

# KIC 007060736

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007060736-01	OBS	No	3.469590	134.680120	152.2	9.215	12.6	14.2	0.95	6283	2.04	624.62
007060736-02	OBS	No	3.470044	133.747134	77.2	8.394	8.5	9.3	0.95	6283	1.03	624.51
007060736-03	OBS	No	316.224992	304.810634	711.2	6.542	7.9	6.5	0.95	6283	2.73	1.52
007060736-04	OBS	No	3.469299	131.650094	109.0	33.660	8.5	11.3	0.95	6283	1.17	624.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007060736-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007060736-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
007060736-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007060736-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—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.

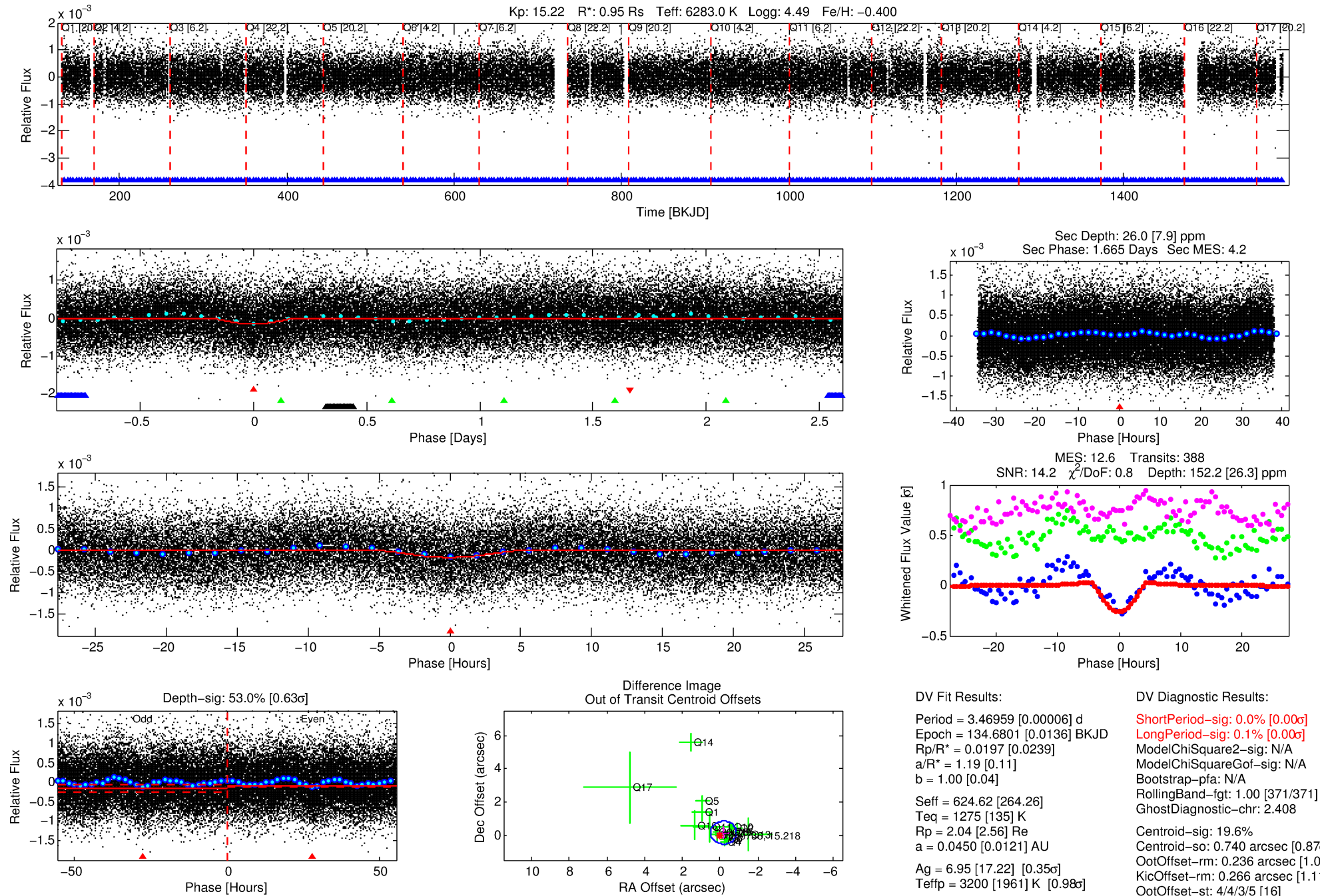
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007060736-01

No Significant Match Found

# DV One-Page Summary

KIC: 7060736 Candidate: 1 of 4 Period: 3.470 d



## DV Fit Results:

Period = 3.46959 [0.00006] d  
Epoch = 134.6801 [0.0136] BKJD  
Rp/R\* = 0.0197 [0.0239]  
a/R\* = 1.19 [0.11]  
b = 1.00 [0.04]  
Seff = 624.62 [264.26]  
Teff = 1275 [135] K  
Rp = 2.04 [2.56] Re  
a = 0.0450 [0.0121] AU  
Ag = 6.95 [17.22] [0.35σ]  
Teffp = 3200 [1961] K [0.98σ]

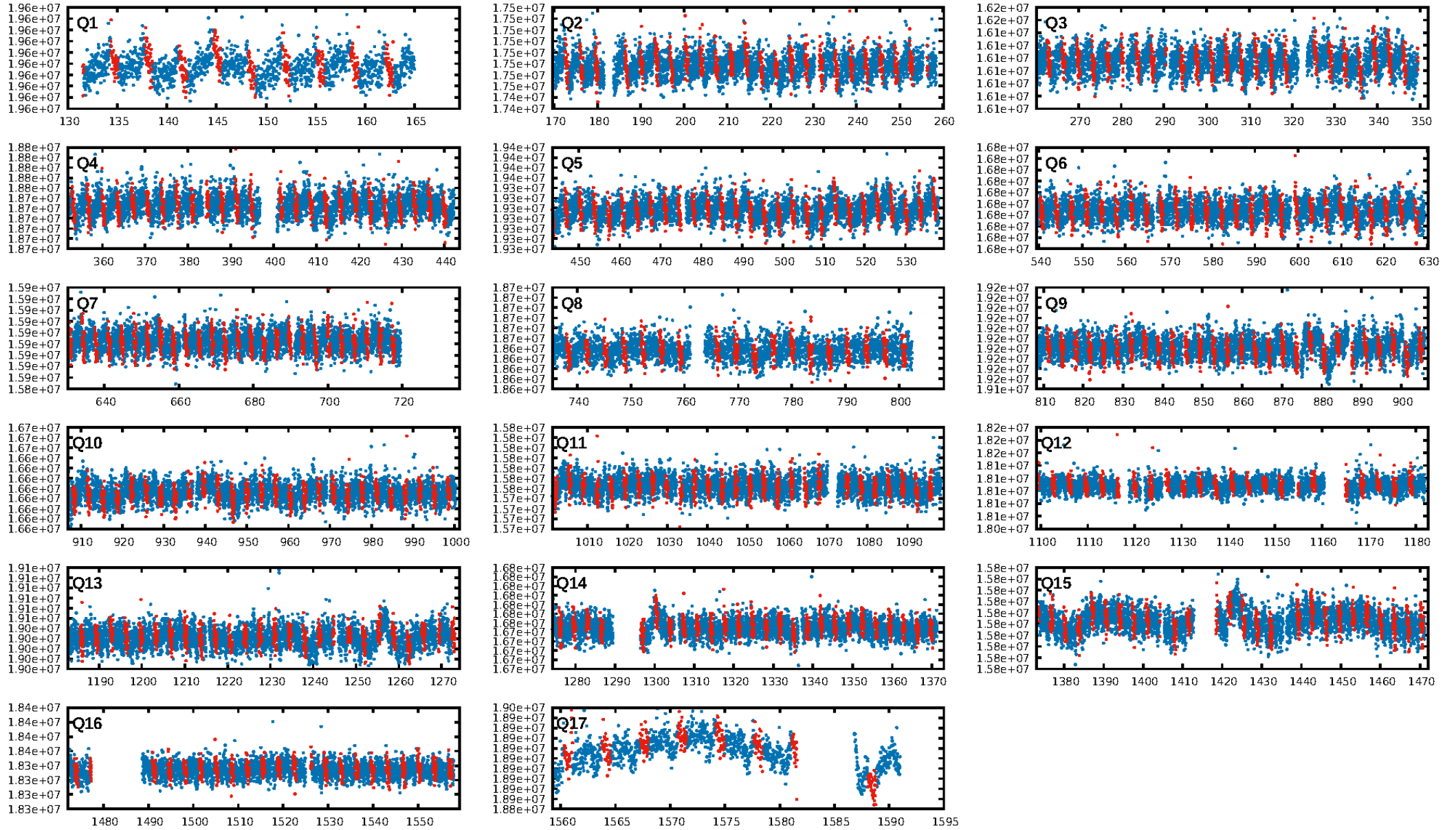
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [371/371]  
GhostDiagnostic-chr: 2.408  
Centroid-sig: 19.6%  
Centroid-so: 0.740 arcsec [0.87σ]  
OotOffset-rm: 0.236 arcsec [1.03σ]  
KicOffset-rm: 0.266 arcsec [1.11σ]  
OotOffset-st: 4/4/3/5 [16]  
KicOffset-st: 4/4/3/5 [16]  
DiffImageQuality-fgm: 0.81 [13/16]  
DiffImageOverlap-fno: 0.00 [0/17]

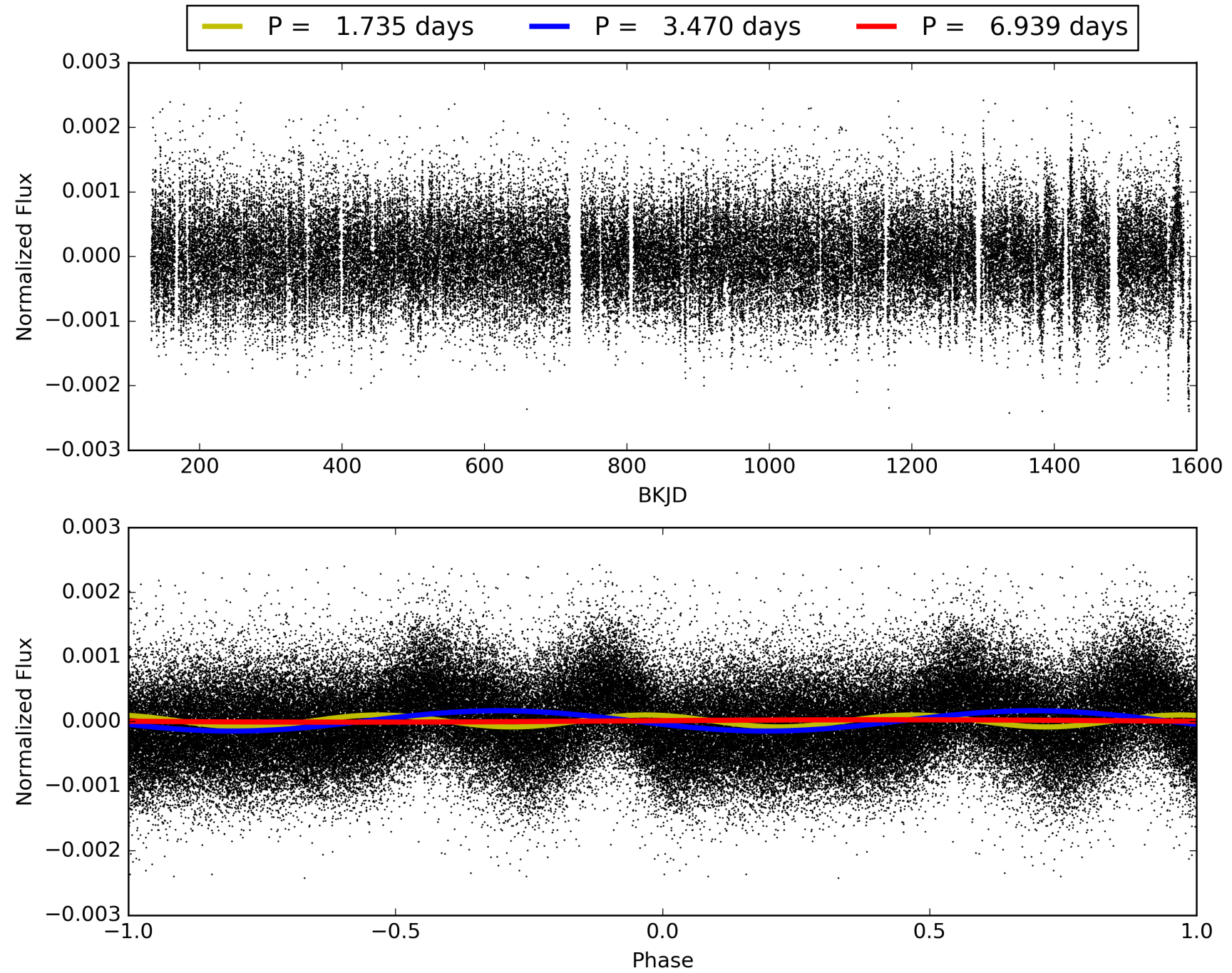
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:38:19 Z

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

# TCE 007060736-01, PDC Light Curves



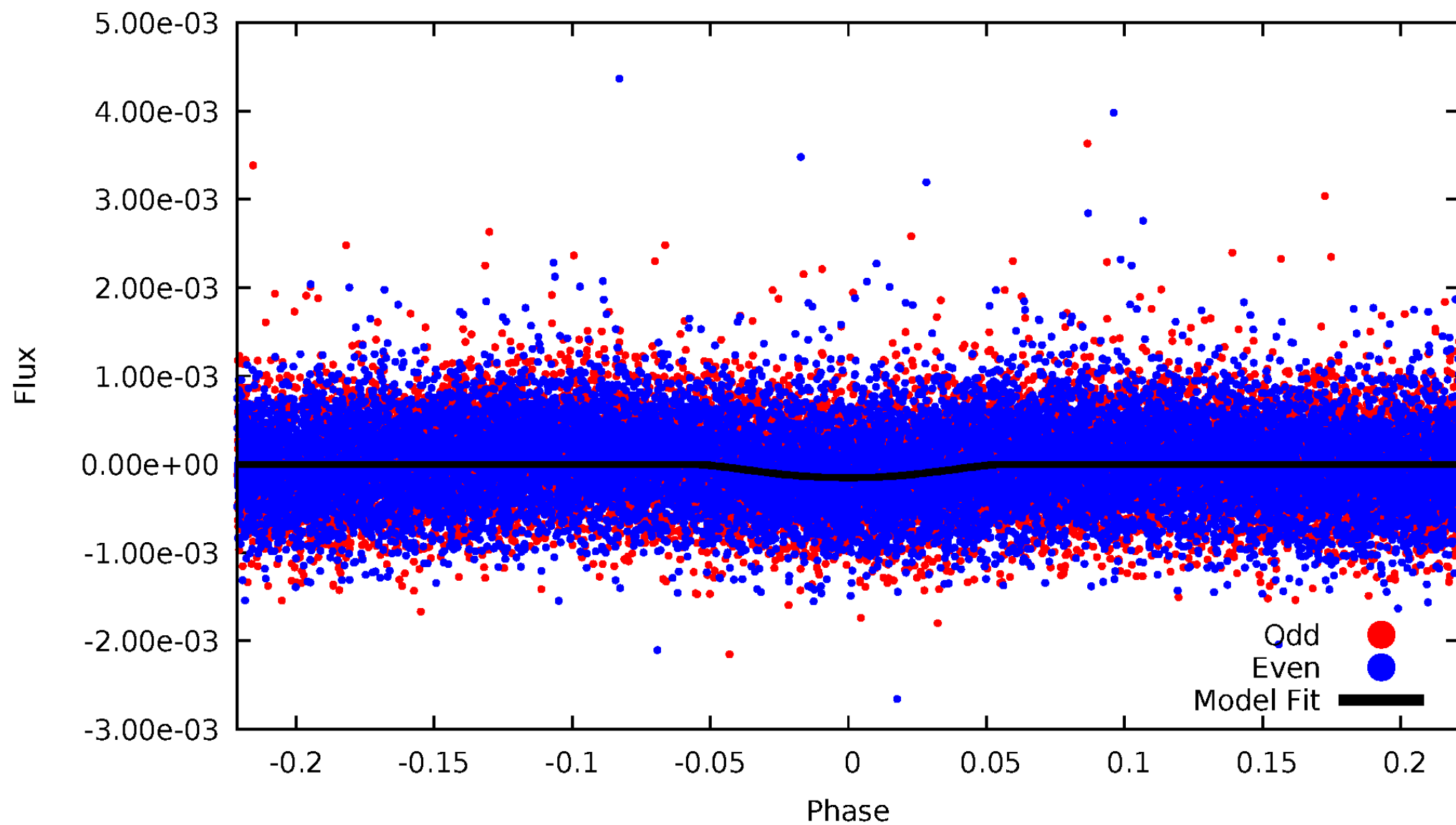
TCE 007060736-01





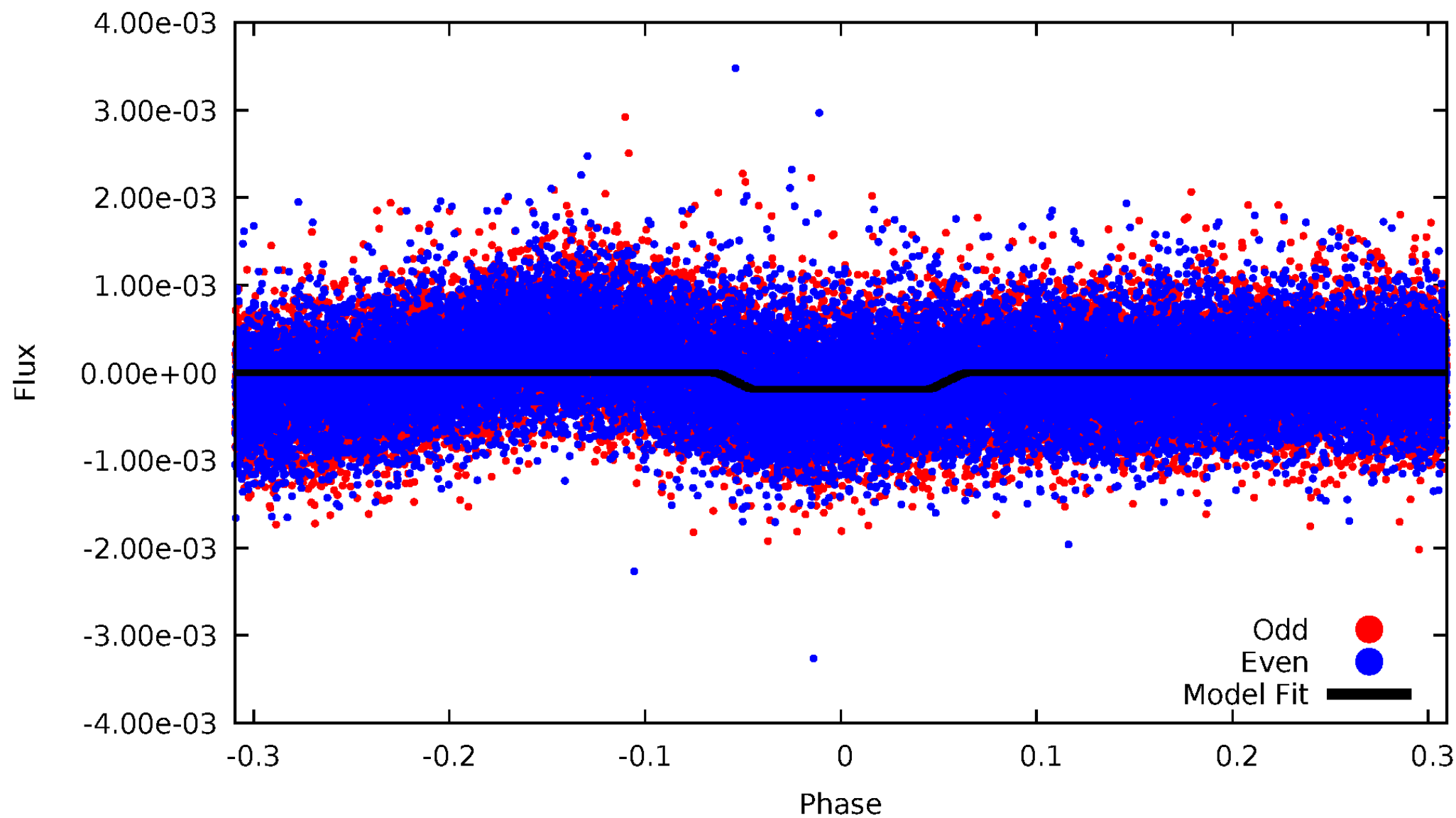
# DV Odd/Even

TCE 007060736-01



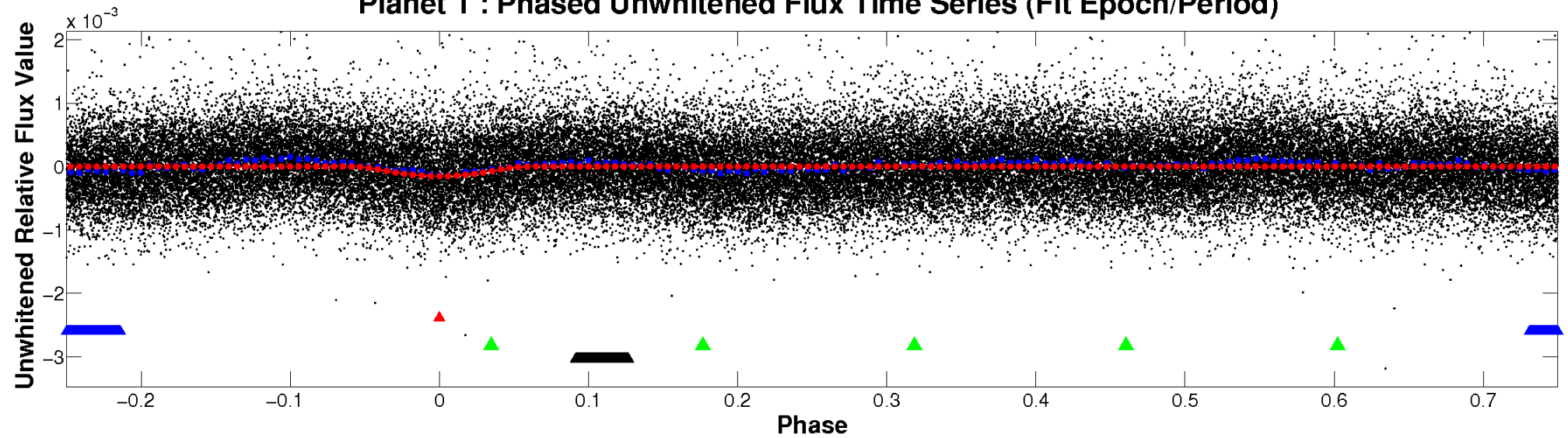
# ALT Odd/Even

TCE 007060736-01

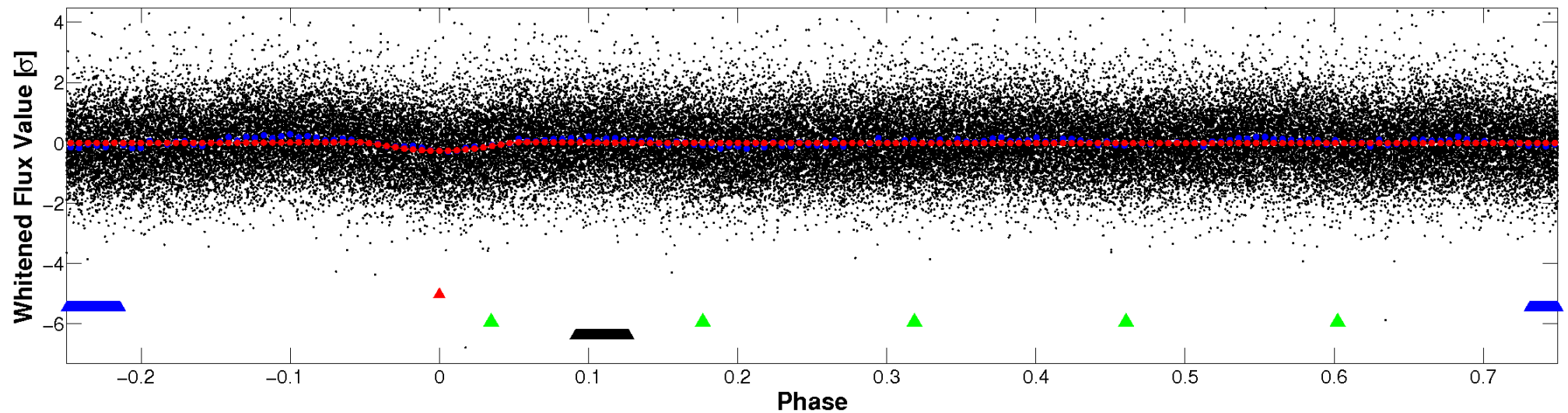


# Non-Whitened Vs. Whitened Light Curve

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

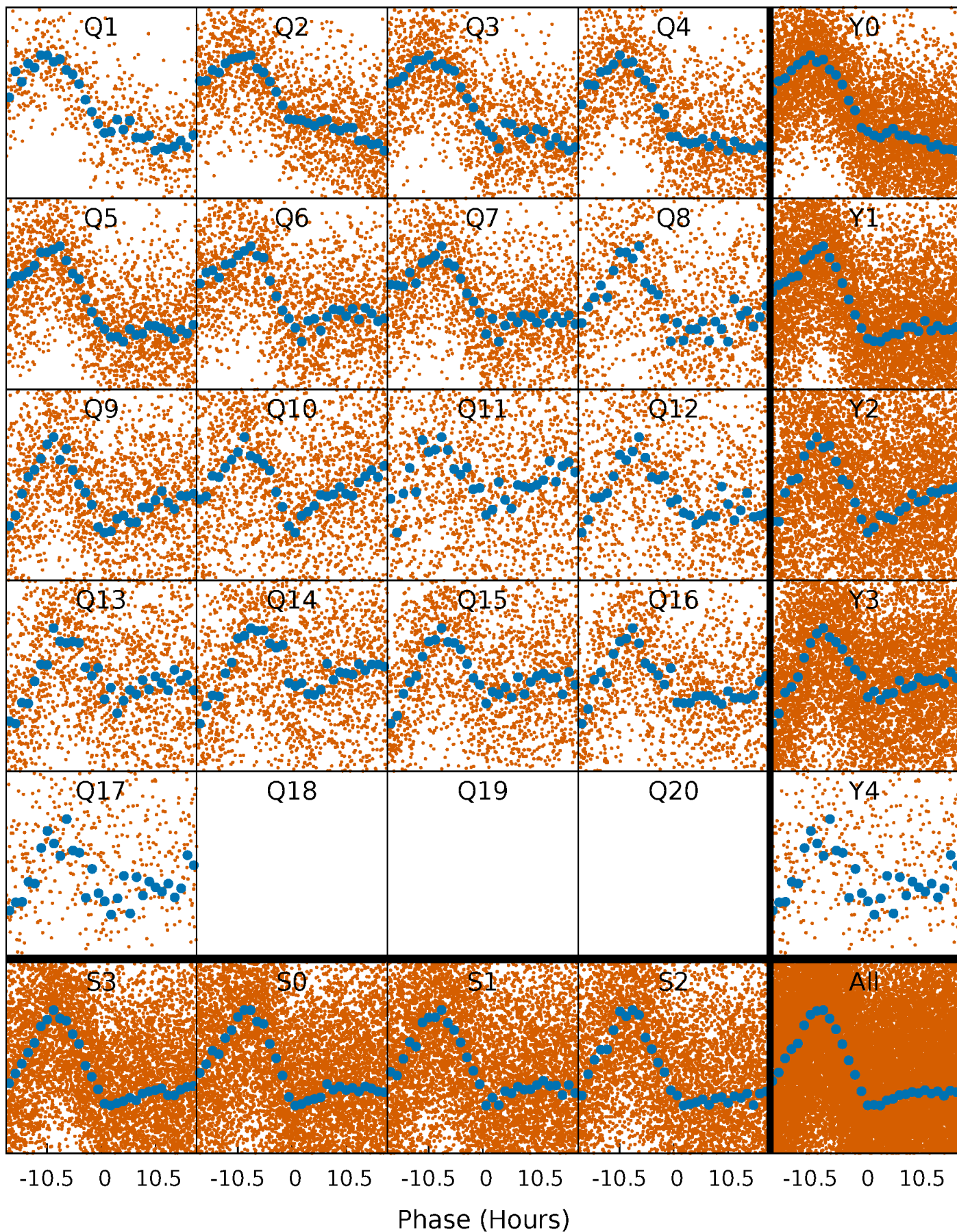


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

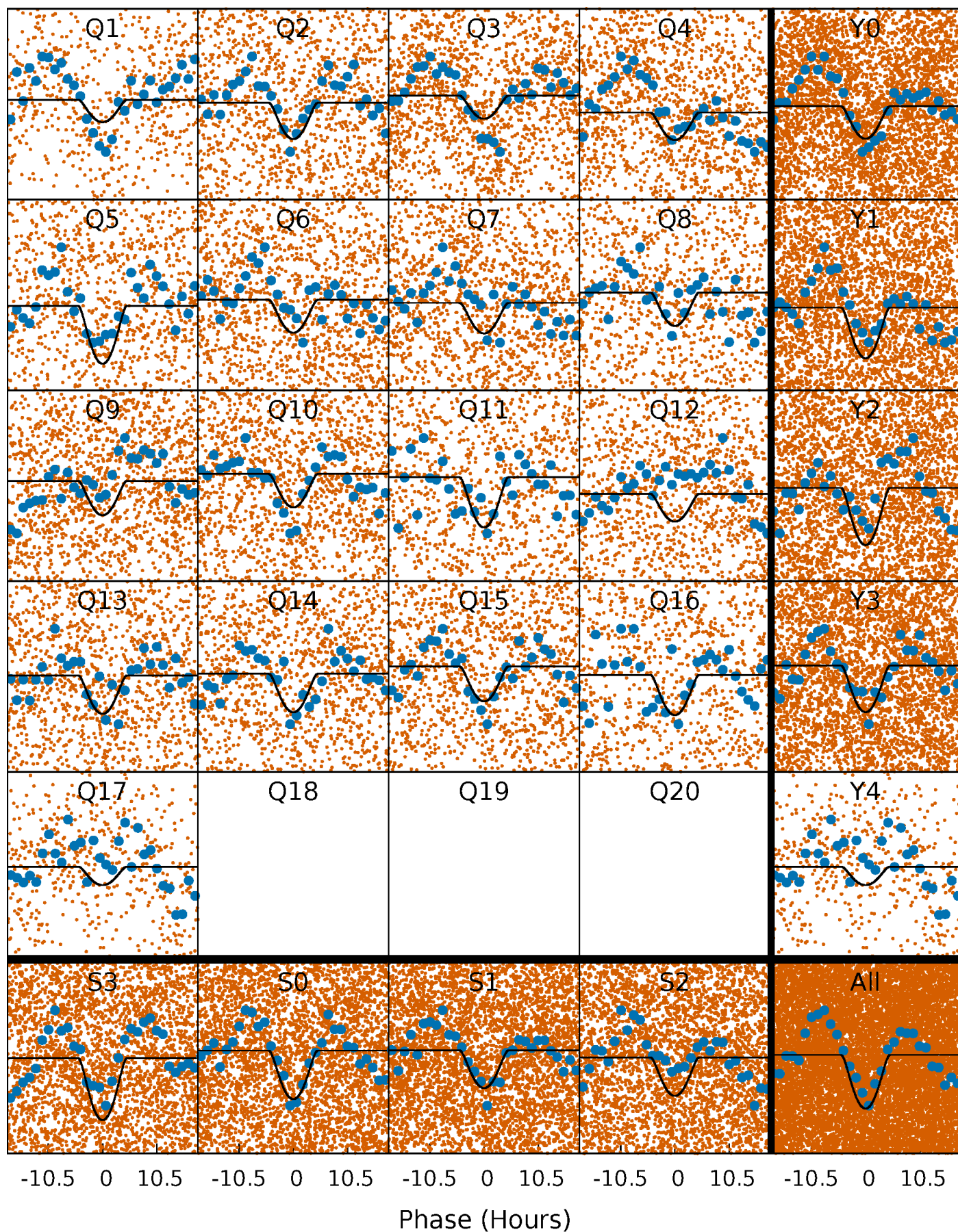
TCE 007060736-01 P= 3.469590 Days  $T_0=134.680120$  (BKJD)





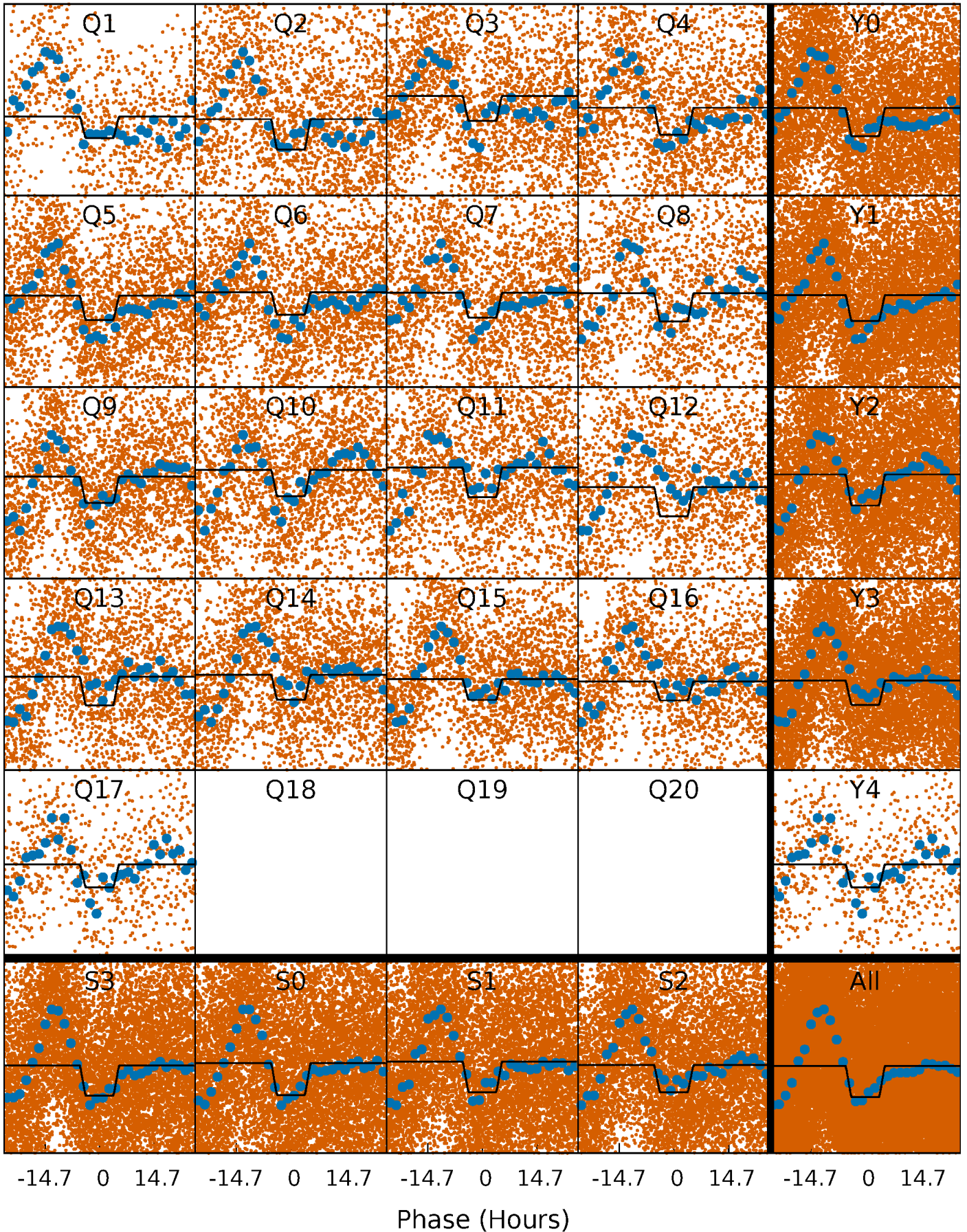
# DV Quarter-Phased Transit Curves

TCE 007060736-01 P= 3.469590 Days  $T_0=134.680120$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007060736-01 P= 3.469484 Days  $T_0=134.833759$  (BKJD)

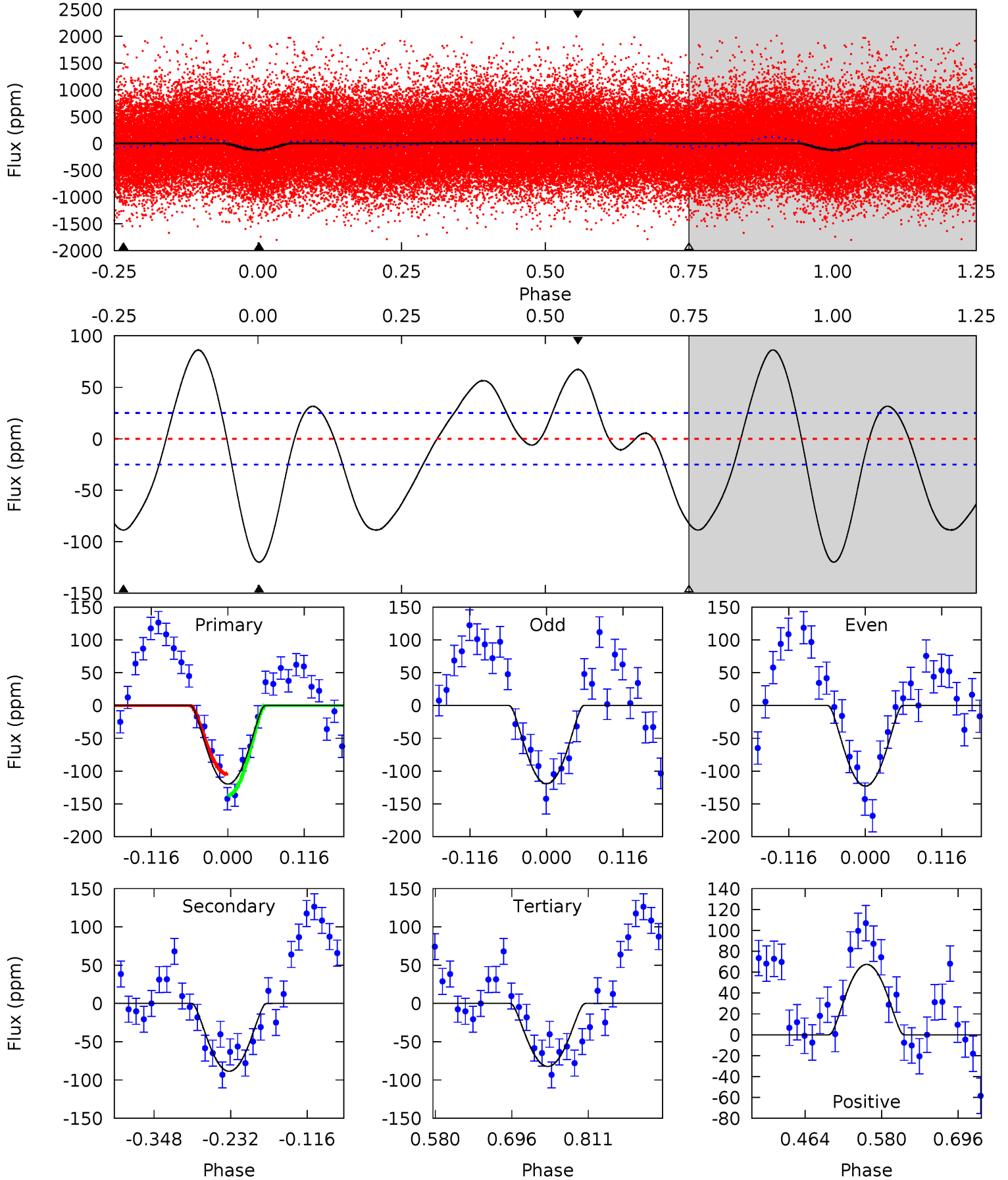




# DV Model-Shift Uniqueness Test

007060736-01, P = 3.469590 Days, E = 131.210530 Days

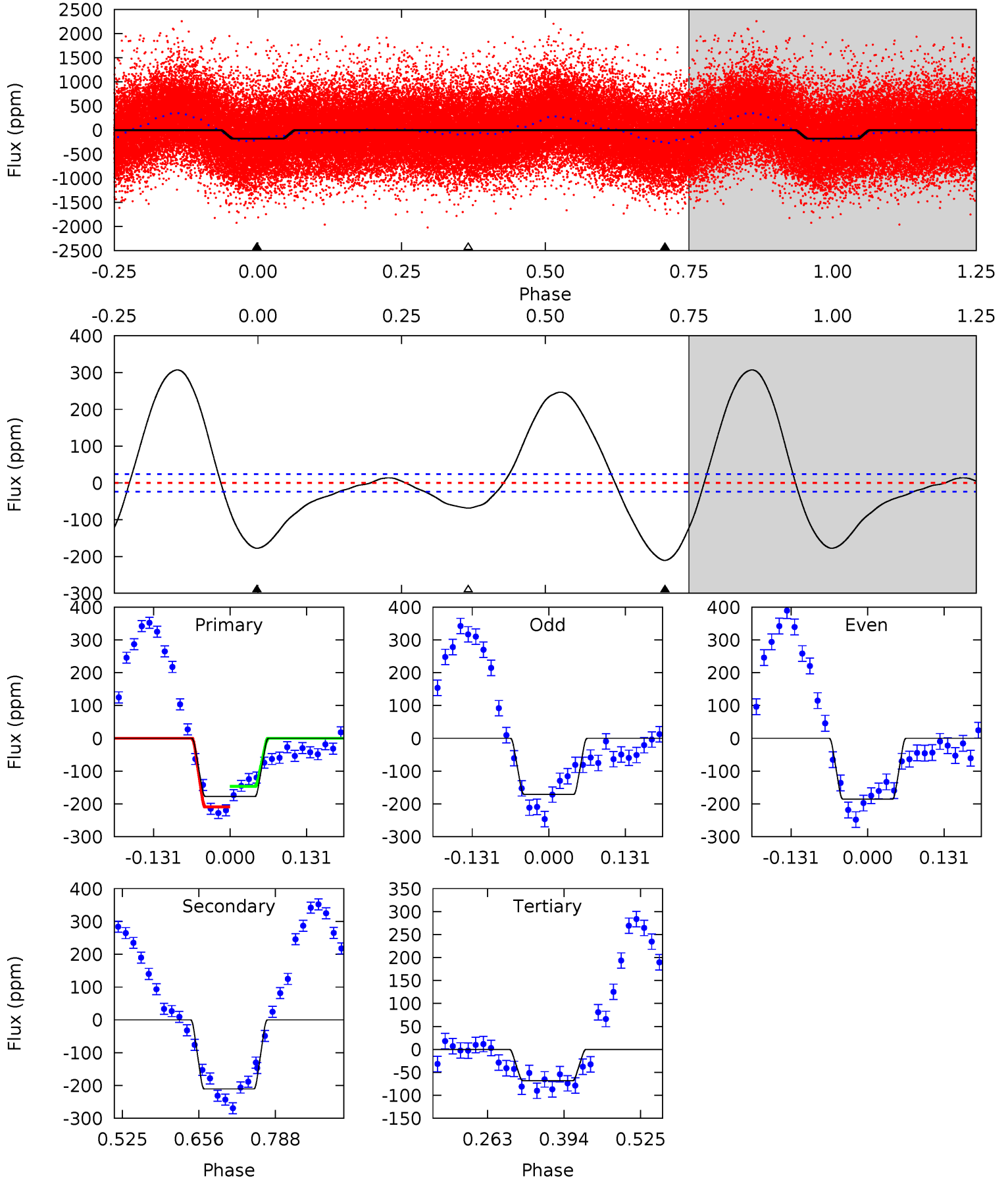
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.6	16.0	14.9	12.2	4.53	1.57	8.06	6.77	9.46	1.14	3.84	0.32	0.97	0.42	2.90



# Alt Model-Shift Uniqueness Test

007060736-01, P = 3.469484 Days, E = 131.364275 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
33.3	39.5	12.8	0	4.51	1.51	22.0	20.5	33.3	26.7	39.5	1.35	1.02	0.59	5.84





### Stellar Parameters For KIC 007060736

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6283^{+176}_{-242}$	$4.485^{+0.054}_{-0.216}$	$-0.400^{+0.300}_{-0.300}$	$0.952^{+0.304}_{-0.101}$	$1.010^{+0.133}_{-0.133}$	$1.648^{+0.455}_{-0.848}$
	+3%/-4%	+1%/-5%	+75%/-75%	+32%/-11%	+13%/-13%	+28%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007060736-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-89 \pm 6$	$2.78^{+2.40}_{-1.84}$	$1820^{+125}_{-94}$	$4086^{+2342}_{-771}$	$13^{+93}_{-9}$
Alt.	$-211 \pm 5$	$2.38^{+2.37}_{-1.52}$	$1814^{+145}_{-98}$	$5129^{+3849}_{-1172}$	$40^{+279}_{-30}$

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

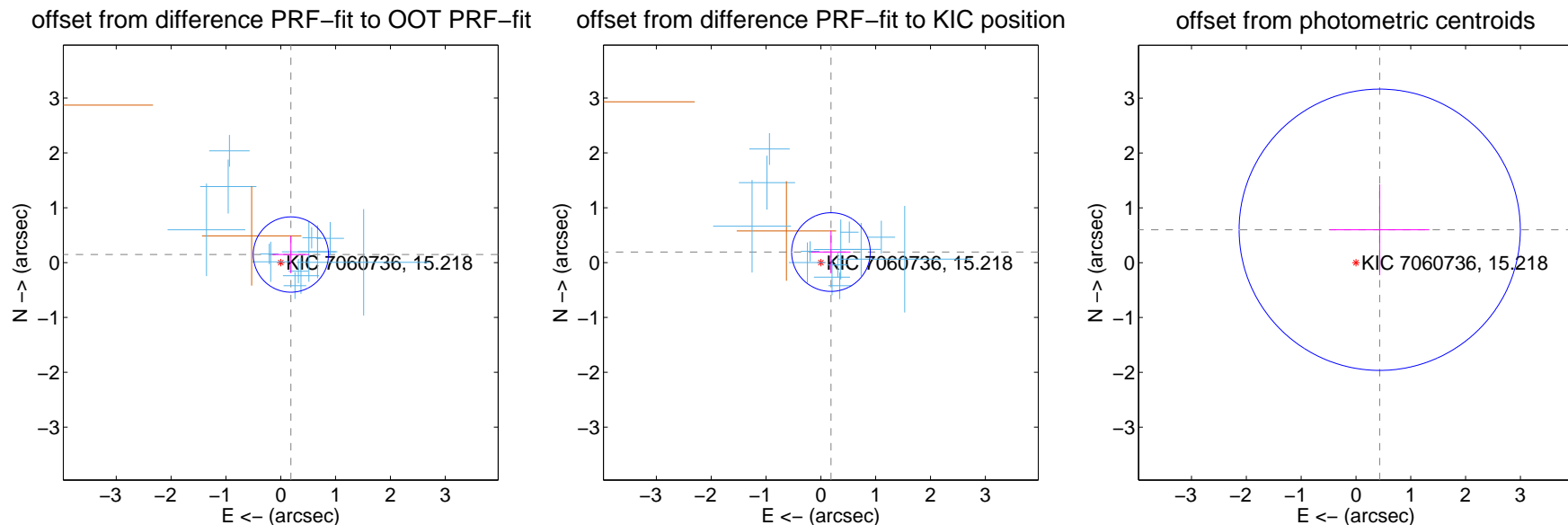
## DV Centroid Data

Supplemental centroid analysis for 007060736-01. Kepler magnitude: 15.22. Transit SNR 14.15

There are 13 quarters with good PRF difference image offsets

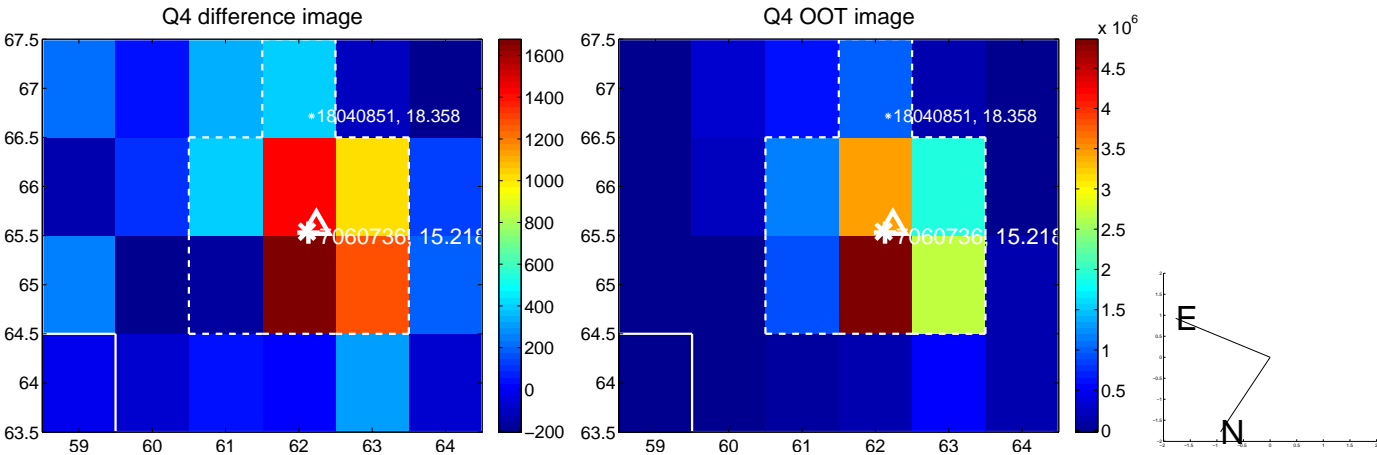
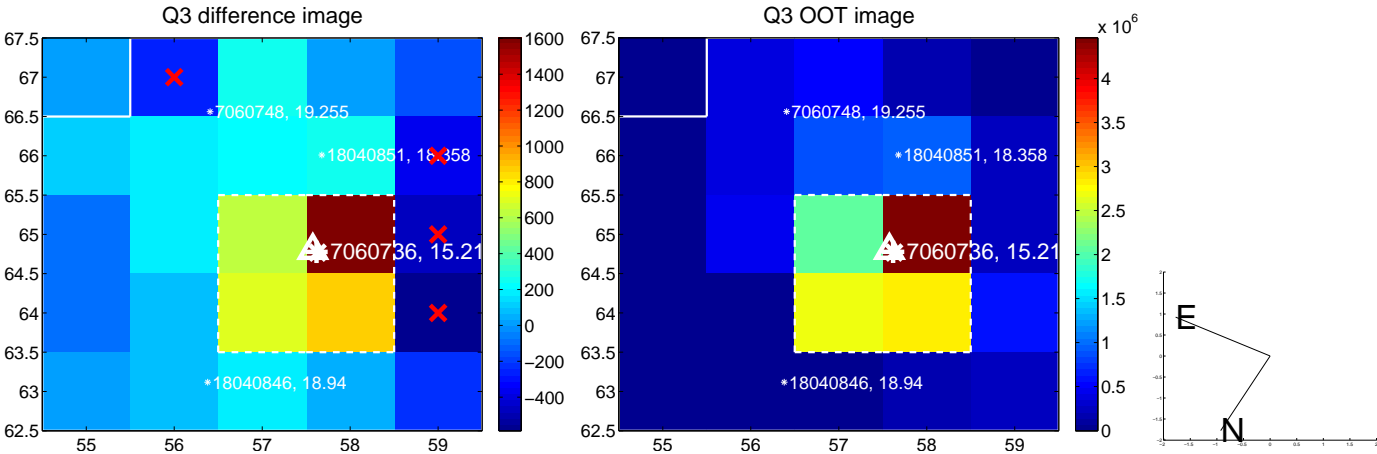
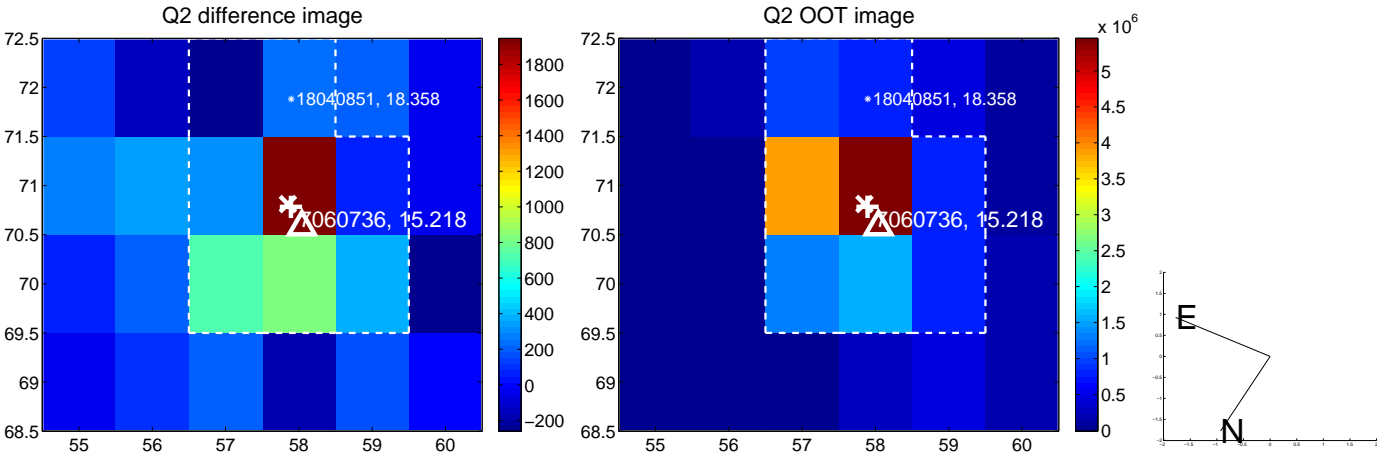
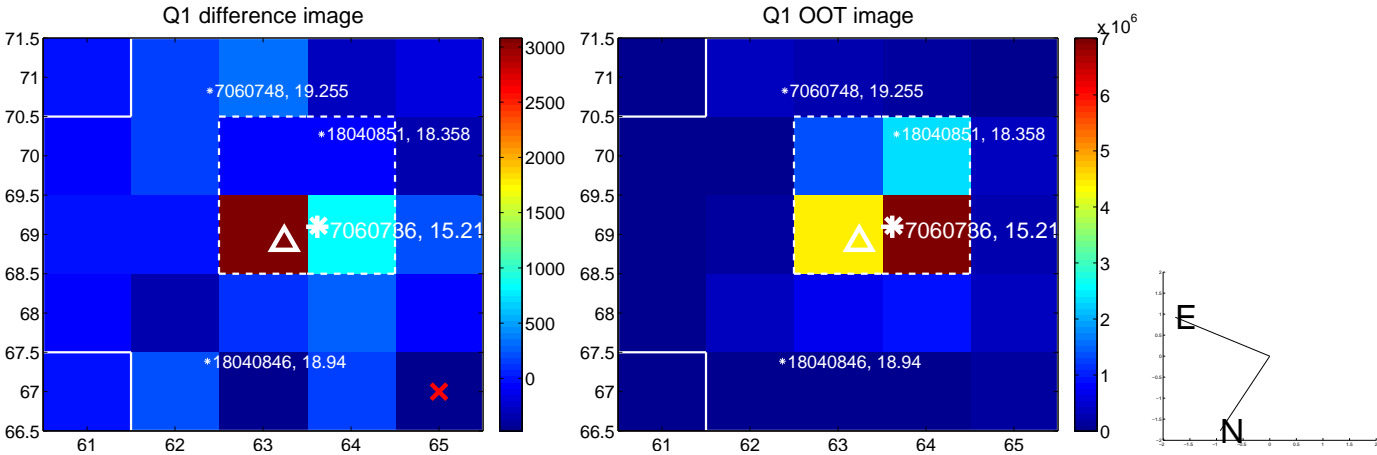
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.236 \pm 0.229$	1.03	$-0.185 \pm 0.335$	$0.147 \pm 0.341$
PRF-fit source offset from KIC position	$0.266 \pm 0.239$	1.11	$-0.184 \pm 0.358$	$0.192 \pm 0.391$
photometric centroid source offset	$0.74 \pm 0.85$	0.87	$-0.43 \pm 0.90$	$0.60 \pm 0.83$

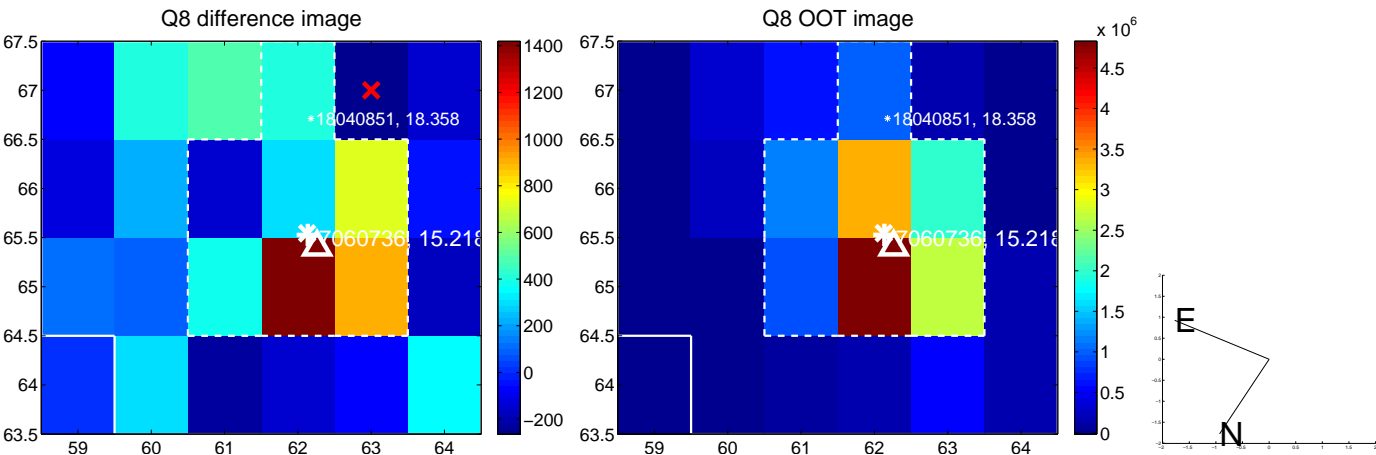
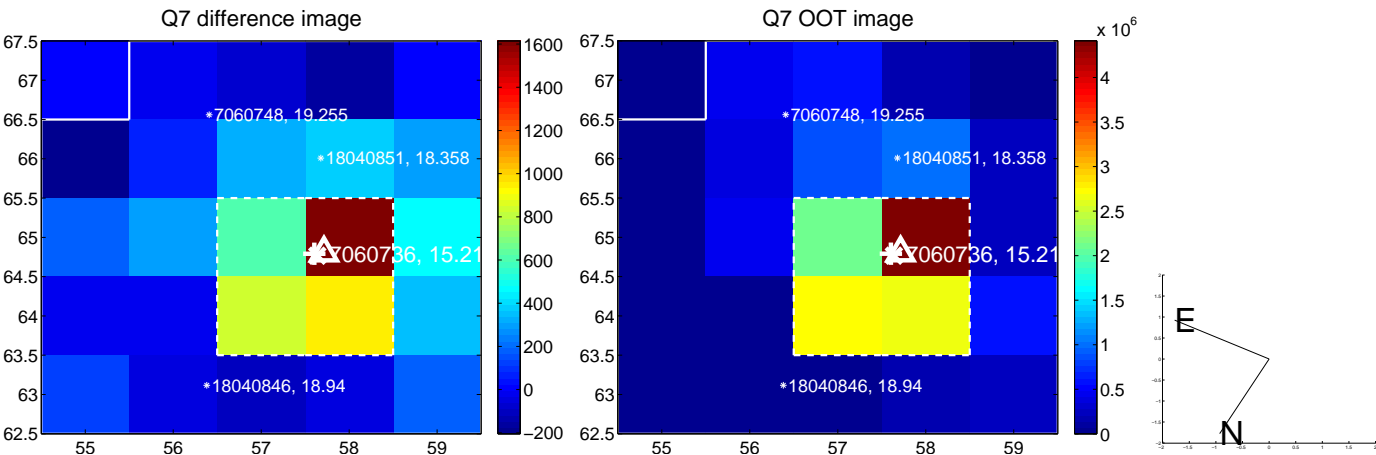
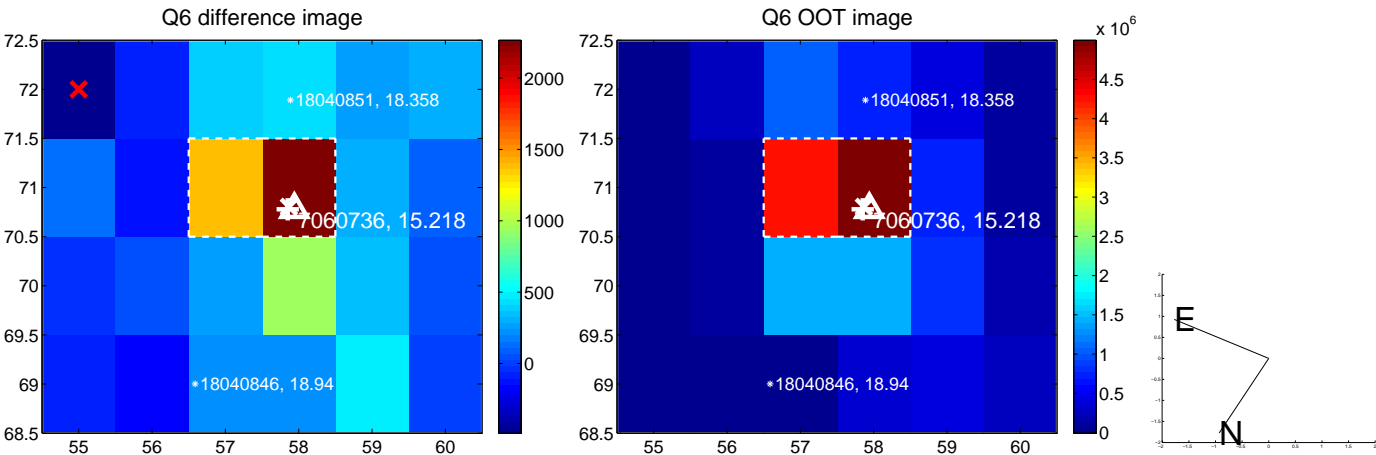
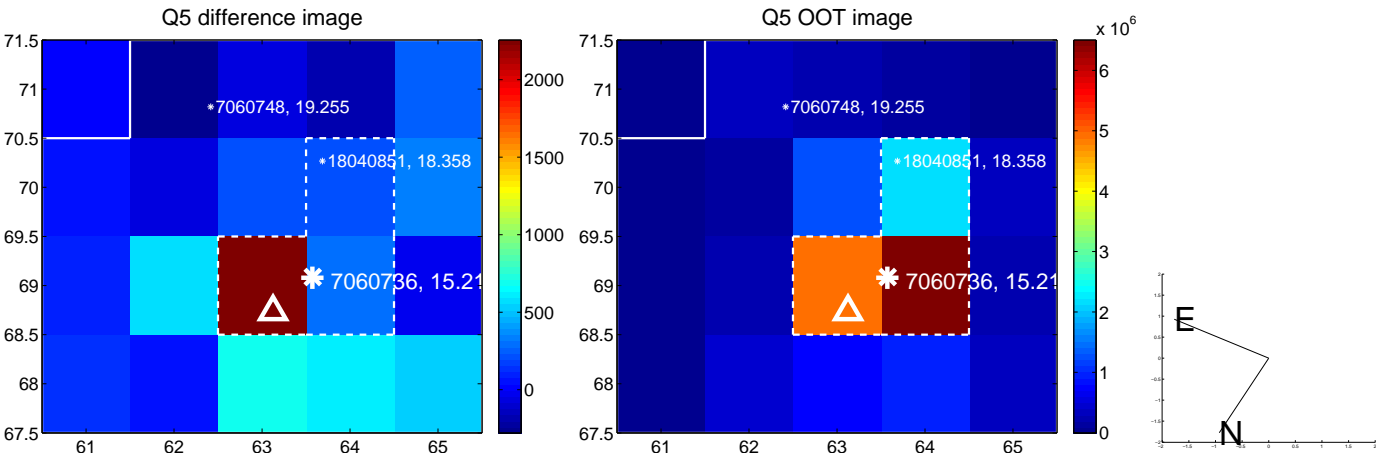


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

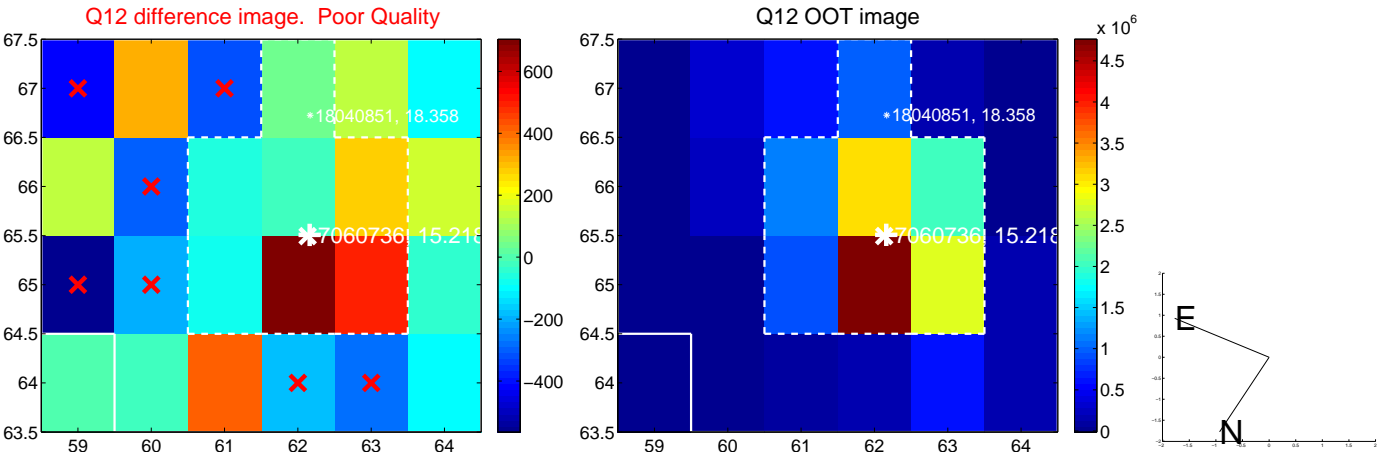
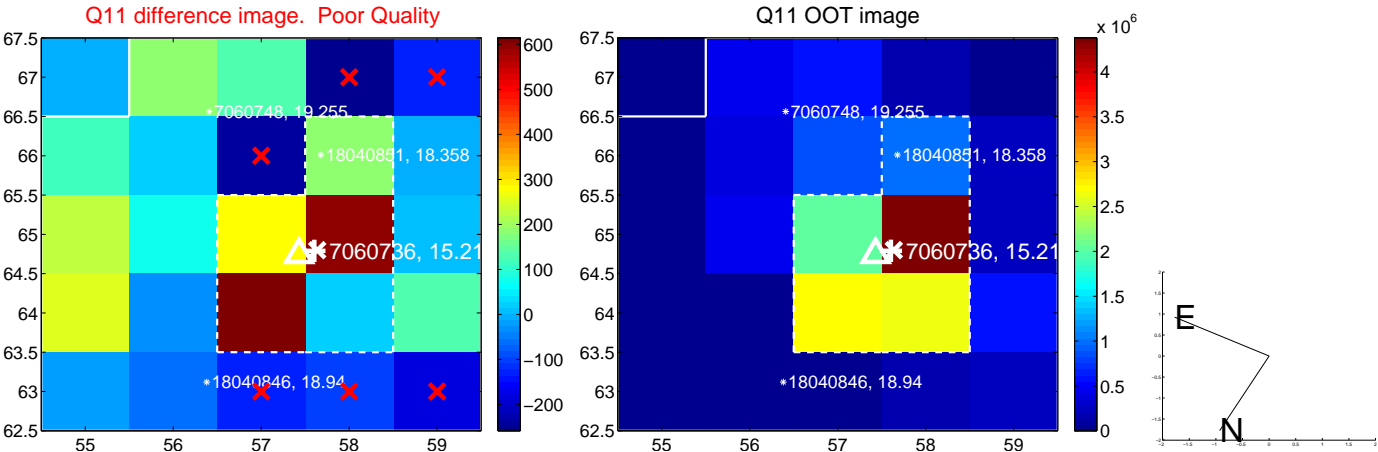
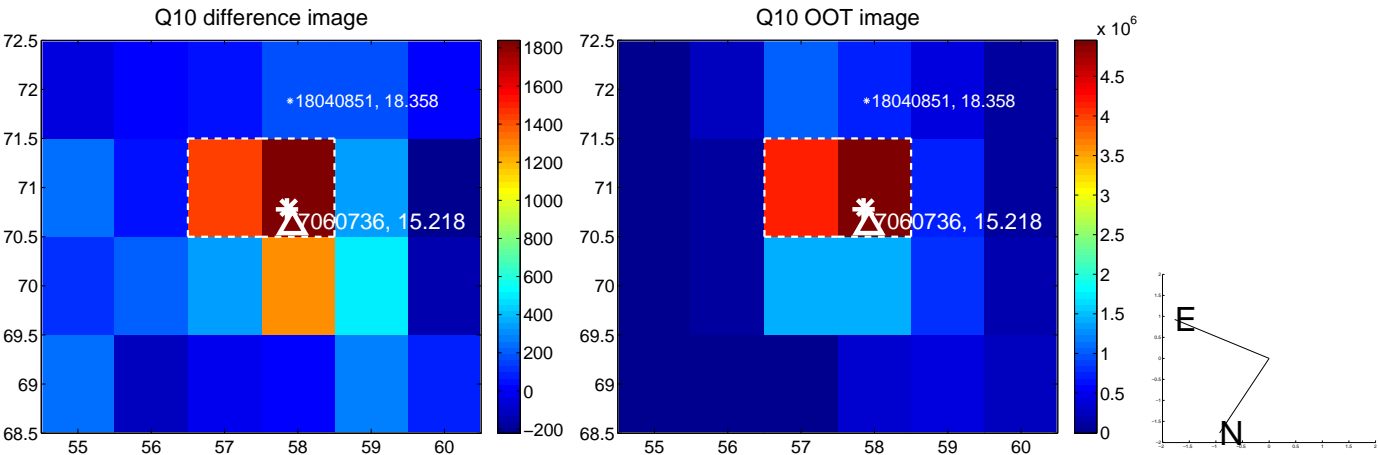
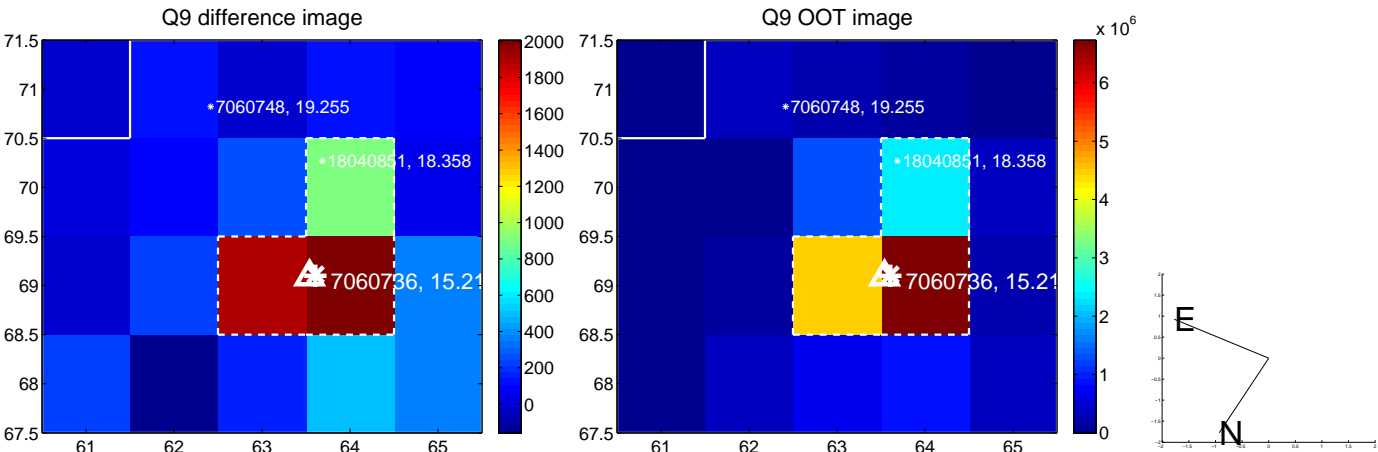


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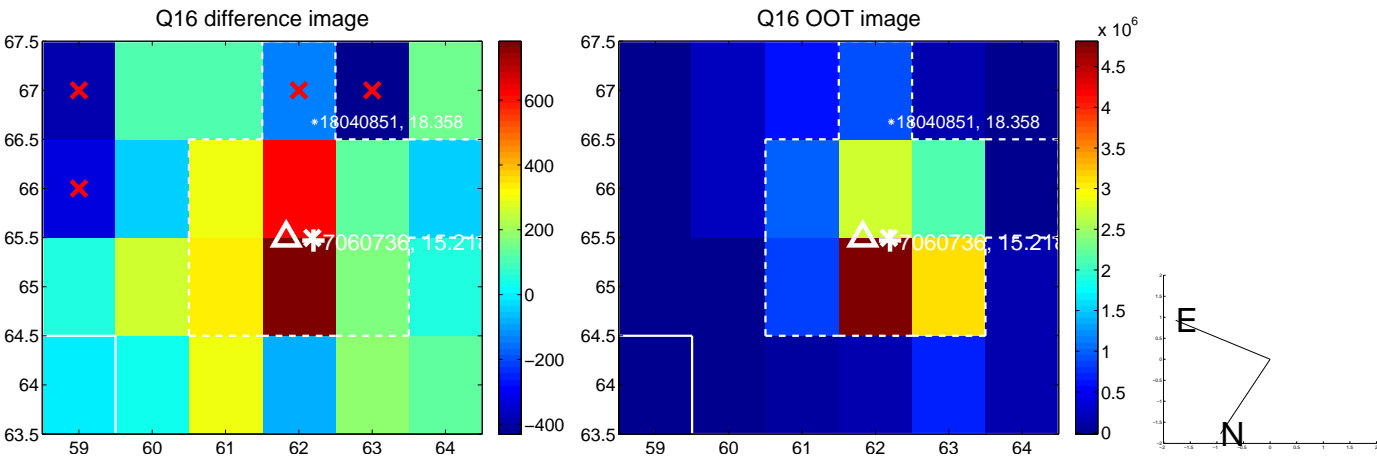
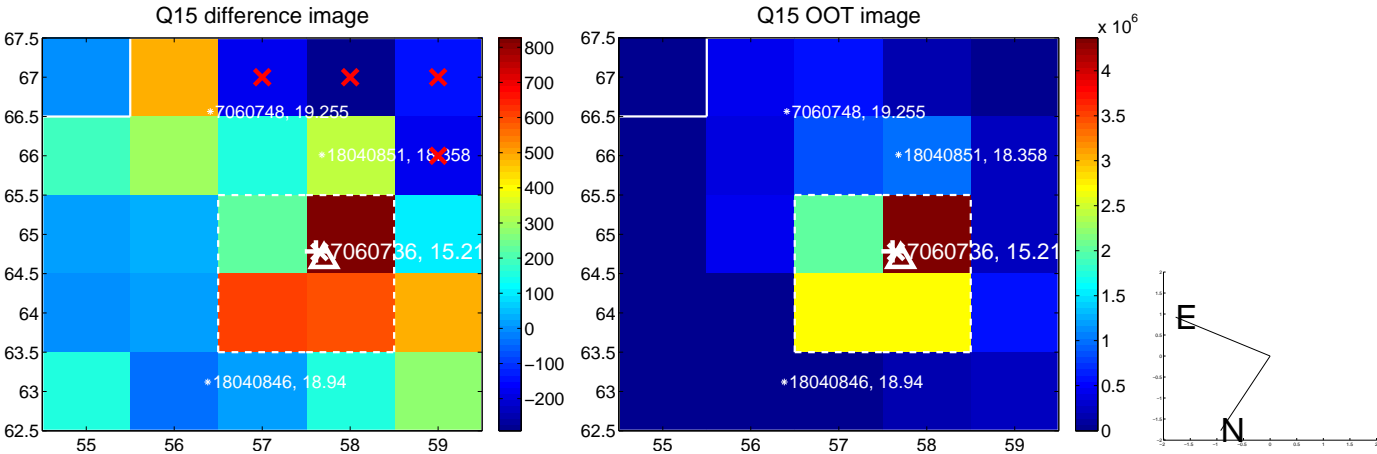
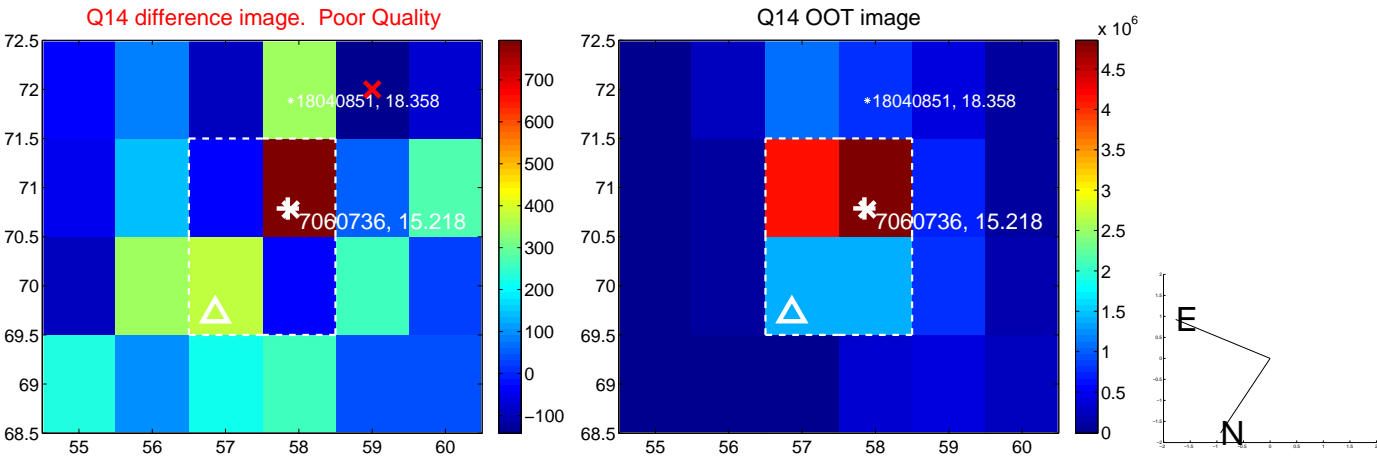
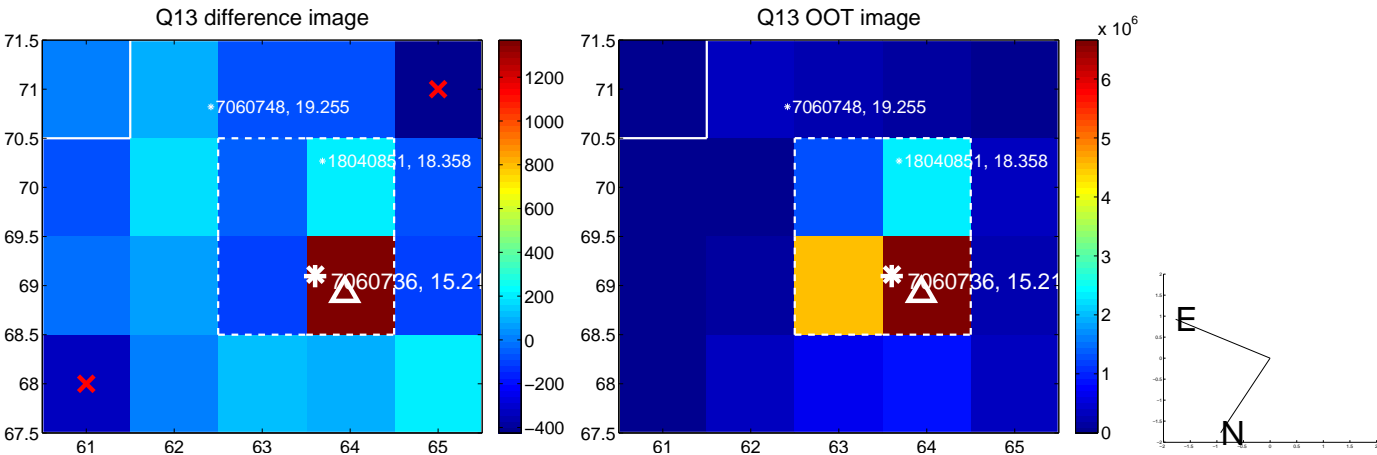




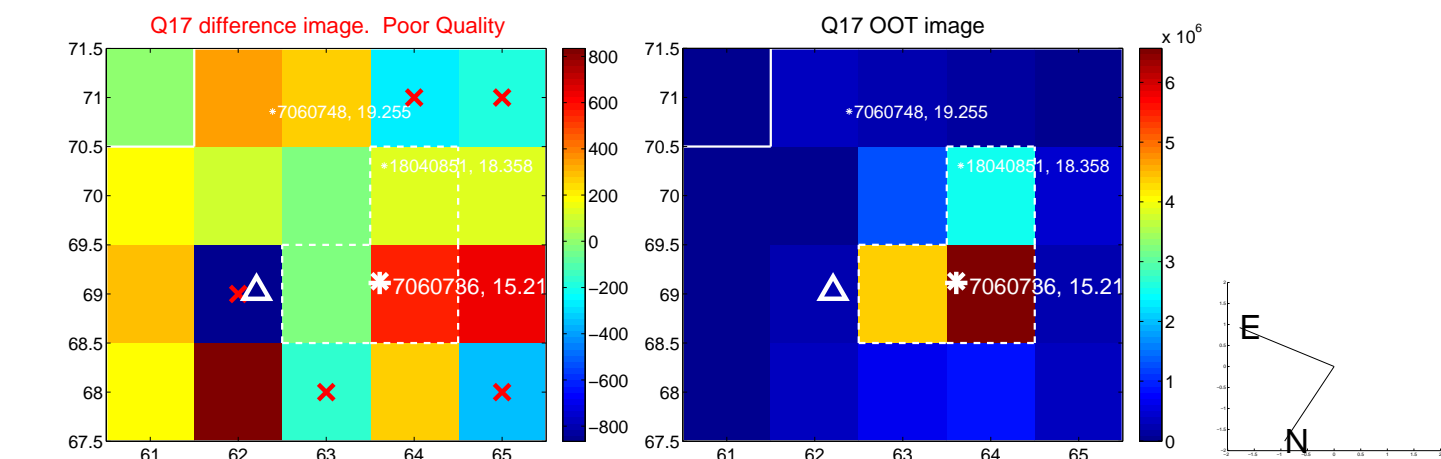
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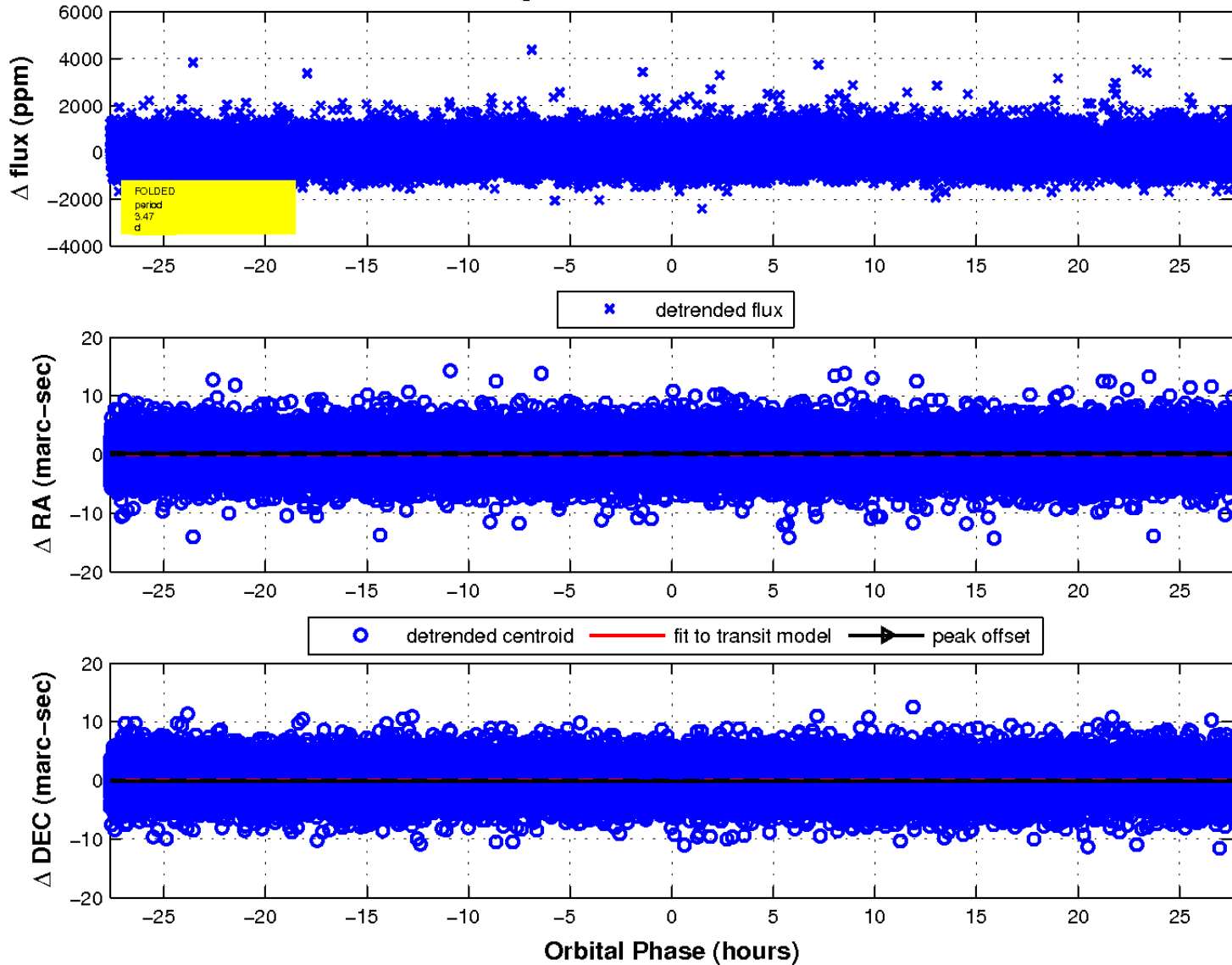
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



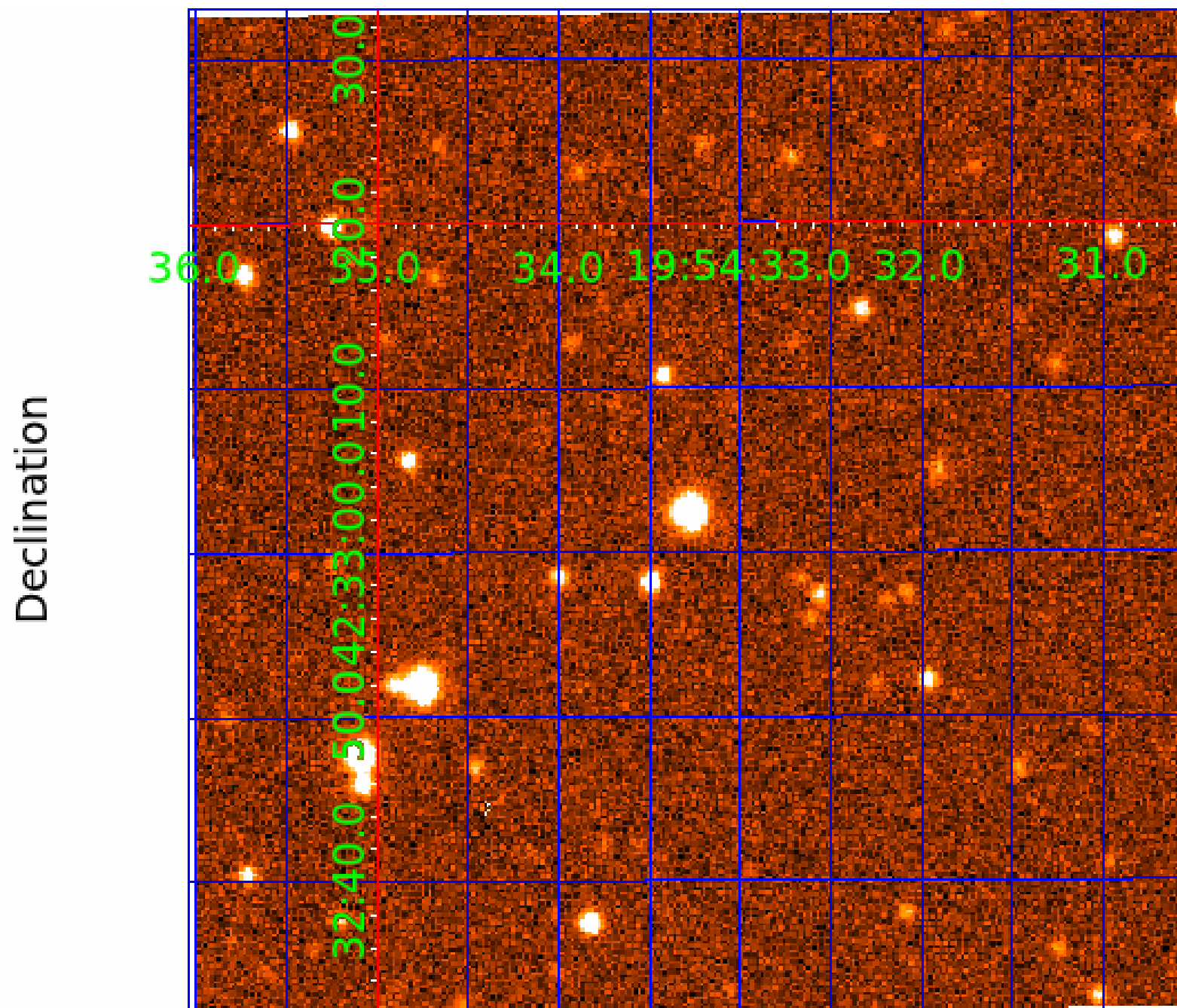
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 4



UKIRT Image





# KIC 007060736

## 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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007060736-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
007060736-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007060736-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—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.

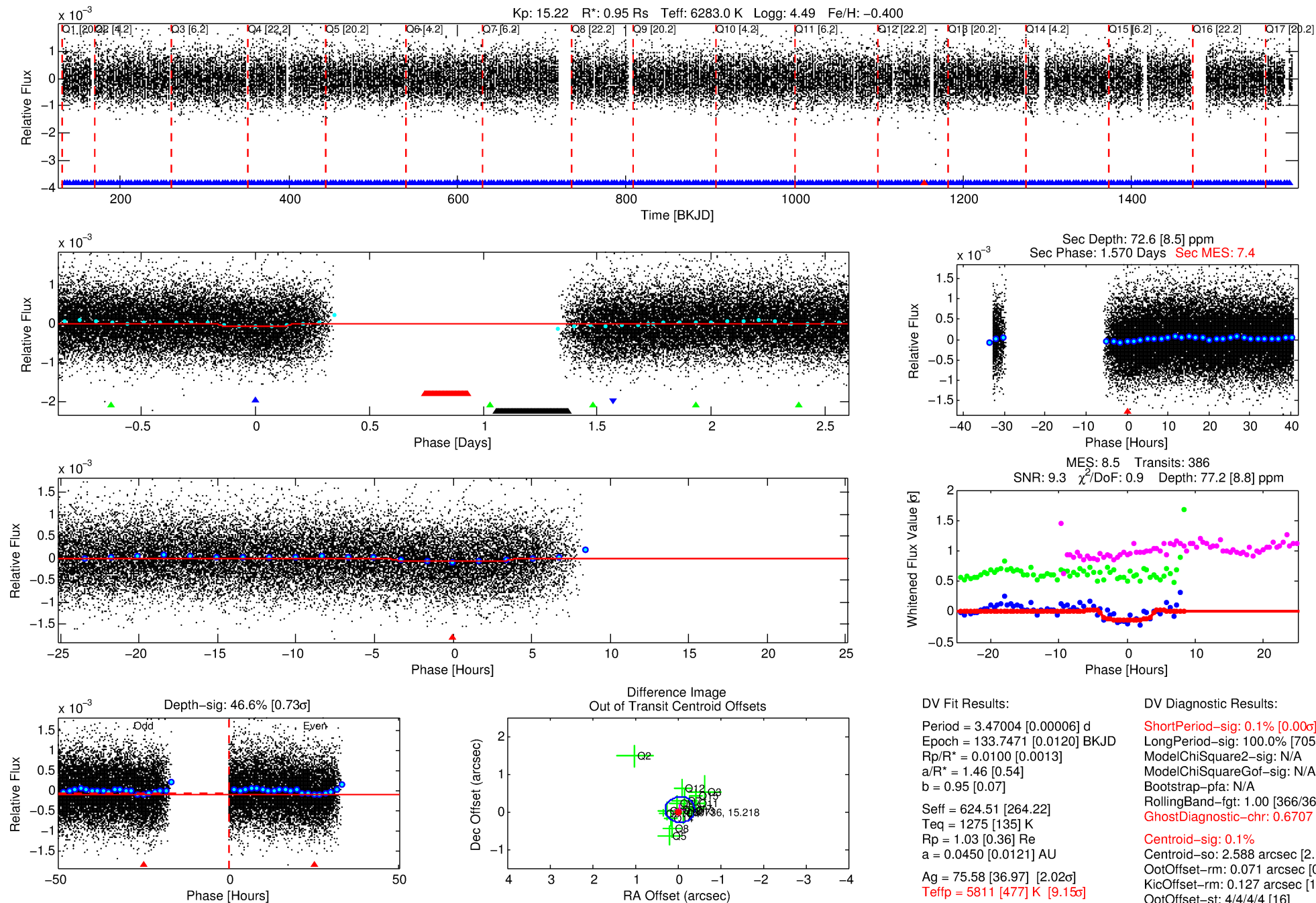
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007060736-02

No Significant Match Found

# DV One-Page Summary

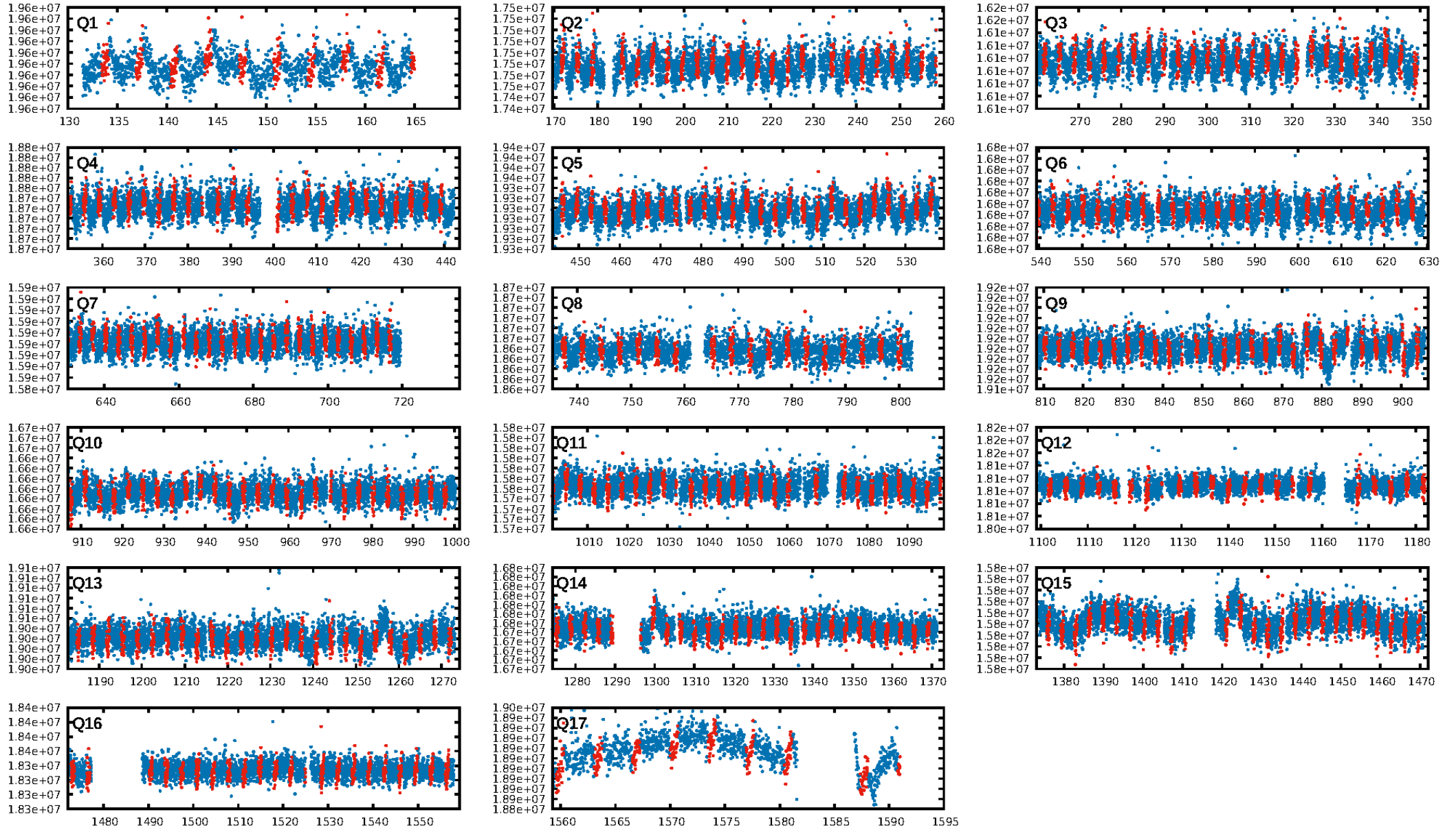
KIC: 7060736 Candidate: 2 of 4 Period: 3.470 d



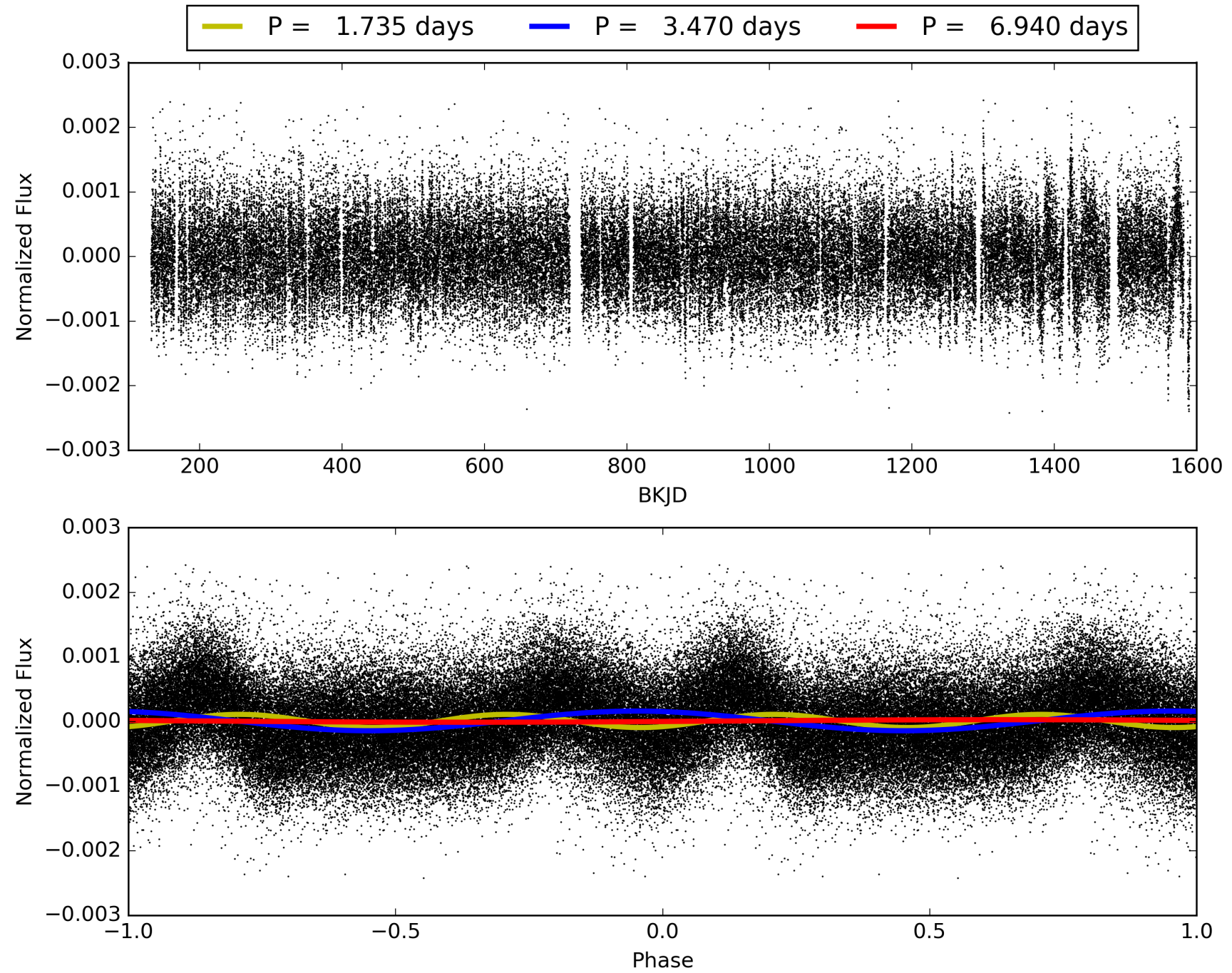
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:38:30 Z

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# TCE 007060736-02, PDC Light Curves

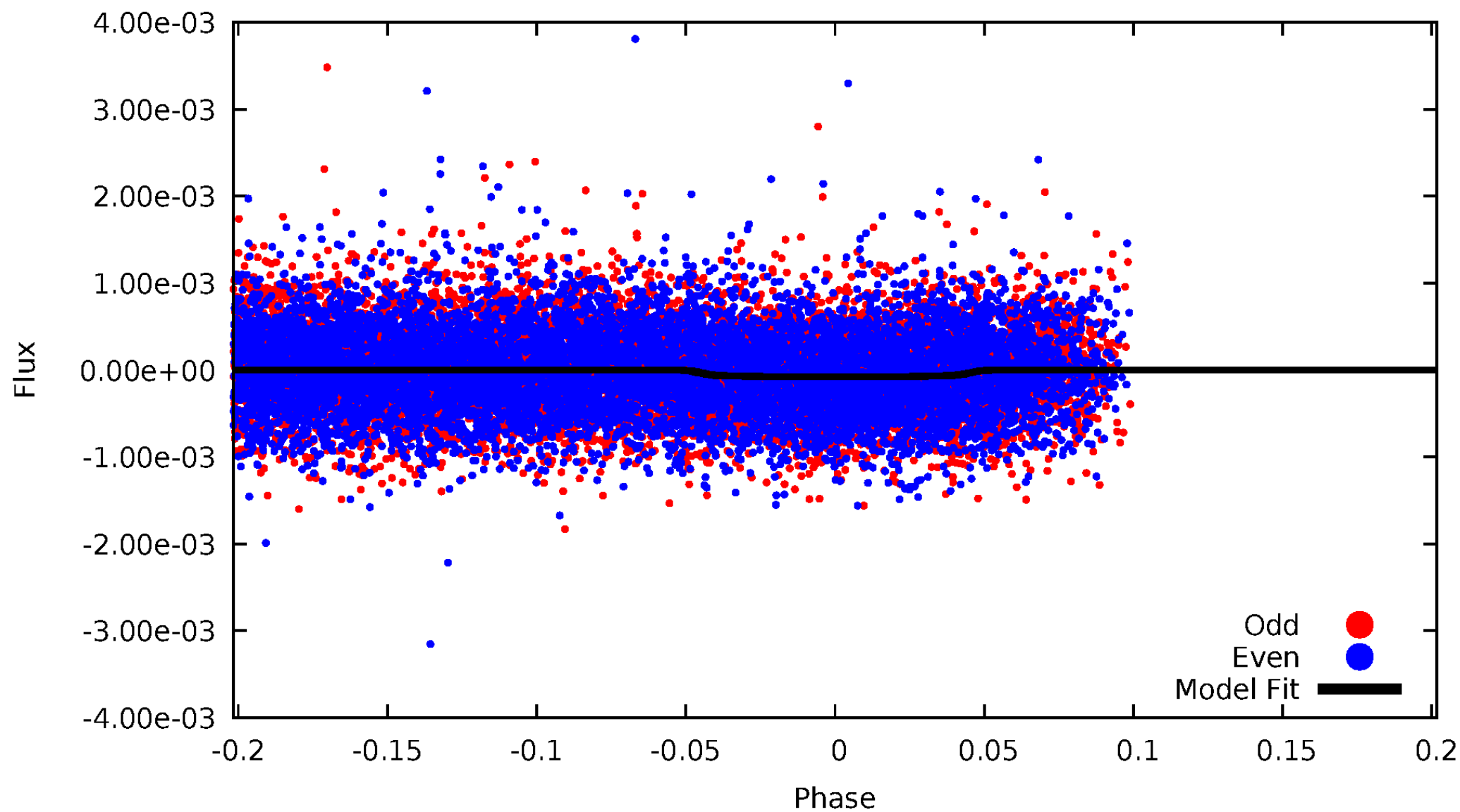


TCE 007060736-02



# DV Odd/Even

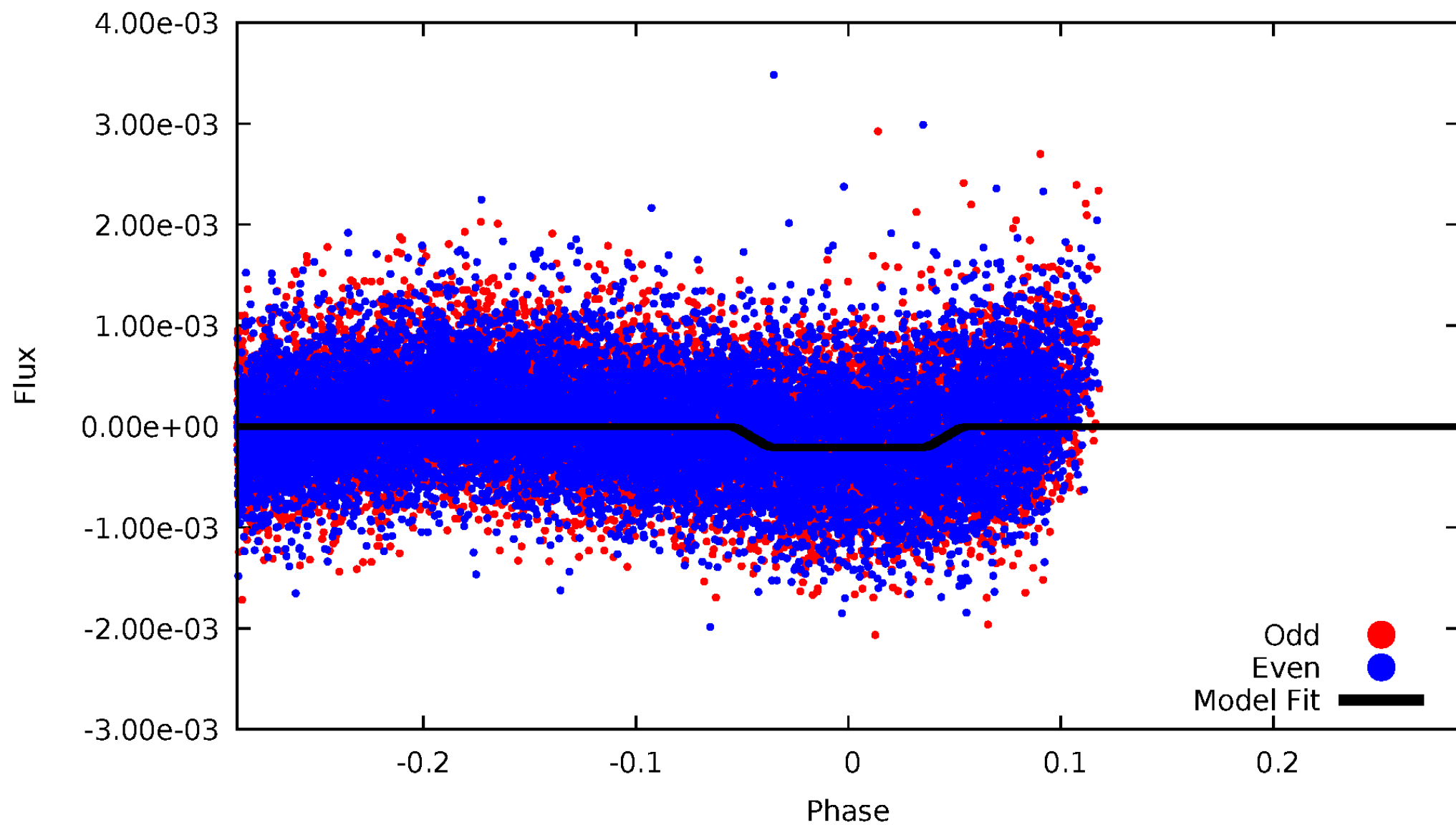
TCE 007060736-02





# ALT Odd/Even

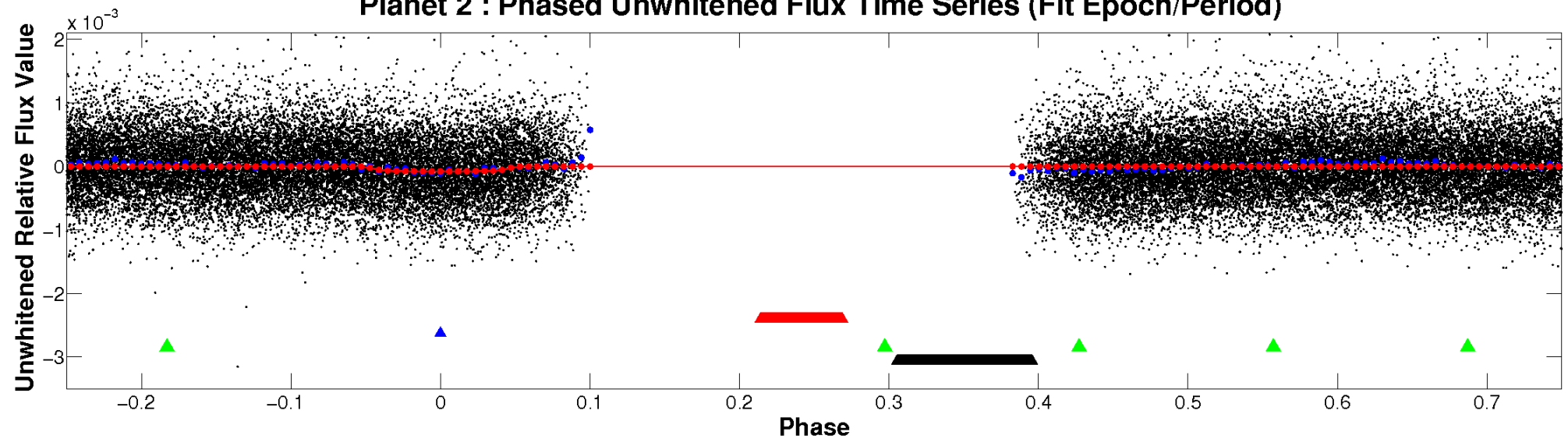
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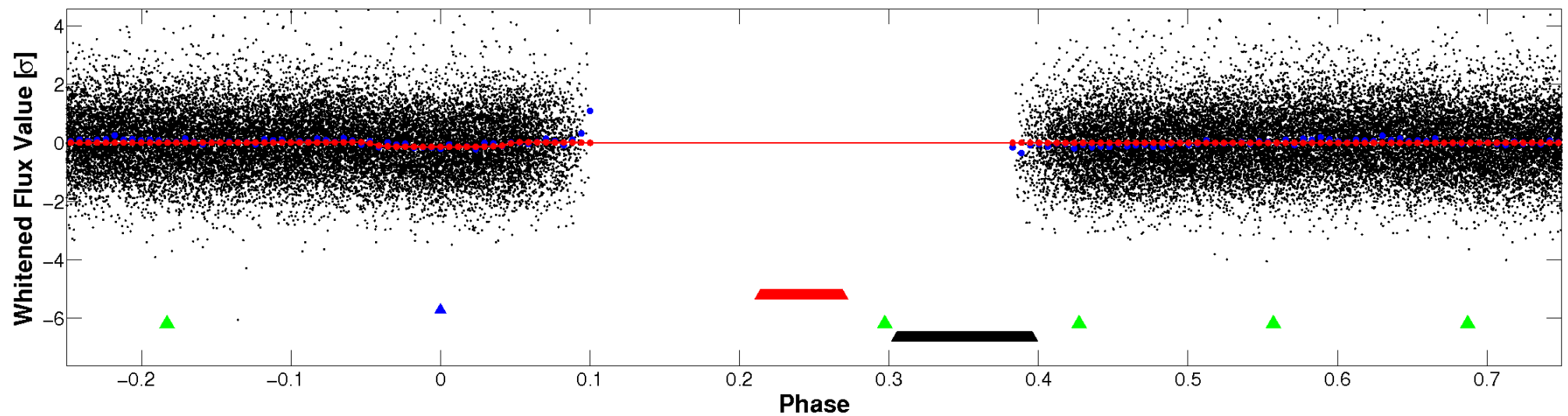


# Non-Whitened Vs. Whitened Light Curve

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

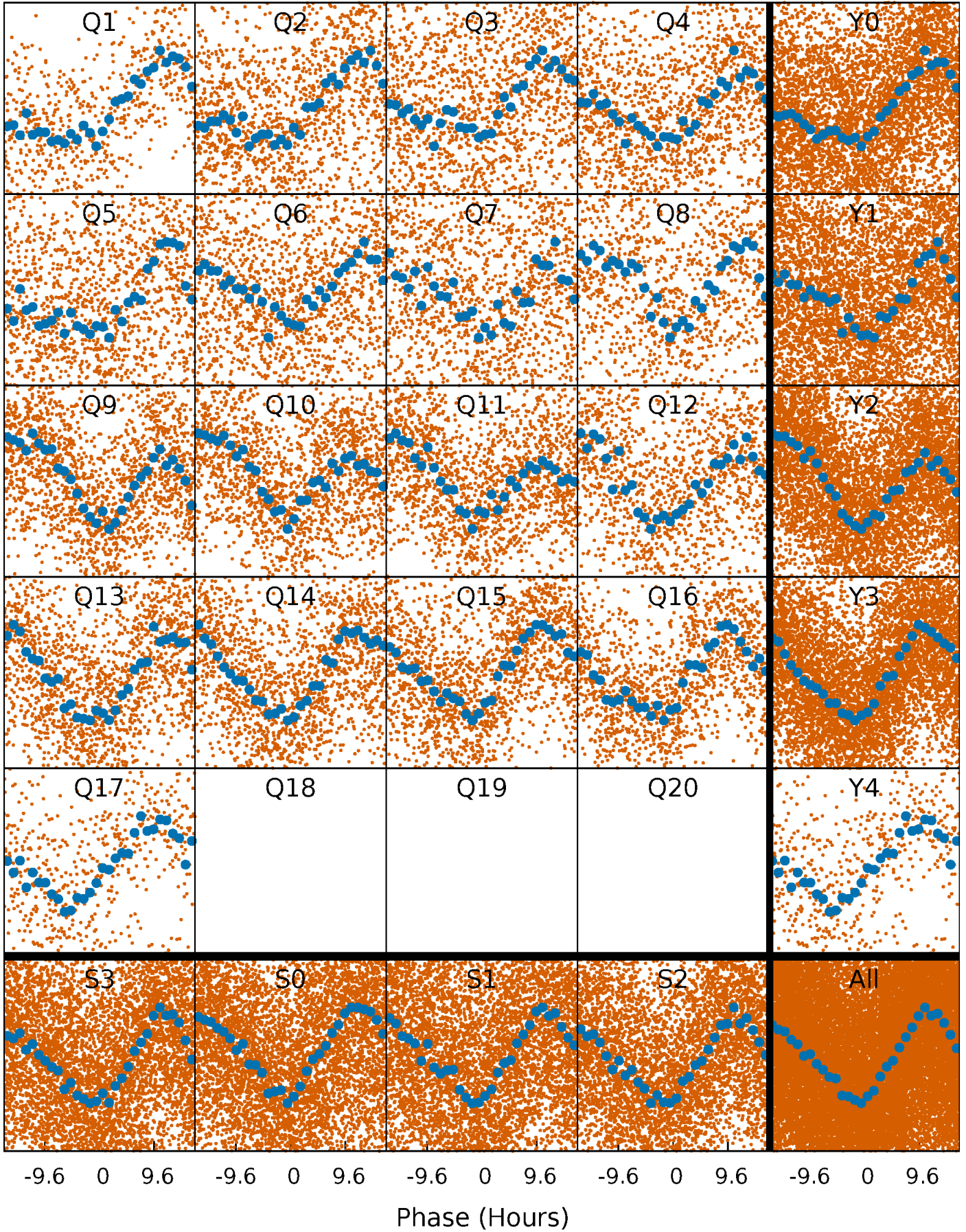


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



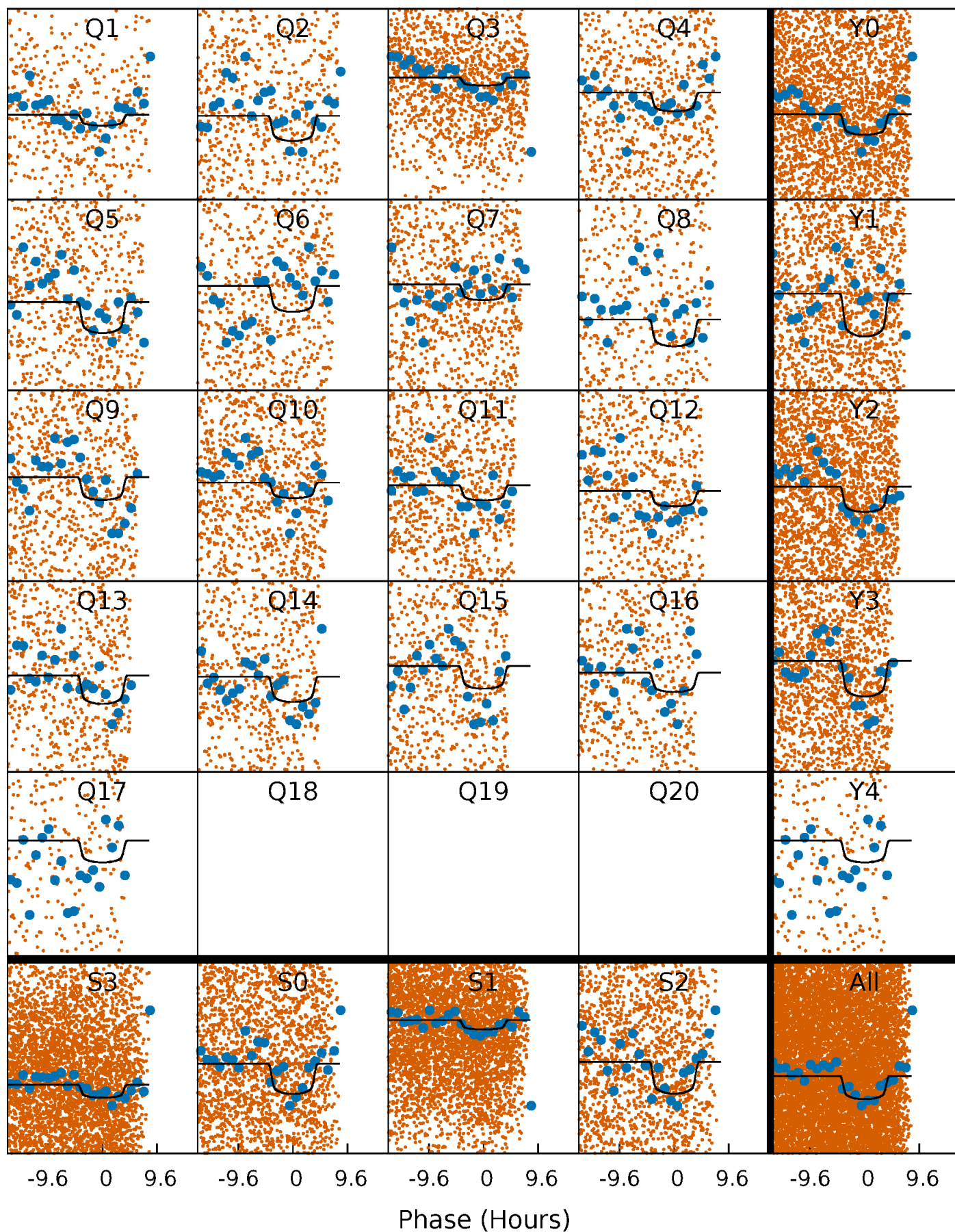
# PDC Quarter-Phased Transit Curves

TCE 007060736-02   P= 3.470044 Days    $T_0=133.747134$  (BKJD)



# DV Quarter-Phased Transit Curves

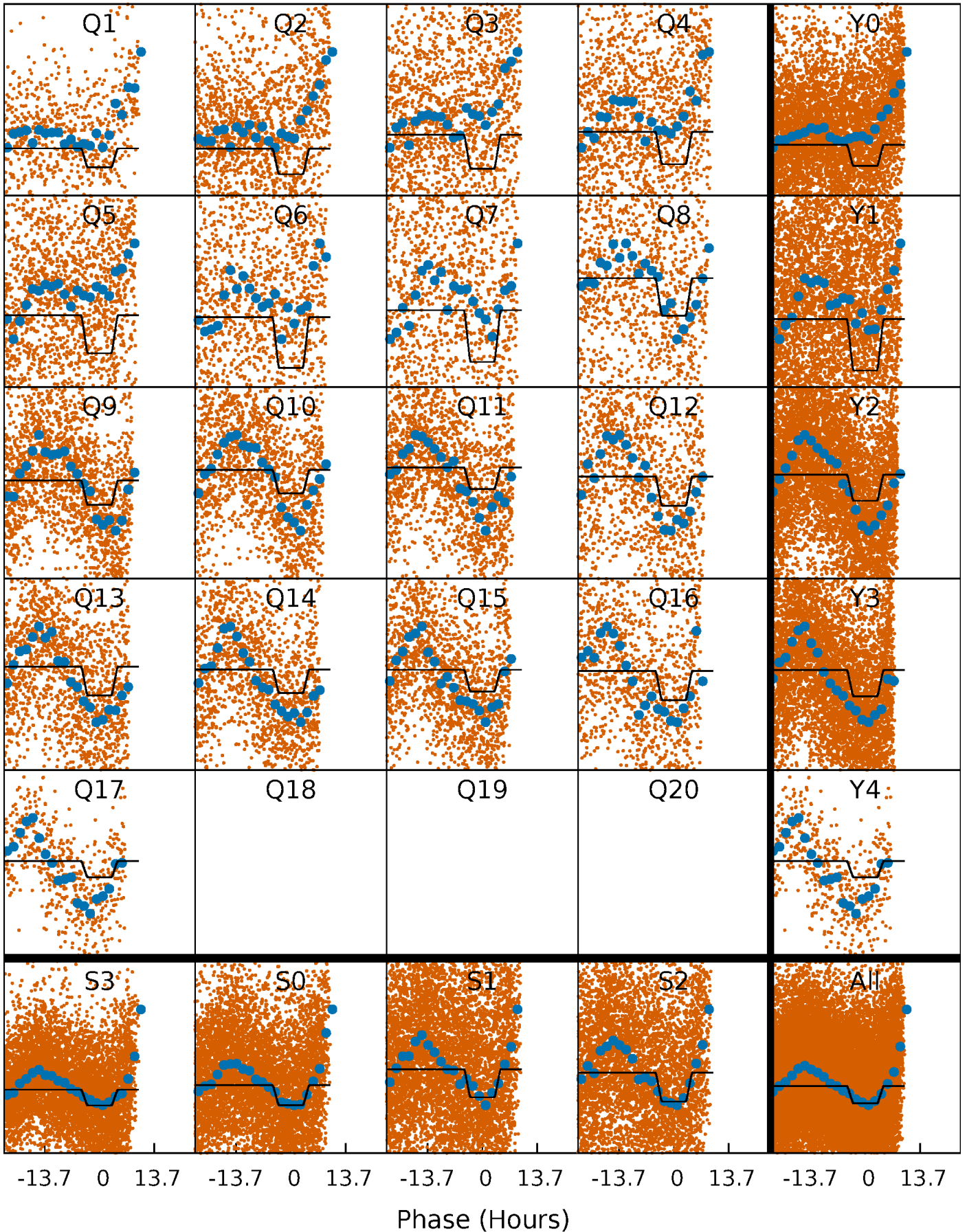
TCE 007060736-02   P= 3.470044 Days    $T_0=133.747134$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

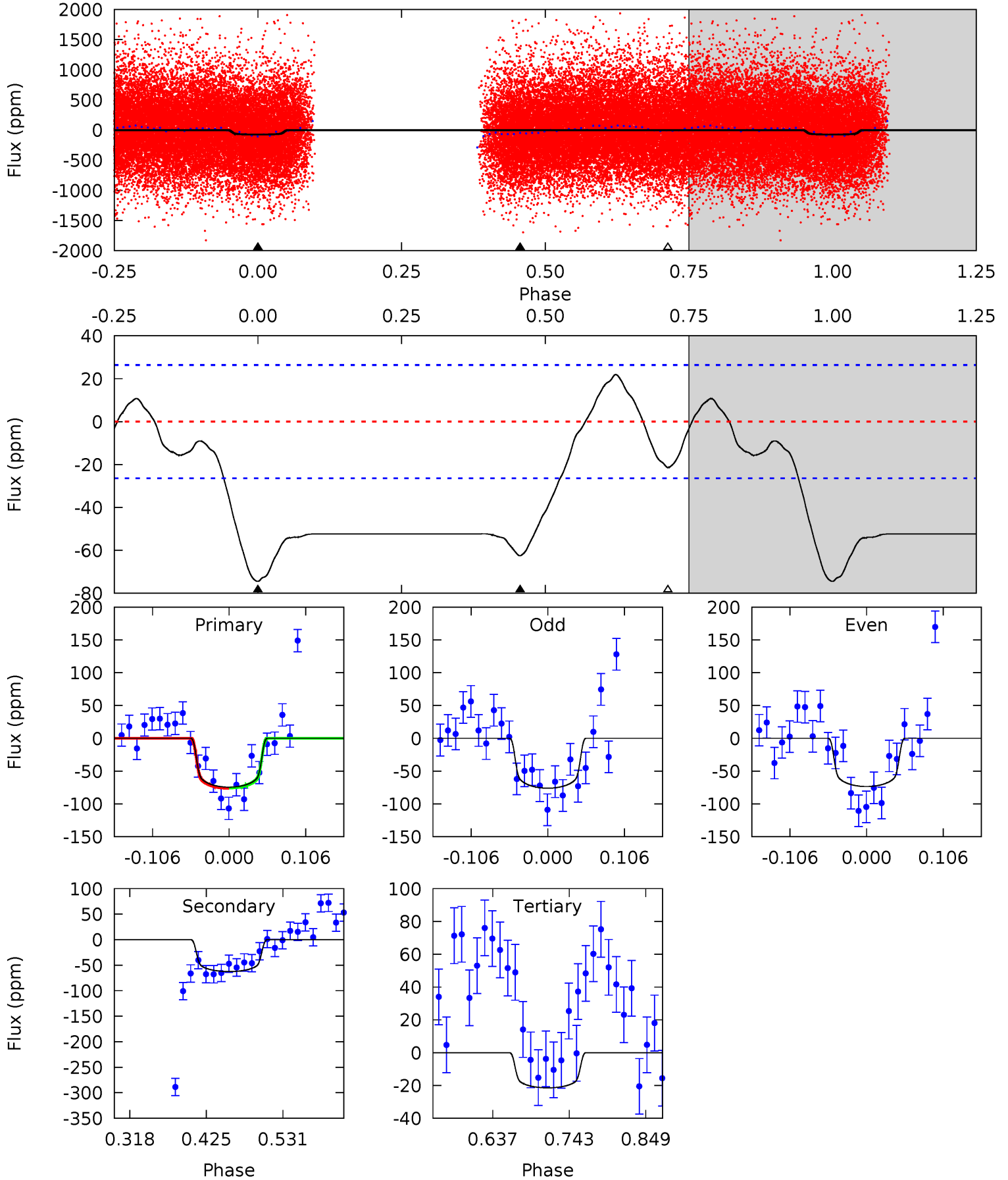
TCE 007060736-02 P= 3.469935 Days  $T_0=133.680604$  (BKJD)



# DV Model-Shift Uniqueness Test

007060736-02, P = 3.470044 Days, E = 130.277090 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
12.9	10.8	3.70	0	4.55	1.62	2.18	9.16	12.9	7.09	10.8	0.22	0.93	0.23	0.05

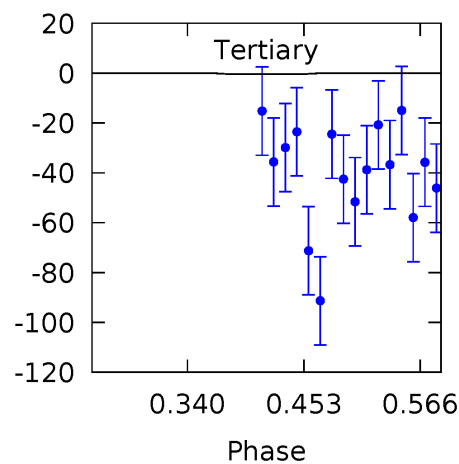
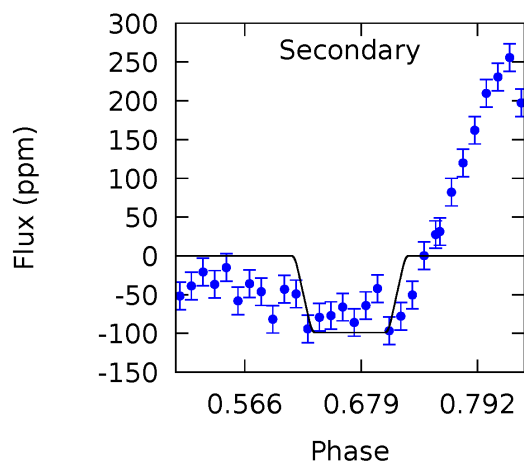
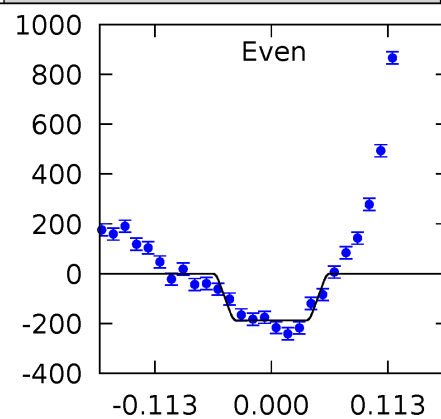
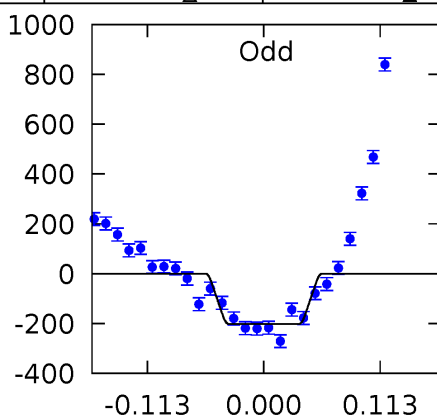
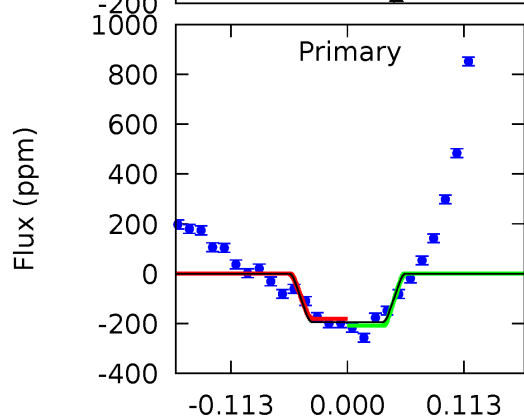
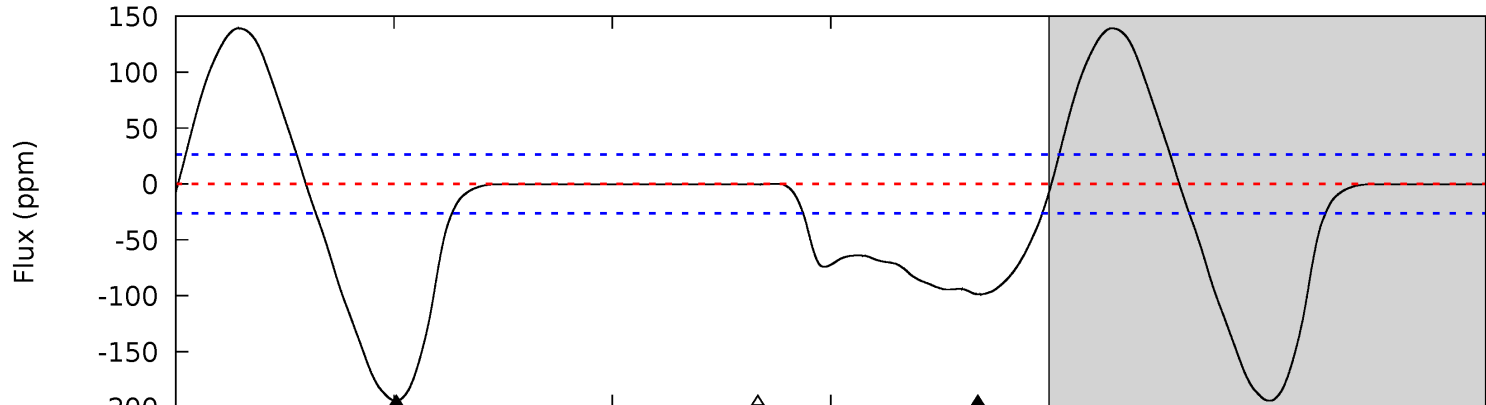
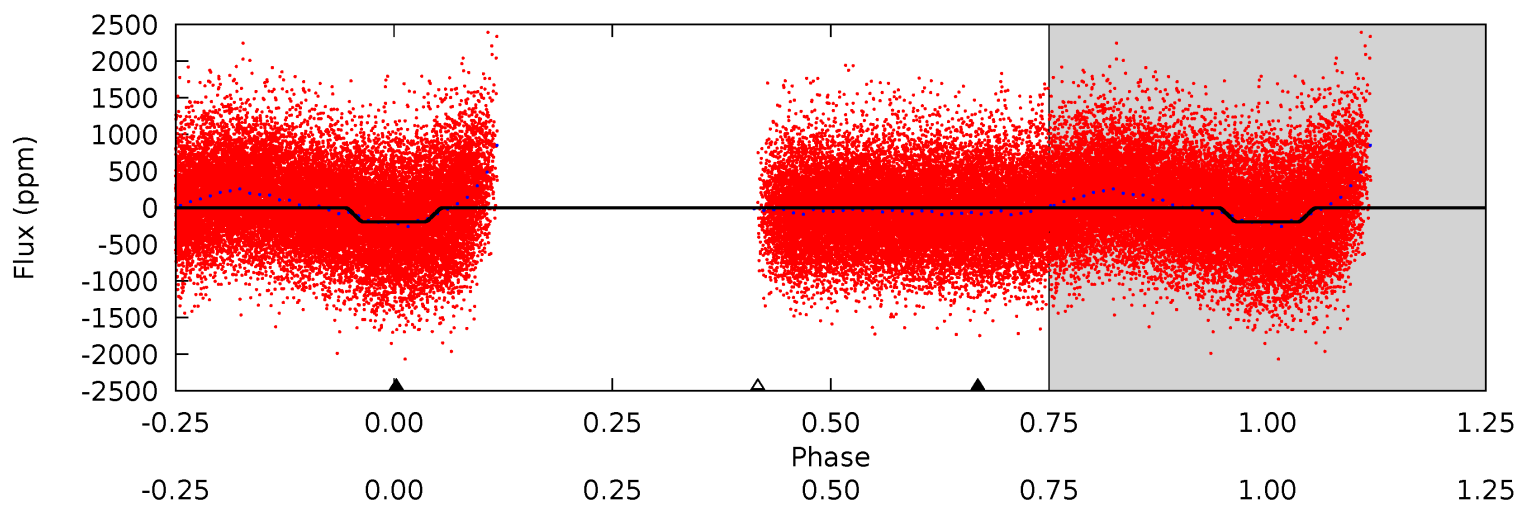




# Alt Model-Shift Uniqueness Test

007060736-02, P = 3.469935 Days, E = 130.210669 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
33.6	17.1	0.07	0	4.54	1.58	14.2	33.5	33.6	17.0	17.1	1.23	0.86	0.42	1.99



### Stellar Parameters For KIC 007060736

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6283^{+176}_{-242}$	$4.485^{+0.054}_{-0.216}$	$-0.400^{+0.300}_{-0.300}$	$0.952^{+0.304}_{-0.101}$	$1.010^{+0.133}_{-0.133}$	$1.648^{+0.455}_{-0.848}$
	+3%/-4%	+1%/-5%	+75%/-75%	+32%/-11%	+13%/-13%	+28%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007060736-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-62 \pm 6$	$1.09^{+0.20}_{-0.19}$	$1818^{+136}_{-91}$	$5583^{+415}_{-383}$	$57^{+26}_{-17}$
Alt.	$-99 \pm 6$	$1.57^{+0.28}_{-0.21}$	$1815^{+138}_{-98}$	$5242^{+278}_{-275}$	$44^{+14}_{-11}$

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

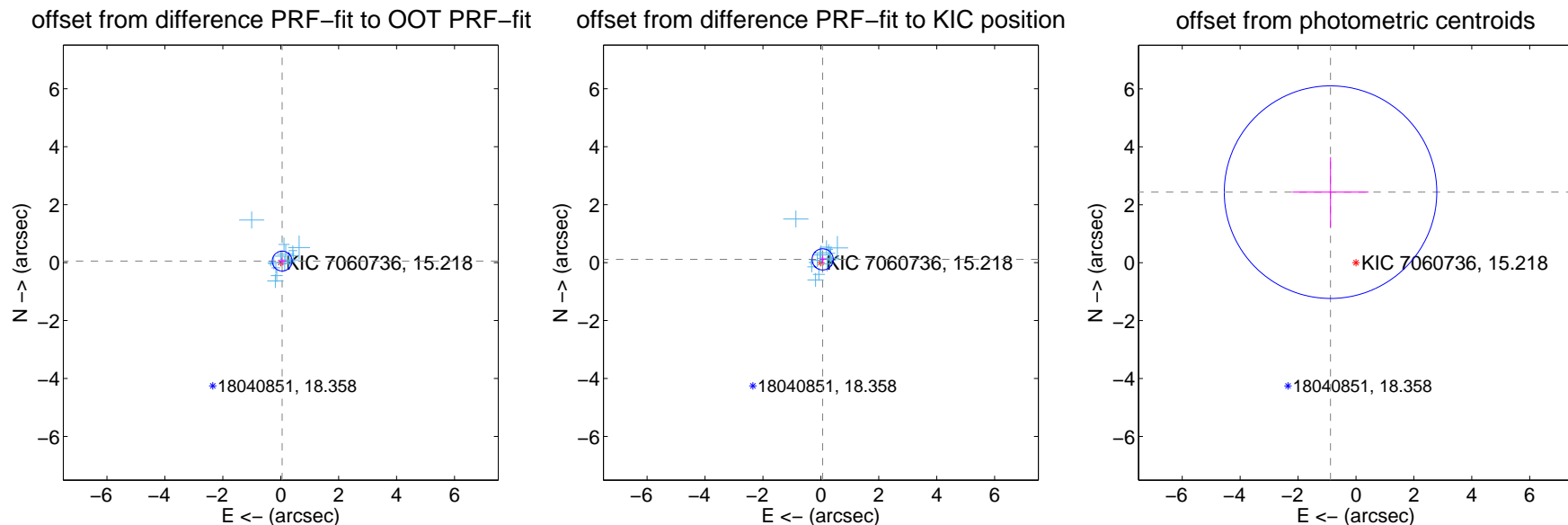
## DV Centroid Data

Supplemental centroid analysis for 007060736-02. Kepler magnitude: 15.22. Transit SNR 9.27

There are 16 quarters with good PRF difference image offsets

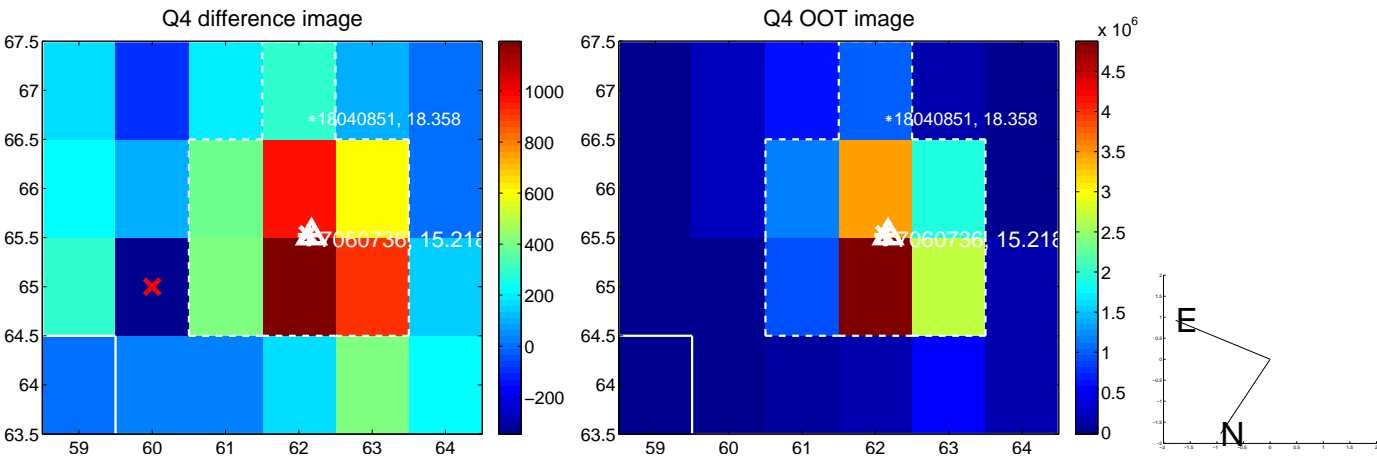
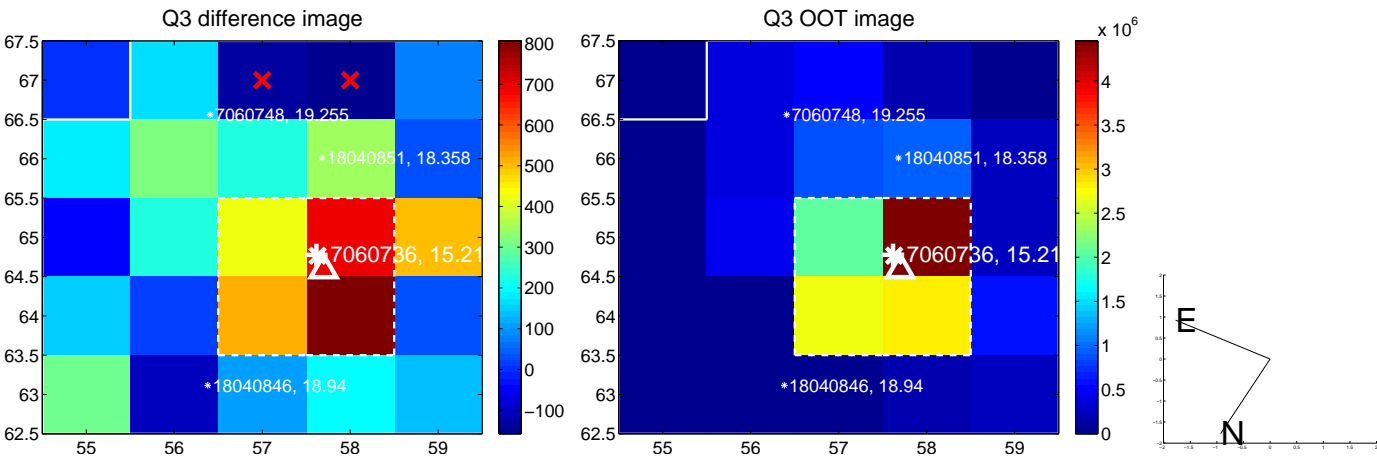
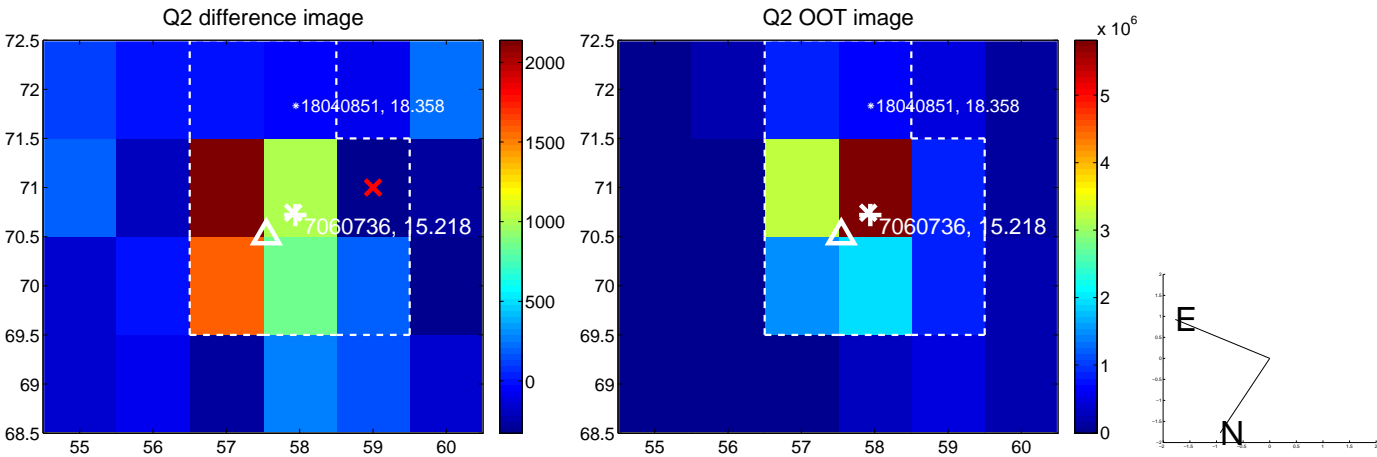
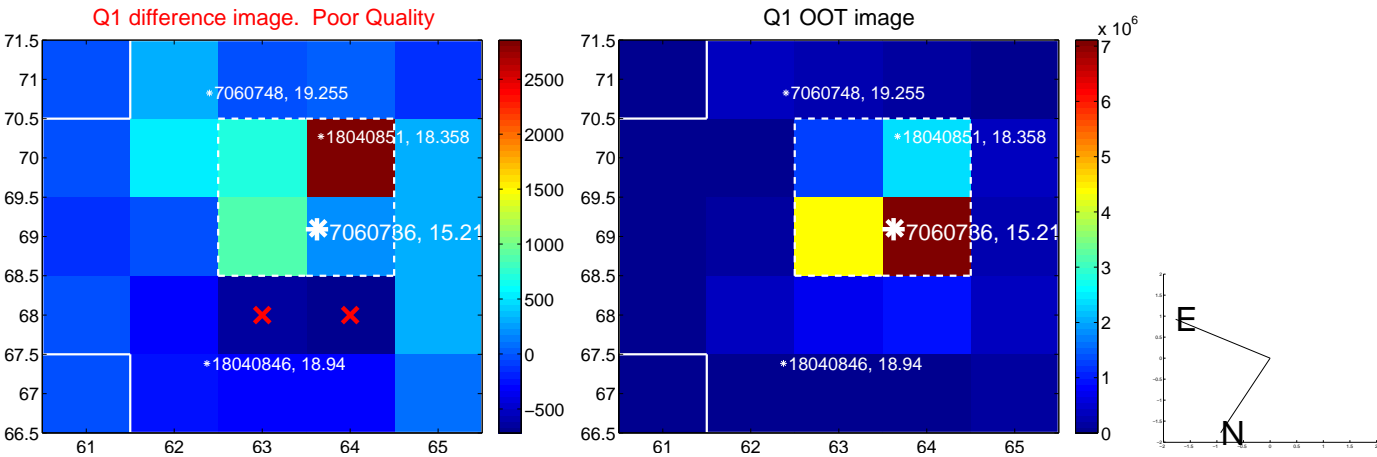
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.071 \pm 0.114$	0.62	$-0.049 \pm 0.123$	$0.052 \pm 0.128$
PRF-fit source offset from KIC position	$0.127 \pm 0.122$	1.04	$-0.062 \pm 0.104$	$0.111 \pm 0.135$
photometric centroid source offset	$2.59 \pm 1.22$	2.12	$0.88 \pm 1.31$	$2.43 \pm 1.21$

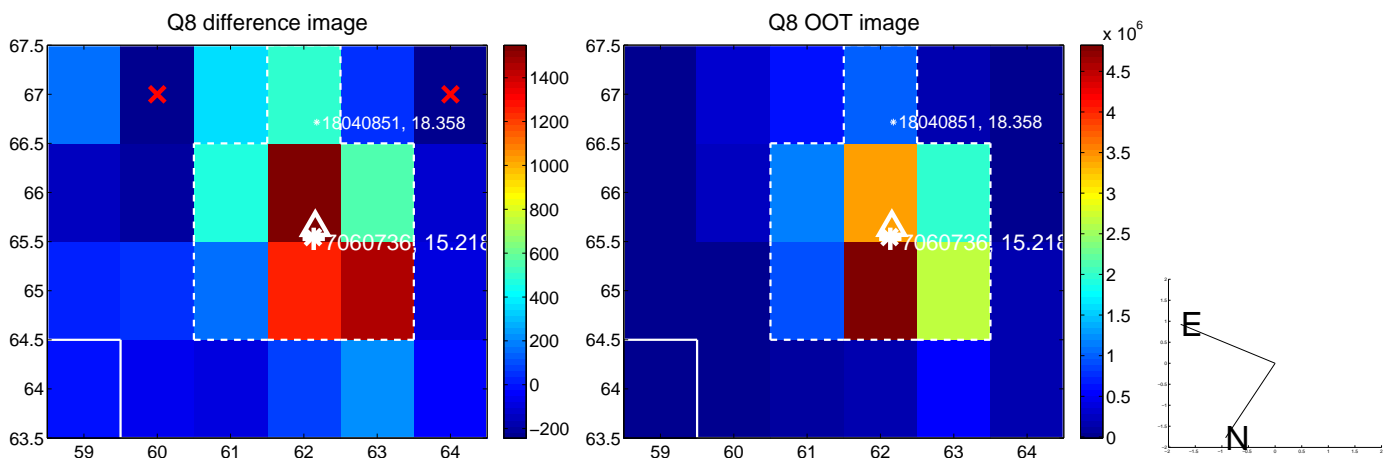
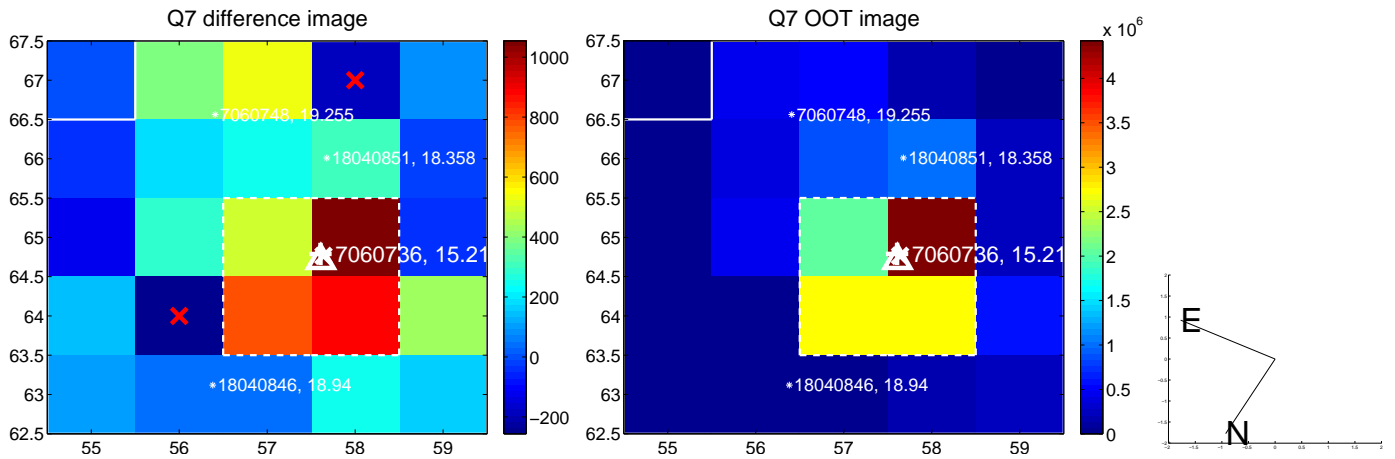
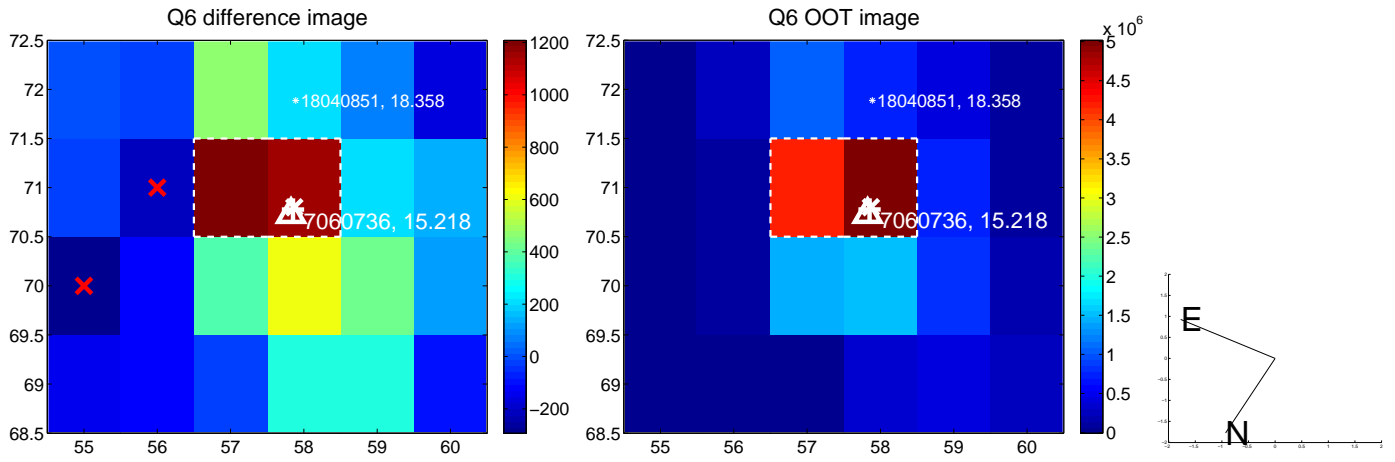
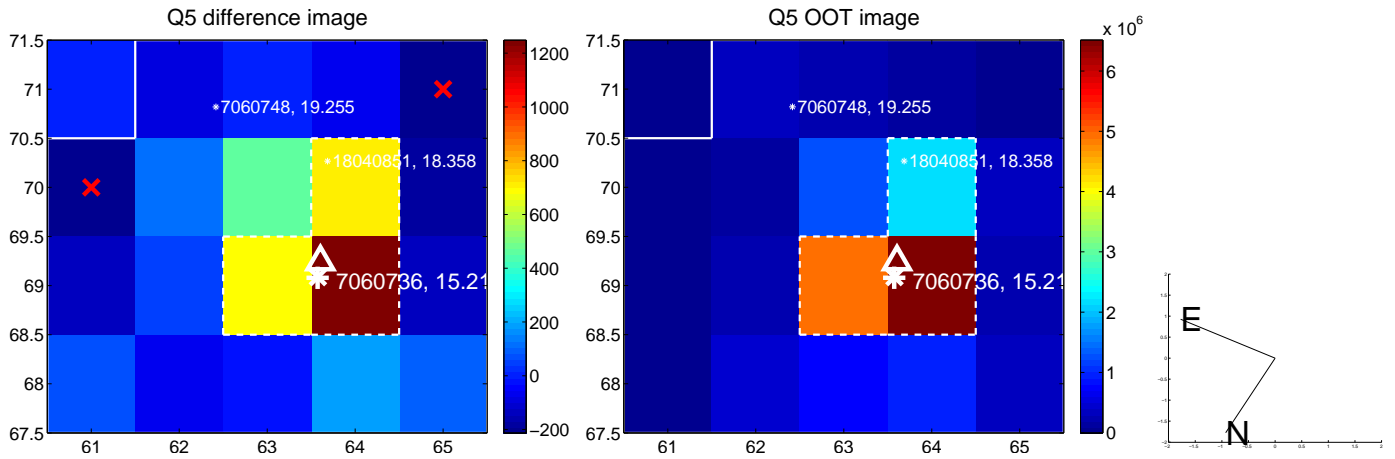


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

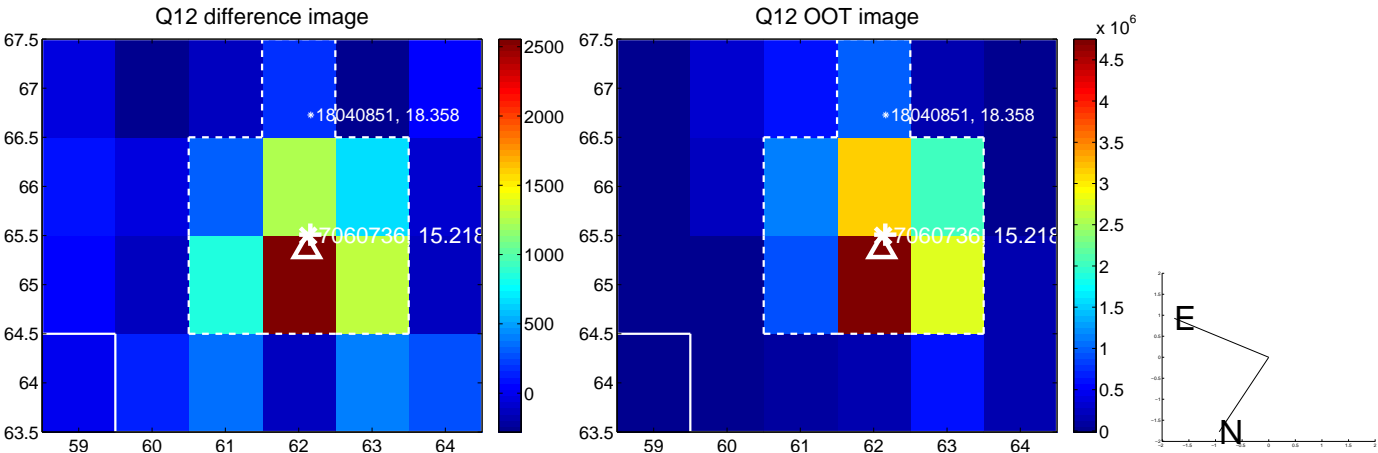
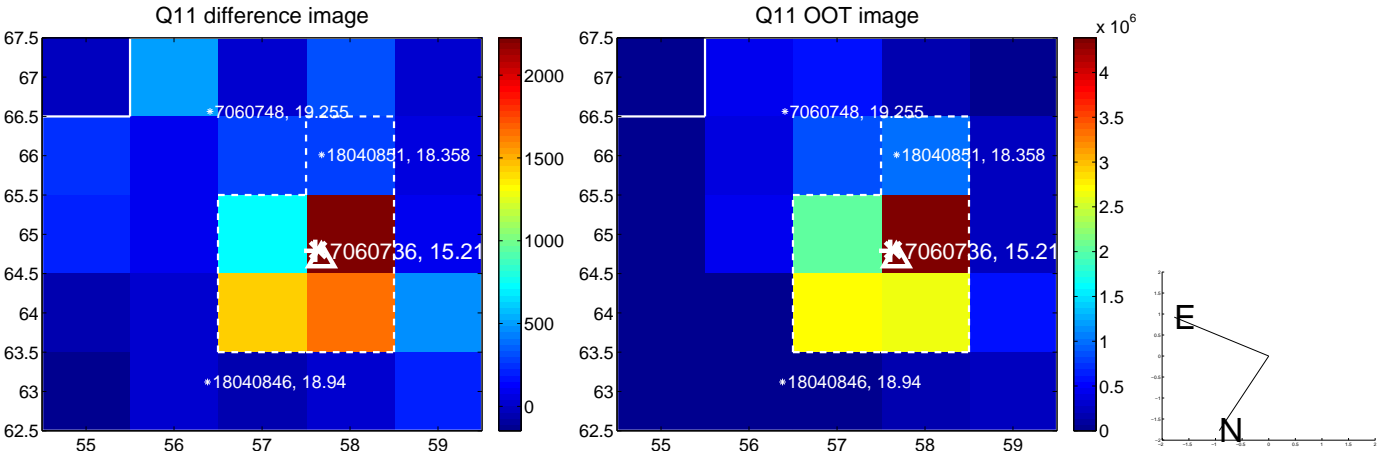
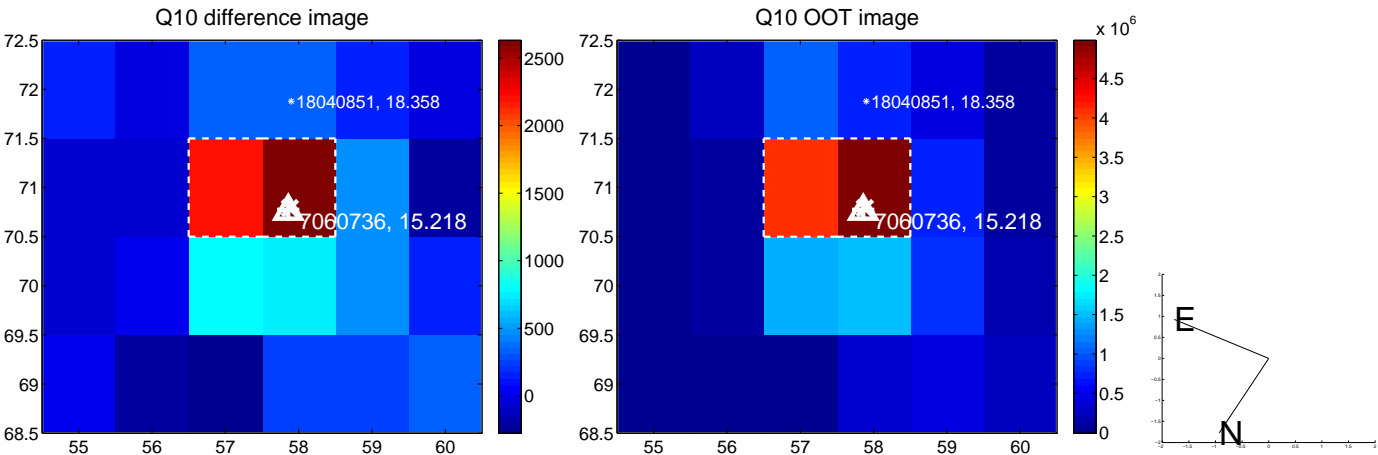
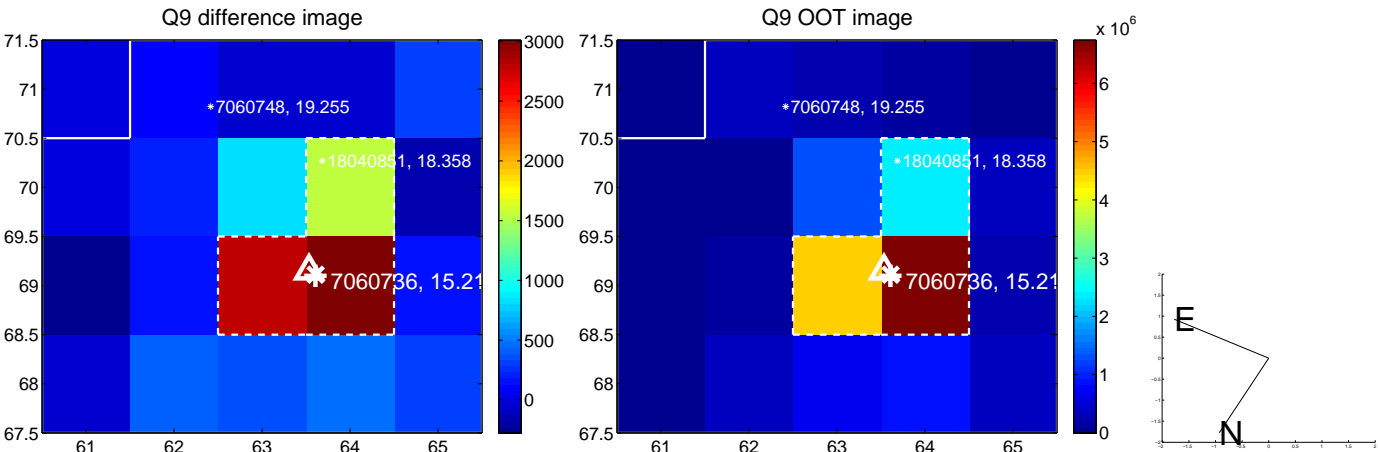


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

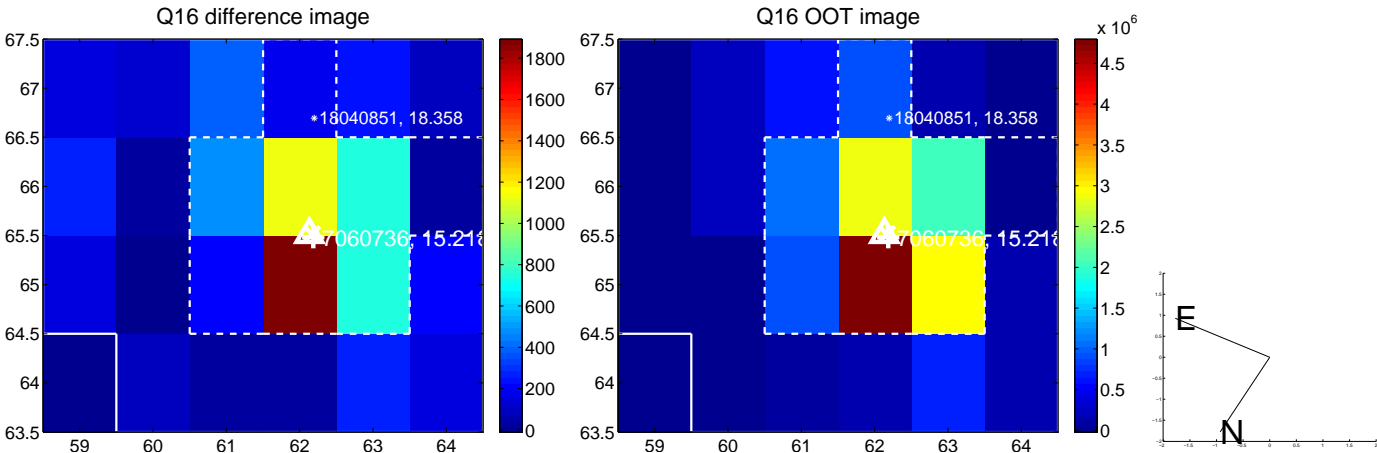
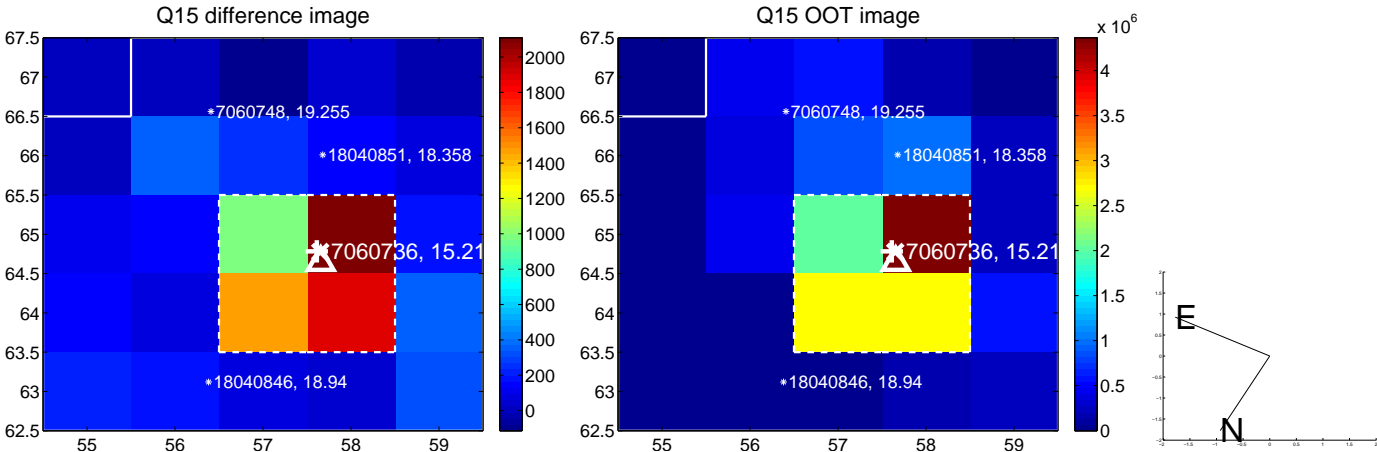
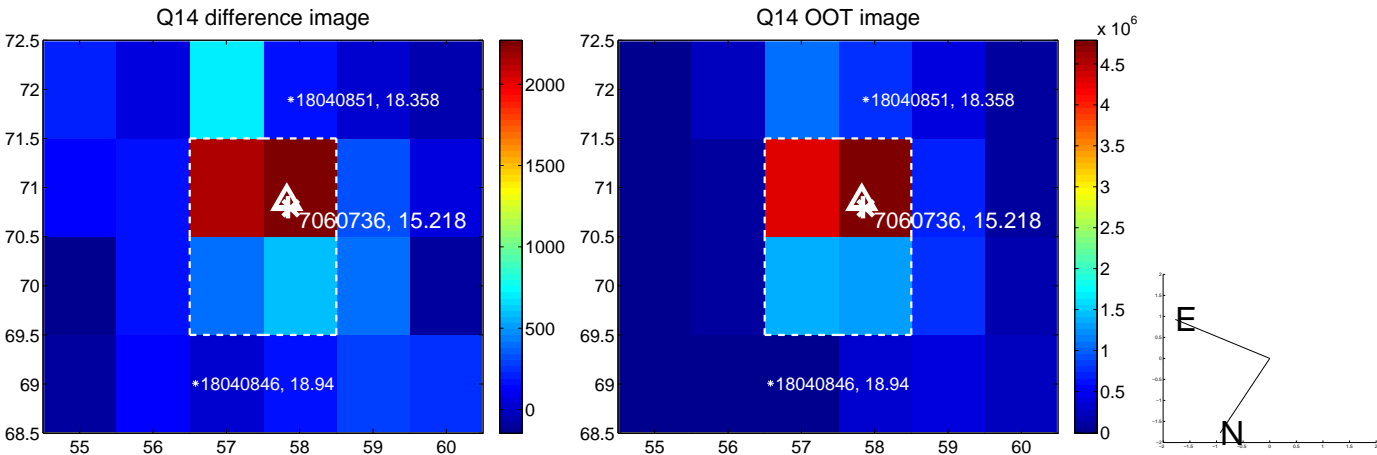
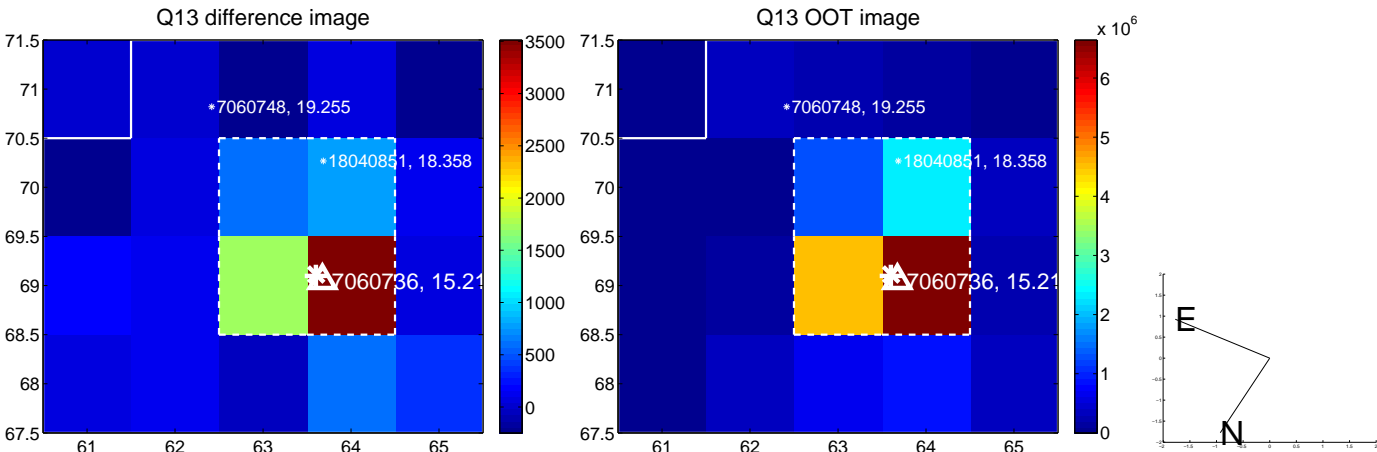




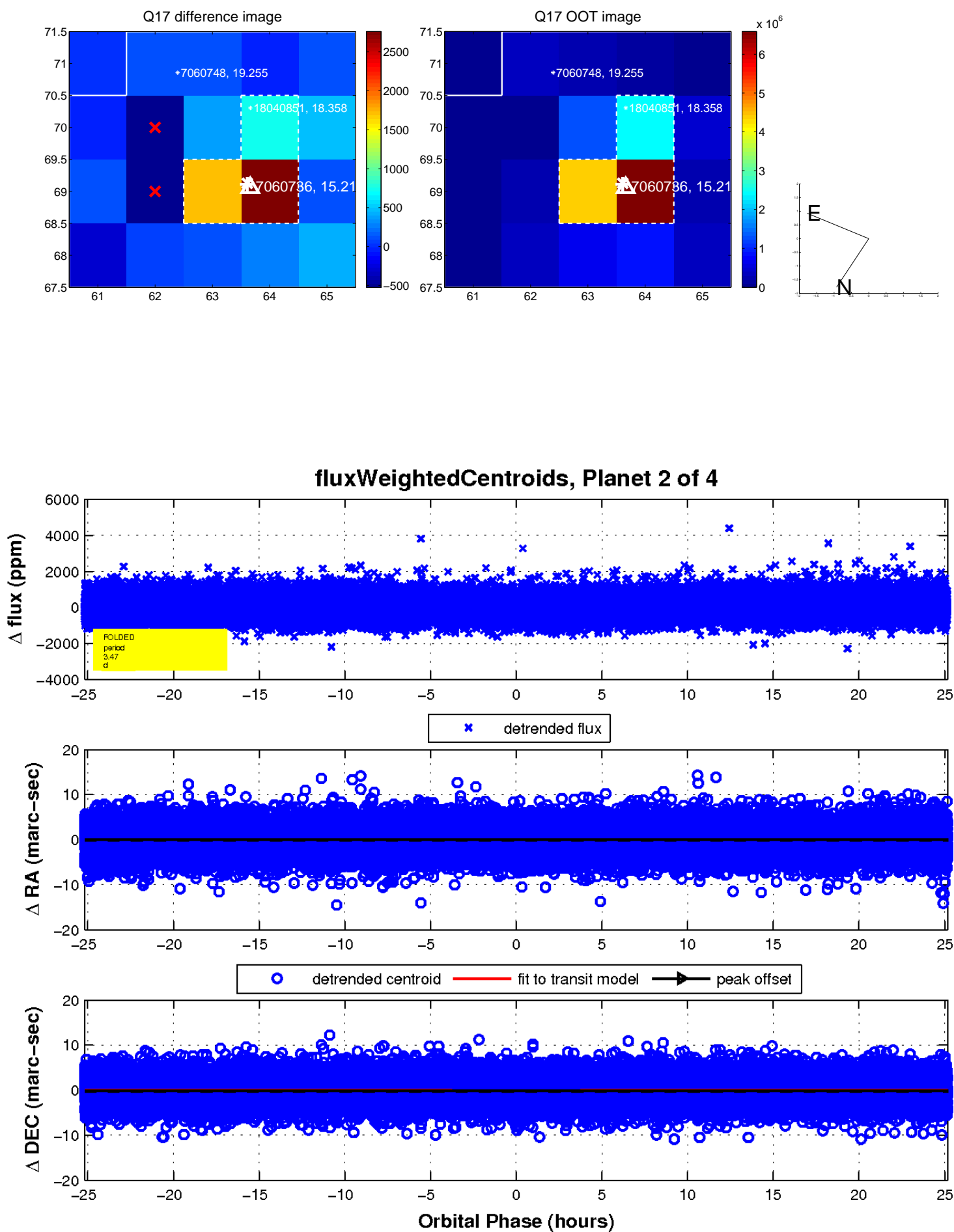
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



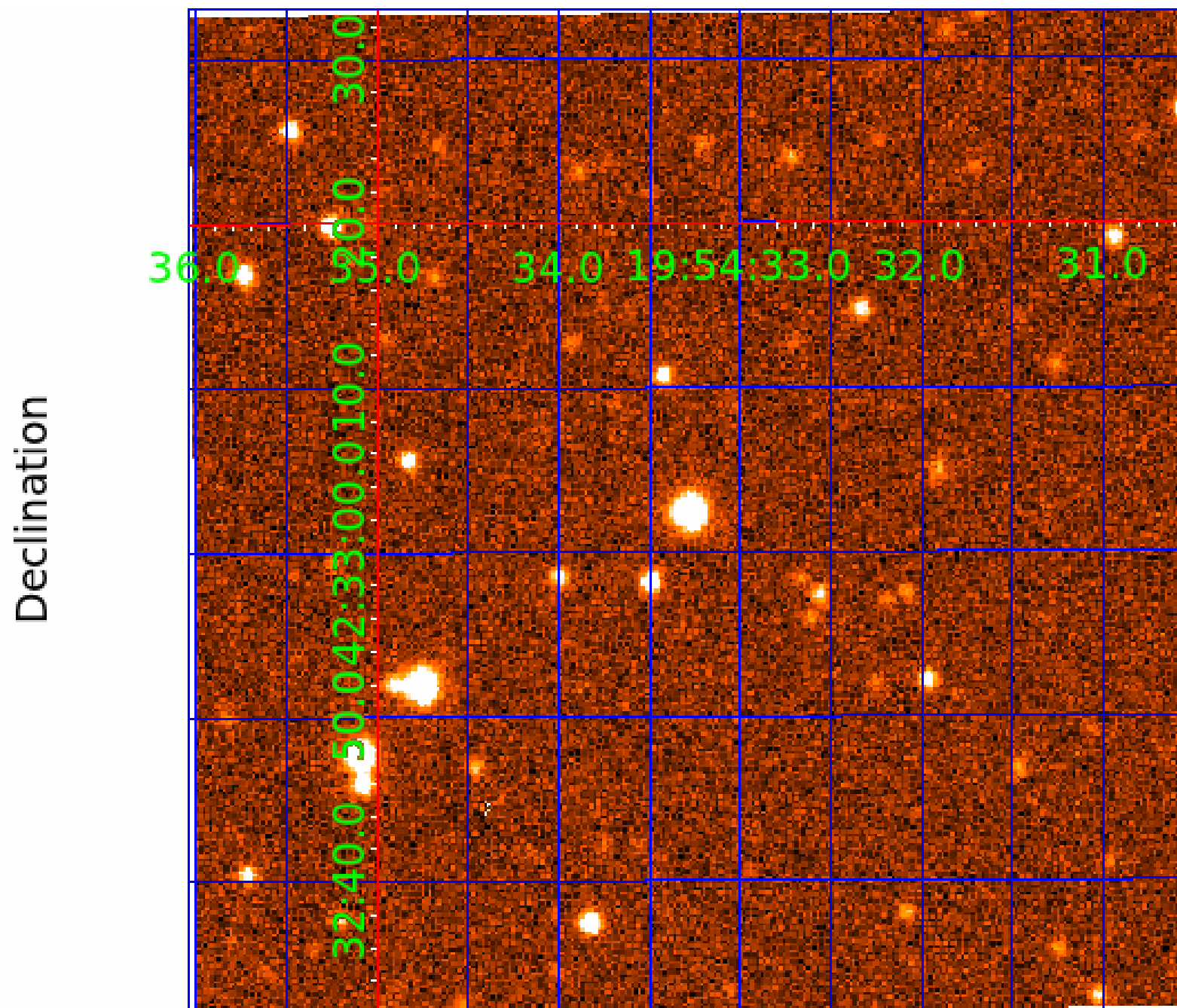
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 007060736

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007060736-01	OBS	No	3.469590	134.680120	152.2	9.215	12.6	14.2	0.95	6283	2.04	624.62
007060736-02	OBS	No	3.470044	133.747134	77.2	8.394	8.5	9.3	0.95	6283	1.03	624.51
007060736-03	OBS	No	316.224992	304.810634	711.2	6.542	7.9	6.5	0.95	6283	2.73	1.52
007060736-04	OBS	No	3.469299	131.650094	109.0	33.660	8.5	11.3	0.95	6283	1.17	624.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007060736-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007060736-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
007060736-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007060736-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—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.

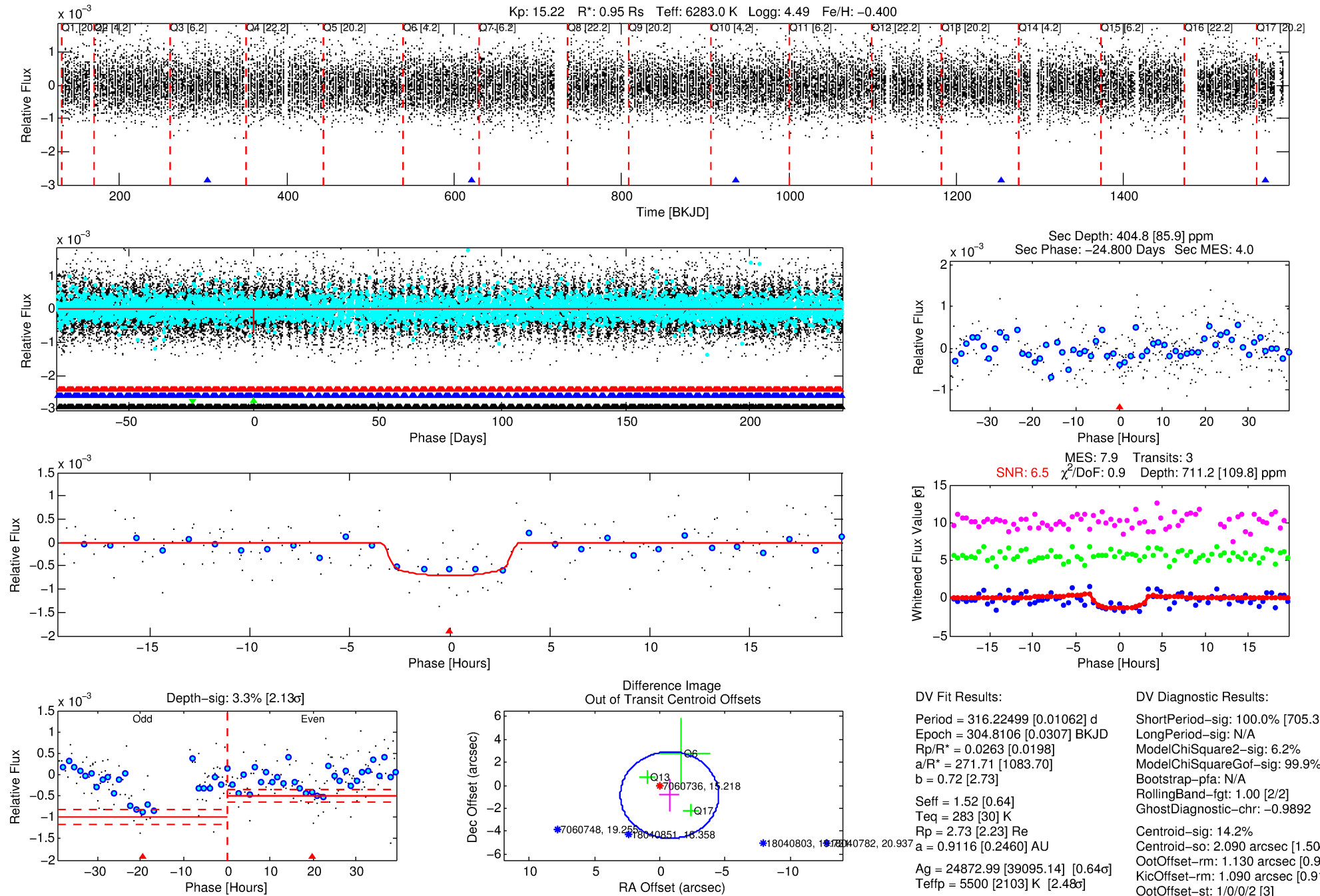
## Ephemeris Match Information For 007060736-03

No Significant Match Found



# DV One-Page Summary

KIC: 7060736 Candidate: 3 of 4 Period: 316.225 d



## DV Fit Results:

Period = 316.22499 [0.01062] d  
Epoch = 304.8106 [0.0307] BKJD  
Rp/R\* = 0.0263 [0.0198]  
a/R\* = 271.71 [1083.70]  
b = 0.72 [2.73]  
Seff = 1.52 [0.64]  
Teq = 283 [30] K  
Rp = 2.73 [2.23] Re  
a = 0.9116 [0.2460] AU  
Ag = 24872.99 [39095.14] [0.64 $\sigma$ ]  
Teff = 5500 [2103] K [2.48 $\sigma$ ]

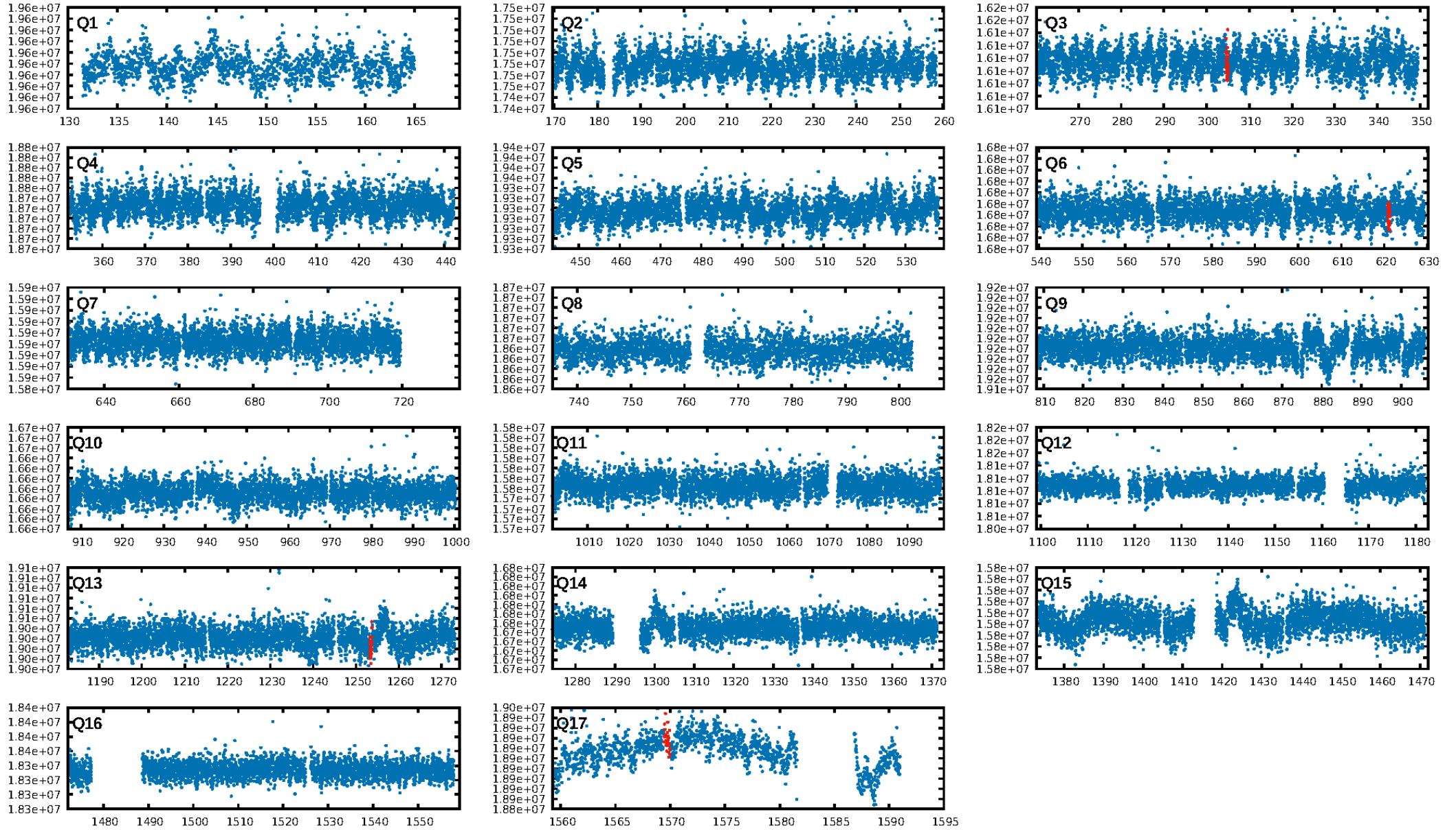
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [705.31 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 6.2%  
ModelChiSquareGof-sig: 99.9%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: -0.9892  
Centroid-sig: 14.2%  
Centroid-so: 2.090 arcsec [1.50 $\sigma$ ]  
OotOffset-rm: 1.130 arcsec [0.90 $\sigma$ ]  
KicOffset-rm: 1.090 arcsec [0.91 $\sigma$ ]  
OotOffset-st: 1/0/0/2 [3]  
KicOffset-st: 1/0/0/2 [3]  
DiffImageQuality-fgm: 0.33 [1/3]  
DiffImageOverlap-fno: 0.25 [1/4]

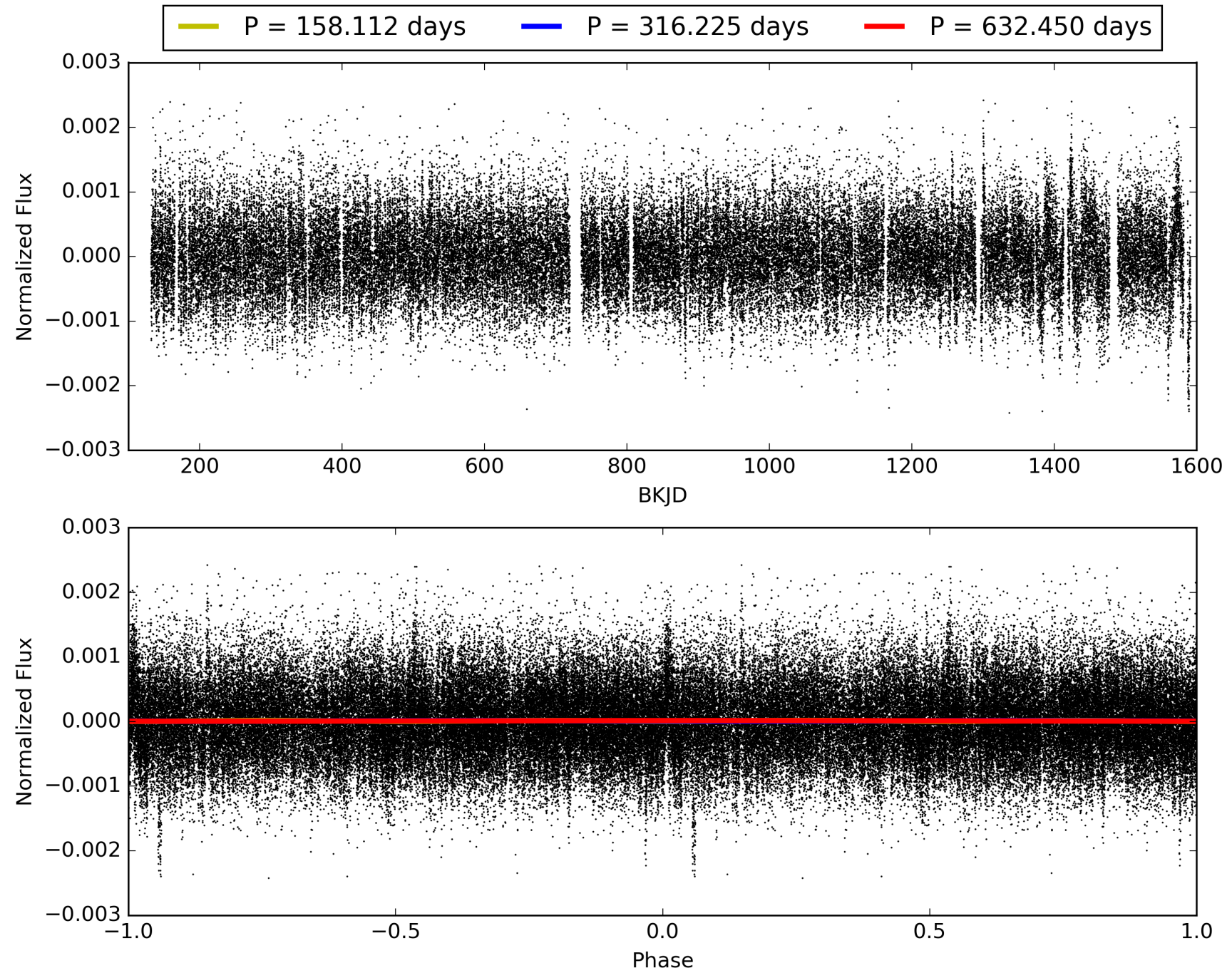
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:38:40 Z

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

# TCE 007060736-03, PDC Light Curves

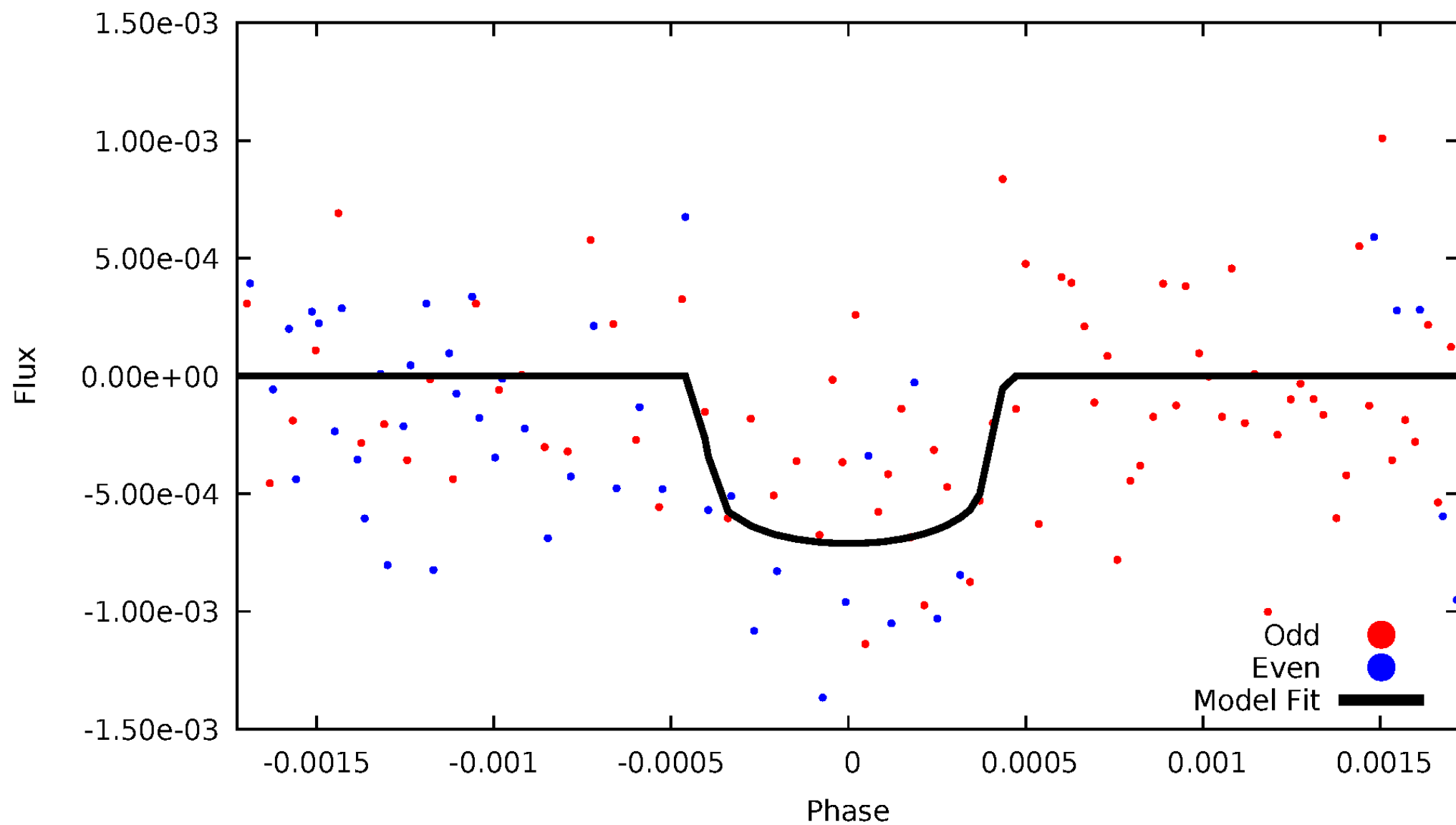


TCE 007060736-03



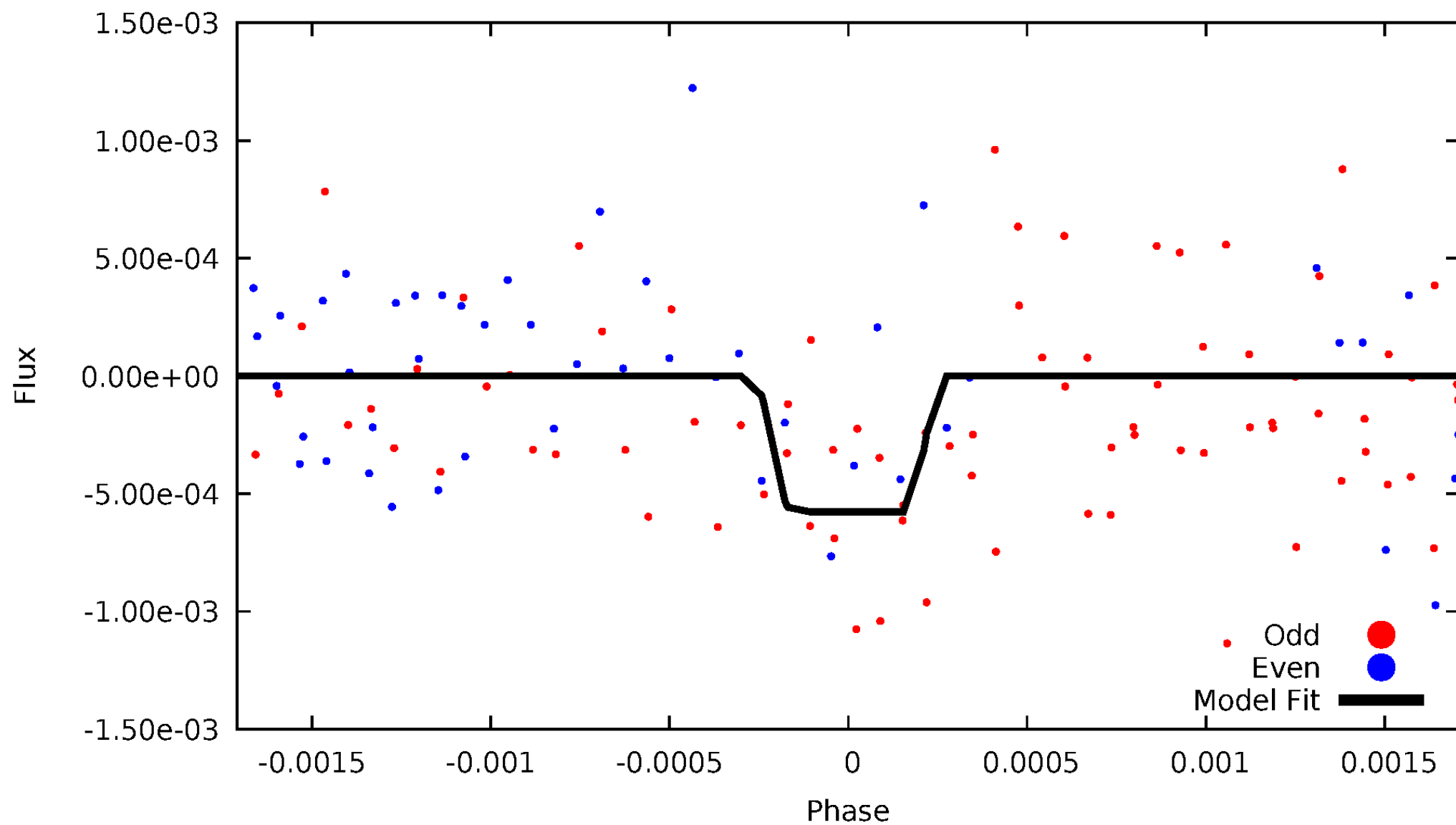
# DV Odd/Even

TCE 007060736-03

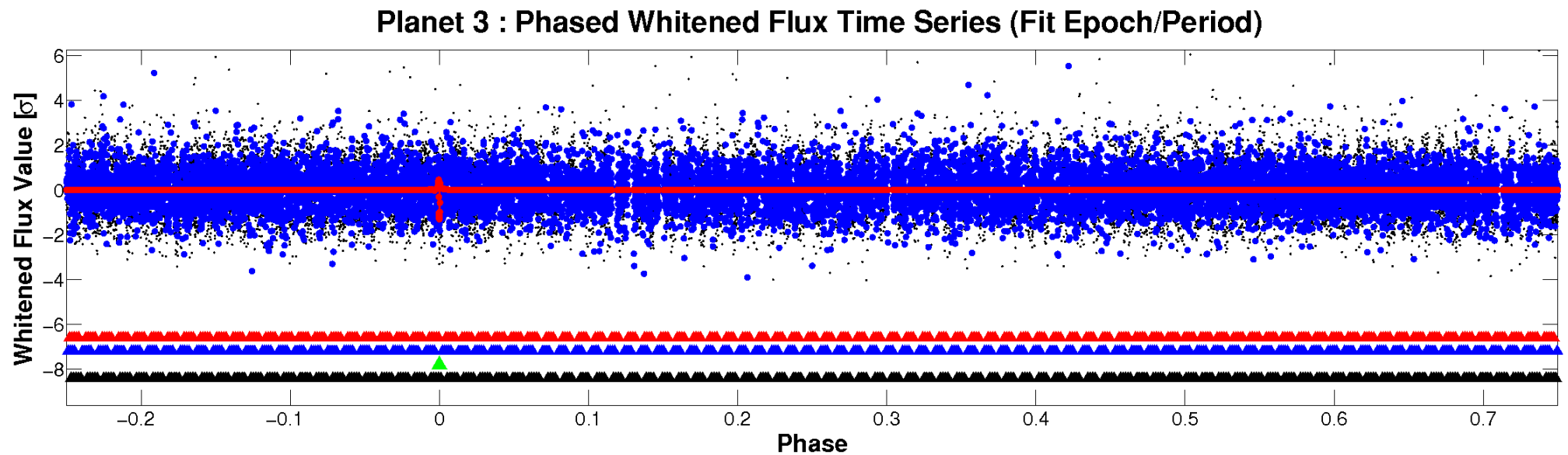
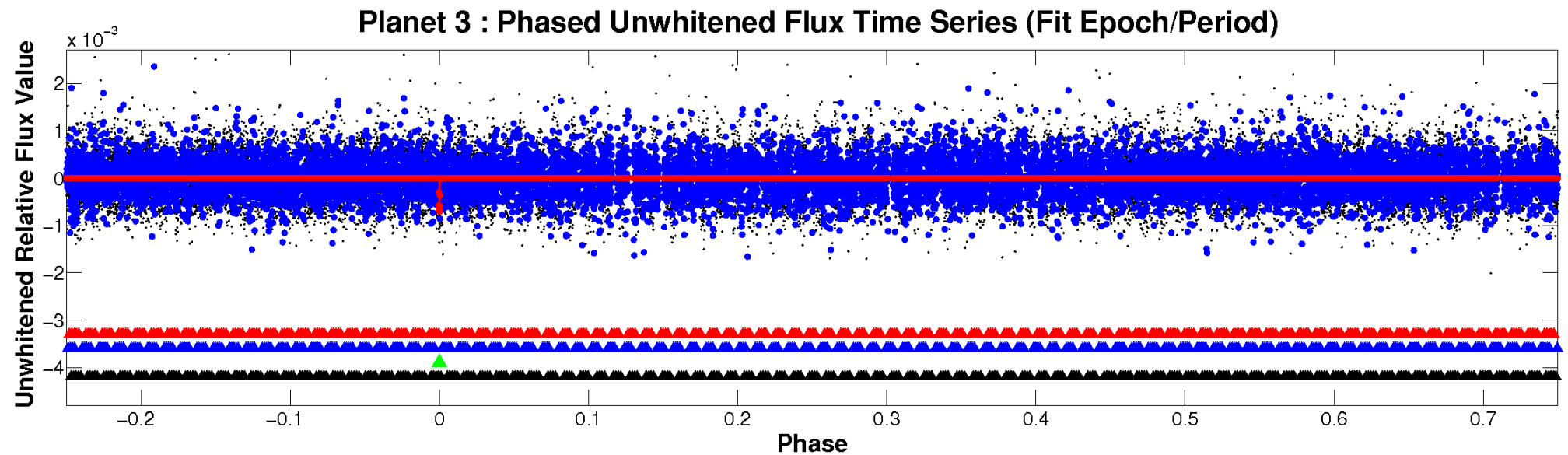


# ALT Odd/Even

TCE 007060736-03



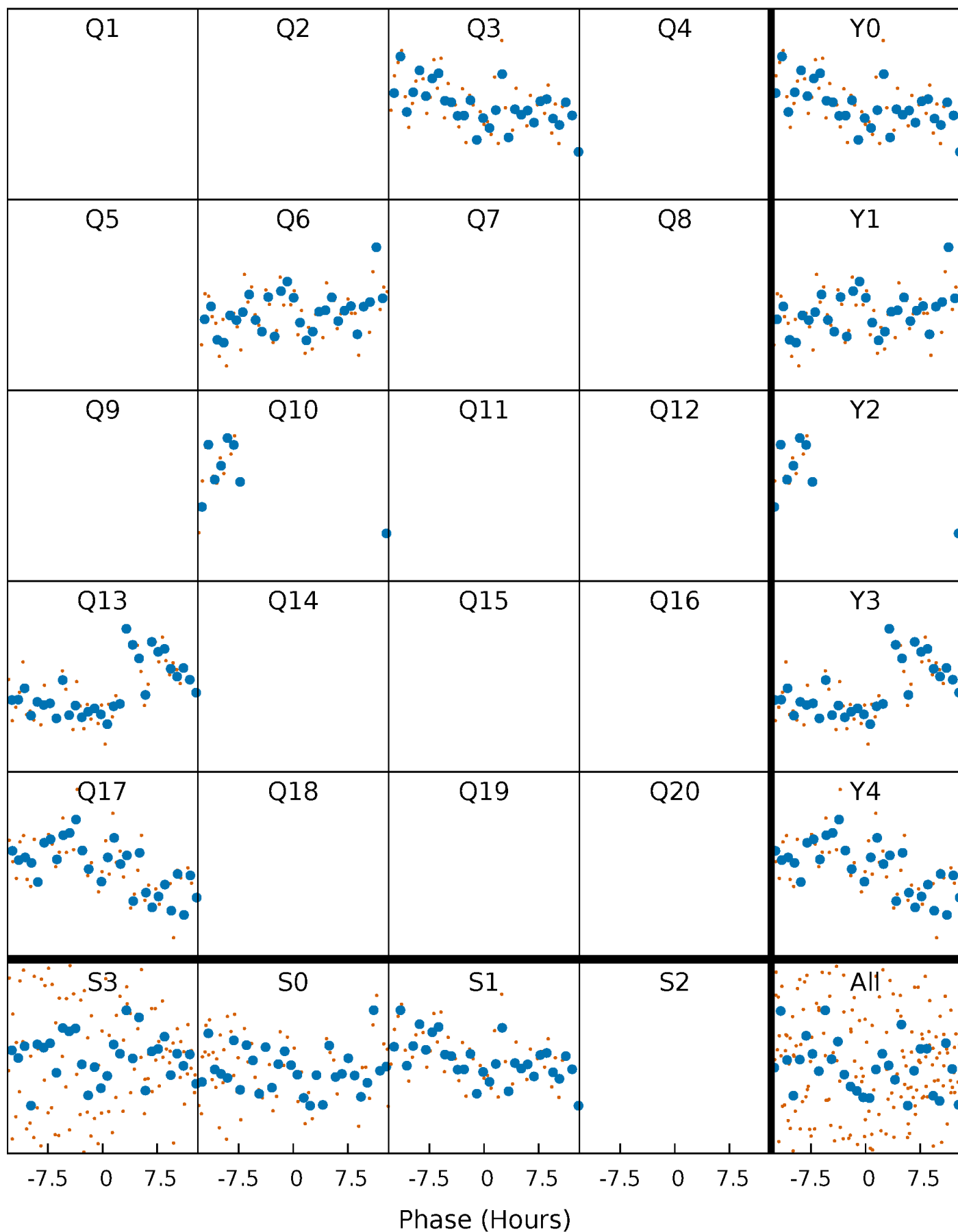
# Non-Whitened Vs. Whitened Light Curve





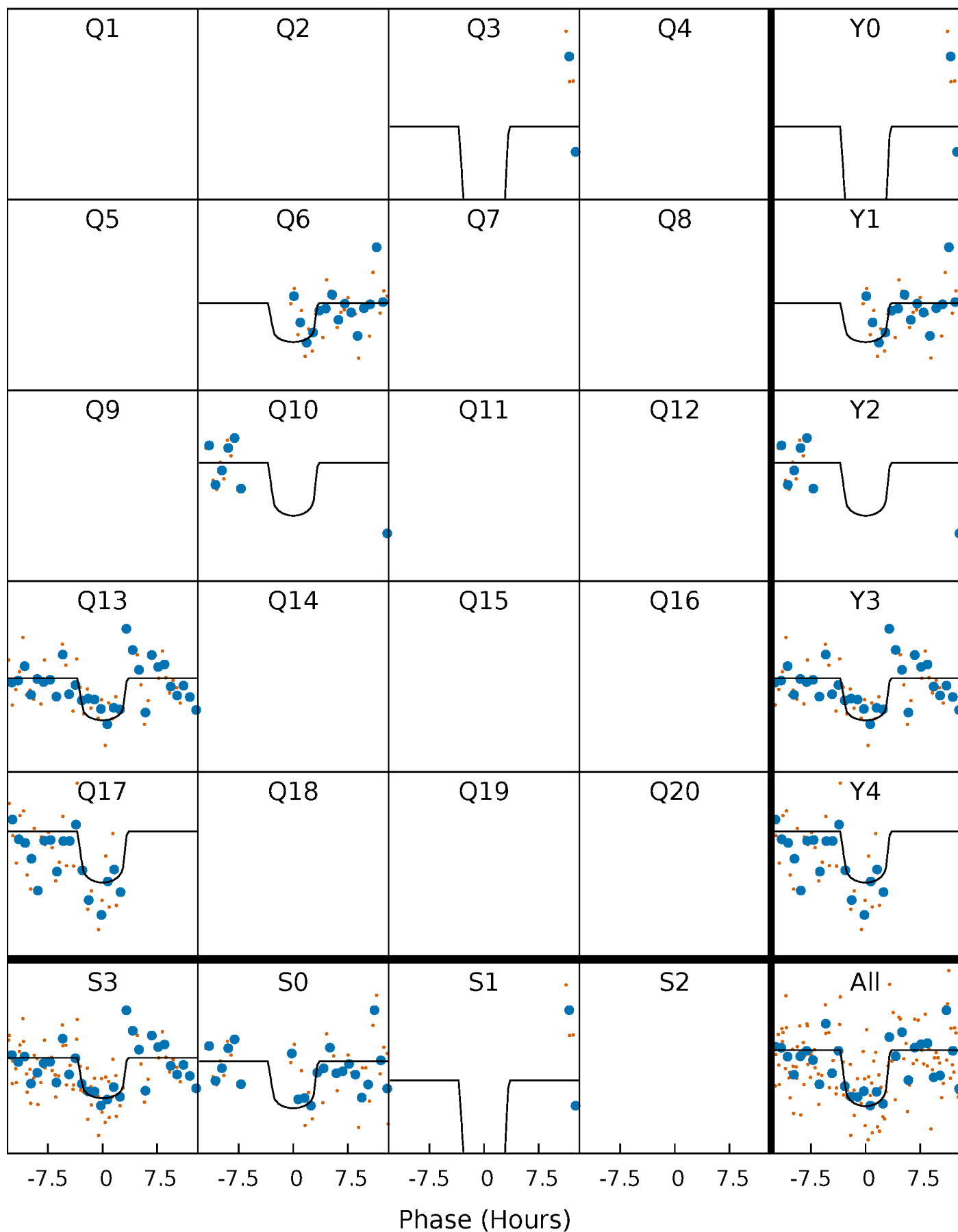
# PDC Quarter-Phased Transit Curves

TCE 007060736-03     $P=316.224992$  Days     $T_0=304.810634$  (BKJD)



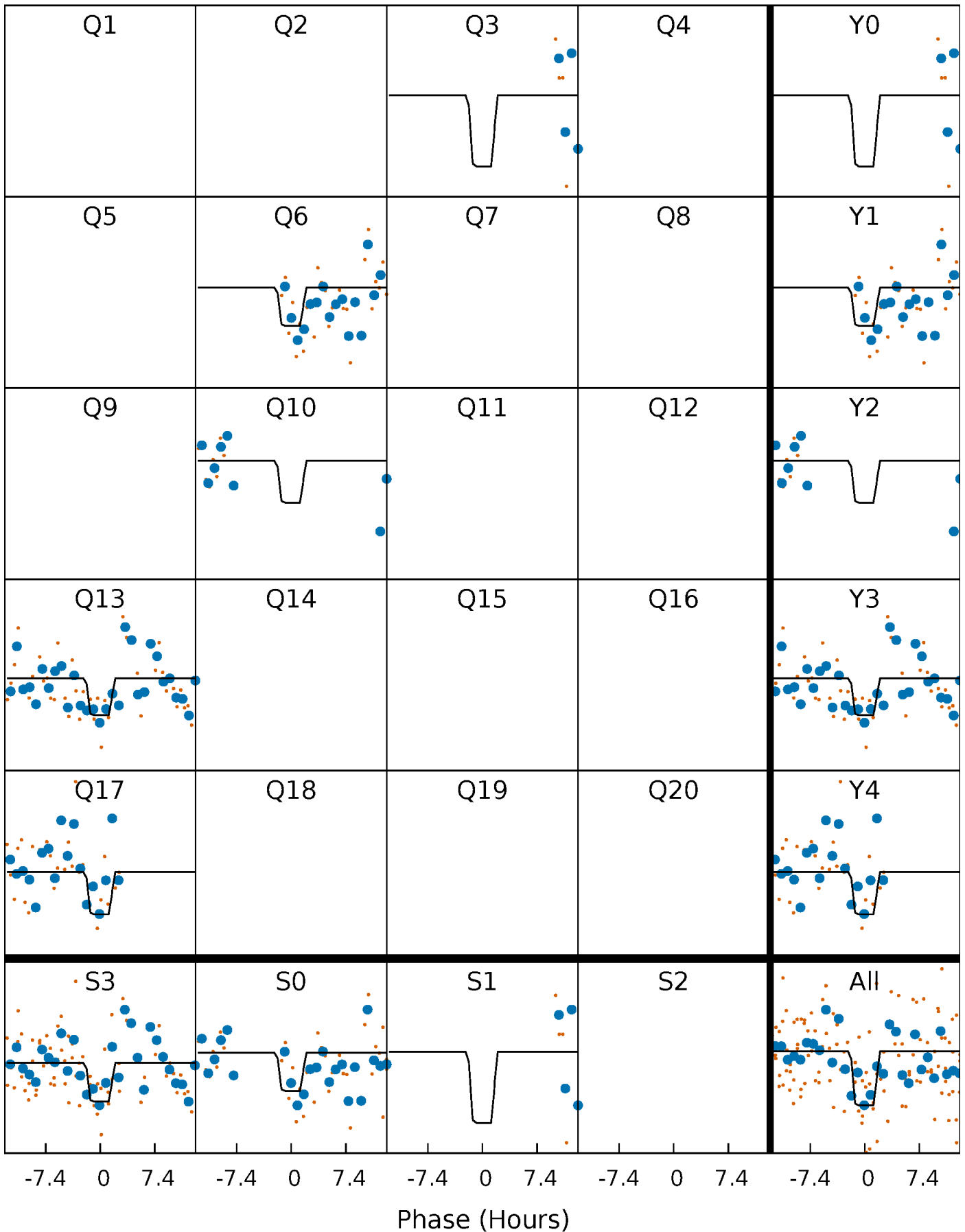
# DV Quarter-Phased Transit Curves

TCE 007060736-03     $P=316.224992$  Days     $T_0=304.810634$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

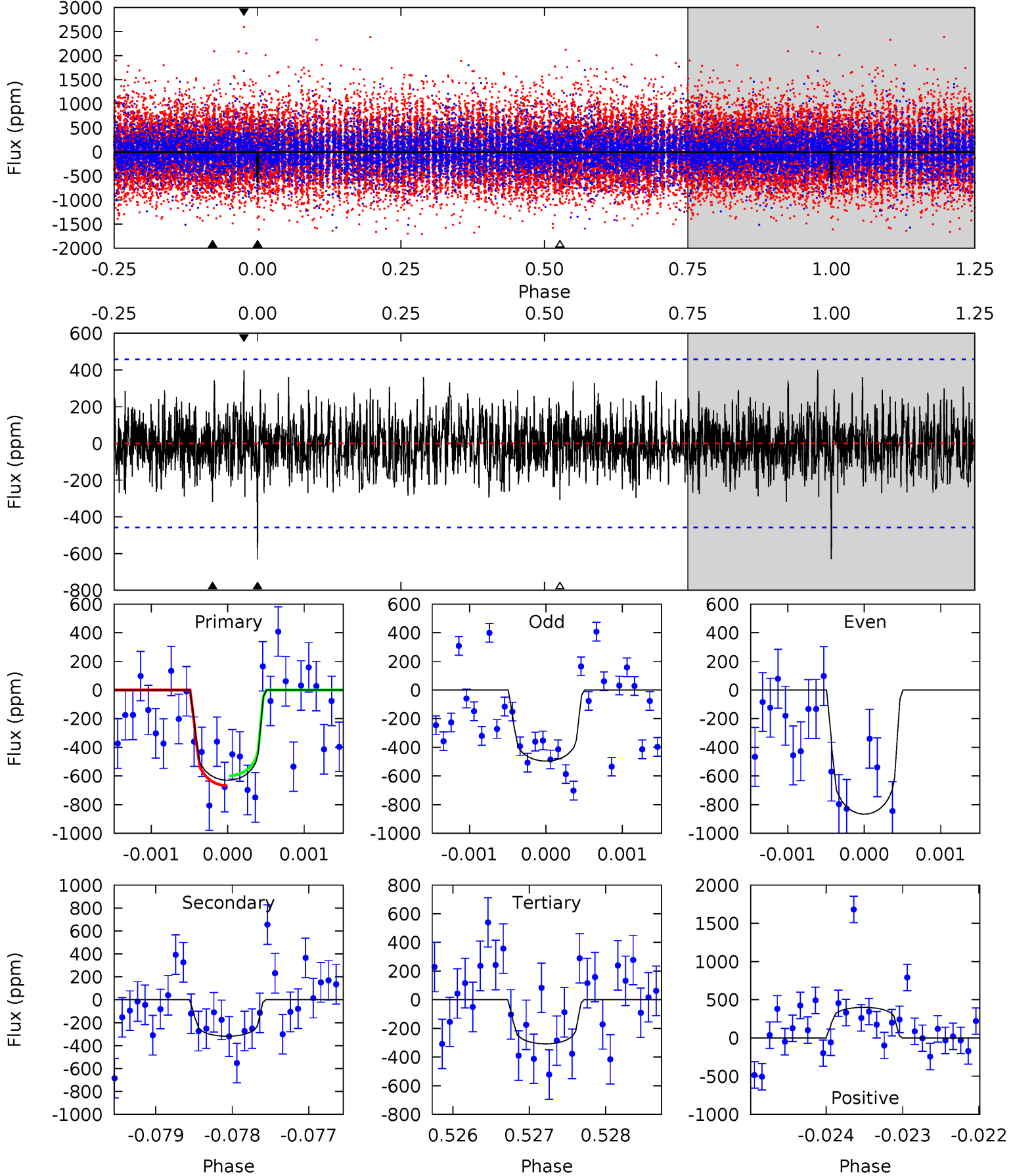
TCE 007060736-03 P=316.209341 Days  $T_0=304.865652$  (BKJD)



# DV Model-Shift Uniqueness Test

007060736-03, P = 316.224992 Days, E = 304.810634 Days

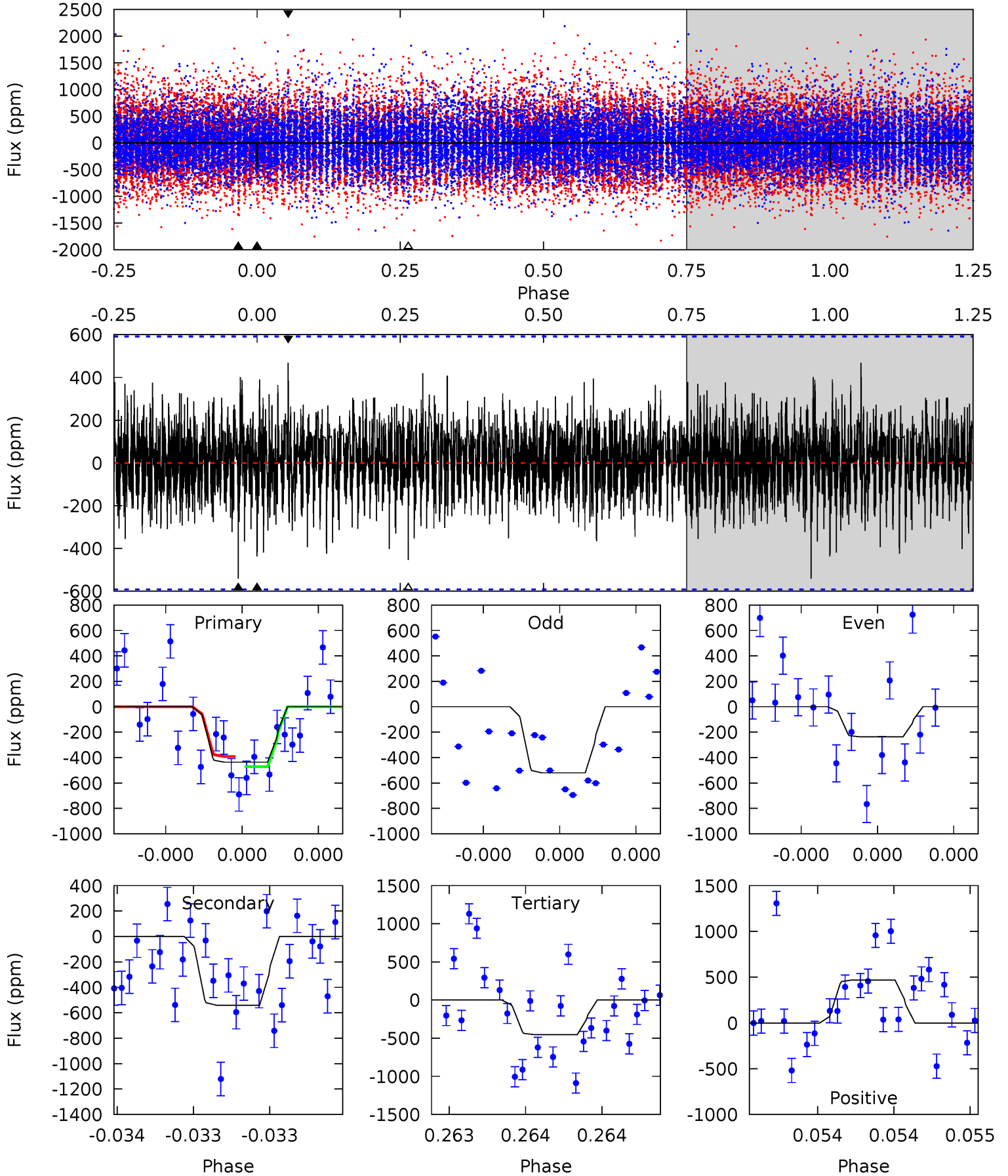
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.50	3.80	3.67	4.77	5.46	3.31	1.21	3.83	2.73	0.13	-0.98	2.09	1.09	0.39	0.41



# Alt Model-Shift Uniqueness Test

007060736-03, P = 316.209341 Days, E = 304.865652 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
4.12	5.11	4.28	4.43	5.59	3.50	1.11	-0.16	-0.30	0.82	0.68	1.23	0.91	0.46	0.38



### Stellar Parameters For KIC 007060736

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6283^{+176}_{-242}$	$4.485^{+0.054}_{-0.216}$	$-0.400^{+0.300}_{-0.300}$	$0.952^{+0.304}_{-0.101}$	$1.010^{+0.133}_{-0.133}$	$1.648^{+0.455}_{-0.848}$
	+3%/-4%	+1%/-5%	+75%/-75%	+32%/-11%	+13%/-13%	+28%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007060736-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-319 \pm 84$	$2.96^{+2.00}_{-1.71}$	$405^{+29}_{-20}$	$5168^{+2806}_{-1032}$	$15632^{+74957}_{-10256}$
Alt.	$-540 \pm 106$	$2.81^{+2.20}_{-1.59}$	$403^{+30}_{-19}$	$5899^{+3802}_{-1284}$	$30463^{+131825}_{-21083}$

$T_{\text{max}}$  = 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

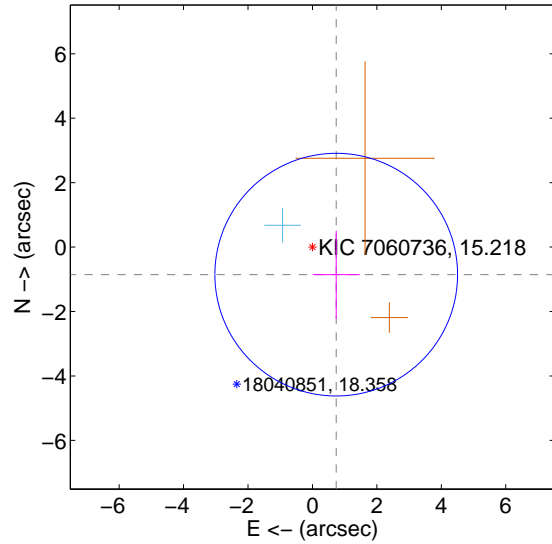
Supplemental centroid analysis for 007060736-03. Kepler magnitude: 15.22. Transit SNR 6.50

There are 1 quarters with good PRF difference image offsets

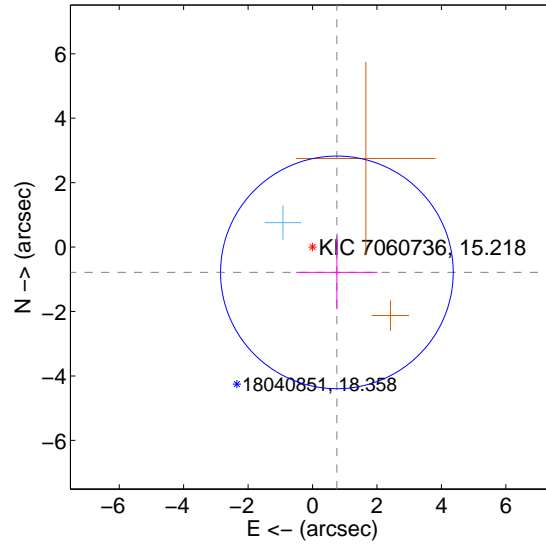
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.130 \pm 1.255$	0.90	$-0.738 \pm 0.730$	$-0.855 \pm 1.365$
PRF-fit source offset from KIC position	$1.090 \pm 1.204$	0.91	$-0.756 \pm 1.261$	$-0.785 \pm 1.148$
photometric centroid source offset	$2.09 \pm 1.39$	1.50	$1.96 \pm 1.40$	$0.73 \pm 1.30$

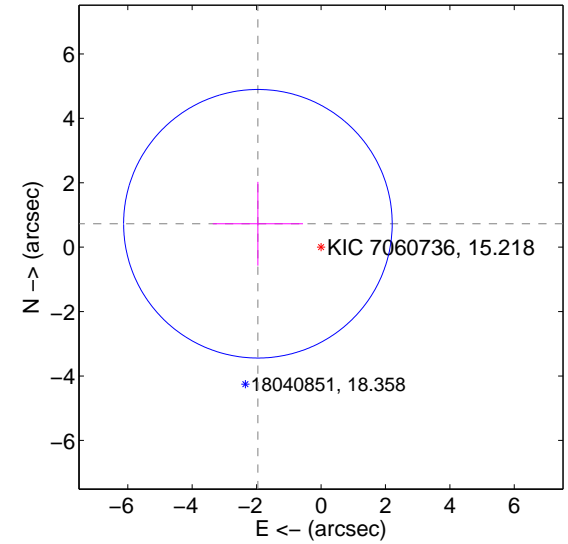
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

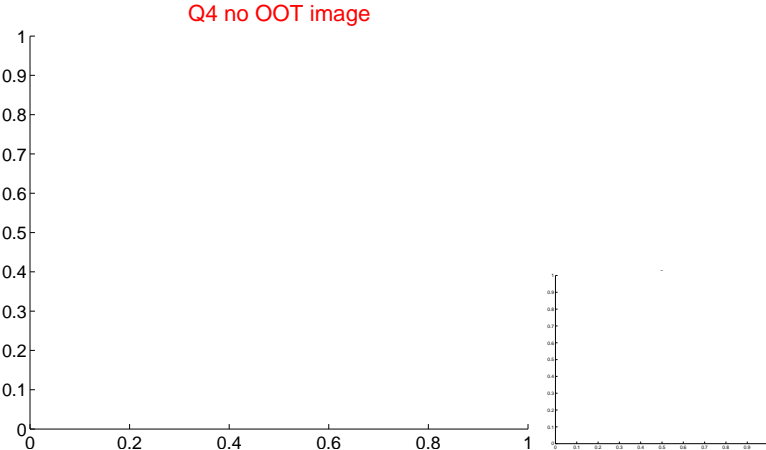
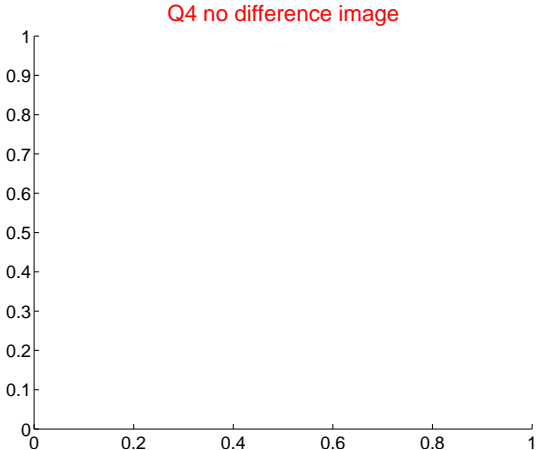
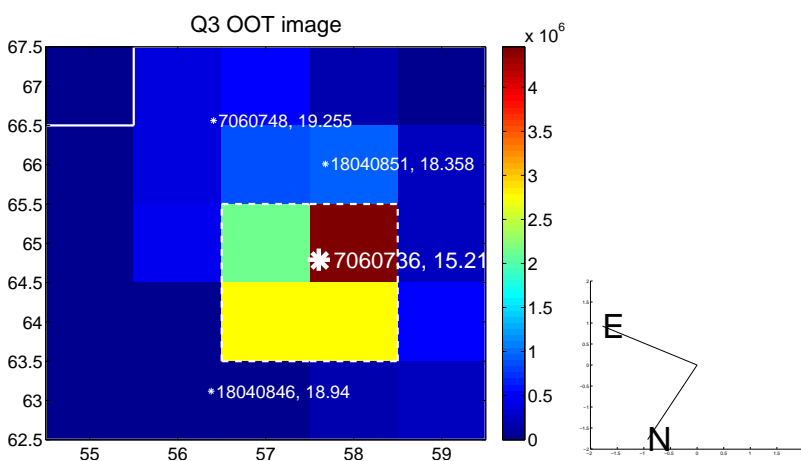
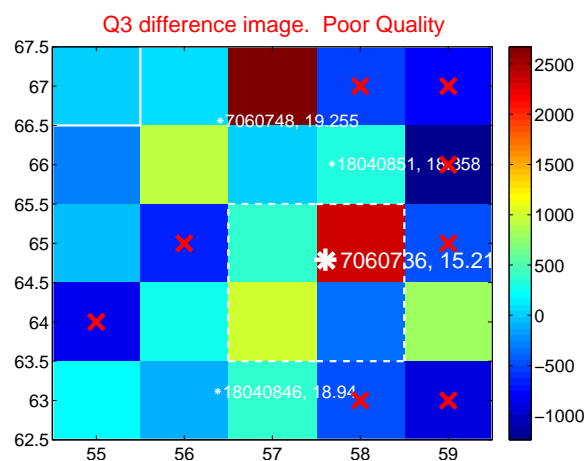
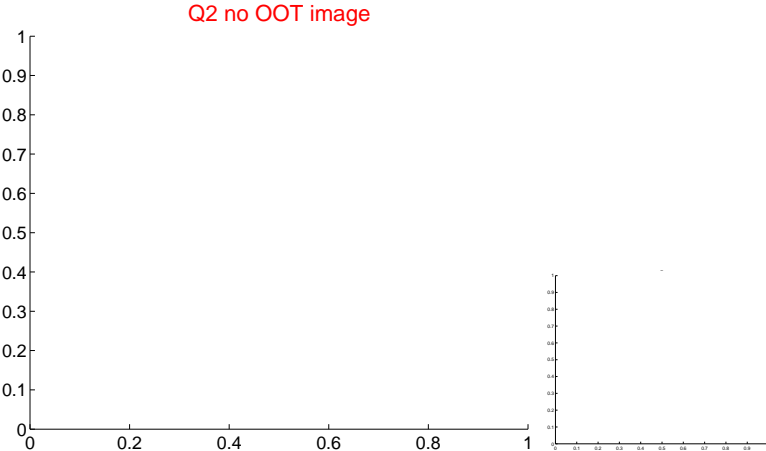
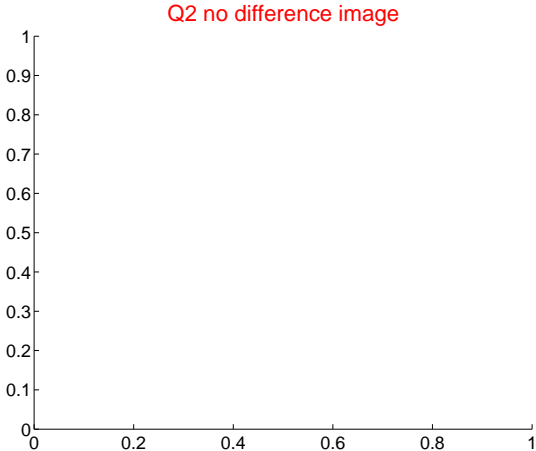
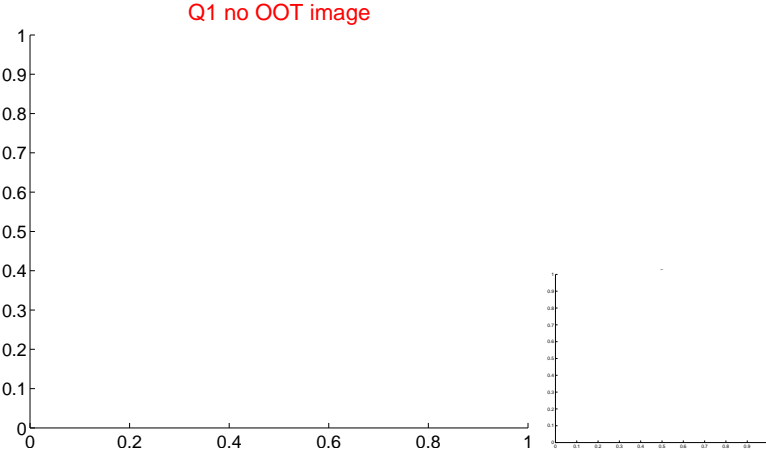
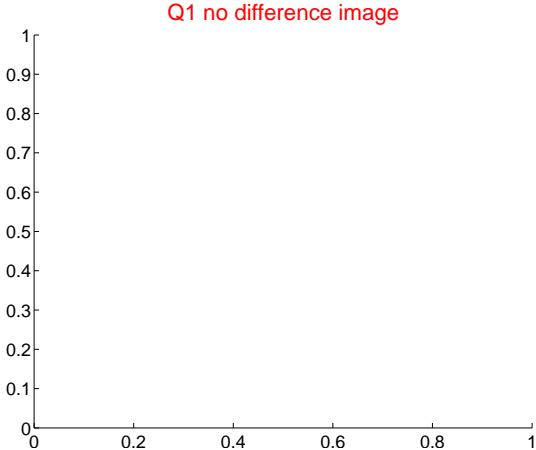


offset from photometric centroids



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.

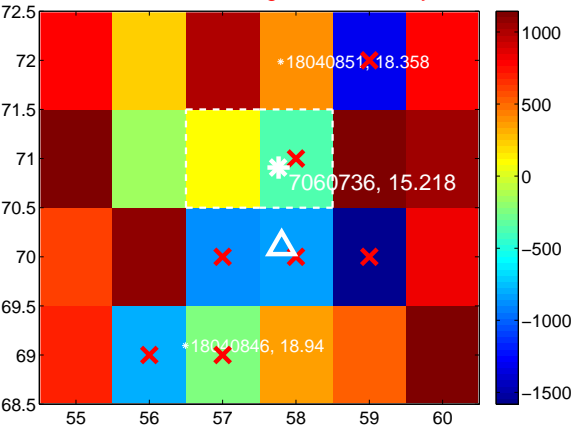
Q5 no difference image



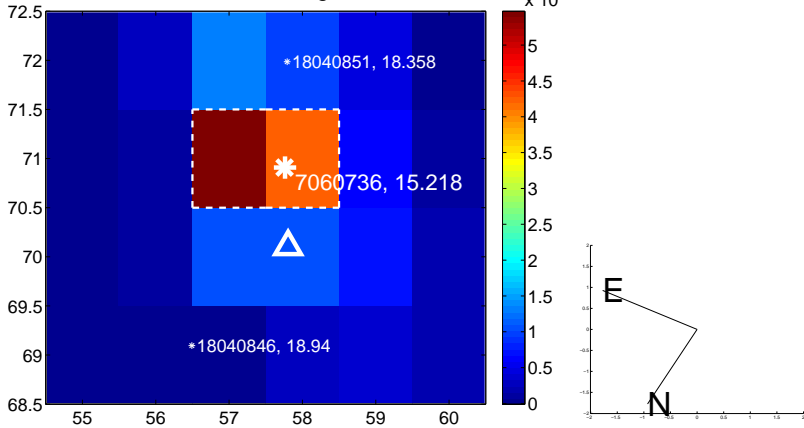
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



Q7 no difference image



Q7 no OOT image



Q8 no difference image



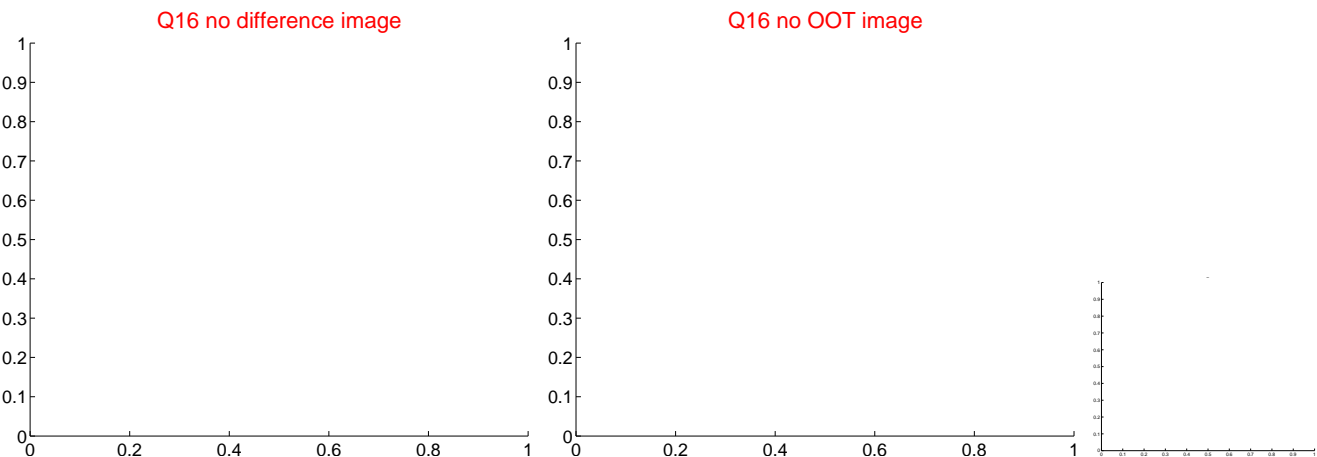
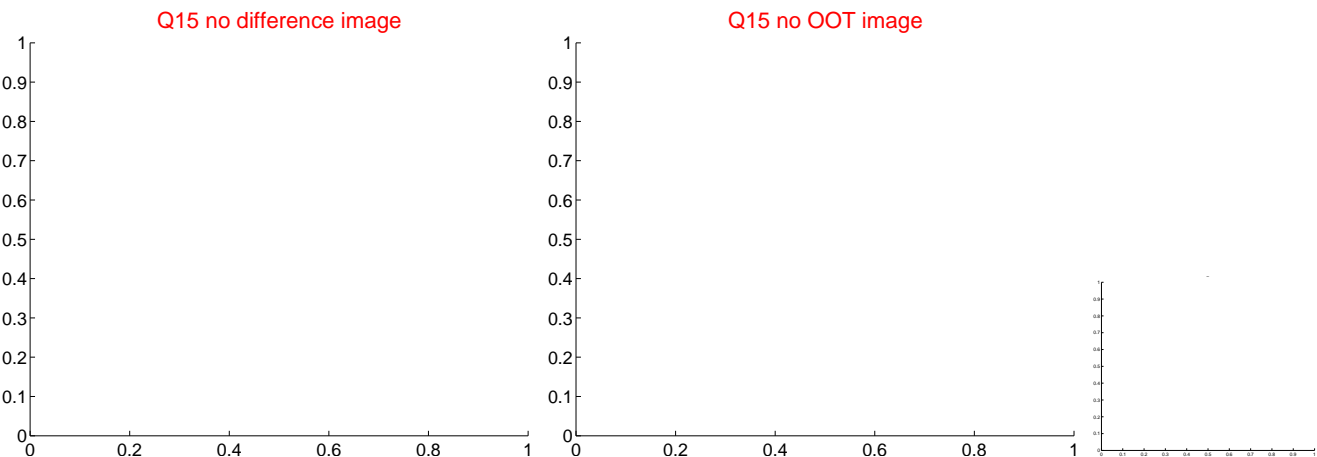
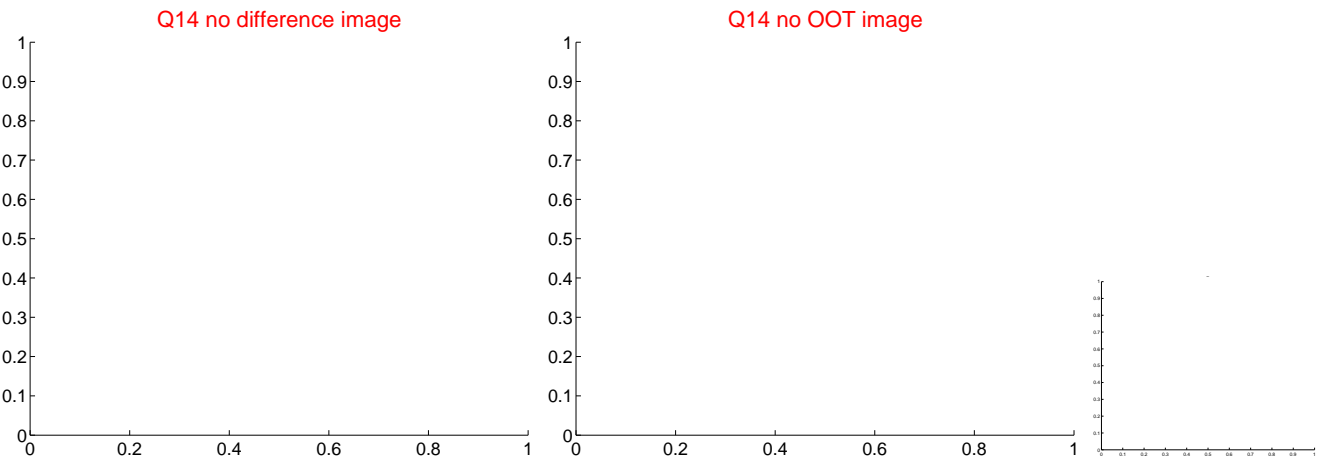
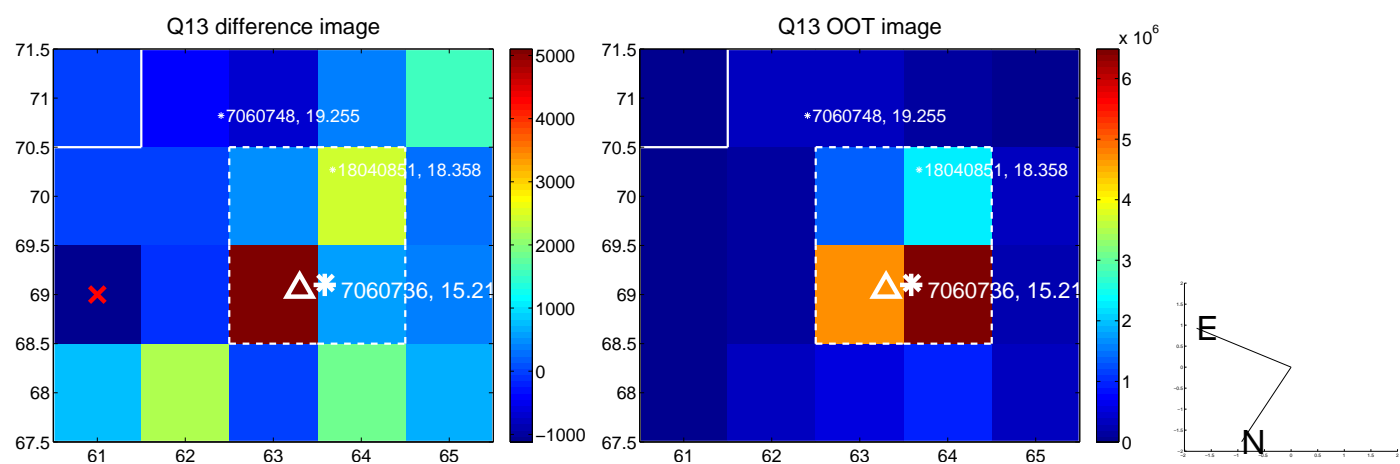
Q8 no OOT image



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

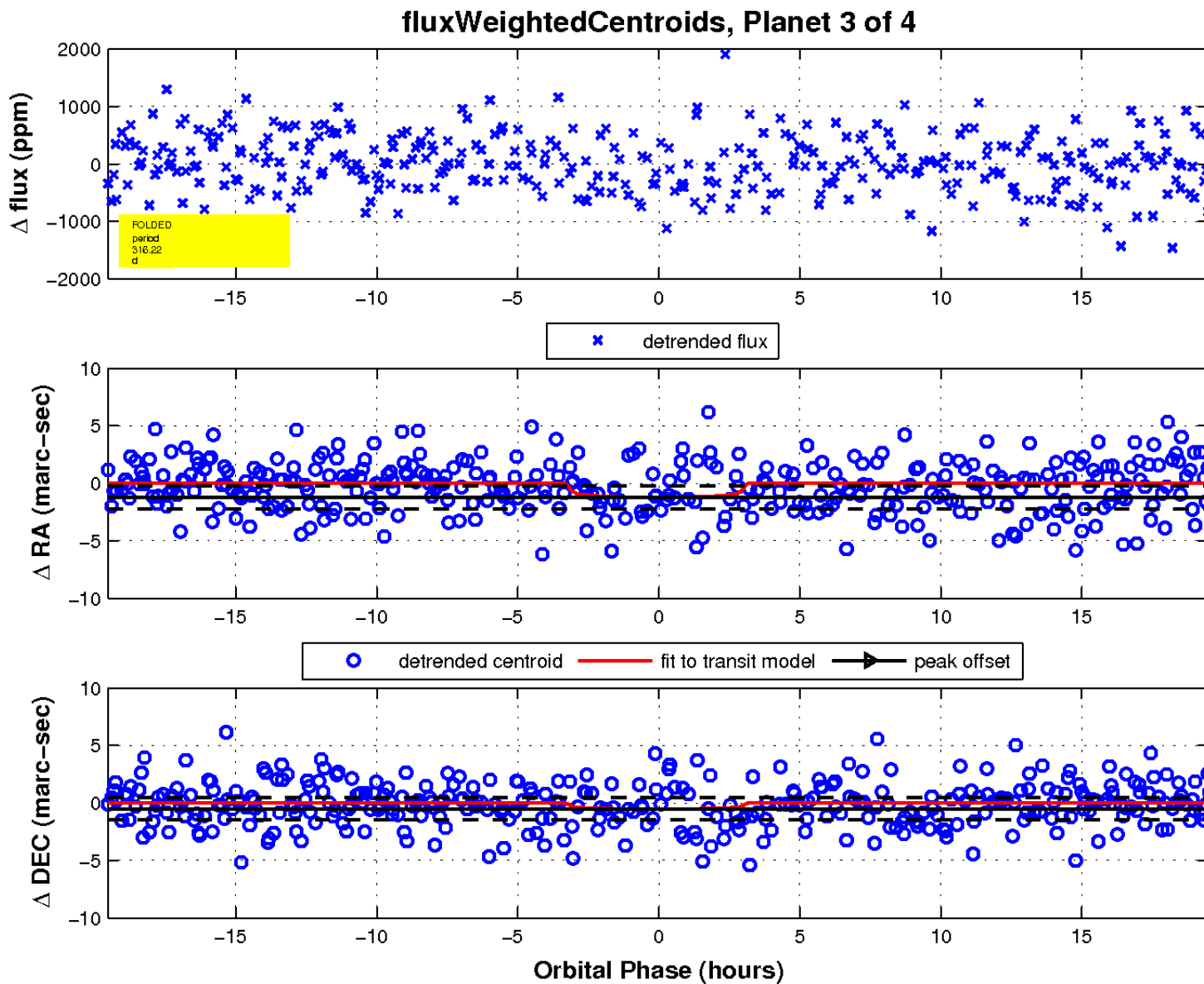
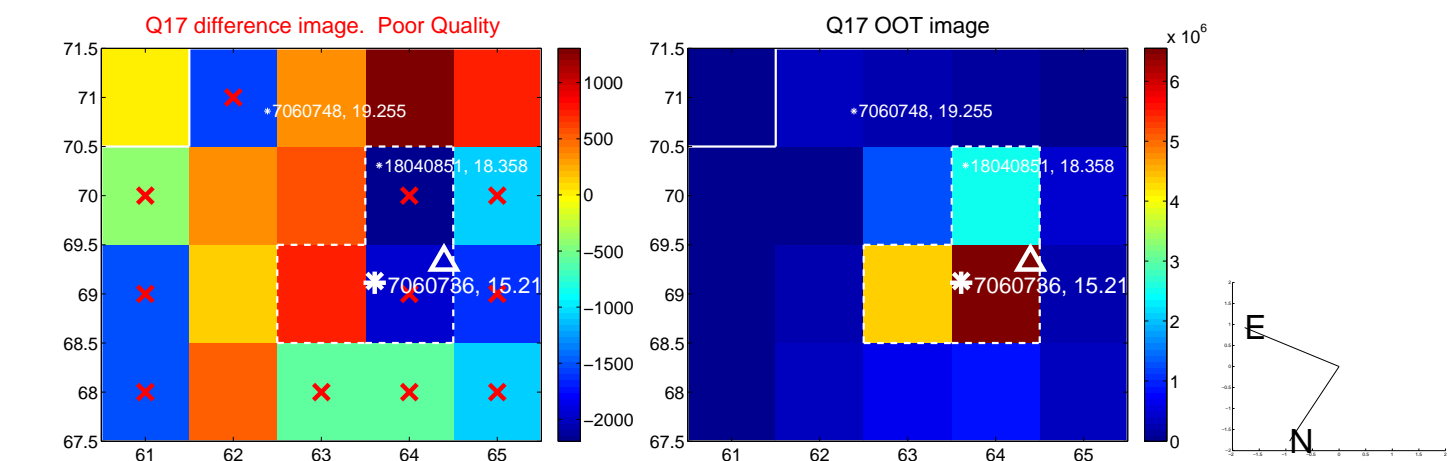


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

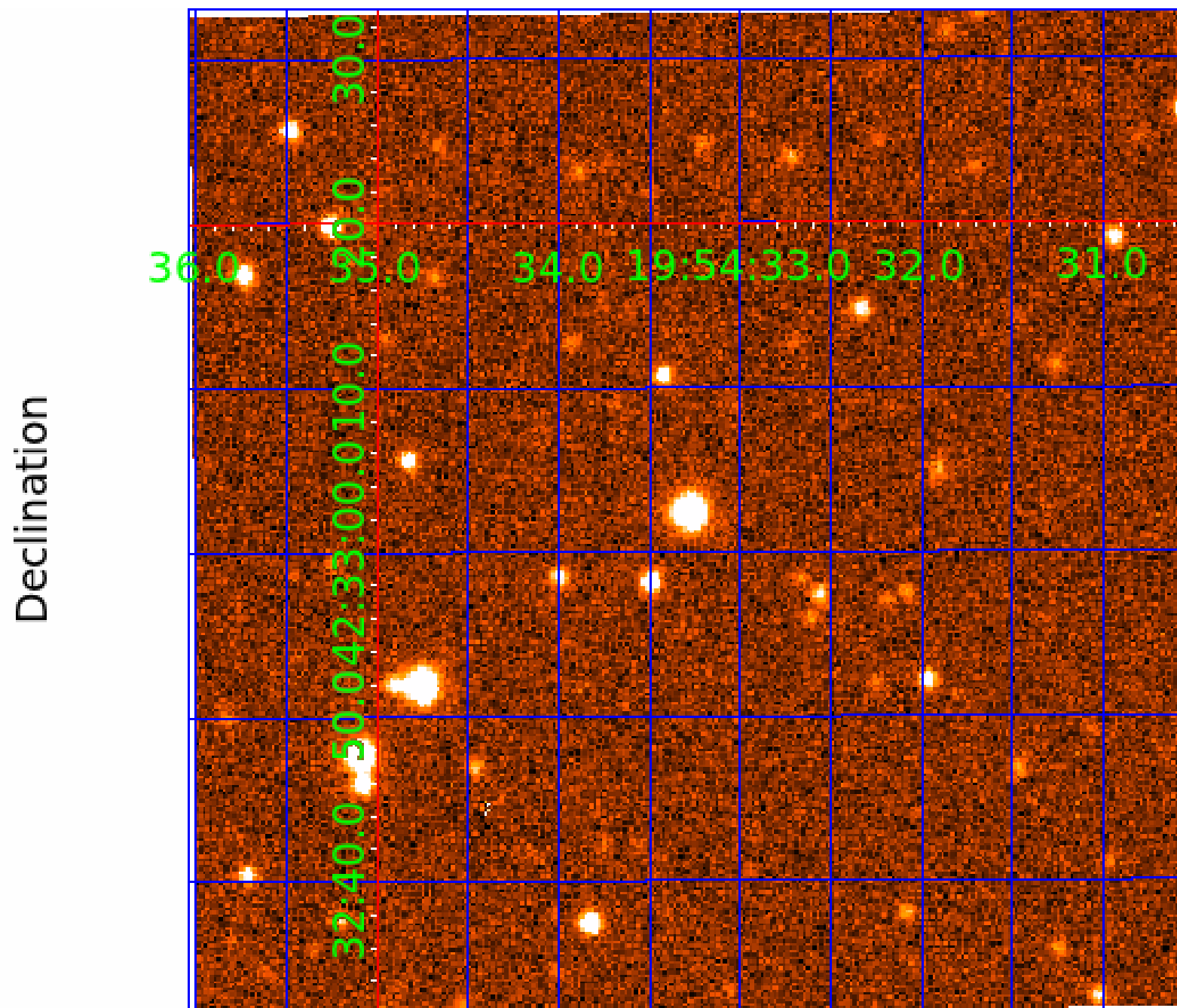




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



# KIC 007060736

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007060736-01	OBS	No	3.469590	134.680120	152.2	9.215	12.6	14.2	0.95	6283	2.04	624.62
007060736-02	OBS	No	3.470044	133.747134	77.2	8.394	8.5	9.3	0.95	6283	1.03	624.51
007060736-03	OBS	No	316.224992	304.810634	711.2	6.542	7.9	6.5	0.95	6283	2.73	1.52
007060736-04	OBS	No	3.469299	131.650094	109.0	33.660	8.5	11.3	0.95	6283	1.17	624.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007060736-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007060736-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
007060736-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
007060736-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—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.

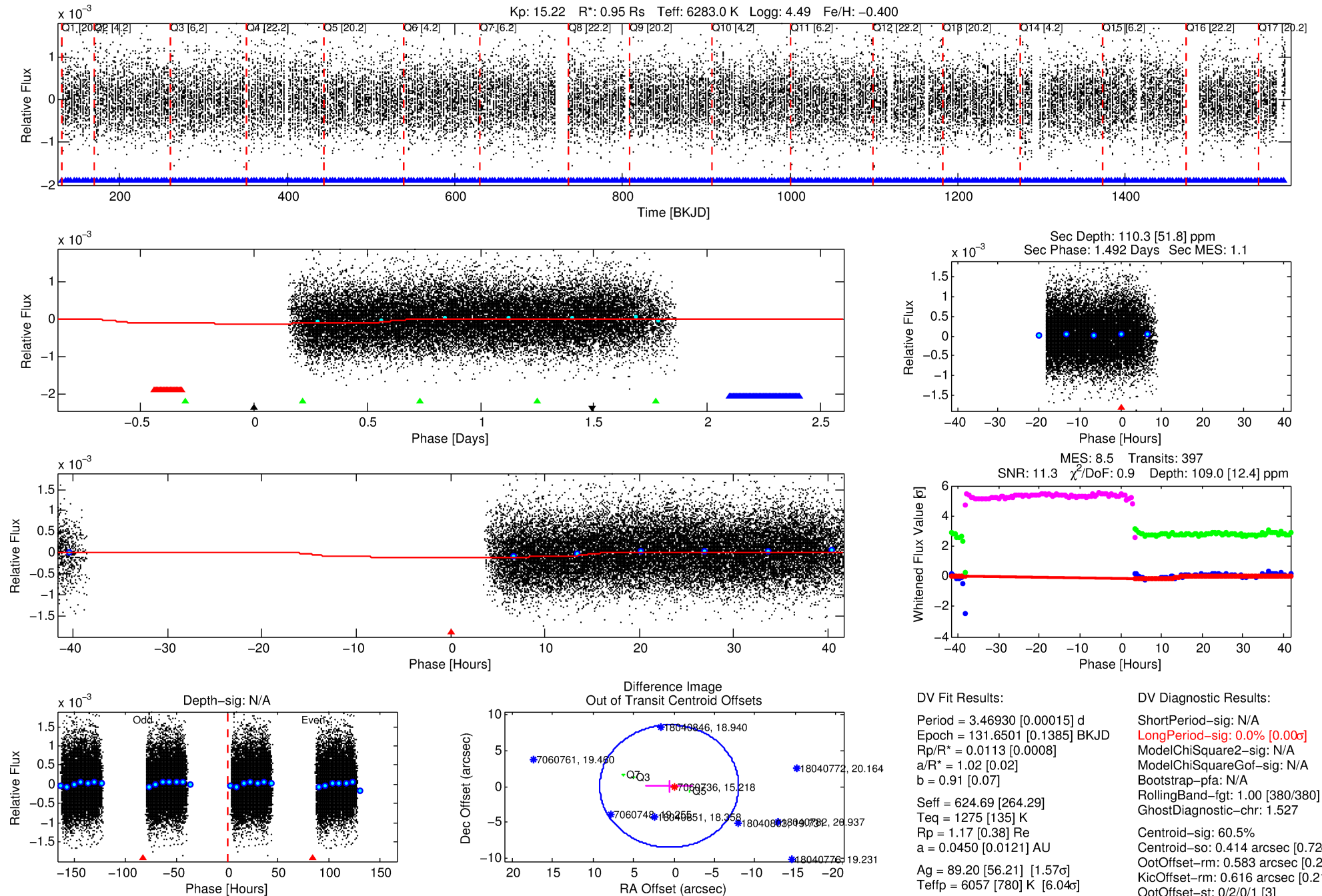
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007060736-04

No Significant Match Found

# DV One-Page Summary

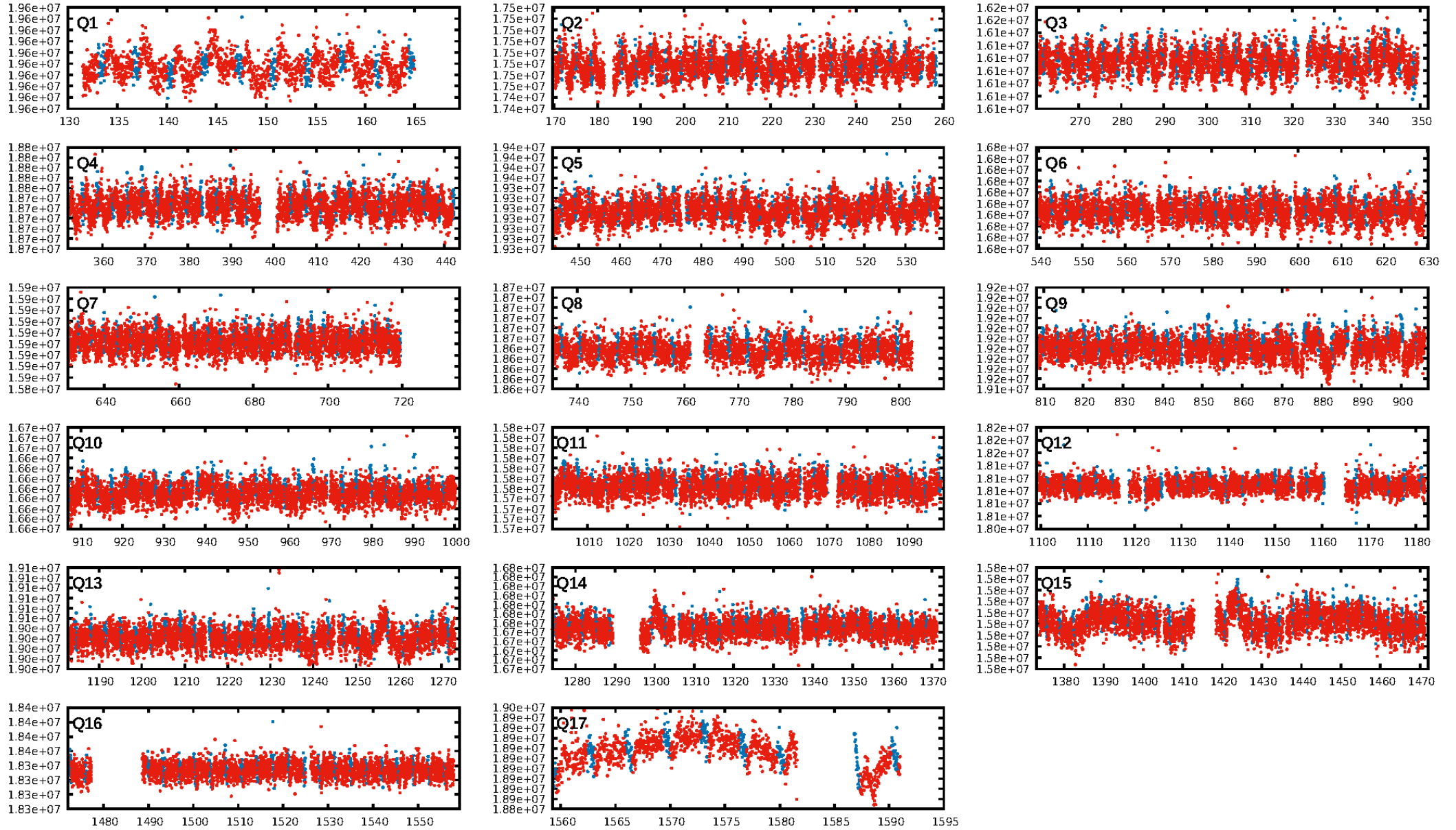
KIC: 7060736 Candidate: 4 of 4 Period: 3.469 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:38:50 Z

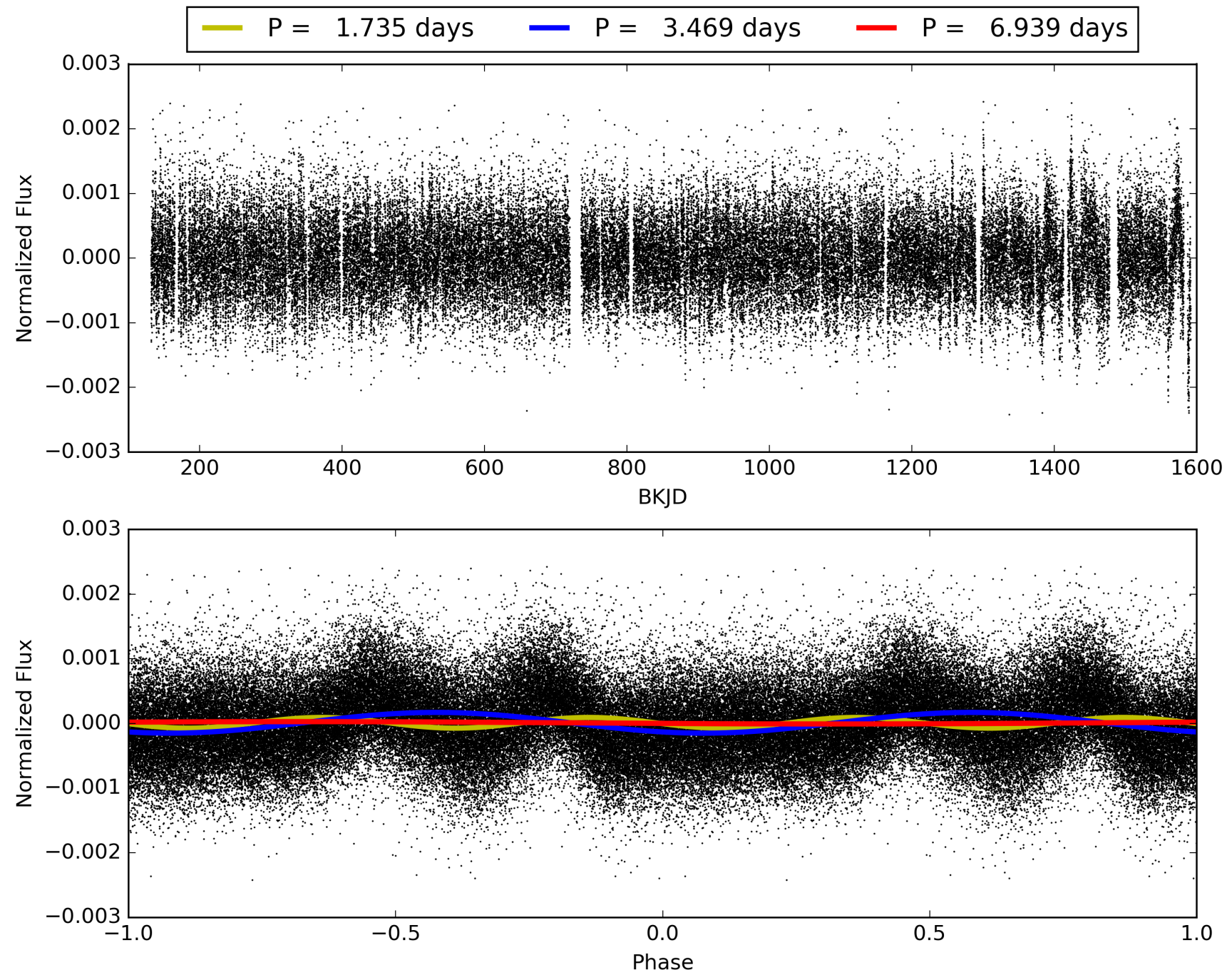
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007060736-04, PDC Light Curves



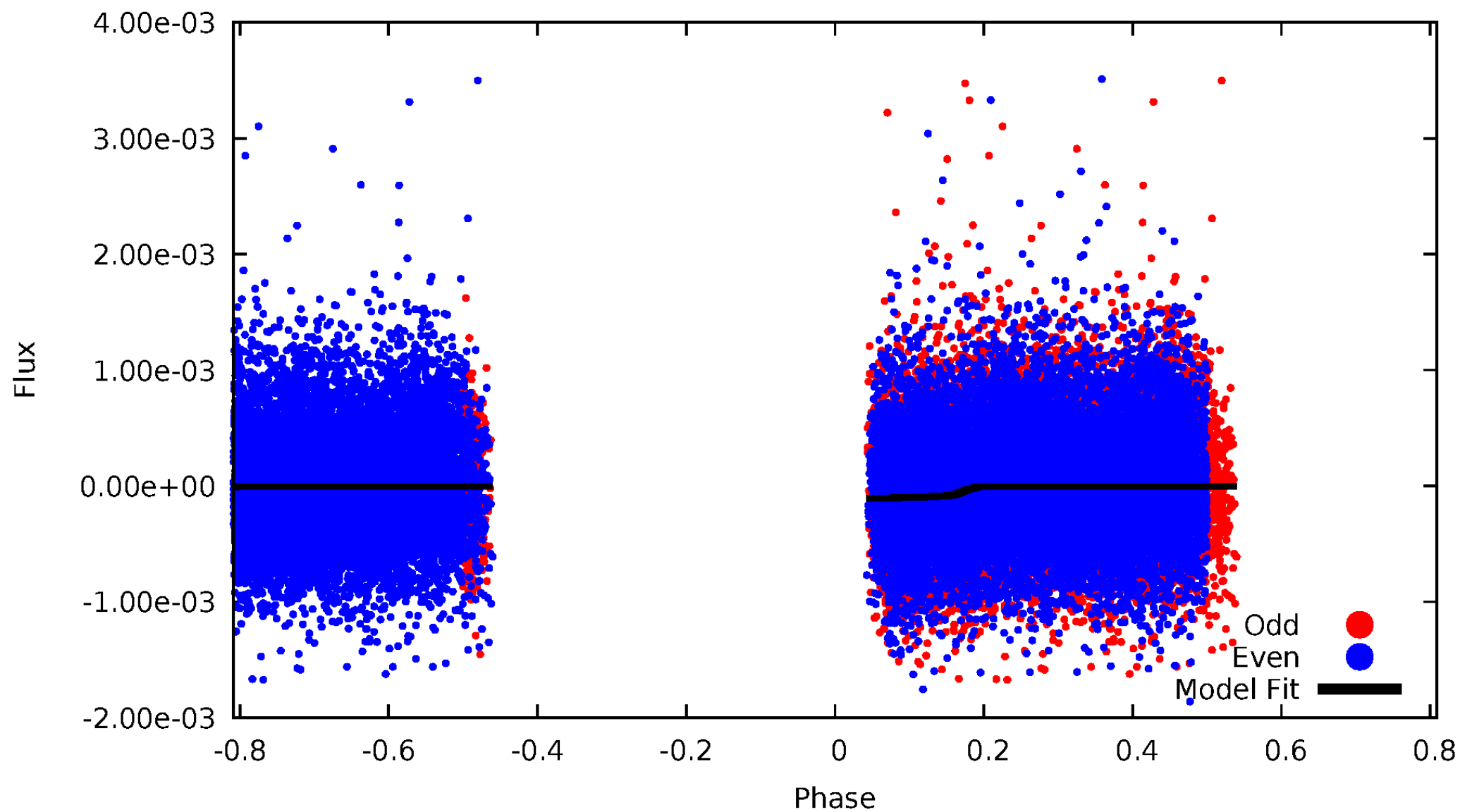


TCE 007060736-04



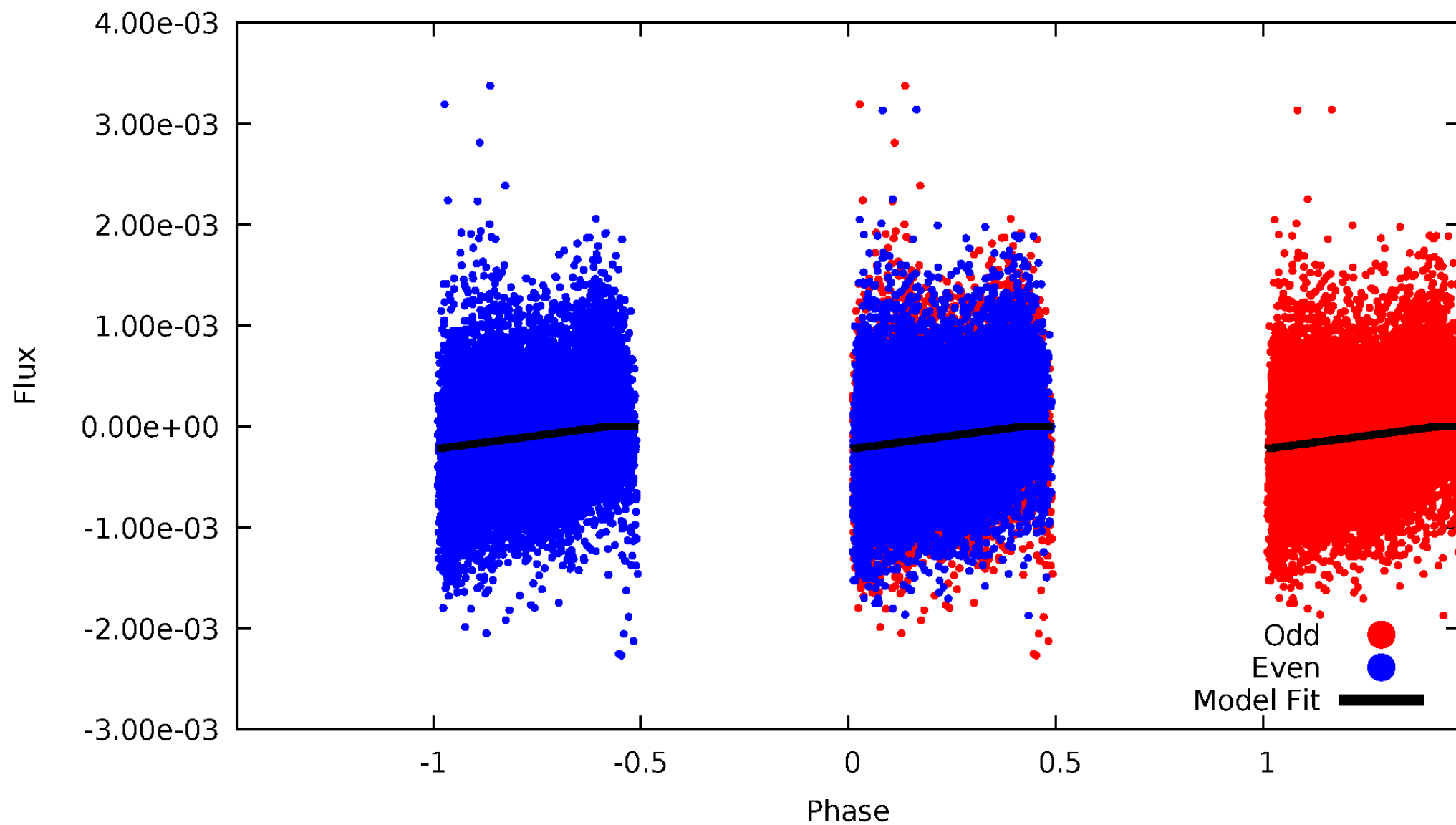
# DV Odd/Even

TCE 007060736-04



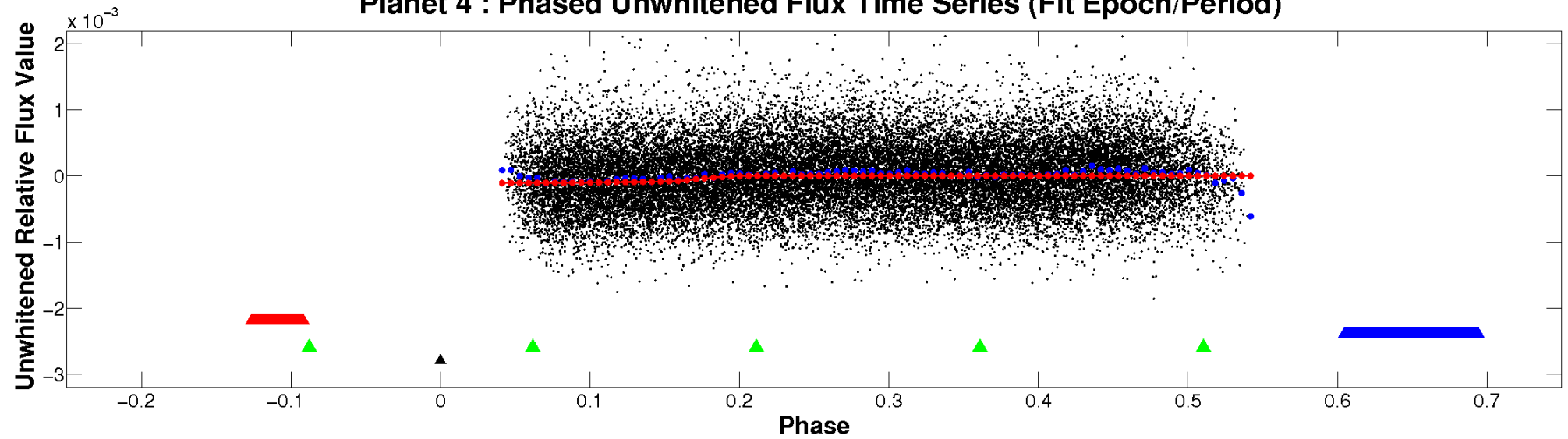
# ALT Odd/Even

TCE 007060736-04

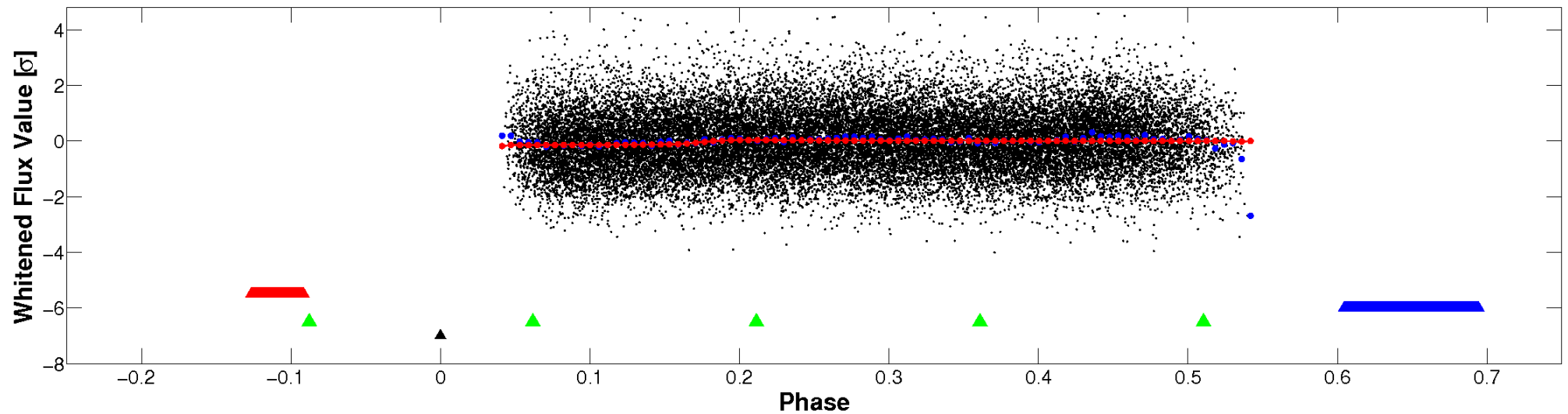


# Non-Whitened Vs. Whitened Light Curve

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

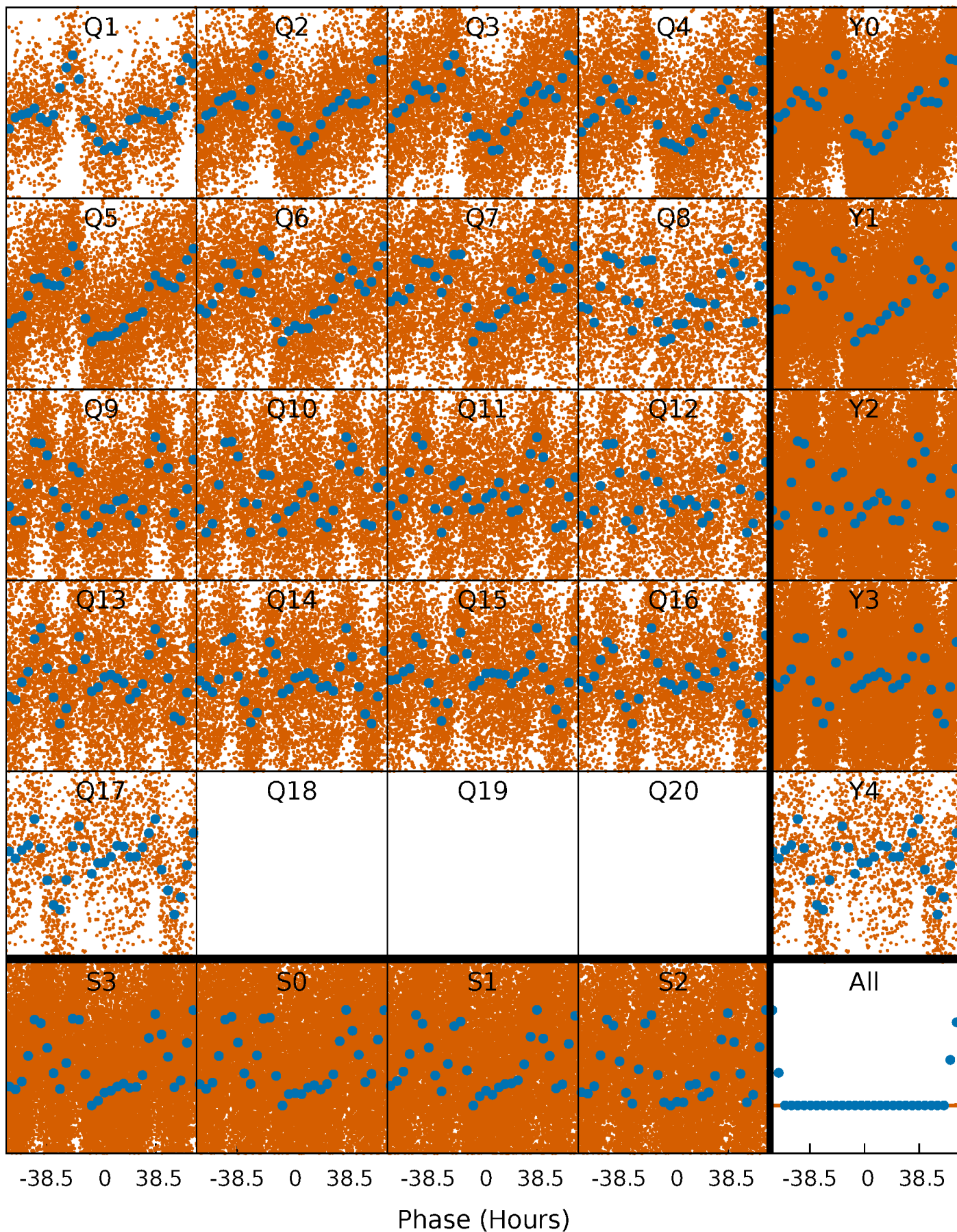


**Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

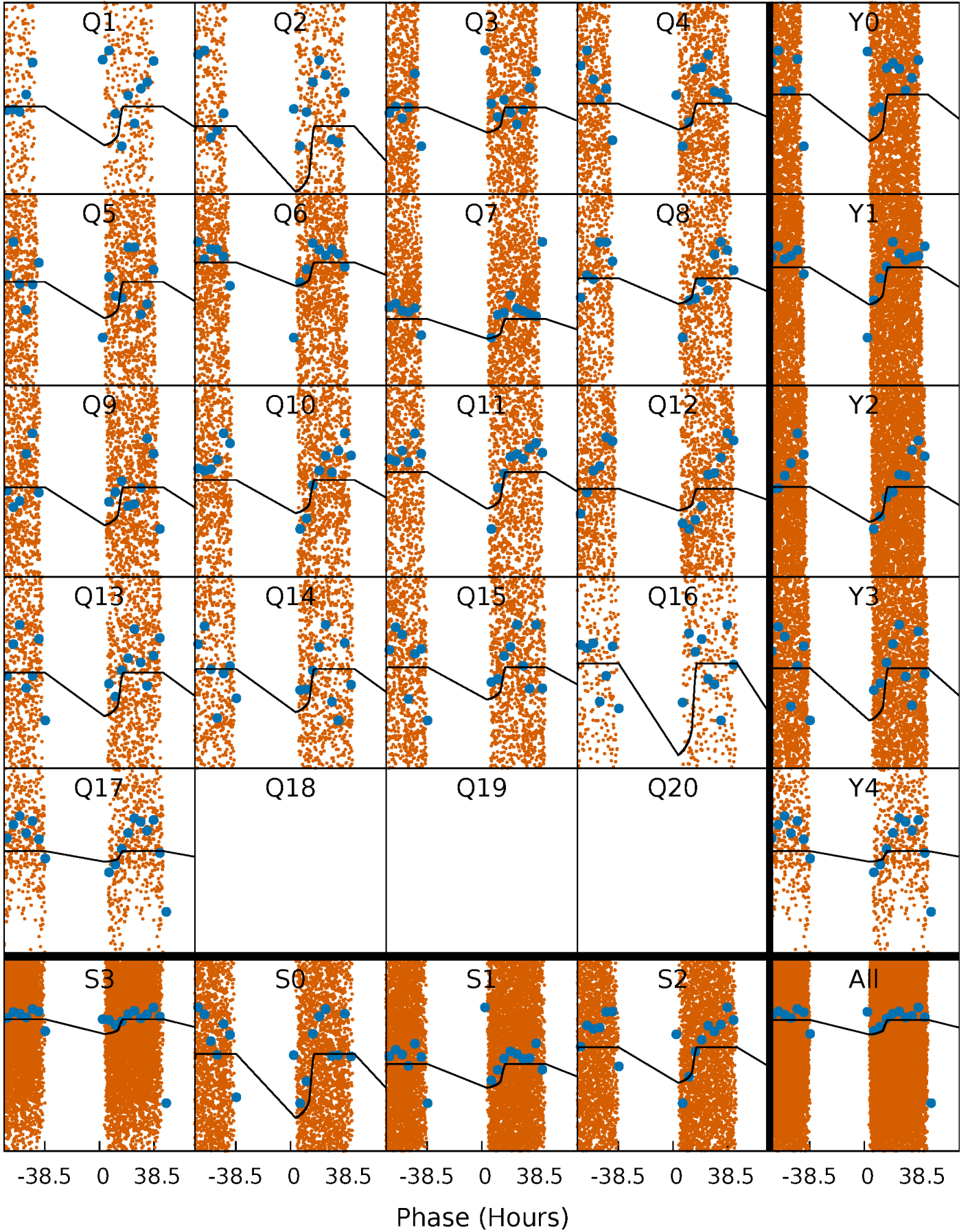
TCE 007060736-04 P= 3.469299 Days  $T_0=131.650094$  (BKJD)





# DV Quarter-Phased Transit Curves

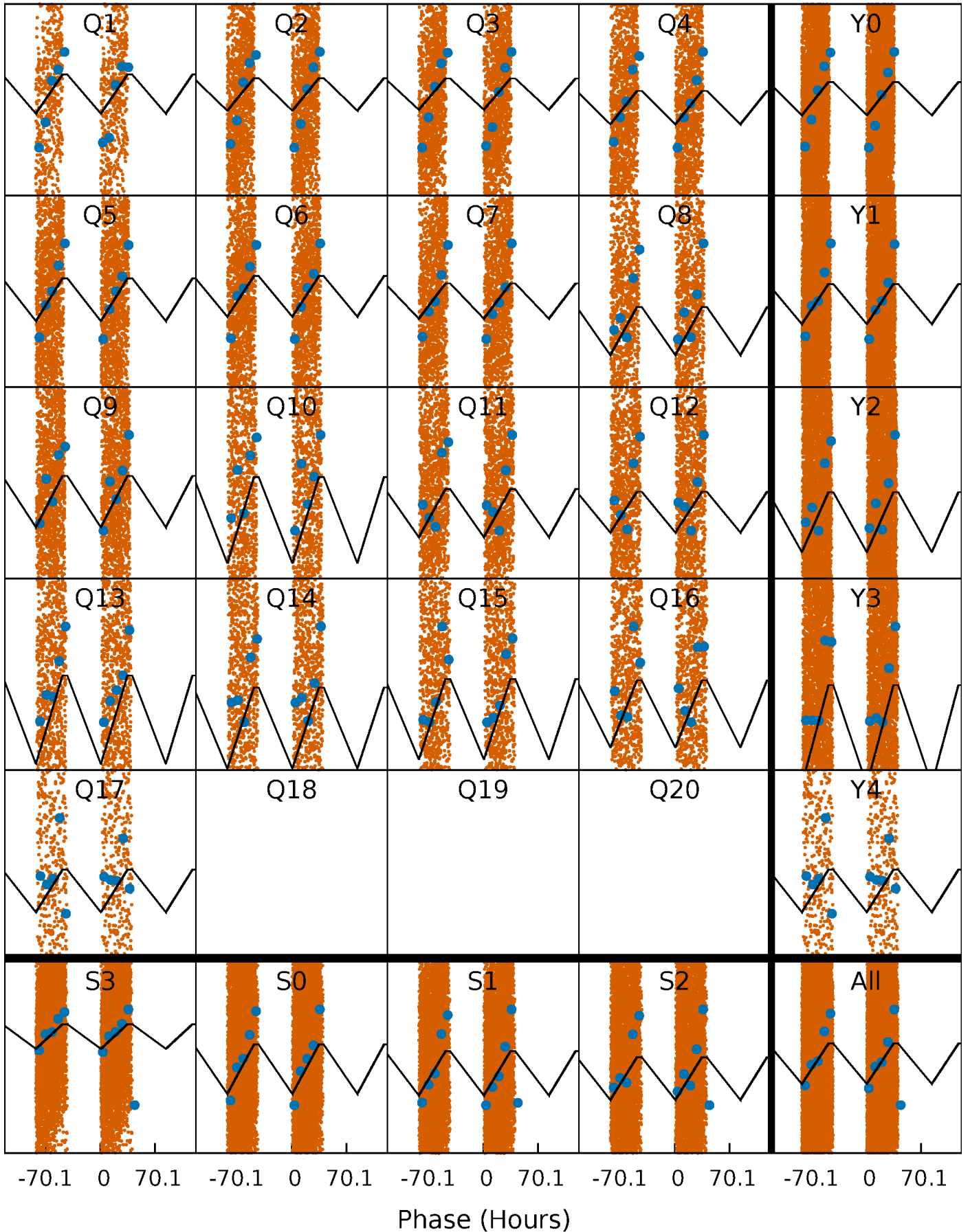
TCE 007060736-04   P= 3.469299 Days    $T_0=131.650094$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

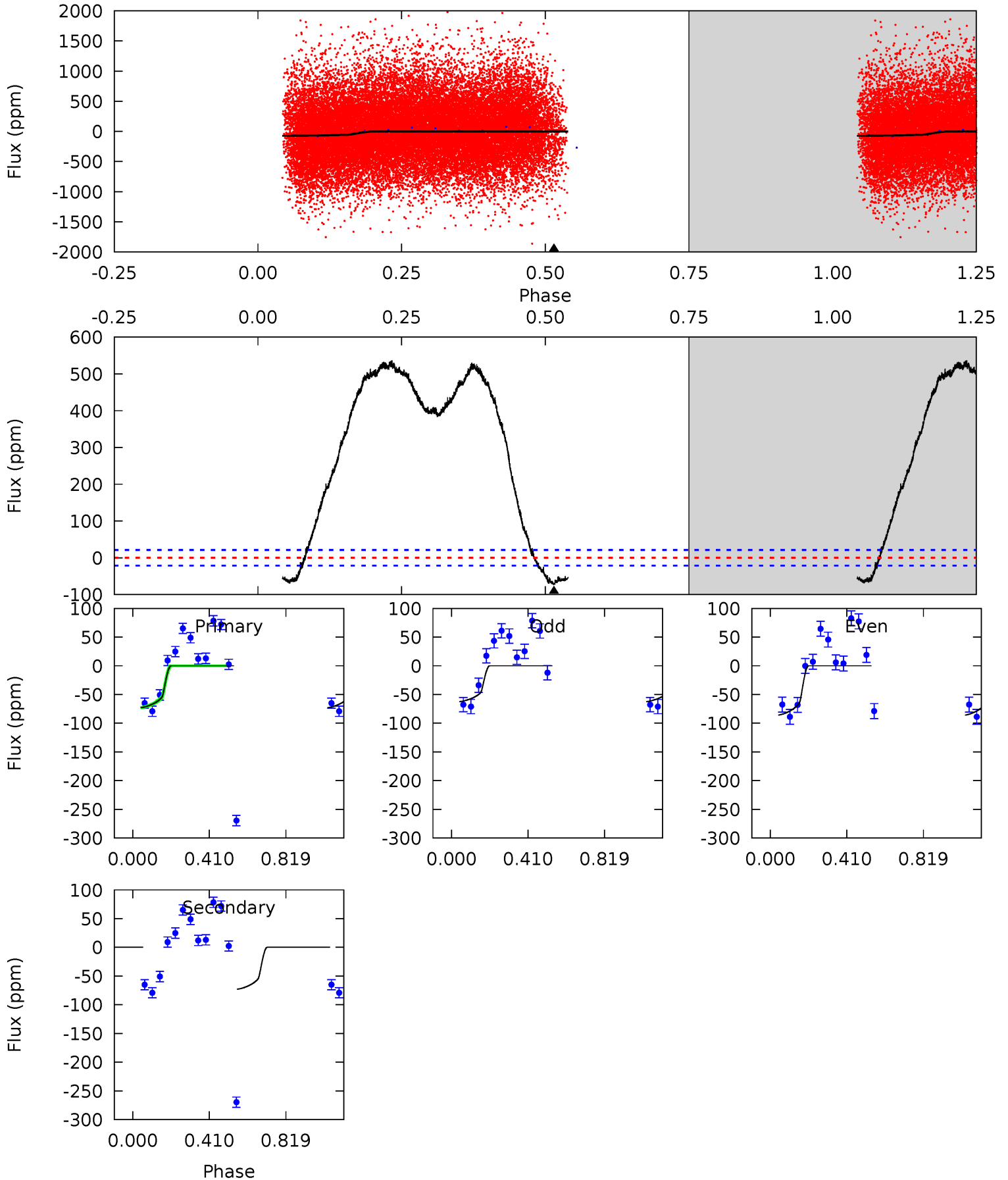
TCE 007060736-04     $P = 3.469417$  Days     $T_0 = 131.764540$  (BKJD)



# DV Model-Shift Uniqueness Test

007060736-04, P = 3.469299 Days, E = 131.650094 Days

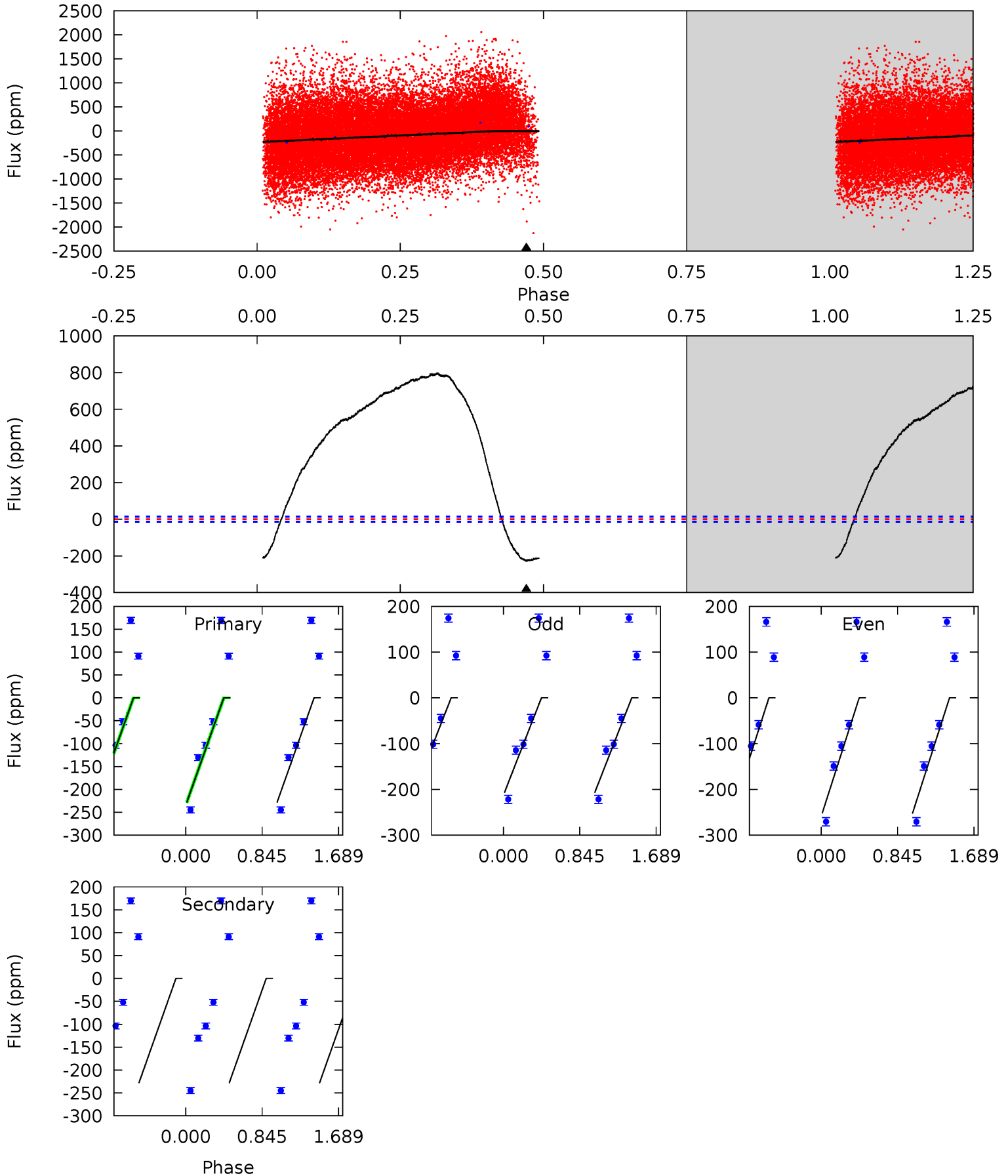
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.6	14.6	0	0	4.26	0.82	11.5	14.6	14.6	14.6	14.6	2.32	1.01	0.88	0



# Alt Model-Shift Uniqueness Test

007060736-04, P = 3.469417 Days, E = 131.764540 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
68.5	68.5	0	0	4.09	0.20	33.0	68.5	68.5	68.5	68.5	6.80	0.96	0.78	0



### Stellar Parameters For KIC 007060736

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6283^{+176}_{-242}$	$4.485^{+0.054}_{-0.216}$	$-0.400^{+0.300}_{-0.300}$	$0.952^{+0.304}_{-0.101}$	$1.010^{+0.133}_{-0.133}$	$1.648^{+0.455}_{-0.848}$
	+3%/-4%	+1%/-5%	+75%/-75%	+32%/-11%	+13%/-13%	+28%/-51%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007060736-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-73 \pm 5$	$1.22^{+0.20}_{-0.14}$	$1816^{+137}_{-98}$	$5452^{+294}_{-249}$	$54^{+13}_{-14}$
Alt.	$-228 \pm 3$	$1.71^{+0.32}_{-0.18}$	$1821^{+146}_{-92}$	$6110^{+258}_{-250}$	$85^{+17}_{-22}$

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

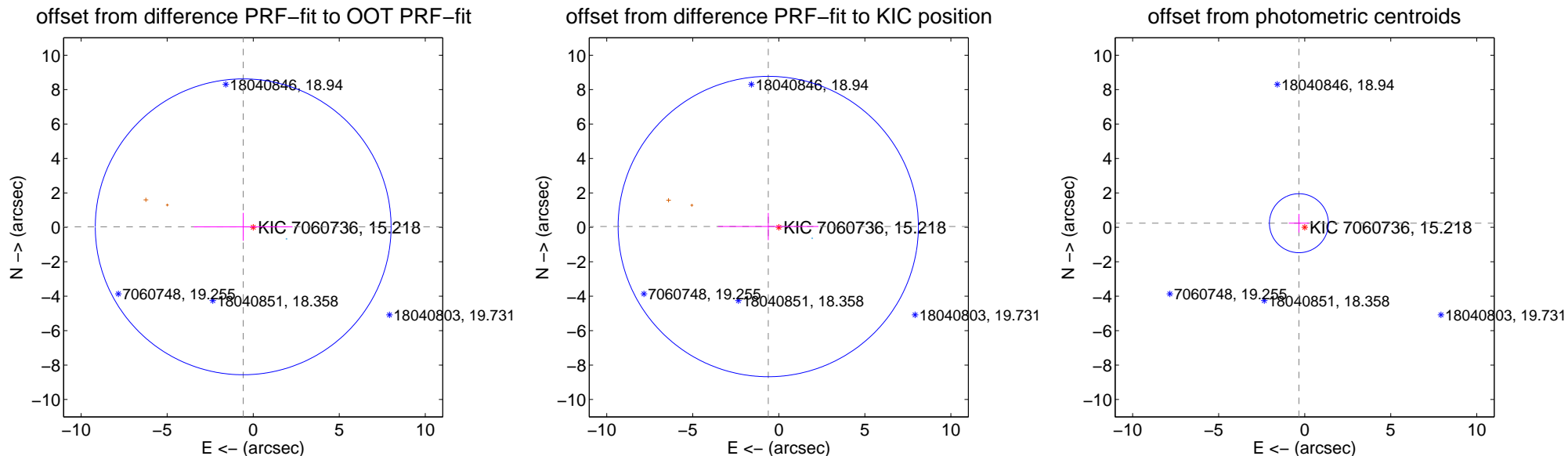
## DV Centroid Data

Supplemental centroid analysis for 007060736-04. Kepler magnitude: 15.22. Transit SNR 11.29

There are 1 quarters with good PRF difference image offsets

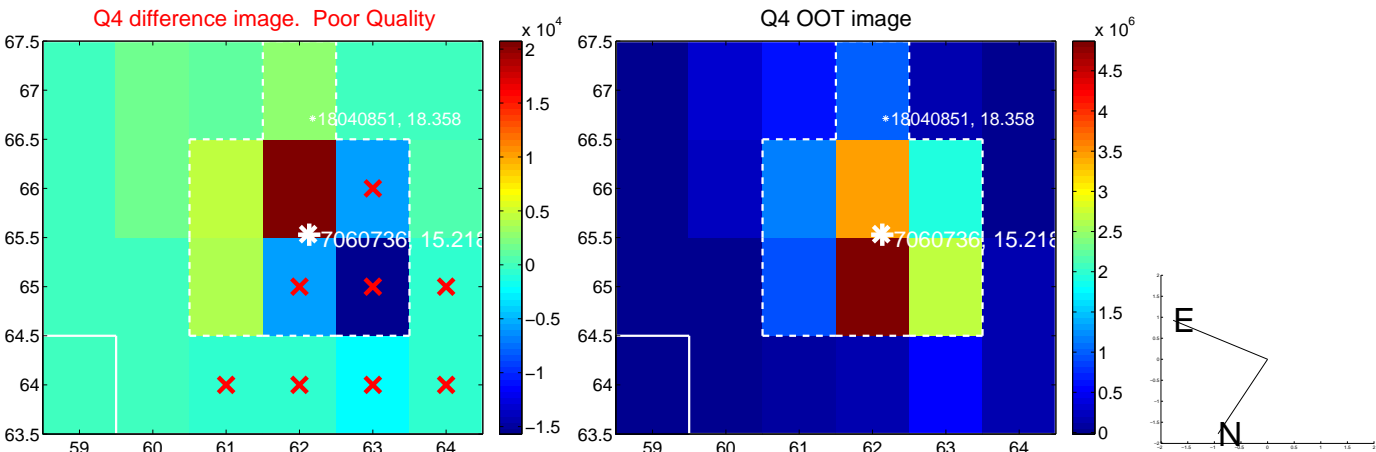
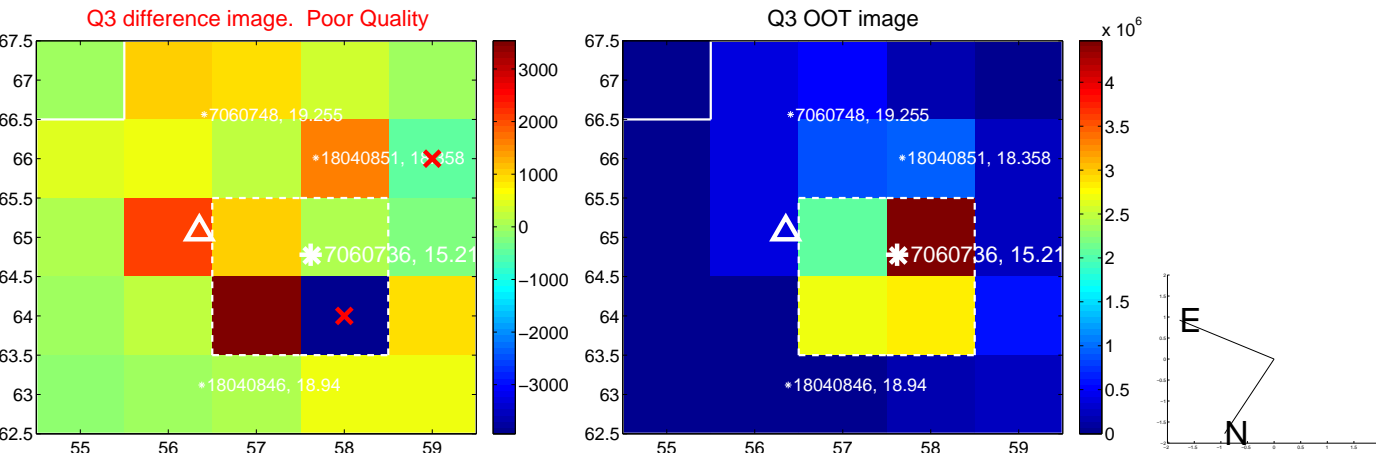
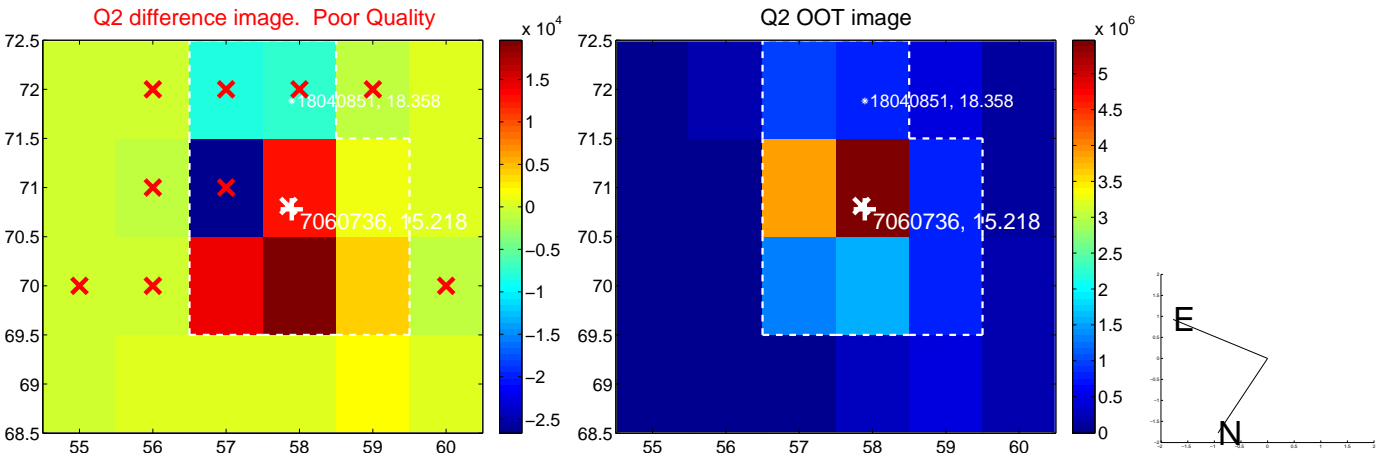
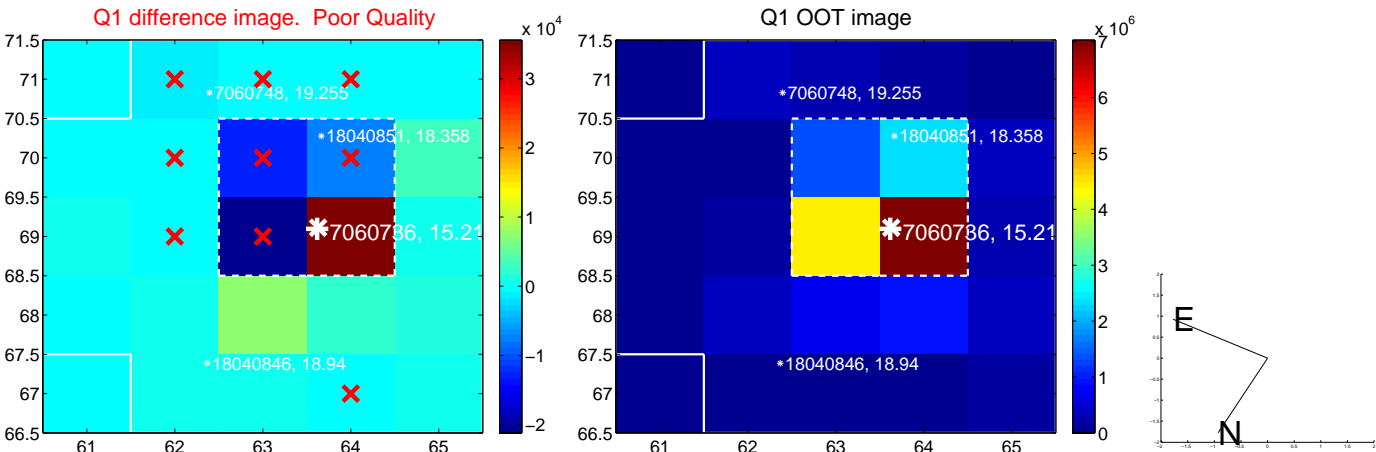
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.583 \pm 2.864$	0.20	$0.582 \pm 2.868$	$0.031 \pm 0.809$
PRF-fit source offset from KIC position	$0.616 \pm 2.908$	0.21	$0.614 \pm 2.916$	$0.048 \pm 0.789$
photometric centroid source offset	$0.41 \pm 0.57$	0.72	$0.34 \pm 0.59$	$0.24 \pm 0.54$



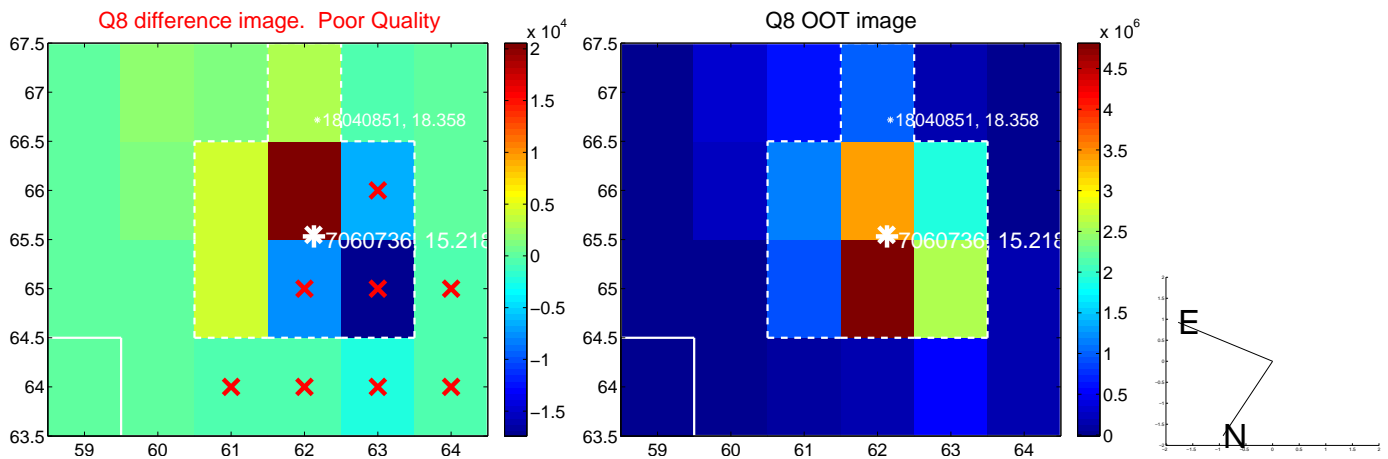
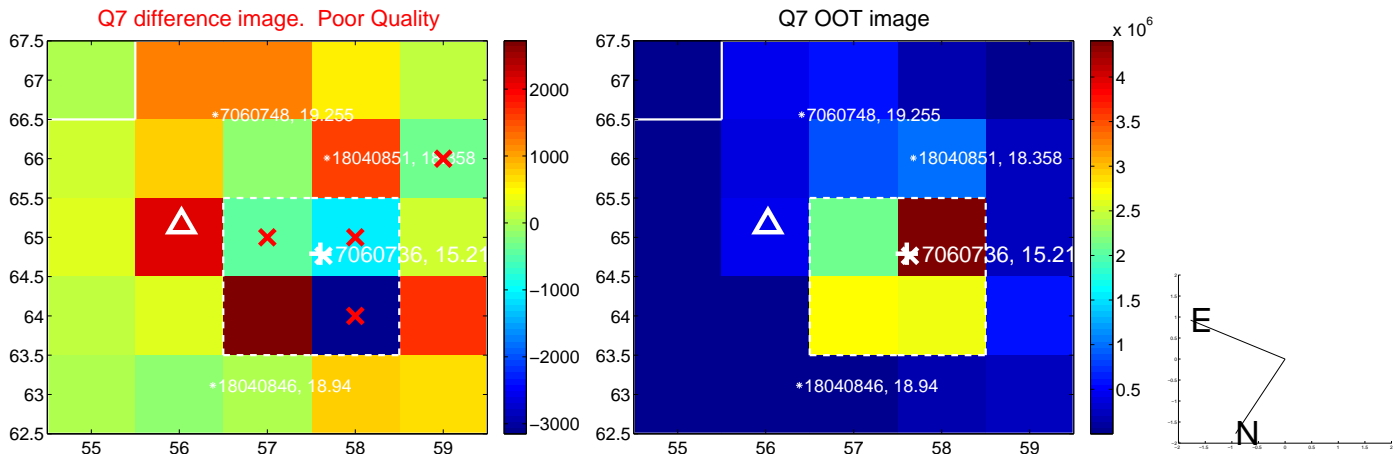
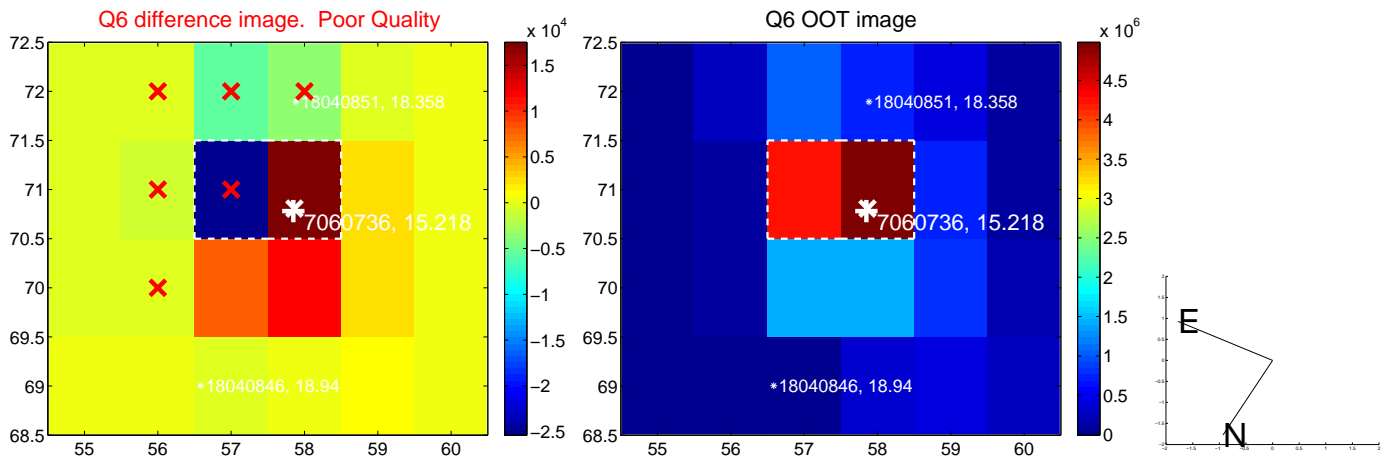
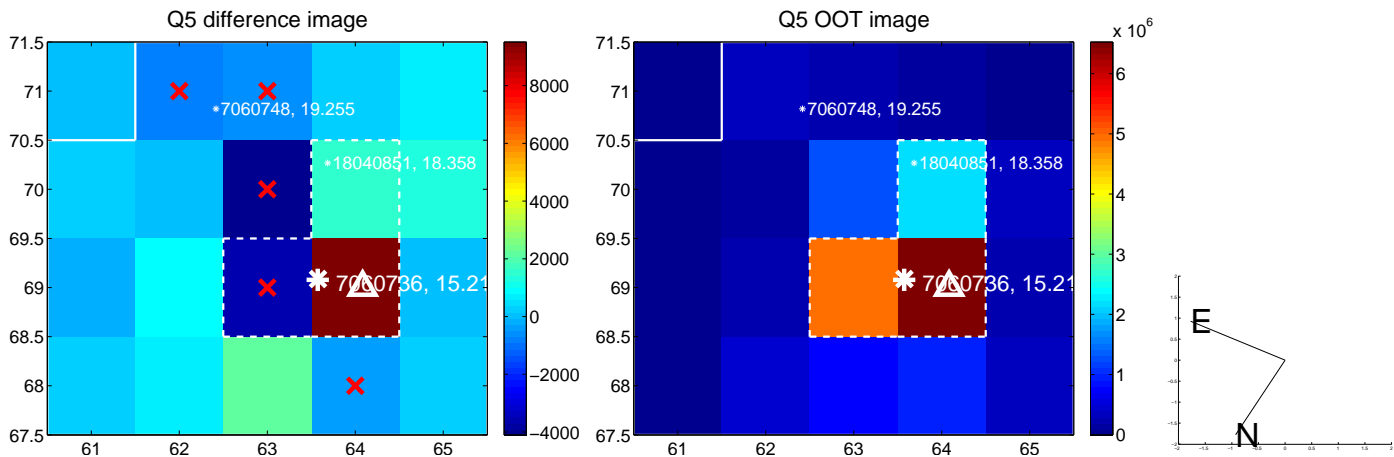
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

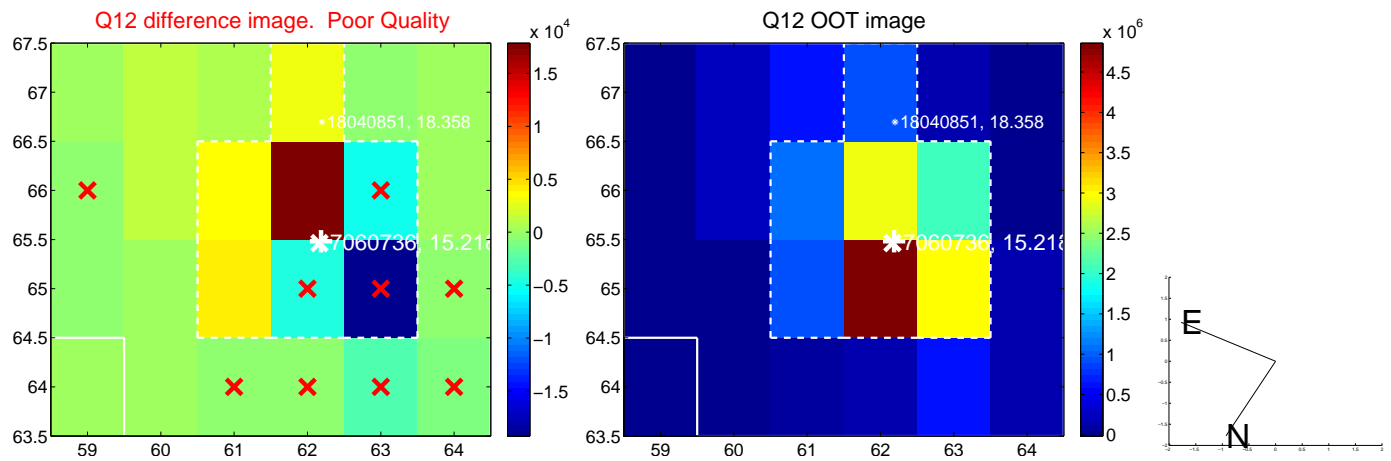
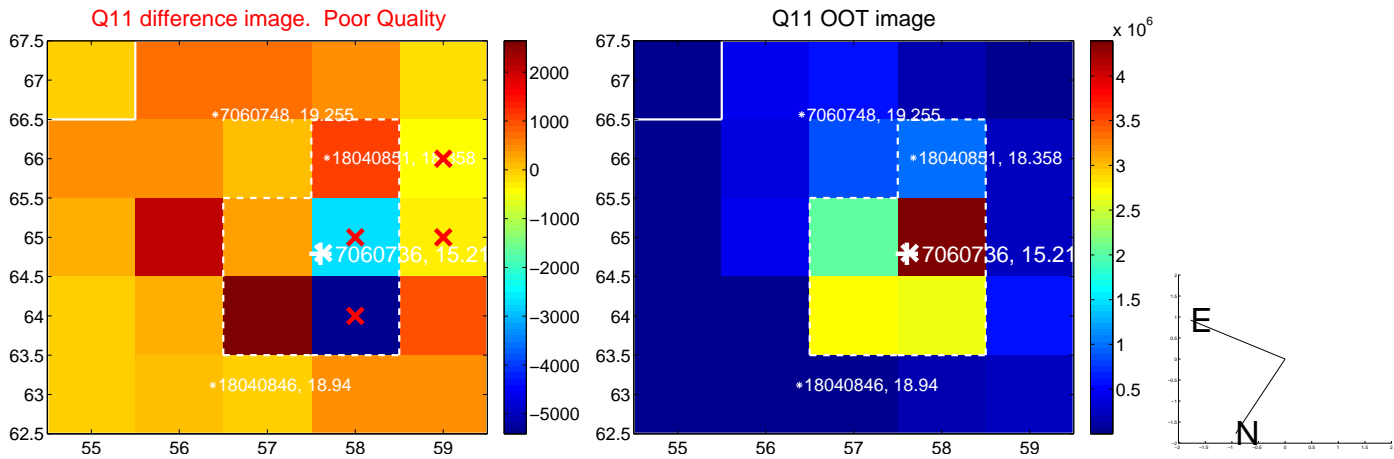
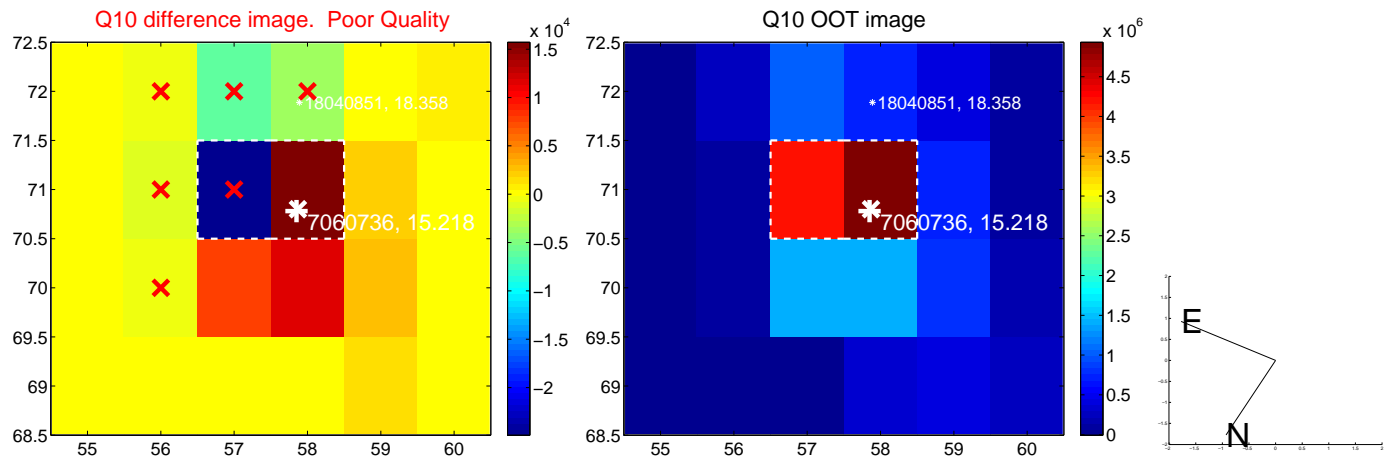
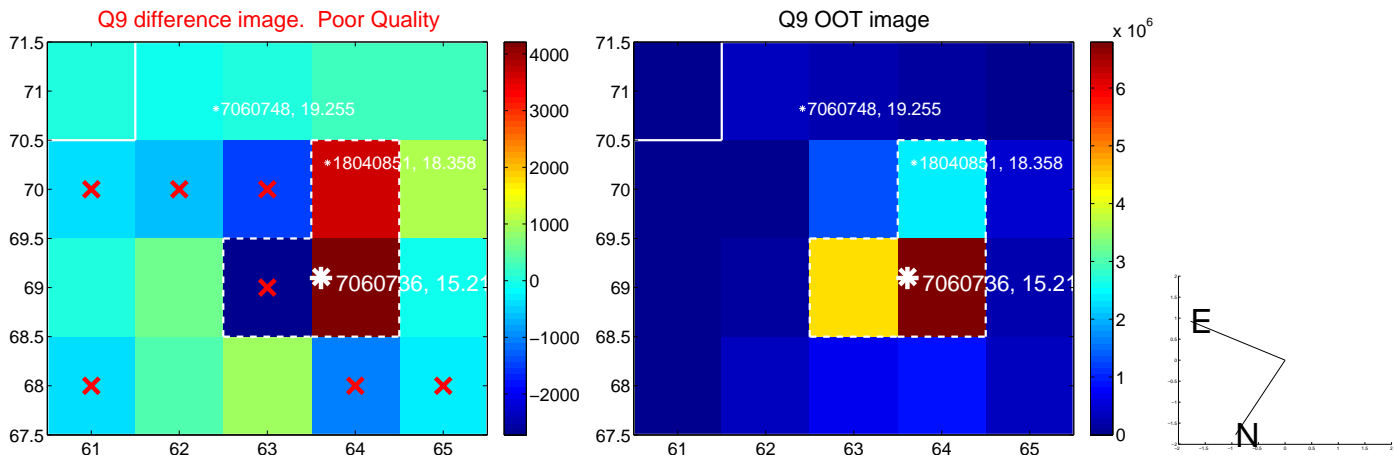




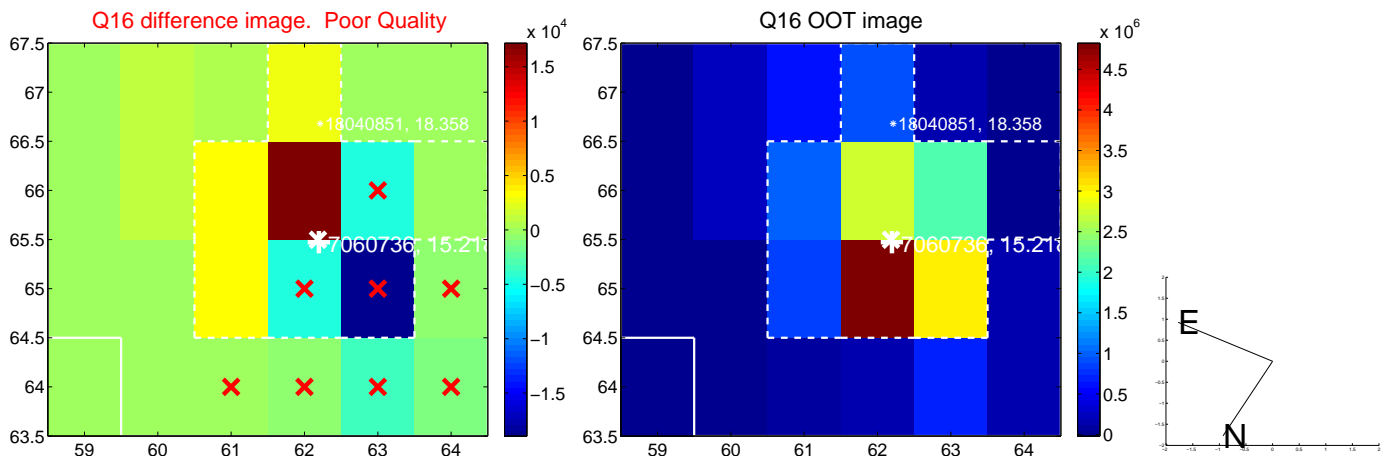
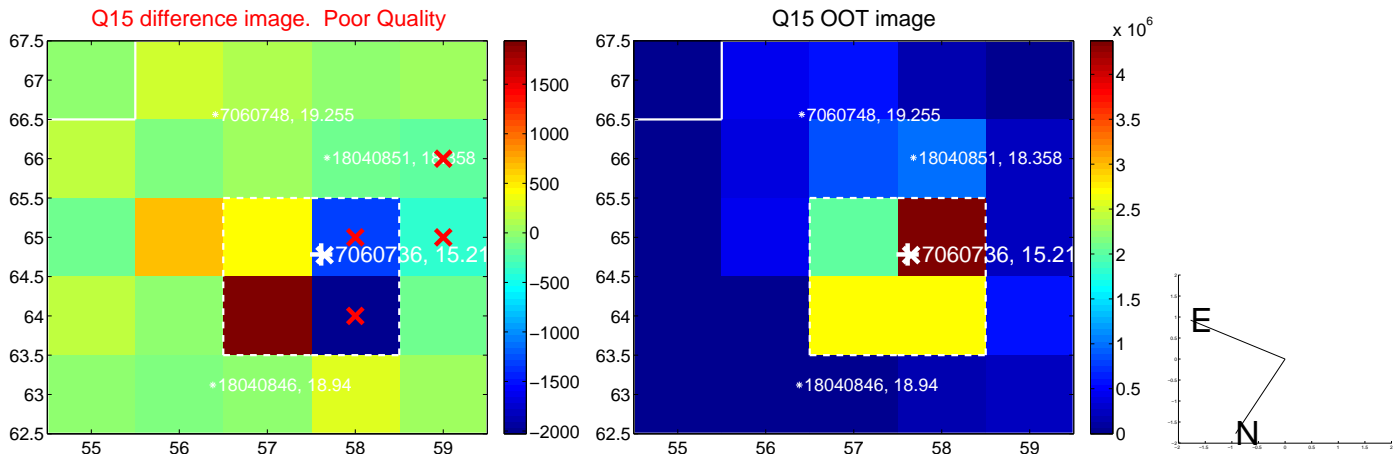
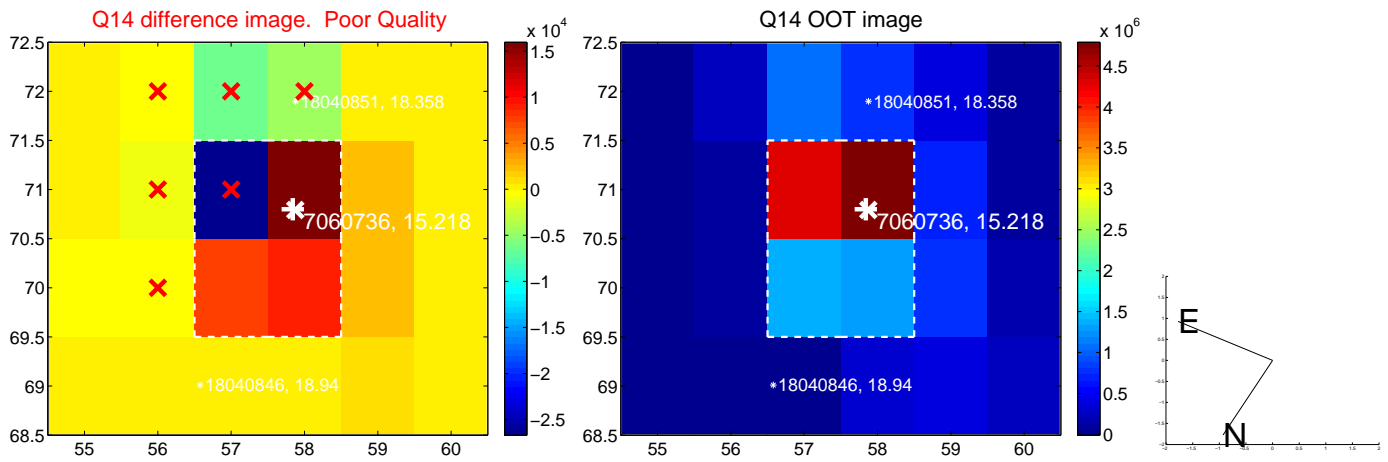
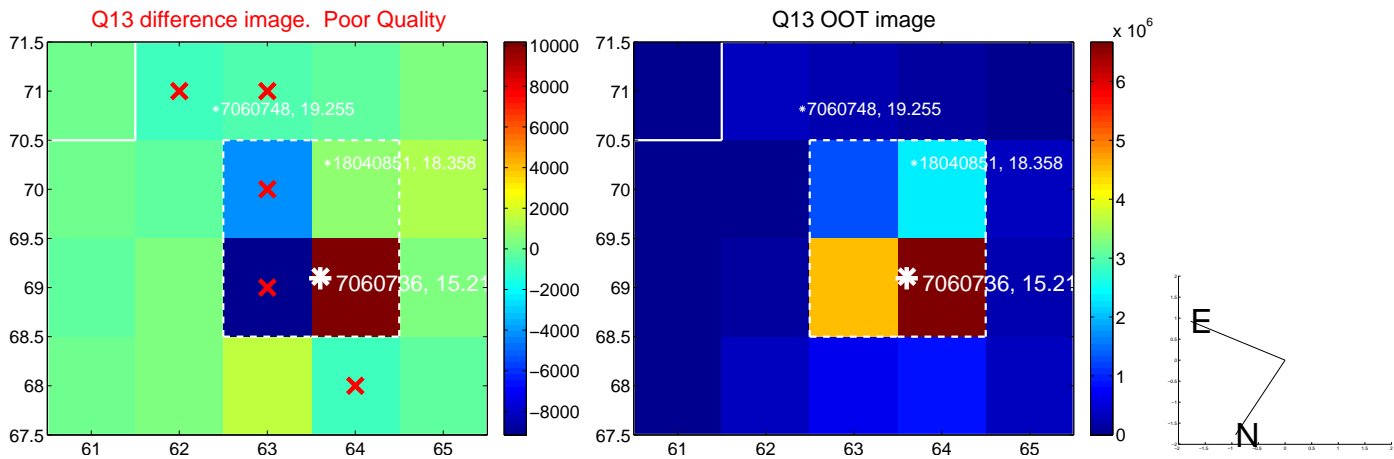
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



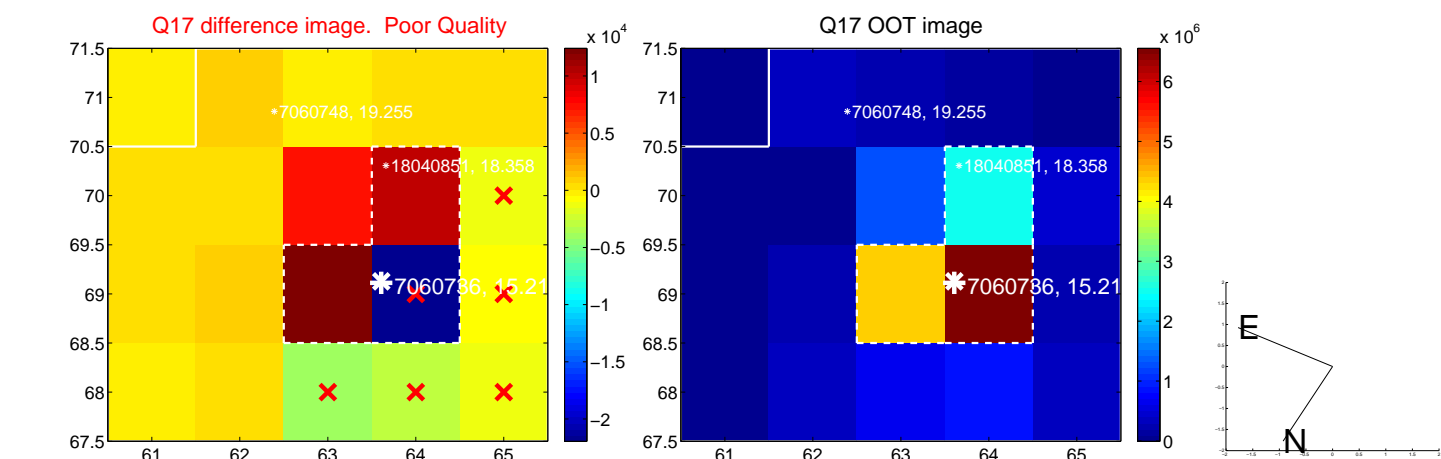
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



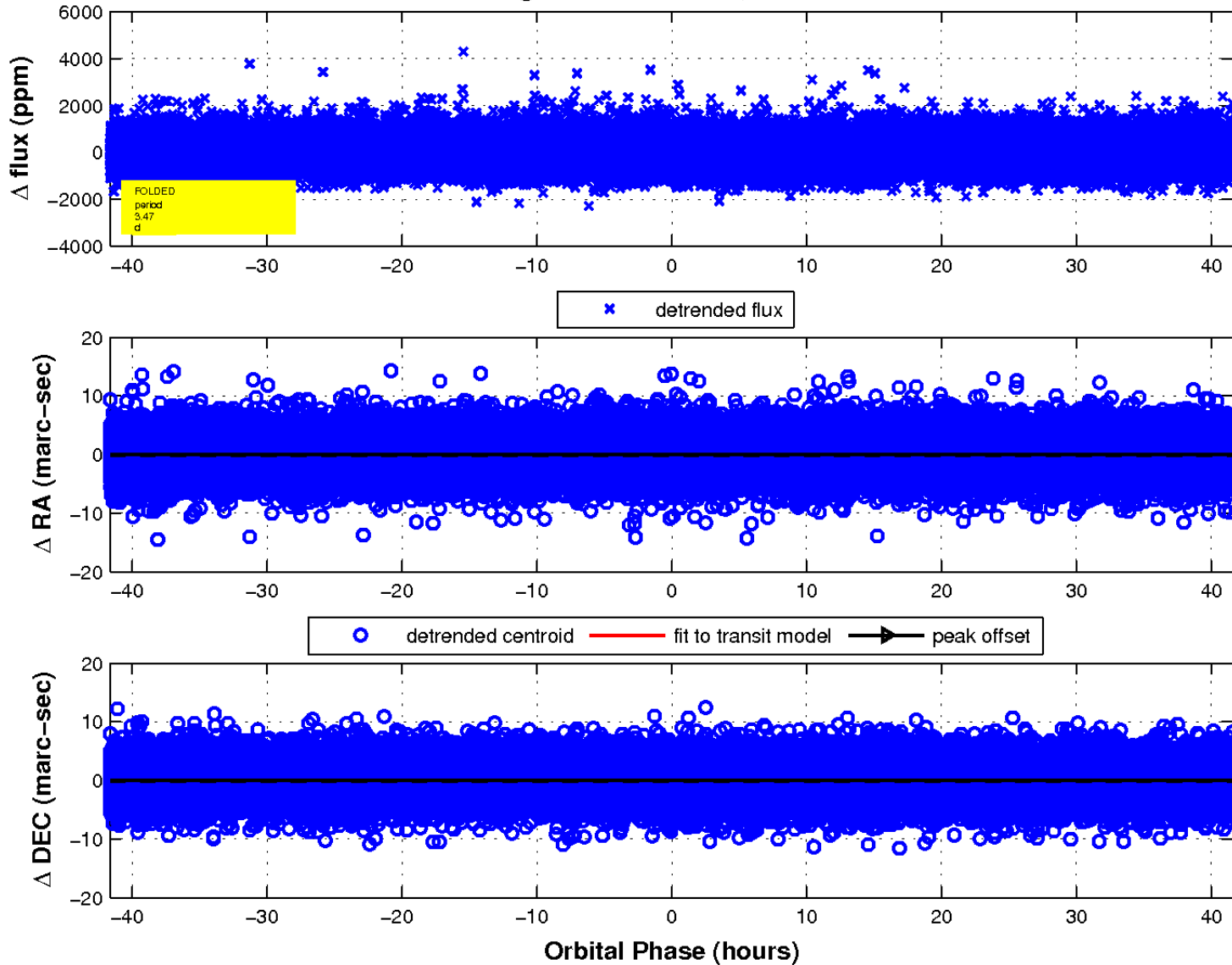
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

