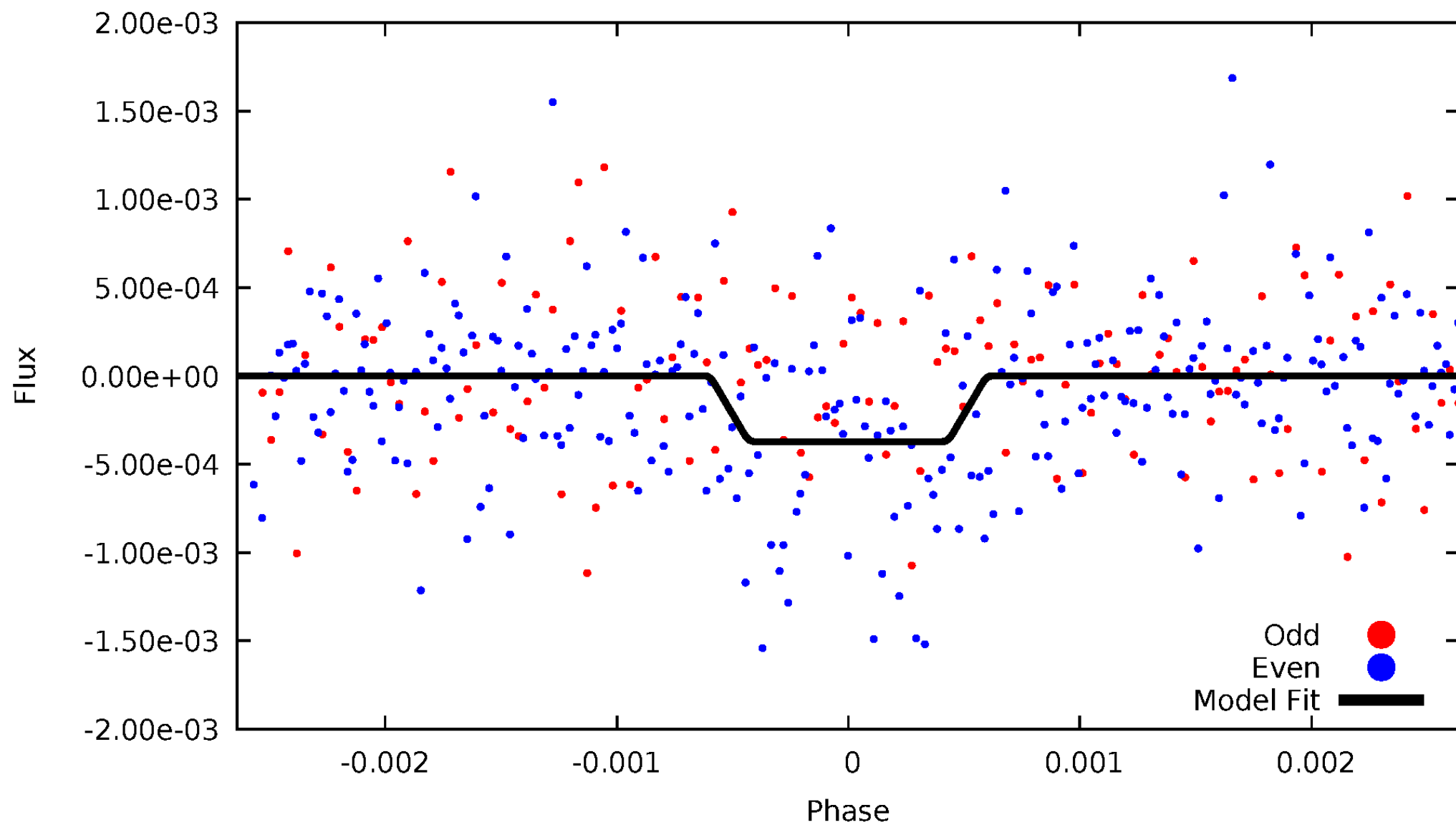
# DV Odd/Even

TCE 008760135-03



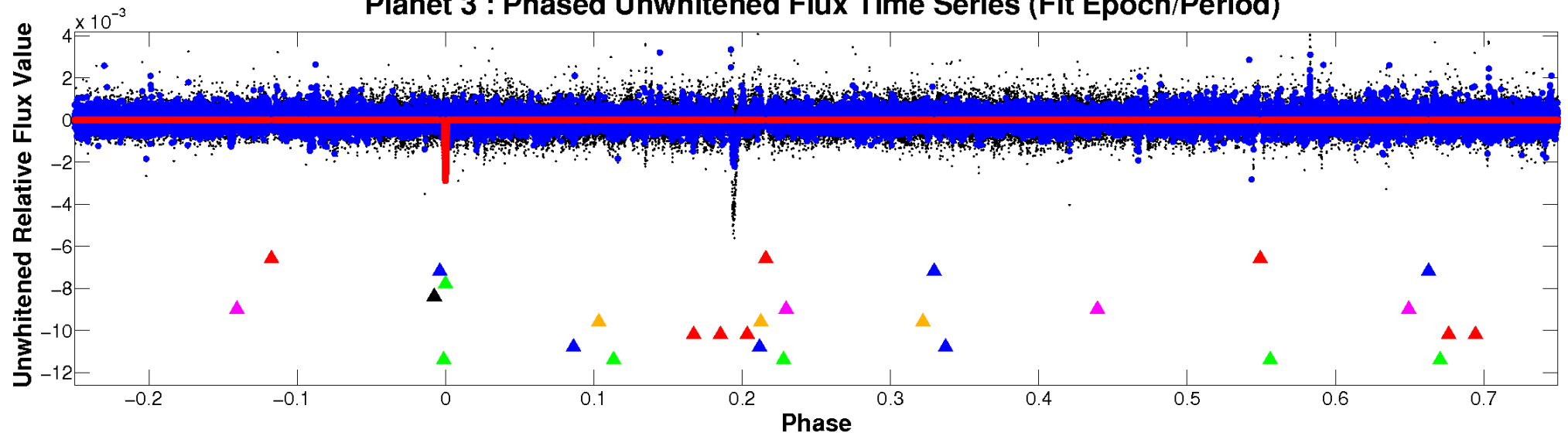
# ALT Odd/Even

TCE 008760135-03

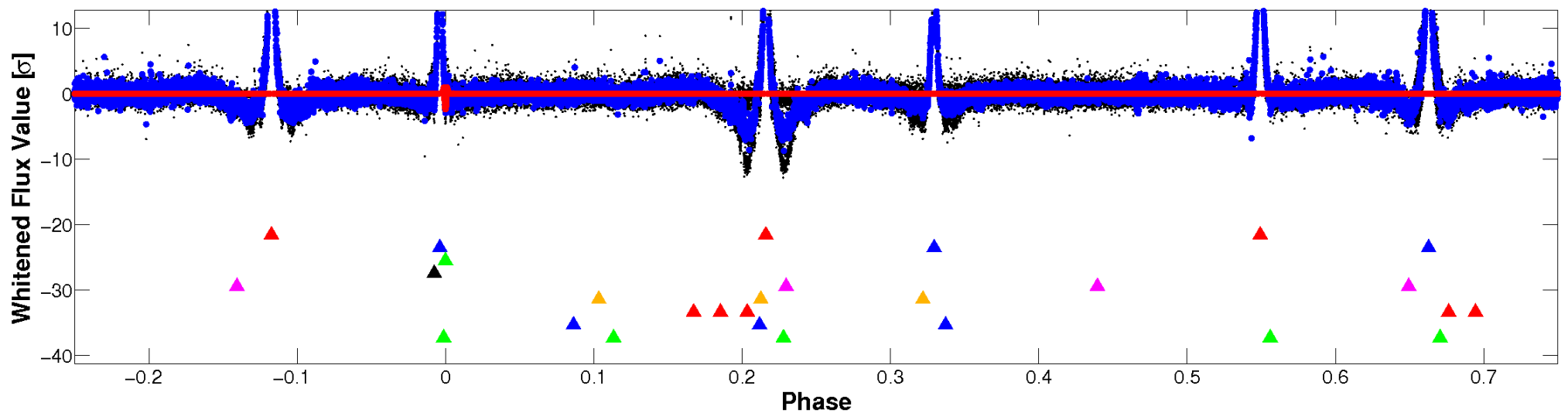


# Non-Whitened Vs. Whitened Light Curve

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

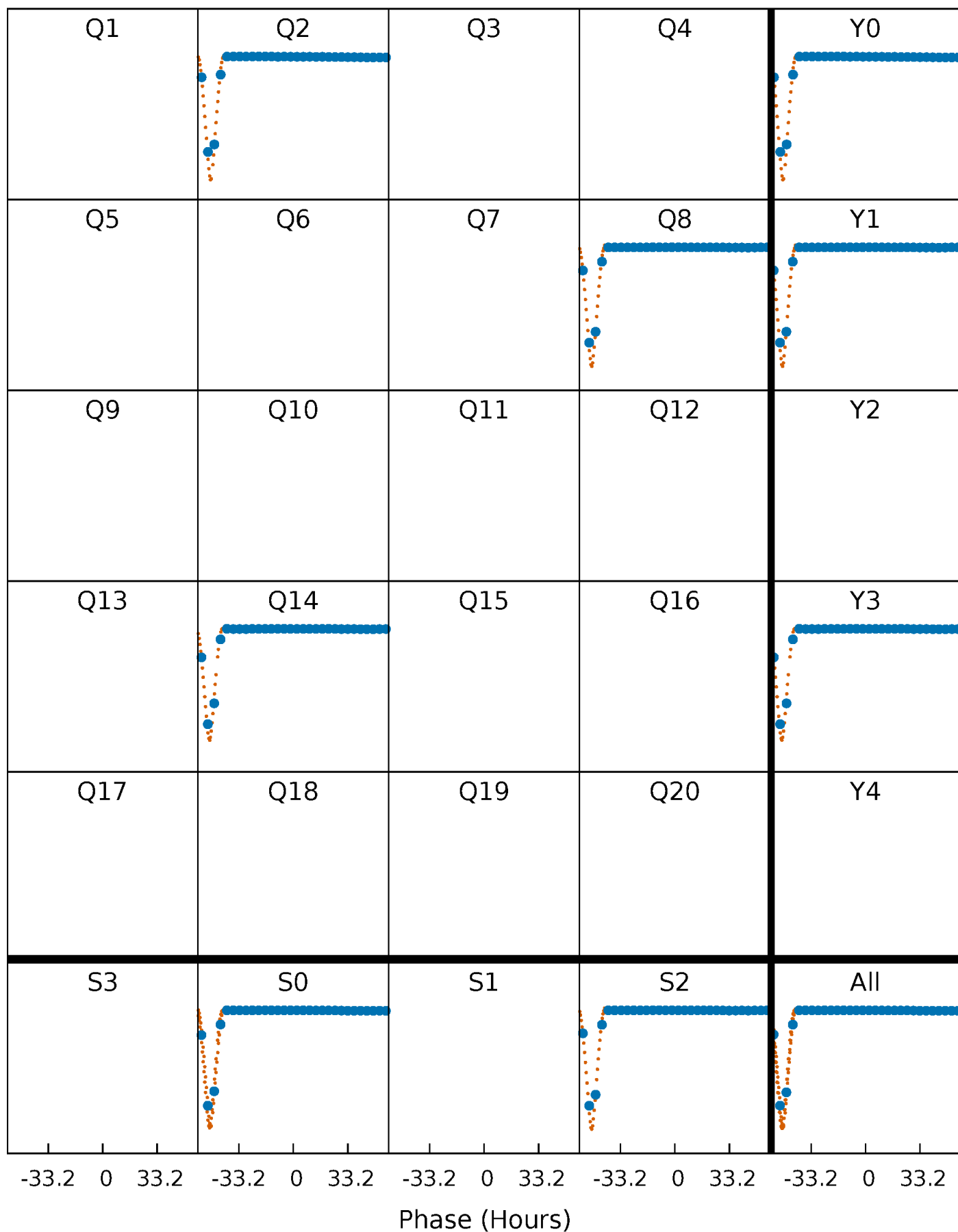


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

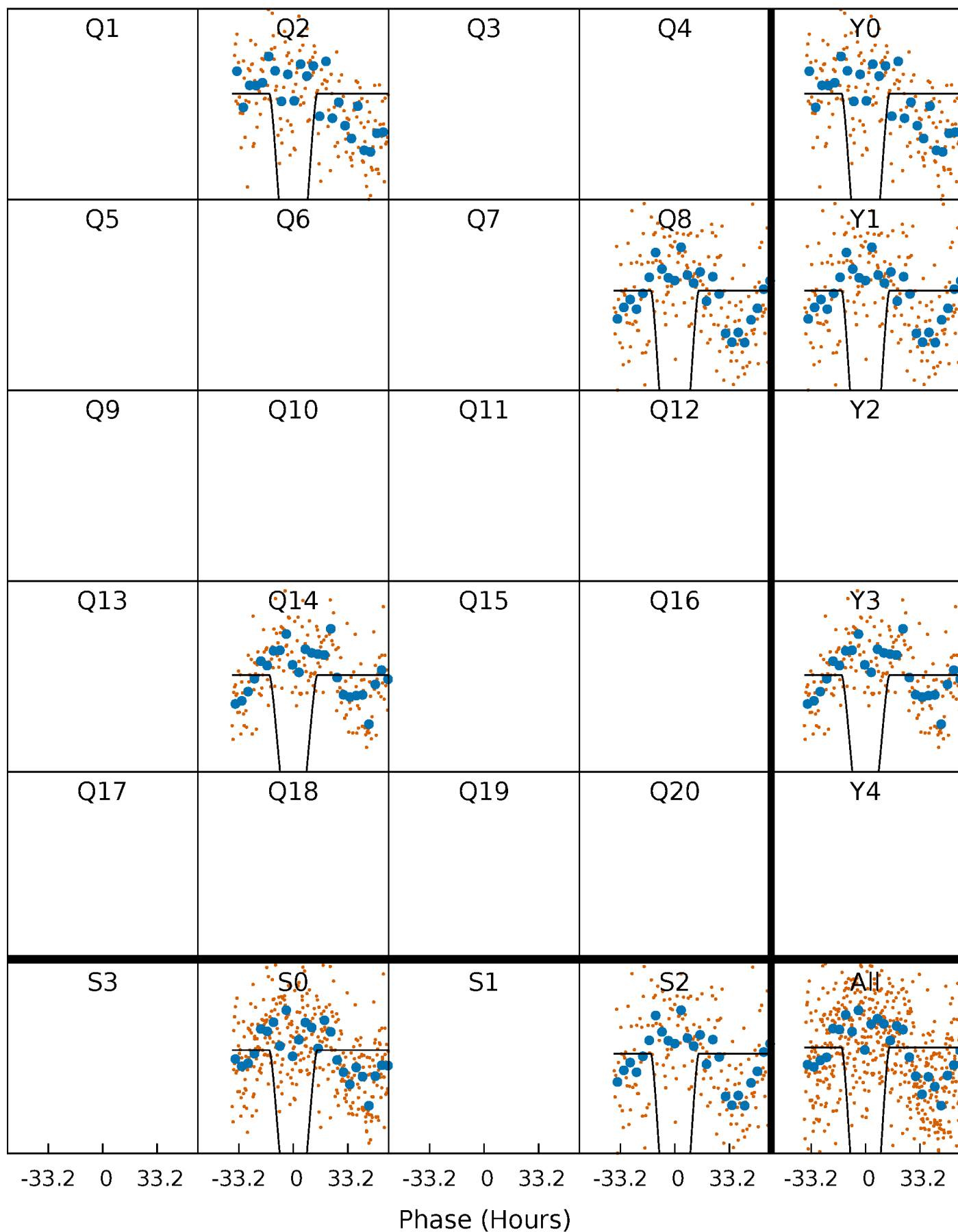
TCE 008760135-03 P=553.955377 Days  $T_0=216.966291$  (BKJD)





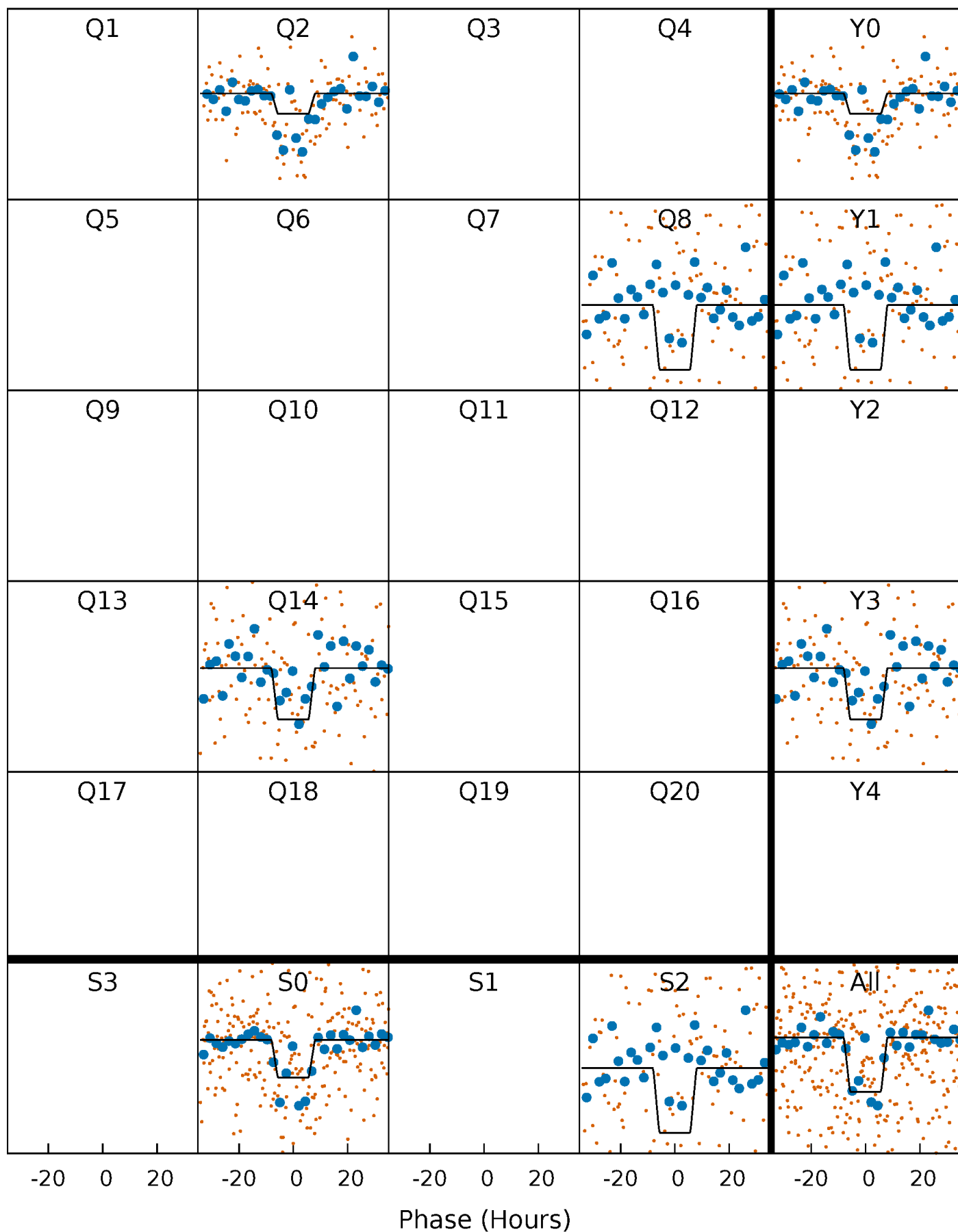
# DV Quarter-Phased Transit Curves

TCE 008760135-03 P=553.955377 Days  $T_0=216.966291$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

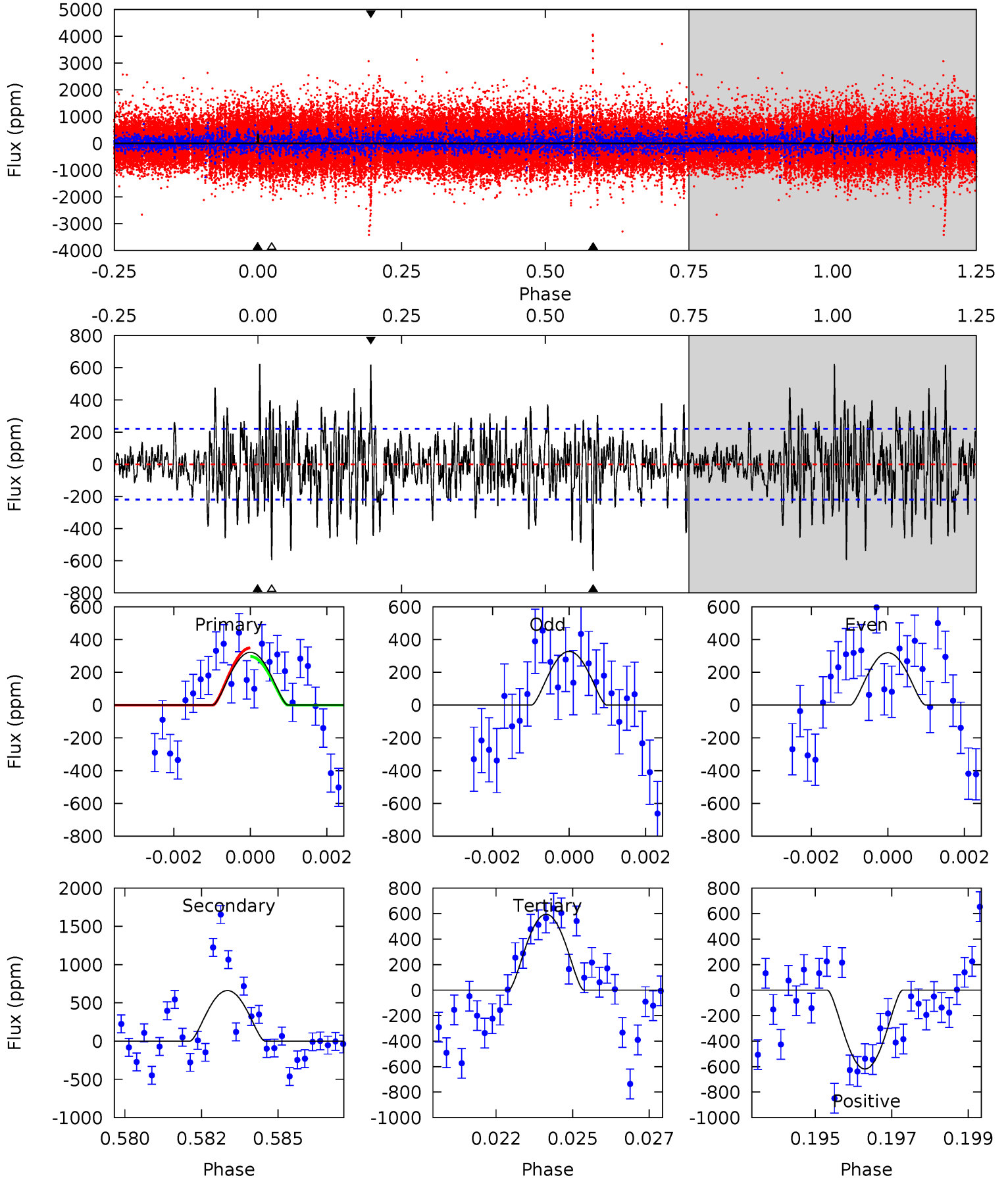
TCE 008760135-03 P=553.960623 Days  $T_0=216.825497$  (BKJD)



# DV Model-Shift Uniqueness Test

008760135-03, P = 553.955377 Days, E = 216.966291 Days

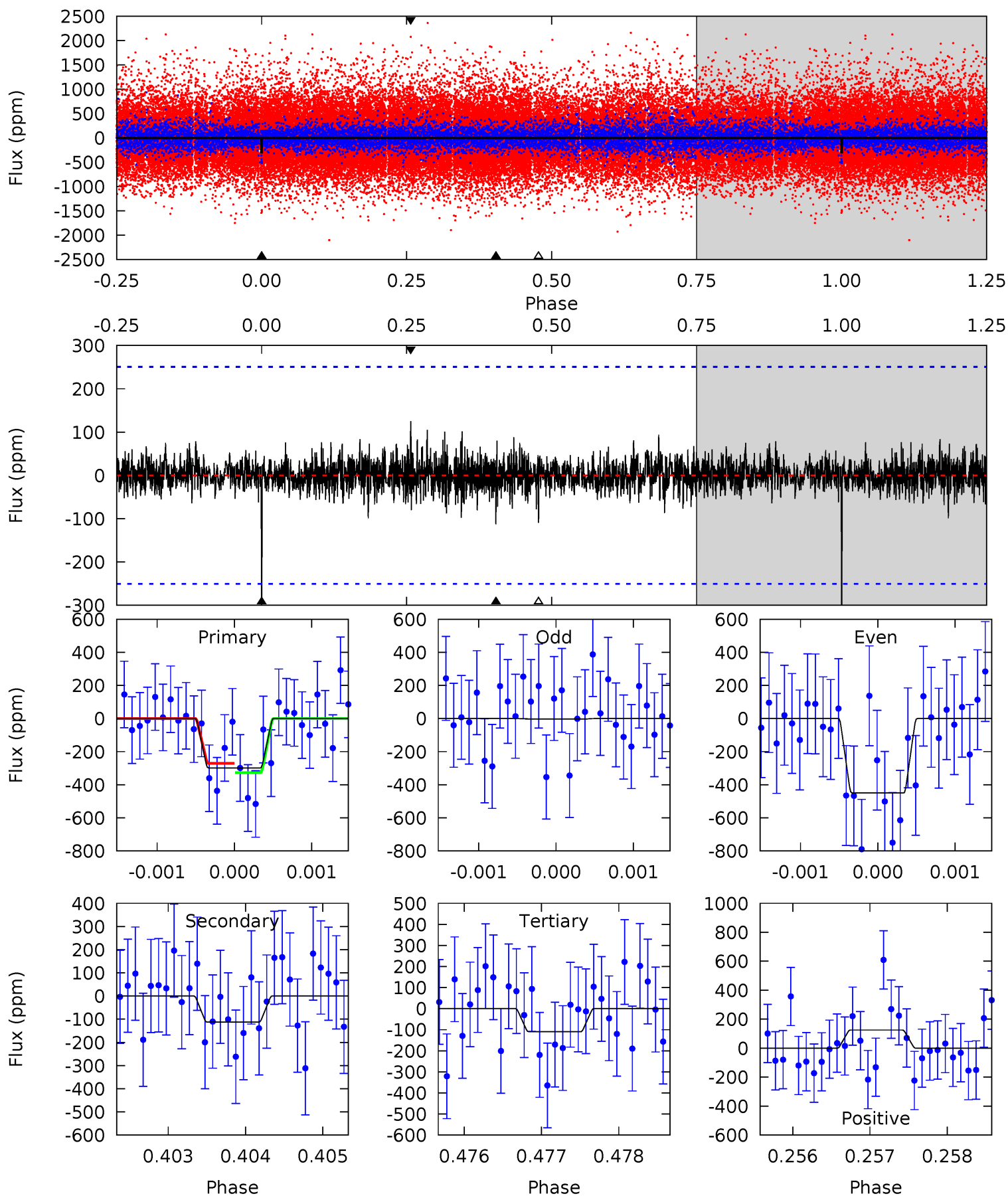
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.78	16.0	14.3	14.9	5.31	3.06	3.68	-6.57	-7.15	1.61	1.02	0.09	0.98	0.49	0.63



# Alt Model-Shift Uniqueness Test

008760135-03, P = 553.960623 Days, E = 216.825497 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
6.46	2.44	2.37	2.71	5.42	3.23	0.54	4.09	3.75	0.06	-0.27	4.54	1.58	0.30	0.61



### Stellar Parameters For KIC 008760135

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5713^{+154}_{-188}$	$4.414^{+0.098}_{-0.196}$	$0.120^{+0.250}_{-0.300}$	$1.023^{+0.289}_{-0.124}$	$0.990^{+0.111}_{-0.100}$	$1.301^{+0.572}_{-0.634}$
	+3%/-3%	+2%/-4%	+208%/-250%	+28%/-12%	+11%/-10%	+44%/-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 008760135-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-661 \pm 41$	$25.96^{+26.72}_{-17.61}$	$314^{+20}_{-17}$	$2702^{+1045}_{-410}$	$906^{+7948}_{-672}$
Alt.	$-113 \pm 46$	$21.29^{+24.88}_{-14.61}$	$313^{+22}_{-16}$	$2251^{+773}_{-331}$	$197^{+1982}_{-151}$

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

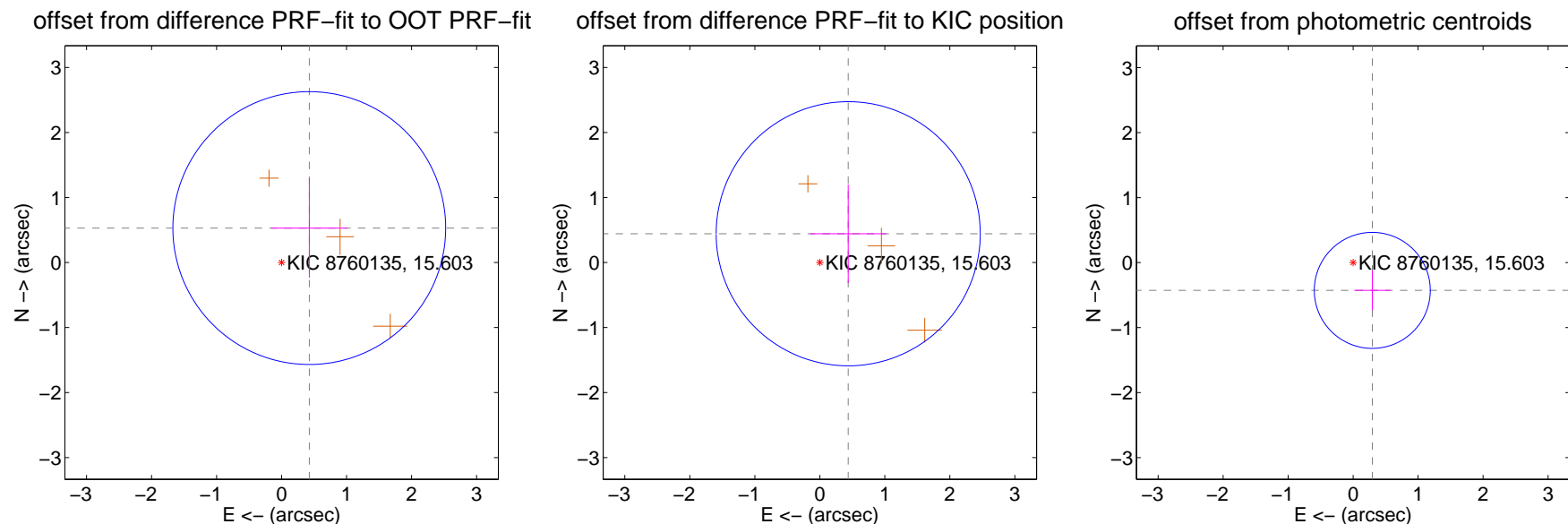
## DV Centroid Data

Supplemental centroid analysis for 008760135-03. Kepler magnitude: 15.60. Transit SNR 20.75

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.680 \pm 0.699$	0.97	$-0.426 \pm 0.588$	$0.530 \pm 0.763$
PRF-fit source offset from KIC position	$0.622 \pm 0.677$	0.92	$-0.437 \pm 0.585$	$0.443 \pm 0.756$
photometric centroid source offset	$0.52 \pm 0.30$	1.75	$-0.30 \pm 0.28$	$-0.43 \pm 0.31$



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

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

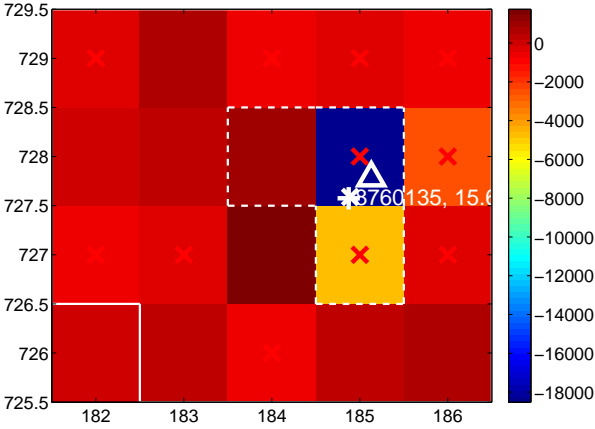
Q1 no difference image



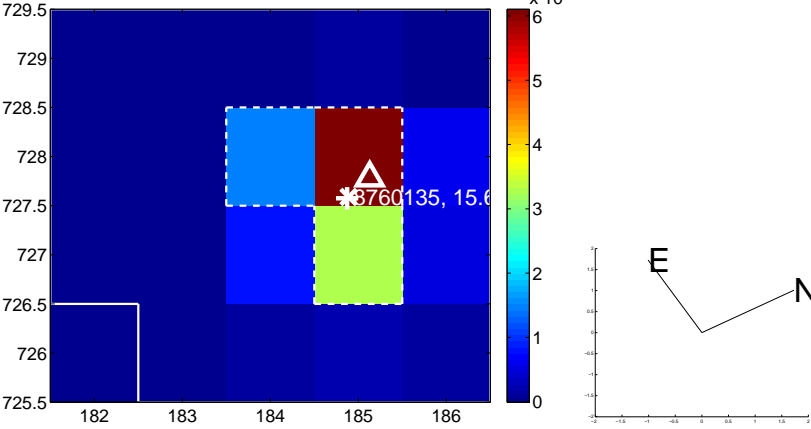
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



Q3 no OOT image



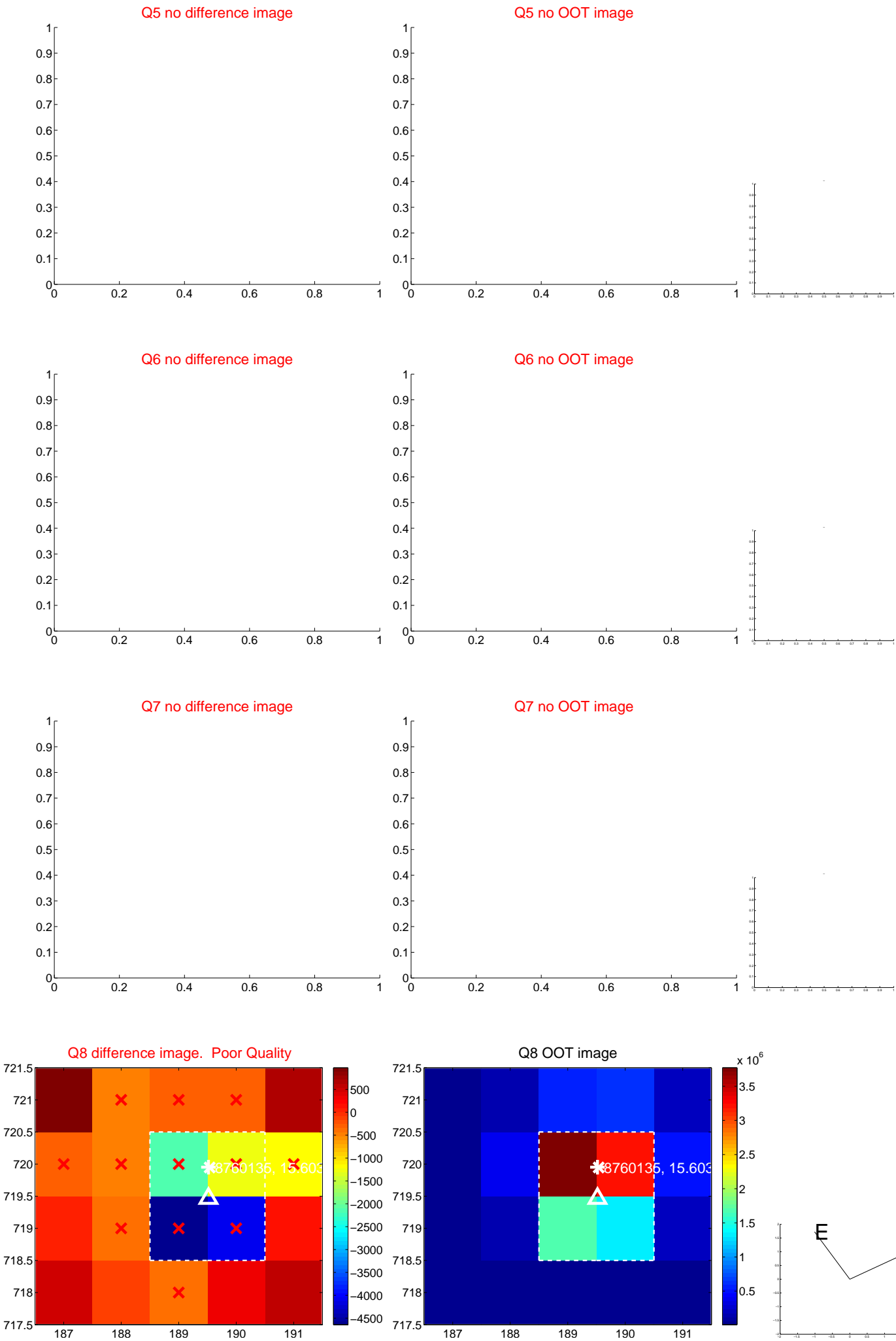
Q4 no difference image



Q4 no OOT image



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





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



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

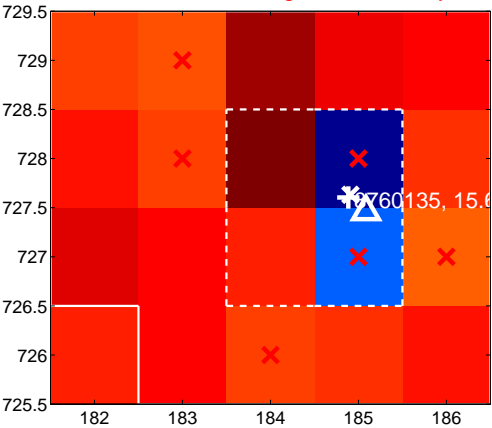
Q13 no difference image



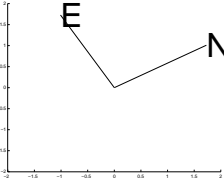
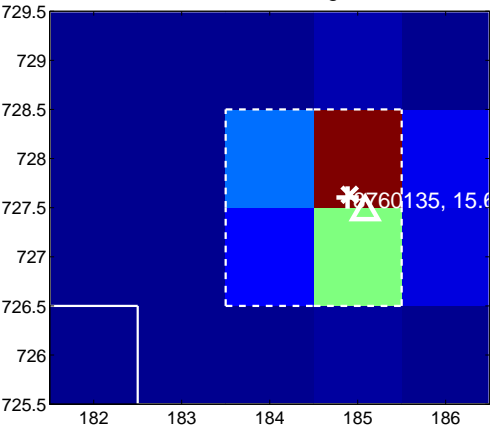
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



Q15 no difference image



Q15 no OOT image



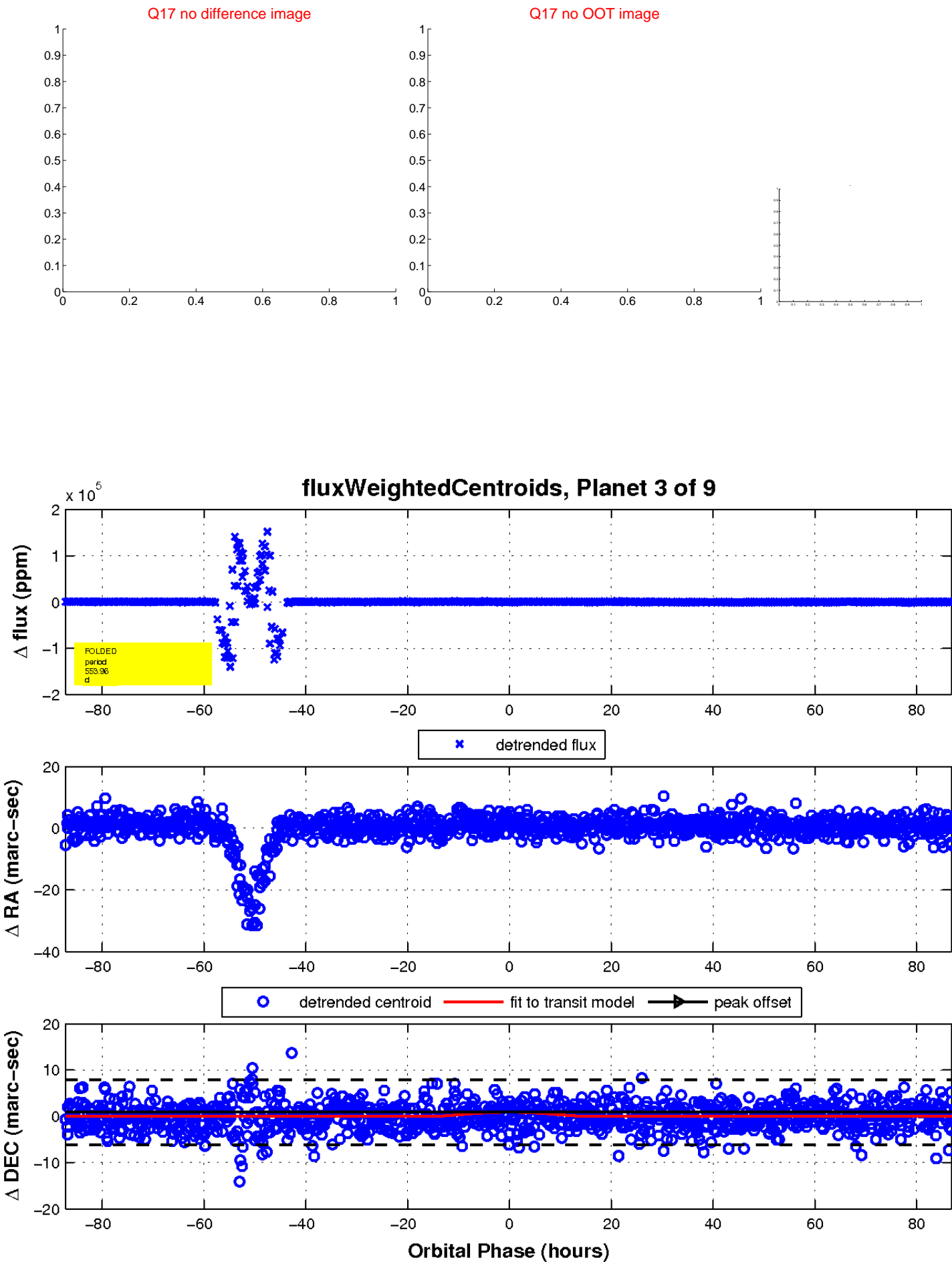
Q16 no difference image



Q16 no OOT image

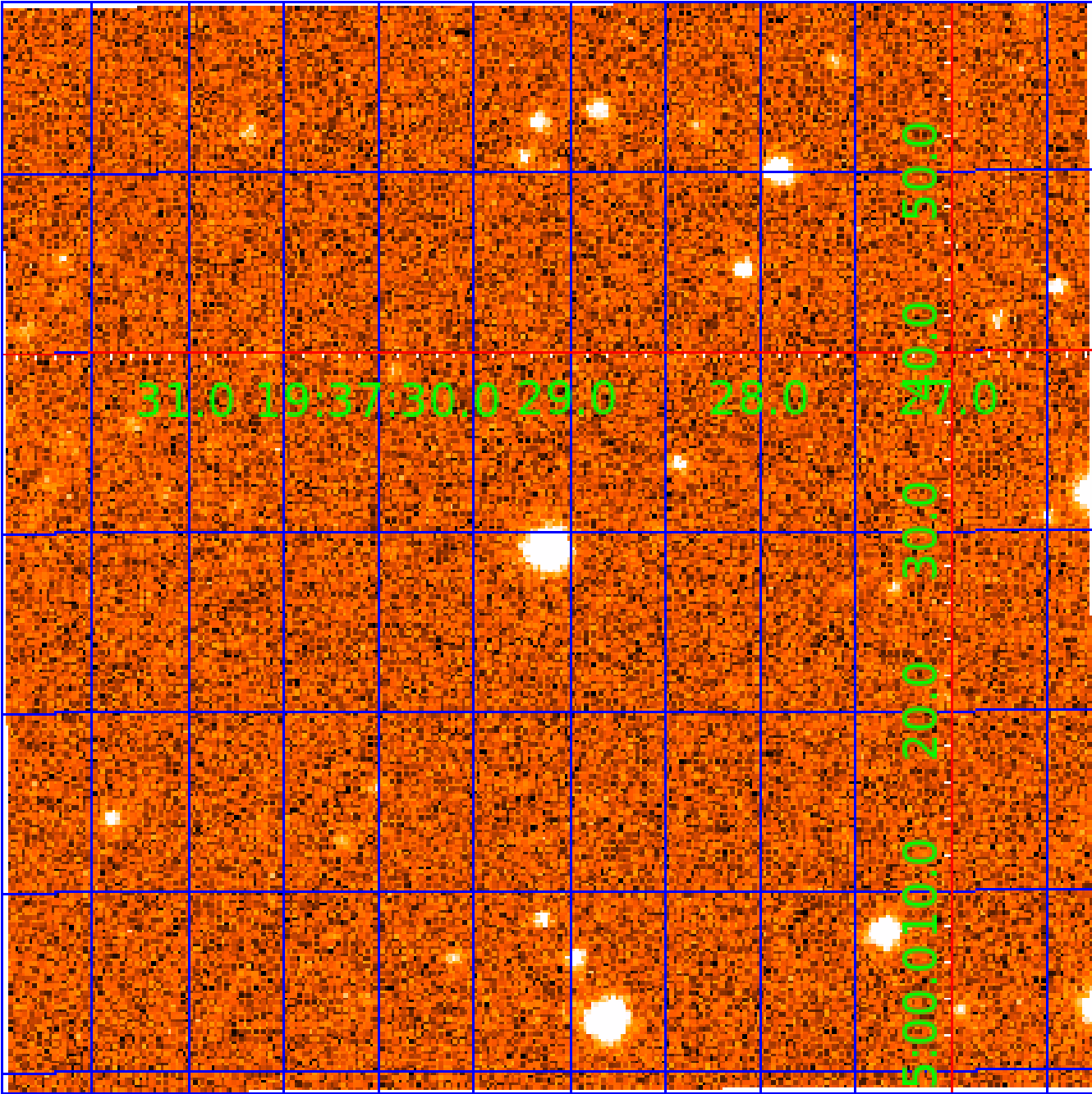


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008760135

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008760135-01	OBS	3524.01	184.644459	151.988827	424552.9	12.000	6016.8	-1.0	1.02	5713	55.82	2.50
008760135-02	OBS	No	184.644459	214.876513	441284.4	9.000	4578.3	-1.0	1.02	5713	55.82	2.50
008760135-03	OBS	No	553.955377	216.966291	2897.5	29.072	34.3	20.7	1.02	5713	10.37	0.58
008760135-05	OBS	No	437.680044	139.064600	2197.0	15.000	26.2	-1.0	1.02	5713	4.73	0.79
008760135-06	OBS	No	614.478016	274.232599	3990.5	3.500	17.5	-1.0	1.02	5713	6.39	0.50
008760135-07	OBS	No	281.983128	309.664392	1366.0	15.000	16.0	-1.0	1.02	5713	3.73	1.42
008760135-08	OBS	No	623.443297	264.789931	3624.4	52.688	23.3	16.1	1.02	5713	11.56	0.49
008760135-09	OBS	No	308.710224	216.283023	1491.6	15.000	20.5	-1.0	1.02	5713	3.90	1.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008760135-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—CENT_NOFITS
008760135-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
008760135-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS
008760135-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008760135-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—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 008760135-05

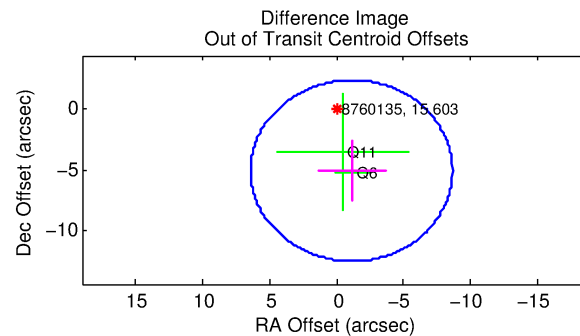
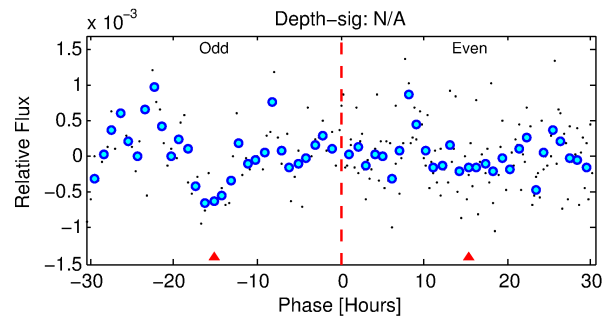
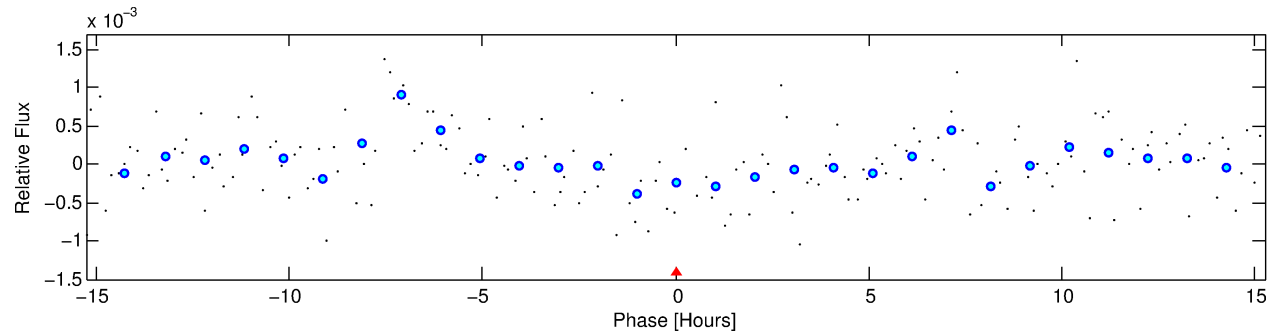
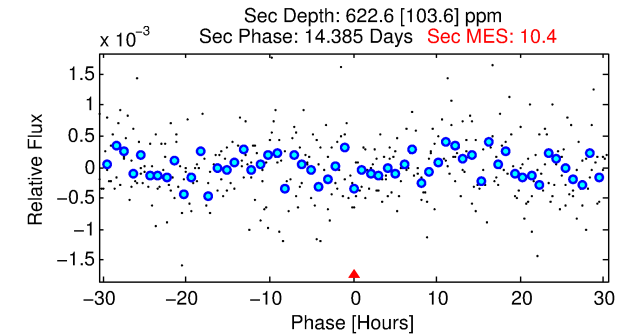
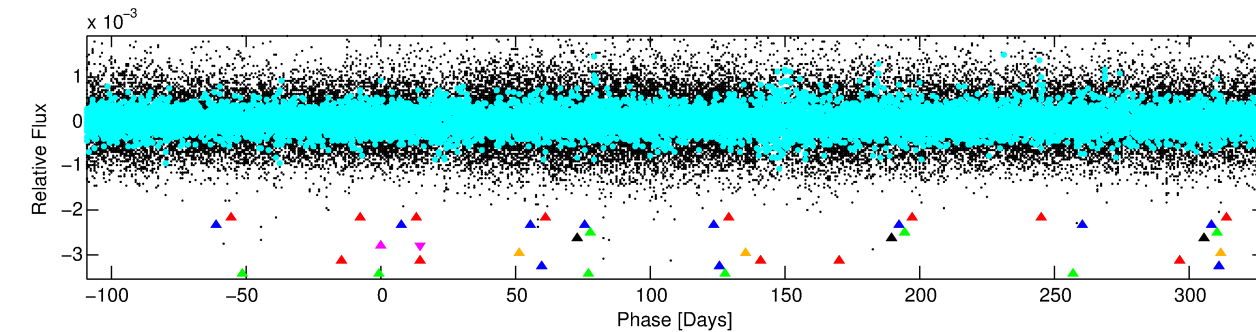
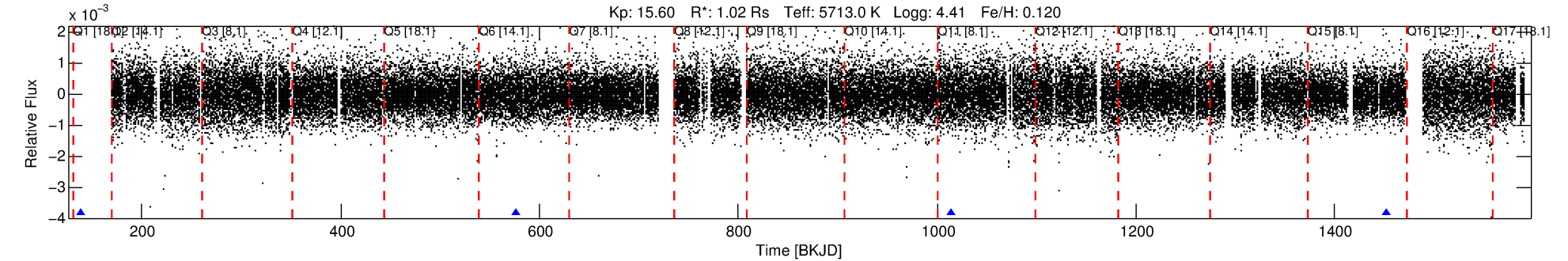
No Significant Match Found

# DV One-Page Summary

KIC: 8760135 Candidate: 5 of 9 Period: 437.680 d

KOI: K03524 Corr: No Ephemeris Match

Kp: 15.60 R\*: 1.02 Rs Teff: 5713.0 K Logg: 4.41 Fe/H: 0.120



## TPS TCE Results:

Period = 437.68004 d  
Epoch = 139.0646 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

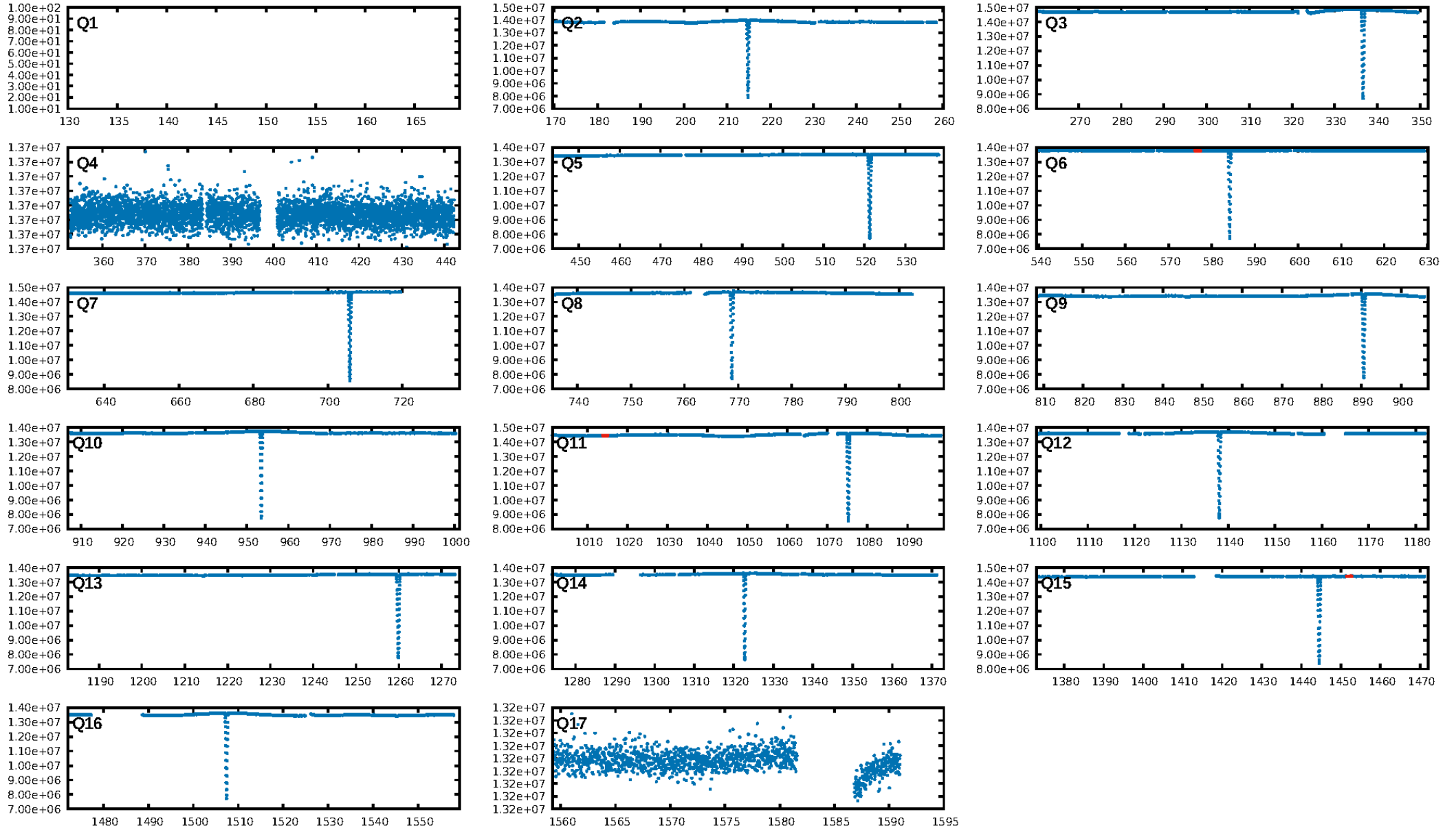
ShortPeriod-sig: 100.0% [145.91 $\sigma$ ]  
LongPeriod-sig: 100.0% [145.25 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.711

Centroid-sig: N/A  
Centroid-so: 3.966 arcsec [0.61 $\sigma$ ]  
OotOffset-rm: 5.204 arcsec [2.07 $\sigma$ ]  
KicOffset-rm: 5.301 arcsec [2.11 $\sigma$ ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 1.00 [3/3]

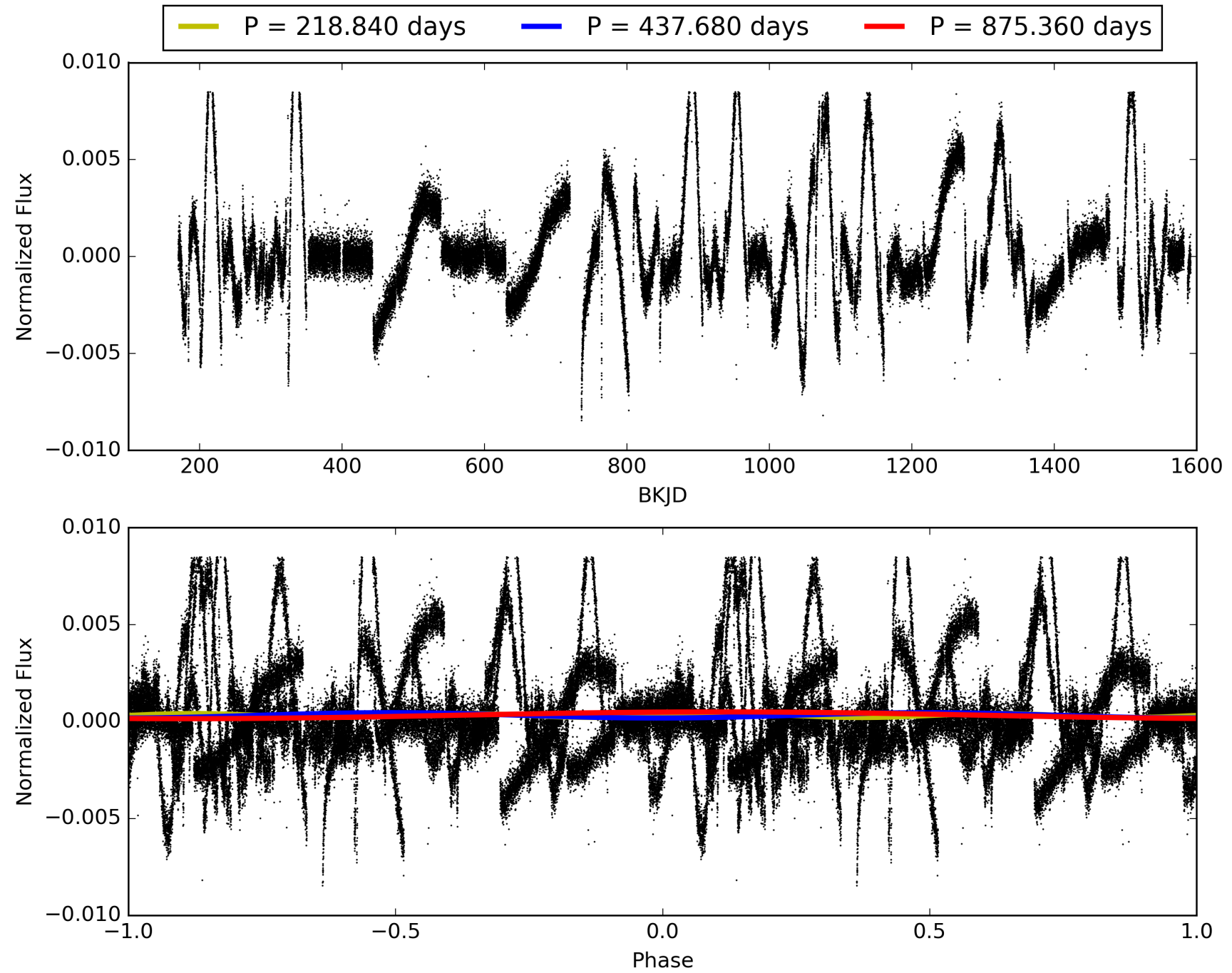
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:36:10 Z

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

# TCE 008760135-05, PDC Light Curves



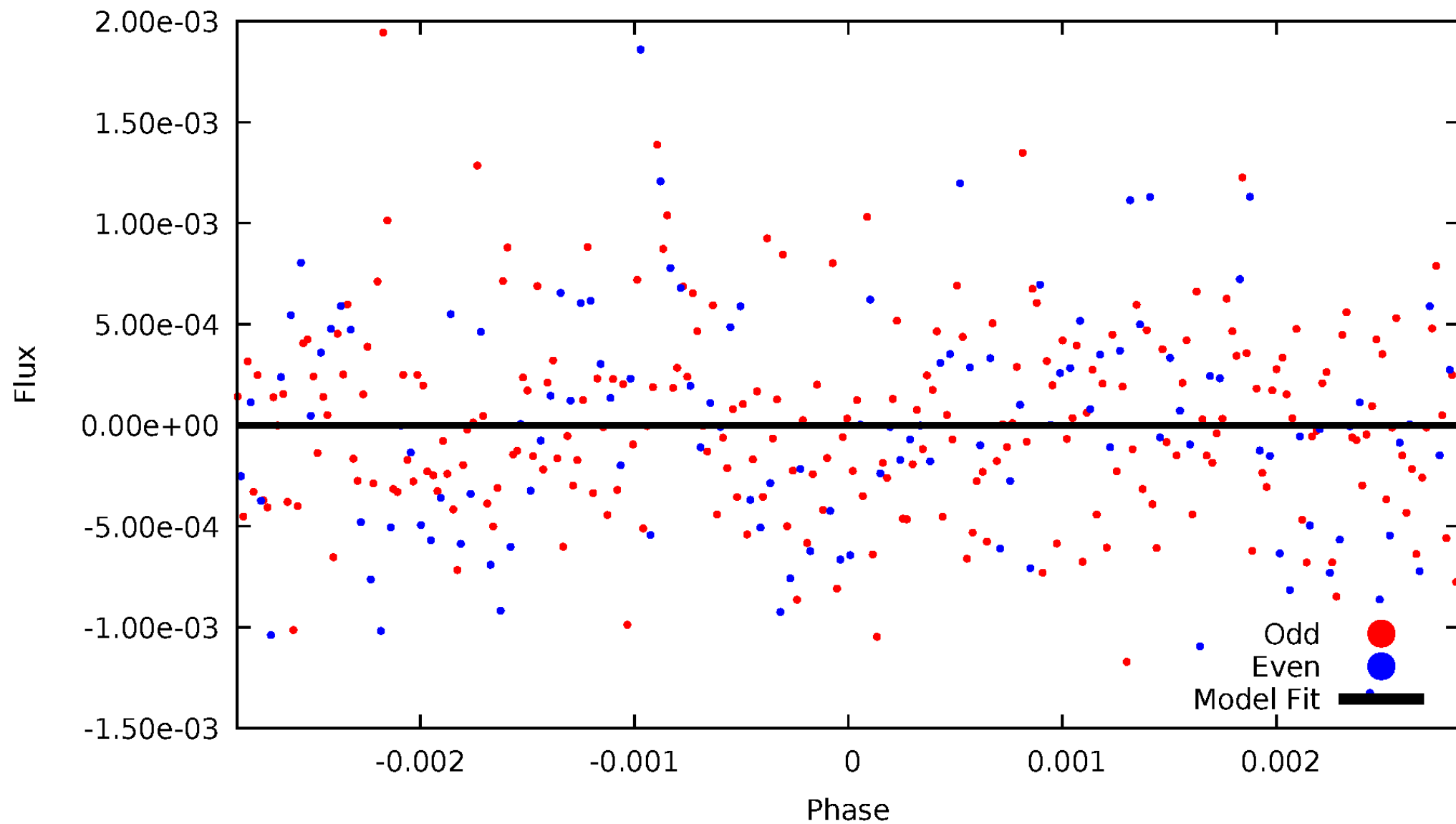
TCE 008760135-05





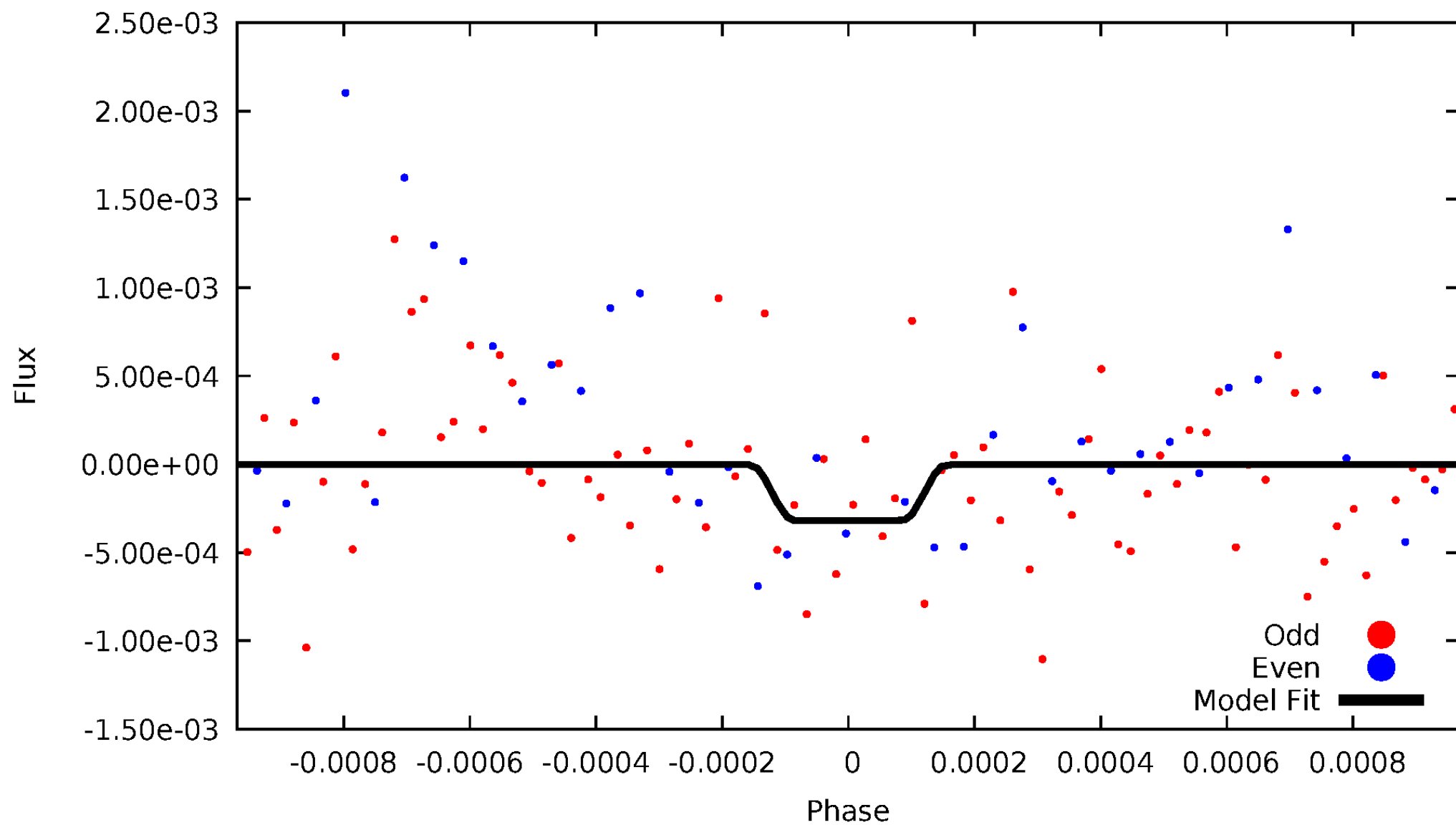
# DV Odd/Even

TCE 008760135-05



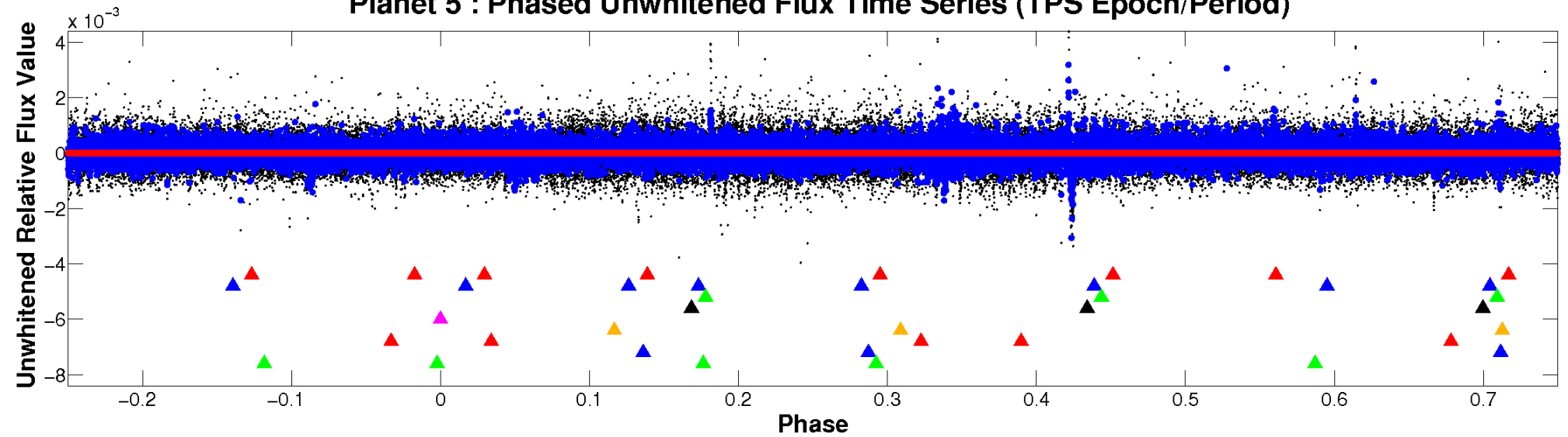
# ALT Odd/Even

TCE 008760135-05



# Non-Whitened Vs. Whitened Light Curve

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

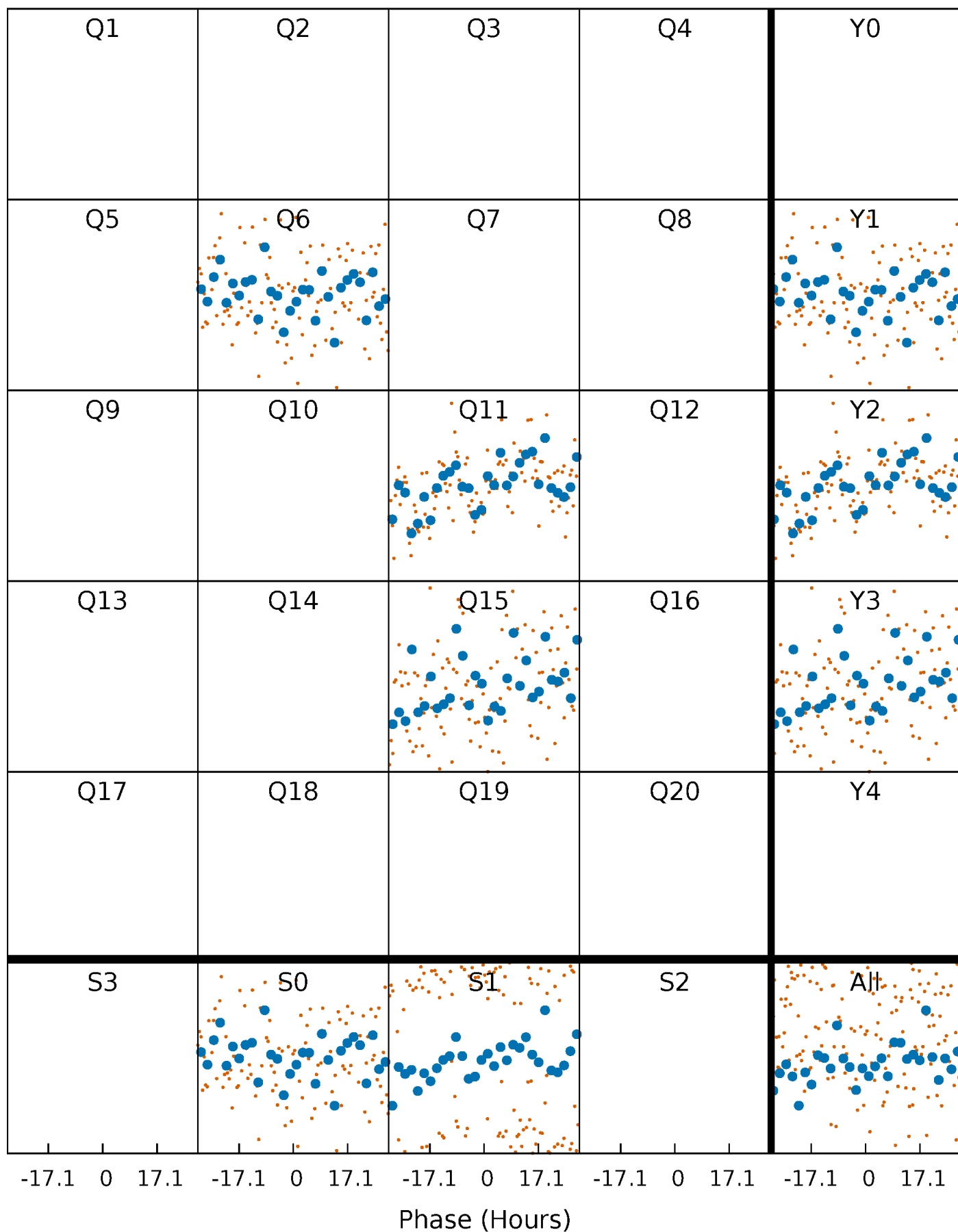


**Planet 5 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



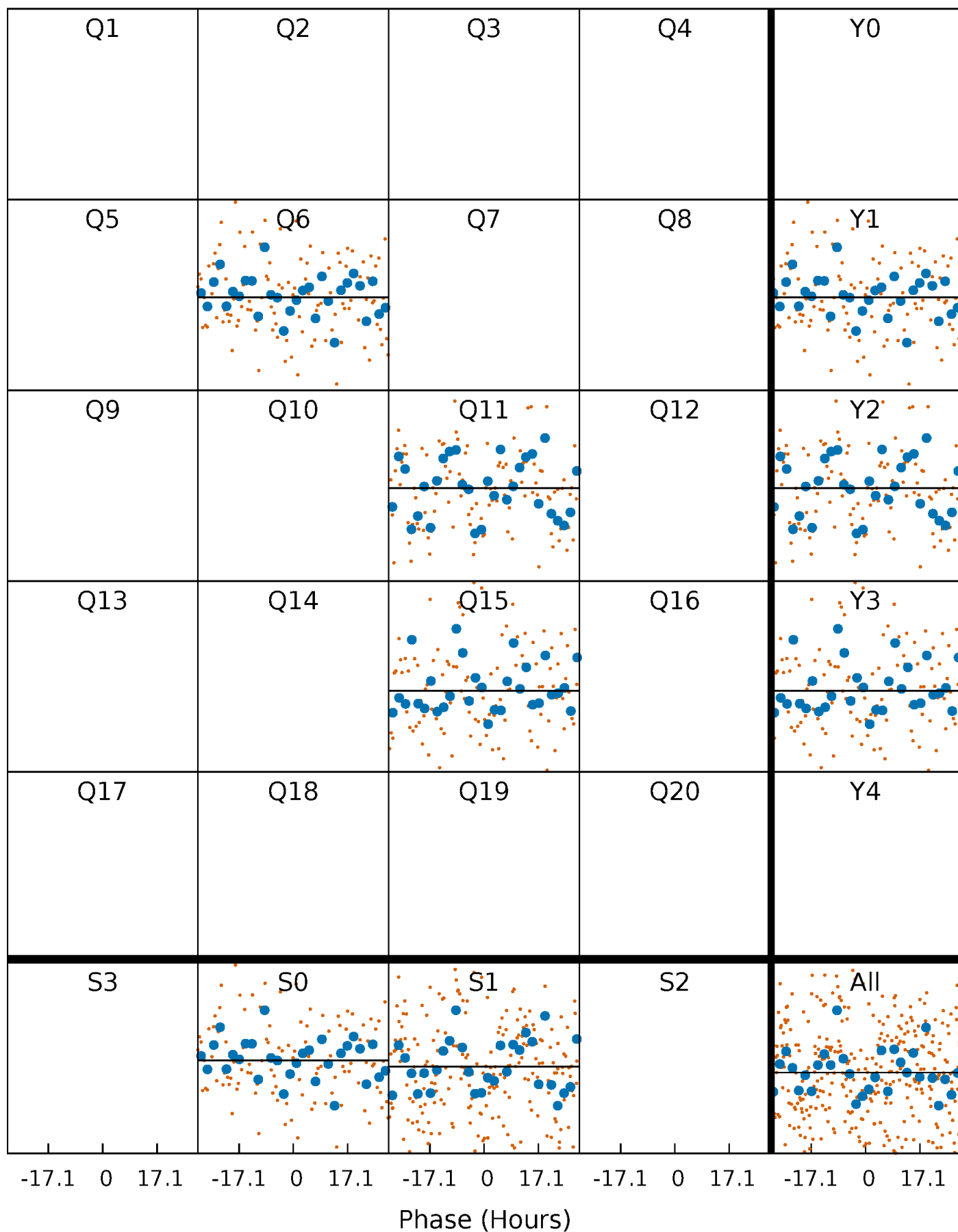
# PDC Quarter-Phased Transit Curves

TCE 008760135-05     $P=437.680044$  Days     $T_0=139.064600$  (BKJD)



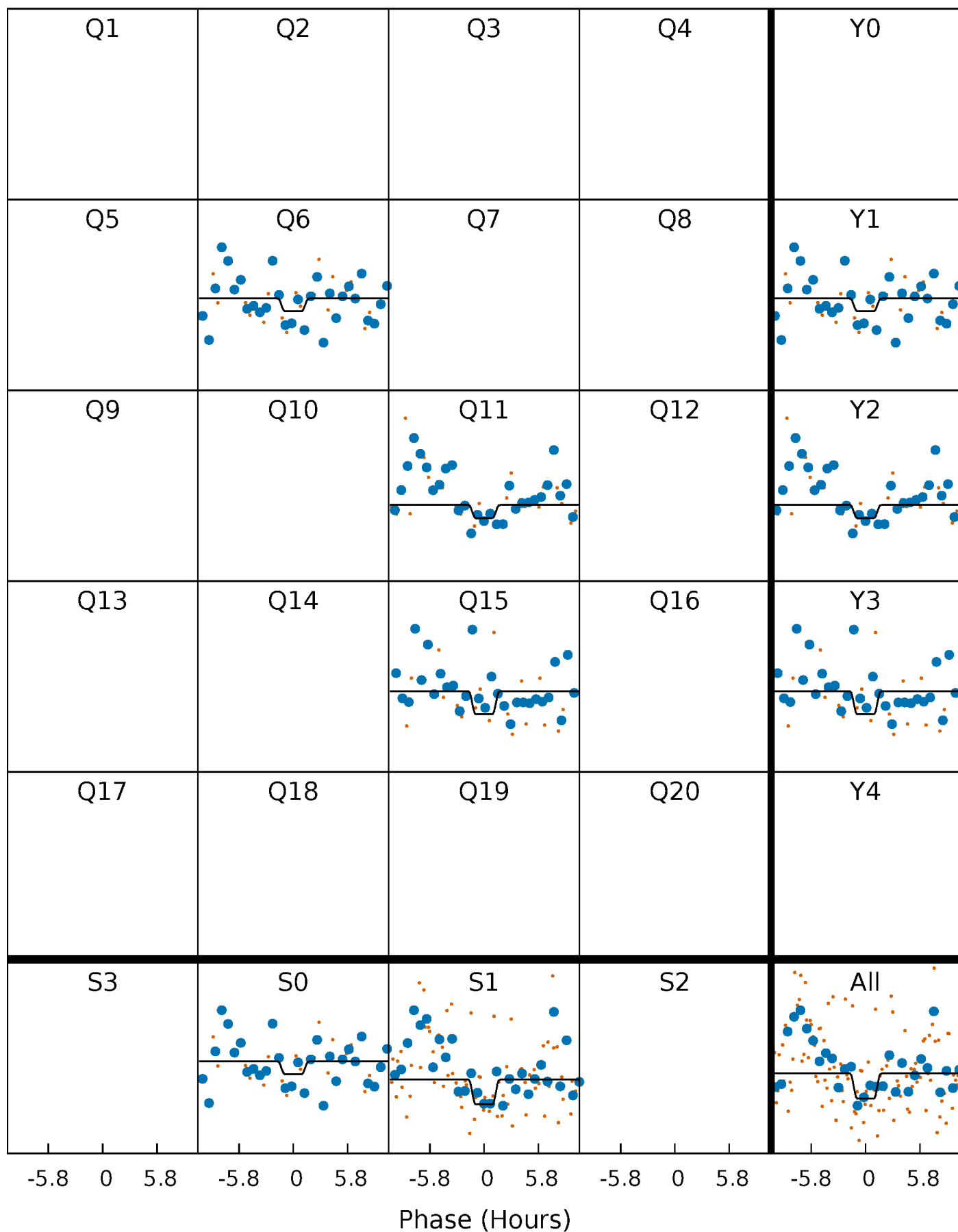
# DV Quarter-Phased Transit Curves

TCE 008760135-05     $P=437.680044$  Days     $T_0=139.064600$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

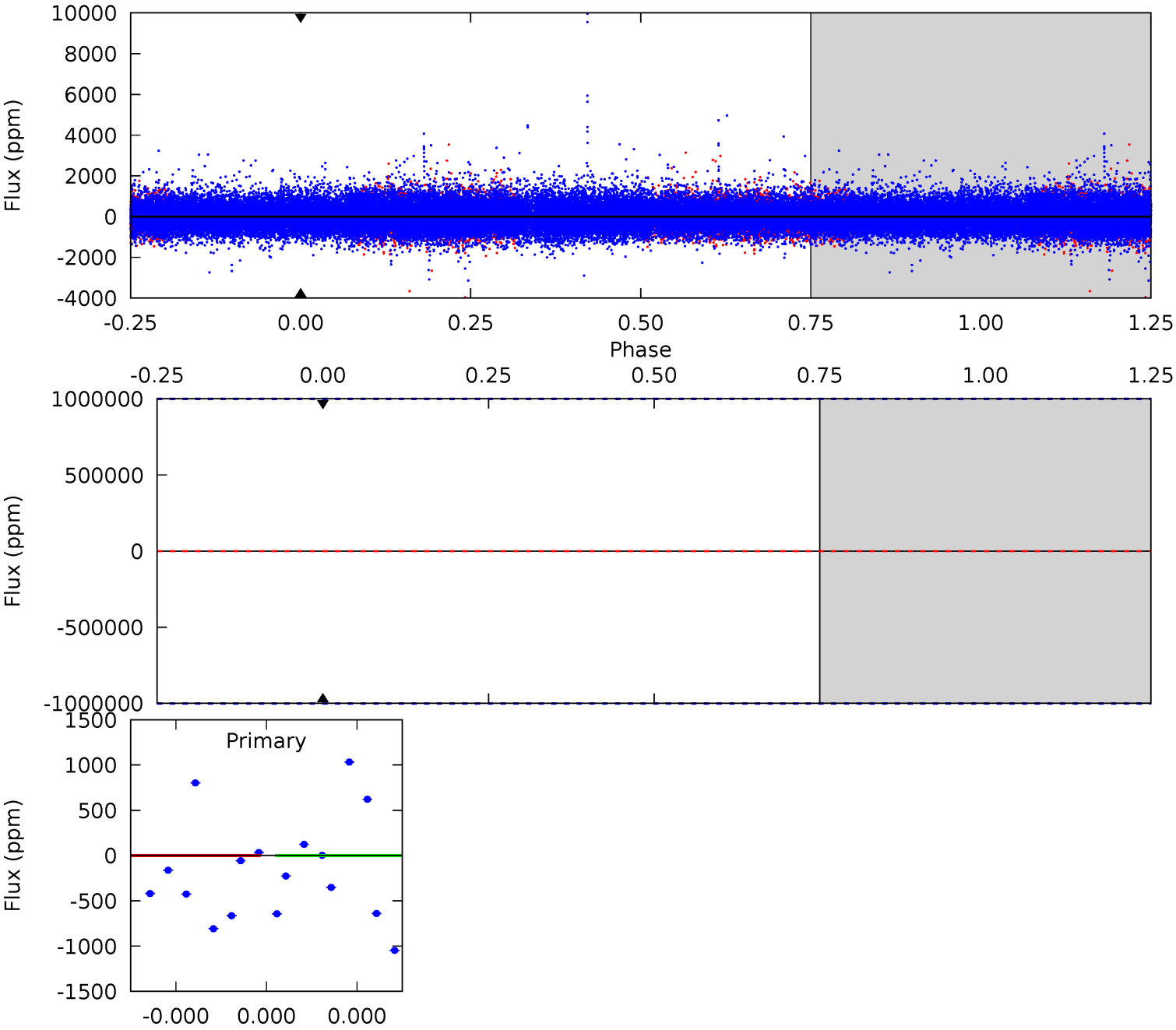
TCE 008760135-05     $P=437.680044$  Days     $T_0=138.988551$  (BKJD)



# DV Model-Shift Uniqueness Test

008760135-05, P = 437.680044 Days, E = 139.064600 Days

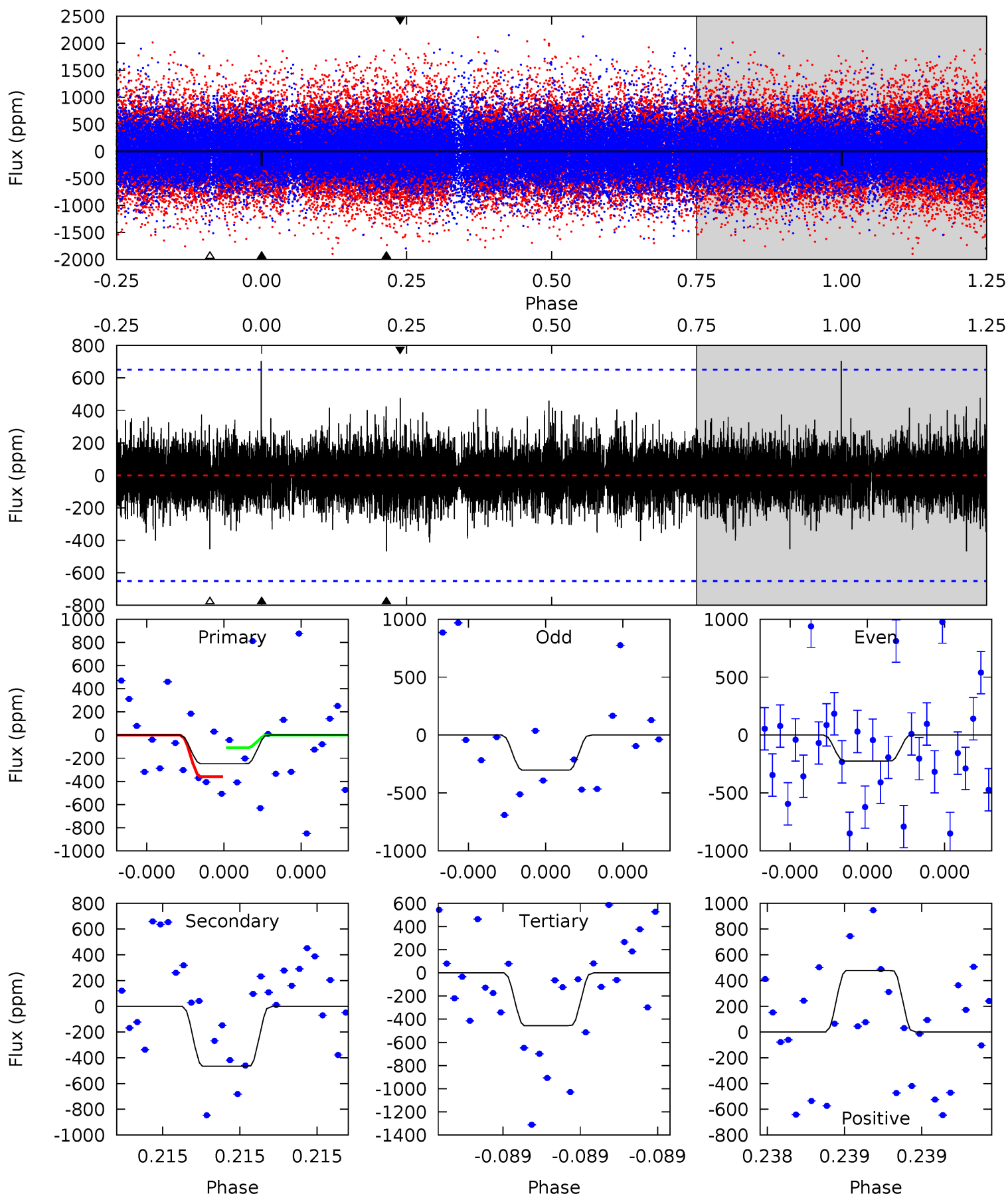
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008760135-05, P = 437.680044 Days, E = 138.988551 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
2.15	4.07	3.97	4.17	5.67	3.63	0.92	-1.82	-2.02	0.10	-0.10	0.32	0.83	0.60	1.09





### Stellar Parameters For KIC 008760135

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5713^{+154}_{-188}$	$4.414^{+0.098}_{-0.196}$	$0.120^{+0.250}_{-0.300}$	$1.023^{+0.289}_{-0.124}$	$0.990^{+0.111}_{-0.100}$	$1.301^{+0.572}_{-0.634}$
	+3%/-3%	+2%/-4%	+208%/-250%	+28%/-12%	+11%/-10%	+44%/-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 008760135-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$9.48^{+9.63}_{-6.46}$	$338^{+23}_{-17}$	$3838^{+15364}_{-20317}$	$8512^{+1445386}_{-1066935}$
Alt.	$-466 \pm 115$	$8.80^{+9.79}_{-6.21}$	$338^{+25}_{-18}$	$3496^{+2039}_{-675}$	$4039^{+41063}_{-3099}$

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

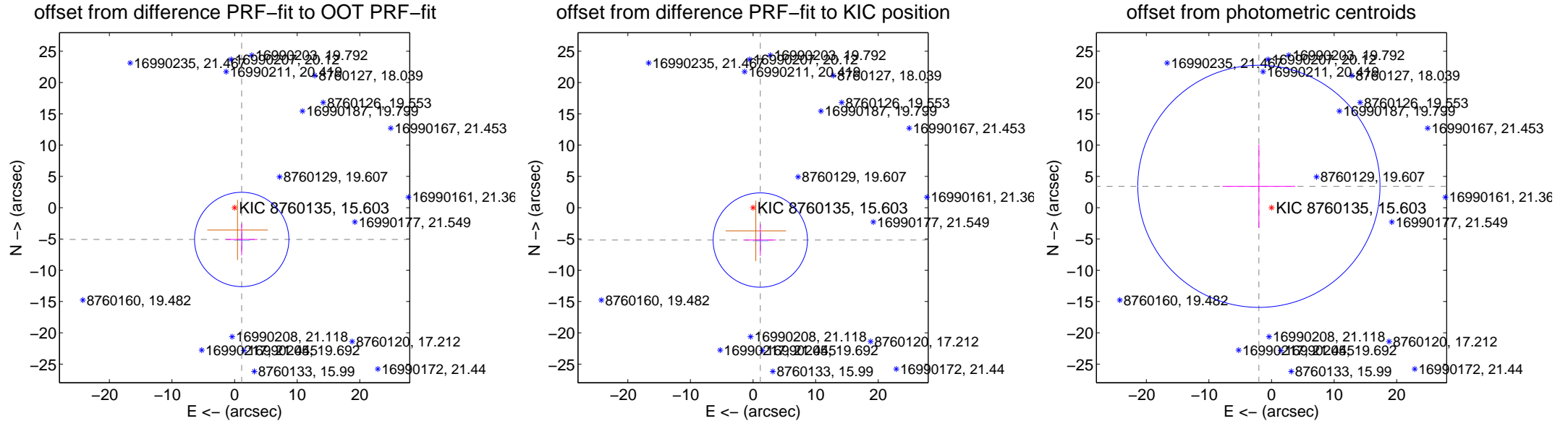
## DV Centroid Data

Supplemental centroid analysis for 008760135-05. Kepler magnitude: 15.60. 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 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.204 \pm 2.512$	2.07	$-1.138 \pm 2.495$	$-5.078 \pm 2.513$
PRF-fit source offset from KIC position	$5.301 \pm 2.512$	2.11	$-1.156 \pm 2.495$	$-5.174 \pm 2.513$
photometric centroid source offset	$3.97 \pm 6.45$	0.61	$2.02 \pm 5.81$	$3.41 \pm 6.66$

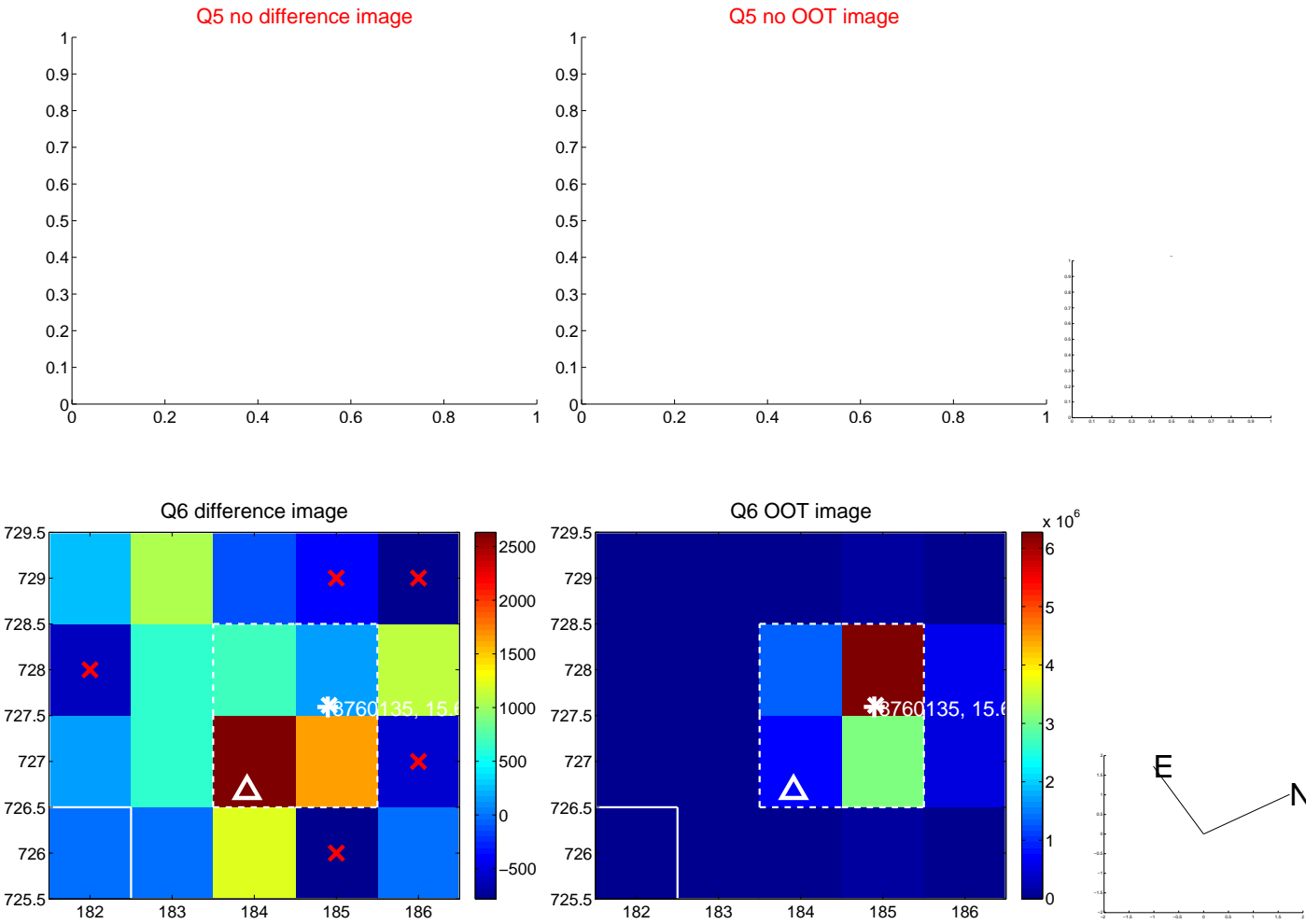


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

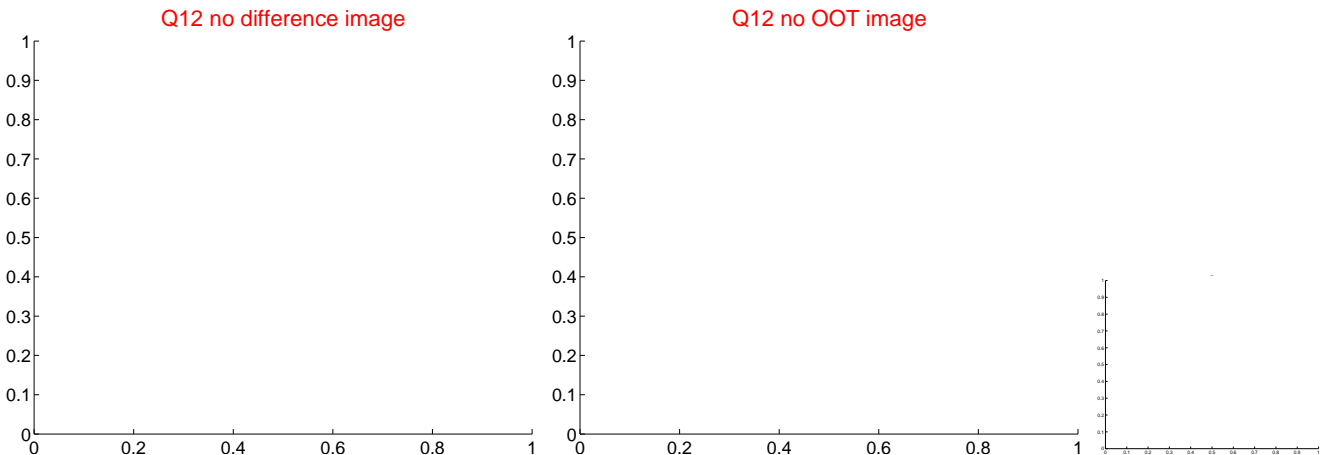
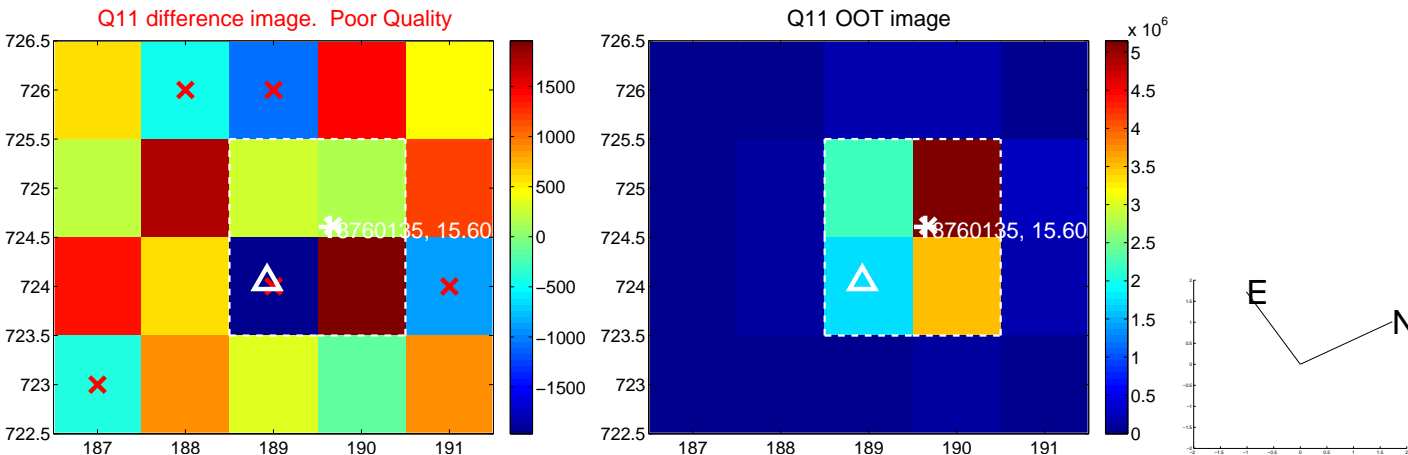
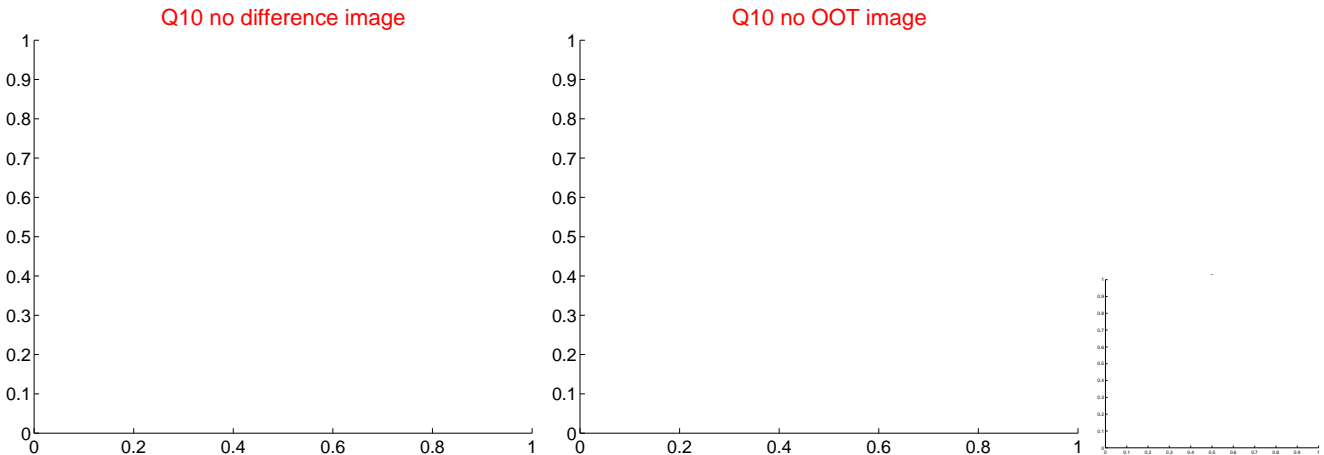
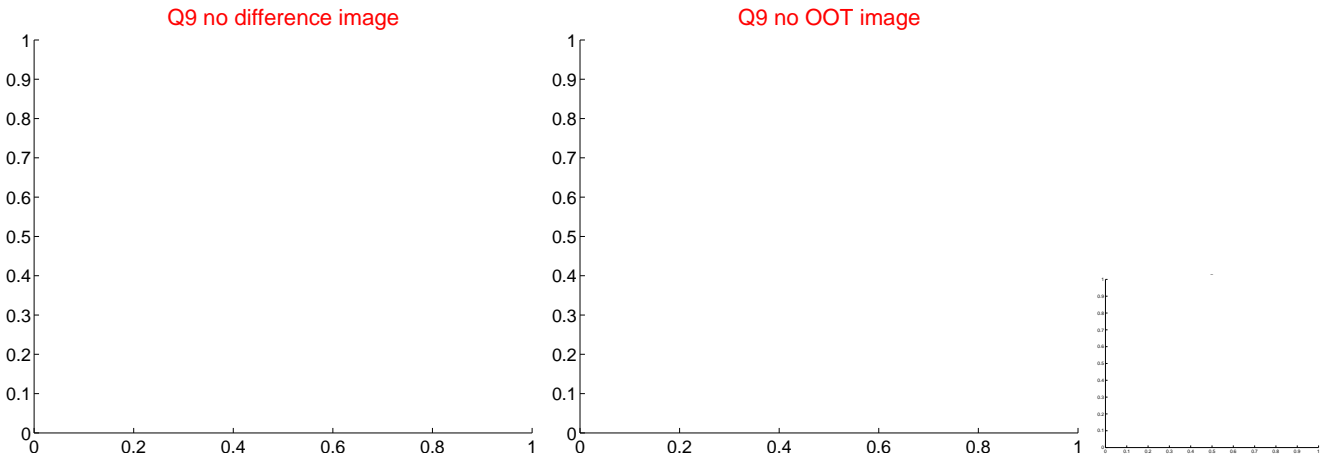
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



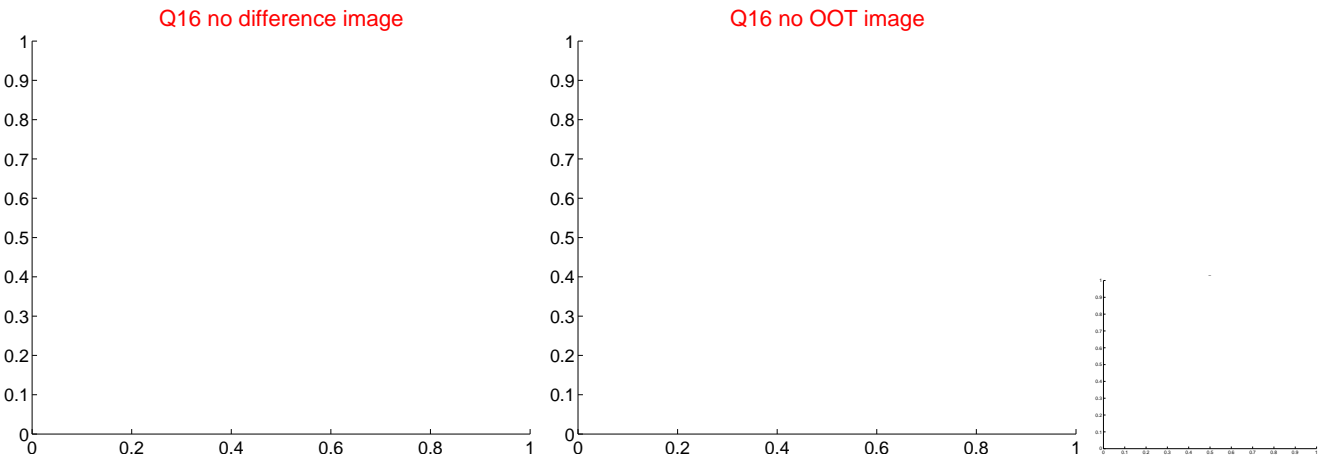
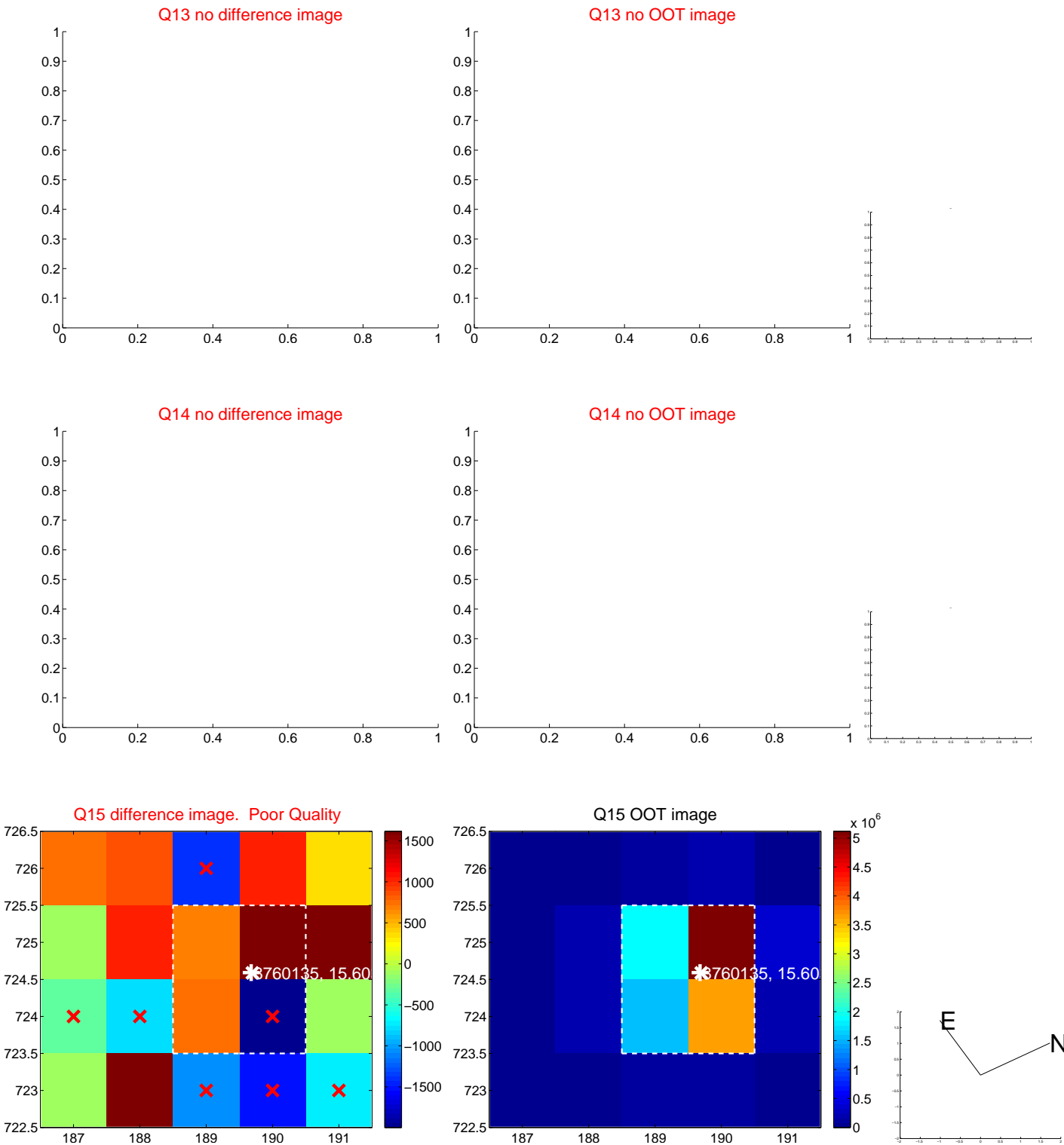
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



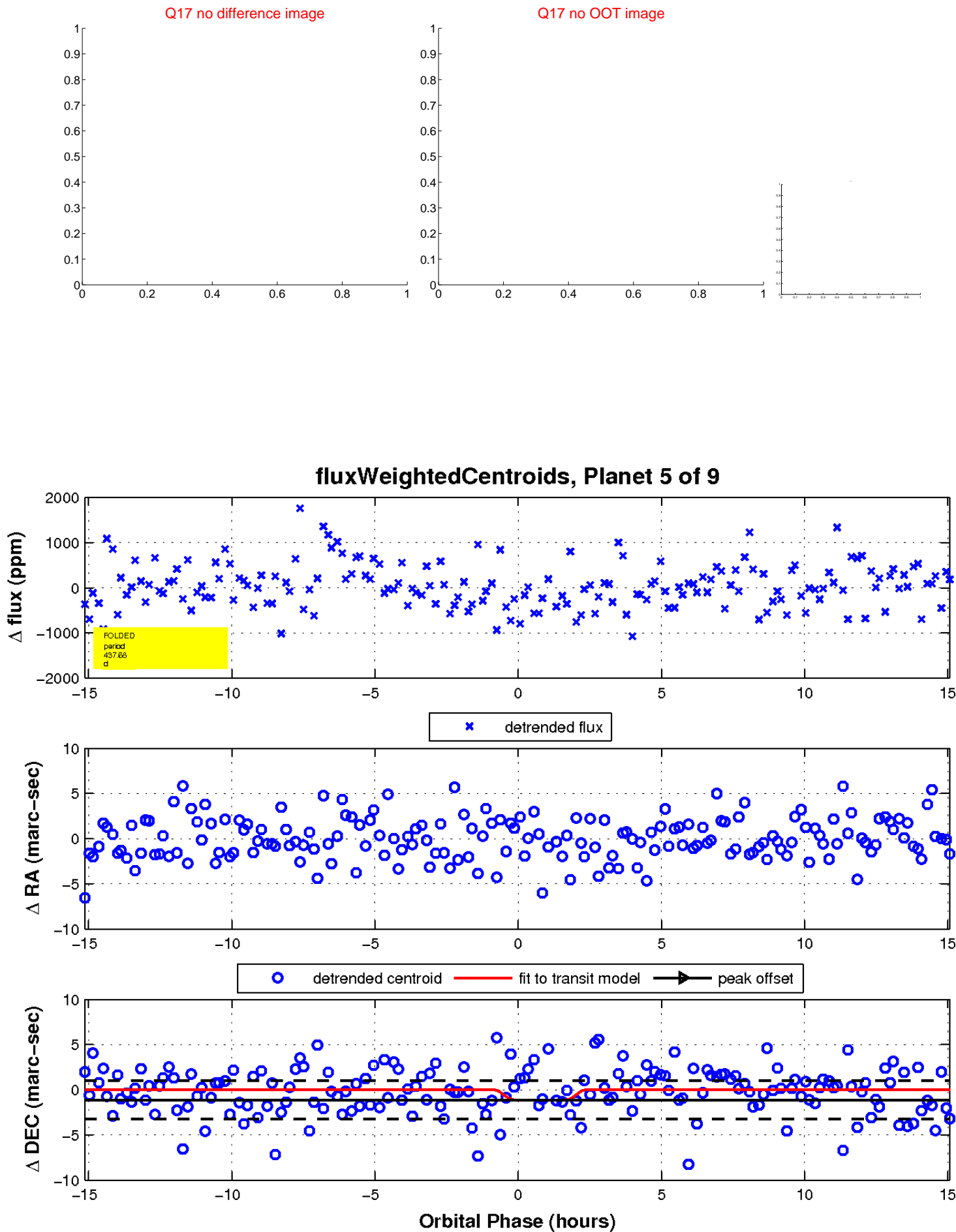
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

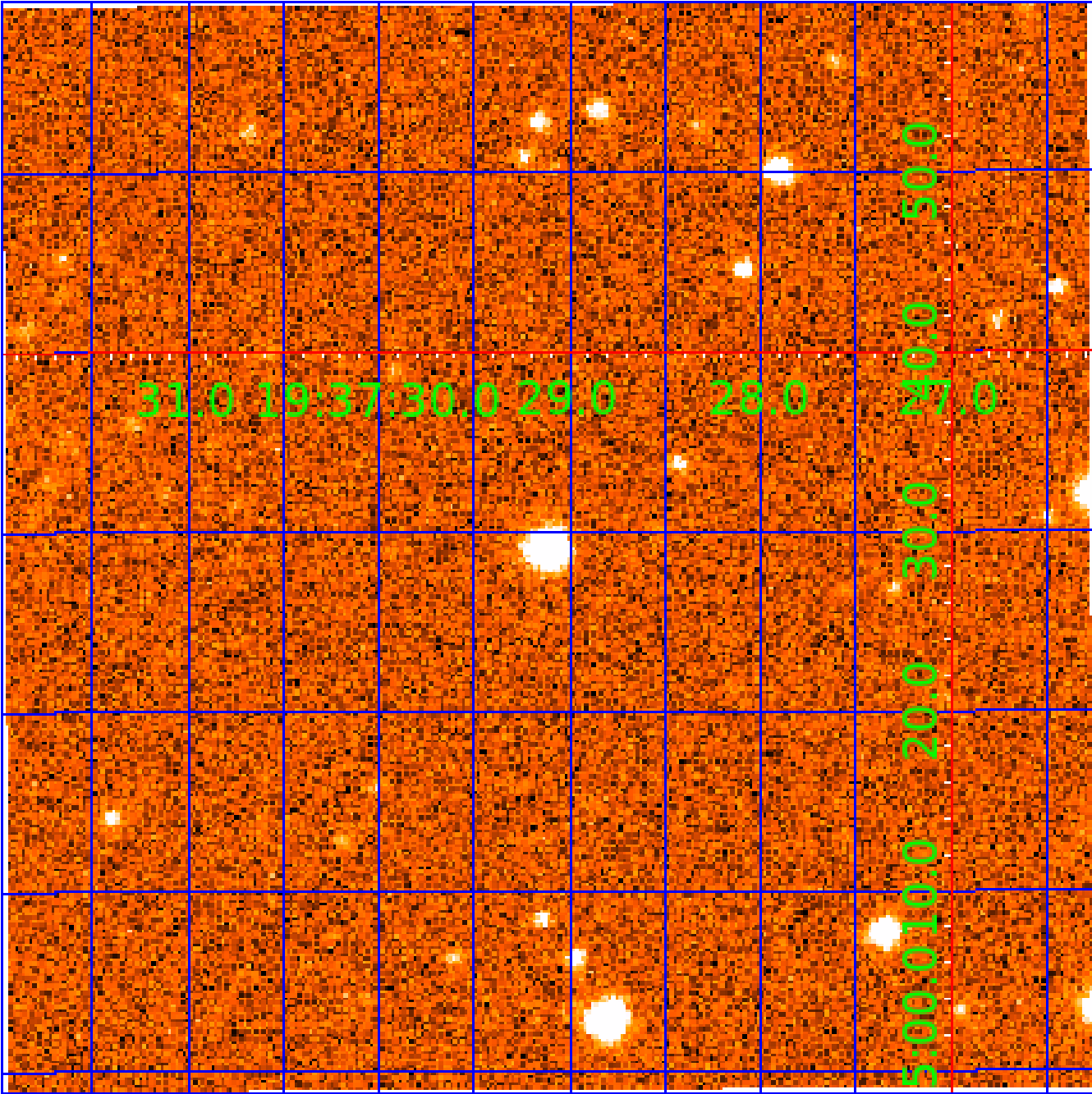


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008760135

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008760135-01	OBS	3524.01	184.644459	151.988827	424552.9	12.000	6016.8	-1.0	1.02	5713	55.82	2.50
008760135-02	OBS	No	184.644459	214.876513	441284.4	9.000	4578.3	-1.0	1.02	5713	55.82	2.50
008760135-03	OBS	No	553.955377	216.966291	2897.5	29.072	34.3	20.7	1.02	5713	10.37	0.58
008760135-05	OBS	No	437.680044	139.064600	2197.0	15.000	26.2	-1.0	1.02	5713	4.73	0.79
008760135-06	OBS	No	614.478016	274.232599	3990.5	3.500	17.5	-1.0	1.02	5713	6.39	0.50
008760135-07	OBS	No	281.983128	309.664392	1366.0	15.000	16.0	-1.0	1.02	5713	3.73	1.42
008760135-08	OBS	No	623.443297	264.789931	3624.4	52.688	23.3	16.1	1.02	5713	11.56	0.49
008760135-09	OBS	No	308.710224	216.283023	1491.6	15.000	20.5	-1.0	1.02	5713	3.90	1.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008760135-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—CENT_NOFITS
008760135-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
008760135-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS
008760135-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008760135-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—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.

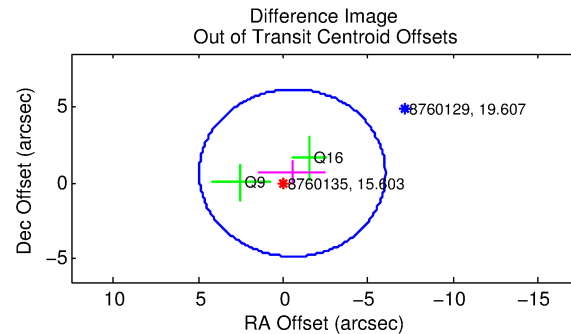
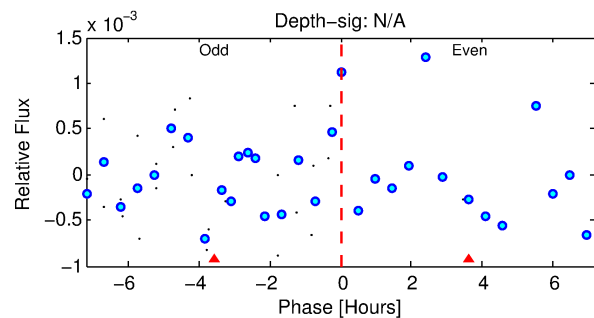
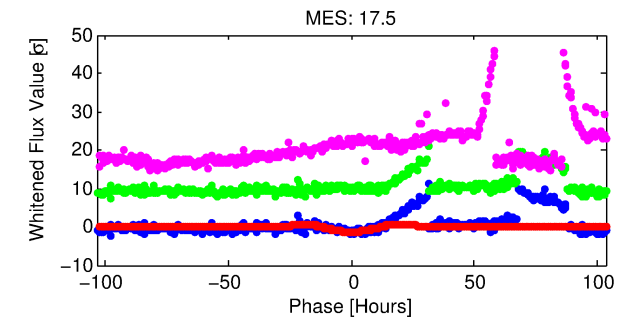
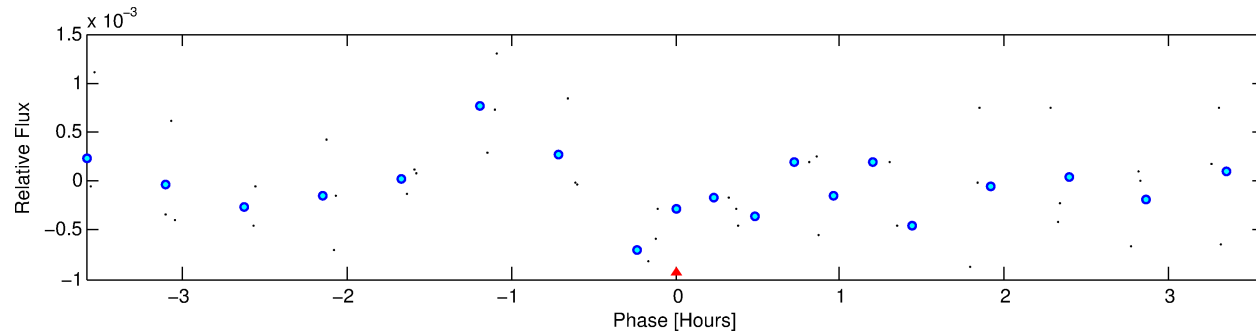
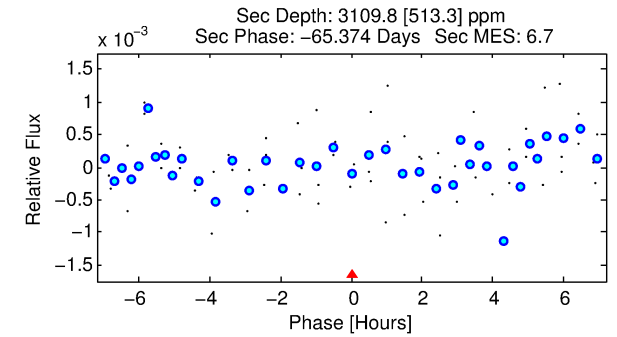
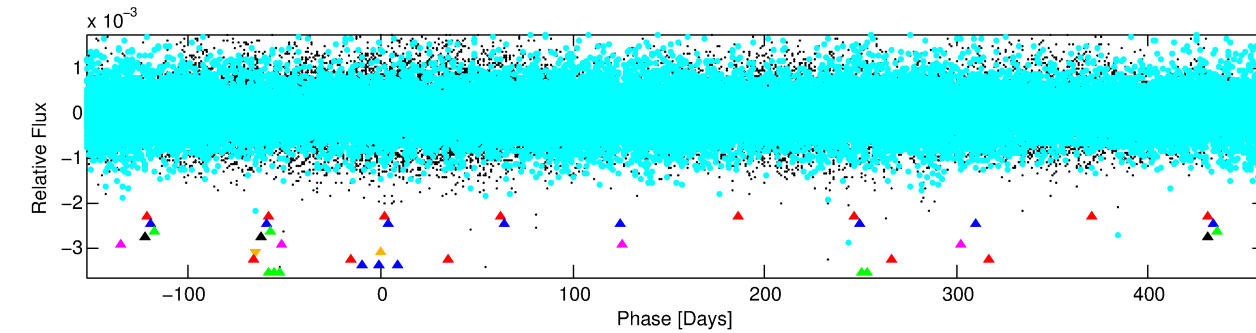
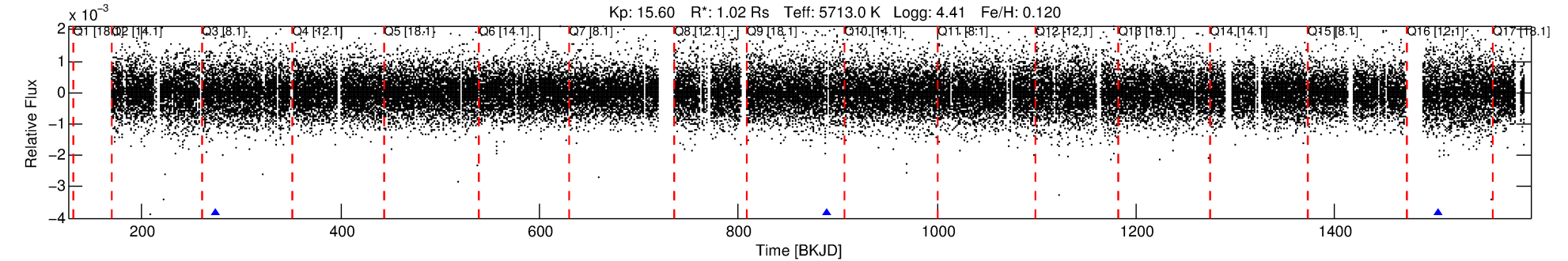
Ephemeris Match Information For 008760135-06

No Significant Match Found

# DV One-Page Summary

KIC: 8760135 Candidate: 6 of 9 Period: 614.478 d  
KOI: K03524 Corr: No Ephemeris Match

Kp: 15.60 R\*: 1.02 Rs Teff: 5713.0 K Logg: 4.41 Fe/H: 0.120



## TPS TCE Results:

Period = 614.47802 d  
Epoch = 274.2326 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

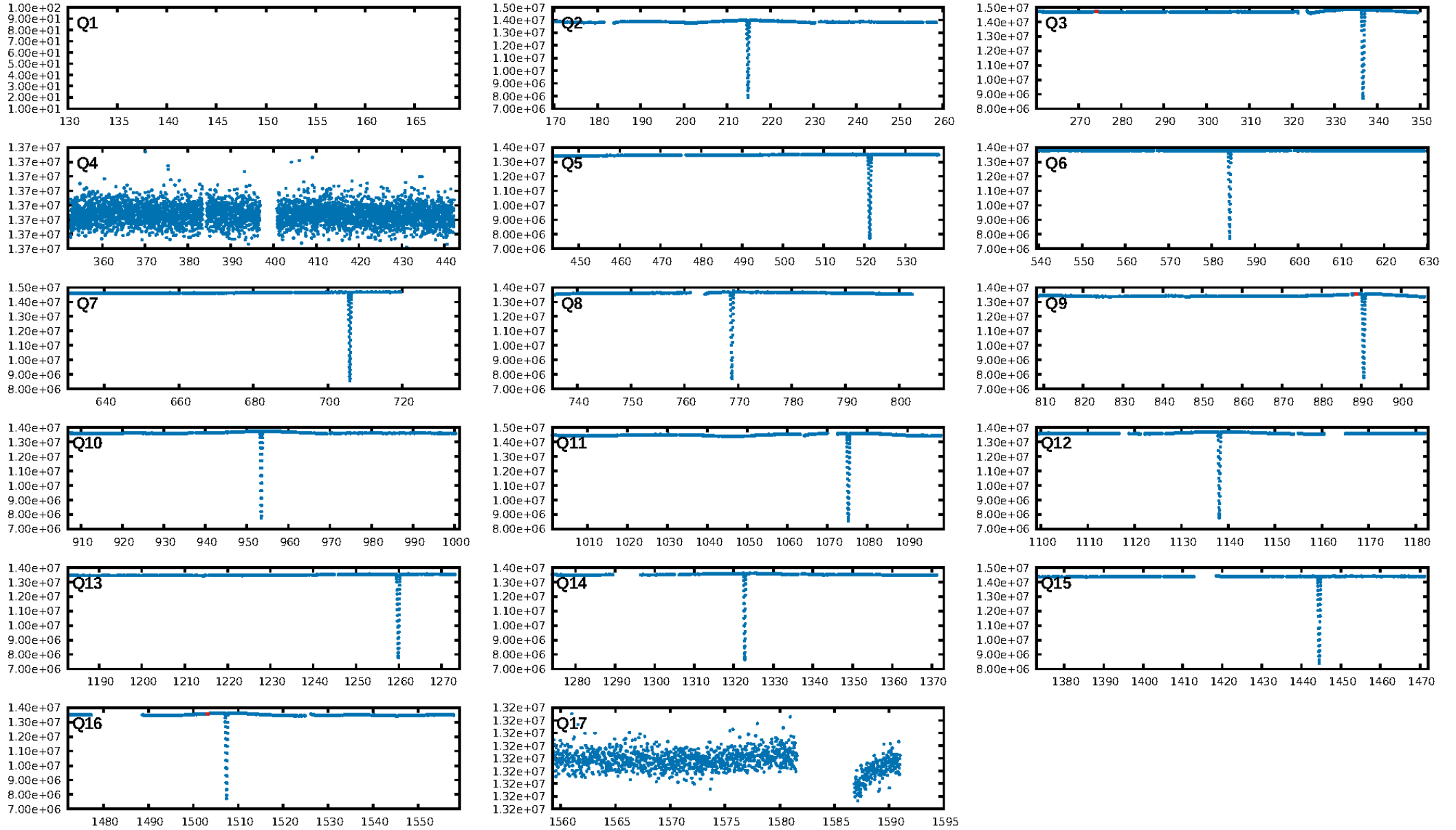
ShortPeriod-sig: 100.0% [49.61σ]  
LongPeriod-sig: 100.0% [4.07σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 0.3786

Centroid-sig: N/A  
Centroid-so: 3.589 arcsec [0.48σ]  
OotOffset-rm: 0.859 arcsec [0.47σ]  
KicOffset-rm: 0.741 arcsec [0.45σ]  
OotOffset-st: 0/0/1/1 [2]  
KicOffset-st: 0/0/1/1 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 0.67 [2/3]

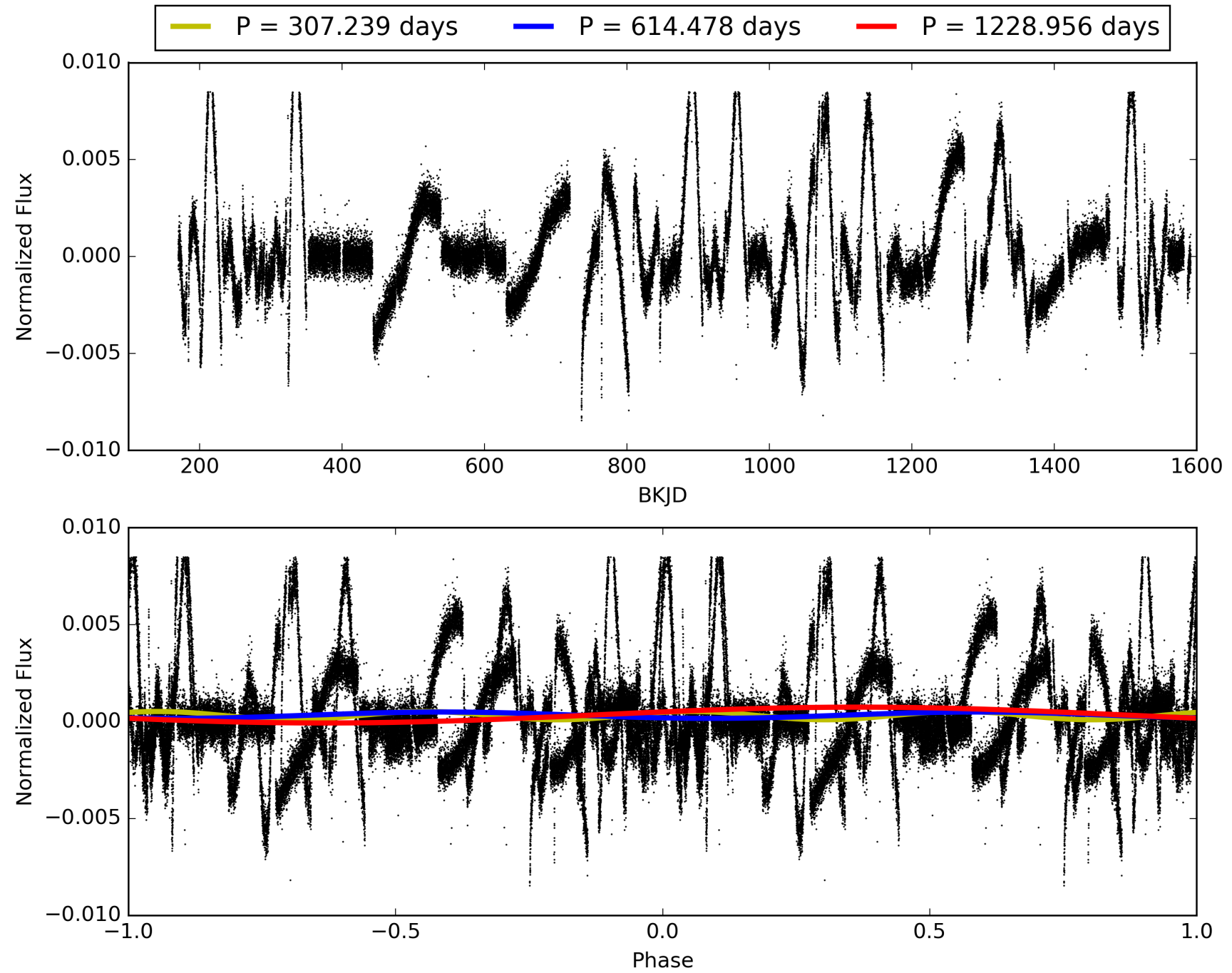
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:37:04 Z

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

# TCE 008760135-06, PDC Light Curves

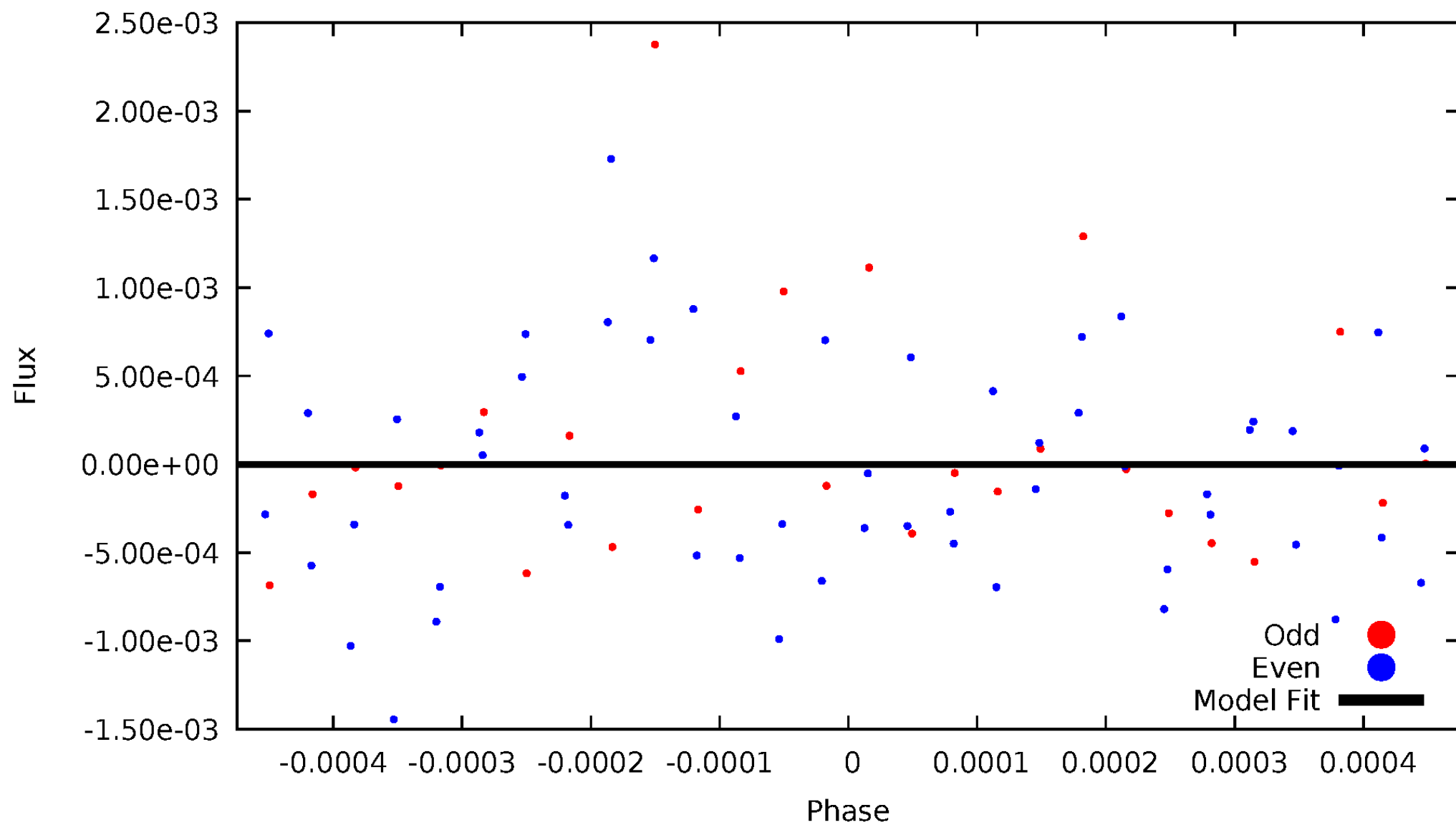


TCE 008760135-06



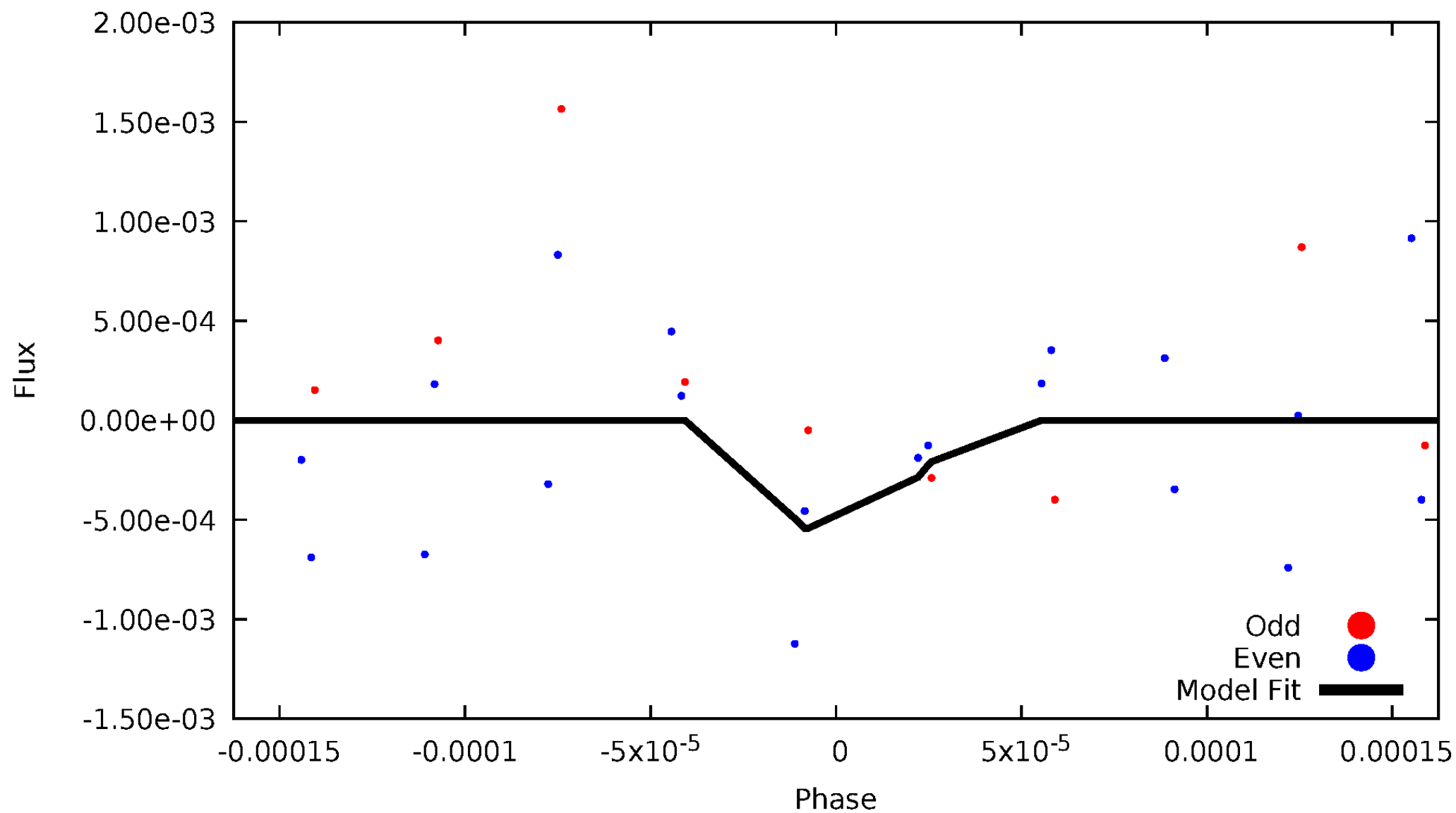
# DV Odd/Even

TCE 008760135-06



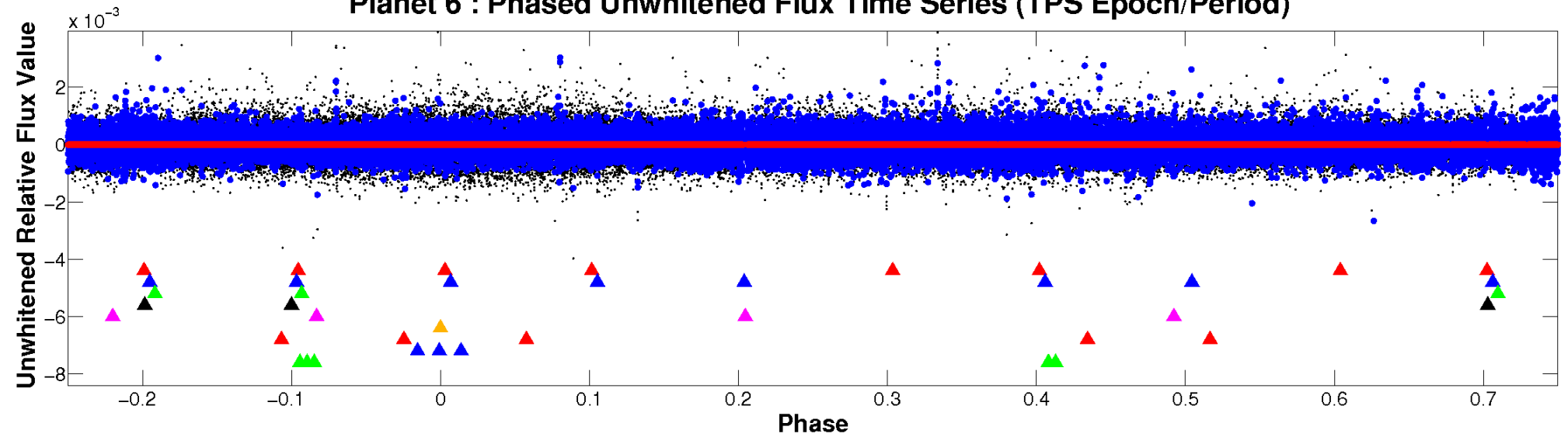
# ALT Odd/Even

TCE 008760135-06

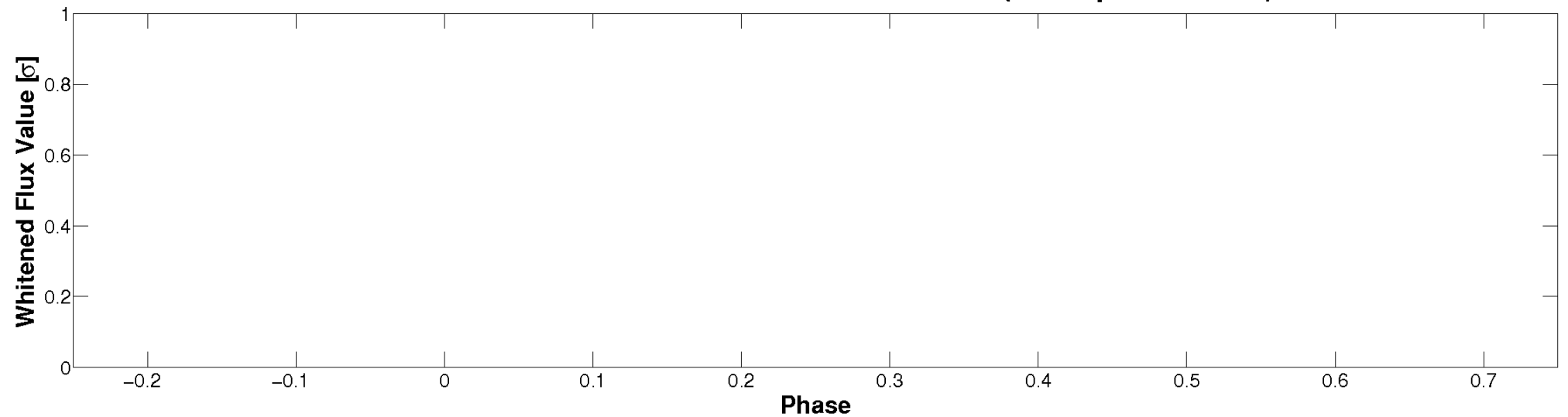


# Non-Whitened Vs. Whitened Light Curve

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

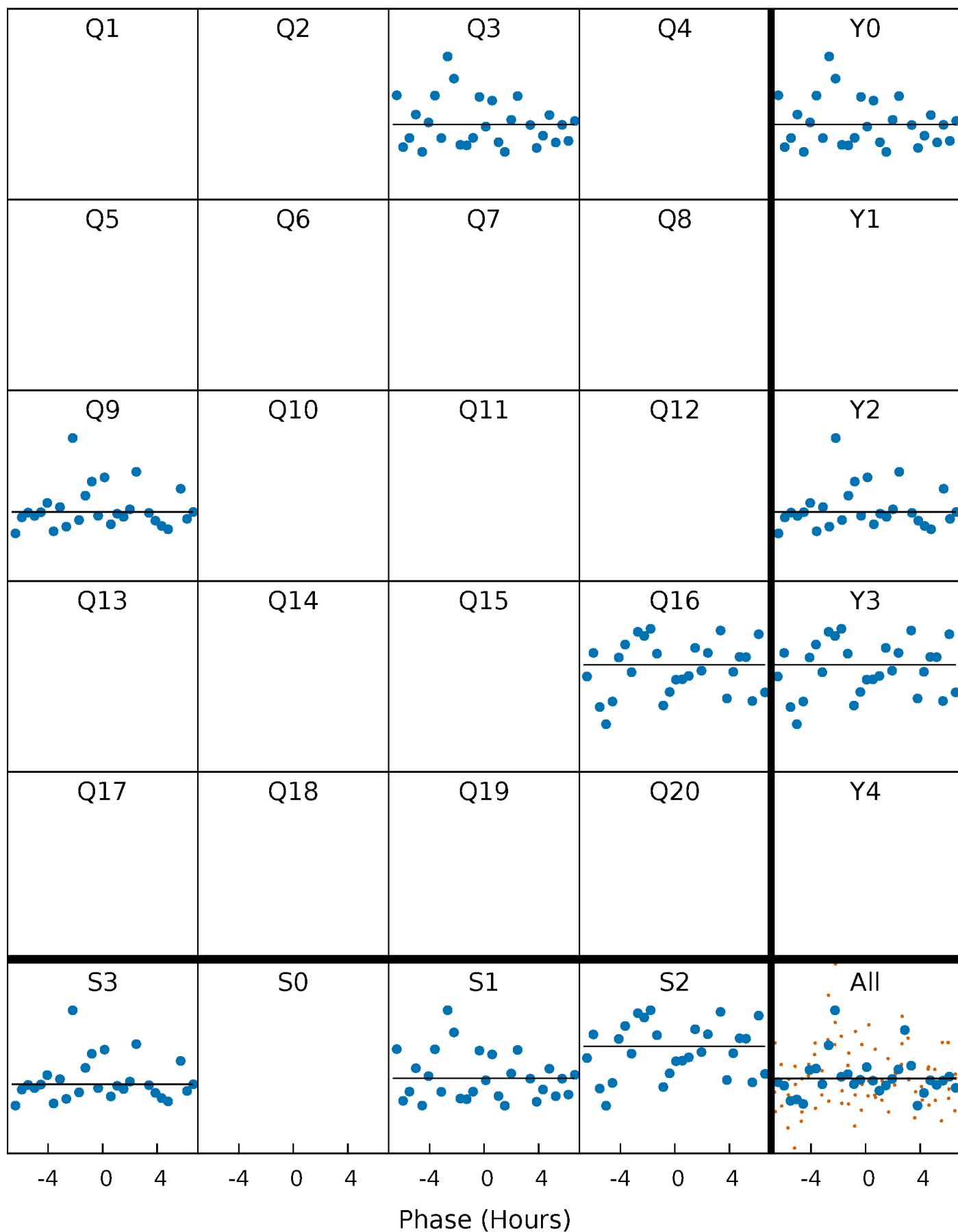
TCE 008760135-06 P=614.478016 Days  $T_0=274.232599$  (BKJD)





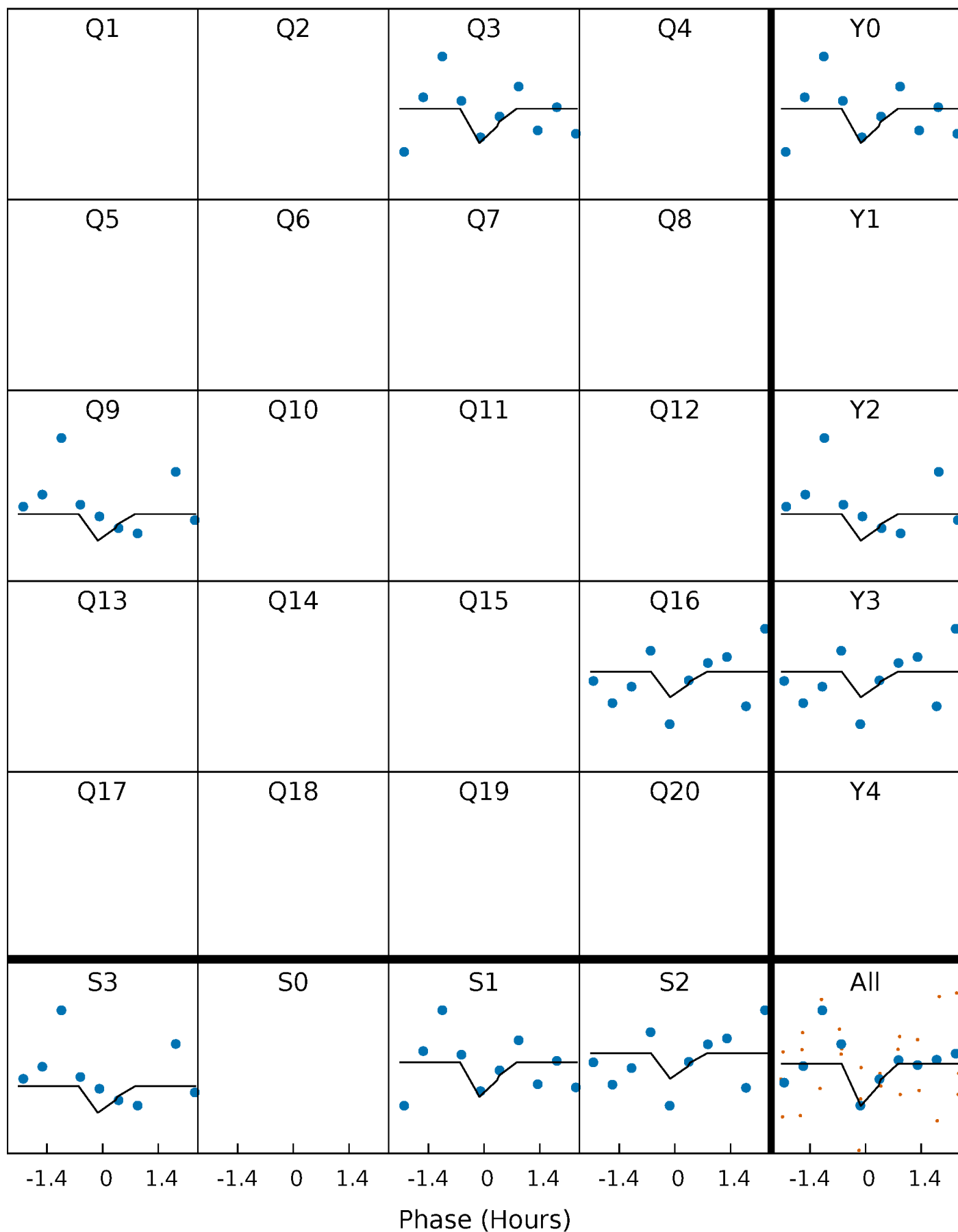
# DV Quarter-Phased Transit Curves

TCE 008760135-06 P=614.478016 Days  $T_0=274.232599$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

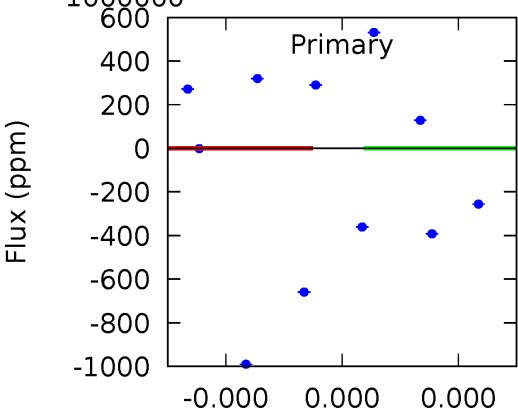
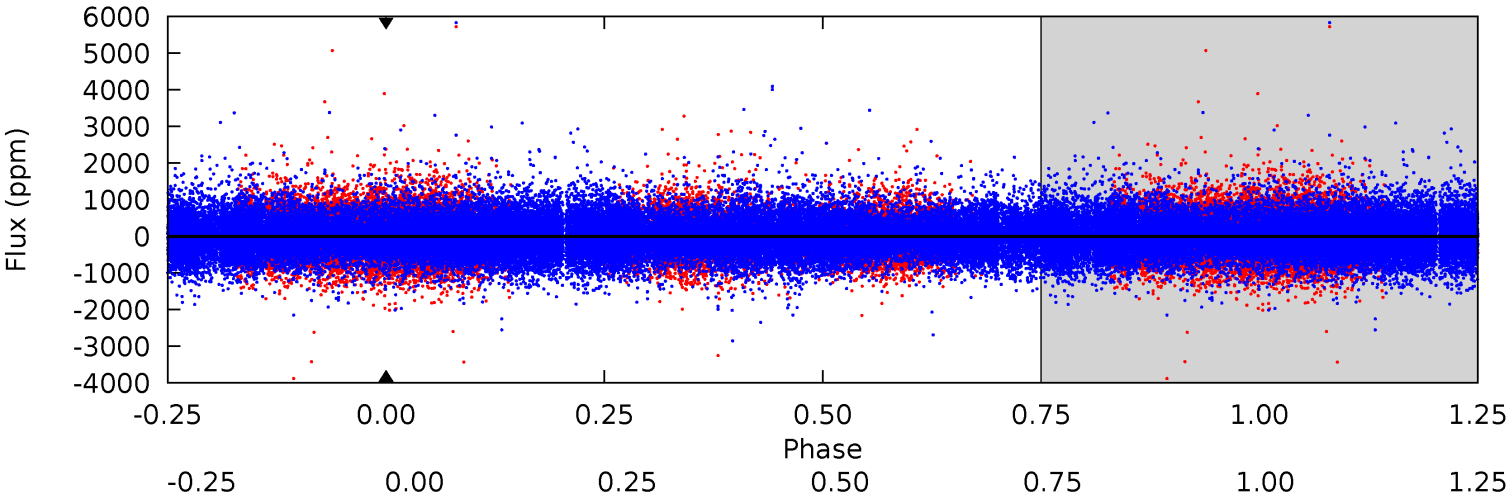
TCE 008760135-06 P=614.478016 Days  $T_0=274.390196$  (BKJD)



# DV Model-Shift Uniqueness Test

008760135-06, P = 614.478016 Days, E = 274.232599 Days

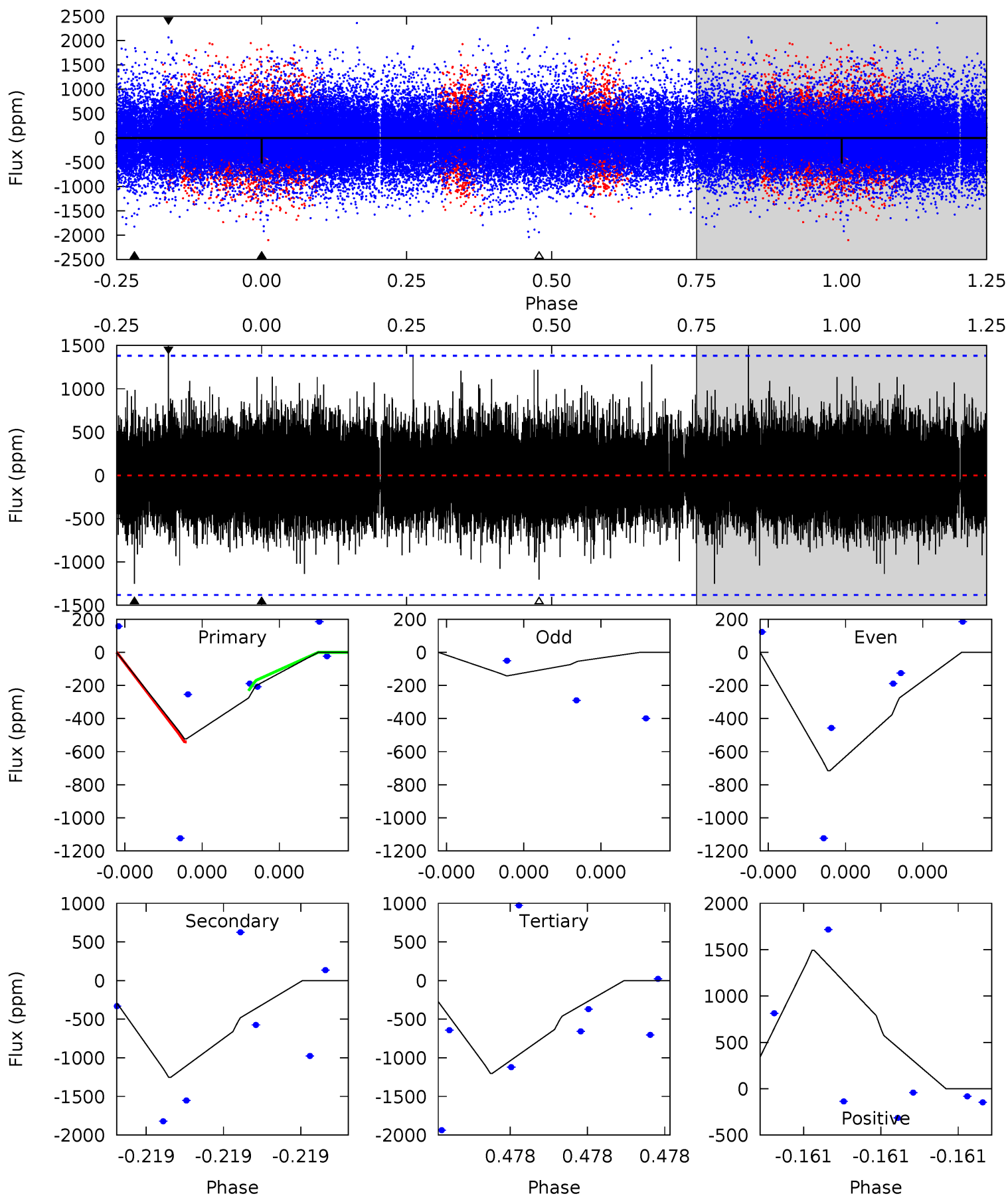
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008760135-06, P = 614.478016 Days, E = 274.390196 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
2.28	5.46	5.23	6.51	6.01	4.13	1.13	-2.95	-4.23	0.22	-1.05	1.12	1.22	0.54	0.67



### Stellar Parameters For KIC 008760135

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5713^{+154}_{-188}$	$4.414^{+0.098}_{-0.196}$	$0.120^{+0.250}_{-0.300}$	$1.023^{+0.289}_{-0.124}$	$0.990^{+0.111}_{-0.100}$	$1.301^{+0.572}_{-0.634}$
	+3%/-3%	+2%/-4%	+208%/-250%	+28%/-12%	+11%/-10%	+44%/-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 008760135-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$0 \pm 1000000$	$10.47^{+9.99}_{-6.83}$	$302^{+22}_{-16}$	$4398^{+13388}_{-17930}$	$24903^{+2020572}_{-1199004}$
Alt.	$-1253 \pm 230$	$9.21^{+8.49}_{-6.26}$	$303^{+22}_{-16}$	$4035^{+2645}_{-726}$	$16540^{+148158}_{-12309}$

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

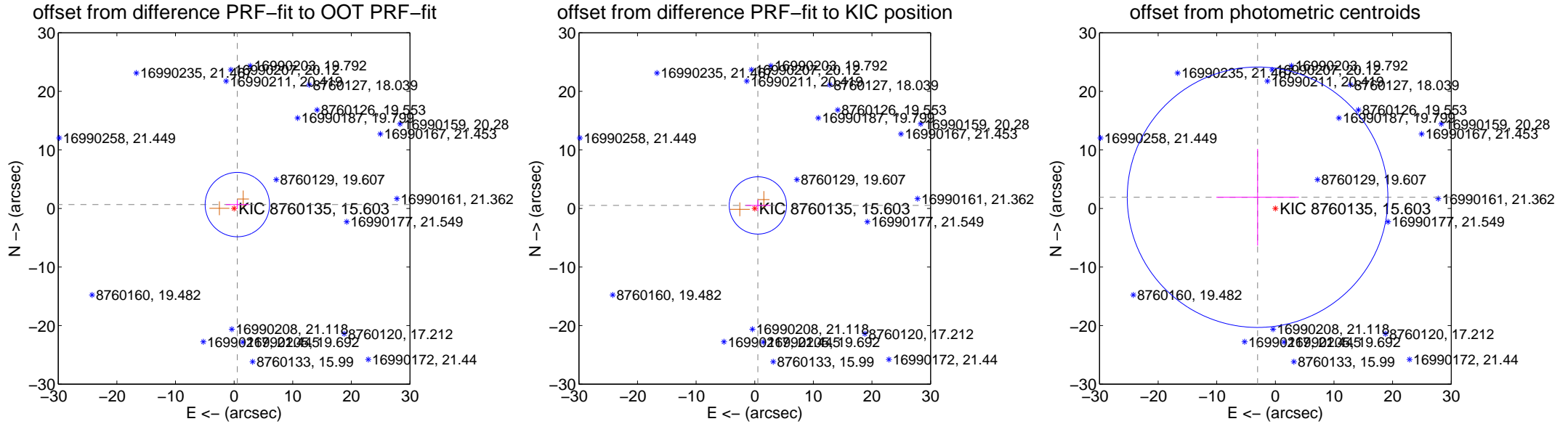
## DV Centroid Data

Supplemental centroid analysis for 008760135-06. Kepler magnitude: 15.60. 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 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.859 \pm 1.831$	0.47	$-0.549 \pm 1.947$	$0.660 \pm 0.764$
PRF-fit source offset from KIC position	$0.741 \pm 1.630$	0.45	$-0.535 \pm 2.066$	$0.513 \pm 0.949$
photometric centroid source offset	$3.59 \pm 7.41$	0.48	$3.04 \pm 7.04$	$1.91 \pm 8.26$



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

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

Q1 no difference image



Q1 no OOT image



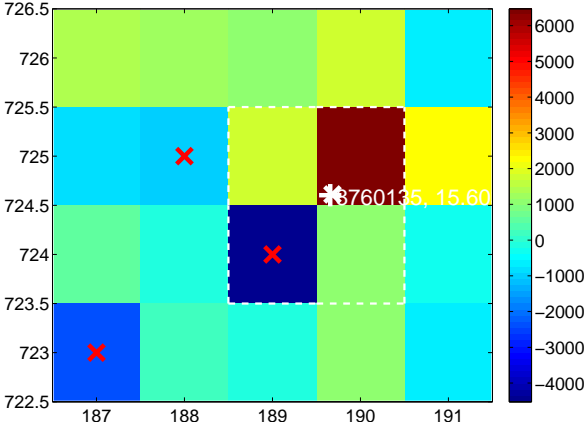
Q2 no difference image



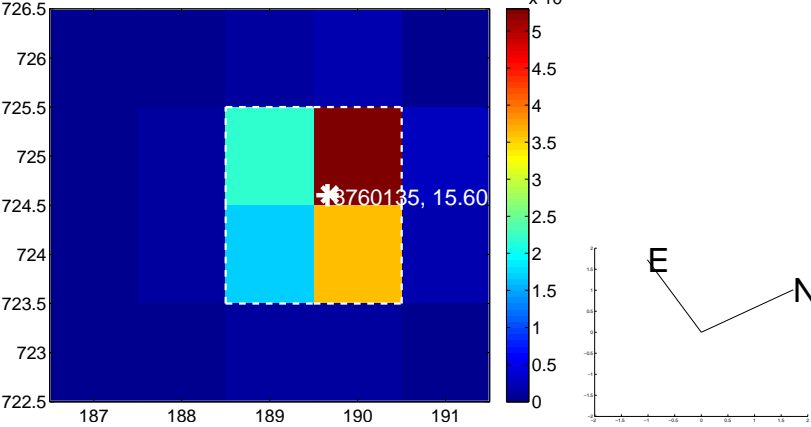
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



Q4 no OOT image

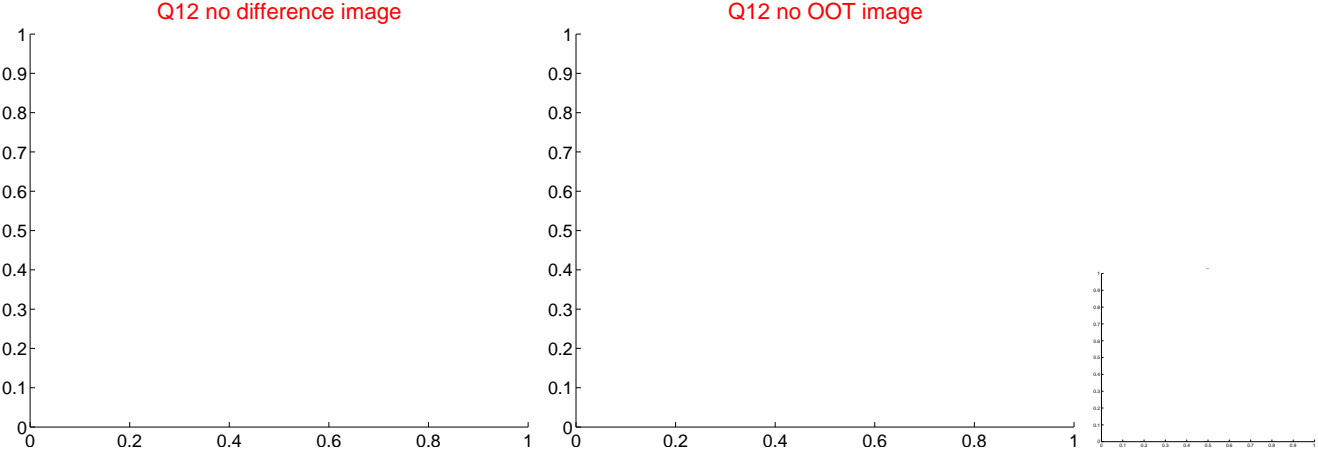
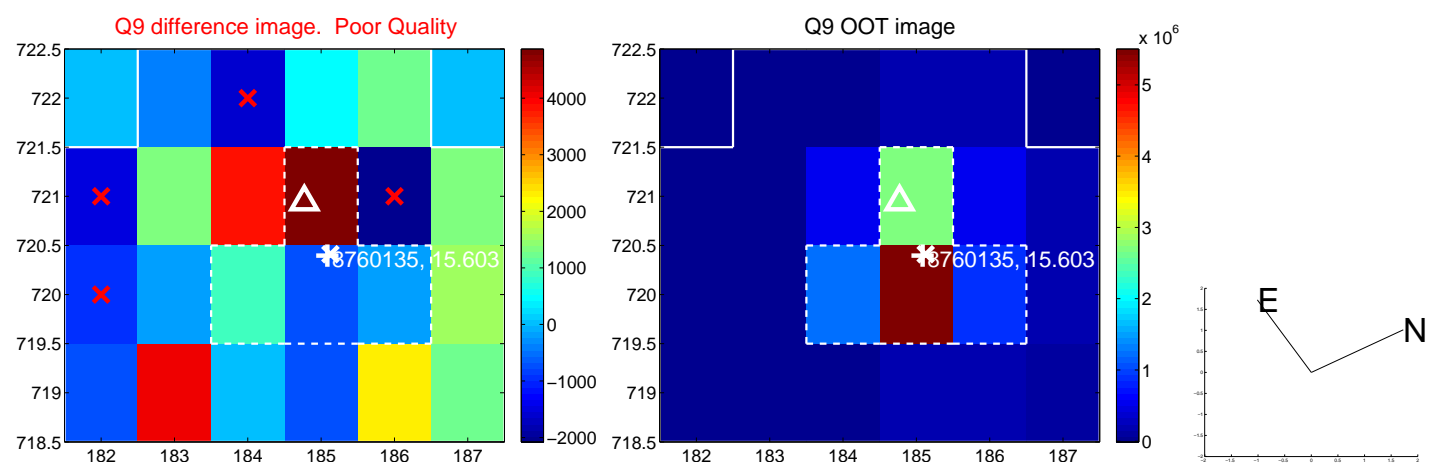


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

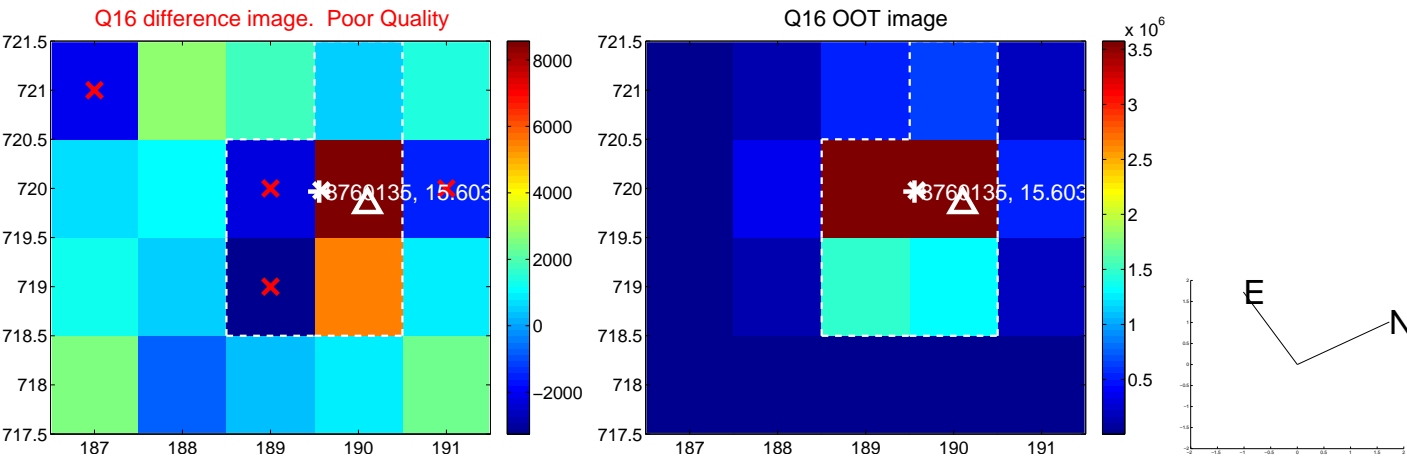




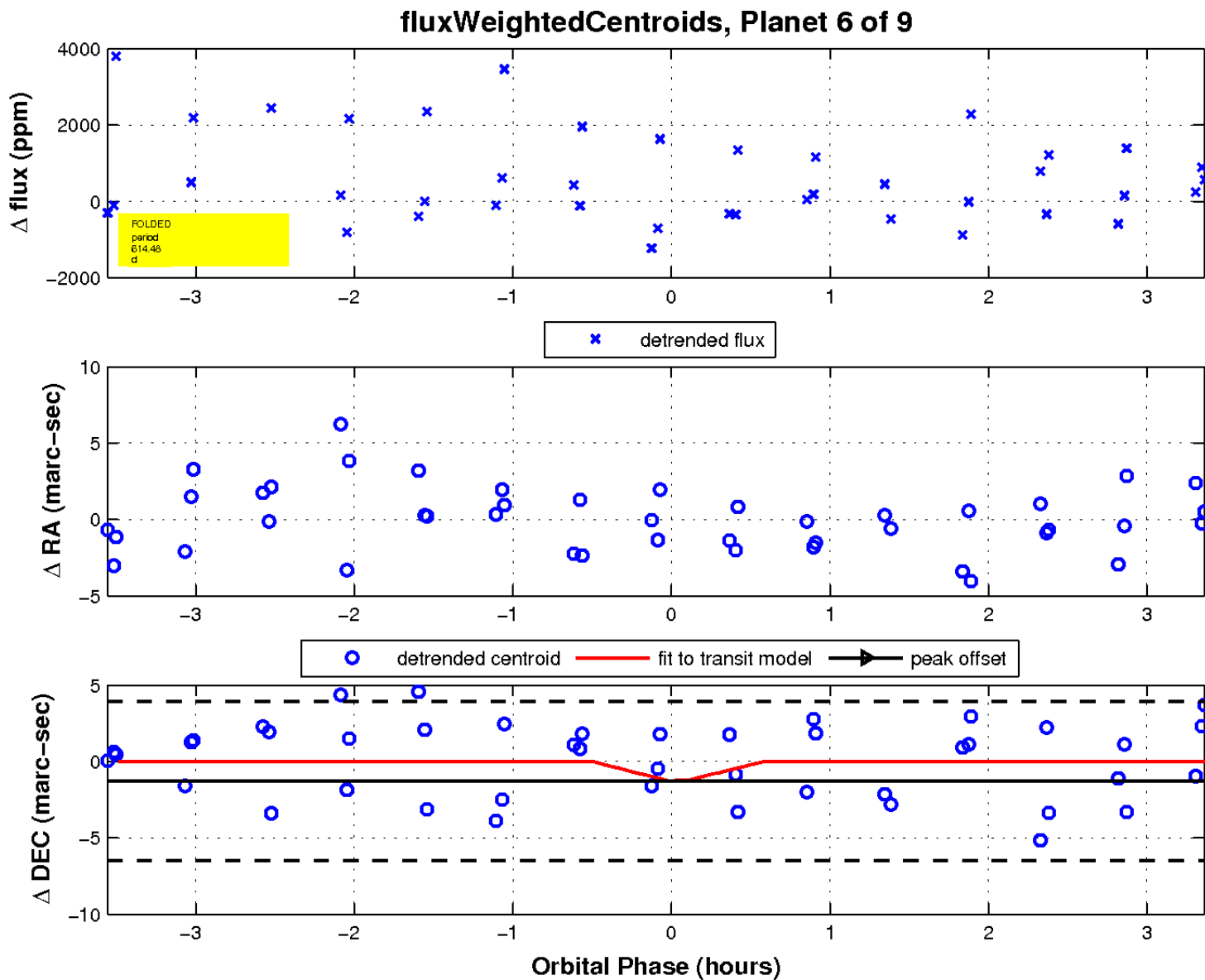
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

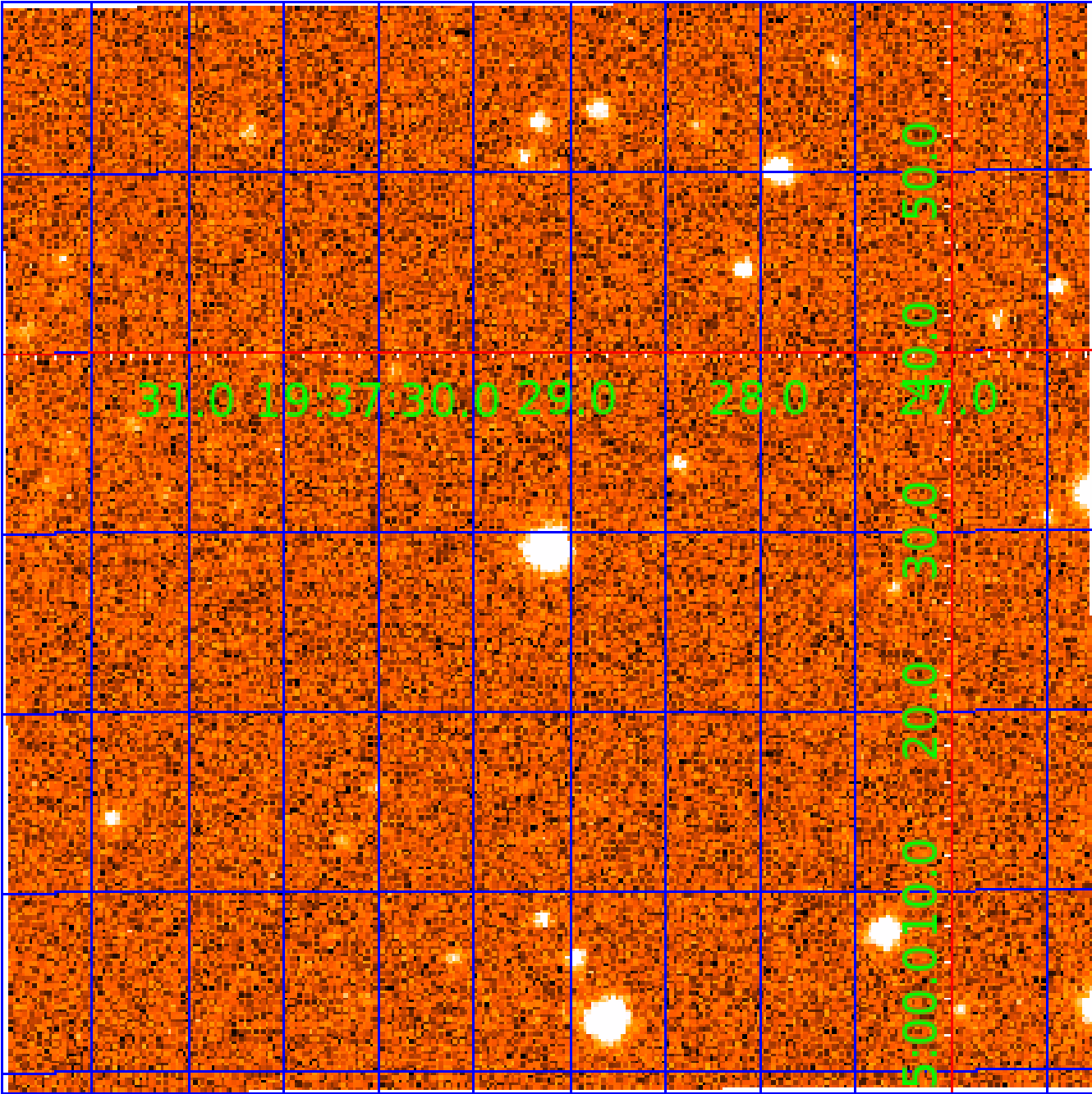


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008760135

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008760135-01	OBS	3524.01	184.644459	151.988827	424552.9	12.000	6016.8	-1.0	1.02	5713	55.82	2.50
008760135-02	OBS	No	184.644459	214.876513	441284.4	9.000	4578.3	-1.0	1.02	5713	55.82	2.50
008760135-03	OBS	No	553.955377	216.966291	2897.5	29.072	34.3	20.7	1.02	5713	10.37	0.58
008760135-05	OBS	No	437.680044	139.064600	2197.0	15.000	26.2	-1.0	1.02	5713	4.73	0.79
008760135-06	OBS	No	614.478016	274.232599	3990.5	3.500	17.5	-1.0	1.02	5713	6.39	0.50
008760135-07	OBS	No	281.983128	309.664392	1366.0	15.000	16.0	-1.0	1.02	5713	3.73	1.42
008760135-08	OBS	No	623.443297	264.789931	3624.4	52.688	23.3	16.1	1.02	5713	11.56	0.49
008760135-09	OBS	No	308.710224	216.283023	1491.6	15.000	20.5	-1.0	1.02	5713	3.90	1.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008760135-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—CENT_NOFITS
008760135-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
008760135-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS
008760135-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008760135-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—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 008760135-07

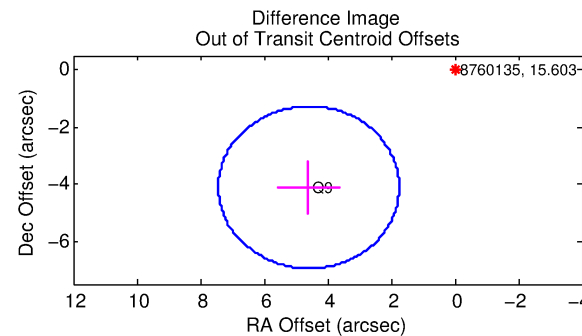
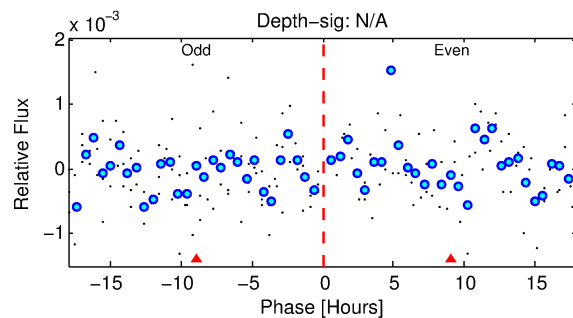
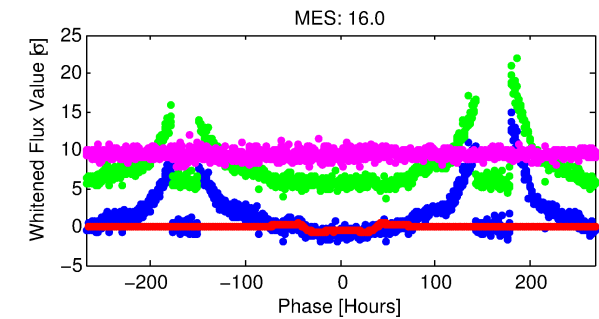
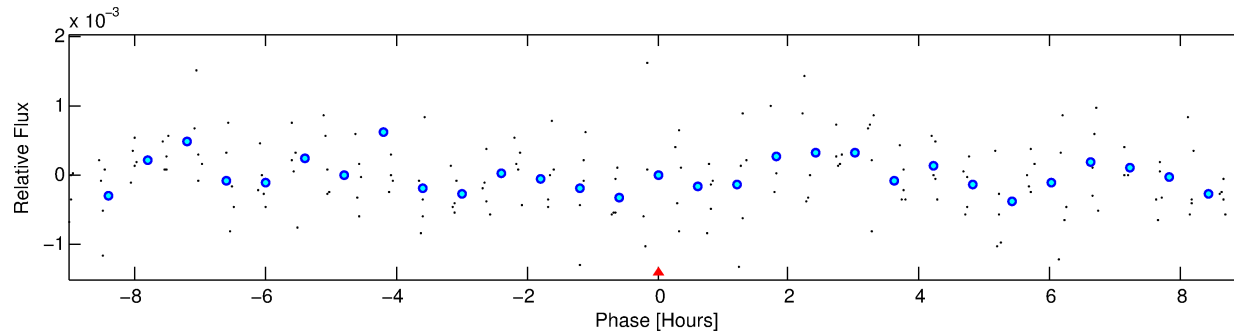
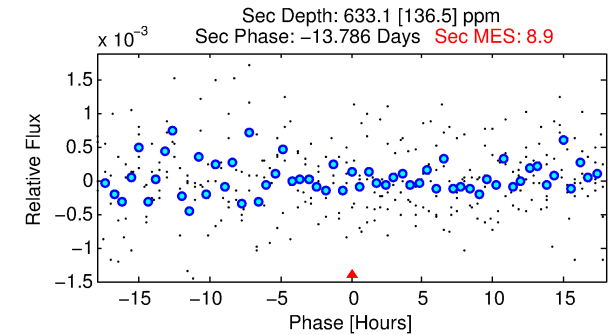
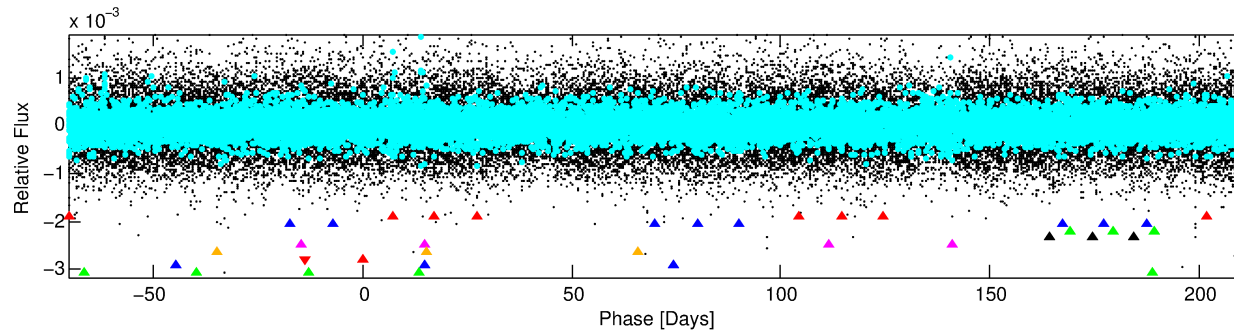
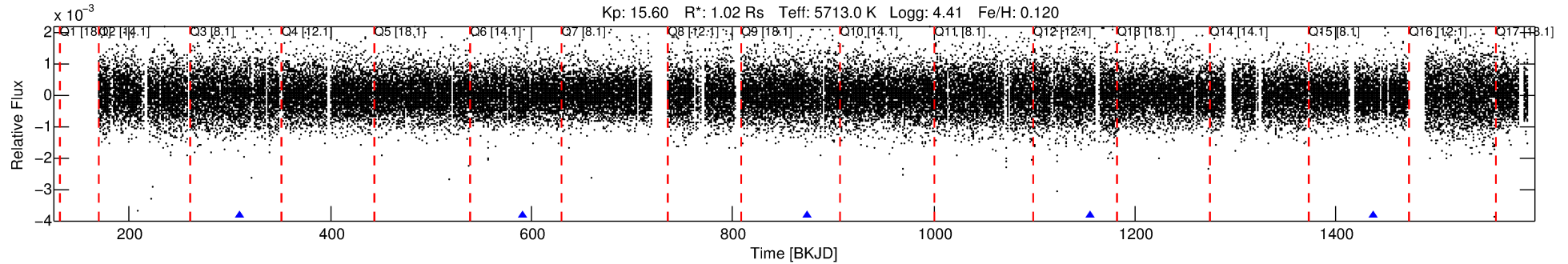
No Significant Match Found

# DV One-Page Summary

KIC: 8760135 Candidate: 7 of 9 Period: 281.983 d

KOI: K03524 Corr: No Ephemeris Match

Kp: 15.60 R\*: 1.02 Rs Teff: 5713.0 K Logg: 4.41 Fe/H: 0.120



## TPS TCE Results:

Period = 281.98313 d  
Epoch = 309.6644 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

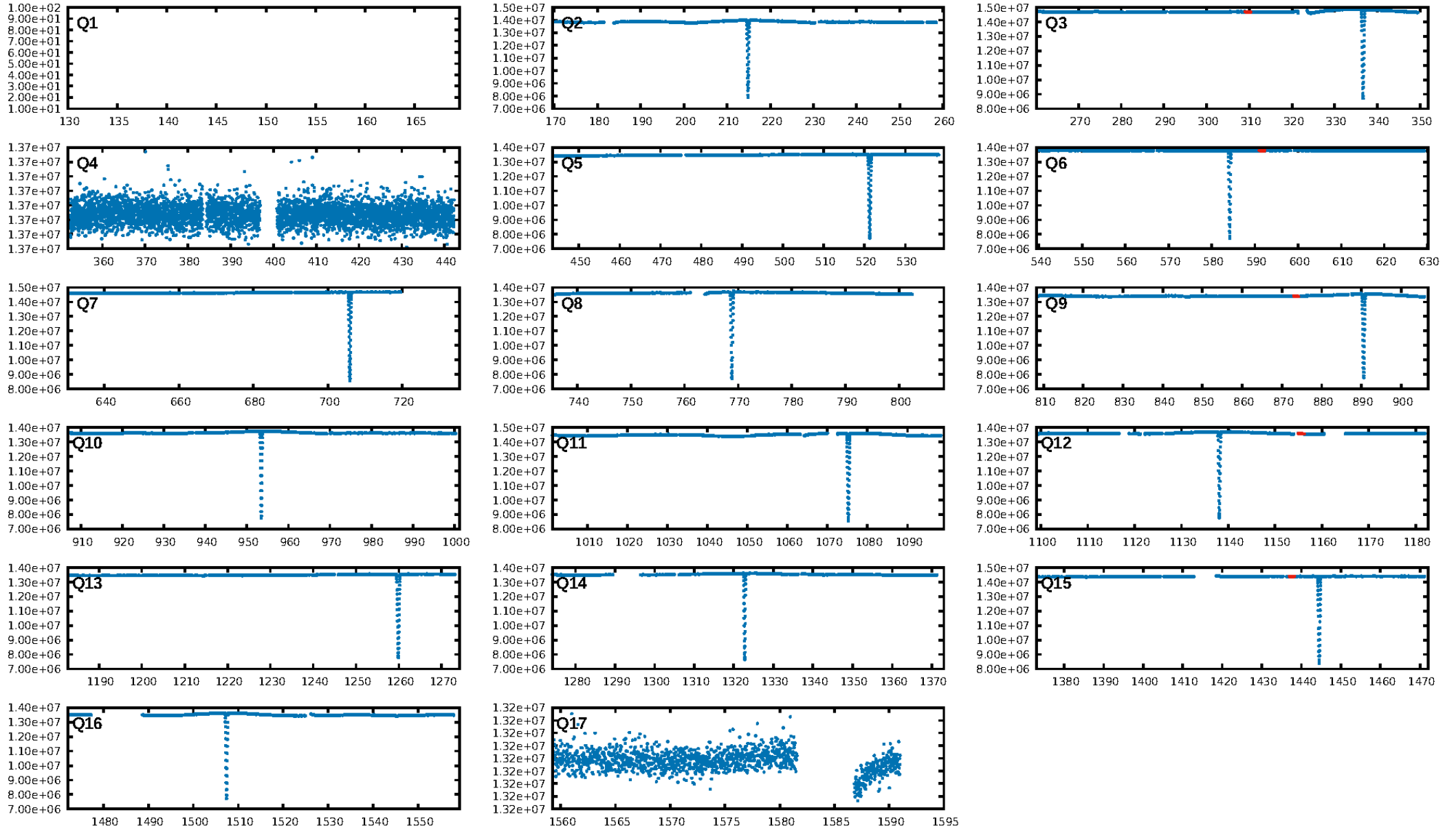
ShortPeriod-sig: 100.0% [133.55σ]  
LongPeriod-sig: 100.0% [30.24σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -0.8908

Centroid-sig: N/A  
Centroid-so: 11.548 arcsec [0.78σ]  
OotOffset-rm: 6.166 arcsec [6.51σ]  
KicOffset-rm: 6.299 arcsec [6.66σ]  
OotOffset-st: 0/0/0/1 [1]  
KicOffset-st: 0/0/0/1 [1]  
DiffImageQuality-fgm: 0.00 [0/1]  
DiffImageOverlap-fno: 1.00 [3/3]

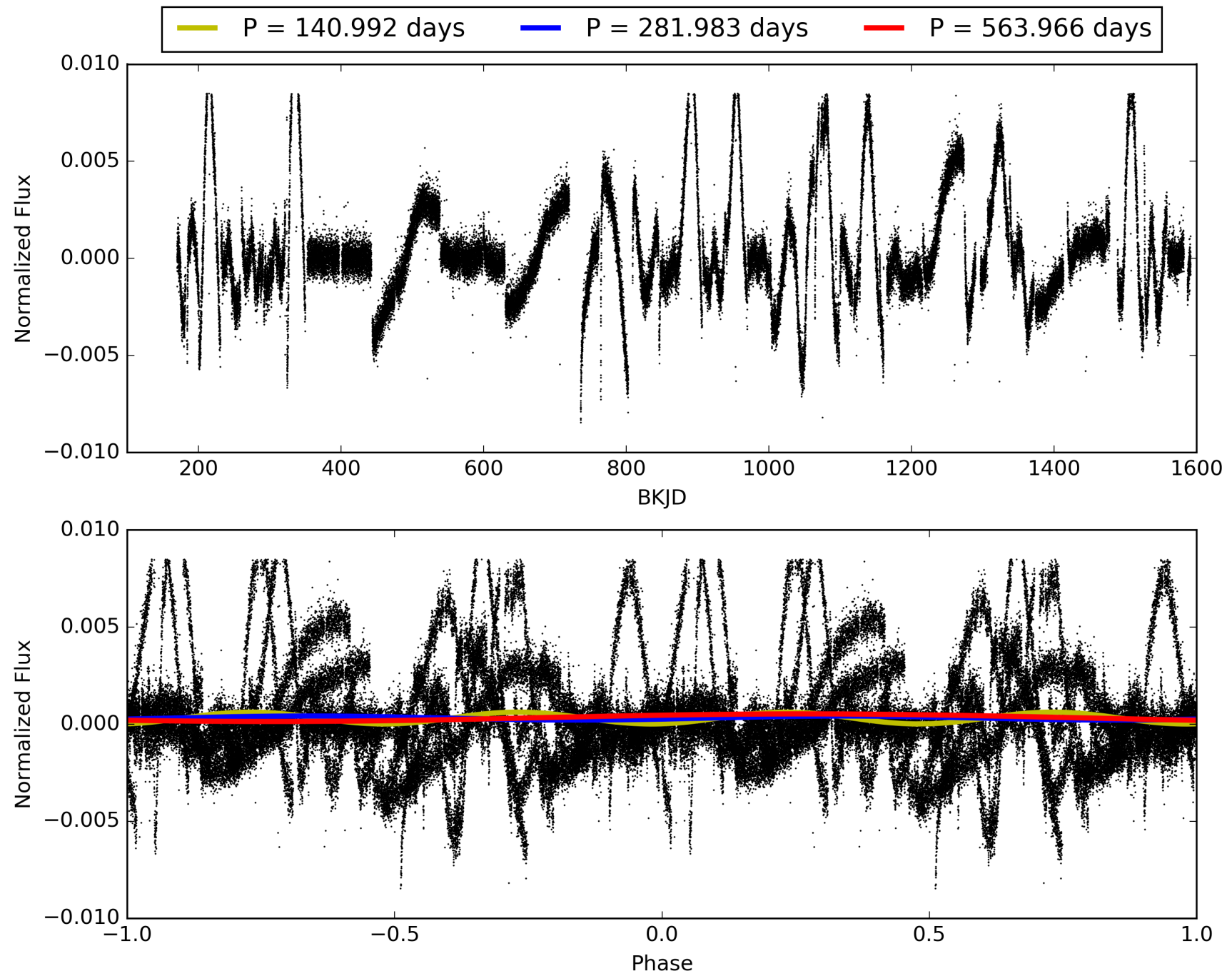
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:37:21 Z

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

# TCE 008760135-07, PDC Light Curves



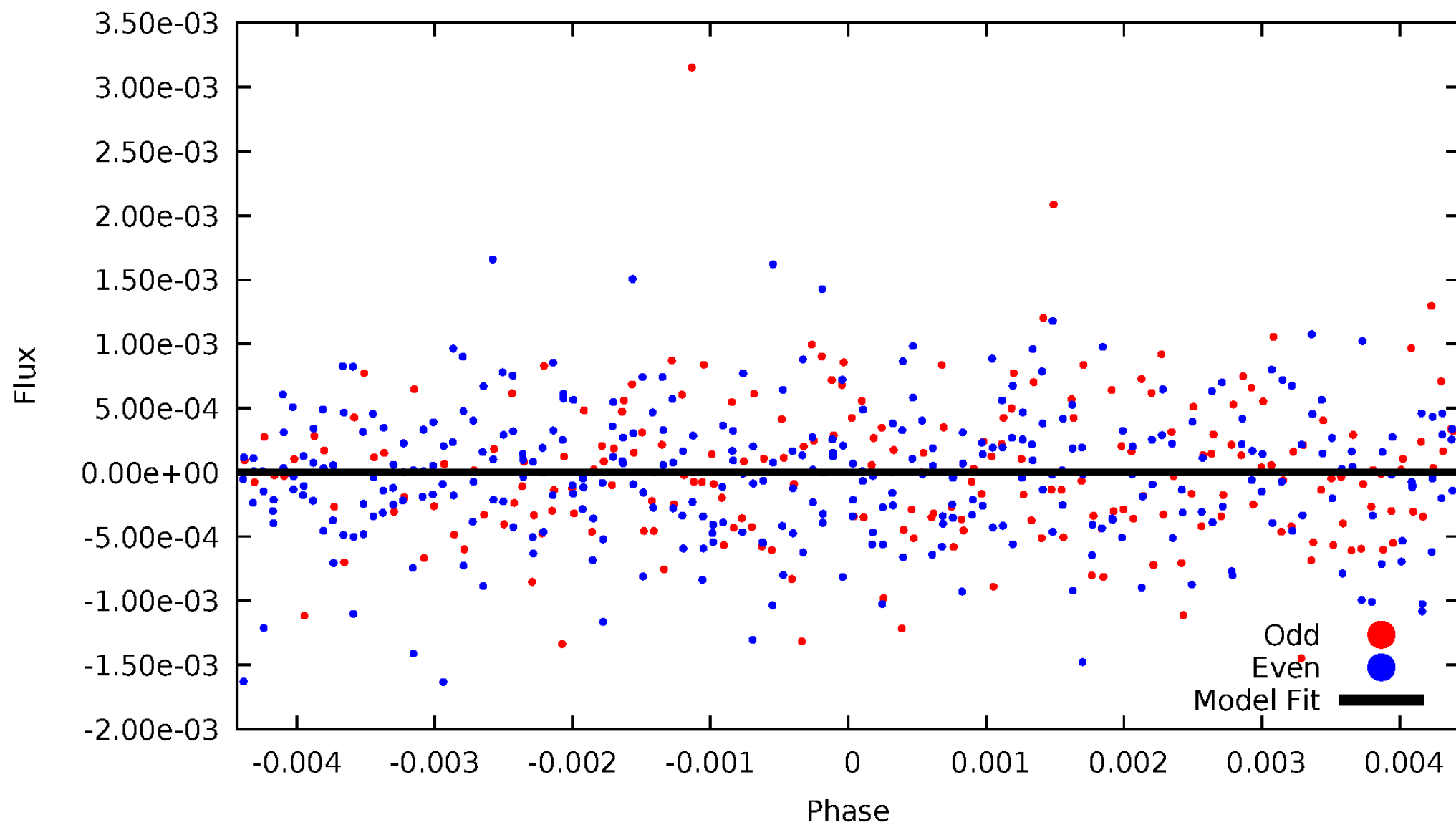
TCE 008760135-07





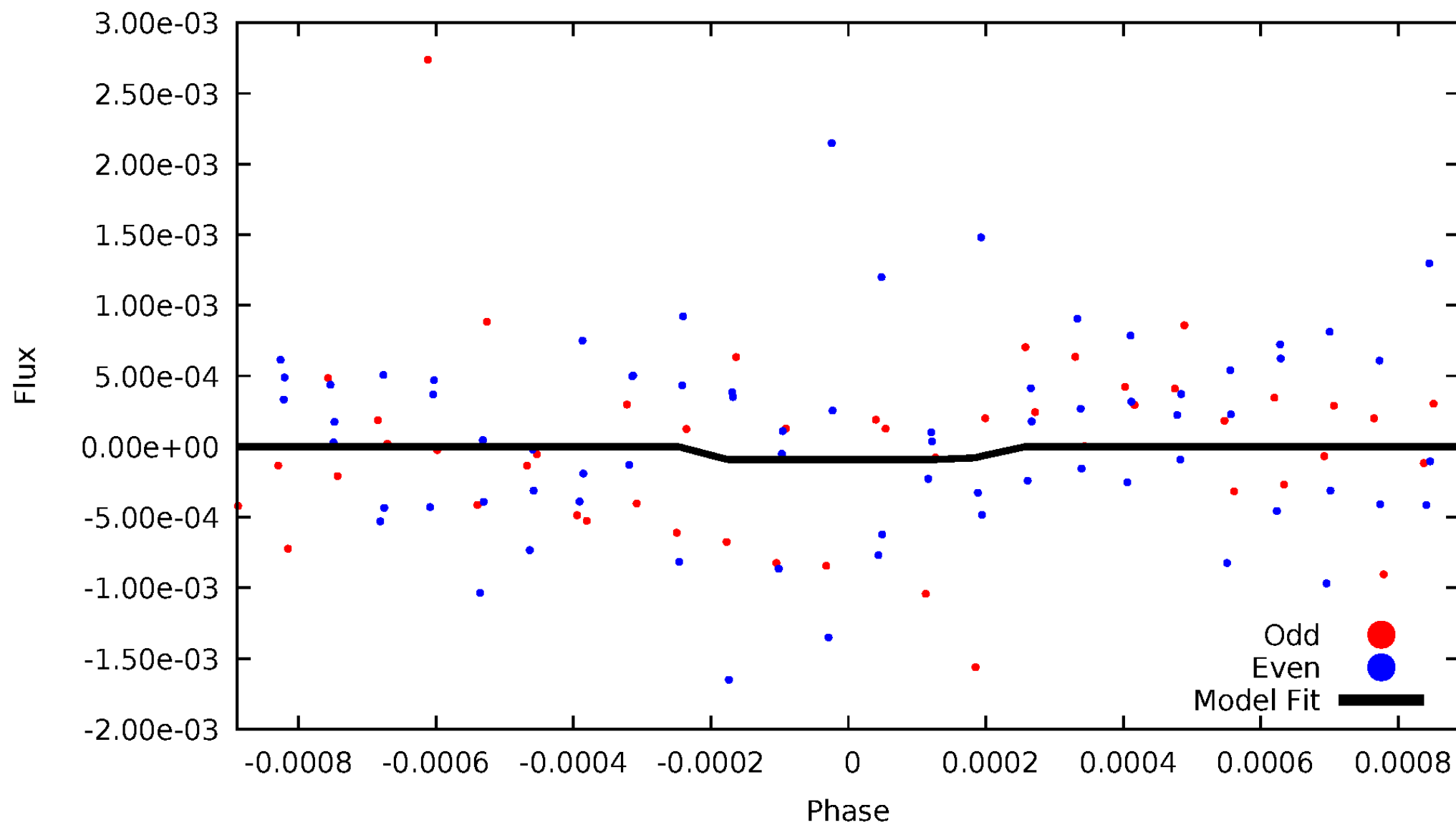
# DV Odd/Even

TCE 008760135-07

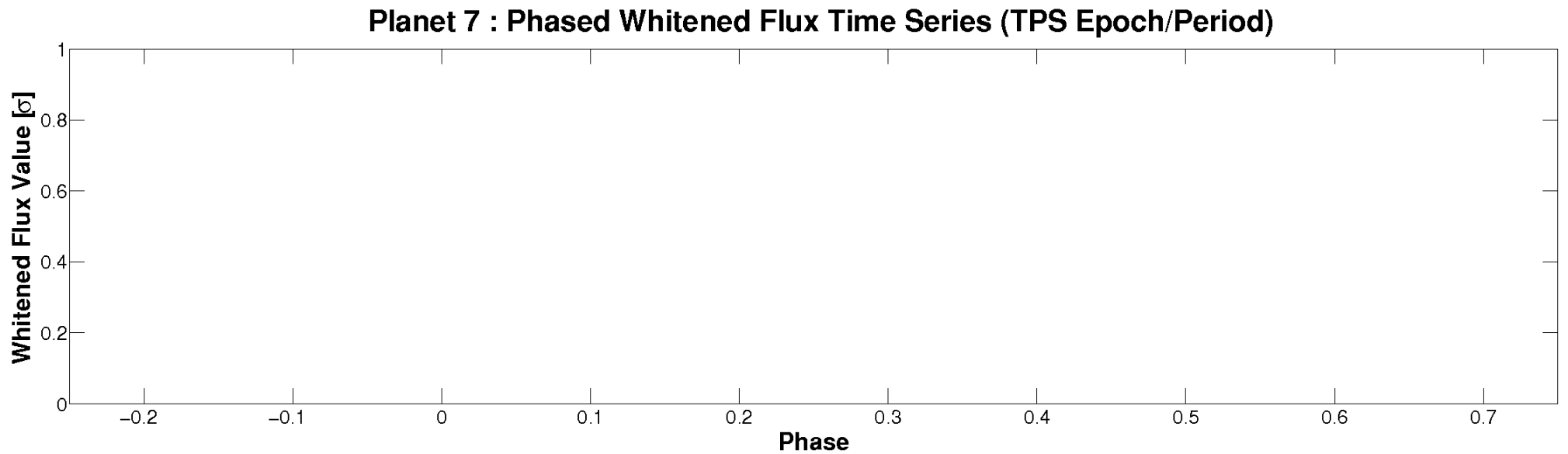
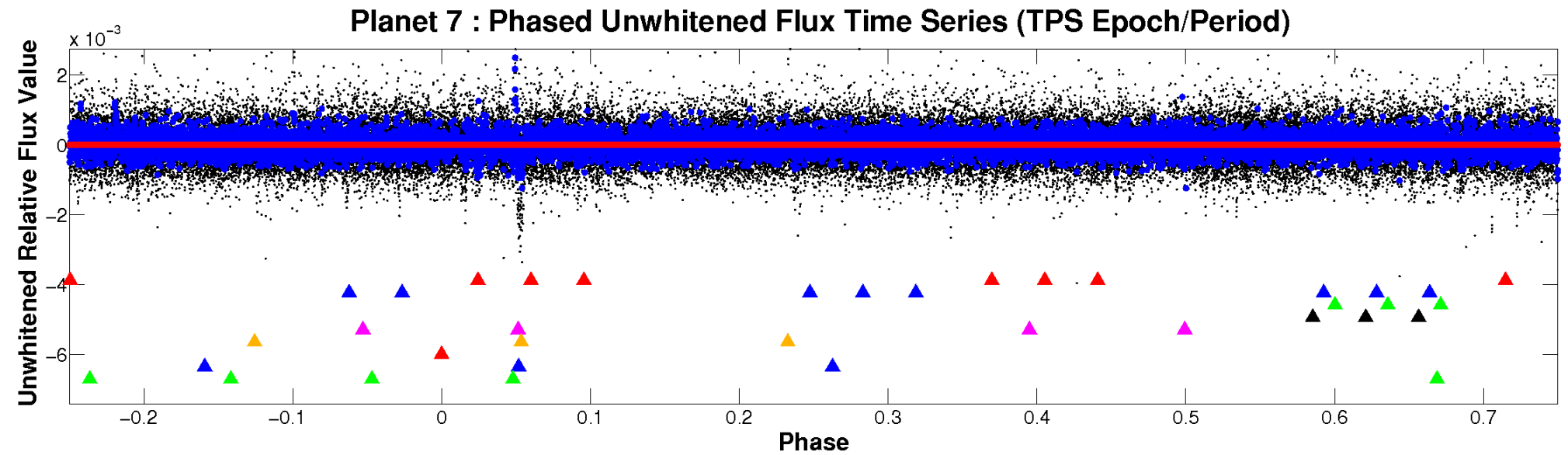


# ALT Odd/Even

TCE 008760135-07



# Non-Whitened Vs. Whitened Light Curve



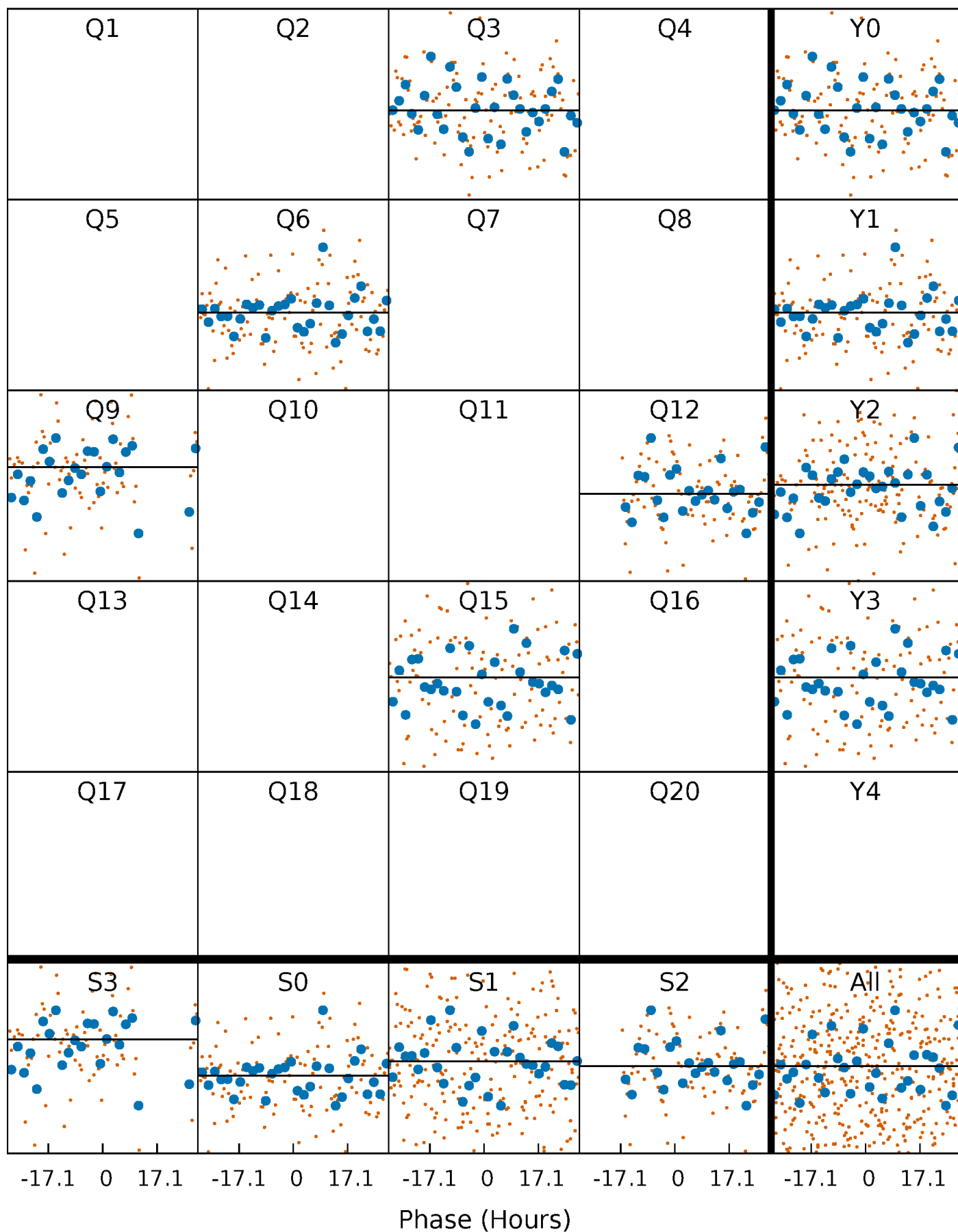
# PDC Quarter-Phased Transit Curves

TCE 008760135-07     $P=281.983128$  Days     $T_0=309.664392$  (BKJD)



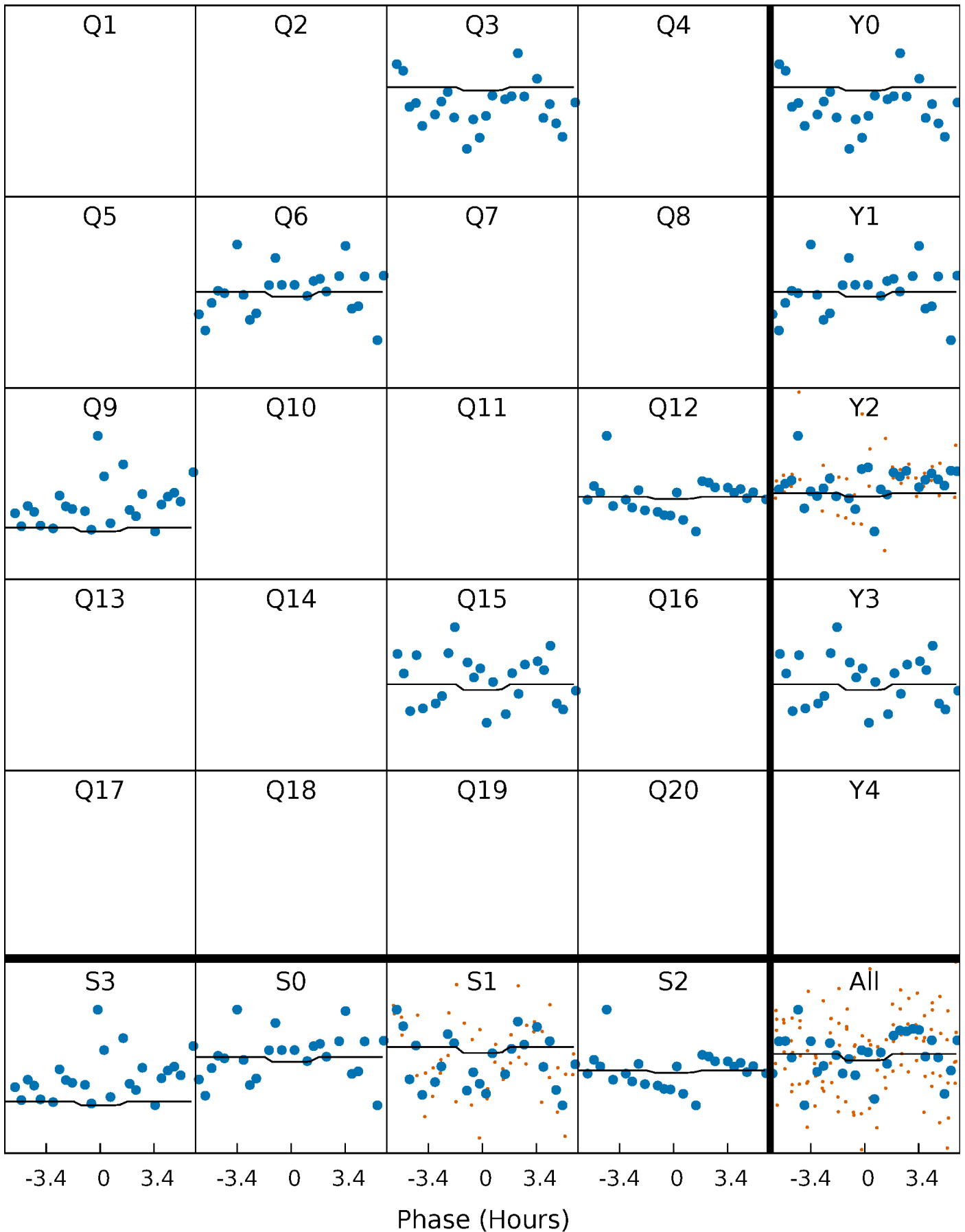
# DV Quarter-Phased Transit Curves

TCE 008760135-07     $P=281.983128$  Days     $T_0=309.664392$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

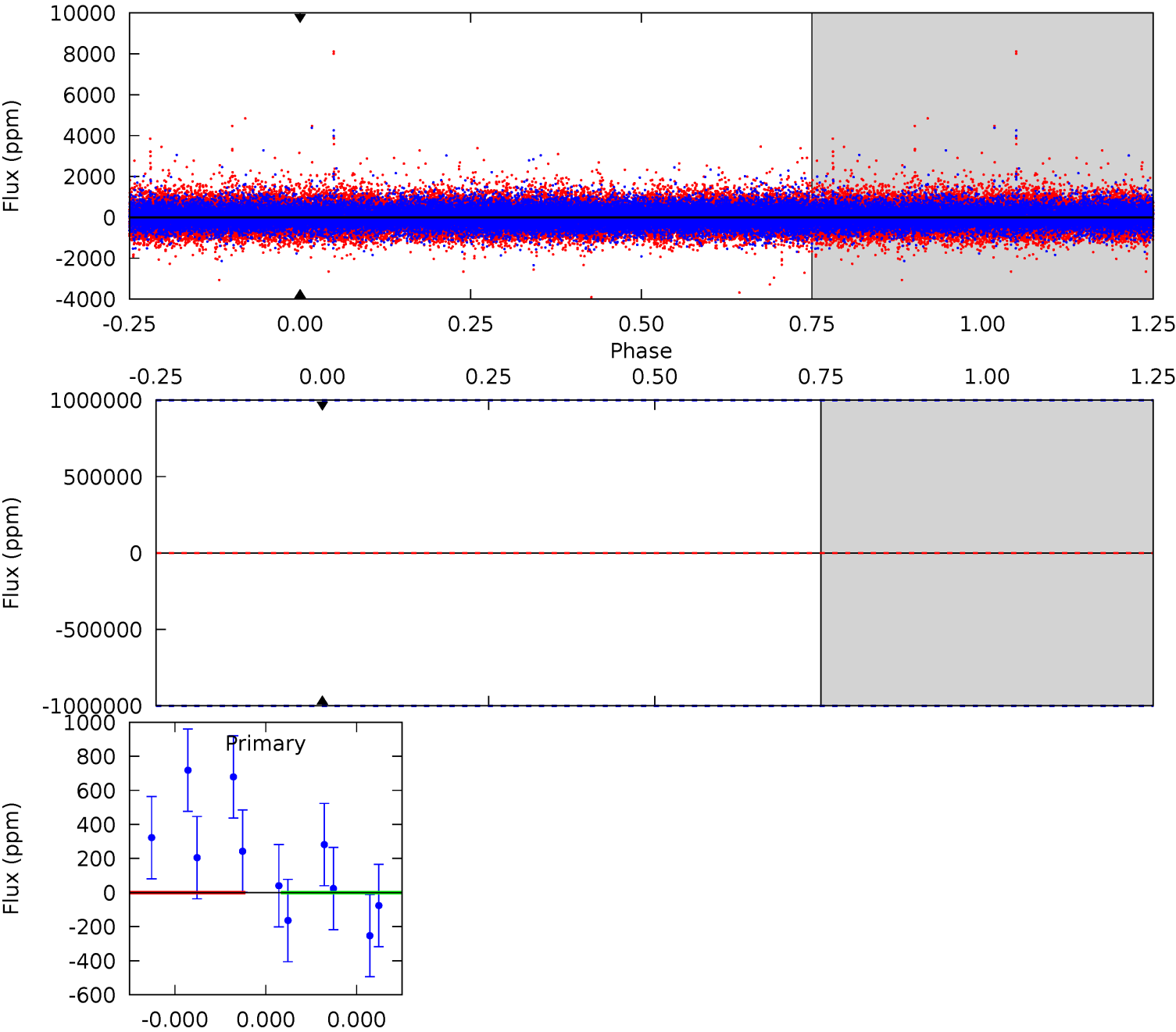
TCE 008760135-07 P=281.983128 Days  $T_0=309.517079$  (BKJD)



# DV Model-Shift Uniqueness Test

008760135-07, P = 281.983128 Days, E = 27.681264 Days

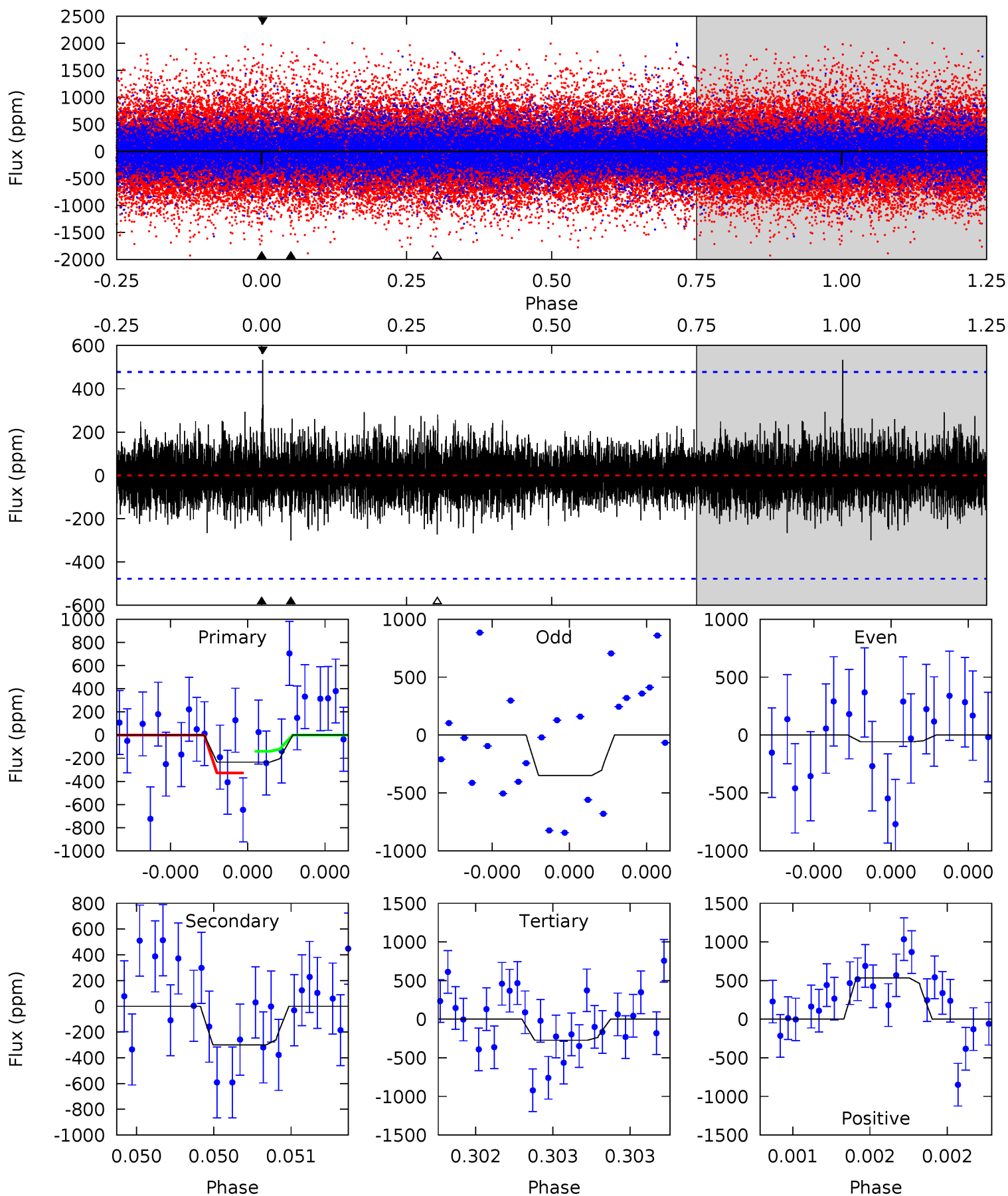
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008760135-07, P = 281.983128 Days, E = 27.533951 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
2.74	3.52	3.19	6.25	5.60	3.51	0.89	-0.46	-3.51	0.32	-2.73	1.66	5.41	0.64	1.09





### Stellar Parameters For KIC 008760135

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5713^{+154}_{-188}$	$4.414^{+0.098}_{-0.196}$	$0.120^{+0.250}_{-0.300}$	$1.023^{+0.289}_{-0.124}$	$0.990^{+0.111}_{-0.100}$	$1.301^{+0.572}_{-0.634}$
	+3%/-3%	+2%/-4%	+208%/-250%	+28%/-12%	+11%/-10%	+44%/-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 008760135-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$9.19^{+9.04}_{-6.61}$	$393^{+28}_{-20}$	$-3451^{+21733}_{-17070}$	$-2218.885^{+780008.642}_{-924595.547}$
Alt.	$-300 \pm 85$	$8.25^{+8.21}_{-5.73}$	$391^{+29}_{-20}$	$3364^{+1667}_{-629}$	$1724^{+14877}_{-1303}$

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

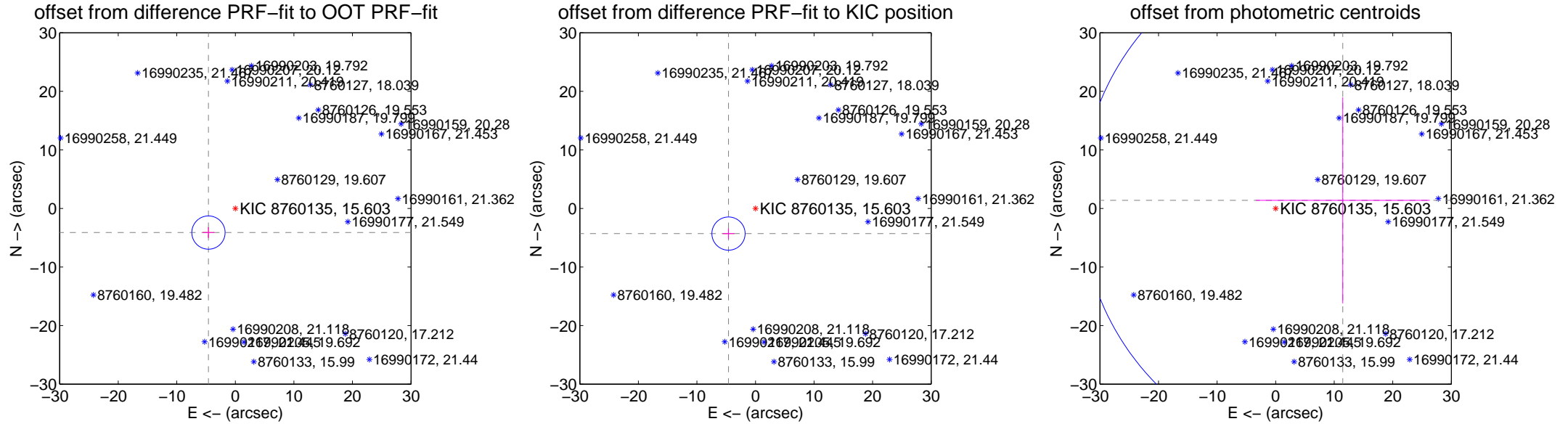
## DV Centroid Data

Supplemental centroid analysis for 008760135-07. Kepler magnitude: 15.60. 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 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$6.166 \pm 0.947$	6.51	$4.590 \pm 0.987$	$-4.117 \pm 0.896$
PRF-fit source offset from KIC position	$6.299 \pm 0.945$	6.66	$4.609 \pm 0.987$	$-4.293 \pm 0.896$
photometric centroid source offset	$11.55 \pm 14.90$	0.78	$-11.46 \pm 14.86$	$1.38 \pm 17.57$



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



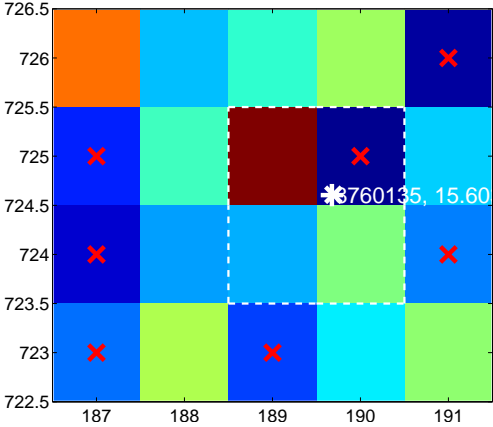
Q2 no difference image



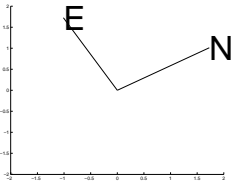
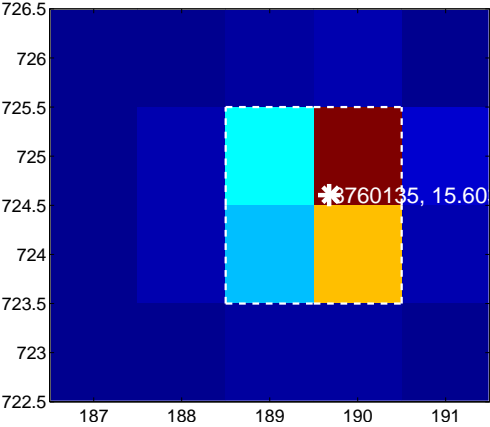
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



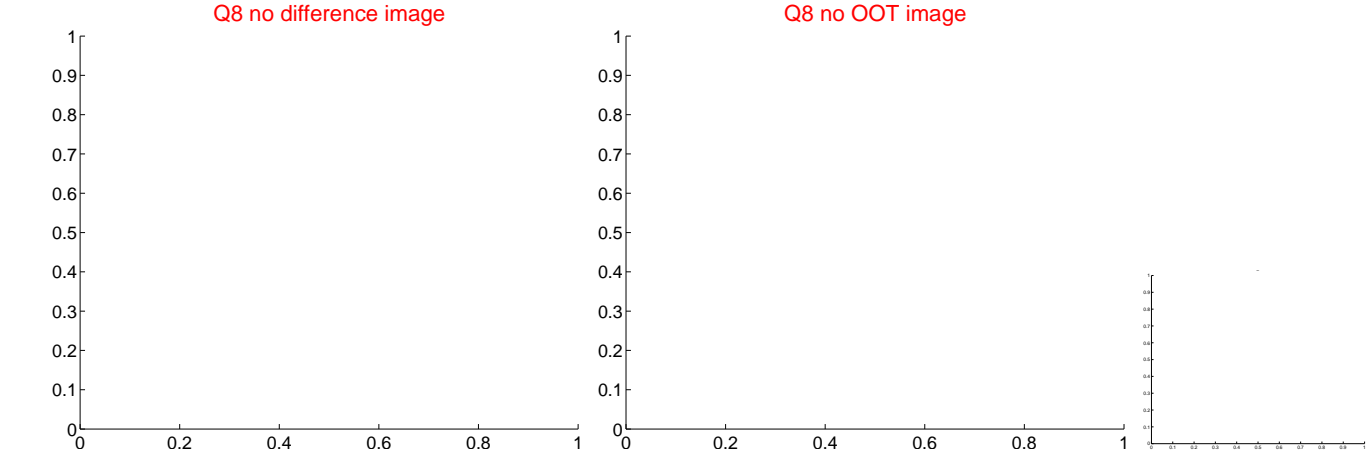
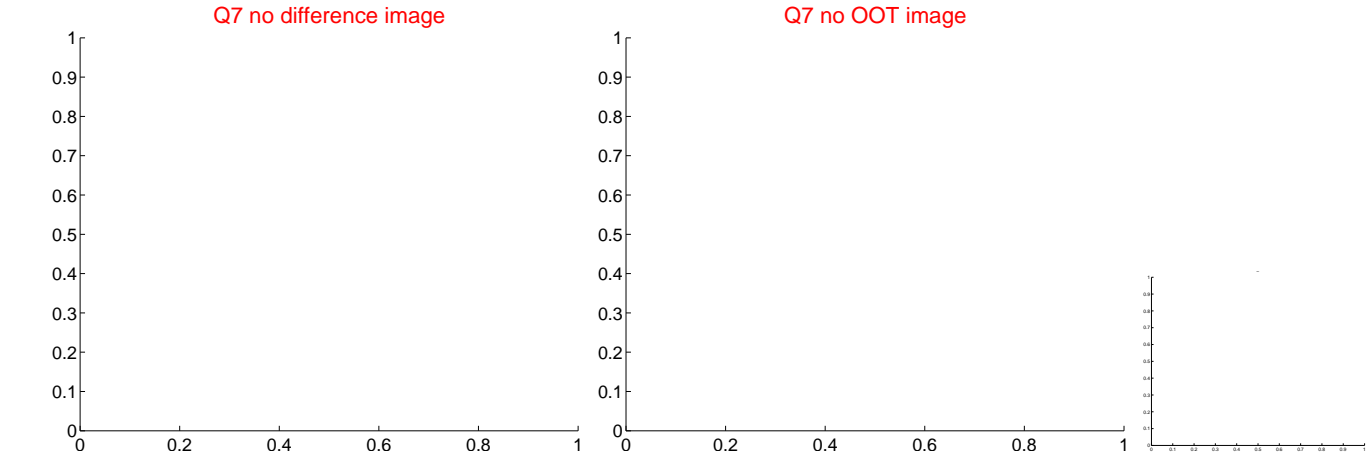
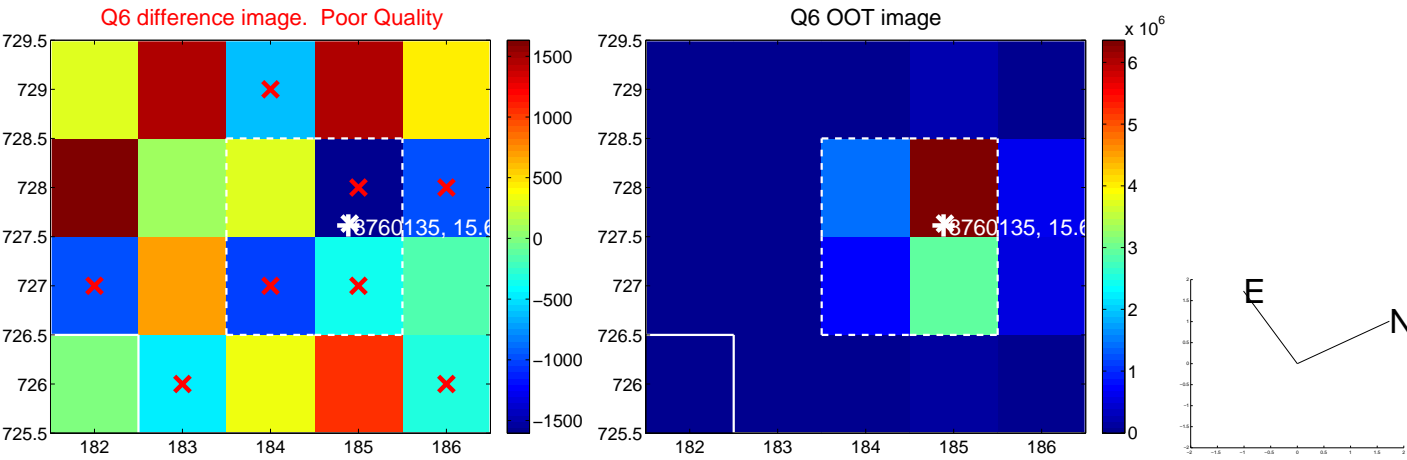
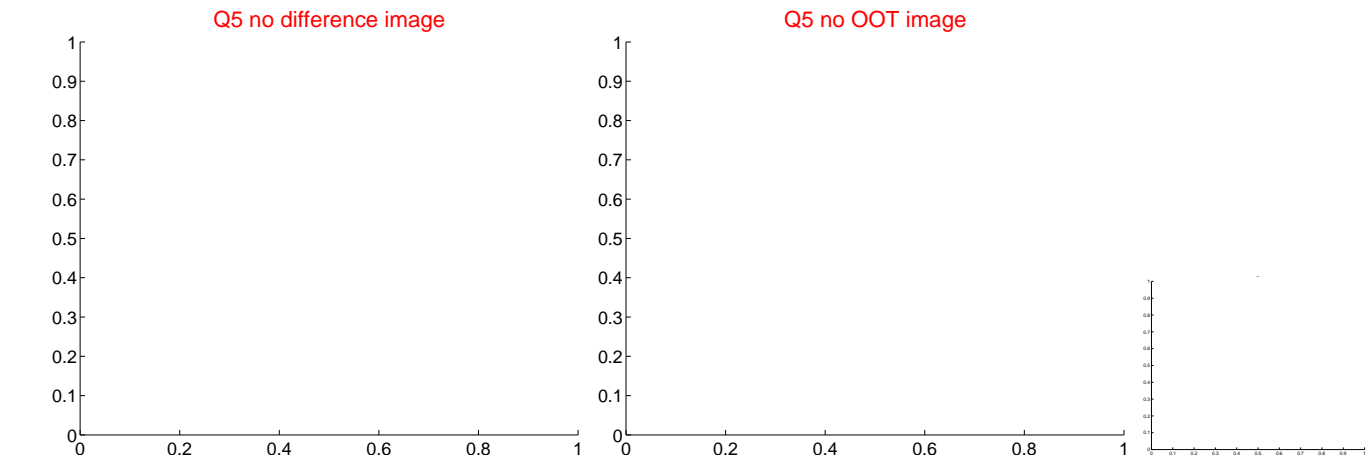
Q4 no difference image



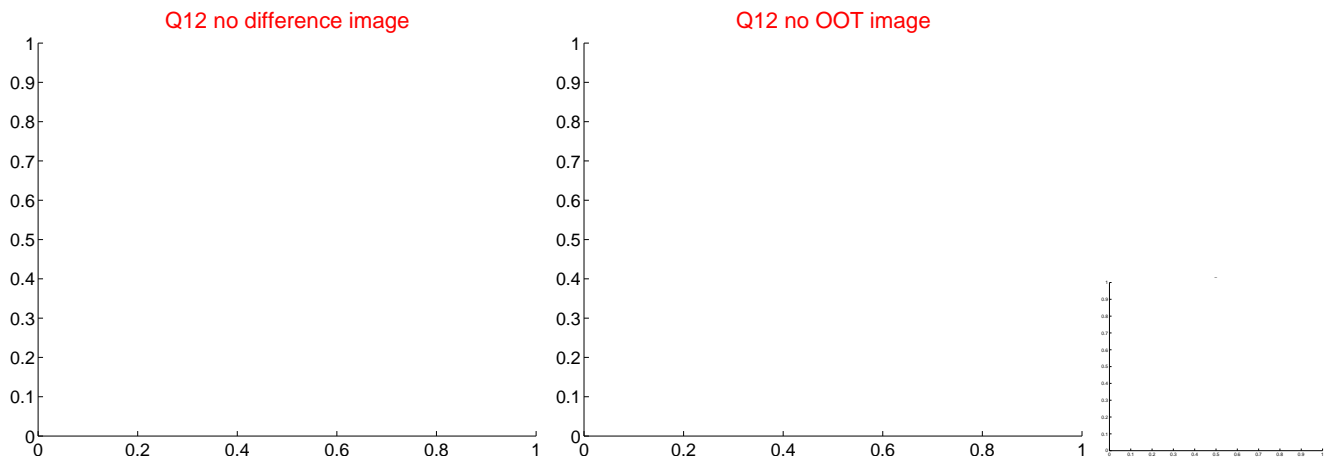
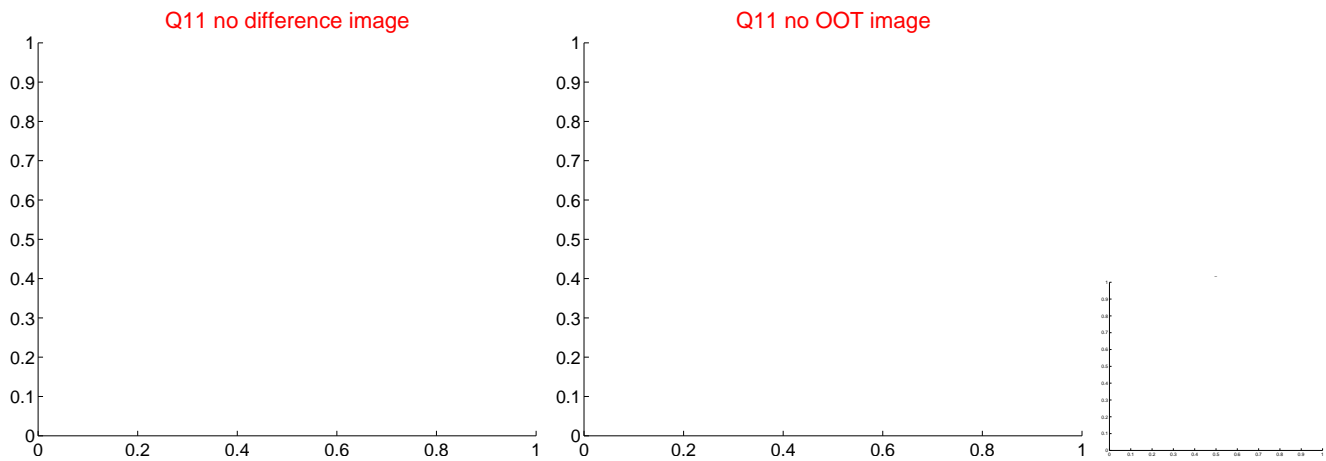
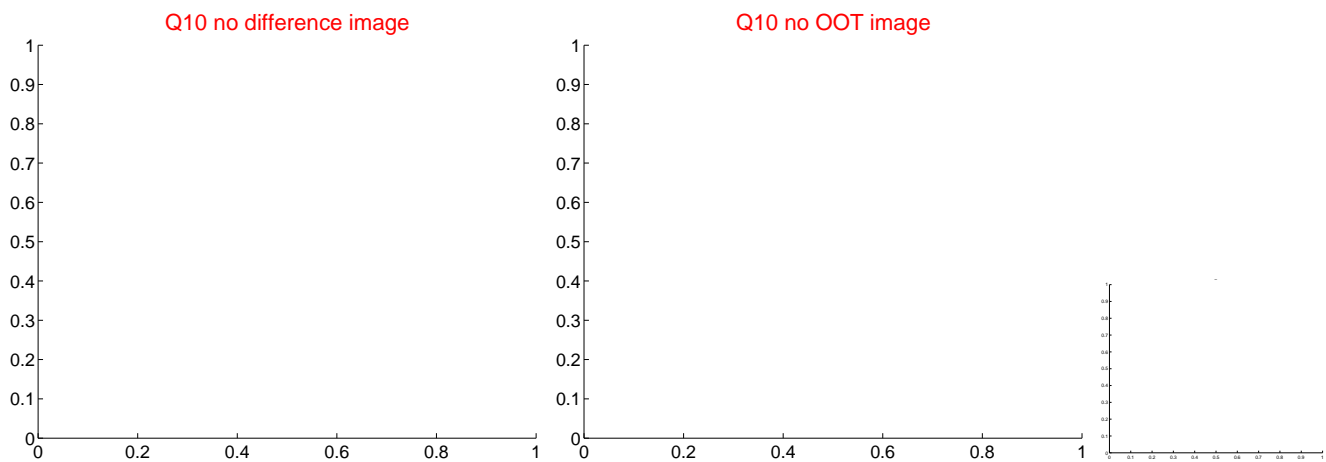
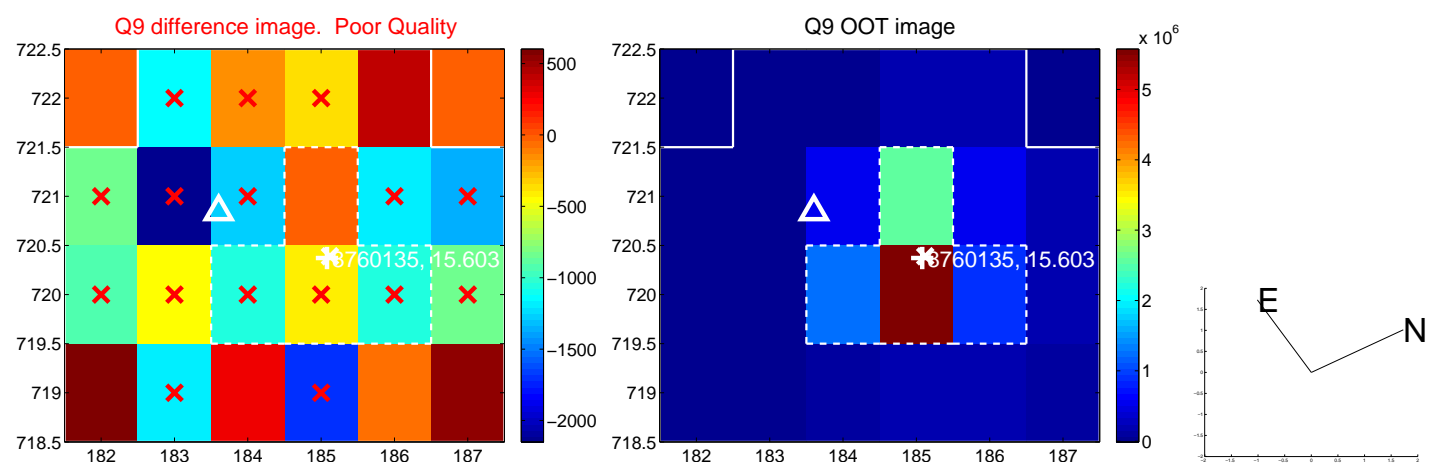
Q4 no OOT image



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



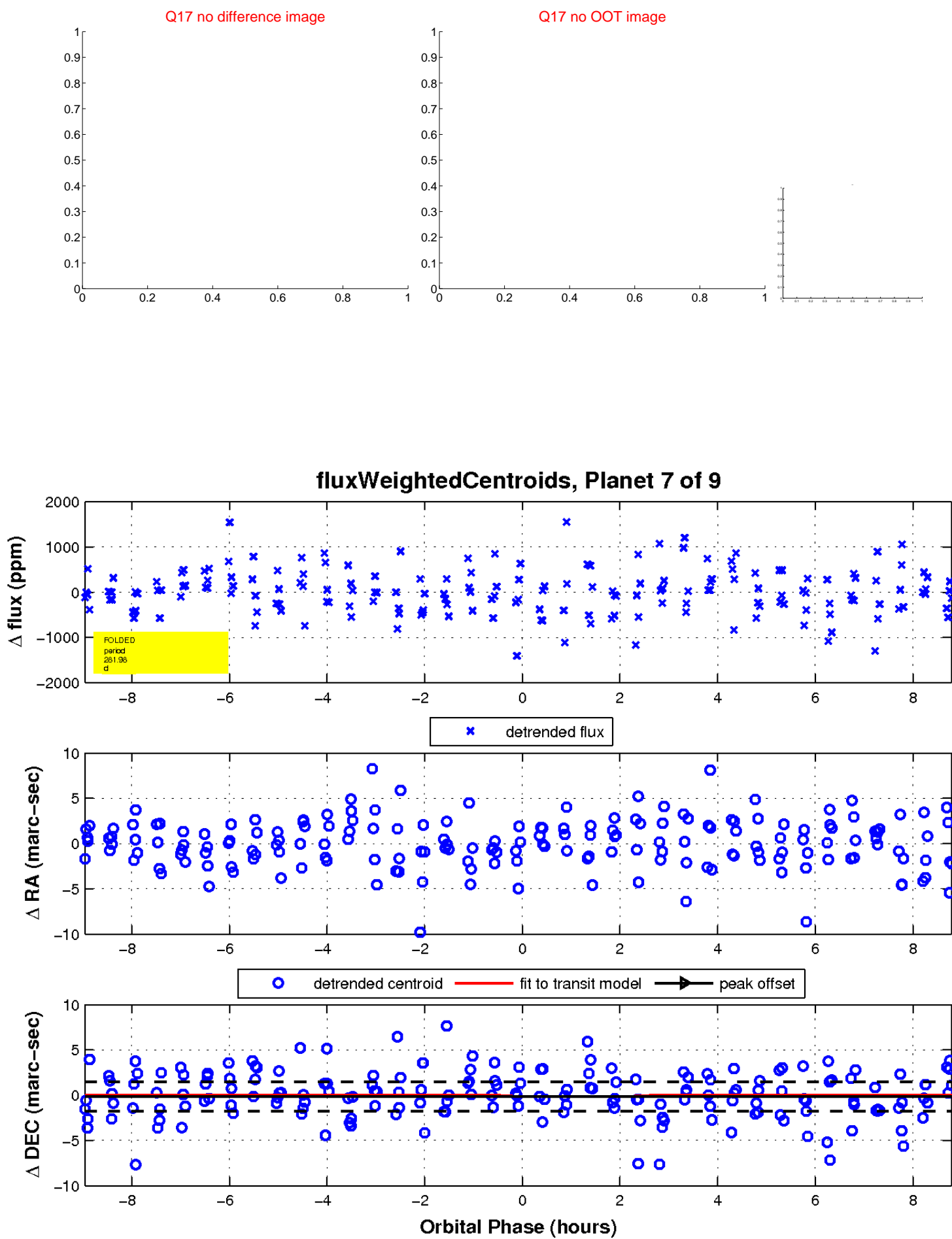
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

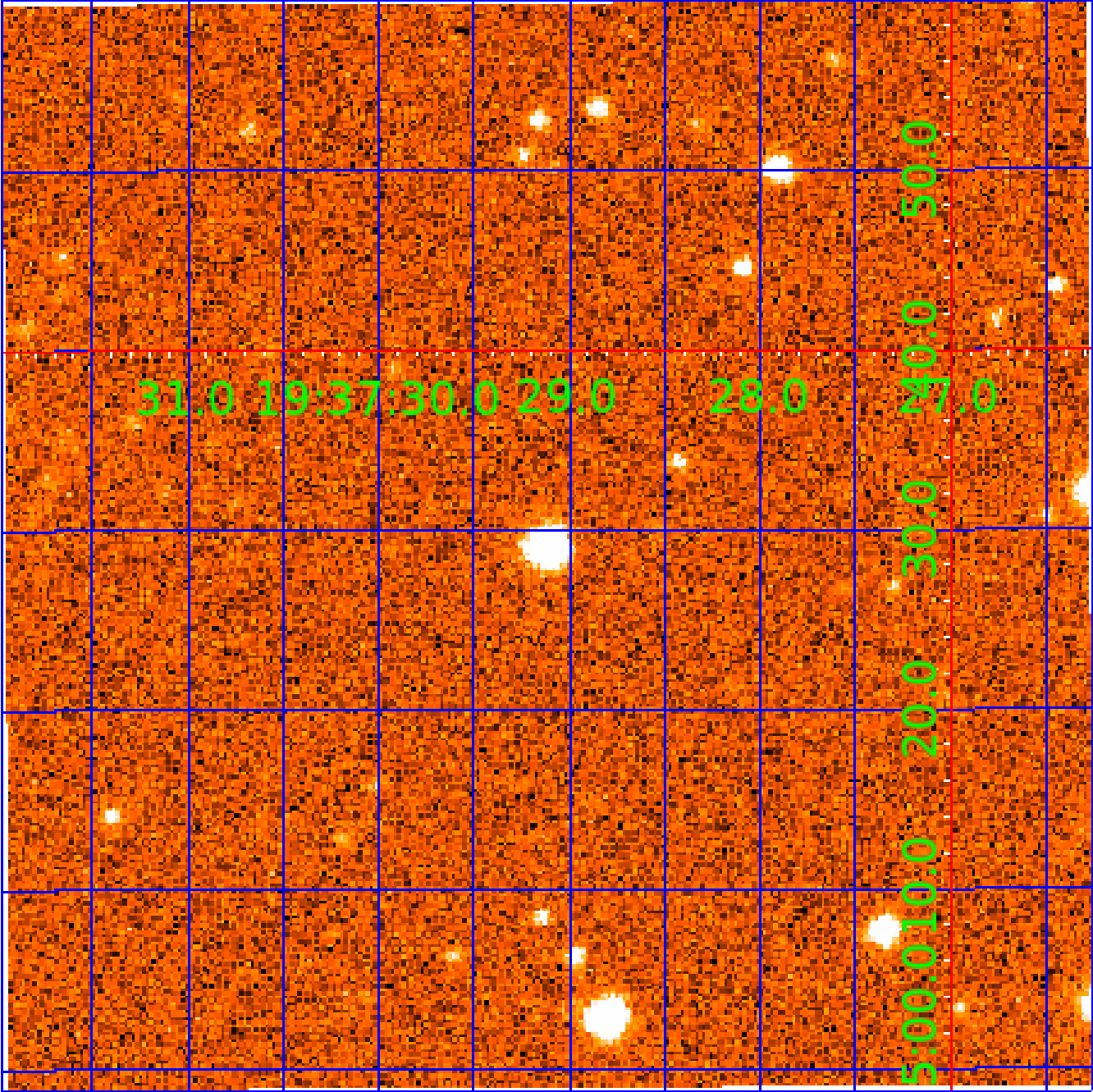


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008760135

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008760135-01	OBS	3524.01	184.644459	151.988827	424552.9	12.000	6016.8	-1.0	1.02	5713	55.82	2.50
008760135-02	OBS	No	184.644459	214.876513	441284.4	9.000	4578.3	-1.0	1.02	5713	55.82	2.50
008760135-03	OBS	No	553.955377	216.966291	2897.5	29.072	34.3	20.7	1.02	5713	10.37	0.58
008760135-05	OBS	No	437.680044	139.064600	2197.0	15.000	26.2	-1.0	1.02	5713	4.73	0.79
008760135-06	OBS	No	614.478016	274.232599	3990.5	3.500	17.5	-1.0	1.02	5713	6.39	0.50
008760135-07	OBS	No	281.983128	309.664392	1366.0	15.000	16.0	-1.0	1.02	5713	3.73	1.42
008760135-08	OBS	No	623.443297	264.789931	3624.4	52.688	23.3	16.1	1.02	5713	11.56	0.49
008760135-09	OBS	No	308.710224	216.283023	1491.6	15.000	20.5	-1.0	1.02	5713	3.90	1.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008760135-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—CENT_NOFITS
008760135-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
008760135-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS
008760135-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008760135-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—CENT_NOFITS

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

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

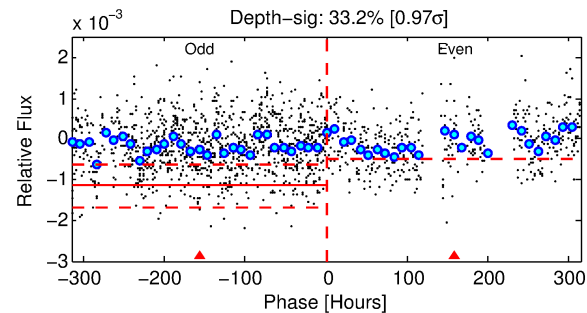
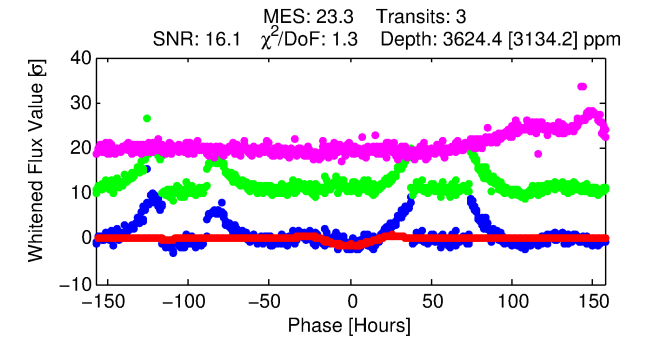
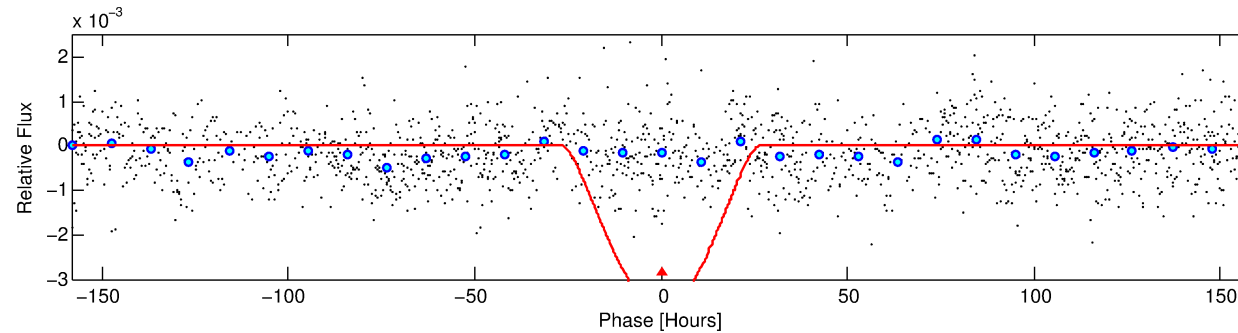
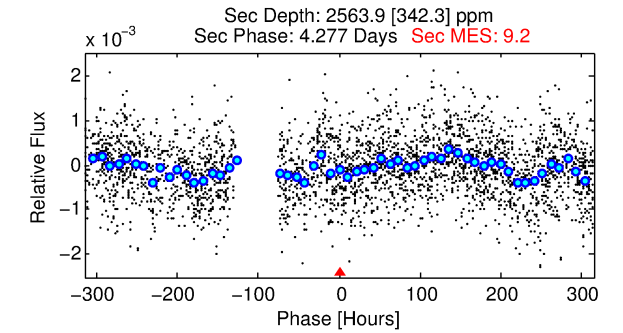
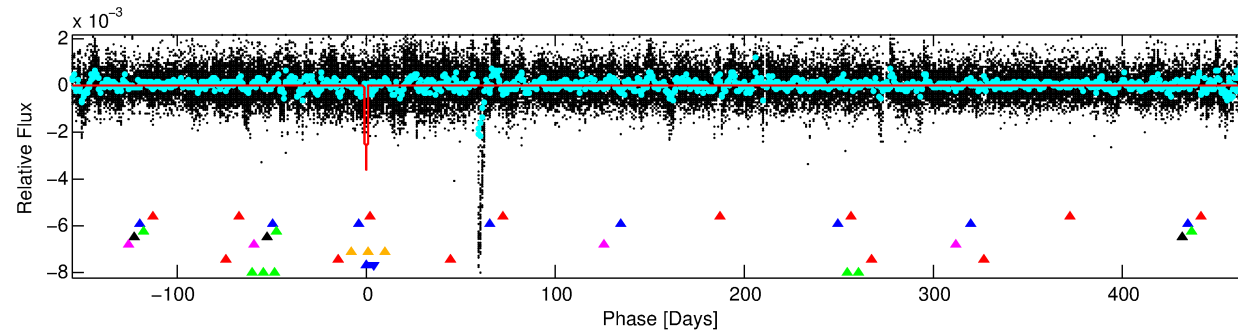
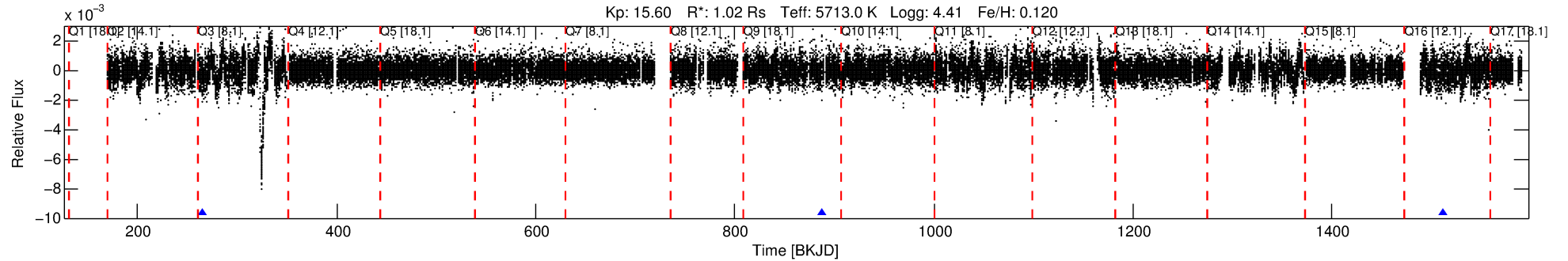
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008760135-08

No Significant Match Found

# DV One-Page Summary

KIC: 8760135 Candidate: 8 of 9 Period: 623.443 d  
KOI: K03524 Corr: No Ephemeris Match



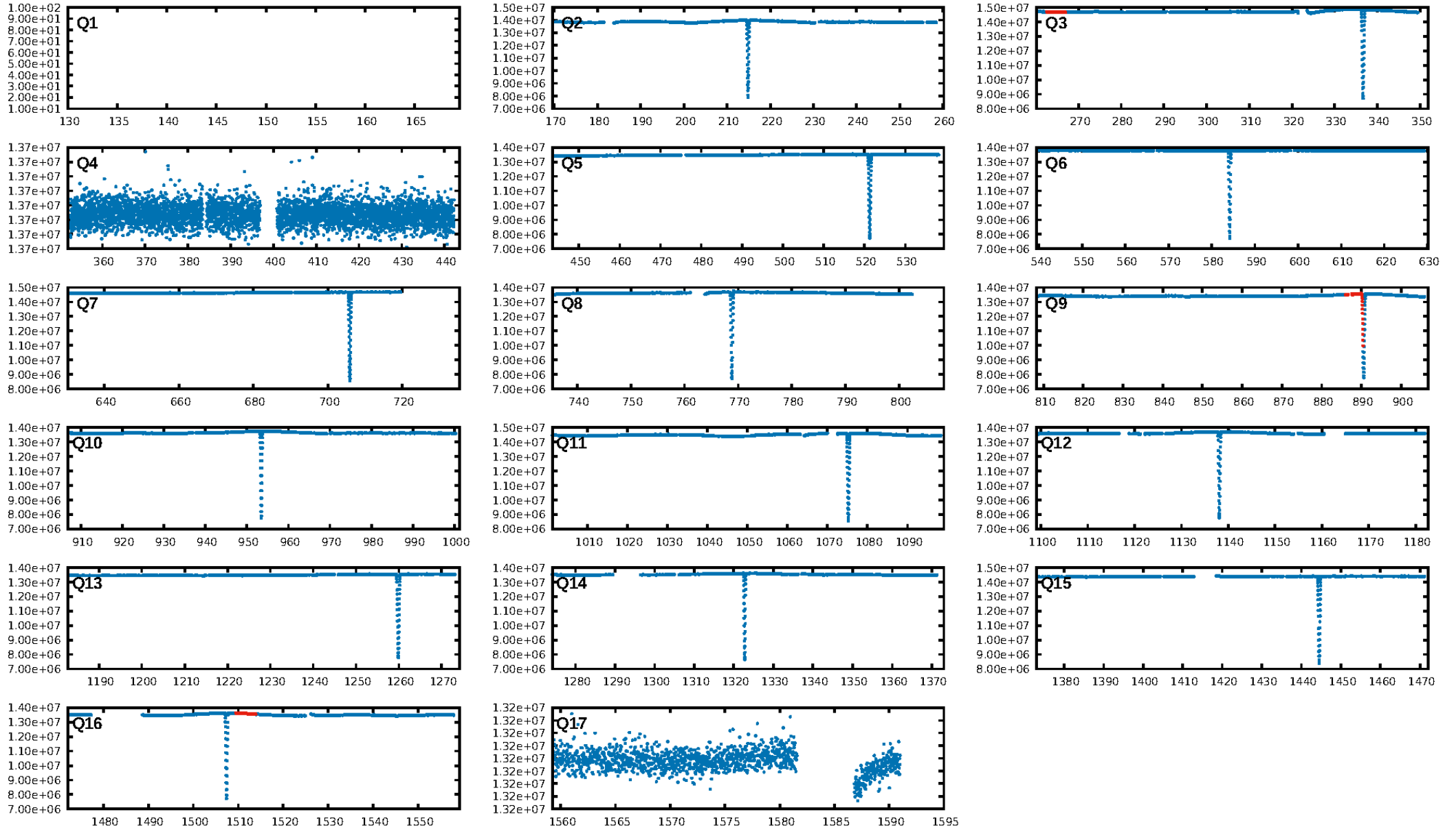
## DV Fit Results:

Period = 623.44330 [0.05782] d  
Epoch = 264.7899 [0.0843] BKJD  
Rp/R\* = 0.1036 [0.2209]  
a/R\* = 42.21 [17.45]  
b = 1.00 [0.37]  
Seff = 0.49 [0.19]  
Teq = 214 [20] K  
Rp = 11.56 [24.87] Re  
a = 1.4239 [0.3432] AU  
Ag = 21399.67 [91654.84] [0.23σ]  
Teffp = 3995 [4265] K [0.89σ]

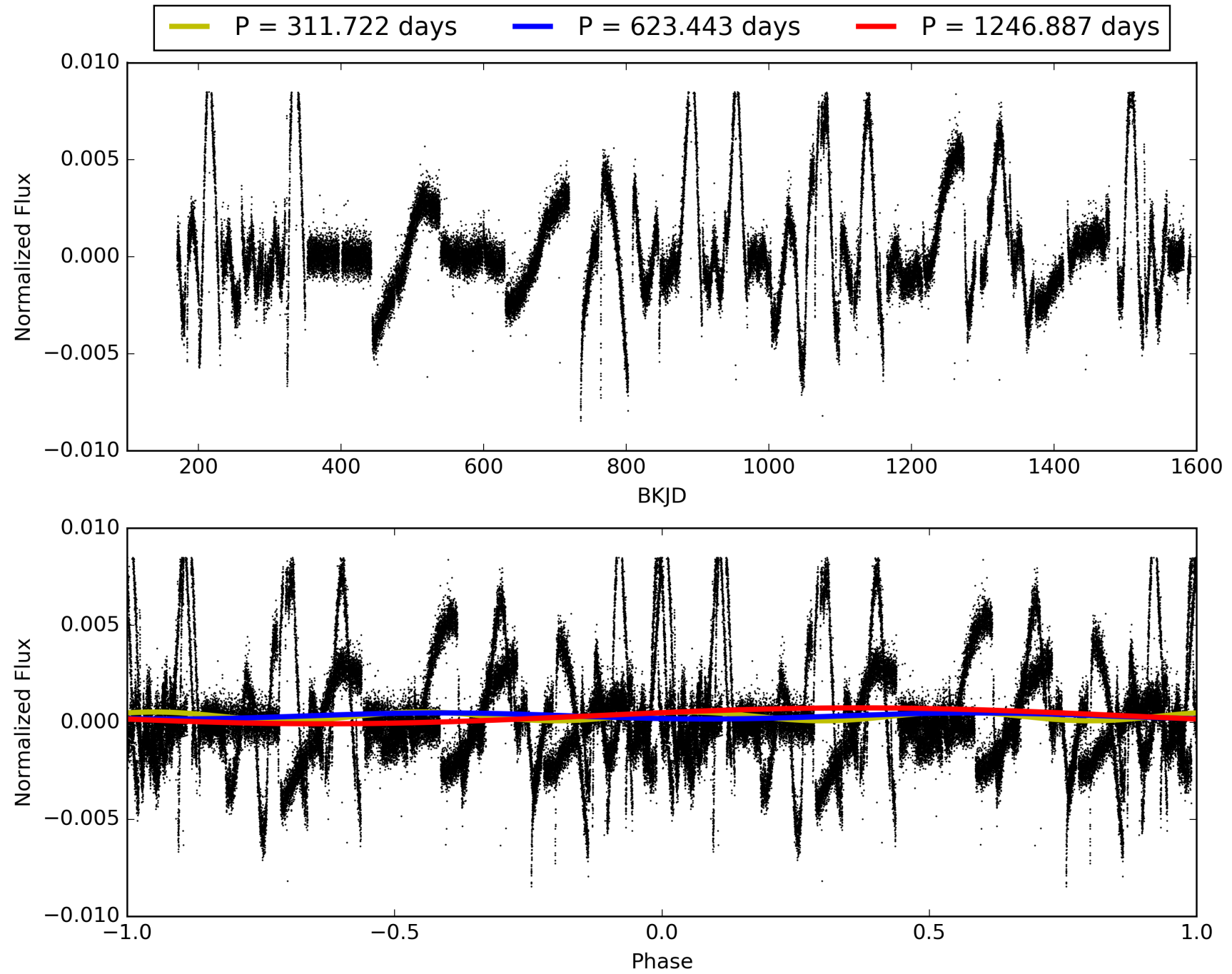
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.07σ]  
LongPeriod-sig: N/A  
**ModelChiSquare2-sig: 0.1%**  
ModelChiSquareGof-sig: 99.8%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.7007**  
Centroid-sig: N/A  
Centroid-so: 0.225 arcsec [1.16σ]  
OotOffset-rm: N/A  
OotOffset-st: 0/0/0 [0]  
KicOffset-rm: N/A  
KicOffset-st: 0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: N/A

# TCE 008760135-08, PDC Light Curves

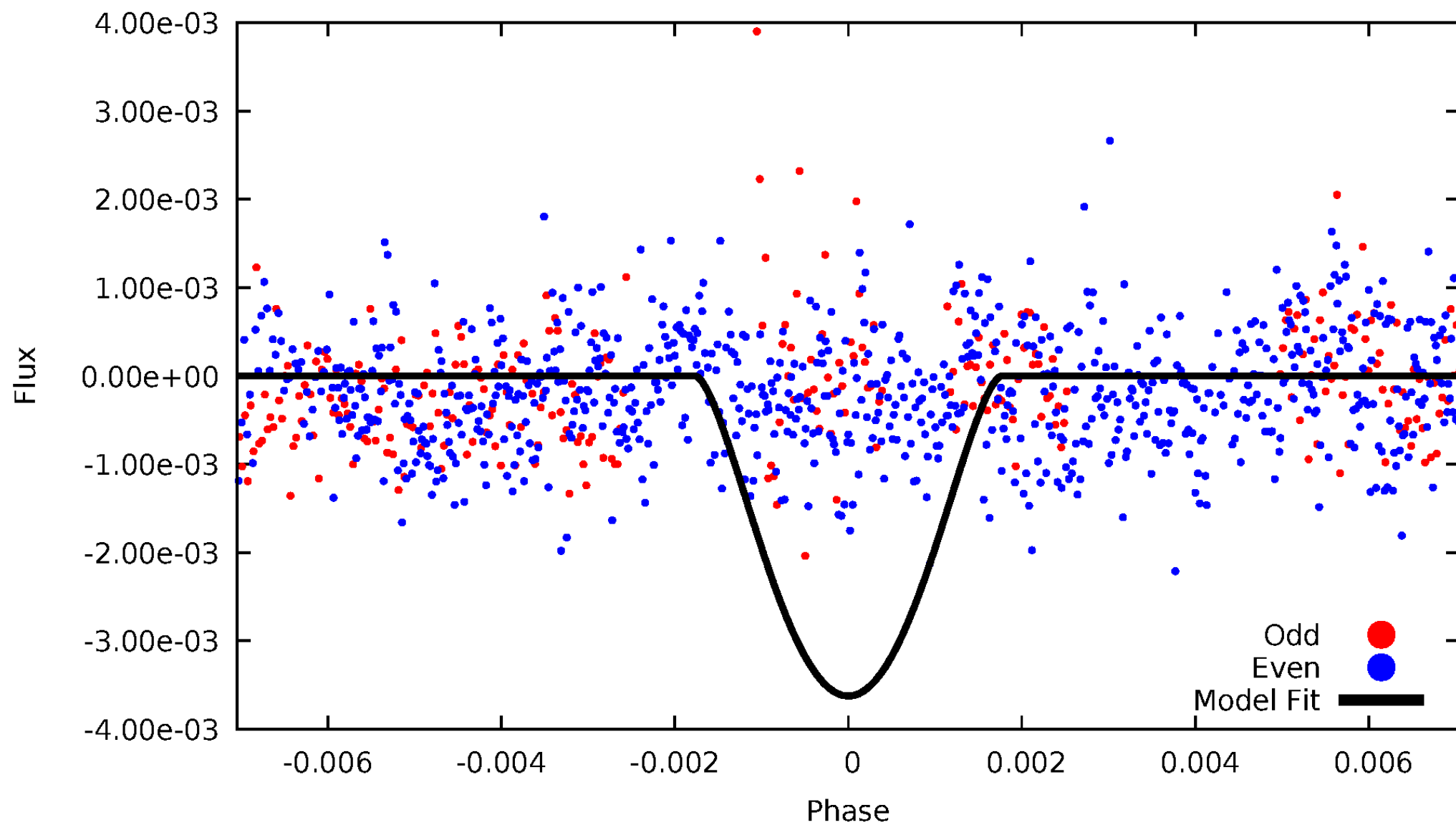


TCE 008760135-08



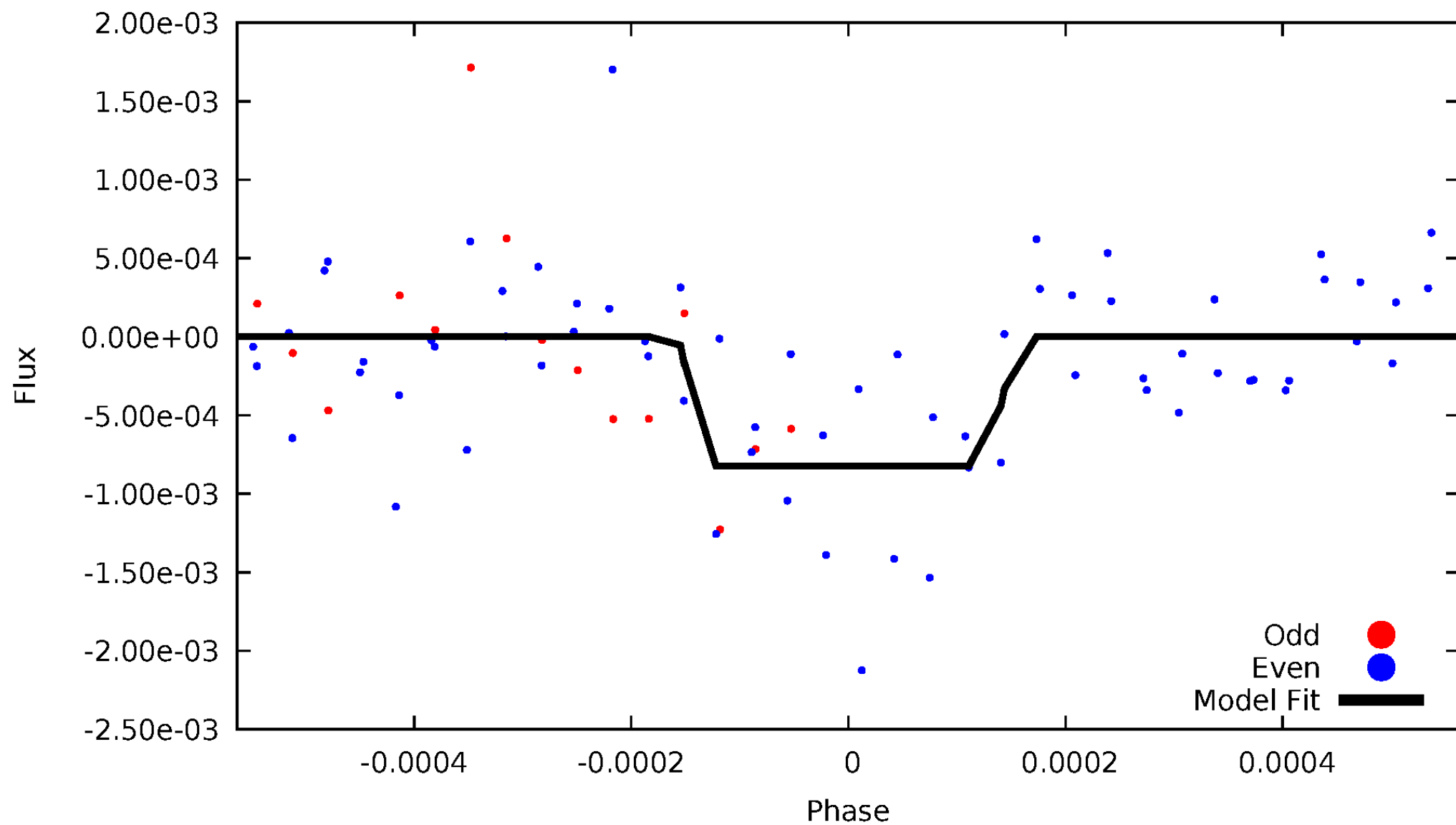
# DV Odd/Even

TCE 008760135-08



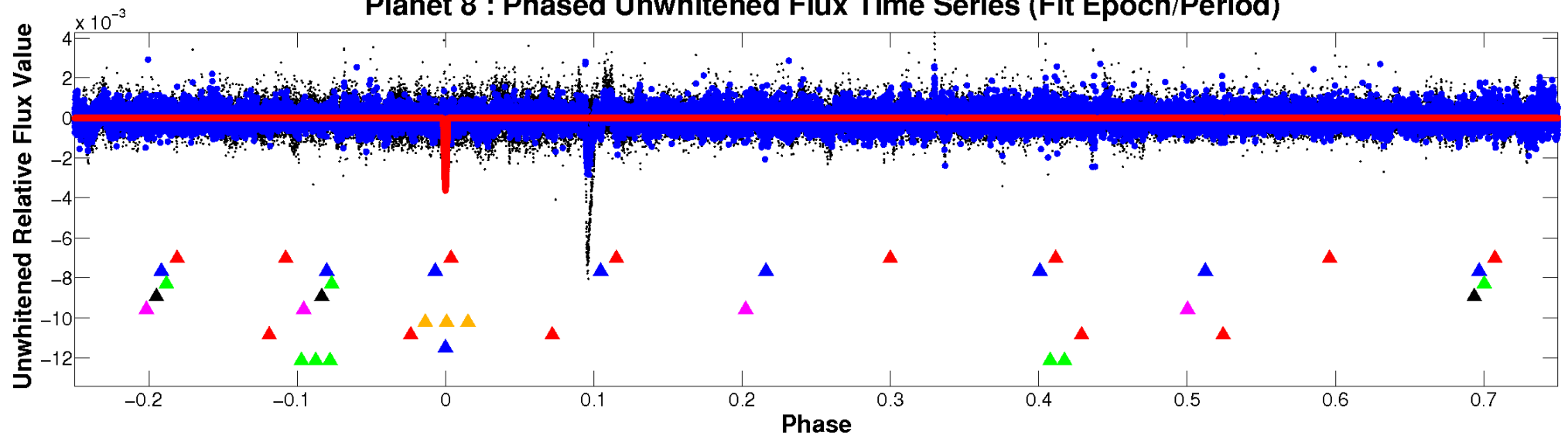
# ALT Odd/Even

TCE 008760135-08

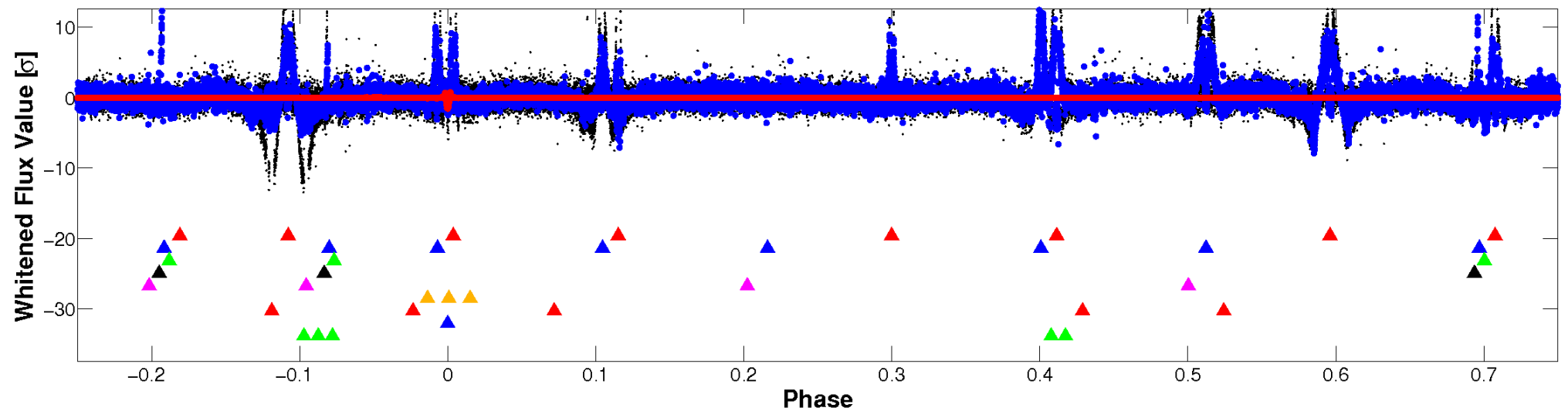


# Non-Whitened Vs. Whitened Light Curve

## Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

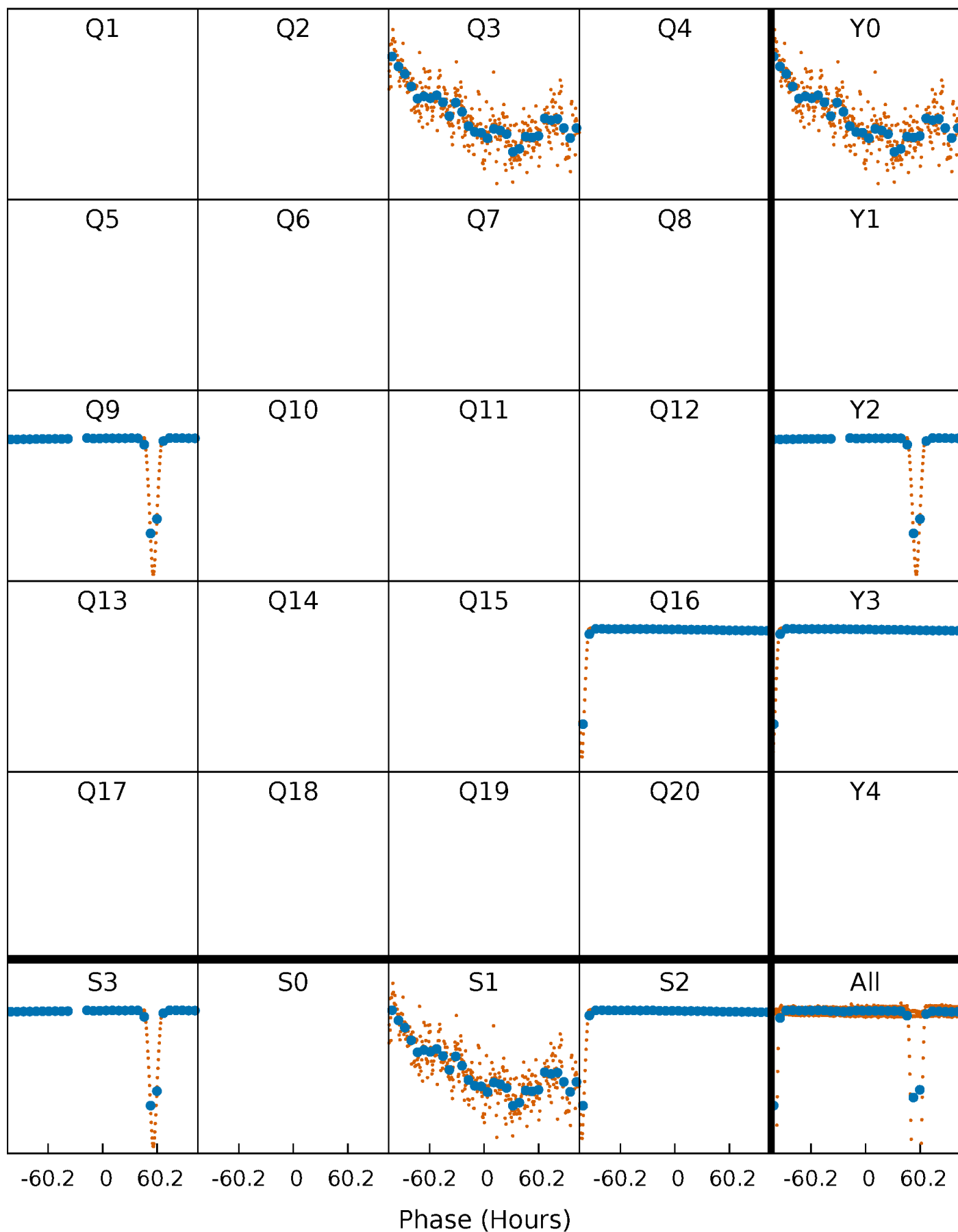


## Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

TCE 008760135-08 P=623.443297 Days  $T_0=264.789931$  (BKJD)





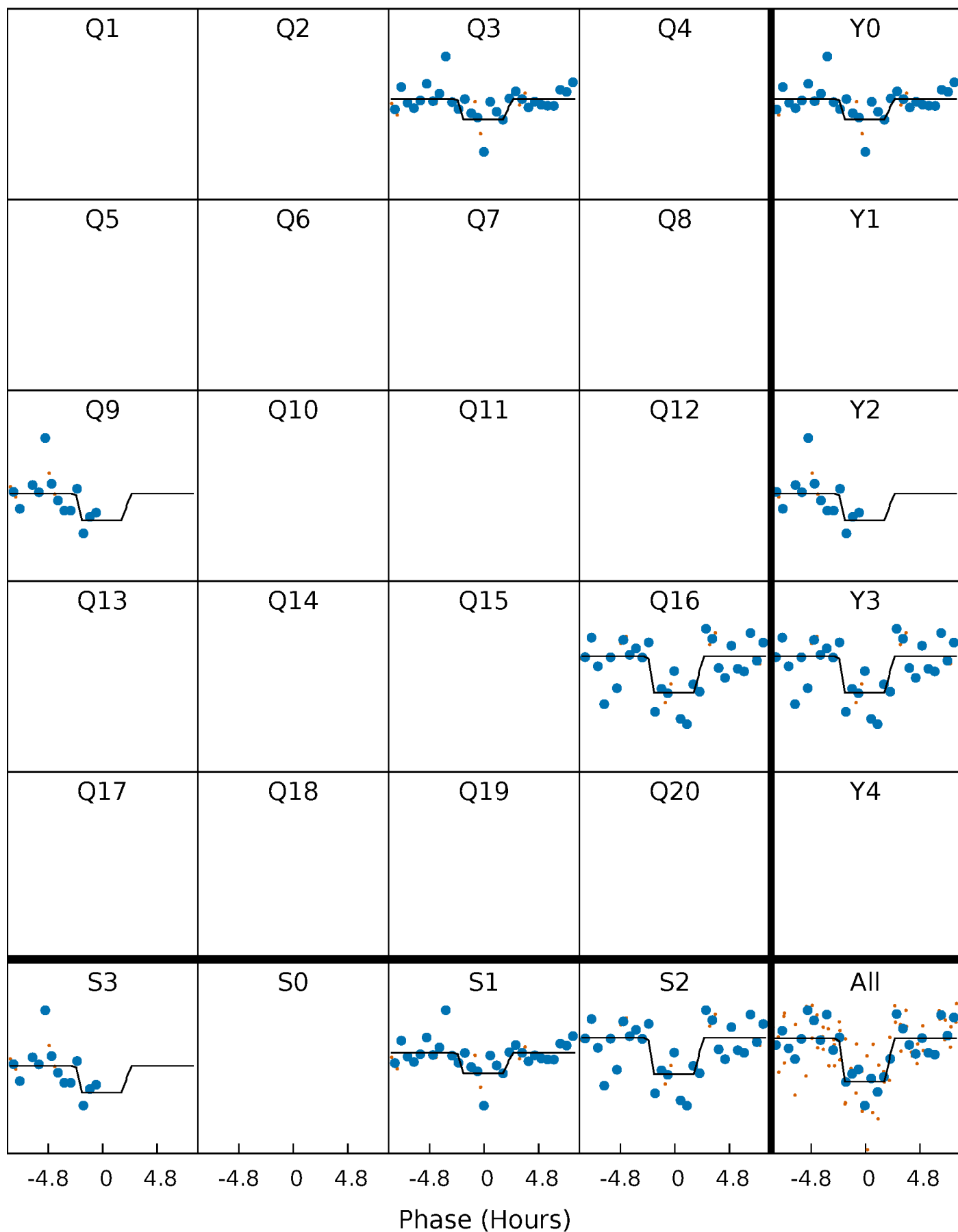
# DV Quarter-Phased Transit Curves

TCE 008760135-08     $P=623.443297$  Days     $T_0=264.789931$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

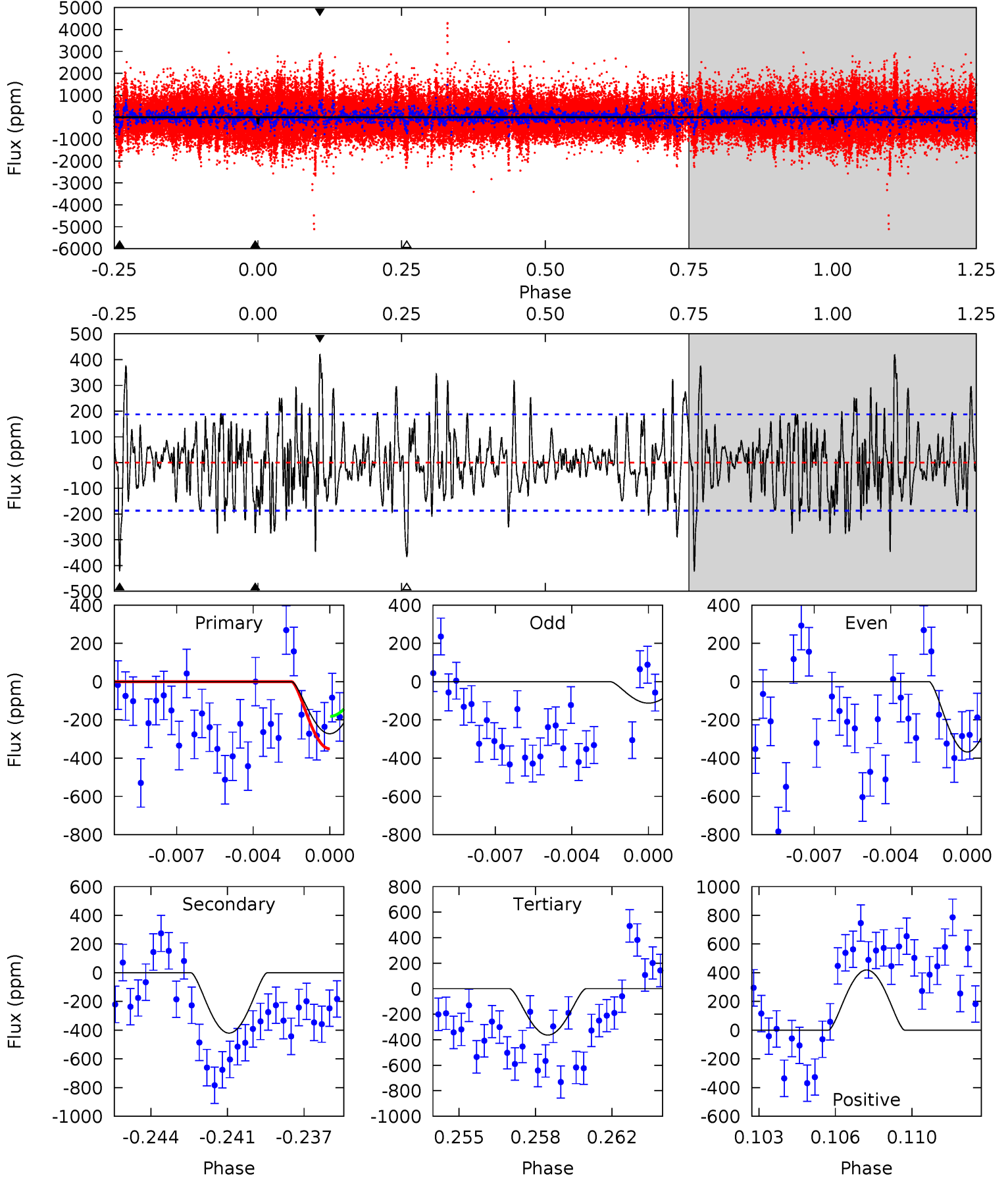
TCE 008760135-08 P=623.141846 Days  $T_0=265.366288$  (BKJD)



# DV Model-Shift Uniqueness Test

008760135-08, P = 623.443297 Days, E = 264.789931 Days

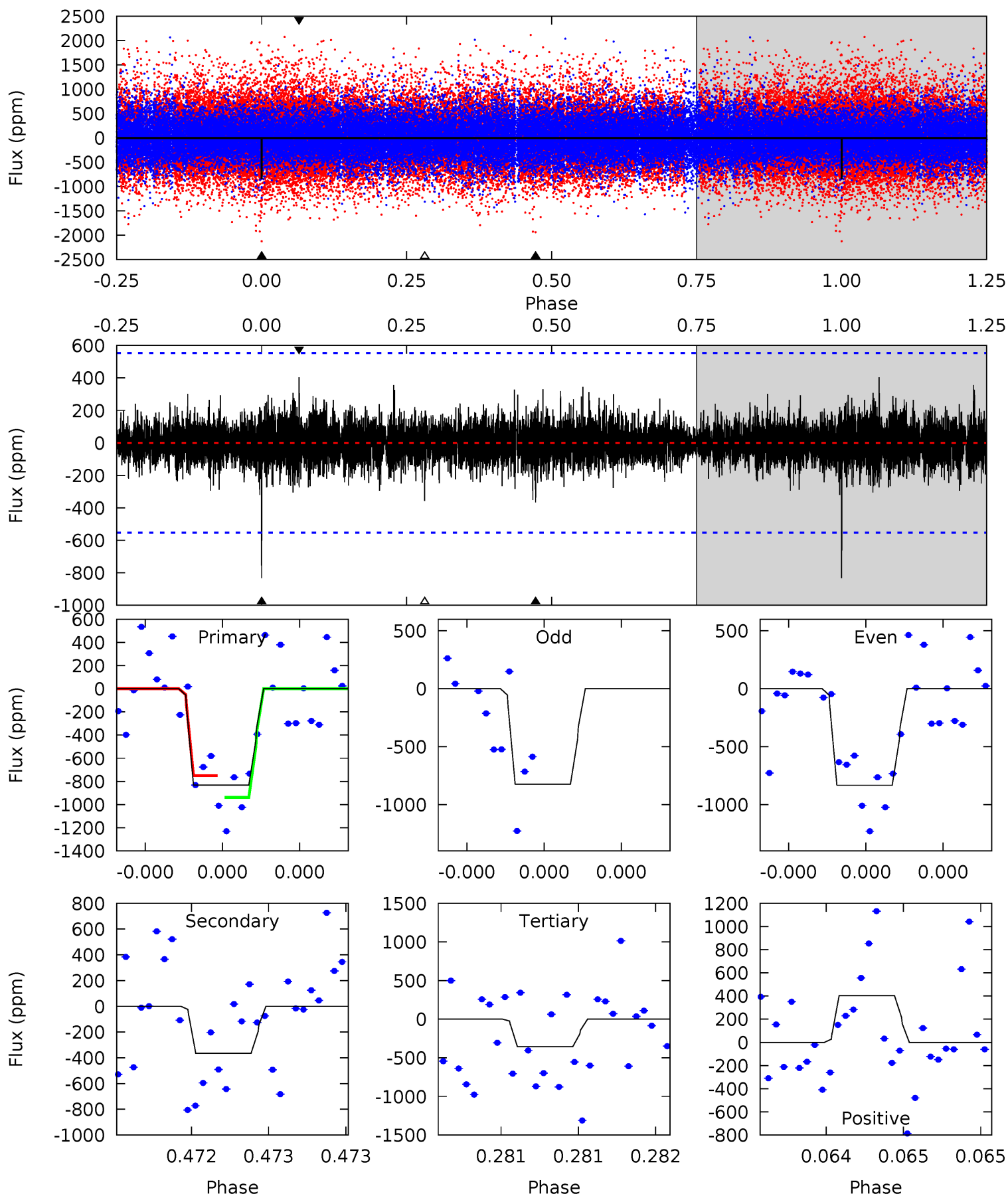
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.60	11.7	10.1	11.7	5.22	2.92	3.11	-2.55	-4.11	1.59	0.03	3.05	2.06	0.50	2.39



# Alt Model-Shift Uniqueness Test

008760135-08, P = 623.141846 Days, E = 265.366288 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.49	3.73	3.65	4.13	5.65	3.59	0.80	4.85	4.37	0.08	-0.40	0.04	1.01	0.33	0.96



### Stellar Parameters For KIC 008760135

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5713^{+154}_{-188}$	$4.414^{+0.098}_{-0.196}$	$0.120^{+0.250}_{-0.300}$	$1.023^{+0.289}_{-0.124}$	$0.990^{+0.111}_{-0.100}$	$1.301^{+0.572}_{-0.634}$
	+3%/-3%	+2%/-4%	+208%/-250%	+28%/-12%	+11%/-10%	+44%/-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 008760135-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-420 \pm 36$	$23.23^{+21.61}_{-16.15}$	$301^{+20}_{-16}$	$2614^{+1044}_{-365}$	$841^{+7589}_{-617}$
Alt.	$-365 \pm 98$	$20.48^{+18.05}_{-14.12}$	$302^{+21}_{-18}$	$2653^{+1054}_{-399}$	$911^{+9063}_{-667}$

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

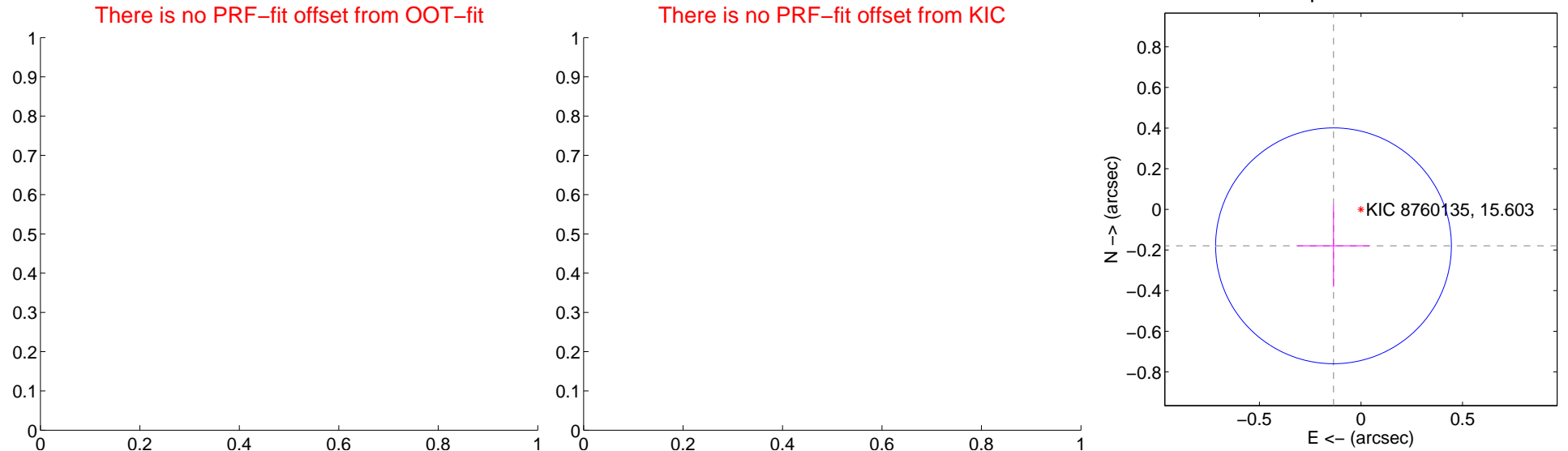
## DV Centroid Data

Supplemental centroid analysis for 008760135-08. Kepler magnitude: 15.60. Transit SNR 16.10

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$0.22 \pm 0.19$	1.16	$0.14 \pm 0.18$	$-0.18 \pm 0.20$



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

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



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





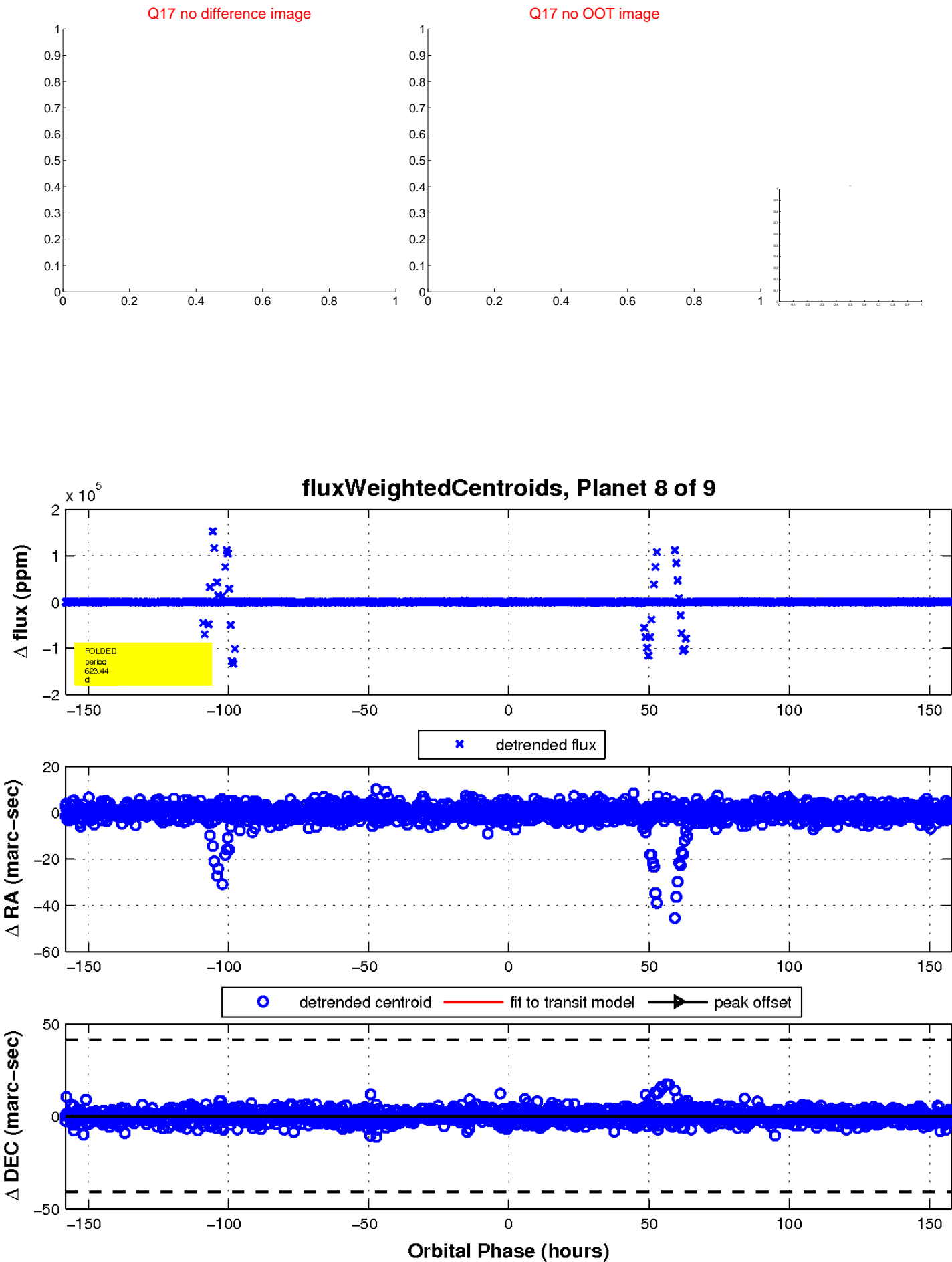
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

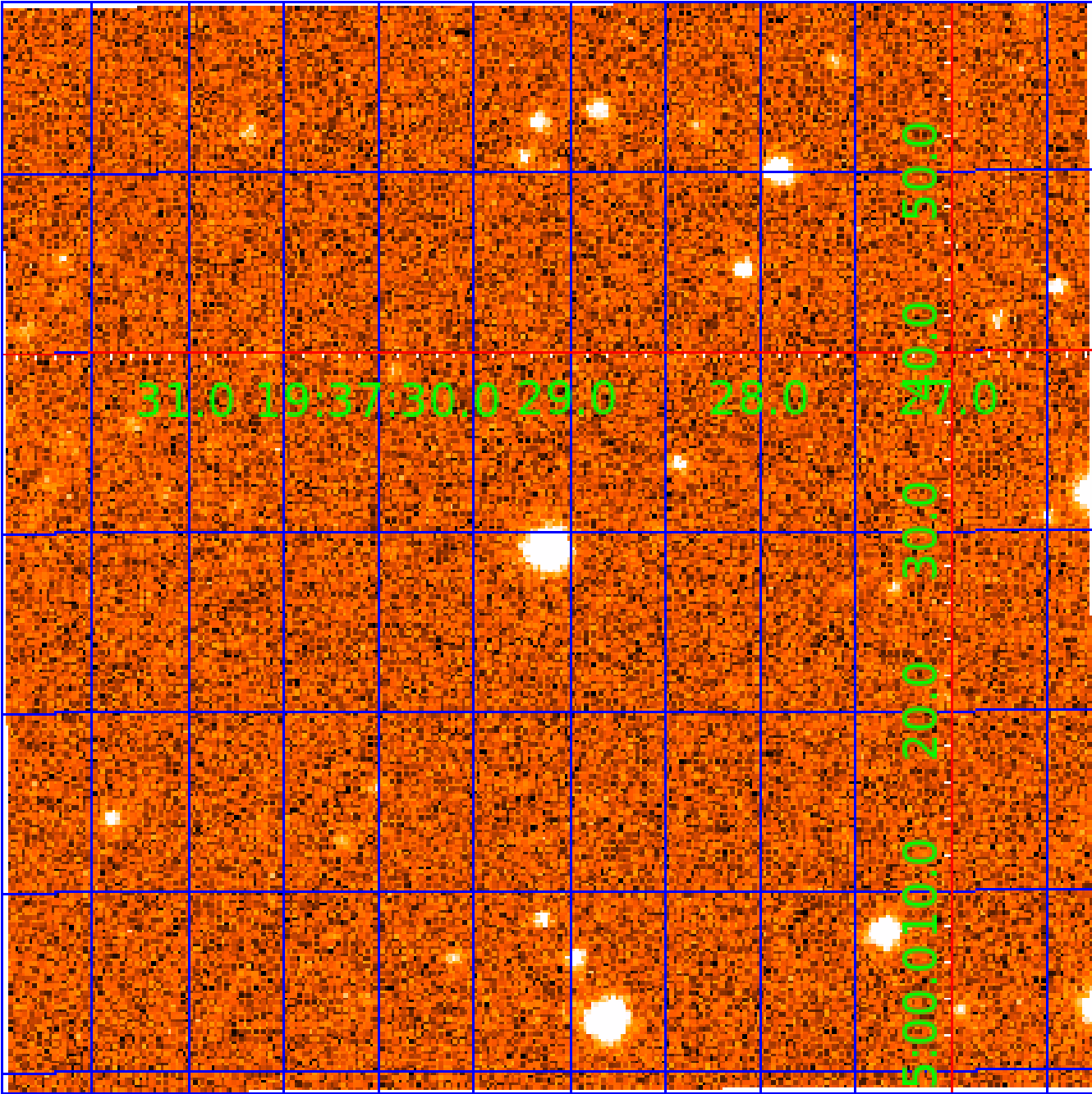


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008760135

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008760135-01	OBS	3524.01	184.644459	151.988827	424552.9	12.000	6016.8	-1.0	1.02	5713	55.82	2.50
008760135-02	OBS	No	184.644459	214.876513	441284.4	9.000	4578.3	-1.0	1.02	5713	55.82	2.50
008760135-03	OBS	No	553.955377	216.966291	2897.5	29.072	34.3	20.7	1.02	5713	10.37	0.58
008760135-05	OBS	No	437.680044	139.064600	2197.0	15.000	26.2	-1.0	1.02	5713	4.73	0.79
008760135-06	OBS	No	614.478016	274.232599	3990.5	3.500	17.5	-1.0	1.02	5713	6.39	0.50
008760135-07	OBS	No	281.983128	309.664392	1366.0	15.000	16.0	-1.0	1.02	5713	3.73	1.42
008760135-08	OBS	No	623.443297	264.789931	3624.4	52.688	23.3	16.1	1.02	5713	11.56	0.49
008760135-09	OBS	No	308.710224	216.283023	1491.6	15.000	20.5	-1.0	1.02	5713	3.90	1.26

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008760135-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—SEASONAL_DEPTH_DV—CENT_NOFITS
008760135-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS
008760135-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_FEW_DIFFS
008760135-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-07	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
008760135-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008760135-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—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 008760135-09

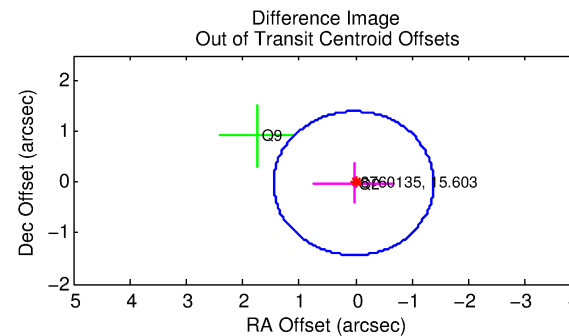
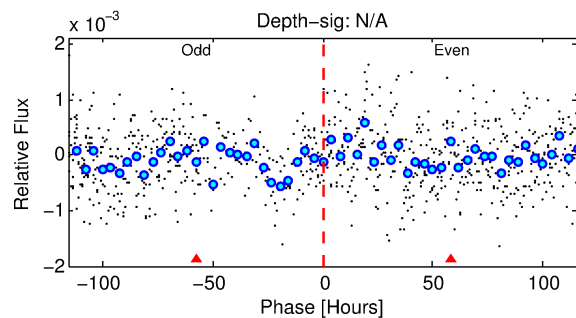
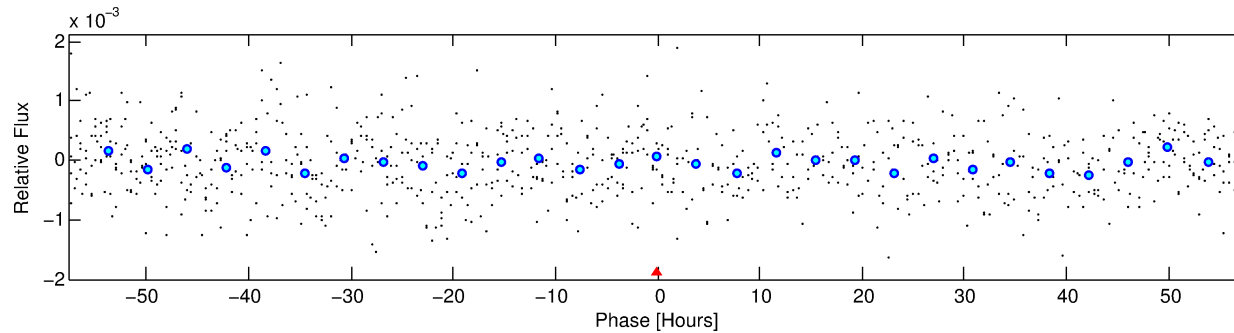
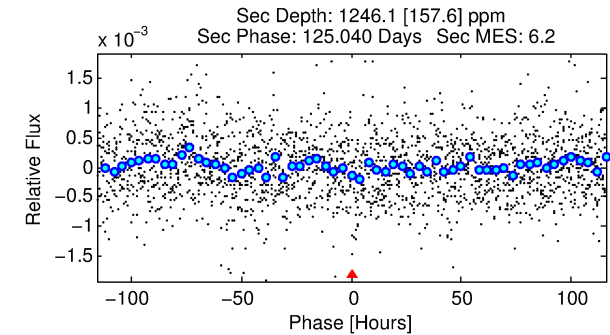
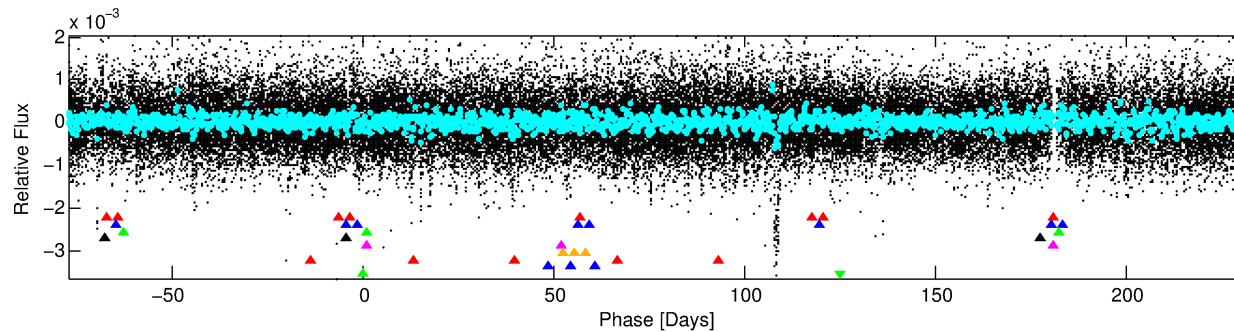
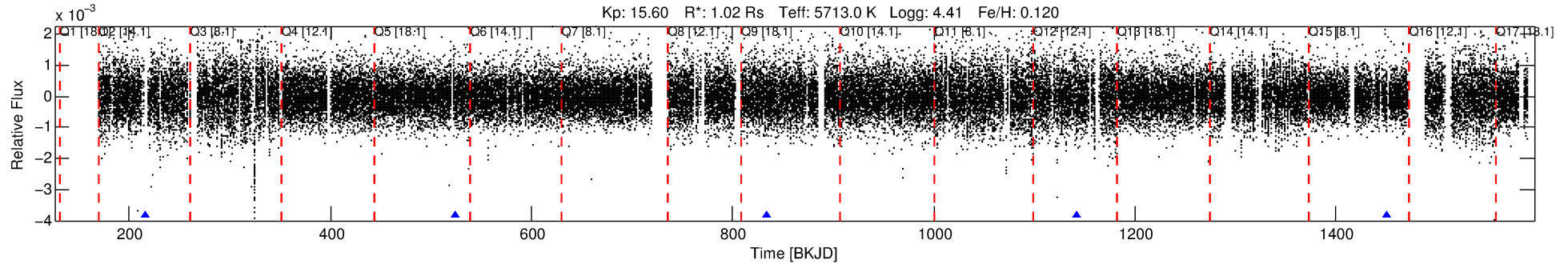
No Significant Match Found

# DV One-Page Summary

KIC: 8760135 Candidate: 9 of 9 Period: 308.710 d

KOI: K03524 Corr: No Ephemeris Match

Kp: 15.60 R\*: 1.02 Rs Teff: 5713.0 K Logg: 4.41 Fe/H: 0.120



## TPS TCE Results:

Period = 308.71022 d  
Epoch = 216.2830 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

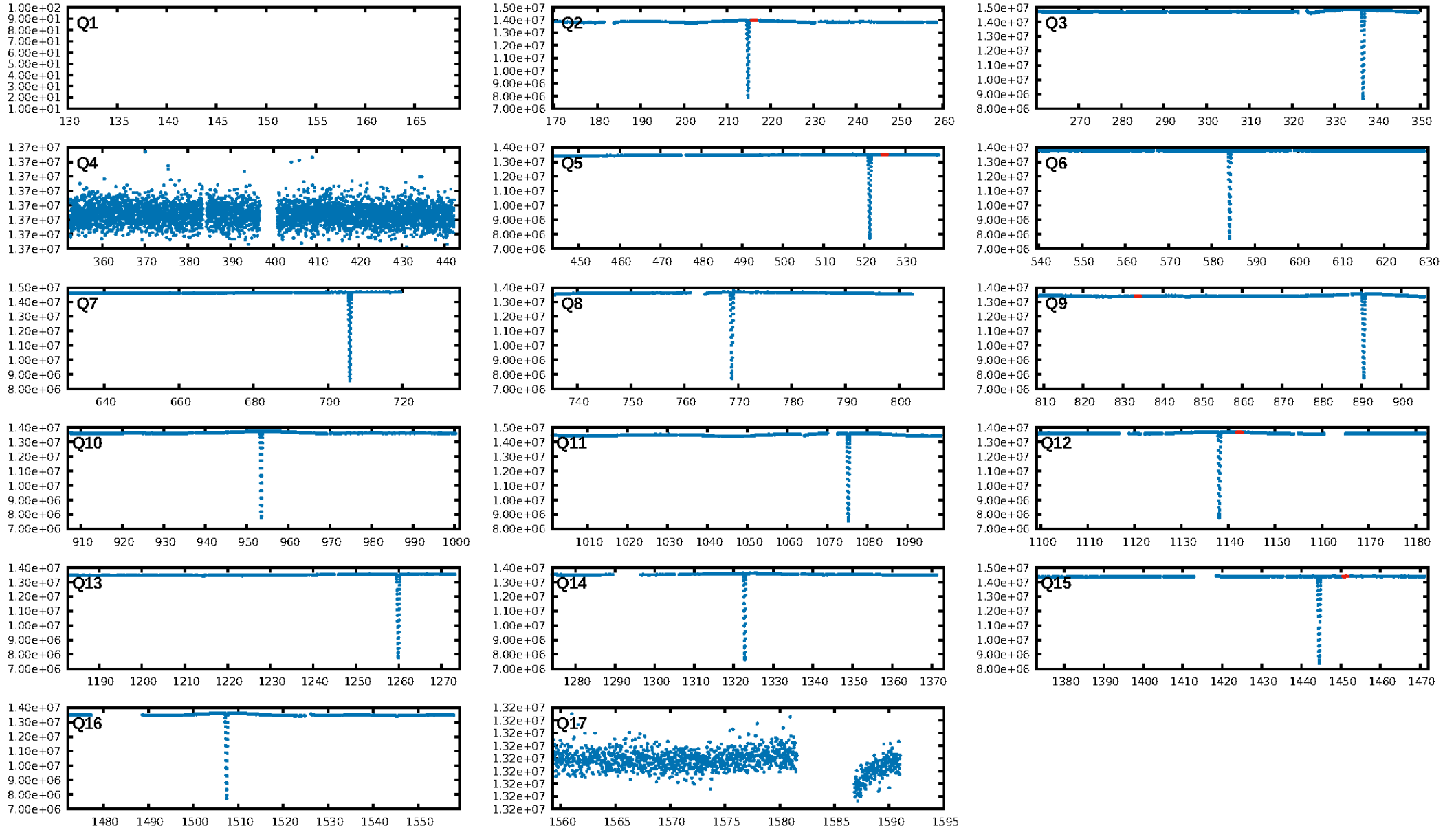
ShortPeriod-sig: 100.0% [30.24 $\sigma$ ]  
LongPeriod-sig: 100.0% [145.91 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -0.5729

Centroid-sig: N/A  
Centroid-so: 1.135 arcsec [0.58 $\sigma$ ]  
OotOffset-rm: 0.040 arcsec [0.09 $\sigma$ ]  
OotOffset-st: 1/0/0/1 [2]  
KicOffset-rm: 0.103 arcsec [0.33 $\sigma$ ]  
KicOffset-st: 1/0/0/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.75 [3/4]

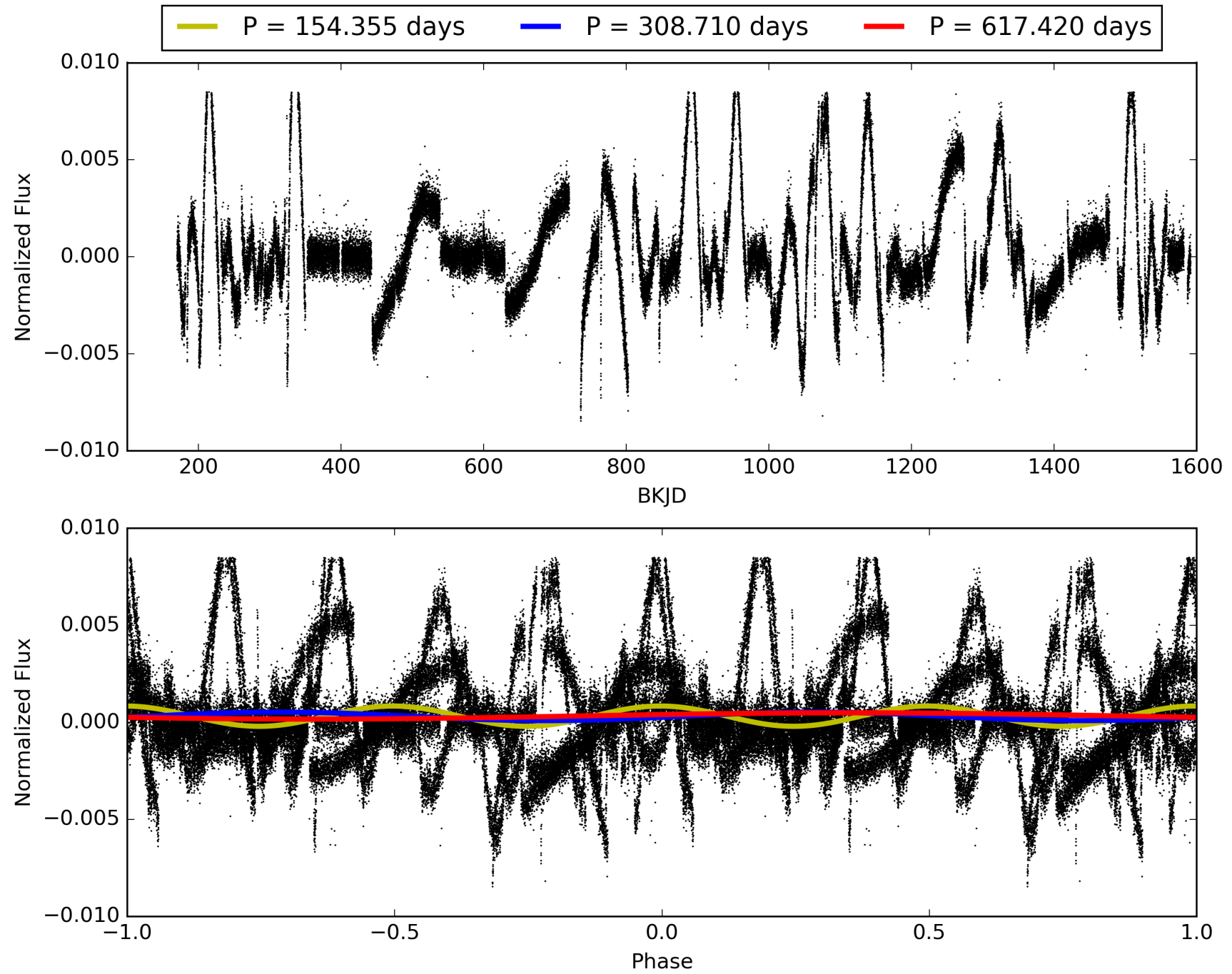
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 23:37:38 Z

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

# TCE 008760135-09, PDC Light Curves



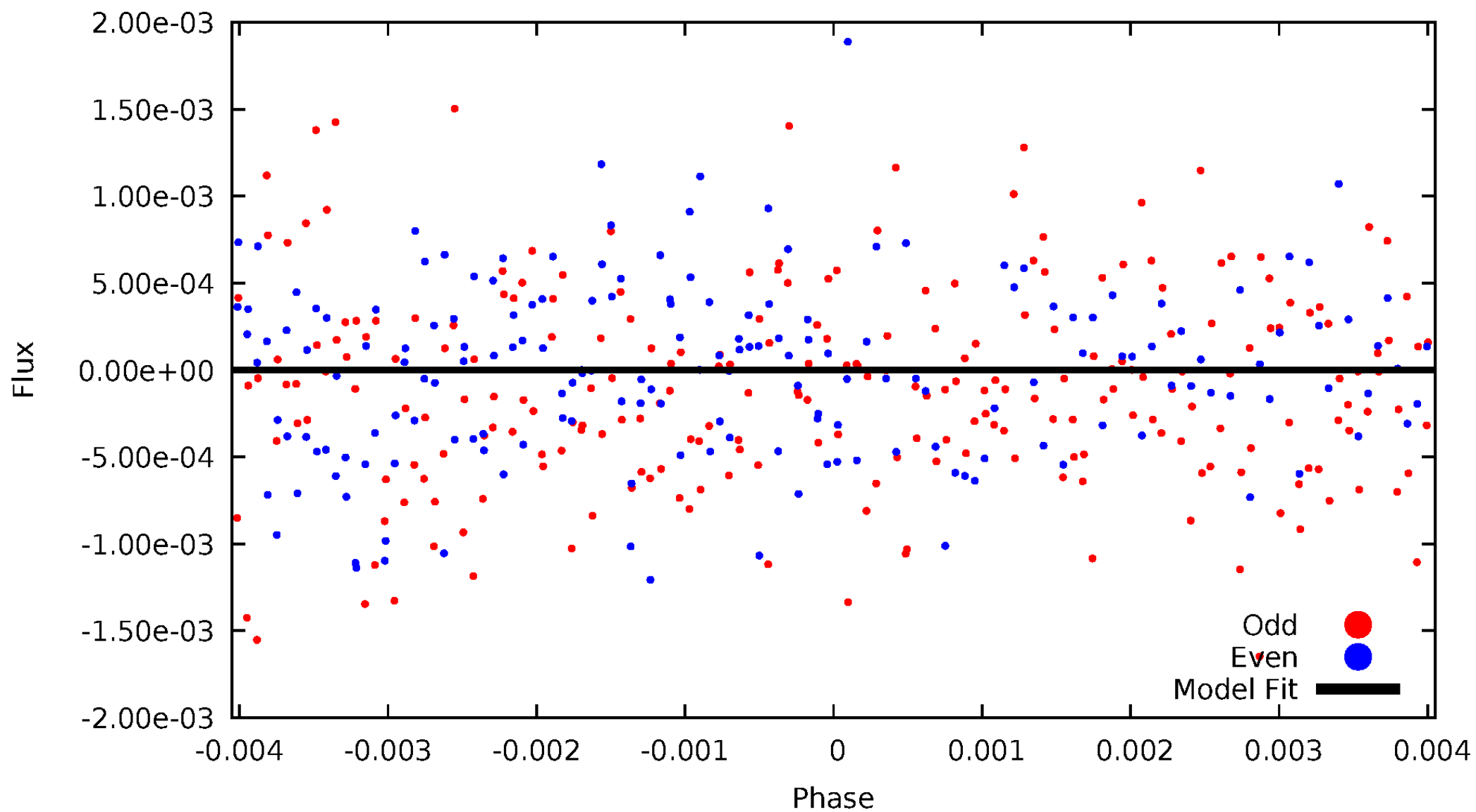
TCE 008760135-09





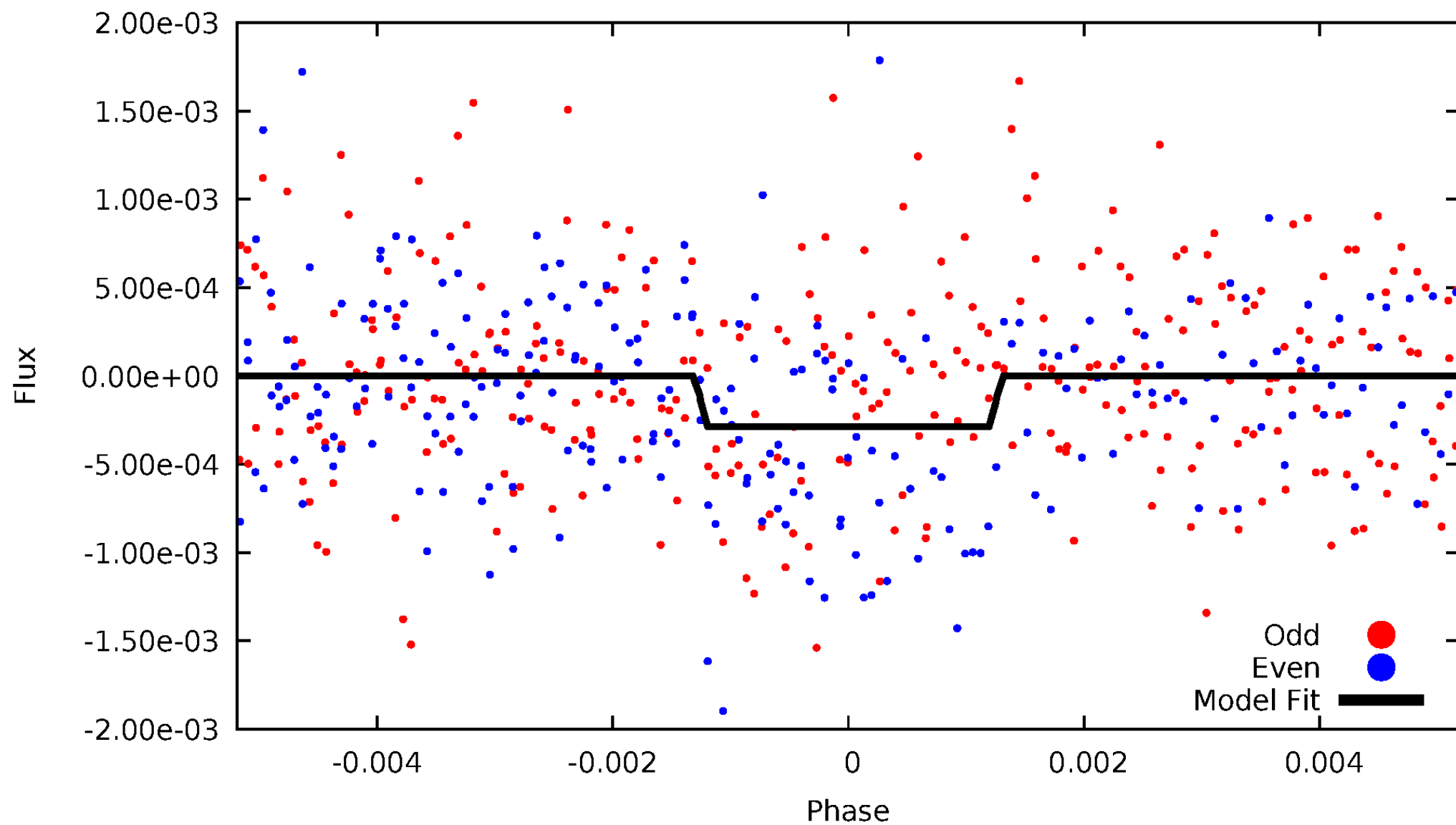
# DV Odd/Even

TCE 008760135-09



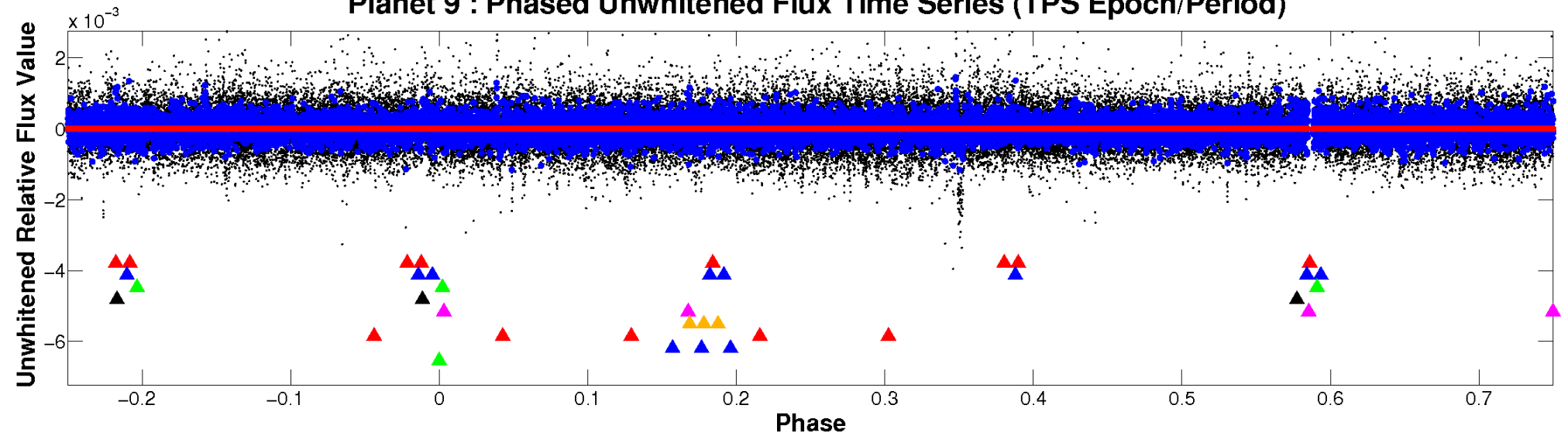
# ALT Odd/Even

TCE 008760135-09

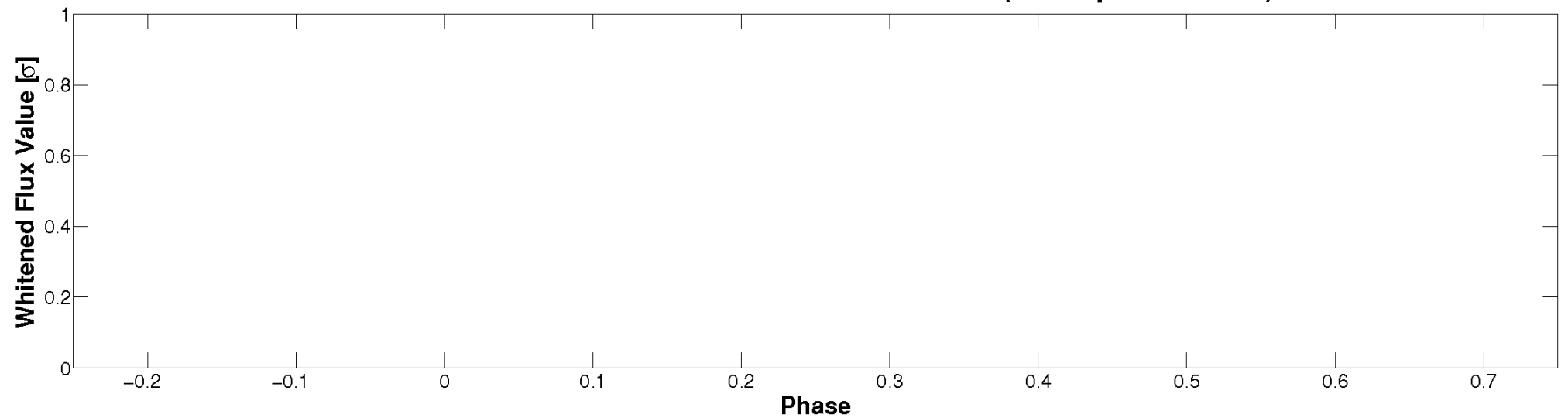


# Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

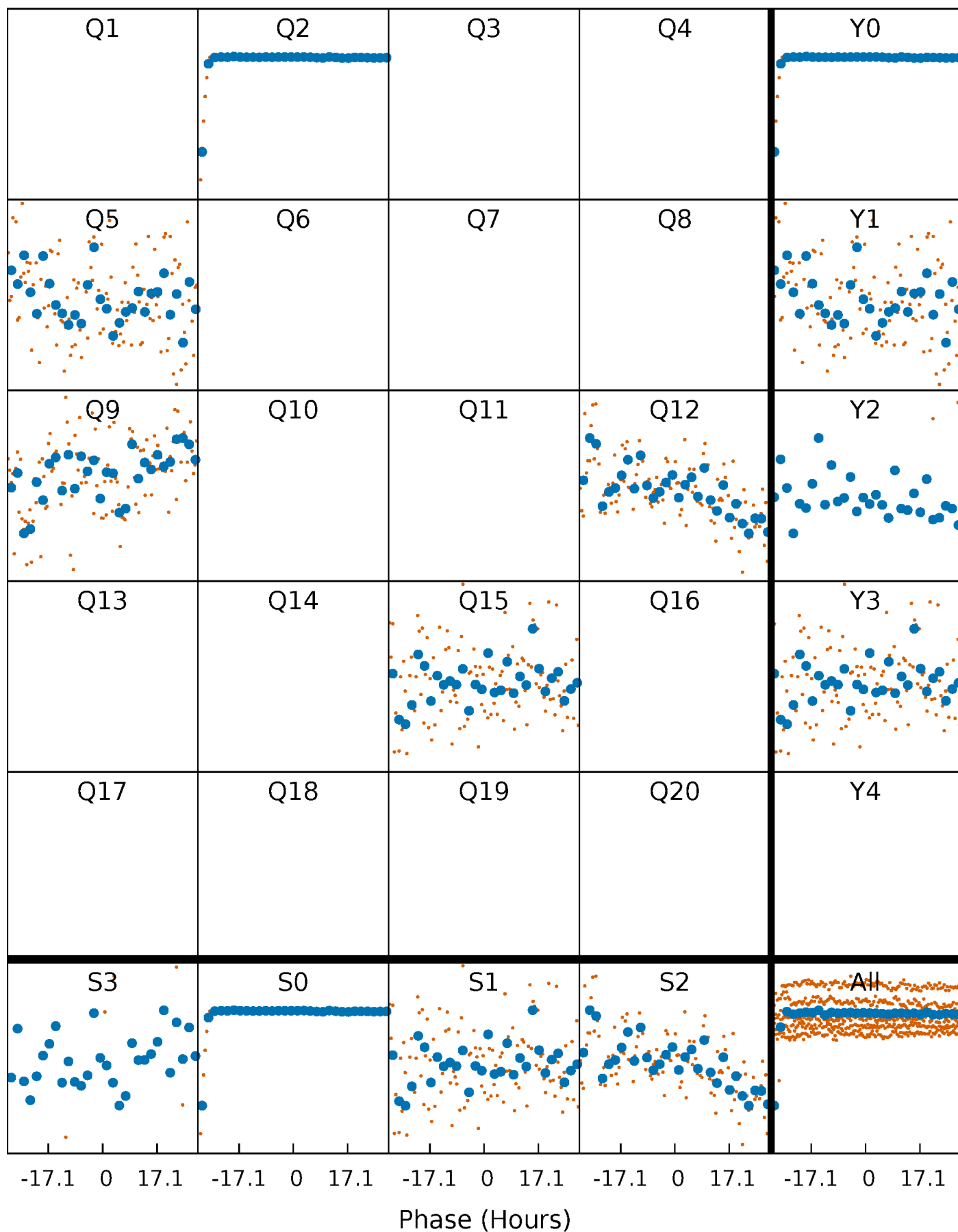


Planet 9 : Phased Whitened Flux Time Series (TPS Epoch/Period)



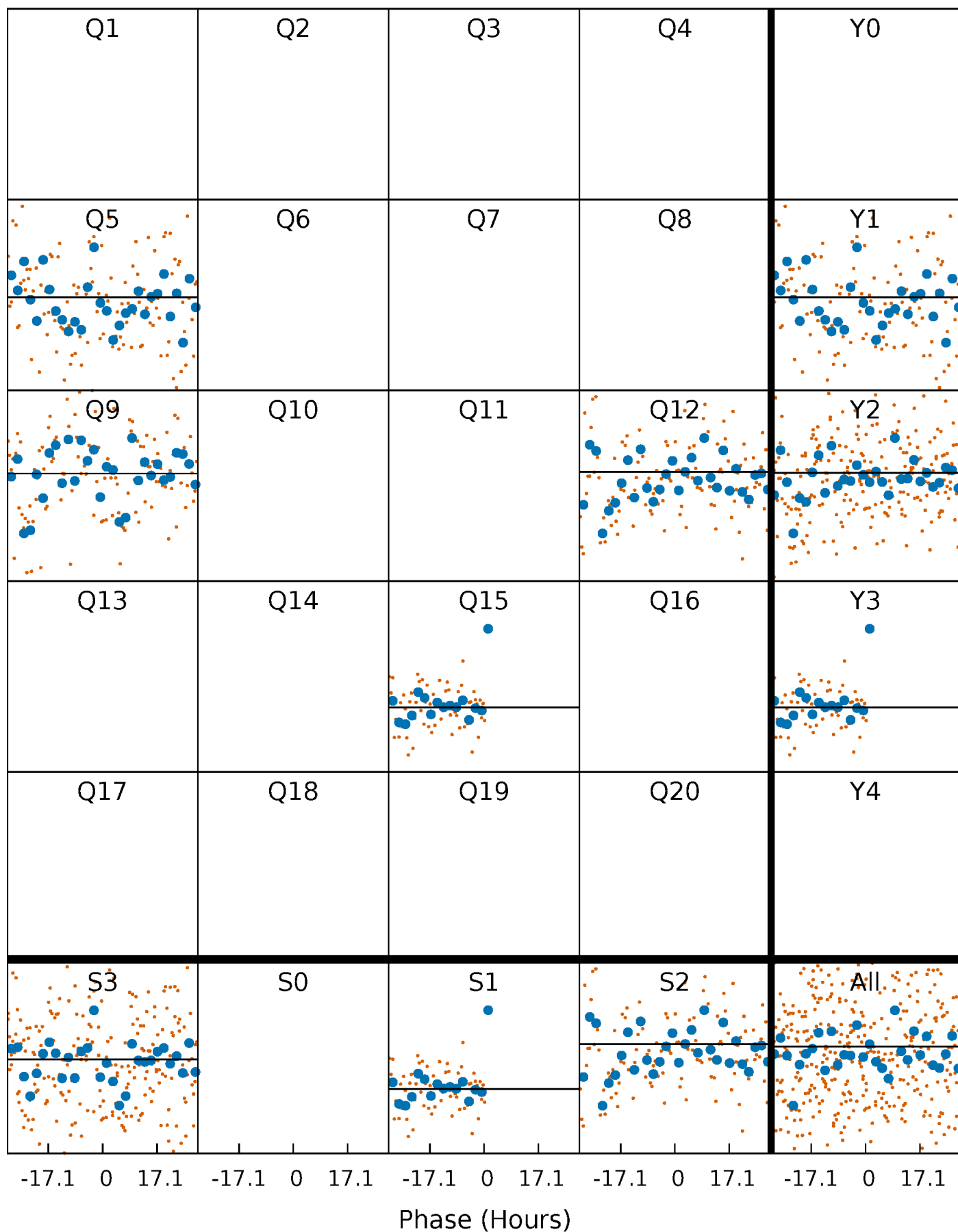
# PDC Quarter-Phased Transit Curves

TCE 008760135-09 P=308.710224 Days  $T_0=216.283023$  (BKJD)



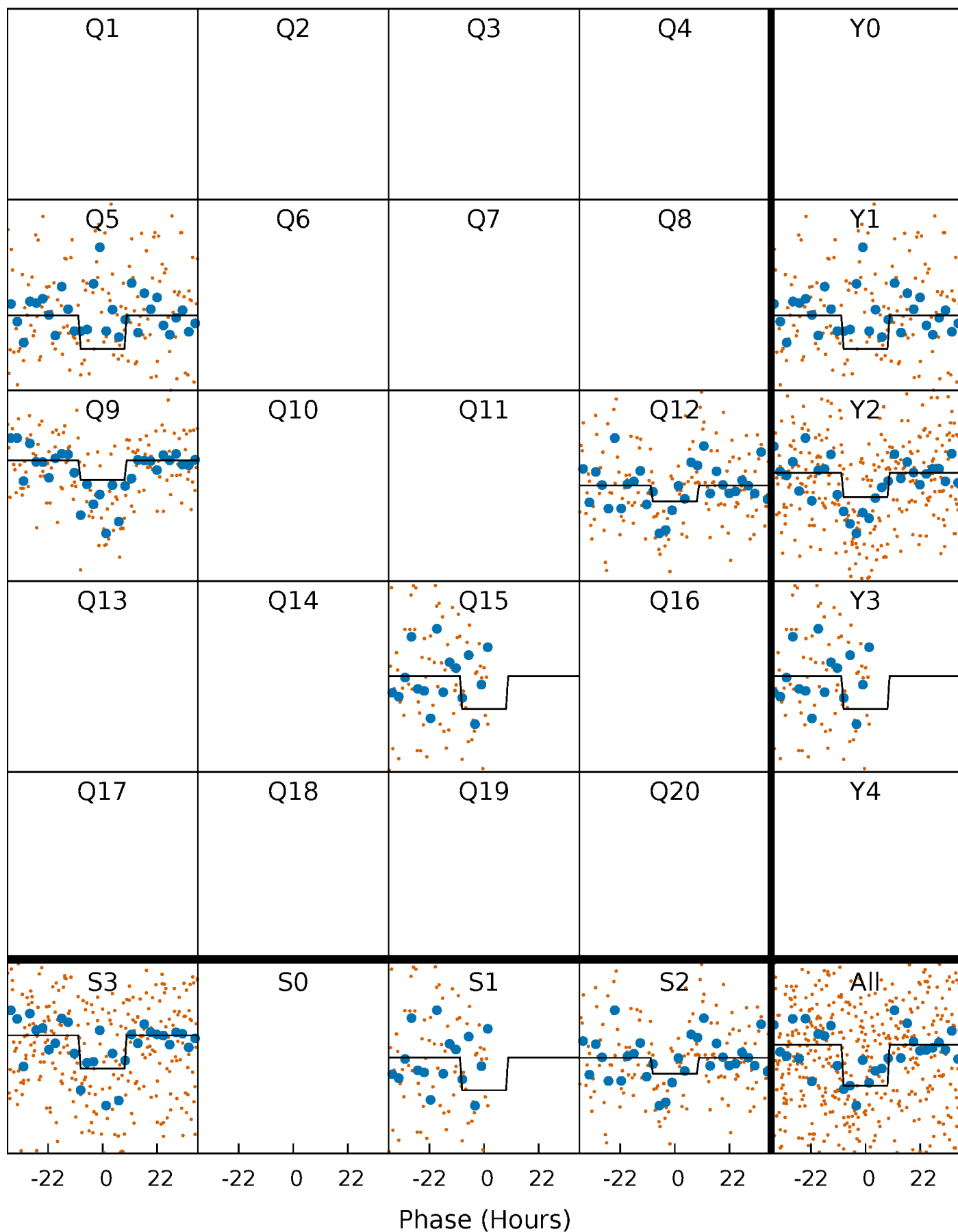
# DV Quarter-Phased Transit Curves

TCE 008760135-09     $P=308.710224$  Days     $T_0=216.283023$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

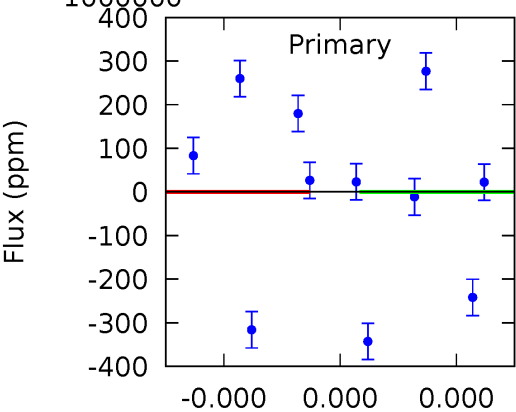
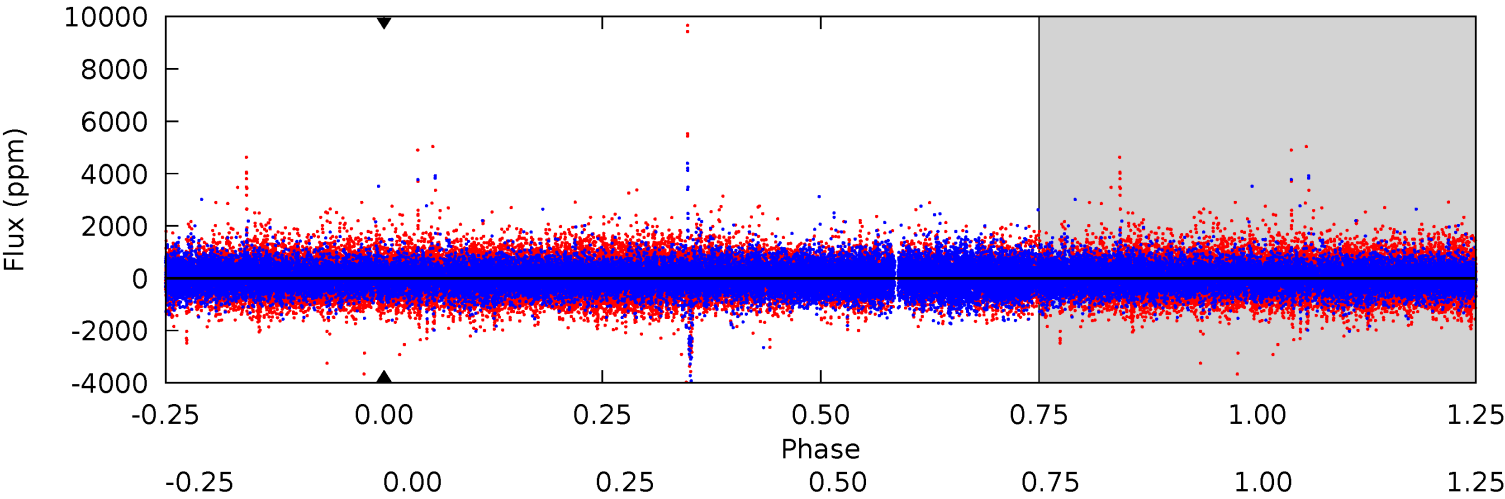
TCE 008760135-09     $P=308.710224$  Days     $T_0=216.230221$  (BKJD)



# DV Model-Shift Uniqueness Test

008760135-09, P = 308.710224 Days, E = 216.283023 Days

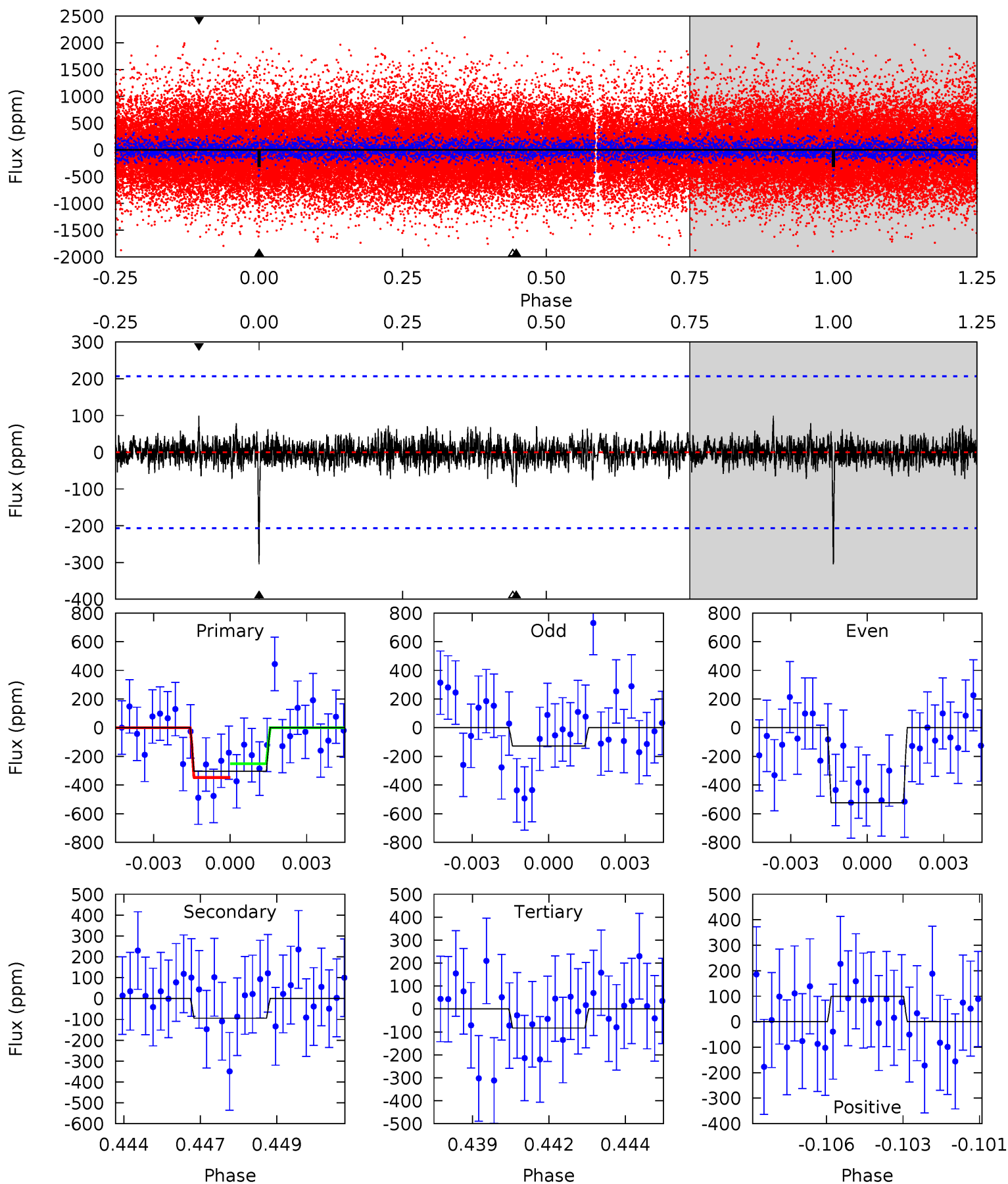
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

008760135-09, P = 308.710224 Days, E = 216.230221 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
7.78	2.41	2.13	2.54	5.28	3.02	0.55	5.65	5.25	0.28	-0.12	5.05	1.38	0.25	1.23





### Stellar Parameters For KIC 008760135

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5713^{+154}_{-188}$	$4.414^{+0.098}_{-0.196}$	$0.120^{+0.250}_{-0.300}$	$1.023^{+0.289}_{-0.124}$	$0.990^{+0.111}_{-0.100}$	$1.301^{+0.572}_{-0.634}$
	+3%/-3%	+2%/-4%	+208%/-250%	+28%/-12%	+11%/-10%	+44%/-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 008760135-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$8.74^{+9.79}_{-5.74}$	$381^{+26}_{-20}$	$4902^{+13599}_{-23638}$	$12839^{+893505}_{-876861}$
Alt.	$-94 \pm 39$	$8.71^{+8.36}_{-6.06}$	$381^{+28}_{-21}$	$2751^{+1217}_{-437}$	$493^{+4961}_{-371}$

$T_{\text{max}}$  = 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

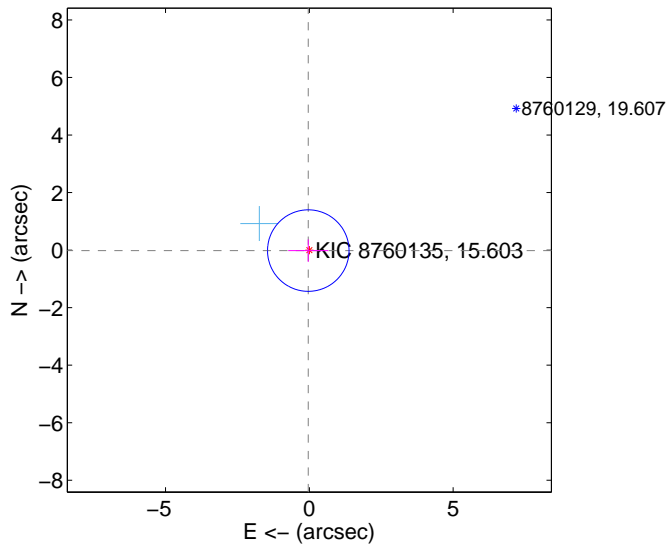
Supplemental centroid analysis for 008760135-09. Kepler magnitude: 15.60. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

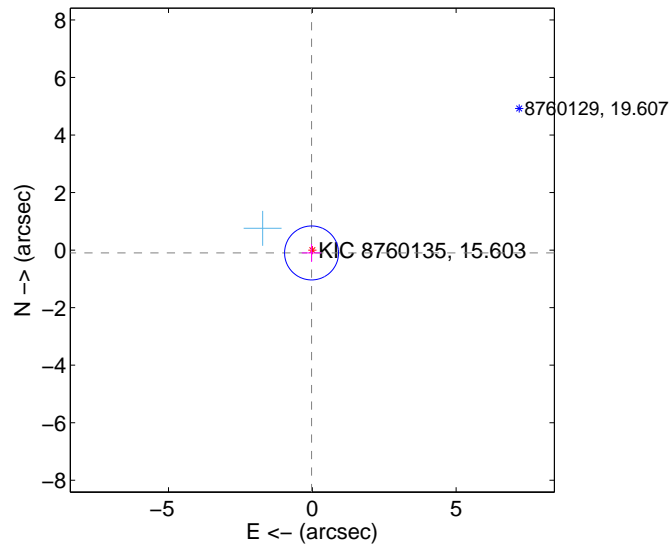
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.040 \pm 0.472$	0.09	$0.036 \pm 0.699$	$-0.017 \pm 0.390$
PRF-fit source offset from KIC position	$0.103 \pm 0.313$	0.33	$0.026 \pm 0.337$	$-0.099 \pm 0.311$
photometric centroid source offset	$1.13 \pm 1.96$	0.58	$1.12 \pm 1.96$	$0.15 \pm 2.14$

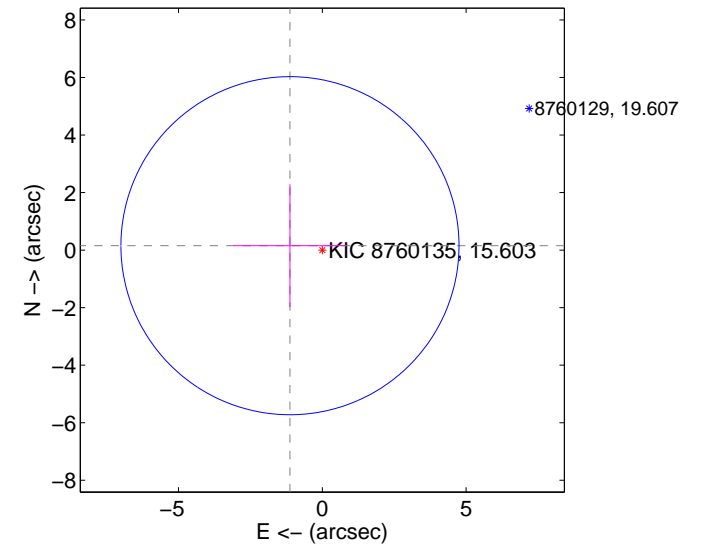
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

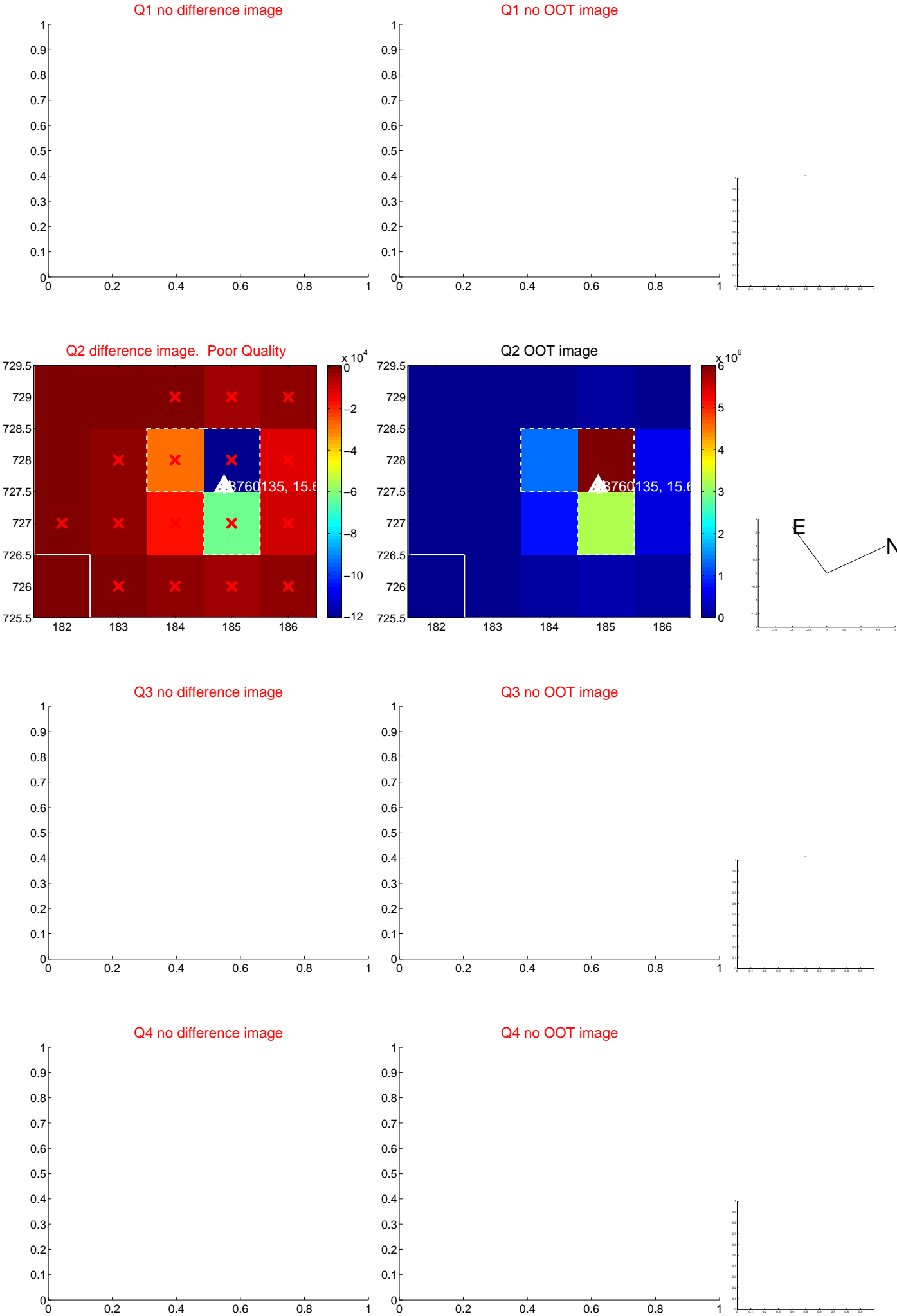


offset from photometric centroids

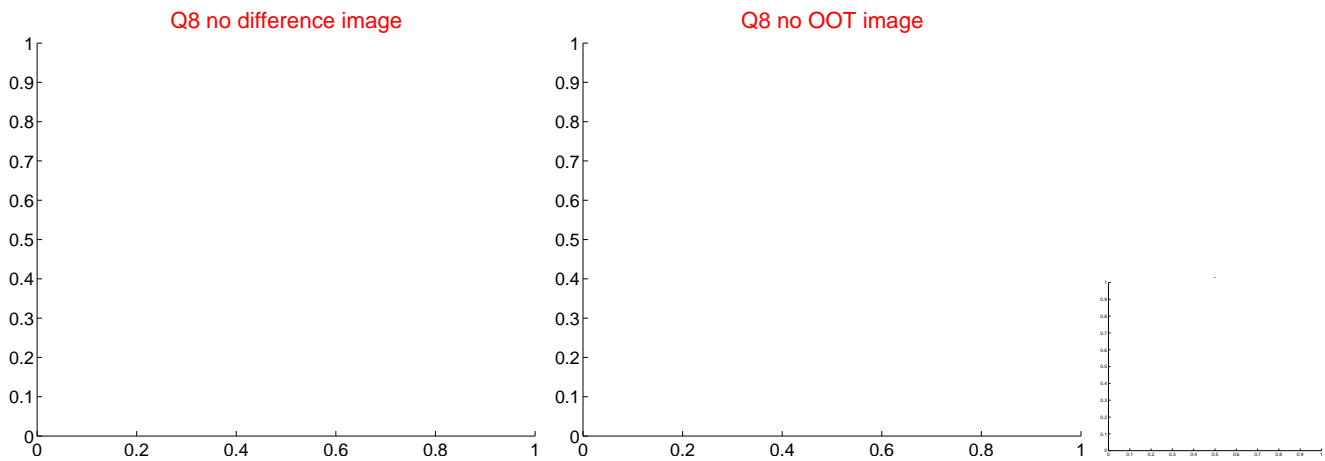
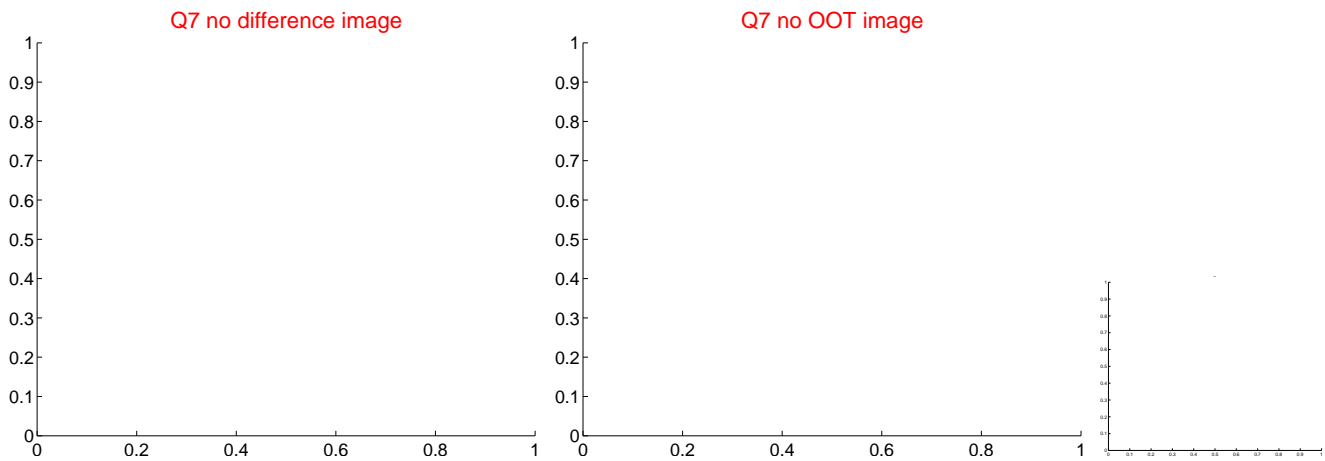
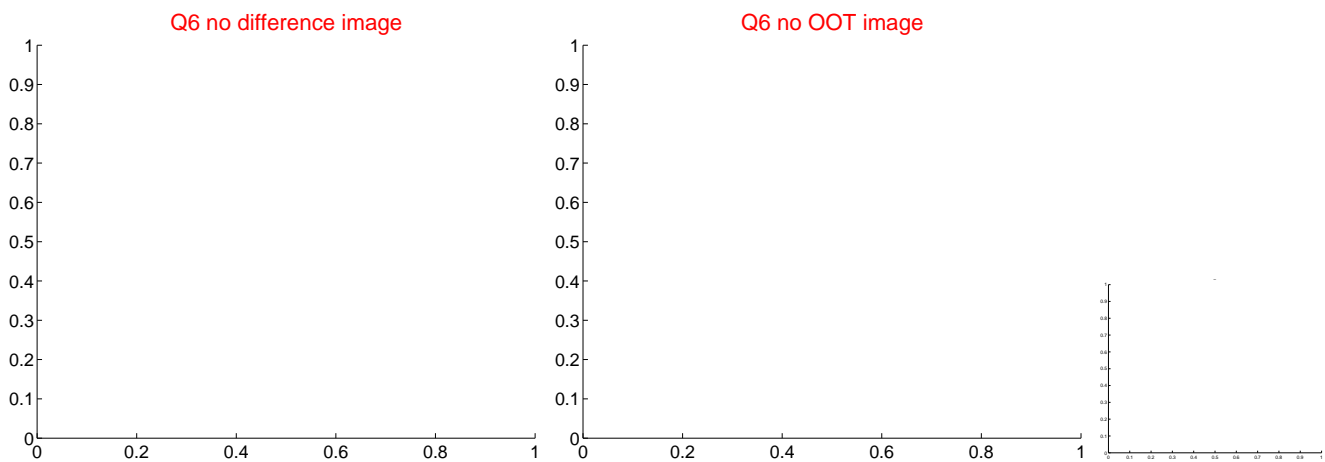
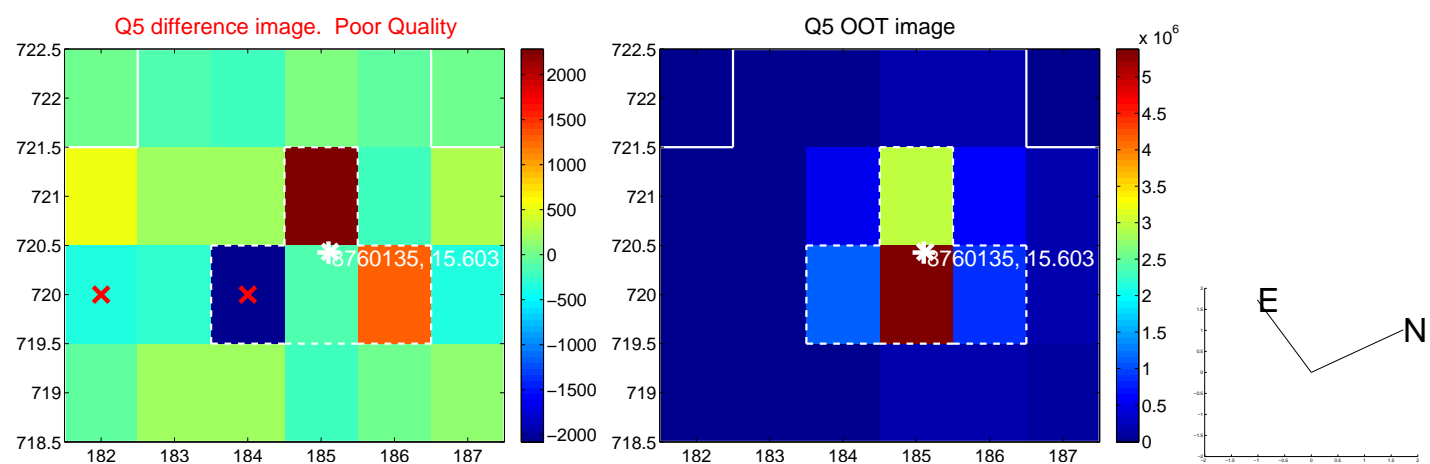


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

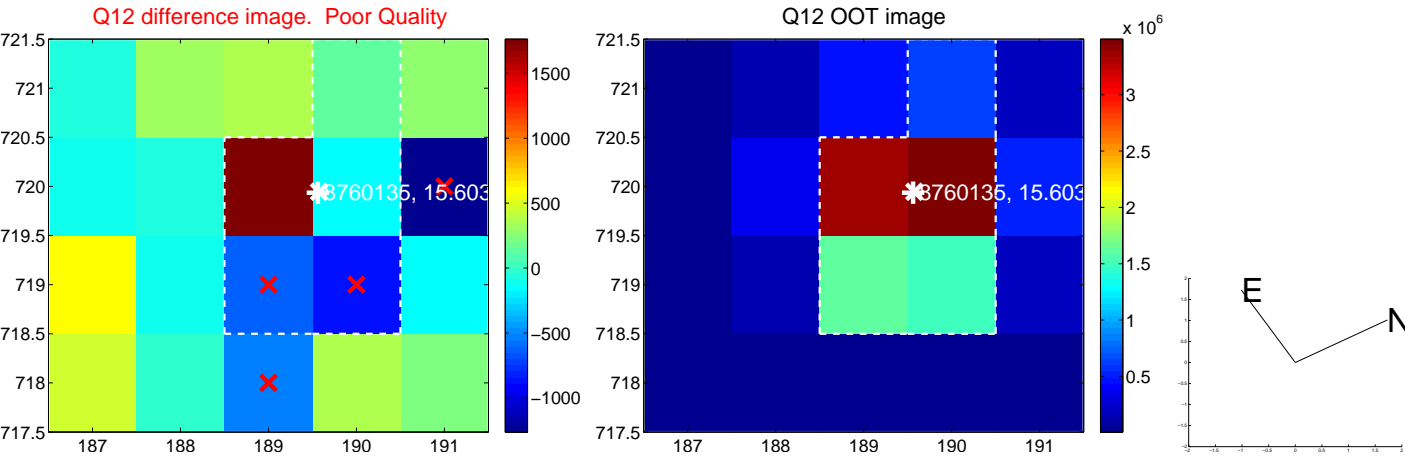
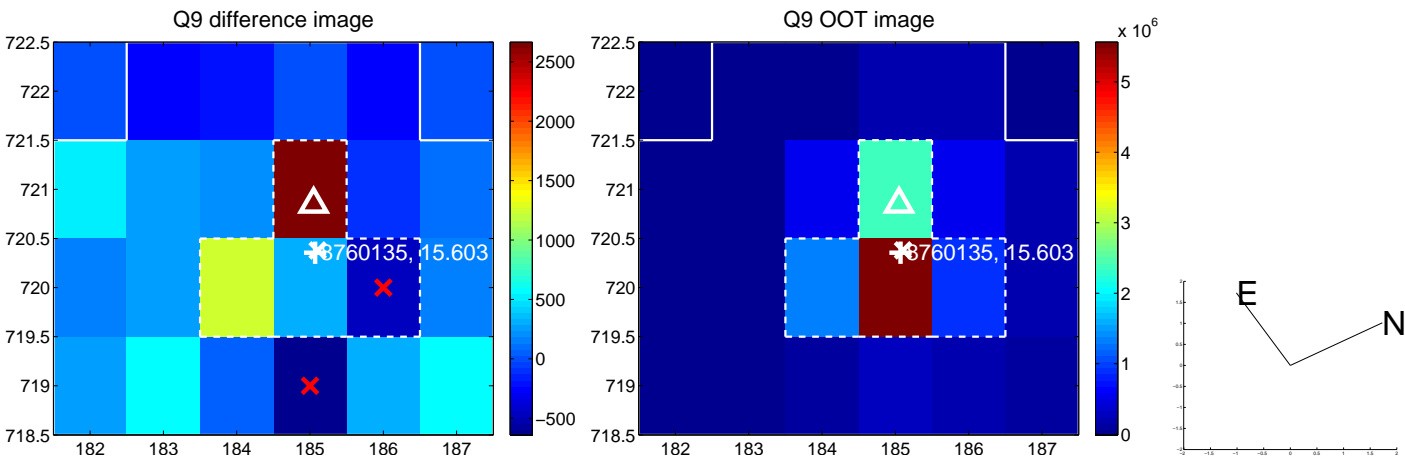
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



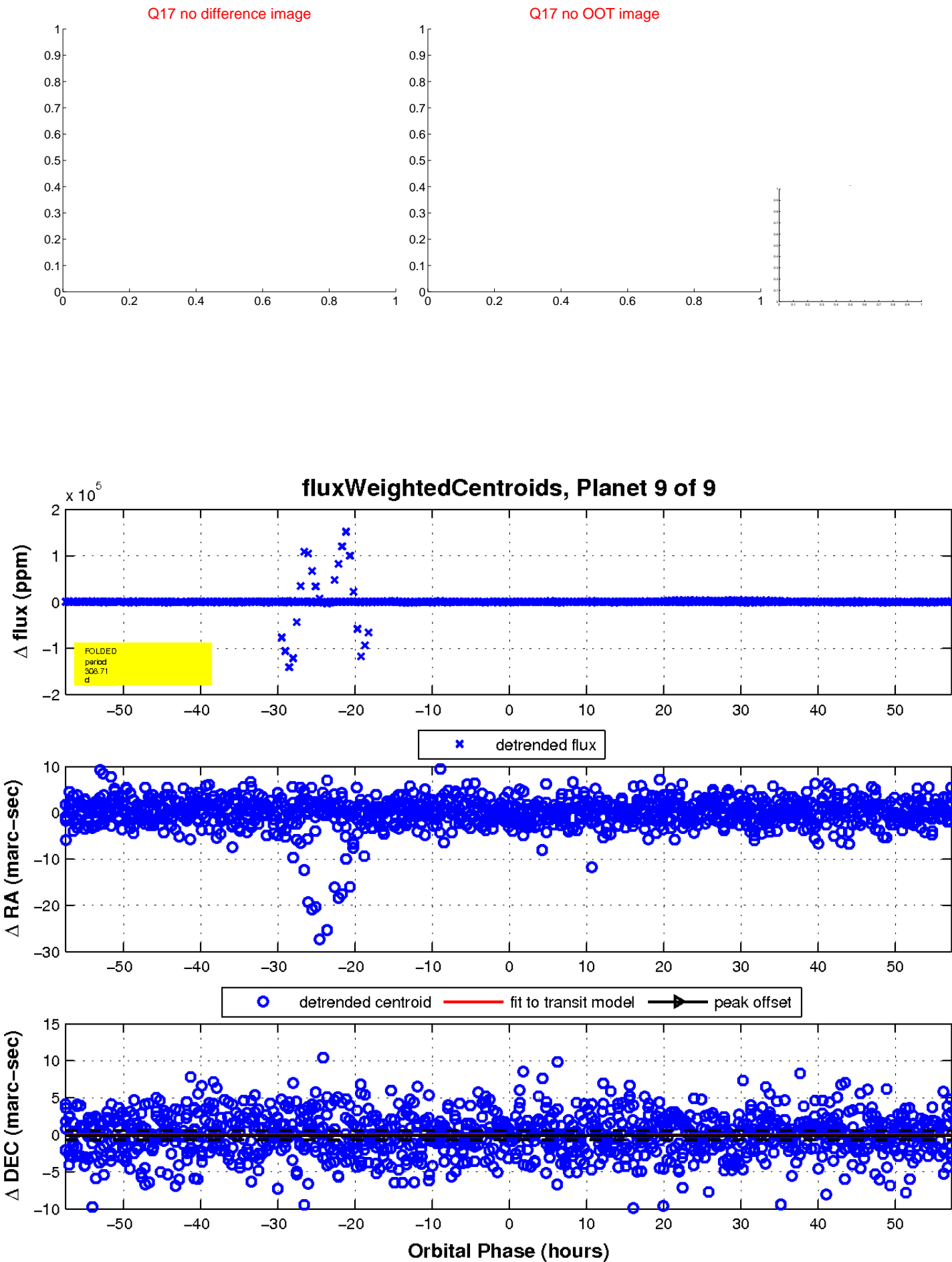
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



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



UKIRT Image

Declination

