

# KIC 005962956

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005962956-01	OBS	No	0.699224	131.979744	1603.6	2.500	10.9	-1.0	0.37	3515	1.46	148.71
005962956-02	OBS	No	192.896857	161.582406	61.5	3.170	12.2	0.1	0.37	3515	0.31	0.08

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005962956-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_NOFITS
005962956-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—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

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

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

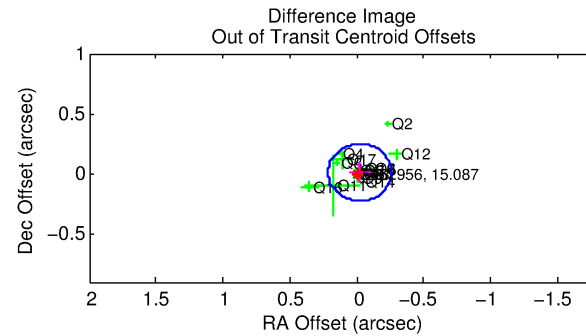
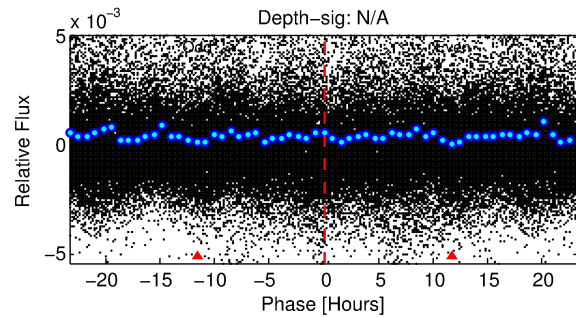
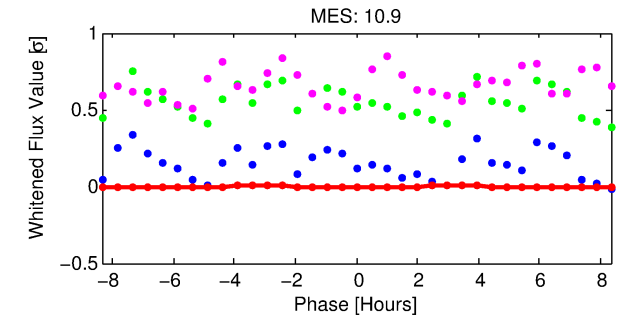
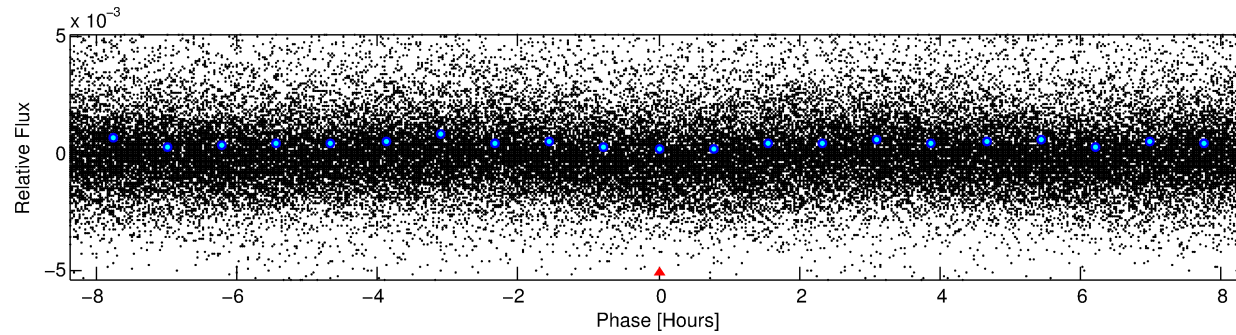
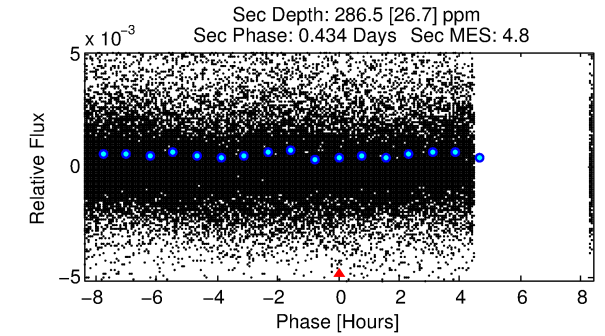
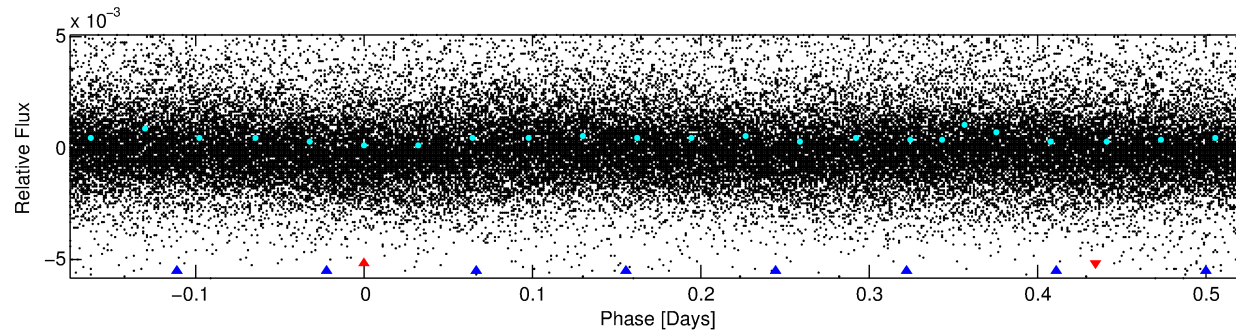
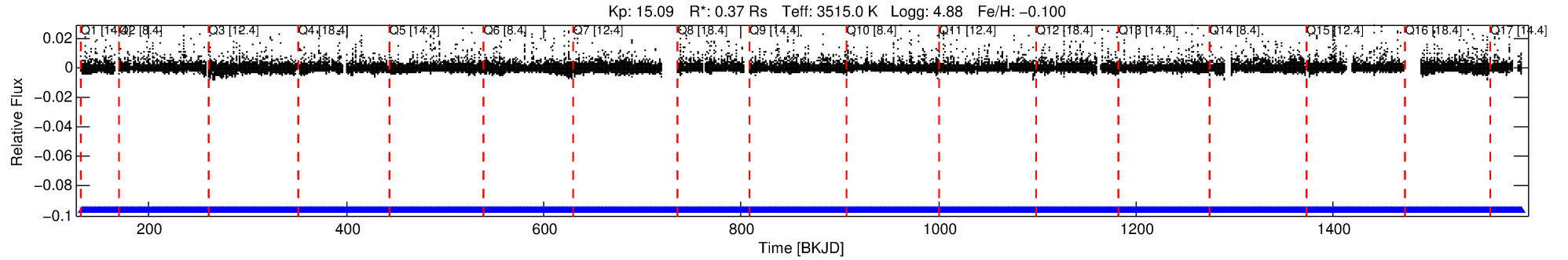
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005962956-01

No Significant Match Found

# DV One-Page Summary

KIC: 5962956 Candidate: 1 of 2 Period: 0.699 d



## TPS TCE Results:

Period = 0.69922 d  
Epoch = 131.9797 BKJD

DV fit results are unavailable

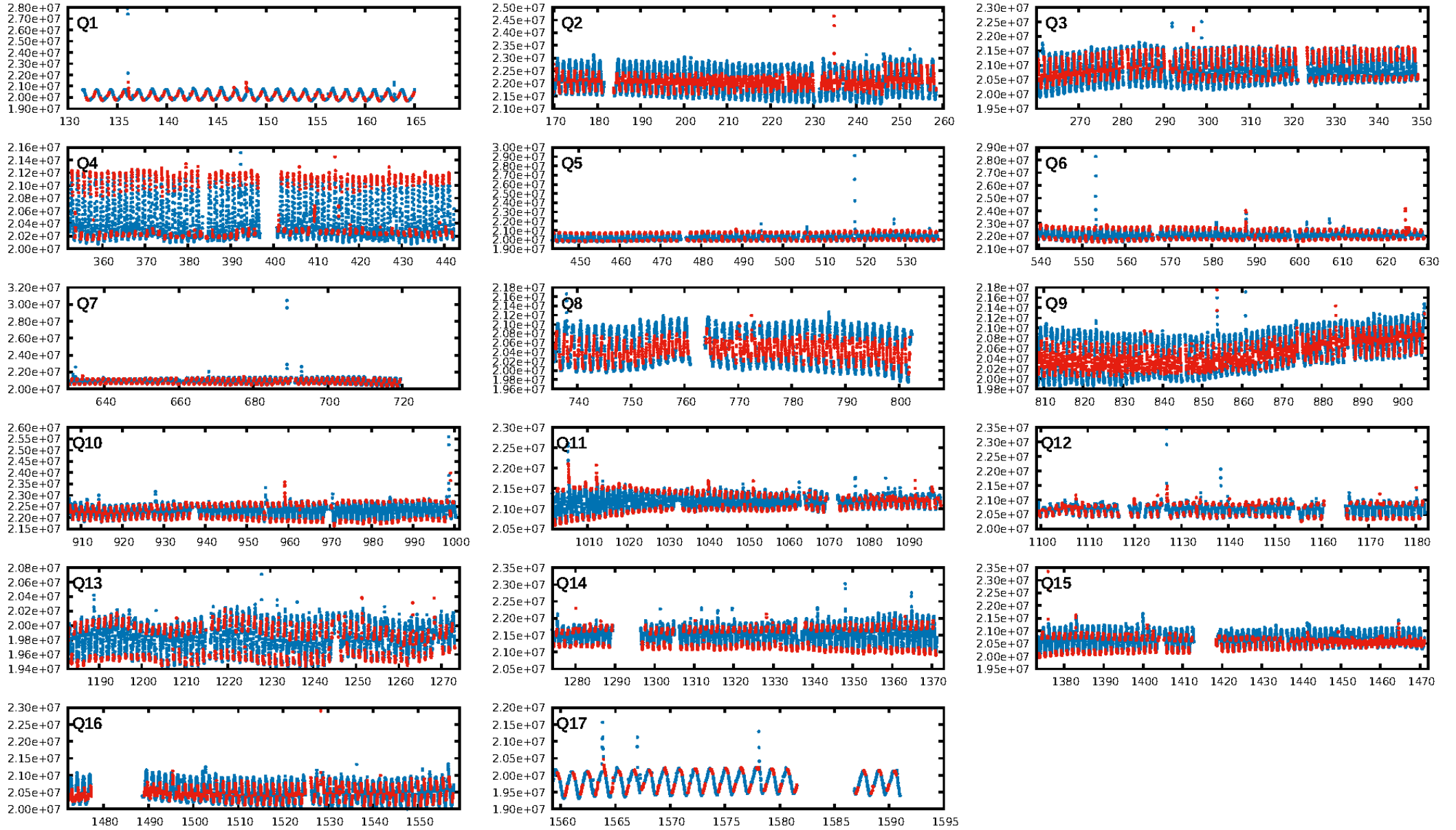
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [1142.55σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 8.54e-17  
RollingBand-fgt: 1.00 [1831/1831]  
GhostDiagnostic-chr: 4.641  
Centroid-sig: 61.4%  
Centroid-so: 0.268 arcsec [1.02σ]  
OotOffset-rm: 0.024 arcsec [0.30σ]  
KicOffset-rm: 0.103 arcsec [1.29σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.65 [11/17]  
DiffImageOverlap-fno: 1.00 [17/17]

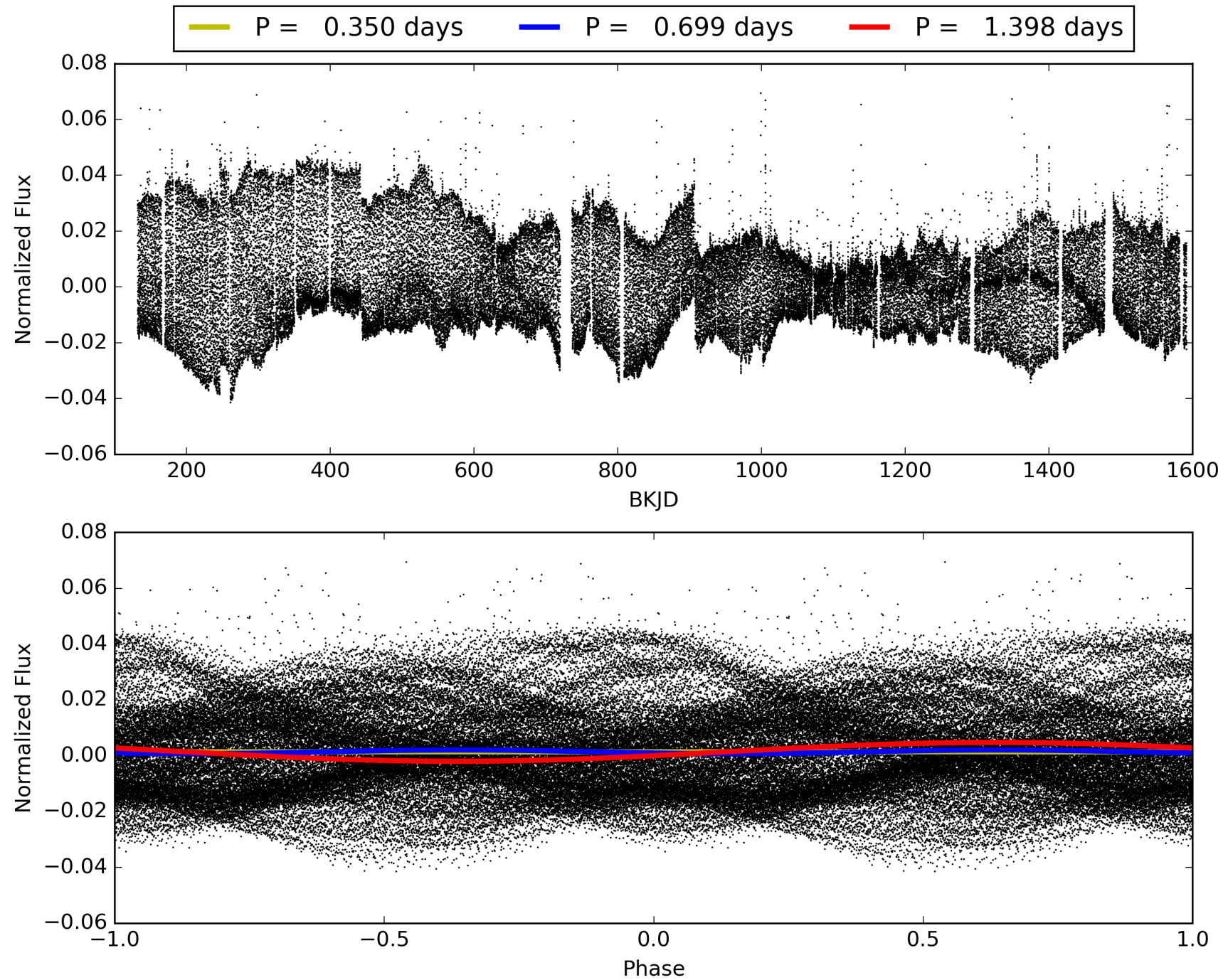
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 19:31:13 Z

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

# TCE 005962956-01, PDC Light Curves

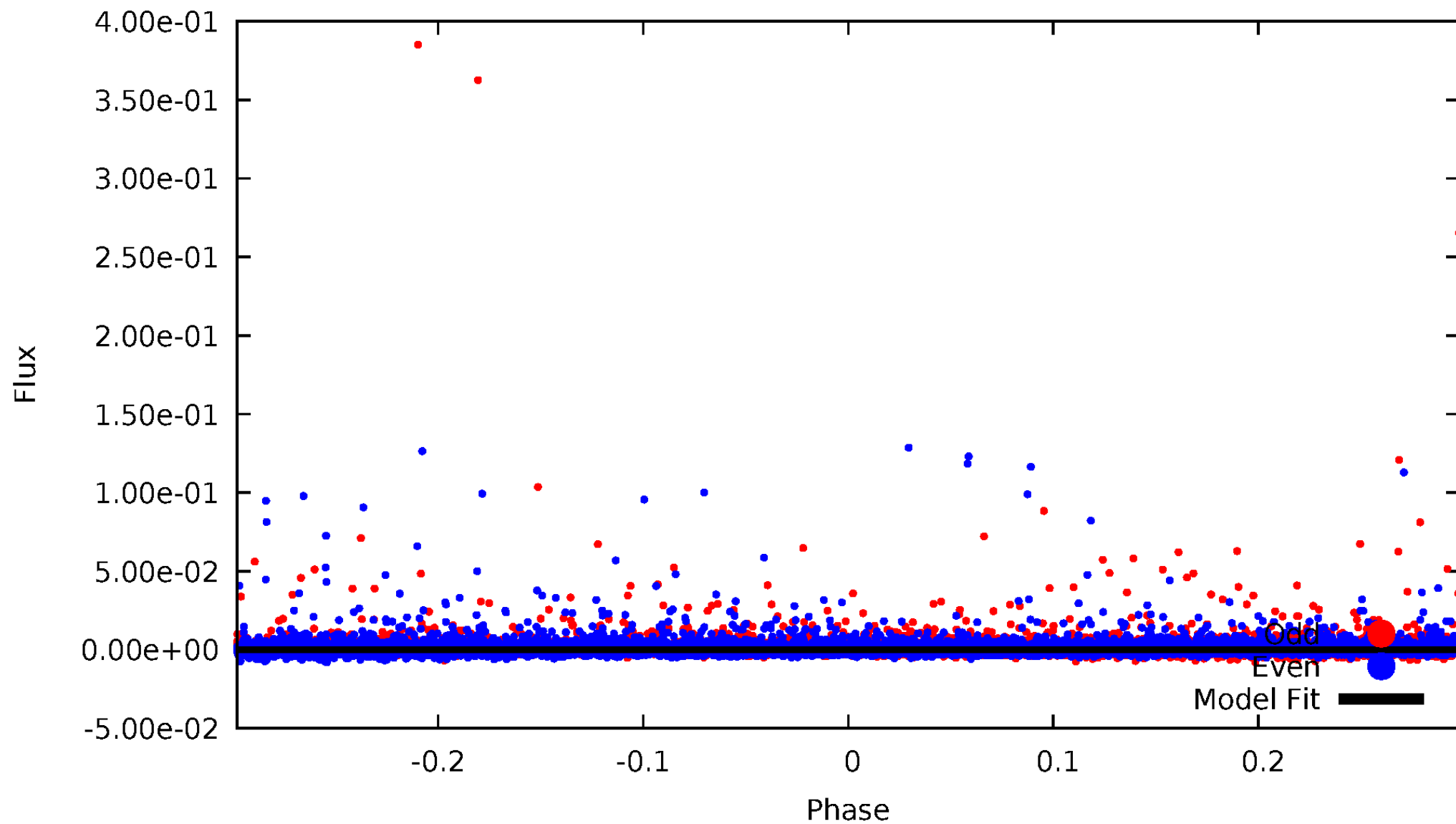


TCE 005962956-01



# DV Odd/Even

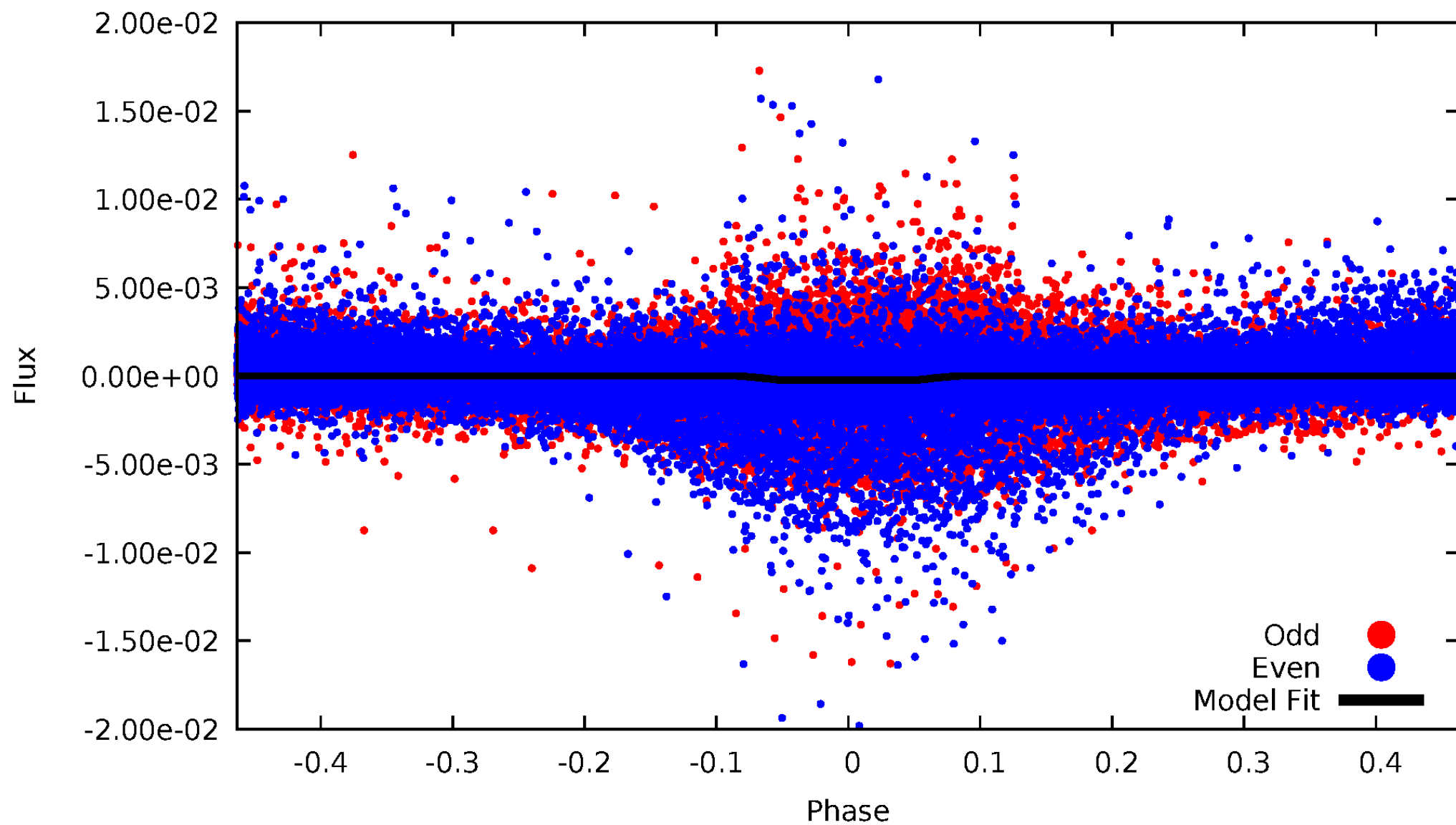
TCE 005962956-01



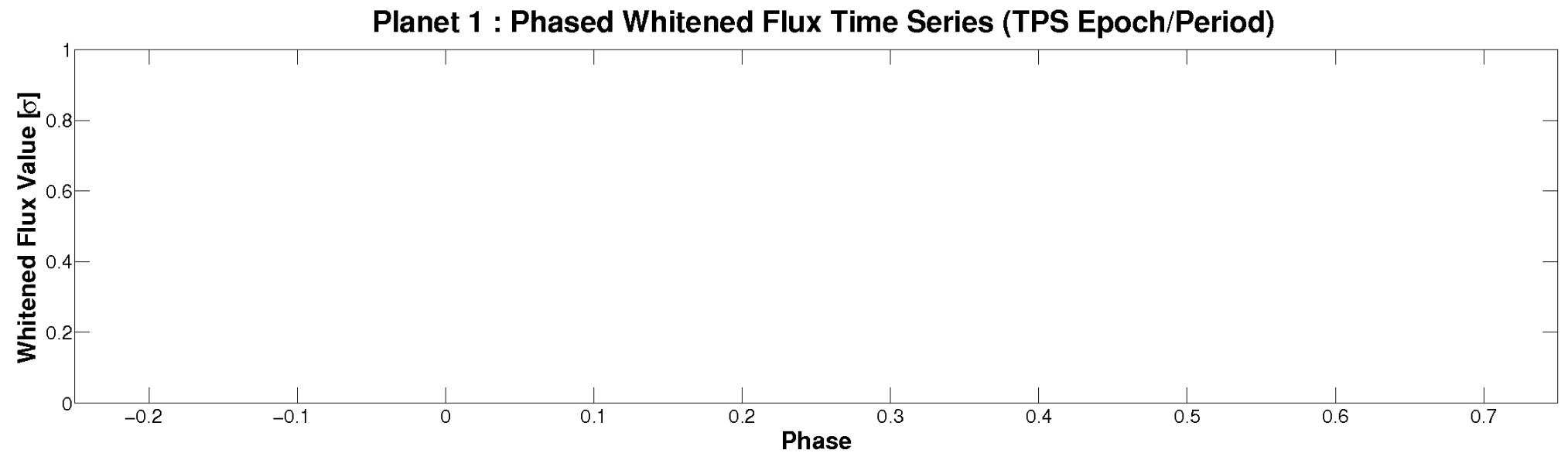
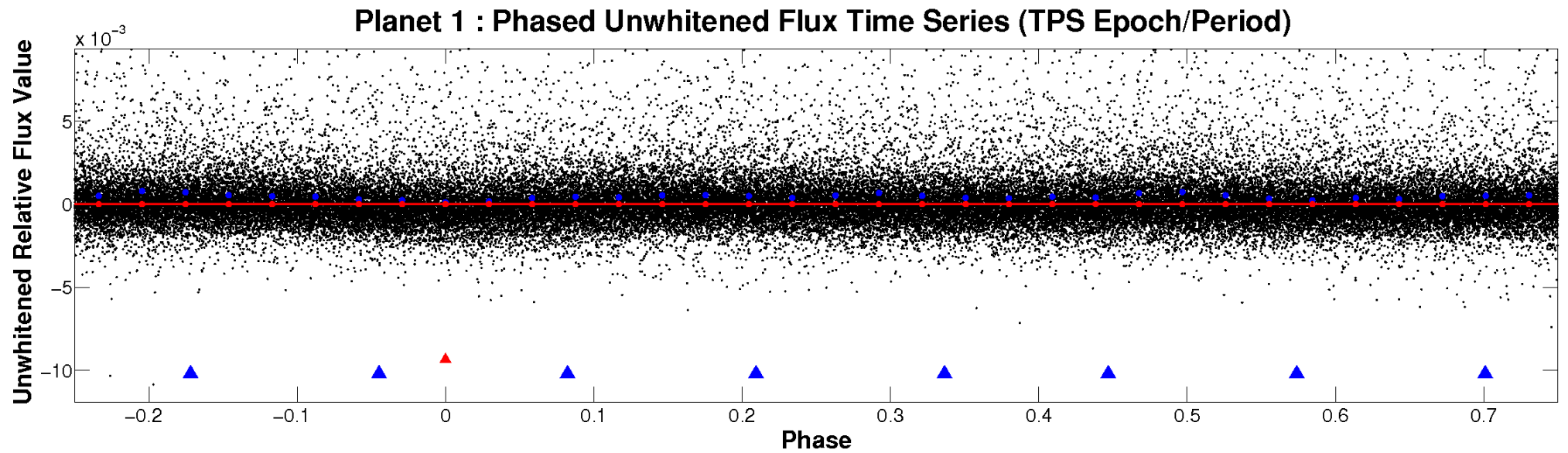


# ALT Odd/Even

TCE 005962956-01

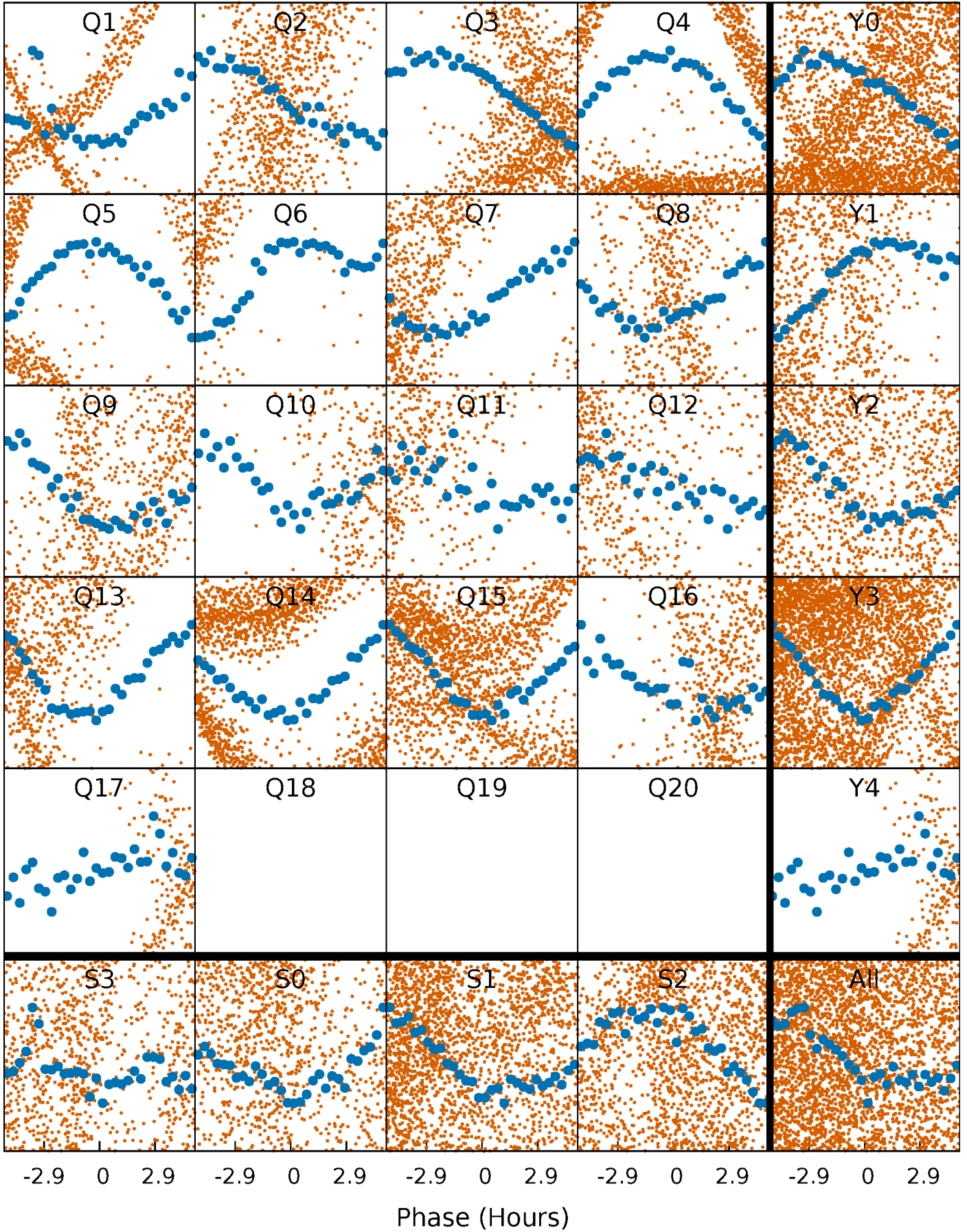


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

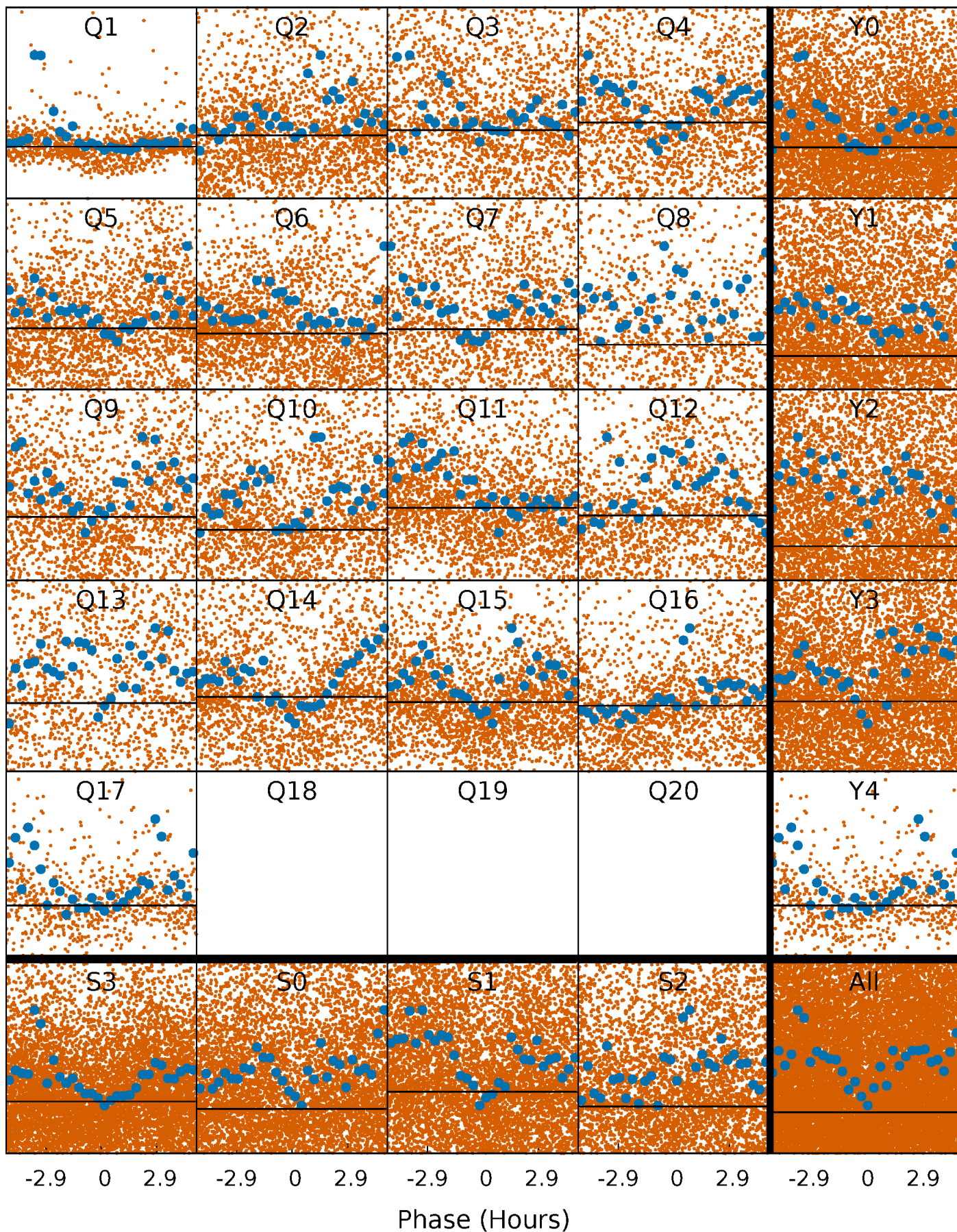
TCE 005962956-01   P= 0.699224 Days    $T_0=131.979744$  (BKJD)





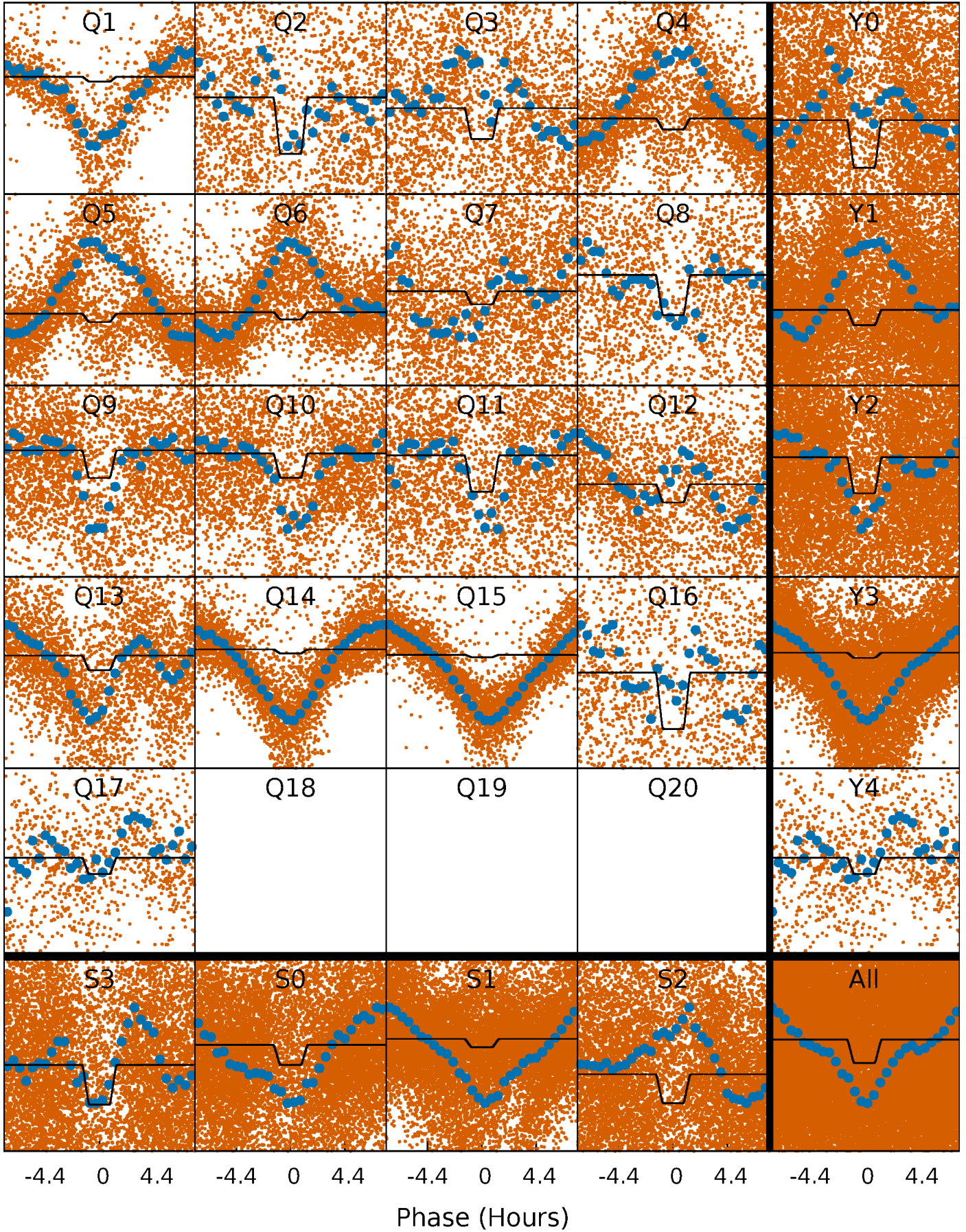
# DV Quarter-Phased Transit Curves

TCE 005962956-01   P= 0.699224 Days    $T_0=131.979744$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005962956-01 P= 0.699224 Days  $T_0=131.970717$  (BKJD)

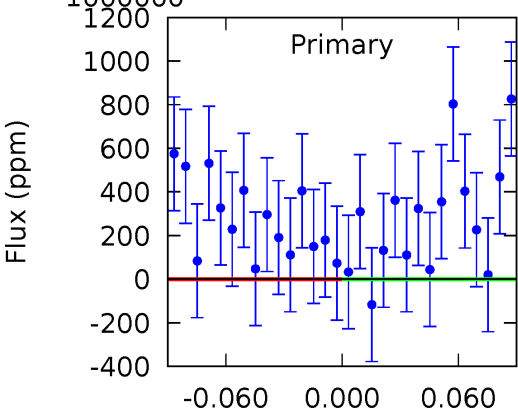
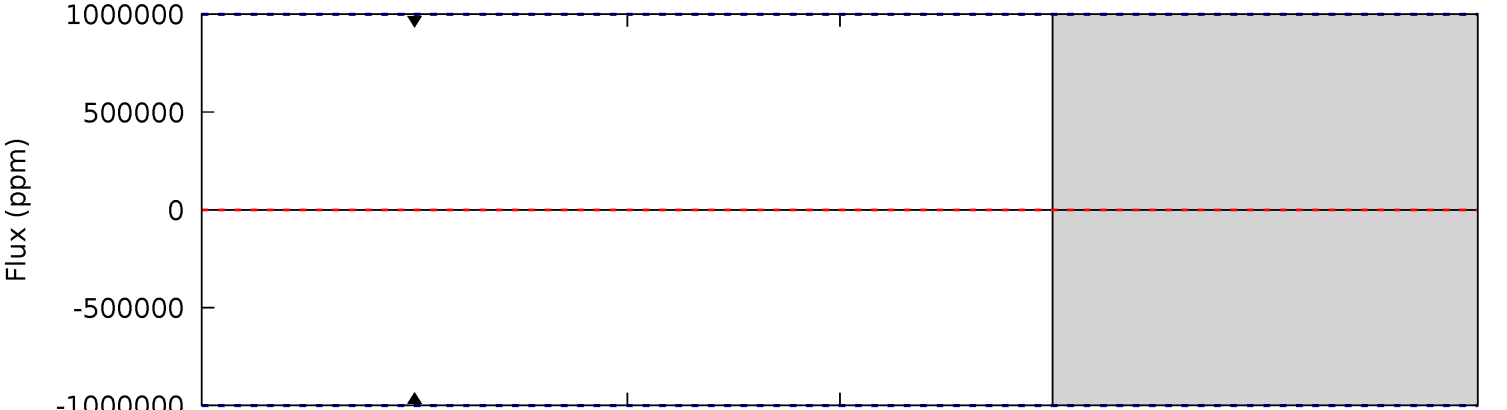
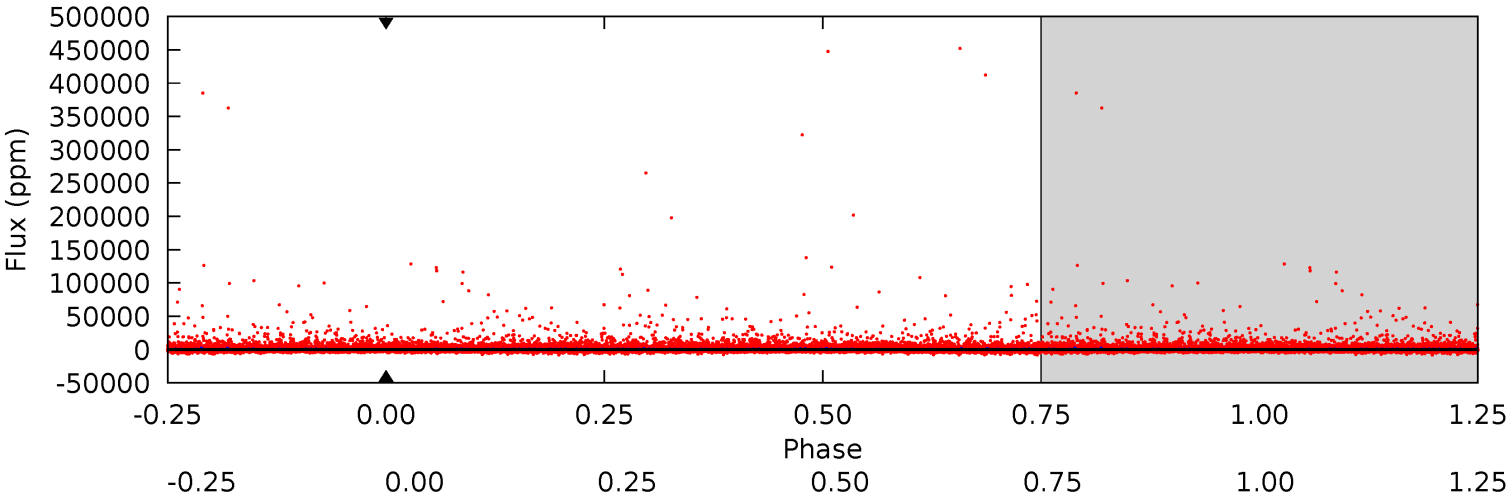




# DV Model-Shift Uniqueness Test

005962956-01, P = 0.699224 Days, E = 131.280520 Days

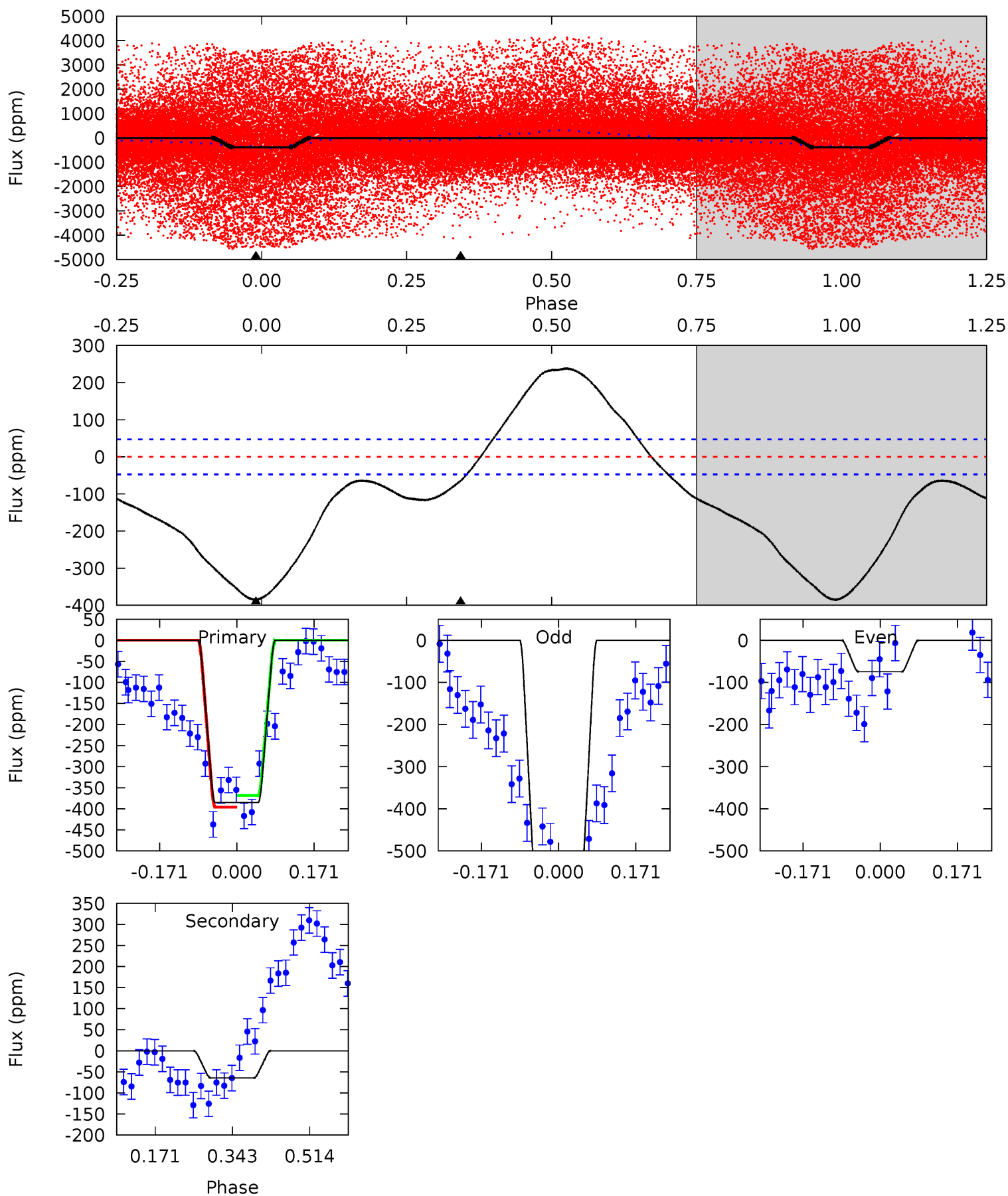
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

005962956-01, P = 0.699224 Days, E = 131.271493 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
36.3	6.08	0	0	4.45	1.37	12.8	36.3	36.3	6.08	6.08	21.2	1.74	0.38	1.33



### Stellar Parameters For KIC 005962956

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$3515^{+42}_{-47}$	$4.885^{+0.035}_{-0.031}$	$-0.100^{+0.100}_{-0.100}$	$0.368^{+0.029}_{-0.032}$	$0.381^{+0.035}_{-0.039}$	$10.800^{+1.889}_{-1.608}$
	+1%/-1%	+1%/-1%	+100%/-100%	+8%/-9%	+9%/-10%	+17%/-15%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 005962956-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$3.52^{+3.10}_{-2.43}$	$1243^{+25}_{-23}$	$2688^{+4215}_{-9319}$	$6.291^{+1110.021}_{-963.365}$
Alt.	$-64 \pm 11$	$2.87^{+3.18}_{-2.03}$	$1245^{+24}_{-25}$	$1859^{+799}_{-3671}$	$0.527^{+5.784}_{-0.409}$

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



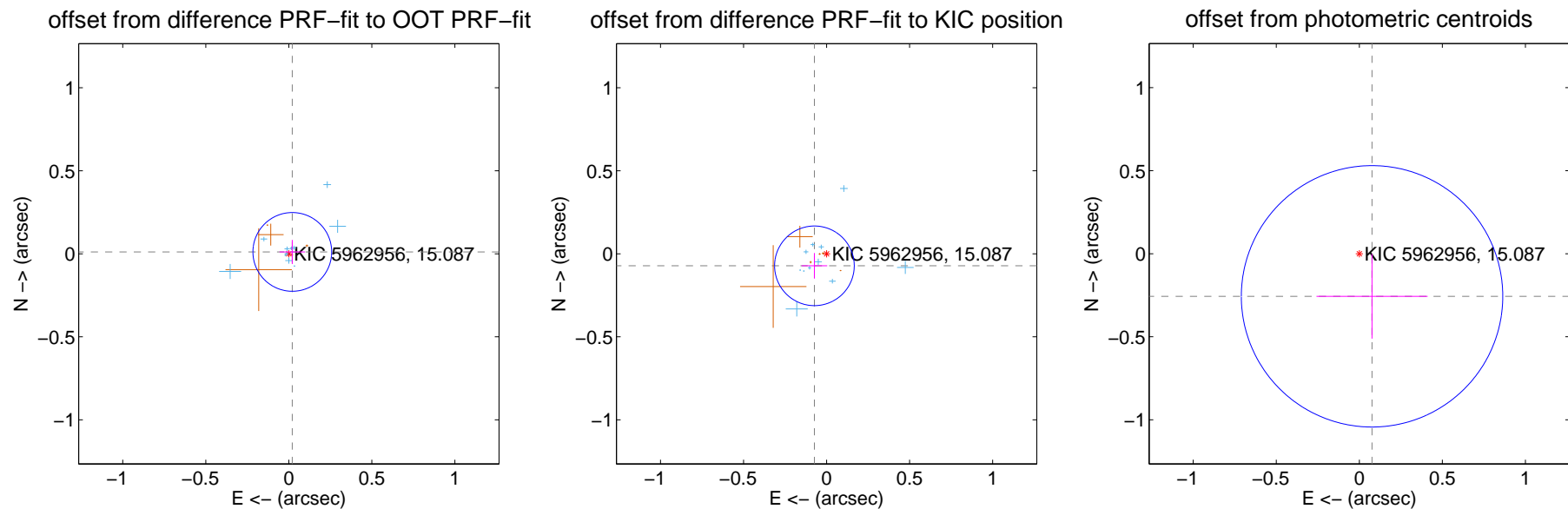
## DV Centroid Data

Supplemental centroid analysis for 005962956-01. Kepler magnitude: 15.09. Transit SNR -1.00

There are 11 quarters with good PRF difference image offsets

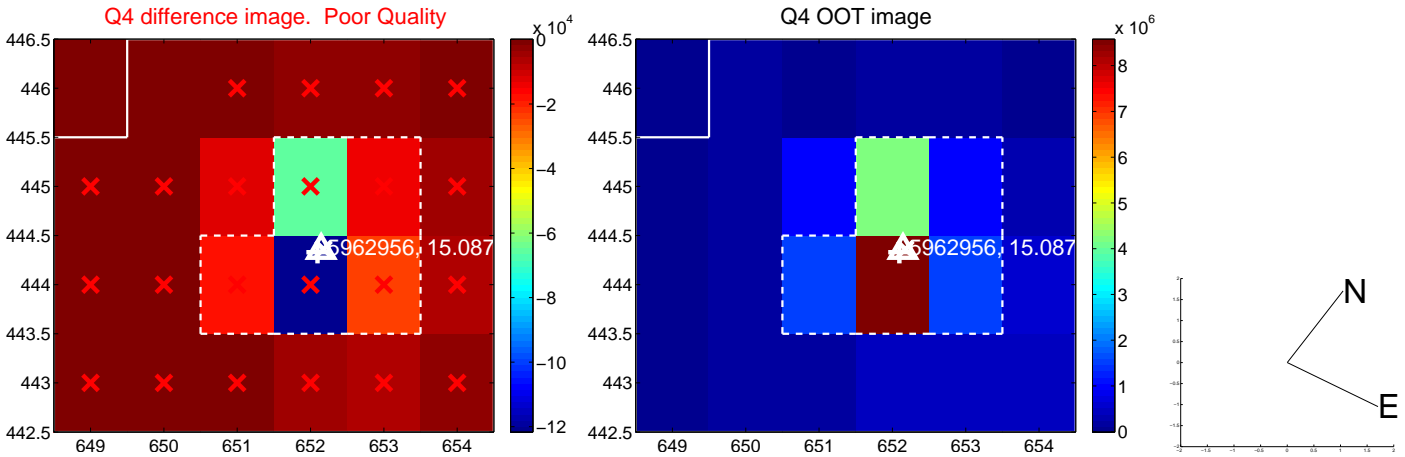
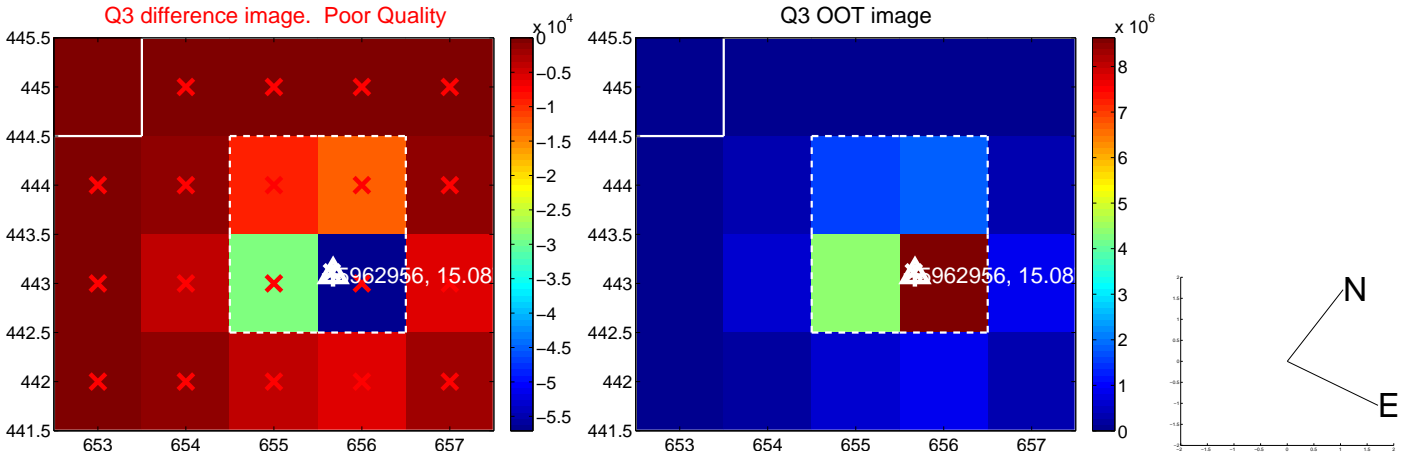
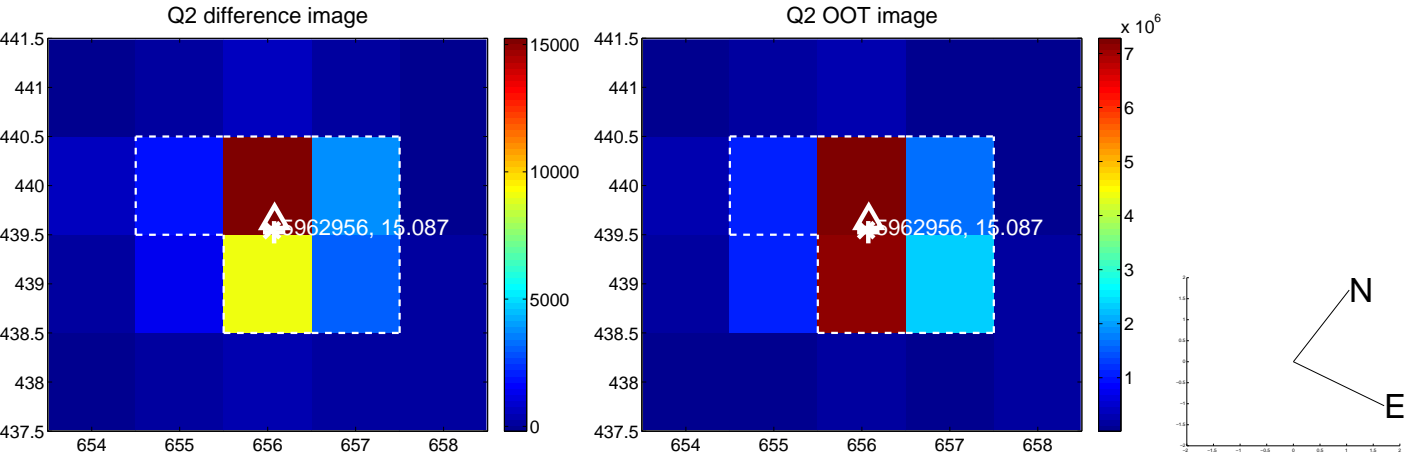
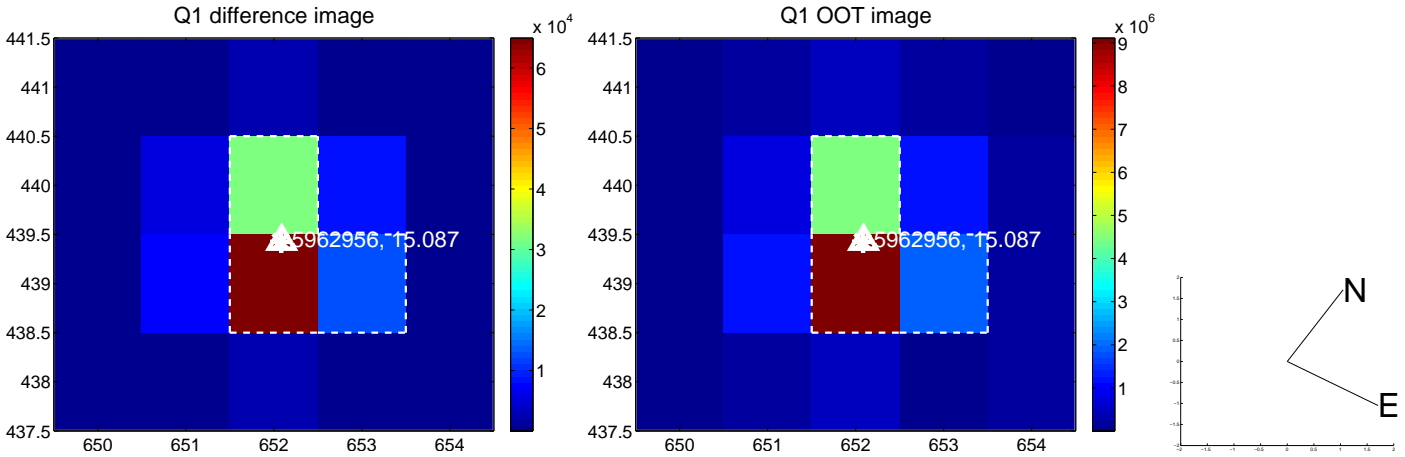
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.024 \pm 0.079$	0.30	$-0.021 \pm 0.077$	$0.011 \pm 0.072$
PRF-fit source offset from KIC position	$0.103 \pm 0.080$	1.29	$0.073 \pm 0.077$	$-0.072 \pm 0.077$
photometric centroid source offset	$0.27 \pm 0.26$	1.02	$-0.08 \pm 0.33$	$-0.26 \pm 0.25$

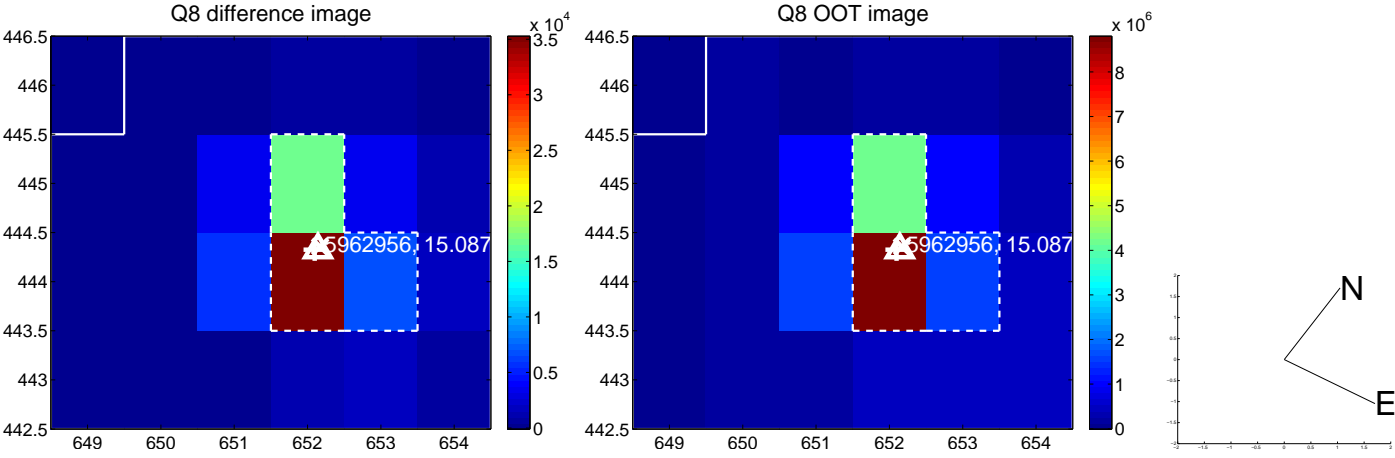
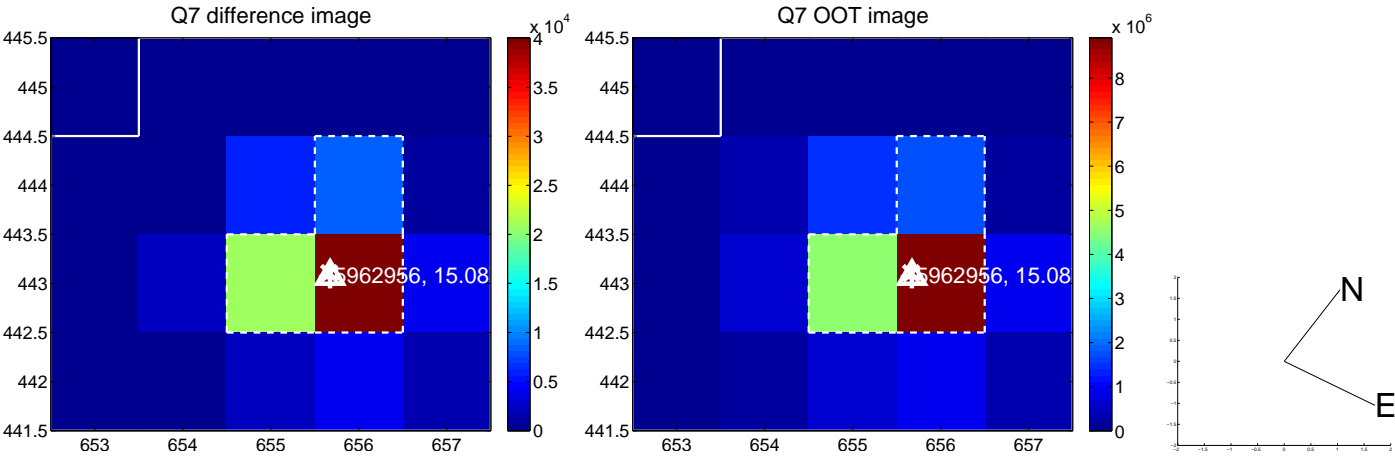
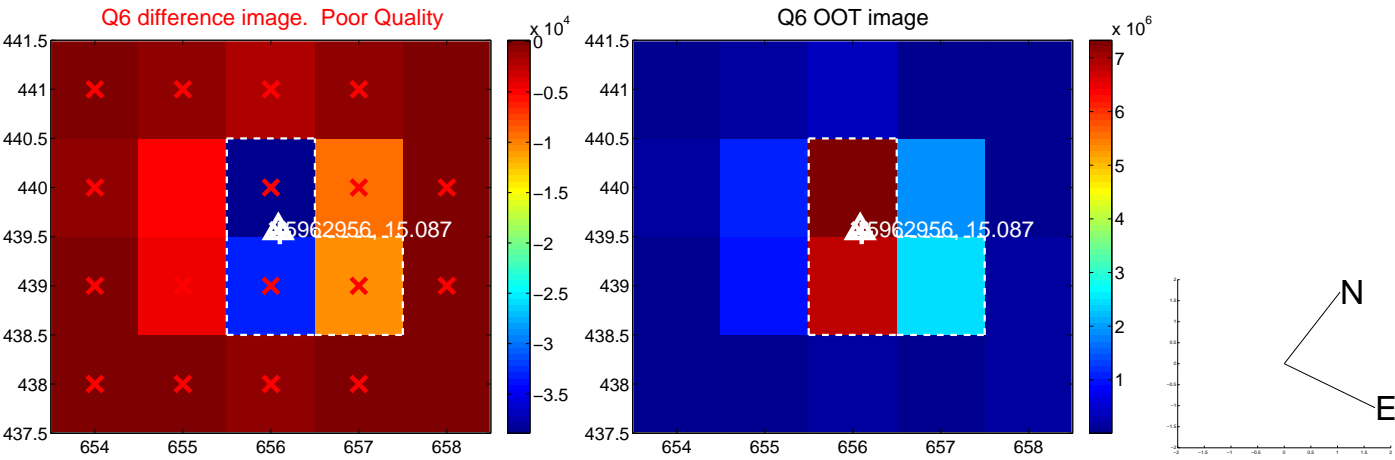
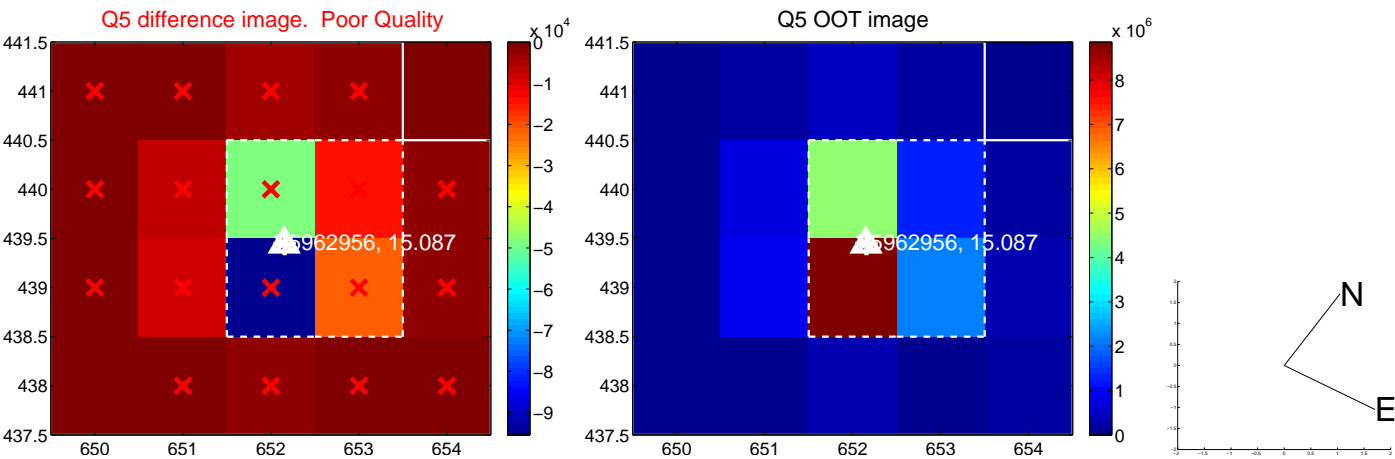


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

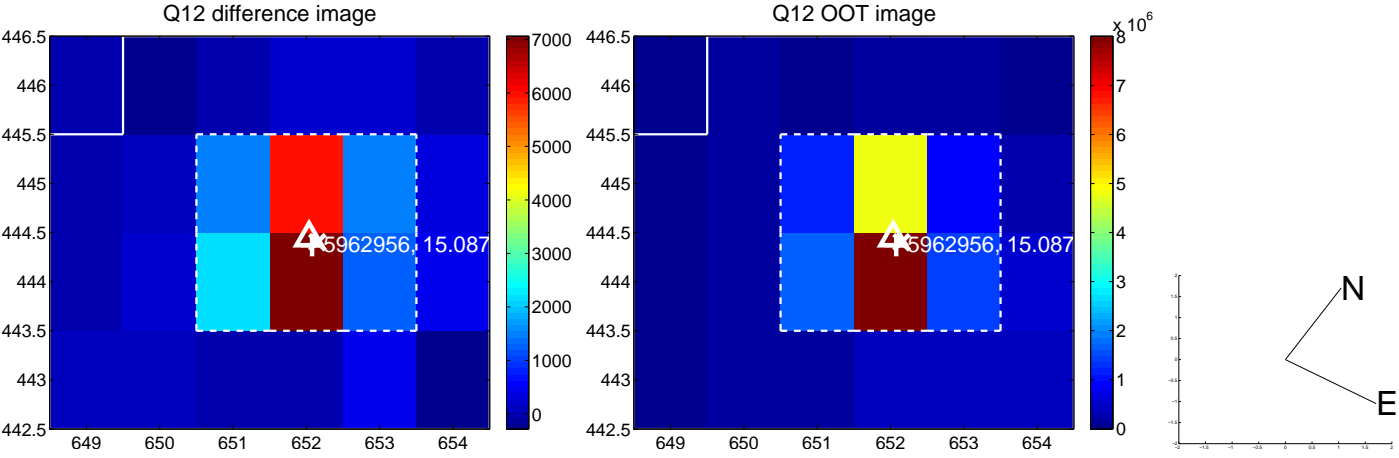
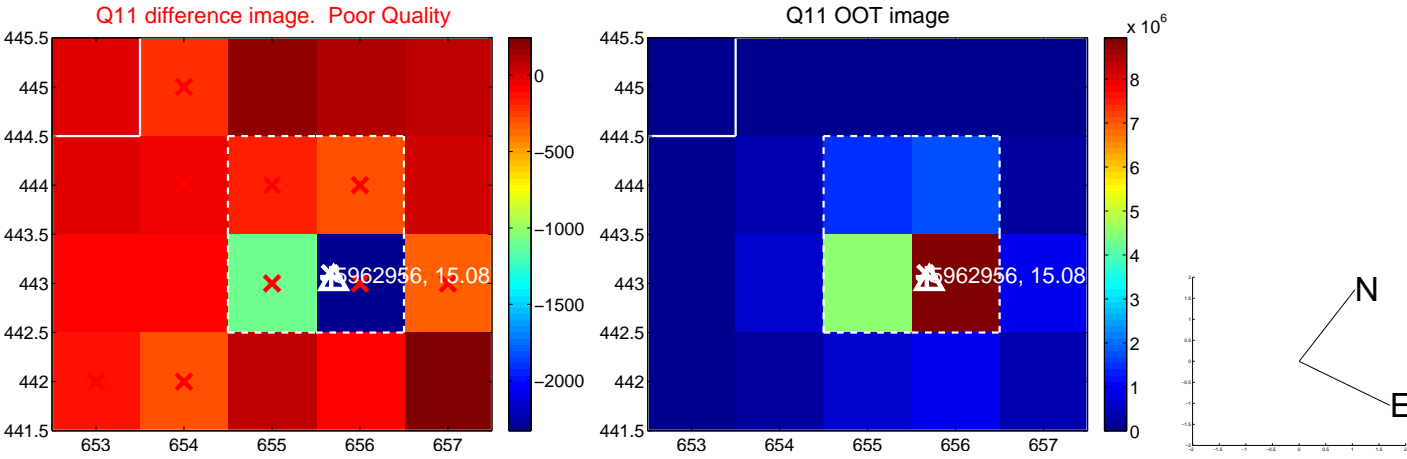
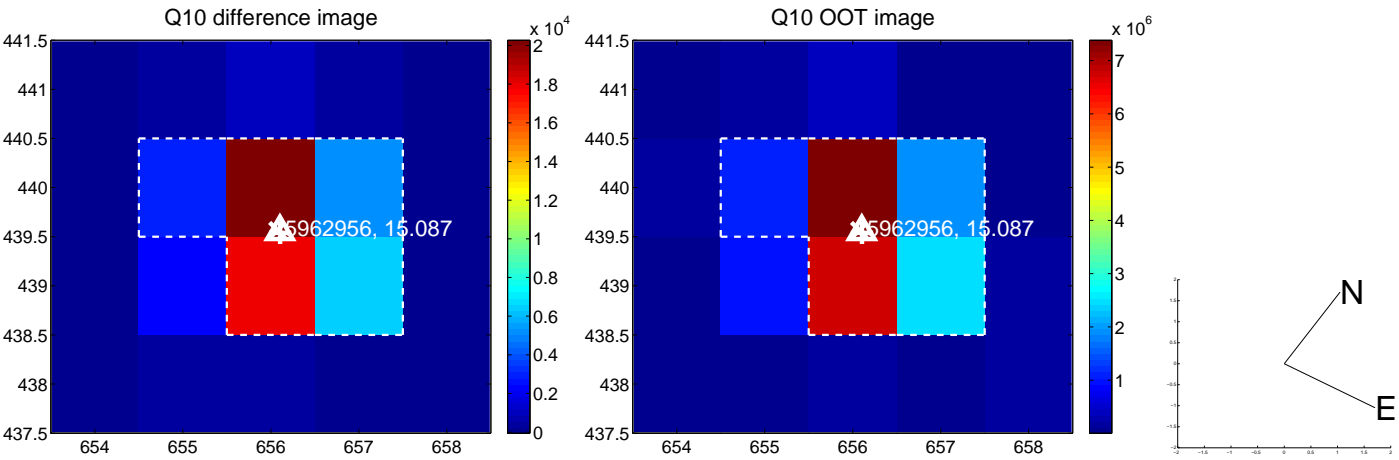
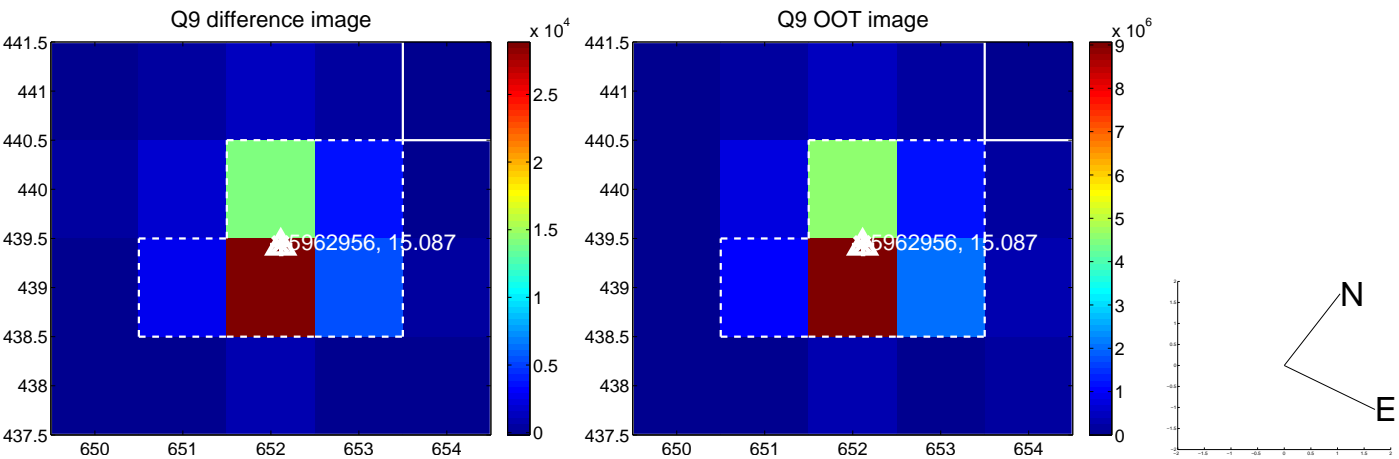
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



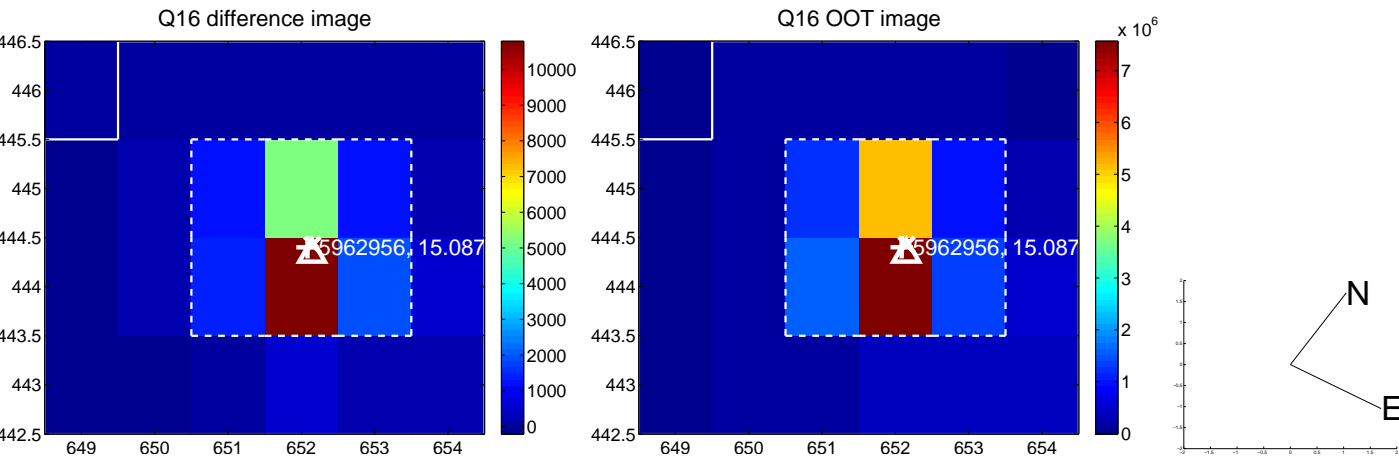
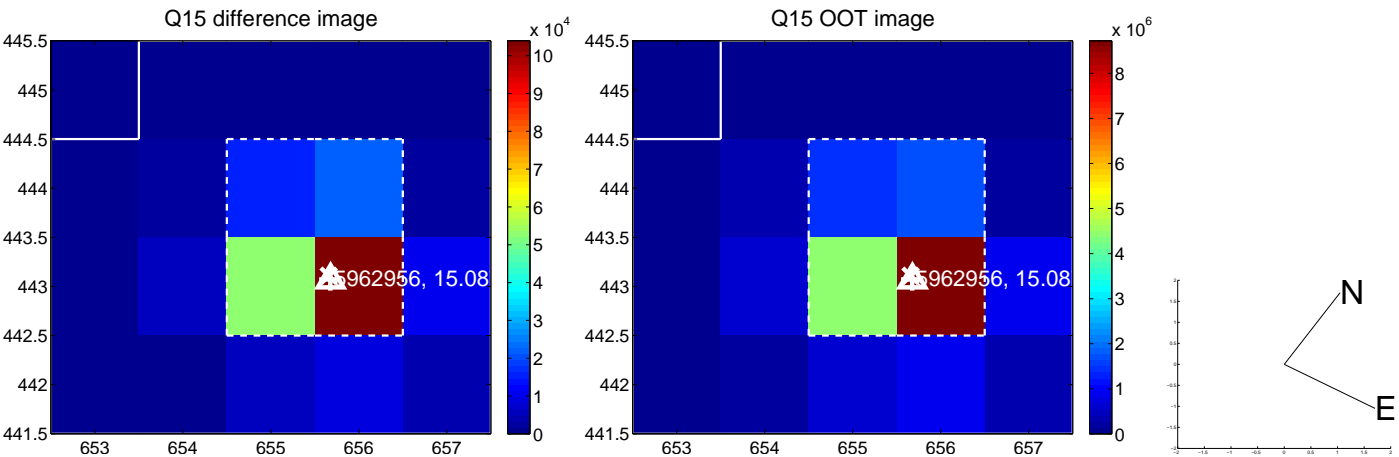
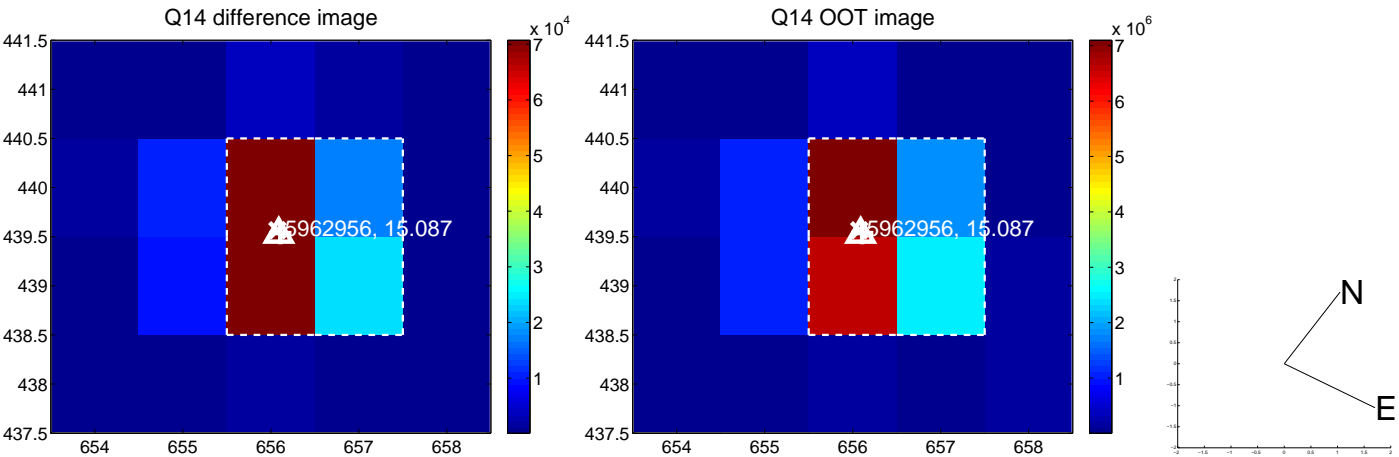
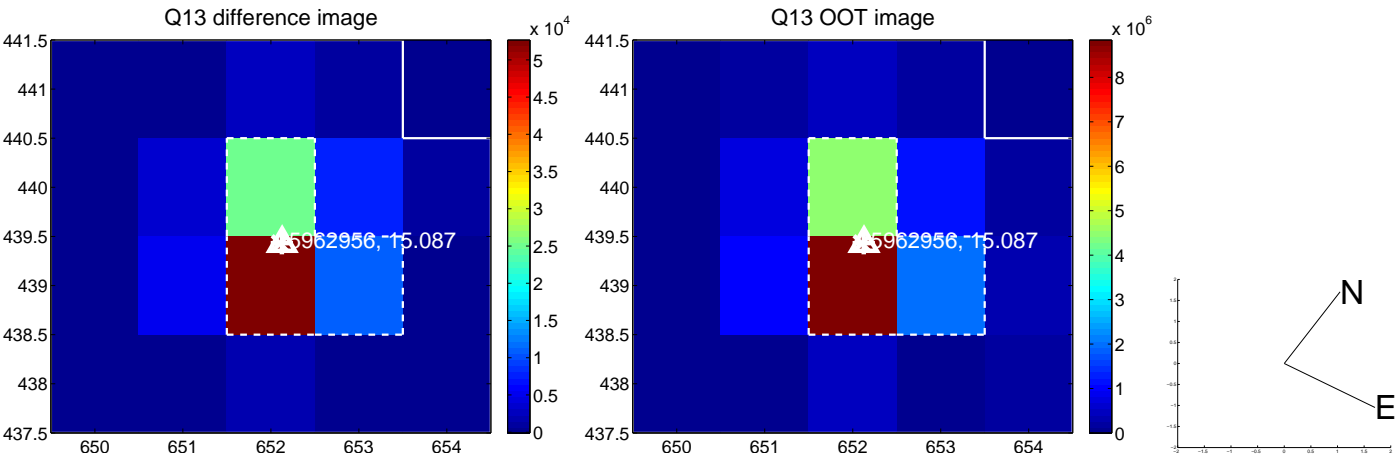
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white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

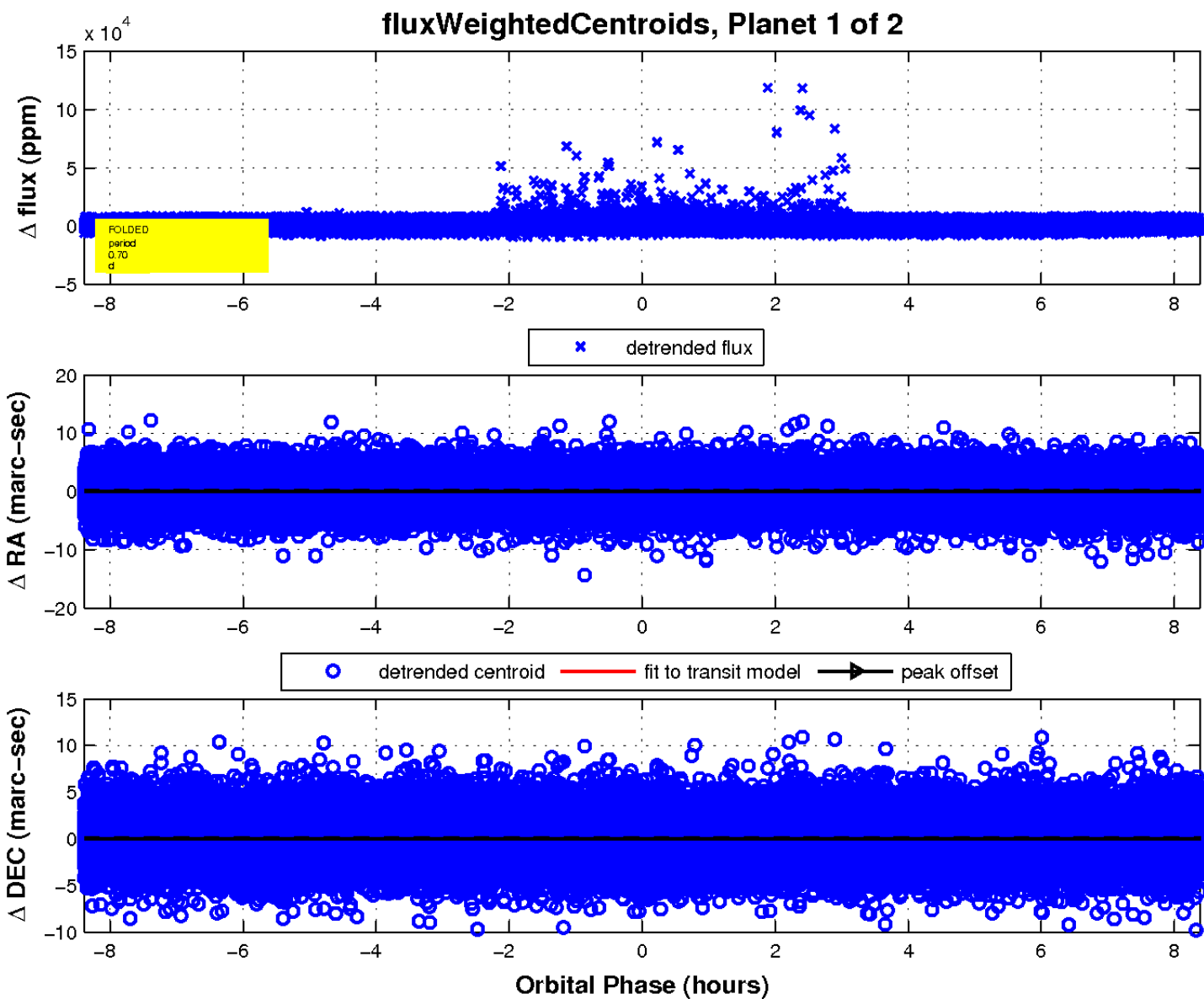
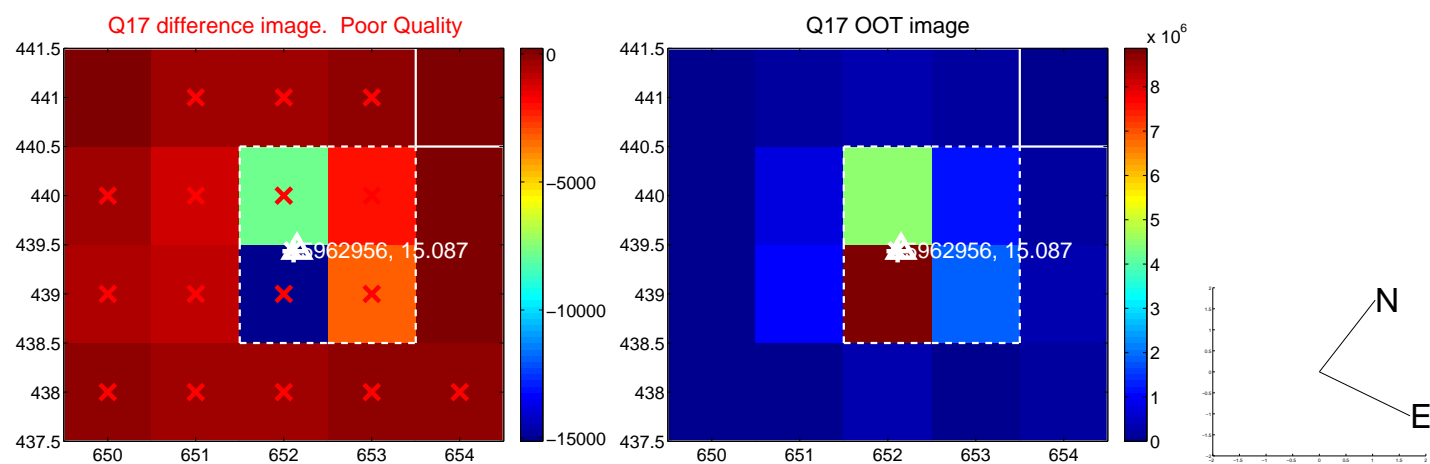


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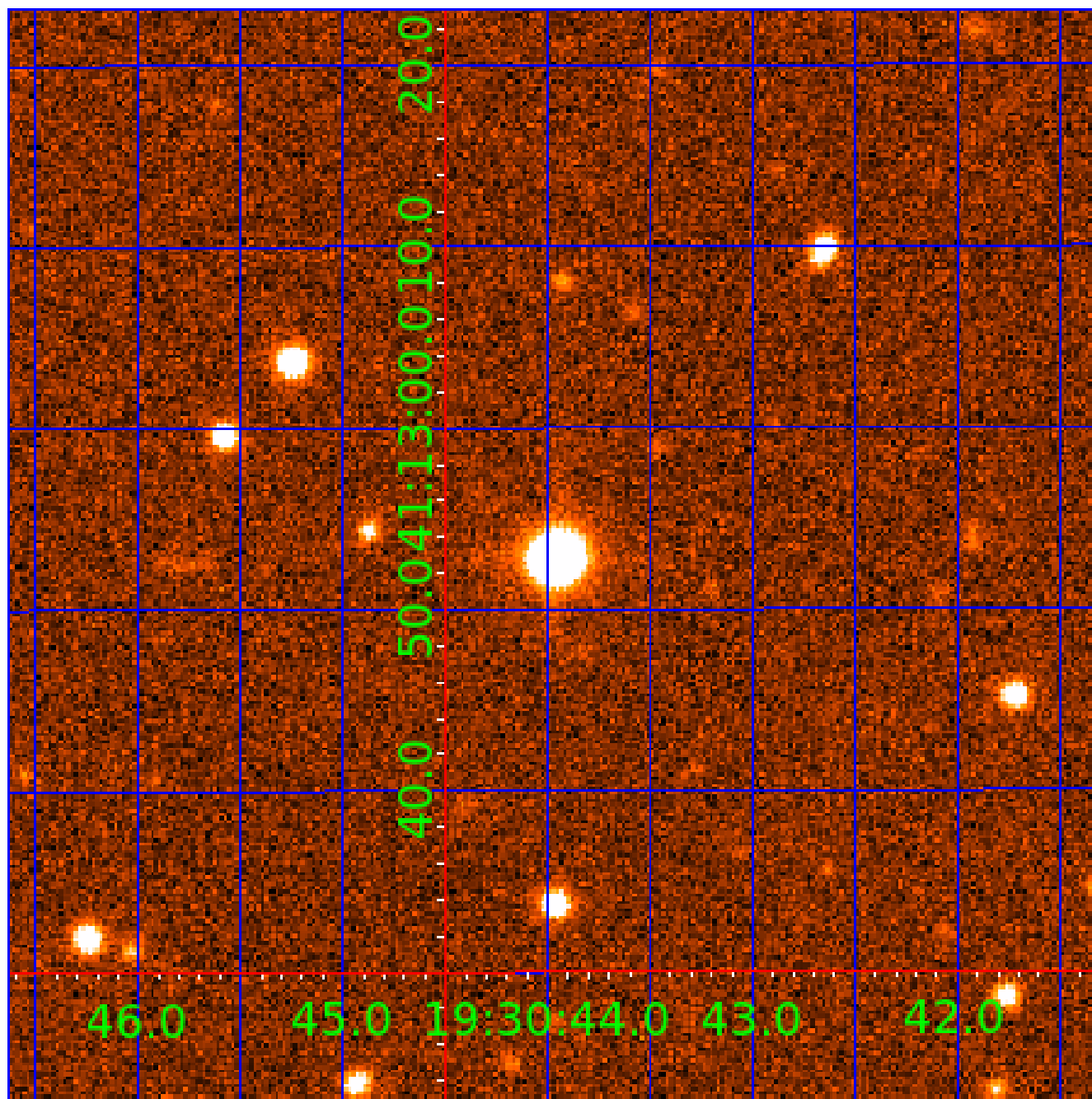


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005962956

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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005962956-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—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

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

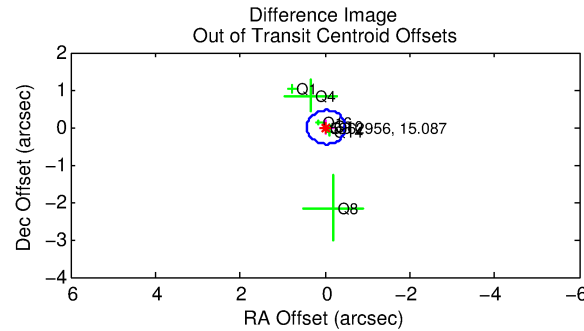
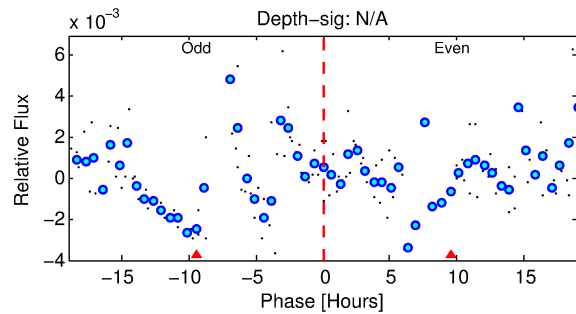
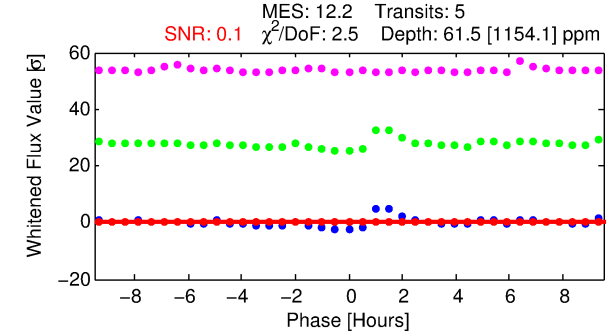
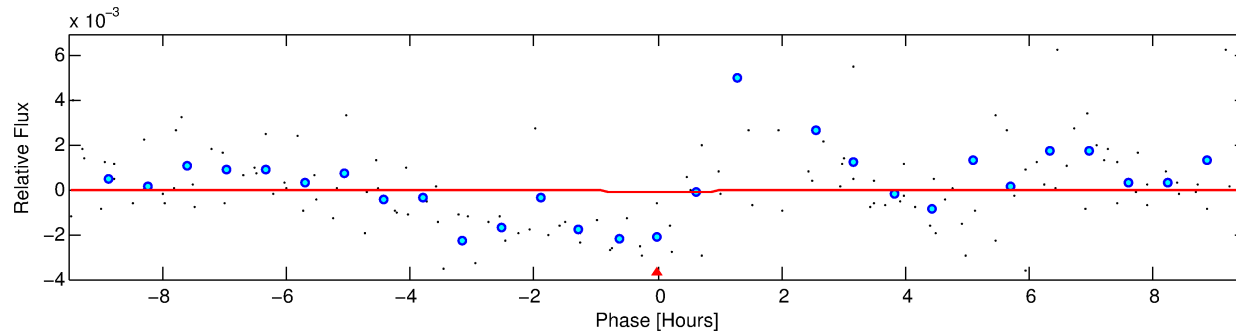
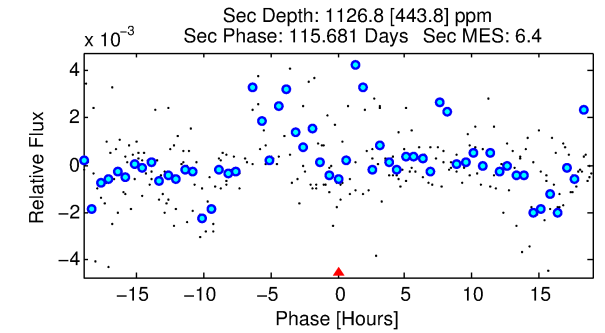
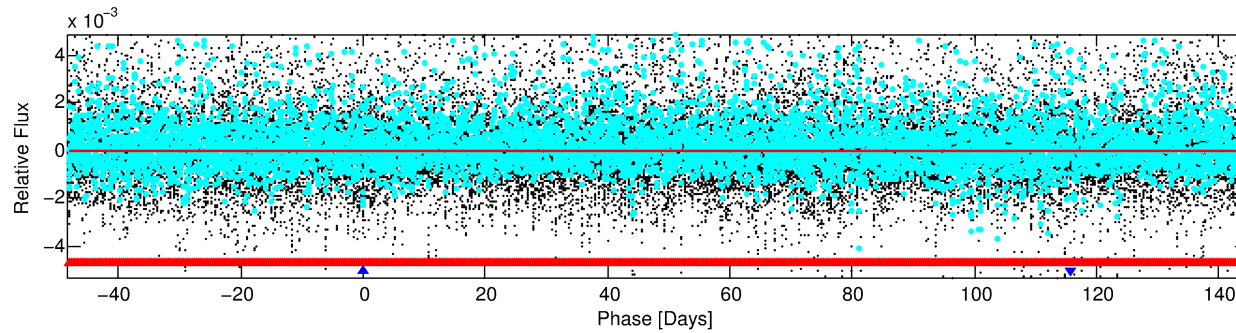
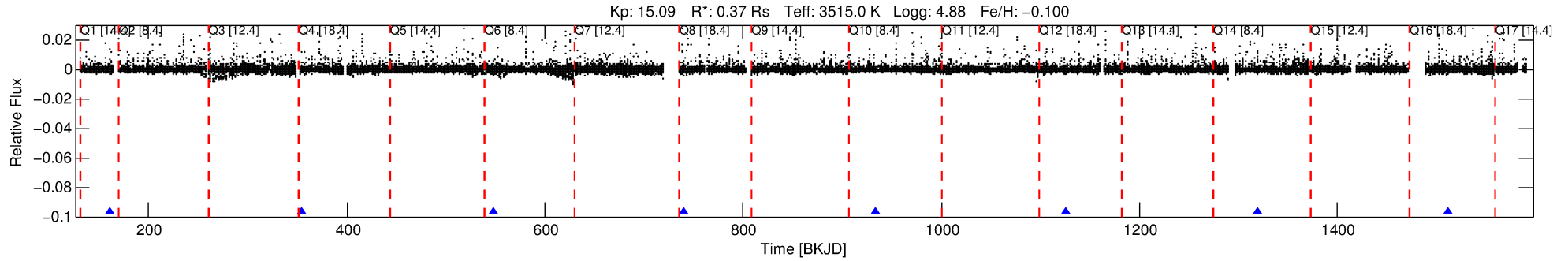
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## Ephemeris Match Information For 005962956-02

No Significant Match Found

# DV One-Page Summary

KIC: 5962956 Candidate: 2 of 2 Period: 192.897 d



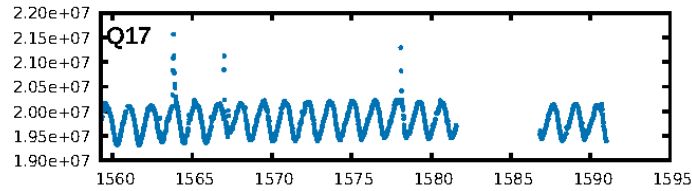
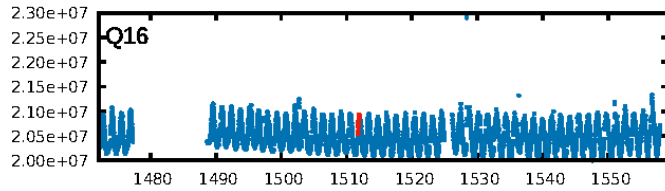
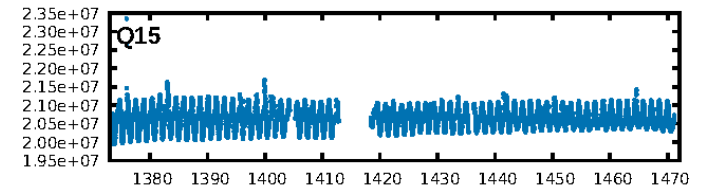
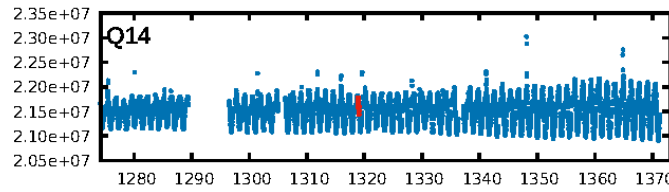
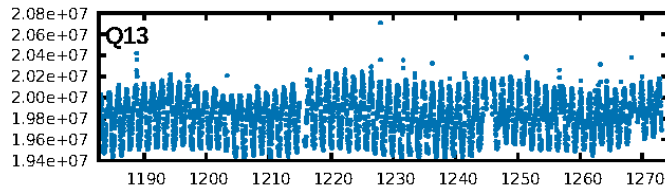
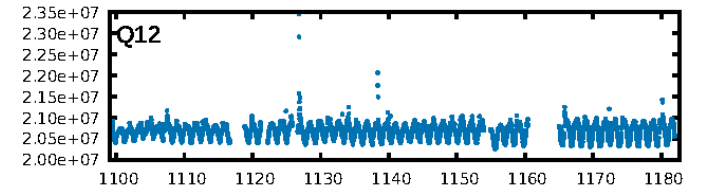
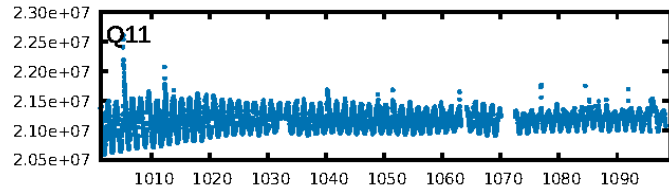
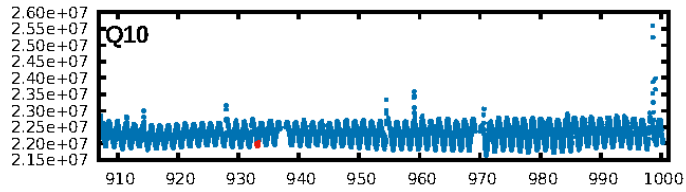
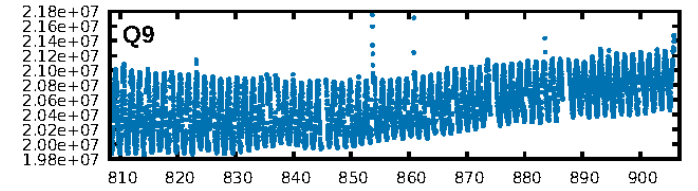
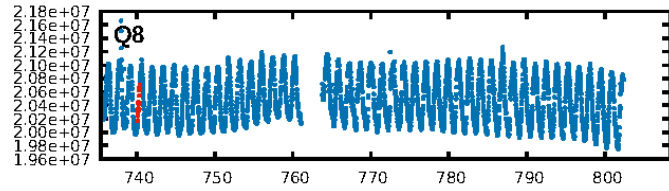
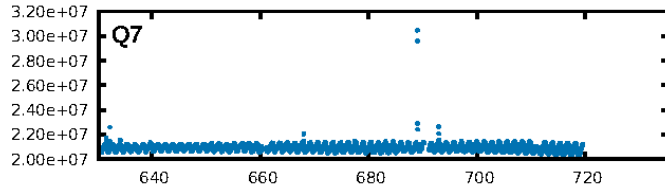
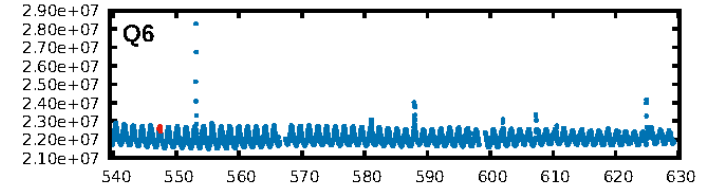
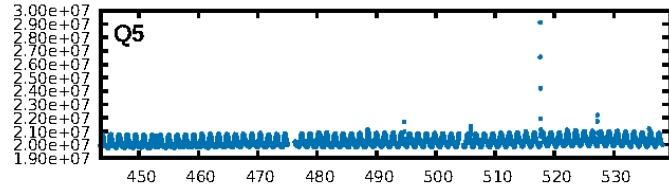
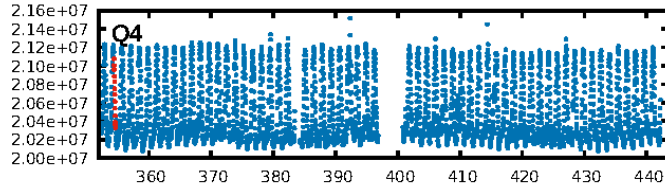
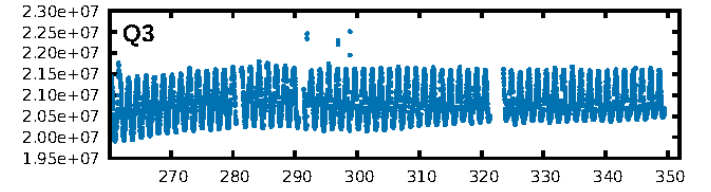
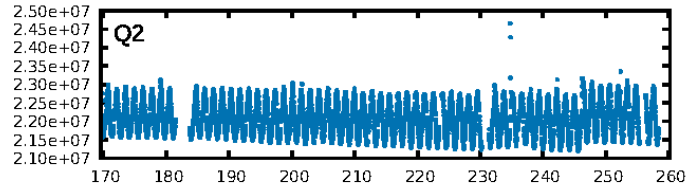
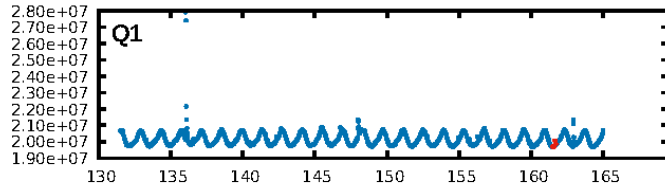
## DV Fit Results:

Period = 192.89686 [0.26063] d  
Epoch = 161.5824 [1.0485] BKJD  
Rp/R\* = 0.0077 [1.3483]  
a/R\* = 322.80 [249387.64]  
b = 0.73 [494.76]  
Seff = 0.08 [0.01]  
Teq = 137 [3] K  
Rp = 0.31 [54.14] Re  
a = 0.4729 [0.0302] AU  
Ag = 1436649.41 [500748202.48] [0.001]  
Teff = 7322 [638014] K [0.01σ]

## DV Diagnostic Results:

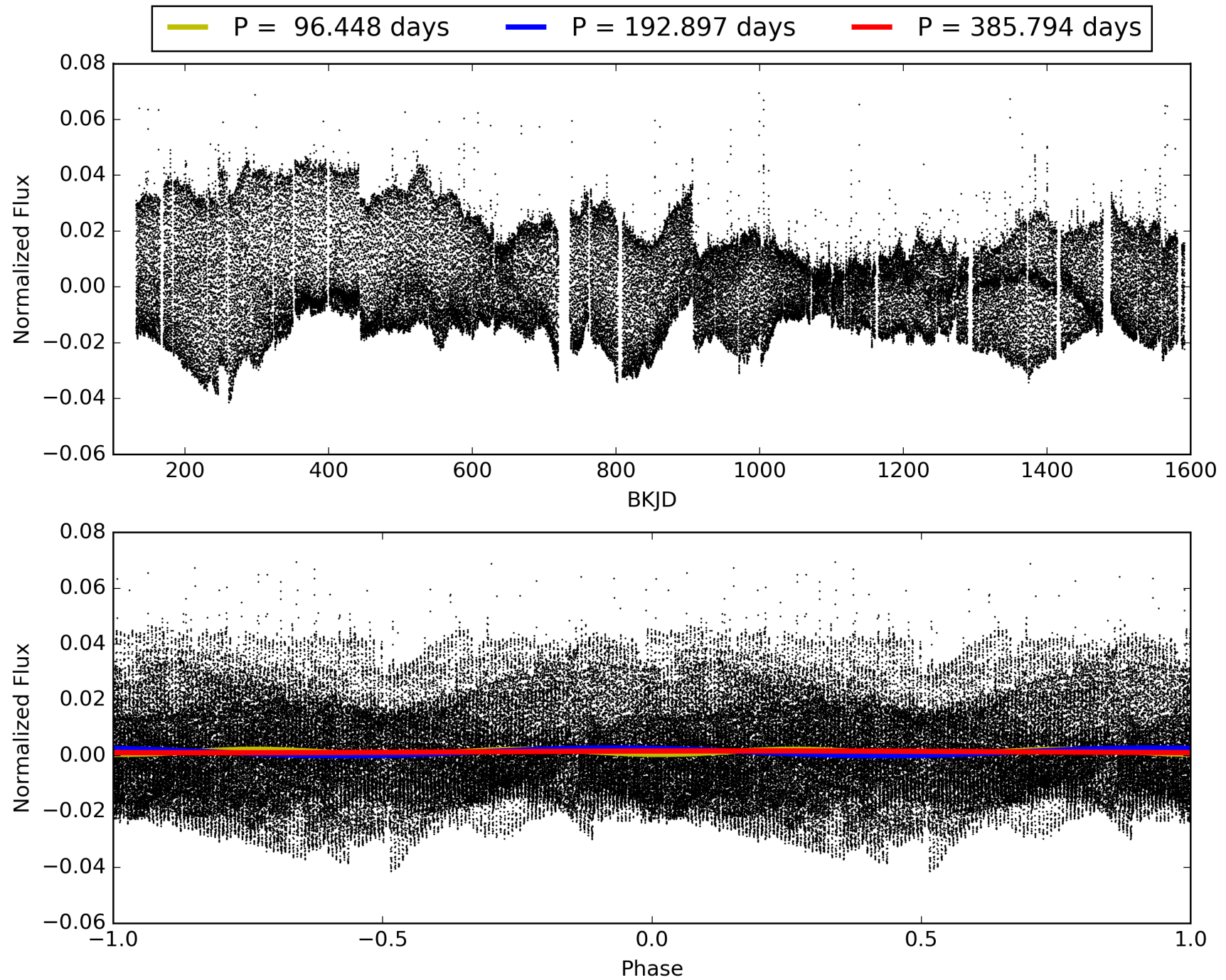
ShortPeriod-sig: 100.0% [1142.55σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 1.3%  
ModelChiSquareGoF-sig: 94.2%  
**Bootstrap-pfa: 1.86e-11**  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: -4.777**  
Centroid-sig: 90.5%  
Centroid-so: 5.779 arcsec [0.29σ]  
OotOffset-rm: 0.026 arcsec [0.17σ]  
KicOffset-rm: 0.120 arcsec [0.50σ]  
OotOffset-st: 3/0/3/1 [7]  
KicOffset-st: 3/0/3/1 [7]  
DiffImageQuality-fgm: 0.43 [3/7]  
DiffImageOverlap-fno: 0.00 [0/7]

# TCE 005962956-02, PDC Light Curves



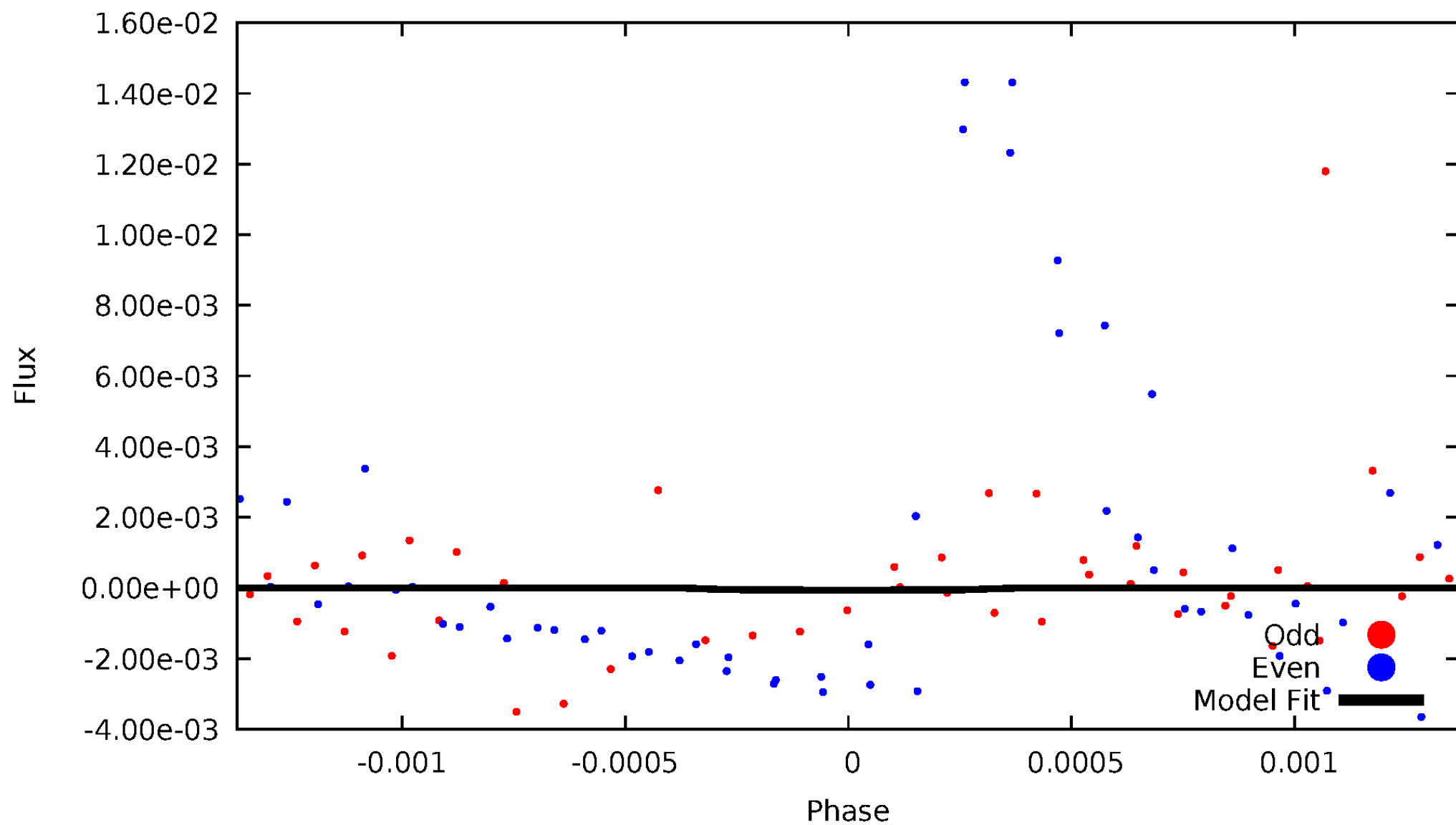


TCE 005962956-02



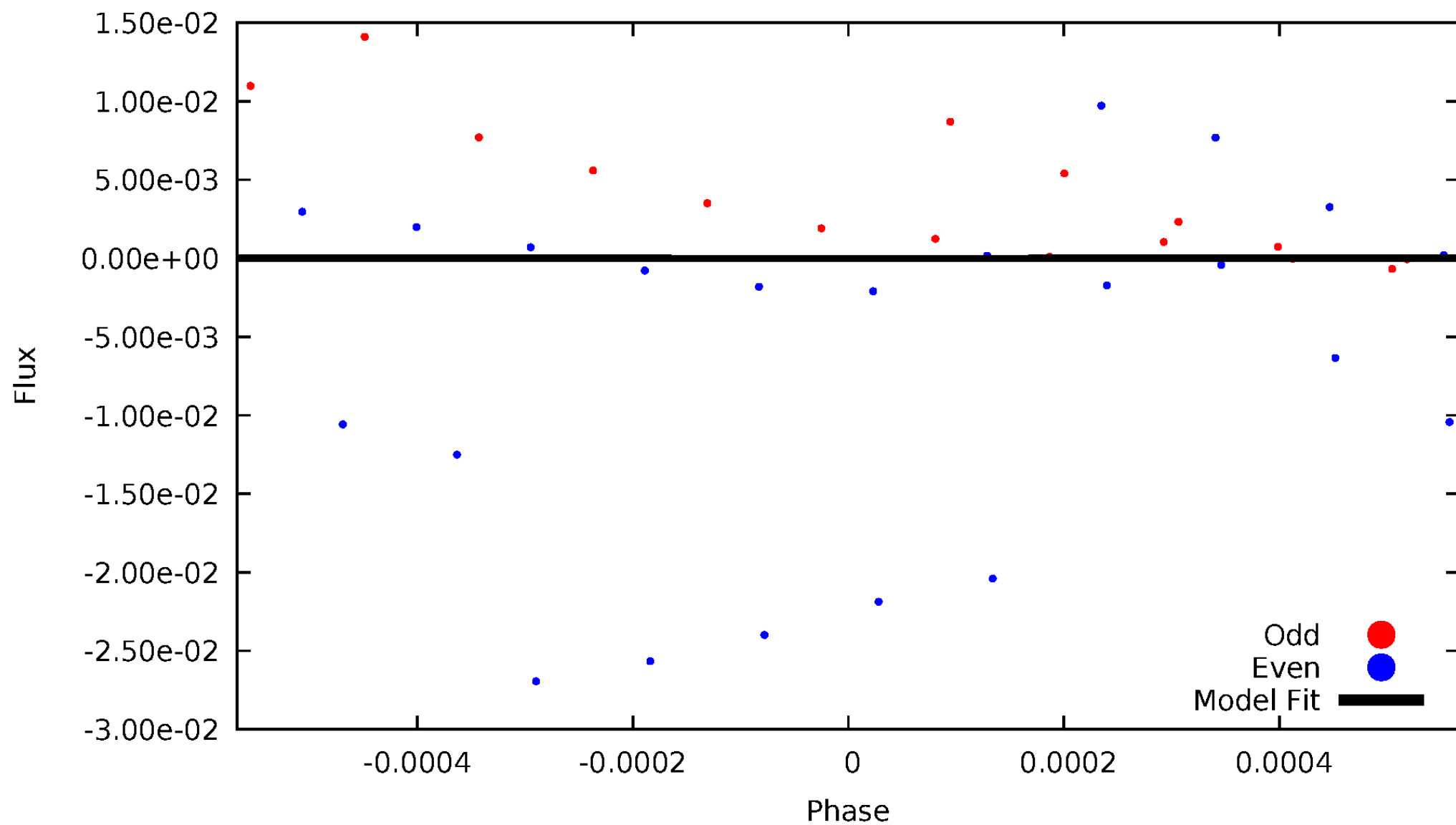
# DV Odd/Even

TCE 005962956-02



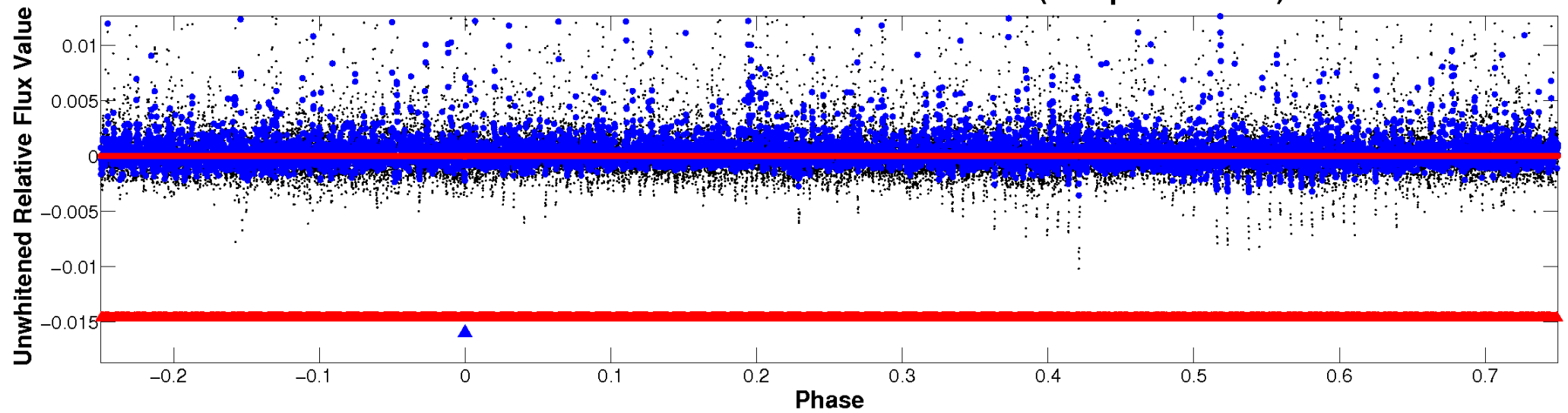
ALT Odd/Even

TCE 005962956-02

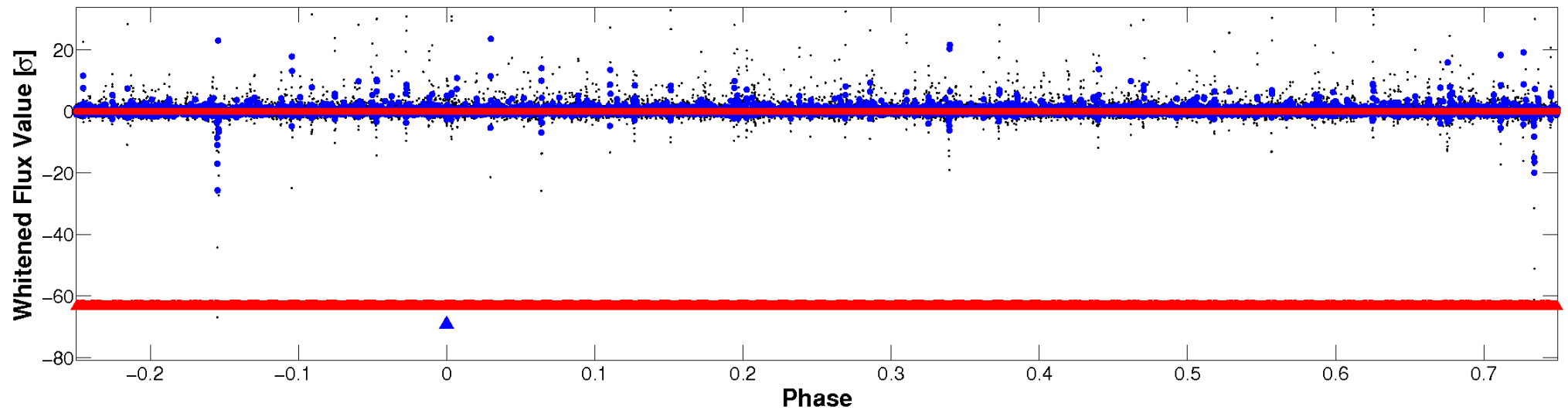


# Non-Whitened Vs. Whitened Light Curve

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

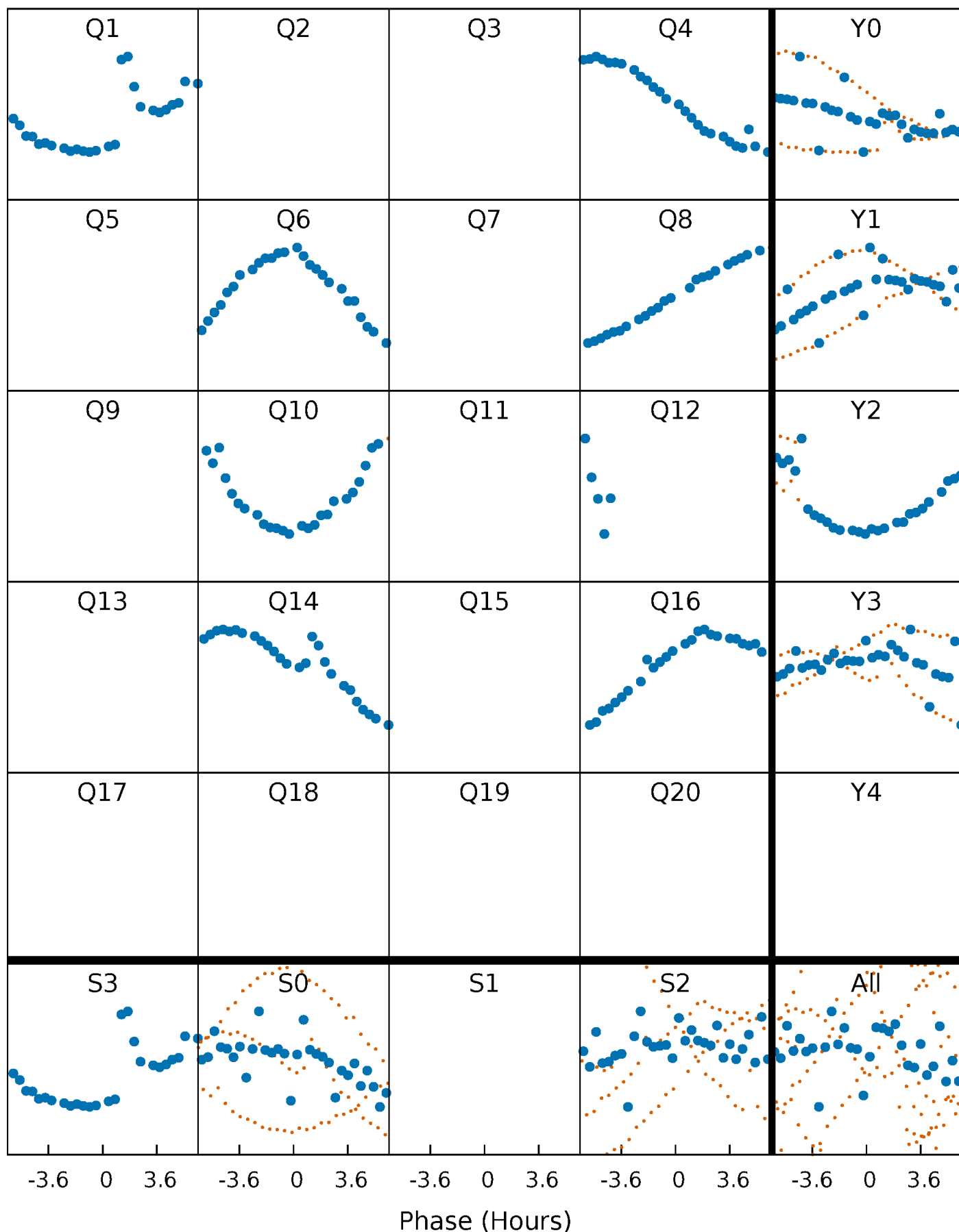


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



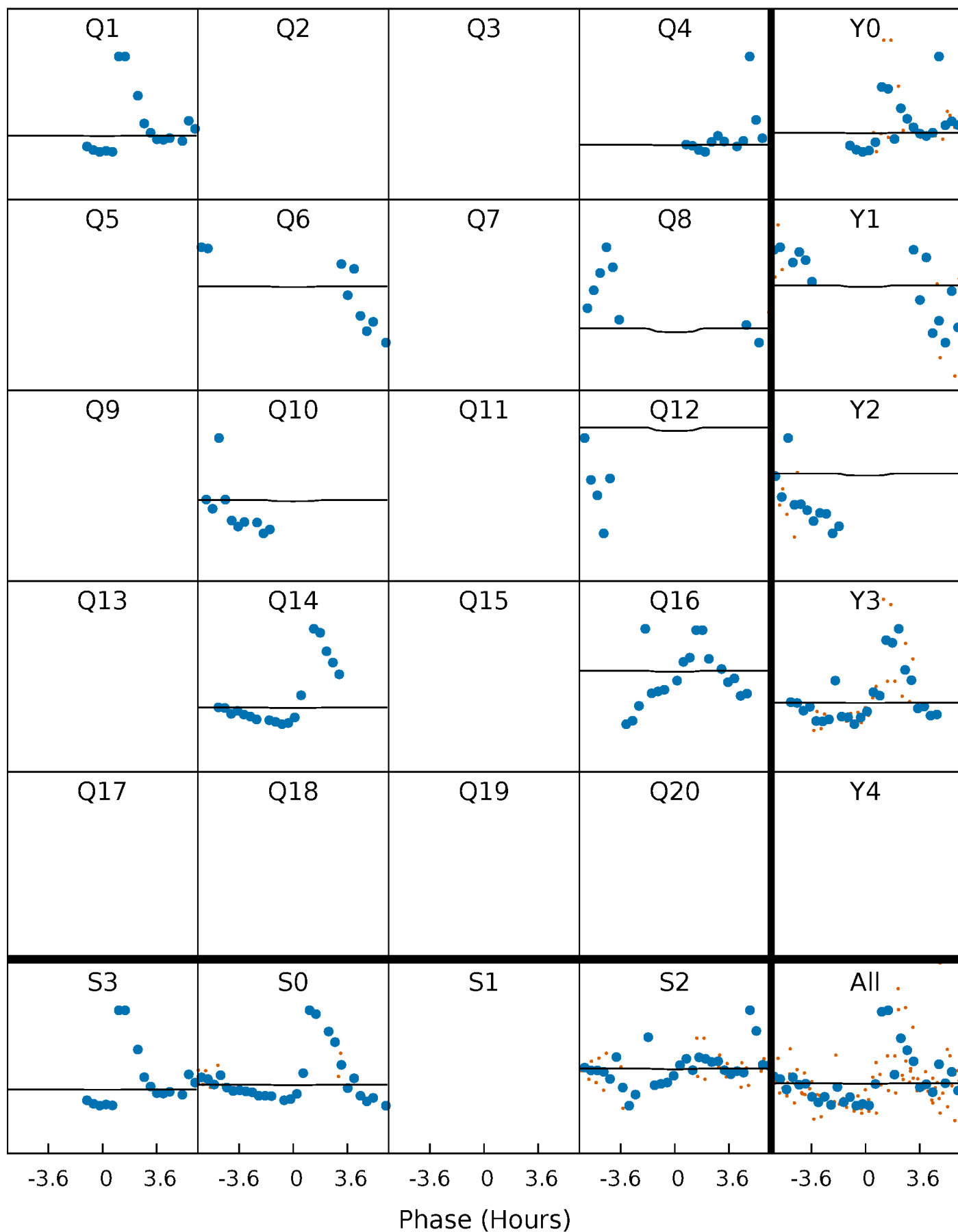
# PDC Quarter-Phased Transit Curves

TCE 005962956-02 P=192.896857 Days  $T_0=161.582406$  (BKJD)



# DV Quarter-Phased Transit Curves

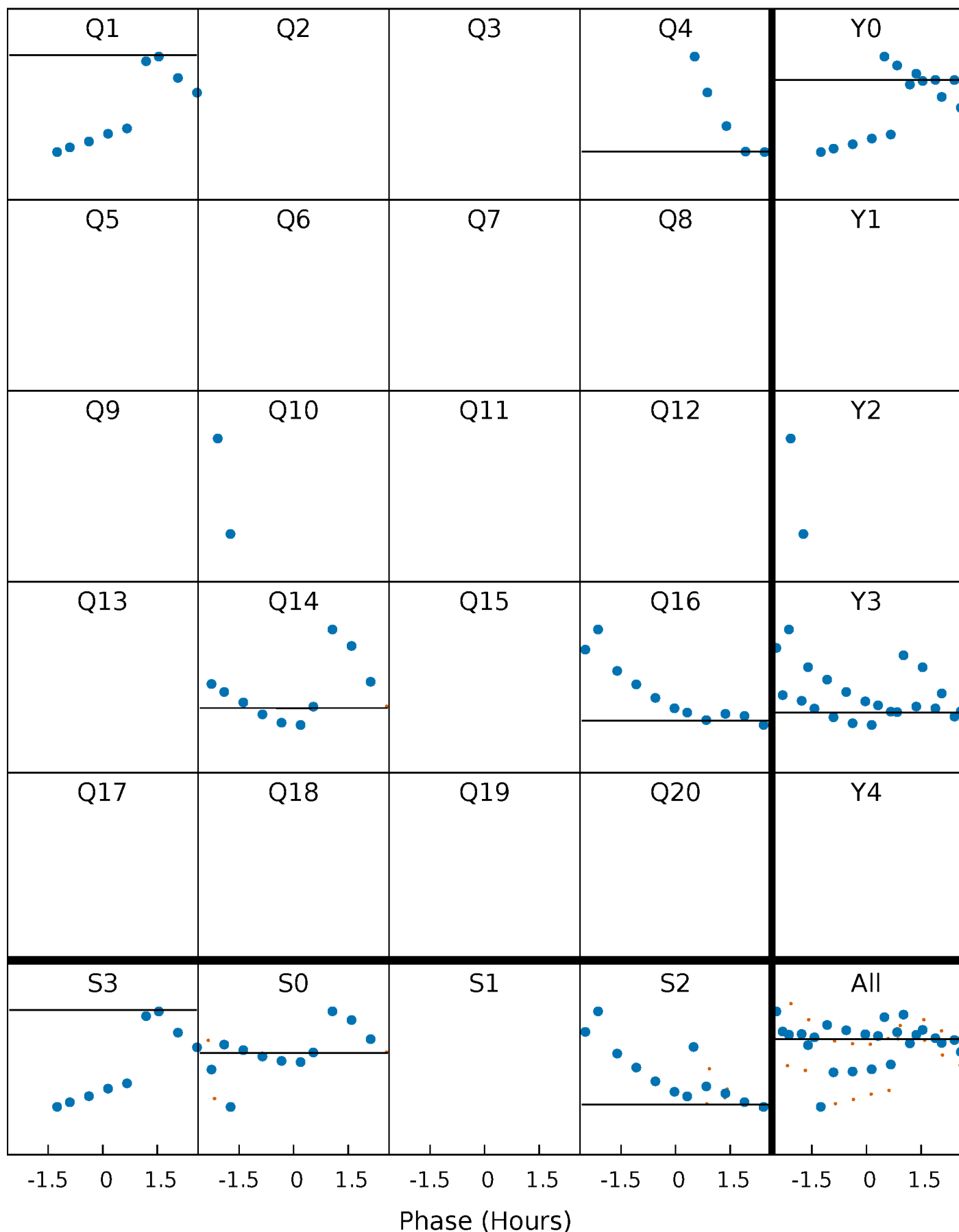
TCE 005962956-02 P=192.896857 Days  $T_0=161.582406$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

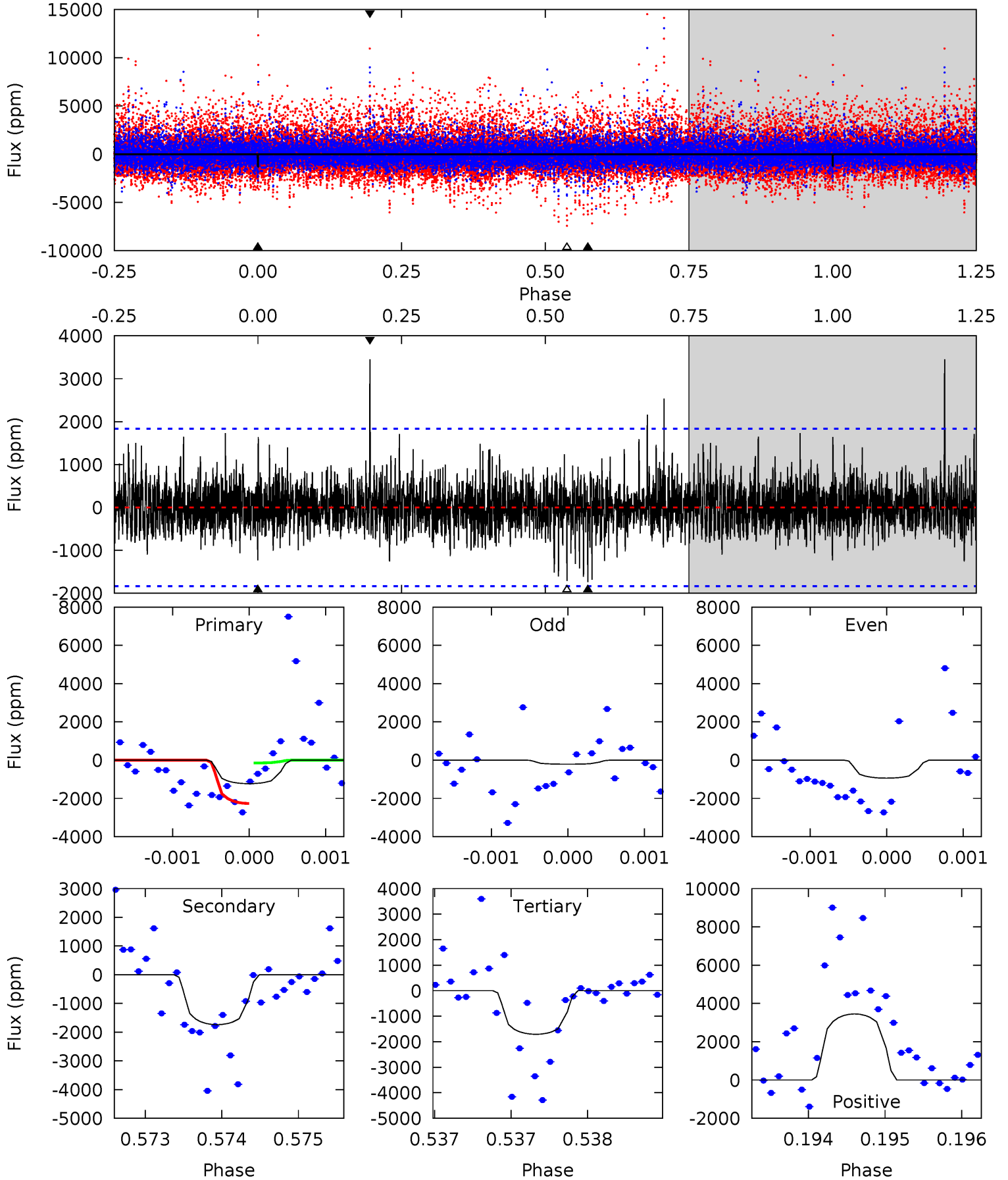
TCE 005962956-02 P=192.896896 Days  $T_0=161.586458$  (BKJD)



# DV Model-Shift Uniqueness Test

005962956-02, P = 192.896857 Days, E = 161.582406 Days

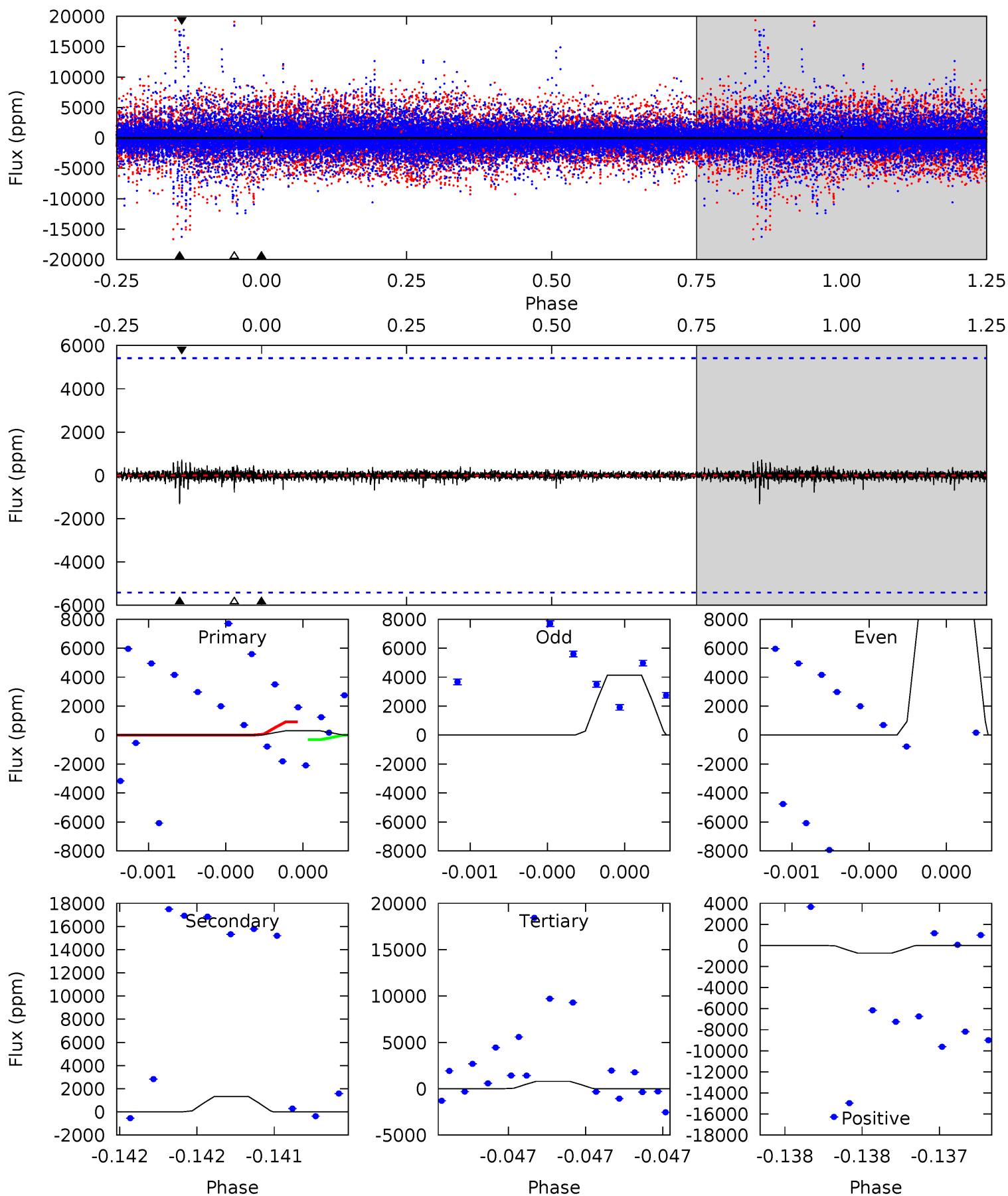
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.68	5.21	5.12	10.3	5.50	3.37	1.27	-1.44	-6.67	0.09	-5.13	0.92	-8.01	0.66	3.20



# Alt Model-Shift Uniqueness Test

005962956-02, P = 192.896896 Days, E = 161.586458 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.31	1.37	0.82	0.76	5.63	3.56	0.10	-0.51	-0.45	0.56	0.62	4.39	5.16	0.36	0.31



### Stellar Parameters For KIC 005962956

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$3515^{+42}_{-47}$	$4.885^{+0.035}_{-0.031}$	$-0.100^{+0.100}_{-0.100}$	$0.368^{+0.029}_{-0.032}$	$0.381^{+0.035}_{-0.039}$	$10.800^{+1.889}_{-1.608}$
	+1%/-1%	+1%/-1%	+100%/-100%	+8%/-9%	+9%/-10%	+17%/-15%
Source	PHO2	PHO2	PHO2	DSEP		

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

### Secondary Eclipse Parameters for KIC 005962956-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-1740 \pm 334$	$37.30^{+38.21}_{-26.76}$	$191^{+3}_{-4}$	$1689^{+502}_{-186}$	$149^{+1892}_{-110}$
Alt.	$-1323 \pm 963$	$35.77^{+38.69}_{-25.12}$	$191^{+3}_{-4}$	$1619^{+439}_{-265}$	$94^{+1039}_{-83}$

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

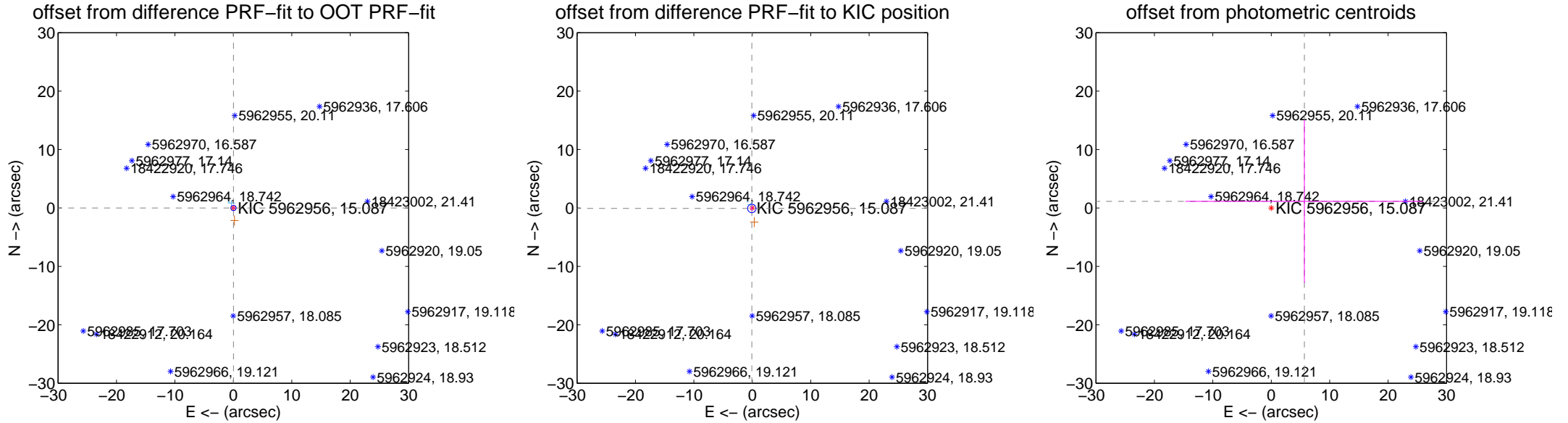
# DV Centroid Data

Supplemental centroid analysis for 005962956-02. Kepler magnitude: 15.09. Transit SNR 0.11

There are 3 quarters with good PRF difference image offsets

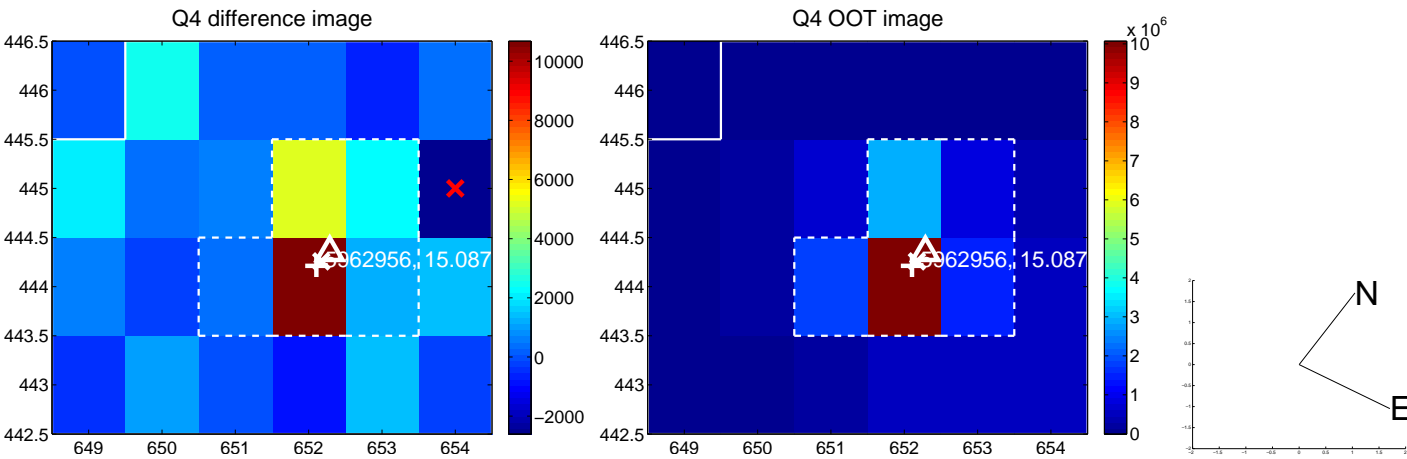
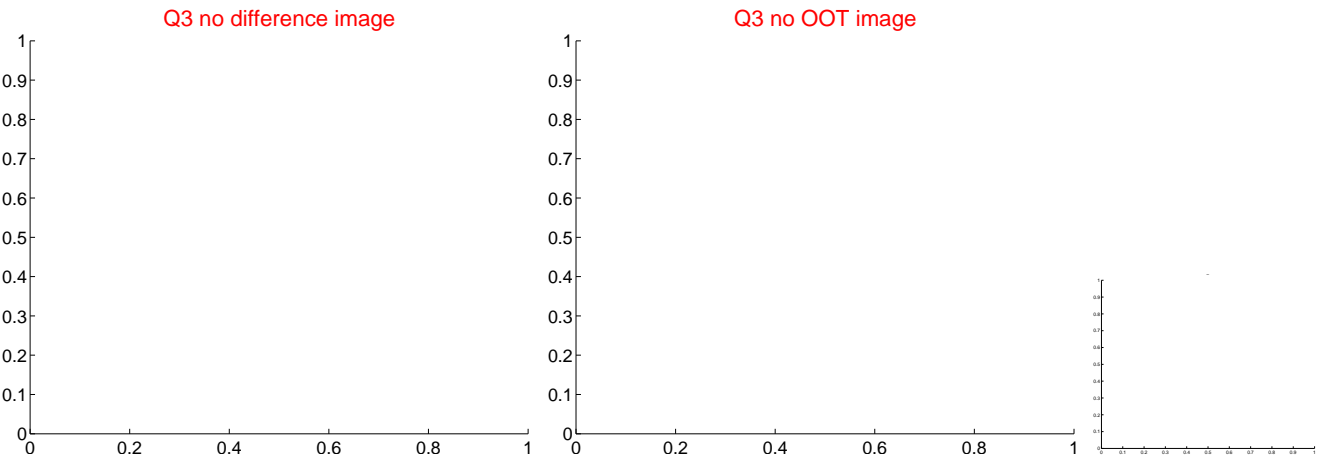
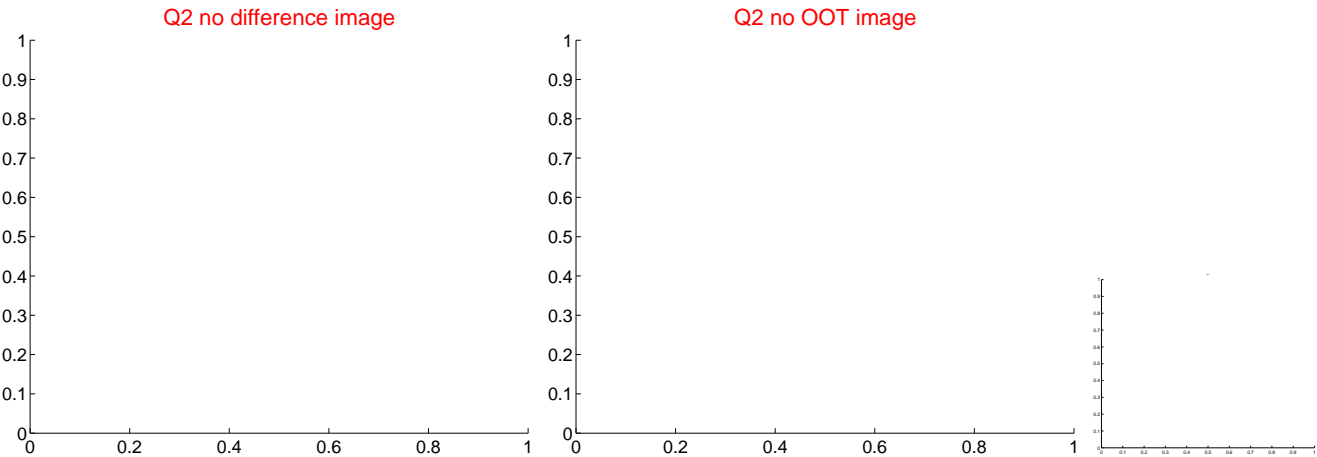
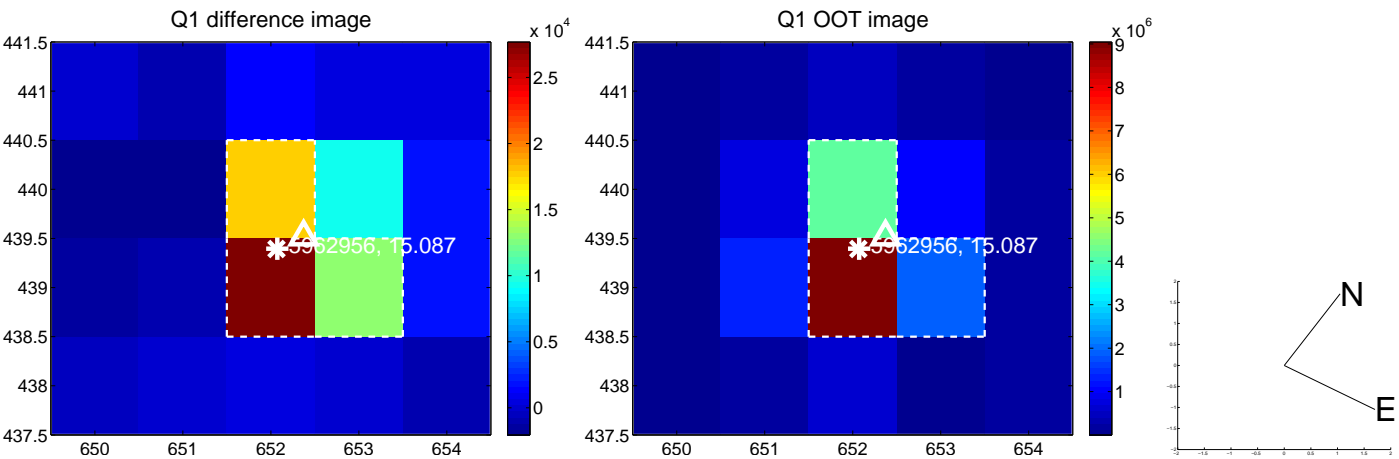
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.026 \pm 0.151$	0.17	$-0.026 \pm 0.151$	$-0.001 \pm 0.154$
PRF-fit source offset from KIC position	$0.120 \pm 0.241$	0.50	$0.085 \pm 0.124$	$-0.085 \pm 0.417$
photometric centroid source offset	$5.78 \pm 20.15$	0.29	$-5.67 \pm 20.35$	$1.13 \pm 13.95$



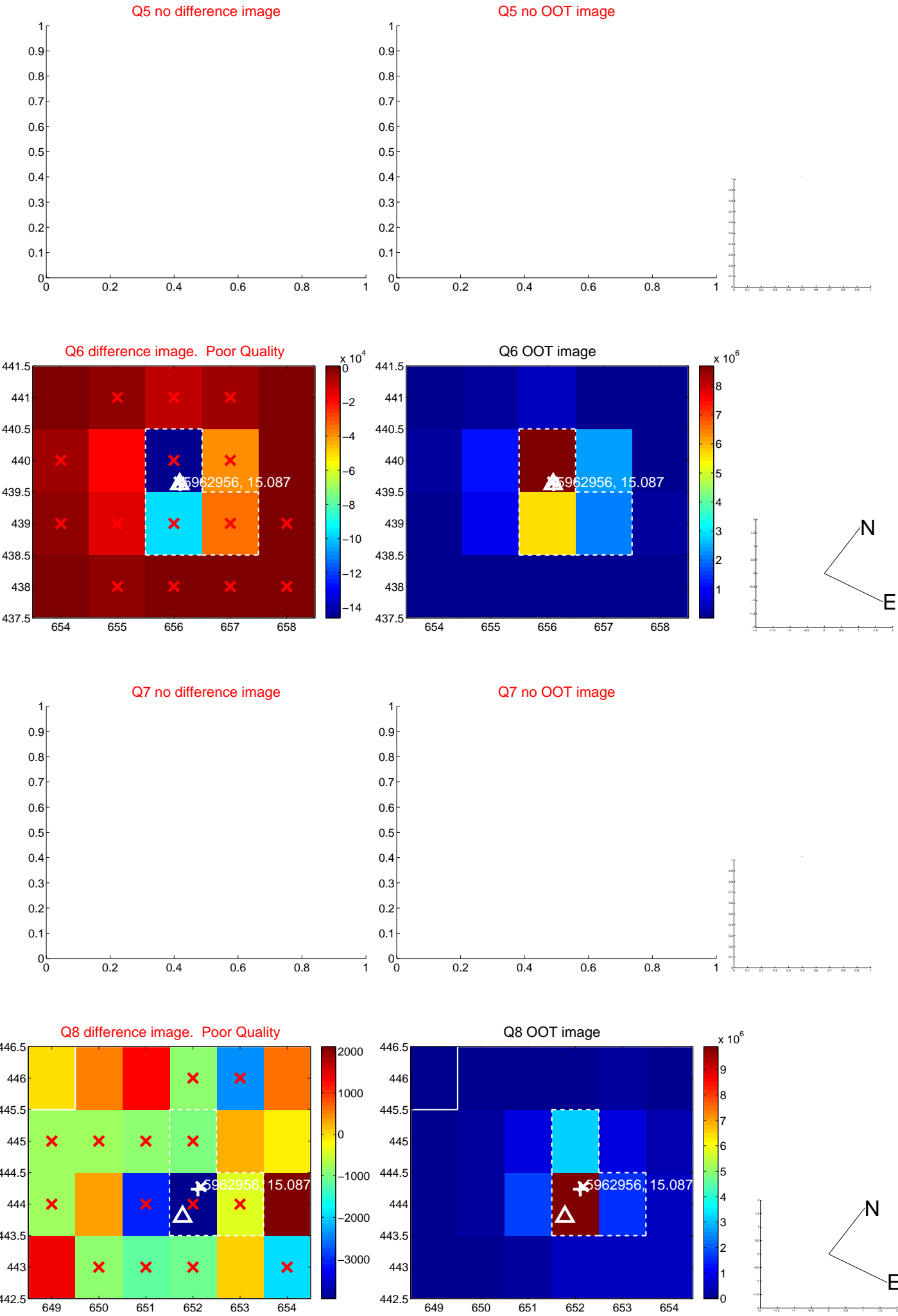
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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





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



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

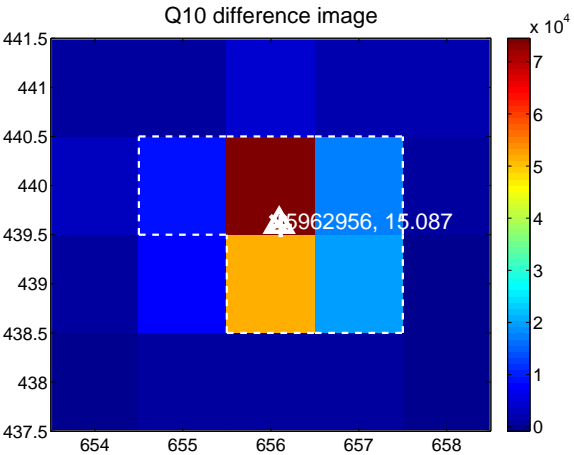
Q9 no difference image



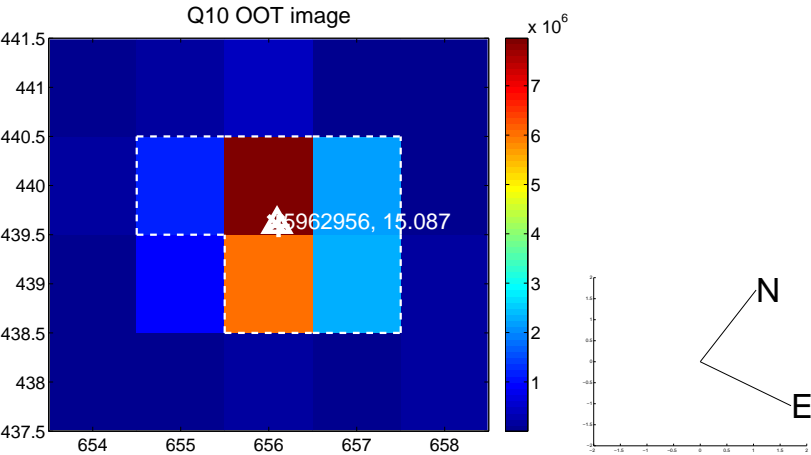
Q9 no OOT image



Q10 difference image



Q10 OOT image



Q11 no difference image



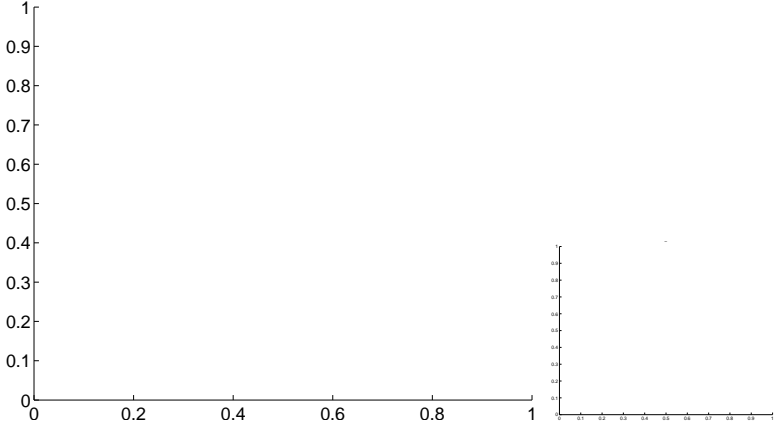
Q11 no OOT image



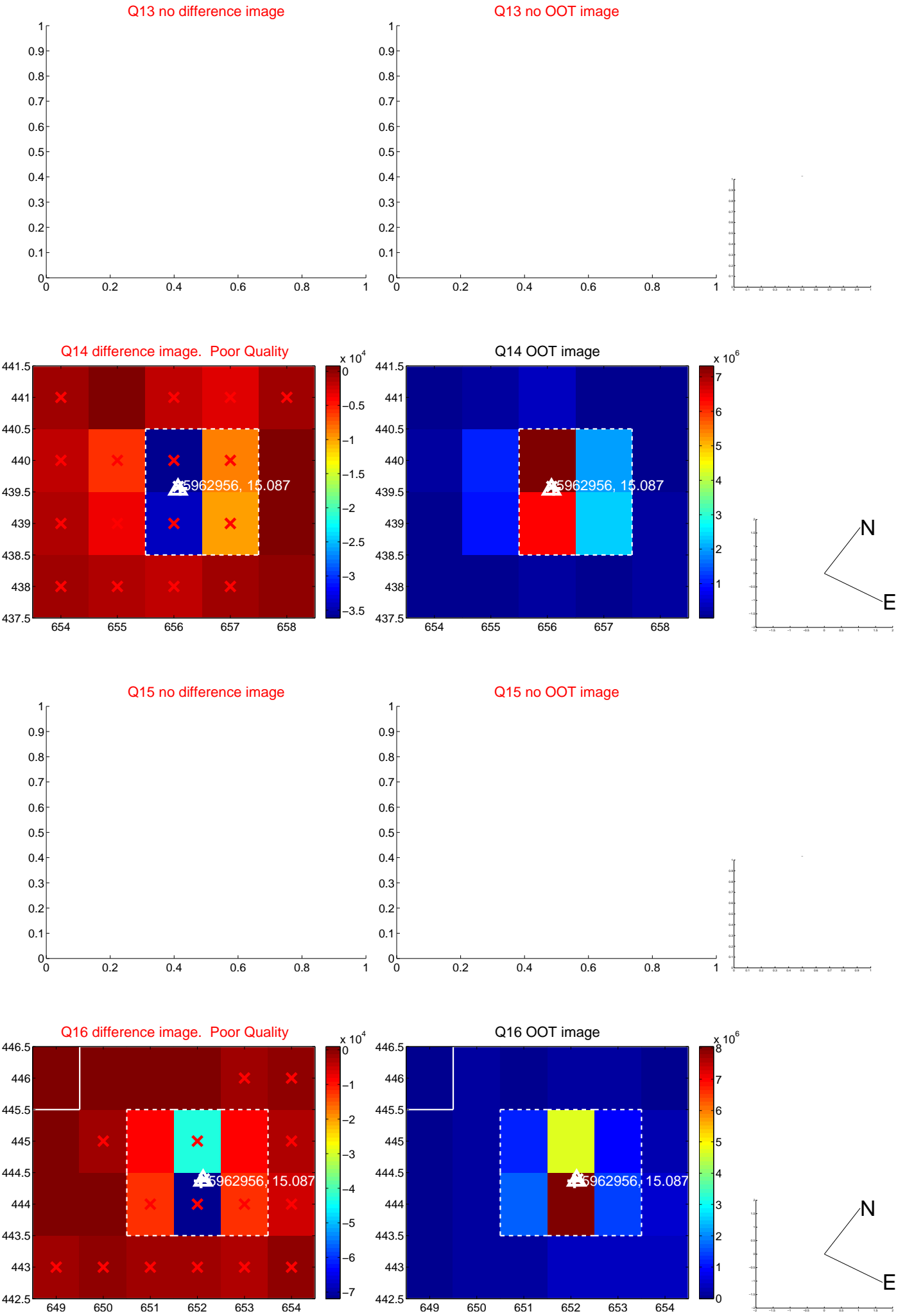
Q12 no difference image



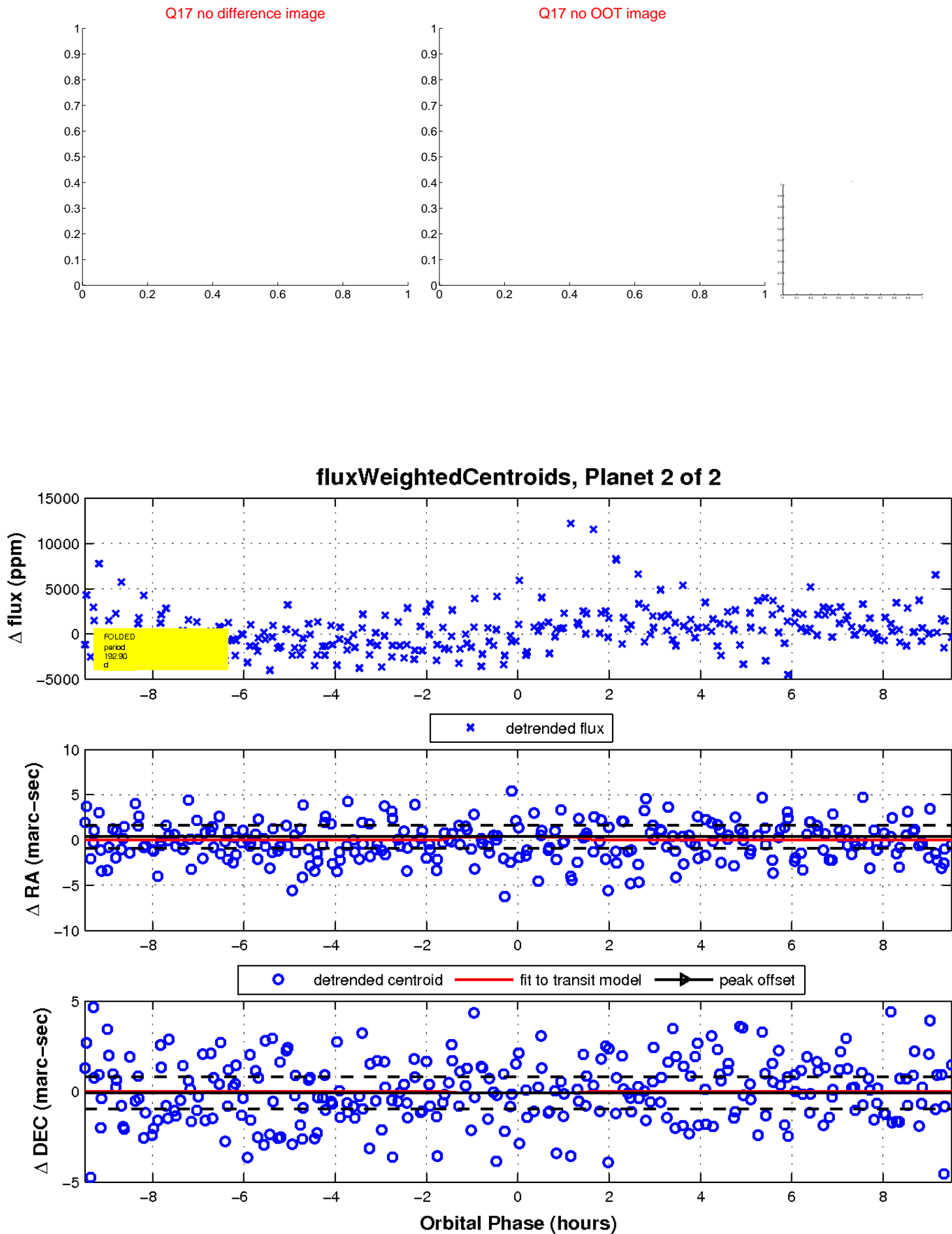
Q12 no OOT image



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



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



UKIRT Image

Declination

