

# KIC 010982872

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010982872-01	OBS	0343.01	4.761701	132.242719	490.1	3.594	95.5	102.0	1.23	5794	3.23	492.66
010982872-02	OBS	0343.02	2.024134	132.040515	230.0	2.705	62.4	70.2	1.23	5794	2.30	1541.39
010982872-03	OBS	0343.03	41.808533	148.707556	175.3	8.036	14.0	15.2	1.23	5794	1.74	27.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010982872-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010982872-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010982872-03	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.

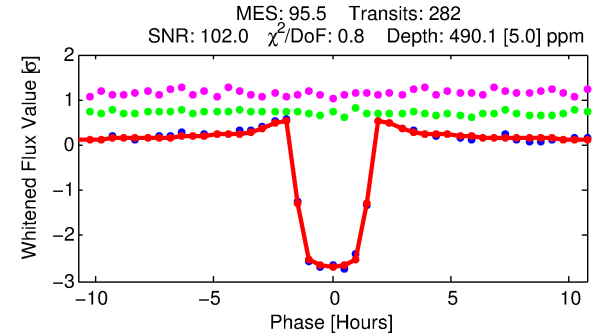
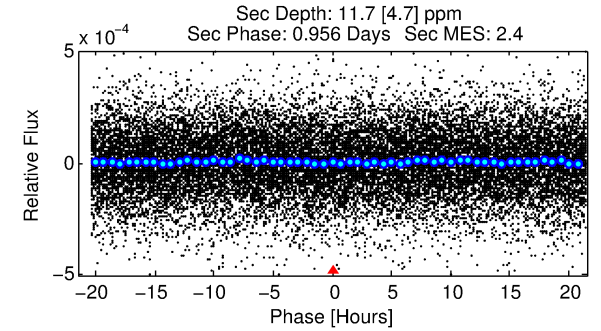
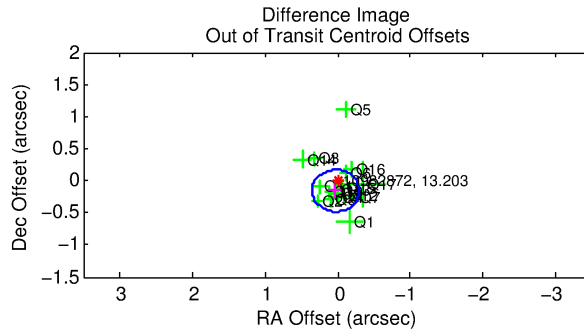
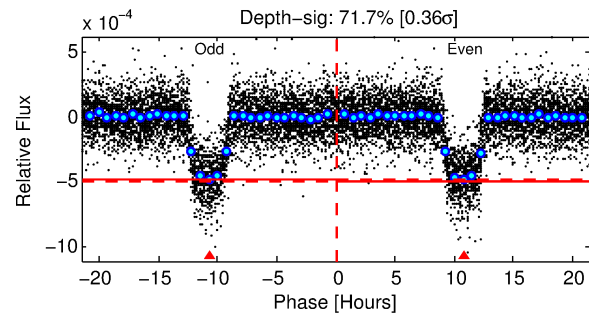
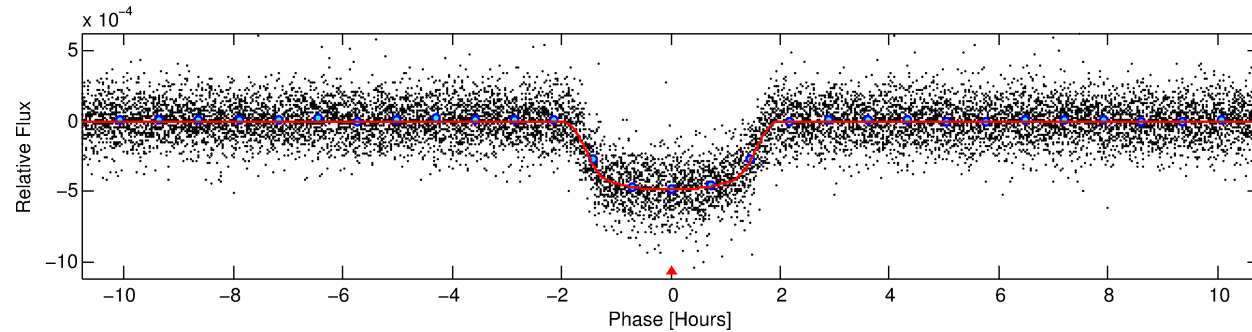
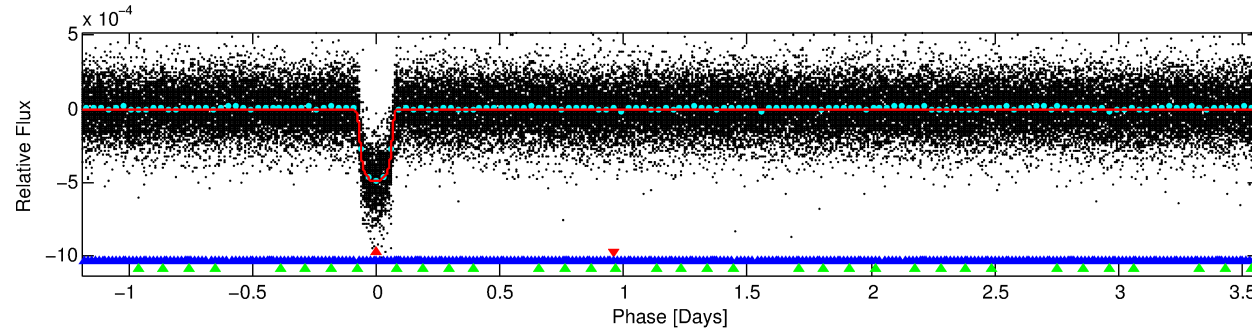
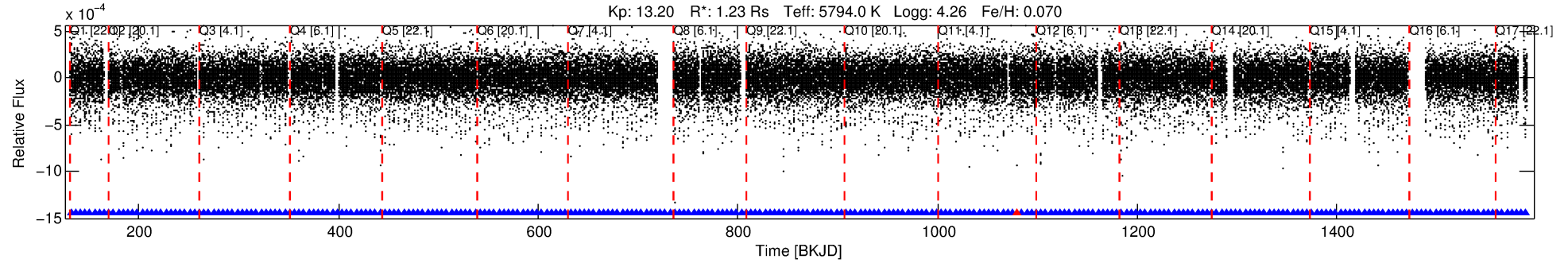
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010982872-01

No Significant Match Found

# DV One-Page Summary

KIC: 10982872 Candidate: 1 of 3 Period: 4.762 d  
KOI: K00343.01 Name: Kepler-142c Corr: 0.959



## DV Fit Results:

Period = 4.76170 [0.00000] d  
Epoch = 132.2427 [0.0005] BKJD  
Rp/R\* = 0.0241 [0.0005]  
a/R\* = 5.04 [0.48]  
b = 0.90 [0.02]  
Seff = 492.66 [136.98]  
Teq = 1201 [84] K  
Rp = 3.23 [0.57] Re  
a = 0.0555 [0.0092] AU  
Ag = 1.90 [0.92] [0.98 $\sigma$ ]  
Teffp = 2180 [224] K [4.10 $\sigma$ ]

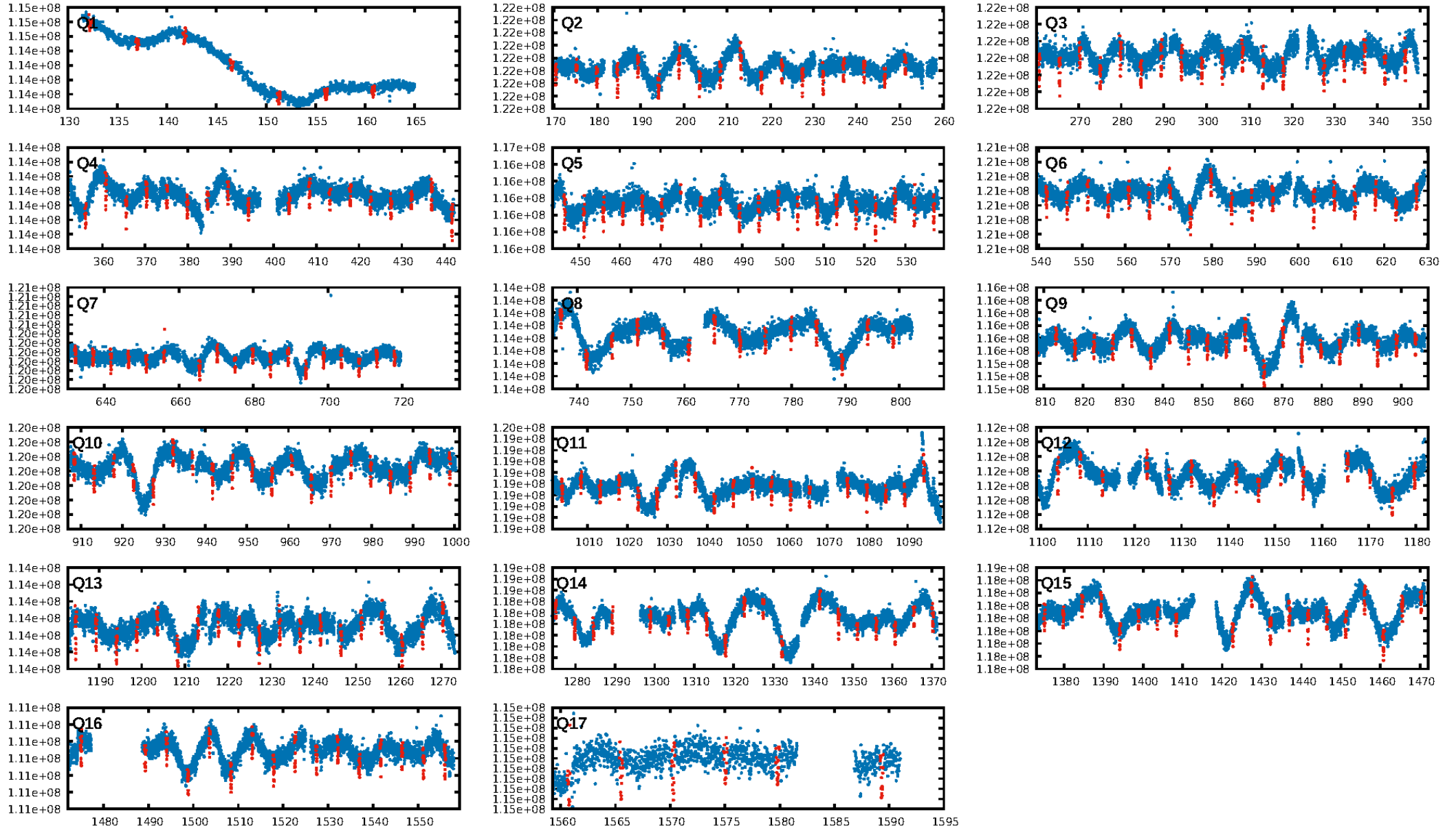
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [14.60 $\sigma$ ]  
LongPeriod-sig: 100.0% [101.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [268/269]  
GhostDiagnostic-chr: 7.093  
Centroid-sig: 0.3%  
Centroid-so: 0.238 arcsec [2.67 $\sigma$ ]  
OotOffset-rm: 0.161 arcsec [1.48 $\sigma$ ]  
KicOffset-rm: 0.263 arcsec [2.83 $\sigma$ ]  
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]

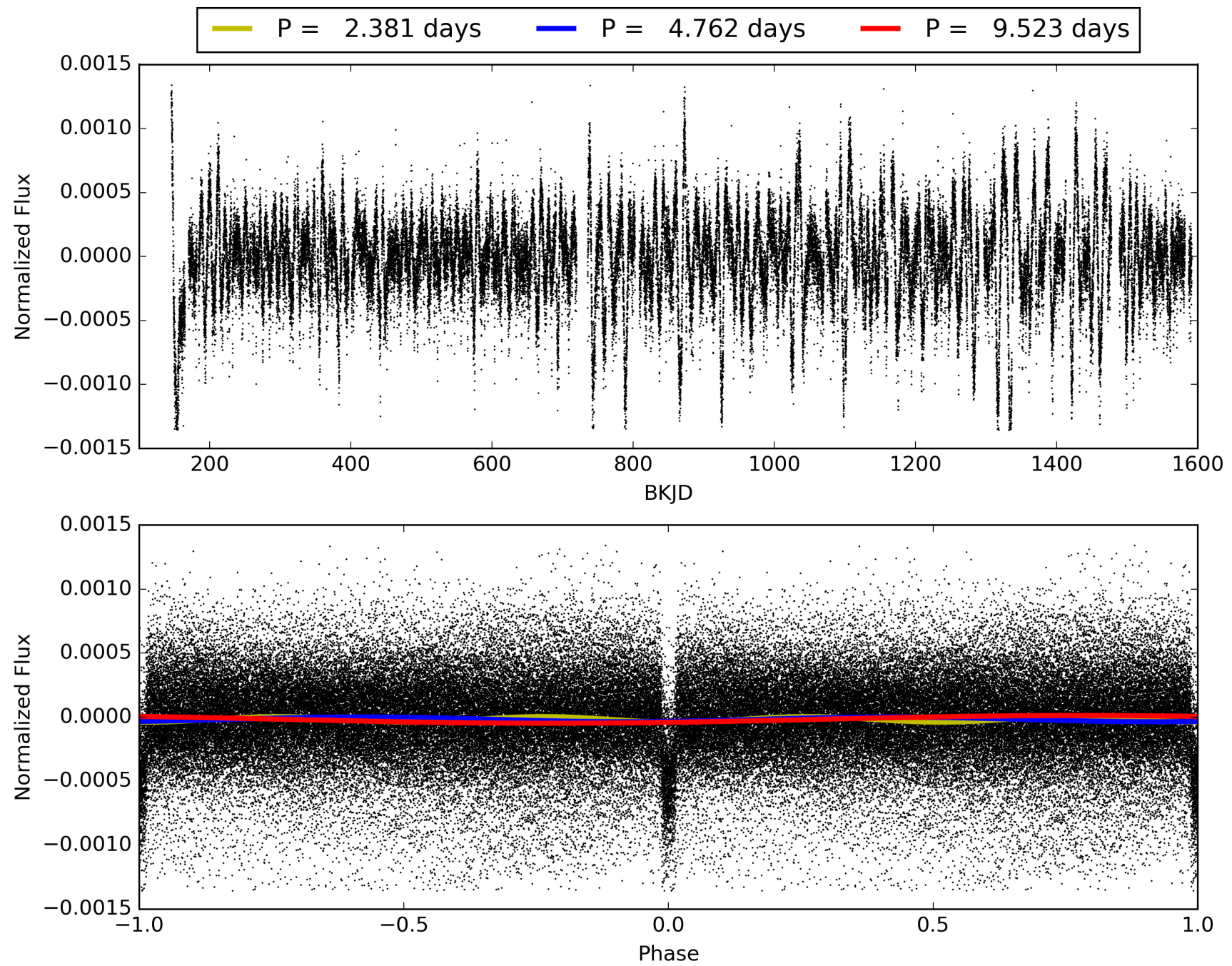
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 12:40:27 Z

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

# TCE 010982872-01, PDC Light Curves



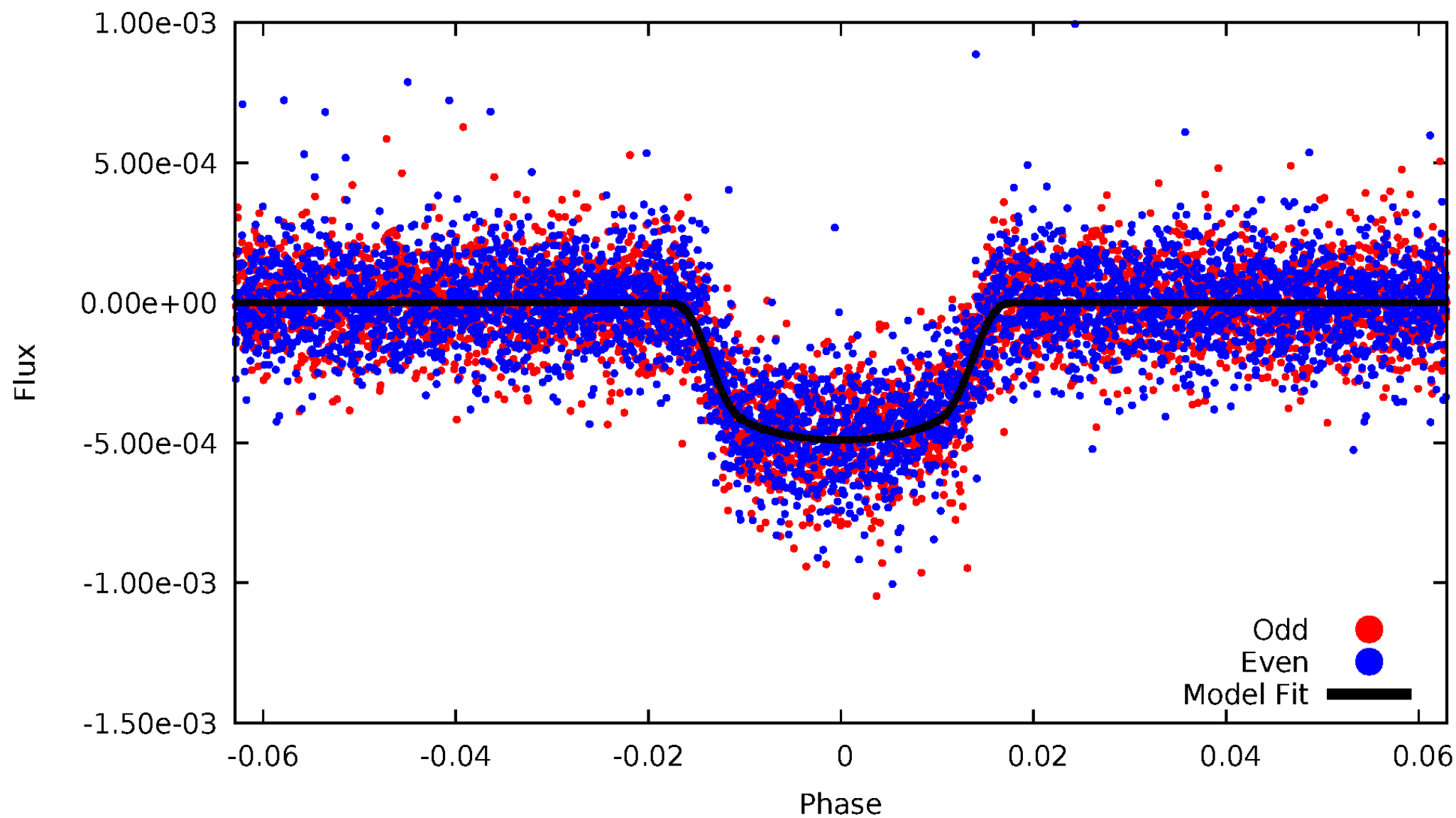
TCE 010982872-01





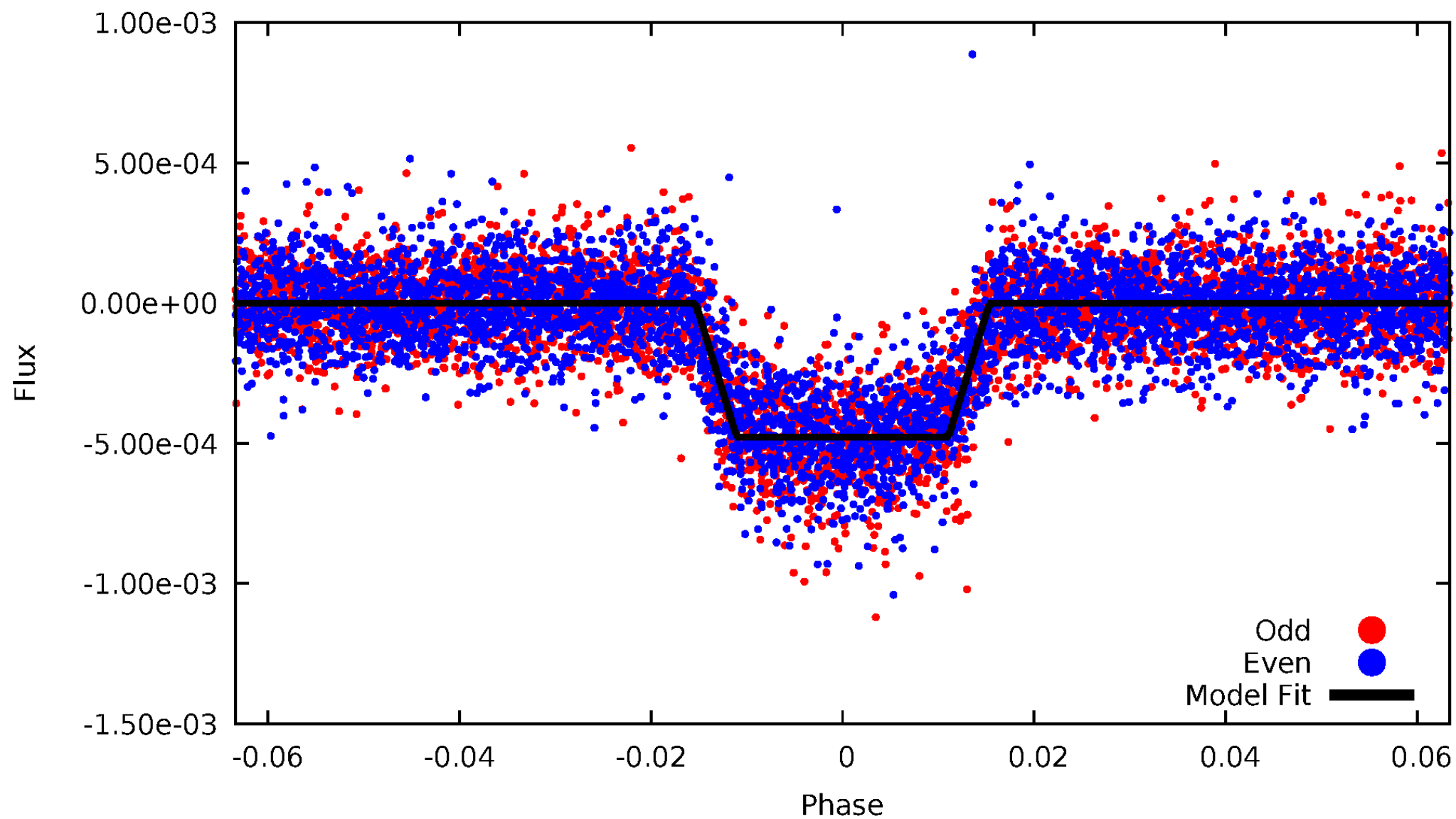
# DV Odd/Even

TCE 010982872-01



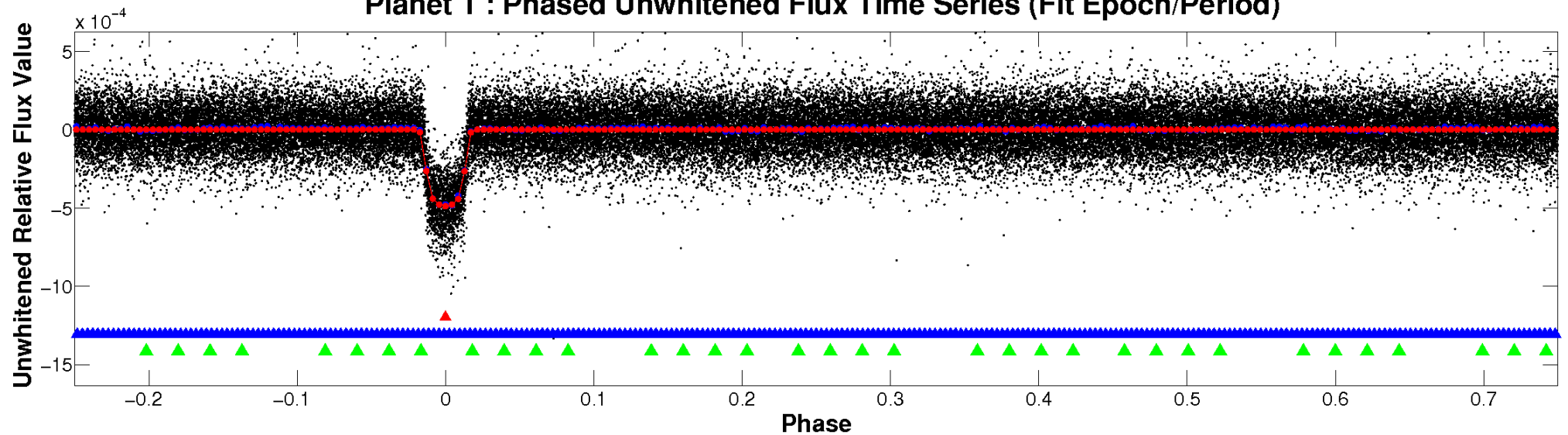
# ALT Odd/Even

TCE 010982872-01

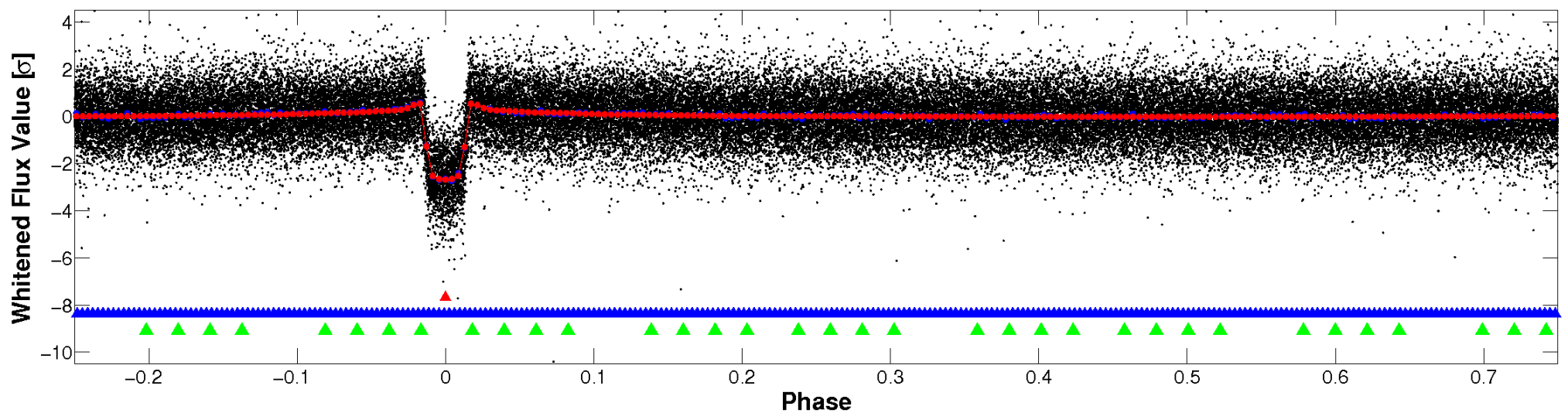


# Non-Whitened Vs. Whitened Light Curve

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

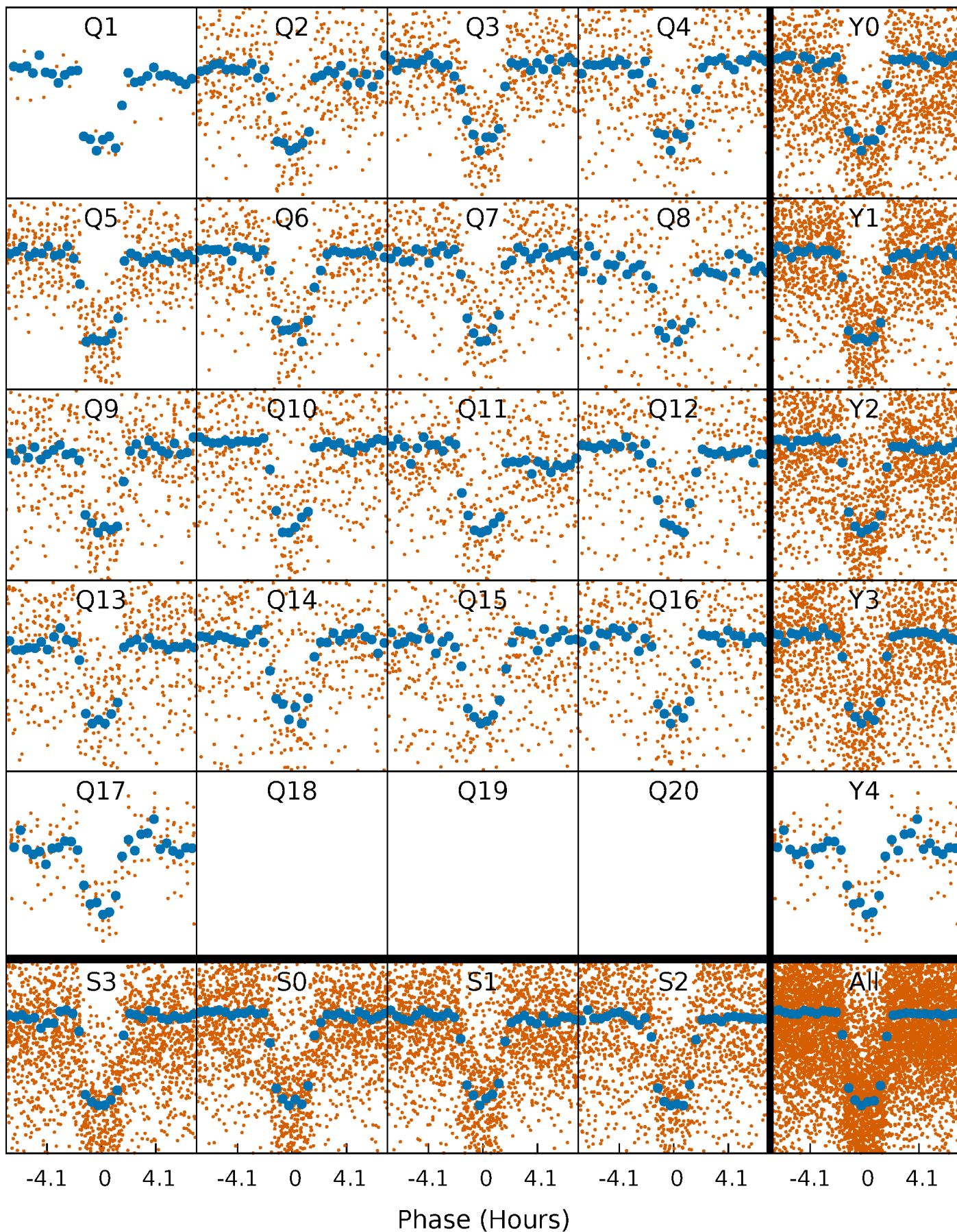


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

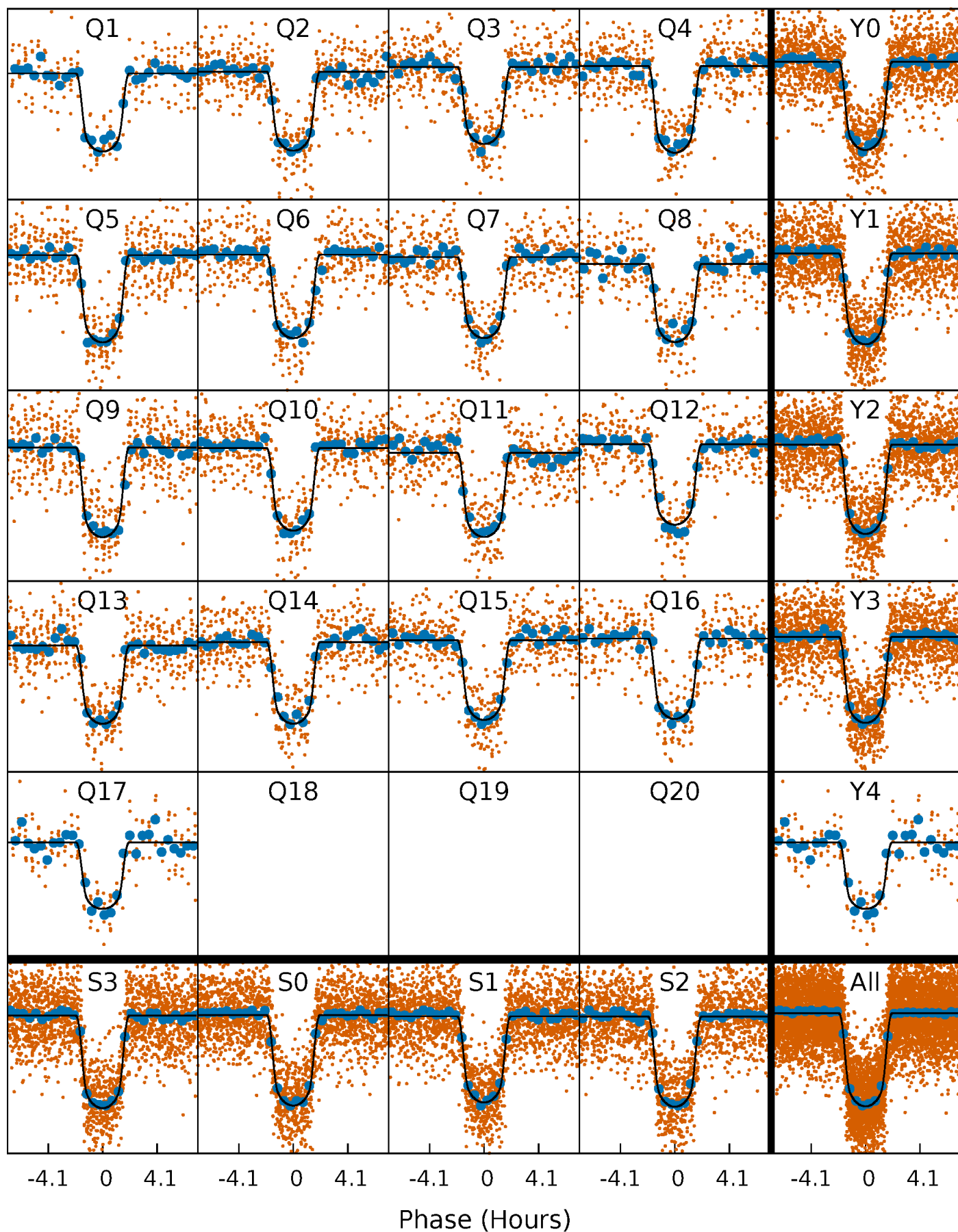
TCE 010982872-01   P= 4.761701 Days    $T_0=132.242719$  (BKJD)





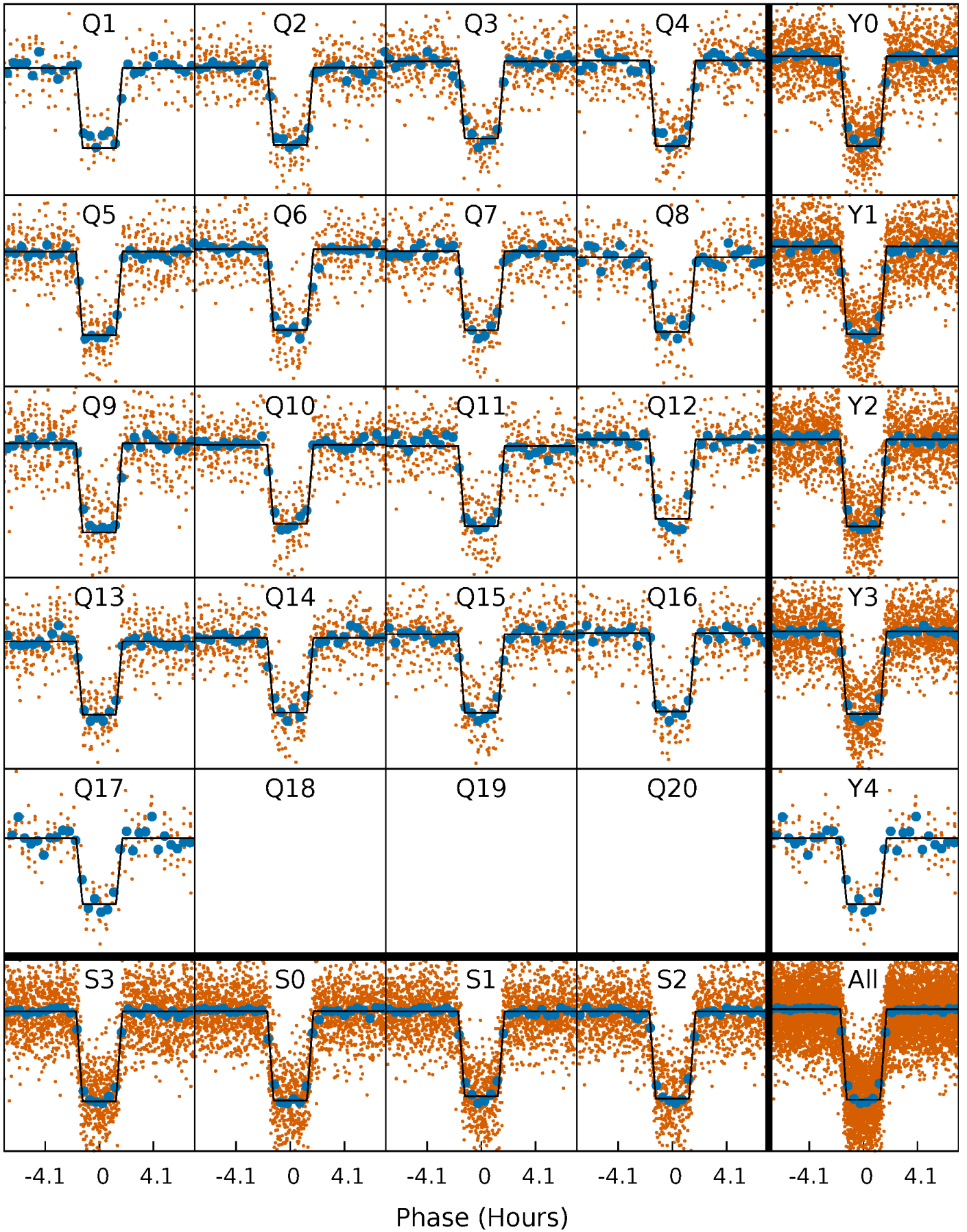
# DV Quarter-Phased Transit Curves

TCE 010982872-01 P= 4.761701 Days  $T_0=132.242719$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

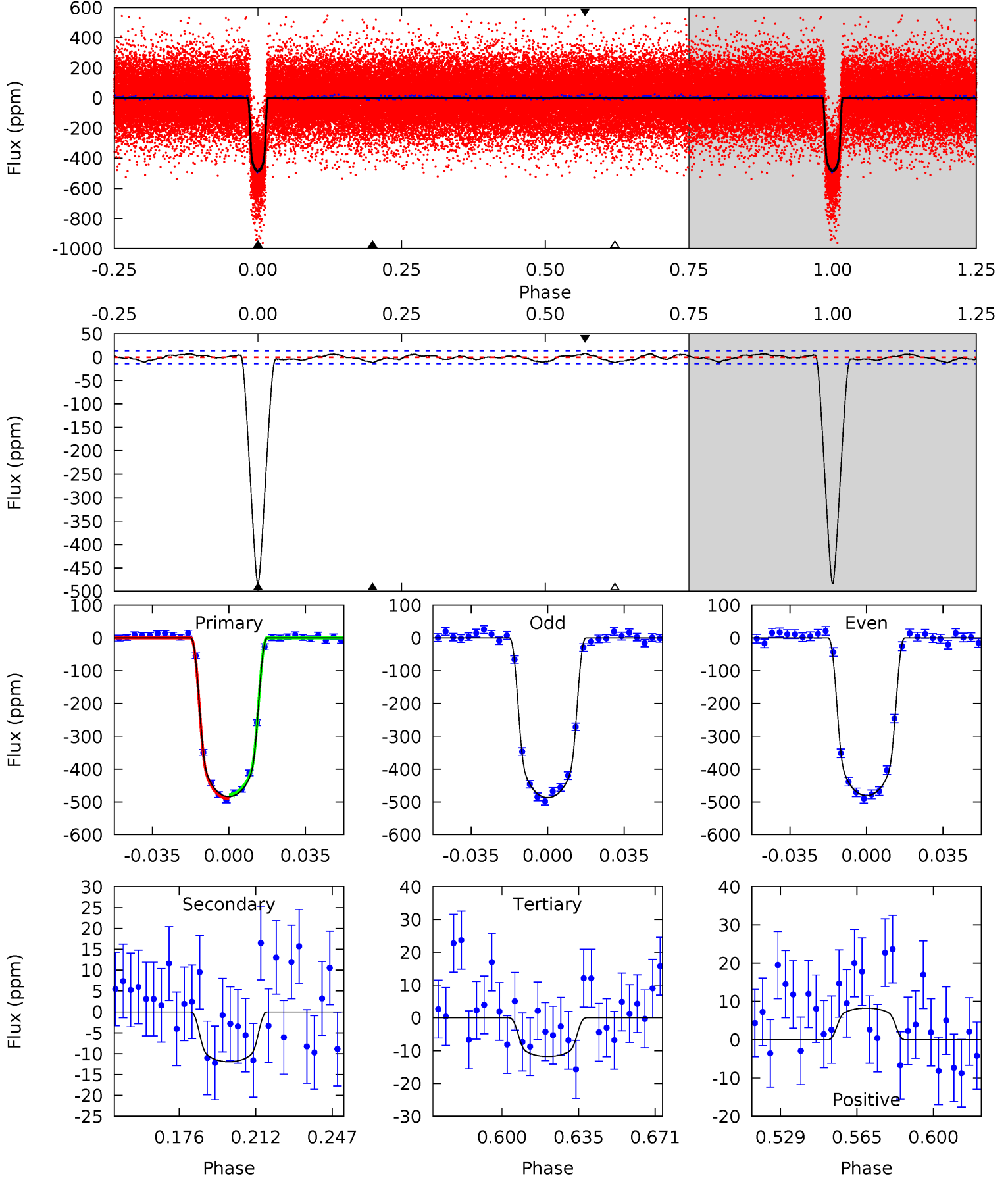
TCE 010982872-01 P= 4.761715 Days  $T_0=132.240822$  (BKJD)



# DV Model-Shift Uniqueness Test

010982872-01, P = 4.761701 Days, E = 127.481018 Days

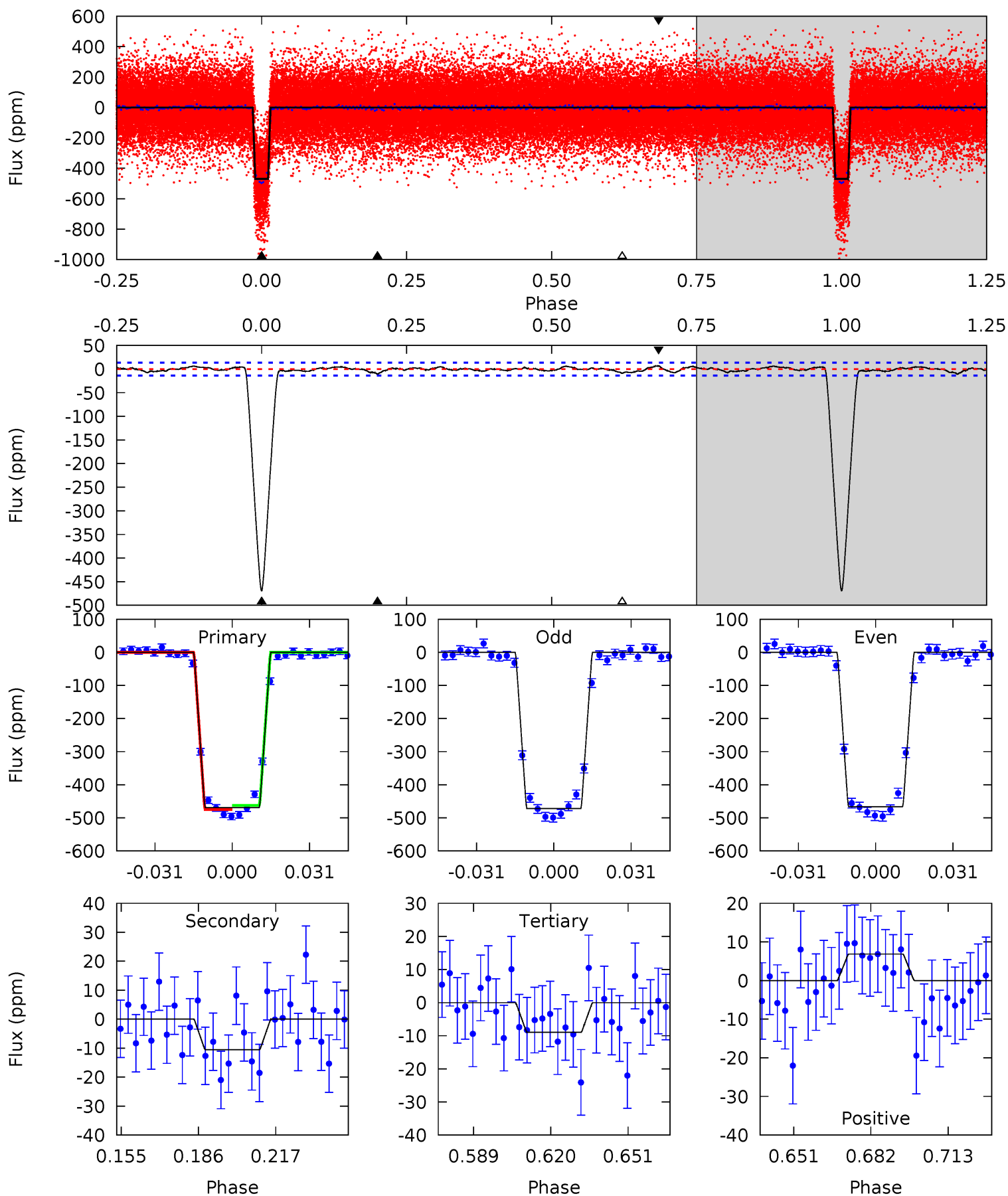
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
173.1	4.27	4.22	2.95	4.78	2.10	1.61	168.9	170.2	0.05	1.32	1.12	1.01	0.02	2.03



# Alt Model-Shift Uniqueness Test

010982872-01, P = 4.761715 Days, E = 127.479107 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
163.0	3.68	3.11	2.39	4.80	2.16	1.11	159.9	160.7	0.57	1.29	0.99	1.01	0.01	2.27





### Stellar Parameters For KIC 010982872

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5794^{+105}_{-117}$	$4.263^{+0.156}_{-0.104}$	$0.070^{+0.150}_{-0.150}$	$1.225^{+0.194}_{-0.213}$	$1.004^{+0.086}_{-0.070}$	$0.769^{+0.510}_{-0.262}$
	+2%/-2%	+4%/-2%	+214%/-214%	+16%/-17%	+9%/-7%	+66%/-34%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 010982872-01 / KOI 0343.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-12 \pm 3$	$3.22^{+0.30}_{-0.31}$	$1671^{+80}_{-86}$	$2827^{+107}_{-128}$	$1.926^{+0.690}_{-0.515}$
Alt.	$-11 \pm 3$	$2.92^{+0.28}_{-0.29}$	$1672^{+76}_{-89}$	$2871^{+122}_{-139}$	$2.118^{+0.826}_{-0.591}$

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

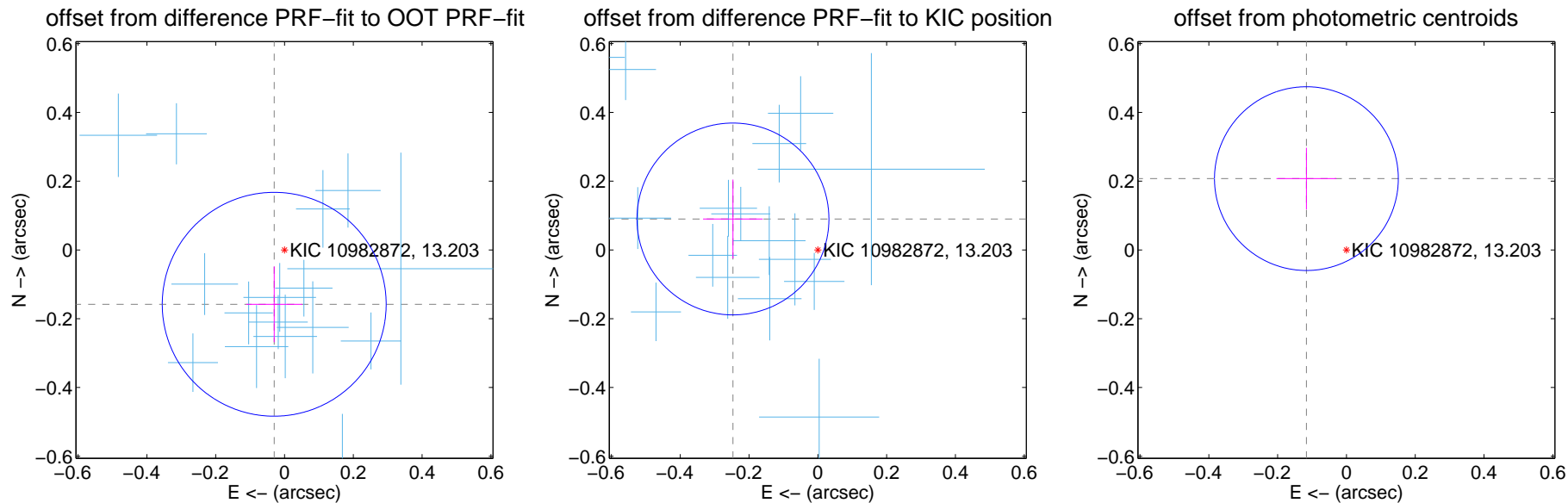
## DV Centroid Data

Supplemental centroid analysis for 010982872-01. Kepler magnitude: 13.20. Transit SNR 102.00

There are 17 quarters with good PRF difference image offsets

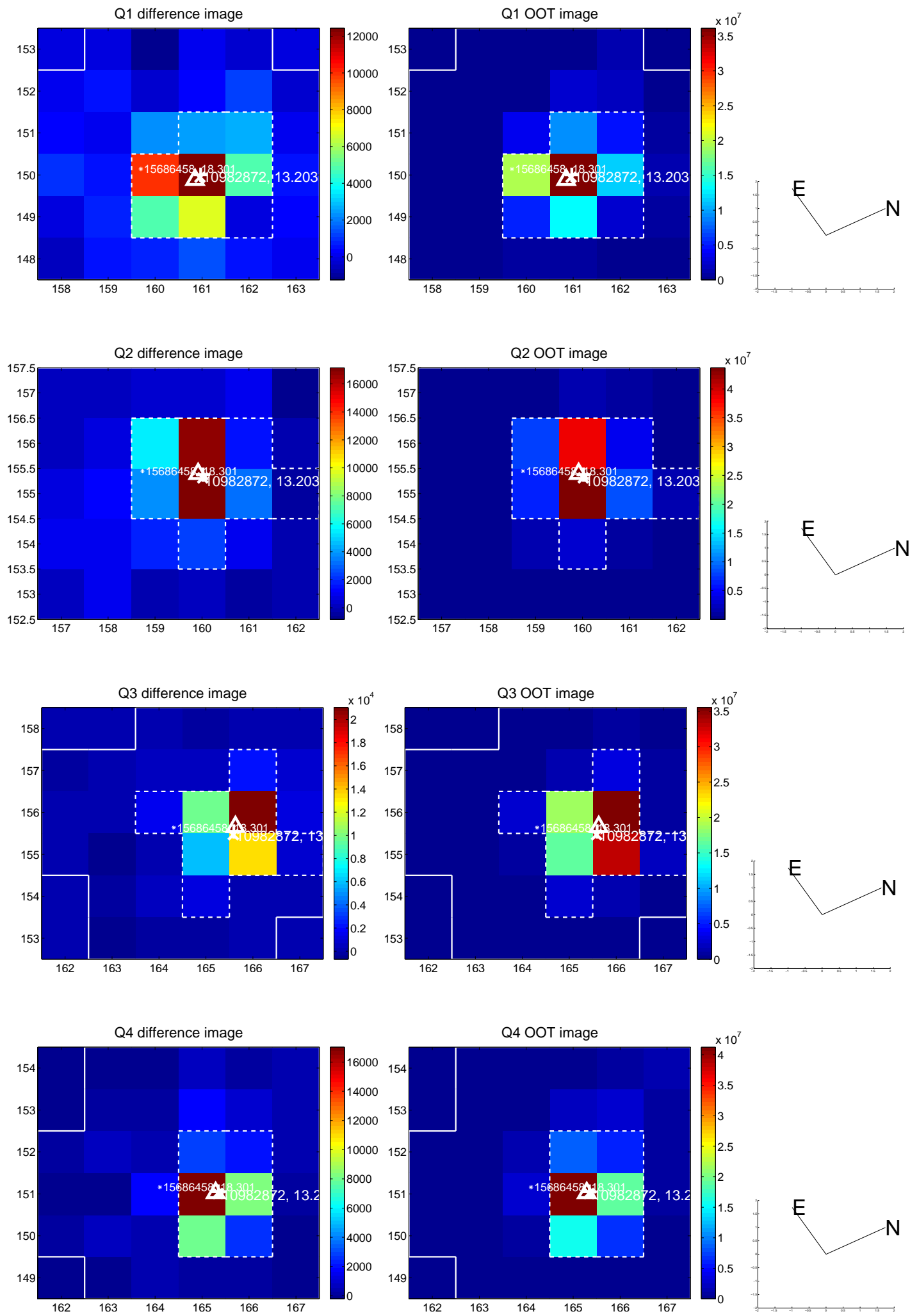
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.161 \pm 0.108$	1.48	$0.030 \pm 0.081$	$-0.158 \pm 0.110$
PRF-fit source offset from KIC position	$0.263 \pm 0.093$	2.83	$0.247 \pm 0.087$	$0.090 \pm 0.115$
photometric centroid source offset	$0.24 \pm 0.09$	2.67	$0.12 \pm 0.09$	$0.21 \pm 0.09$

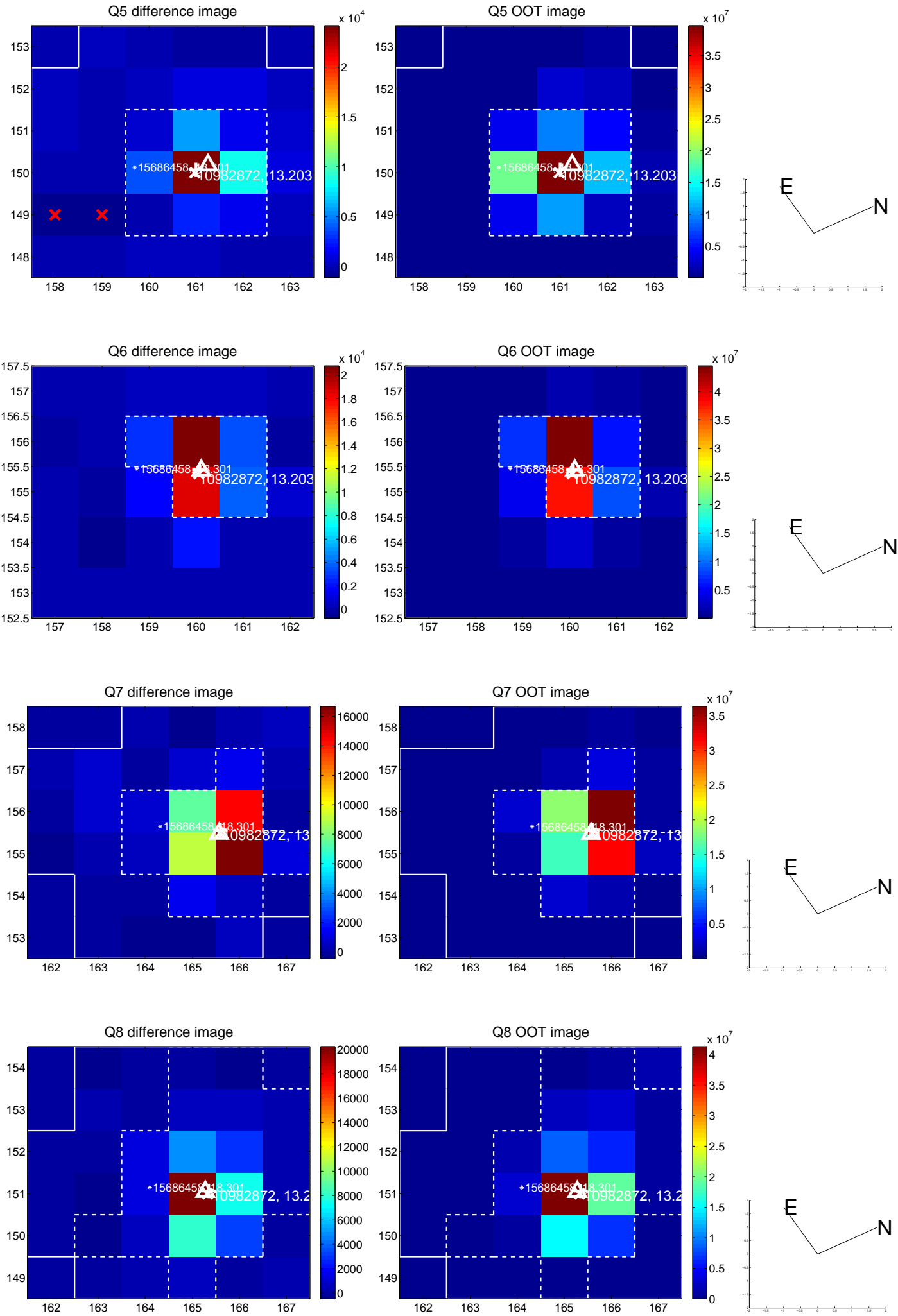


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

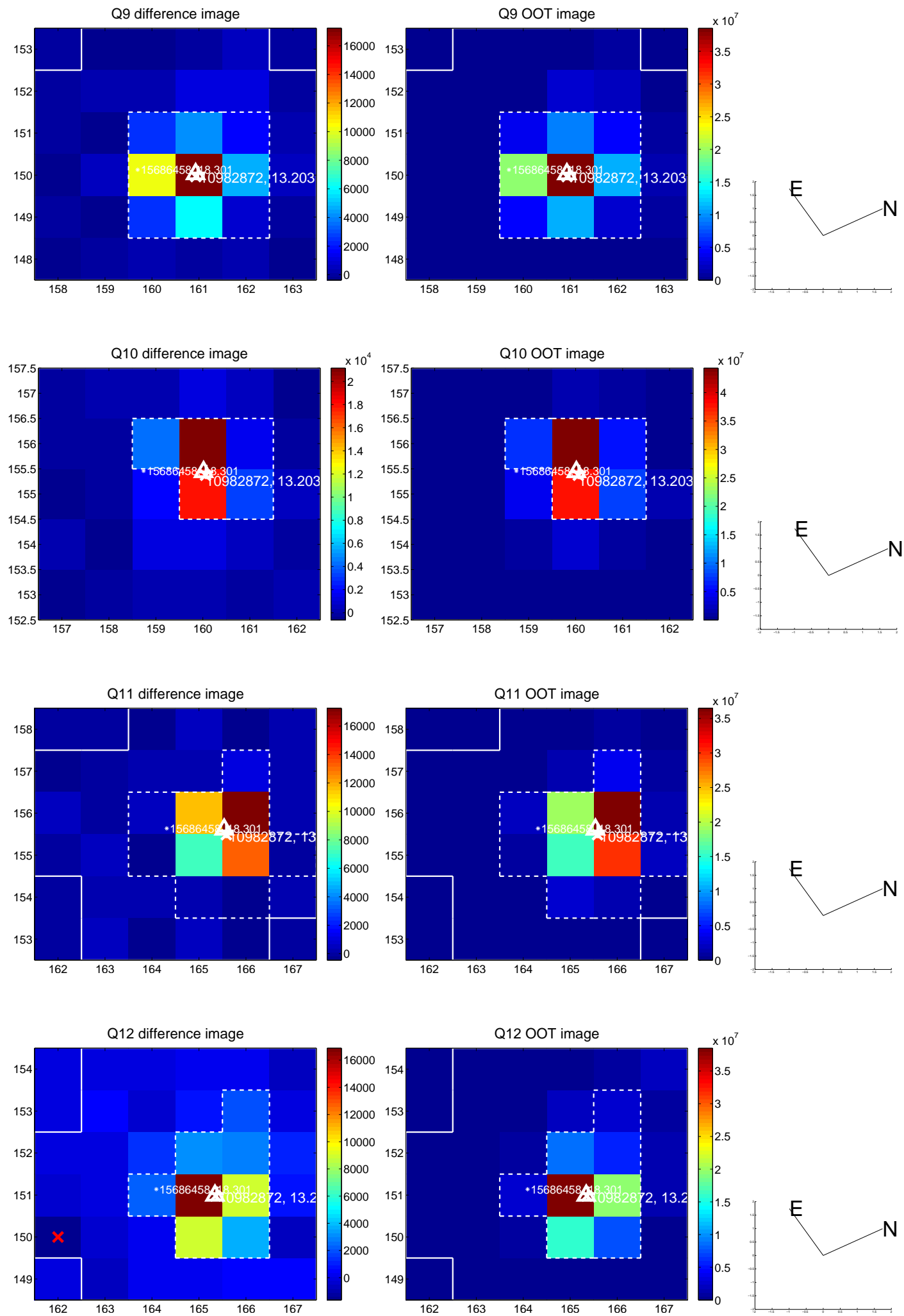


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

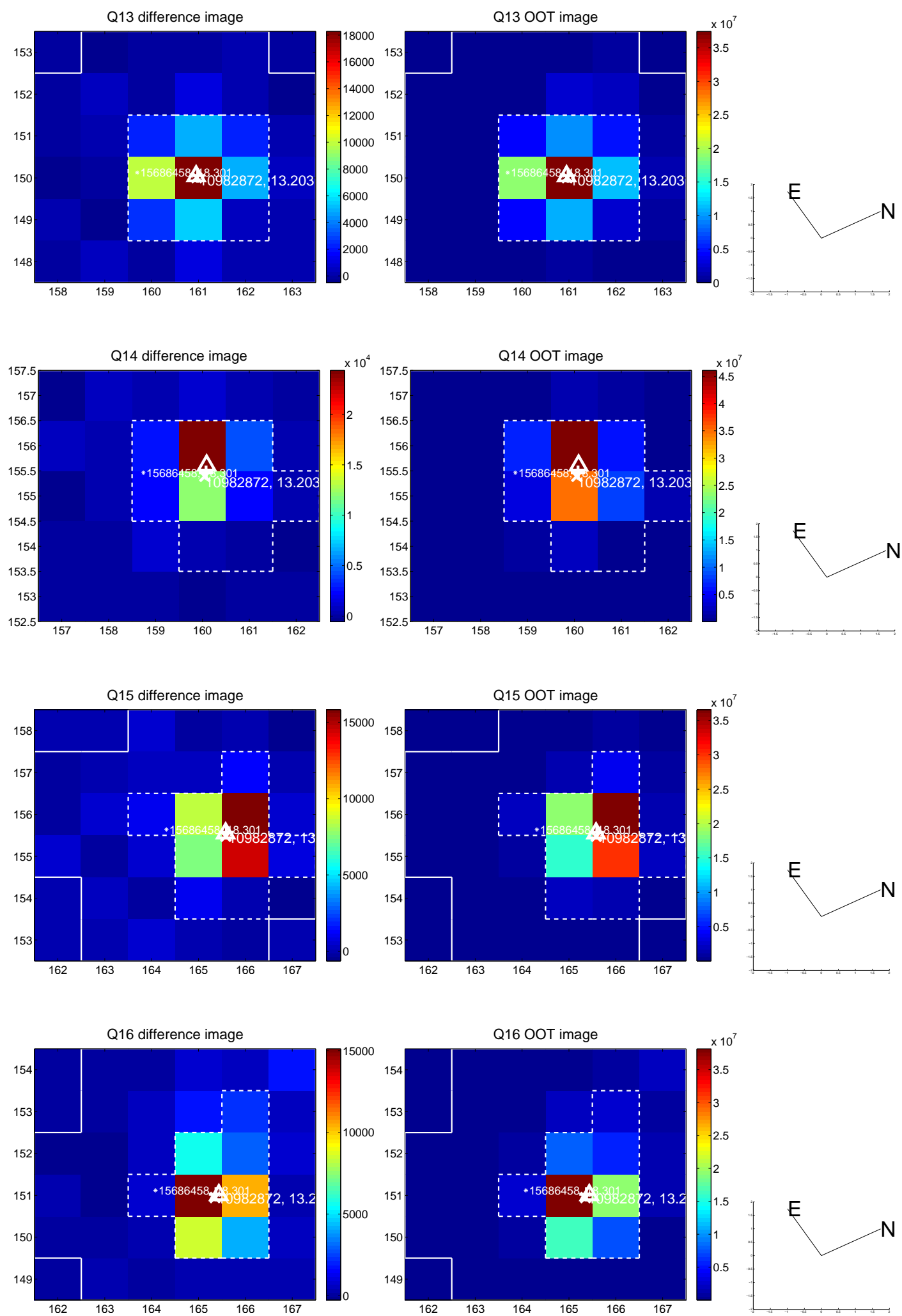




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



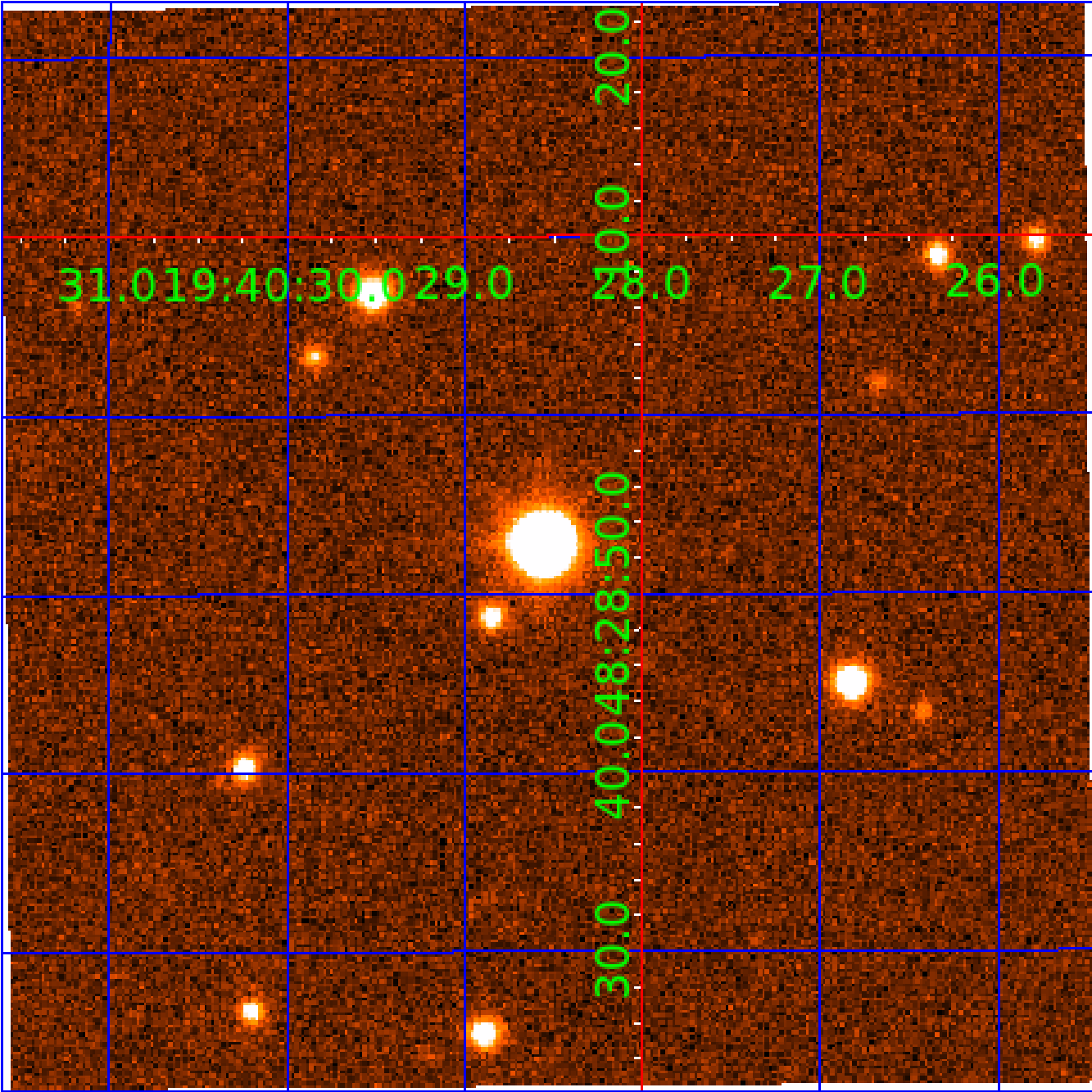
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination





# KIC 010982872

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010982872-01	OBS	0343.01	4.761701	132.242719	490.1	3.594	95.5	102.0	1.23	5794	3.23	492.66
010982872-02	OBS	0343.02	2.024134	132.040515	230.0	2.705	62.4	70.2	1.23	5794	2.30	1541.39
010982872-03	OBS	0343.03	41.808533	148.707556	175.3	8.036	14.0	15.2	1.23	5794	1.74	27.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010982872-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010982872-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010982872-03	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.

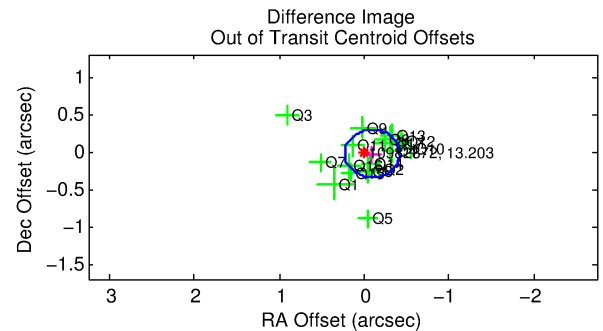
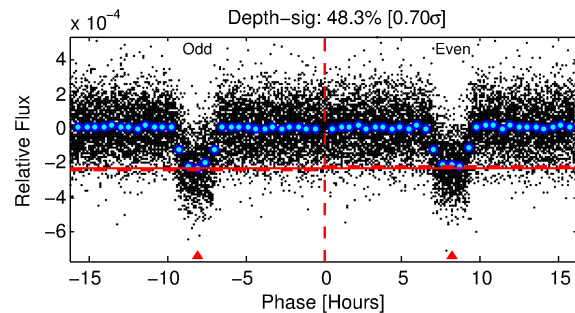
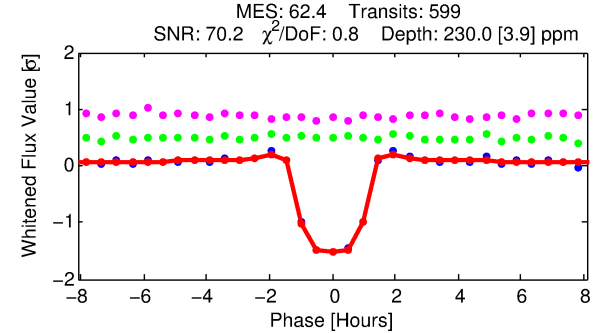
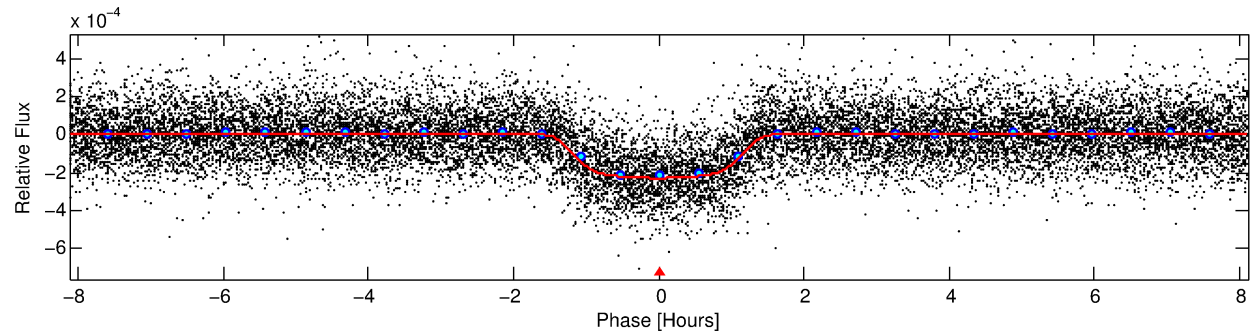
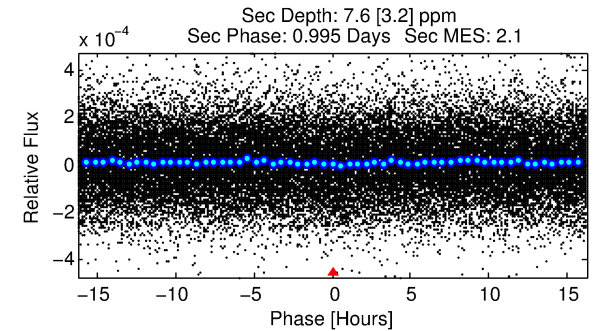
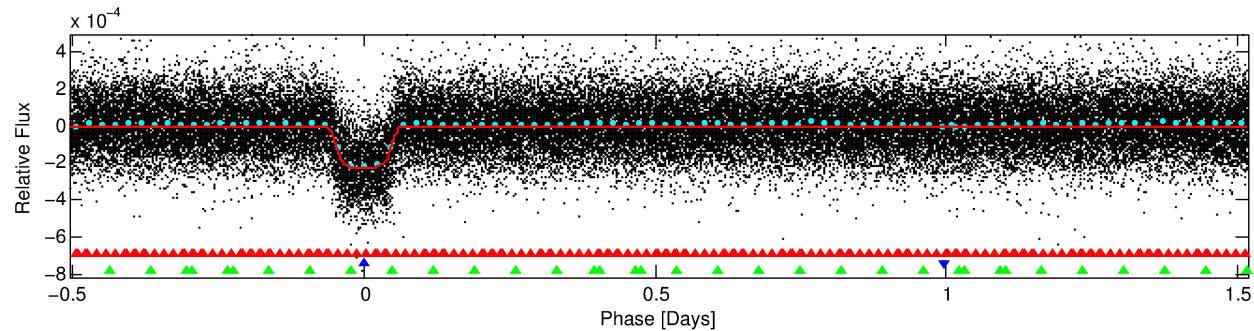
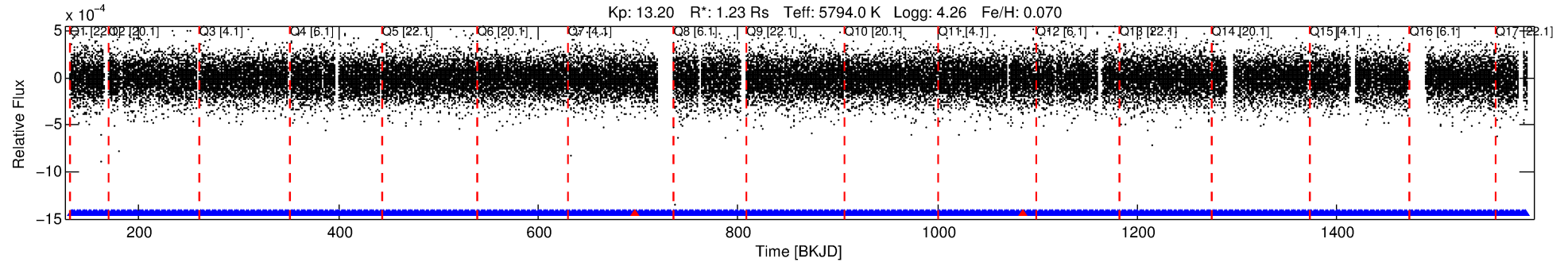
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010982872-02

No Significant Match Found

# DV One-Page Summary

KIC: 10982872 Candidate: 2 of 3 Period: 2.024 d  
KOI: K00343.02 Name: Kepler-142b Corr: 0.961



## DV Fit Results:

Period = 2.02413 [0.00000] d  
Epoch = 132.0405 [0.0005] BKJD  
Rp/R\* = 0.0172 [0.0007]  
a/R\* = 2.51 [0.39]  
b = 0.93 [0.03]  
Seff = 1541.39 [428.57]  
Teq = 1598 [111] K  
Rp = 2.30 [0.41] Re  
a = 0.0314 [0.0052] AU  
Ag = 0.78 [0.39] [-0.56σ]  
Teffp = 2322 [251] K [2.64σ]

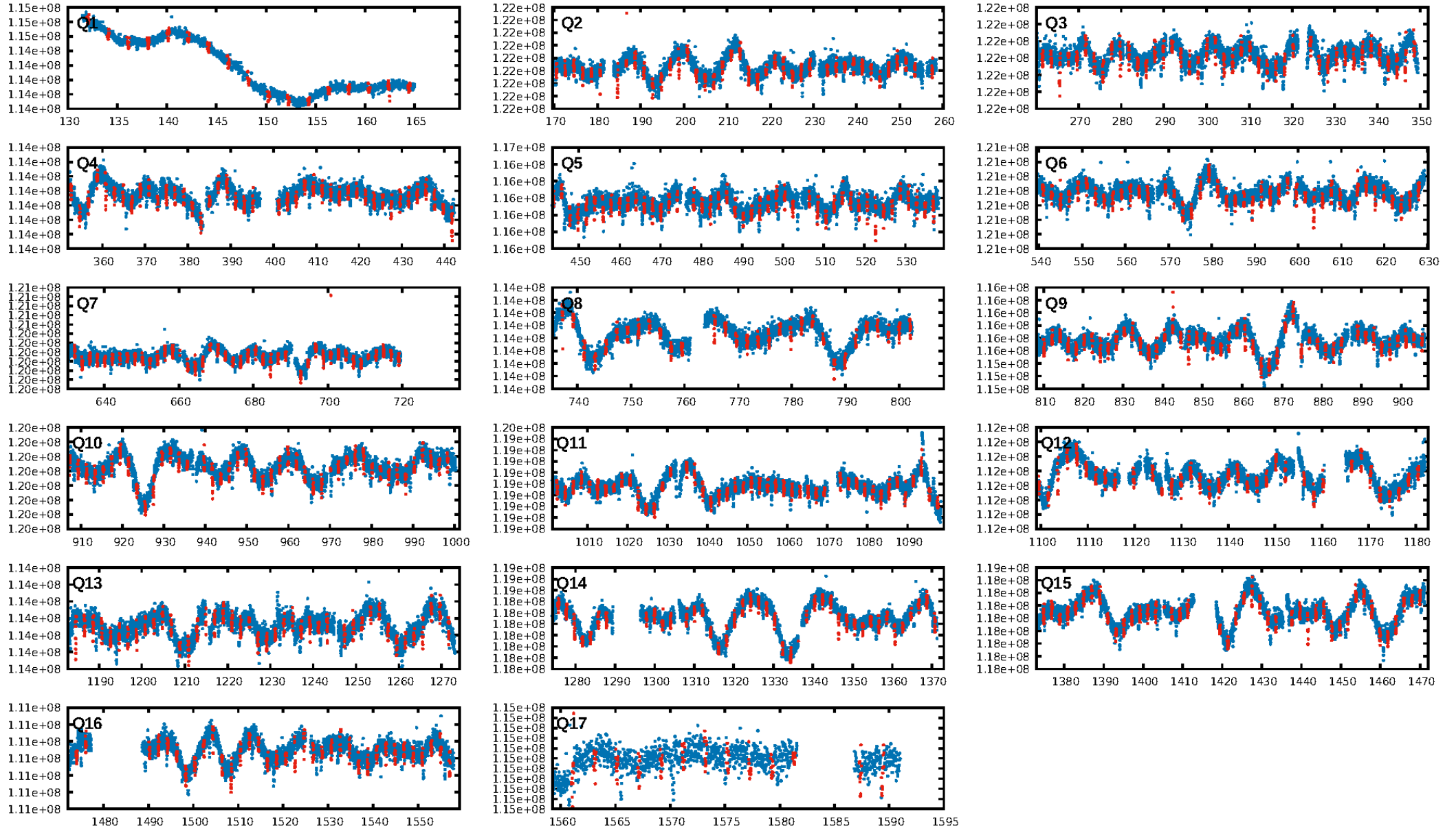
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [14.60σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [568/570]  
GhostDiagnostic-chr: 5.185  
Centroid-sig: 85.2%  
Centroid-so: 0.428 arcsec [3.06σ]  
OotOffset-rm: 0.098 arcsec [0.92σ]  
KicOffset-rm: 0.200 arcsec [1.89σ]  
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]

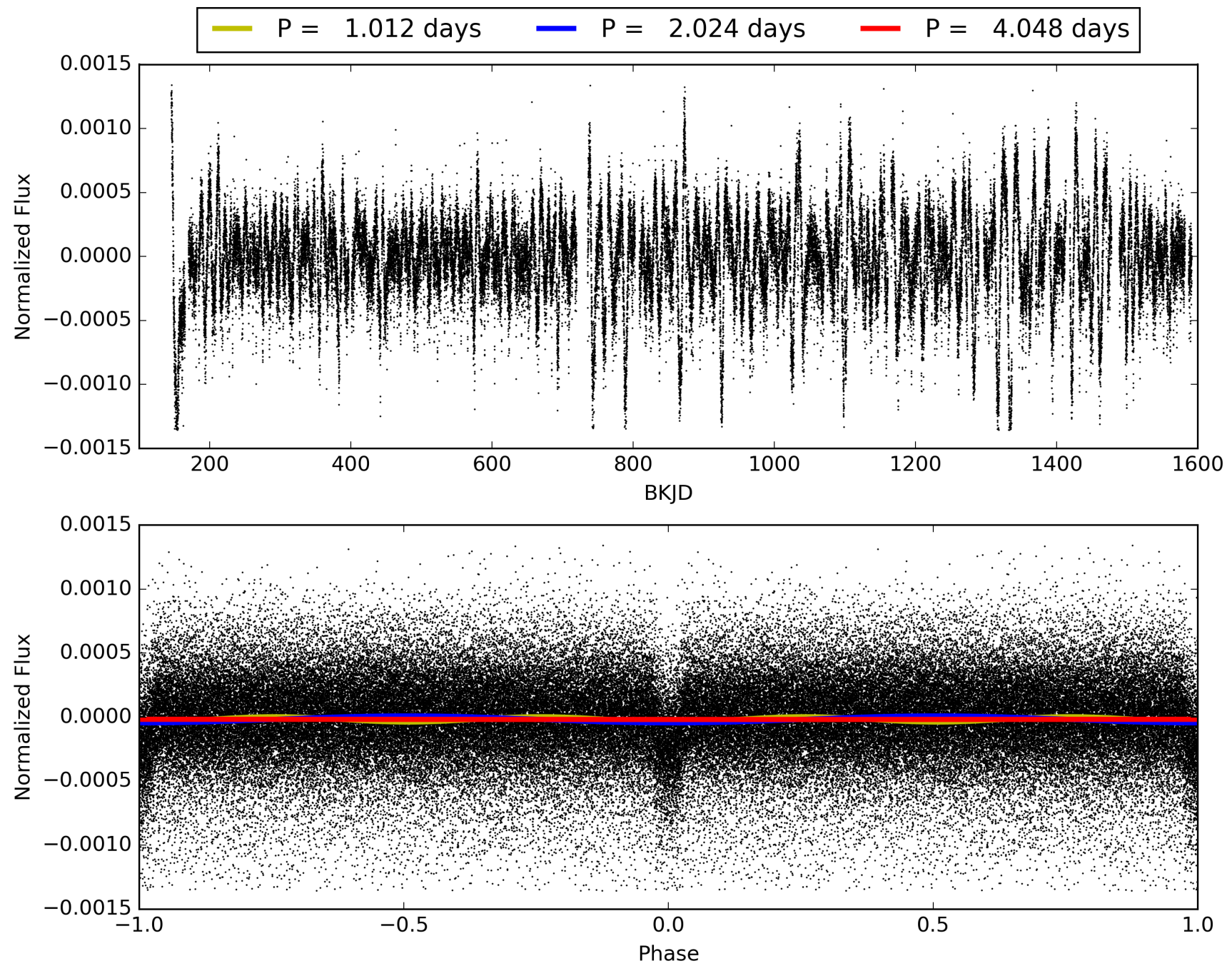
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 12:40:35 Z

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

# TCE 010982872-02, PDC Light Curves

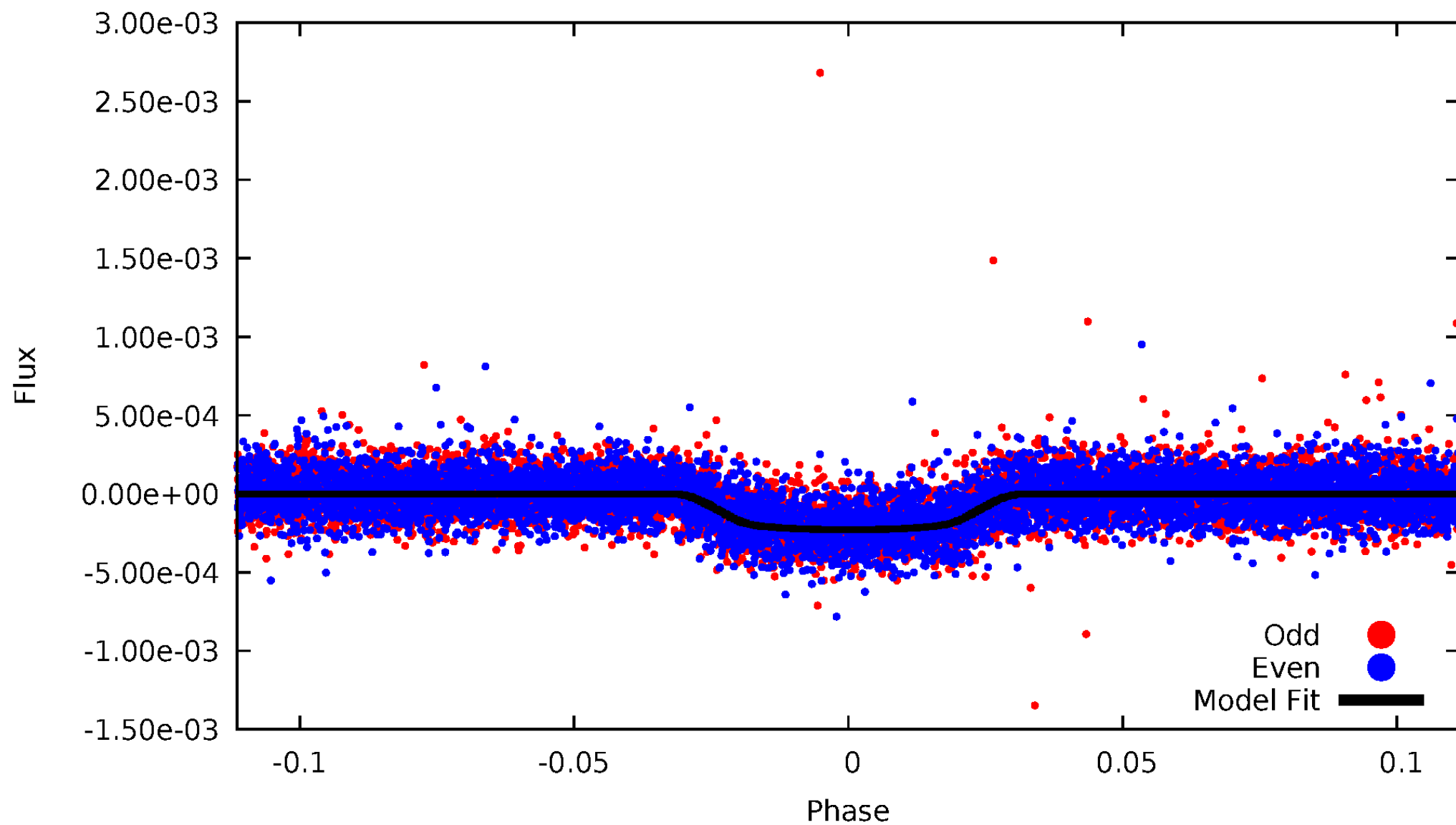


TCE 010982872-02



# DV Odd/Even

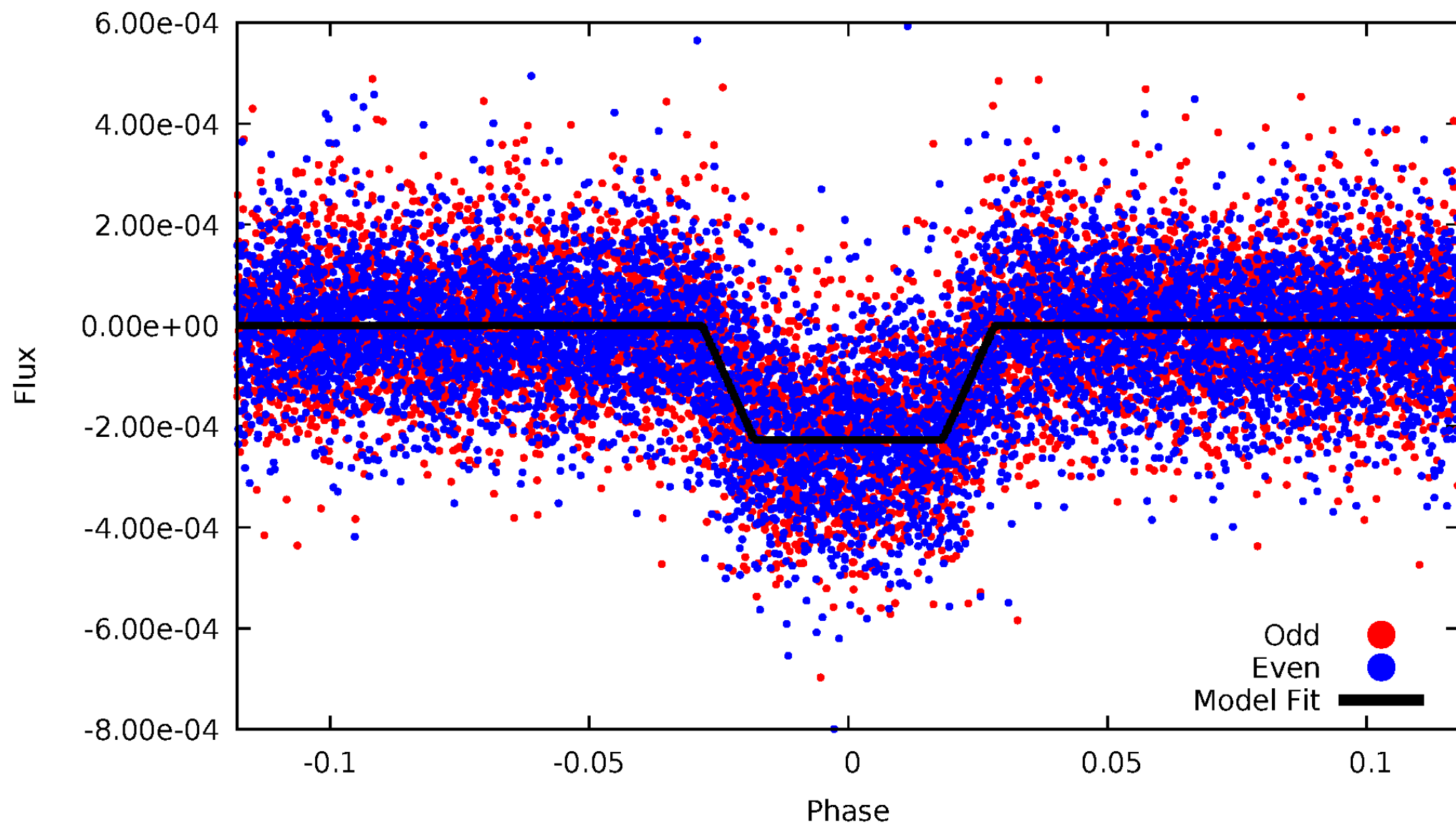
TCE 010982872-02





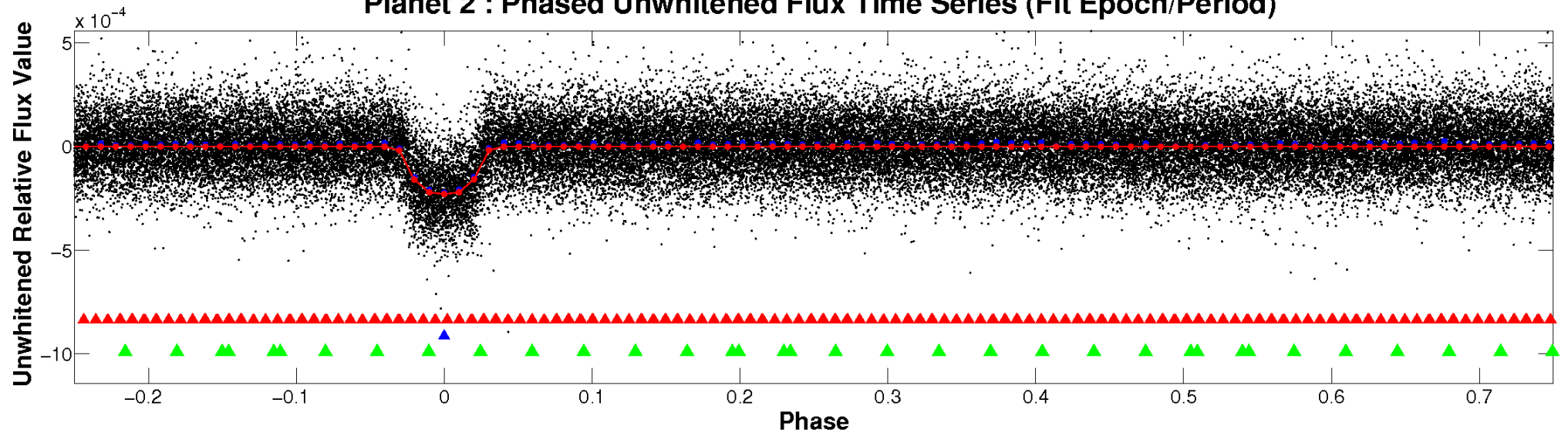
# ALT Odd/Even

TCE 010982872-02

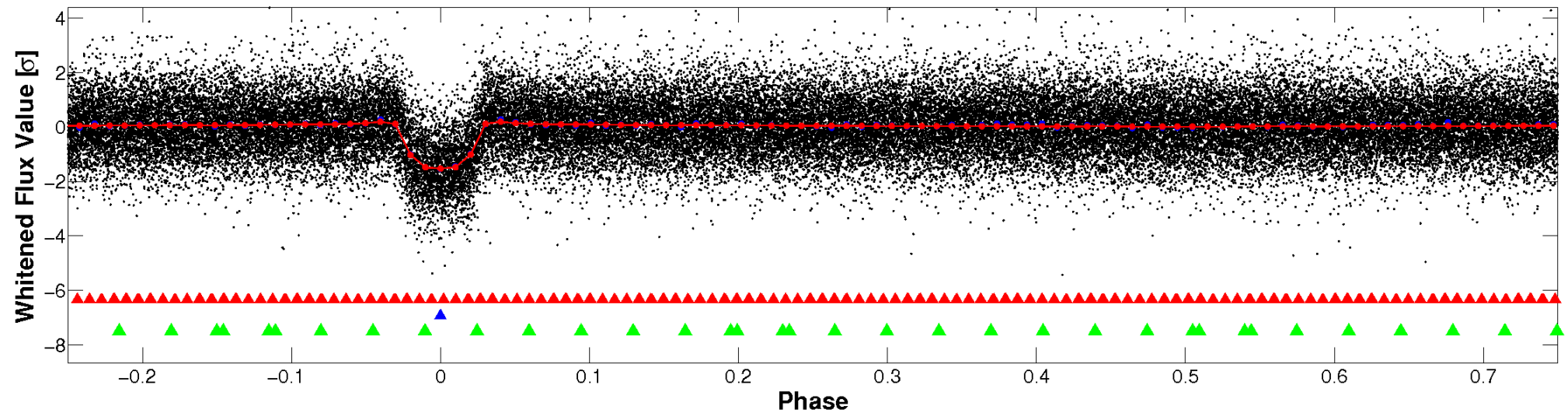


# Non-Whitened Vs. Whitened Light Curve

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



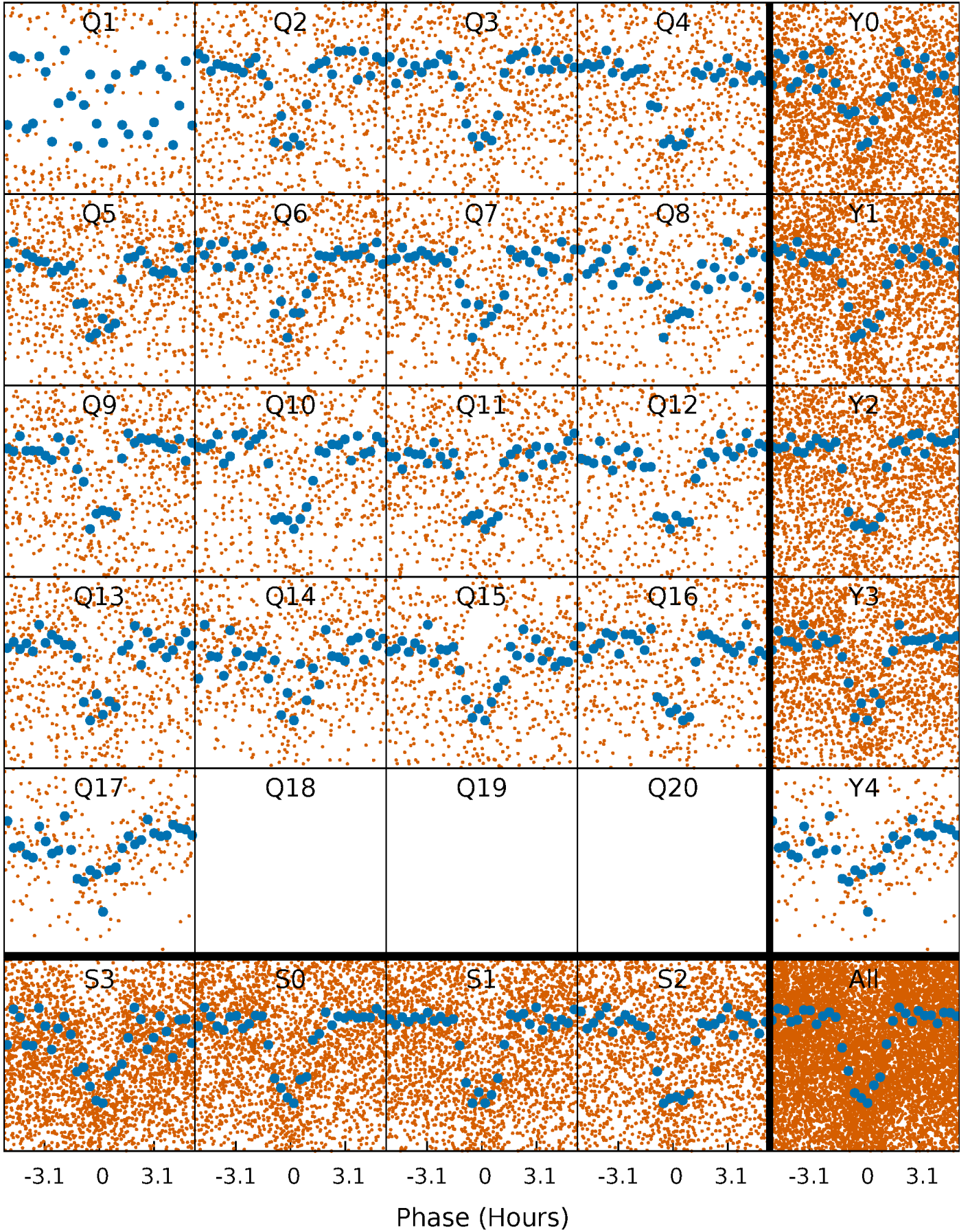
## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)





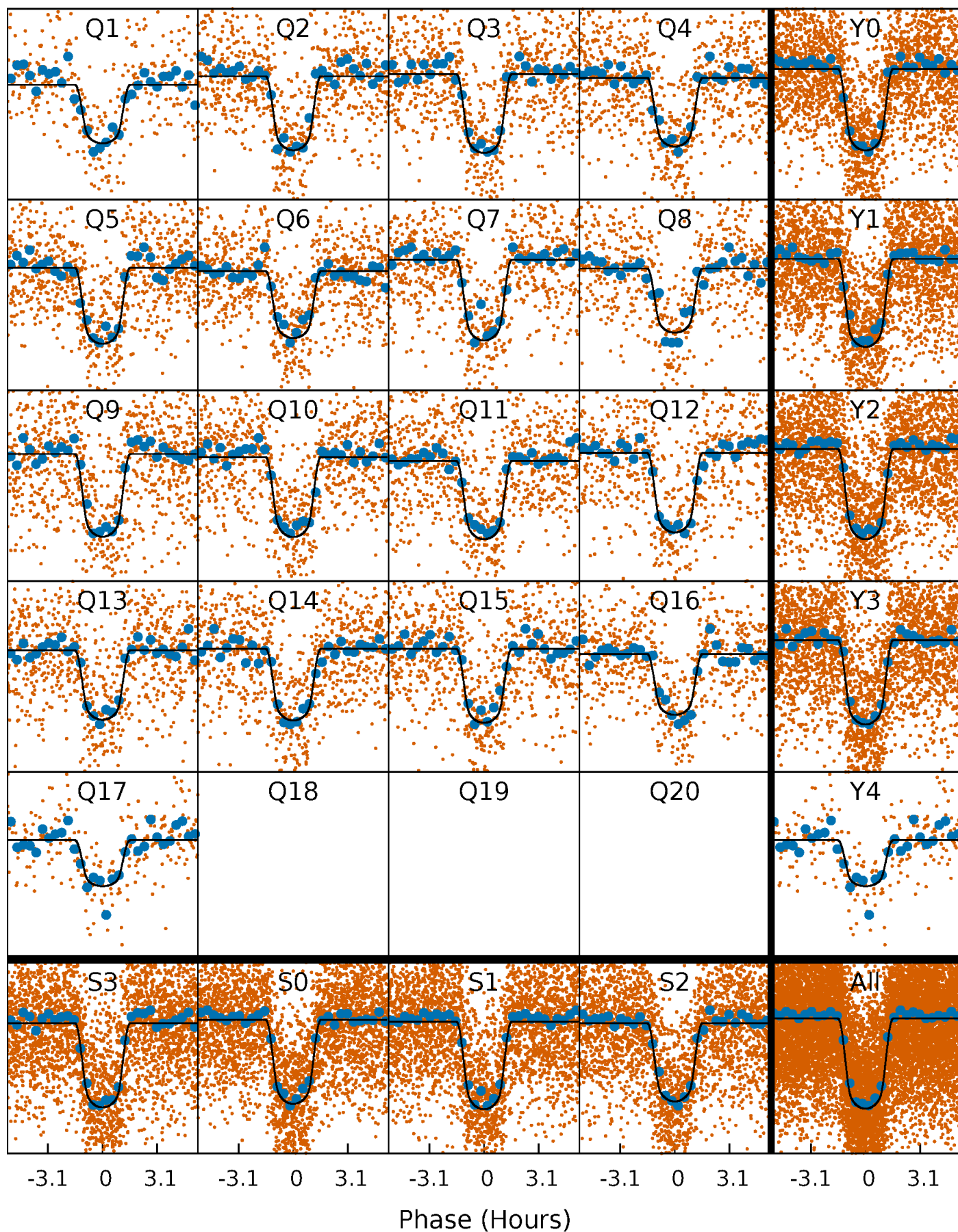
# PDC Quarter-Phased Transit Curves

TCE 010982872-02   P= 2.024134 Days    $T_0=132.040515$  (BKJD)



# DV Quarter-Phased Transit Curves

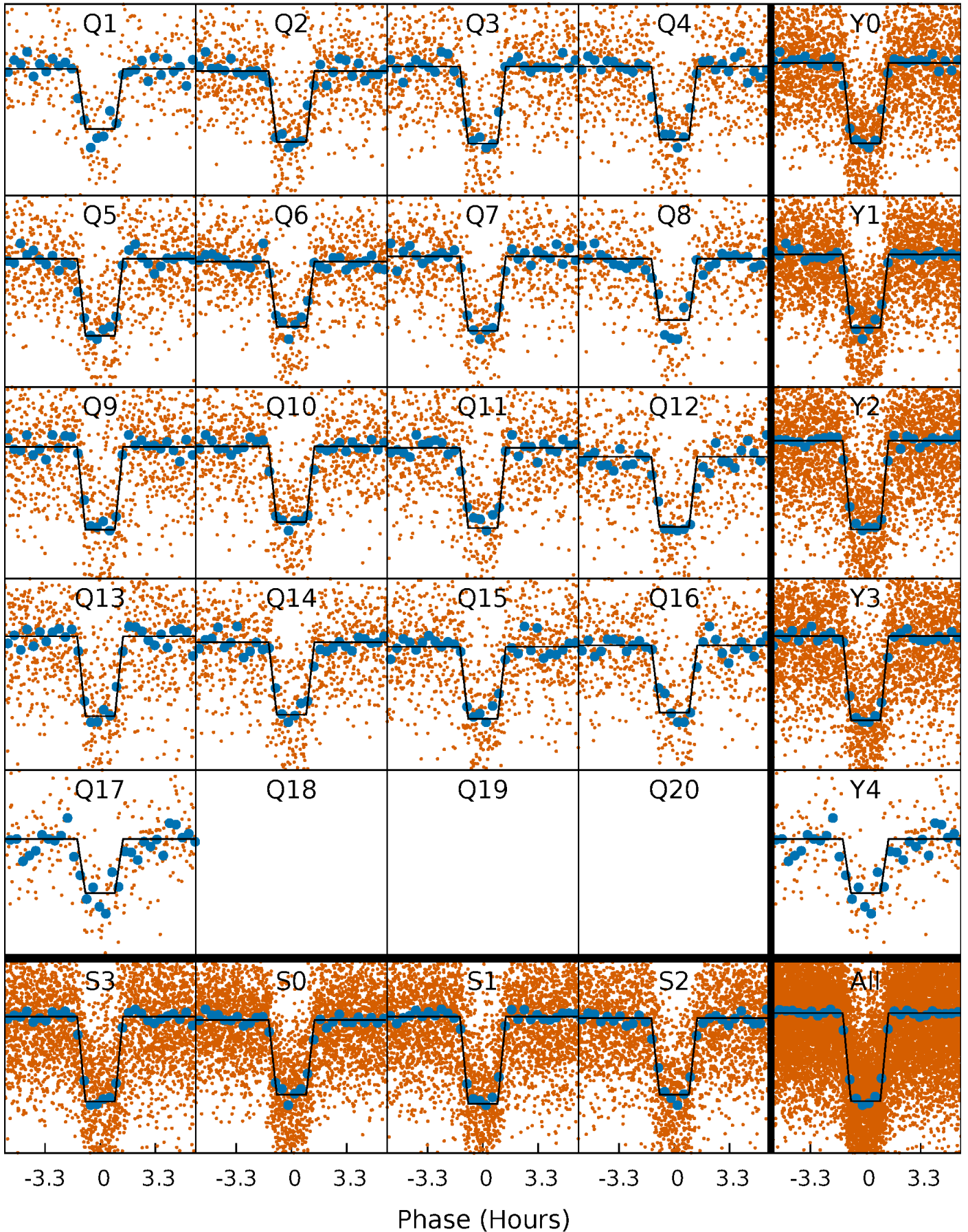
TCE 010982872-02   P= 2.024134 Days    $T_0=132.040515$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

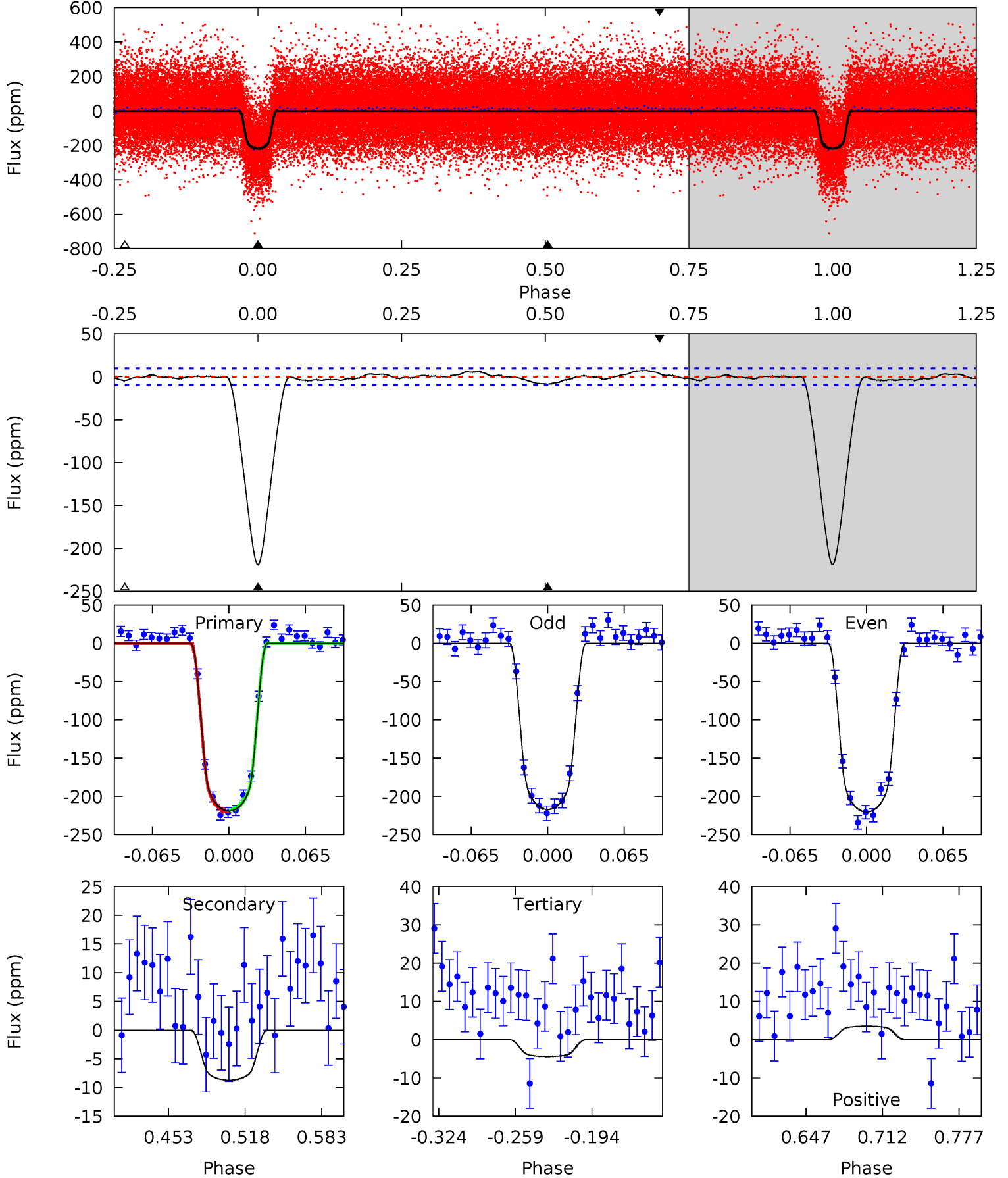
TCE 010982872-02   P= 2.024131 Days    $T_0=132.041739$  (BKJD)



# DV Model-Shift Uniqueness Test

010982872-02, P = 2.024134 Days, E = 130.016381 Days

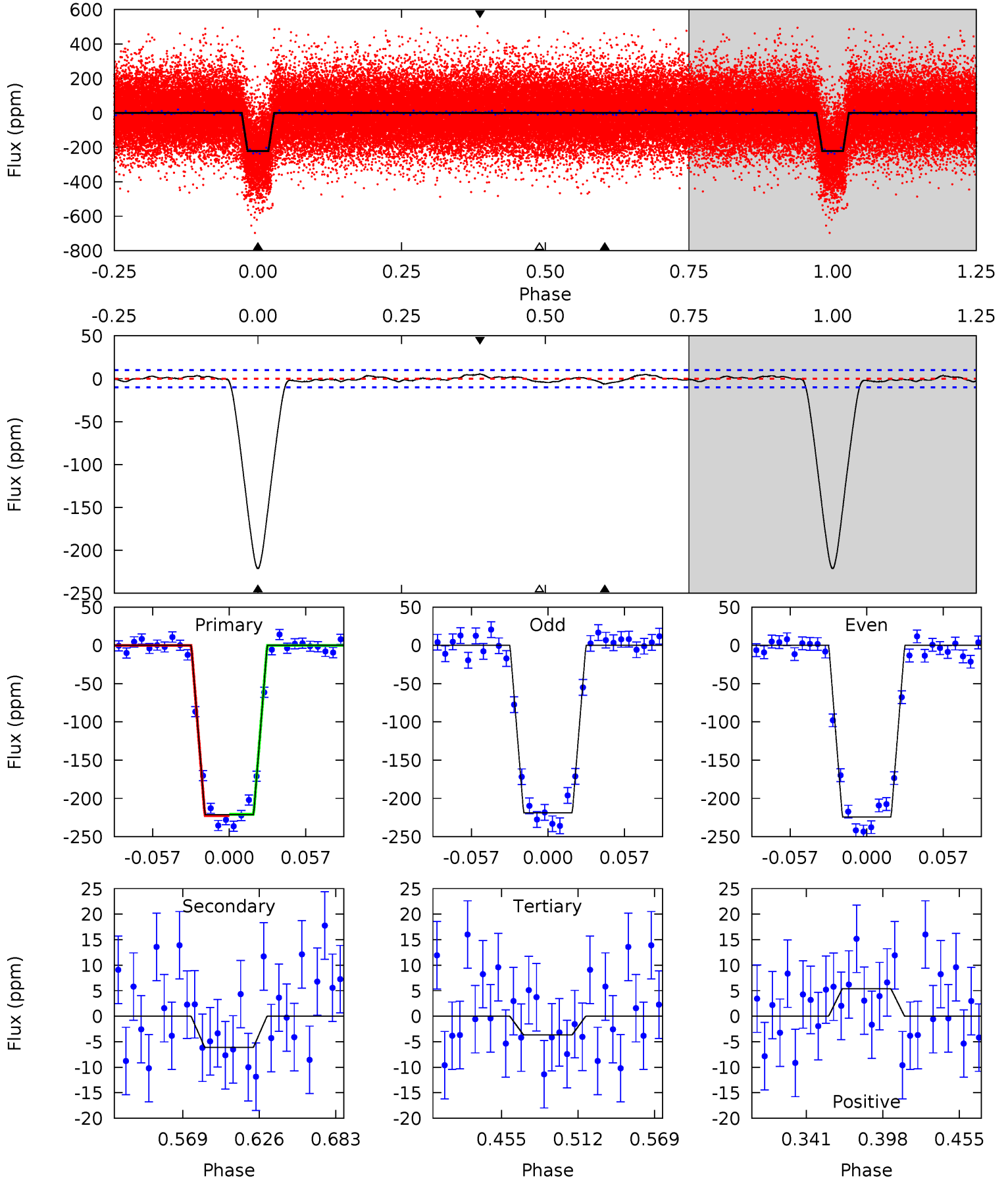
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
106.2	4.22	2.13	1.73	4.66	1.85	1.38	104.1	104.5	2.09	2.49	0.78	0.97	0.03	0.59



# Alt Model-Shift Uniqueness Test

010982872-02, P = 2.024131 Days, E = 130.017608 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
103.3	2.85	1.70	2.52	4.68	1.90	1.07	101.6	100.8	1.14	0.33	1.31	0.99	0.02	0.41



### Stellar Parameters For KIC 010982872

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5794^{+105}_{-117}$	$4.263^{+0.156}_{-0.104}$	$0.070^{+0.150}_{-0.150}$	$1.225^{+0.194}_{-0.213}$	$1.004^{+0.086}_{-0.070}$	$0.769^{+0.510}_{-0.262}$
	+2%/-2%	+4%/-2%	+214%/-214%	+16%/-17%	+9%/-7%	+66%/-34%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 010982872-02 / KOI 0343.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-9 \pm 2$	$2.29^{+0.23}_{-0.24}$	$2230^{+102}_{-118}$	$2881^{+144}_{-173}$	$0.894^{+0.325}_{-0.247}$
Alt.	$-6 \pm 2$	$2.01^{+0.20}_{-0.22}$	$2224^{+106}_{-116}$	$2823^{+185}_{-280}$	$0.826^{+0.345}_{-0.307}$

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

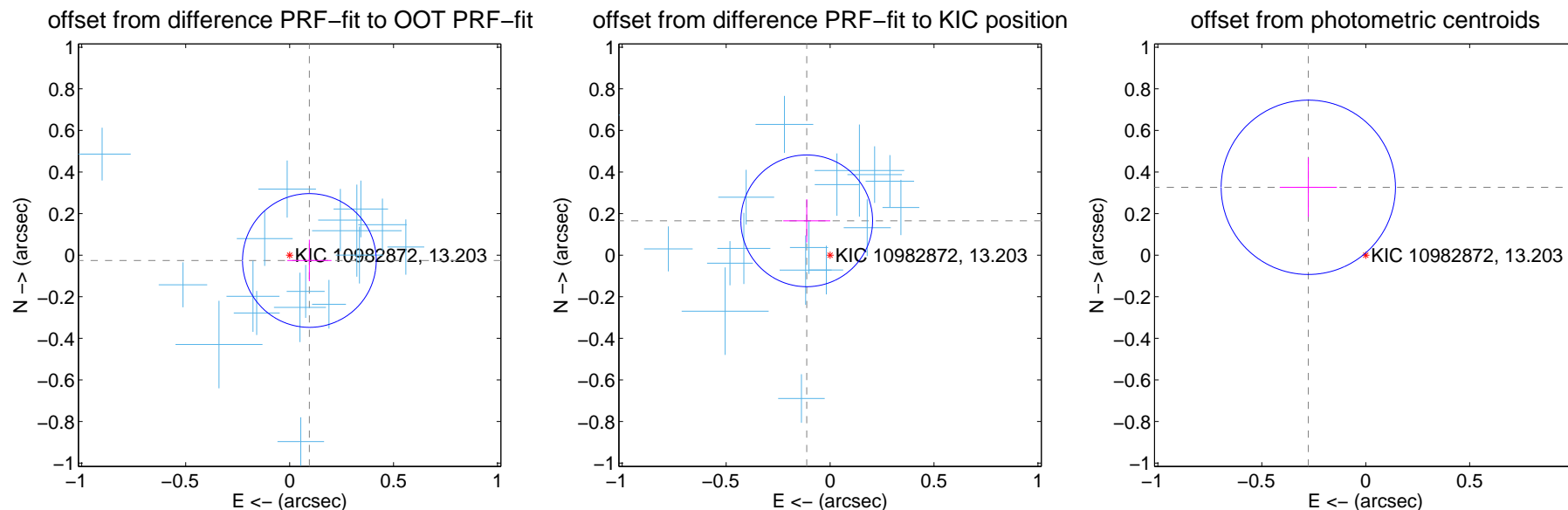
## DV Centroid Data

Supplemental centroid analysis for 010982872-02. Kepler magnitude: 13.20. Transit SNR 70.20

There are 17 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

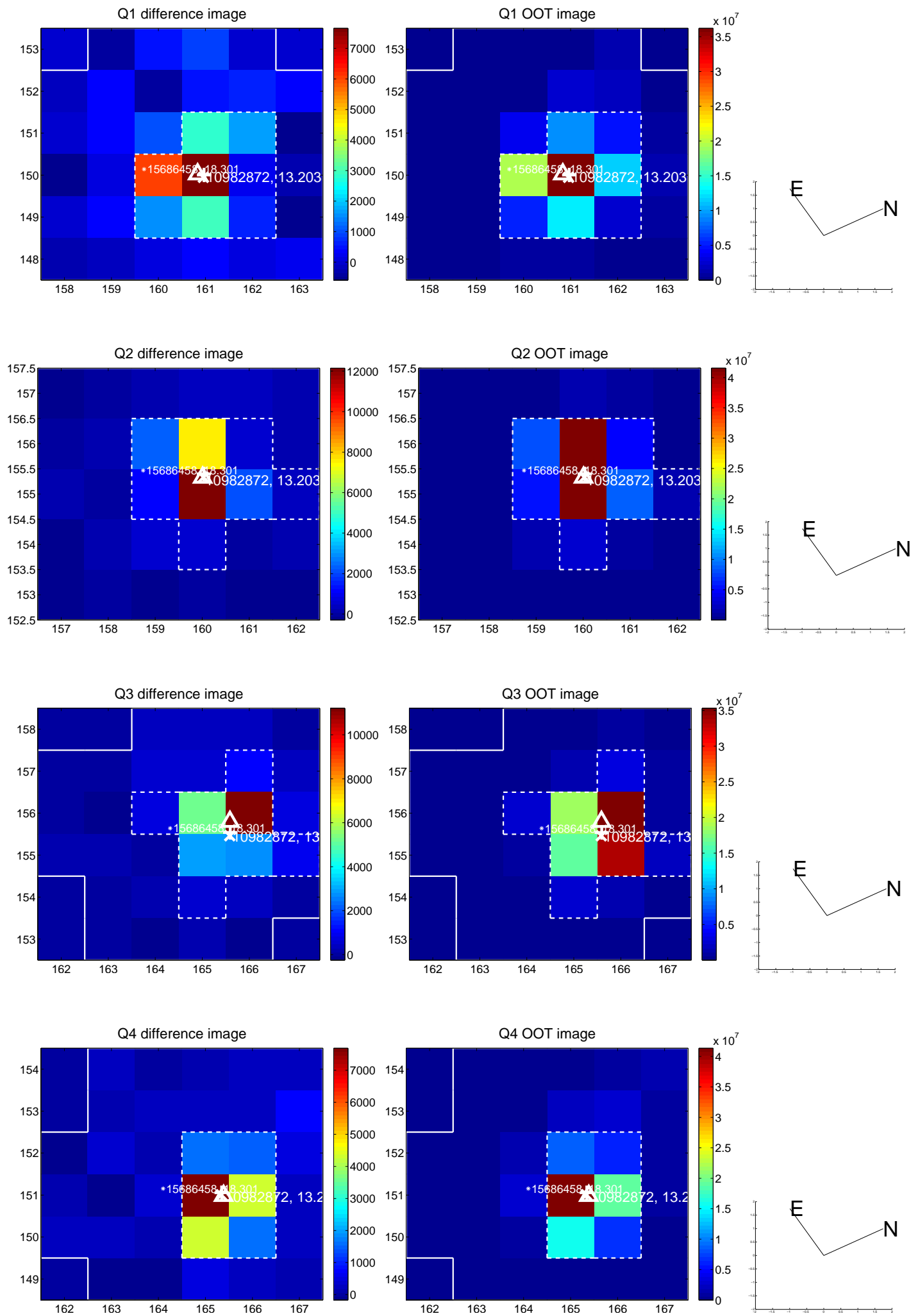
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.098 \pm 0.107$	0.92	$-0.095 \pm 0.106$	$-0.026 \pm 0.100$
PRF-fit source offset from KIC position	$0.200 \pm 0.106$	1.89	$0.112 \pm 0.113$	$0.165 \pm 0.104$
photometric centroid source offset	$0.43 \pm 0.14$	3.06	$0.28 \pm 0.14$	$0.33 \pm 0.14$



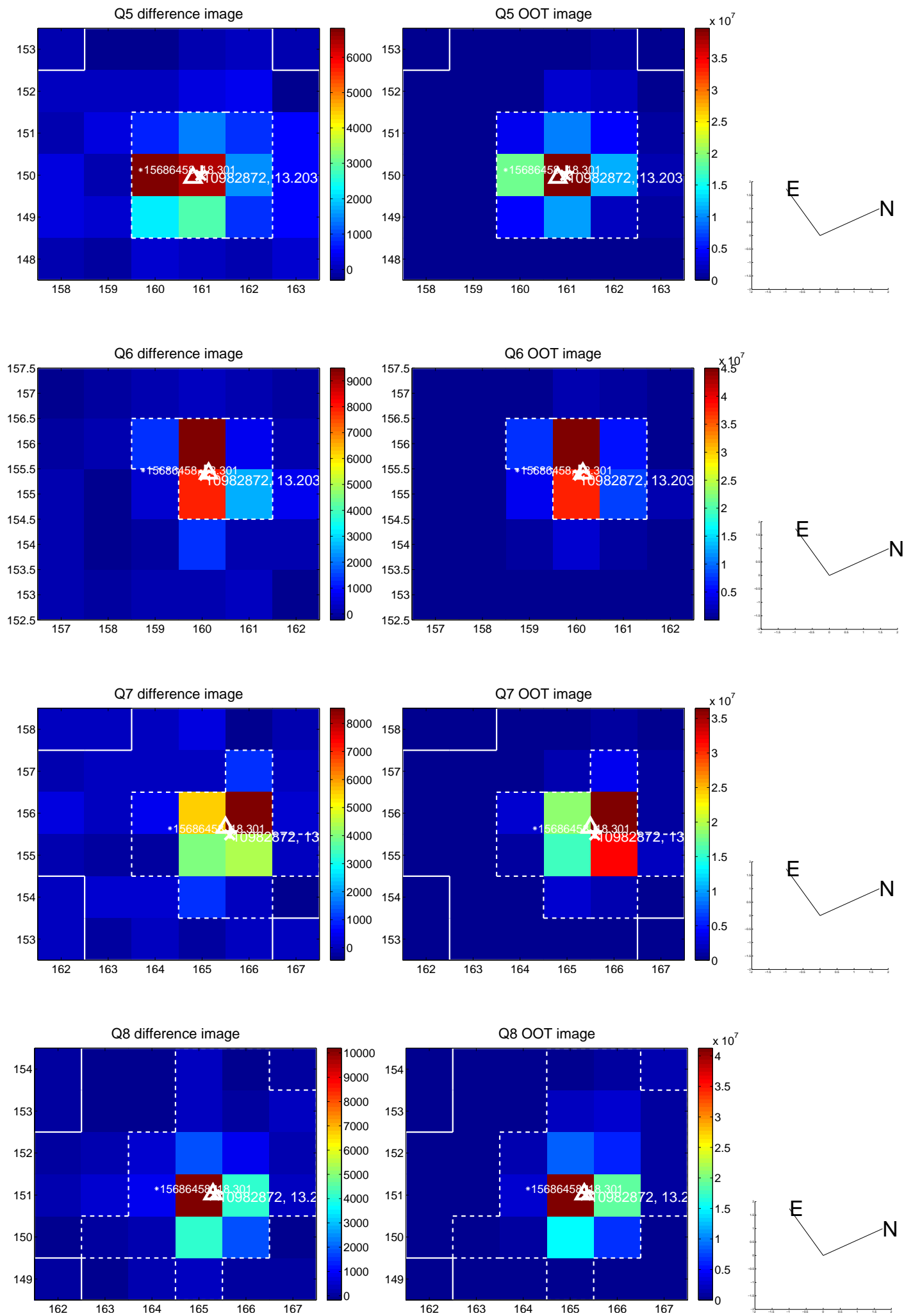
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



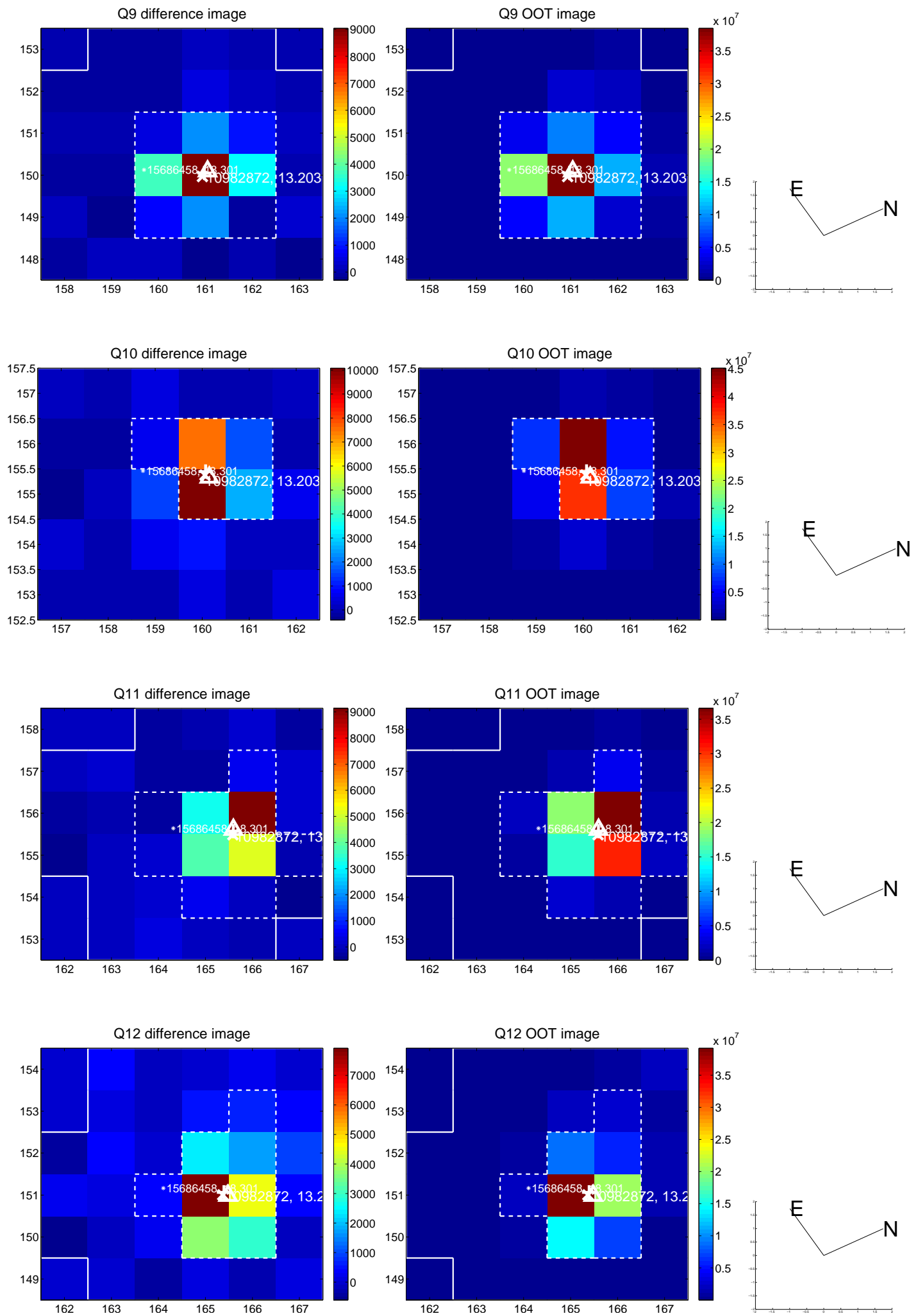
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



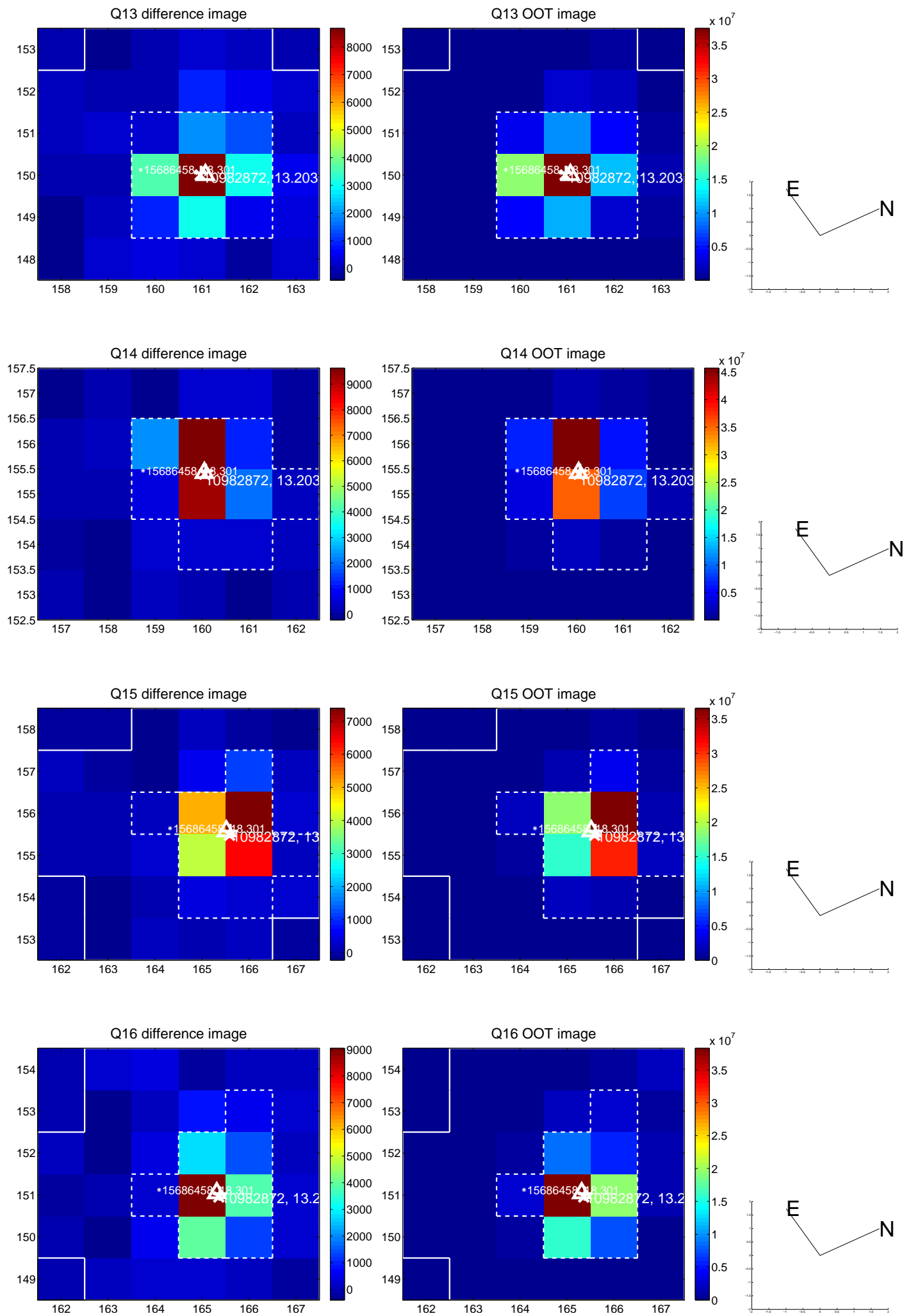
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



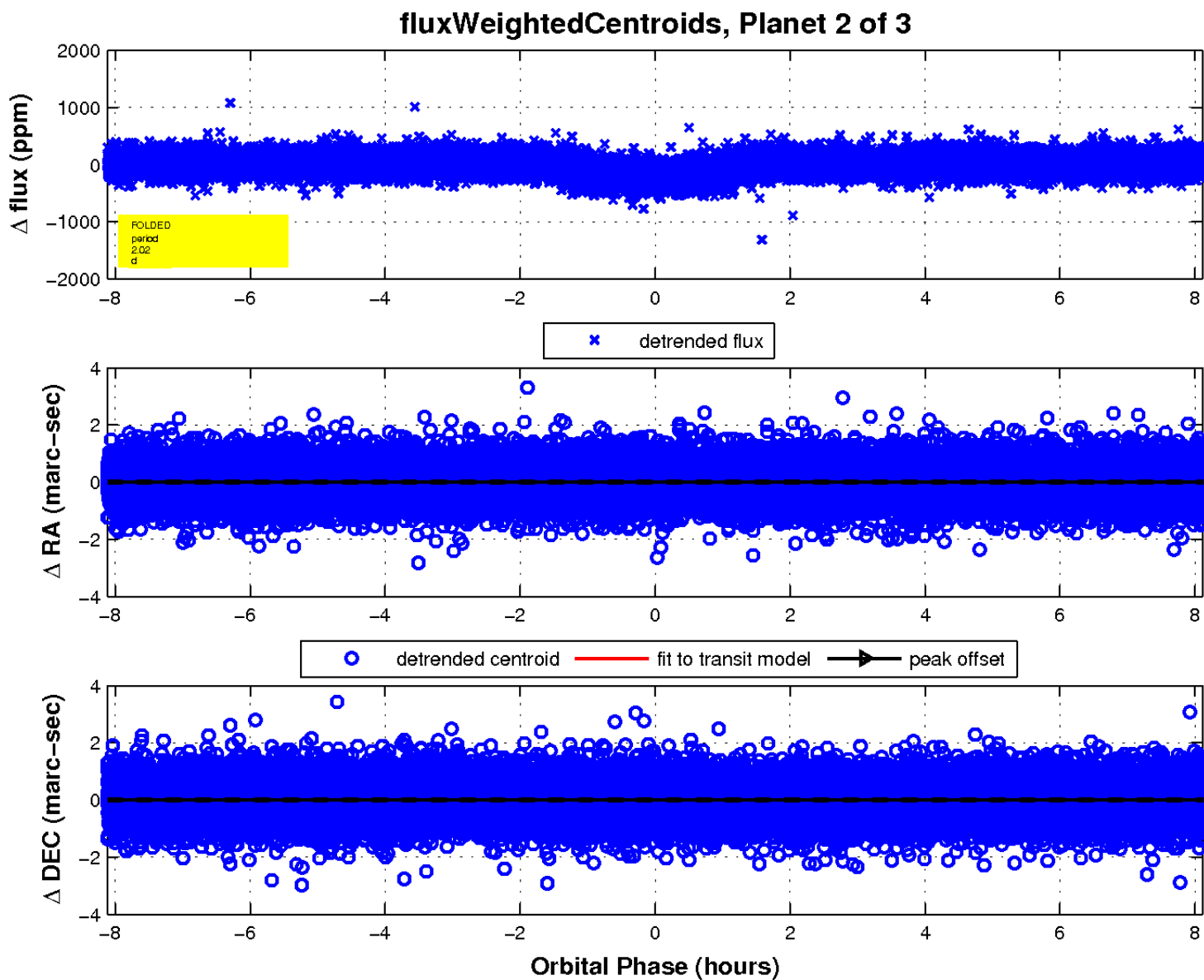
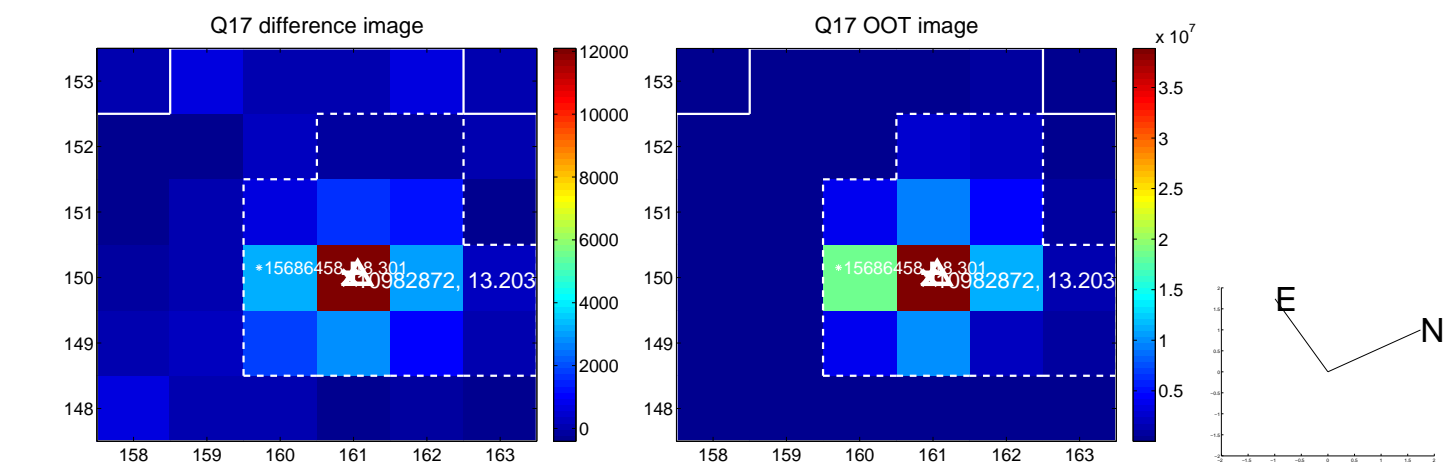
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

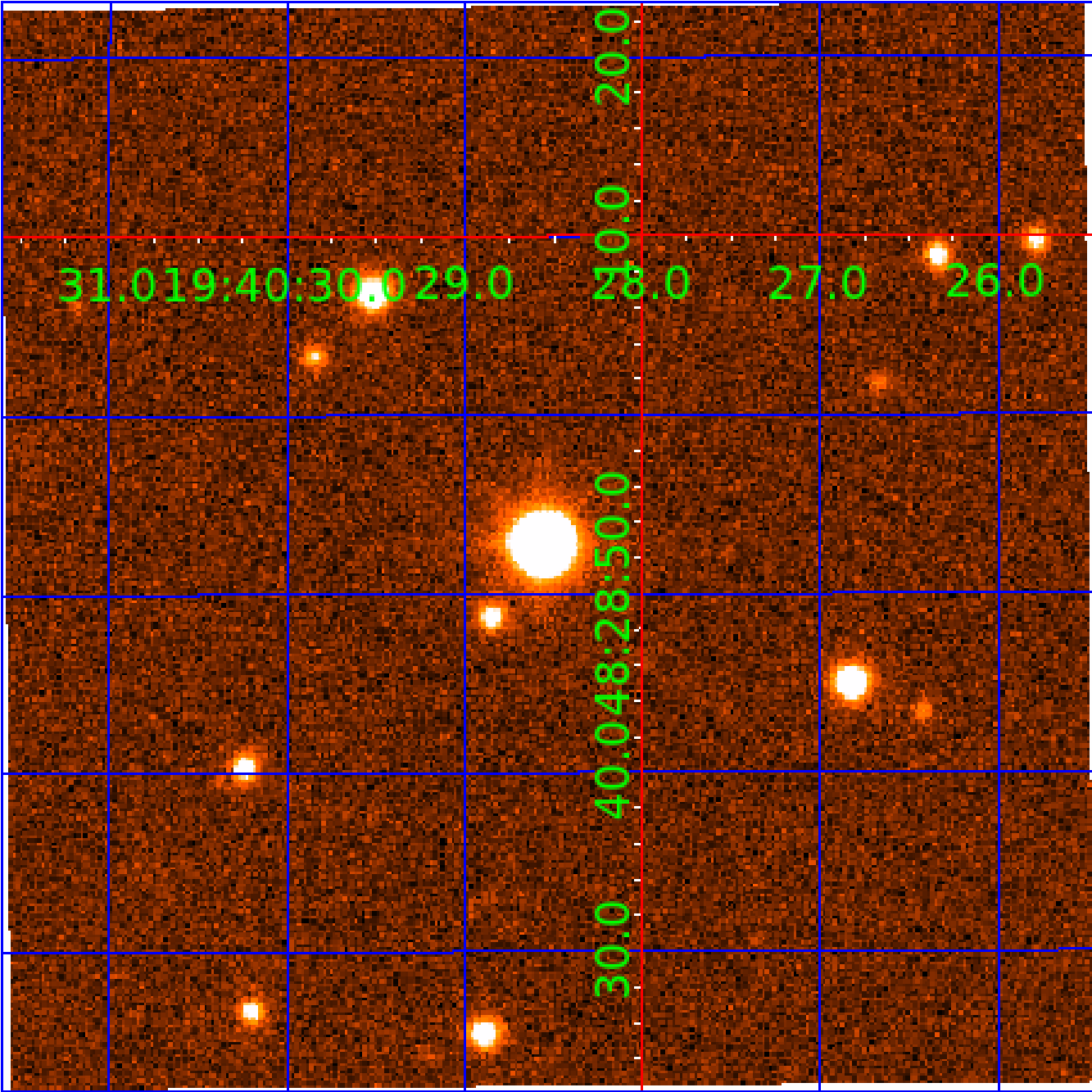


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



UKIRT Image

Declination





# KIC 010982872

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010982872-01	OBS	0343.01	4.761701	132.242719	490.1	3.594	95.5	102.0	1.23	5794	3.23	492.66
010982872-02	OBS	0343.02	2.024134	132.040515	230.0	2.705	62.4	70.2	1.23	5794	2.30	1541.39
010982872-03	OBS	0343.03	41.808533	148.707556	175.3	8.036	14.0	15.2	1.23	5794	1.74	27.20

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010982872-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010982872-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010982872-03	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.

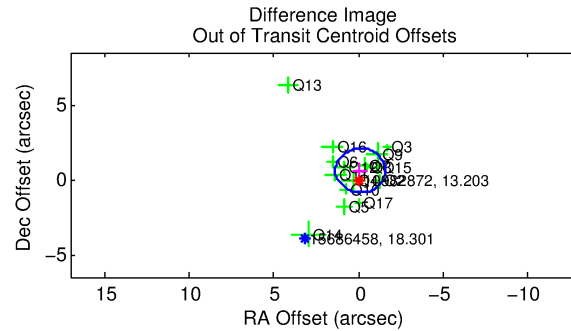
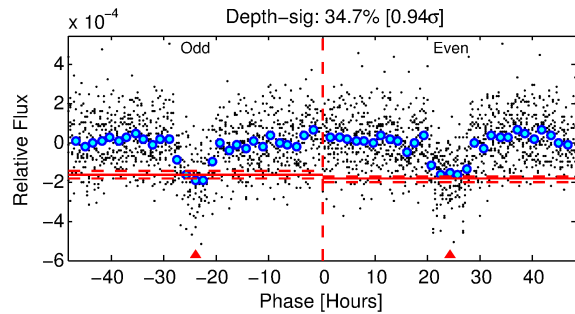
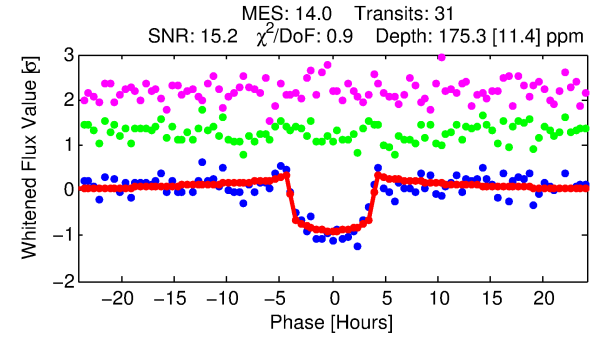
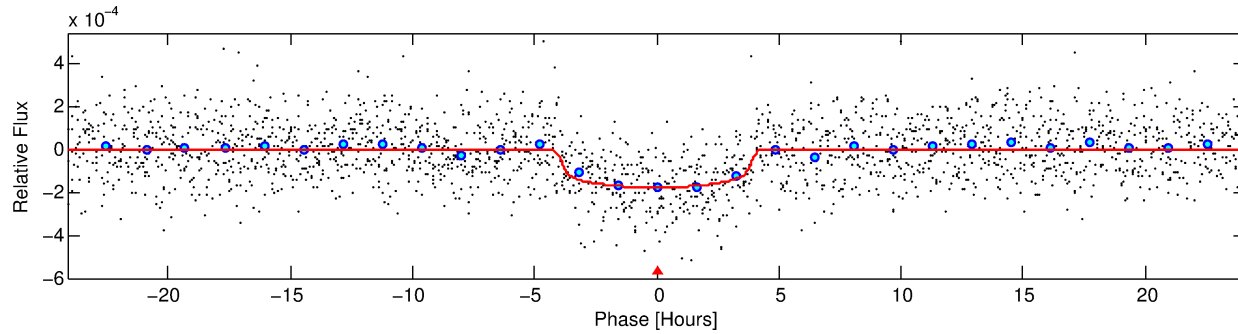
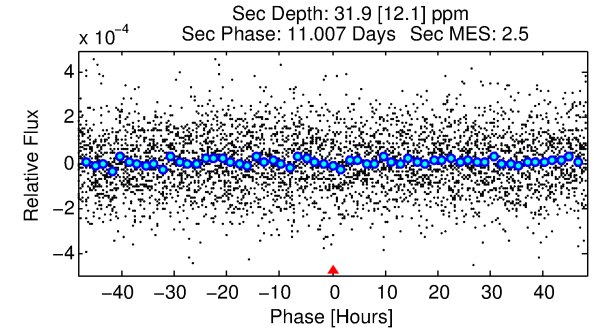
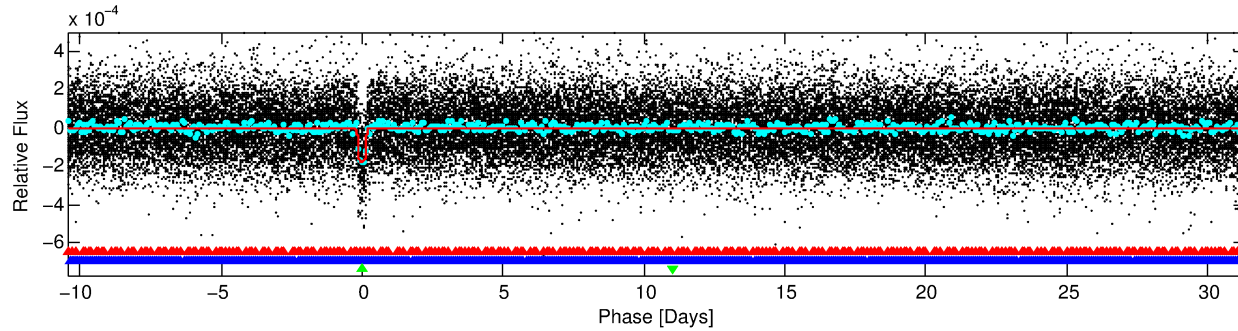
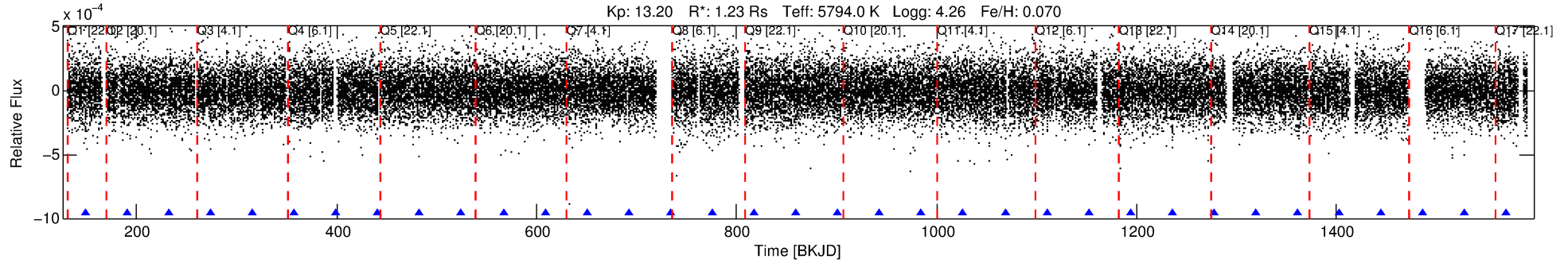
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010982872-03

No Significant Match Found

# DV One-Page Summary

KIC: 10982872 Candidate: 3 of 3 Period: 41.809 d  
KOI: K00343.03 Name: Kepler-142d Corr: 0.970



## DV Fit Results:

Period = 41.80853 [0.00035] d  
Epoch = 148.7076 [0.0069] BKJD  
Rp/R\* = 0.0130 [0.0050]  
a/R\* = 28.57 [48.90]  
b = 0.71 [1.19]  
Seff = 27.20 [7.56]  
Teq = 582 [40] K  
Rp = 1.74 [0.74] Re  
a = 0.2360 [0.0393] AU  
Ag = 323.32 [291.21] [1.11σ]  
Teffp = 3818 [825] K [3.92σ]

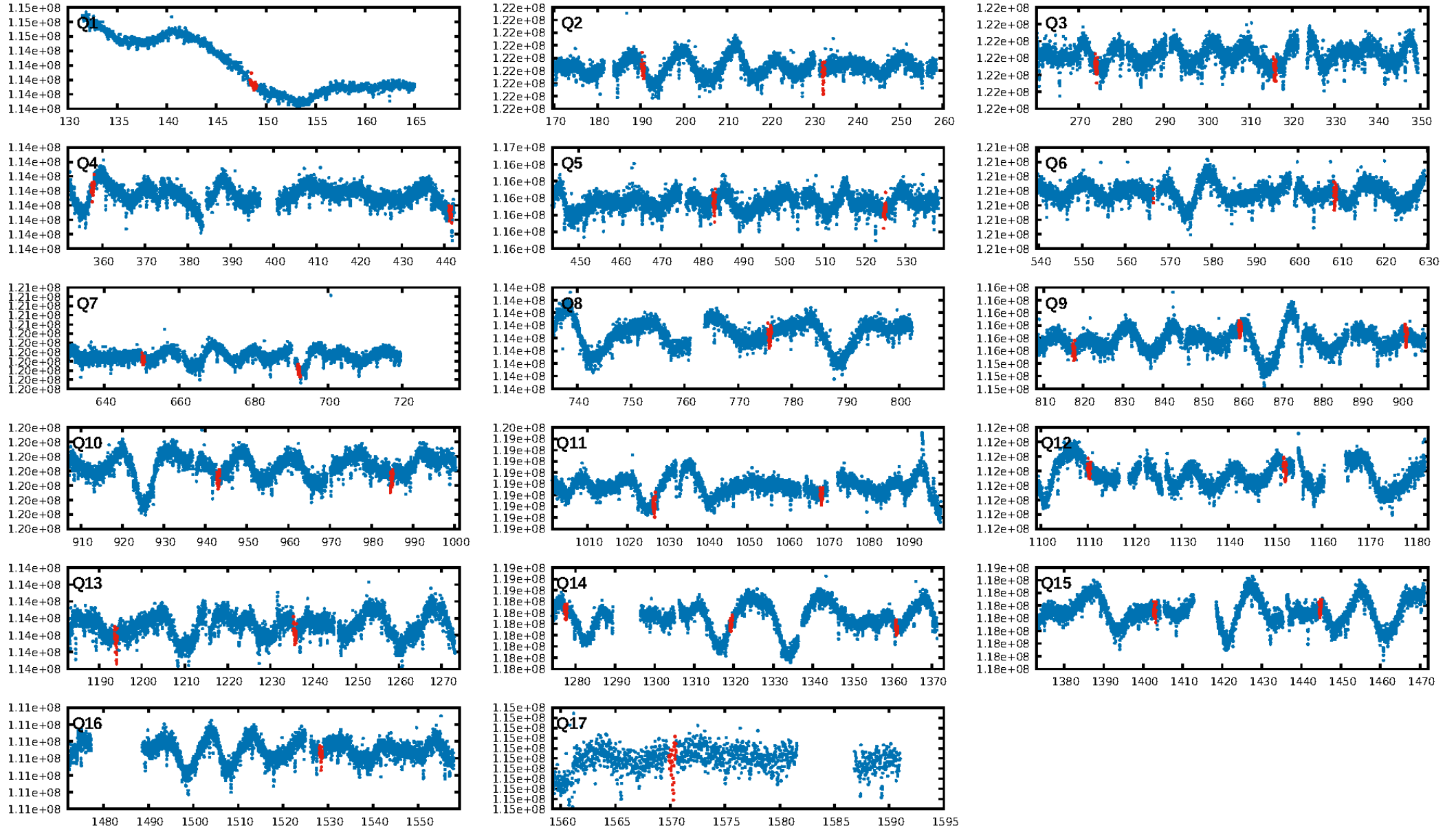
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [101.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 99.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 4.83e-40  
RollingBand-fgt: 1.00 [29/29]  
GhostDiagnostic-chr: 4.361  
Centroid-sig: 88.0%  
Centroid-so: 0.585 arcsec [1.10σ]  
OotOffset-rm: 0.616 arcsec [1.25σ]  
KicOffset-rm: 0.844 arcsec [1.65σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.75 [12/16]  
DiffImageOverlap-fno: 0.35 [6/17]

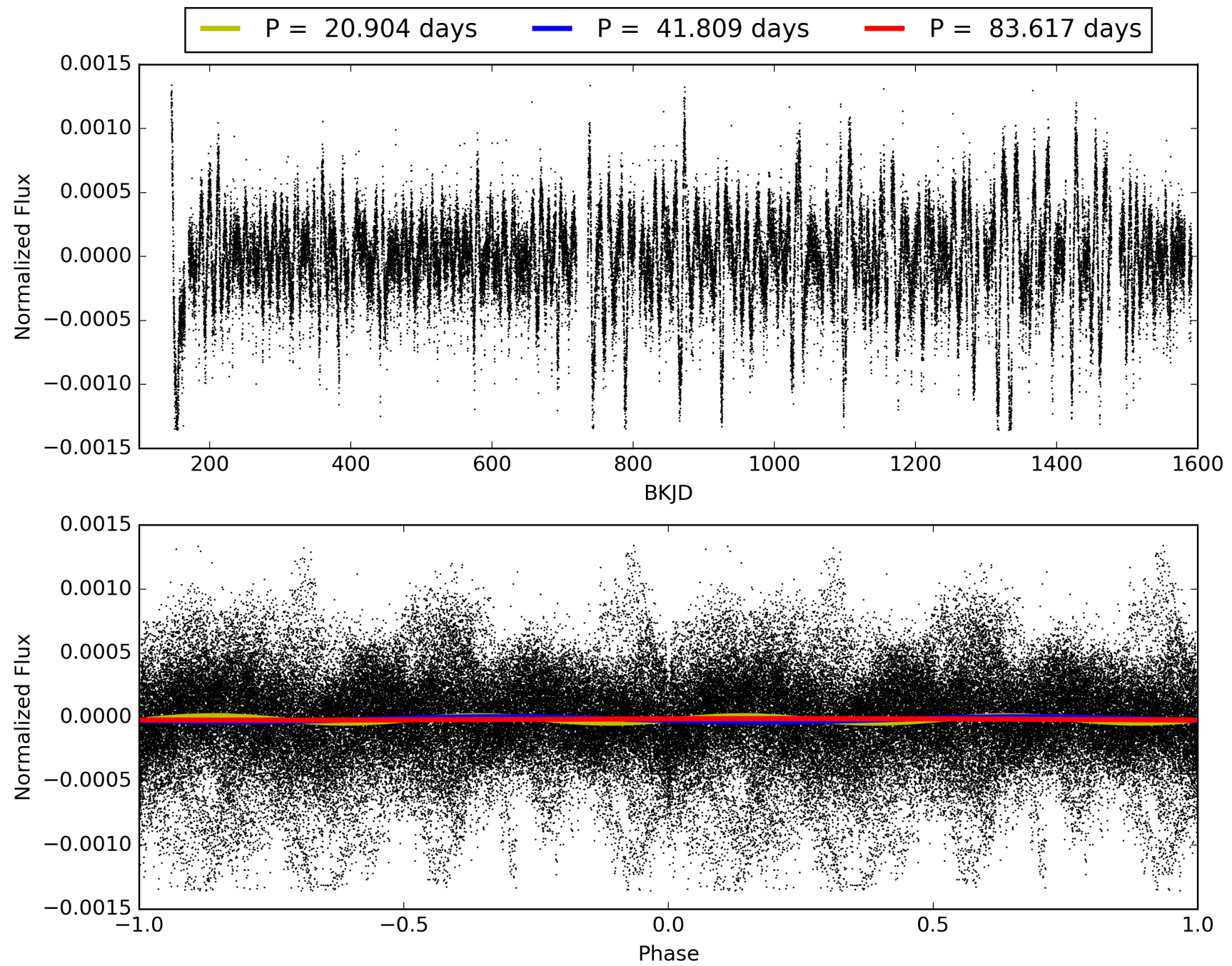
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 12:40:43 Z

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

# TCE 010982872-03, PDC Light Curves

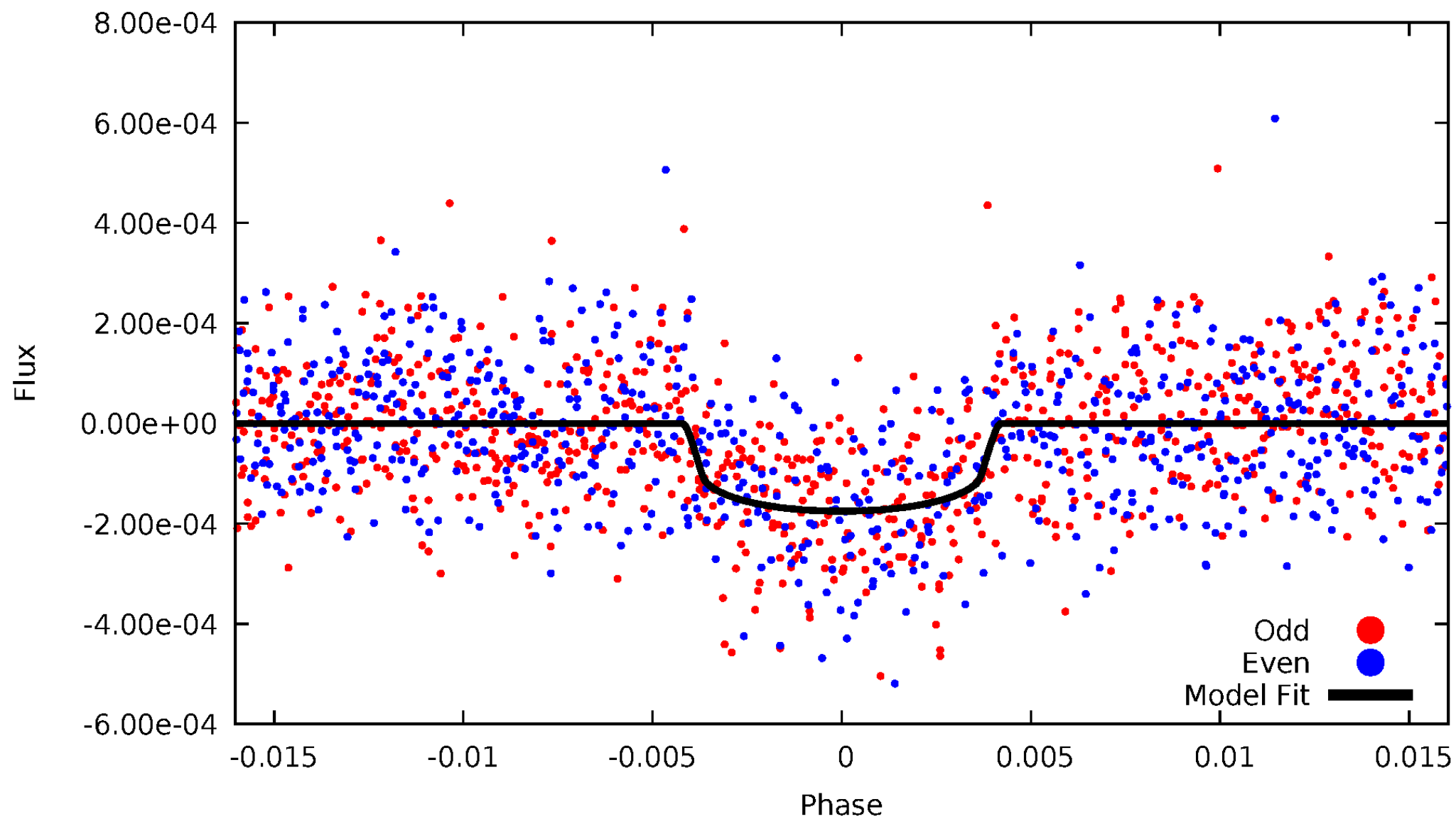


# TCE 010982872-03



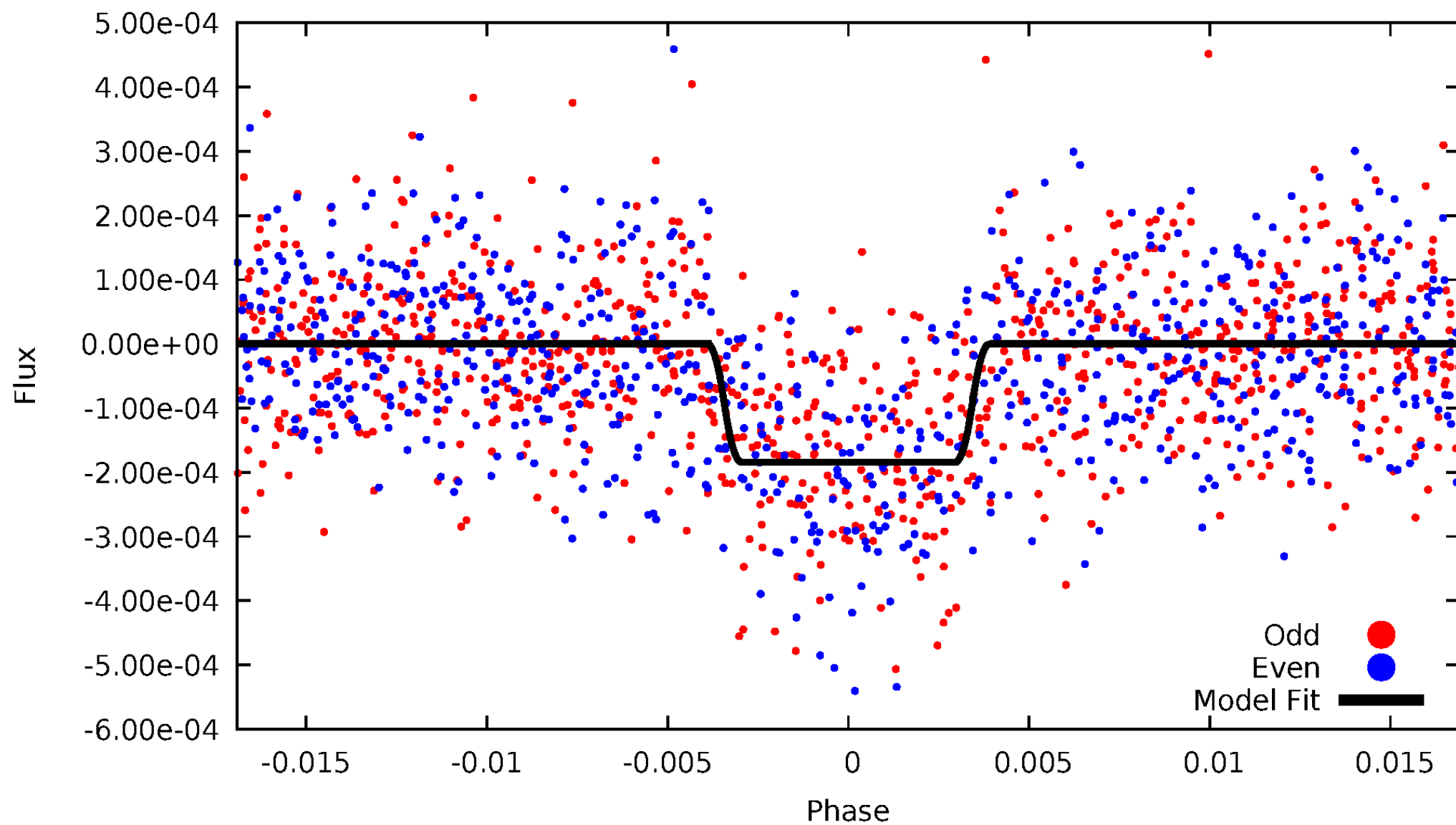
DV Odd/Even

TCE 010982872-03



# ALT Odd/Even

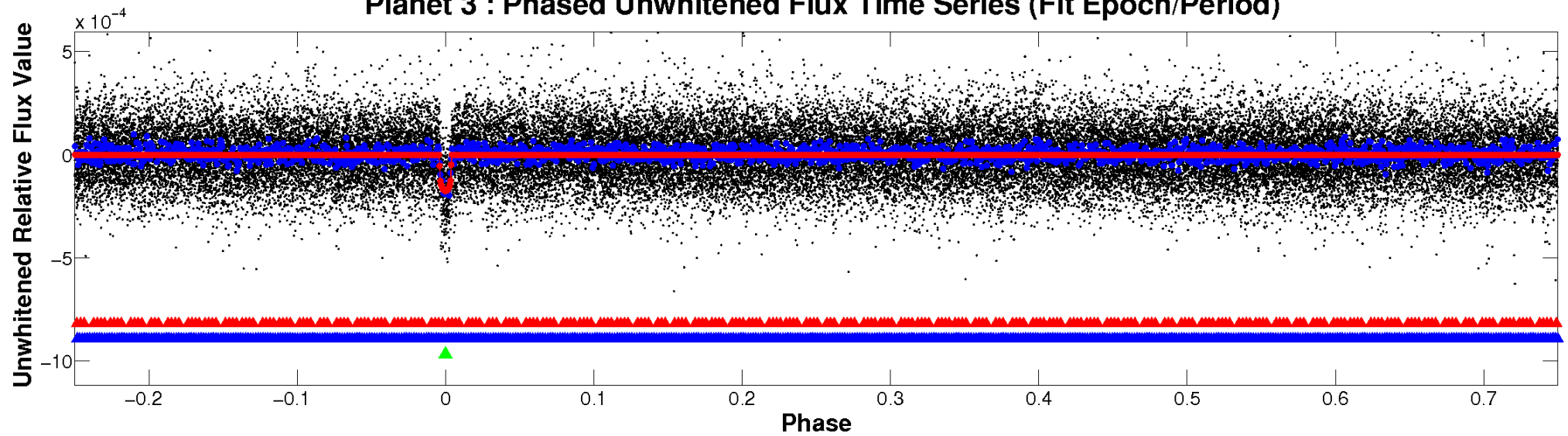
TCE 010982872-03



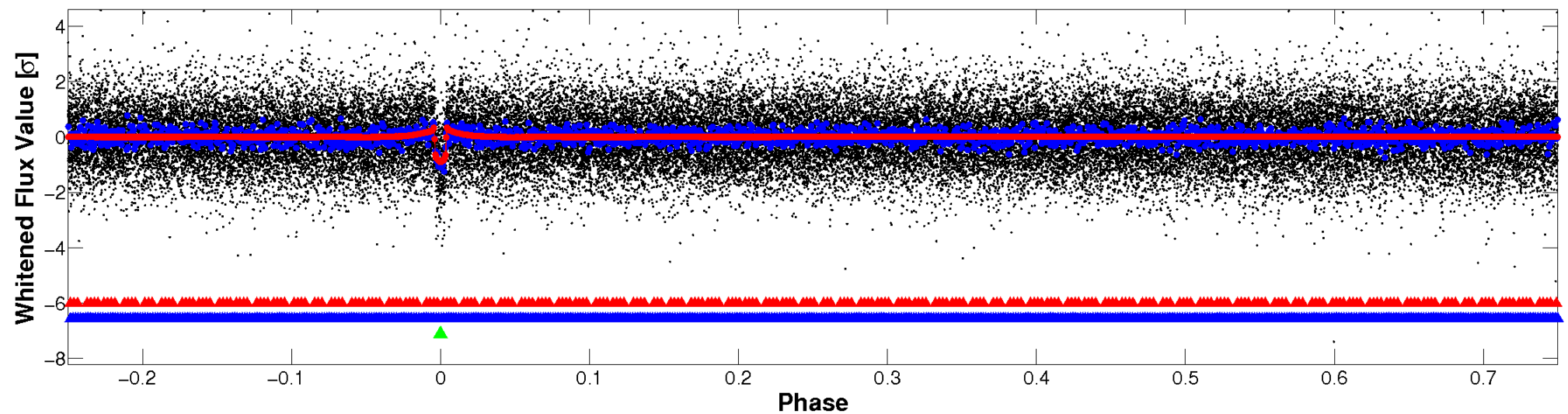


# Non-Whitened Vs. Whitened Light Curve

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

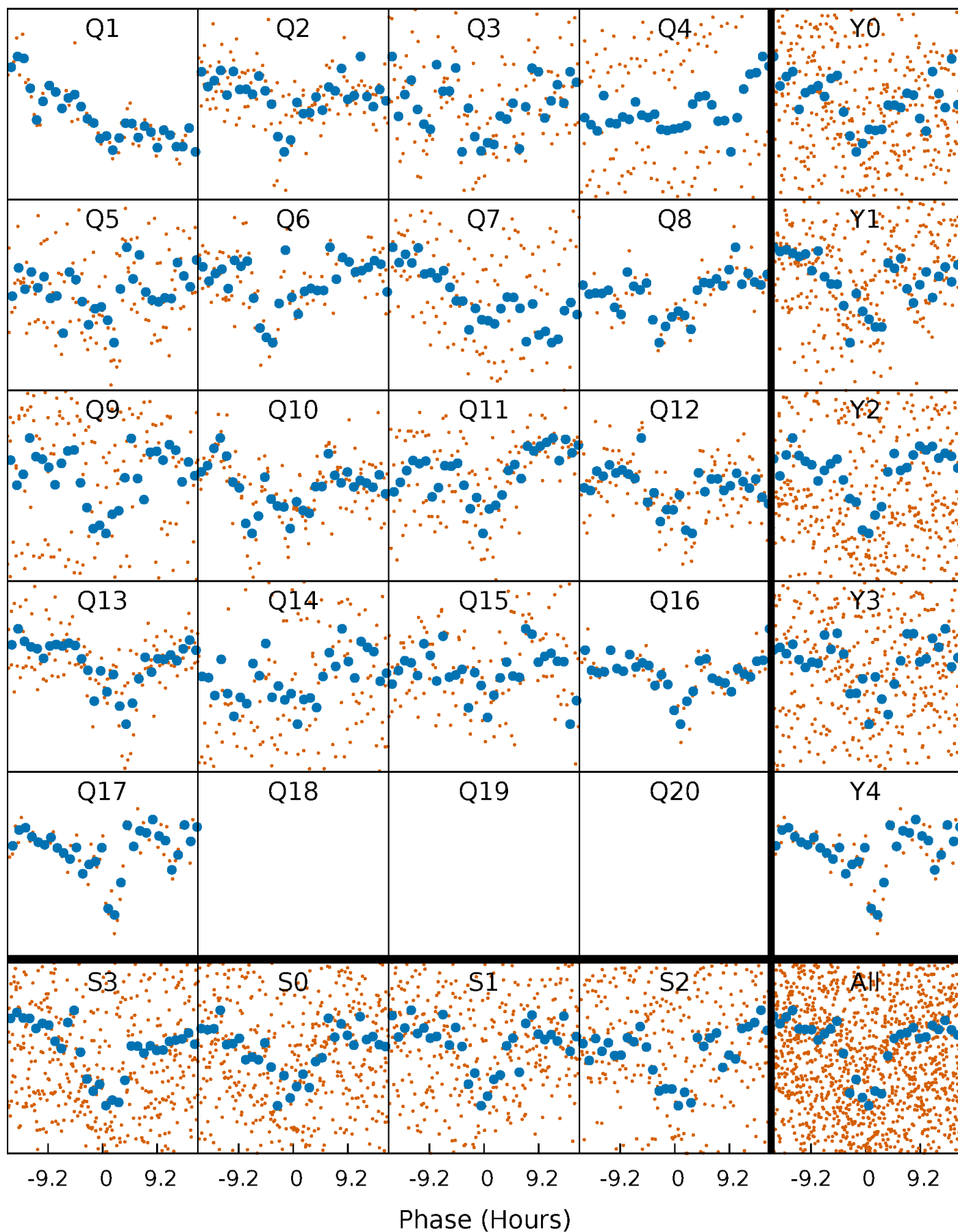


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



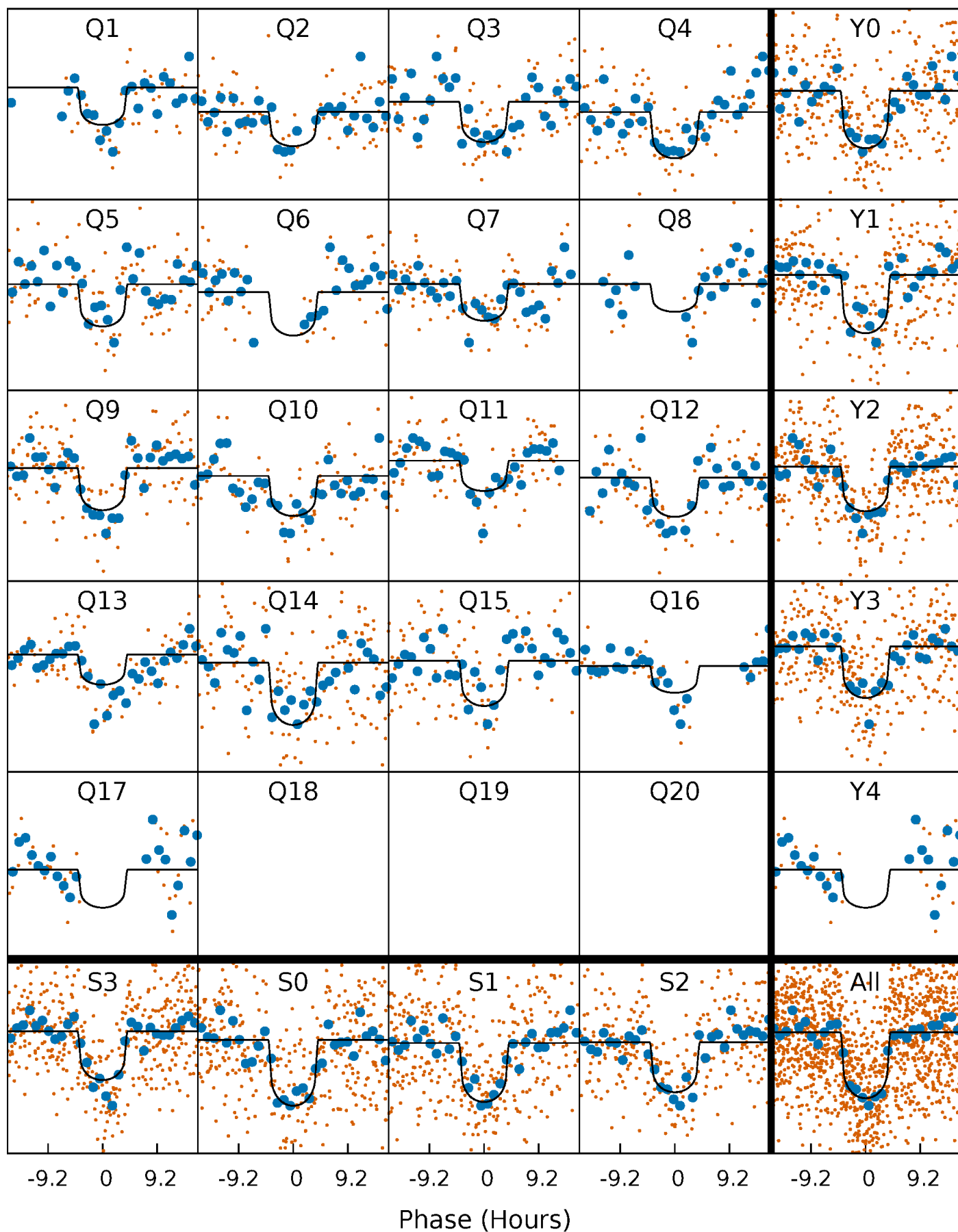
# PDC Quarter-Phased Transit Curves

TCE 010982872-03 P= 41.808533 Days  $T_0=148.707556$  (BKJD)



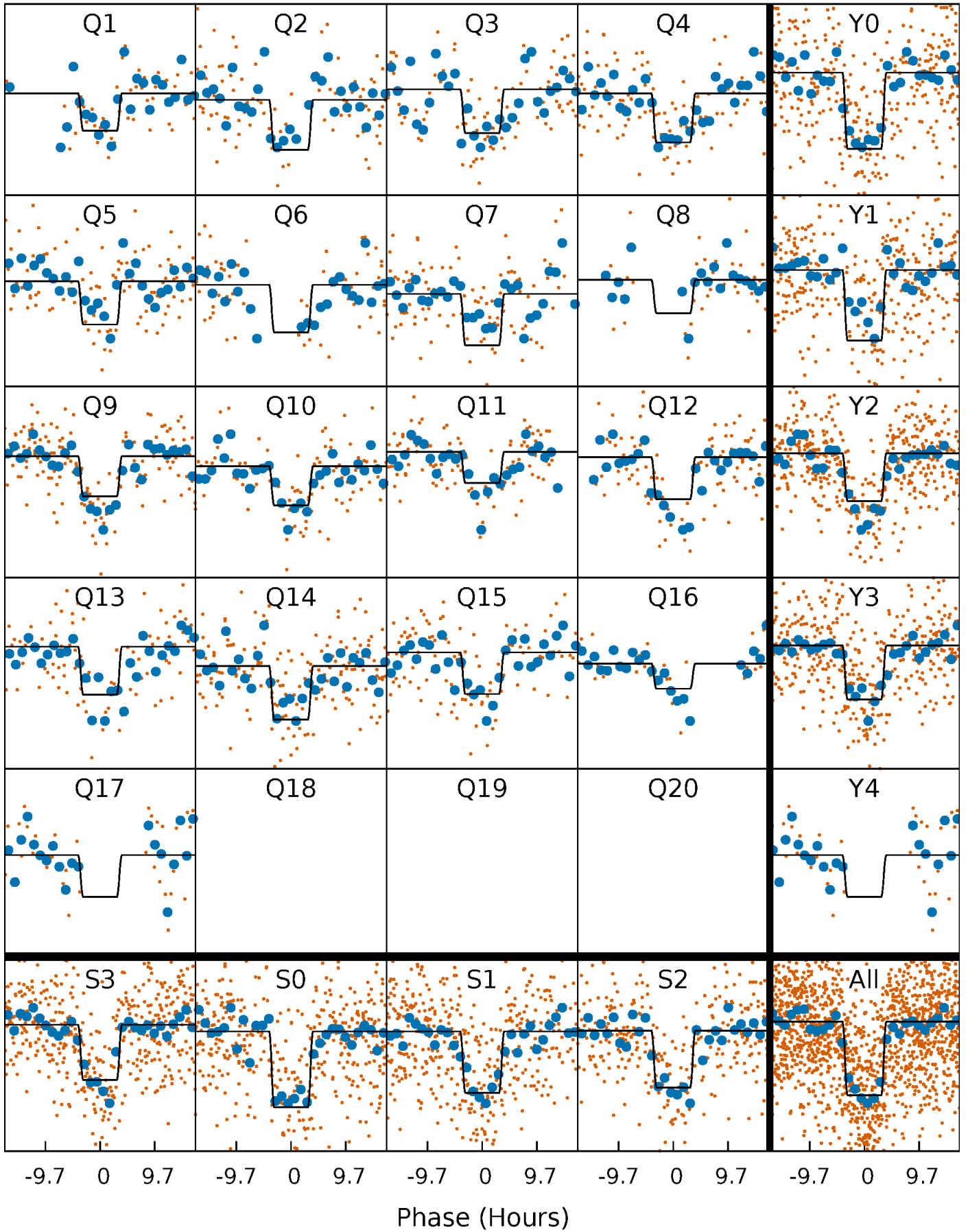
# DV Quarter-Phased Transit Curves

TCE 010982872-03 P= 41.808533 Days  $T_0=148.707556$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

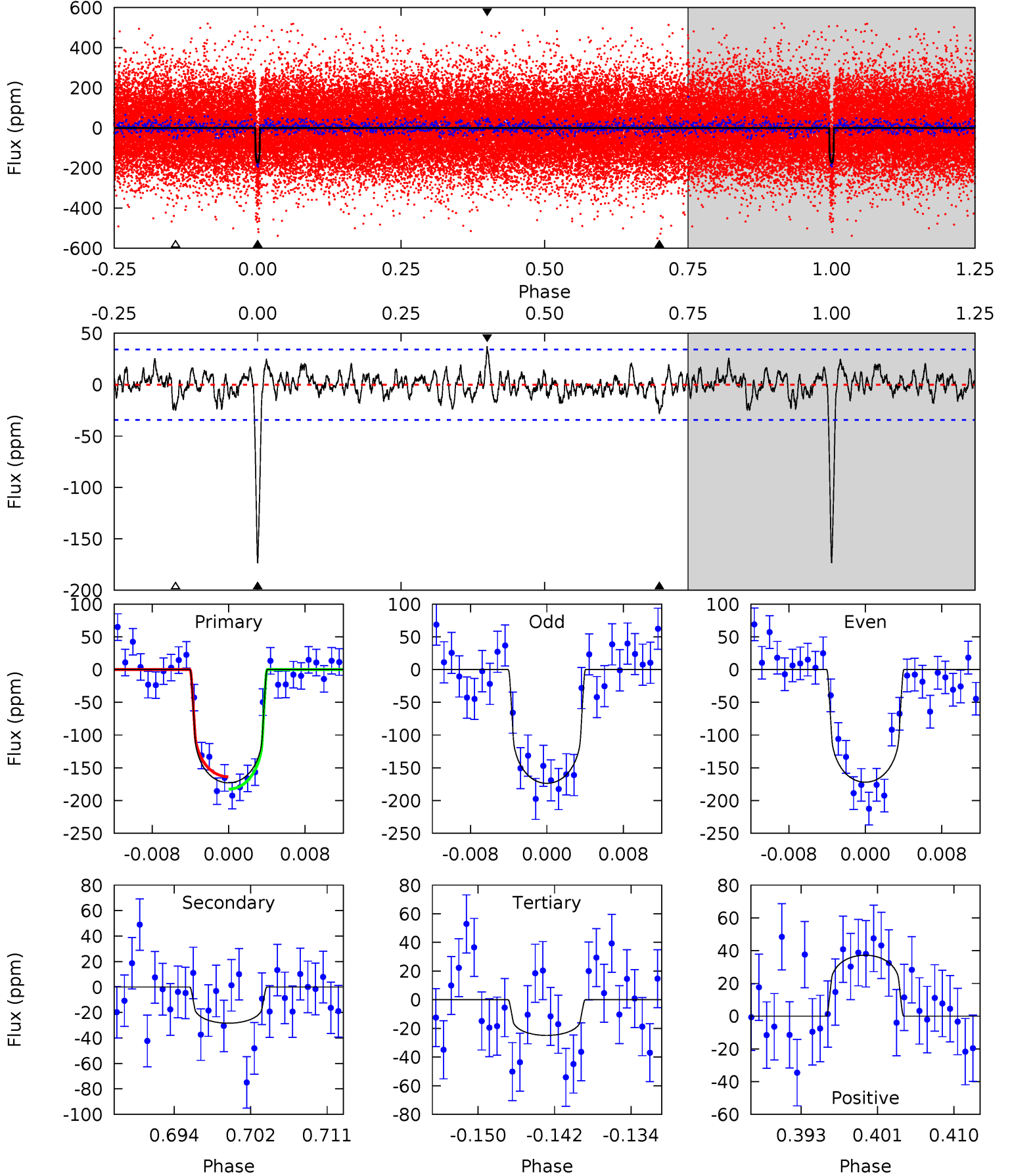
TCE 010982872-03 P= 41.807944 Days  $T_0=148.715081$  (BKJD)



# DV Model-Shift Uniqueness Test

010982872-03, P = 41.808533 Days, E = 106.899023 Days

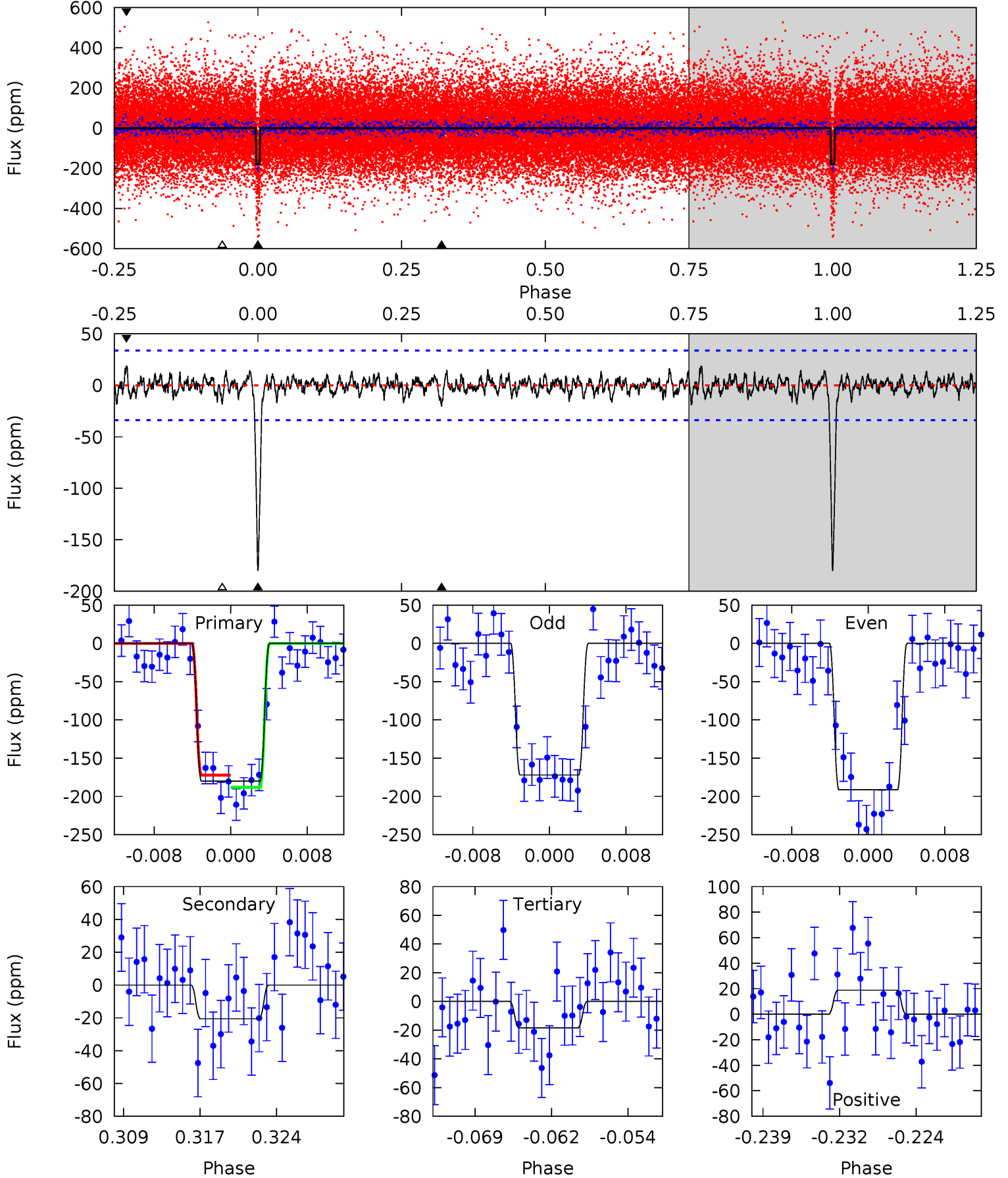
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.5	4.19	3.67	5.49	5.06	2.64	1.31	21.9	20.1	0.52	-1.30	0.13	0.98	0.18	1.39



# Alt Model-Shift Uniqueness Test

010982872-03, P = 41.807944 Days, E = 106.907137 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
27.0	3.08	2.76	2.83	5.08	2.66	0.88	24.3	24.2	0.32	0.26	1.44	1.05	0.09	1.20





### Stellar Parameters For KIC 010982872

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$5794^{+105}_{-117}$	$4.263^{+0.156}_{-0.104}$	$0.070^{+0.150}_{-0.150}$	$1.225^{+0.194}_{-0.213}$	$1.004^{+0.086}_{-0.070}$	$0.769^{+0.510}_{-0.262}$
	+2%/-2%	+4%/-2%	+214%/-214%	+16%/-17%	+9%/-7%	+66%/-34%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 010982872-03 / KOI 0343.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-28 \pm 7$	$1.74^{+0.68}_{-0.73}$	$808^{+38}_{-42}$	$3979^{+922}_{-422}$	$287^{+559}_{-148}$
Alt.	$-21 \pm 7$	$1.80^{+0.69}_{-0.66}$	$808^{+38}_{-39}$	$3715^{+688}_{-424}$	$186^{+318}_{-97}$

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

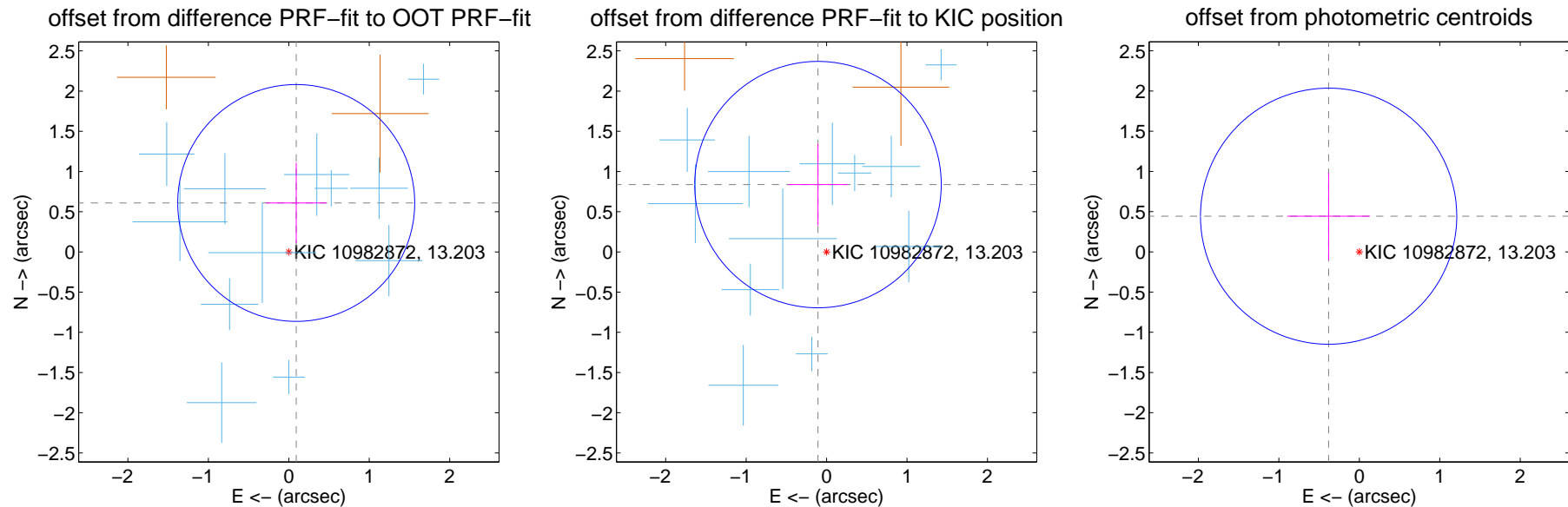
## DV Centroid Data

Supplemental centroid analysis for 010982872-03. Kepler magnitude: 13.20. Transit SNR 15.23

There are 12 quarters with good PRF difference image offsets

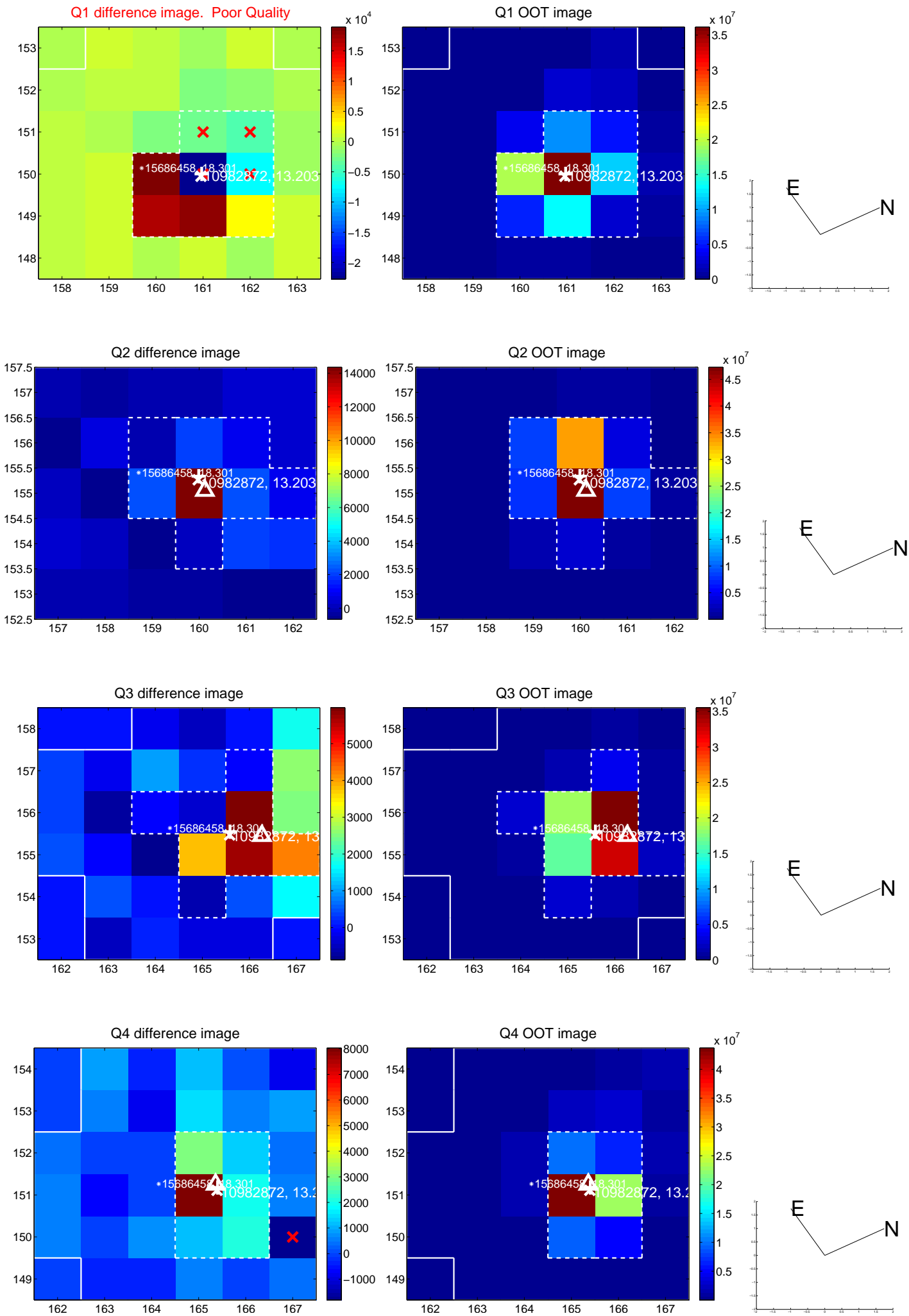
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.616 \pm 0.491$	1.25	$-0.092 \pm 0.375$	$0.609 \pm 0.502$
PRF-fit source offset from KIC position	$0.844 \pm 0.511$	1.65	$0.107 \pm 0.367$	$0.837 \pm 0.507$
photometric centroid source offset	$0.58 \pm 0.53$	1.10	$0.38 \pm 0.51$	$0.44 \pm 0.54$

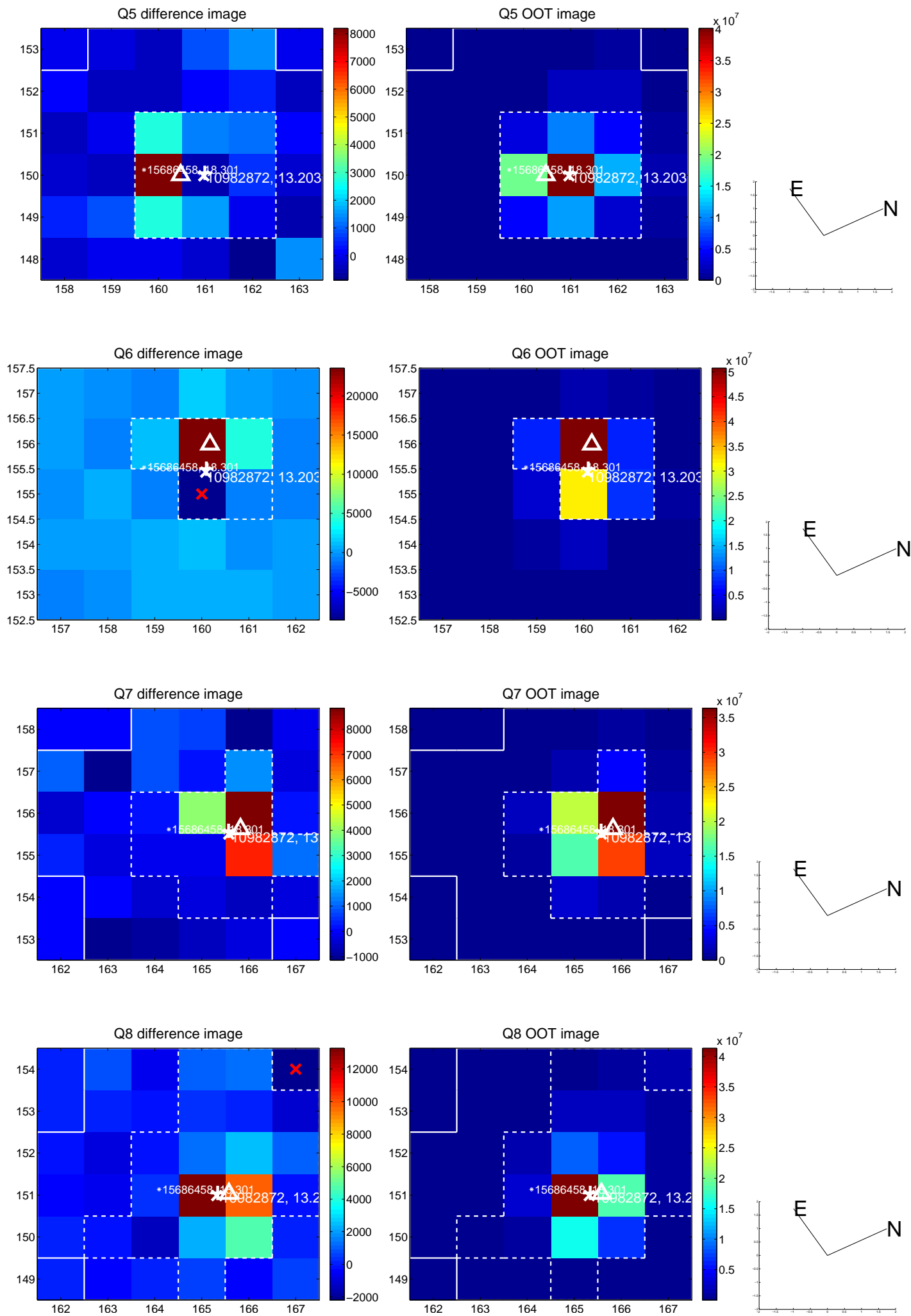


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

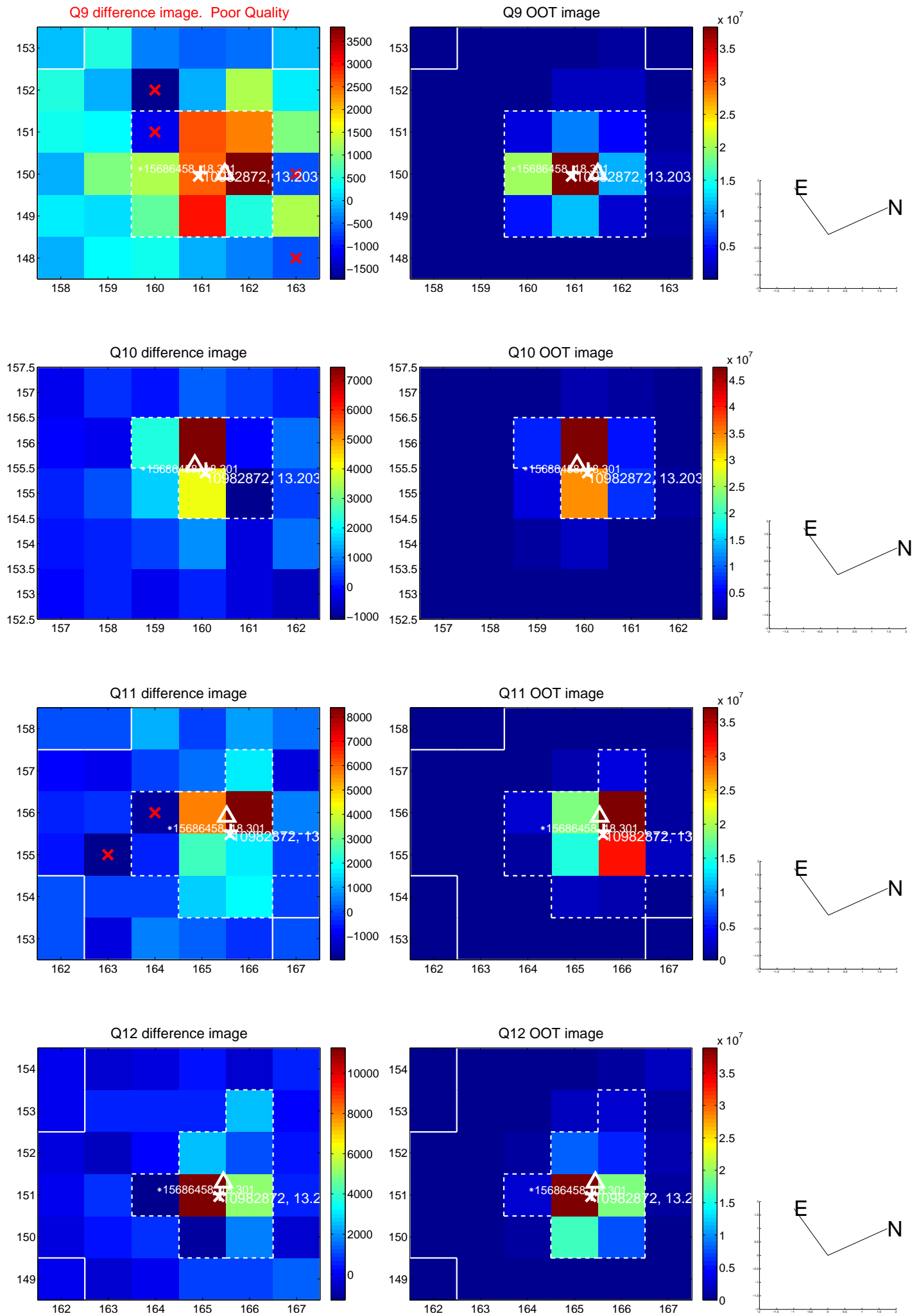
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



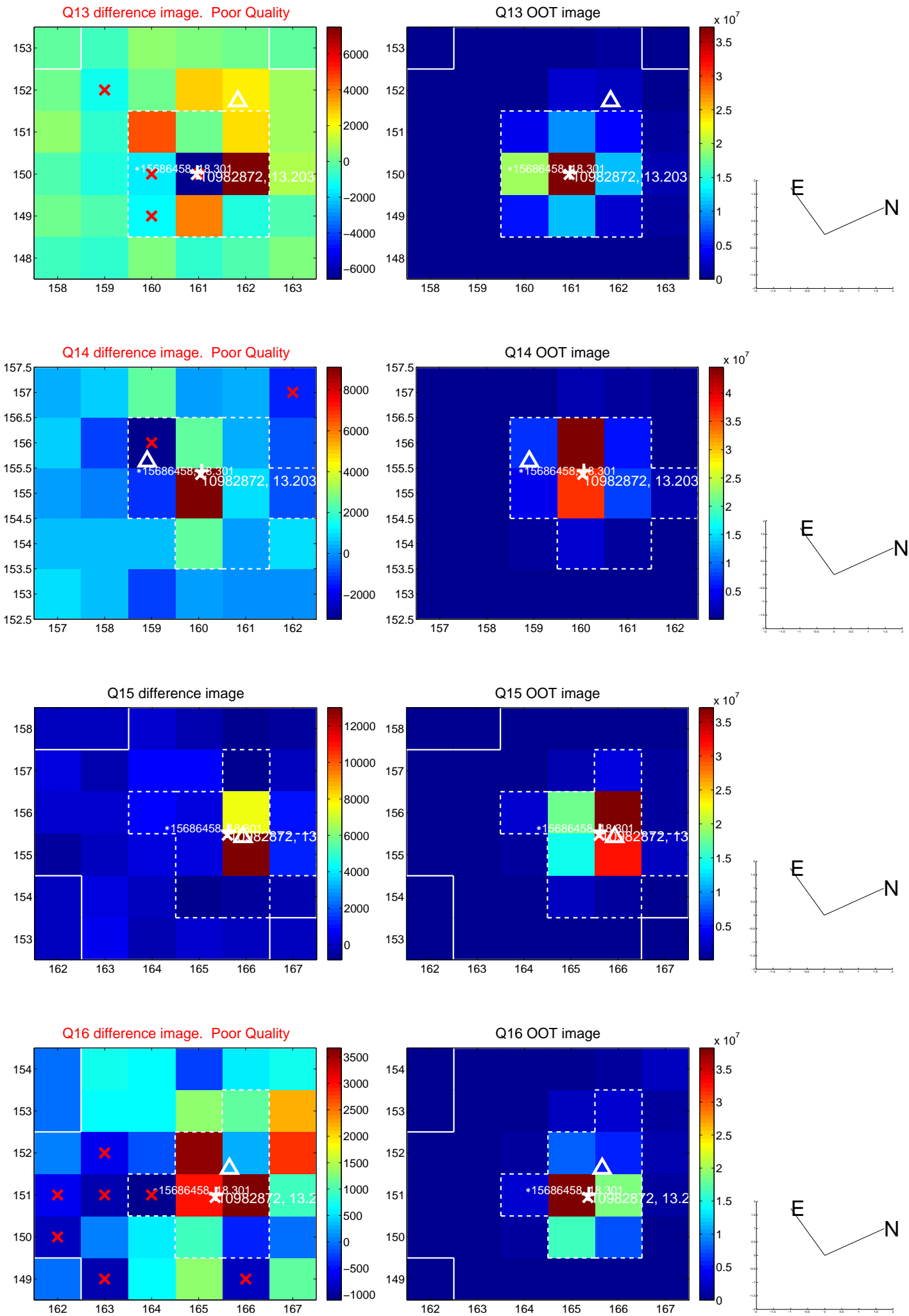
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

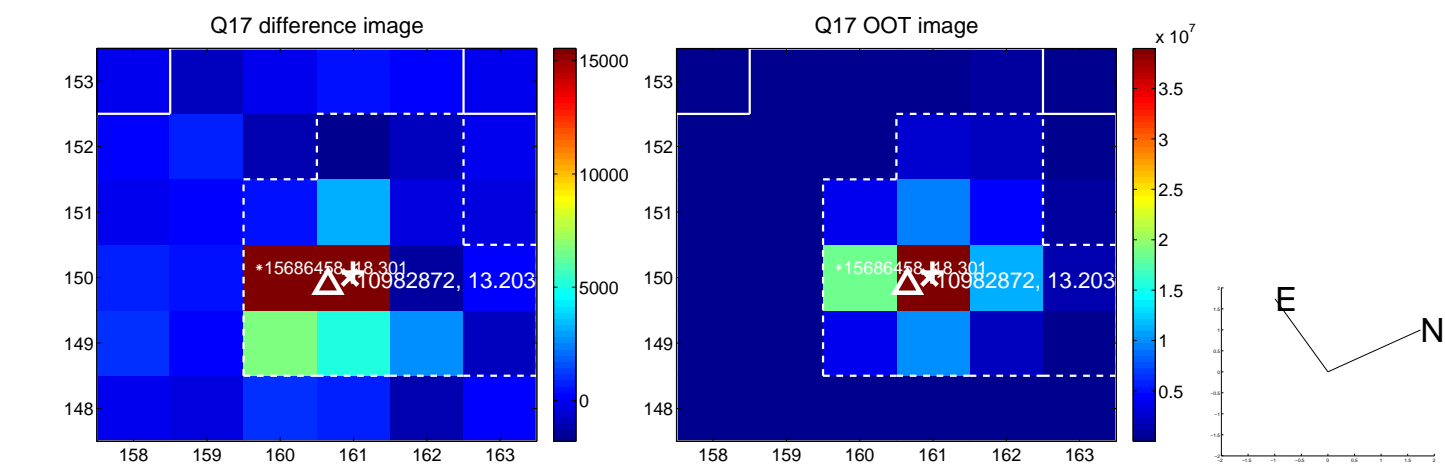


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

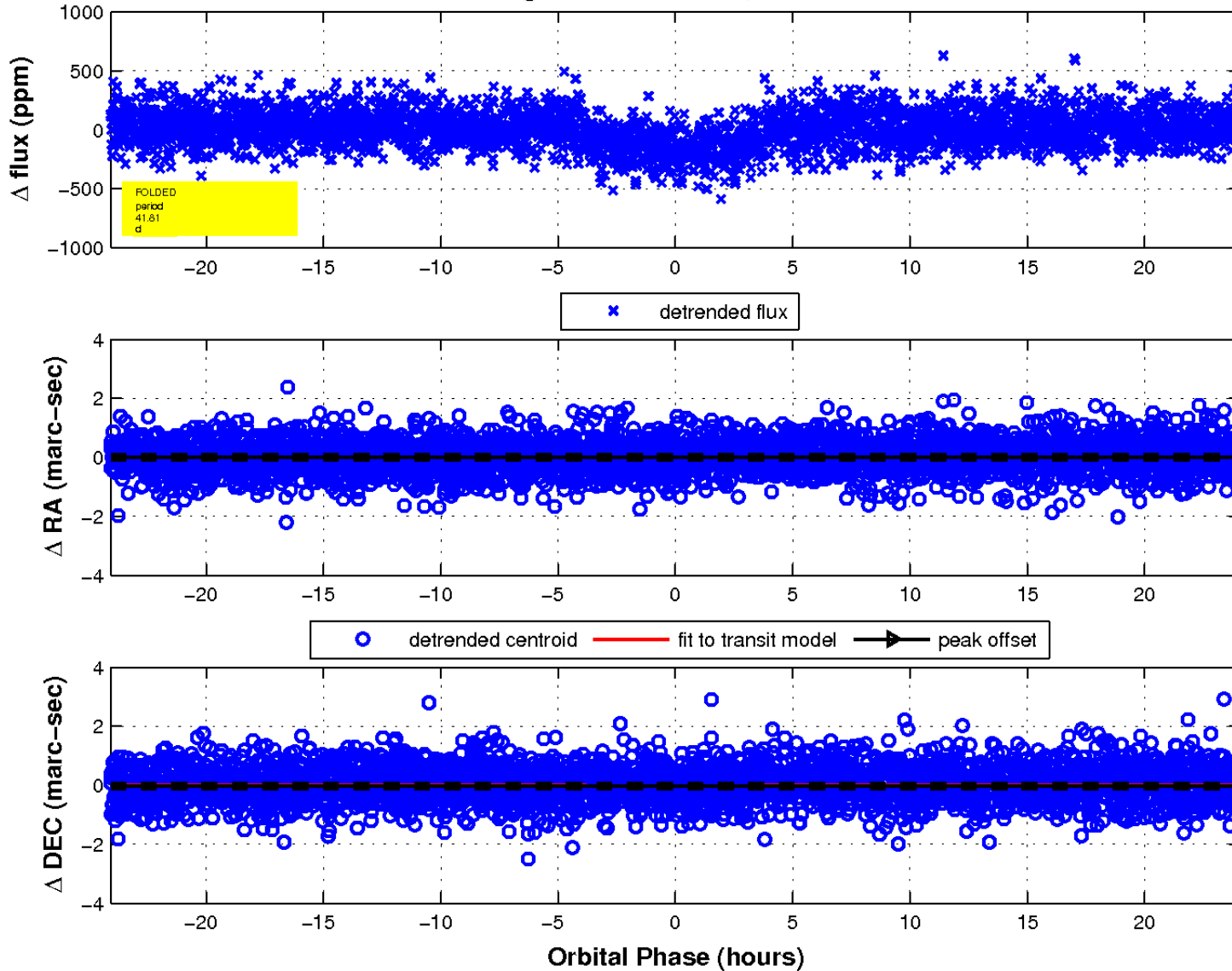




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

