

# KIC 011662513

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011662513-01	OBS	No	0.650868	131.593103	0.0	4.522	7.2	0.0	2.33	7507	0.00	49346.37
011662513-02	OBS	No	0.892083	131.520740	210.7	1.163	13.7	13.3	2.33	7507	3.94	32411.98
011662513-03	OBS	No	0.892089	131.965122	180.3	4.192	11.9	14.6	2.33	7507	3.62	32411.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011662513-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011662513-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
011662513-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—SAME_NTL_PERIOD

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

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

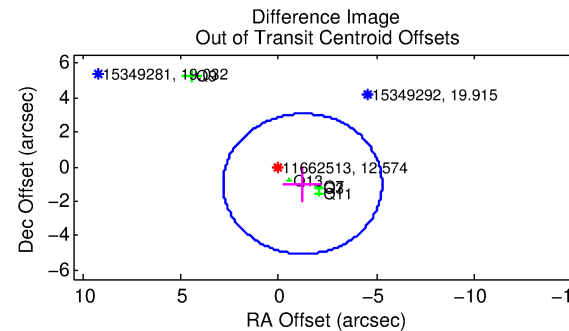
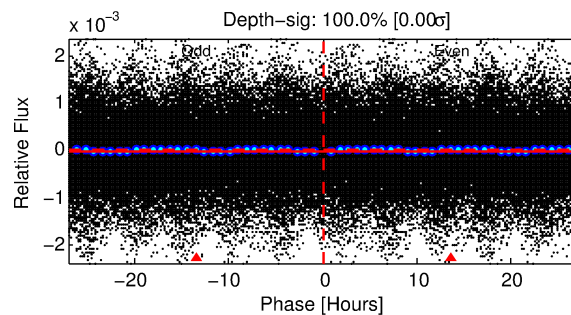
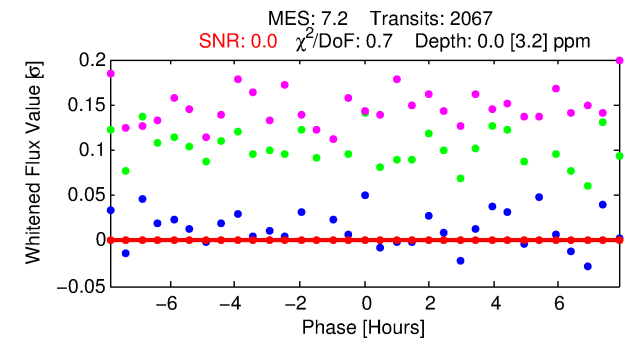
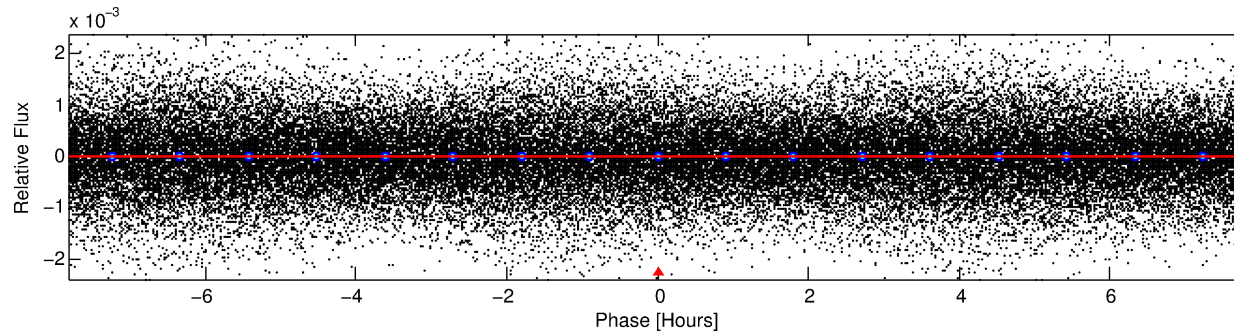
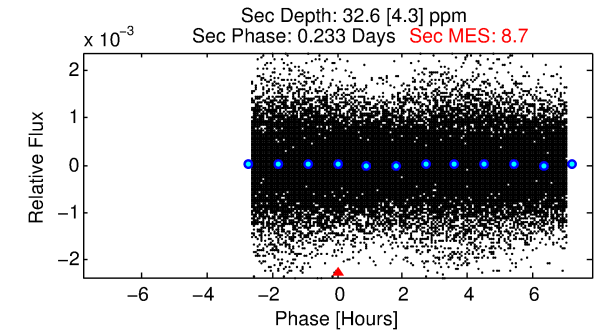
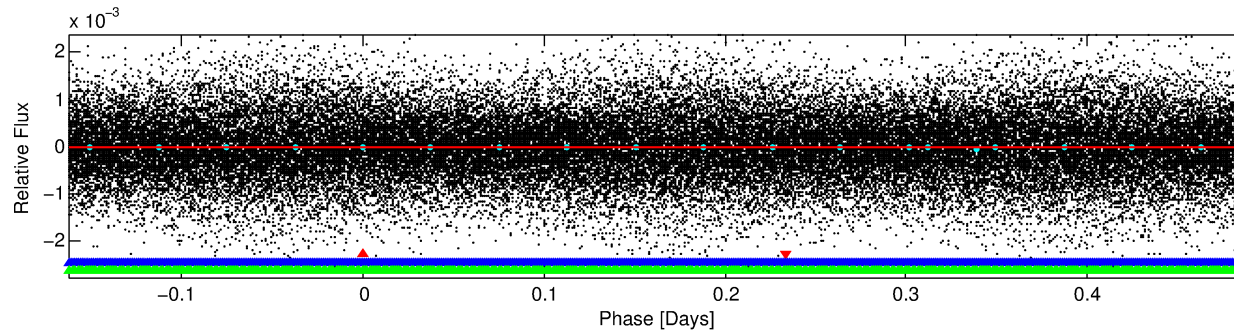
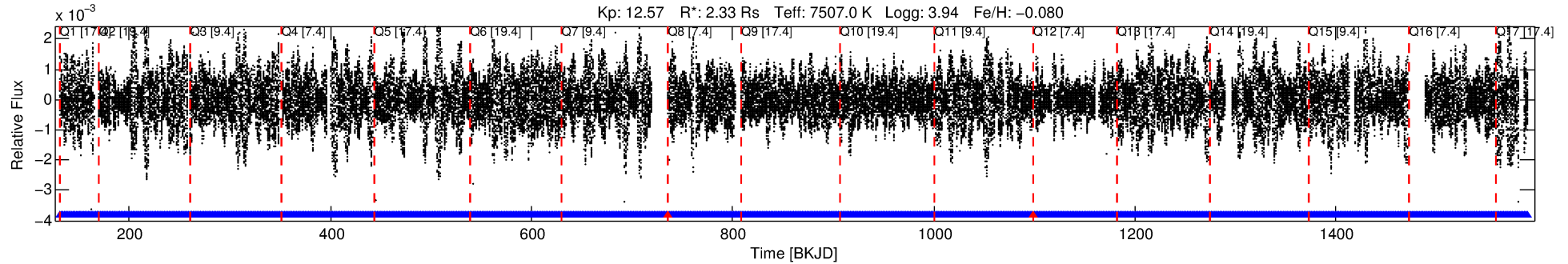
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011662513-01

No Significant Match Found

# DV One-Page Summary

KIC: 11662513 Candidate: 1 of 3 Period: 0.651 d



## DV Fit Results:

Period = 0.65087 [1.79404] d  
Epoch = 131.5931 [329.8455] BKJD  
Rp/R\* = 0.0000 [0.1293]  
a/R\* = 1.12 [123.98]  
b = 0.77 [1017.39]  
Seff = 49346.37 [182851.59]  
Teq = 3800 [3521] K  
Rp = 0.00 [32.91] Re  
a = 0.0177 [0.0329] AU  
Ag = 569115.13 [11906116042.16] [0.00σ]  
Teff = 161391 [844179408] K [0.00σ]

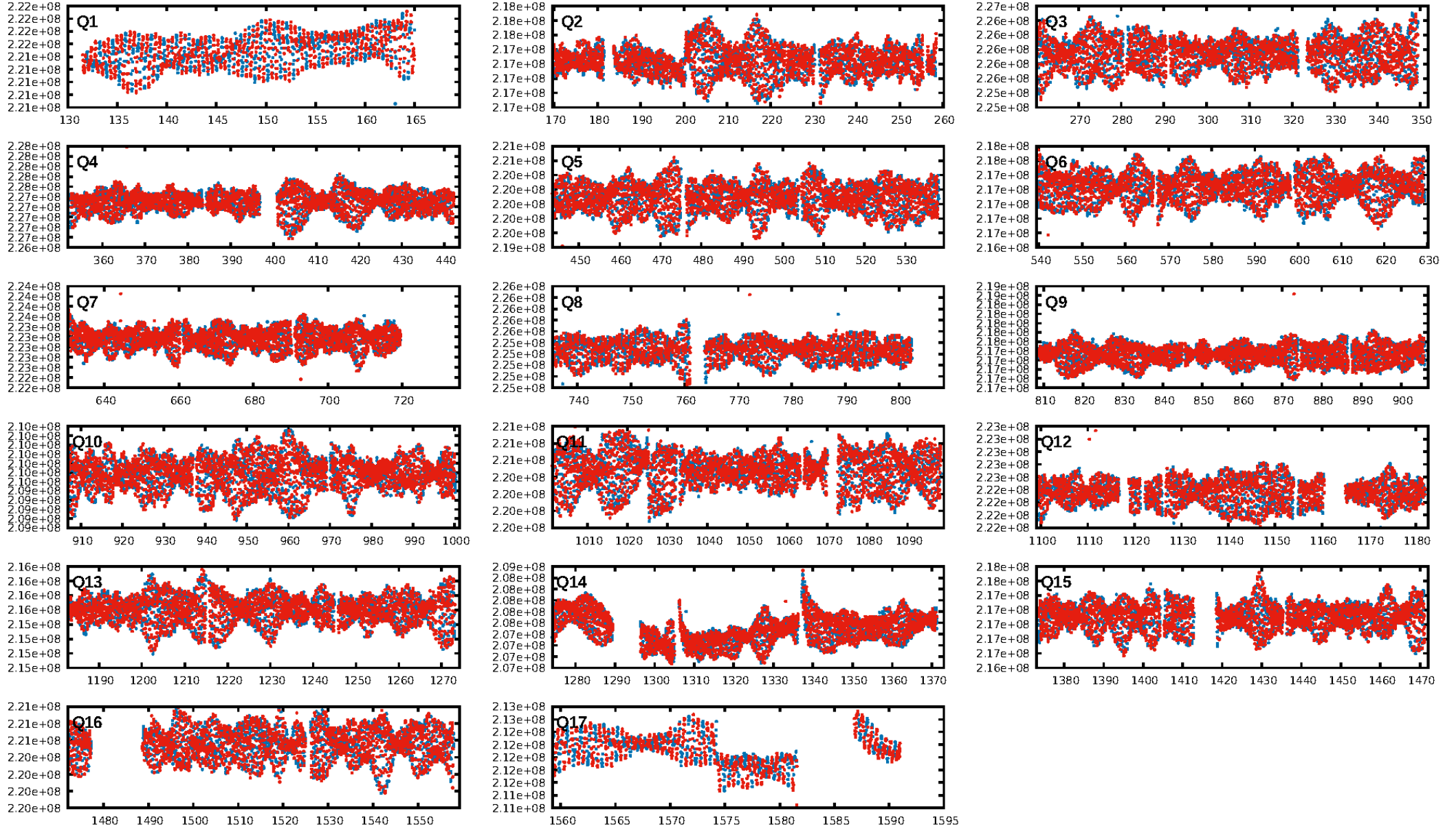
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 78.5% [1.24σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1972/1974]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 1.581 arcsec [1.17σ]  
KicOffset-rm: 1.562 arcsec [1.06σ]  
OotOffset-st: 0/3/0/2 [5]  
KicOffset-st: 0/3/0/2 [5]  
DiffImageQuality-fgm: 0.20 [1/5]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:18:24 Z

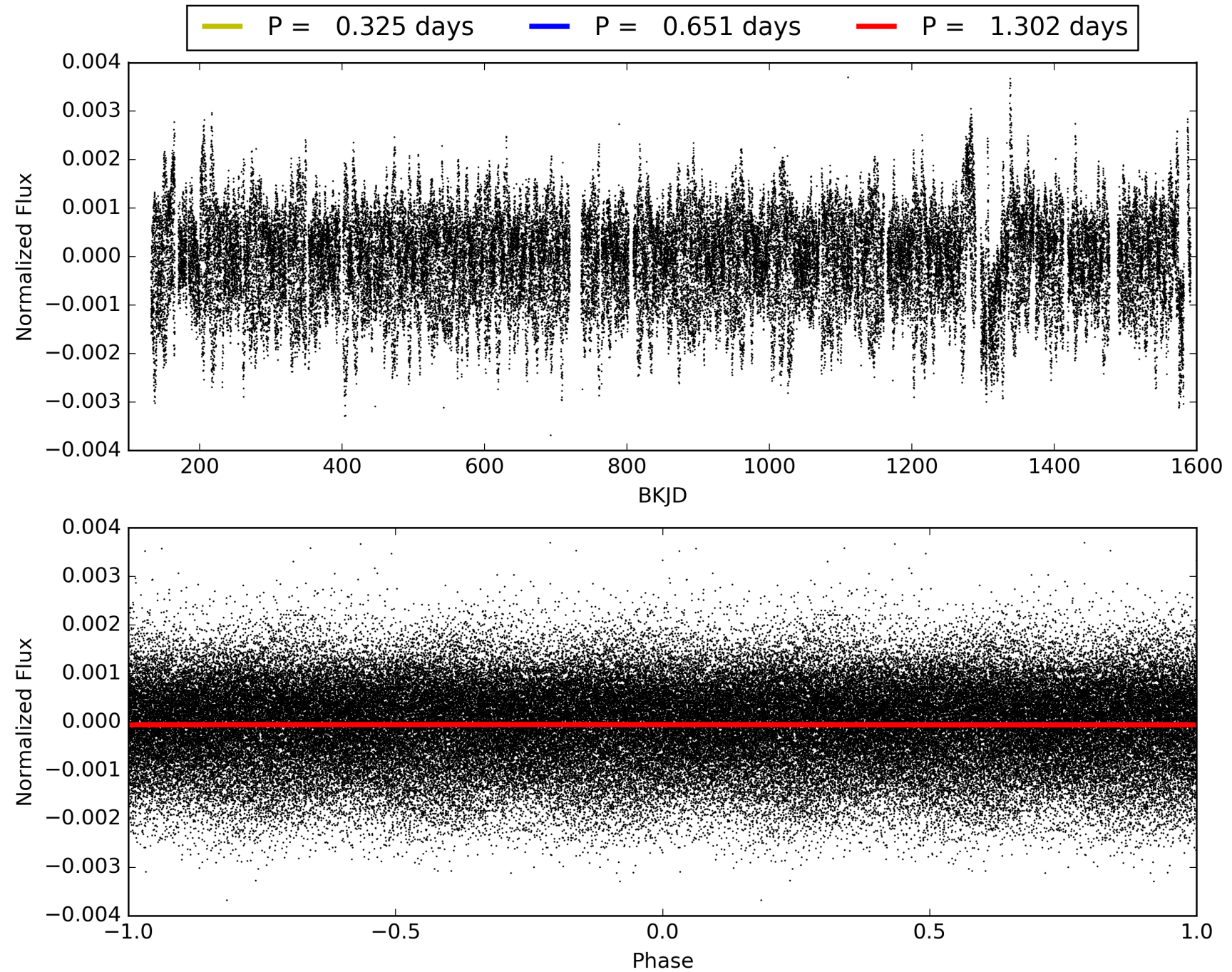
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011662513-01, PDC Light Curves





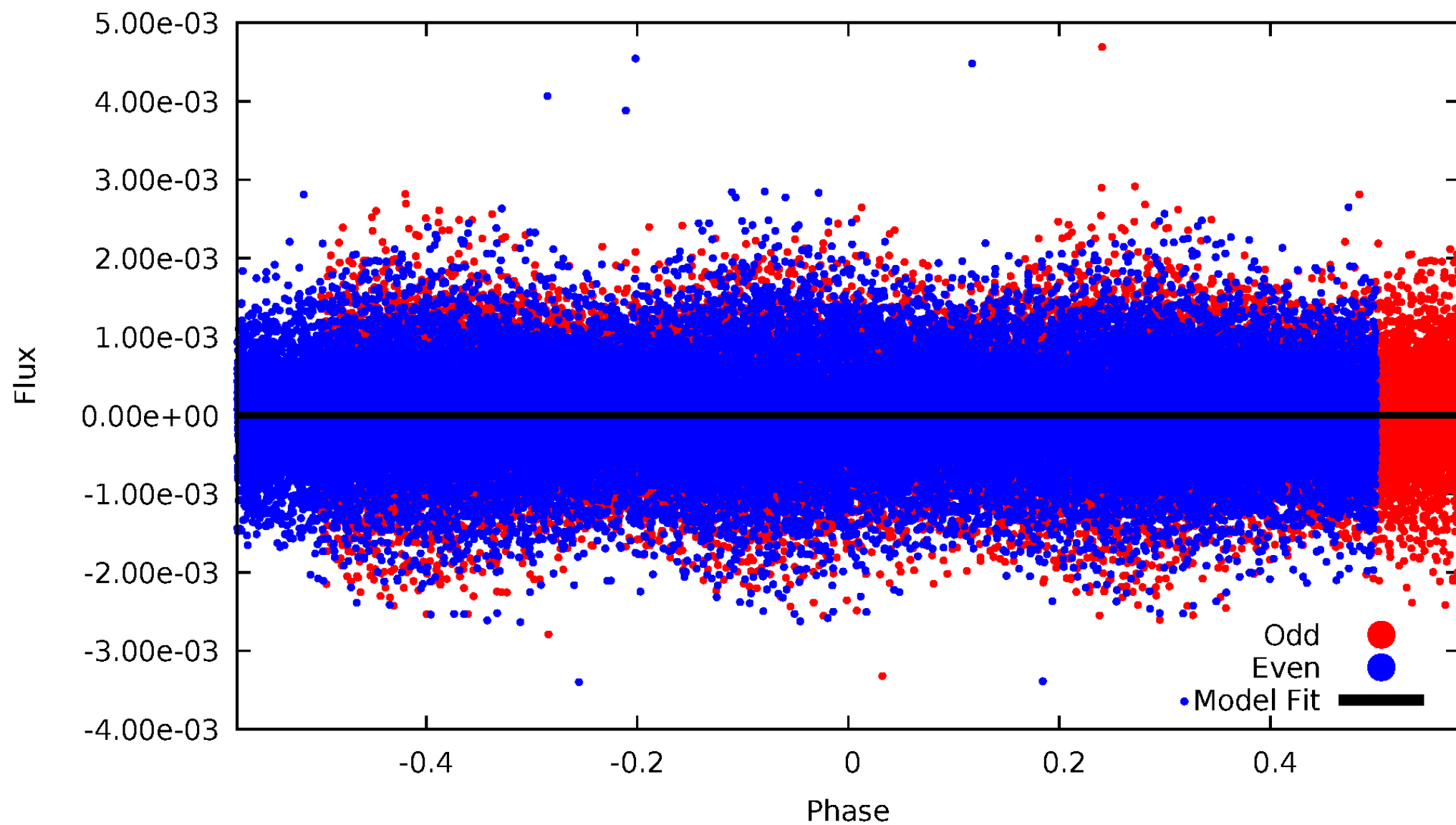
# TCE 011662513-01





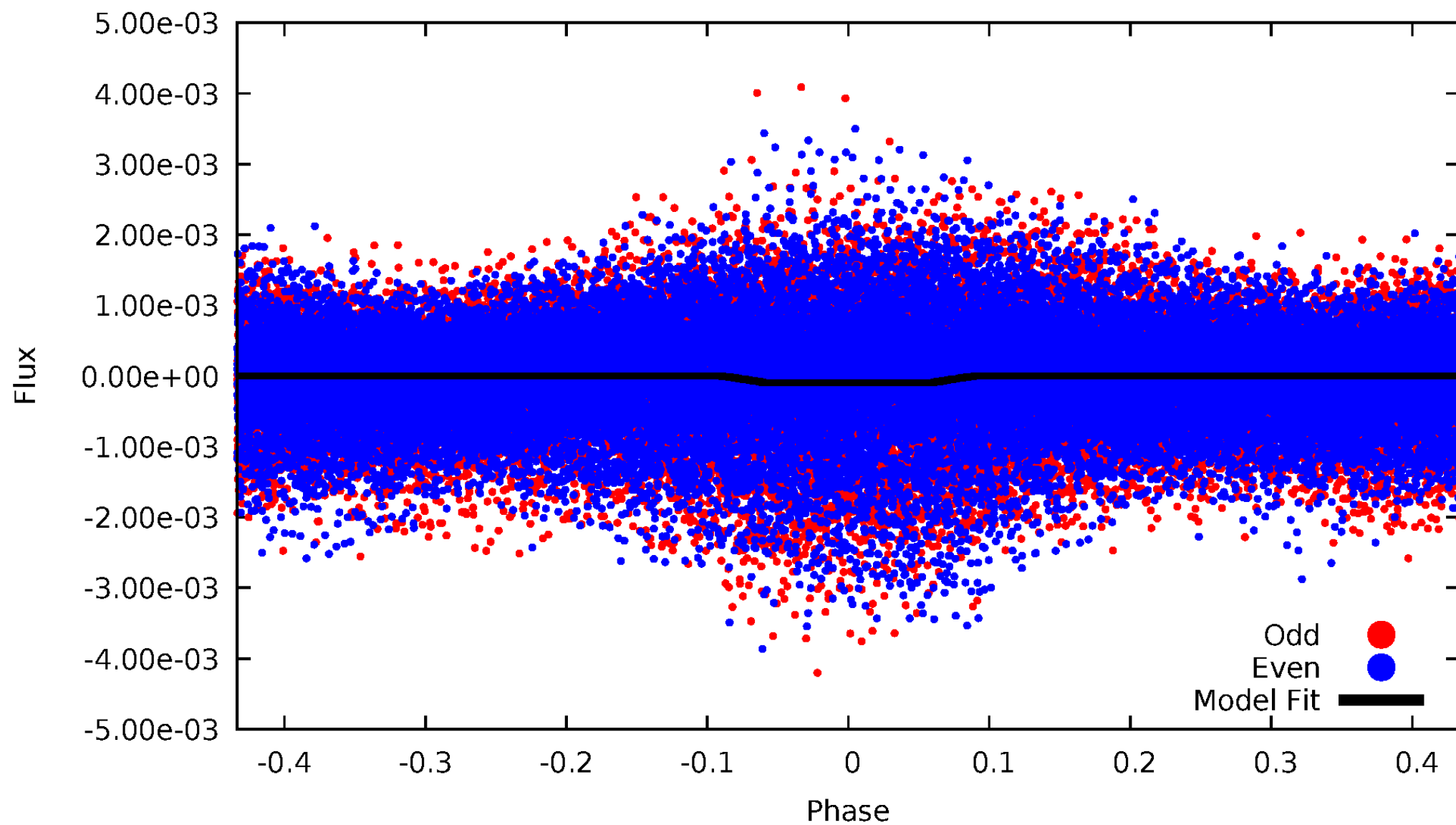
# DV Odd/Even

TCE 011662513-01



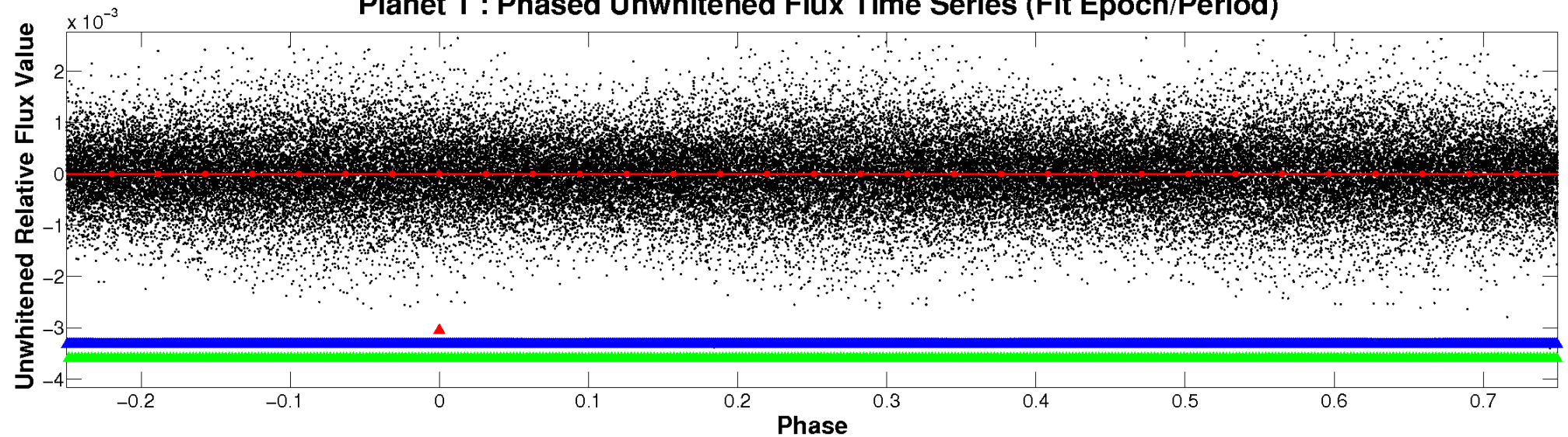
# ALT Odd/Even

TCE 011662513-01

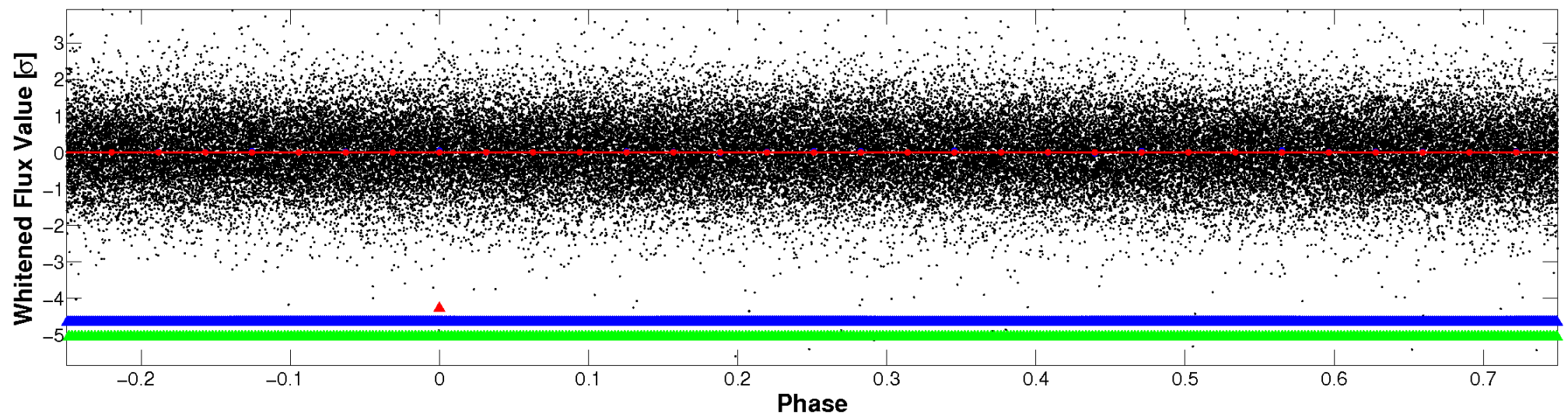


# Non-Whitened Vs. Whitened Light Curve

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



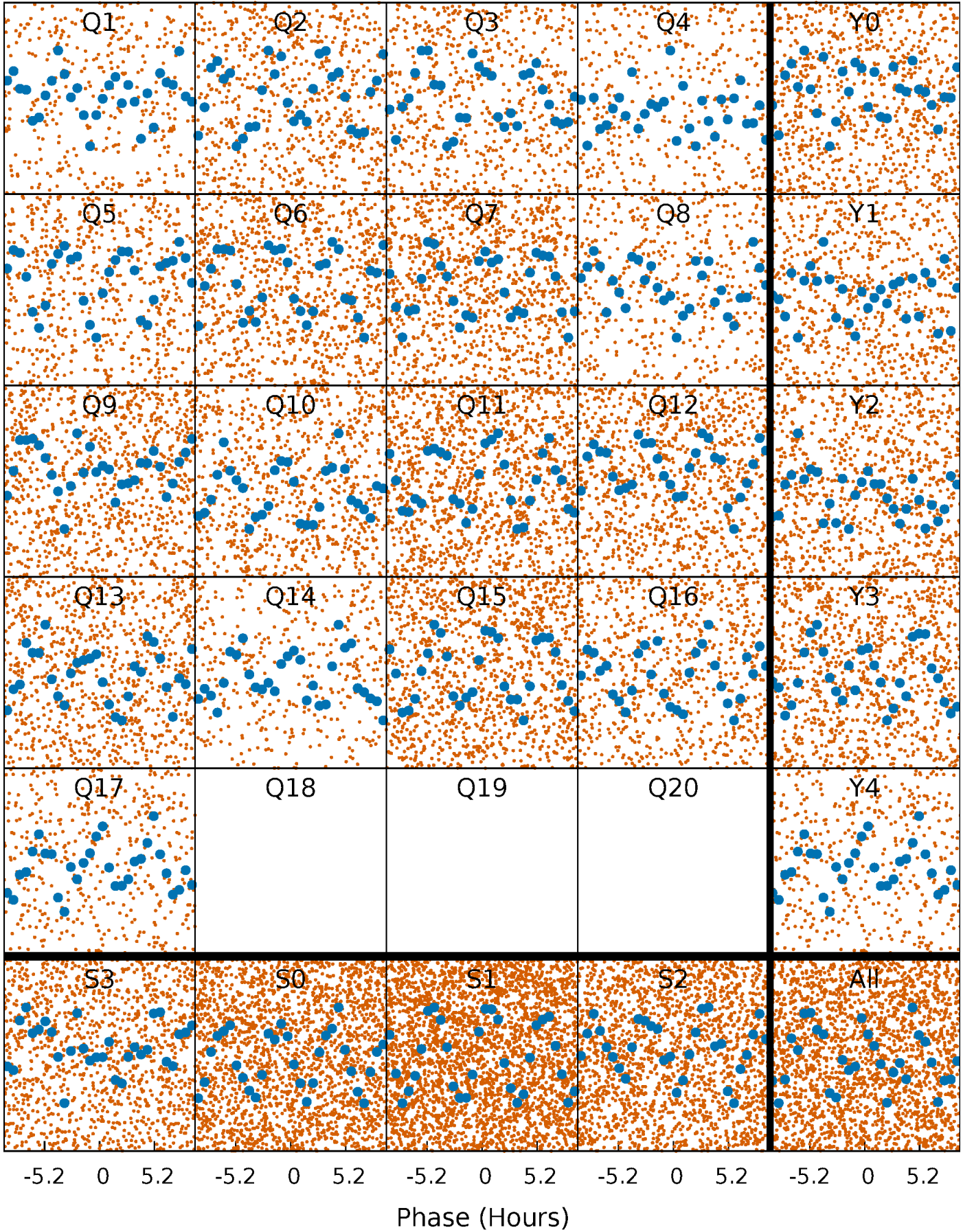
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





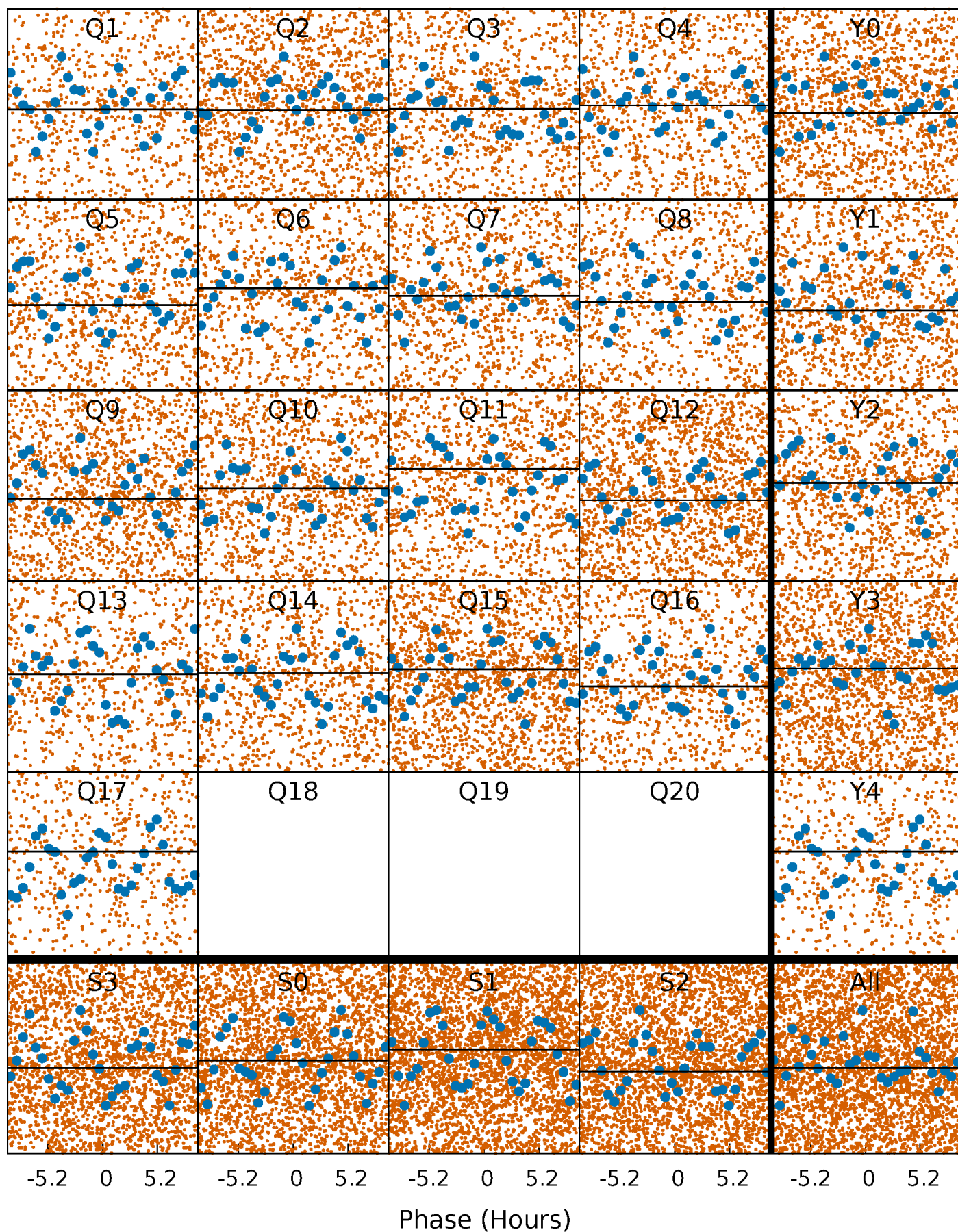
# PDC Quarter-Phased Transit Curves

TCE 011662513-01 P= 0.650868 Days  $T_0=131.593103$  (BKJD)



# DV Quarter-Phased Transit Curves

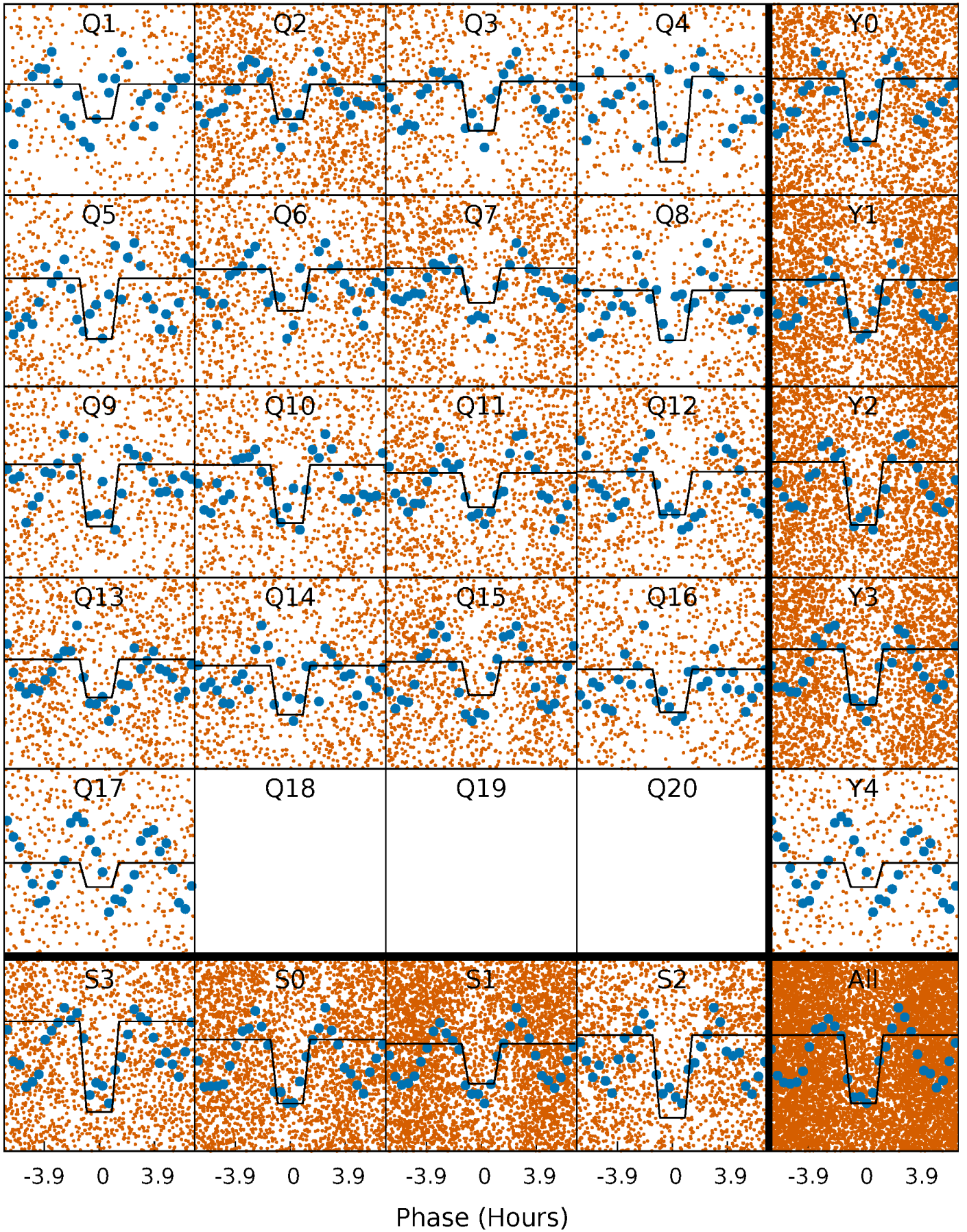
TCE 011662513-01 P= 0.650868 Days  $T_0=131.593103$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 011662513-01 P= 0.651281 Days  $T_0=131.589308$  (BKJD)

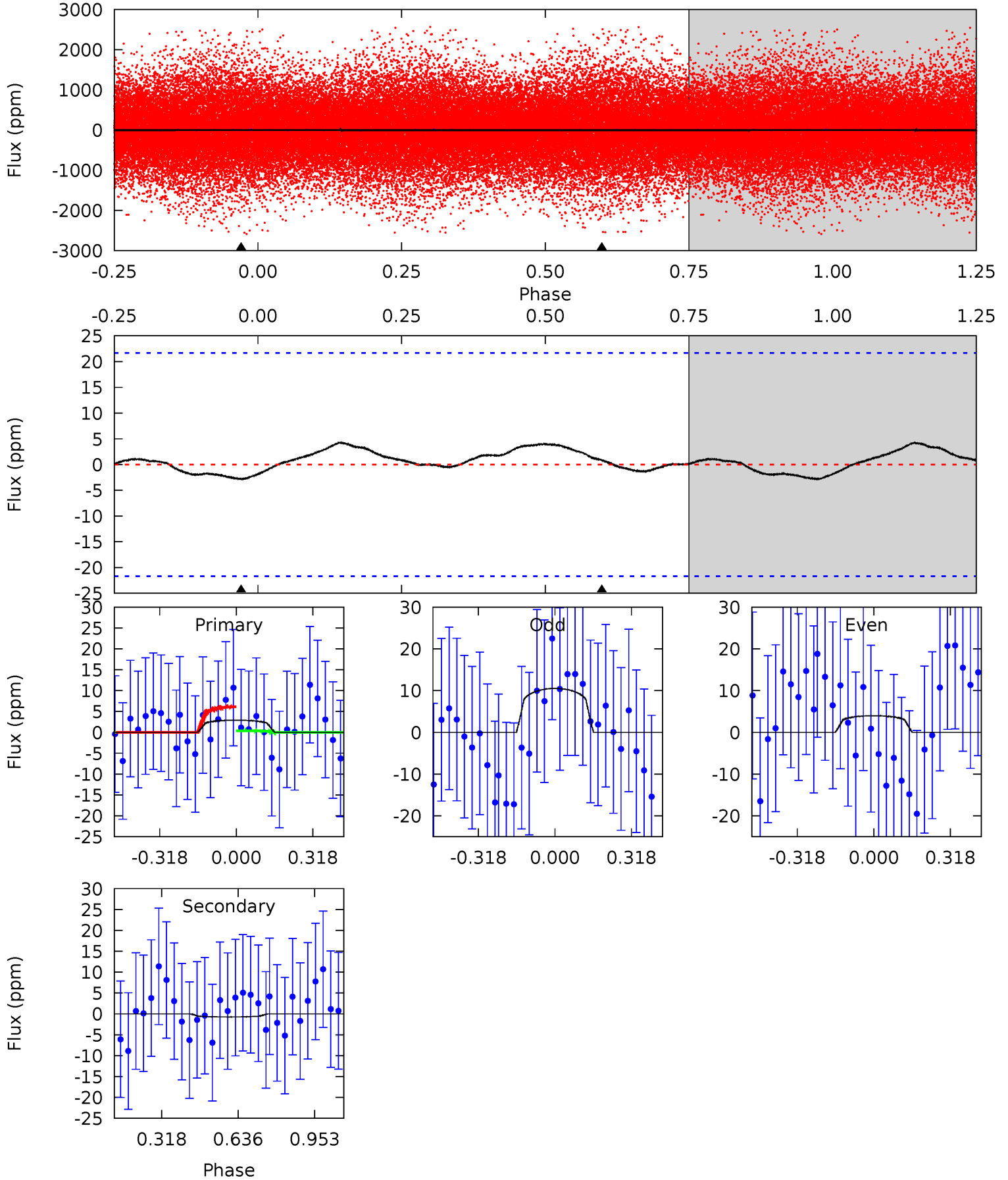




# DV Model-Shift Uniqueness Test

011662513-01, P = 0.650868 Days, E = 130.942235 Days

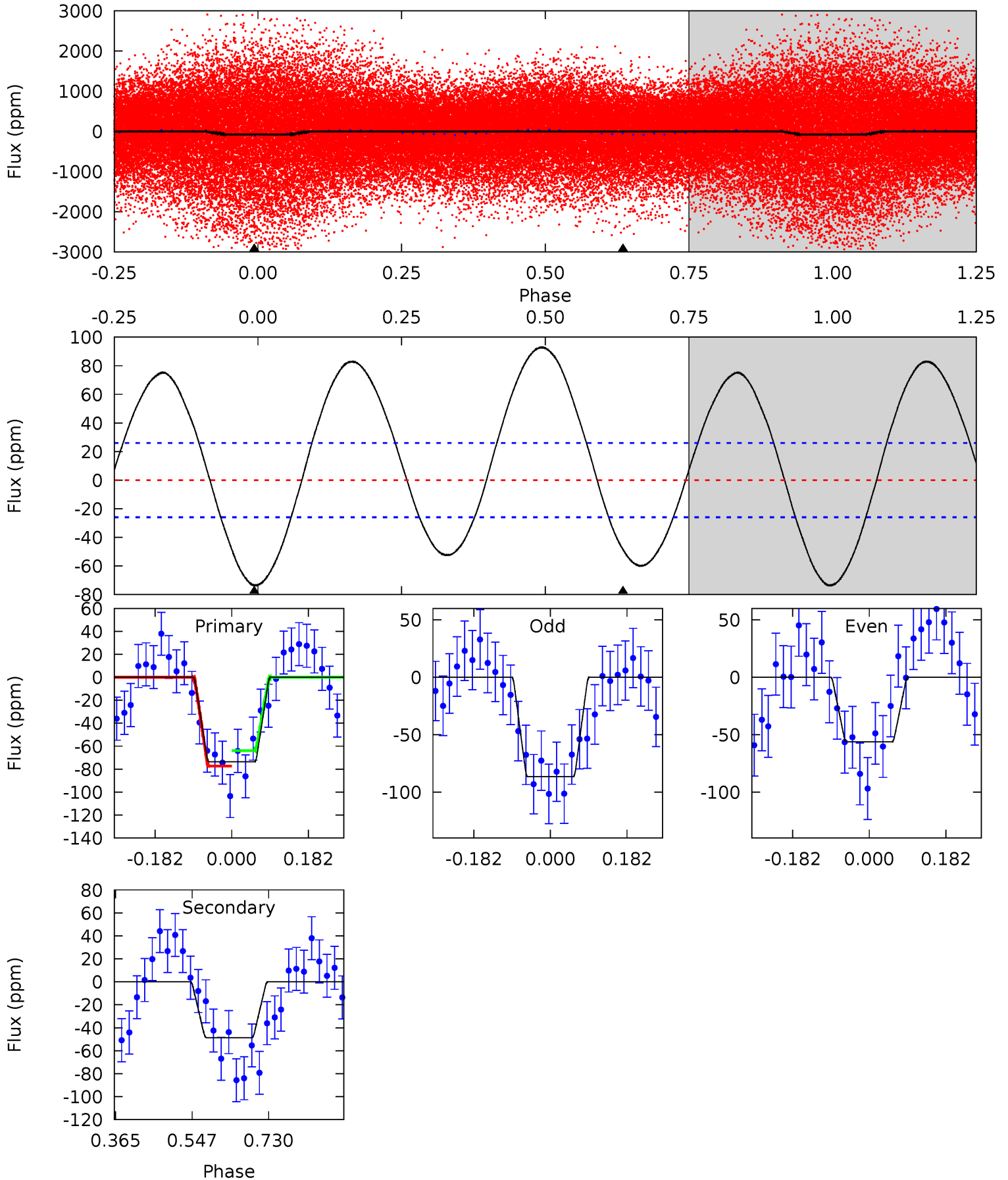
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.58	-0.14	0	0	4.32	1.00	0.10	0.58	0.58	-0.14	-0.14	0.69	-0.60	0.60	0.61



# Alt Model-Shift Uniqueness Test

011662513-01, P = 0.651281 Days, E = 130.938027 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
12.6	8.31	0	0	4.44	1.33	7.48	12.6	12.6	8.31	8.31	2.29	3.53	0.56	0.74



### Stellar Parameters For KIC 011662513

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7507^{+209}_{-314}$	$3.945^{+0.253}_{-0.136}$	$-0.080^{+0.200}_{-0.350}$	$2.332^{+0.493}_{-0.740}$	$1.746^{+0.200}_{-0.350}$	$0.194^{+0.291}_{-0.082}$
	+3%/-4%	+6%/-3%	+250%/-438%	+21%/-32%	+11%/-20%	+150%/-42%
Source	KIC0	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 011662513-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$1 \pm 5$	$19.71^{+23.85}_{-13.69}$	$3900^{+1817}_{-825}$	$-3661^{+565}_{-1276}$	$-0.000^{+0.007}_{-0.020}$
Alt.	$-49 \pm 6$	$21.71^{+24.50}_{-14.48}$	$3950^{+1617}_{-805}$	$-3377^{+6636}_{-1095}$	$0.048^{+0.560}_{-0.042}$

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



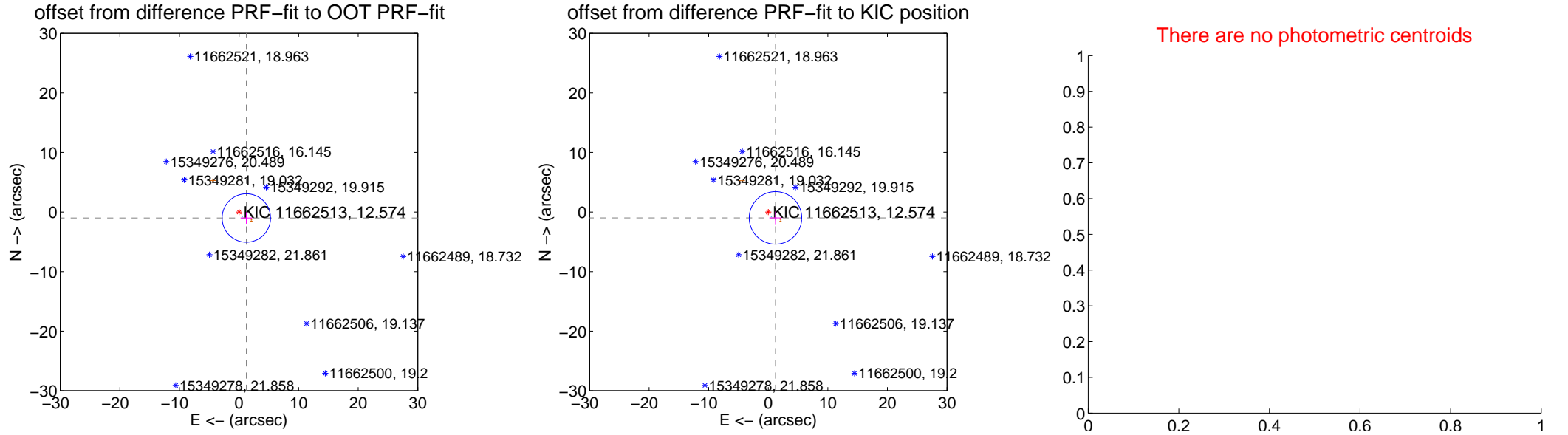
## DV Centroid Data

Supplemental centroid analysis for 011662513-01. Kepler magnitude: 12.57. Transit SNR 0.00

There are 1 quarters with good PRF difference image offsets

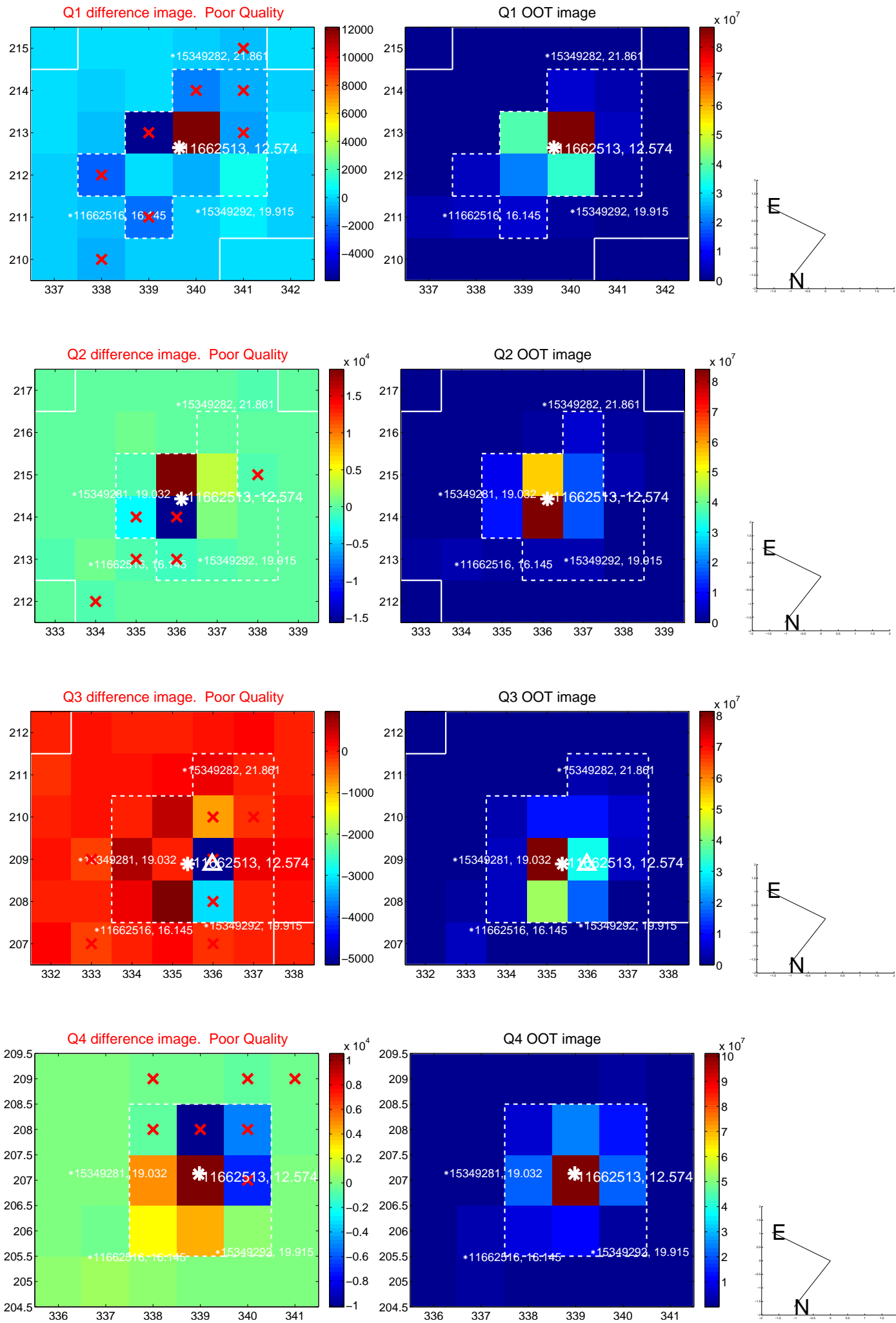
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.581 \pm 1.354$	1.17	$-1.225 \pm 0.974$	$-1.000 \pm 0.970$
PRF-fit source offset from KIC position	$1.562 \pm 1.469$	1.06	$-1.213 \pm 1.034$	$-0.984 \pm 1.066$
photometric centroid source offset	—	—	—	—

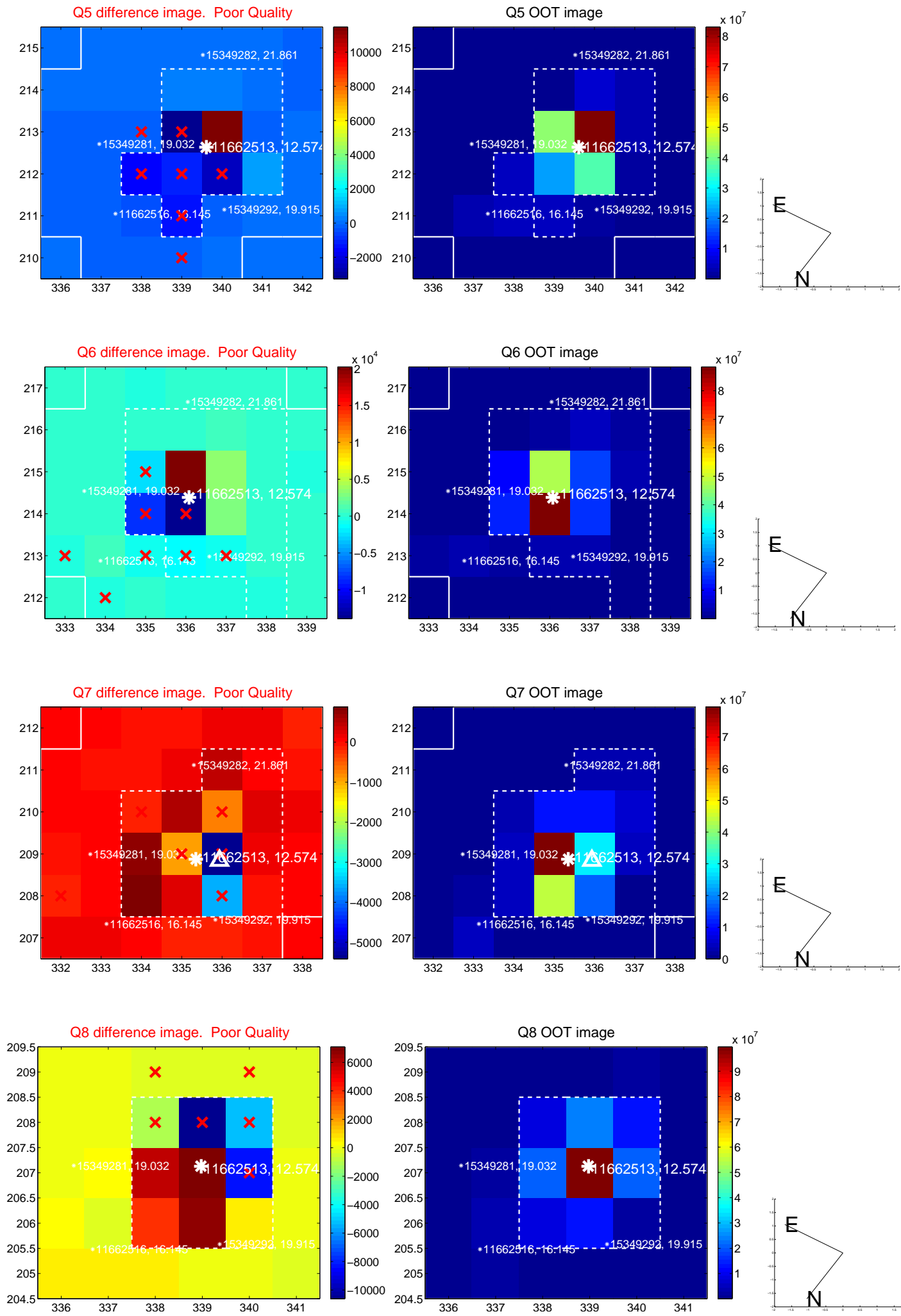


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

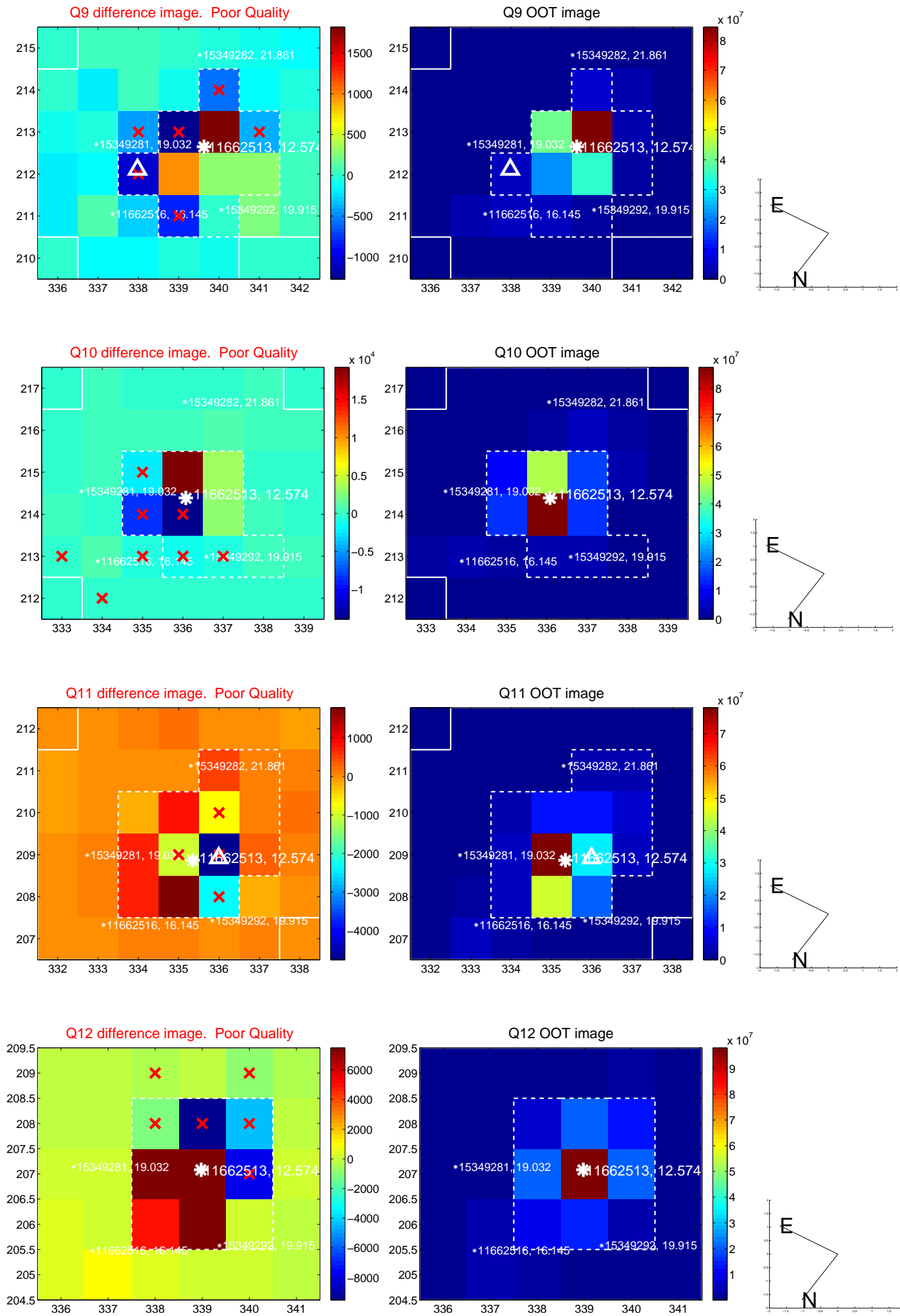


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

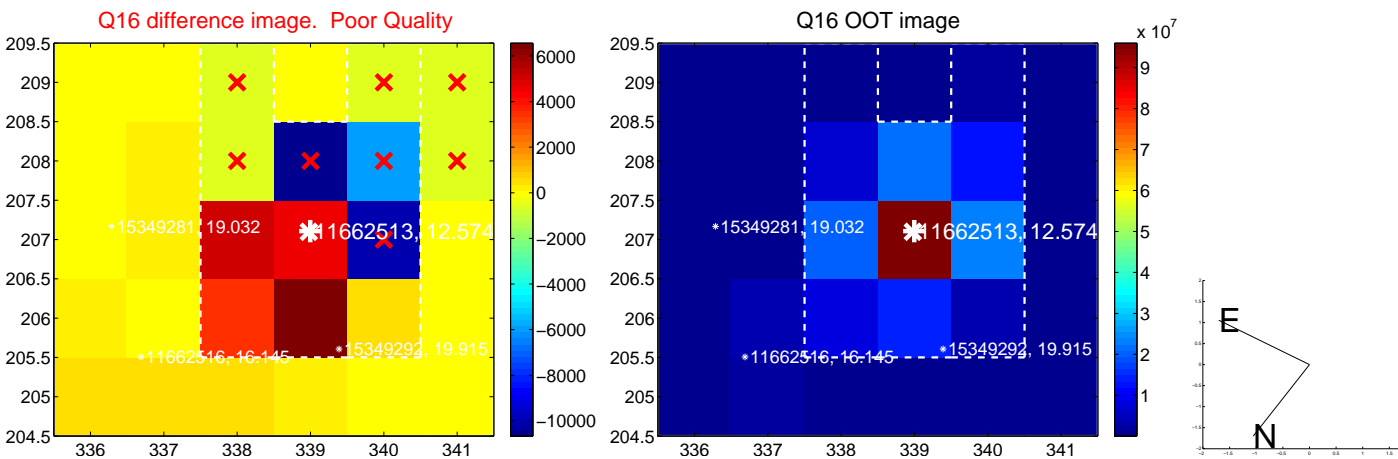
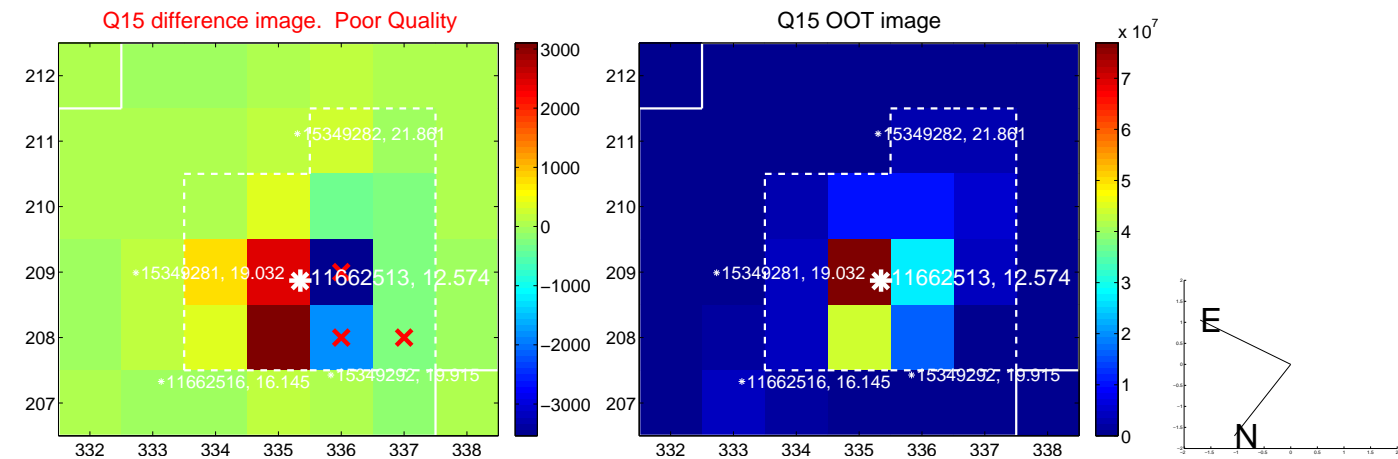
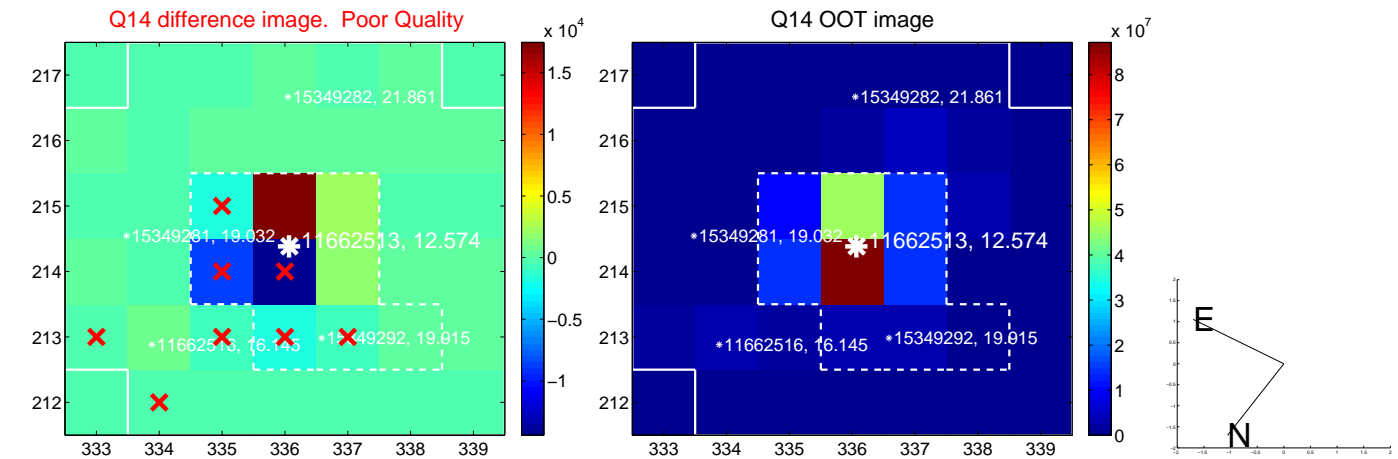
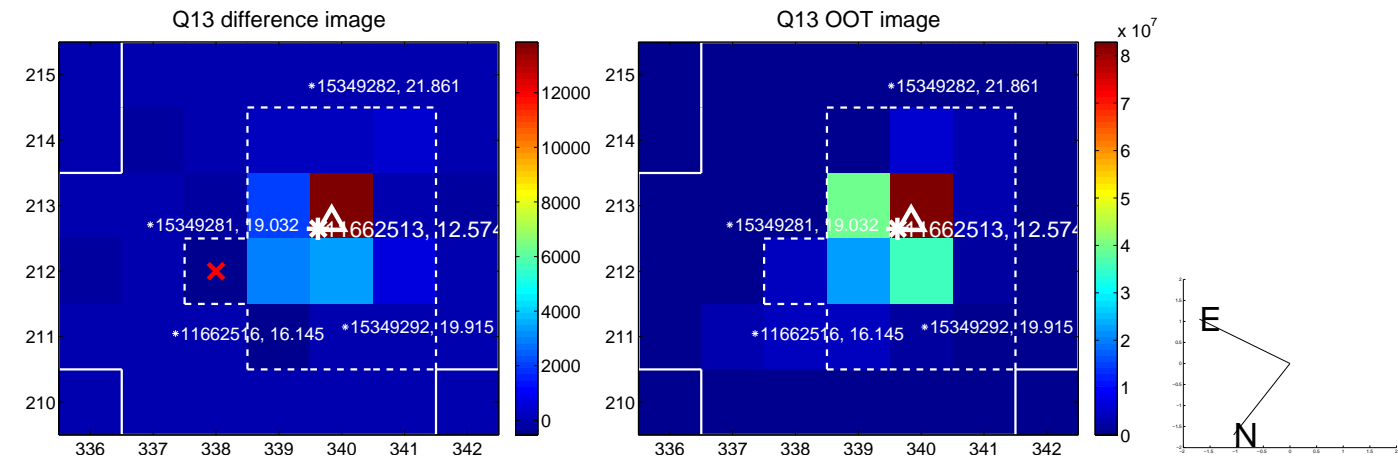




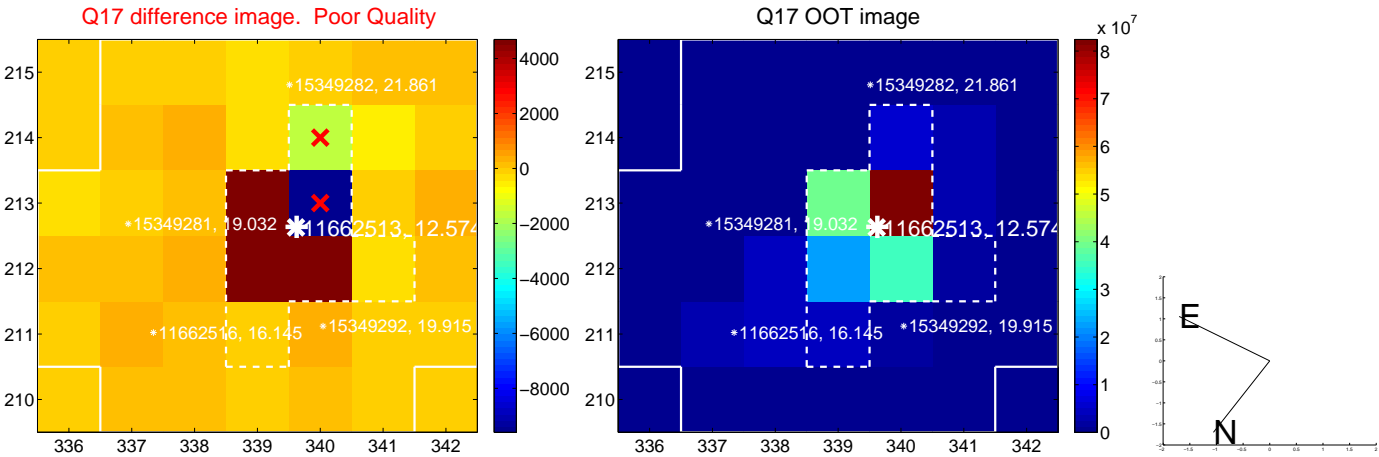
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



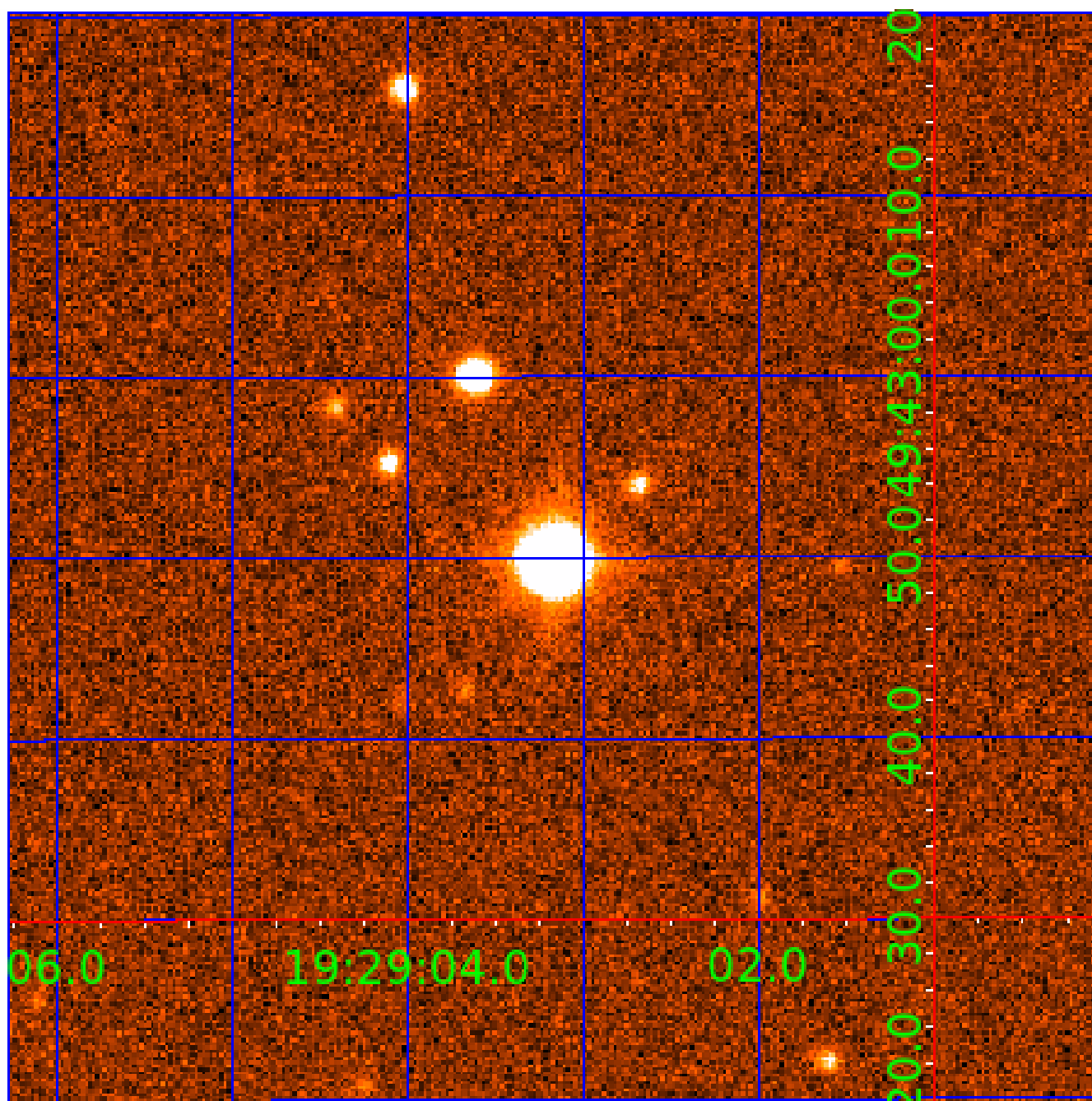
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



# KIC 011662513

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011662513-01	OBS	No	0.650868	131.593103	0.0	4.522	7.2	0.0	2.33	7507	0.00	49346.37
011662513-02	OBS	No	0.892083	131.520740	210.7	1.163	13.7	13.3	2.33	7507	3.94	32411.98
011662513-03	OBS	No	0.892089	131.965122	180.3	4.192	11.9	14.6	2.33	7507	3.62	32411.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011662513-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011662513-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
011662513-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—SAME_NTL_PERIOD

**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.

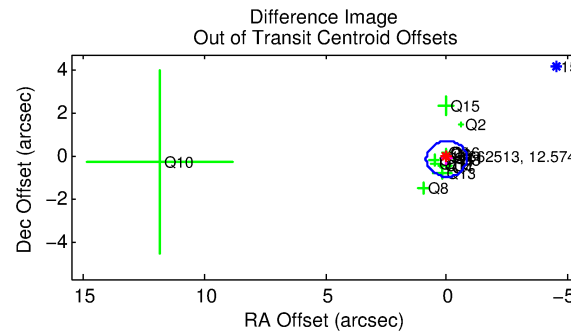
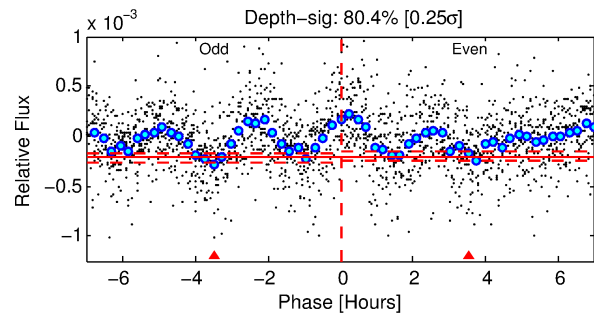
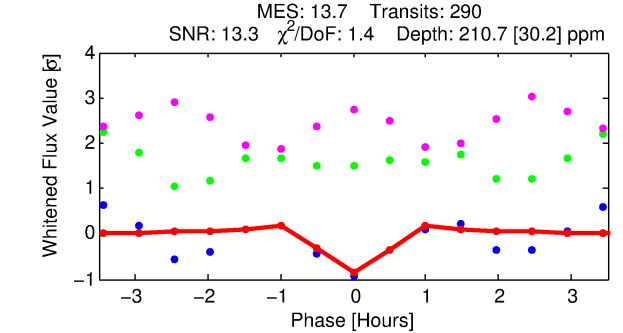
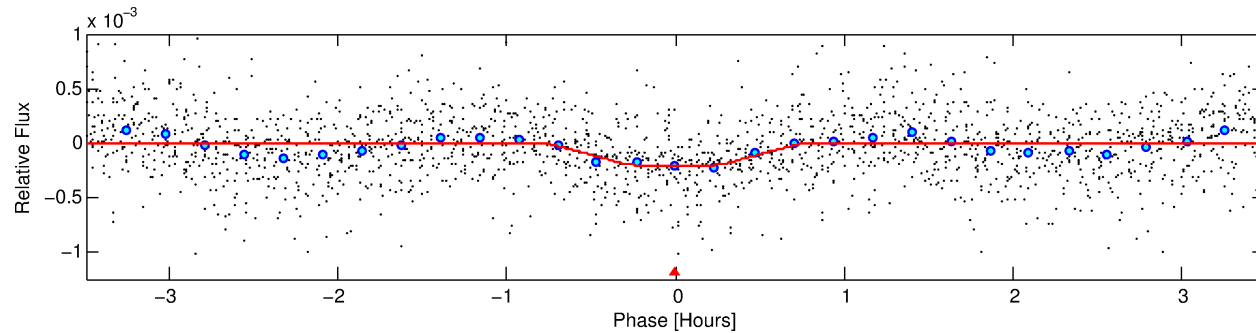
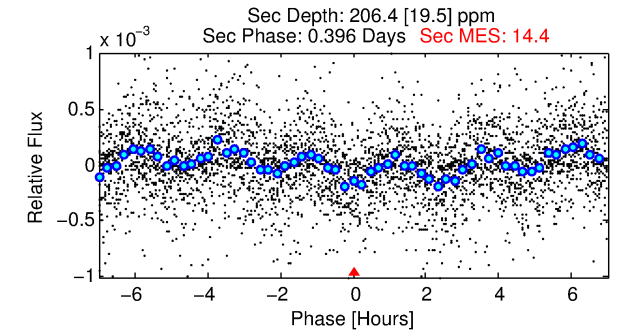
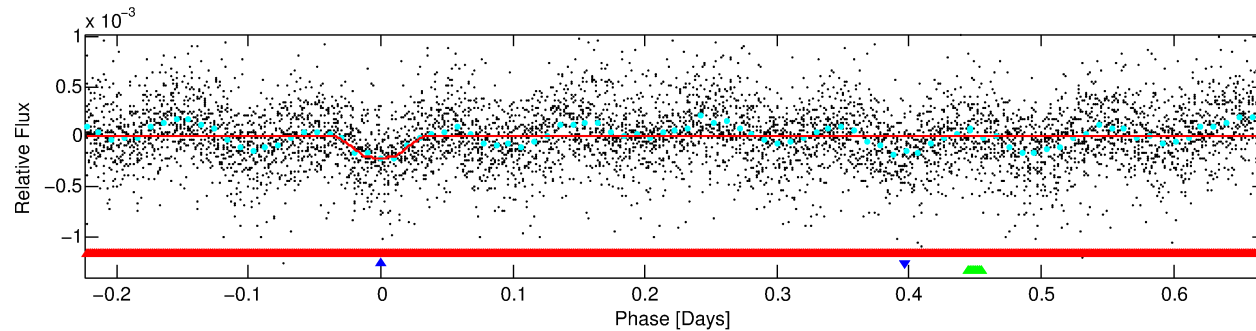
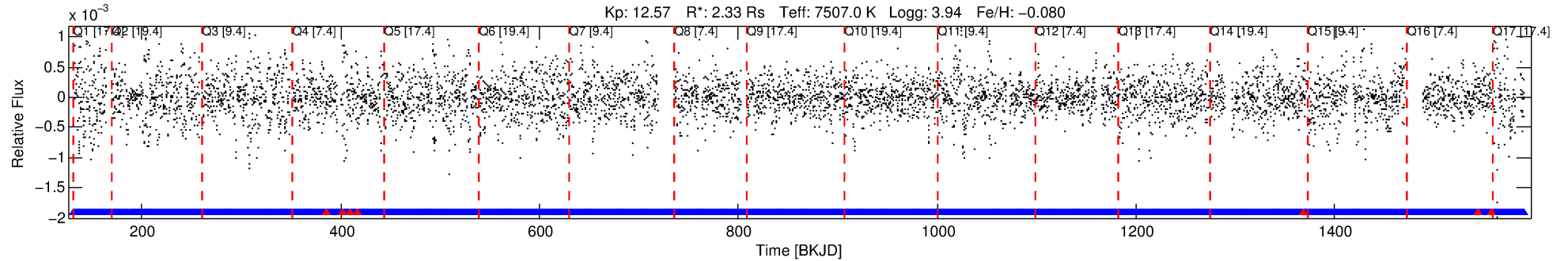
## Ephemeris Match Information For 011662513-02

No Significant Match Found



# DV One-Page Summary

KIC: 11662513 Candidate: 2 of 3 Period: 0.892 d



## DV Fit Results:

Period = 0.89208 [0.00001] d  
Epoch = 131.5207 [0.0016] BKJD  
Rp/R\* = 0.0155 [0.0061]  
a/R\* = 2.92 [6.48]  
b = 0.90 [0.54]  
Seff = 3241.98 [15325.65]  
Teq = 3421 [404] K  
Rp = 3.94 [2.00] Re  
a = 0.0219 [0.0063] AU  
Ag = 3.50 [3.19] [0.78σ]  
Teffp = 7235 [1474] K [2.50σ]

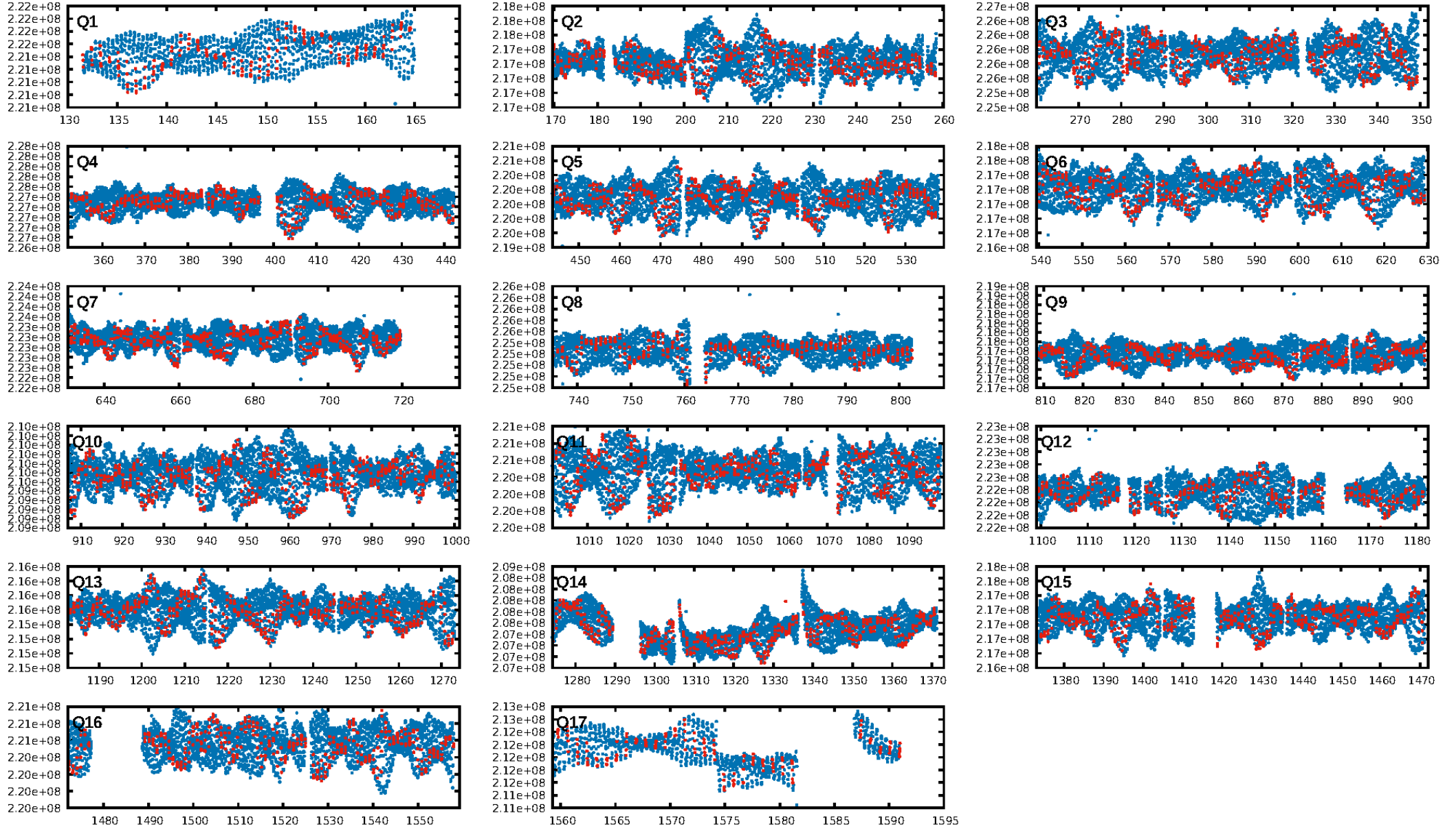
## DV Diagnostic Results:

ShortPeriod-sig: 78.5% [1.24σ]  
**LongPeriod-sig: 0.0% [0.00σ]**  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.97 [270/277]  
GhostDiagnostic-chr: 1.223  
Centroid-sig: 5.9%  
Centroid-so: 0.041 arcsec [0.34σ]  
OotOffset-rm: 0.131 arcsec [0.47σ]  
KicOffset-rm: 0.136 arcsec [0.49σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.81 [13/16]  
DiffImageOverlap-fno: 0.71 [12/17]

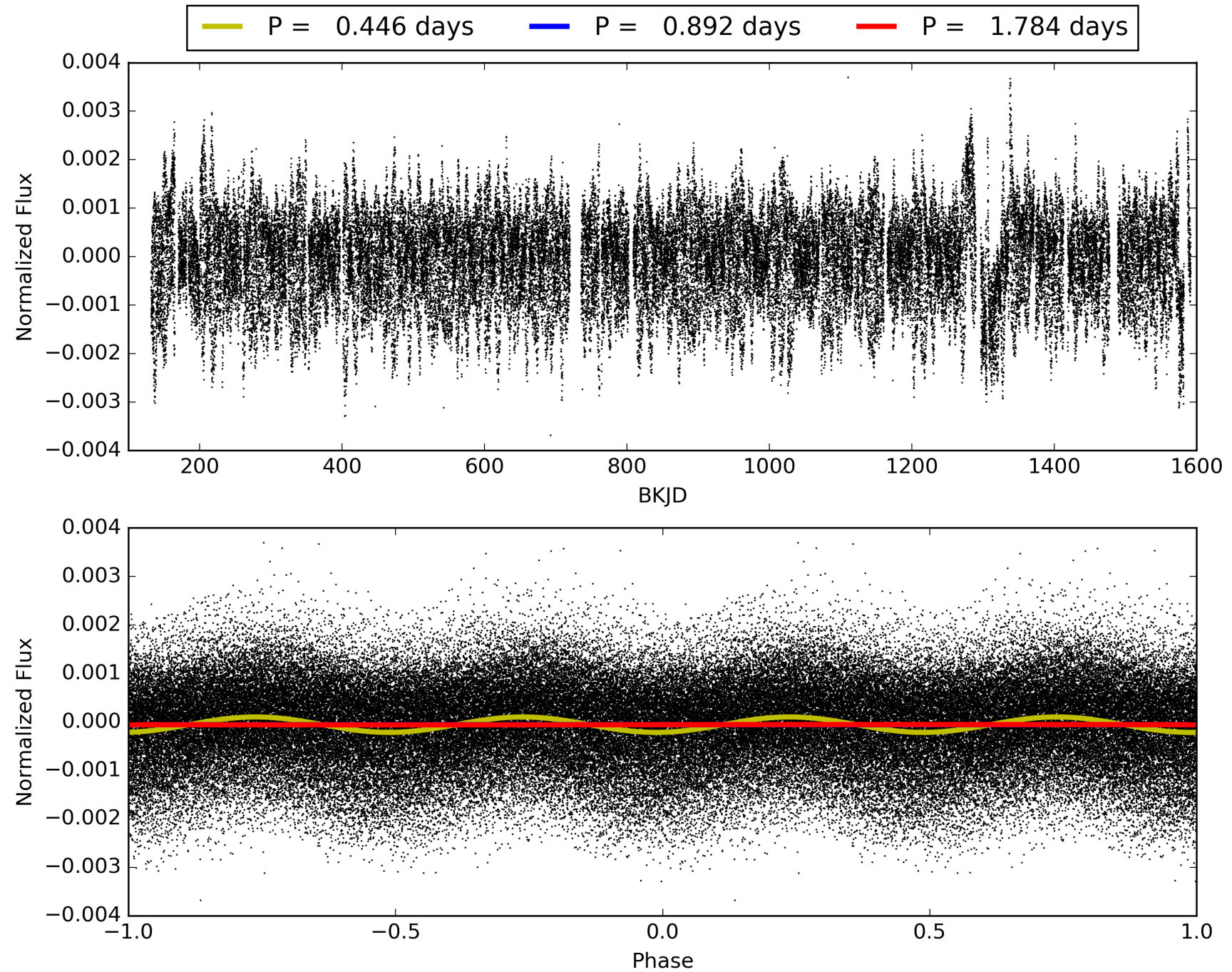
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:18:36 Z

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

# TCE 011662513-02, PDC Light Curves

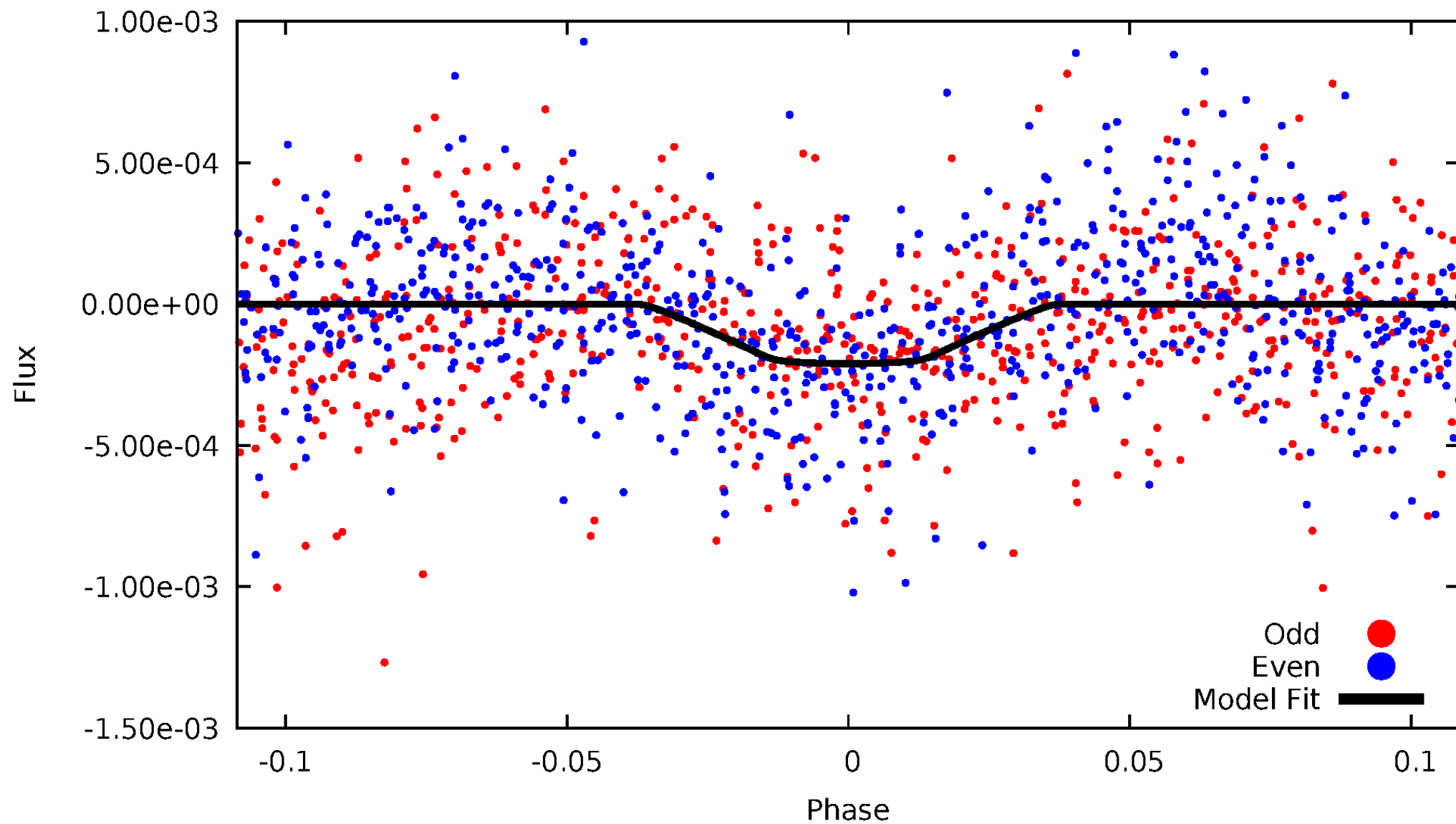


# TCE 011662513-02



# DV Odd/Even

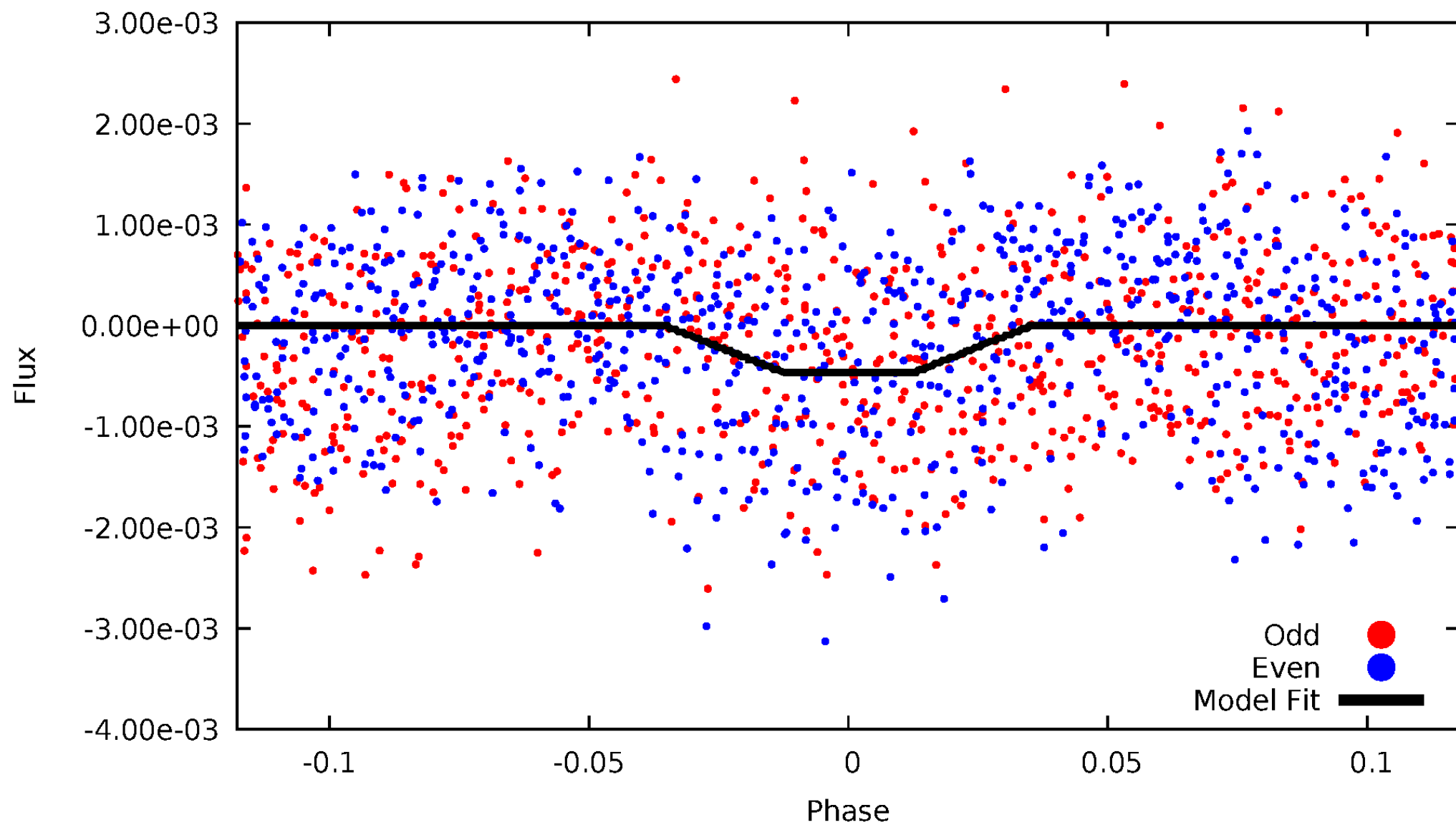
TCE 011662513-02





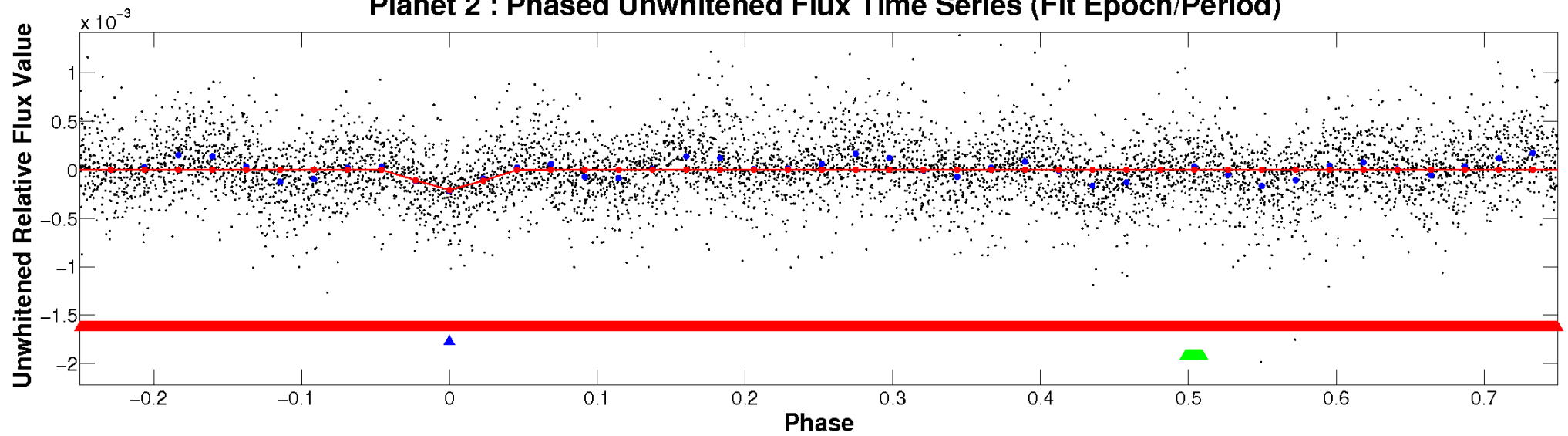
# ALT Odd/Even

TCE 011662513-02

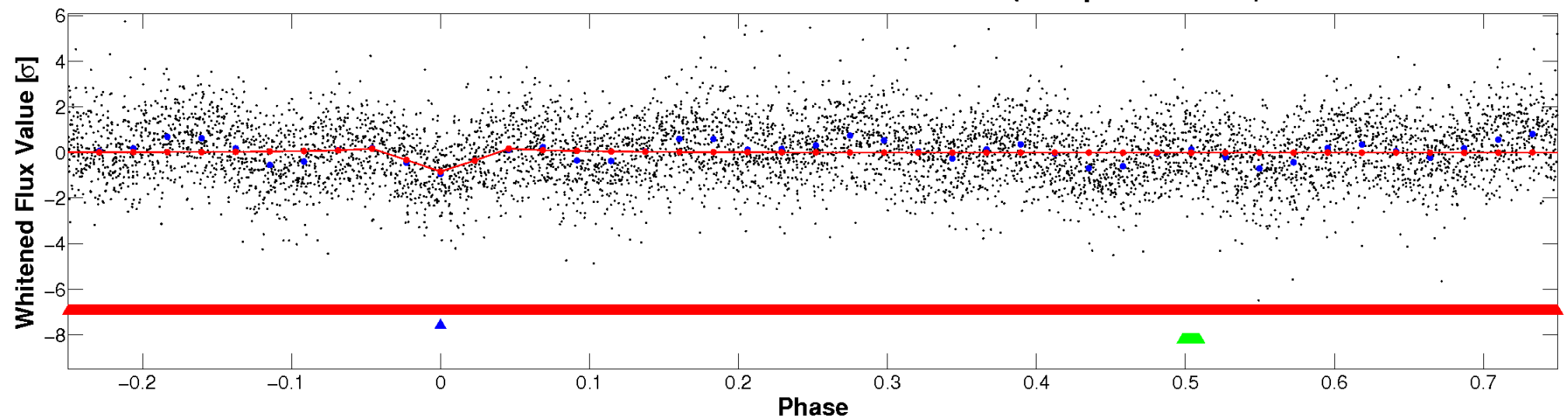


# Non-Whitened Vs. Whitened Light Curve

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

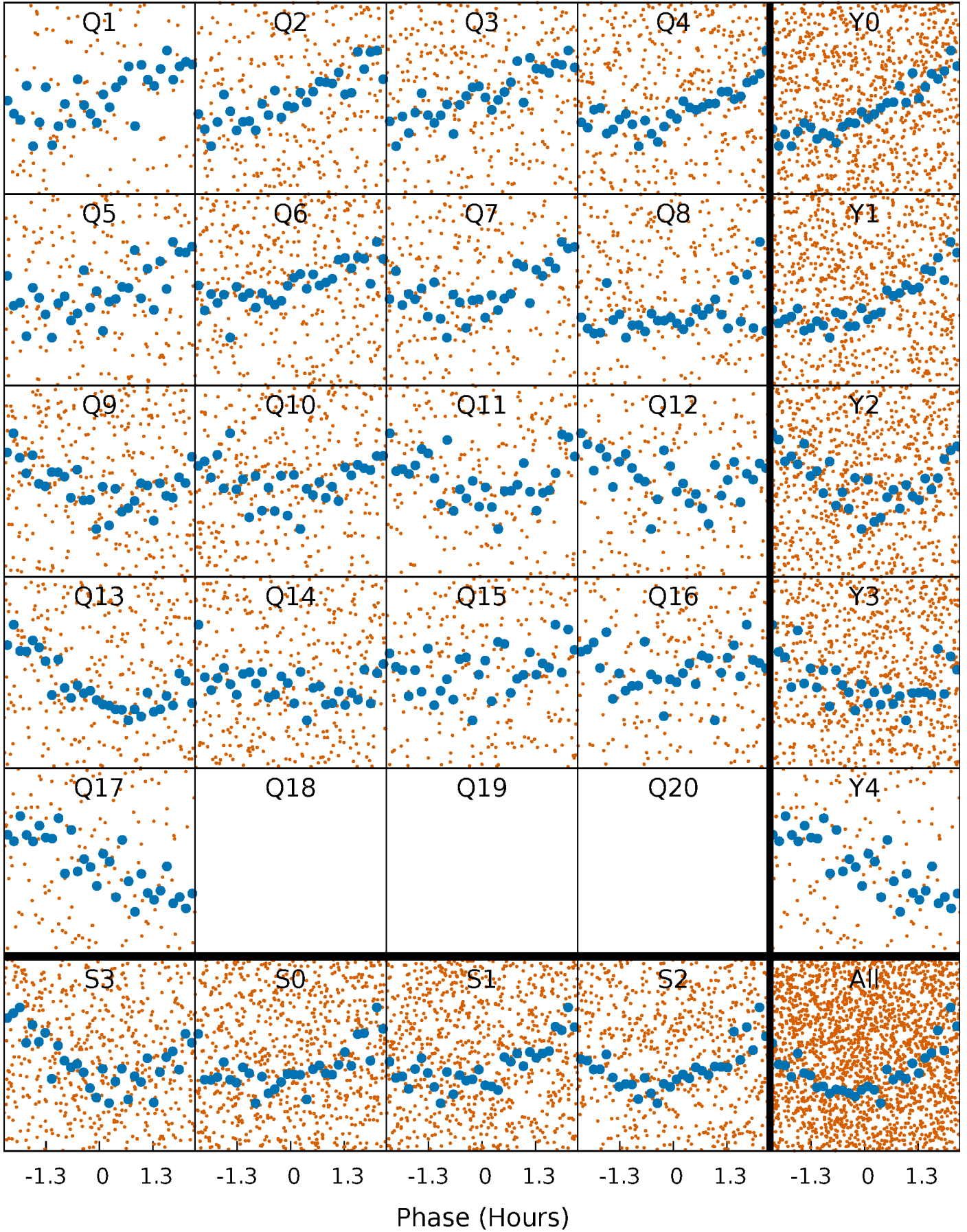


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



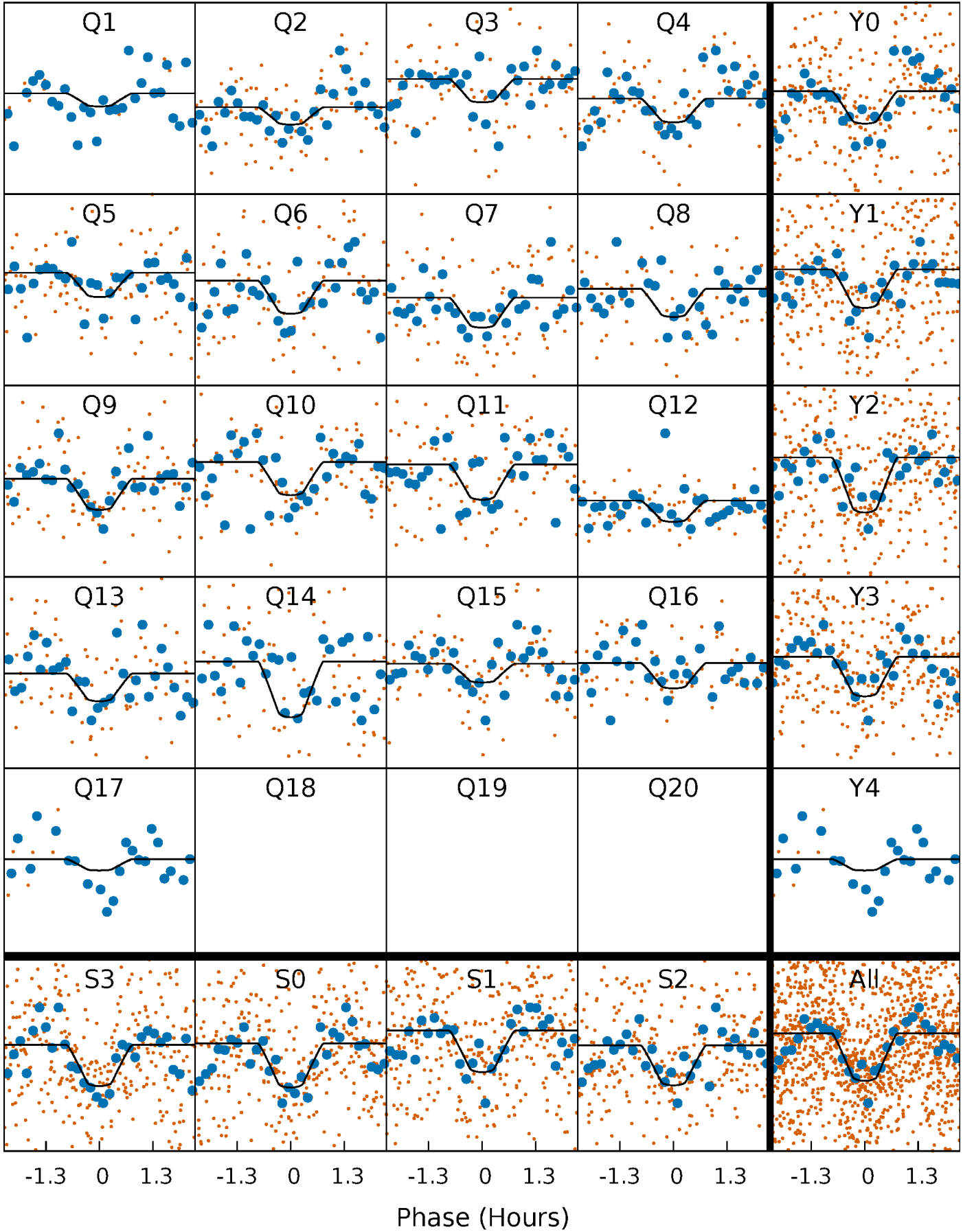
# PDC Quarter-Phased Transit Curves

TCE 011662513-02   P= 0.892083 Days    $T_0=131.520740$  (BKJD)



# DV Quarter-Phased Transit Curves

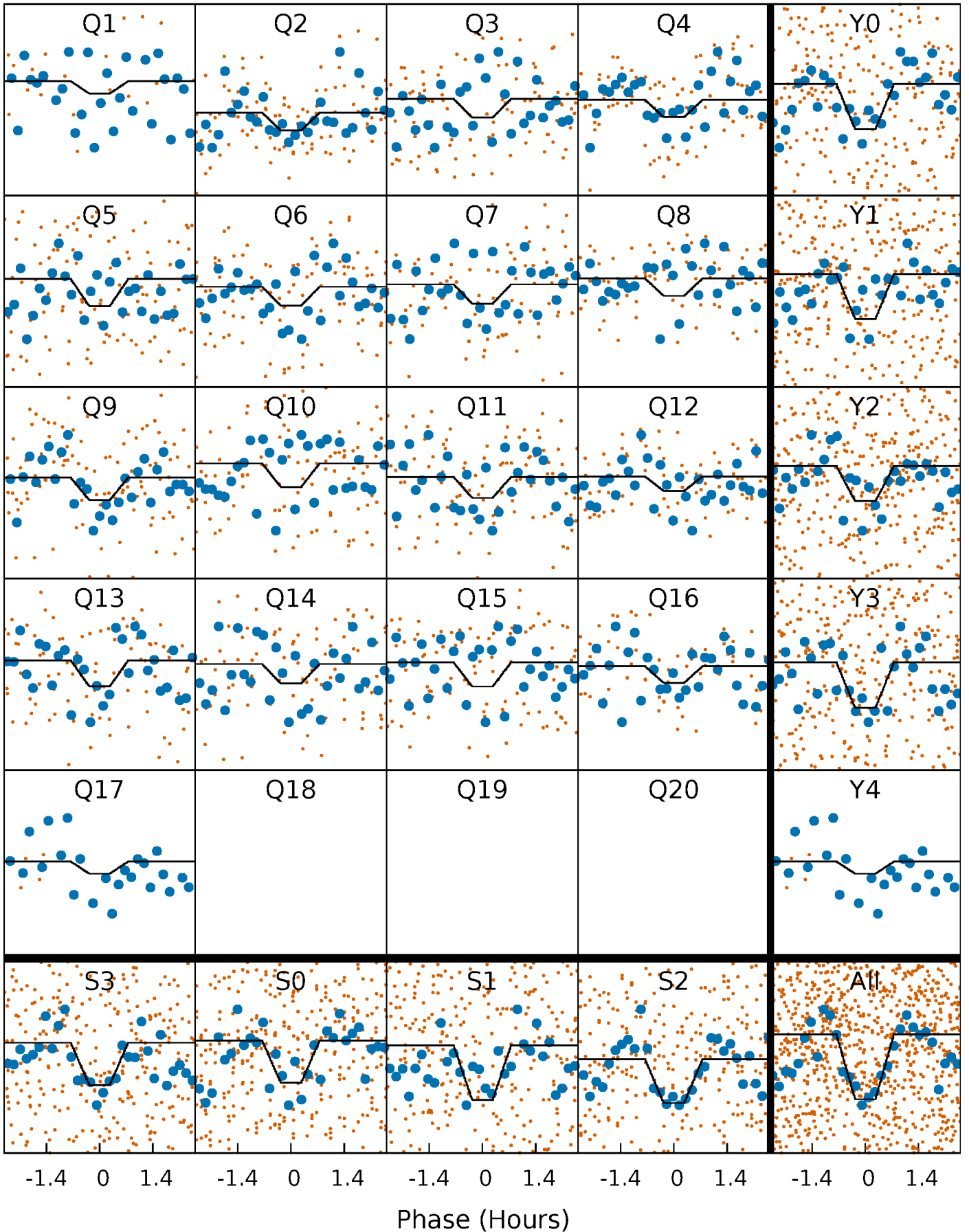
TCE 011662513-02 P= 0.892083 Days  $T_0=131.520740$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

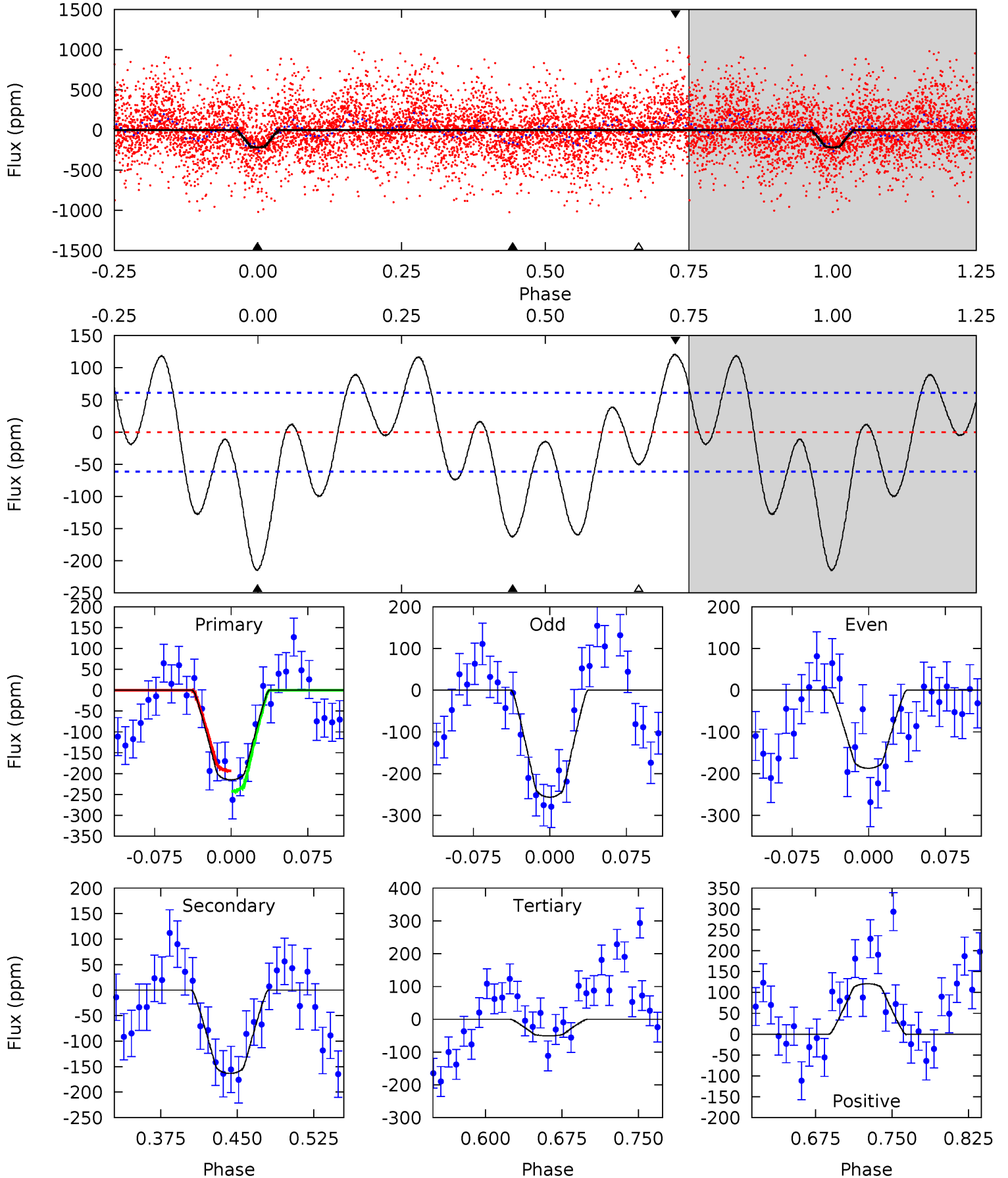
TCE 011662513-02 P= 0.892077 Days  $T_0=131.524036$  (BKJD)



# DV Model-Shift Uniqueness Test

011662513-02, P = 0.892083 Days, E = 131.520740 Days

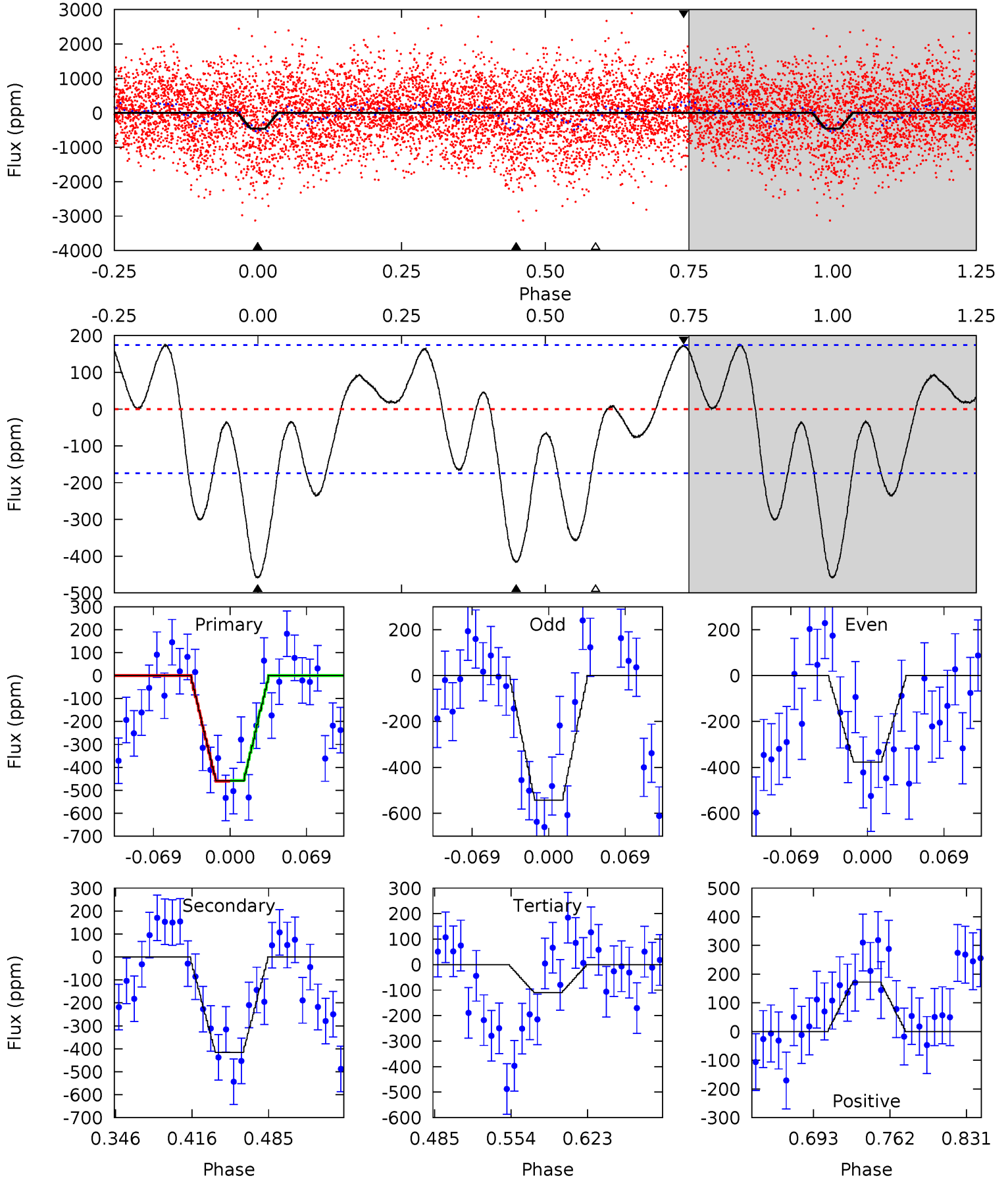
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.2	12.3	3.81	9.12	4.62	1.78	5.69	12.4	7.09	8.51	3.20	2.66	1.09	0.36	1.87



# Alt Model-Shift Uniqueness Test

011662513-02, P = 0.892077 Days, E = 131.524036 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
12.2	11.1	2.92	4.59	4.64	1.82	3.73	9.30	7.62	8.15	6.48	2.24	1.18	0.28	0.04



### Stellar Parameters For KIC 011662513

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7507^{+209}_{-314}$	$3.945^{+0.253}_{-0.136}$	$-0.080^{+0.200}_{-0.350}$	$2.332^{+0.493}_{-0.740}$	$1.746^{+0.200}_{-0.350}$	$0.194^{+0.291}_{-0.082}$
	+3%/-4%	+6%/-3%	+250%/-438%	+21%/-32%	+11%/-20%	+150%/-42%
Source	KIC0	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 011662513-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-163 \pm 13$	$3.74^{+1.62}_{-1.50}$	$4702^{+360}_{-405}$	$6485^{+2444}_{-1083}$	$3.104^{+5.180}_{-1.643}$
Alt.	$-416 \pm 38$	$5.21^{+1.97}_{-1.68}$	$4717^{+321}_{-380}$	$7061^{+1882}_{-1056}$	$3.976^{+4.370}_{-1.867}$

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



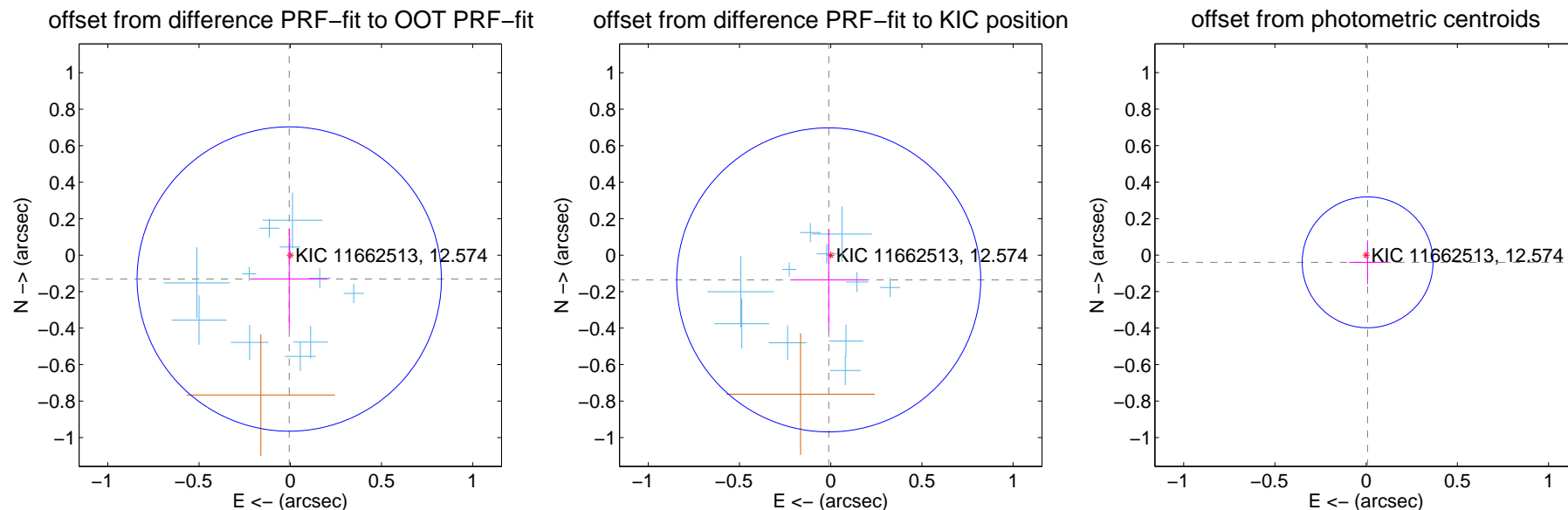
## DV Centroid Data

Supplemental centroid analysis for 011662513-02. Kepler magnitude: 12.57. Transit SNR 13.25

There are 13 quarters with good PRF difference image offsets

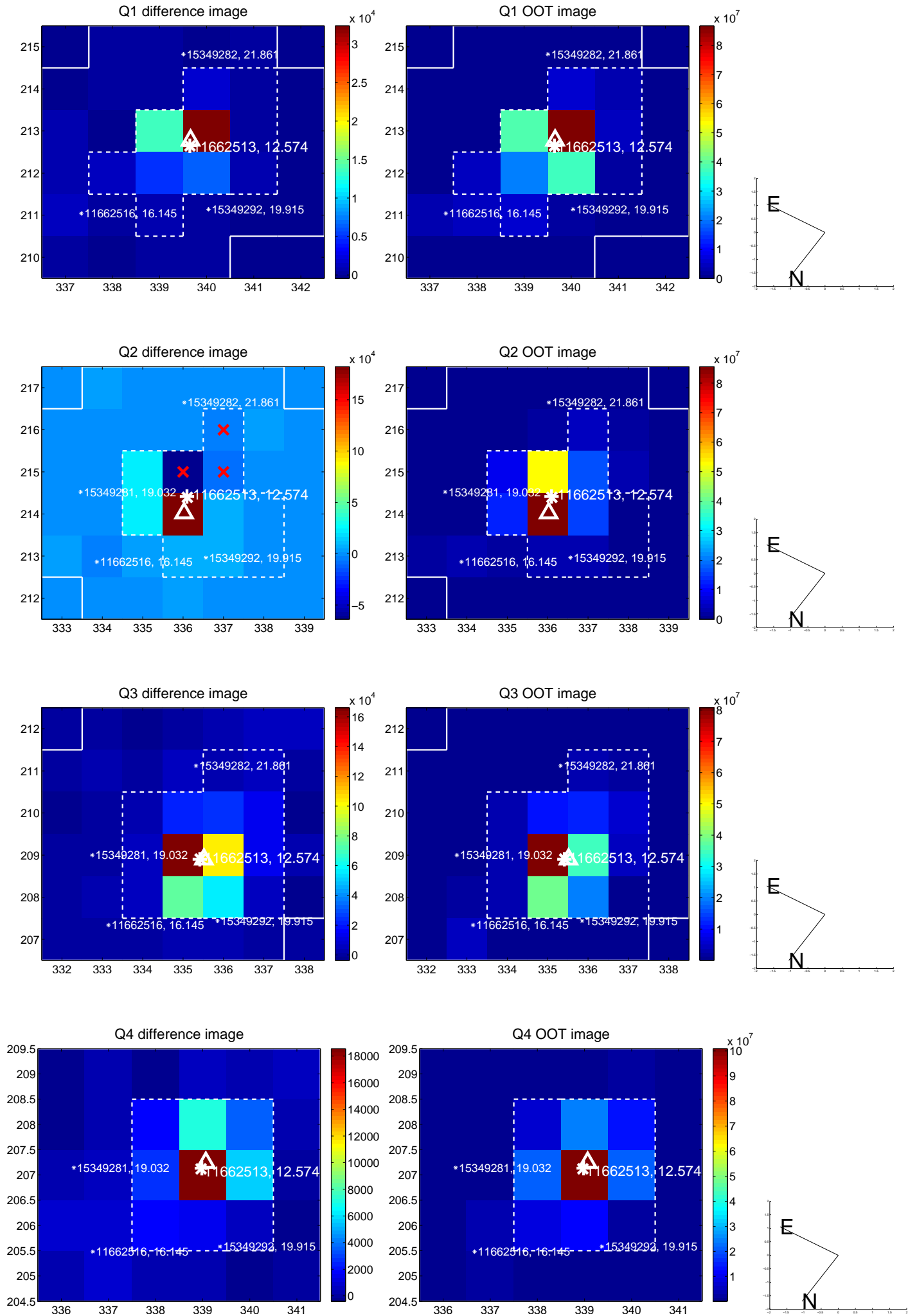
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.131 \pm 0.278$	0.47	$0.006 \pm 0.205$	$-0.131 \pm 0.278$
PRF-fit source offset from KIC position	$0.136 \pm 0.278$	0.49	$0.011 \pm 0.205$	$-0.136 \pm 0.278$
photometric centroid source offset	$0.04 \pm 0.12$	0.34	$-0.01 \pm 0.10$	$-0.04 \pm 0.12$

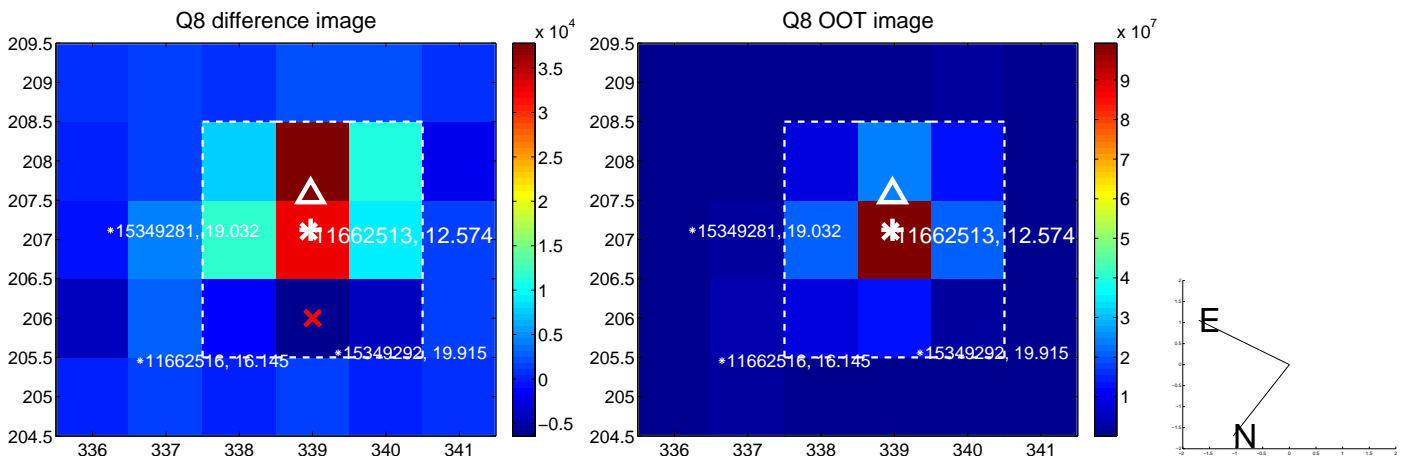
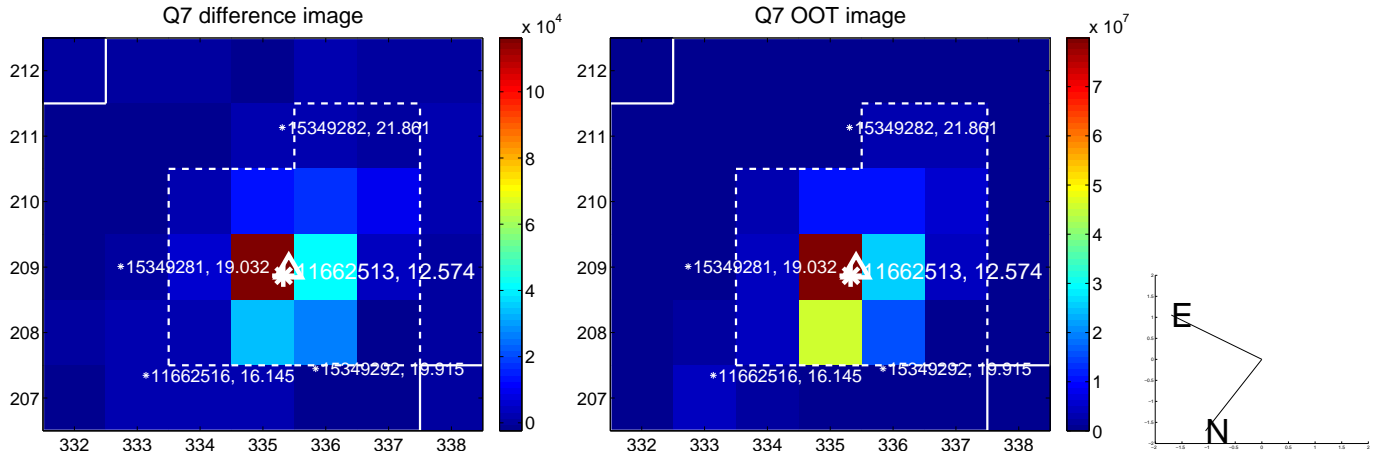
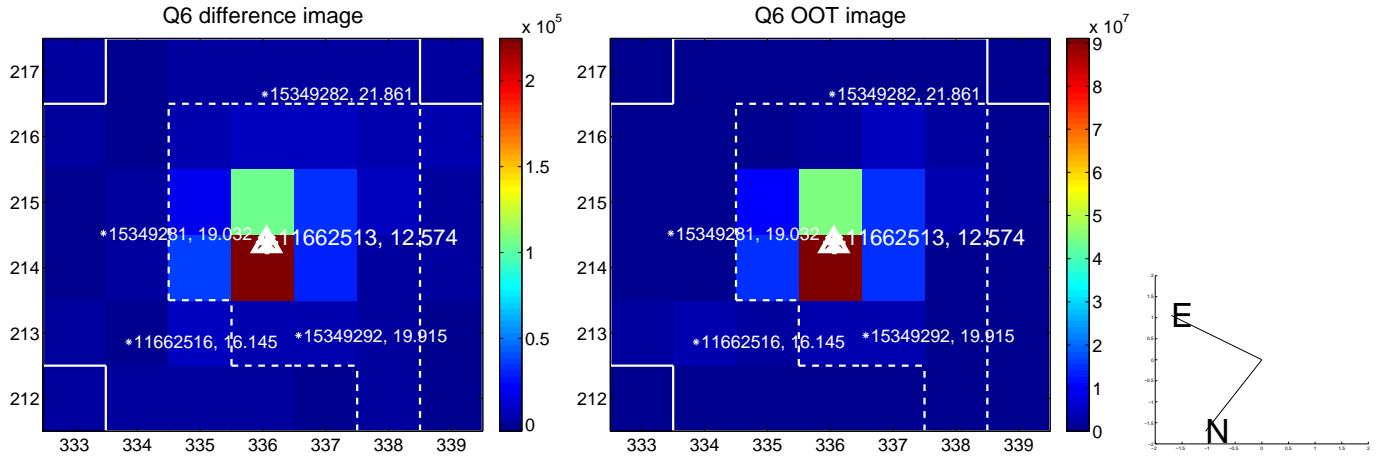
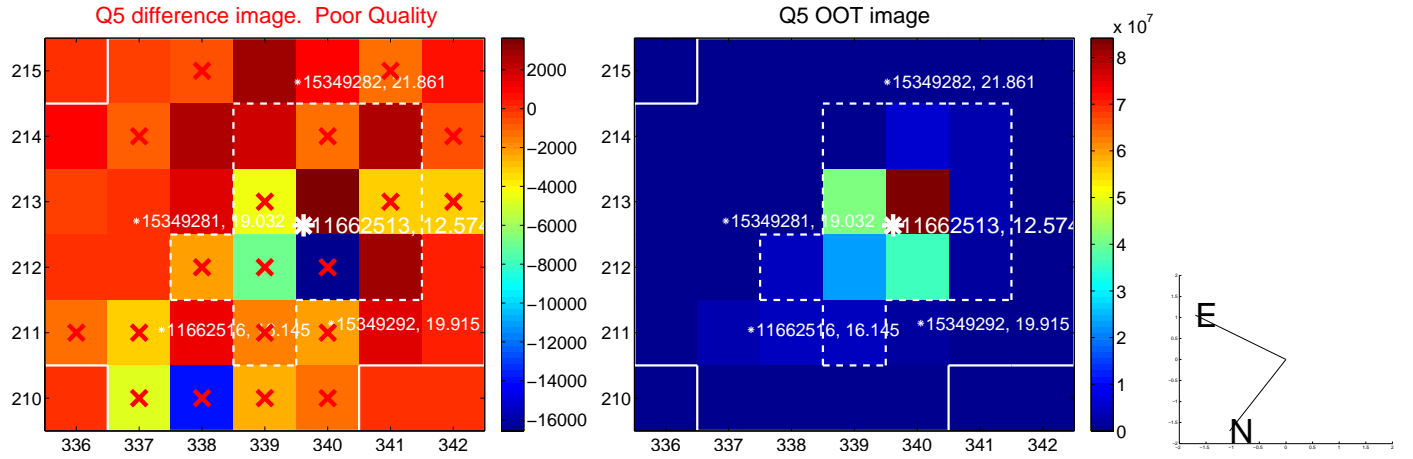


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

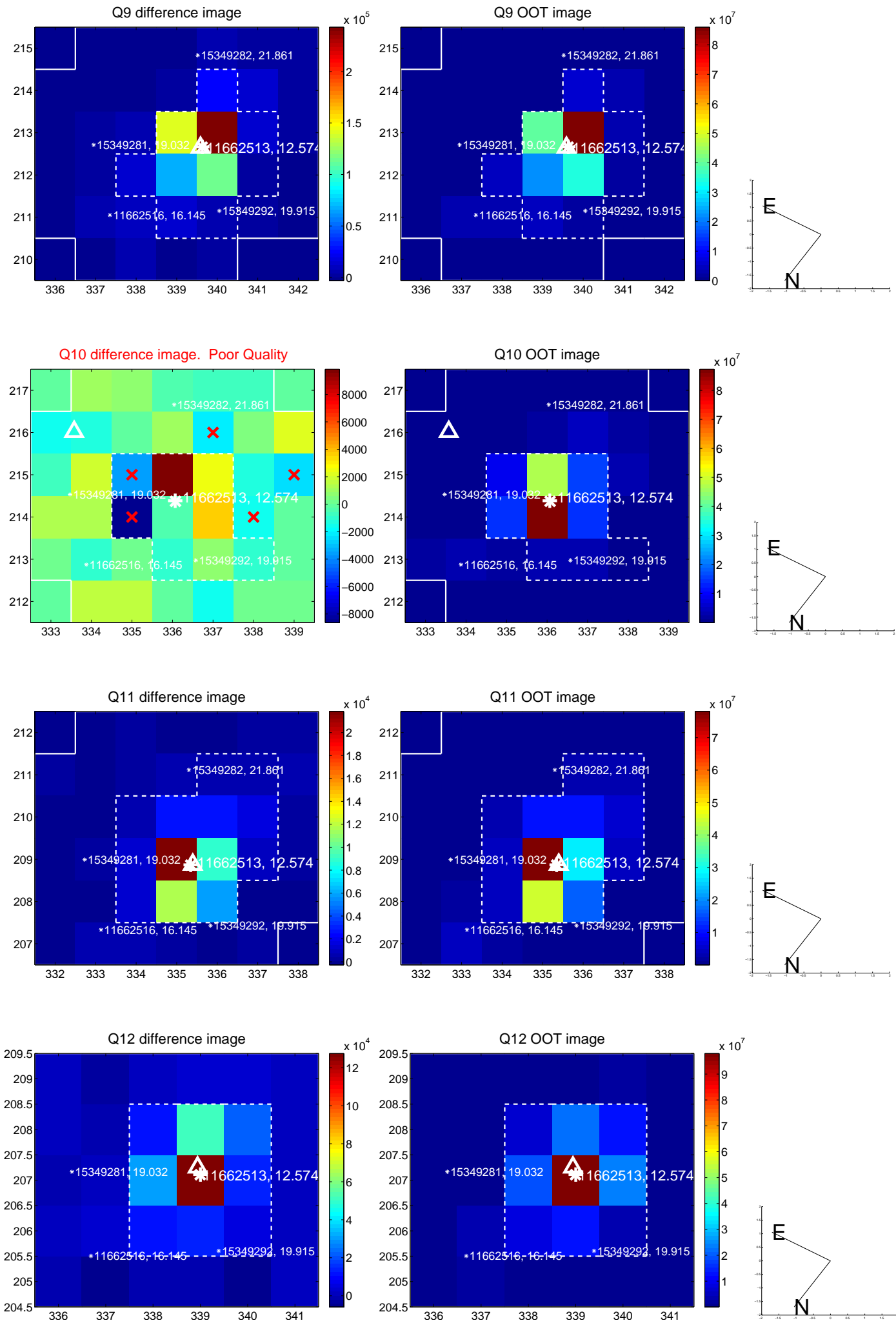
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



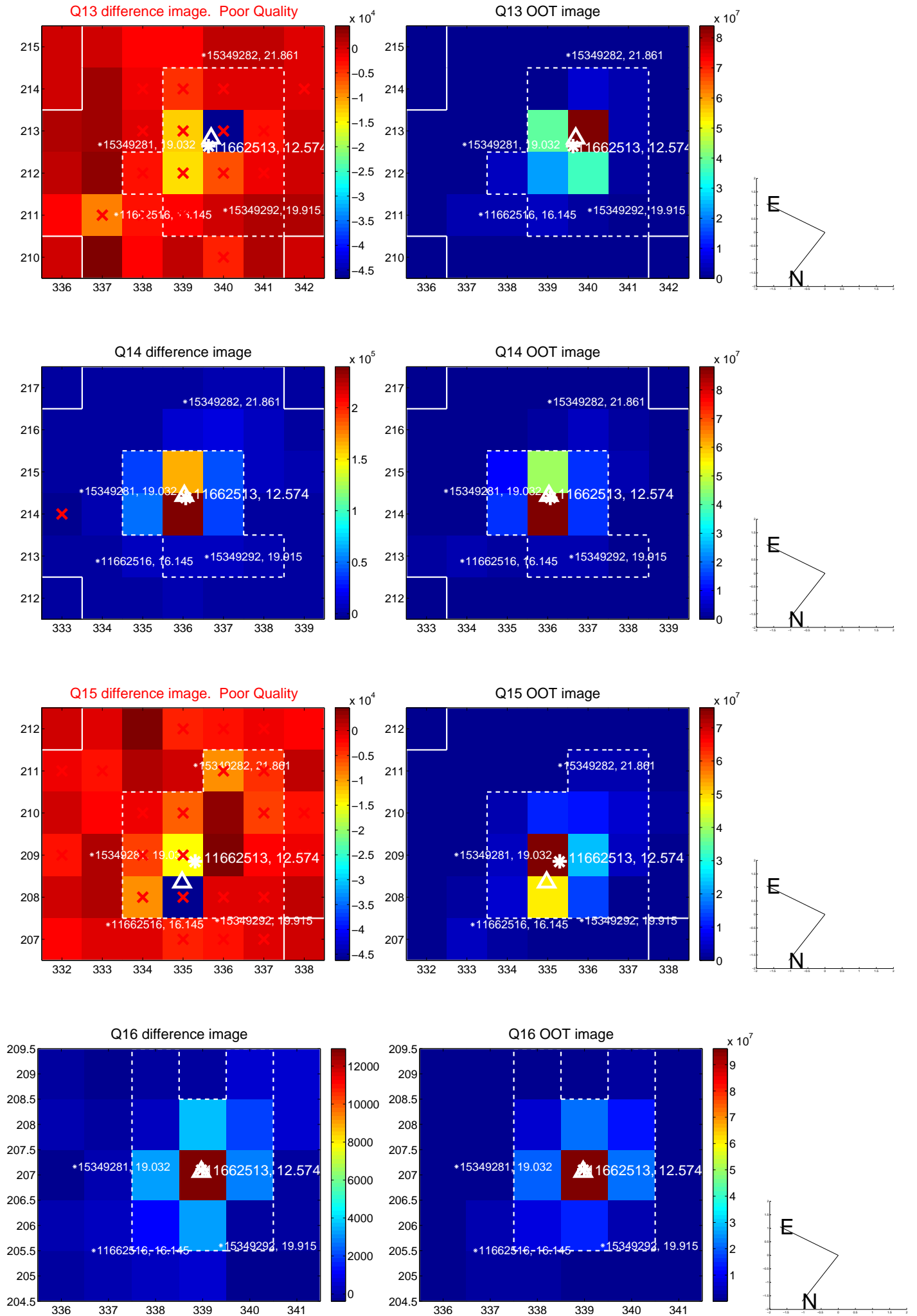
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

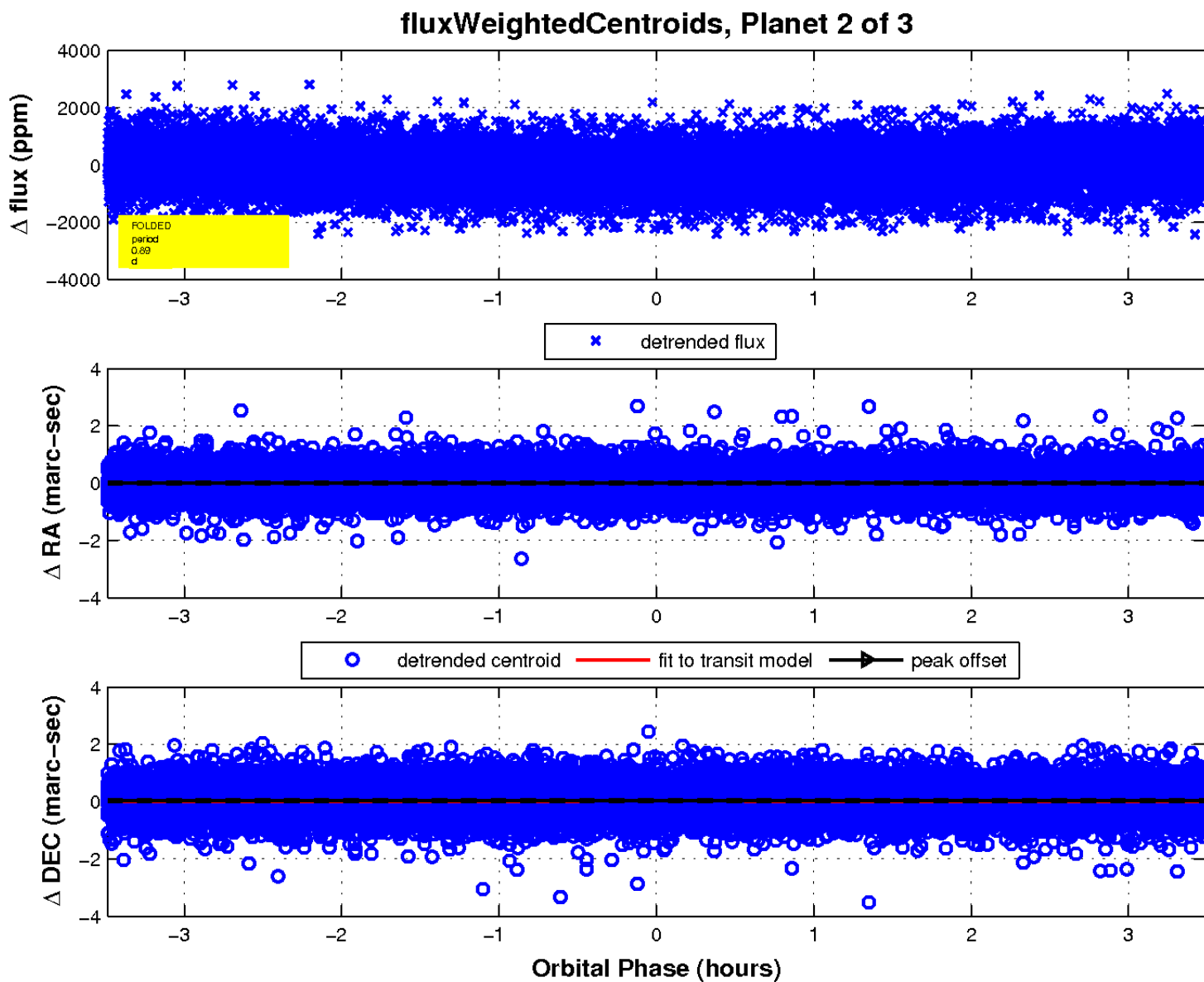
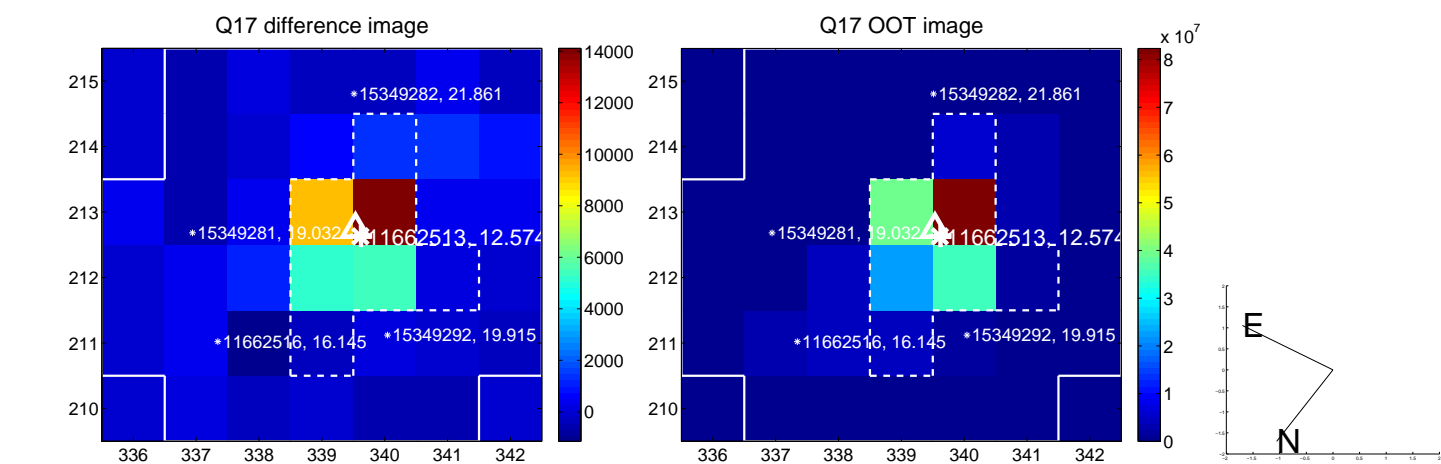


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



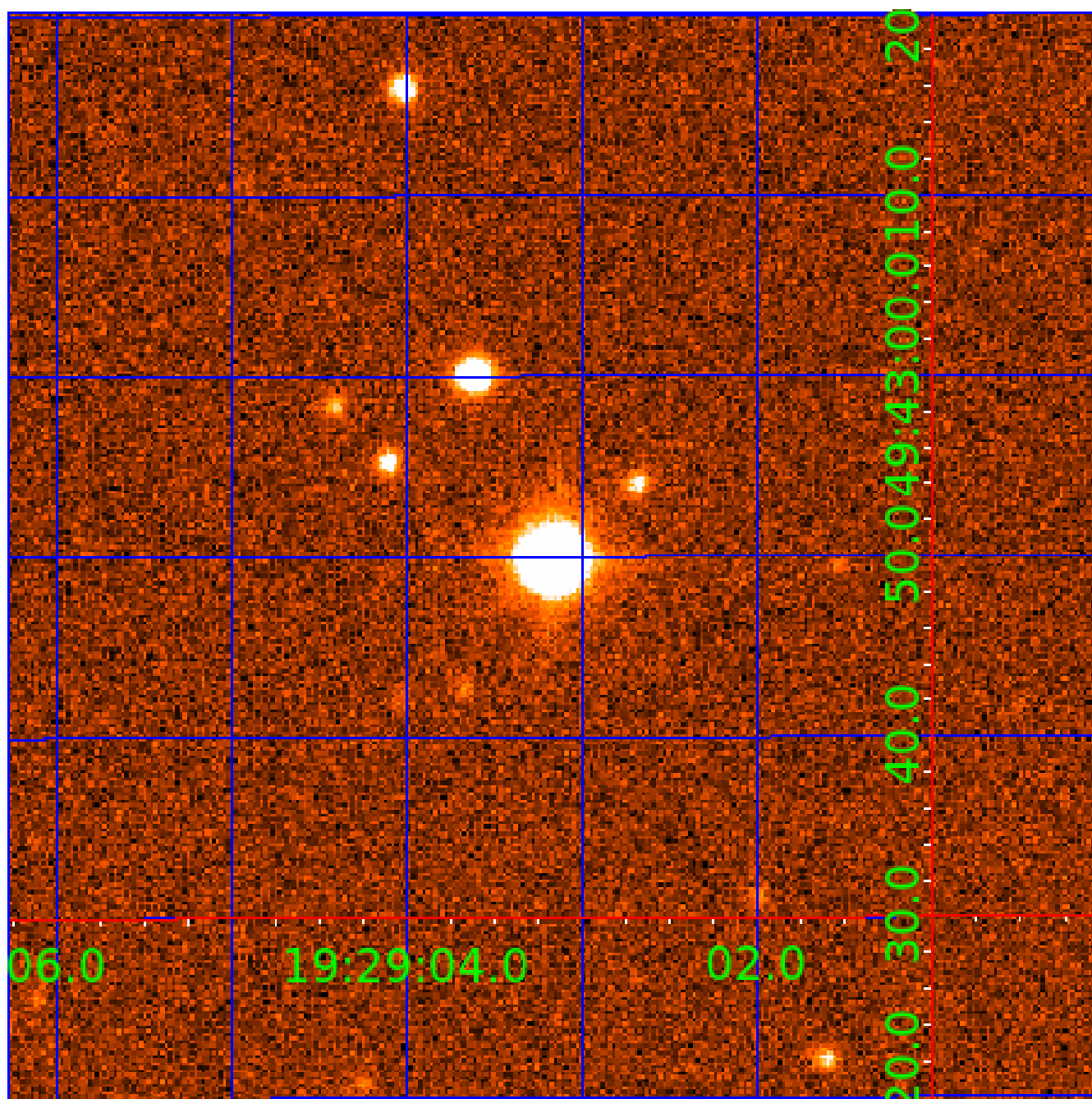


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 011662513

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011662513-01	OBS	No	0.650868	131.593103	0.0	4.522	7.2	0.0	2.33	7507	0.00	49346.37
011662513-02	OBS	No	0.892083	131.520740	210.7	1.163	13.7	13.3	2.33	7507	3.94	32411.98
011662513-03	OBS	No	0.892089	131.965122	180.3	4.192	11.9	14.6	2.33	7507	3.62	32411.69

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011662513-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011662513-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
011662513-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_ZUMA—TRANS_GAPPED—LPP_DV—LPP_ALT—SAME_NTL_PERIOD

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

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

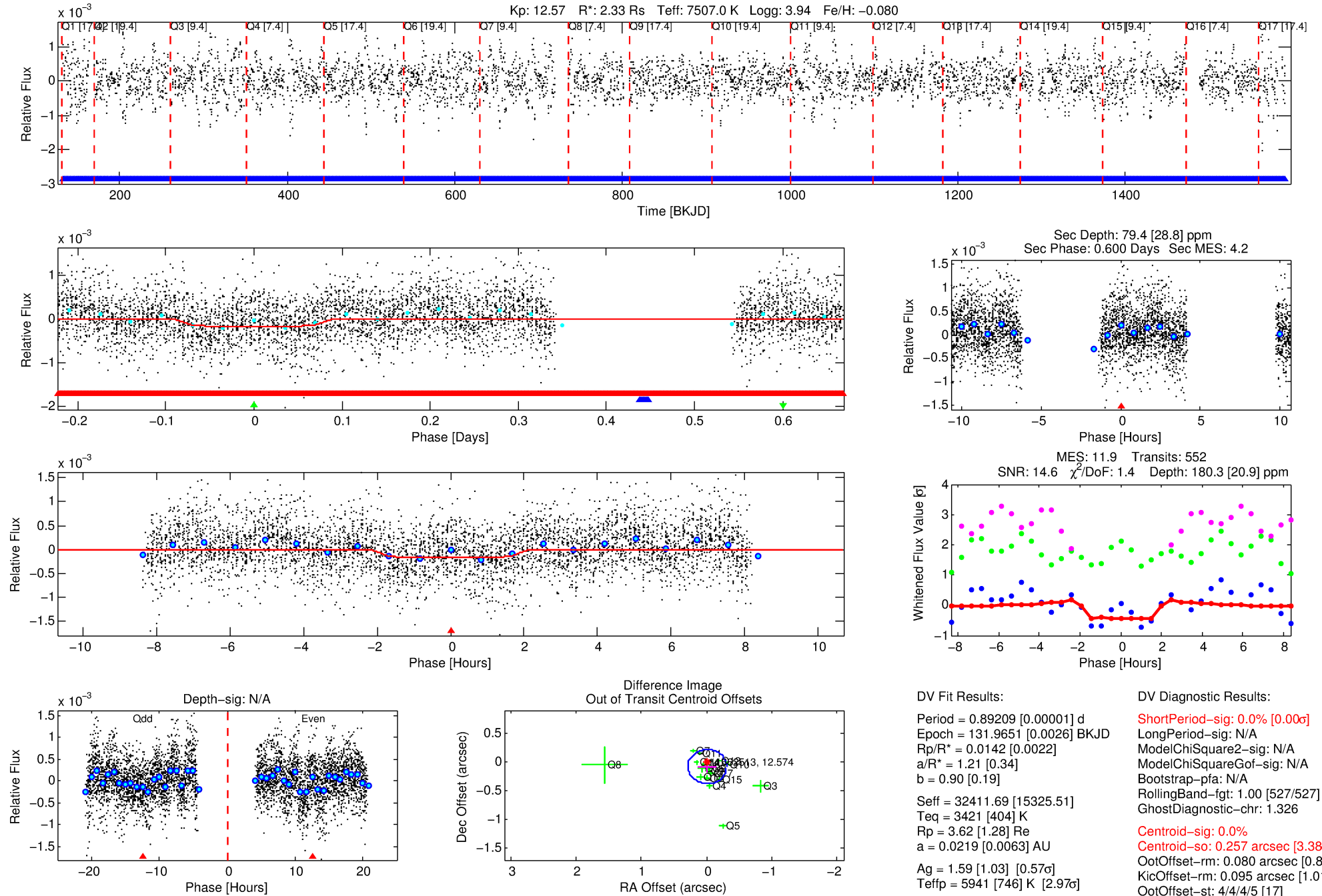
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 011662513-03

No Significant Match Found

# DV One-Page Summary

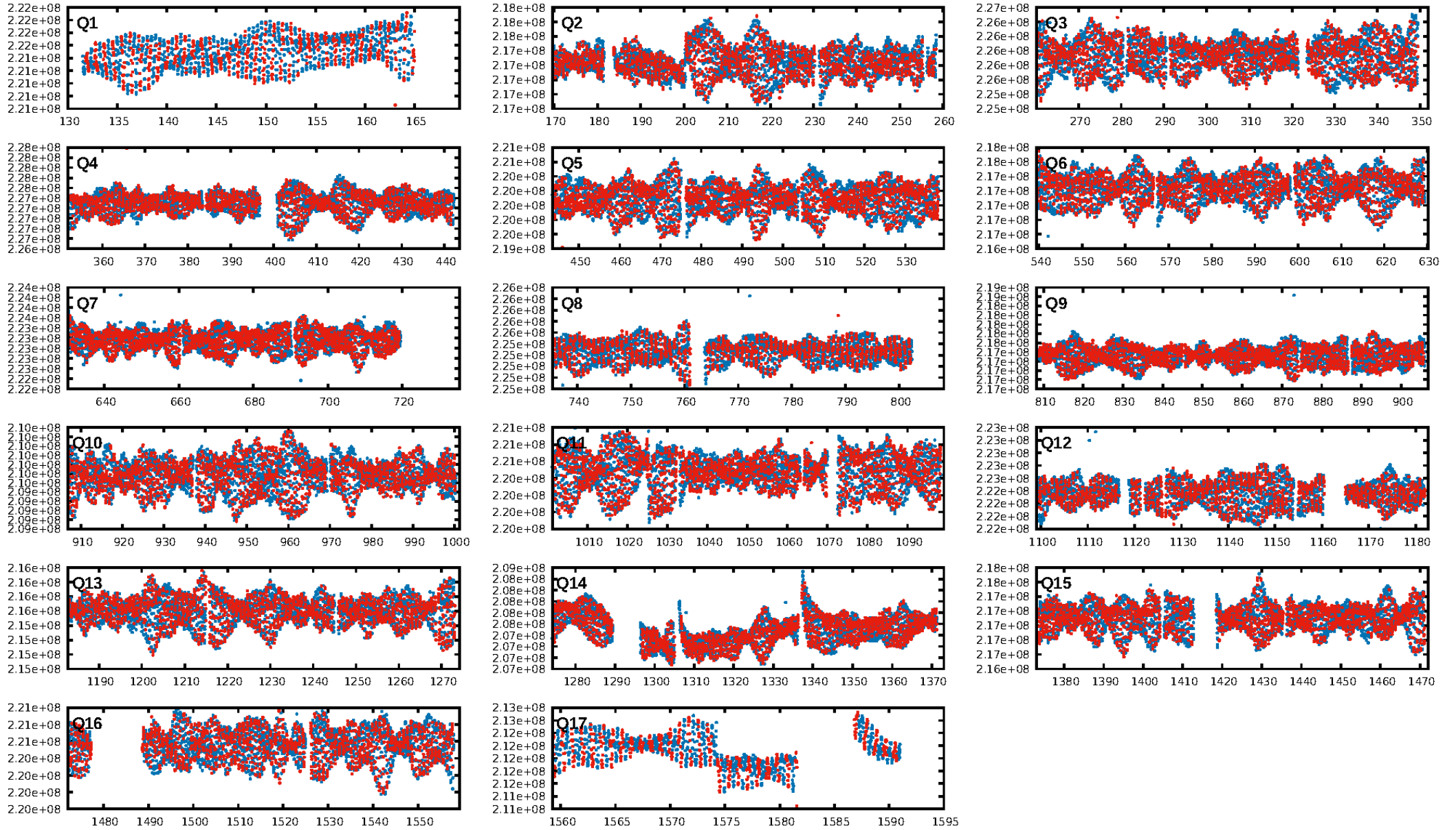
KIC: 11662513 Candidate: 3 of 3 Period: 0.892 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:18:43 Z

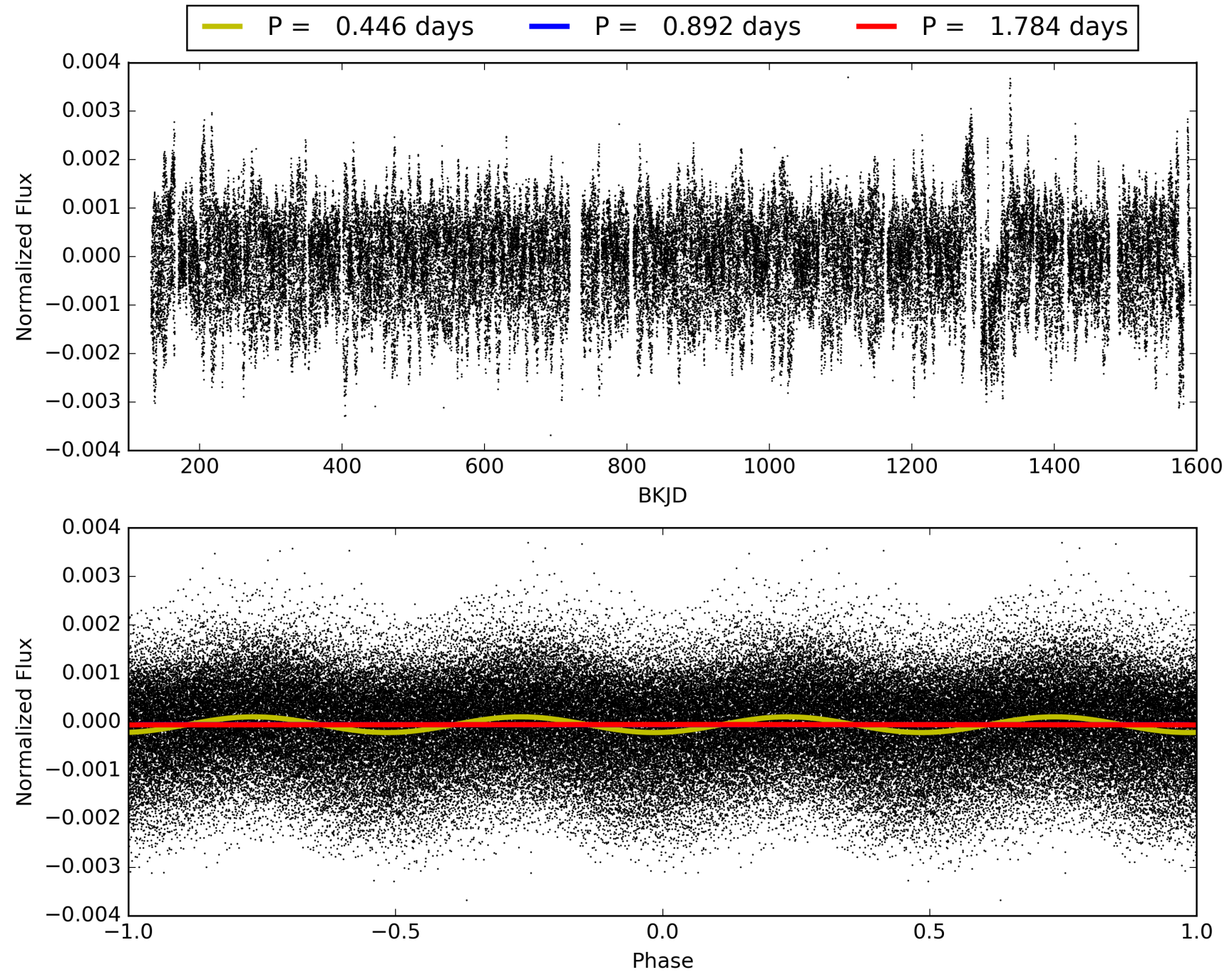
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011662513-03, PDC Light Curves



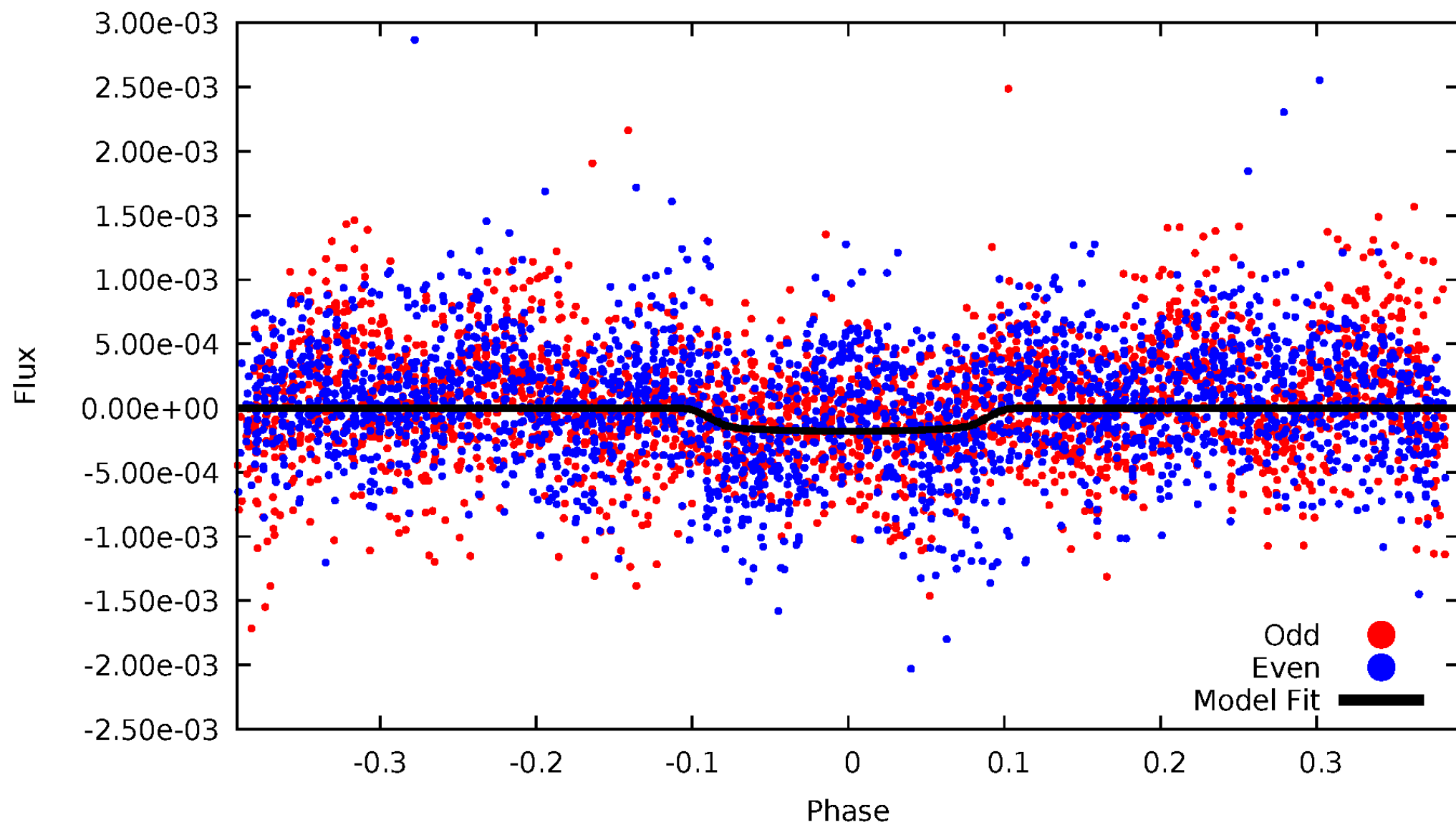


# TCE 011662513-03



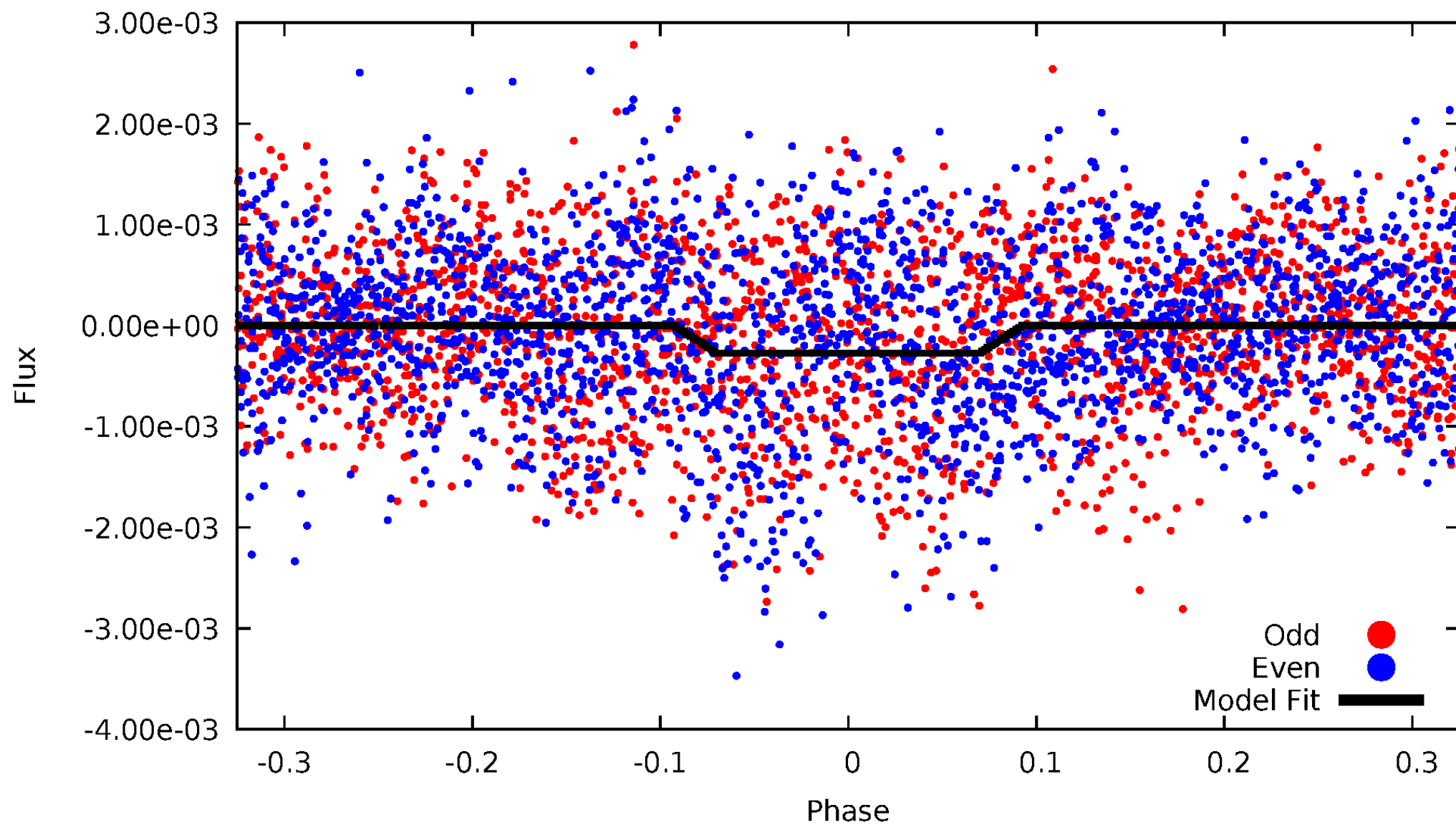
# DV Odd/Even

TCE 011662513-03



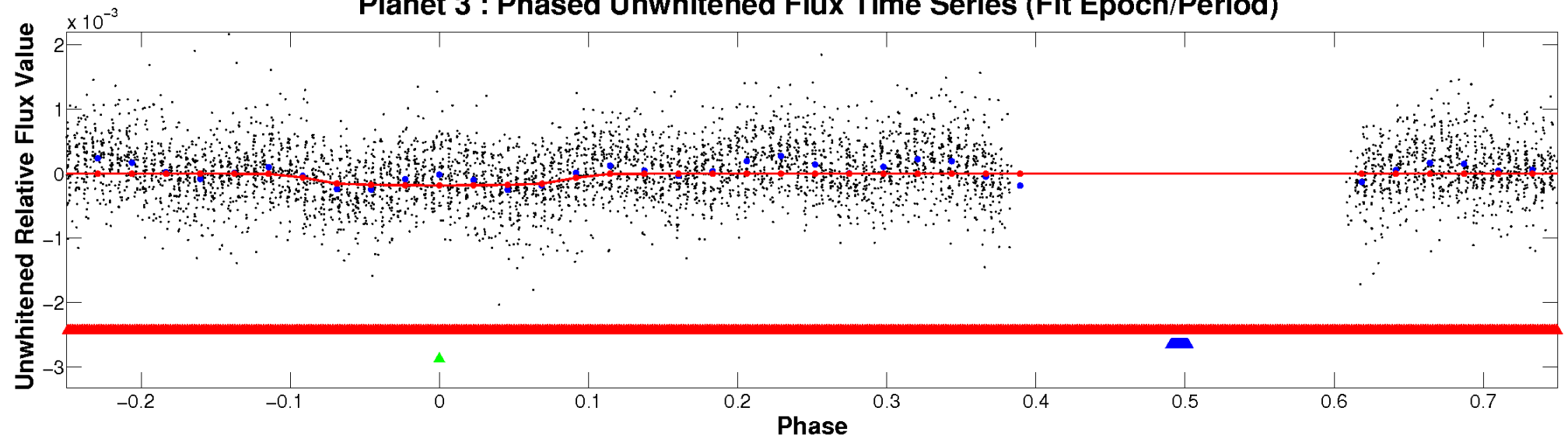
# ALT Odd/Even

TCE 011662513-03

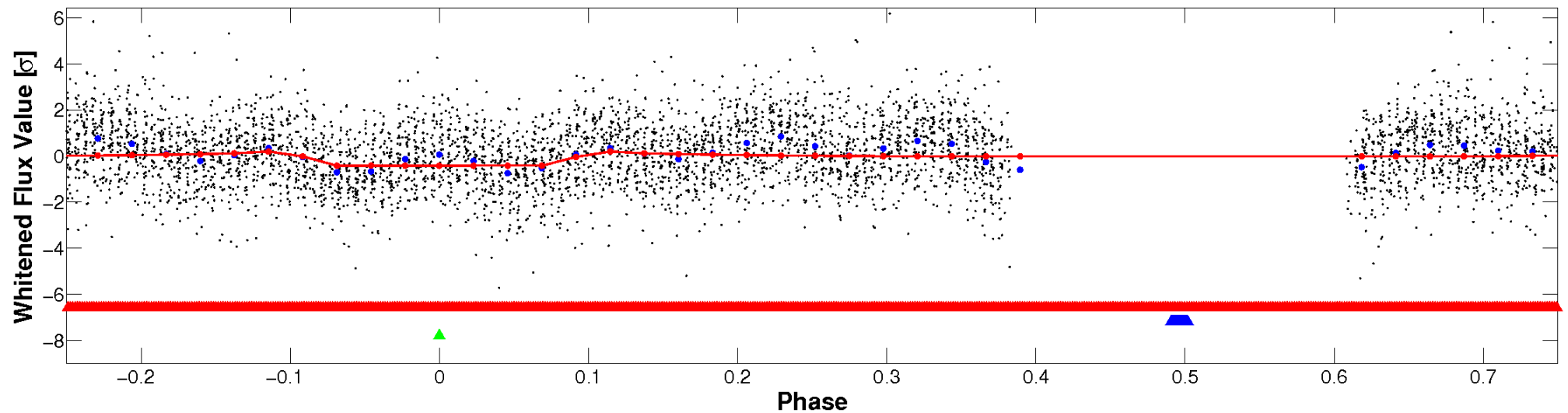


# Non-Whitened Vs. Whitened Light Curve

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



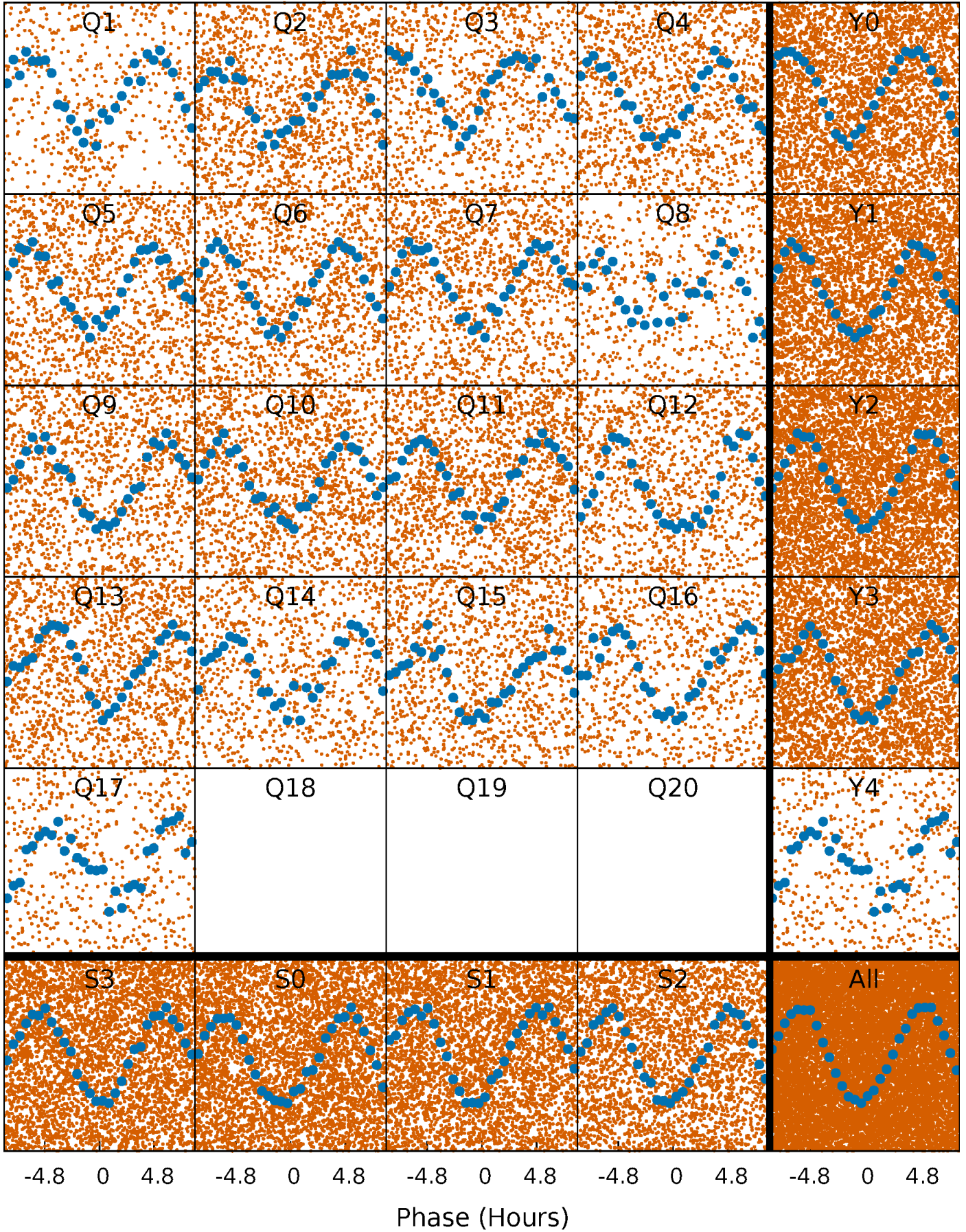
## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

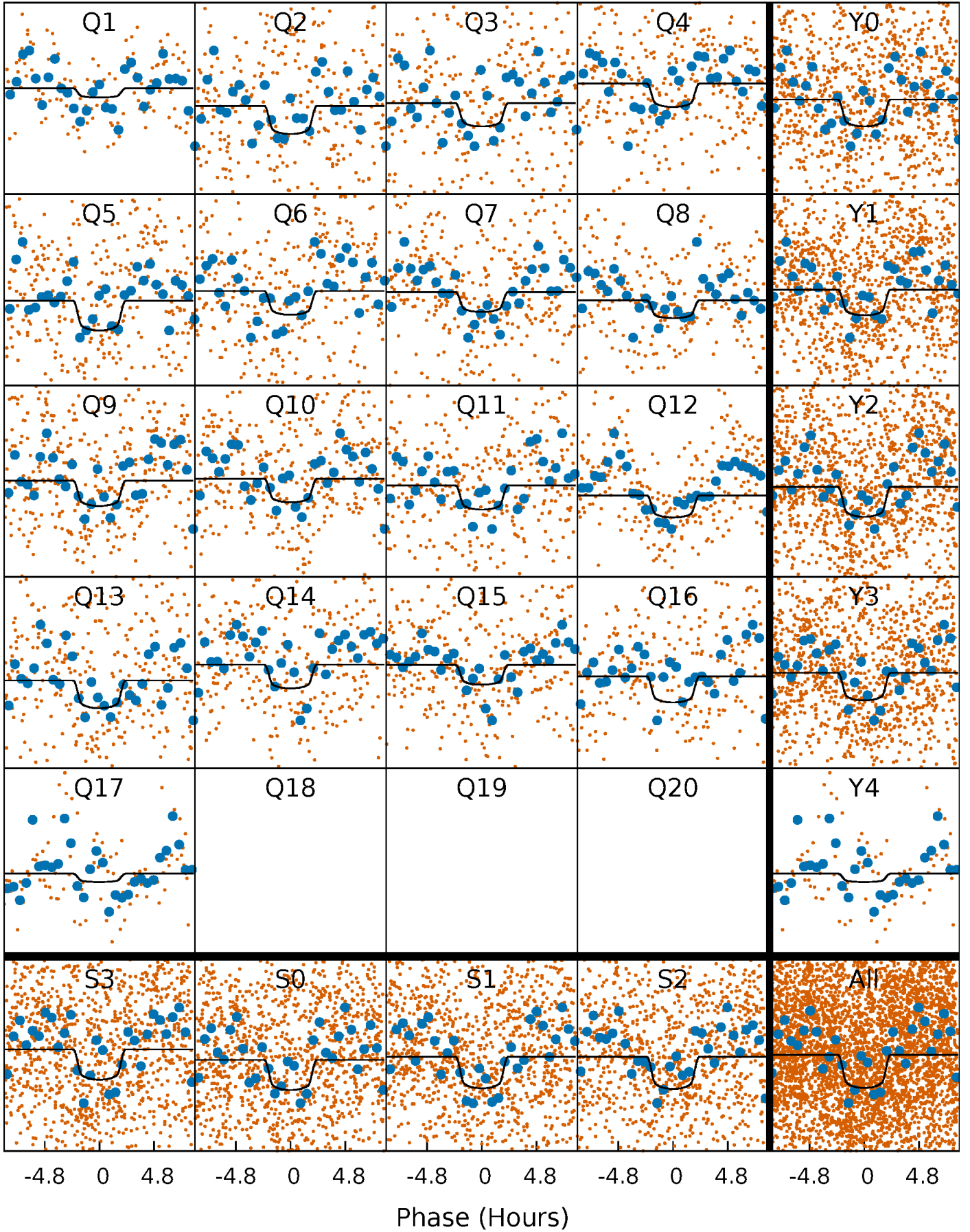
TCE 011662513-03 P= 0.892089 Days  $T_0=131.965122$  (BKJD)





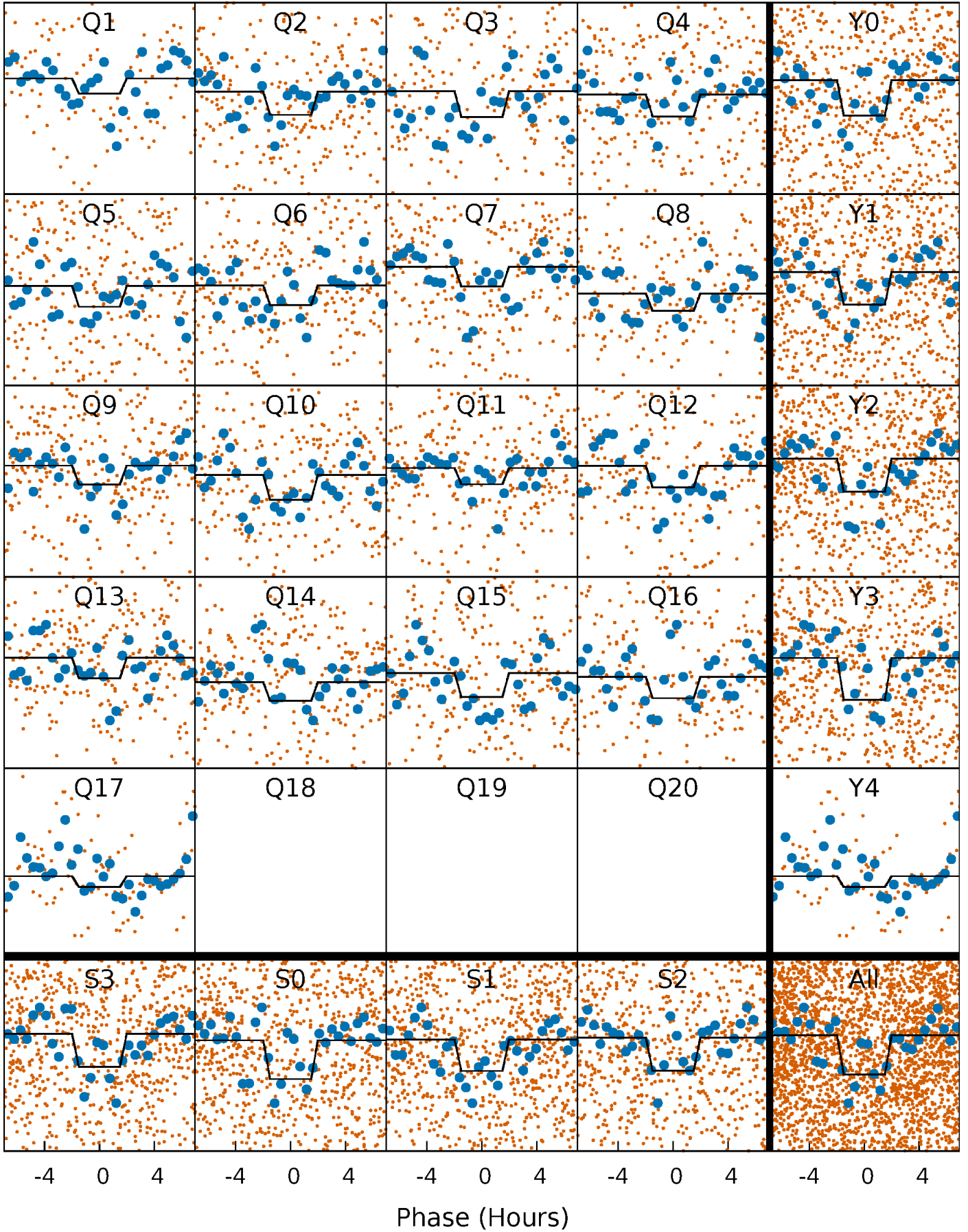
# DV Quarter-Phased Transit Curves

TCE 011662513-03 P= 0.892089 Days  $T_0=131.965122$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

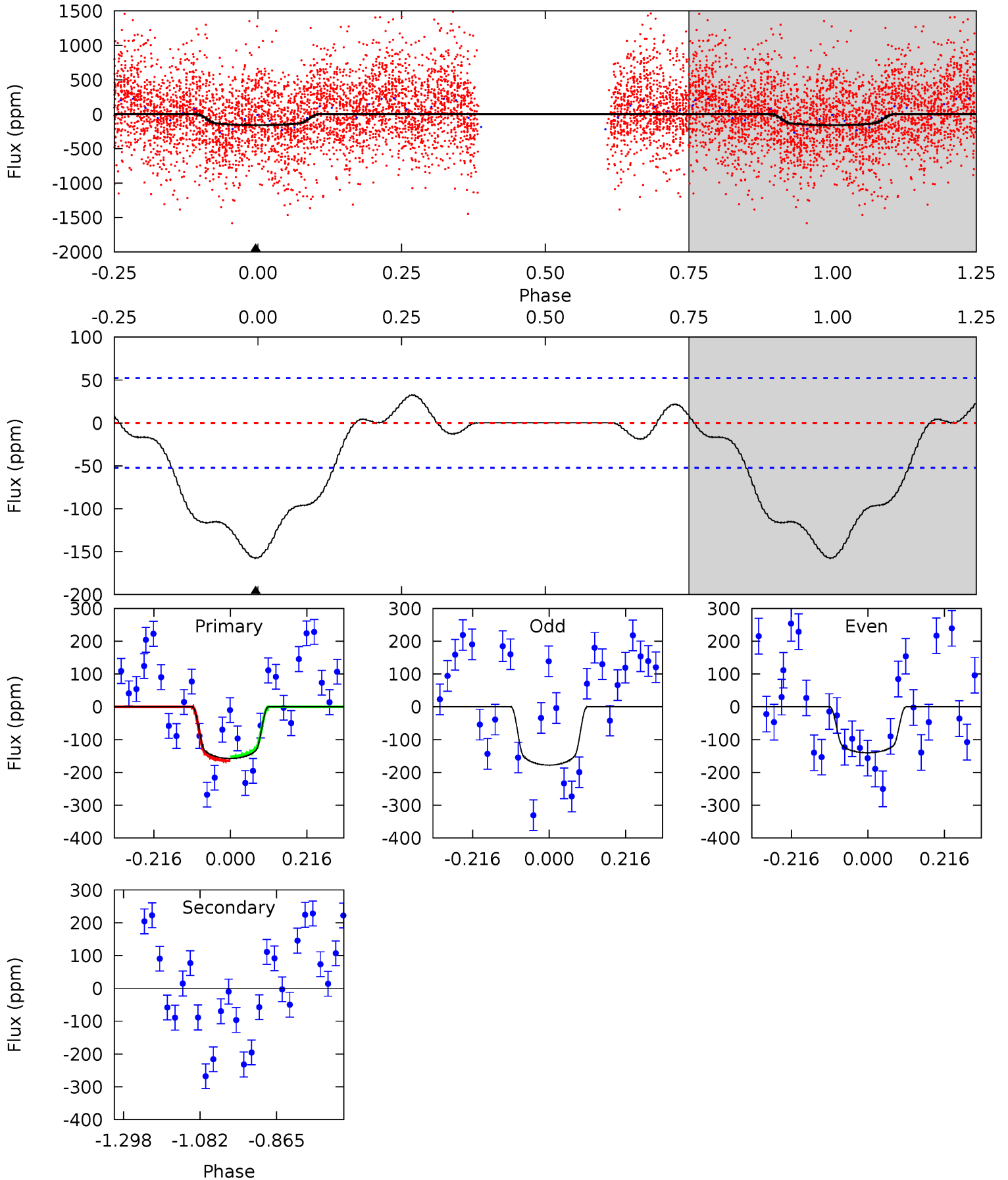
TCE 011662513-03 P= 0.892077 Days  $T_0=131.968412$  (BKJD)



# DV Model-Shift Uniqueness Test

011662513-03, P = 0.892089 Days, E = 131.073033 Days

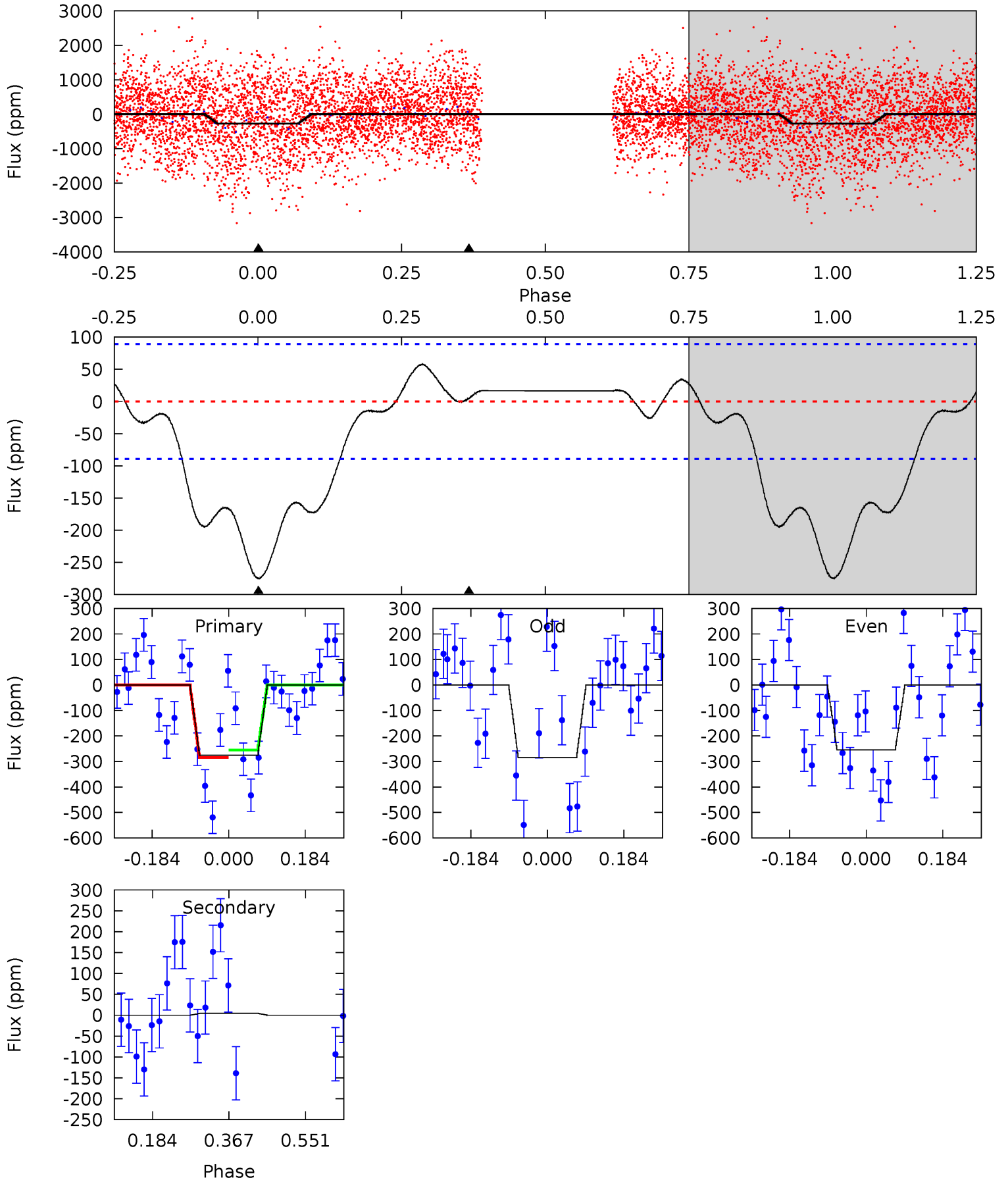
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	0	0	0	4.40	1.24	1.24	13.2	13.2	0	0	1.58	1.04	0.17	0.57



# Alt Model-Shift Uniqueness Test

011662513-03, P = 0.892077 Days, E = 131.076335 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
13.7	-0.22	0	0	4.44	1.33	1.06	13.7	13.7	-0.22	-0.22	0.73	1.17	0.17	0.78



### Stellar Parameters For KIC 011662513

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7507^{+209}_{-314}$	$3.945^{+0.253}_{-0.136}$	$-0.080^{+0.200}_{-0.350}$	$2.332^{+0.493}_{-0.740}$	$1.746^{+0.200}_{-0.350}$	$0.194^{+0.291}_{-0.082}$
	+3%/-4%	+6%/-3%	+250%/-438%	+21%/-32%	+11%/-20%	+150%/-42%
Source	KIC0	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 011662513-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 12$	$3.46^{+0.83}_{-0.69}$	$4707^{+341}_{-395}$	$-4056^{+1326}_{-527}$	$0.022^{+0.249}_{-0.267}$
Alt.	$4 \pm 20$	$4.11^{+0.85}_{-0.90}$	$4727^{+322}_{-381}$	$-4255^{+1152}_{-565}$	$-0.067^{+0.308}_{-0.336}$

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



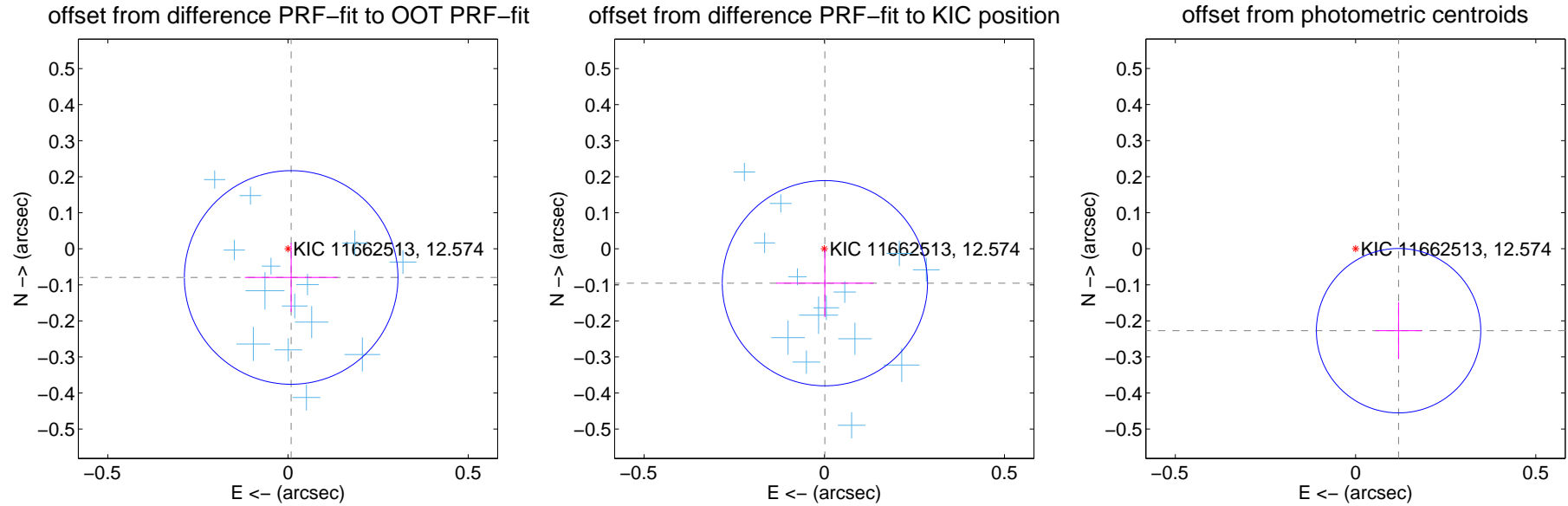
## DV Centroid Data

Supplemental centroid analysis for 011662513-03. Kepler magnitude: 12.57. Transit SNR 14.64

There are 17 quarters with good PRF difference image offsets

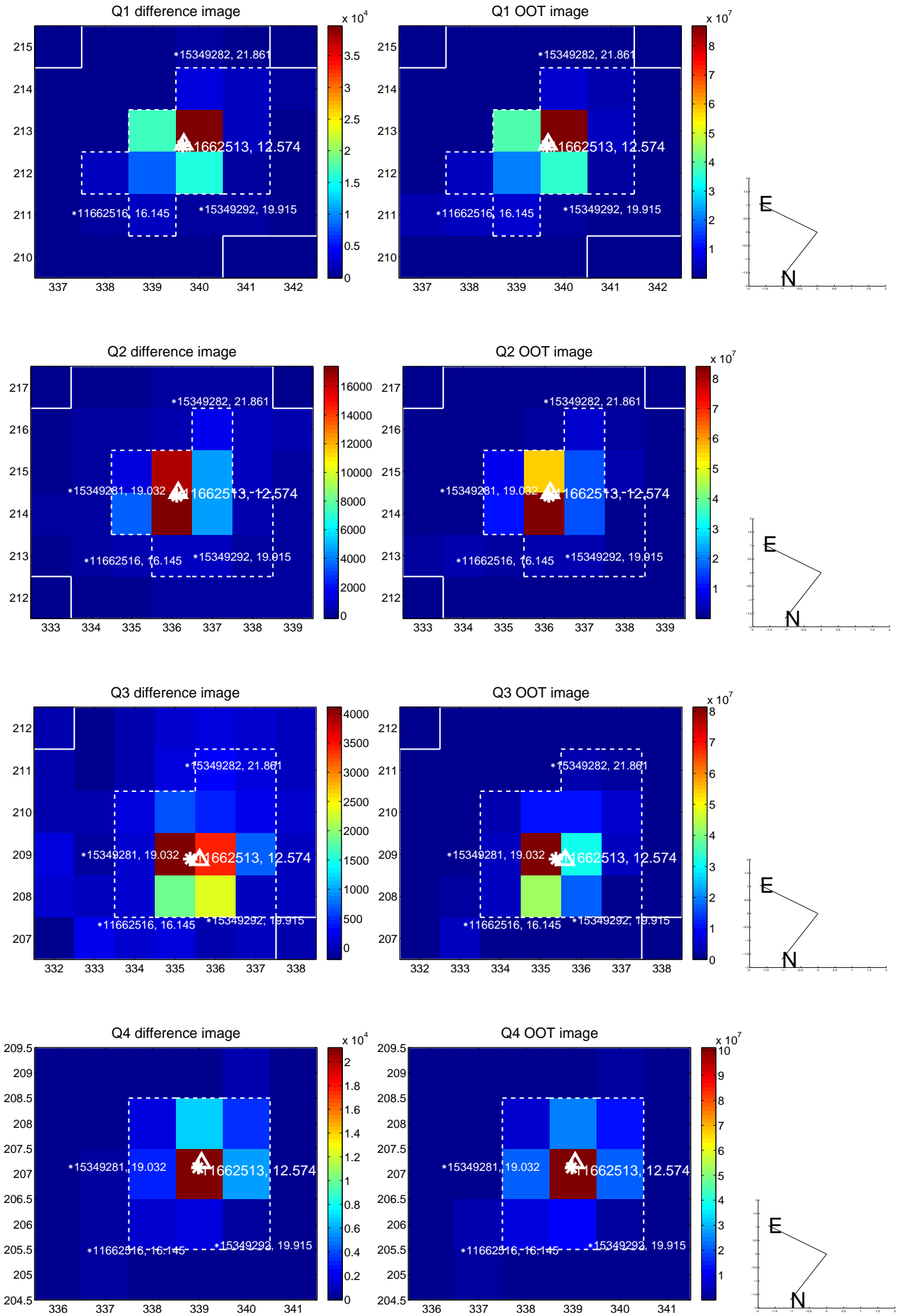
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.080 \pm 0.099$	0.81	$-0.009 \pm 0.129$	$-0.079 \pm 0.096$
PRF-fit source offset from KIC position	$0.095 \pm 0.095$	1.01	$-0.002 \pm 0.135$	$-0.095 \pm 0.094$
photometric centroid source offset	$0.26 \pm 0.08$	3.38	$-0.12 \pm 0.06$	$-0.23 \pm 0.08$

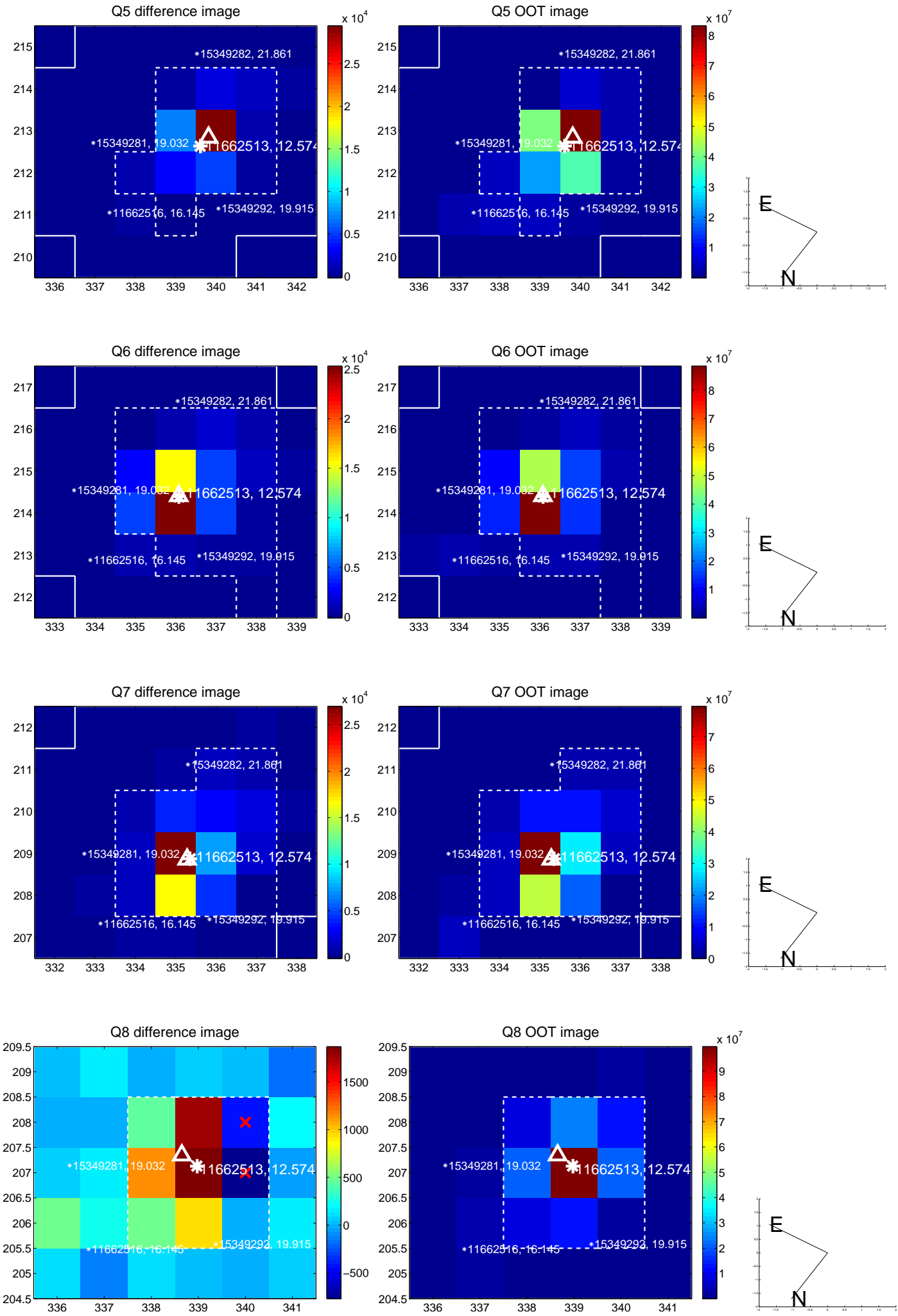


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

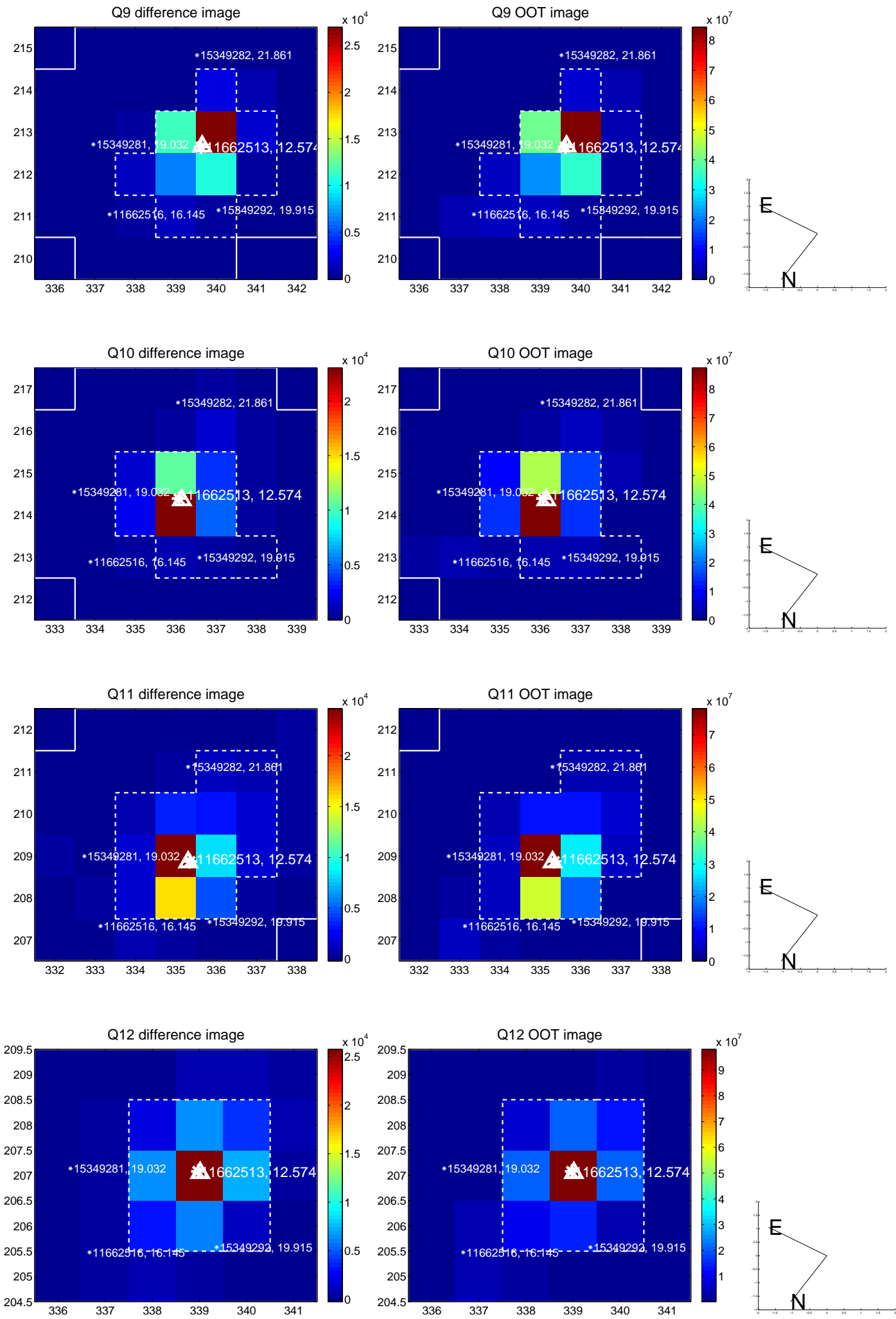
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



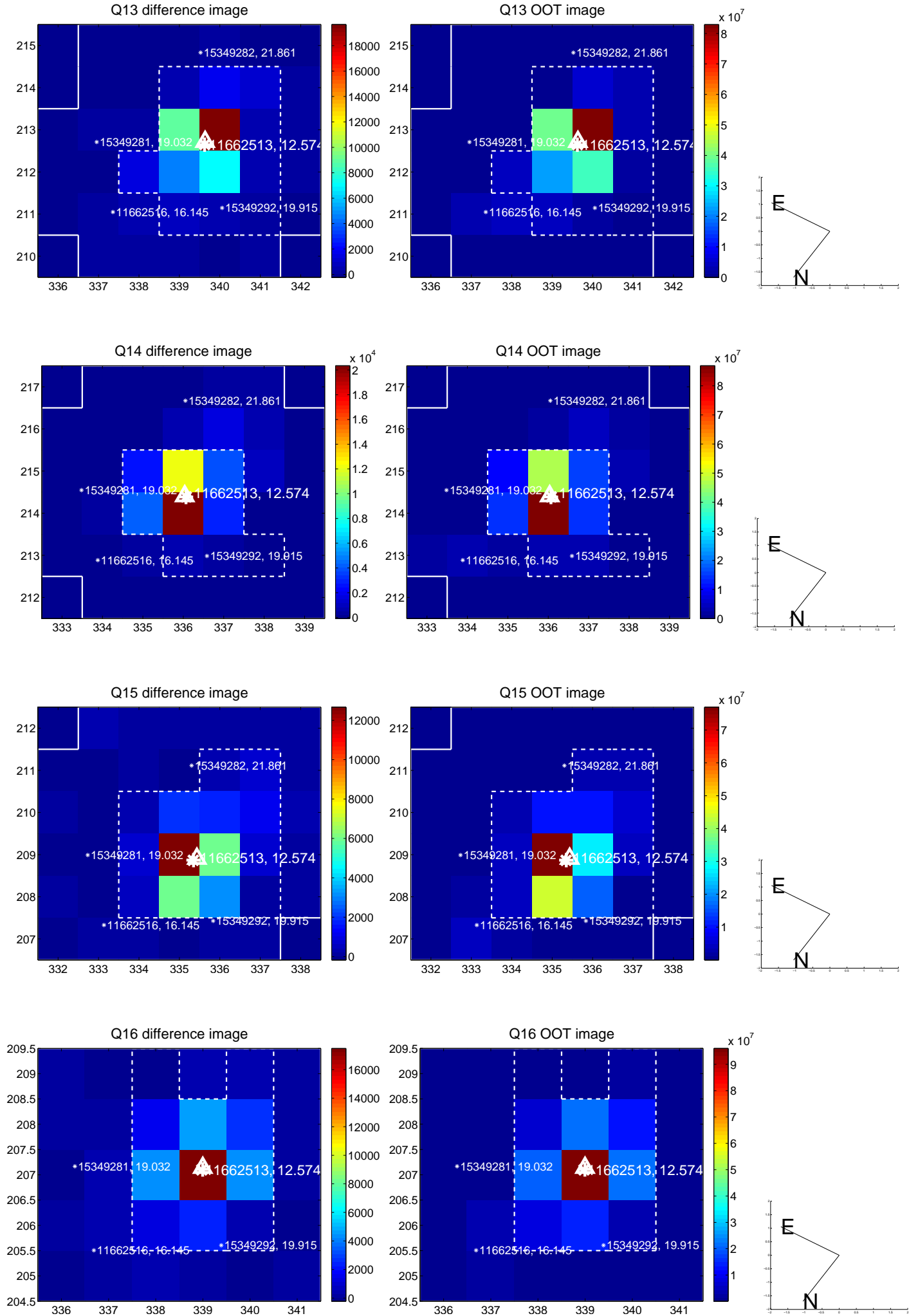
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



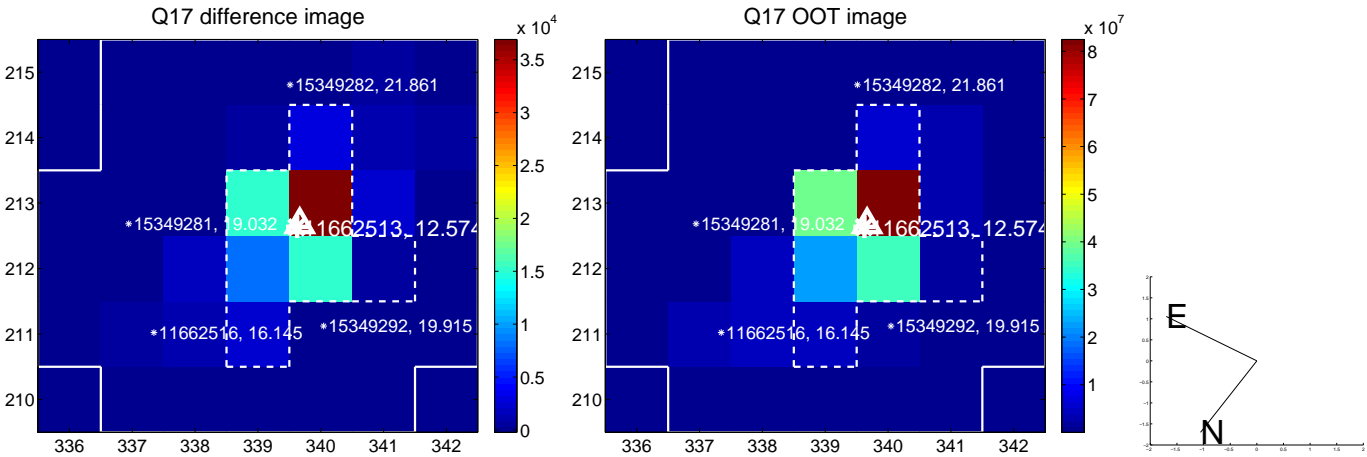
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



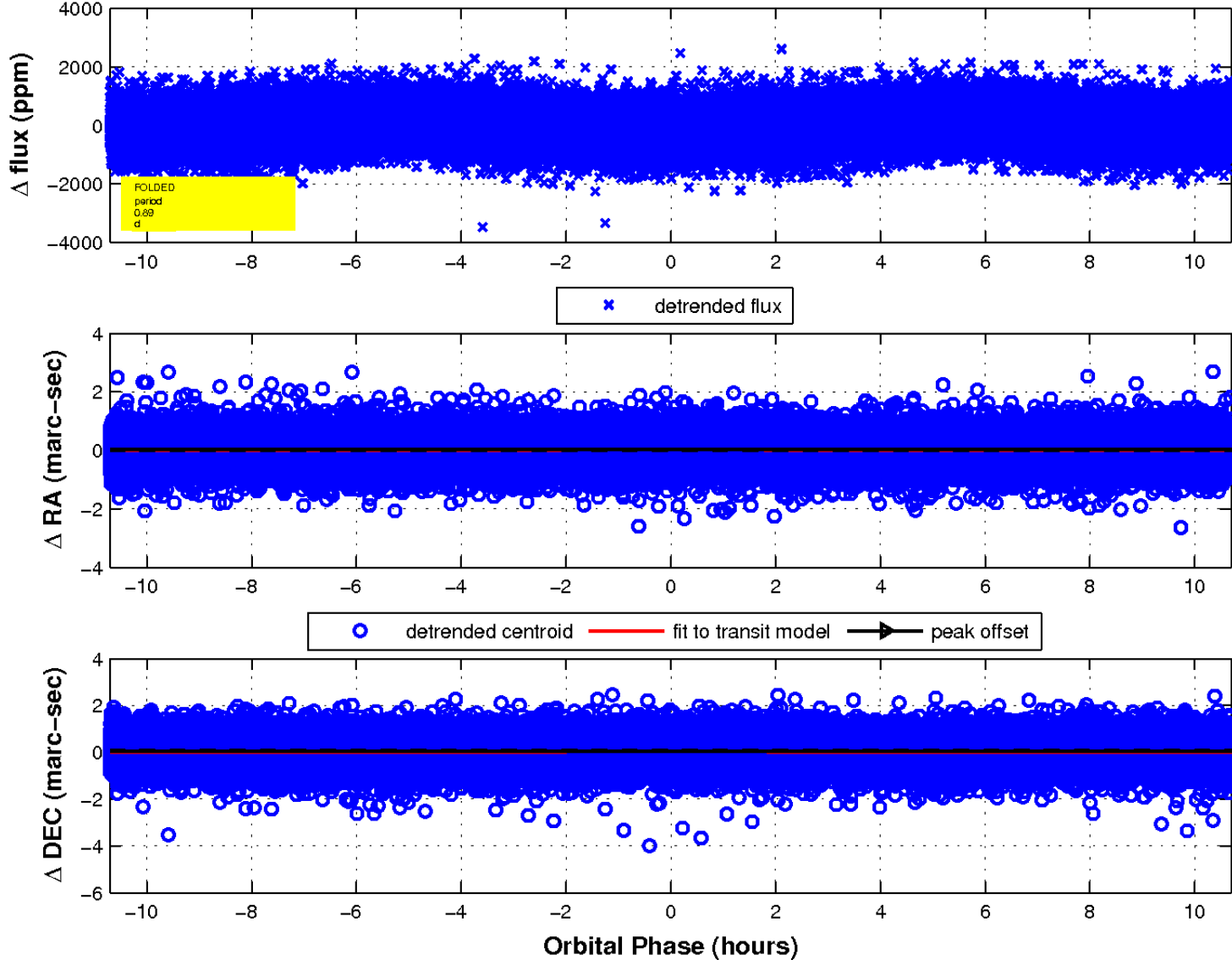
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3





UKIRT Image

Declination

