

# KIC 011709244

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011709244-01	OBS	1832.01	4.544441	134.900527	863.6	1.922	45.0	52.3	0.94	5445	3.26	253.56
011709244-02	OBS	1832.02	12.762212	143.729182	720.7	2.426	20.0	22.5	0.94	5445	4.40	63.99
011709244-03	OBS	1832.03	38.714862	134.033094	823.2	3.721	18.3	19.9	0.94	5445	3.09	14.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011709244-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
011709244-02	OBS	PC	0.97	0	0	0	0	NO_COMMENT
011709244-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

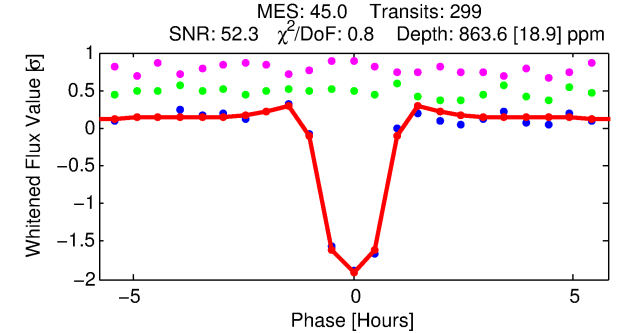
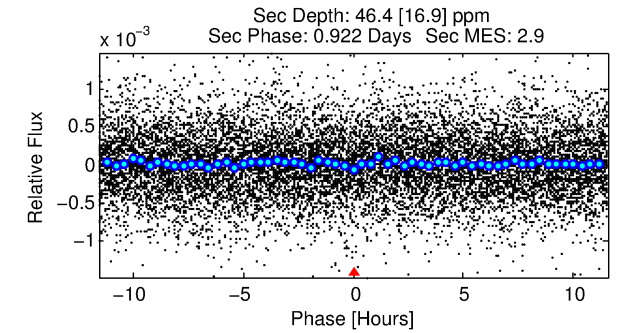
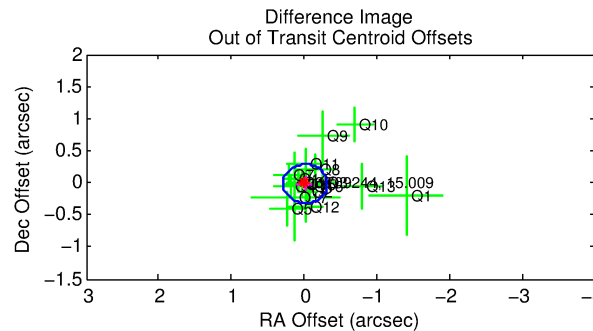
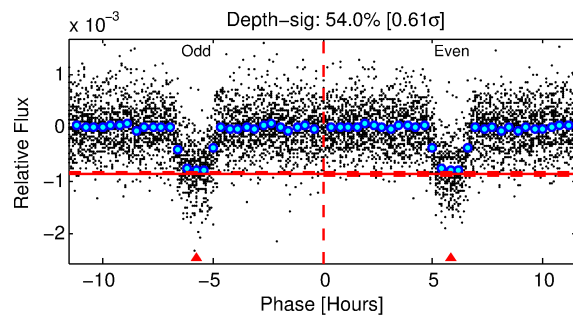
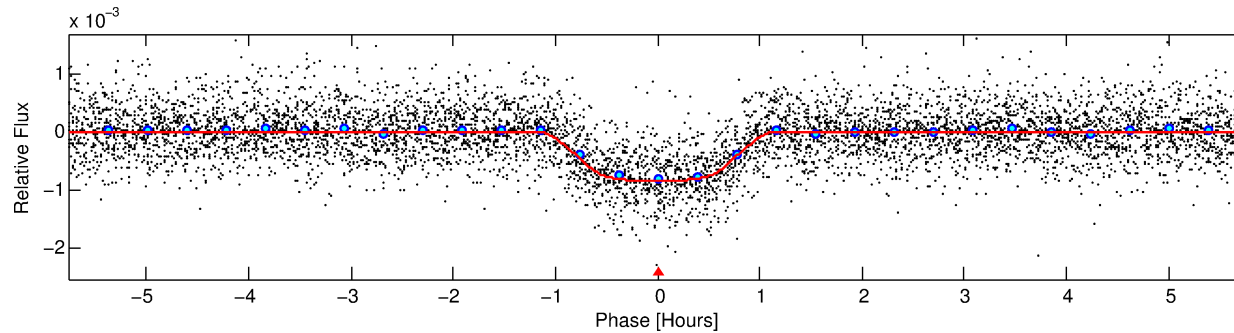
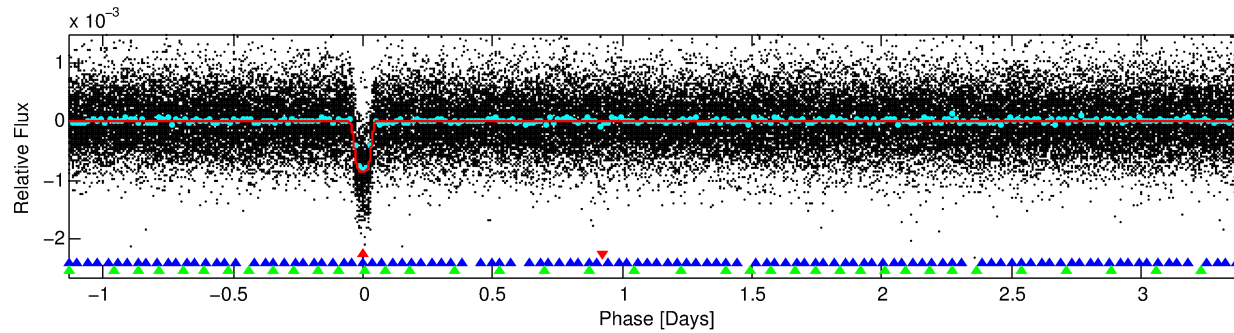
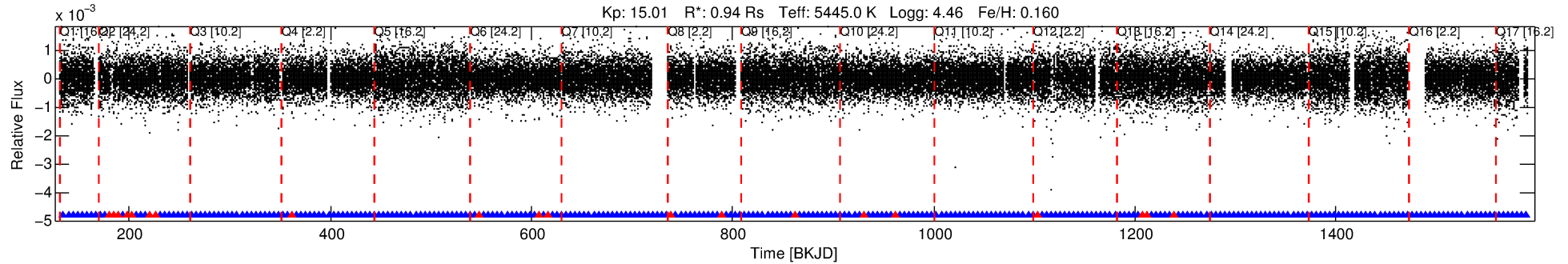
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011709244-01

No Significant Match Found

# DV One-Page Summary

KIC: 11709244 Candidate: 1 of 3 Period: 4.544 d  
KOI: K01832.01 Name: Kepler-325b Corr: 0.952



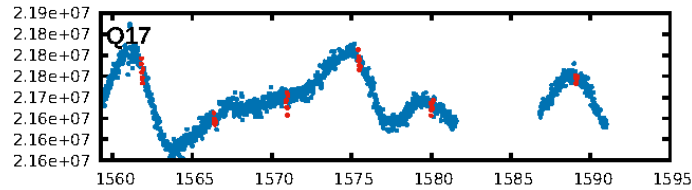
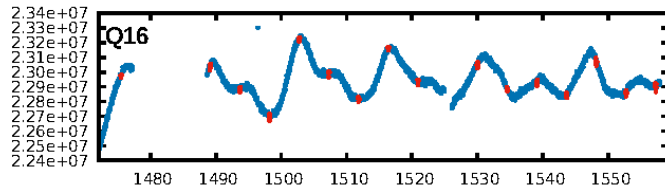
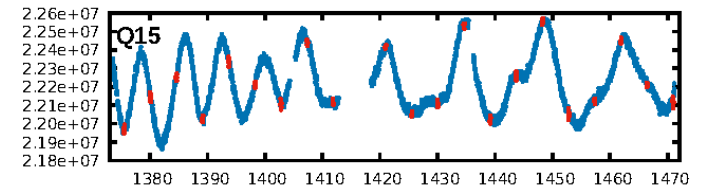
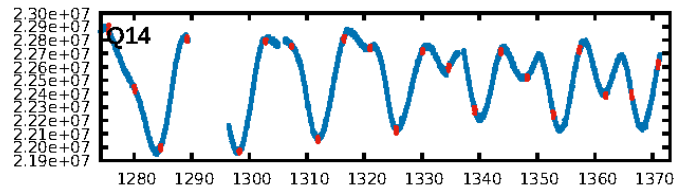
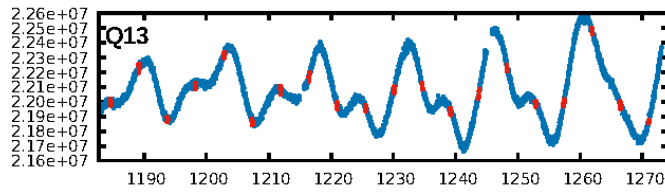
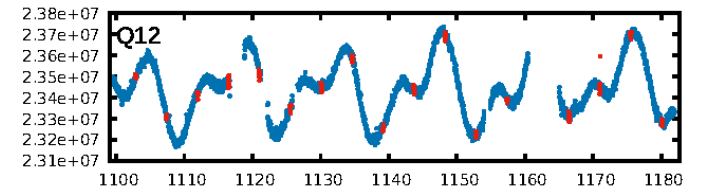
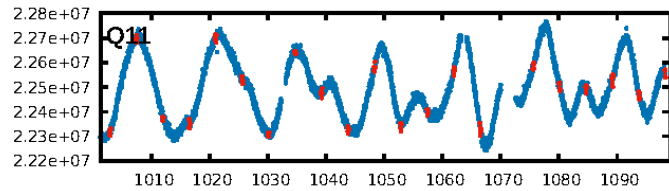
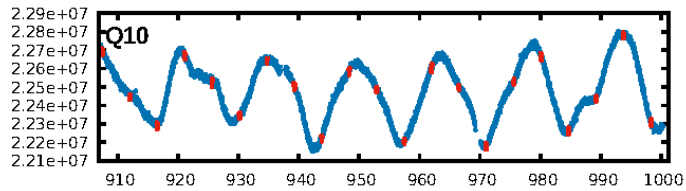
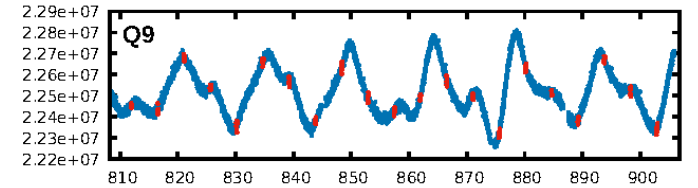
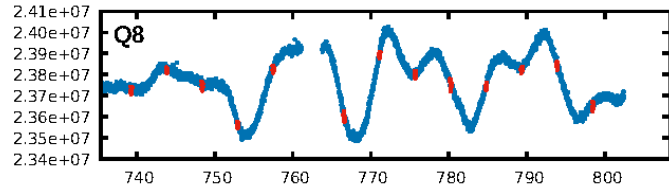
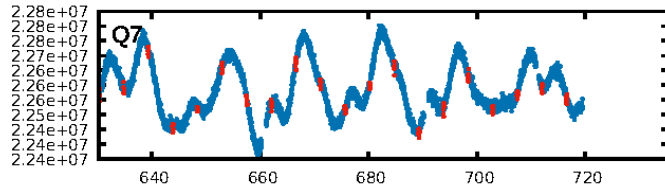
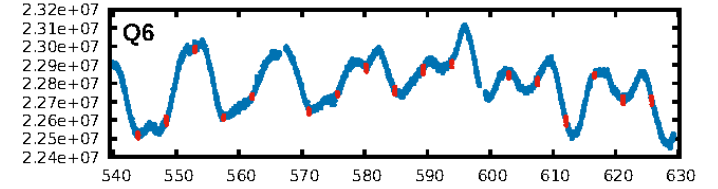
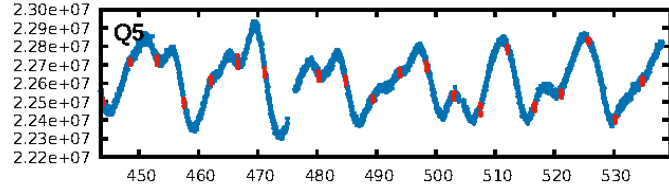
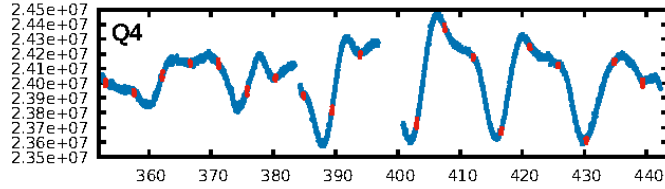
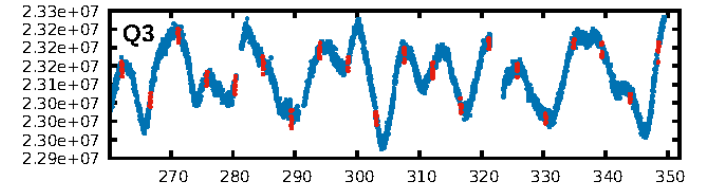
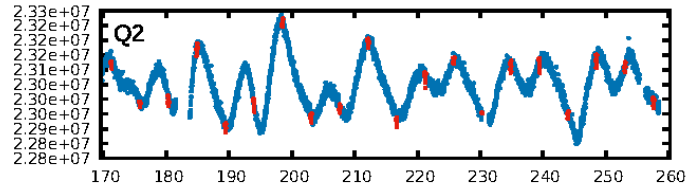
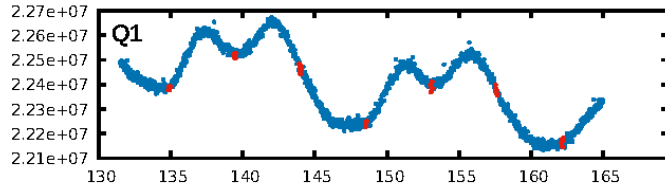
## DV Fit Results:

Period = 4.54444 [0.00000] d  
Epoch = 134.9005 [0.0006] BKJD  
Rp/R\* = 0.0319 [0.0029]  
a/R\* = 9.74 [3.52]  
b = 0.88 [0.10]  
Seff = 253.55 [44.53]  
Teq = 1018 [45] K  
Rp = 3.26 [0.47] Re  
a = 0.0522 [0.0055] AU  
Ag = 6.54 [2.86] [1.93 $\sigma$ ]  
Teffp = 2516 [258] K [5.73 $\sigma$ ]

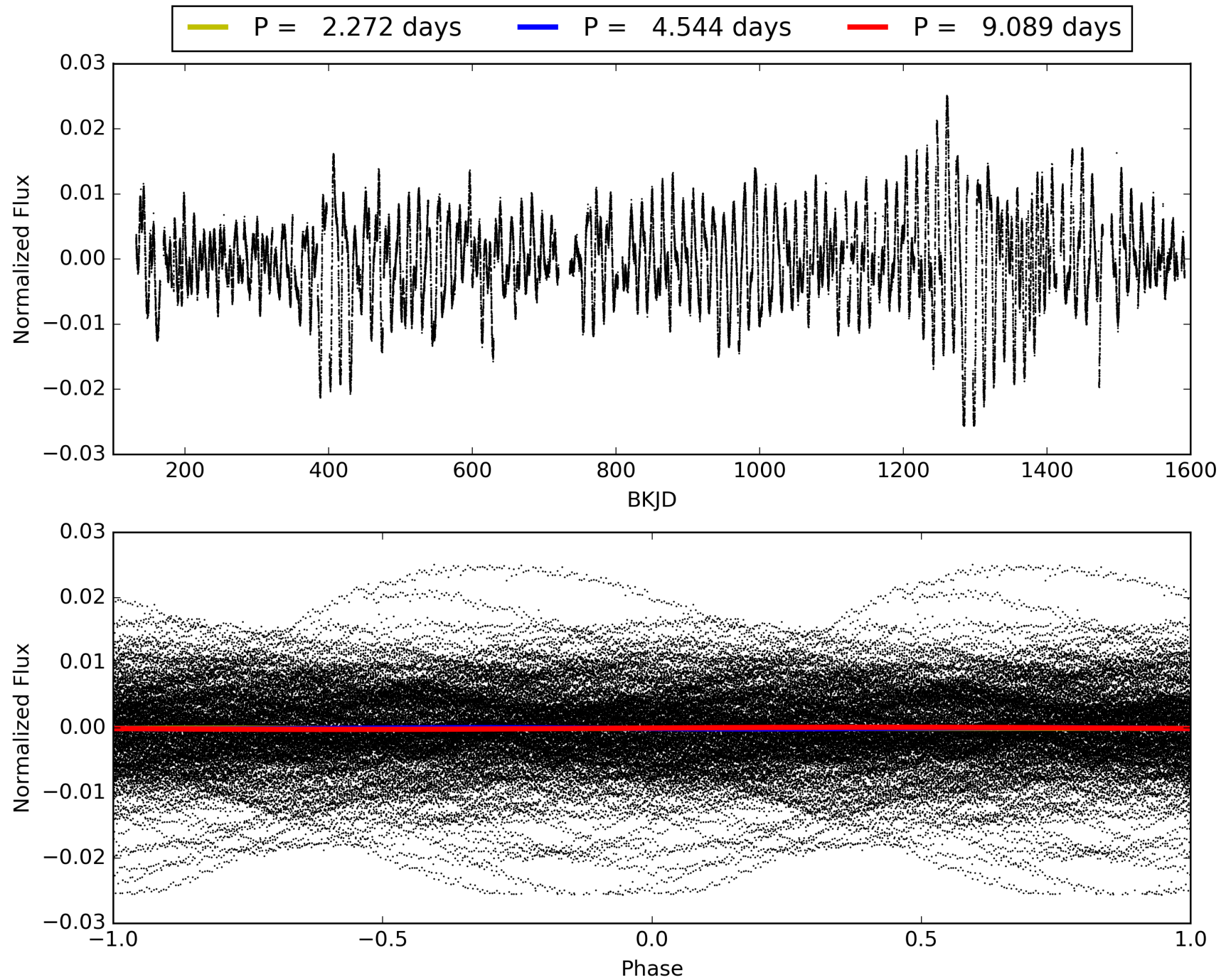
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [63.72 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 0.93 [266/286]  
GhostDiagnostic-chr: 3.092  
Centroid-sig: 0.9%  
Centroid-so: 0.403 arcsec [1.78 $\sigma$ ]  
OotOffset-rm: 0.022 arcsec [0.22 $\sigma$ ]  
KicOffset-rm: 0.111 arcsec [1.10 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 011709244-01, PDC Light Curves

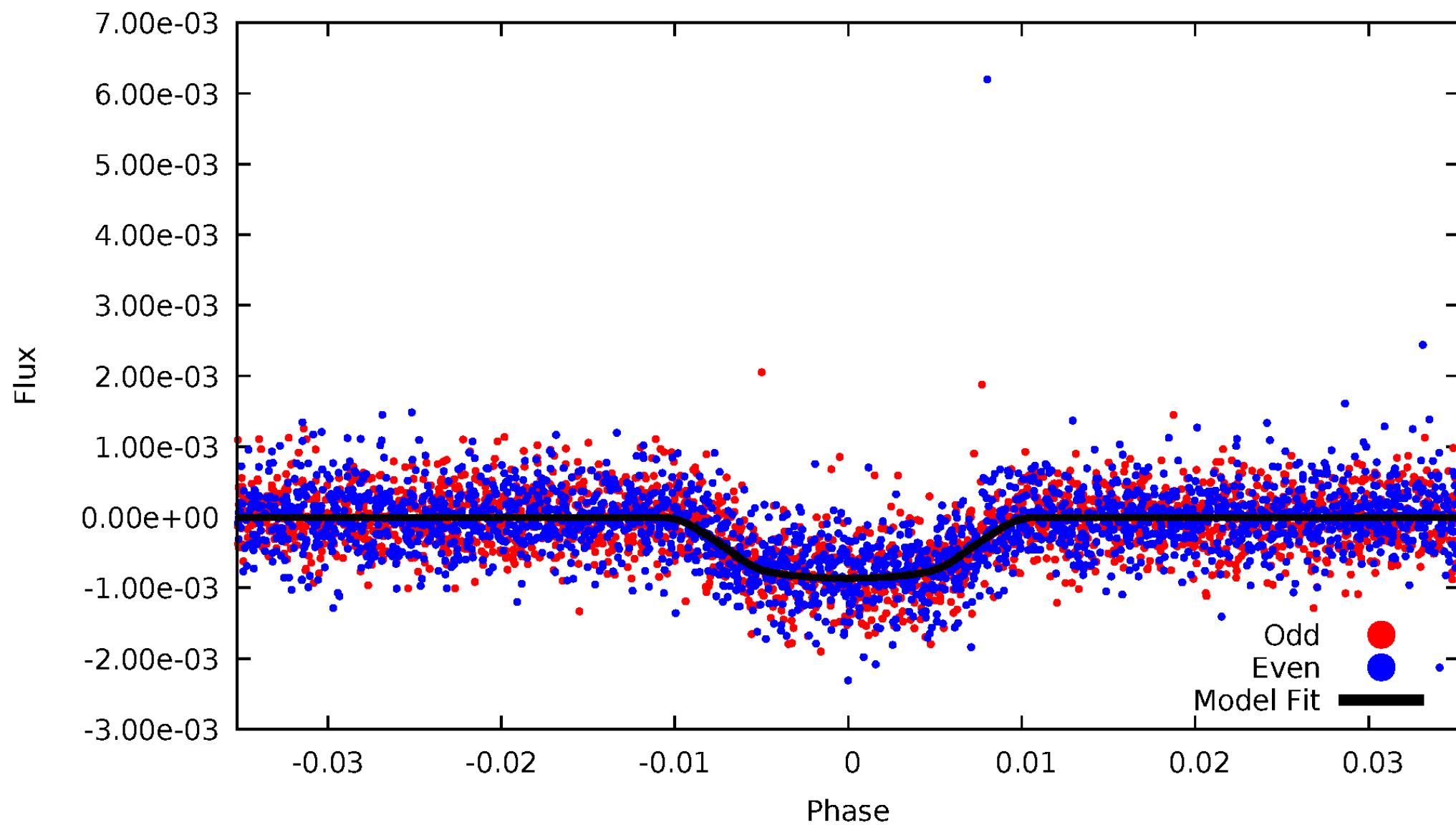


TCE 011709244-01



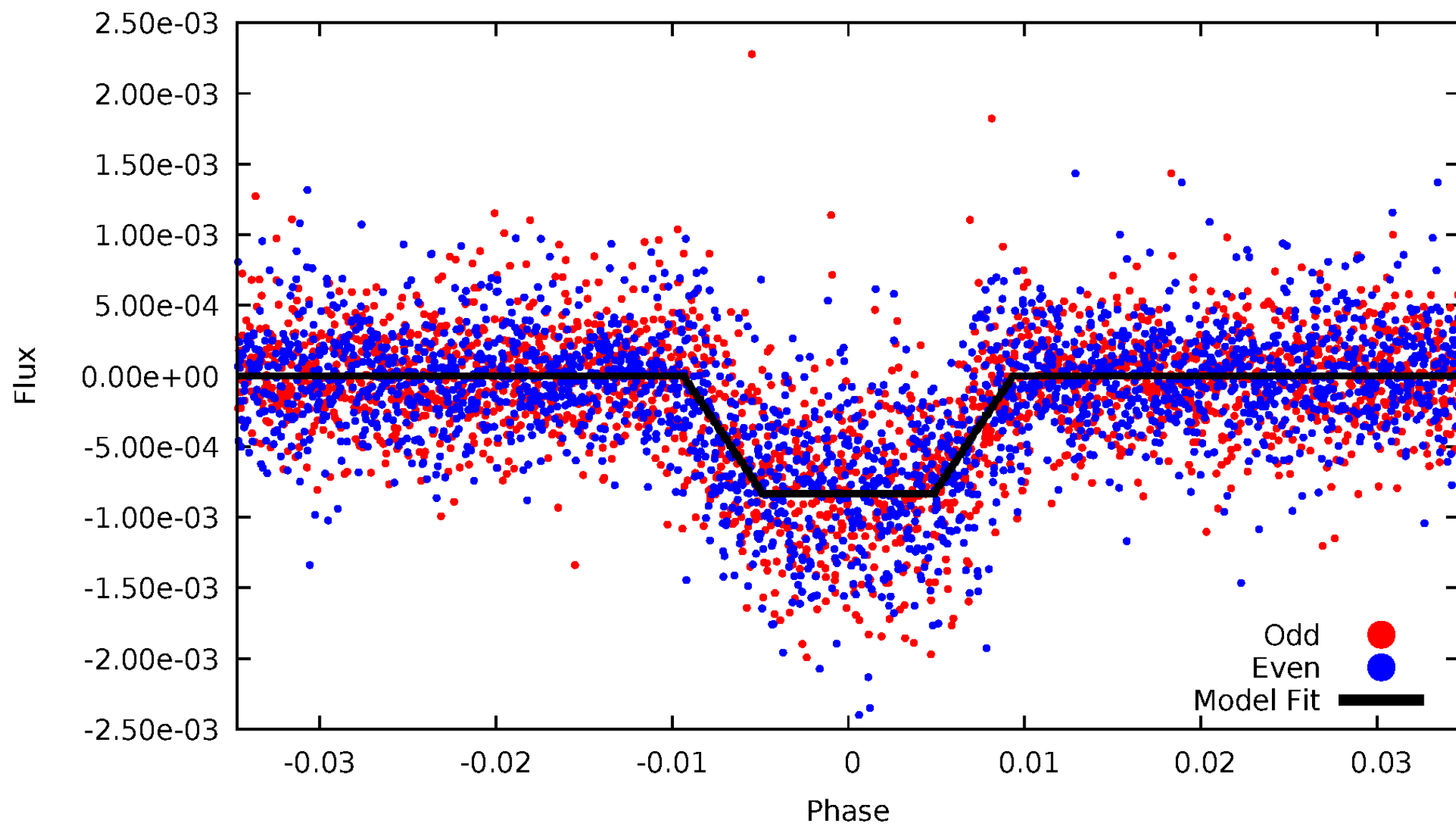
# DV Odd/Even

TCE 011709244-01



# ALT Odd/Even

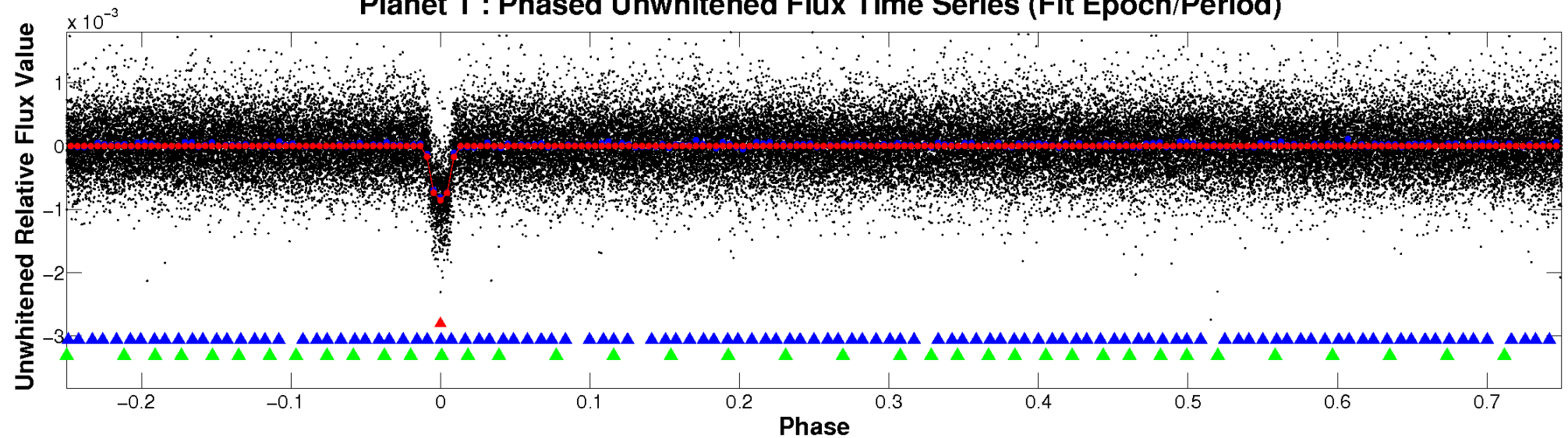
TCE 011709244-01



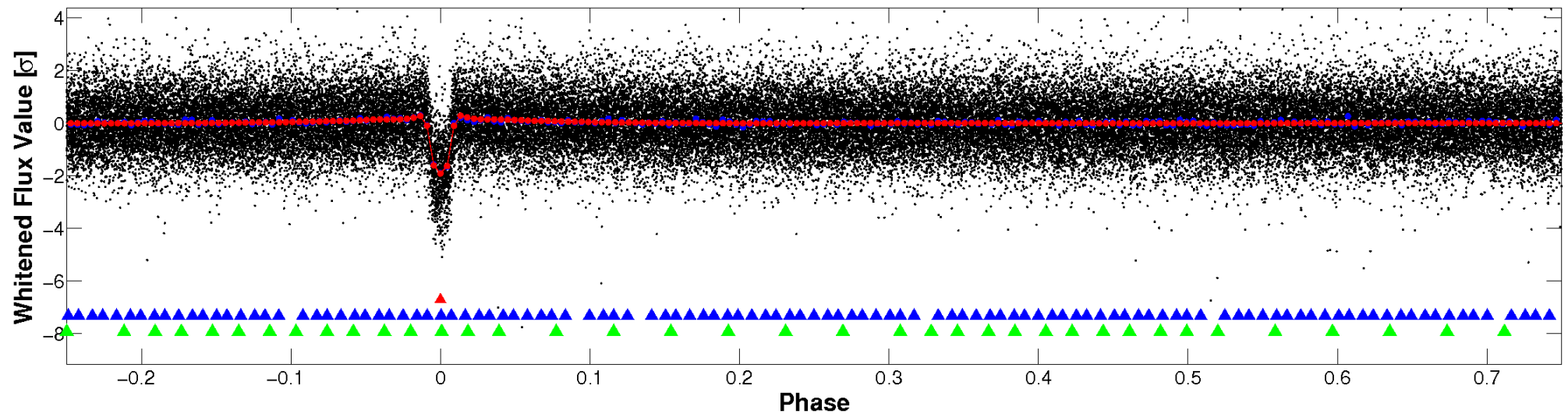


# Non-Whitened Vs. Whitened Light Curve

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

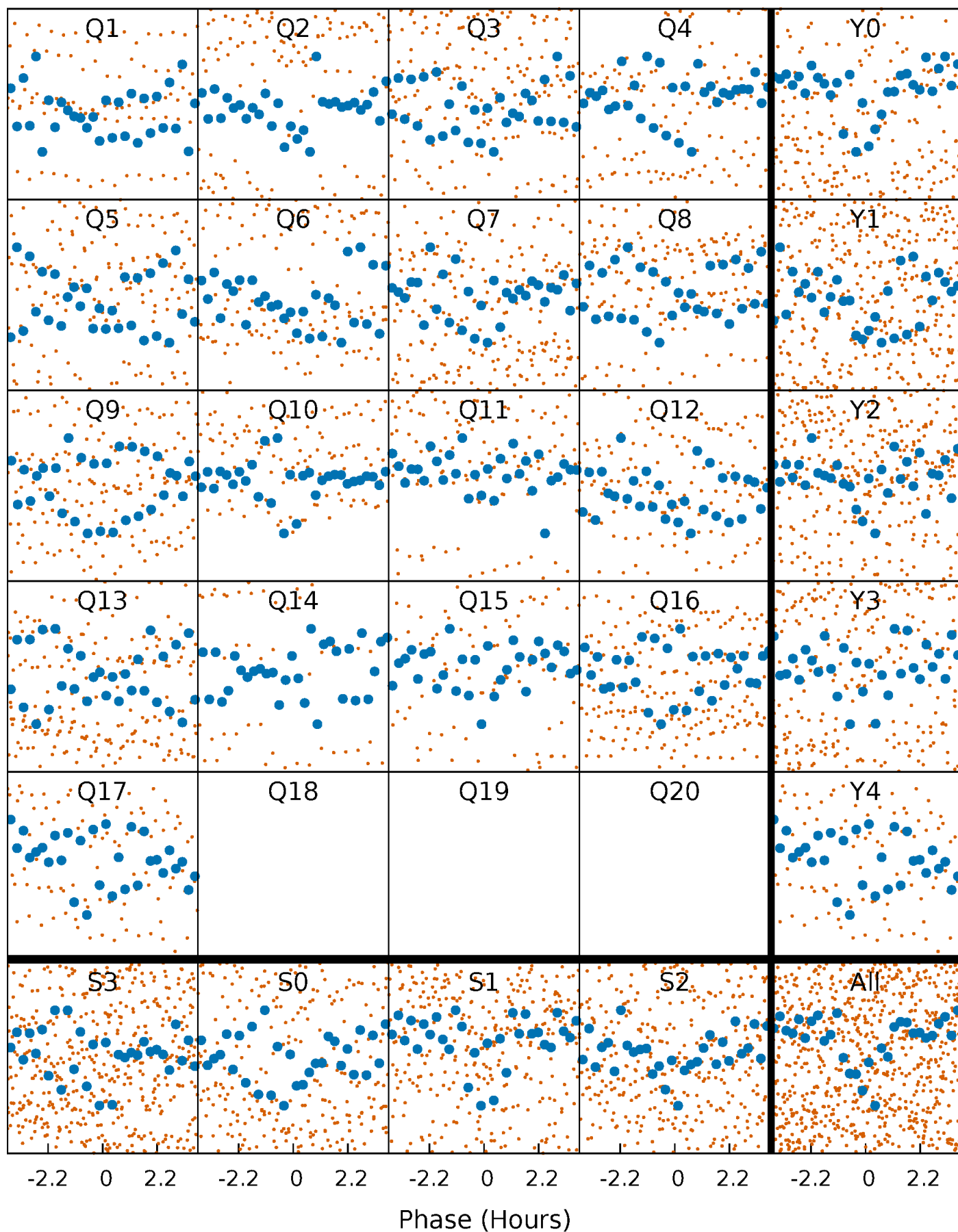


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

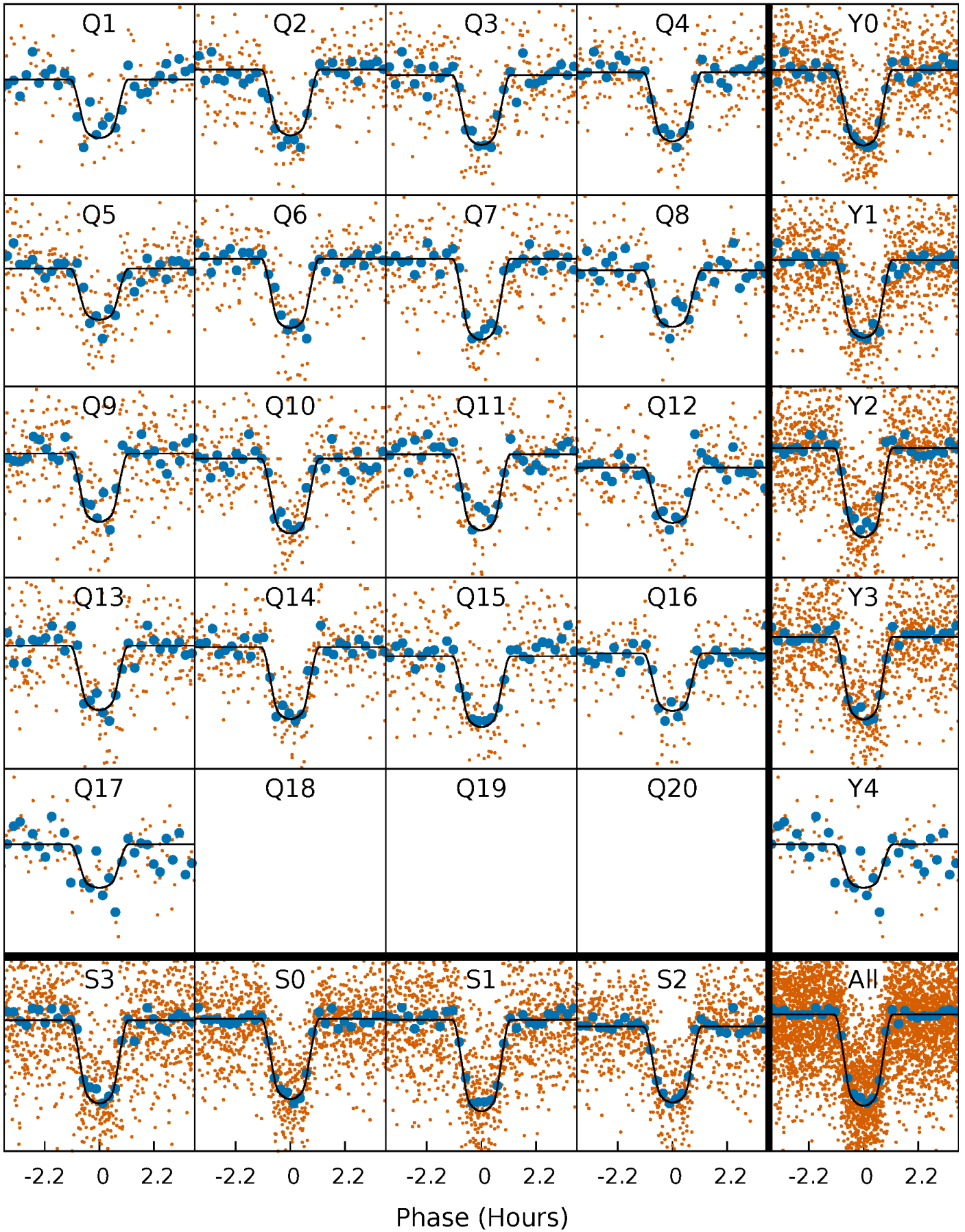
TCE 011709244-01   P= 4.544441 Days    $T_0=134.900527$  (BKJD)





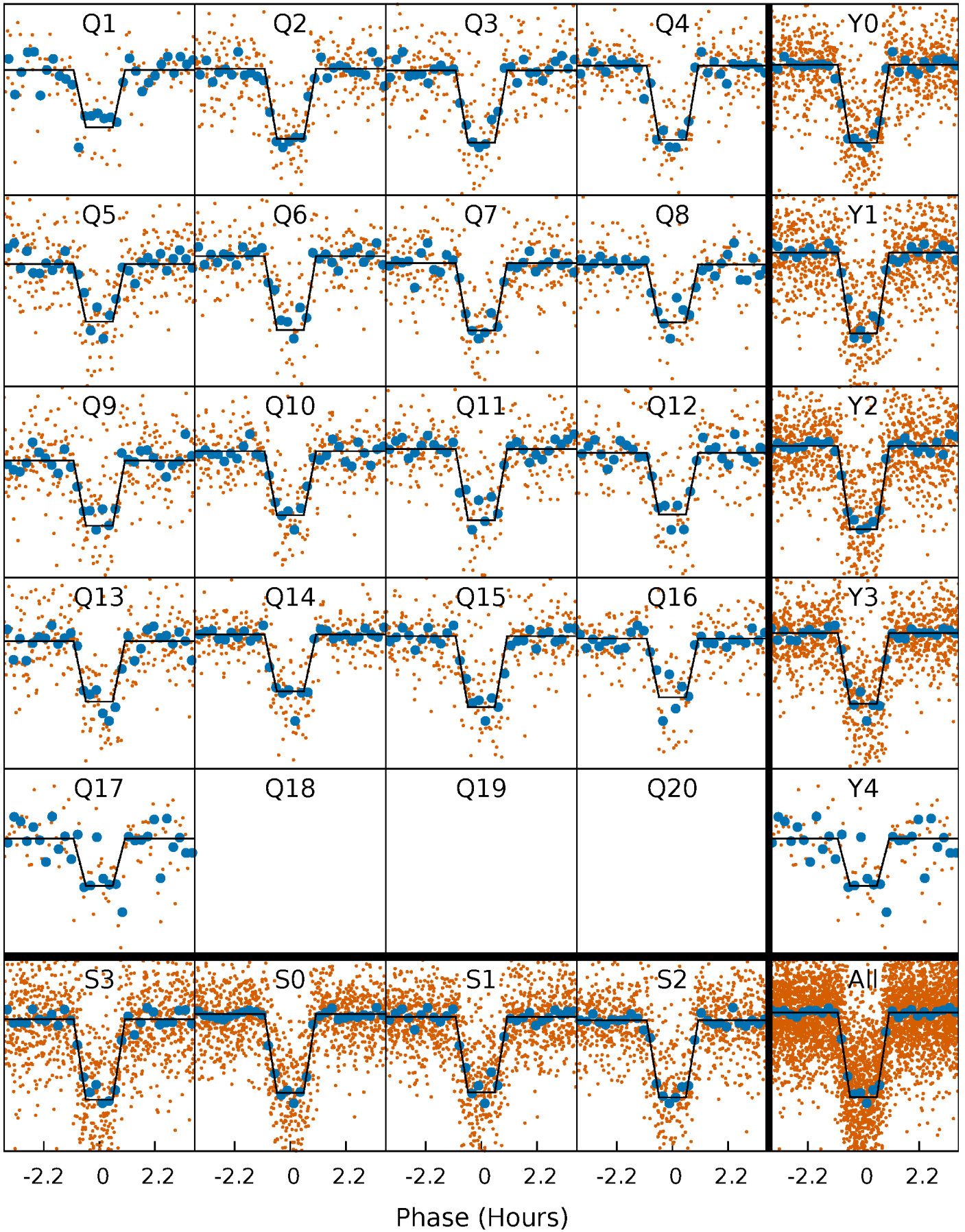
# DV Quarter-Phased Transit Curves

TCE 011709244-01 P= 4.544441 Days  $T_0=134.900527$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

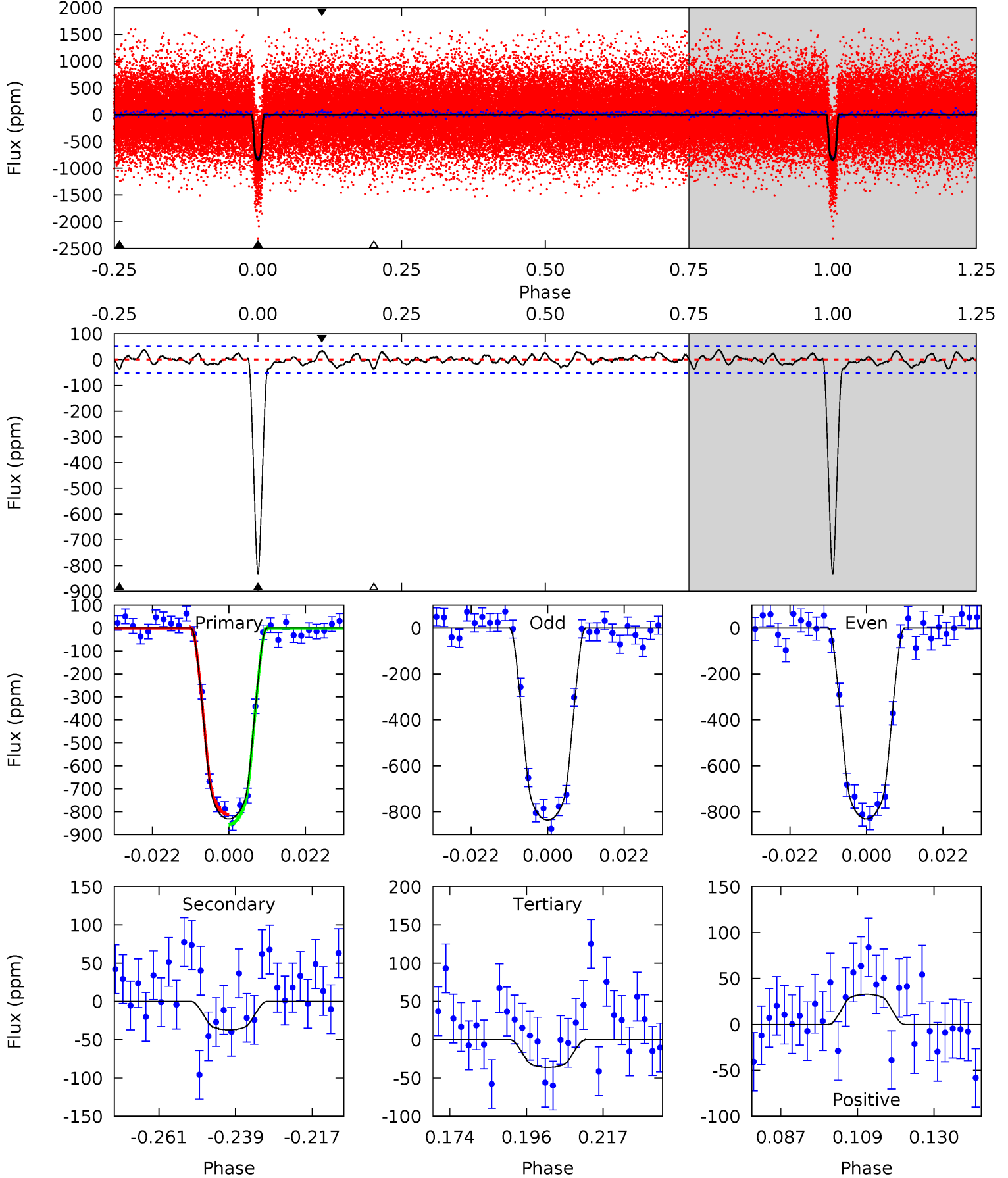
TCE 011709244-01 P= 4.544417 Days  $T_0=134.904435$  (BKJD)



# DV Model-Shift Uniqueness Test

011709244-01, P = 4.544441 Days, E = 130.356086 Days

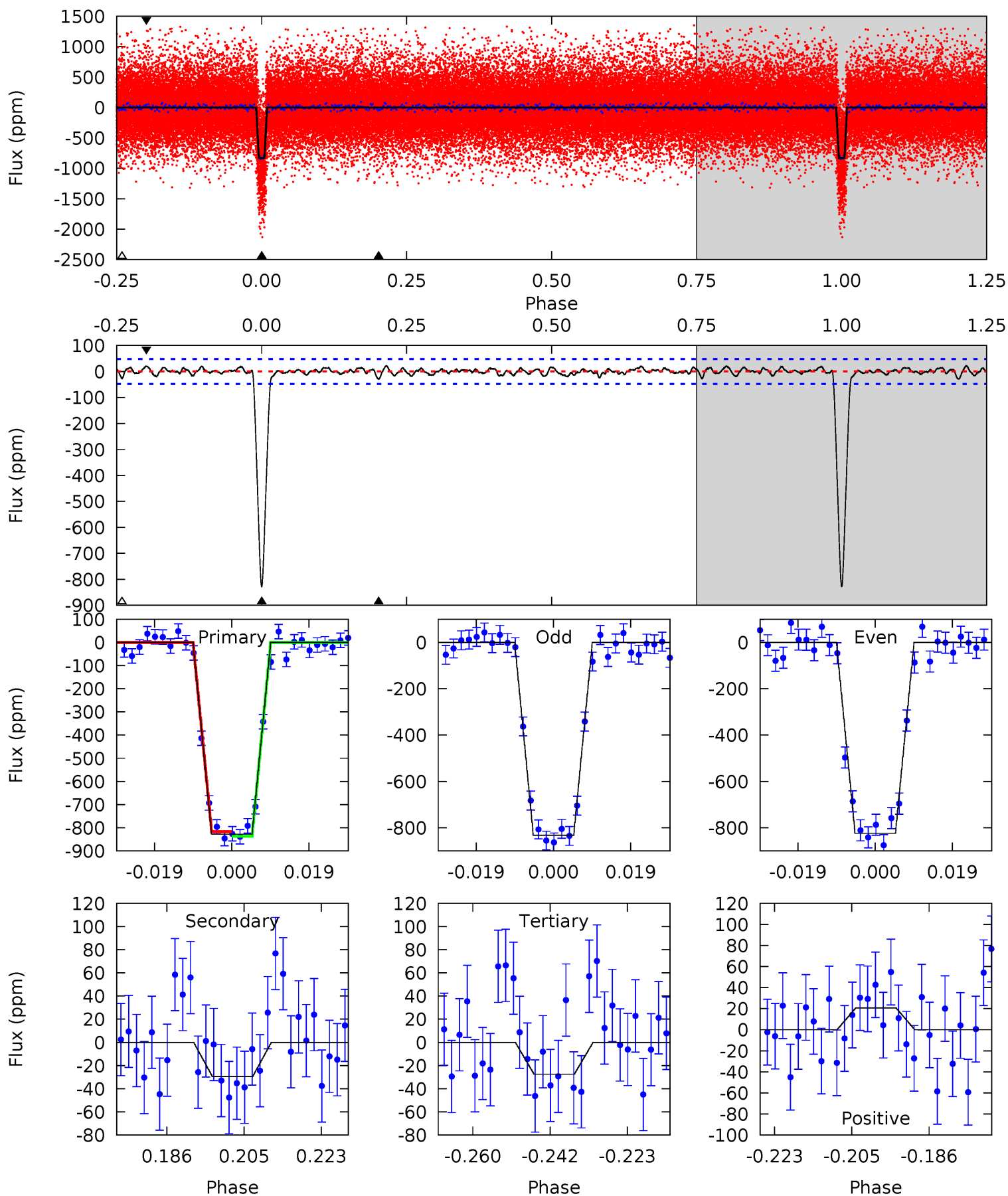
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
77.8	3.47	3.38	3.07	4.88	2.30	1.25	74.4	74.7	0.09	0.40	0.23	0.99	0.04	2.00



# Alt Model-Shift Uniqueness Test

011709244-01, P = 4.544417 Days, E = 130.360018 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
84.6	3.00	2.80	2.11	4.91	2.35	0.88	81.8	82.5	0.20	0.89	0.42	1.01	0.03	1.02



### Stellar Parameters For KIC 011709244

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5445^{+81}_{-81}$	$4.458^{+0.072}_{-0.096}$	$0.160^{+0.150}_{-0.150}$	$0.937^{+0.105}_{-0.078}$	$0.919^{+0.052}_{-0.046}$	$1.573^{+0.394}_{-0.450}$
	+1%/-1%	+2%/-2%	+94%/-94%	+11%/-8%	+6%/-5%	+25%/-29%
Source	SPE90	SPE90	SPE90	DSEP		

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

### Secondary Eclipse Parameters for KIC 011709244-01 / KOI 1832.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-37 \pm 11$	$3.30^{+0.35}_{-0.36}$	$1428^{+49}_{-47}$	$2997^{+153}_{-165}$	$5.108^{+2.024}_{-1.599}$
Alt.	$-29 \pm 10$	$3.00^{+0.35}_{-0.34}$	$1424^{+50}_{-40}$	$2983^{+166}_{-179}$	$5.001^{+2.199}_{-1.863}$

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

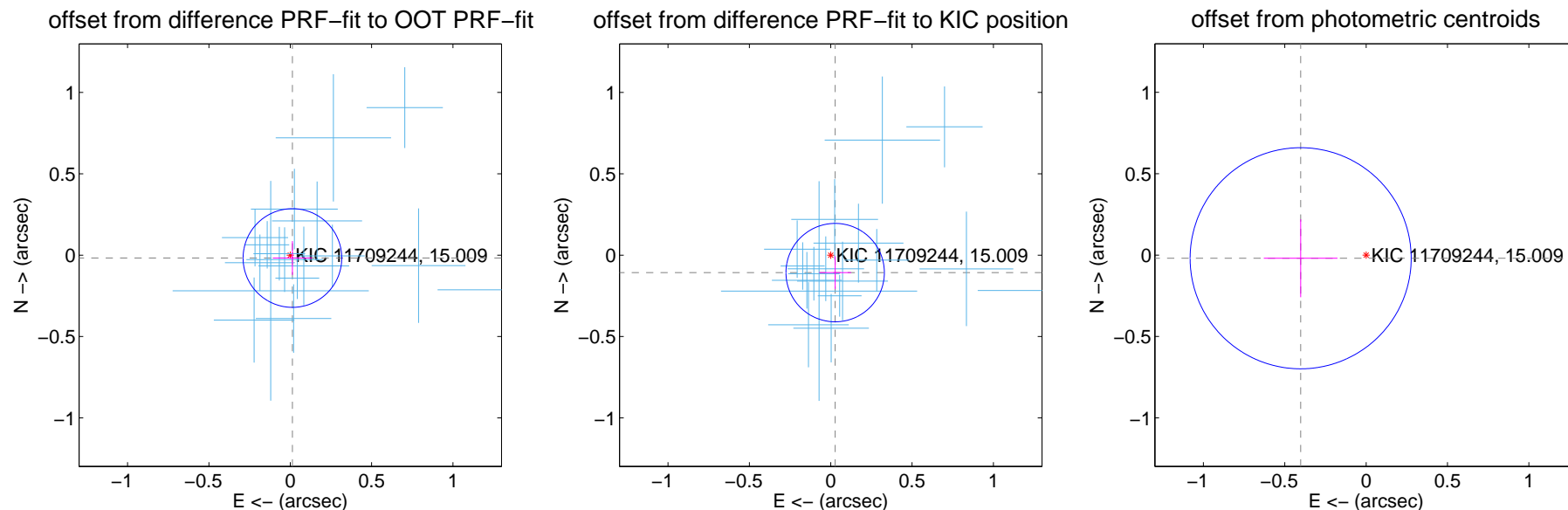
## DV Centroid Data

Supplemental centroid analysis for 011709244-01. Kepler magnitude: 15.01. Transit SNR 52.33

There are 17 quarters with good PRF difference image offsets

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

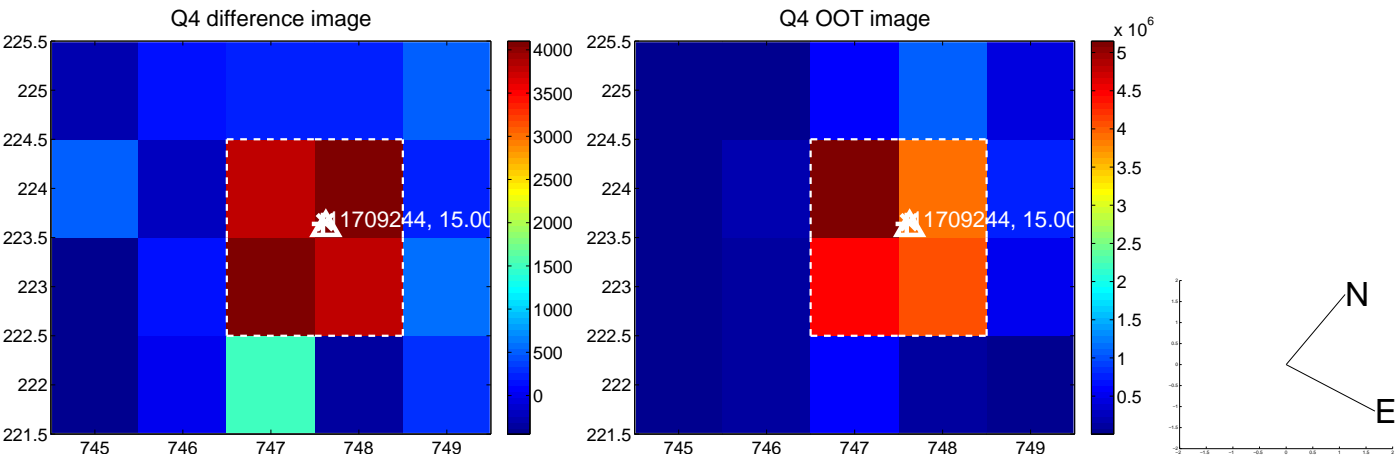
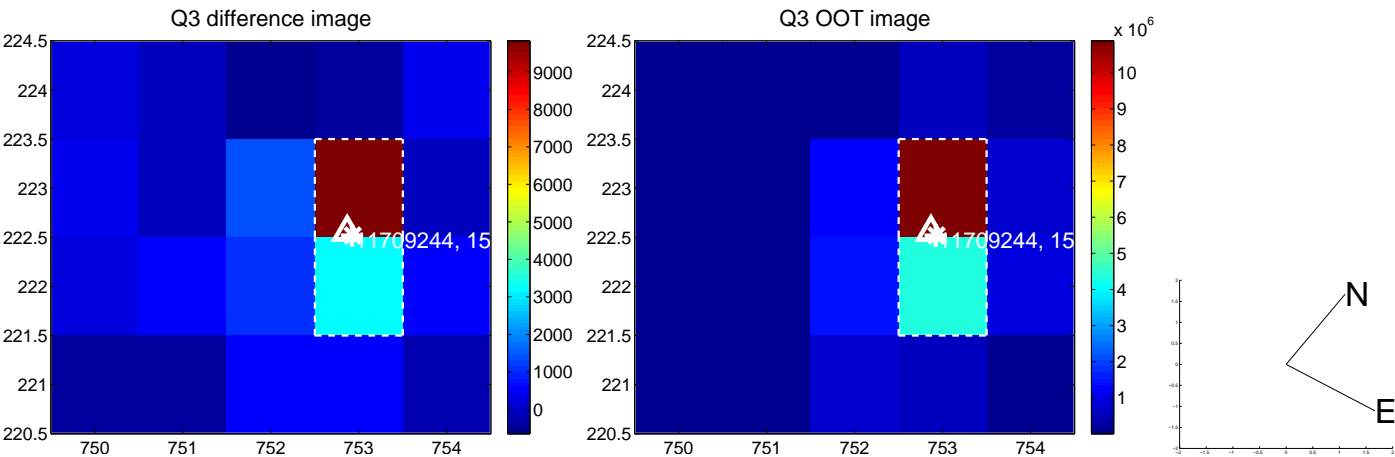
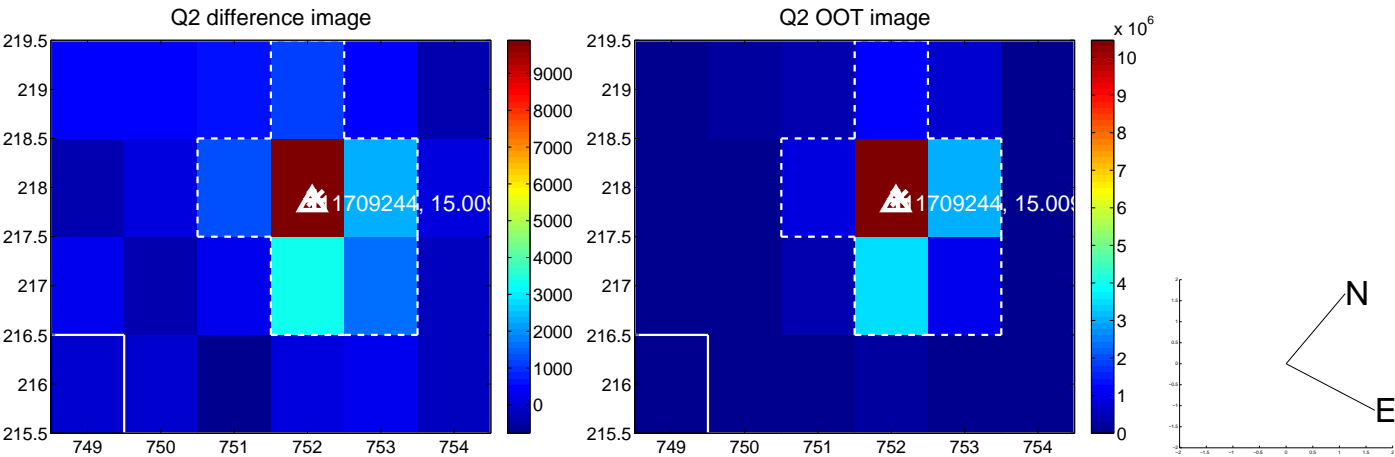
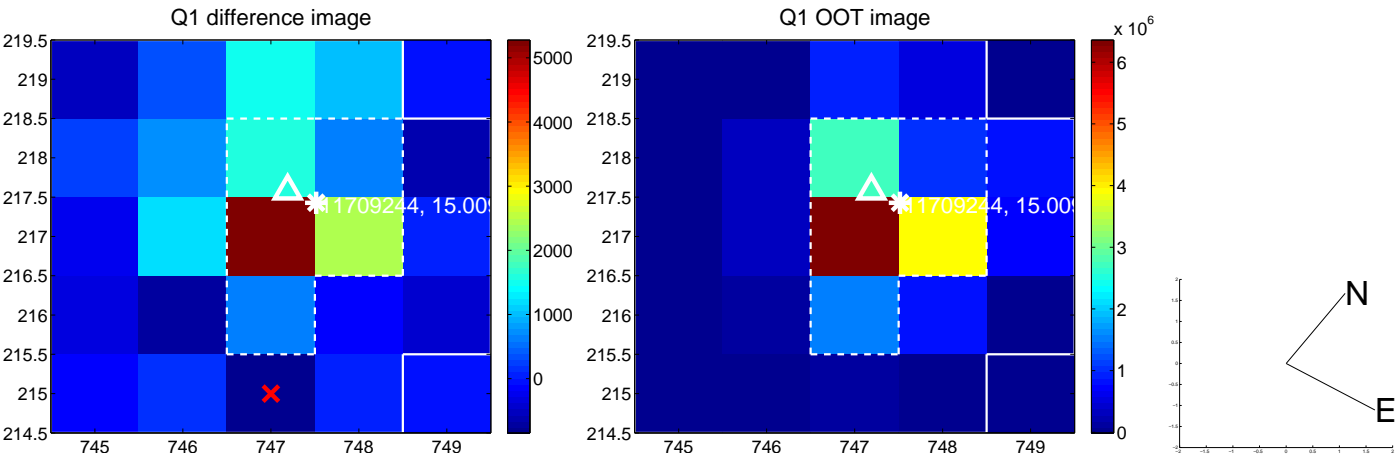
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.022 \pm 0.101$	0.22	$-0.013 \pm 0.120$	$-0.018 \pm 0.104$
PRF-fit source offset from KIC position	$0.111 \pm 0.101$	1.10	$-0.027 \pm 0.097$	$-0.107 \pm 0.101$
photometric centroid source offset	$0.40 \pm 0.23$	1.78	$0.40 \pm 0.23$	$-0.02 \pm 0.24$



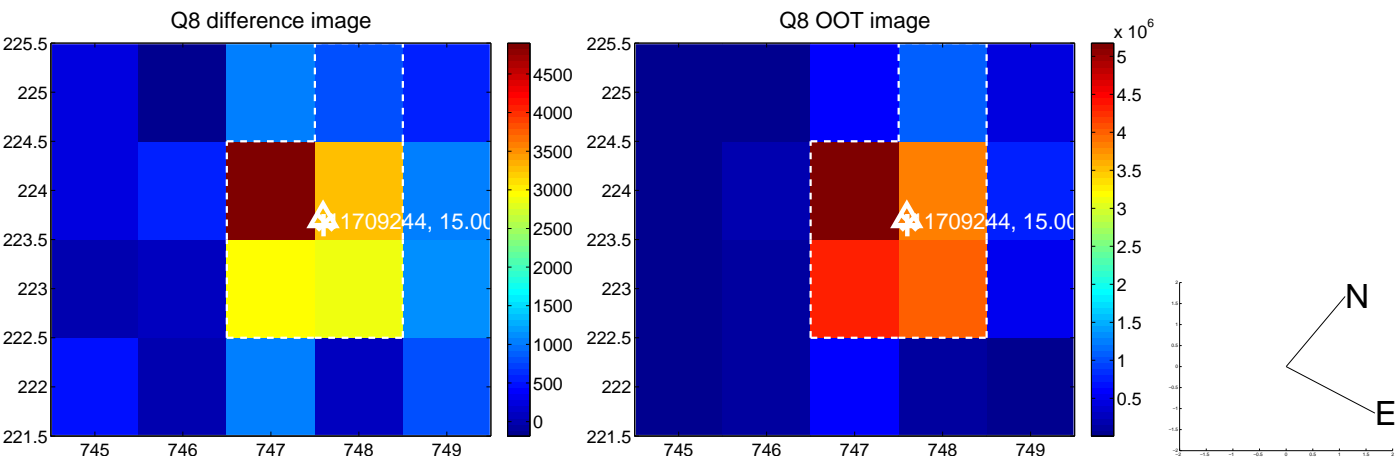
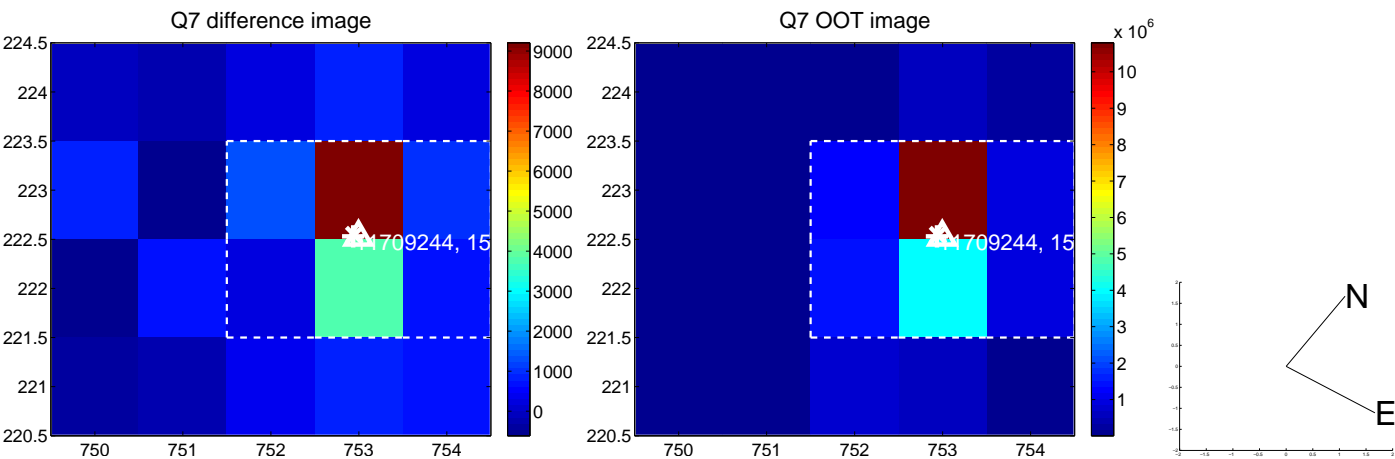
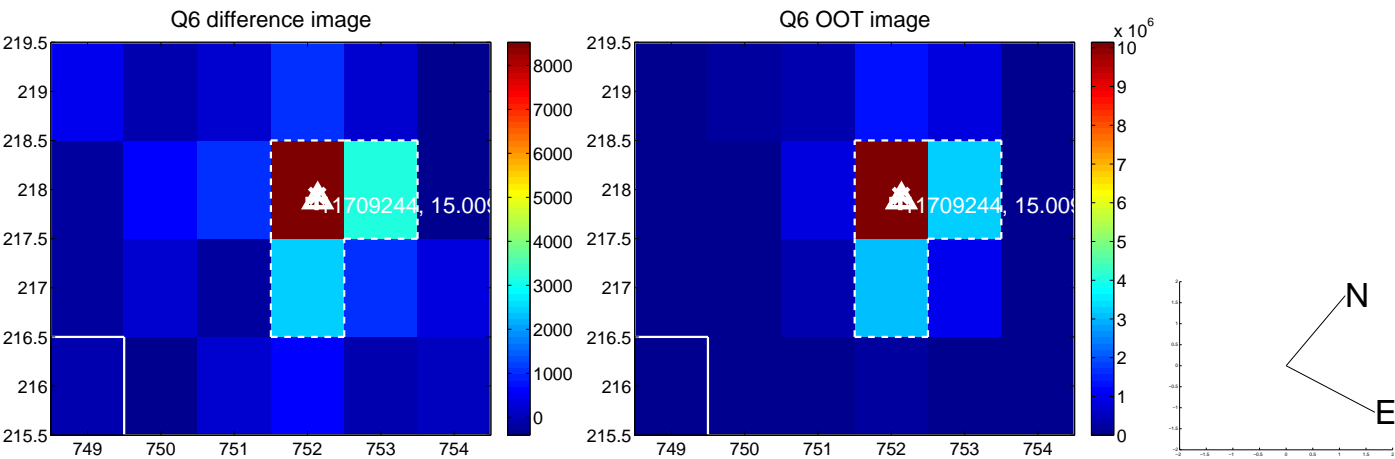
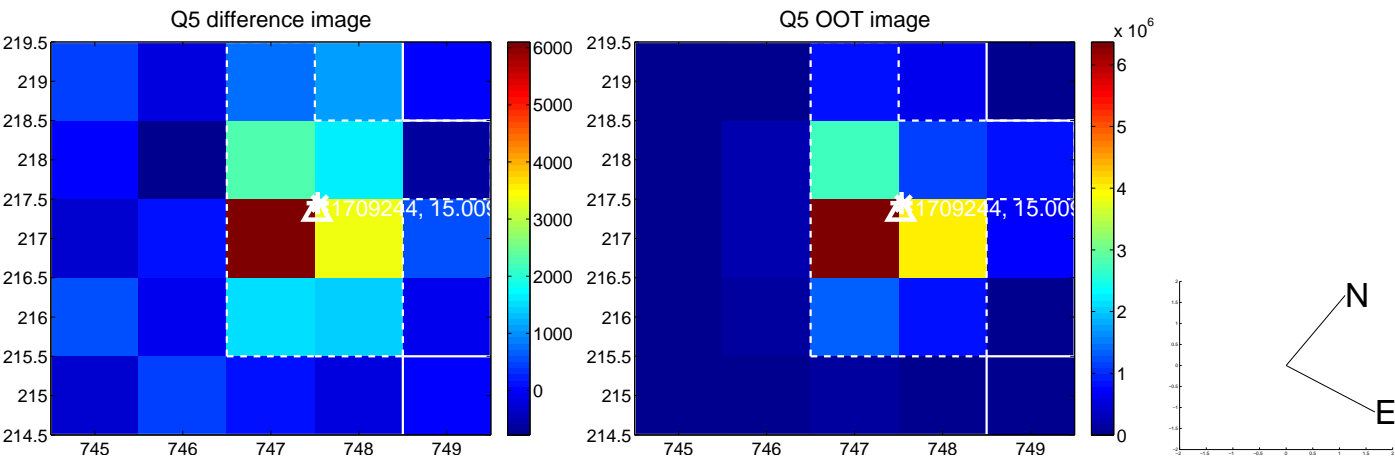
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



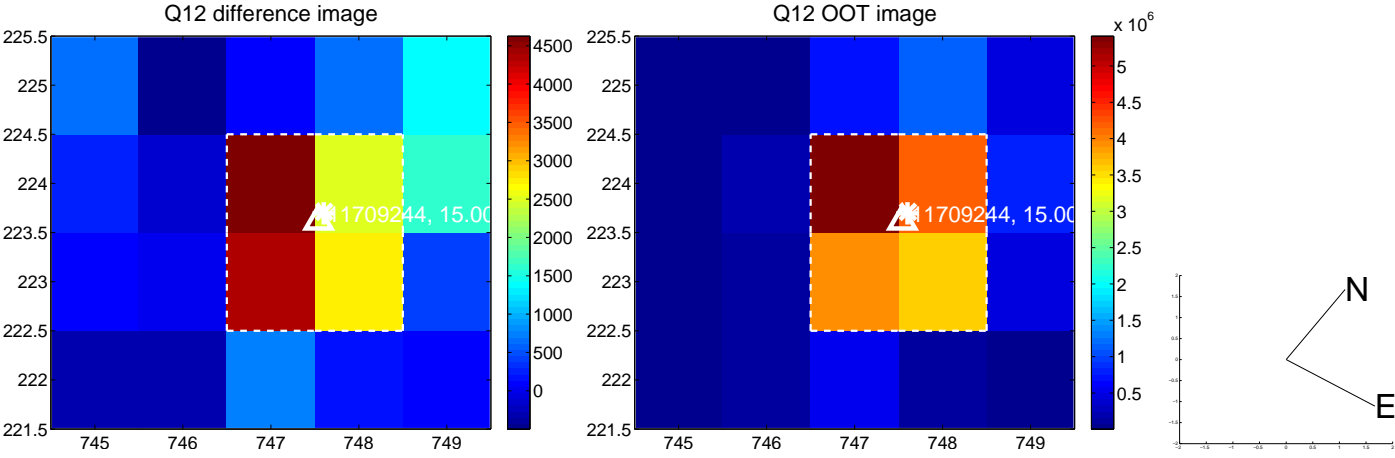
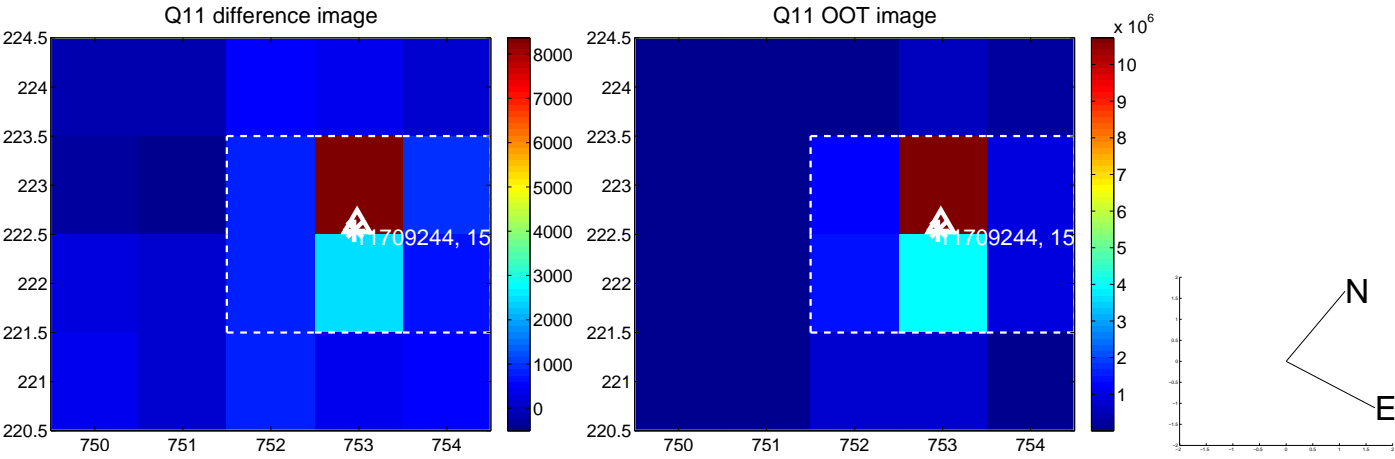
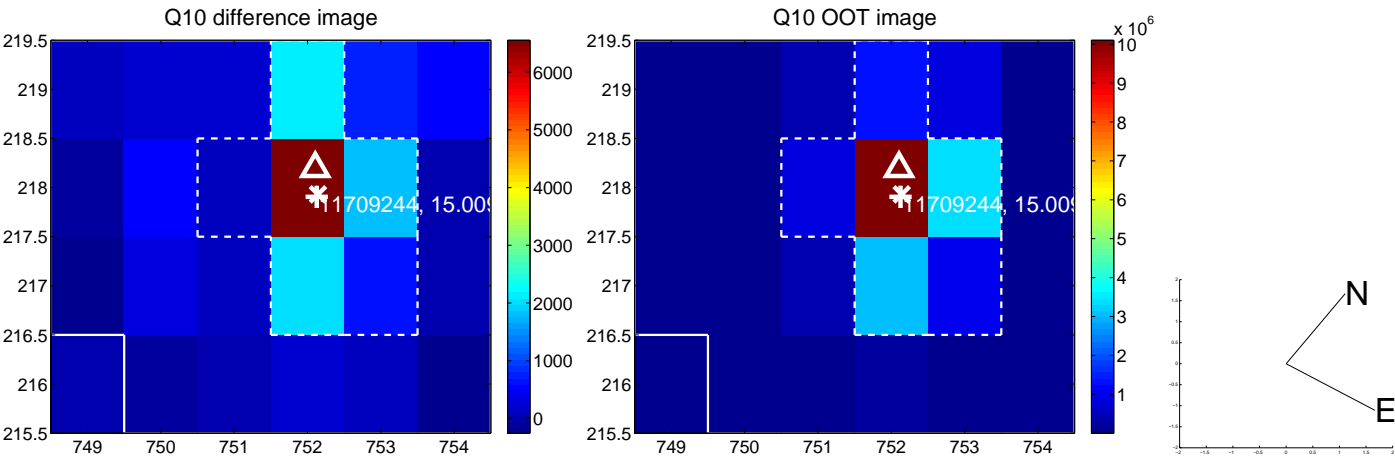
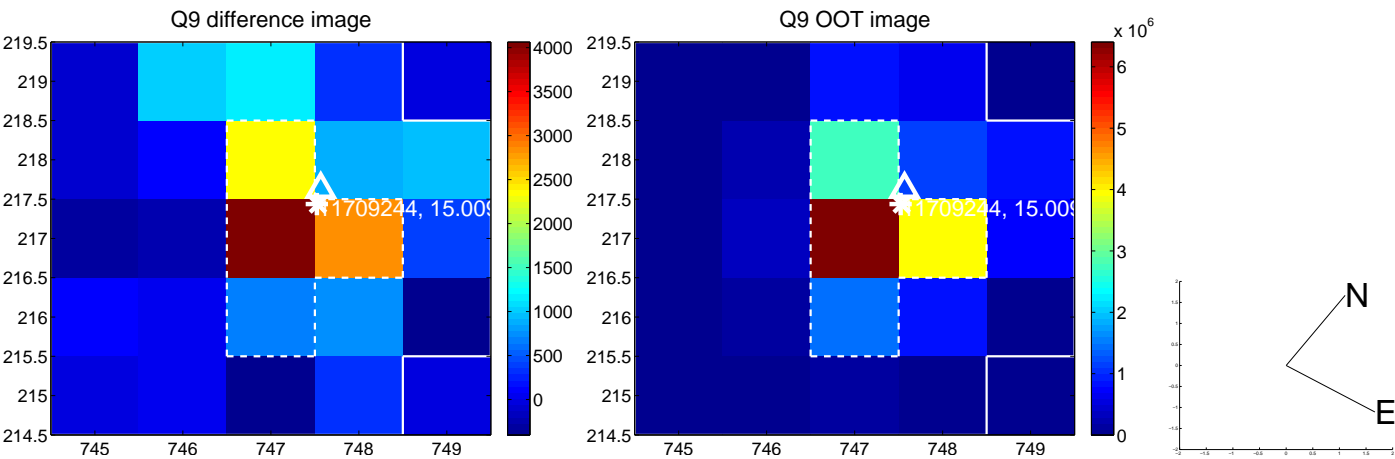
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



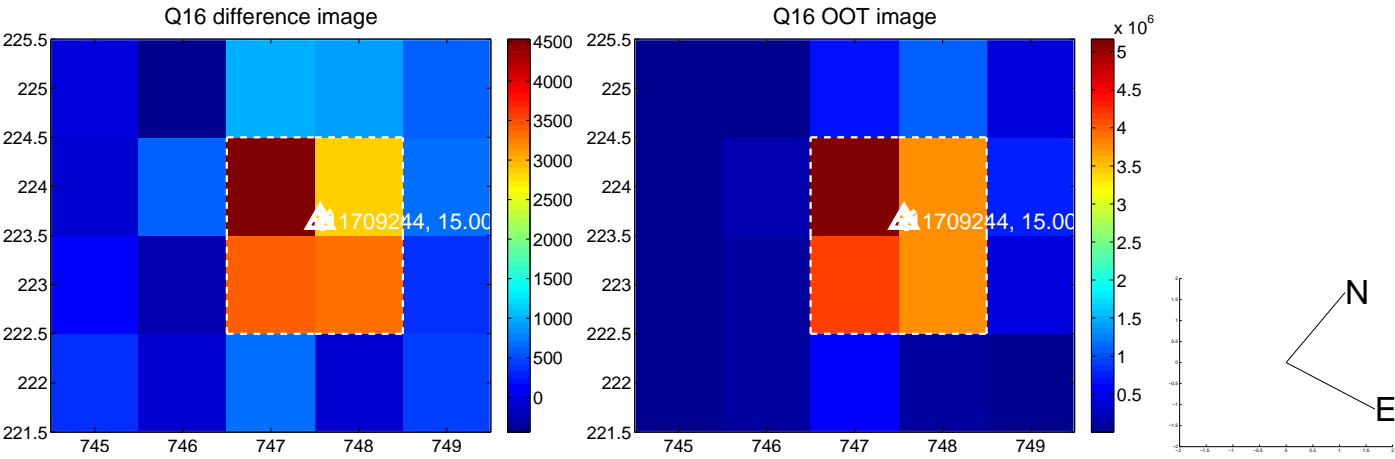
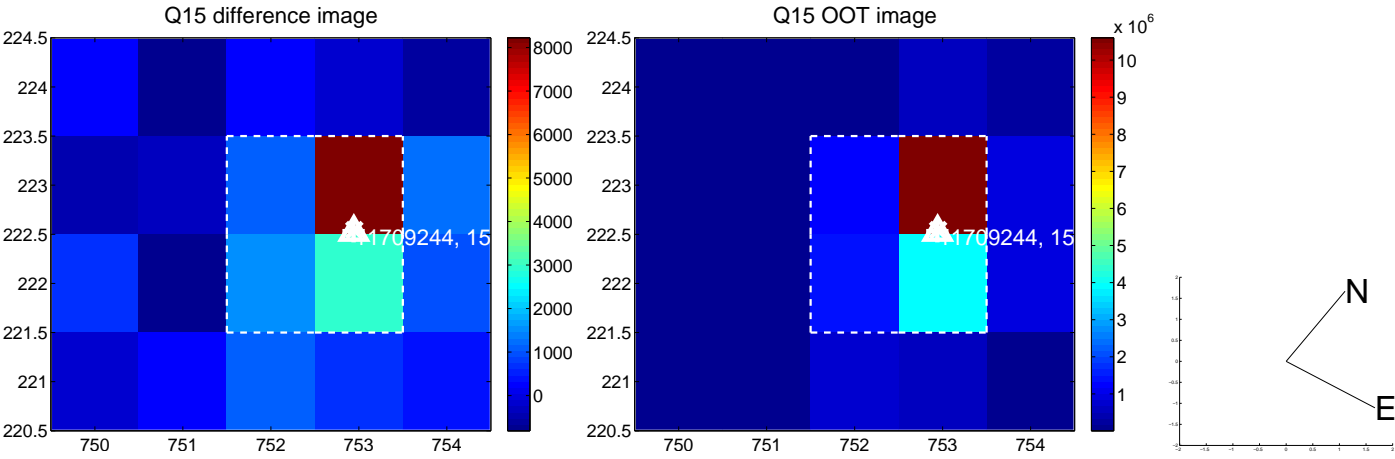
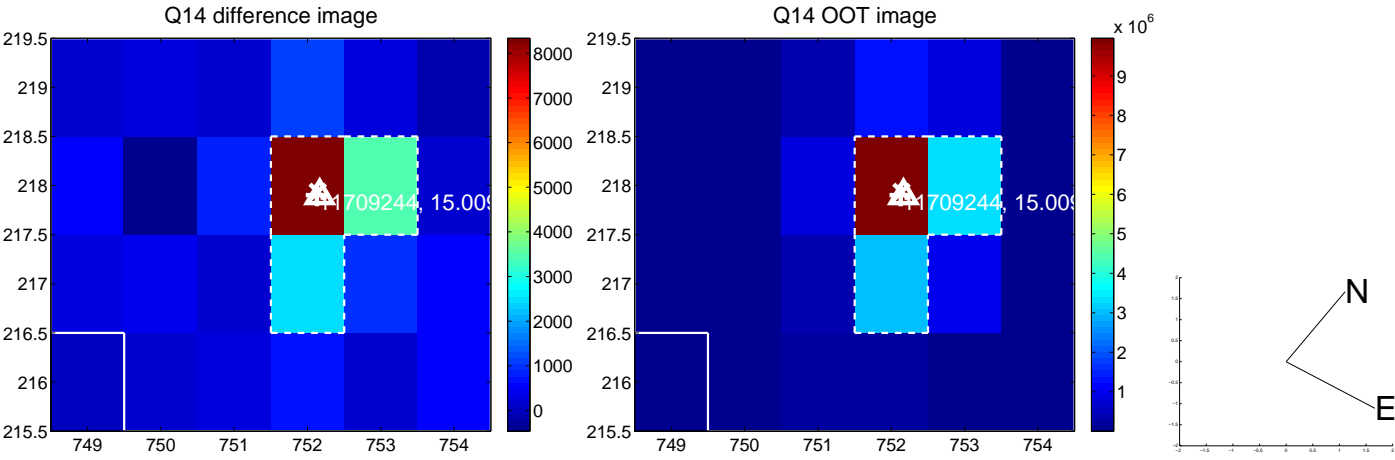
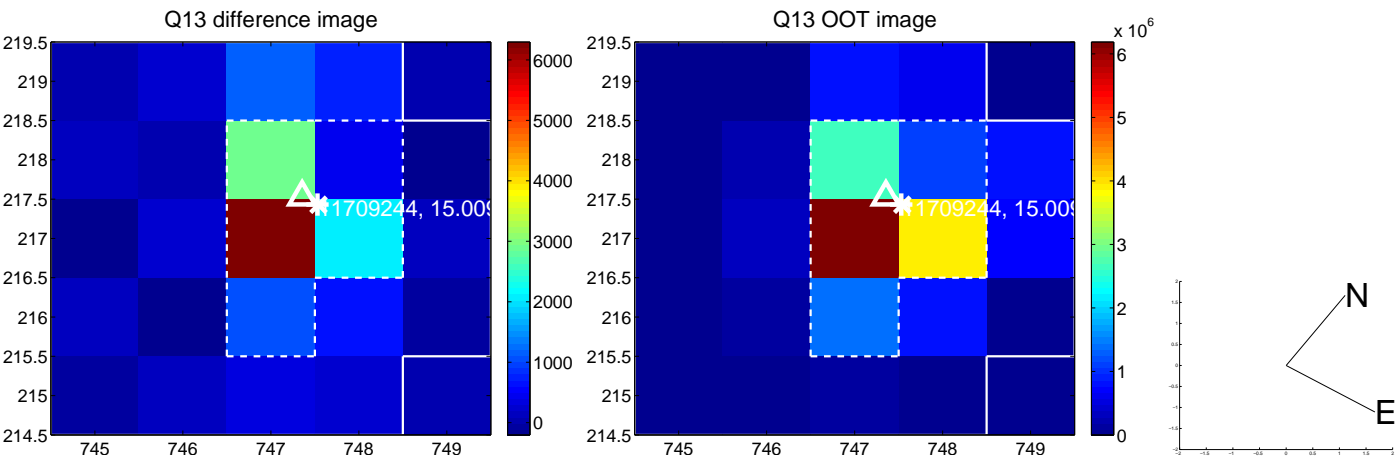
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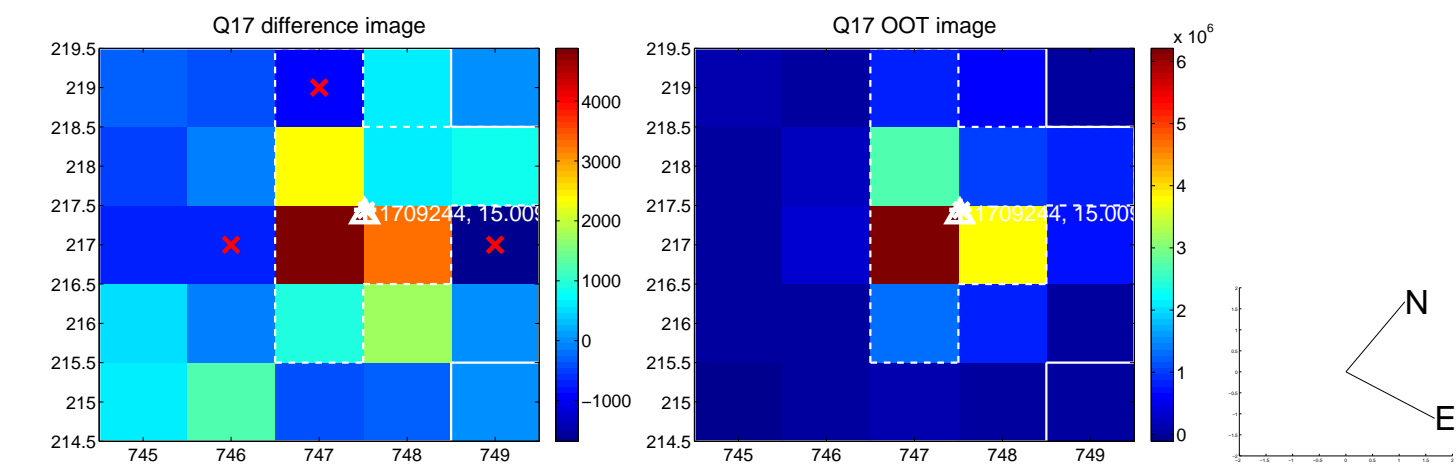
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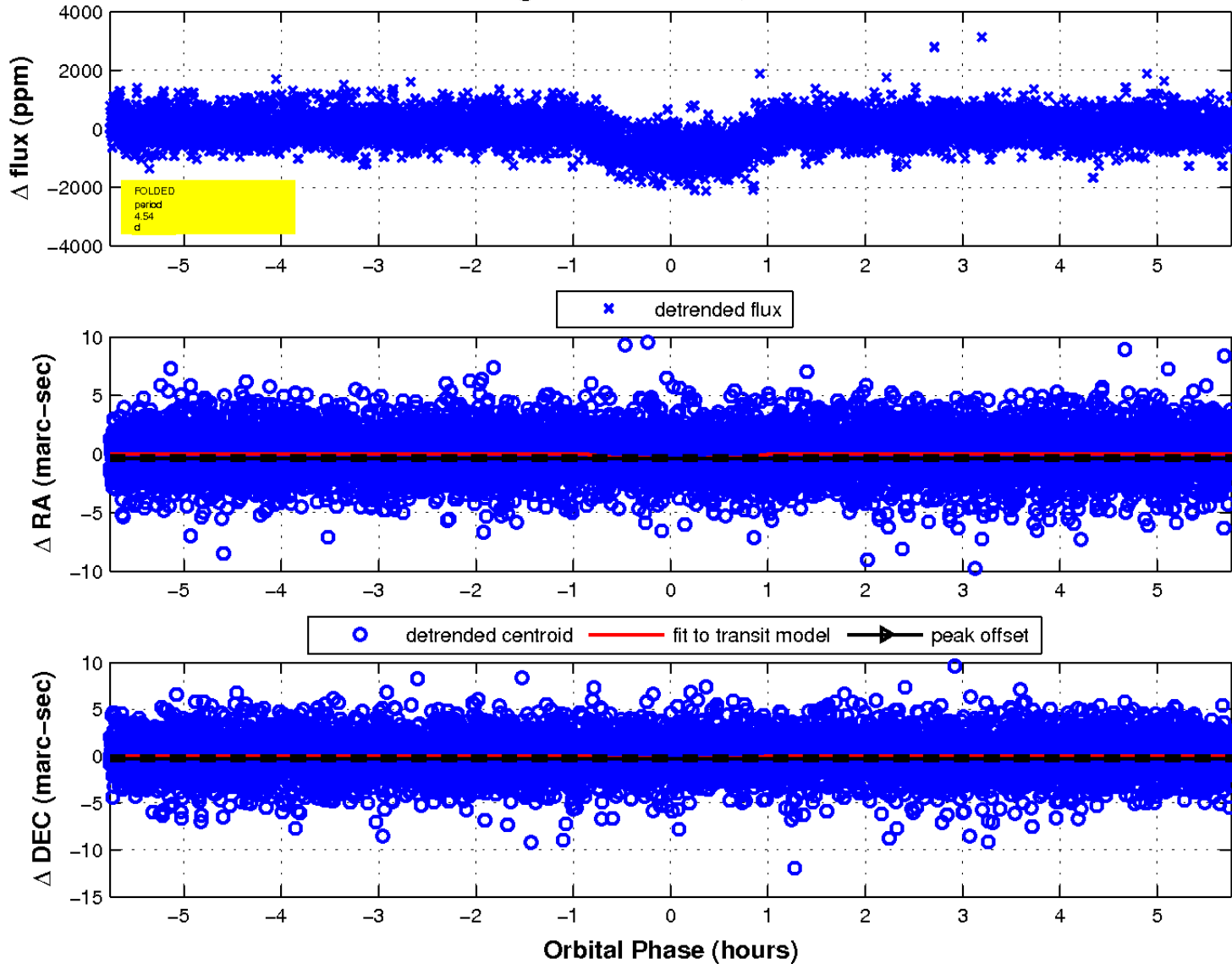
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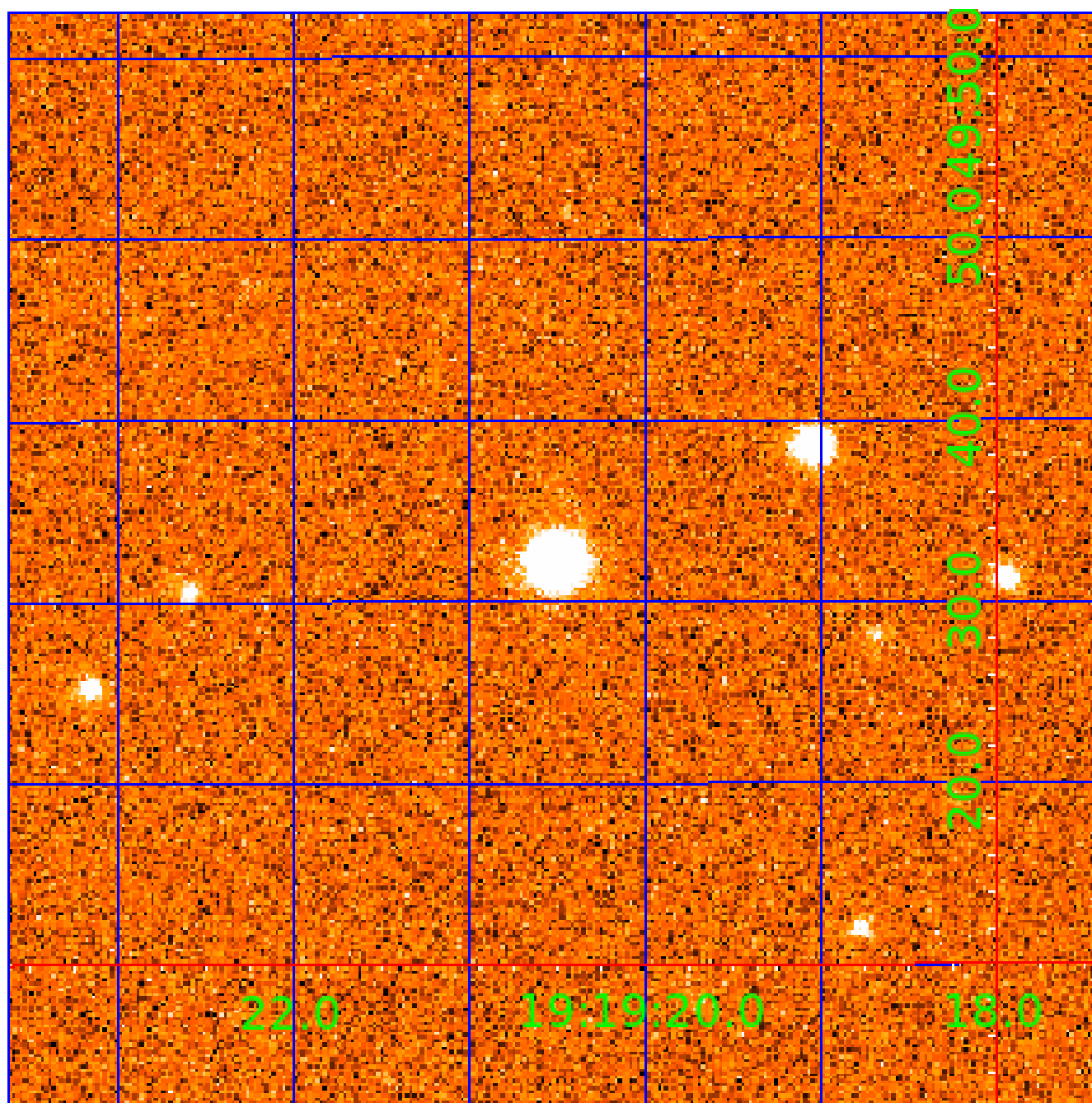


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 011709244

## Q1-17 DR25 TCE Parameters

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## Robovetter Results

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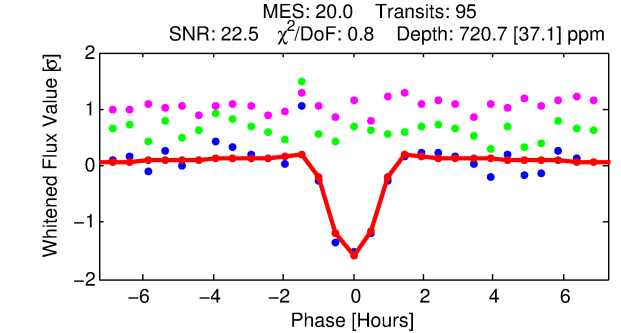
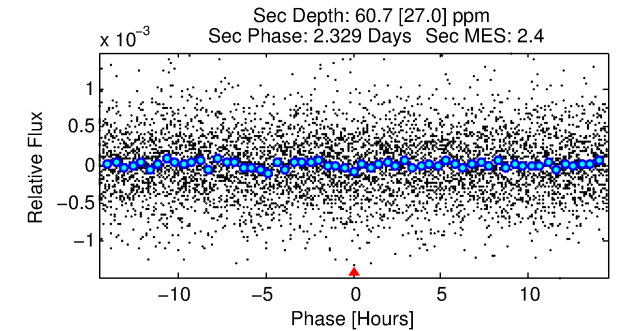
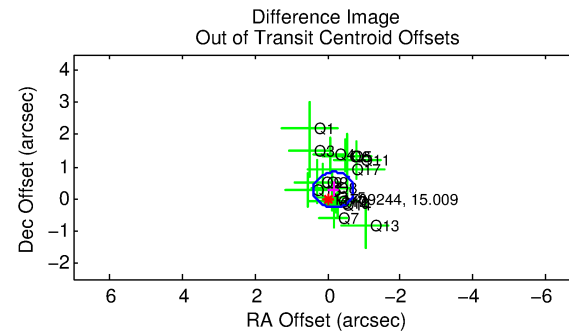
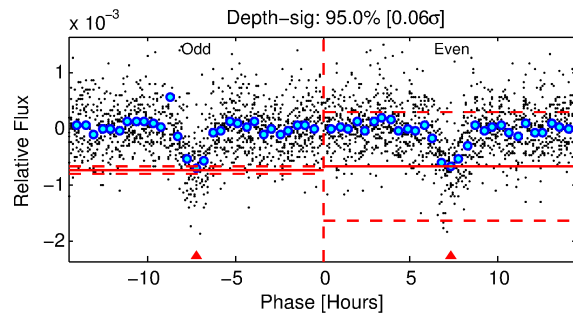
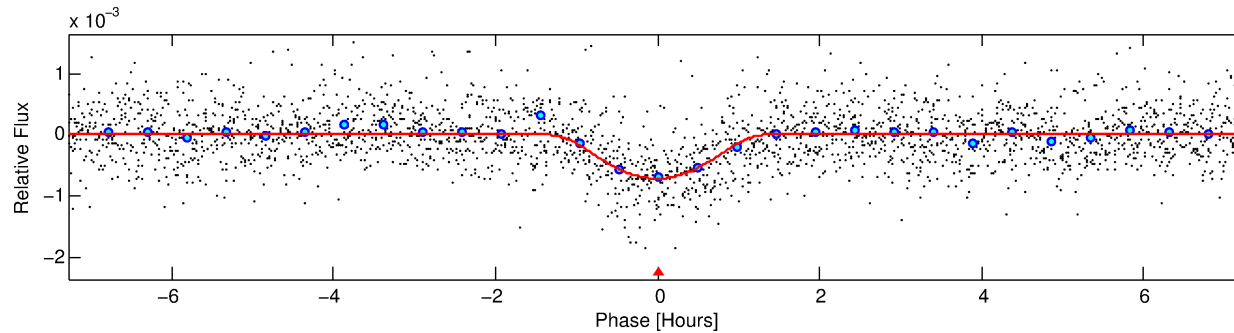
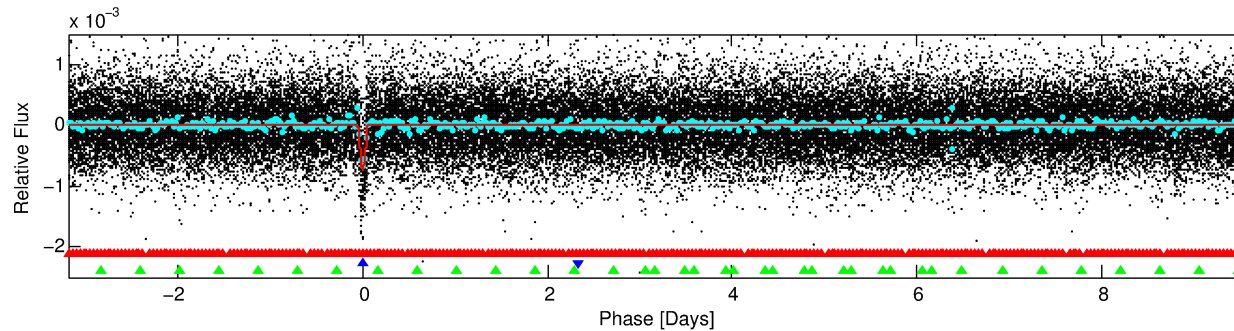
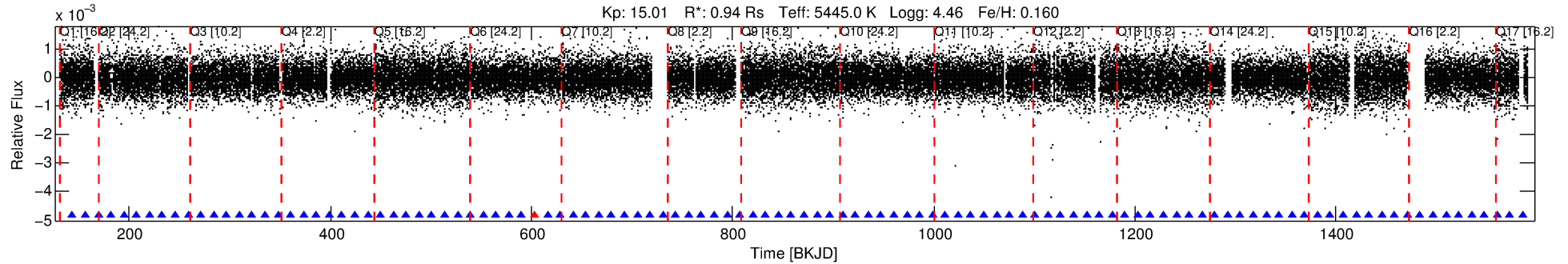
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011709244-02

No Significant Match Found

# DV One-Page Summary

KIC: 11709244 Candidate: 2 of 3 Period: 12.762 d  
KOI: K01832.02 Name: Kepler-325c Corr: 0.907



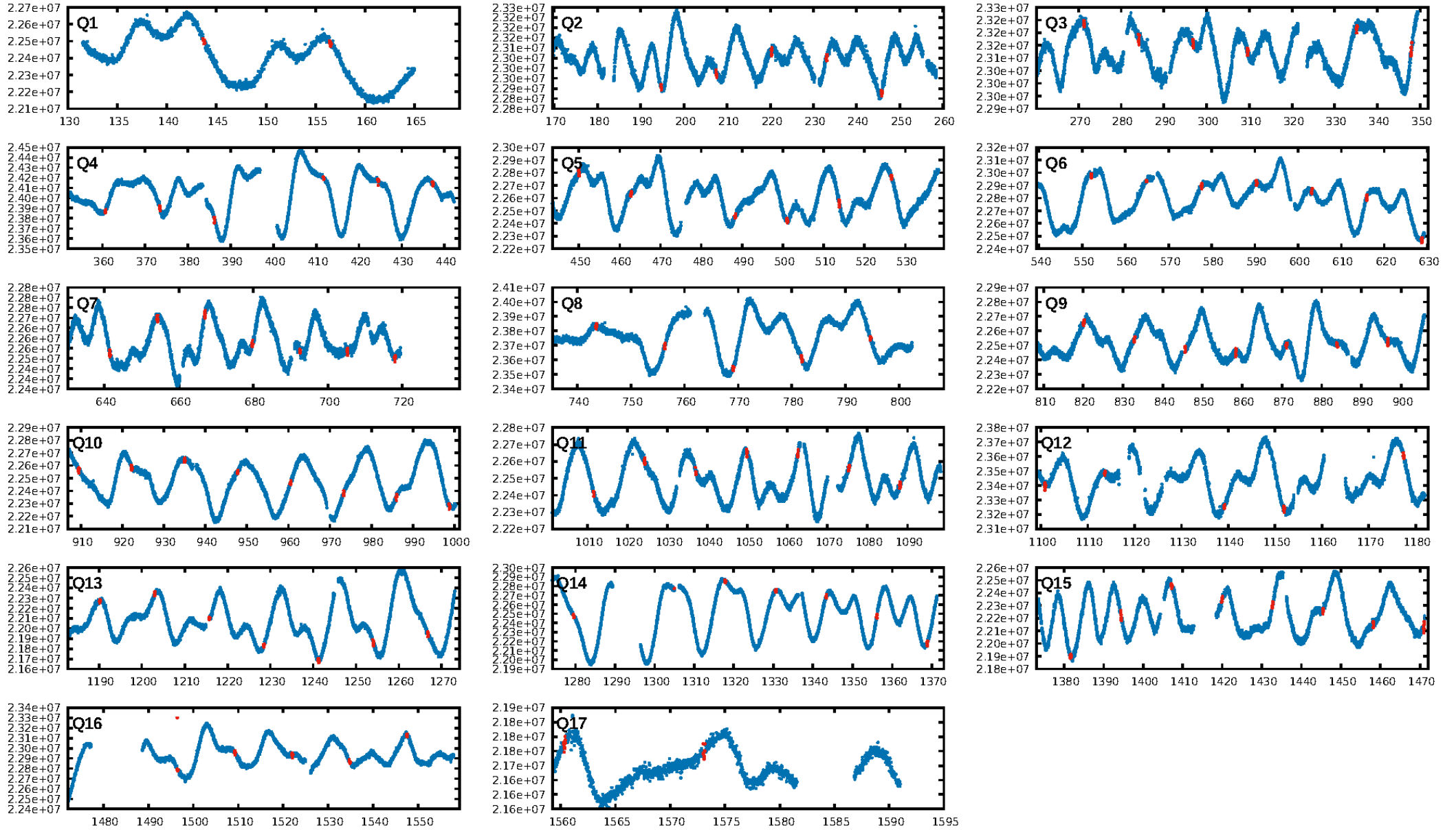
## DV Fit Results:

Period = 12.76221 [0.00004] d  
Epoch = 143.7292 [0.0025] BKJD  
Rp/R\* = 0.0430 [0.0499]  
a/R\* = 13.35 [4.83]  
b = 0.99 [0.08]  
Seff = 63.99 [11.24]  
Teq = 721 [32] K  
Rp = 4.40 [5.13] Re  
a = 0.1039 [0.0109] AU  
Ag = 18.63 [44.11] [0.40 $\sigma$ ]  
Teffp = 2317 [1368] K [1.17 $\sigma$ ]

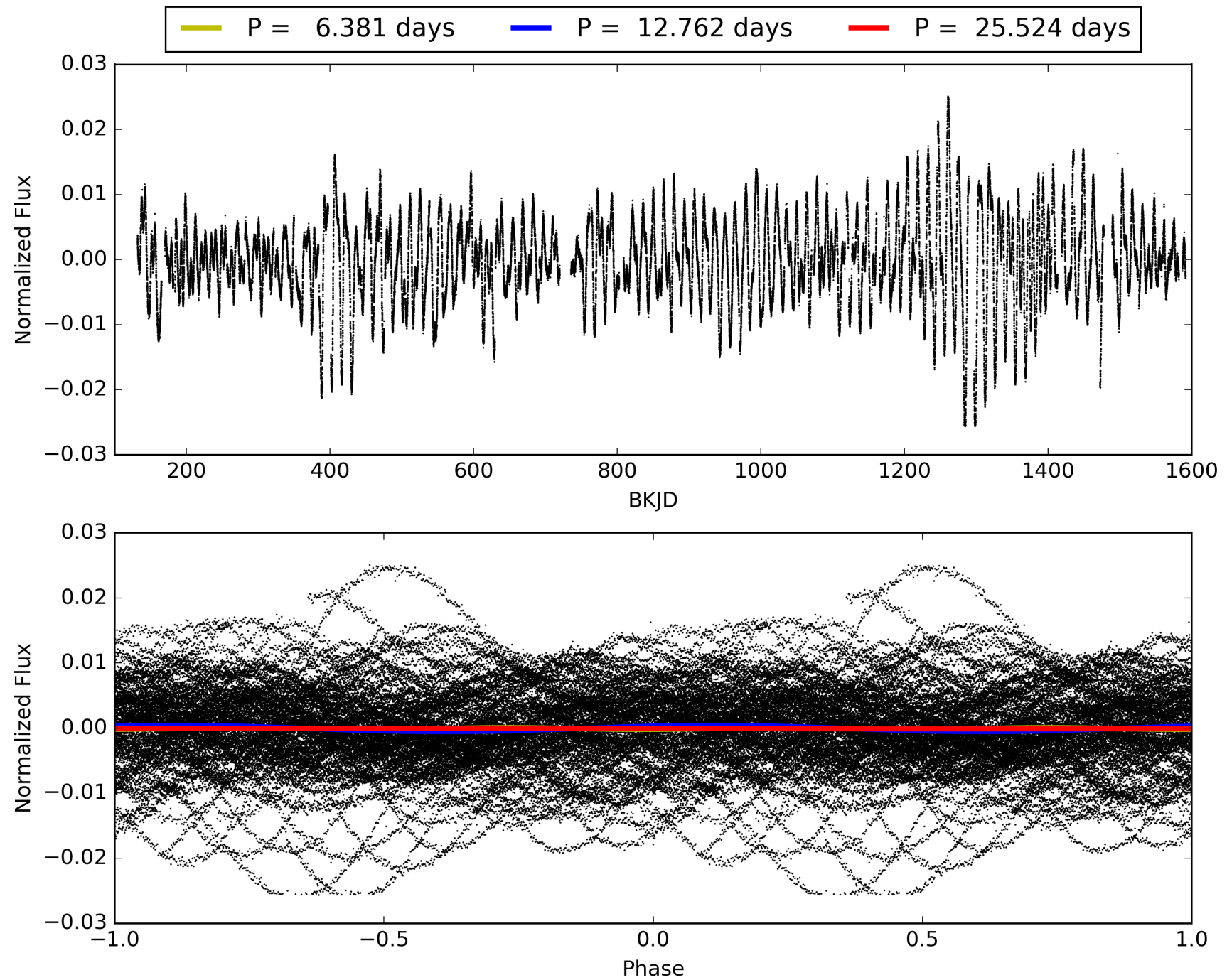
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [63.72 $\sigma$ ]  
LongPeriod-sig: 100.0% [140.21 $\sigma$ ]  
ModelChiSquare2-sig: 90.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 9.95e-87  
RollingBand-fgt: 0.99 [90/91]  
GhostDiagnostic-chr: 2.235  
Centroid-sig: 67.5%  
Centroid-so: 0.270 arcsec [0.53 $\sigma$ ]  
OotOffset-rm: 0.316 arcsec [1.71 $\sigma$ ]  
KicOffset-rm: 0.251 arcsec [1.44 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.82 [14/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 011709244-02, PDC Light Curves

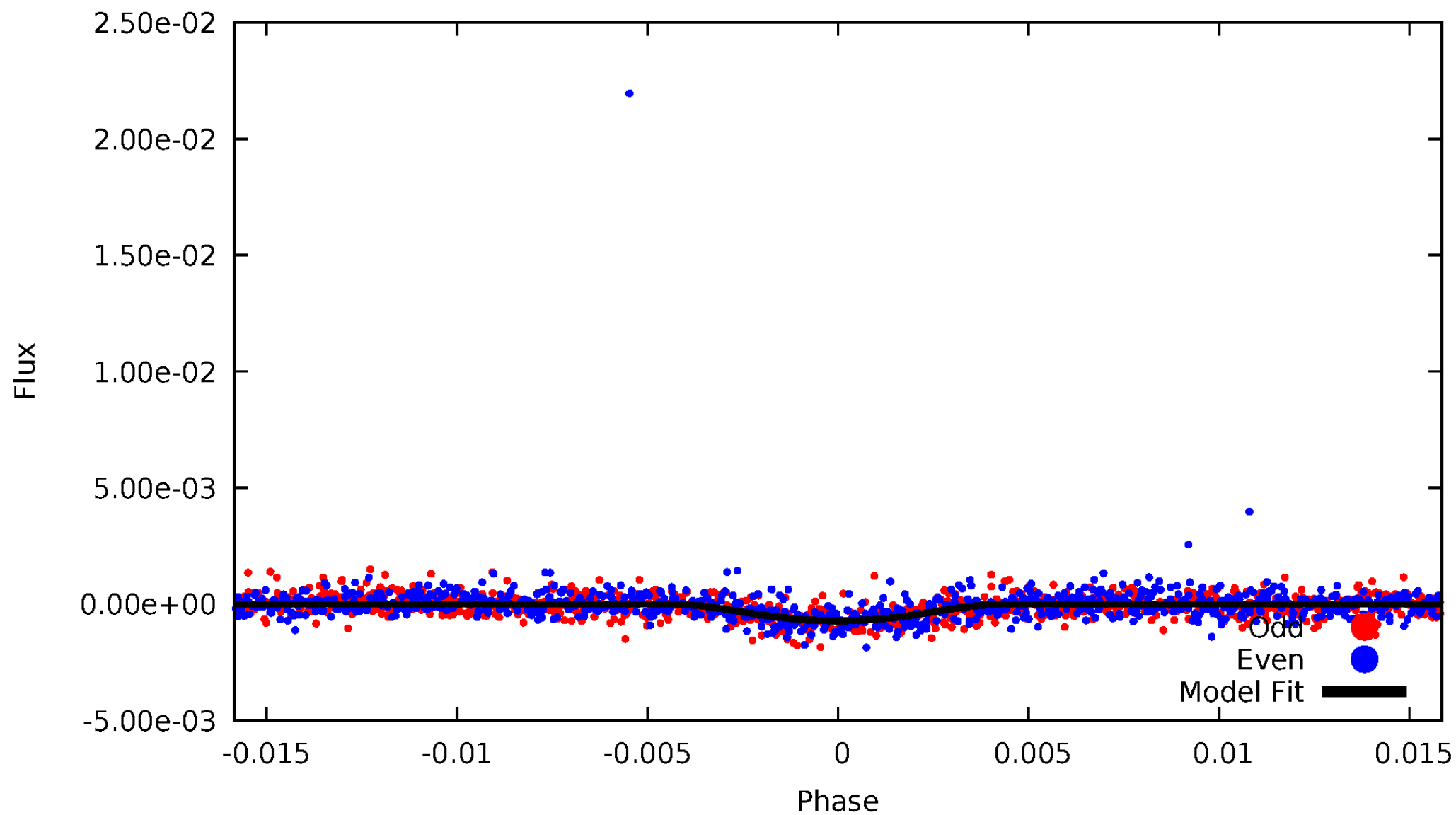


# TCE 011709244-02



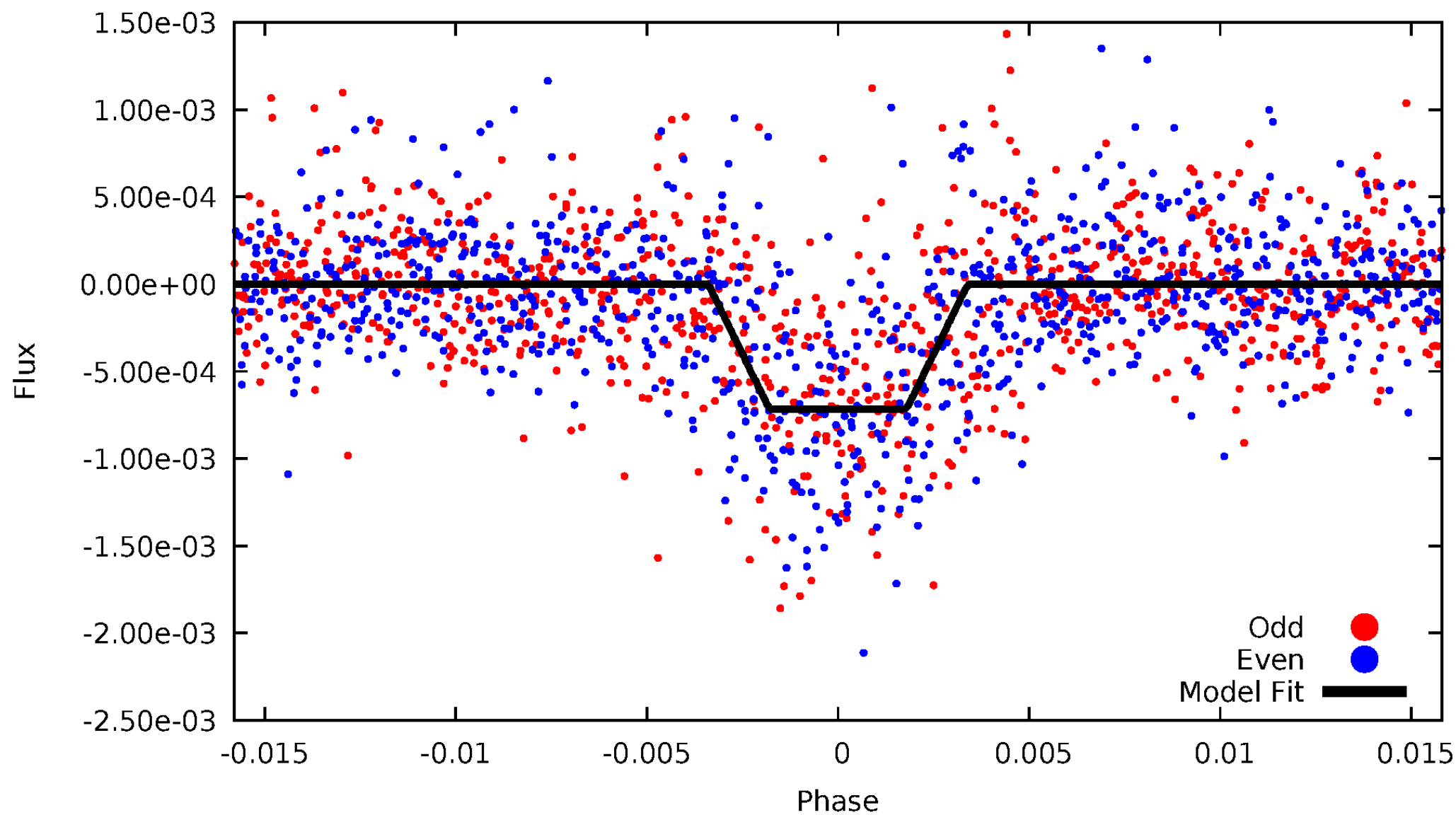
# DV Odd/Even

TCE 011709244-02



# ALT Odd/Even

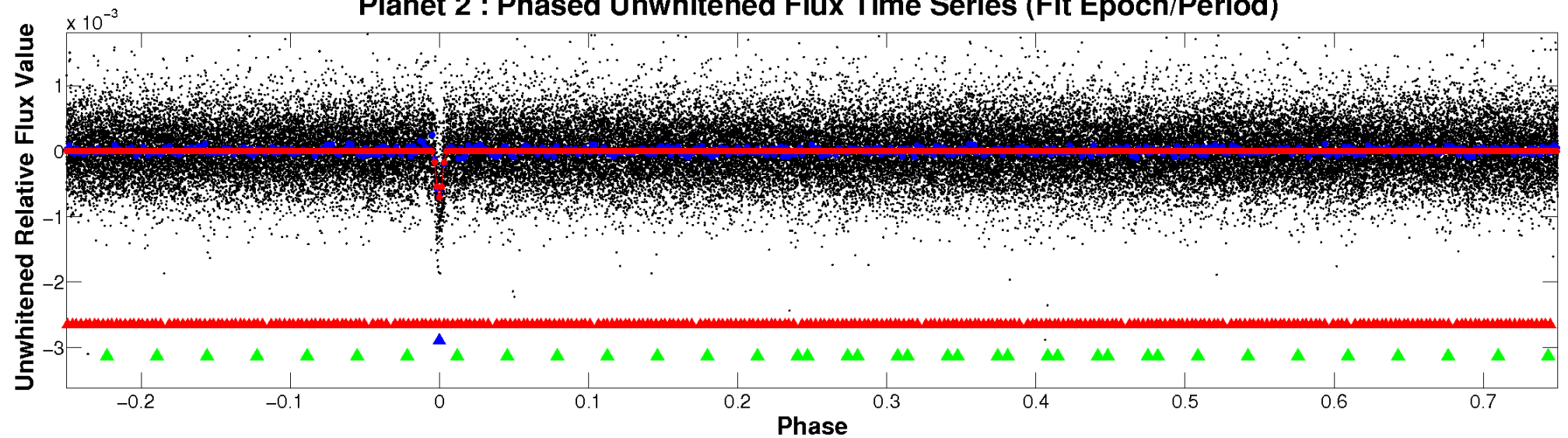
TCE 011709244-02



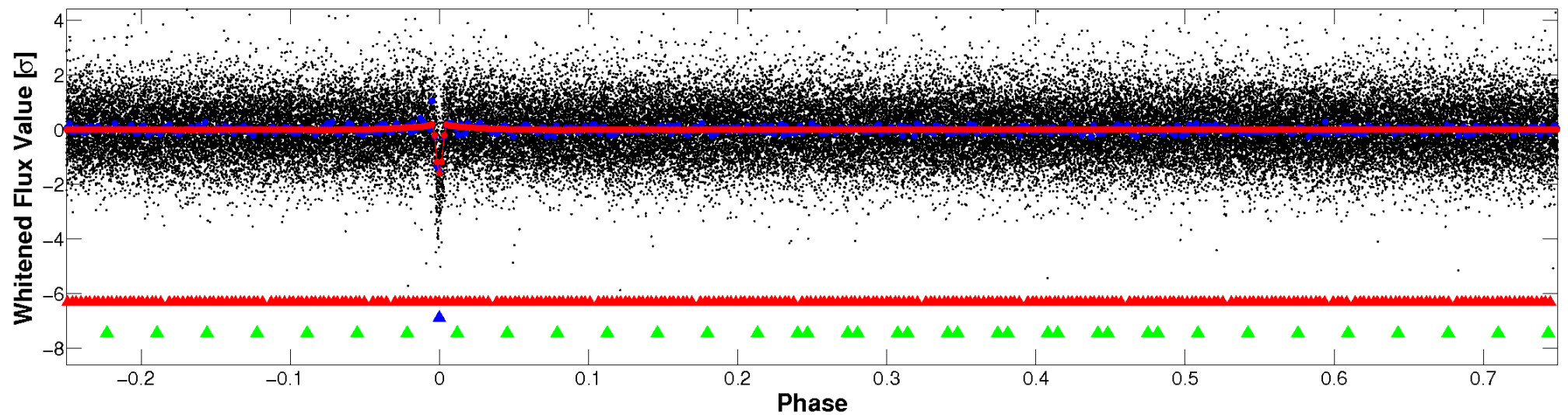


# Non-Whitened Vs. Whitened Light Curve

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

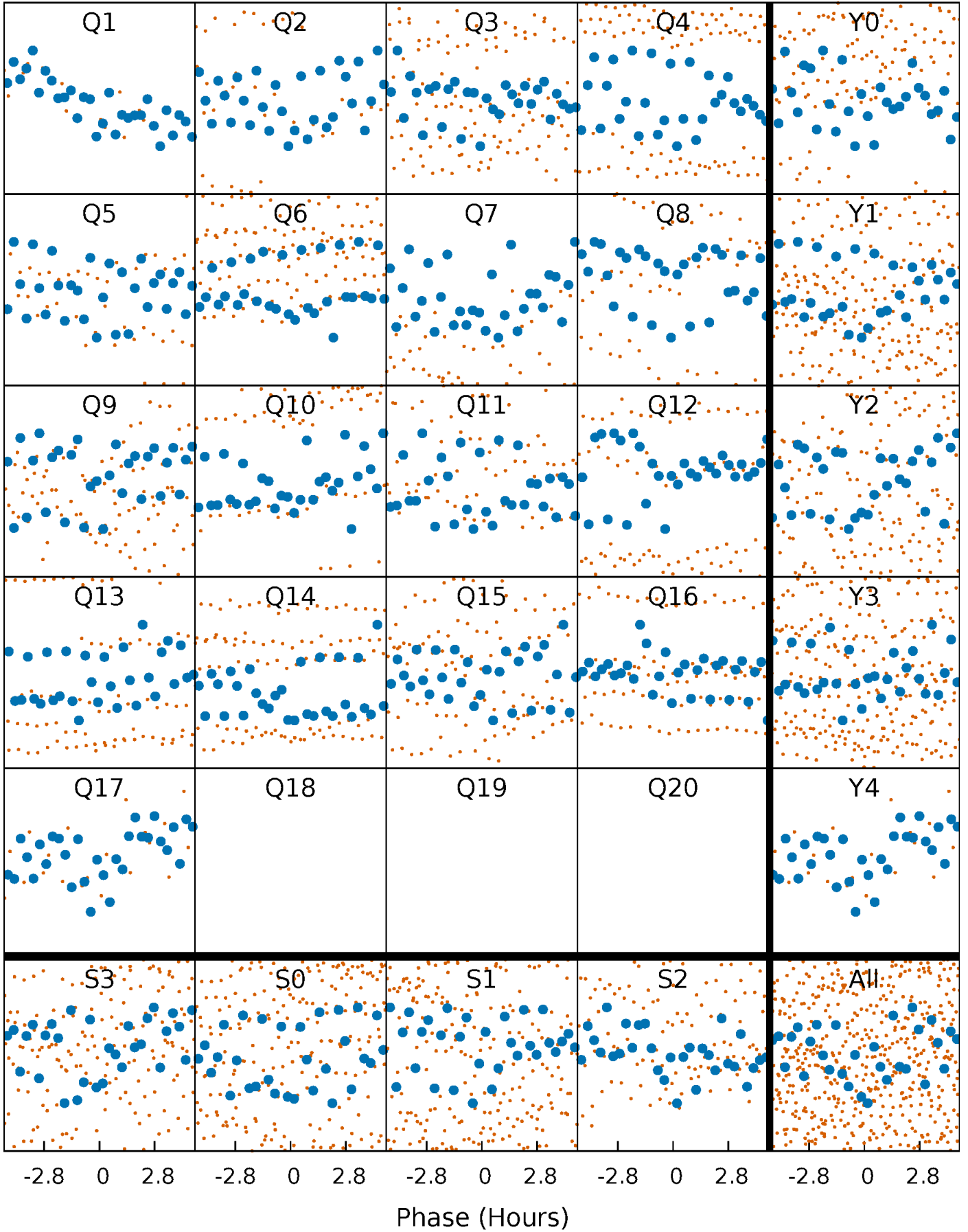


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



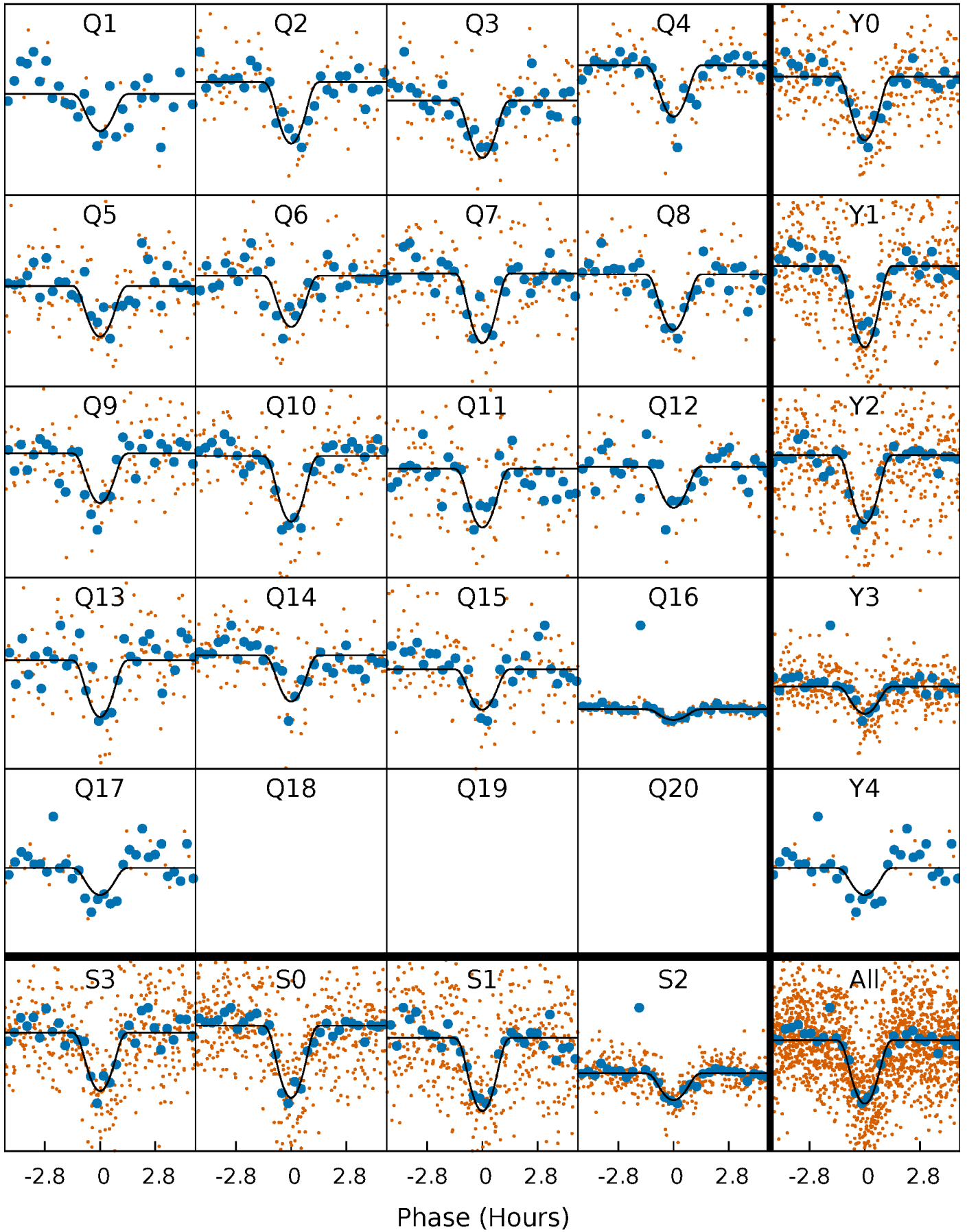
# PDC Quarter-Phased Transit Curves

TCE 011709244-02 P= 12.762212 Days  $T_0=143.729182$  (BKJD)



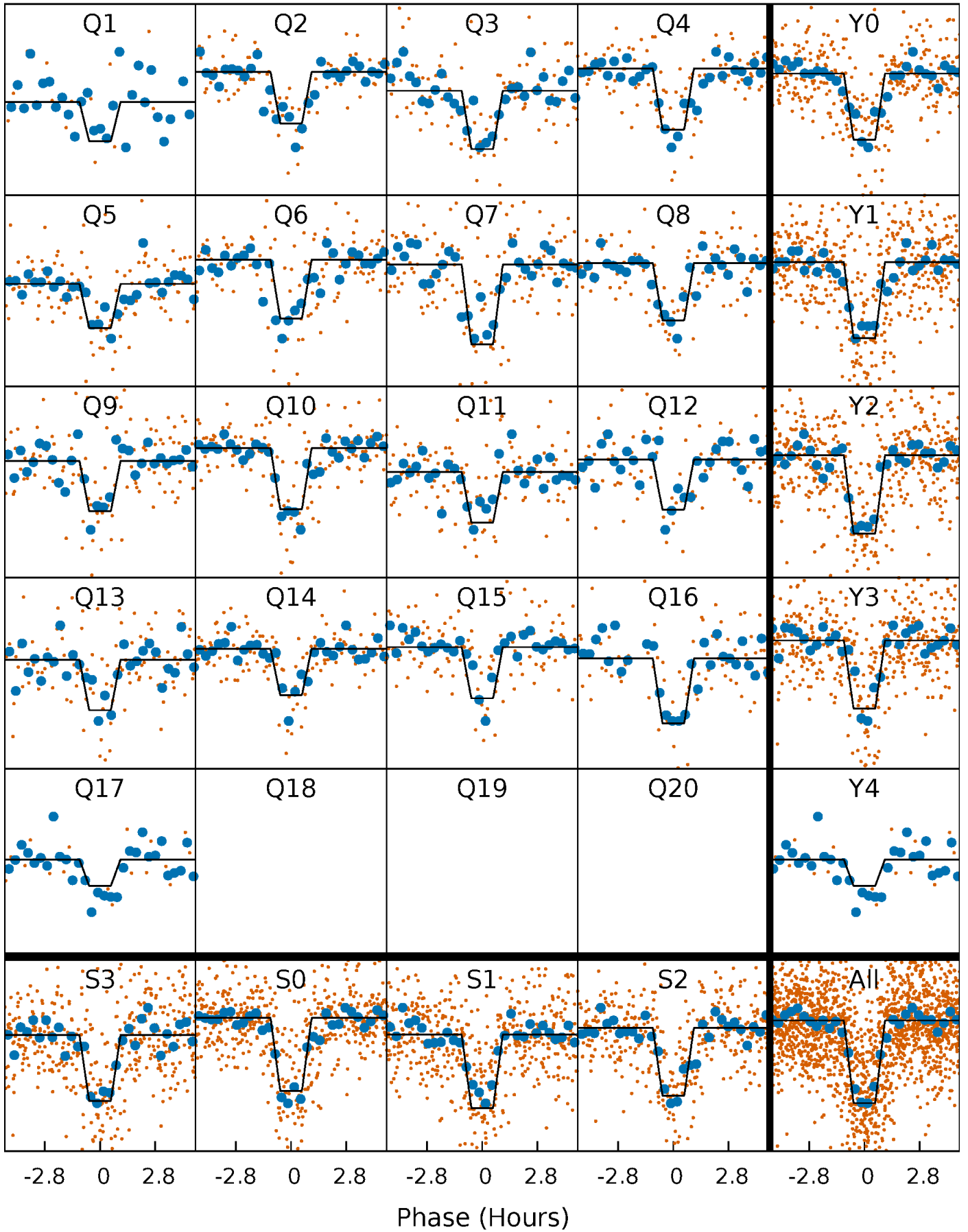
# DV Quarter-Phased Transit Curves

TCE 011709244-02 P= 12.762212 Days  $T_0=143.729182$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

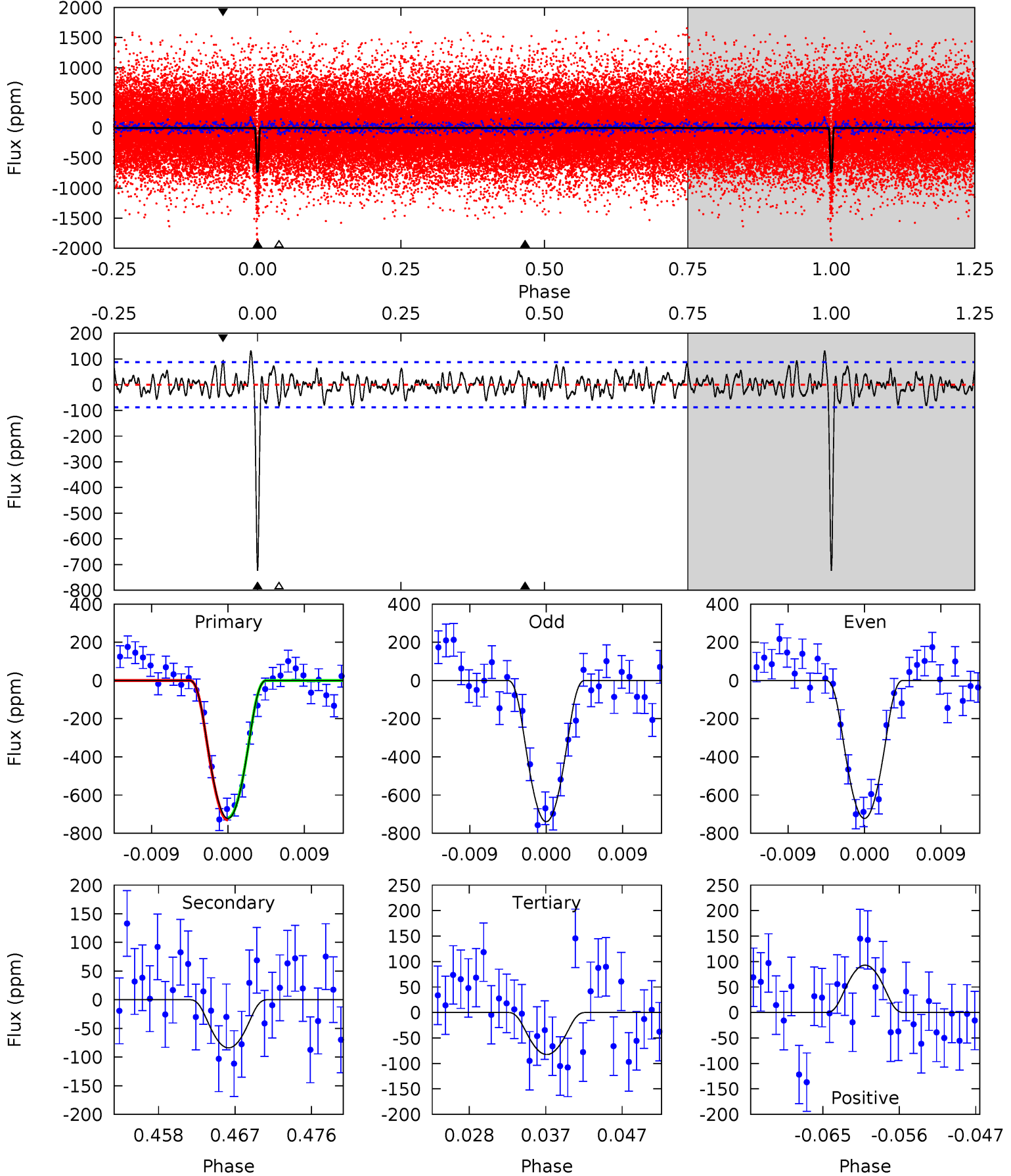
TCE 011709244-02 P= 12.762189 Days  $T_0=143.730674$  (BKJD)



# DV Model-Shift Uniqueness Test

011709244-02,  $P = 12.762212$  Days,  $E = 130.966970$  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
41.3	4.80	4.72	5.32	5.04	2.60	1.74	36.6	36.0	0.08	-0.51	0.48	1.03	0.15	0.32

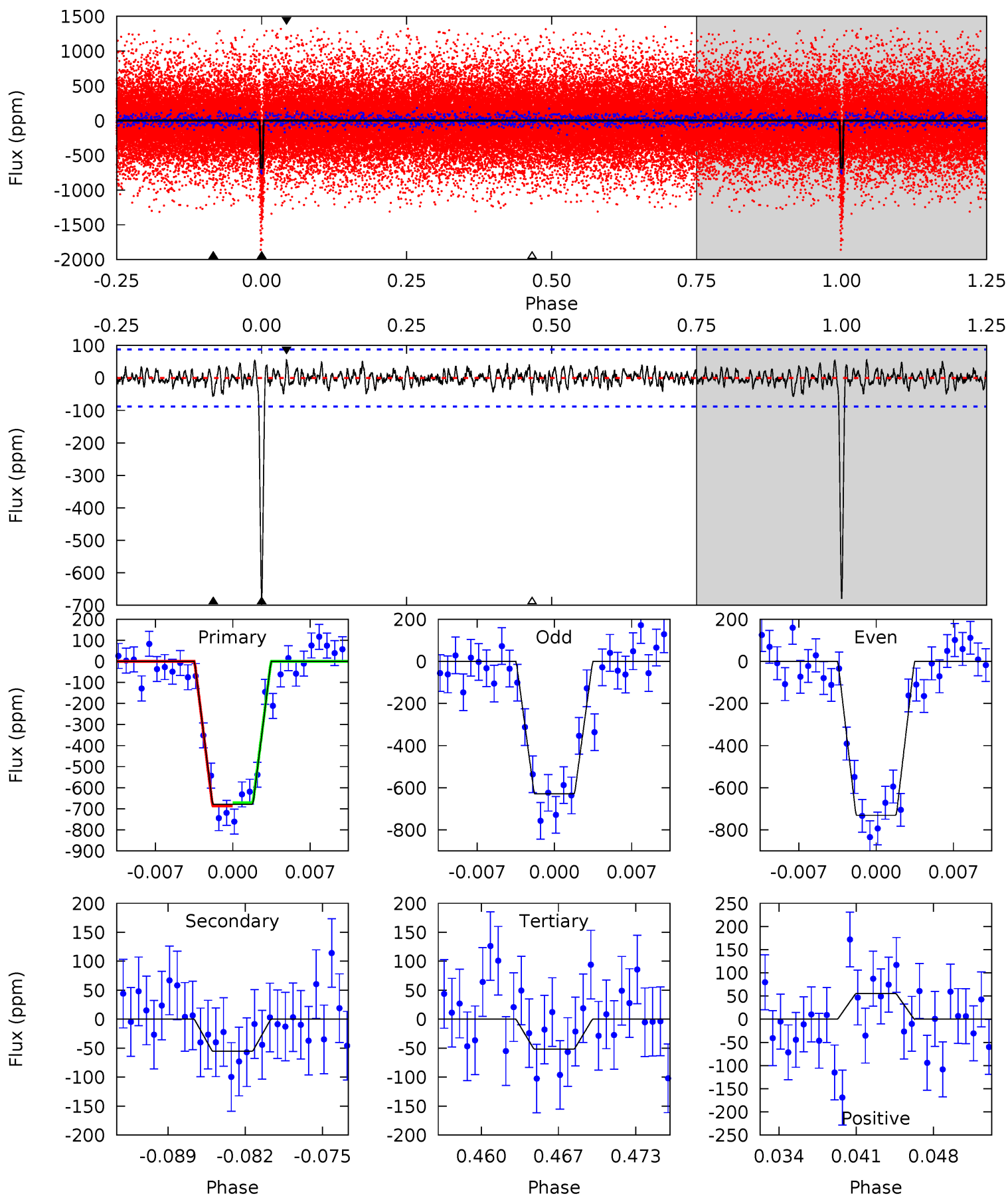




# Alt Model-Shift Uniqueness Test

011709244-02,  $P = 12.762189$  Days,  $E = 130.968485$  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
39.4	3.21	3.00	3.21	5.10	2.70	0.98	36.4	36.2	0.21	-0.00	2.97	1.02	0.08	0.46





### Stellar Parameters For KIC 011709244

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5445^{+81}_{-81}$	$4.458^{+0.072}_{-0.096}$	$0.160^{+0.150}_{-0.150}$	$0.937^{+0.105}_{-0.078}$	$0.919^{+0.052}_{-0.046}$	$1.573^{+0.394}_{-0.450}$
	+1%/-1%	+2%/-2%	+94%/-94%	+11%/-8%	+6%/-5%	+25%/-29%
Source	SPE90	SPE90	SPE90	DSEP		

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

### Secondary Eclipse Parameters for KIC 011709244-02 / KOI 1832.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-84 \pm 17$	$5.67^{+4.58}_{-3.54}$	$1010^{+38}_{-31}$	$2896^{+1049}_{-426}$	$15^{+92}_{-11}$
Alt.	$-55 \pm 17$	$4.70^{+4.39}_{-3.10}$	$1012^{+33}_{-30}$	$2871^{+1142}_{-469}$	$14^{+110}_{-11}$

$T_{\text{max}}$  = Theoretical Maximum Planetary Temperature

$T_{\text{obs}}$  = Observed Planetary Temperature (Assuming  $A=0.3$ )

$A_{\text{obs}}$  = Observed Albedo (Assuming  $T=0$ )

If a secondary eclipse is present, the system is likely an EB if  $T_{\text{obs}} \gg T_{\text{max}}$  AND  $A_{\text{obs}} \gg 1.0$

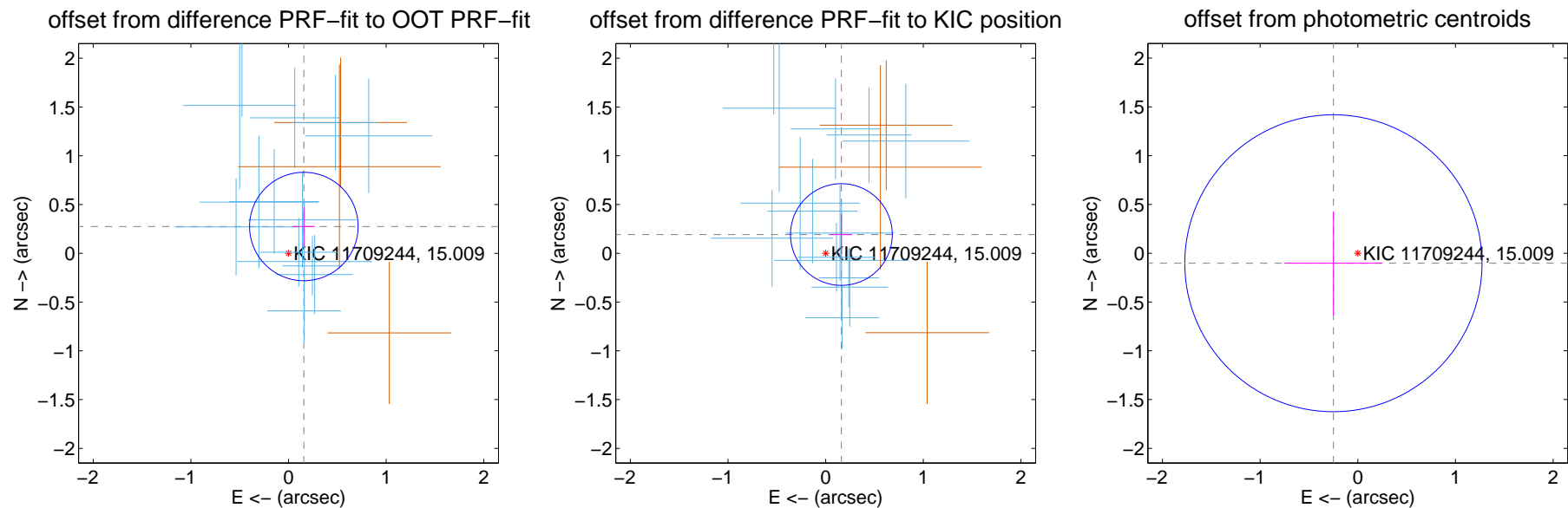
## DV Centroid Data

Supplemental centroid analysis for 011709244-02. Kepler magnitude: 15.01. Transit SNR 22.48

There are 14 quarters with good PRF difference image offsets

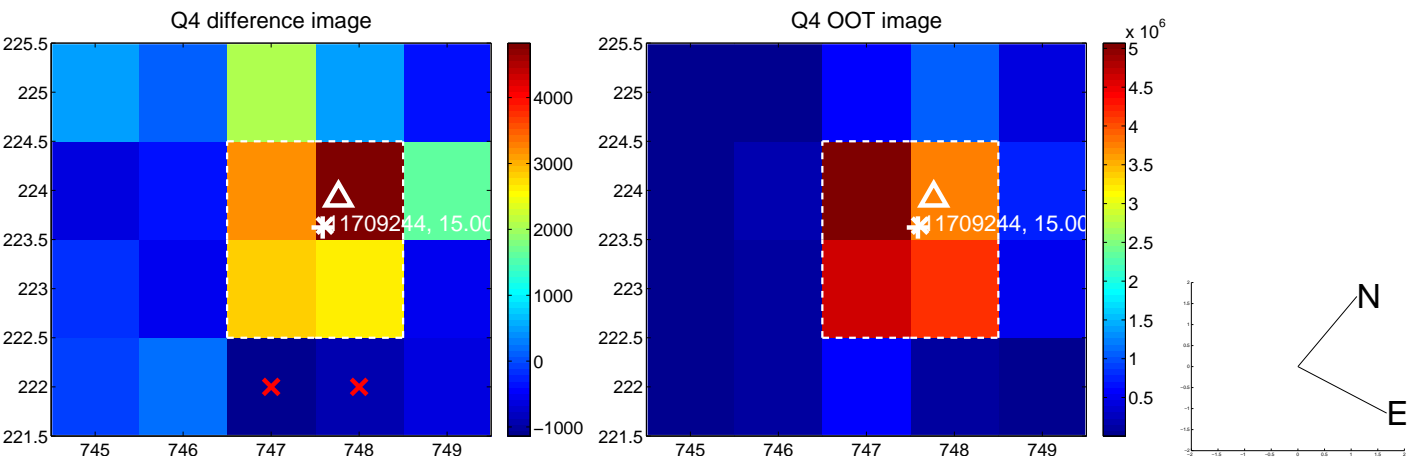
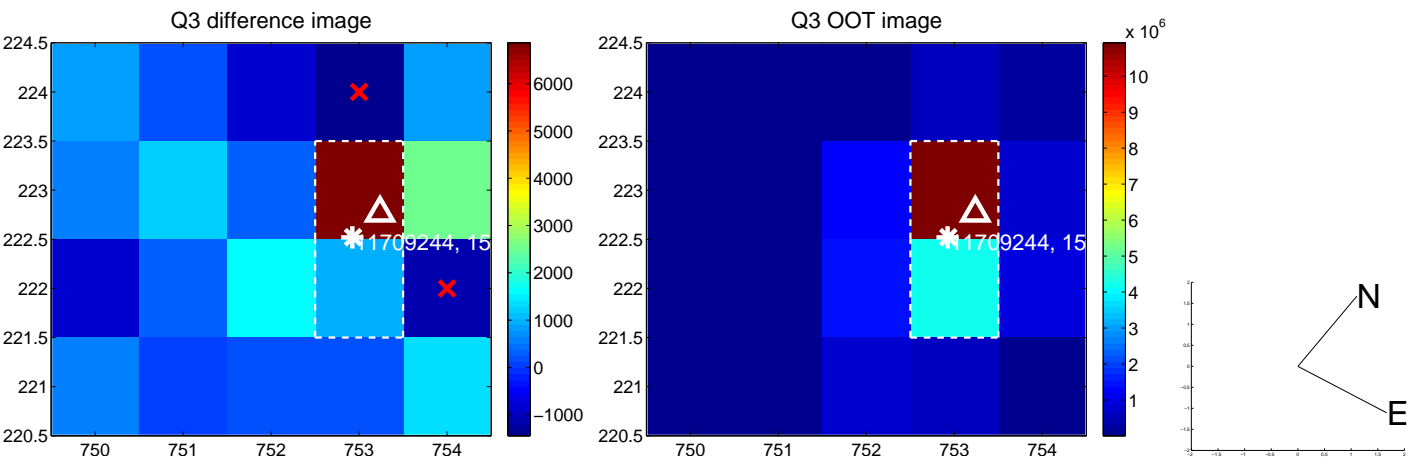
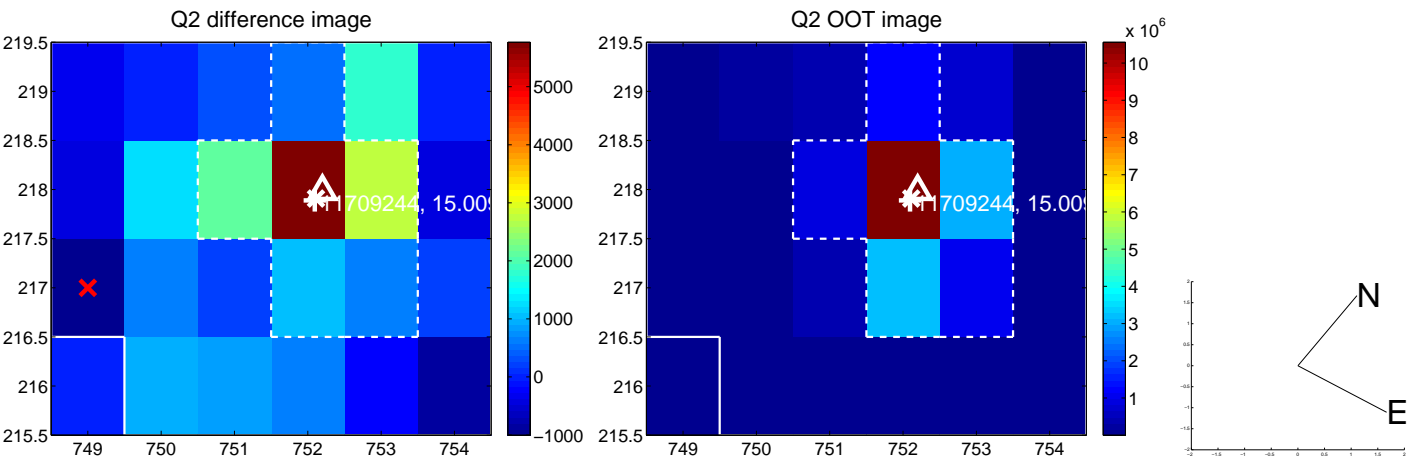
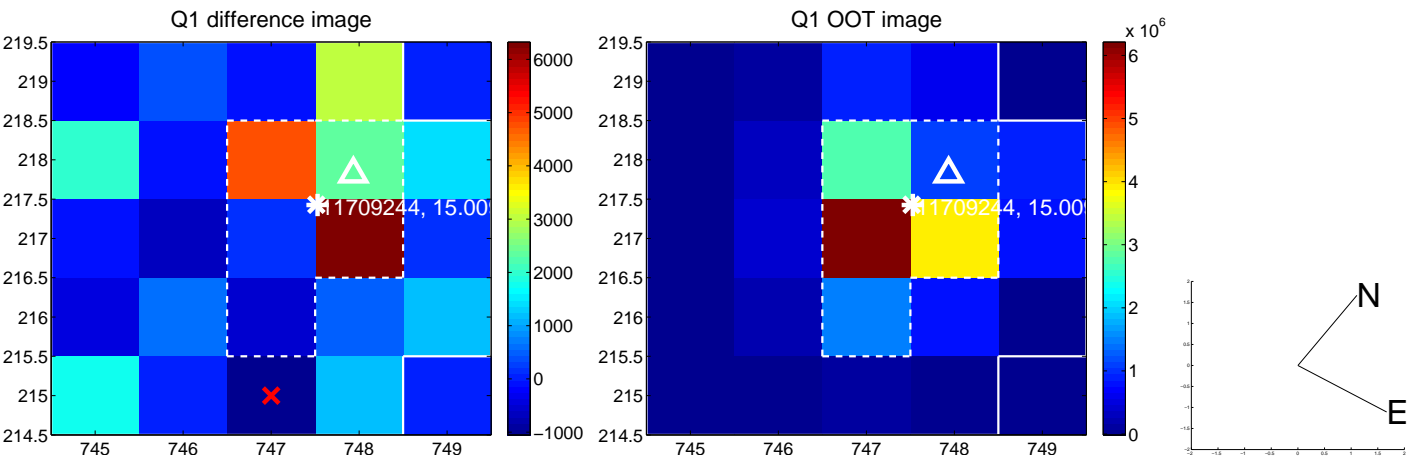
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.316 \pm 0.185$	1.71	$-0.157 \pm 0.115$	$0.275 \pm 0.203$
PRF-fit source offset from KIC position	$0.251 \pm 0.174$	1.44	$-0.161 \pm 0.113$	$0.192 \pm 0.206$
photometric centroid source offset	$0.27 \pm 0.51$	0.53	$0.25 \pm 0.50$	$-0.10 \pm 0.53$

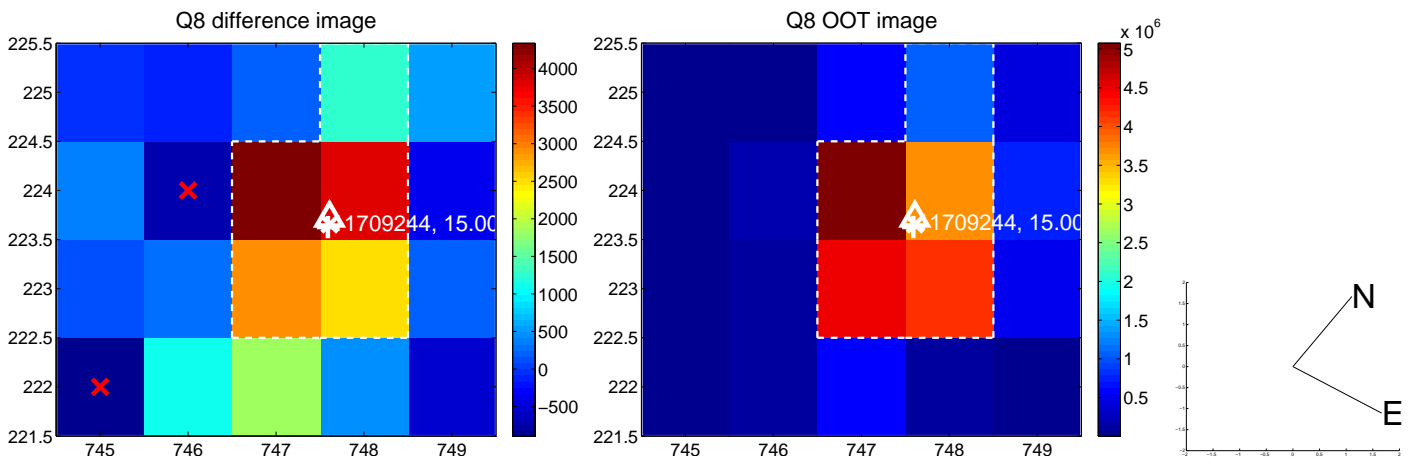
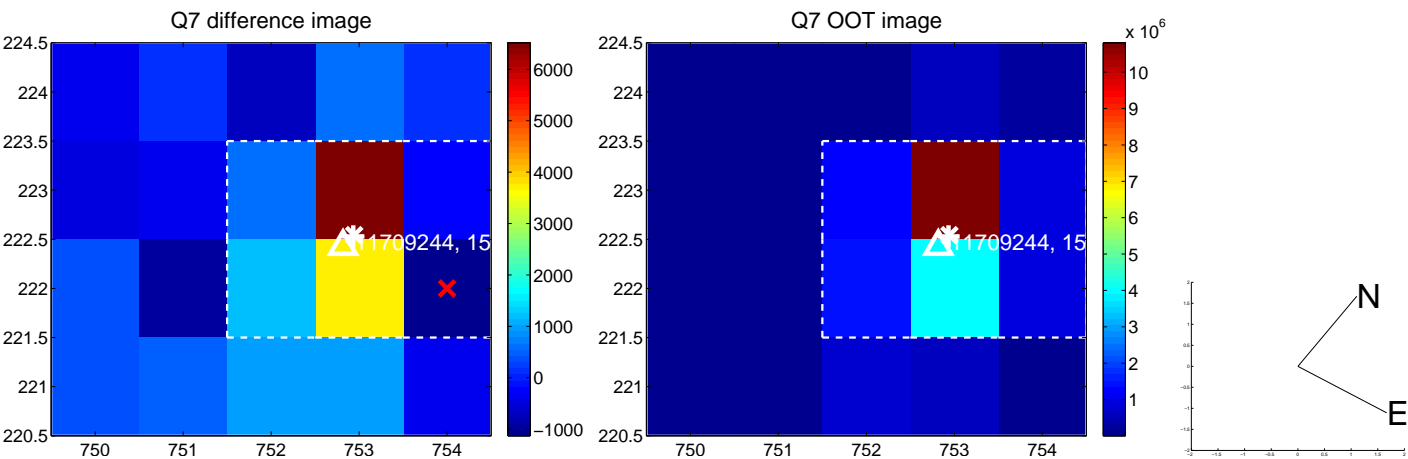
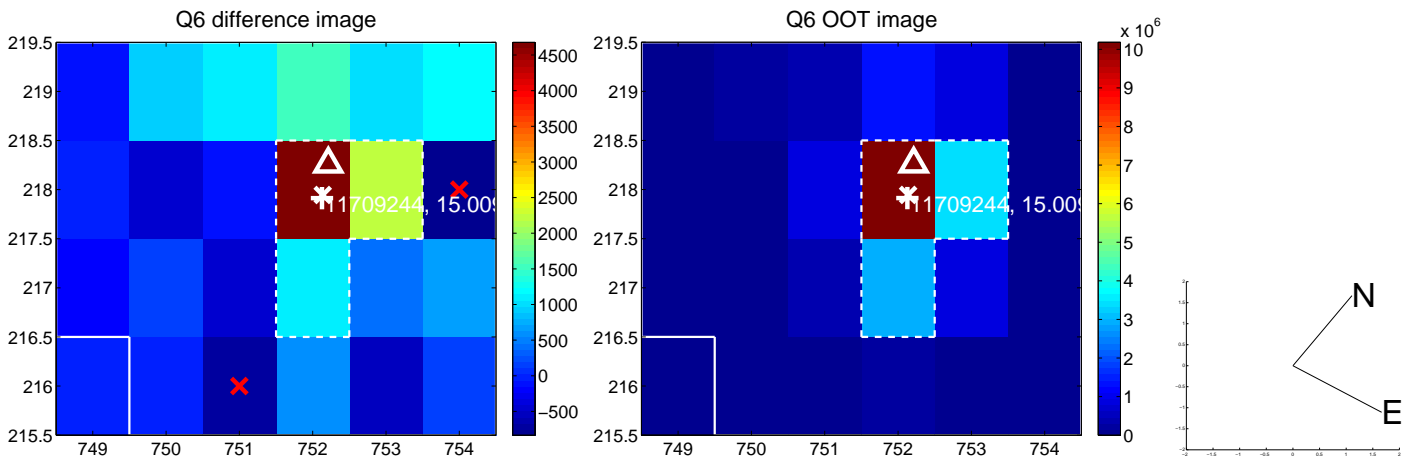
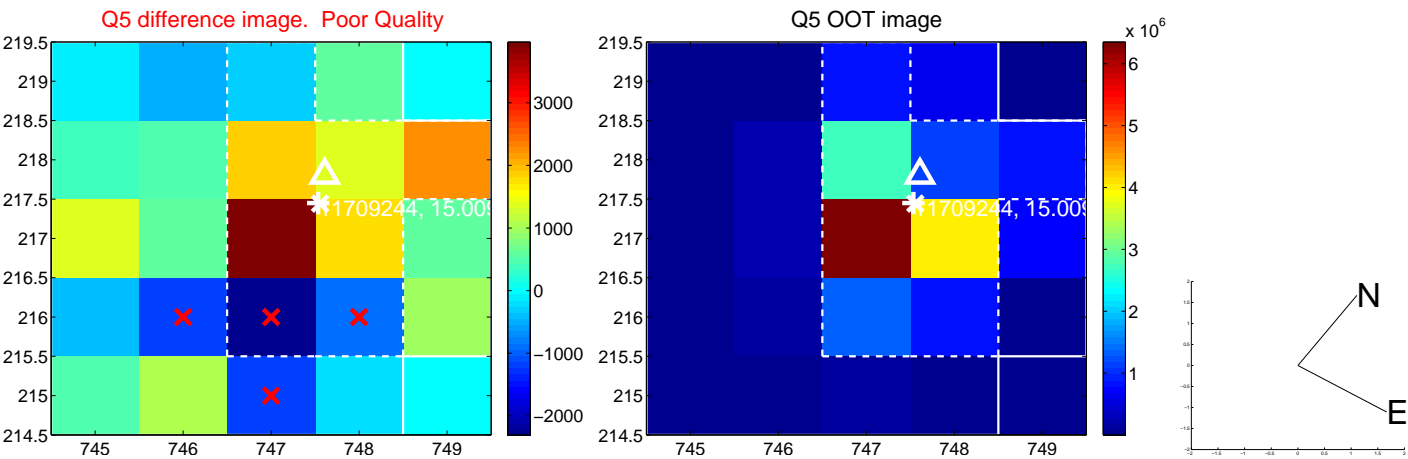


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

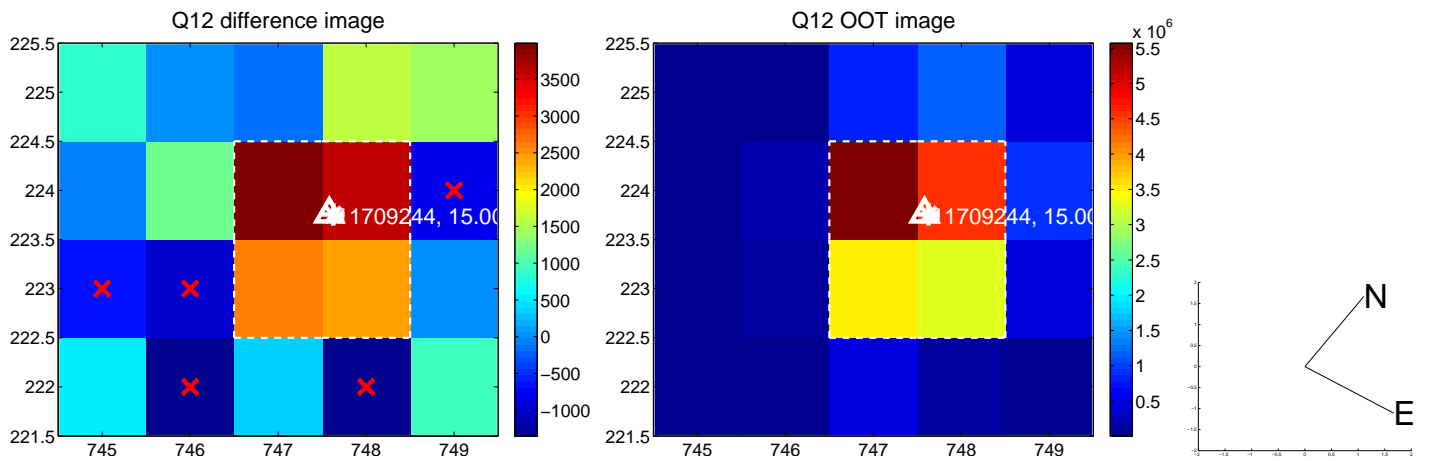
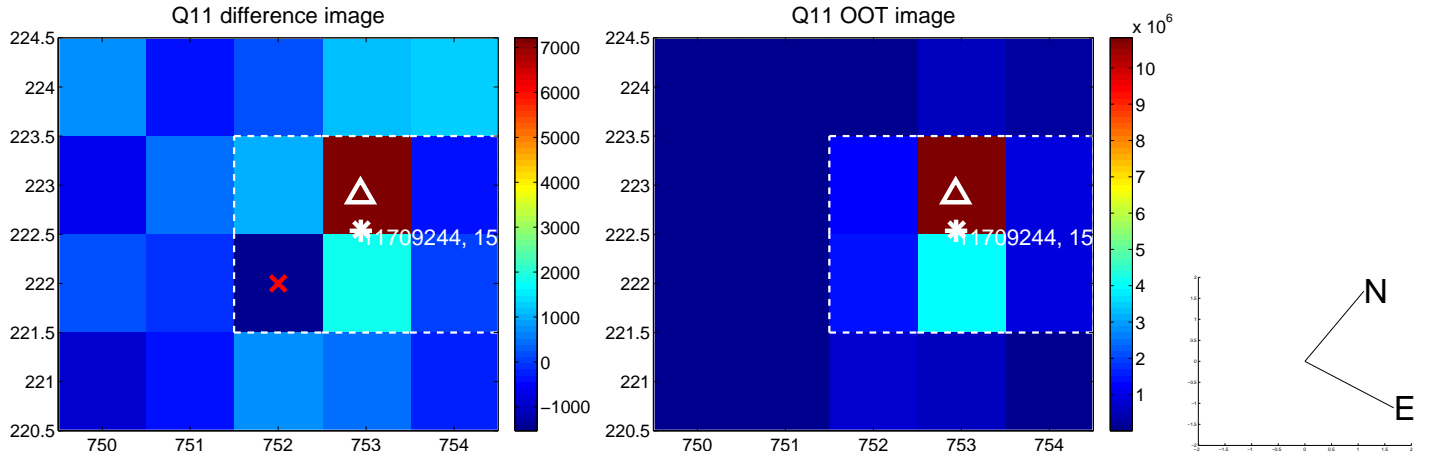
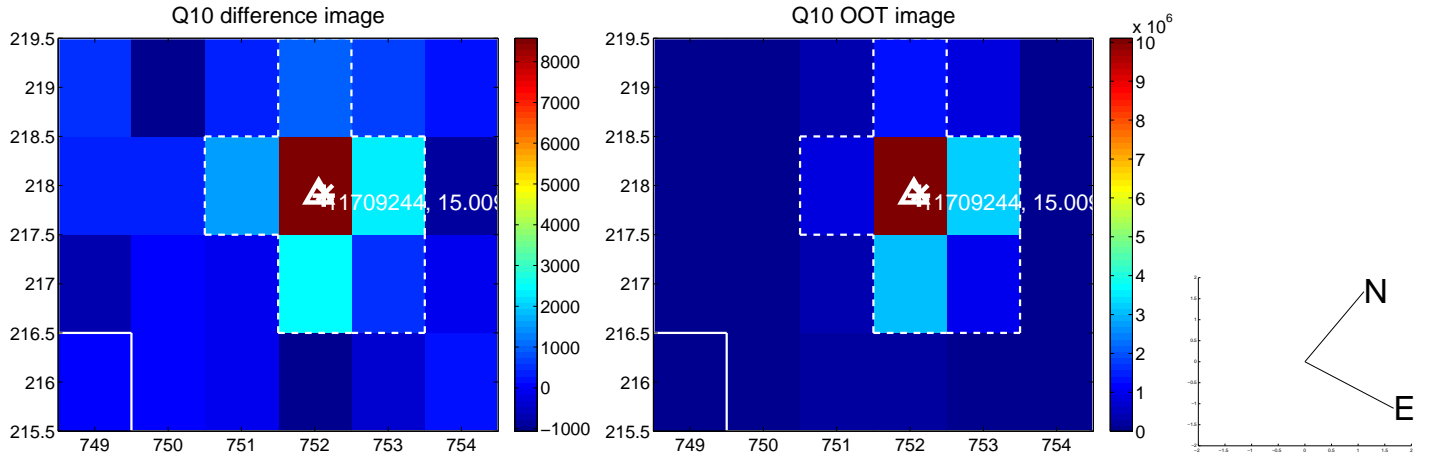
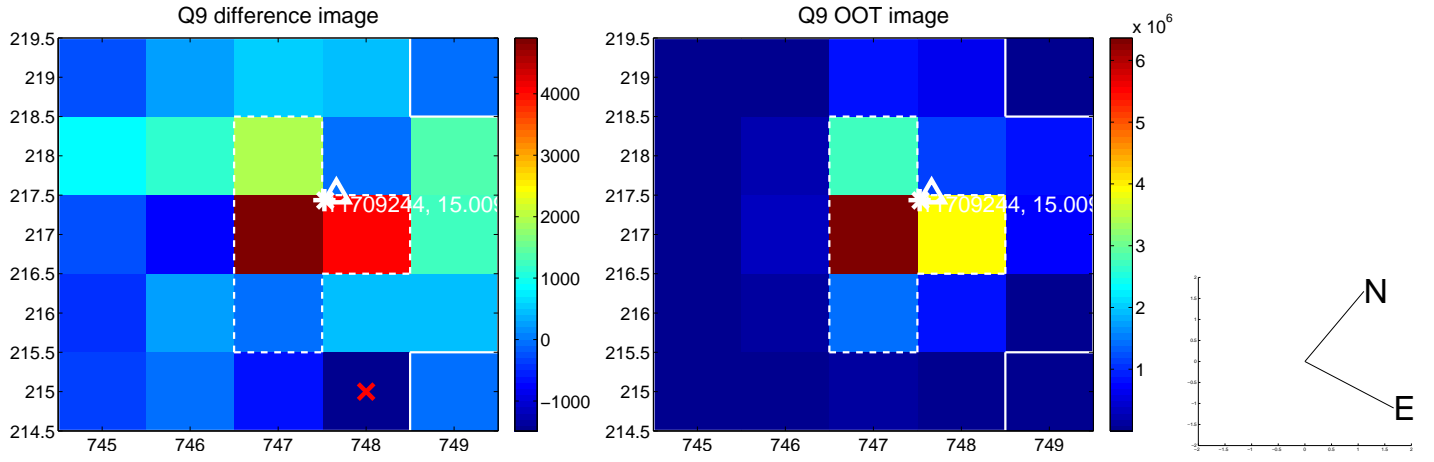
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



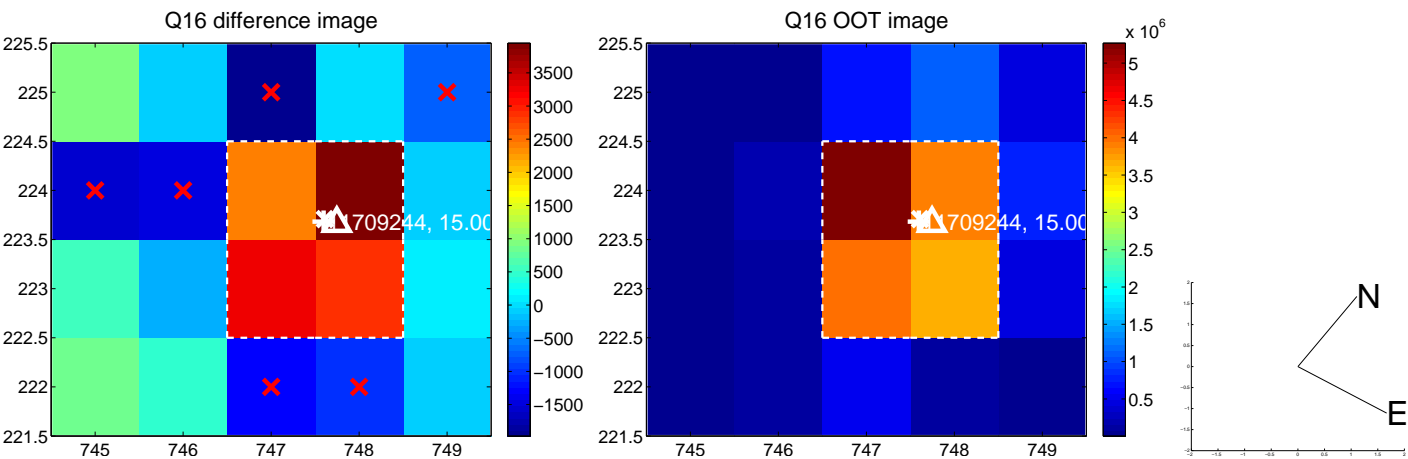
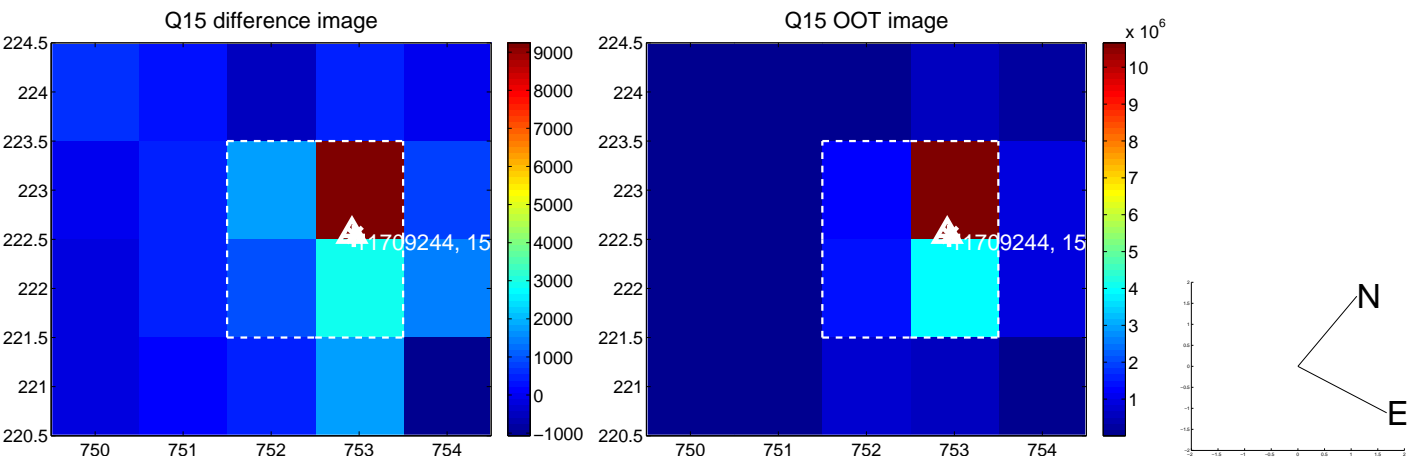
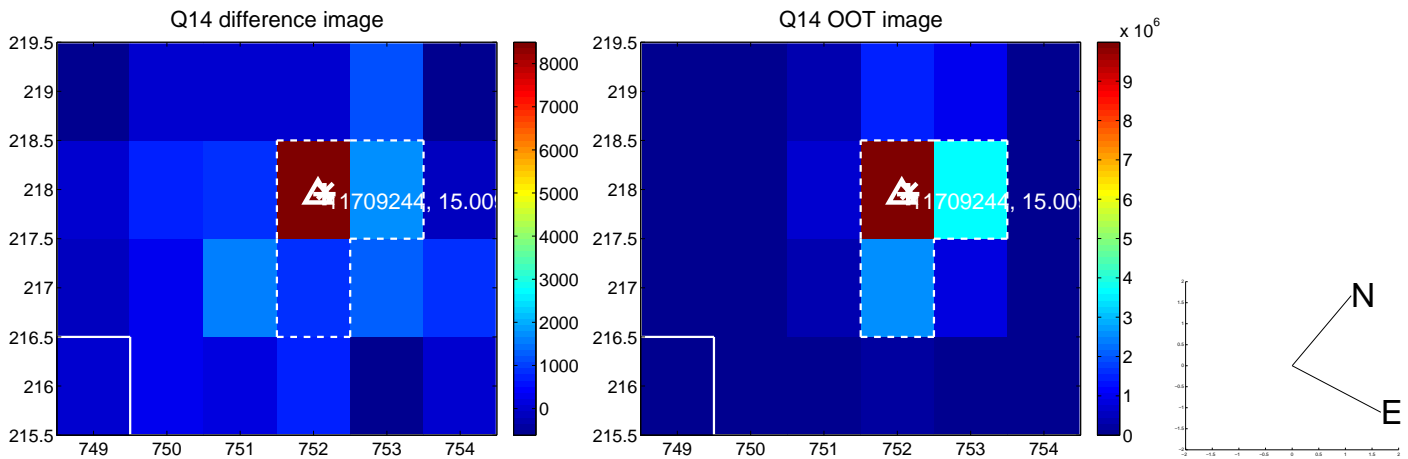
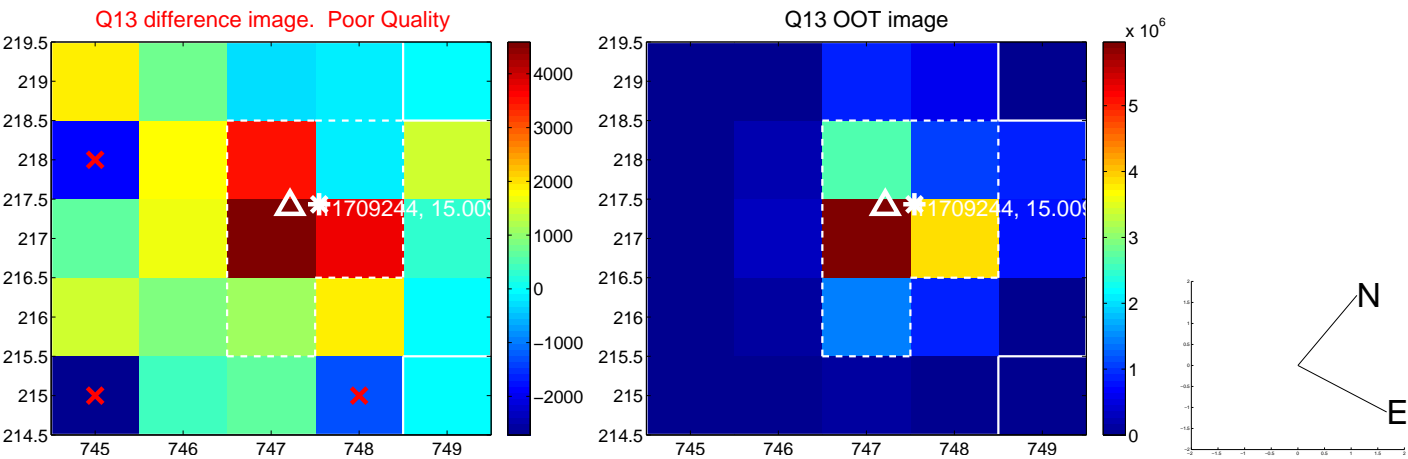
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



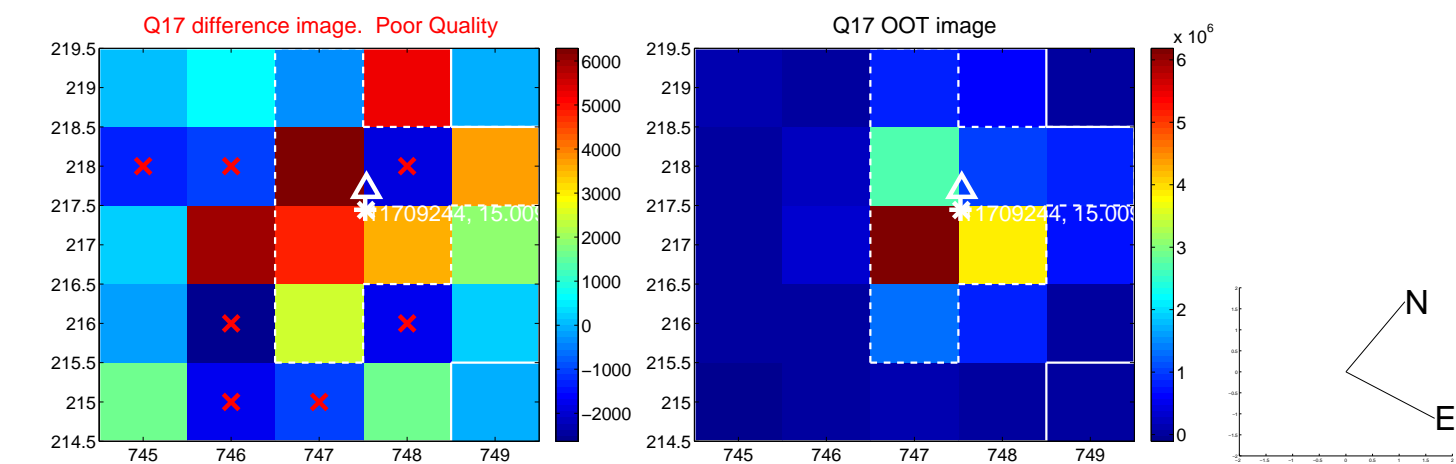
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



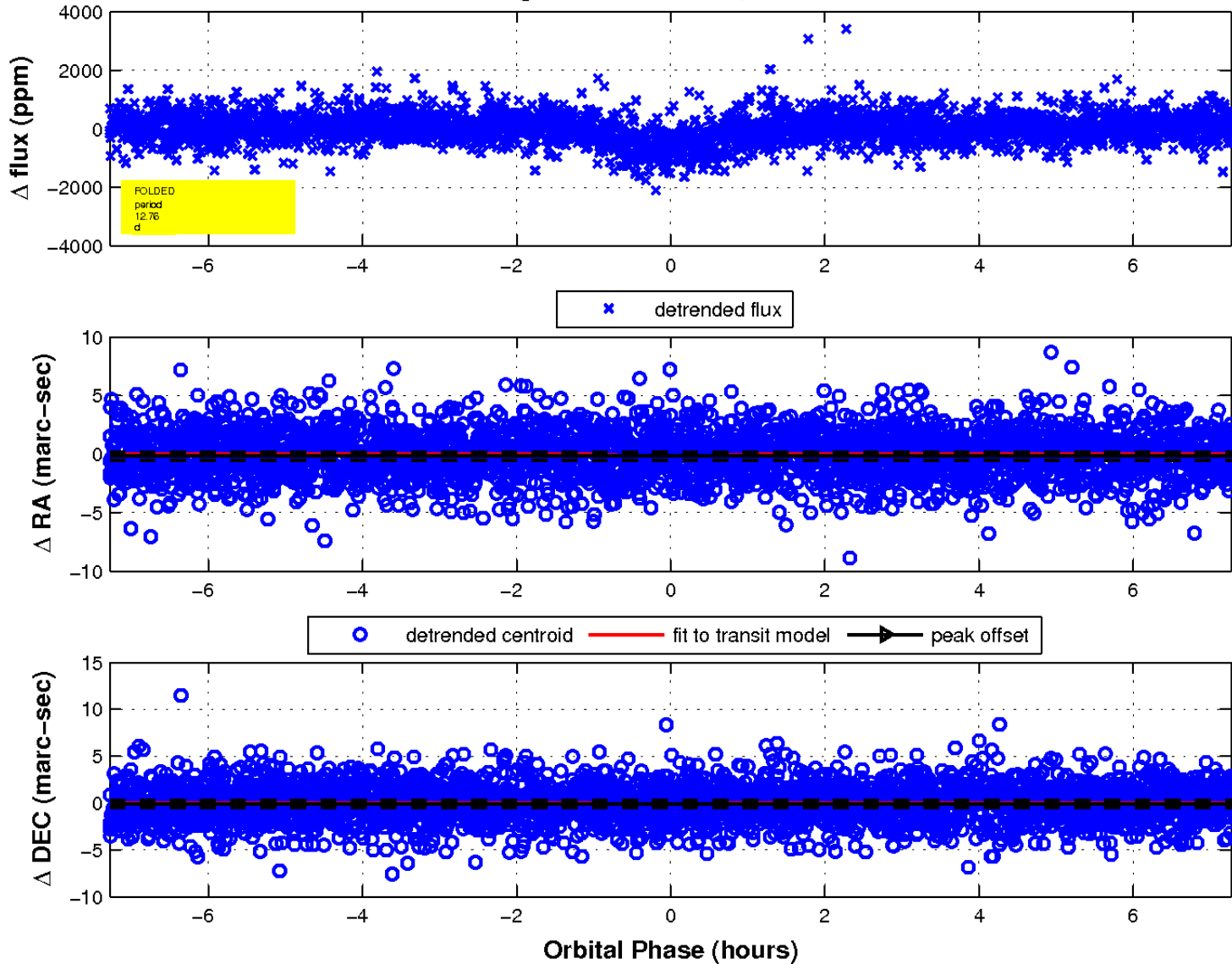
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



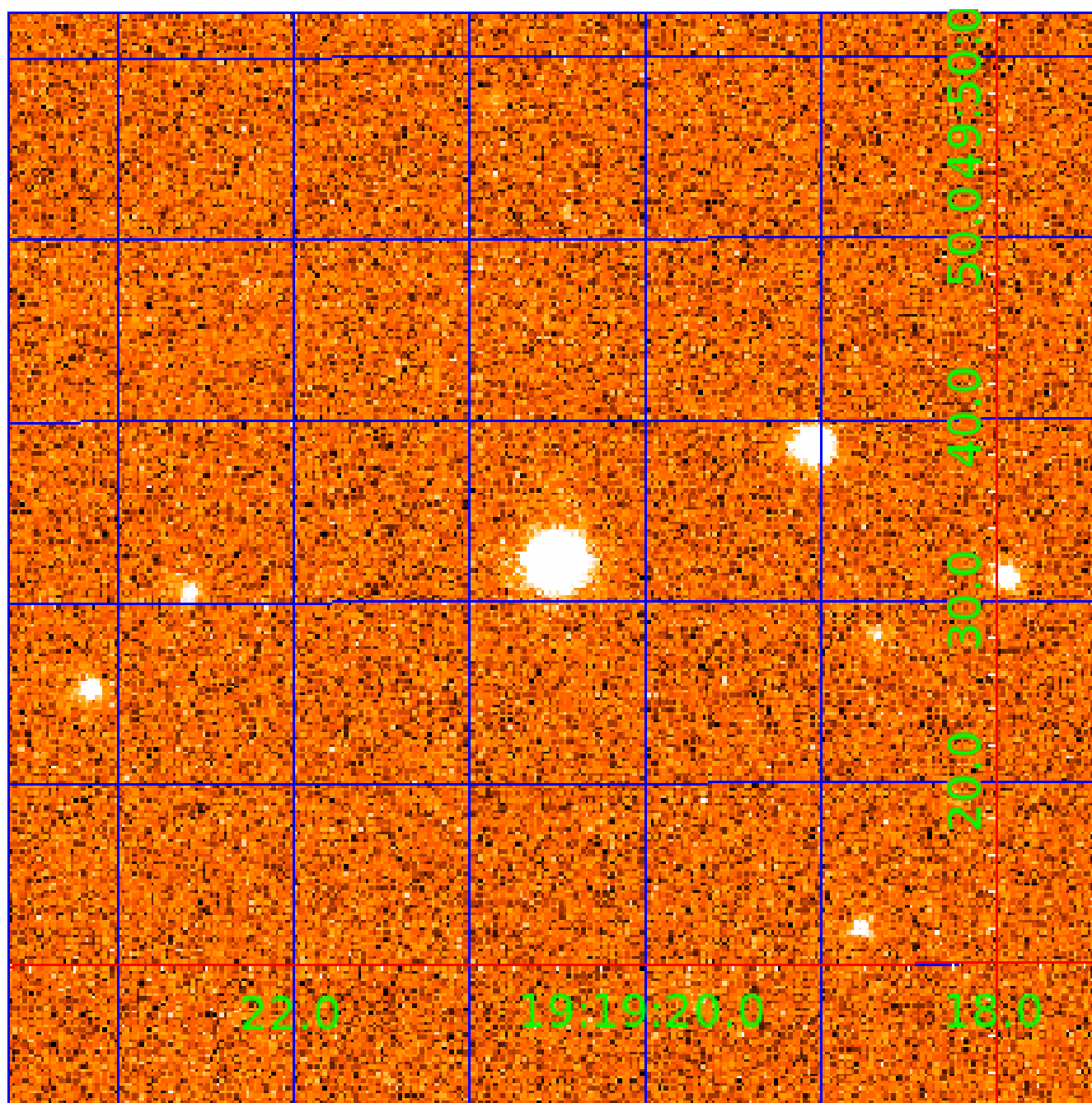
fluxWeightedCentroids, Planet 2 of 3





UKIRT Image

Declination



# KIC 011709244

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011709244-01	OBS	1832.01	4.544441	134.900527	863.6	1.922	45.0	52.3	0.94	5445	3.26	253.56
011709244-02	OBS	1832.02	12.762212	143.729182	720.7	2.426	20.0	22.5	0.94	5445	4.40	63.99
011709244-03	OBS	1832.03	38.714862	134.033094	823.2	3.721	18.3	19.9	0.94	5445	3.09	14.57

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011709244-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
011709244-02	OBS	PC	0.97	0	0	0	0	NO_COMMENT
011709244-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

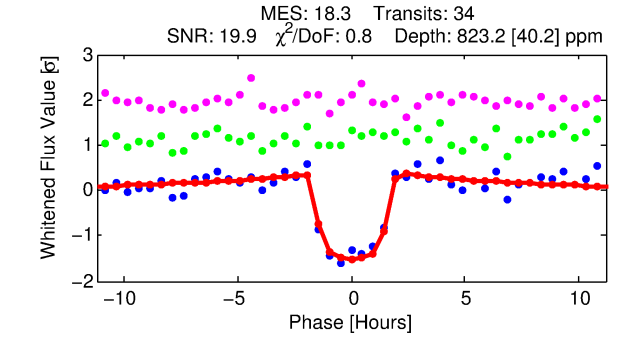
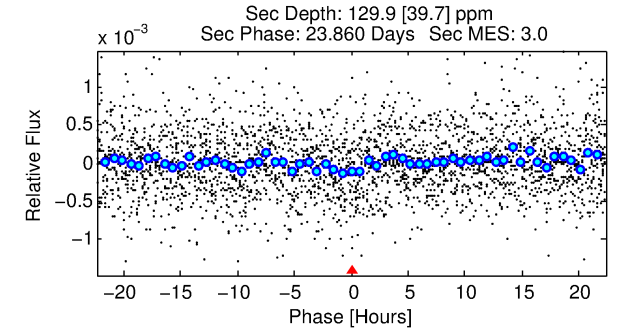
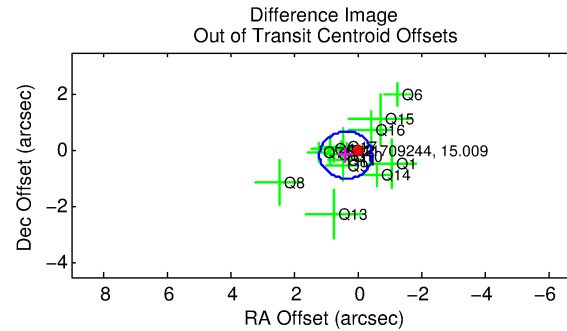
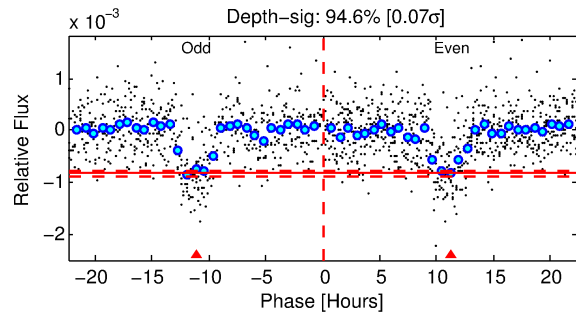
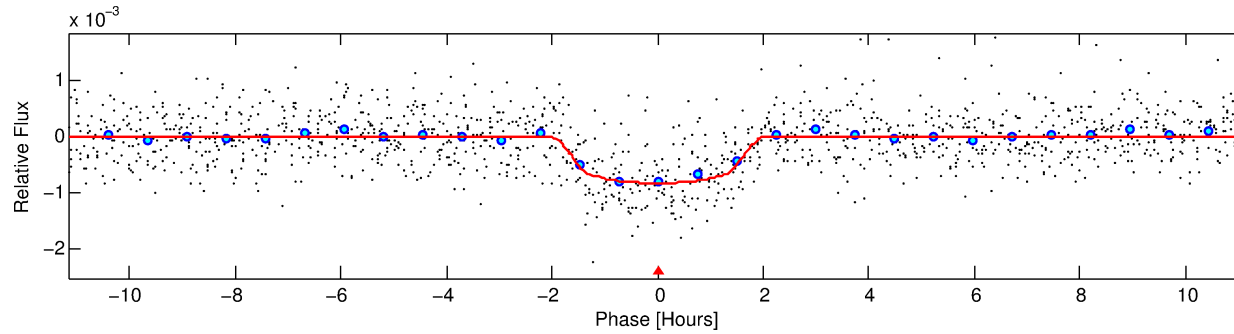
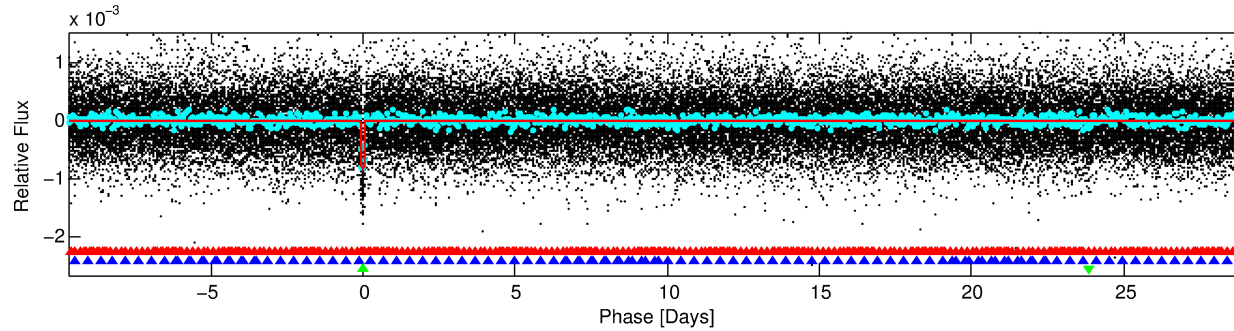
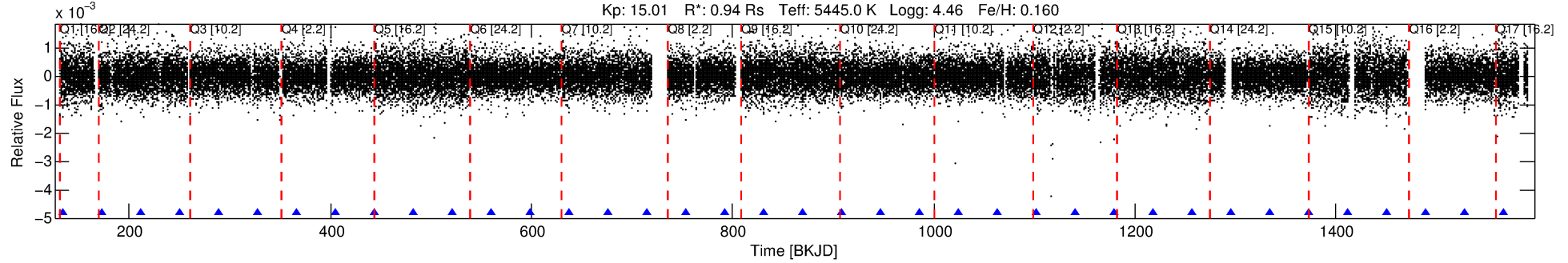
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011709244-03

No Significant Match Found

# DV One-Page Summary

KIC: 11709244 Candidate: 3 of 3 Period: 38.715 d  
KOI: K01832.03 Name: Kepler-325d Corr: 0.964



## DV Fit Results:

Period = 38.71486 [0.00016] d  
Epoch = 134.0331 [0.0033] BKJD  
Rp/R\* = 0.0302 [0.0050]  
a/R\* = 46.56 [30.24]  
b = 0.85 [0.22]  
Seff = 14.57 [2.56]  
Teq = 498 [22] K  
Rp = 3.09 [0.61] Re  
a = 0.2178 [0.0229] AU  
Ag = 354.98 [169.62] [2.09 $\sigma$ ]  
Teffp = 3344 [378] K [7.51 $\sigma$ ]

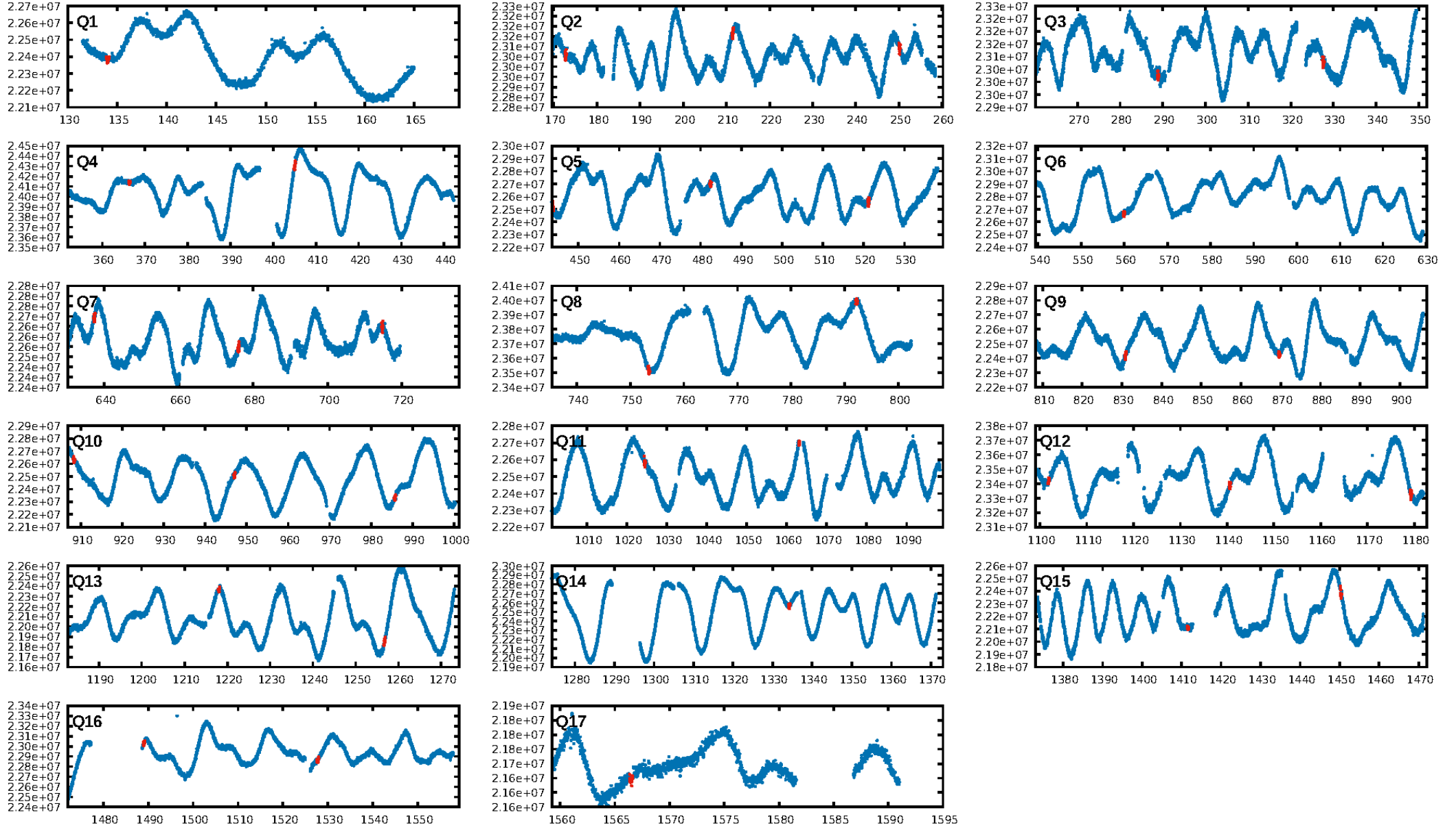
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [140.21 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 43.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.53e-70  
RollingBand-fgt: 1.00 [32/32]  
GhostDiagnostic-chr: 4.986  
Centroid-sig: 0.8%  
Centroid-so: 1.209 arcsec [2.31 $\sigma$ ]  
OotOffset-rm: 0.393 arcsec [1.42 $\sigma$ ]  
KicOffset-rm: 0.419 arcsec [1.53 $\sigma$ ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.94 [15/16]  
DiffImageOverlap-fno: 0.82 [14/17]

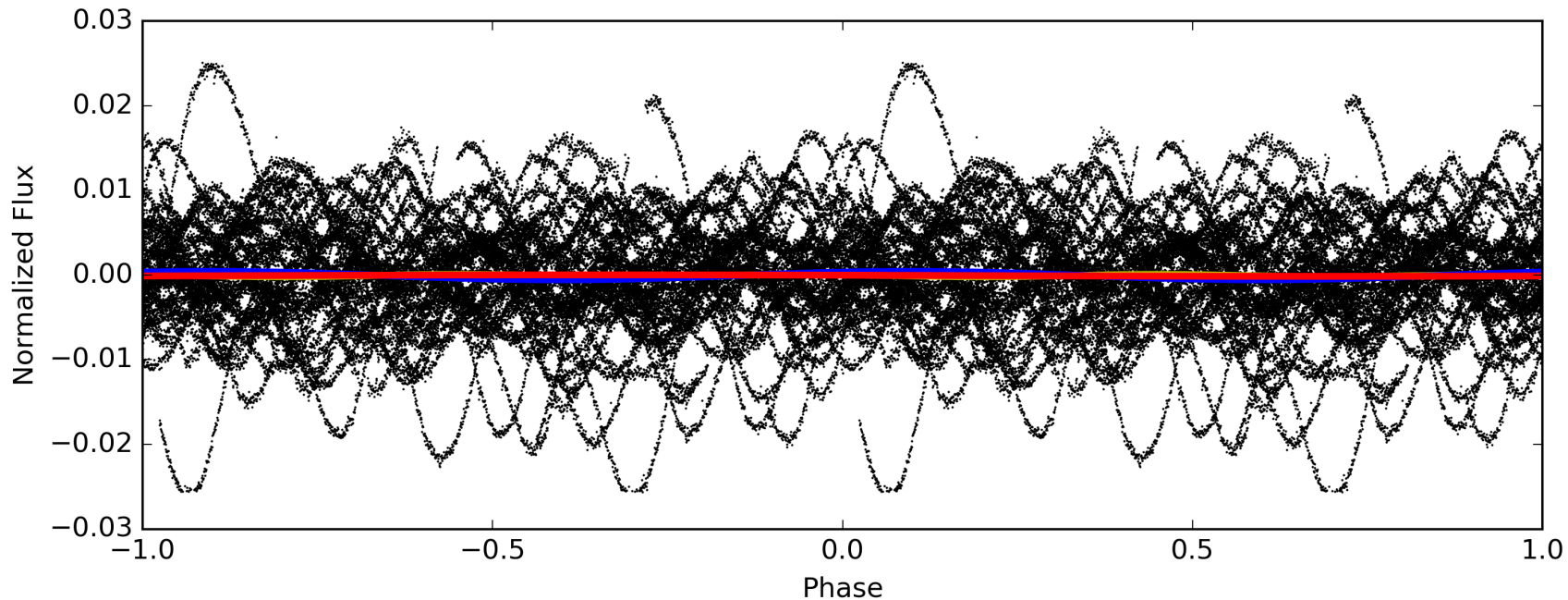
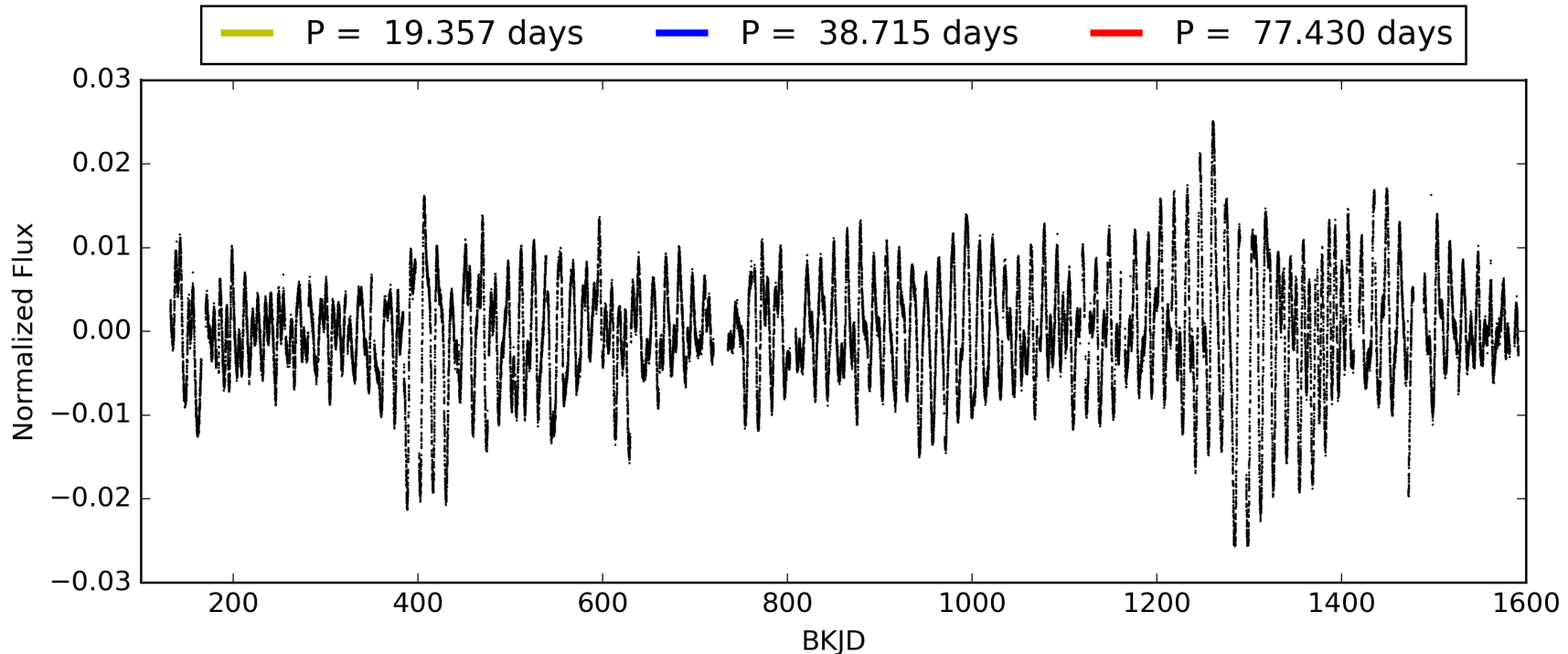
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 13:02:25 Z

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

# TCE 011709244-03, PDC Light Curves

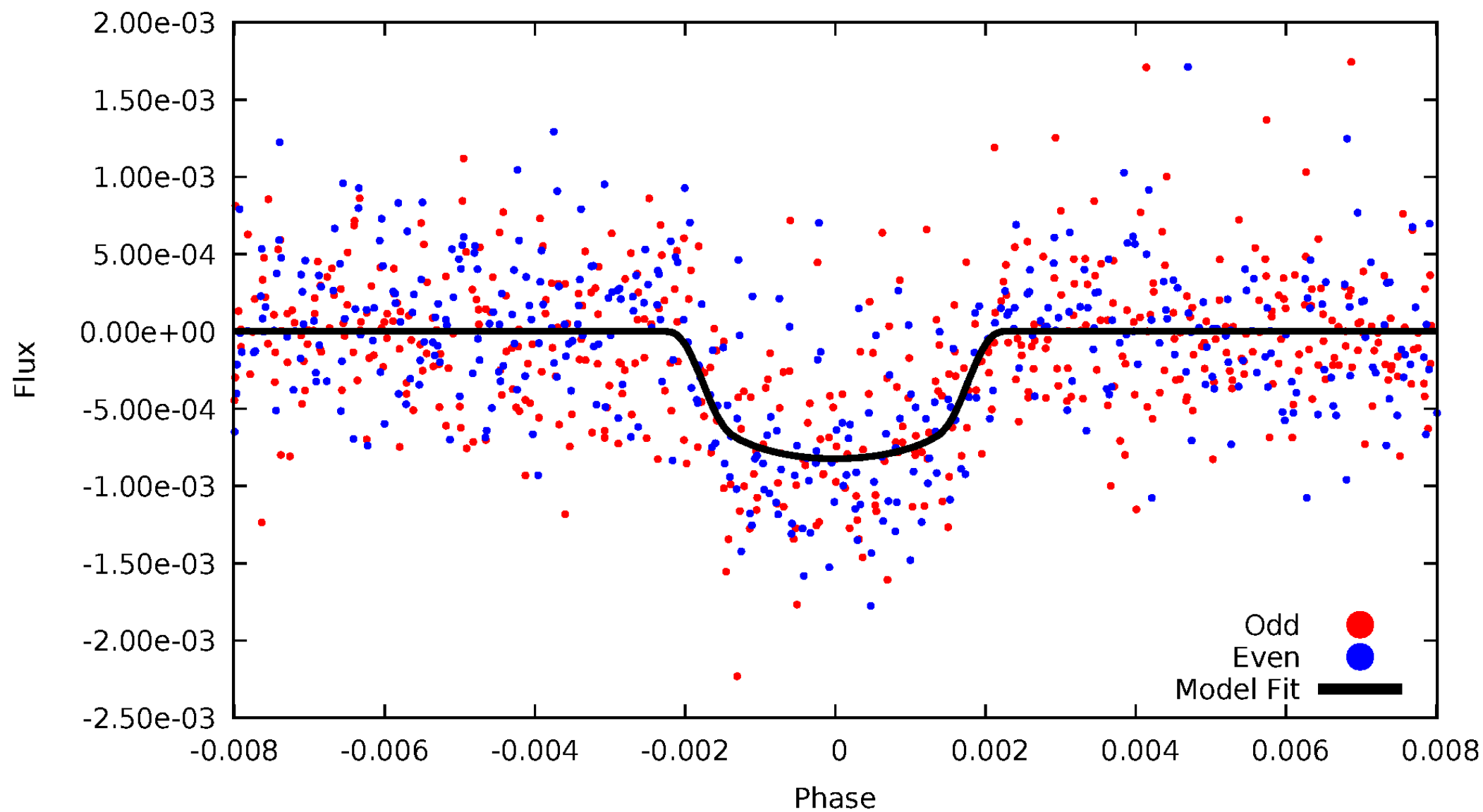


TCE 011709244-03



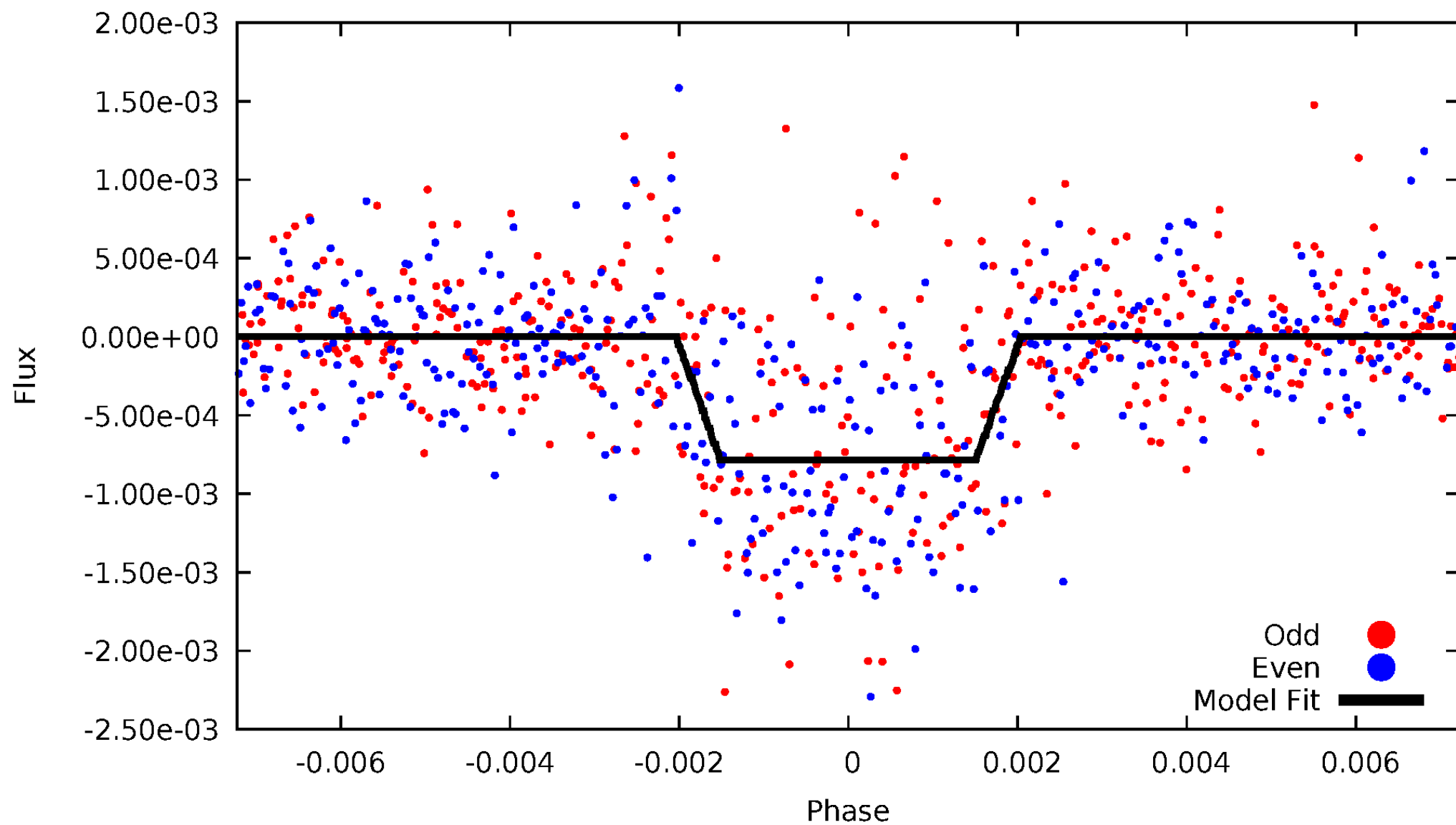
# DV Odd/Even

TCE 011709244-03



# ALT Odd/Even

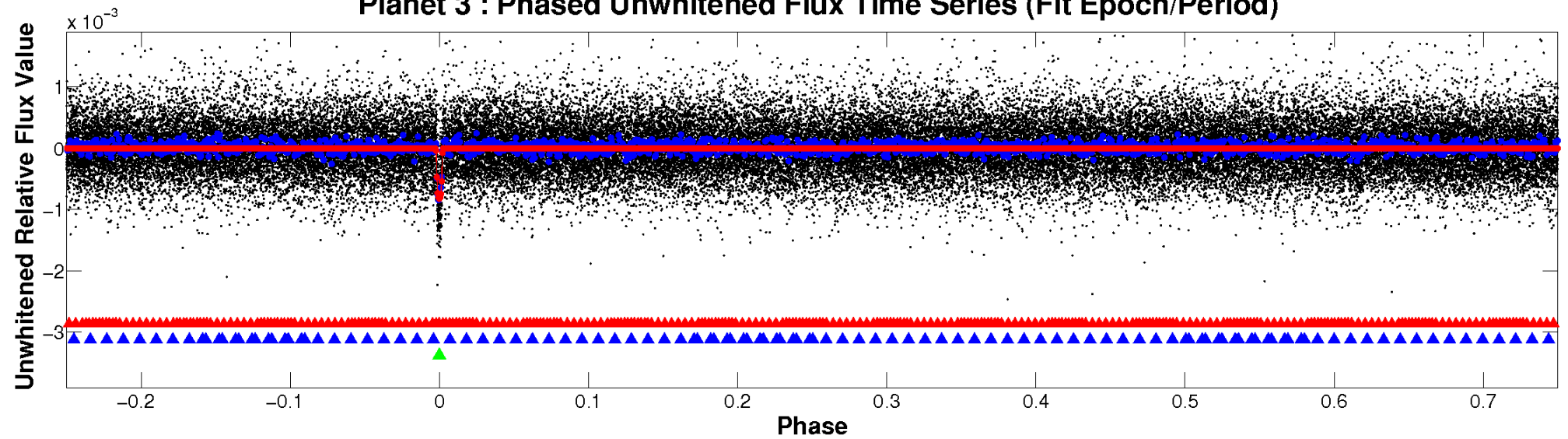
TCE 011709244-03



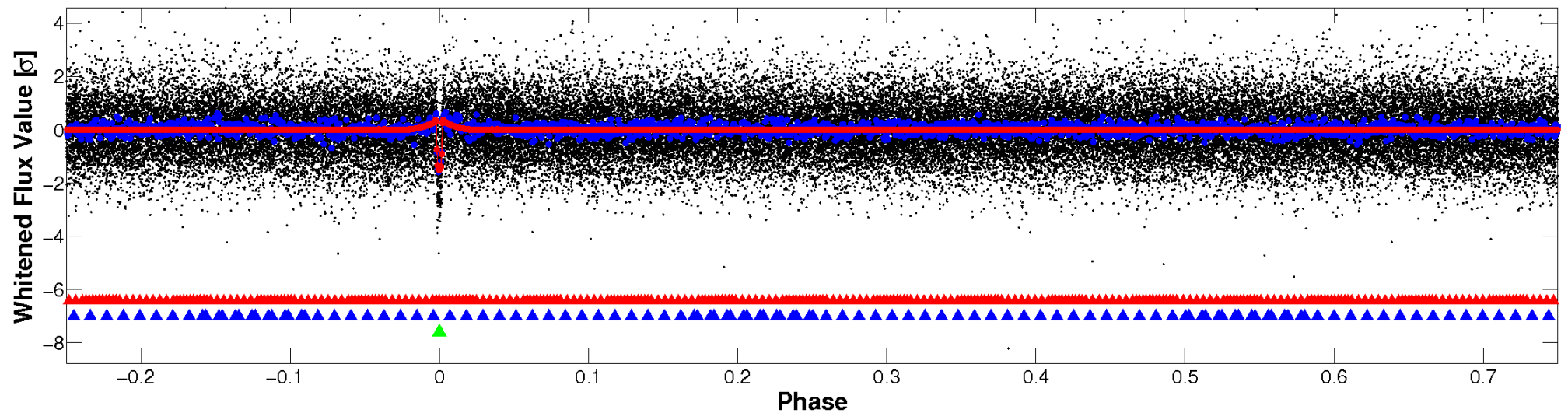


# Non-Whitened Vs. Whitened Light Curve

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

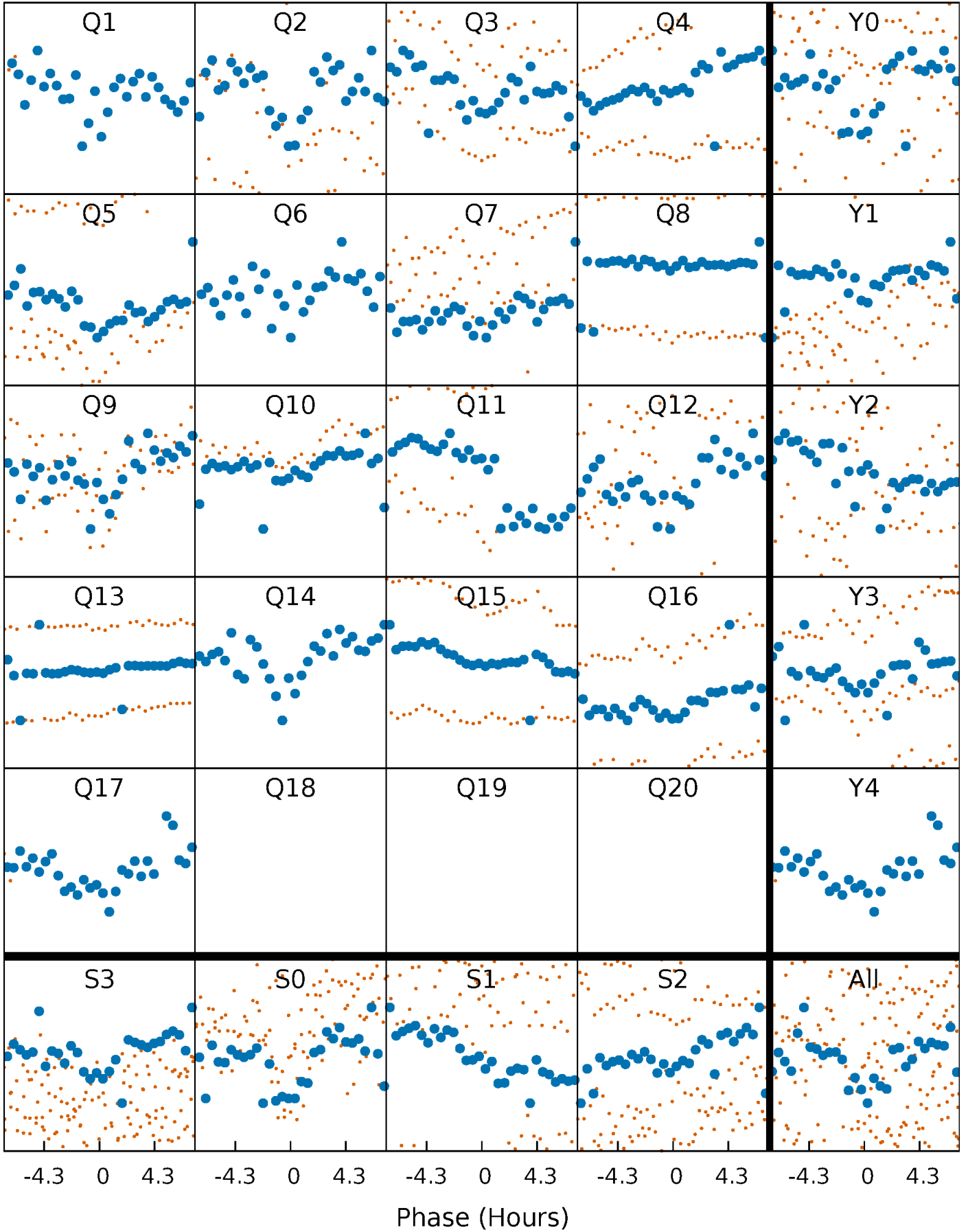


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



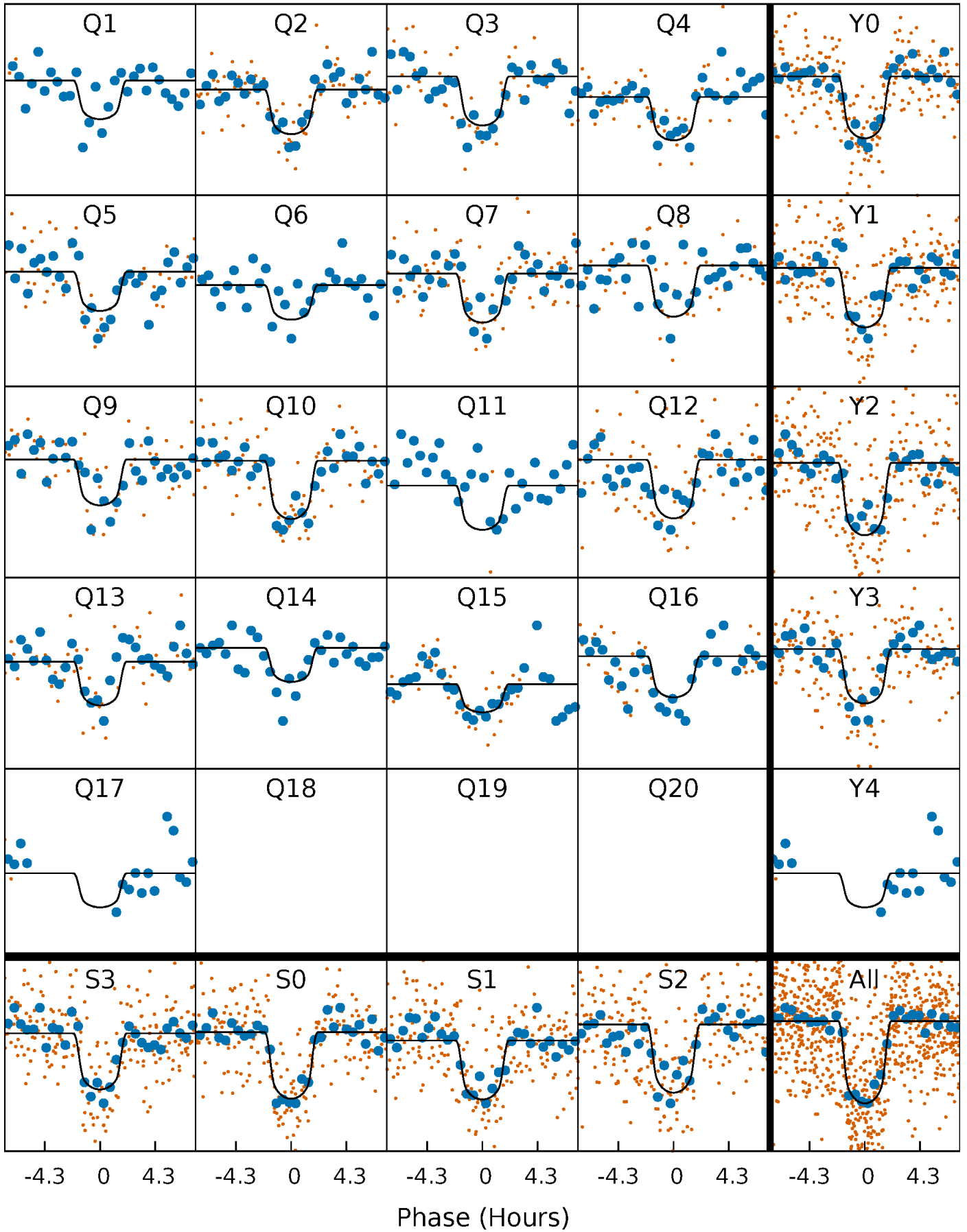
# PDC Quarter-Phased Transit Curves

TCE 011709244-03 P= 38.714862 Days  $T_0=134.033094$  (BKJD)



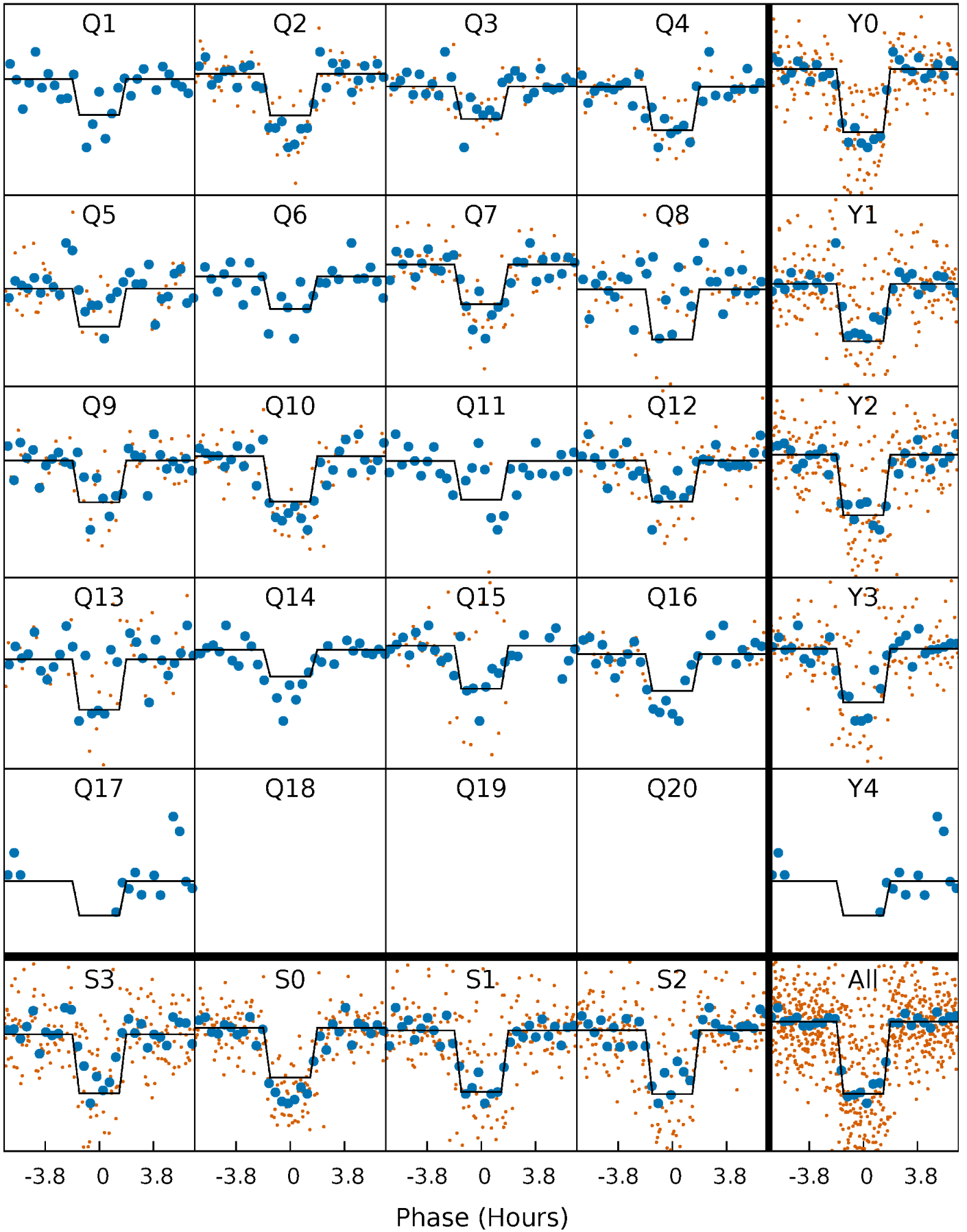
# DV Quarter-Phased Transit Curves

TCE 011709244-03   P= 38.714862 Days    $T_0=134.033094$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

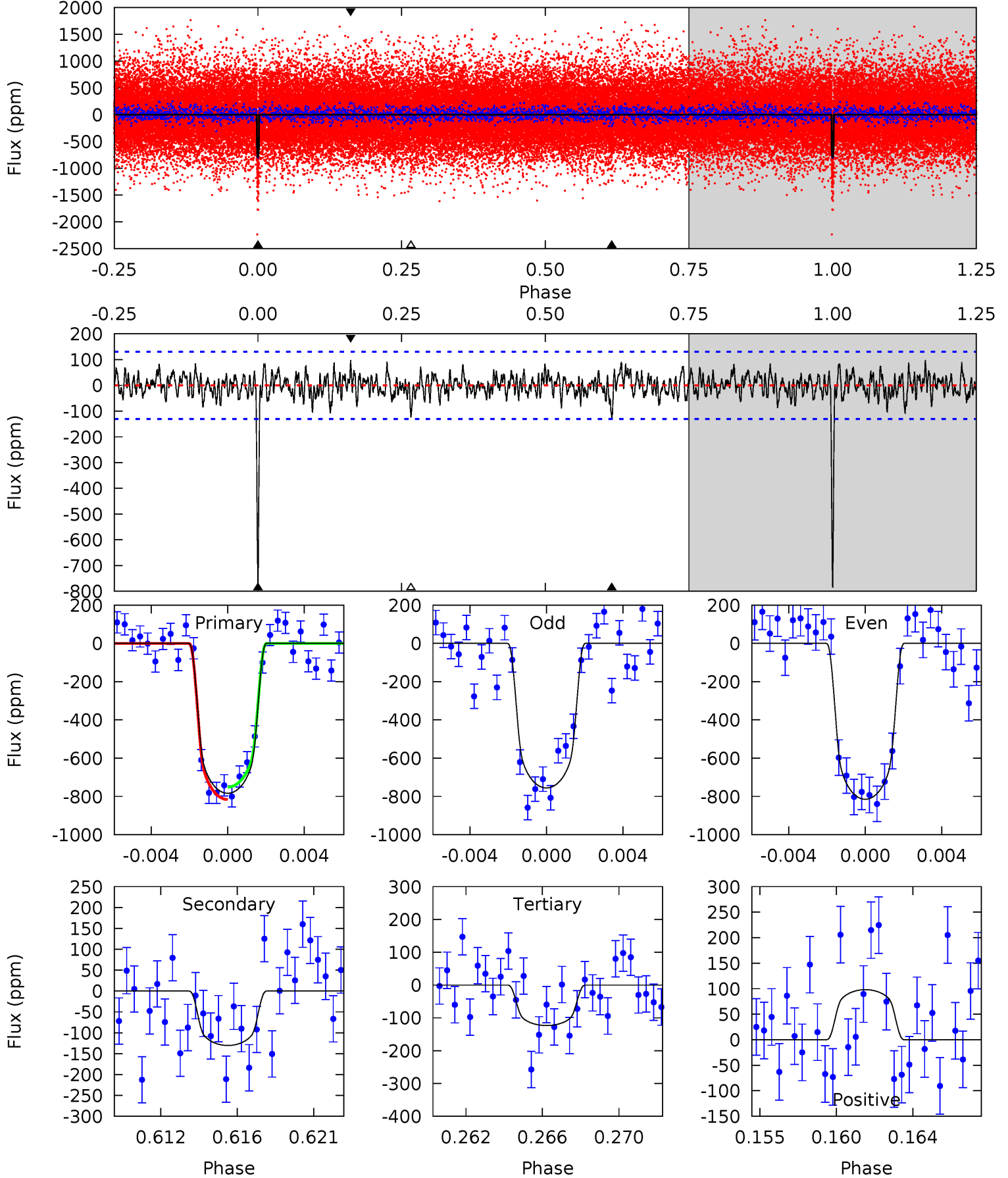
TCE 011709244-03   P= 38.715171 Days    $T_0=134.030656$  (BKJD)



# DV Model-Shift Uniqueness Test

011709244-03, P = 38.714862 Days, E = 95.318232 Days

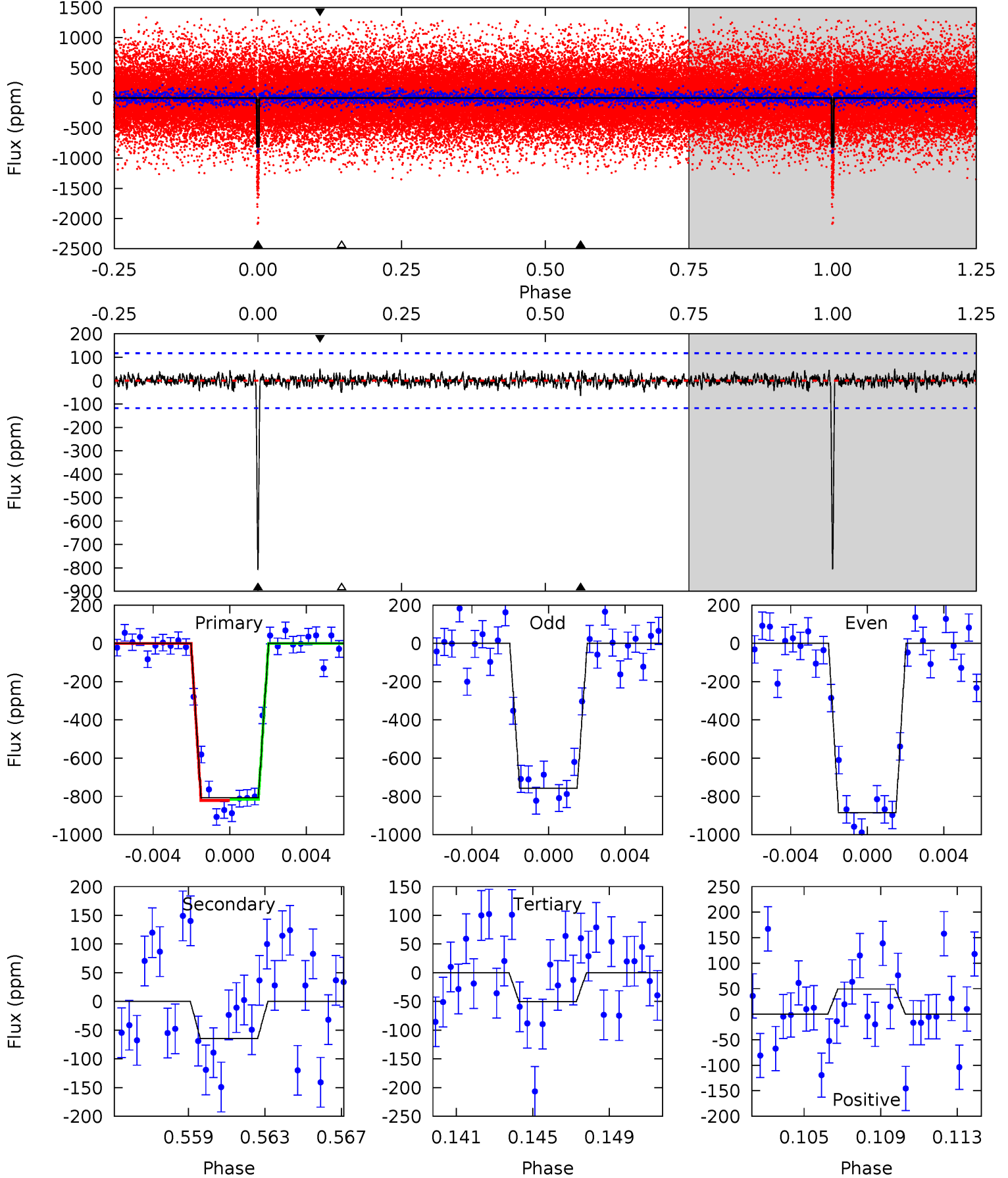
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.0	5.17	4.89	3.89	5.18	2.85	1.34	26.2	27.2	0.28	1.28	1.17	1.03	0.11	1.29



# Alt Model-Shift Uniqueness Test

011709244-03, P = 38.715171 Days, E = 95.315485 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
35.8	2.86	2.22	2.20	5.20	2.88	0.65	33.6	33.6	0.64	0.67	2.84	0.92	0.06	0.13



### Stellar Parameters For KIC 011709244

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5445^{+81}_{-81}$	$4.458^{+0.072}_{-0.096}$	$0.160^{+0.150}_{-0.150}$	$0.937^{+0.105}_{-0.078}$	$0.919^{+0.052}_{-0.046}$	$1.573^{+0.394}_{-0.450}$
	+1%/-1%	+2%/-2%	+94%/-94%	+11%/-8%	+6%/-5%	+25%/-29%
Source	SPE90	SPE90	SPE90	DSEP		

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

### Secondary Eclipse Parameters for KIC 011709244-03 / KOI 1832.03

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-130 \pm 25$	$3.10^{+0.55}_{-0.53}$	$700^{+22}_{-22}$	$3739^{+257}_{-204}$	$354^{+169}_{-111}$
Alt.	$-65 \pm 23$	$2.91^{+0.51}_{-0.57}$	$700^{+23}_{-22}$	$3410^{+287}_{-267}$	$200^{+131}_{-85}$

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



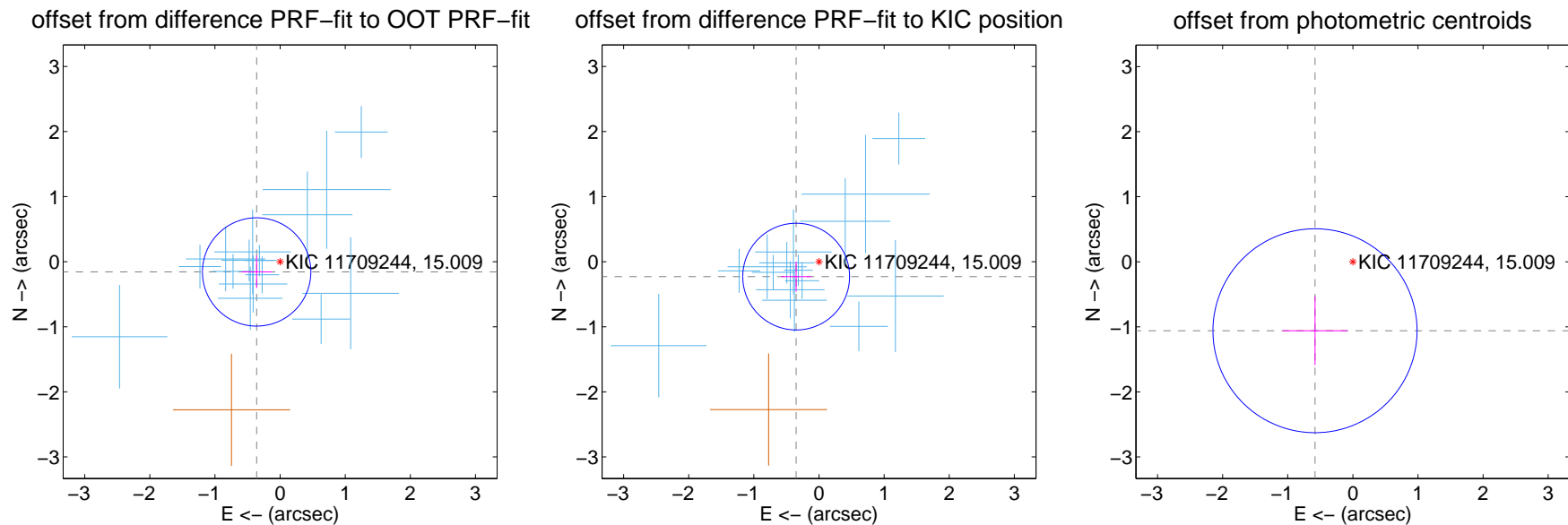
## DV Centroid Data

Supplemental centroid analysis for 011709244-03. Kepler magnitude: 15.01. Transit SNR 19.90

There are 15 quarters with good PRF difference image offsets

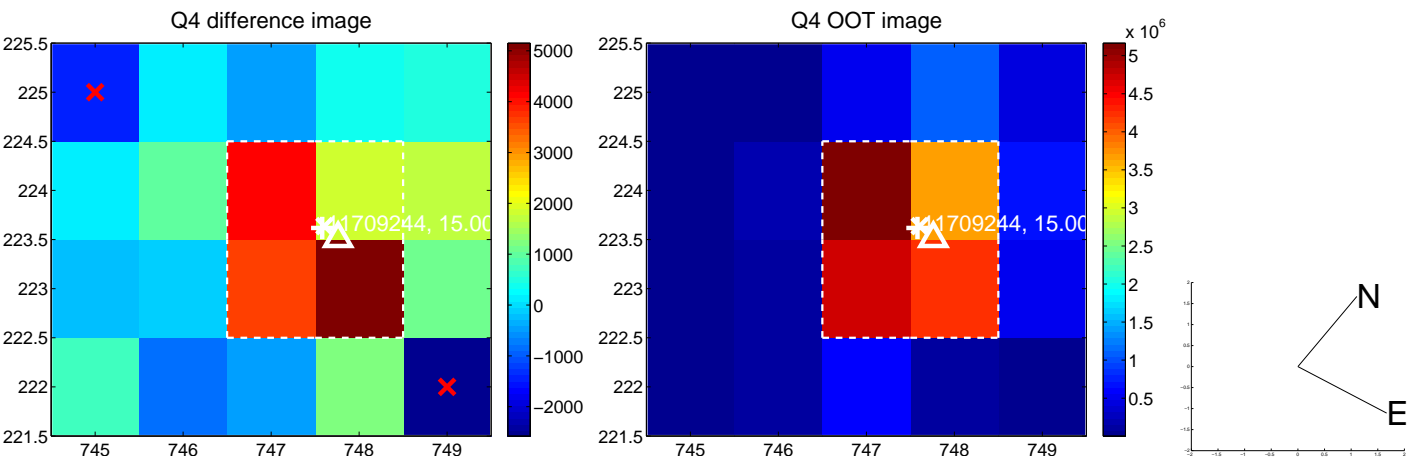
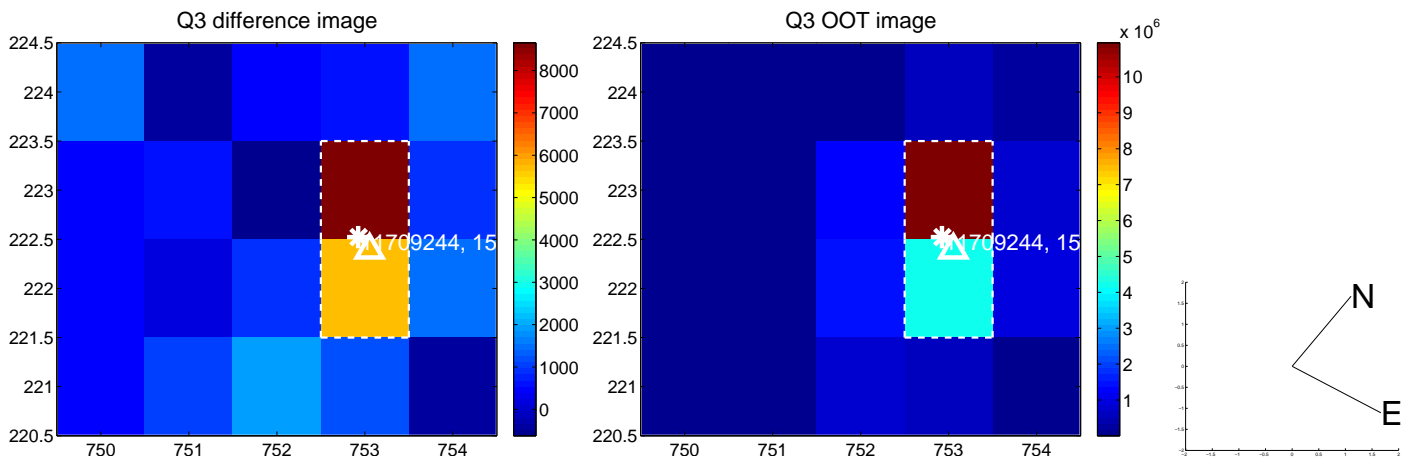
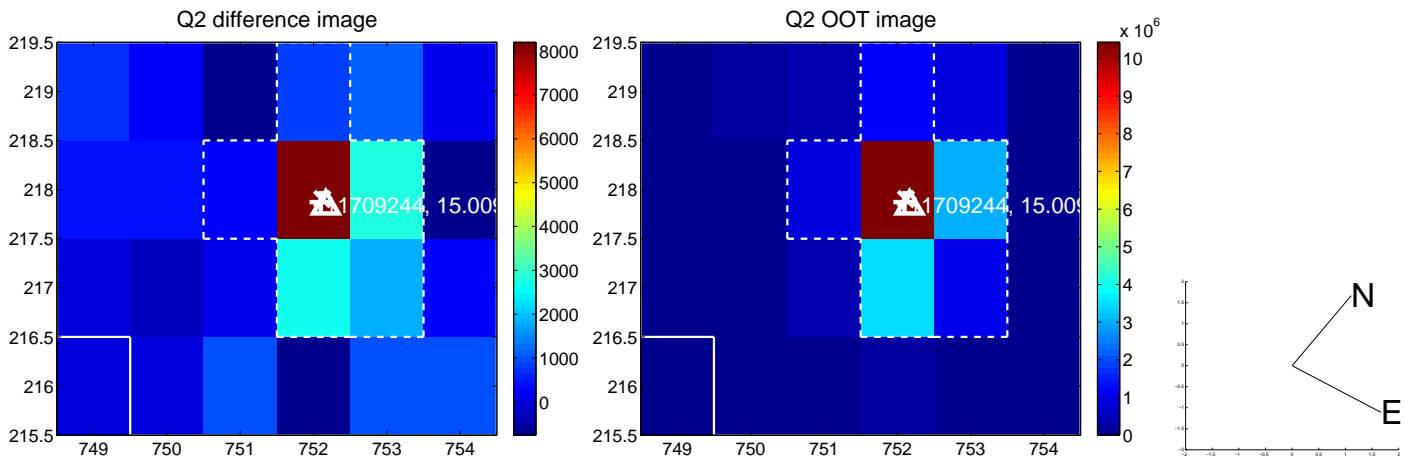
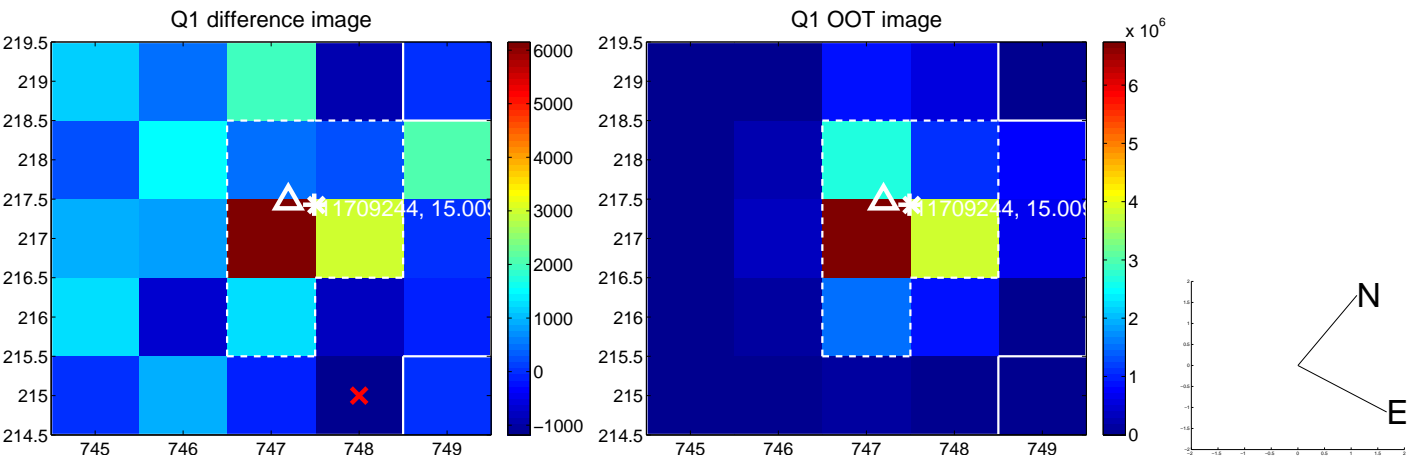
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.393 \pm 0.277$	1.42	$0.360 \pm 0.232$	$-0.157 \pm 0.247$
PRF-fit source offset from KIC position	$0.419 \pm 0.273$	1.53	$0.350 \pm 0.231$	$-0.229 \pm 0.232$
photometric centroid source offset	$1.21 \pm 0.52$	2.31	$0.58 \pm 0.50$	$-1.06 \pm 0.53$

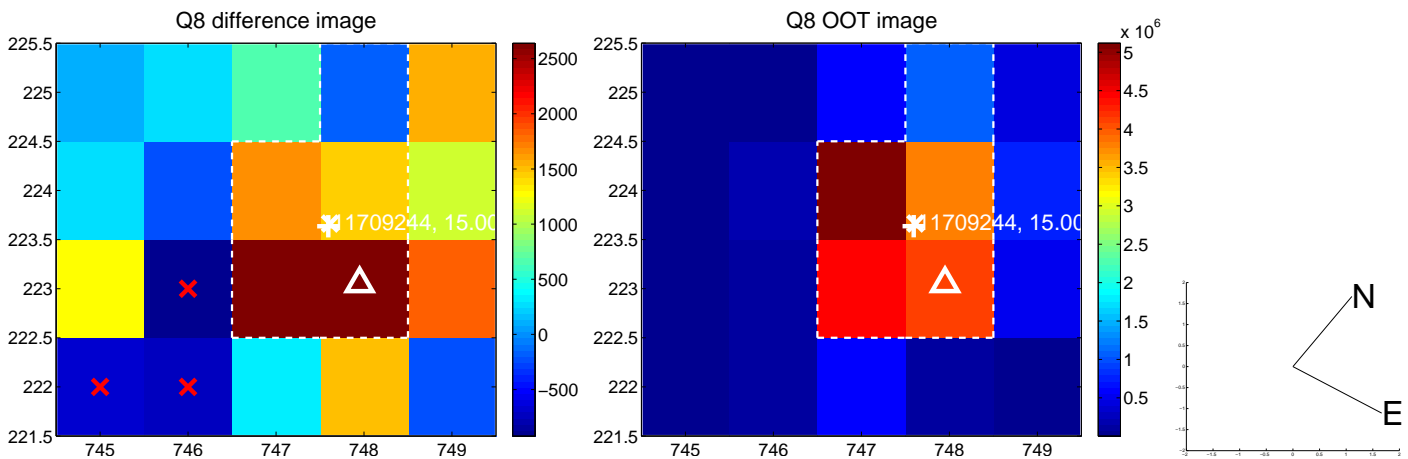
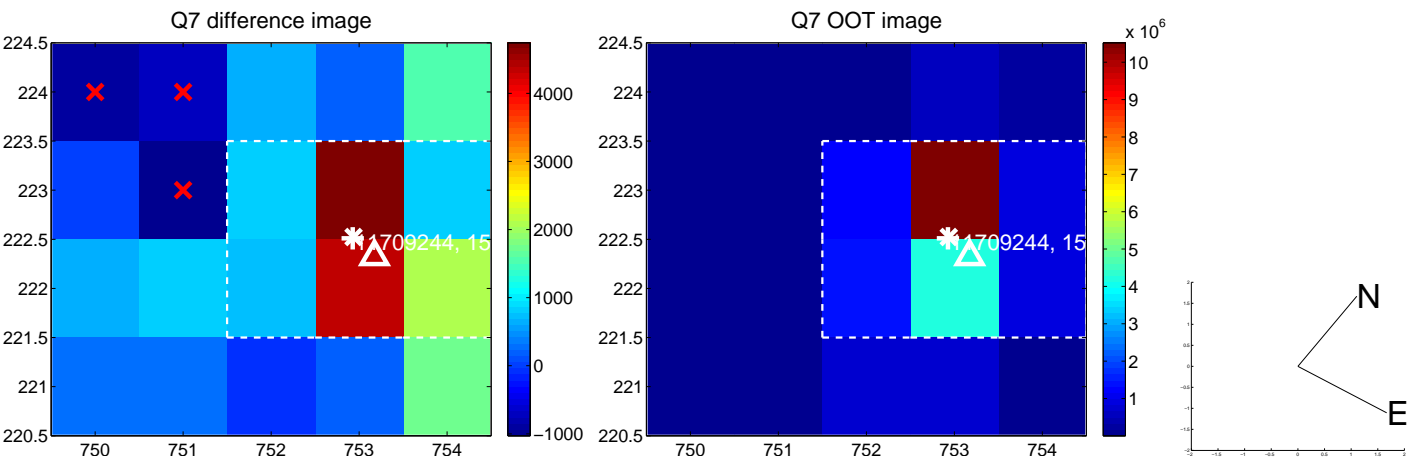
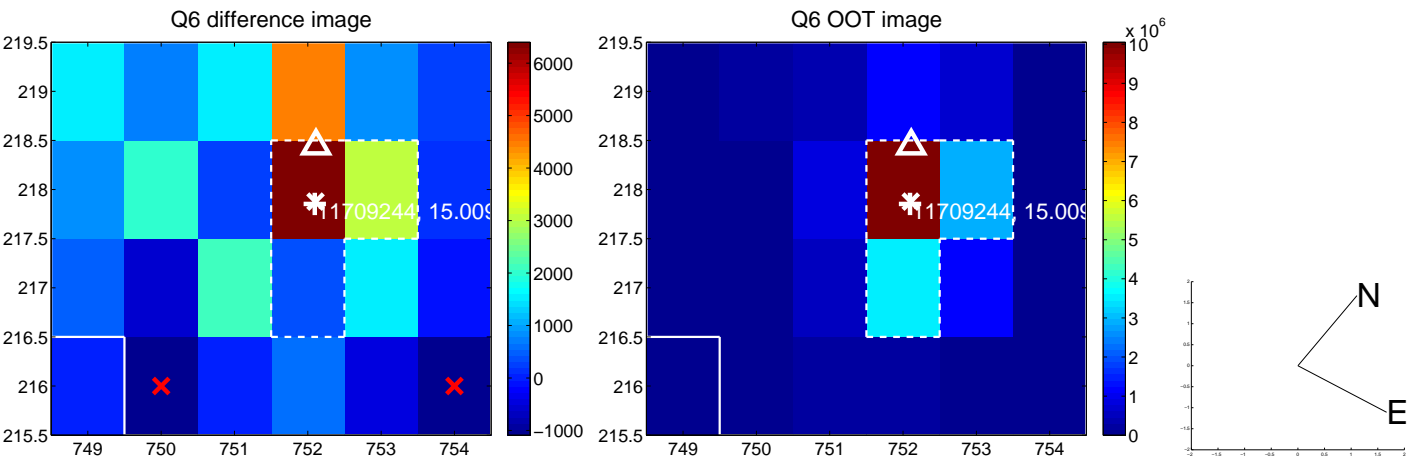
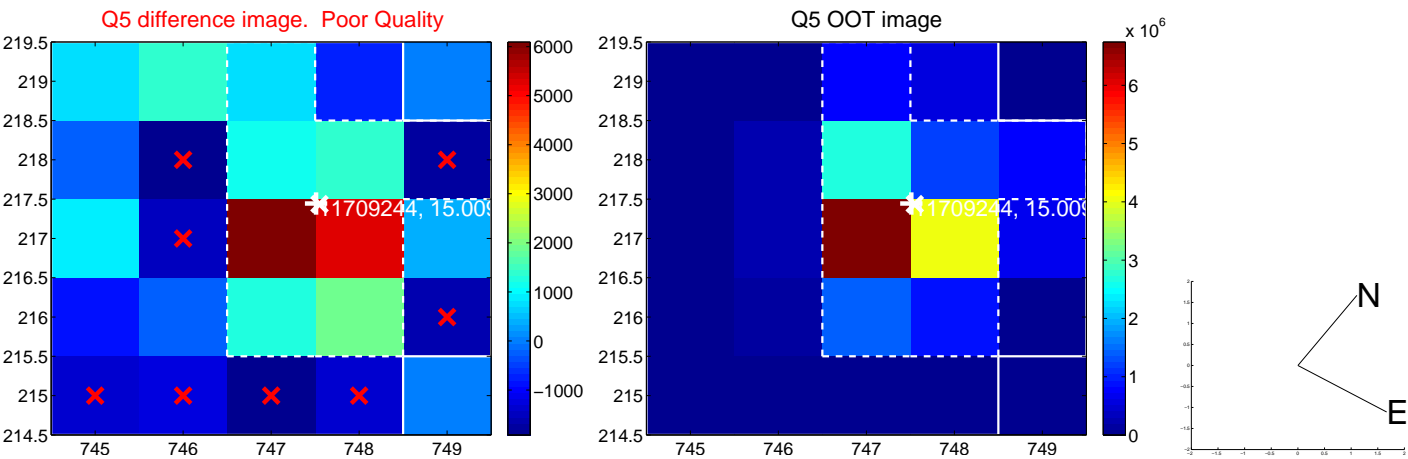


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

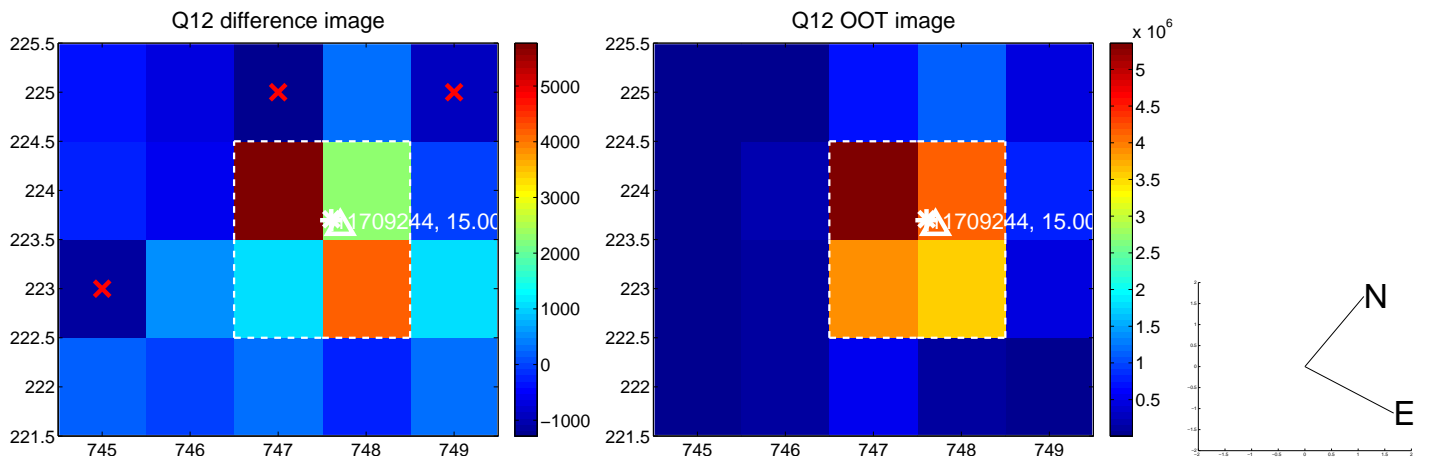
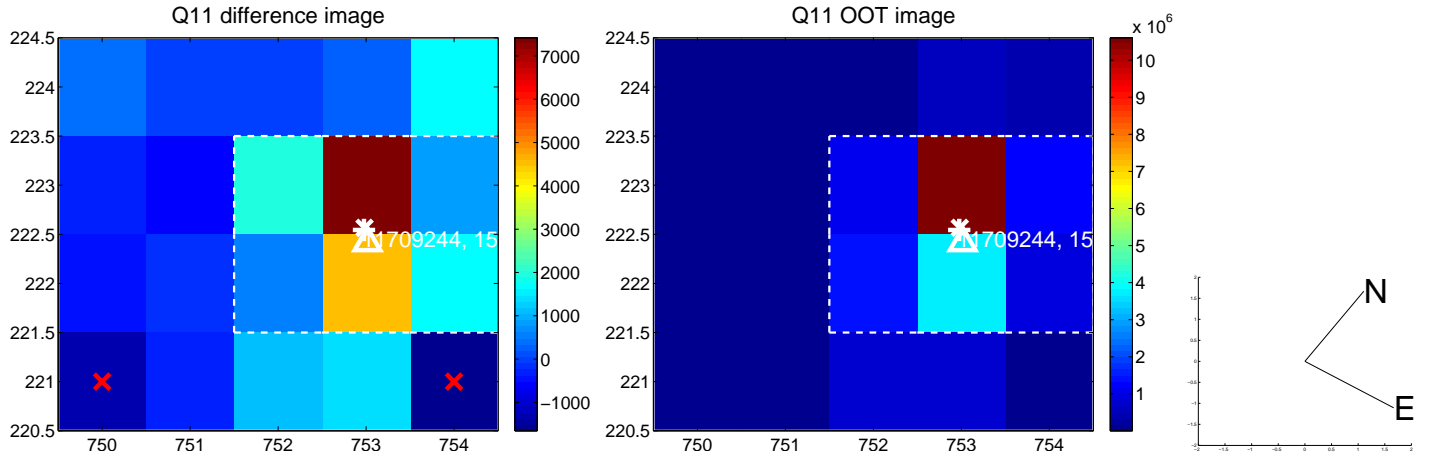
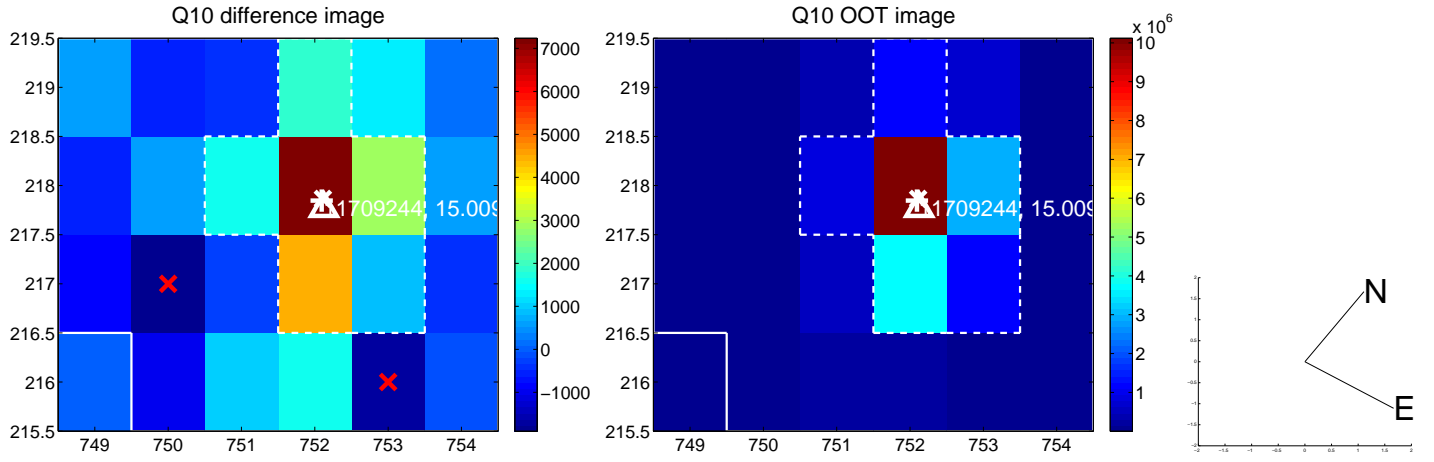
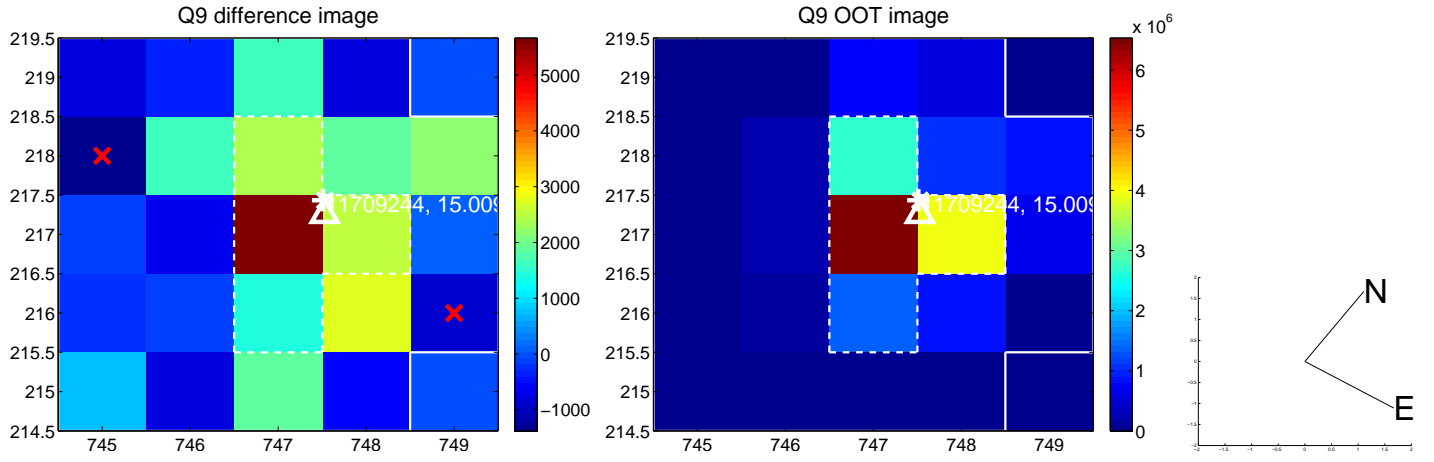
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



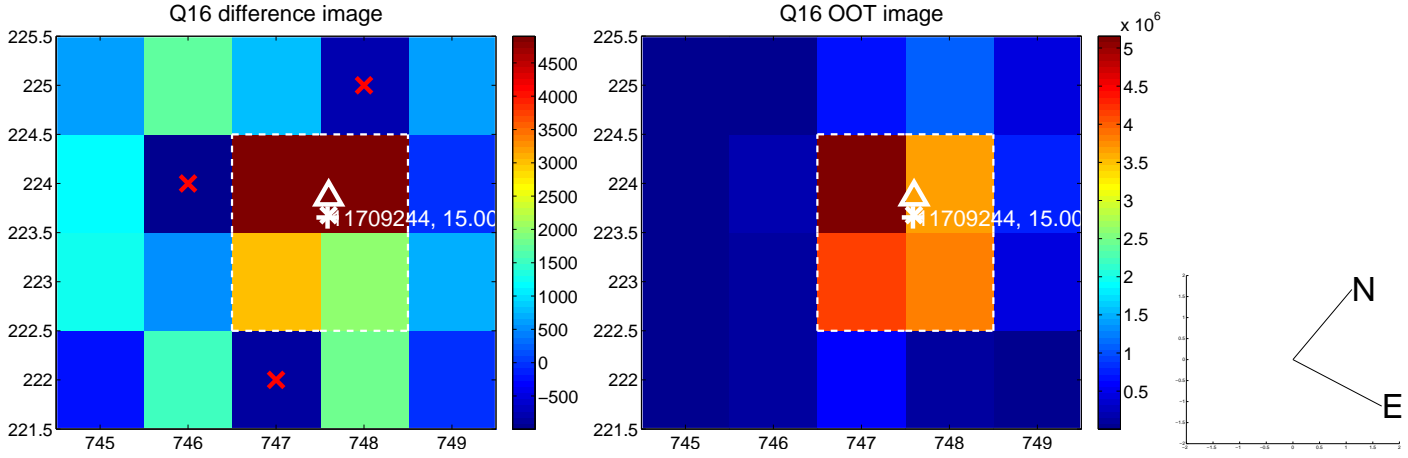
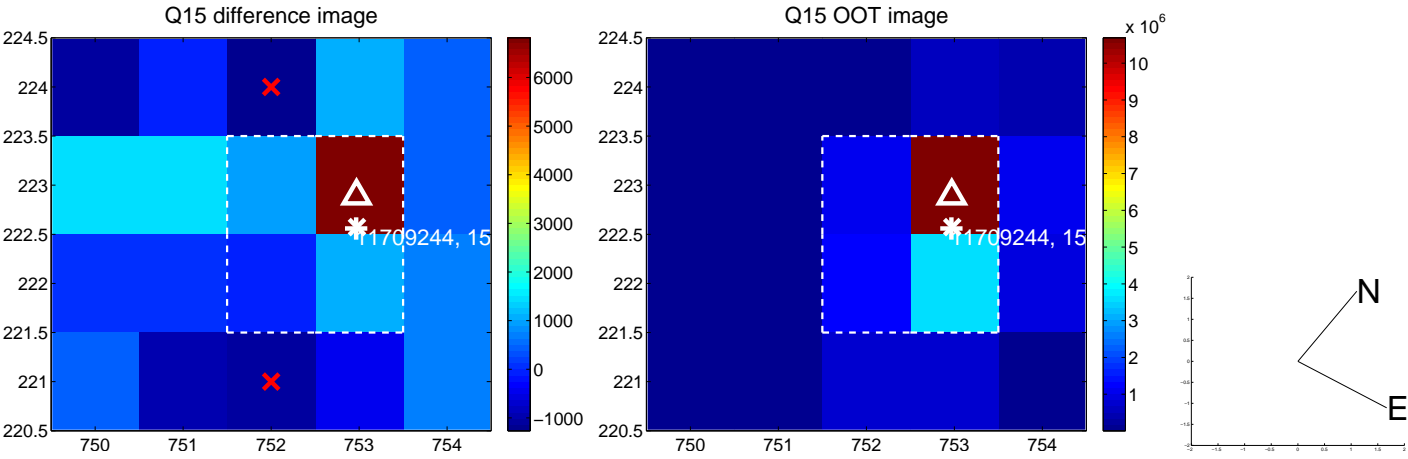
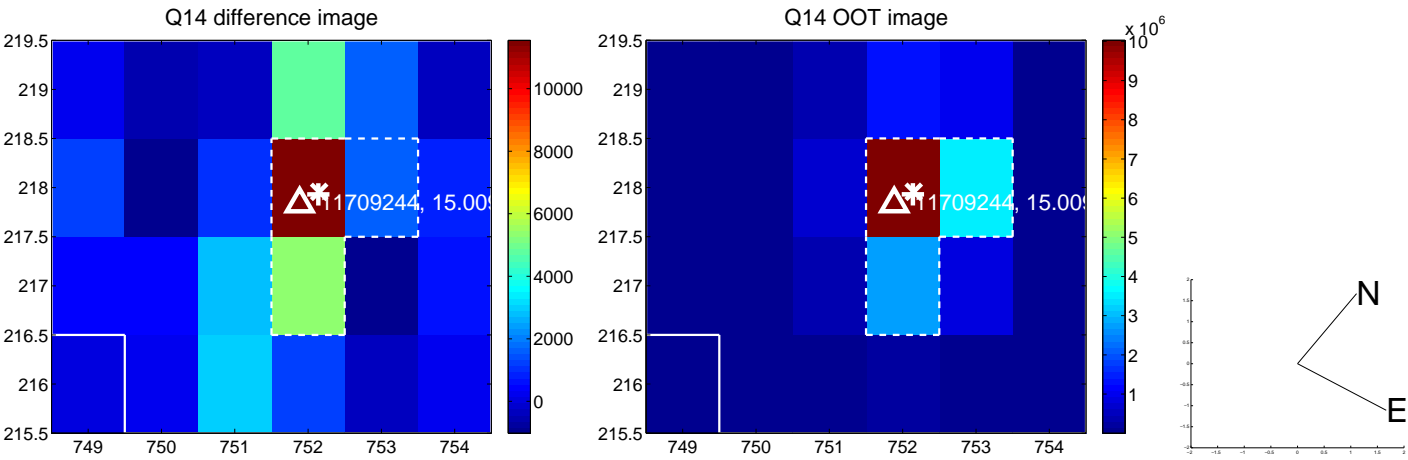
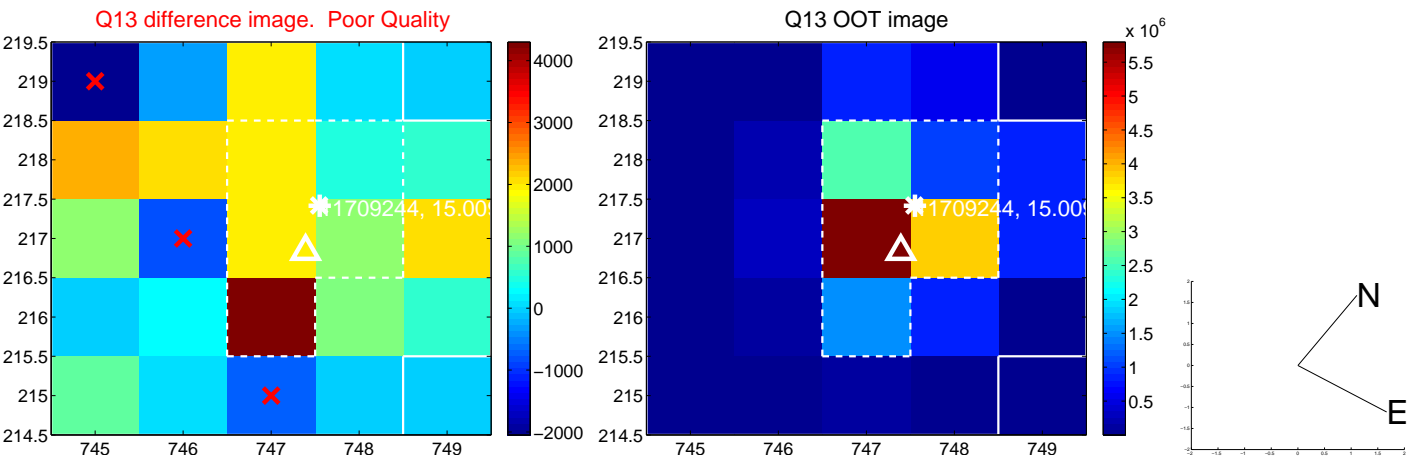
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



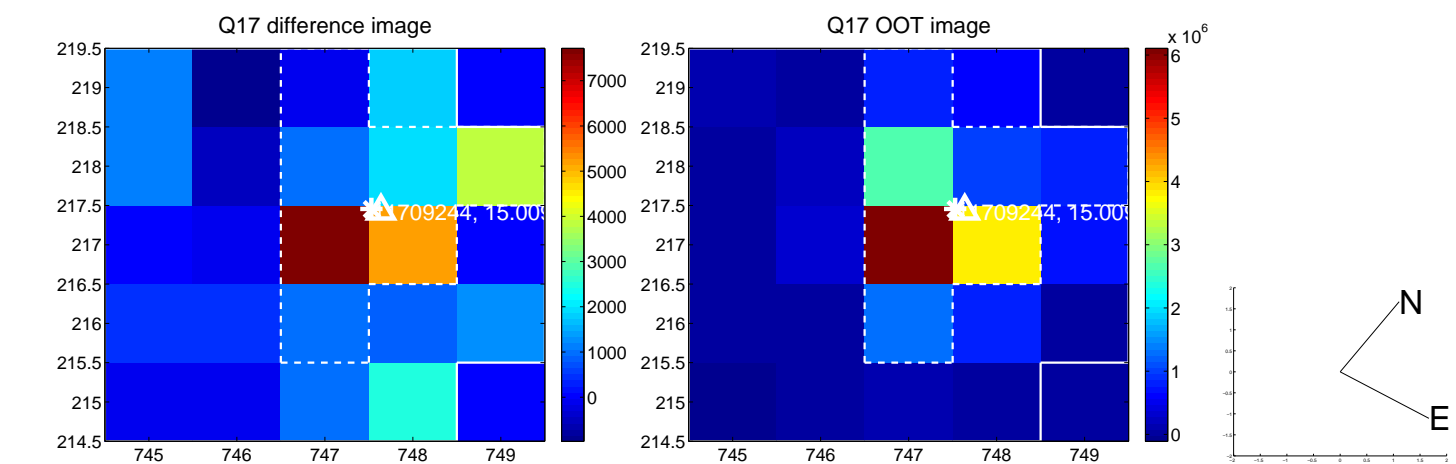
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



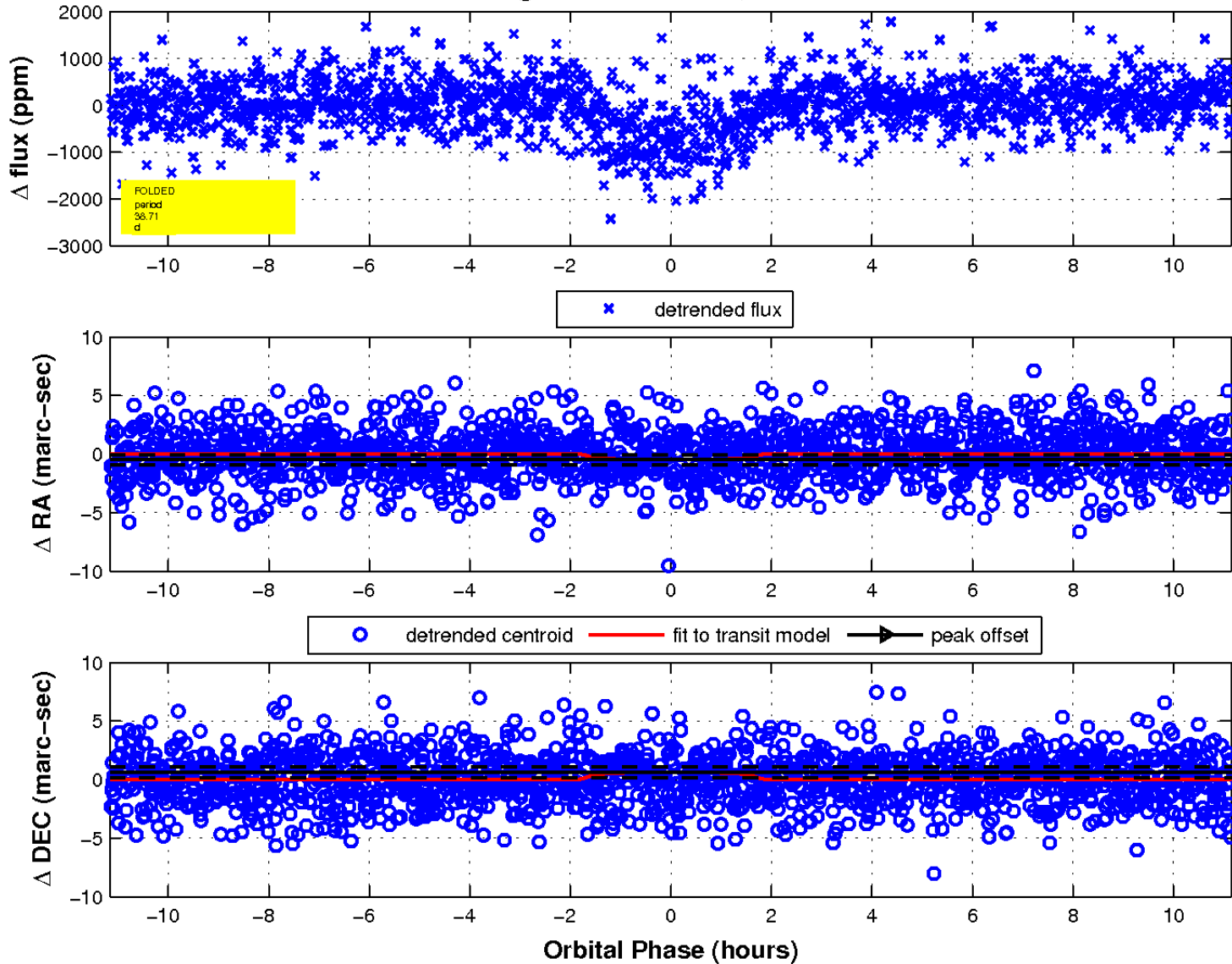
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

