

# KIC 008174306

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008174306-01	OBS	No	1.341188	131.561854	30.6	6.305	14.5	17.2	2.50	8007	1.42	25556.50
008174306-02	OBS	No	1.341203	132.230523	22.2	6.708	12.1	12.5	2.50	8007	1.19	25556.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008174306-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008174306-02	OBS	FP	0.00	1	0	0	0	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.

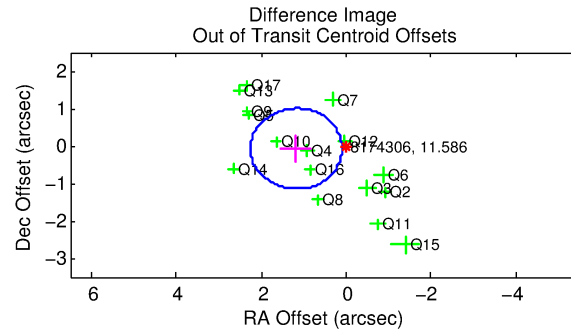
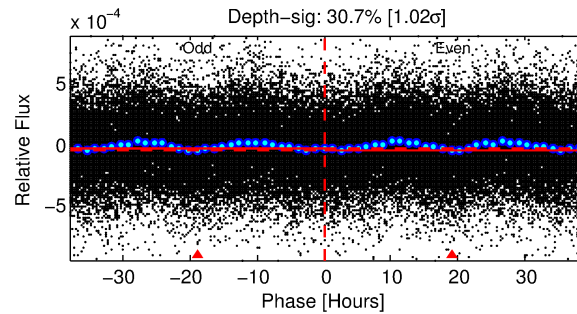
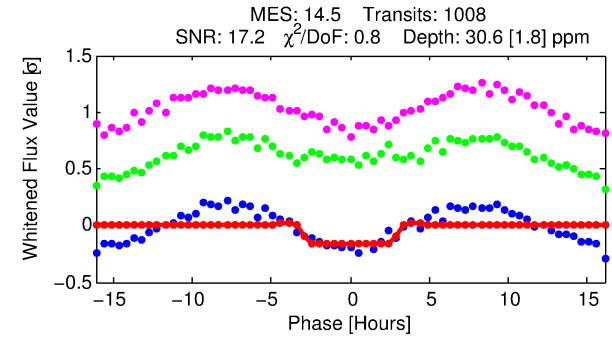
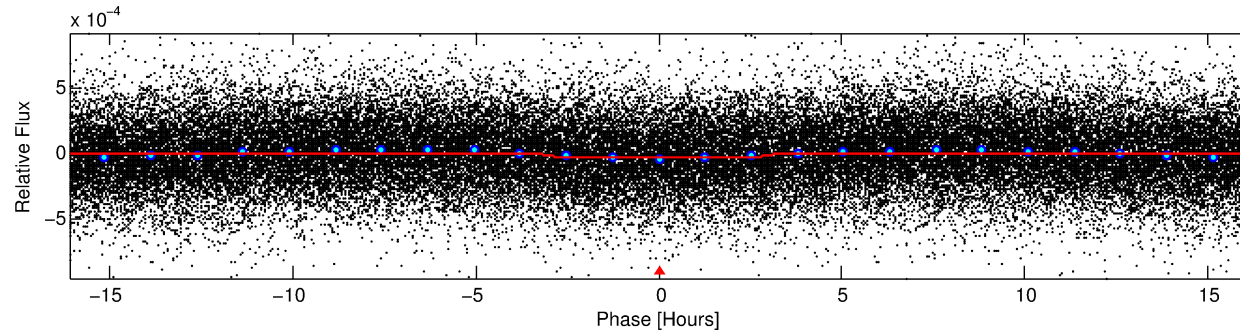
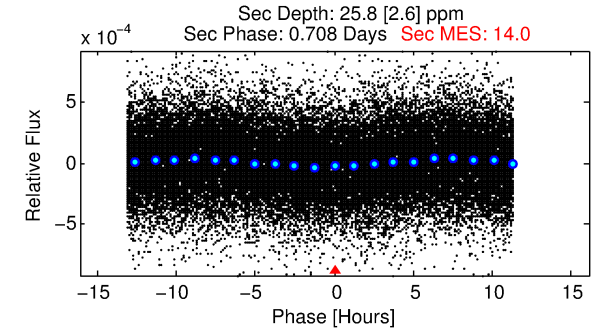
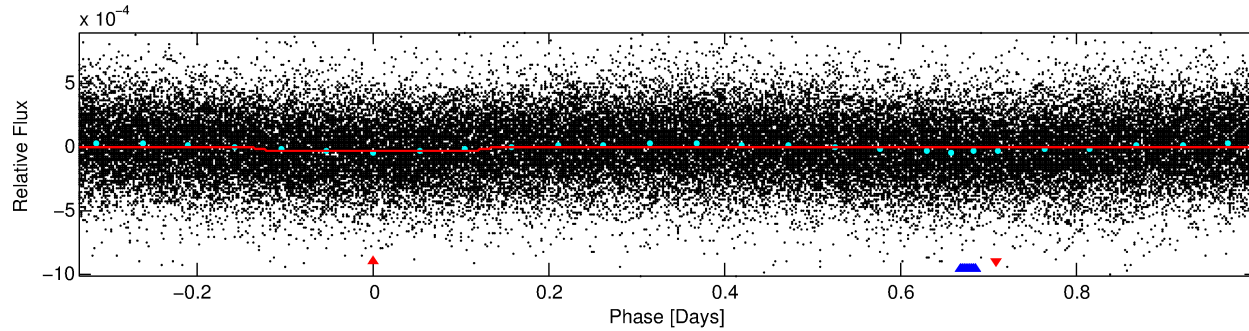
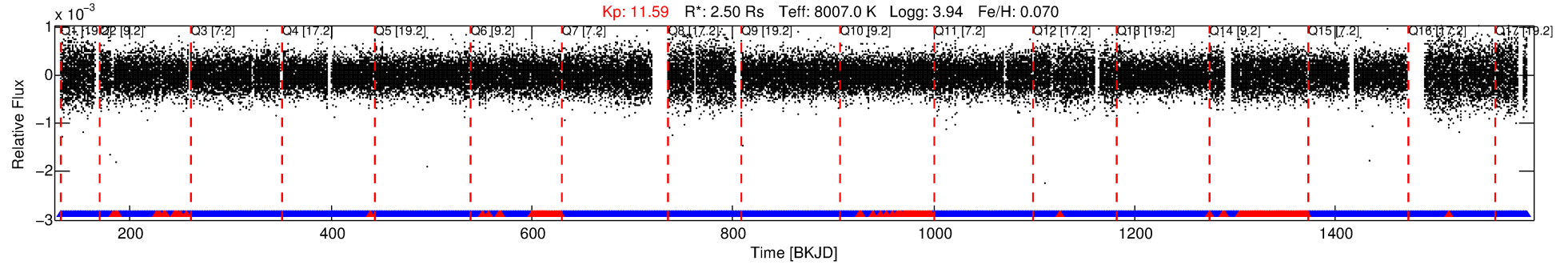
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008174306-01

No Significant Match Found

# DV One-Page Summary

KIC: 8174306 Candidate: 1 of 2 Period: 1.341 d



## DV Fit Results:

Period = 1.34119 [0.00001] d  
Epoch = 131.5619 [0.0037] BKJD  
Rp/R\* = 0.0052 [0.0020]  
a/R\* = 1.61 [2.17]  
b = 0.46 [3.74]  
Seff = 25556.50 [11968.42]  
Teq = 3224 [377] K  
Rp = 1.42 [0.69] Re  
a = 0.0300 [0.0084] AU  
Ag = 6.28 [5.52] [0.96σ]  
Teffp = 7890 [1540] K [2.94σ]

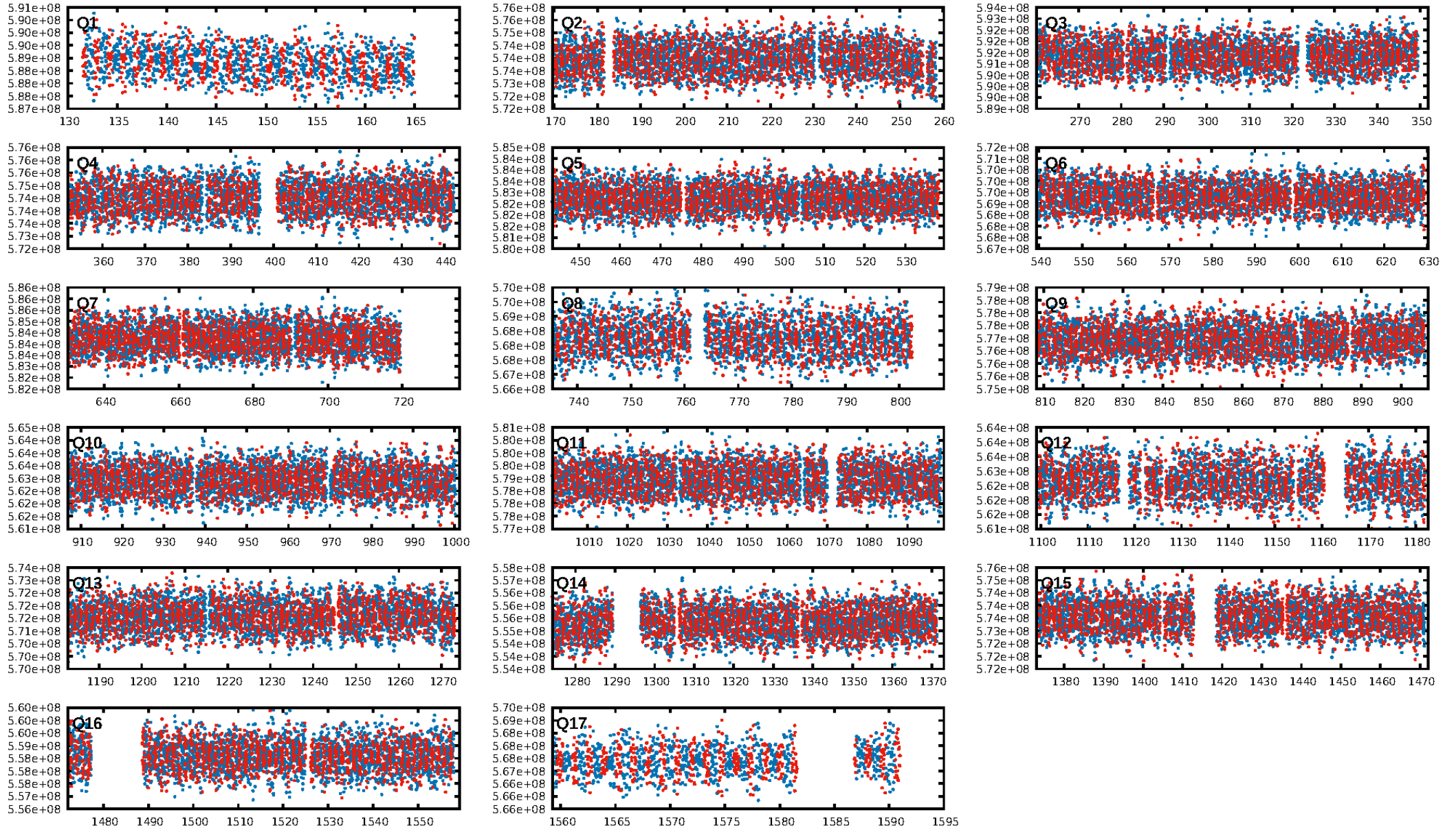
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.87 [834/961]  
GhostDiagnostic-chr: 8.897  
Centroid-sig: N/A  
Centroid-so: 0.216 arcsec [0.76σ]  
OotOffset-rm: 1.172 arcsec [3.27σ]  
KicOffset-rm: 1.259 arcsec [3.59σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.75 [12/16]  
DiffImageOverlap-fno: 0.88 [15/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 13:17:43 Z

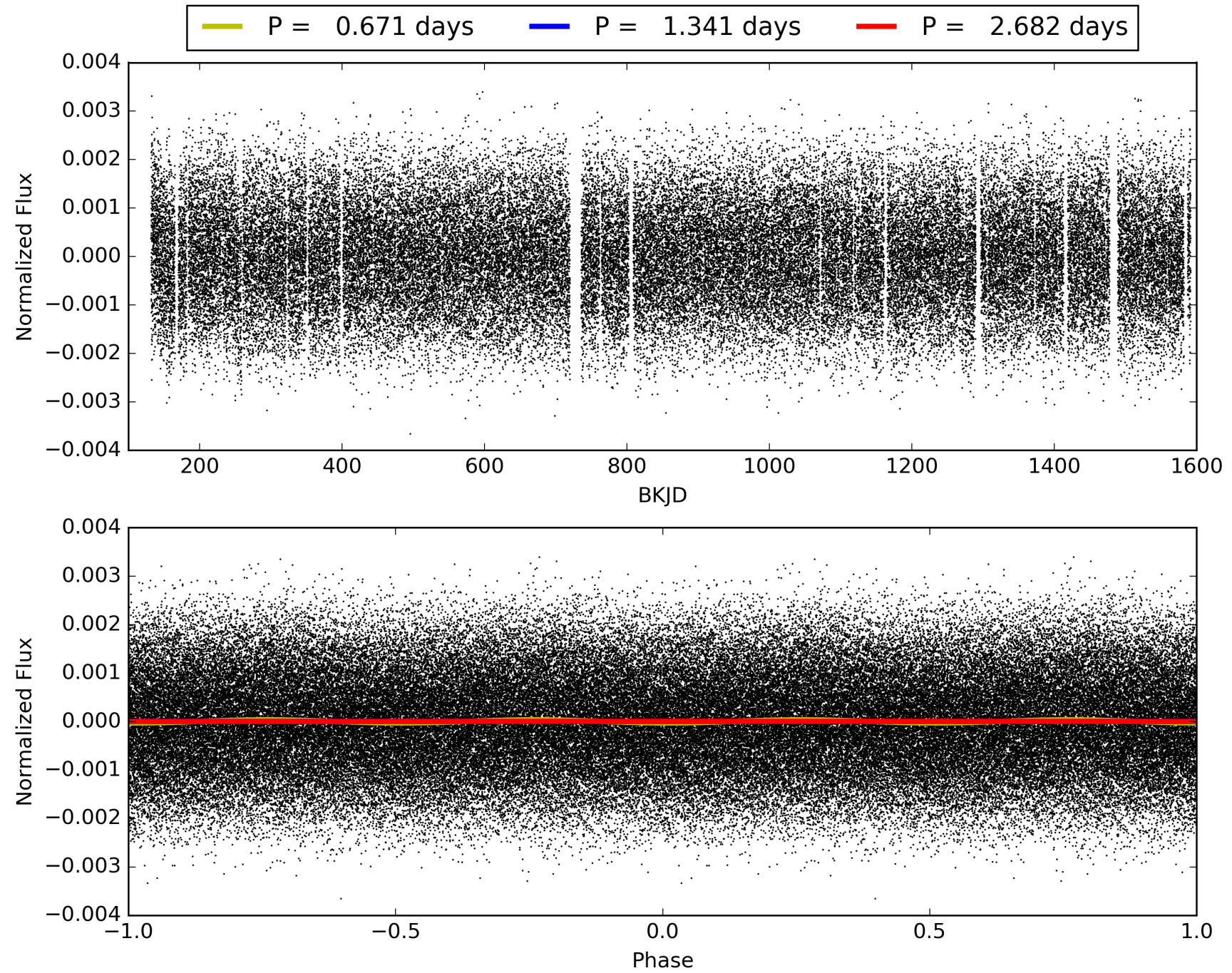
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008174306-01, PDC Light Curves



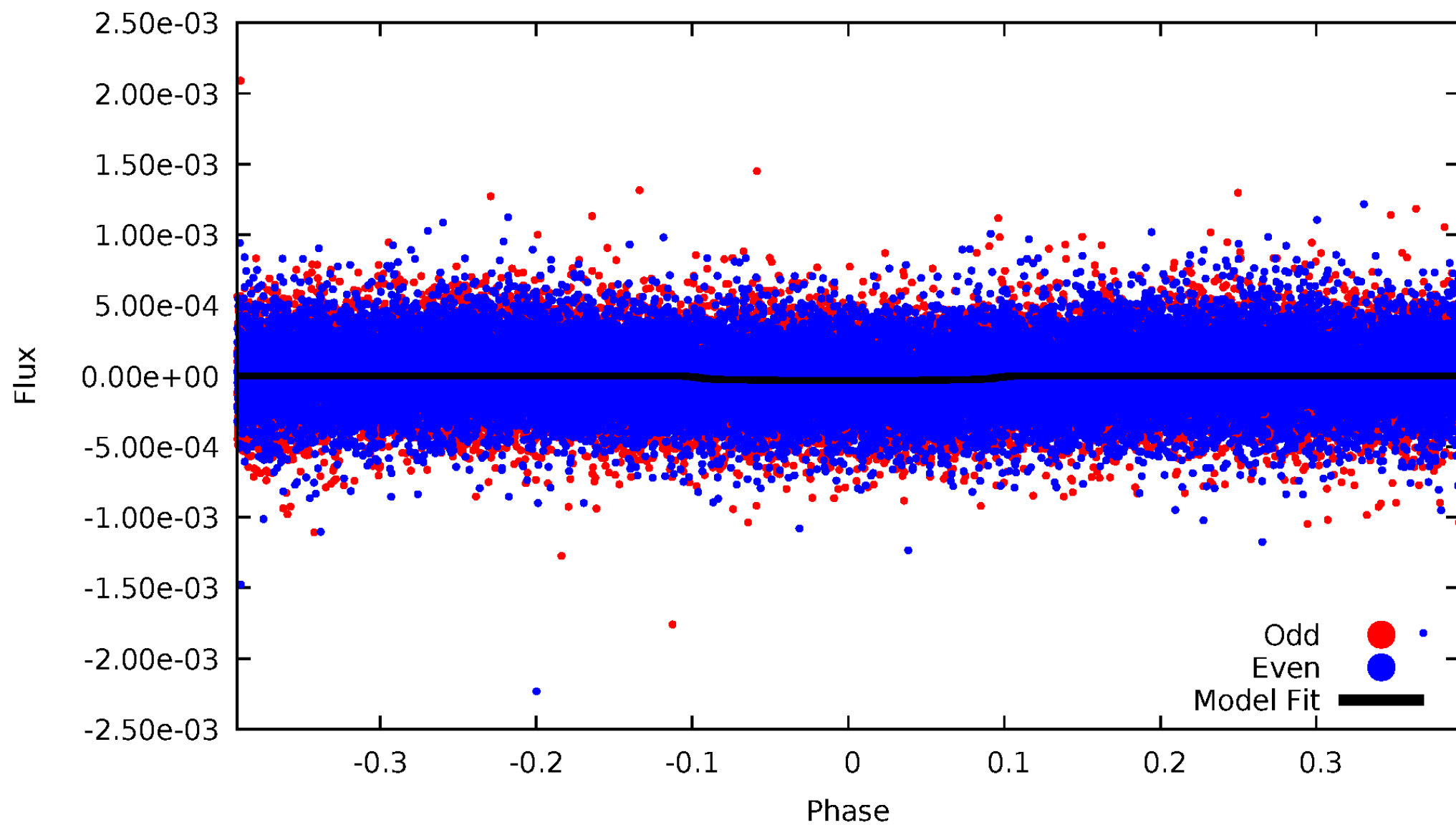


# TCE 008174306-01



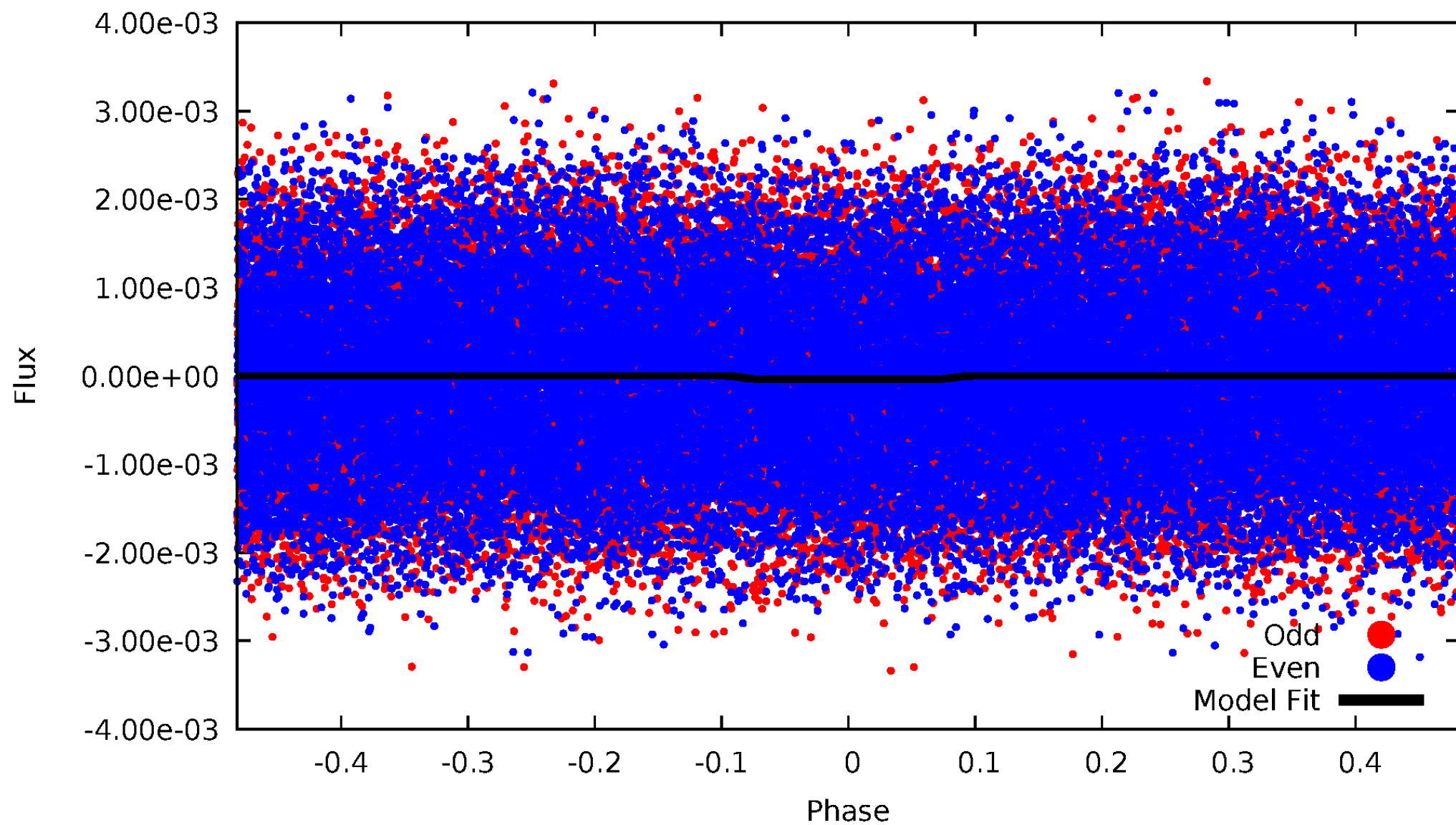
# DV Odd/Even

TCE 008174306-01



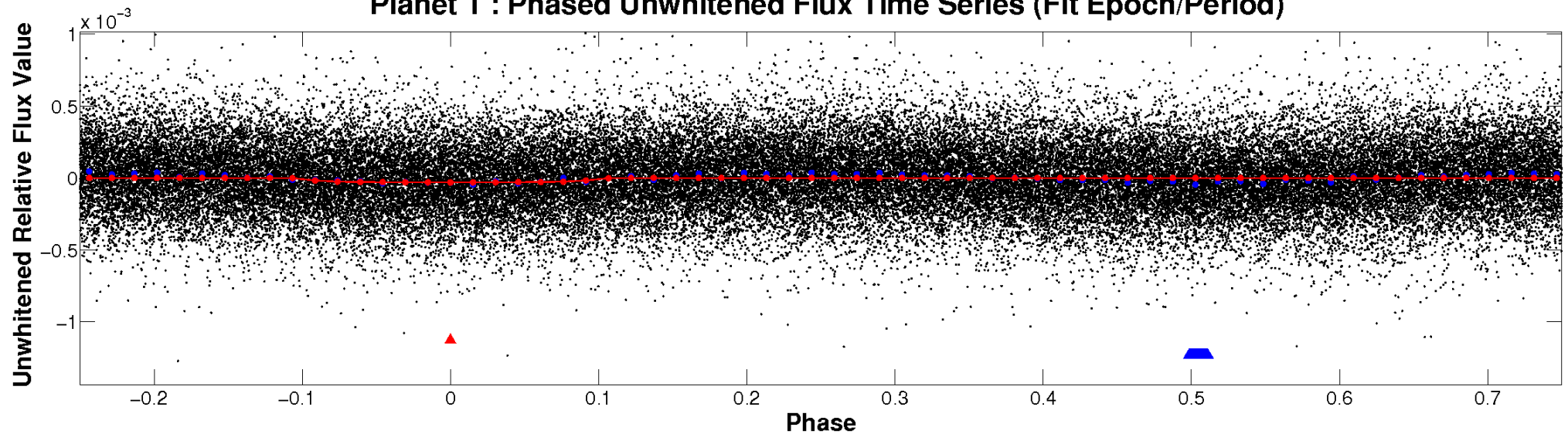
# ALT Odd/Even

TCE 008174306-01

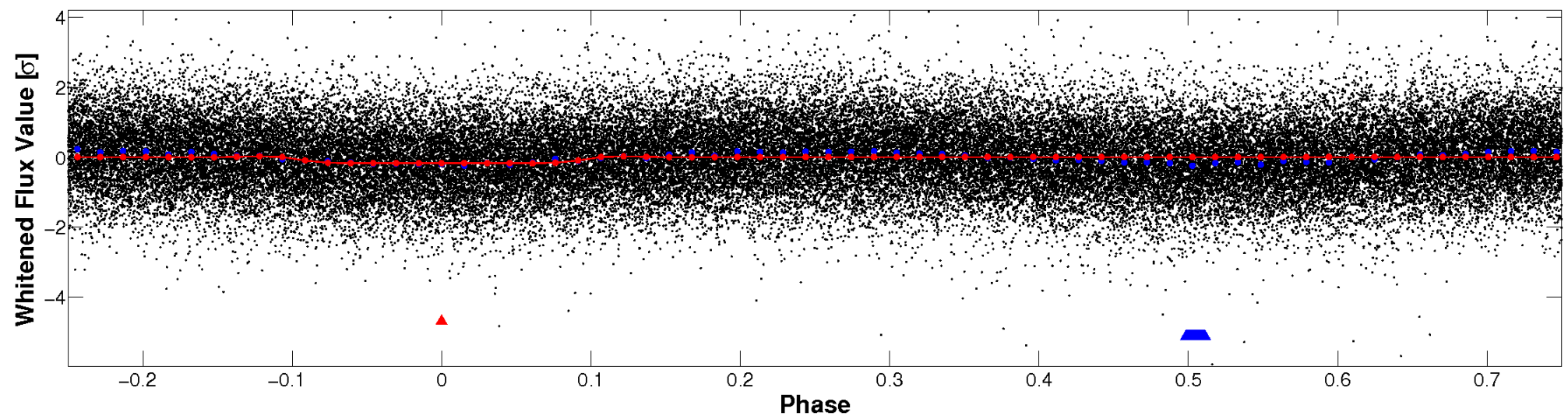


# Non-Whitened Vs. Whitened Light Curve

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



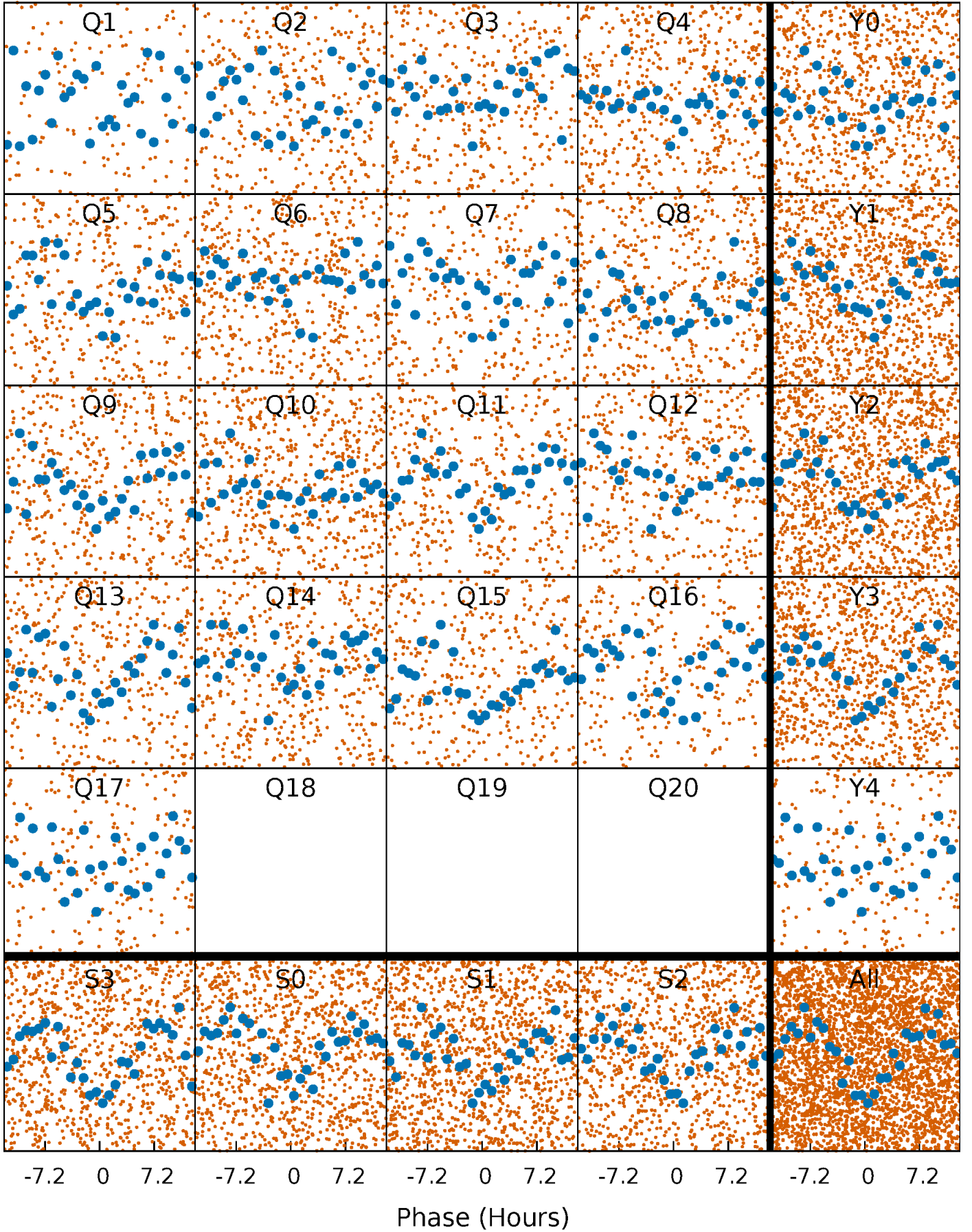
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

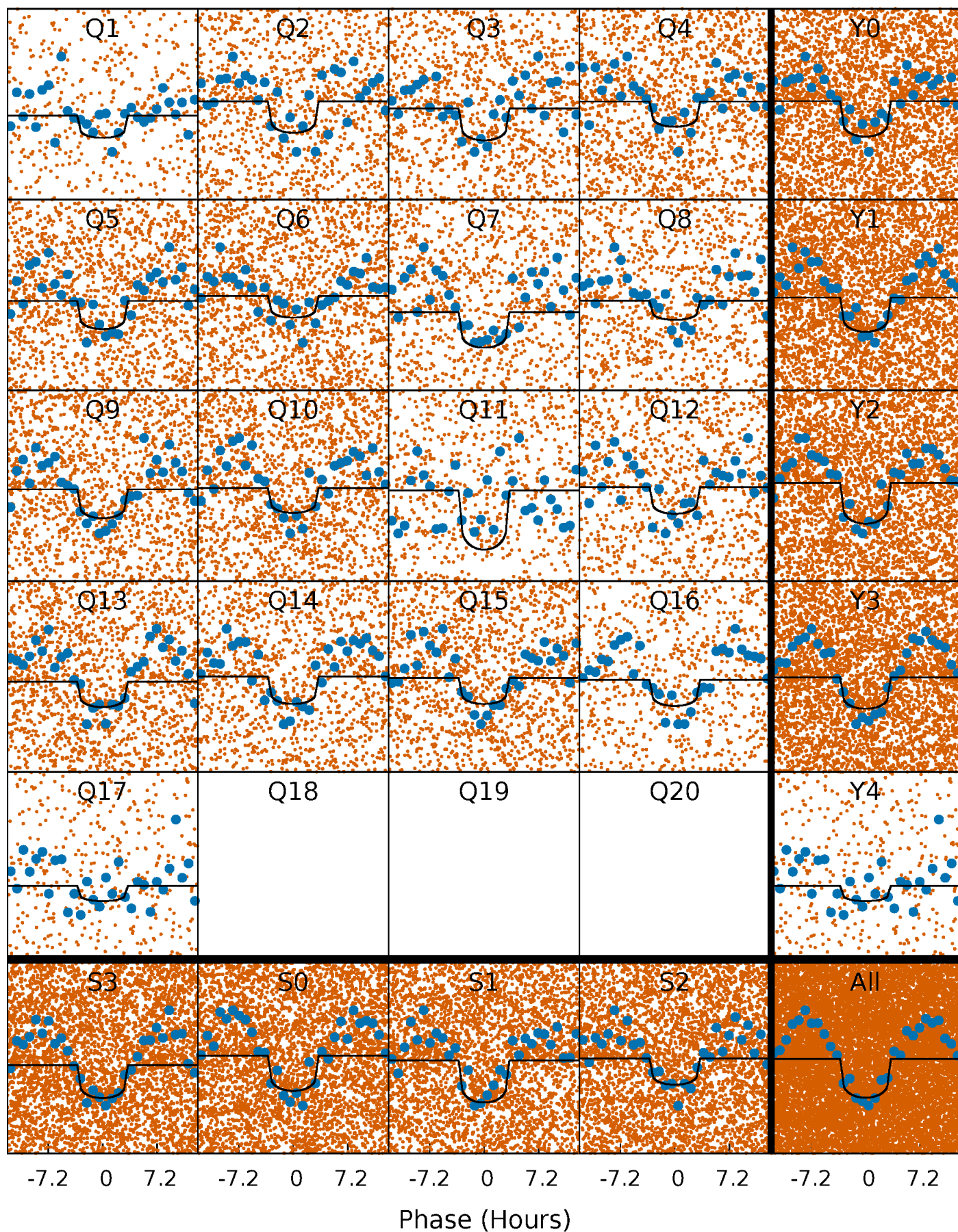
TCE 008174306-01 P= 1.341188 Days  $T_0=131.561854$  (BKJD)





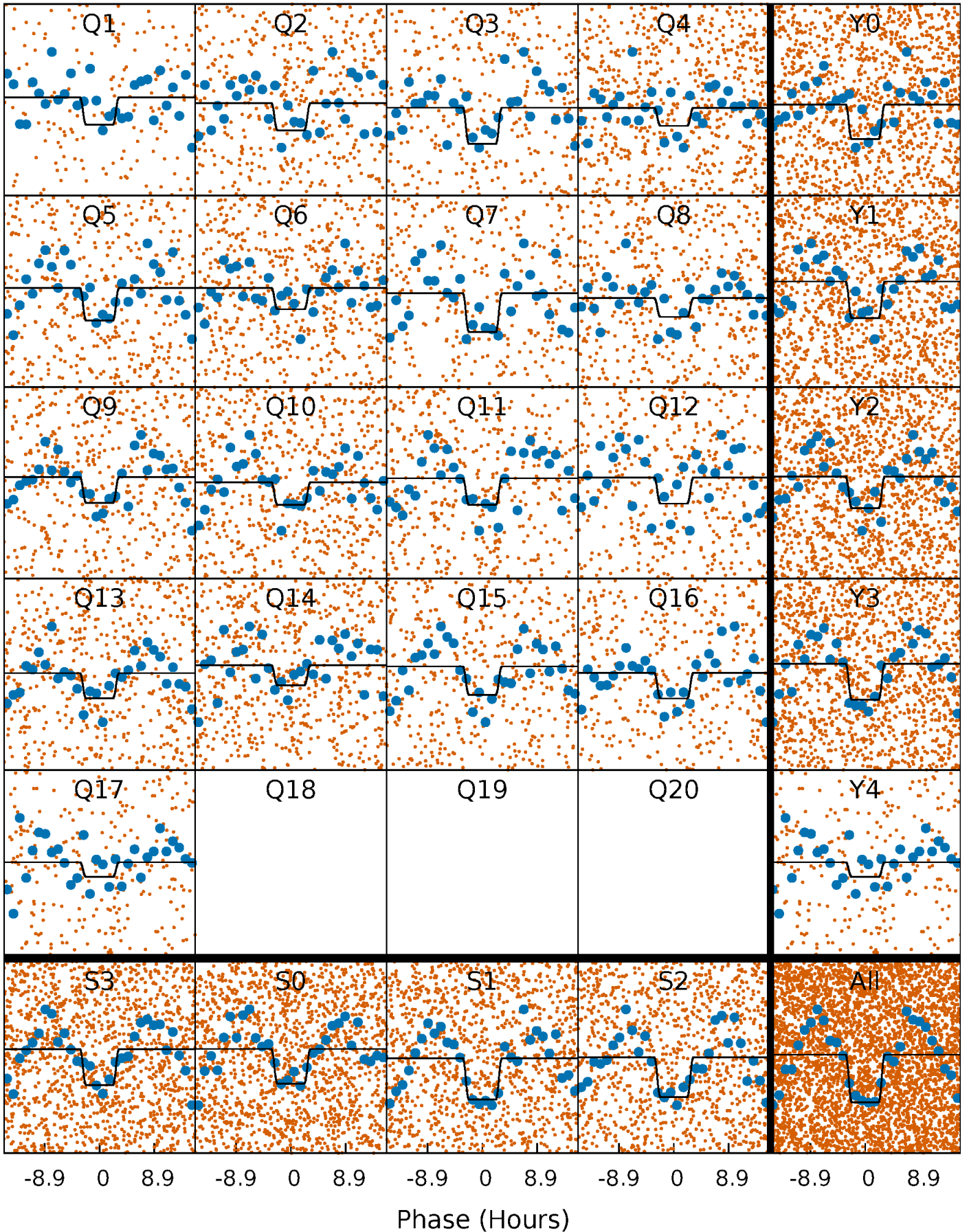
# DV Quarter-Phased Transit Curves

TCE 008174306-01 P= 1.341188 Days  $T_0=131.561854$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

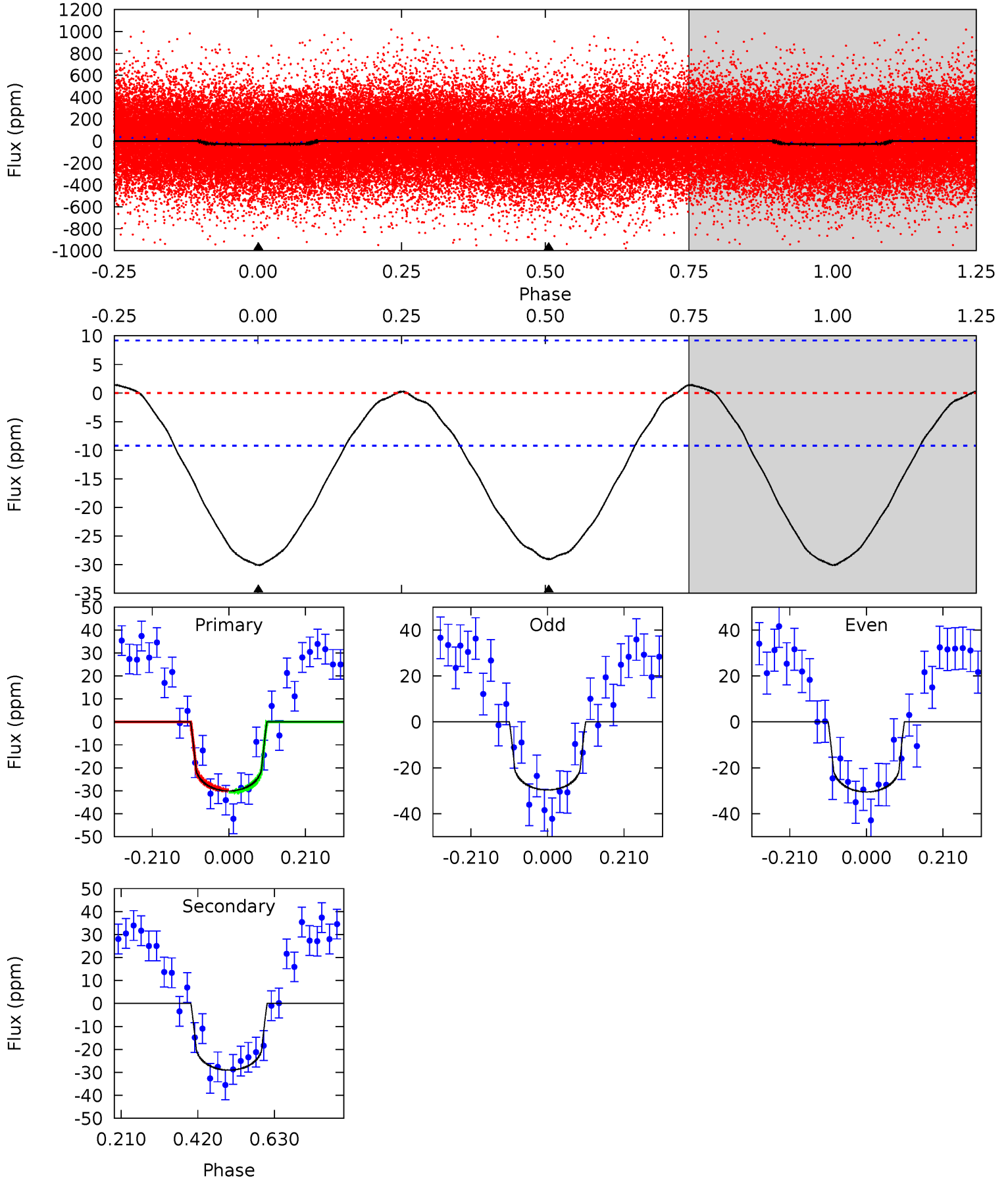
TCE 008174306-01 P= 1.341189 Days  $T_0=131.563556$  (BKJD)



# DV Model-Shift Uniqueness Test

008174306-01, P = 1.341188 Days, E = 130.220666 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
14.4	13.9	0	0	4.41	1.25	0.44	14.4	14.4	13.9	13.9	0.20	0.94	0.04	0.24

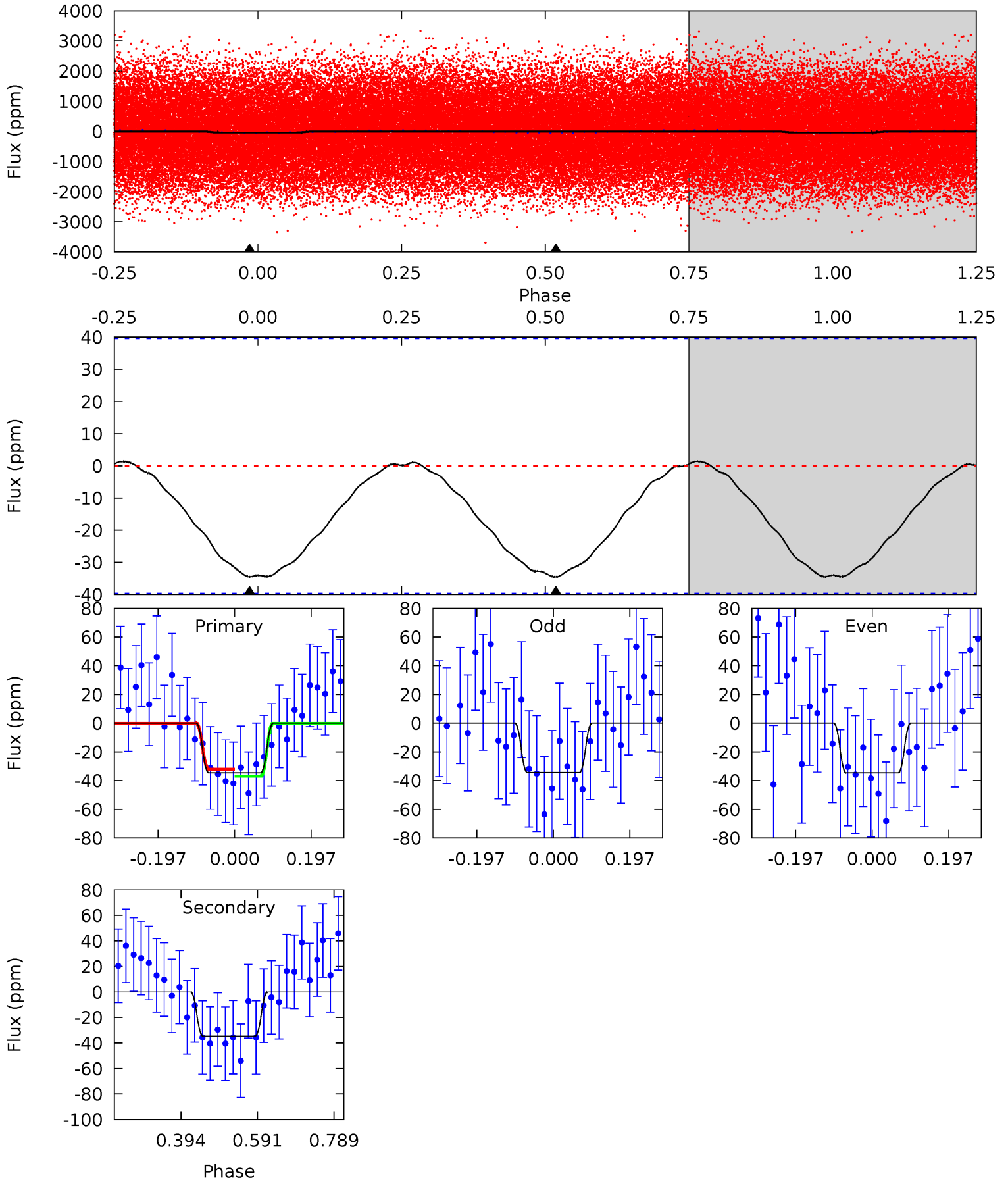




# Alt Model-Shift Uniqueness Test

008174306-01, P = 1.341189 Days, E = 130.222367 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
3.84	3.84	0	0	4.42	1.29	0.19	3.84	3.84	3.84	3.84	0.01	0.84	0.04	0.27





### Stellar Parameters For KIC 008174306

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8007^{+222}_{-333}$	$3.943^{+0.252}_{-0.126}$	$0.070^{+0.200}_{-0.450}$	$2.495^{+0.447}_{-0.767}$	$1.993^{+0.292}_{-0.437}$	$0.181^{+0.265}_{-0.070}$
	+3%/-4%	+6%/-3%	+286%/-643%	+18%/-31%	+15%/-22%	+147%/-39%
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 008174306-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-29 \pm 2$	$1.33^{+0.63}_{-0.50}$	$4434^{+288}_{-341}$	$8103^{+3519}_{-1521}$	$8.049^{+13.572}_{-4.188}$
Alt.	$-35 \pm 9$	$1.62^{+0.59}_{-0.51}$	$4461^{+282}_{-383}$	$7540^{+2298}_{-1287}$	$6.131^{+8.137}_{-2.973}$

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

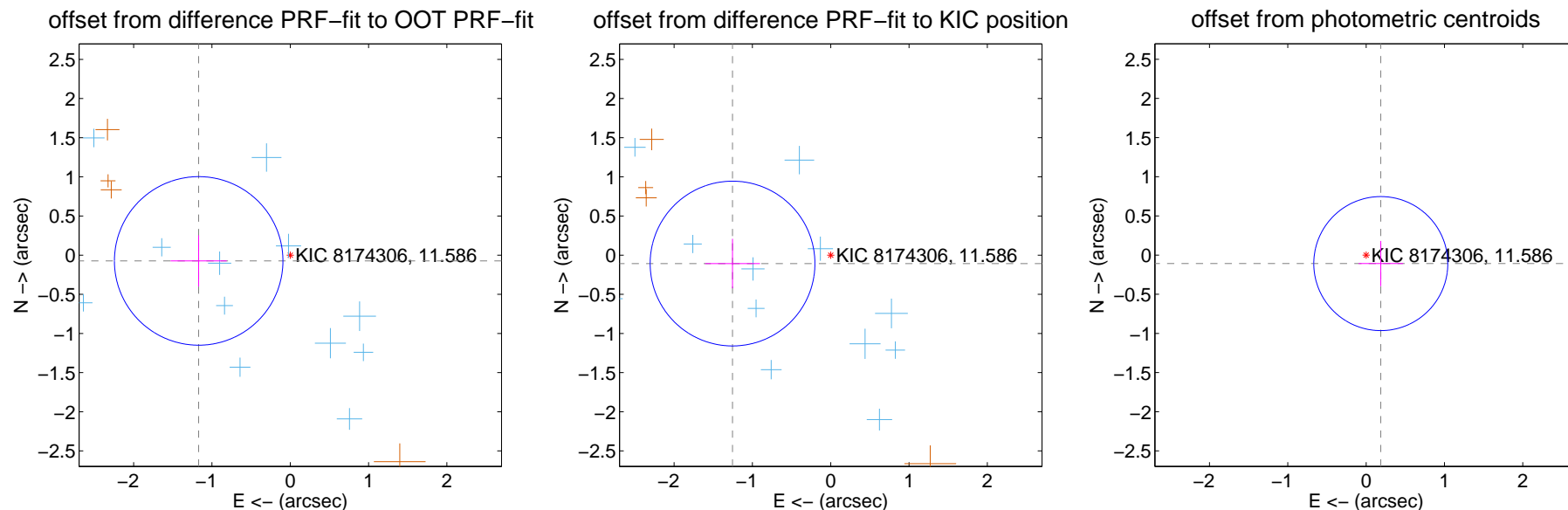
## DV Centroid Data

Supplemental centroid analysis for 008174306-01. **Kepler magnitude: 11.59.** Transit SNR 17.20

There are 12 quarters with good PRF difference image offsets

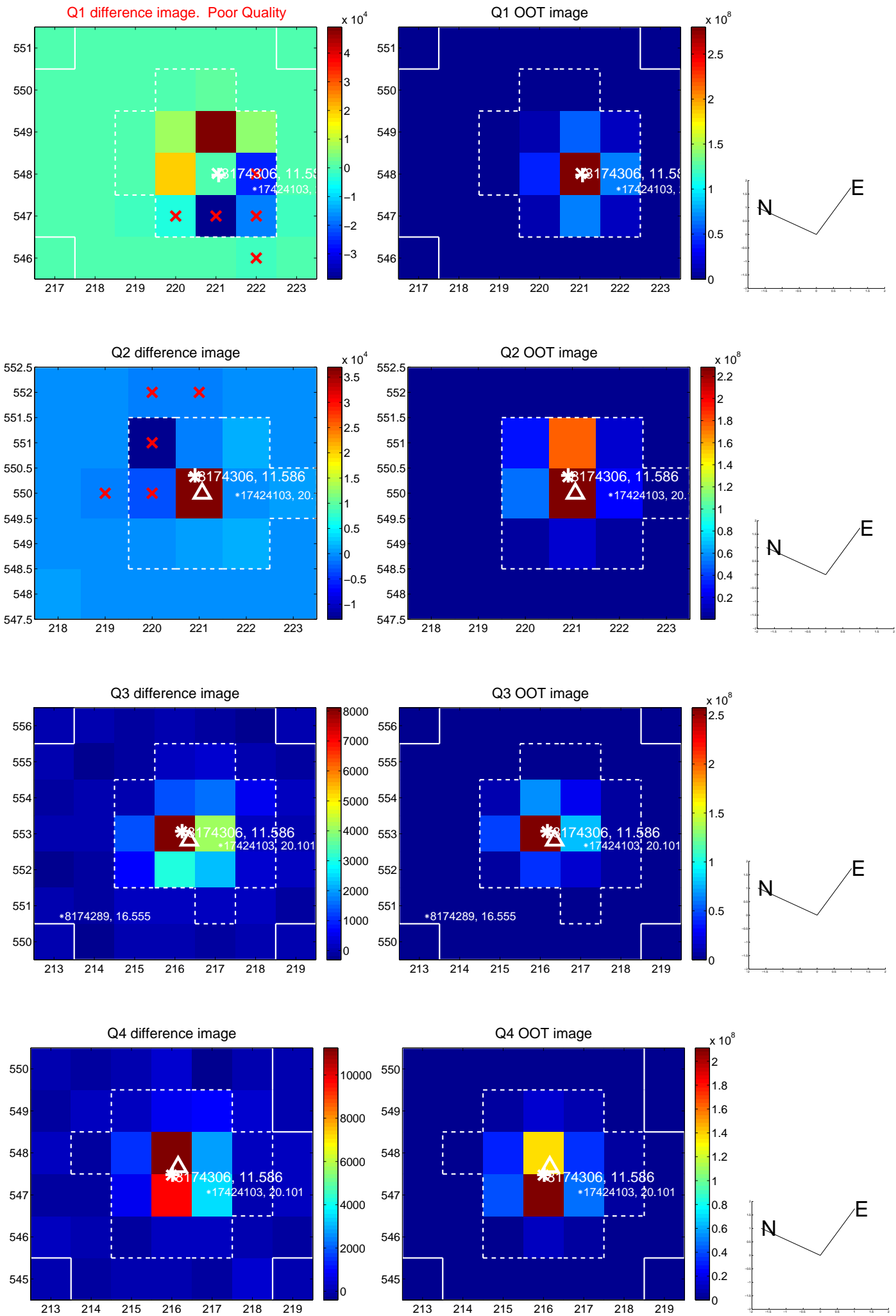
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>1.172 \pm 0.359</math></b>	<b>3.27</b>	$1.170 \pm 0.359$	$-0.074 \pm 0.327$
PRF-fit source offset from KIC position	<b><math>1.259 \pm 0.351</math></b>	<b>3.59</b>	$1.254 \pm 0.351$	$-0.107 \pm 0.316$
photometric centroid source offset	$0.22 \pm 0.29$	0.76	$-0.19 \pm 0.28$	$-0.11 \pm 0.29$

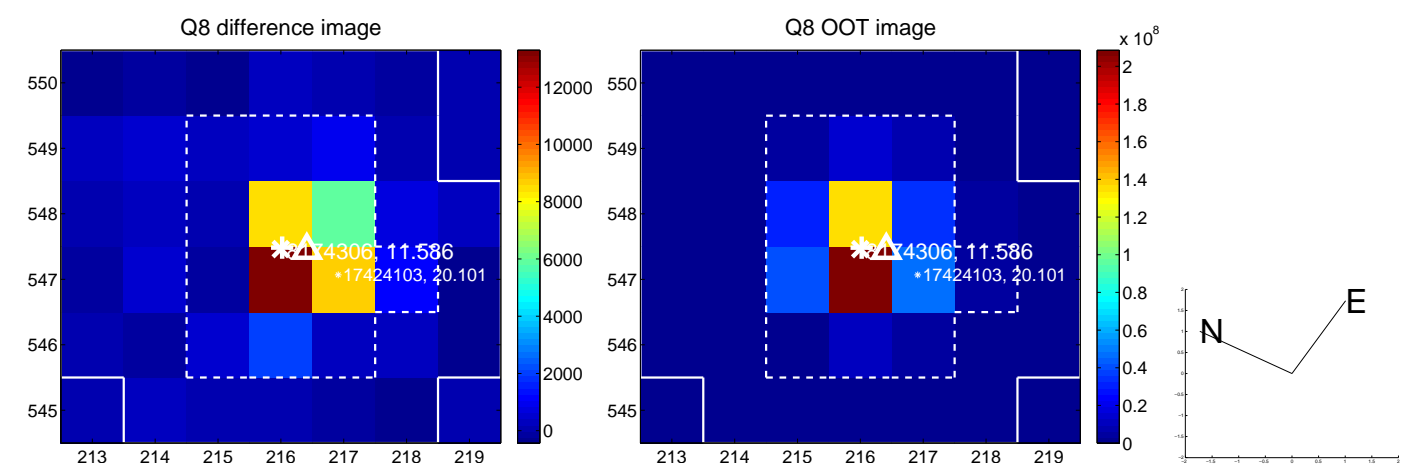
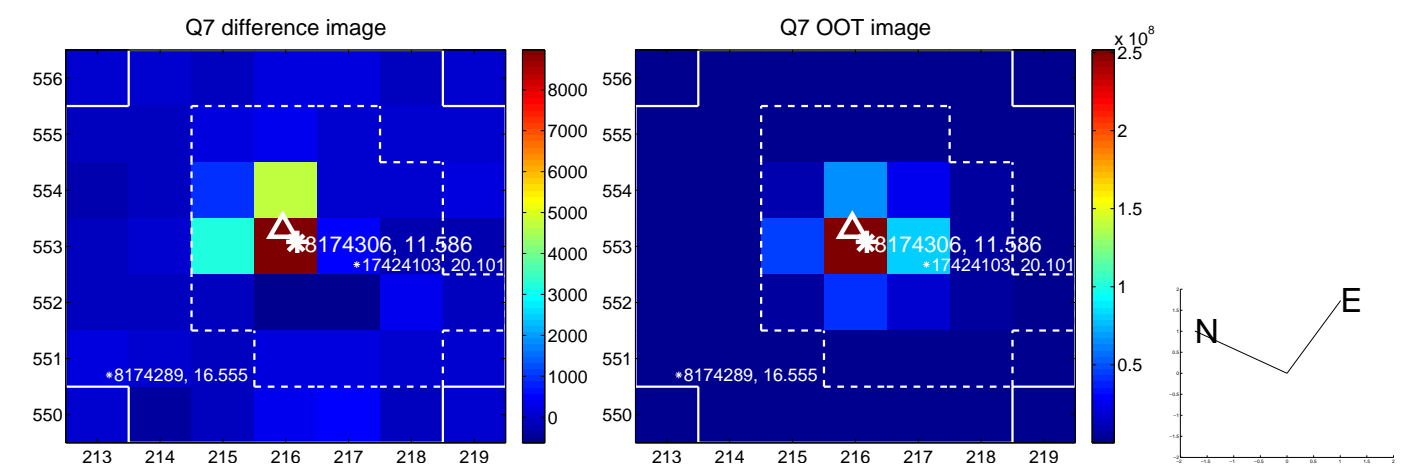
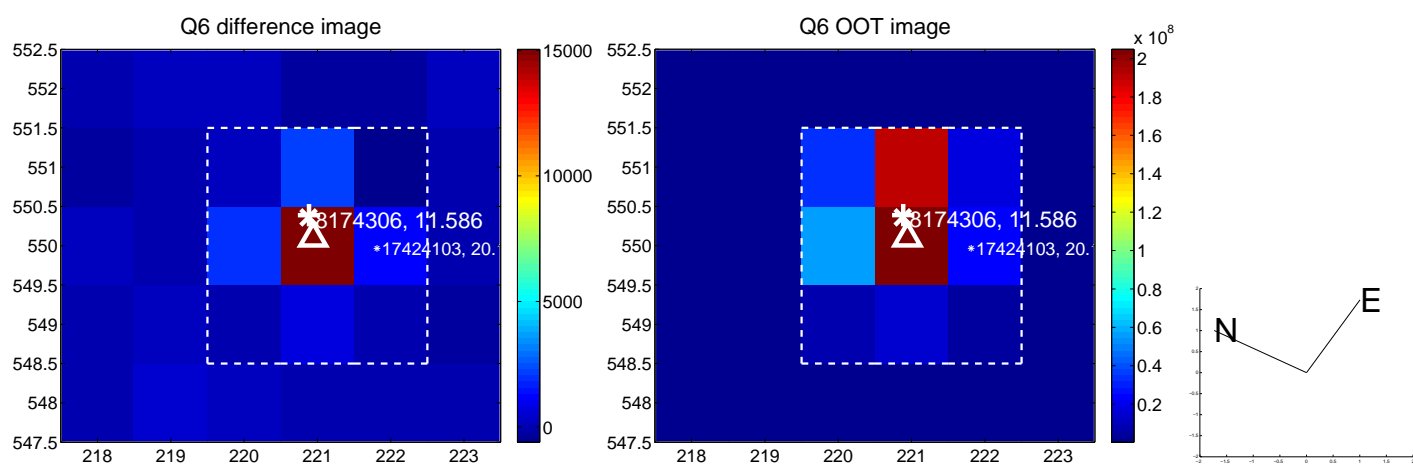
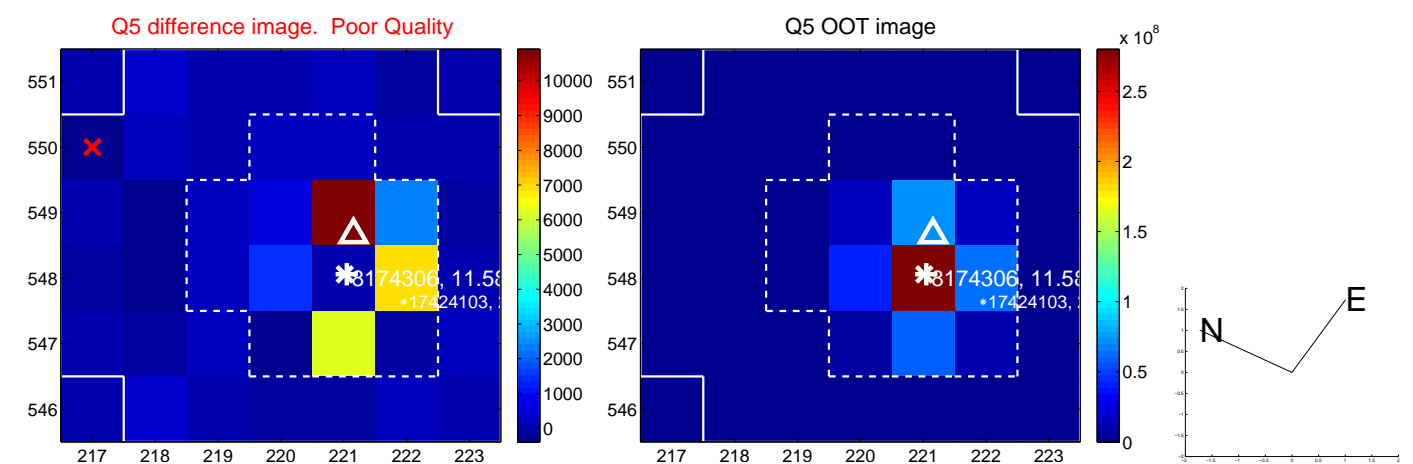


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

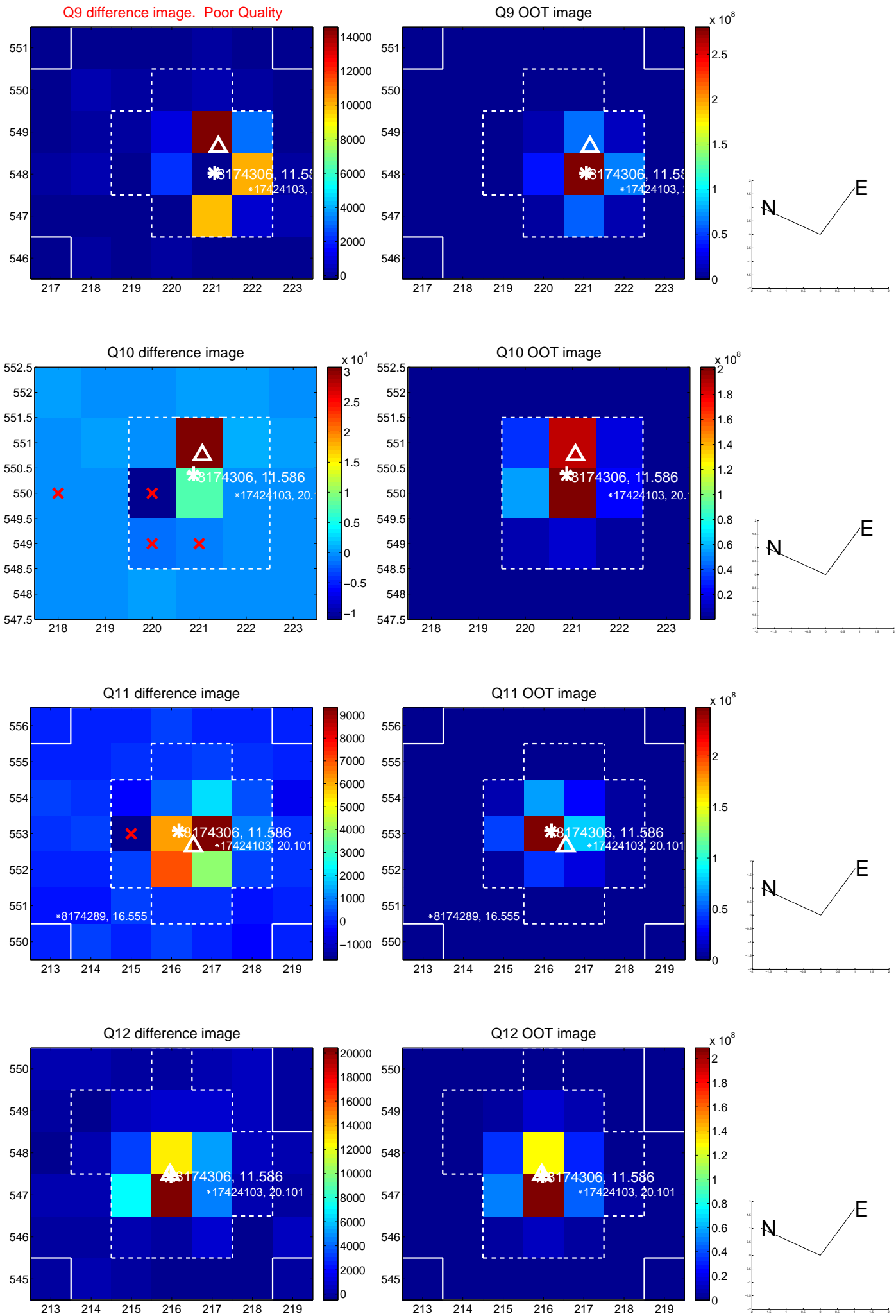


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

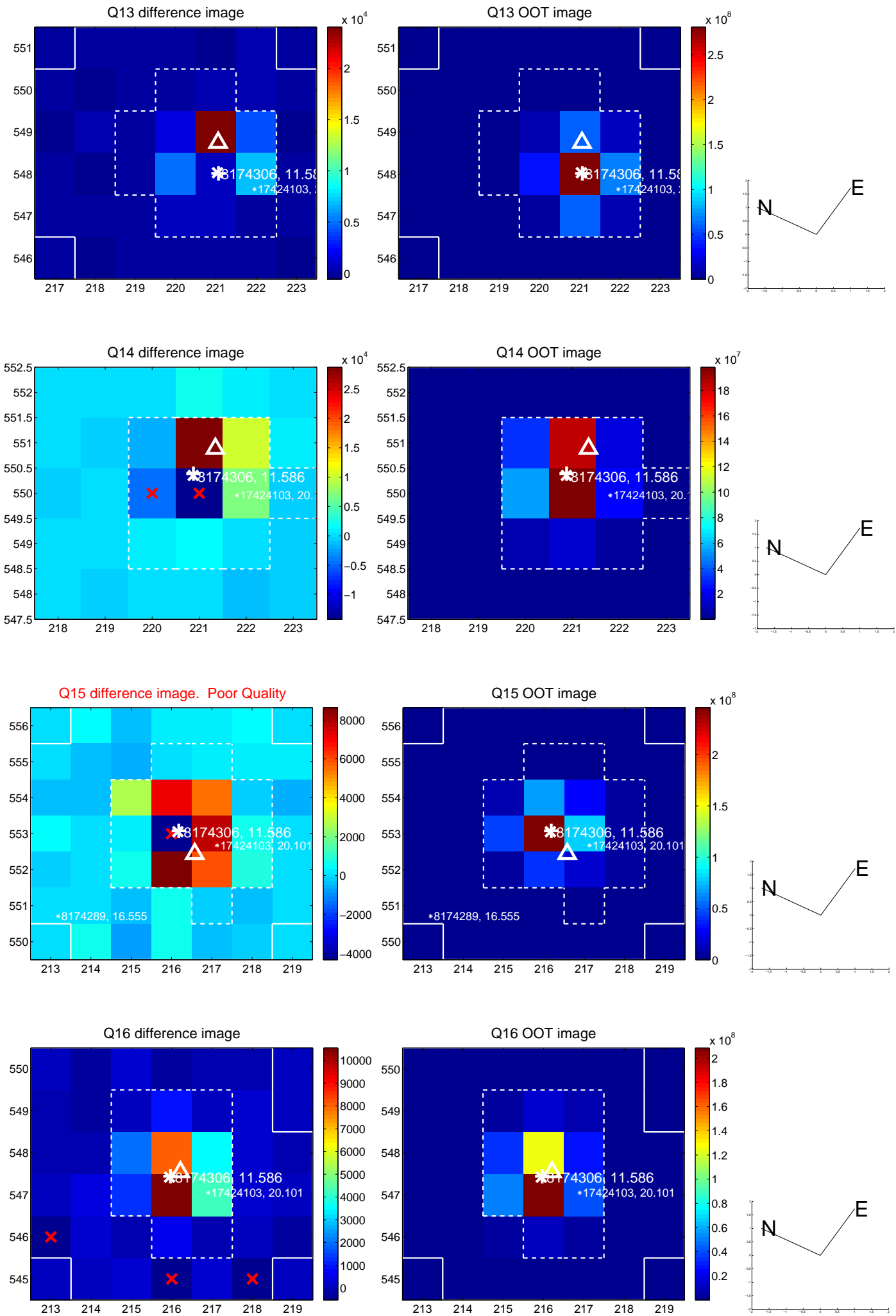




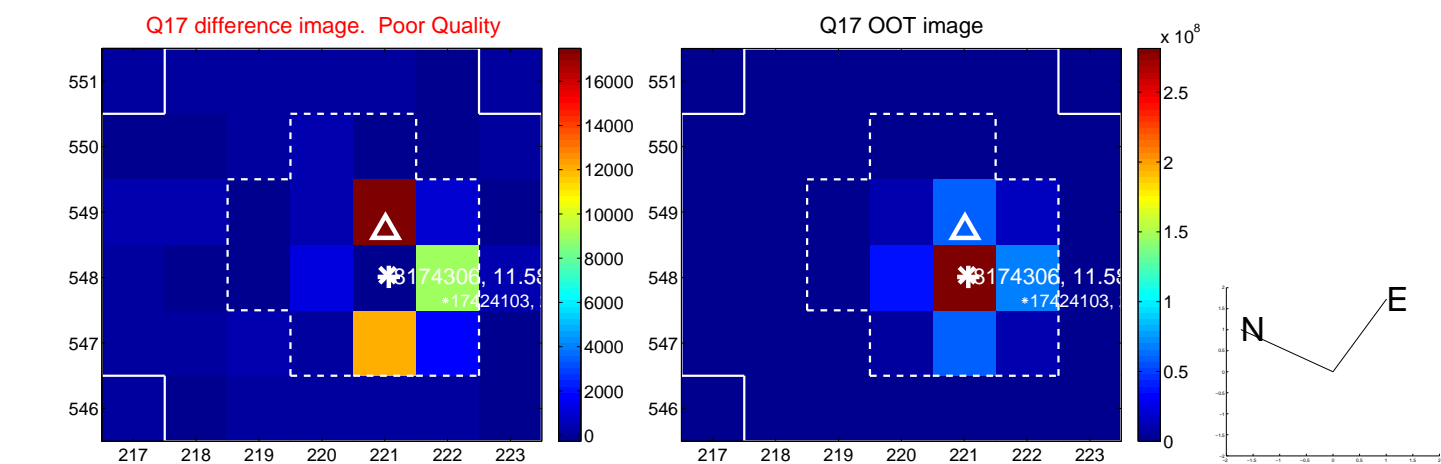
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



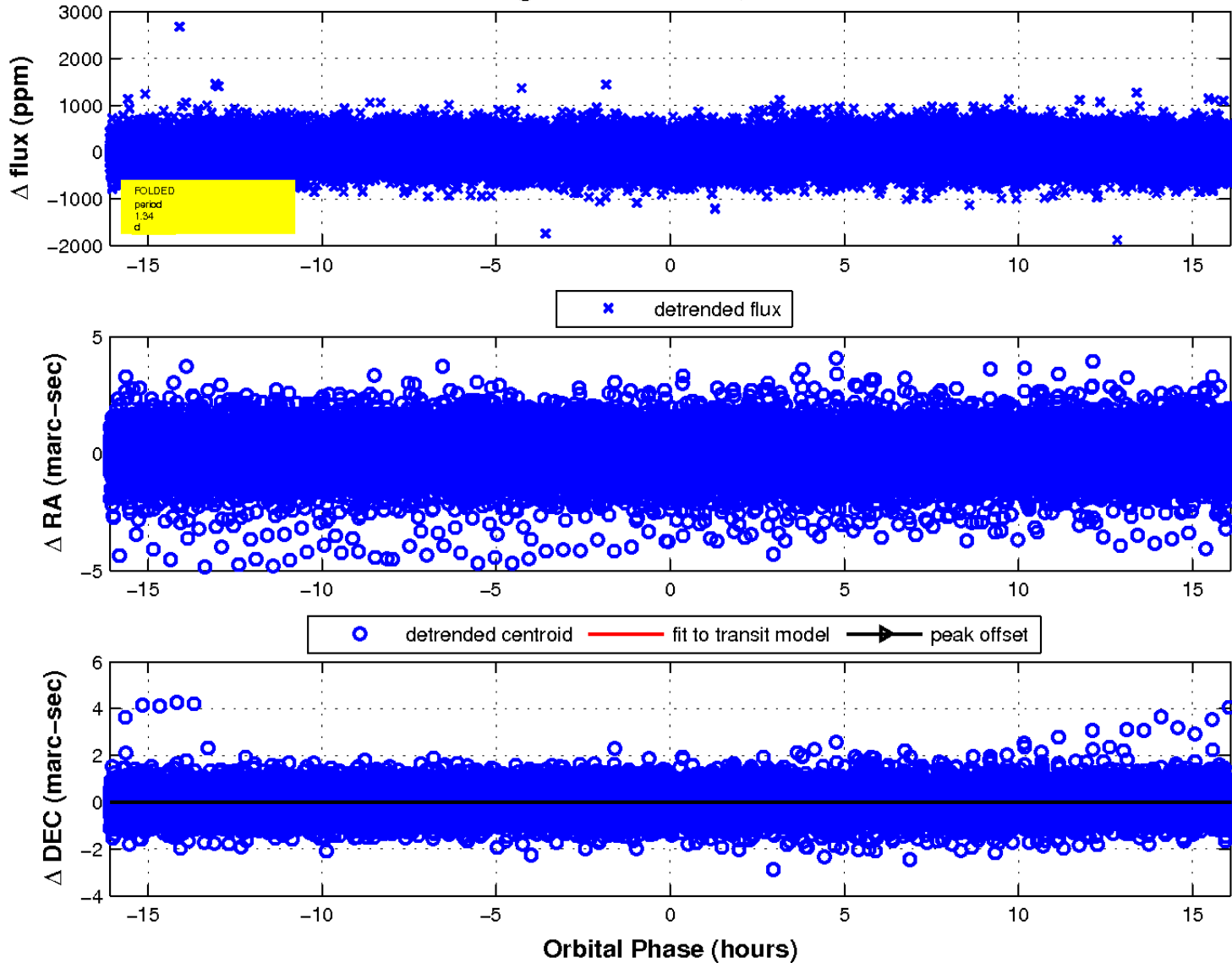
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

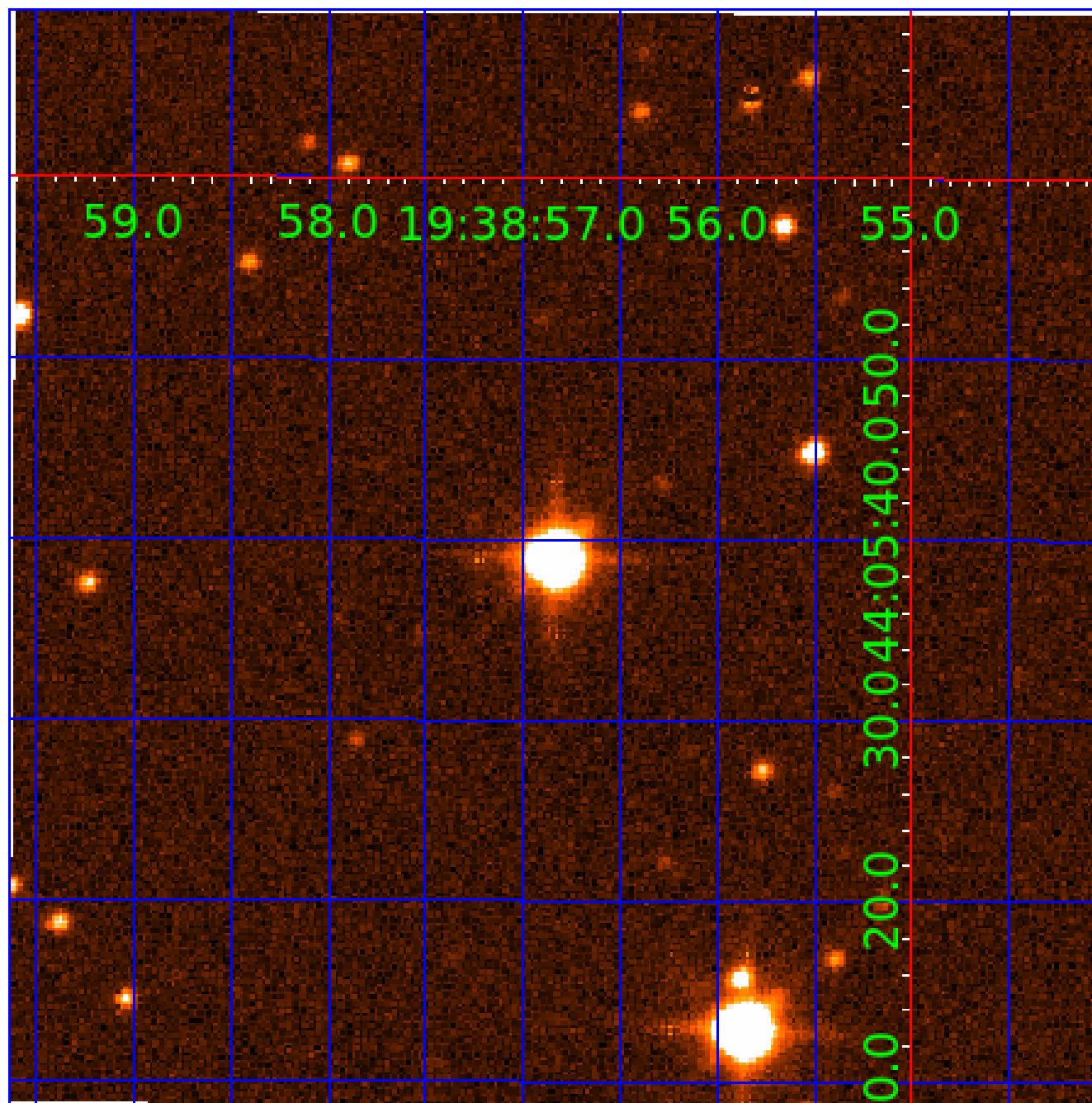


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination





# KIC 008174306

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008174306-01	OBS	No	1.341188	131.561854	30.6	6.305	14.5	17.2	2.50	8007	1.42	25556.50
008174306-02	OBS	No	1.341203	132.230523	22.2	6.708	12.1	12.5	2.50	8007	1.19	25556.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008174306-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
008174306-02	OBS	FP	0.00	1	0	0	0	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.

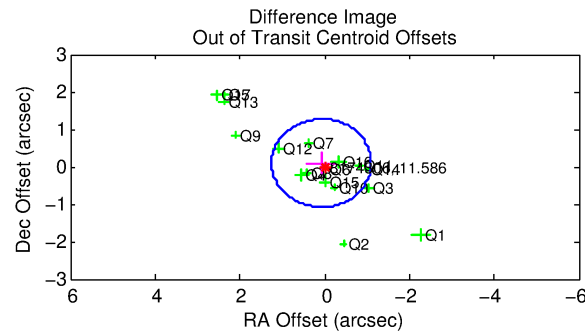
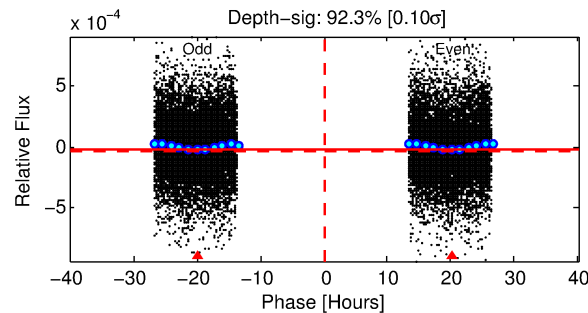
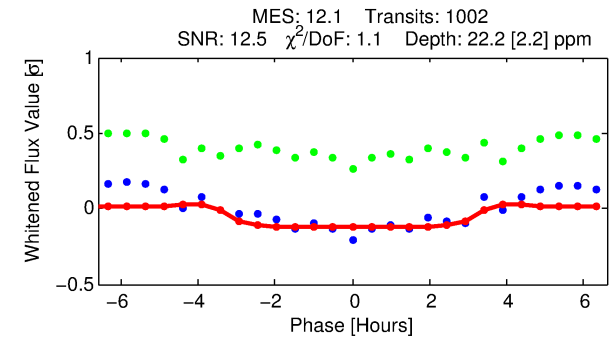
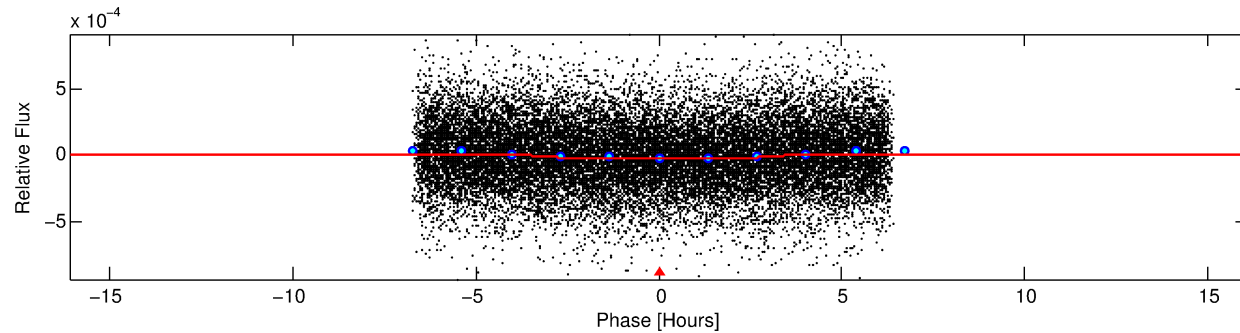
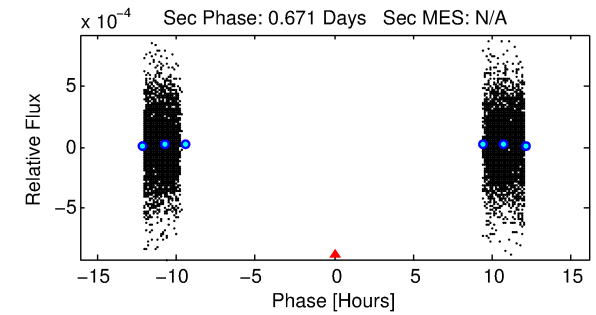
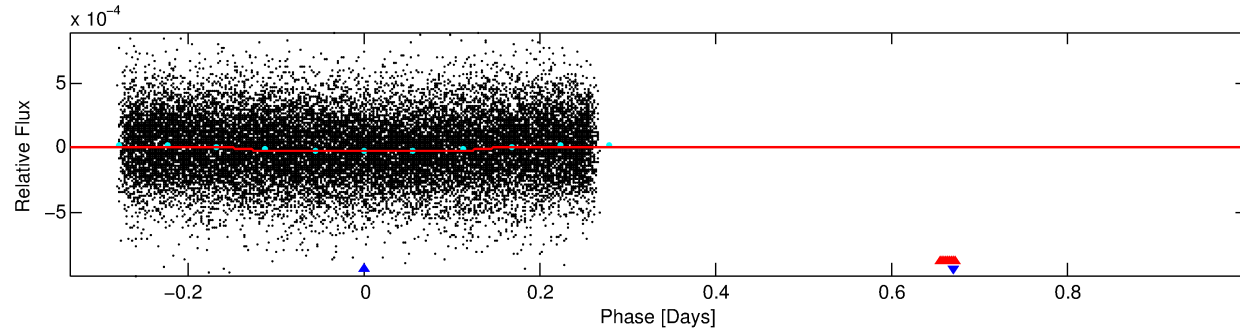
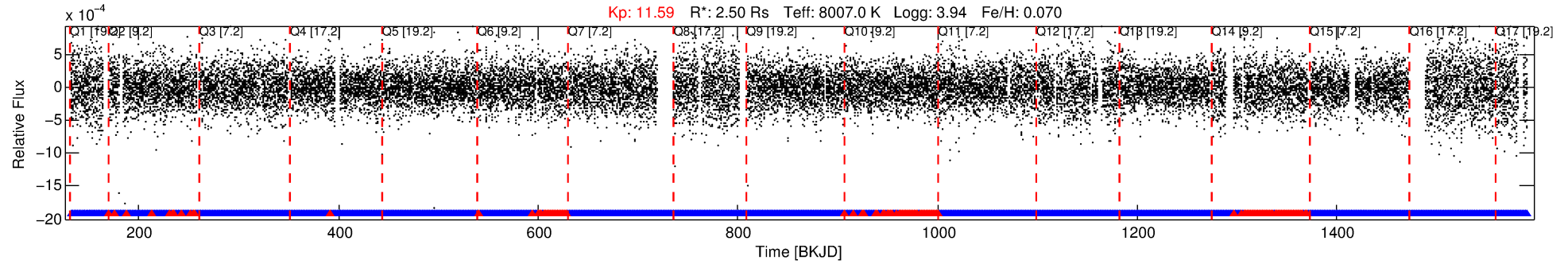
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008174306-02

No Significant Match Found

# DV One-Page Summary

KIC: 8174306 Candidate: 2 of 2 Period: 1.341 d



## DV Fit Results:

Period = 1.34120 [0.00002] d  
Epoch = 132.2305 [0.0063] BKJD  
Rp/R\* = 0.0044 [0.0063]  
a/R\* = 1.65 [8.74]  
b = 0.02 [379.03]  
Seff = 25556.10 [11968.24]  
Teq = 3224 [377] K  
Rp = 1.19 [1.76] Re  
a = 0.0300 [0.0084] AU

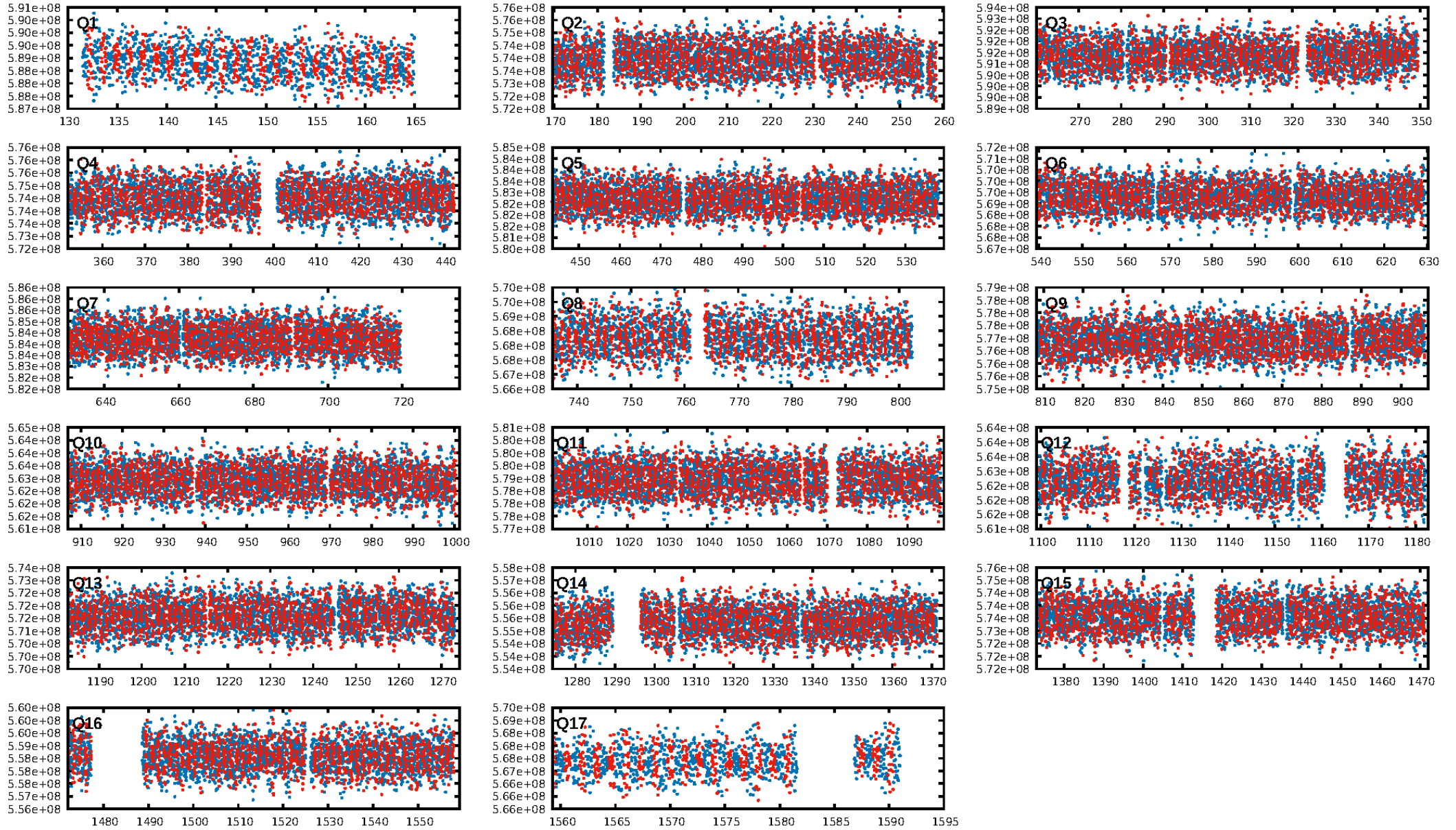
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.87 [834/957]  
GhostDiagnostic-chr: 3.413  
Centroid-sig: N/A  
Centroid-so: 0.267 arcsec [0.70σ]  
OotOffset-rm: 0.121 arcsec [0.31σ]  
KicOffset-rm: 0.208 arcsec [0.53σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.88 [15/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 13:17:57 Z

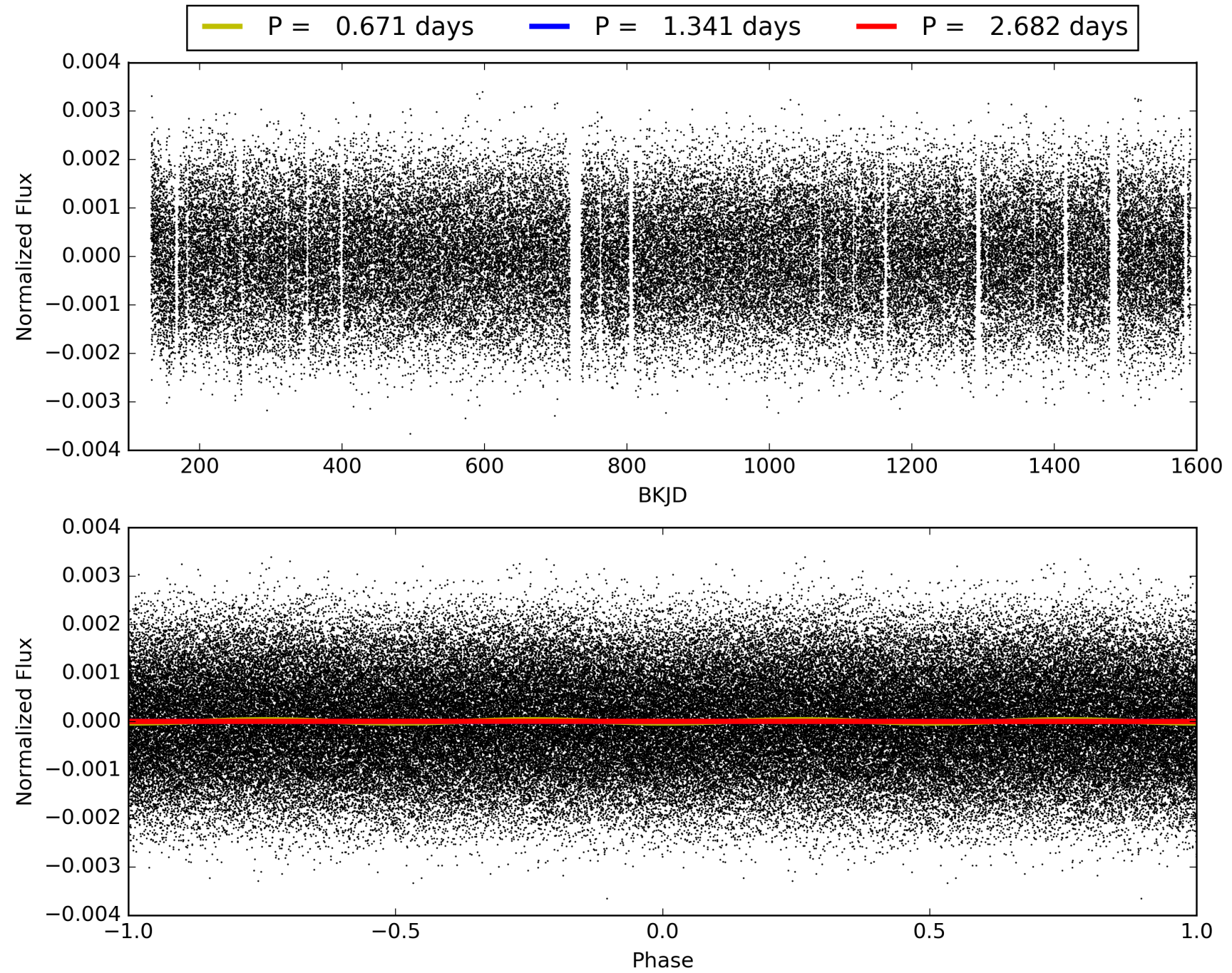
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008174306-02, PDC Light Curves



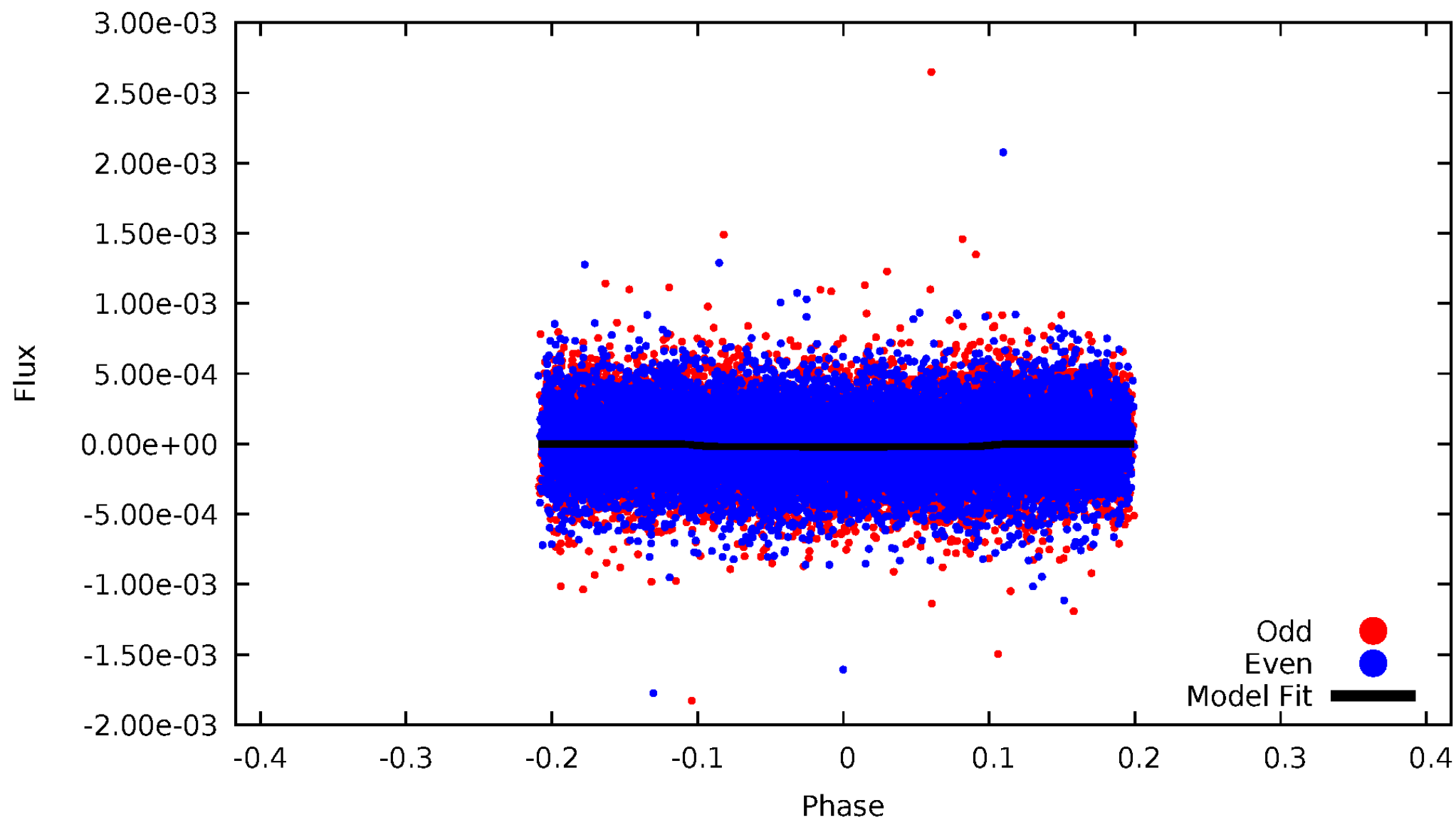


TCE 008174306-02



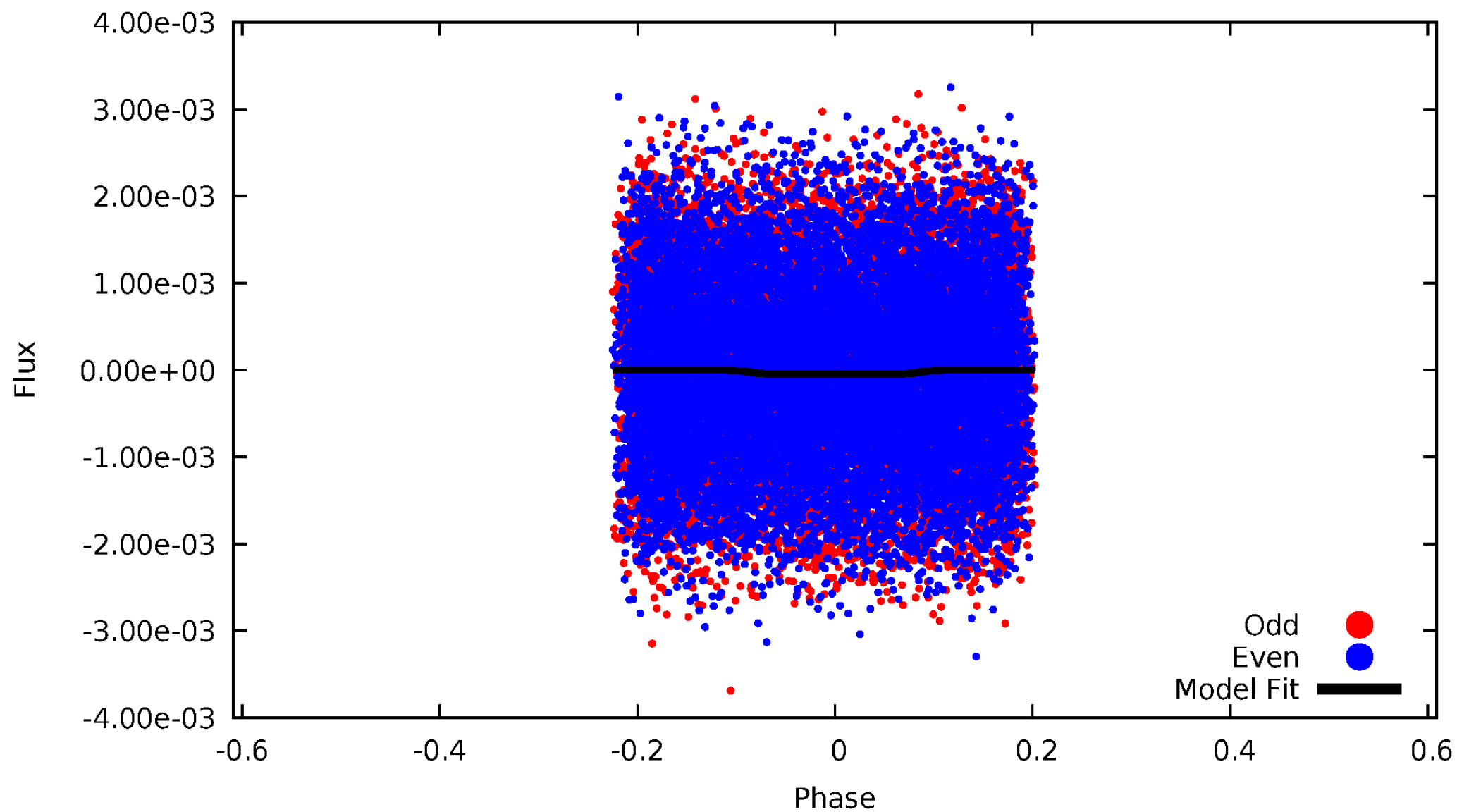
# DV Odd/Even

TCE 008174306-02



# ALT Odd/Even

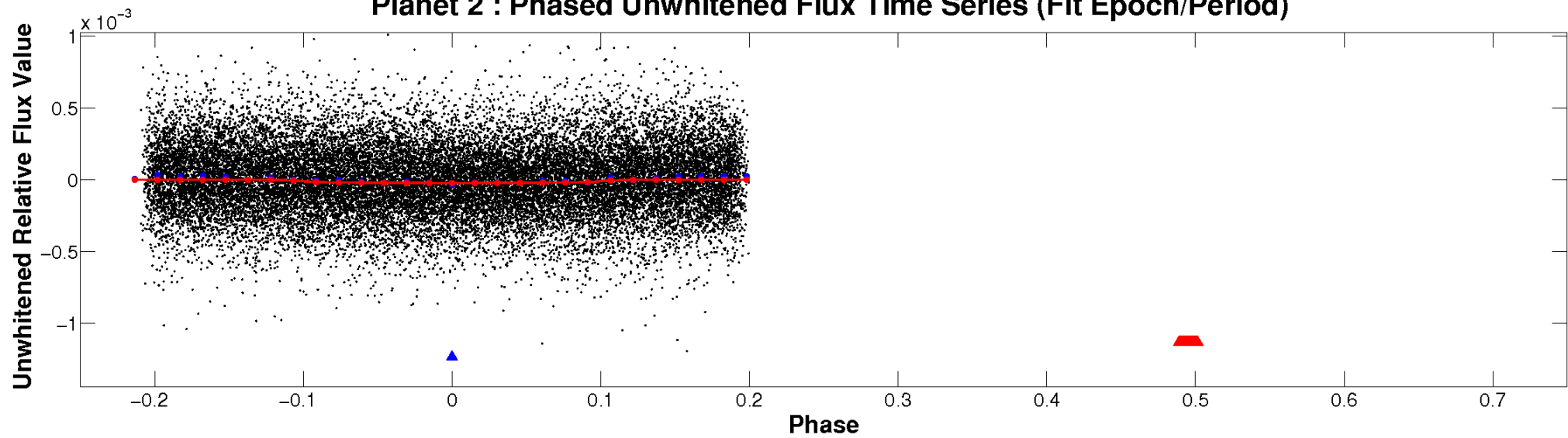
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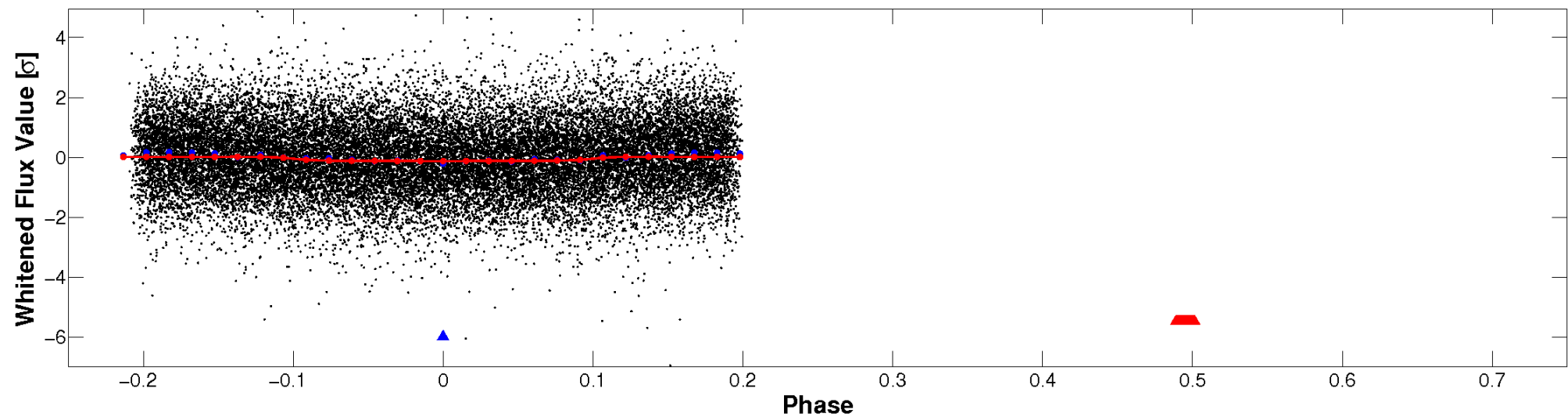


# Non-Whitened Vs. Whitened Light Curve

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

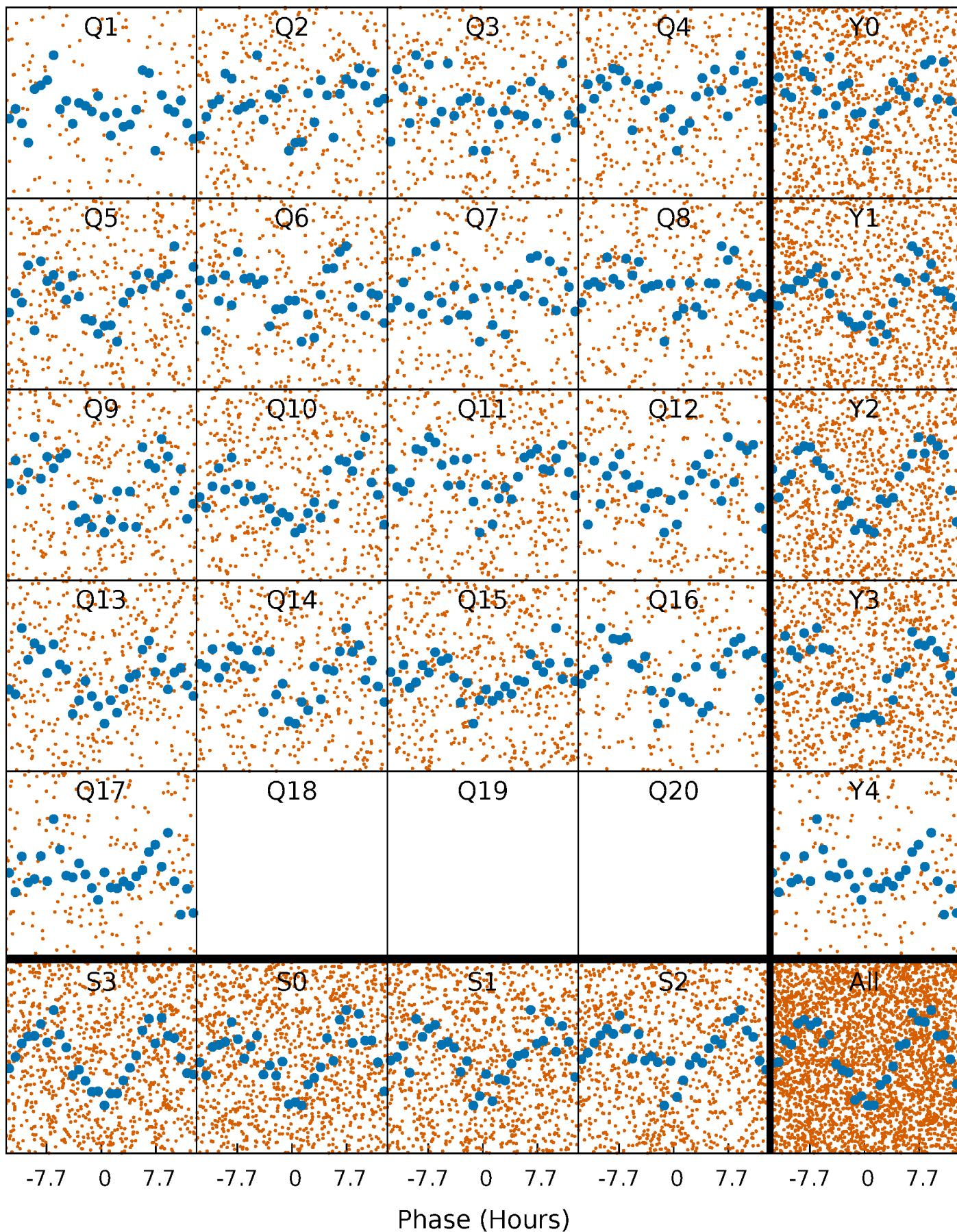


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



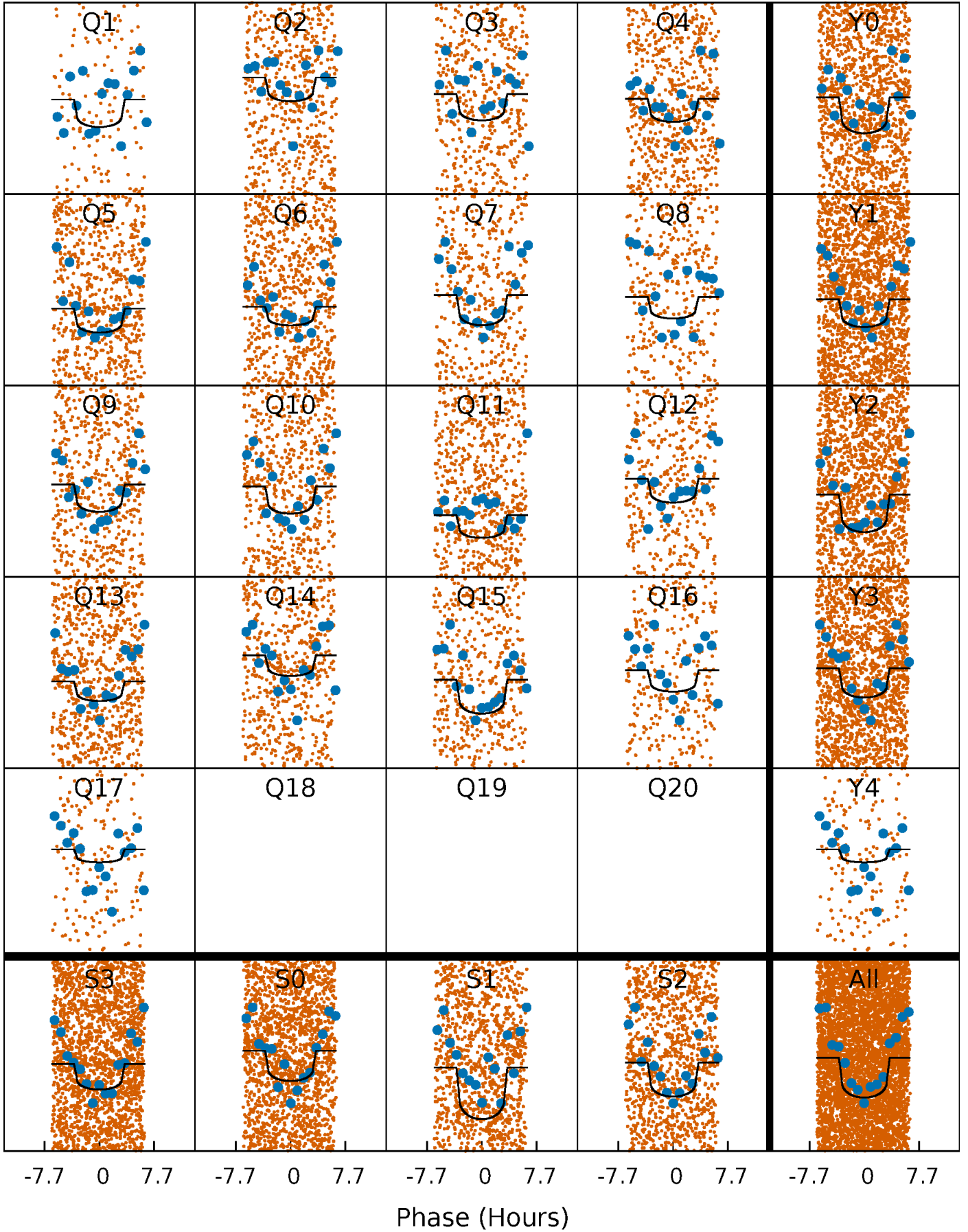
# PDC Quarter-Phased Transit Curves

TCE 008174306-02 P= 1.341203 Days  $T_0=132.230523$  (BKJD)



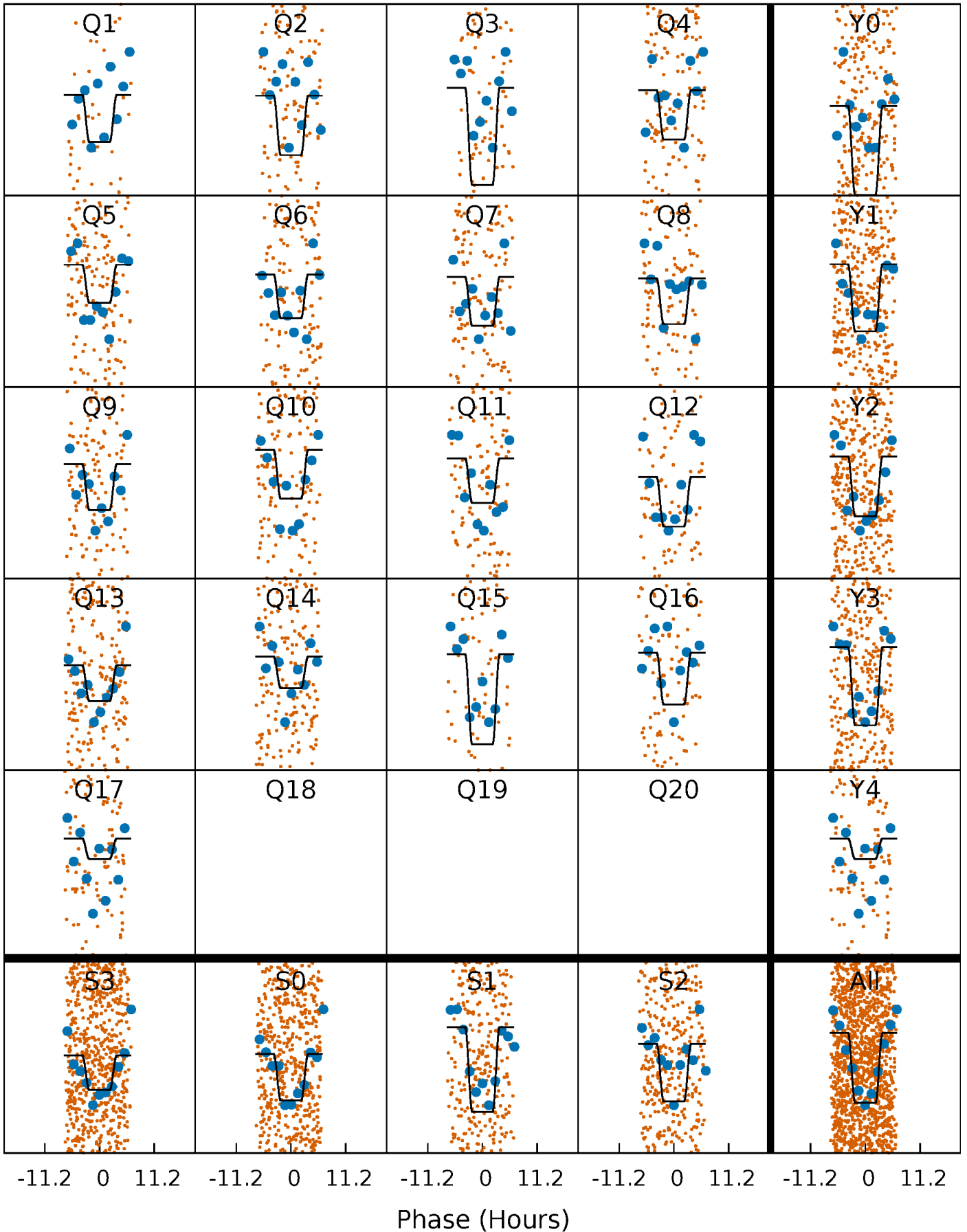
# DV Quarter-Phased Transit Curves

TCE 008174306-02     $P = 1.341203$  Days     $T_0 = 132.230523$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

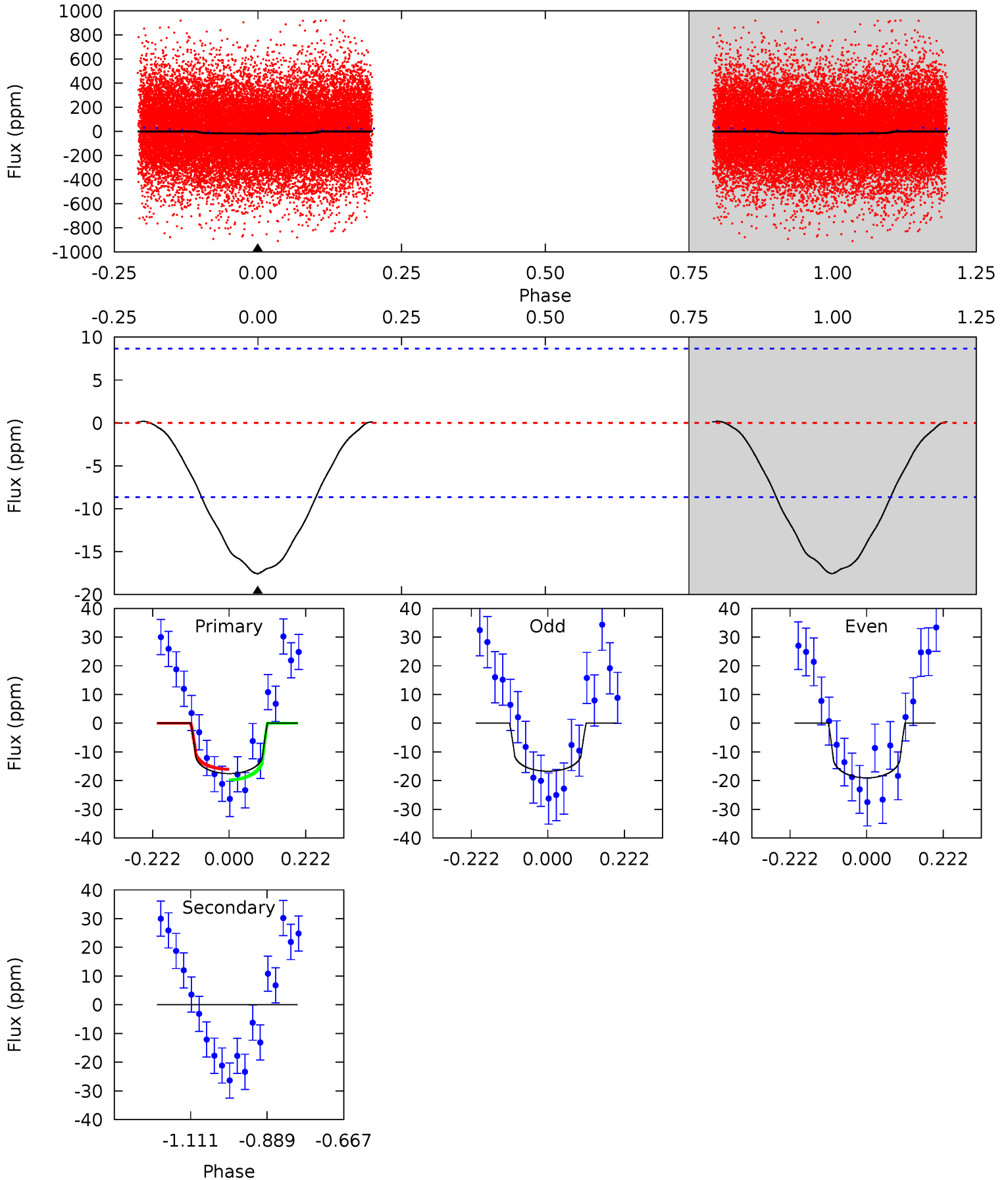
TCE 008174306-02    P= 1.341227 Days     $T_0=132.225818$  (BKJD)



# DV Model-Shift Uniqueness Test

008174306-02, P = 1.341203 Days, E = 130.889320 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
8.92	0	0	0	4.39	1.22	0.11	8.92	8.92	0	0	0.59	1.07	0.01	0.95

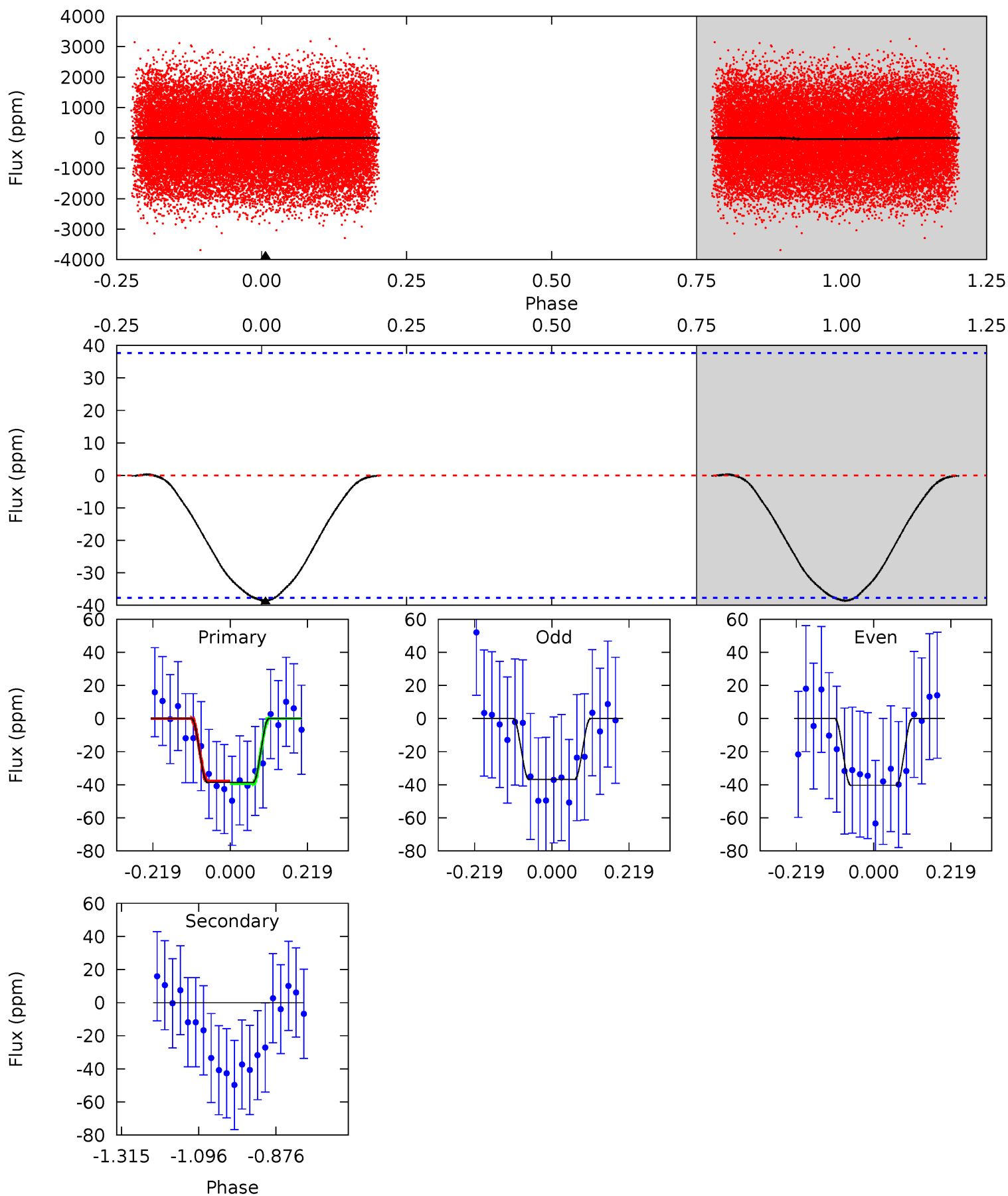




# Alt Model-Shift Uniqueness Test

008174306-02, P = 1.341227 Days, E = 130.884591 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
4.50	0	0	0	4.40	1.23	0.03	4.50	4.50	0	0	0.20	1.03	0.01	0.10





### Stellar Parameters For KIC 008174306

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$8007^{+222}_{-333}$	$3.943^{+0.252}_{-0.126}$	$0.070^{+0.200}_{-0.450}$	$2.495^{+0.447}_{-0.767}$	$1.993^{+0.292}_{-0.437}$	$0.181^{+0.265}_{-0.070}$
	+3%/-4%	+6%/-3%	+286%/-643%	+18%/-31%	+15%/-22%	+147%/-39%
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 008174306-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 2$	$1.67^{+1.42}_{-1.06}$	$4450^{+300}_{-370}$	$-3859^{+7646}_{-877}$	$0.007^{+0.573}_{-0.544}$
Alt.	$0 \pm 9$	$2.09^{+1.66}_{-1.31}$	$4435^{+303}_{-353}$	$-3872^{+8824}_{-1707}$	$0.009^{+1.518}_{-1.572}$

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

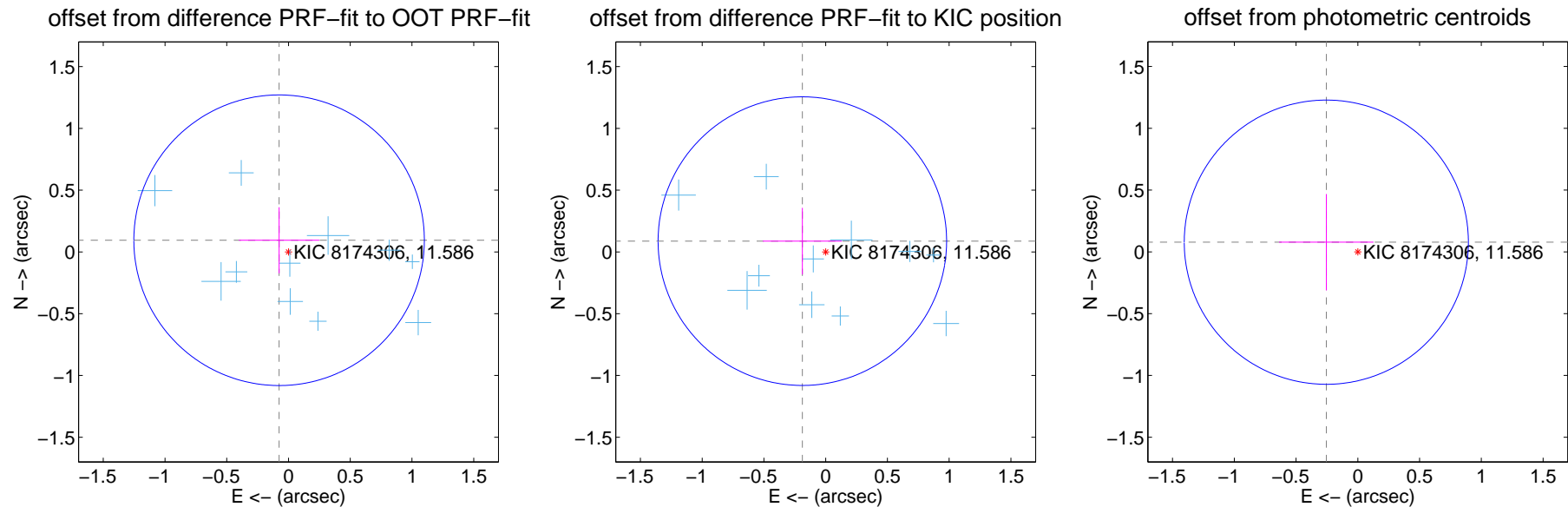
## DV Centroid Data

Supplemental centroid analysis for 008174306-02. **Kepler magnitude: 11.59.** Transit SNR 12.55

There are 15 quarters with good PRF difference image offsets

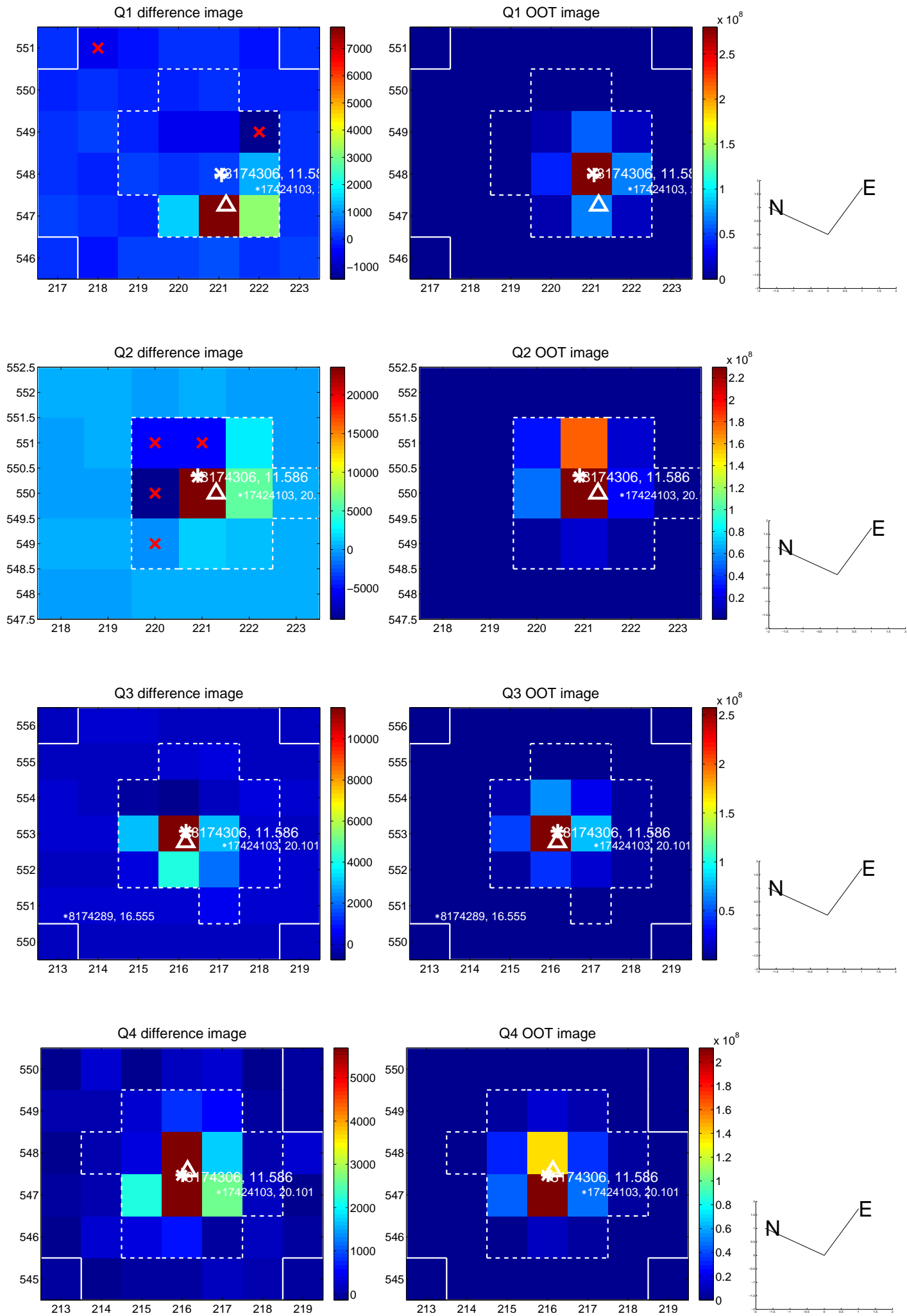
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.121 \pm 0.392$	0.31	$0.076 \pm 0.326$	$0.095 \pm 0.267$
PRF-fit source offset from KIC position	$0.208 \pm 0.389$	0.53	$0.189 \pm 0.320$	$0.087 \pm 0.269$
photometric centroid source offset	$0.27 \pm 0.38$	0.70	$0.25 \pm 0.38$	$0.08 \pm 0.39$

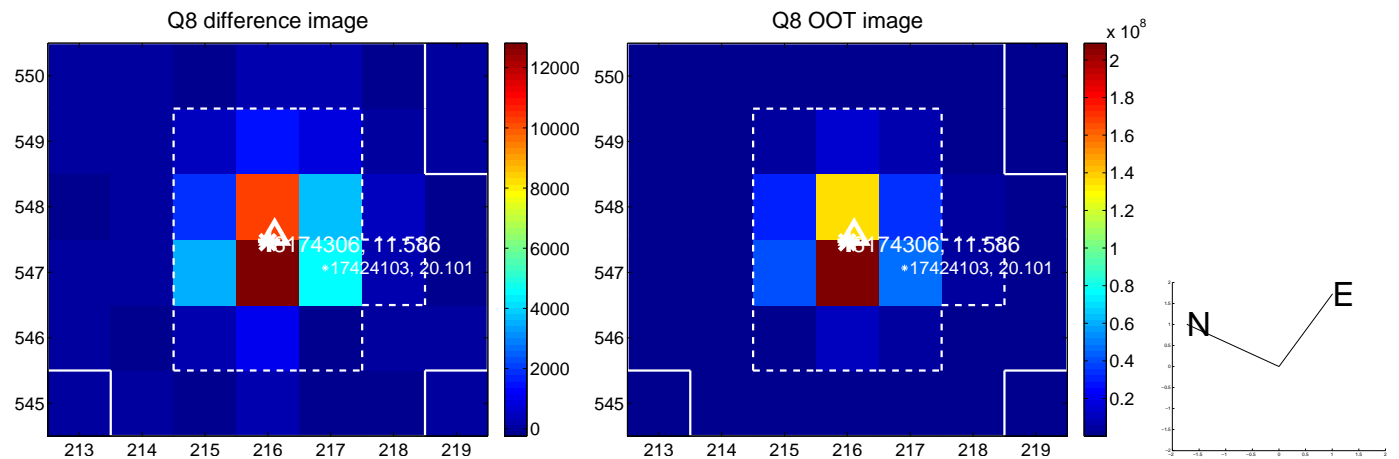
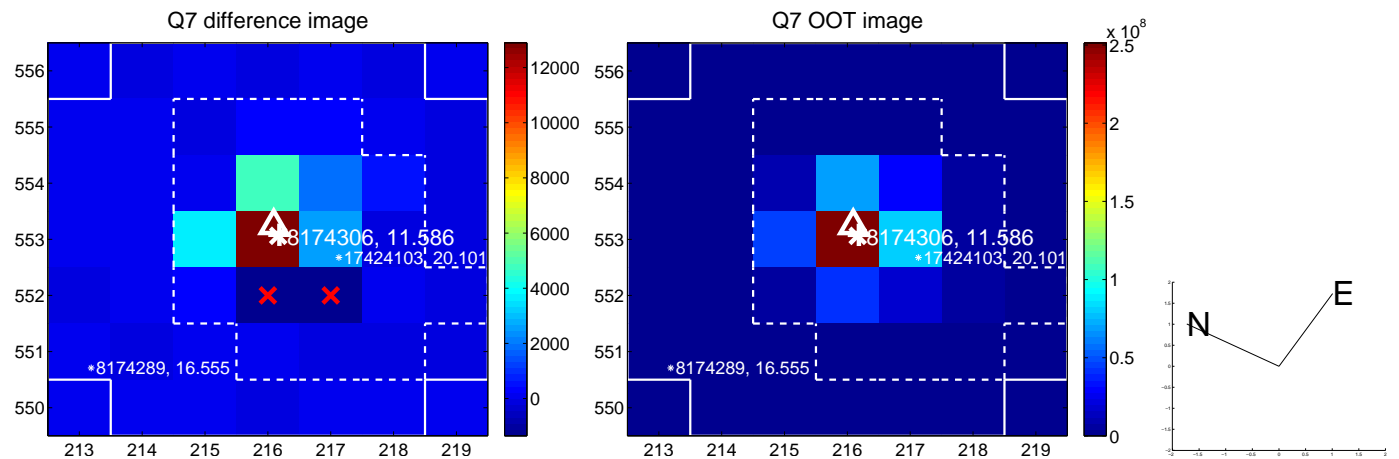
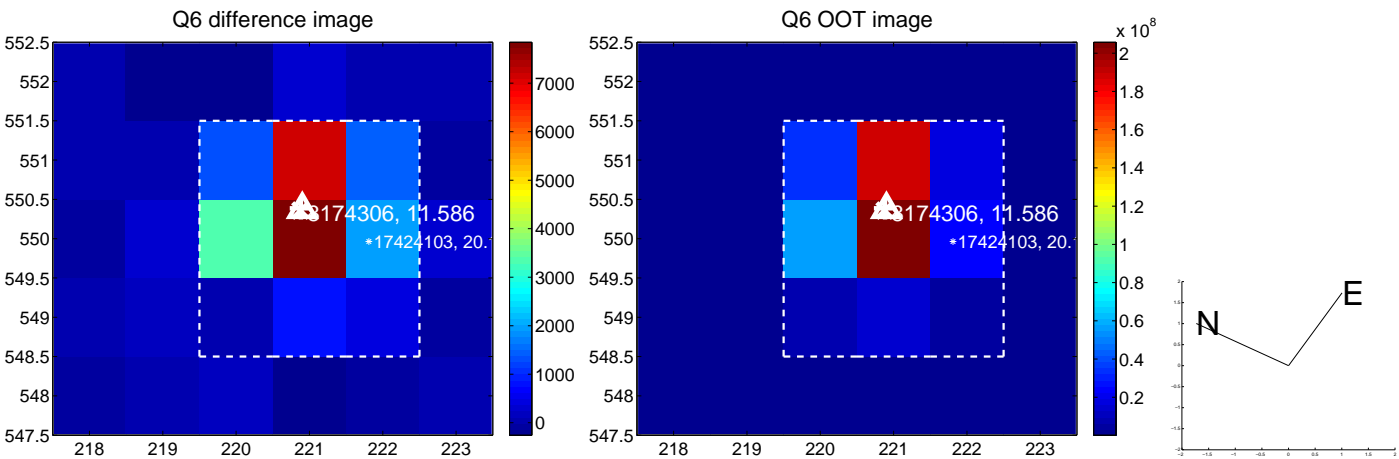
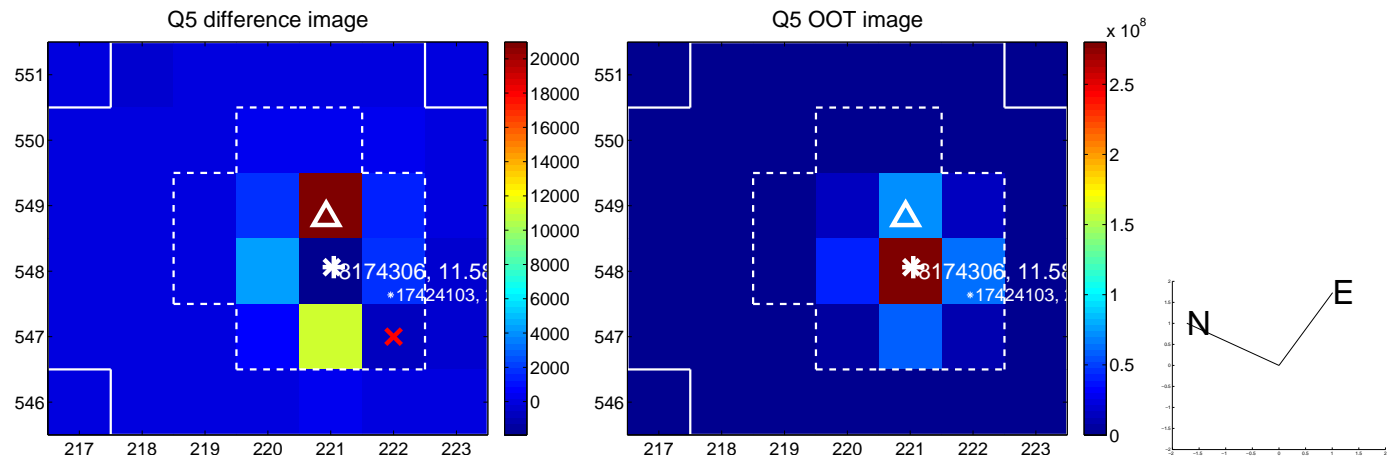


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

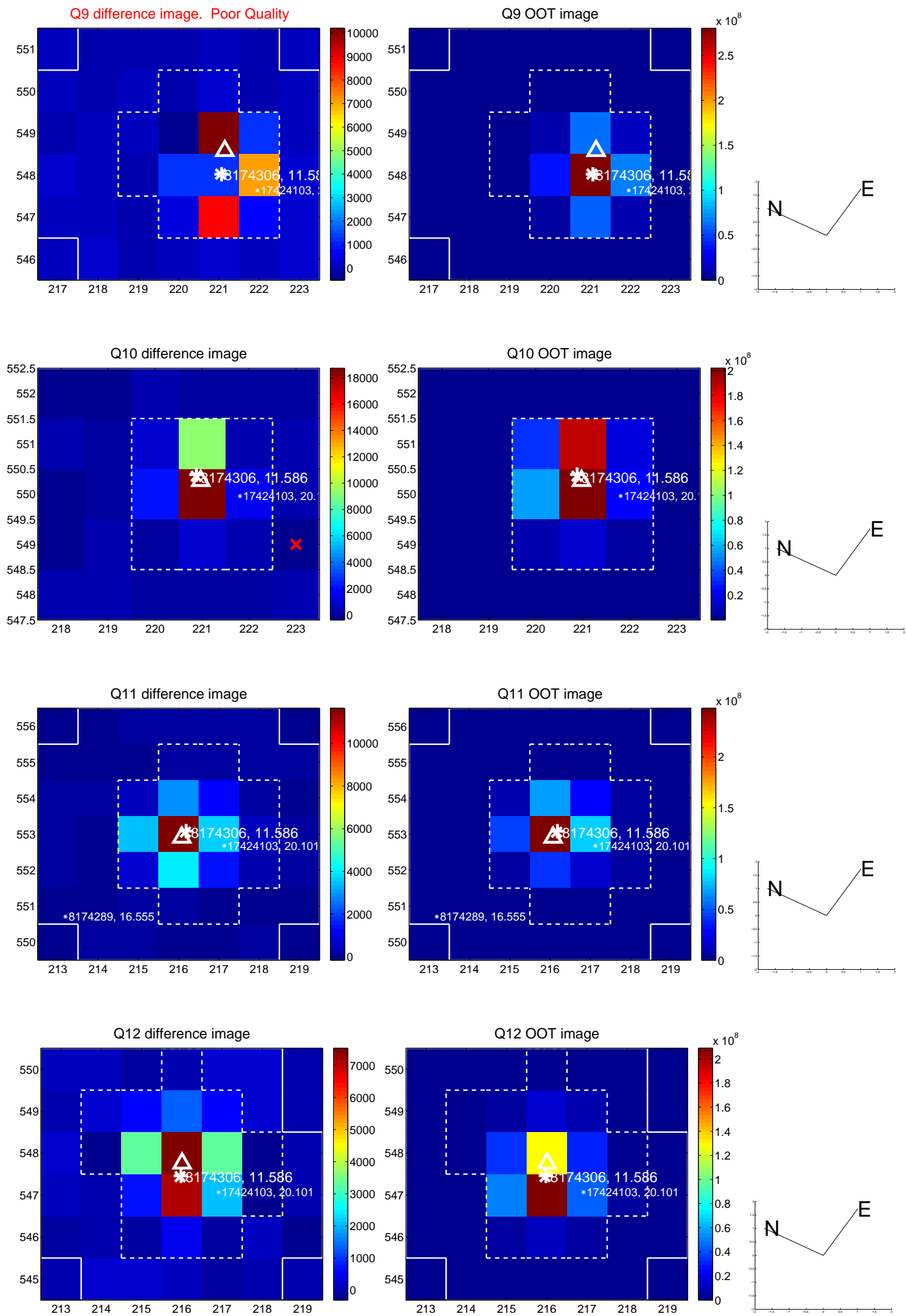
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



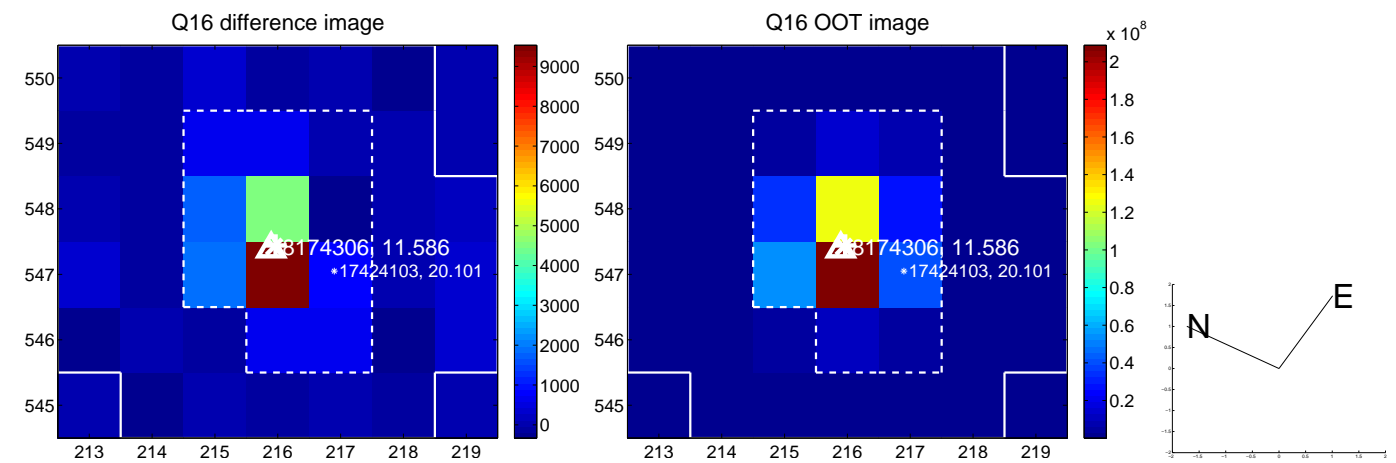
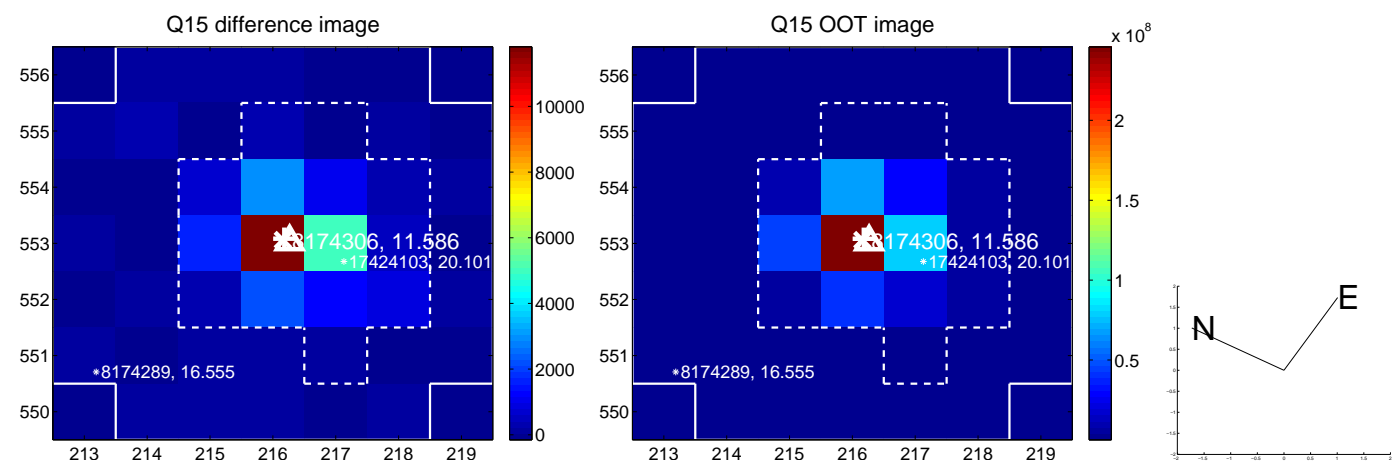
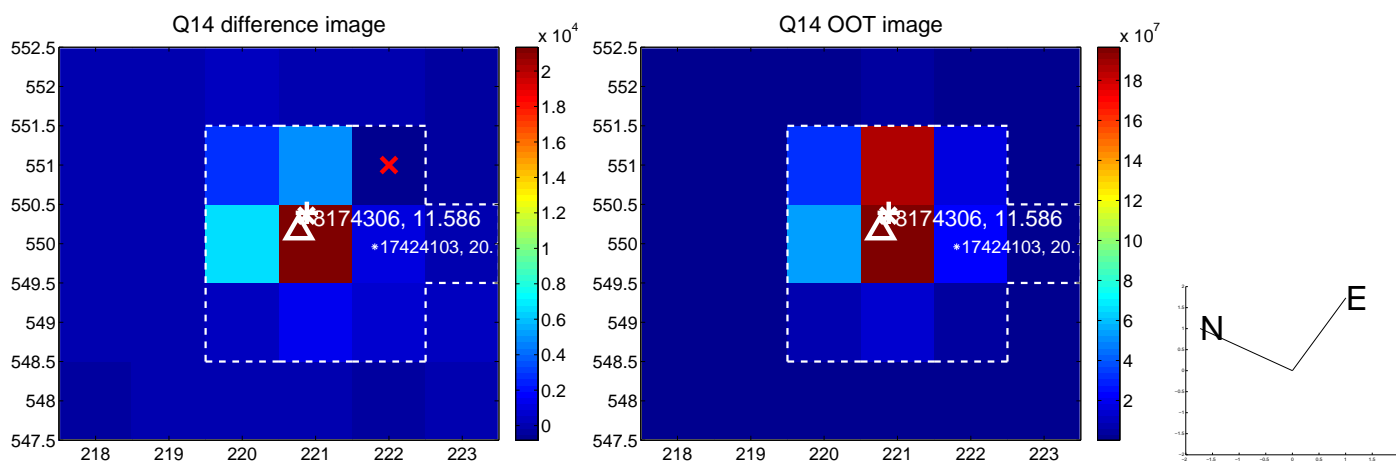
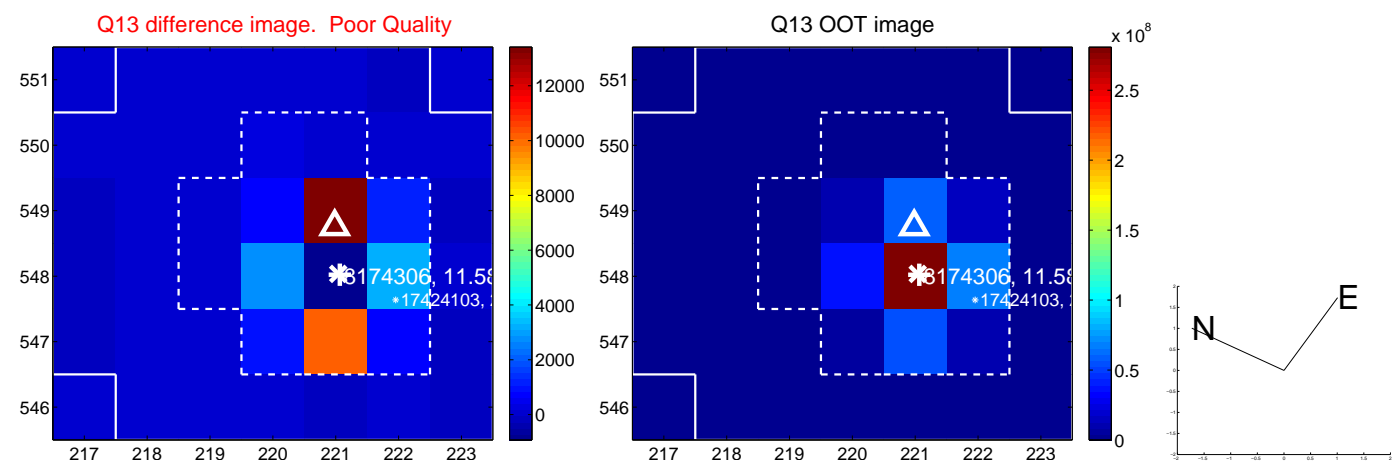
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

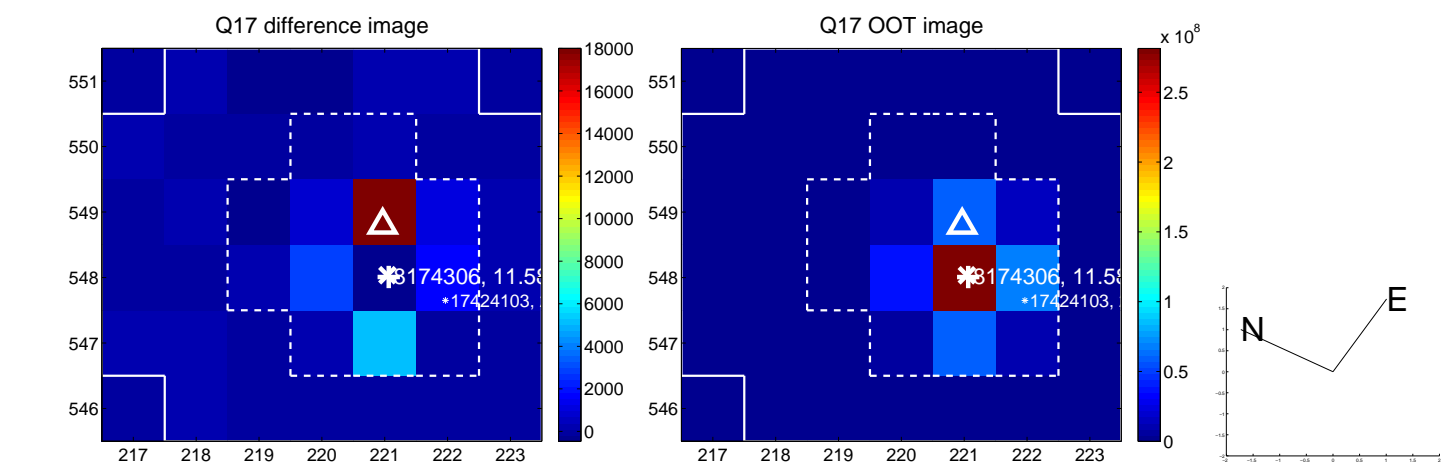


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

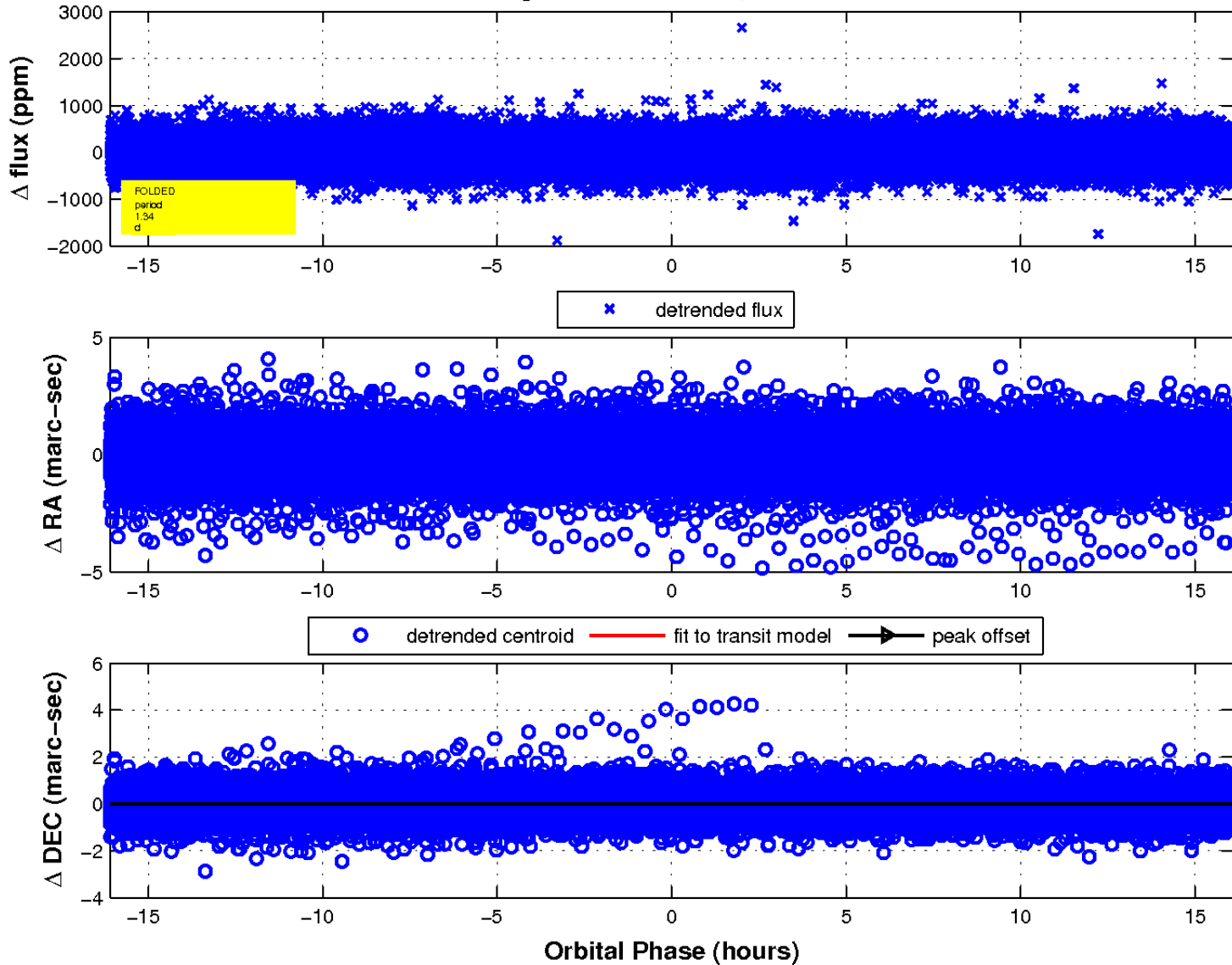




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

