

# KIC 010215422

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010215422-01	OBS	7297.01	24.847318	154.117322	316059.0	4.500	12087.3	-1.0	0.85	5644	44.98	24.80
010215422-02	OBS	No	24.847076	146.254228	58899.5	7.174	2478.8	2158.6	0.85	5644	26.43	24.80
010215422-03	OBS	No	12.423554	141.993410	9243.6	15.000	223.6	-1.0	0.85	5644	8.11	62.50

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010215422-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
010215422-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
010215422-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS

**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.

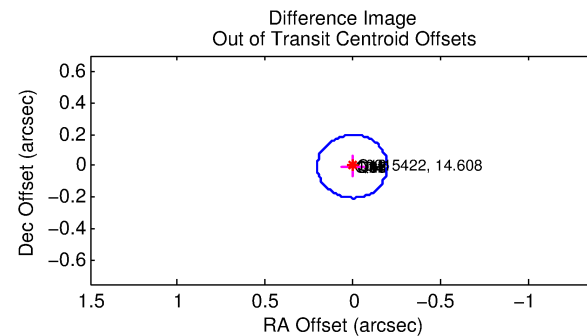
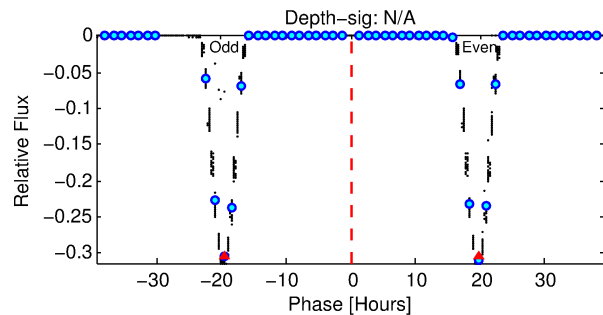
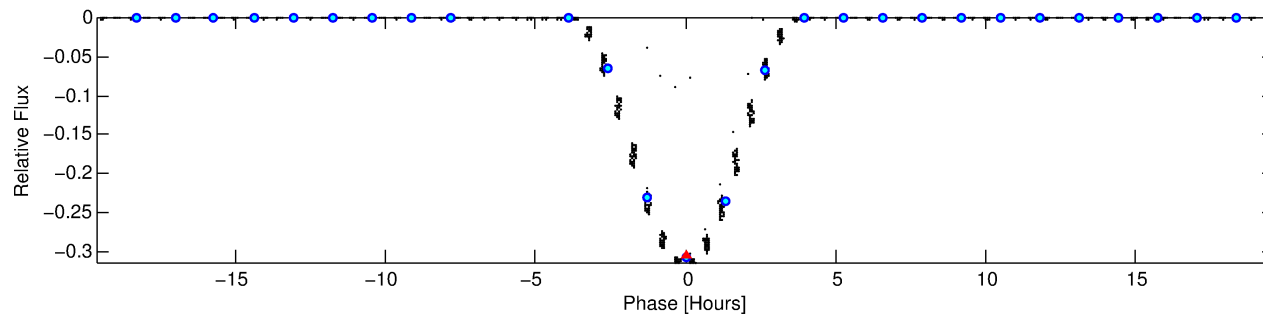
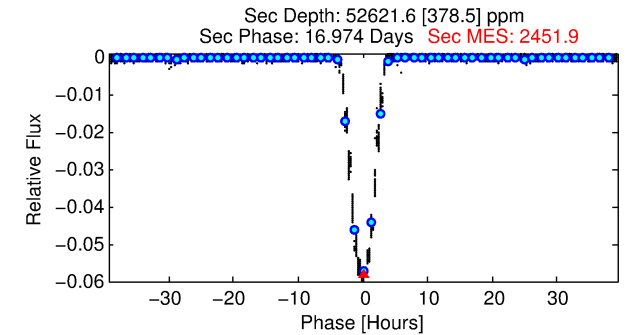
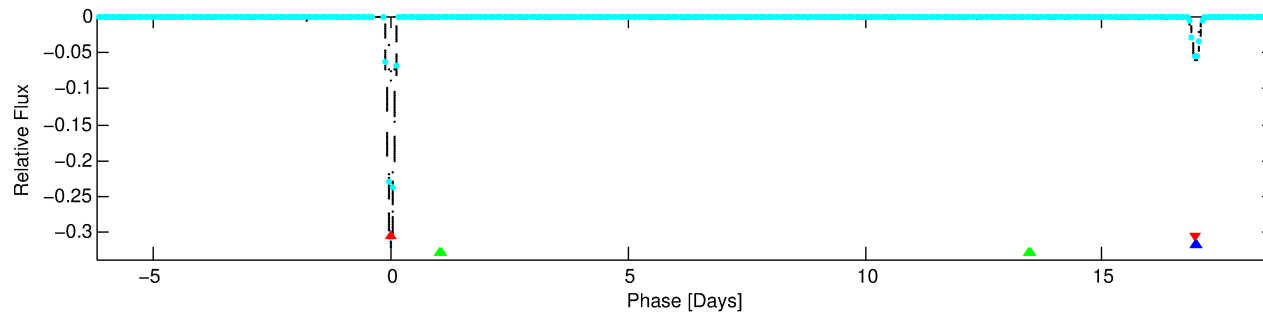
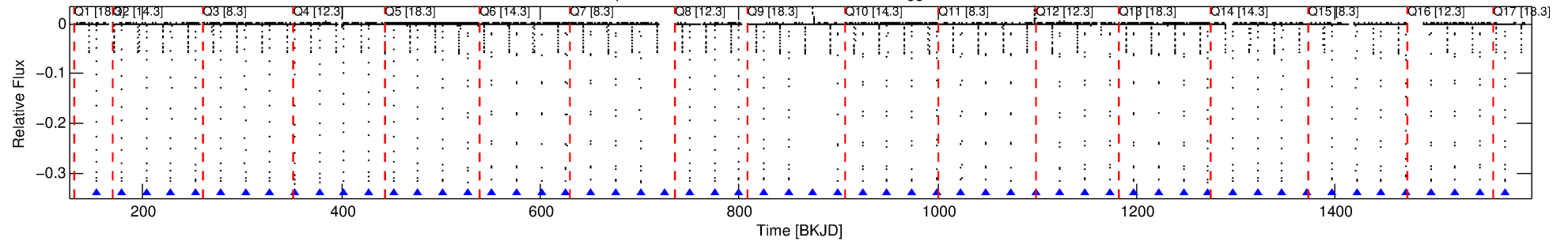
Ephemeris Match Information For 010215422-01

No Significant Match Found

# DV One-Page Summary

KIC: 10215422 Candidate: 1 of 3 Period: 24.847 d  
KOI: K07297.01 Corr: 0.786

Kp: 14.61 R\*: 0.85 Rs Teff: 5644.0 K Logg: 4.55 Fe/H: -0.060



## TPS TCE Results:

Period = 24.84732 d  
Epoch = 154.1173 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

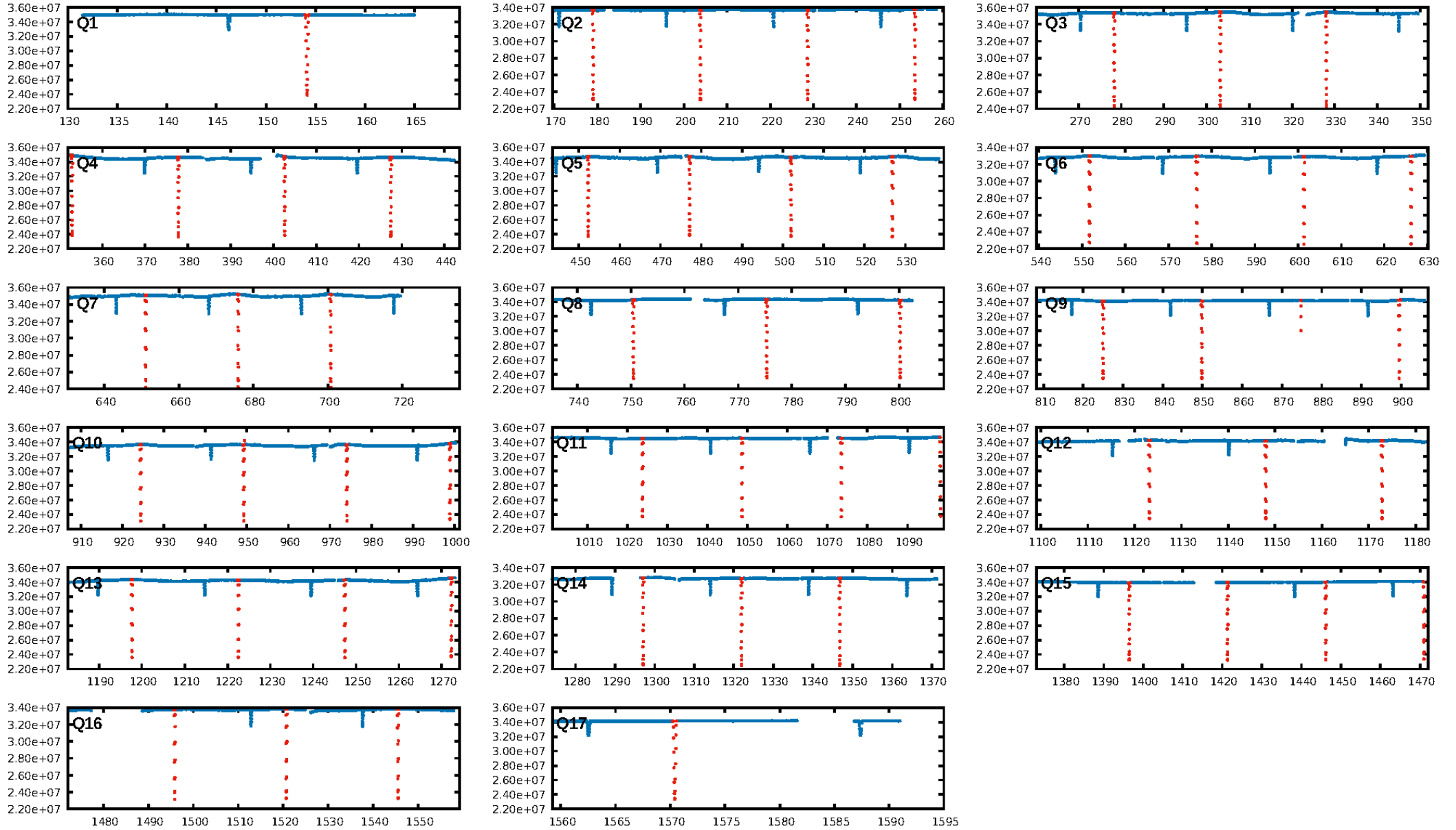
ShortPeriod-sig: 0.1% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [54/54]  
GhostDiagnostic-chr: 4.021

Centroid-sig: N/A  
Centroid-so: 0.282 arcsec [378.50σ]  
OotOffset-rm: 0.006 arcsec [0.08σ]  
KicOffset-rm: 0.178 arcsec [2.64σ]  
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]

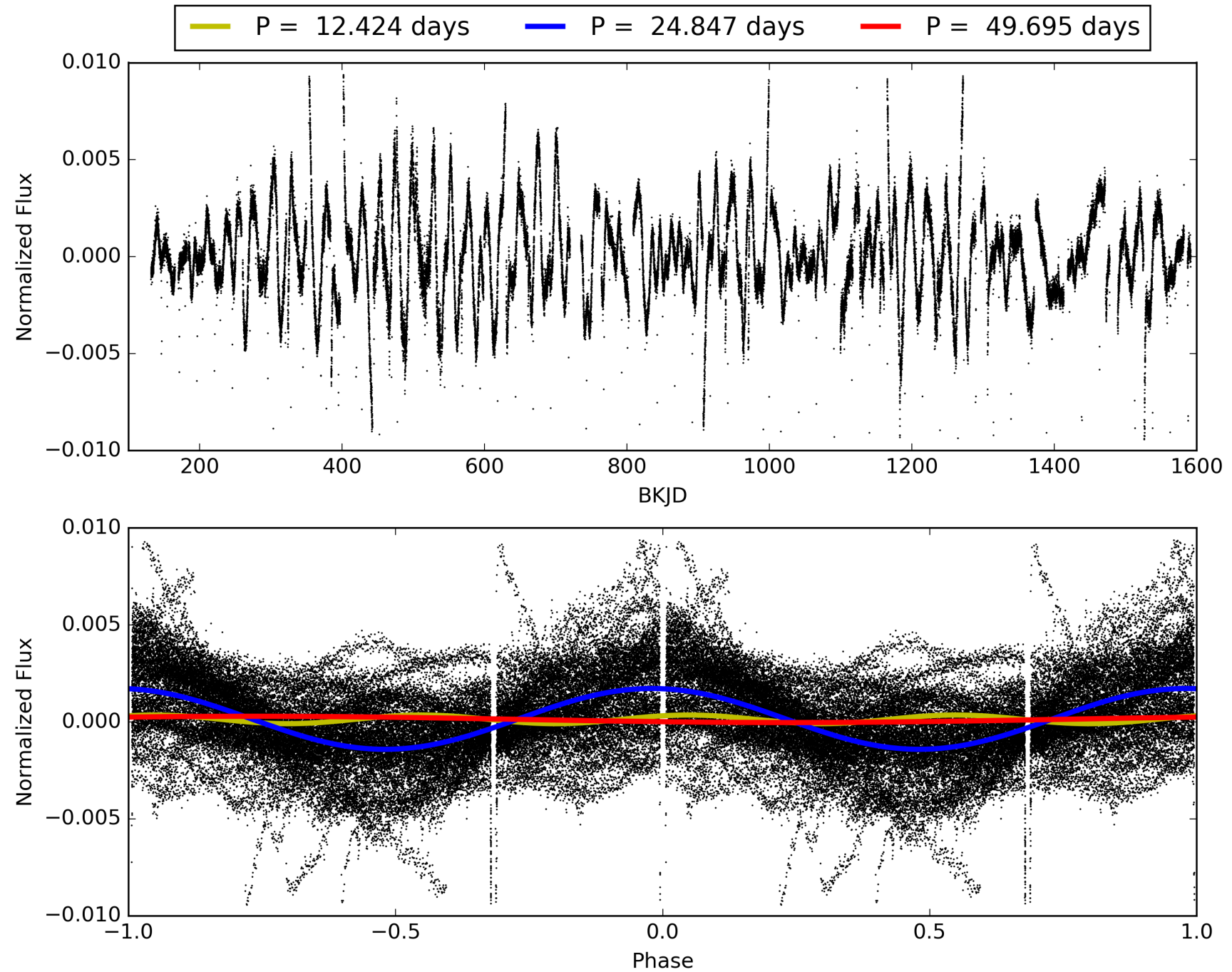
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:57:29 Z

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

# TCE 010215422-01, PDC Light Curves

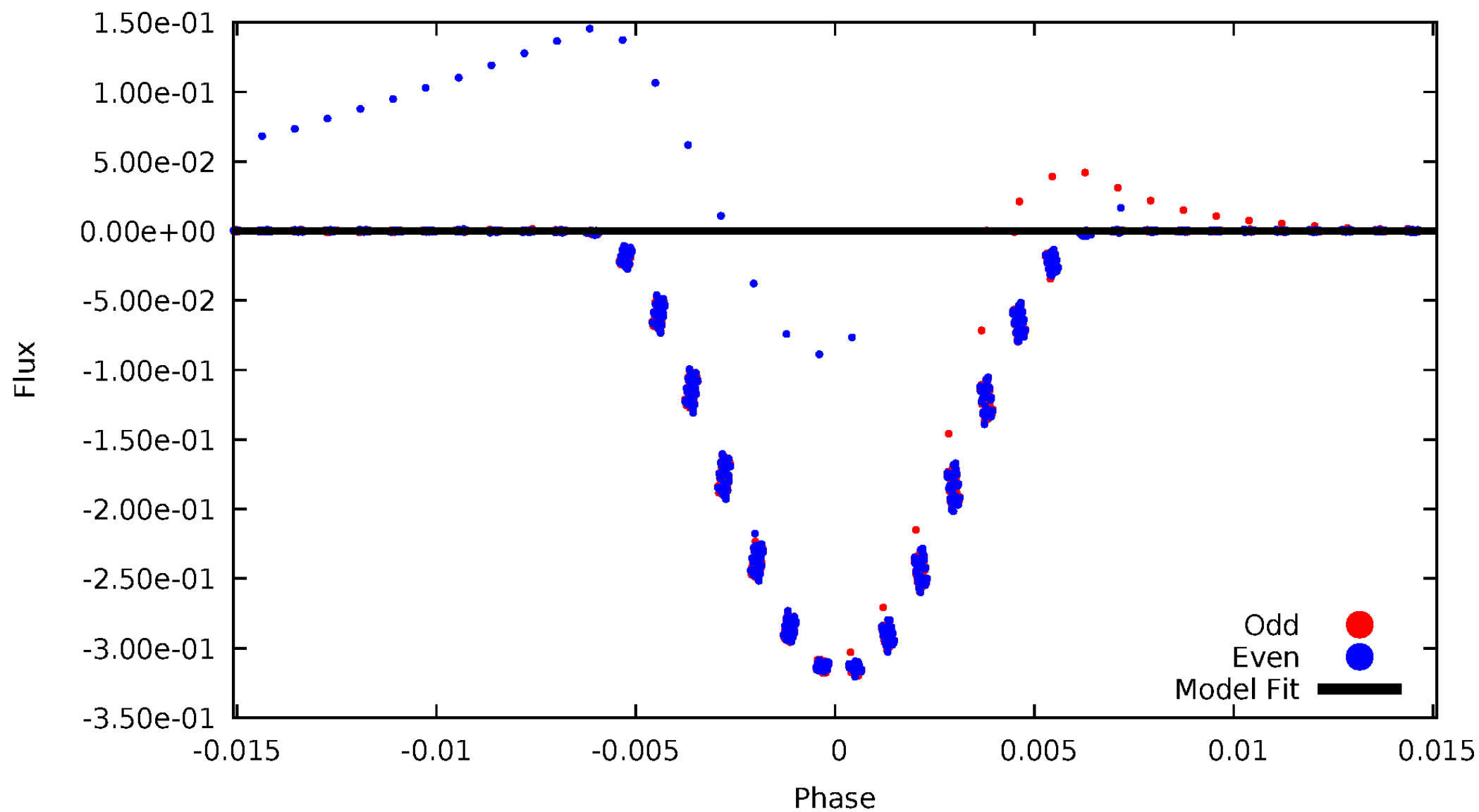


TCE 010215422-01



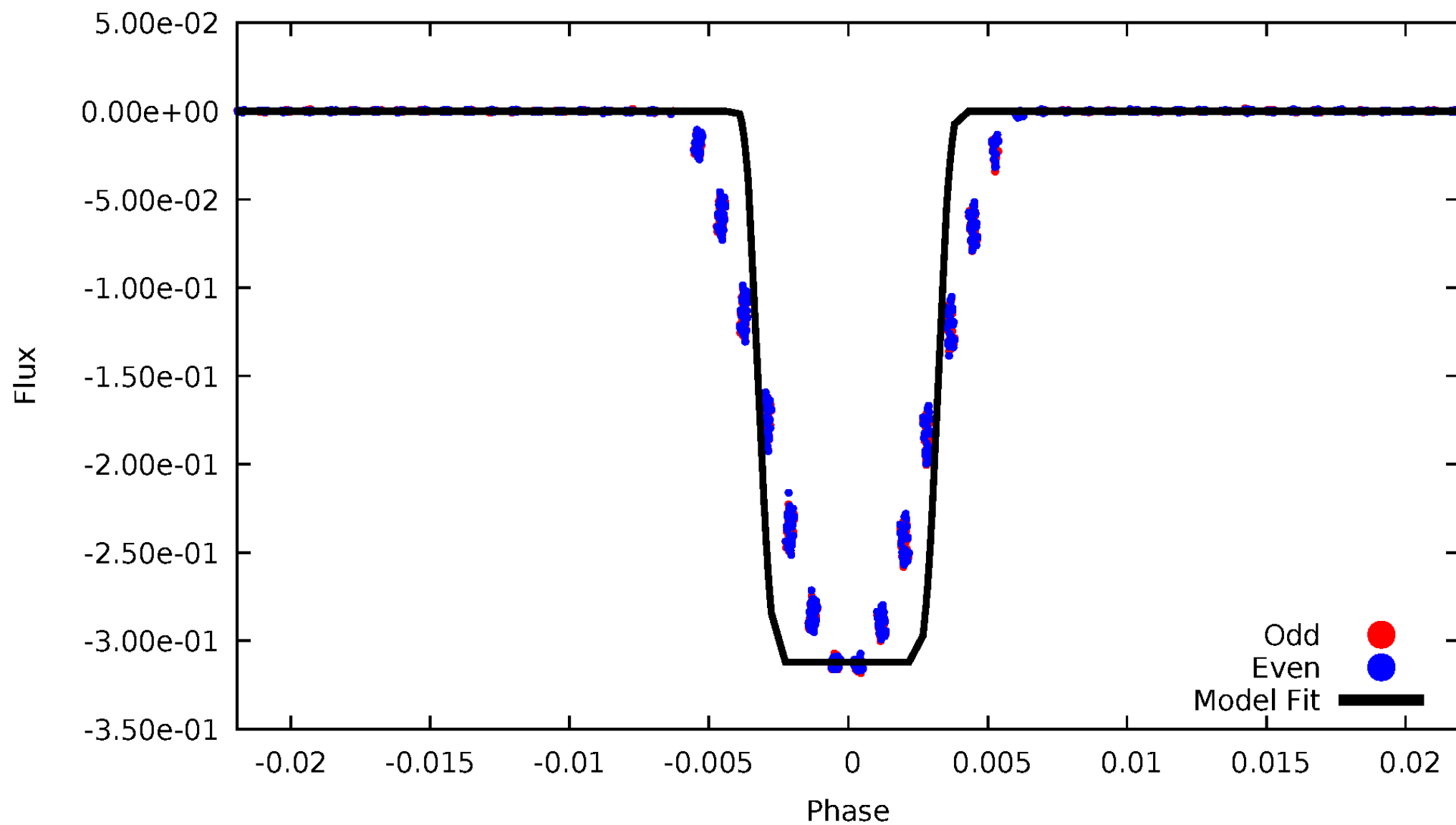
# DV Odd/Even

TCE 010215422-01



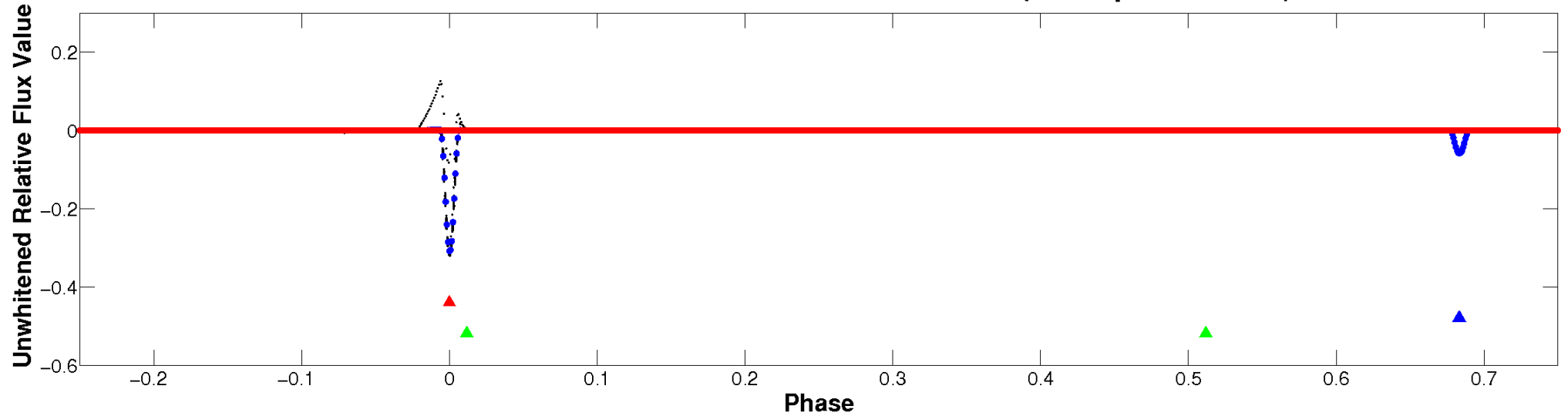
# ALT Odd/Even

TCE 010215422-01



# Non-Whitened Vs. Whitened Light Curve

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

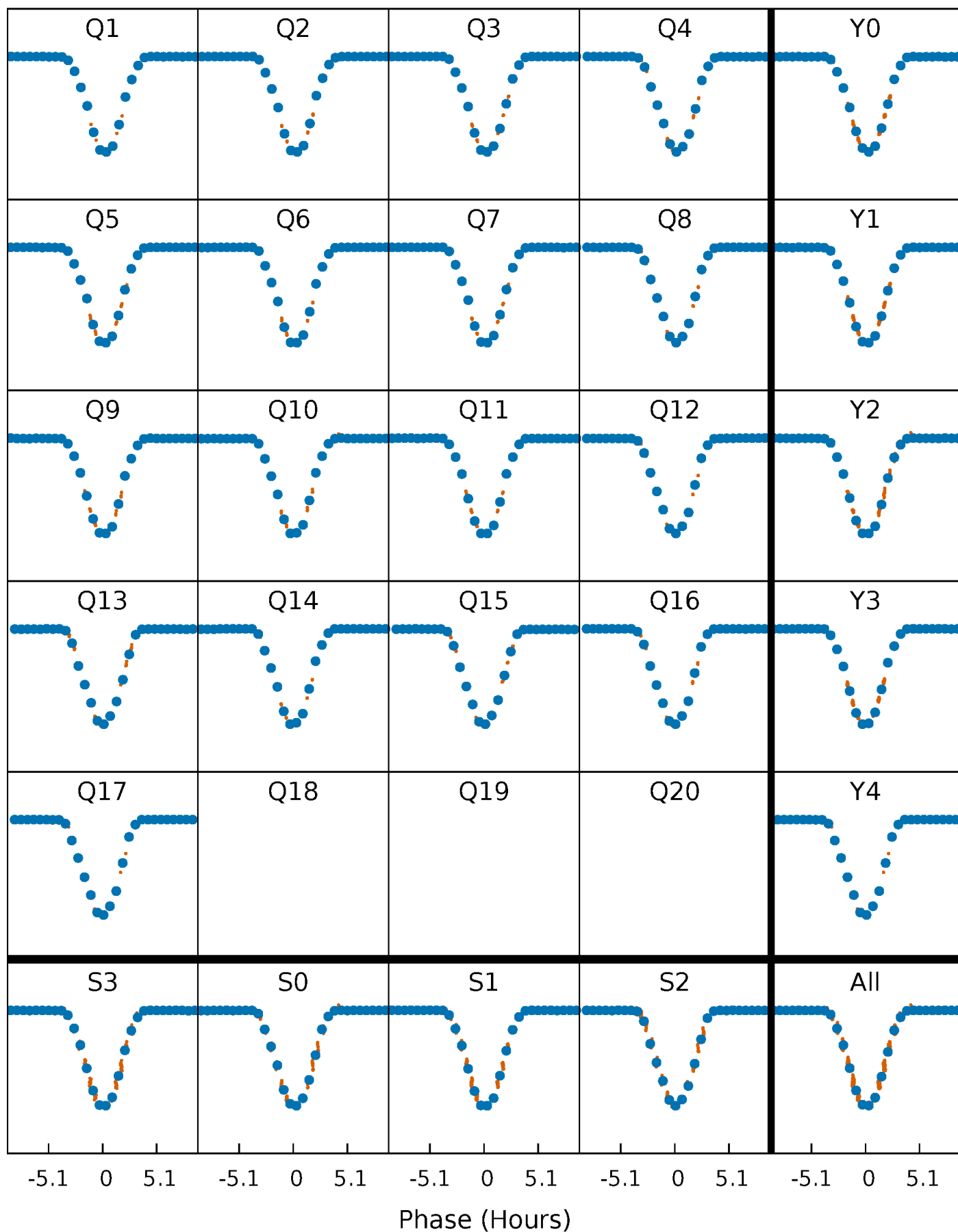


**Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



# PDC Quarter-Phased Transit Curves

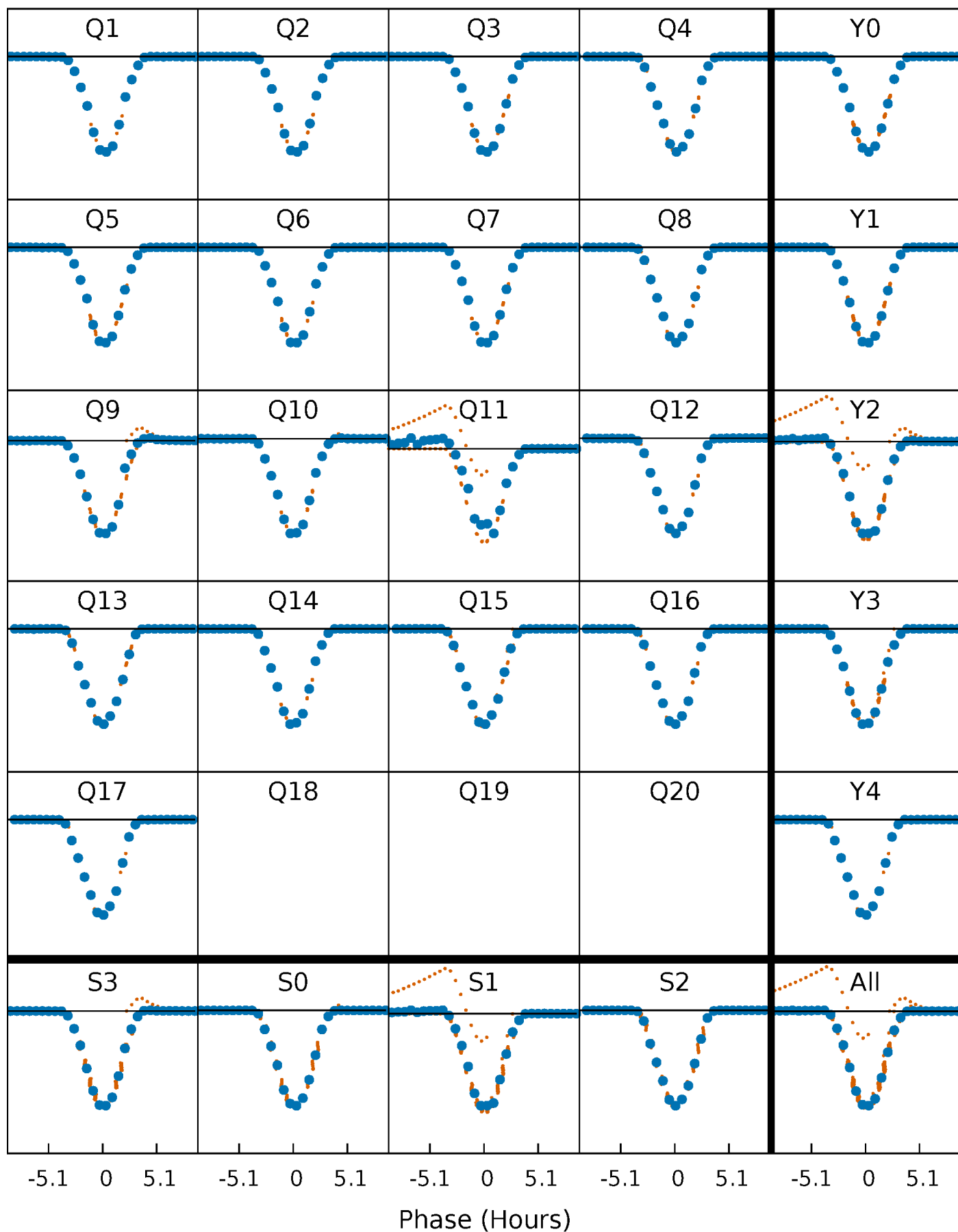
TCE 010215422-01 P= 24.847318 Days  $T_0=154.117322$  (BKJD)





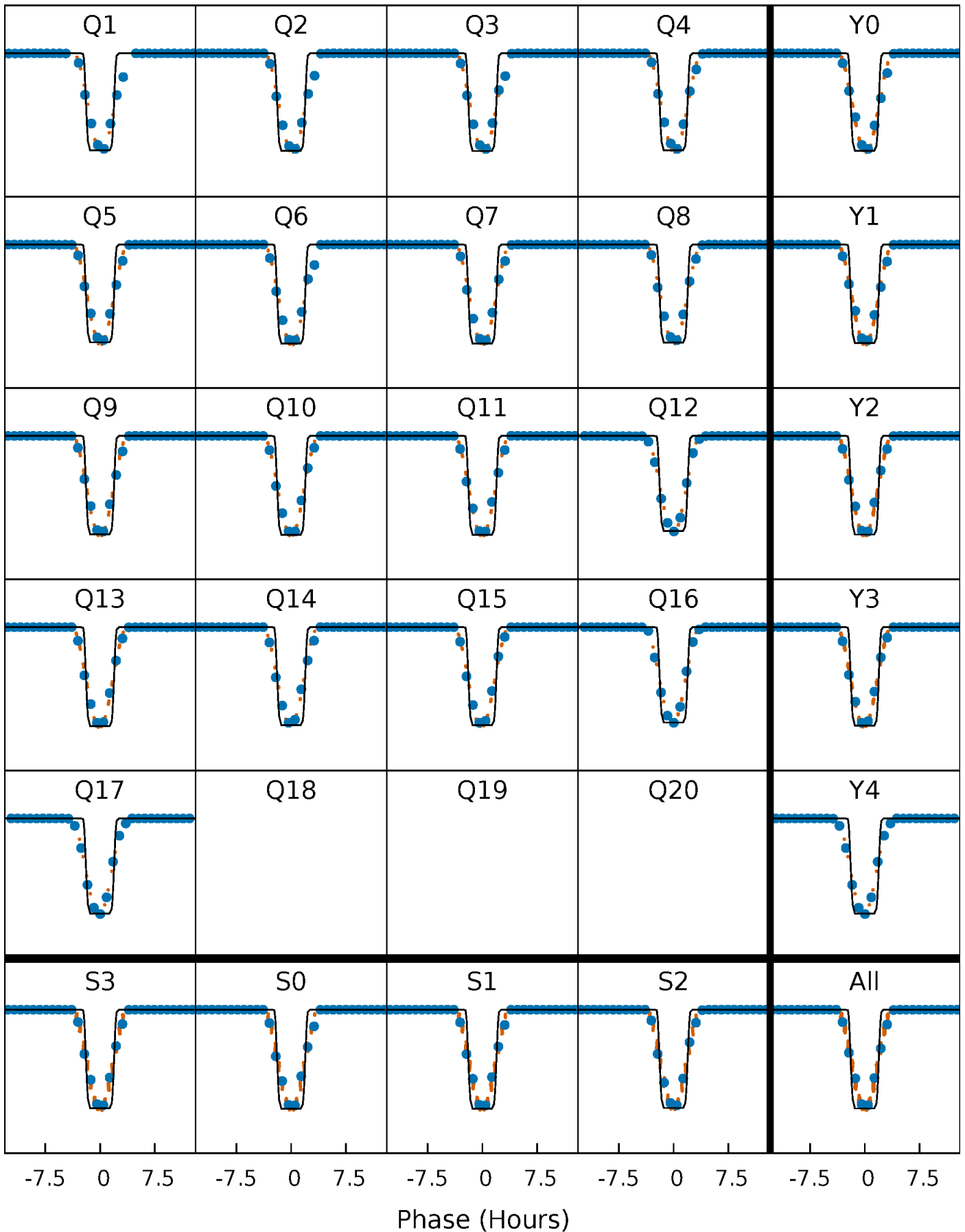
# DV Quarter-Phased Transit Curves

TCE 010215422-01 P= 24.847318 Days  $T_0=154.117322$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

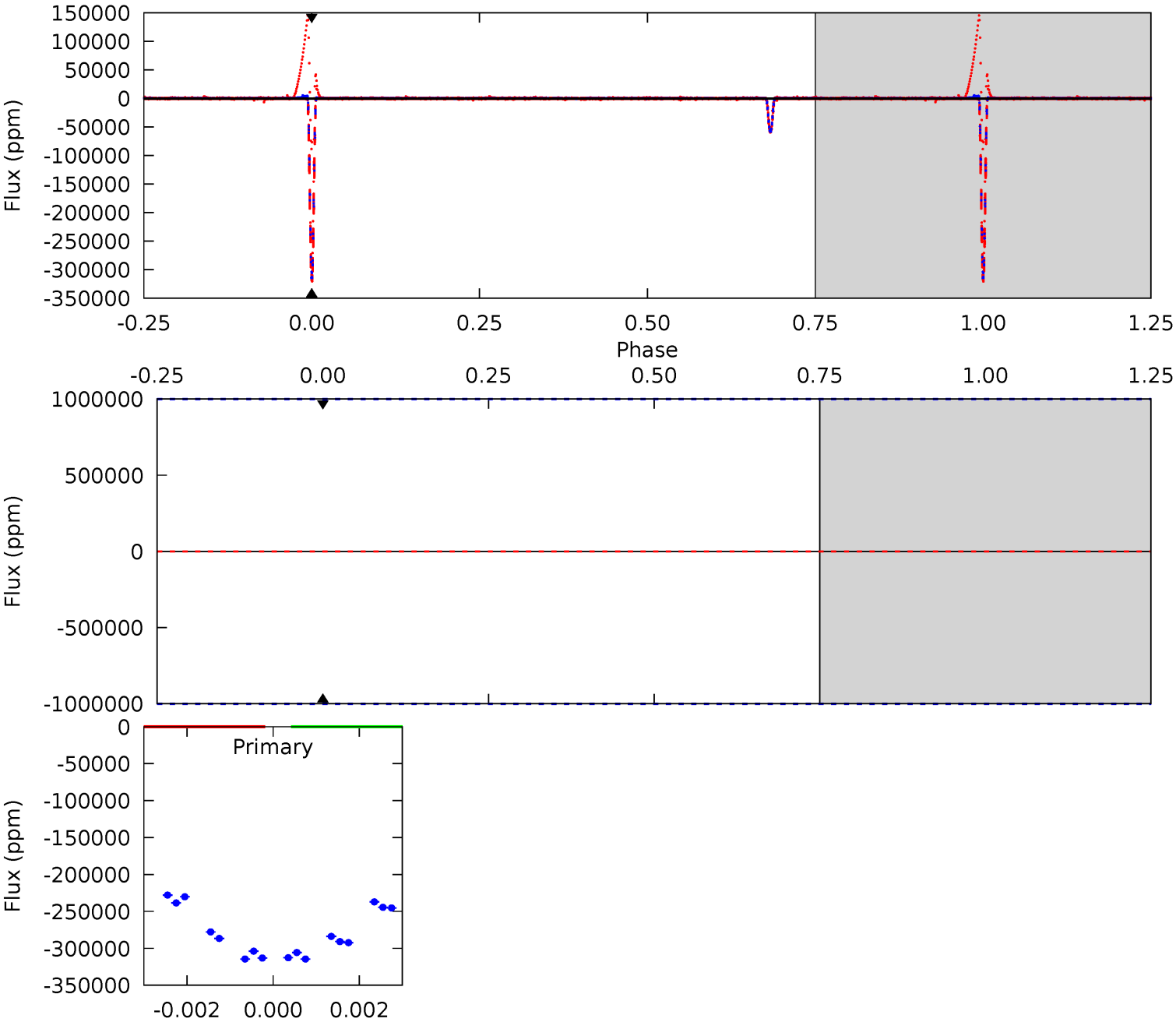
TCE 010215422-01 P= 24.847318 Days  $T_0=154.120797$  (BKJD)



# DV Model-Shift Uniqueness Test

010215422-01, P = 24.847318 Days, E = 129.270004 Days

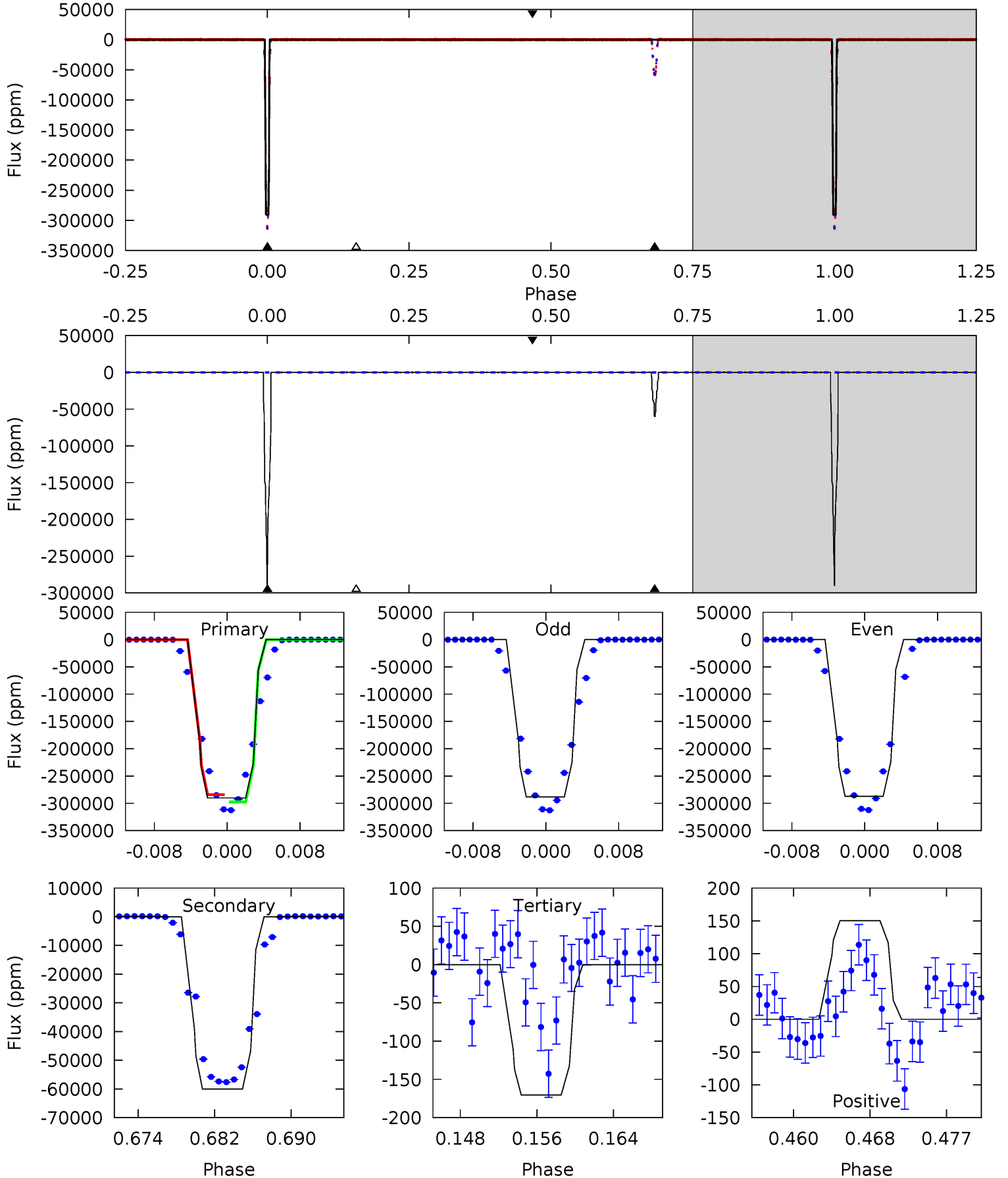
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

010215422-01, P = 24.847318 Days, E = 129.273479 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
7500	1553	4.40	3.88	5.06	2.64	1.16	7495	7496	1548	1549	13.6	1.00	0.00	21.1



### Stellar Parameters For KIC 010215422

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5644^{+169}_{-152}$	$4.550^{+0.035}_{-0.196}$	$-0.060^{+0.300}_{-0.300}$	$0.854^{+0.233}_{-0.078}$	$0.943^{+0.095}_{-0.104}$	$2.137^{+0.391}_{-1.039}$
	+3%/-3%	+1%/-4%	+500%/-500%	+27%/-9%	+10%/-11%	+18%/-49%
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 010215422-01 / KOI 7297.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$47.26^{+11.88}_{-11.34}$	$818^{+56}_{-38}$	$-2488^{+7274}_{-2191}$	$-10.259^{+725.268}_{-598.352}$
Alt.	$-60078 \pm 39$	$53.62^{+12.29}_{-9.39}$	$816^{+53}_{-36}$	$4102^{+325}_{-250}$	$320^{+153}_{-111}$

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

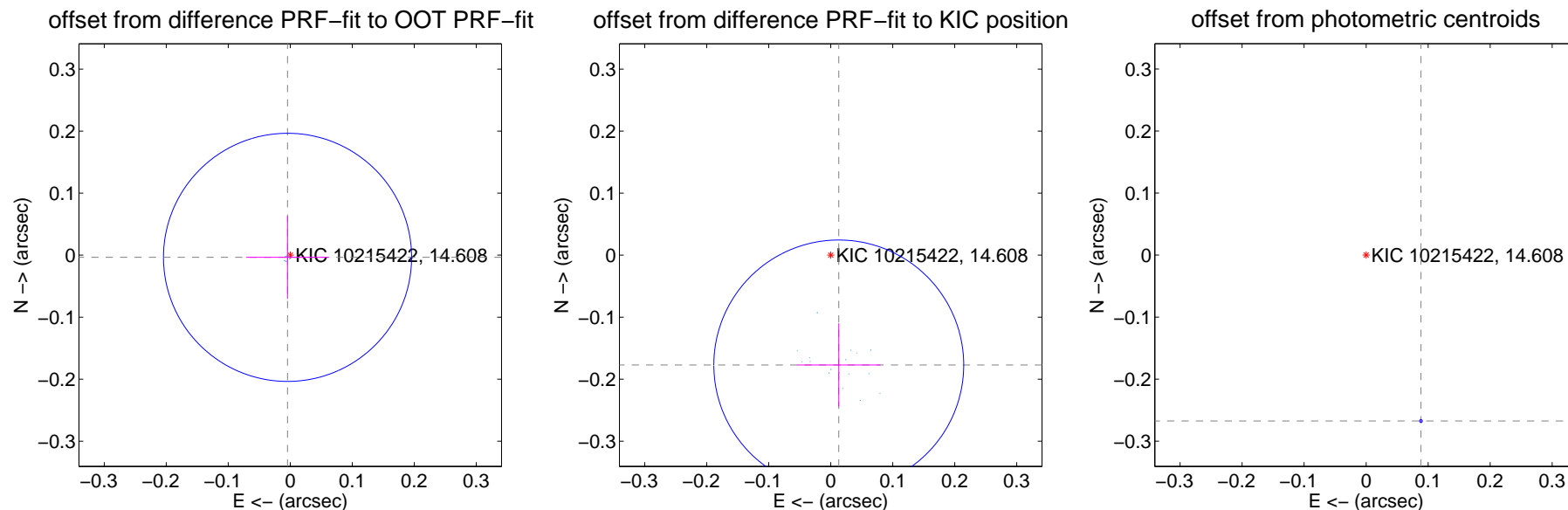
## DV Centroid Data

Supplemental centroid analysis for 010215422-01. Kepler magnitude: 14.61. Transit SNR -1.00

There are 17 quarters with good PRF difference image offsets

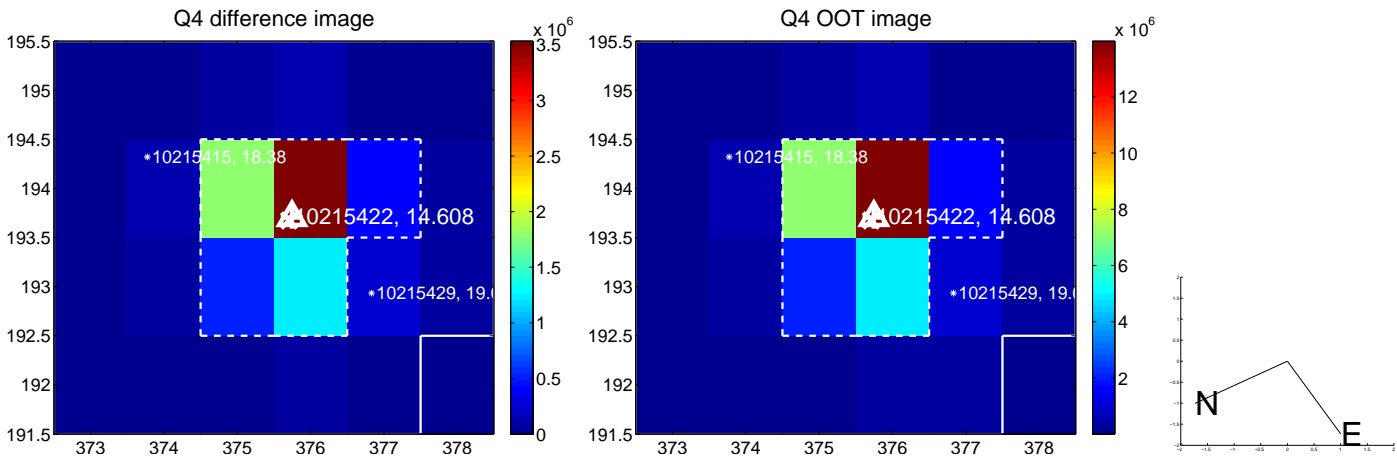
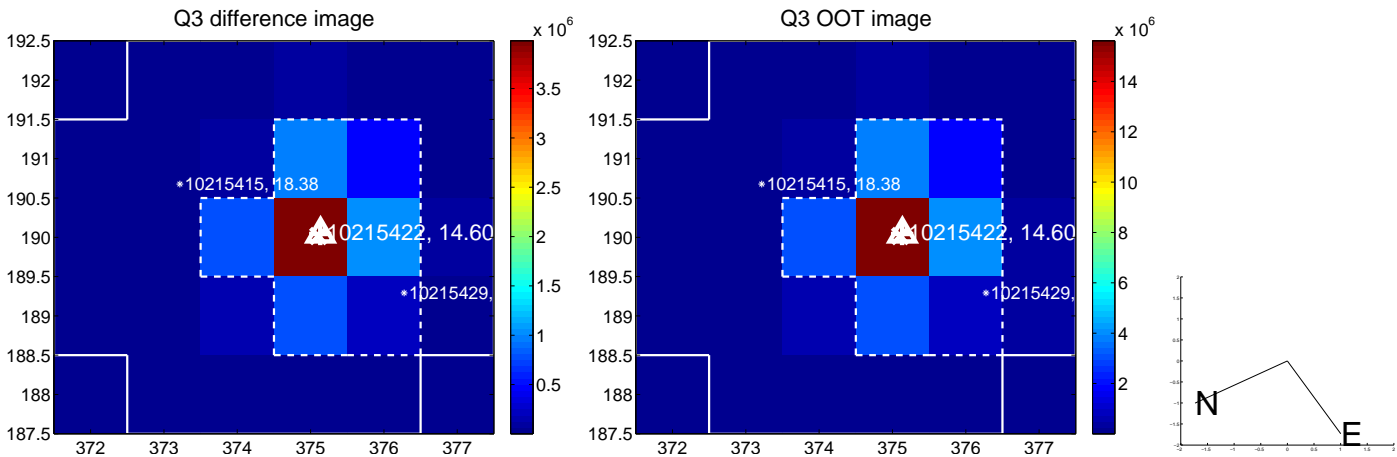
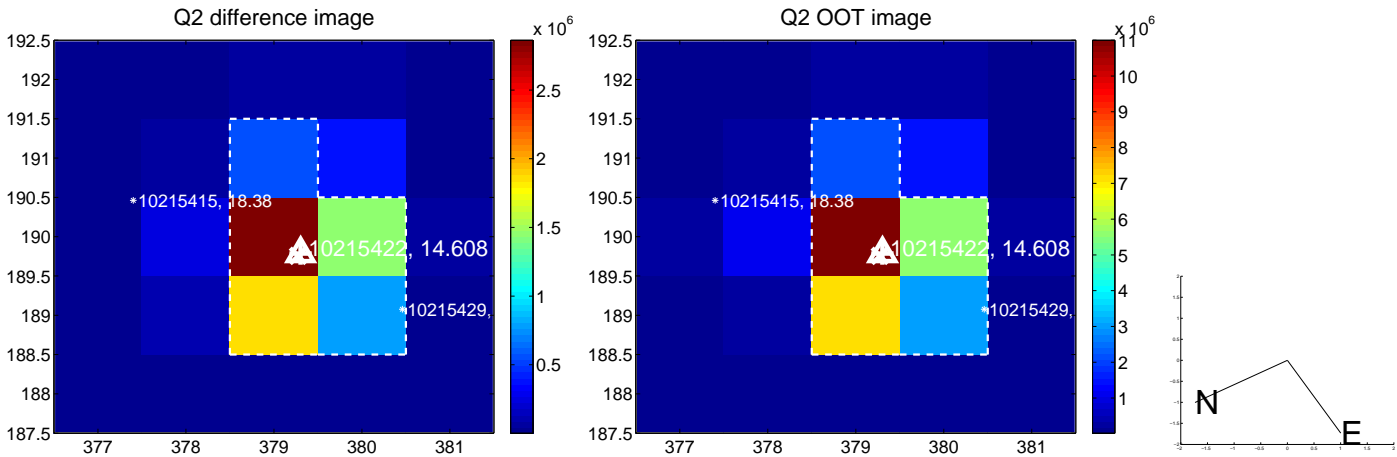
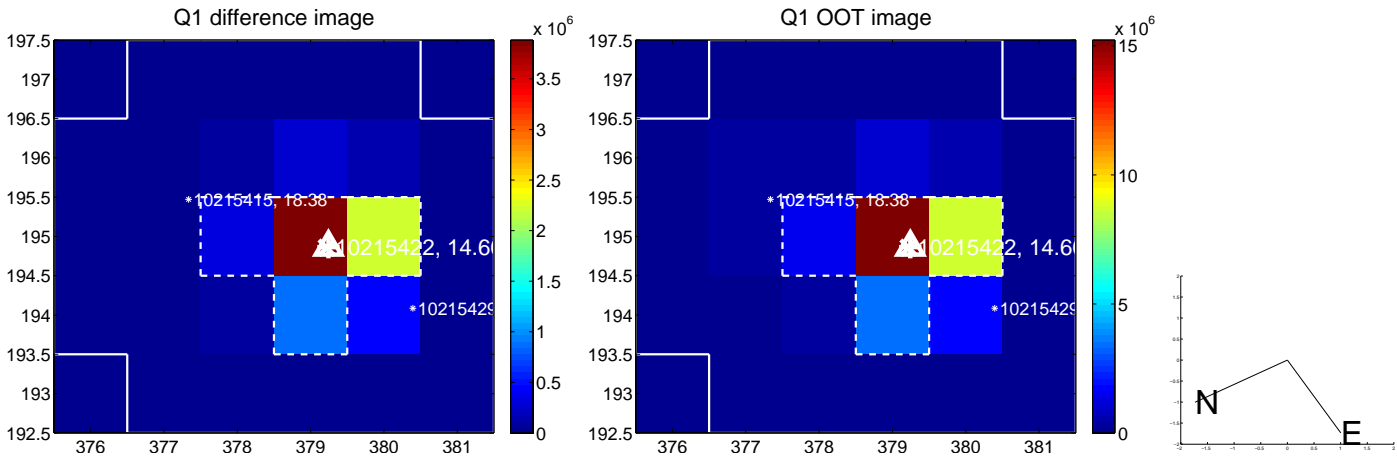
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.006 \pm 0.067$	0.08	$0.004 \pm 0.067$	$-0.004 \pm 0.067$
PRF-fit source offset from KIC position	$0.178 \pm 0.067$	2.64	$-0.013 \pm 0.067$	$-0.177 \pm 0.067$
photometric centroid source offset	$0.28 \pm 0.00$	<b>378.50</b>	$-0.09 \pm 0.00$	$-0.27 \pm 0.00$

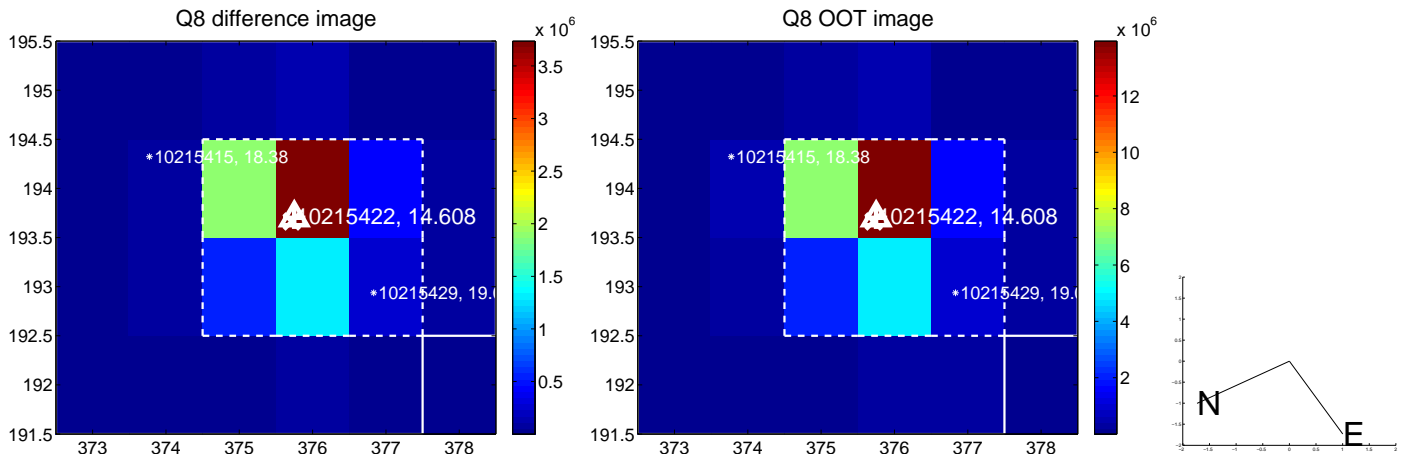
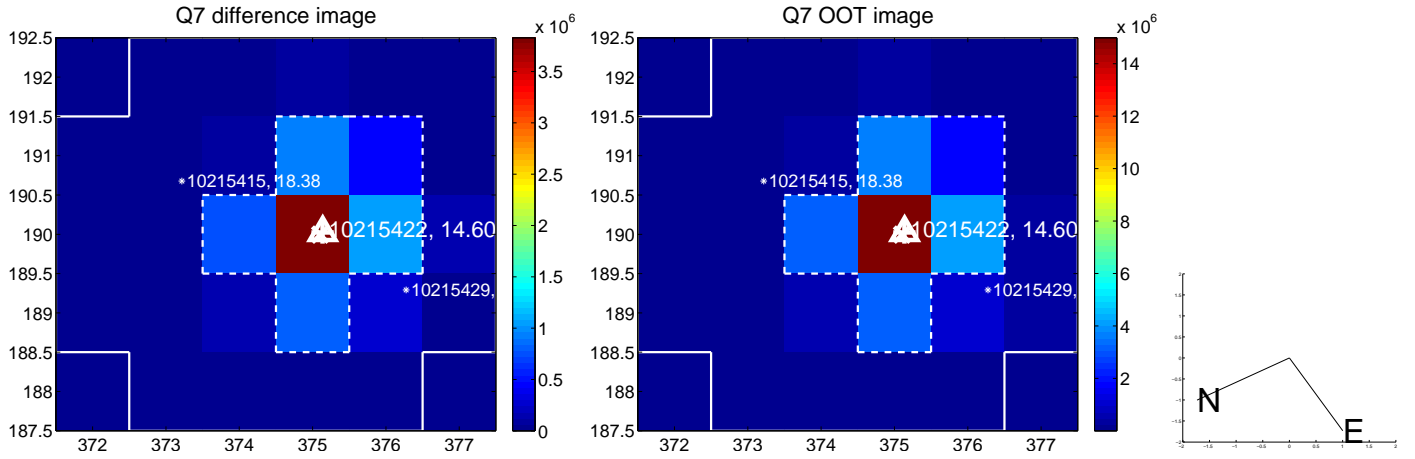
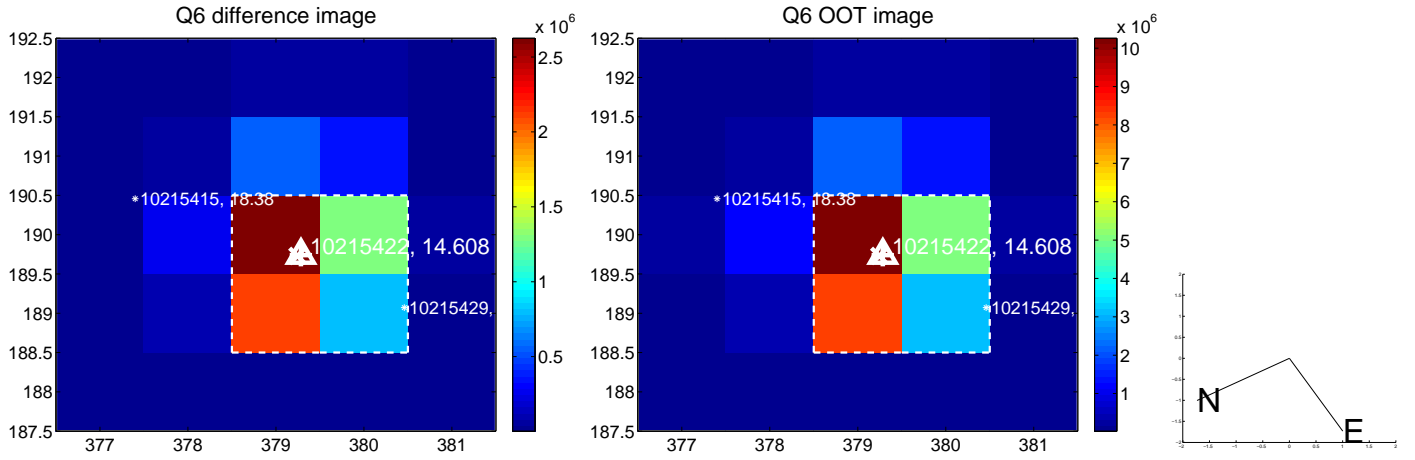
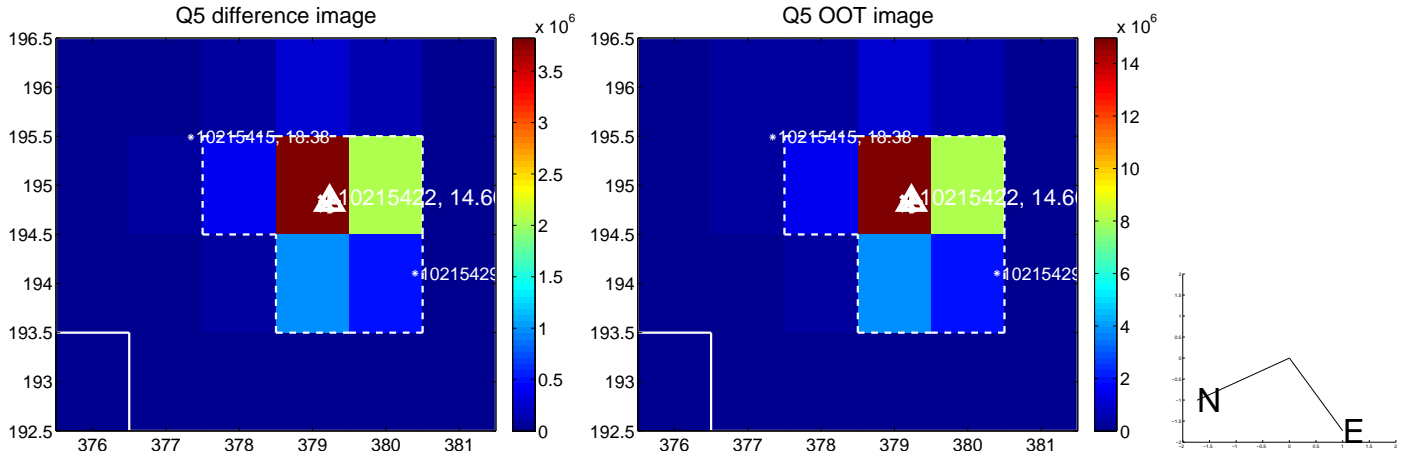


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

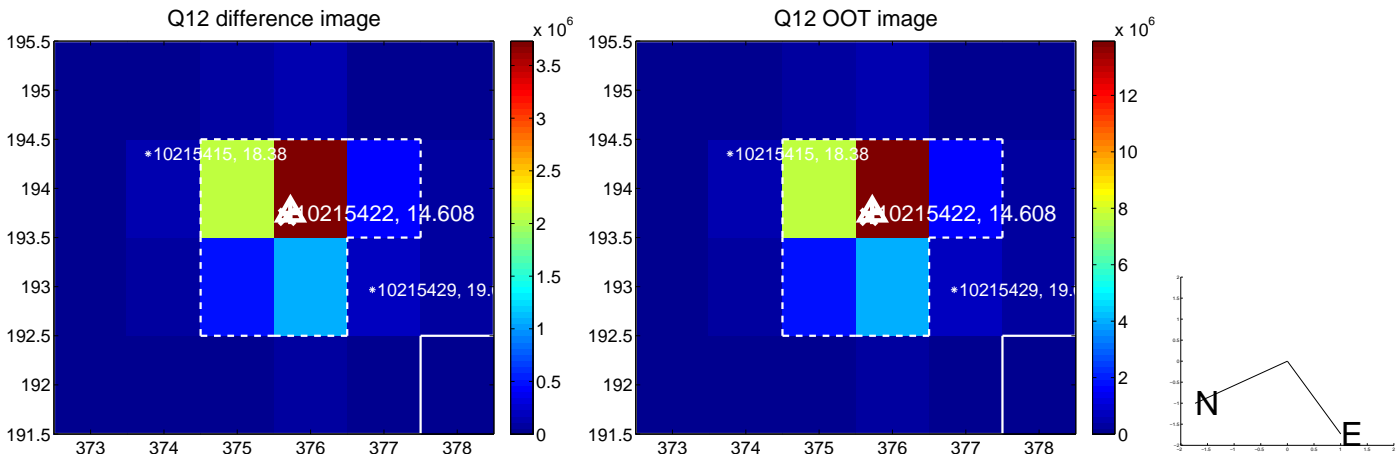
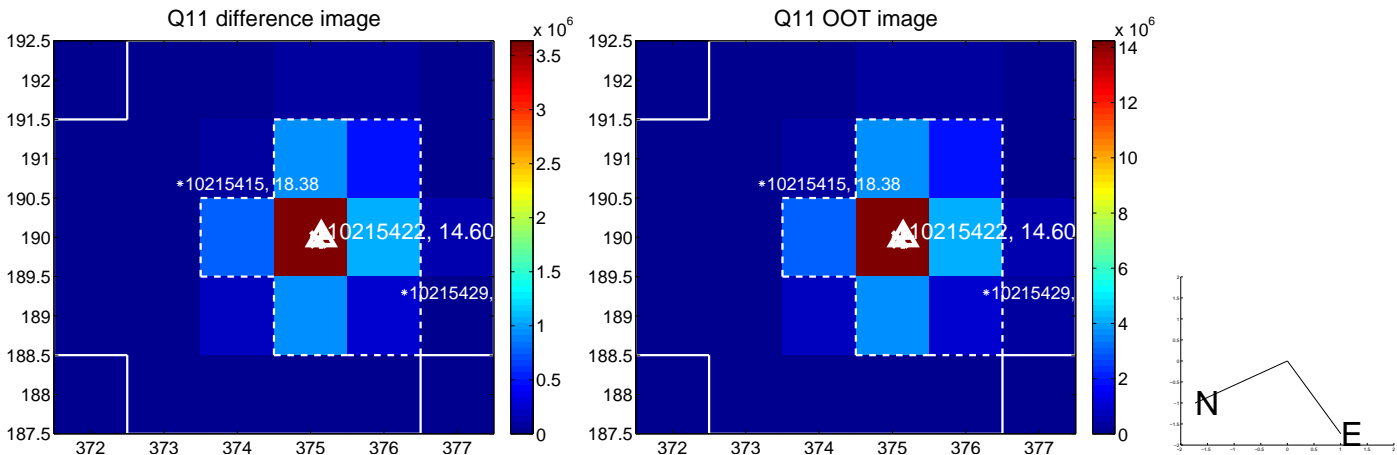
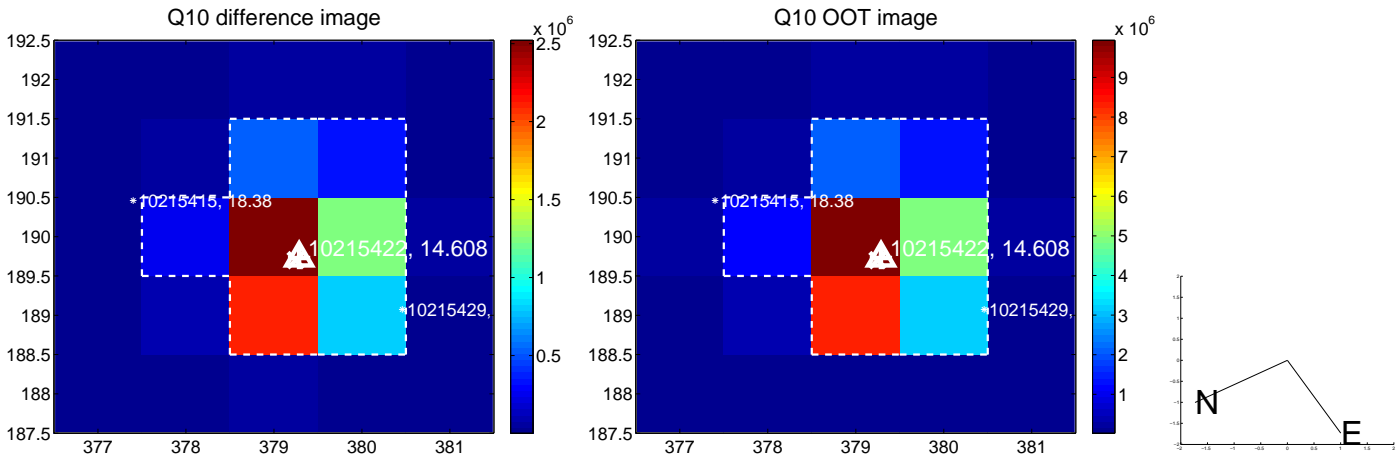
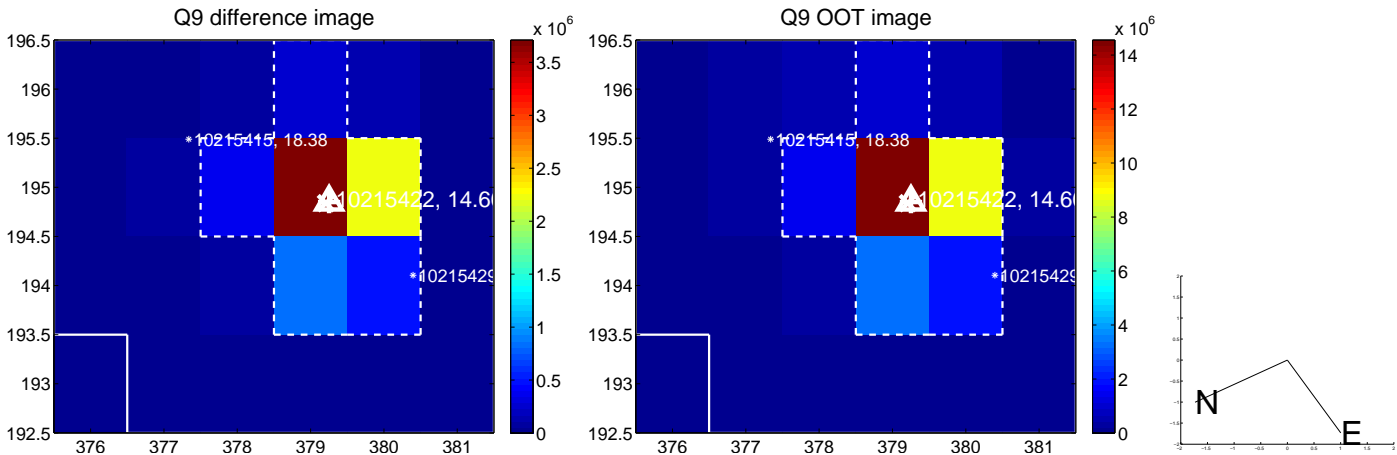


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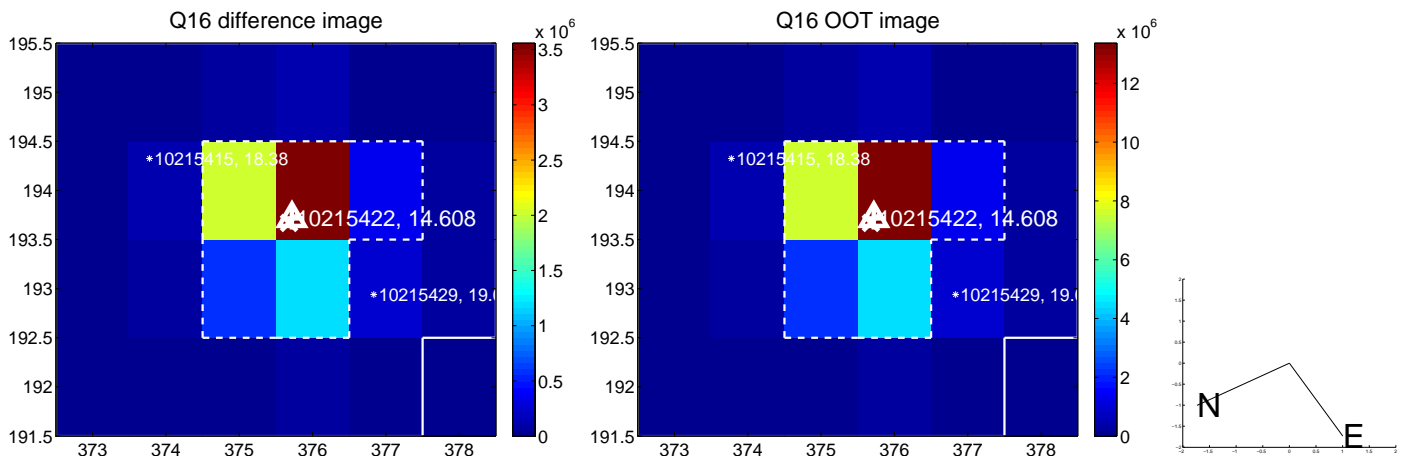
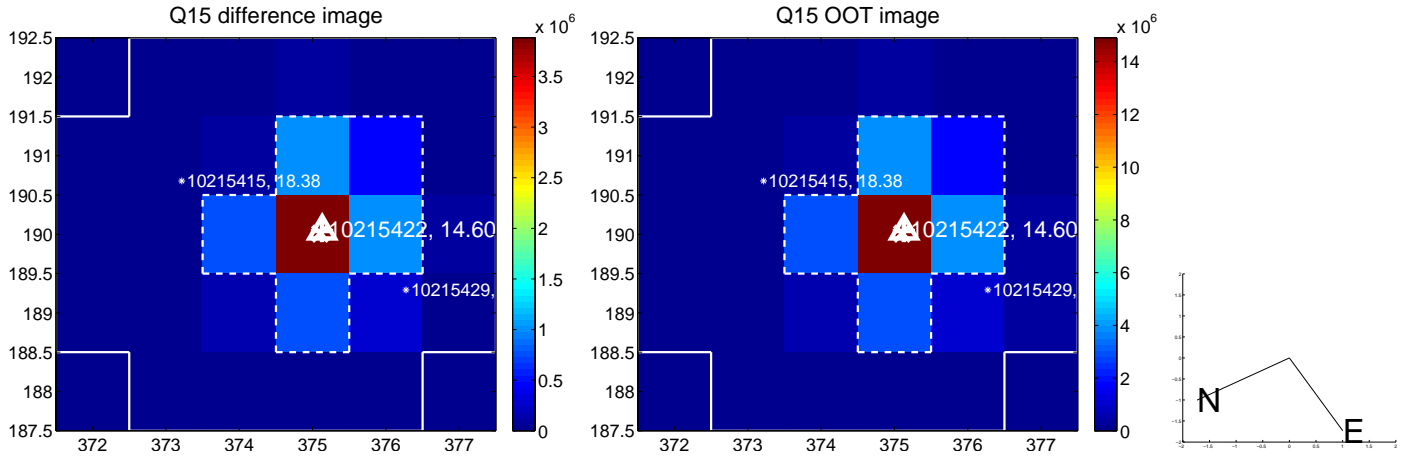
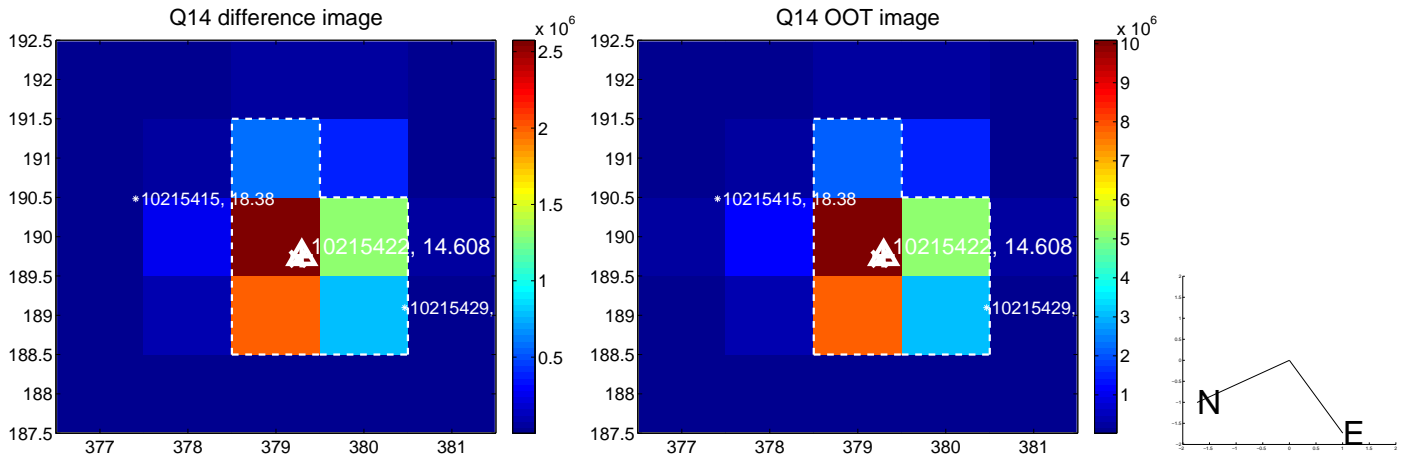
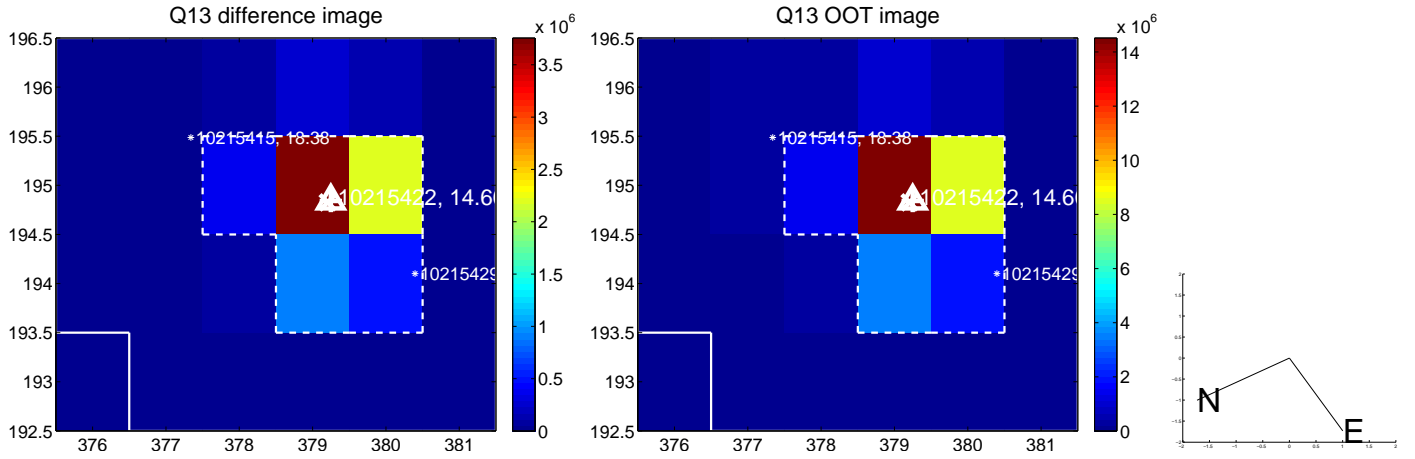




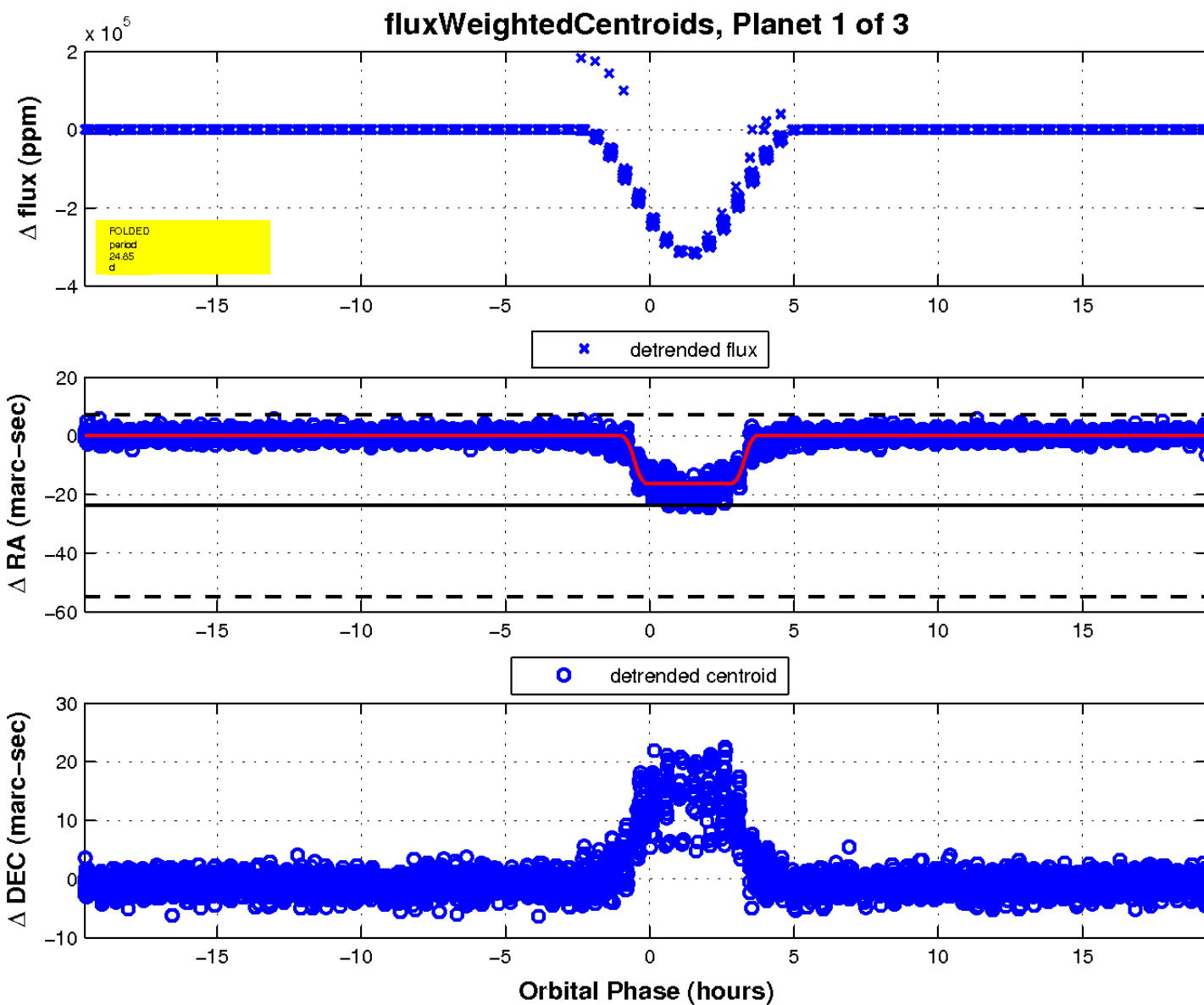
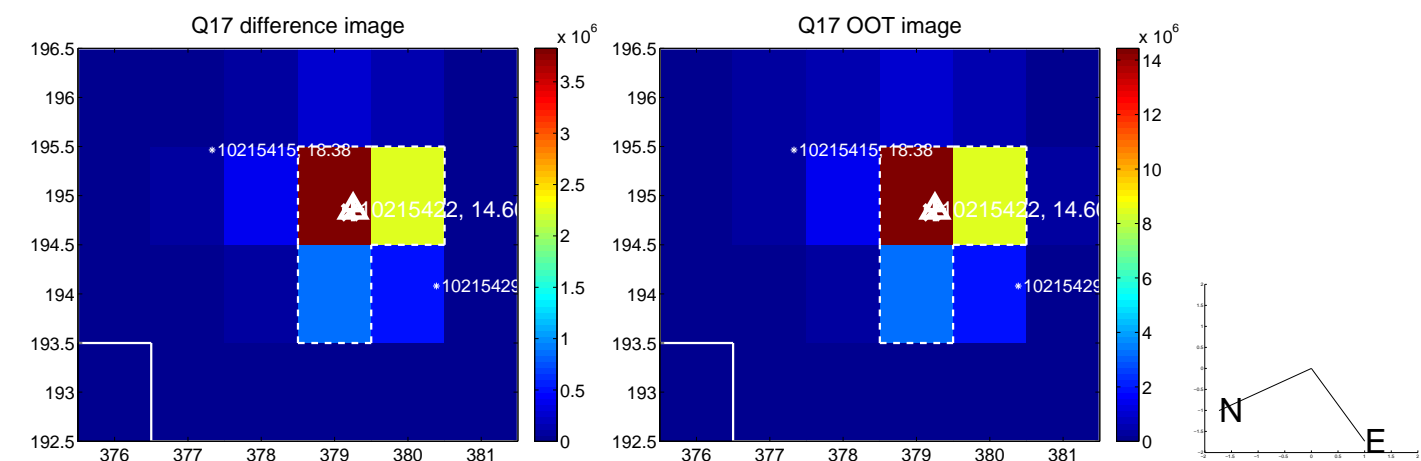
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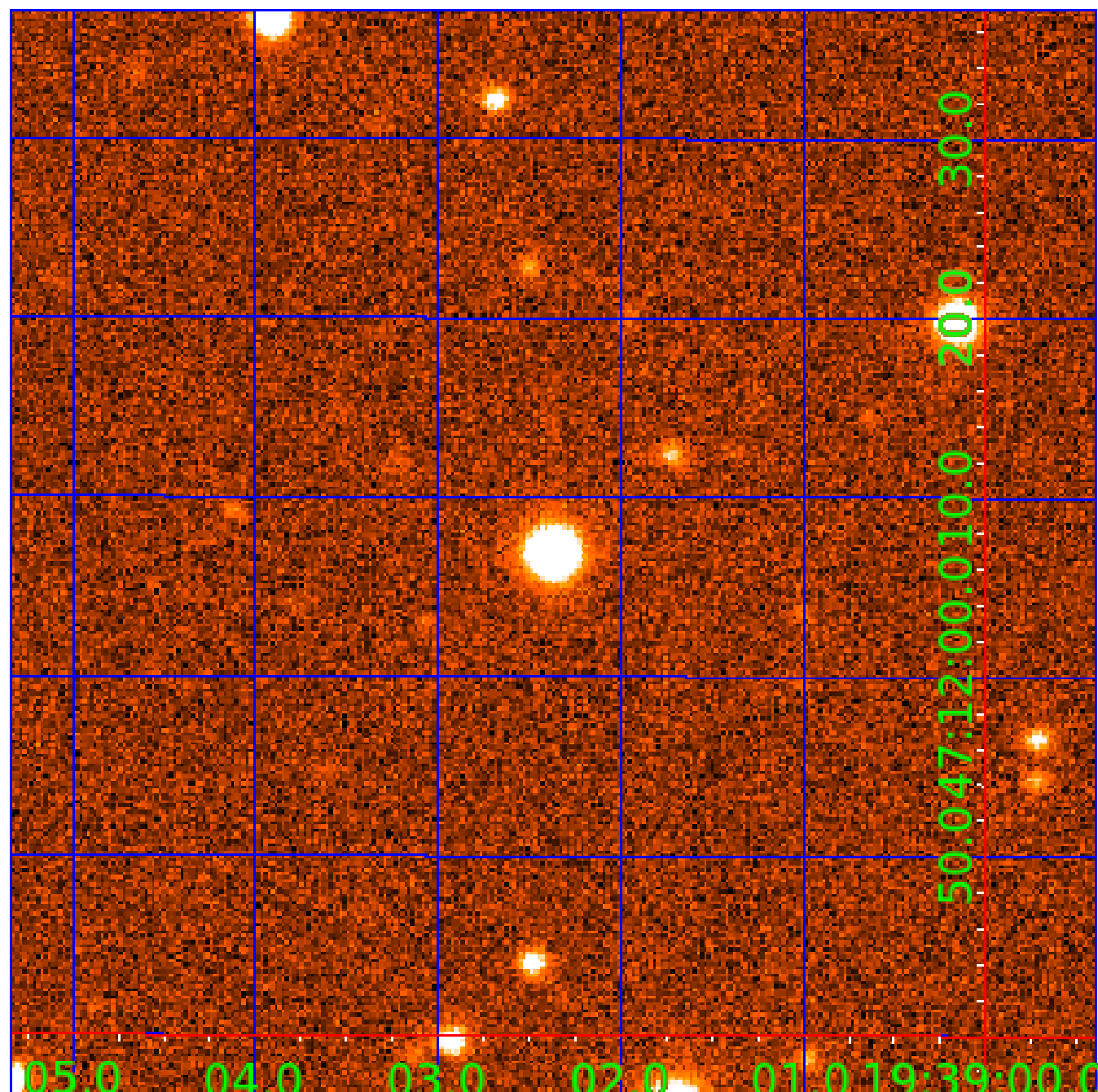


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UKIRT Image

Declination



# KIC 010215422

## Q1-17 DR25 TCE Parameters

TCE	Run Type	KOI?	Period (Days)	Epoch (BKJD)	Depth (ppm)	Duration (Hours)	MES	SNR	$R_{\star}$ ( $R_{\odot}$ )	$T_{\star}$ (K)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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## Robovetter Results

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010215422-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS

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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.

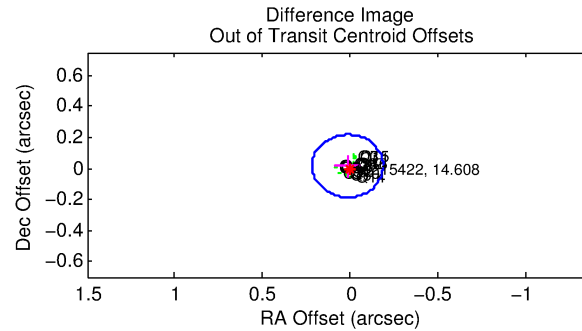
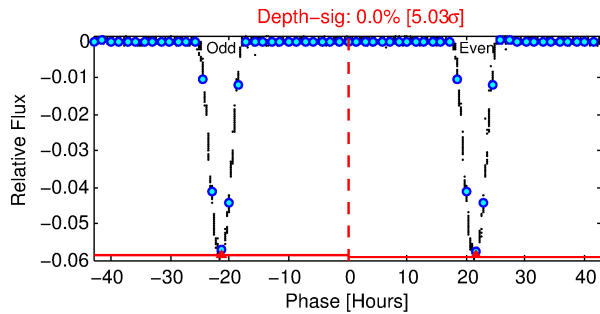
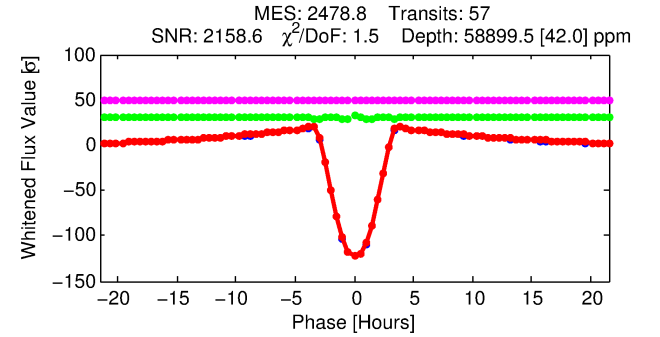
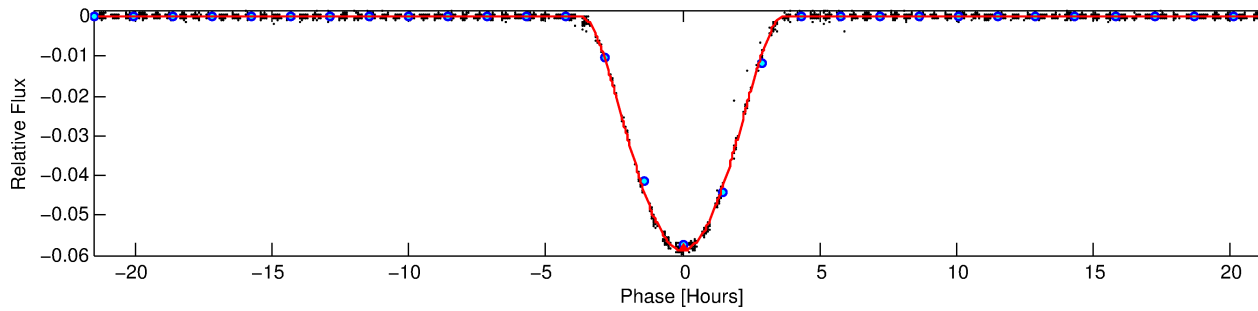
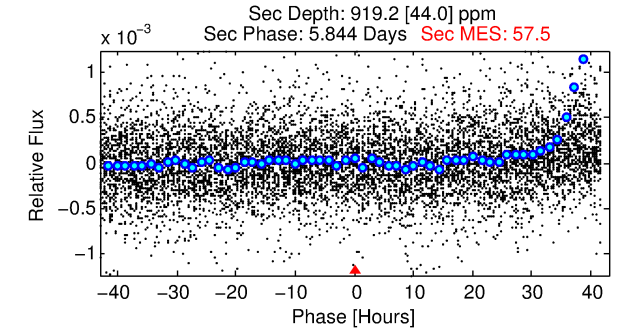
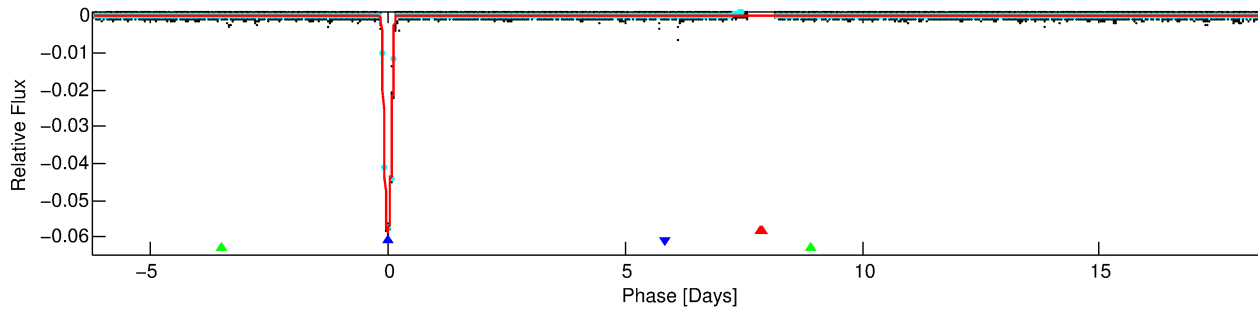
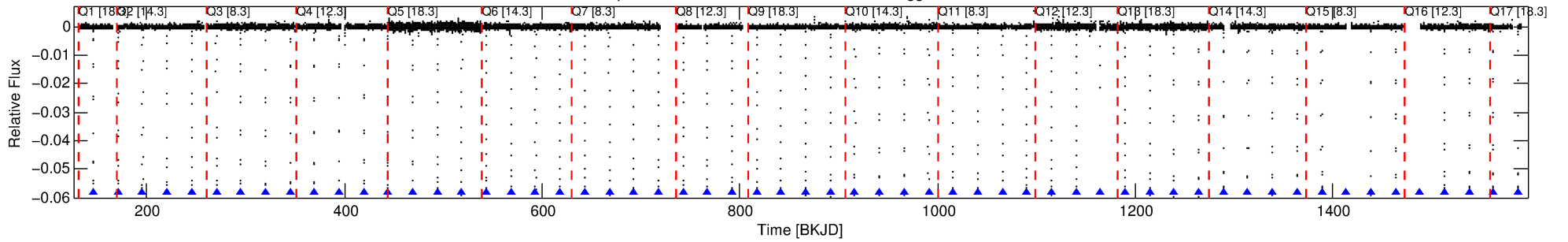
Ephemeris Match Information For 010215422-02

No Significant Match Found

# DV One-Page Summary

KIC: 10215422 Candidate: 2 of 3 Period: 24.847 d  
KOI: K07297 Corr: No Ephemeris Match

Kp: 14.61 R\*: 0.85 Rs Teff: 5644.0 K Logg: 4.55 Fe/H: -0.060



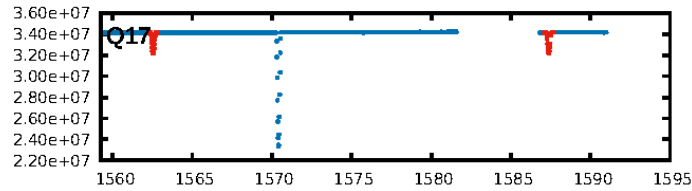
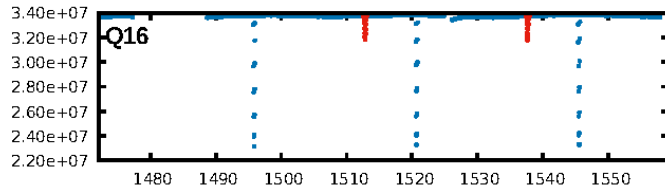
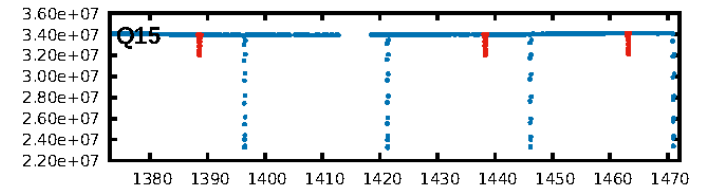
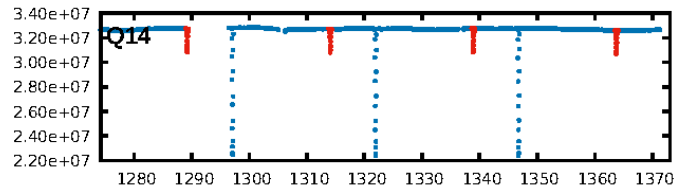
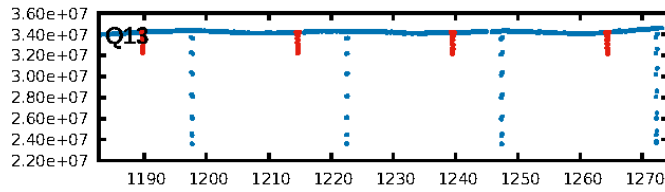
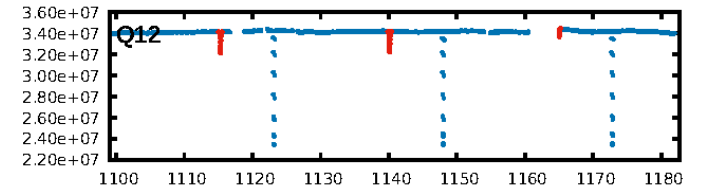
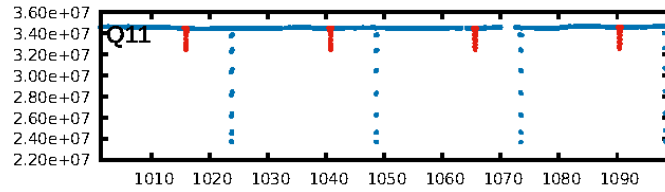
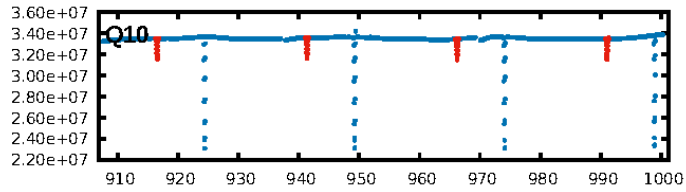
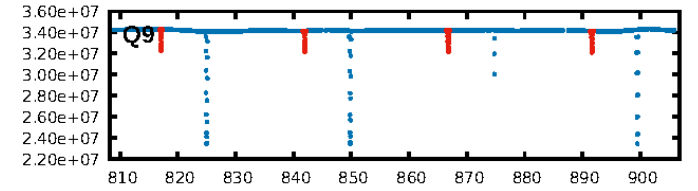
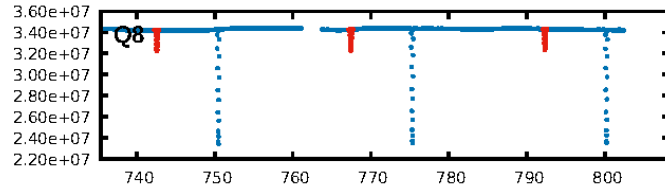
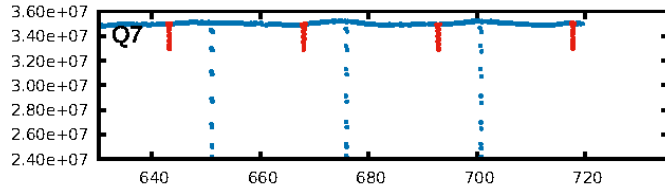
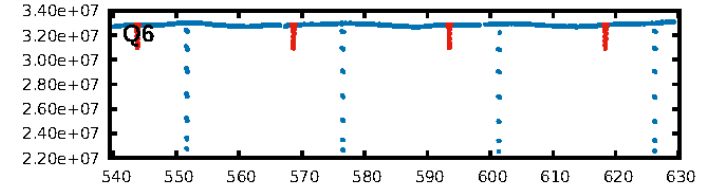
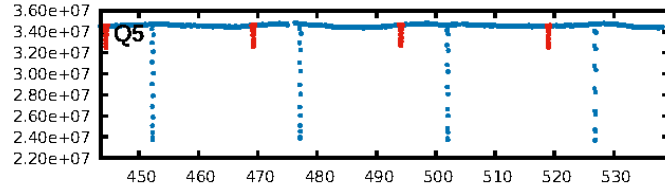
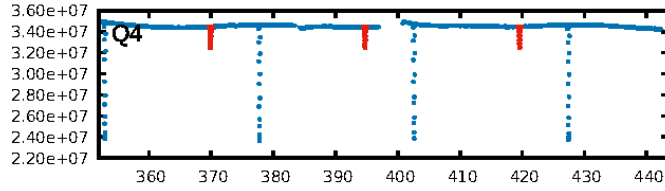
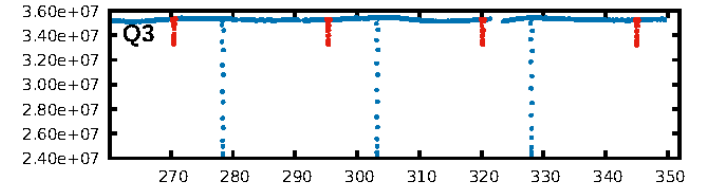
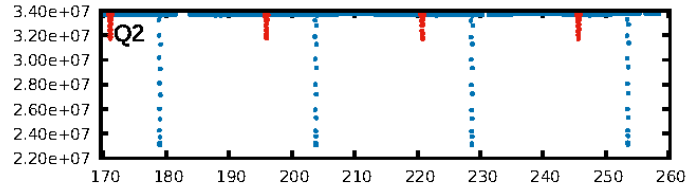
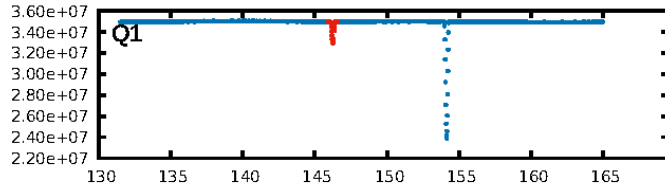
## DV Fit Results:

Period = 24.84708 [0.00000] d  
Epoch = 146.2542 [0.0001] BKJD  
Rp/R\* = 0.2837 [0.0023]  
a/R\* = 25.52 [0.04]  
b = 0.85 [0.00]  
Seff = 24.80 [9.21]  
Teff = 569 [53] K  
Rp = 26.43 [7.22] Re  
a = 0.1635 [0.0386] AU  
Ag = 19.35 [6.87] [2.67σ]  
Teffp = 1845 [60] K [15.96σ]

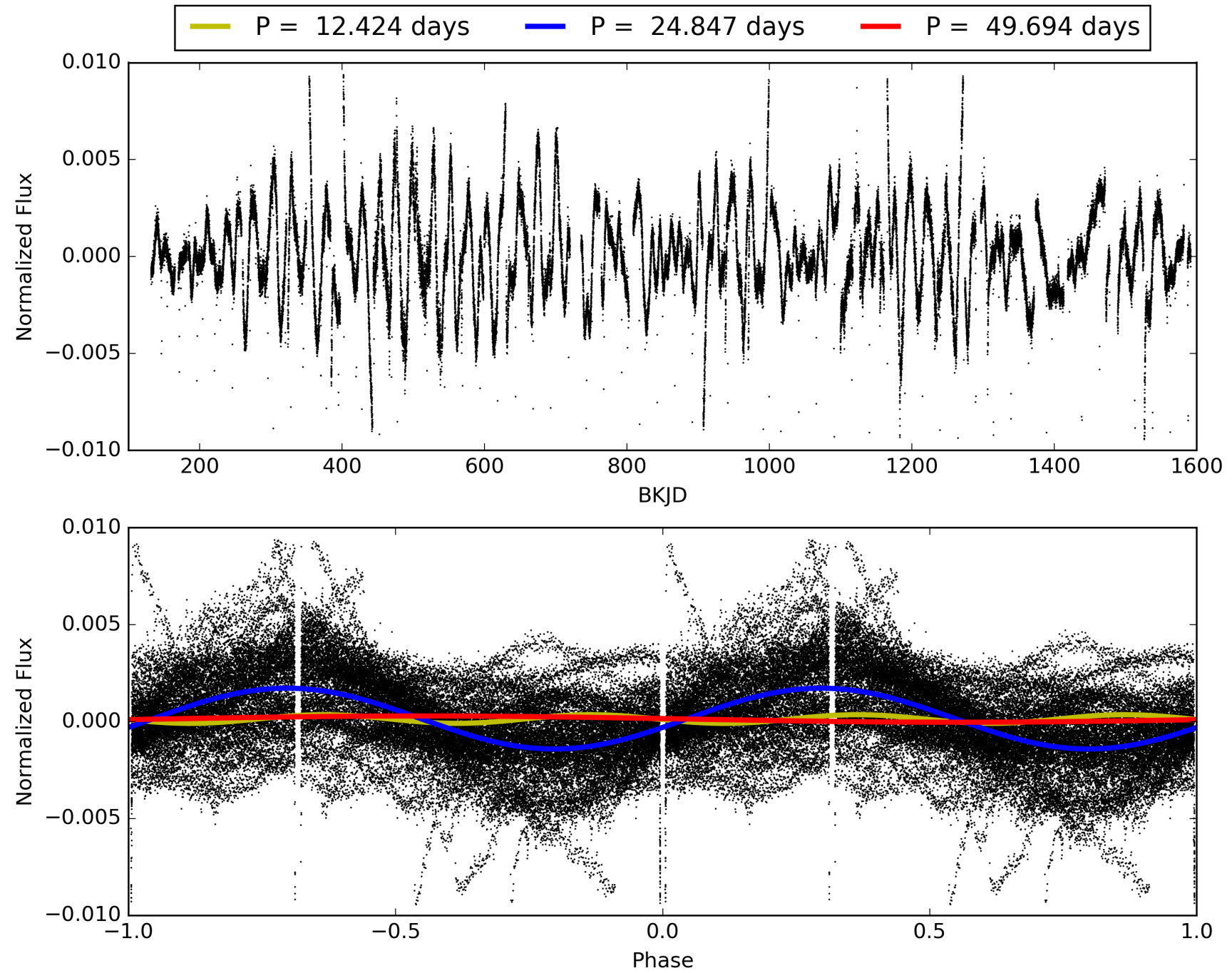
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [17.93σ]  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 0.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [54/54]  
GhostDiagnostic-chr: 5.206  
Centroid-sig: N/A  
Centroid-so: 0.235 arcsec [60.56σ]  
OotOffset-rm: 0.023 arcsec [0.34σ]  
KicOffset-rm: 0.157 arcsec [2.32σ]  
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 010215422-02, PDC Light Curves



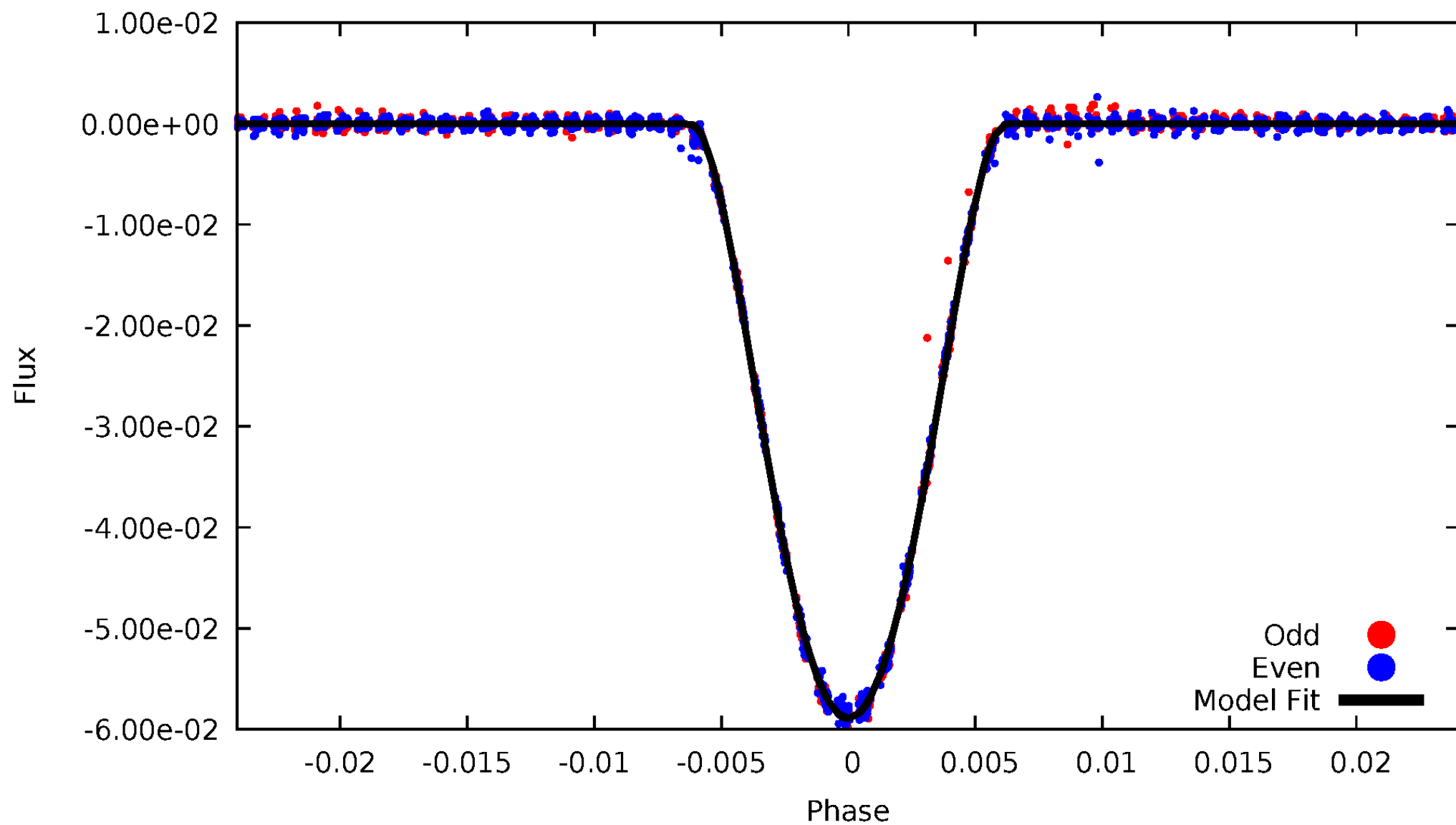
TCE 010215422-02





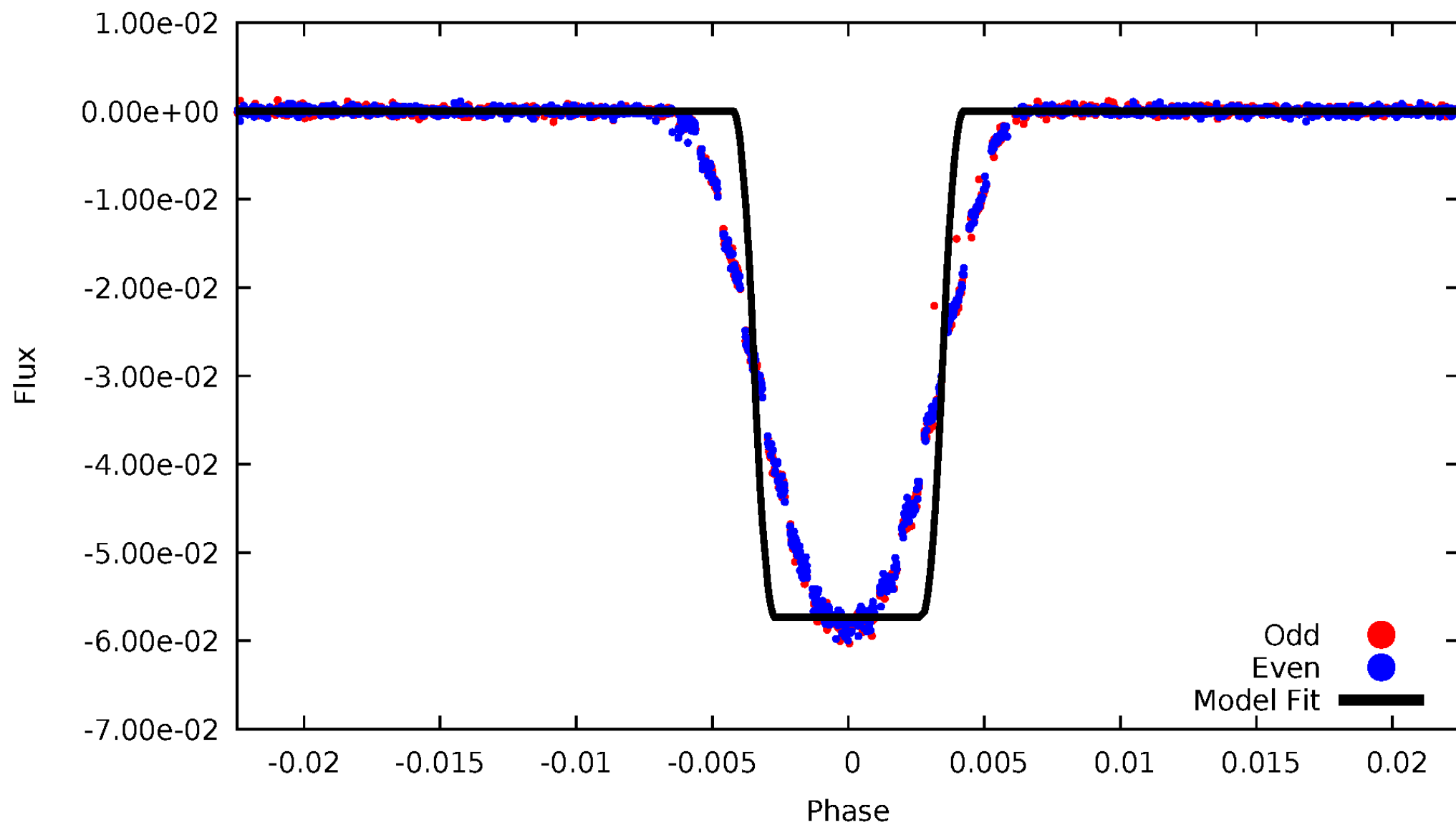
# DV Odd/Even

TCE 010215422-02



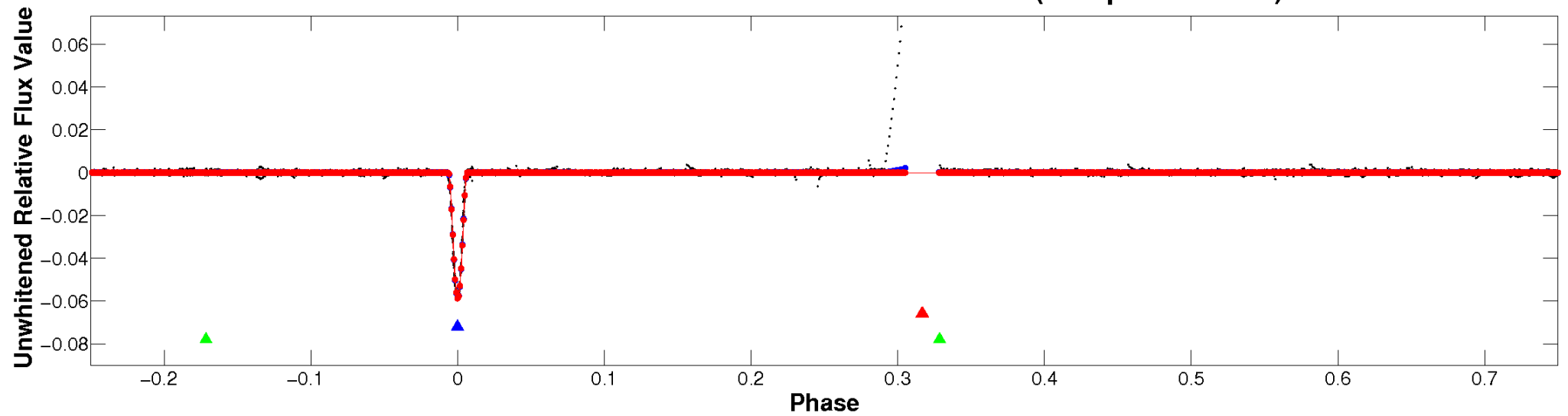
# ALT Odd/Even

TCE 010215422-02

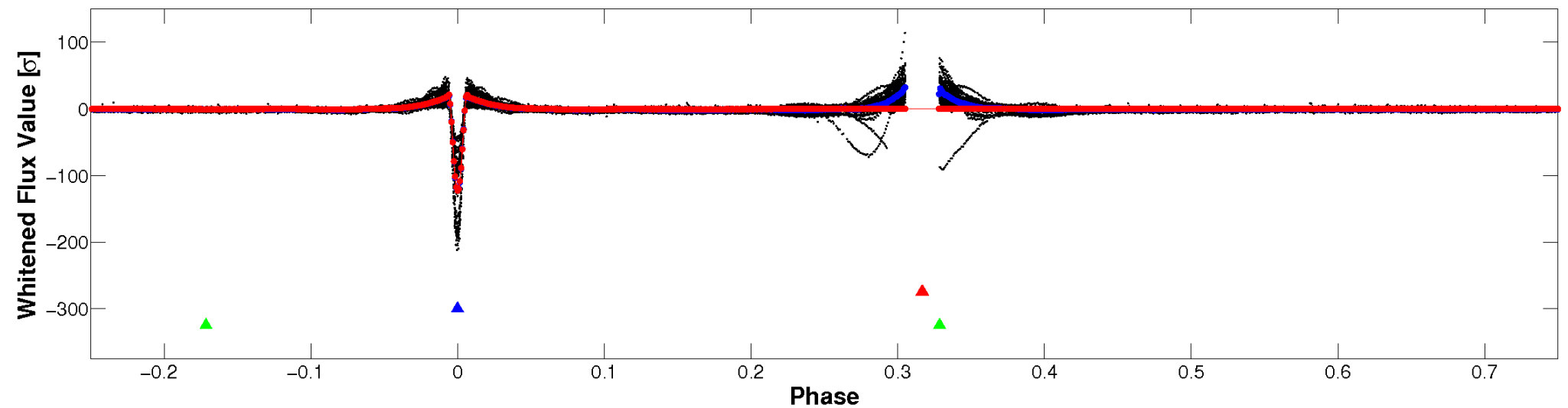


# Non-Whitened Vs. Whitened Light Curve

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

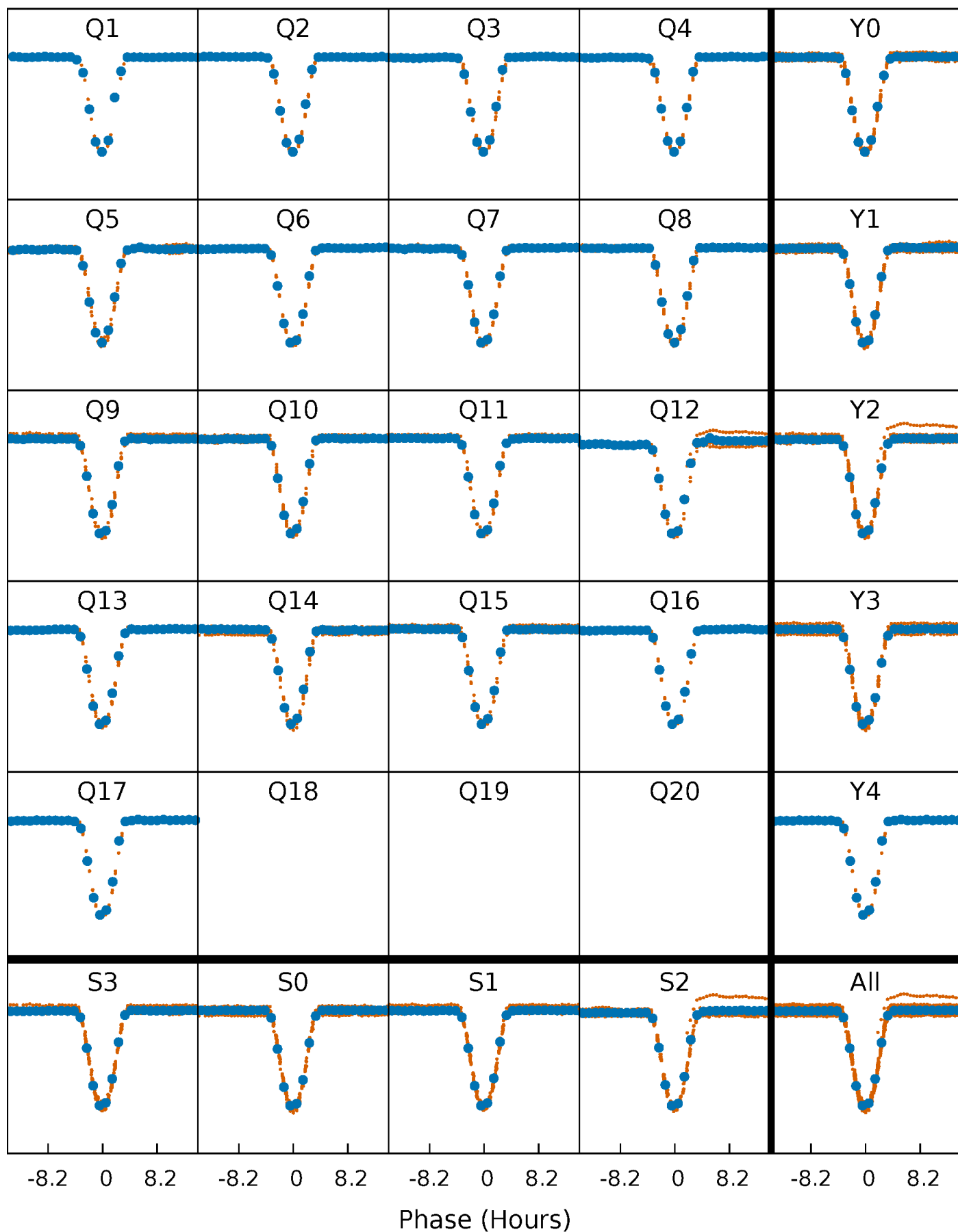


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



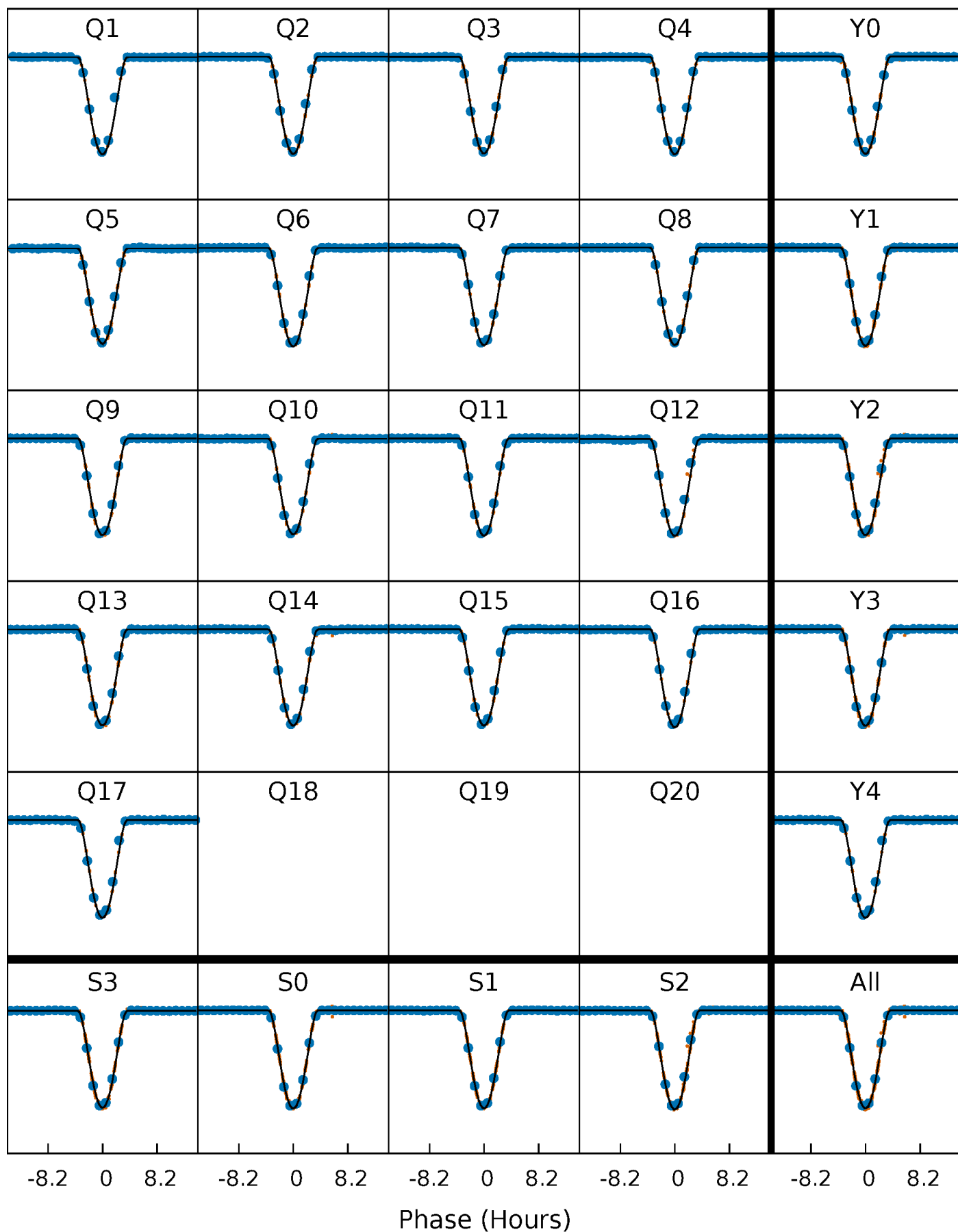
# PDC Quarter-Phased Transit Curves

TCE 010215422-02   P= 24.847076 Days    $T_0=146.254228$  (BKJD)



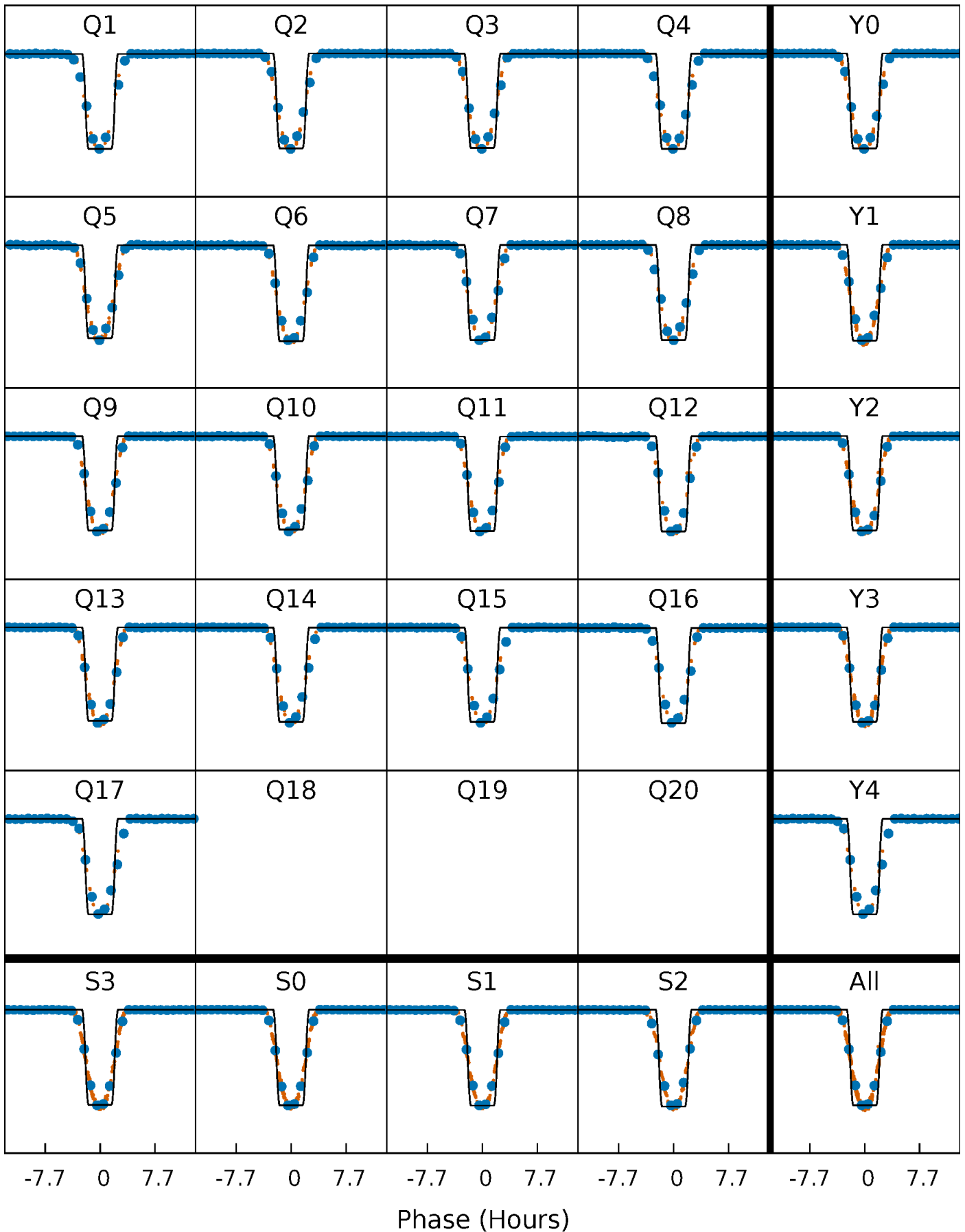
# DV Quarter-Phased Transit Curves

TCE 010215422-02   P= 24.847076 Days    $T_0=146.254228$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

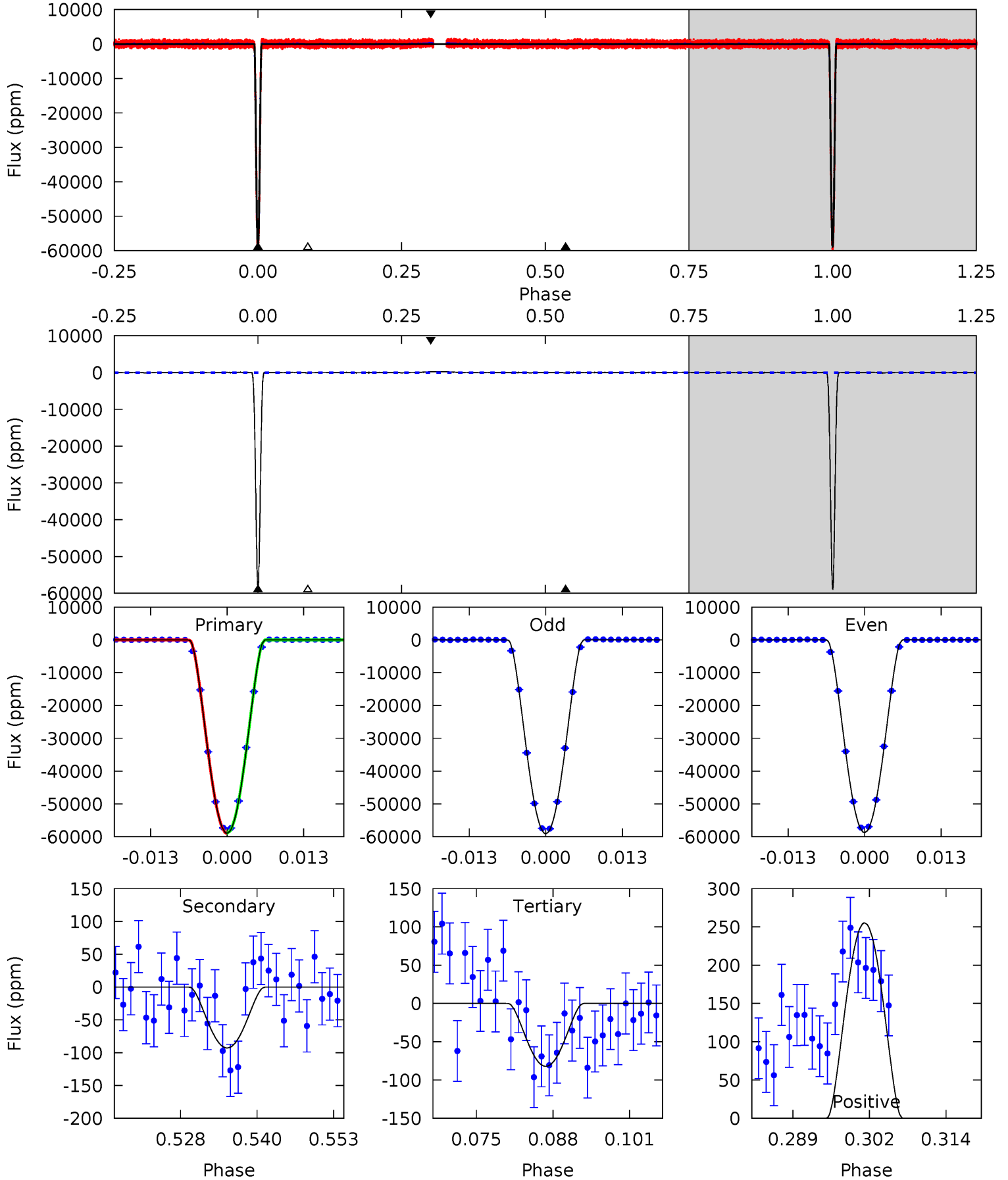
TCE 010215422-02     $P = 24.846968$  Days     $T_0 = 146.257243$  (BKJD)



# DV Model-Shift Uniqueness Test

010215422-02, P = 24.847076 Days, E = 121.407152 Days

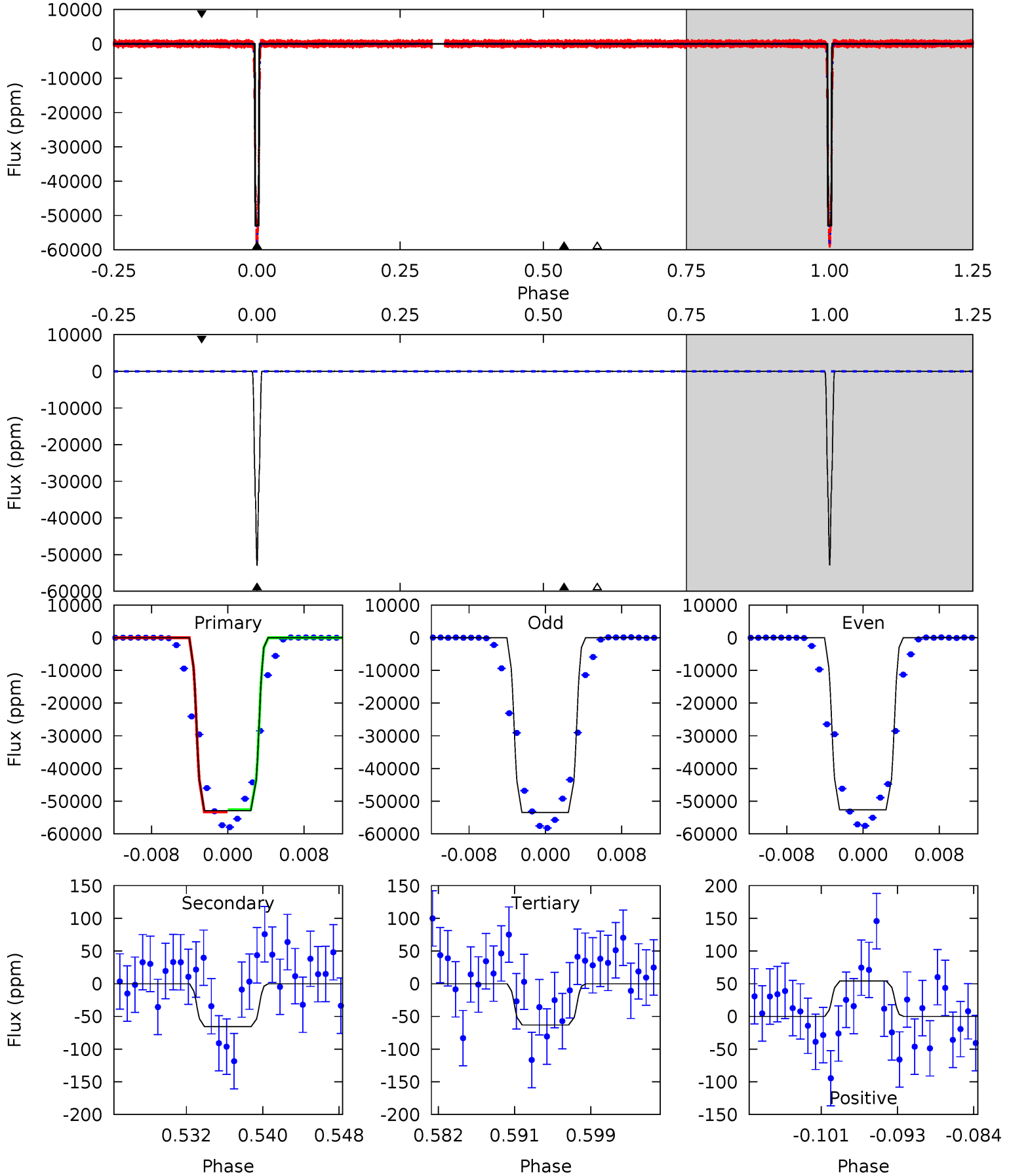
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4848	7.64	6.76	21.0	4.98	2.50	3.98	4841	4827	0.88	-13.4	14.7	0.99	0.00	3.23



# Alt Model-Shift Uniqueness Test

010215422-02, P = 24.846968 Days, E = 121.410275 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
3478	4.33	4.15	3.56	5.06	2.63	1.12	3474	3475	0.18	0.77	28.7	0.99	0.00	0





### Stellar Parameters For KIC 010215422

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5644^{+169}_{-152}$	$4.550^{+0.035}_{-0.196}$	$-0.060^{+0.300}_{-0.300}$	$0.854^{+0.233}_{-0.078}$	$0.943^{+0.095}_{-0.104}$	$2.137^{+0.391}_{-1.039}$
	+3%/-3%	+1%/-4%	+500%/-500%	+27%/-9%	+10%/-11%	+18%/-49%
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 010215422-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-93 \pm 12$	$27.24^{+4.14}_{-2.01}$	$816^{+53}_{-36}$	$1995^{+39}_{-40}$	$1.749^{+0.341}_{-0.398}$
Alt.	$-66 \pm 15$	$23.10^{+3.30}_{-1.60}$	$814^{+56}_{-32}$	$1989^{+56}_{-73}$	$1.695^{+0.497}_{-0.501}$

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

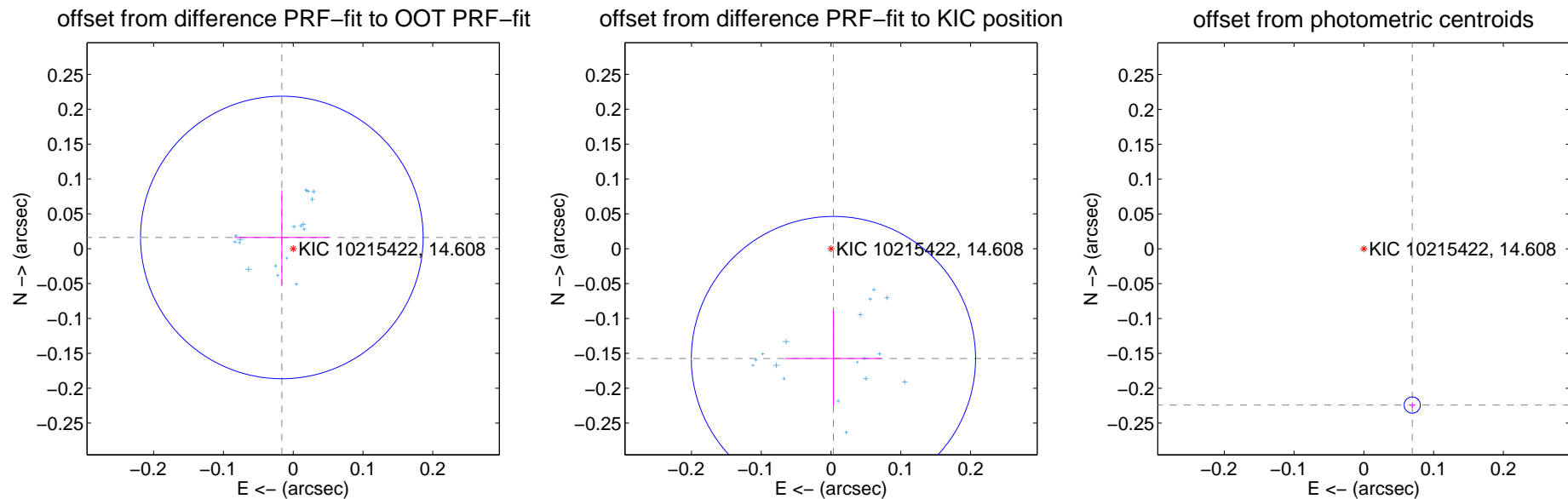
## DV Centroid Data

Supplemental centroid analysis for 010215422-02. Kepler magnitude: 14.61. Transit SNR 2158.60

There are 17 quarters with good PRF difference image offsets

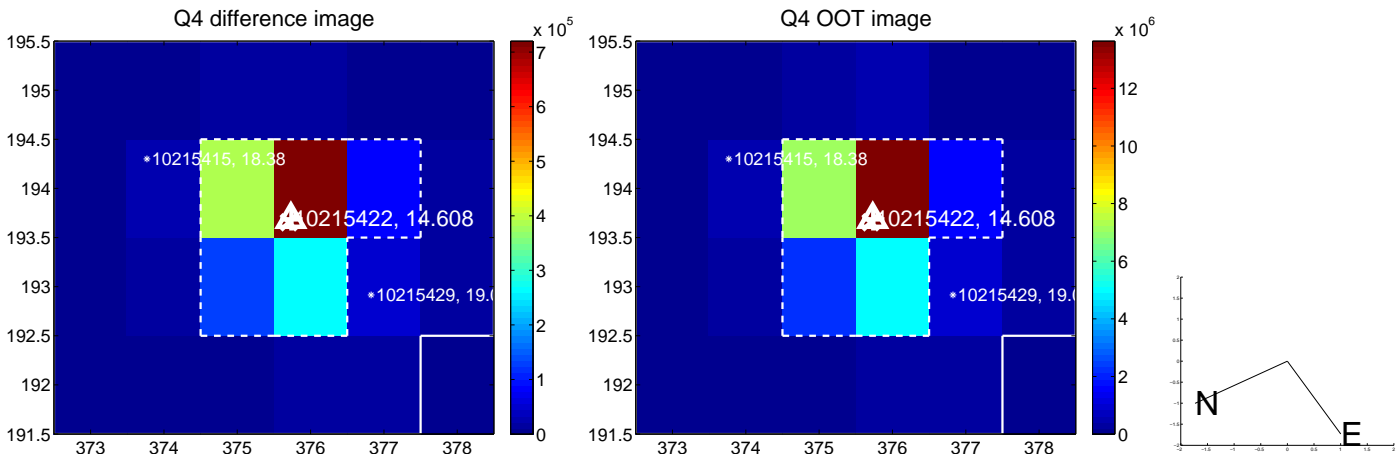
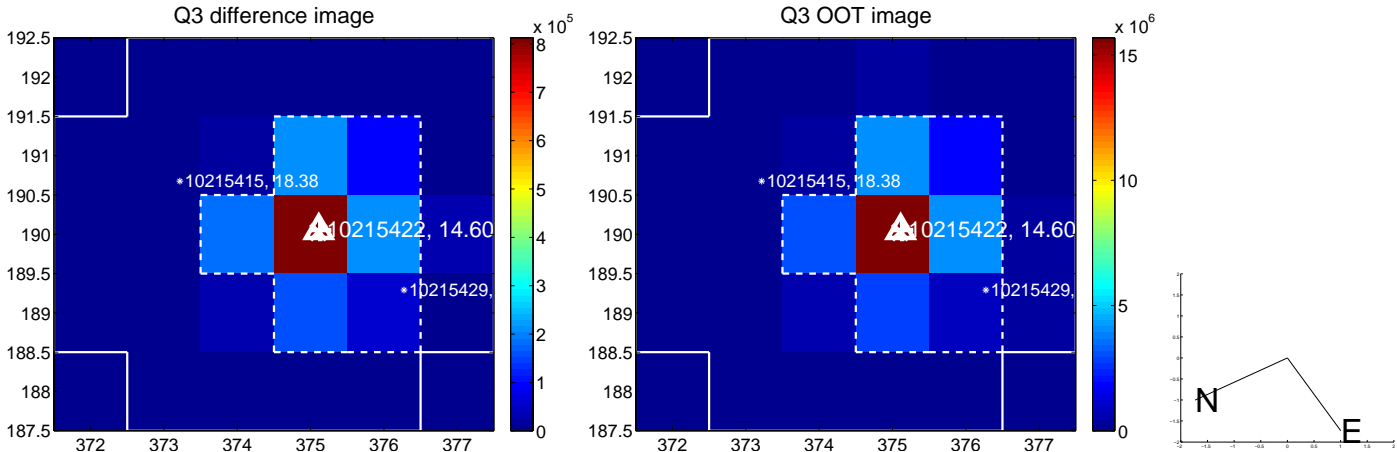
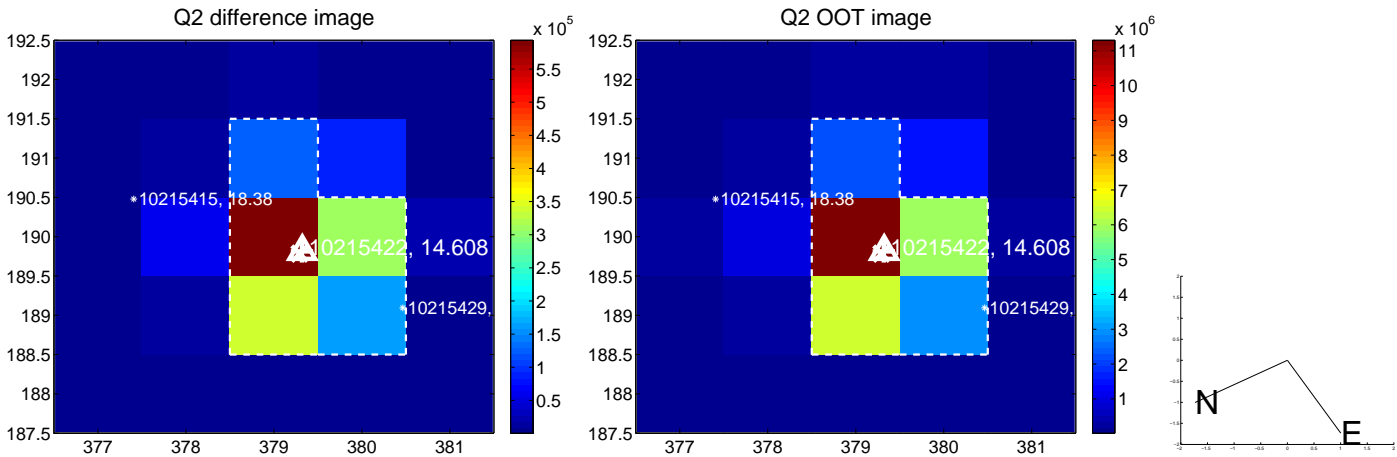
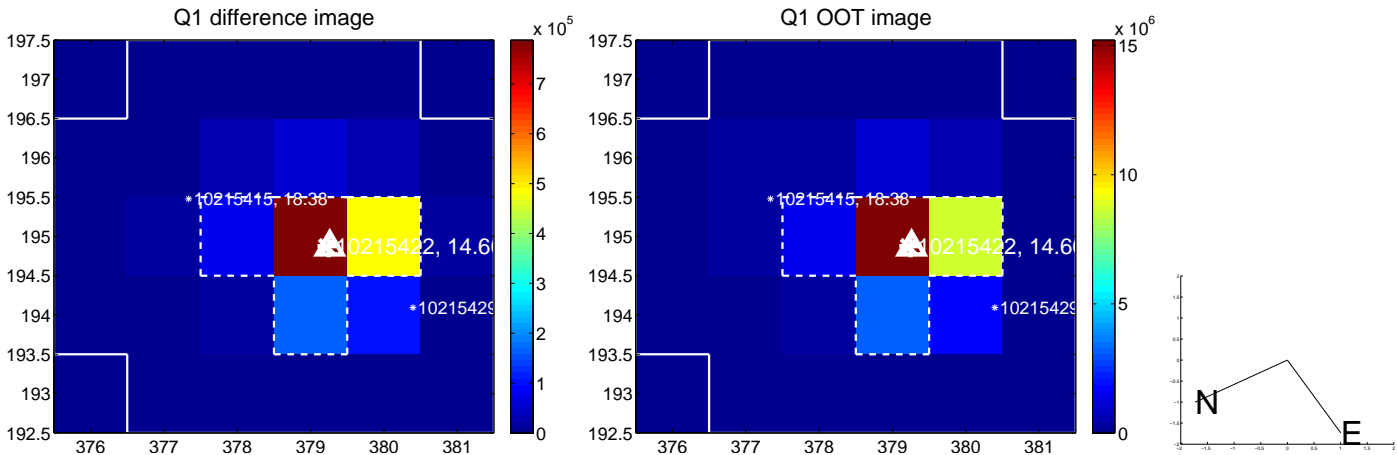
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.023 \pm 0.068$	0.34	$0.016 \pm 0.068$	$0.016 \pm 0.068$
PRF-fit source offset from KIC position	$0.157 \pm 0.068$	2.32	$-0.003 \pm 0.069$	$-0.157 \pm 0.068$
photometric centroid source offset	$0.23 \pm 0.00$	60.56	$-0.07 \pm 0.00$	$-0.22 \pm 0.00$

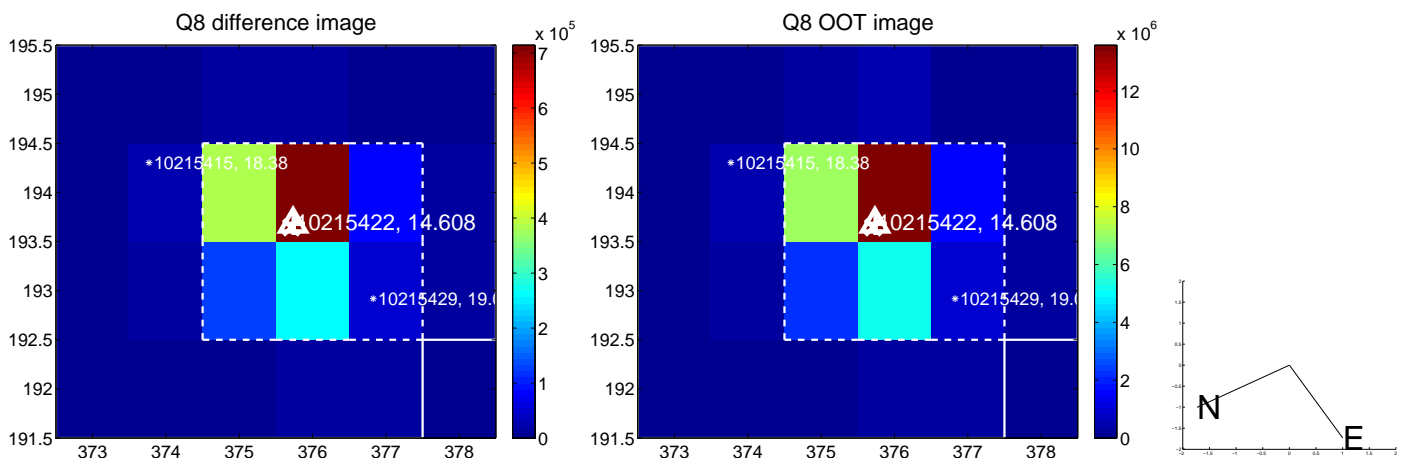
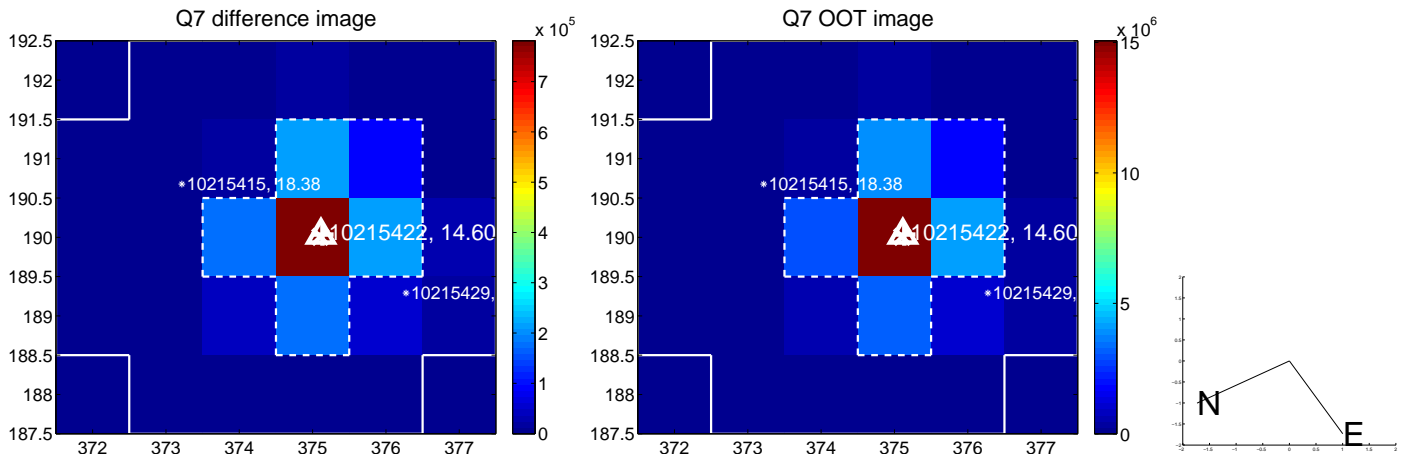
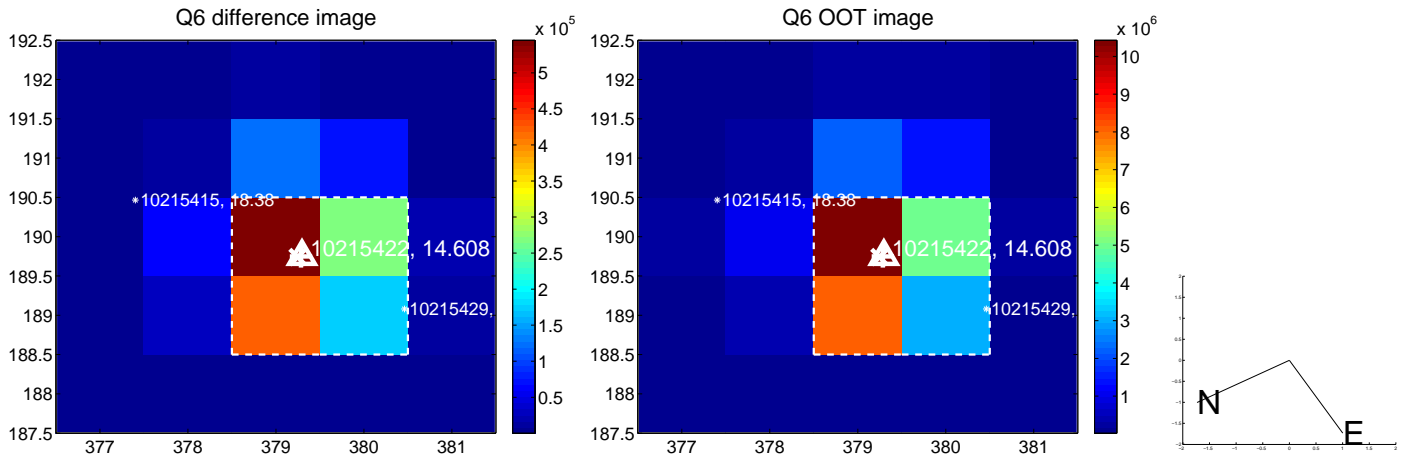
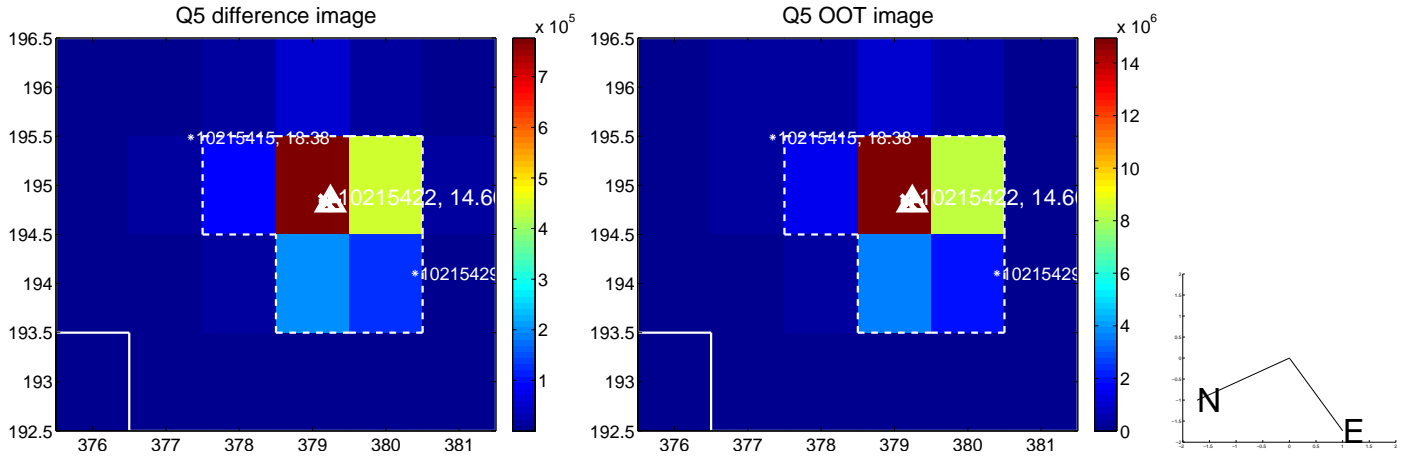


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

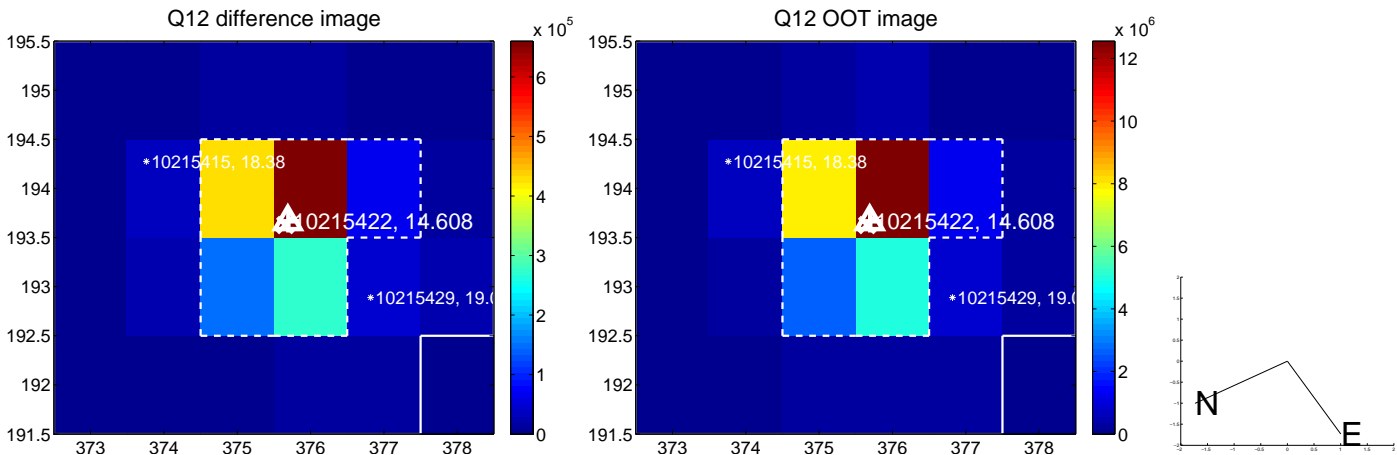
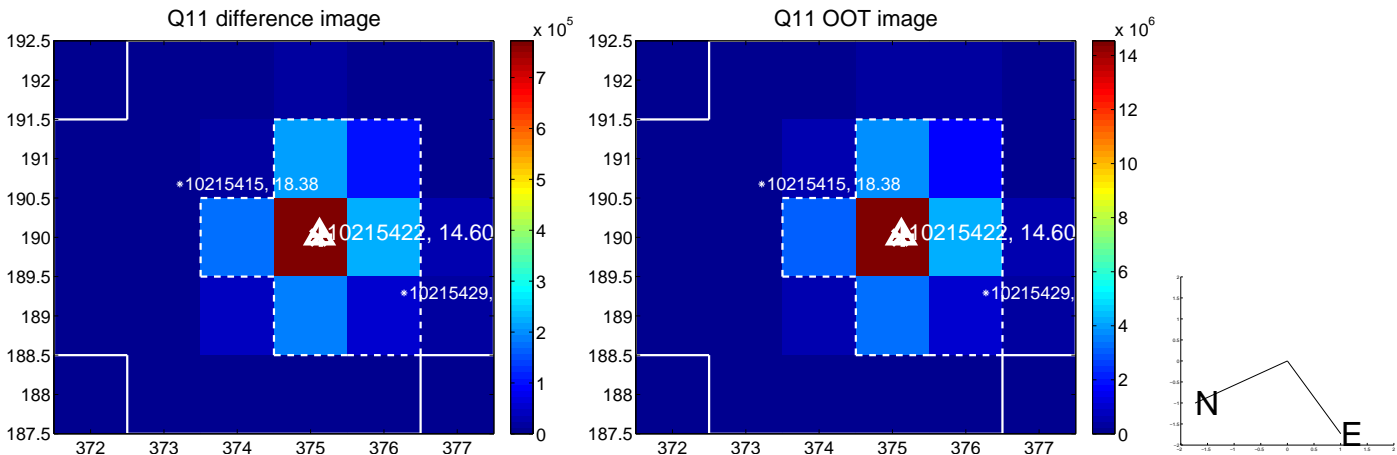
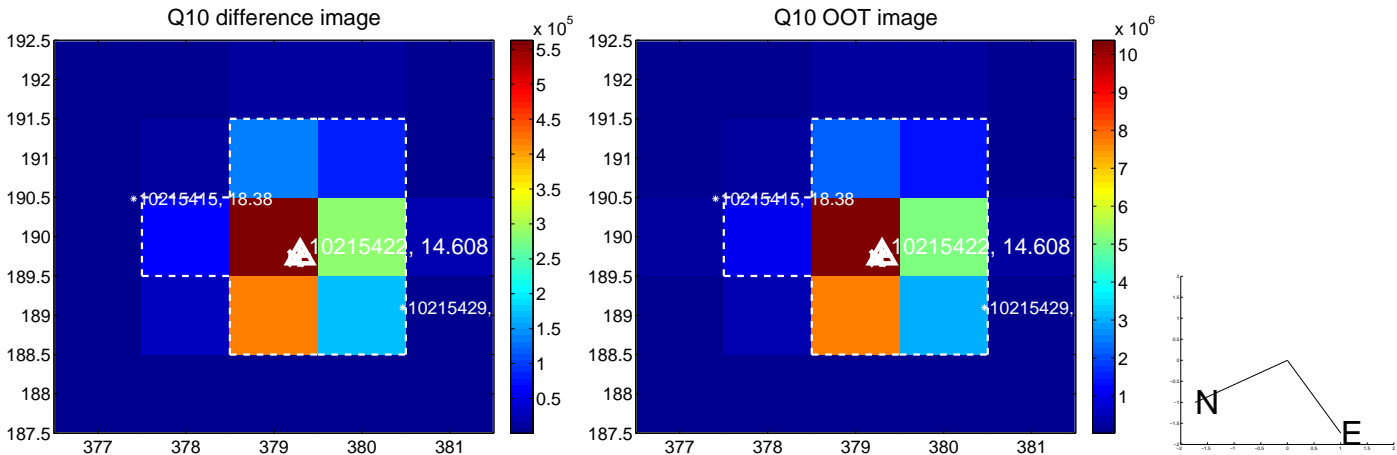
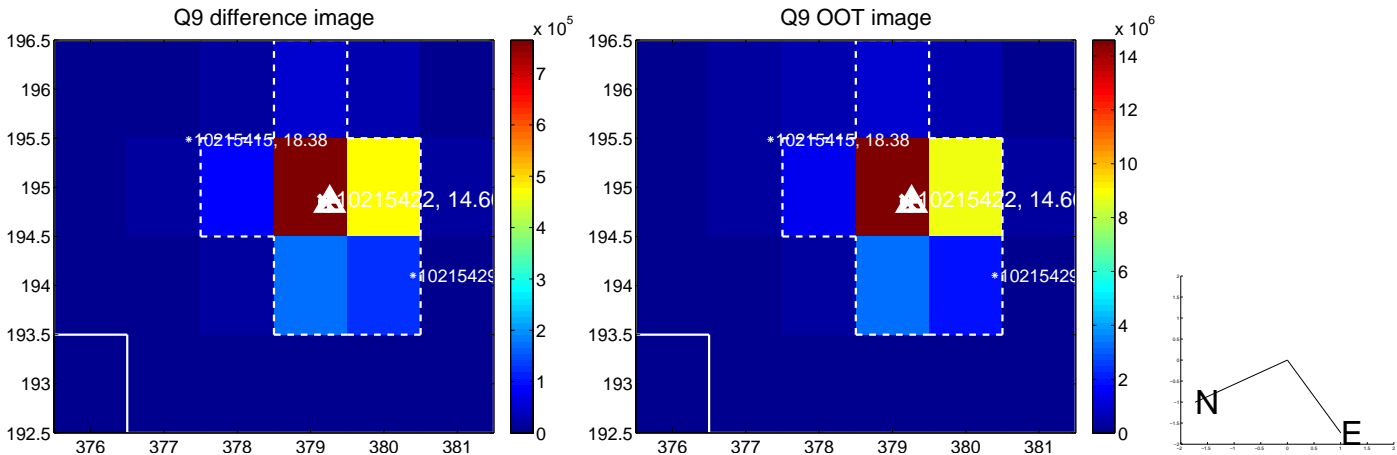
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



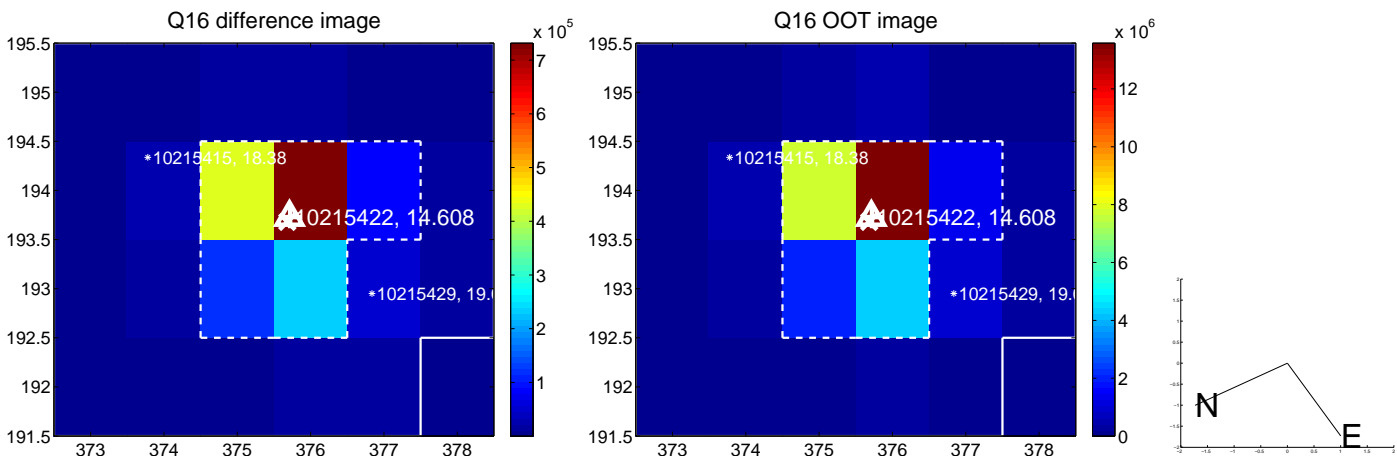
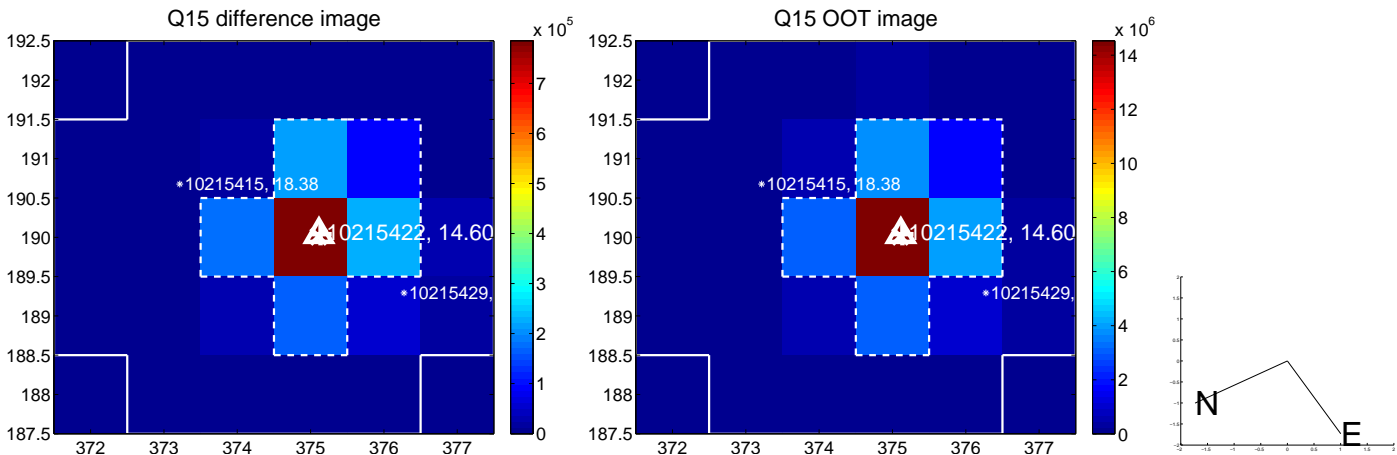
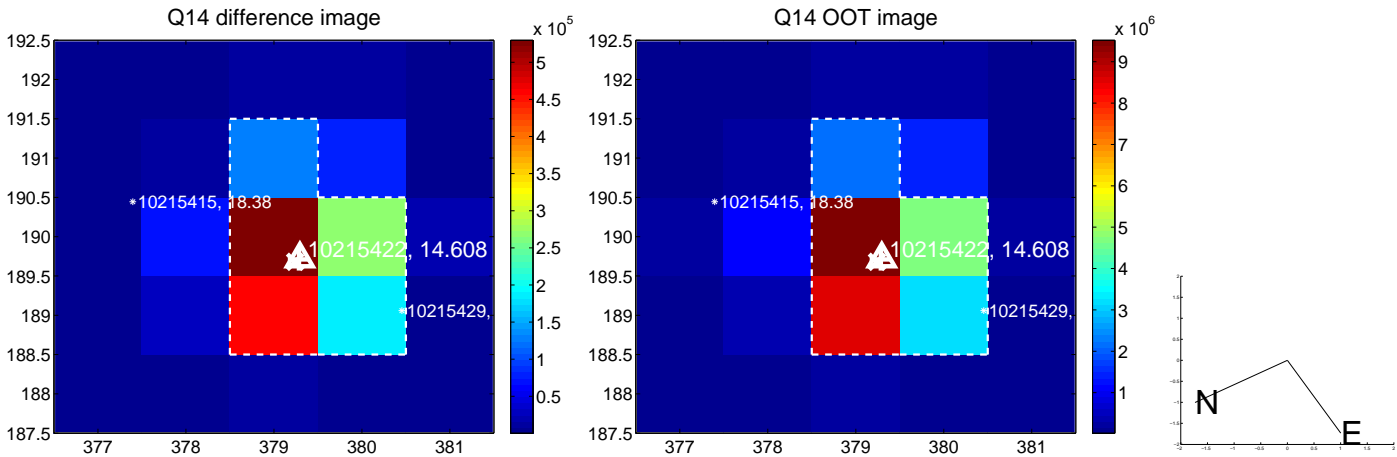
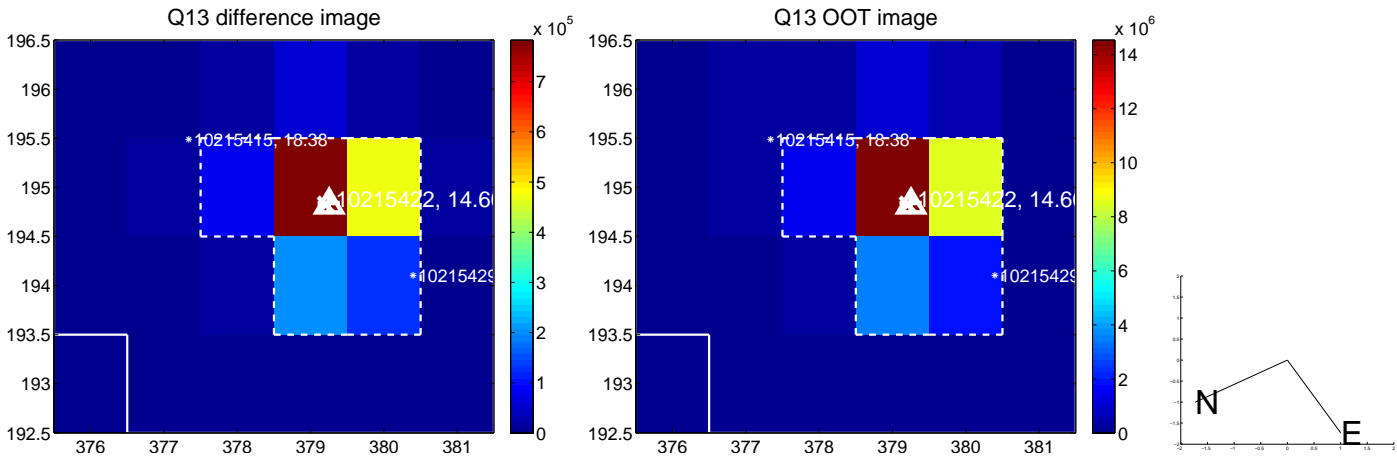
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



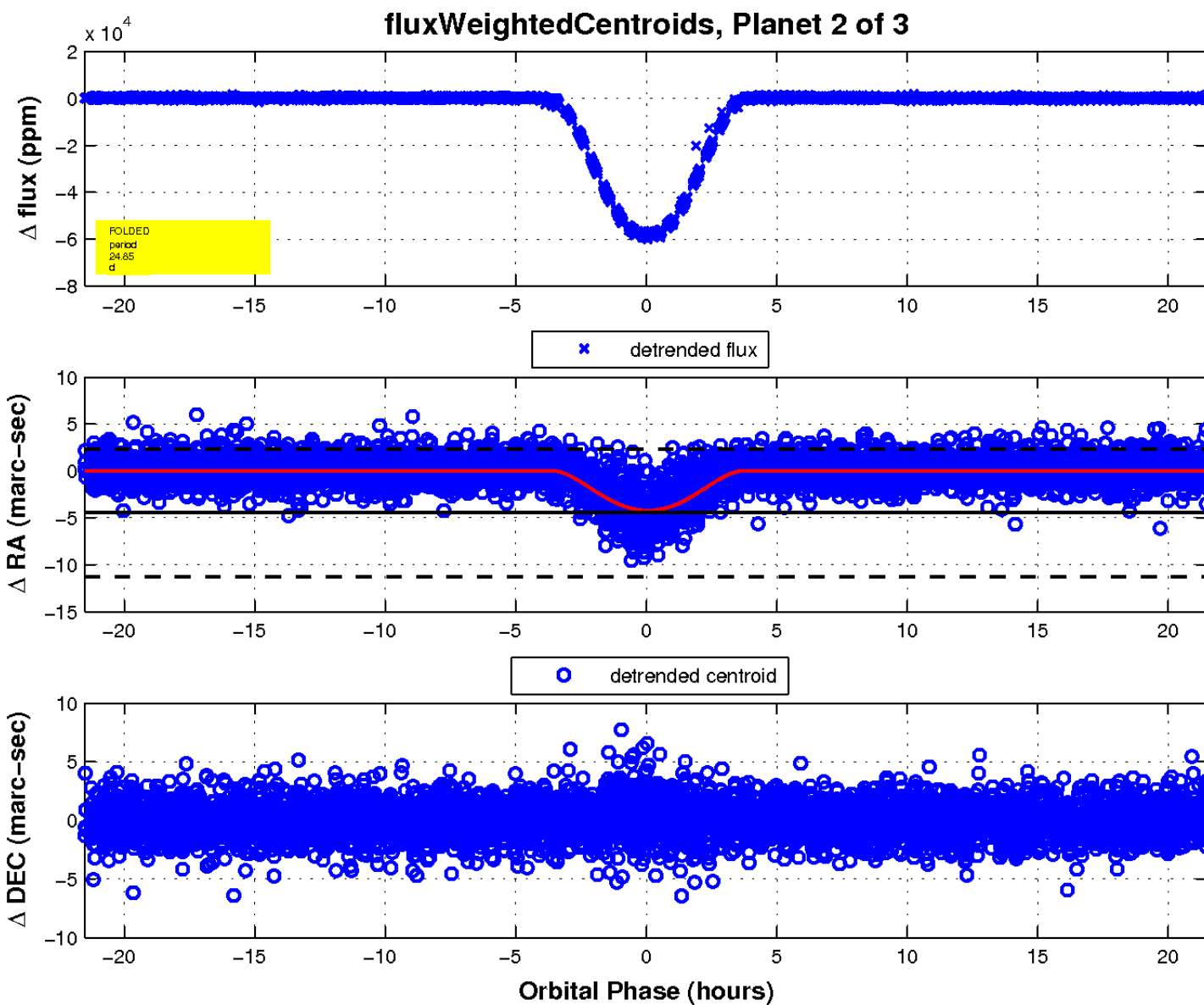
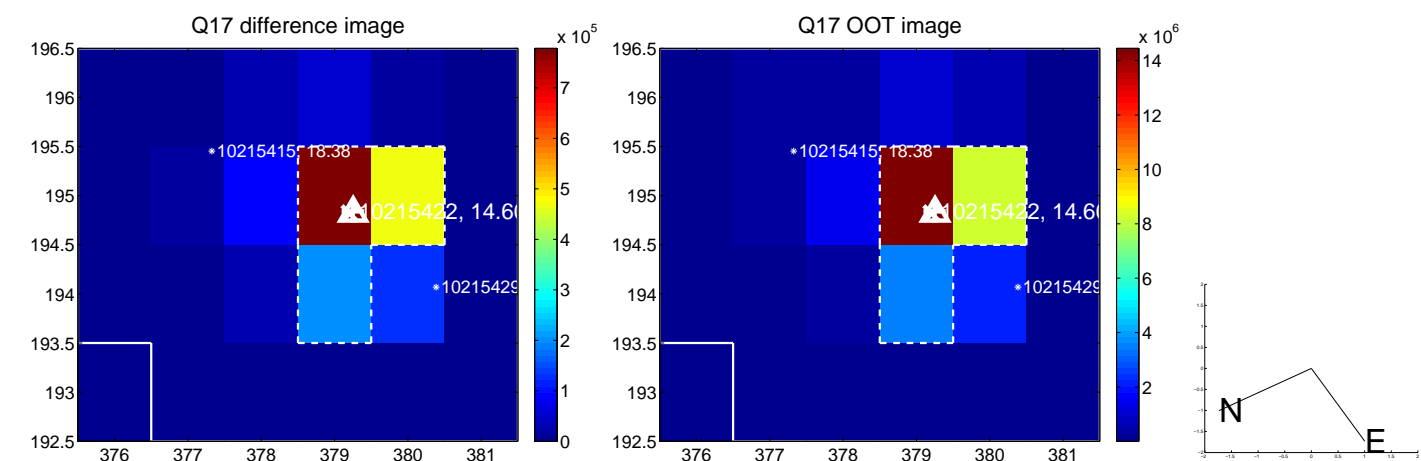
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

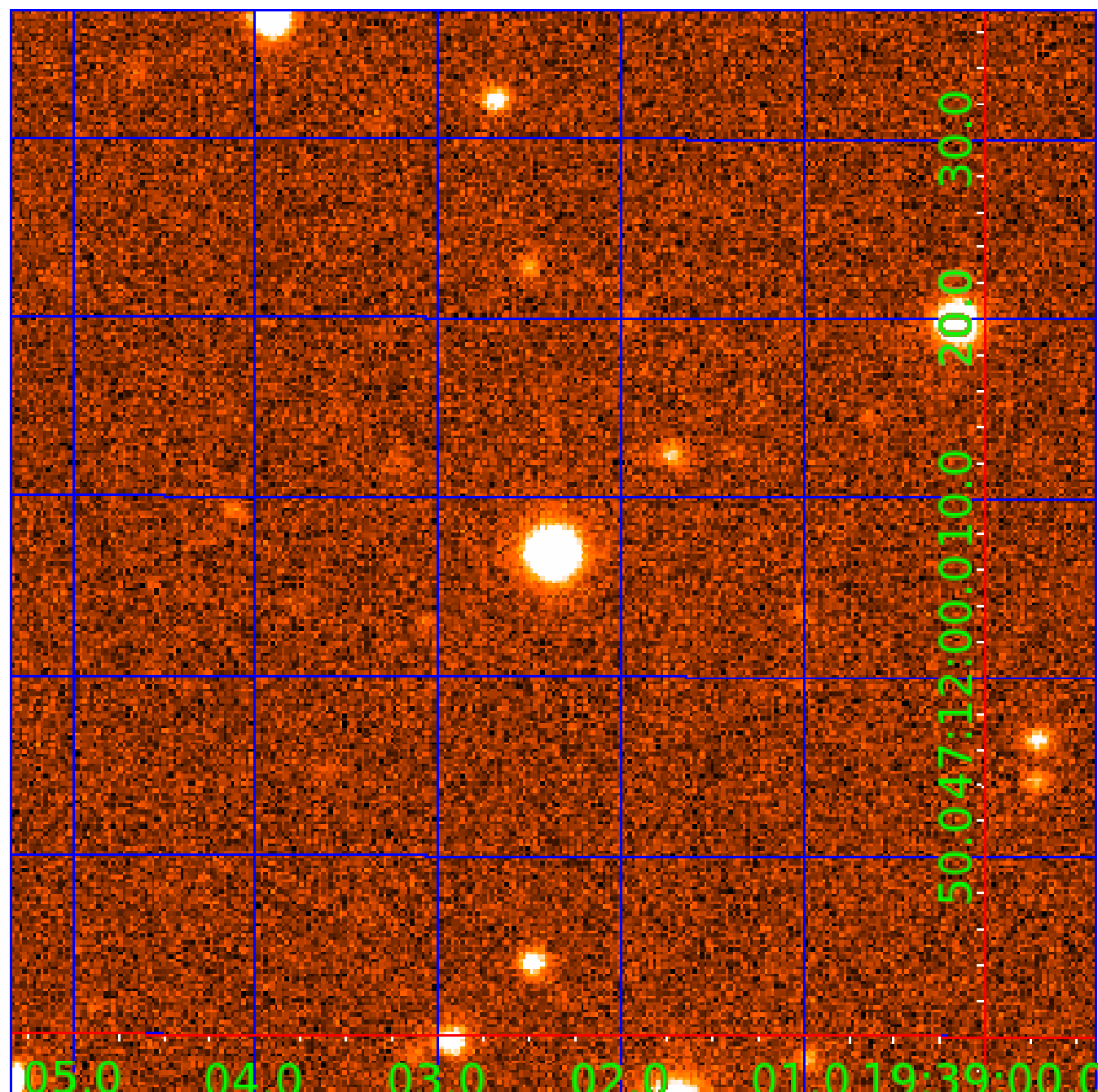


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 010215422

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010215422-01	OBS	7297.01	24.847318	154.117322	316059.0	4.500	12087.3	-1.0	0.85	5644	44.98	24.80
010215422-02	OBS	No	24.847076	146.254228	58899.5	7.174	2478.8	2158.6	0.85	5644	26.43	24.80
010215422-03	OBS	No	12.423554	141.993410	9243.6	15.000	223.6	-1.0	0.85	5644	8.11	62.50

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010215422-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
010215422-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
010215422-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—RESIDUAL_TCE—CENT_NOFITS

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

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

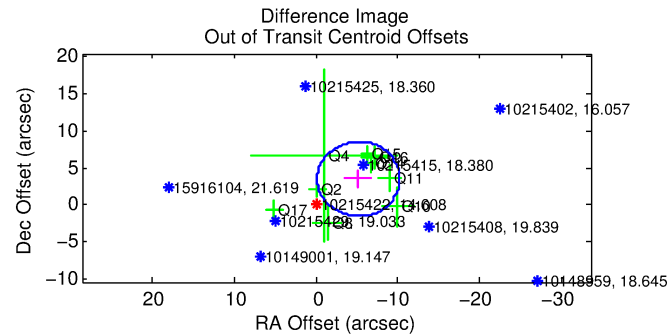
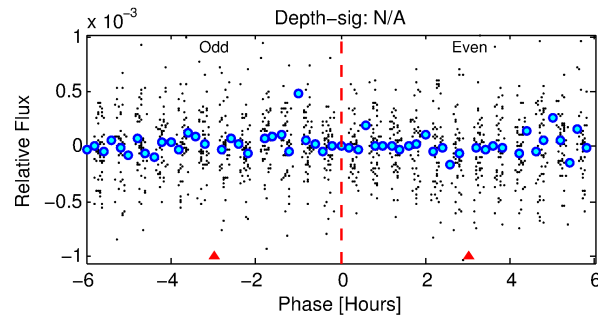
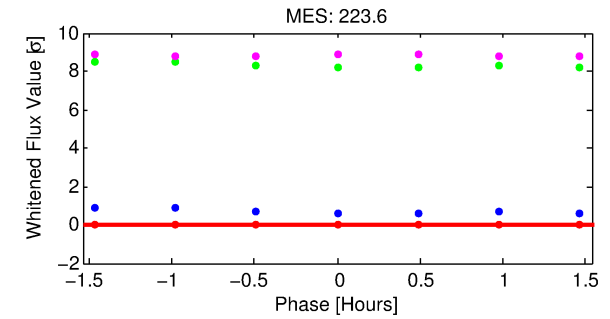
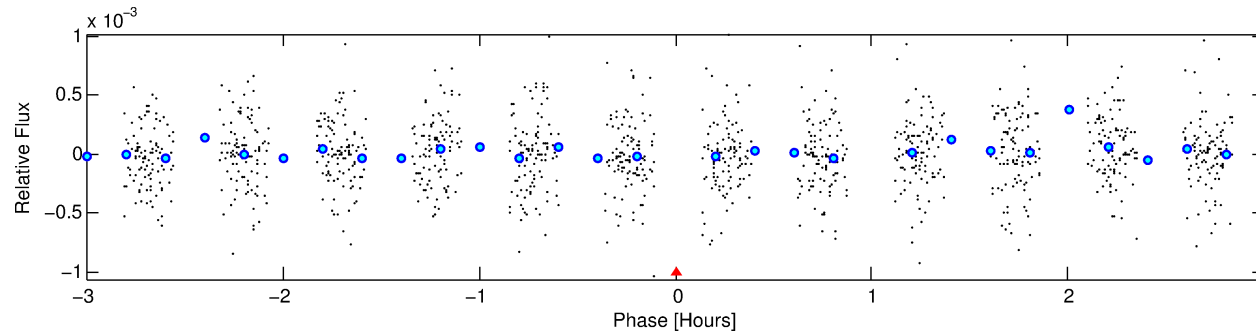
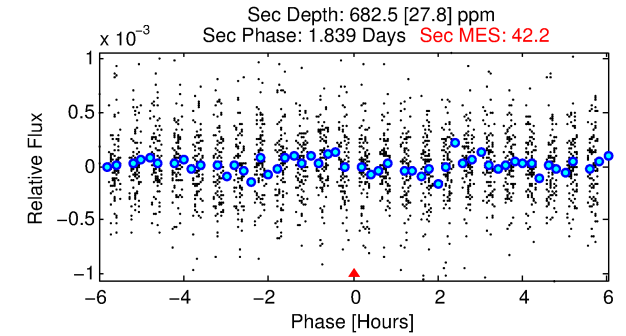
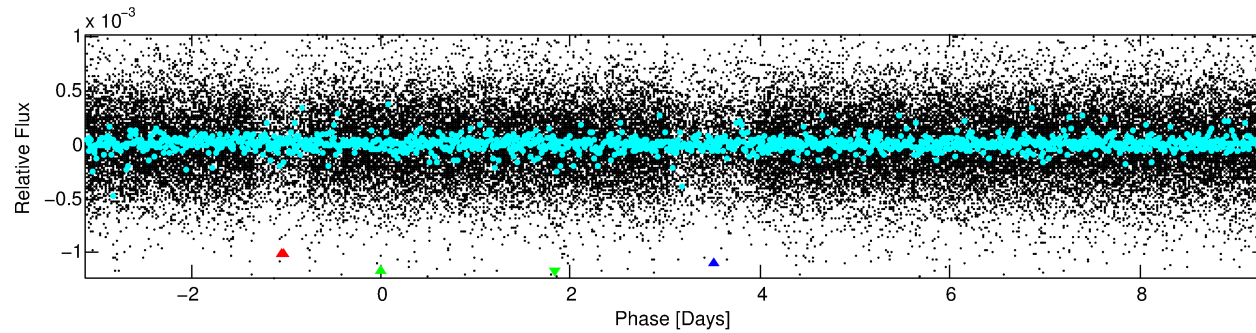
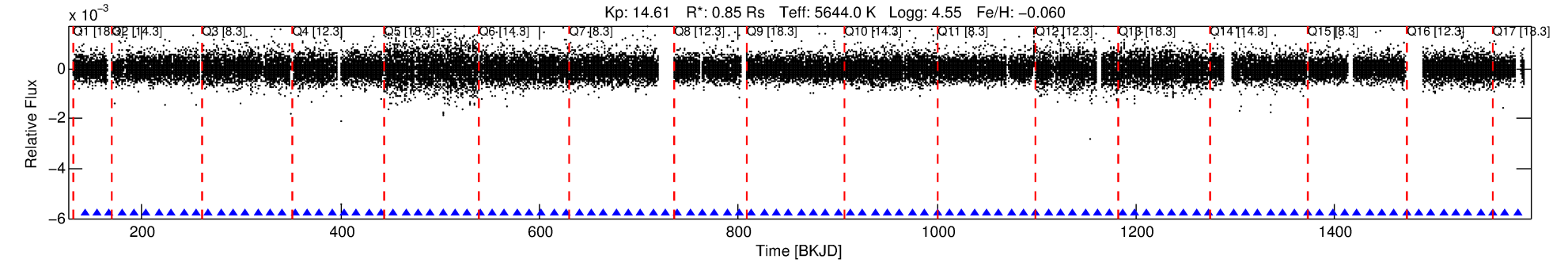
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010215422-03

No Significant Match Found

# DV One-Page Summary

KIC: 10215422 Candidate: 3 of 3 Period: 12.424 d  
KOI: K07297 Corr: No Ephemeris Match



## TPS TCE Results:

Period = 12.42355 d  
Epoch = 141.9934 BKJD

**DV fit results are unavailable**

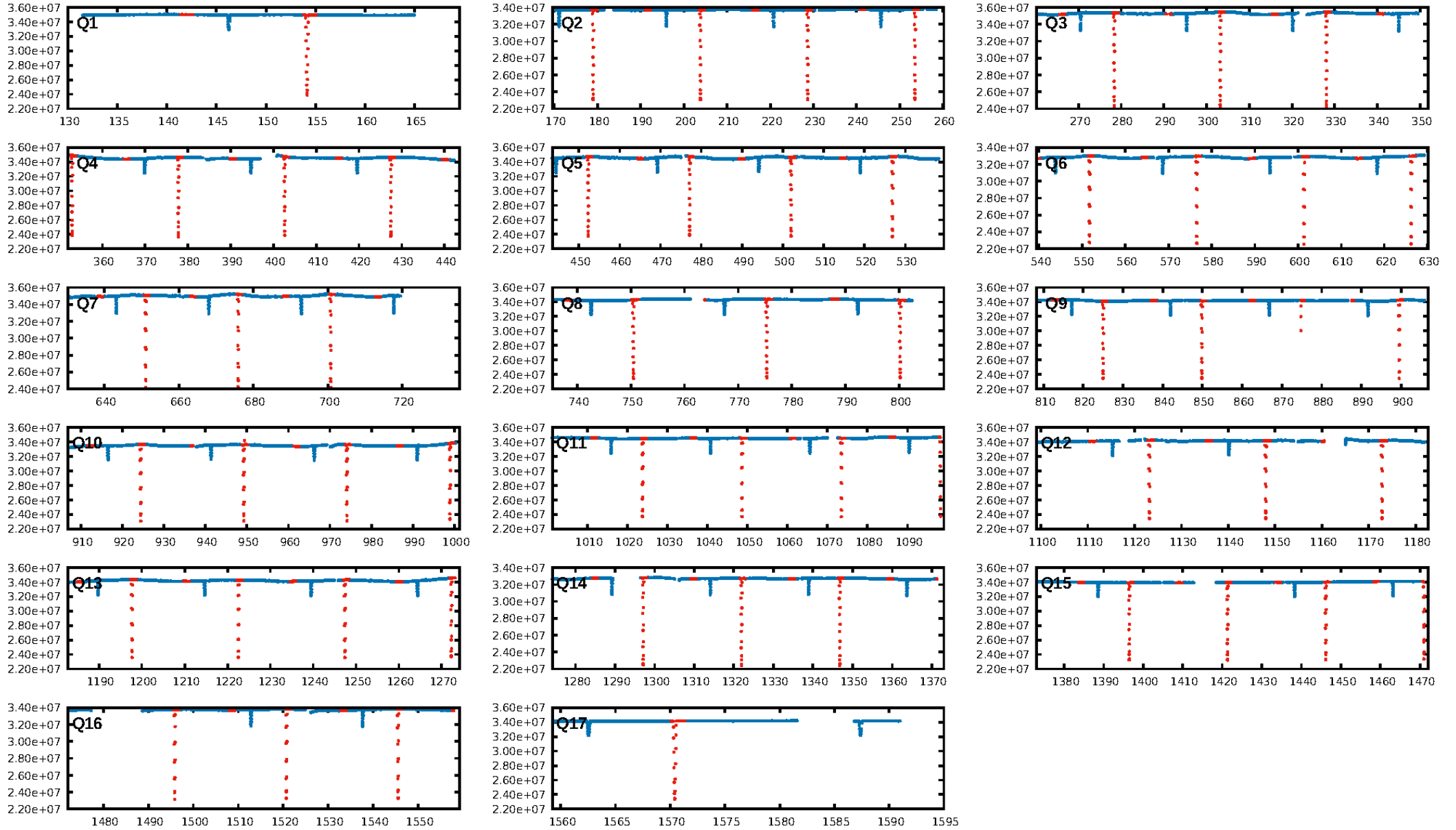
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [17.93σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [104/104]  
GhostDiagnostic-chr: -1.133  
Centroid-sig: N/A  
Centroid-so: 5.439 arcsec [0.37σ]  
**OotOffset-rm: 6.231 arcsec [3.70σ]**  
**KicOffset-rm: 6.178 arcsec [4.14σ]**  
OotOffset-st: 3/2/3/1 [9]  
KicOffset-st: 3/2/3/1 [9]  
DiffImageQuality-fgm: 0.11 [1/9]  
DiffImageOverlap-fno: 1.00 [13/13]

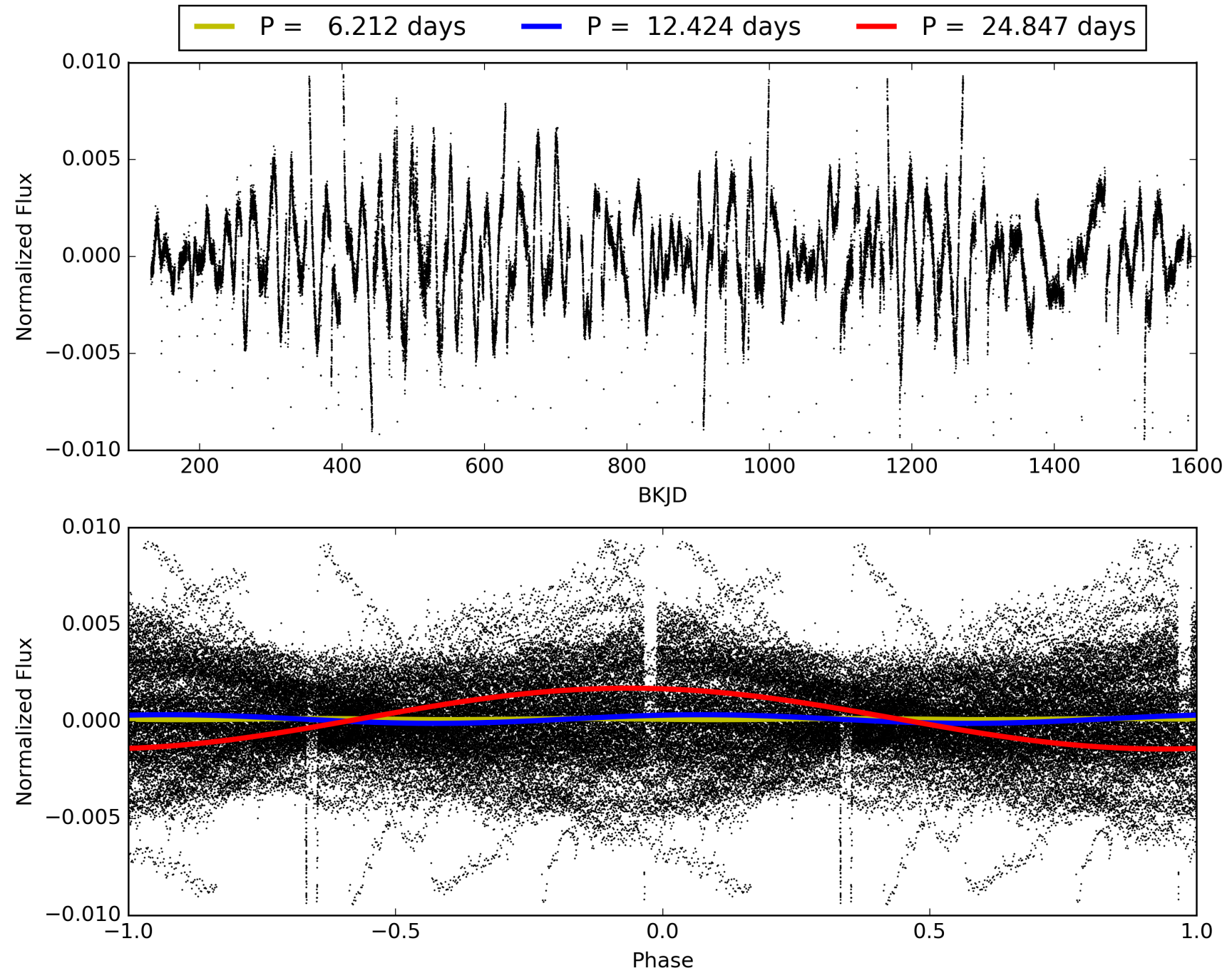
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:57:38 Z

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

# TCE 010215422-03, PDC Light Curves

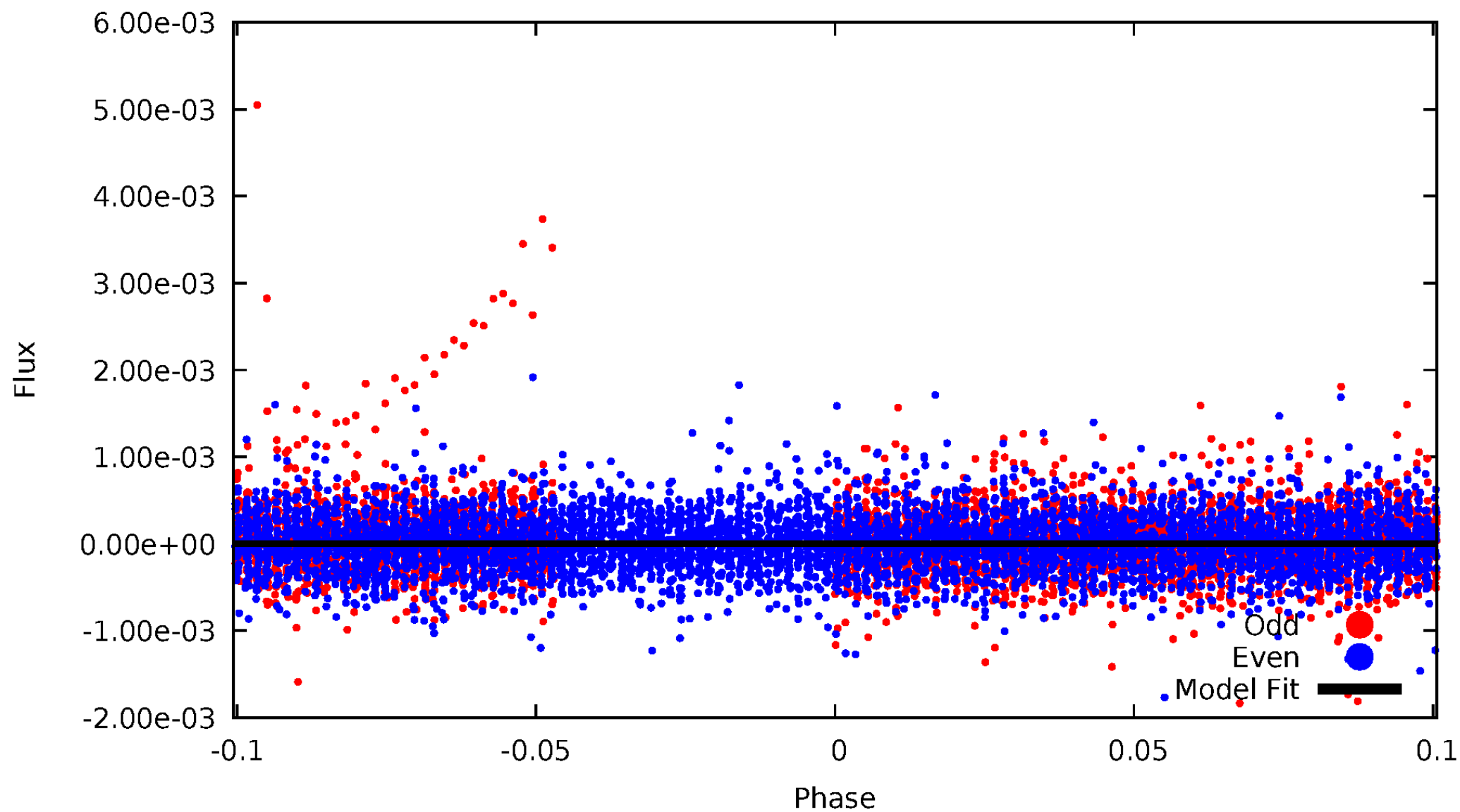


TCE 010215422-03



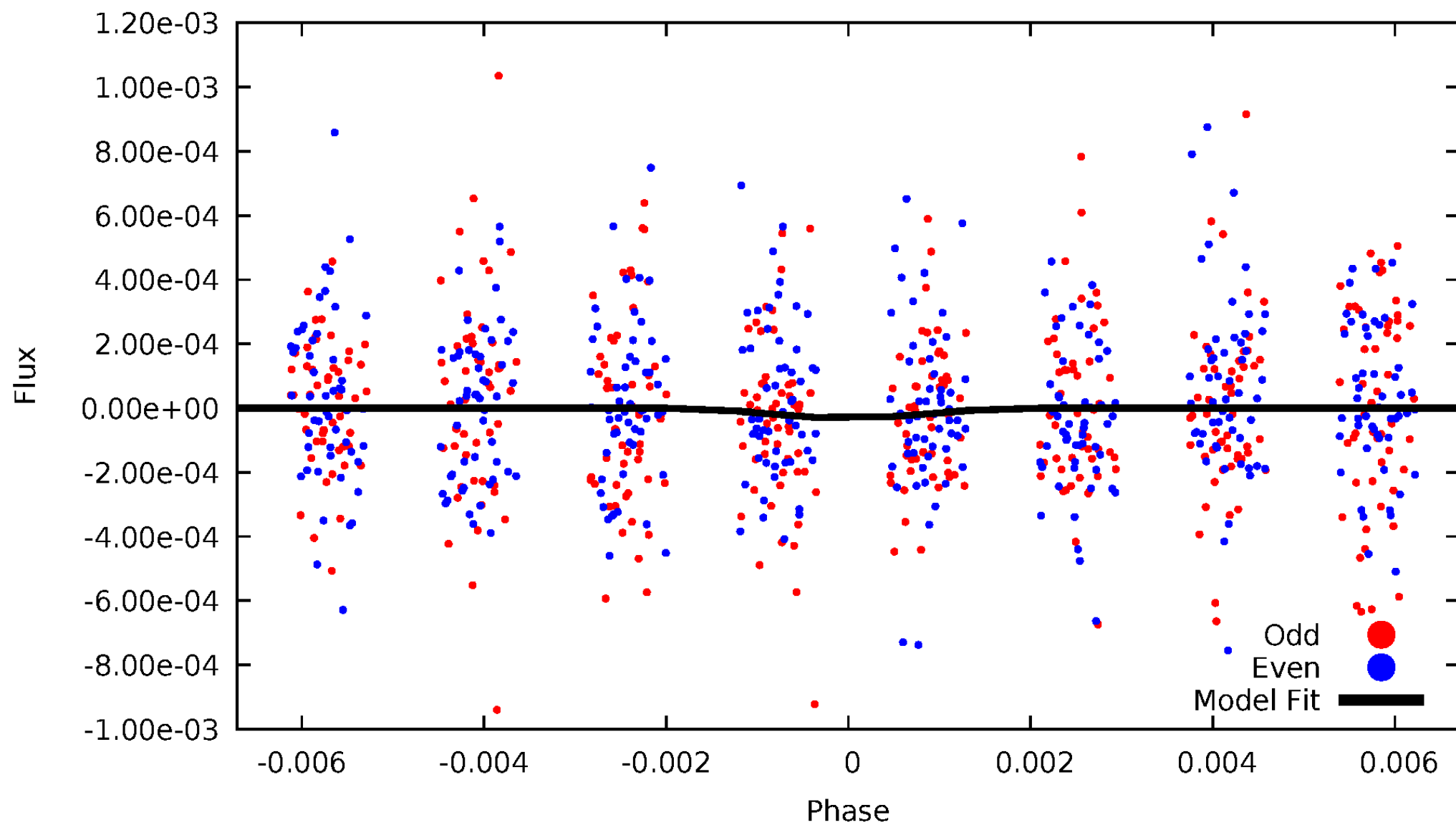
# DV Odd/Even

TCE 010215422-03

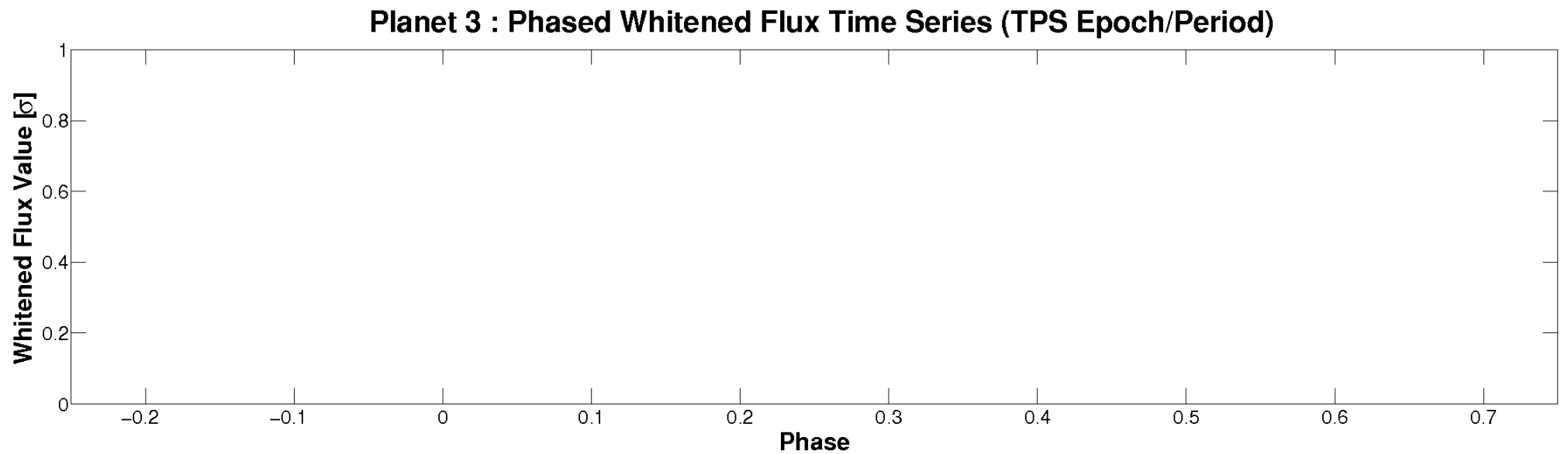
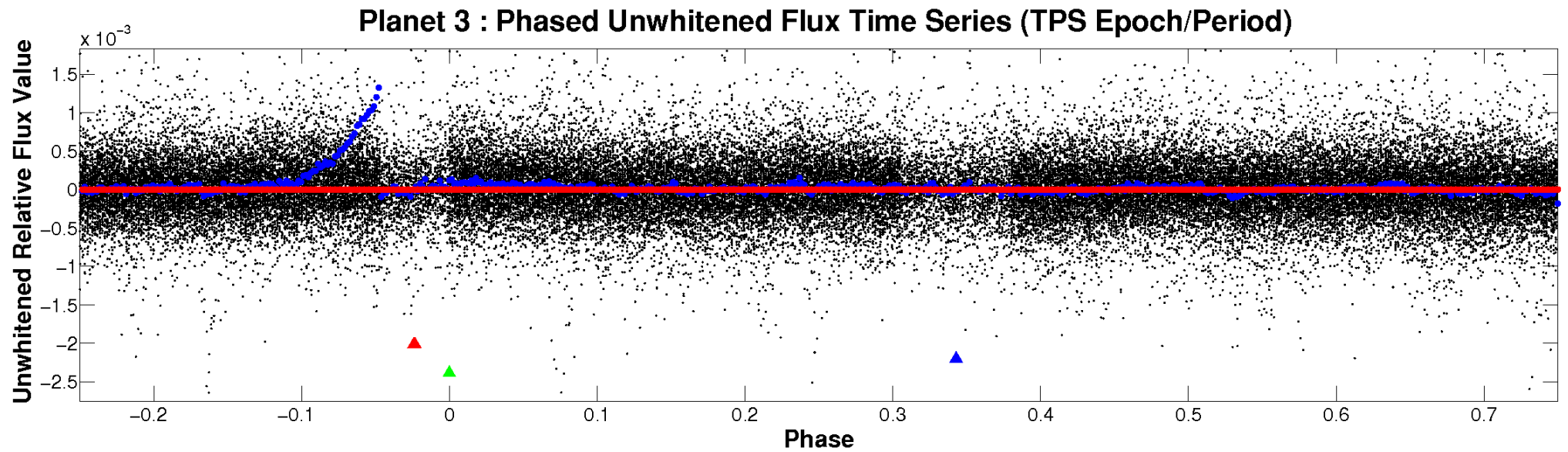


# ALT Odd/Even

TCE 010215422-03

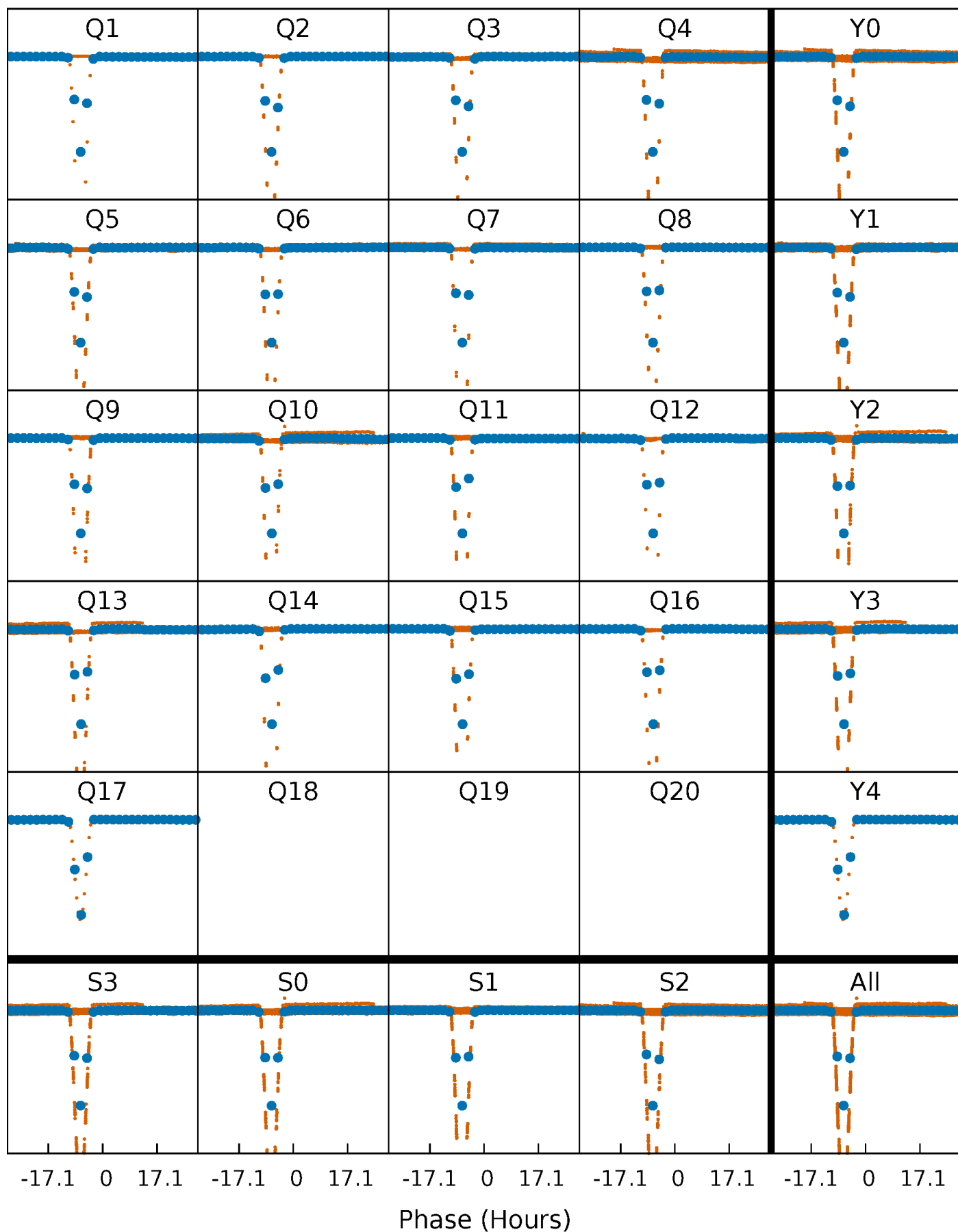


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

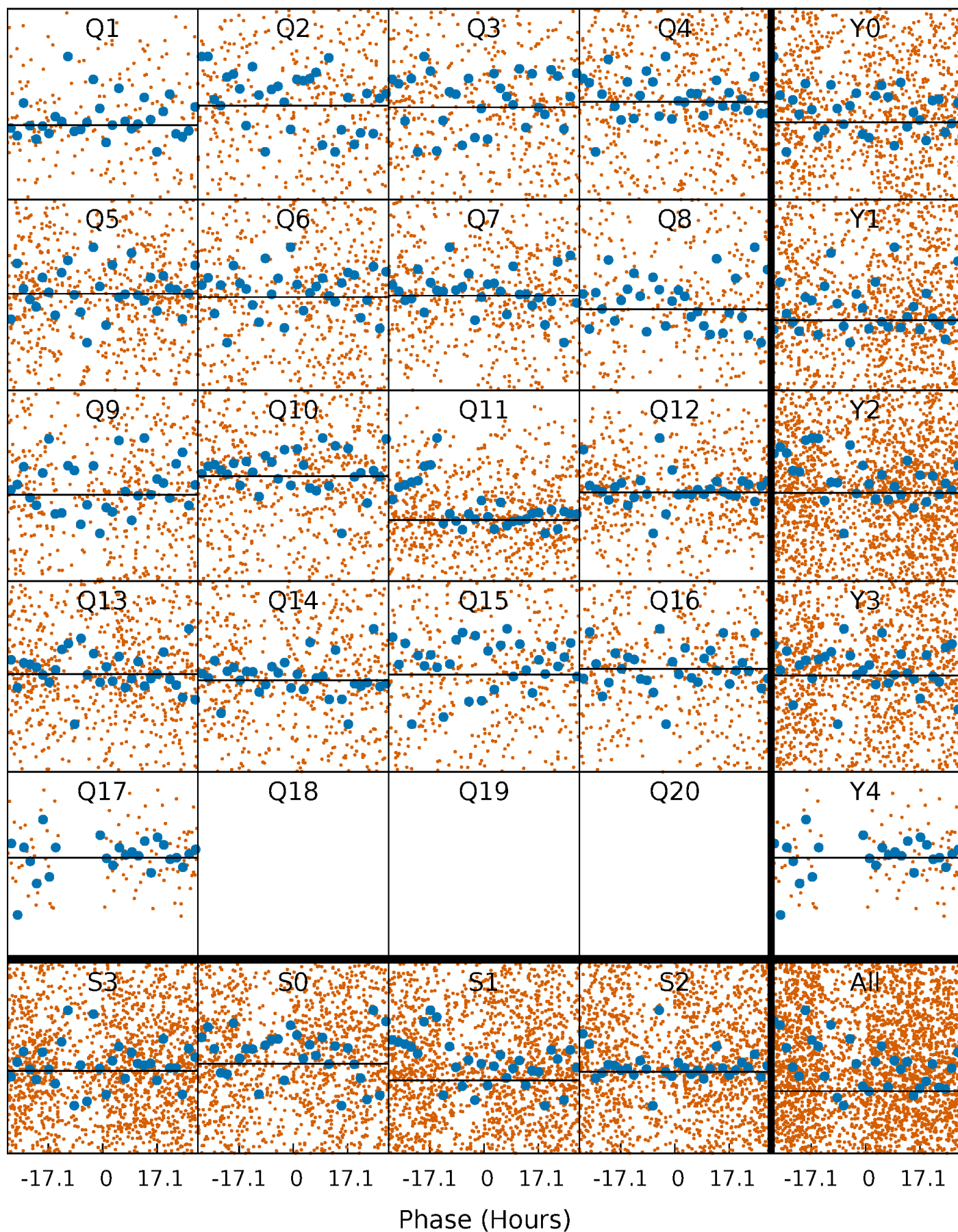
TCE 010215422-03 P= 12.423554 Days  $T_0=141.993410$  (BKJD)





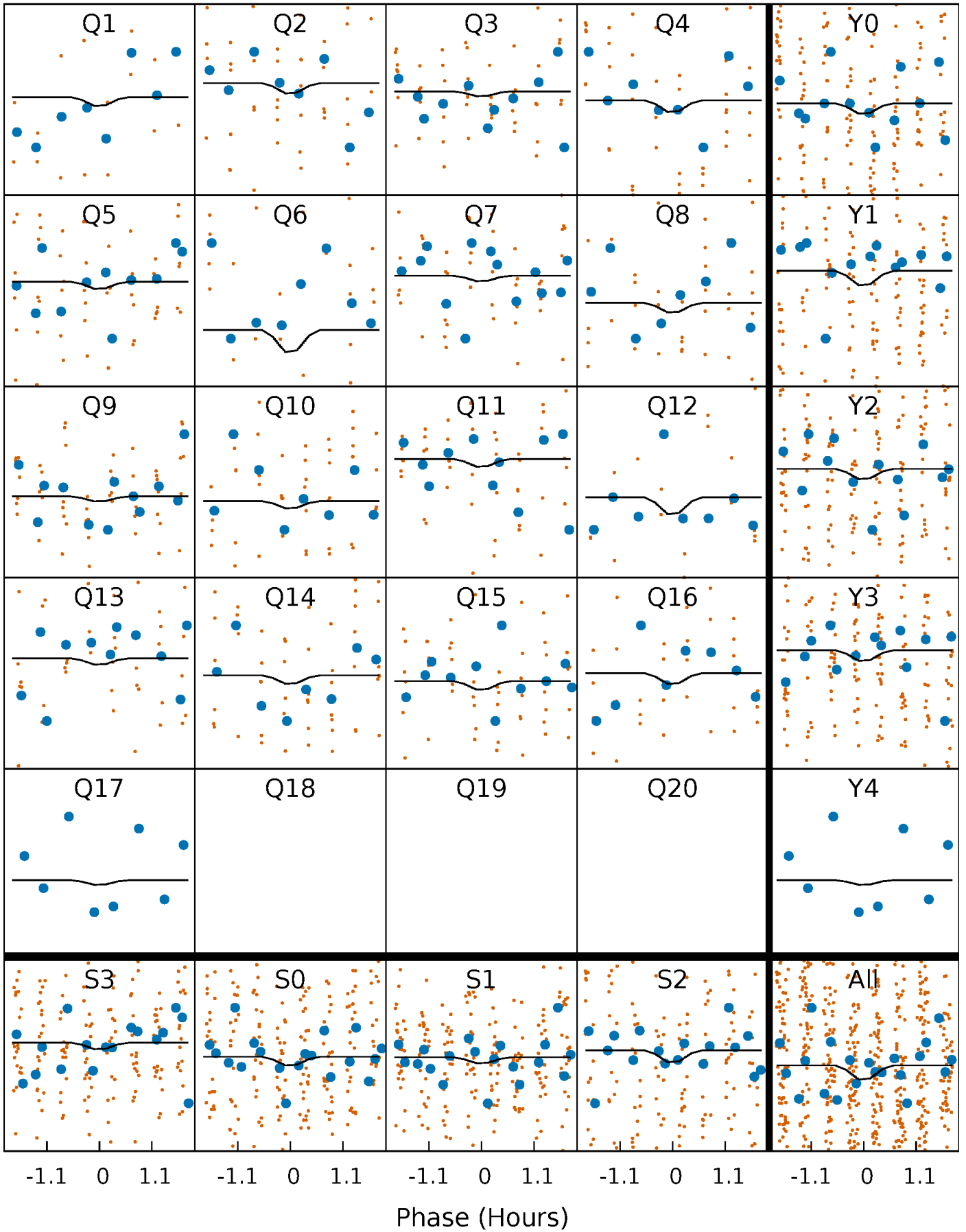
# DV Quarter-Phased Transit Curves

TCE 010215422-03 P= 12.423554 Days  $T_0=141.993410$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

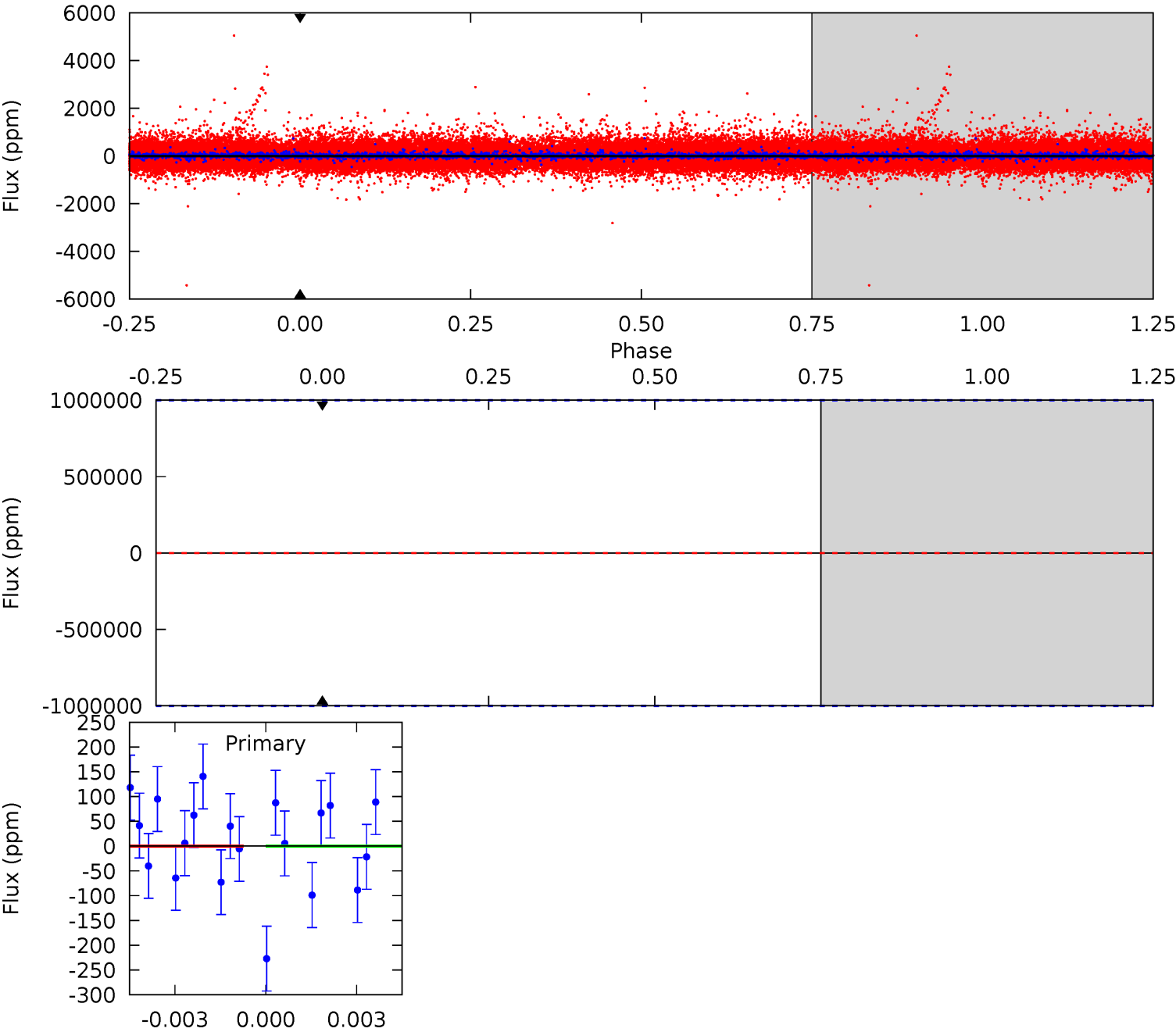
TCE 010215422-03   P= 12.423554 Days    $T_0=142.743752$  (BKJD)



# DV Model-Shift Uniqueness Test

010215422-03, P = 12.423554 Days, E = 129.569856 Days

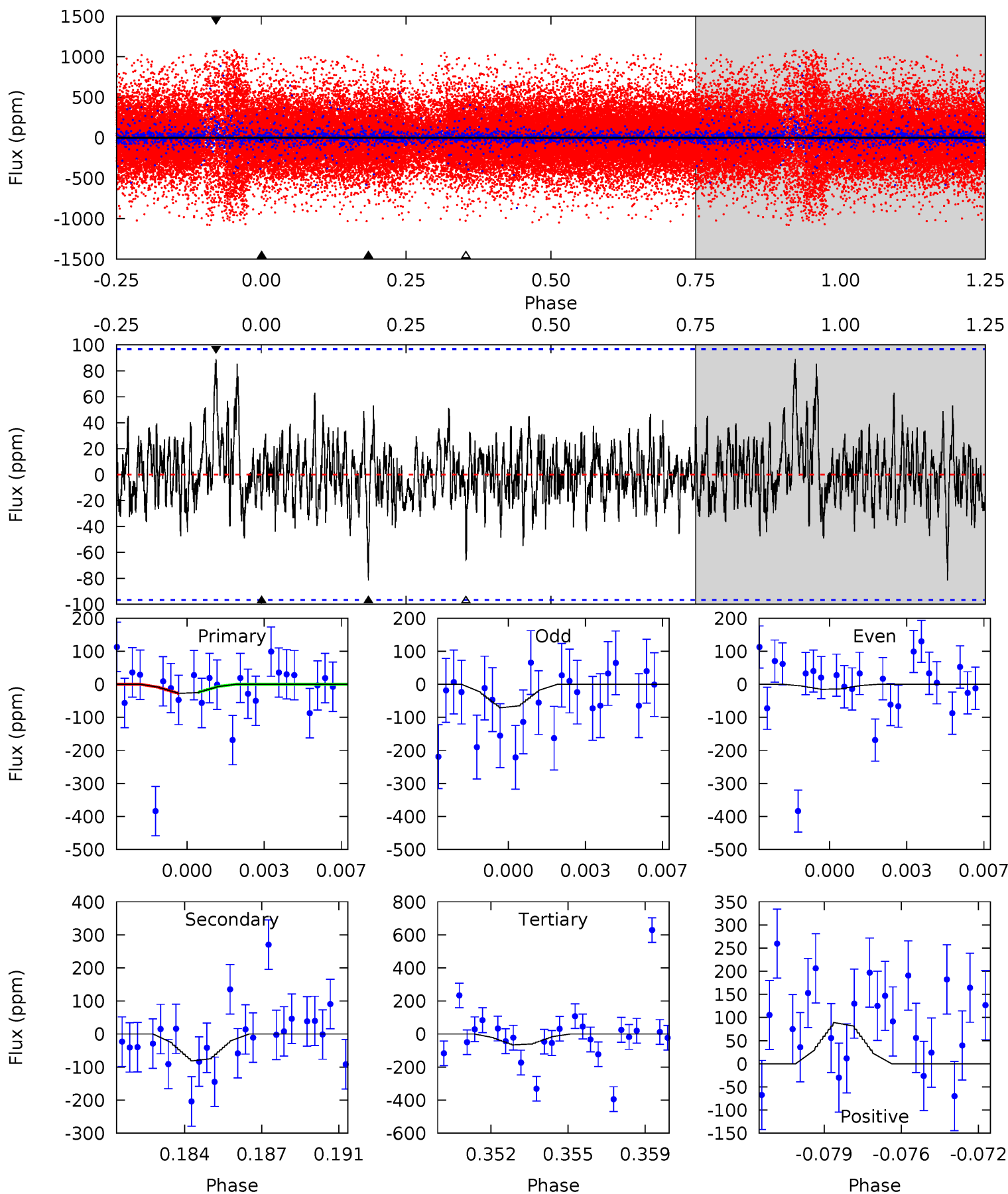
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

010215422-03, P = 12.423554 Days, E = 130.320198 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
1.49	4.41	3.55	4.82	5.24	2.94	1.04	-2.06	-3.33	0.86	-0.41	1.52	1.98	0.52	0.09



### Stellar Parameters For KIC 010215422

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5644^{+169}_{-152}$	$4.550^{+0.035}_{-0.196}$	$-0.060^{+0.300}_{-0.300}$	$0.854^{+0.233}_{-0.078}$	$0.943^{+0.095}_{-0.104}$	$2.137^{+0.391}_{-1.039}$
	+3%/-3%	+1%/-4%	+500%/-500%	+27%/-9%	+10%/-11%	+18%/-49%
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 010215422-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$11.01^{+9.01}_{-6.78}$	$1027^{+69}_{-45}$	$4278^{+9349}_{-16779}$	$157^{+8673}_{-7464}$
Alt.	$-81 \pm 18$	$6.85^{+7.71}_{-4.76}$	$1027^{+67}_{-45}$	$2752^{+1258}_{-488}$	$9.707^{+98.816}_{-7.621}$

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

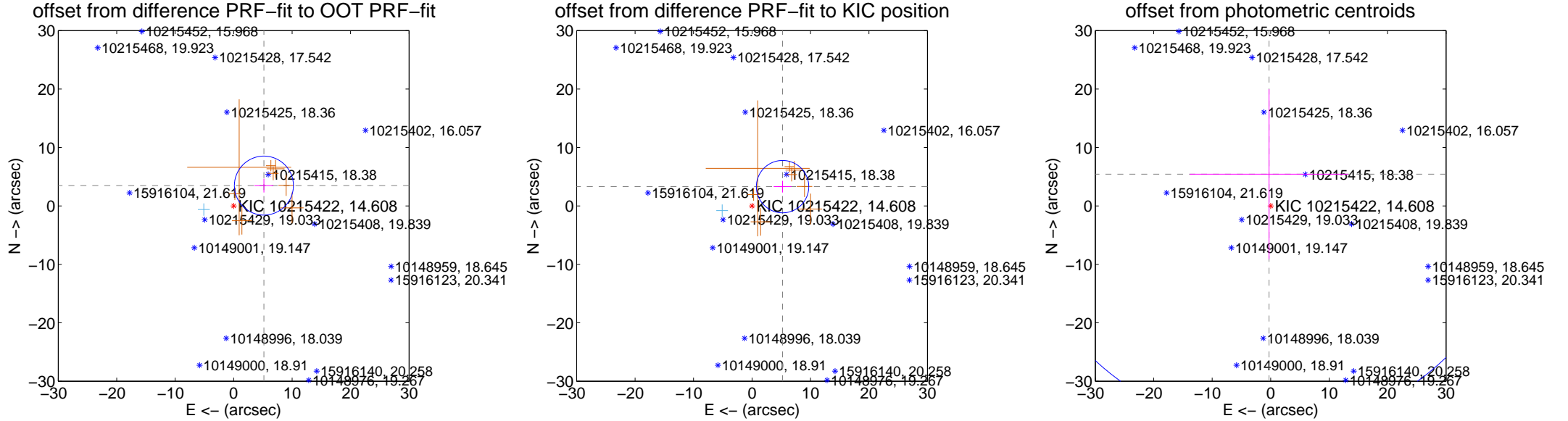
## DV Centroid Data

Supplemental centroid analysis for 010215422-03. Kepler magnitude: 14.61. Transit SNR -1.00

There are 1 quarters with good PRF difference image offsets

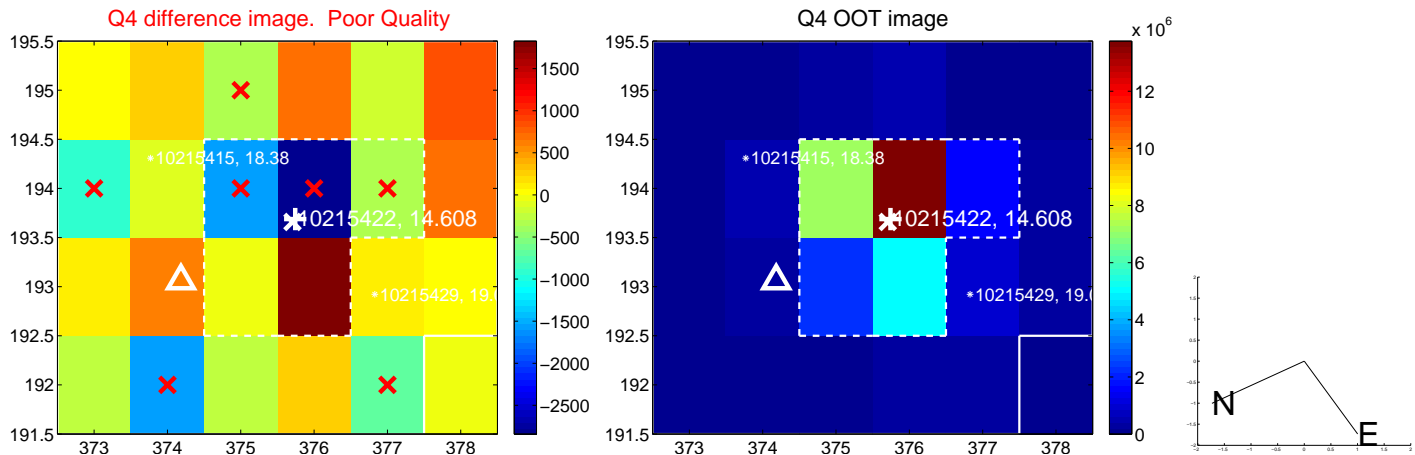
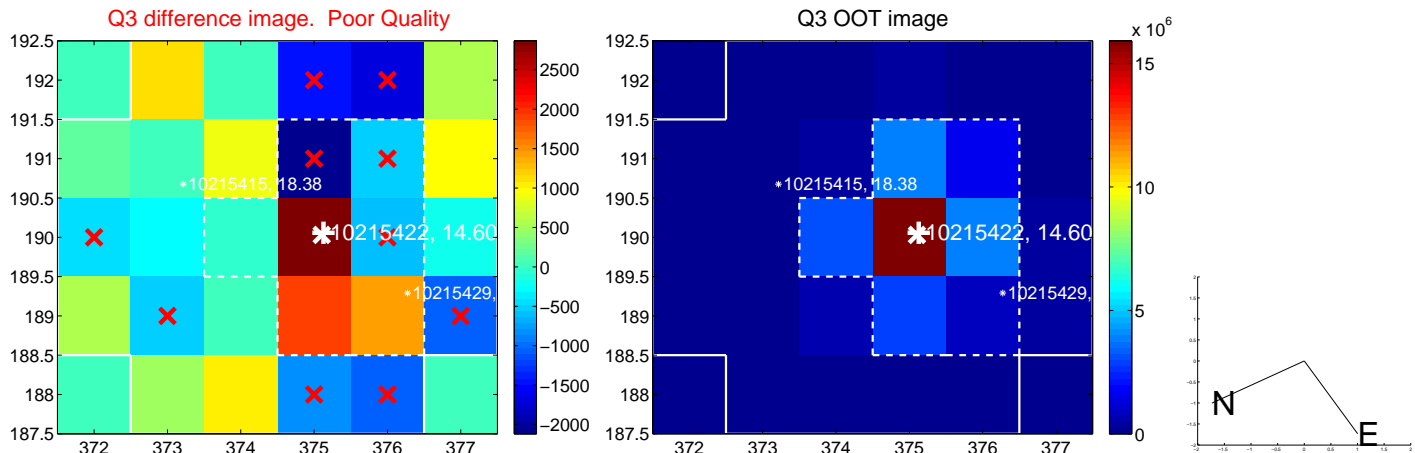
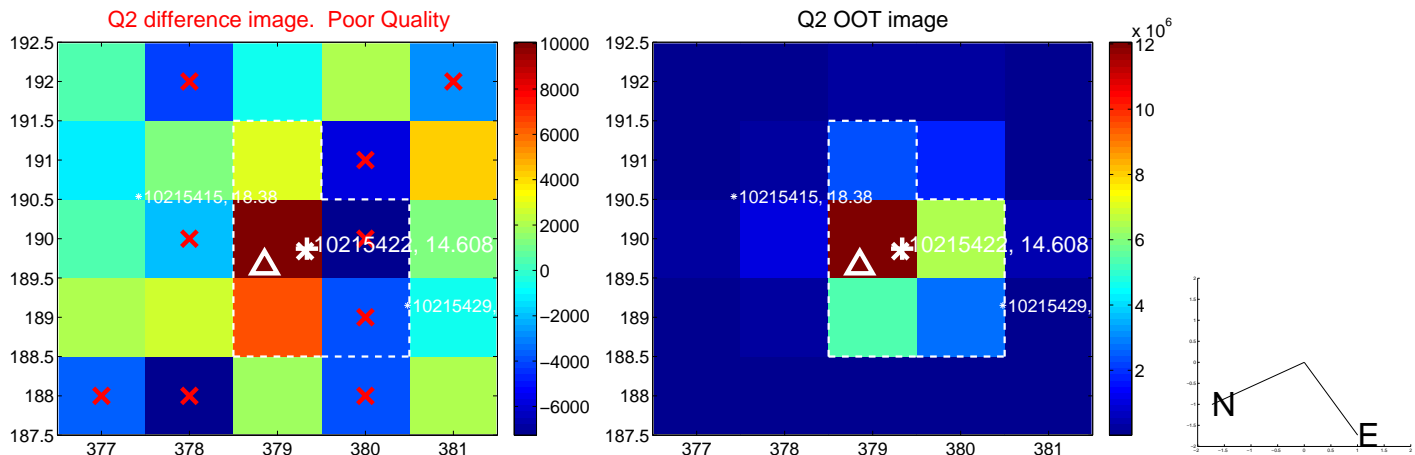
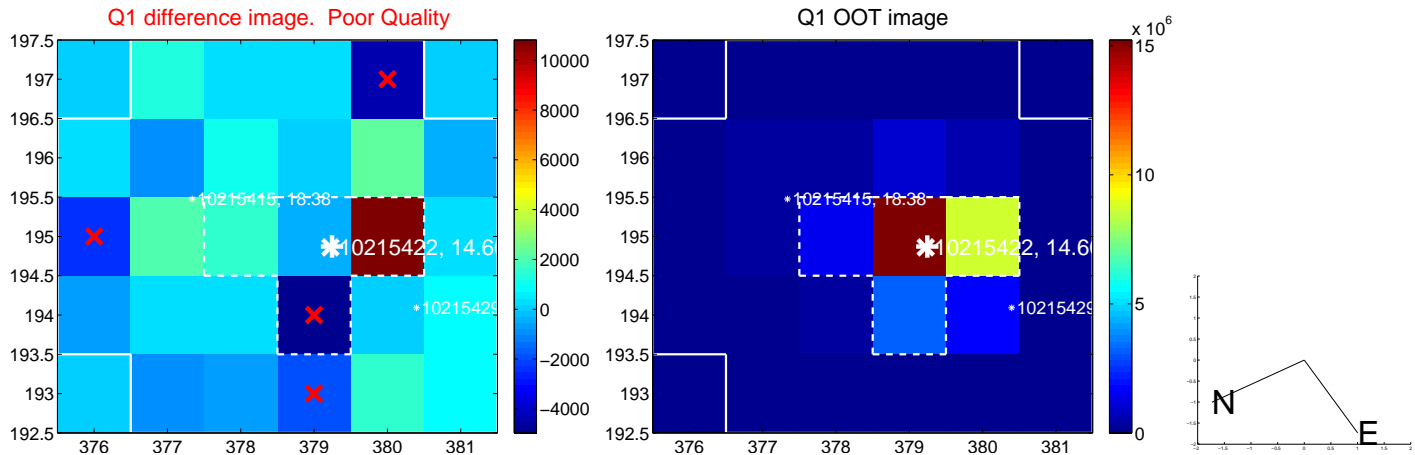
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$6.231 \pm 1.682$	3.70	$-5.171 \pm 1.622$	$3.477 \pm 1.186$
PRF-fit source offset from KIC position	$6.178 \pm 1.493$	4.14	$-5.224 \pm 1.519$	$3.298 \pm 1.000$
photometric centroid source offset	$5.44 \pm 14.53$	0.37	$0.28 \pm 13.55$	$5.43 \pm 14.53$

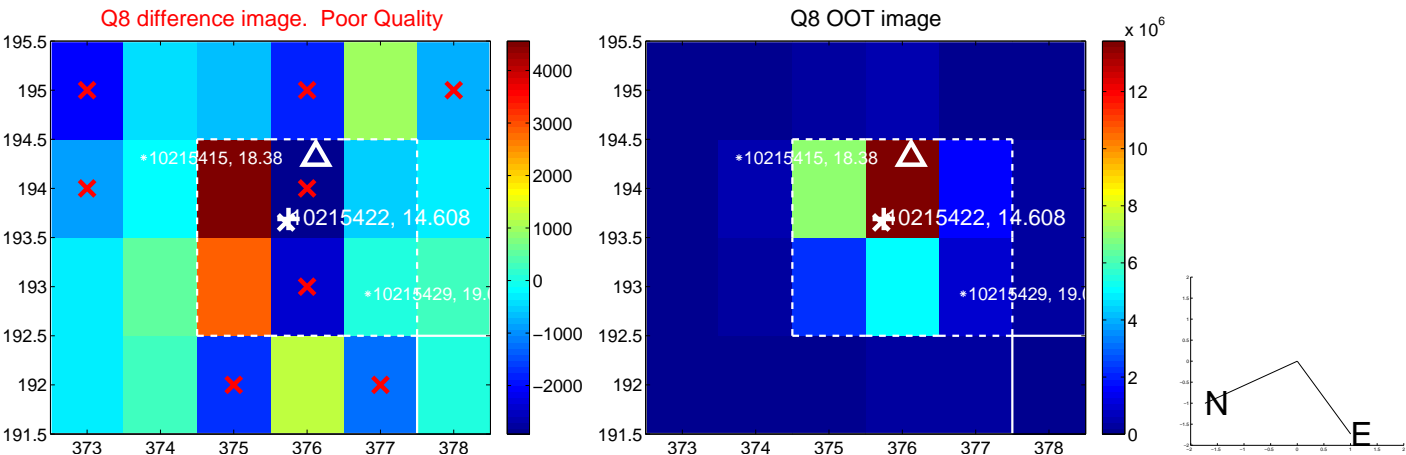
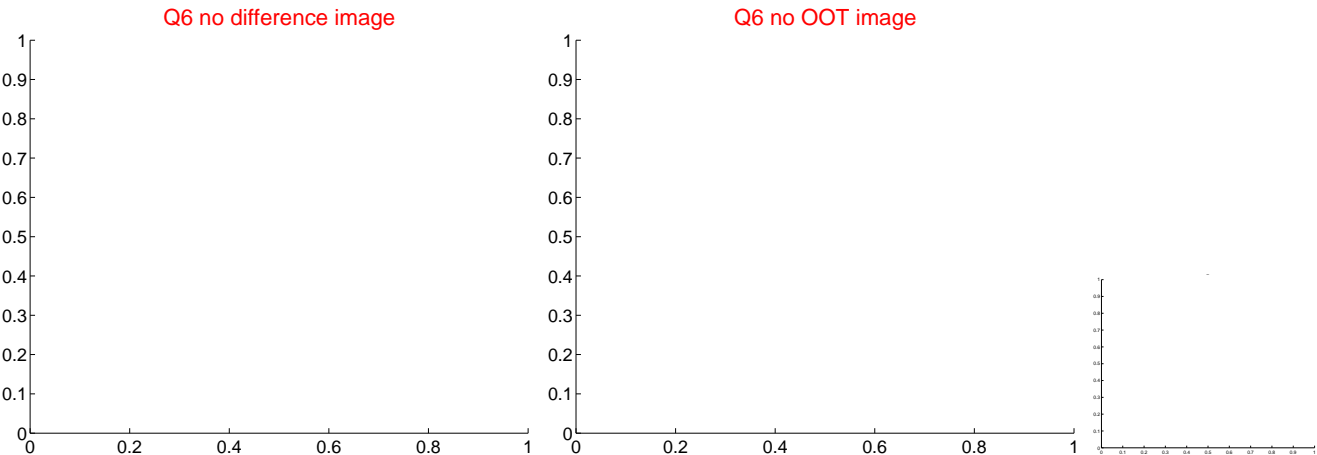
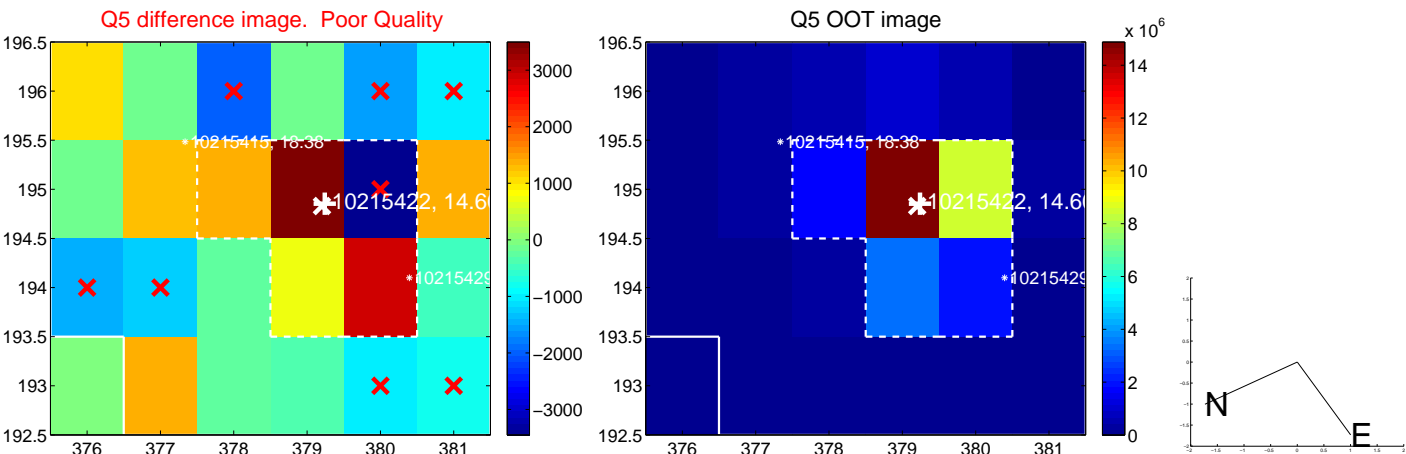


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

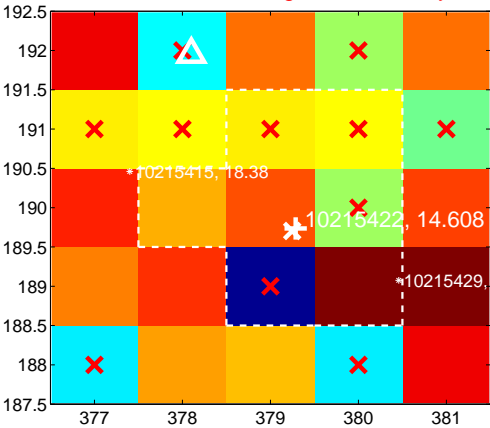
Q9 no difference image



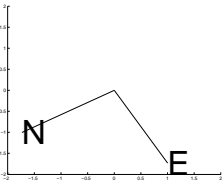
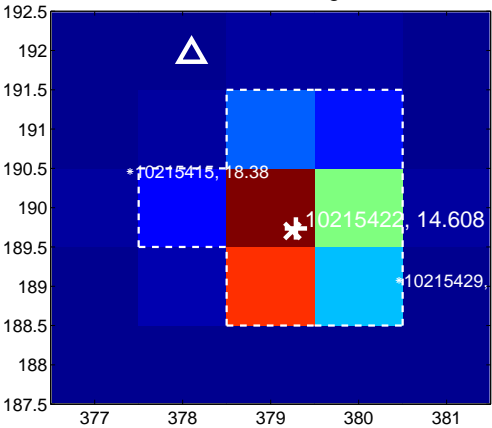
Q9 no OOT image



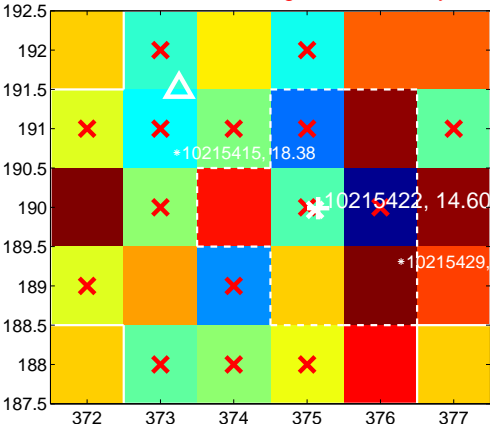
Q10 difference image. Poor Quality



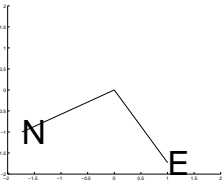
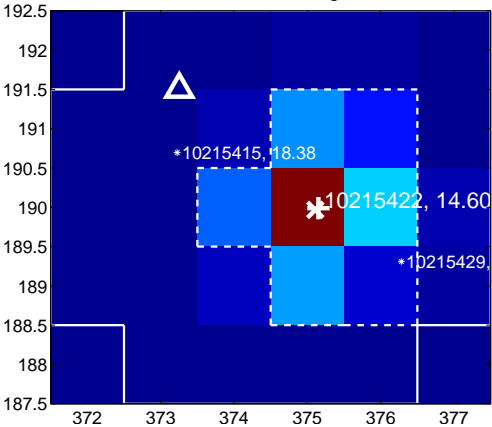
Q10 OOT image



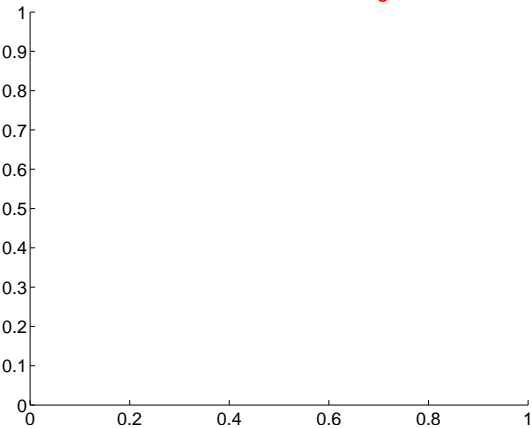
Q11 difference image. Poor Quality



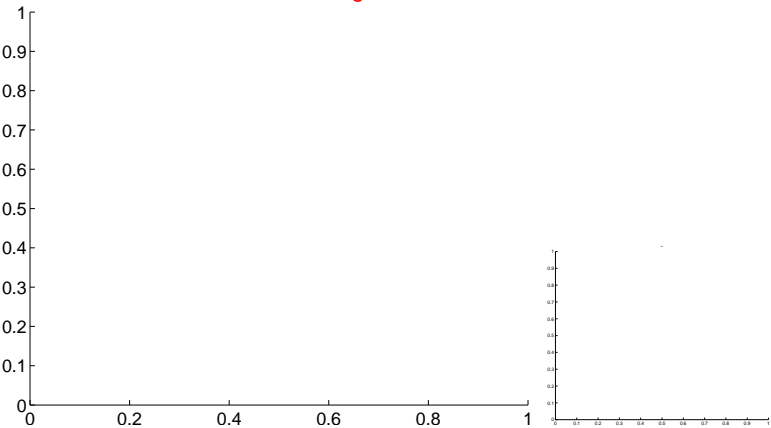
Q11 OOT image



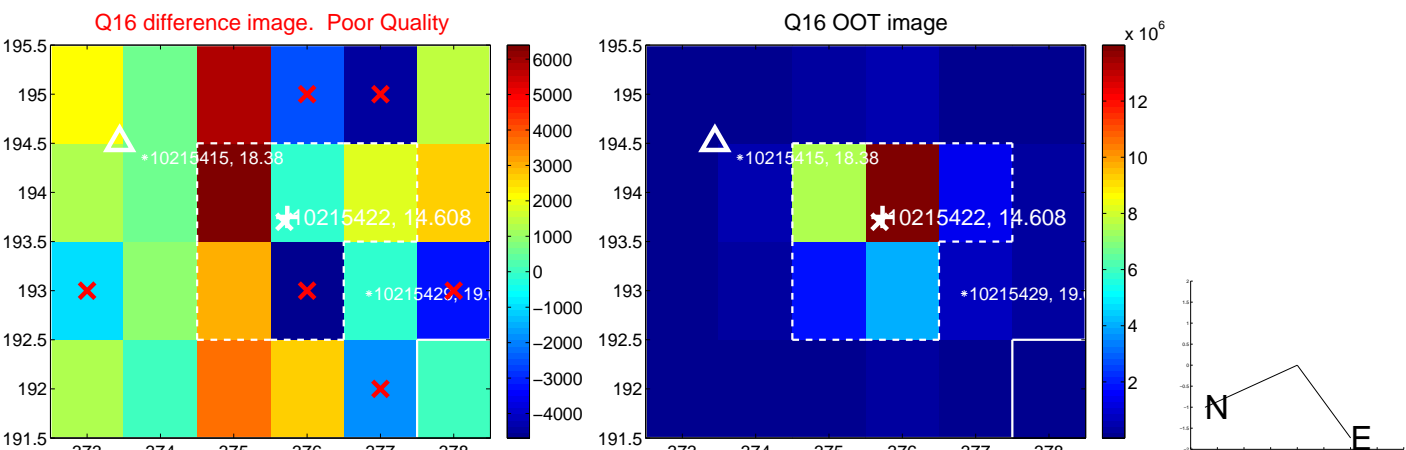
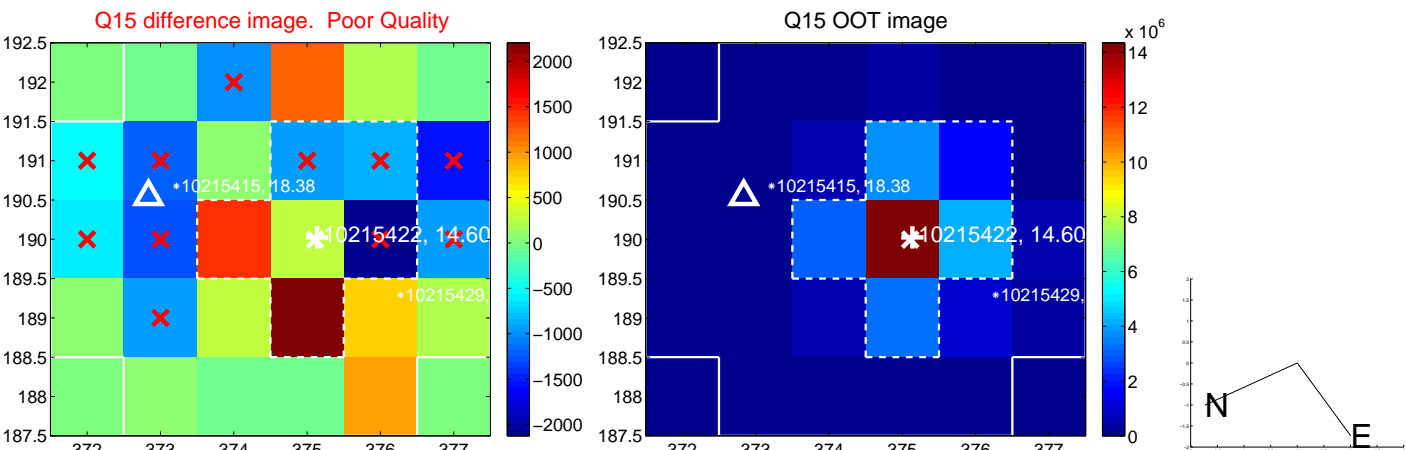
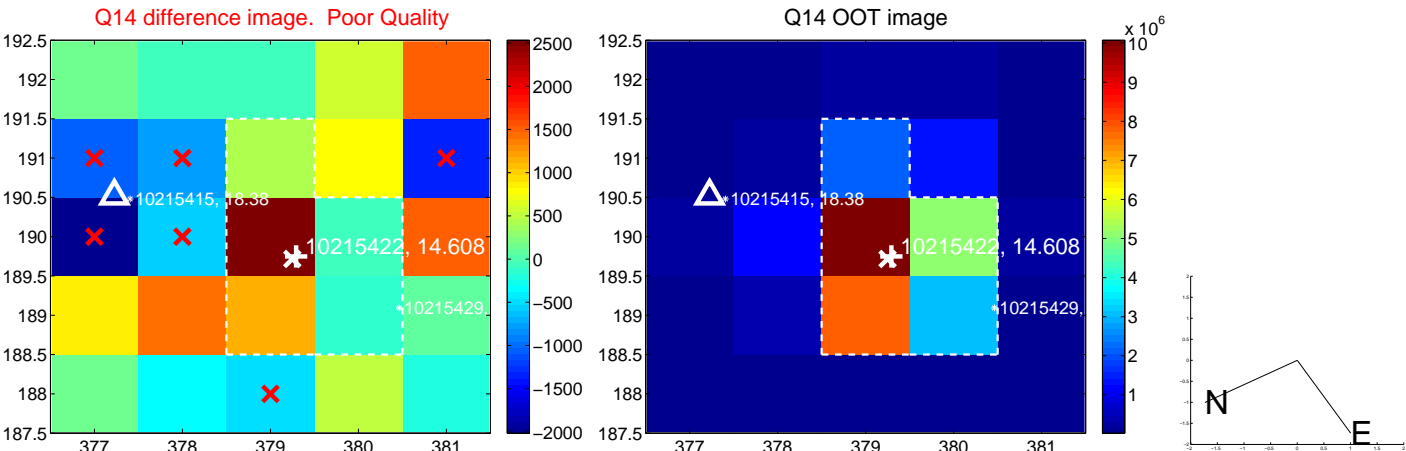
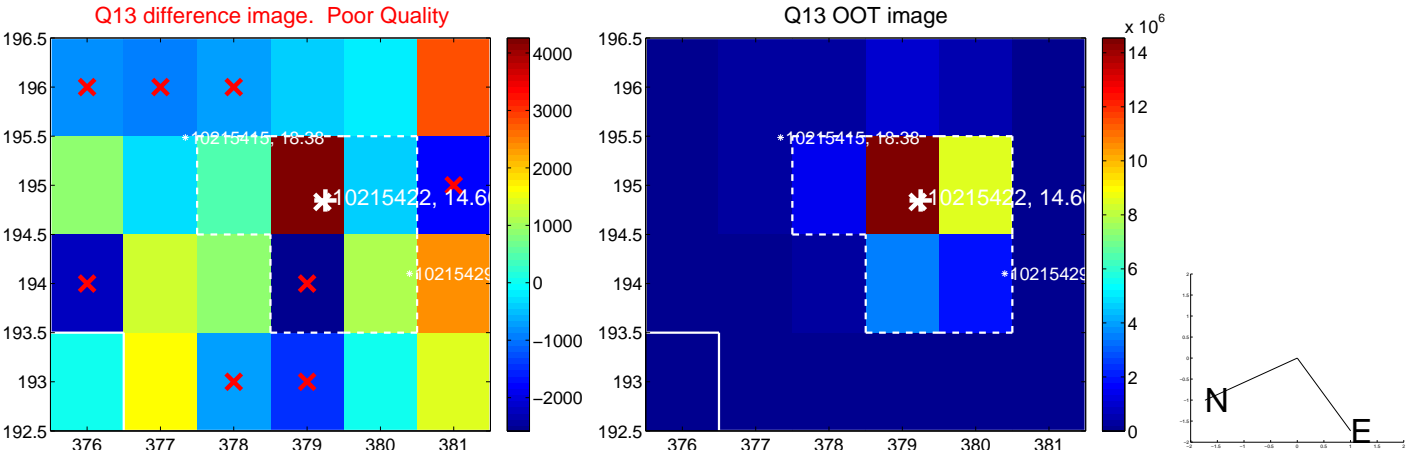
Q12 no difference image



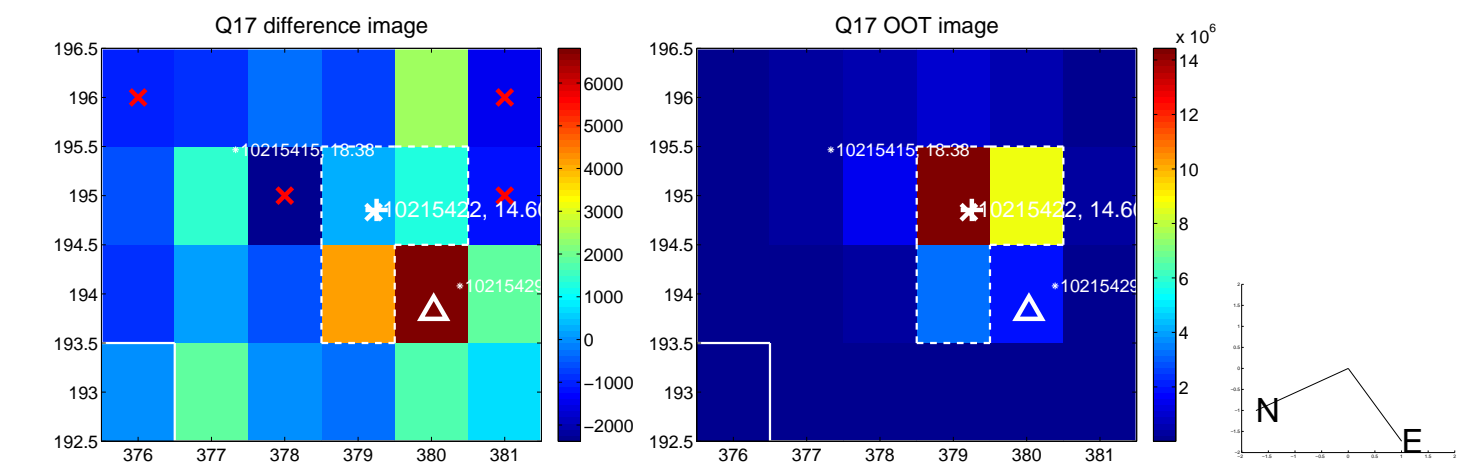
Q12 no OOT image



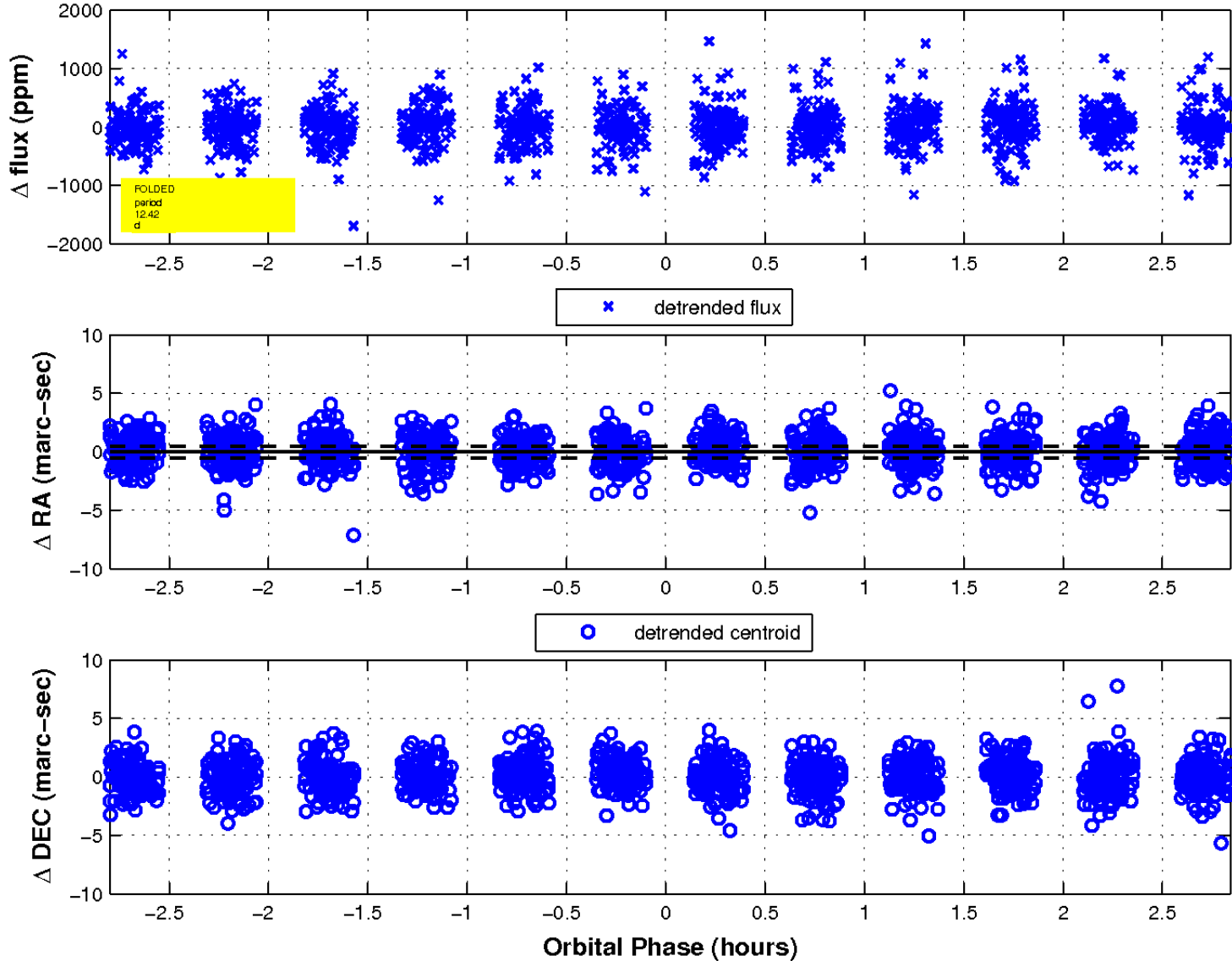
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

