

# KIC 011921886

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011921886-01	OBS	No	1.314019	132.790836	59.5	7.500	10.6	7.7	2.61	5510	1.99	9673.20
011921886-02	OBS	No	98.917364	150.560664	128.5	6.258	9.5	1.4	2.61	5510	3.08	30.43
011921886-03	OBS	No	437.626084	557.784613	2229.7	13.427	9.0	9.1	2.61	5510	14.20	4.19
011921886-04	OBS	No	248.226516	355.549780	973.1	10.511	9.5	5.1	2.61	5510	8.72	8.92
011921886-05	OBS	No	579.536993	207.005908	3166.7	14.298	10.2	8.4	2.61	5510	14.55	2.88
011921886-06	OBS	No	587.359791	187.901531	6204.3	52.830	9.7	7.3	2.61	5510	23.79	2.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011921886-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
011921886-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—HALO_GHOST
011921886-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011921886-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011921886-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011921886-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

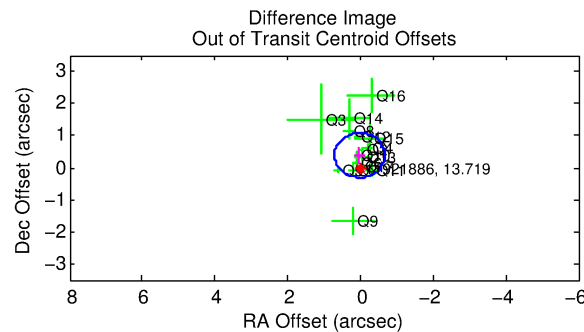
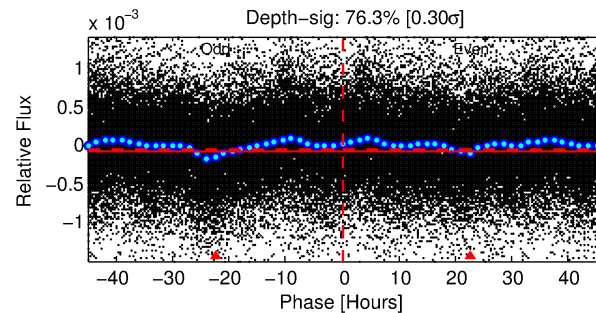
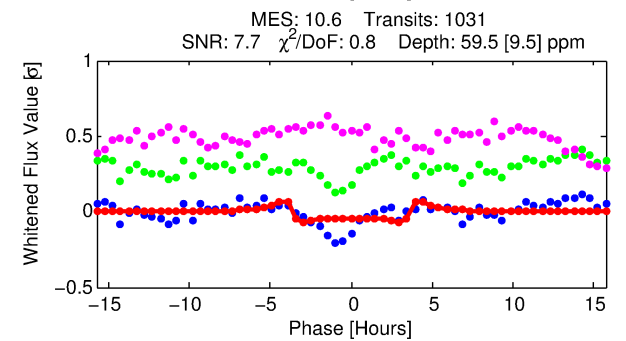
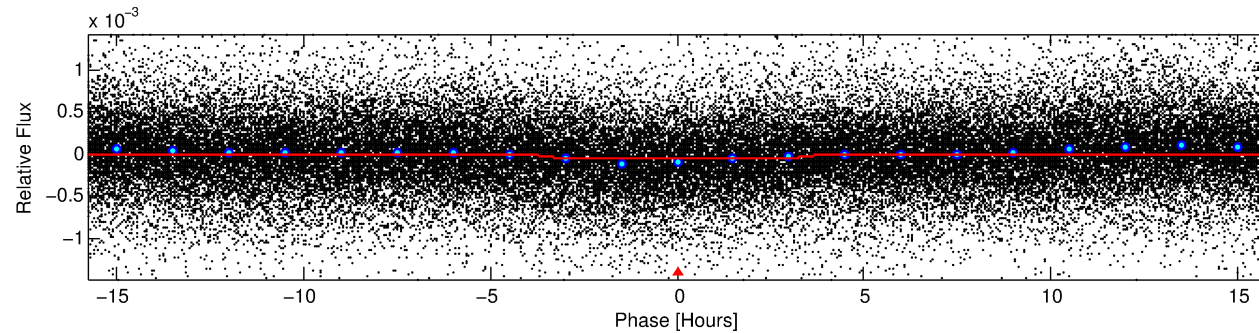
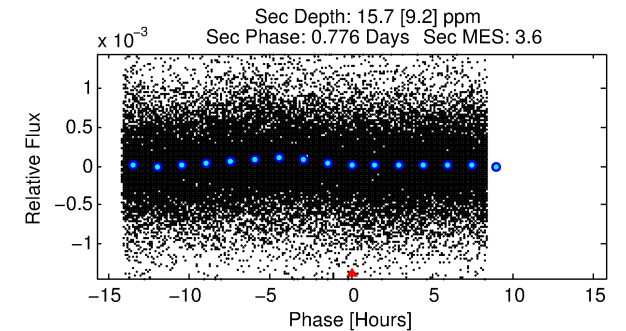
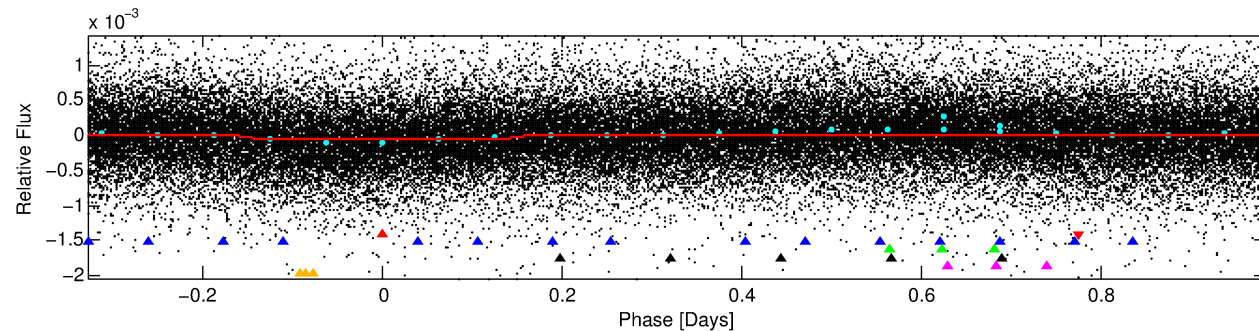
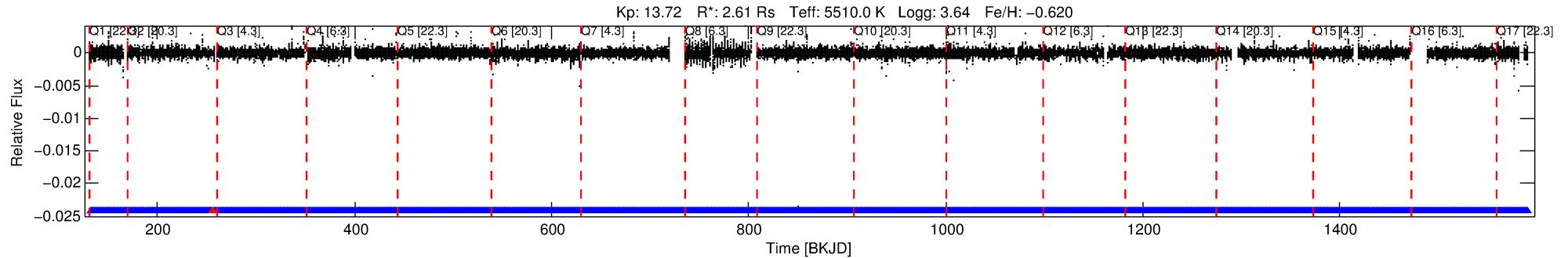
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011921886-01

No Significant Match Found

# DV One-Page Summary

KIC: 11921886 Candidate: 1 of 6 Period: 1.314 d



## DV Fit Results:

Period = 1.31402 [0.00001] d  
Epoch = 132.7908 [0.0032] BKJD  
Rp/R\* = 0.0070 [0.0056]  
a/R\* = 1.48 [2.95]  
b = 0.00 [1137.24]  
Seff = 9673.20 [14624.67]  
Teq = 2529 [956] K  
Rp = 1.99 [2.15] Re  
a = 0.0241 [0.0207] AU  
Ag = 1.26 [2.86] [0.09σ]  
Teffp = 4141 [1778] K [0.80σ]

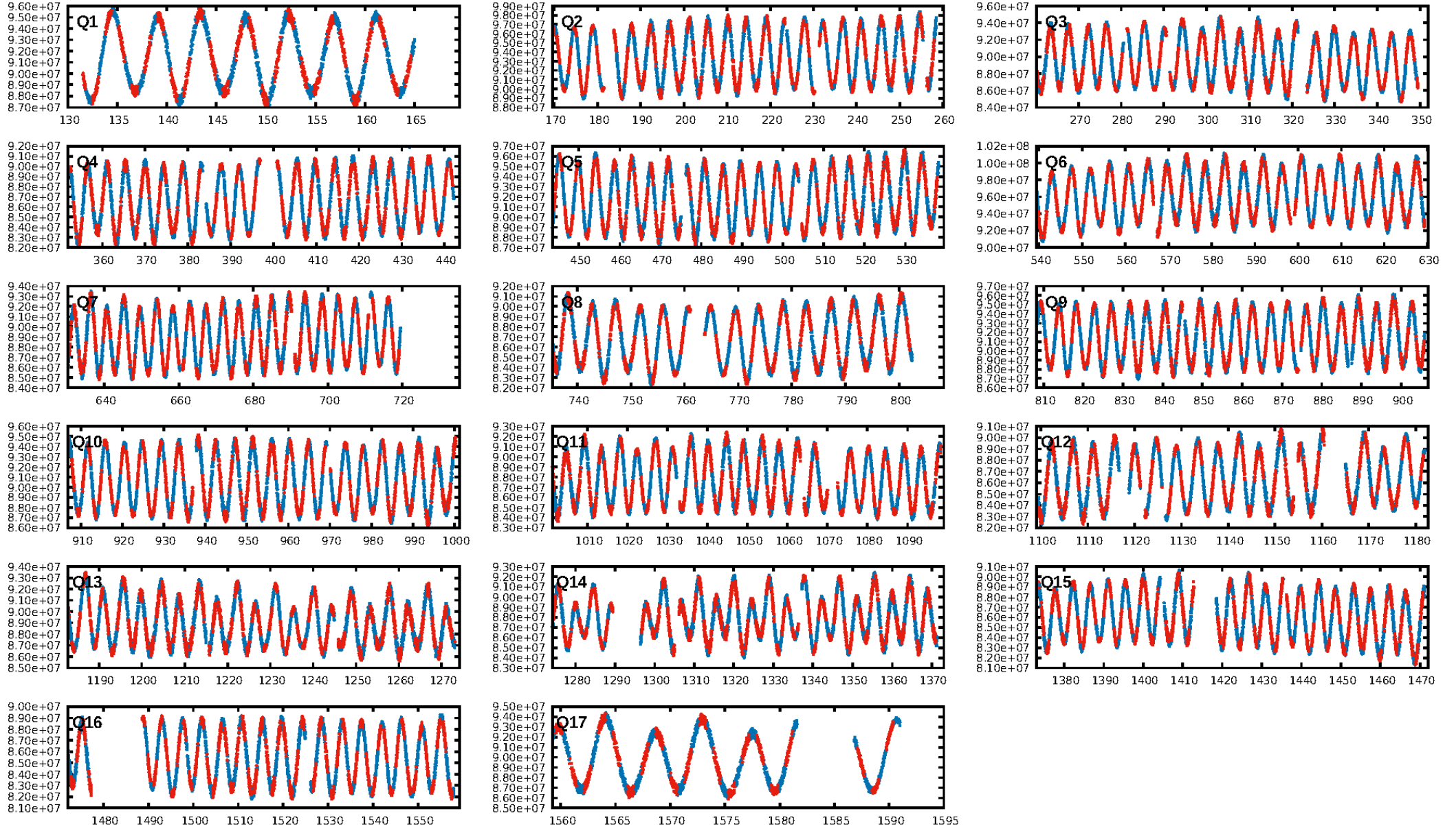
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [239.82σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.25e-18  
RollingBand-fgt: 1.00 [984/985]  
**GhostDiagnostic-chr: -0.008106**  
Centroid-sig: 4.3%  
Centroid-so: 0.368 arcsec [0.89σ]  
OotOffset-rm: 0.387 arcsec [1.67σ]  
KicOffset-rm: 0.360 arcsec [1.64σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.56 [9/16]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:54:09 Z

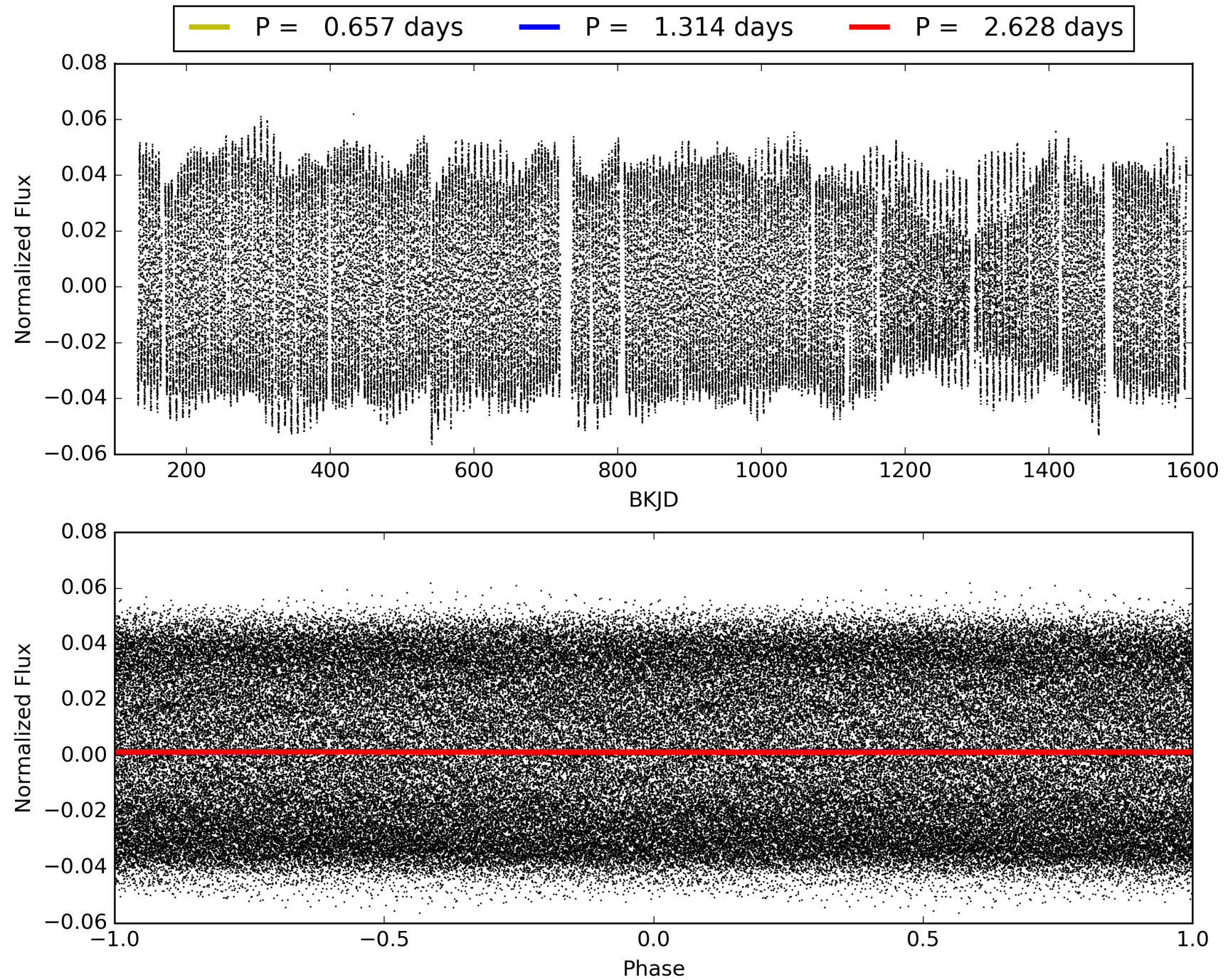
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011921886-01, PDC Light Curves





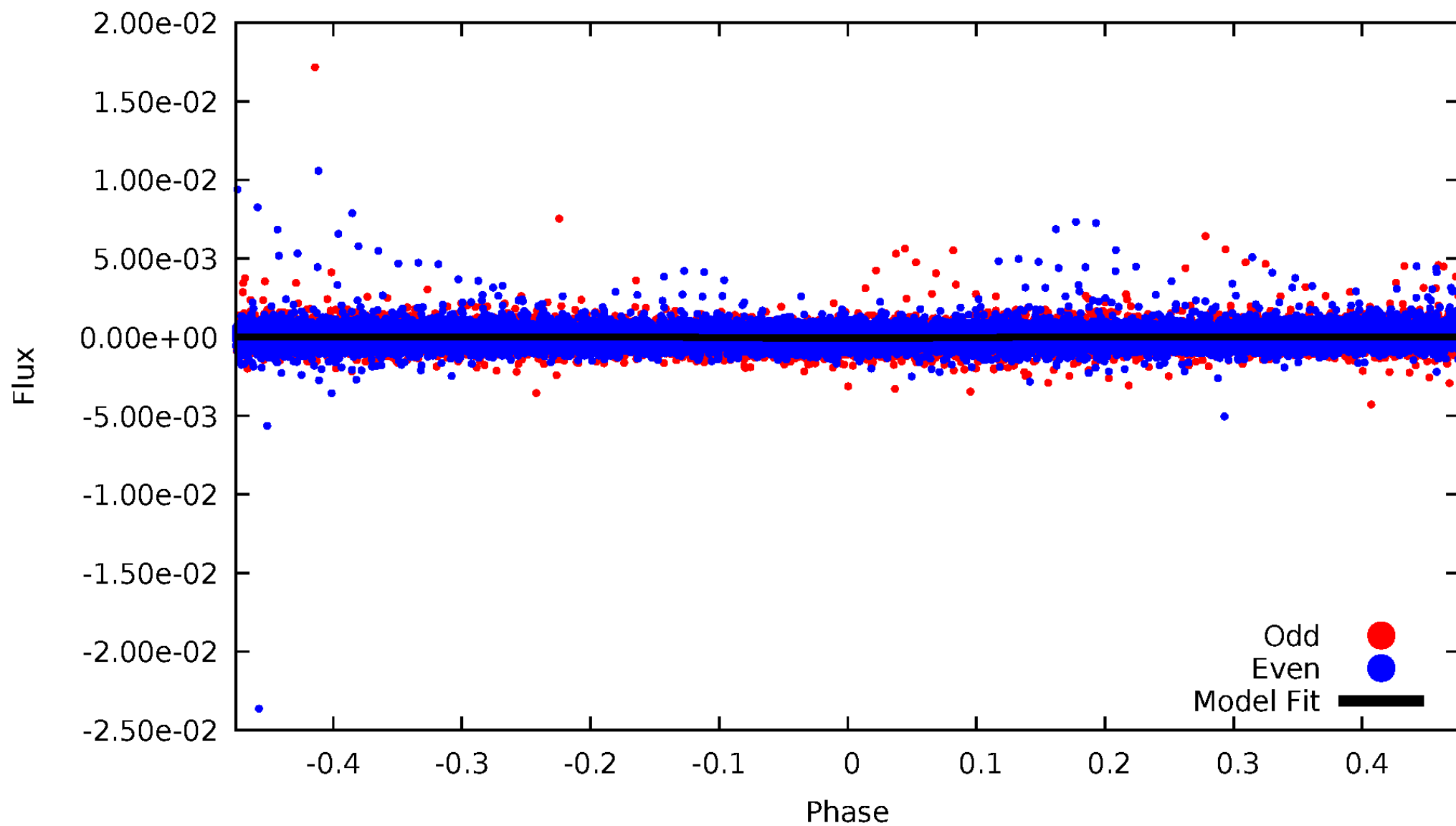
# TCE 011921886-01





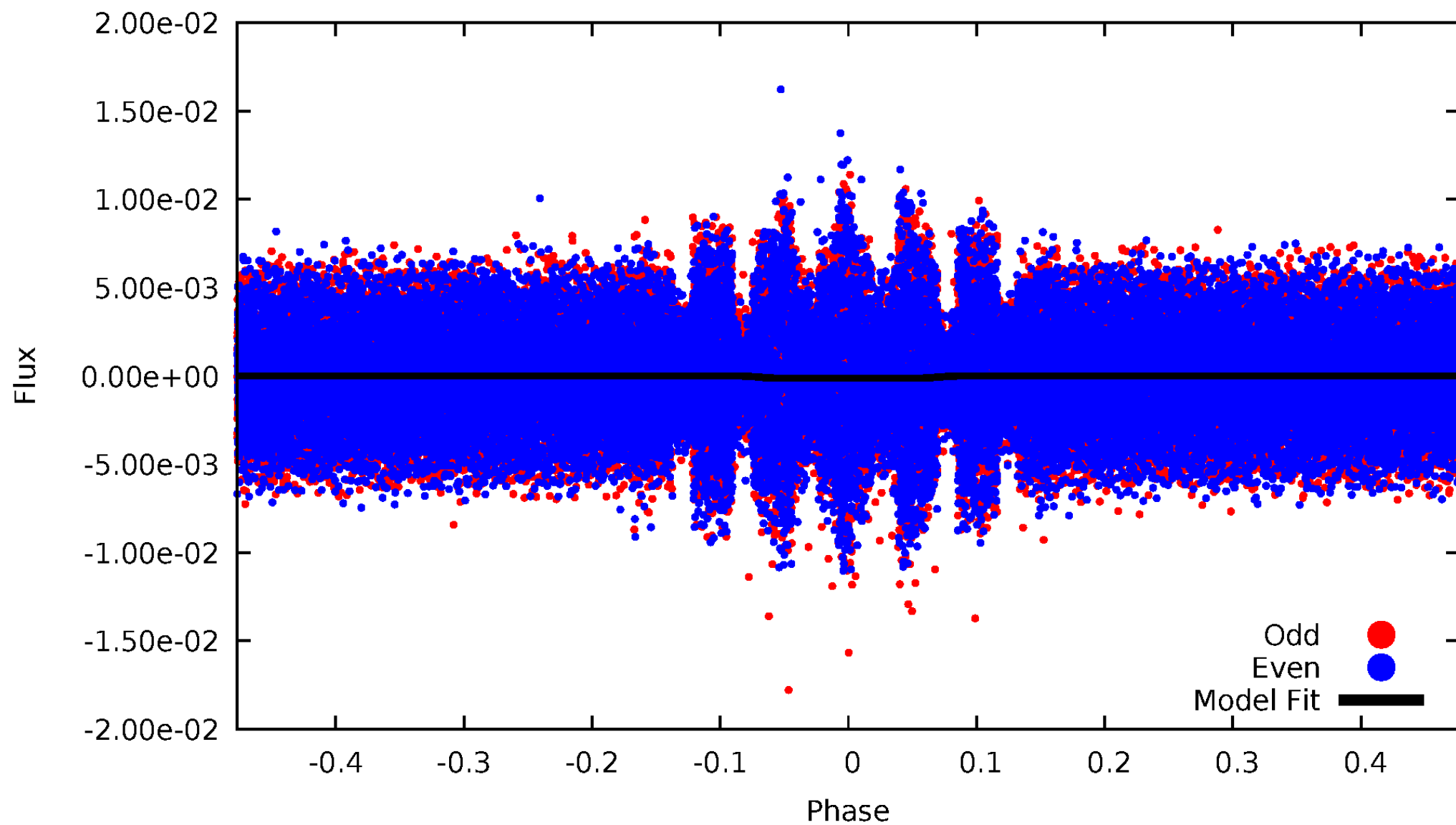
# DV Odd/Even

TCE 011921886-01



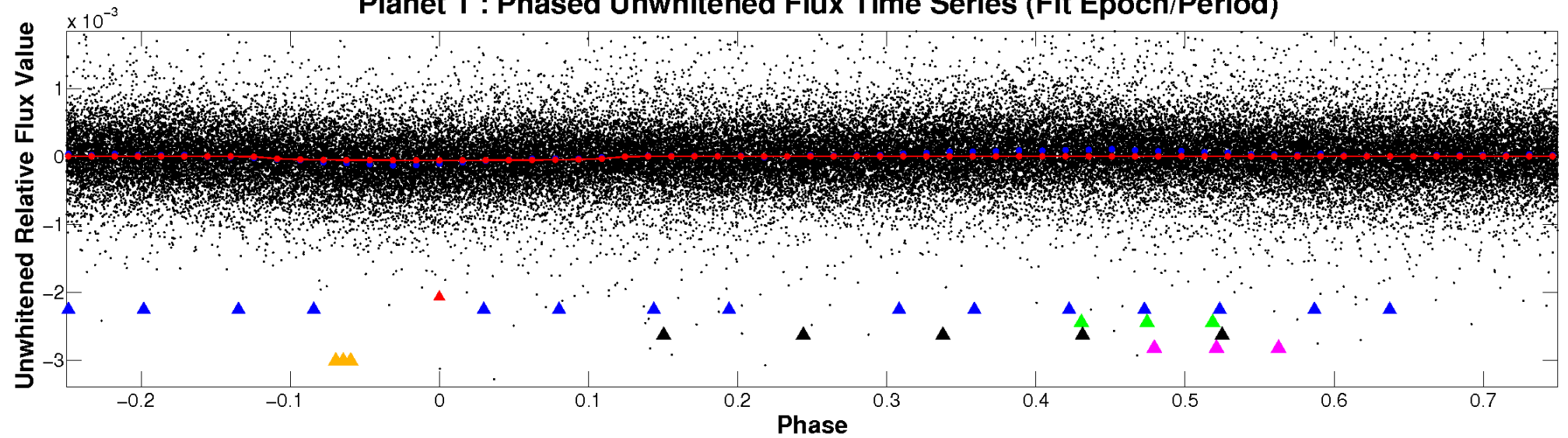
# ALT Odd/Even

TCE 011921886-01

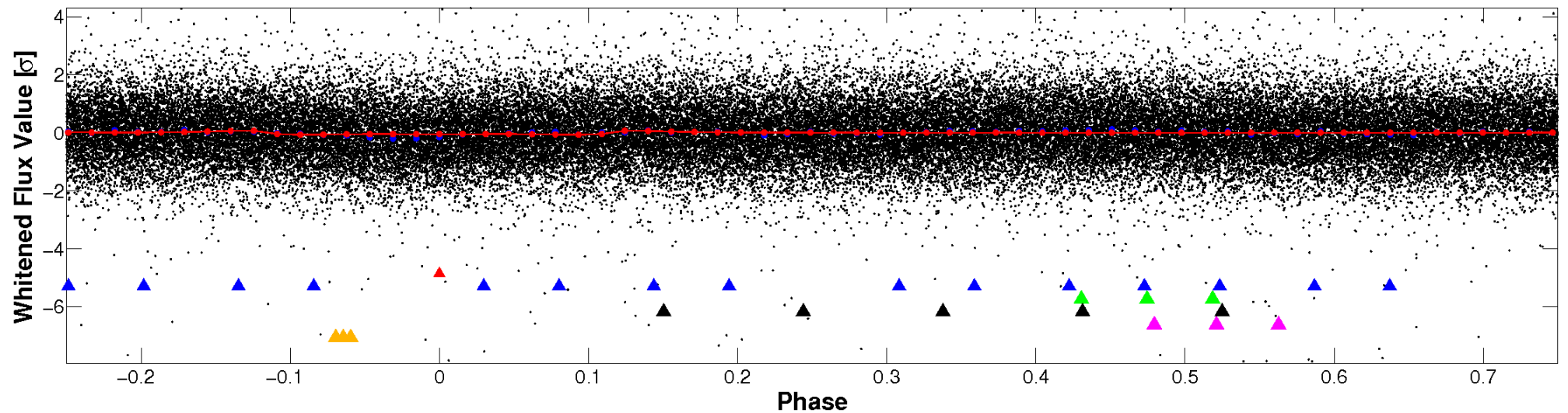


# Non-Whitened Vs. Whitened Light Curve

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



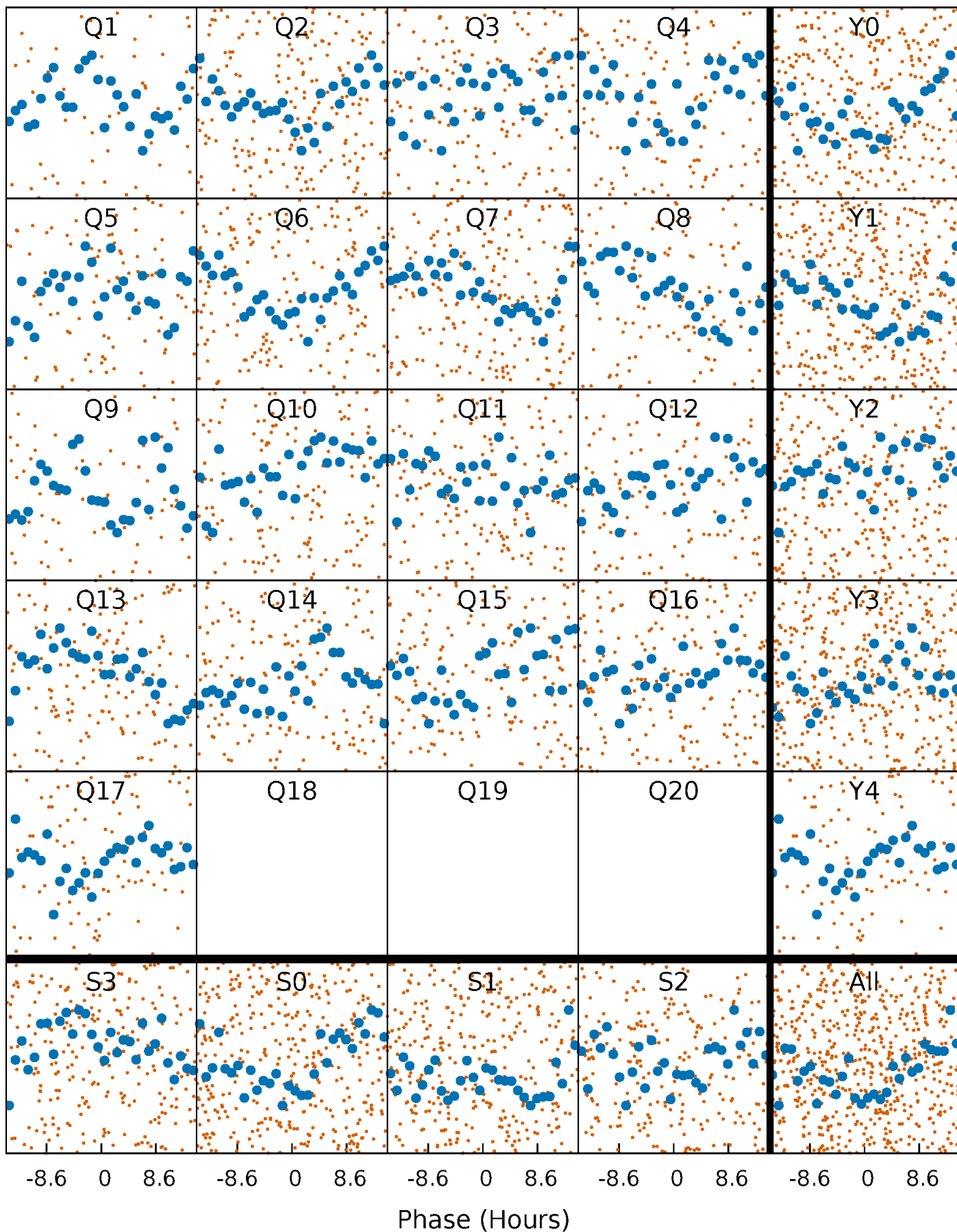
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





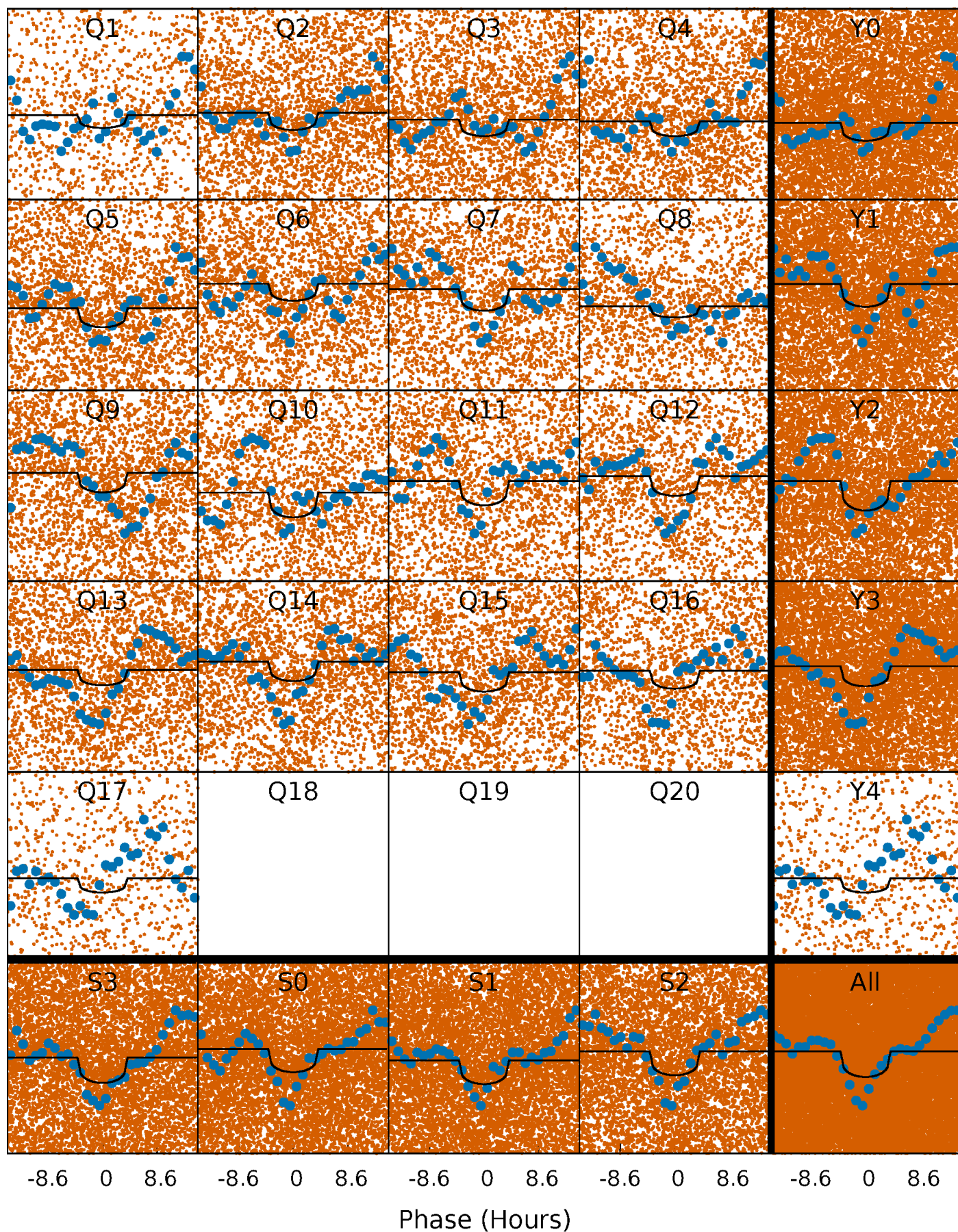
# PDC Quarter-Phased Transit Curves

TCE 011921886-01 P= 1.314019 Days  $T_0=132.790836$  (BKJD)



# DV Quarter-Phased Transit Curves

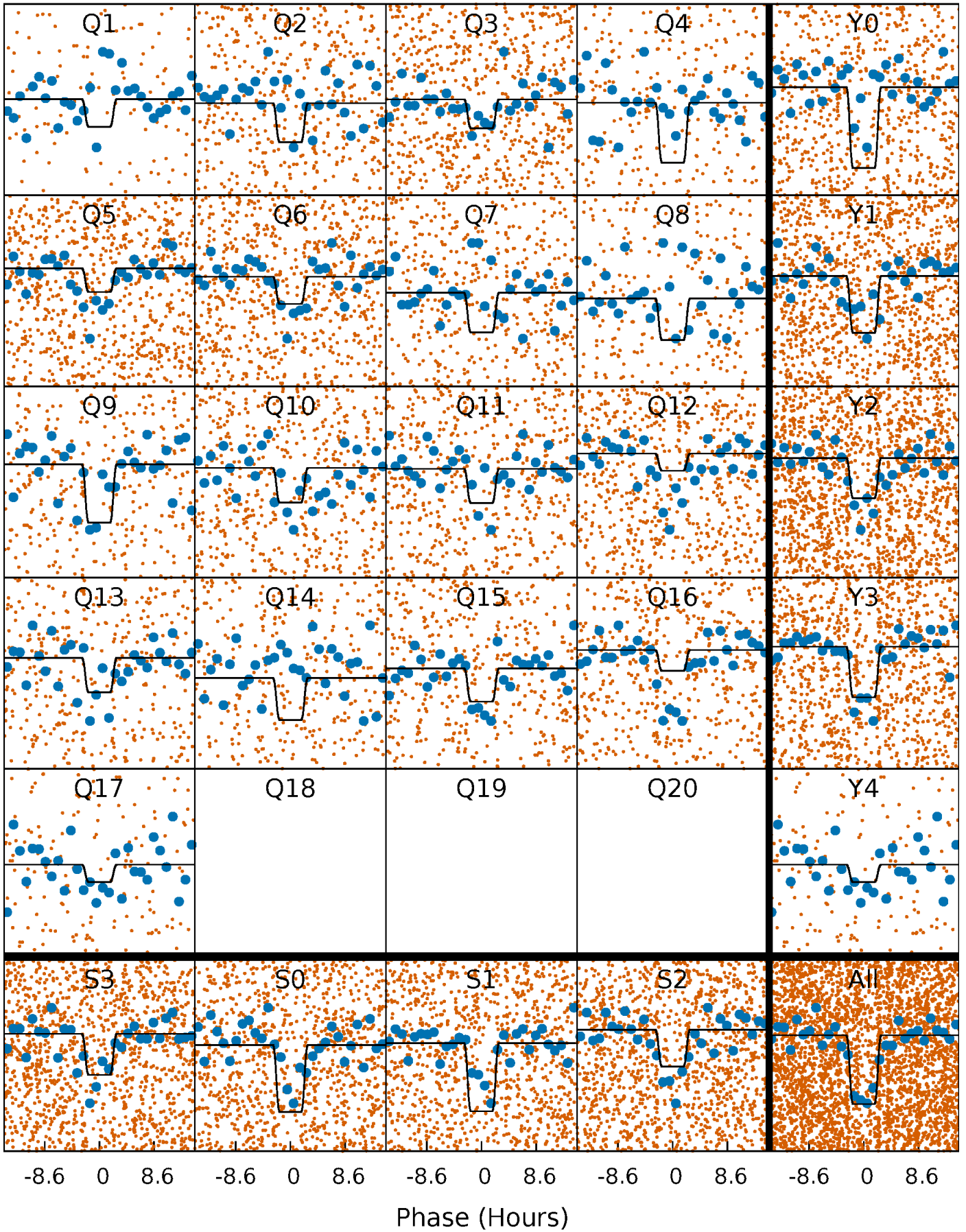
TCE 011921886-01 P= 1.314019 Days  $T_0=132.790836$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011921886-01 P= 1.313915 Days  $T_0=132.802568$  (BKJD)

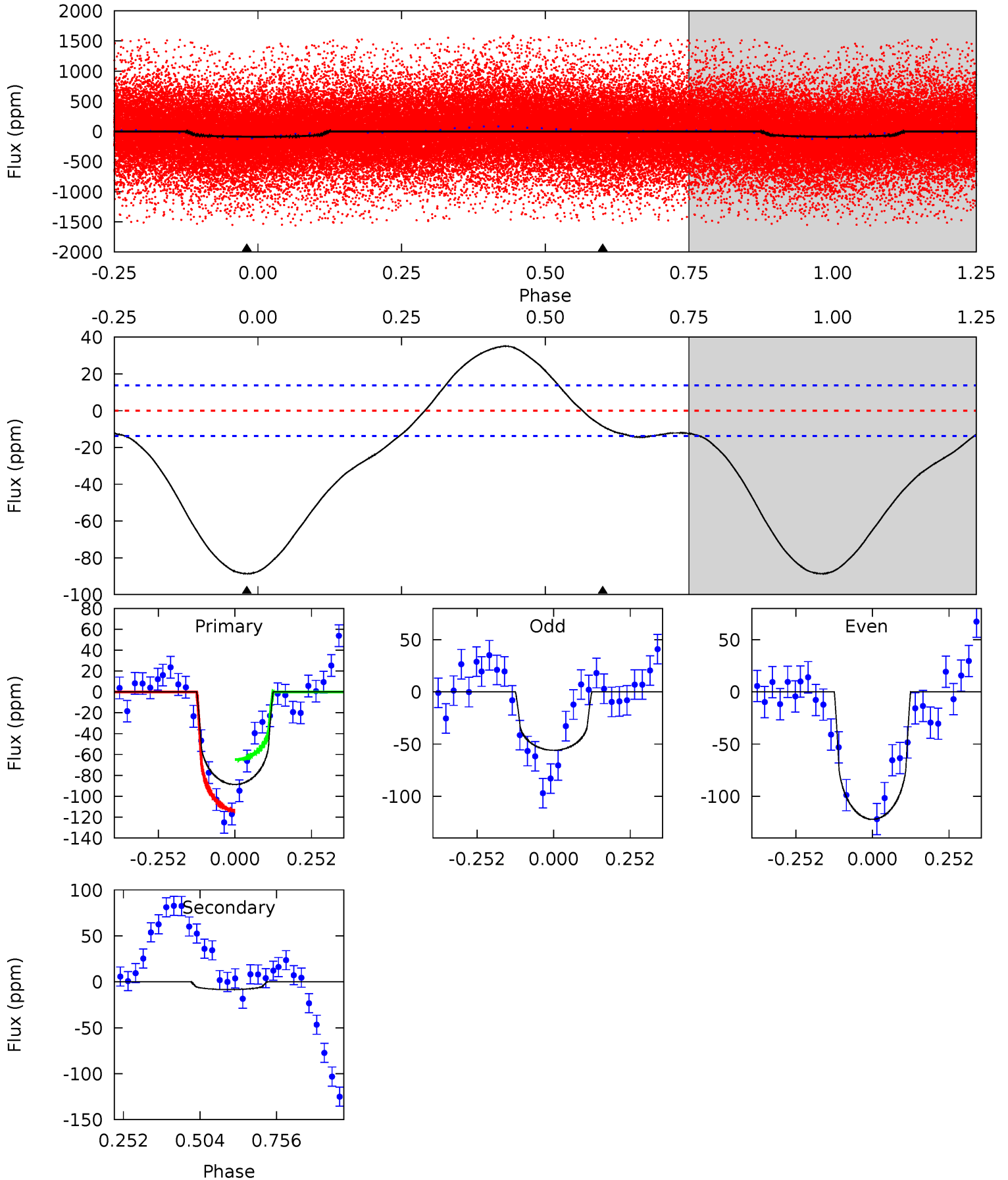




# DV Model-Shift Uniqueness Test

011921886-01, P = 1.314019 Days, E = 131.476817 Days

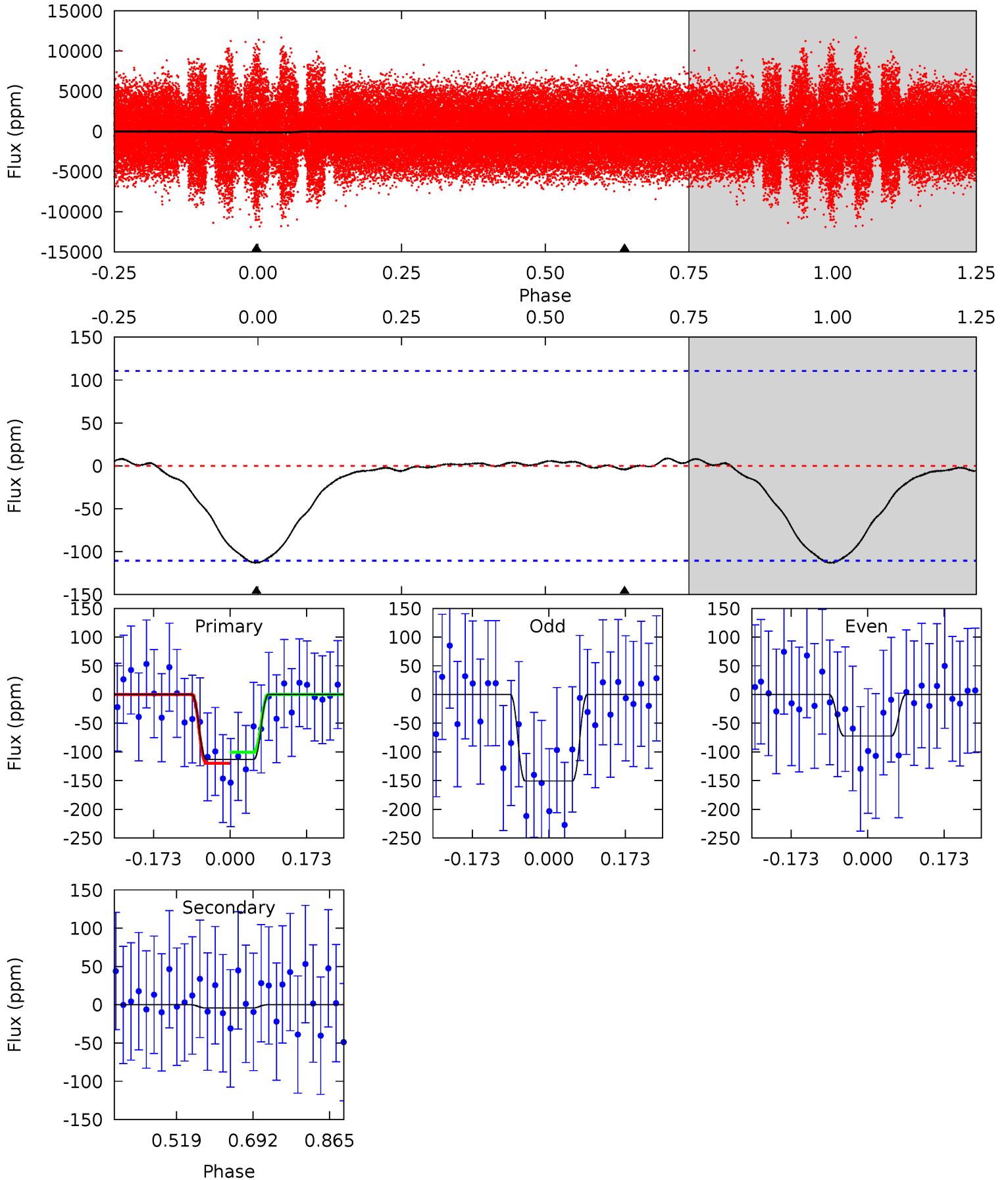
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.2	2.68	0	0	4.37	1.15	3.67	28.2	28.2	2.68	2.68	10.6	1.10	0.28	7.81



# Alt Model-Shift Uniqueness Test

011921886-01, P = 1.313915 Days, E = 131.488653 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.55	0.17	0	0	4.45	1.36	0.12	4.55	4.55	0.17	0.17	1.58	0.97	0.07	0.39



### Stellar Parameters For KIC 011921886

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5510^{+219}_{-197}$	$3.639^{+0.928}_{-0.232}$	$-0.620^{+0.350}_{-0.300}$	$2.608^{+1.013}_{-1.881}$	$1.080^{+0.209}_{-0.288}$	$0.086^{+1.966}_{-0.058}$
	+4%/-4%	+26%/-6%	+56%/-48%	+39%/-72%	+19%/-27%	+2293%/-67%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011921886-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-8 \pm 3$	$1.86^{+1.59}_{-1.25}$	$3401^{+467}_{-716}$	$3384^{+1952}_{-6261}$	$0.781^{+5.869}_{-0.577}$
Alt.	$-4 \pm 25$	$2.67^{+1.89}_{-1.46}$	$3441^{+440}_{-682}$	$-3179^{+7324}_{-1158}$	$0.087^{+1.693}_{-1.421}$

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



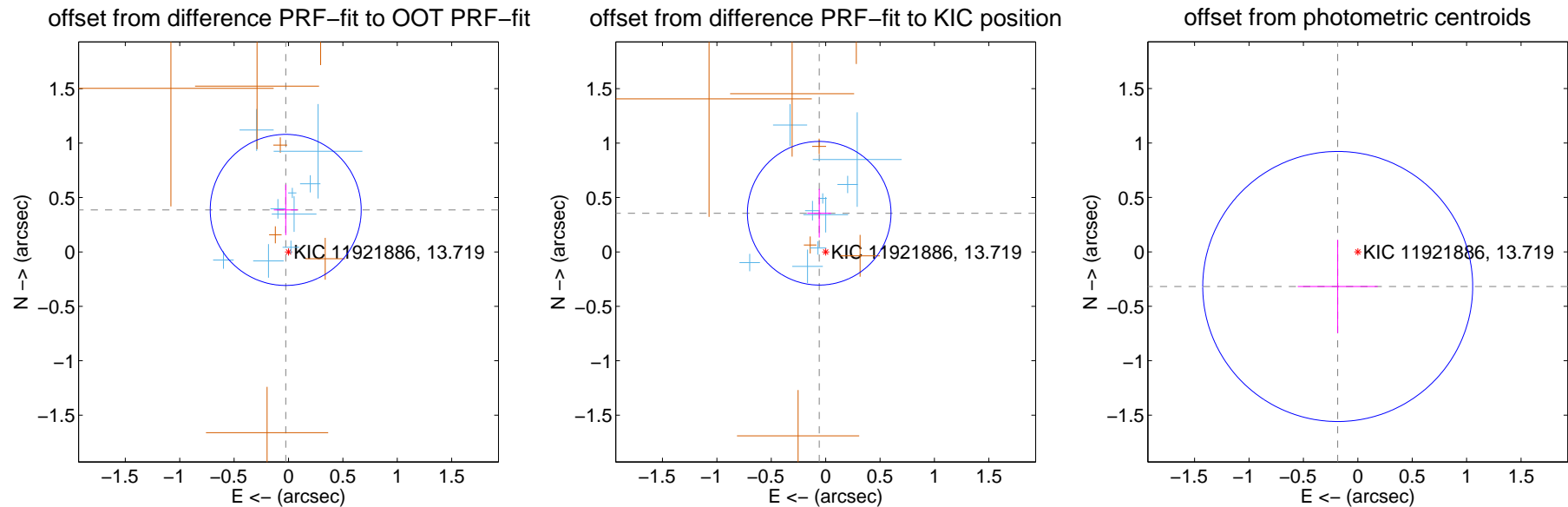
## DV Centroid Data

Supplemental centroid analysis for 011921886-01. Kepler magnitude: 13.72. Transit SNR 7.73

There are 9 quarters with good PRF difference image offsets

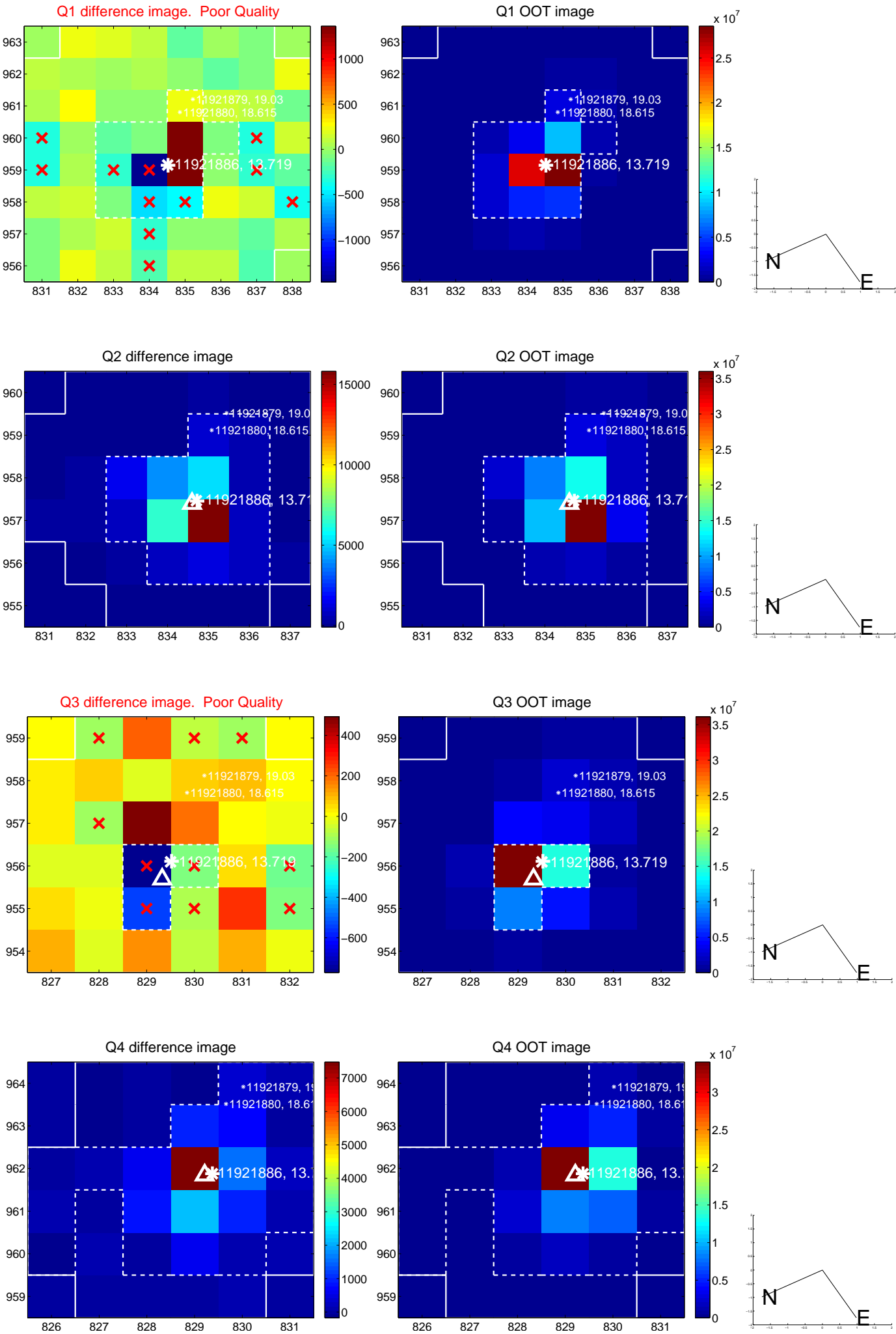
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.387 \pm 0.231$	1.67	$0.026 \pm 0.109$	$0.386 \pm 0.232$
PRF-fit source offset from KIC position	$0.360 \pm 0.220$	1.64	$0.059 \pm 0.110$	$0.355 \pm 0.224$
photometric centroid source offset	$0.37 \pm 0.41$	0.89	$0.18 \pm 0.37$	$-0.32 \pm 0.43$

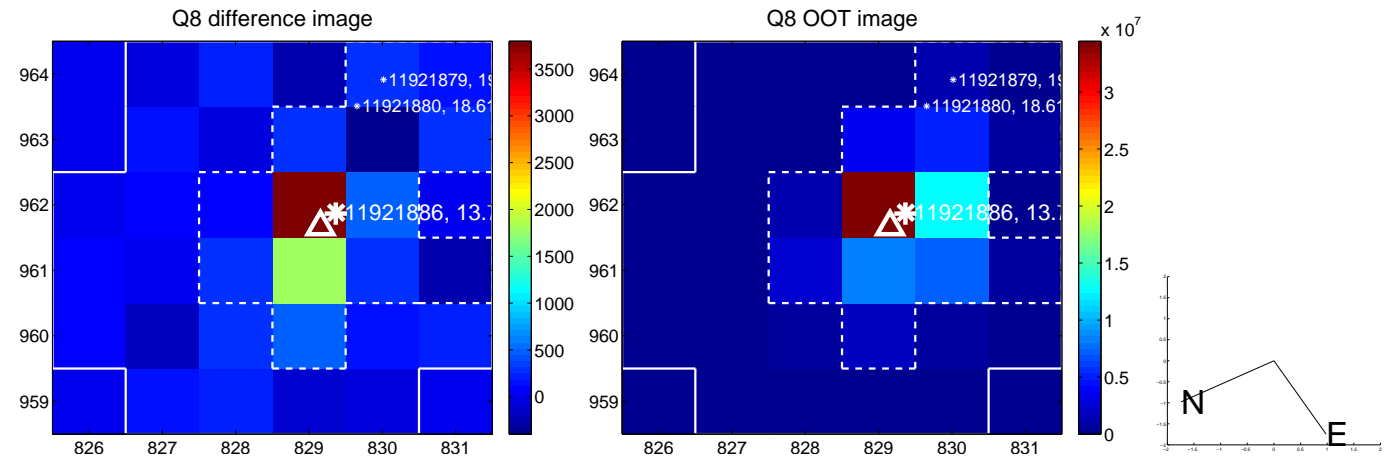
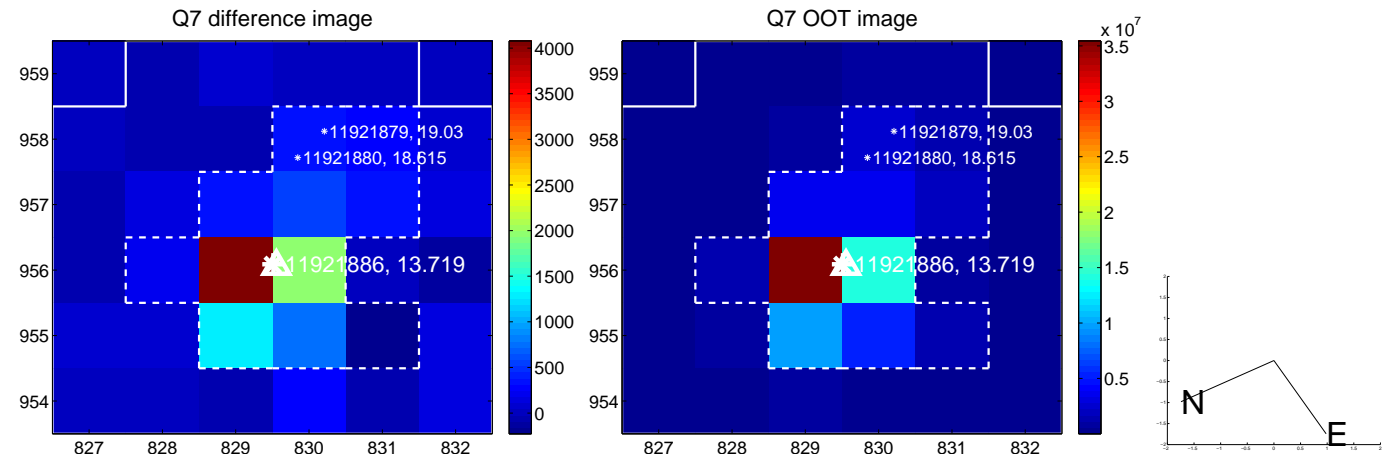
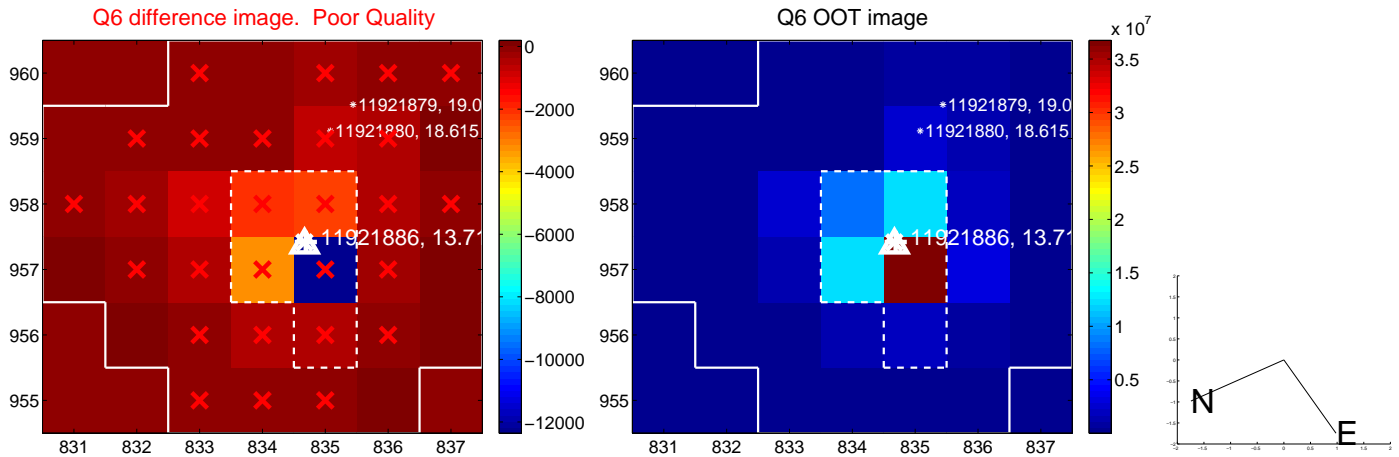
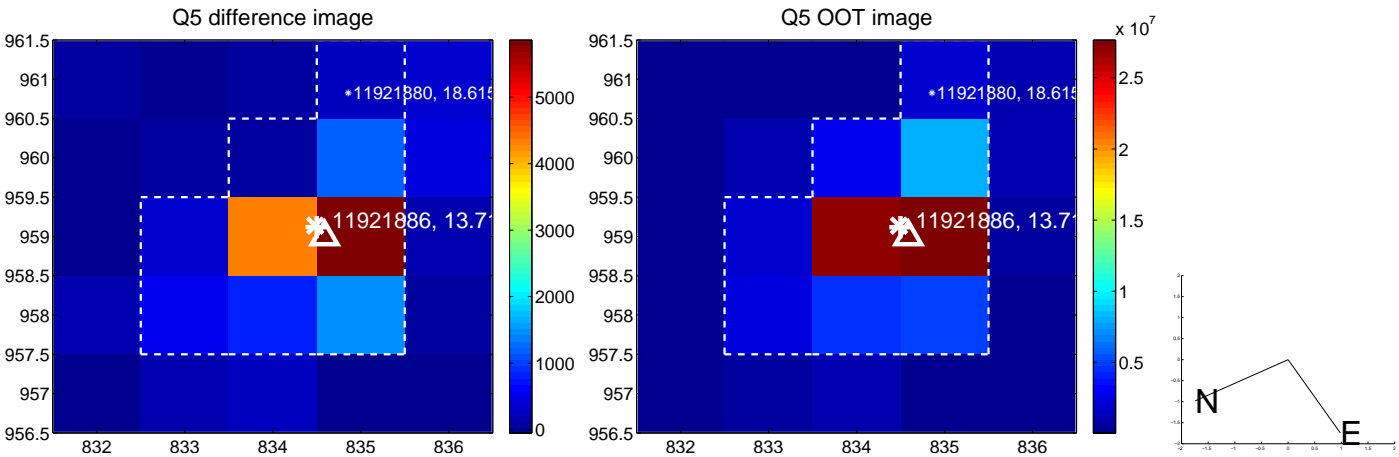


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

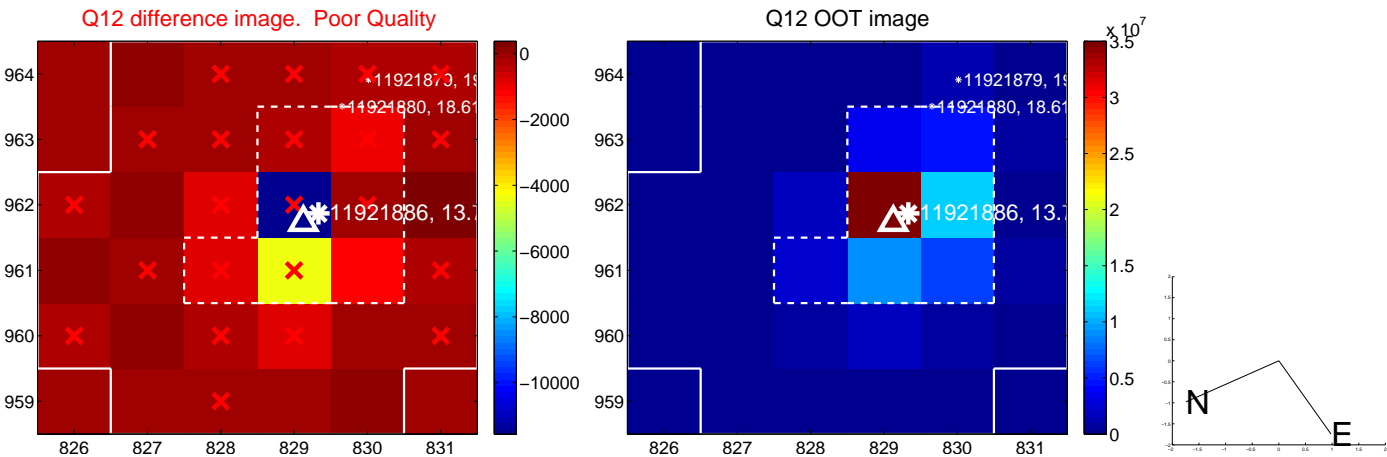
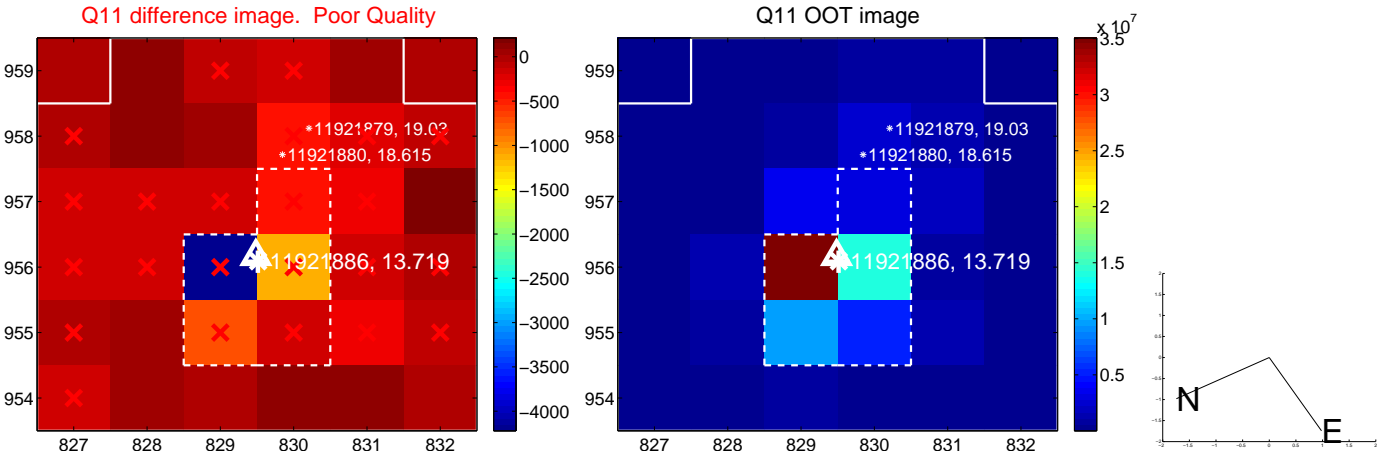
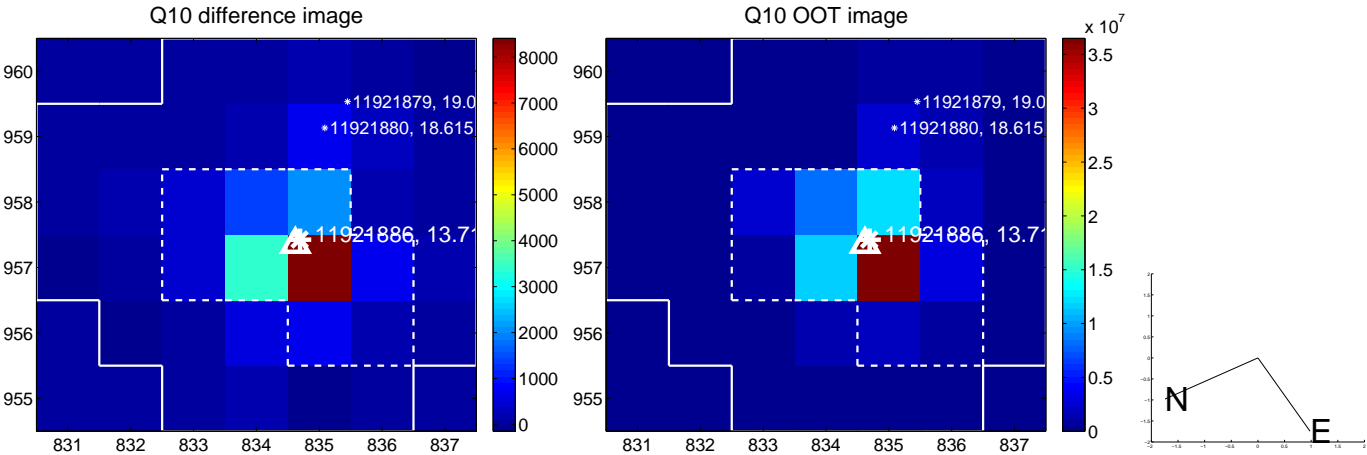
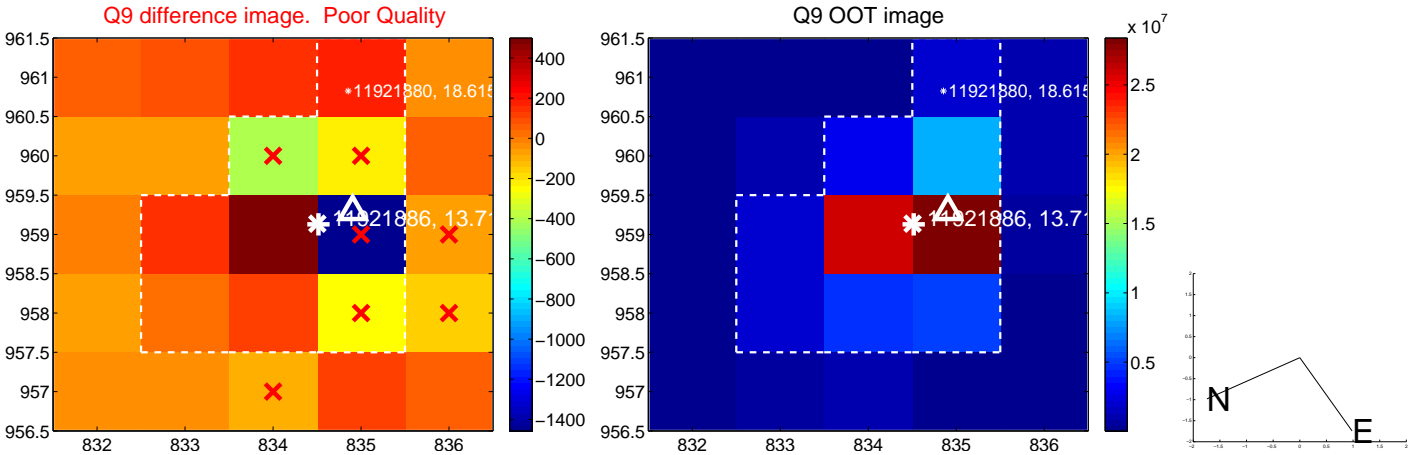


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

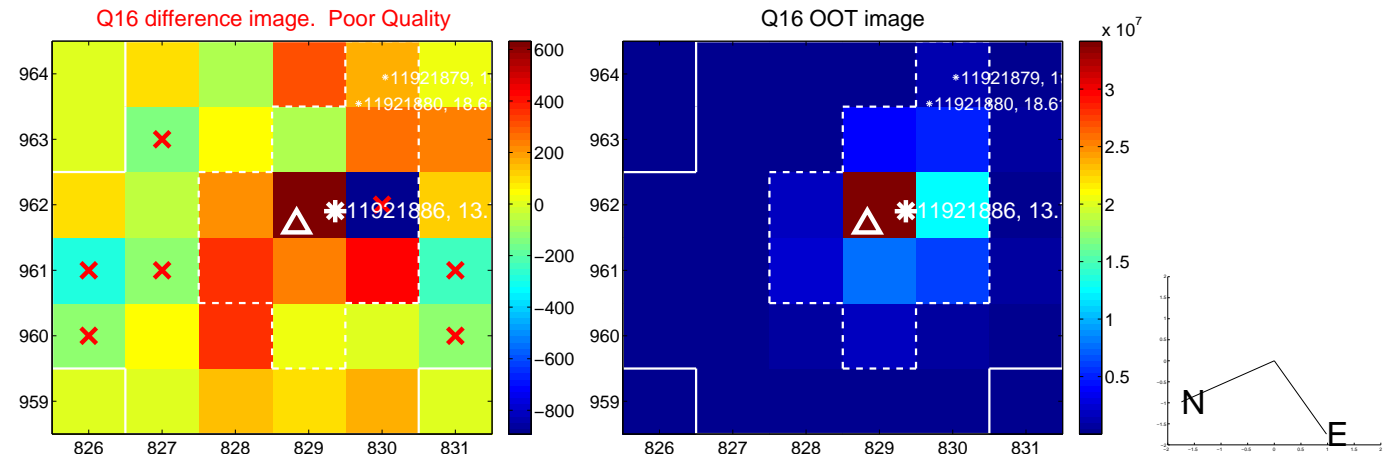
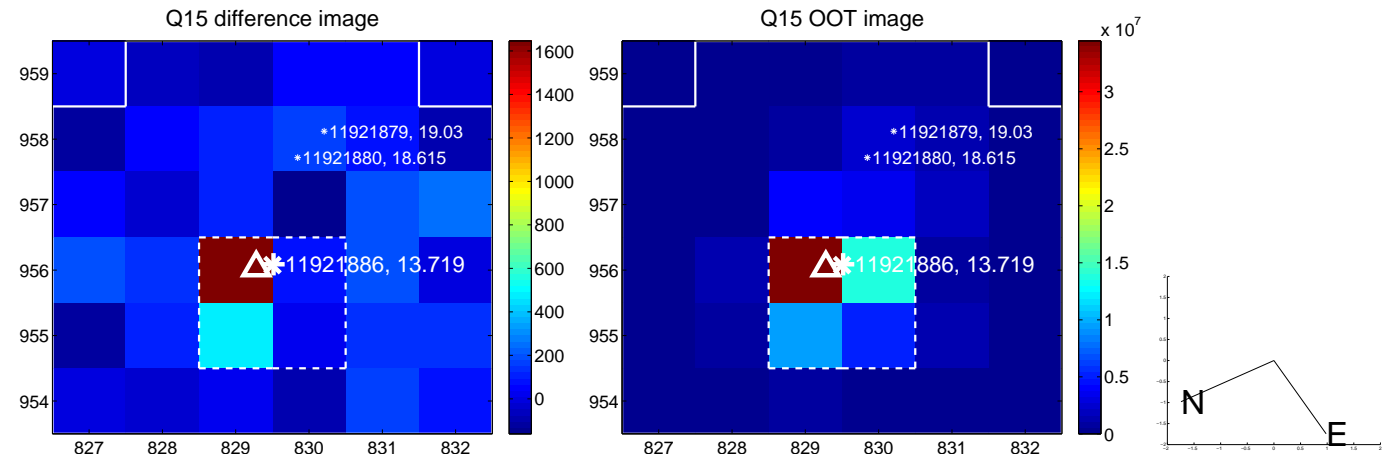
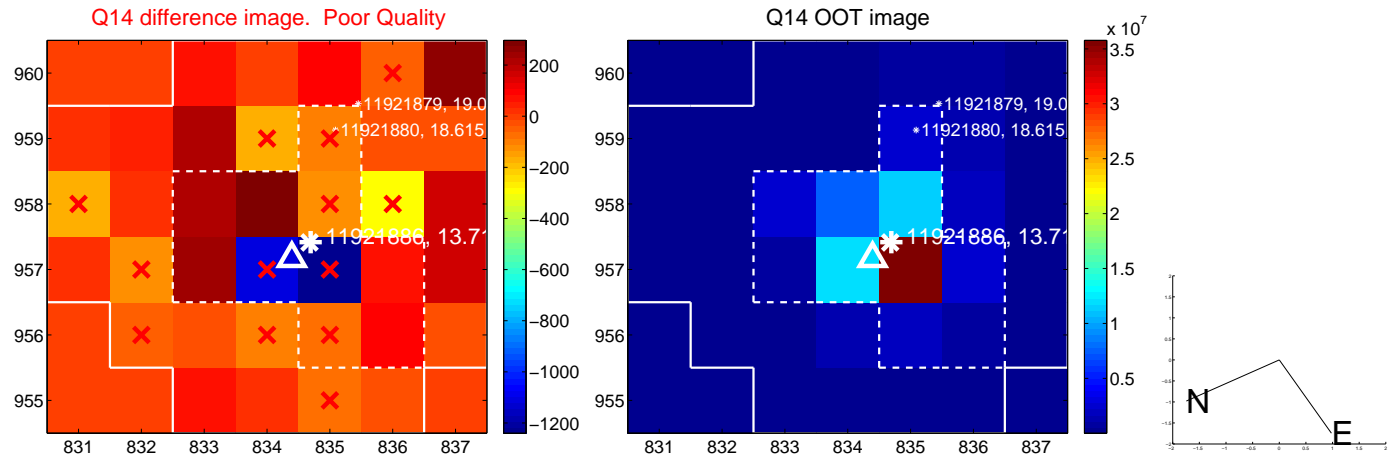
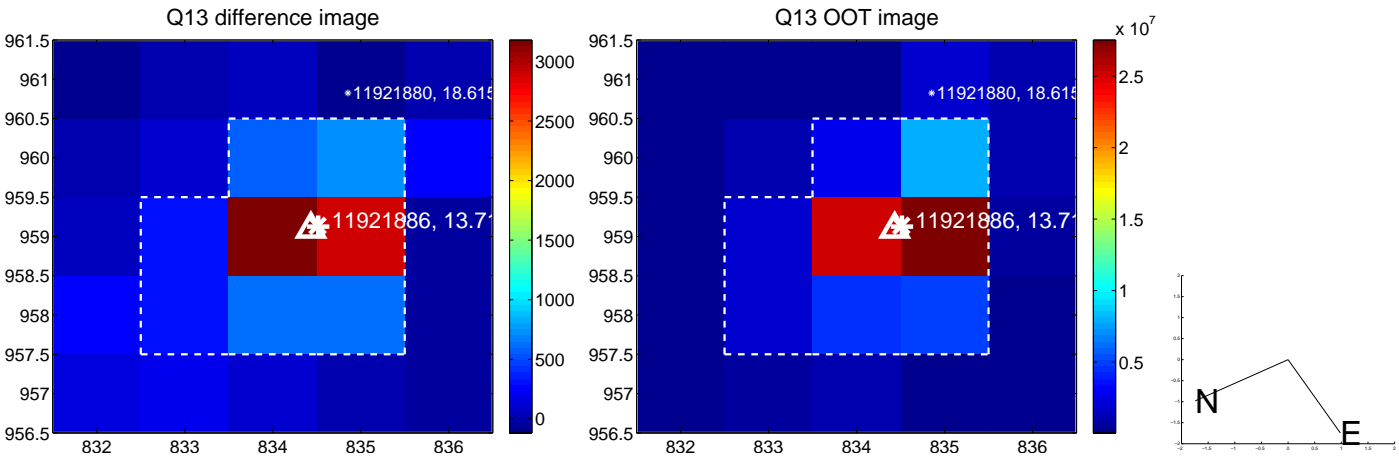




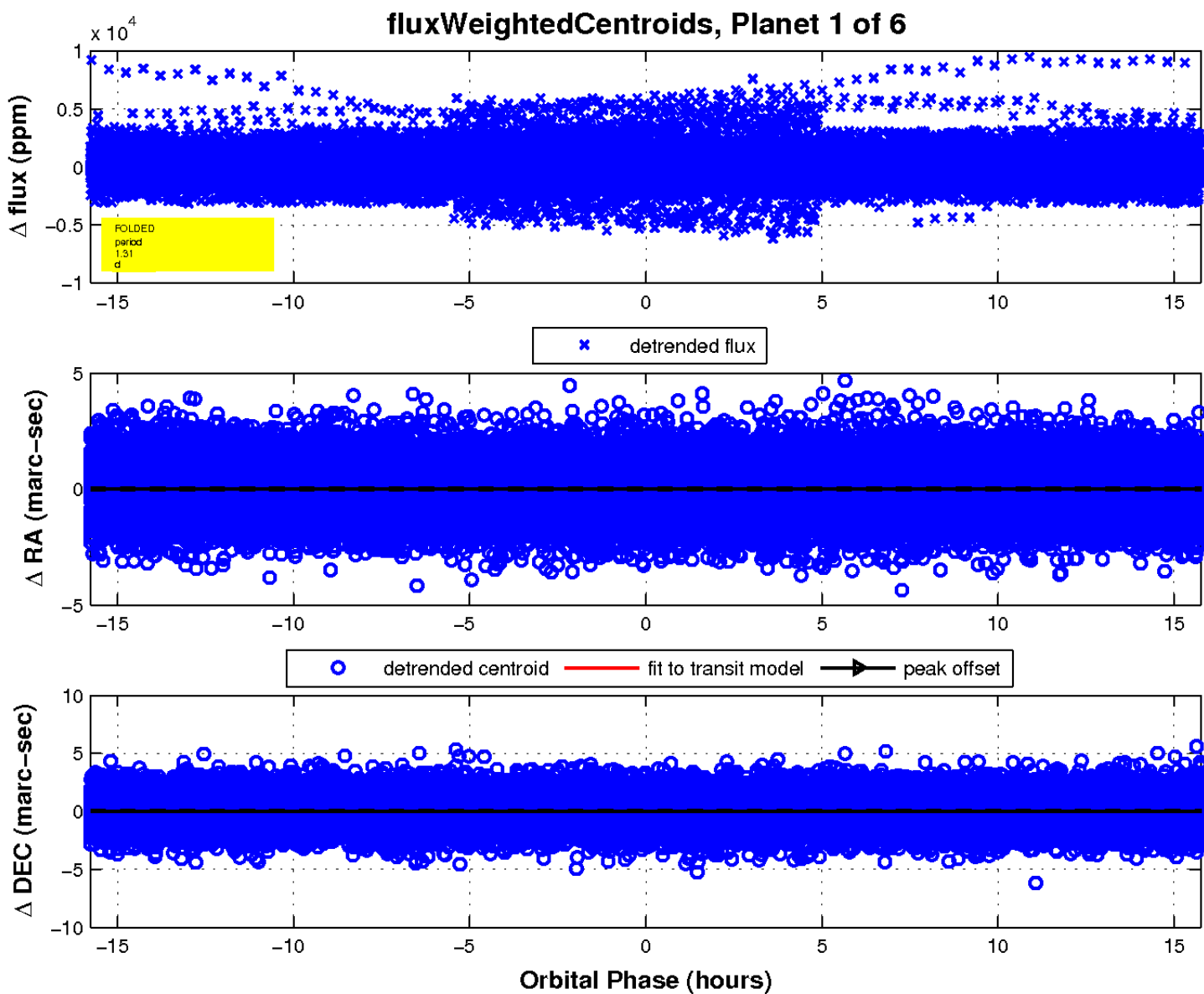
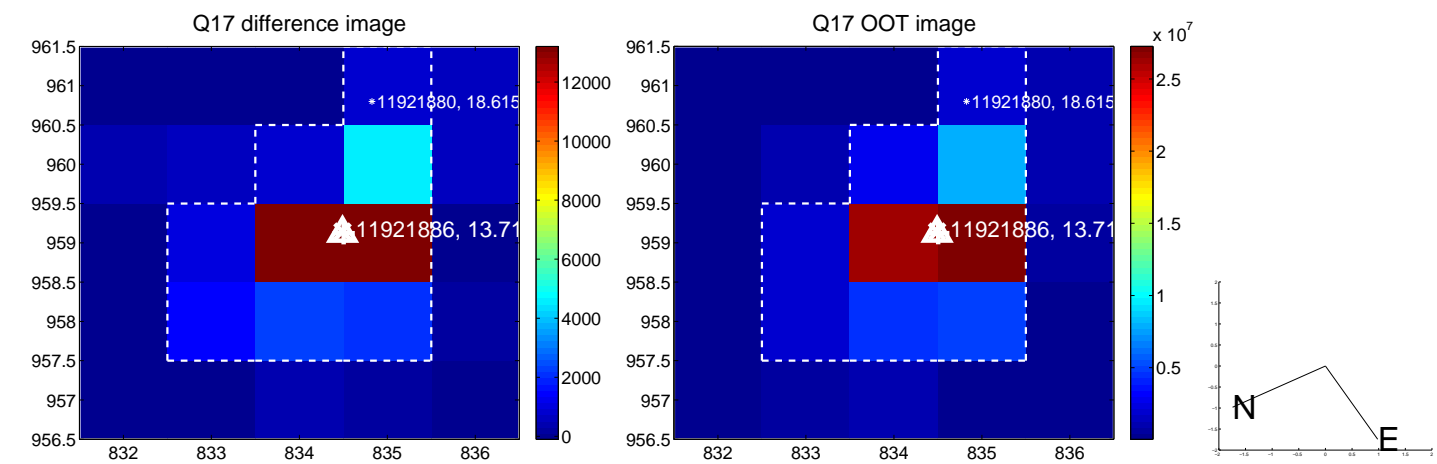
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

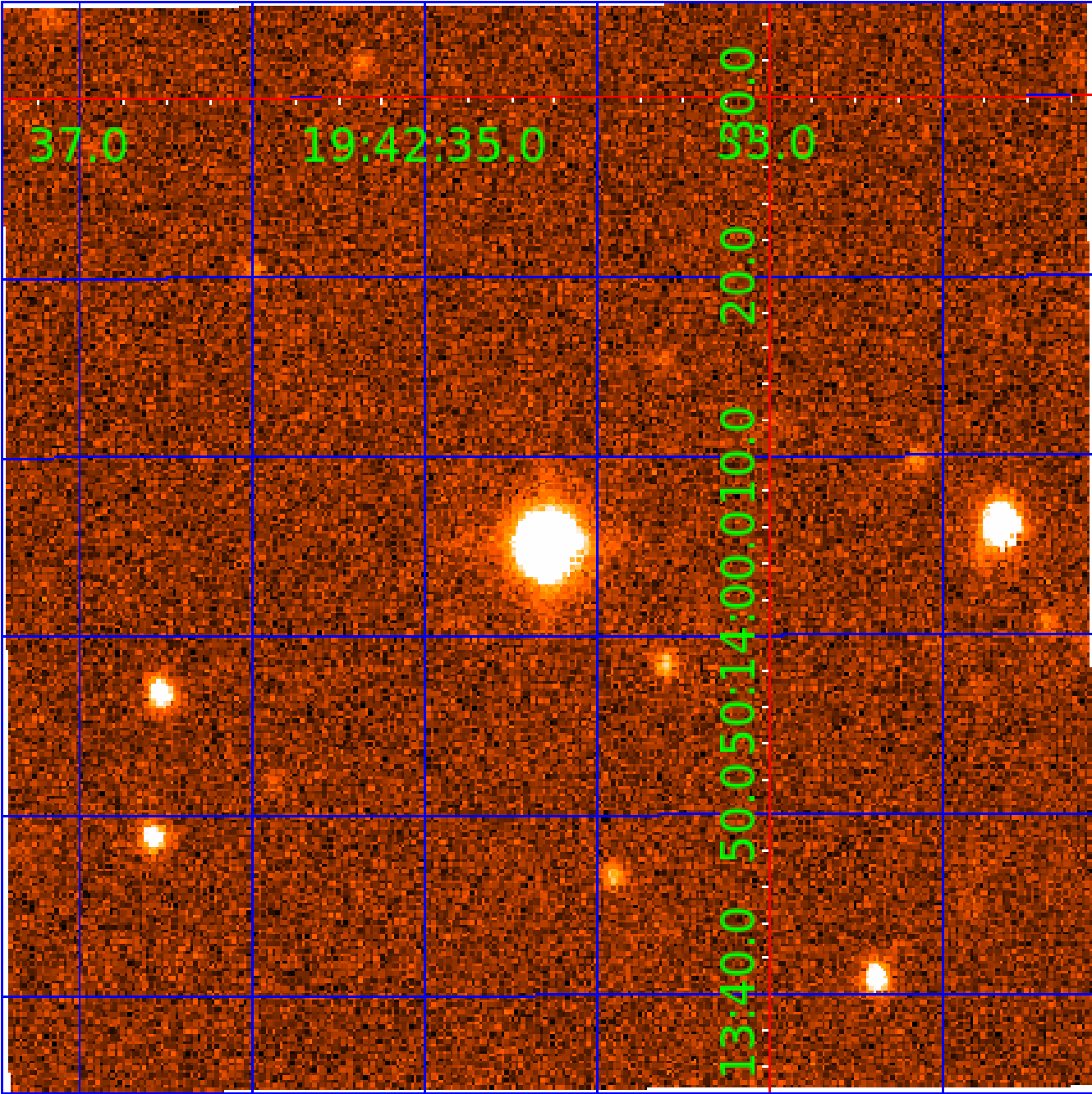


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 011921886

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011921886-01	OBS	No	1.314019	132.790836	59.5	7.500	10.6	7.7	2.61	5510	1.99	9673.20
011921886-02	OBS	No	98.917364	150.560664	128.5	6.258	9.5	1.4	2.61	5510	3.08	30.43
011921886-03	OBS	No	437.626084	557.784613	2229.7	13.427	9.0	9.1	2.61	5510	14.20	4.19
011921886-04	OBS	No	248.226516	355.549780	973.1	10.511	9.5	5.1	2.61	5510	8.72	8.92
011921886-05	OBS	No	579.536993	207.005908	3166.7	14.298	10.2	8.4	2.61	5510	14.55	2.88
011921886-06	OBS	No	587.359791	187.901531	6204.3	52.830	9.7	7.3	2.61	5510	23.79	2.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011921886-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
011921886-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—HALO_GHOST
011921886-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011921886-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011921886-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011921886-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

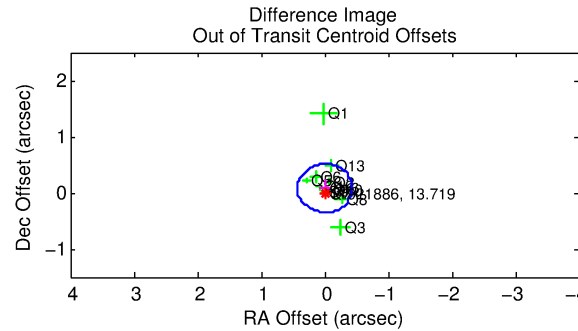
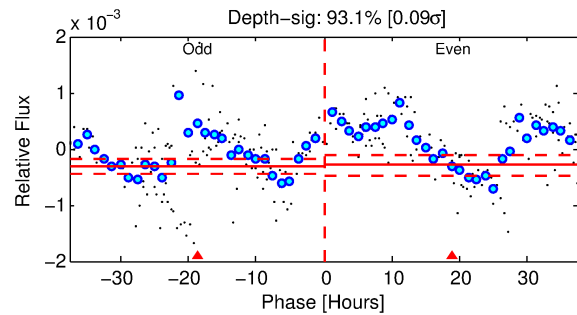
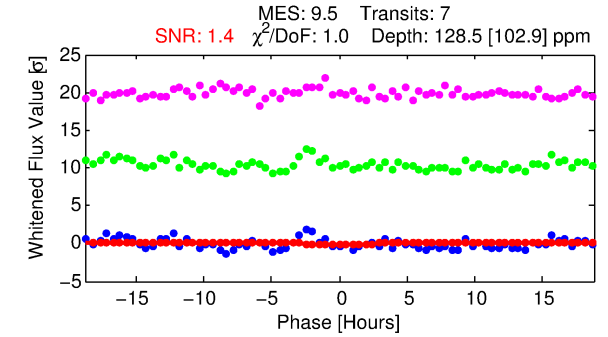
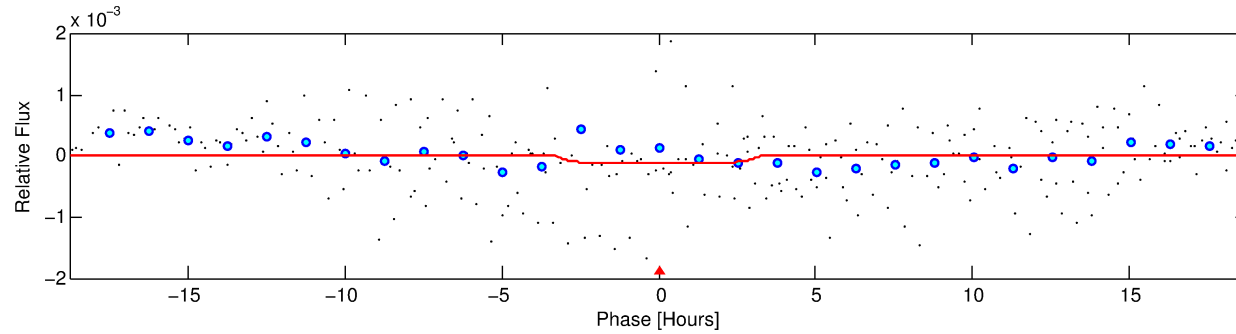
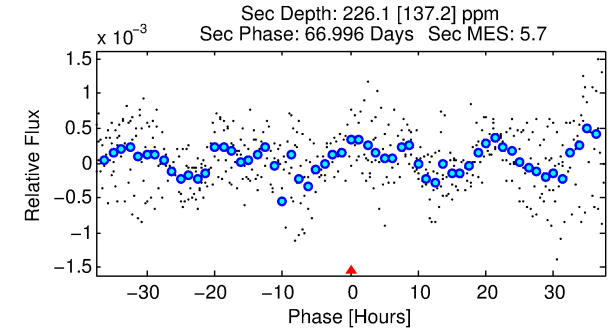
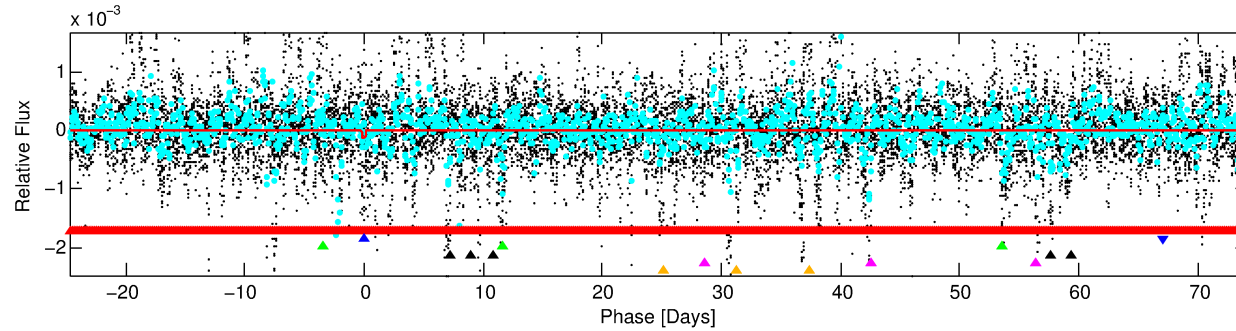
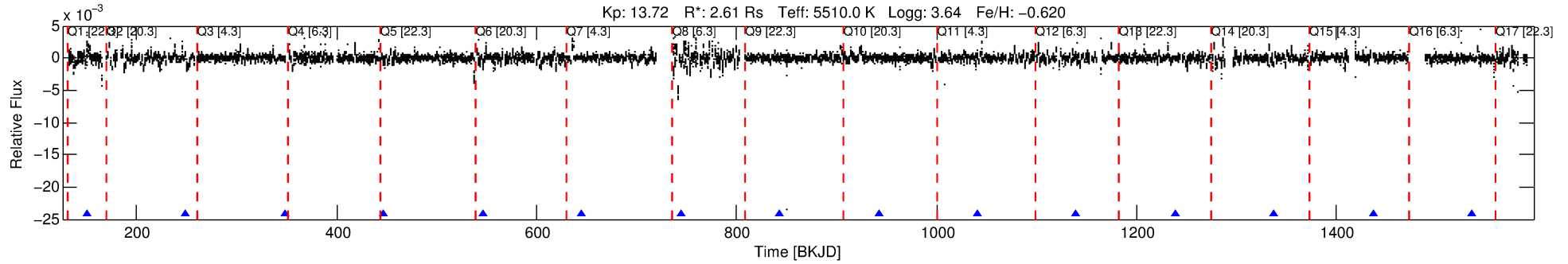
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011921886-02

No Significant Match Found

# DV One-Page Summary

KIC: 11921886 Candidate: 2 of 6 Period: 98.917 d



## DV Fit Results:

Period = 98.91736 [0.00608] d  
Epoch = 150.5607 [0.0447] BKJD  
Rp/R\* = 0.0108 [0.0548]  
a/R\* = 98.04 [2240.84]  
b = 0.60 [24.34]  
Seff = 30.43 [46.01]  
Teq = 599 [226] K  
Rp = 3.08 [15.74] Re  
a = 0.4296 [0.3692] AU  
Ag = 2420.08 [24803.36] [0.10σ]  
Teffp = 6495 [16463] K [0.36σ]

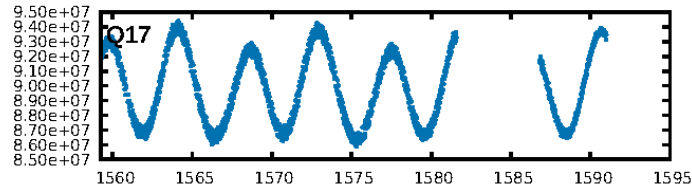
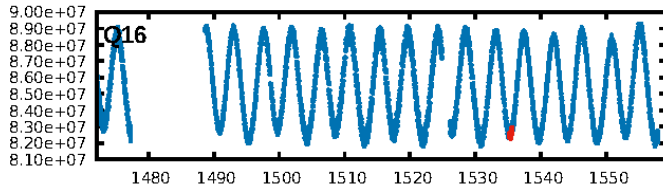
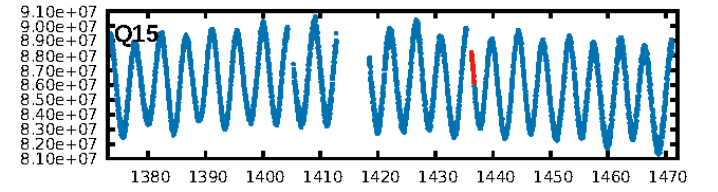
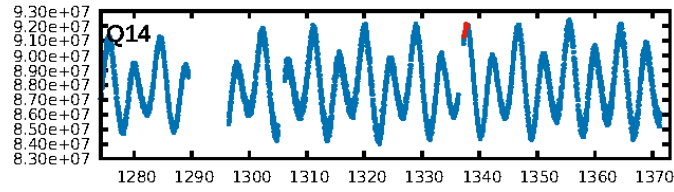
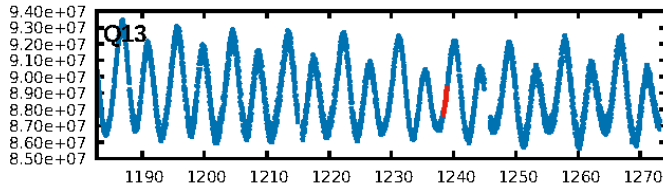
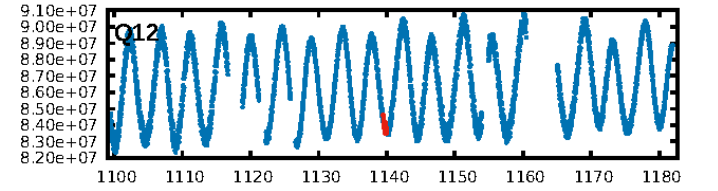
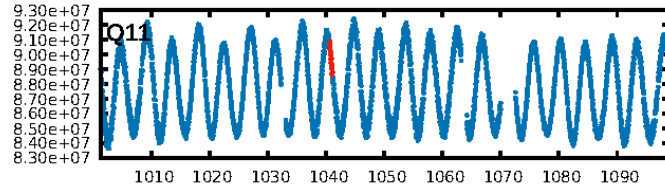
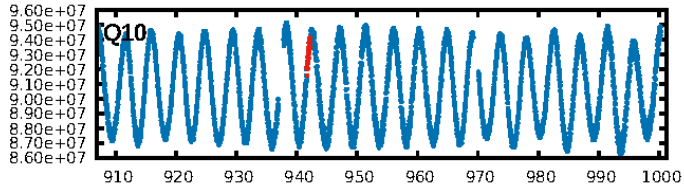
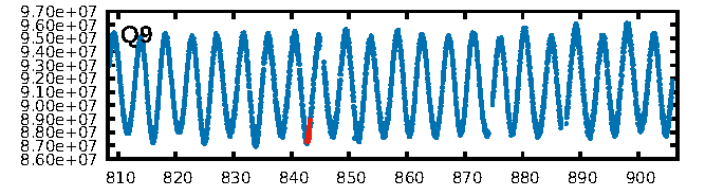
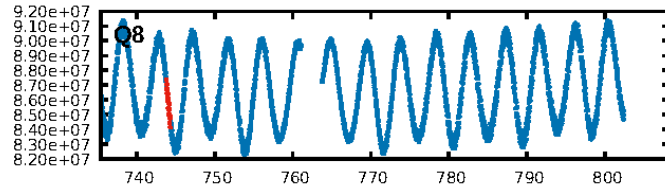
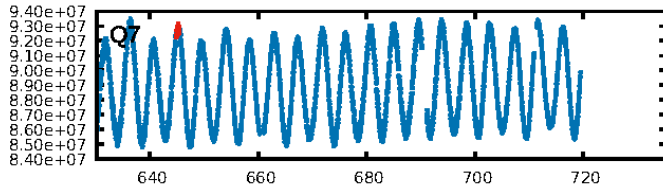
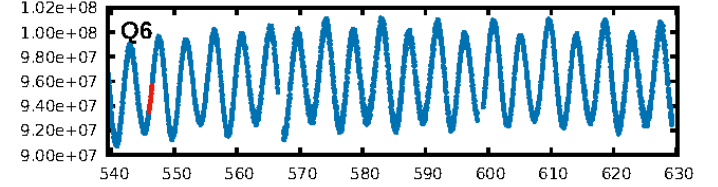
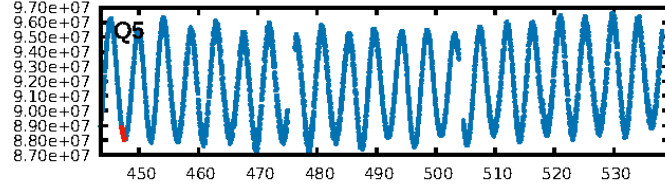
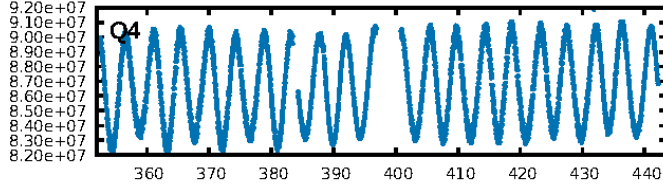
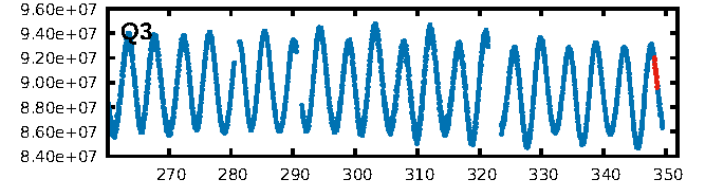
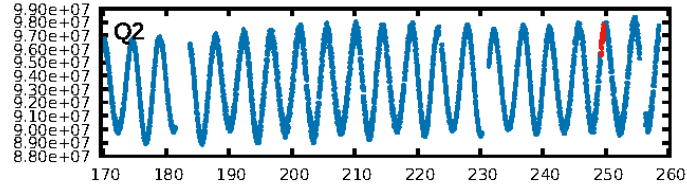
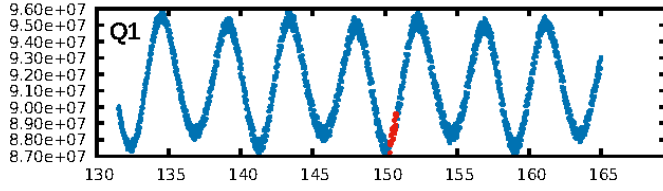
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [239.82σ]  
LongPeriod-sig: 100.0% [292.93σ]  
ModelChiSquare2-sig: 24.5%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.23e-11**  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: 0.004496  
Centroid-sig: 89.9%  
Centroid-so: 0.923 arcsec [0.54σ]  
OotOffset-rm: 0.081 arcsec [0.56σ]  
OotOffset-st: 3/2/3/4 [12]  
KicOffset-rm: 0.053 arcsec [0.35σ]  
KicOffset-st: 3/2/3/4 [12]  
DiffImageQuality-fgm: 0.67 [8/12]  
DiffImageOverlap-fno: 0.00 [0/12]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:54:19 Z

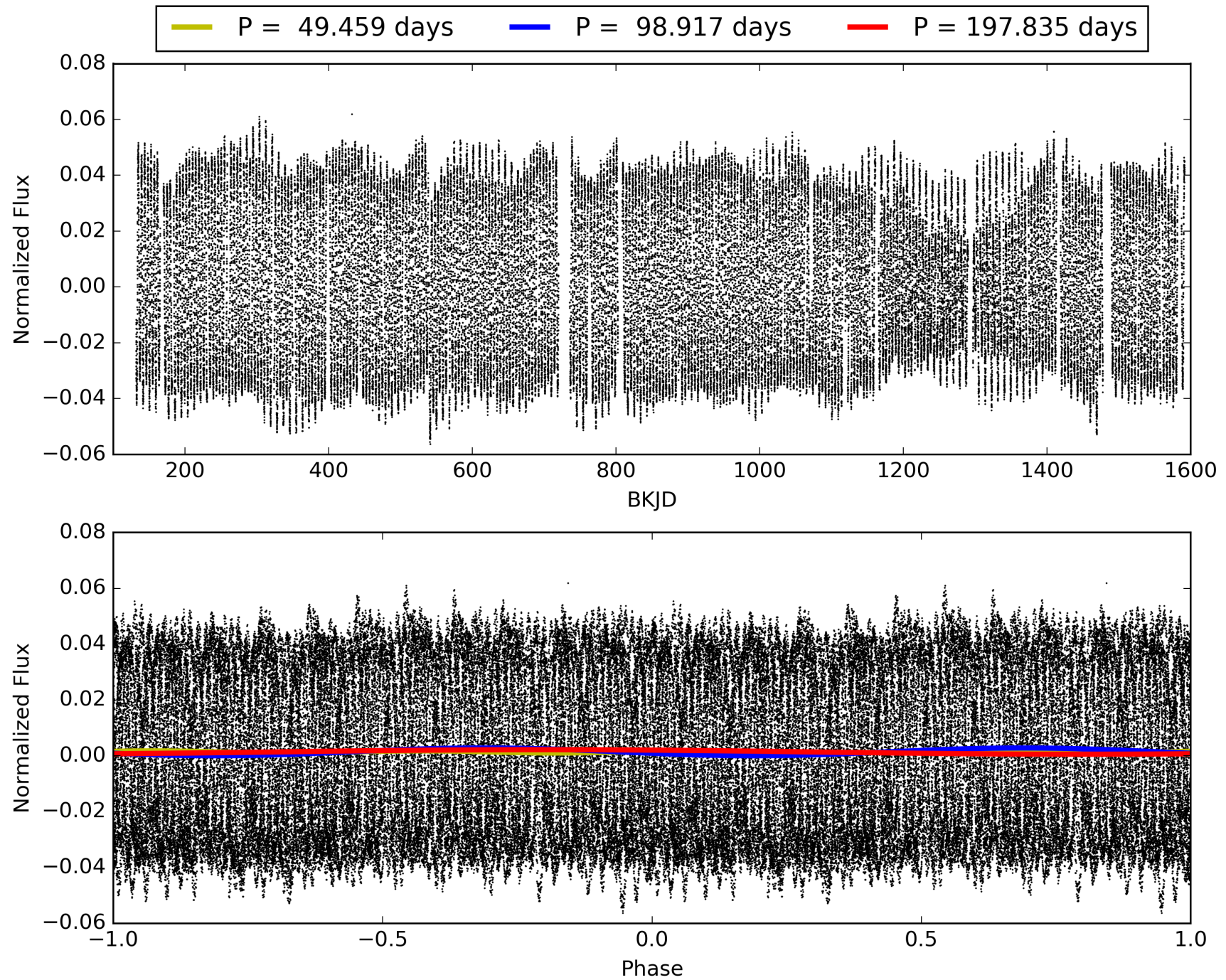
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011921886-02, PDC Light Curves



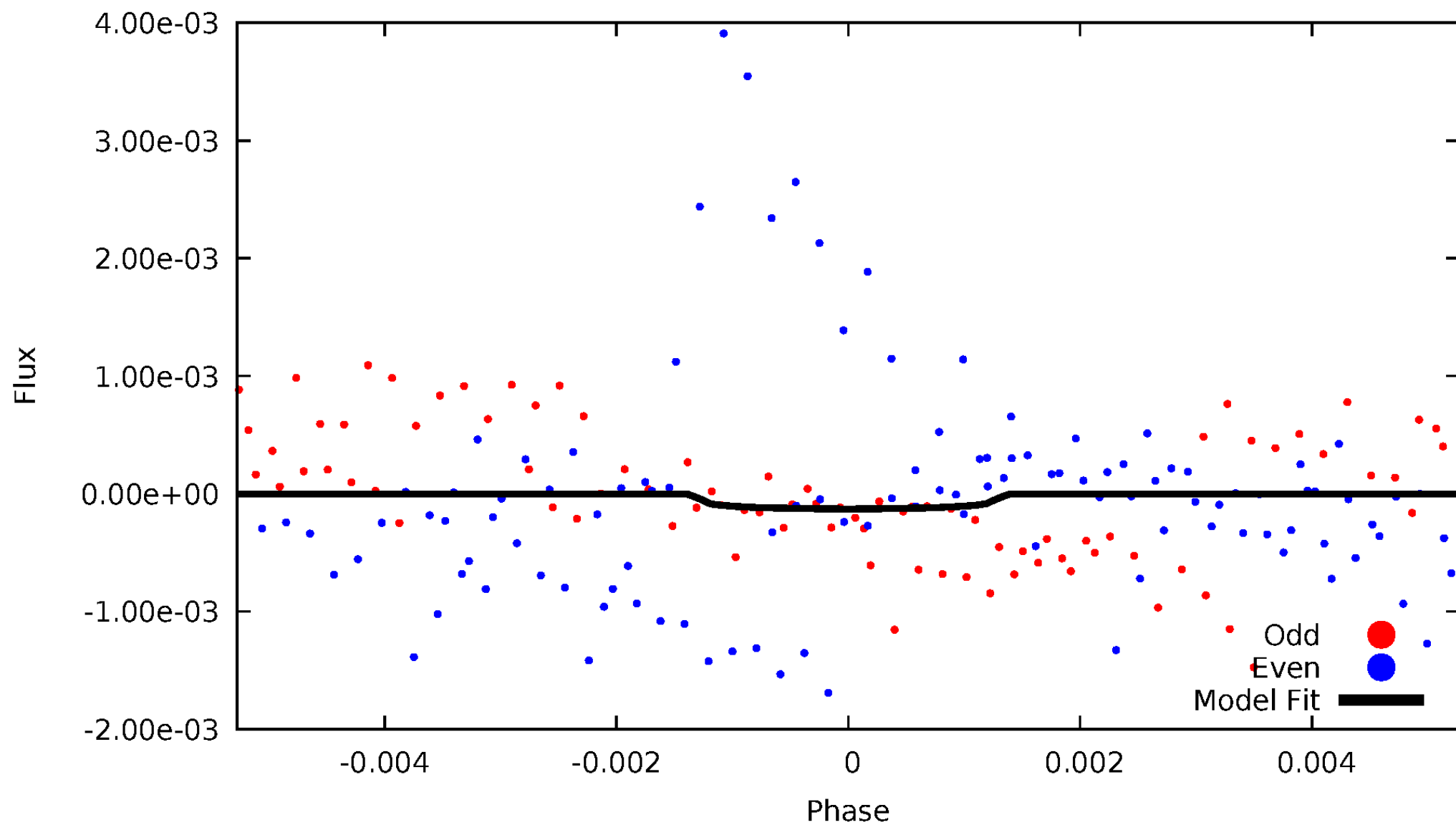


# TCE 011921886-02



# DV Odd/Even

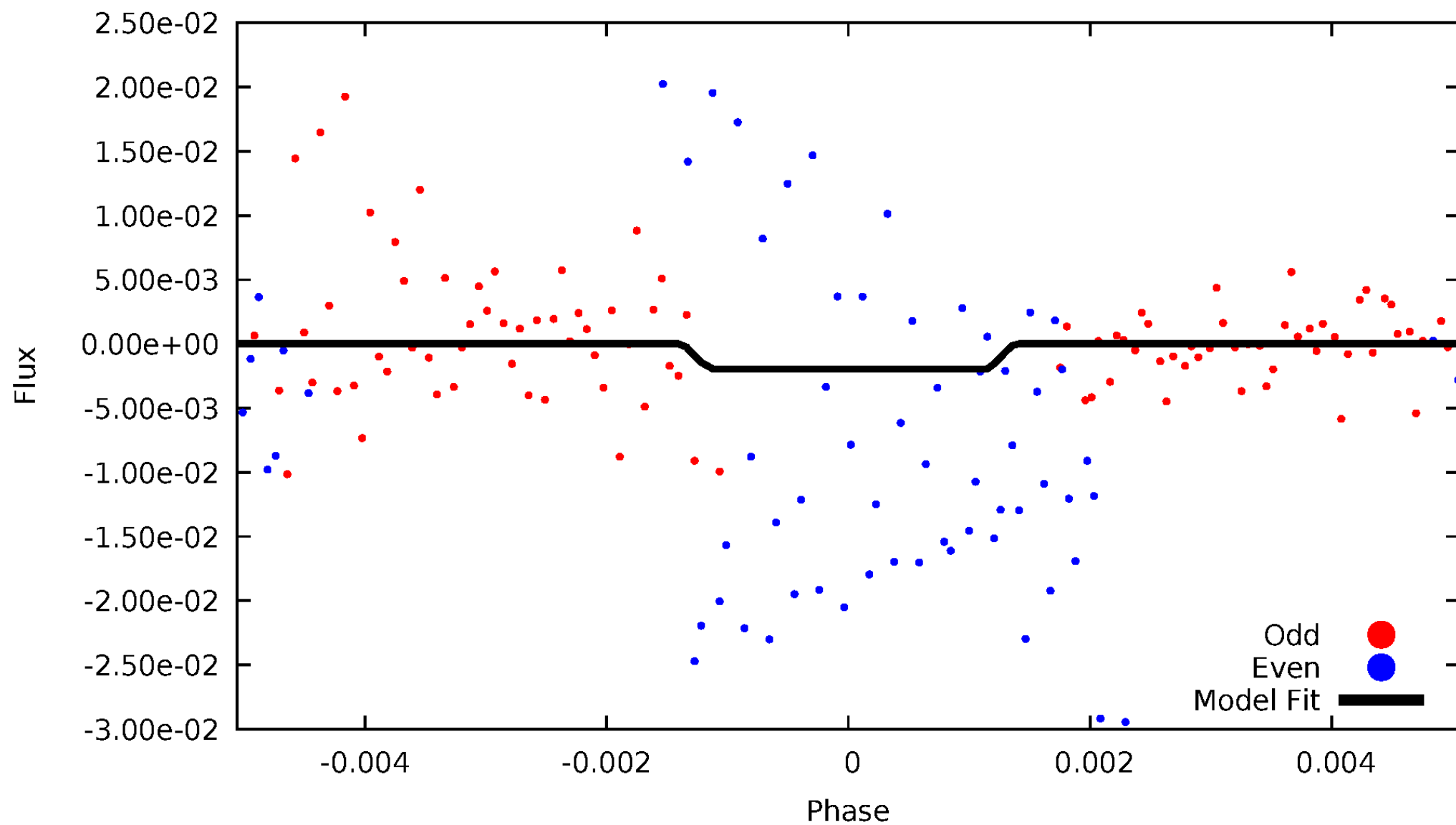
TCE 011921886-02





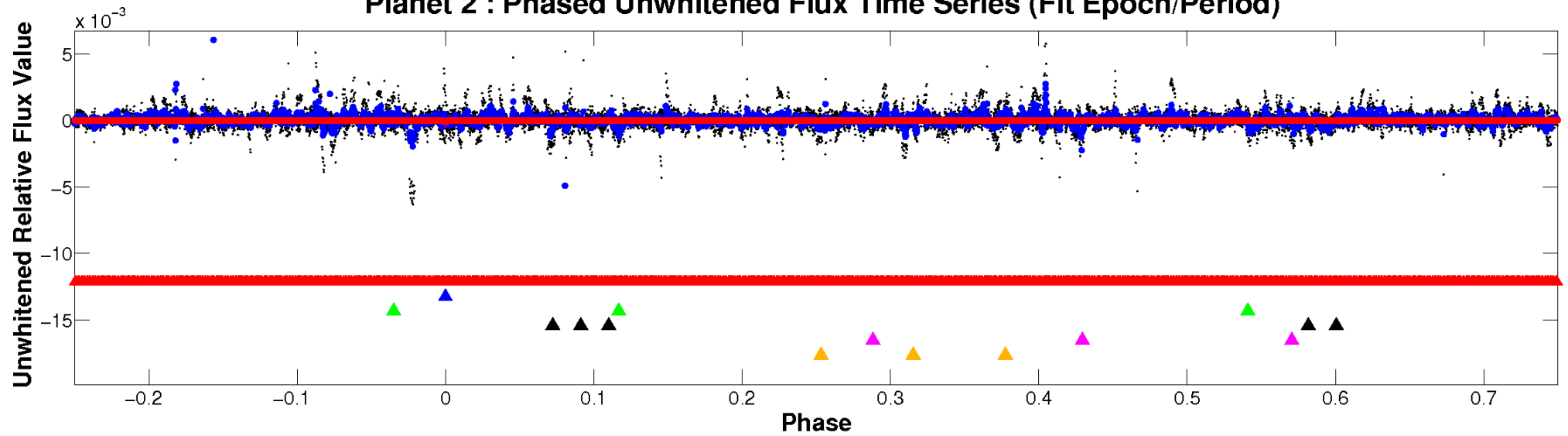
# ALT Odd/Even

TCE 011921886-02

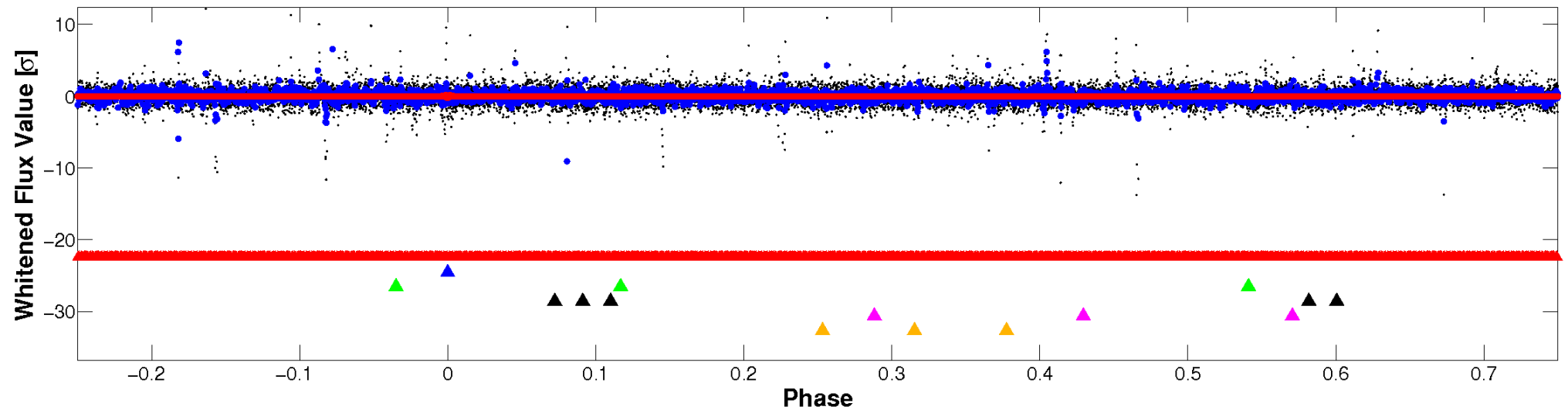


# Non-Whitened Vs. Whitened Light Curve

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

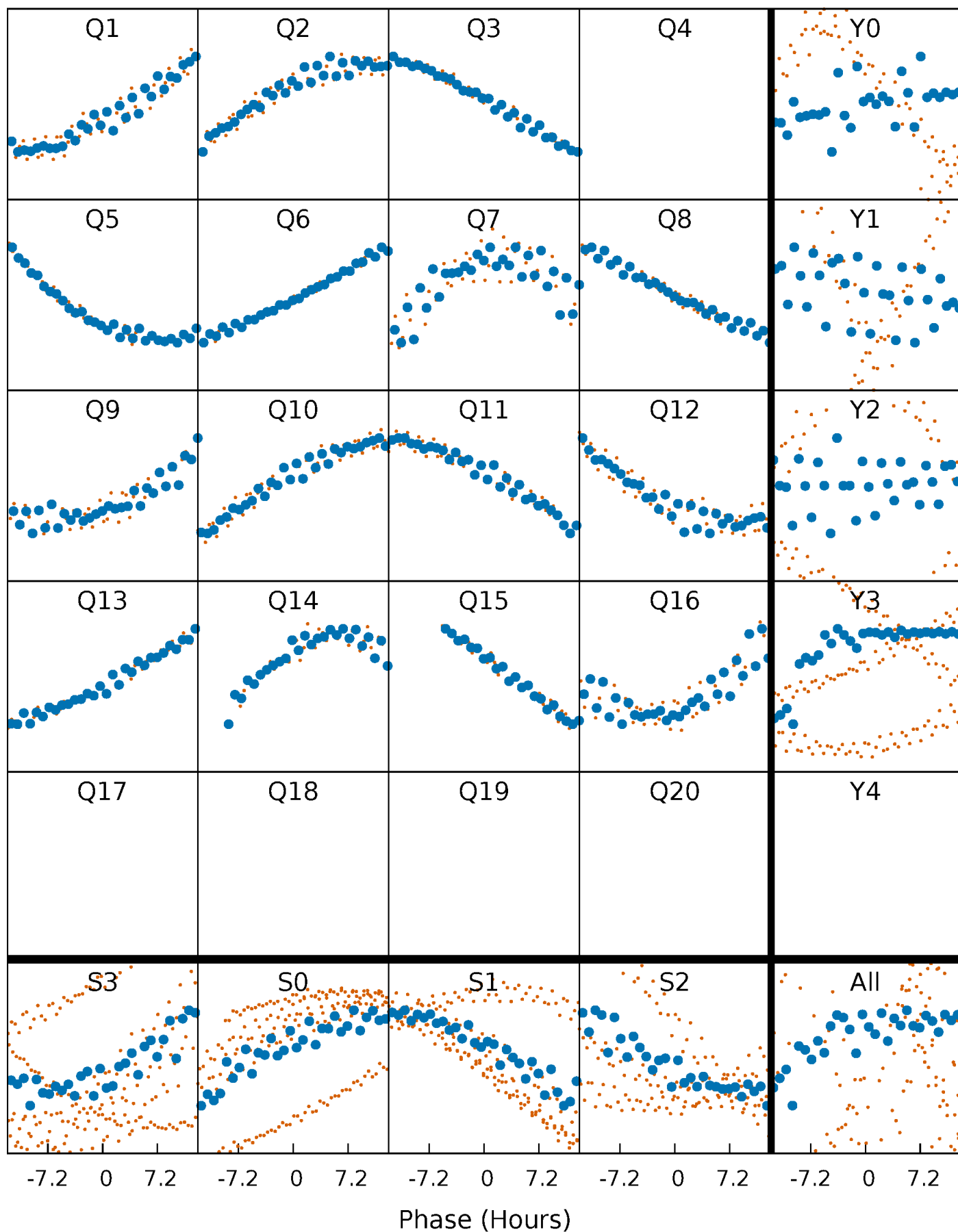


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



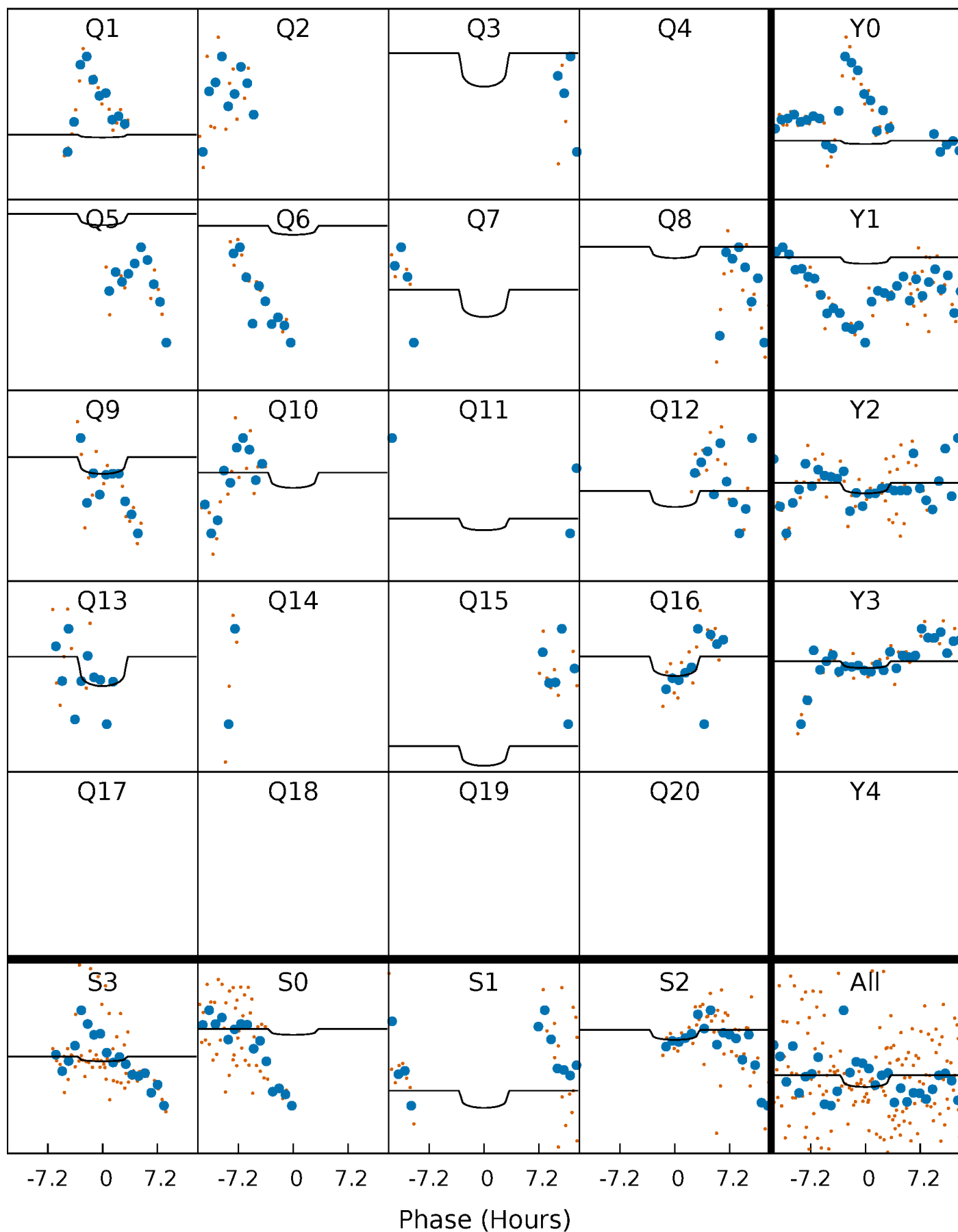
# PDC Quarter-Phased Transit Curves

TCE 011921886-02   P= 98.917364 Days    $T_0=150.560664$  (BKJD)



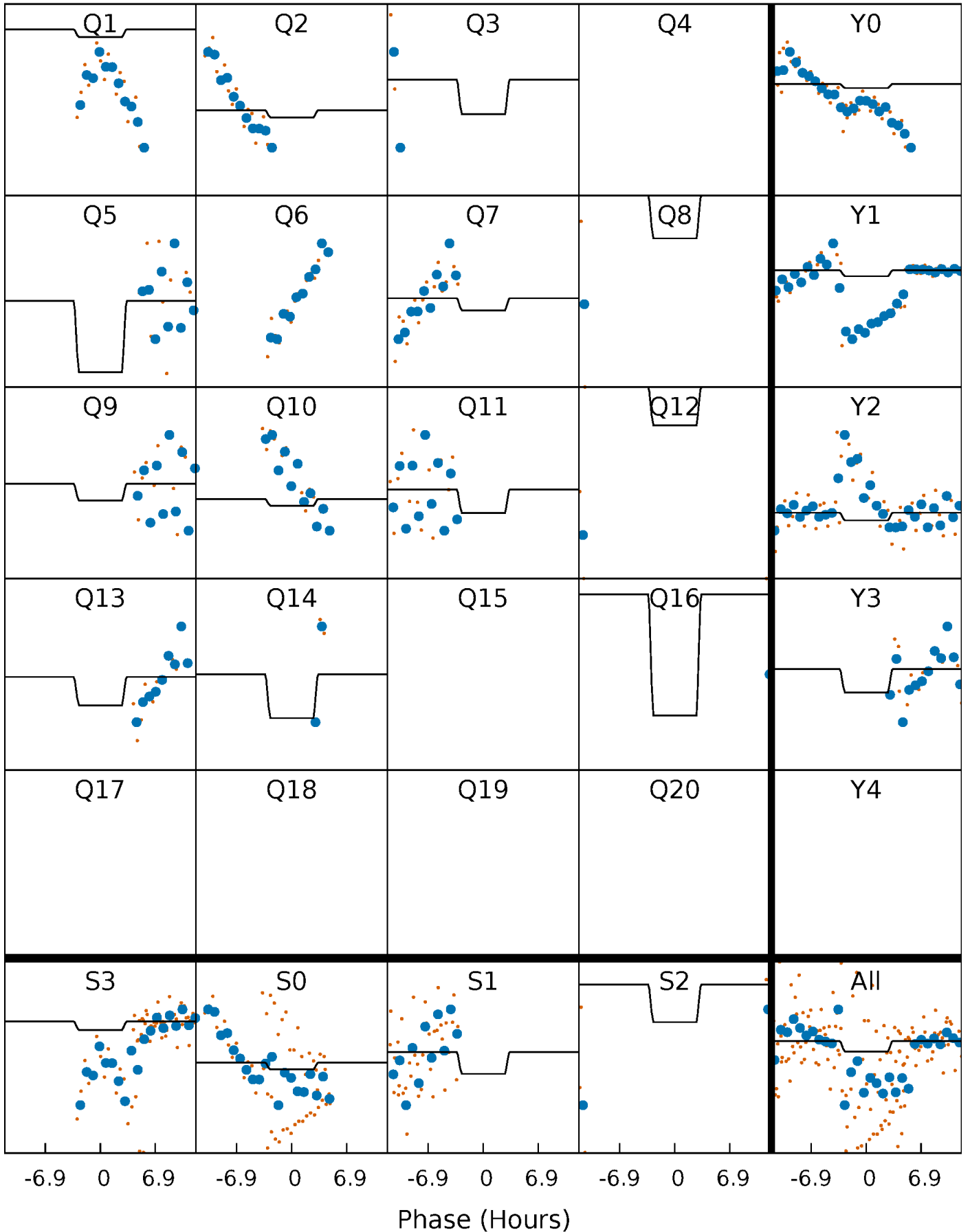
# DV Quarter-Phased Transit Curves

TCE 011921886-02 P= 98.917364 Days  $T_0=150.560664$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011921886-02 P= 98.884804 Days  $T_0=150.472716$  (BKJD)

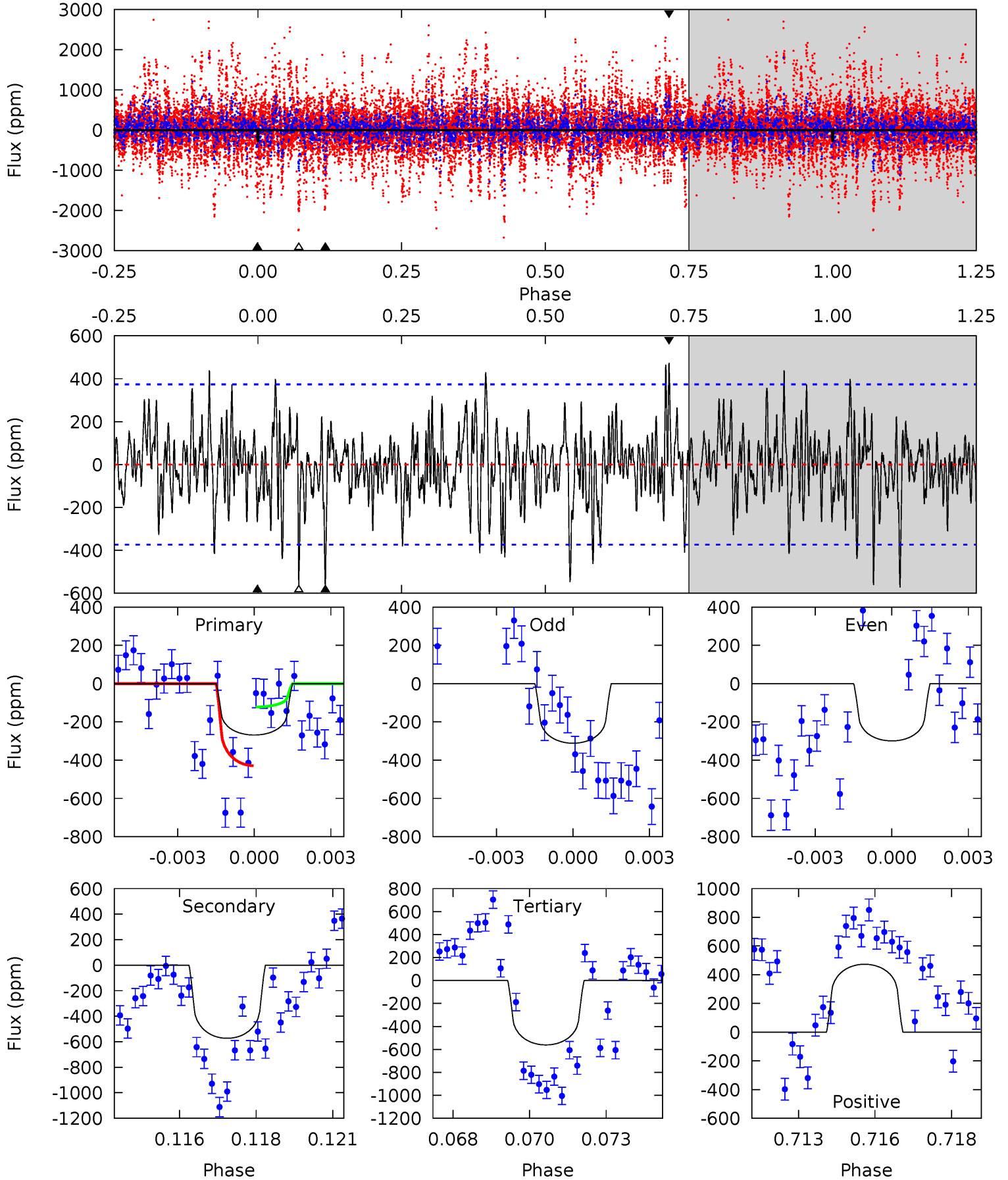




# DV Model-Shift Uniqueness Test

011921886-02, P = 98.917364 Days, E = 51.643300 Days

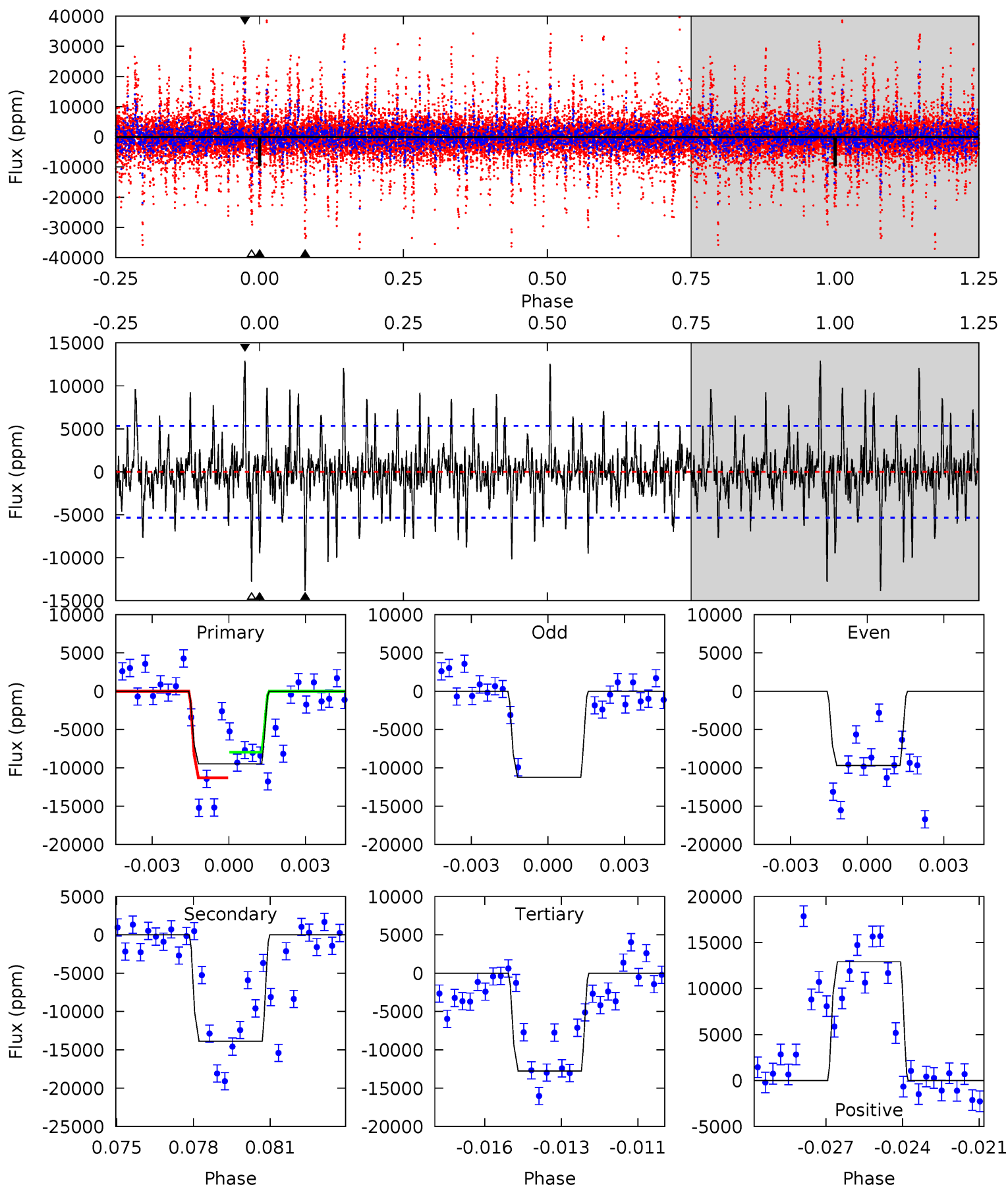
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.79	8.08	7.91	6.67	5.26	2.99	2.04	-4.12	-2.88	0.17	1.41	0.08	0.78	0.45	2.19



# Alt Model-Shift Uniqueness Test

011921886-02, P = 98.884804 Days, E = 51.587912 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.37	13.7	12.6	12.8	5.27	3.00	2.81	-3.27	-3.40	1.08	0.96	0.39	0.65	0.48	1.68



### Stellar Parameters For KIC 011921886

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5510^{+219}_{-197}$	$3.639^{+0.928}_{-0.232}$	$-0.620^{+0.350}_{-0.300}$	$2.608^{+1.013}_{-1.881}$	$1.080^{+0.209}_{-0.288}$	$0.086^{+1.966}_{-0.058}$
	+4%/-4%	+26%/-6%	+56%/-48%	+39%/-72%	+19%/-27%	+2293%/-67%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011921886-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-573 \pm 71$	$9.92^{+13.65}_{-7.16}$	$823^{+95}_{-166}$	$4374^{+3577}_{-934}$	$582^{+7392}_{-480}$
Alt.	$-13877 \pm 1012$	$14.05^{+14.85}_{-9.33}$	$817^{+105}_{-165}$	$8240^{+11685}_{-2535}$	$7537^{+54824}_{-5800}$

$T_{max}$  = 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

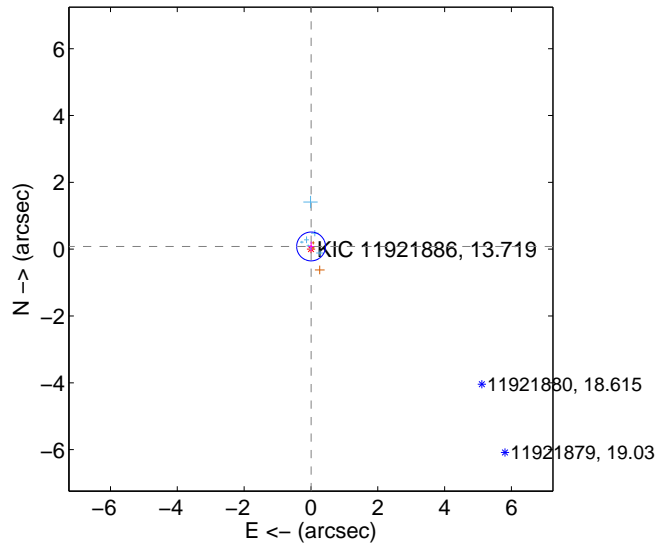
Supplemental centroid analysis for 011921886-02. Kepler magnitude: 13.72. Transit SNR 1.42

There are 8 quarters with good PRF difference image offsets

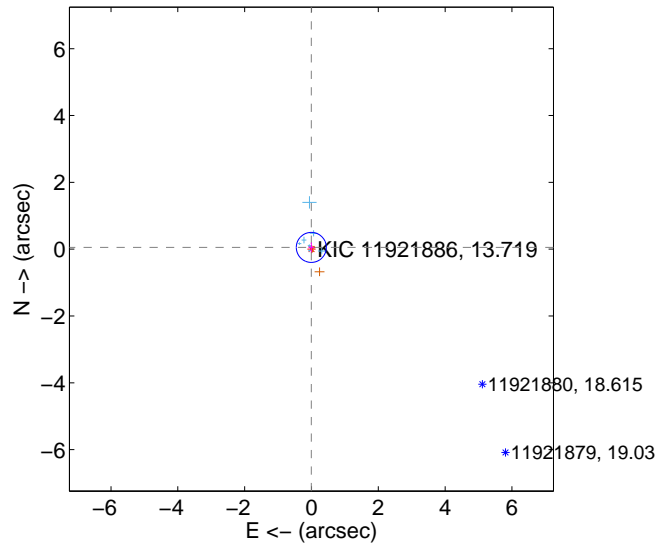
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.081 \pm 0.144$	0.56	$-0.004 \pm 0.077$	$0.081 \pm 0.145$
PRF-fit source offset from KIC position	$0.053 \pm 0.150$	0.35	$0.005 \pm 0.084$	$0.053 \pm 0.148$
photometric centroid source offset	$0.92 \pm 1.70$	0.54	$0.76 \pm 1.60$	$0.53 \pm 1.89$

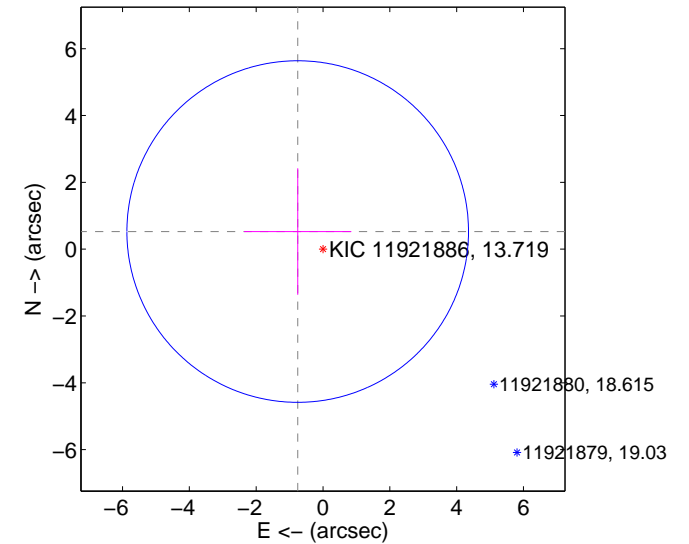
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

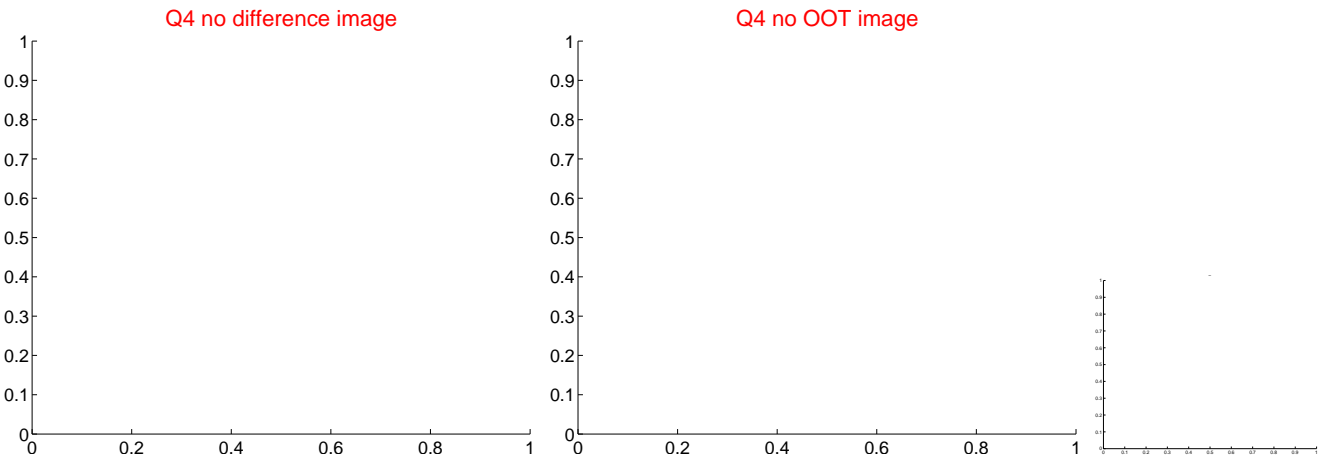
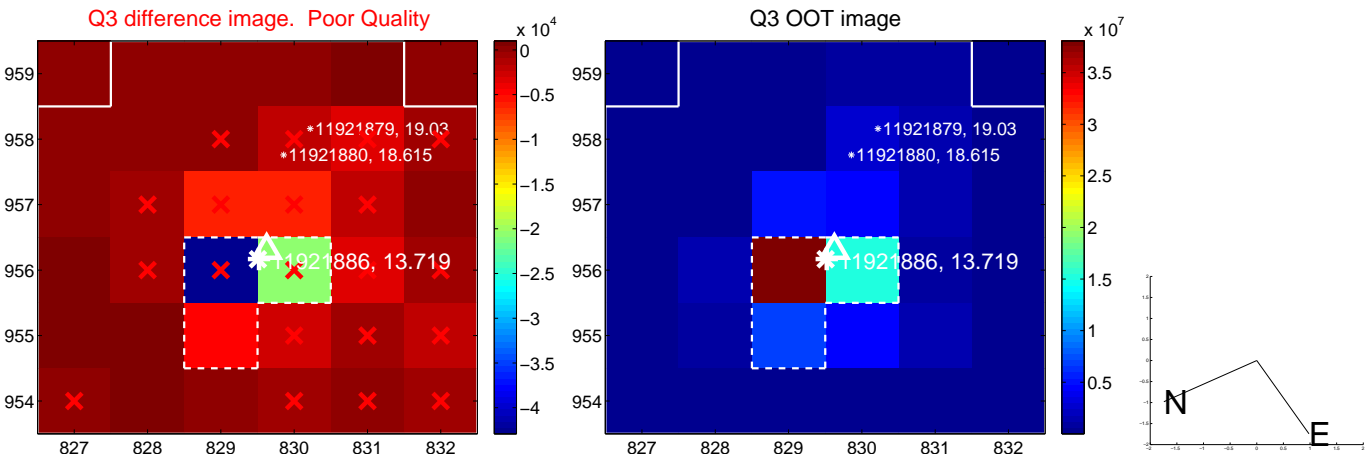
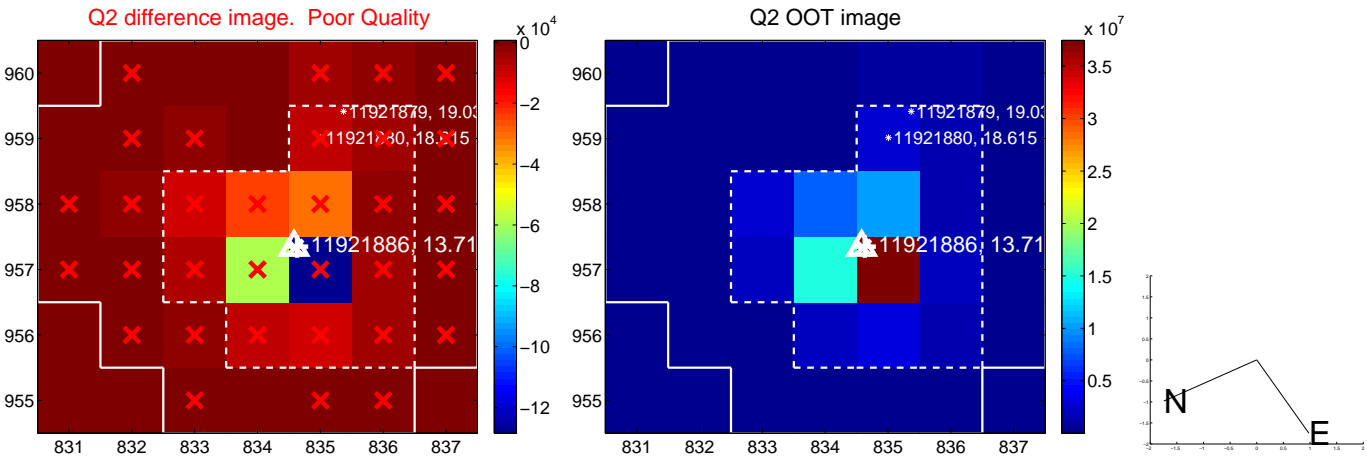
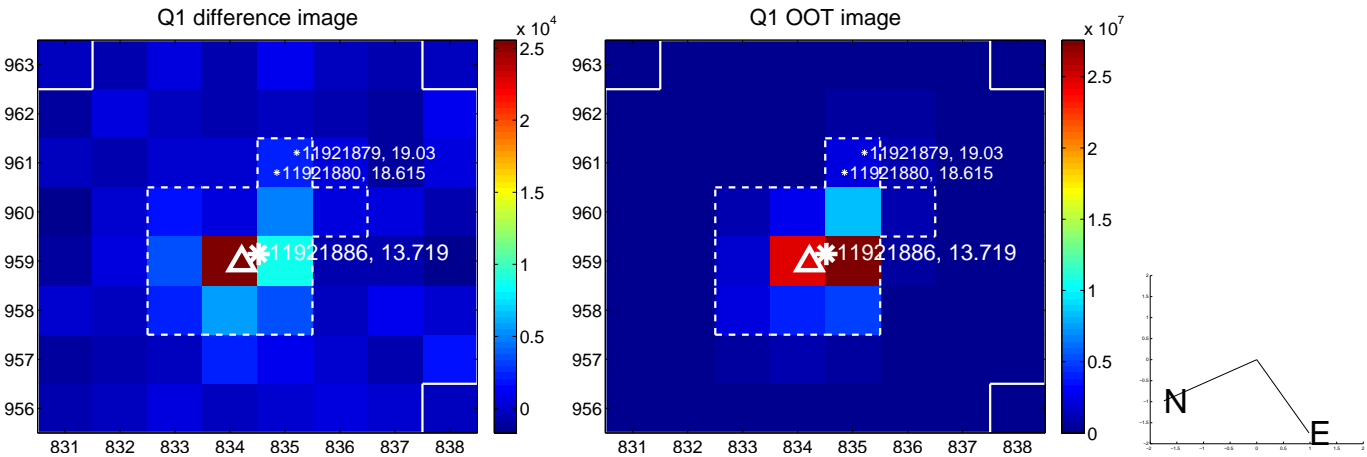


offset from photometric centroids



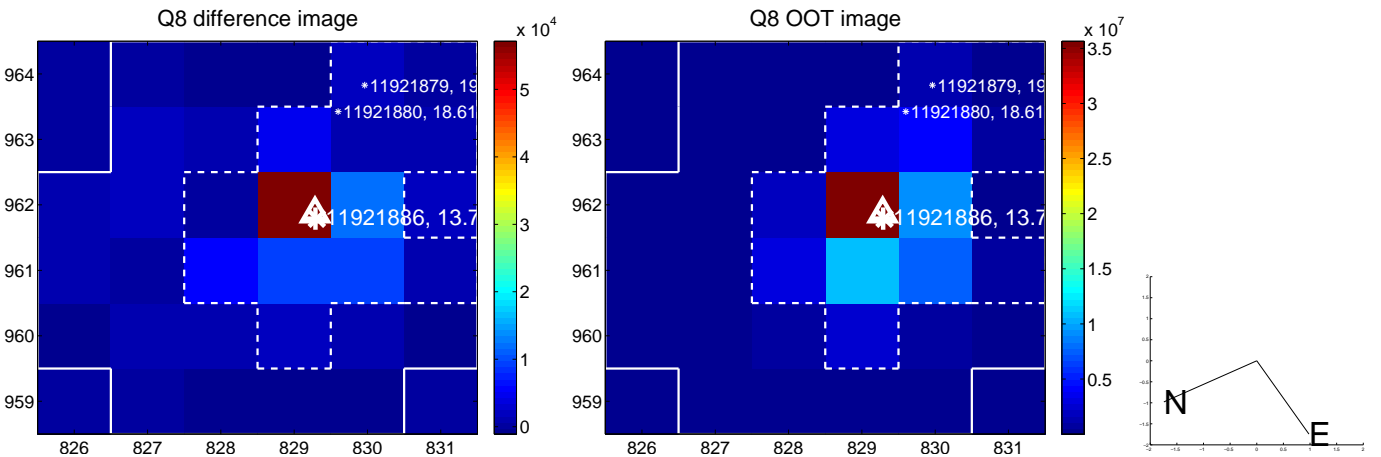
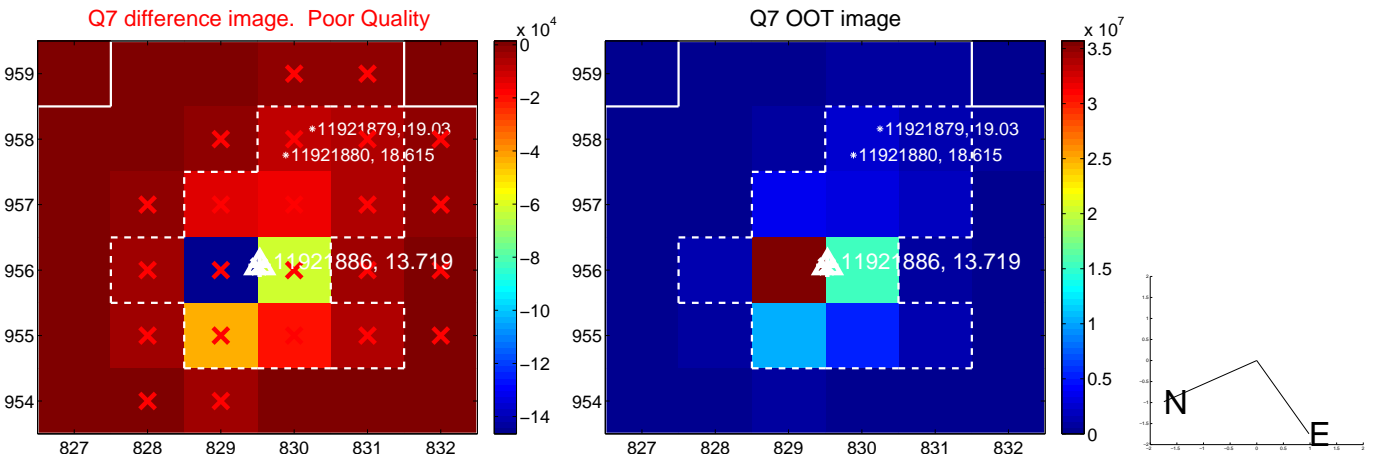
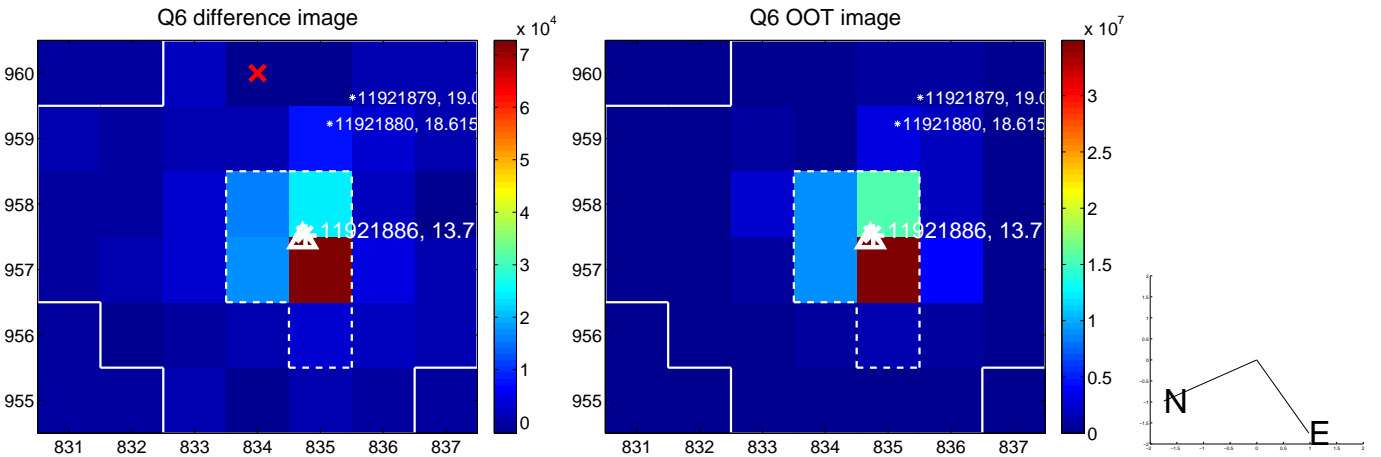
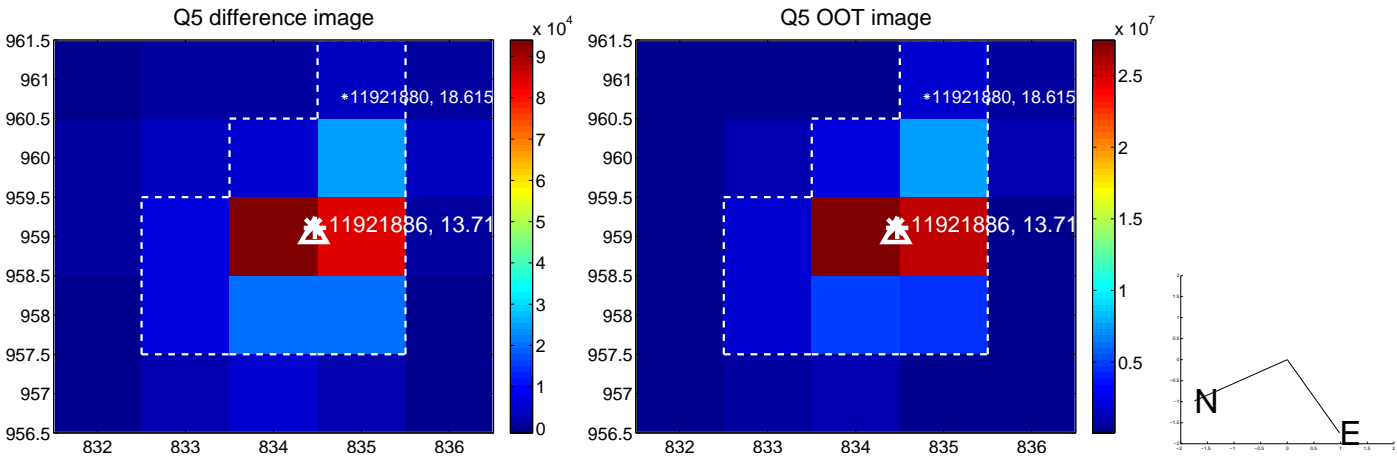
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

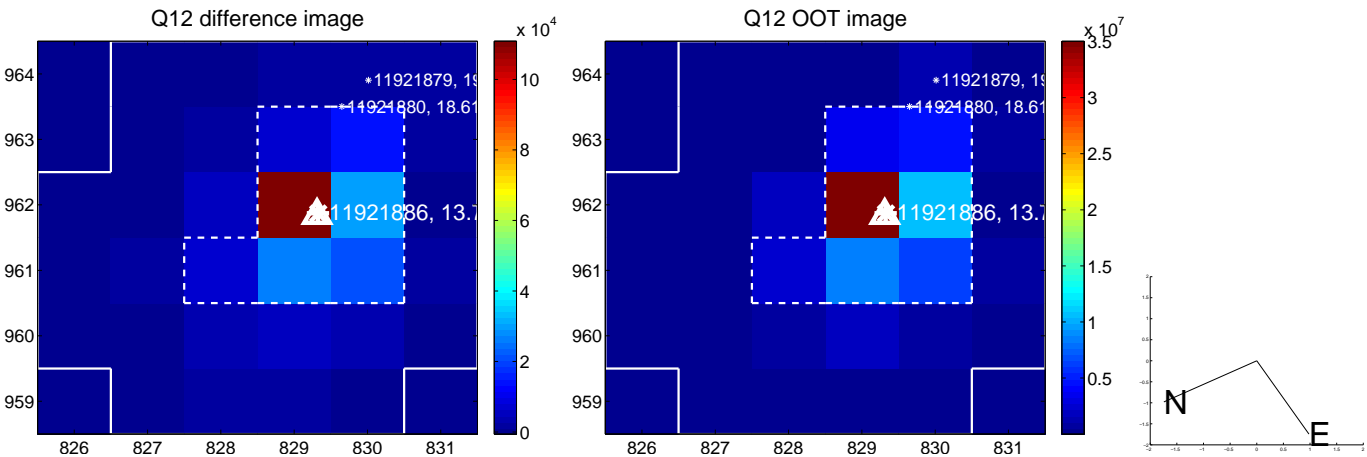
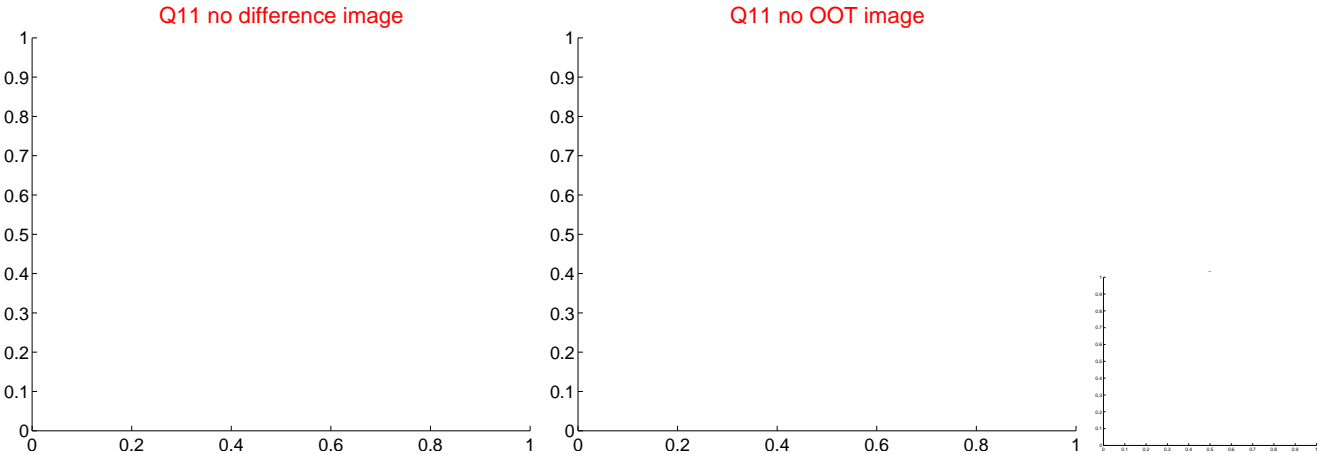
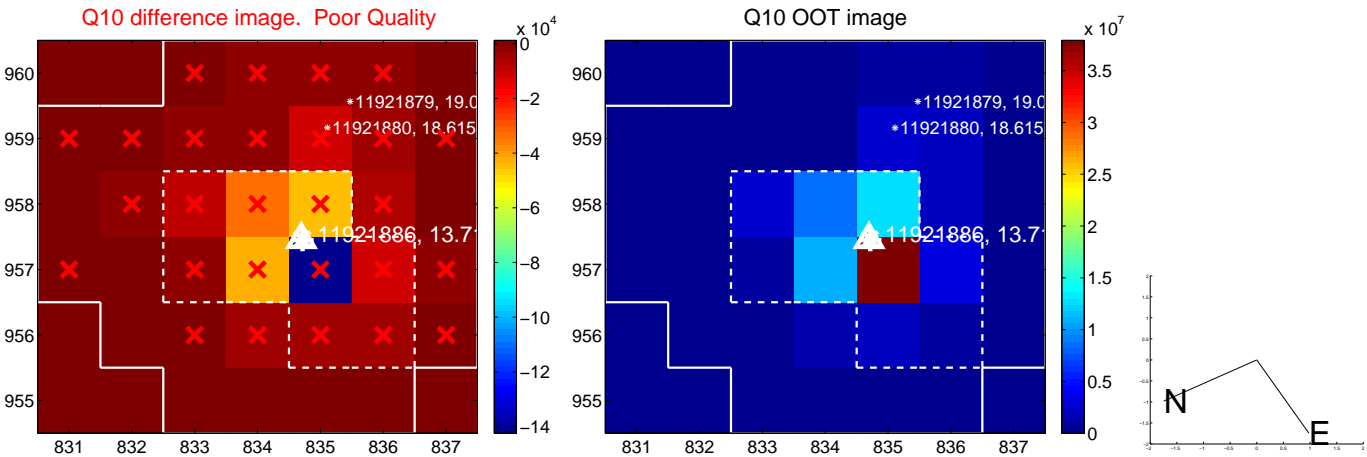
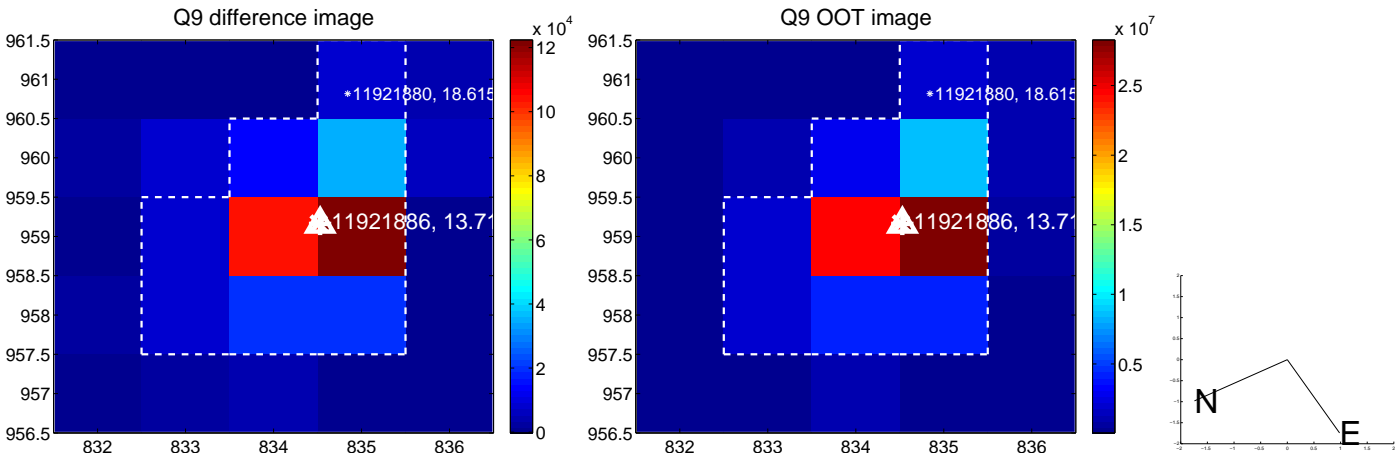




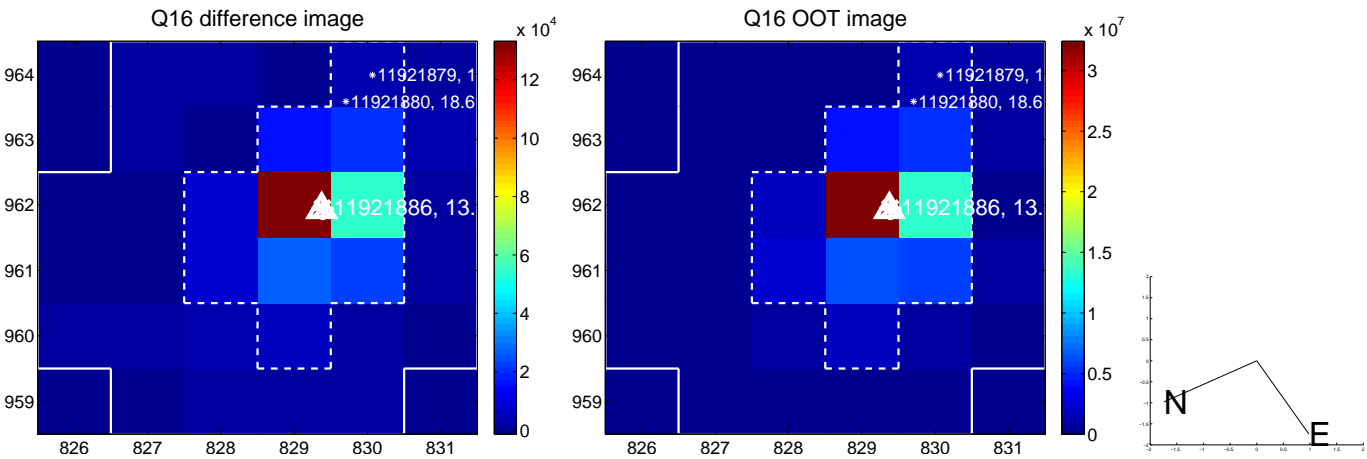
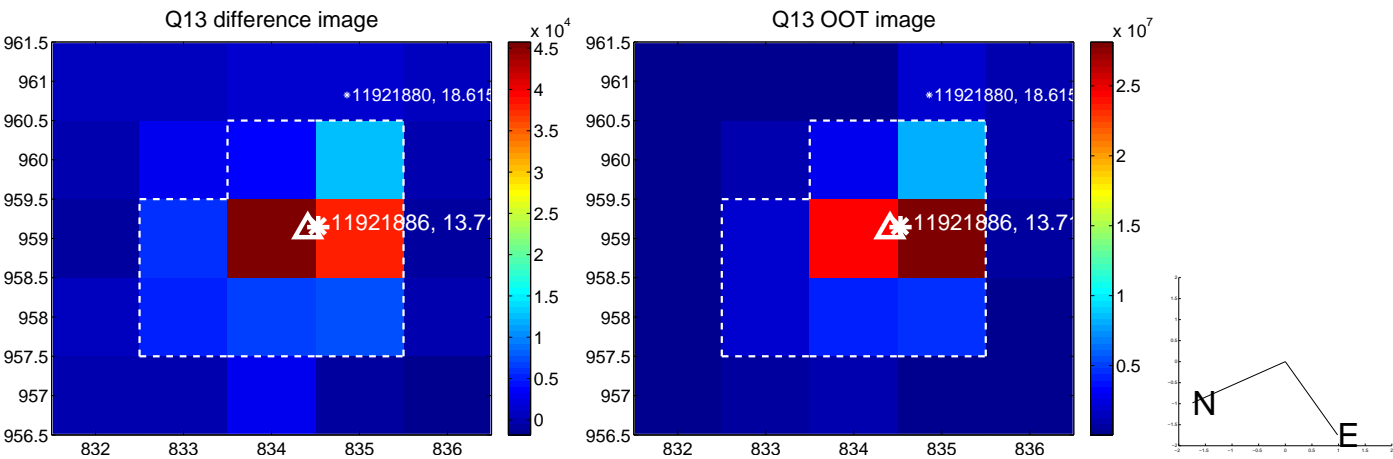
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



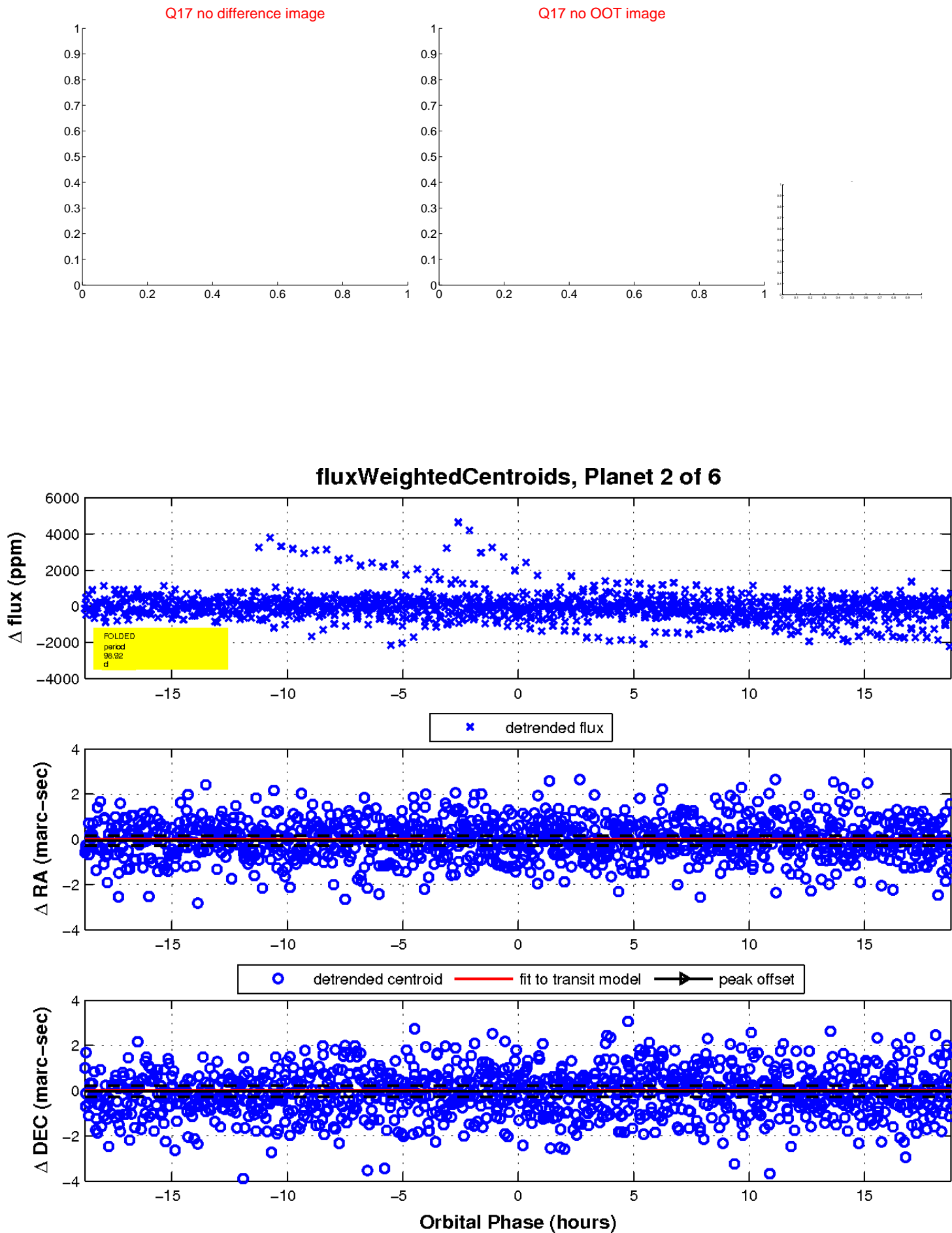
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

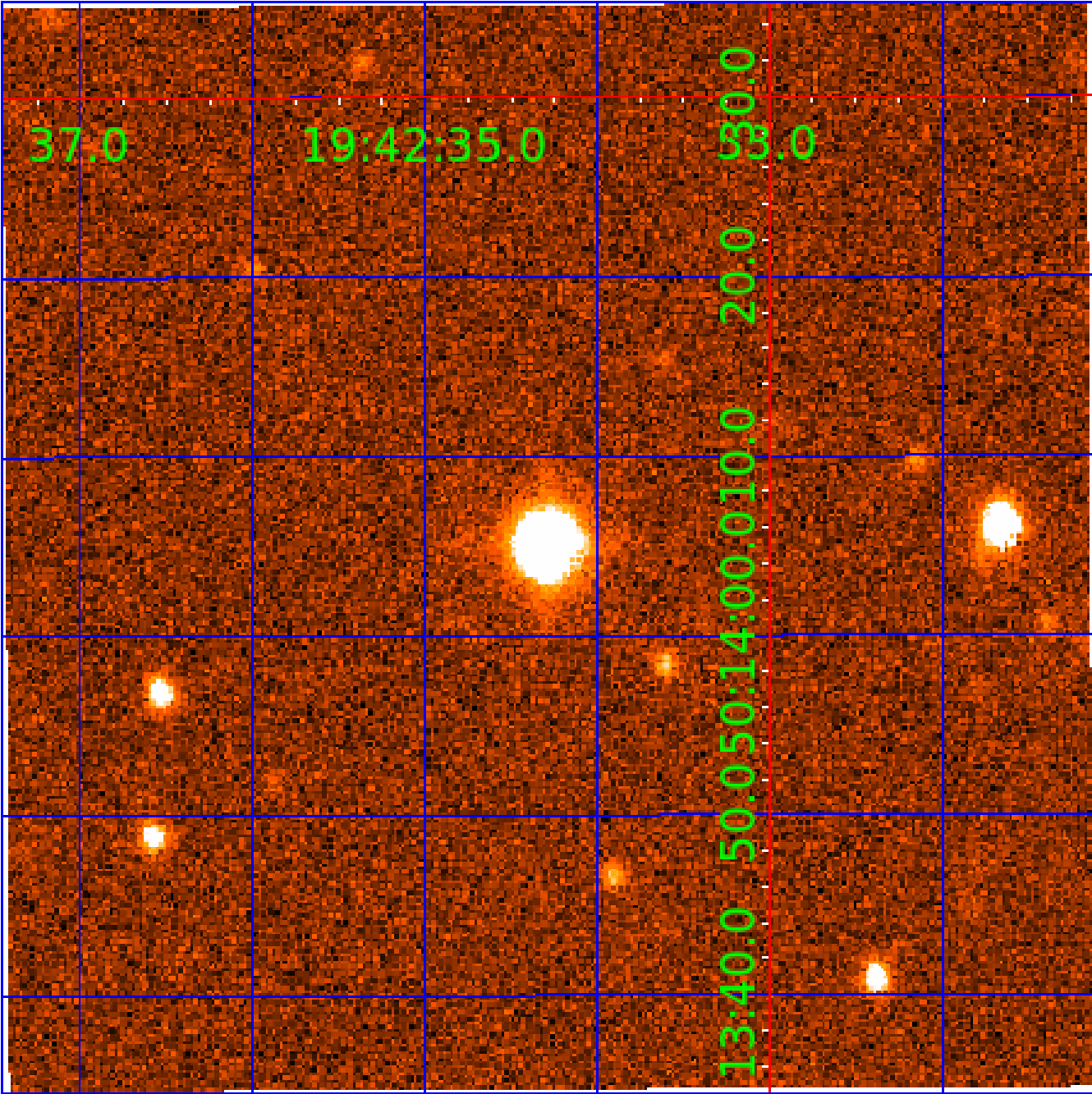


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 011921886

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011921886-01	OBS	No	1.314019	132.790836	59.5	7.500	10.6	7.7	2.61	5510	1.99	9673.20
011921886-02	OBS	No	98.917364	150.560664	128.5	6.258	9.5	1.4	2.61	5510	3.08	30.43
011921886-03	OBS	No	437.626084	557.784613	2229.7	13.427	9.0	9.1	2.61	5510	14.20	4.19
011921886-04	OBS	No	248.226516	355.549780	973.1	10.511	9.5	5.1	2.61	5510	8.72	8.92
011921886-05	OBS	No	579.536993	207.005908	3166.7	14.298	10.2	8.4	2.61	5510	14.55	2.88
011921886-06	OBS	No	587.359791	187.901531	6204.3	52.830	9.7	7.3	2.61	5510	23.79	2.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011921886-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
011921886-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—CHASES_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—HALO_GHOST
011921886-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011921886-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011921886-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011921886-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

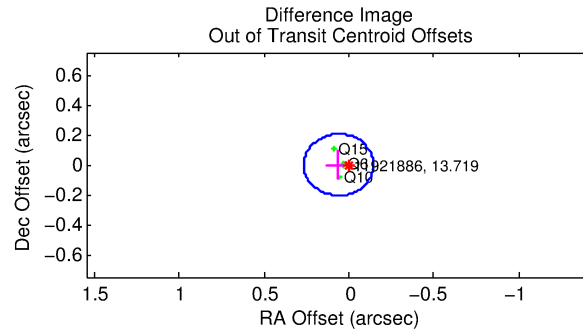
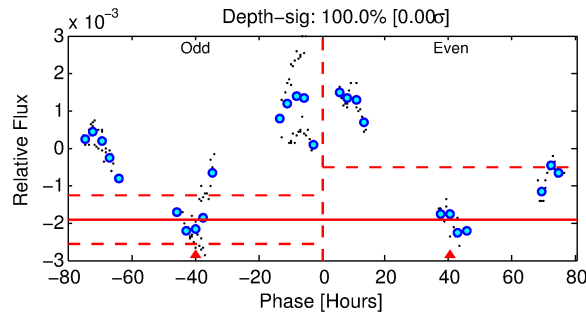
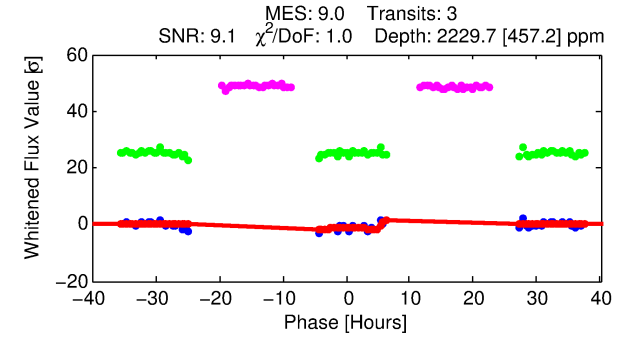
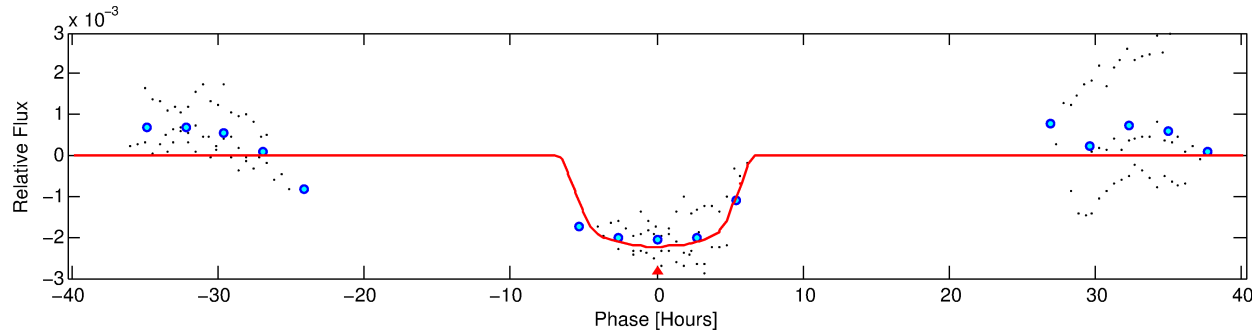
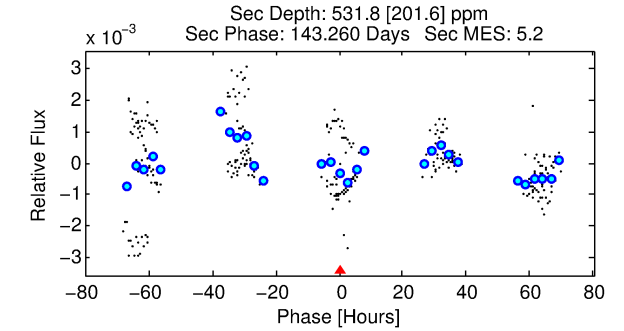
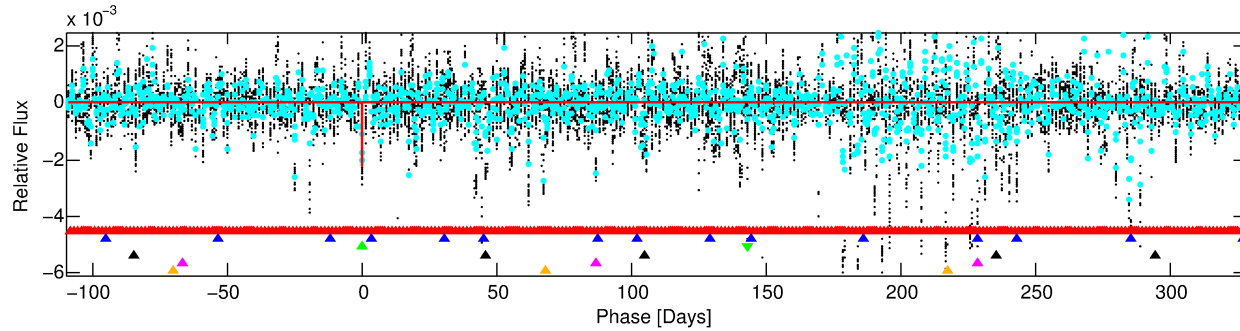
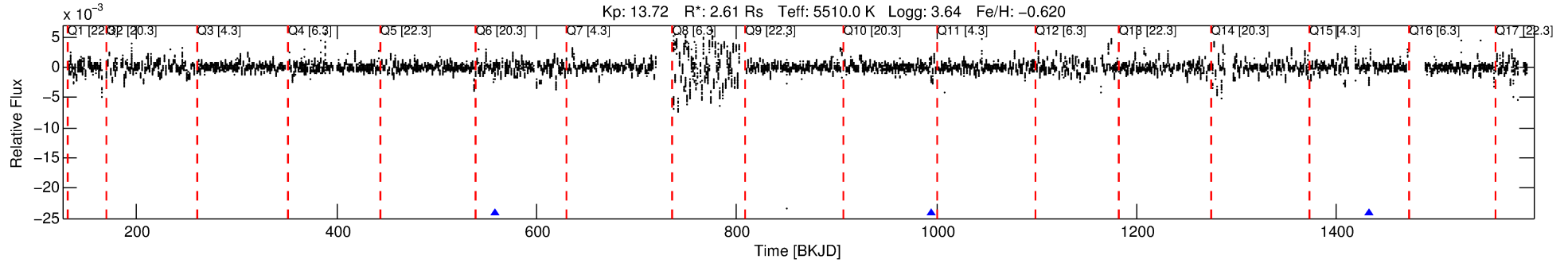
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011921886-03

No Significant Match Found

# DV One-Page Summary

KIC: 11921886 Candidate: 3 of 6 Period: 437.626 d



## DV Fit Results:

Period = 437.62608 [0.02813] d  
Epoch = 557.7846 [0.0368] BKJD  
Rp/R\* = 0.0499 [0.0060]  
a/R\* = 147.98 [38.23]  
b = 0.87 [0.05]  
Seff = 4.19 [6.34]  
Teq = 365 [138] K  
Rp = 14.20 [10.39] Re  
a = 1.1578 [0.9950] AU  
Ag = 1944.06 [3050.61] [0.64 $\sigma$ ]  
Teffp = 3745 [446] K [7.24 $\sigma$ ]

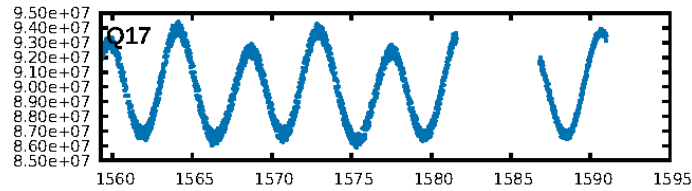
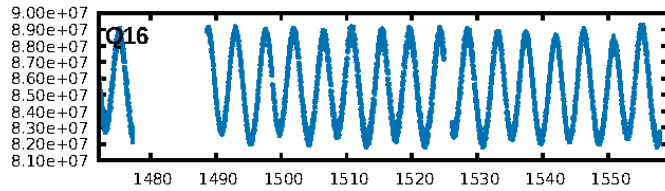
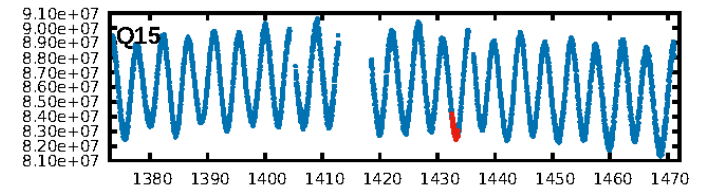
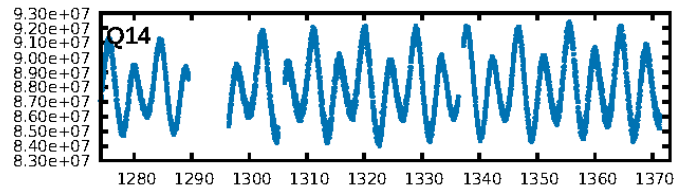
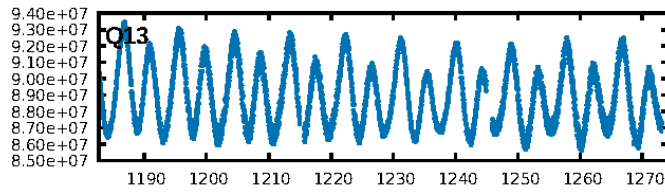
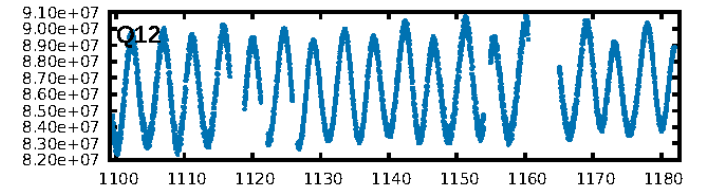
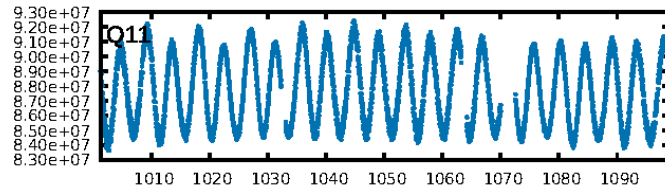
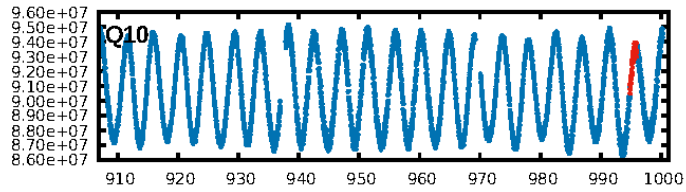
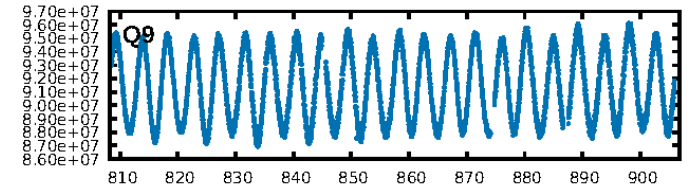
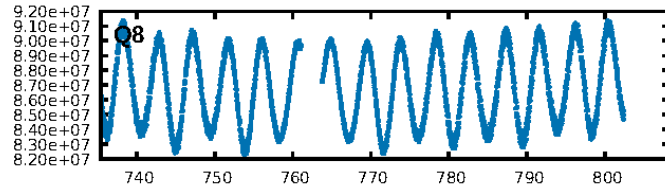
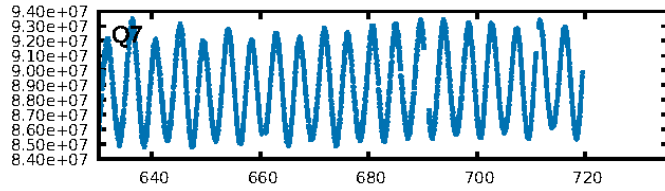
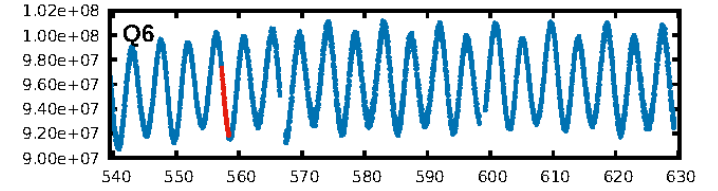
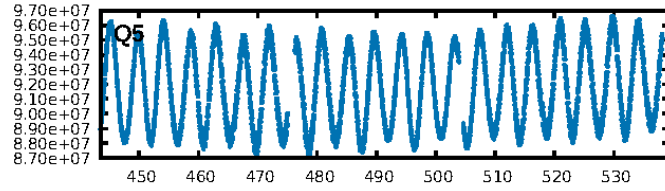
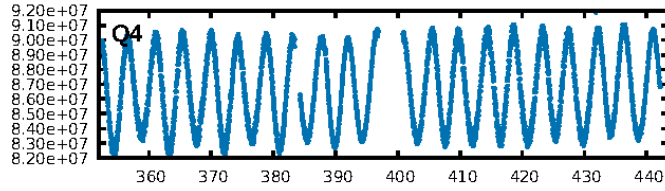
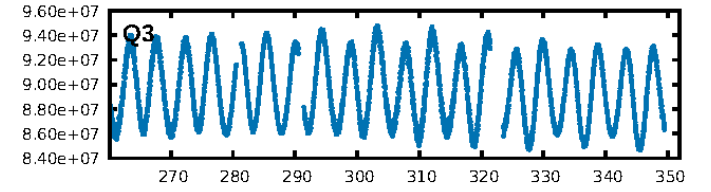
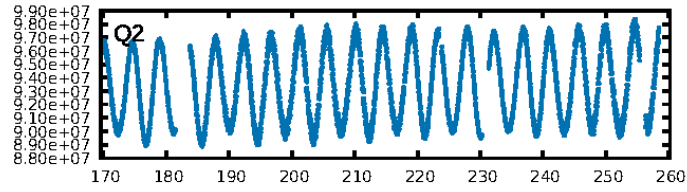
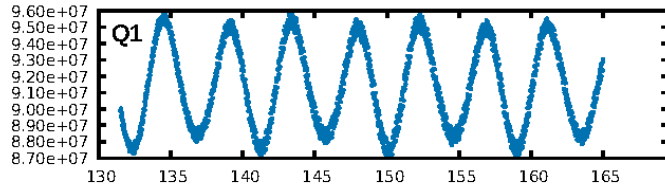
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [266.57 $\sigma$ ]  
LongPeriod-sig: 100.0% [173.64 $\sigma$ ]  
ModelChiSquare2-sig: 42.2%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 3.79e-07**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 2.043  
Centroid-sig: 73.8%  
Centroid-so: 0.396 arcsec [2.42 $\sigma$ ]  
OotOffset-rm: 0.063 arcsec [0.92 $\sigma$ ]  
OotOffset-st: 2/1/0/0 [3]  
KicOffset-rm: 0.097 arcsec [0.93 $\sigma$ ]  
KicOffset-st: 2/1/0/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 0.00 [0/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:54:24 Z

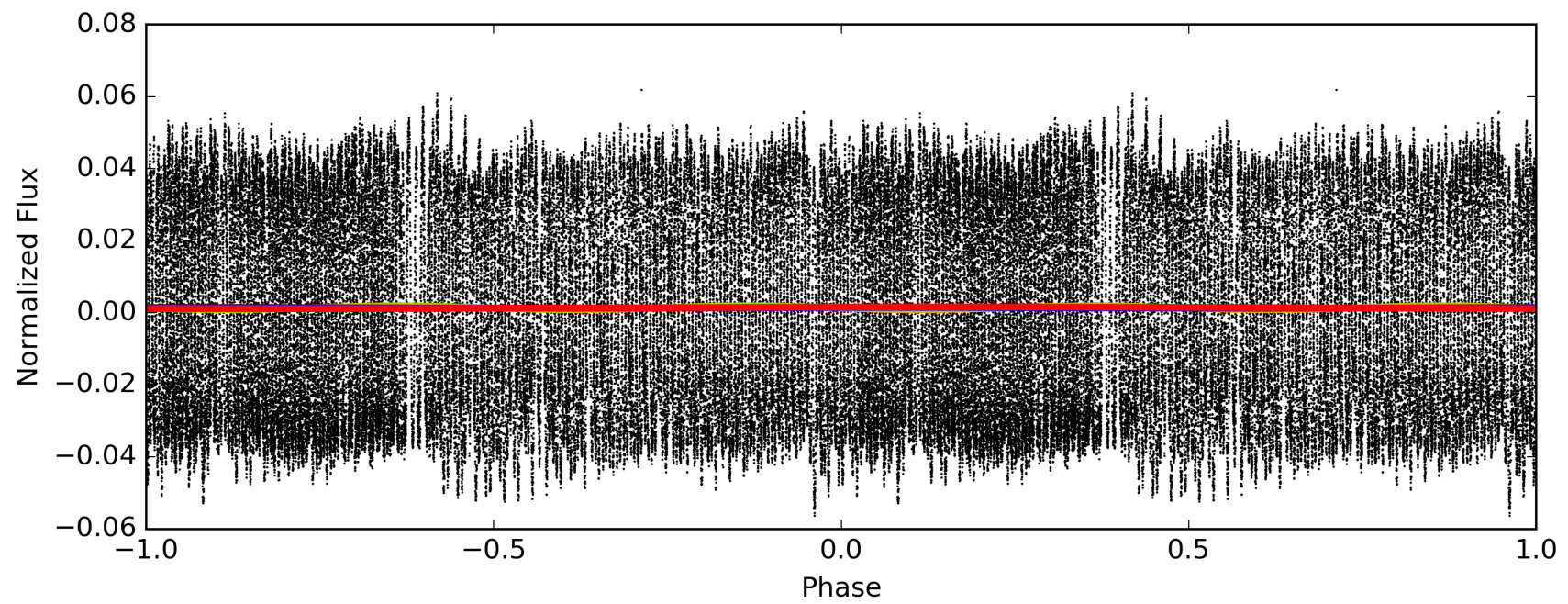
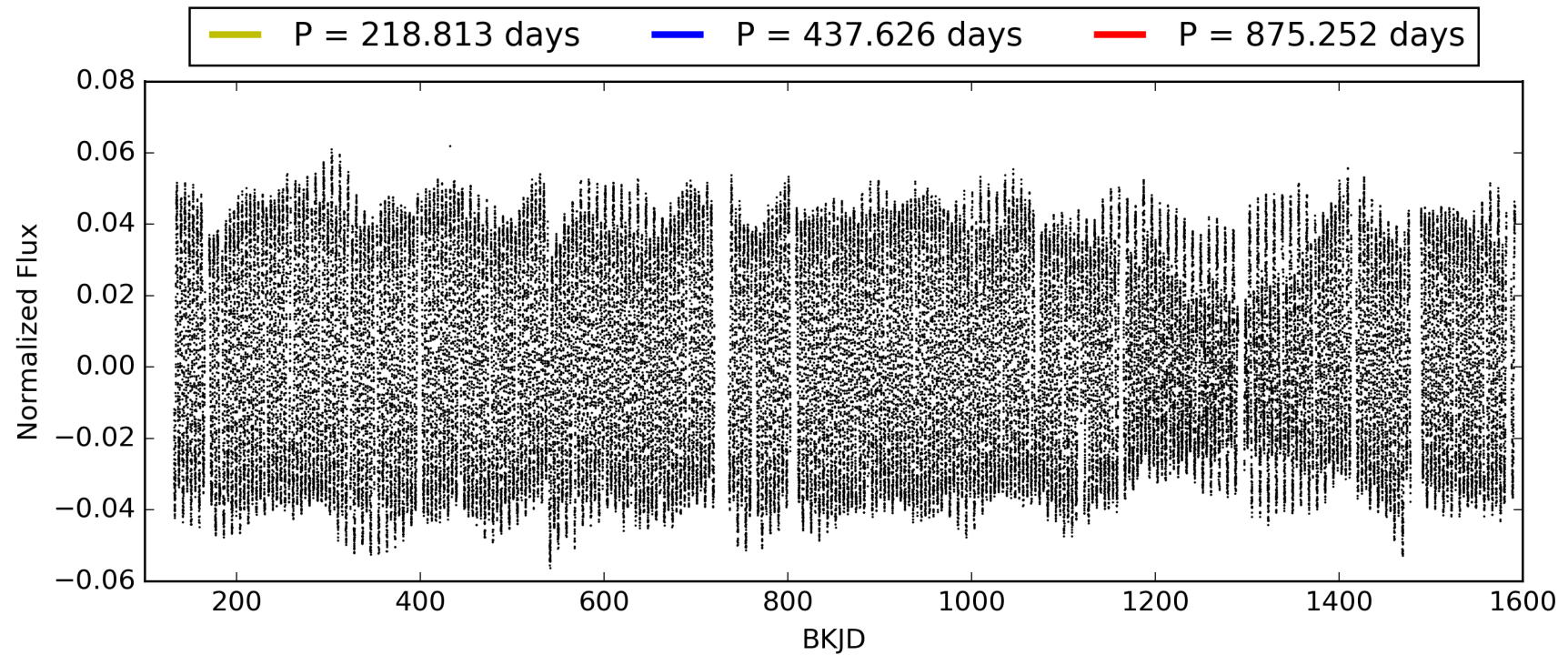
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011921886-03, PDC Light Curves



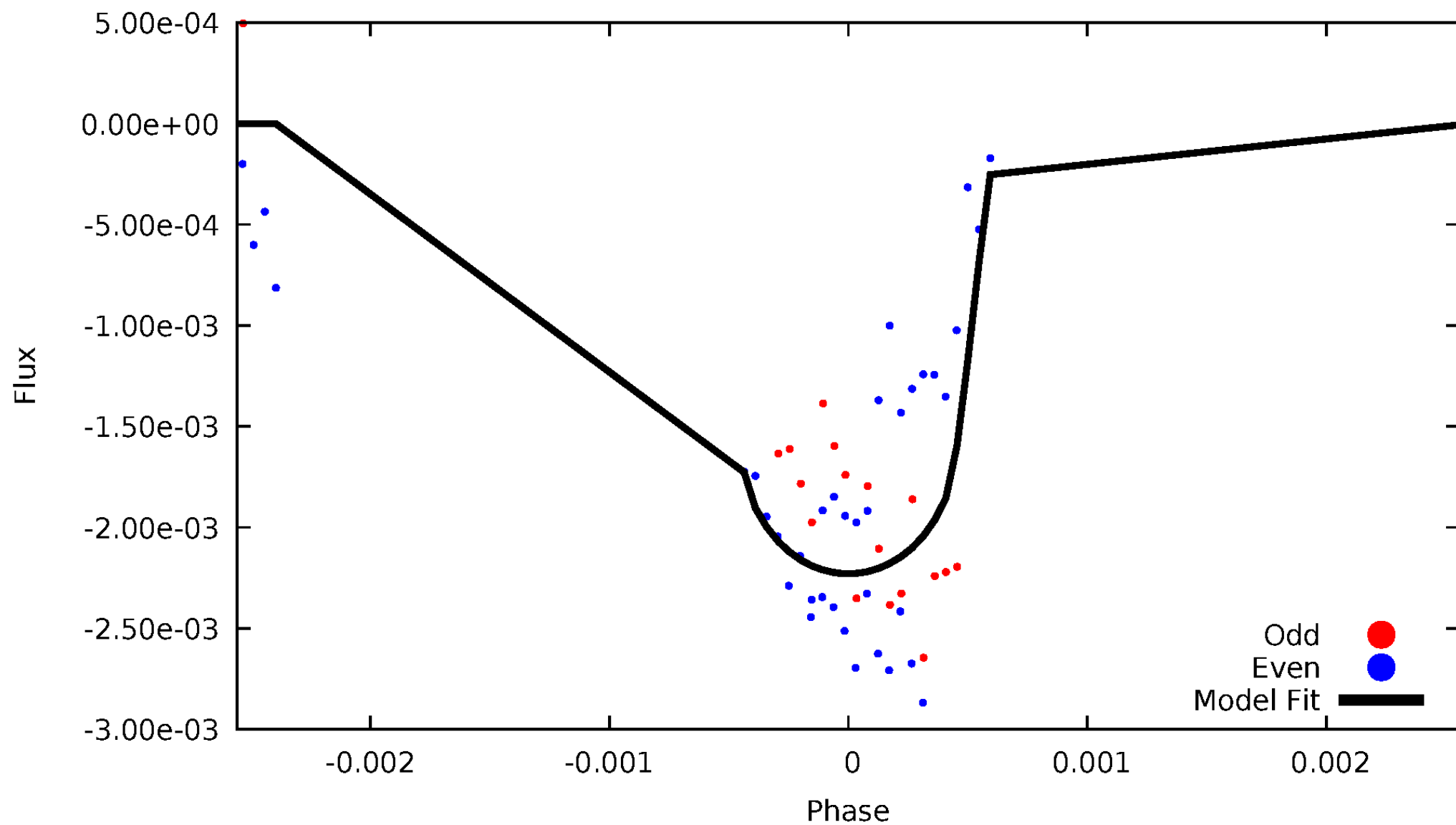


TCE 011921886-03



# DV Odd/Even

TCE 011921886-03





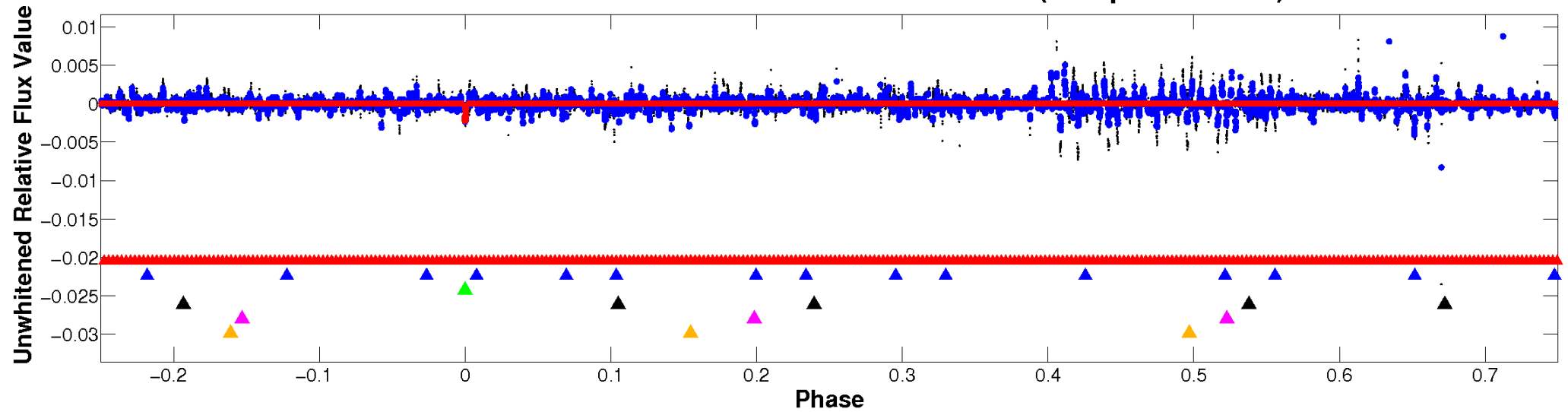


ALT Odd/Even

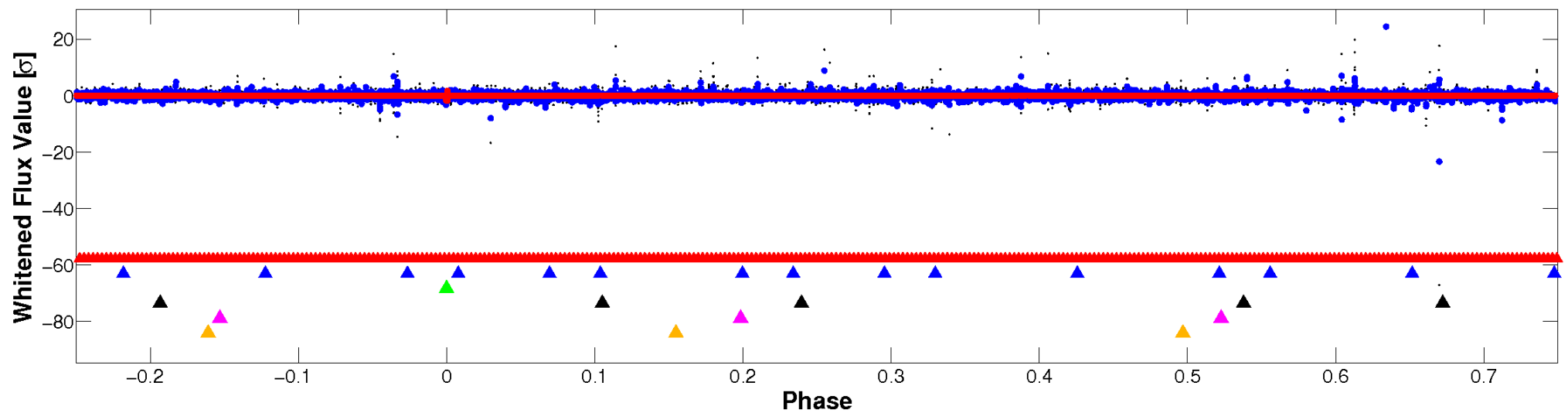
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

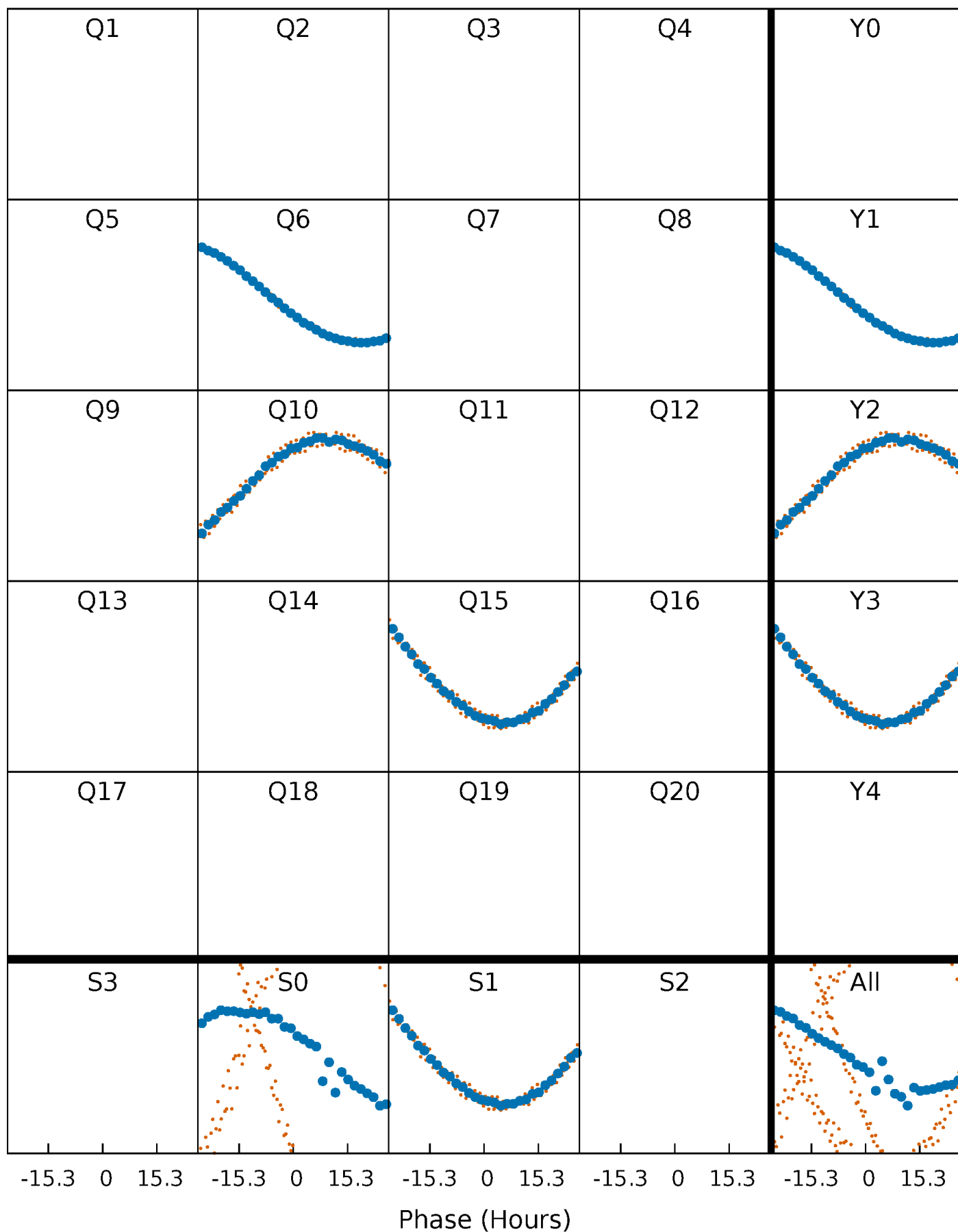


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



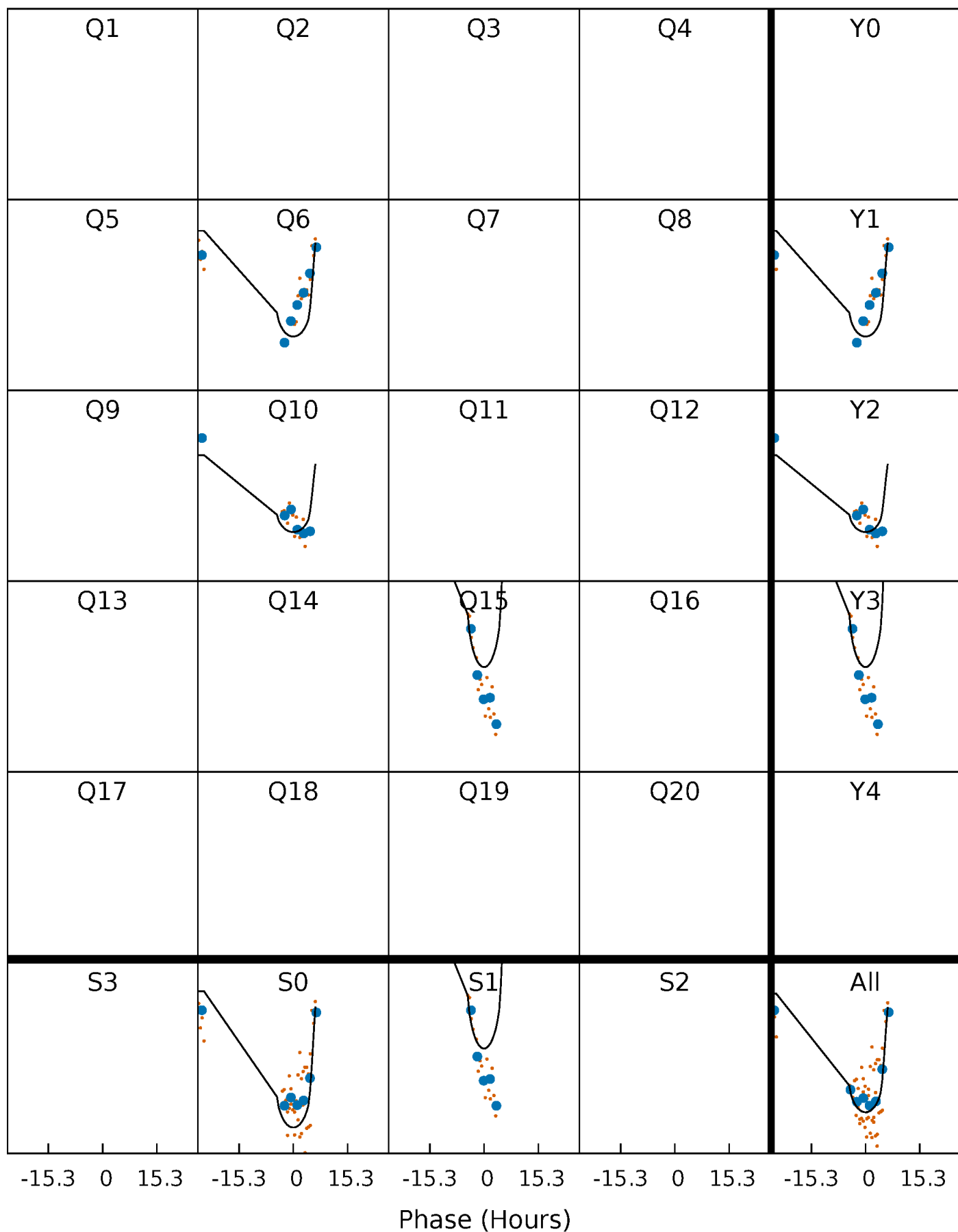
# PDC Quarter-Phased Transit Curves

TCE 011921886-03     $P=437.626084$  Days     $T_0=557.784613$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 011921886-03     $P=437.626084$  Days     $T_0=557.784613$  (BKJD)

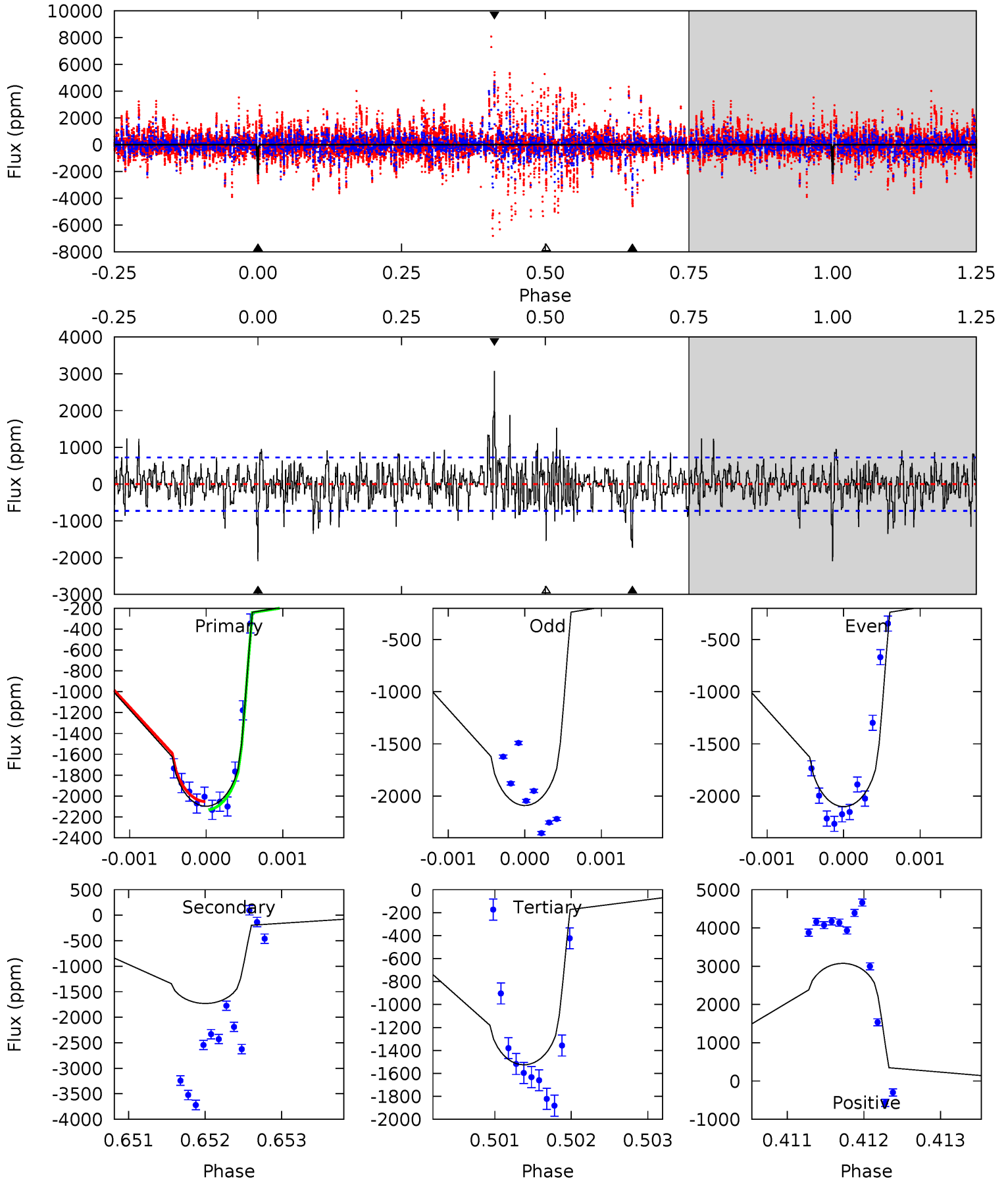


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

011921886-03, P = 437.626084 Days, E = 120.158529 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	13.0	11.5	23.1	5.45	3.30	3.05	4.31	-7.35	1.54	-10.1	0.04	0.99	0.59	0.30





## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 011921886

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5510^{+219}_{-197}$	$3.639^{+0.928}_{-0.232}$	$-0.620^{+0.350}_{-0.300}$	$2.608^{+1.013}_{-1.881}$	$1.080^{+0.209}_{-0.288}$	$0.086^{+1.966}_{-0.058}$
	+4%/-4%	+26%/-6%	+56%/-48%	+39%/-72%	+19%/-27%	+2293%/-67%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011921886-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1730 \pm 133$	$12.96^{+4.44}_{-5.07}$	$493^{+61}_{-100}$	$5084^{+332}_{-317}$	$7617^{+11802}_{-3316}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

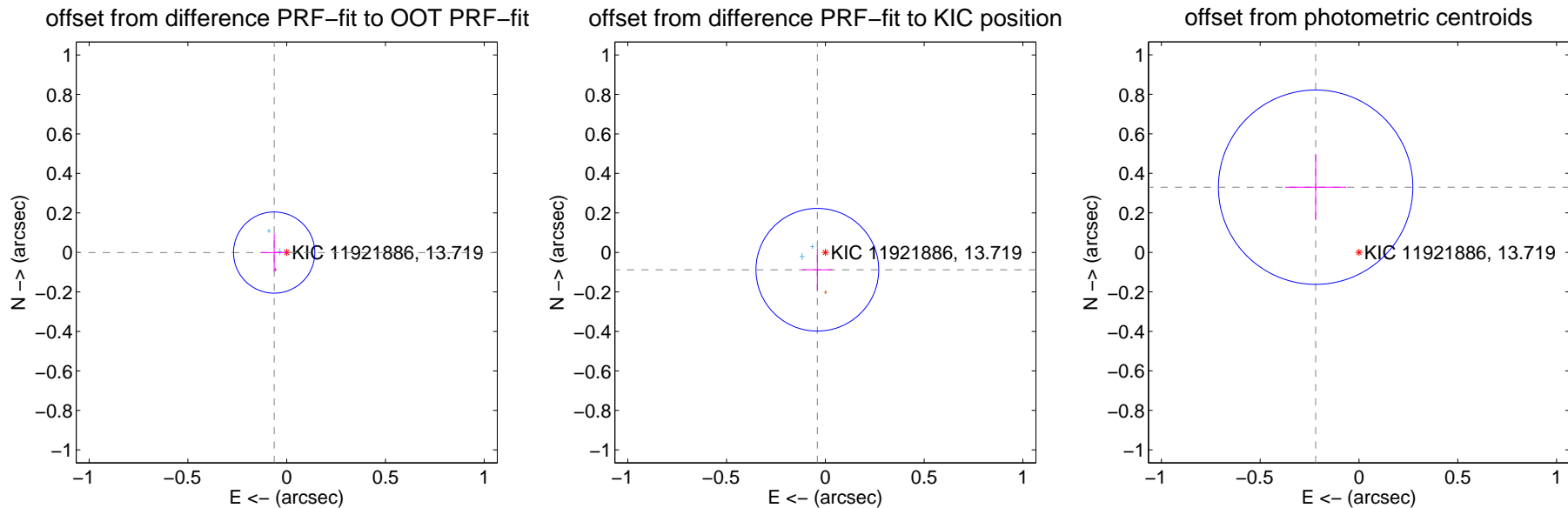
## DV Centroid Data

Supplemental centroid analysis for 011921886-03. Kepler magnitude: 13.72. Transit SNR 9.13

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.063 \pm 0.069$	0.92	$0.063 \pm 0.069$	$-0.001 \pm 0.095$
PRF-fit source offset from KIC position	$0.097 \pm 0.104$	0.93	$0.040 \pm 0.076$	$-0.088 \pm 0.109$
photometric centroid source offset	$0.40 \pm 0.16$	2.42	$0.22 \pm 0.15$	$0.33 \pm 0.17$

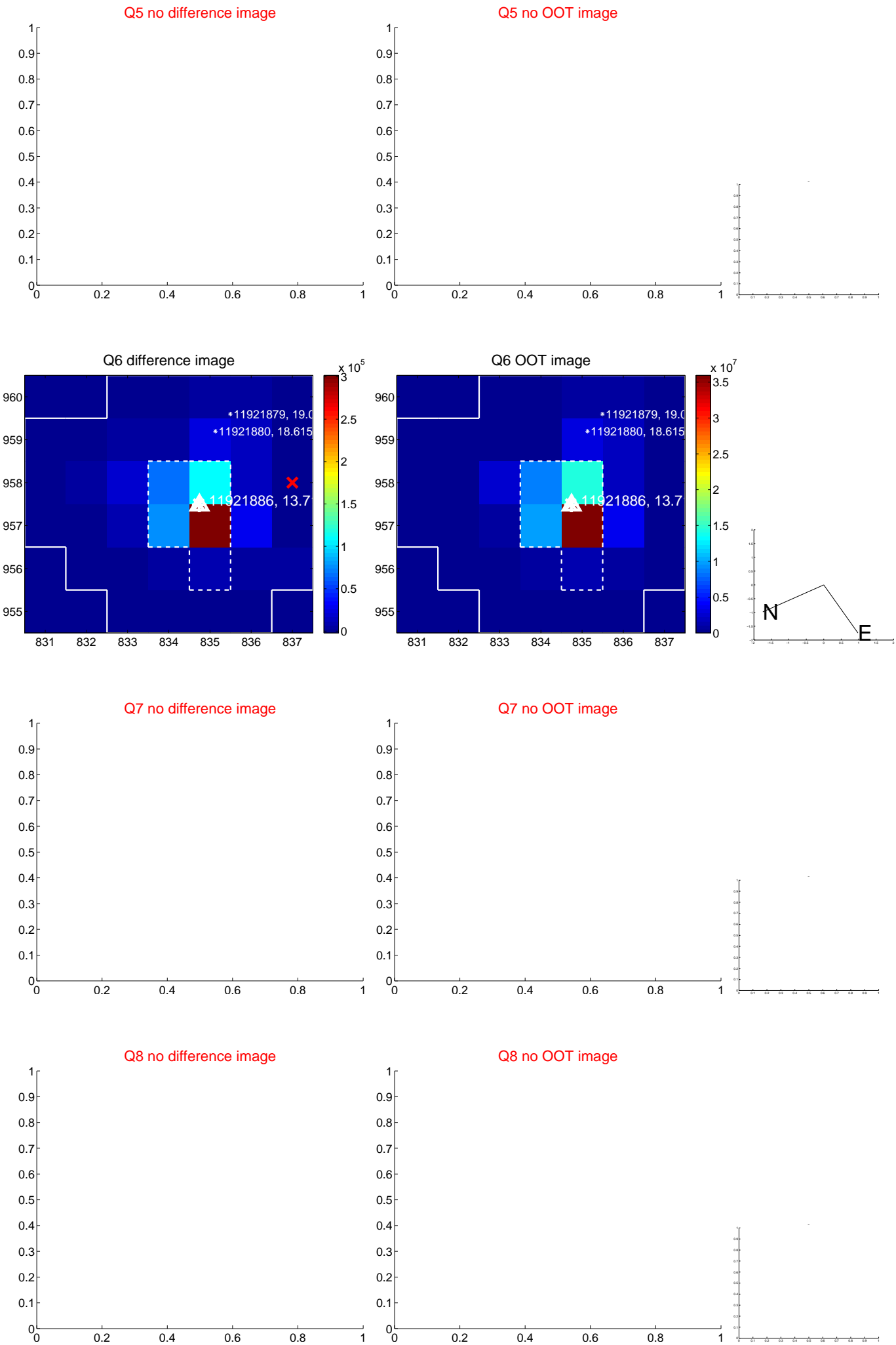


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

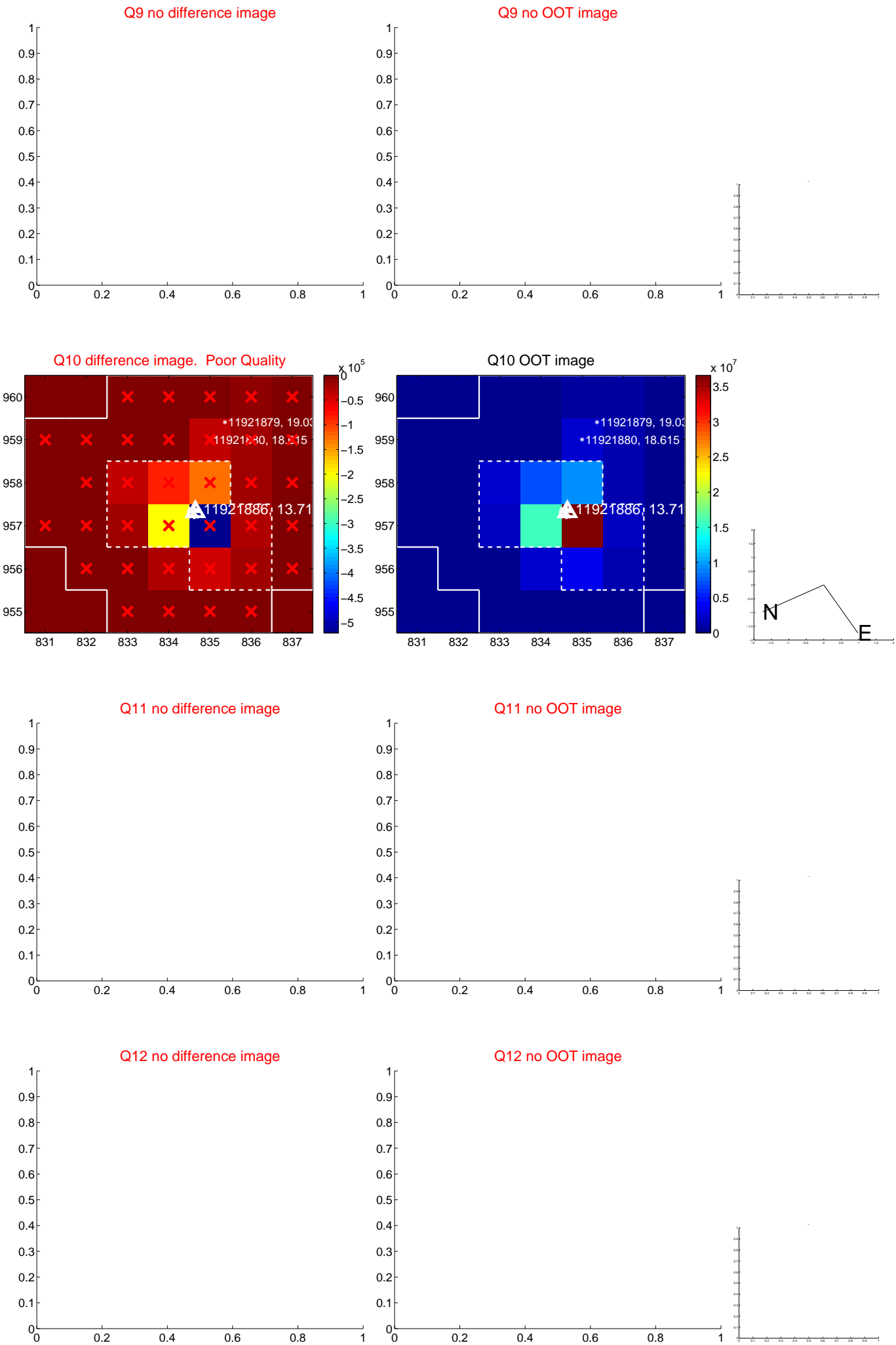
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

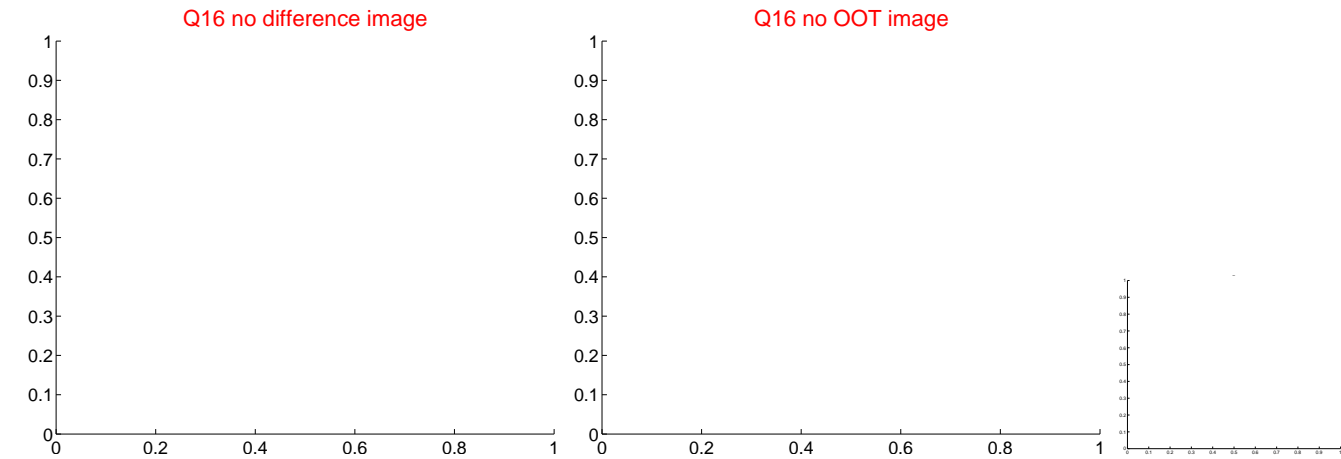
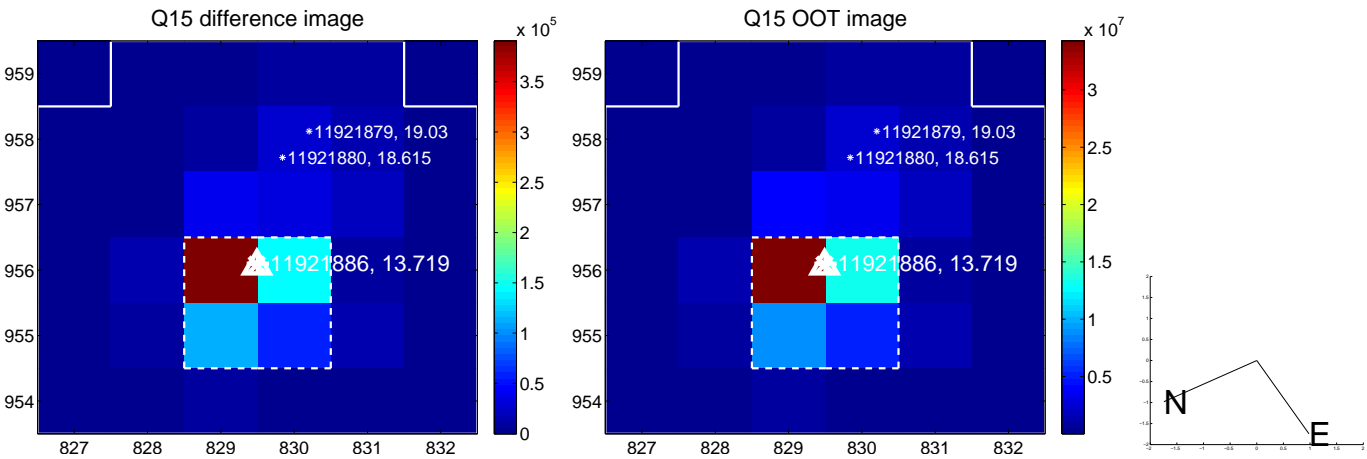
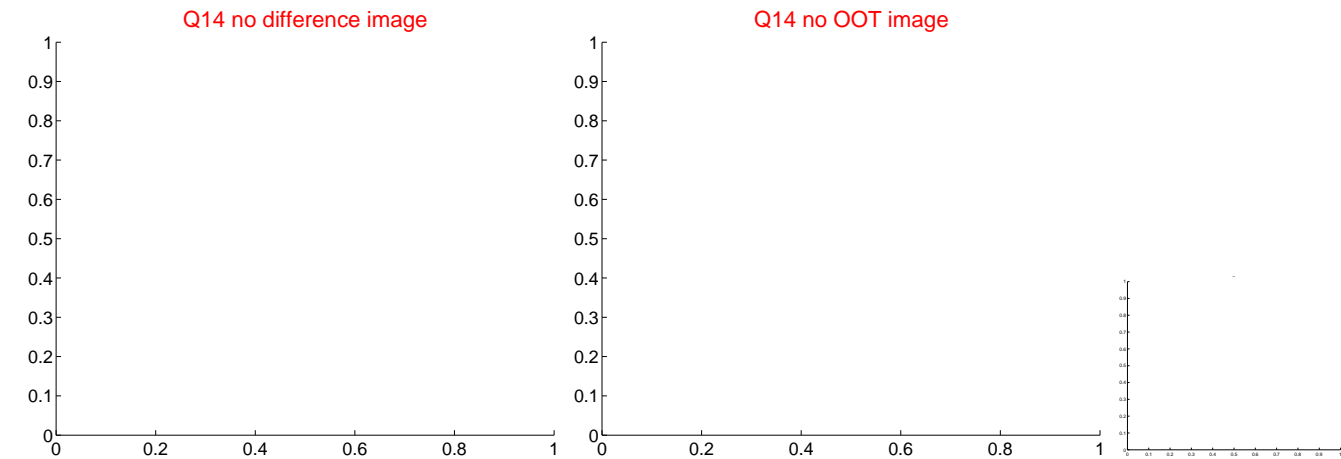
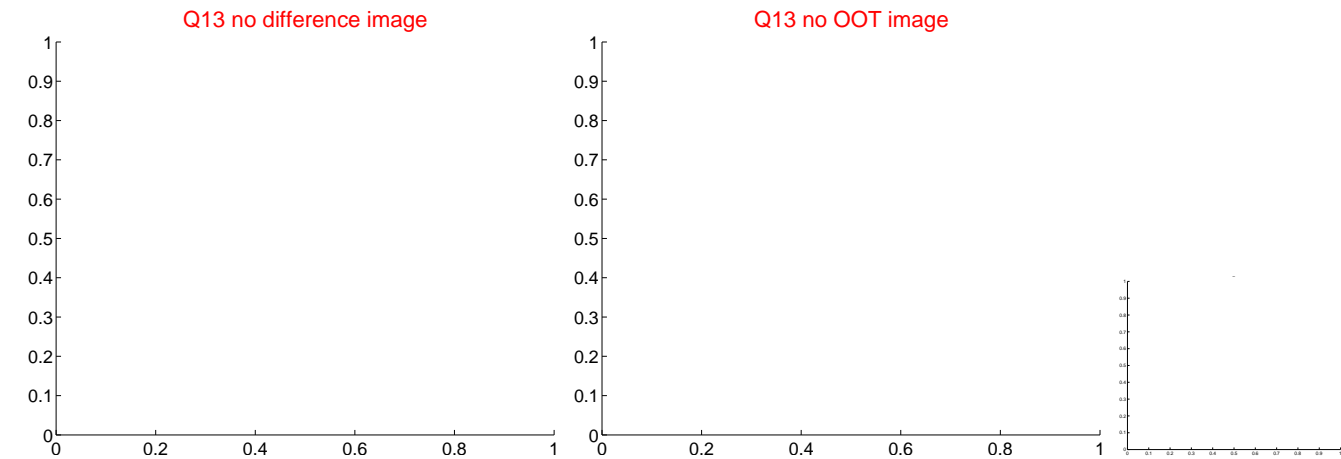


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

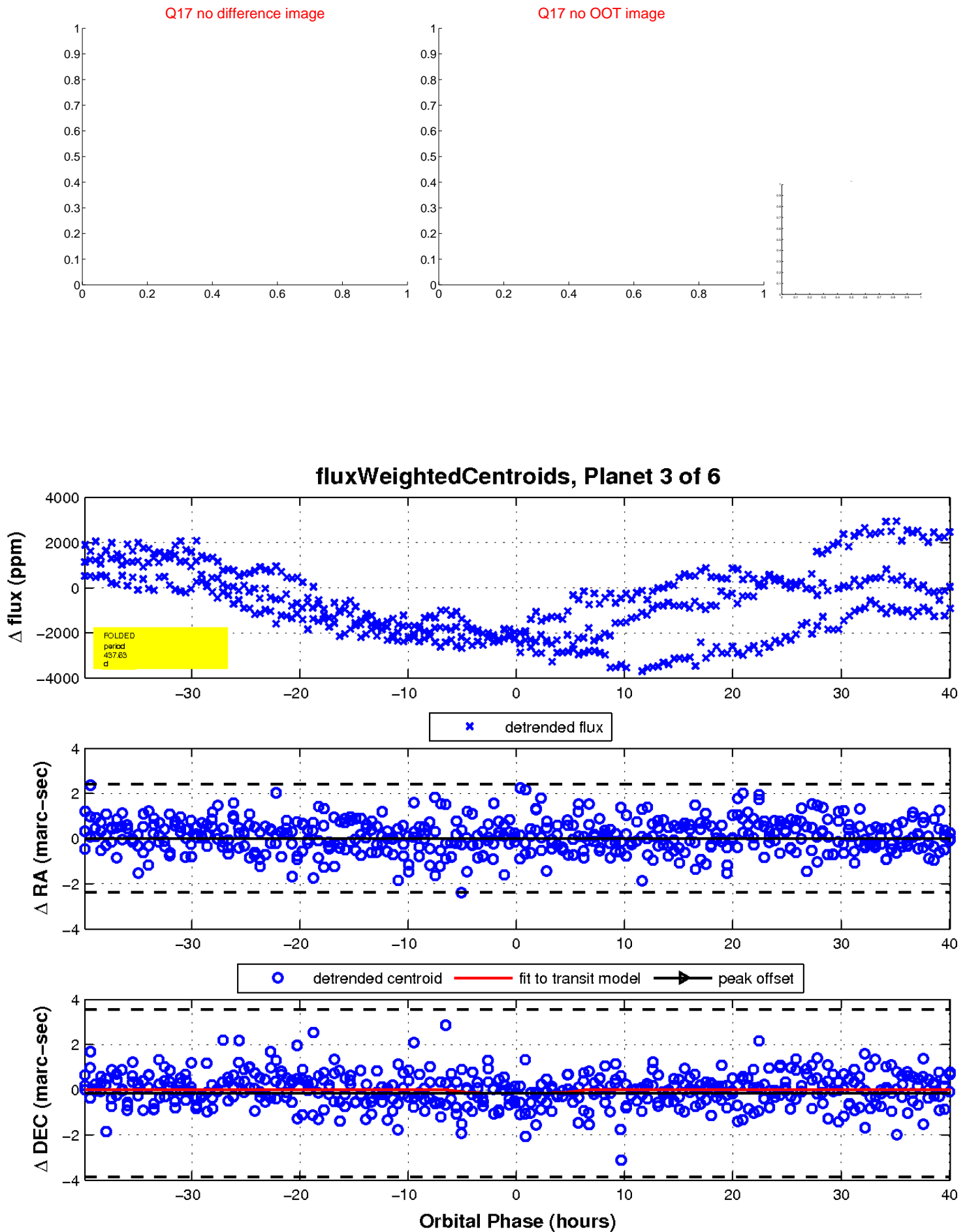




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

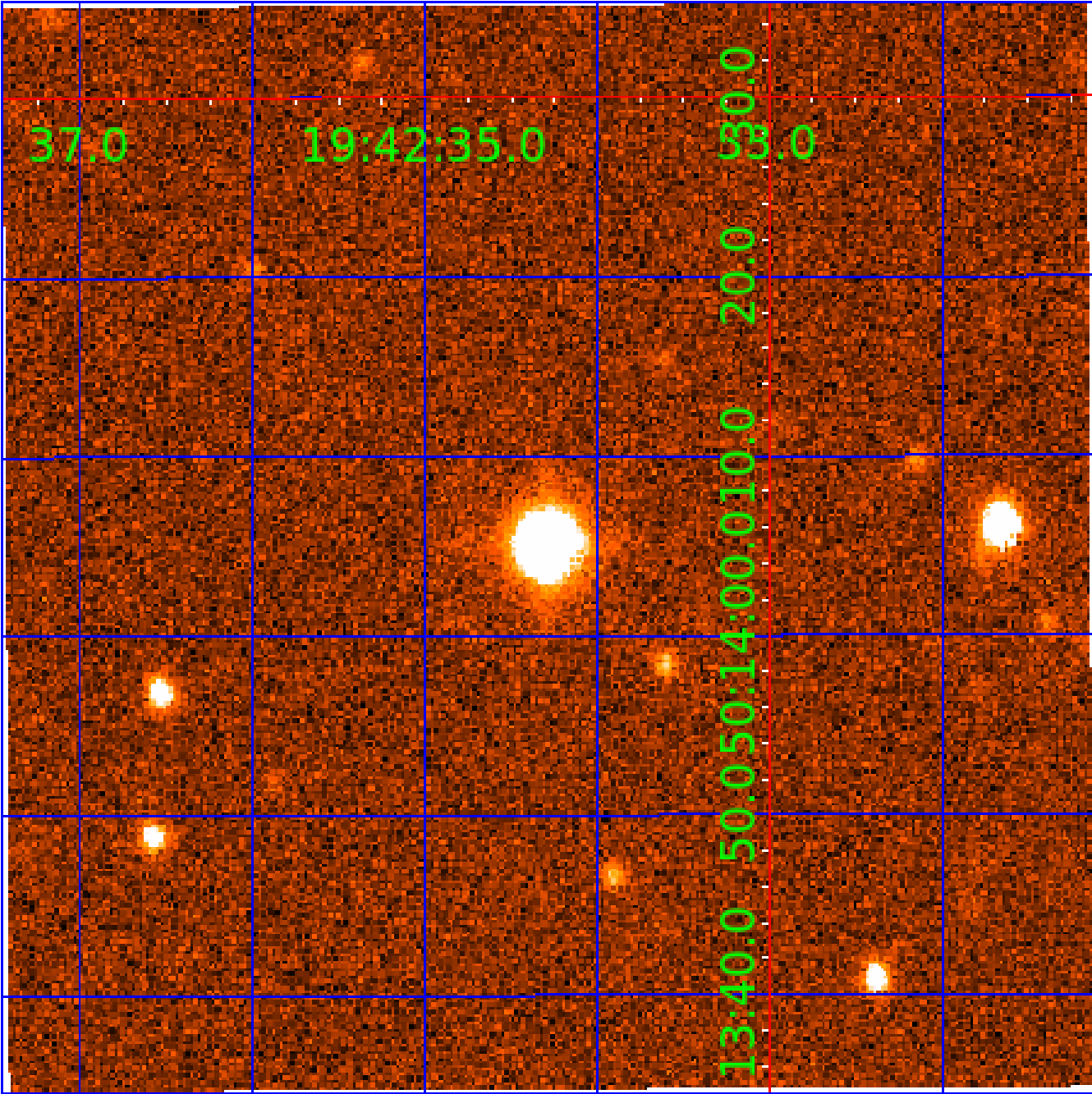


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011921886

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011921886-01	OBS	No	1.314019	132.790836	59.5	7.500	10.6	7.7	2.61	5510	1.99	9673.20
011921886-02	OBS	No	98.917364	150.560664	128.5	6.258	9.5	1.4	2.61	5510	3.08	30.43
011921886-03	OBS	No	437.626084	557.784613	2229.7	13.427	9.0	9.1	2.61	5510	14.20	4.19
011921886-04	OBS	No	248.226516	355.549780	973.1	10.511	9.5	5.1	2.61	5510	8.72	8.92
011921886-05	OBS	No	579.536993	207.005908	3166.7	14.298	10.2	8.4	2.61	5510	14.55	2.88
011921886-06	OBS	No	587.359791	187.901531	6204.3	52.830	9.7	7.3	2.61	5510	23.79	2.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011921886-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
011921886-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—CHASES_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—HALO_GHOST
011921886-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011921886-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011921886-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011921886-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

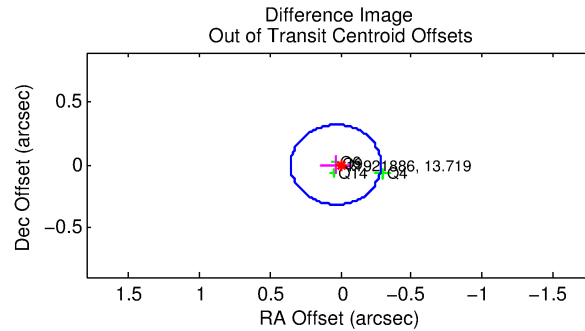
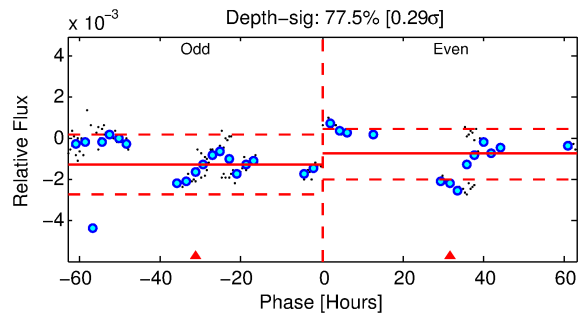
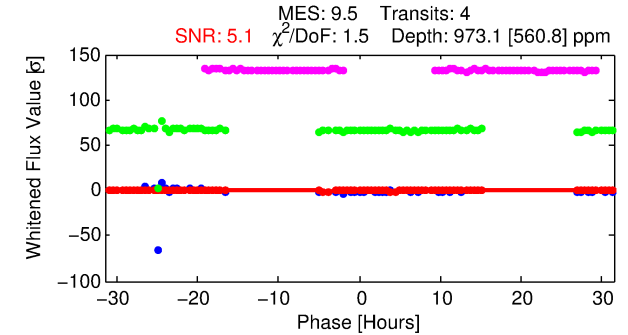
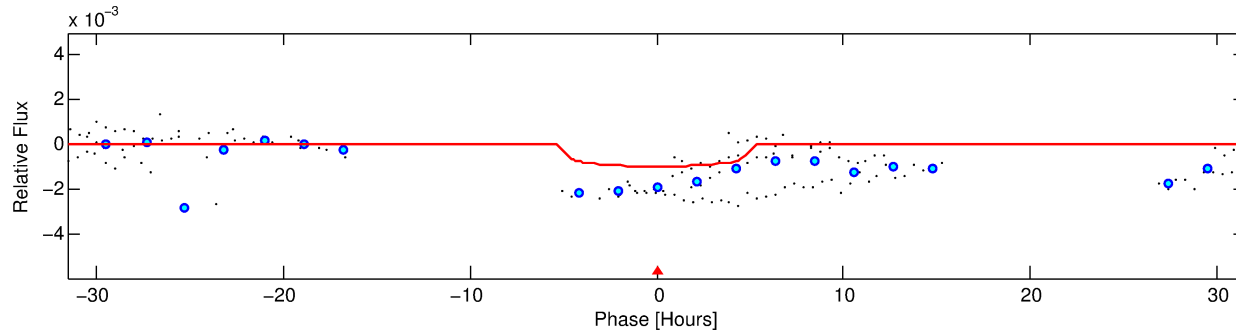
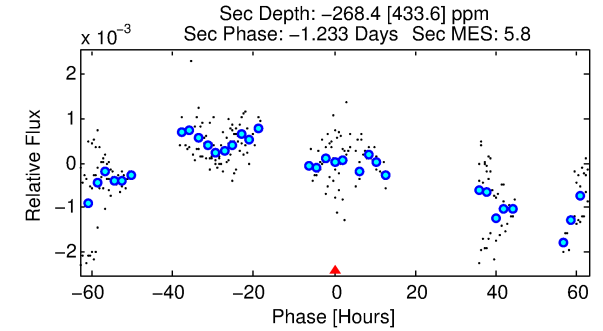
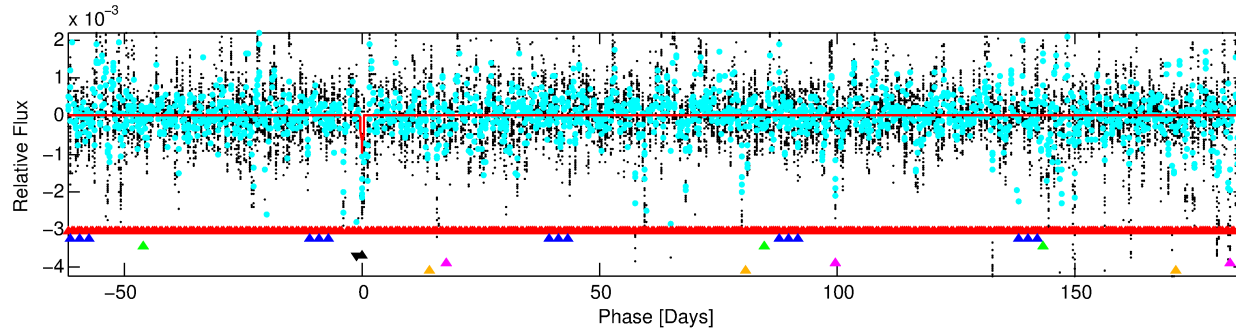
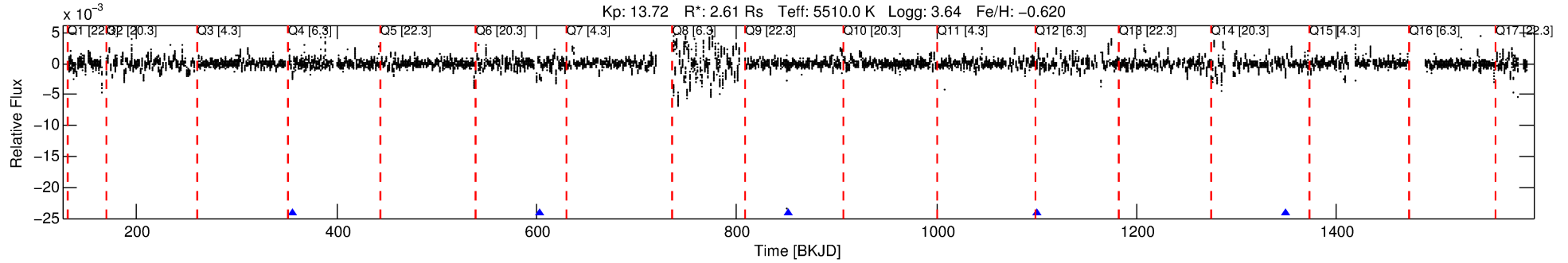
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011921886-04

No Significant Match Found

# DV One-Page Summary

KIC: 11921886 Candidate: 4 of 6 Period: 248.227 d



## DV Fit Results:

Period = 248.22652 [0.02305] d  
Epoch = 355.5498 [0.0323] BKJD  
Rp/R\* = 0.0306 [0.0221]  
a/R\* = 134.47 [366.74]  
b = 0.71 [1.93]  
Seff = 8.92 [13.49]  
Teq = 441 [167] K  
Rp = 8.72 [8.89] Re  
a = 0.7934 [0.6818] AU  
Ag = N/A  
Teffp = N/A

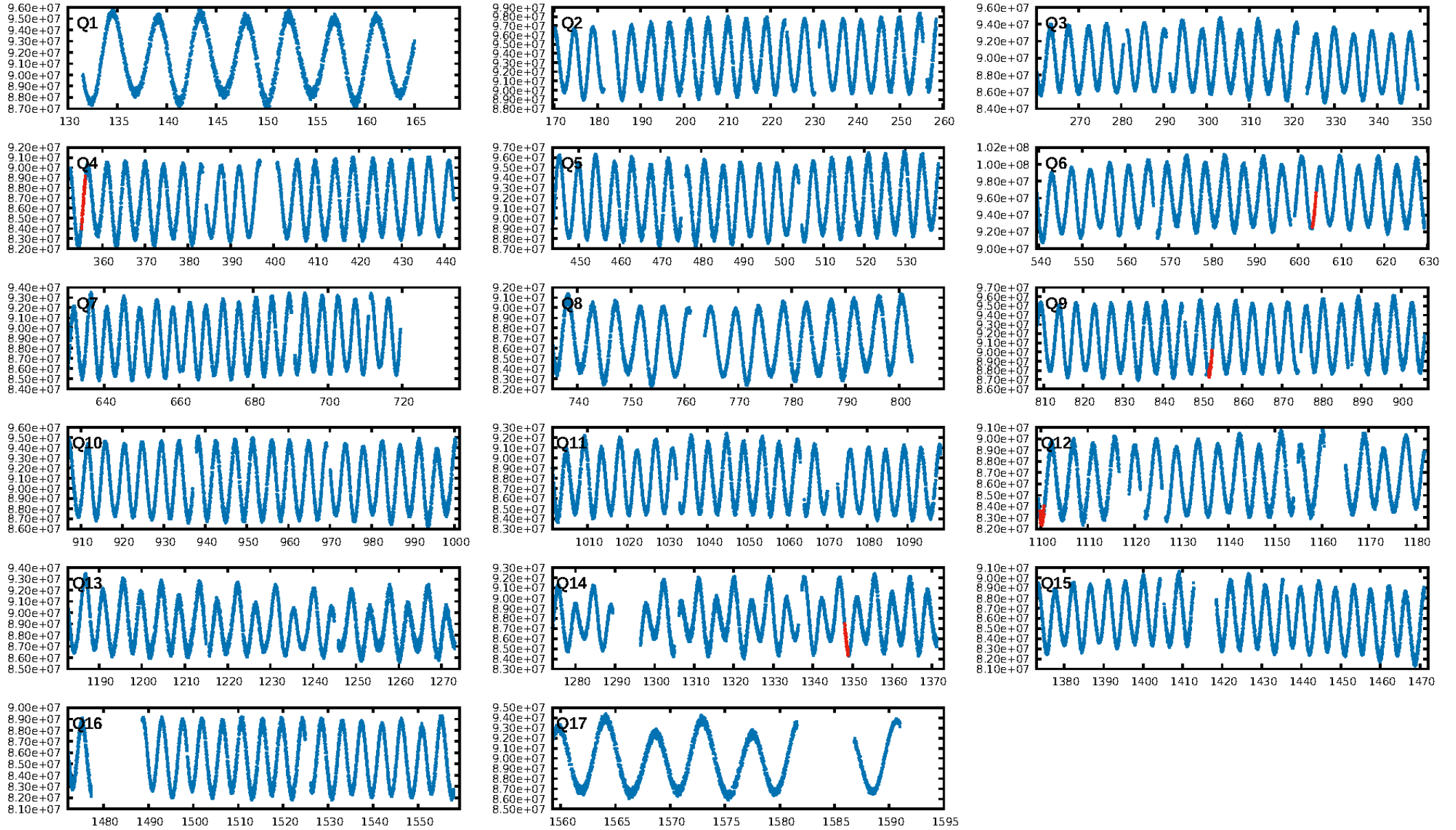
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [292.93σ]  
LongPeriod-sig: 100.0% [266.57σ]  
ModelChiSquare2-sig: 16.5%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.41e-08**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: -1.908  
Centroid-sig: 1.3%  
**Centroid-so: 1.232 arcsec [3.27σ]**  
OotOffset-rm: 0.034 arcsec [0.32σ]  
KicOffset-rm: 0.074 arcsec [0.82σ]  
OotOffset-st: 2/0/1/1 [4]  
KicOffset-st: 2/0/1/1 [4]  
DiffImageQuality-fgm: 0.75 [3/4]  
DiffImageOverlap-fno: 0.00 [0/4]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:54:28 Z

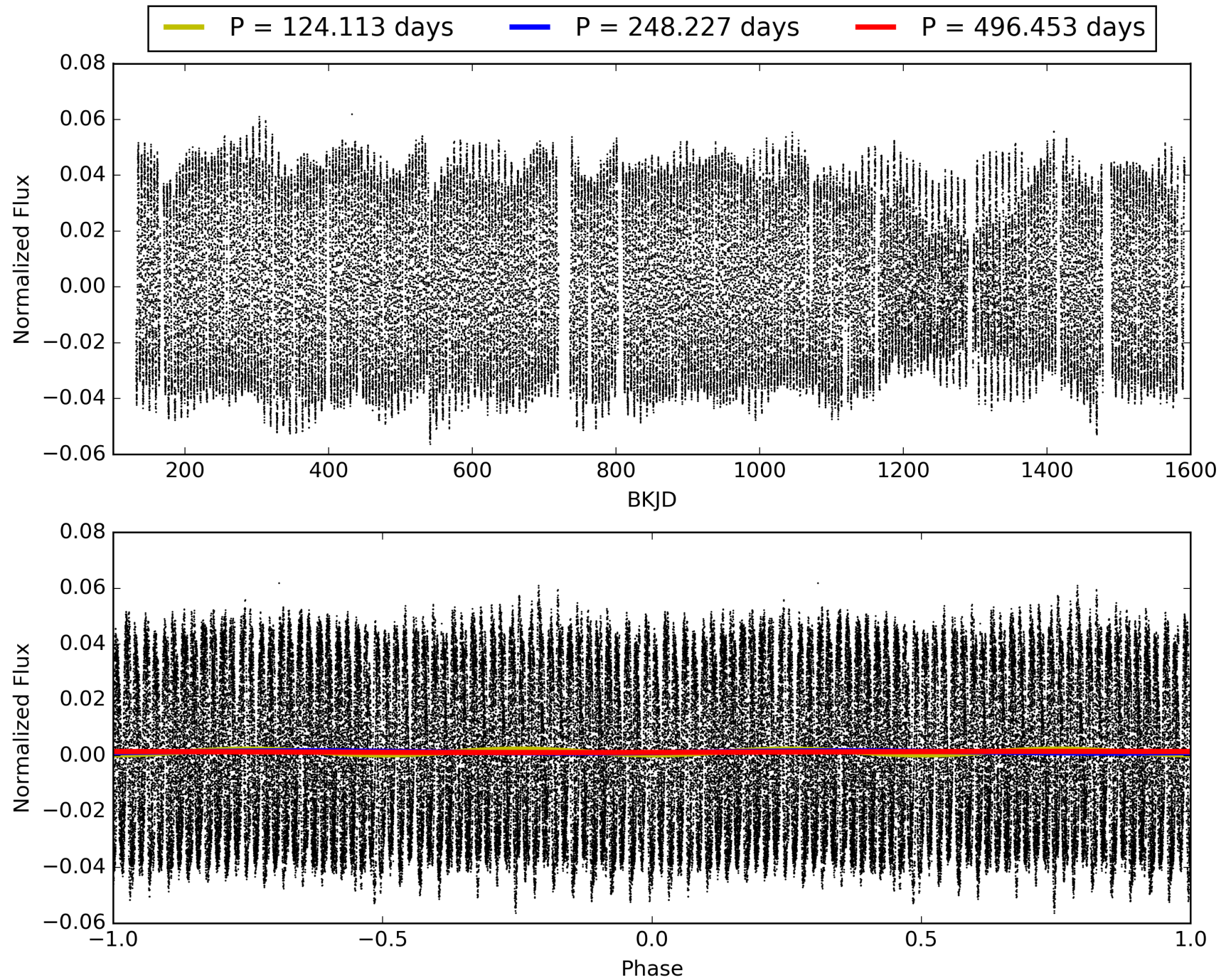
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011921886-04, PDC Light Curves





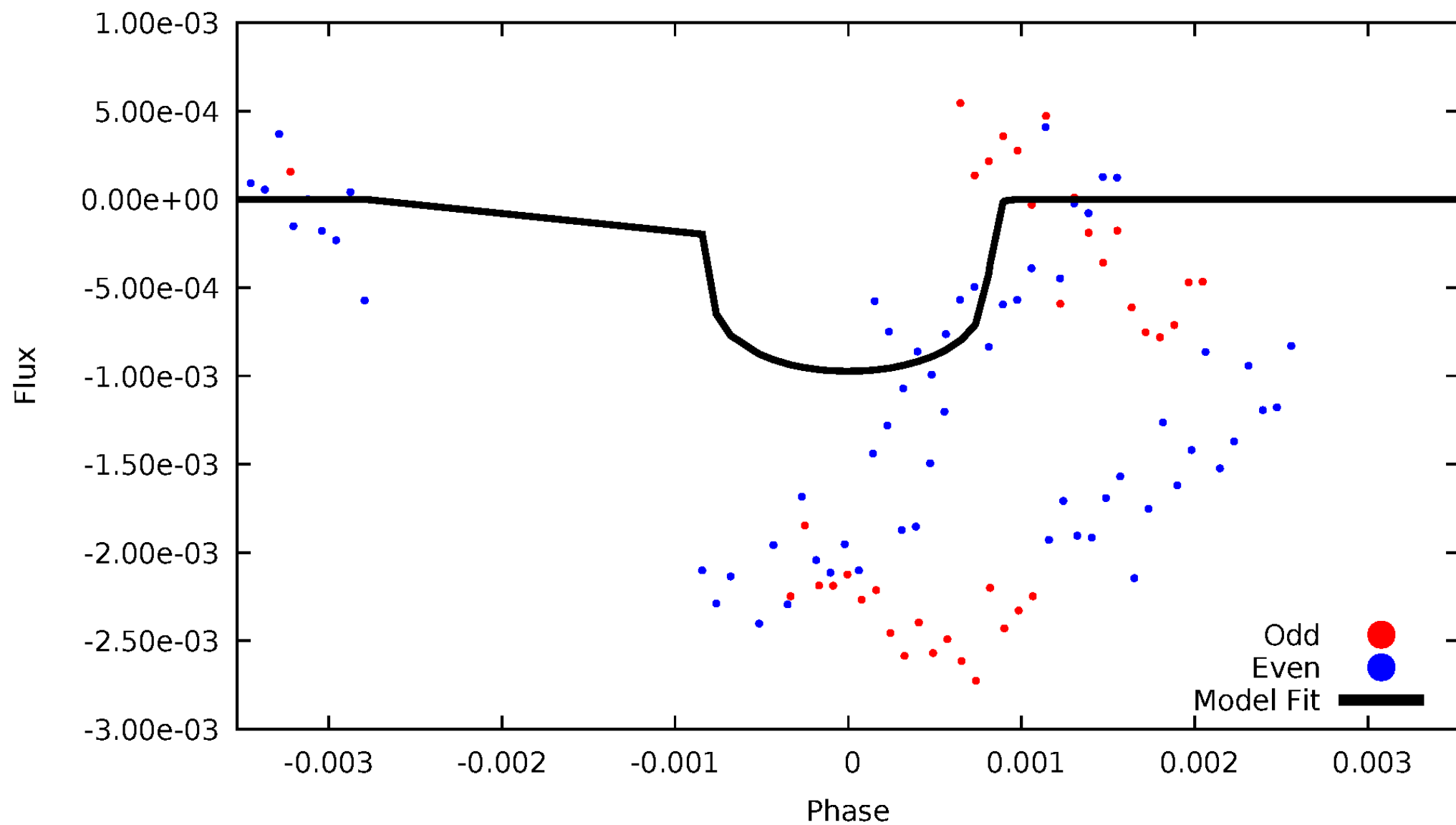
# TCE 011921886-04





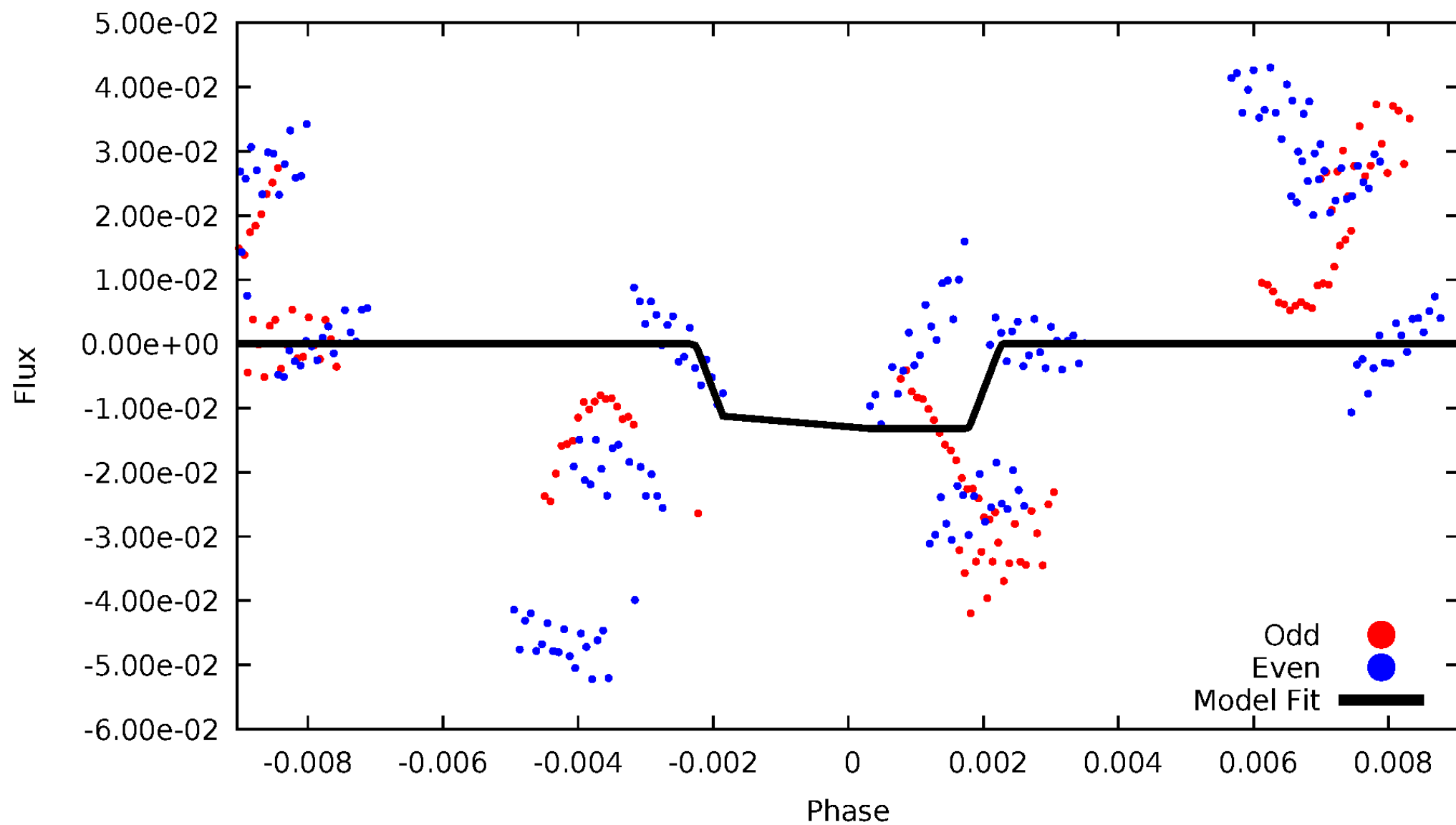
# DV Odd/Even

TCE 011921886-04



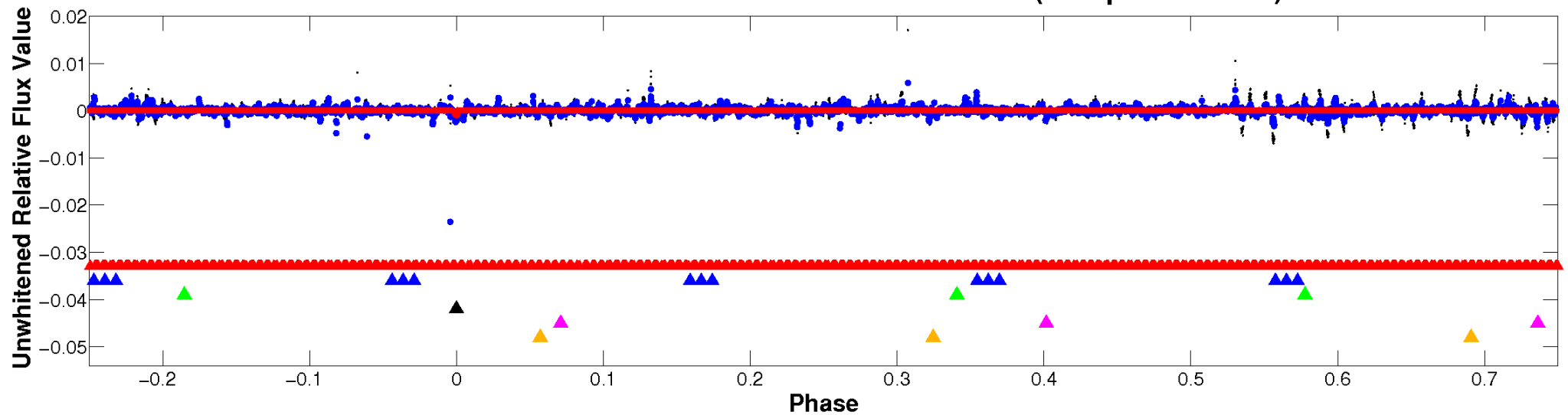
# ALT Odd/Even

TCE 011921886-04

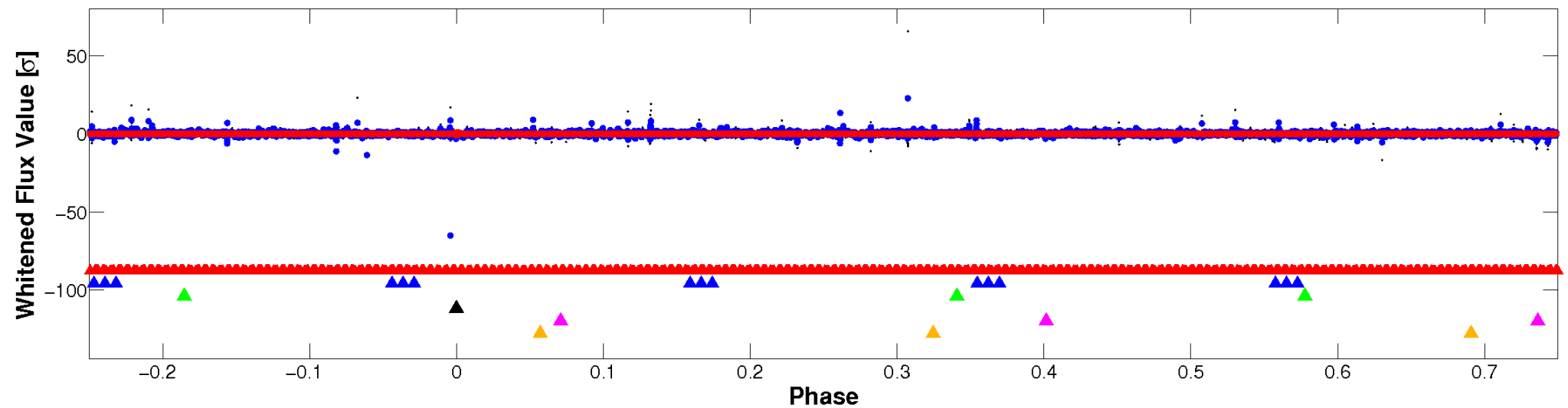


# Non-Whitened Vs. Whitened Light Curve

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

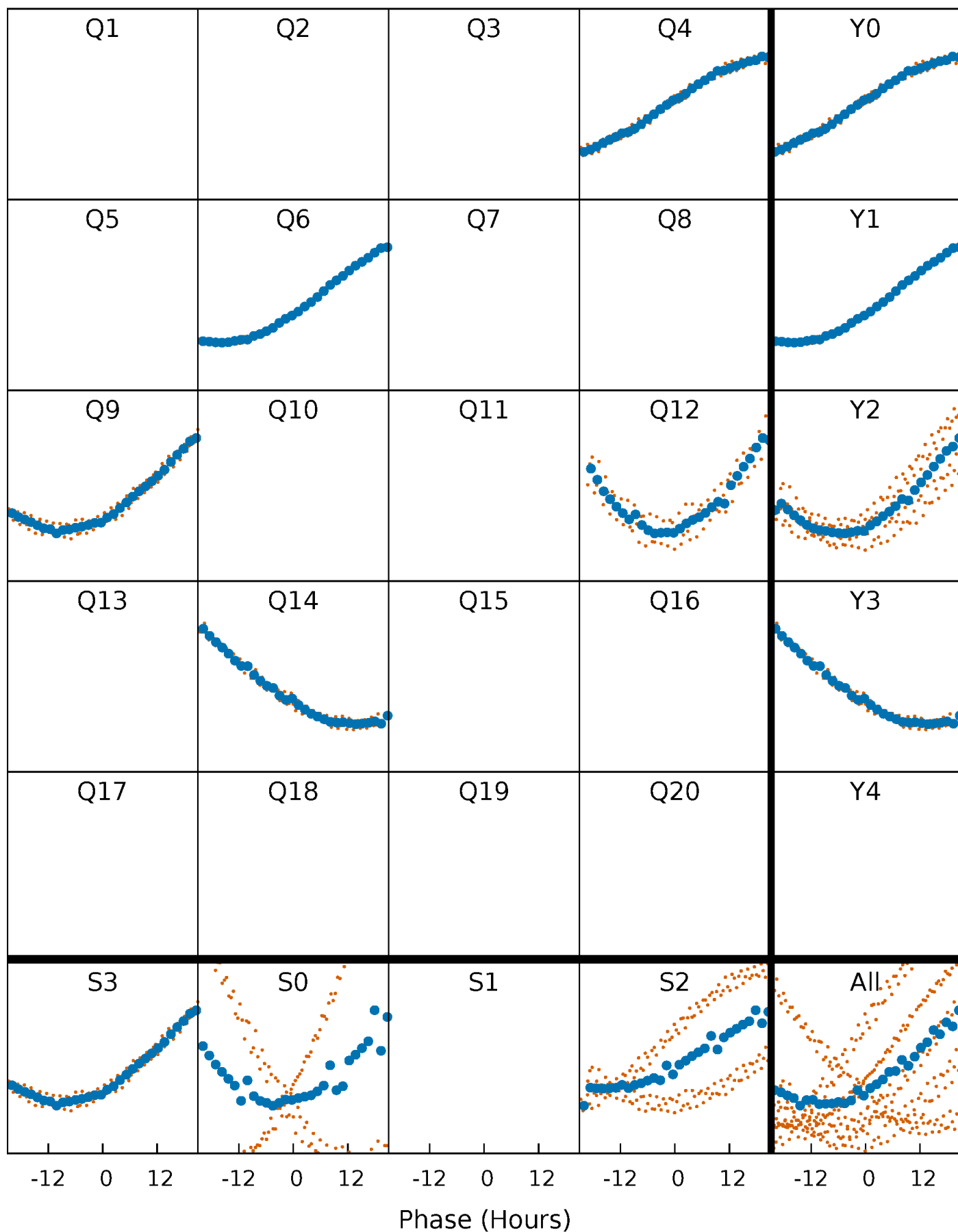


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



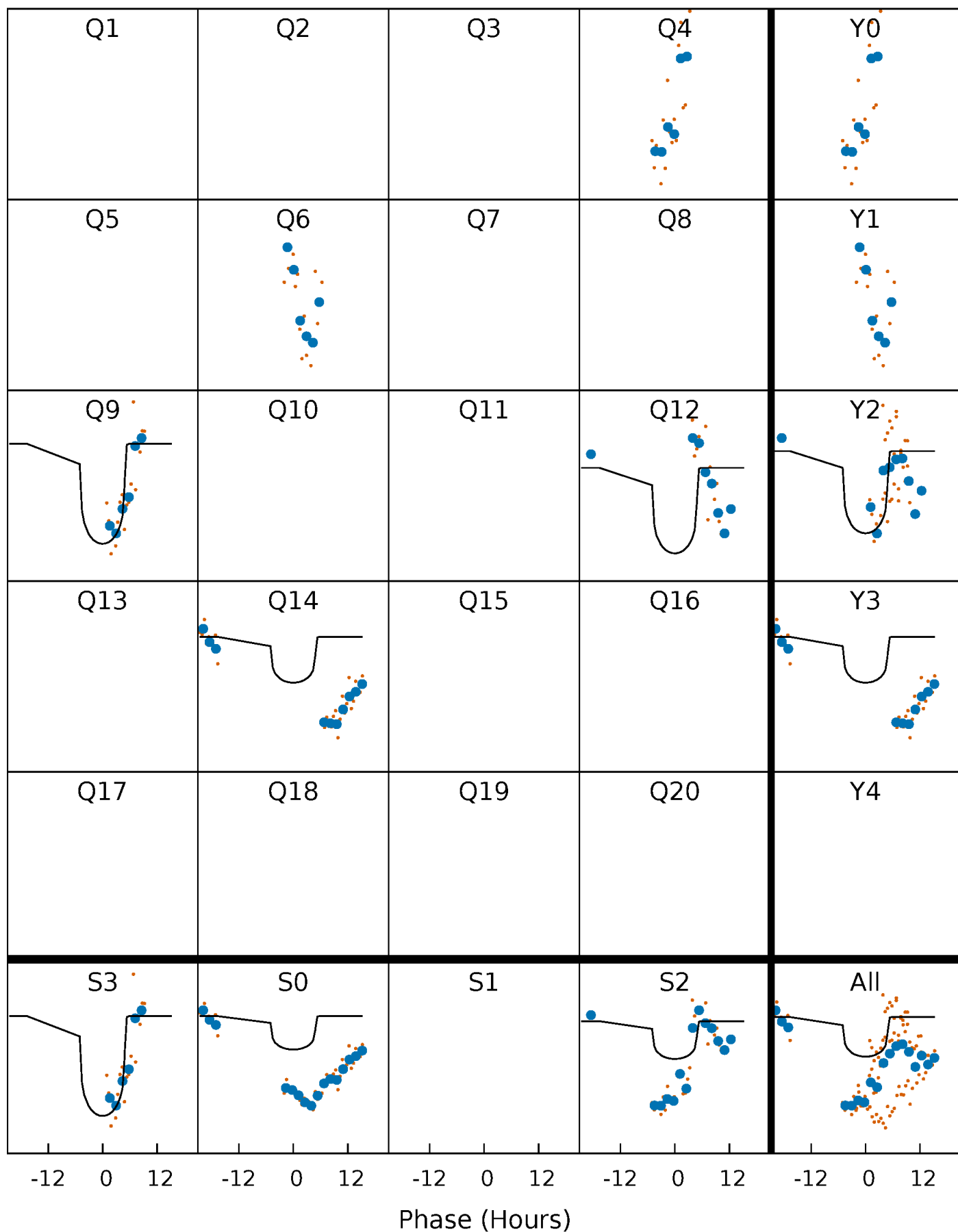
# PDC Quarter-Phased Transit Curves

TCE 011921886-04   P=248.226516 Days    $T_0=355.549780$  (BKJD)



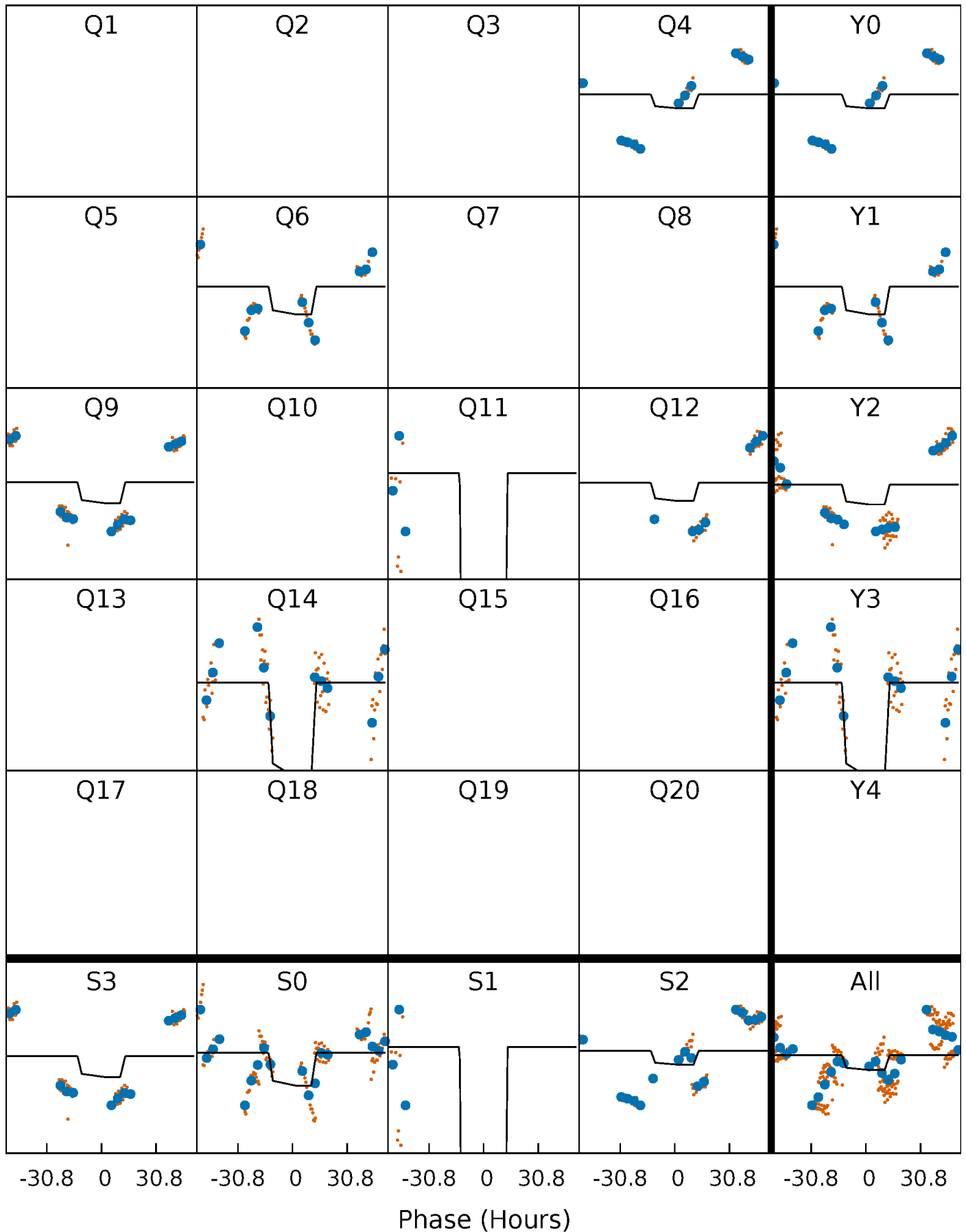
# DV Quarter-Phased Transit Curves

TCE 011921886-04   P=248.226516 Days    $T_0=355.549780$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

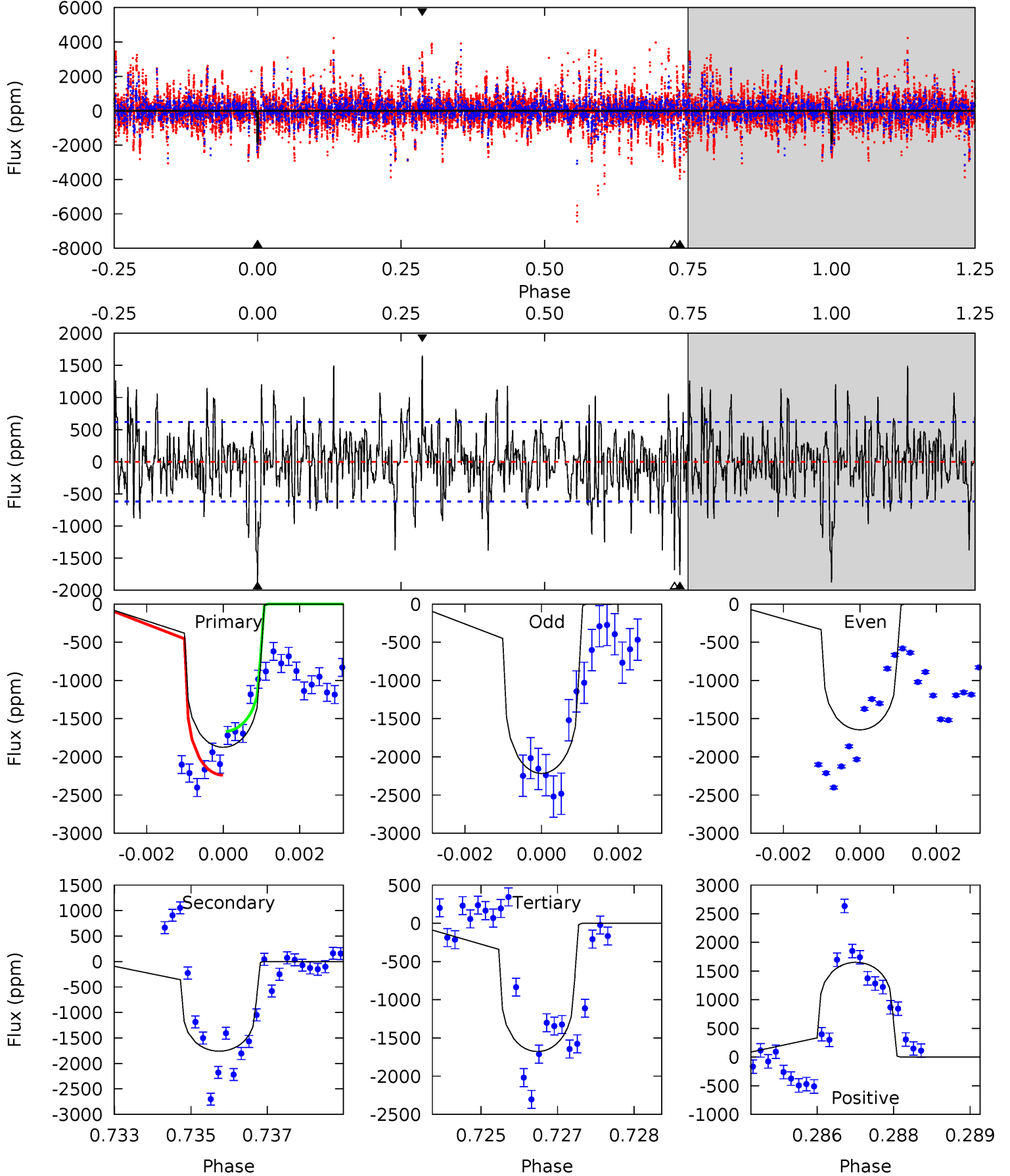
TCE 011921886-04 P=248.240509 Days  $T_0=355.260763$  (BKJD)



# DV Model-Shift Uniqueness Test

011921886-04, P = 248.226516 Days, E = 107.323264 Days

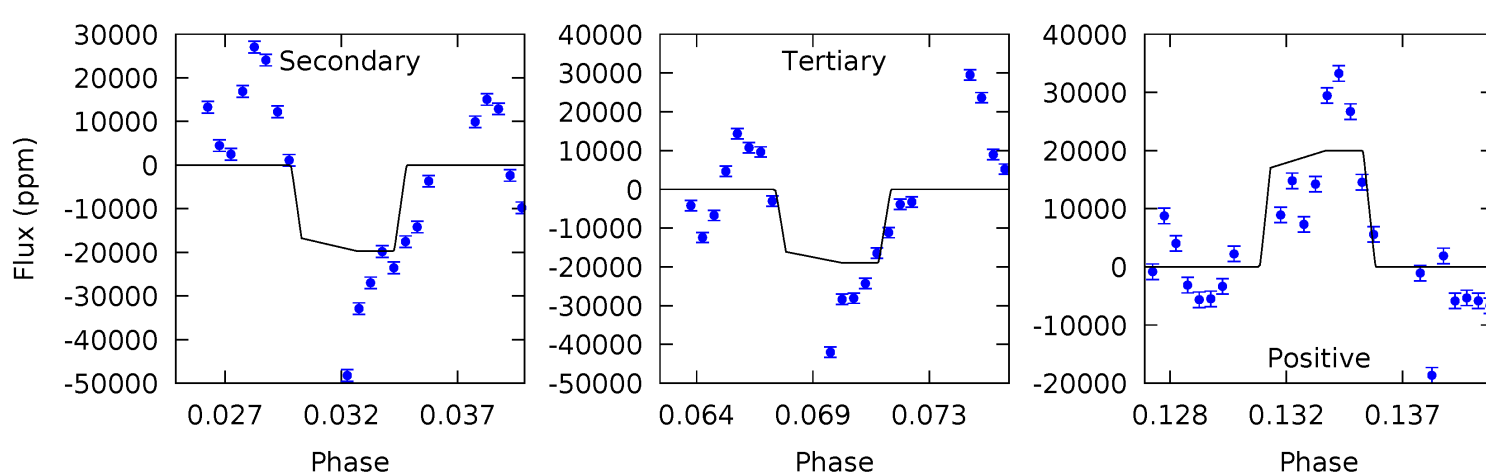
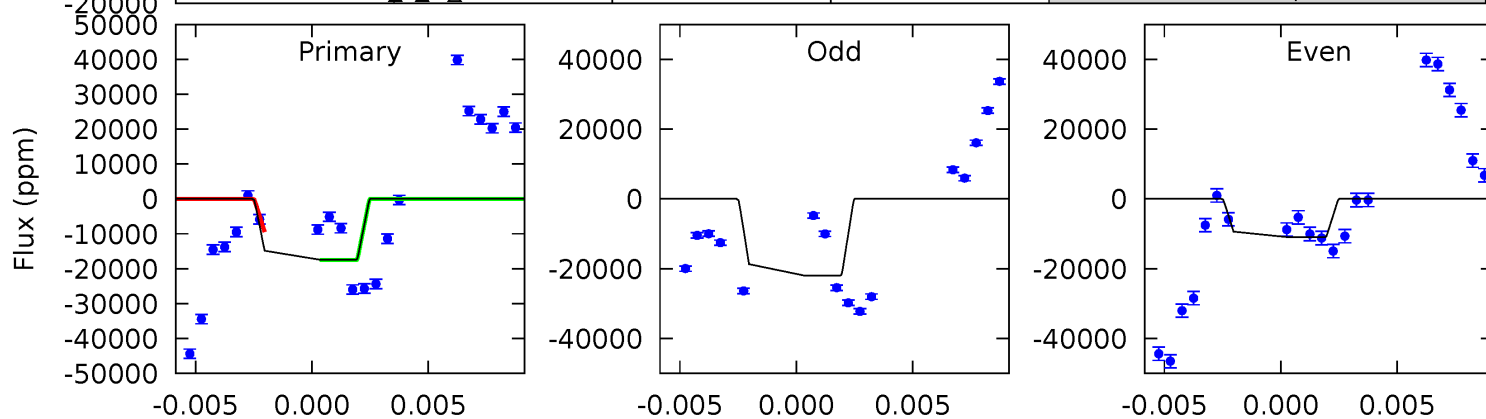
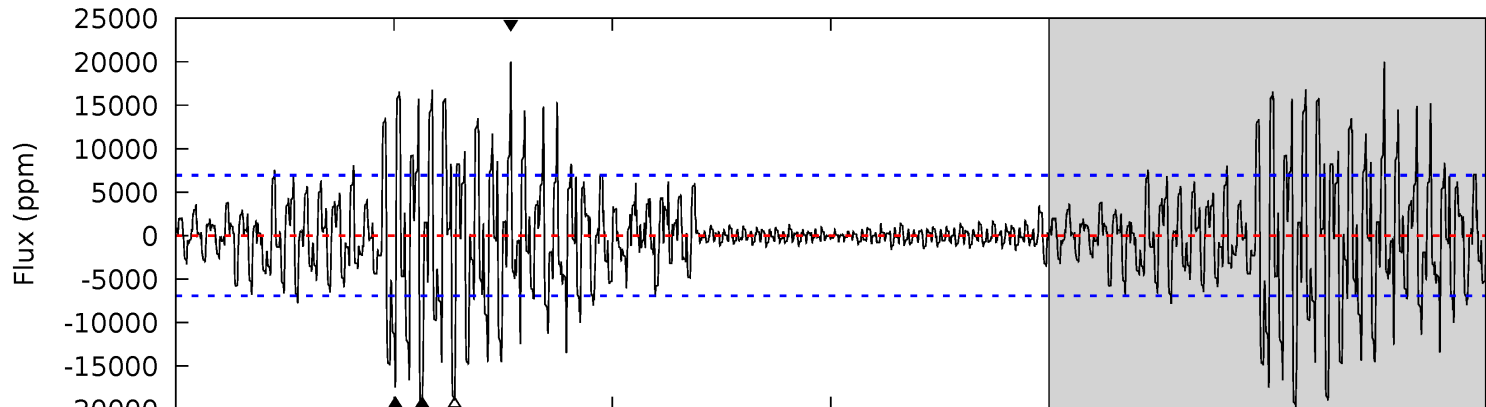
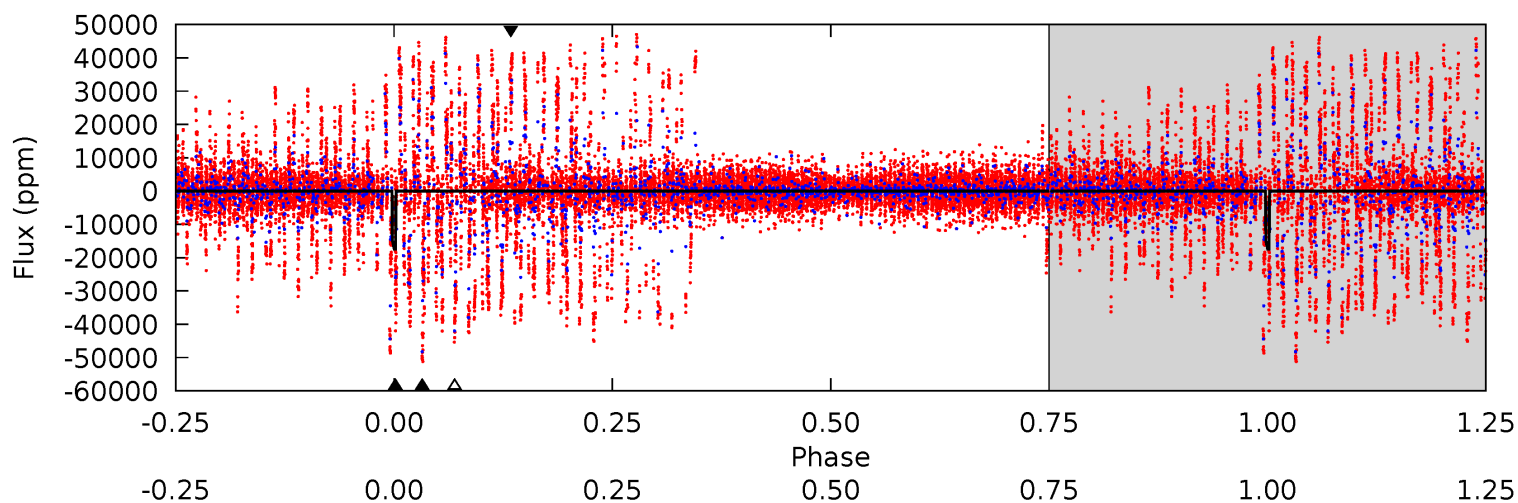
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.3	15.2	14.5	14.3	5.36	3.14	3.40	1.71	1.92	0.70	0.91	2.19	0.85	0.47	2.24



# Alt Model-Shift Uniqueness Test

011921886-04, P = 248.240509 Days, E = 107.020254 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.0	14.7	14.1	14.9	5.17	2.84	2.95	-1.10	-1.90	0.57	-0.23	3.88	1.26	0.50	2.48





### Stellar Parameters For KIC 011921886

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5510^{+219}_{-197}$	$3.639^{+0.928}_{-0.232}$	$-0.620^{+0.350}_{-0.300}$	$2.608^{+1.013}_{-1.881}$	$1.080^{+0.209}_{-0.288}$	$0.086^{+1.966}_{-0.058}$
	+4%/-4%	+26%/-6%	+56%/-48%	+39%/-72%	+19%/-27%	+2293%/-67%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011921886-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1759 \pm 115$	$7.93^{+7.06}_{-4.75}$	$602^{+70}_{-113}$	$6173^{+4424}_{-1284}$	$9463^{+51922}_{-6747}$
Alt.	$-19701 \pm 1341$	$30.26^{+10.73}_{-11.55}$	$603^{+72}_{-108}$	$6116^{+809}_{-585}$	$7439^{+11717}_{-3319}$

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

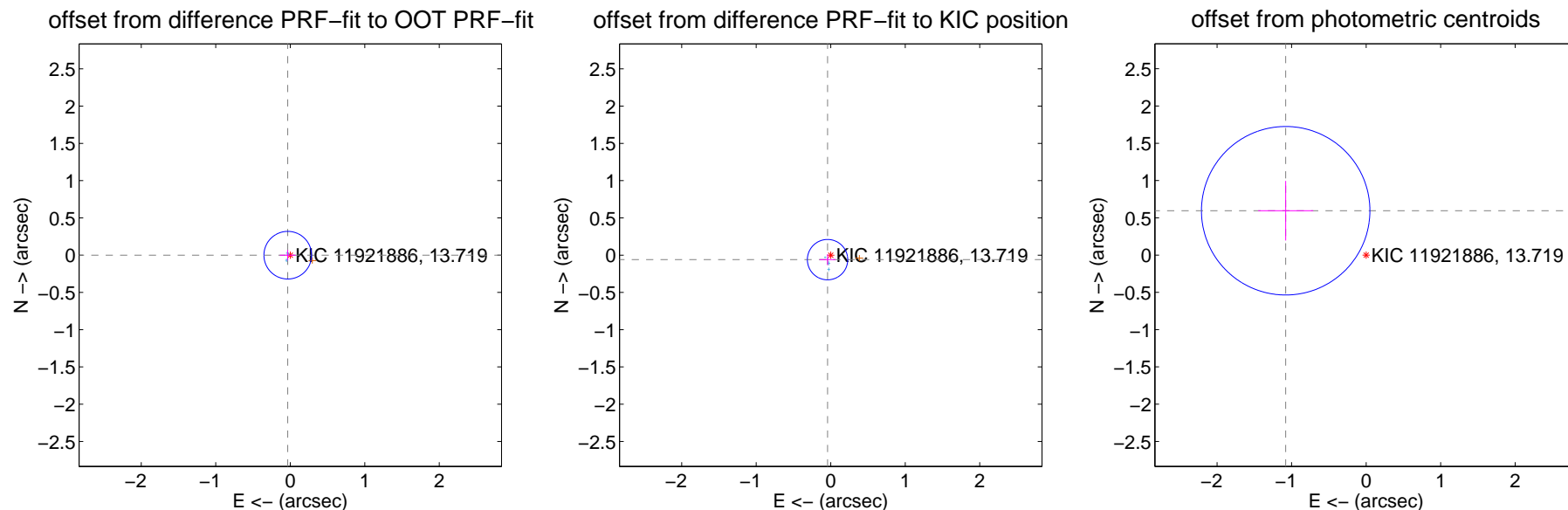
## DV Centroid Data

Supplemental centroid analysis for 011921886-04. Kepler magnitude: 13.72. Transit SNR 5.08

There are 3 quarters with good PRF difference image offsets

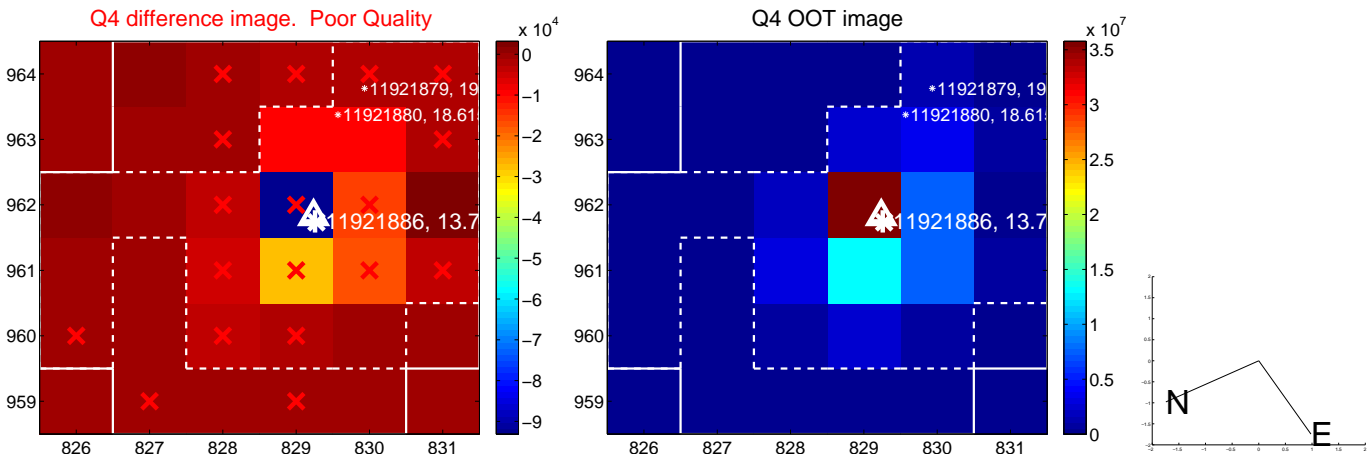
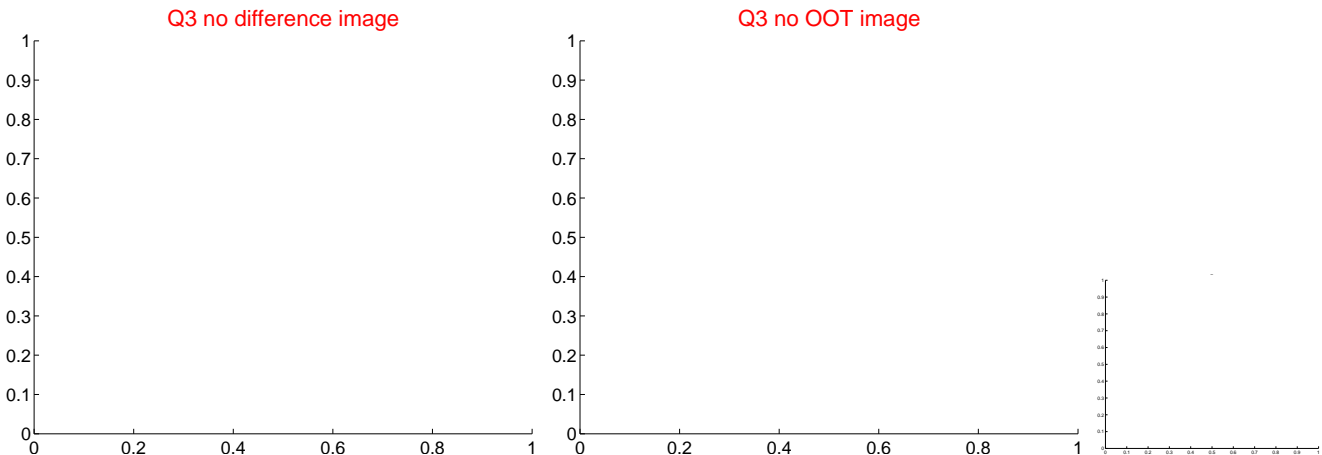
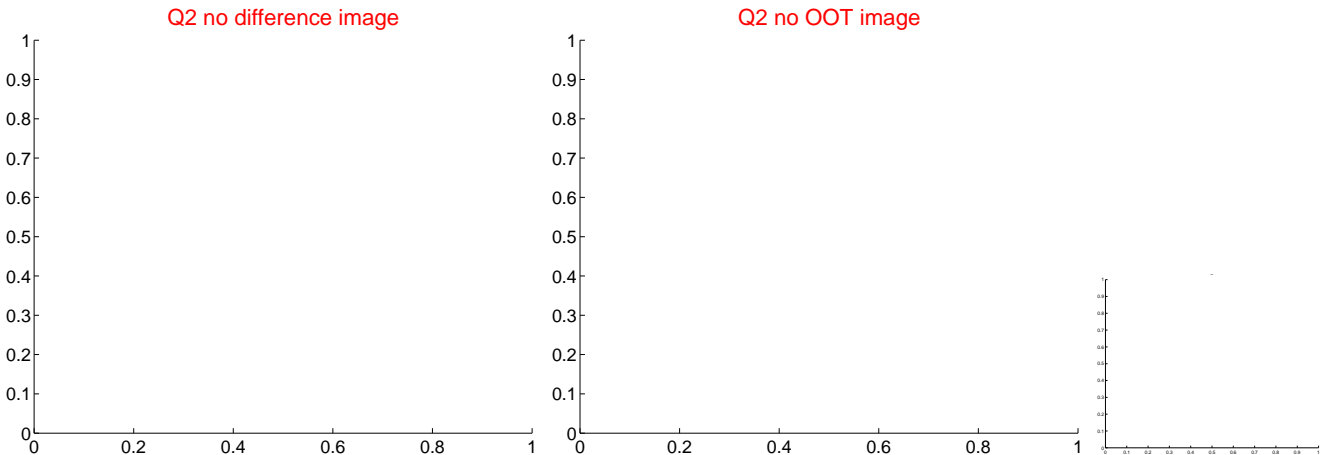
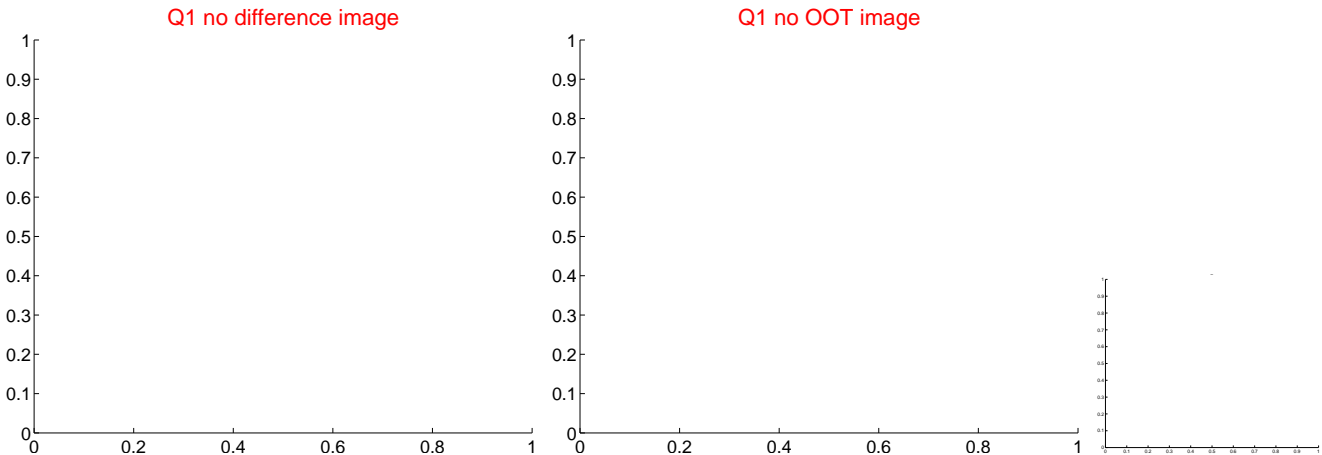
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.034 \pm 0.107$	0.32	$0.034 \pm 0.107$	$-0.000 \pm 0.071$
PRF-fit source offset from KIC position	$0.074 \pm 0.090$	0.82	$0.043 \pm 0.106$	$-0.060 \pm 0.072$
photometric centroid source offset	$1.23 \pm 0.38$	3.27	$1.08 \pm 0.37$	$0.59 \pm 0.40$

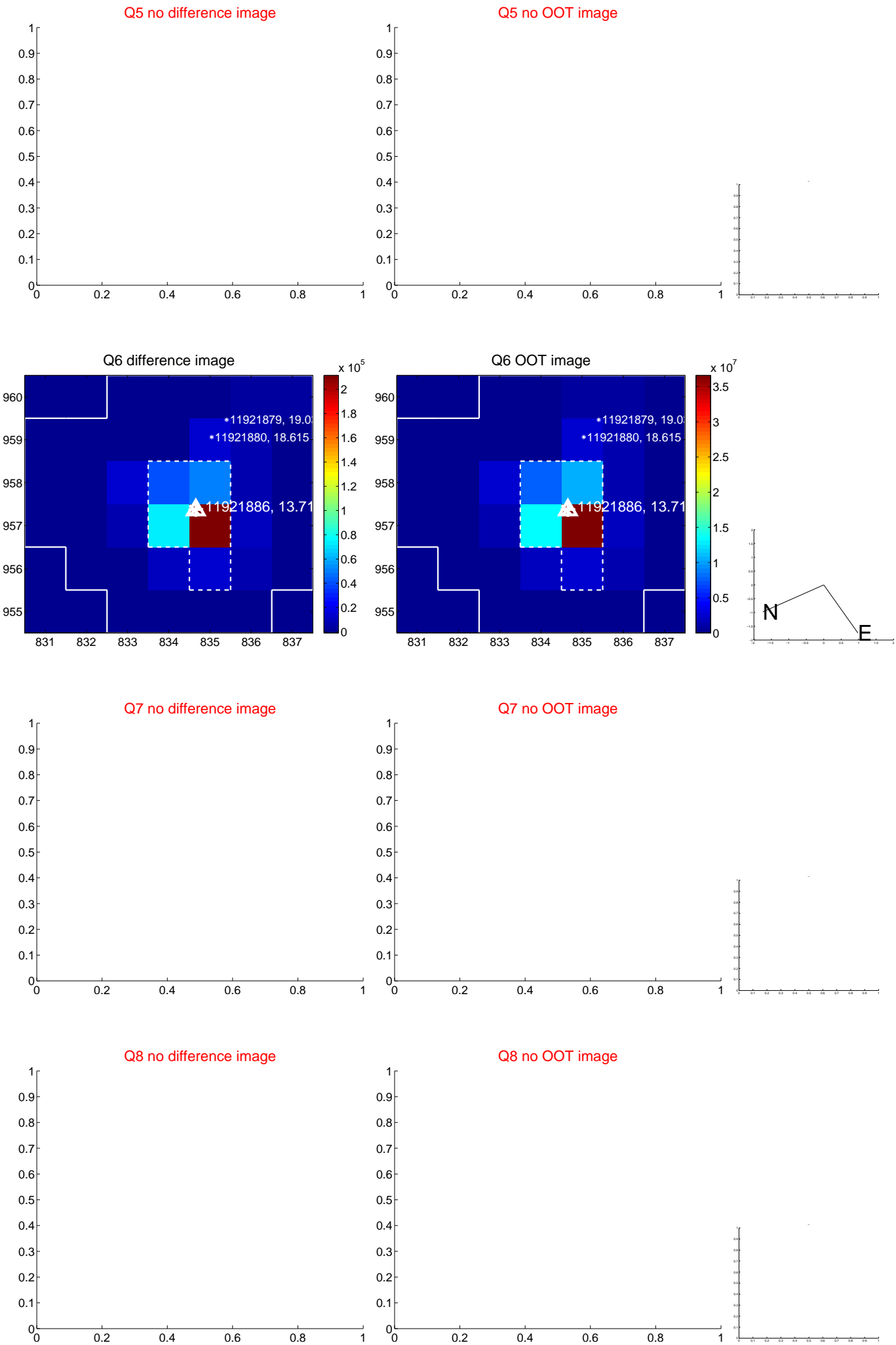


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

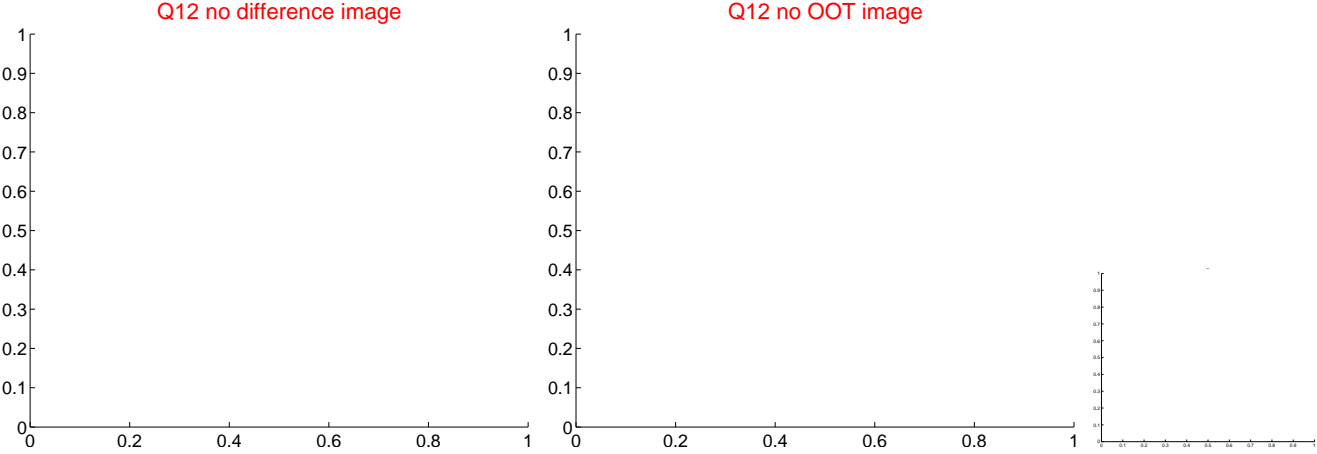
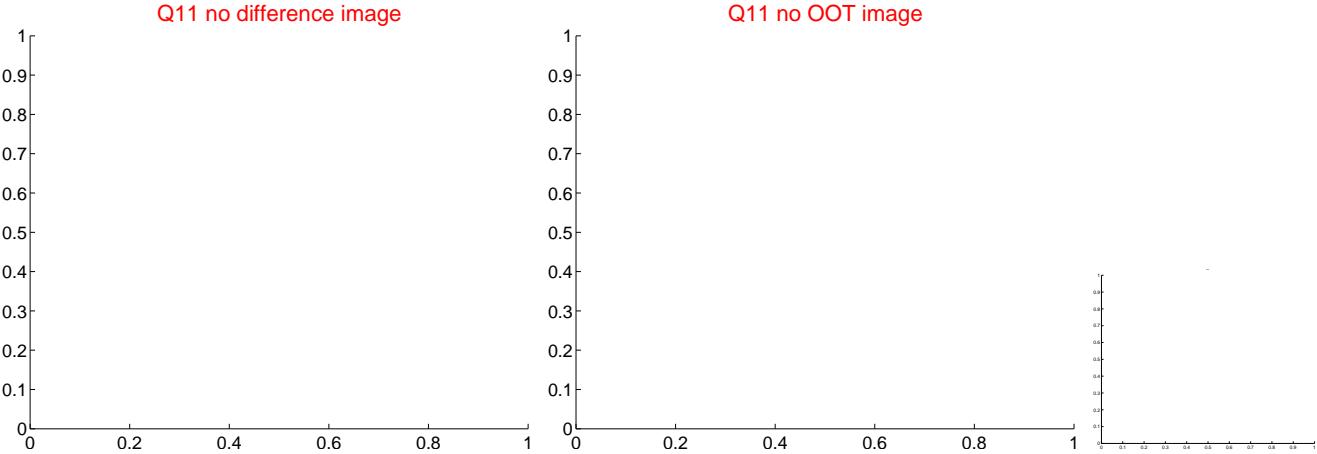
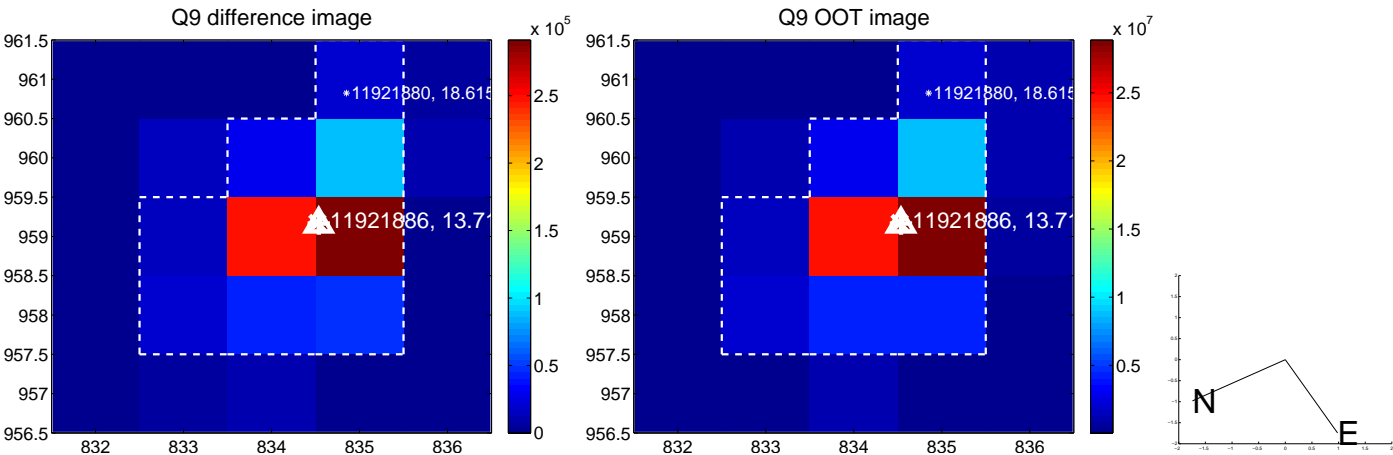
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



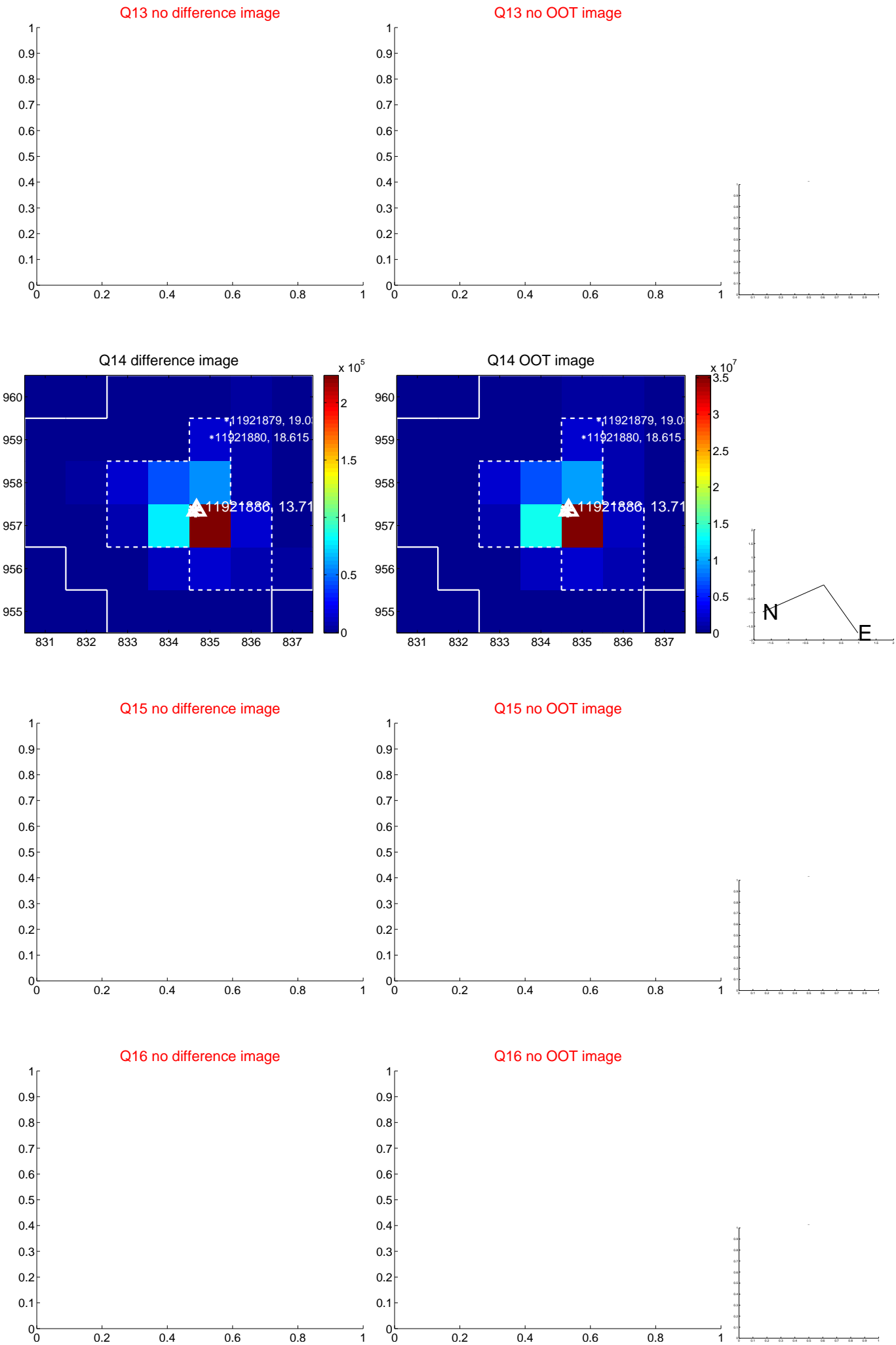
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



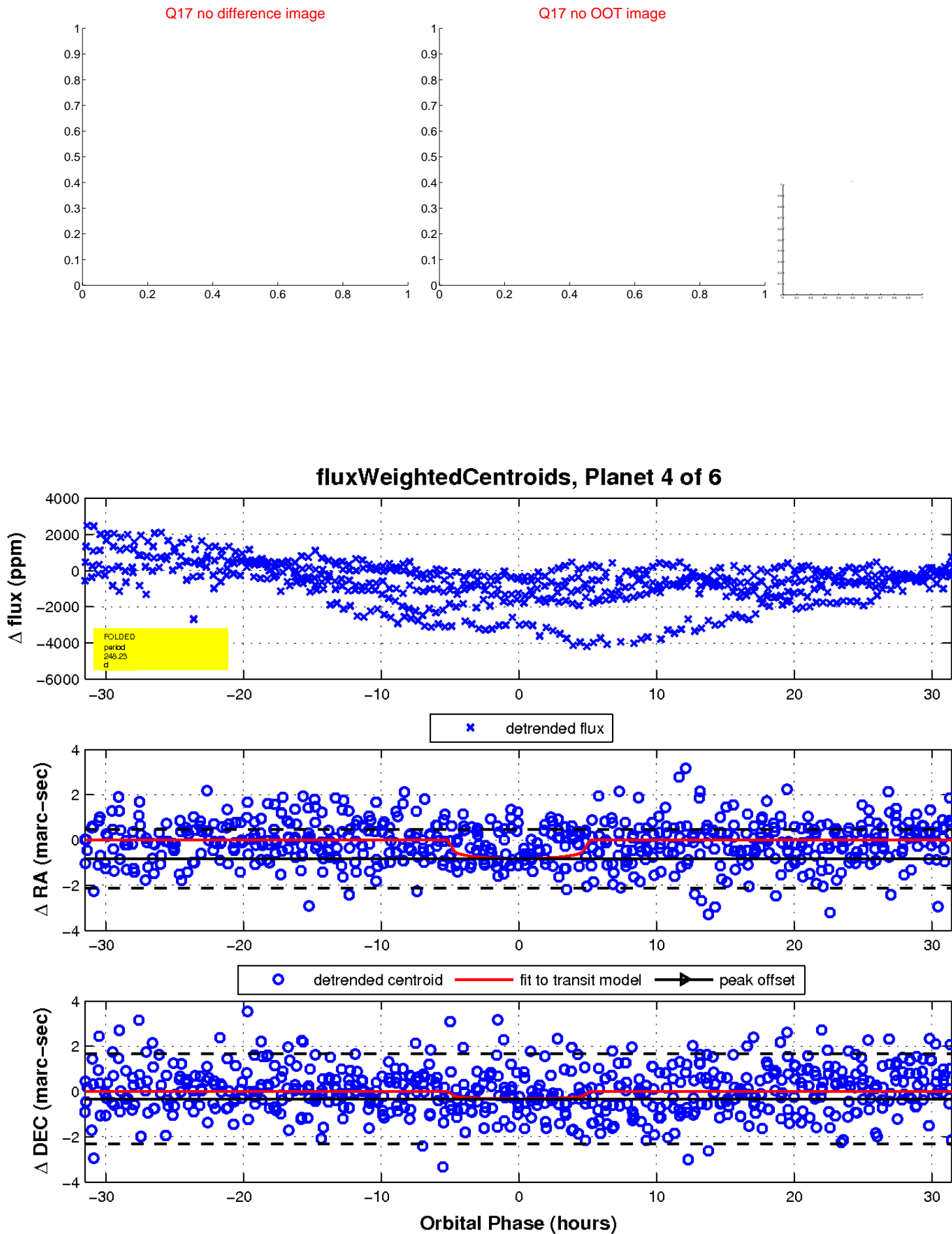
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

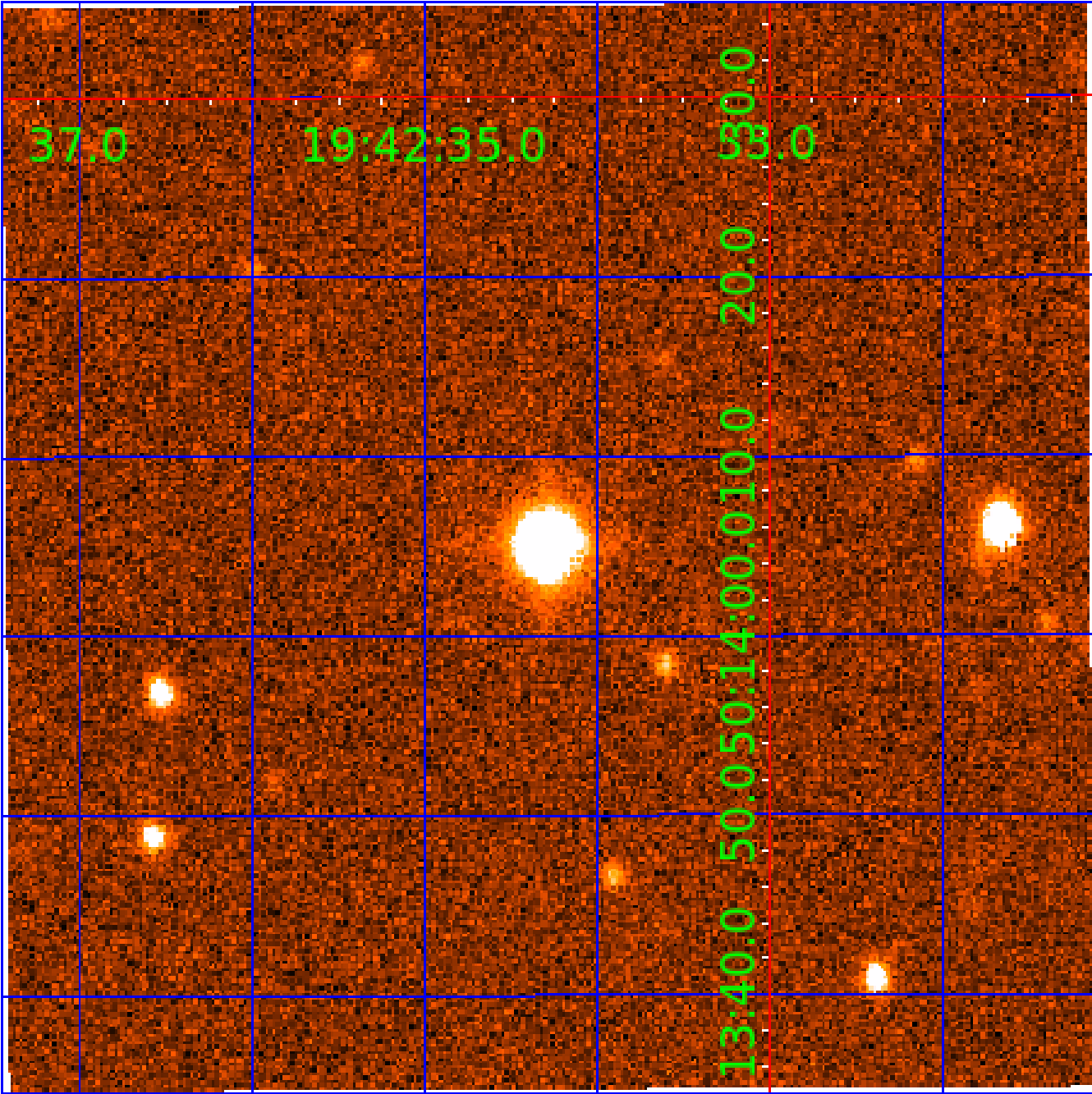


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 011921886

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011921886-01	OBS	No	1.314019	132.790836	59.5	7.500	10.6	7.7	2.61	5510	1.99	9673.20
011921886-02	OBS	No	98.917364	150.560664	128.5	6.258	9.5	1.4	2.61	5510	3.08	30.43
011921886-03	OBS	No	437.626084	557.784613	2229.7	13.427	9.0	9.1	2.61	5510	14.20	4.19
011921886-04	OBS	No	248.226516	355.549780	973.1	10.511	9.5	5.1	2.61	5510	8.72	8.92
011921886-05	OBS	No	579.536993	207.005908	3166.7	14.298	10.2	8.4	2.61	5510	14.55	2.88
011921886-06	OBS	No	587.359791	187.901531	6204.3	52.830	9.7	7.3	2.61	5510	23.79	2.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011921886-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
011921886-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—CHASES_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—HALO_GHOST
011921886-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011921886-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011921886-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011921886-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

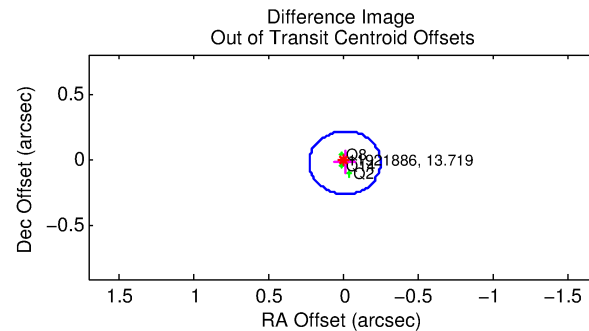
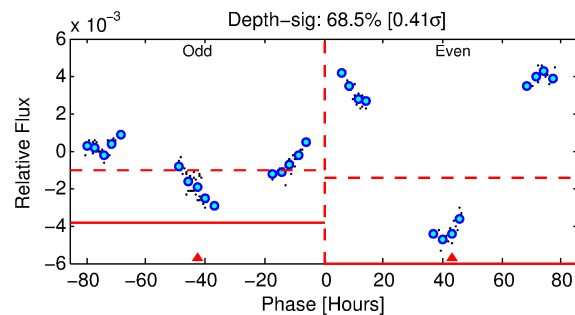
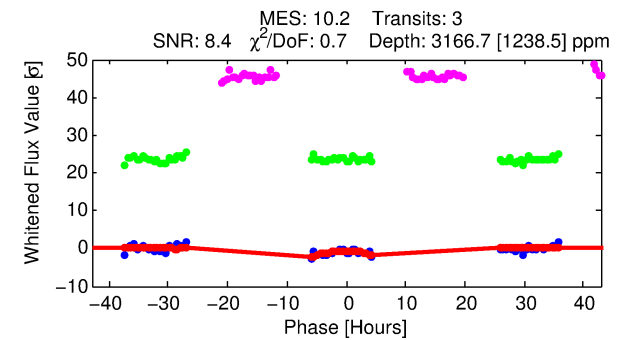
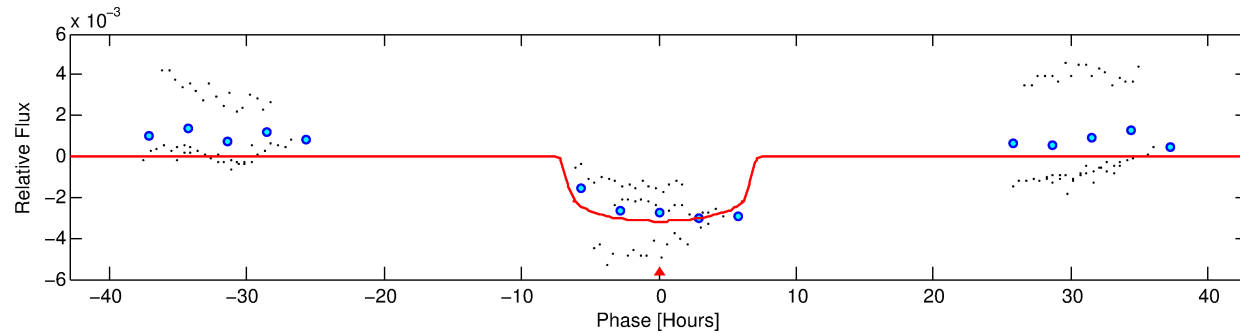
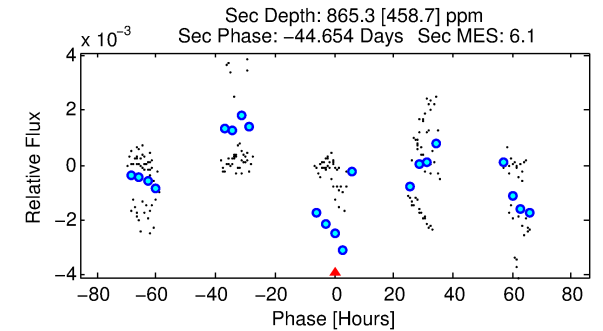
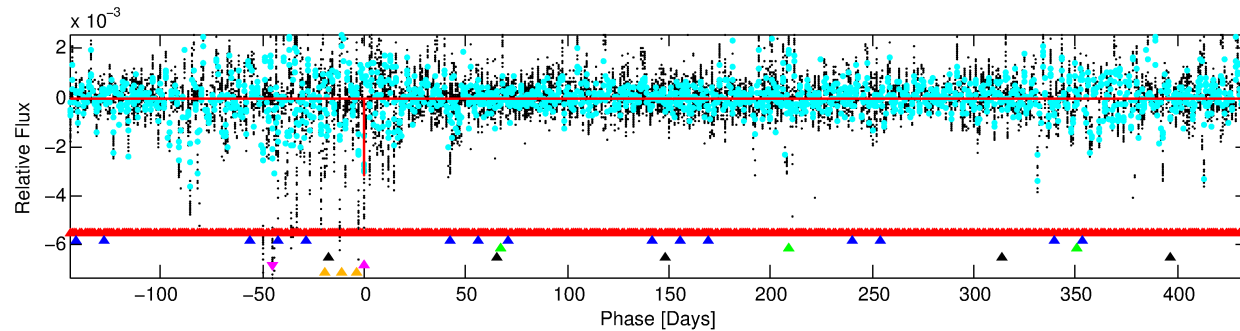
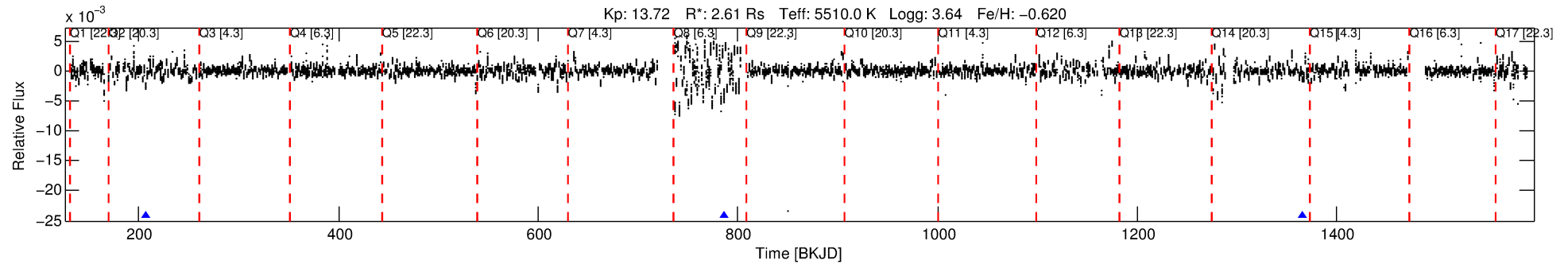
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011921886-05

No Significant Match Found

# DV One-Page Summary

KIC: 11921886 Candidate: 5 of 6 Period: 579.537 d



## DV Fit Results:

Period = 579.53699 [0.03769] d  
Epoch = 207.0059 [0.0443] BKJD  
Rp/R\* = 0.0511 [0.0932]  
a/R\* = 325.47 [2780.36]  
b = 0.00 [6400.30]  
Seff = 2.88 [4.36]  
Teq = 332 [126] K  
Rp = 14.55 [28.52] Re  
a = 1.3962 [1.1999] AU  
Ag = 4385.92 [17452.71] [0.25 $\sigma$ ]  
Teffp = 4180 [3854] K [1.00 $\sigma$ ]

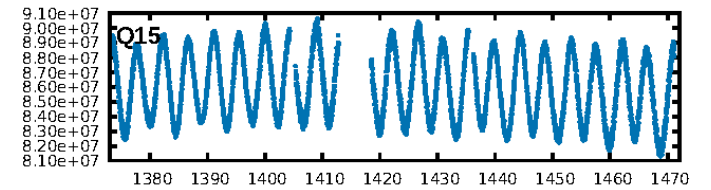
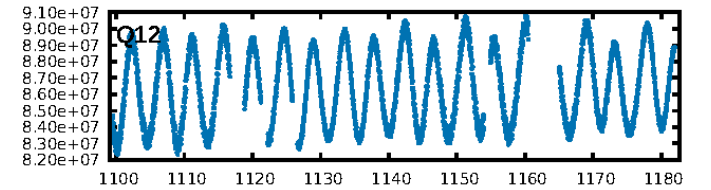
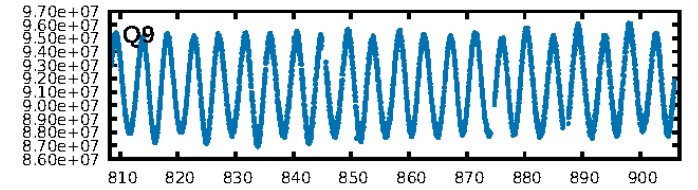
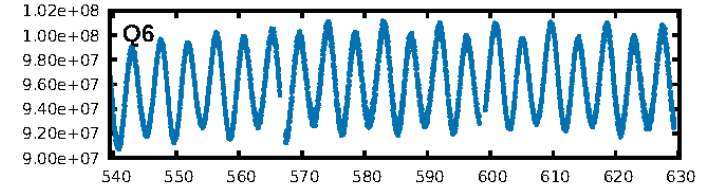
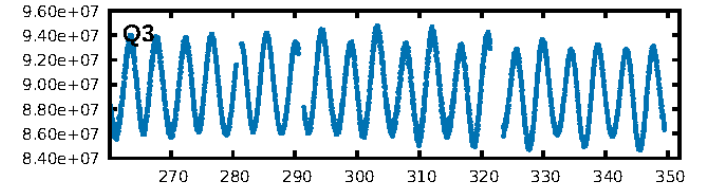
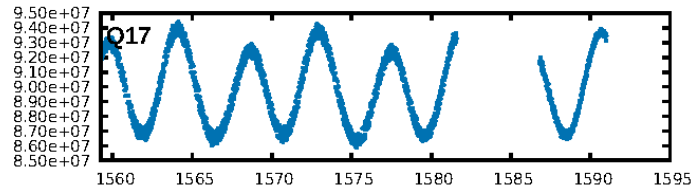
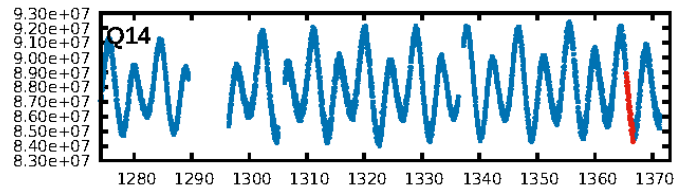
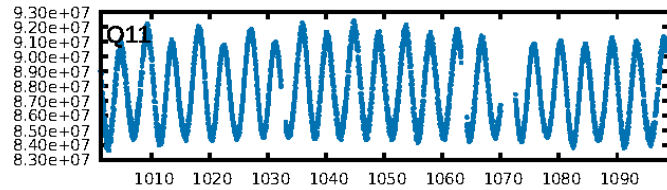
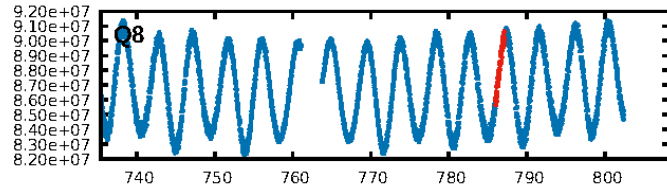
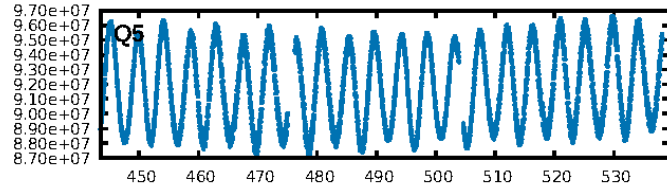
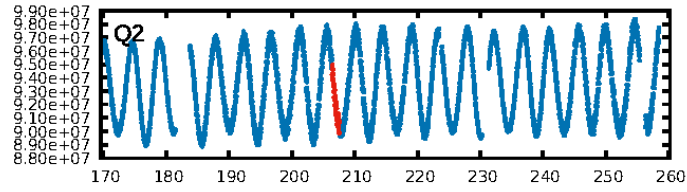
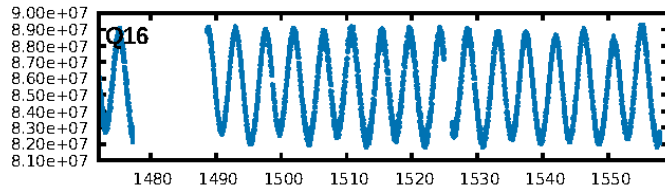
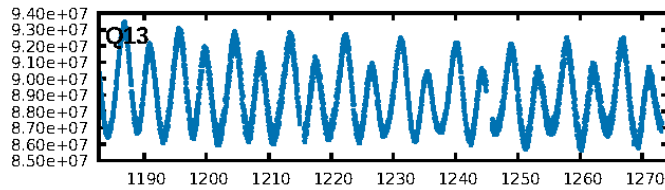
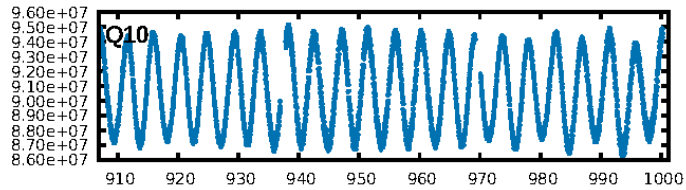
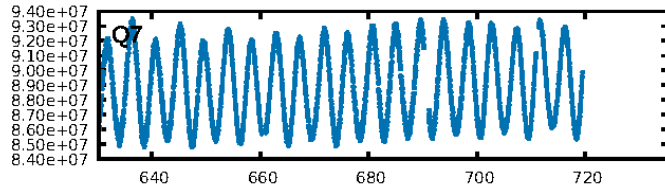
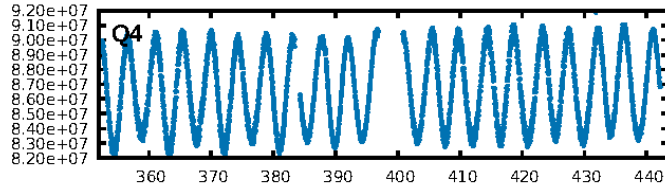
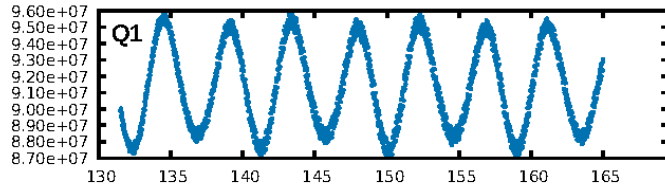
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [173.64 $\sigma$ ]  
LongPeriod-sig: 99.9% [3.43 $\sigma$ ]  
ModelChiSquare2-sig: 95.9%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.65e-07**  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 0.3456**  
Centroid-sig: 1.5%  
**Centroid-so: 0.622 arcsec [3.06 $\sigma$ ]**  
OotOffset-rm: 0.025 arcsec [0.31 $\sigma$ ]  
KicOffset-rm: 0.063 arcsec [0.51 $\sigma$ ]  
OotOffset-st: 2/0/1/0 [3]  
KicOffset-st: 2/0/1/0 [3]  
DiffImageQuality-fgm: 0.67 [2/3]  
DiffImageOverlap-fno: 0.00 [0/3]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:54:33 Z

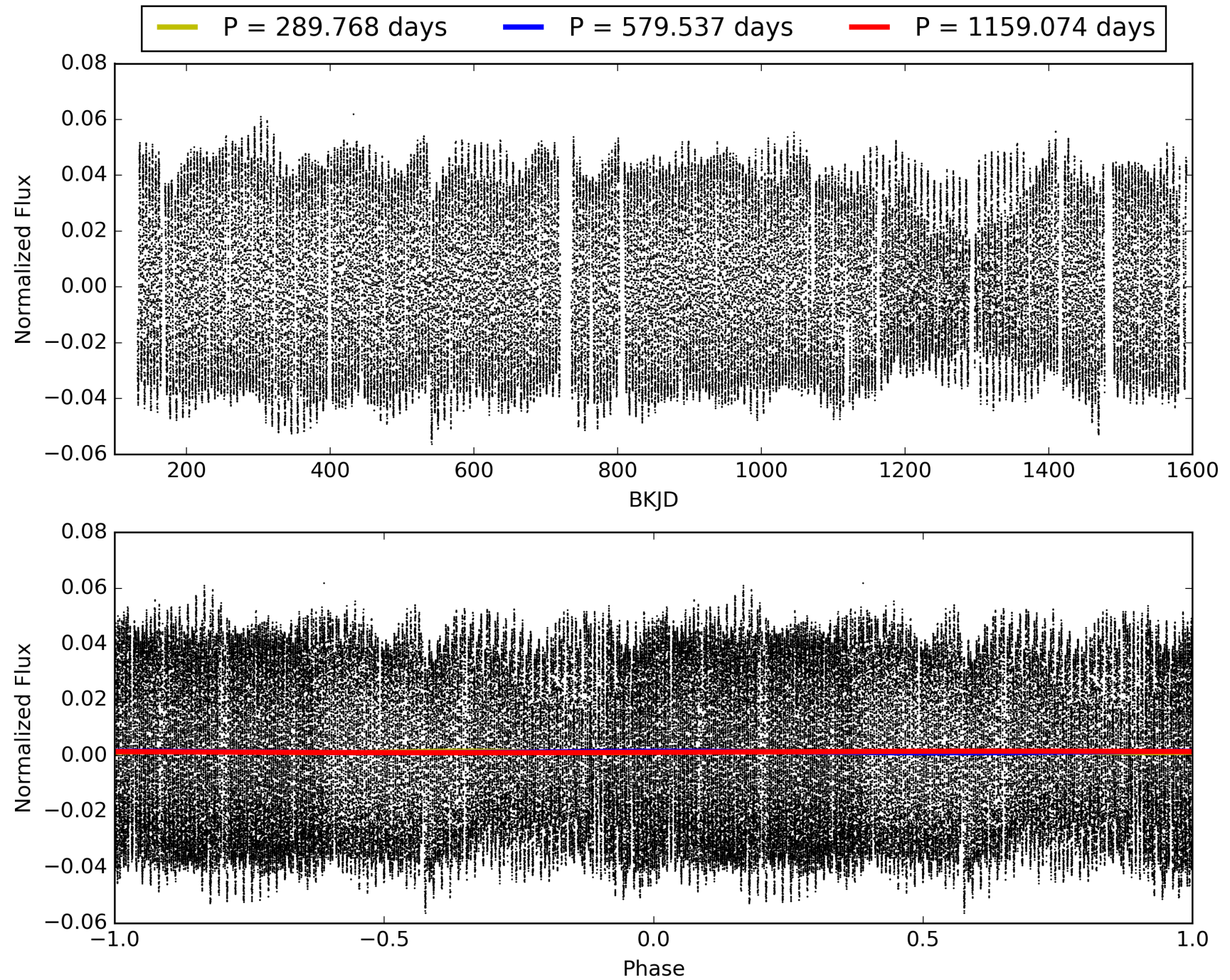
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011921886-05, PDC Light Curves



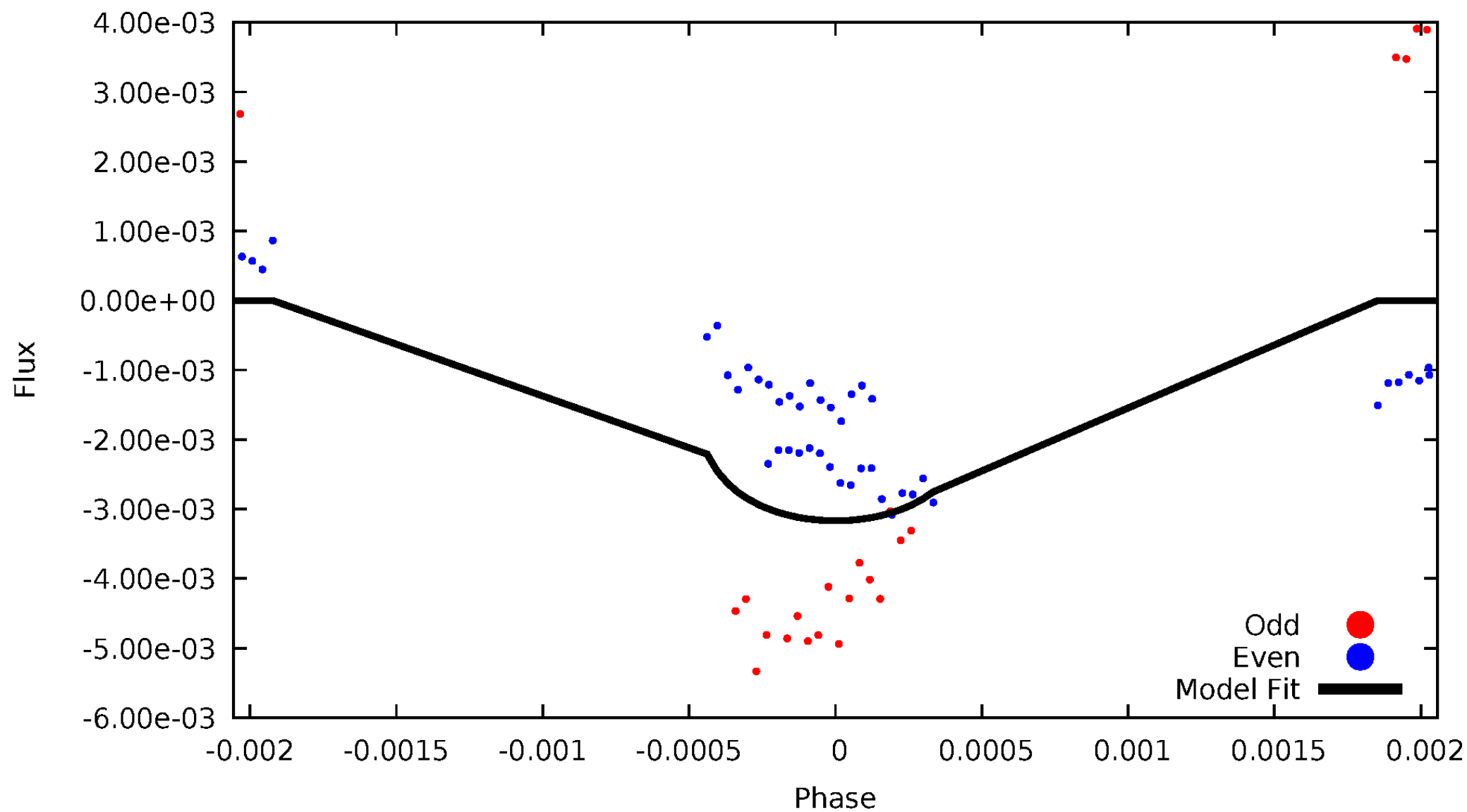


# TCE 011921886-05



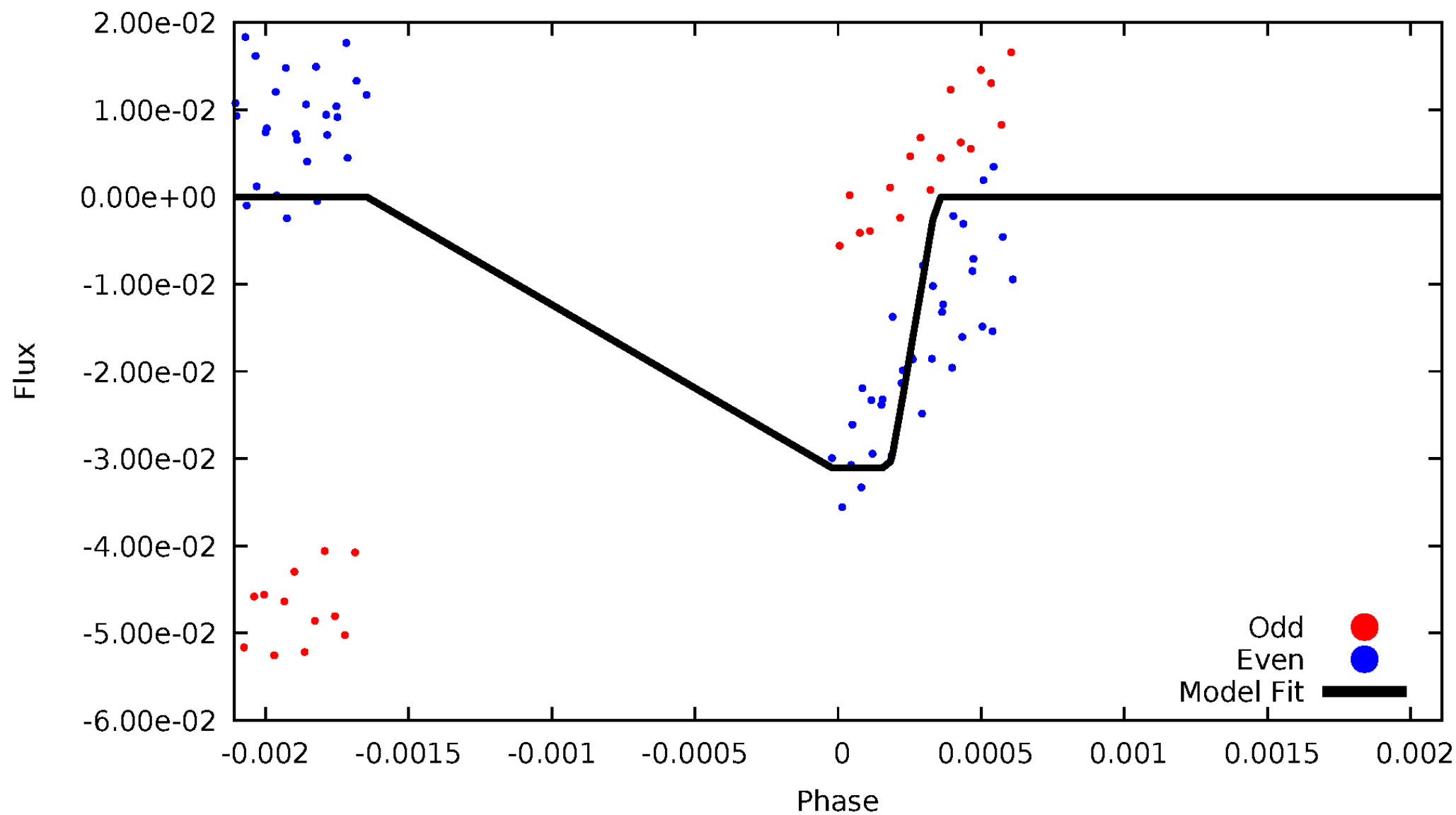
# DV Odd/Even

TCE 011921886-05



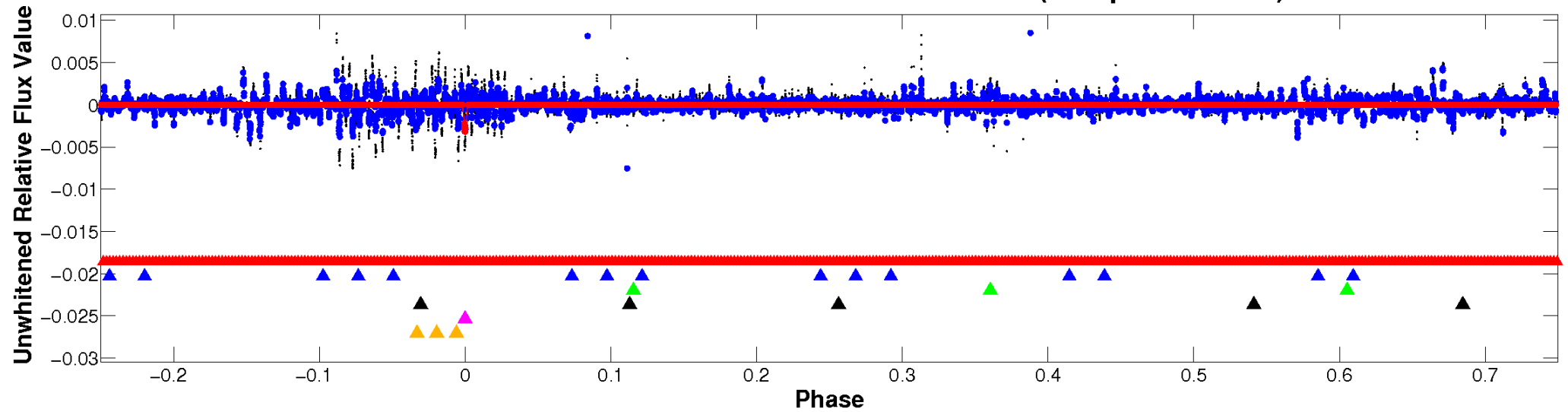
# ALT Odd/Even

TCE 011921886-05

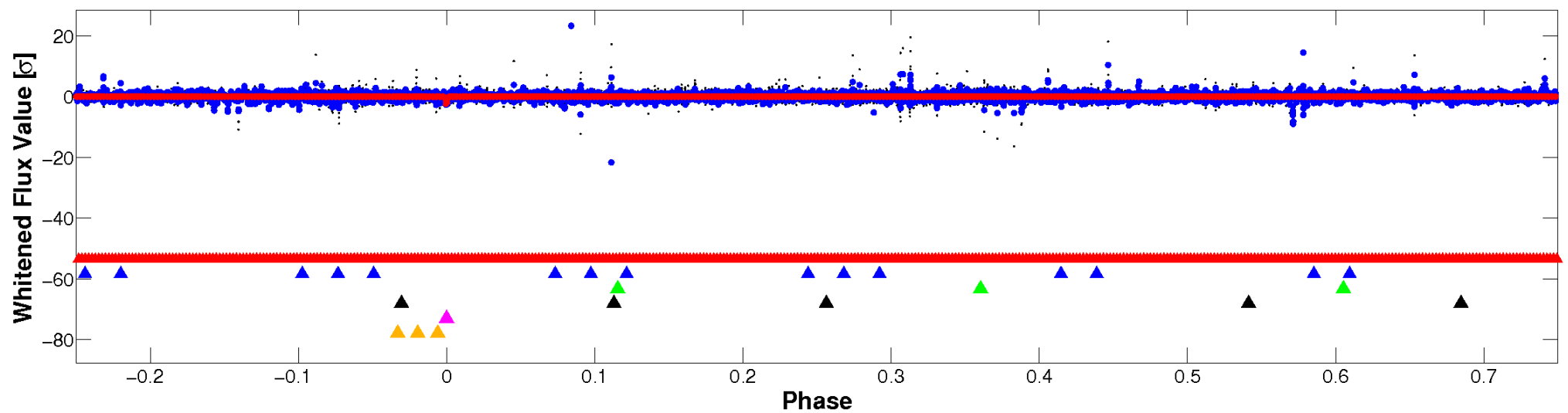


# Non-Whitened Vs. Whitened Light Curve

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

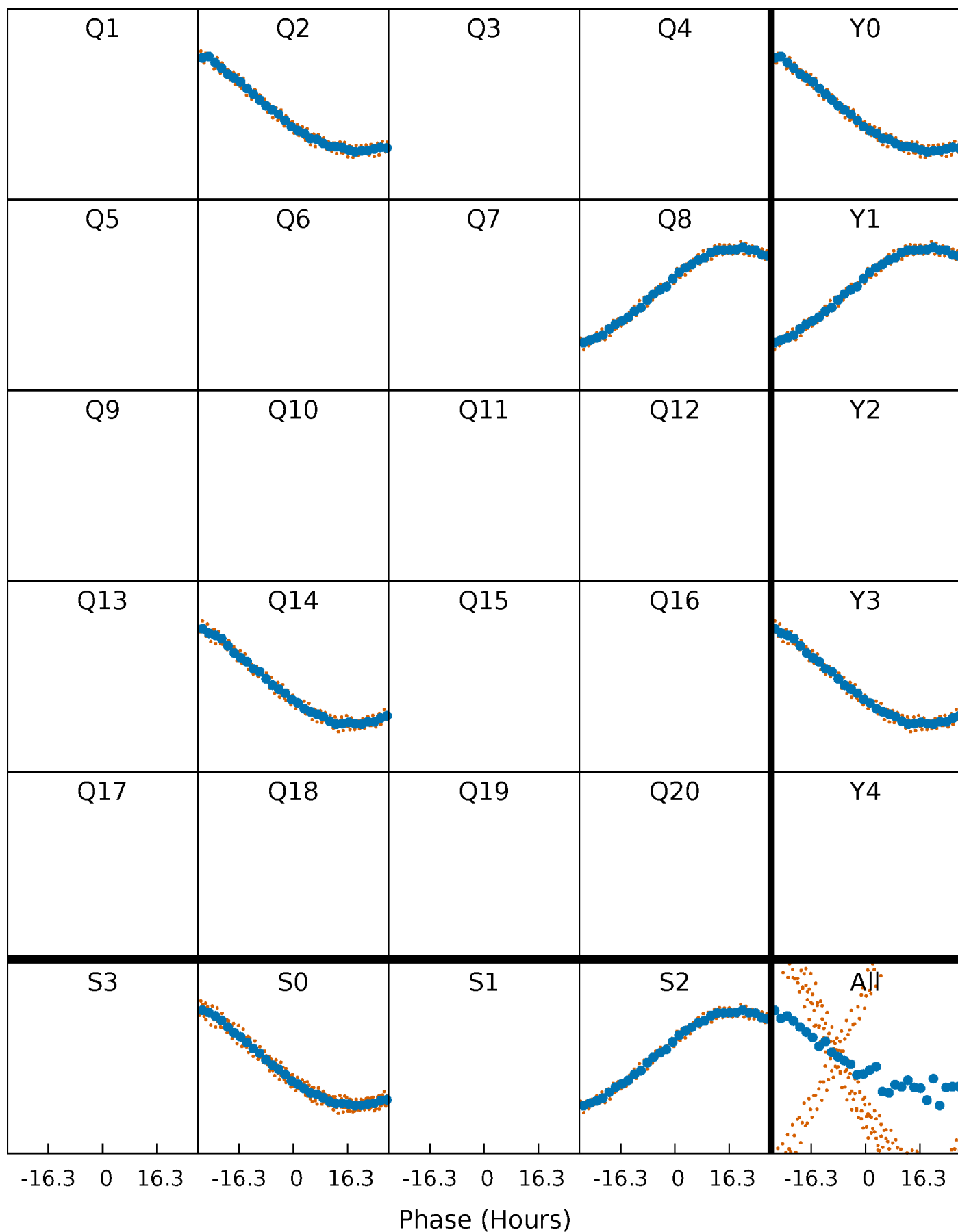


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

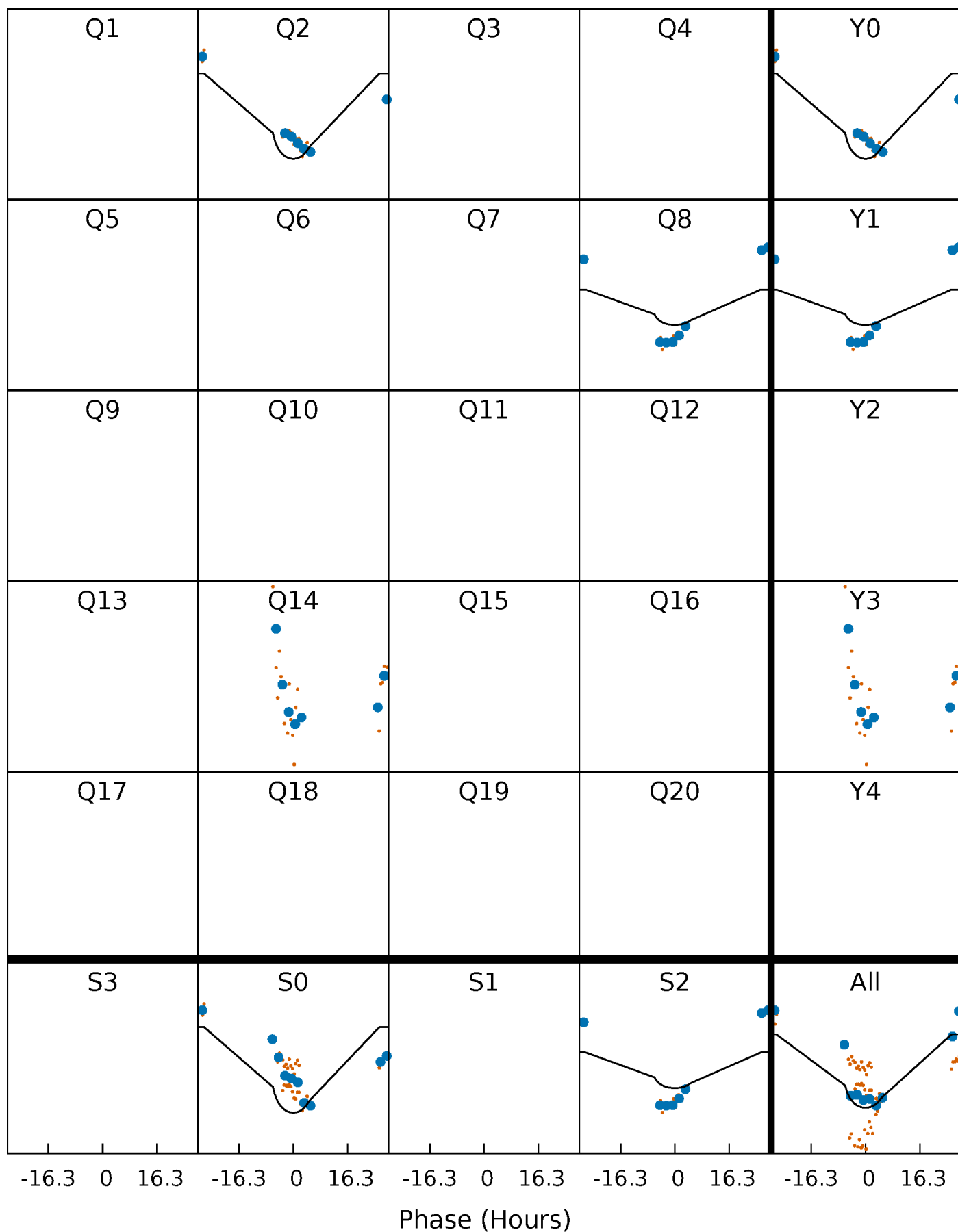
TCE 011921886-05     $P=579.536993$  Days     $T_0=207.005909$  (BKJD)





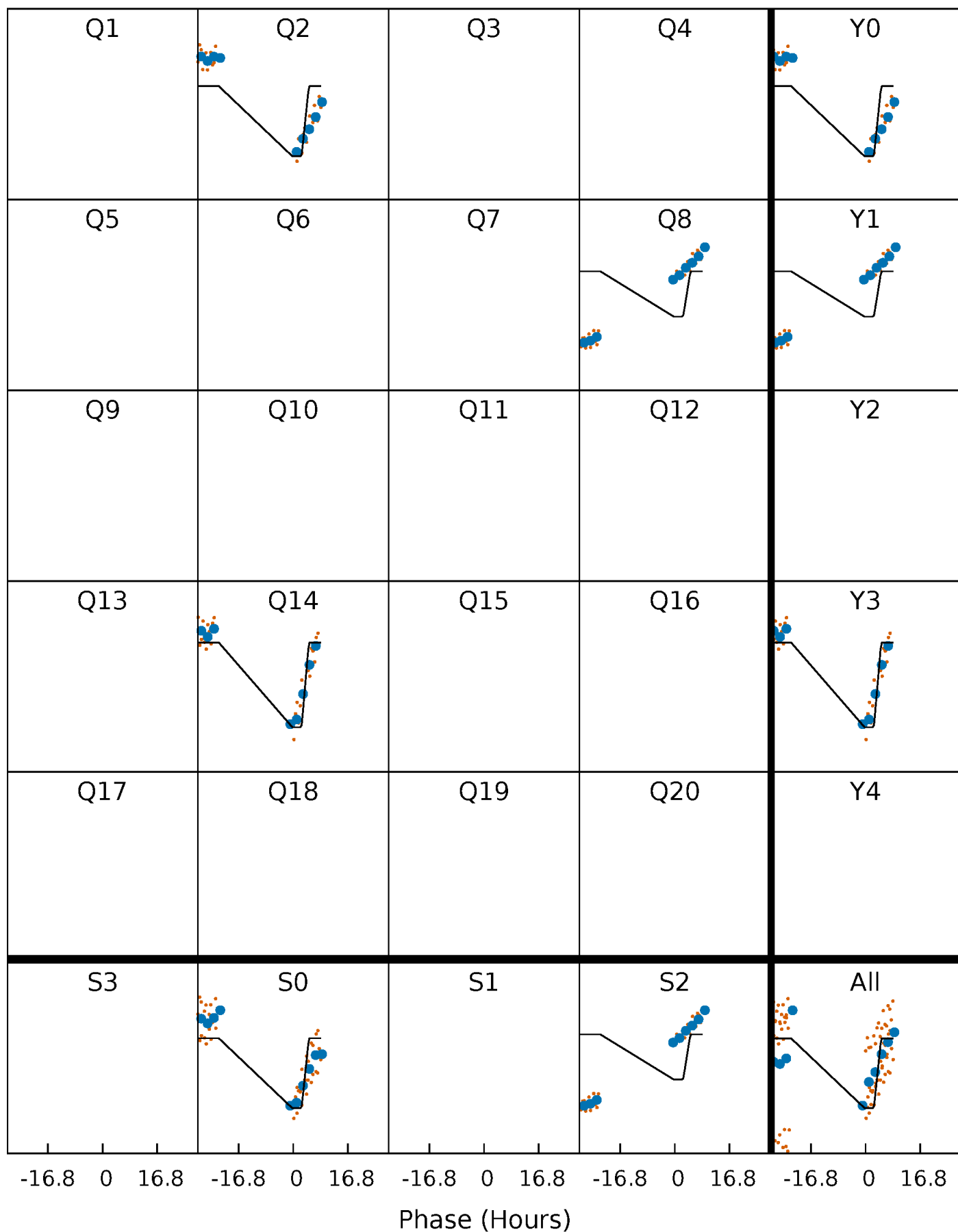
# DV Quarter-Phased Transit Curves

TCE 011921886-05     $P=579.536993$  Days     $T_0=207.005909$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

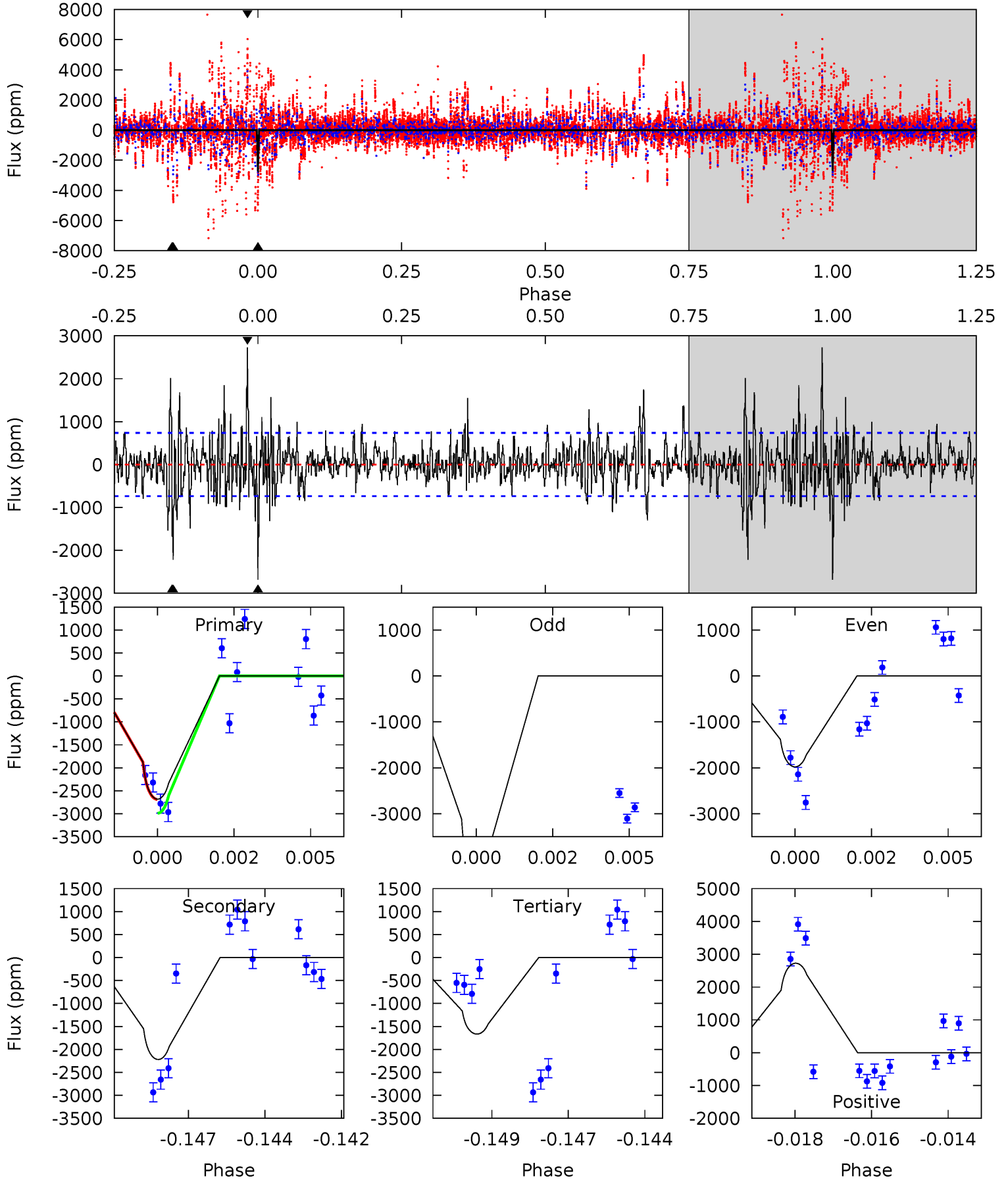
TCE 011921886-05 P=579.495762 Days  $T_0=206.846150$  (BKJD)



# DV Model-Shift Uniqueness Test

011921886-05, P = 579.536993 Days, E = 207.005909 Days

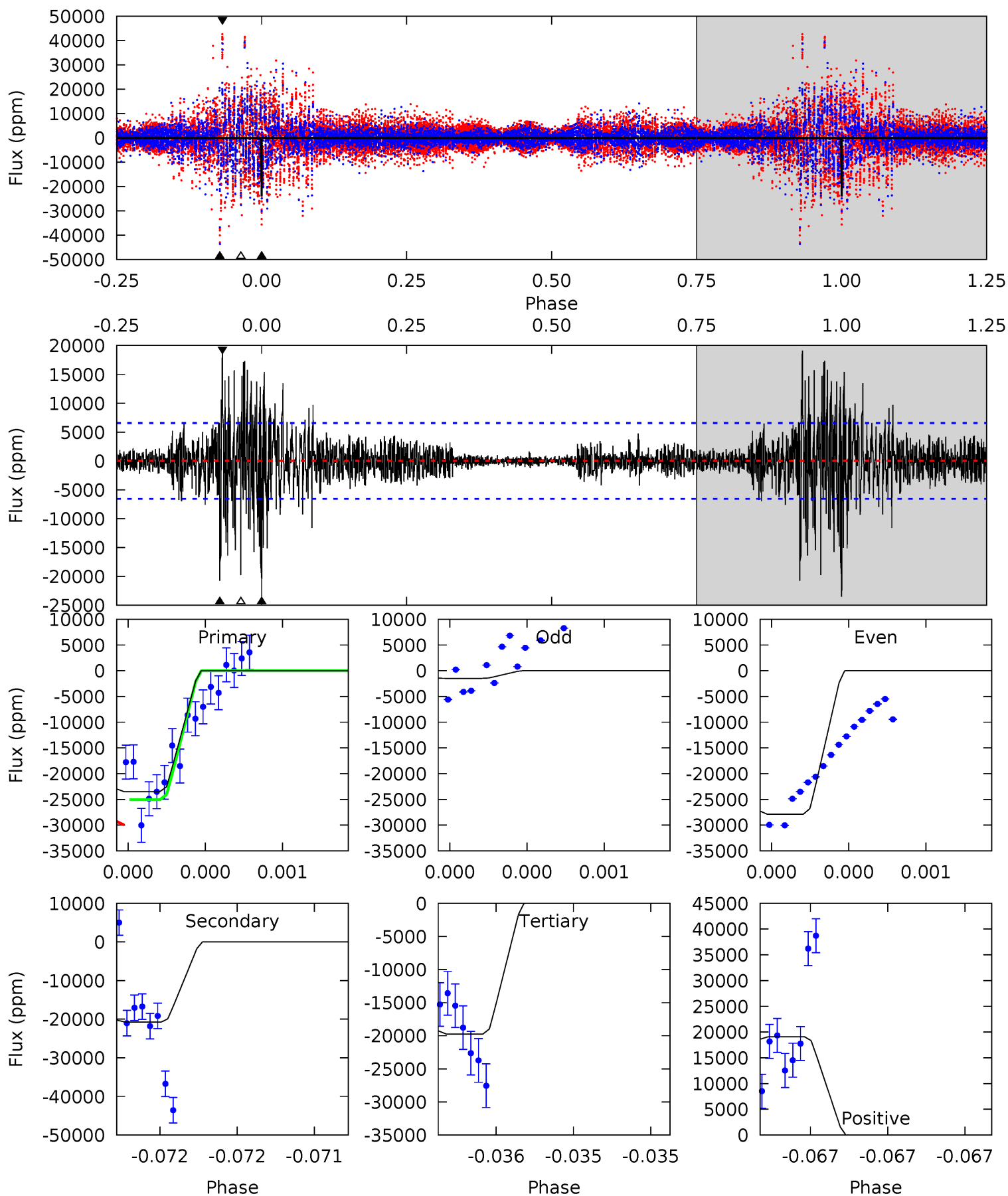
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	16.0	12.0	19.6	5.30	3.05	3.07	7.31	-0.31	3.98	-3.64	7.22	1.08	0.50	1.10



# Alt Model-Shift Uniqueness Test

011921886-05, P = 579.495762 Days, E = 206.846150 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.1	17.7	16.9	16.3	5.62	3.55	2.34	3.17	3.75	0.85	1.42	7.56	0.73	0.45	0.00



### Stellar Parameters For KIC 011921886

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5510^{+219}_{-197}$	$3.639^{+0.928}_{-0.232}$	$-0.620^{+0.350}_{-0.300}$	$2.608^{+1.013}_{-1.881}$	$1.080^{+0.209}_{-0.288}$	$0.086^{+1.966}_{-0.058}$
	+4%/-4%	+26%/-6%	+56%/-48%	+39%/-72%	+19%/-27%	+2293%/-67%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011921886-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	-2219±139	$20.39^{+22.91}_{-14.43}$	$451^{+60}_{-93}$	$4326^{+3180}_{-892}$	$5920^{+58878}_{-4633}$
Alt.	-20753±1170	$42.40^{+32.26}_{-23.54}$	$456^{+57}_{-100}$	$5056^{+2062}_{-797}$	$12236^{+50797}_{-8226}$

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

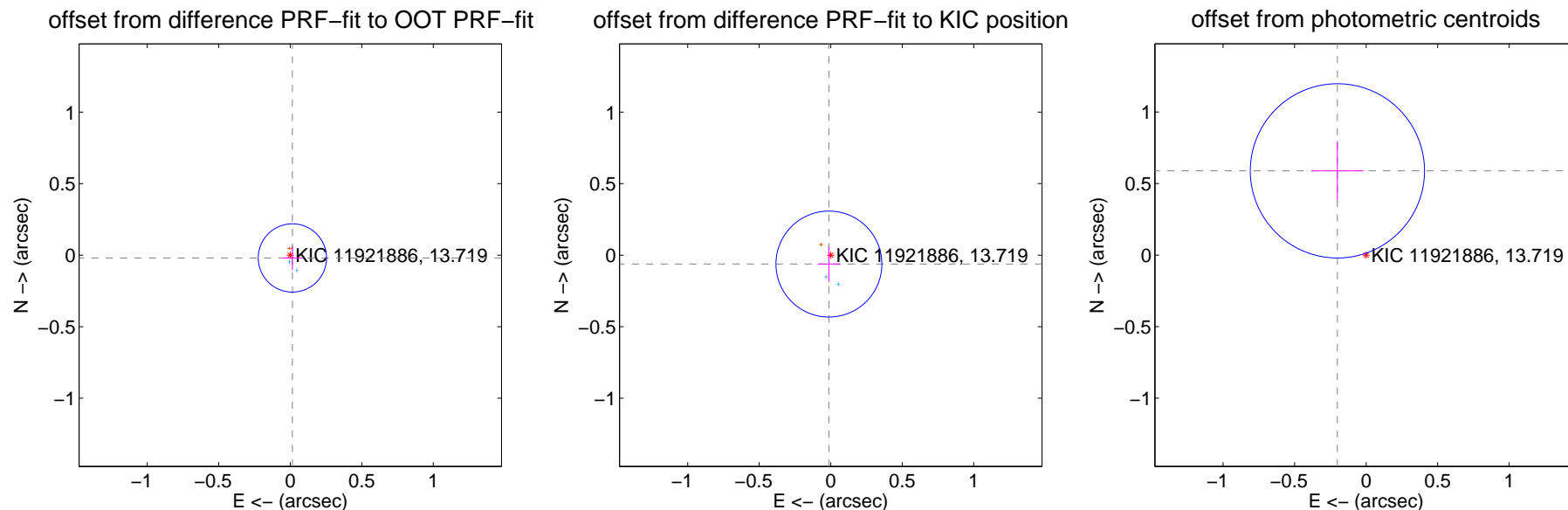
## DV Centroid Data

Supplemental centroid analysis for 011921886-05. Kepler magnitude: 13.72. Transit SNR 8.42

There are 2 quarters with good PRF difference image offsets

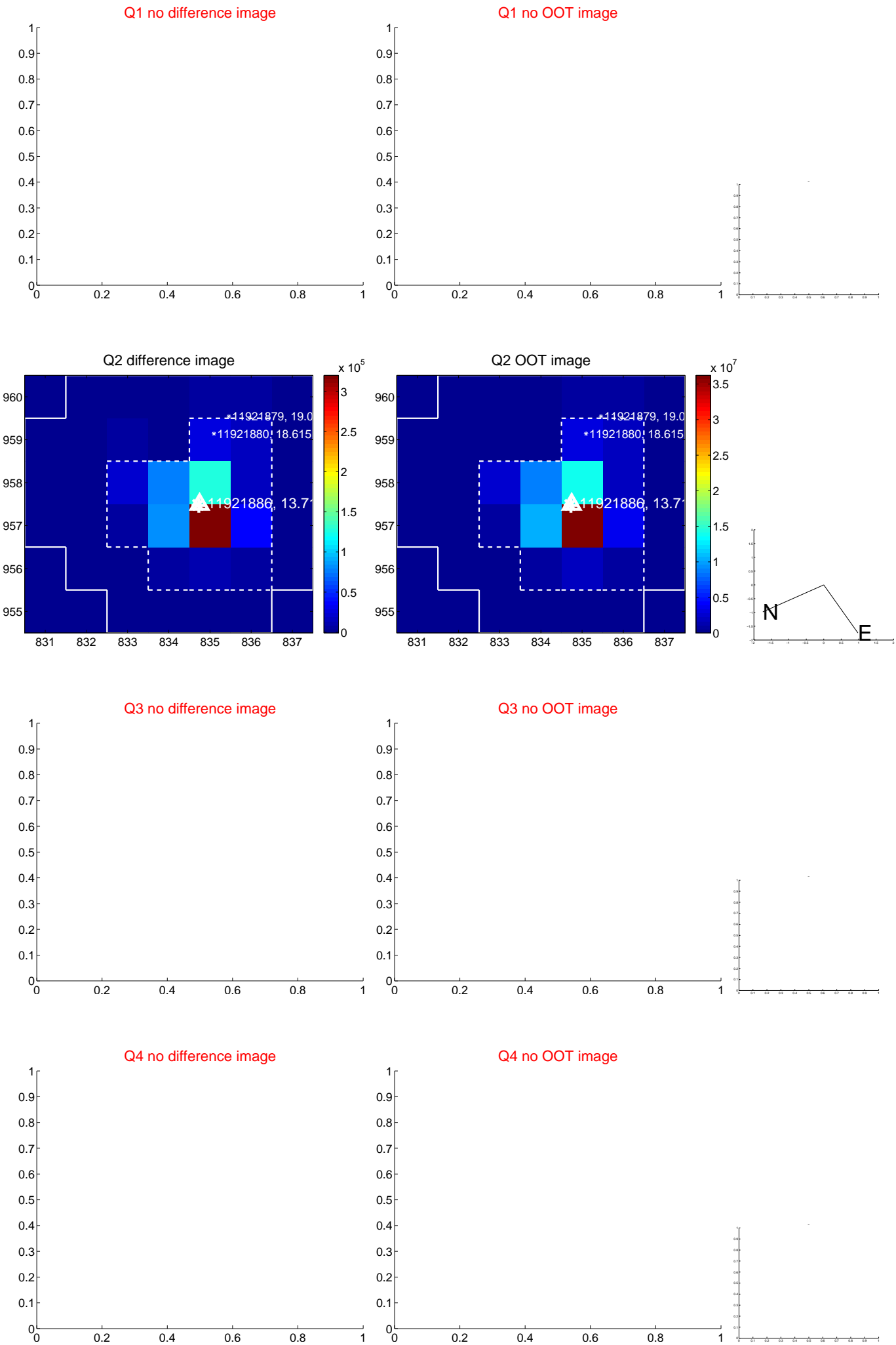
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.025 \pm 0.080$	0.31	$-0.015 \pm 0.070$	$-0.020 \pm 0.084$
PRF-fit source offset from KIC position	$0.063 \pm 0.123$	0.51	$0.013 \pm 0.078$	$-0.062 \pm 0.125$
photometric centroid source offset	$0.62 \pm 0.20$	3.06	$0.20 \pm 0.18$	$0.59 \pm 0.21$



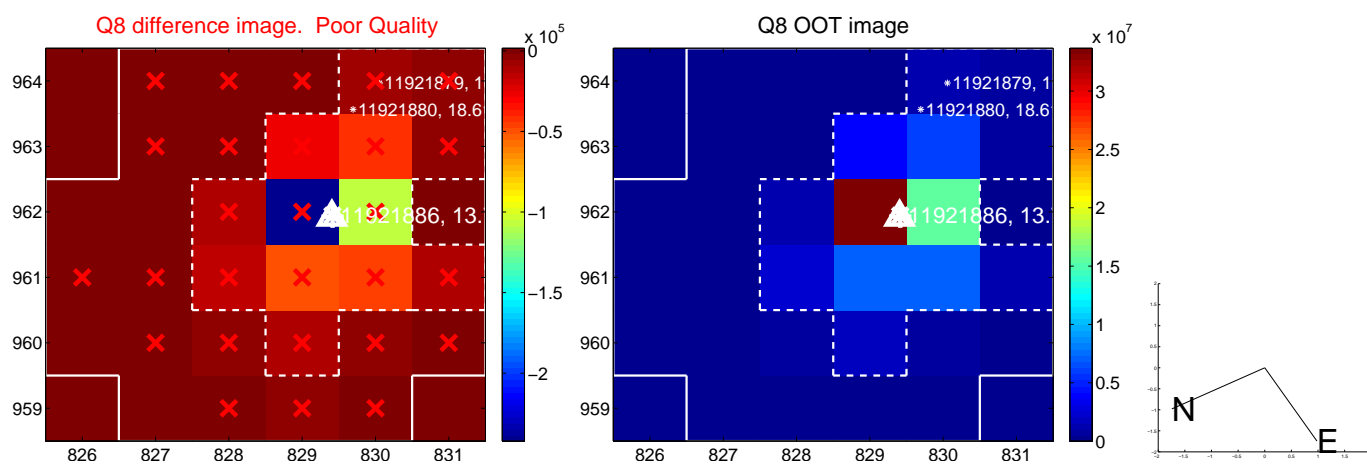
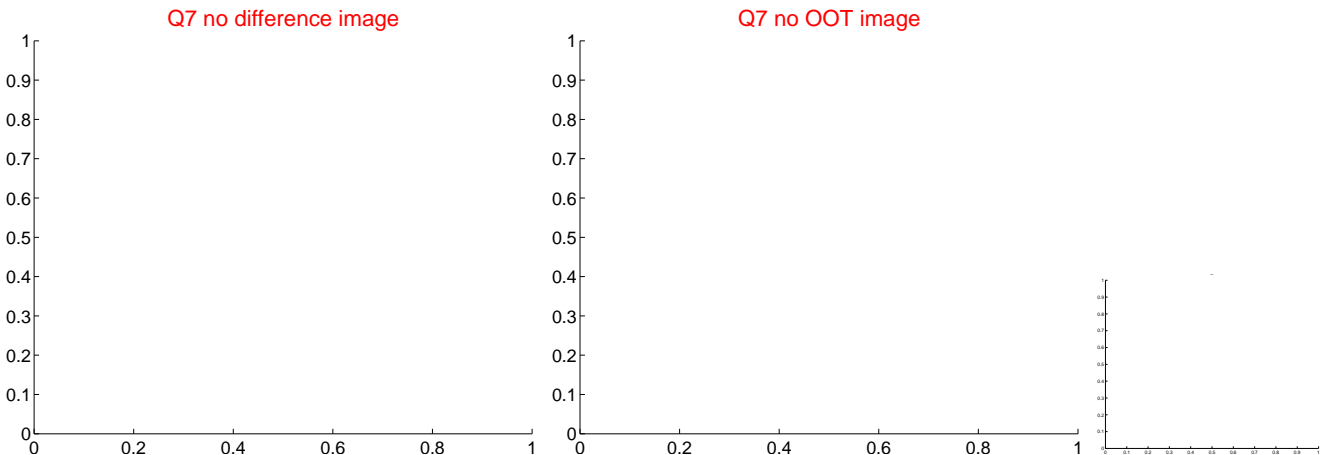
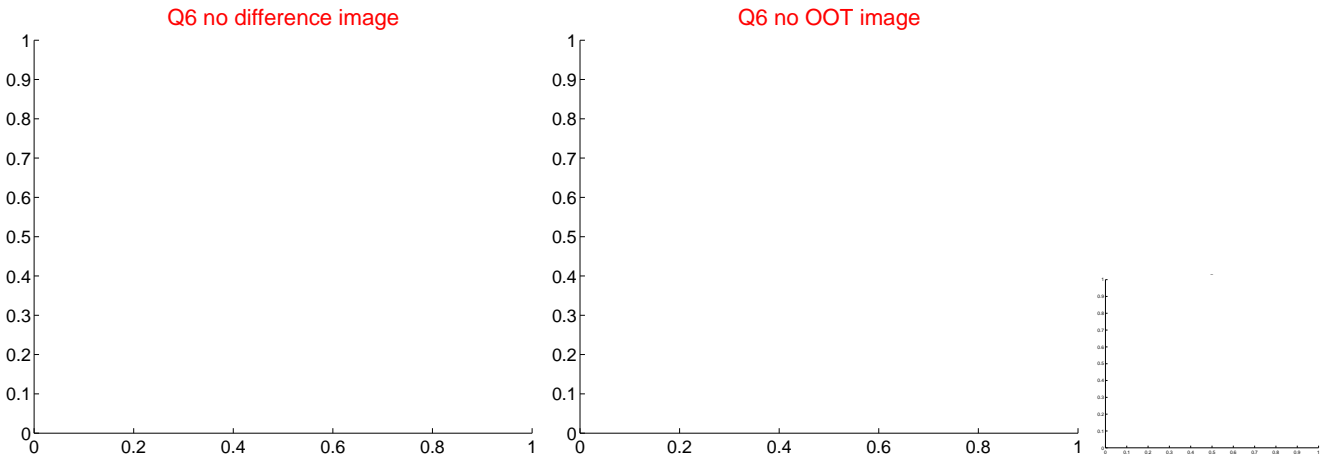
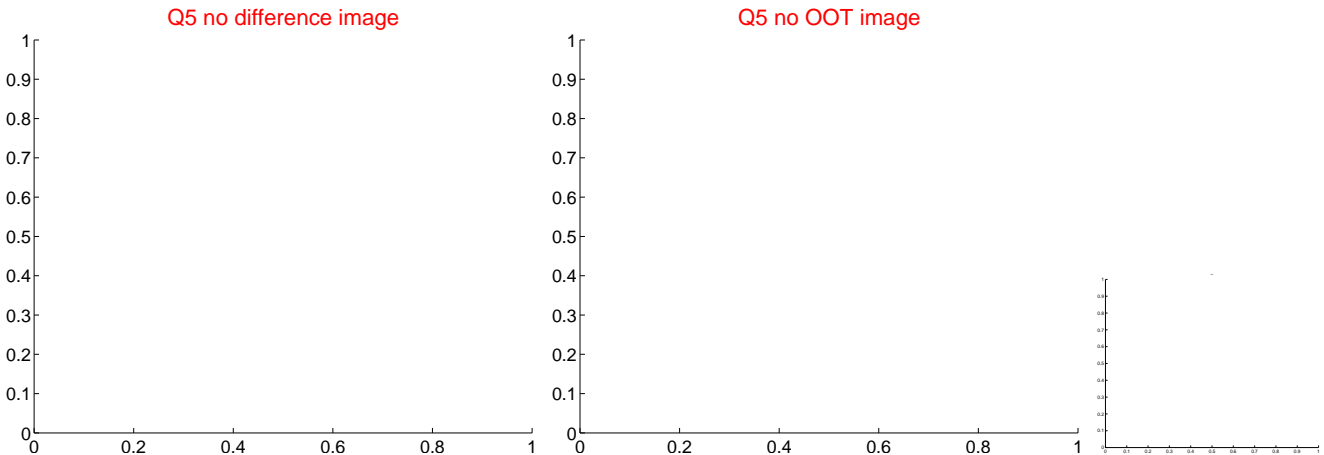
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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





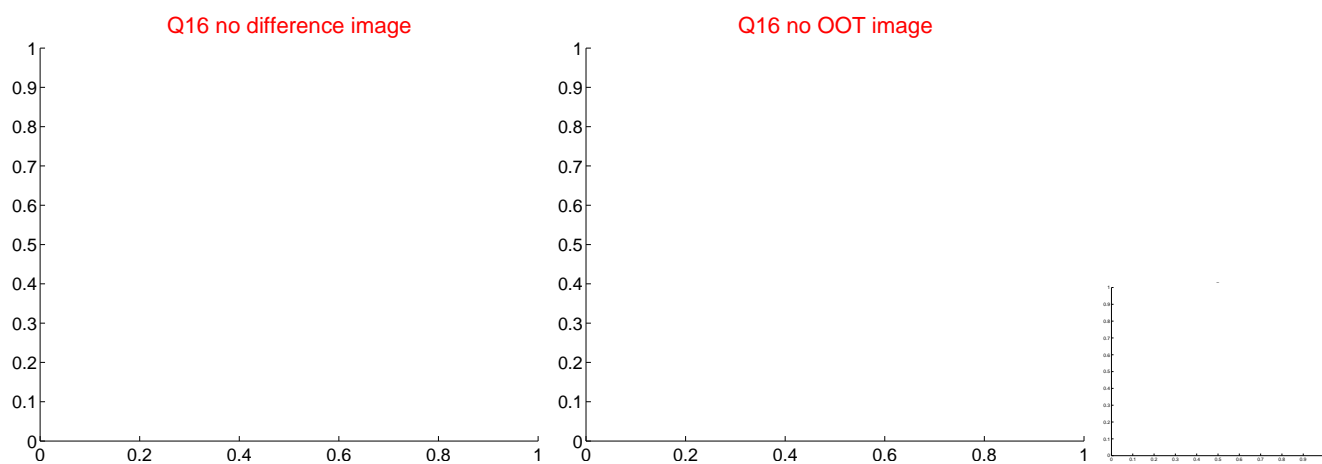
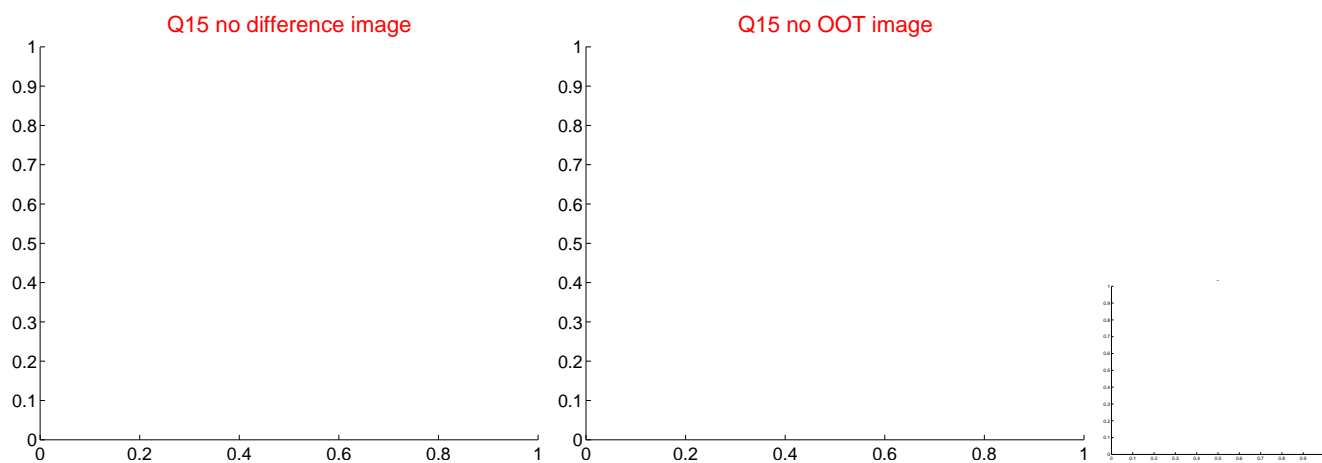
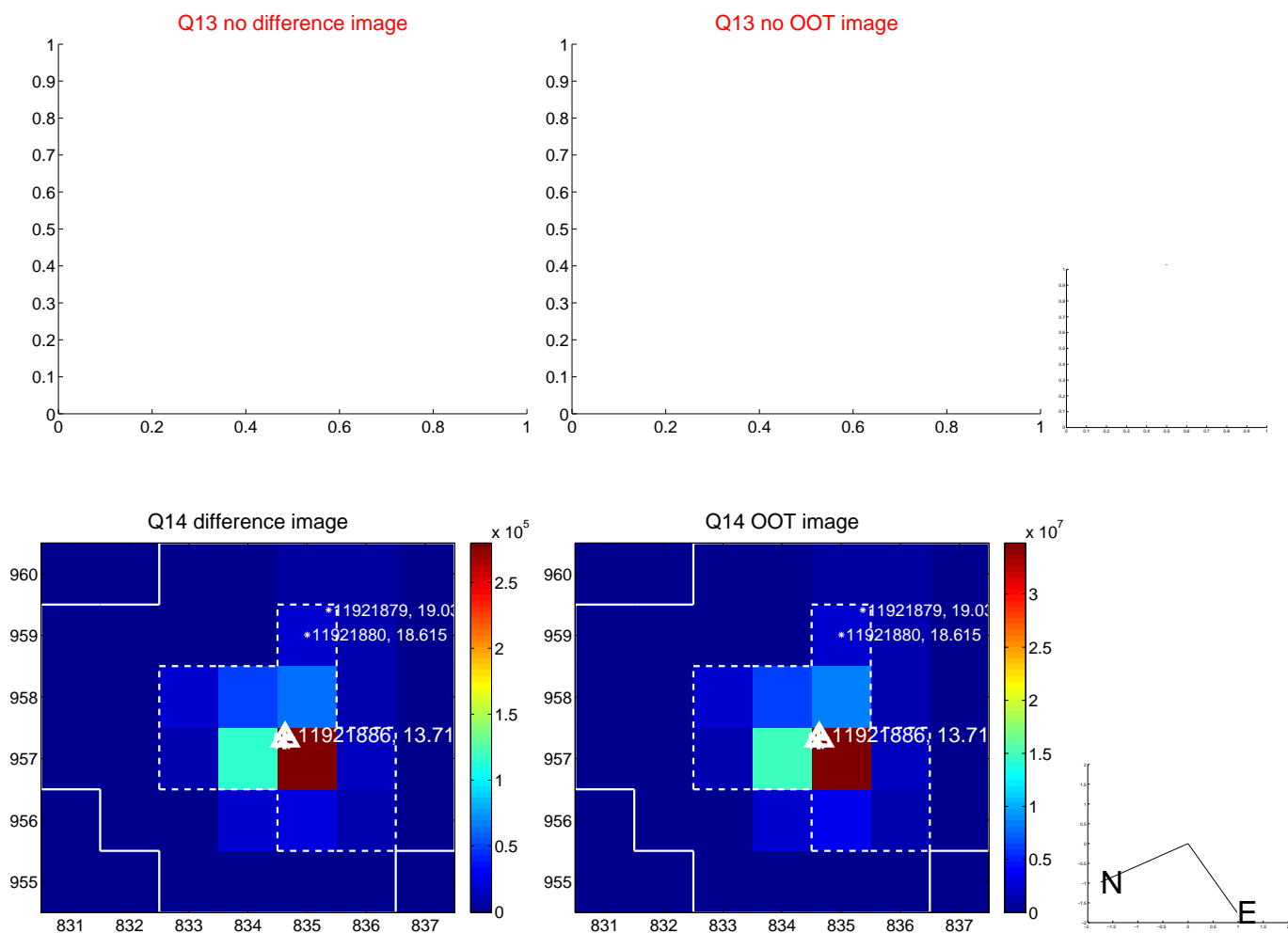
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



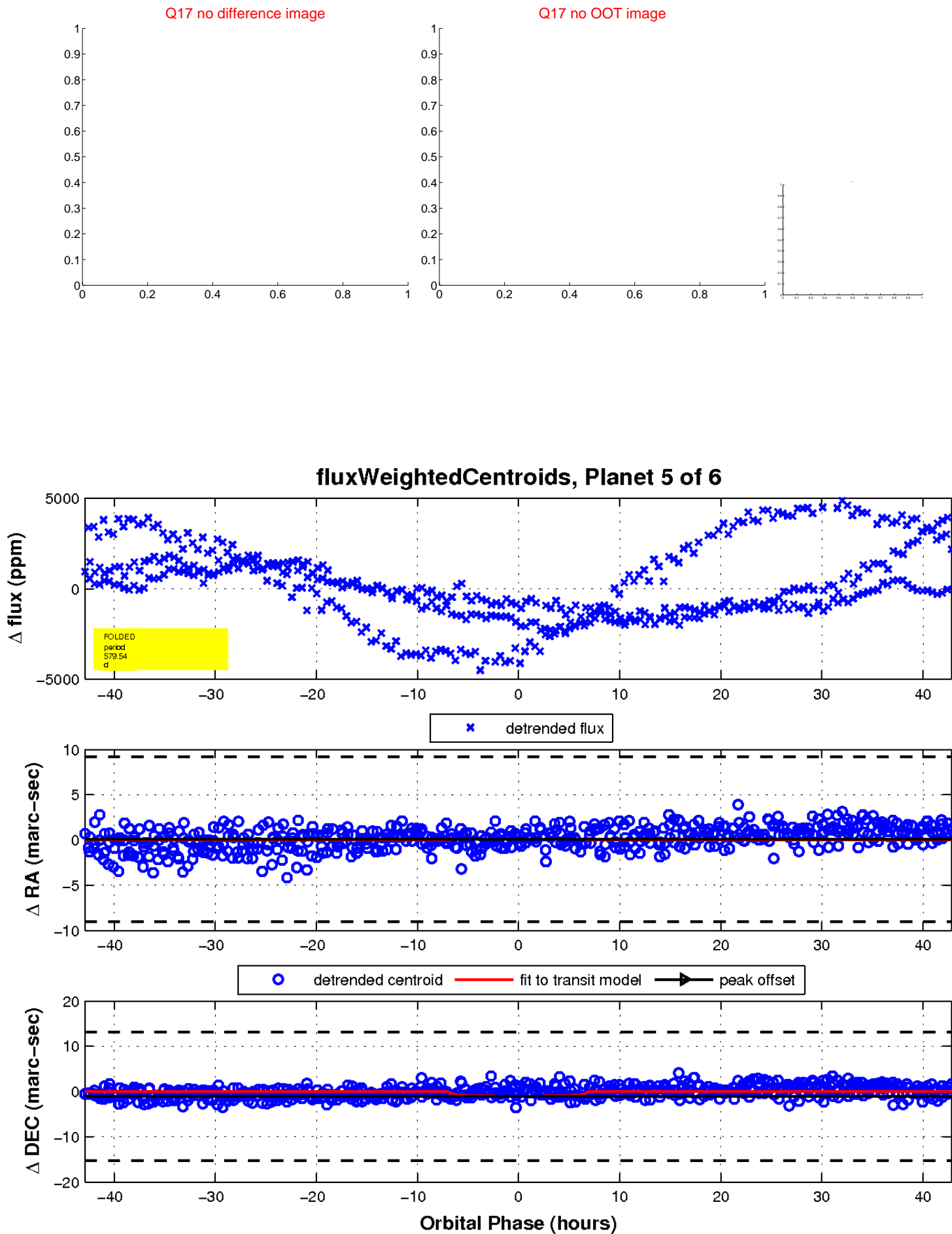
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

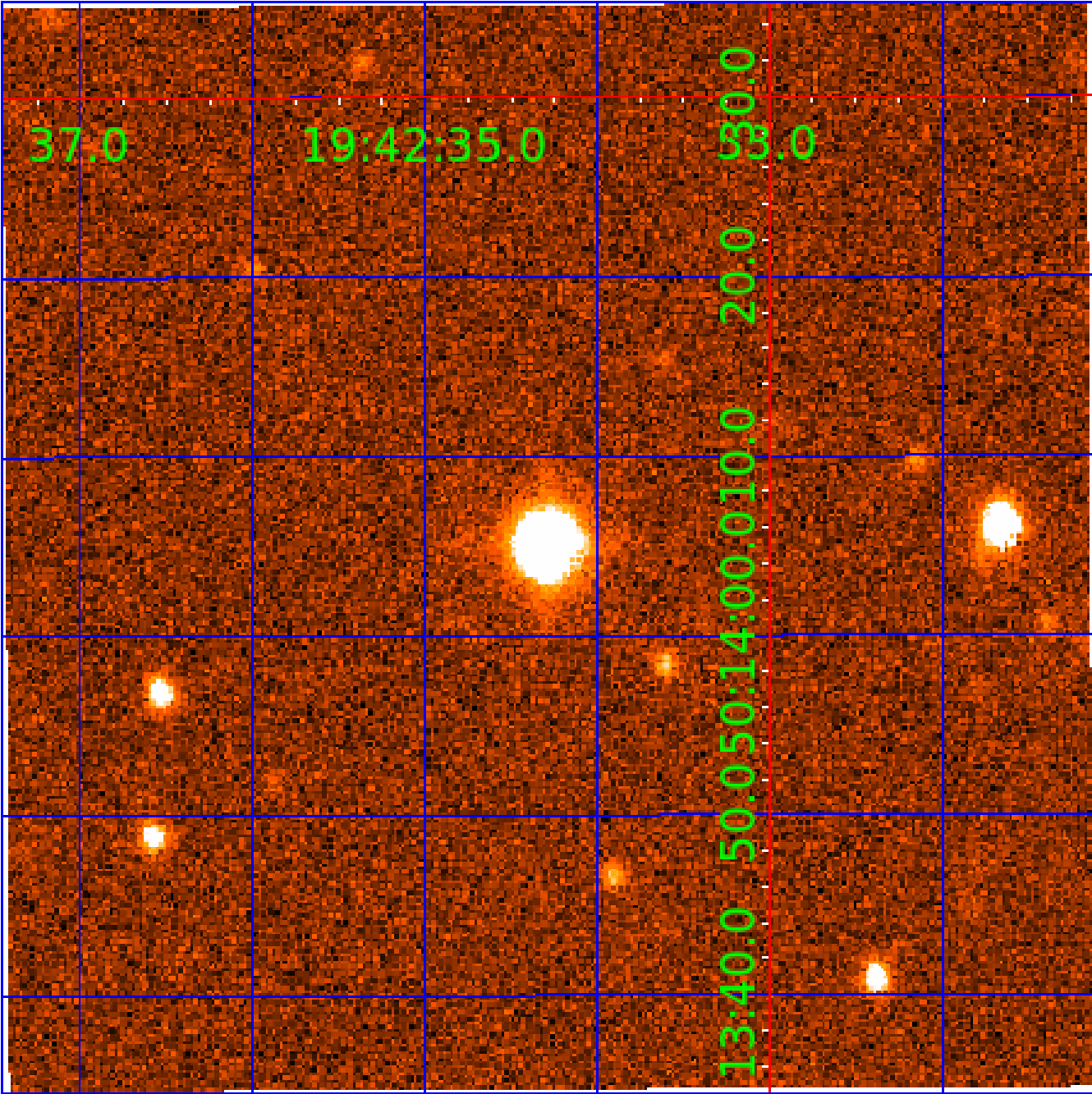


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011921886

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011921886-01	OBS	No	1.314019	132.790836	59.5	7.500	10.6	7.7	2.61	5510	1.99	9673.20
011921886-02	OBS	No	98.917364	150.560664	128.5	6.258	9.5	1.4	2.61	5510	3.08	30.43
011921886-03	OBS	No	437.626084	557.784613	2229.7	13.427	9.0	9.1	2.61	5510	14.20	4.19
011921886-04	OBS	No	248.226516	355.549780	973.1	10.511	9.5	5.1	2.61	5510	8.72	8.92
011921886-05	OBS	No	579.536993	207.005908	3166.7	14.298	10.2	8.4	2.61	5510	14.55	2.88
011921886-06	OBS	No	587.359791	187.901531	6204.3	52.830	9.7	7.3	2.61	5510	23.79	2.83

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011921886-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
011921886-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—CHASES_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—HALO_GHOST
011921886-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011921886-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
011921886-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011921886-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

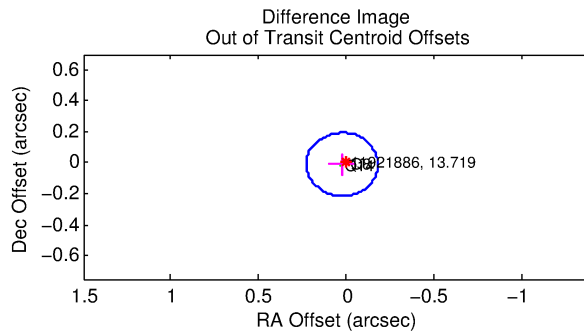
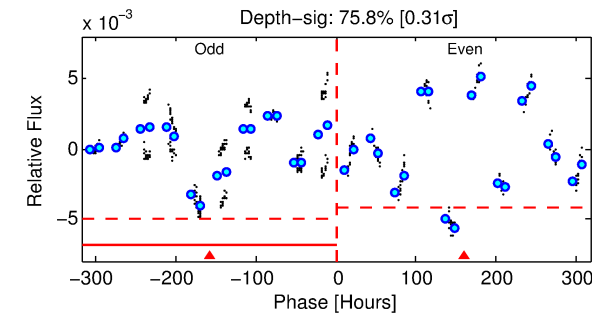
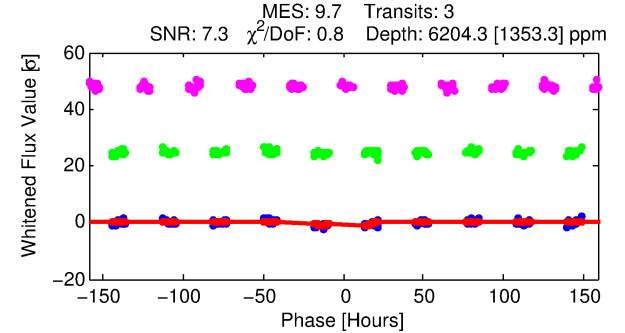
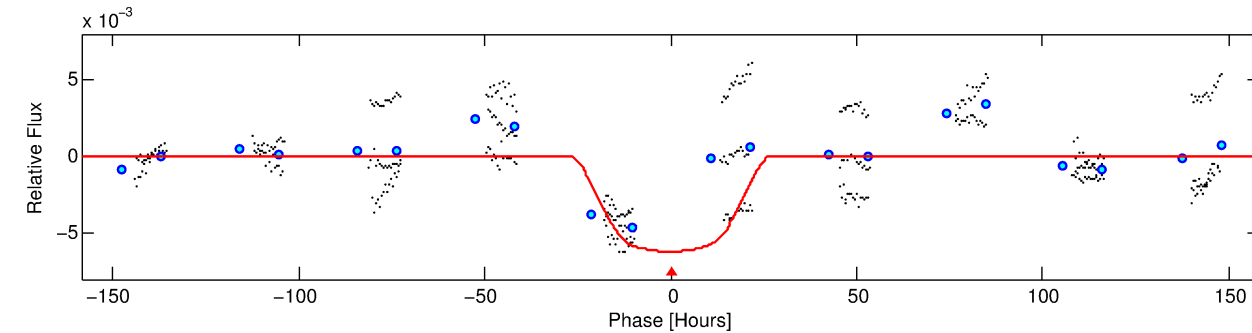
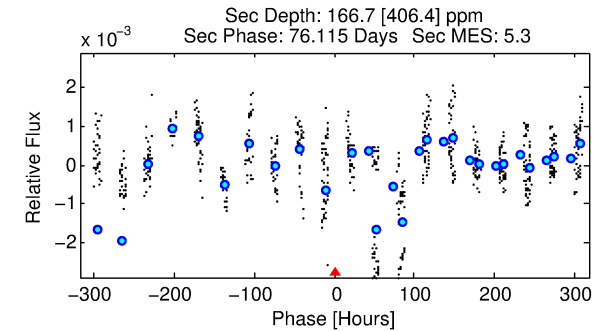
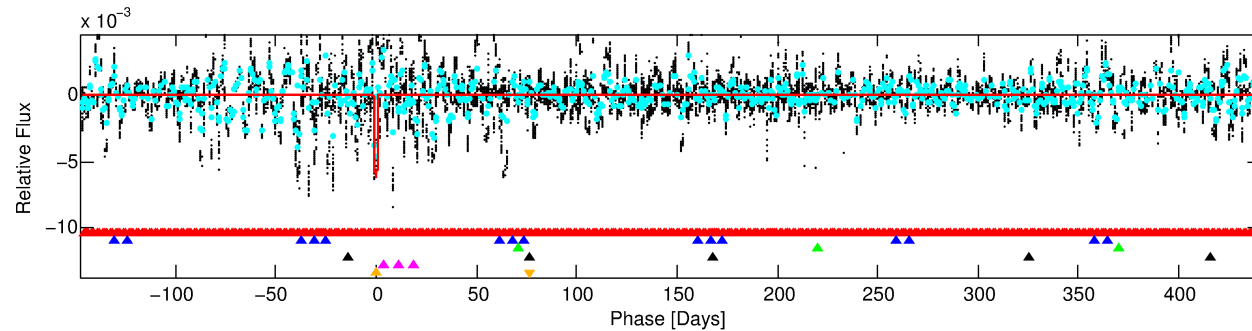
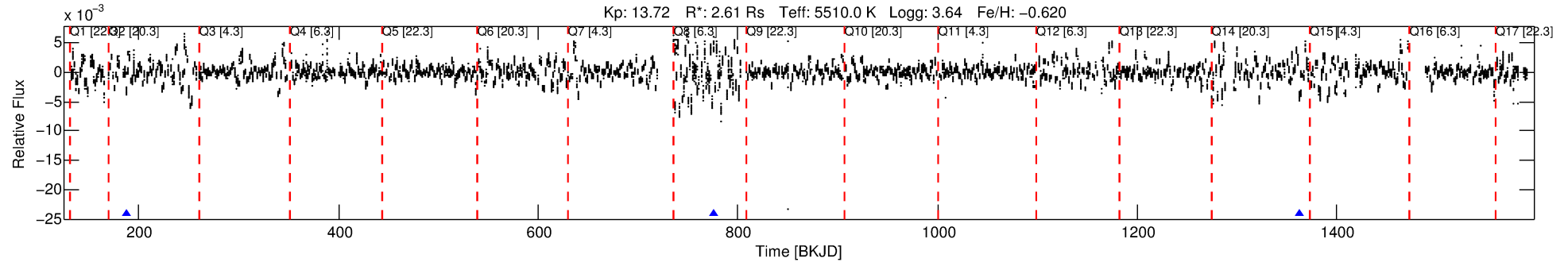
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011921886-06

No Significant Match Found

# DV One-Page Summary

KIC: 11921886 Candidate: 6 of 6 Period: 587.360 d



## DV Fit Results:

Period = 587.35979 [0.03021] d  
Epoch = 187.9015 [0.0461] BKJD  
Rp/R\* = 0.0836 [0.0095]  
a/R\* = 55.24 [4.11]  
b = 0.87 [0.01]  
Seff = 2.83 [4.28]  
Teq = 331 [125] K  
Rp = 23.79 [17.37] Re  
a = 1.4088 [1.2107] AU  
Ag = 321.55 [924.15] [0.35 $\sigma$ ]  
Teffp = 2165 [1329] K [1.37 $\sigma$ ]

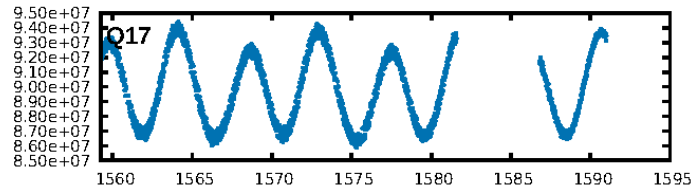
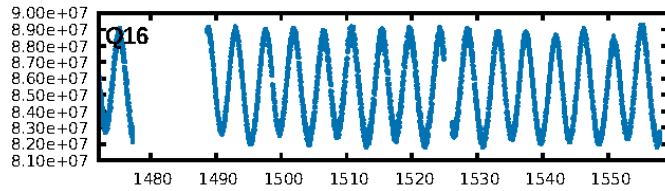
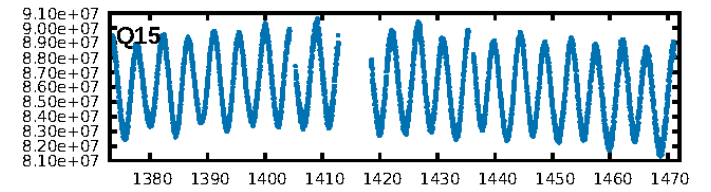
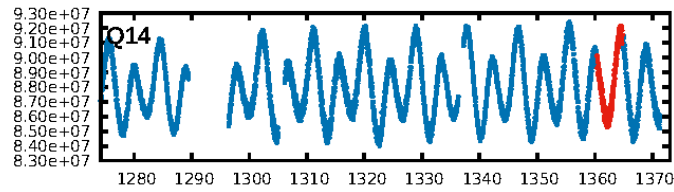
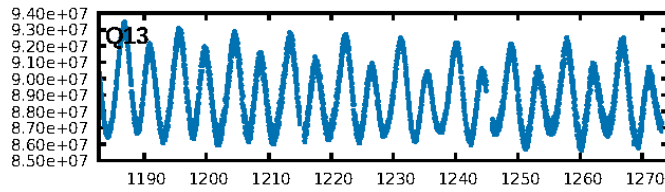
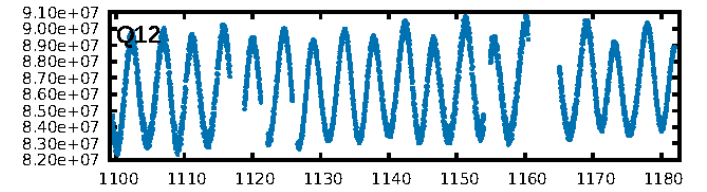
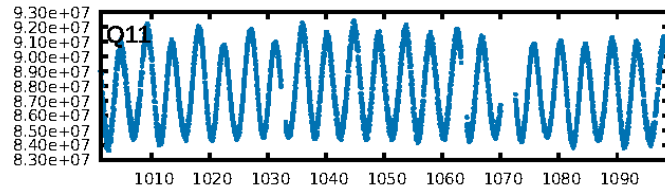
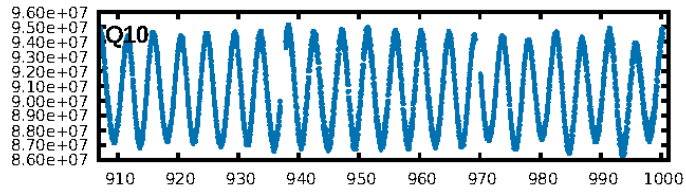
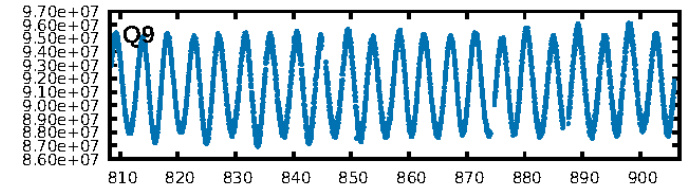
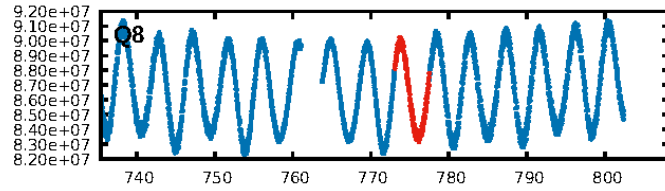
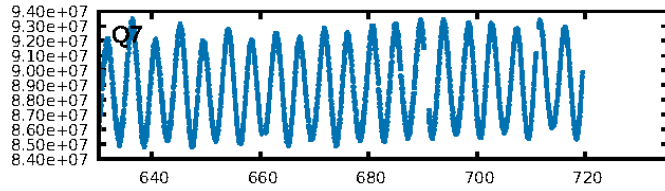
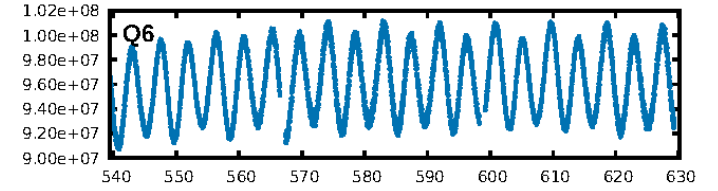
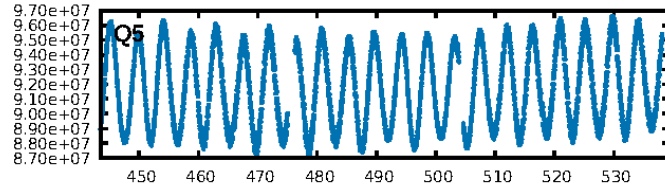
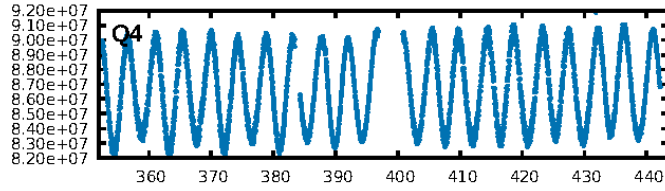
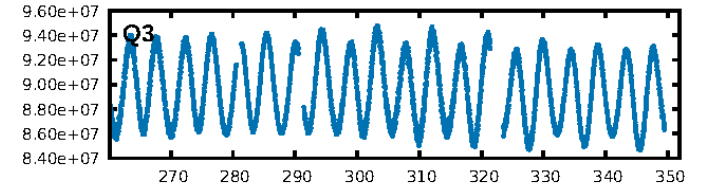
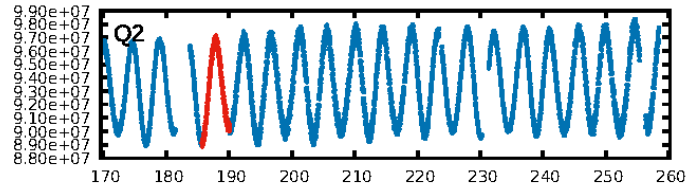
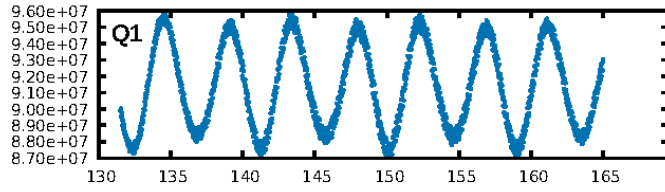
## DV Diagnostic Results:

ShortPeriod-sig: 99.9% [3.43 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 65.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.60e-07  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: 1.137  
Centroid-sig: 7.6%  
Centroid-so: 0.203 arcsec [2.11 $\sigma$ ]  
OotOffset-rm: 0.027 arcsec [0.40 $\sigma$ ]  
KicOffset-rm: 0.060 arcsec [0.42 $\sigma$ ]  
OotOffset-st: 1/0/1/0 [2]  
KicOffset-st: 1/0/1/0 [2]  
DiffImageQuality-fgm: 1.00 [2/2]  
DiffImageOverlap-fno: 0.00 [0/2]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:54:38 Z

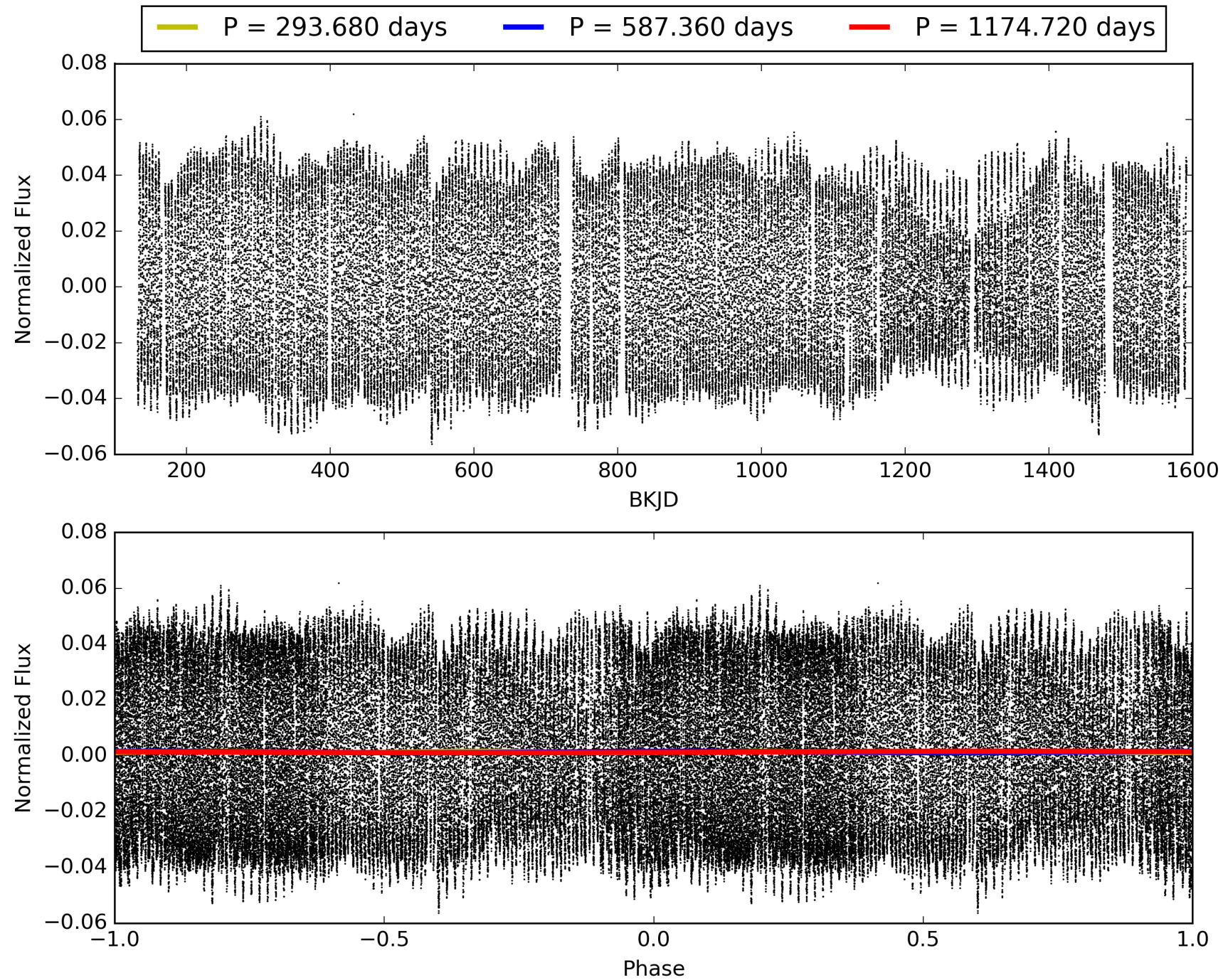
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011921886-06, PDC Light Curves



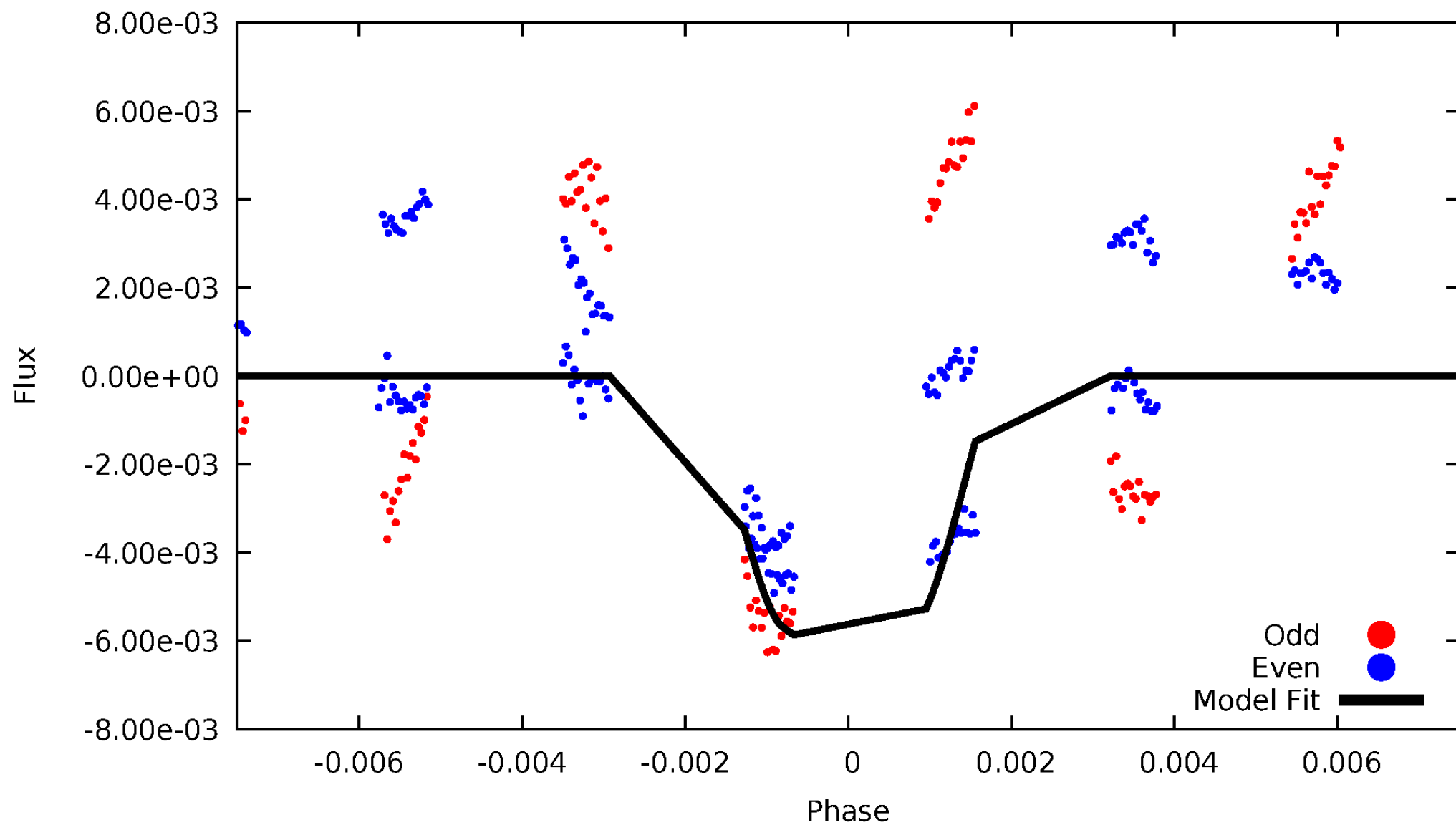


# TCE 011921886-06



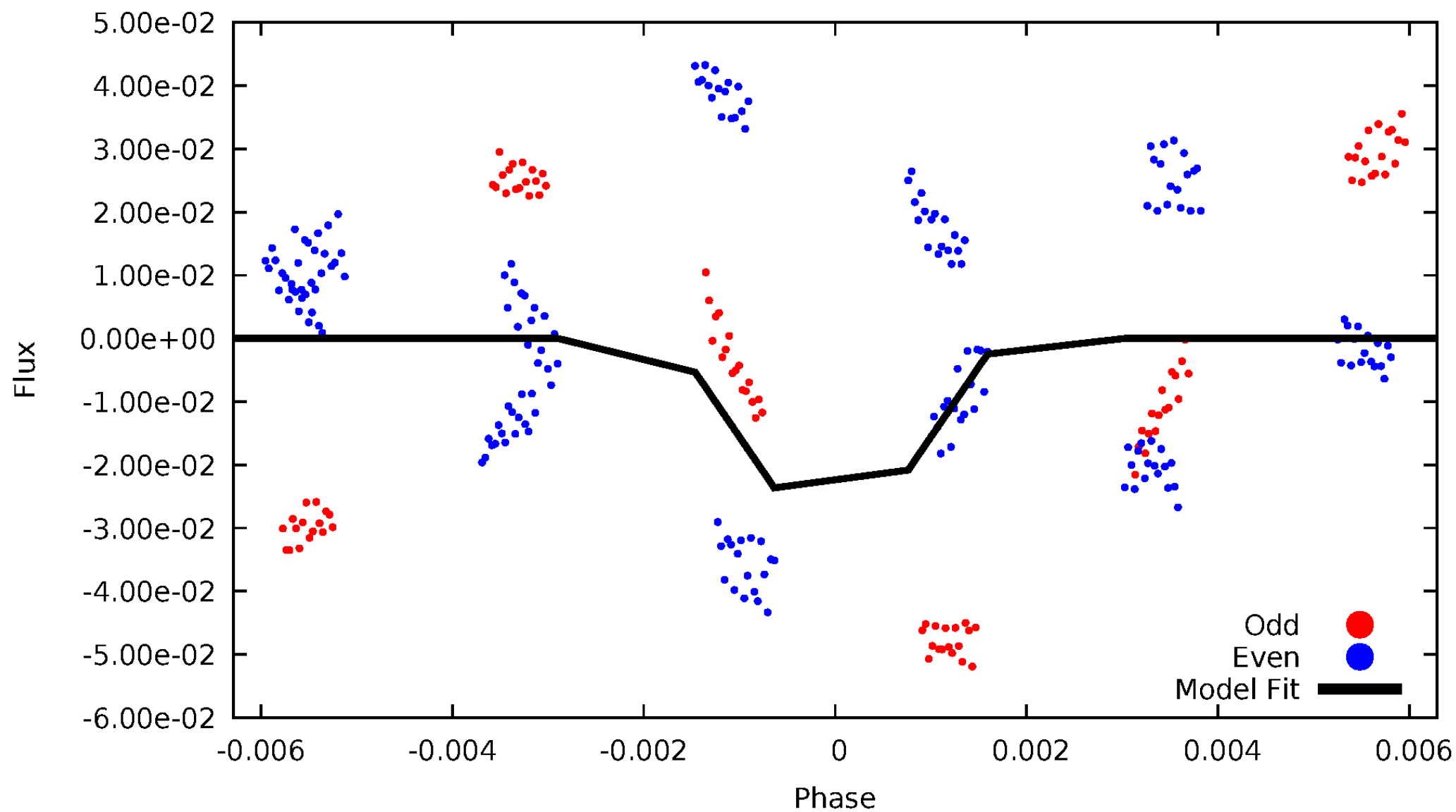
# DV Odd/Even

TCE 011921886-06



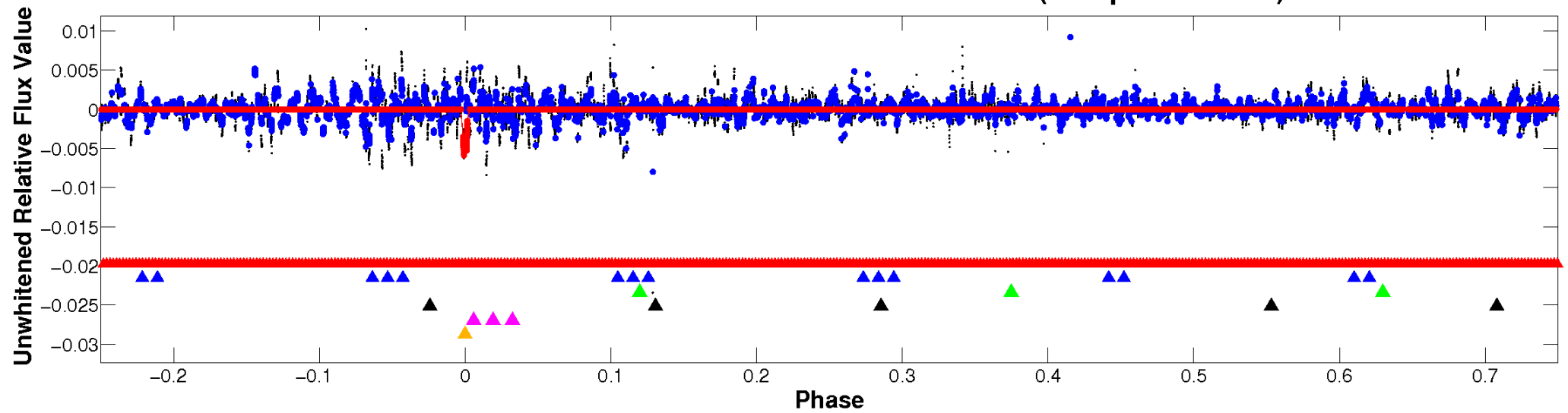
# ALT Odd/Even

TCE 011921886-06

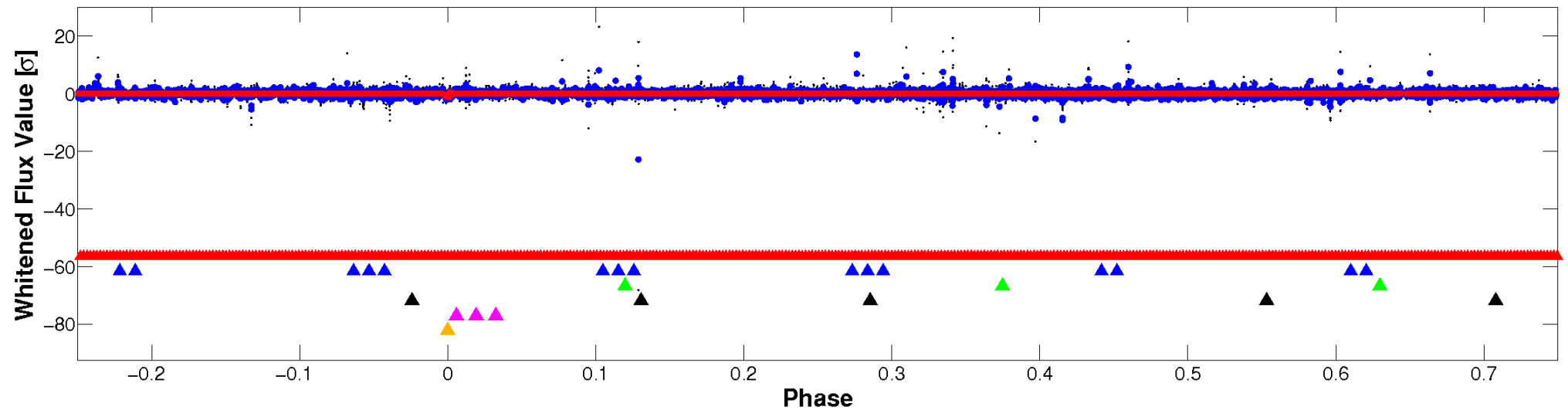


# Non-Whitened Vs. Whitened Light Curve

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

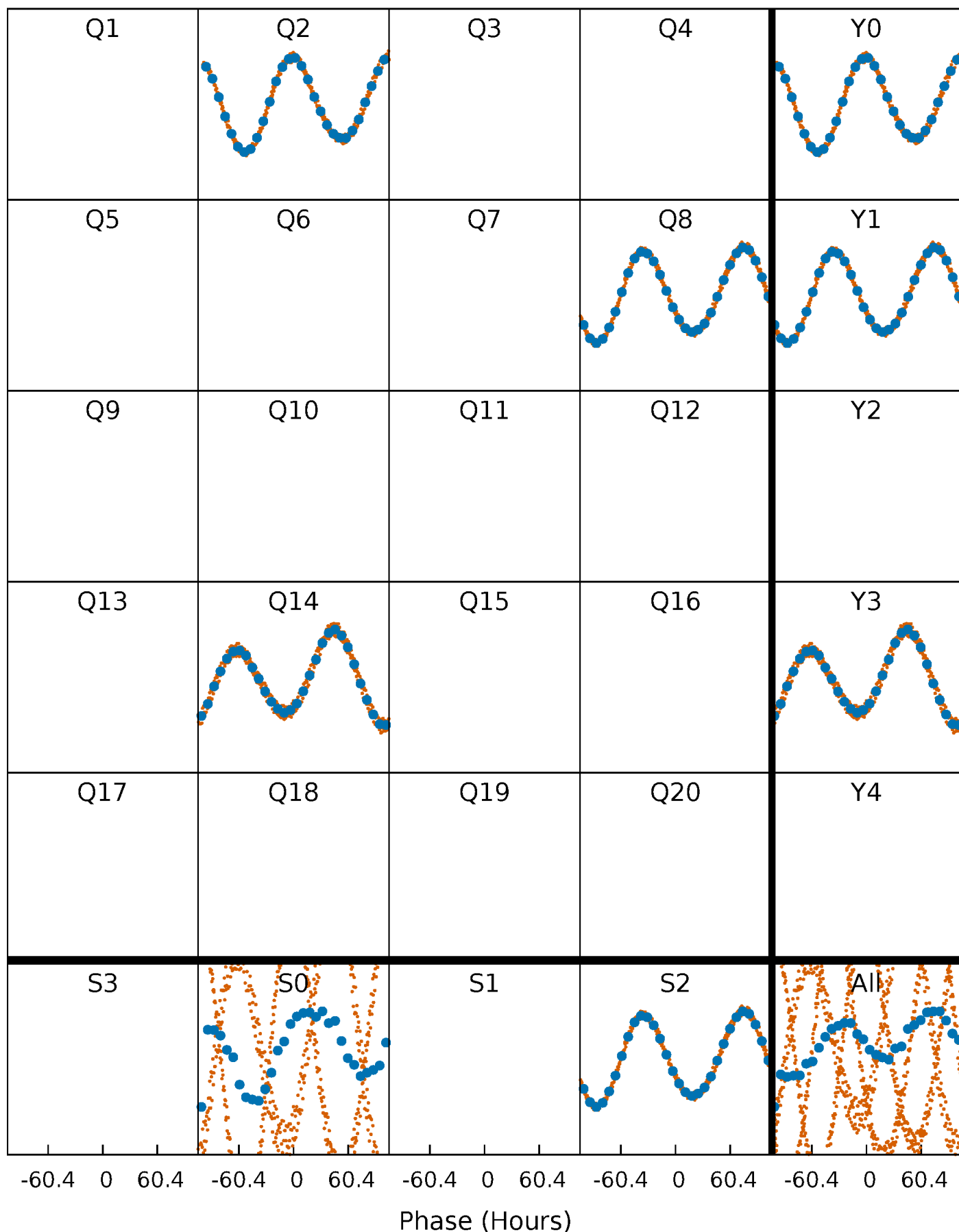


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



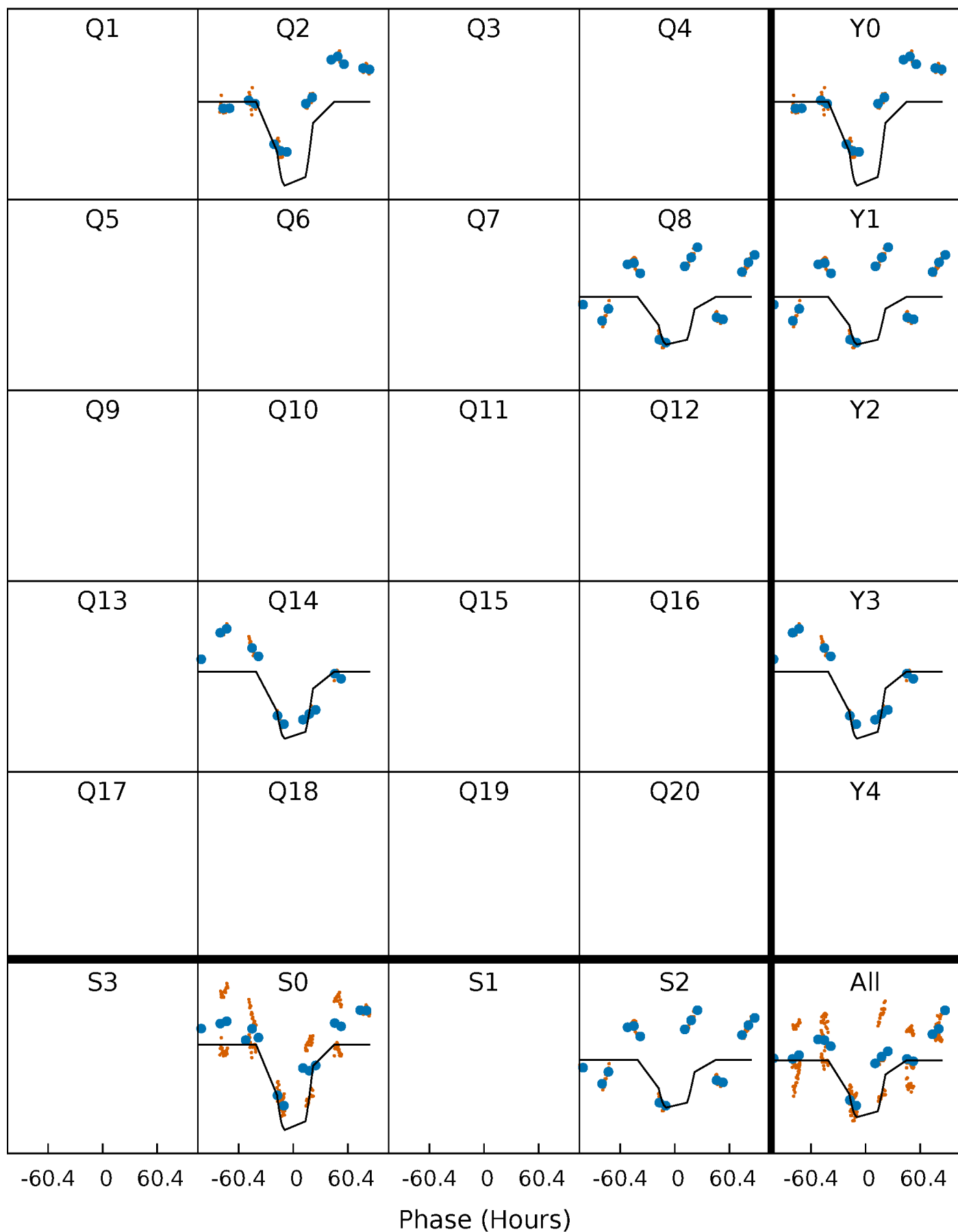
# PDC Quarter-Phased Transit Curves

TCE 011921886-06 P=587.359791 Days  $T_0=187.901531$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 011921886-06 P=587.359791 Days  $T_0=187.901531$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

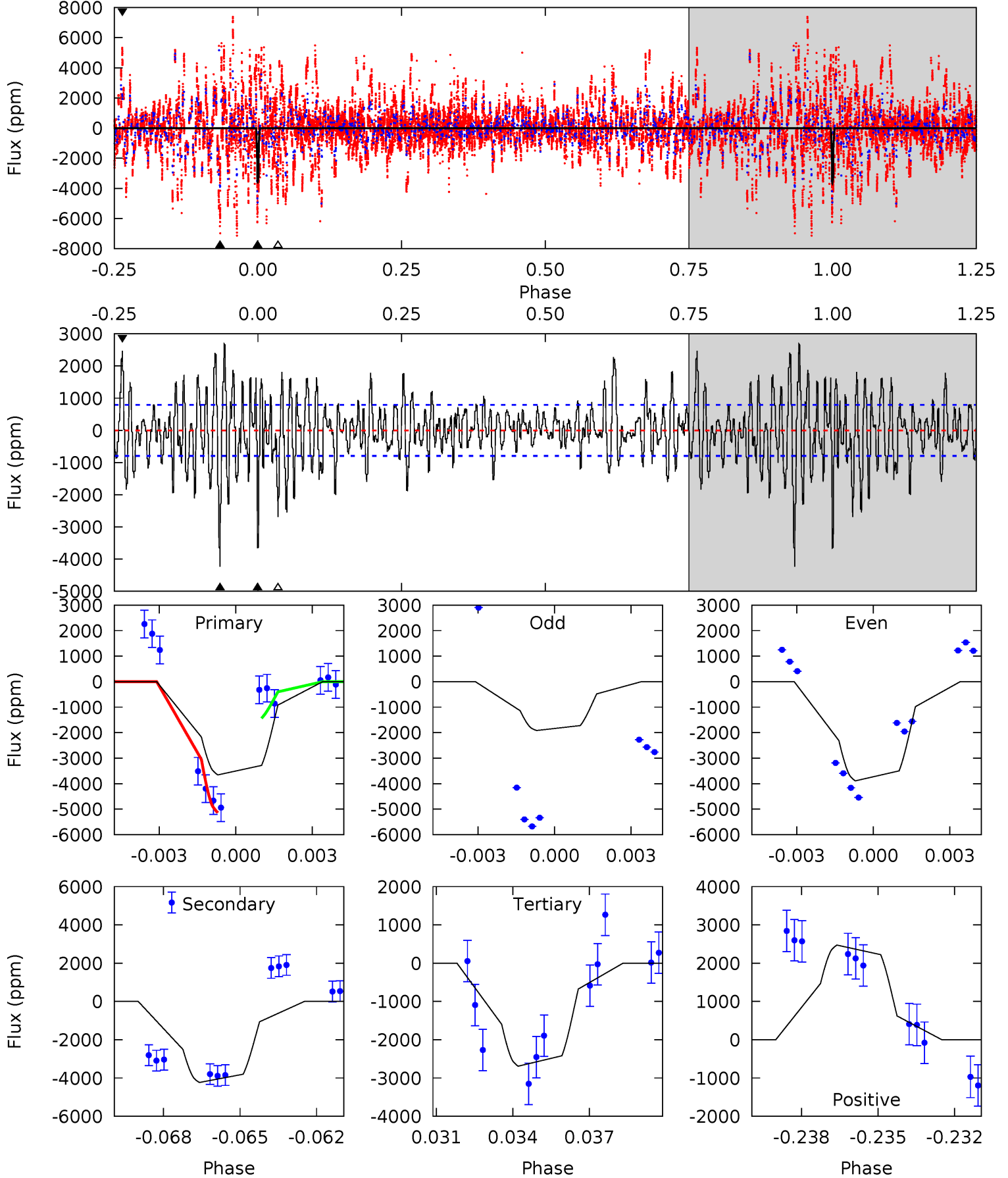
TCE 011921886-06 P=587.294570 Days  $T_0=188.013613$  (BKJD)



# DV Model-Shift Uniqueness Test

011921886-06, P = 587.359791 Days, E = 187.901531 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
24.3	28.1	17.9	16.4	5.26	2.99	5.34	6.41	7.85	10.2	11.7	6.19	1.28	0.39	11.7

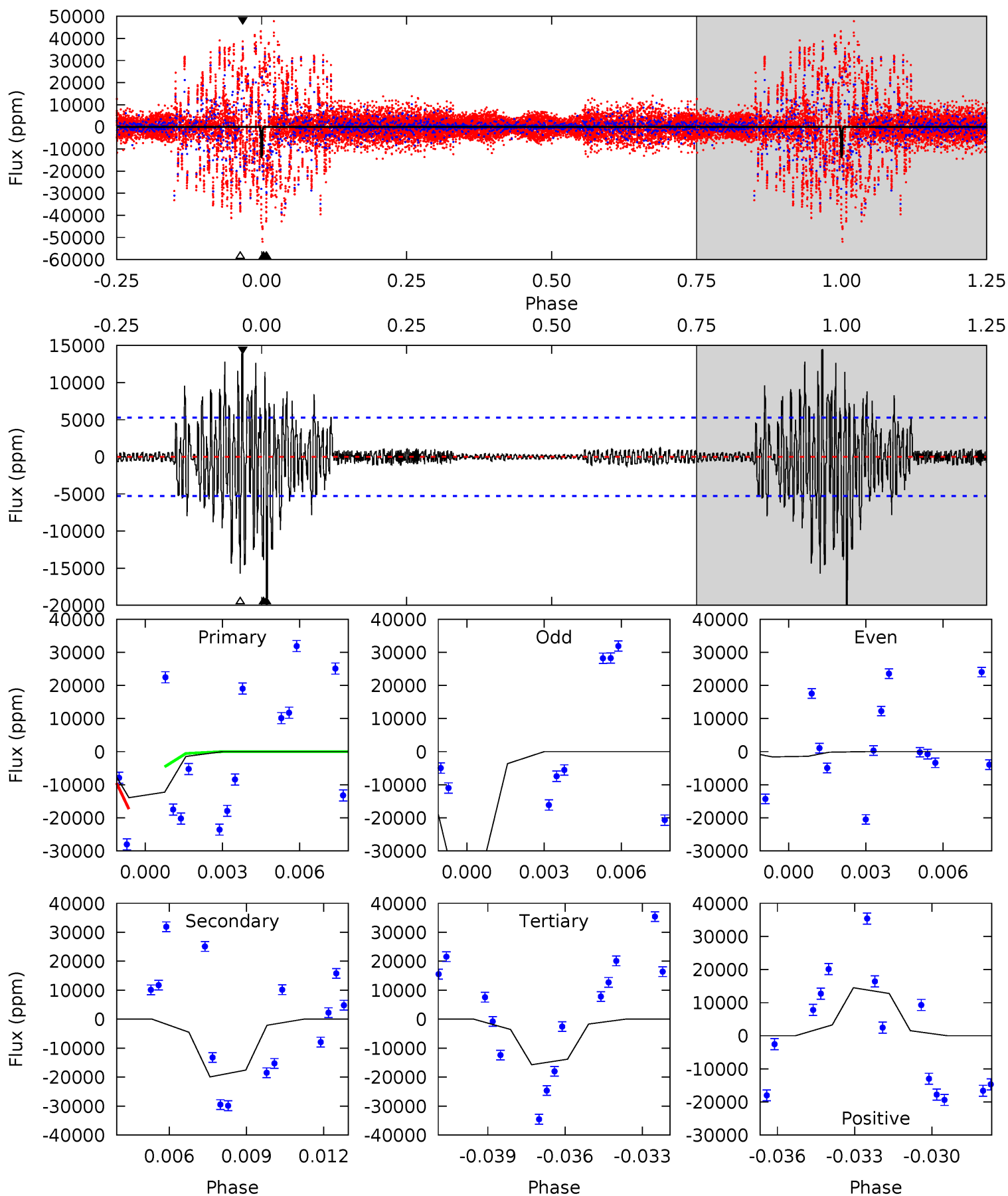




# Alt Model-Shift Uniqueness Test

011921886-06, P = 587.294570 Days, E = 188.013613 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	19.8	15.6	14.4	5.25	2.97	2.77	-1.80	-0.59	4.21	5.42	18.3	0.31	0.42	6.40



### Stellar Parameters For KIC 011921886

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5510^{+219}_{-197}$	$3.639^{+0.928}_{-0.232}$	$-0.620^{+0.350}_{-0.300}$	$2.608^{+1.013}_{-1.881}$	$1.080^{+0.209}_{-0.288}$	$0.086^{+1.966}_{-0.058}$
	+4%/-4%	+26%/-6%	+56%/-48%	+39%/-72%	+19%/-27%	+2293%/-67%
Source	PHO54	PHO54	PHO54	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology  
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

### Secondary Eclipse Parameters for KIC 011921886-06 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-4231 \pm 150$	$22.03^{+7.27}_{-8.94}$	$449^{+59}_{-98}$	$4970^{+297}_{-279}$	$9605^{+15839}_{-4042}$
Alt.	$-19942 \pm 1005$	$45.80^{+11.32}_{-17.28}$	$455^{+53}_{-89}$	$5162^{+234}_{-219}$	$10507^{+15744}_{-3527}$

$T_{max}$  = 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

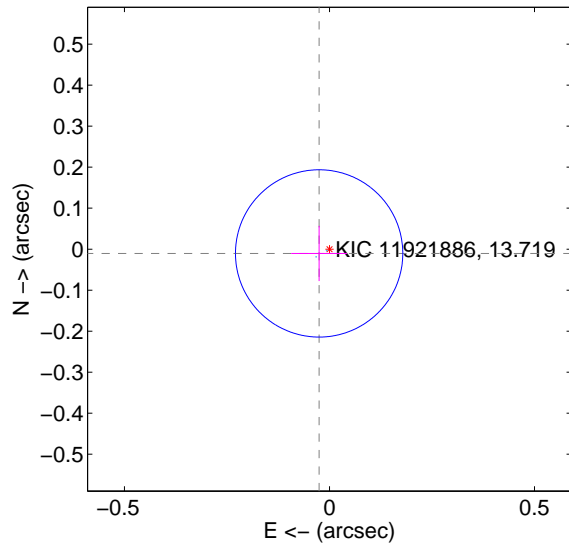
Supplemental centroid analysis for 011921886-06. Kepler magnitude: 13.72. Transit SNR 7.27

There are 2 quarters with good PRF difference image offsets

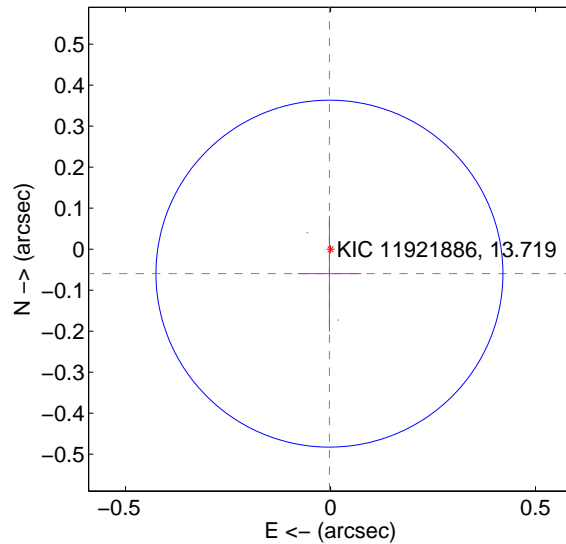
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.027 \pm 0.068$	0.40	$0.025 \pm 0.068$	$-0.010 \pm 0.067$
PRF-fit source offset from KIC position	$0.060 \pm 0.141$	0.42	$0.003 \pm 0.078$	$-0.060 \pm 0.141$
photometric centroid source offset	$0.20 \pm 0.10$	2.11	$0.09 \pm 0.09$	$0.18 \pm 0.10$

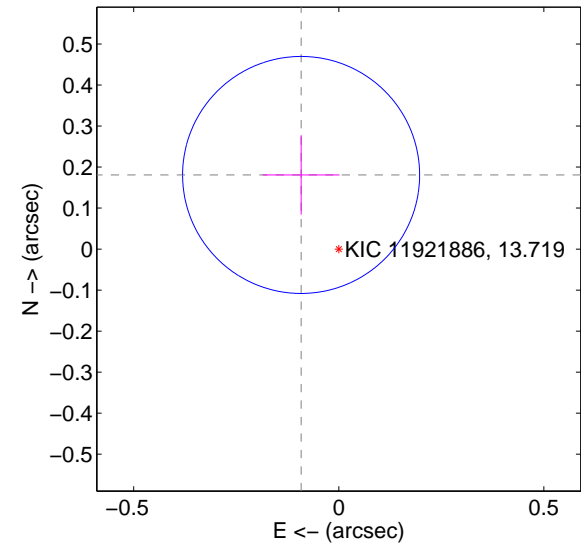
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

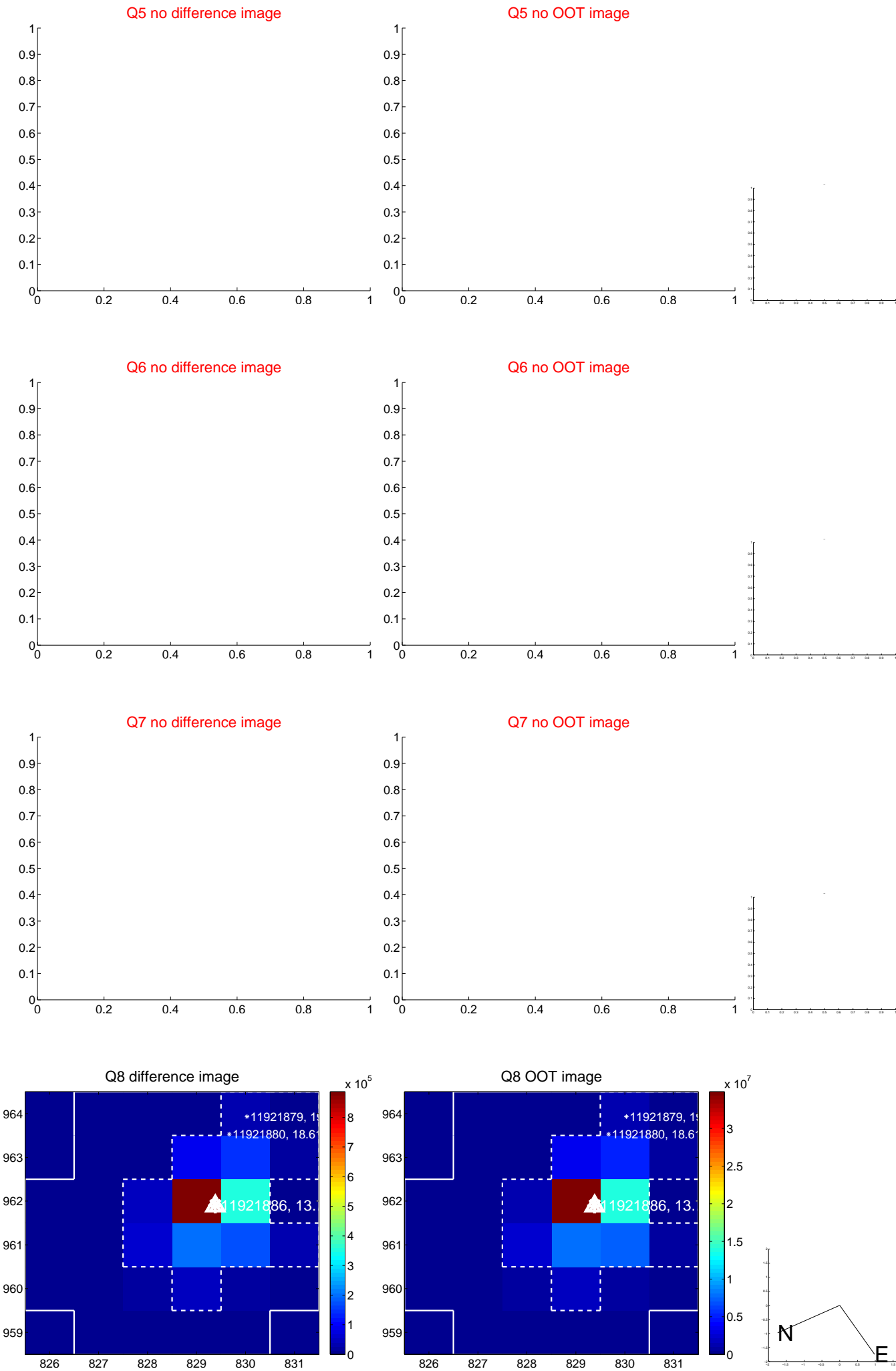


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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



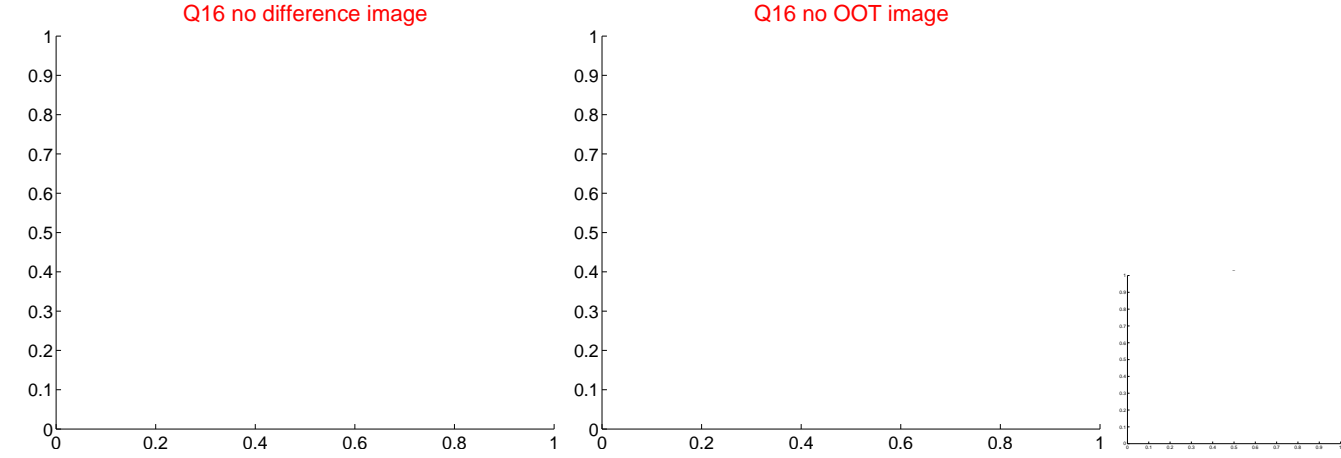
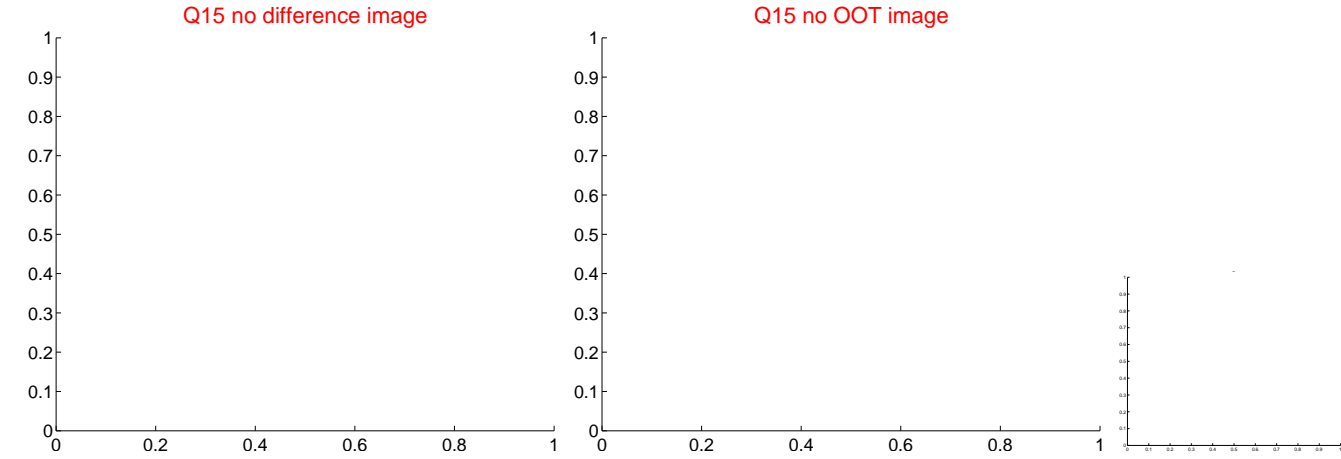
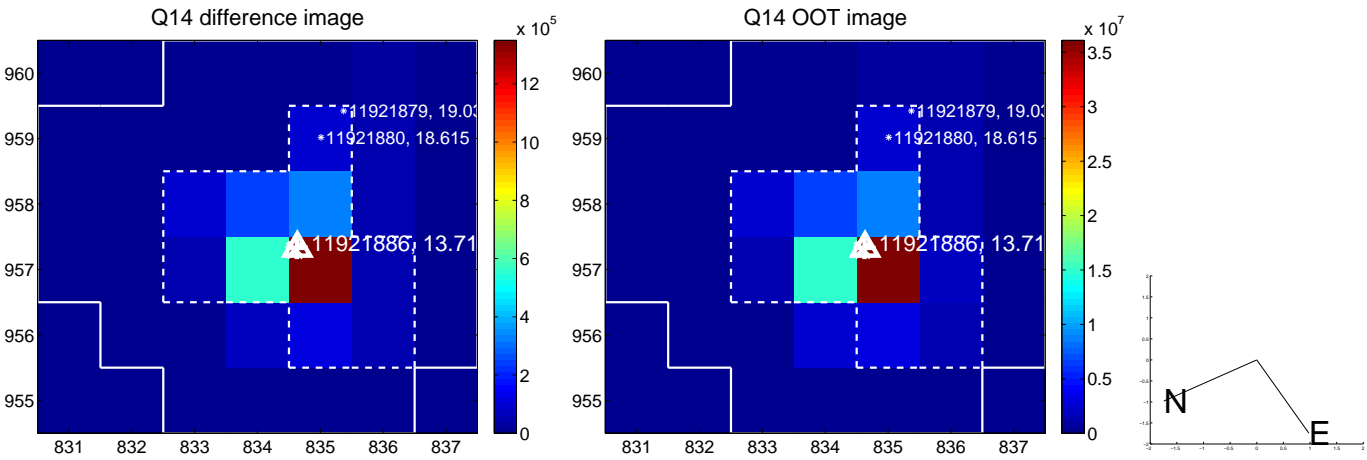
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



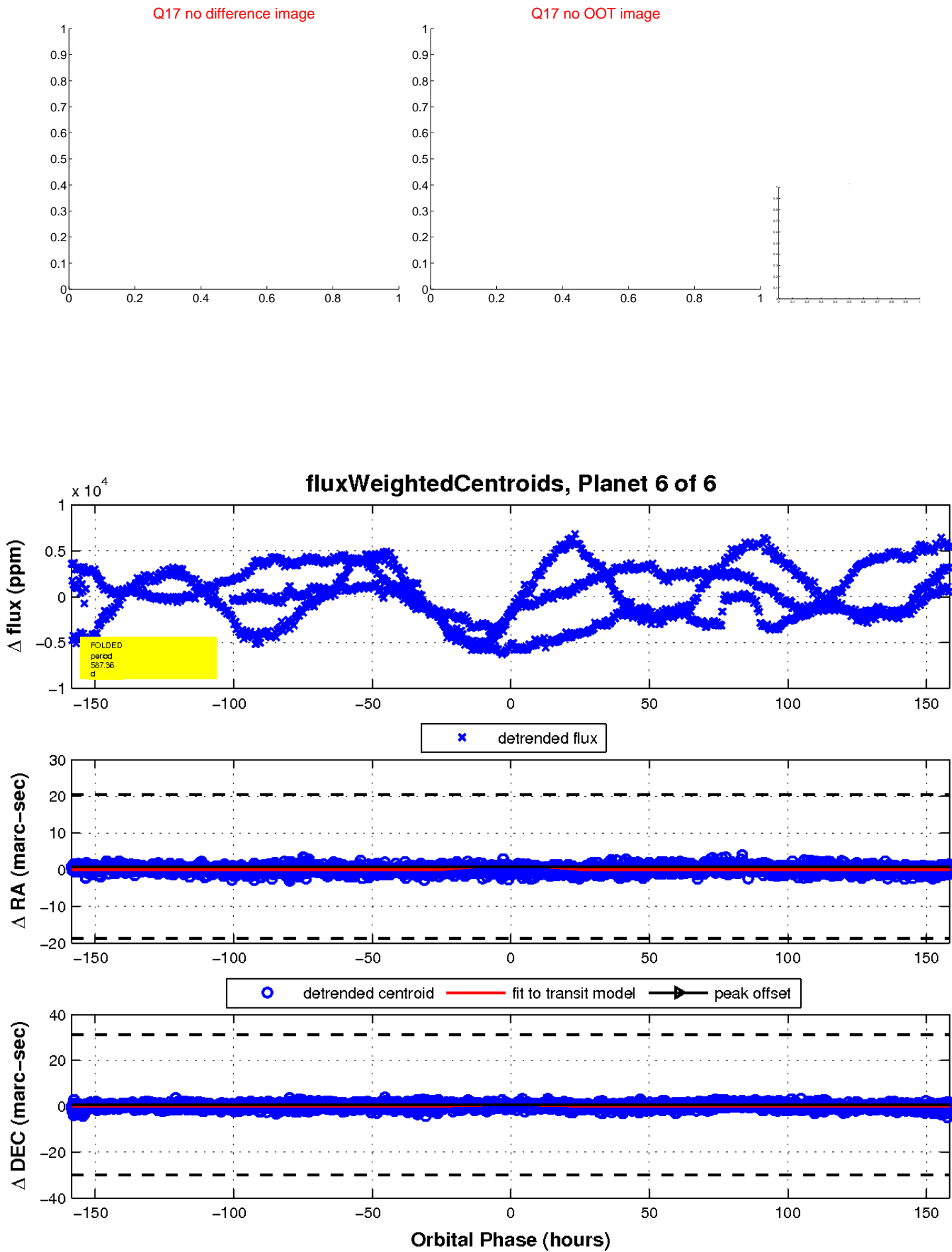
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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





UKIRT Image

Declination

