

# KIC 007905683

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007905683-01	OBS	No	1.315699	131.552045	24.8	5.367	8.7	8.9	1.11	6387	0.56	3222.58
007905683-02	OBS	No	197.618189	237.033231	145.5	32.954	9.3	4.6	1.11	6387	1.44	4.04
007905683-03	OBS	No	139.590793	133.942988	283.9	4.773	8.4	6.9	1.11	6387	2.10	6.42
007905683-04	OBS	No	14.709259	138.554134	87.4	9.390	8.2	7.7	1.11	6387	1.22	128.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007905683-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
007905683-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007905683-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT
007905683-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV

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

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

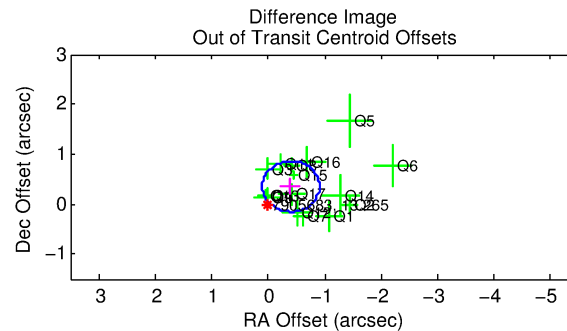
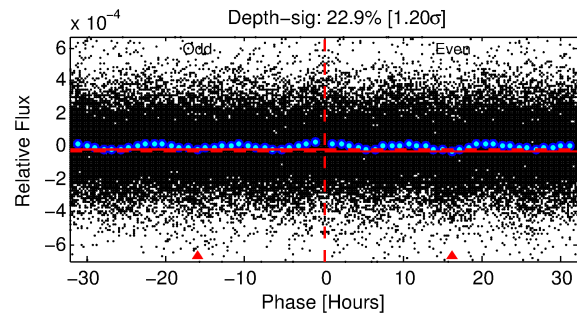
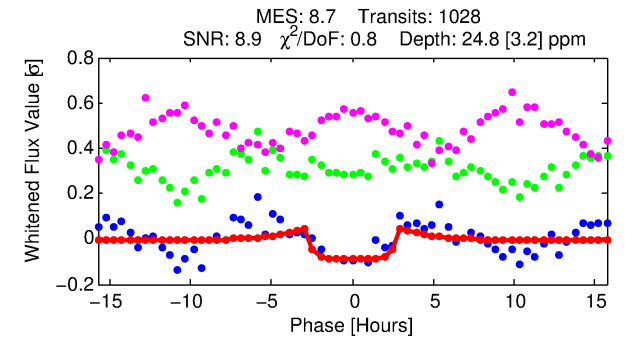
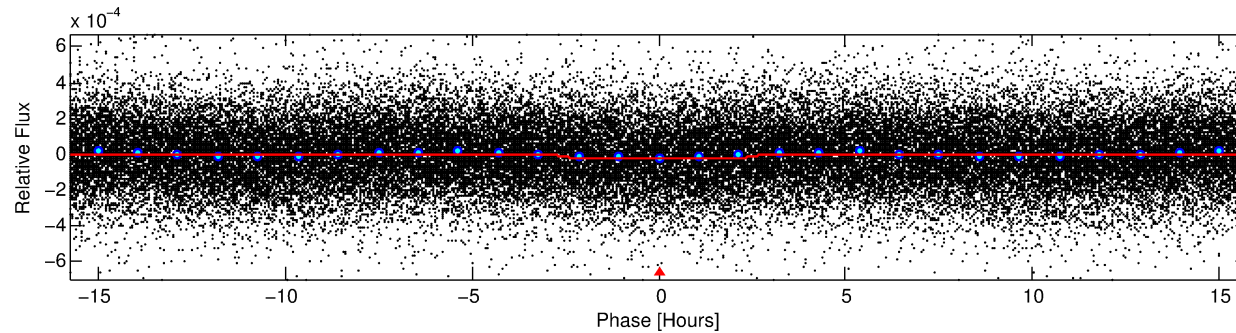
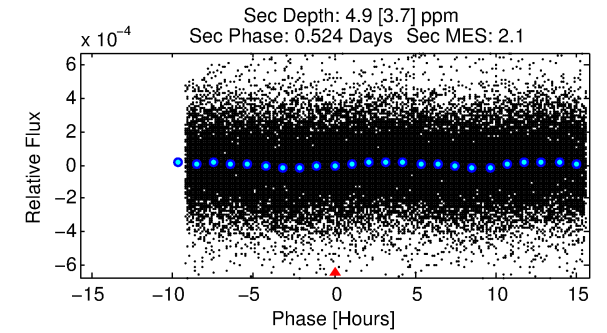
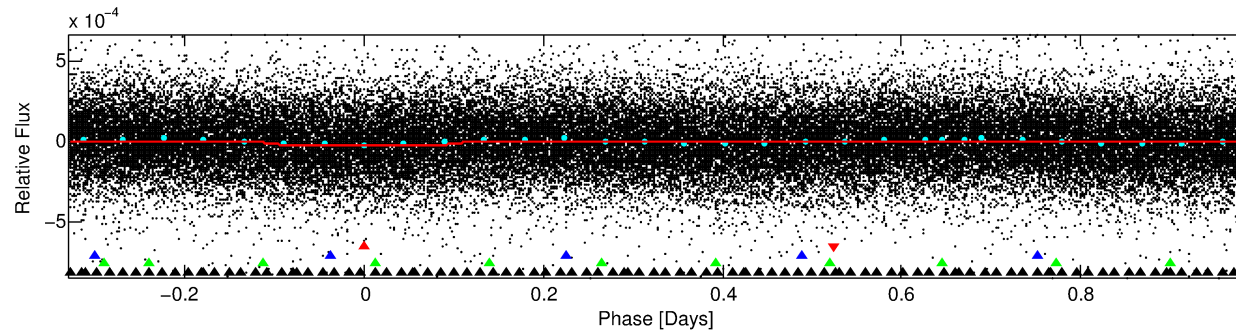
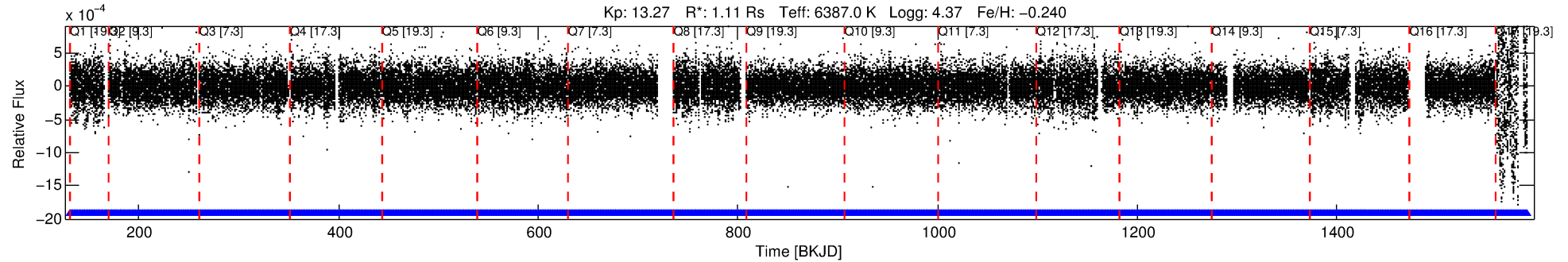
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007905683-01

No Significant Match Found

# DV One-Page Summary

KIC: 7905683 Candidate: 1 of 4 Period: 1.316 d



## DV Fit Results:

Period = 1.31570 [0.00001] d  
Epoch = 131.5520 [0.0040] BKJD  
Rp/R\* = 0.0046 [0.0038]  
a/R\* = 1.95 [6.30]  
b = 0.17 [25.27]  
Seff = 3222.58 [1280.47]  
Teq = 1921 [191] K  
Rp = 0.56 [0.50] Re  
a = 0.0239 [0.0063] AU  
Ag = 5.01 [9.39] [0.43σ]  
Teffp = 4445 [2044] K [1.23σ]

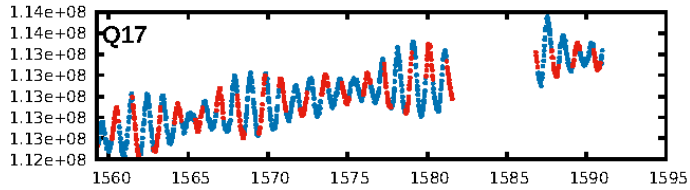
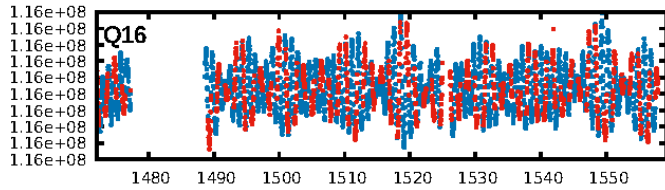
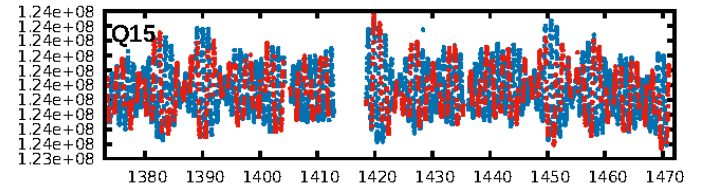
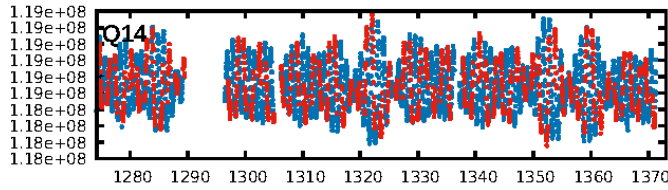
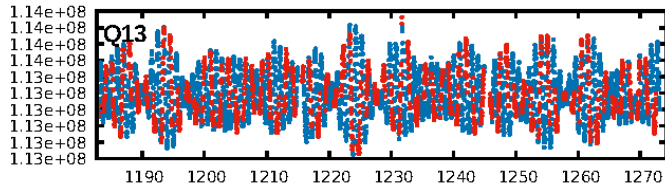
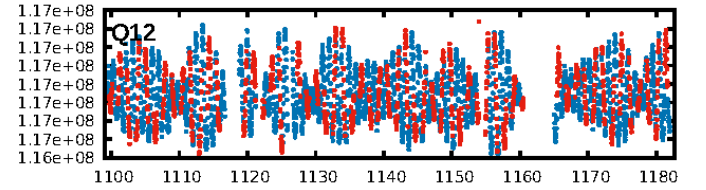
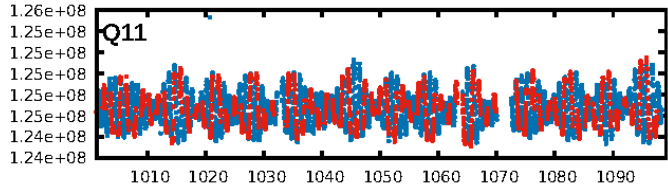
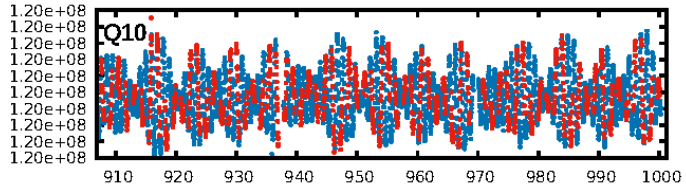
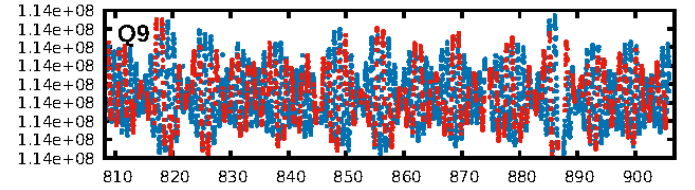
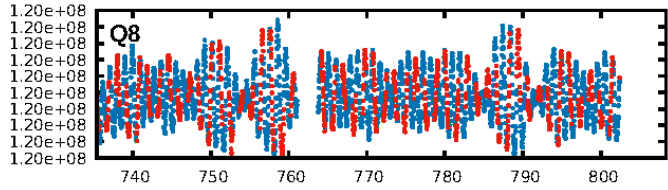
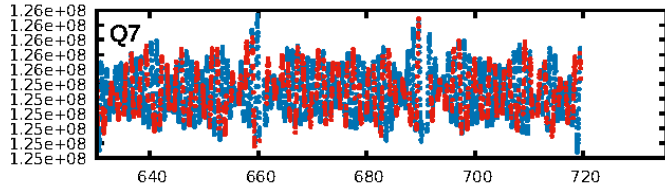
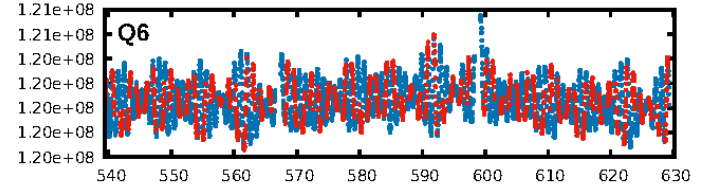
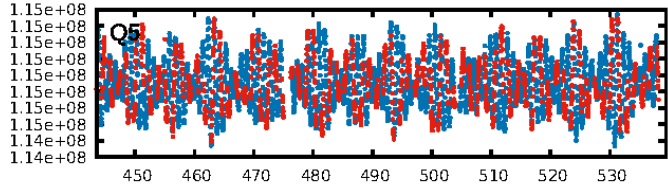
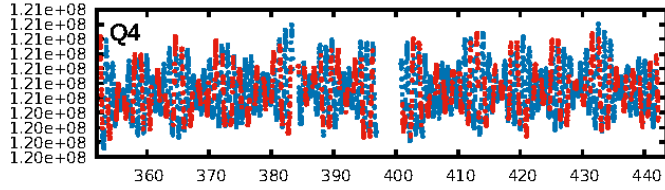
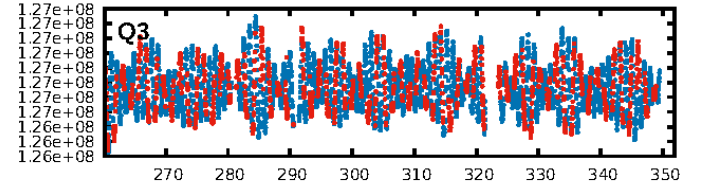
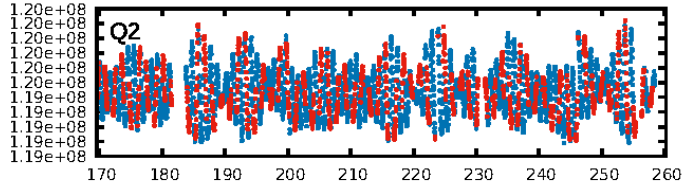
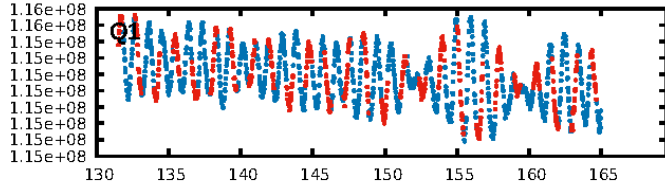
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [29.72σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.70e-13  
RollingBand-fgt: 1.00 [981/981]  
GhostDiagnostic-chr: 2.185  
Centroid-sig: 80.4%  
Centroid-so: 0.706 arcsec [1.11σ]  
OotOffset-rm: 0.536 arcsec [3.17σ]  
KicOffset-rm: 0.299 arcsec [1.71σ]  
OotOffset-st: 3/4/4/5 [16]  
KicOffset-st: 3/4/4/5 [16]  
DiffImageQuality-fgm: 0.69 [11/16]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:34:24 Z

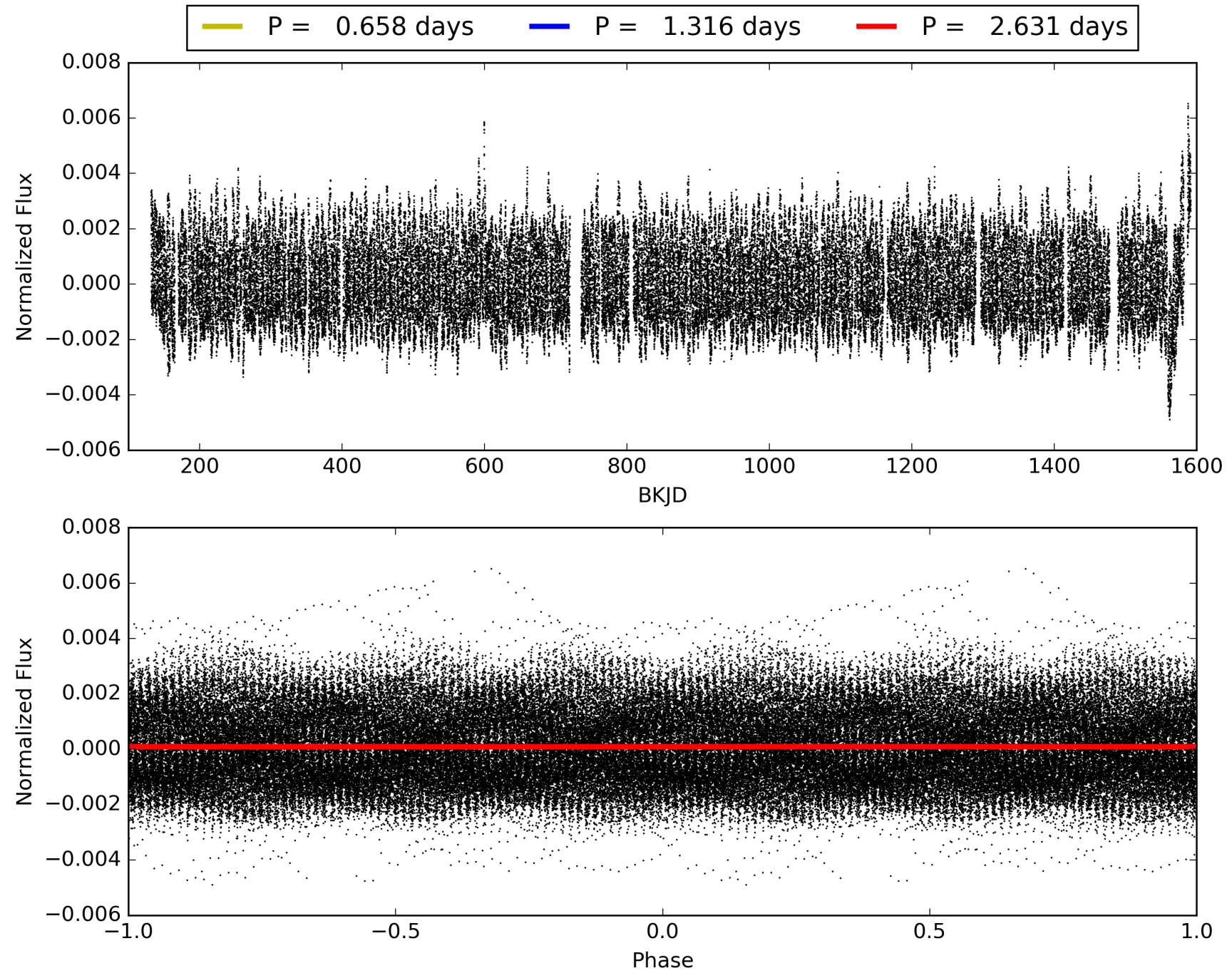
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

## TCE 007905683-01, PDC Light Curves





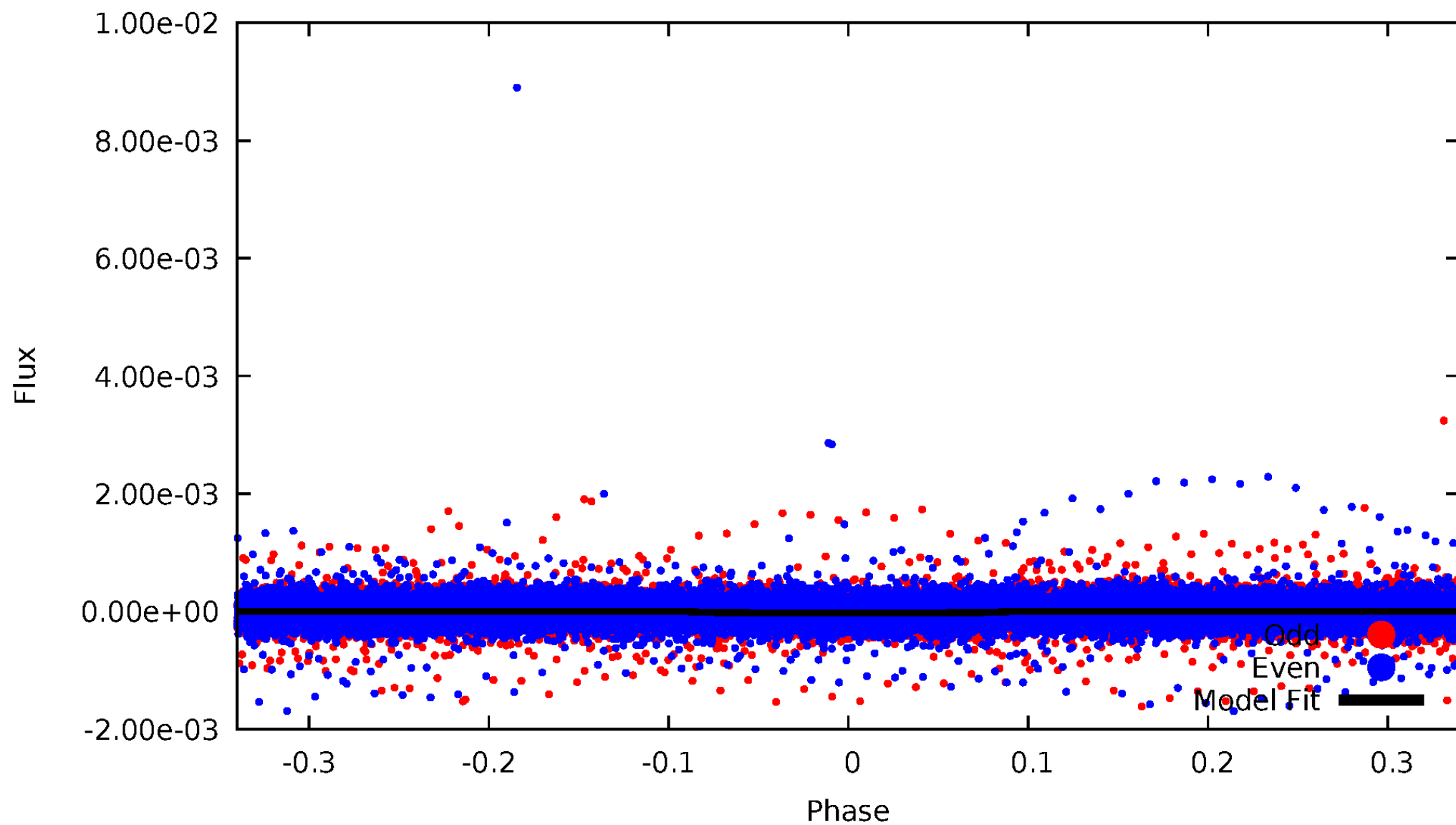
TCE 007905683-01





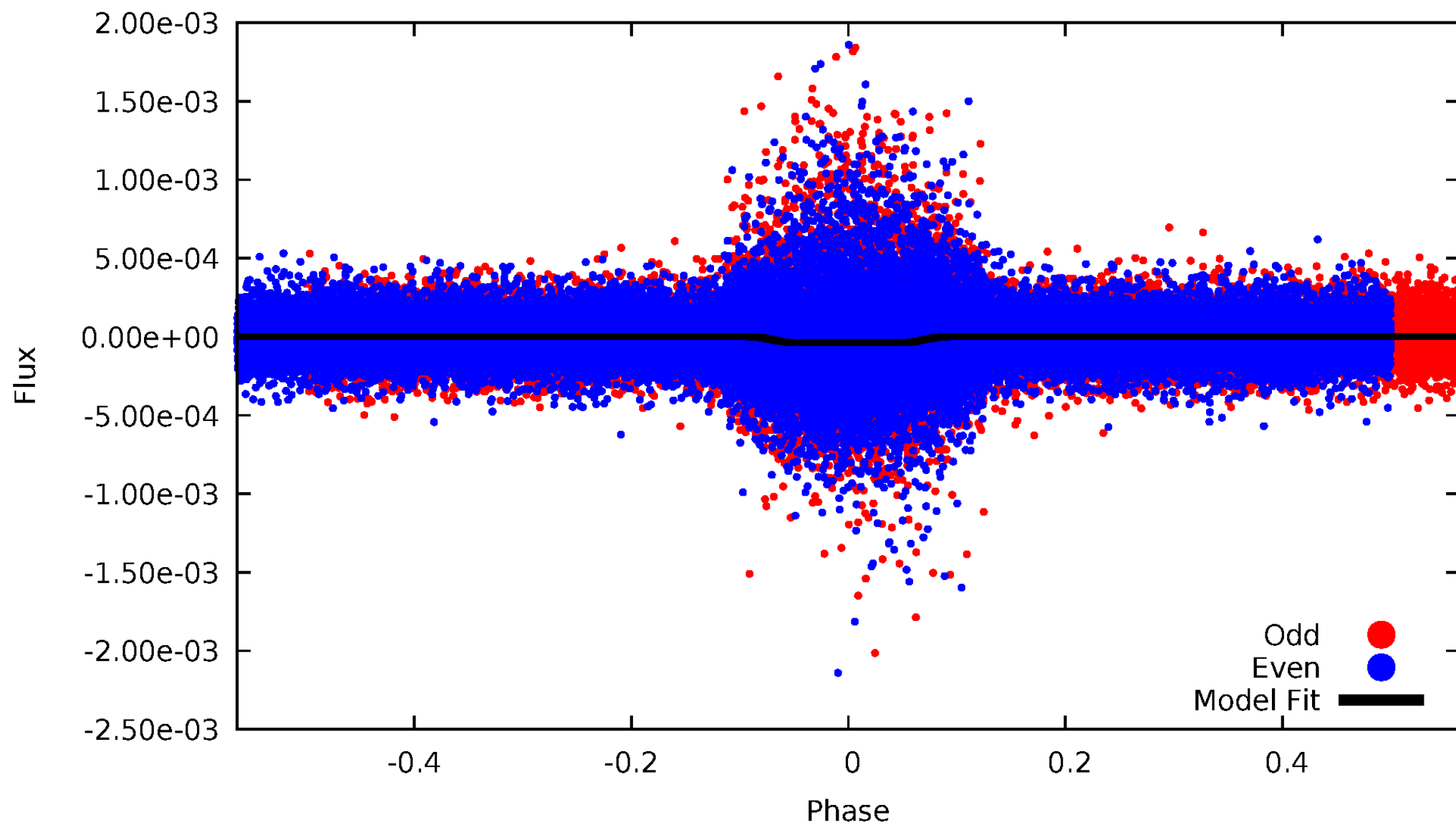
# DV Odd/Even

TCE 007905683-01

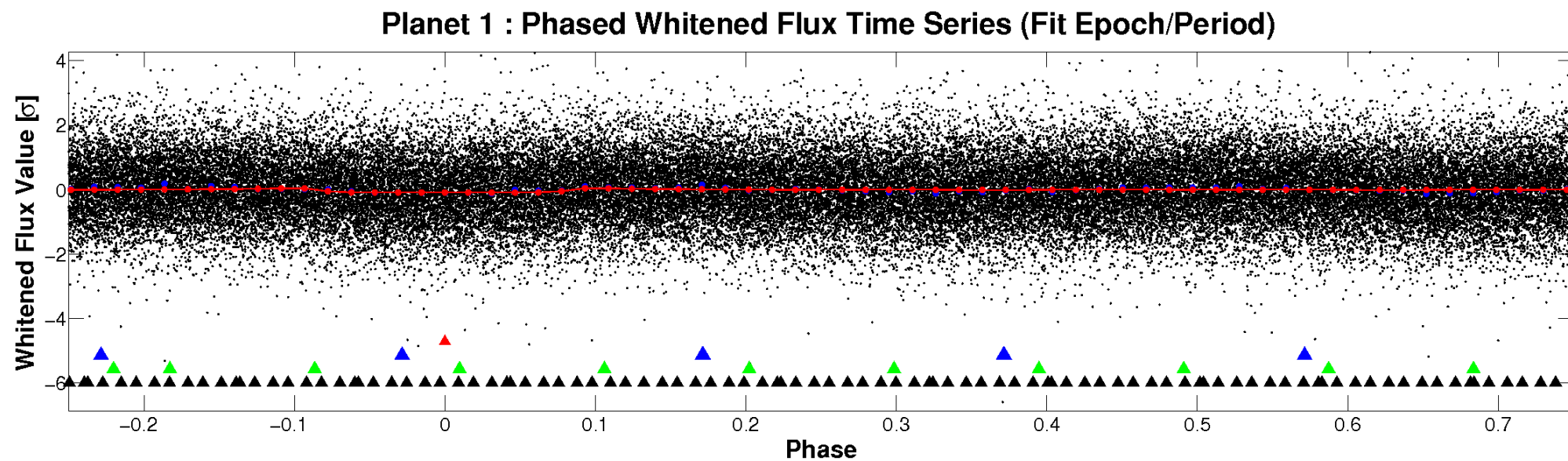
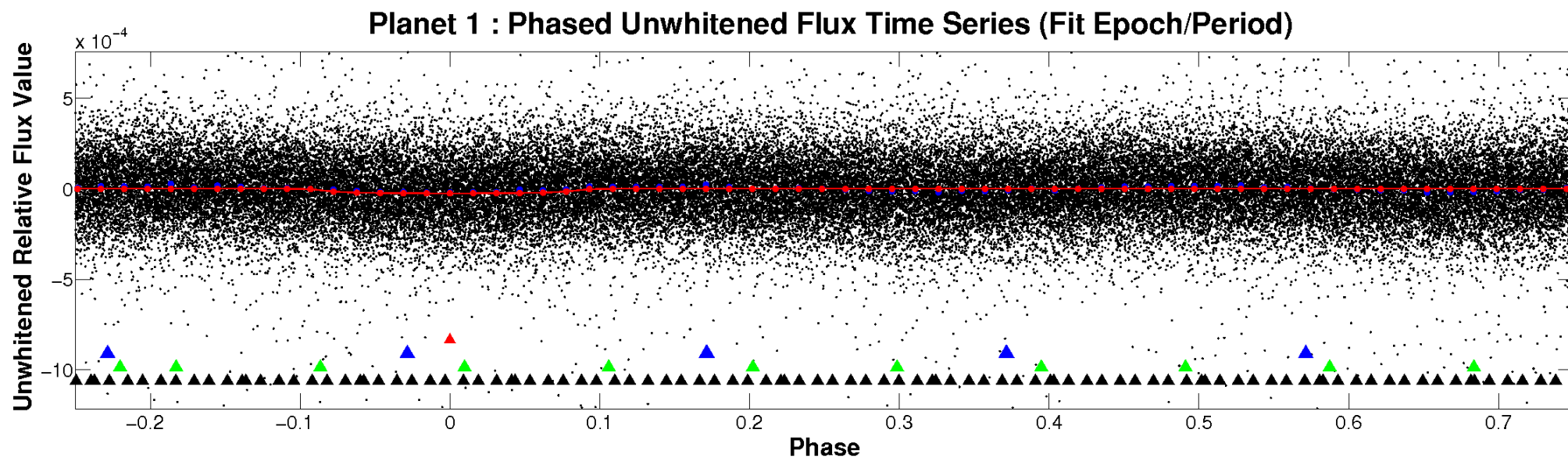


# ALT Odd/Even

TCE 007905683-01



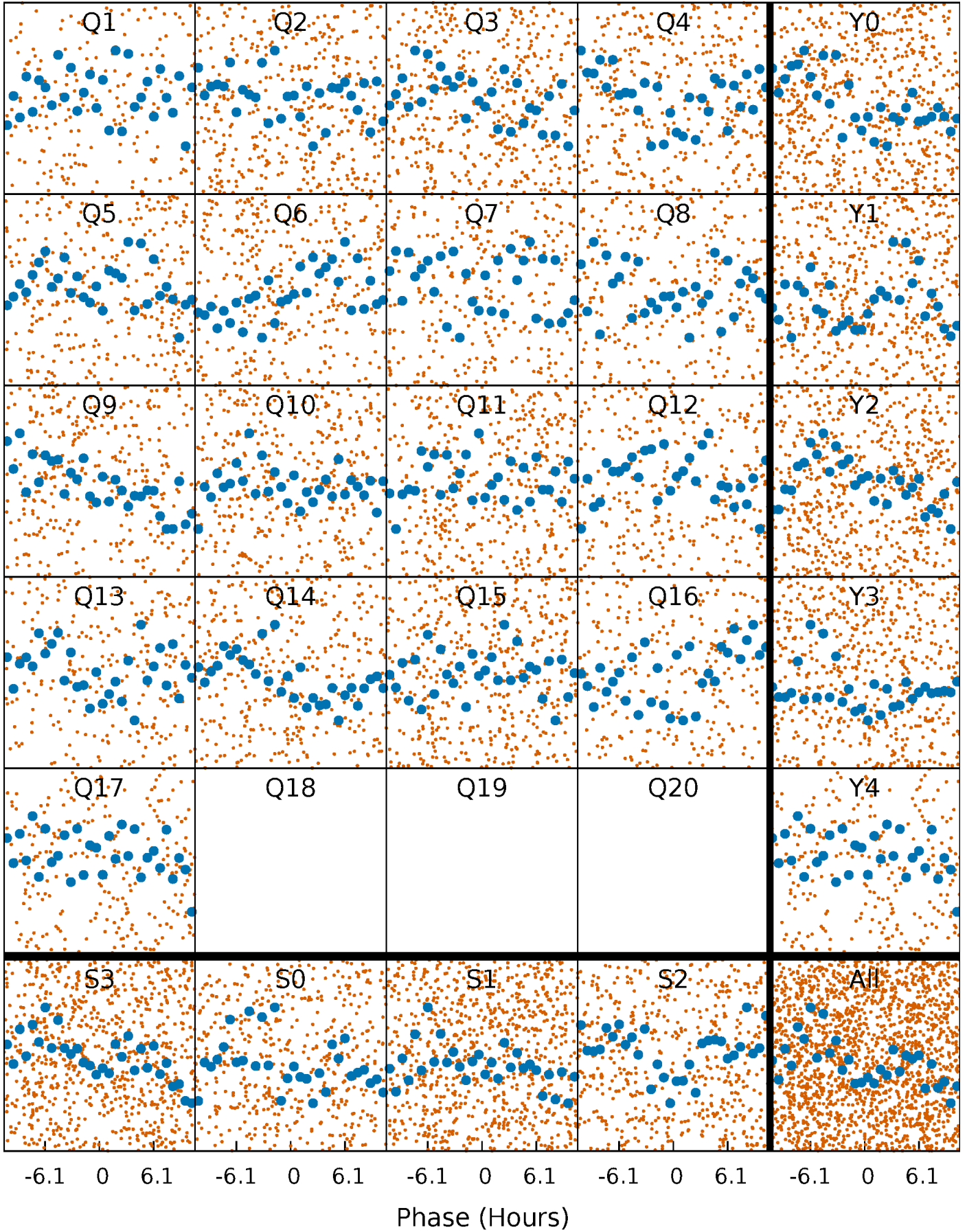
# Non-Whitened Vs. Whitened Light Curve





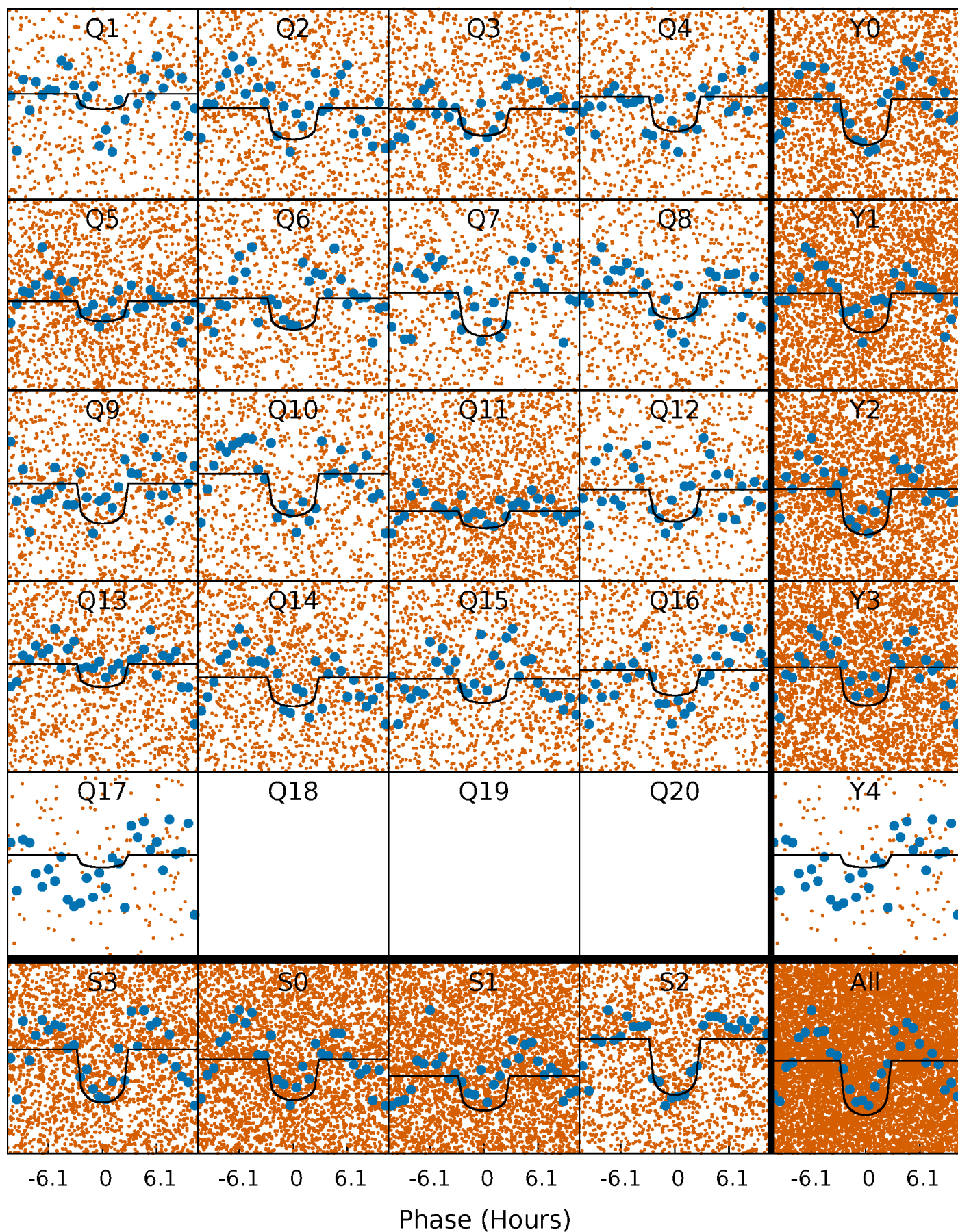
# PDC Quarter-Phased Transit Curves

TCE 007905683-01 P= 1.315699 Days  $T_0=131.552045$  (BKJD)



# DV Quarter-Phased Transit Curves

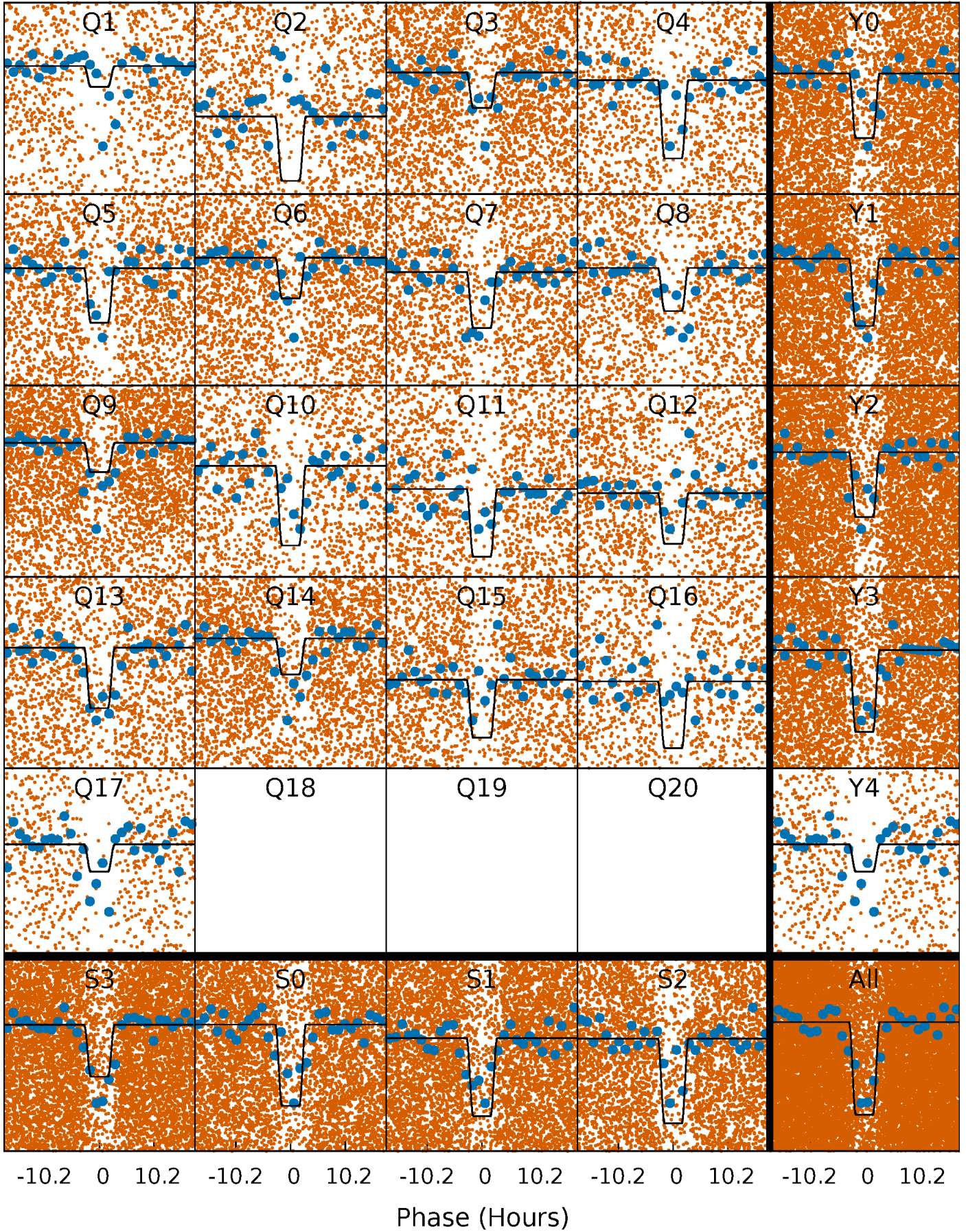
TCE 007905683-01 P= 1.315699 Days  $T_0=131.552045$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 007905683-01 P= 1.315716 Days  $T_0=131.524464$  (BKJD)

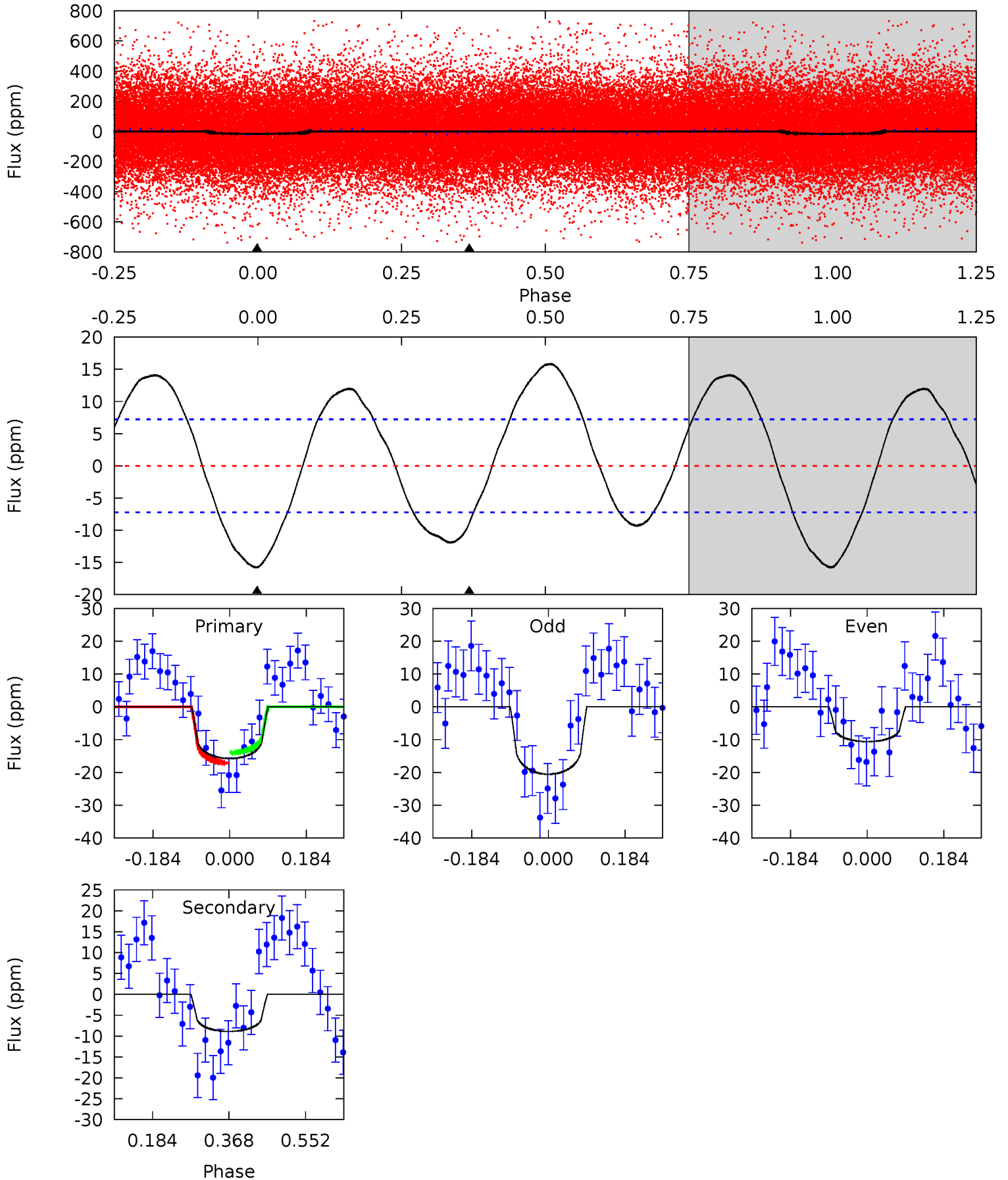




# DV Model-Shift Uniqueness Test

007905683-01, P = 1.315699 Days, E = 130.236346 Days

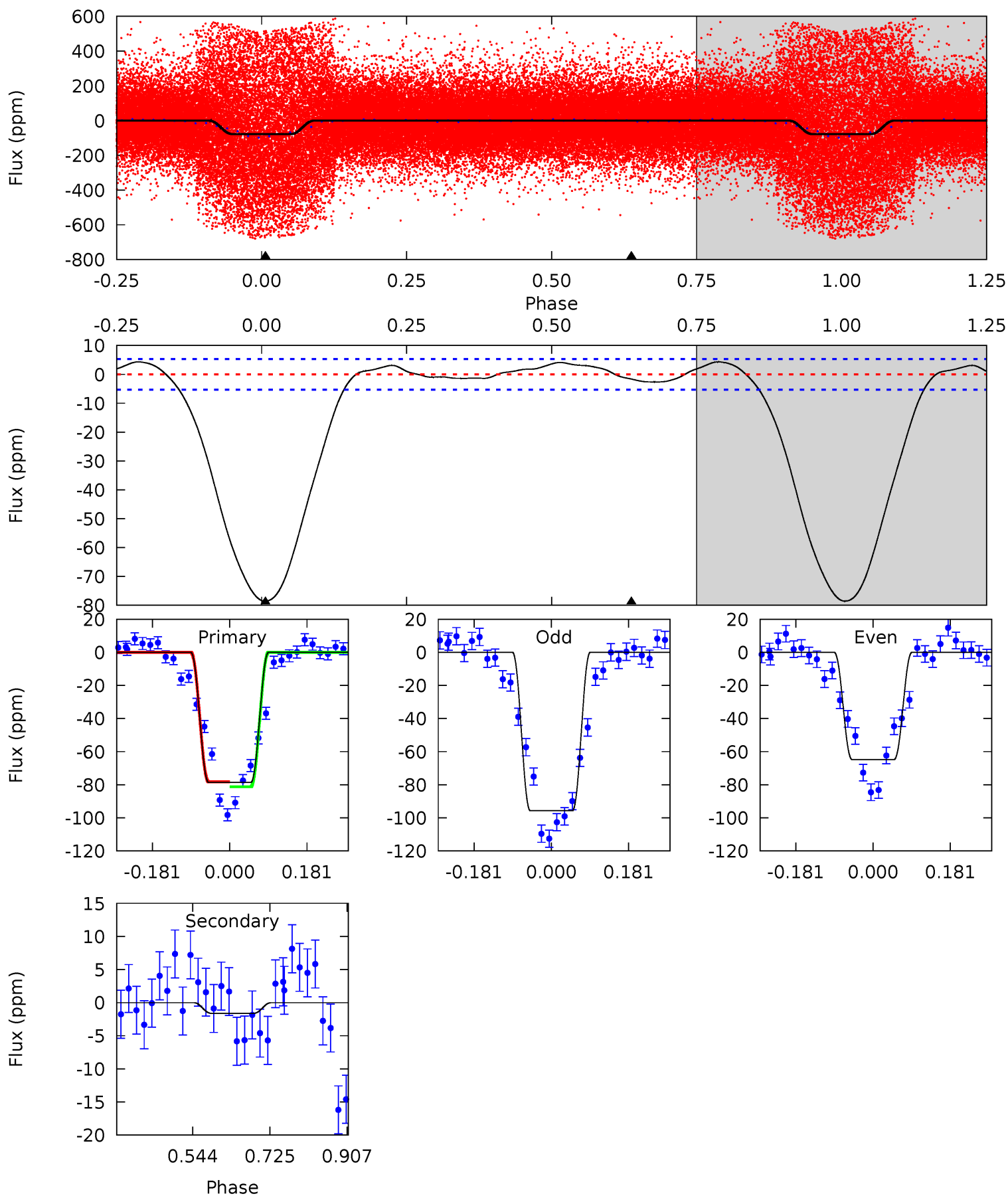
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.70	5.46	0	0	4.44	1.33	4.80	9.70	9.70	5.46	5.46	3.07	0.87	0.50	0.97



# Alt Model-Shift Uniqueness Test

007905683-01, P = 1.315716 Days, E = 130.208748 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
65.4	1.35	0	0	4.44	1.34	1.23	65.4	65.4	1.35	1.35	12.8	0.39	0.05	0



### Stellar Parameters For KIC 007905683

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6387^{+157}_{-204}$	$4.369^{+0.087}_{-0.203}$	$-0.240^{+0.250}_{-0.300}$	$1.113^{+0.352}_{-0.151}$	$1.050^{+0.172}_{-0.114}$	$1.074^{+0.400}_{-0.560}$
	+2%/-3%	+2%/-5%	+104%/-125%	+32%/-14%	+16%/-11%	+37%/-52%
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 007905683-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-9 \pm 2$	$0.65^{+0.49}_{-0.37}$	$2715^{+202}_{-148}$	$4836^{+2469}_{-983}$	$6.429^{+27.511}_{-4.344}$
Alt.	$-2 \pm 1$	$0.81^{+0.49}_{-0.43}$	$2708^{+202}_{-130}$	$3055^{+1194}_{-5809}$	$0.695^{+2.823}_{-0.572}$

$T_{\text{max}}$  = 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

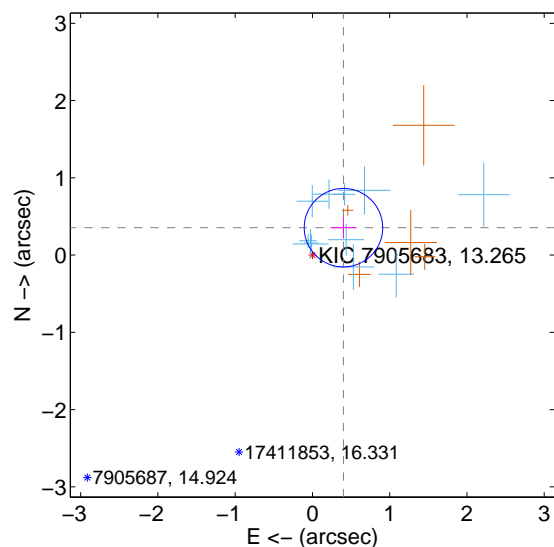
Supplemental centroid analysis for 007905683-01. Kepler magnitude: 13.27. Transit SNR 8.89

There are 11 quarters with good PRF difference image offsets

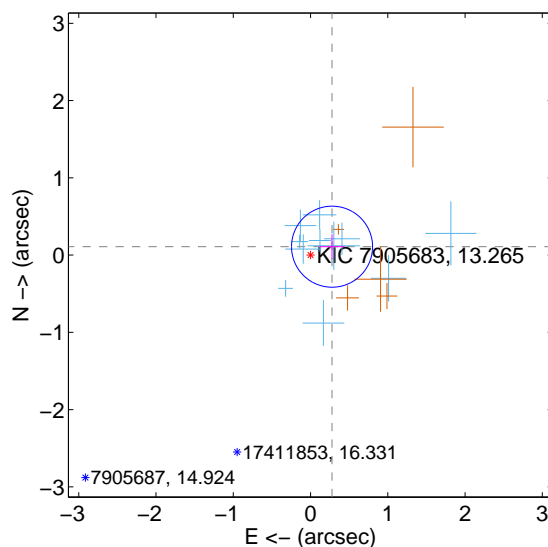
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.536 \pm 0.169$	$3.17$	$-0.402 \pm 0.167$	$0.355 \pm 0.141$
PRF-fit source offset from KIC position	$0.299 \pm 0.175$	$1.71$	$-0.279 \pm 0.164$	$0.109 \pm 0.160$
photometric centroid source offset	$0.71 \pm 0.63$	$1.11$	$0.63 \pm 0.61$	$-0.33 \pm 0.71$

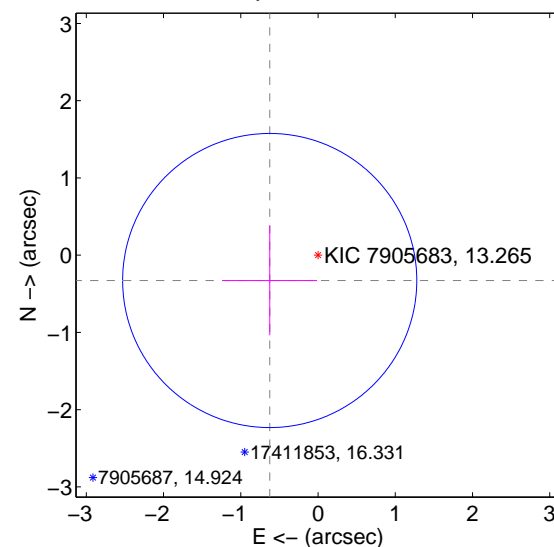
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

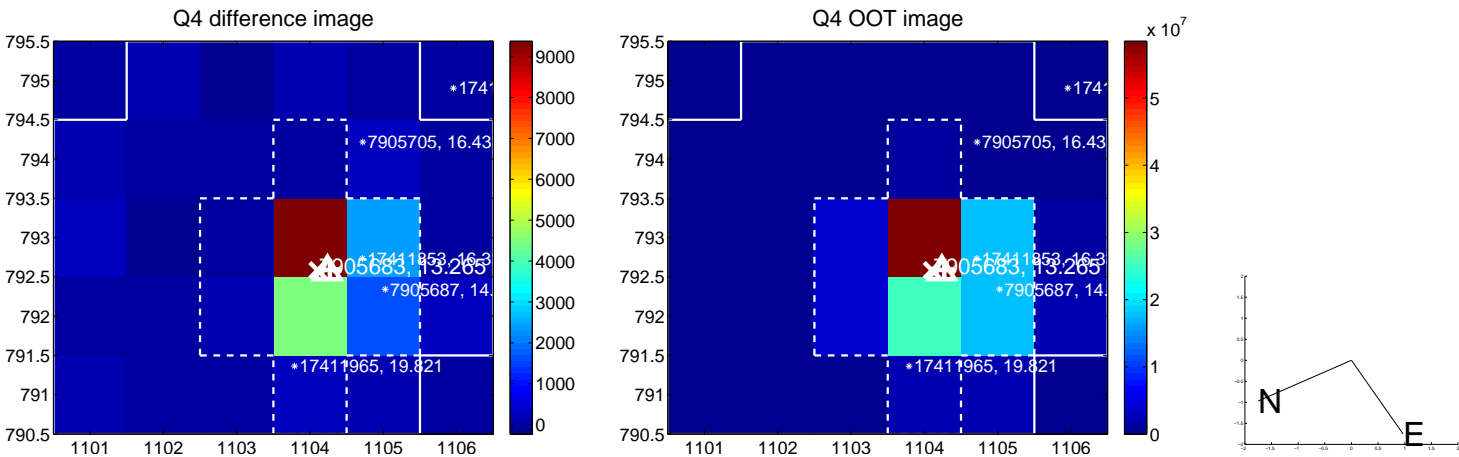
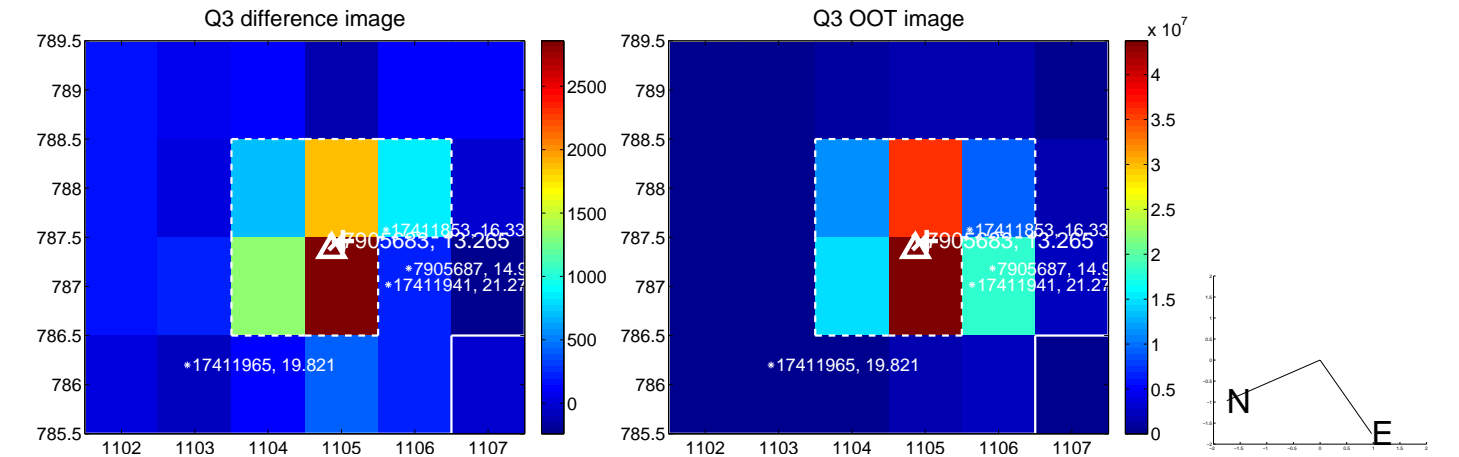
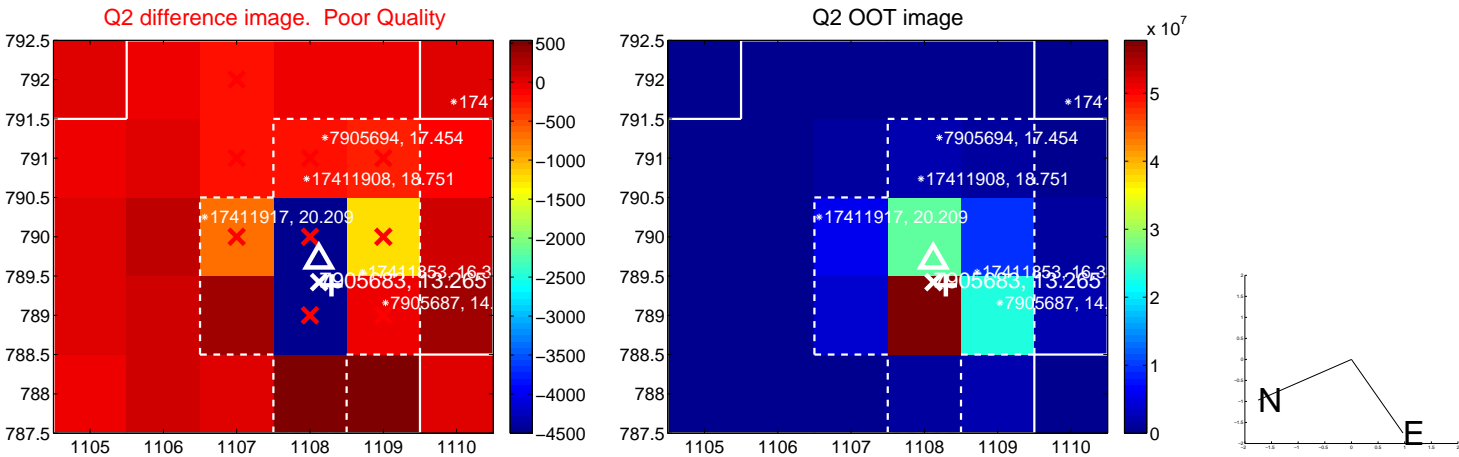
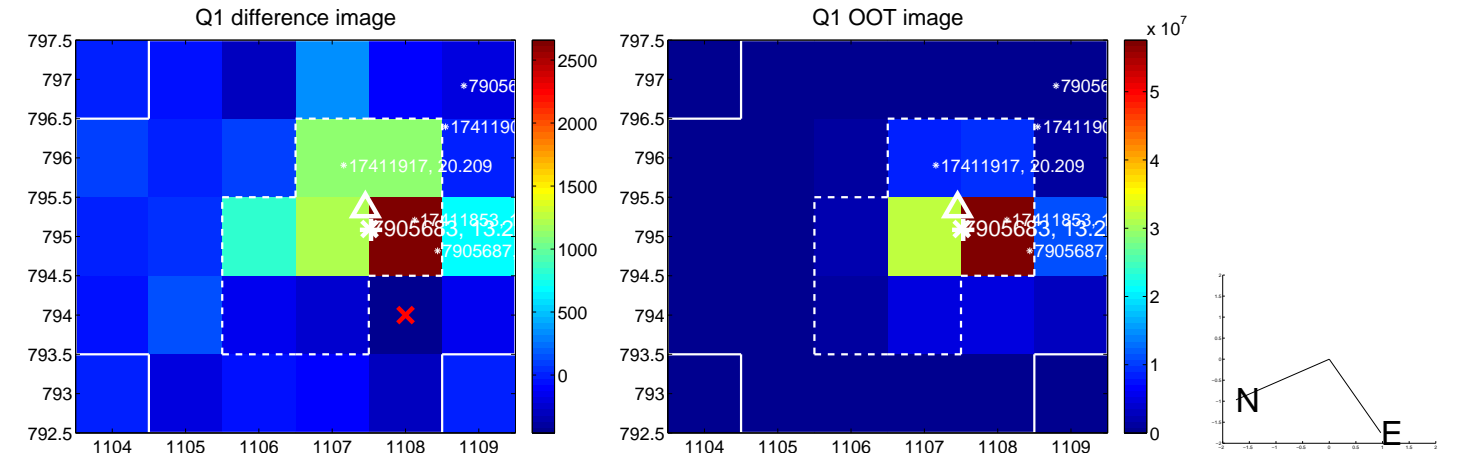


offset from photometric centroids

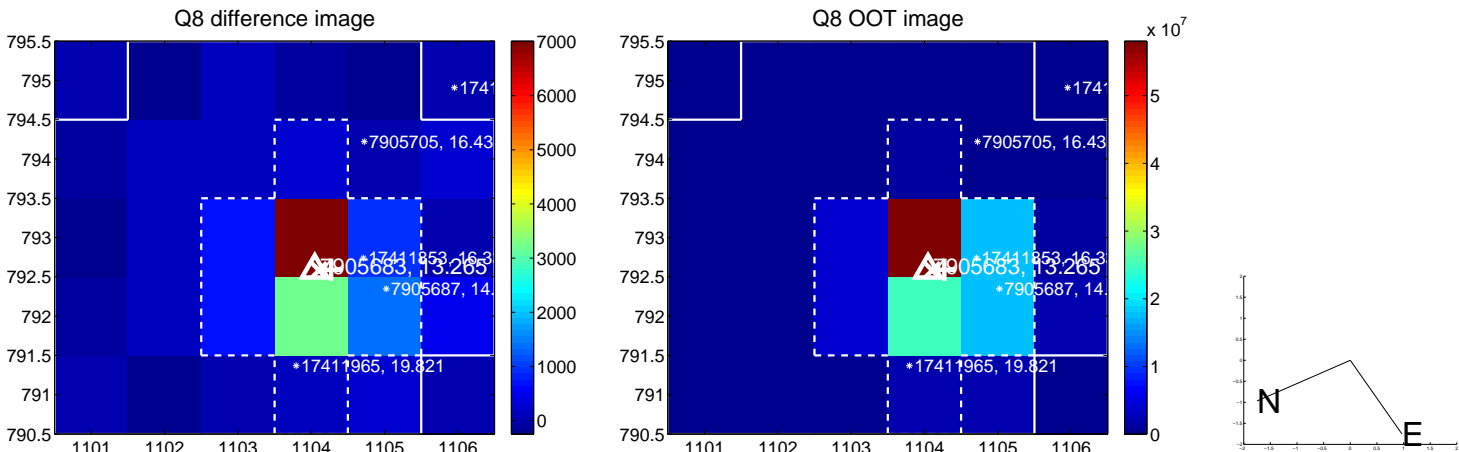
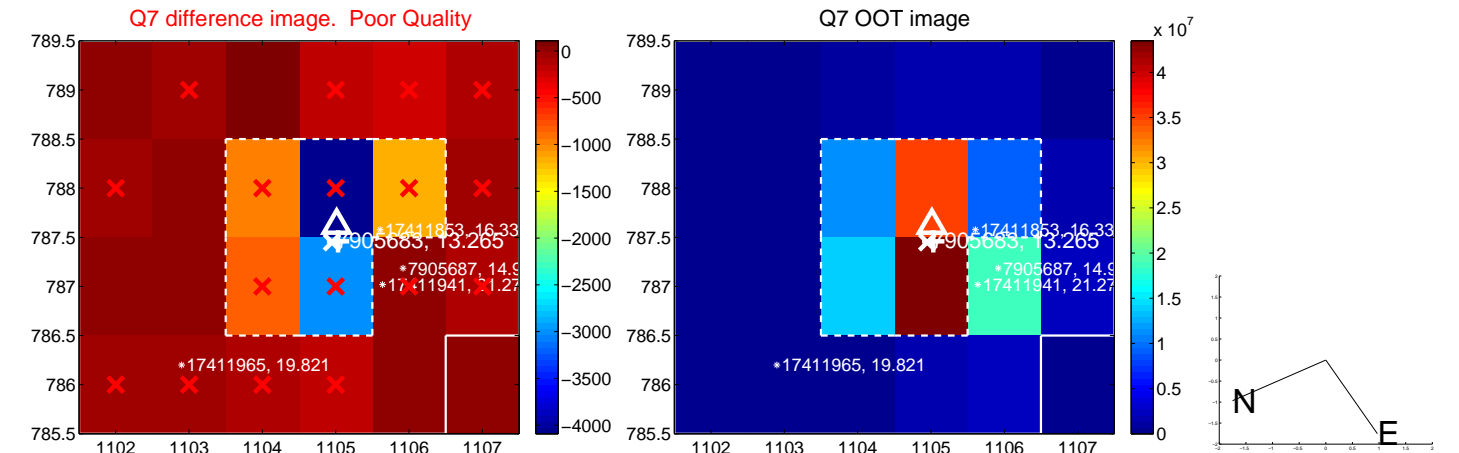
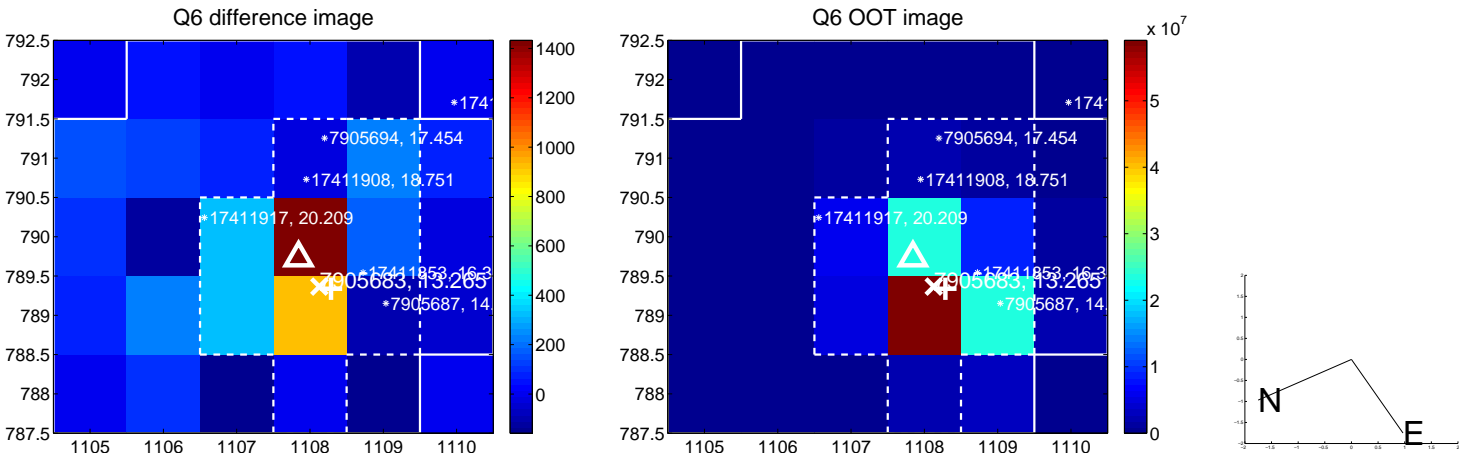
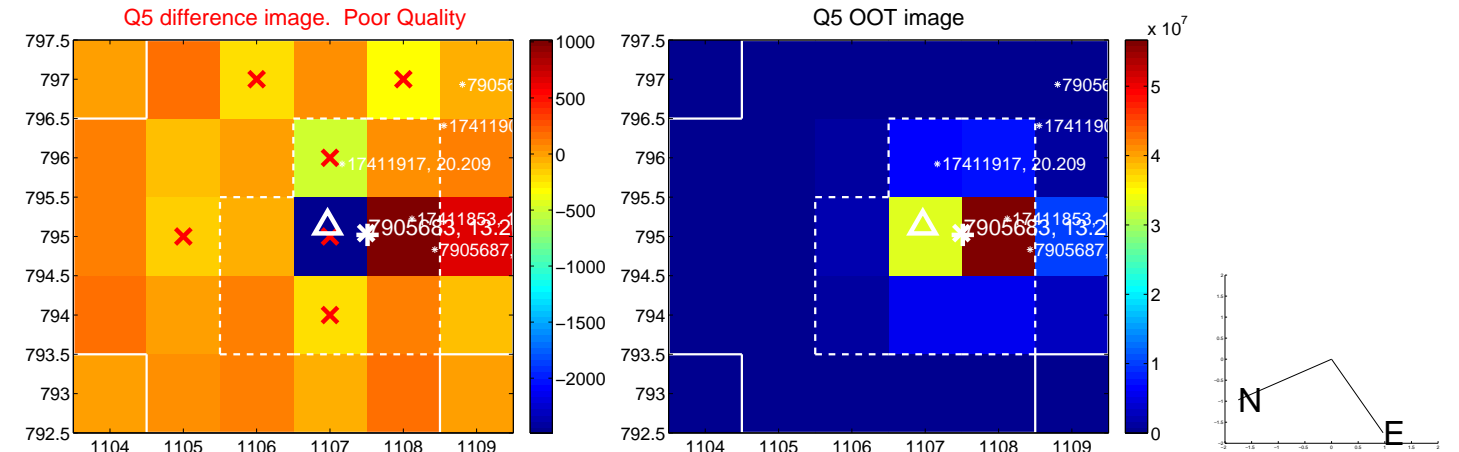


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

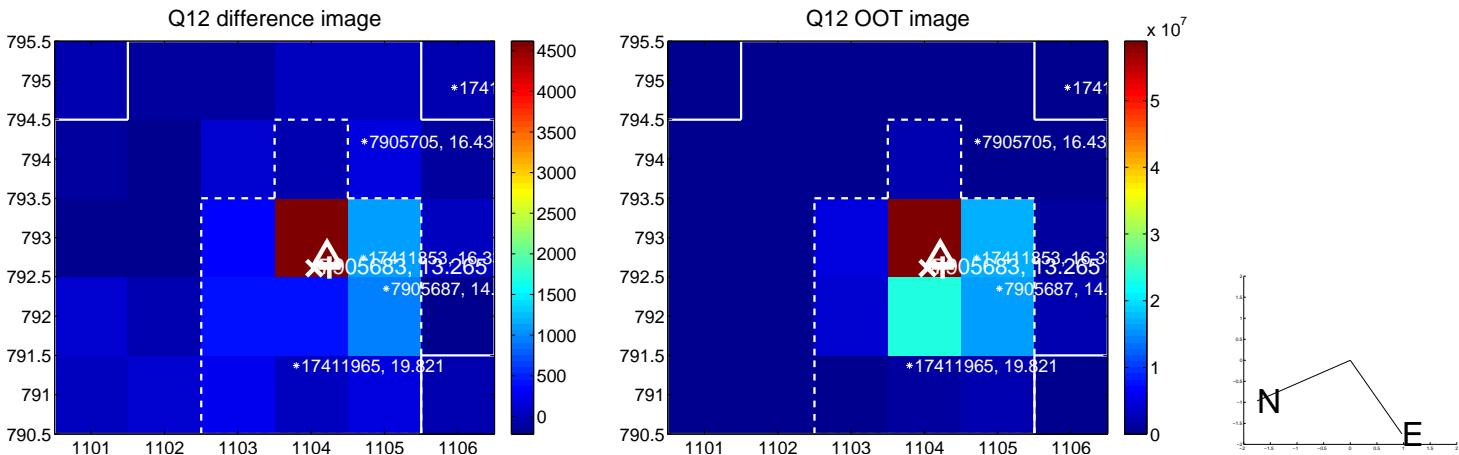
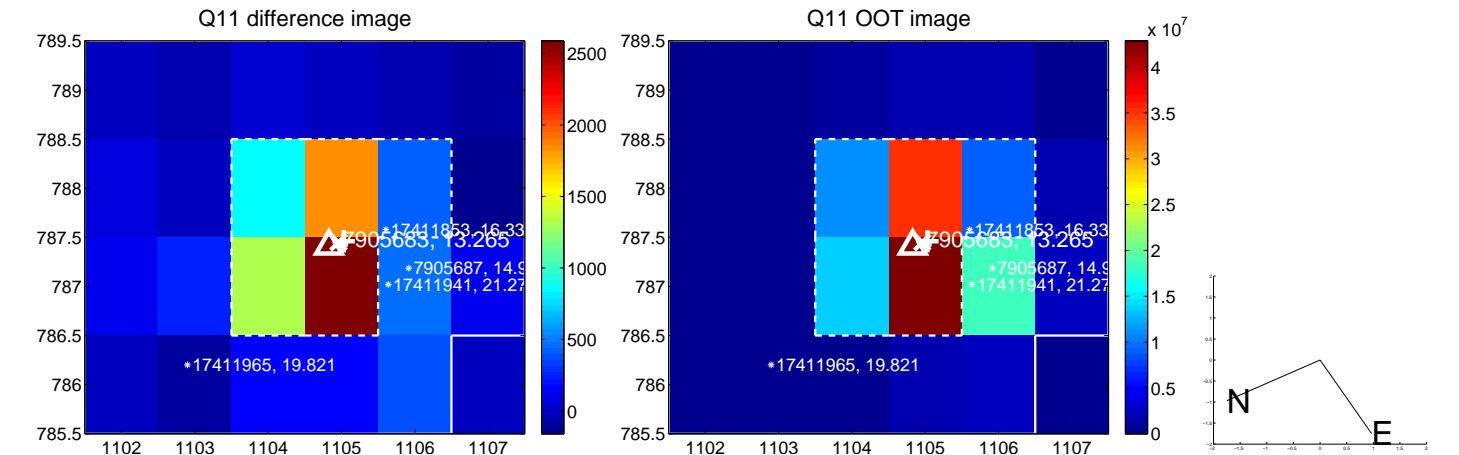
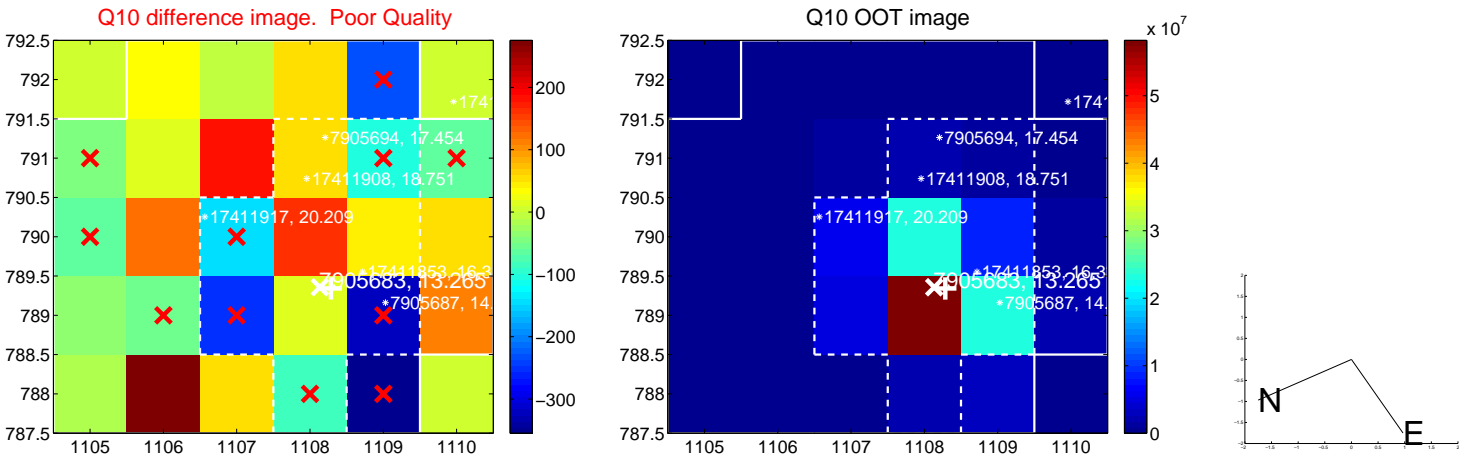
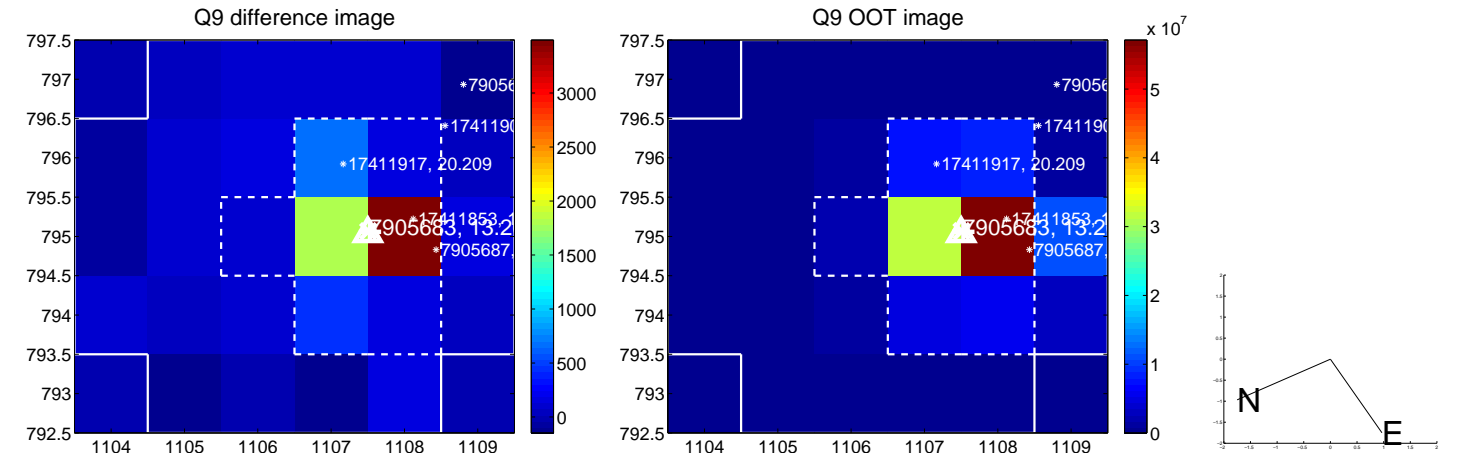


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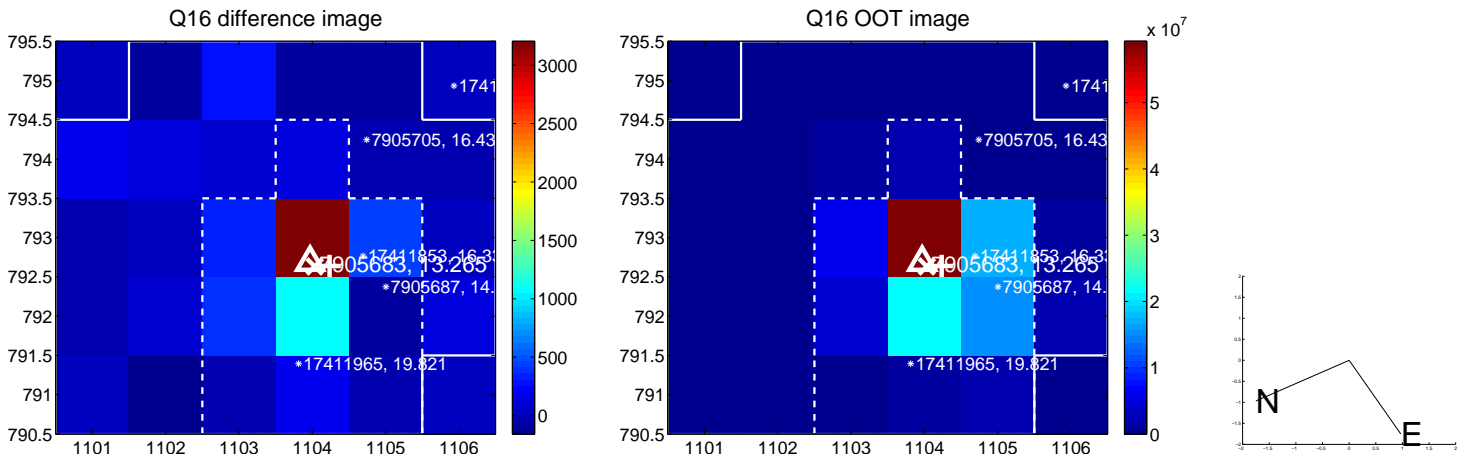
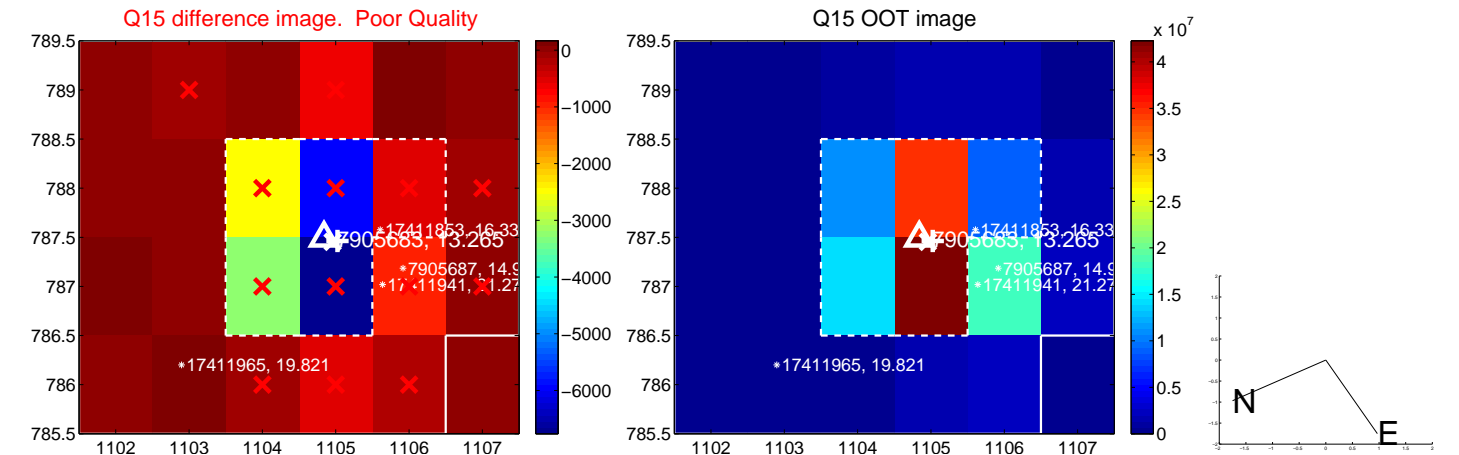
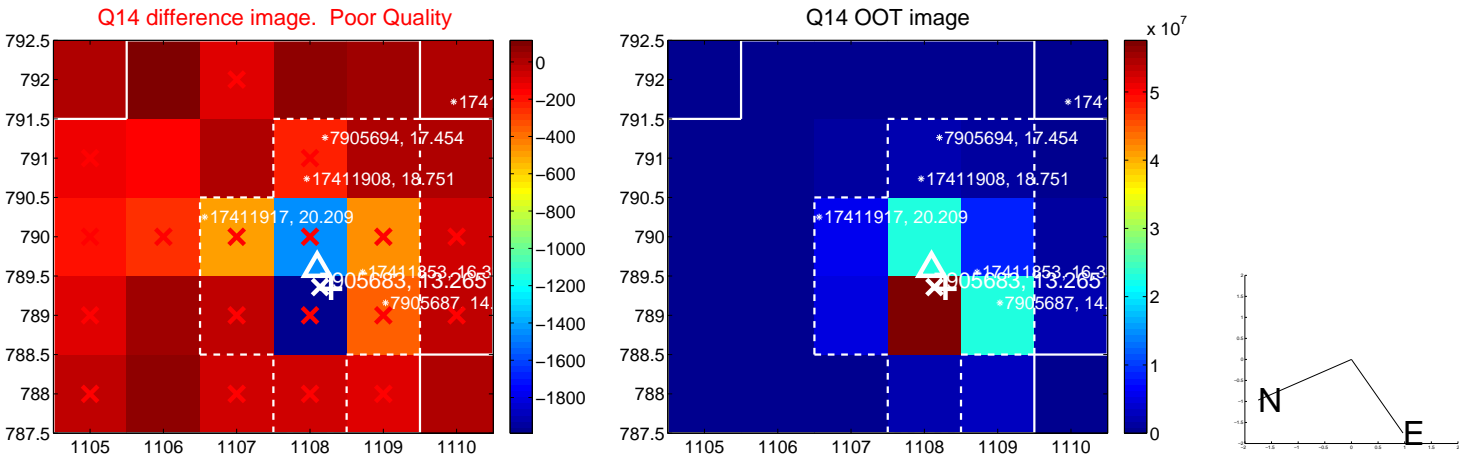
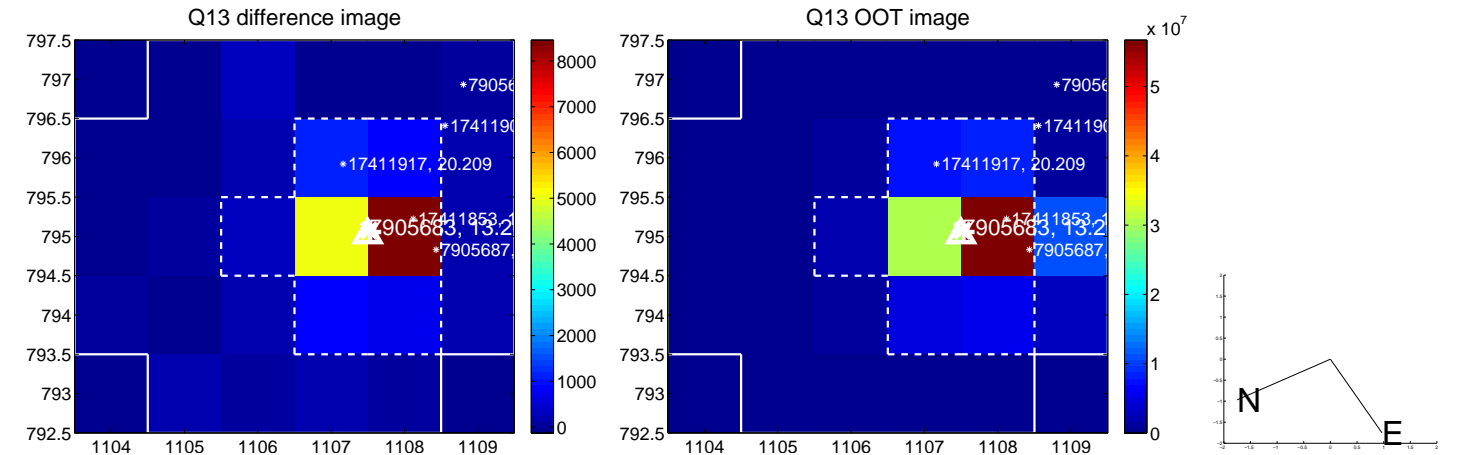




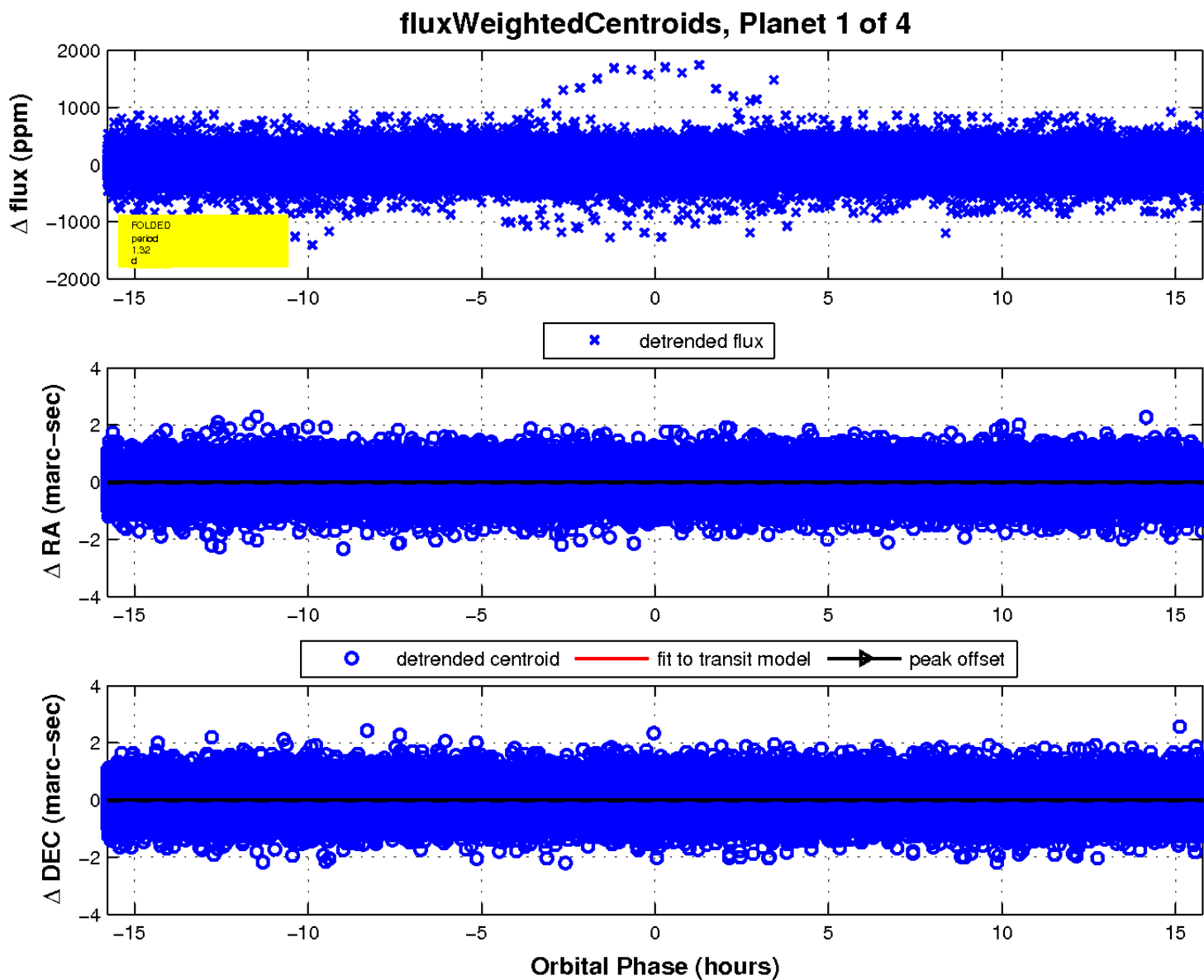
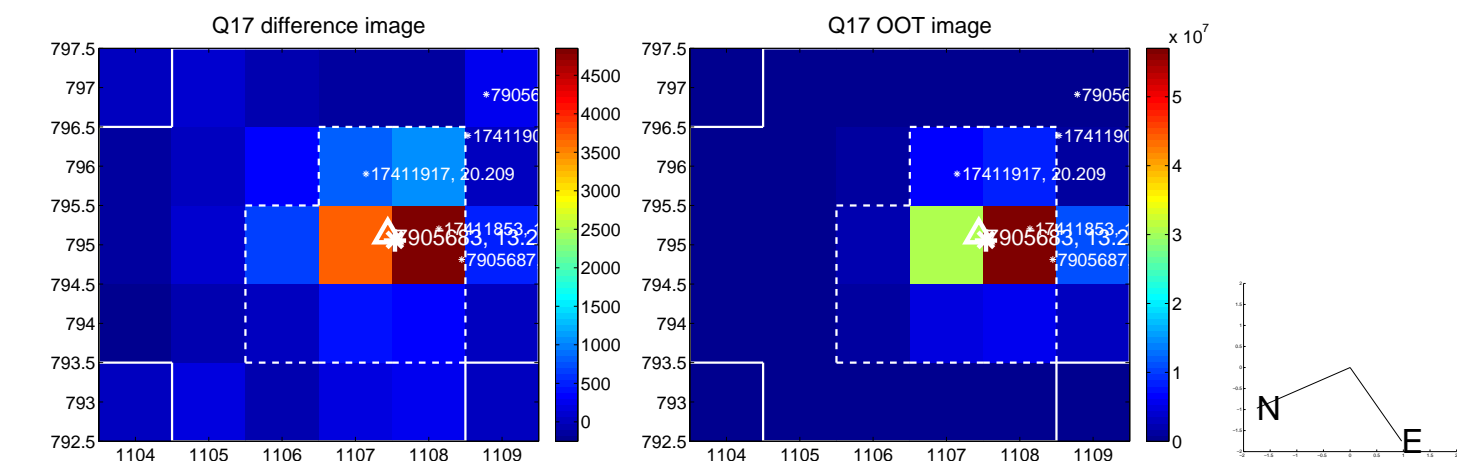
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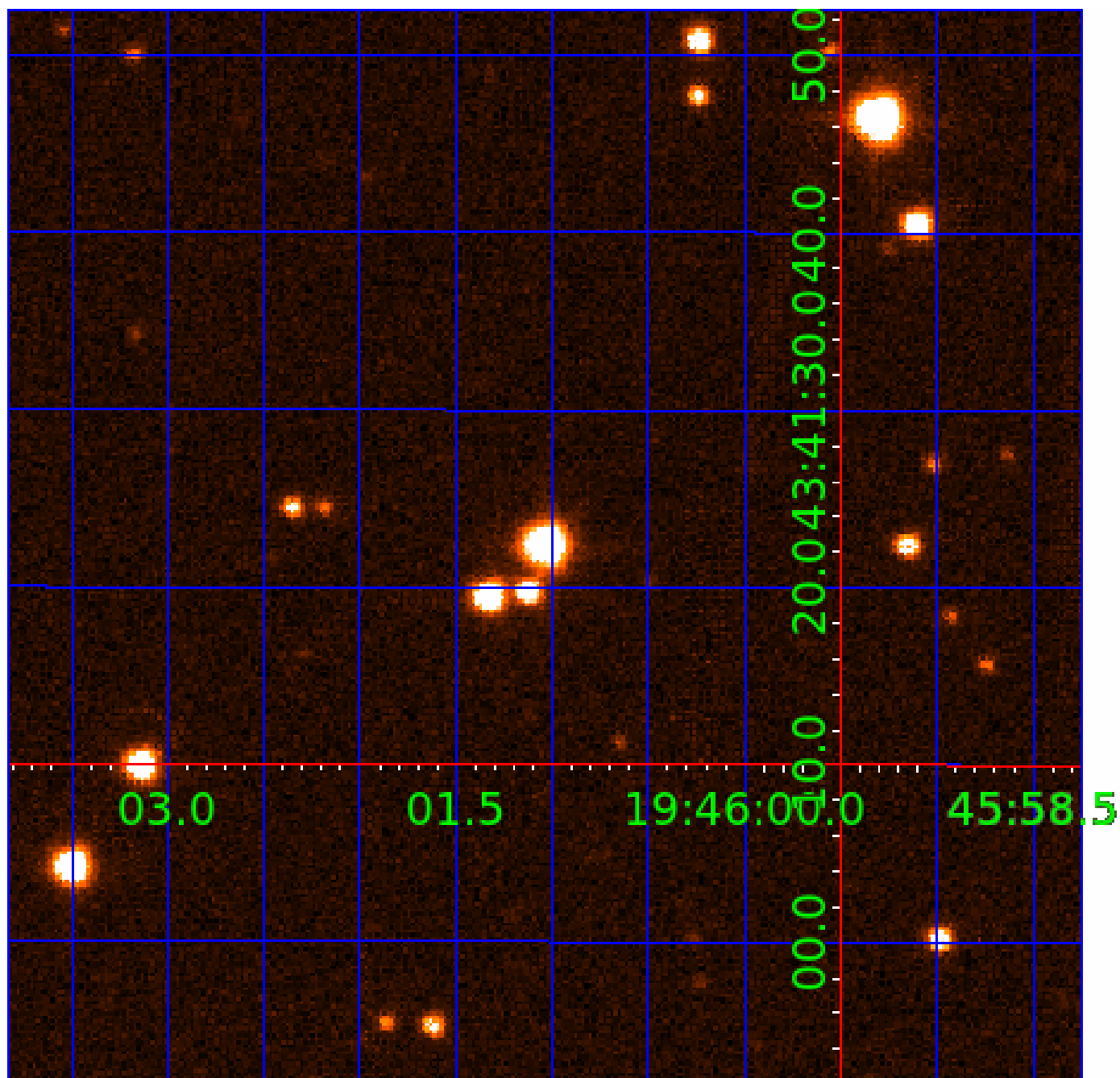


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UKIRT Image

Declination



# KIC 007905683

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007905683-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT
007905683-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV

**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.

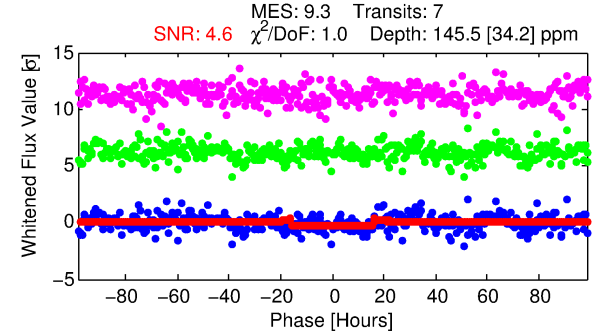
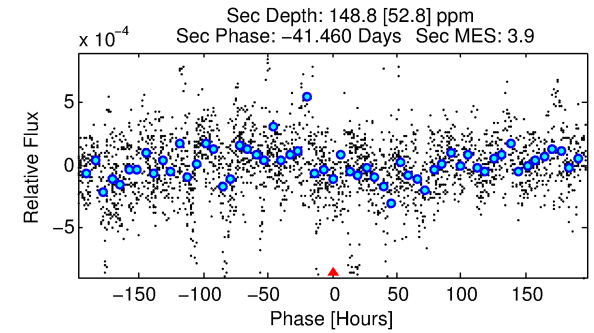
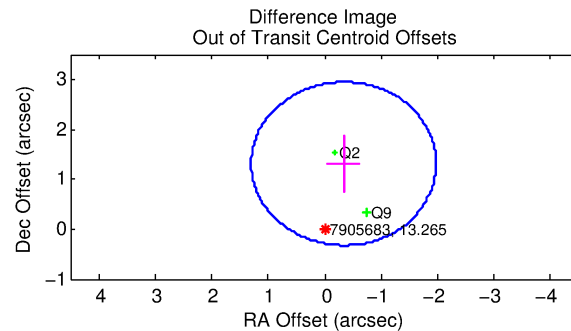
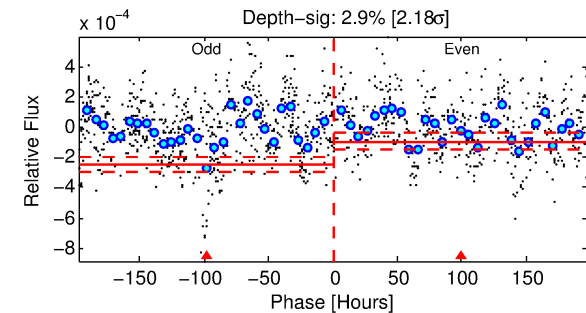
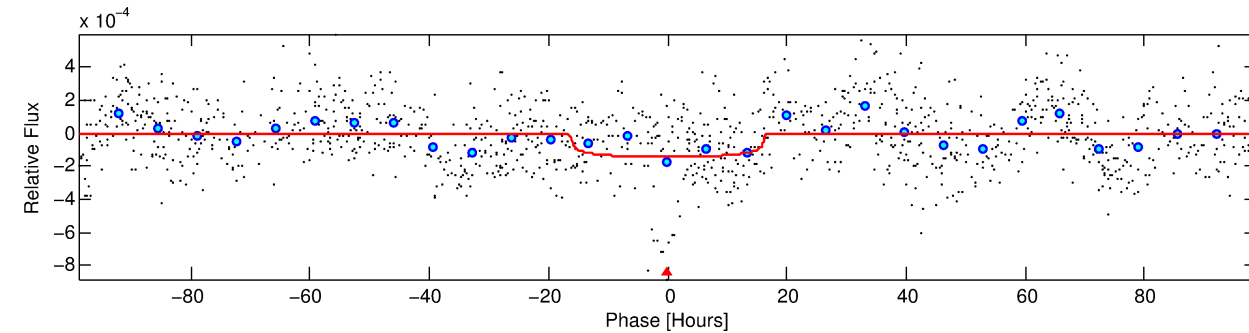
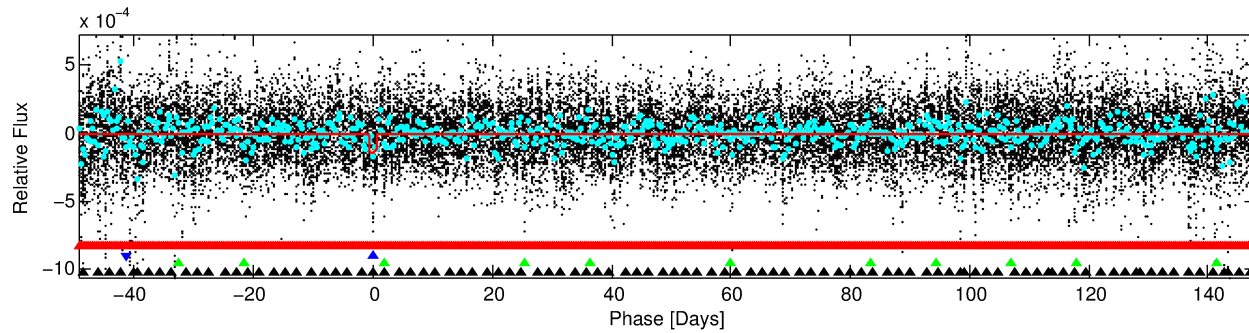
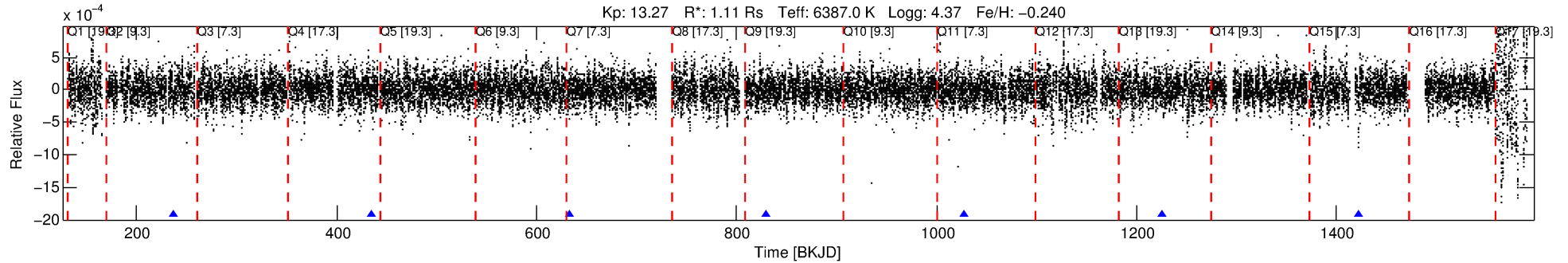
## Ephemeris Match Information For 007905683-02

No Significant Match Found



# DV One-Page Summary

KIC: 7905683 Candidate: 2 of 4 Period: 197.618 d



## DV Fit Results:

Period = 197.61819 [0.00951] d  
Epoch = 237.0332 [0.0345] BKJD  
Rp/R\* = 0.0118 [0.0026]  
a/R\* = 33.50 [30.73]  
b = 0.70 [0.67]  
Seff = 4.04 [1.60]  
Teq = 361 [36] K  
Rp = 1.44 [0.55] Re  
a = 0.6765 [0.1773] AU  
Ag = 18168.30 [12275.47] [1.48 $\sigma$ ]  
Teffp = 6488 [934] K [6.56 $\sigma$ ]

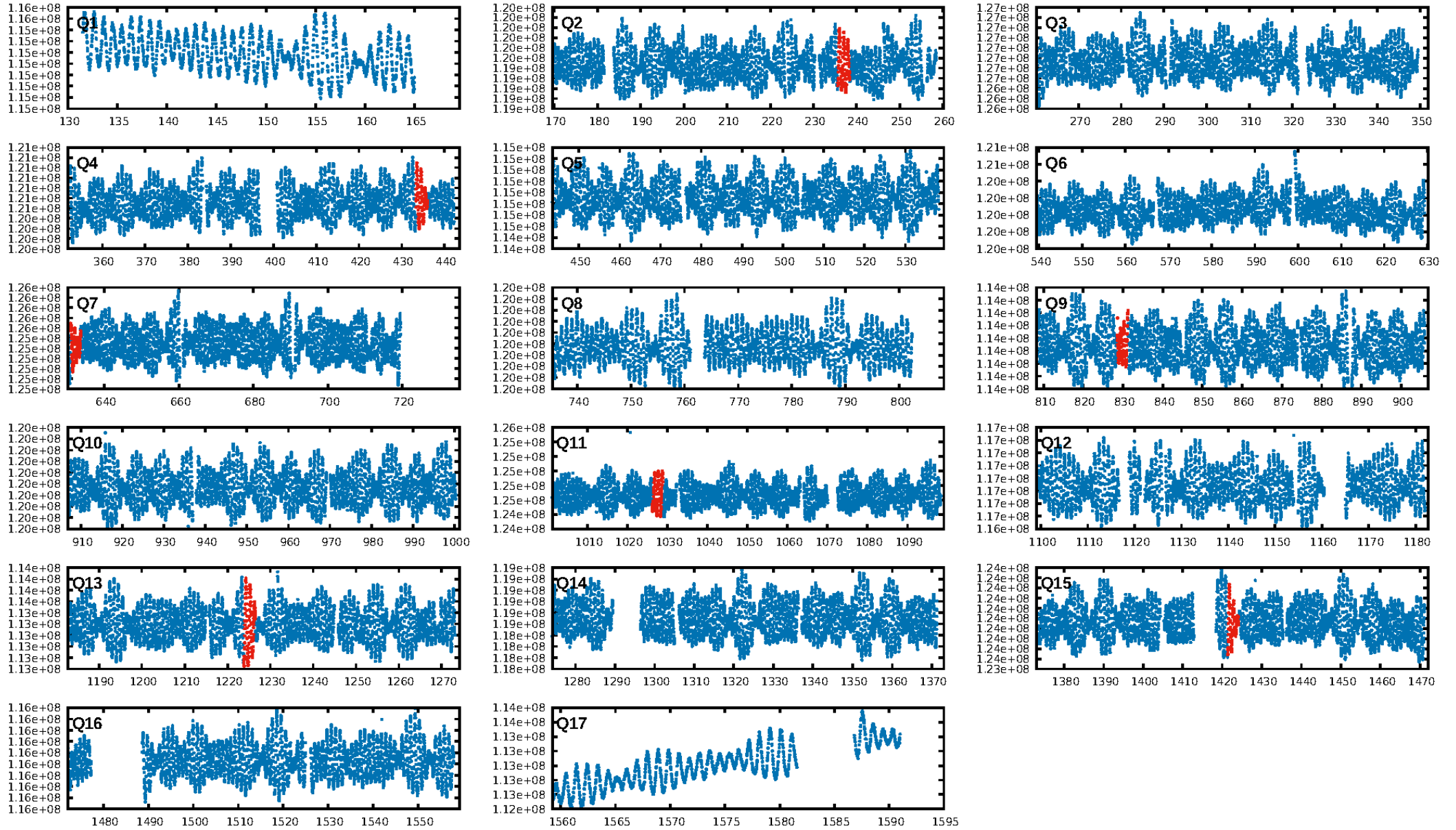
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [41.82 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 1.4%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 2.52e-12**  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: 1.099  
Centroid-sig: 3.3%  
Centroid-so: 0.957 arcsec [1.37 $\sigma$ ]  
OotOffset-rm: 1.351 arcsec [2.48 $\sigma$ ]  
KicOffset-rm: 0.965 arcsec [2.44 $\sigma$ ]  
OotOffset-st: 1/0/0/1 [2]  
KicOffset-st: 1/0/0/1 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.00 [0/3]

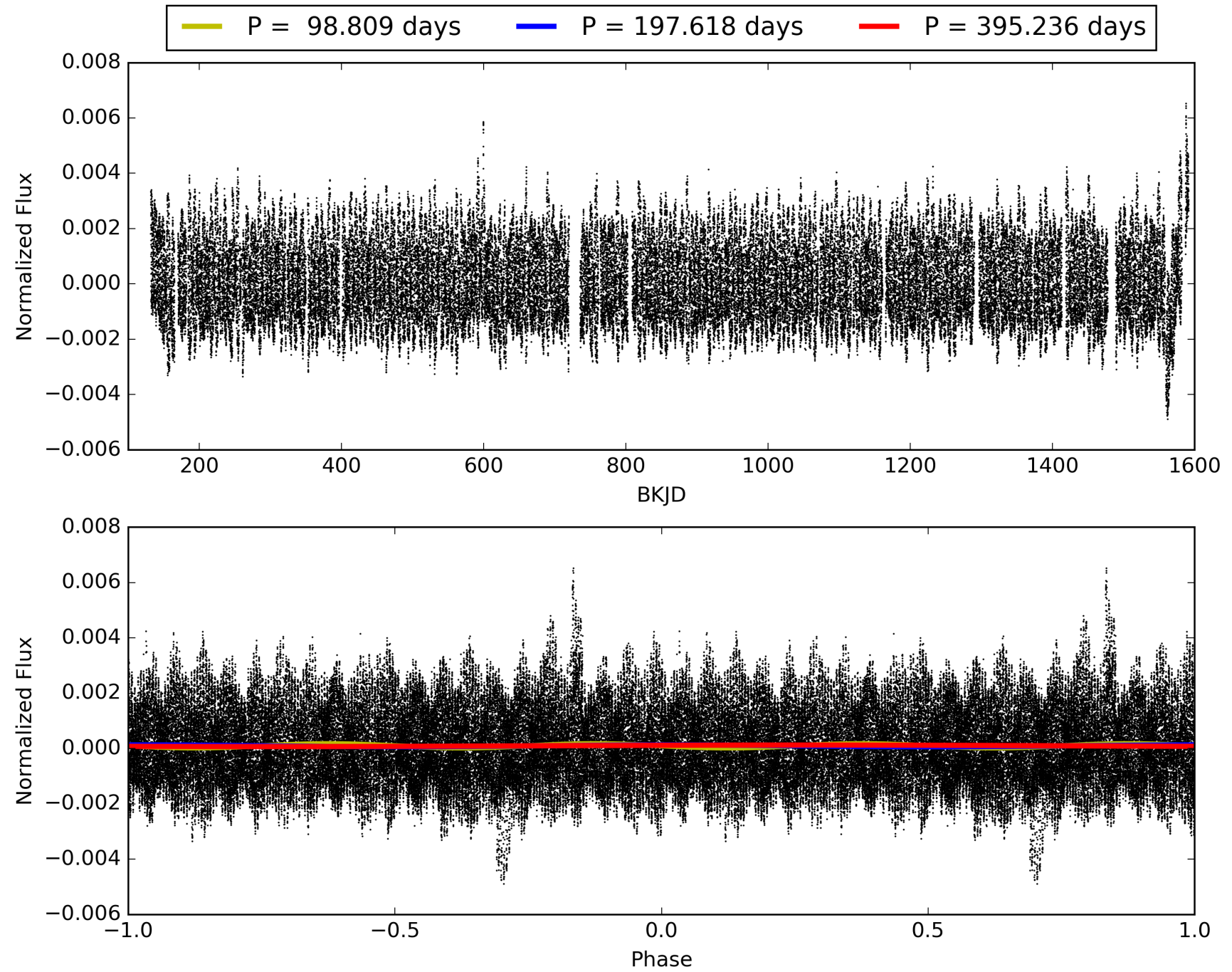
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:34:35 Z

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

# TCE 007905683-02, PDC Light Curves

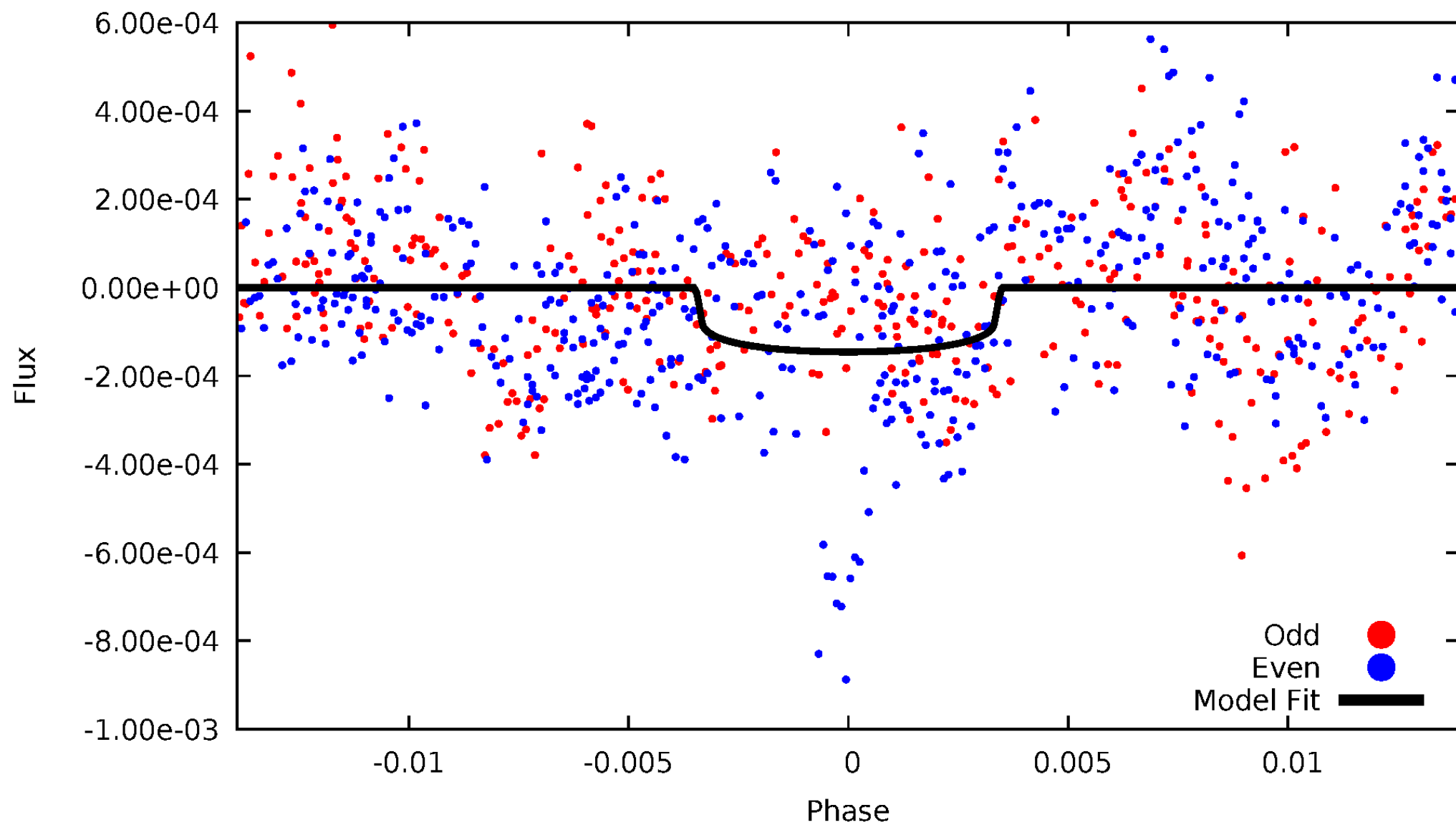


# TCE 007905683-02



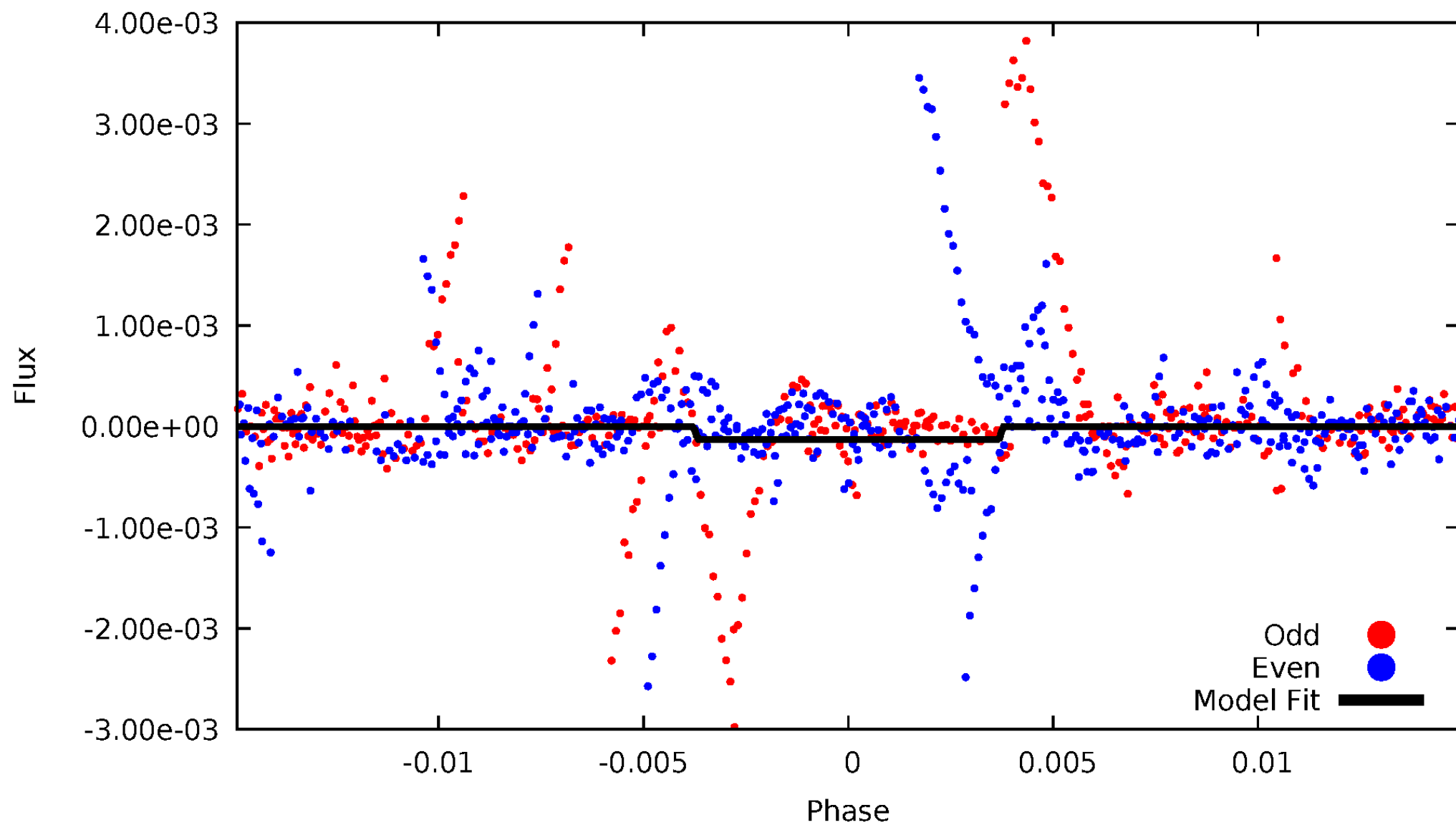
# DV Odd/Even

TCE 007905683-02



# ALT Odd/Even

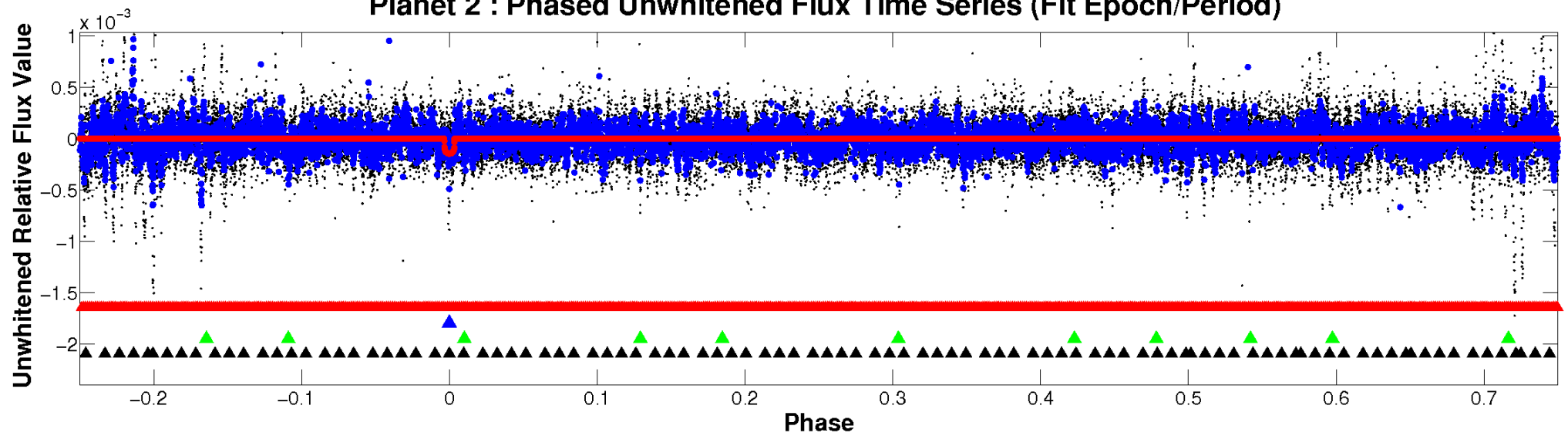
TCE 007905683-02



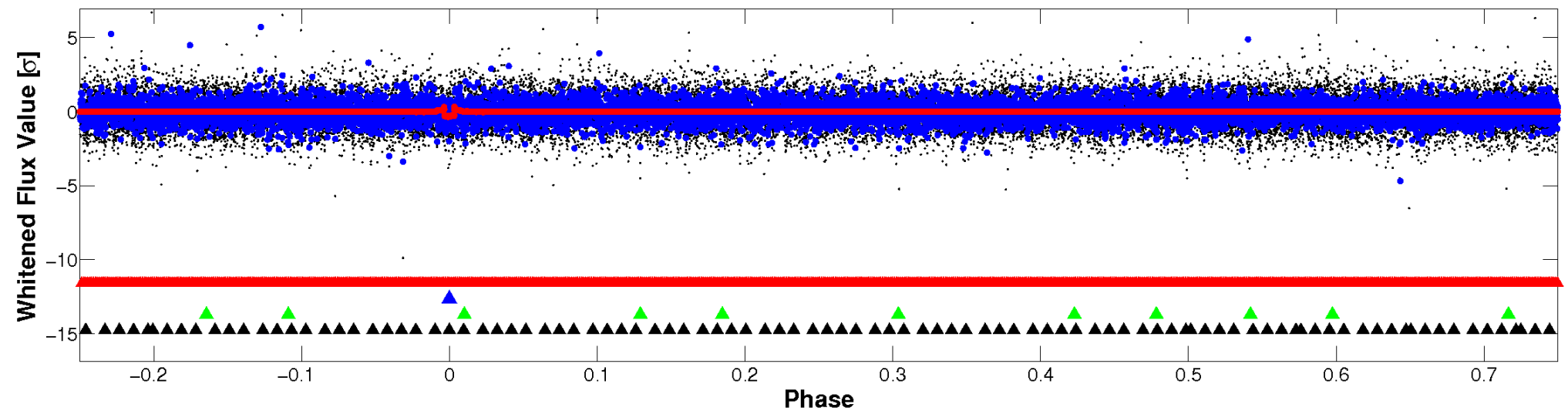


# Non-Whitened Vs. Whitened Light Curve

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



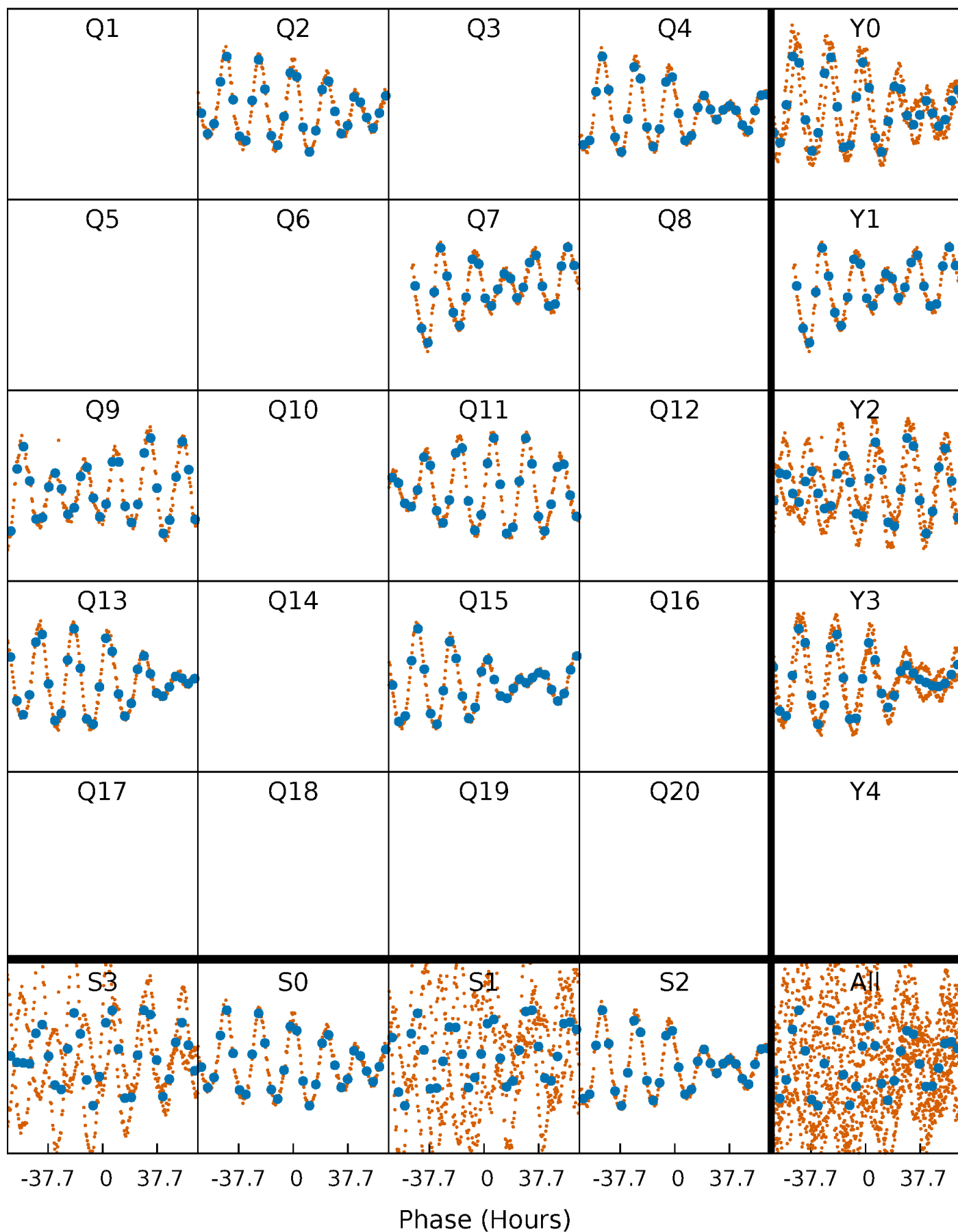
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





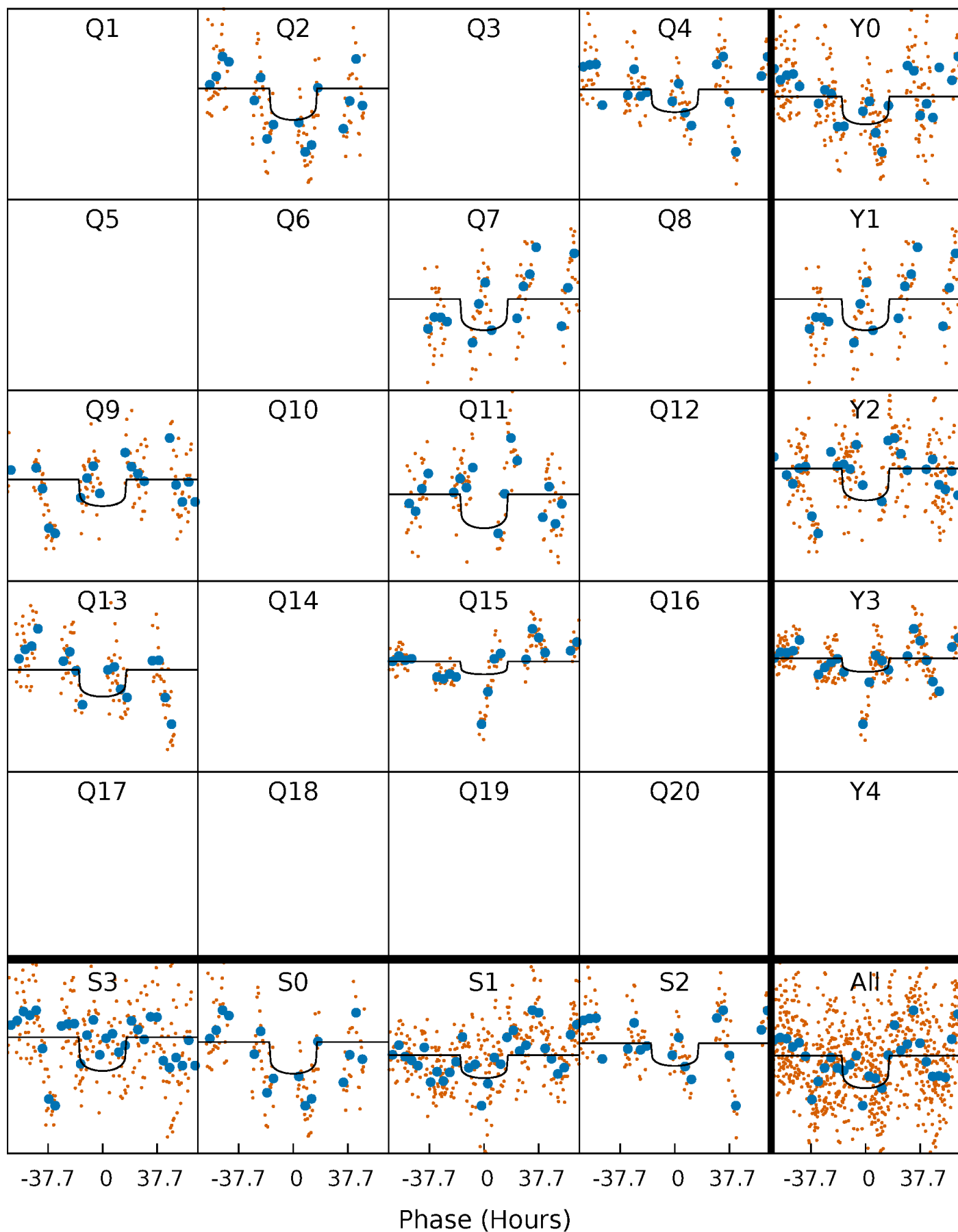
# PDC Quarter-Phased Transit Curves

TCE 007905683-02 P=197.618189 Days  $T_0=237.033231$  (BKJD)



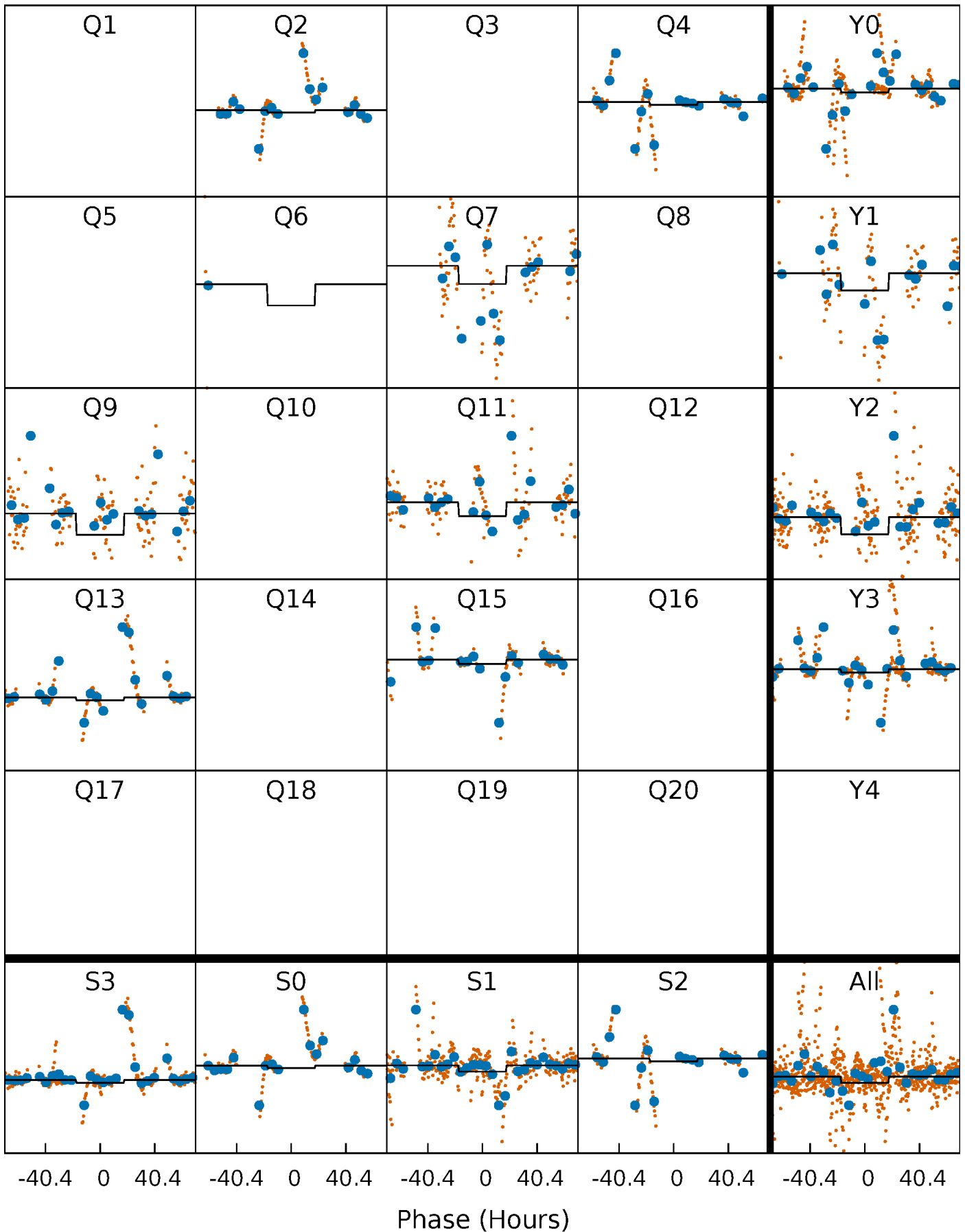
# DV Quarter-Phased Transit Curves

TCE 007905683-02 P=197.618189 Days  $T_0=237.033231$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

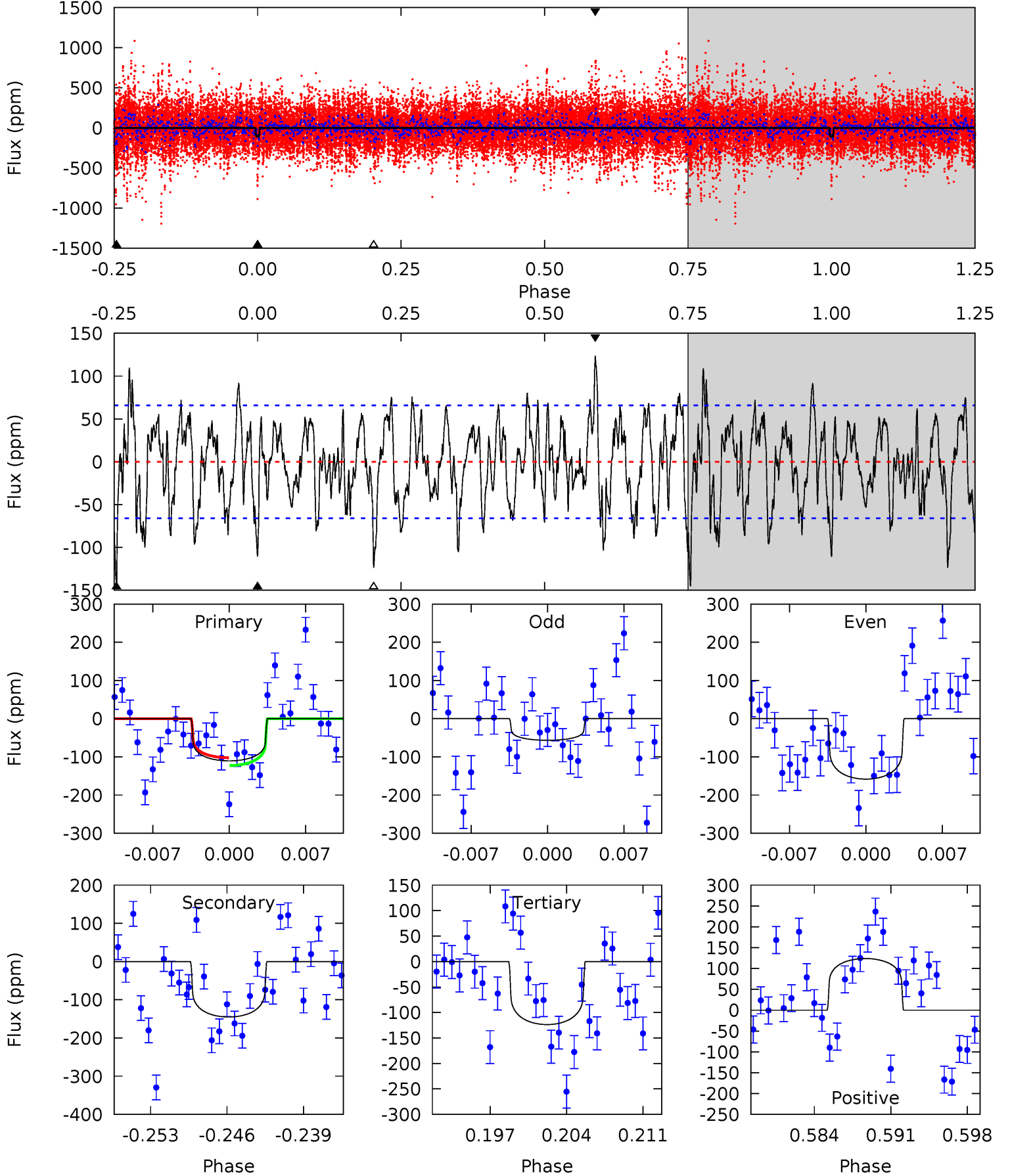
TCE 007905683-02 P=197.538036 Days  $T_0=236.814770$  (BKJD)



# DV Model-Shift Uniqueness Test

007905683-02, P = 197.618189 Days, E = 39.415042 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.54	11.2	9.57	9.58	5.09	2.70	3.26	-1.02	-1.03	1.66	1.65	3.59	1.55	0.46	0.77

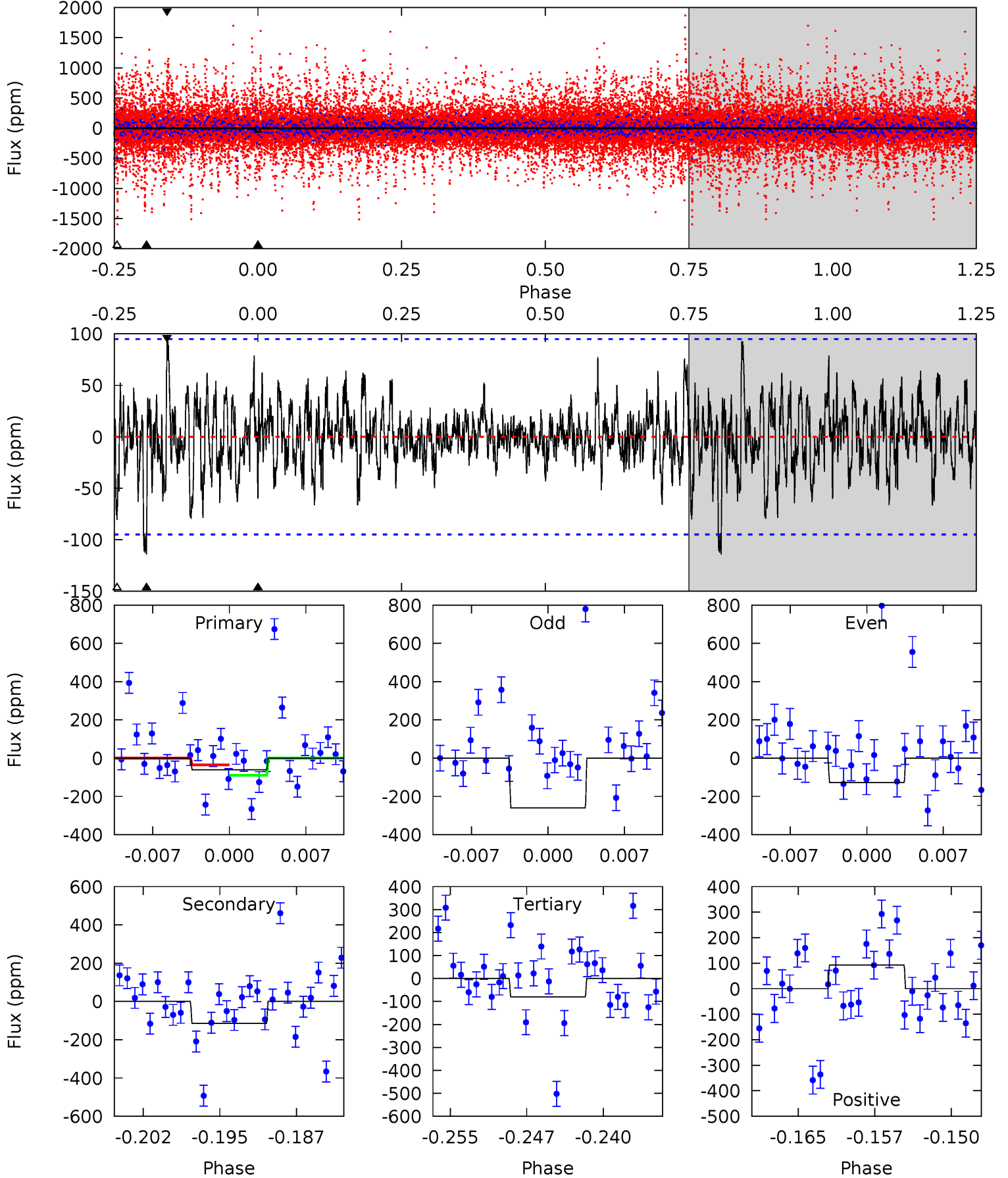




# Alt Model-Shift Uniqueness Test

007905683-02, P = 197.538036 Days, E = 39.276734 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
3.22	6.11	4.29	4.97	5.08	2.67	1.32	-1.07	-1.74	1.82	1.14	2.82	0.25	0.45	1.49



### Stellar Parameters For KIC 007905683

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6387^{+157}_{-204}$	$4.369^{+0.087}_{-0.203}$	$-0.240^{+0.250}_{-0.300}$	$1.113^{+0.352}_{-0.151}$	$1.050^{+0.172}_{-0.114}$	$1.074^{+0.400}_{-0.560}$
	+2%/-3%	+2%/-5%	+104%/-125%	+32%/-14%	+16%/-11%	+37%/-52%
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 007905683-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-145 \pm 13$	$1.50^{+0.38}_{-0.35}$	$511^{+35}_{-27}$	$6384^{+903}_{-648}$	$16088^{+10667}_{-5885}$
Alt.	$-114 \pm 19$	$1.47^{+0.37}_{-0.38}$	$512^{+38}_{-27}$	$6126^{+1035}_{-684}$	$13443^{+10649}_{-5418}$

$T_{\text{max}}$  = 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

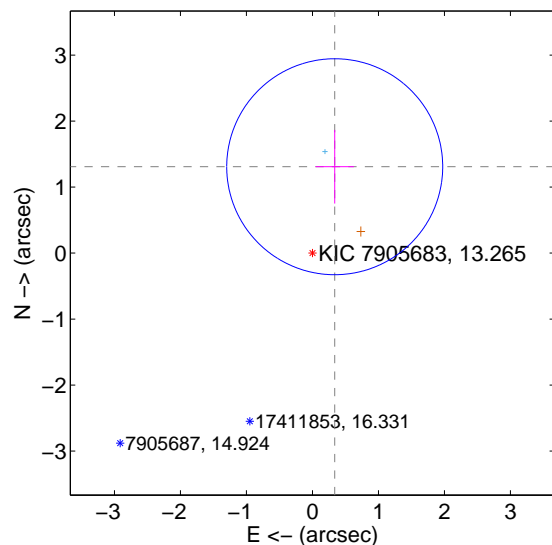
Supplemental centroid analysis for 007905683-02. Kepler magnitude: 13.27. Transit SNR 4.63

There are 1 quarters with good PRF difference image offsets

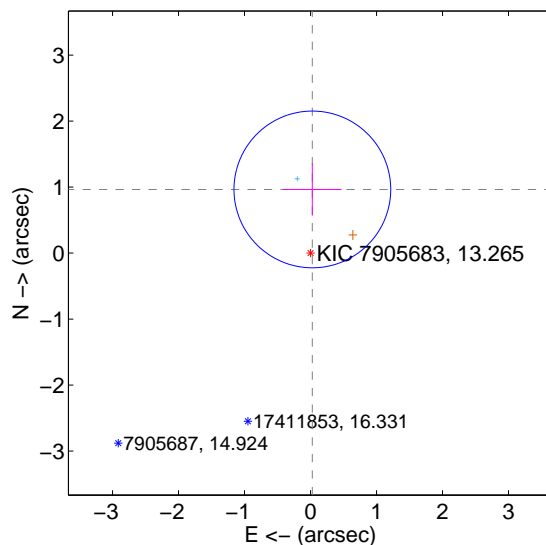
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.351 \pm 0.545$	2.48	$-0.337 \pm 0.290$	$1.309 \pm 0.558$
PRF-fit source offset from KIC position	$0.965 \pm 0.396$	2.44	$-0.028 \pm 0.443$	$0.965 \pm 0.396$
photometric centroid source offset	$0.96 \pm 0.70$	1.37	$0.70 \pm 0.61$	$0.65 \pm 0.79$

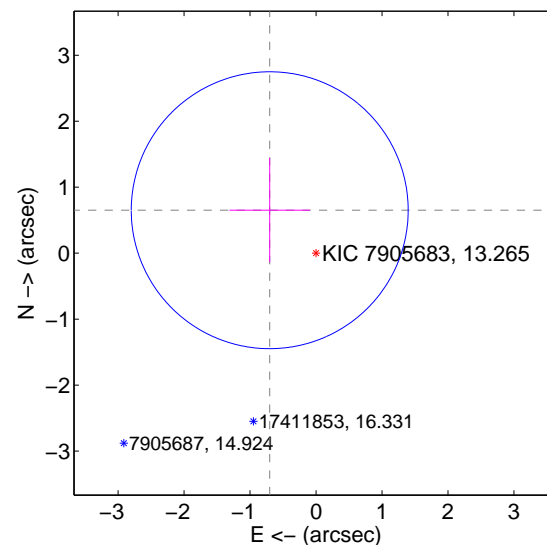
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

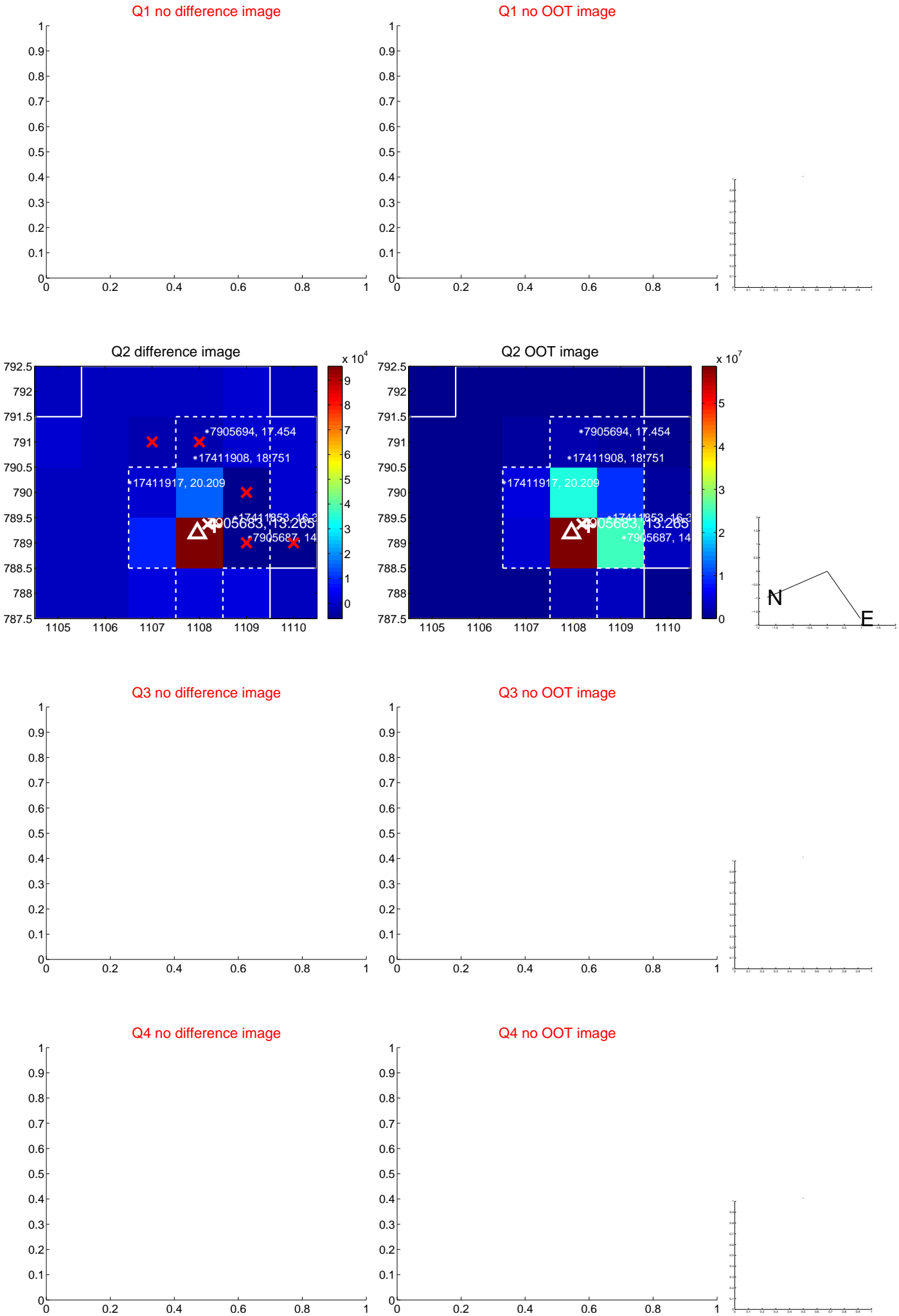


offset from photometric centroids



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.

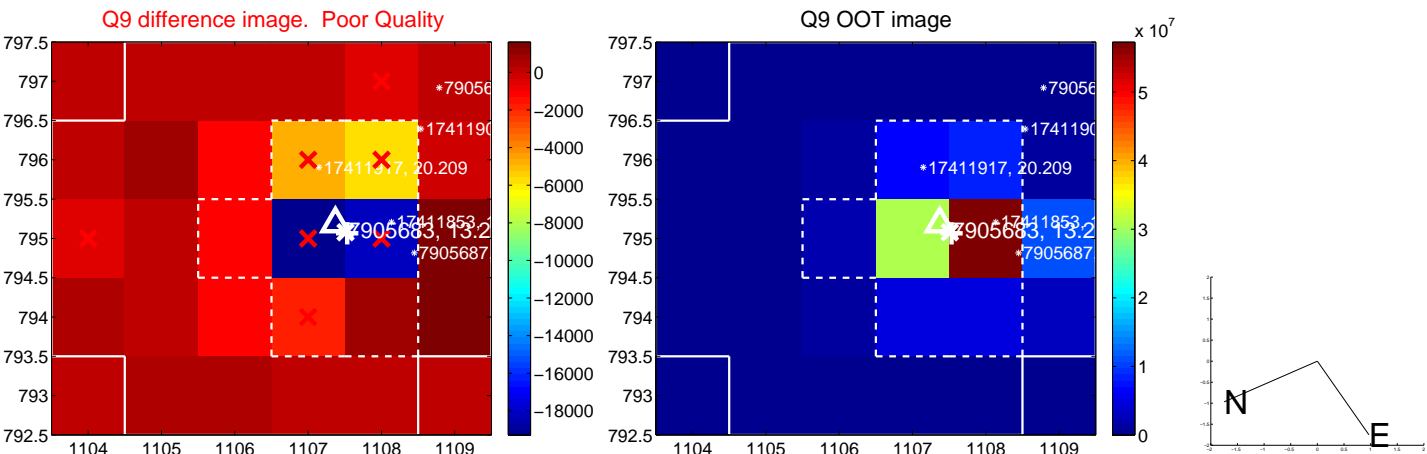




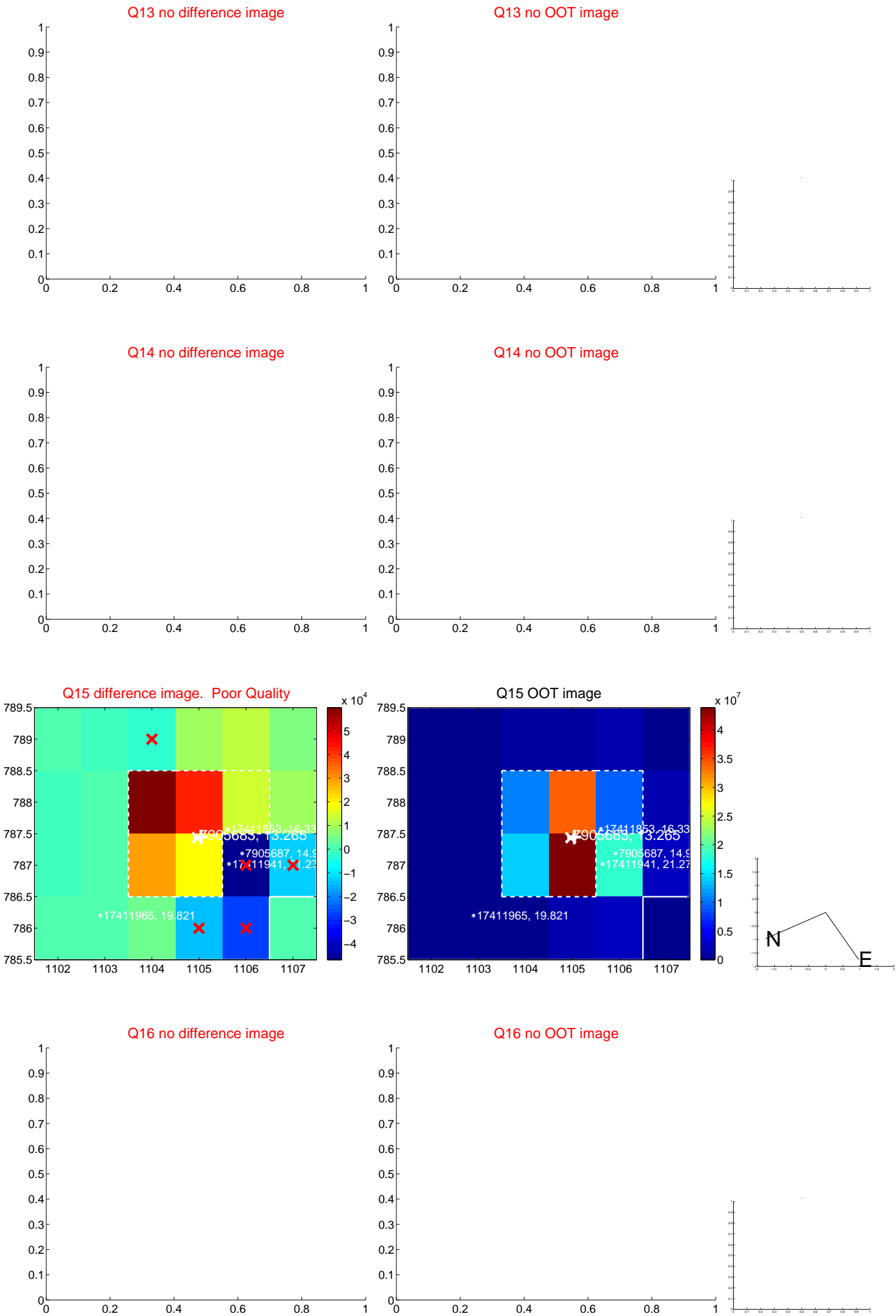
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



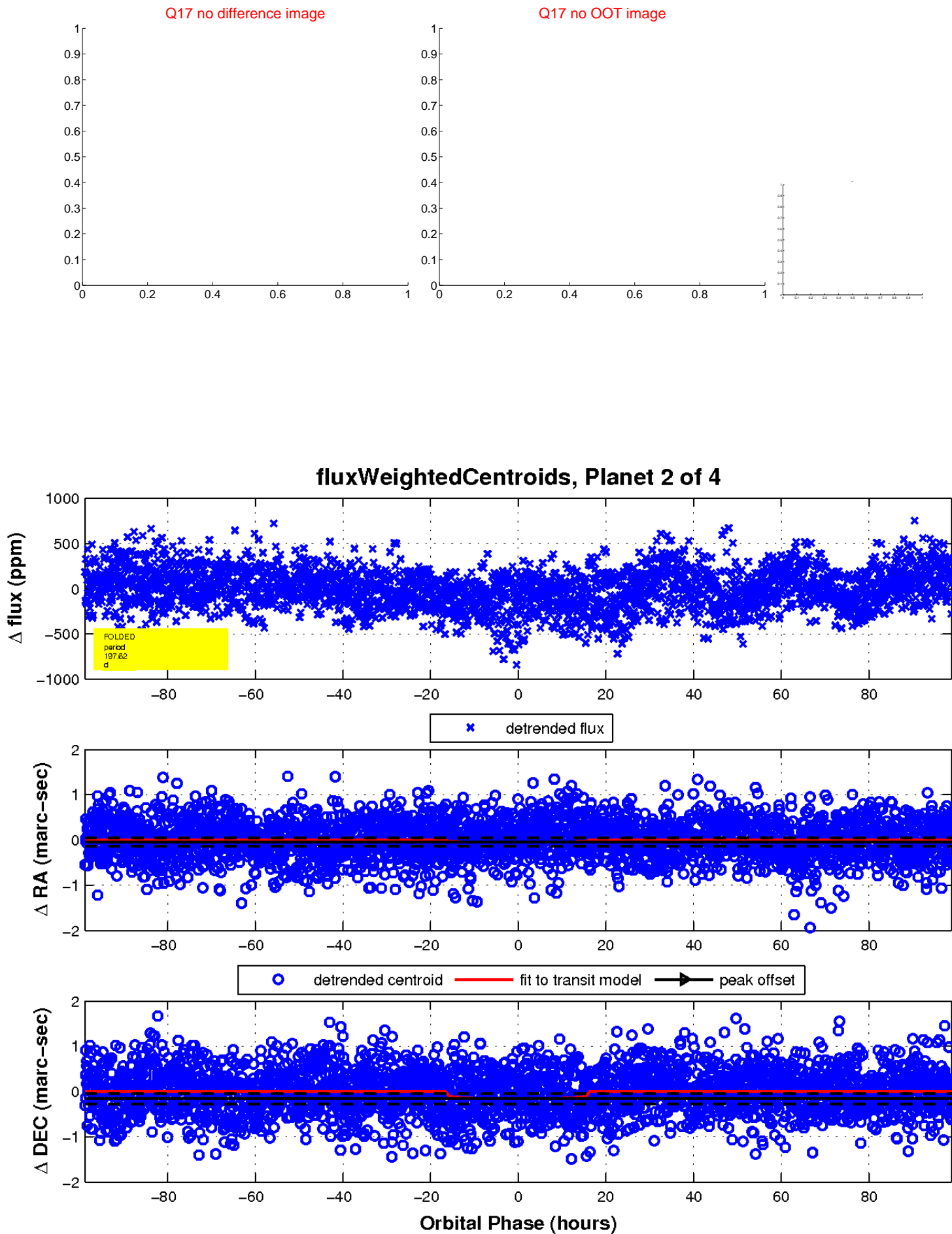
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

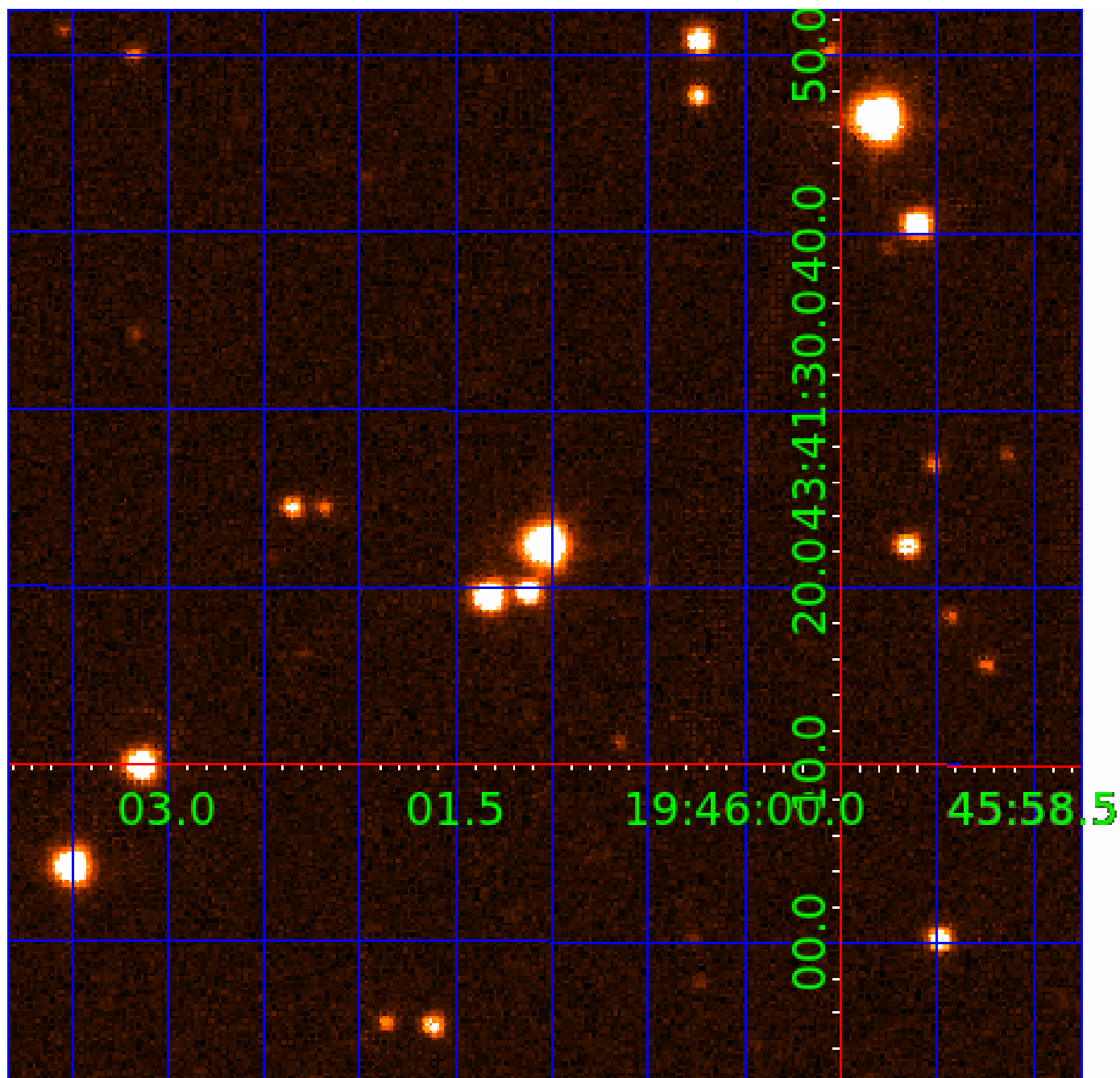


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007905683

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007905683-01	OBS	No	1.315699	131.552045	24.8	5.367	8.7	8.9	1.11	6387	0.56	3222.58
007905683-02	OBS	No	197.618189	237.033231	145.5	32.954	9.3	4.6	1.11	6387	1.44	4.04
007905683-03	OBS	No	139.590793	133.942988	283.9	4.773	8.4	6.9	1.11	6387	2.10	6.42
007905683-04	OBS	No	14.709259	138.554134	87.4	9.390	8.2	7.7	1.11	6387	1.22	128.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007905683-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
007905683-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007905683-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT
007905683-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV

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

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

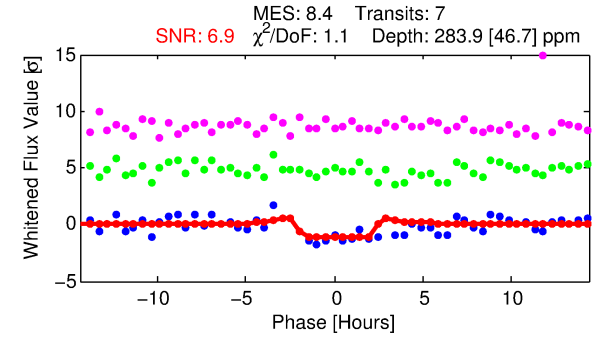
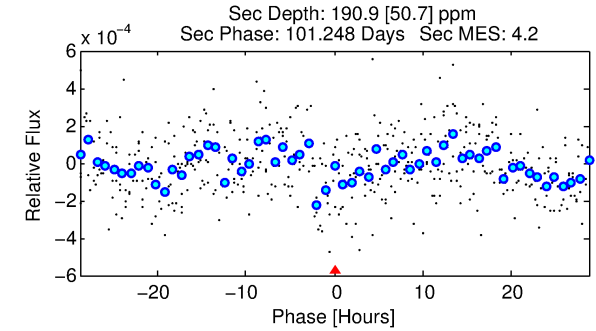
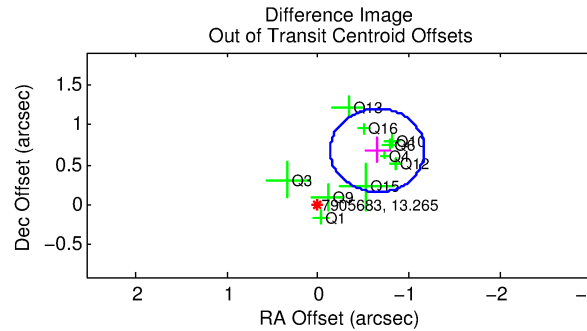
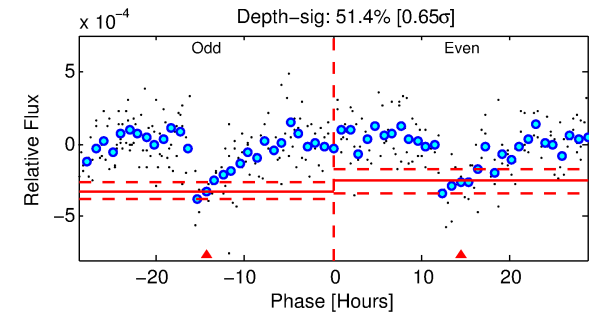
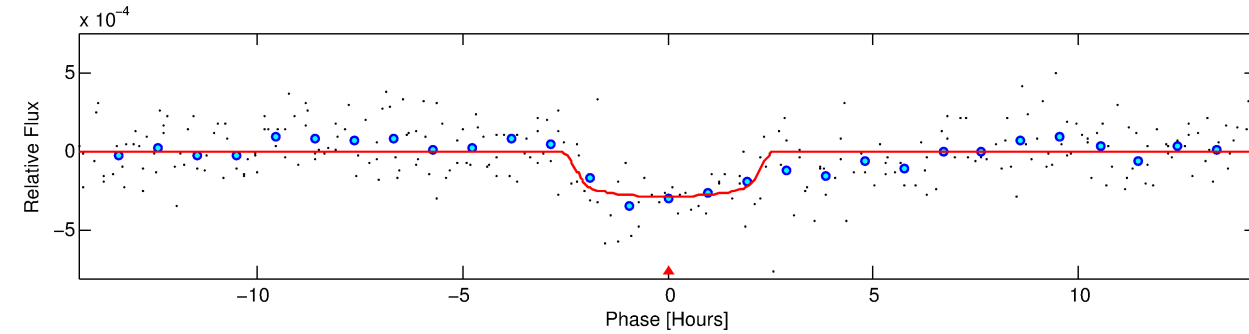
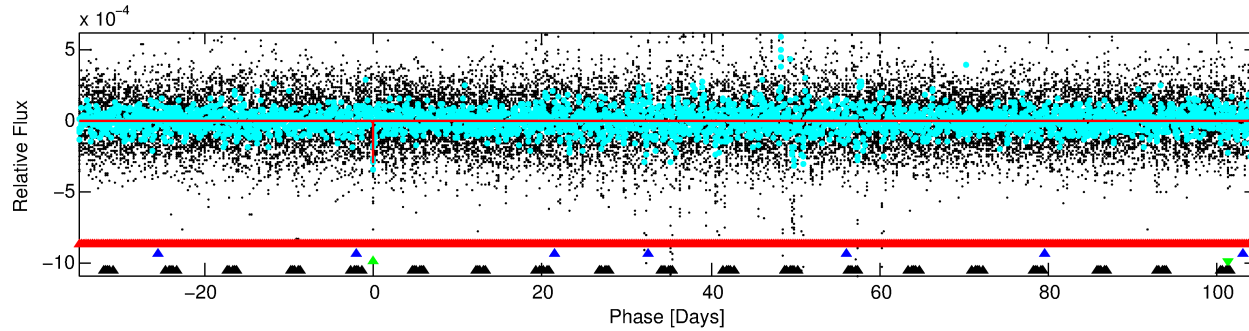
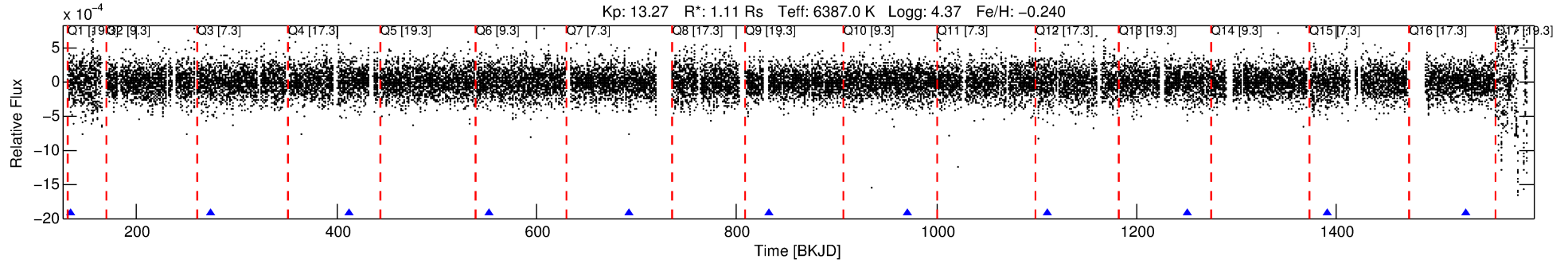
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007905683-03

No Significant Match Found

# DV One-Page Summary

KIC: 7905683 Candidate: 3 of 4 Period: 139.591 d



## DV Fit Results:

Period = 139.59079 [0.00291] d  
Epoch = 133.9430 [0.0219] BKJD  
Rp/R\* = 0.0173 [0.0101]  
a/R\* = 130.92 [420.16]  
b = 0.83 [1.19]  
Seff = 6.42 [2.55]  
Teq = 406 [40] K  
Rp = 2.10 [1.40] Re  
a = 0.5365 [0.1407] AU  
Ag = 6849.69 [8624.04] [0.79 $\sigma$ ]  
Teffp = 5708 [1724] K [3.07 $\sigma$ ]

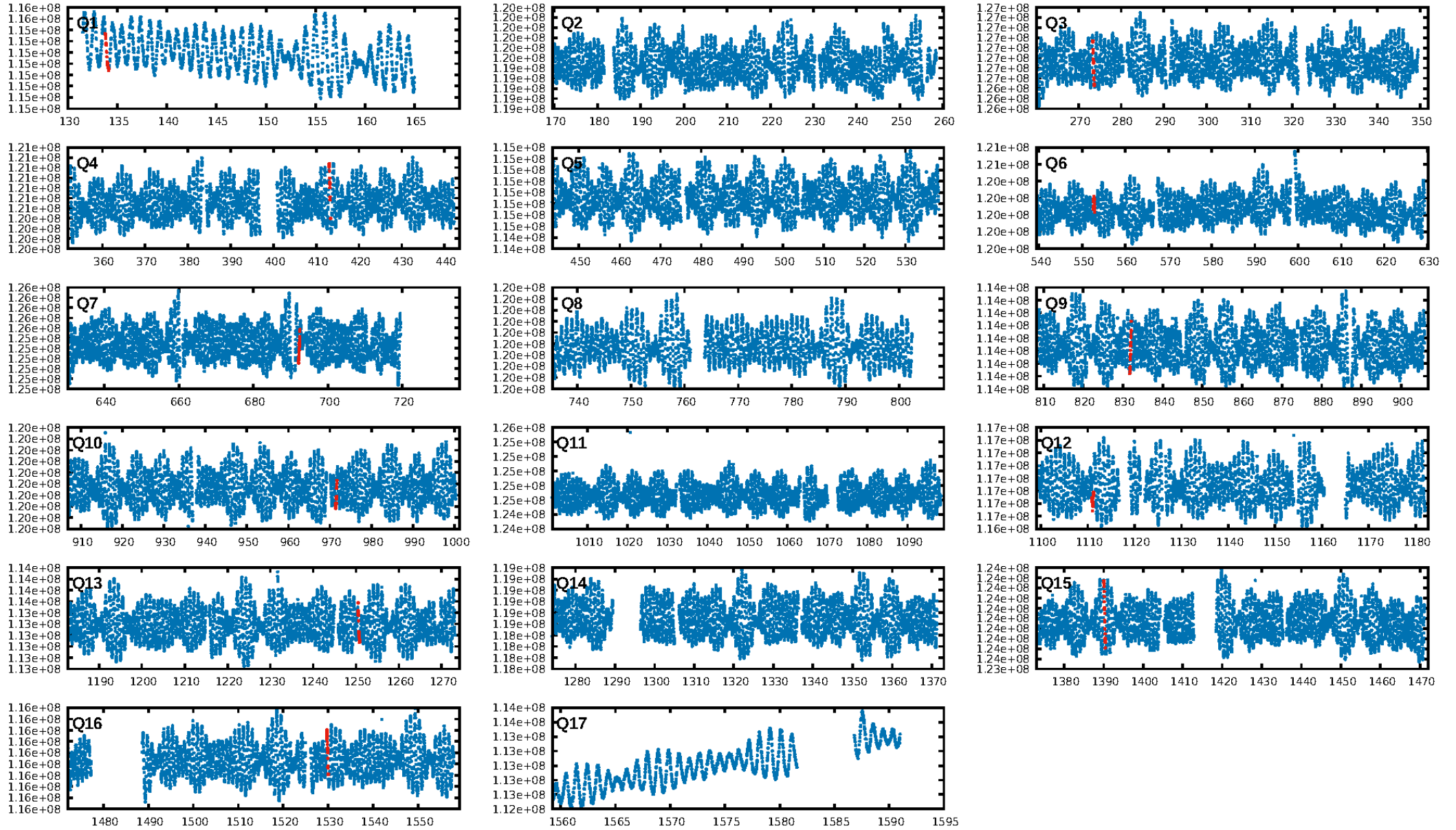
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [284.54 $\sigma$ ]  
LongPeriod-sig: 100.0% [41.82 $\sigma$ ]  
ModelChiSquare2-sig: 33.4%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 2.72e-11**  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: 1.324  
Centroid-sig: 13.0%  
Centroid-so: 0.306 arcsec [0.49 $\sigma$ ]  
**OotOffset-rm: 0.943 arcsec [5.44 $\sigma$ ]**  
OotOffset-st: 2/2/3/3 [10]  
KicOffset-rm: 0.333 arcsec [2.94 $\sigma$ ]  
KicOffset-st: 2/2/3/3 [10]  
DiffImageQuality-fgm: 0.60 [6/10]  
DiffImageOverlap-fno: 0.20 [2/10]

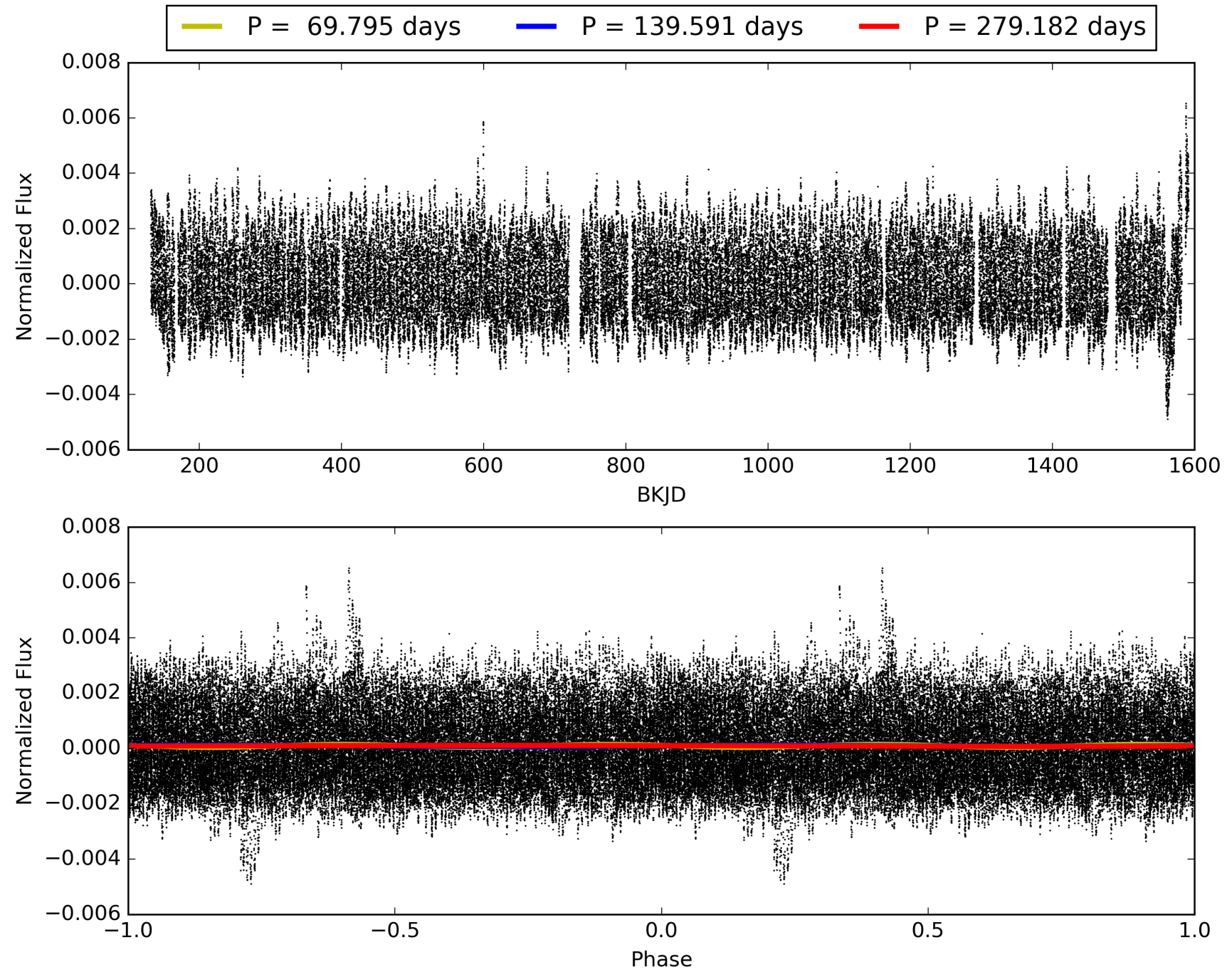
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:34:41 Z

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

# TCE 007905683-03, PDC Light Curves

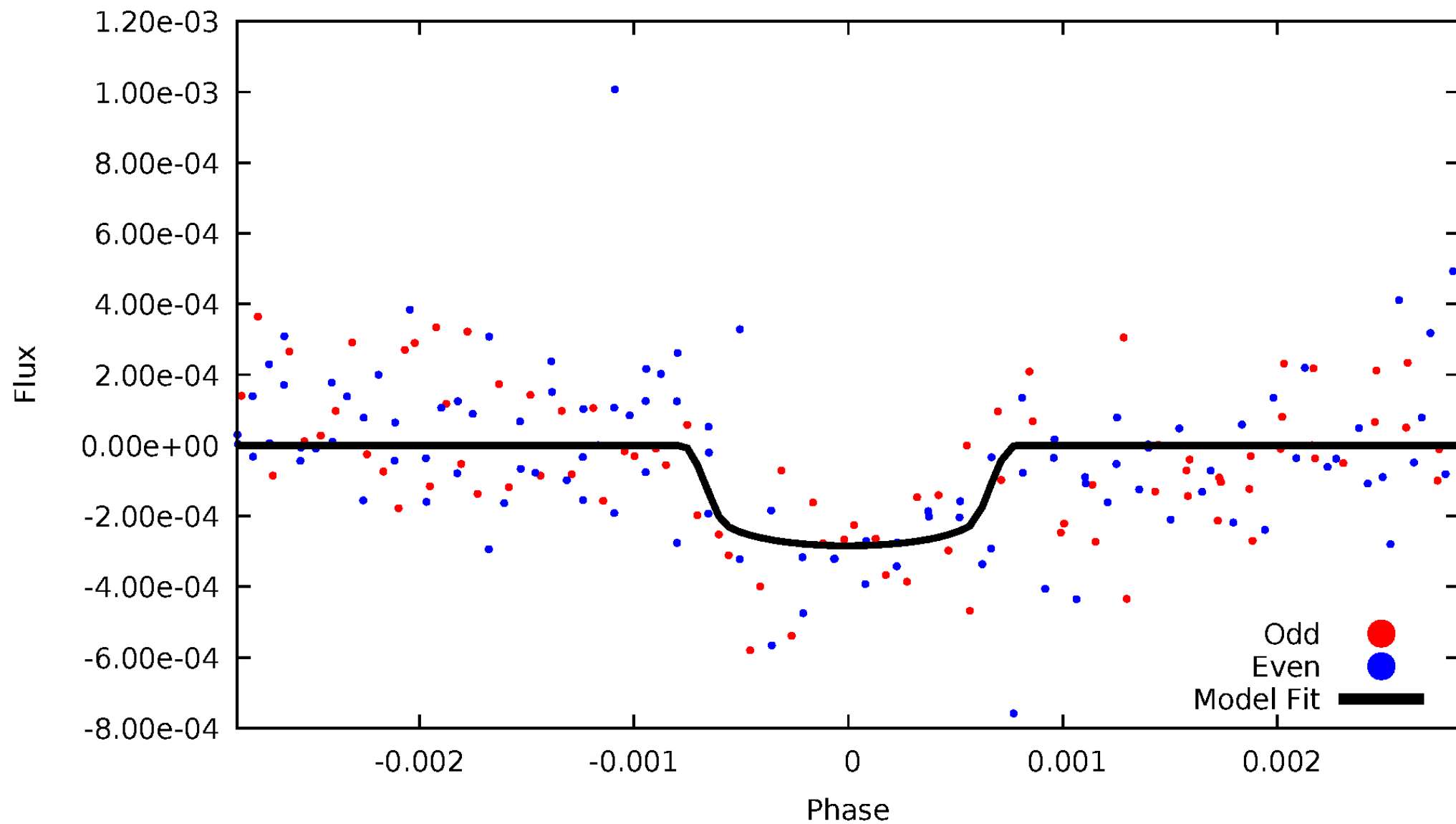


# TCE 007905683-03



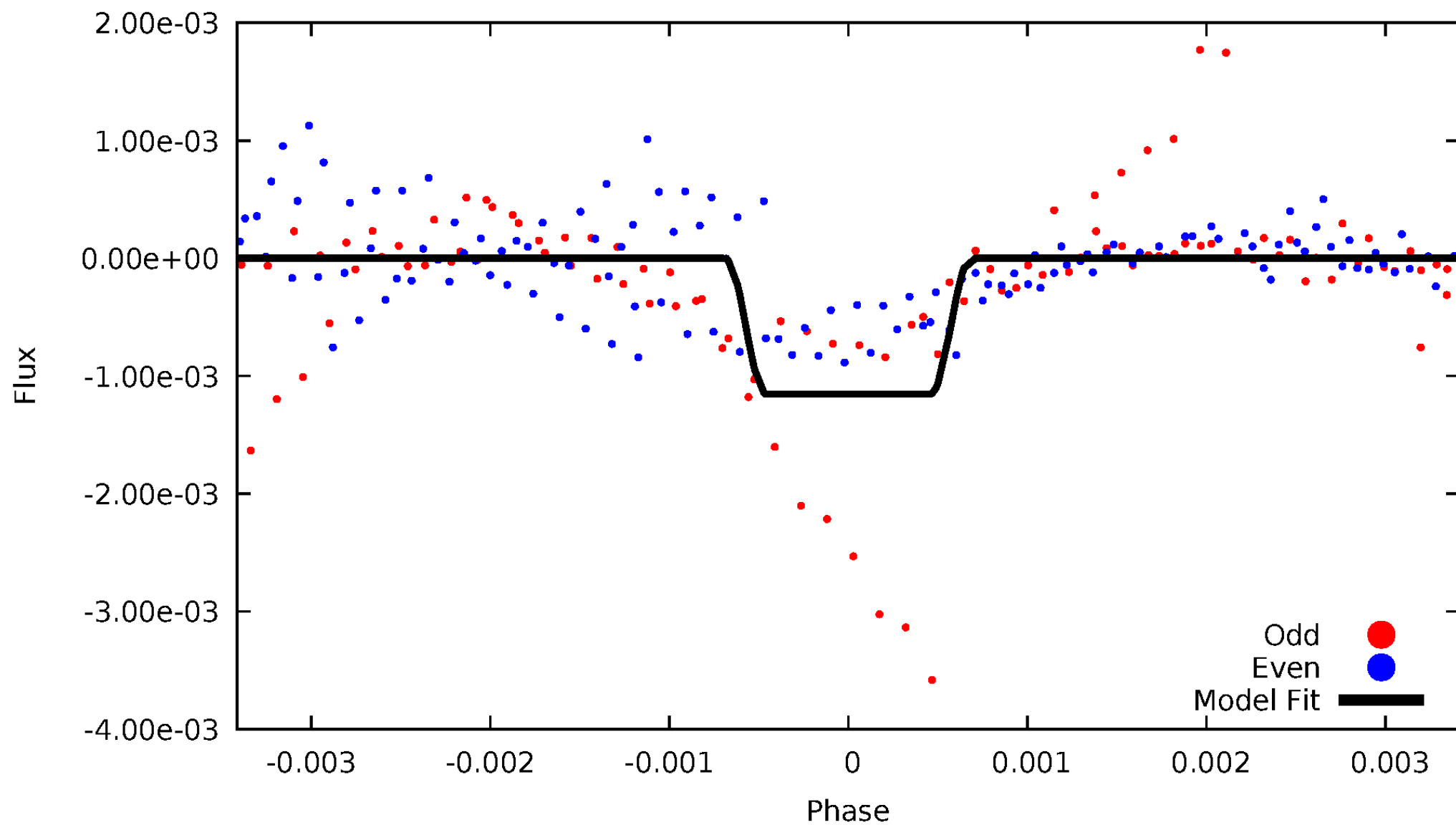
# DV Odd/Even

TCE 007905683-03



# ALT Odd/Even

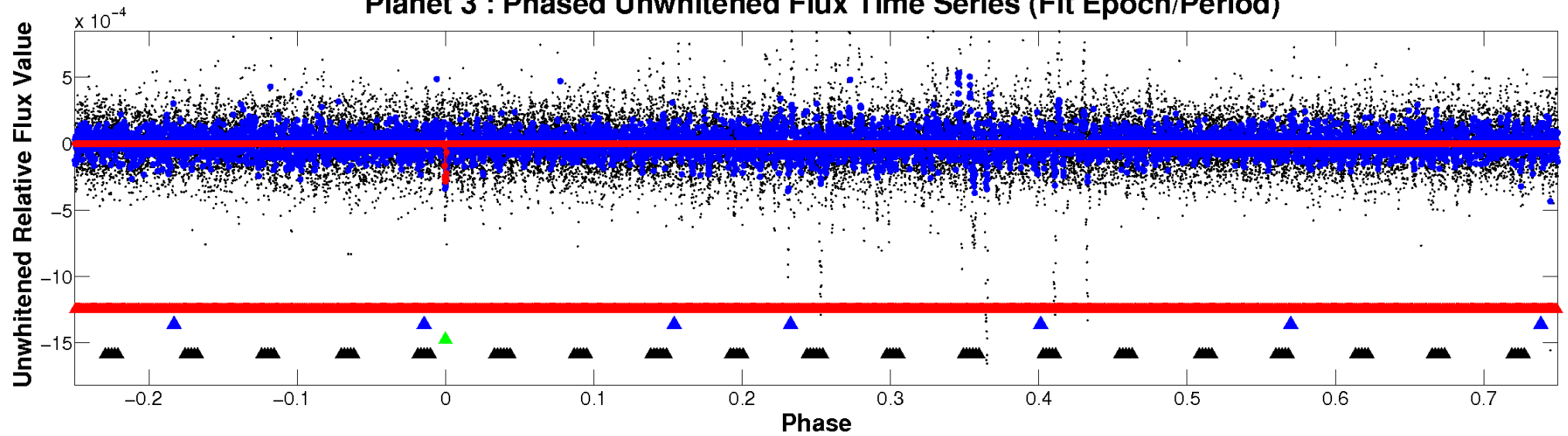
TCE 007905683-03



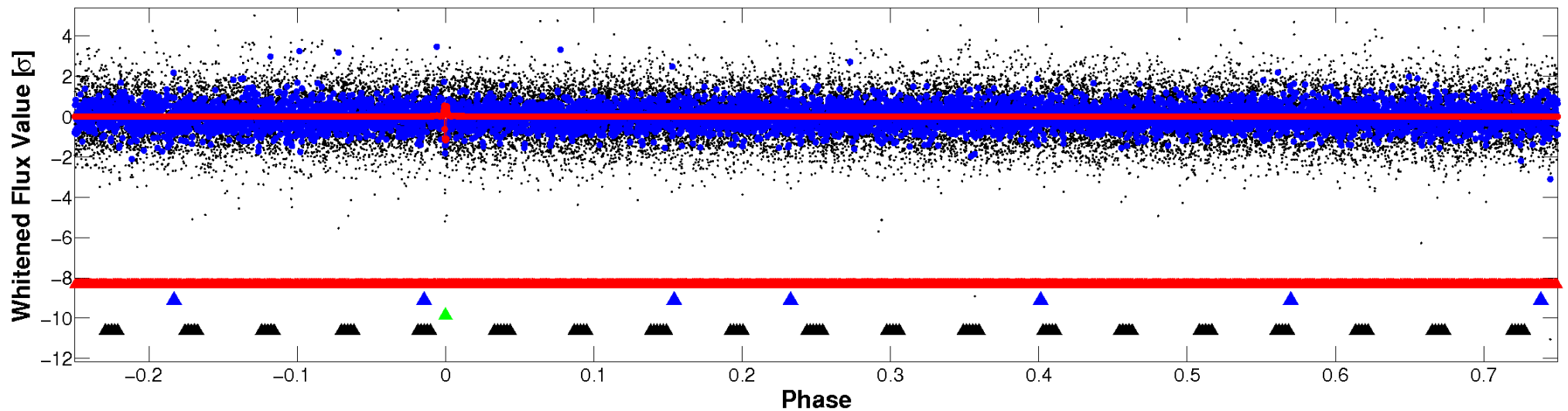


# Non-Whitened Vs. Whitened Light Curve

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

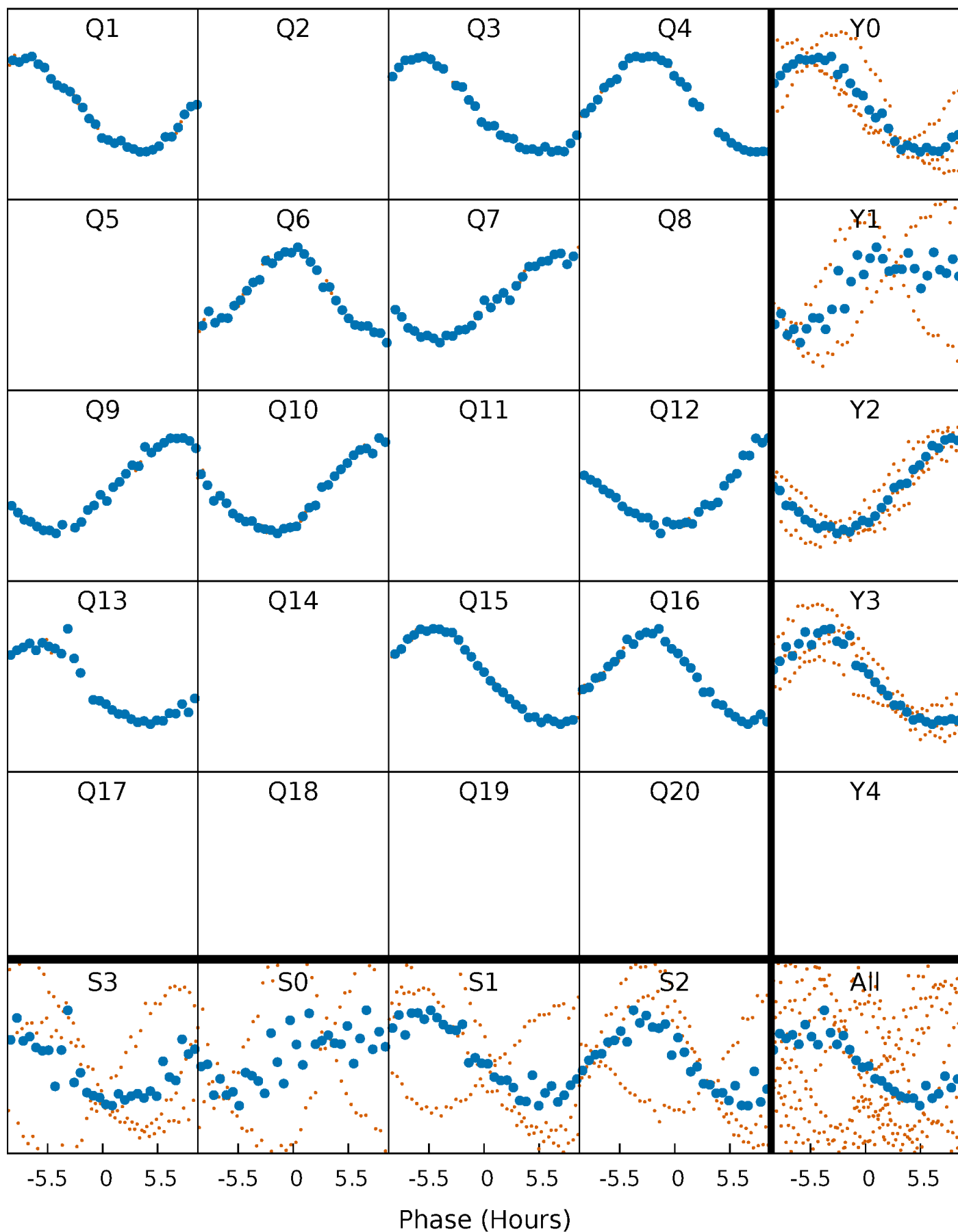


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



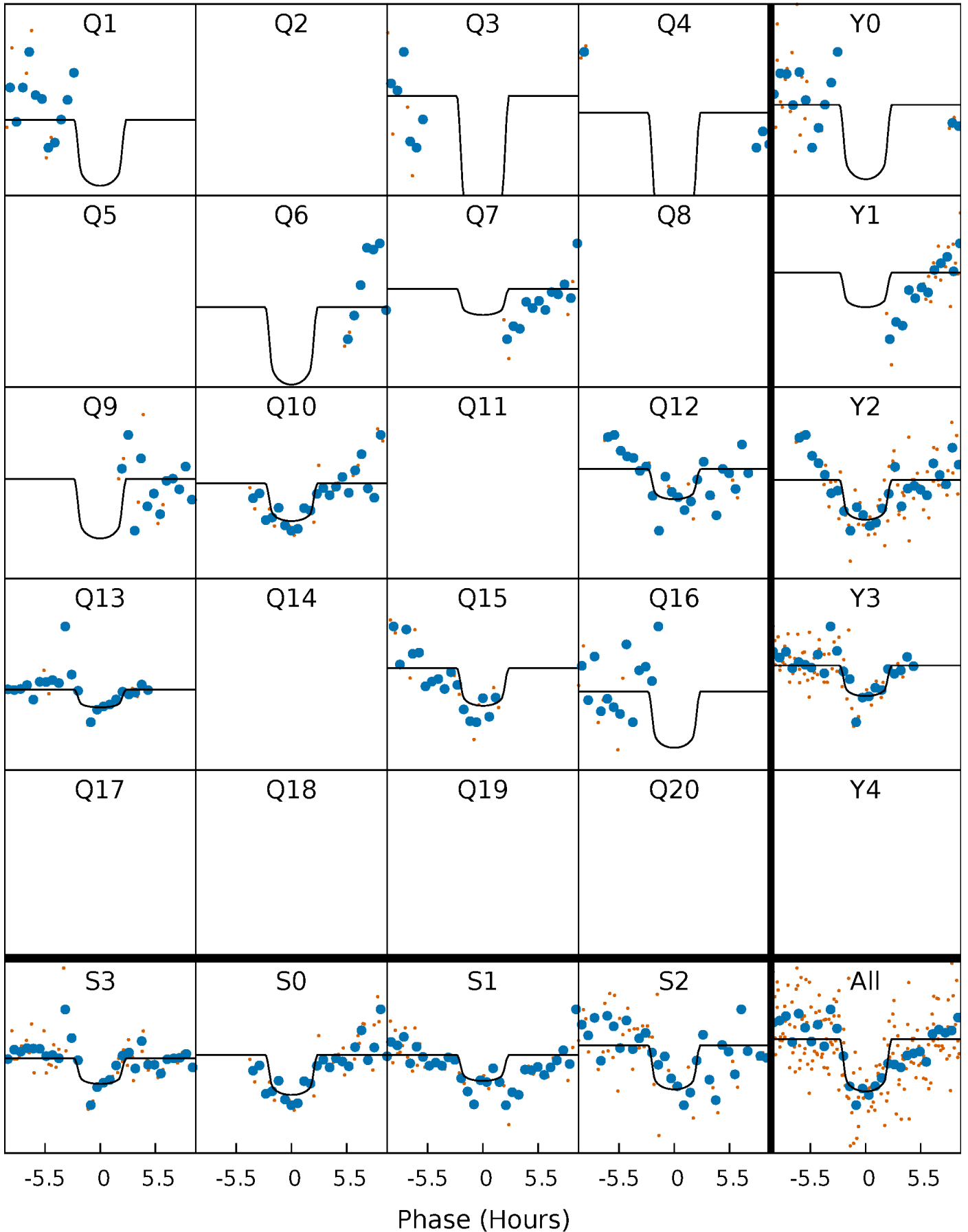
# PDC Quarter-Phased Transit Curves

TCE 007905683-03 P=139.590793 Days  $T_0=133.942988$  (BKJD)



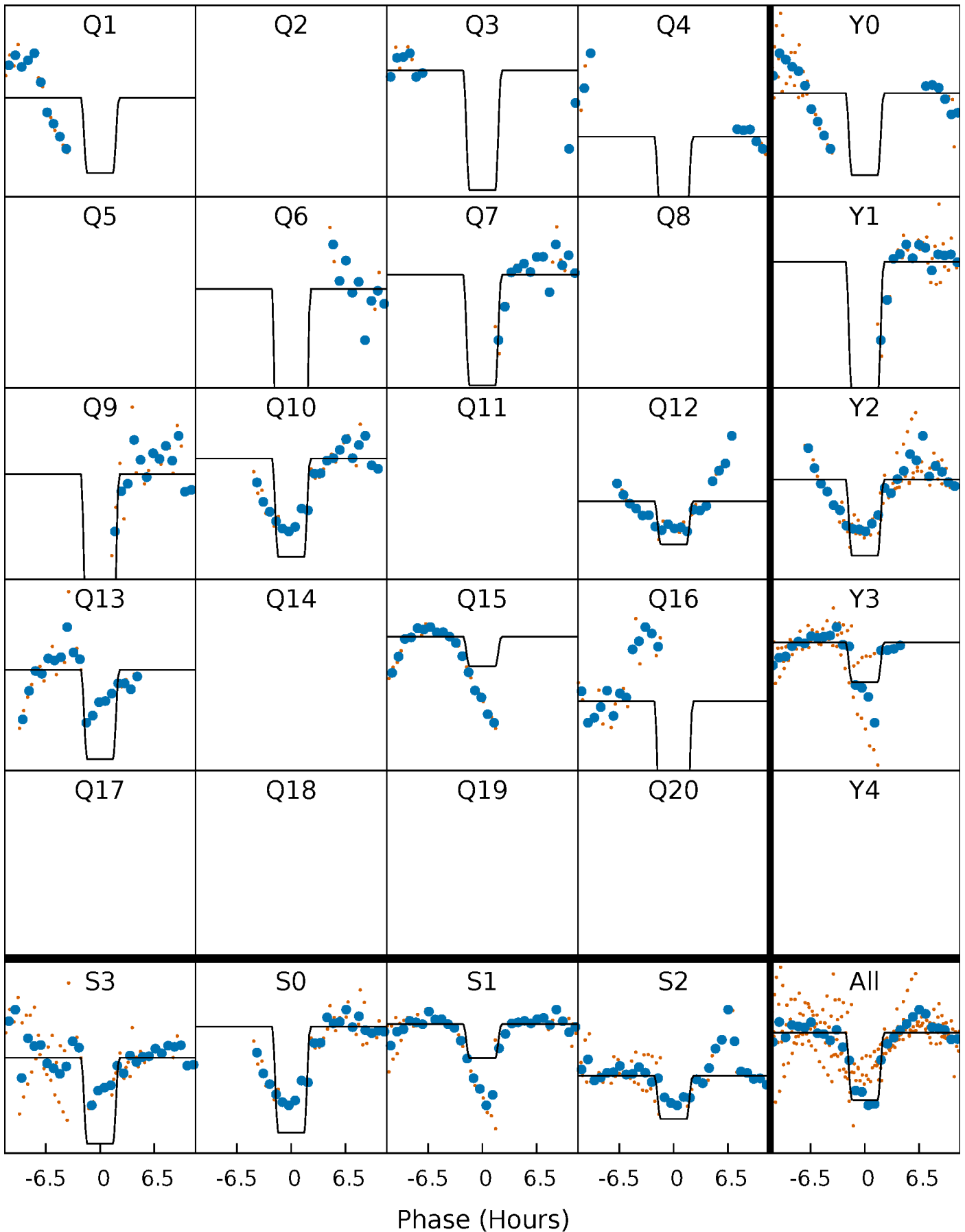
# DV Quarter-Phased Transit Curves

TCE 007905683-03     $P=139.590793$  Days     $T_0=133.942988$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

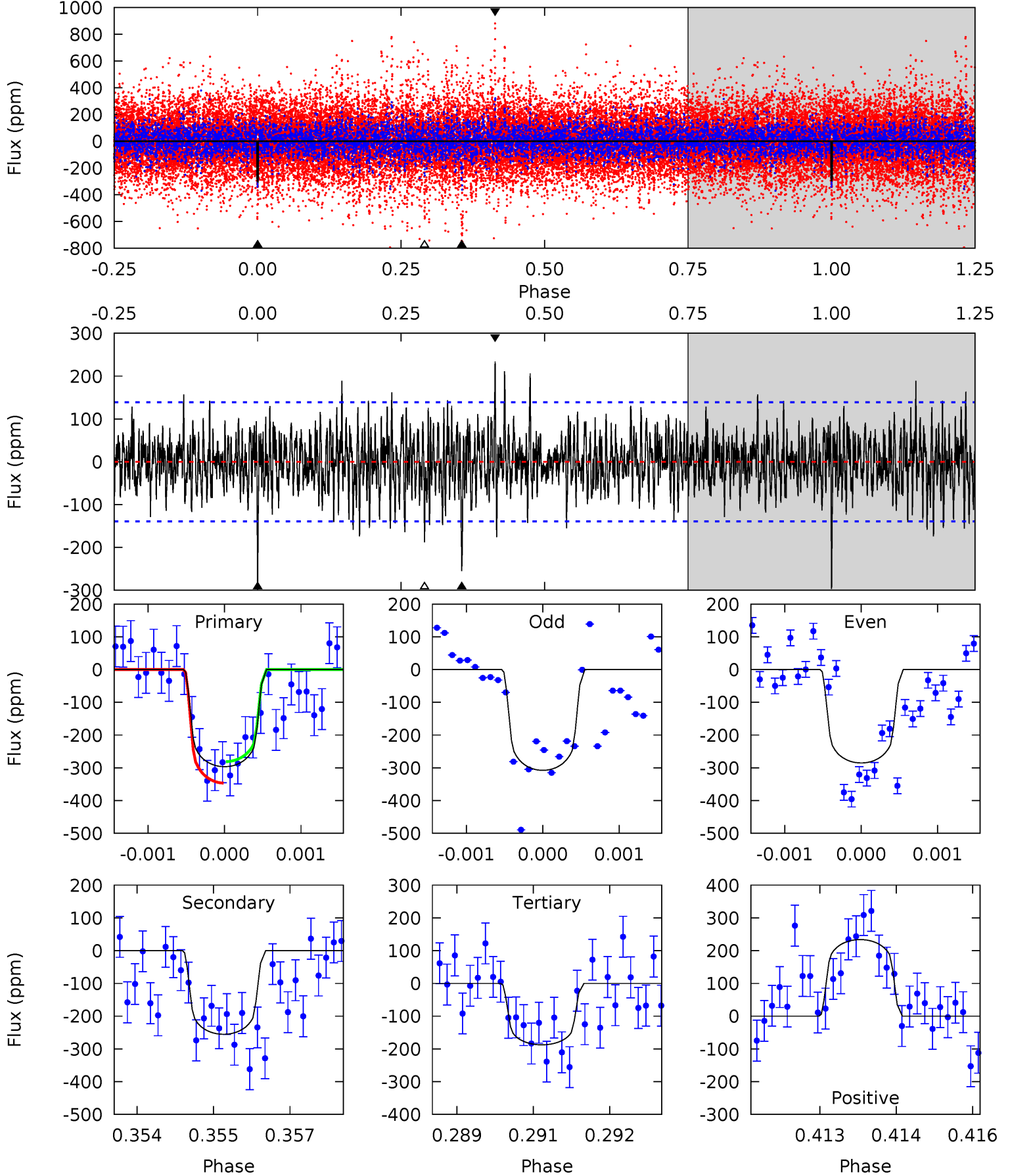
TCE 007905683-03 P=139.586127 Days  $T_0=133.984963$  (BKJD)



# DV Model-Shift Uniqueness Test

007905683-03, P = 139.590793 Days, E = 133.942988 Days

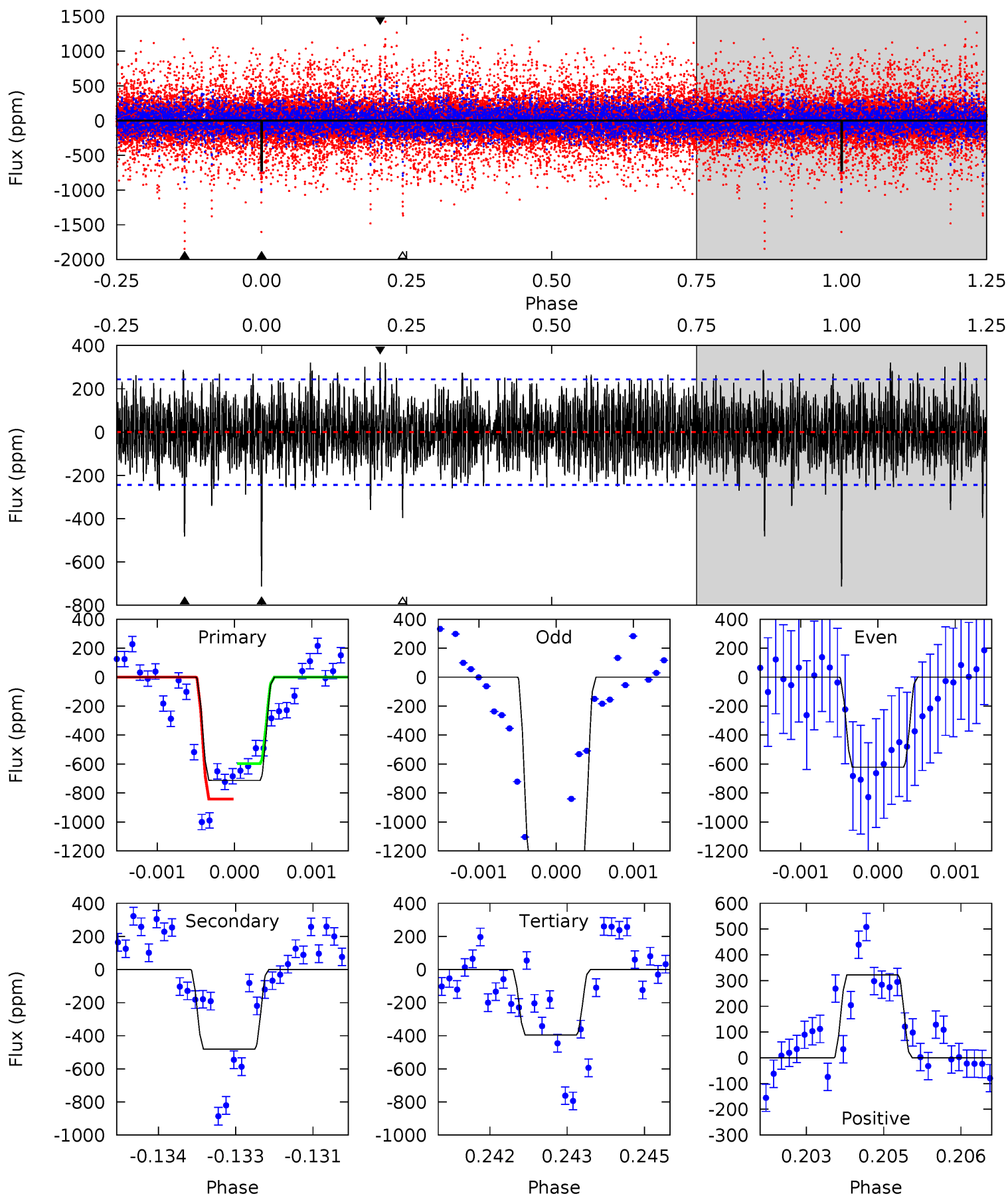
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	9.89	7.26	9.04	5.38	3.18	2.07	4.22	2.44	2.63	0.84	0.43	0.68	0.44	1.25



# Alt Model-Shift Uniqueness Test

007905683-03, P = 139.586127 Days, E = 133.984963 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	10.6	8.76	7.12	5.39	3.20	2.43	7.01	8.65	1.89	3.53	7.65	1.03	0.31	2.75





### Stellar Parameters For KIC 007905683

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6387^{+157}_{-204}$	$4.369^{+0.087}_{-0.203}$	$-0.240^{+0.250}_{-0.300}$	$1.113^{+0.352}_{-0.151}$	$1.050^{+0.172}_{-0.114}$	$1.074^{+0.400}_{-0.560}$
	+2%/-3%	+2%/-5%	+104%/-125%	+32%/-14%	+16%/-11%	+37%/-52%
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 007905683-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-255 \pm 26$	$2.21^{+1.31}_{-1.09}$	$573^{+38}_{-31}$	$6045^{+2905}_{-1072}$	$8132^{+25661}_{-4855}$
Alt.	$-481 \pm 45$	$4.27^{+1.31}_{-1.40}$	$573^{+43}_{-27}$	$5175^{+1012}_{-535}$	$4192^{+4755}_{-1866}$

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

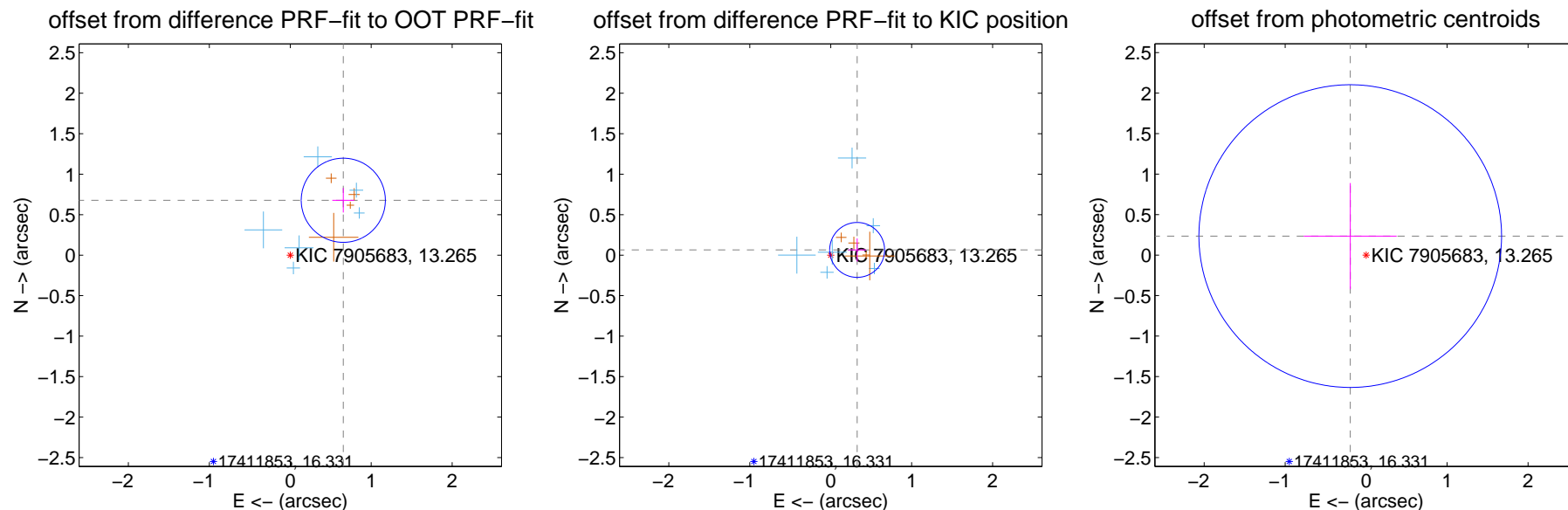
## DV Centroid Data

Supplemental centroid analysis for 007905683-03. Kepler magnitude: 13.27. Transit SNR 6.93

There are 6 quarters with good PRF difference image offsets

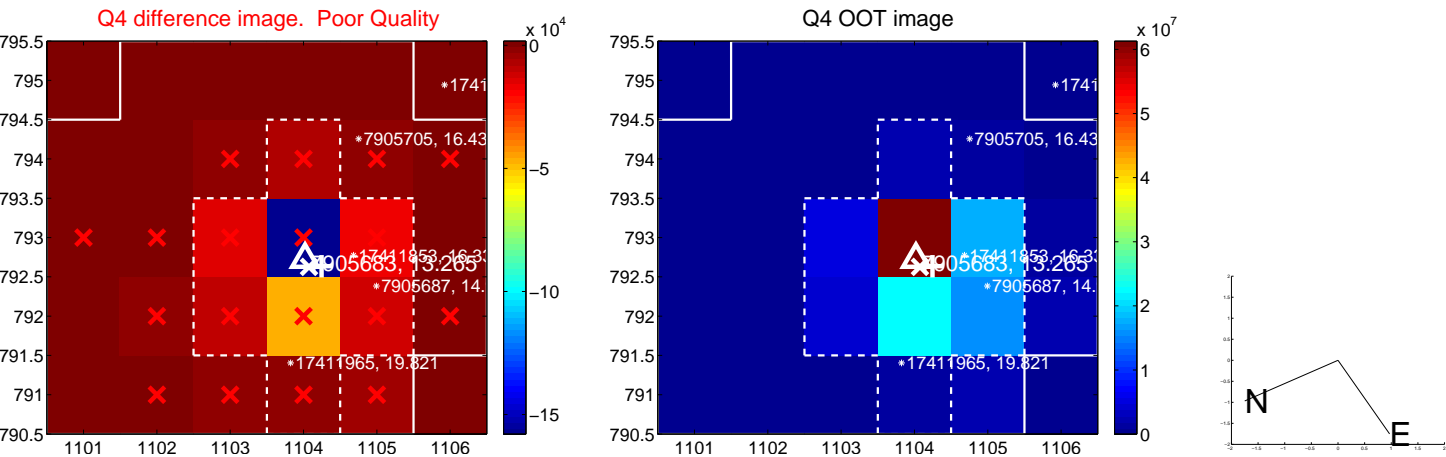
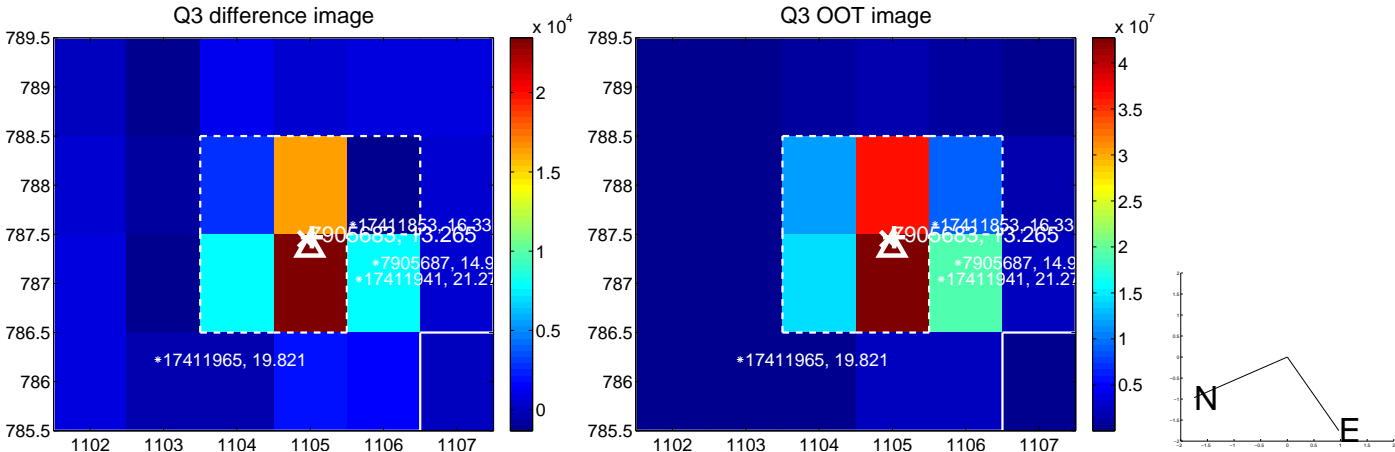
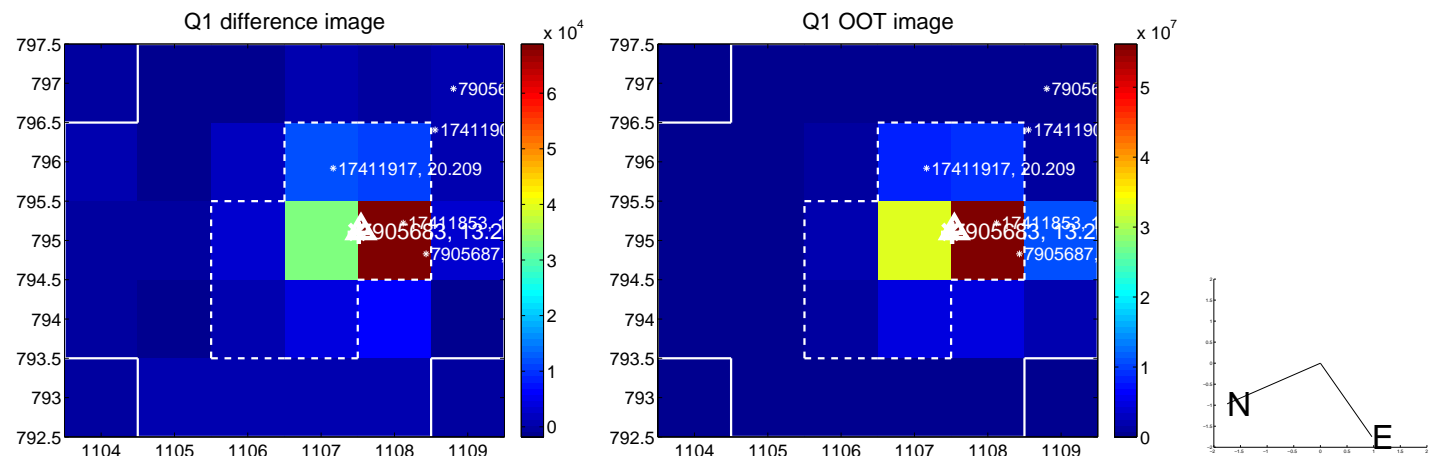
The direct PRF centroid is offset from the target star catalog position by about 0.82 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.943 \pm 0.173$	5.44	$-0.655 \pm 0.136$	$0.678 \pm 0.151$
PRF-fit source offset from KIC position	$0.333 \pm 0.113$	2.94	$-0.326 \pm 0.111$	$0.065 \pm 0.143$
photometric centroid source offset	$0.31 \pm 0.62$	0.49	$0.20 \pm 0.57$	$0.23 \pm 0.66$

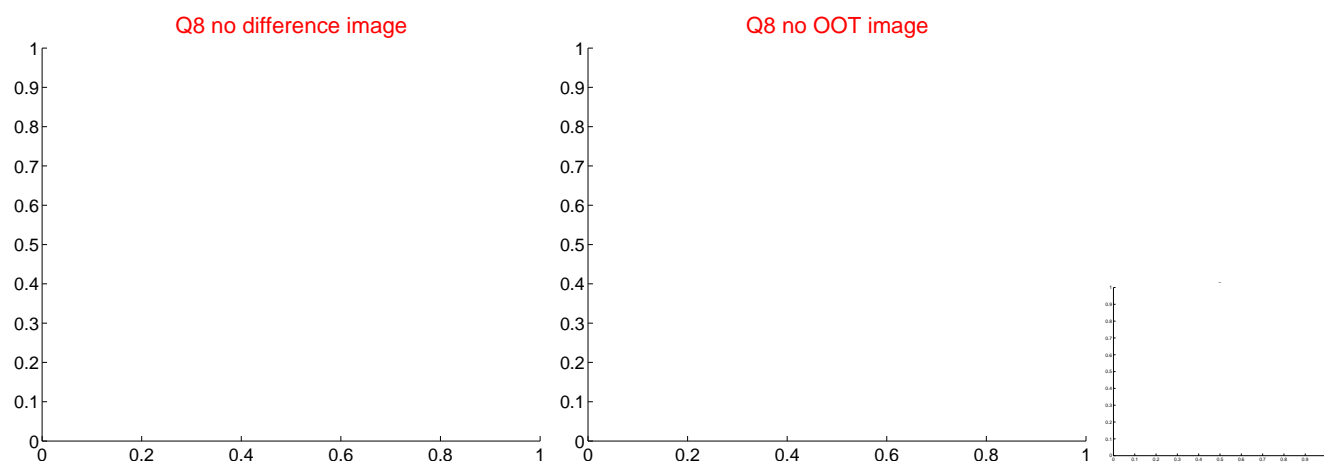
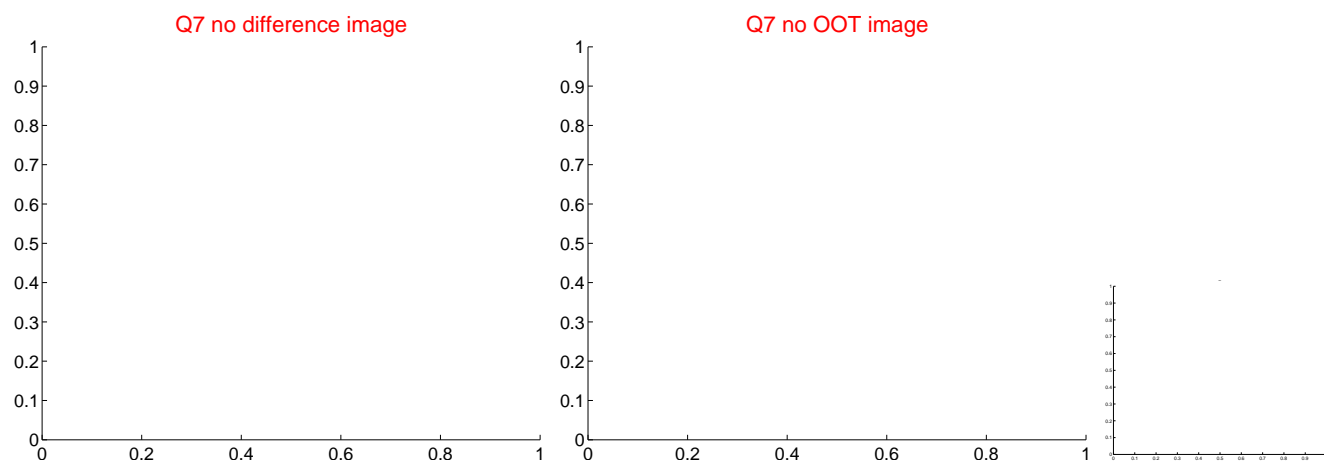
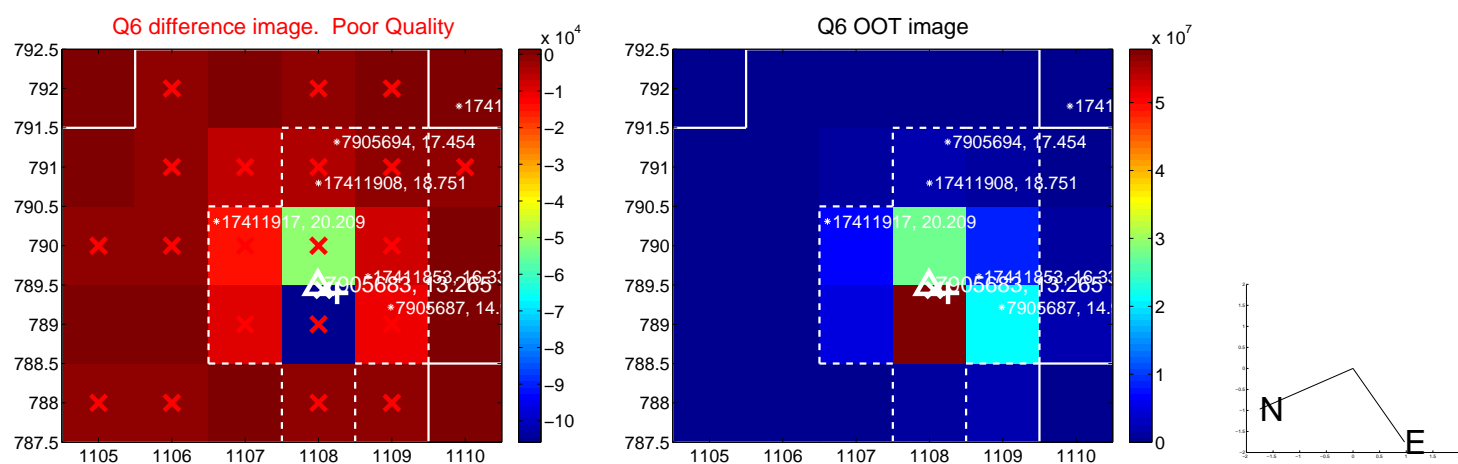
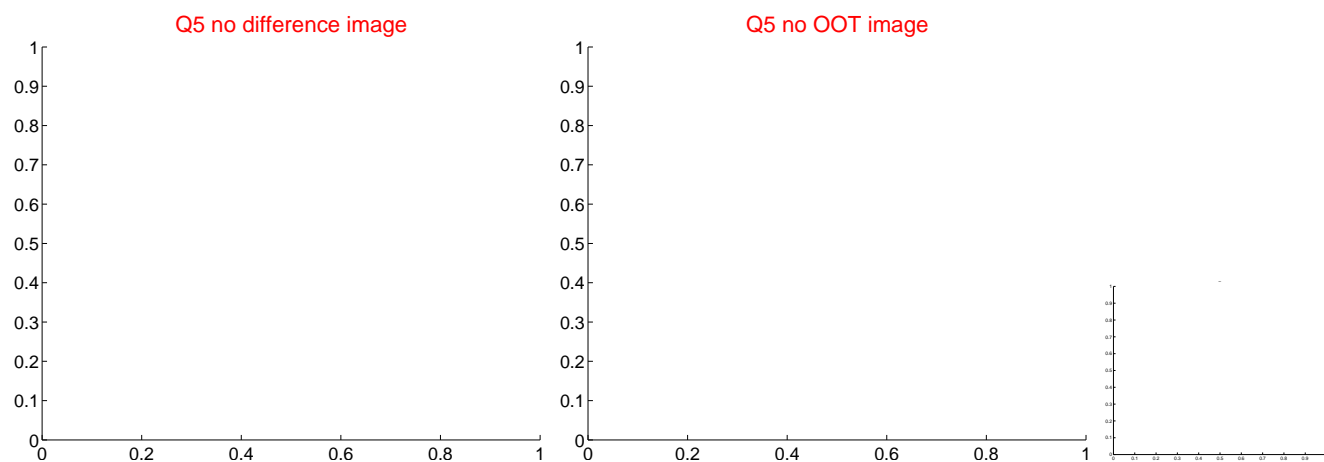


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

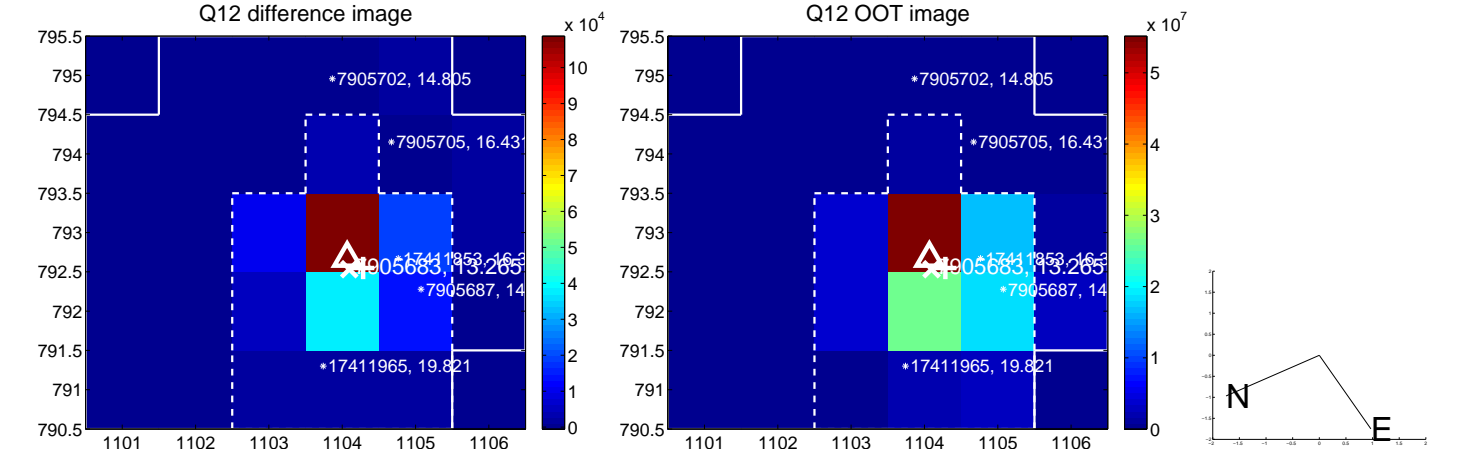
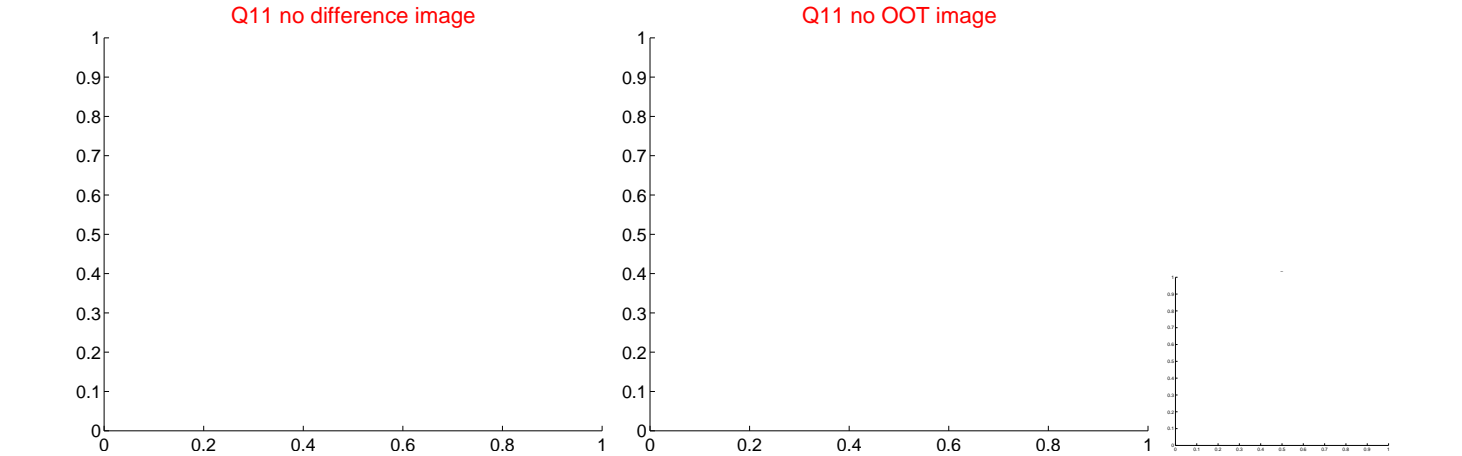
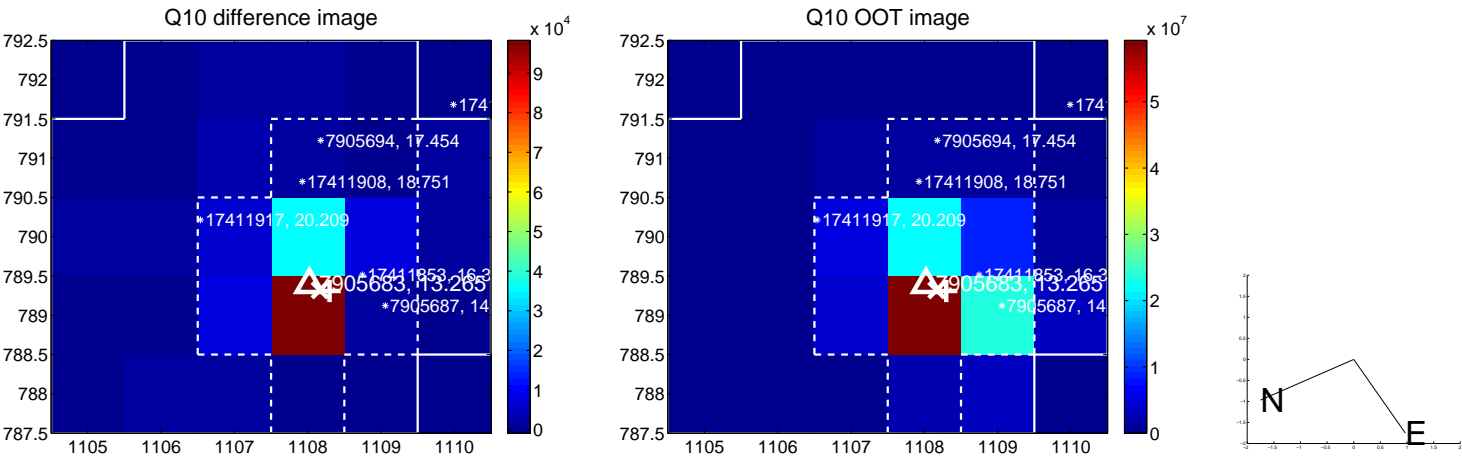
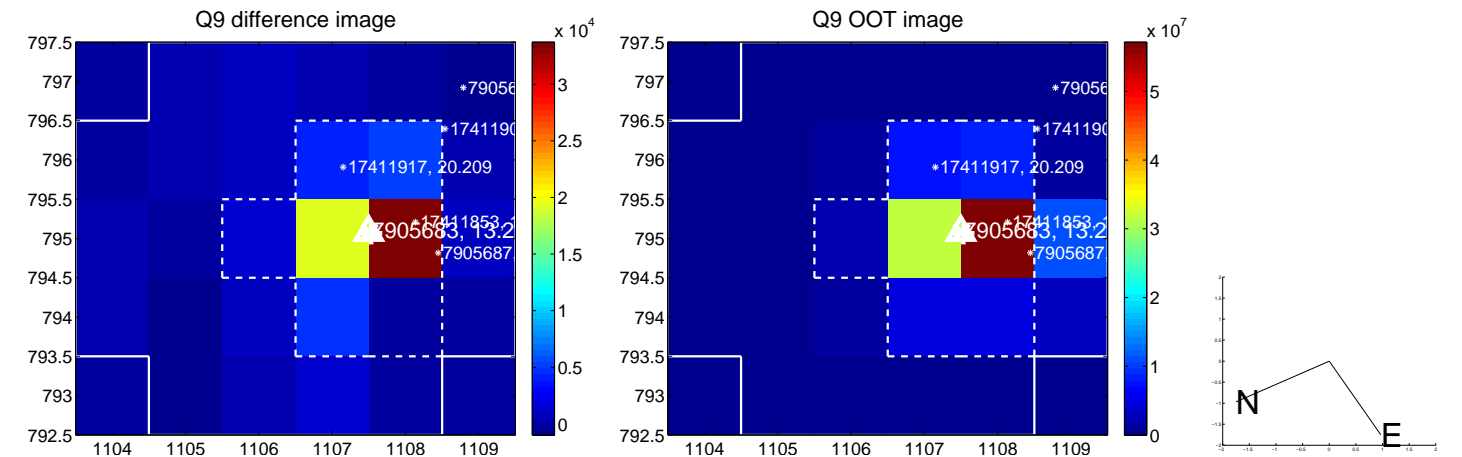
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



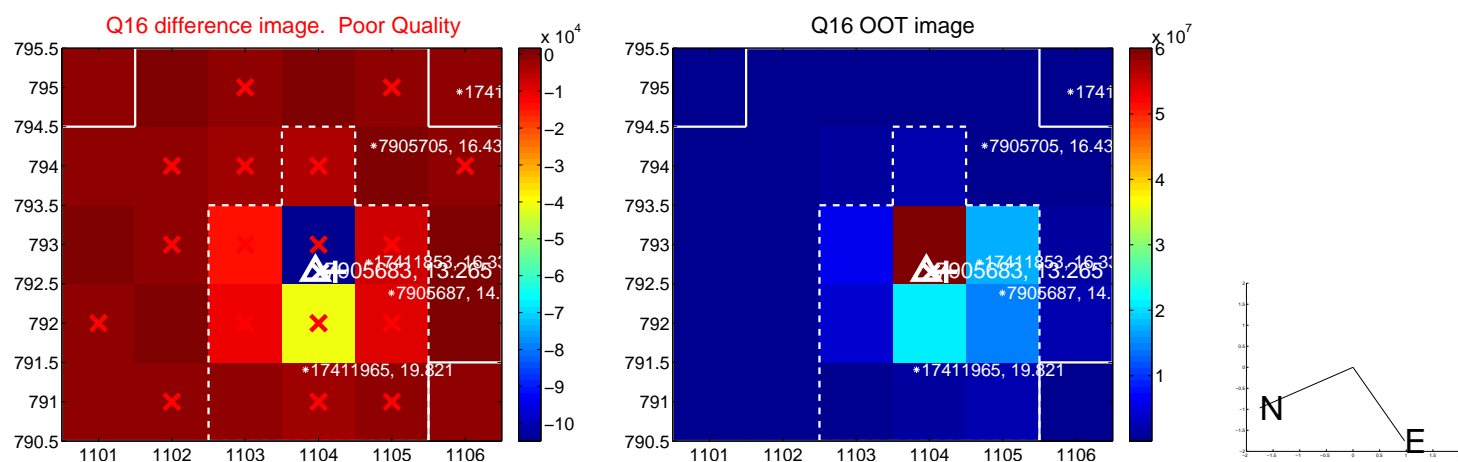
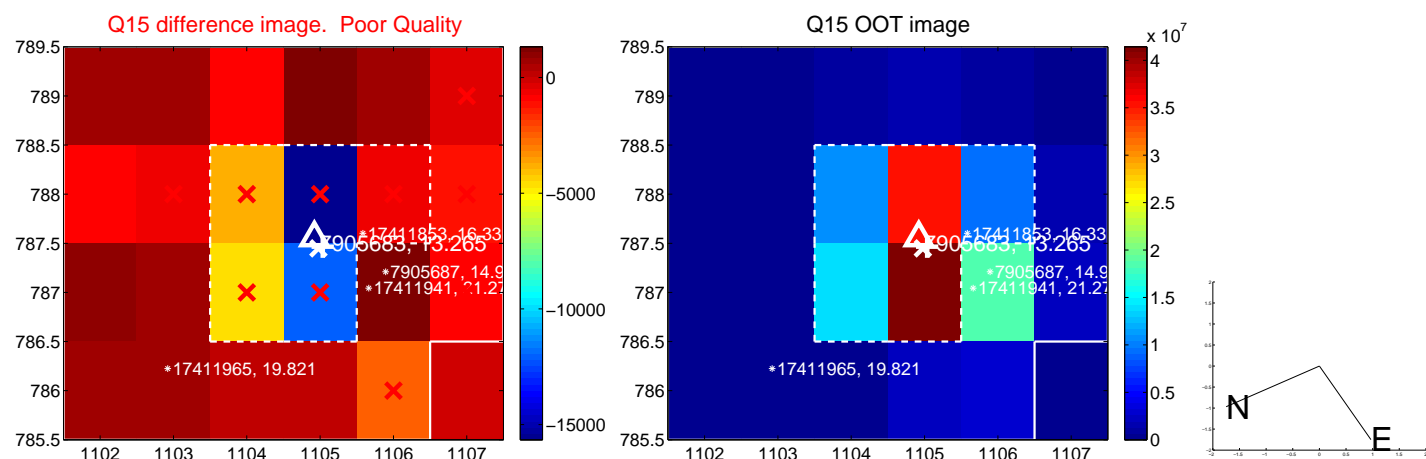
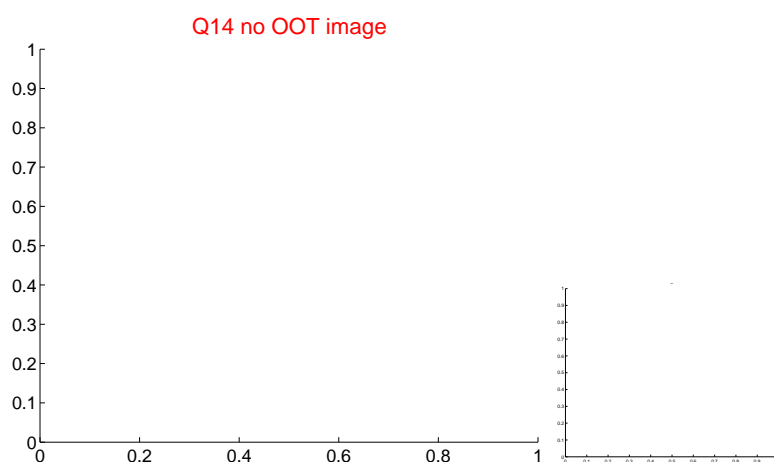
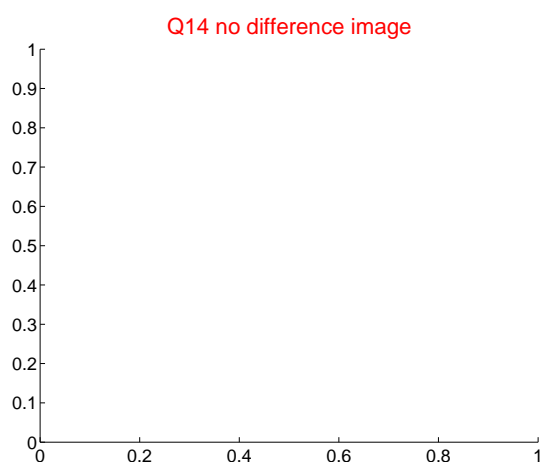
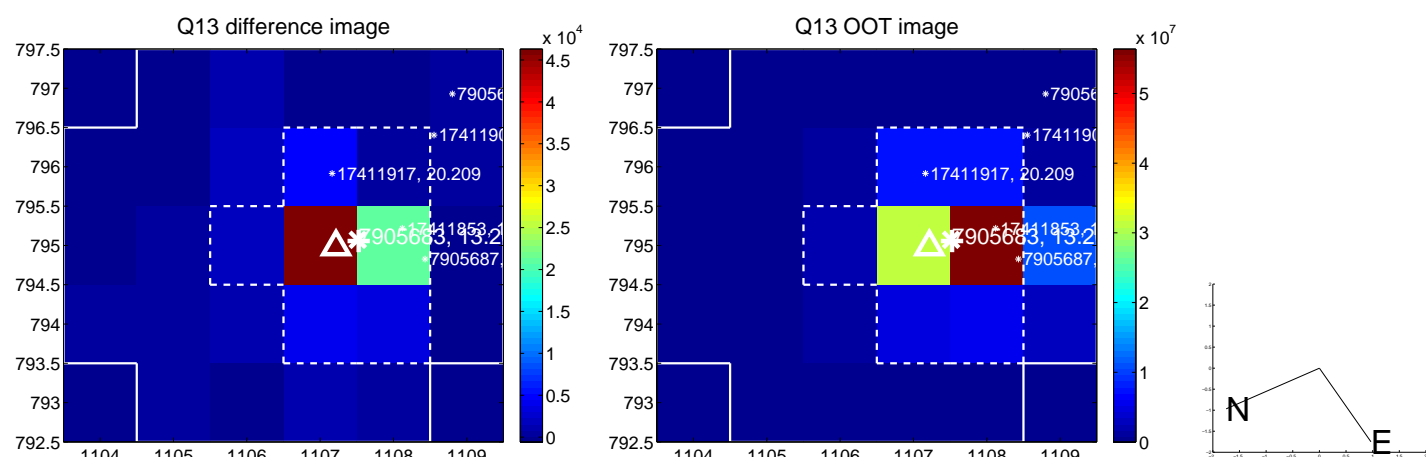
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

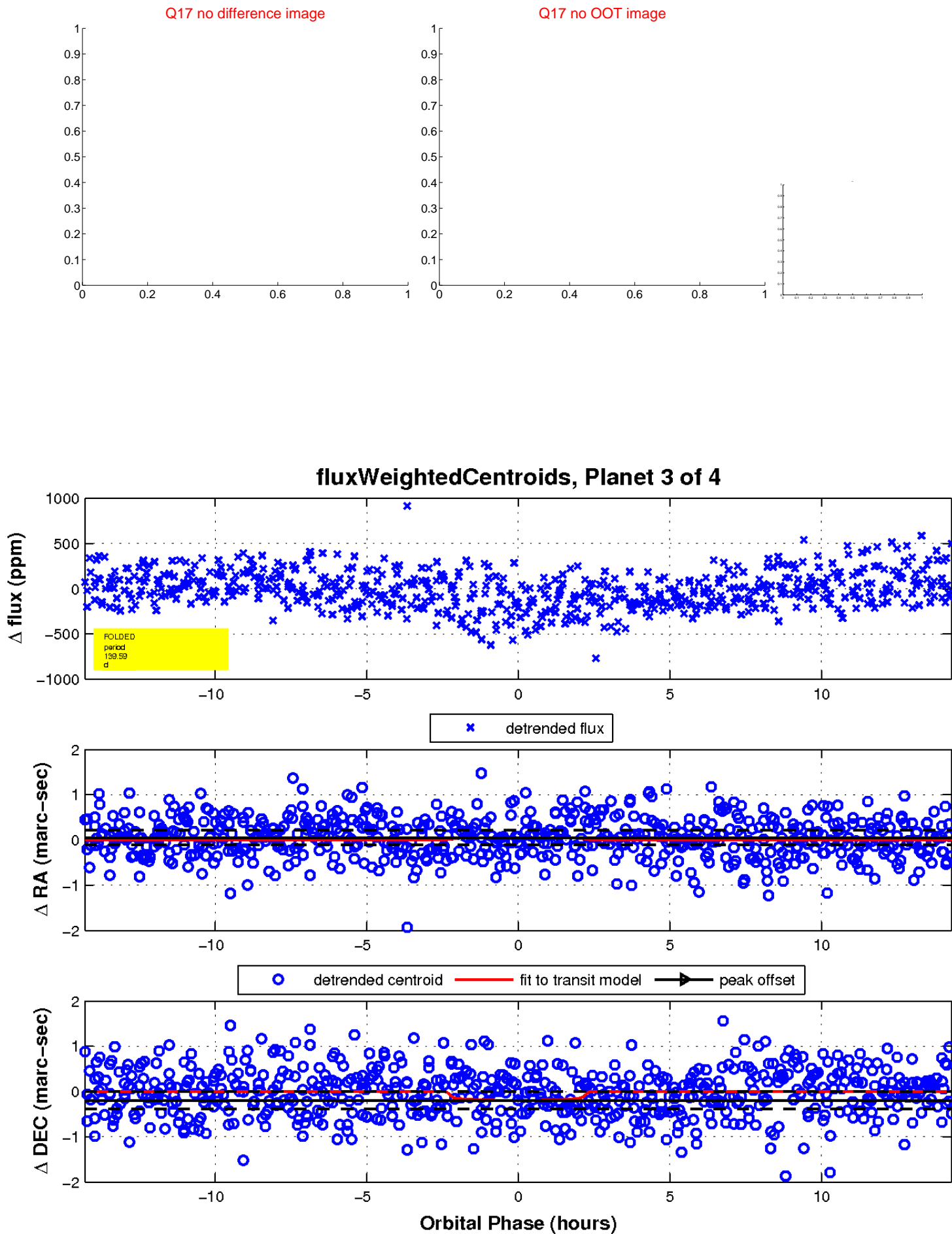


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



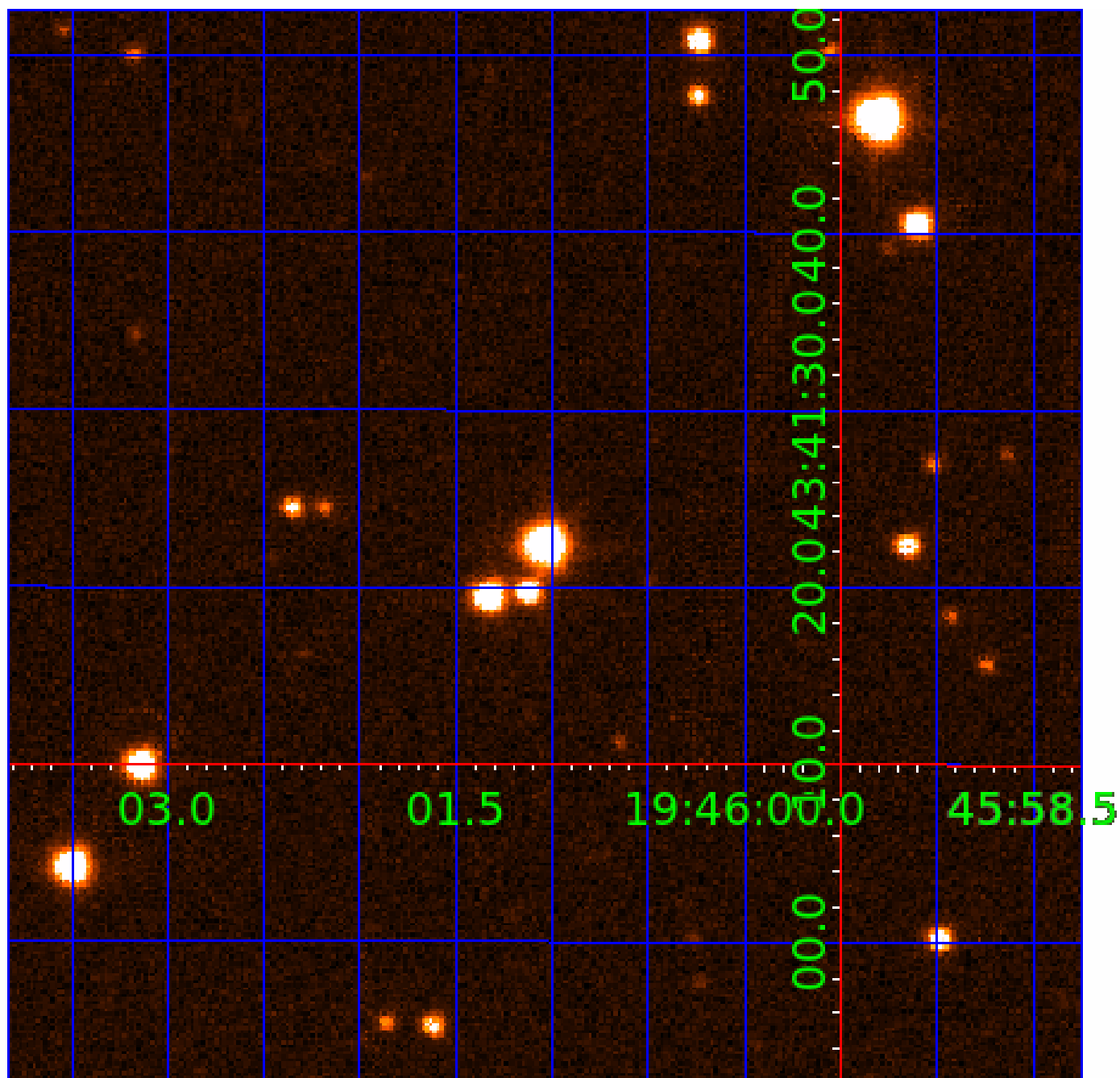


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007905683

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007905683-01	OBS	No	1.315699	131.552045	24.8	5.367	8.7	8.9	1.11	6387	0.56	3222.58
007905683-02	OBS	No	197.618189	237.033231	145.5	32.954	9.3	4.6	1.11	6387	1.44	4.04
007905683-03	OBS	No	139.590793	133.942988	283.9	4.773	8.4	6.9	1.11	6387	2.10	6.42
007905683-04	OBS	No	14.709259	138.554134	87.4	9.390	8.2	7.7	1.11	6387	1.22	128.91

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007905683-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
007905683-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
007905683-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT
007905683-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV

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

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

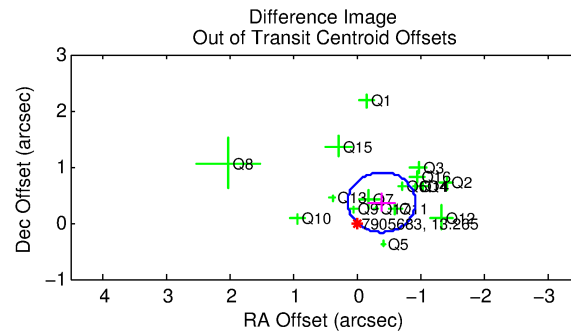
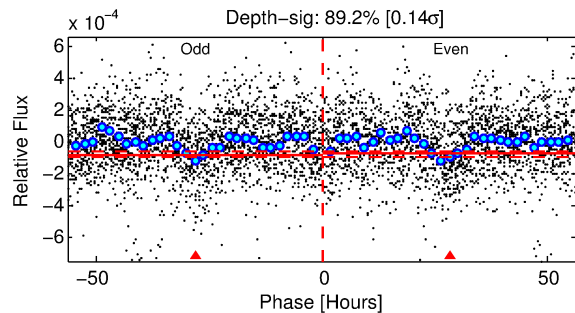
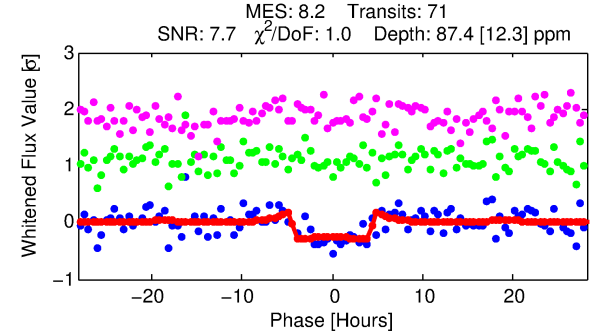
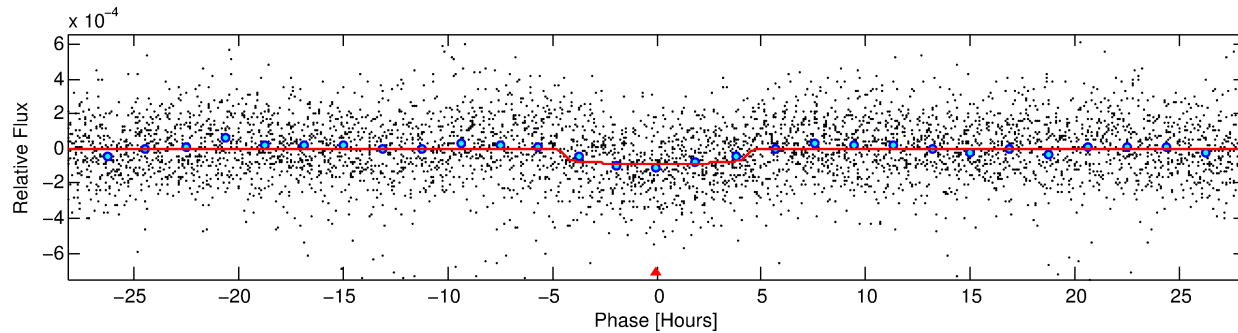
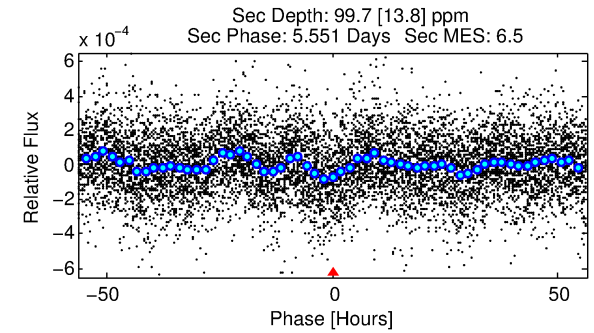
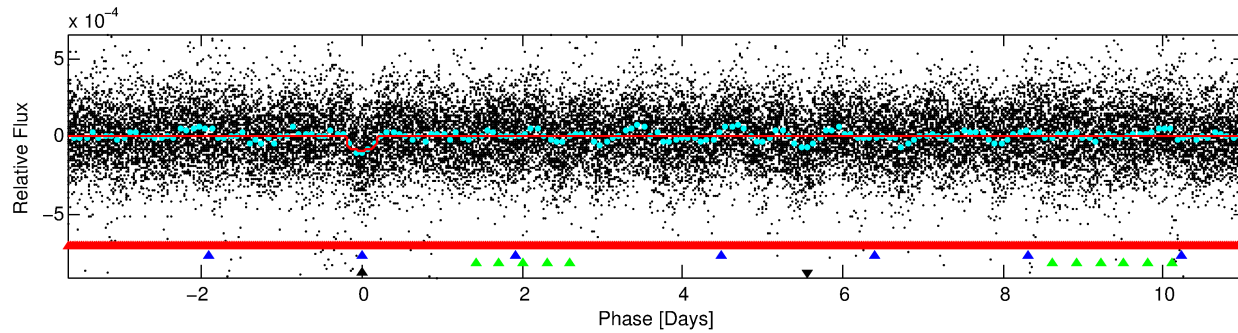
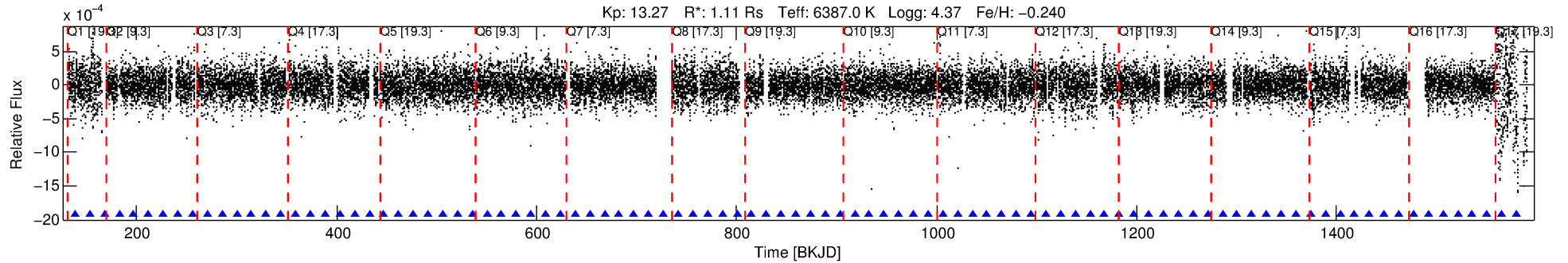
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007905683-04

No Significant Match Found

# DV One-Page Summary

KIC: 7905683 Candidate: 4 of 4 Period: 14.709 d



## DV Fit Results:

Period = 14.70926 [0.00022] d  
Epoch = 138.5541 [0.0124] BKJD  
Rp/R\* = 0.0100 [0.0016]  
a/R\* = 5.48 [4.14]  
b = 0.90 [0.16]  
Seff = 128.91 [51.22]  
Teff = 859 [85] K  
Rp = 1.22 [0.43] Re  
a = 0.1197 [0.0314] AU  
Ag = 528.08 [272.20] [1.94σ]  
Teffp = 6368 [597] K [9.14σ]

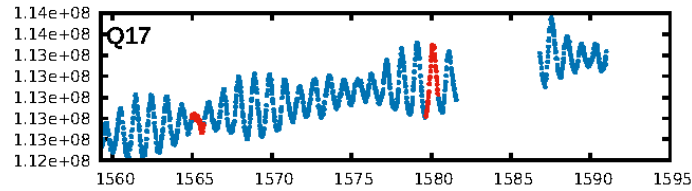
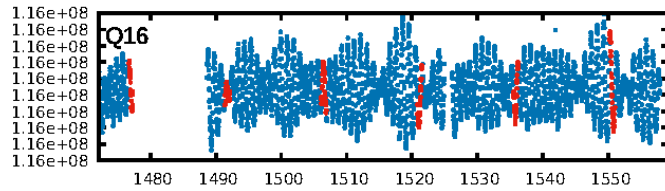
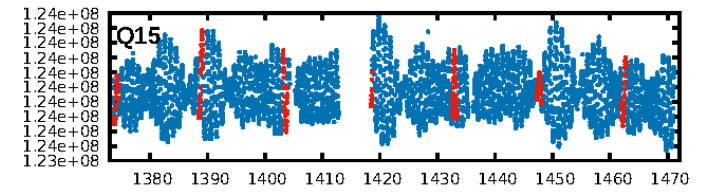
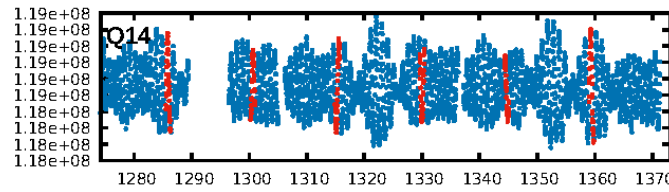
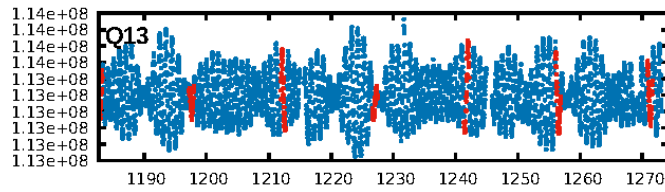
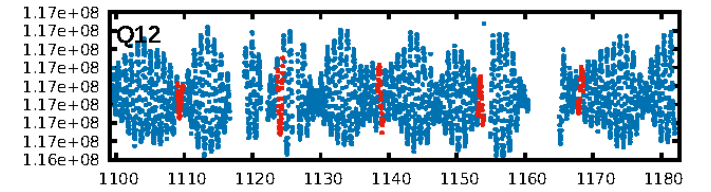
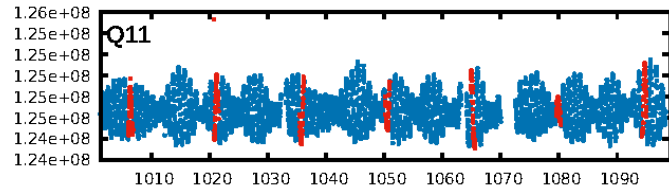
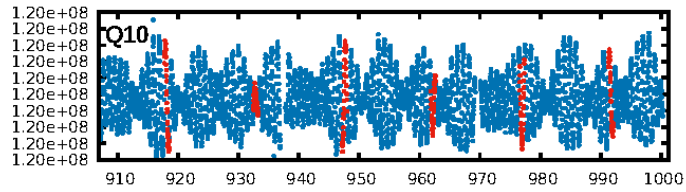
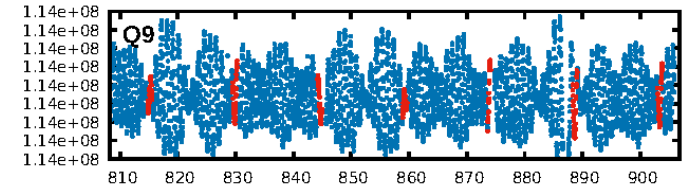
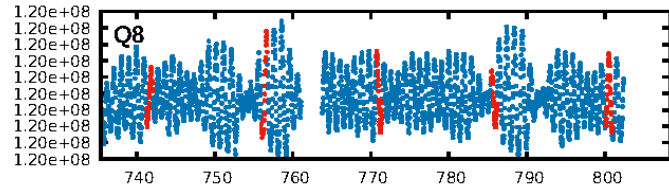
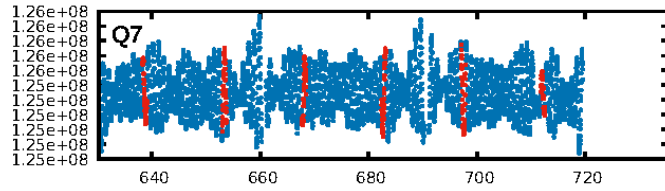
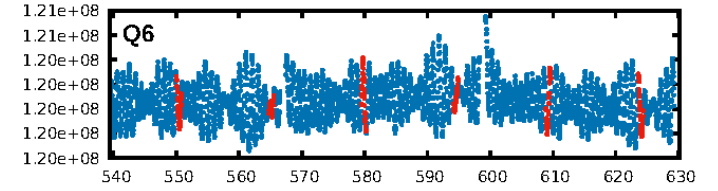
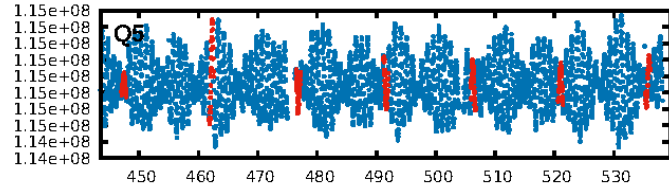
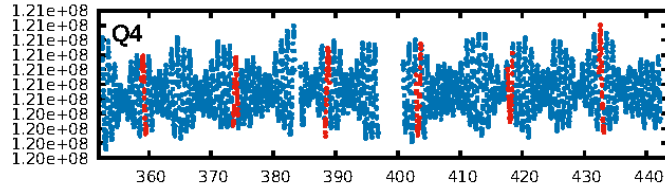
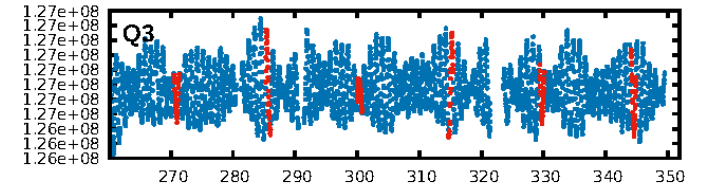
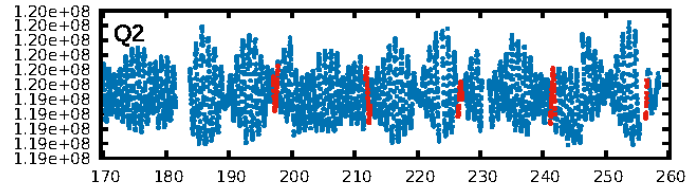
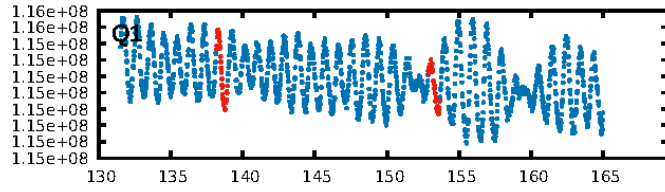
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [29.72σ]  
LongPeriod-sig: 100.0% [284.54σ]  
ModelChiSquare2-sig: 67.1%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 2.22e-11**  
RollingBand-fgt: 1.00 [68/68]  
GhostDiagnostic-chr: 2.596  
Centroid-sig: 81.9%  
Centroid-so: 0.803 arcsec [1.48σ]  
**OotOffset-rm: 0.536 arcsec [3.01σ]**  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 0.360 arcsec [1.88σ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.59 [10/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:34:46 Z

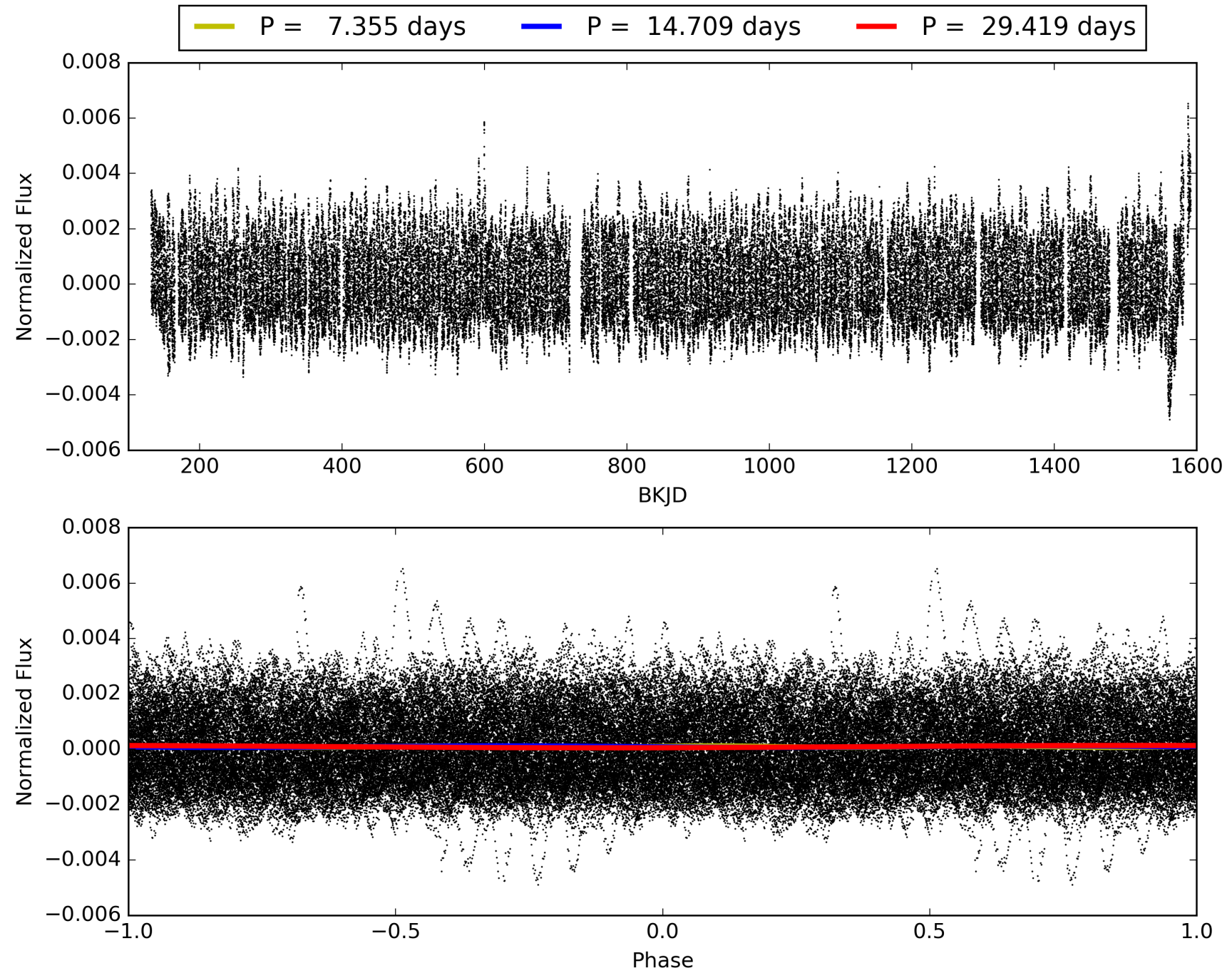
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007905683-04, PDC Light Curves





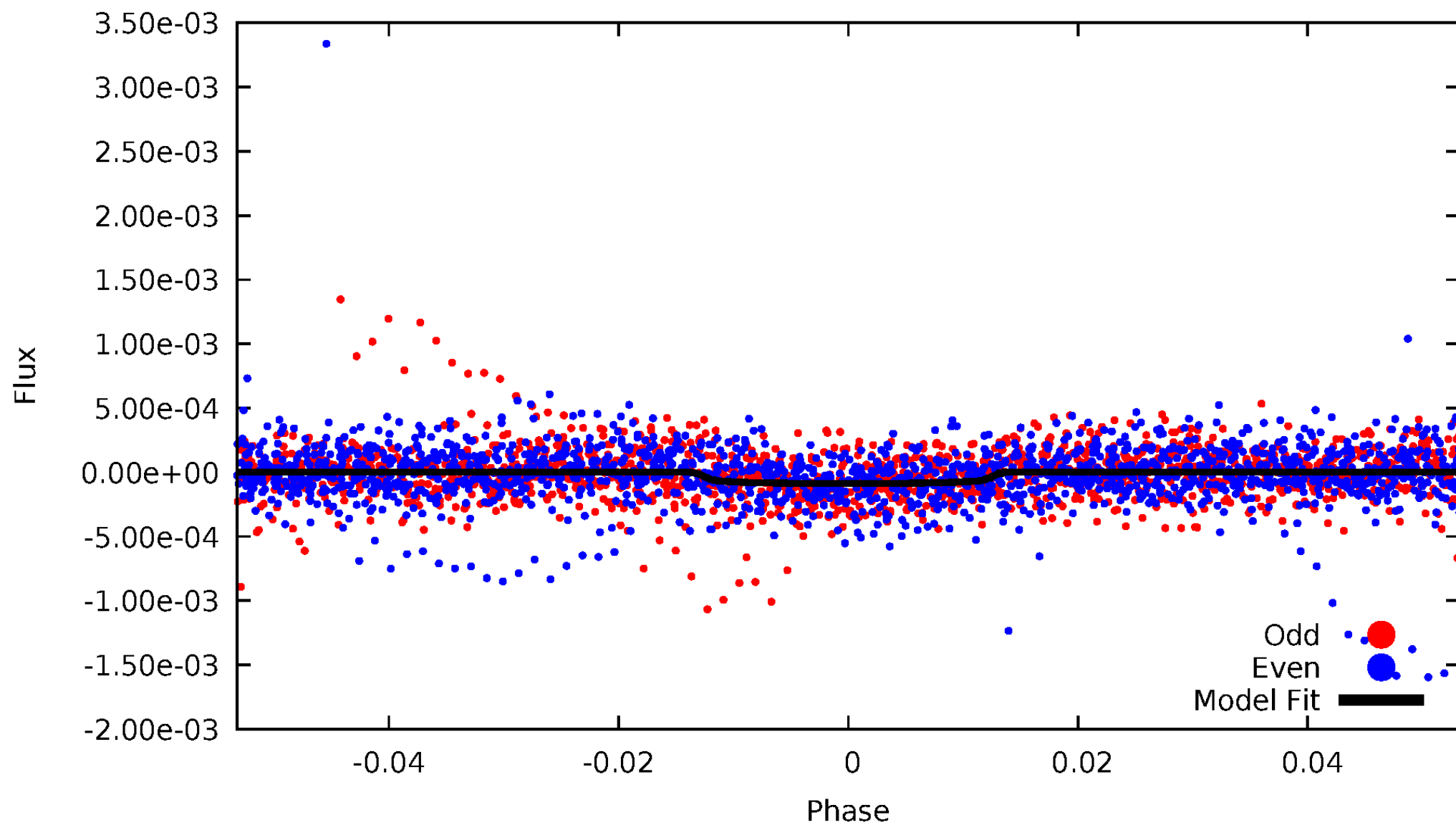
TCE 007905683-04





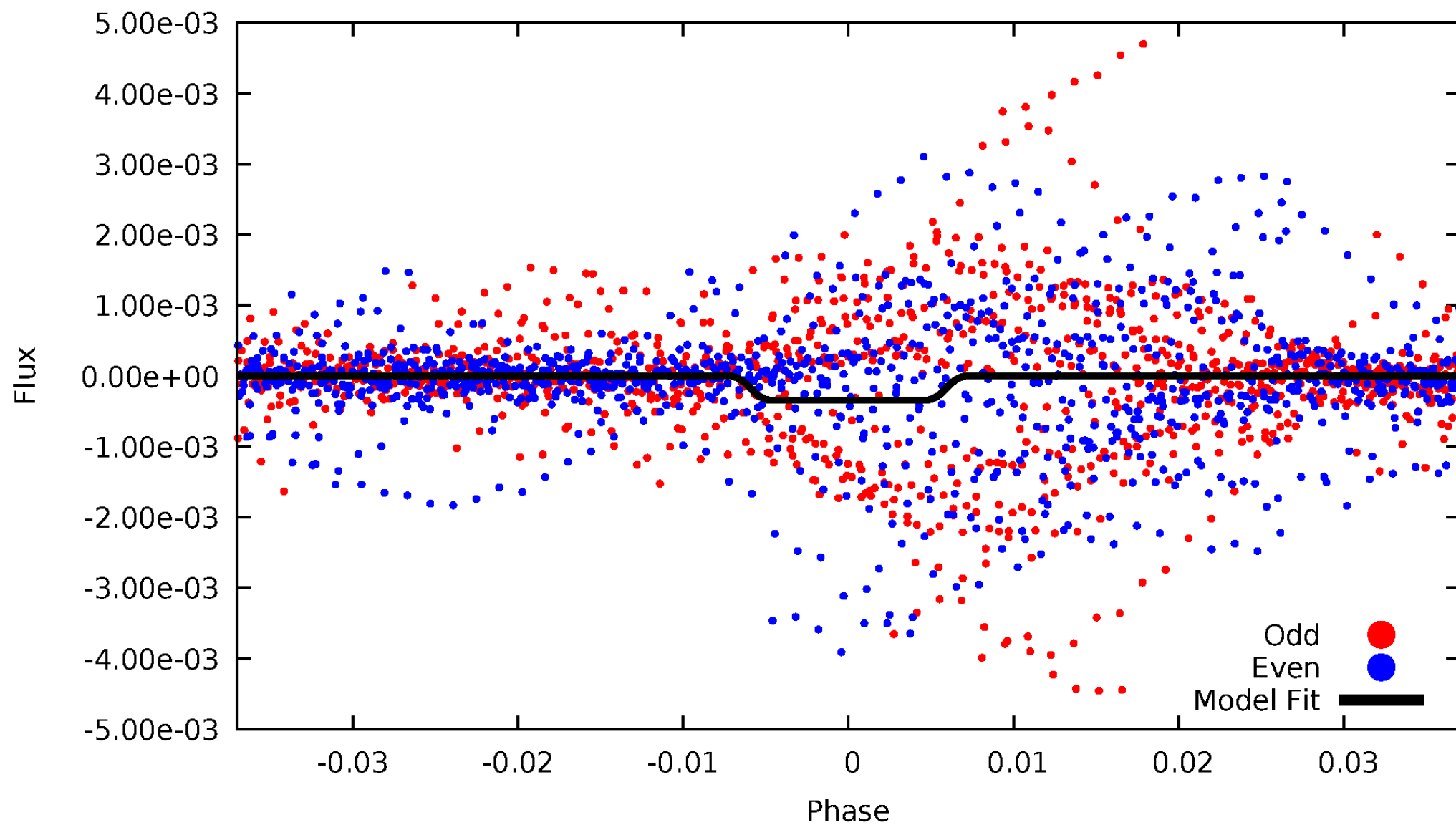
# DV Odd/Even

TCE 007905683-04



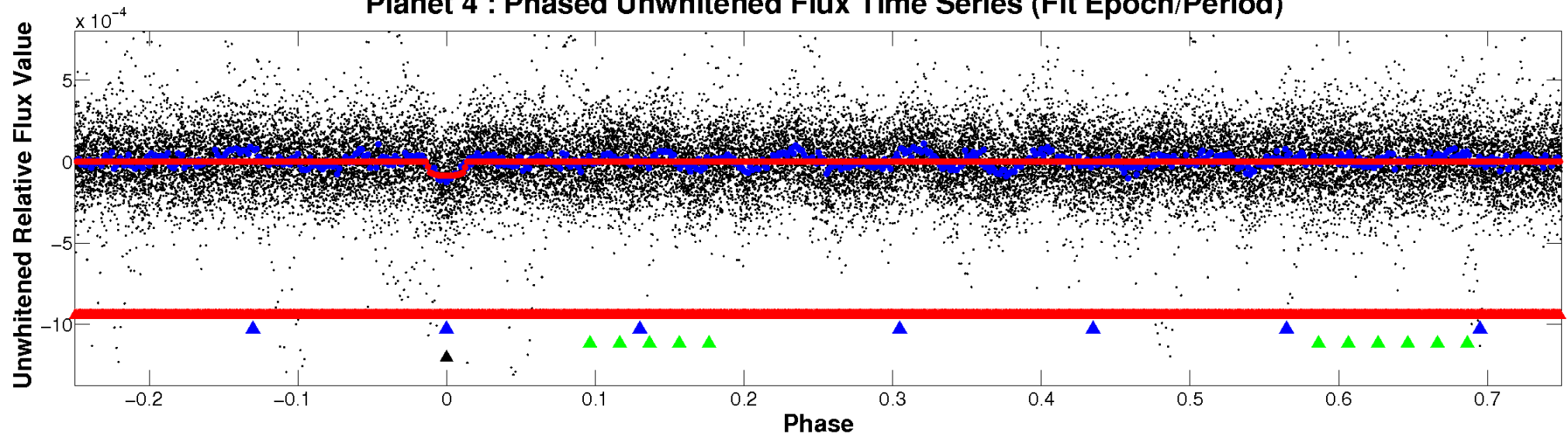
# ALT Odd/Even

TCE 007905683-04

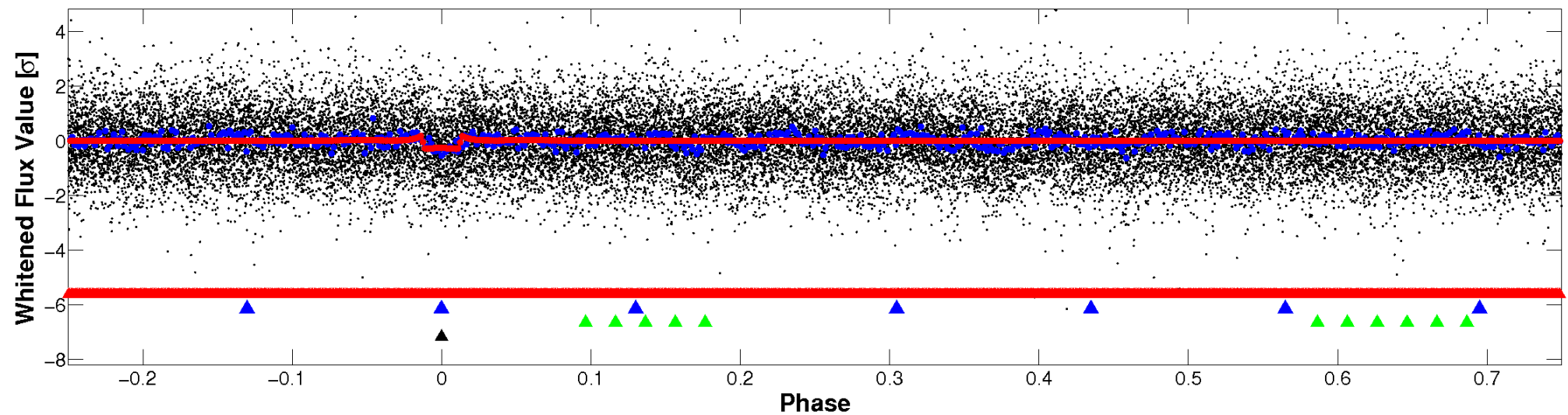


# Non-Whitened Vs. Whitened Light Curve

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

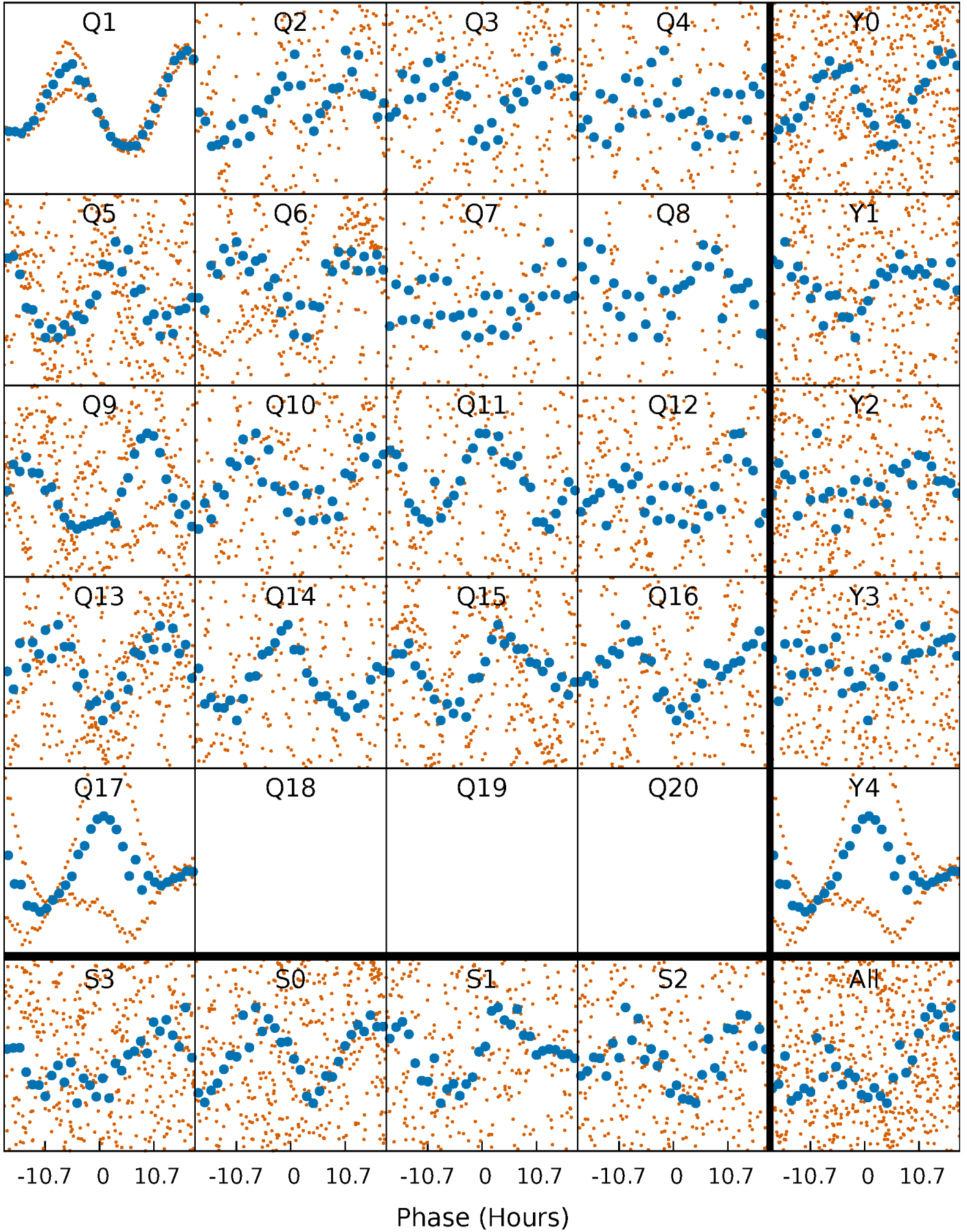


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



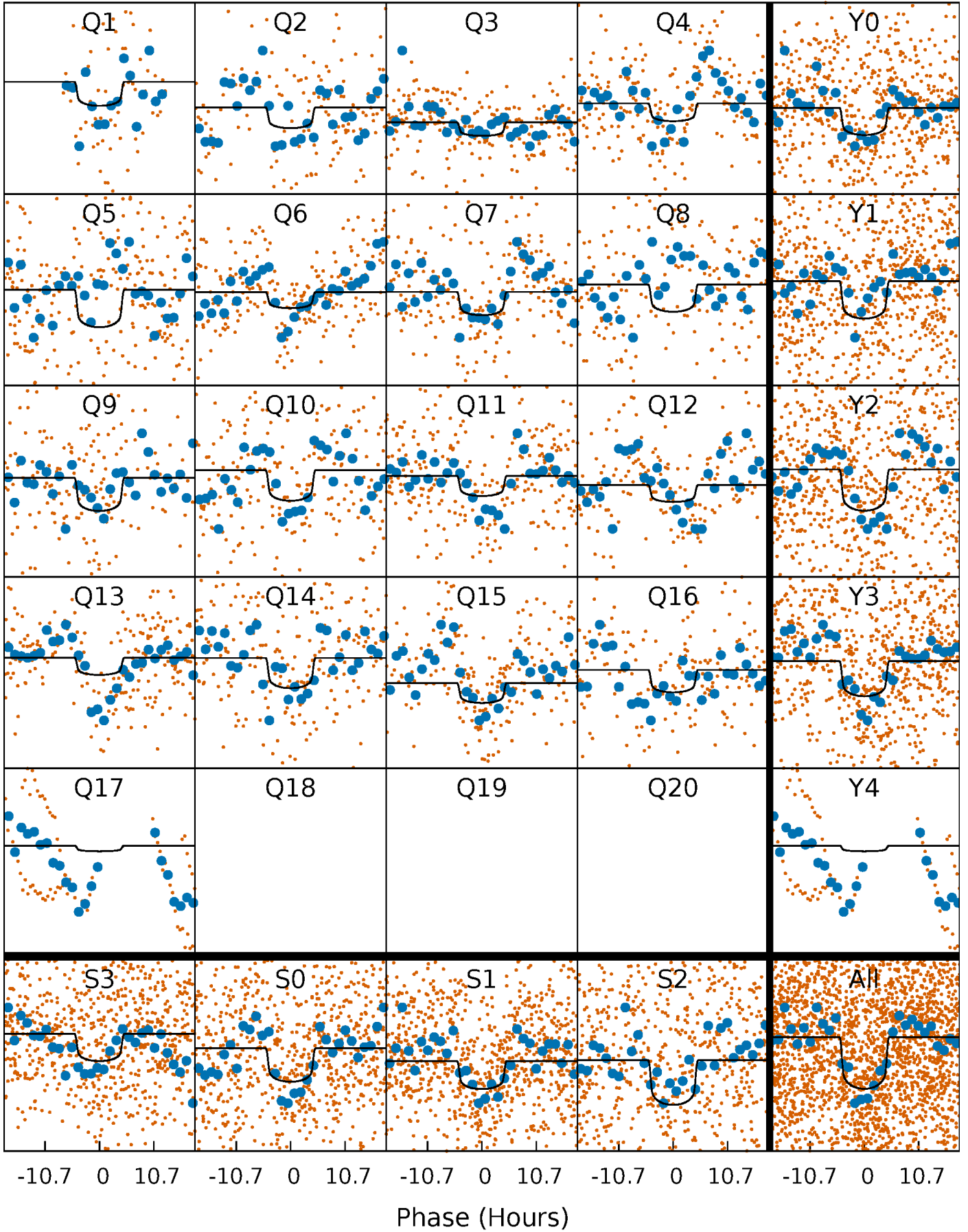
# PDC Quarter-Phased Transit Curves

TCE 007905683-04 P= 14.709259 Days  $T_0=138.554134$  (BKJD)



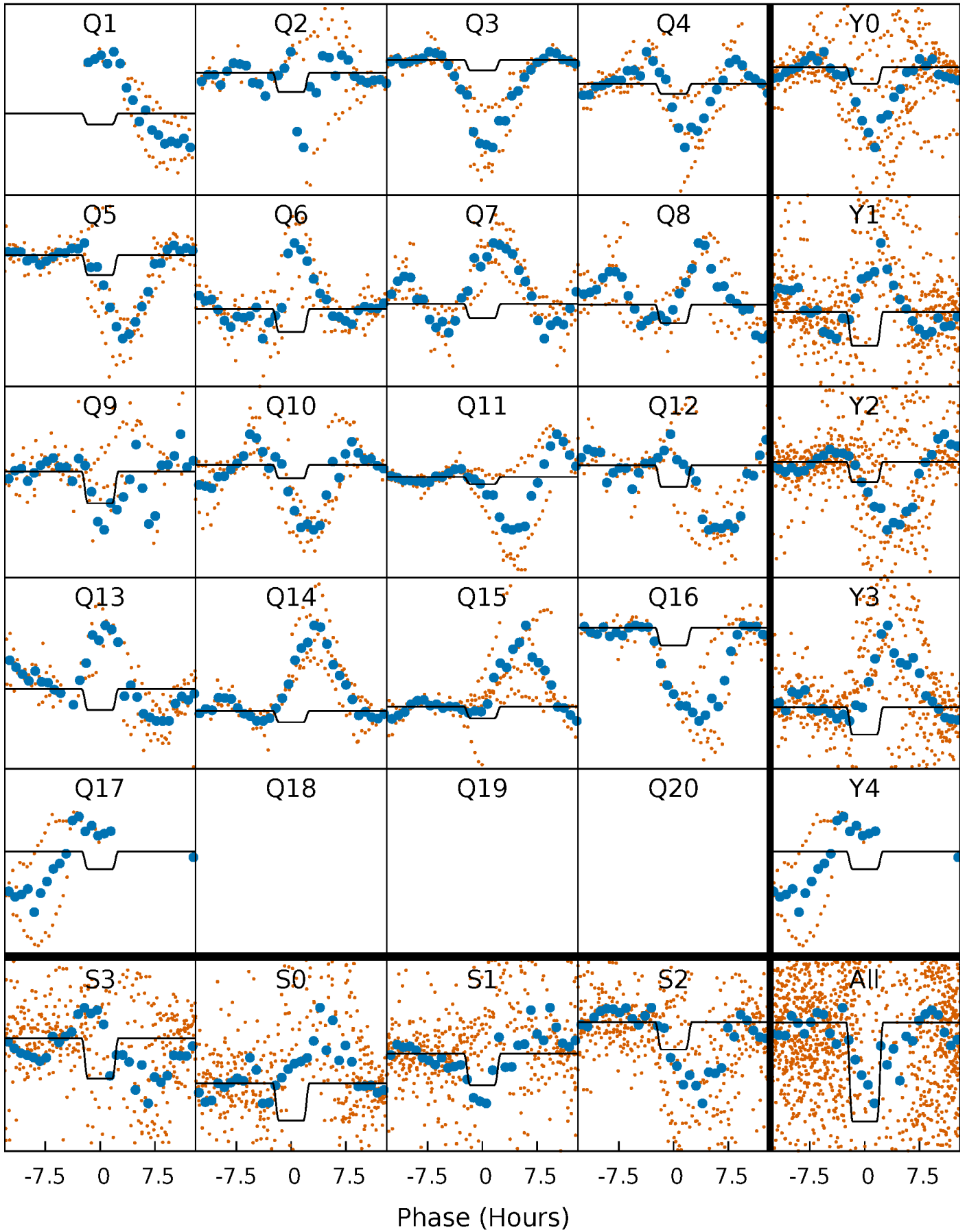
# DV Quarter-Phased Transit Curves

TCE 007905683-04   P= 14.709259 Days    $T_0=138.554134$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007905683-04 P= 14.710491 Days  $T_0=138.342704$  (BKJD)

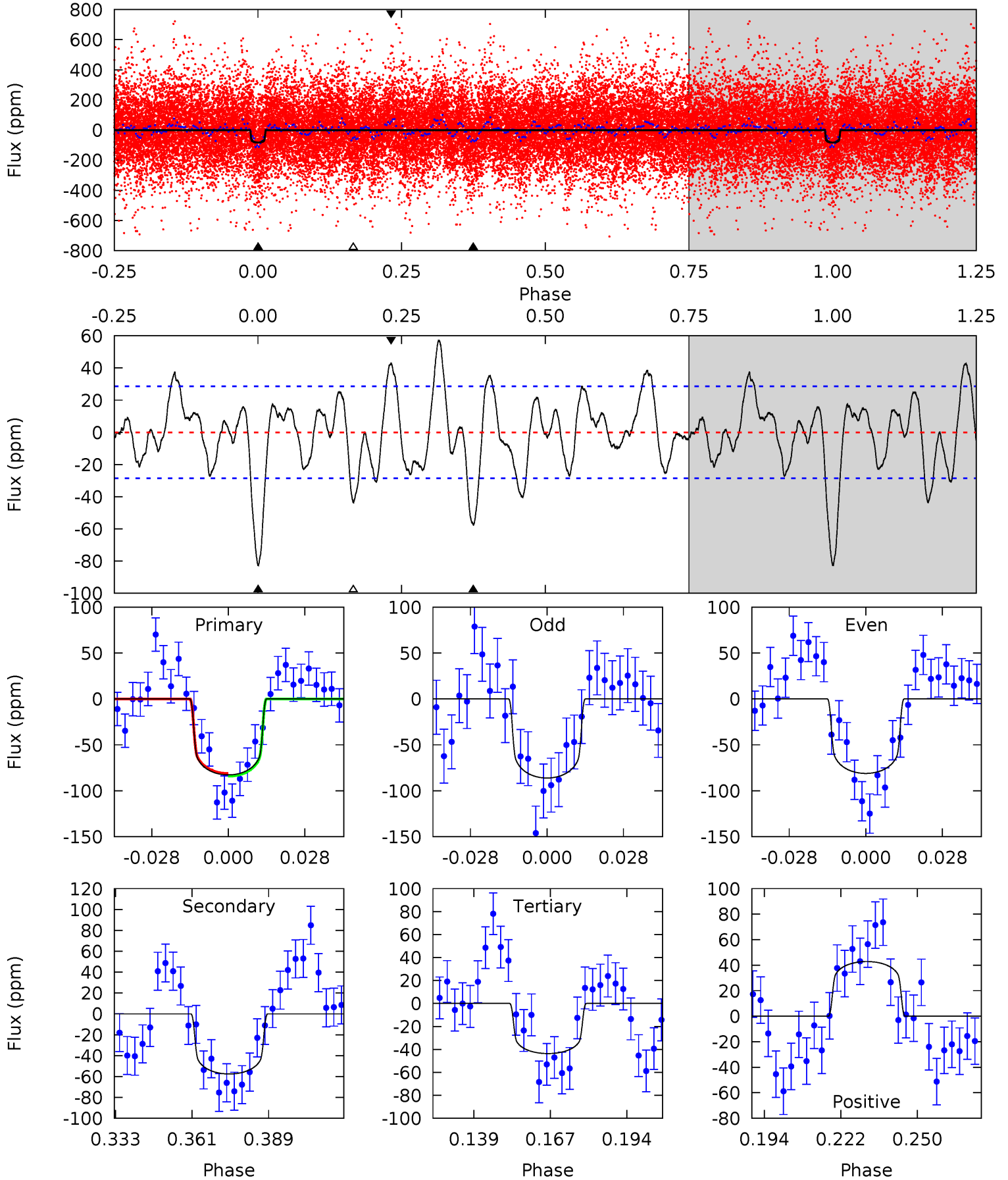




# DV Model-Shift Uniqueness Test

007905683-04,  $P = 14.709259$  Days,  $E = 123.844875$  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
14.0	9.71	7.36	7.23	4.83	2.20	3.14	6.59	6.73	2.35	2.48	0.42	1.07	0.41	0.23

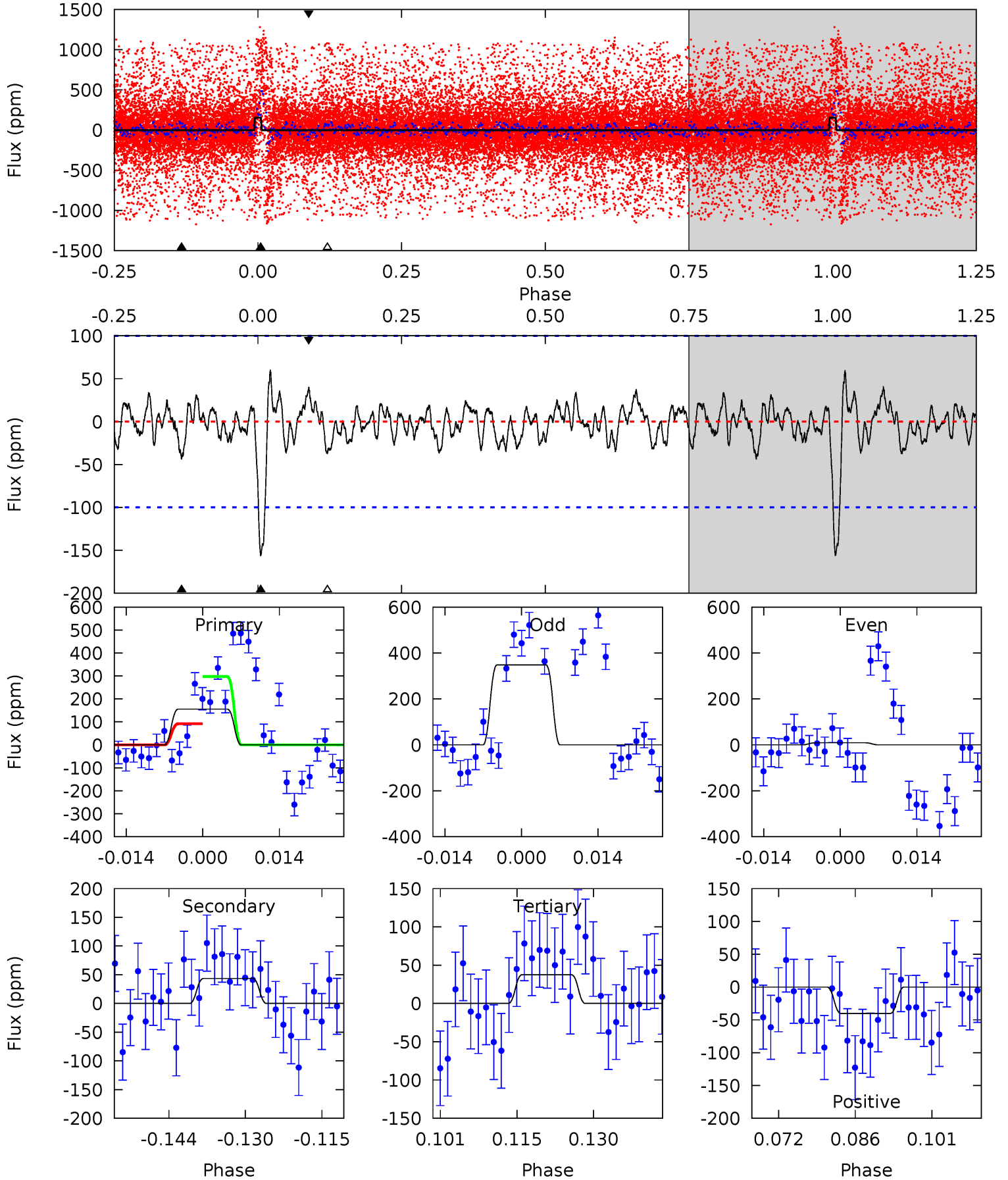




# Alt Model-Shift Uniqueness Test

007905683-04, P = 14.710491 Days, E = 123.632213 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
7.73	2.16	1.86	2.00	4.96	2.45	0.80	5.87	5.73	0.29	0.16	8.44	-1.28	0.28	0



### Stellar Parameters For KIC 007905683

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6387^{+157}_{-204}$	$4.369^{+0.087}_{-0.203}$	$-0.240^{+0.250}_{-0.300}$	$1.113^{+0.352}_{-0.151}$	$1.050^{+0.172}_{-0.114}$	$1.074^{+0.400}_{-0.560}$
	+2%/-3%	+2%/-5%	+104%/-125%	+32%/-14%	+16%/-11%	+37%/-52%
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 007905683-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-58 \pm 6$	$1.27^{+0.28}_{-0.24}$	$1217^{+90}_{-63}$	$5545^{+551}_{-422}$	$279^{+148}_{-92}$
Alt.	$-43 \pm 20$	$2.32^{+0.41}_{-0.32}$	$1211^{+89}_{-62}$	$4092^{+342}_{-447}$	$61^{+43}_{-31}$

$T_{max}$  = 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

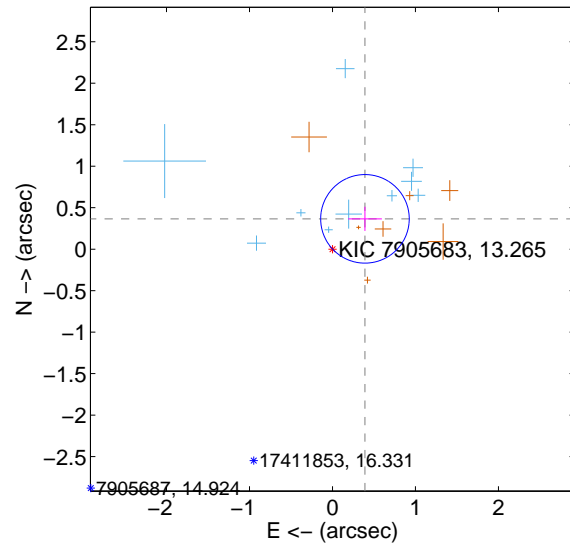
Supplemental centroid analysis for 007905683-04. Kepler magnitude: 13.27. Transit SNR 7.71

There are 10 quarters with good PRF difference image offsets

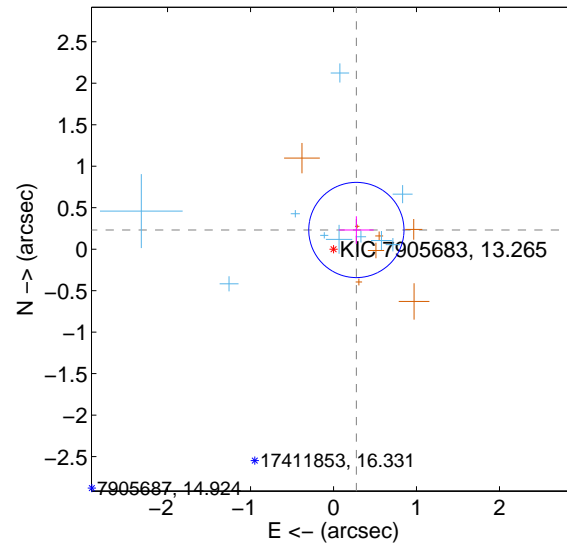
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>0.536 \pm 0.178</math></b>	<b>3.01</b>	$-0.392 \pm 0.204$	$0.366 \pm 0.145$
PRF-fit source offset from KIC position	$0.360 \pm 0.191$	1.88	$-0.275 \pm 0.208$	$0.231 \pm 0.166$
photometric centroid source offset	$0.80 \pm 0.54$	1.48	$0.59 \pm 0.51$	$-0.54 \pm 0.58$

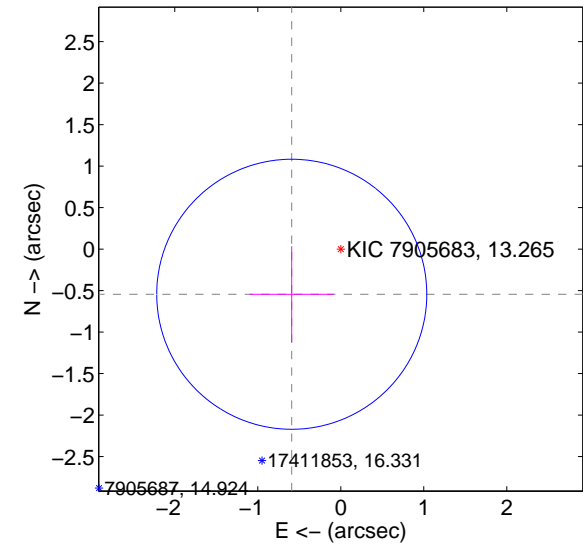
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

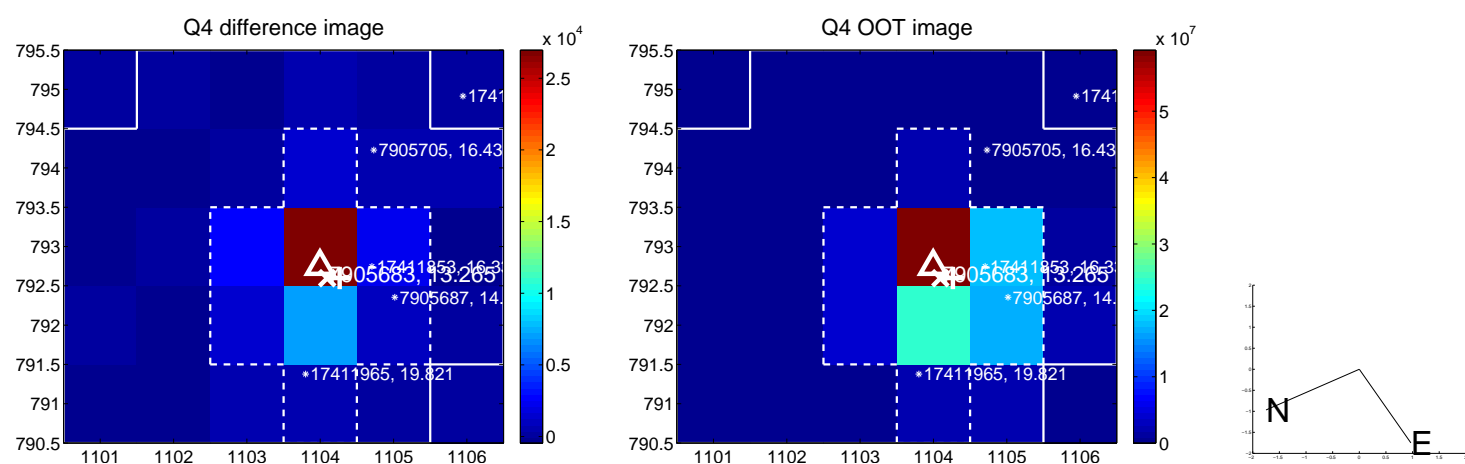
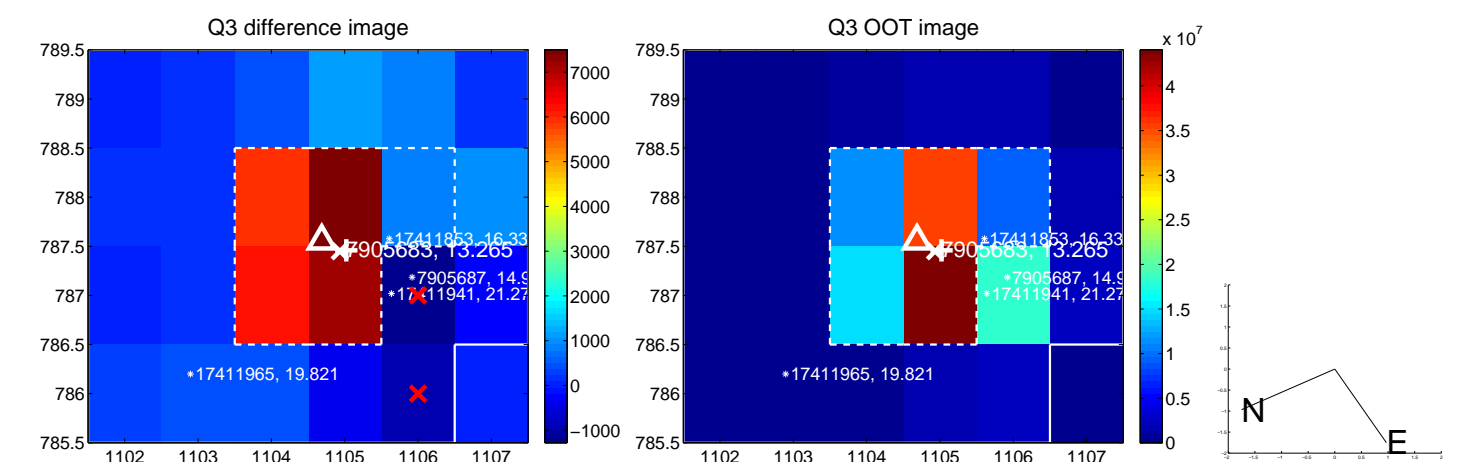
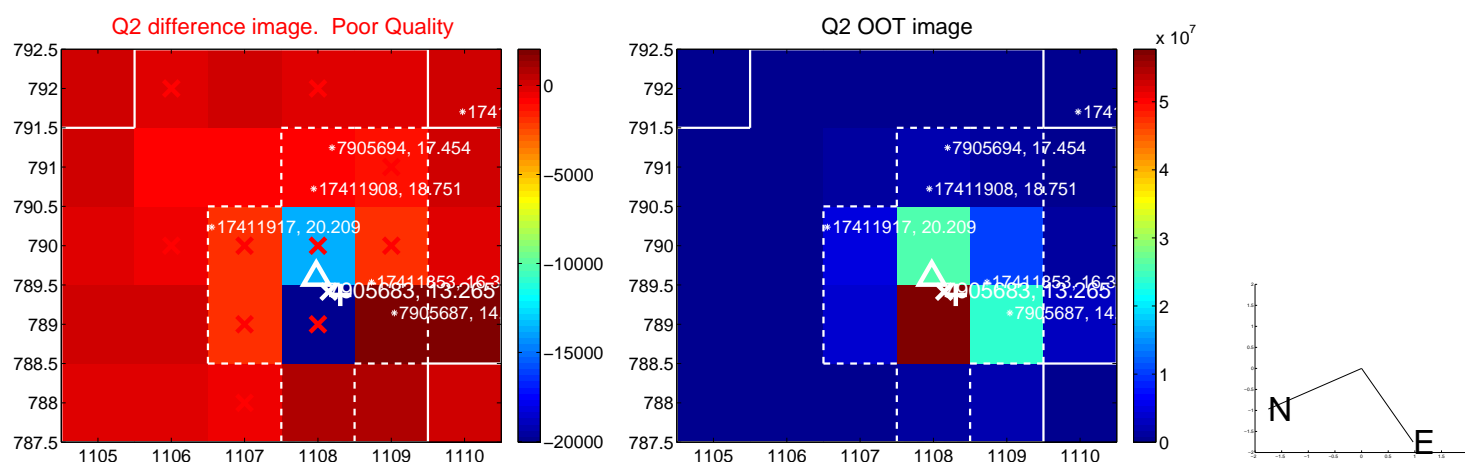
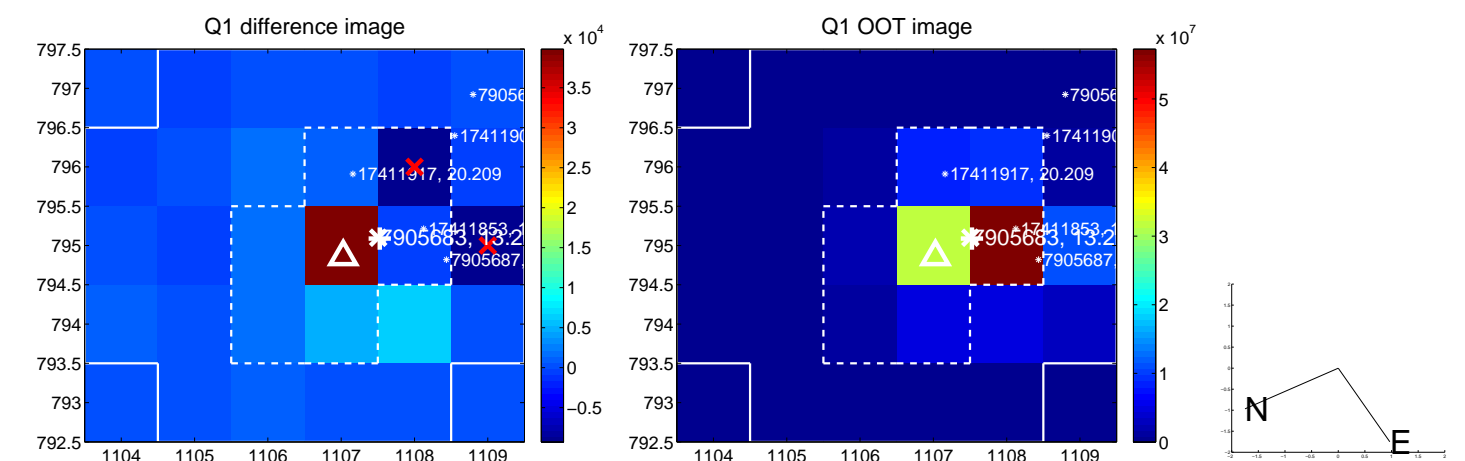


offset from photometric centroids

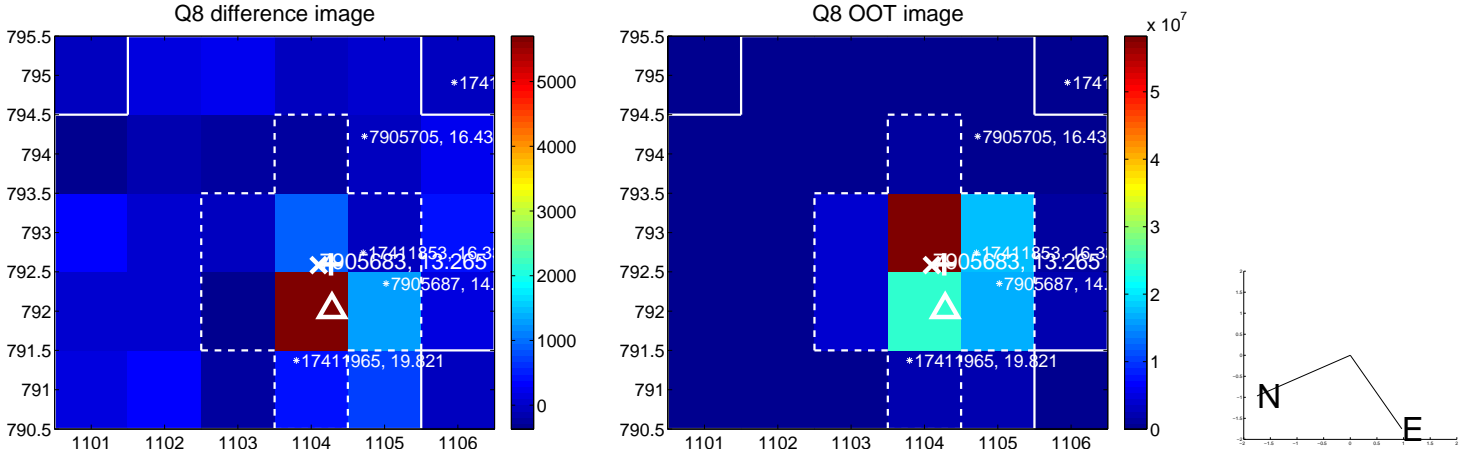
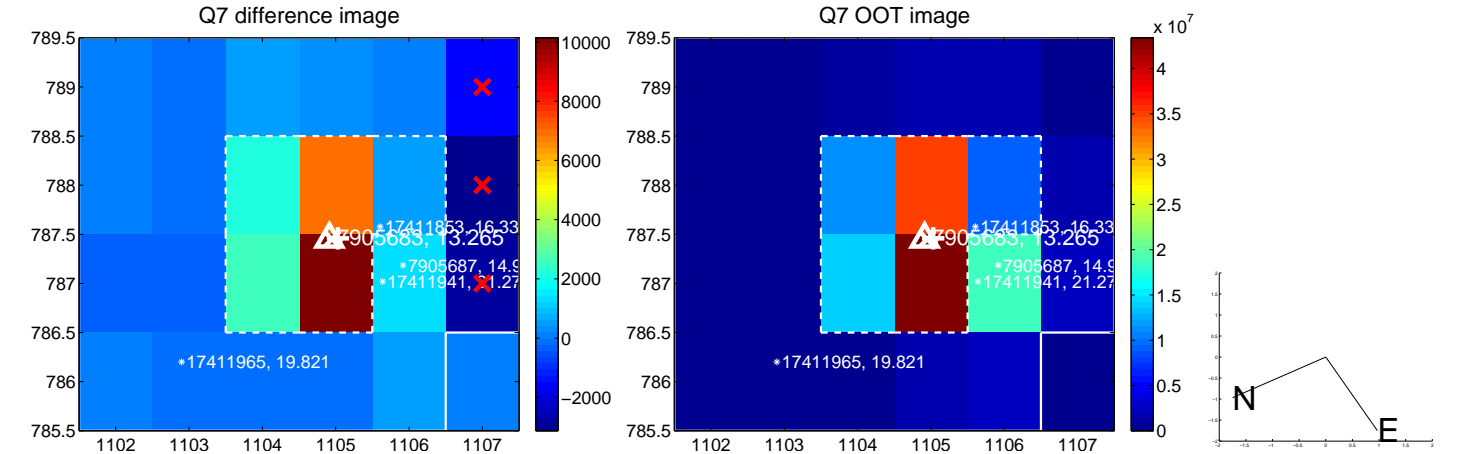
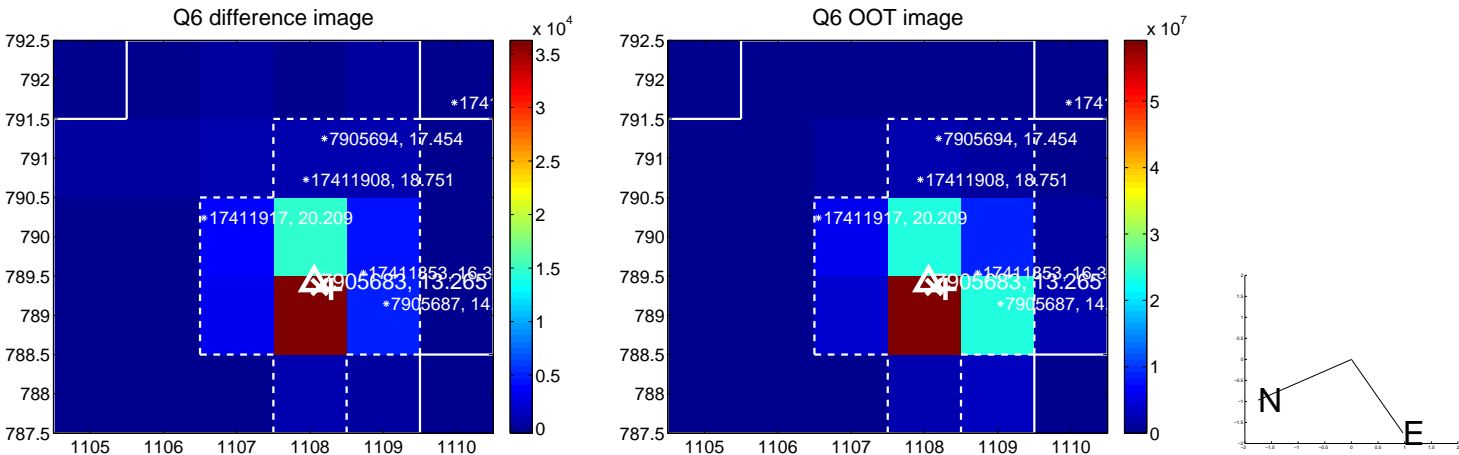
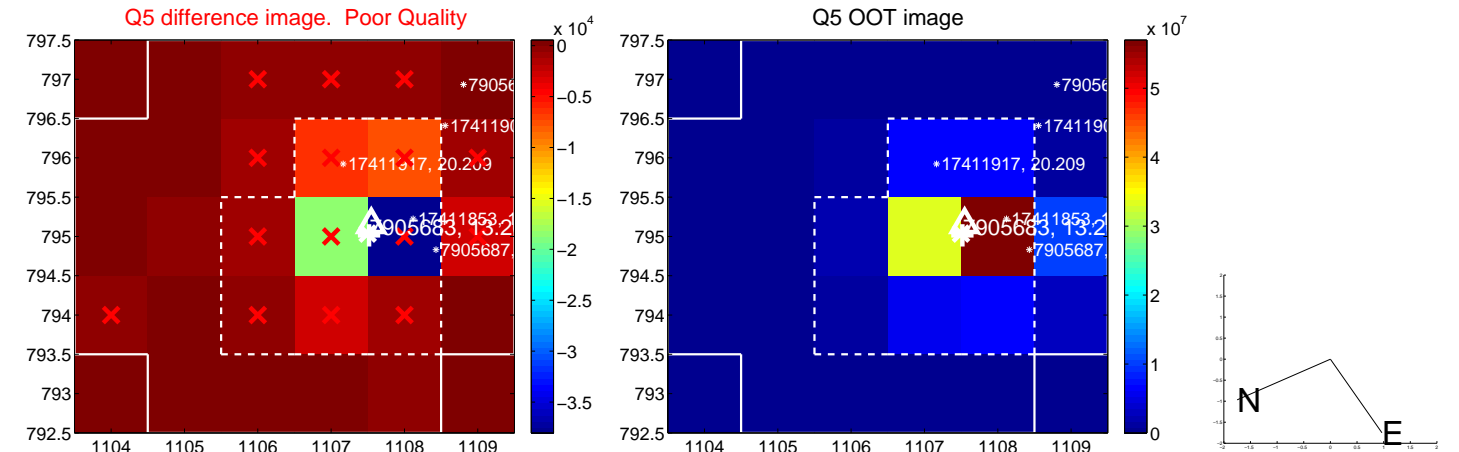


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

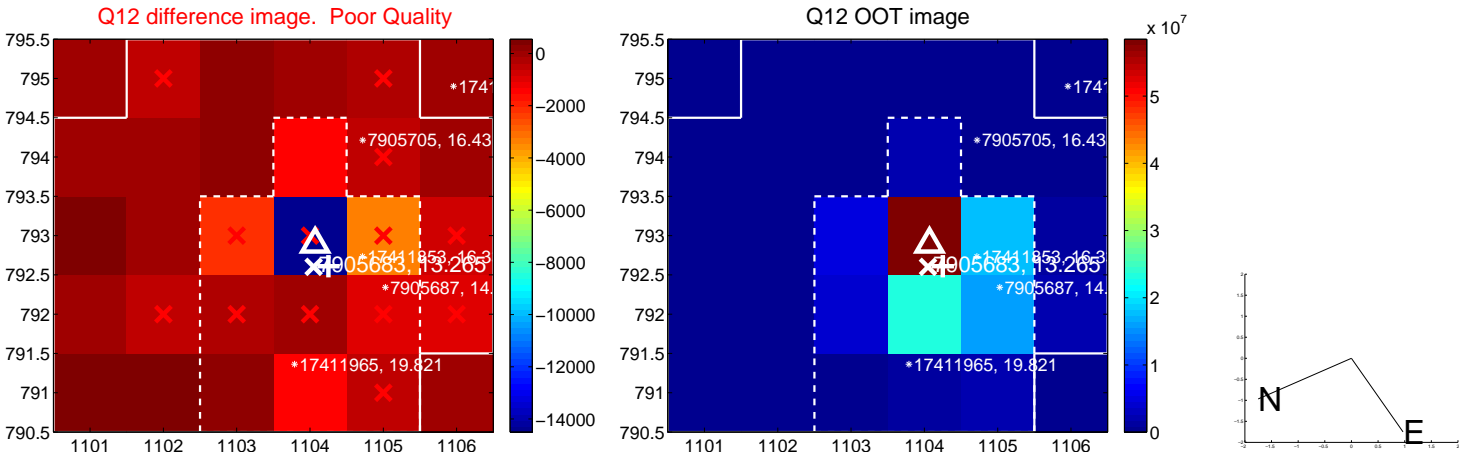
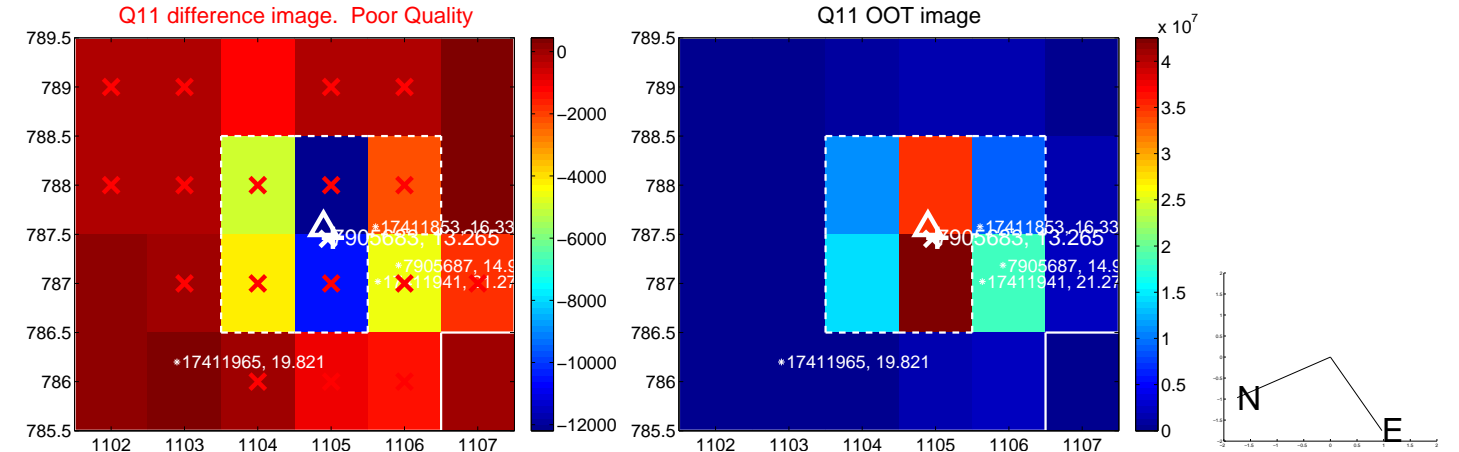
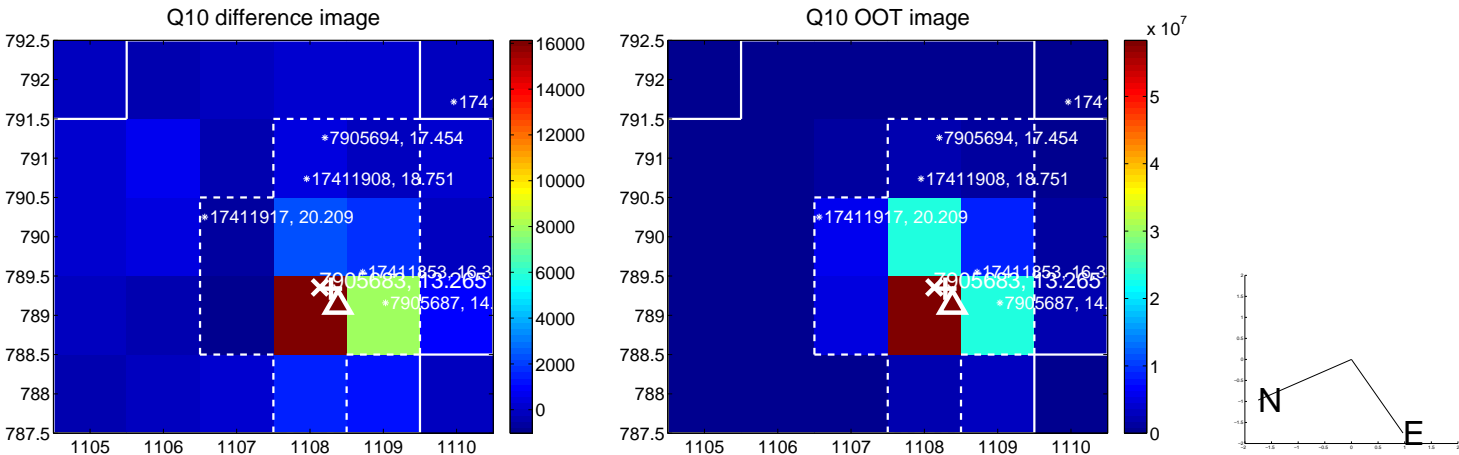
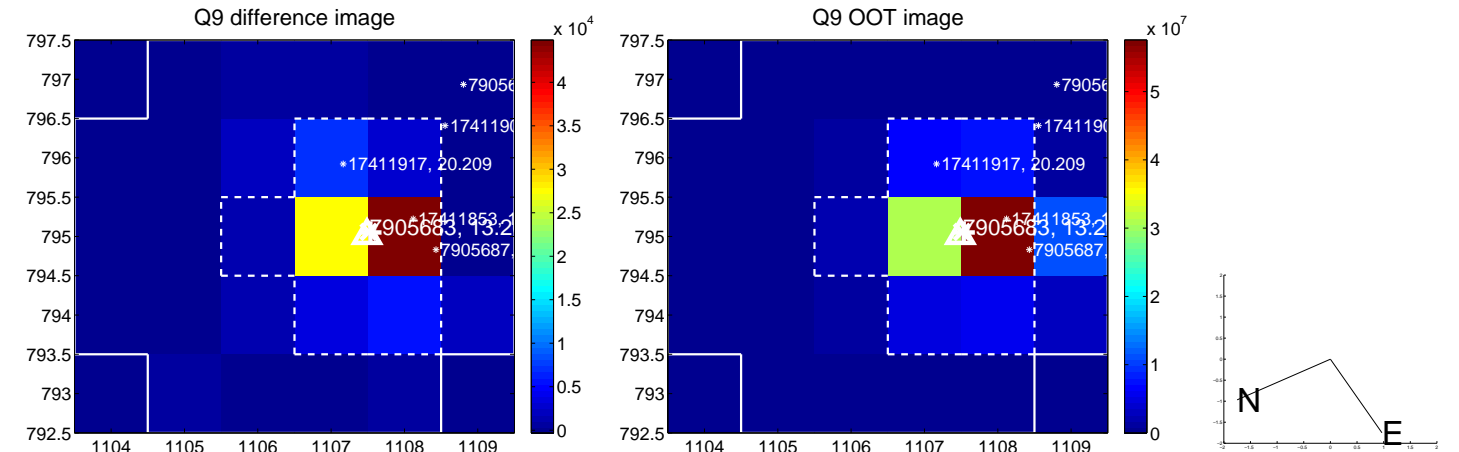
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



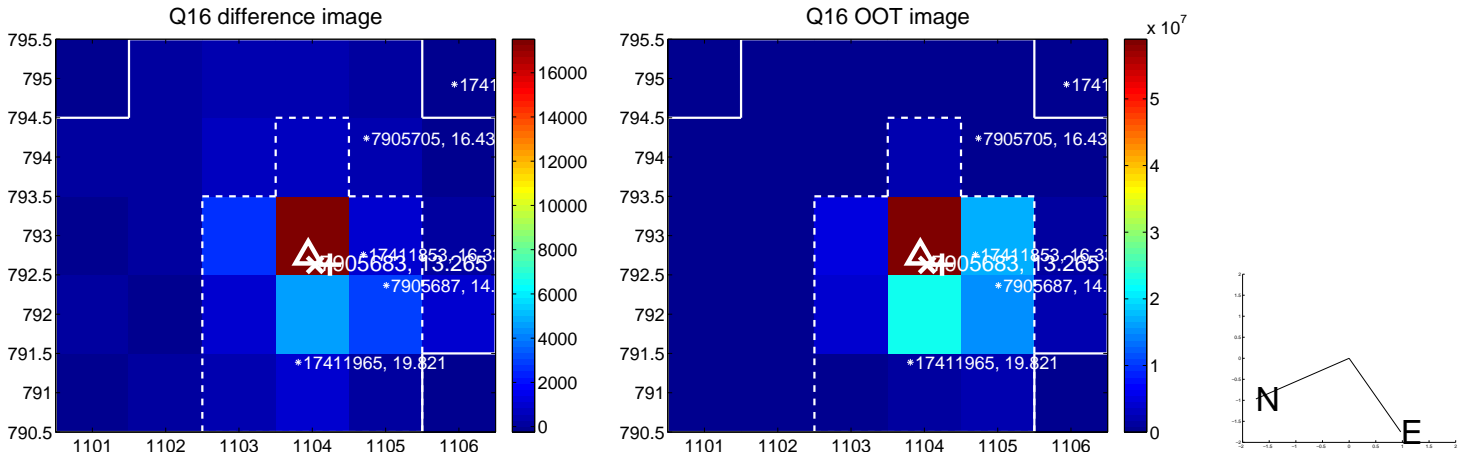
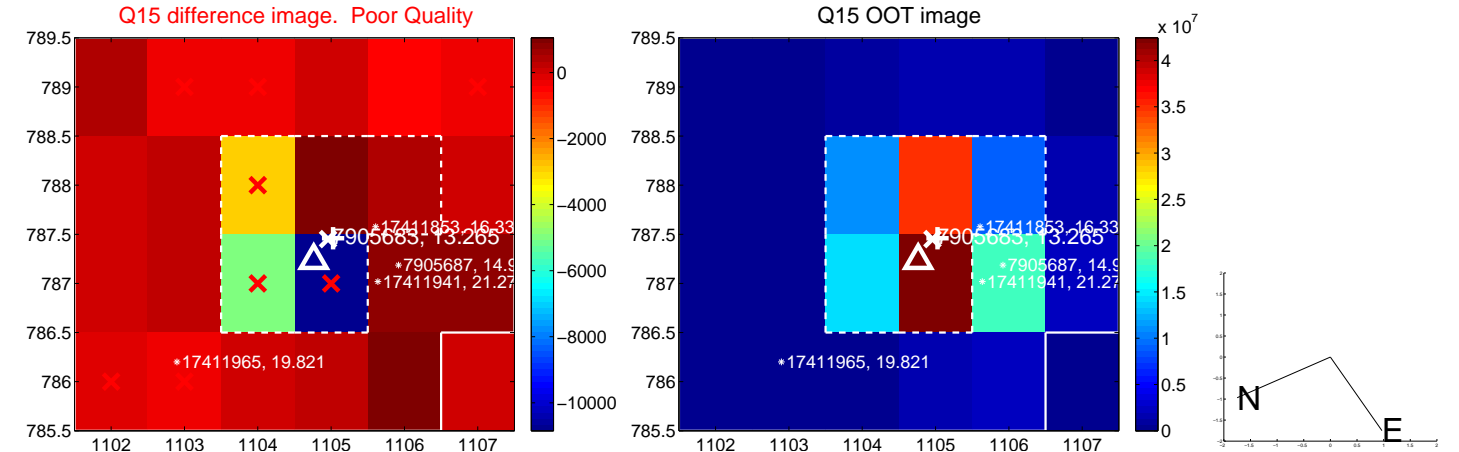
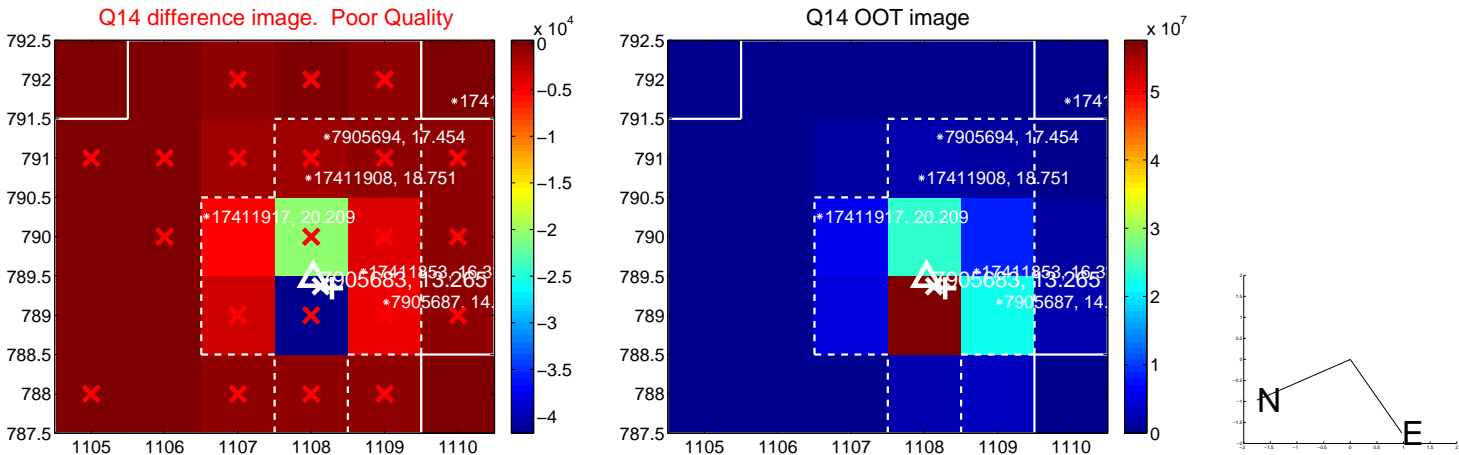
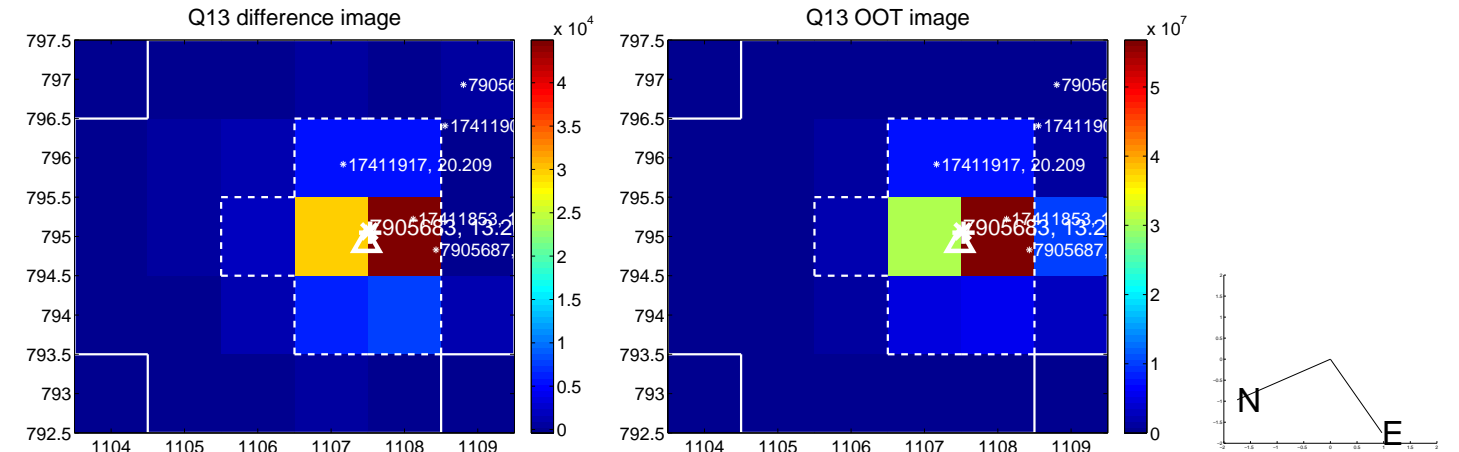
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

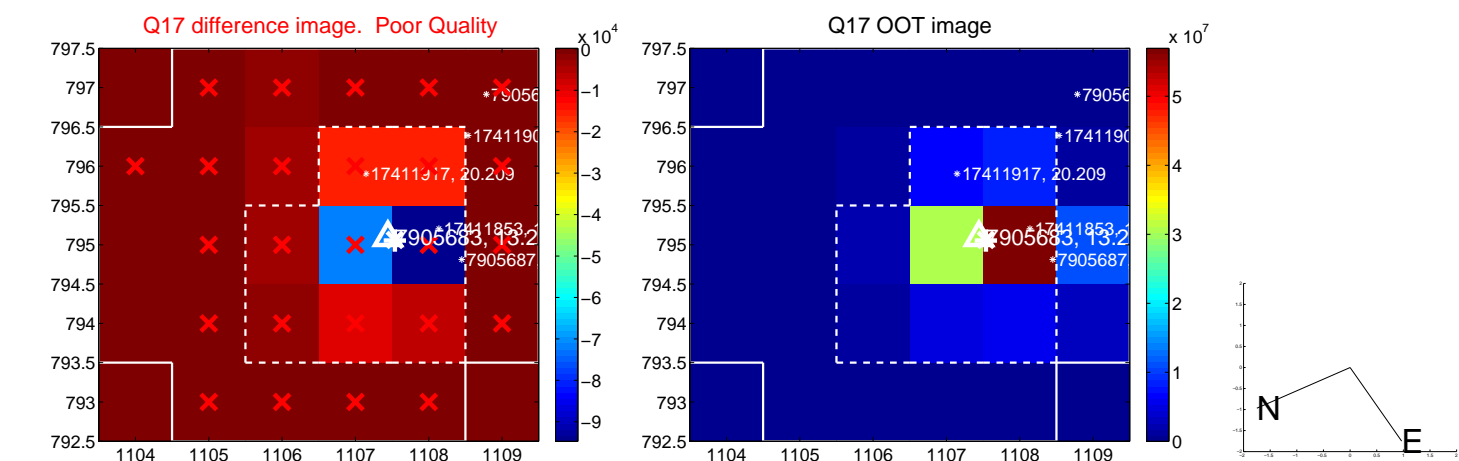


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

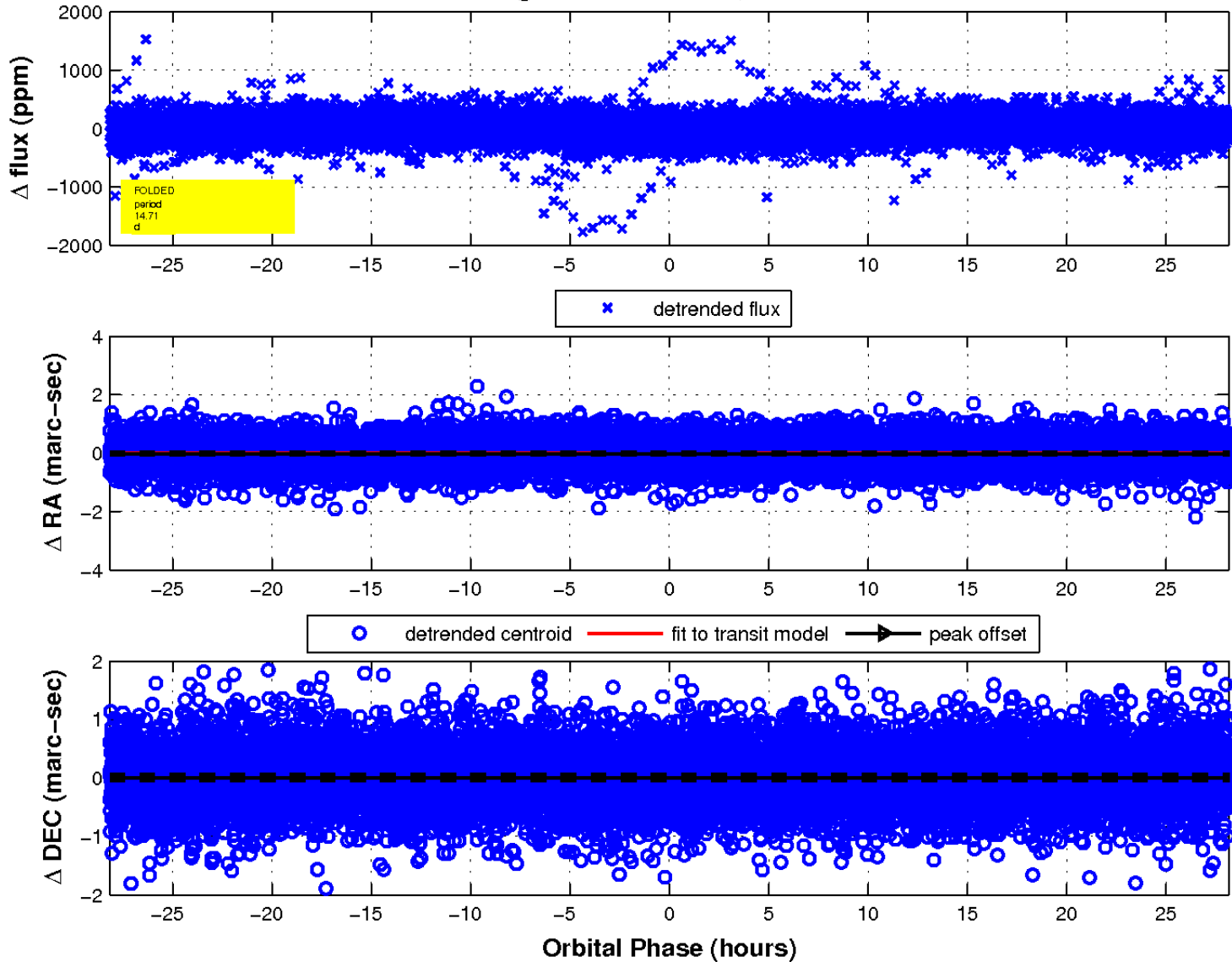




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

