

# KIC 011910642

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011910642-01	OBS	No	0.528897	131.749128	30.7	1.366	11.9	9.3	3.62	7861	2.33	0.00
011910642-02	OBS	No	0.528905	131.923171	27.9	1.458	10.3	8.4	3.62	7861	2.23	0.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011910642-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011910642-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

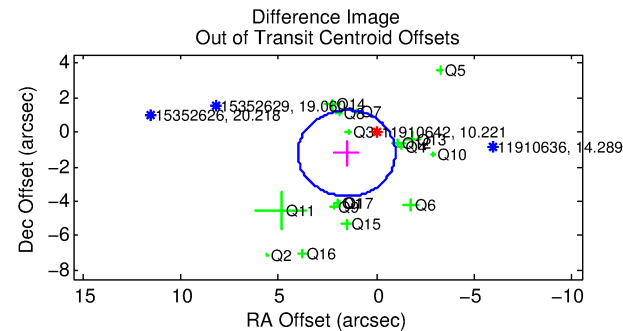
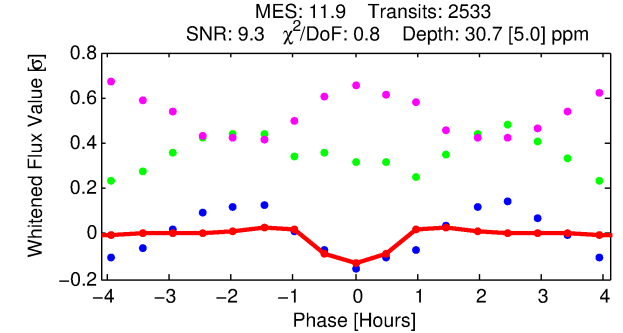
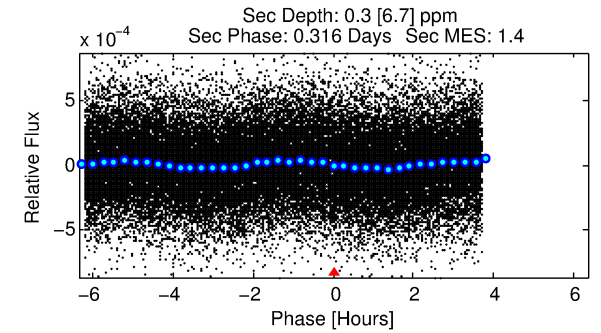
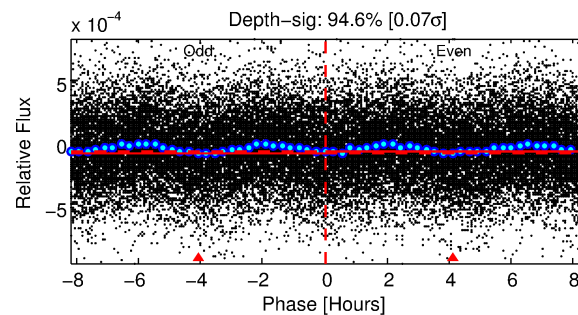
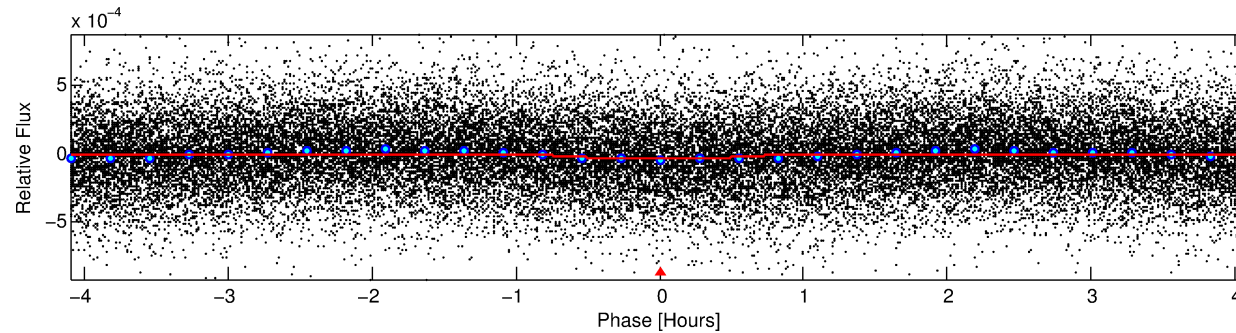
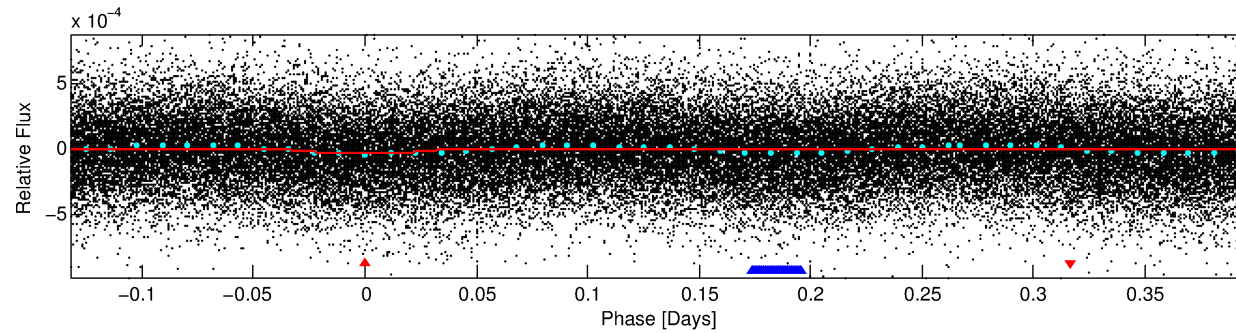
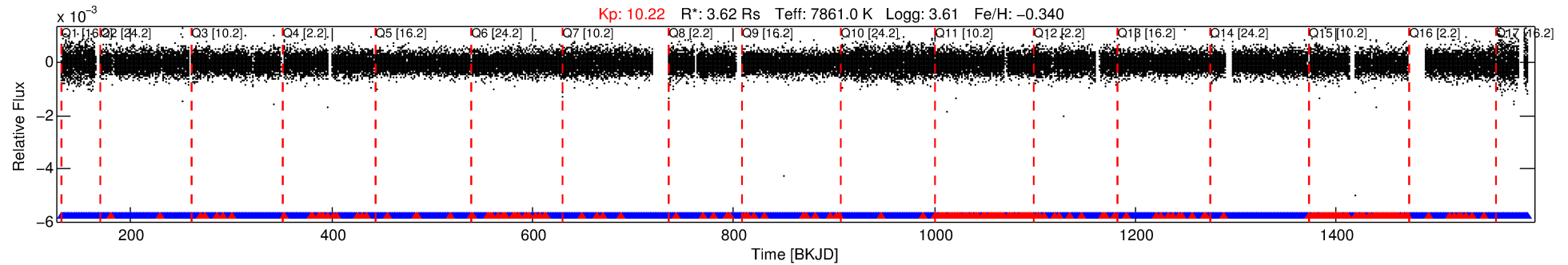
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011910642-01

No Significant Match Found

# DV One-Page Summary

KIC: 11910642 Candidate: 1 of 2 Period: 0.529 d



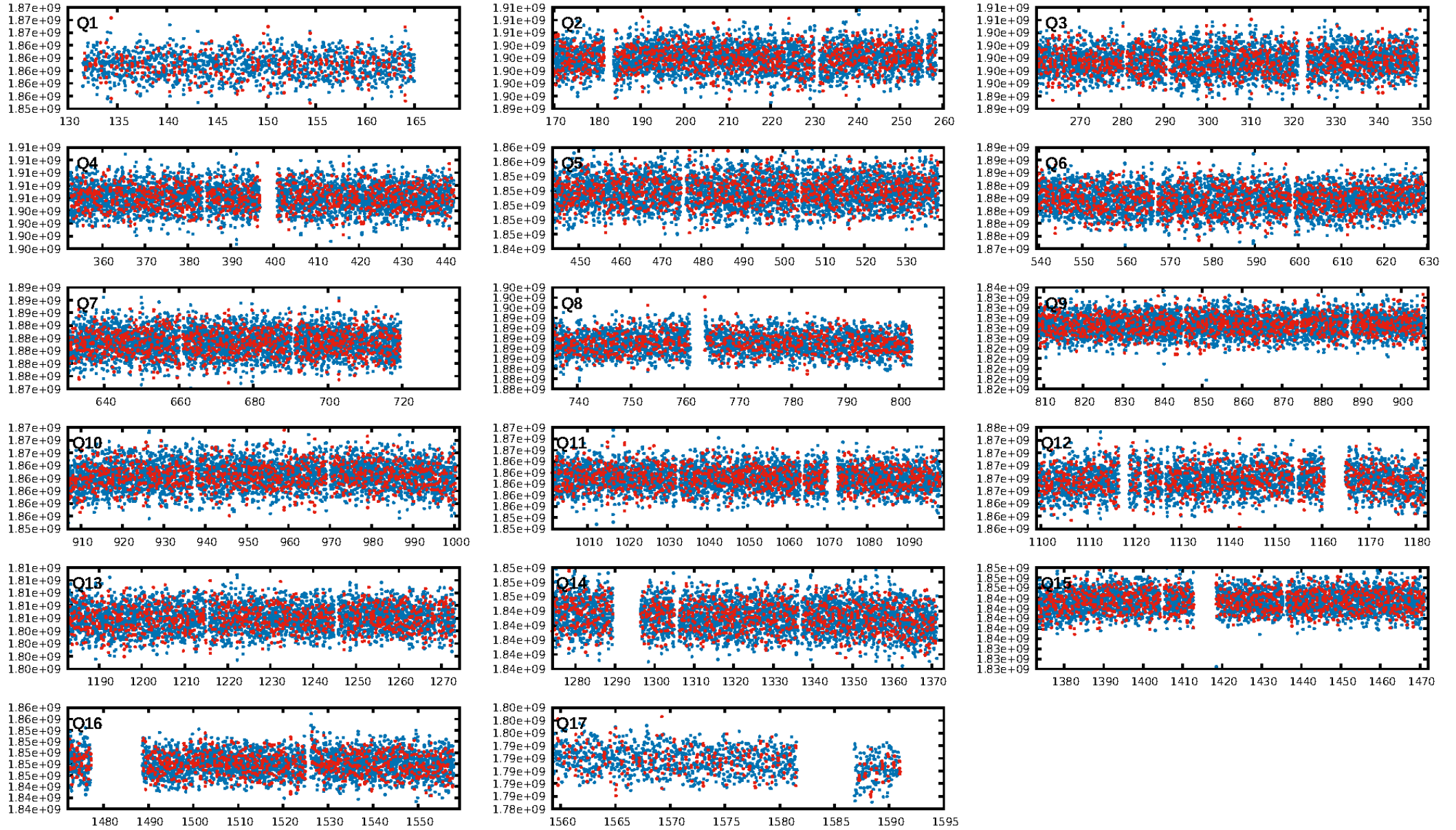
## DV Fit Results:

Period = 0.52890 [0.00001] d  
Epoch = 131.7491 [0.0021] BKJD  
 $R_p/R^* = 0.0059$  [0.0016]  
 $a/R^* = 1.68$  [1.65]  
 $b = 0.89$  [0.37]  
 $\text{Seff} = \text{N/A}$   
 $\text{Teq} = \text{N/A}$   
 $R_p = 2.33$  [1.42] Re  
 $a = \text{N/A}$   
 $\text{Ag} = \text{N/A}$   
 $\text{Teffp} = \text{N/A}$

## DV Diagnostic Results:

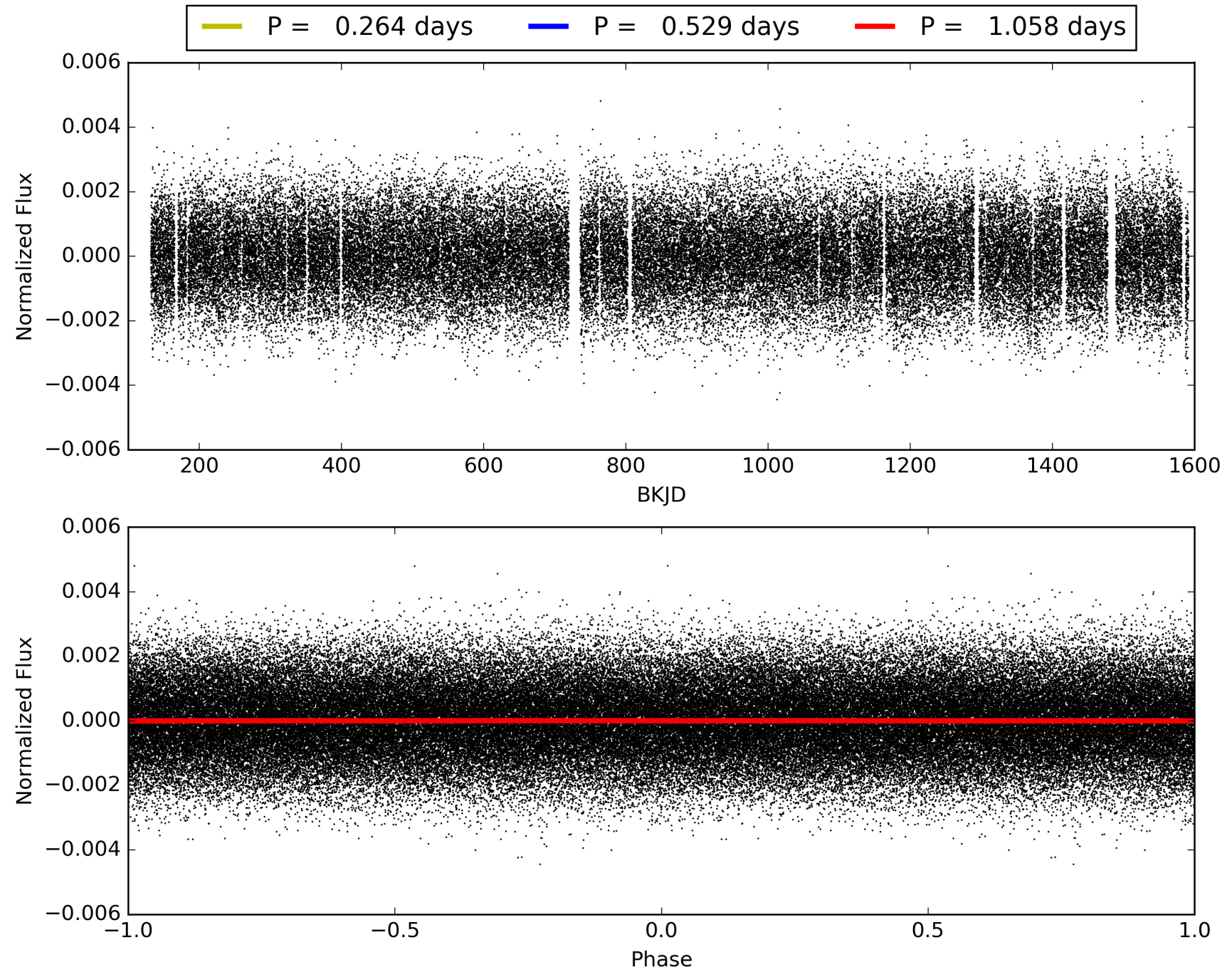
ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 7.09e-19  
RollingBand-fgt: 0.89 [2146/2419]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 0.2%  
Centroid-so: 1.222 arcsec [3.33 $\sigma$ ]  
OotOffset-rm: 1.955 arcsec [2.36 $\sigma$ ]  
KicOffset-rm: 2.232 arcsec [2.53 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.29 [5/17]  
DiffImageOverlap-fno: 0.00 [0/17]

# TCE 011910642-01, PDC Light Curves



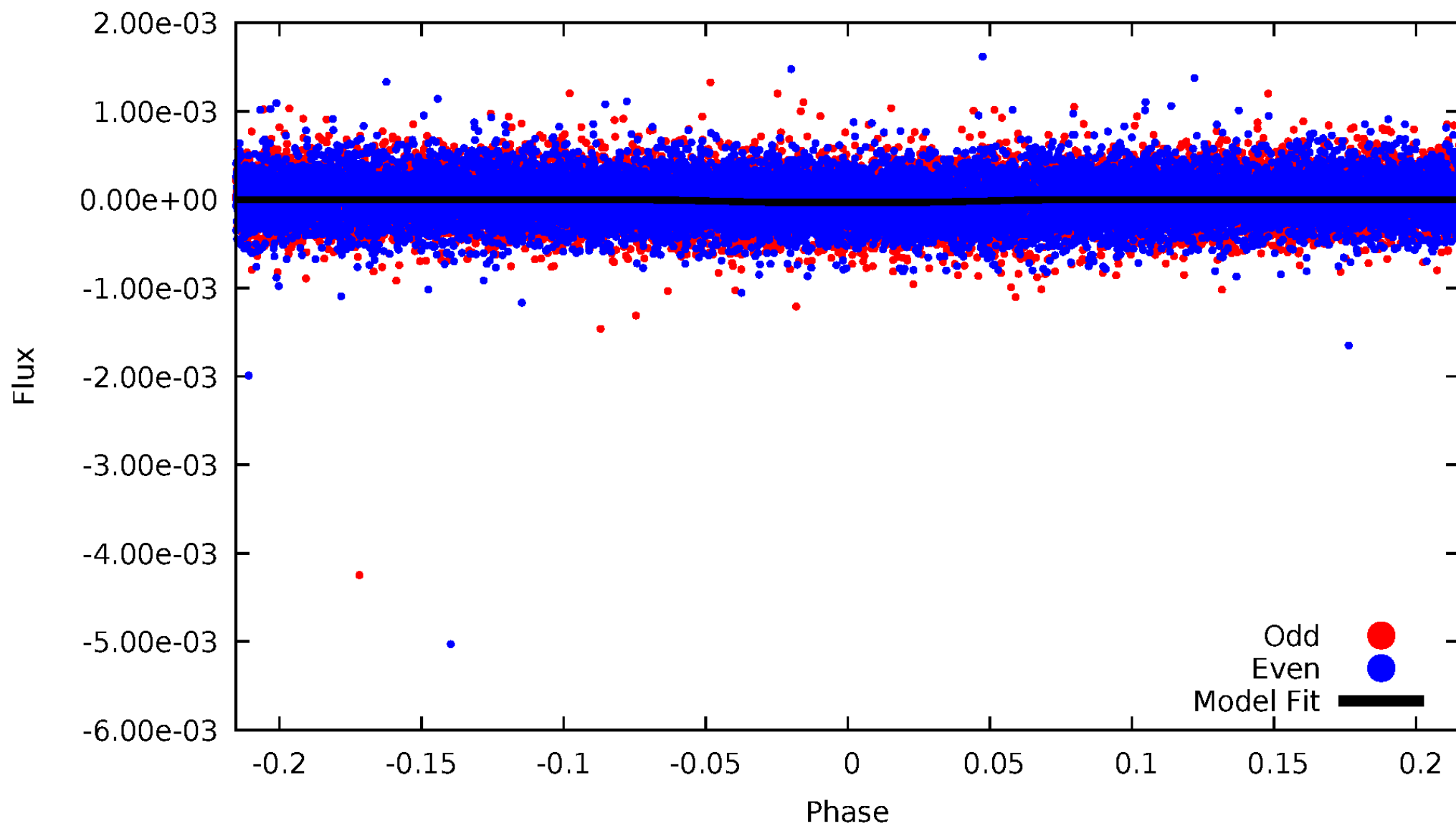


# TCE 011910642-01



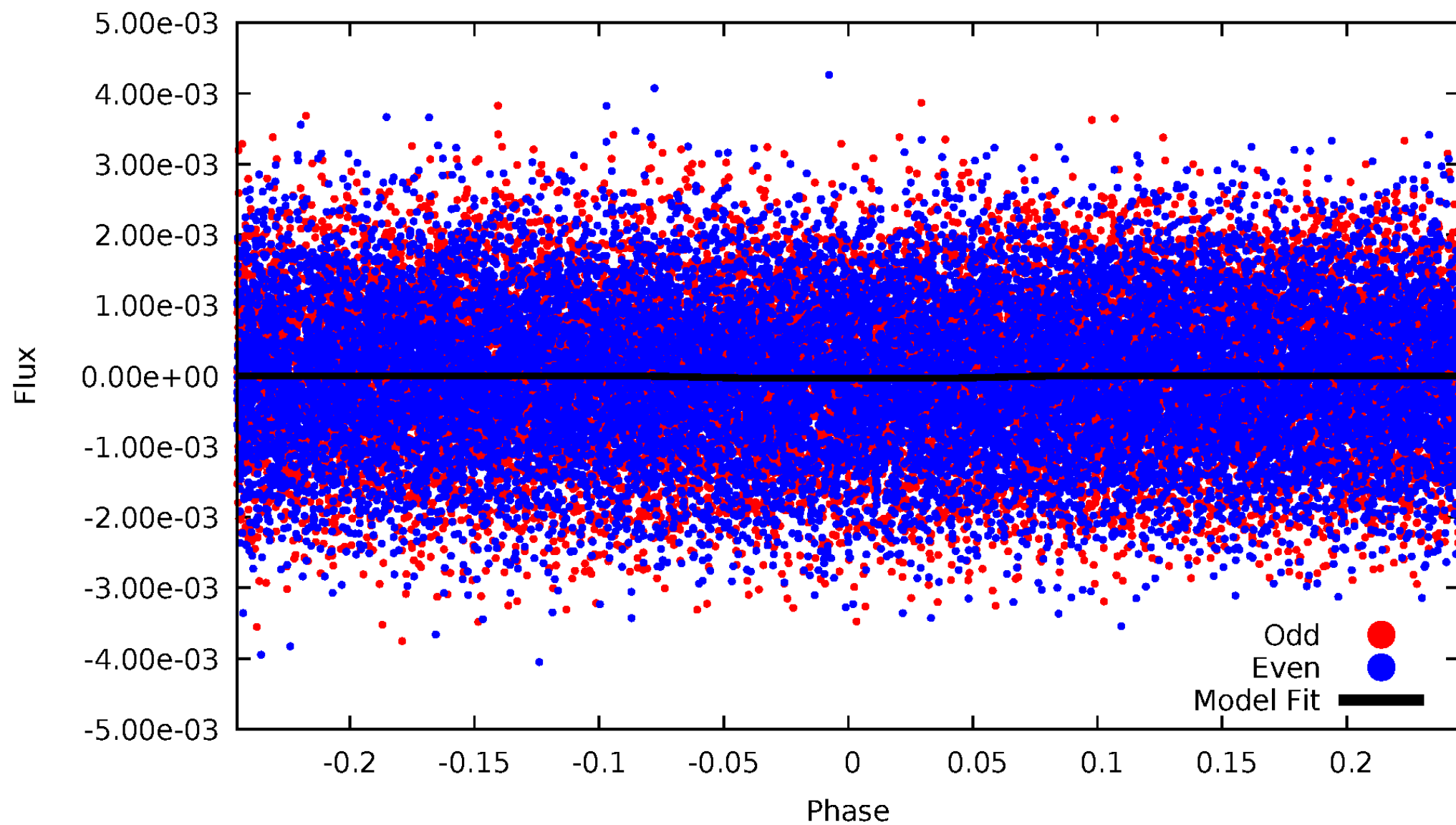
# DV Odd/Even

TCE 011910642-01



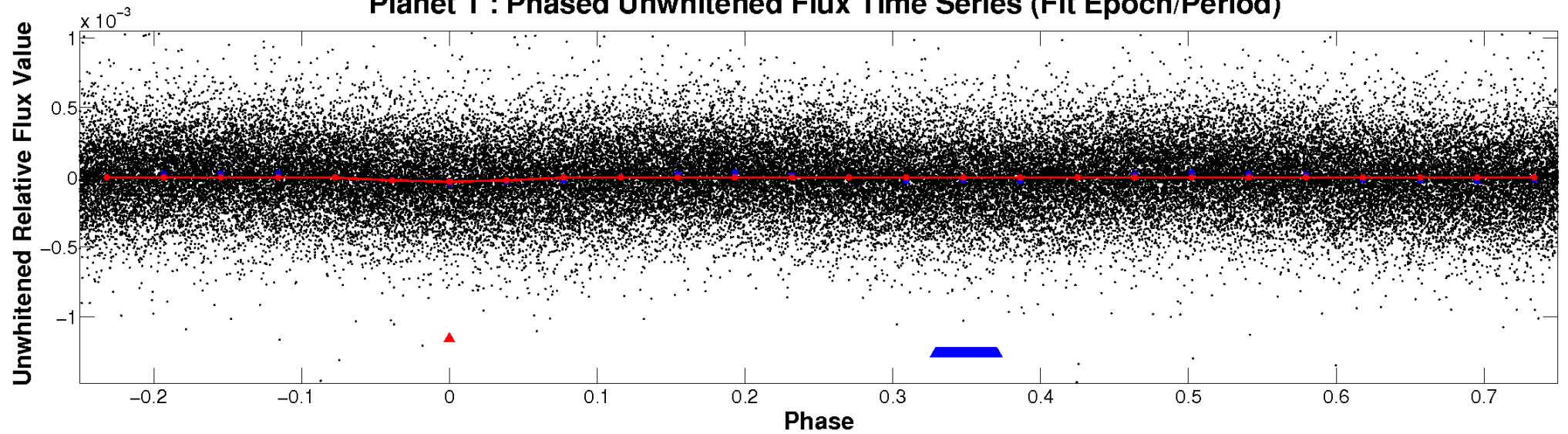
# ALT Odd/Even

TCE 011910642-01

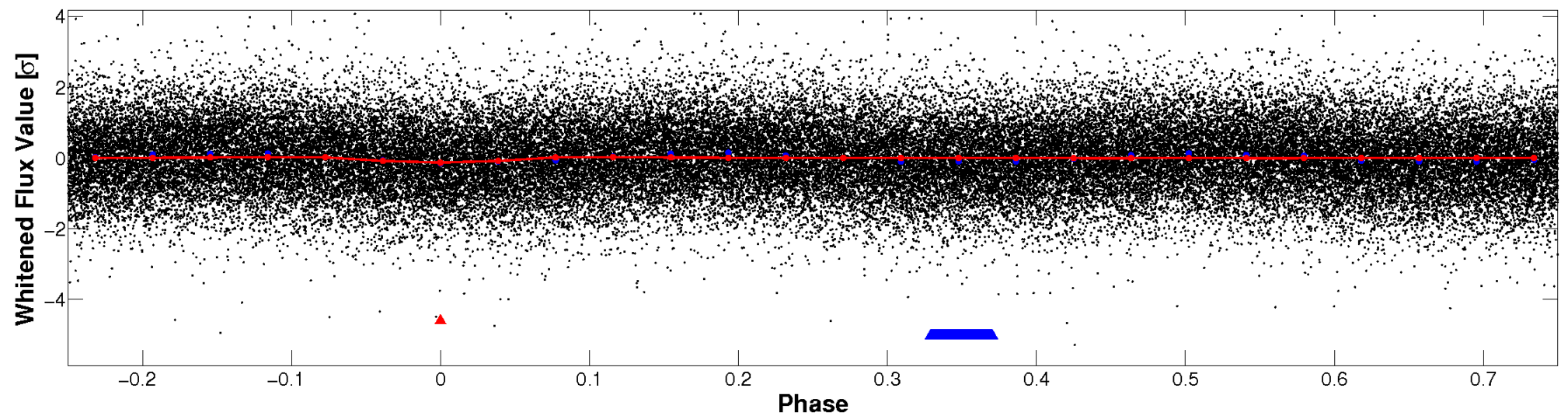


# Non-Whitened Vs. Whitened Light Curve

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



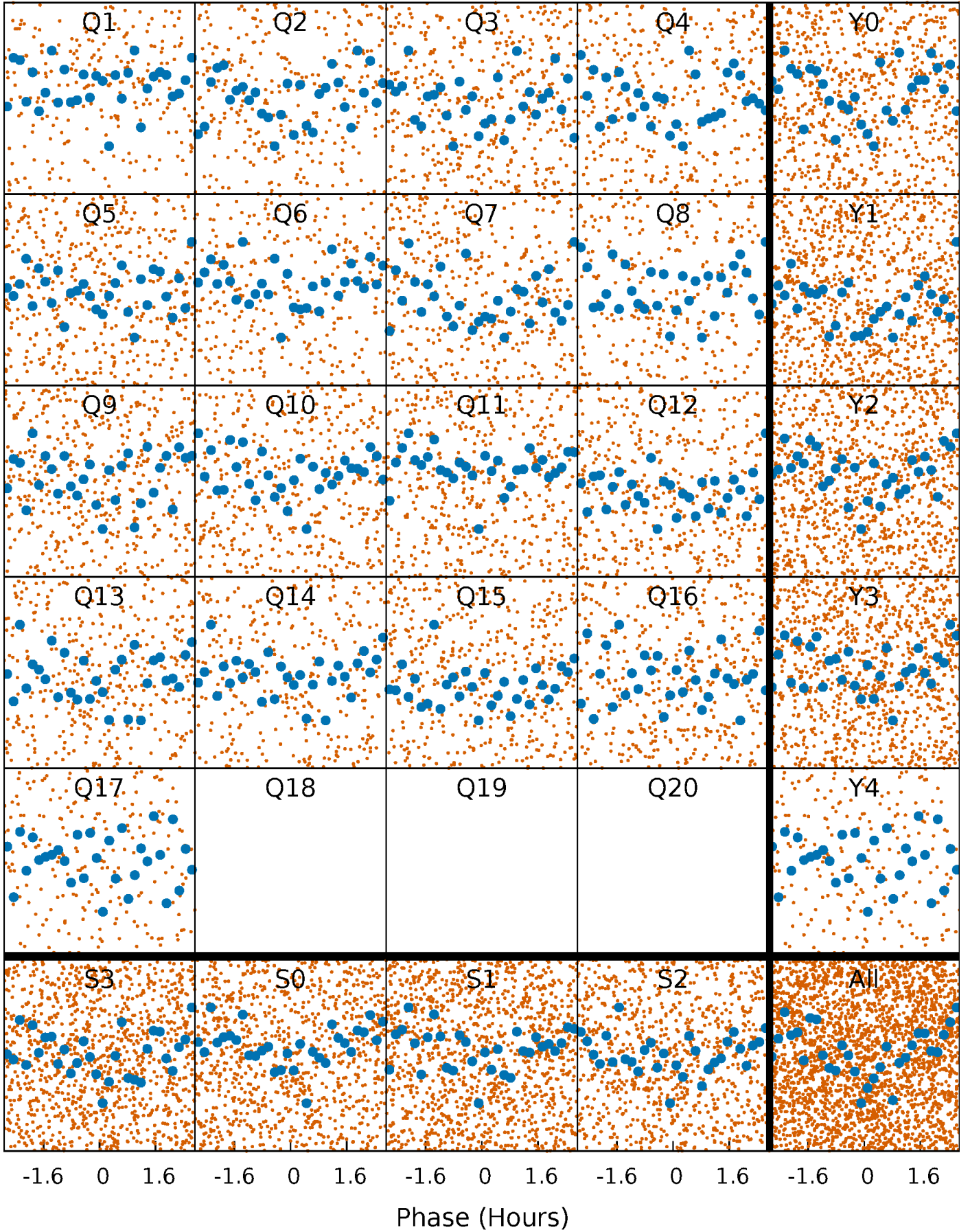
## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)





# PDC Quarter-Phased Transit Curves

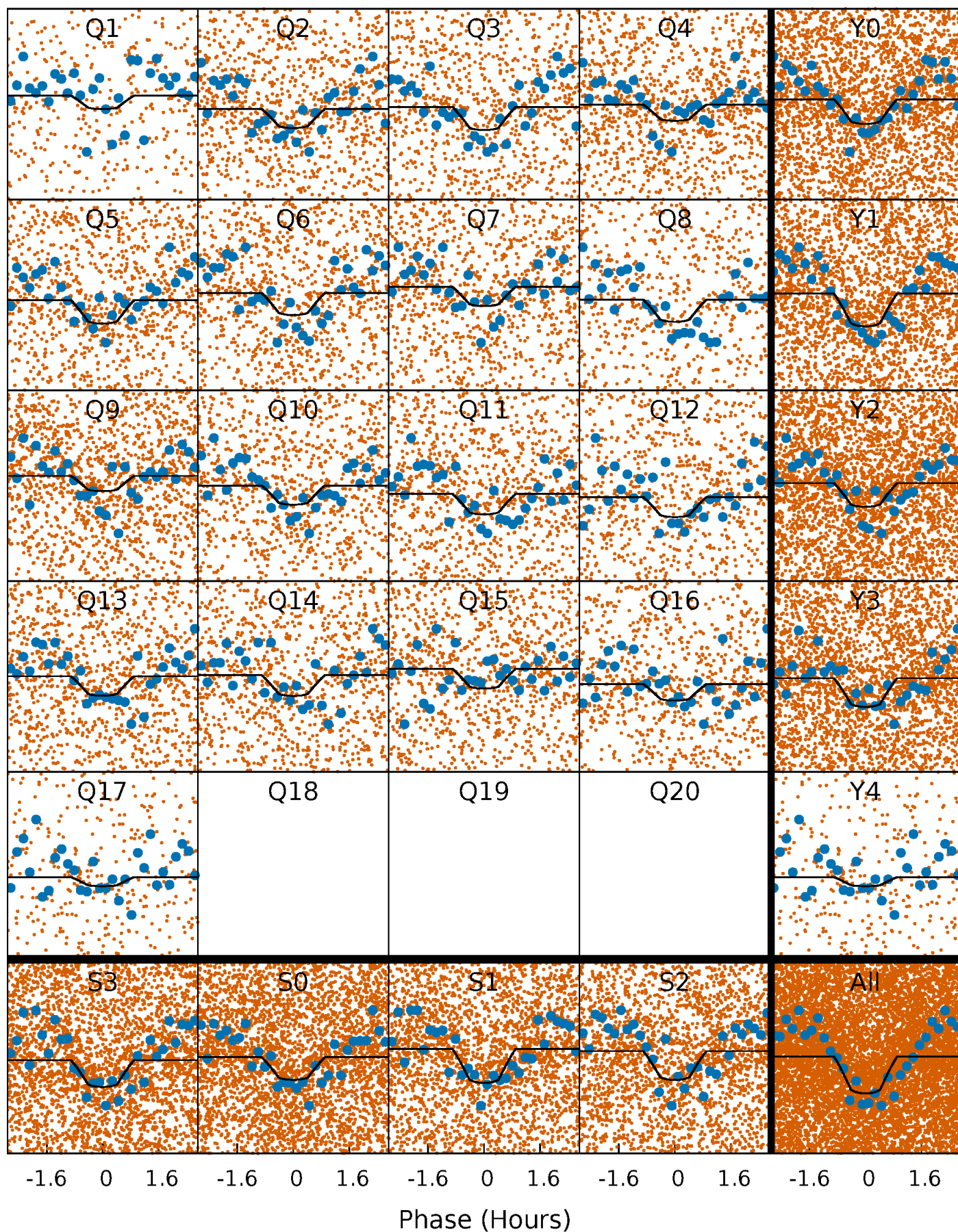
TCE 011910642-01   P= 0.528897 Days    $T_0=131.749128$  (BKJD)





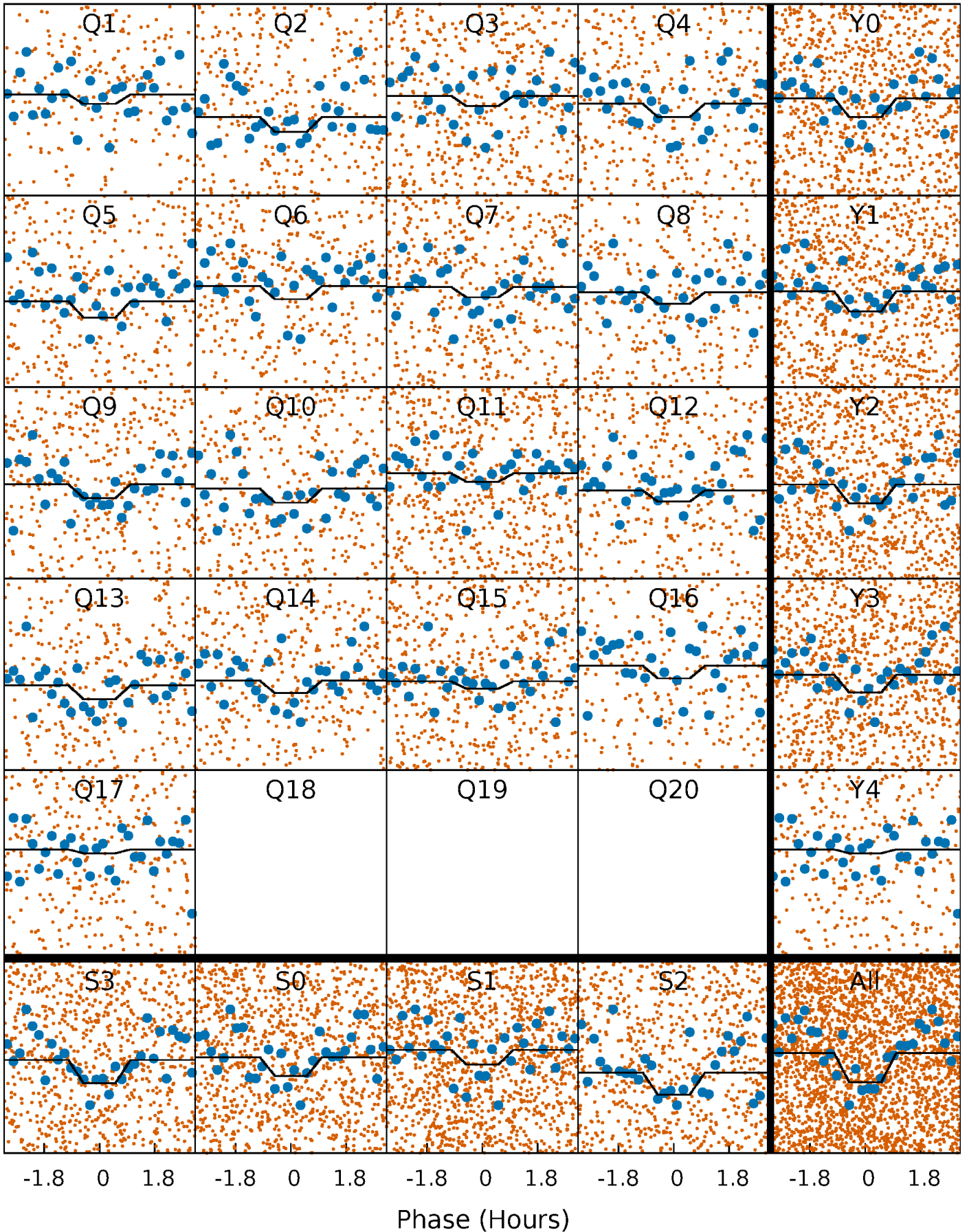
# DV Quarter-Phased Transit Curves

TCE 011910642-01 P= 0.528897 Days  $T_0=131.749128$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

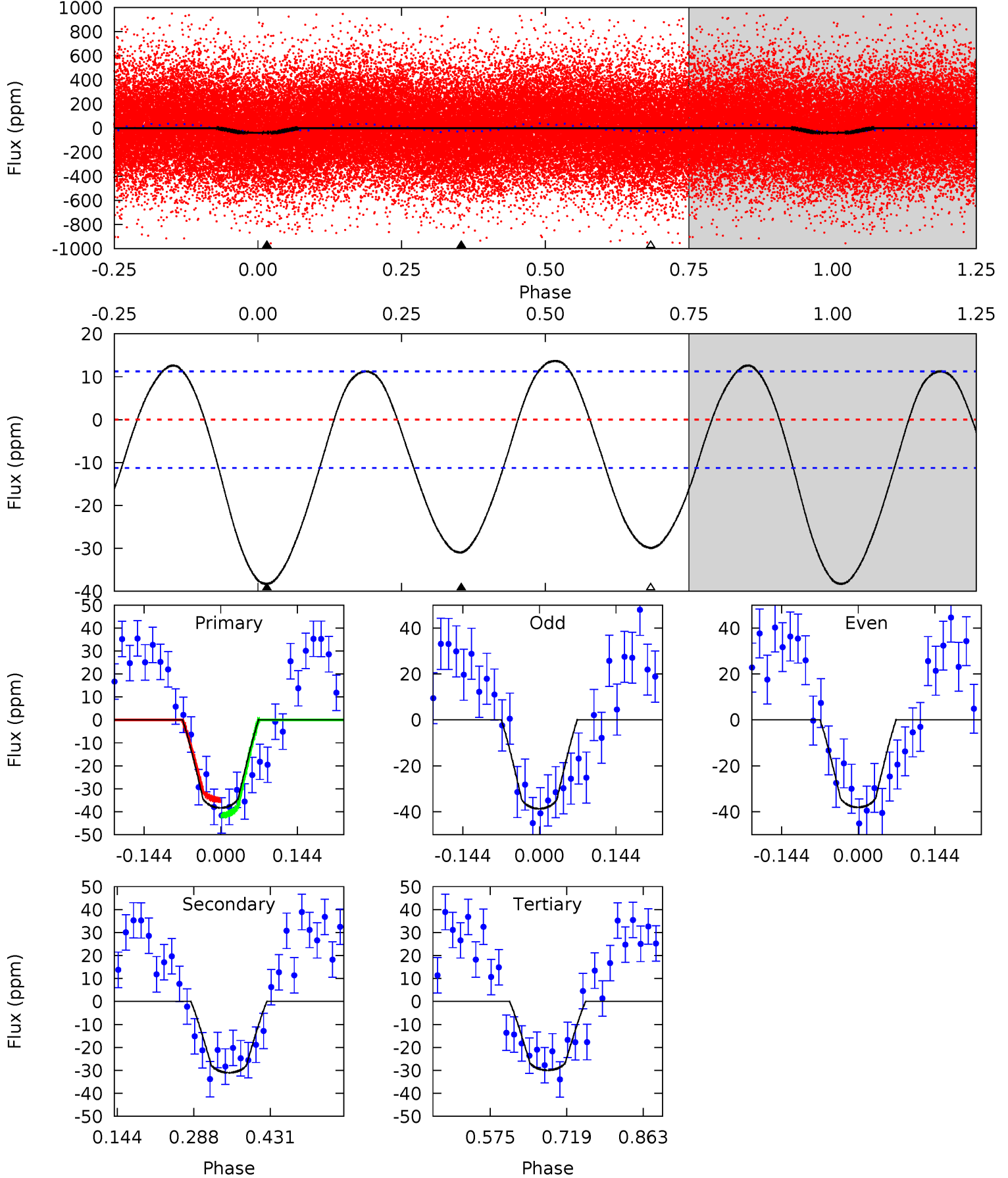
TCE 011910642-01 P= 0.528905 Days  $T_0=131.749085$  (BKJD)



# DV Model-Shift Uniqueness Test

011910642-01, P = 0.528897 Days, E = 131.220231 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
15.3	12.4	11.9	0	4.49	1.46	6.35	3.34	15.3	0.43	12.4	0.12	0.97	0.26	1.35

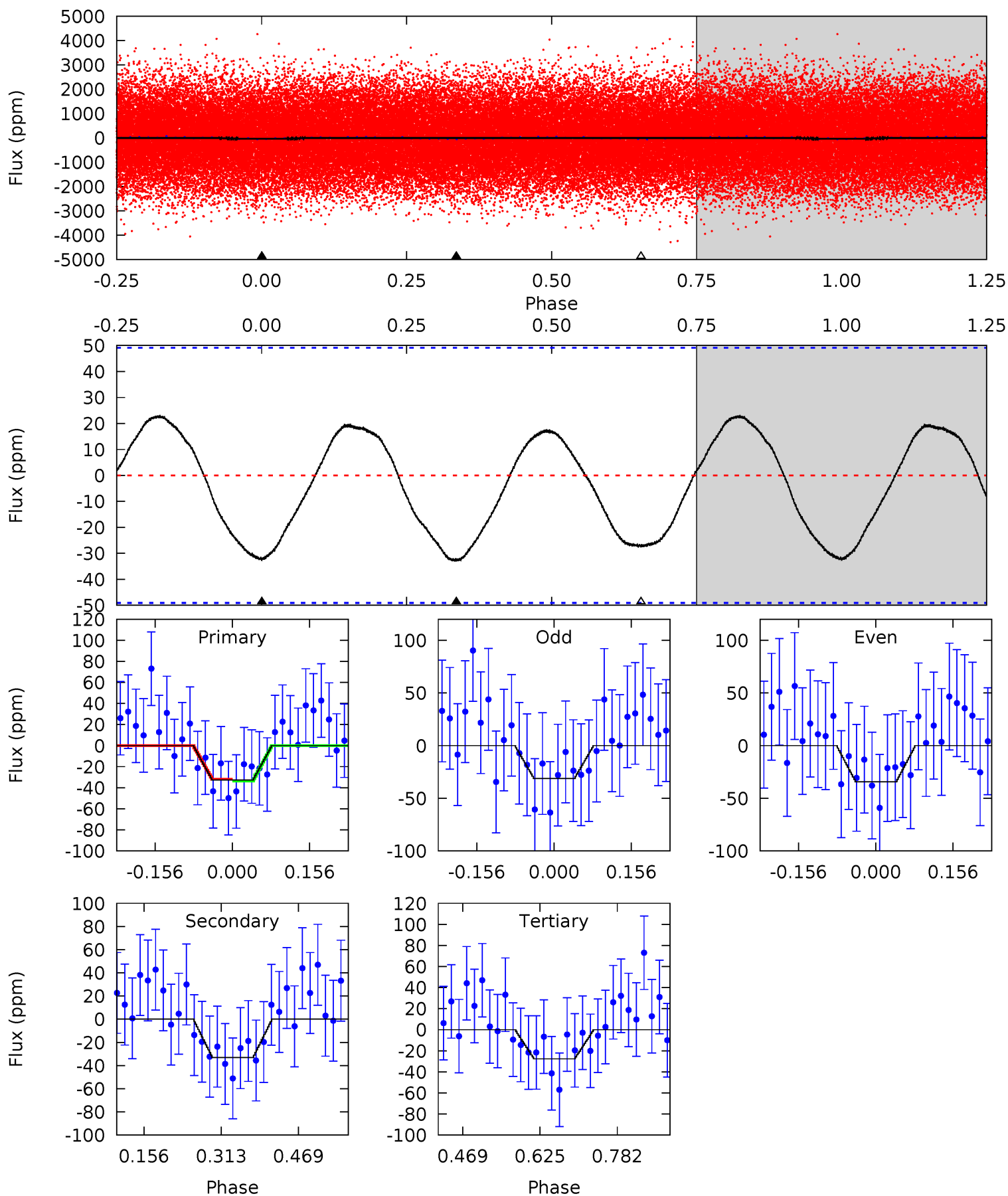




# Alt Model-Shift Uniqueness Test

011910642-01, P = 0.528905 Days, E = 131.220180 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
2.98	3.02	2.52	0	4.47	1.42	1.62	0.46	2.98	0.50	3.02	0.15	1.06	0.41	0.08





### Stellar Parameters For KIC 011910642

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7861^{+249}_{-304}$	$3.613^{+0.558}_{-0.062}$	$-0.340^{+0.200}_{-0.300}$	$3.616^{+0.620}_{-1.983}$	$1.957^{+0.093}_{-0.528}$	$0.058^{+0.393}_{-0.018}$
	+3%/-4%	+15%/-2%	+59%/-88%	+17%/-55%	+5%/-27%	+673%/-31%
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 011910642-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-31 \pm 3$	$1.98^{+0.72}_{-0.70}$	$6903^{+513}_{-996}$	$6796^{+1920}_{-1199}$	$1.080^{+1.412}_{-0.493}$
Alt.	$-33 \pm 11$	$1.89^{+0.73}_{-0.72}$	$6843^{+595}_{-973}$	$7159^{+2507}_{-1694}$	$1.260^{+1.948}_{-0.663}$

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

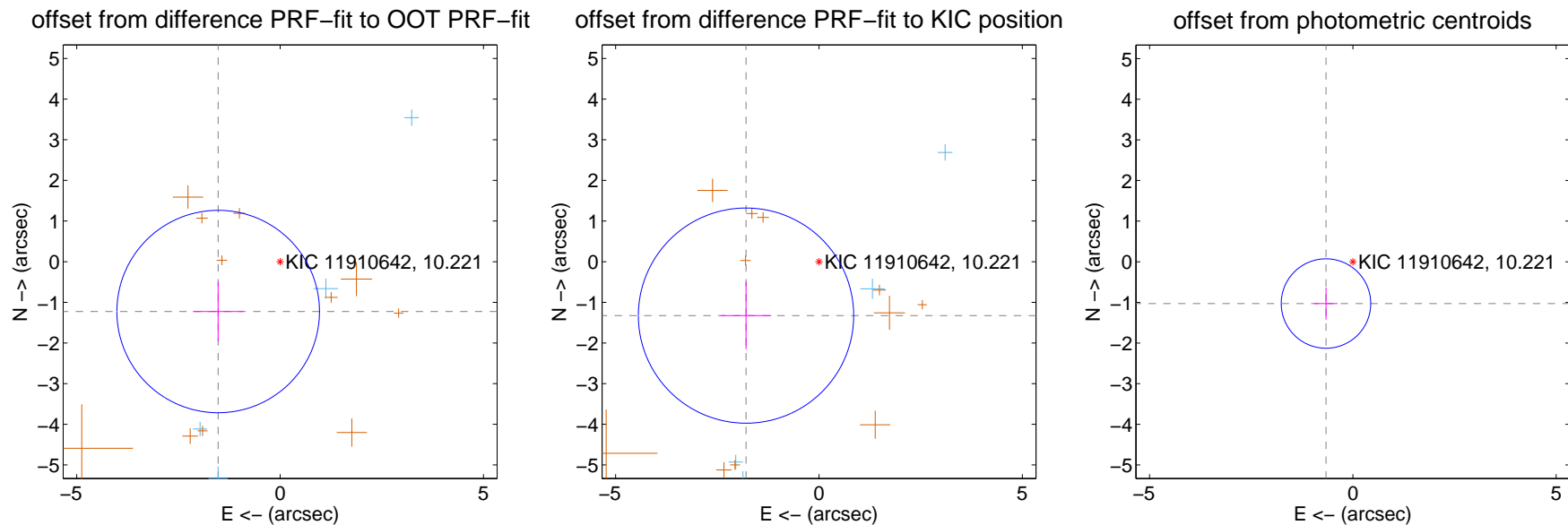
## DV Centroid Data

Supplemental centroid analysis for 011910642-01. **Kepler magnitude: 10.22.** Transit SNR 9.31

There are 5 quarters with good PRF difference image offsets

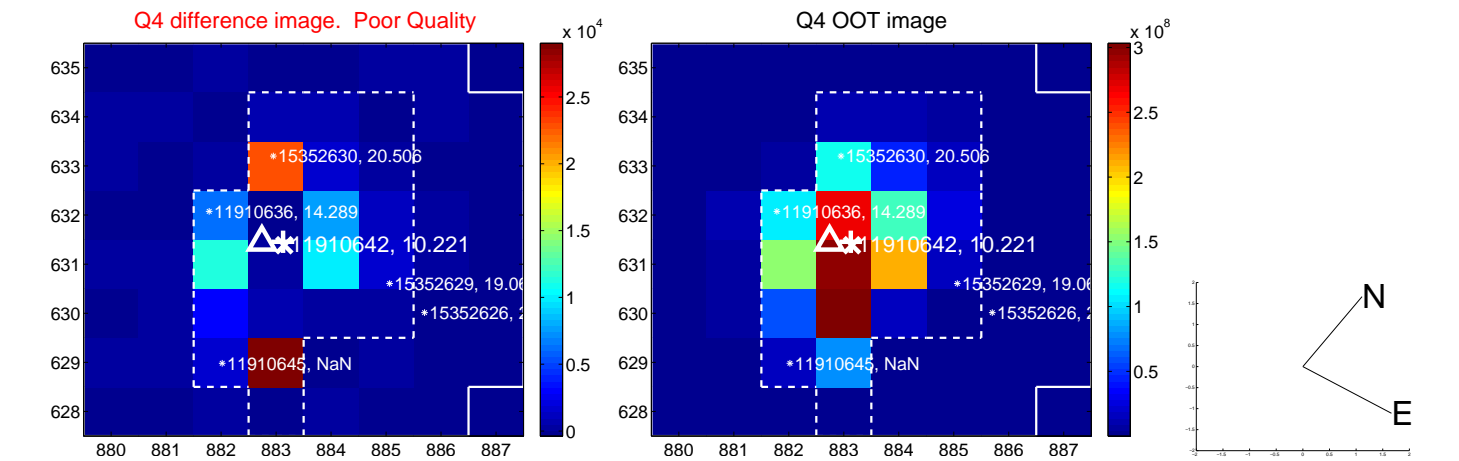
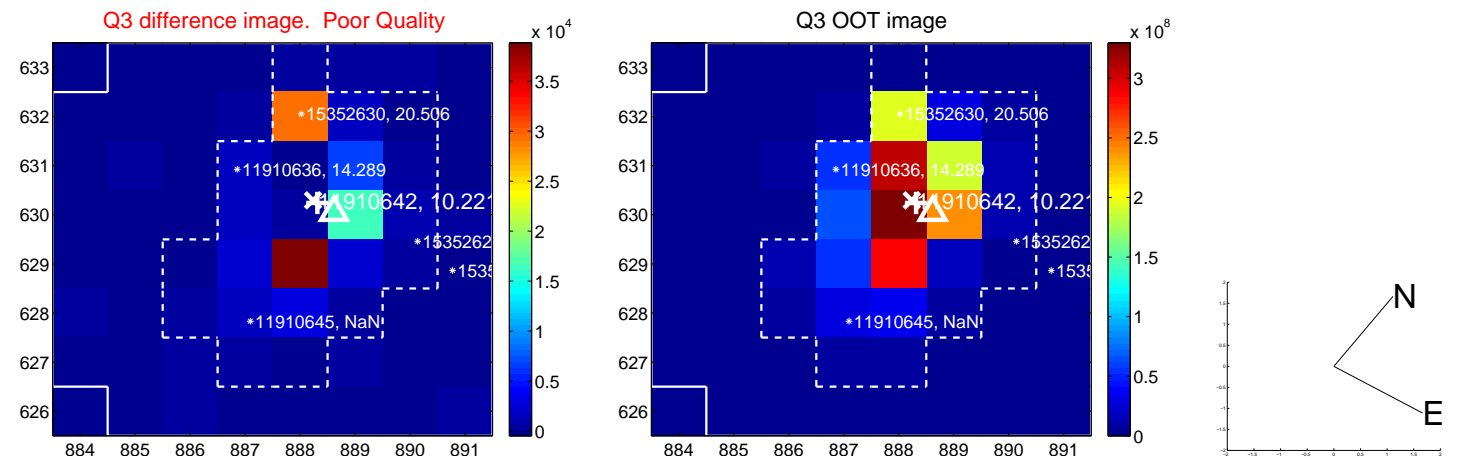
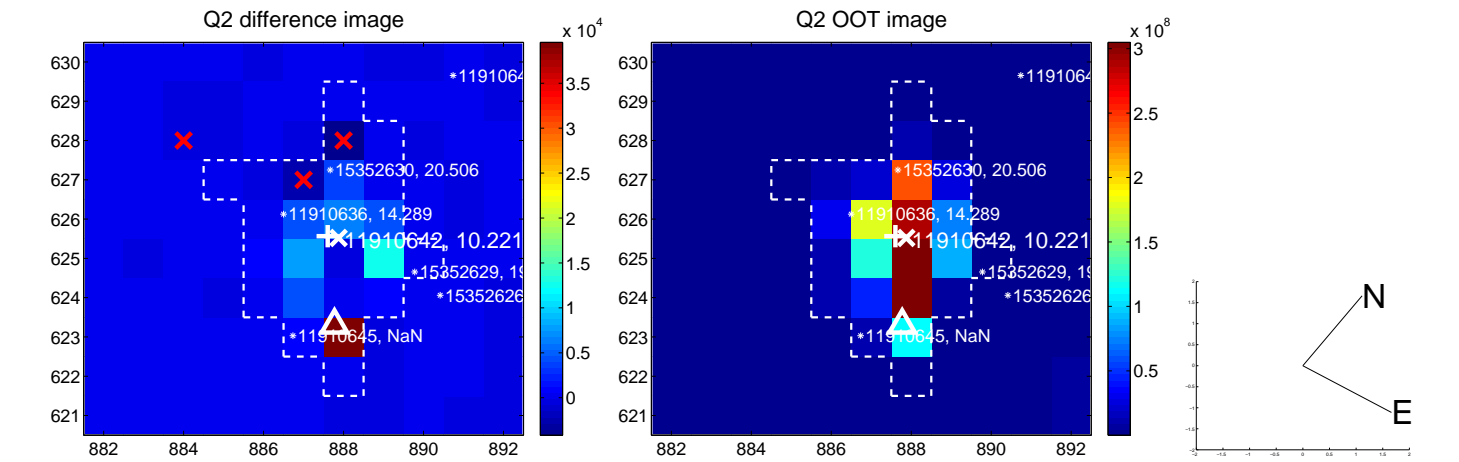
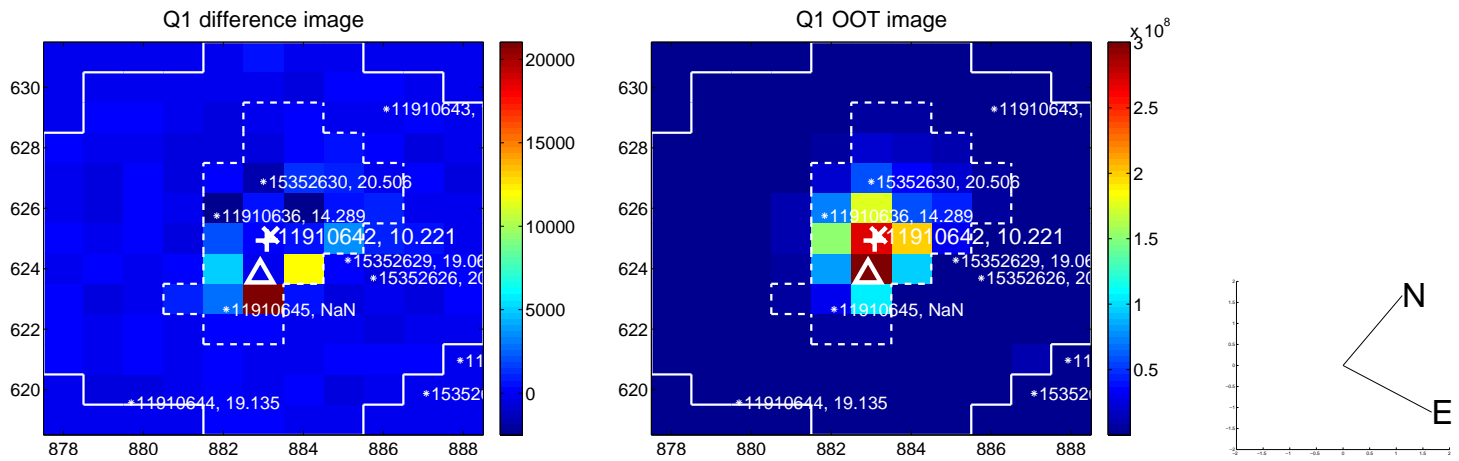
The direct PRF centroid is offset from the target star catalog position by about 0.85 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.955 \pm 0.830$	2.36	$1.523 \pm 0.620$	$-1.226 \pm 0.726$
PRF-fit source offset from KIC position	$2.232 \pm 0.883$	2.53	$1.794 \pm 0.622$	$-1.327 \pm 0.828$
photometric centroid source offset	<b><math>1.22 \pm 0.37</math></b>	<b>3.33</b>	$0.66 \pm 0.28$	$-1.03 \pm 0.40$

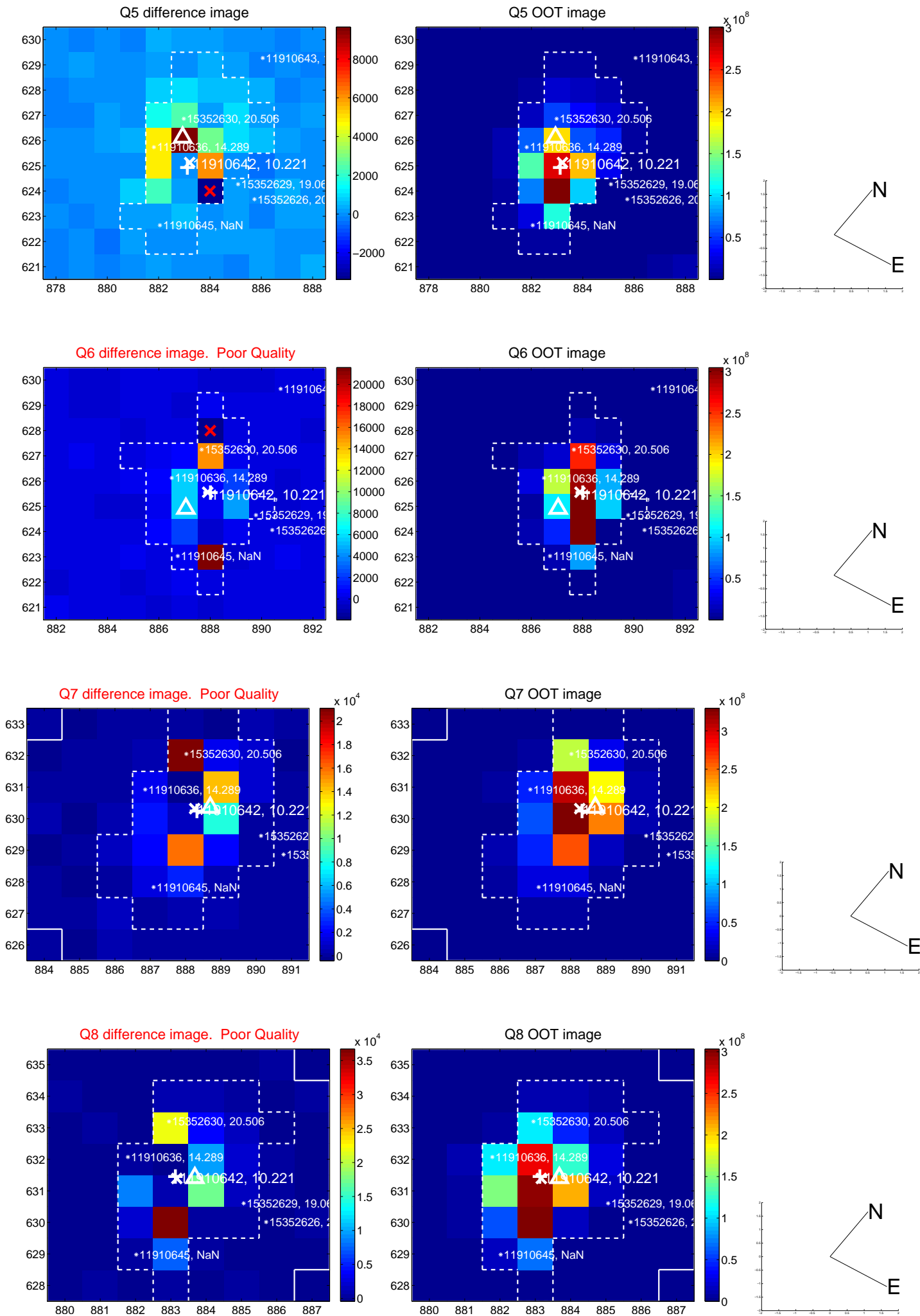


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

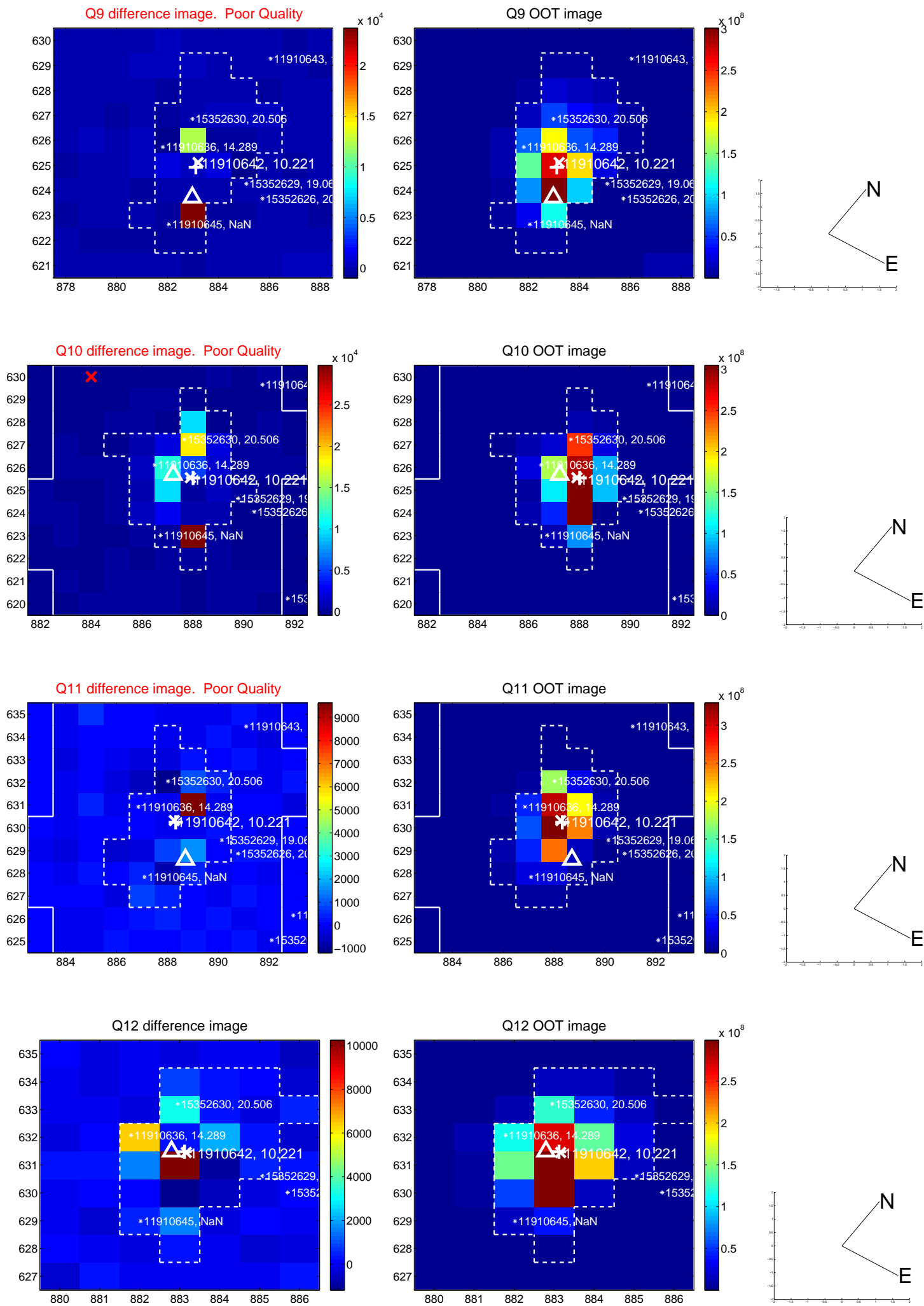


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

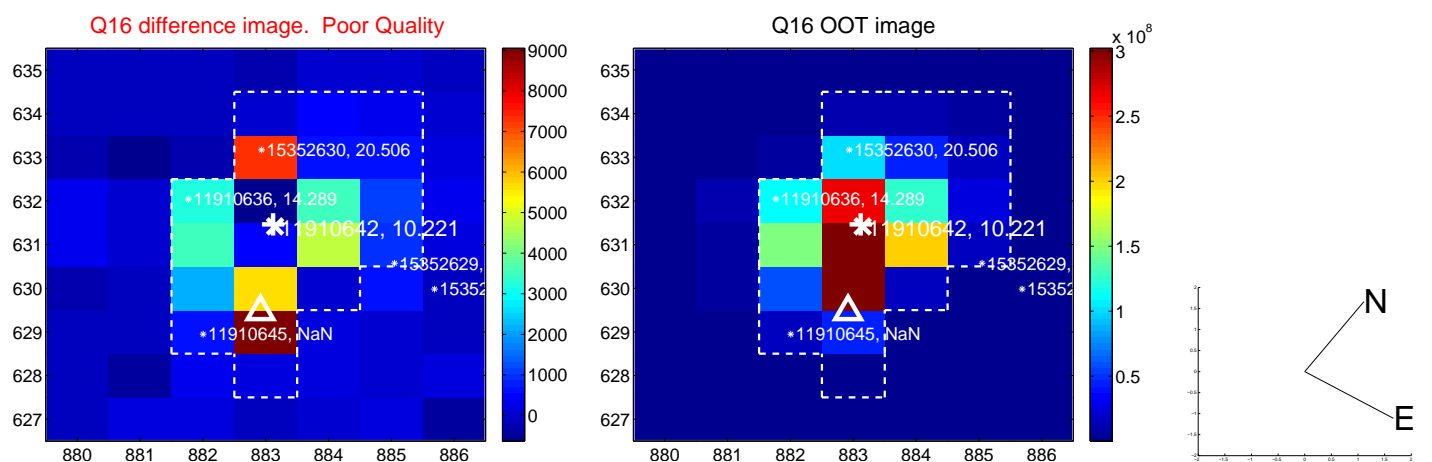
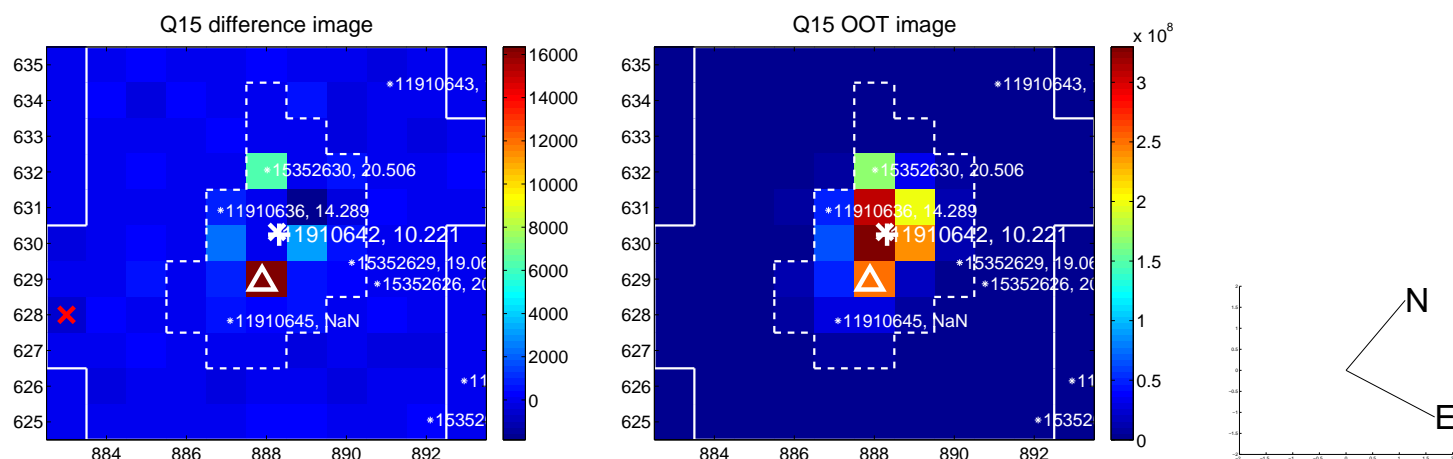
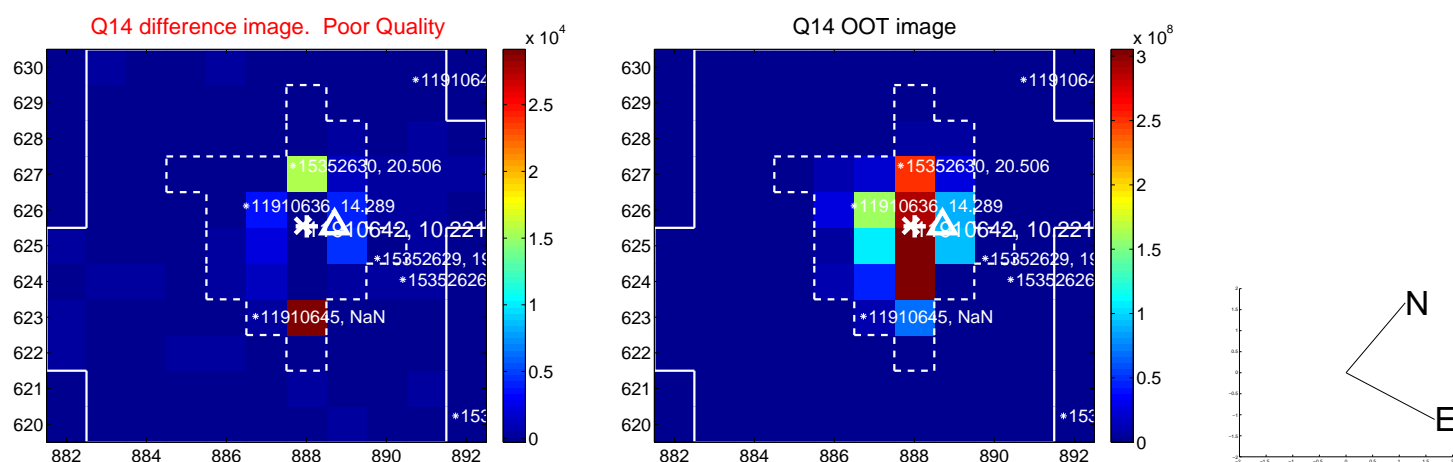
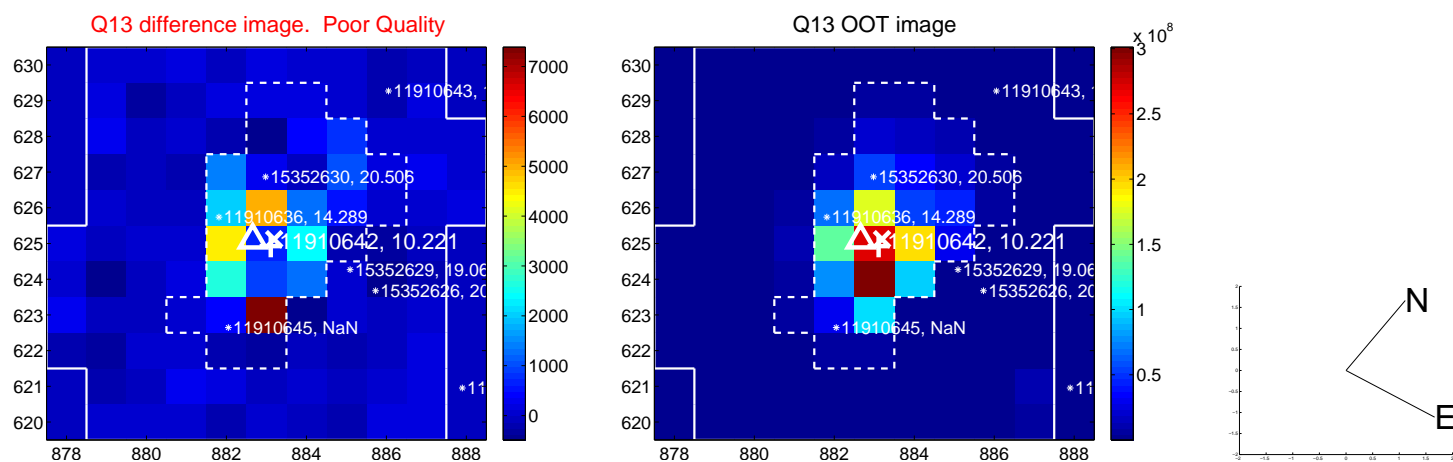




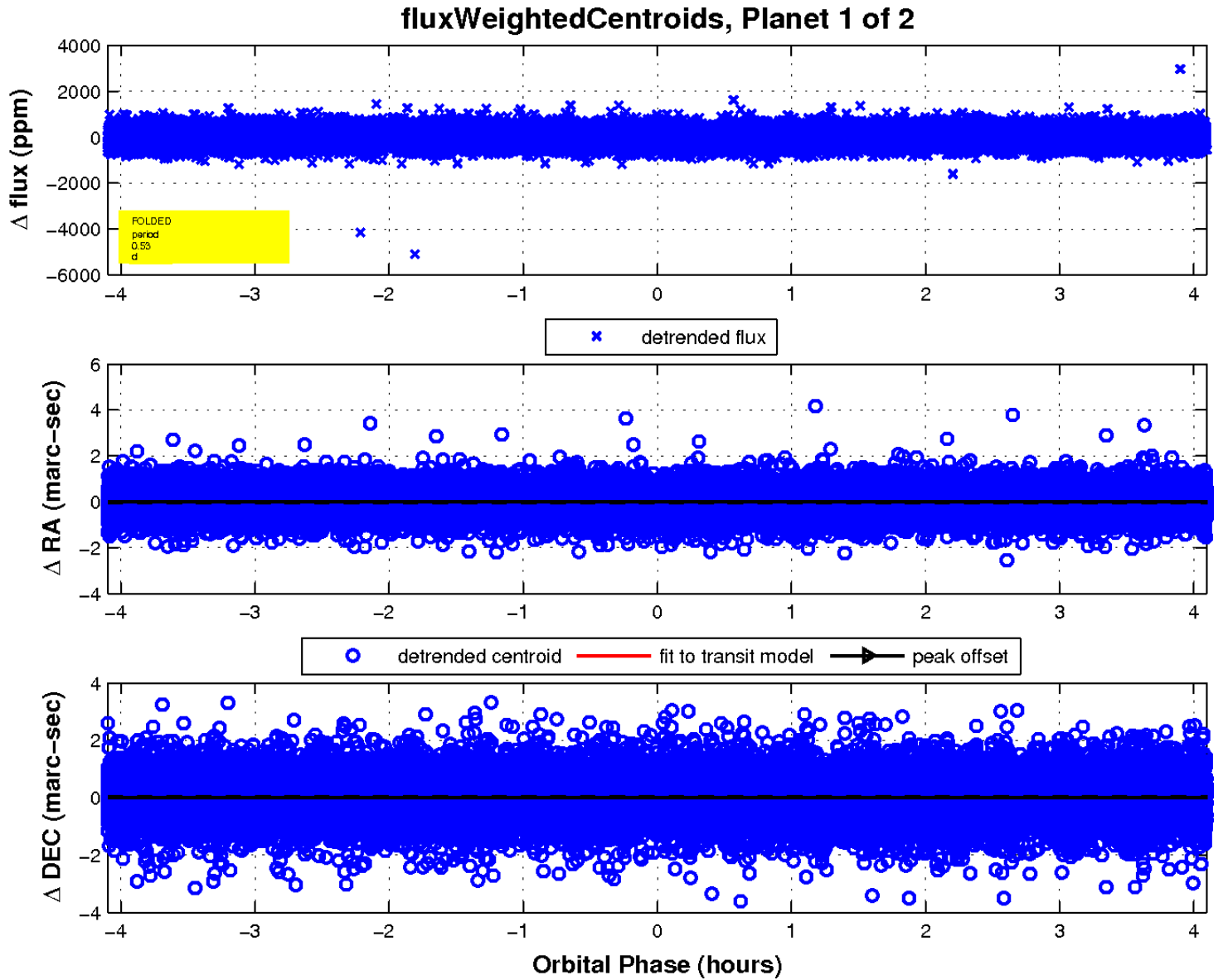
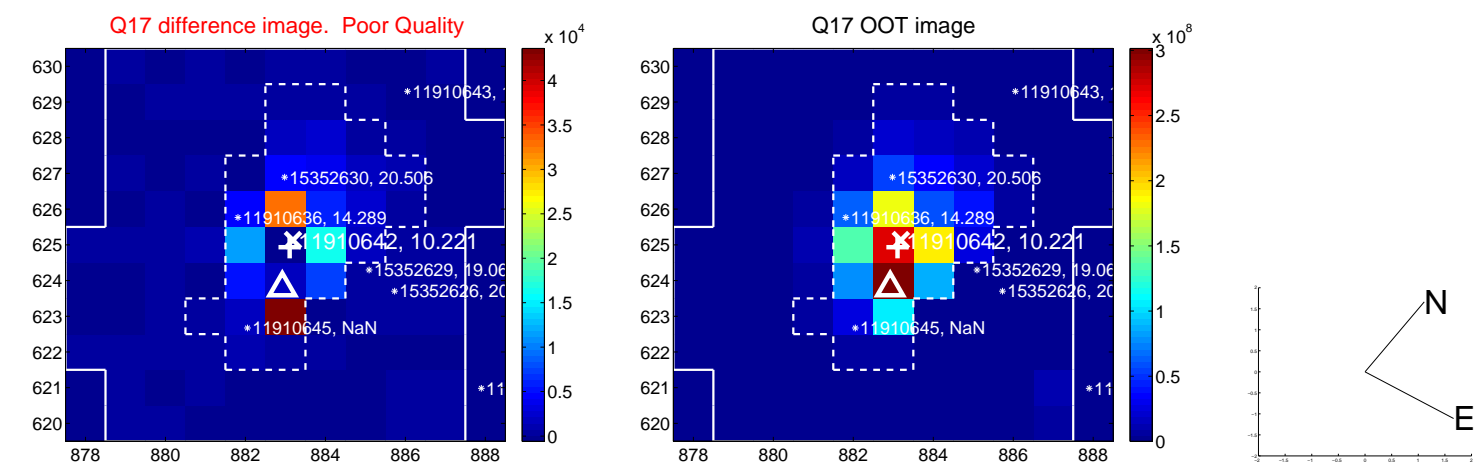
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



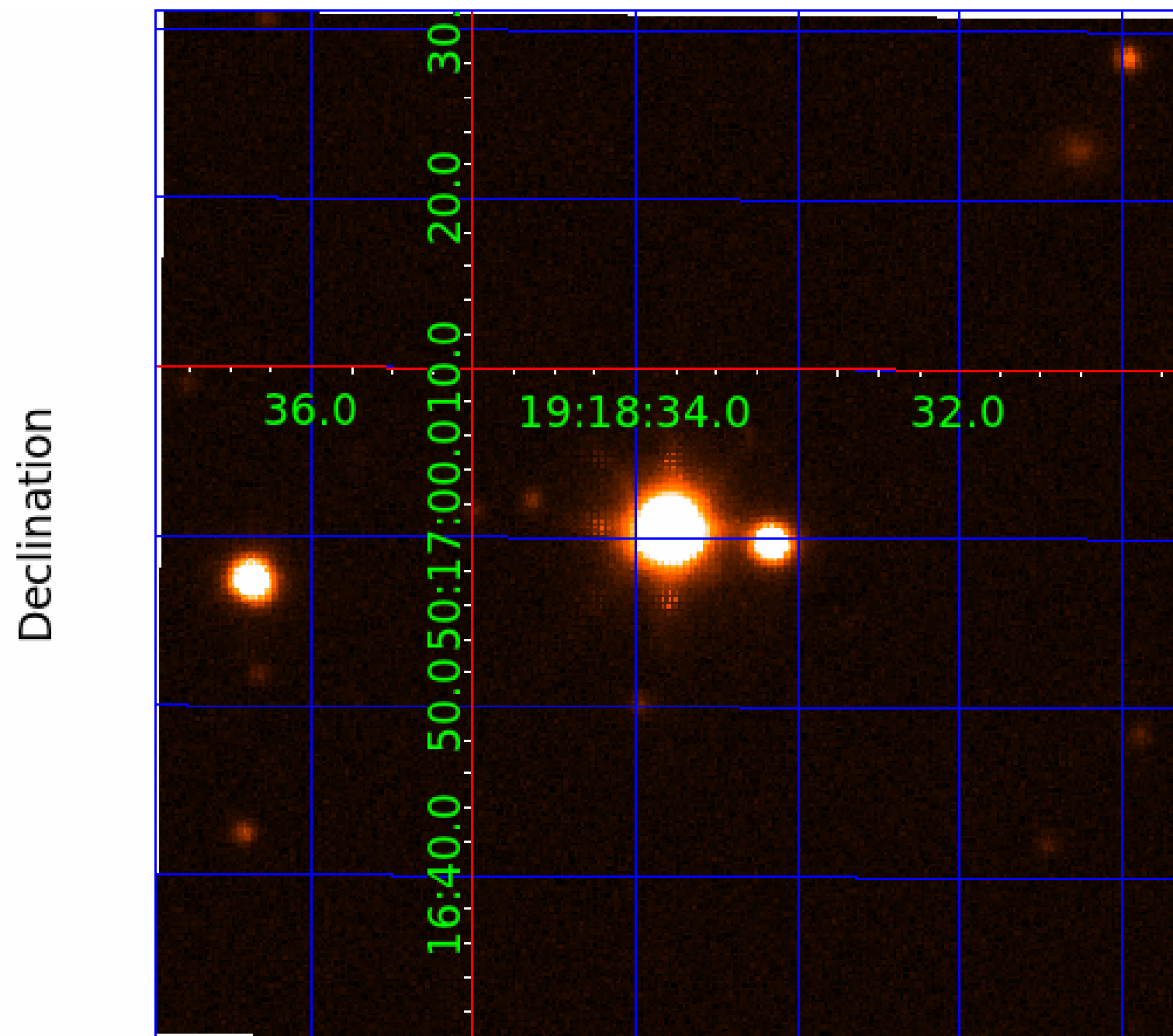
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image





# KIC 011910642

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
011910642-01	OBS	No	0.528897	131.749128	30.7	1.366	11.9	9.3	3.62	7861	2.33	0.00
011910642-02	OBS	No	0.528905	131.923171	27.9	1.458	10.3	8.4	3.62	7861	2.23	0.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011910642-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
011910642-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD—CENT_SATURATED

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

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

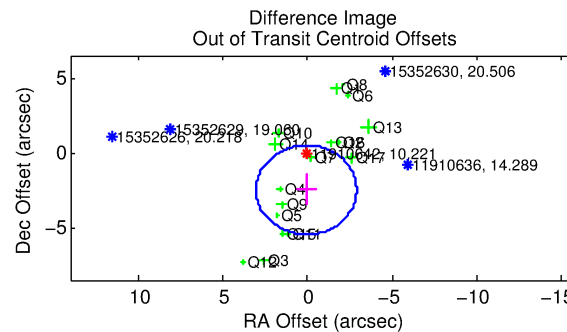
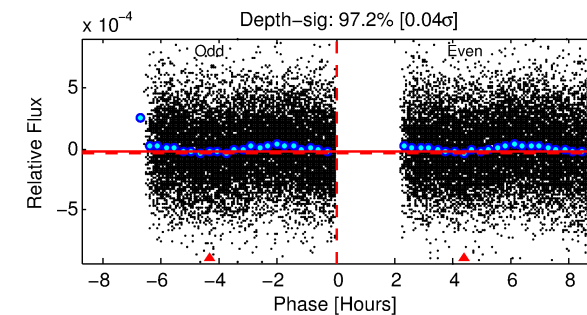
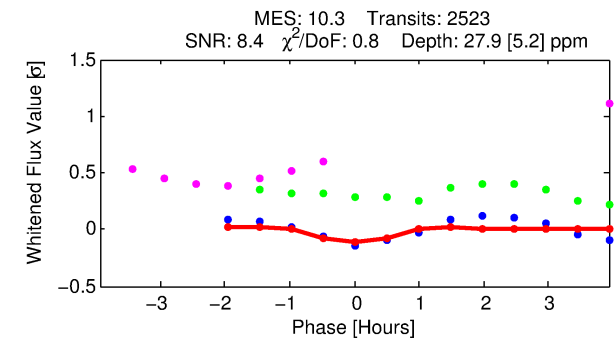
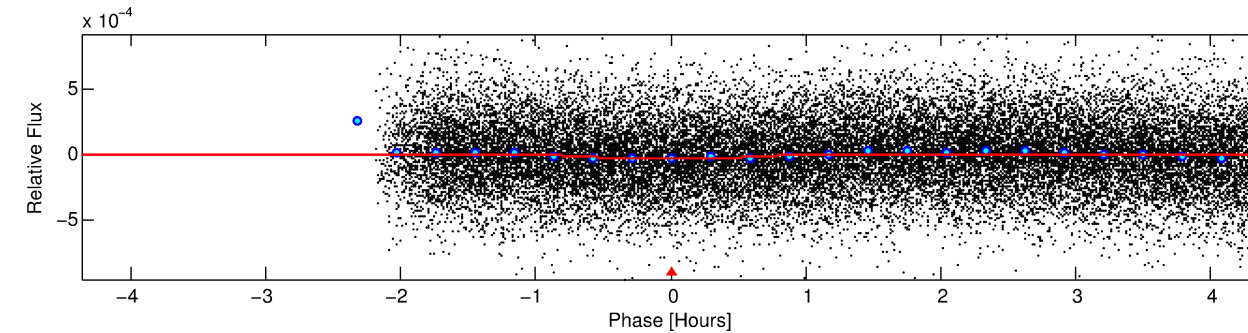
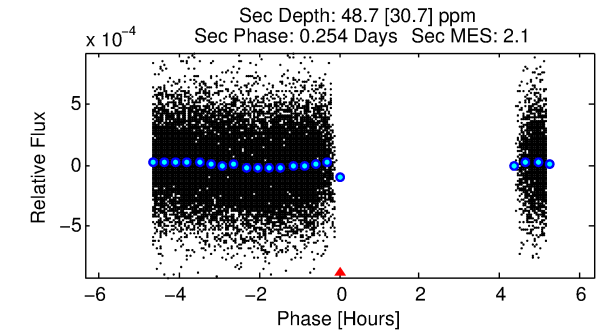
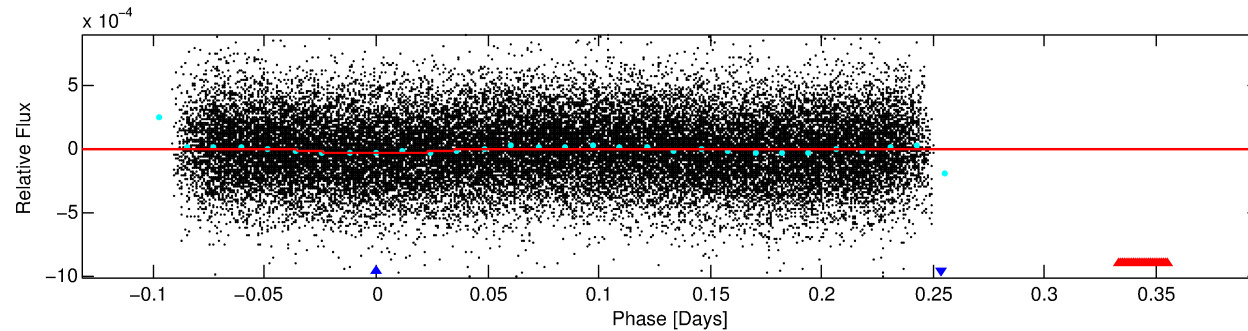
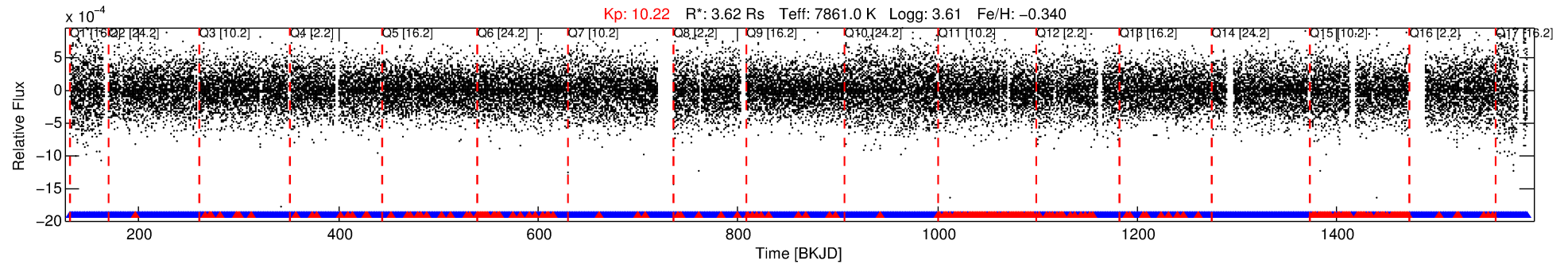
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 011910642-02

No Significant Match Found

# DV One-Page Summary

KIC: 11910642 Candidate: 2 of 2 Period: 0.529 d



## DV Fit Results:

Period = 0.52890 [0.00001] d  
Epoch = 131.9232 [0.0025] BKJD  
Rp/R\* = 0.0057 [0.0017]  
a/R\* = 1.56 [1.61]  
b = 0.90 [0.38]  
Seff = N/A  
Teq = N/A  
Rp = 2.23 [1.40] Re  
a = N/A  
Ag = N/A  
Teffp = N/A

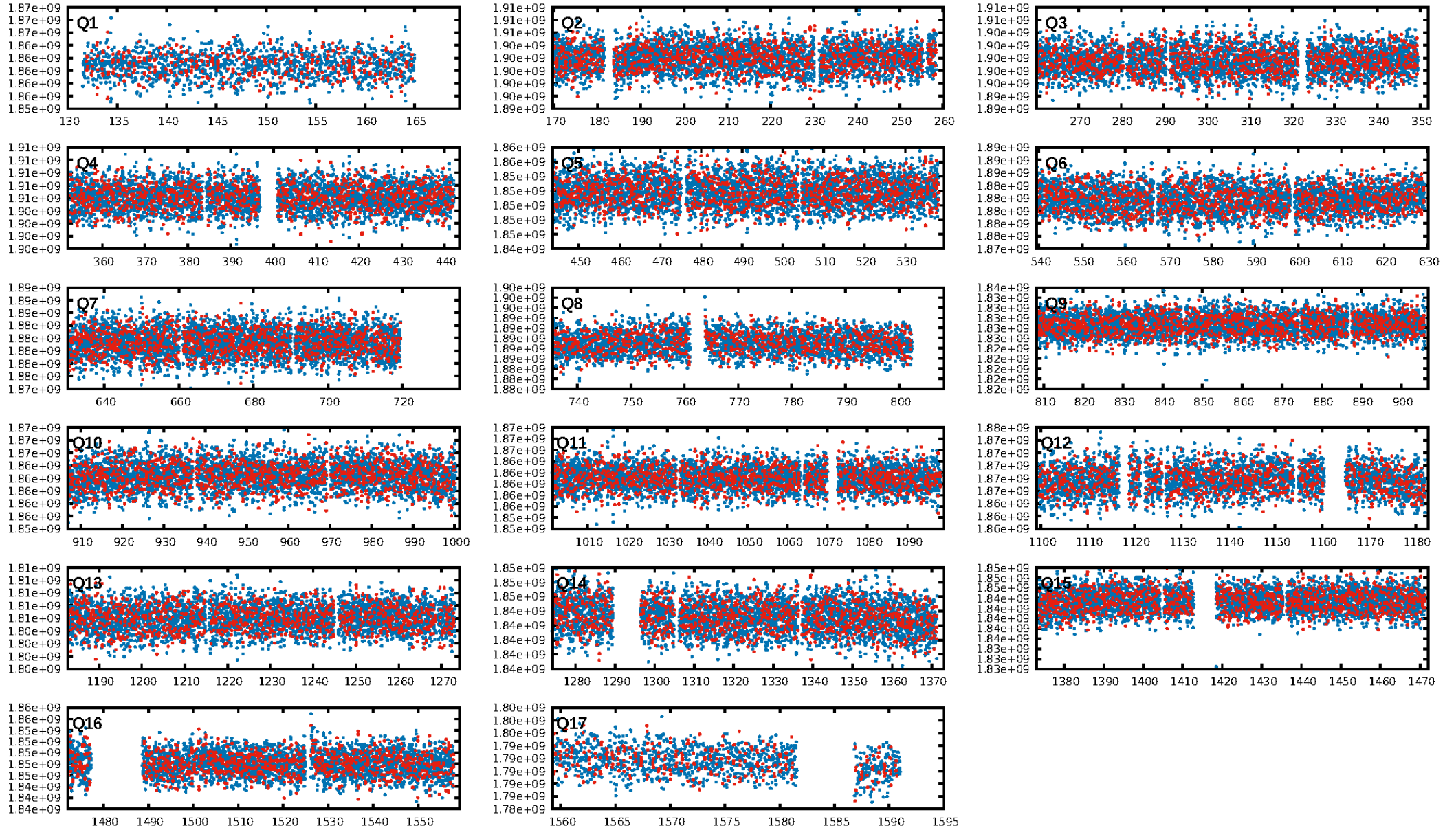
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.01e-13  
RollingBand-fgt: 0.90 [2158/2410]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 0.8%  
Centroid-so: 1.128 arcsec [2.95σ]  
OotOffset-rm: 2.489 arcsec [2.51σ]  
KicOffset-rm: 2.937 arcsec [2.95σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.18 [3/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:17:32 Z

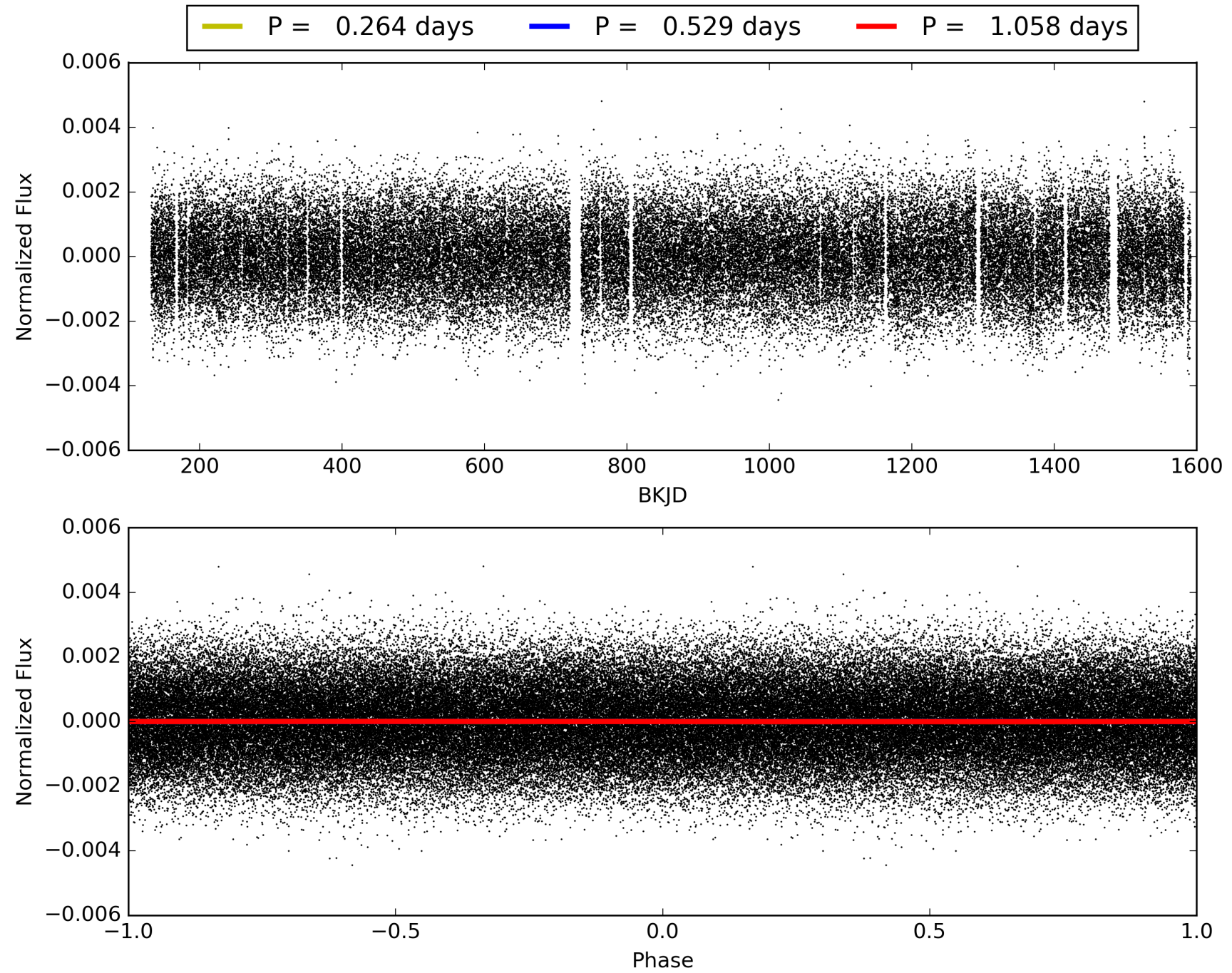
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 011910642-02, PDC Light Curves





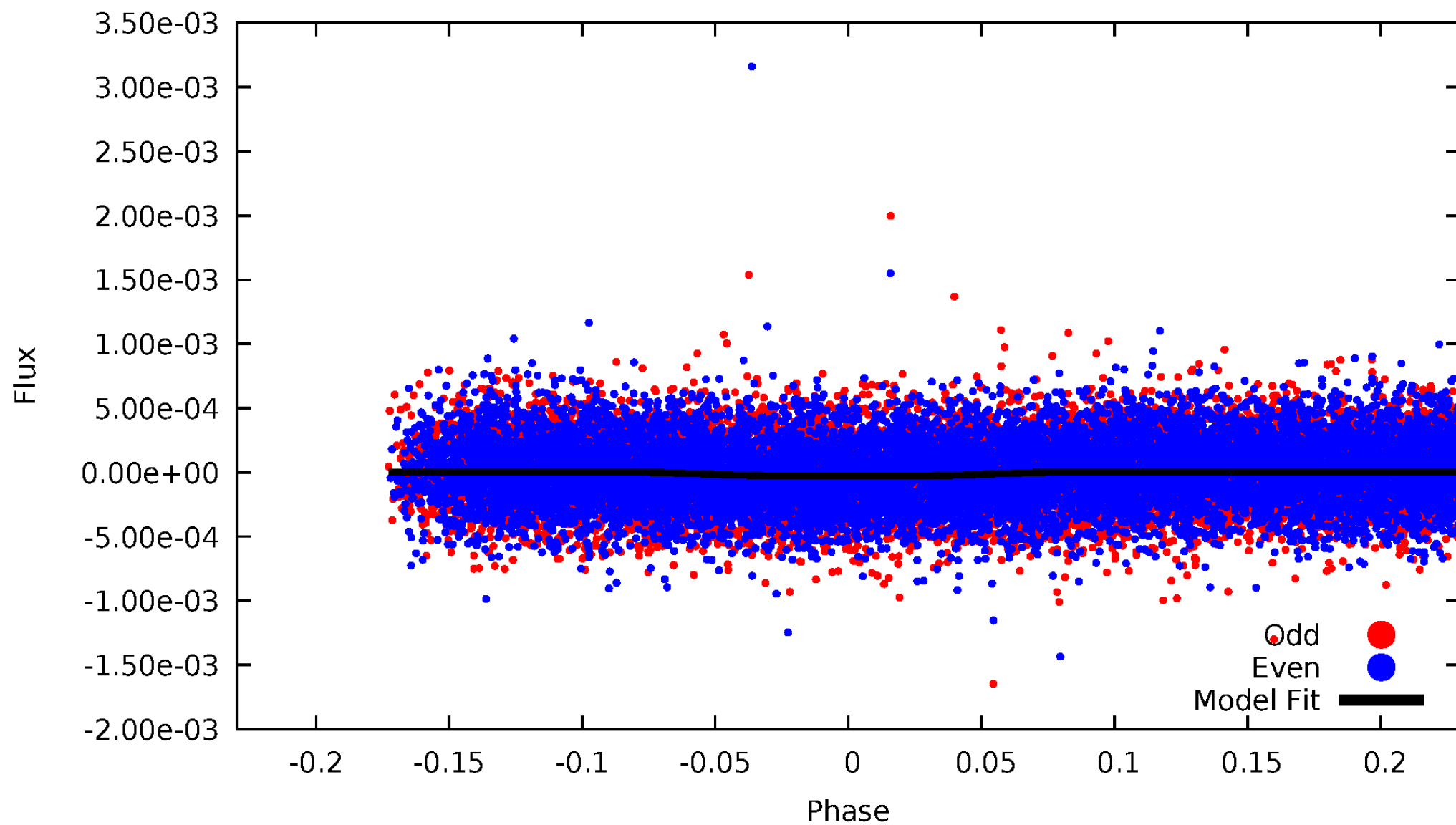
# TCE 011910642-02





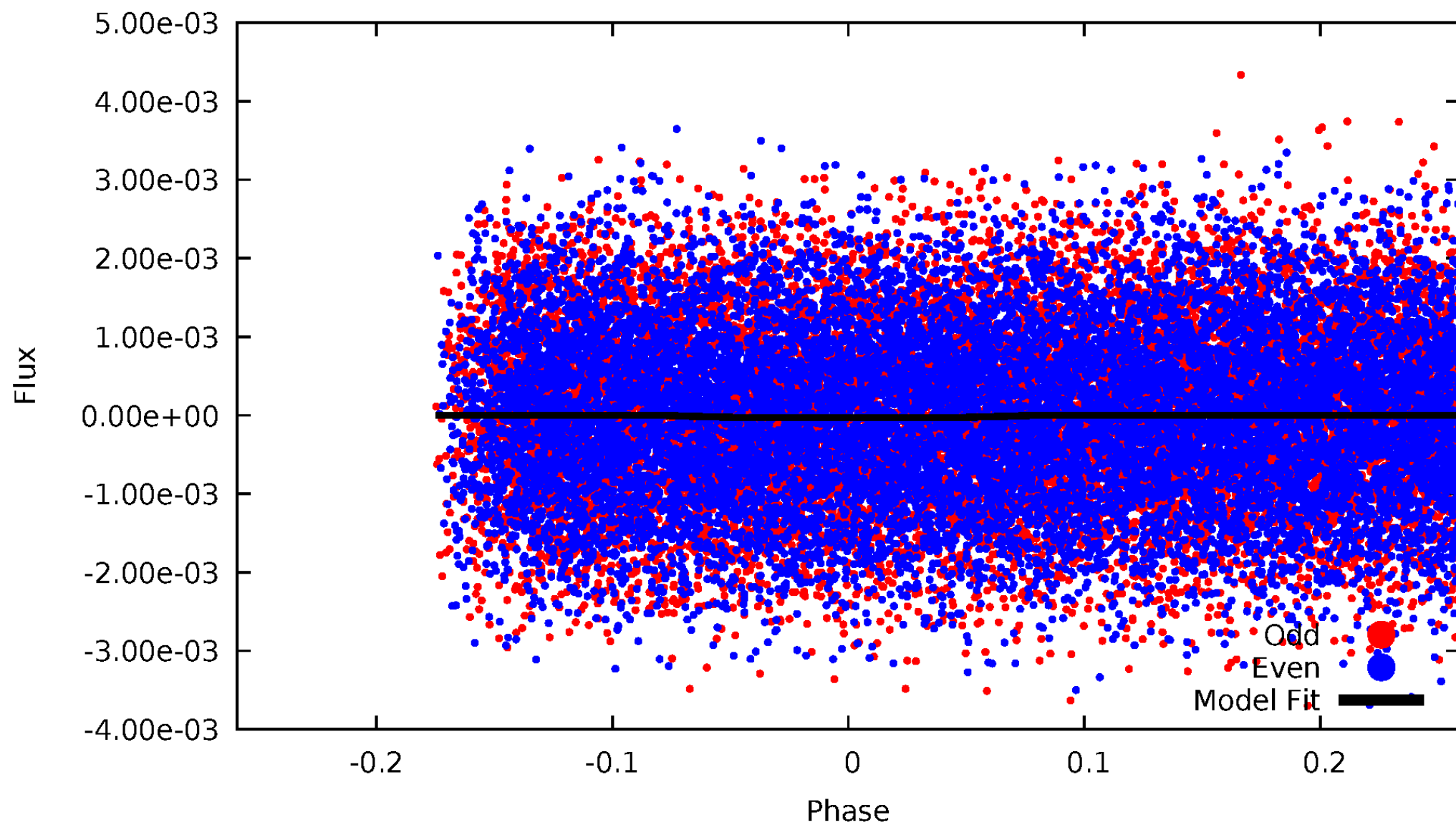
# DV Odd/Even

TCE 011910642-02



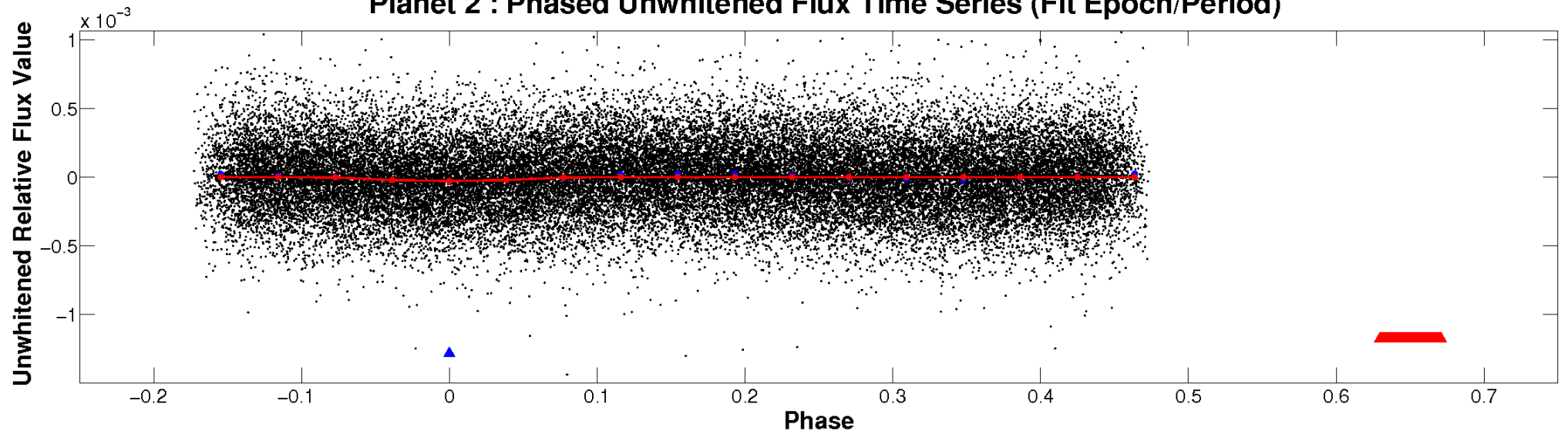
# ALT Odd/Even

TCE 011910642-02

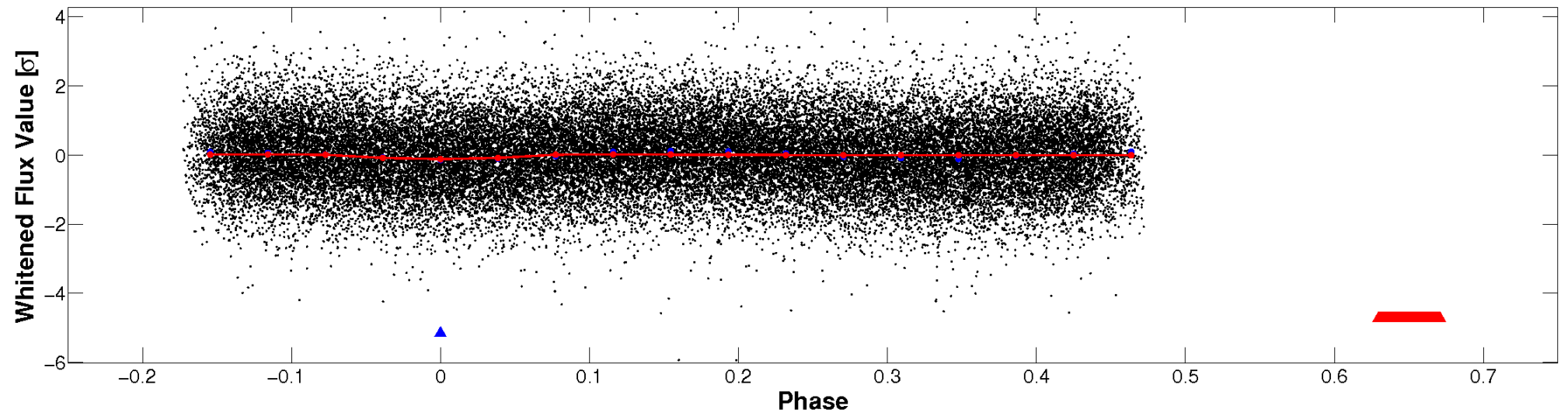


# Non-Whitened Vs. Whitened Light Curve

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

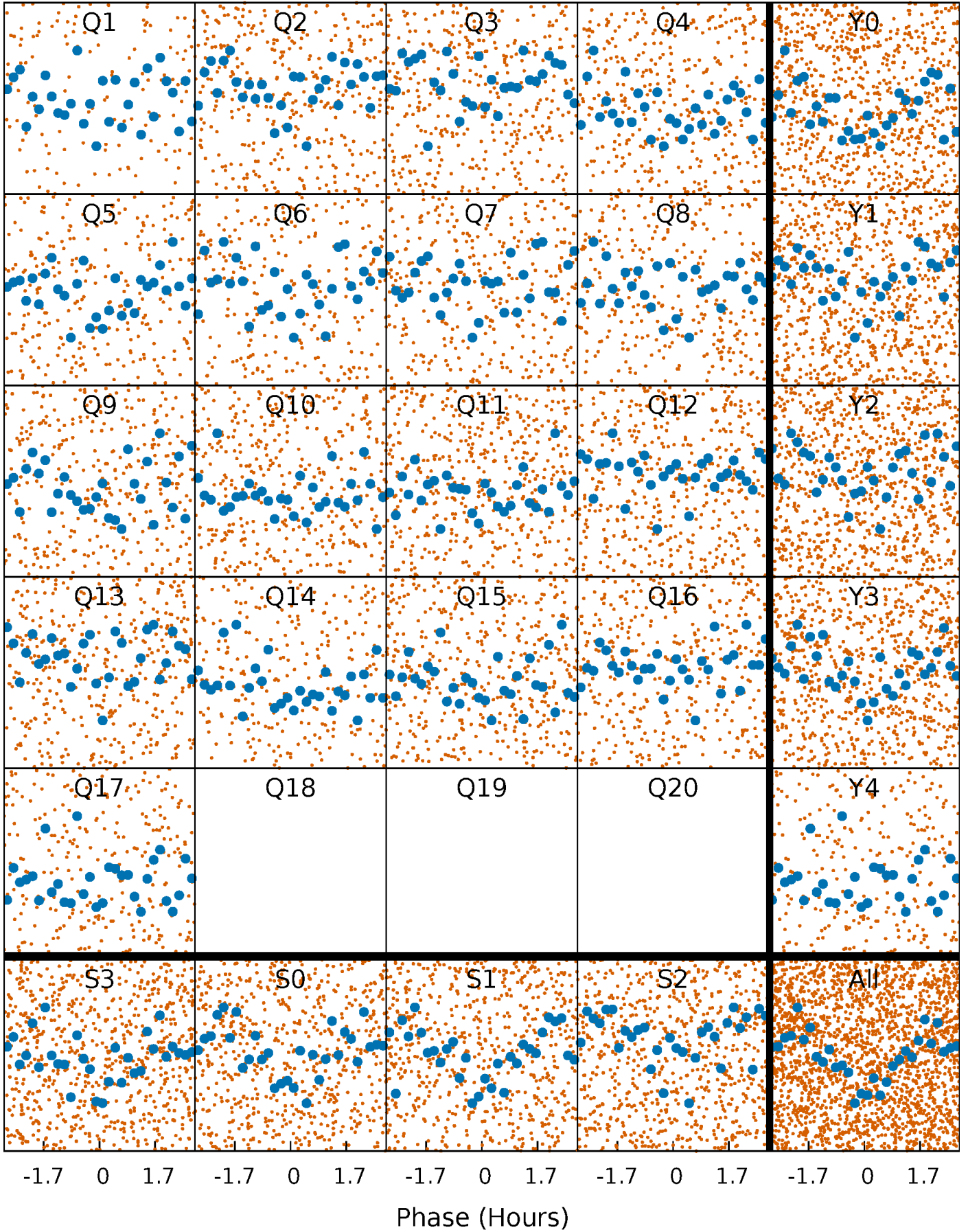


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

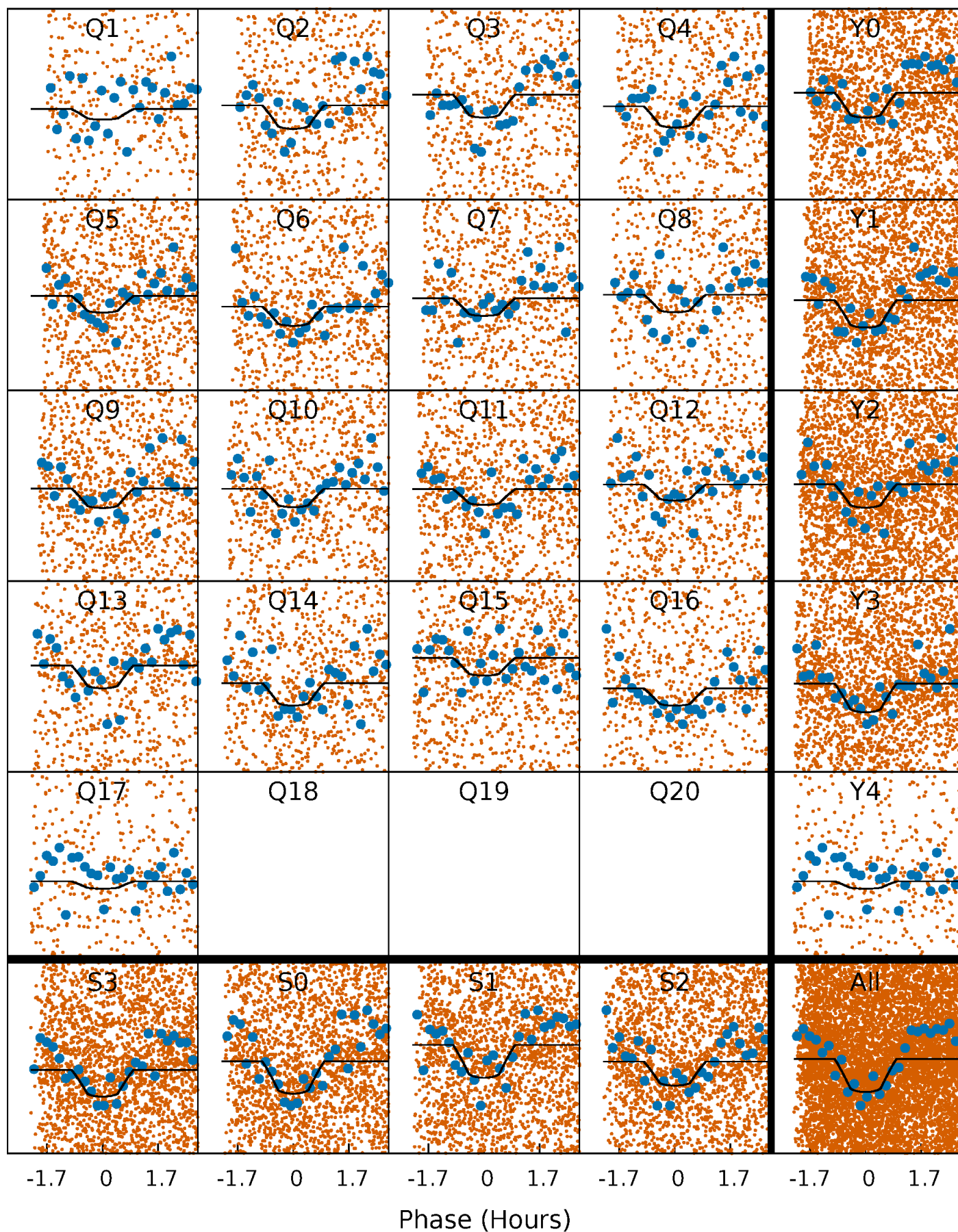
TCE 011910642-02    P= 0.528905 Days     $T_0=131.923171$  (BKJD)





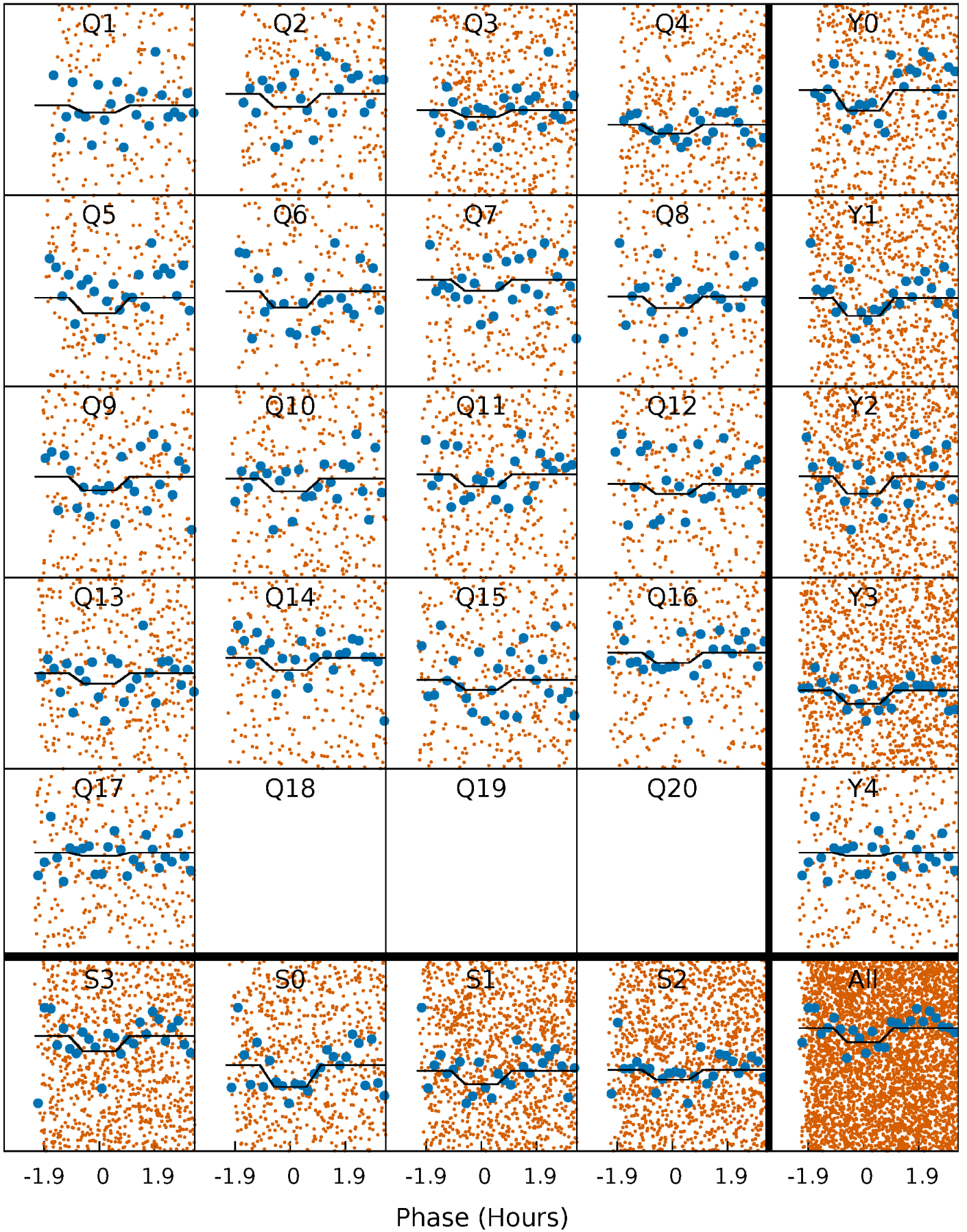
# DV Quarter-Phased Transit Curves

TCE 011910642-02   P= 0.528905 Days    $T_0=131.923171$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 011910642-02   P= 0.528905 Days    $T_0=131.923114$  (BKJD)

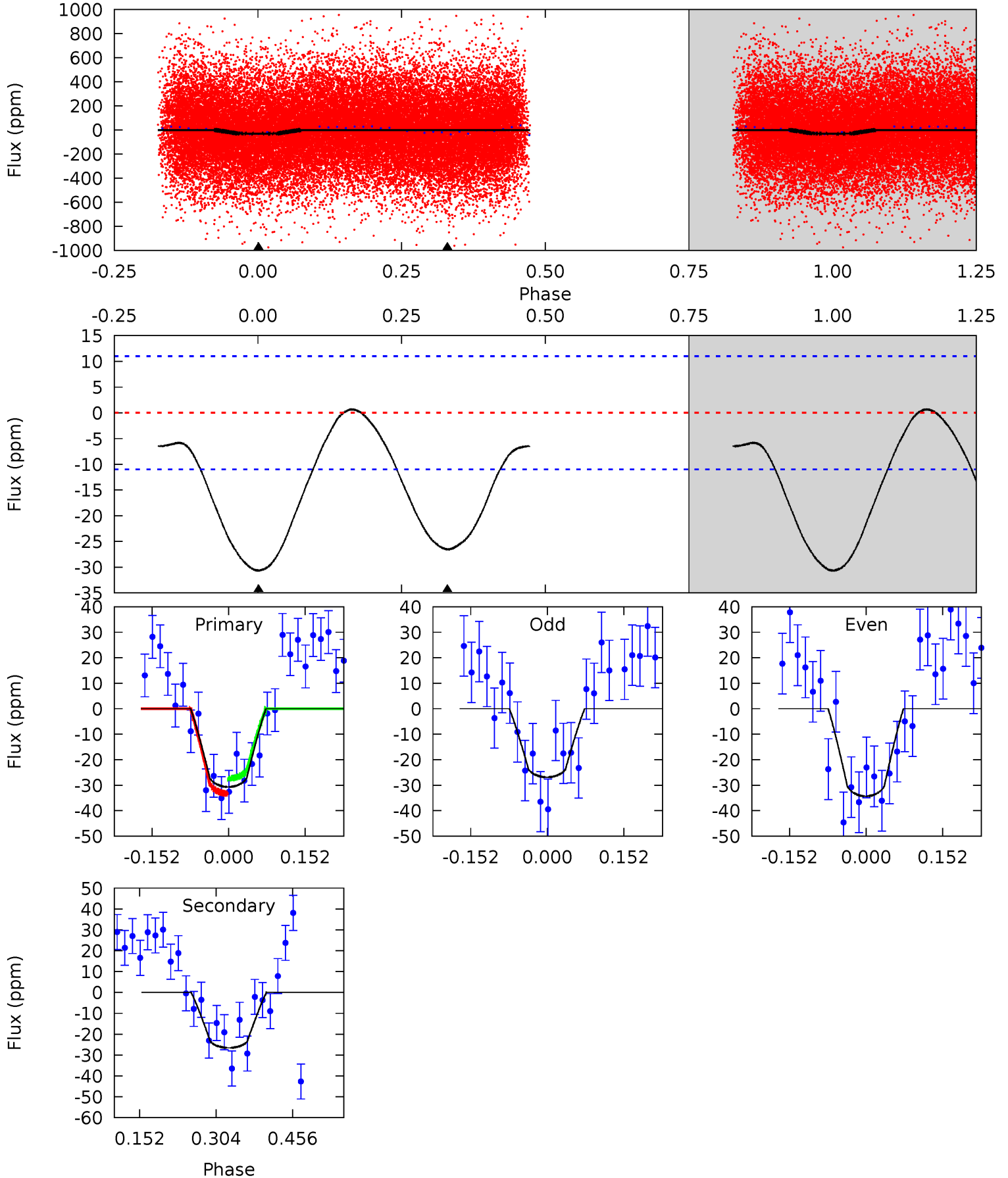




# DV Model-Shift Uniqueness Test

011910642-02, P = 0.528905 Days, E = 131.394266 Days

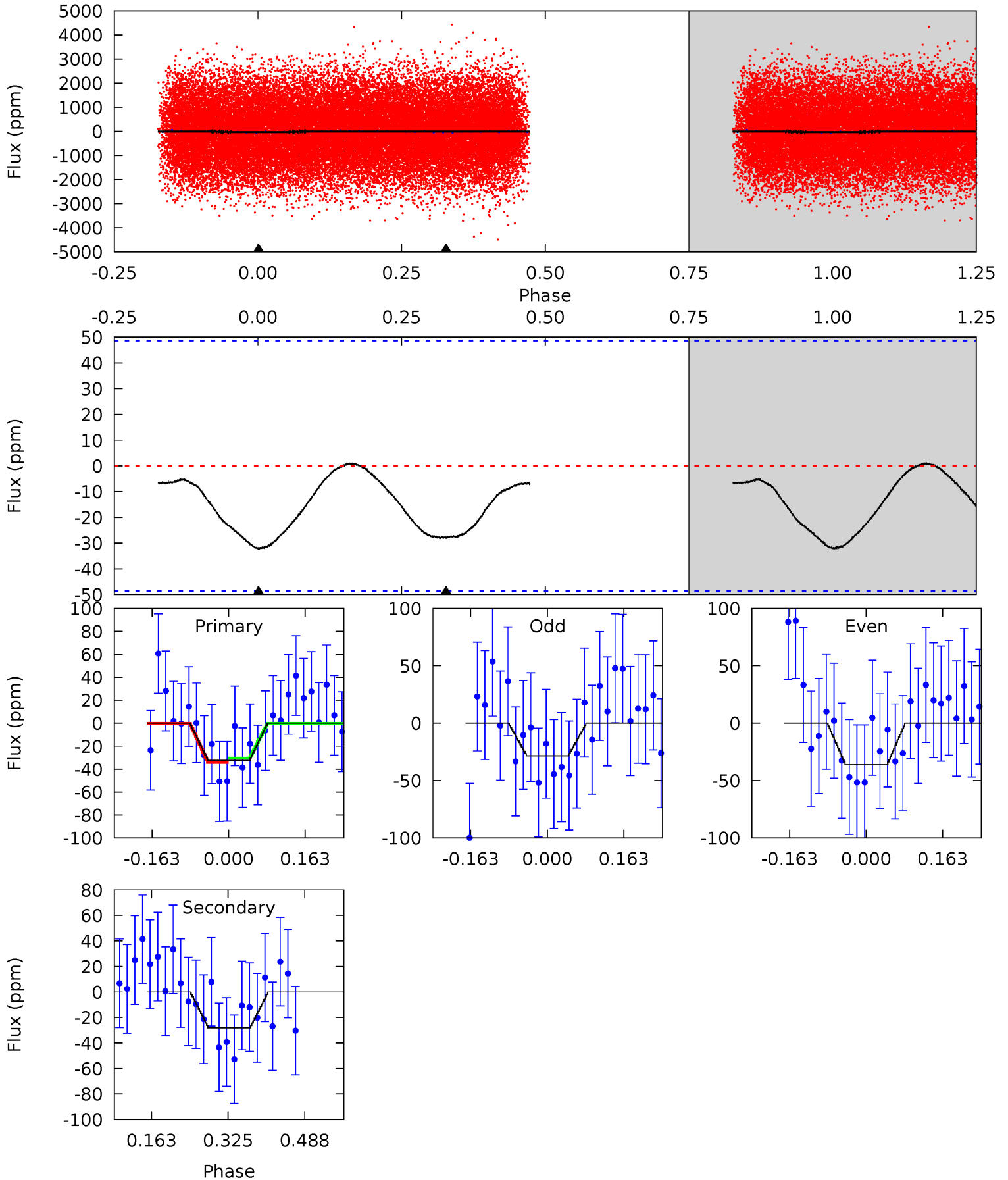
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	10.8	0	0	4.48	1.43	1.09	12.5	12.5	10.8	10.8	1.53	0.93	0.02	1.20



# Alt Model-Shift Uniqueness Test

011910642-02, P = 0.528905 Days, E = 131.394209 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
2.96	2.58	0	0	4.46	1.40	0.27	2.96	2.96	2.58	2.58	0.36	1.02	0.04	0.18



### Stellar Parameters For KIC 011910642

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7861^{+249}_{-304}$	$3.613^{+0.558}_{-0.062}$	$-0.340^{+0.200}_{-0.300}$	$3.616^{+0.620}_{-1.983}$	$1.957^{+0.093}_{-0.528}$	$0.058^{+0.393}_{-0.018}$
	+3%/-4%	+15%/-2%	+59%/-88%	+17%/-55%	+5%/-27%	+673%/-31%
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 011910642-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-27 \pm 2$	$1.91^{+0.75}_{-0.75}$	$6910^{+577}_{-964}$	$6738^{+2131}_{-1494}$	$1.012^{+1.540}_{-0.496}$
Alt.	$-28 \pm 11$	$1.83^{+0.82}_{-0.68}$	$6906^{+542}_{-1032}$	$6816^{+2489}_{-1775}$	$1.091^{+1.976}_{-0.616}$

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

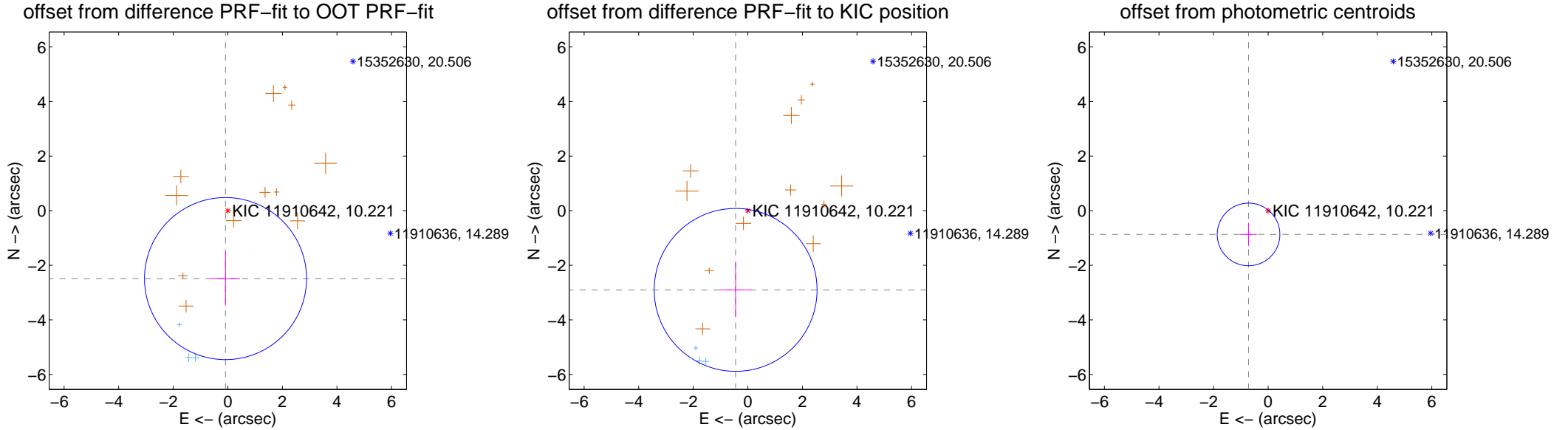
## DV Centroid Data

Supplemental centroid analysis for 011910642-02. **Kepler magnitude: 10.22.** Transit SNR 8.37

**There are 3 quarters with good PRF difference image offsets**

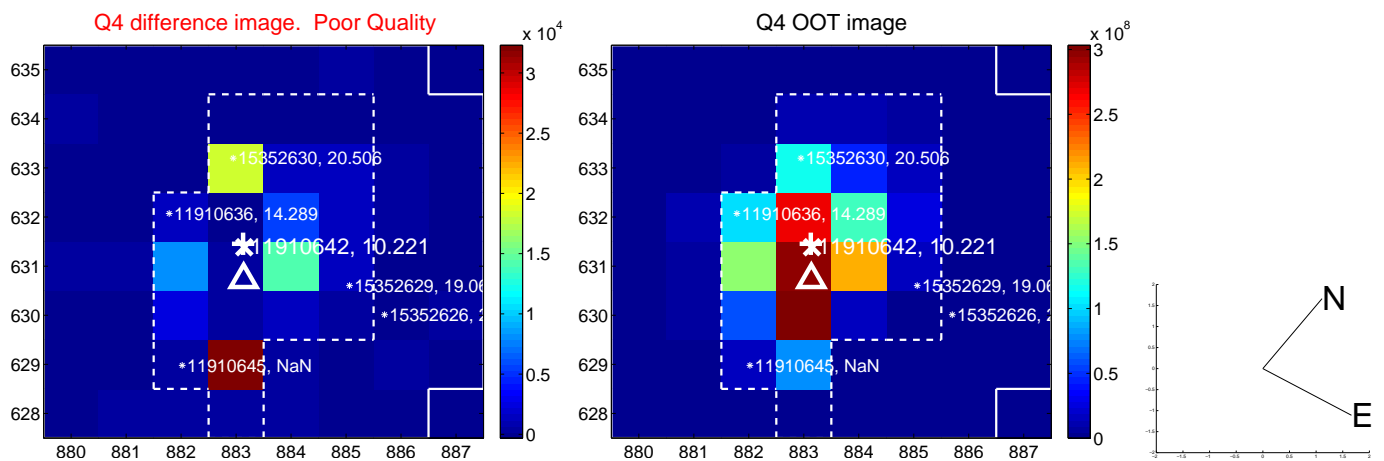
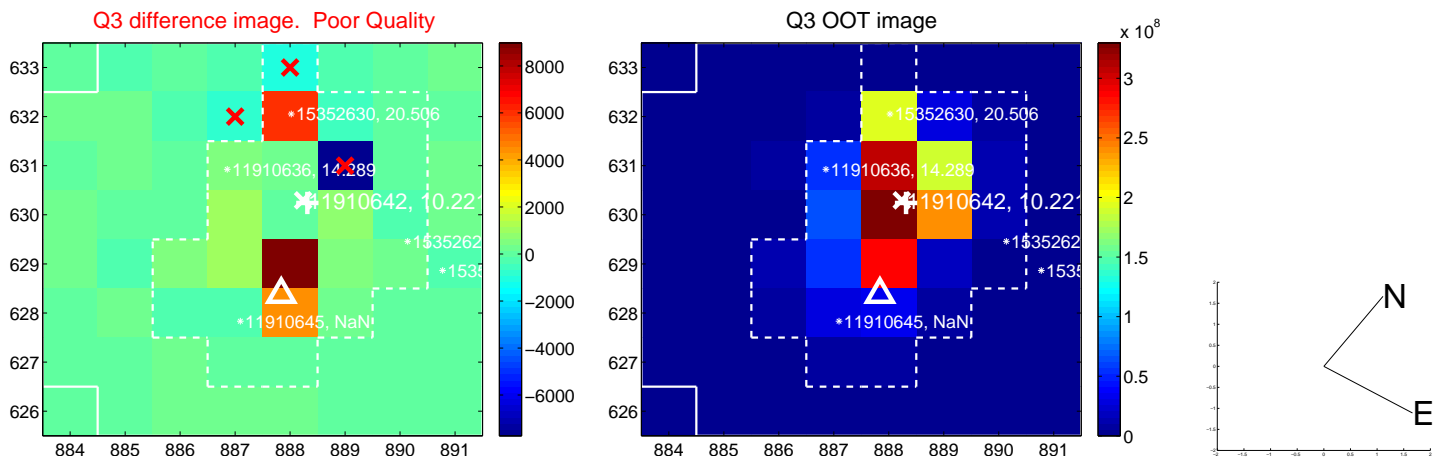
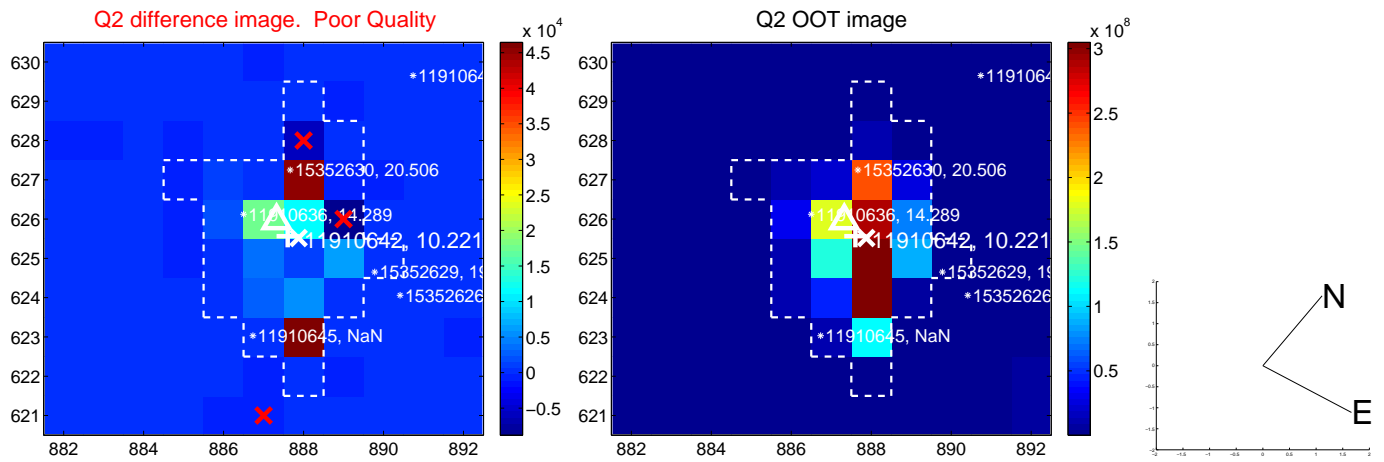
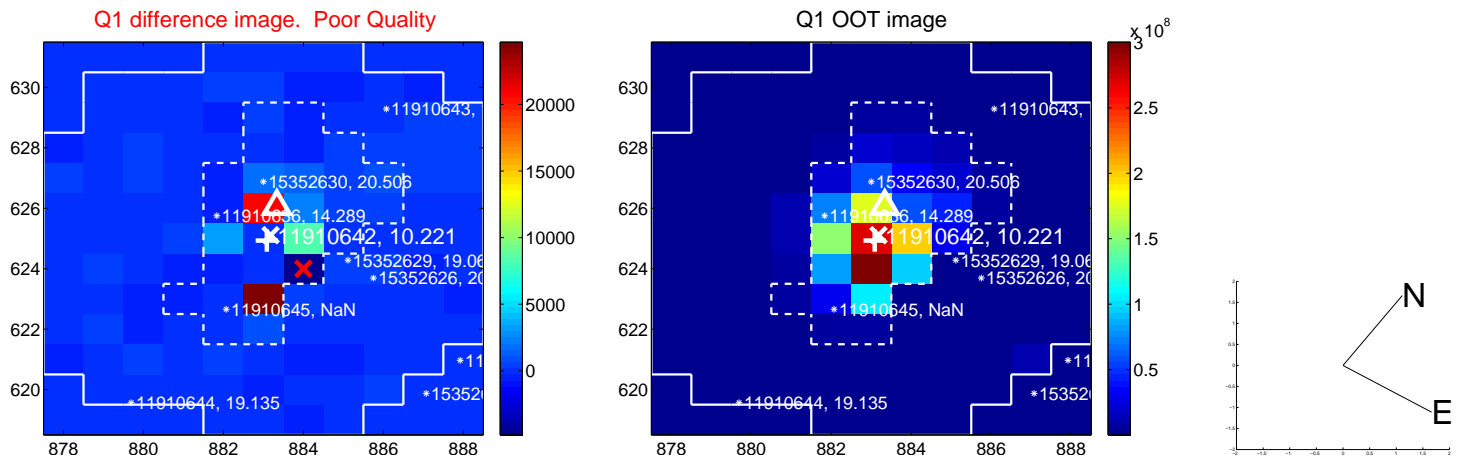
The direct PRF centroid is offset from the target star catalog position by about 0.85 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.489 \pm 0.990$	2.51	$0.084 \pm 0.536$	$-2.488 \pm 0.990$
PRF-fit source offset from KIC position	$2.937 \pm 0.995$	2.95	$0.447 \pm 0.594$	$-2.902 \pm 1.003$
photometric centroid source offset	$1.13 \pm 0.38$	2.95	$0.72 \pm 0.31$	$-0.87 \pm 0.43$

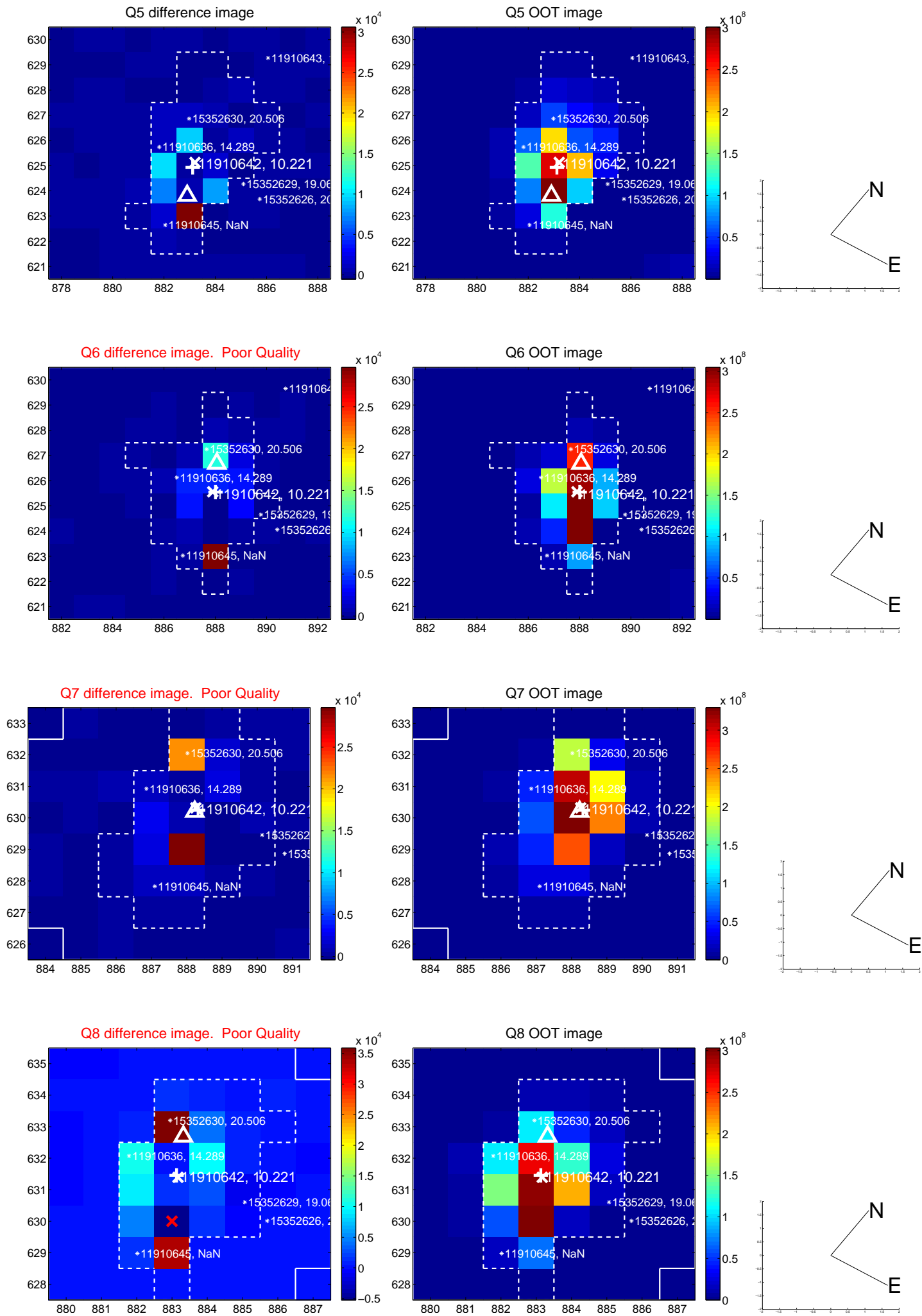


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

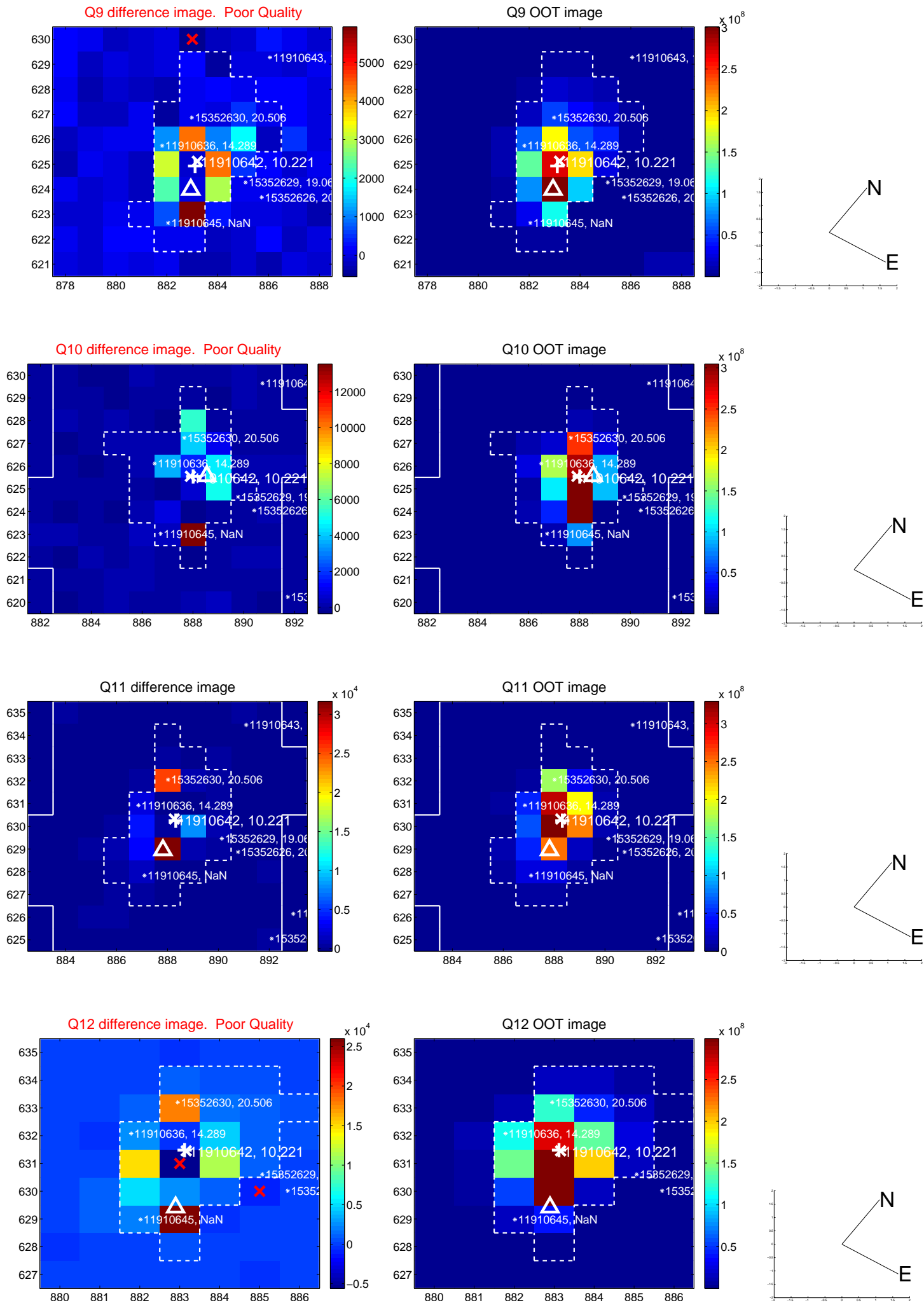


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

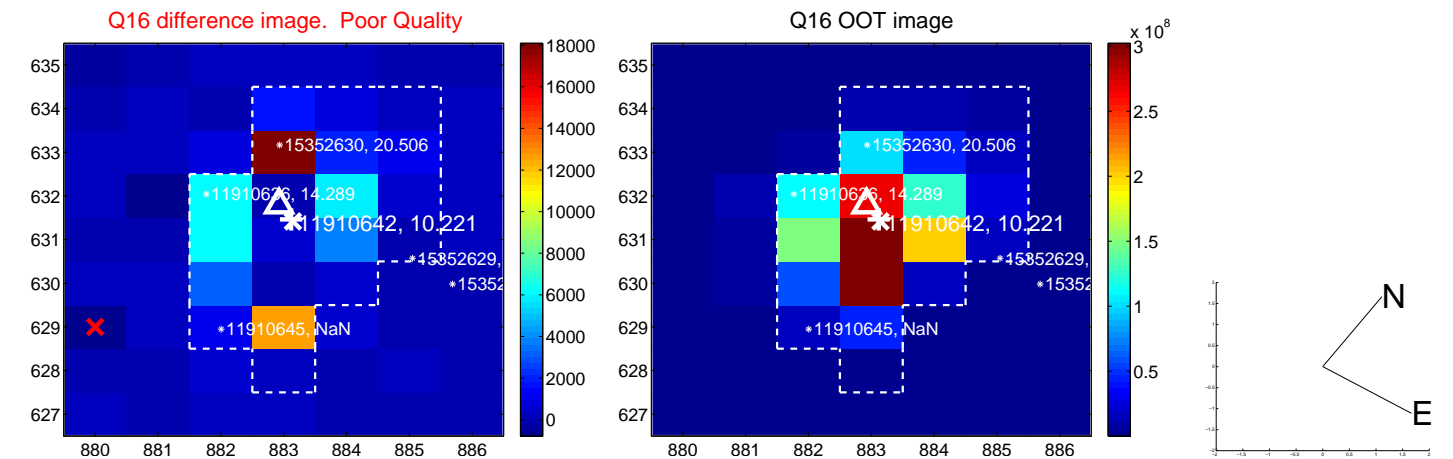
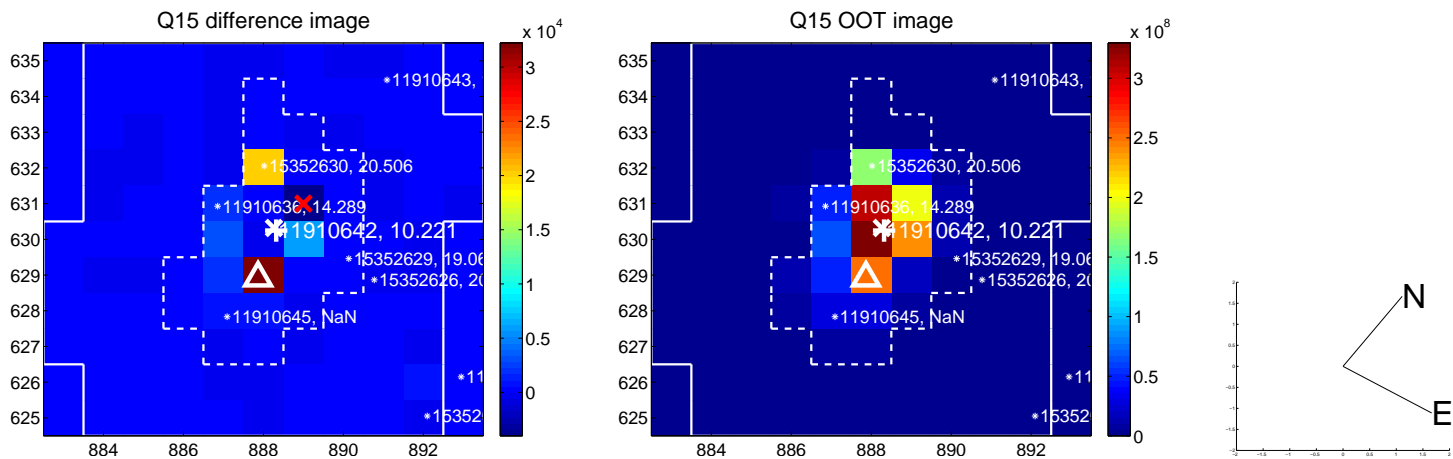
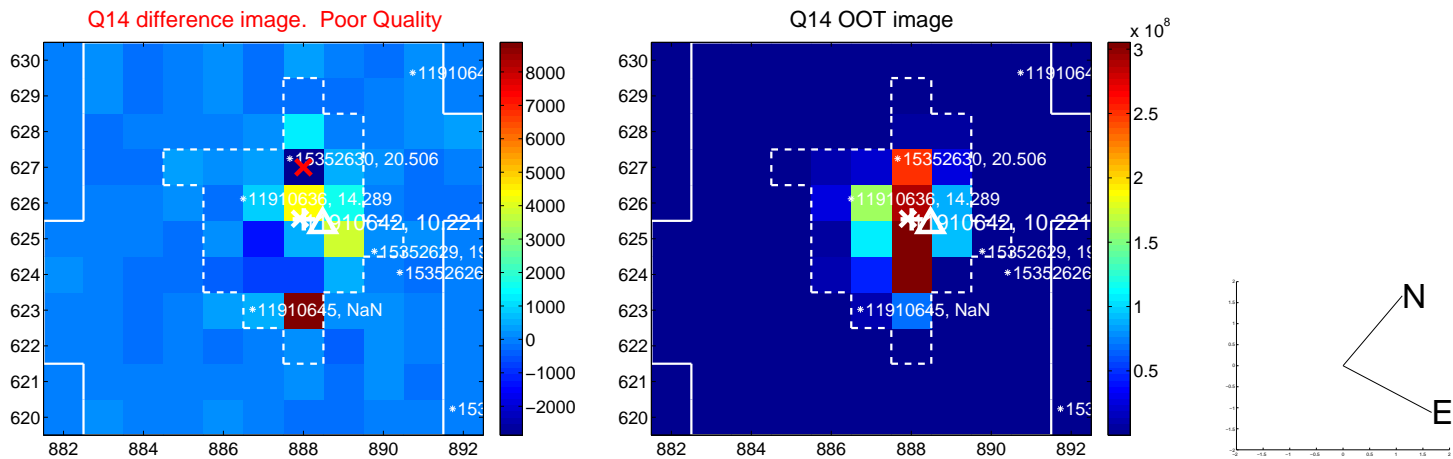
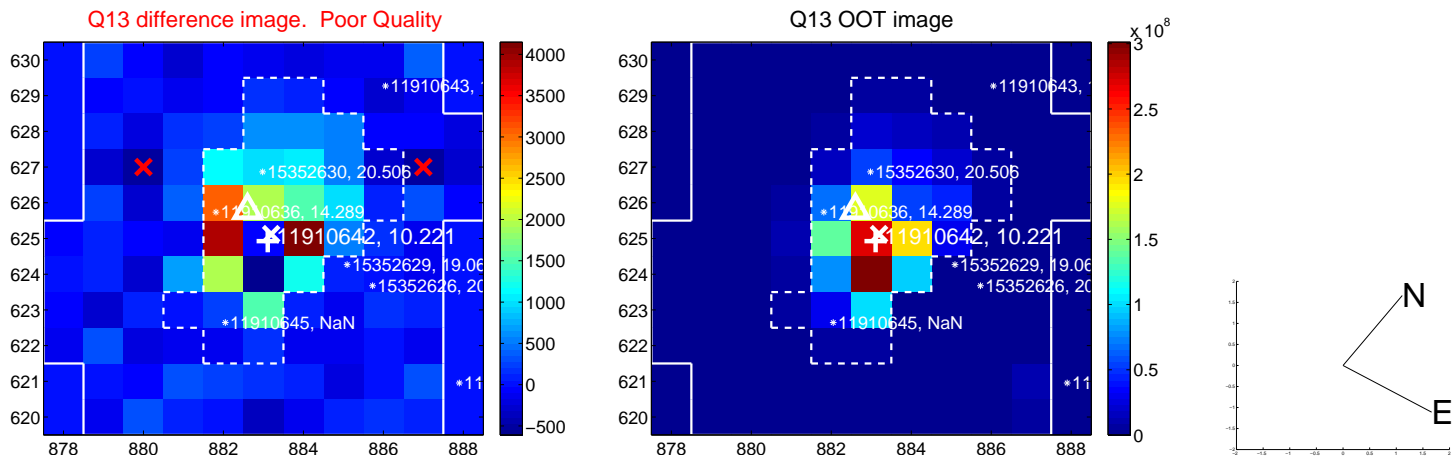




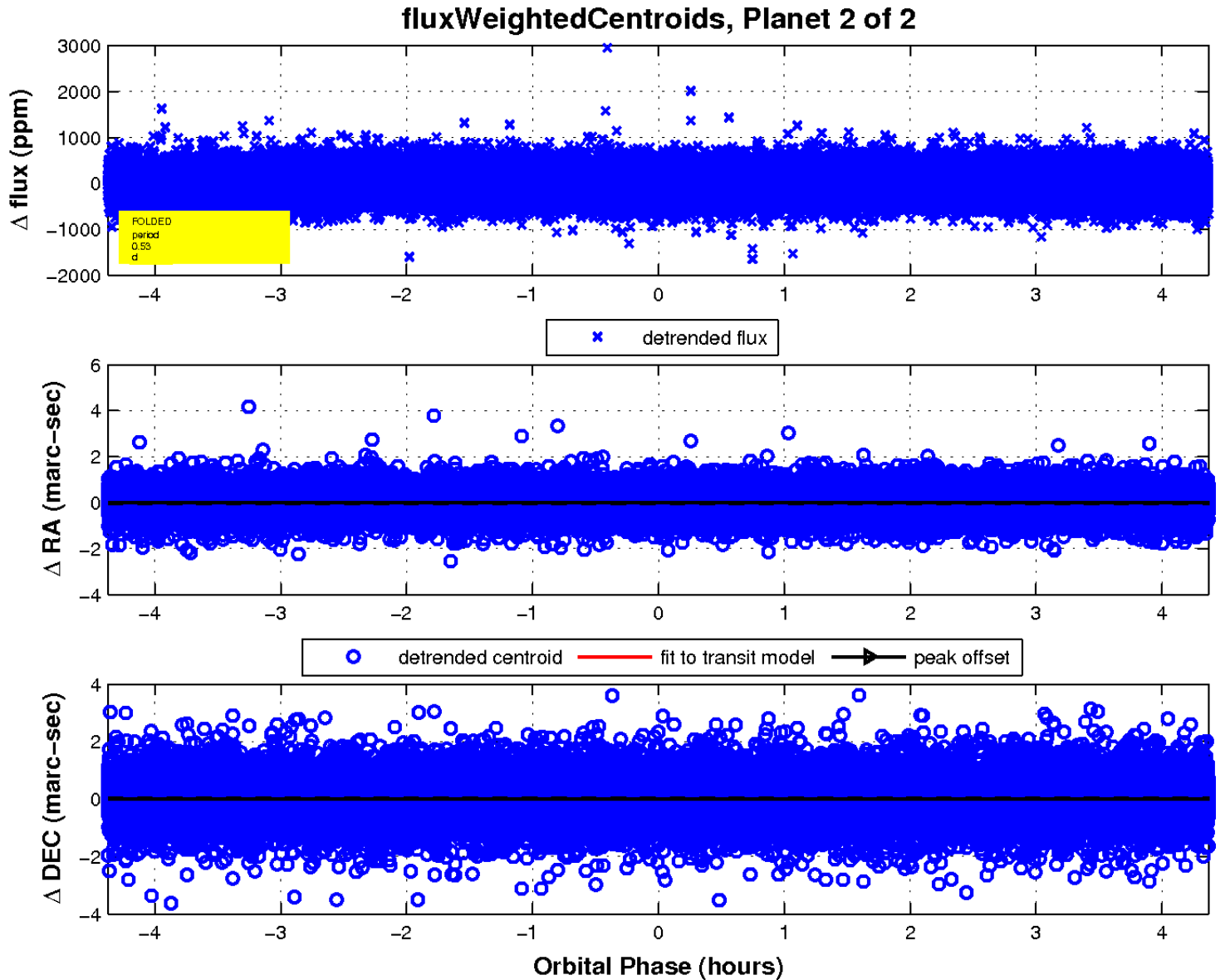
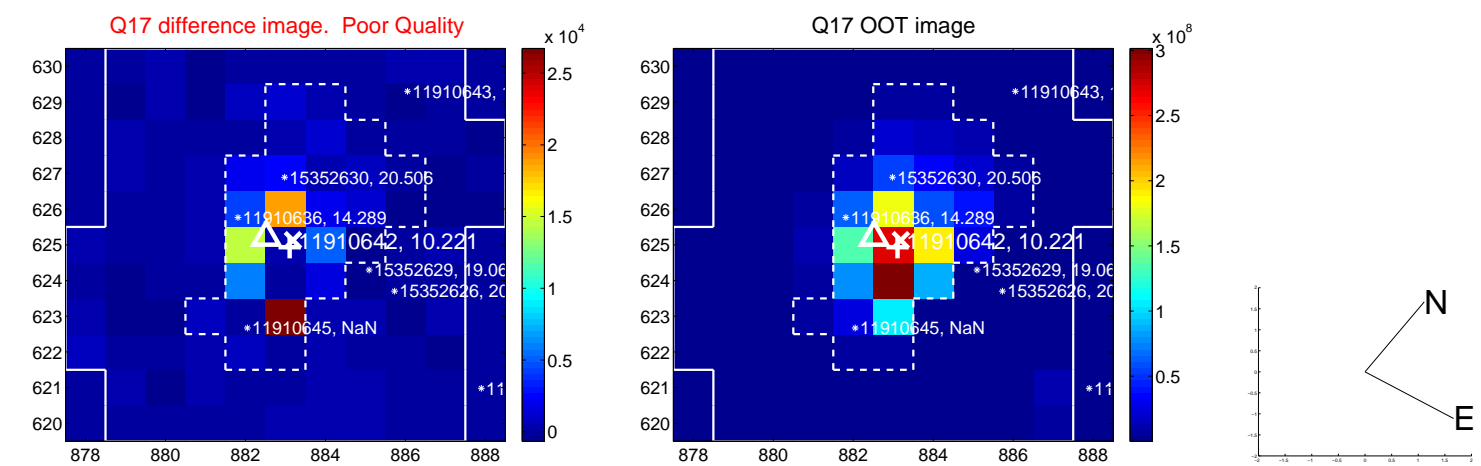
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

