

# KIC 007907423

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007907423-01	OBS	0899.01	7.113734	131.640604	798.1	2.292	35.8	40.0	0.41	3561	1.33	8.01
007907423-02	OBS	0899.02	3.306534	134.375164	502.8	1.984	30.5	35.1	0.41	3561	1.10	22.25
007907423-03	OBS	0899.03	15.368373	132.026632	765.7	2.696	24.3	26.7	0.41	3561	1.36	2.87

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007907423-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
007907423-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
007907423-03	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

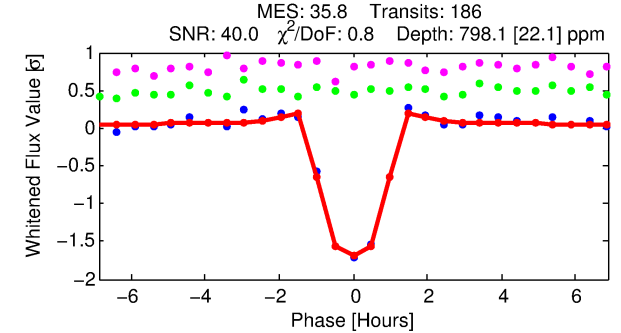
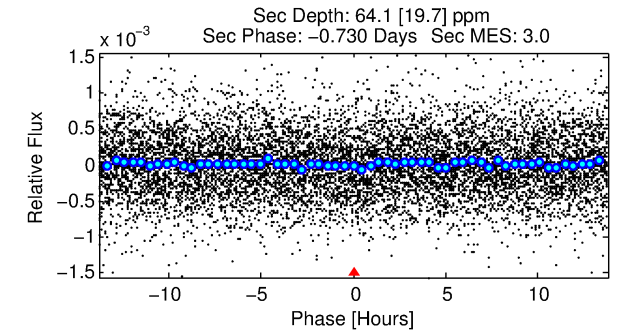
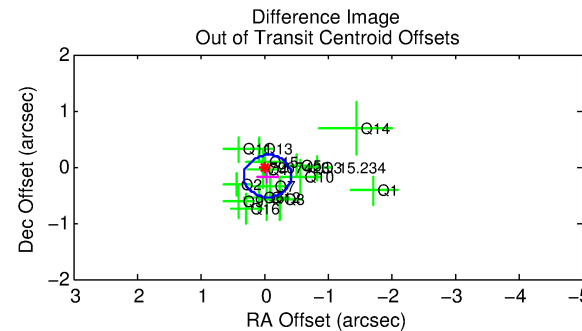
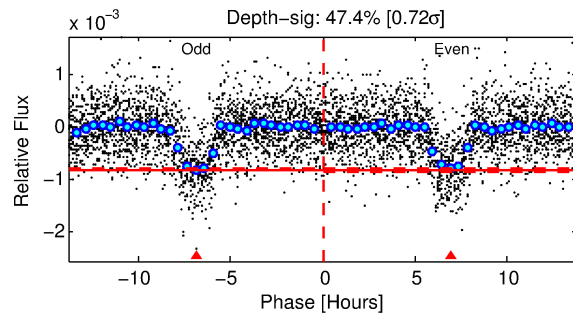
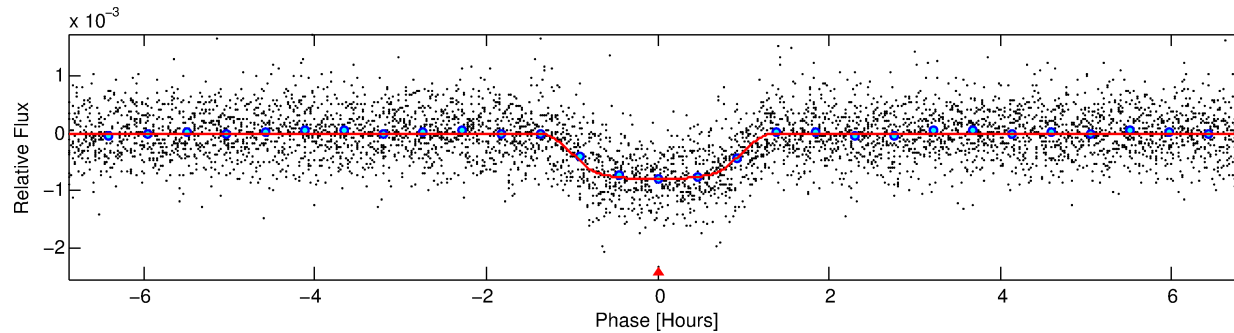
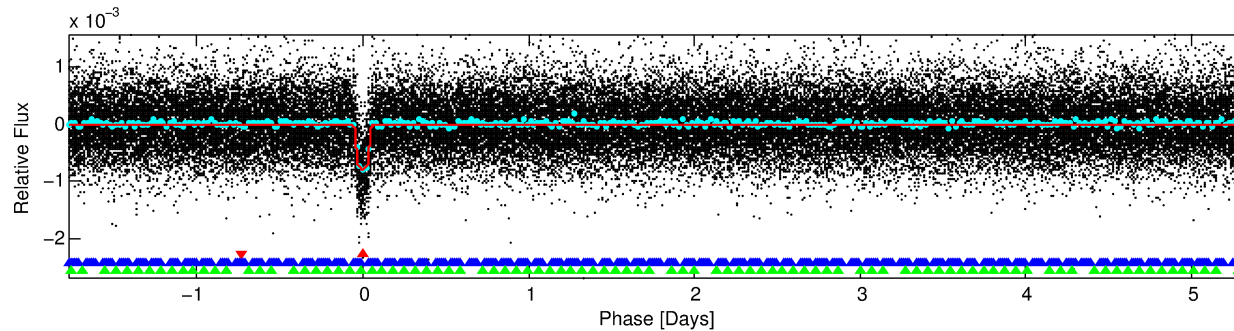
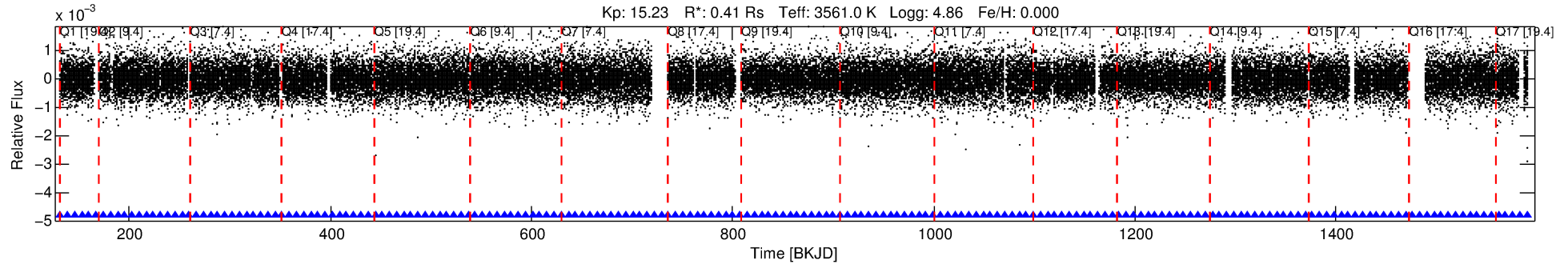
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007907423-01

No Significant Match Found

# DV One-Page Summary

KIC: 7907423 Candidate: 1 of 3 Period: 7.114 d  
KOI: K00899.01 Name: Kepler-249c Corr: 0.969



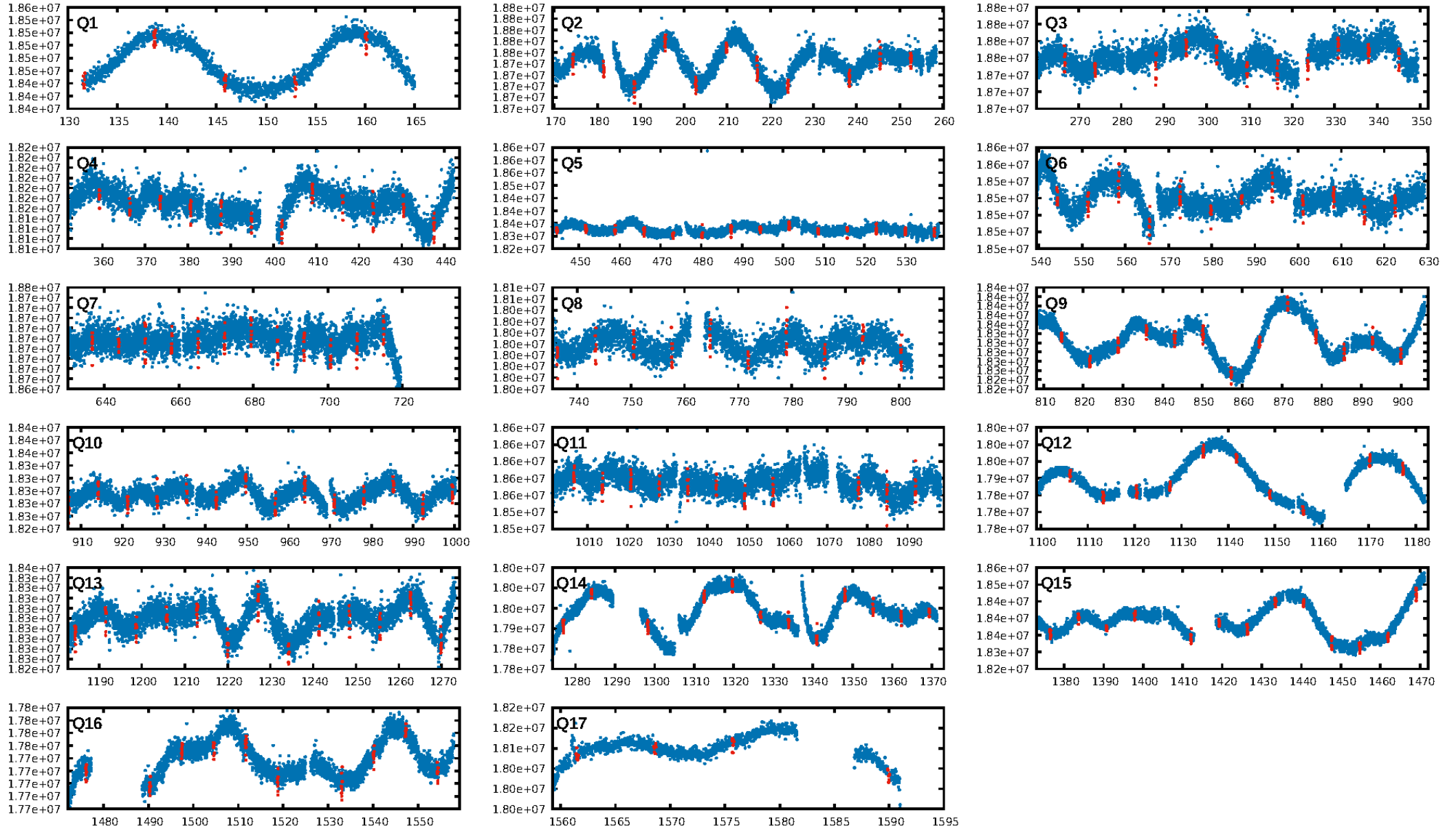
## DV Fit Results:

Period = 7.11373 [0.00001] d  
Epoch = 131.6406 [0.0011] BKJD  
Rp/R\* = 0.0297 [0.0038]  
a/R\* = 13.68 [7.36]  
b = 0.85 [0.17]  
Seff = 8.01 [1.31]  
Teq = 429 [17] K  
Rp = 1.33 [0.26] Re  
a = 0.0551 [0.0058] AU  
Ag = 60.38 [25.41] [2.34 $\sigma$ ]  
Teffp = 1849 [191] K [7.41 $\sigma$ ]

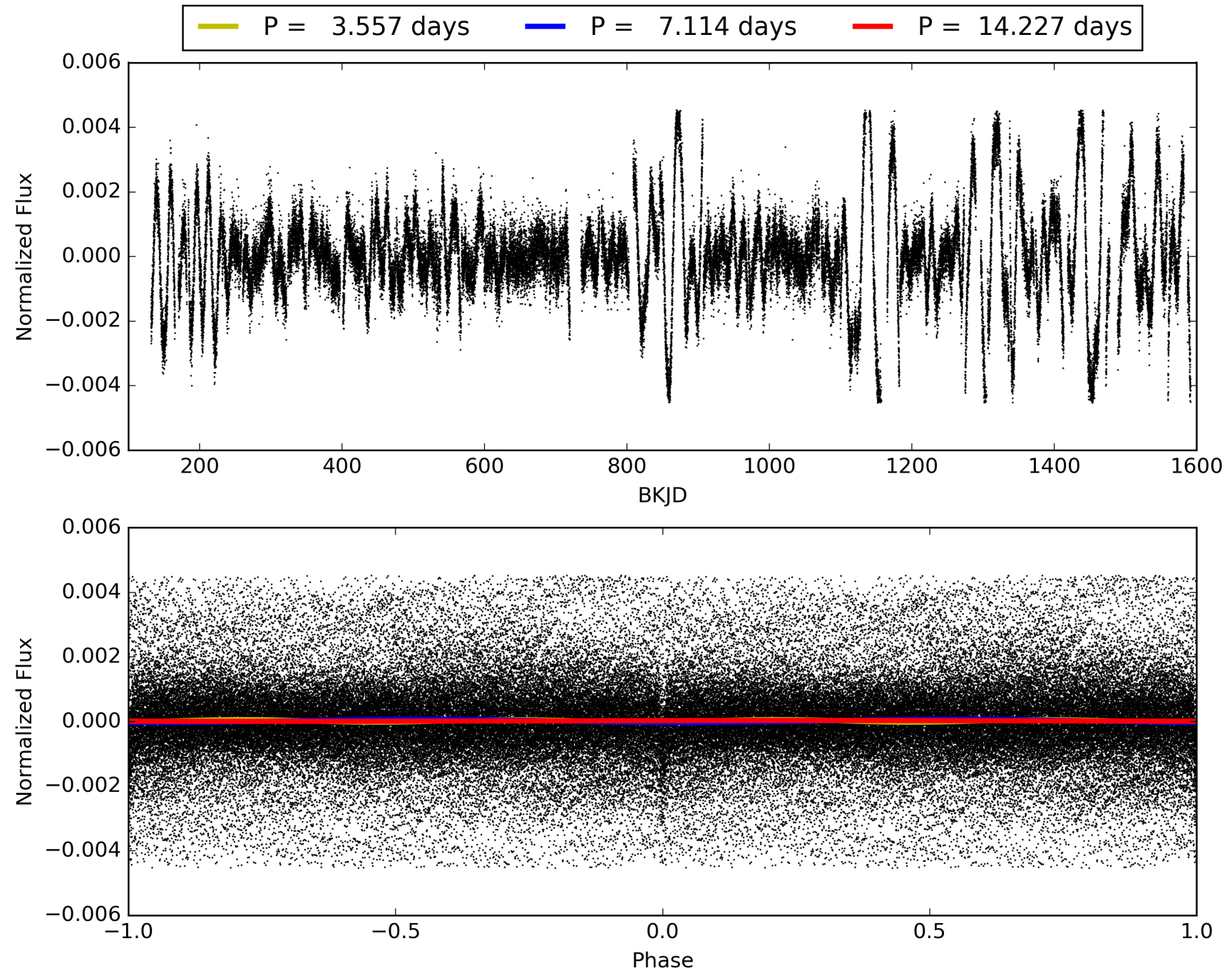
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [30.14 $\sigma$ ]  
LongPeriod-sig: 100.0% [55.99 $\sigma$ ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.33e-269  
RollingBand-fgt: 1.00 [177/177]  
GhostDiagnostic-chr: 4.489  
Centroid-sig: 0.0%  
Centroid-so: 1.036 arcsec [3.47 $\sigma$ ]  
OotOffset-rm: 0.179 arcsec [1.43 $\sigma$ ]  
KicOffset-rm: 0.528 arcsec [2.93 $\sigma$ ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 1.00 [16/16]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007907423-01, PDC Light Curves



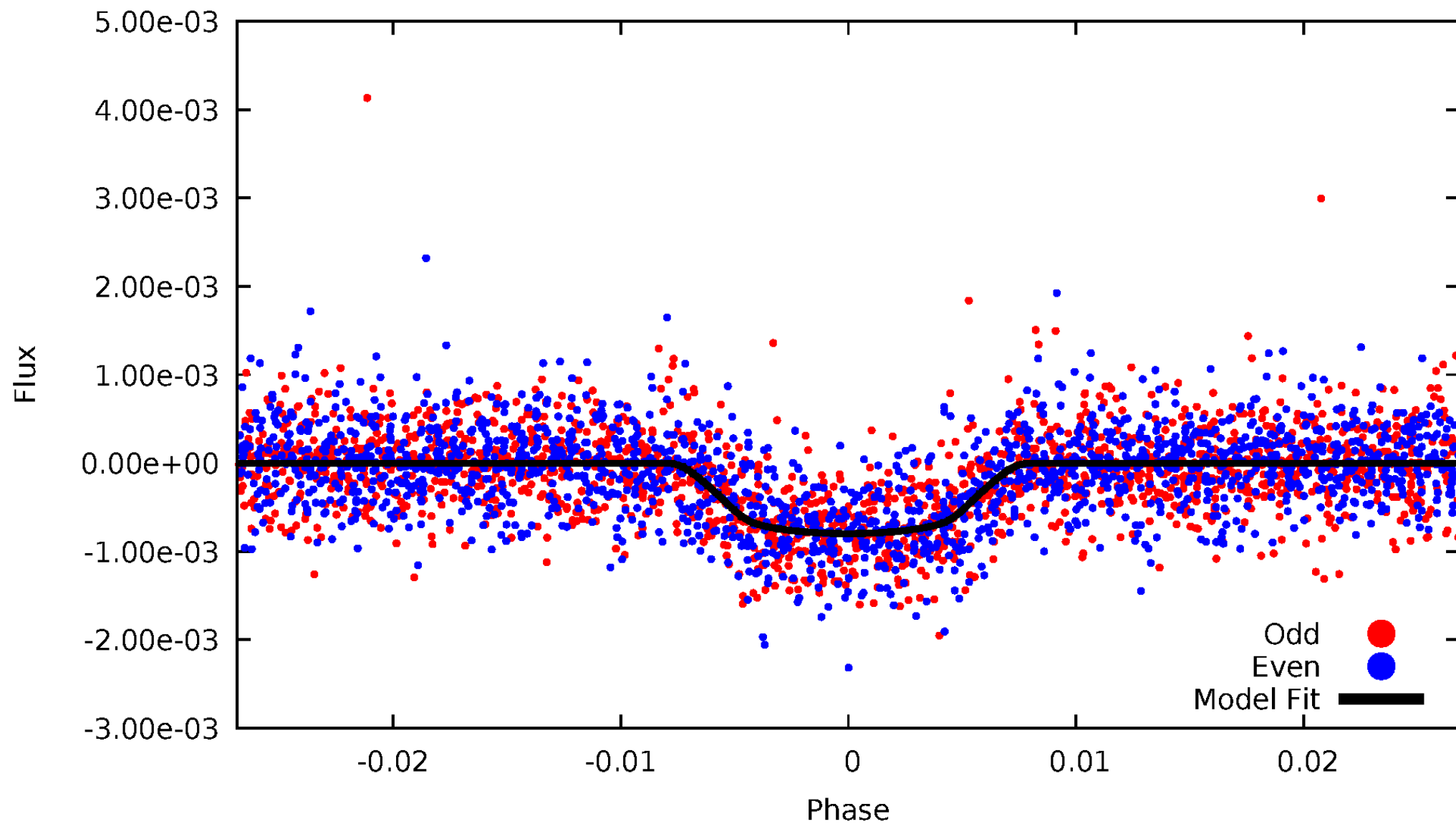
TCE 007907423-01





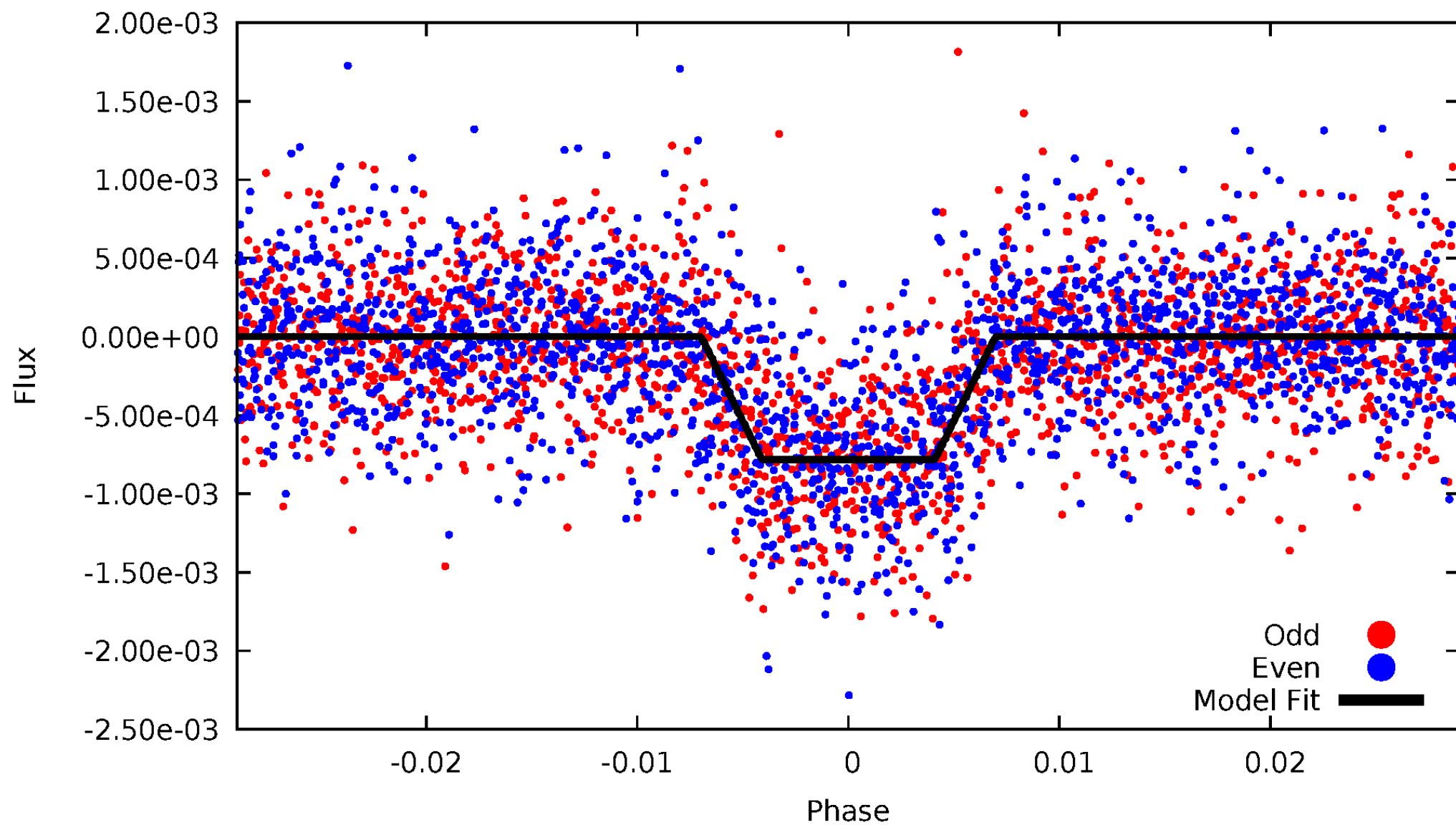
# DV Odd/Even

TCE 007907423-01



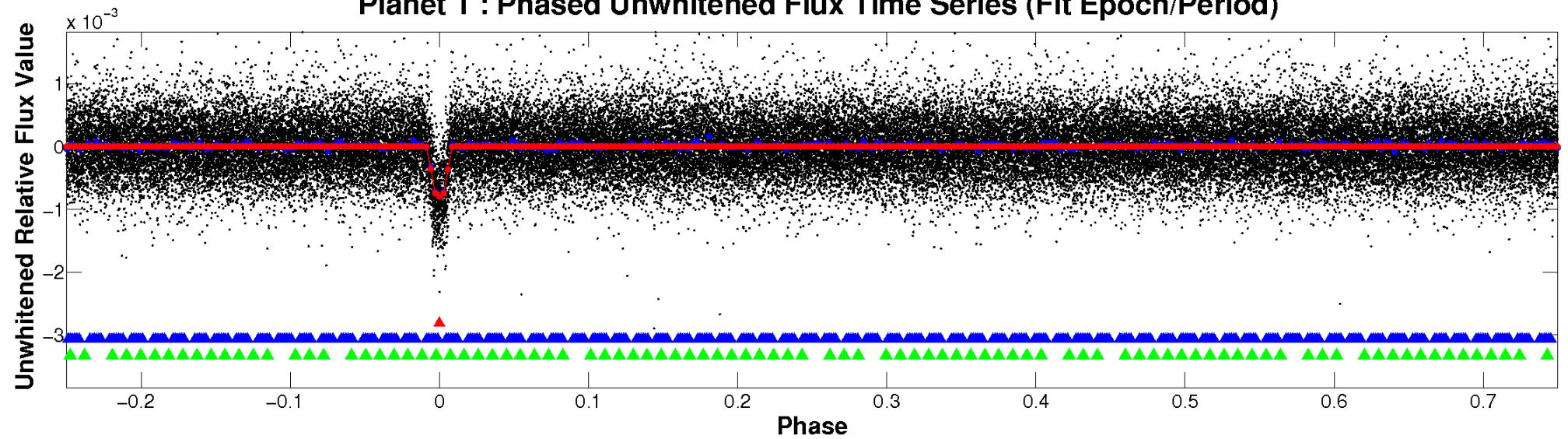
# ALT Odd/Even

TCE 007907423-01

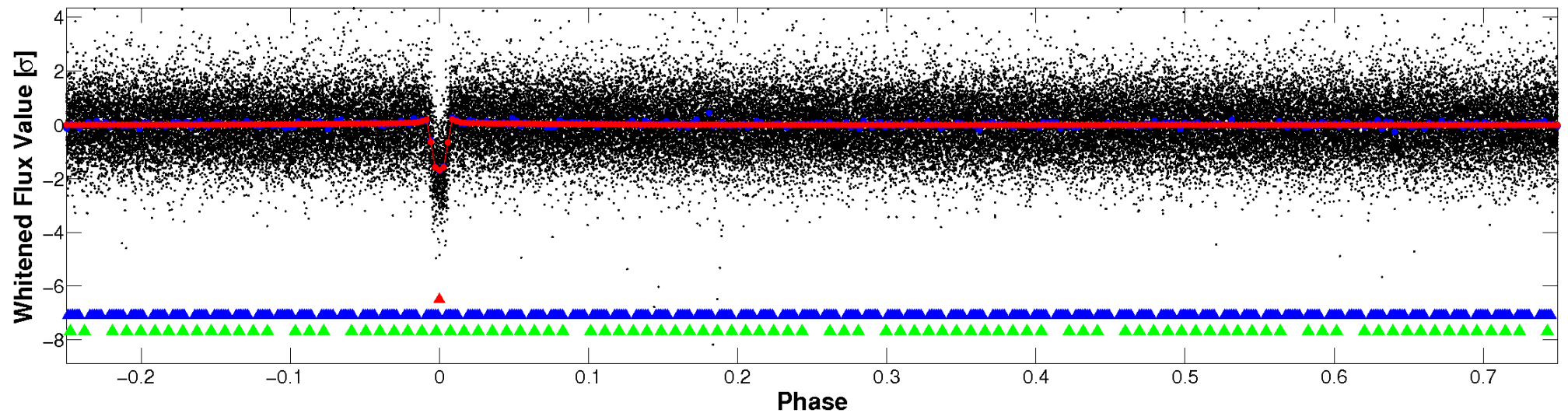


# Non-Whitened Vs. Whitened Light Curve

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

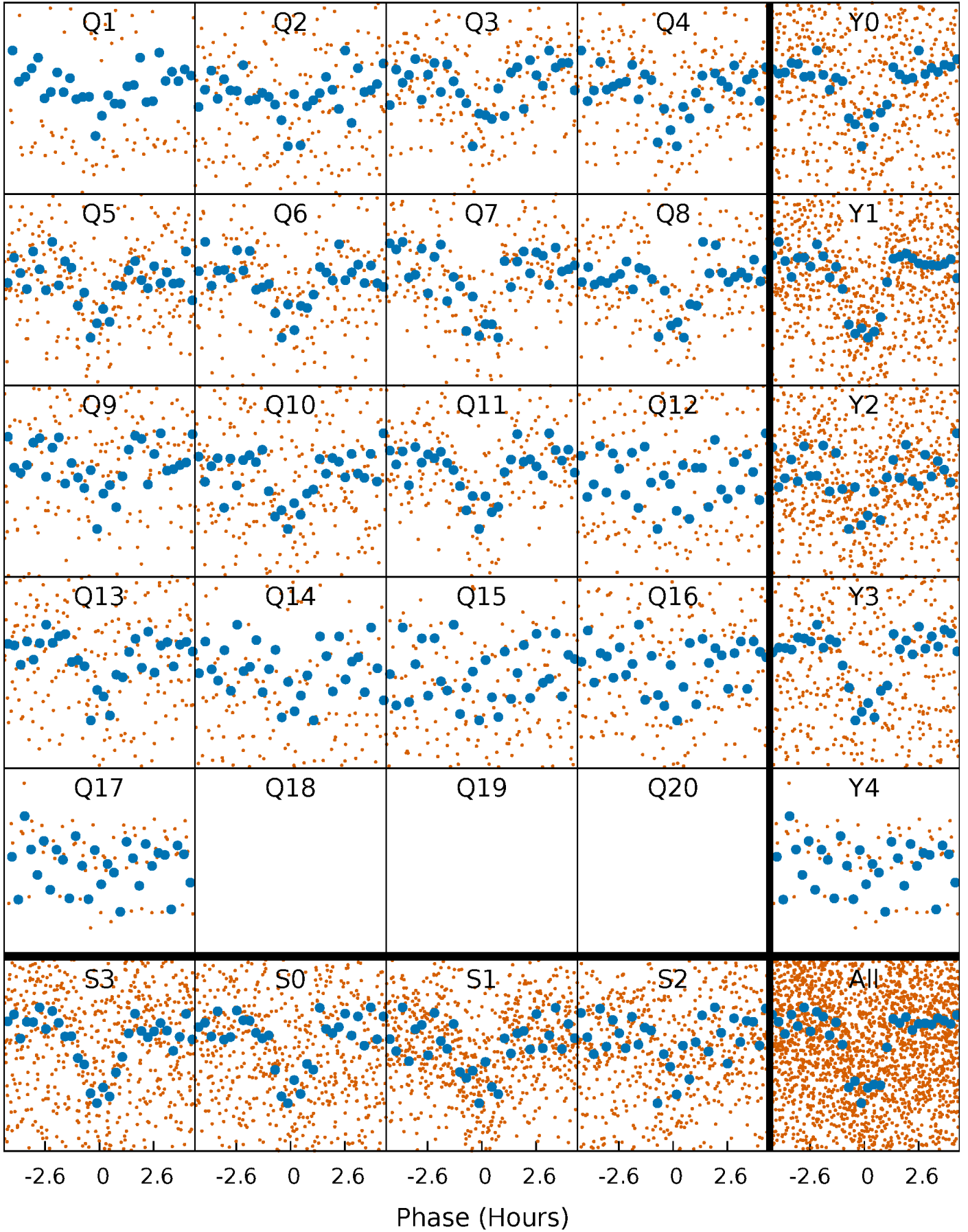


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

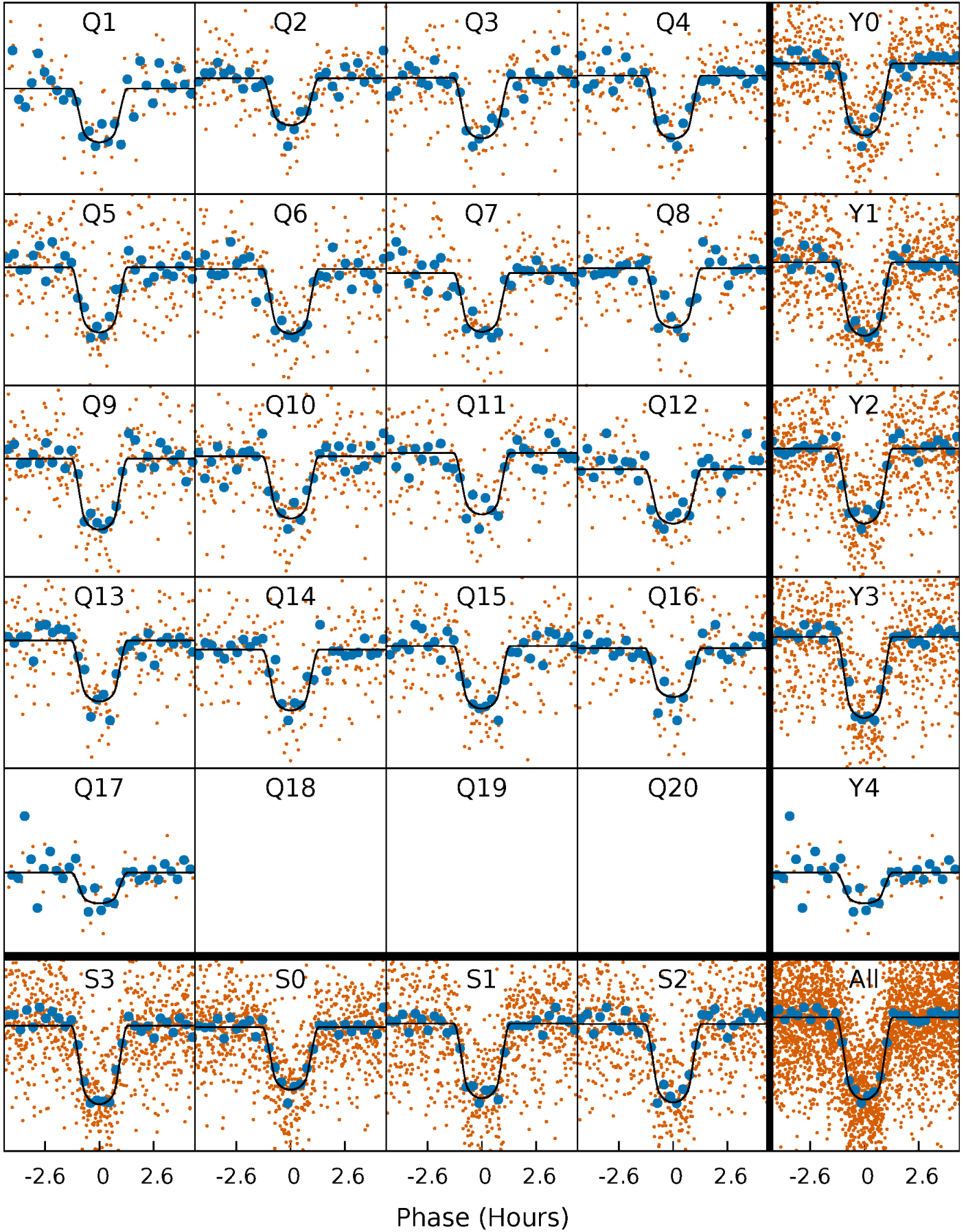
TCE 007907423-01   P= 7.113734 Days    $T_0=131.640604$  (BKJD)





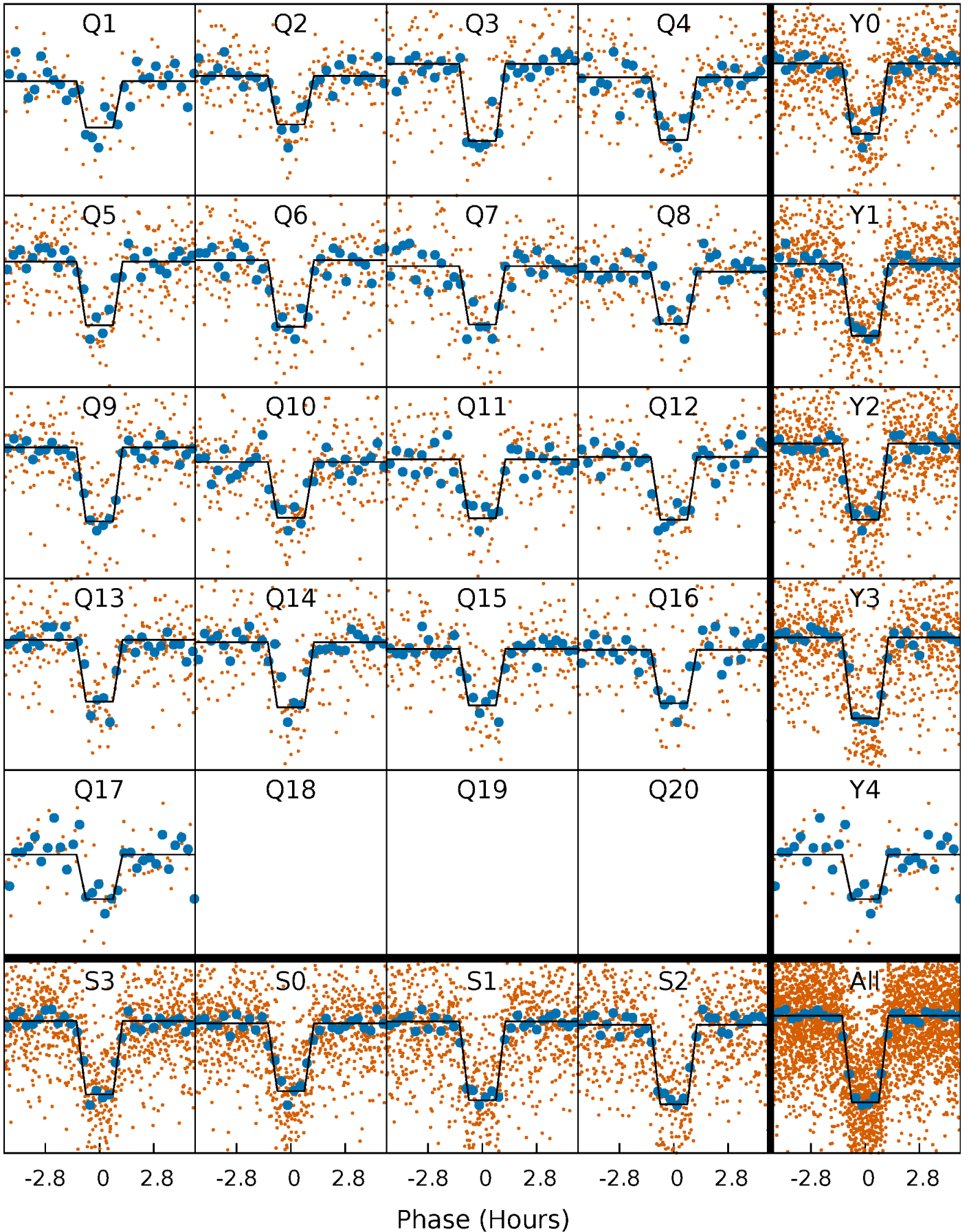
# DV Quarter-Phased Transit Curves

TCE 007907423-01   P= 7.113734 Days    $T_0=131.640604$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

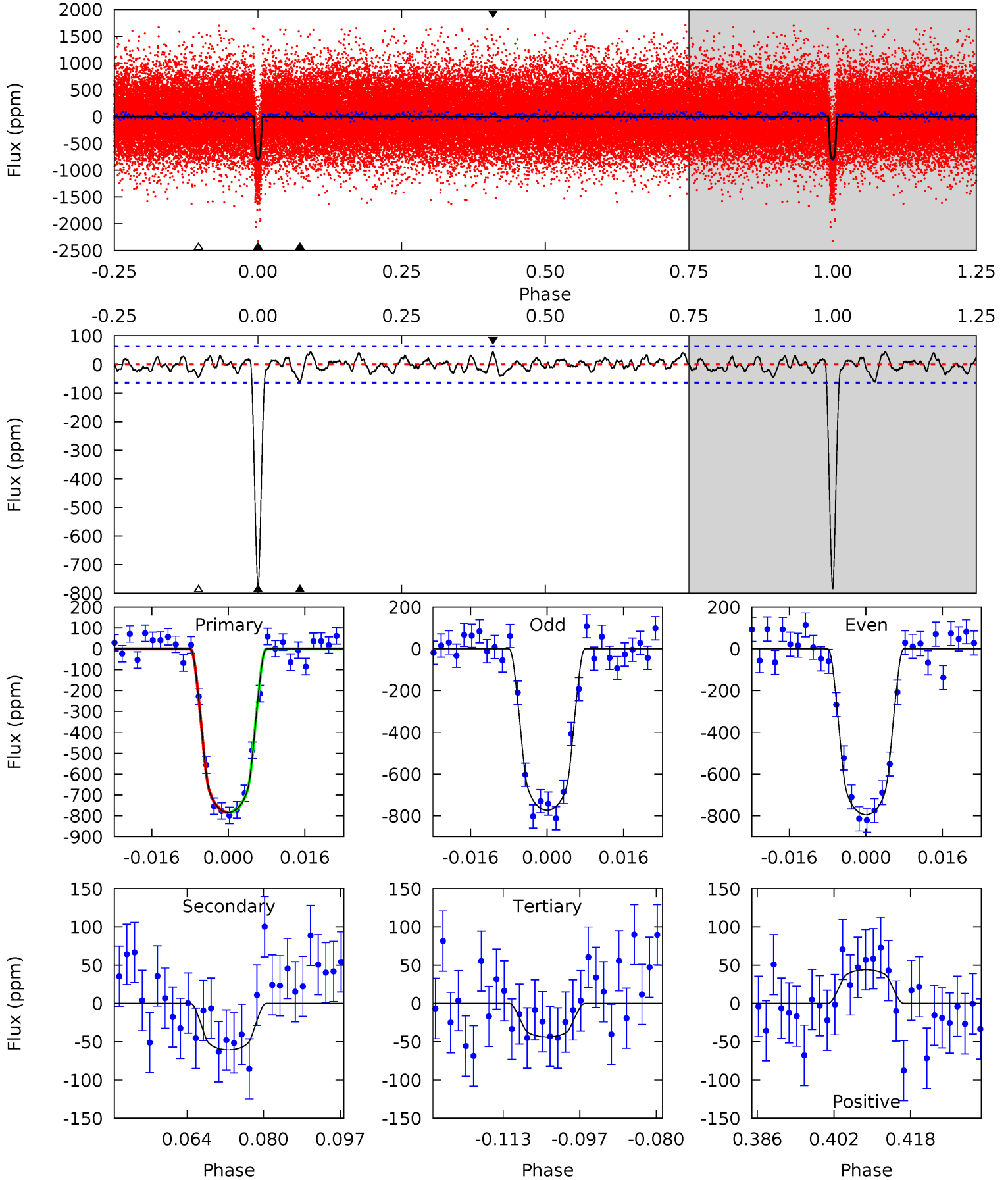
TCE 007907423-01 P= 7.113724 Days  $T_0=131.641727$  (BKJD)



# DV Model-Shift Uniqueness Test

007907423-01, P = 7.113734 Days, E = 124.526870 Days

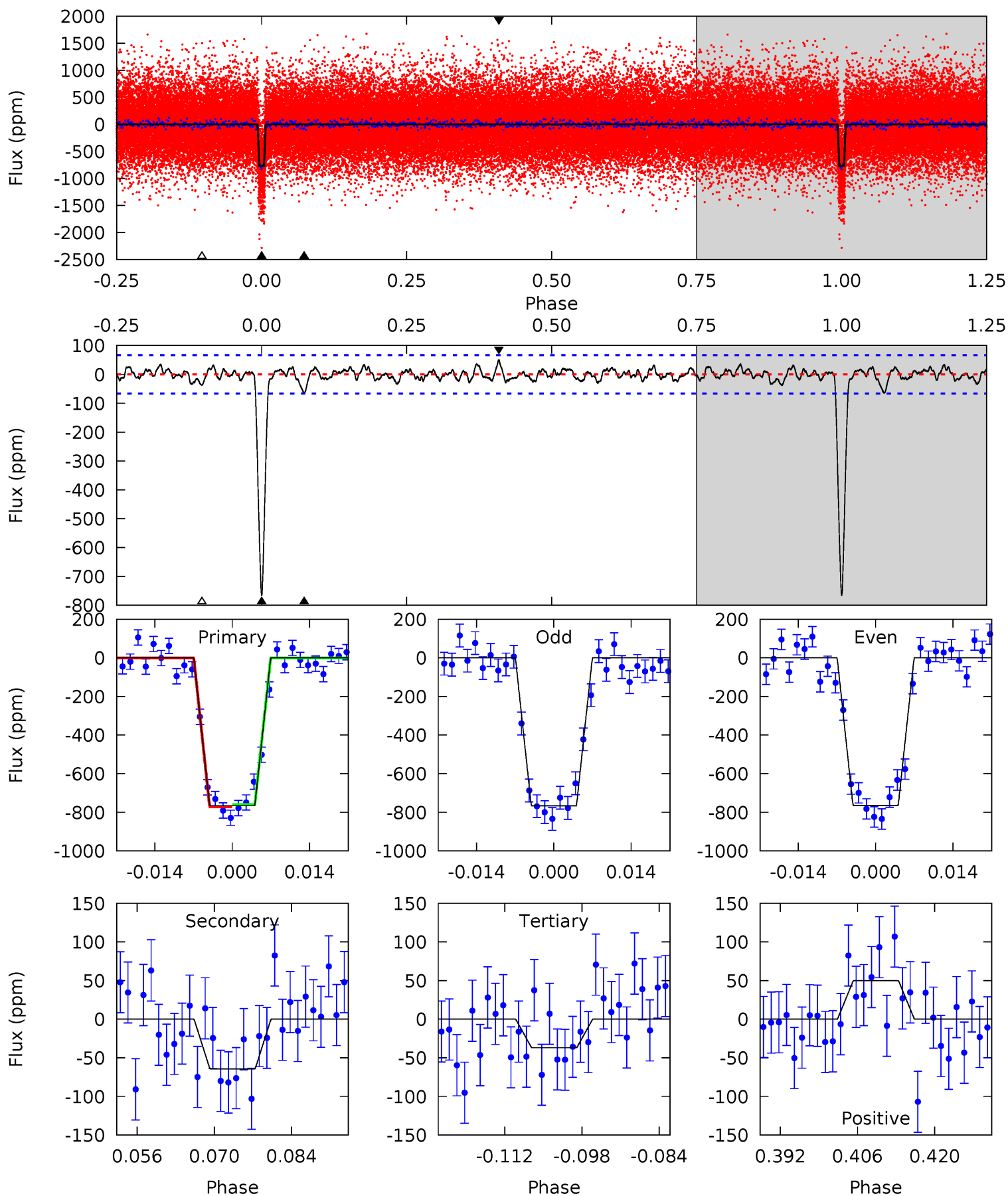
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
60.9	4.71	3.39	3.41	4.93	2.41	1.30	57.5	57.5	1.32	1.30	0.84	0.98	0.05	0.02



# Alt Model-Shift Uniqueness Test

007907423-01, P = 7.113724 Days, E = 124.528003 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
57.2	4.82	2.76	3.73	4.96	2.46	1.11	54.4	53.5	2.06	1.08	0.04	0.98	0.06	0.42





### Stellar Parameters For KIC 007907423

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$3561^{+71}_{-89}$	$4.855^{+0.055}_{-0.055}$	$0.000^{+0.150}_{-0.150}$	$0.411^{+0.045}_{-0.060}$	$0.440^{+0.041}_{-0.076}$	$8.950^{+3.027}_{-1.898}$
	+2%/-2%	+1%/-1%	+inf%/-inf%	+11%/-15%	+9%/-17%	+34%/-21%
Source	SPE70	SPE60	SPE70	DSEP		

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

### Secondary Eclipse Parameters for KIC 007907423-01 / KOI 0899.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-61 \pm 13$	$1.32^{+0.19}_{-0.19}$	$599^{+19}_{-22}$	$2447^{+112}_{-103}$	$56^{+24}_{-17}$
Alt.	$-65 \pm 13$	$1.26^{+0.18}_{-0.20}$	$598^{+19}_{-21}$	$2501^{+123}_{-103}$	$68^{+28}_{-19}$

$T_{max}$  = 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

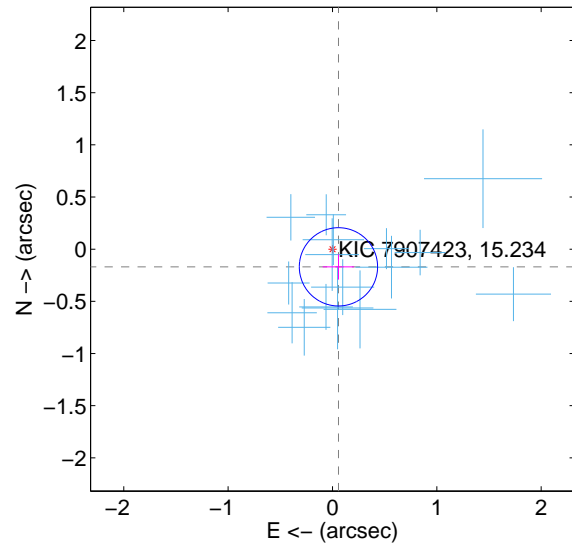
Supplemental centroid analysis for 007907423-01. Kepler magnitude: 15.23. Transit SNR 39.98

There are 16 quarters with good PRF difference image offsets

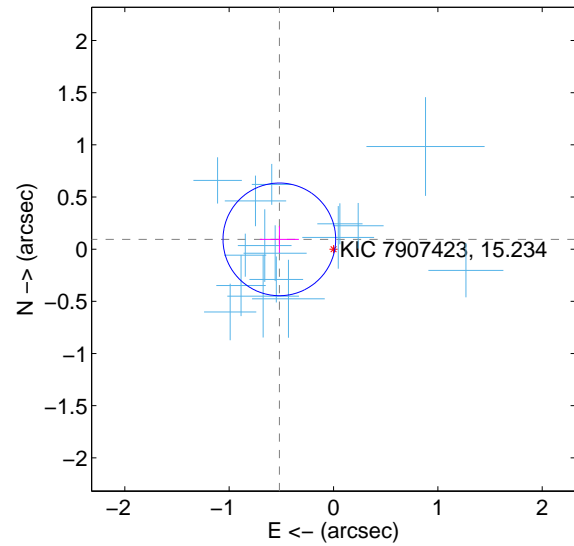
The direct PRF centroid is offset from the target star catalog position by about 0.73 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.179 \pm 0.125$	1.43	$-0.057 \pm 0.151$	$-0.169 \pm 0.122$
PRF-fit source offset from KIC position	$0.528 \pm 0.180$	2.93	$0.519 \pm 0.187$	$0.094 \pm 0.127$
photometric centroid source offset	$1.04 \pm 0.30$	3.47	$0.69 \pm 0.30$	$-0.78 \pm 0.30$

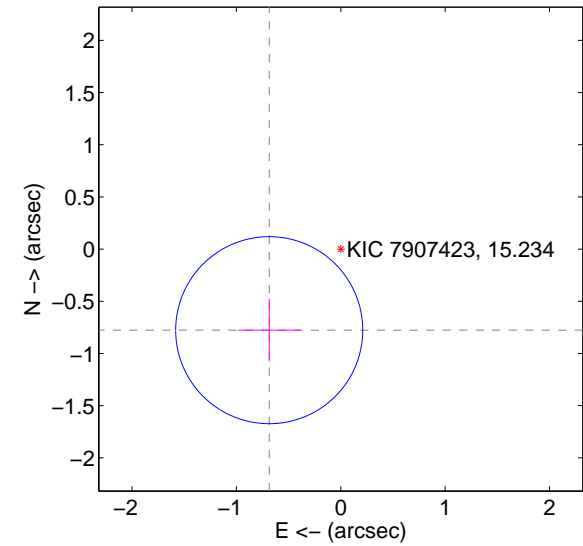
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

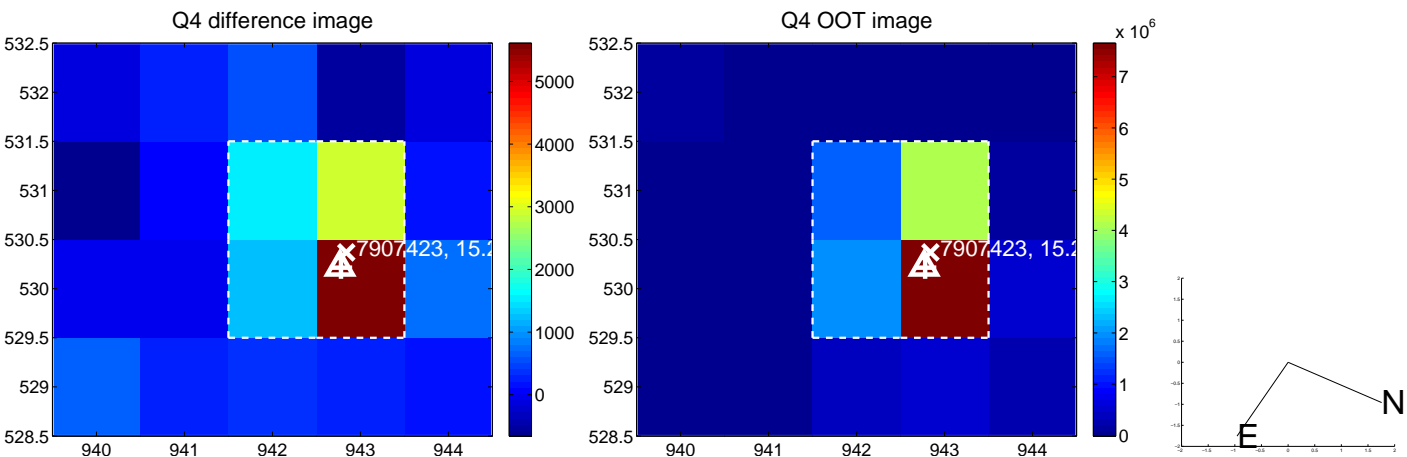
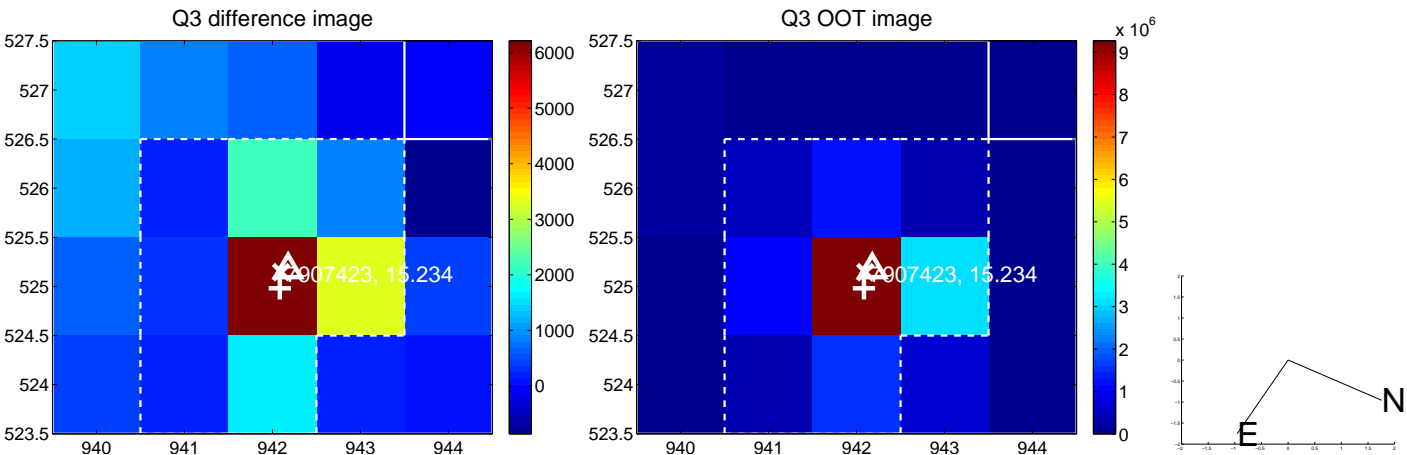
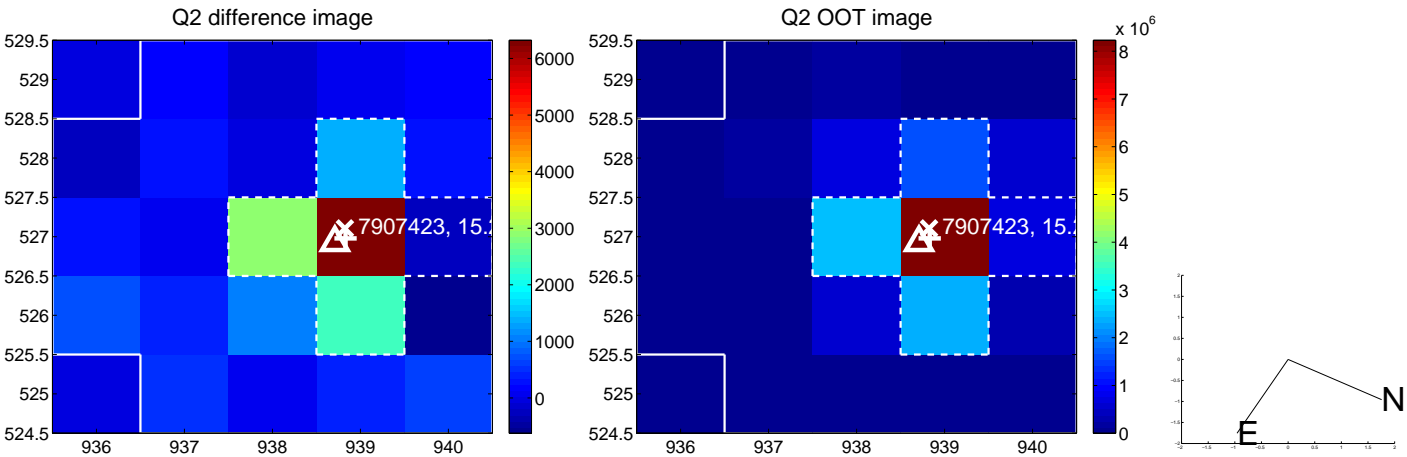
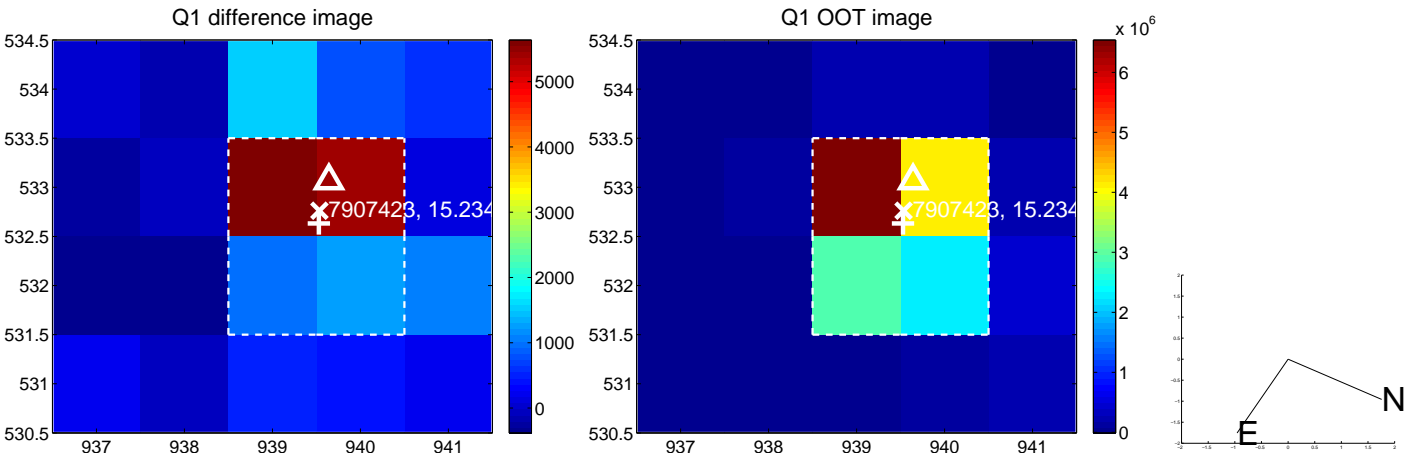


offset from photometric centroids

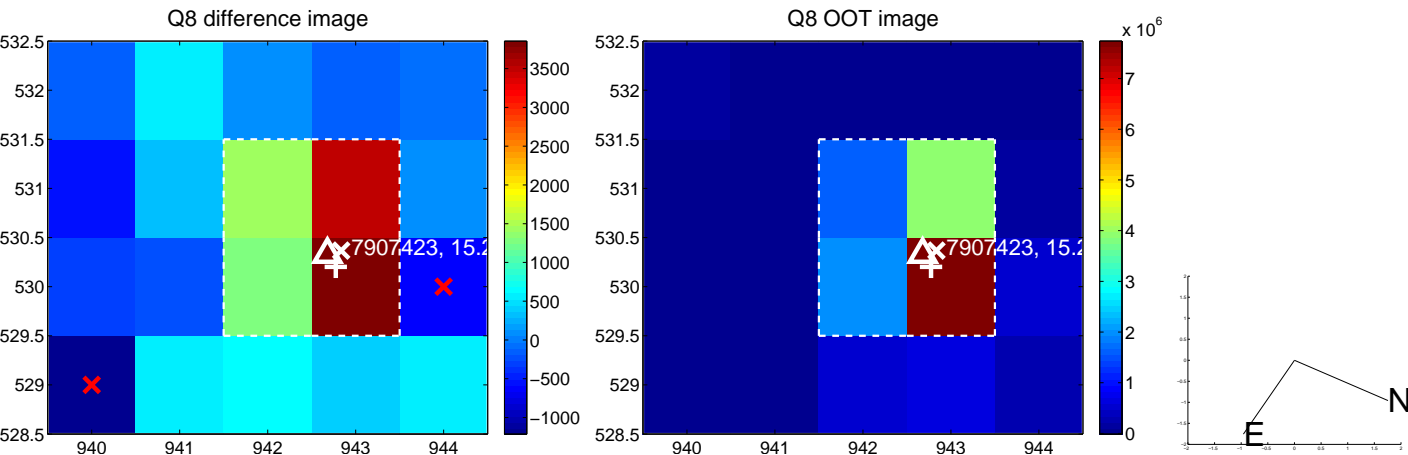
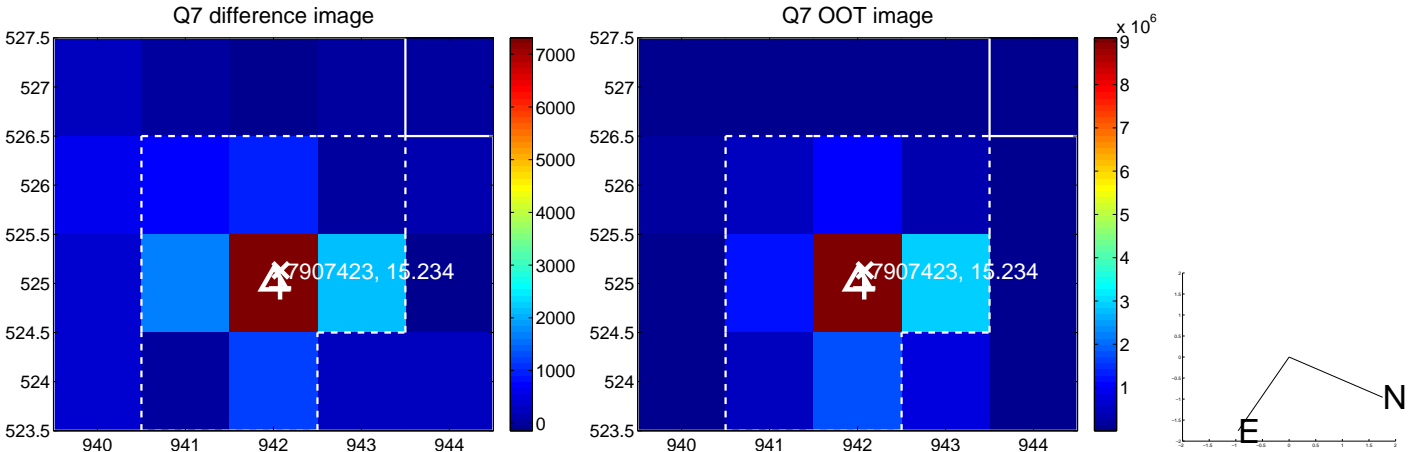
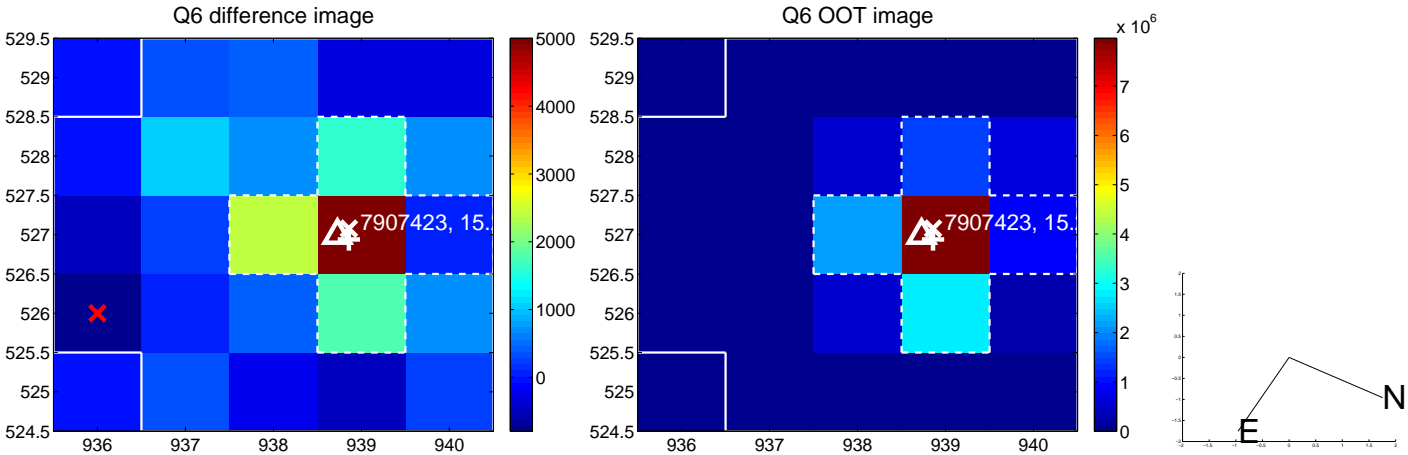
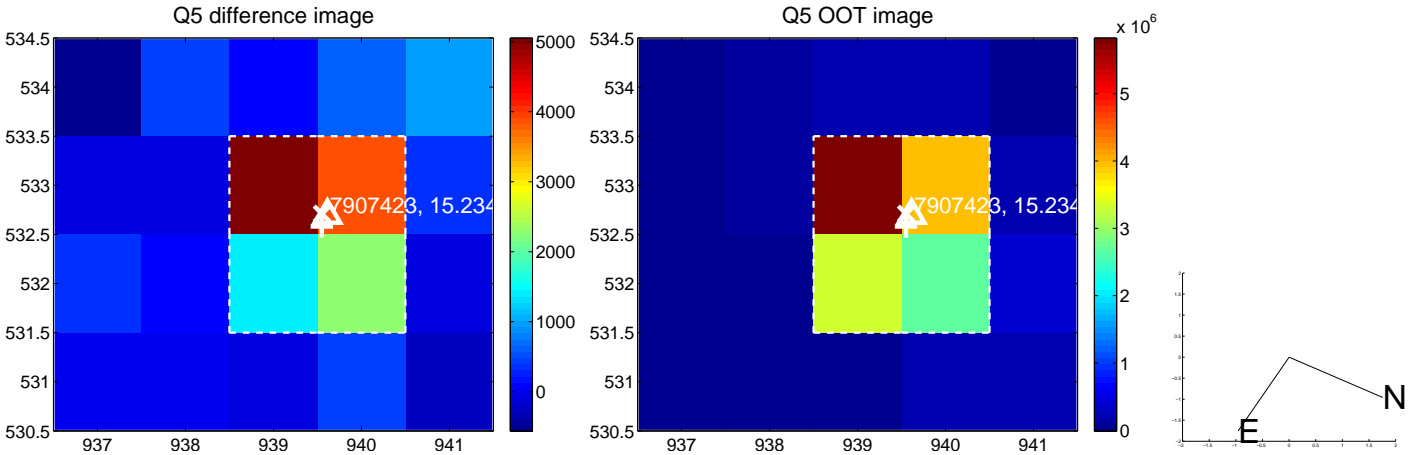


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

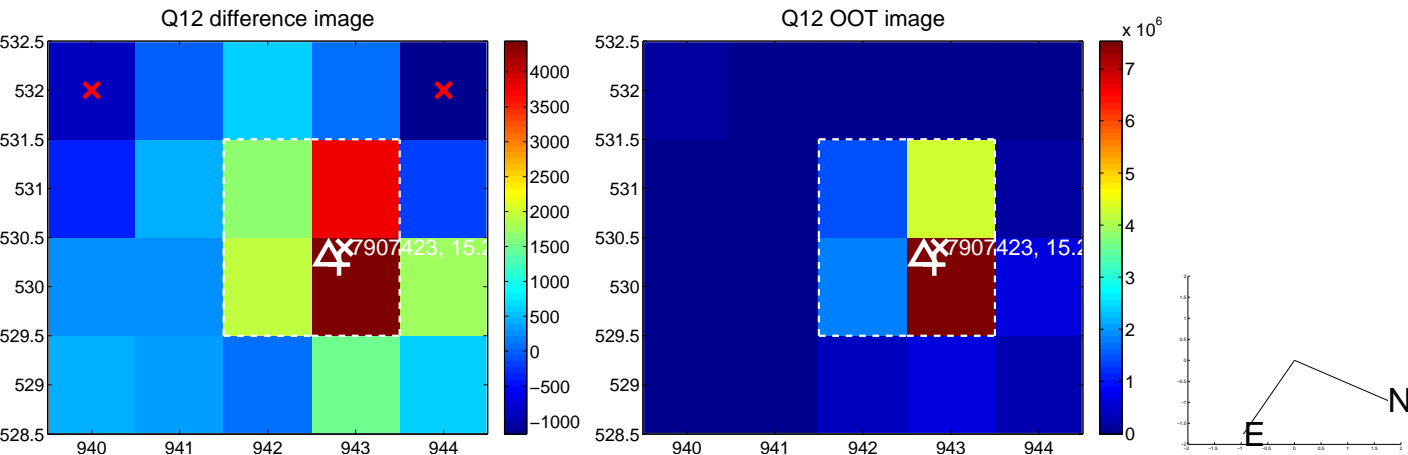
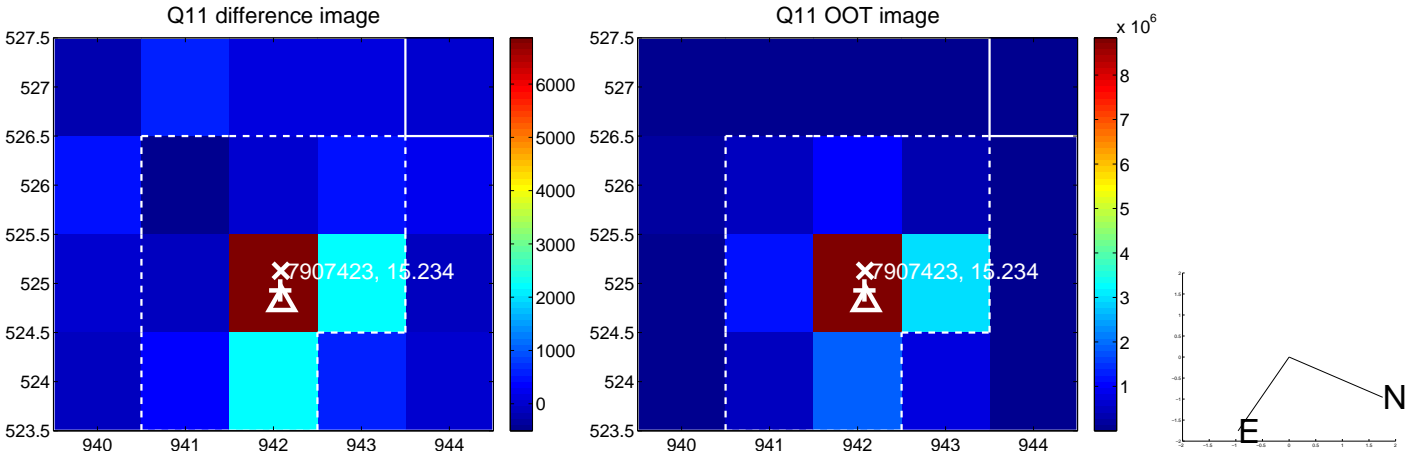
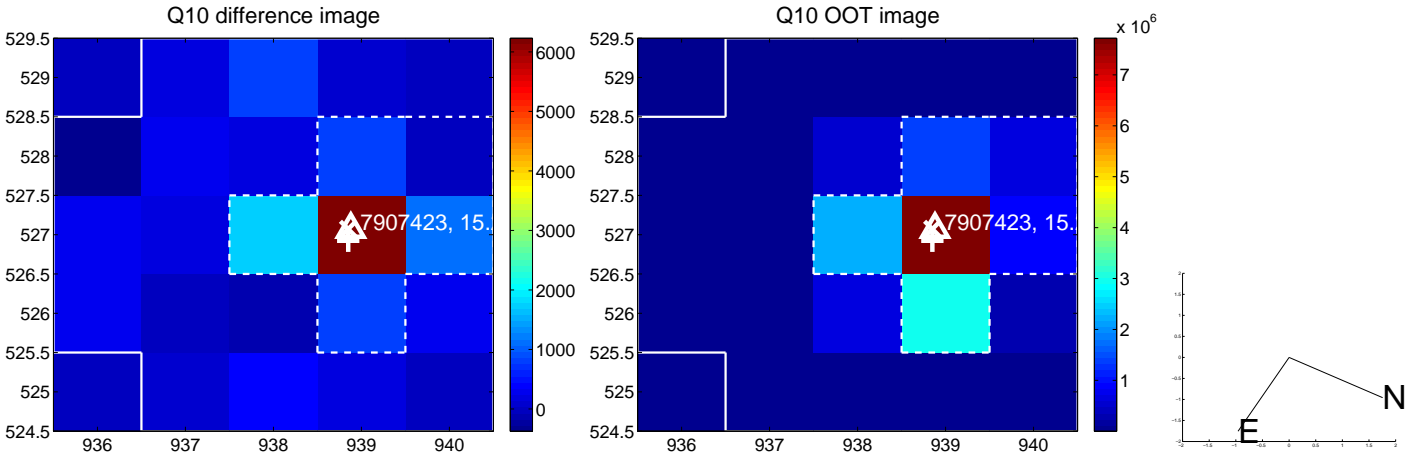
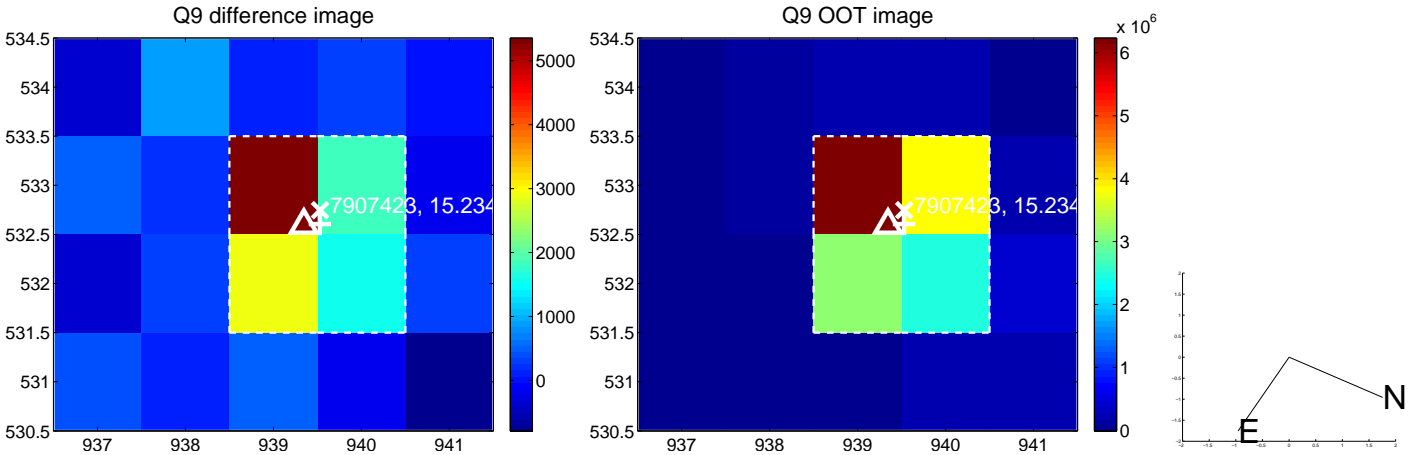


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

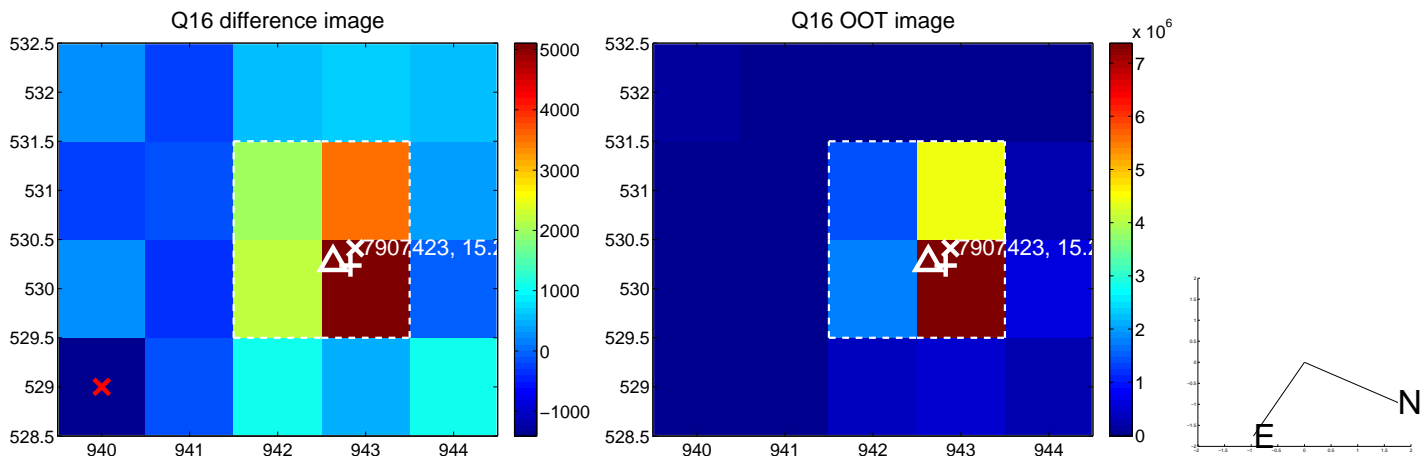
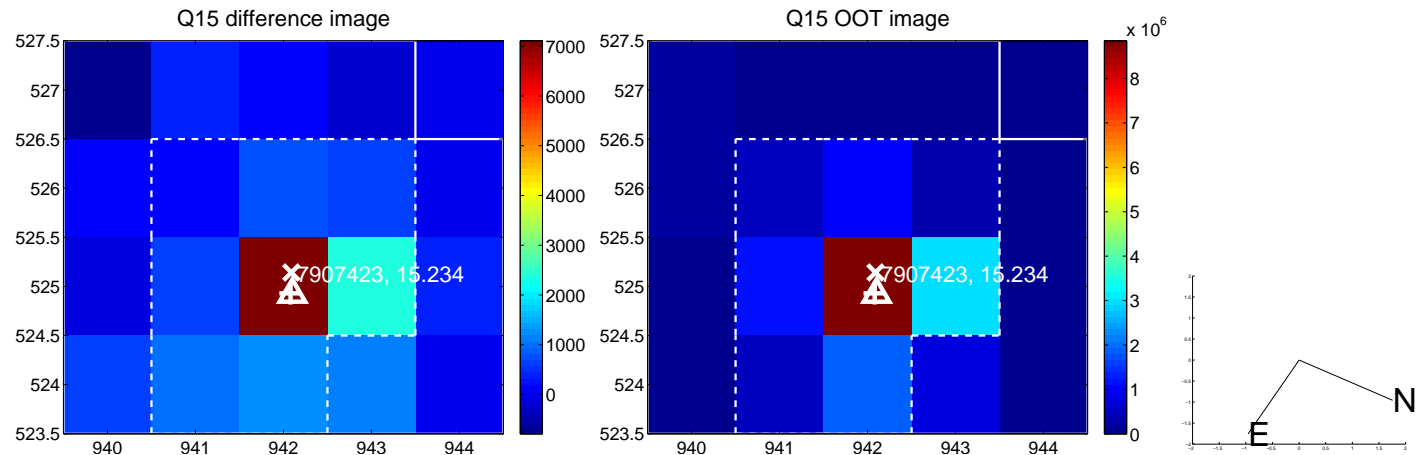
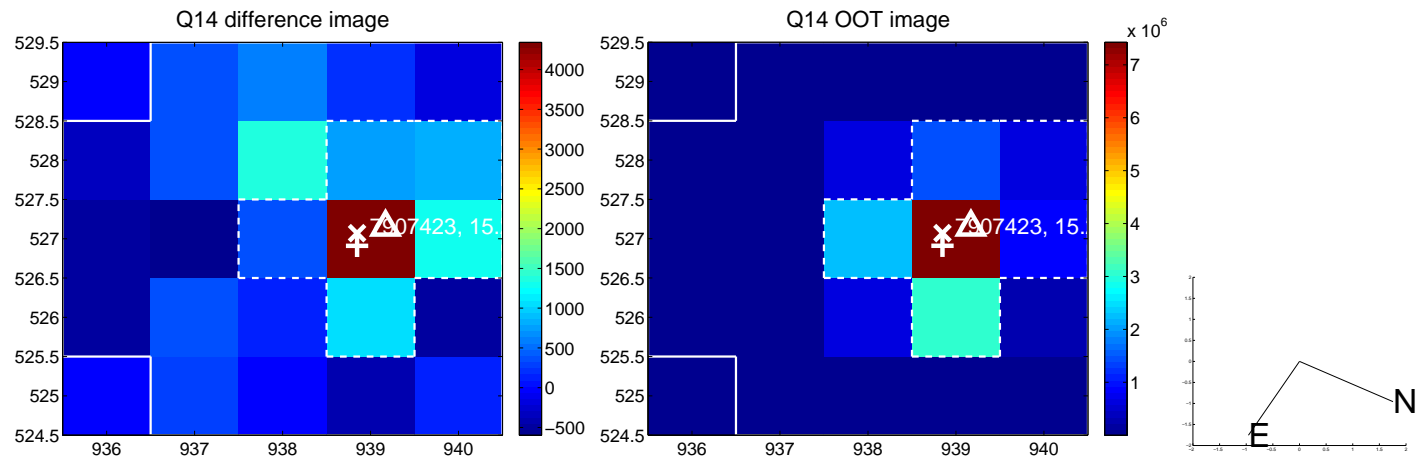
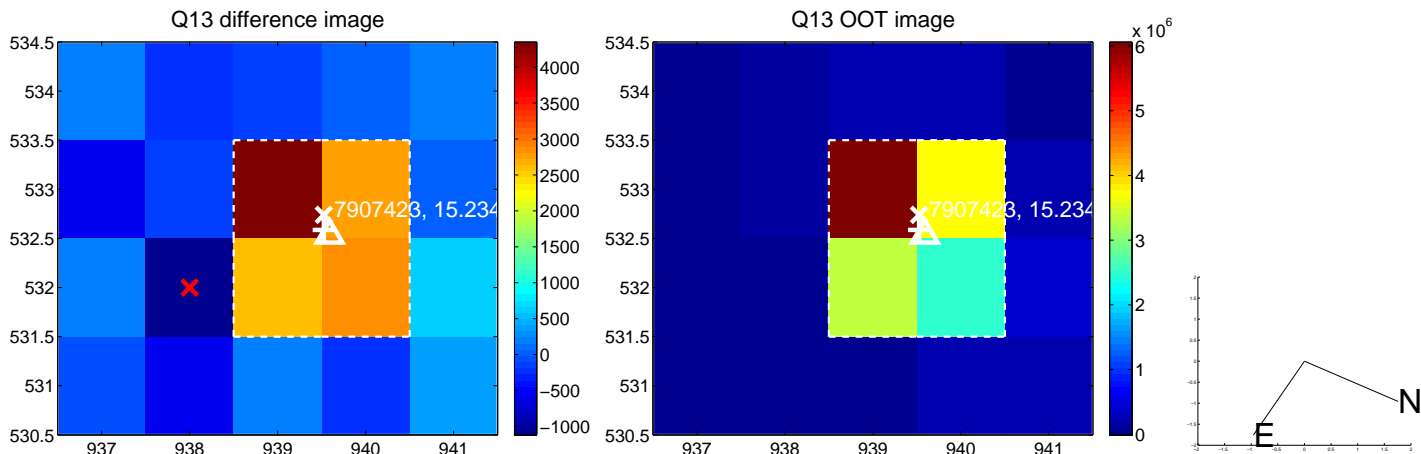




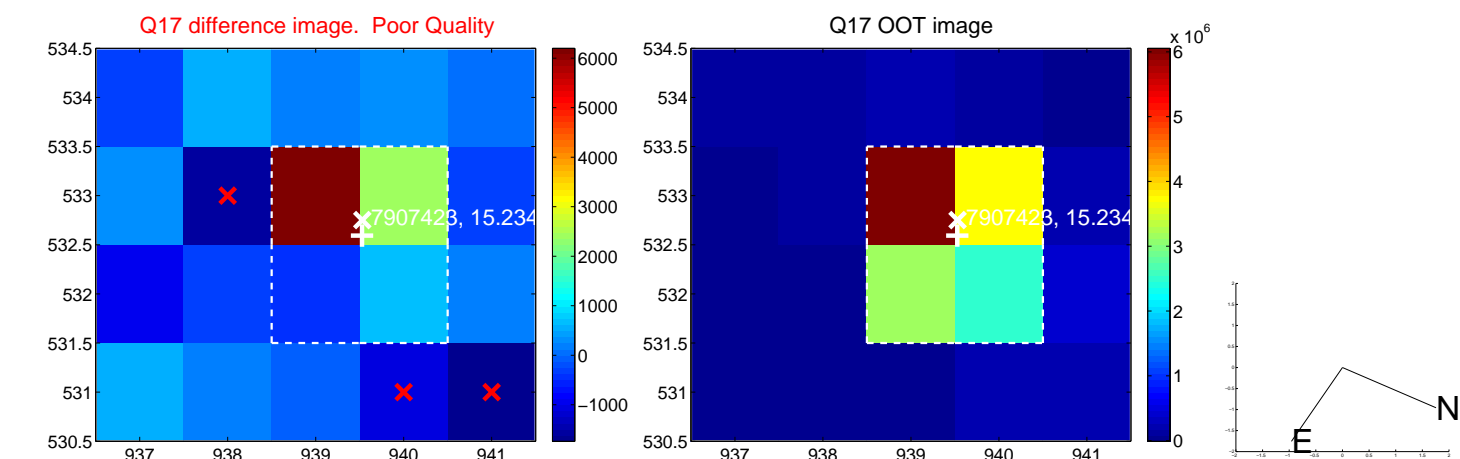
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



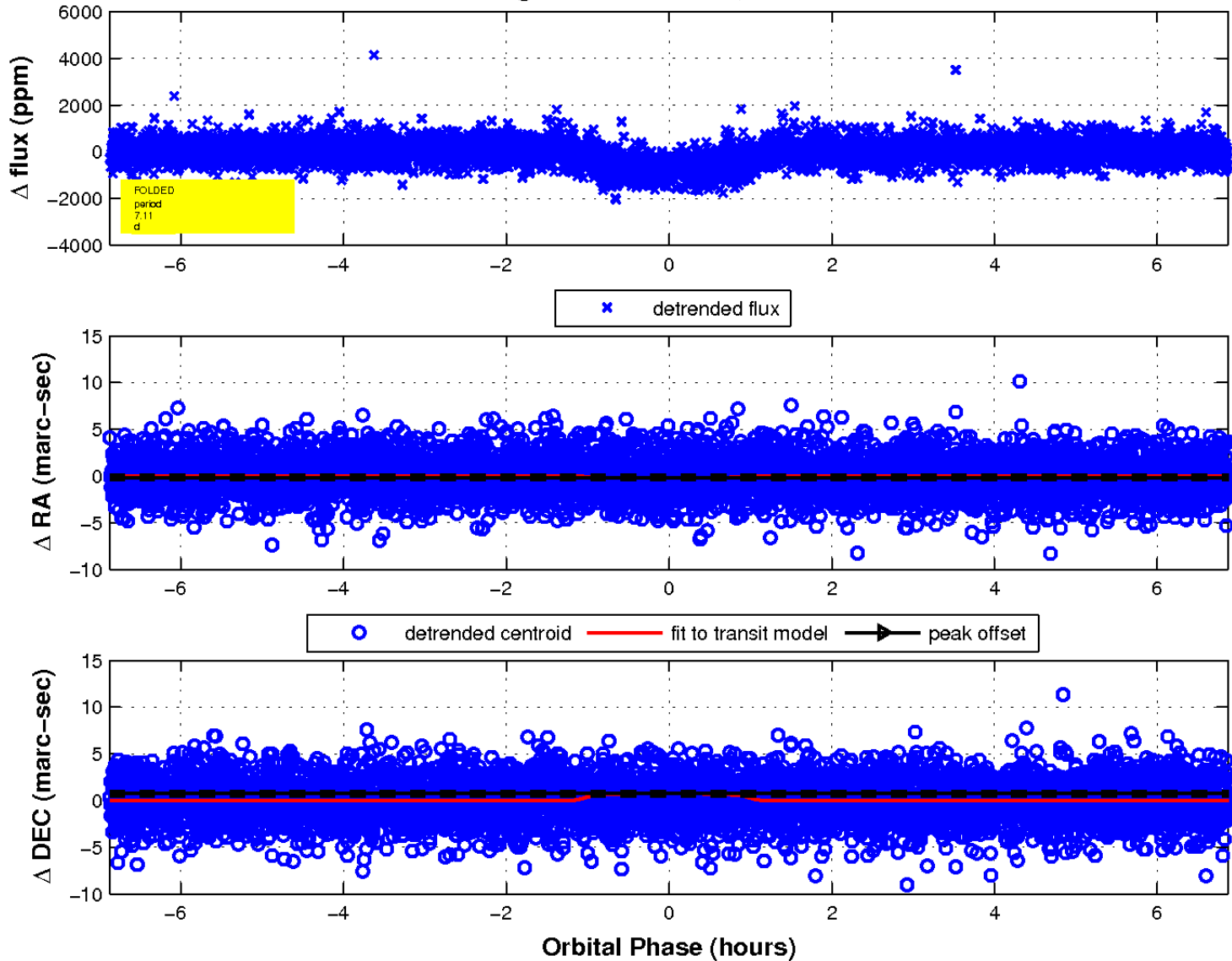
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

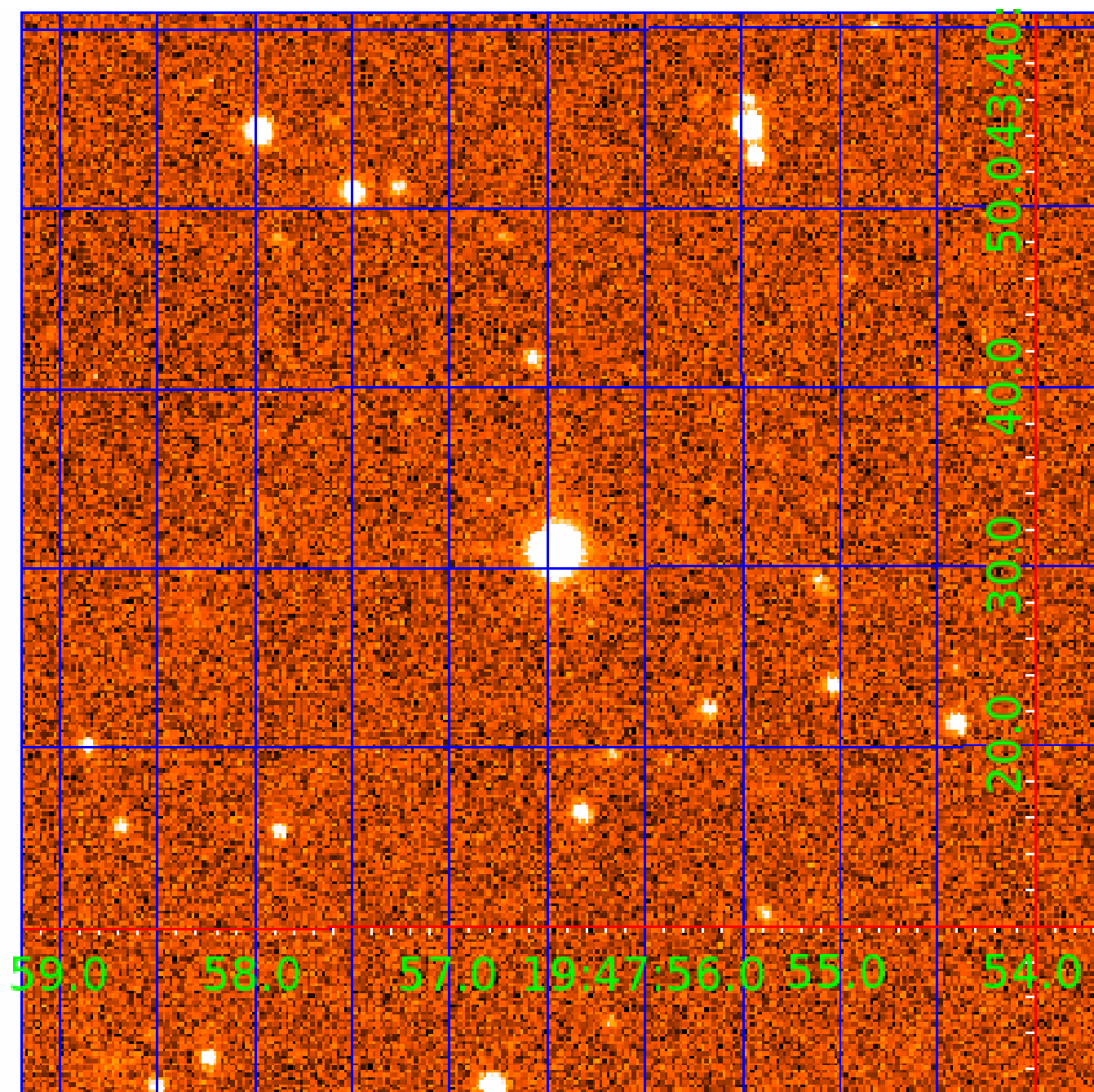


fluxWeightedCentroids, Planet 1 of 3



# UKIRT Image

Declination





# KIC 007907423

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007907423-01	OBS	0899.01	7.113734	131.640604	798.1	2.292	35.8	40.0	0.41	3561	1.33	8.01
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007907423-03	OBS	0899.03	15.368373	132.026632	765.7	2.696	24.3	26.7	0.41	3561	1.36	2.87

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007907423-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
007907423-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
007907423-03	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

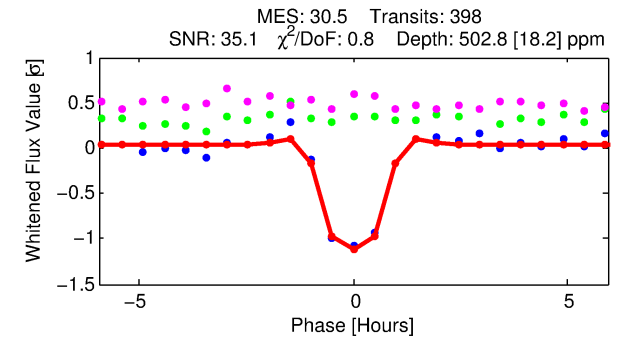
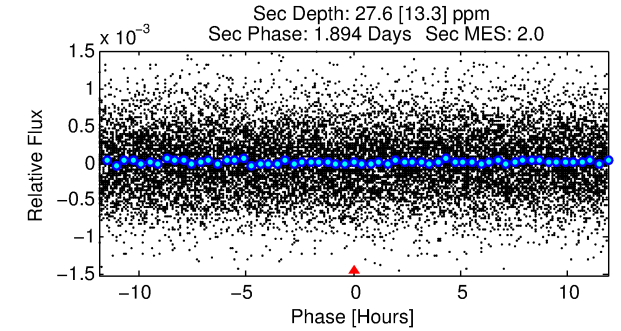
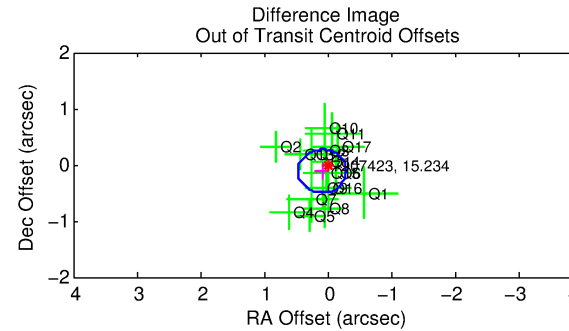
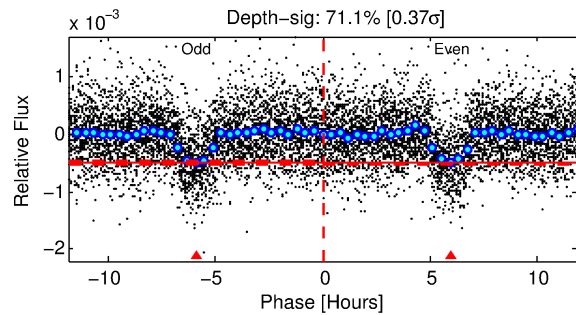
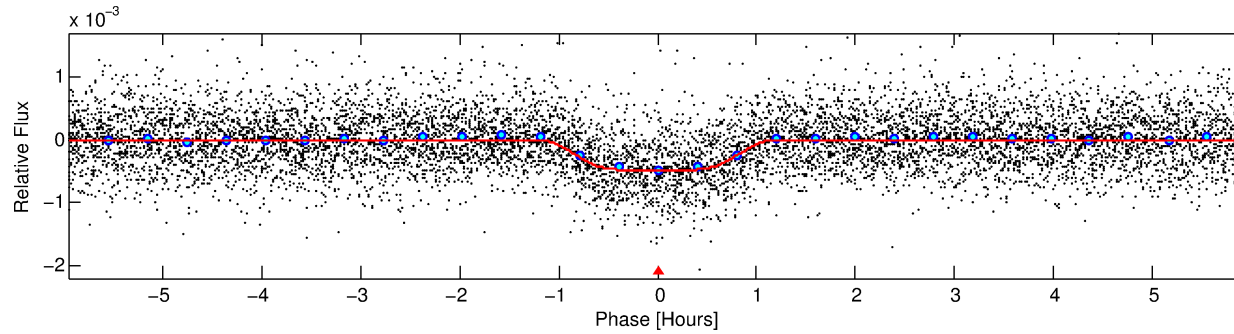
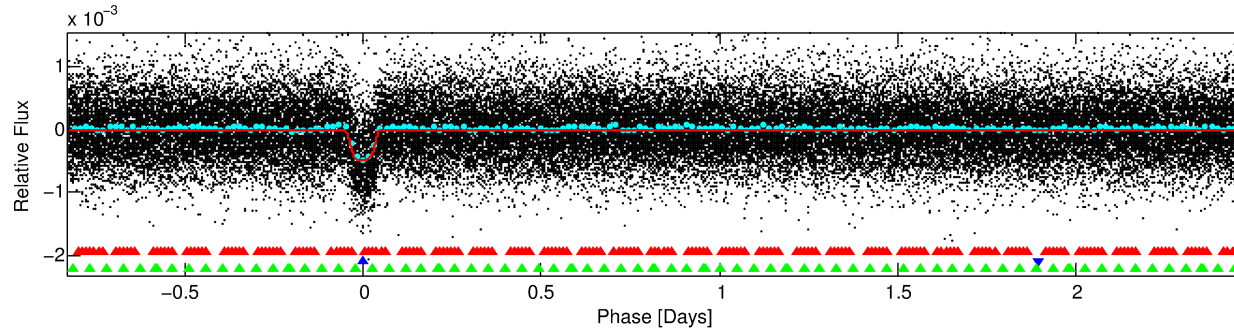
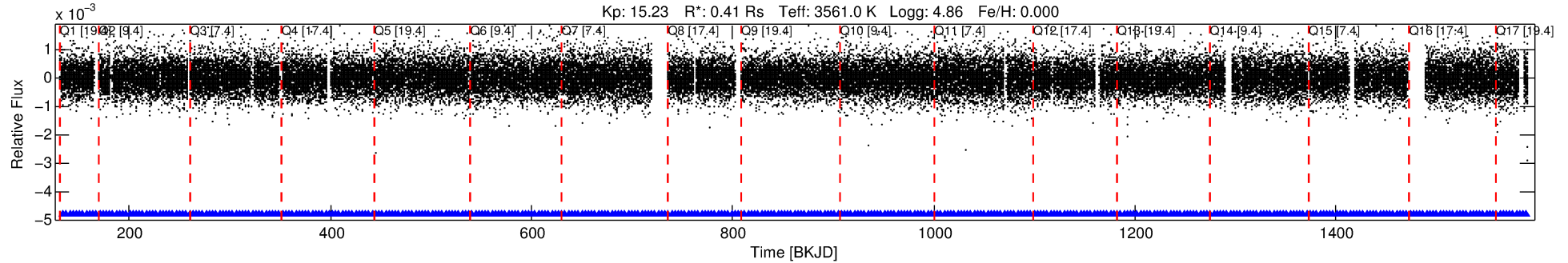
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007907423-02

No Significant Match Found

# DV One-Page Summary

KIC: 7907423 Candidate: 2 of 3 Period: 3.307 d  
KOI: K00899.02 Name: Kepler-249b Corr: 0.960



## DV Fit Results:

Period = 3.30653 [0.00001] d  
Epoch = 134.3752 [0.0009] BKJD  
Rp/R\* = 0.0245 [0.0033]  
a/R\* = 6.32 [3.49]  
b = 0.90 [0.12]  
Seff = 22.25 [3.63]  
Teq = 554 [23] K  
Rp = 1.10 [0.22] Re  
a = 0.0331 [0.0035] AU  
Ag = 13.72 [7.76] [1.64 $\sigma$ ]  
Teffp = 1648 [231] K [4.72 $\sigma$ ]

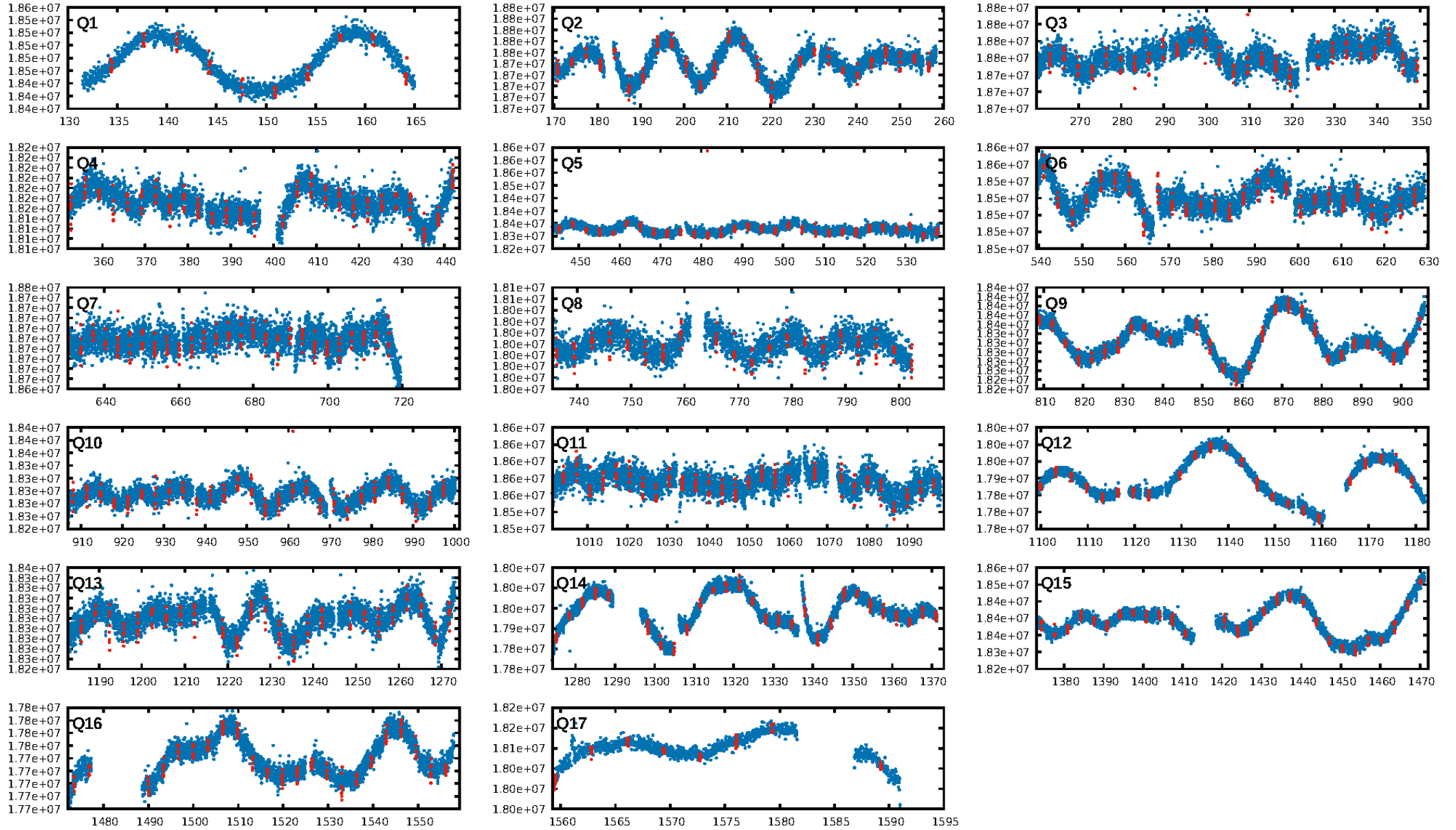
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [30.14 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.21e-197  
RollingBand-fgt: 1.00 [380/380]  
GhostDiagnostic-chr: 13.98  
Centroid-sig: 16.5%  
Centroid-so: 0.782 arcsec [2.26 $\sigma$ ]  
OotOffset-rm: 0.144 arcsec [1.13 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-rm: 0.747 arcsec [7.10 $\sigma$ ]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

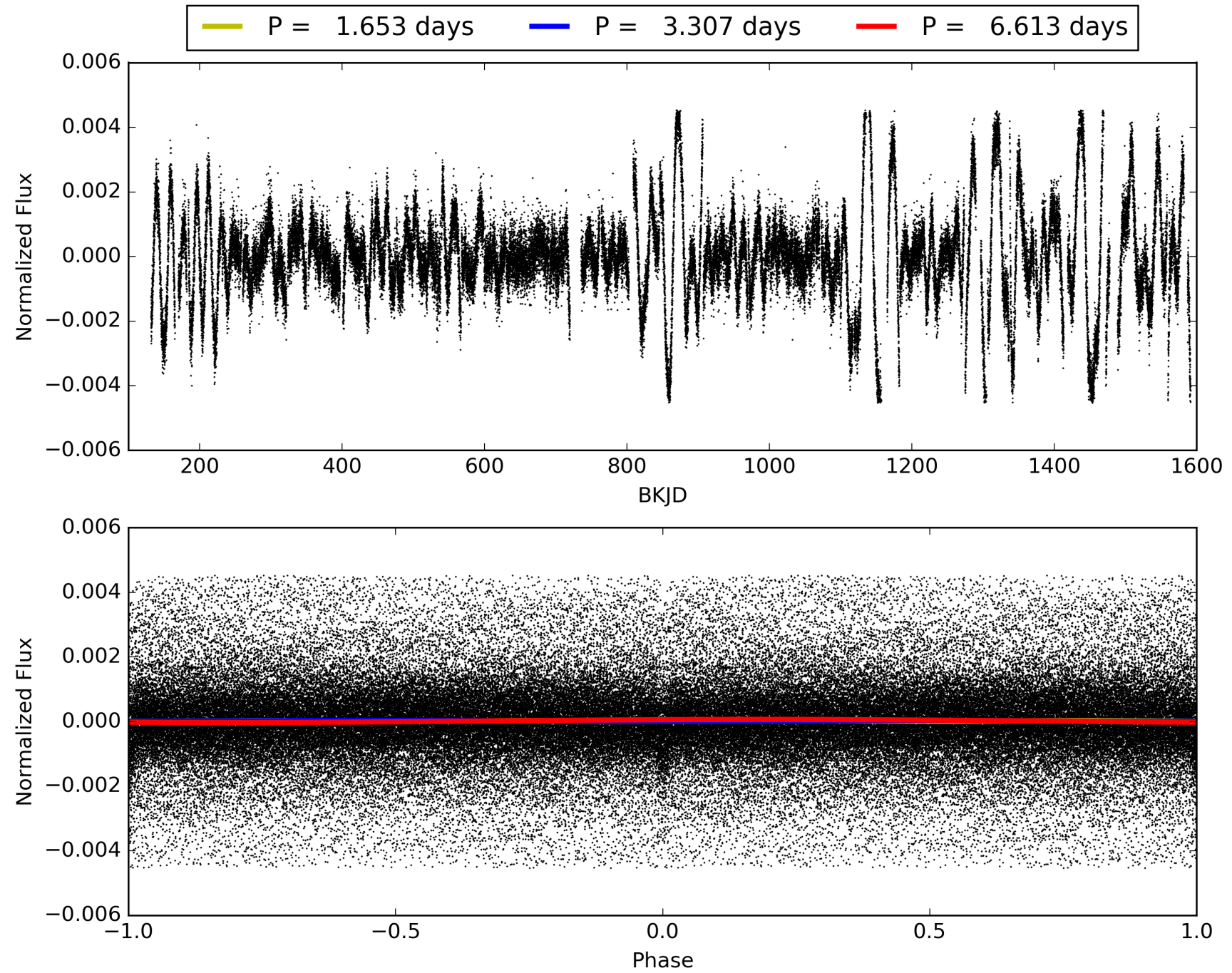
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 09:50:33 Z

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

# TCE 007907423-02, PDC Light Curves

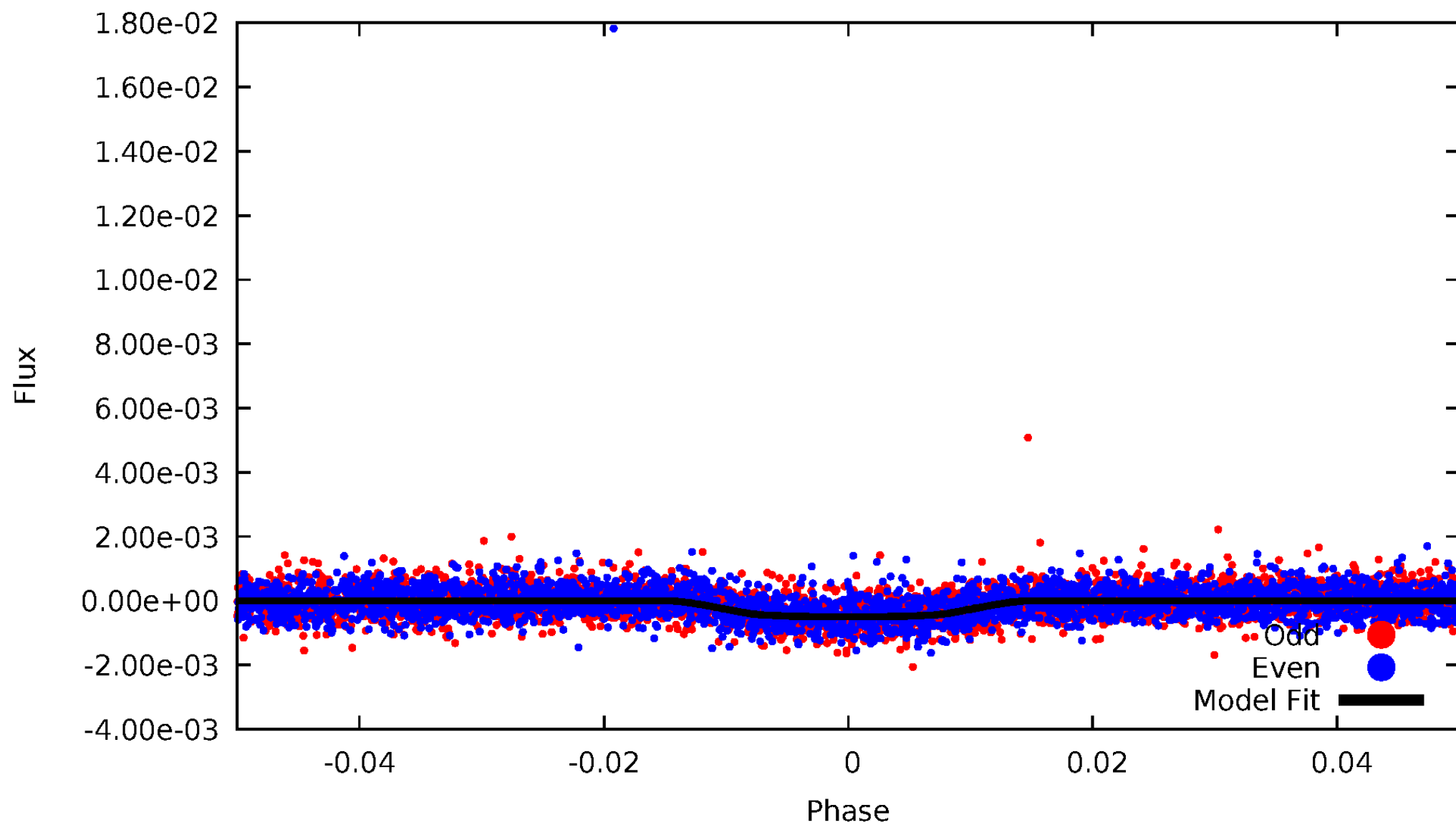


# TCE 007907423-02



# DV Odd/Even

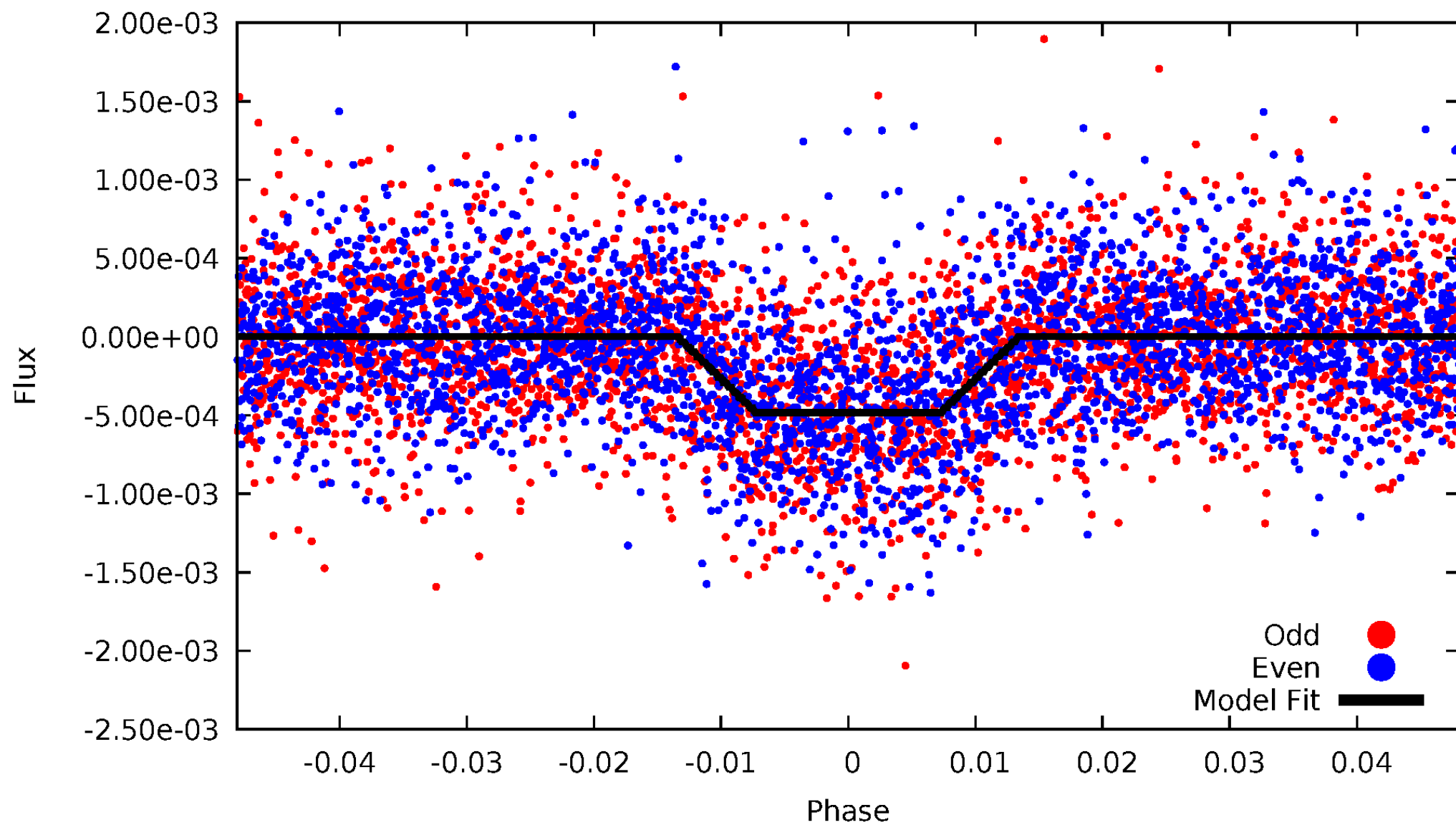
TCE 007907423-02





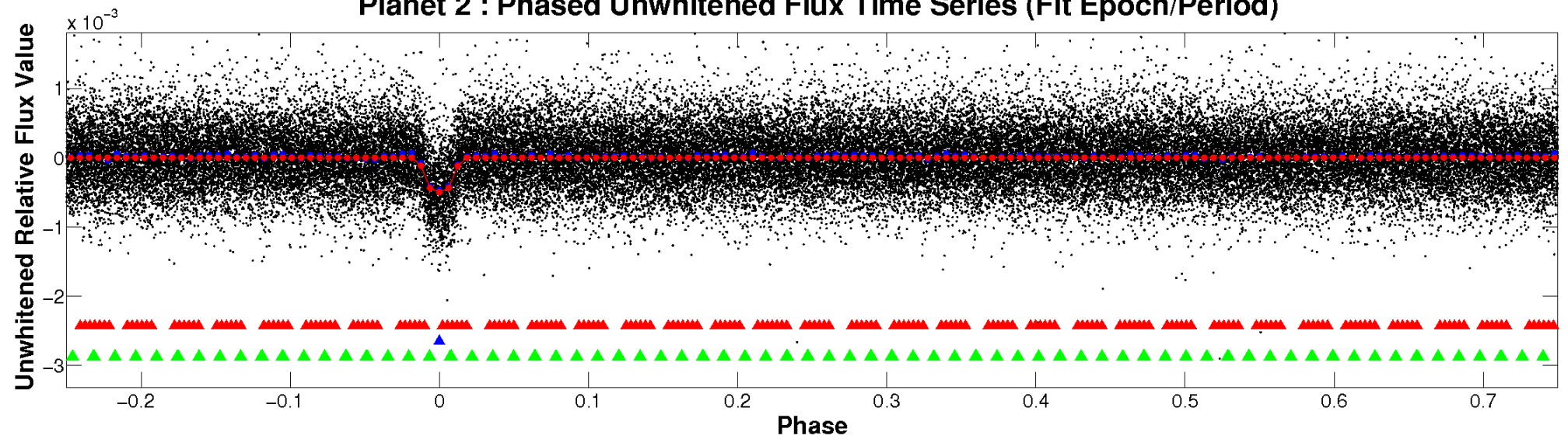
# ALT Odd/Even

TCE 007907423-02

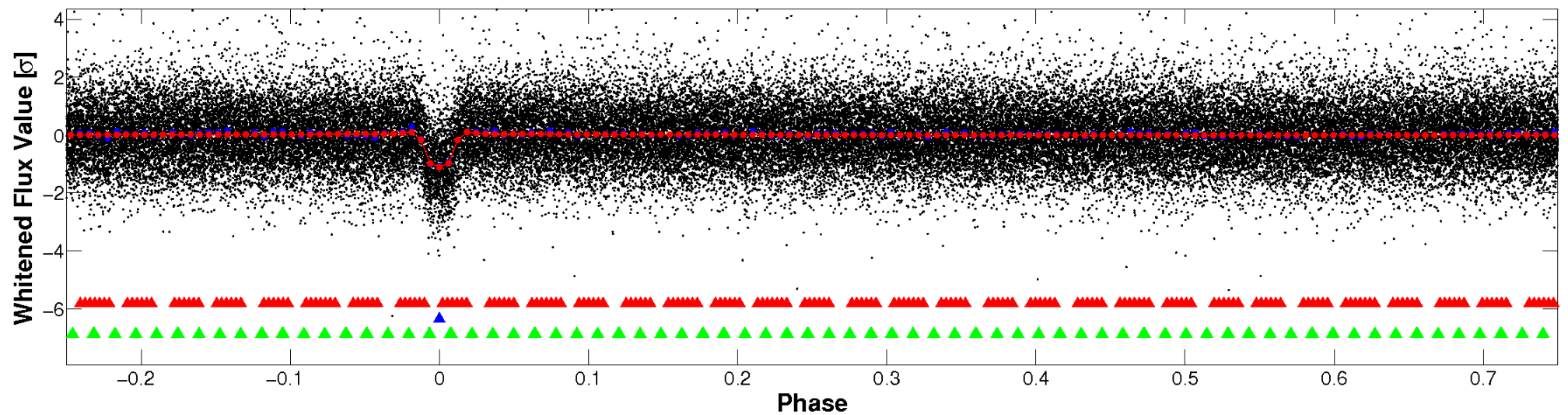


# Non-Whitened Vs. Whitened Light Curve

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



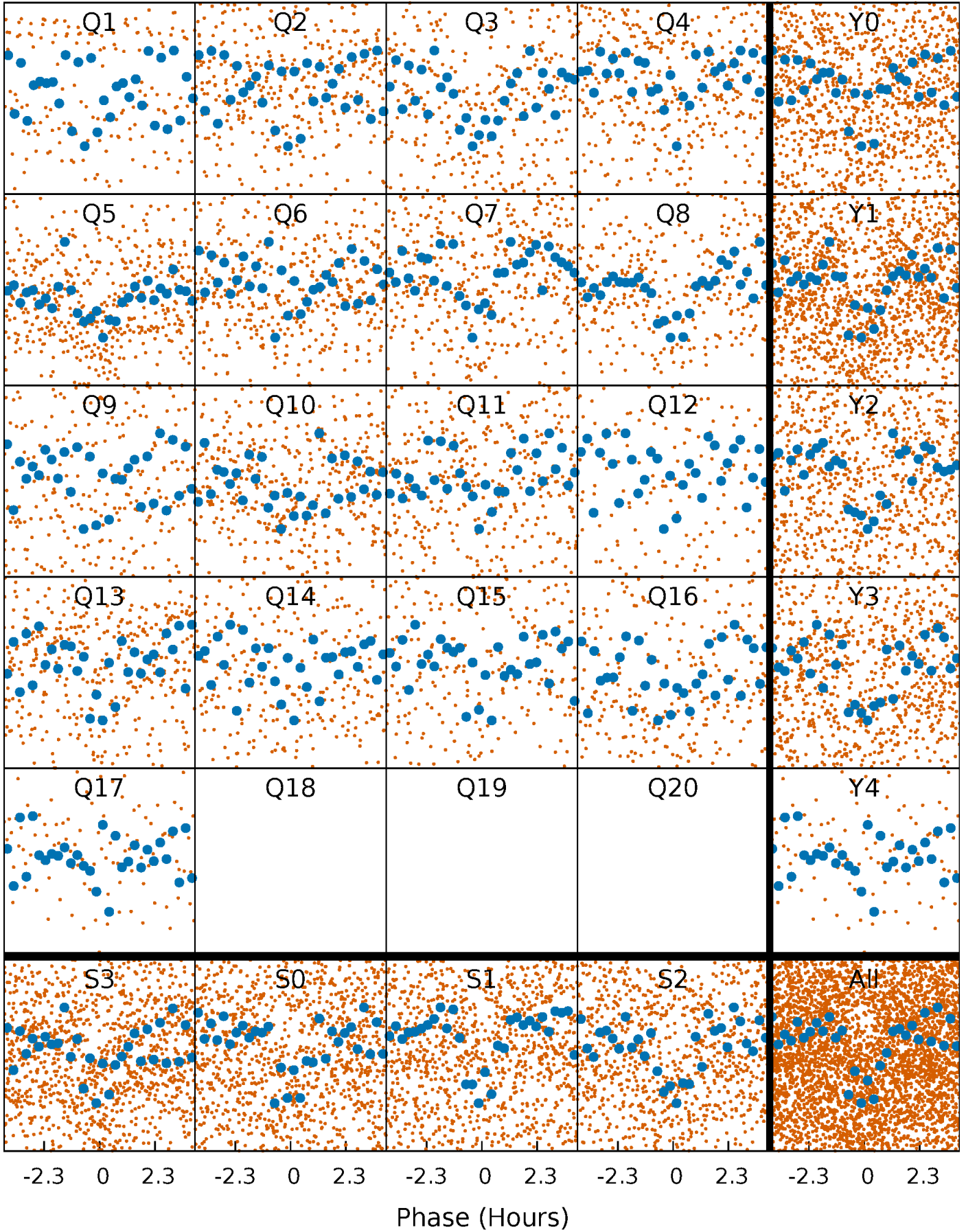
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





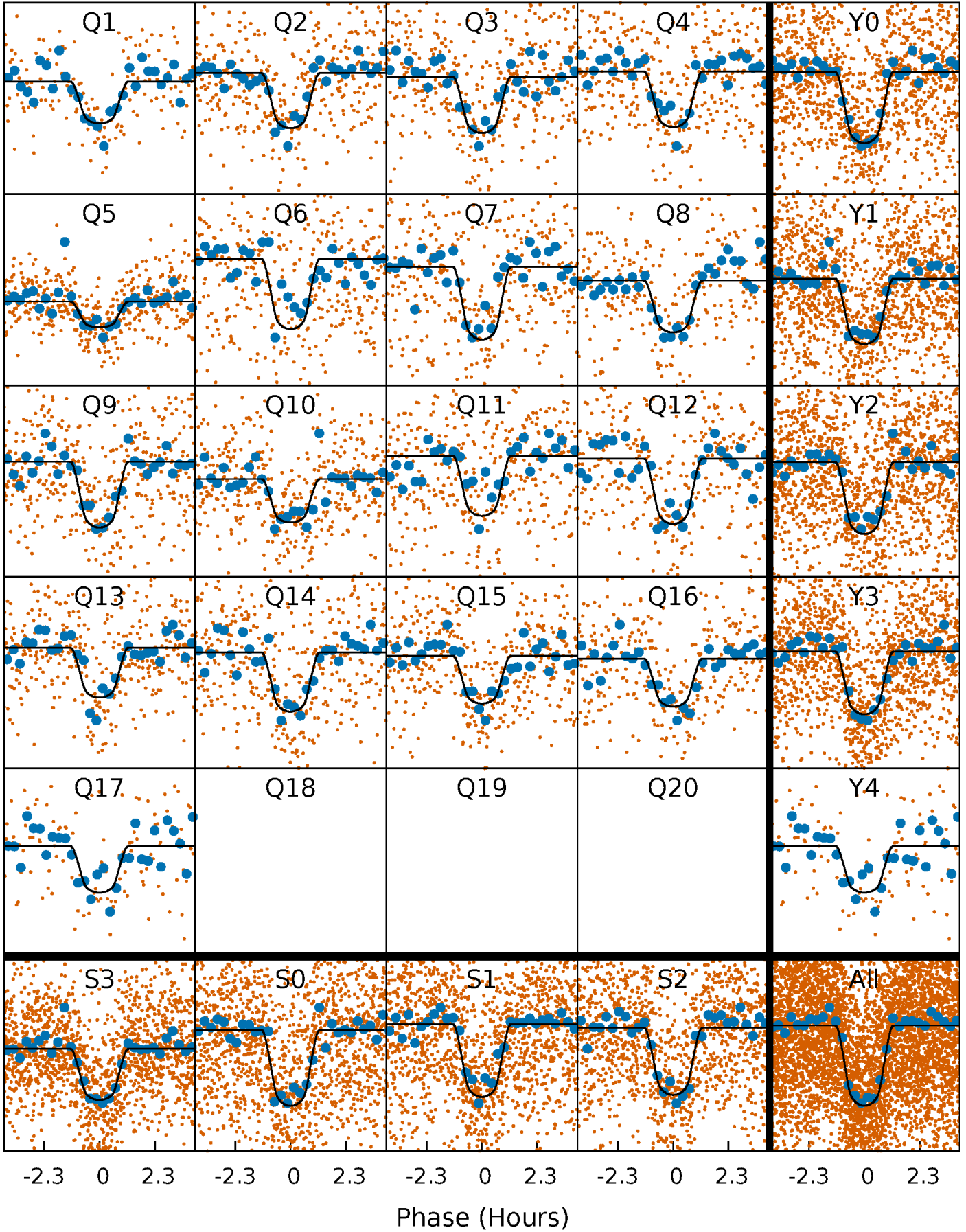
# PDC Quarter-Phased Transit Curves

TCE 007907423-02   P= 3.306534 Days    $T_0=134.375164$  (BKJD)



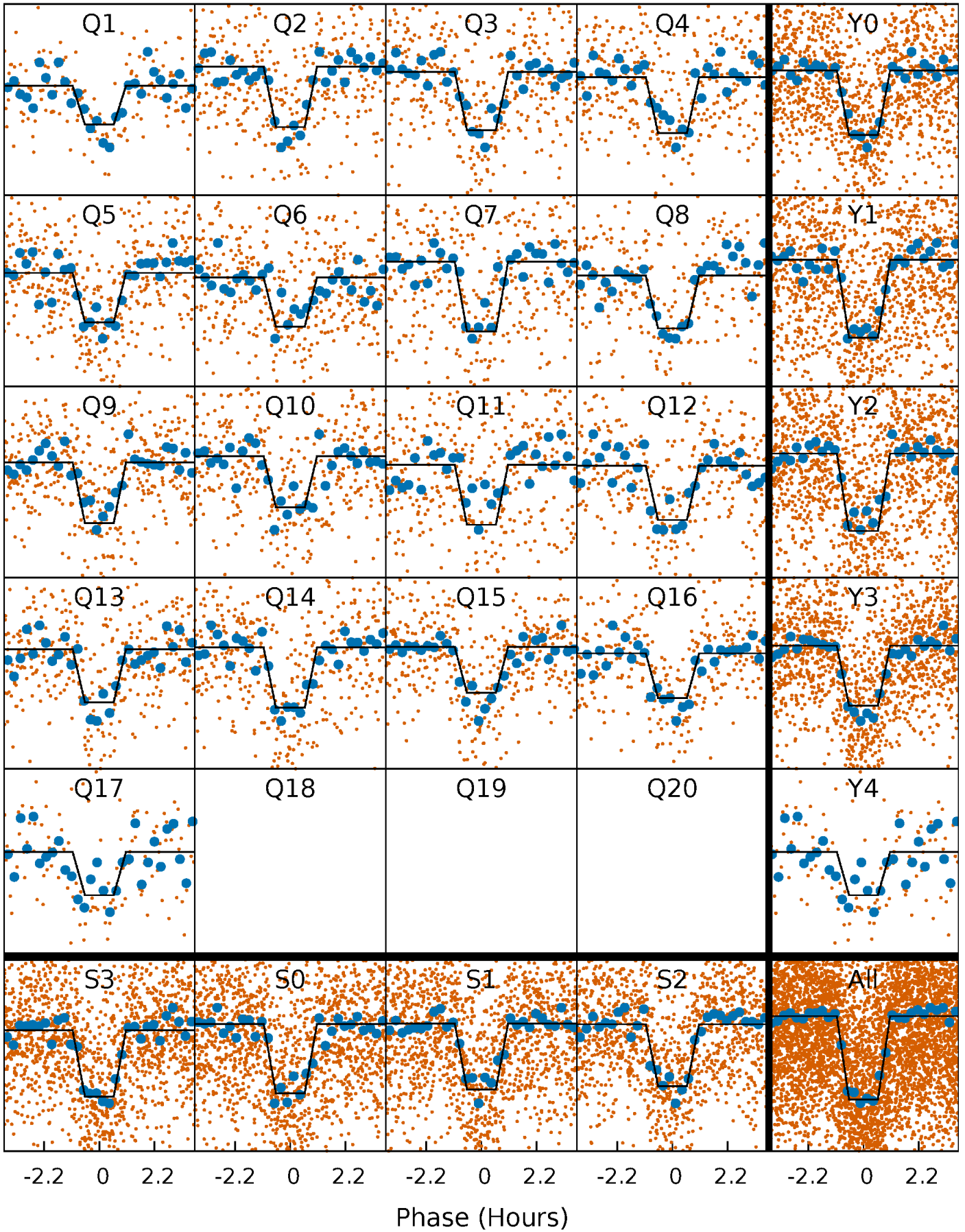
# DV Quarter-Phased Transit Curves

TCE 007907423-02 P= 3.306534 Days  $T_0=134.375164$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007907423-02     $P = 3.306556$  Days     $T_0 = 134.370936$  (BKJD)

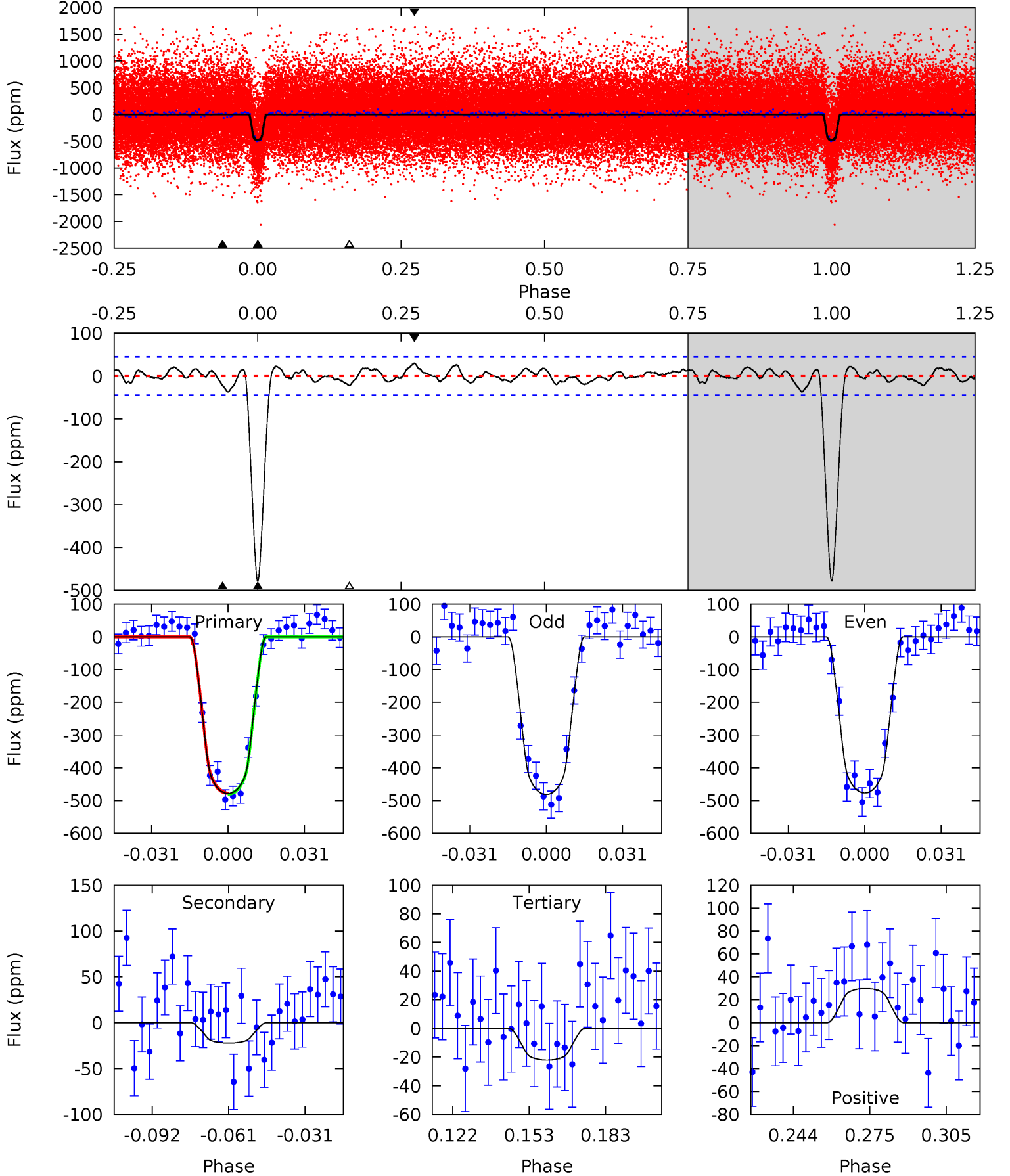




# DV Model-Shift Uniqueness Test

007907423-02, P = 3.306534 Days, E = 131.068630 Days

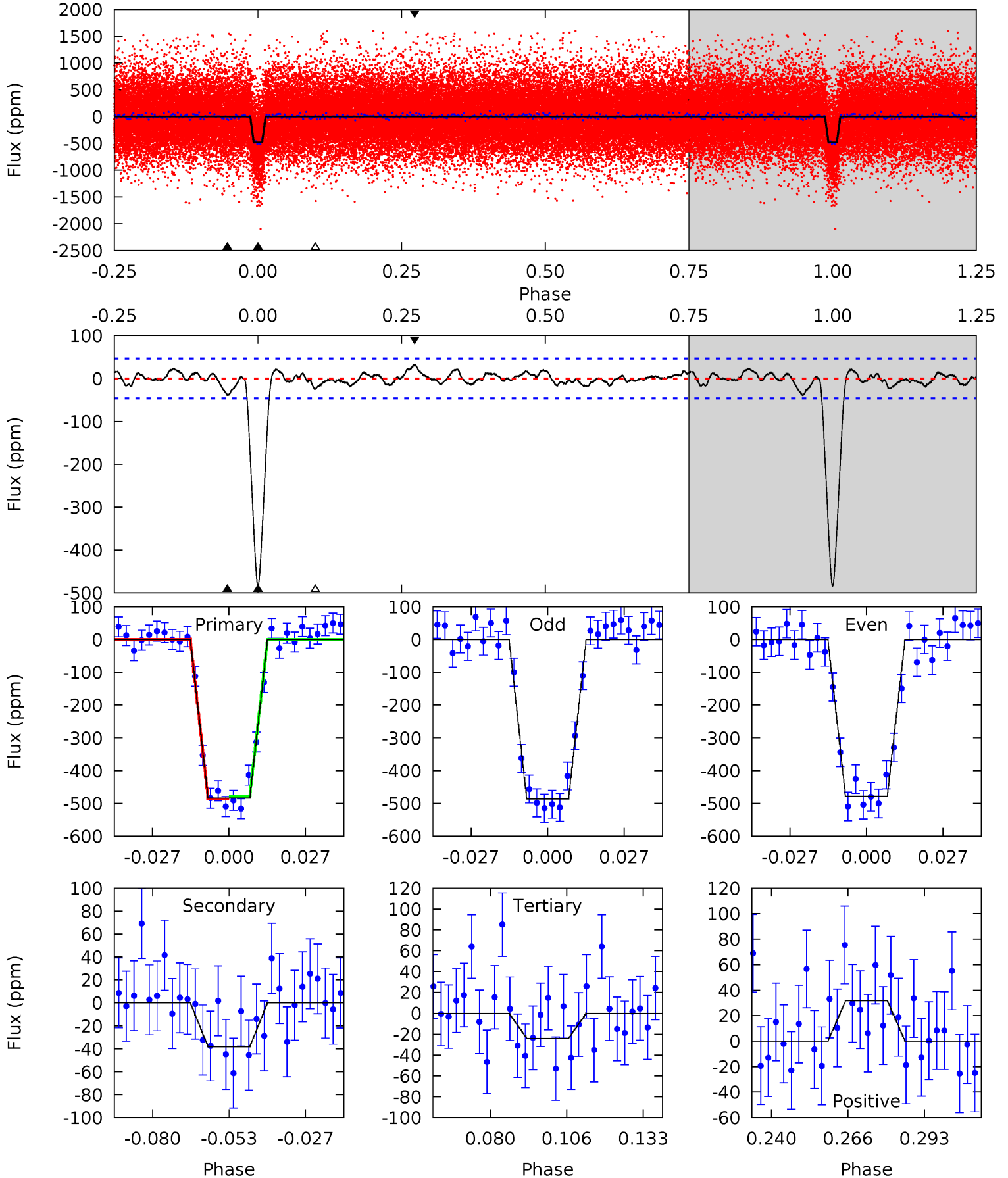
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
51.4	2.39	2.37	3.20	4.81	2.16	1.17	49.0	48.2	0.01	-0.82	0.25	0.97	0.06	0.17



# Alt Model-Shift Uniqueness Test

007907423-02, P = 3.306556 Days, E = 131.064380 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
50.1	3.95	2.48	3.28	4.84	2.22	1.08	47.6	46.8	1.47	0.67	0.46	0.98	0.06	0.36



### Stellar Parameters For KIC 007907423

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3561^{+71}_{-89}$	$4.855^{+0.055}_{-0.055}$	$0.000^{+0.150}_{-0.150}$	$0.411^{+0.045}_{-0.060}$	$0.440^{+0.041}_{-0.076}$	$8.950^{+3.027}_{-1.898}$
	+2%/-2%	+1%/-1%	+inf%/-inf%	+11%/-15%	+9%/-17%	+34%/-21%
Source	SPE70	SPE60	SPE70	DSEP		

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

### Secondary Eclipse Parameters for KIC 007907423-02 / KOI 0899.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-22 \pm 9$	$1.09^{+0.18}_{-0.15}$	$773^{+23}_{-24}$	$2276^{+140}_{-153}$	$11^{+7}_{-5}$
Alt.	$-38 \pm 10$	$0.98^{+0.17}_{-0.16}$	$774^{+27}_{-26}$	$2487^{+139}_{-124}$	$23^{+12}_{-8}$

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

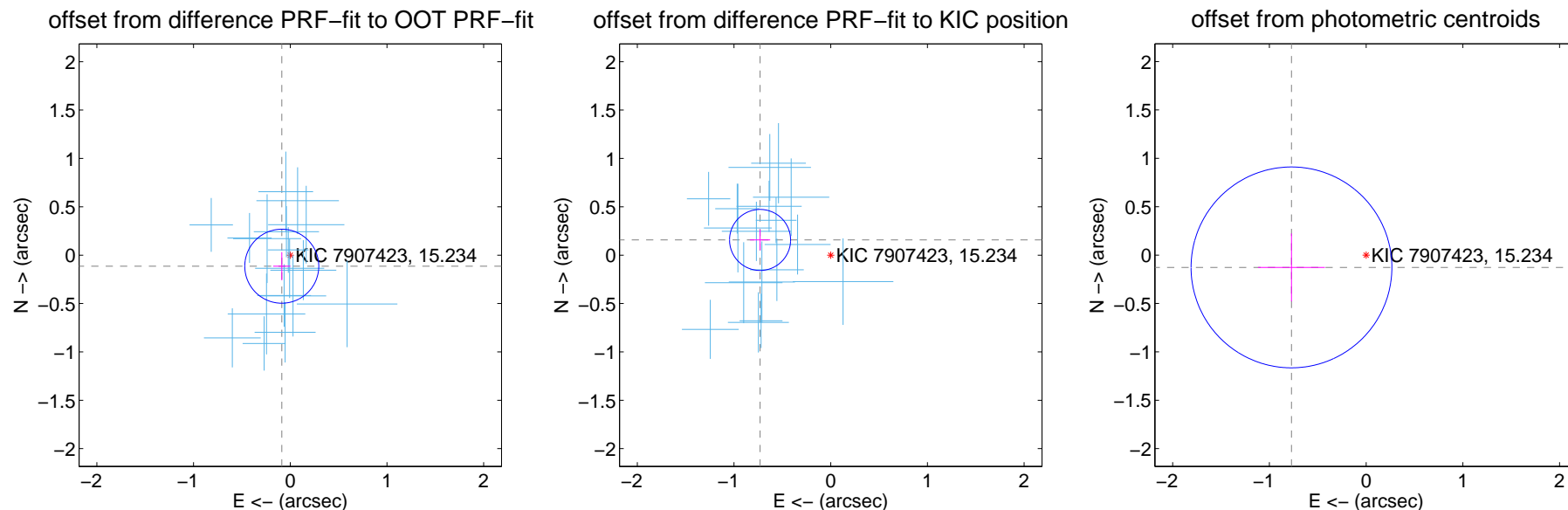
## DV Centroid Data

Supplemental centroid analysis for 007907423-02. Kepler magnitude: 15.23. Transit SNR 35.08

There are 17 quarters with good PRF difference image offsets

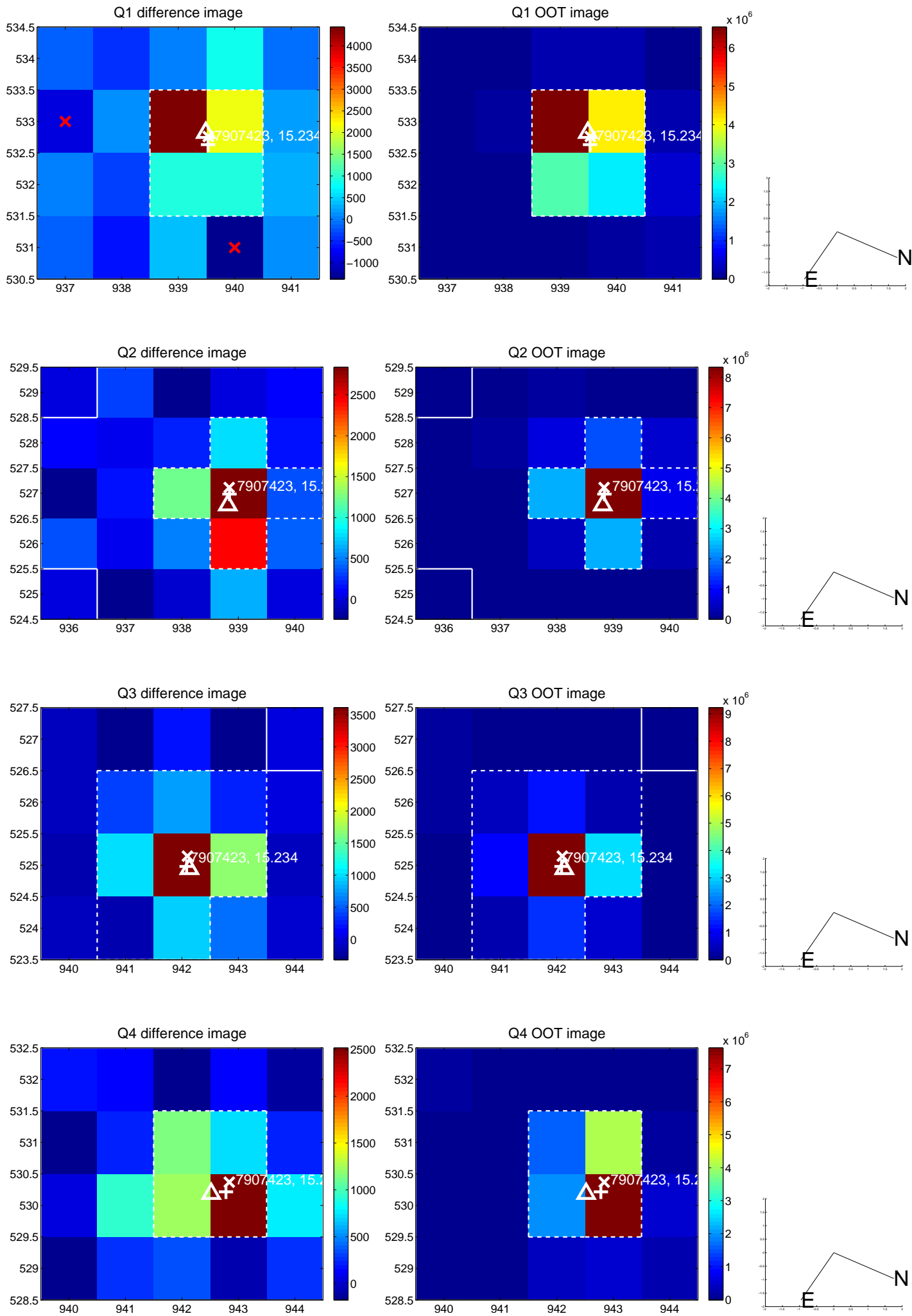
The direct PRF centroid is offset from the target star catalog position by about 0.64 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.144 \pm 0.128$	1.13	$0.088 \pm 0.089$	$-0.114 \pm 0.146$
PRF-fit source offset from KIC position	$0.747 \pm 0.105$	7.10	$0.731 \pm 0.105$	$0.157 \pm 0.107$
photometric centroid source offset	$0.78 \pm 0.35$	2.26	$0.77 \pm 0.35$	$-0.13 \pm 0.35$



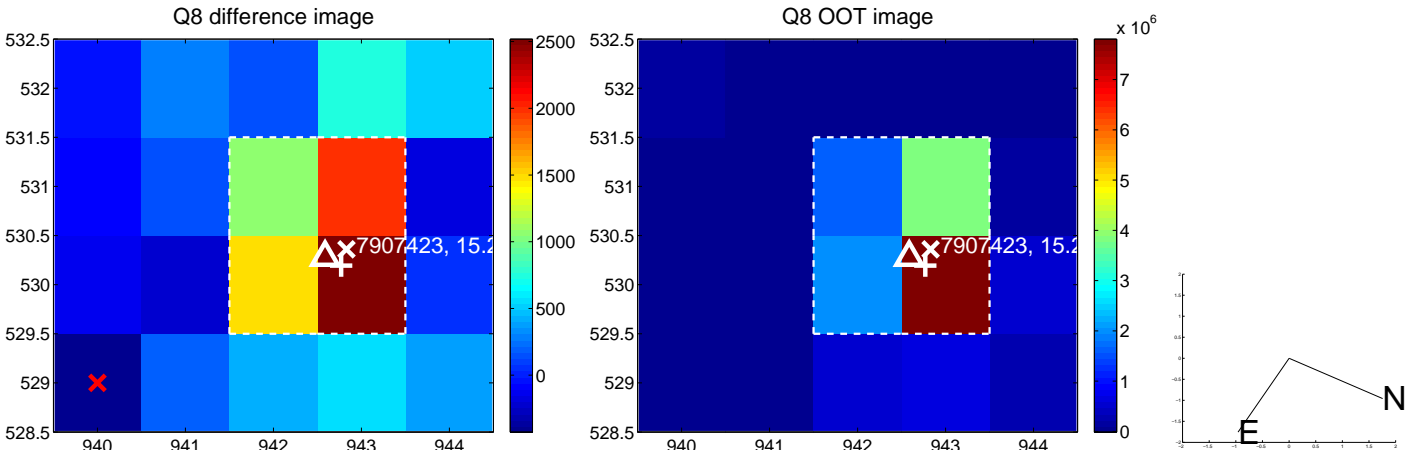
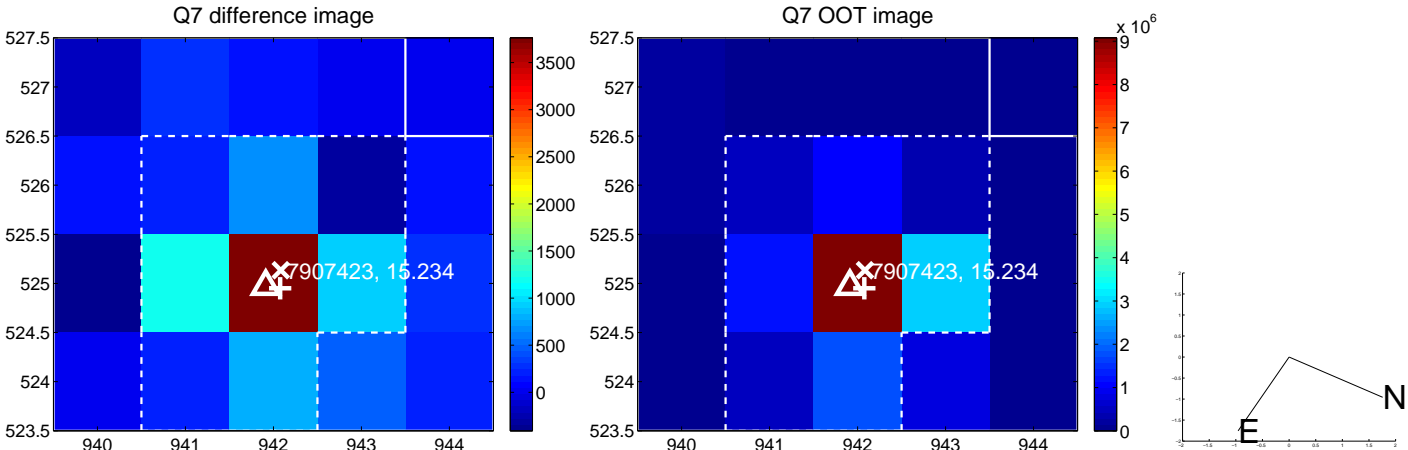
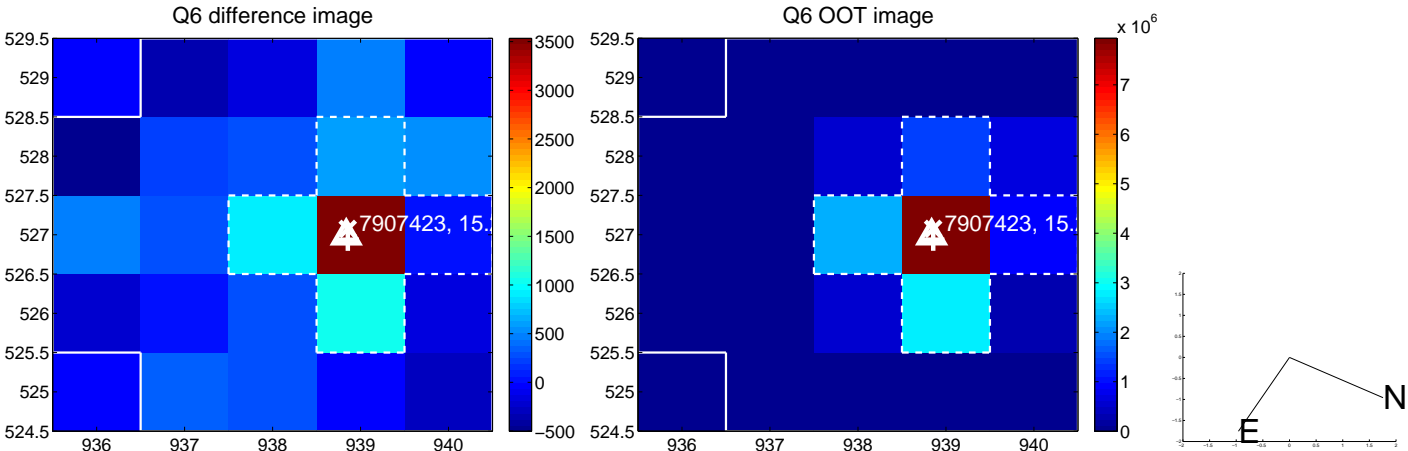
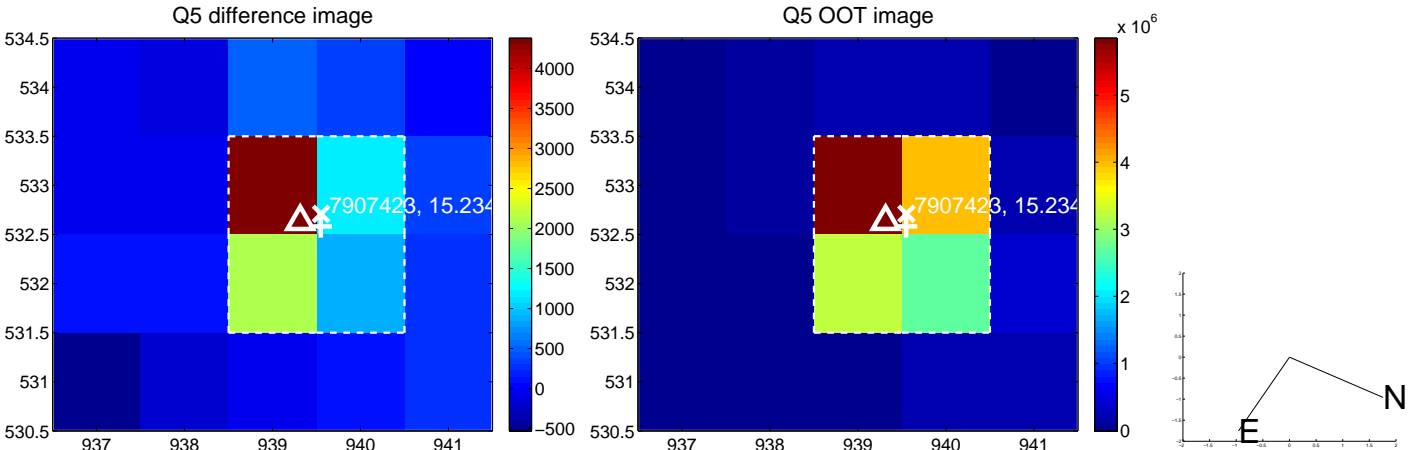
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

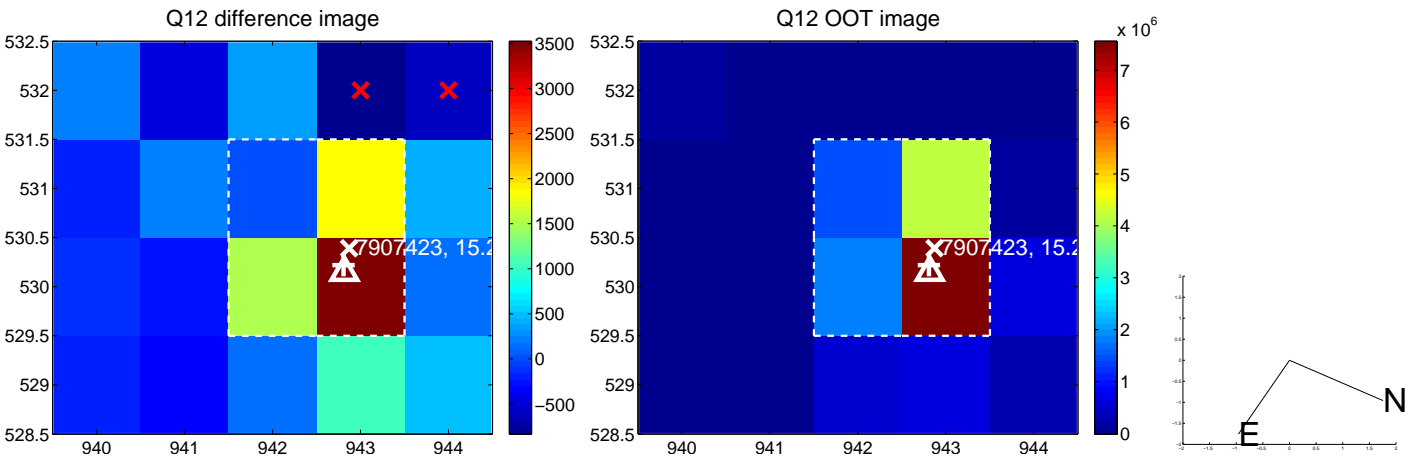
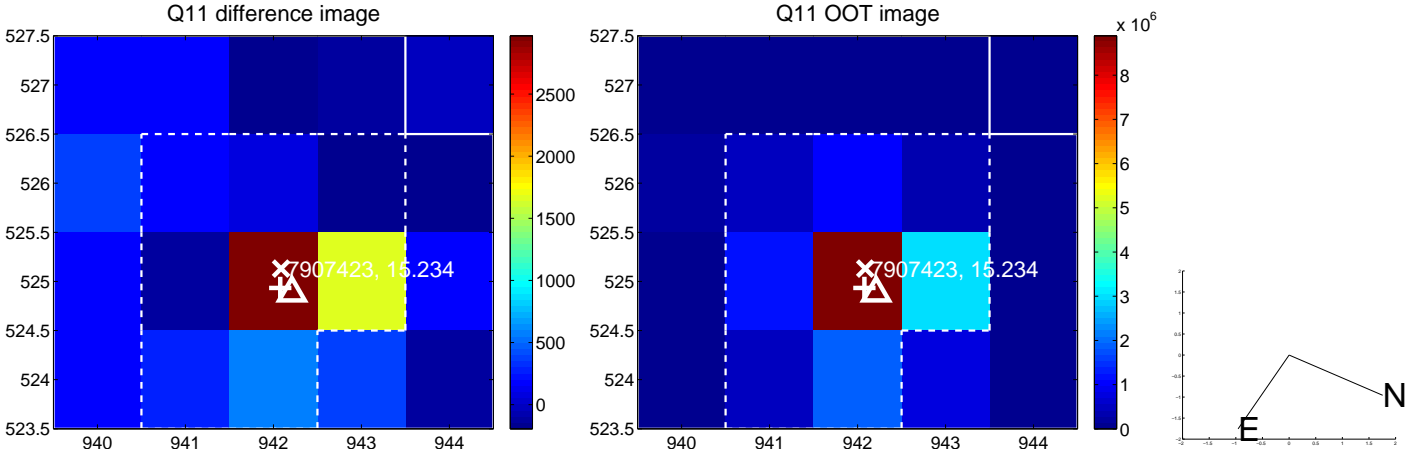
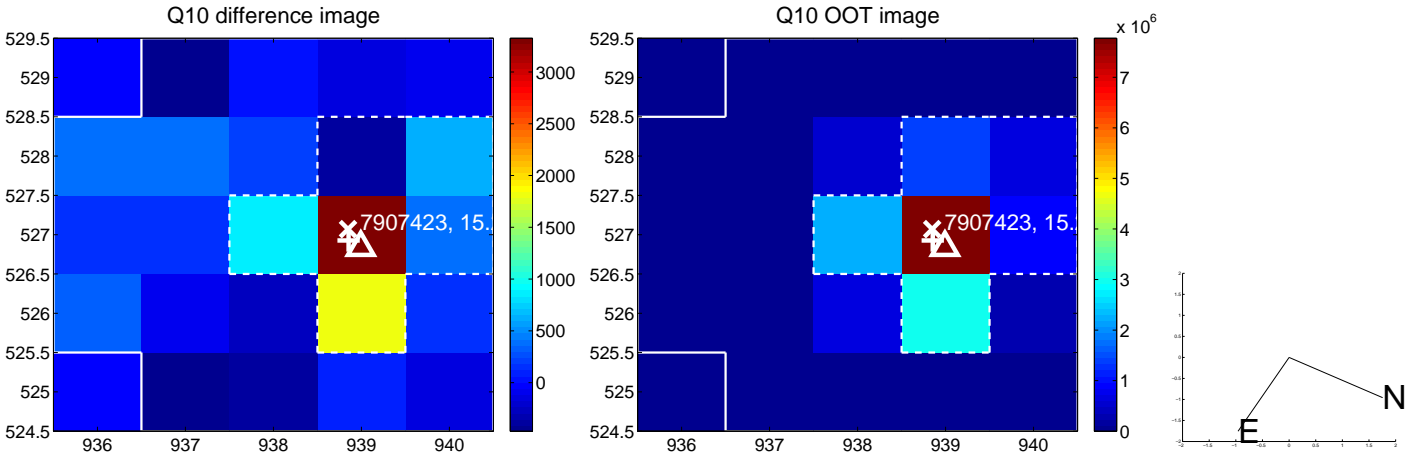
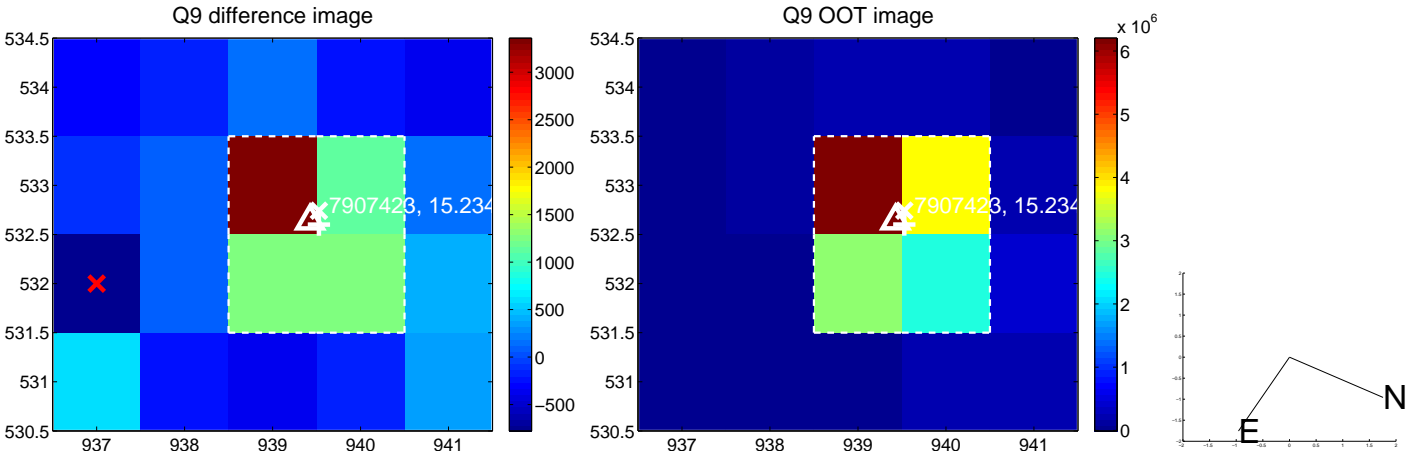




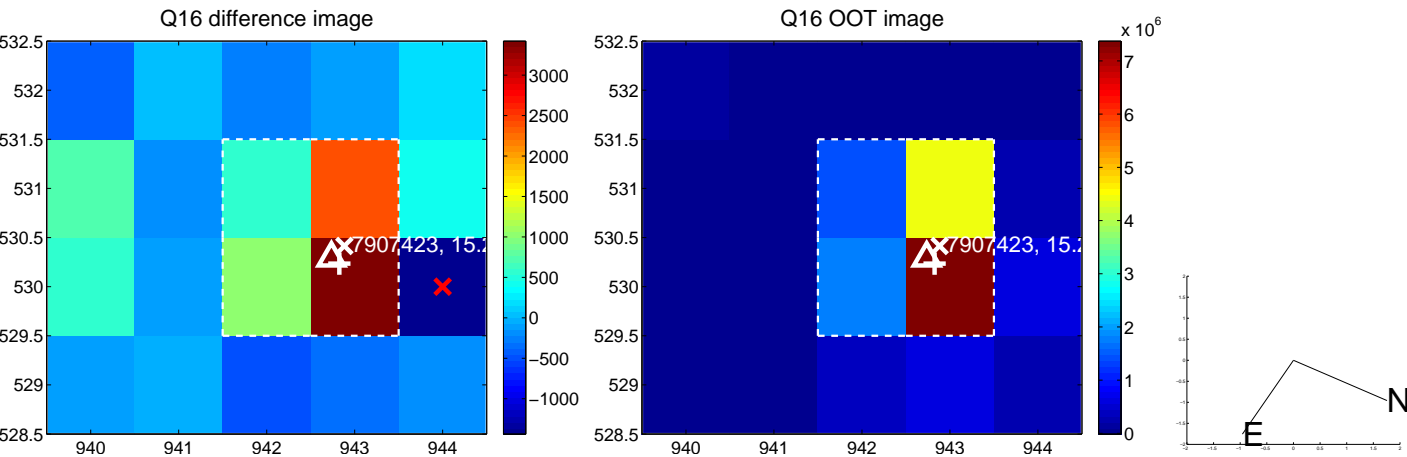
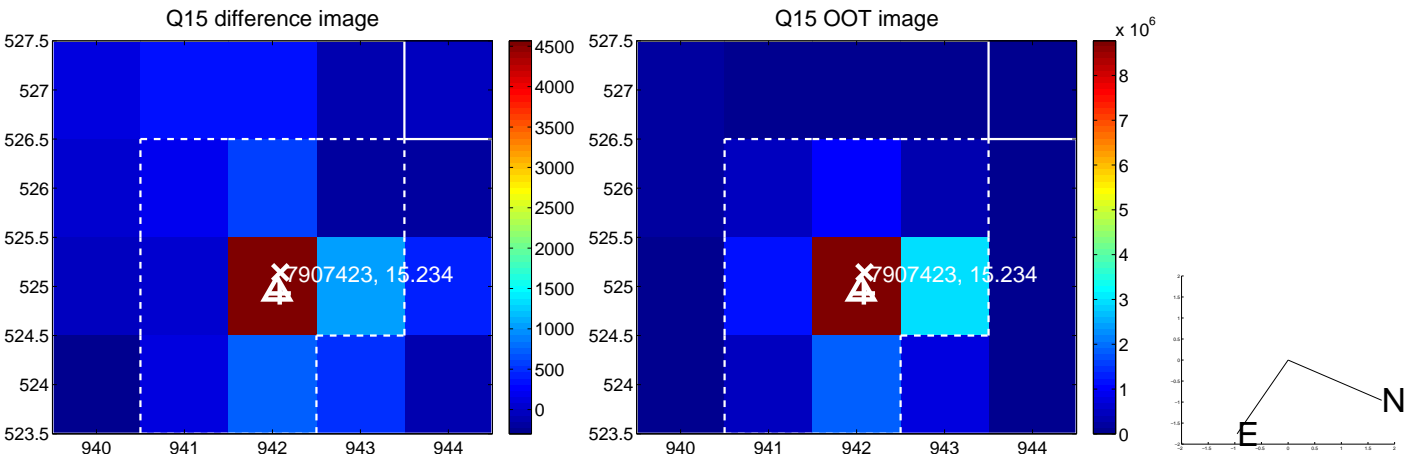
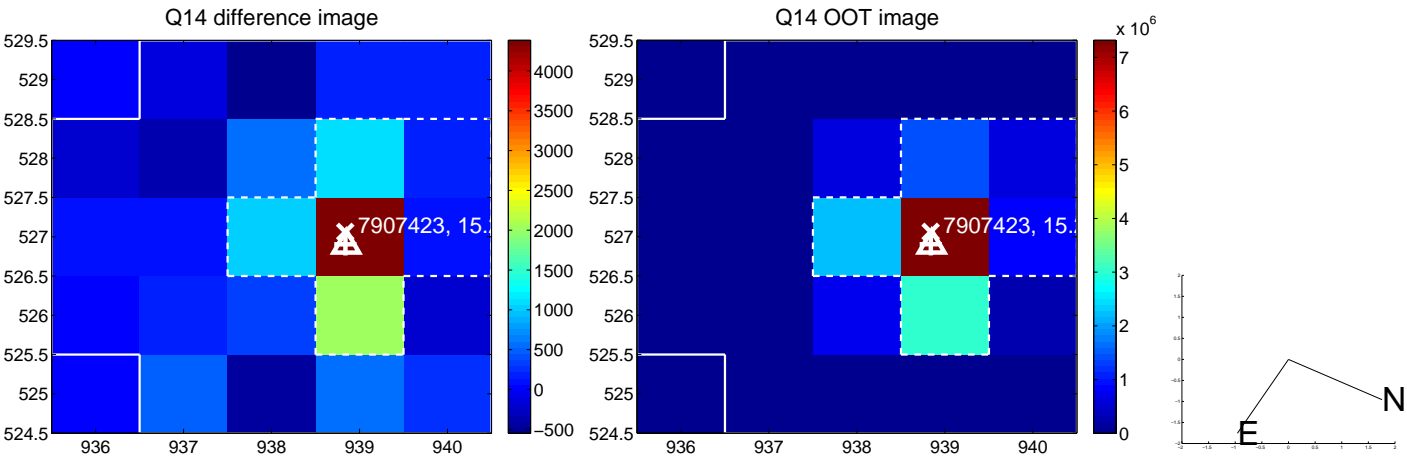
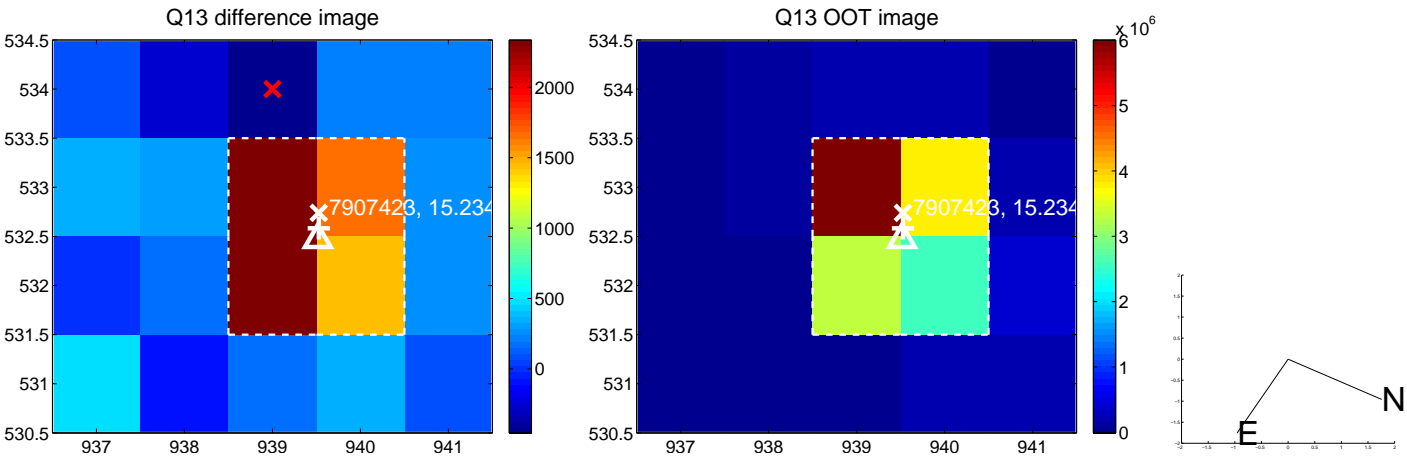
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



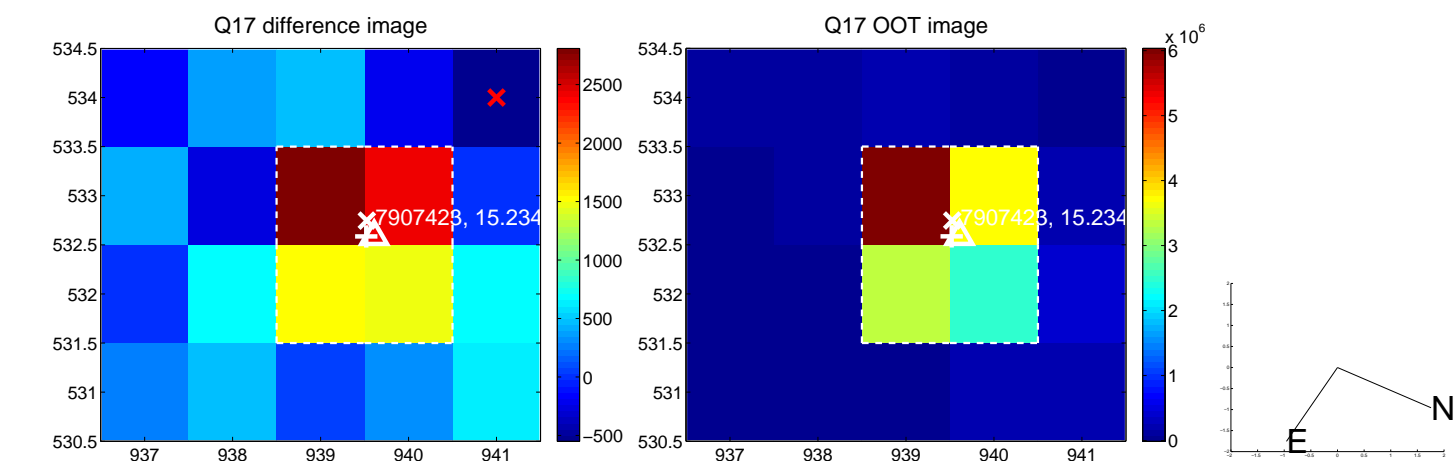
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



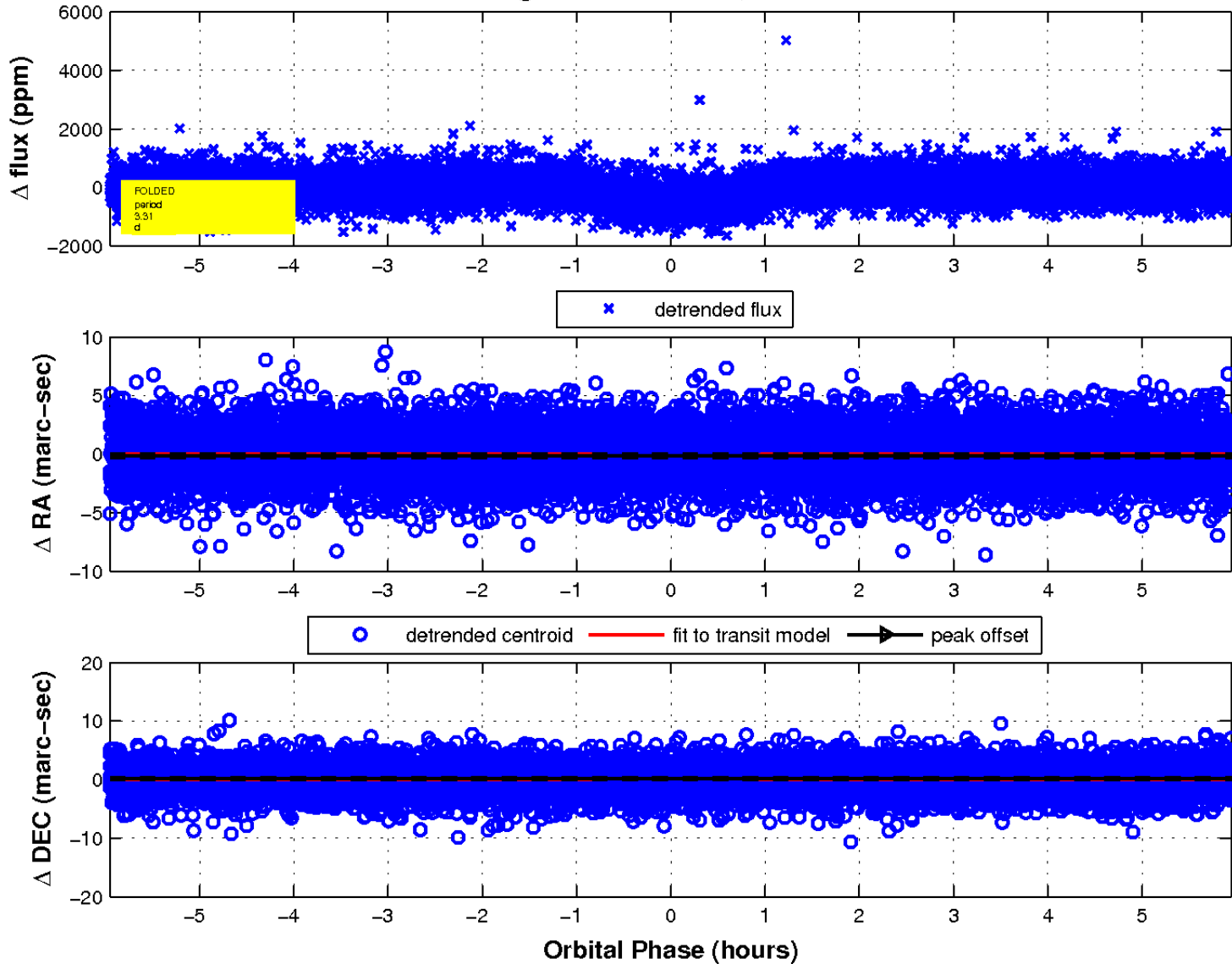
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

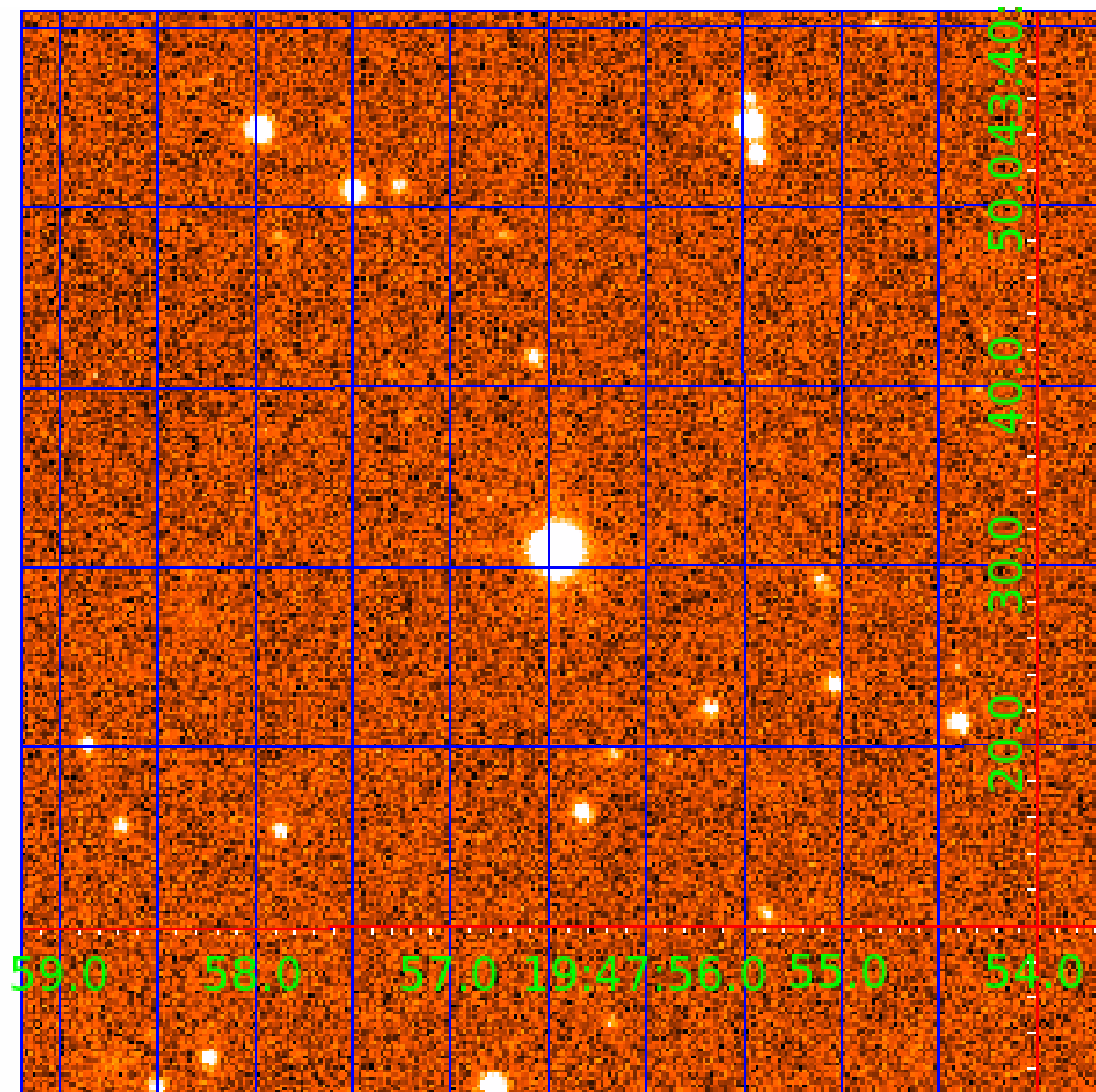


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



# KIC 007907423

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007907423-01	OBS	0899.01	7.113734	131.640604	798.1	2.292	35.8	40.0	0.41	3561	1.33	8.01
007907423-02	OBS	0899.02	3.306534	134.375164	502.8	1.984	30.5	35.1	0.41	3561	1.10	22.25
007907423-03	OBS	0899.03	15.368373	132.026632	765.7	2.696	24.3	26.7	0.41	3561	1.36	2.87

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007907423-01	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
007907423-02	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS
007907423-03	OBS	PC	1.00	0	0	0	0	CENT_KIC_POS

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

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

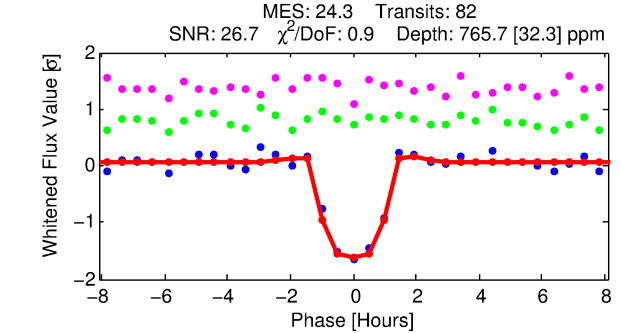
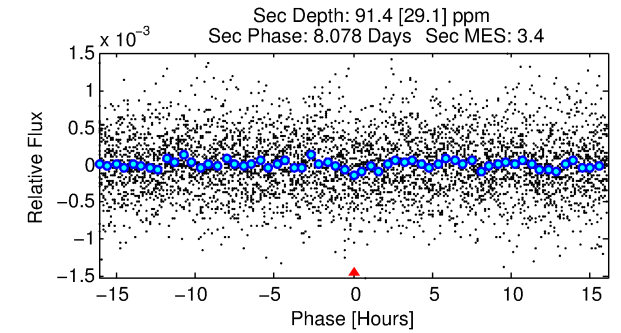
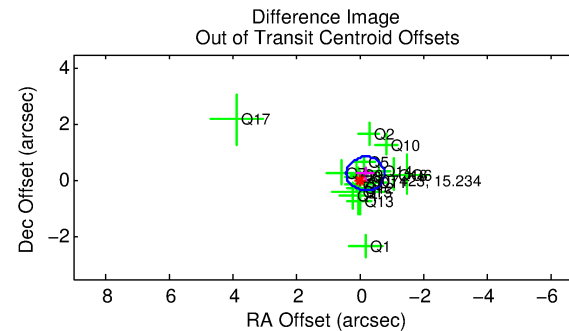
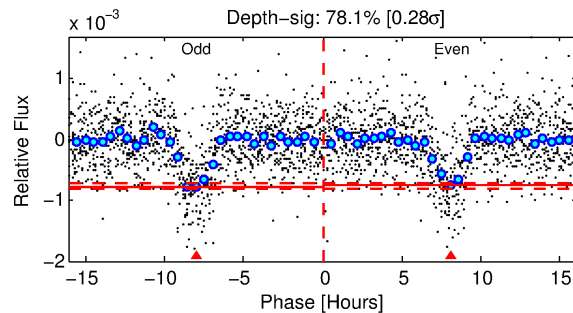
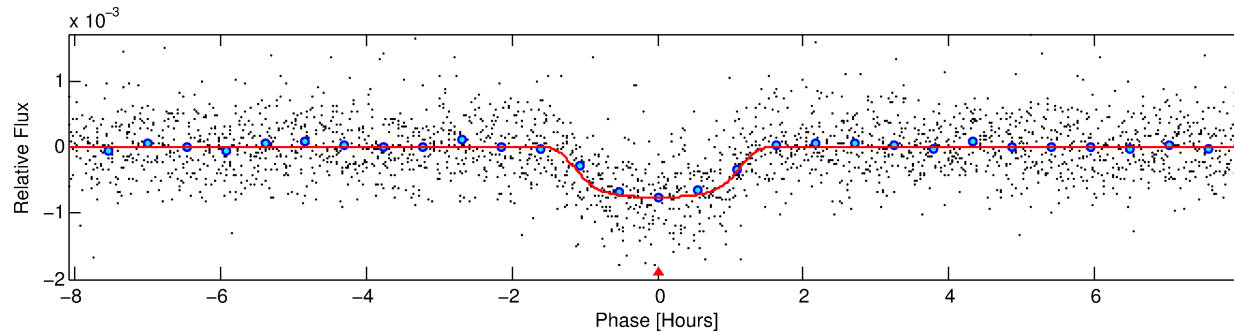
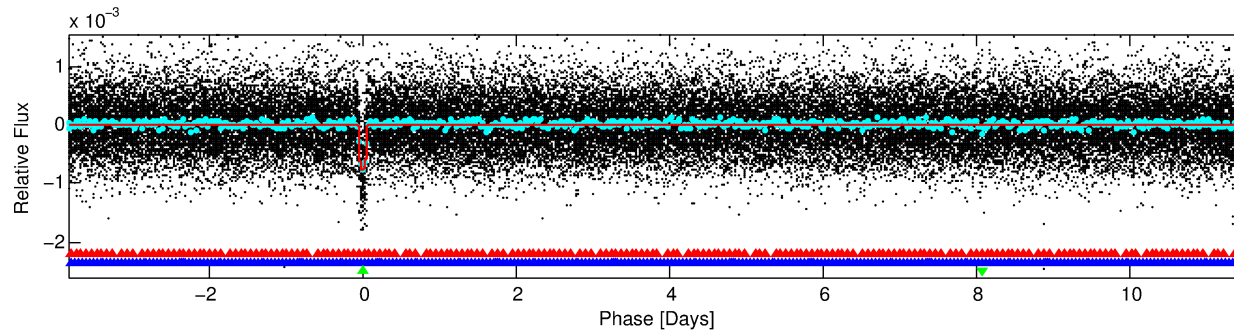
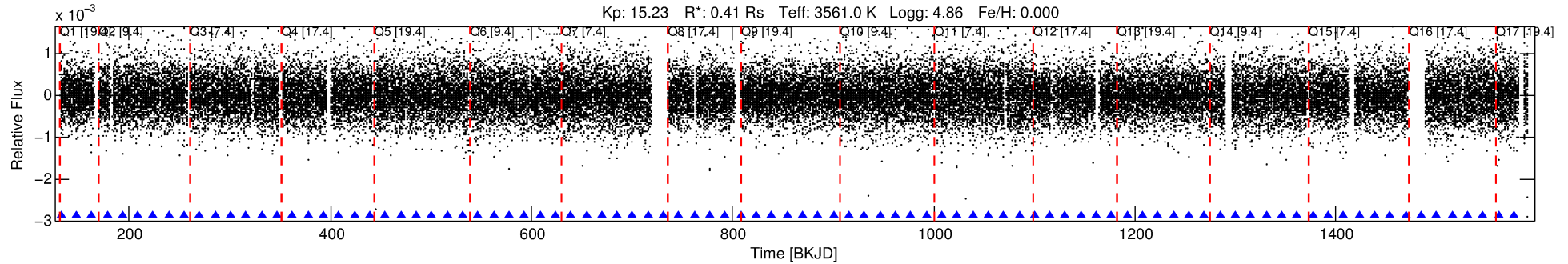
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007907423-03

No Significant Match Found

# DV One-Page Summary

KIC: 7907423 Candidate: 3 of 3 Period: 15.368 d  
KOI: K00899.03 Name: Kepler-249d Corr: 0.959



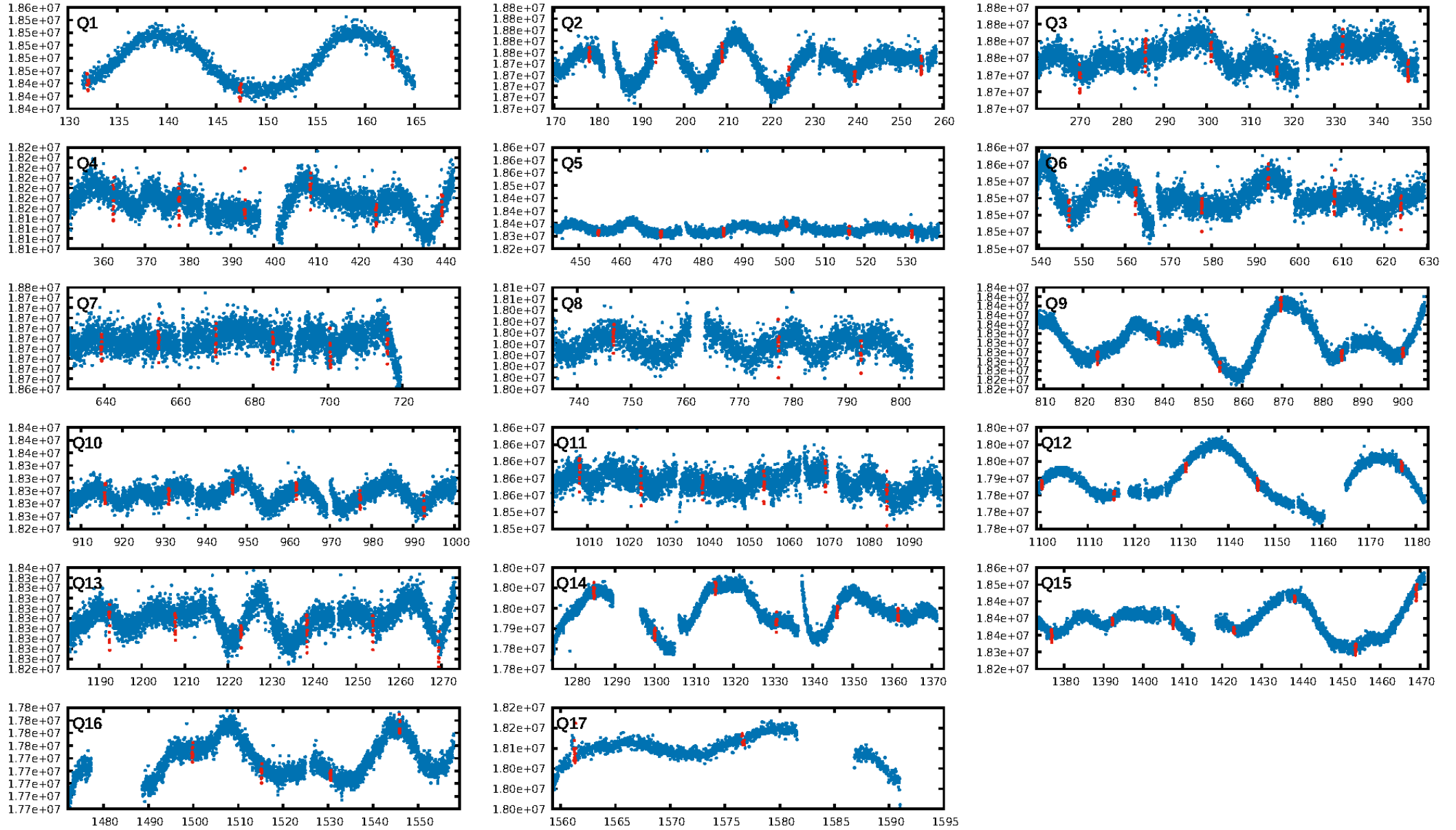
## DV Fit Results:

Period = 15.36837 [0.00004] d  
Epoch = 132.0266 [0.0022] BKJD  
Rp/R\* = 0.0303 [0.0031]  
a/R\* = 21.75 [8.69]  
b = 0.90 [0.08]  
Seff = 2.87 [0.47]  
Teq = 332 [14] K  
Rp = 1.36 [0.24] Re  
a = 0.0921 [0.0098] AU  
Ag = 230.54 [91.83] [2.50 $\sigma$ ]  
Teffp = 1999 [195] K [8.53 $\sigma$ ]

## DV Diagnostic Results:

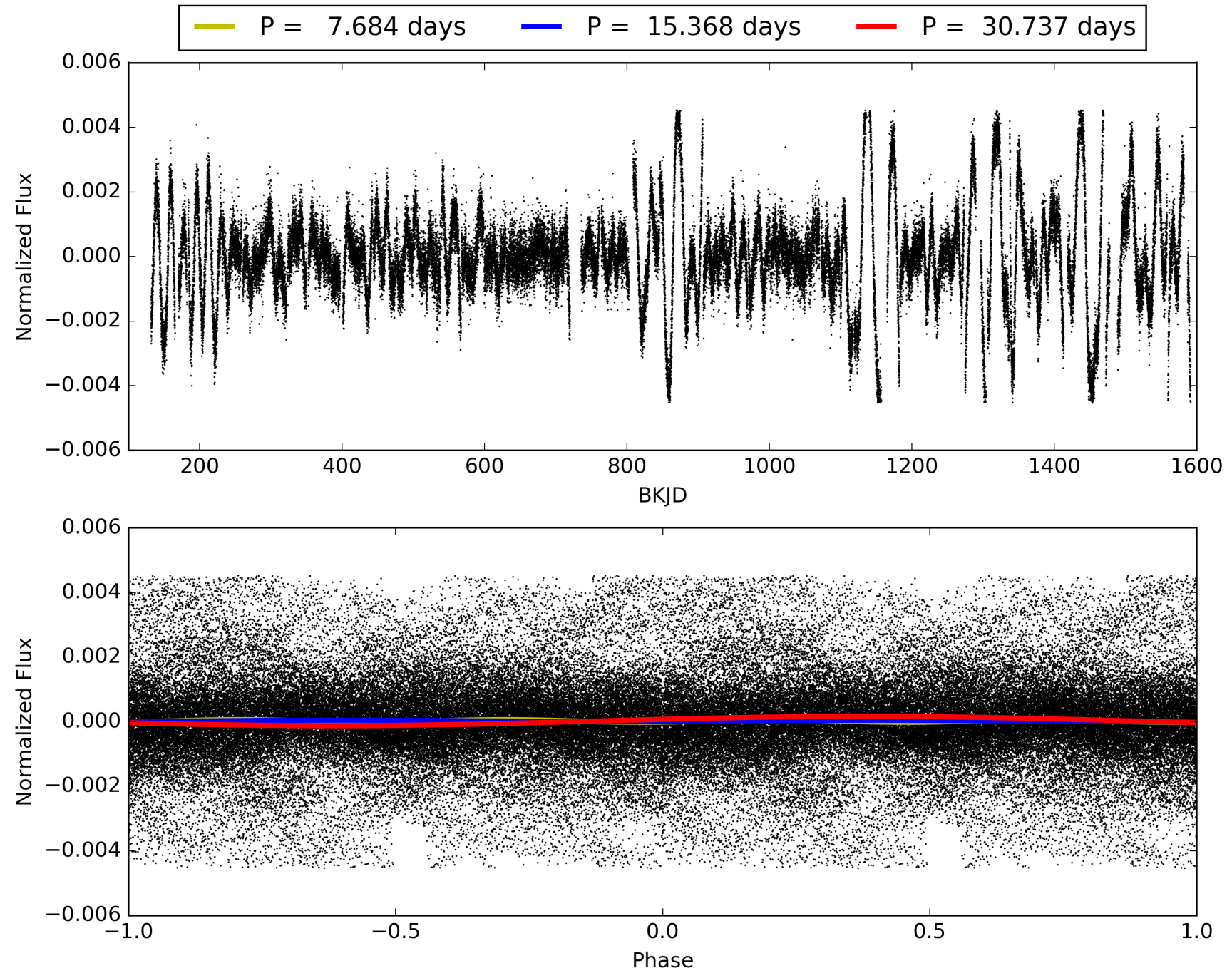
ShortPeriod-sig: 100.0% [55.99 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 68.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.57e-126  
RollingBand-fgt: 1.00 [77/77]  
GhostDiagnostic-chr: 3.919  
Centroid-sig: 0.2%  
Centroid-so: 0.566 arcsec [1.35 $\sigma$ ]  
OotOffset-rm: 0.310 arcsec [1.55 $\sigma$ ]  
KicOffset-rm: 0.645 arcsec [2.11 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.94 [16/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007907423-03, PDC Light Curves



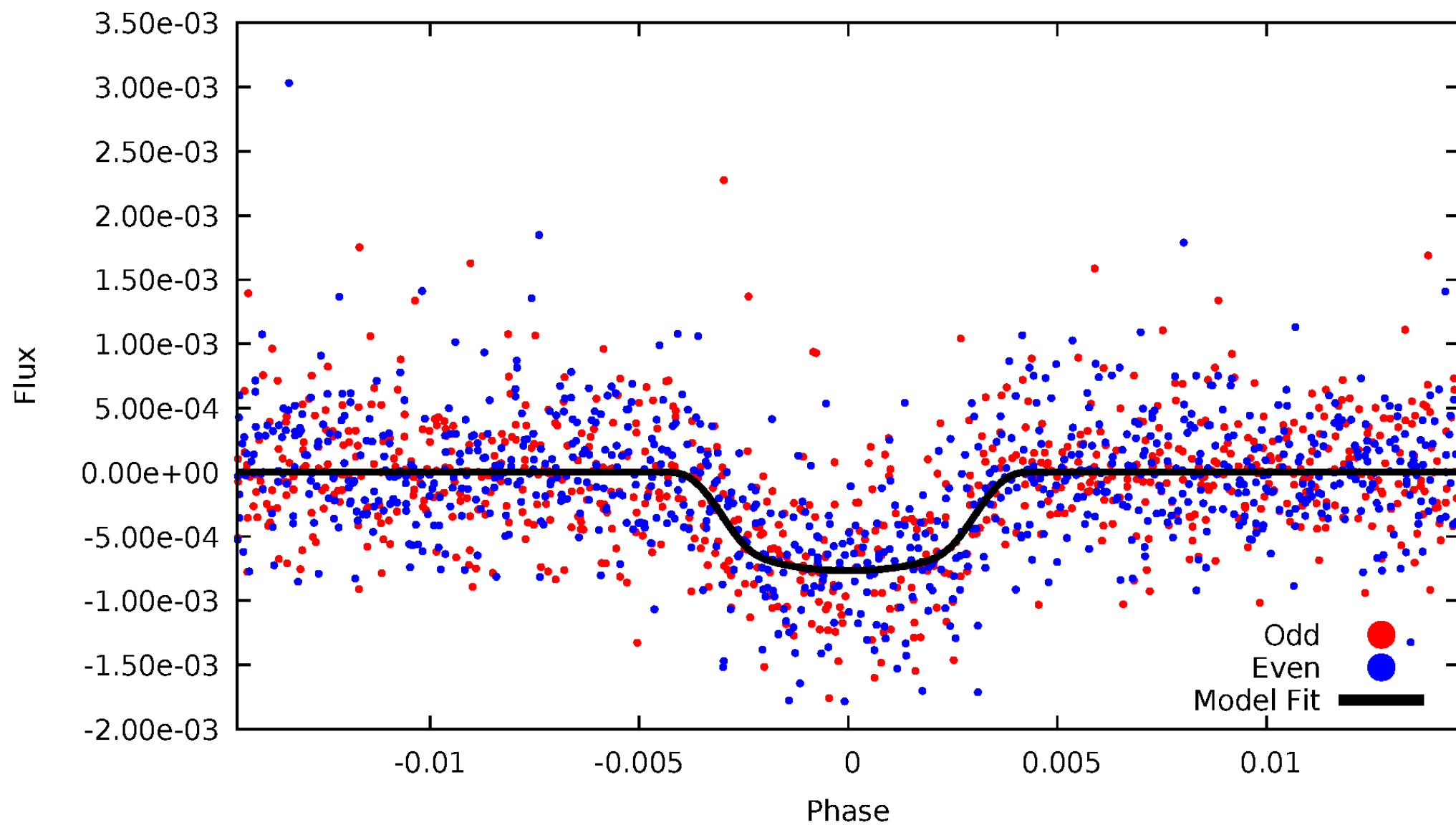


TCE 007907423-03



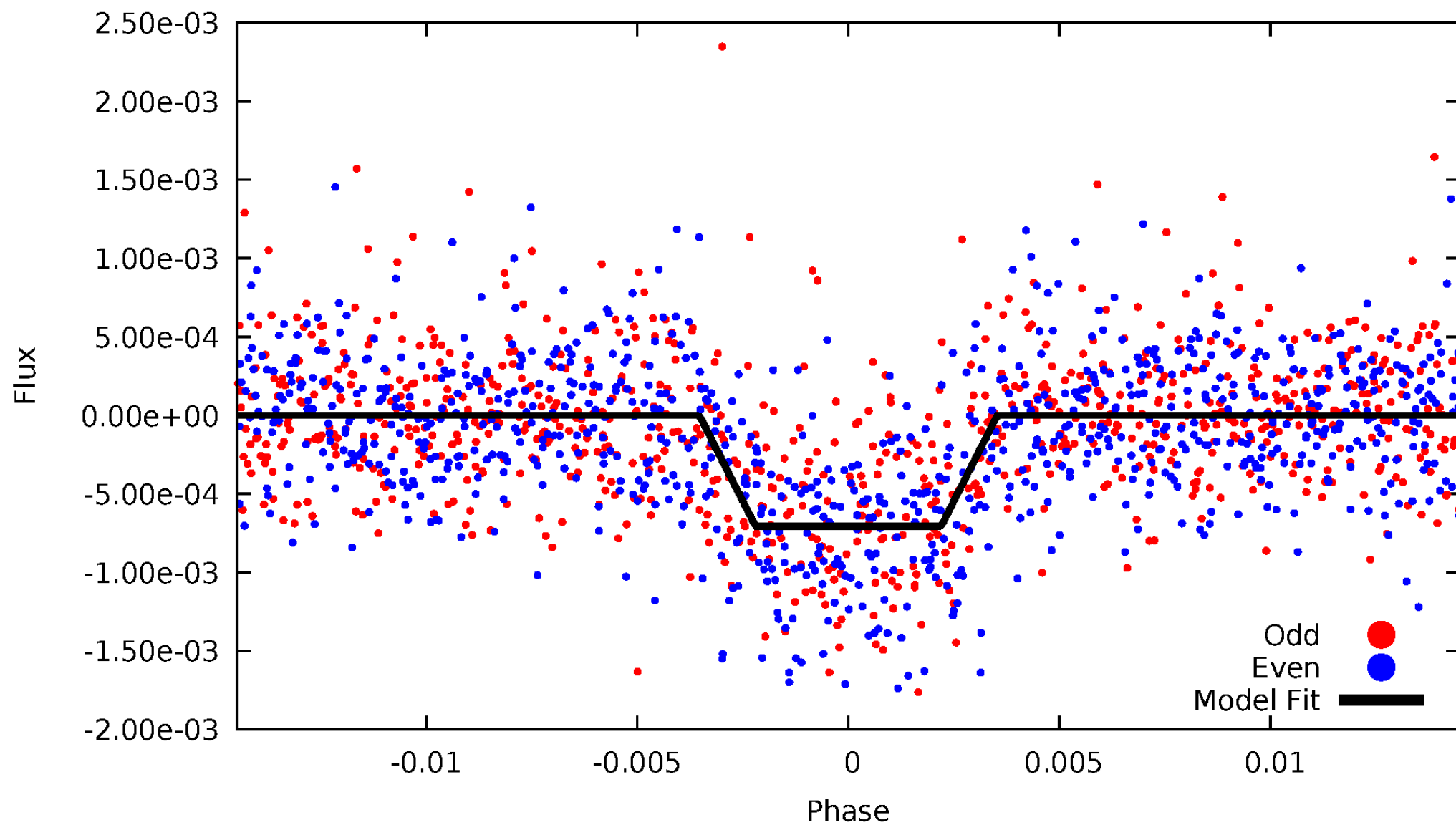
# DV Odd/Even

TCE 007907423-03



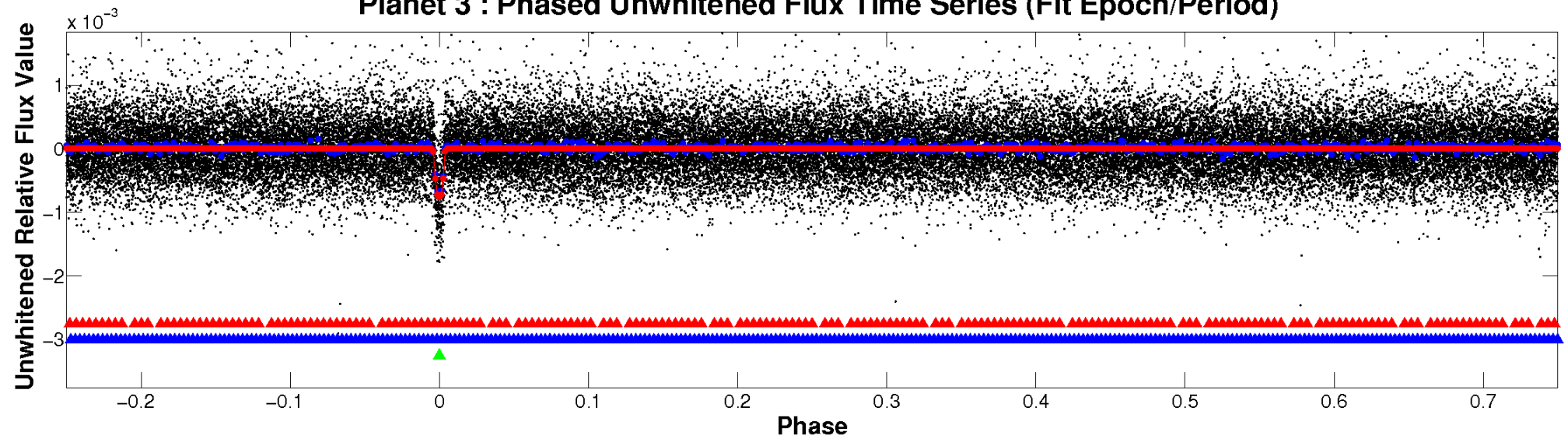
# ALT Odd/Even

TCE 007907423-03

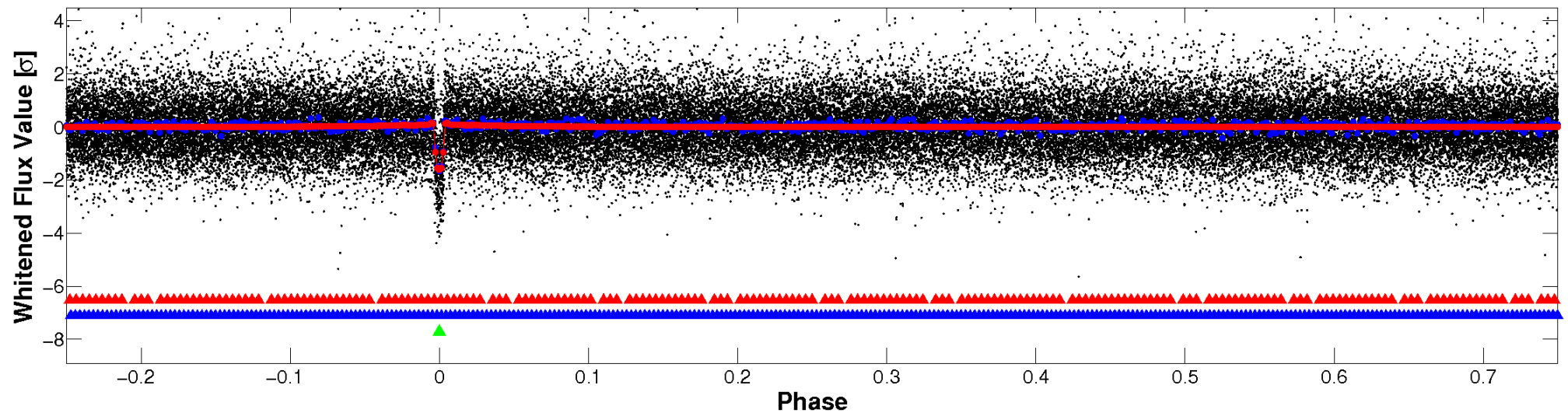


# Non-Whitened Vs. Whitened Light Curve

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

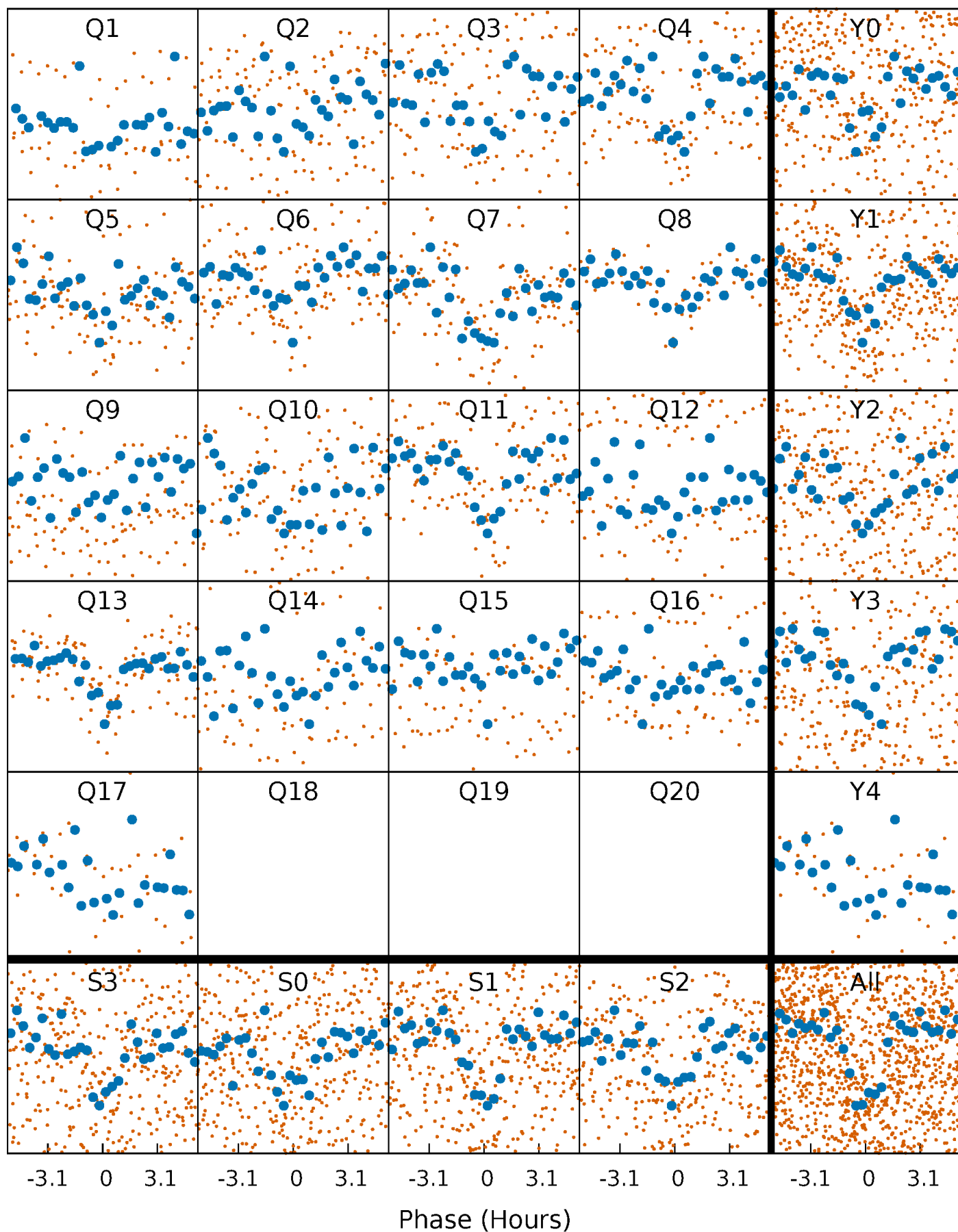


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

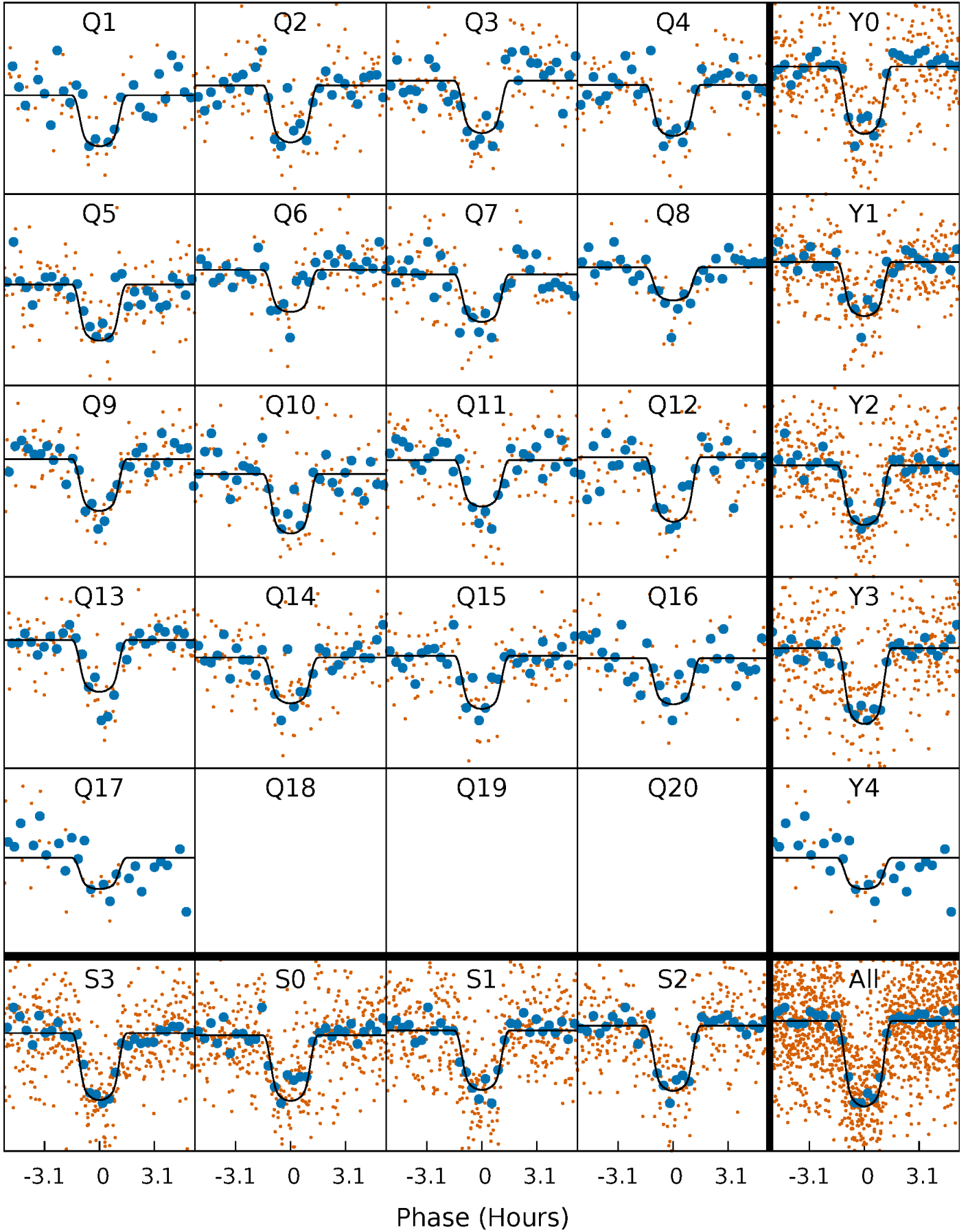
TCE 007907423-03 P= 15.368373 Days  $T_0=132.026632$  (BKJD)





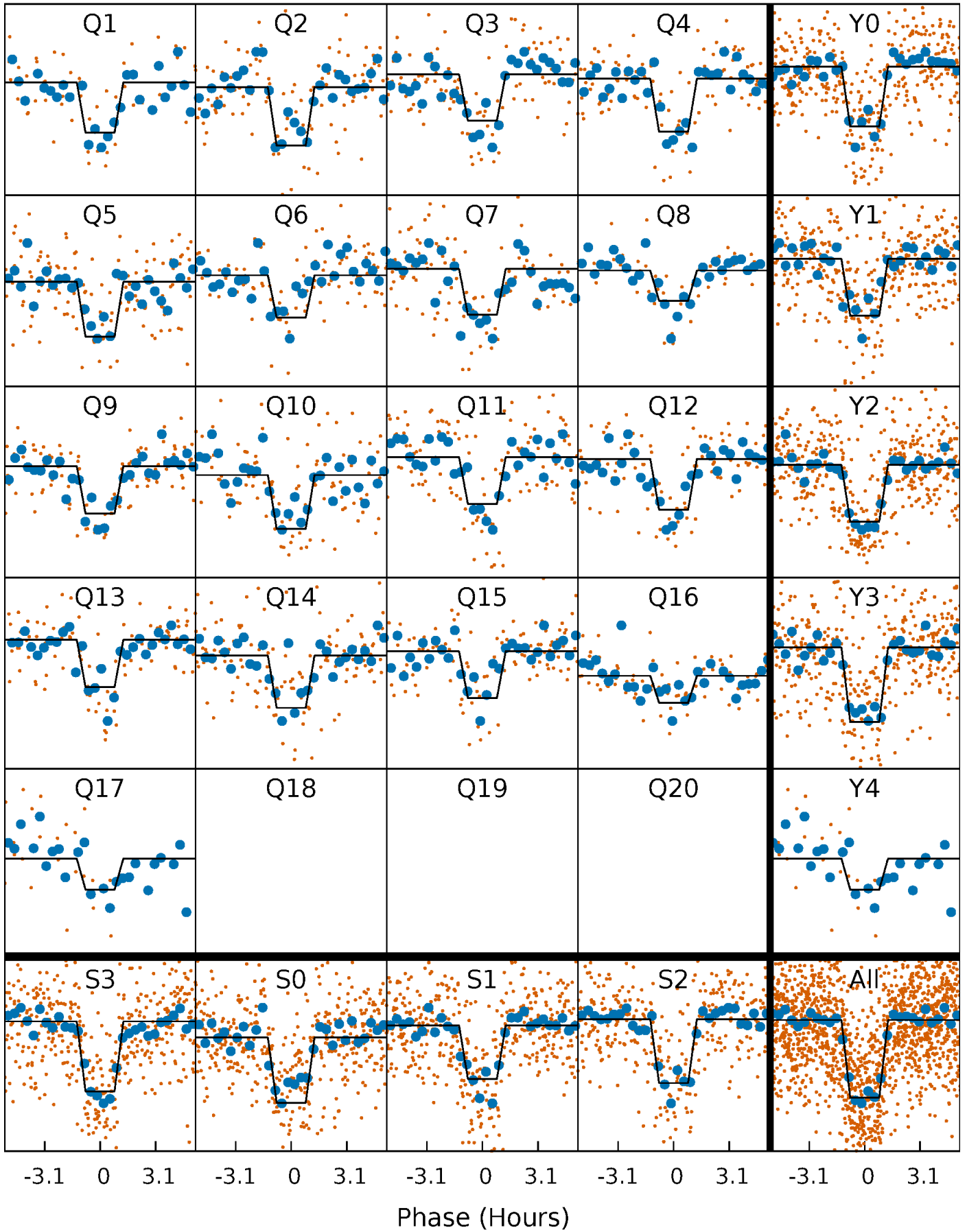
# DV Quarter-Phased Transit Curves

TCE 007907423-03   P= 15.368373 Days    $T_0=132.026632$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007907423-03 P= 15.368362 Days  $T_0=132.026779$  (BKJD)

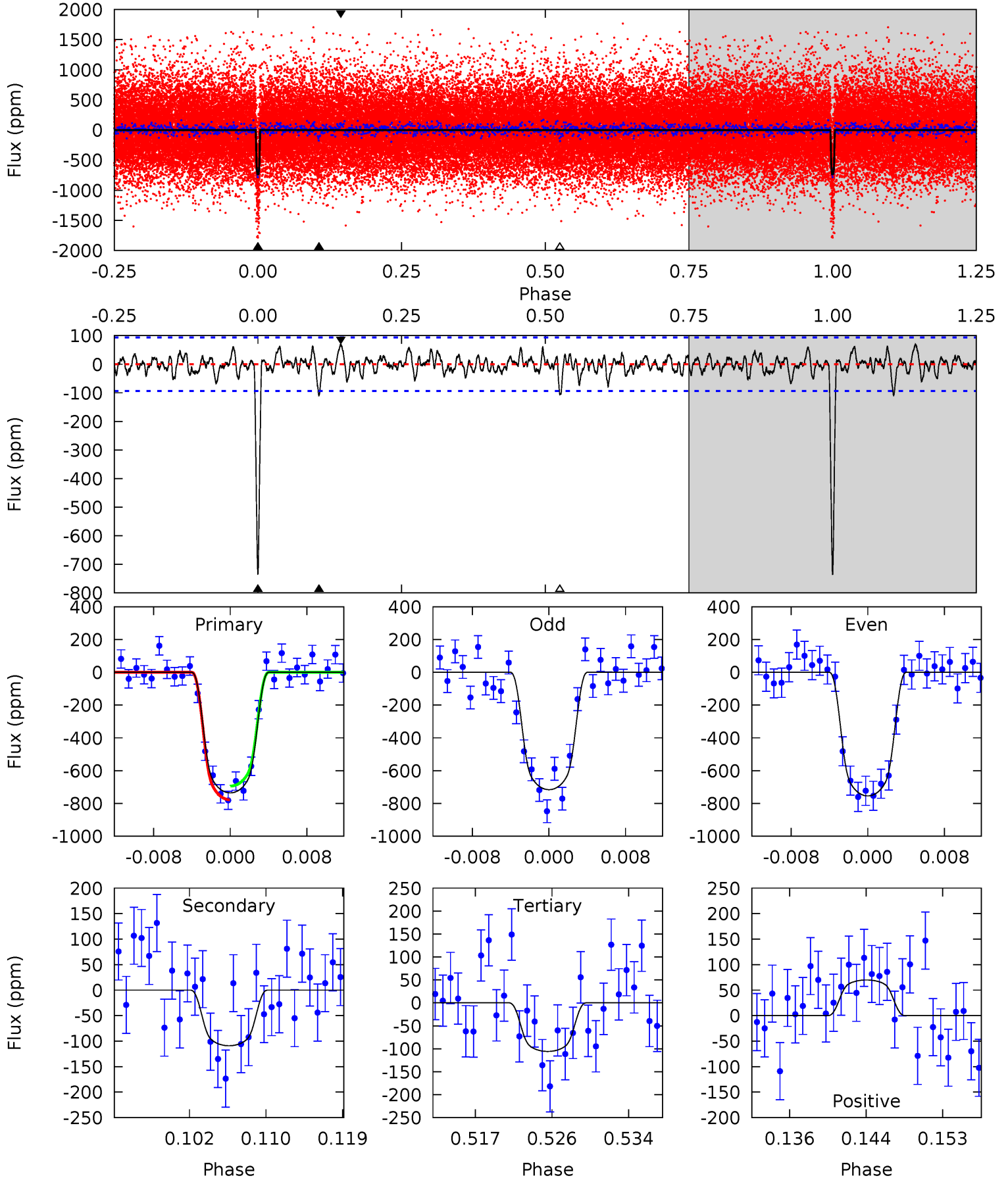




# DV Model-Shift Uniqueness Test

007907423-03, P = 15.368373 Days, E = 116.658259 Days

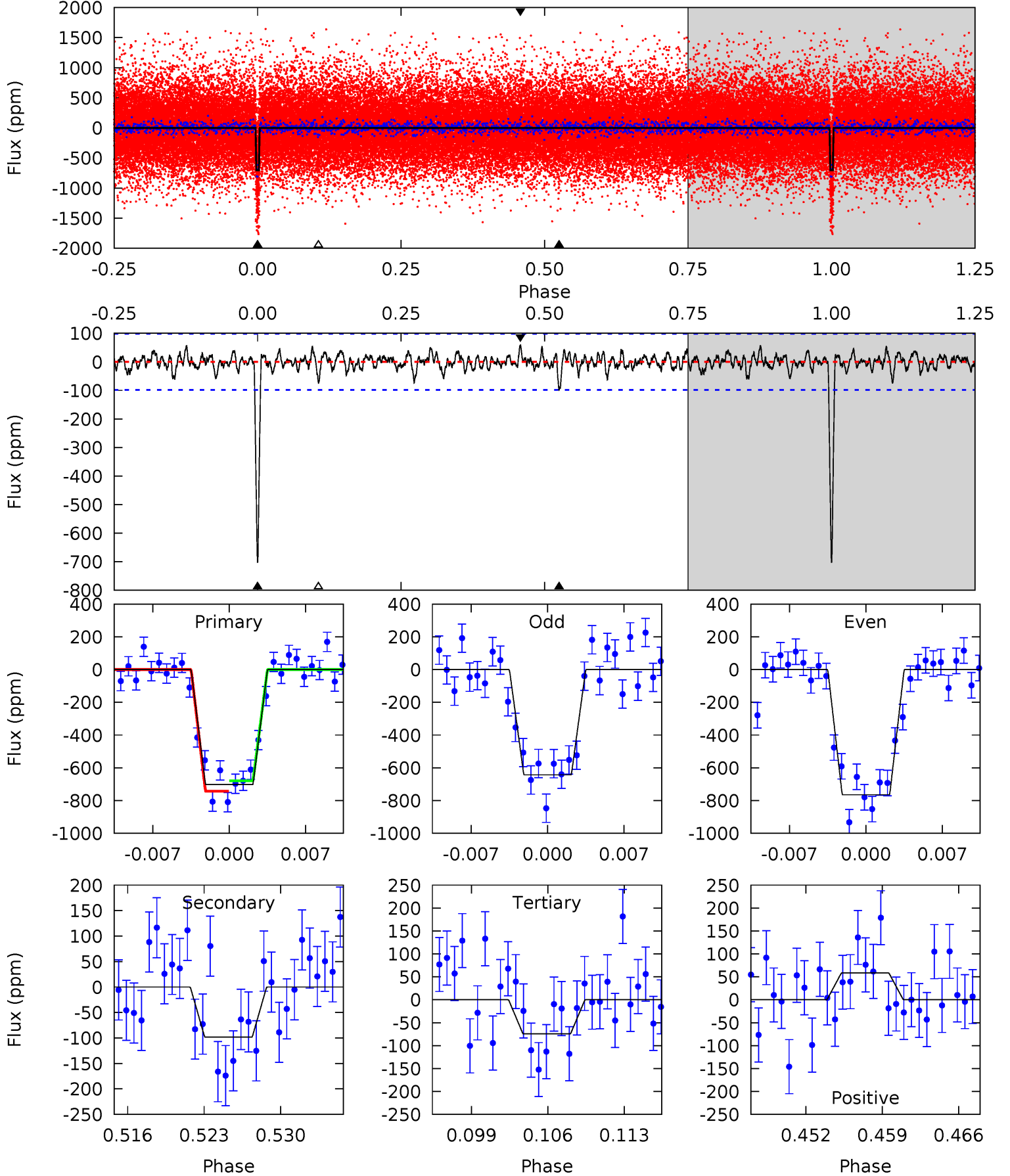
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.7	5.88	5.71	3.77	5.06	2.63	1.33	34.0	35.9	0.18	2.11	1.03	0.96	0.09	2.26



# Alt Model-Shift Uniqueness Test

007907423-03, P = 15.368362 Days, E = 116.658417 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.4	5.10	3.86	3.03	5.09	2.69	1.07	32.6	33.4	1.23	2.07	3.14	0.98	0.08	1.66



### Stellar Parameters For KIC 007907423

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$3561^{+71}_{-89}$	$4.855^{+0.055}_{-0.055}$	$0.000^{+0.150}_{-0.150}$	$0.411^{+0.045}_{-0.060}$	$0.440^{+0.041}_{-0.076}$	$8.950^{+3.027}_{-1.898}$
	+2%/-2%	+1%/-1%	+inf%/-inf%	+11%/-15%	+9%/-17%	+34%/-21%
Source	SPE70	SPE60	SPE70	DSEP		

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

### Secondary Eclipse Parameters for KIC 007907423-03 / KOI 0899.03

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-109 \pm 19$	$1.36^{+0.17}_{-0.16}$	$464^{+16}_{-16}$	$2629^{+98}_{-105}$	$277^{+85}_{-73}$
Alt.	$-98 \pm 19$	$1.18^{+0.17}_{-0.15}$	$463^{+15}_{-15}$	$2680^{+122}_{-114}$	$327^{+107}_{-88}$

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

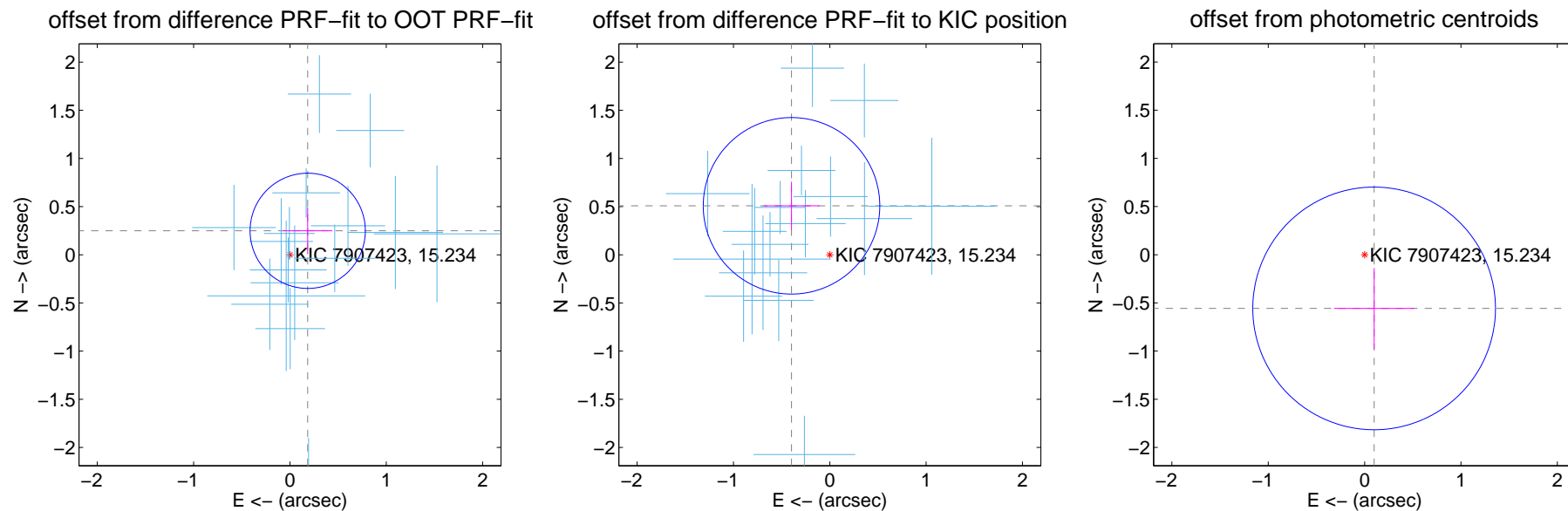
## DV Centroid Data

Supplemental centroid analysis for 007907423-03. Kepler magnitude: 15.23. Transit SNR 26.74

There are 16 quarters with good PRF difference image offsets

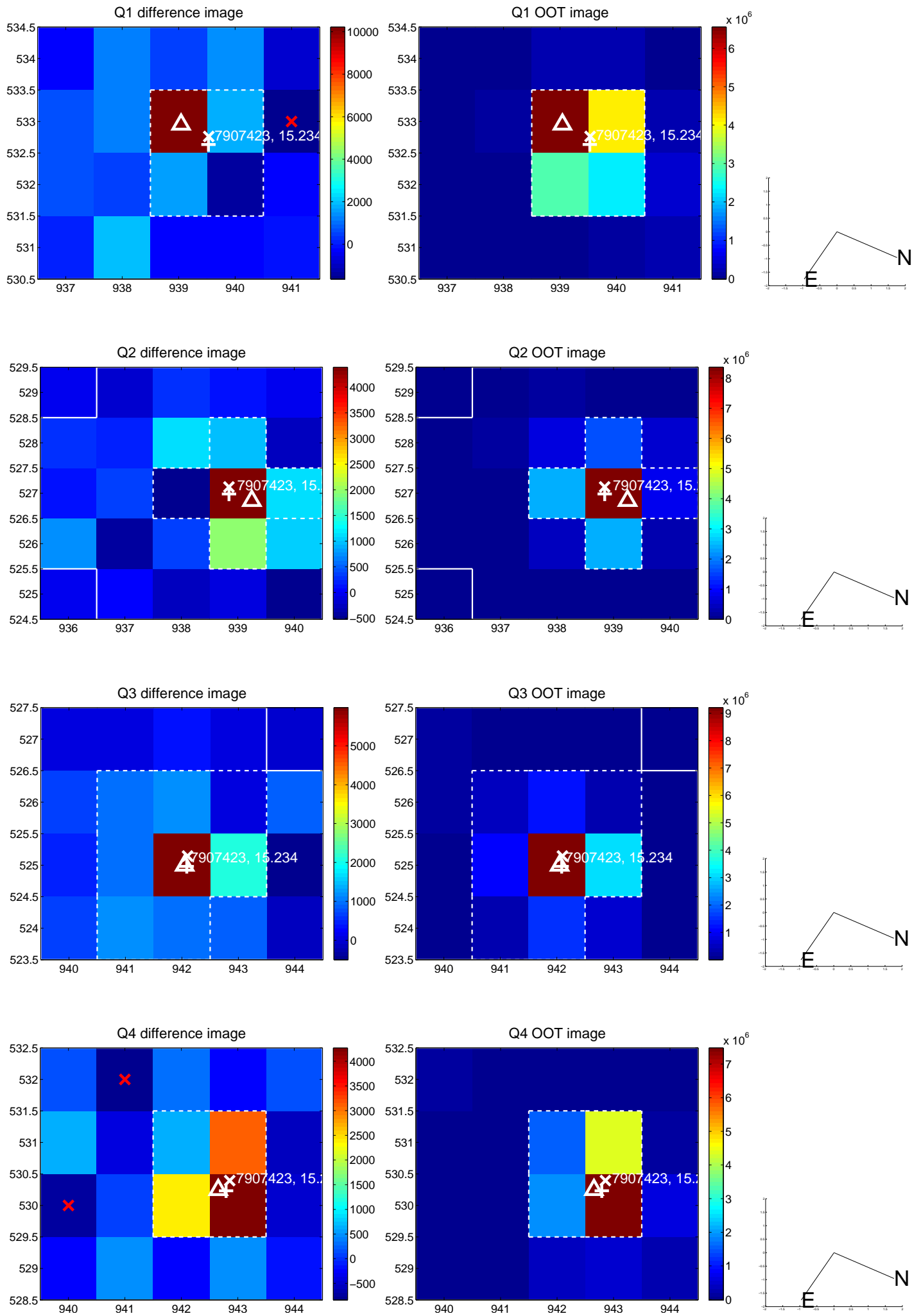
The direct PRF centroid is offset from the target star catalog position by about 0.64 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.310 \pm 0.199$	1.55	$-0.184 \pm 0.256$	$0.249 \pm 0.242$
PRF-fit source offset from KIC position	$0.645 \pm 0.305$	2.11	$0.397 \pm 0.289$	$0.508 \pm 0.250$
photometric centroid source offset	$0.57 \pm 0.42$	1.35	$-0.10 \pm 0.42$	$-0.56 \pm 0.42$



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.

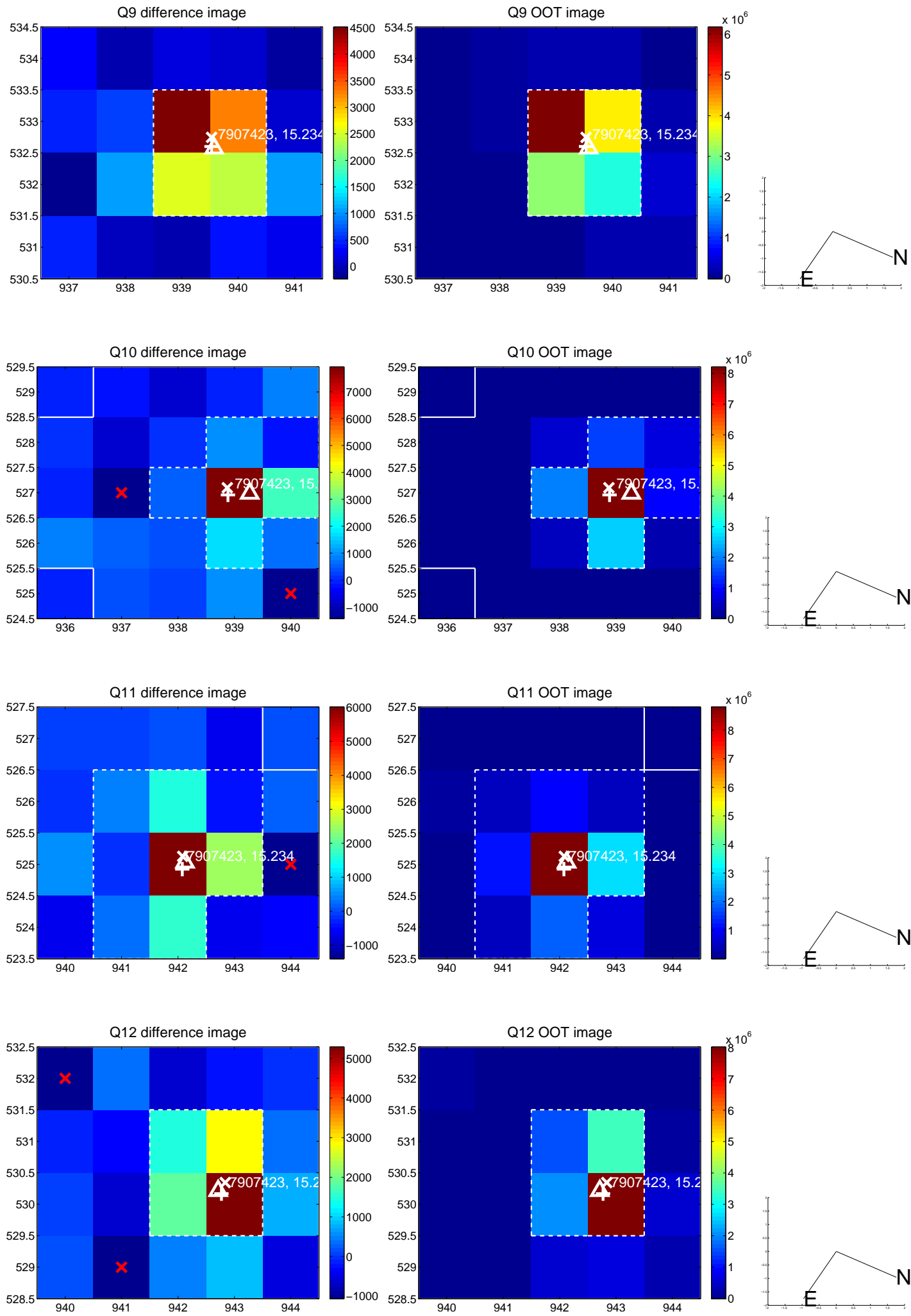
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



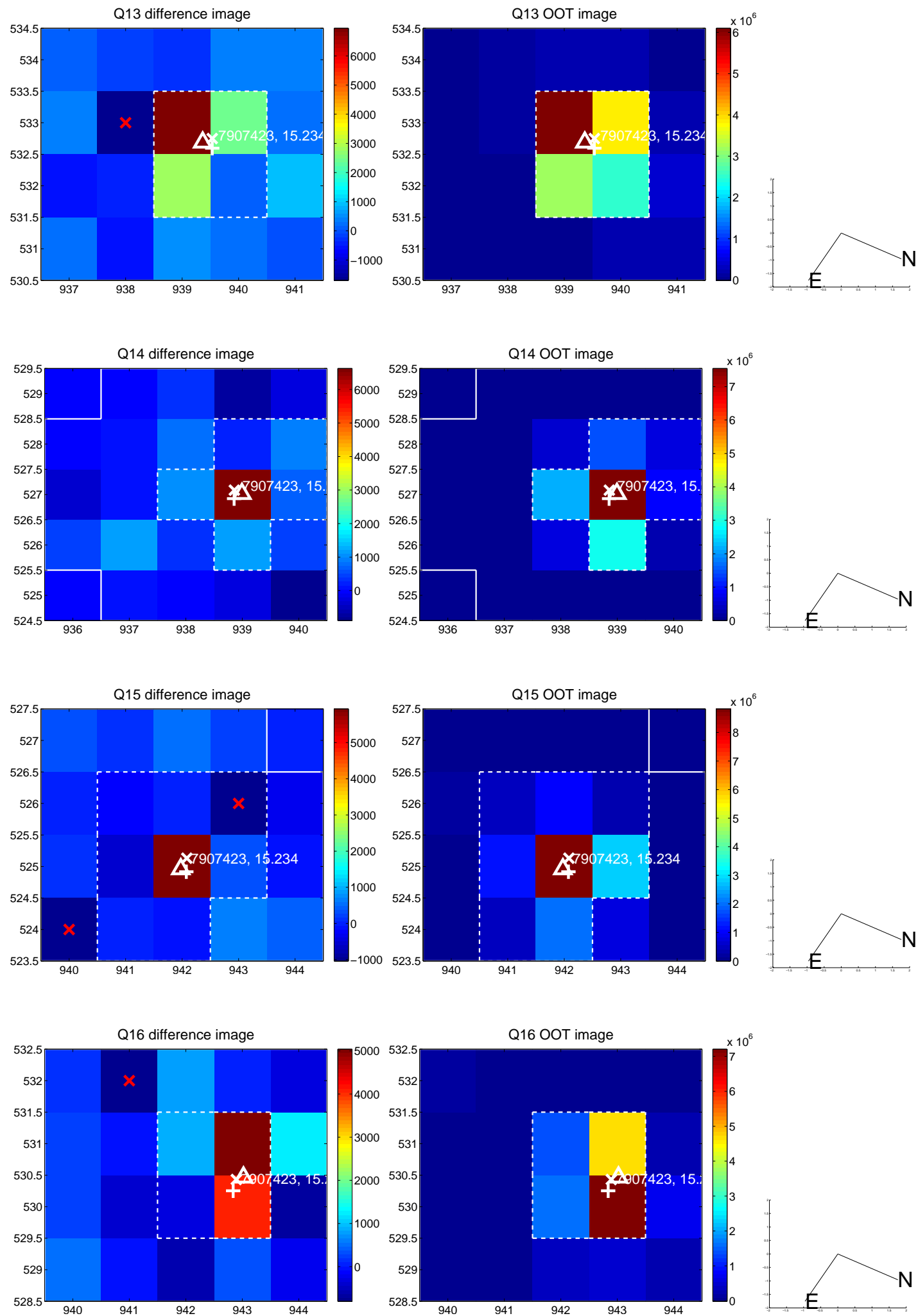




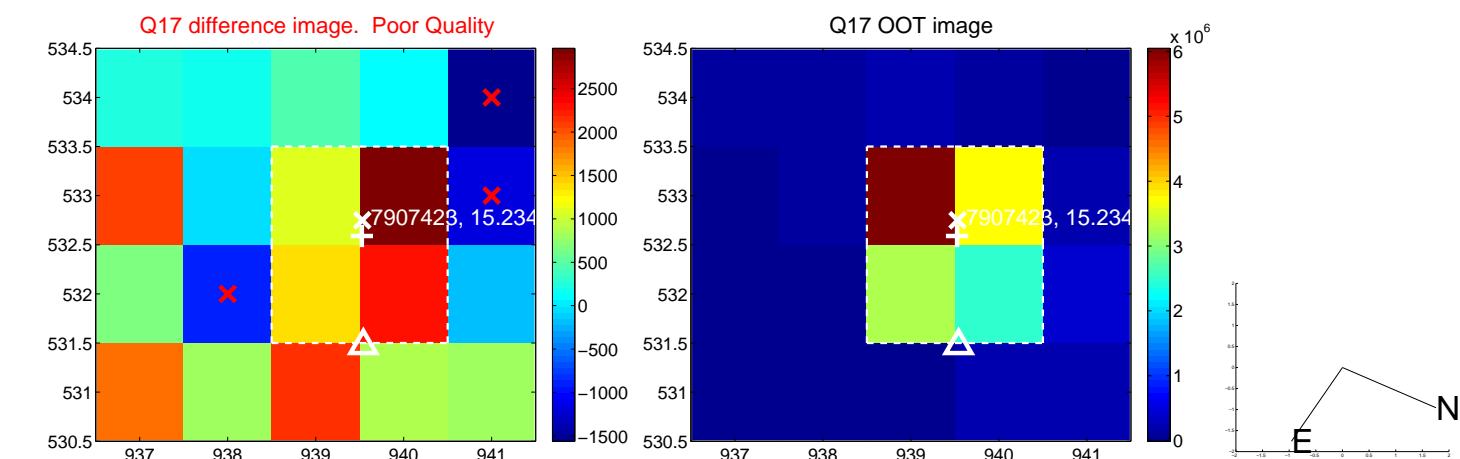
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



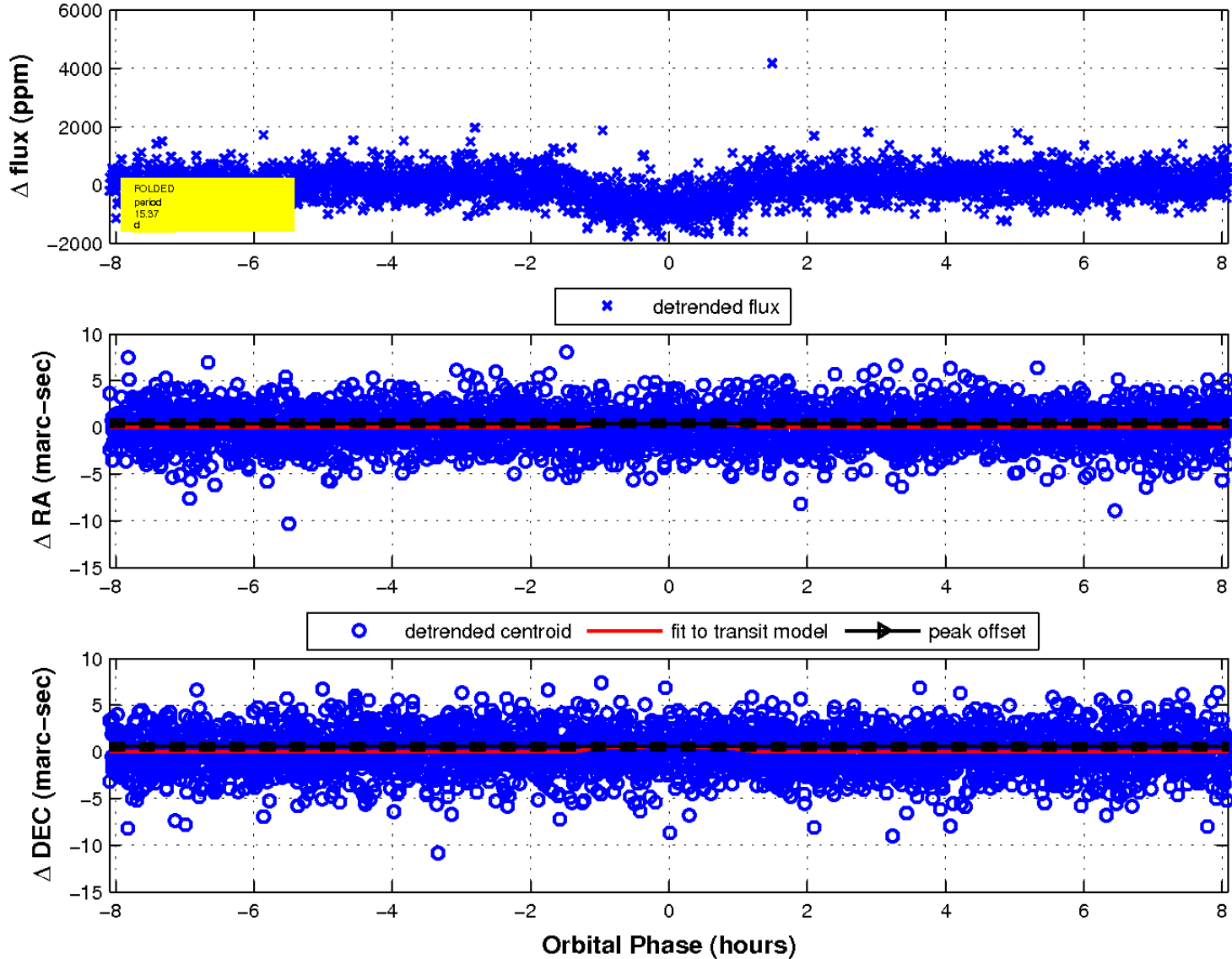
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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# UKIRT Image

Declination

