

# KIC 007974032

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007974032-01	OBS	No	1.377285	132.019333	403.3	1.791	10.6	9.5	1.99	7237	4.65	12234.33
007974032-02	OBS	No	0.556339	131.616130	382.4	0.991	12.2	10.2	1.99	7237	4.56	40972.54
007974032-03	OBS	No	0.556354	132.042244	111.8	1.500	10.3	-1.0	1.99	7237	2.14	40971.03
007974032-04	OBS	No	0.556349	131.935994	144.3	1.500	10.9	-1.0	1.99	7237	2.44	40971.50

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007974032-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007974032-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007974032-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_NOFITS
007974032-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

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

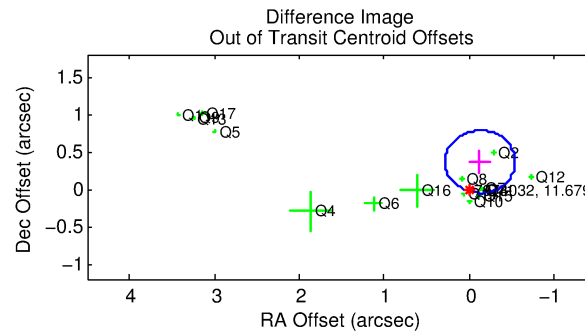
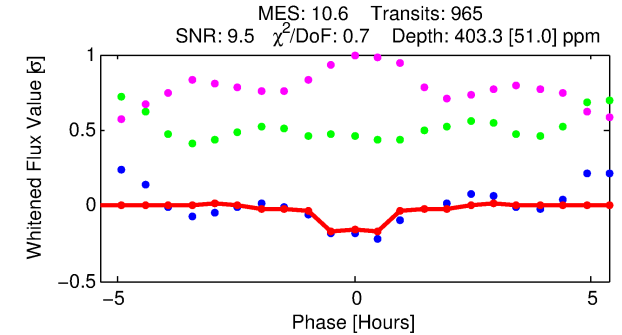
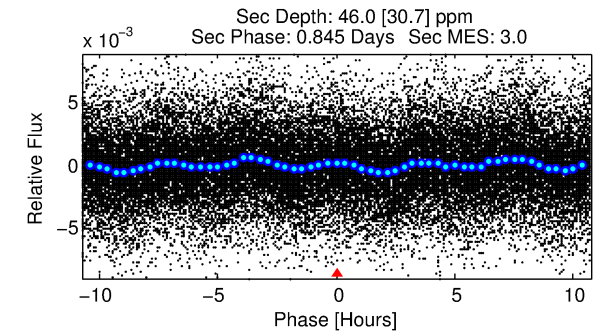
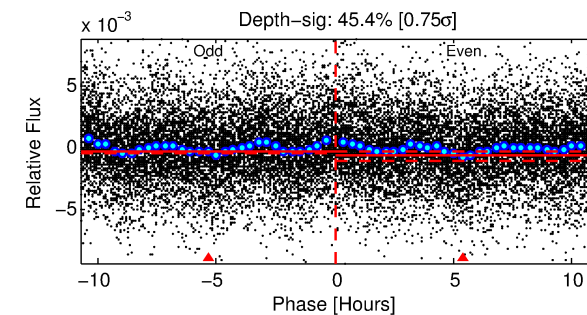
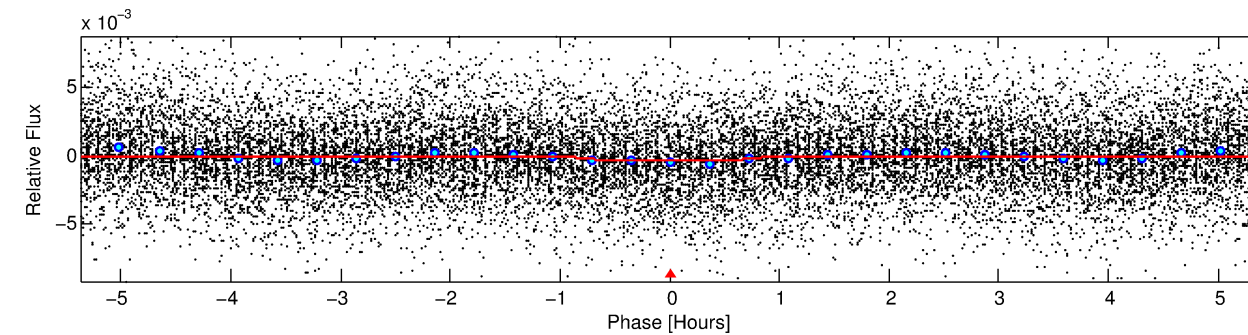
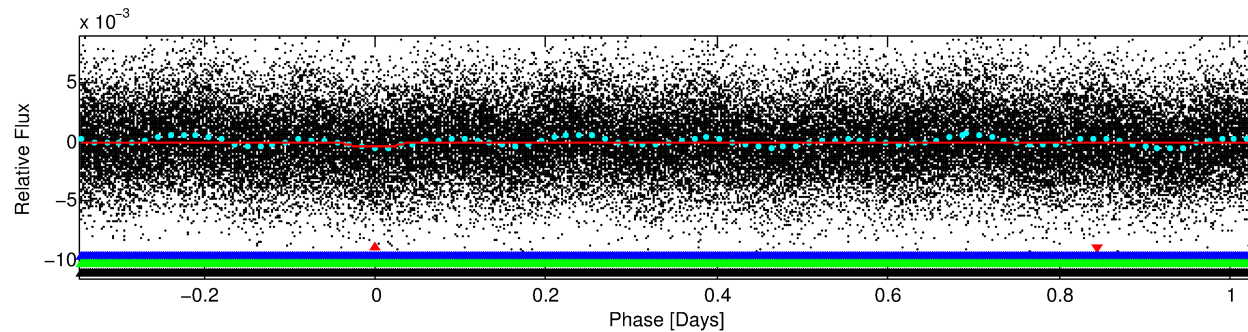
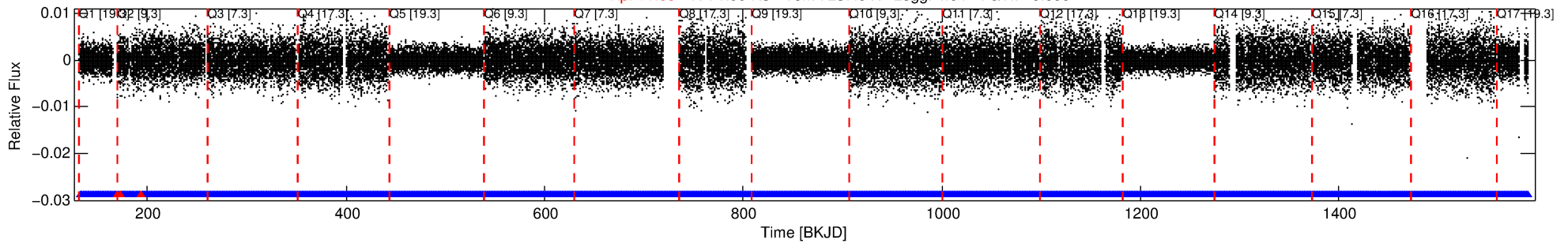
Ephemeris Match Information For 007974032-01

No Significant Match Found

# DV One-Page Summary

KIC: 7974032 Candidate: 1 of 4 Period: 1.377 d

Kp: 11.68 R\*: 1.99 Rs Teff: 7237.0 K Logg: 4.04 Fe/H: -0.060



## DV Fit Results:

Period = 1.37728 [0.00001] d  
Epoch = 132.0193 [0.0024] BKJD  
Rp/R\* = 0.0214 [0.0062]  
a/R\* = 2.99 [4.68]  
b = 0.90 [0.37]  
Seff = 12234.34 [4819.33]  
Teq = 2682 [264] K  
Rp = 4.65 [1.88] Re  
a = 0.0283 [0.0068] AU  
Ag = 0.93 [0.89] [-0.07σ]  
Teffp = 4076 [919] K [1.46σ]

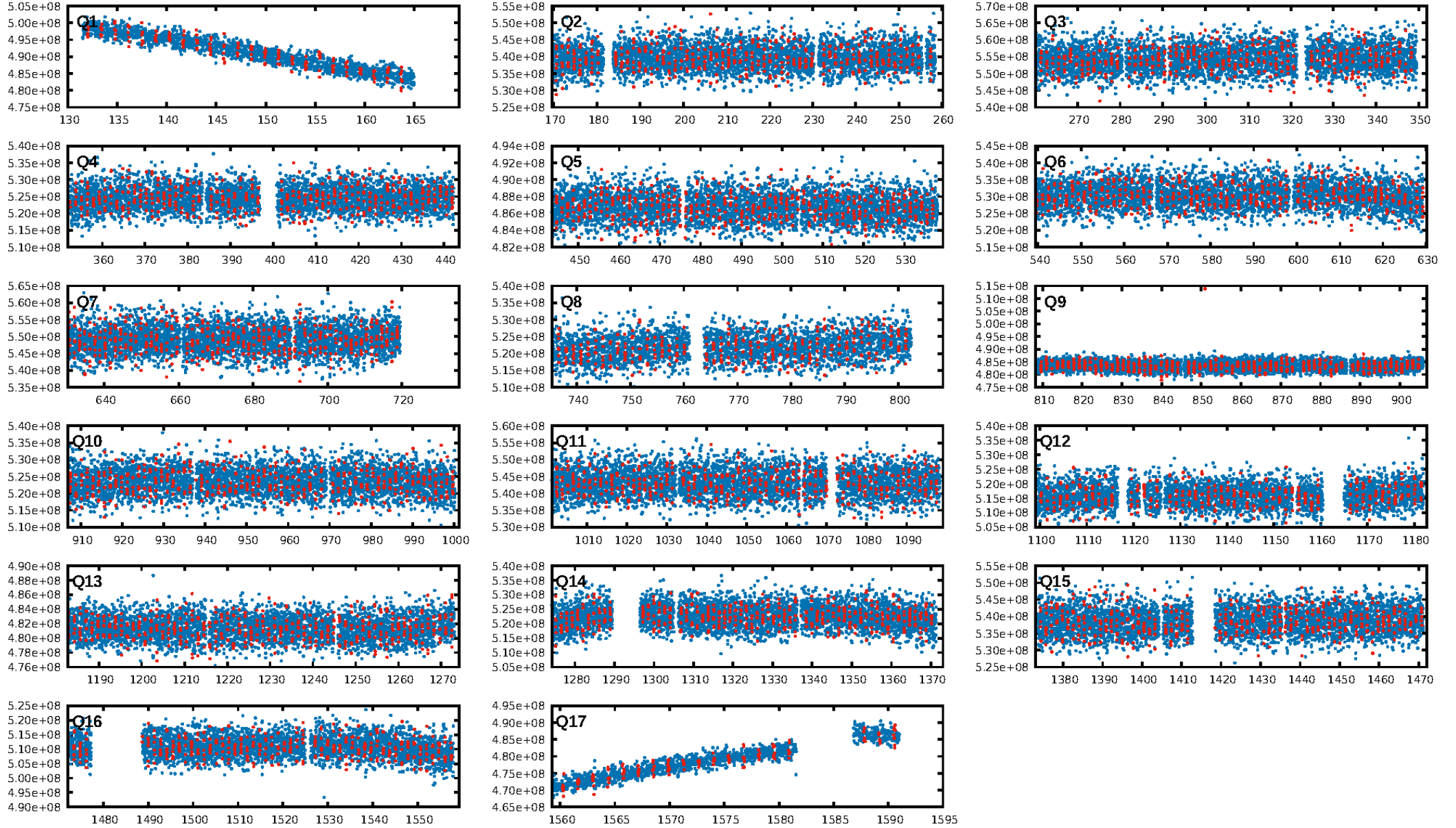
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.43σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [919/922]  
**GhostDiagnostic-chr: -3.976**  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.389 arcsec [2.79σ]  
KicOffset-rm: 0.420 arcsec [2.69σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.82 [14/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:18:32 Z

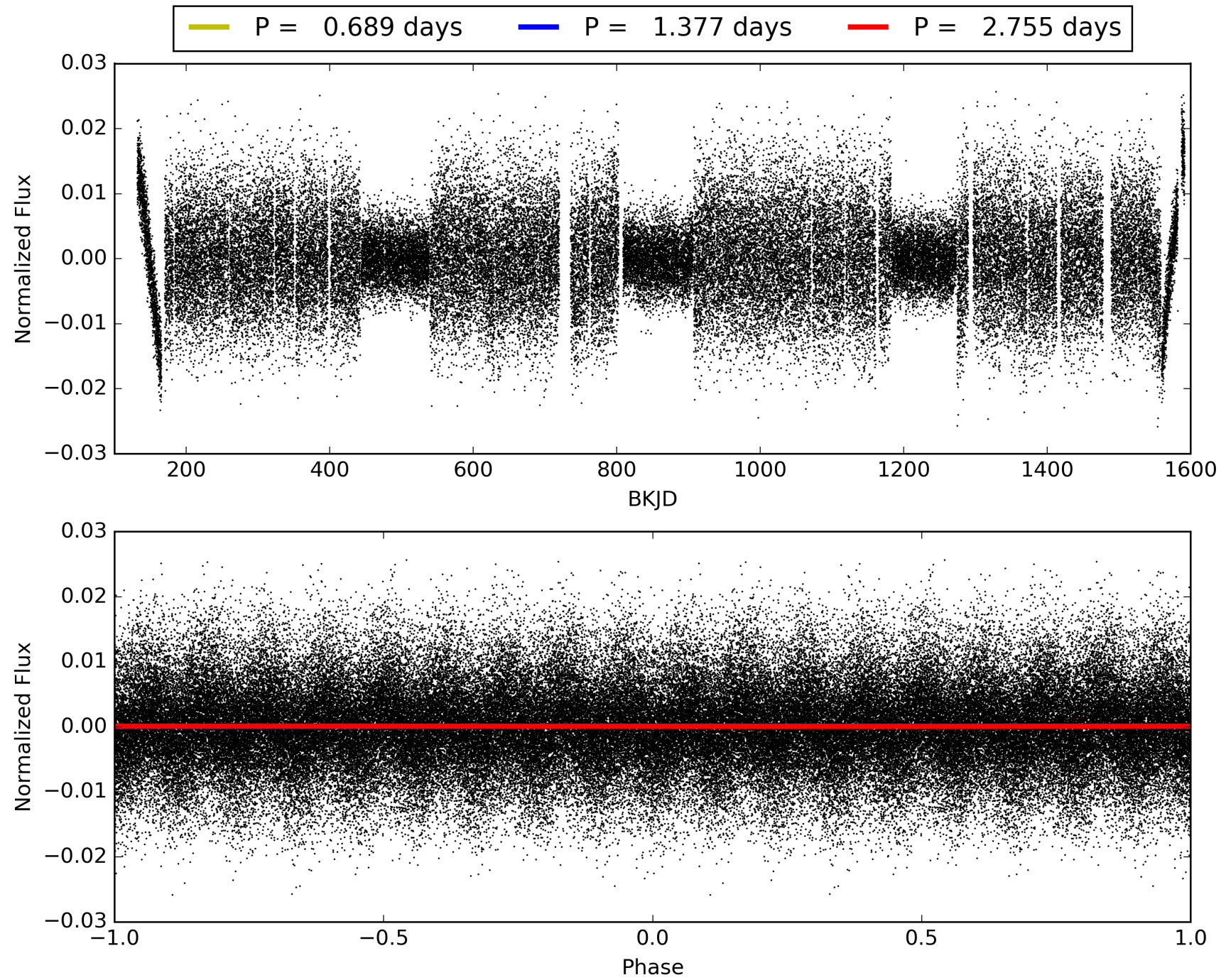
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007974032-01, PDC Light Curves





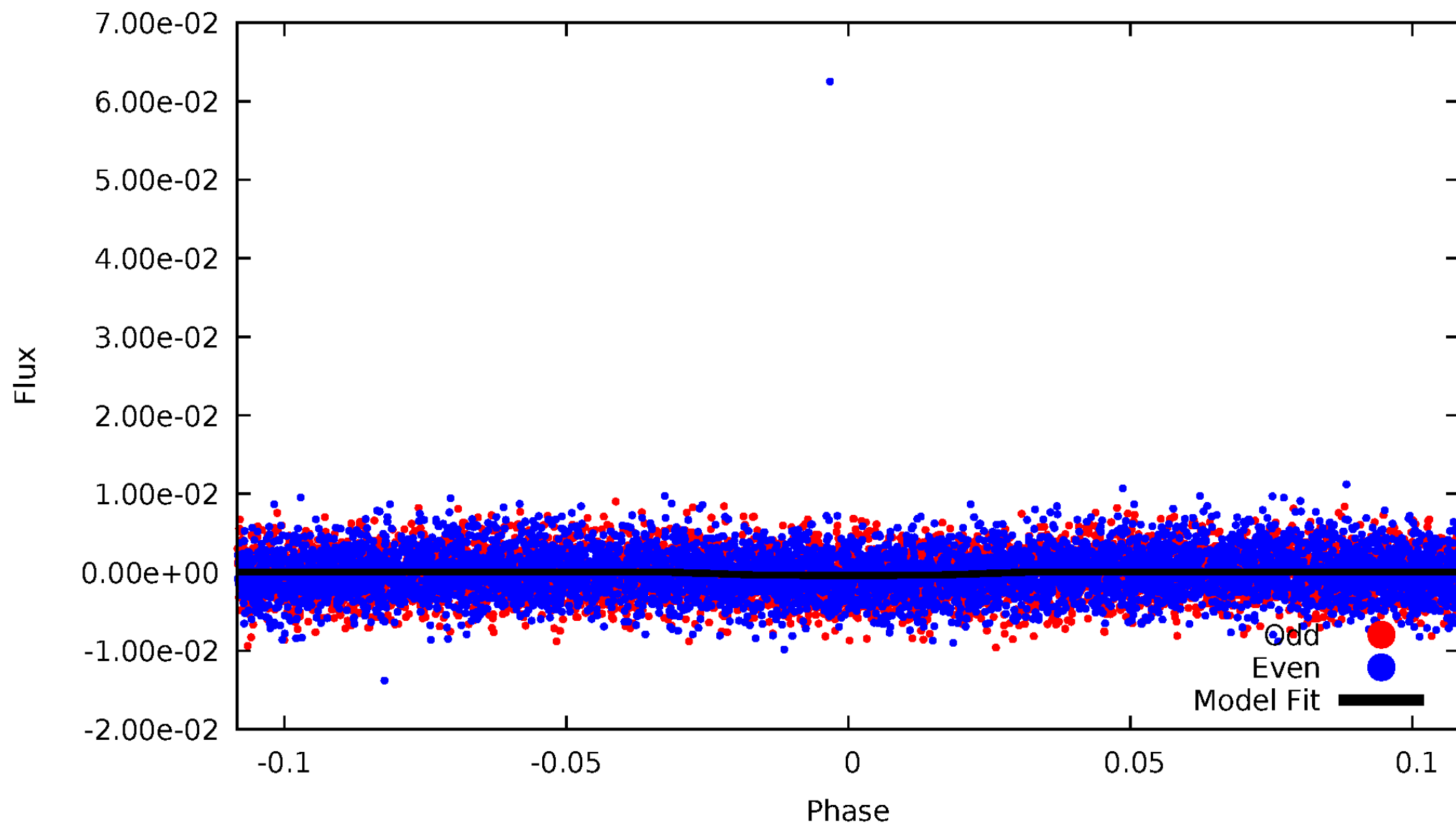
TCE 007974032-01





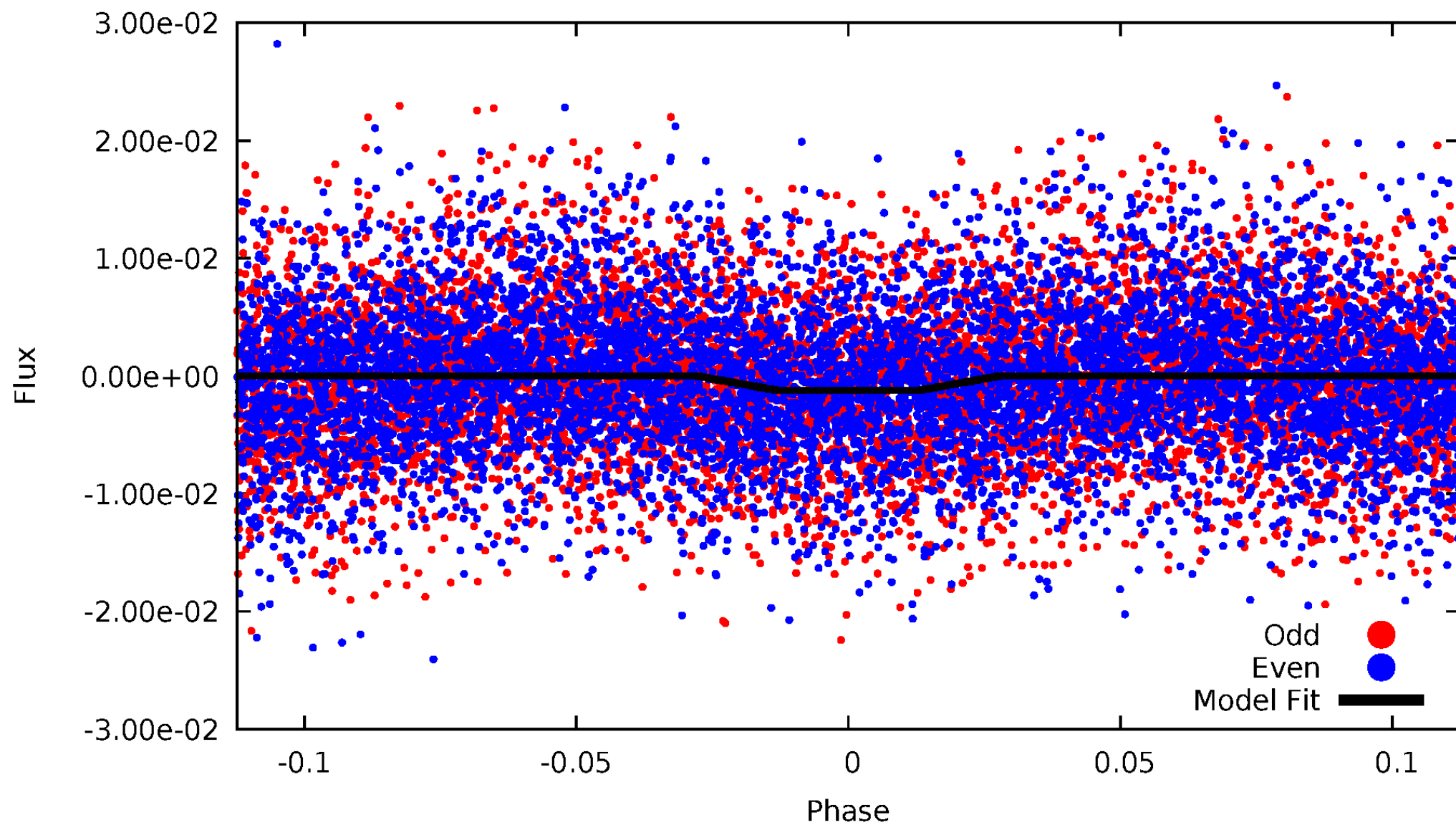
# DV Odd/Even

TCE 007974032-01



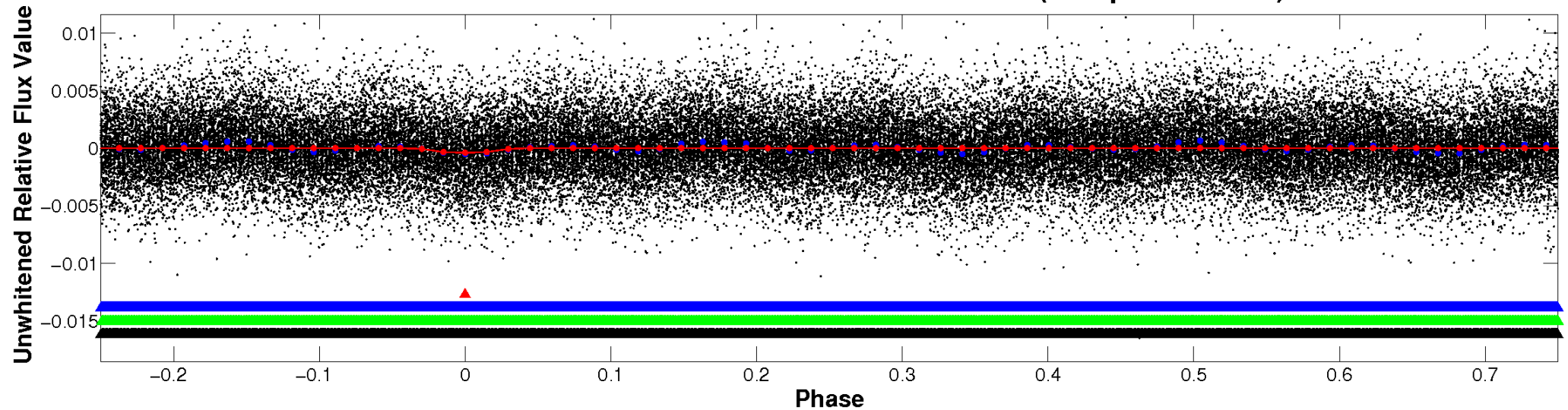
# ALT Odd/Even

TCE 007974032-01

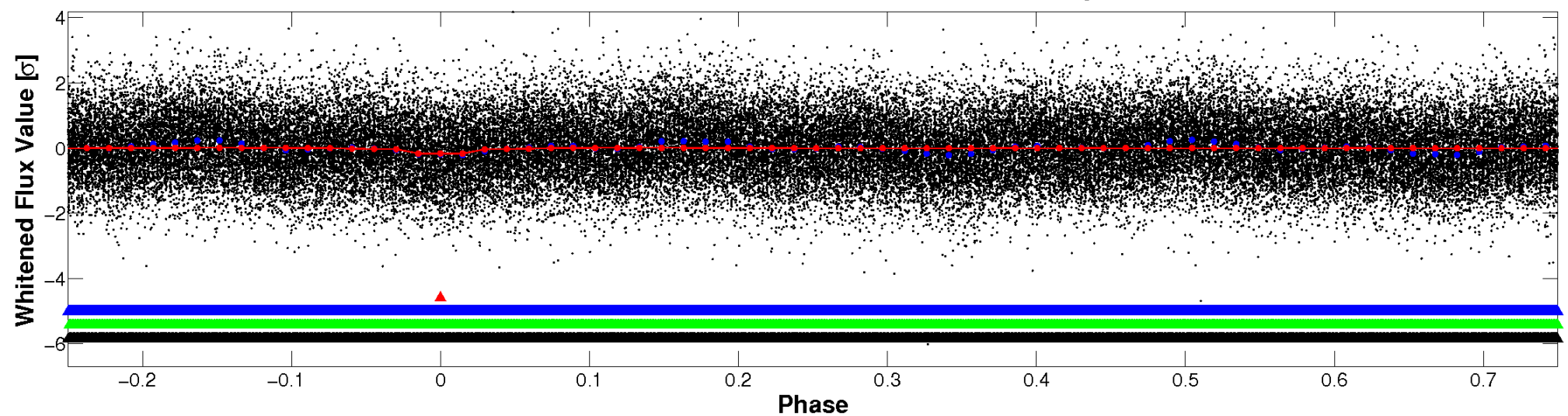


# Non-Whitened Vs. Whitened Light Curve

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



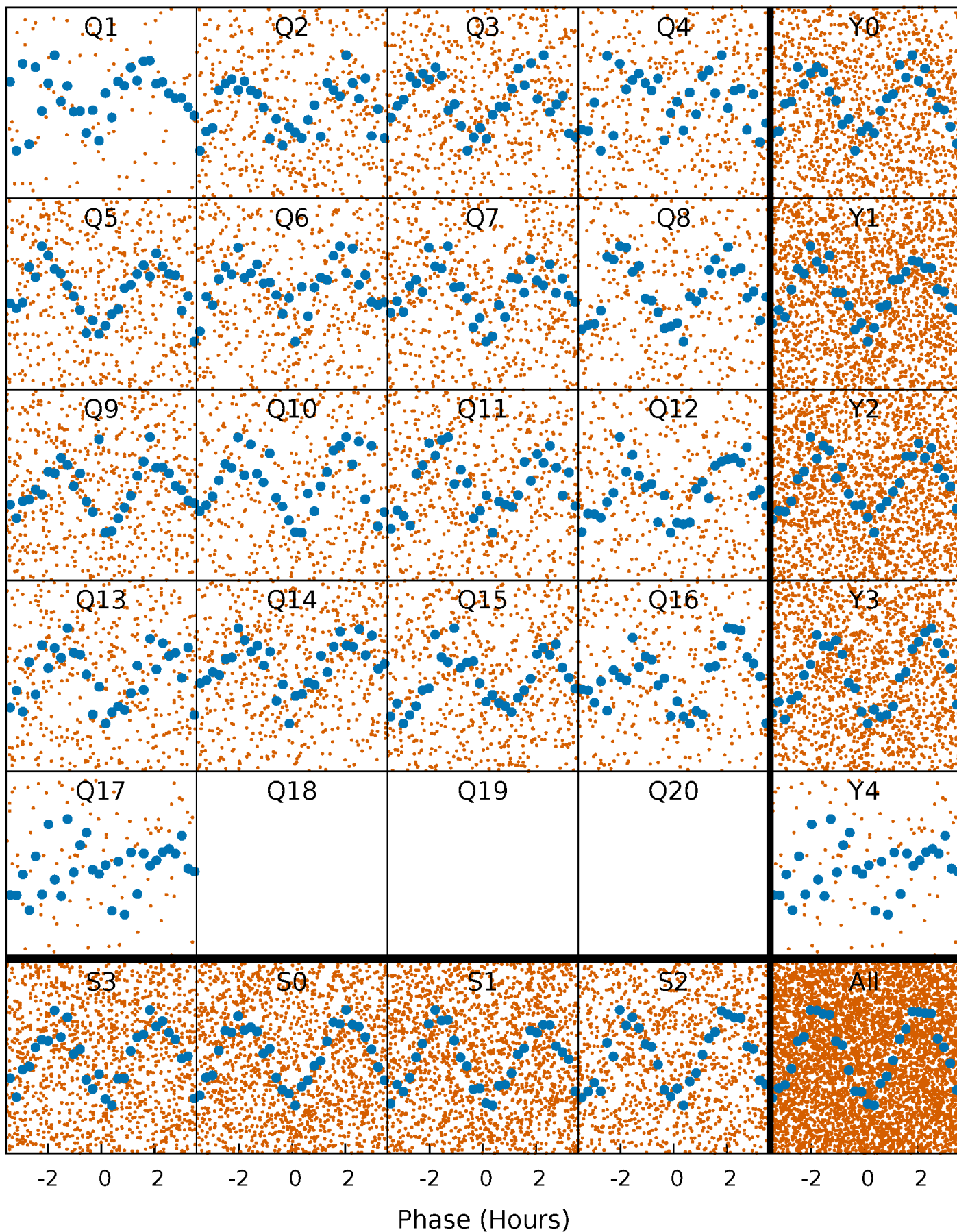
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





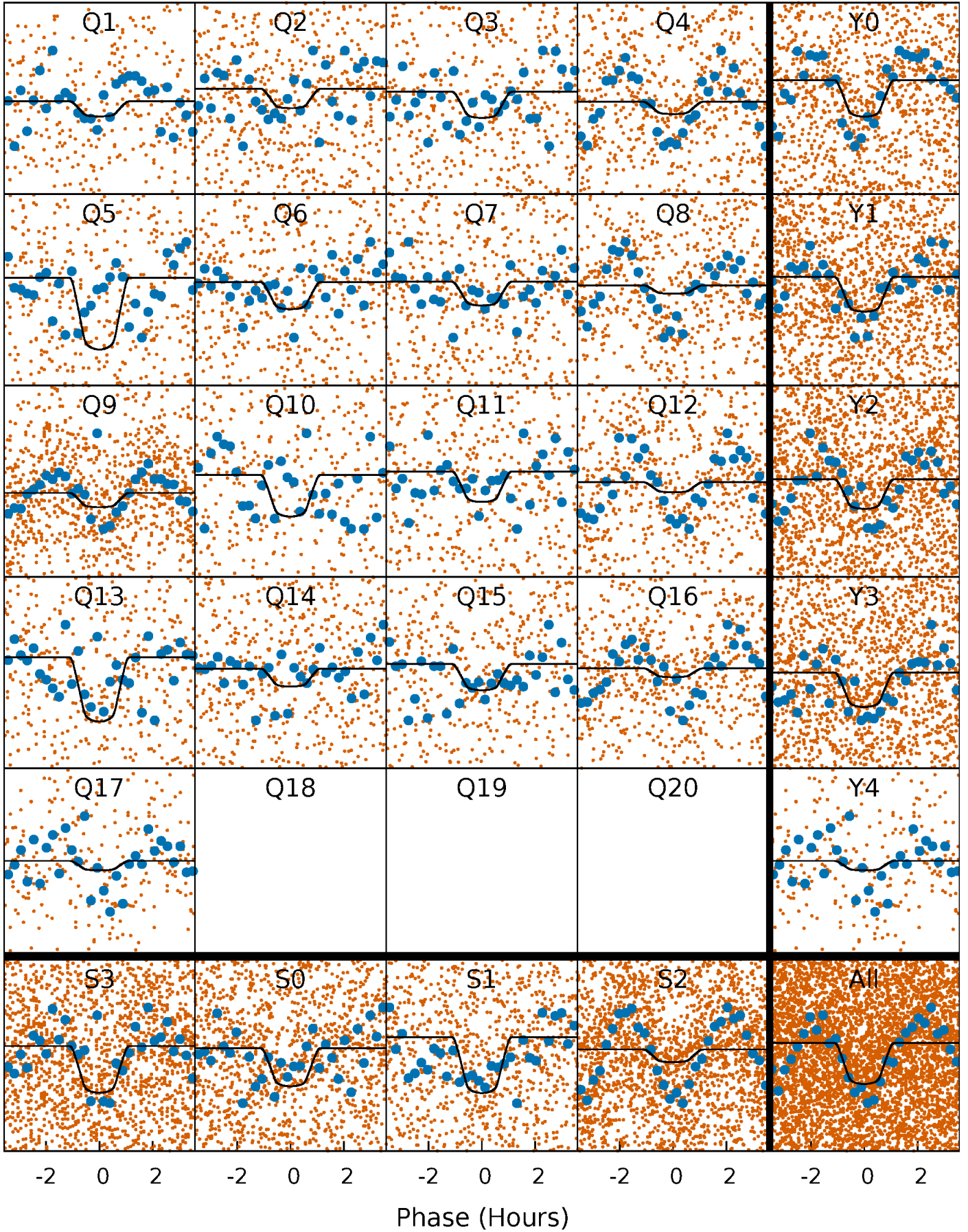
# PDC Quarter-Phased Transit Curves

TCE 007974032-01 P= 1.377285 Days  $T_0=132.019333$  (BKJD)



# DV Quarter-Phased Transit Curves

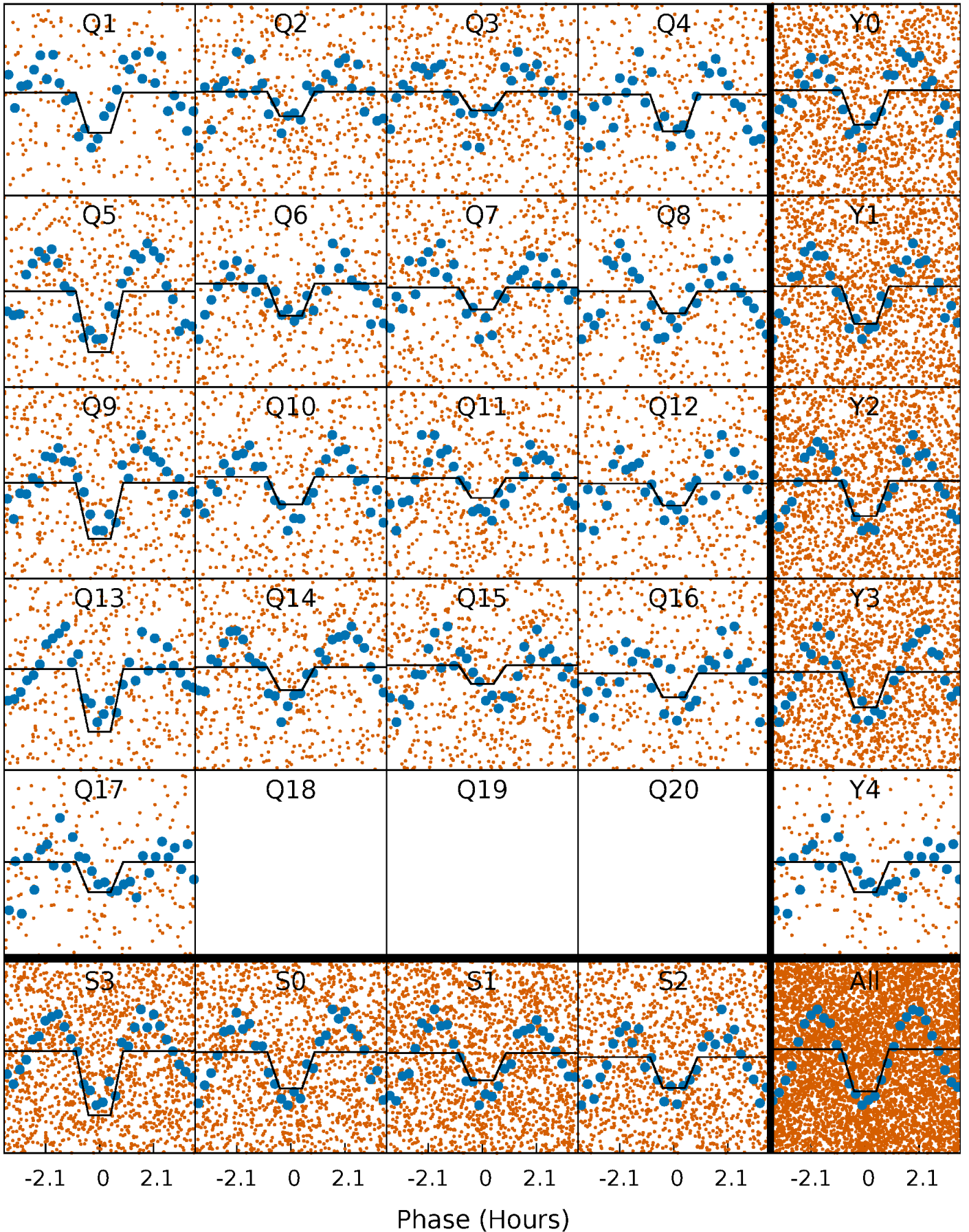
TCE 007974032-01 P= 1.377285 Days  $T_0=132.019333$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 007974032-01 P= 1.377296 Days  $T_0=132.019509$  (BKJD)

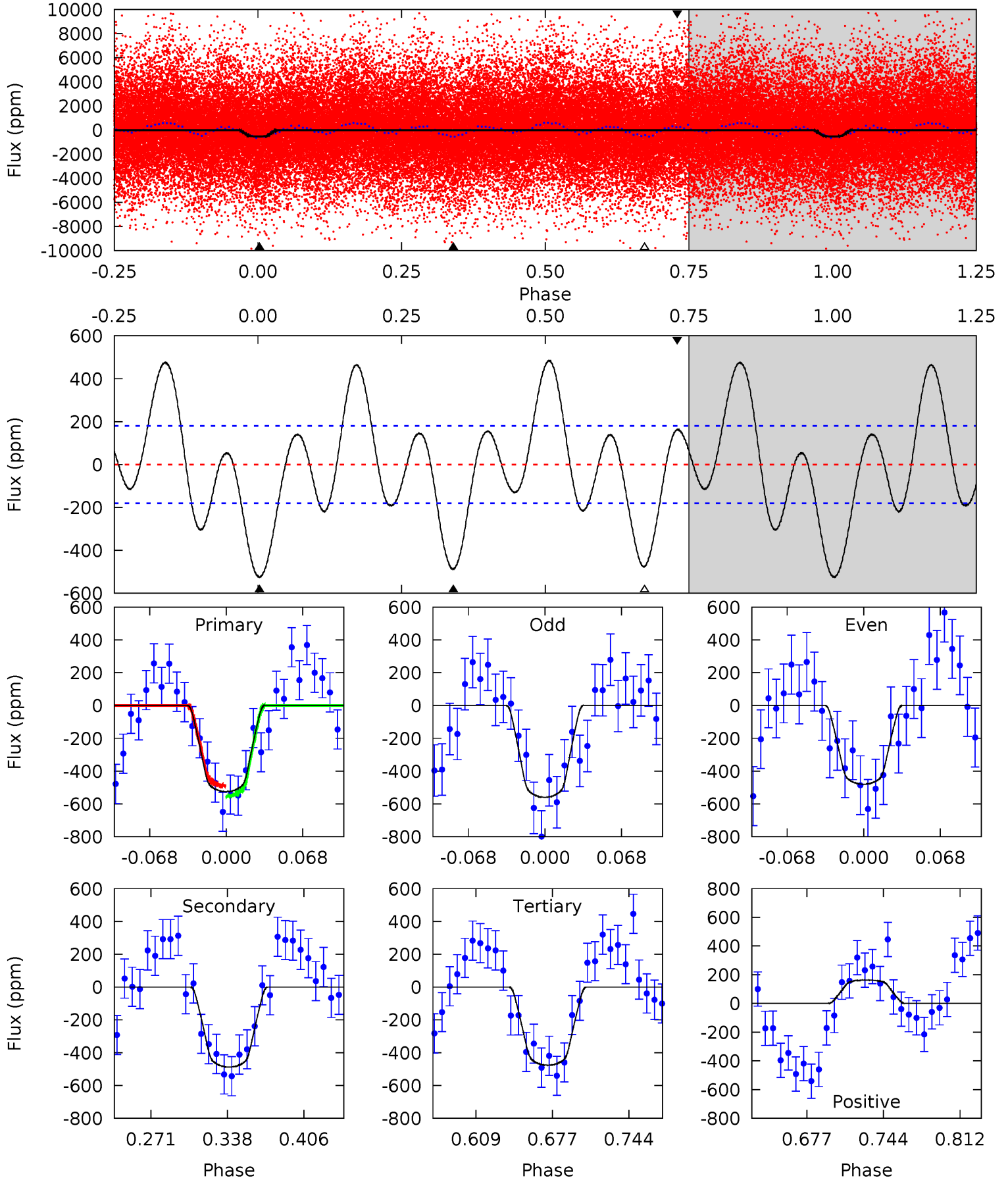




# DV Model-Shift Uniqueness Test

007974032-01, P = 1.377285 Days, E = 130.642048 Days

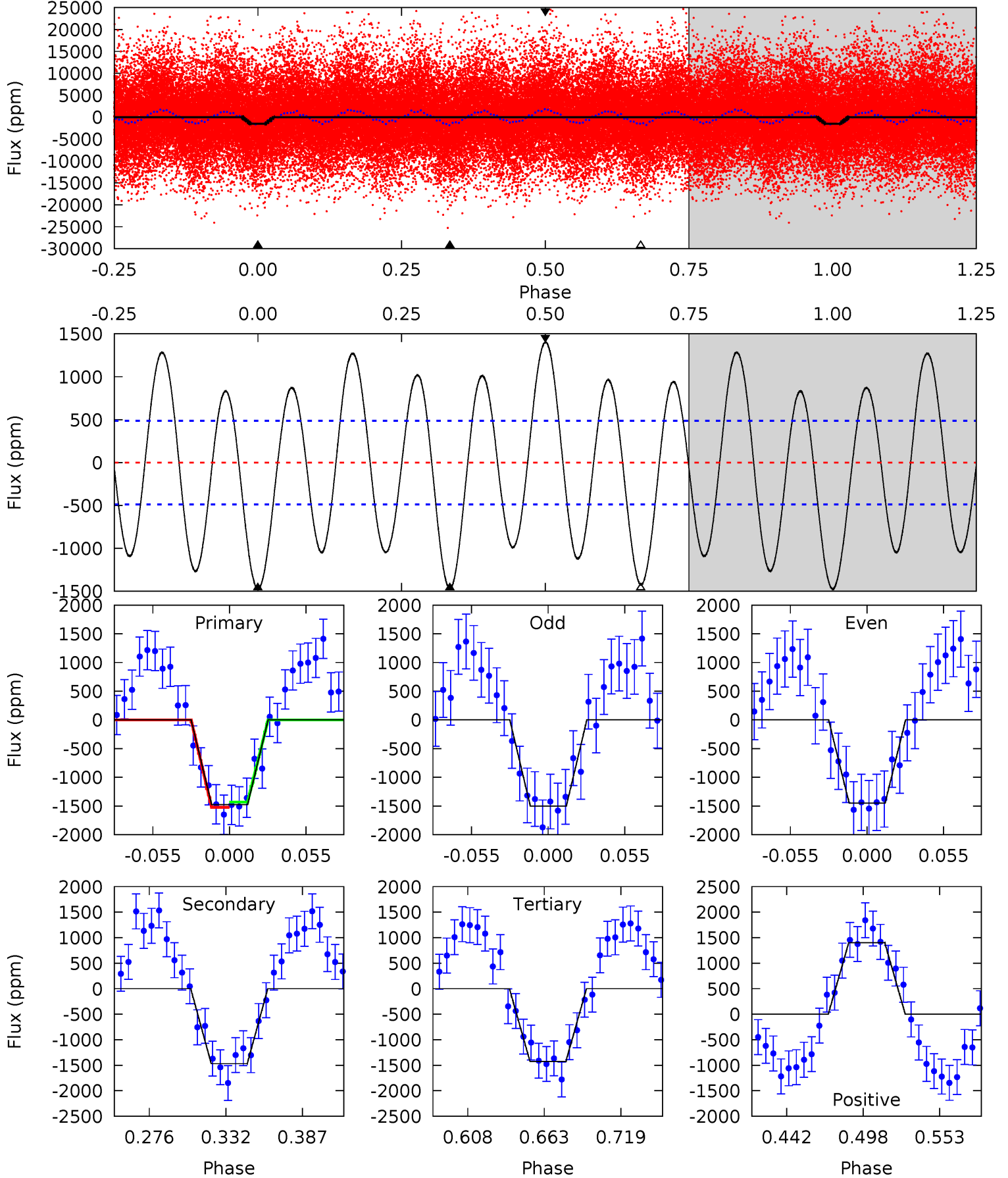
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	12.6	12.3	4.20	4.65	1.83	6.00	1.26	9.34	0.29	8.37	1.03	0.88	0.48	0.82



# Alt Model-Shift Uniqueness Test

007974032-01, P = 1.377296 Days, E = 130.642213 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
14.2	14.1	13.7	13.5	4.69	1.92	7.80	0.51	0.70	0.45	0.64	0.26	1.05	0.49	0.43



### Stellar Parameters For KIC 007974032

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$7237^{+201}_{-302}$	$4.039^{+0.198}_{-0.162}$	$-0.060^{+0.250}_{-0.350}$	$1.994^{+0.559}_{-0.504}$	$1.585^{+0.200}_{-0.300}$	$0.281^{+0.332}_{-0.133}$
	+3%/-4%	+5%/-4%	+417%/-583%	+28%/-25%	+13%/-19%	+118%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007974032-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-488 \pm 39$	$4.58^{+1.51}_{-1.43}$	$3719^{+276}_{-289}$	$7269^{+1794}_{-992}$	$10^{+11}_{-4}$
Alt.	$-1470 \pm 104$	$7.49^{+1.94}_{-1.60}$	$3720^{+302}_{-273}$	$7530^{+1117}_{-751}$	$11^{+7}_{-4}$

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



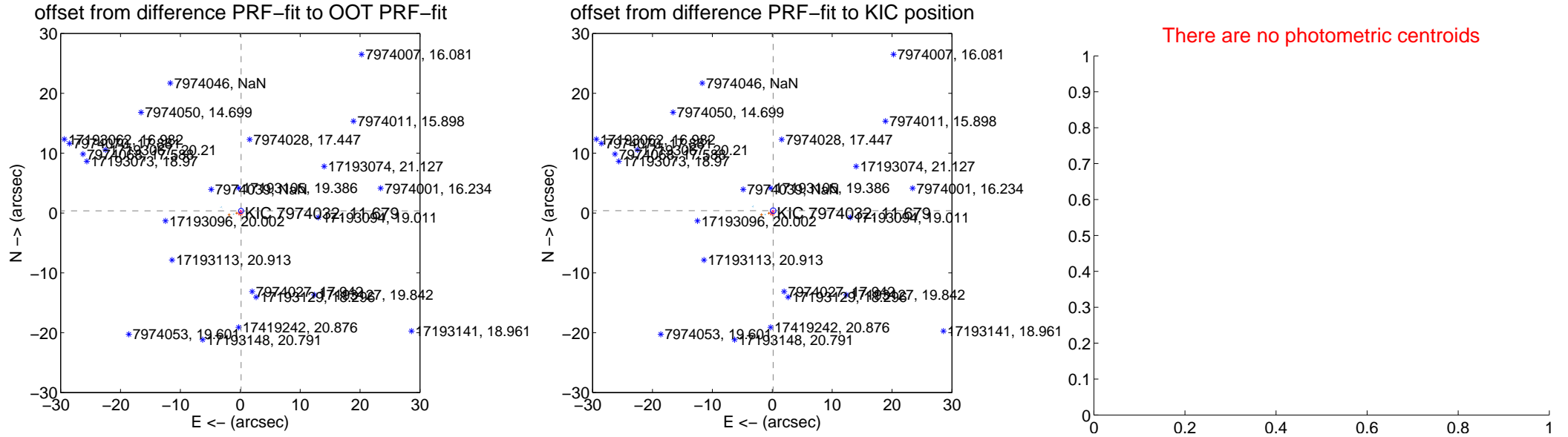
## DV Centroid Data

Supplemental centroid analysis for 007974032-01. **Kepler magnitude: 11.68.** Transit SNR 9.54

There are 14 quarters with good PRF difference image offsets

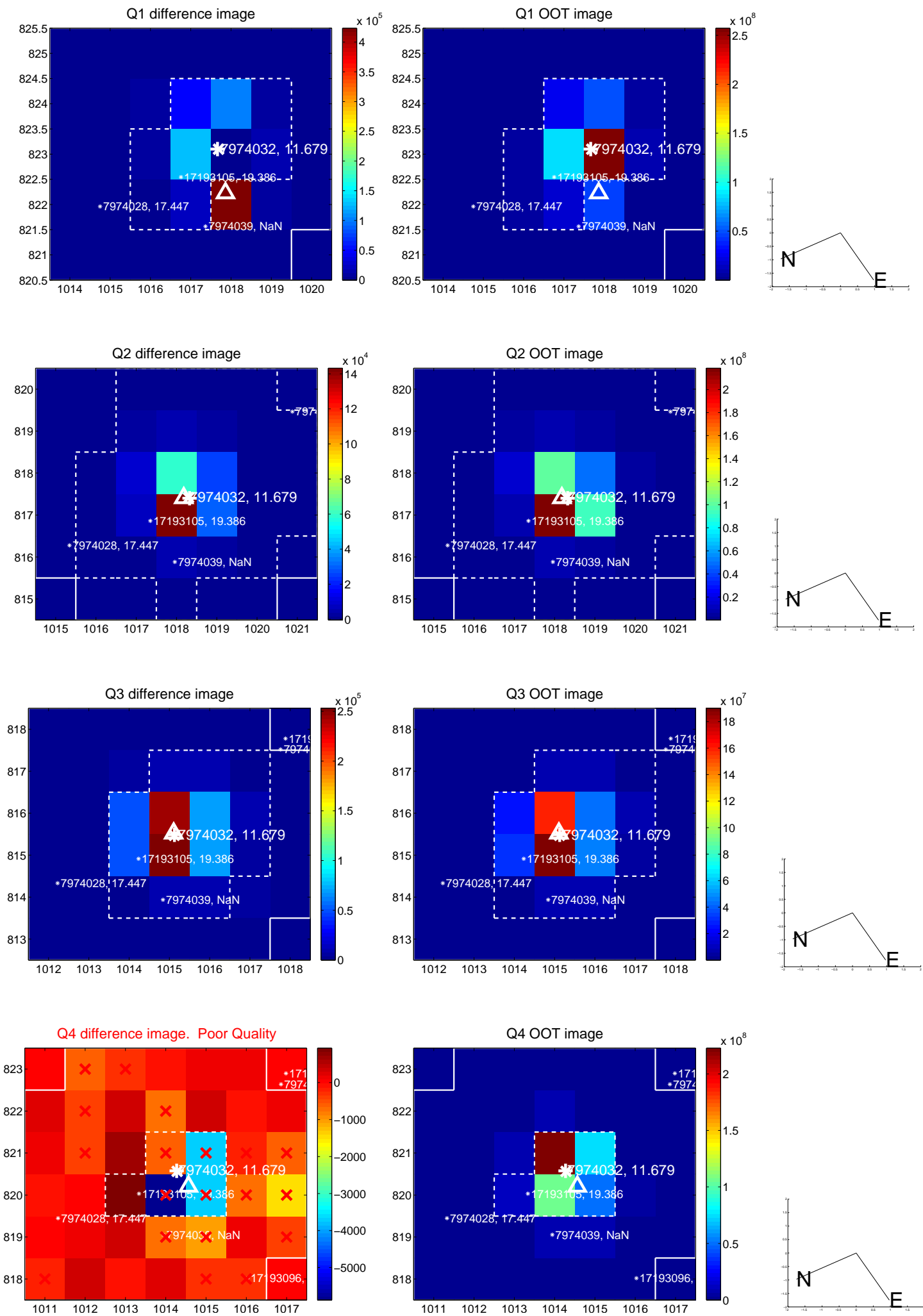
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.389 \pm 0.139$	2.79	$-0.132 \pm 0.122$	$0.365 \pm 0.141$
PRF-fit source offset from KIC position	$0.420 \pm 0.156$	2.69	$-0.156 \pm 0.125$	$0.390 \pm 0.160$
photometric centroid source offset	—	—	—	—

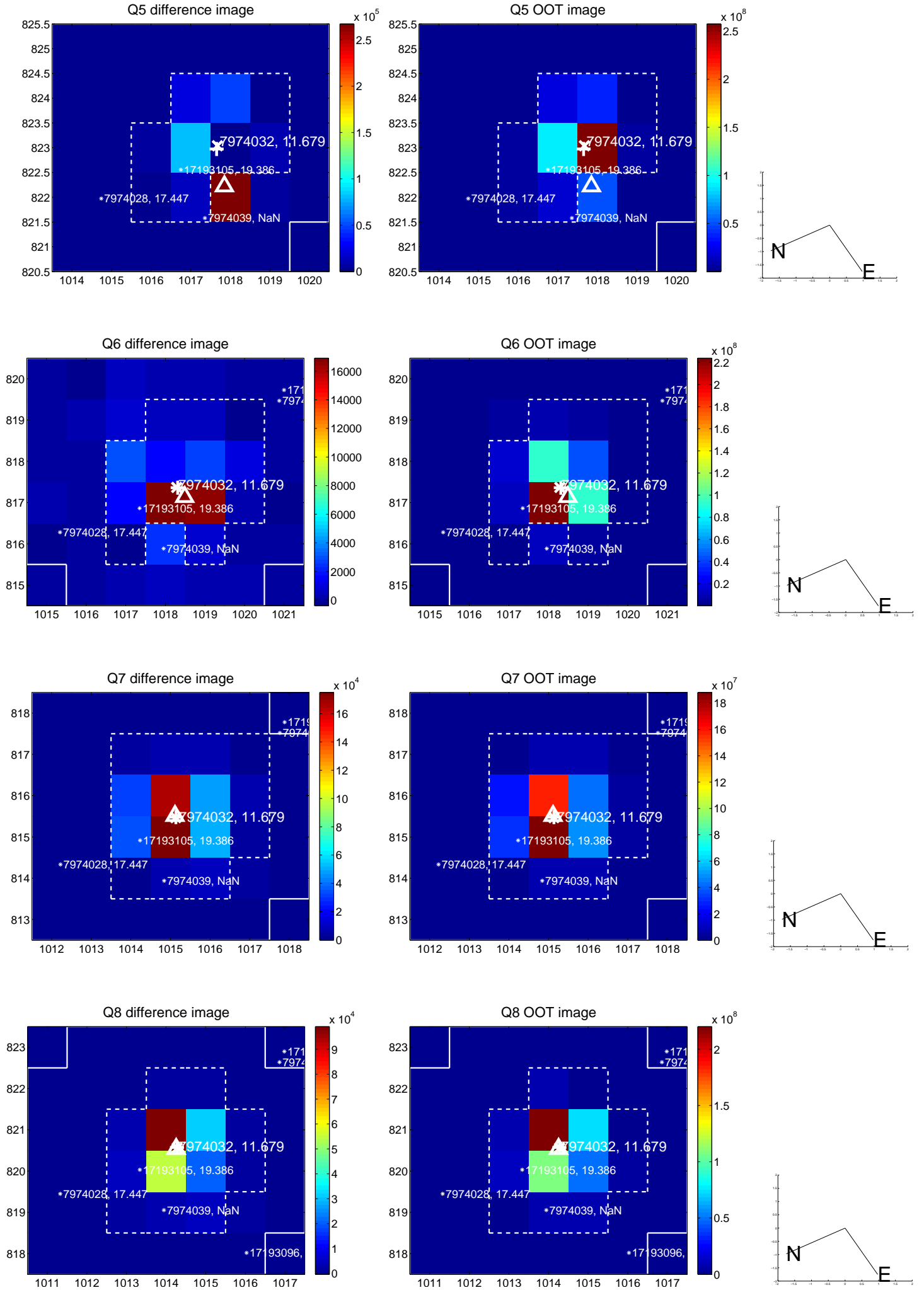


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

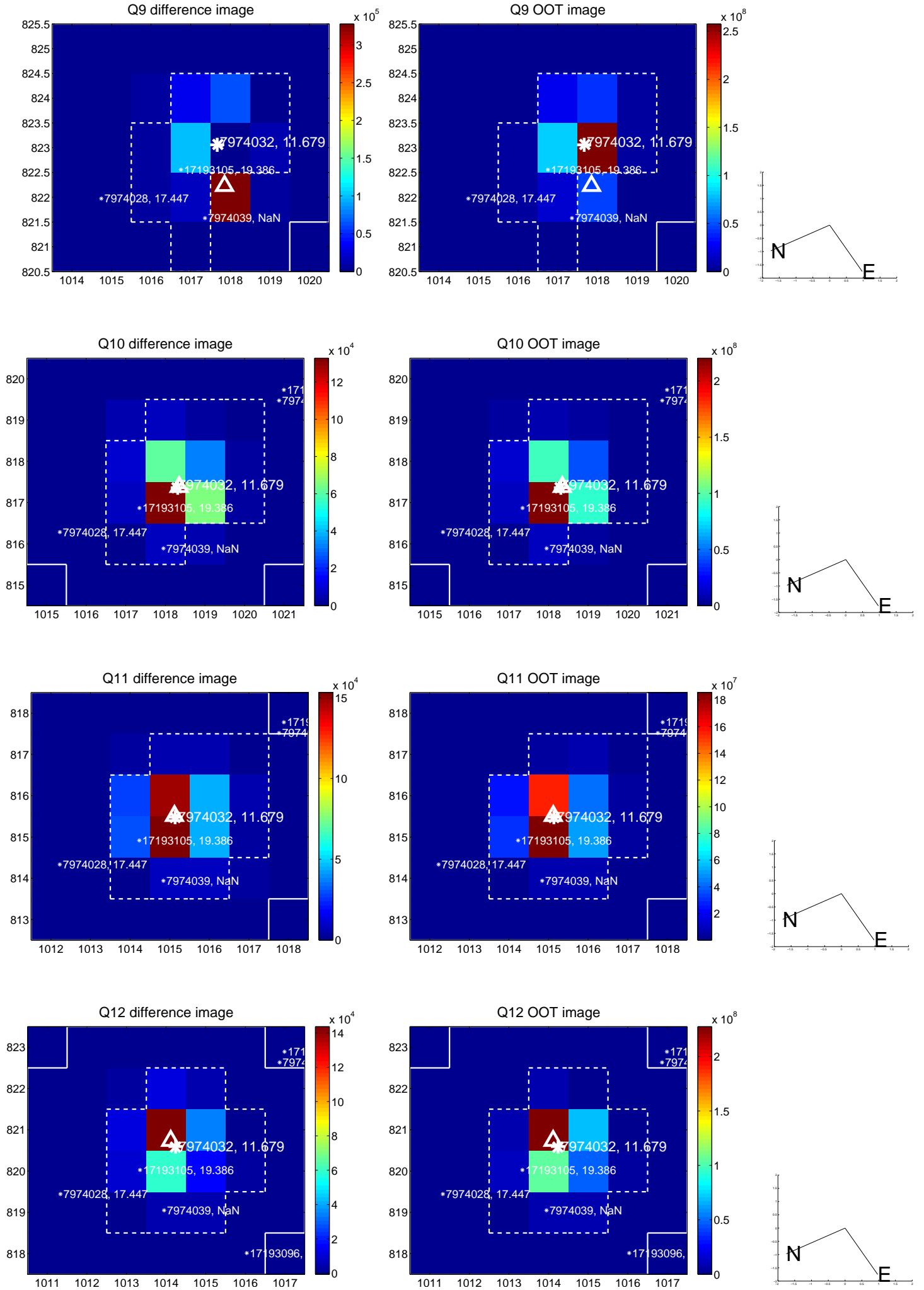


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

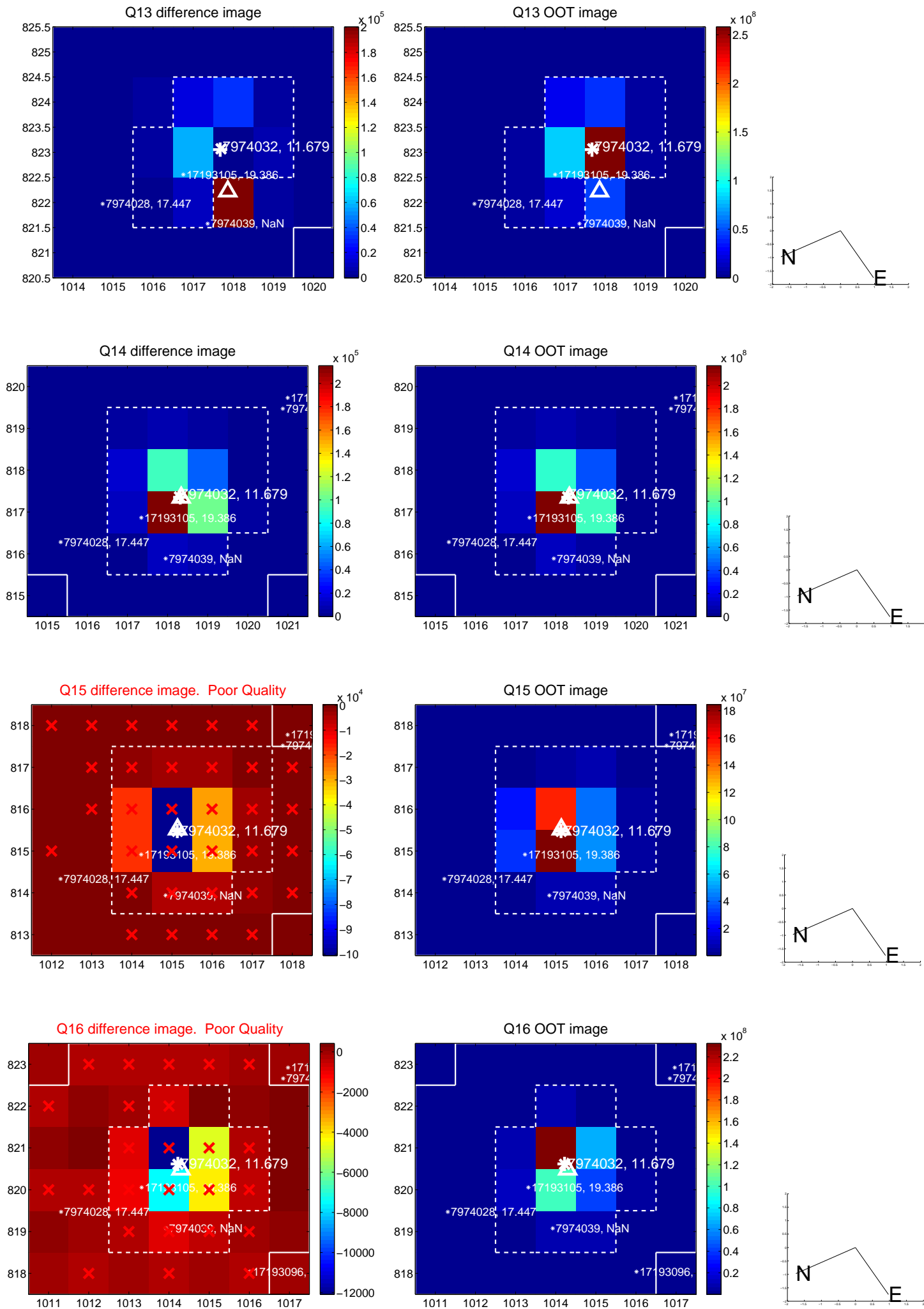




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



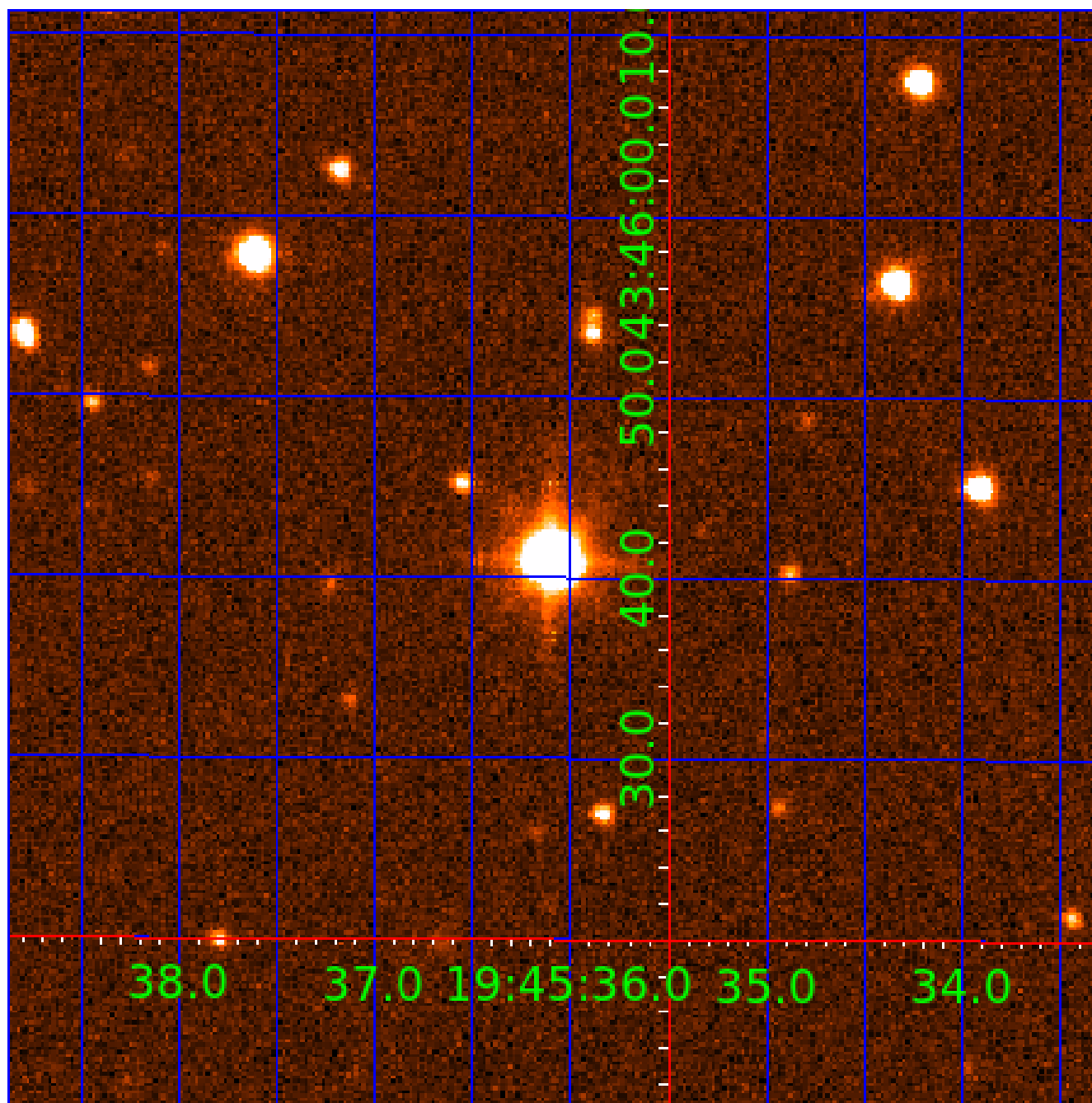
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination





# KIC 007974032

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007974032-01	OBS	No	1.377285	132.019333	403.3	1.791	10.6	9.5	1.99	7237	4.65	12234.33
007974032-02	OBS	No	0.556339	131.616130	382.4	0.991	12.2	10.2	1.99	7237	4.56	40972.54
007974032-03	OBS	No	0.556354	132.042244	111.8	1.500	10.3	-1.0	1.99	7237	2.14	40971.03
007974032-04	OBS	No	0.556349	131.935994	144.3	1.500	10.9	-1.0	1.99	7237	2.44	40971.50

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007974032-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007974032-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007974032-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_NOFITS
007974032-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

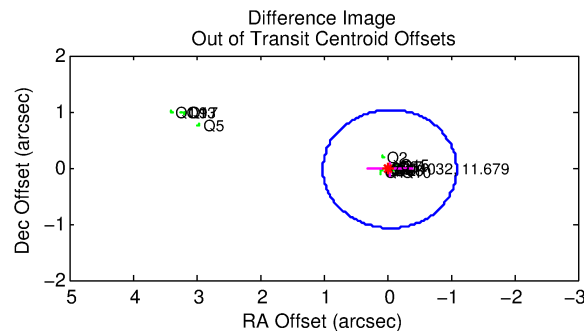
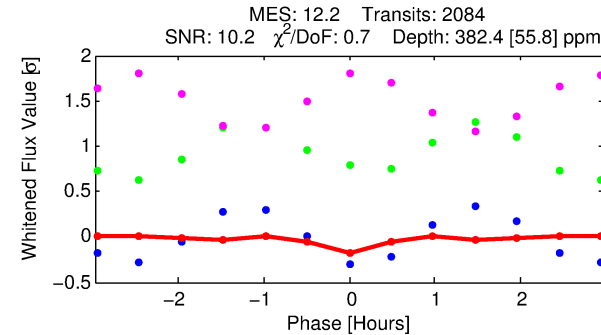
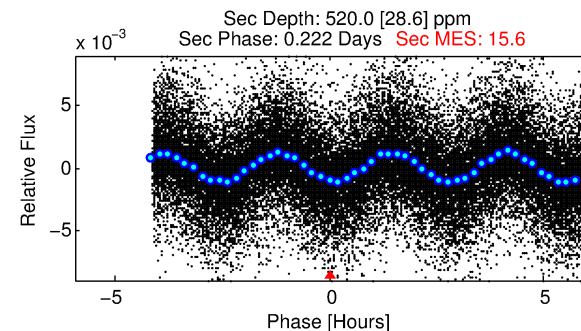
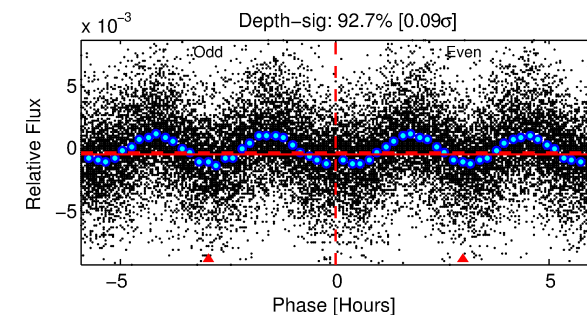
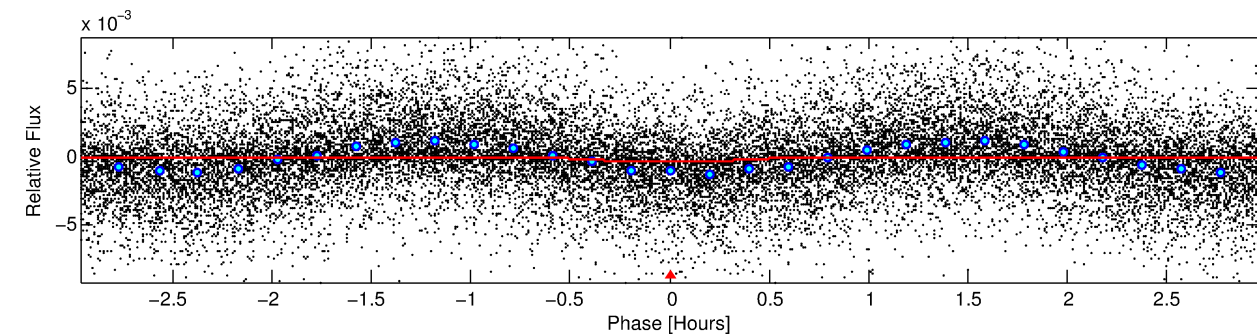
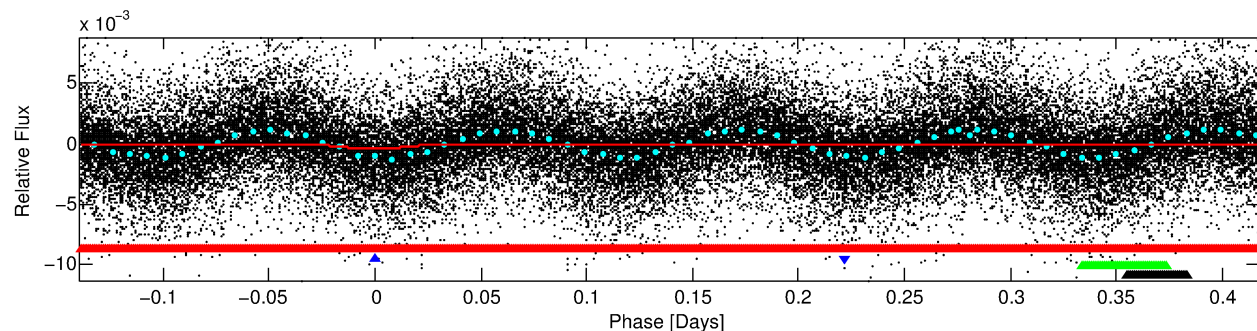
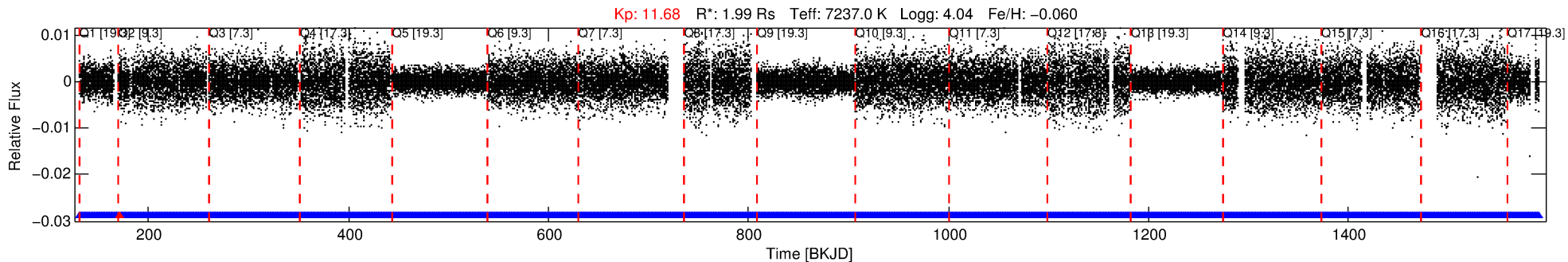
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007974032-02

No Significant Match Found

# DV One-Page Summary

KIC: 7974032 Candidate: 2 of 4 Period: 0.556 d



## DV Fit Results:

Period = 0.55634 [0.00001] d  
Epoch = 131.6161 [0.0013] BKJD  
Rp/R\* = 0.0209 [0.0080]  
a/R\* = 2.27 [4.26]  
b = 0.90 [0.50]  
Seff = 40972.54 [16139.85]  
Teq = 3628 [357] K  
Rp = 4.56 [2.17] Re  
a = 0.0154 [0.0037] AU  
Ag = 3.29 [2.79] [0.82σ]  
Teffp = 7552 [1488] K [2.56σ]

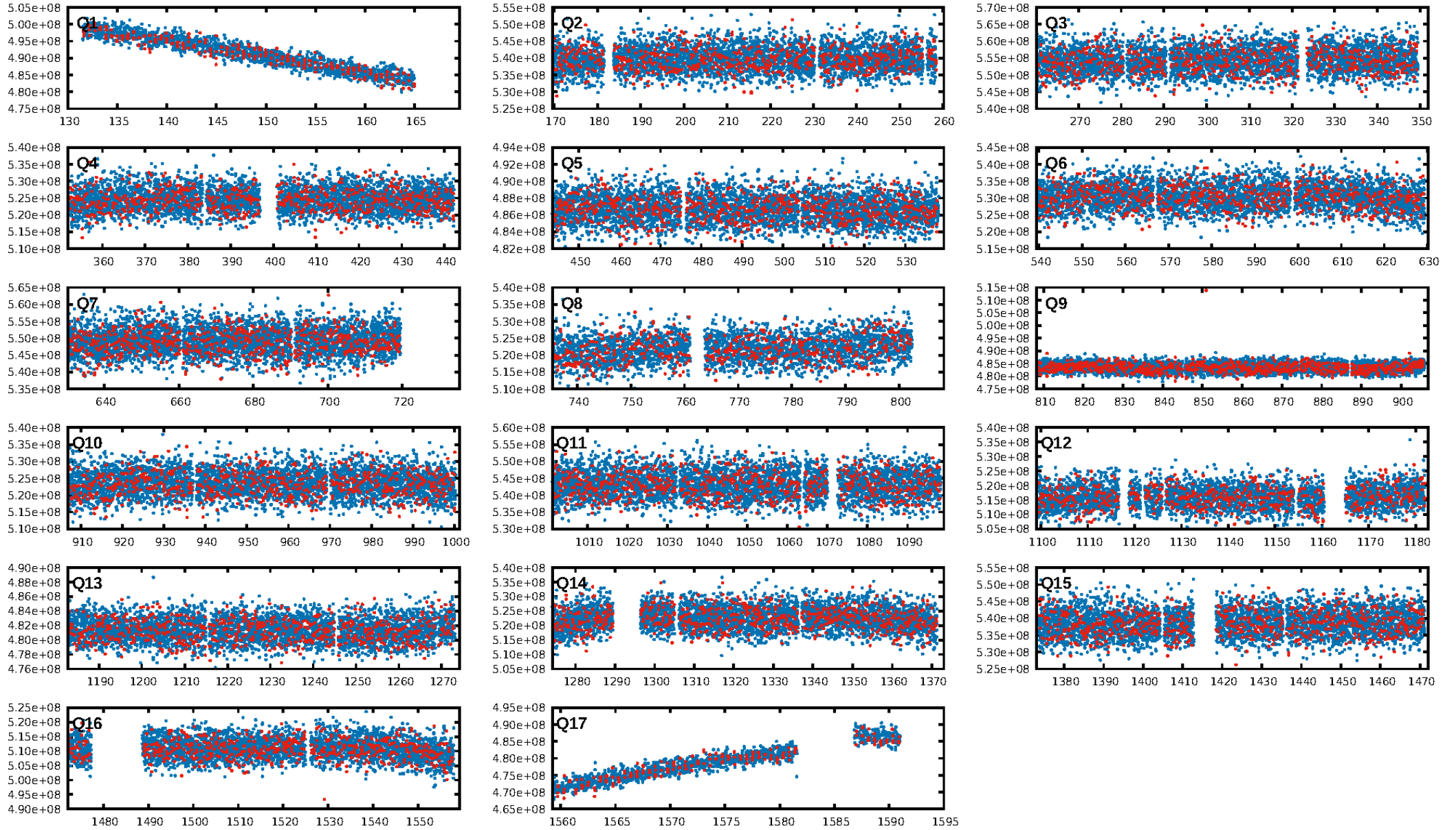
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1988/1989]  
GhostDiagnostic-chr: -1.296  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.048 arcsec [0.14σ]  
KicOffset-rm: 0.248 arcsec [1.62σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:18:42 Z

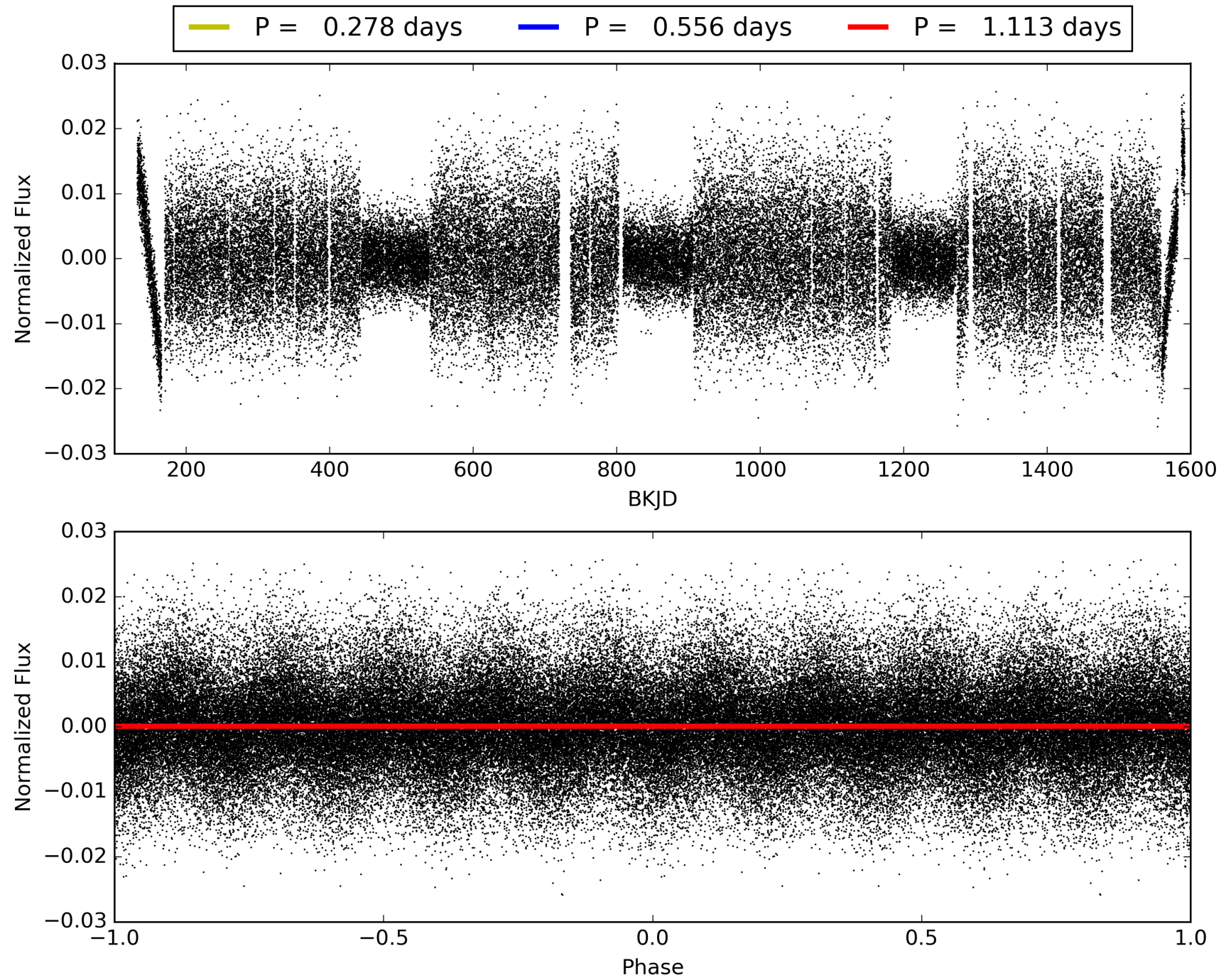
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007974032-02, PDC Light Curves





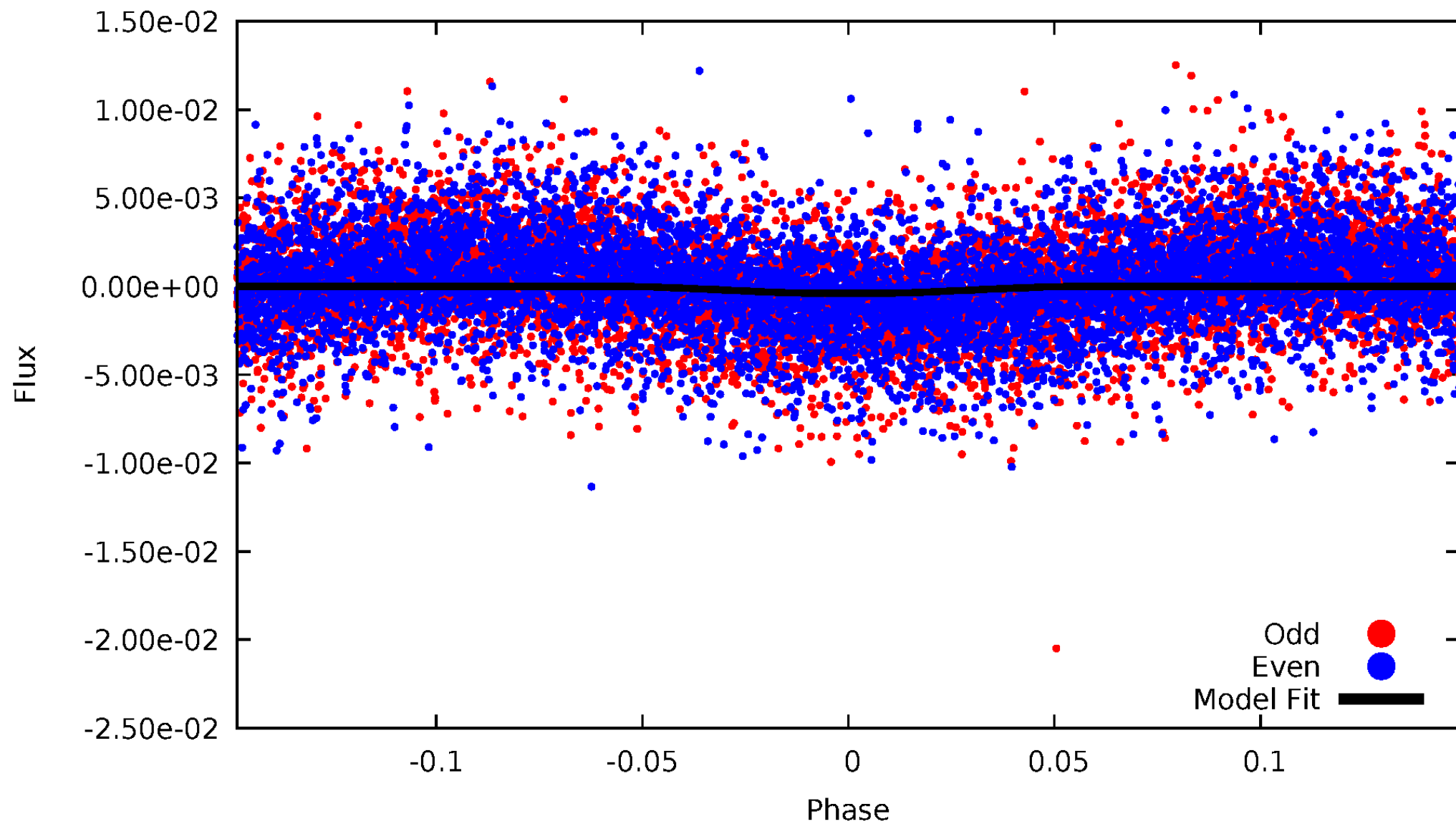
TCE 007974032-02





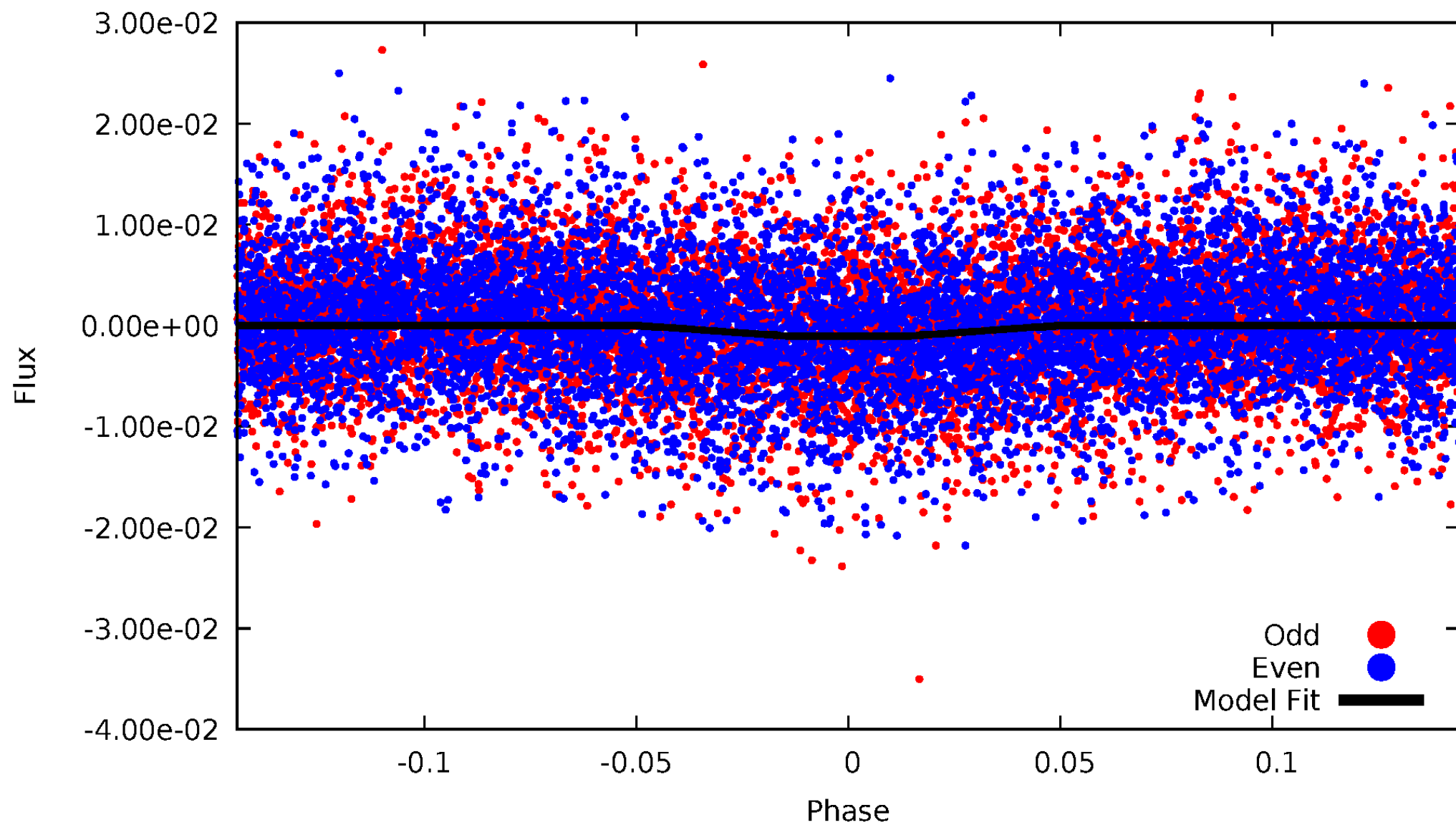
# DV Odd/Even

TCE 007974032-02



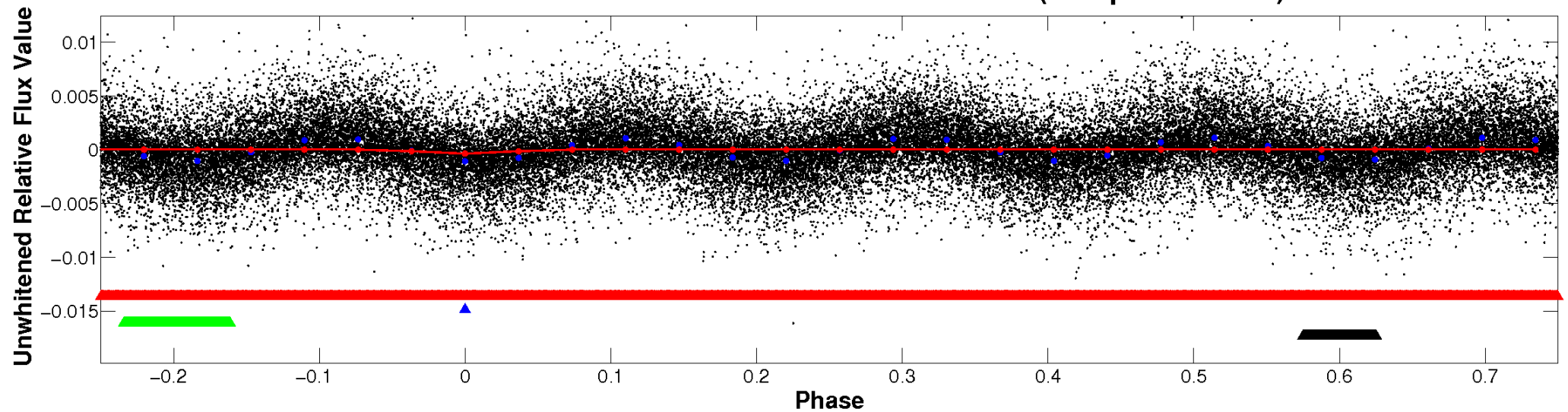
ALT Odd/Even

TCE 007974032-02

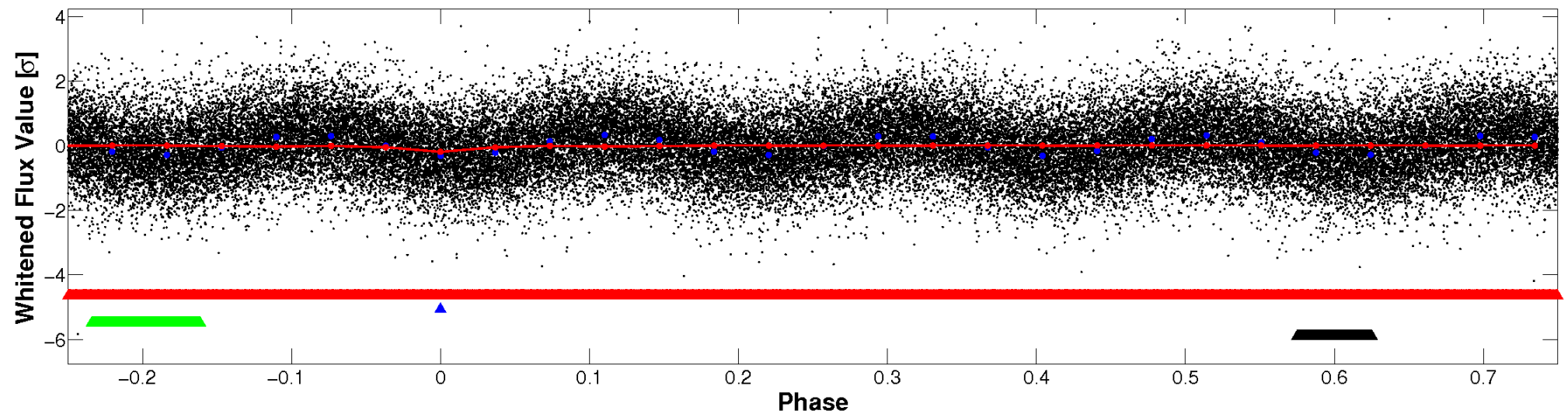


# Non-Whitened Vs. Whitened Light Curve

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

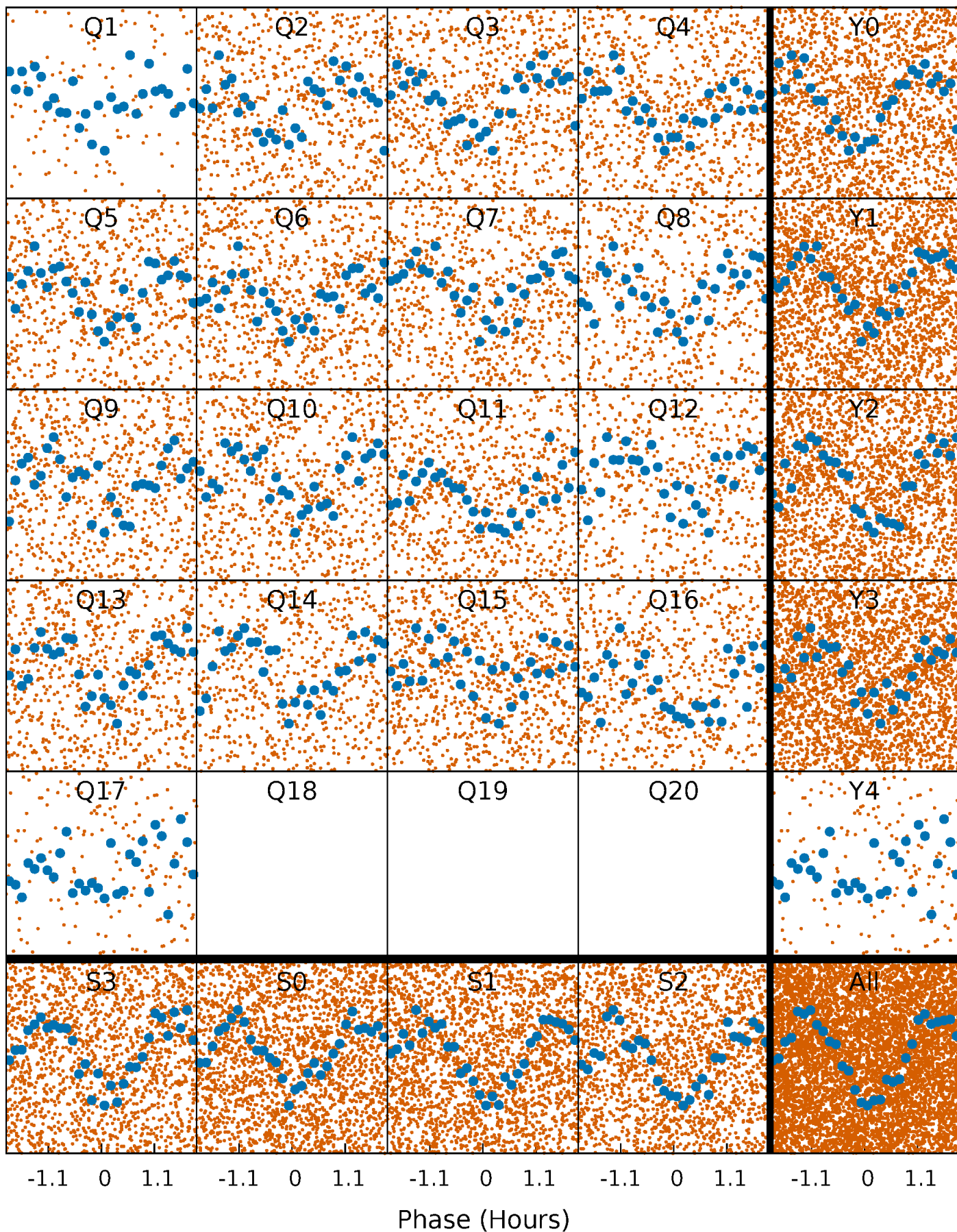


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

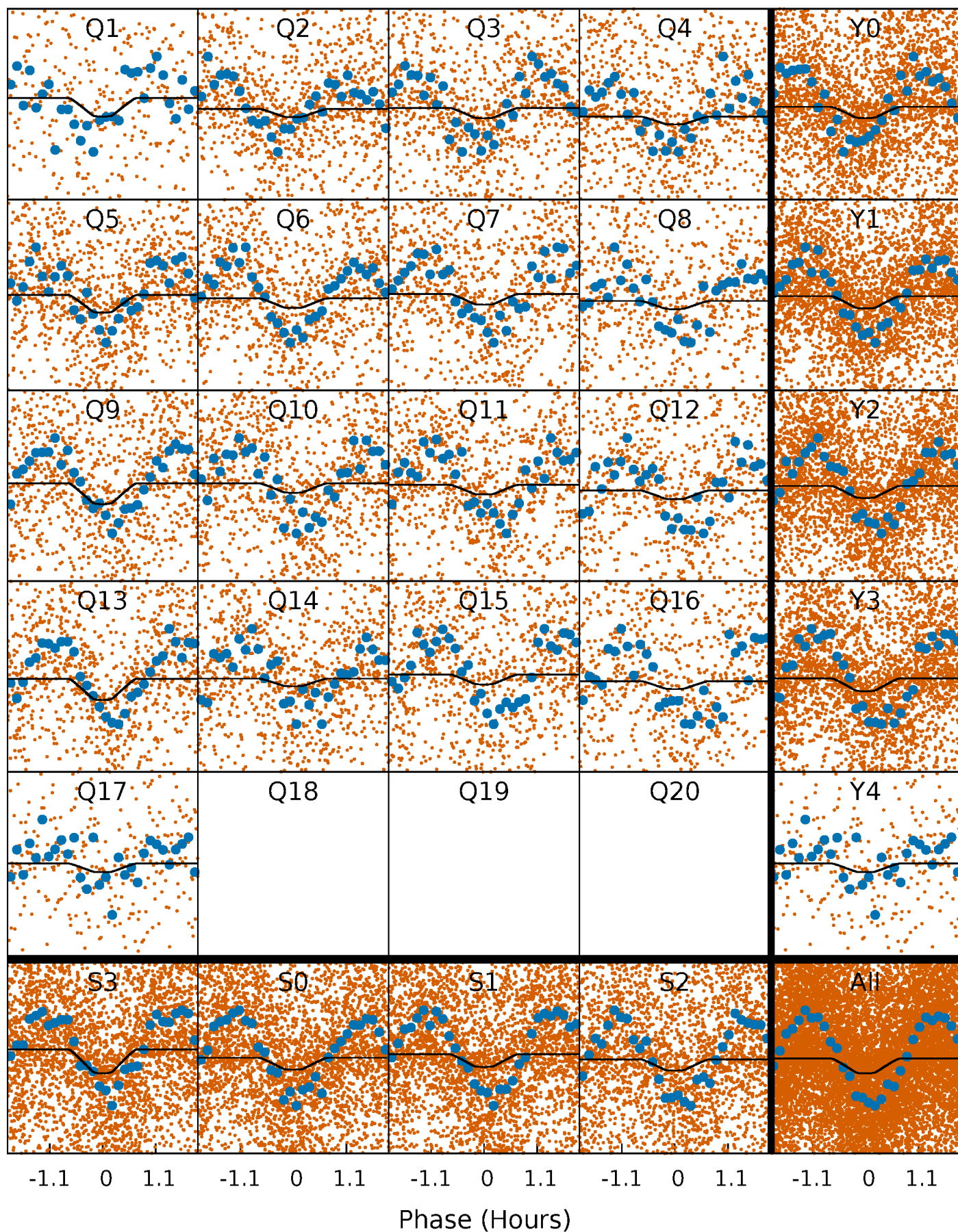
TCE 007974032-02 P= 0.556339 Days  $T_0=131.616130$  (BKJD)





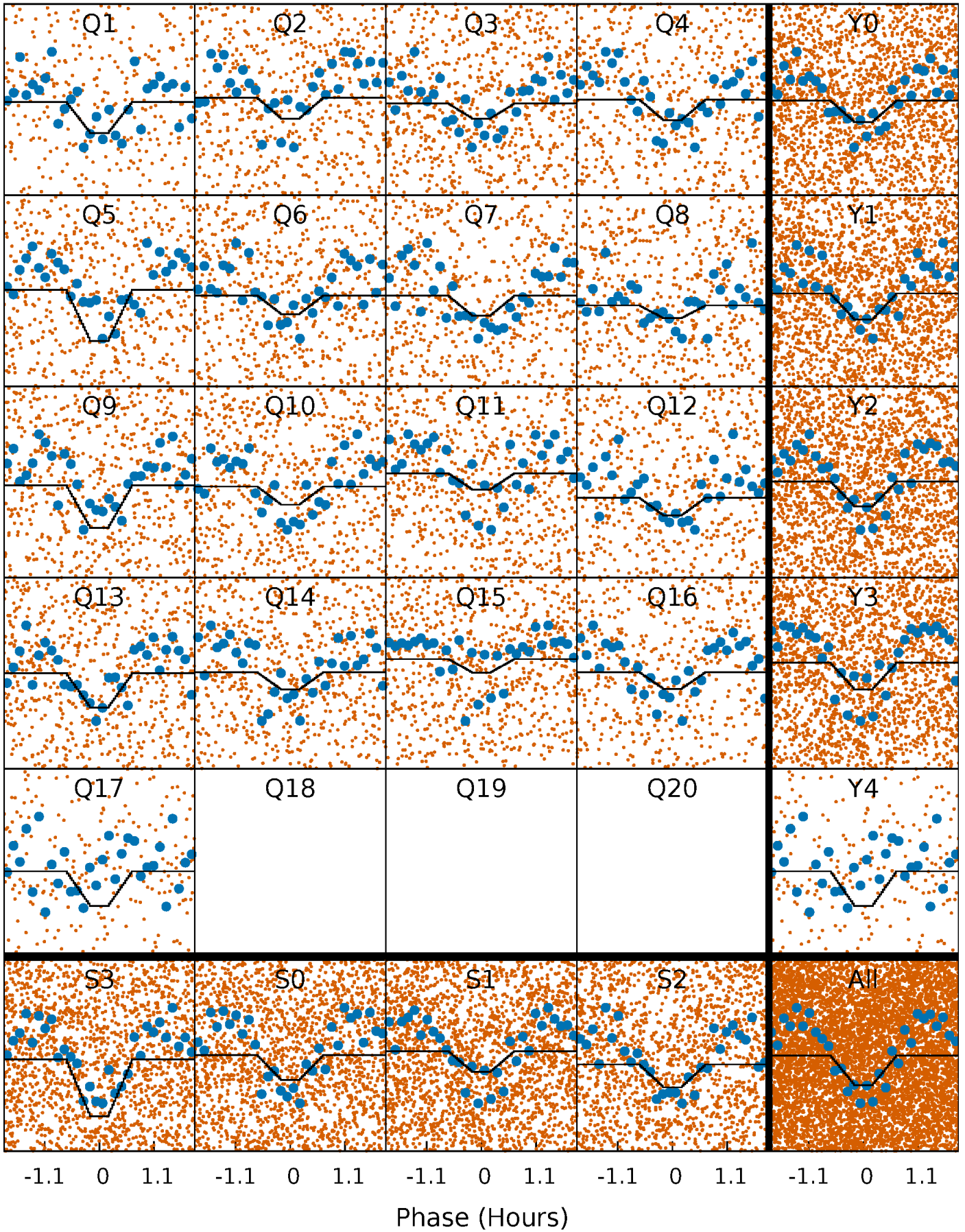
# DV Quarter-Phased Transit Curves

TCE 007974032-02   P= 0.556339 Days    $T_0=131.616130$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

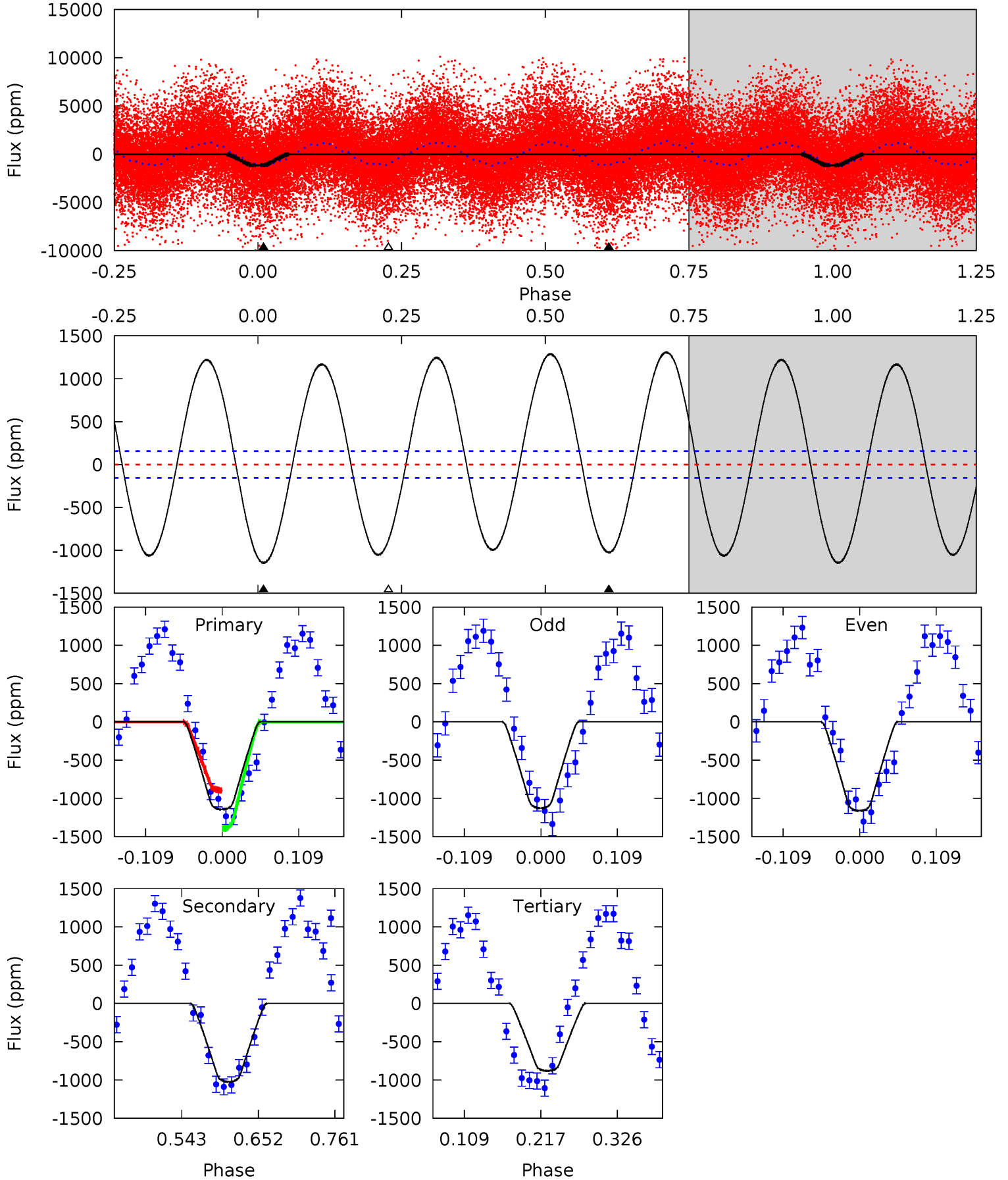
TCE 007974032-02   P= 0.556349 Days    $T_0=131.608092$  (BKJD)



# DV Model-Shift Uniqueness Test

007974032-02, P = 0.556339 Days, E = 131.059791 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
33.5	29.9	25.7	0	4.55	1.60	22.8	7.75	33.5	4.20	29.9	0.50	1.17	0.53	7.47

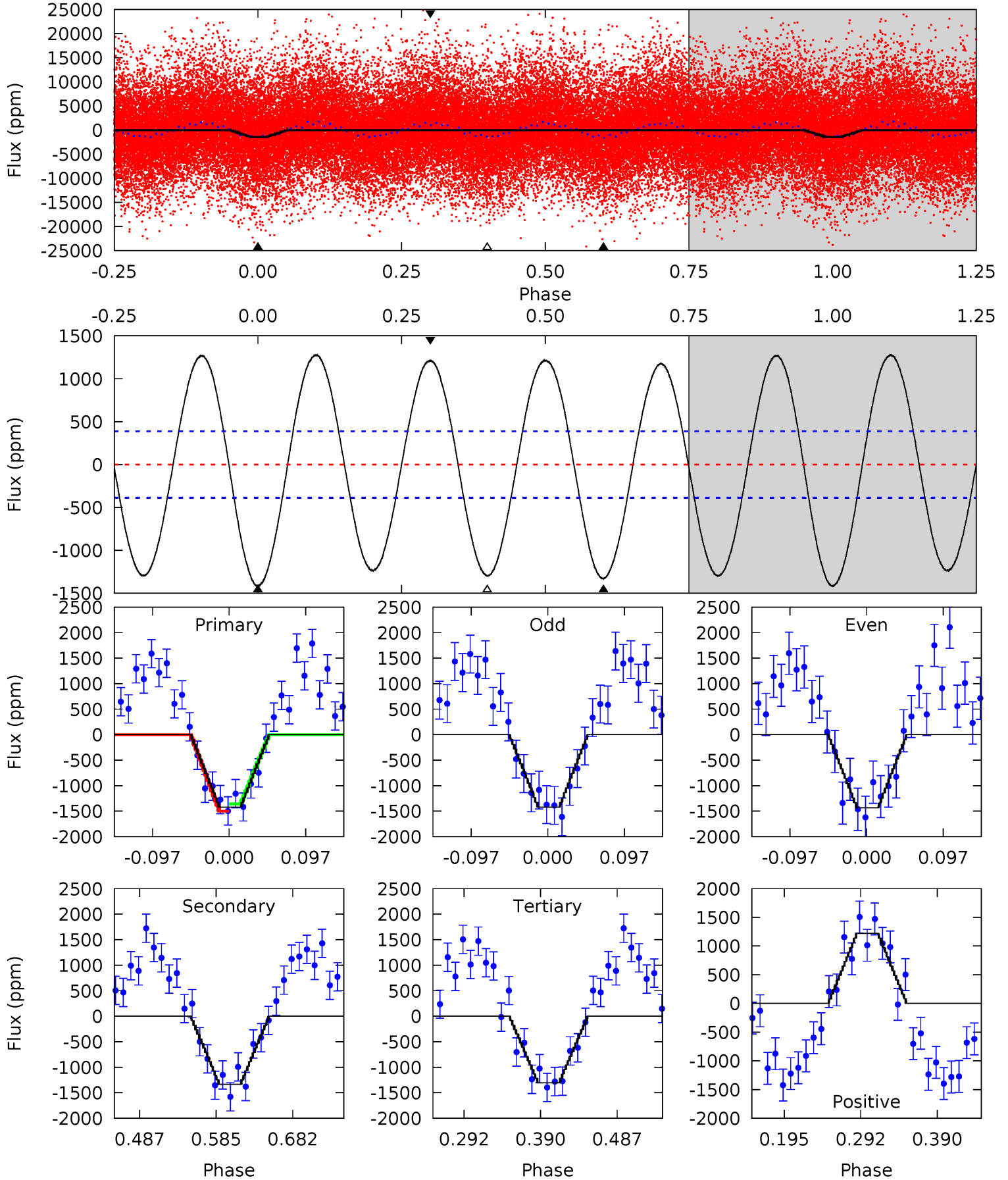




# Alt Model-Shift Uniqueness Test

007974032-02, P = 0.556349 Days, E = 131.051743 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
16.8	15.8	15.4	14.4	4.57	1.66	10.5	1.37	2.40	0.35	1.38	0.06	1.00	0.47	0.81





### Stellar Parameters For KIC 007974032

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7237^{+201}_{-302}$	$4.039^{+0.198}_{-0.162}$	$-0.060^{+0.250}_{-0.350}$	$1.994^{+0.559}_{-0.504}$	$1.585^{+0.200}_{-0.300}$	$0.281^{+0.332}_{-0.133}$
	+3%/-4%	+5%/-4%	+417%/-583%	+28%/-25%	+13%/-19%	+118%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007974032-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-1024 \pm 34$	$4.36^{+2.10}_{-1.66}$	$5050^{+324}_{-399}$	$9274^{+4167}_{-1982}$	$6.870^{+11.102}_{-3.635}$
Alt.	$-1335 \pm 85$	$6.99^{+2.24}_{-1.86}$	$5008^{+386}_{-333}$	$7406^{+1599}_{-1069}$	$3.498^{+3.153}_{-1.471}$

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

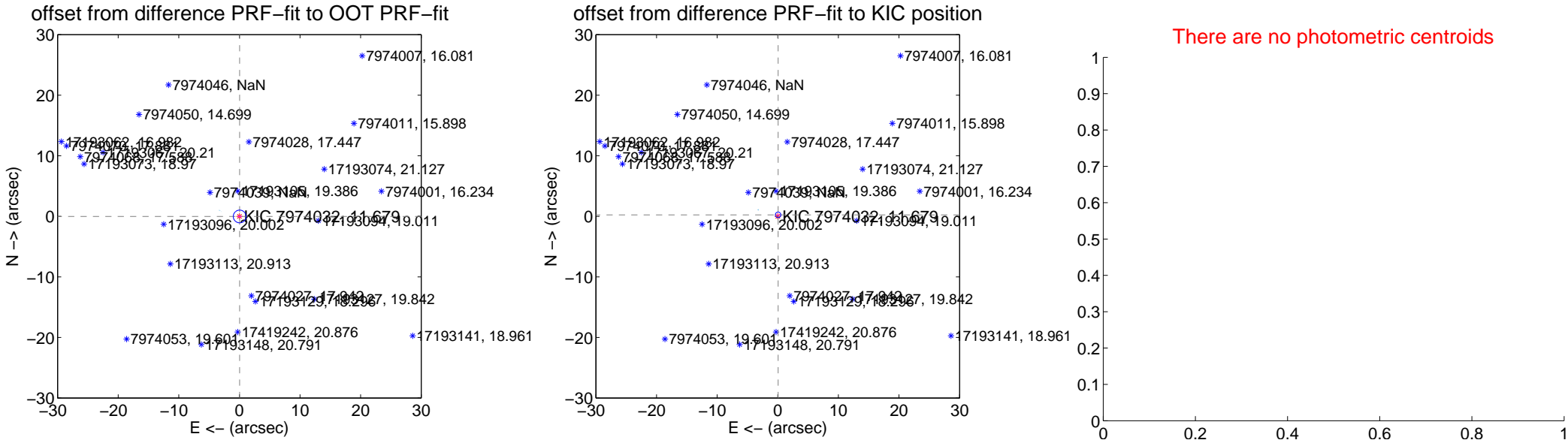
## DV Centroid Data

Supplemental centroid analysis for 007974032-02. **Kepler magnitude: 11.68.** Transit SNR 10.22

There are 17 quarters with good PRF difference image offsets

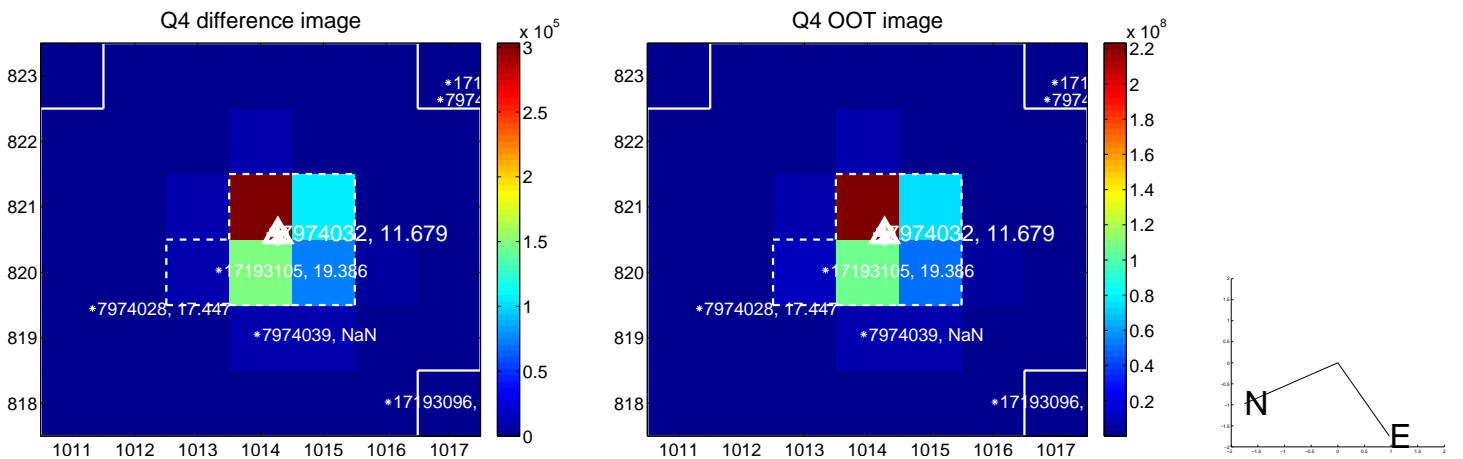
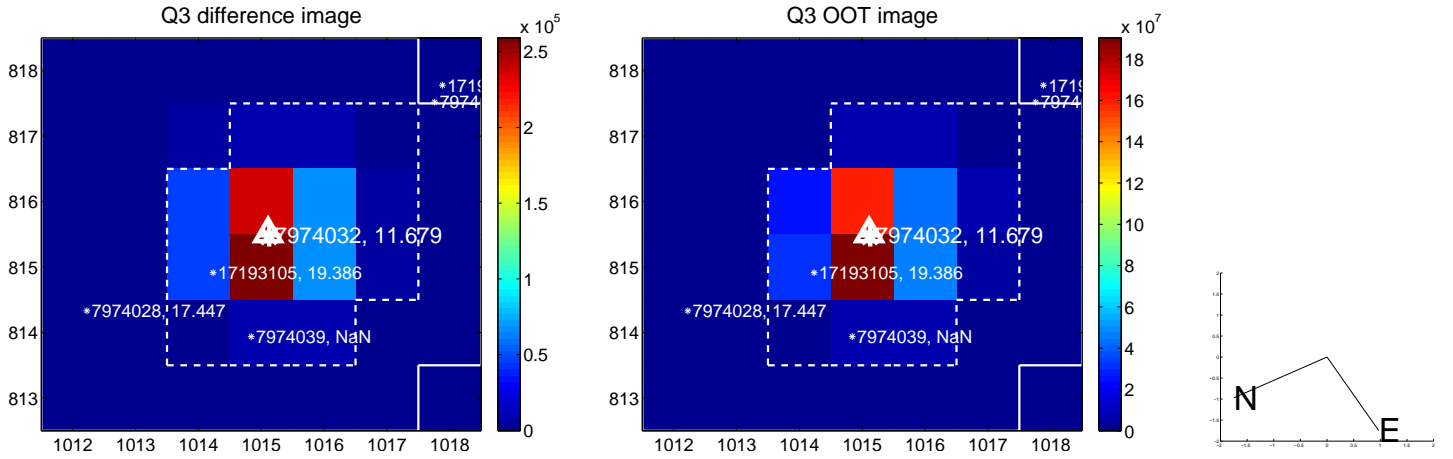
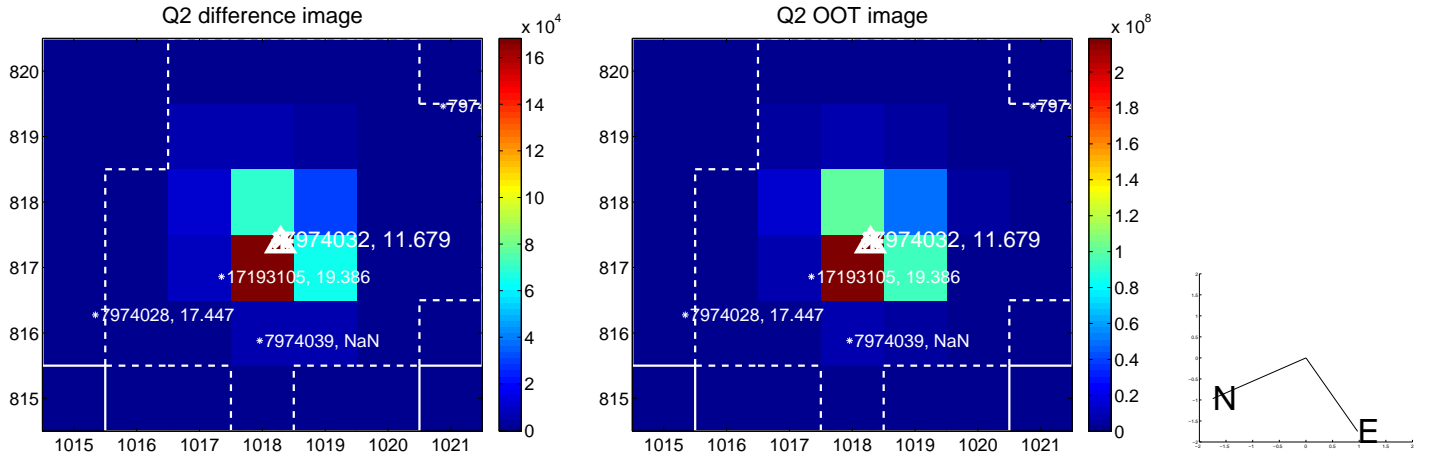
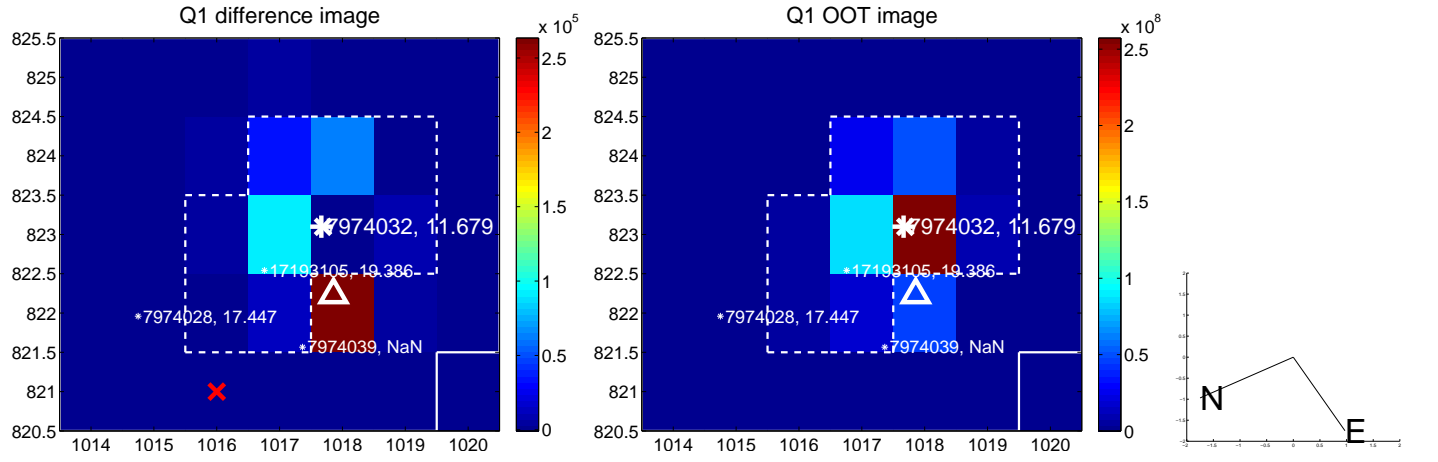
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.048 \pm 0.351$	0.14	$-0.041 \pm 0.348$	$-0.025 \pm 0.121$
PRF-fit source offset from KIC position	$0.248 \pm 0.153$	1.62	$-0.060 \pm 0.114$	$0.241 \pm 0.155$
photometric centroid source offset	—	—	—	—

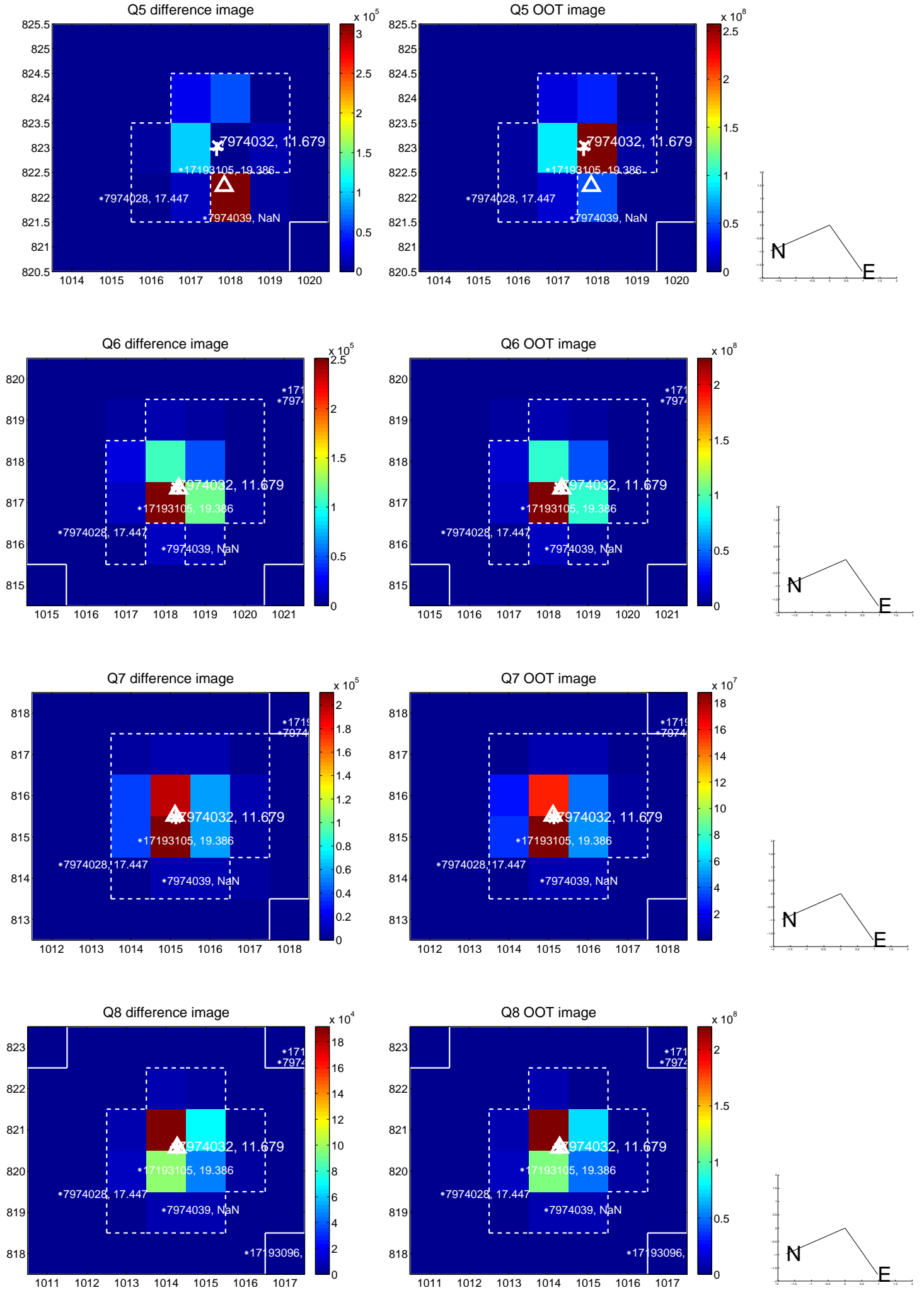


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

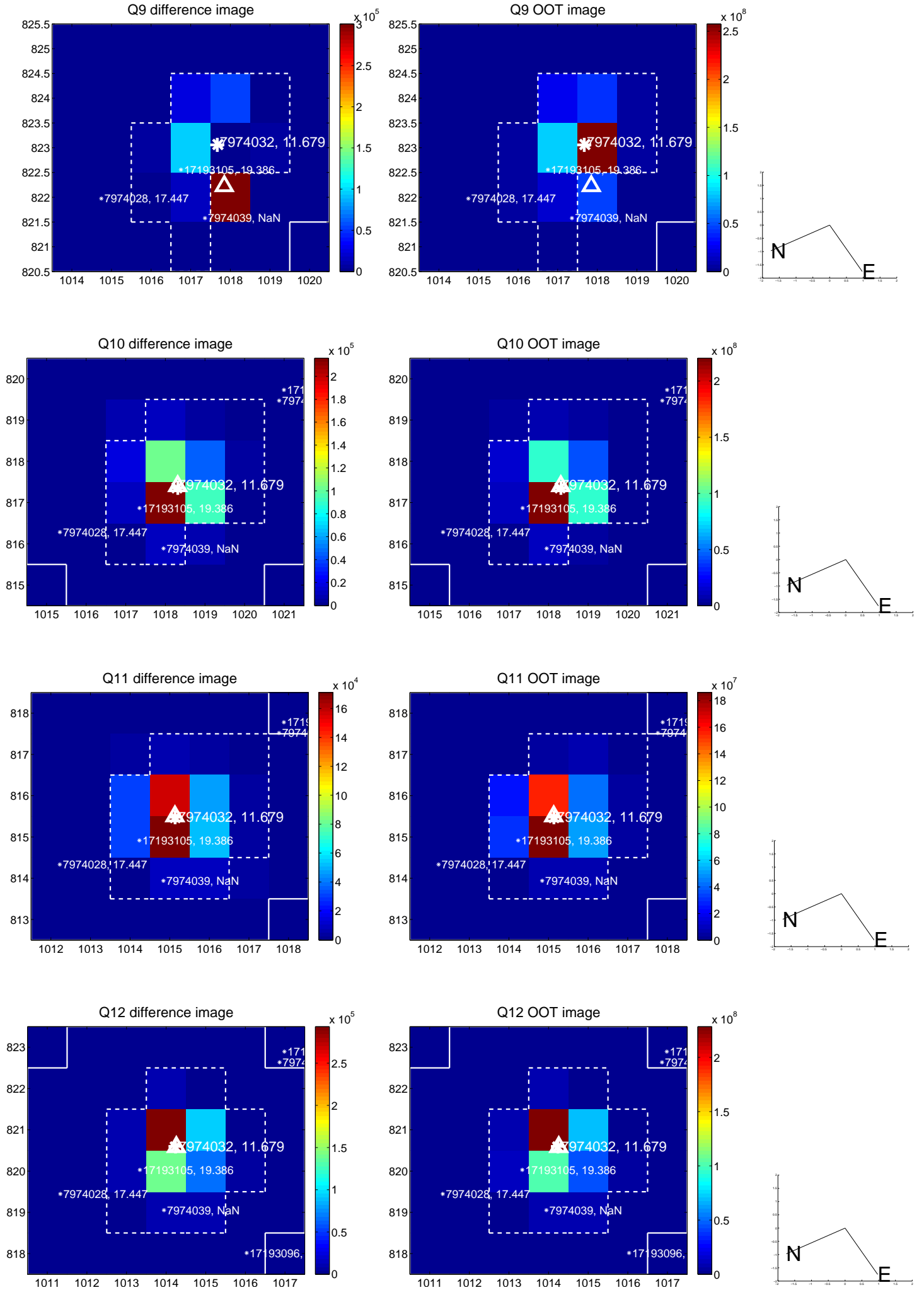
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

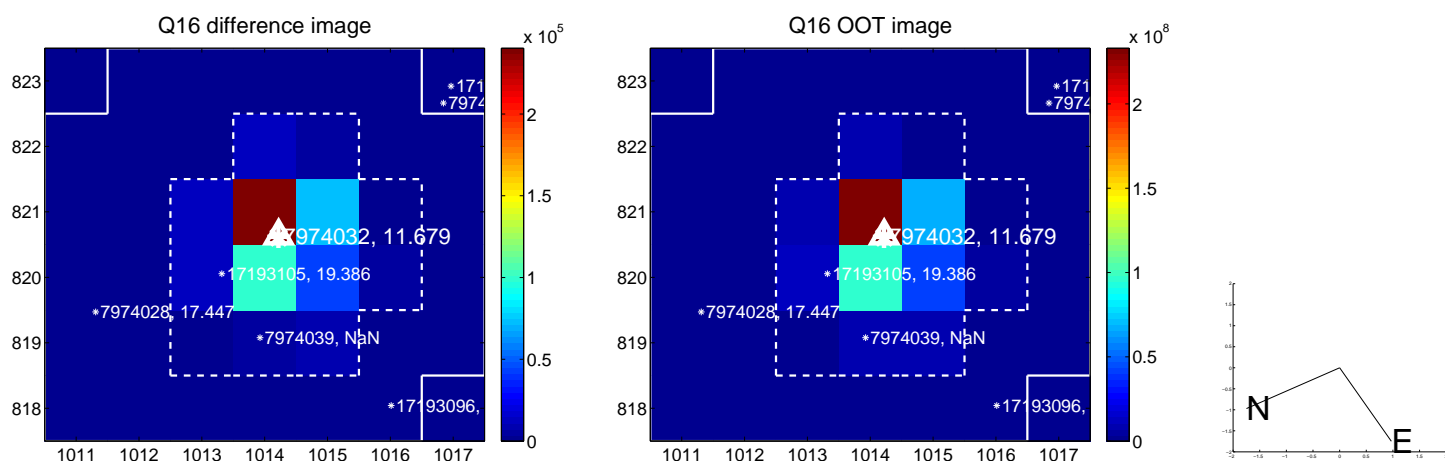
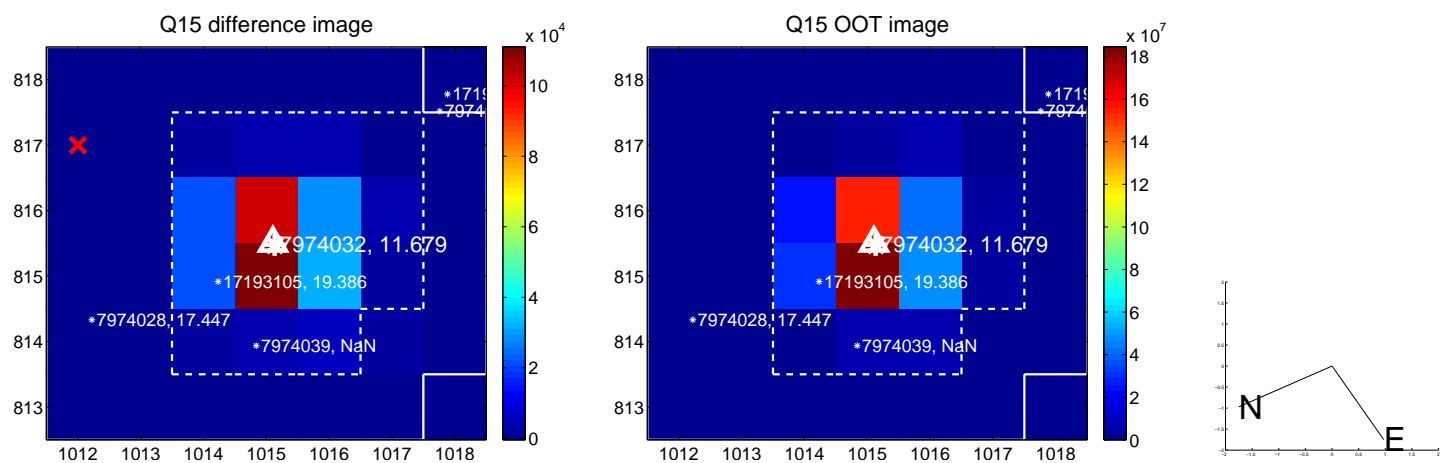
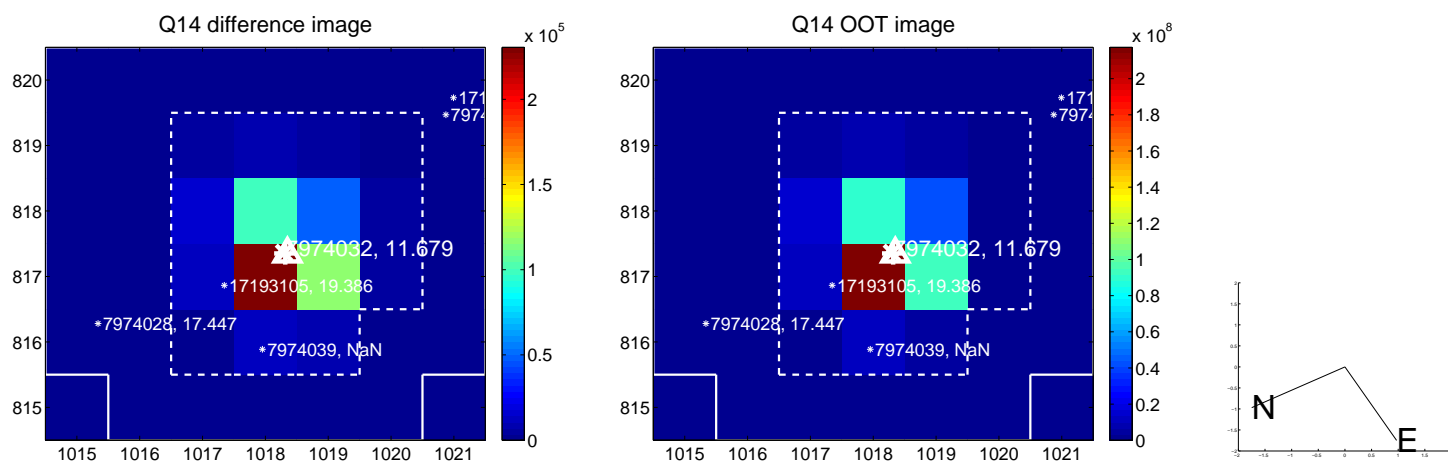
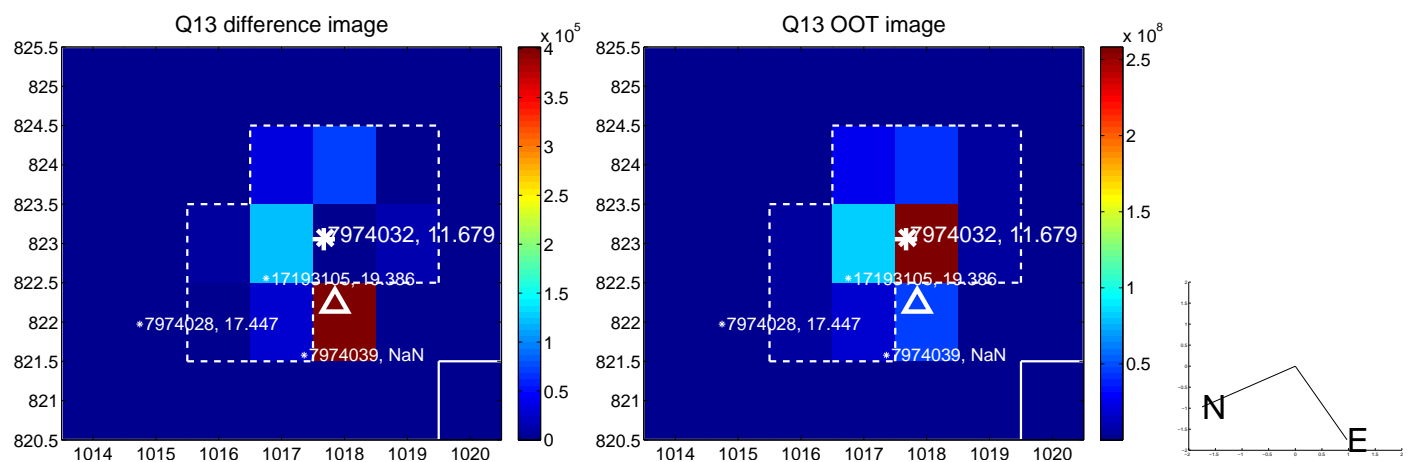


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

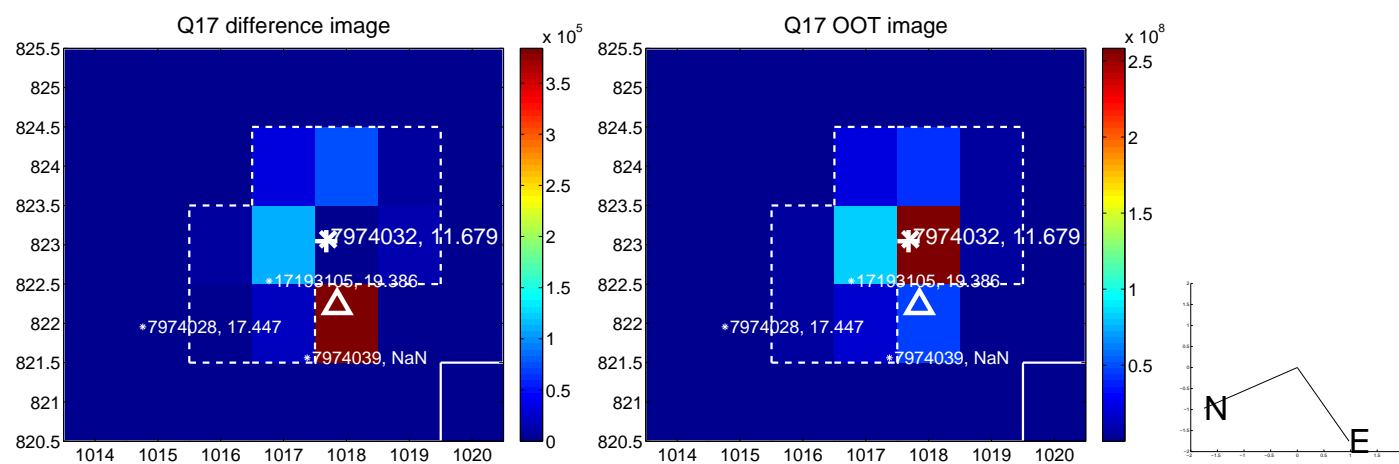




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



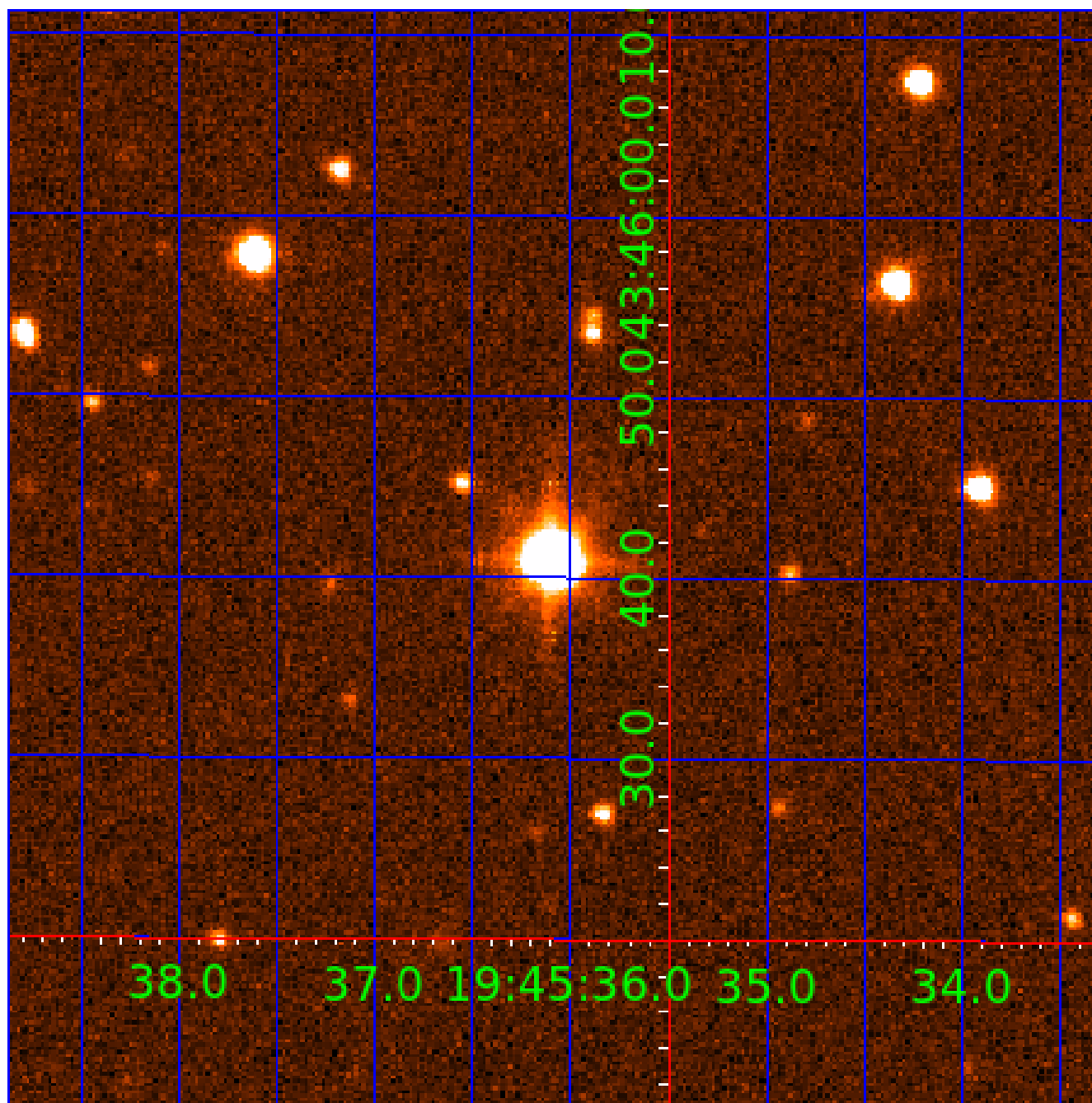
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



# KIC 007974032

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007974032-01	OBS	No	1.377285	132.019333	403.3	1.791	10.6	9.5	1.99	7237	4.65	12234.33
007974032-02	OBS	No	0.556339	131.616130	382.4	0.991	12.2	10.2	1.99	7237	4.56	40972.54
007974032-03	OBS	No	0.556354	132.042244	111.8	1.500	10.3	-1.0	1.99	7237	2.14	40971.03
007974032-04	OBS	No	0.556349	131.935994	144.3	1.500	10.9	-1.0	1.99	7237	2.44	40971.50

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007974032-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007974032-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007974032-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_NOFITS
007974032-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

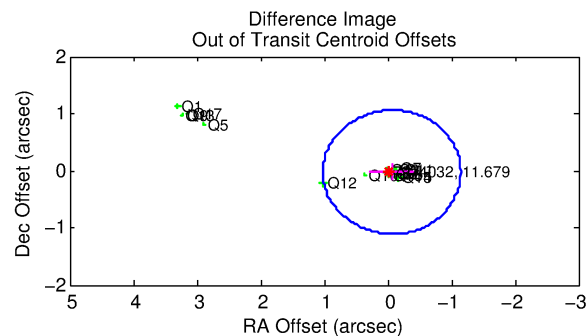
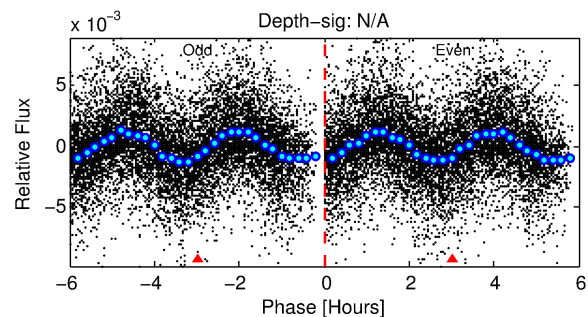
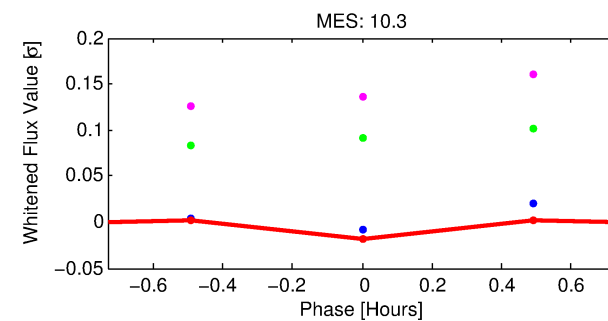
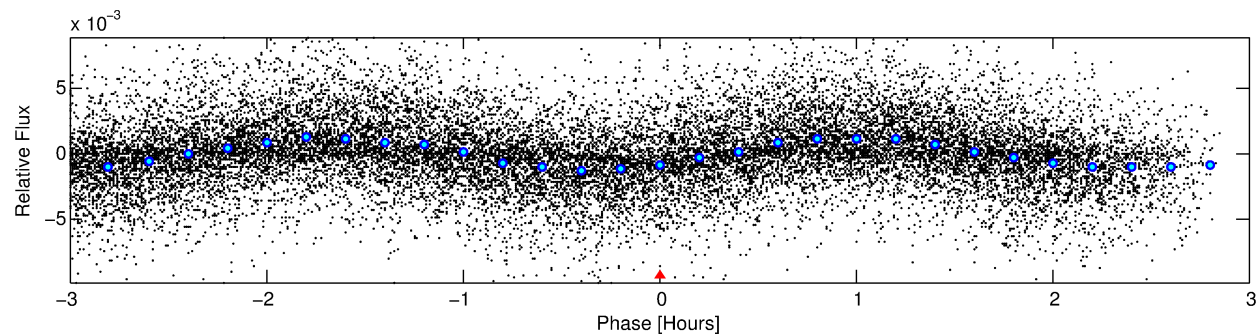
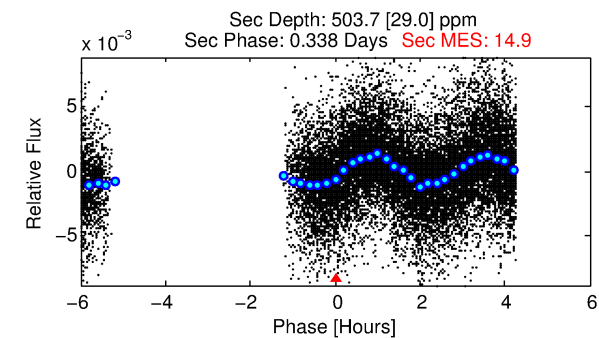
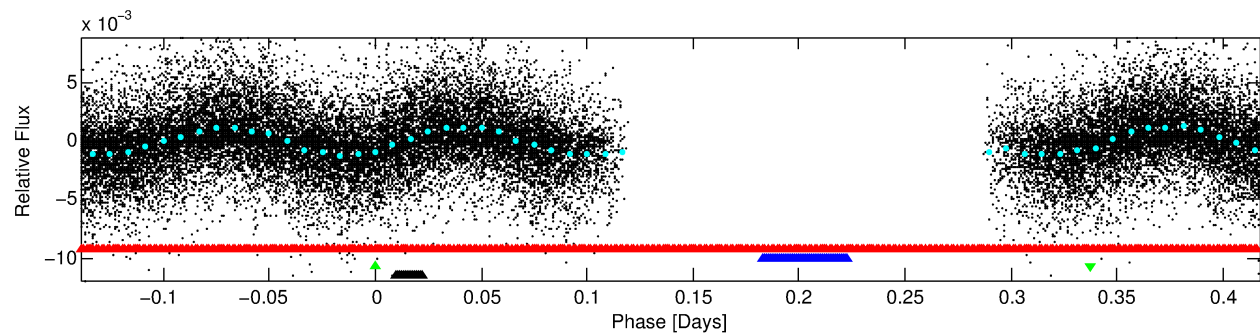
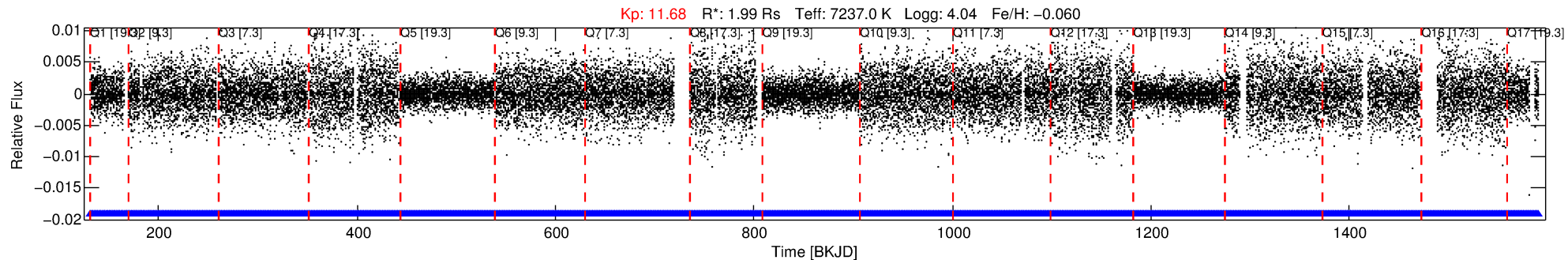
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007974032-03

No Significant Match Found

# DV One-Page Summary

KIC: 7974032 Candidate: 3 of 4 Period: 0.556 d



## TPS TCE Results:

Period = 0.55635 d  
Epoch = 132.0422 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

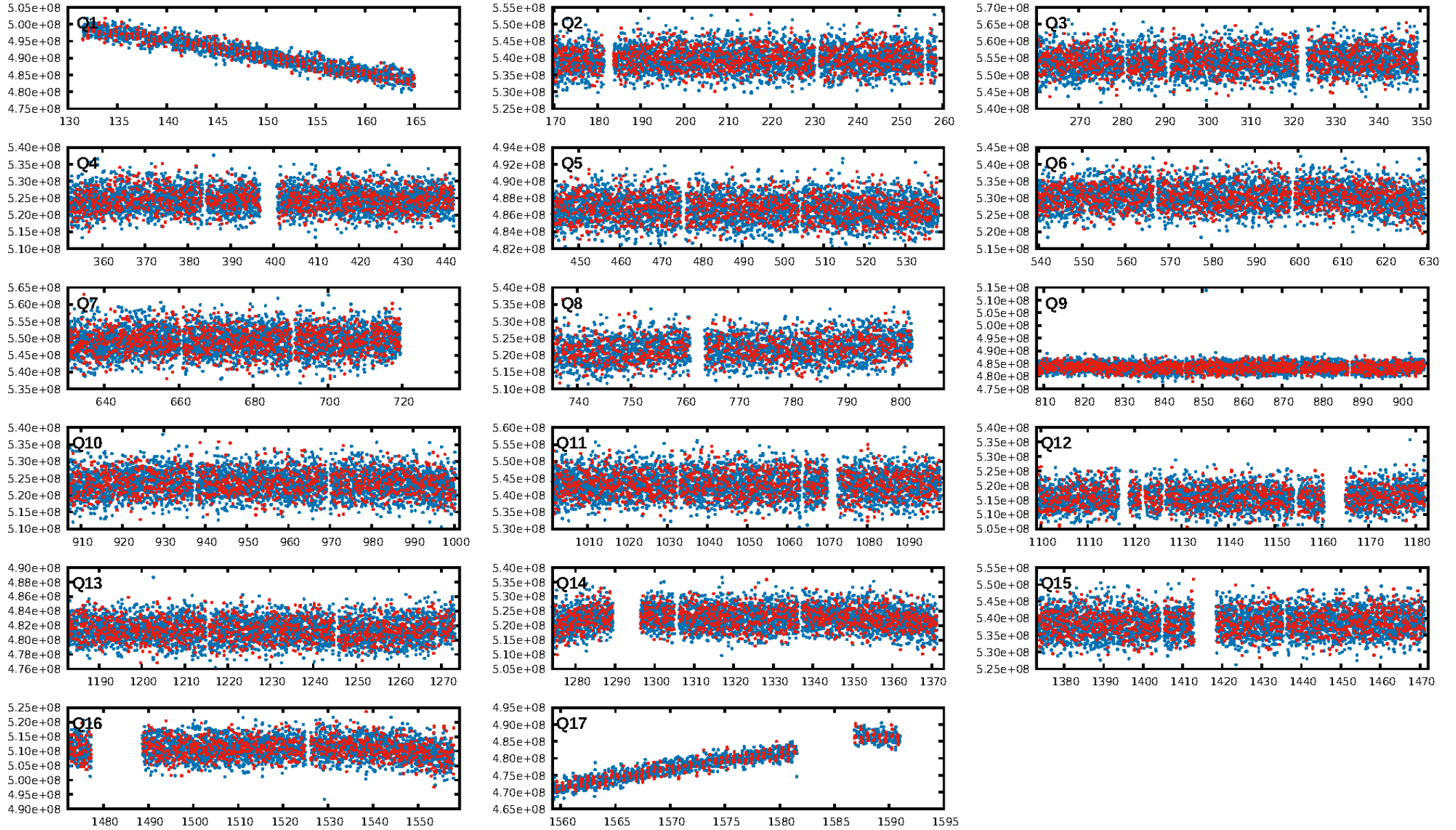
ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [8.43σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1995/1995]  
GhostDiagnostic-chr: 1.052  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.069 arcsec [0.19σ]  
KicOffset-rm: 0.080 arcsec [0.27σ]  
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: 01-Feb-2016 02:18:51 Z

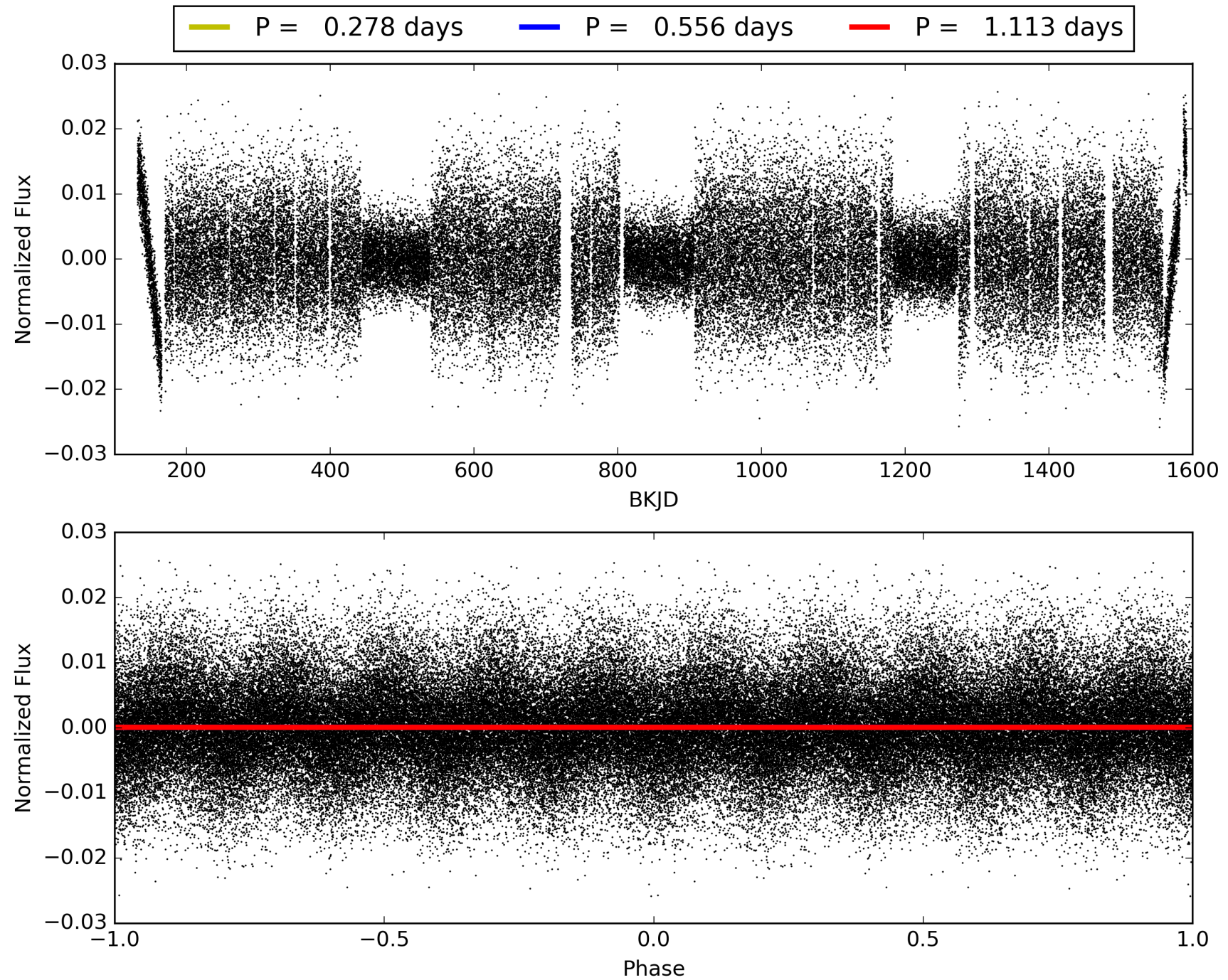
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 007974032-03, PDC Light Curves

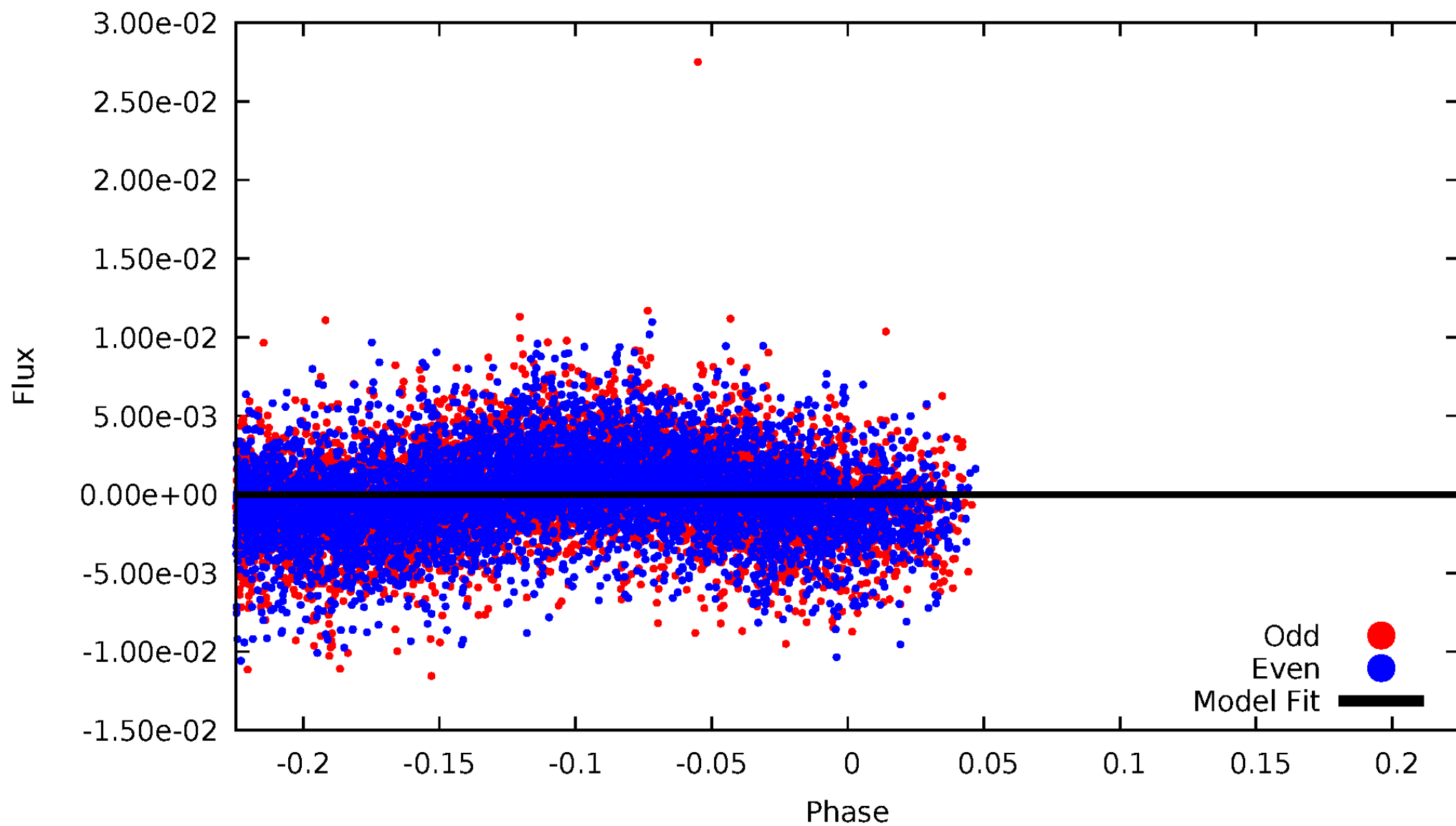


TCE 007974032-03



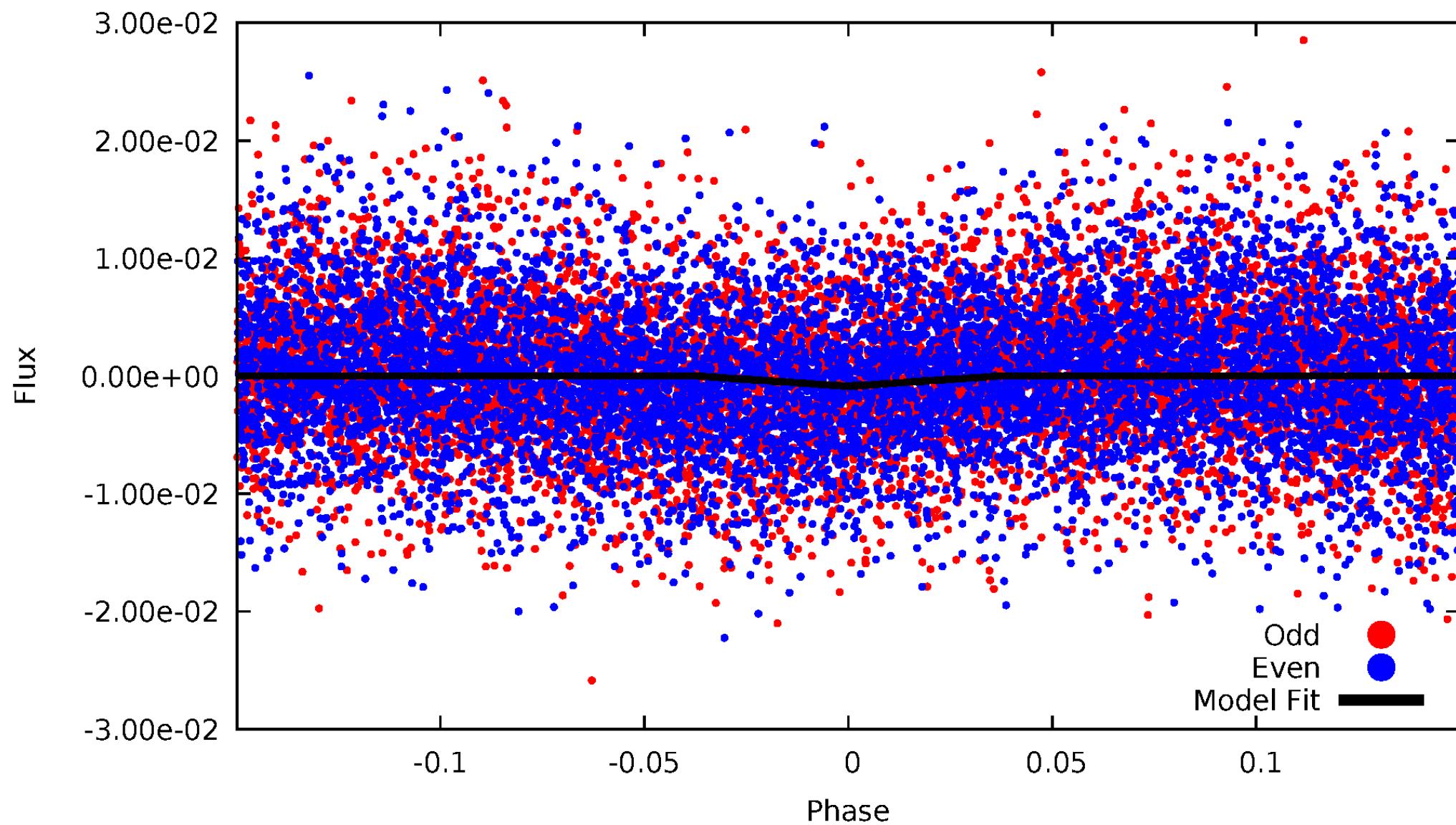
# DV Odd/Even

TCE 007974032-03



# ALT Odd/Even

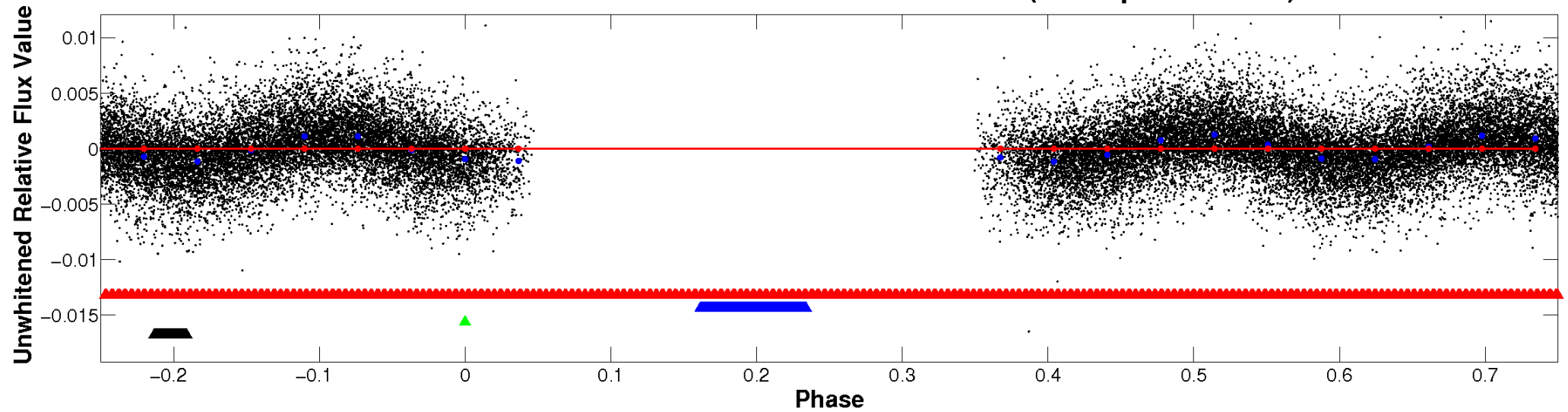
TCE 007974032-03



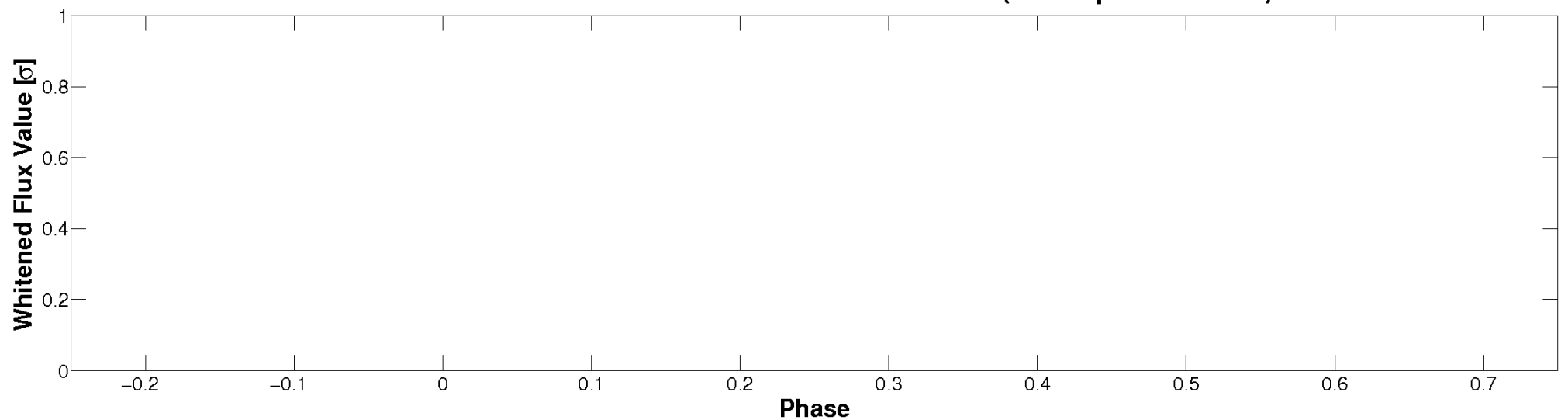


# Non-Whitened Vs. Whitened Light Curve

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



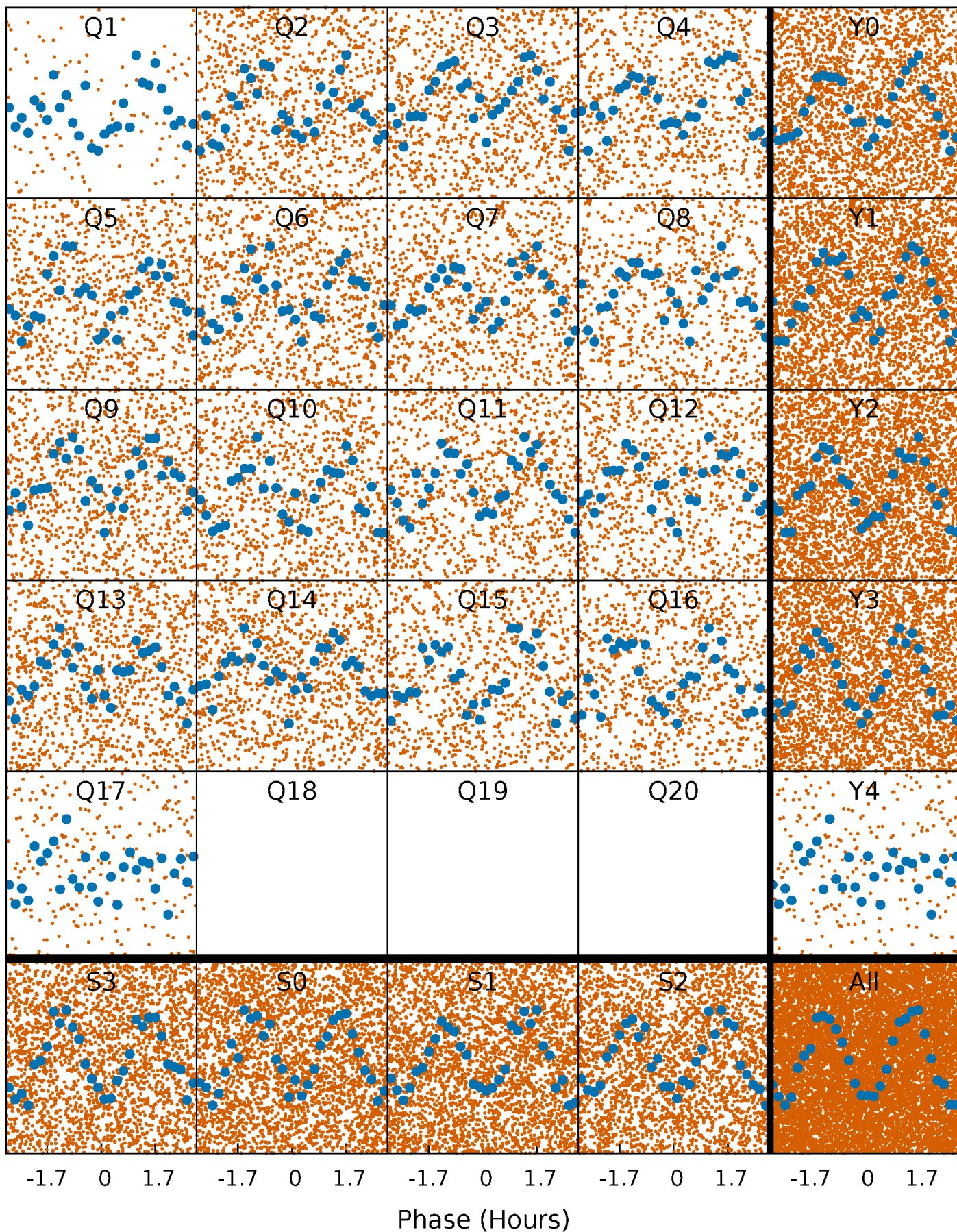
**Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)**





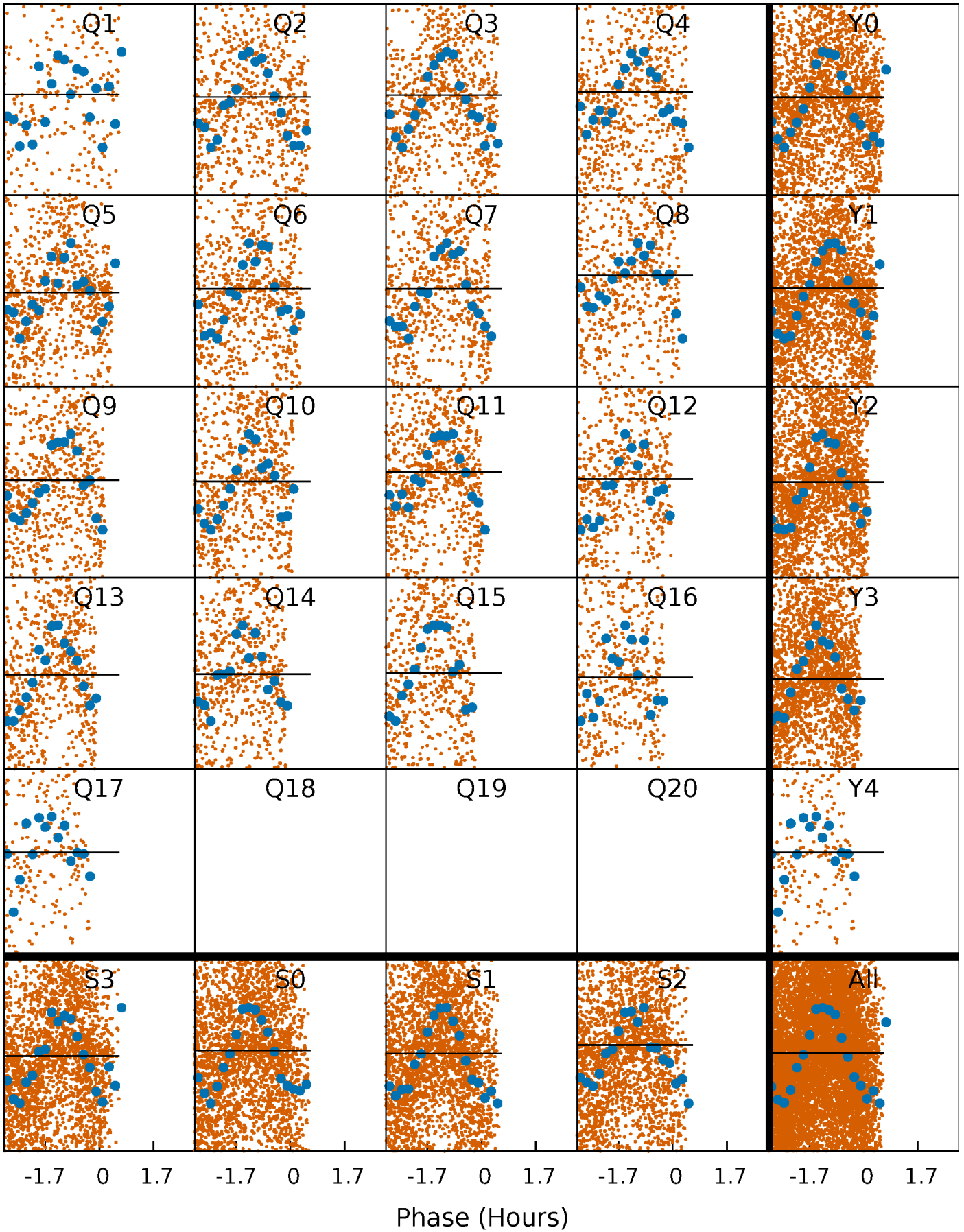
# PDC Quarter-Phased Transit Curves

TCE 007974032-03 P= 0.556354 Days  $T_0=132.042244$  (BKJD)



# DV Quarter-Phased Transit Curves

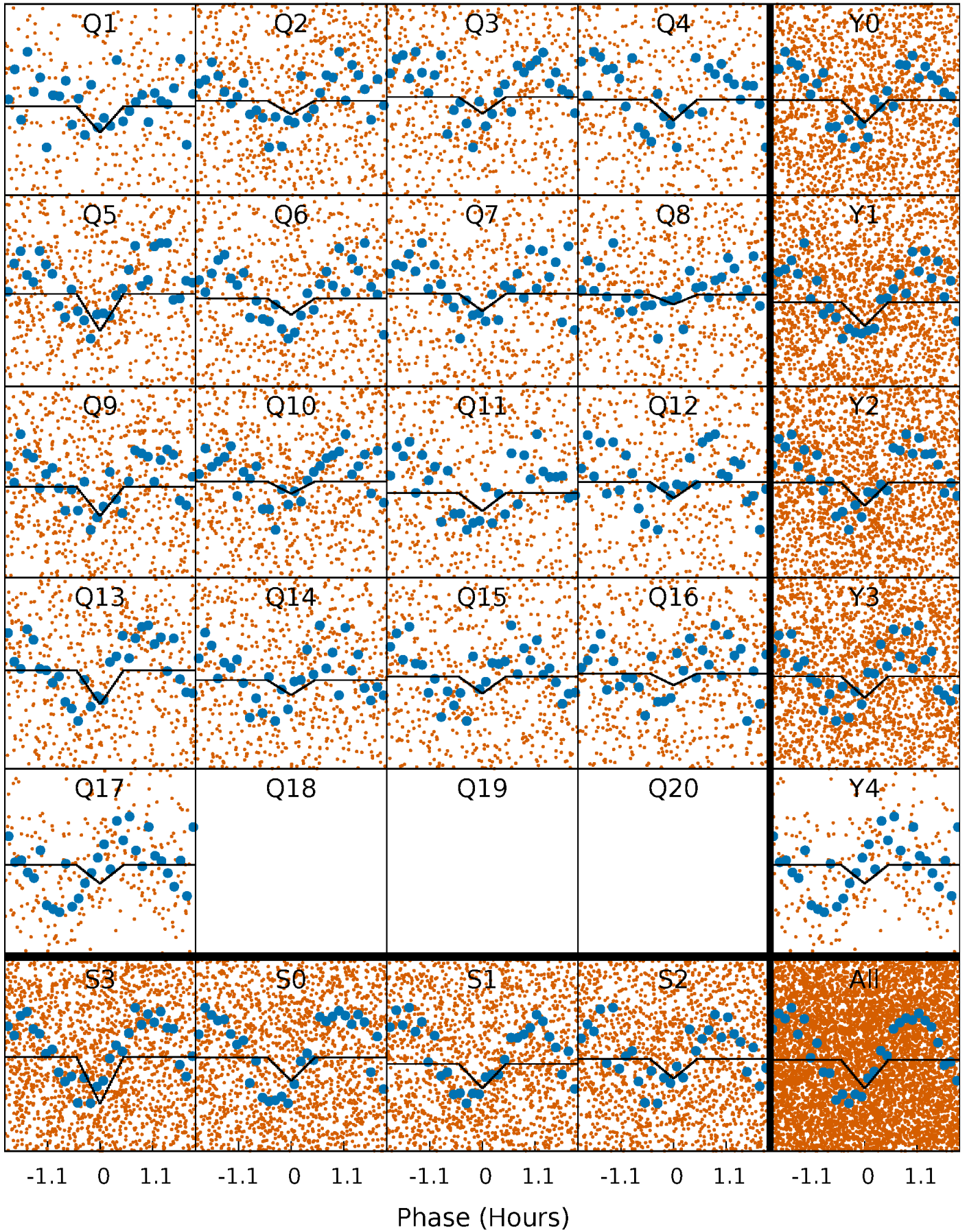
TCE 007974032-03    P= 0.556354 Days     $T_0=132.042244$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

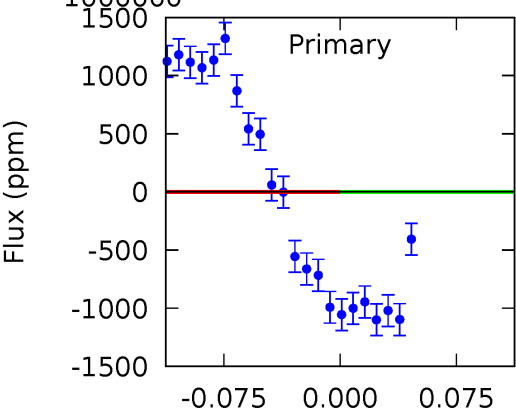
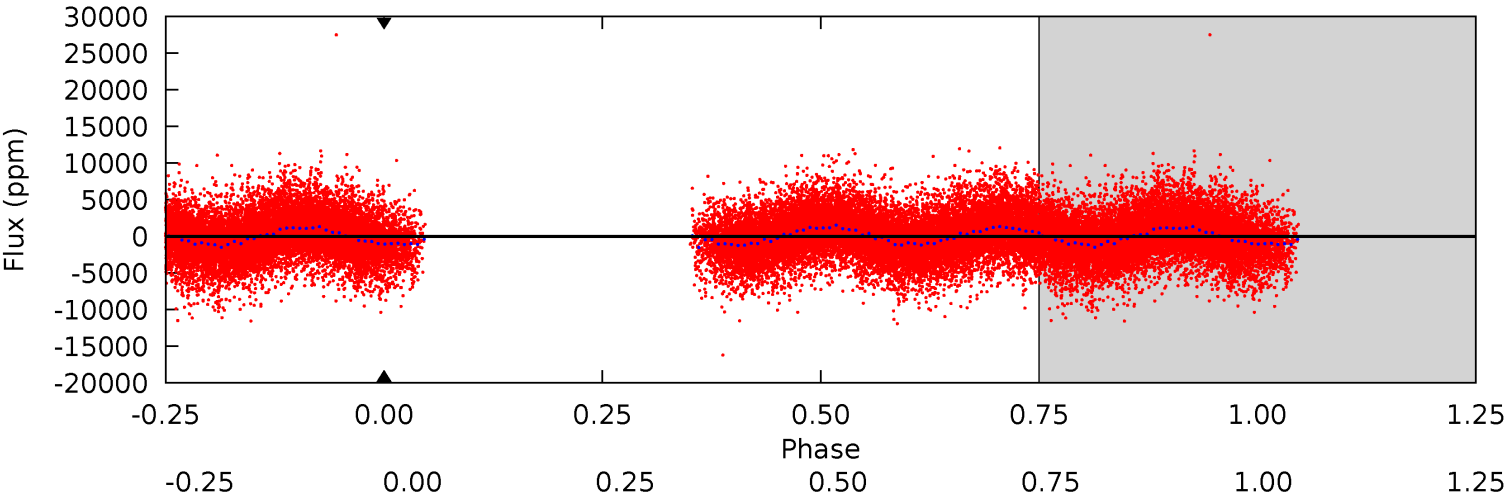
TCE 007974032-03   P= 0.556354 Days    $T_0=131.949539$  (BKJD)



# DV Model-Shift Uniqueness Test

007974032-03, P = 0.556354 Days, E = 131.485890 Days

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

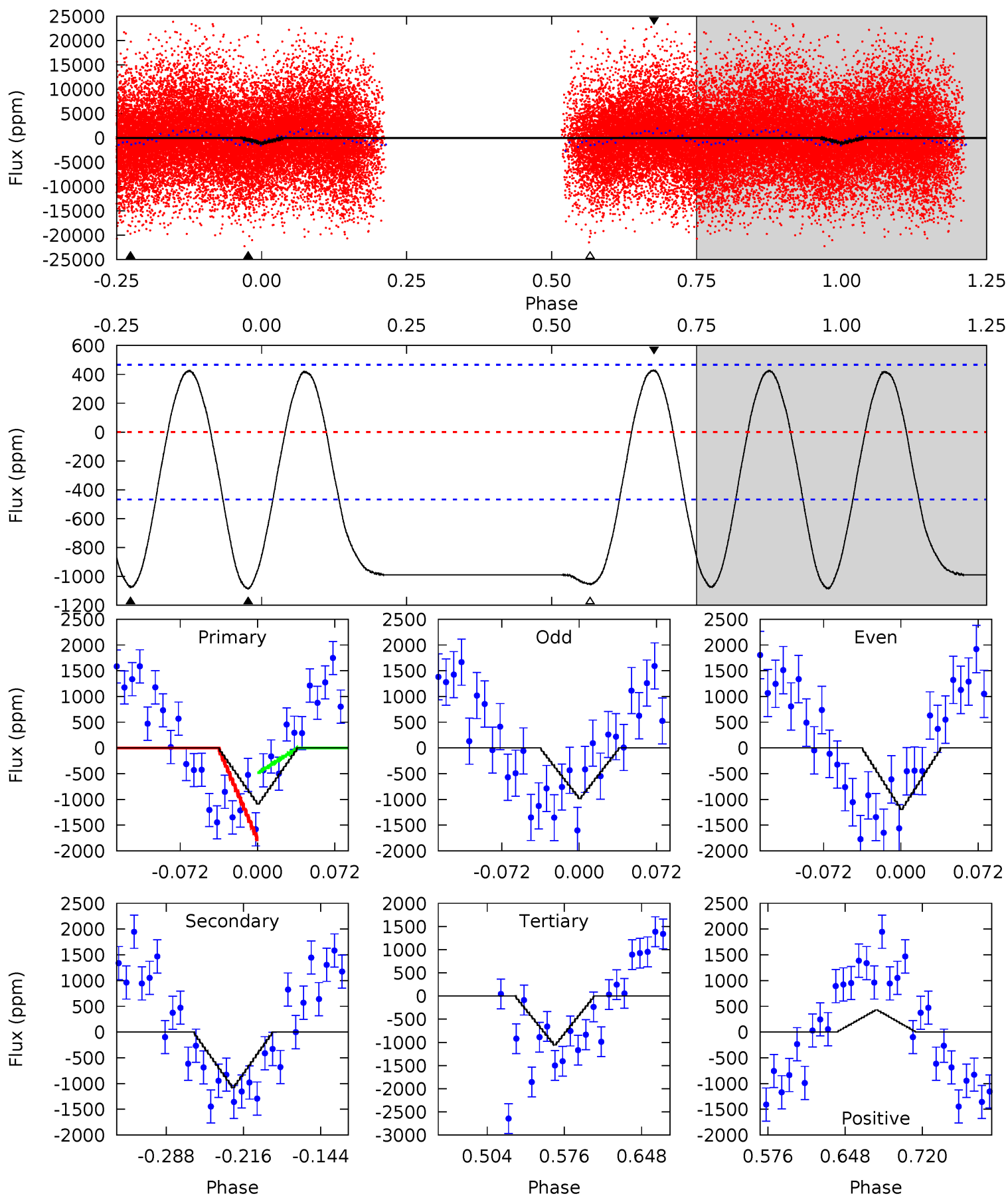




# Alt Model-Shift Uniqueness Test

007974032-03, P = 0.556354 Days, E = 131.393185 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
10.8	10.7	10.5	4.28	4.63	1.80	5.21	0.31	6.54	0.20	6.43	1.05	1.00	0.28	6.71



### Stellar Parameters For KIC 007974032

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7237^{+201}_{-302}$	$4.039^{+0.198}_{-0.162}$	$-0.060^{+0.250}_{-0.350}$	$1.994^{+0.559}_{-0.504}$	$1.585^{+0.200}_{-0.300}$	$0.281^{+0.332}_{-0.133}$
	+3%/-4%	+5%/-4%	+417%/-583%	+28%/-25%	+13%/-19%	+118%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007974032-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$14.97^{+15.97}_{-10.49}$	$5048^{+381}_{-376}$	$6198^{+40145}_{-40669}$	$1.846^{+121.877}_{-86.398}$
Alt.	$-1078 \pm 101$	$18.30^{+17.07}_{-12.62}$	$5007^{+376}_{-348}$	$3640^{+4275}_{-7612}$	$0.423^{+4.036}_{-0.309}$

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

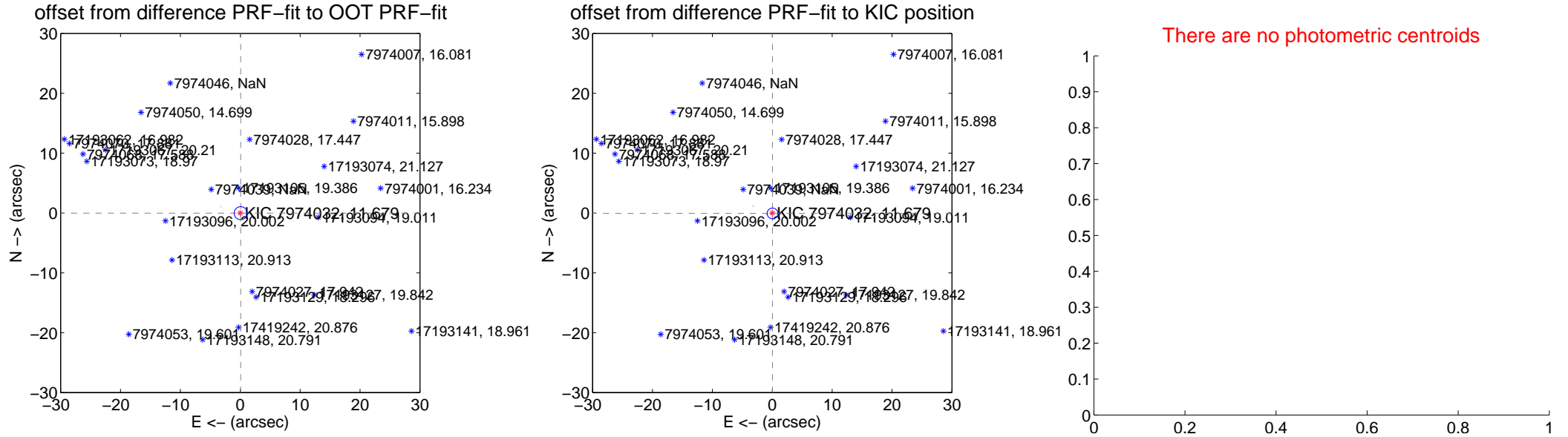
## DV Centroid Data

Supplemental centroid analysis for 007974032-03. **Kepler magnitude: 11.68.** Transit SNR -1.00

There are 15 quarters with good PRF difference image offsets

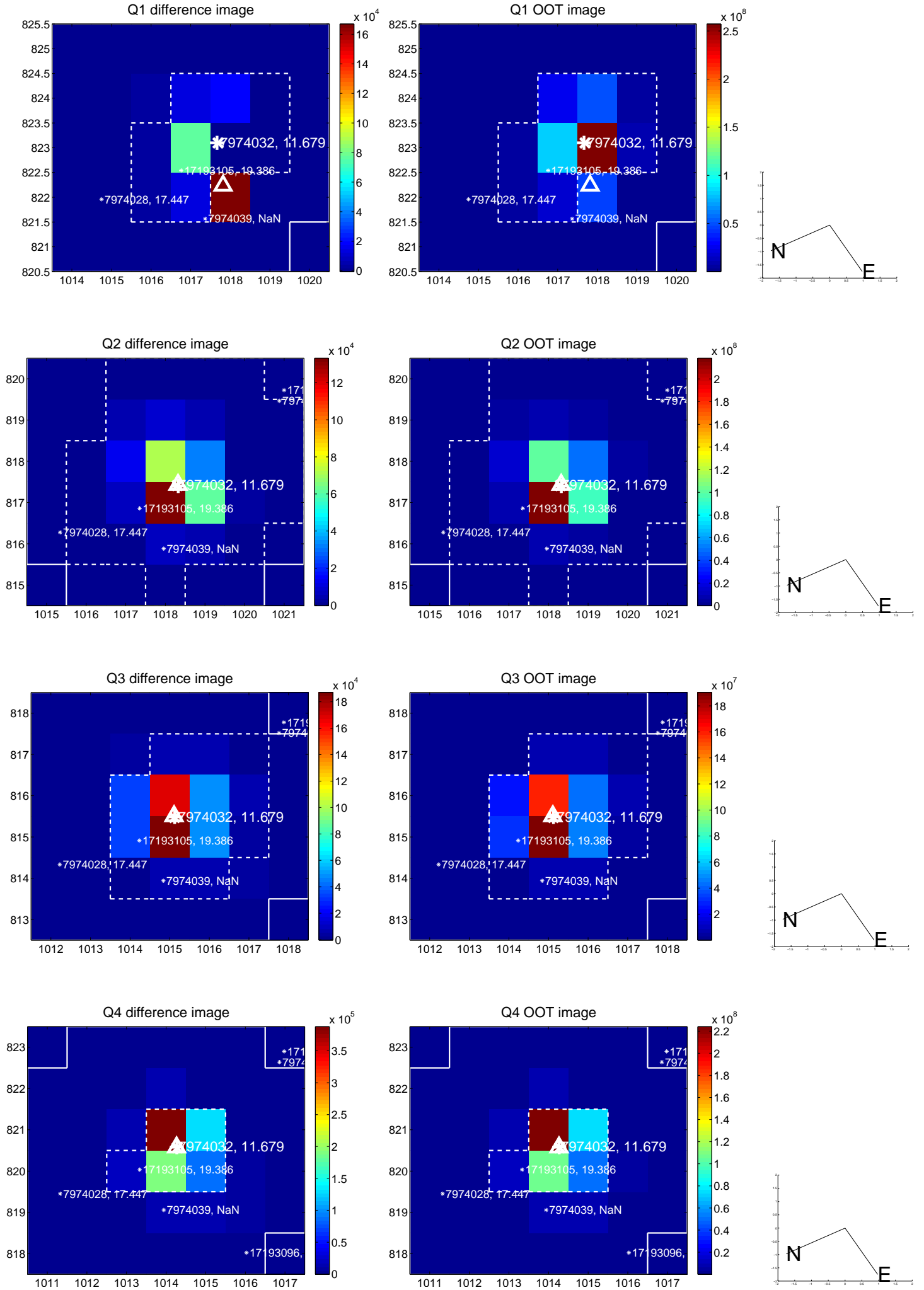
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.069 \pm 0.361$	0.19	$-0.064 \pm 0.346$	$-0.024 \pm 0.130$
PRF-fit source offset from KIC position	$0.080 \pm 0.299$	0.27	$-0.042 \pm 0.359$	$-0.068 \pm 0.145$
photometric centroid source offset	—	—	—	—

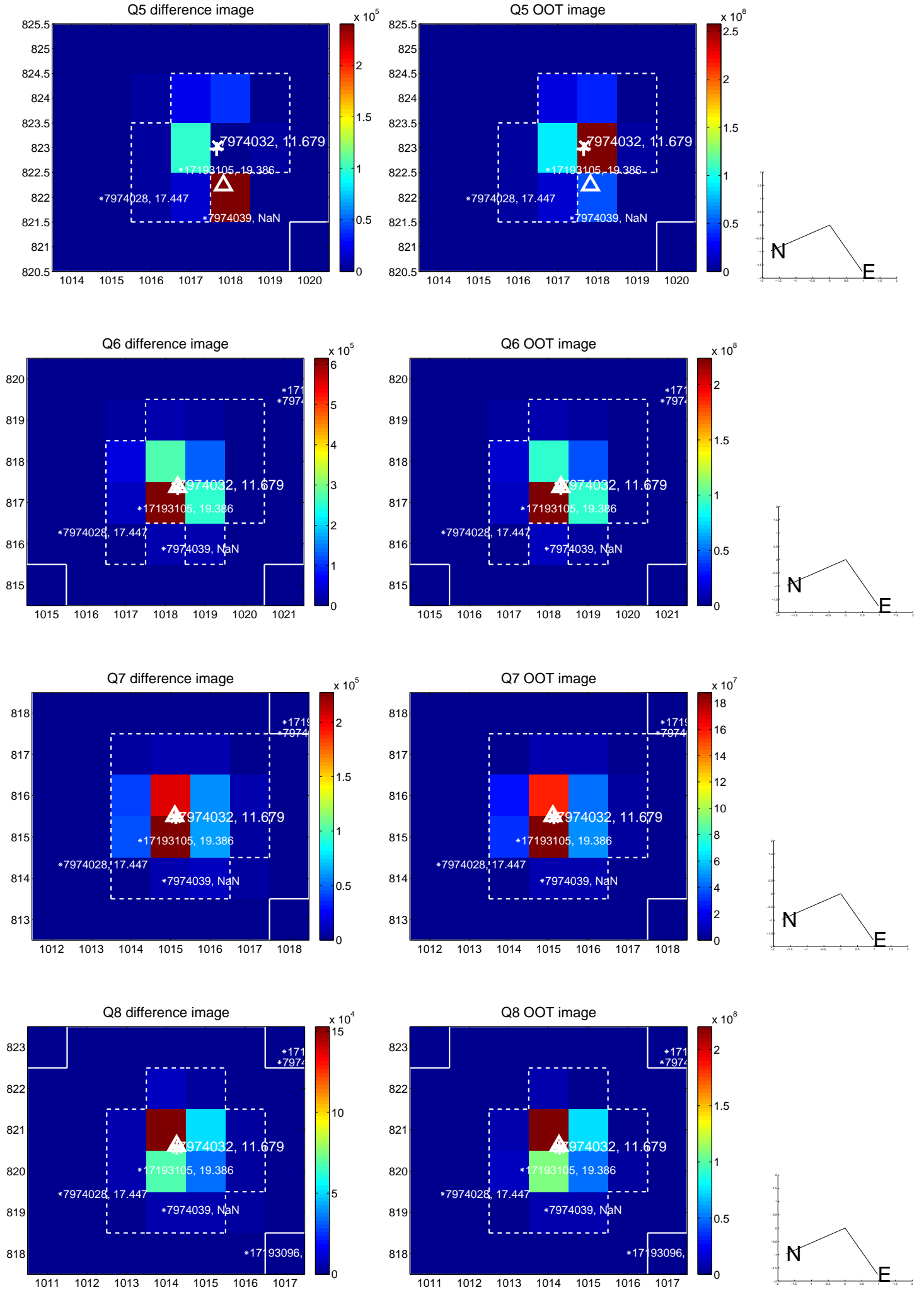


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

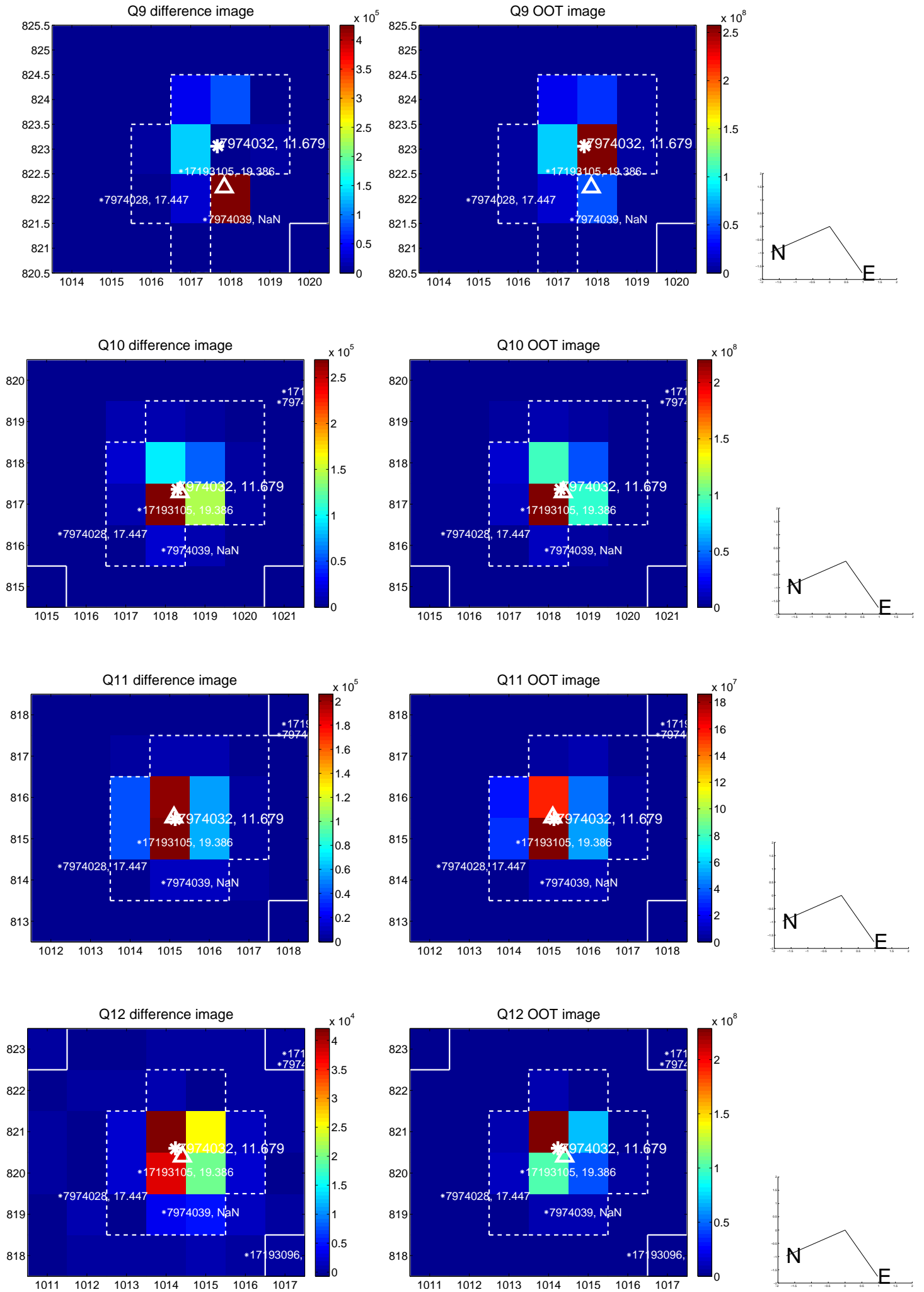


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

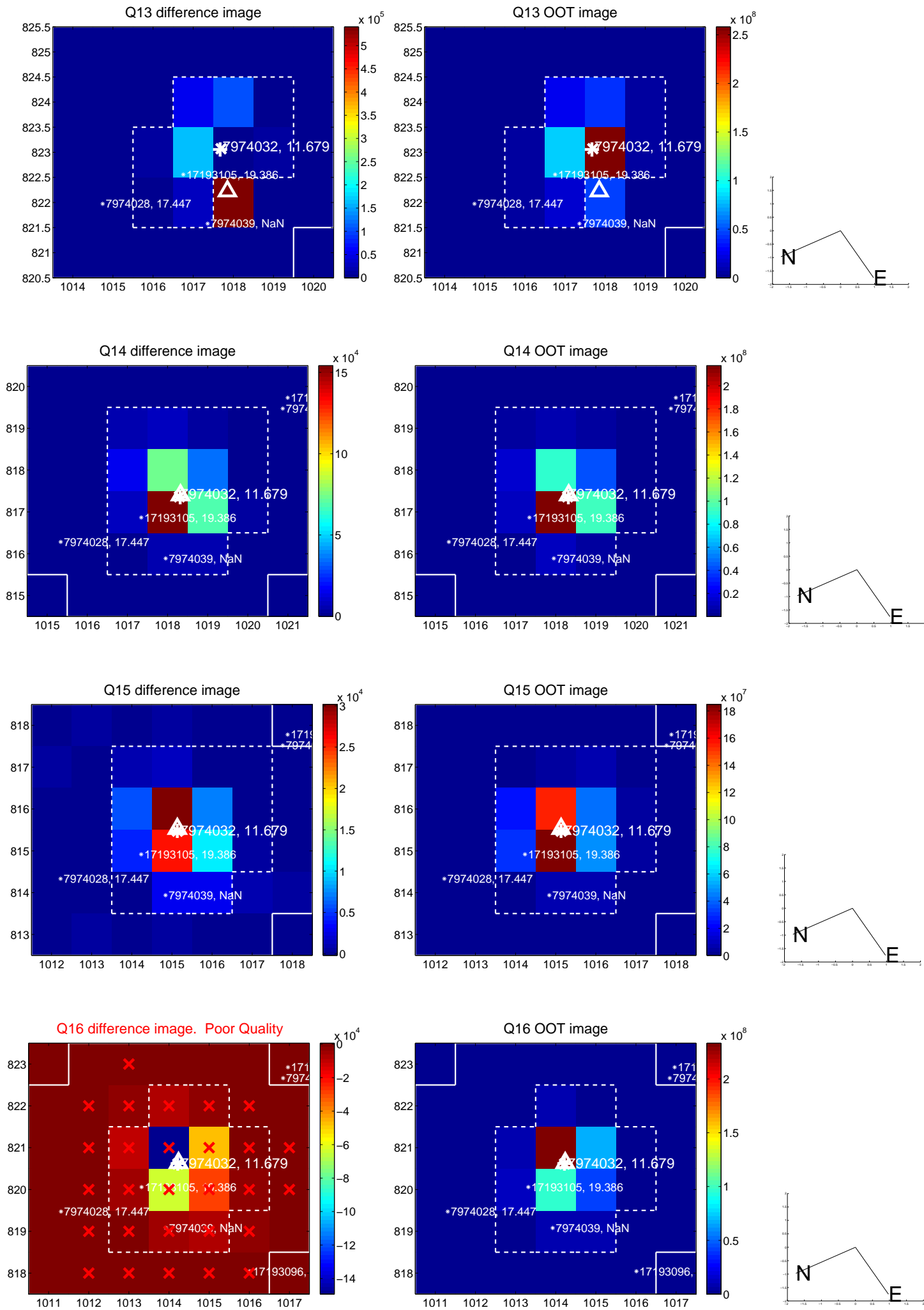




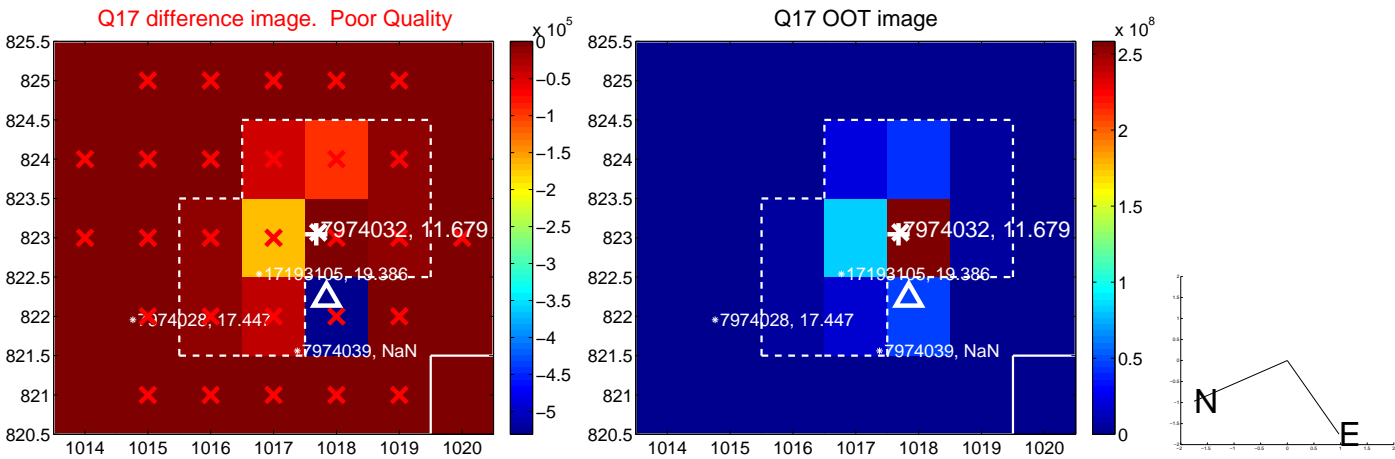
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



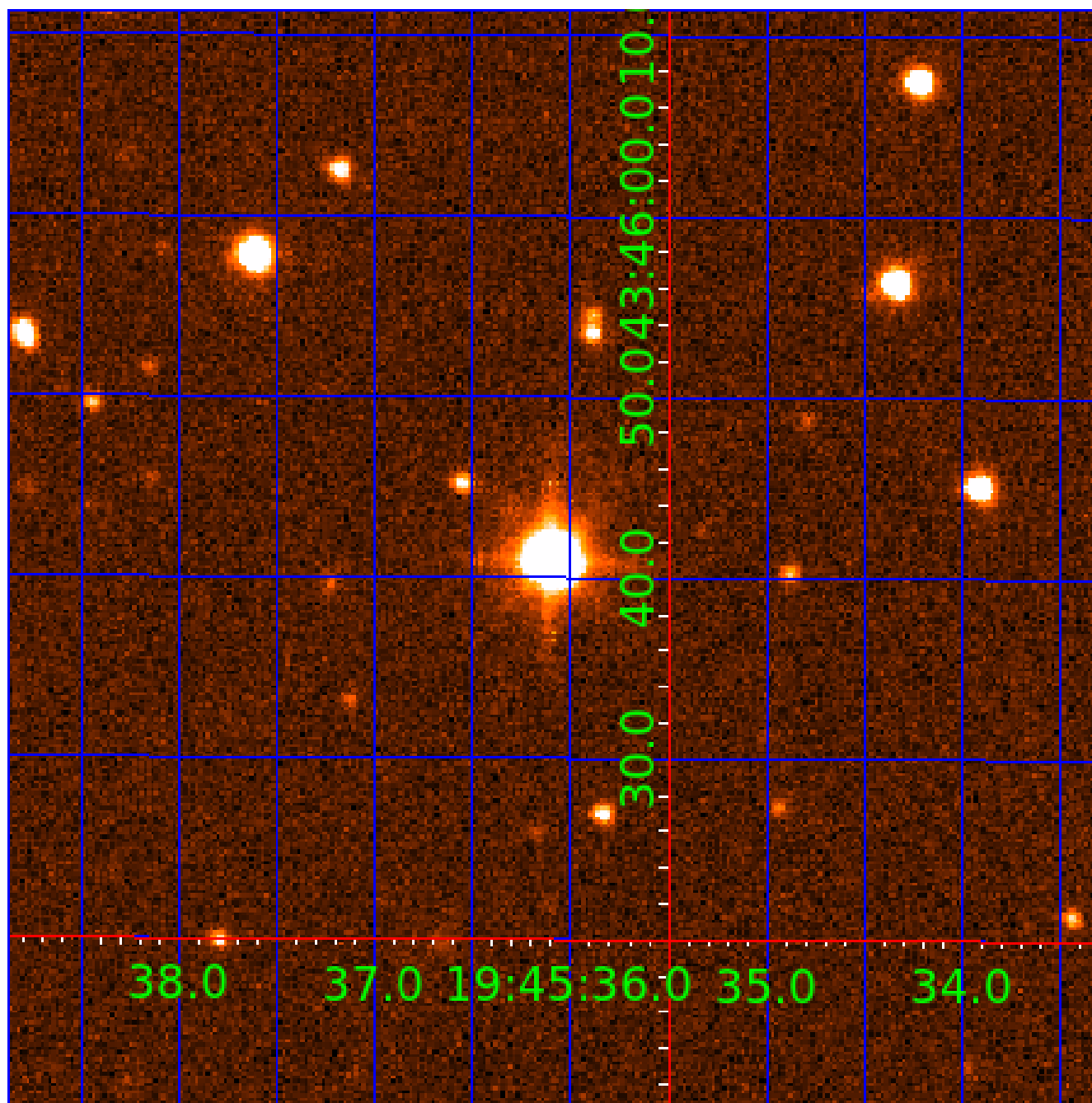
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



# KIC 007974032

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007974032-01	OBS	No	1.377285	132.019333	403.3	1.791	10.6	9.5	1.99	7237	4.65	12234.33
007974032-02	OBS	No	0.556339	131.616130	382.4	0.991	12.2	10.2	1.99	7237	4.56	40972.54
007974032-03	OBS	No	0.556354	132.042244	111.8	1.500	10.3	-1.0	1.99	7237	2.14	40971.03
007974032-04	OBS	No	0.556349	131.935994	144.3	1.500	10.9	-1.0	1.99	7237	2.44	40971.50

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007974032-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007974032-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
007974032-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—SAME_NTL_PERIOD—CENT_NOFITS
007974032-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_NOFITS

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

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

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

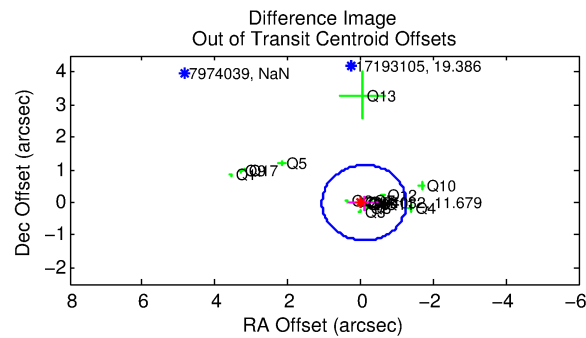
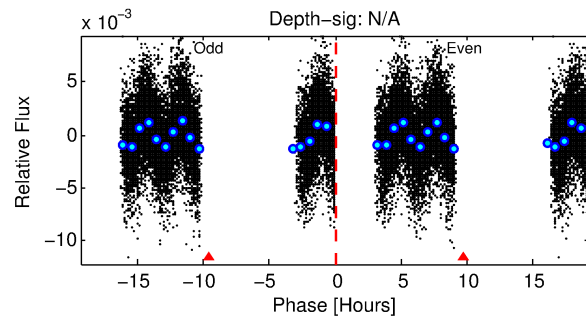
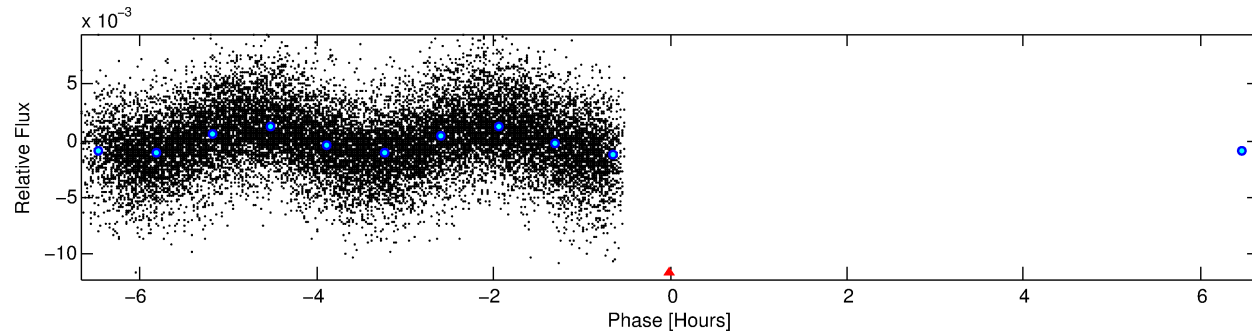
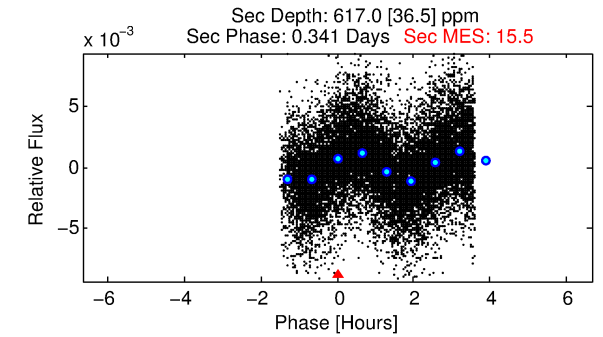
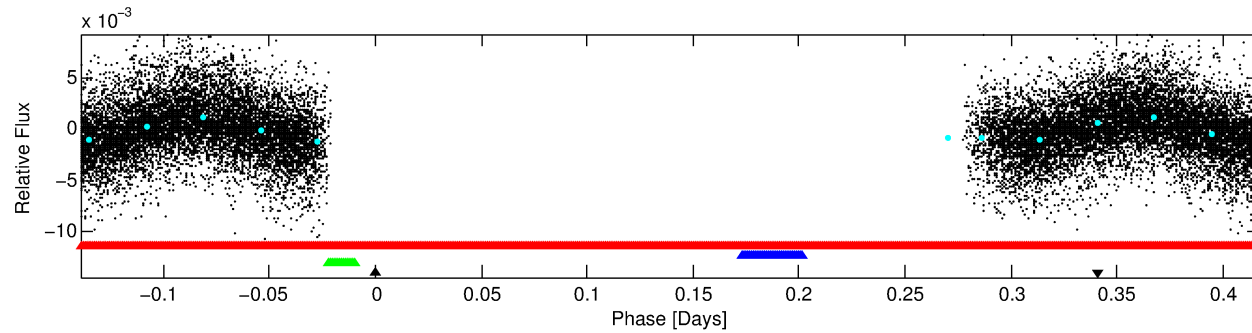
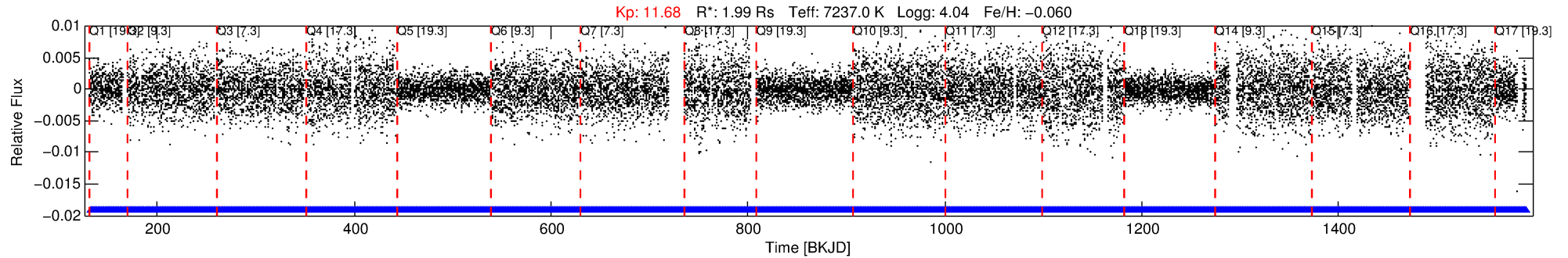
Ephemeris Match Information For 007974032-04

No Significant Match Found



# DV One-Page Summary

KIC: 7974032 Candidate: 4 of 4 Period: 0.556 d



## TPS TCE Results:

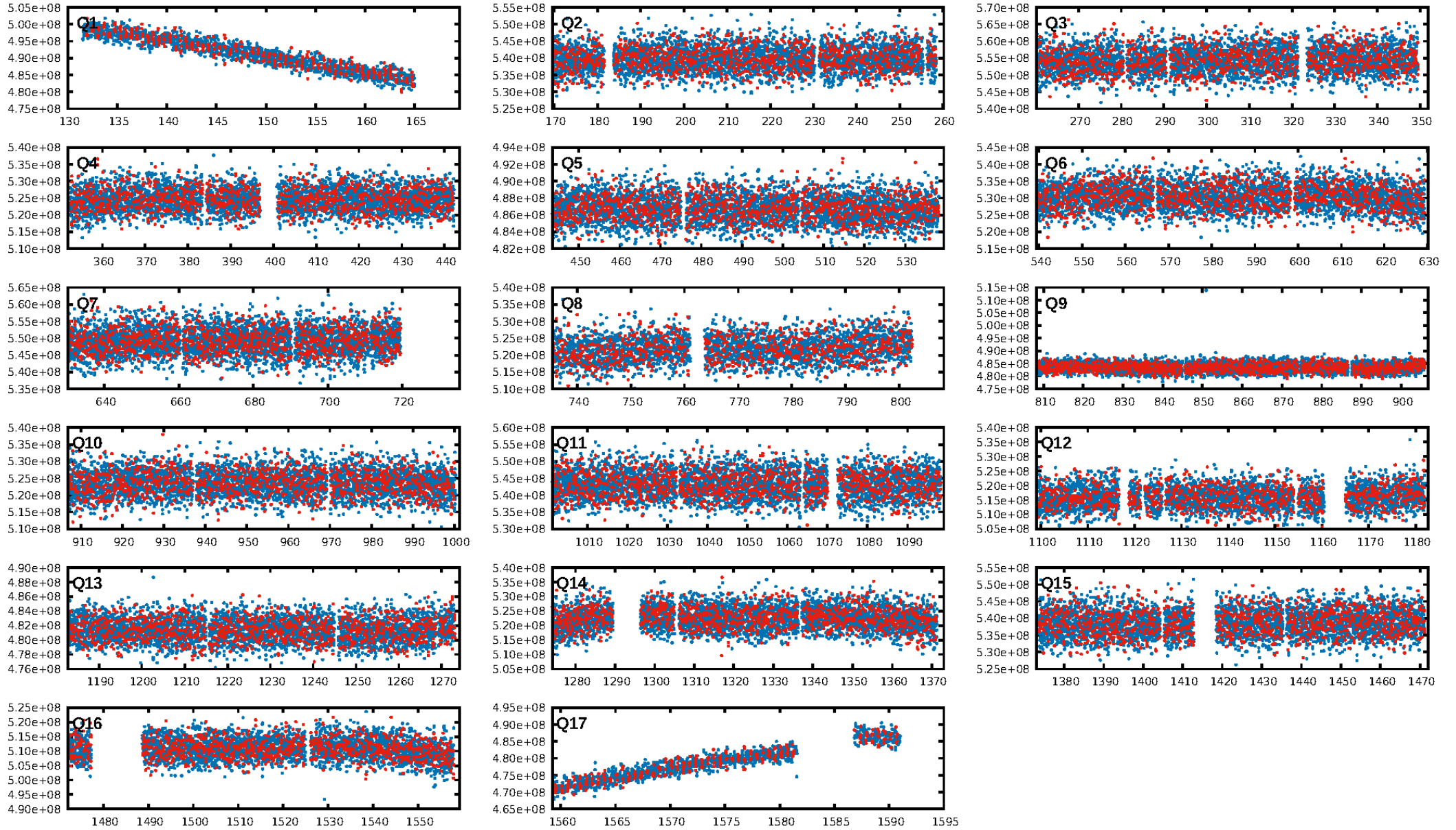
Period = 0.55635 d  
Epoch = 131.9360 BKJD

DV fit results are unavailable

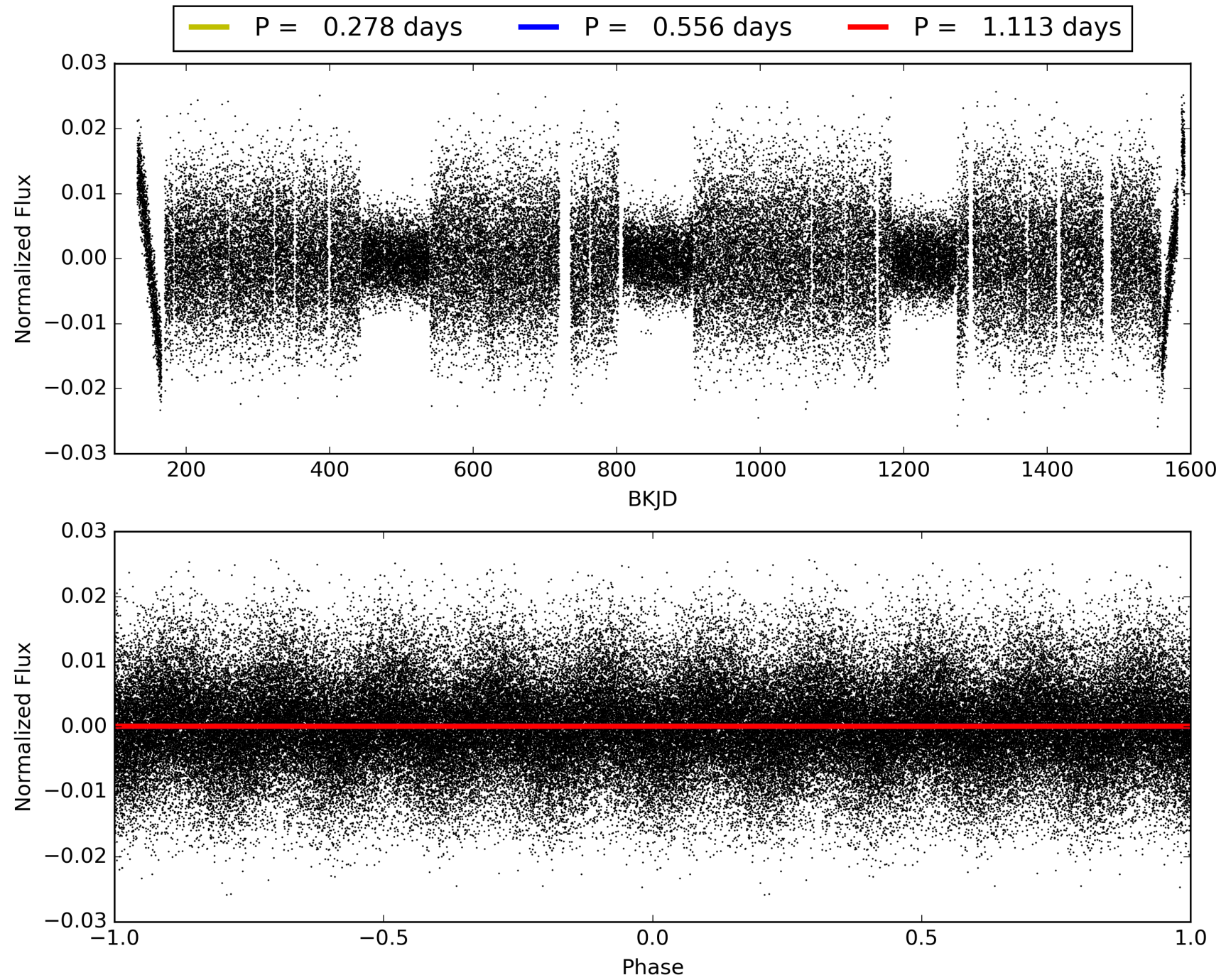
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1931/1931]  
GhostDiagnostic-chr: 5.15  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.100 arcsec [0.26 $\sigma$ ]  
KicOffset-rm: 0.120 arcsec [0.30 $\sigma$ ]  
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 007974032-04, PDC Light Curves

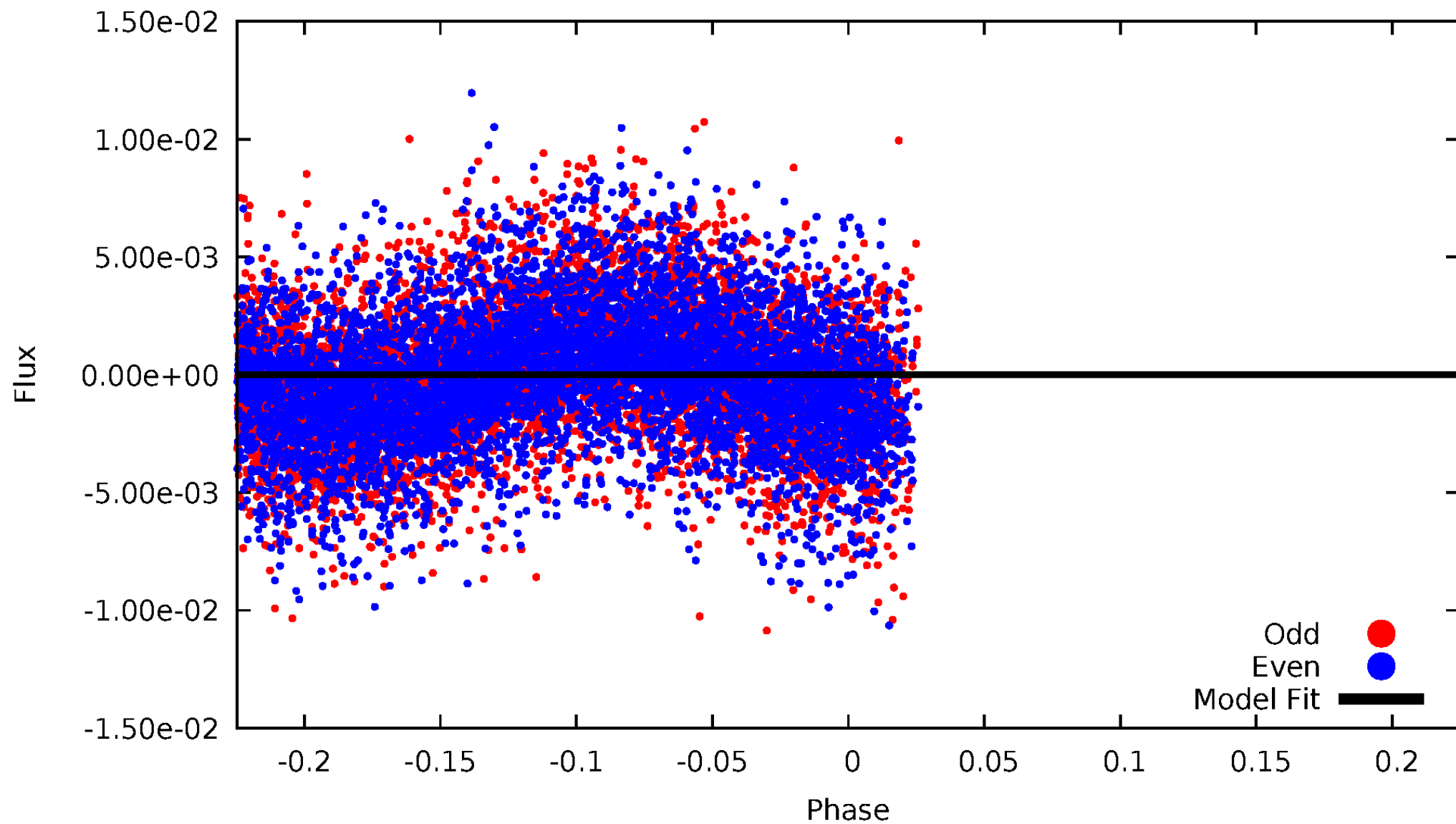


TCE 007974032-04



DV Odd/Even

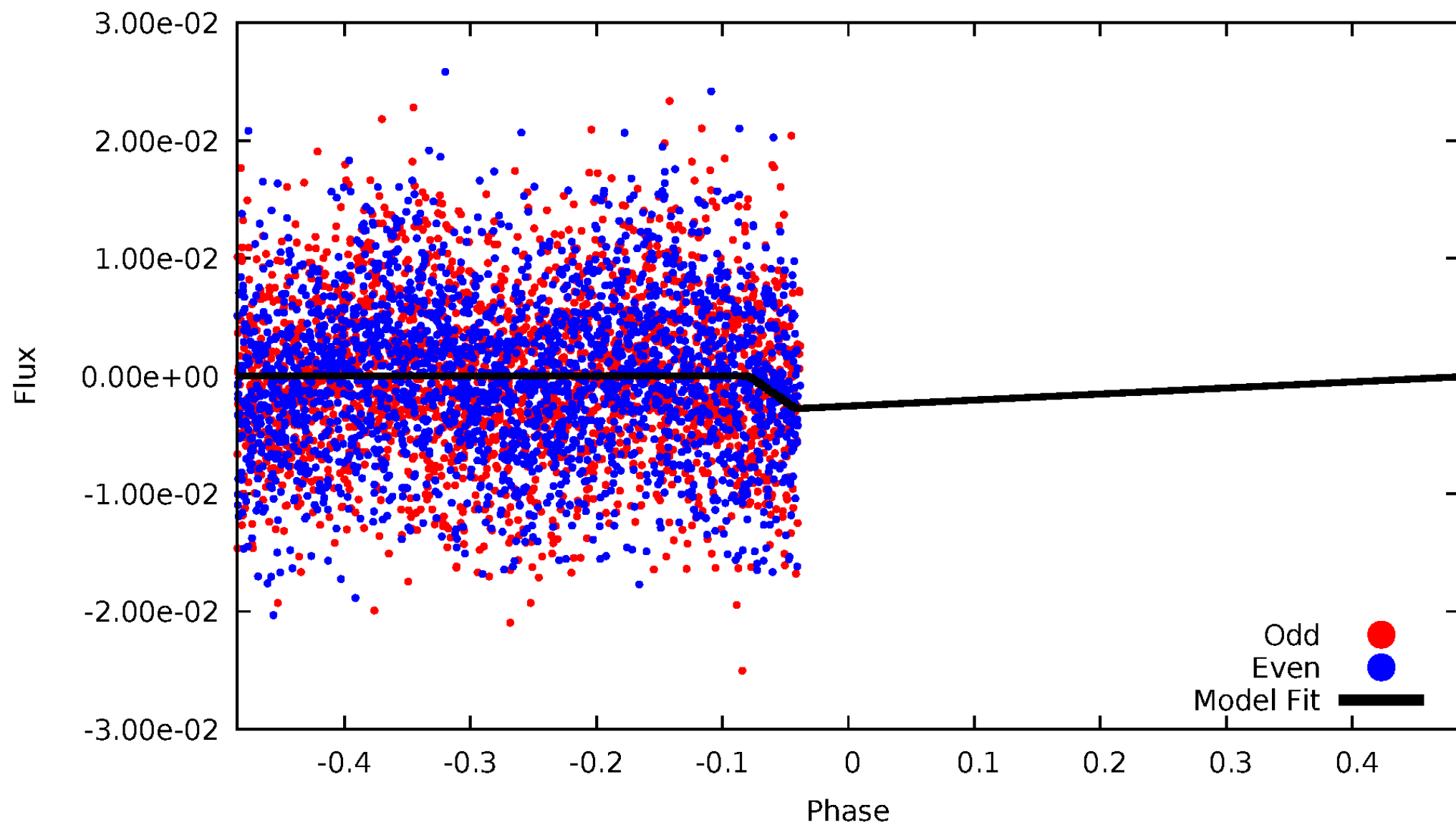
TCE 007974032-04





# ALT Odd/Even

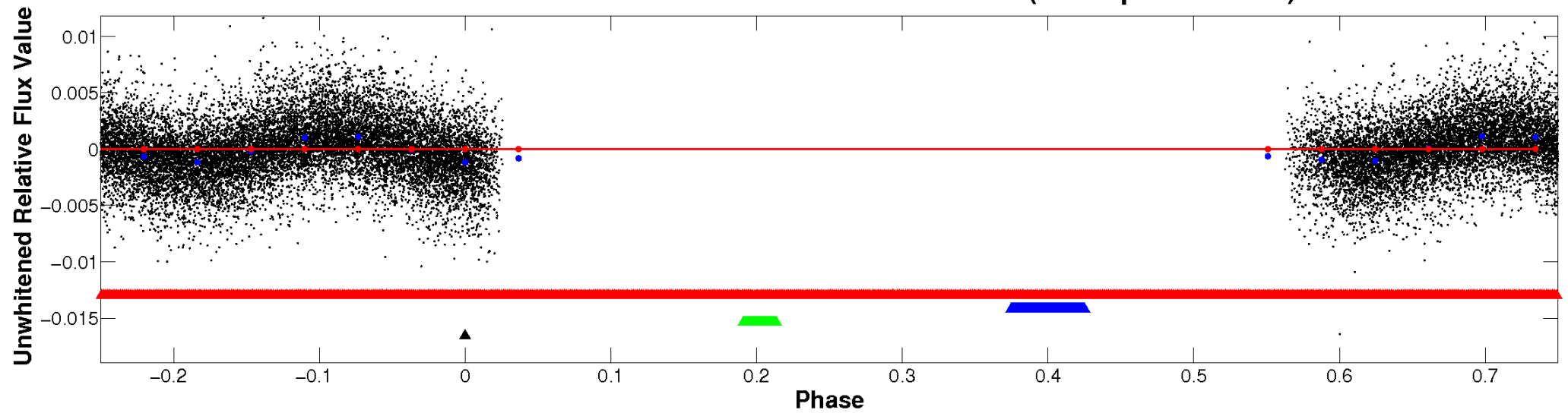
TCE 007974032-04



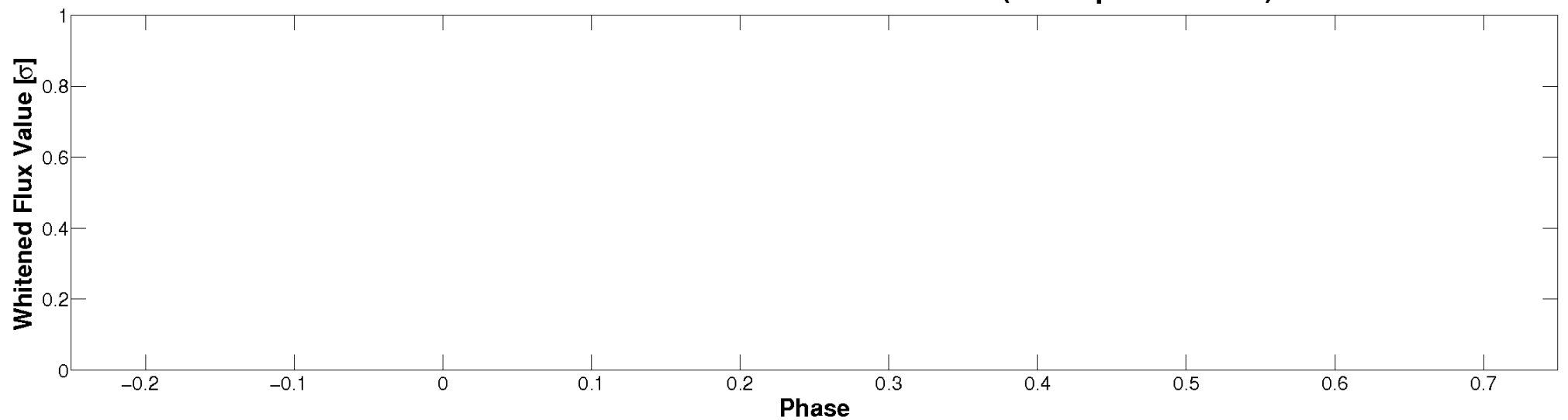


# Non-Whitened Vs. Whitened Light Curve

**Planet 4 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)**

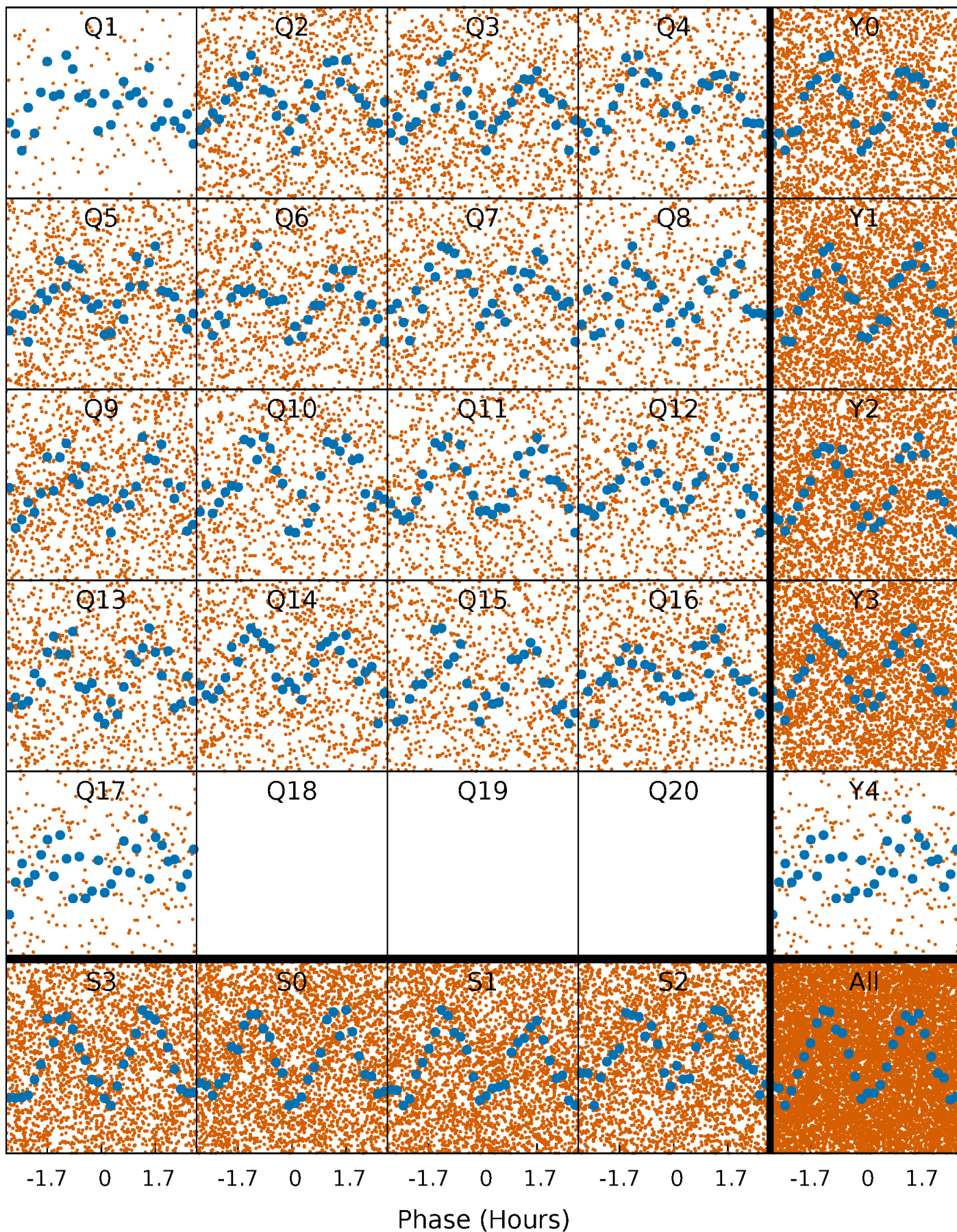


**Planet 4 : Phased Whitened Flux Time Series (TPS Epoch/Period)**



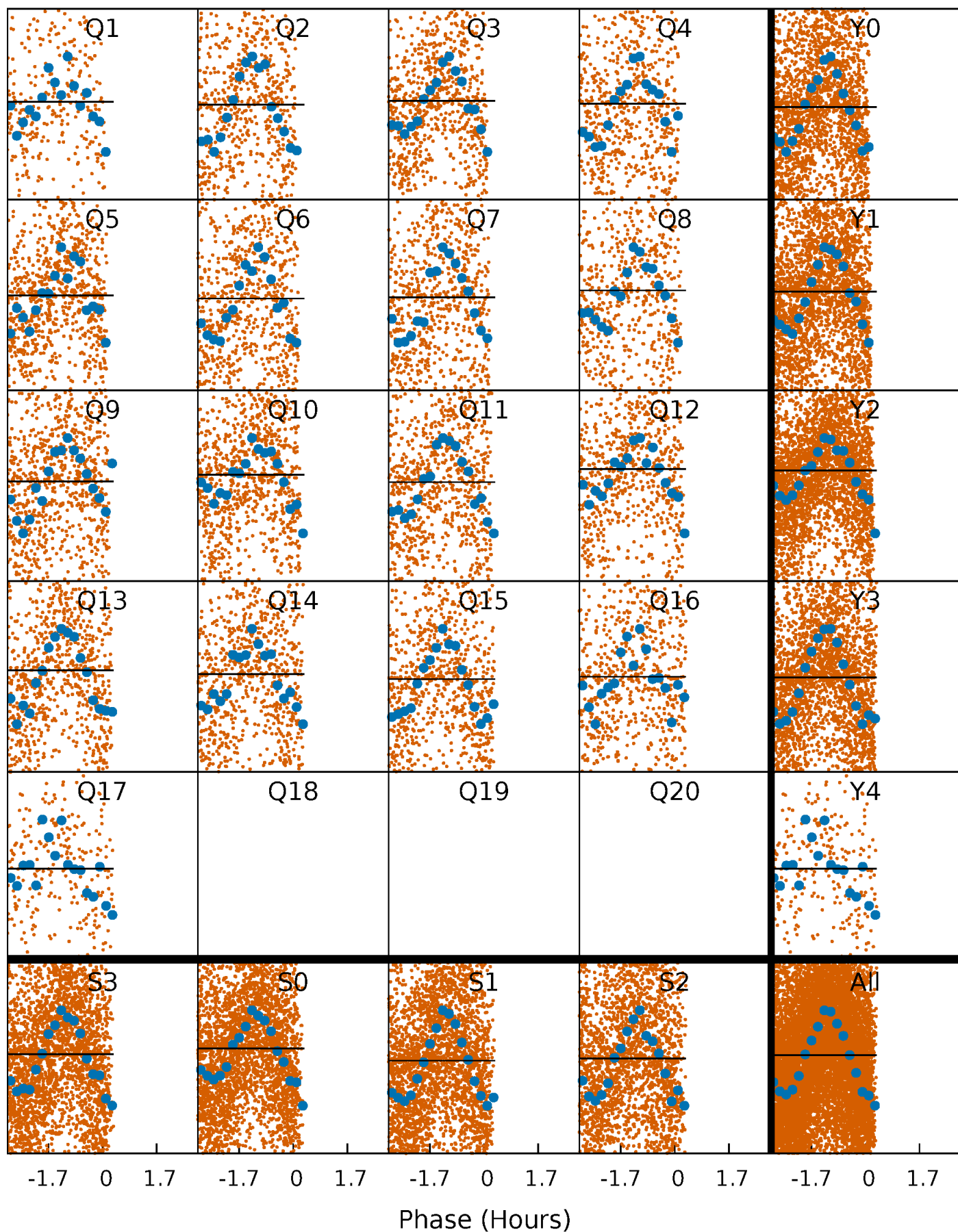
# PDC Quarter-Phased Transit Curves

TCE 007974032-04   P= 0.556349 Days    $T_0=131.935994$  (BKJD)



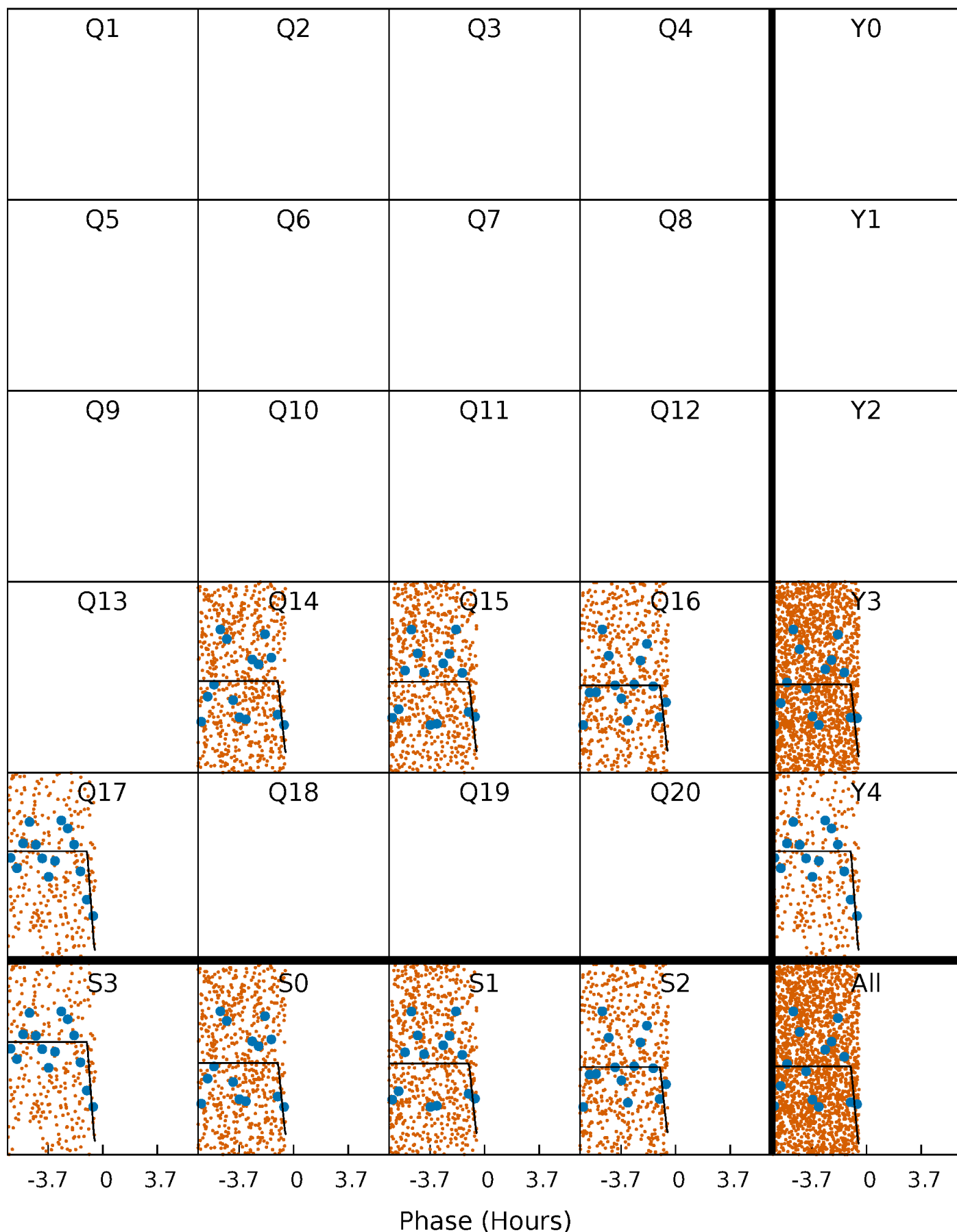
# DV Quarter-Phased Transit Curves

TCE 007974032-04    P= 0.556349 Days     $T_0=131.935994$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

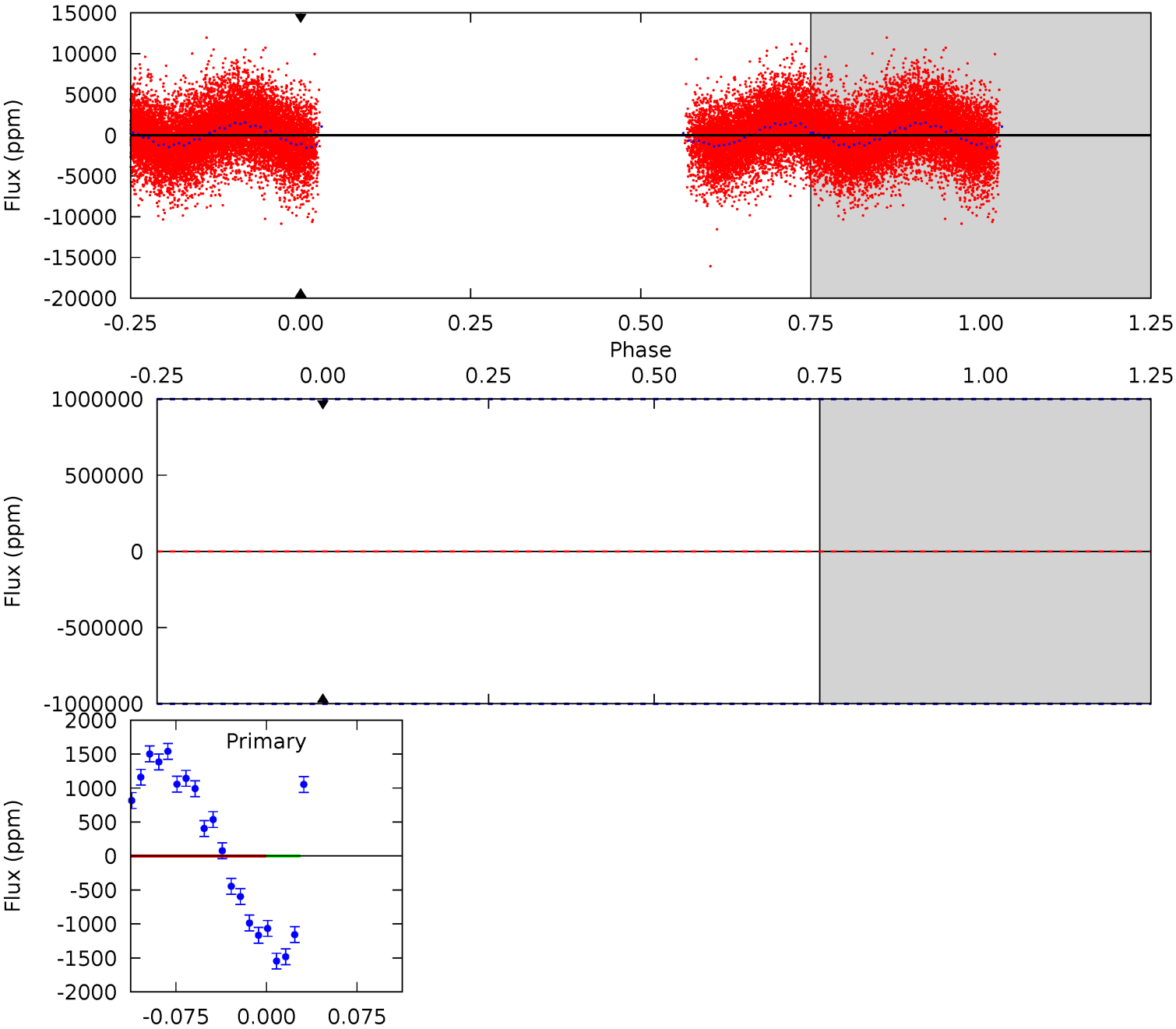
TCE 007974032-04 P= 0.556349 Days  $T_0=131.971513$  (BKJD)



# DV Model-Shift Uniqueness Test

007974032-04, P = 0.556349 Days, E = 131.379645 Days

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

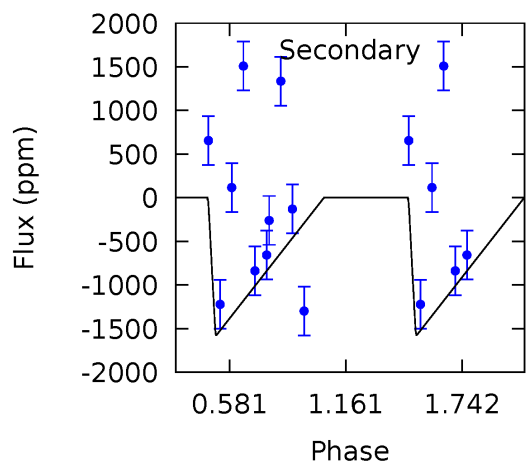
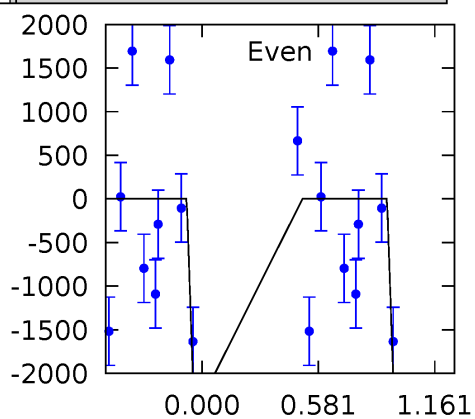
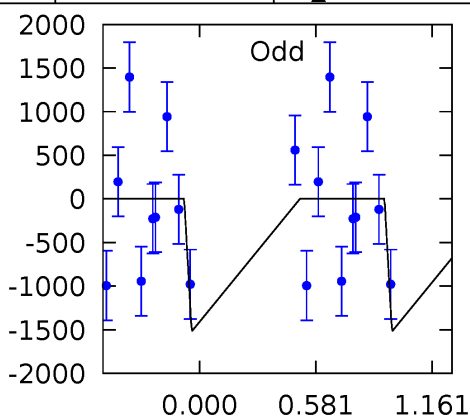
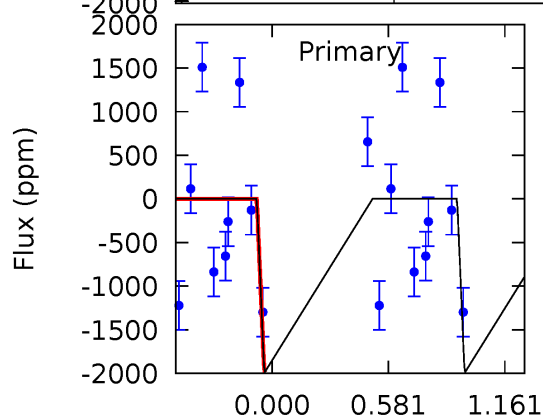
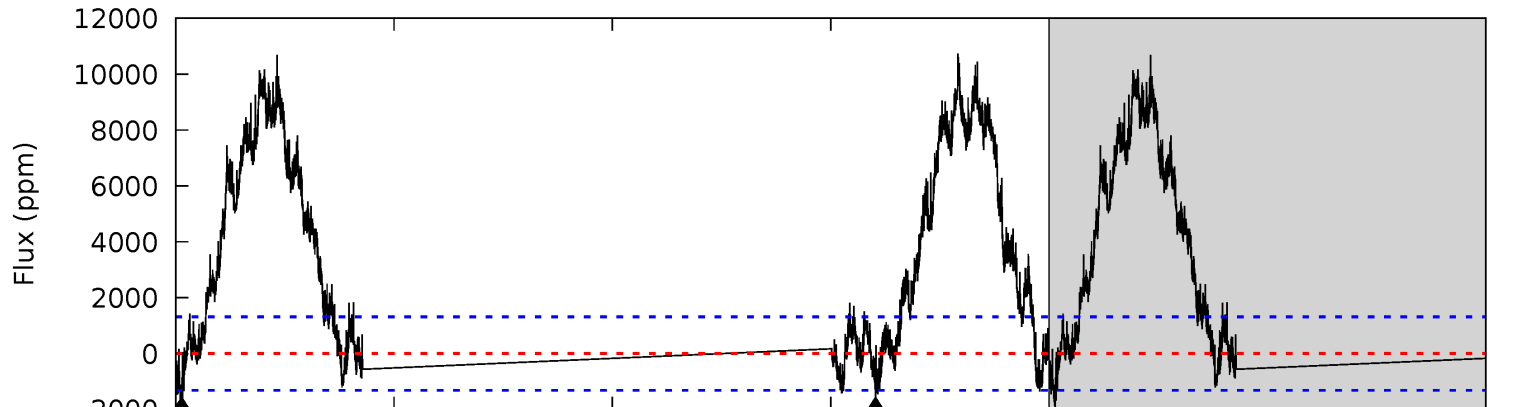
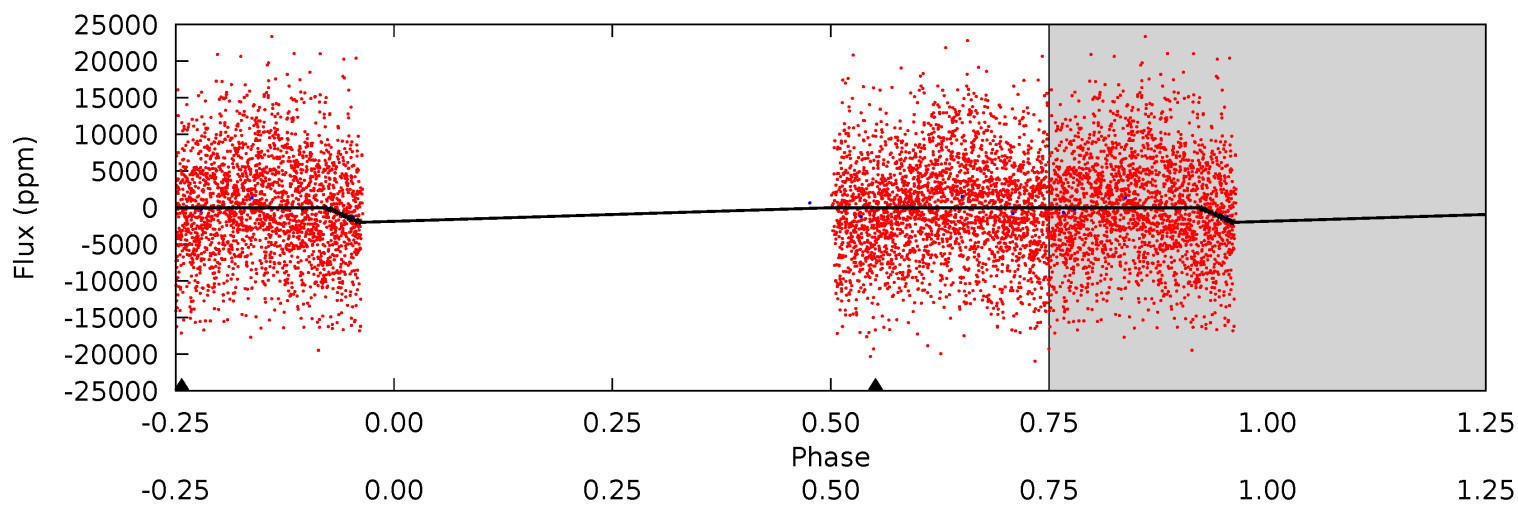




# Alt Model-Shift Uniqueness Test

007974032-04, P = 0.556349 Days, E = 131.971513 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
6.29	5.00	0	0	4.18	0.55	2.55	6.29	6.29	5.00	5.00	1.53	0	0.84	0



### Stellar Parameters For KIC 007974032

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7237^{+201}_{-302}$	$4.039^{+0.198}_{-0.162}$	$-0.060^{+0.250}_{-0.350}$	$1.994^{+0.559}_{-0.504}$	$1.585^{+0.200}_{-0.300}$	$0.281^{+0.332}_{-0.133}$
	+3%/-4%	+5%/-4%	+417%/-583%	+28%/-25%	+13%/-19%	+118%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007974032-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$14.82^{+16.87}_{-10.06}$	$5031^{+373}_{-400}$	$4210^{+34678}_{-51068}$	$0.533^{+102.831}_{-120.128}$
Alt.	$-1576 \pm 315$	$20.58^{+17.11}_{-14.20}$	$5044^{+345}_{-357}$	$4043^{+4160}_{-7929}$	$0.495^{+4.211}_{-0.366}$

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

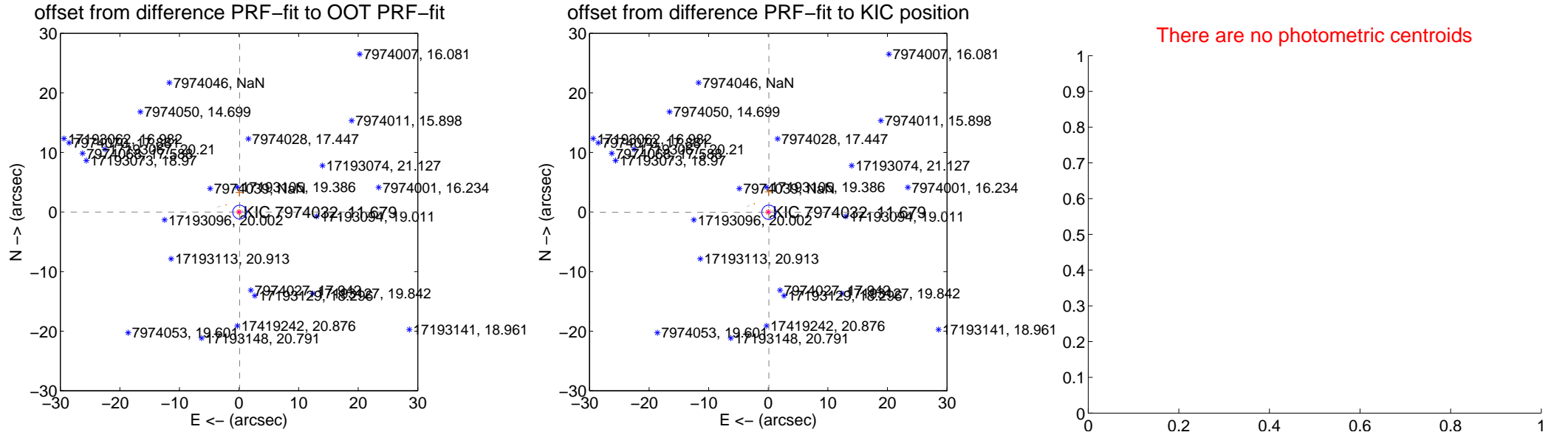
## DV Centroid Data

Supplemental centroid analysis for 007974032-04. **Kepler magnitude: 11.68.** Transit SNR -1.00

There are 5 quarters with good PRF difference image offsets

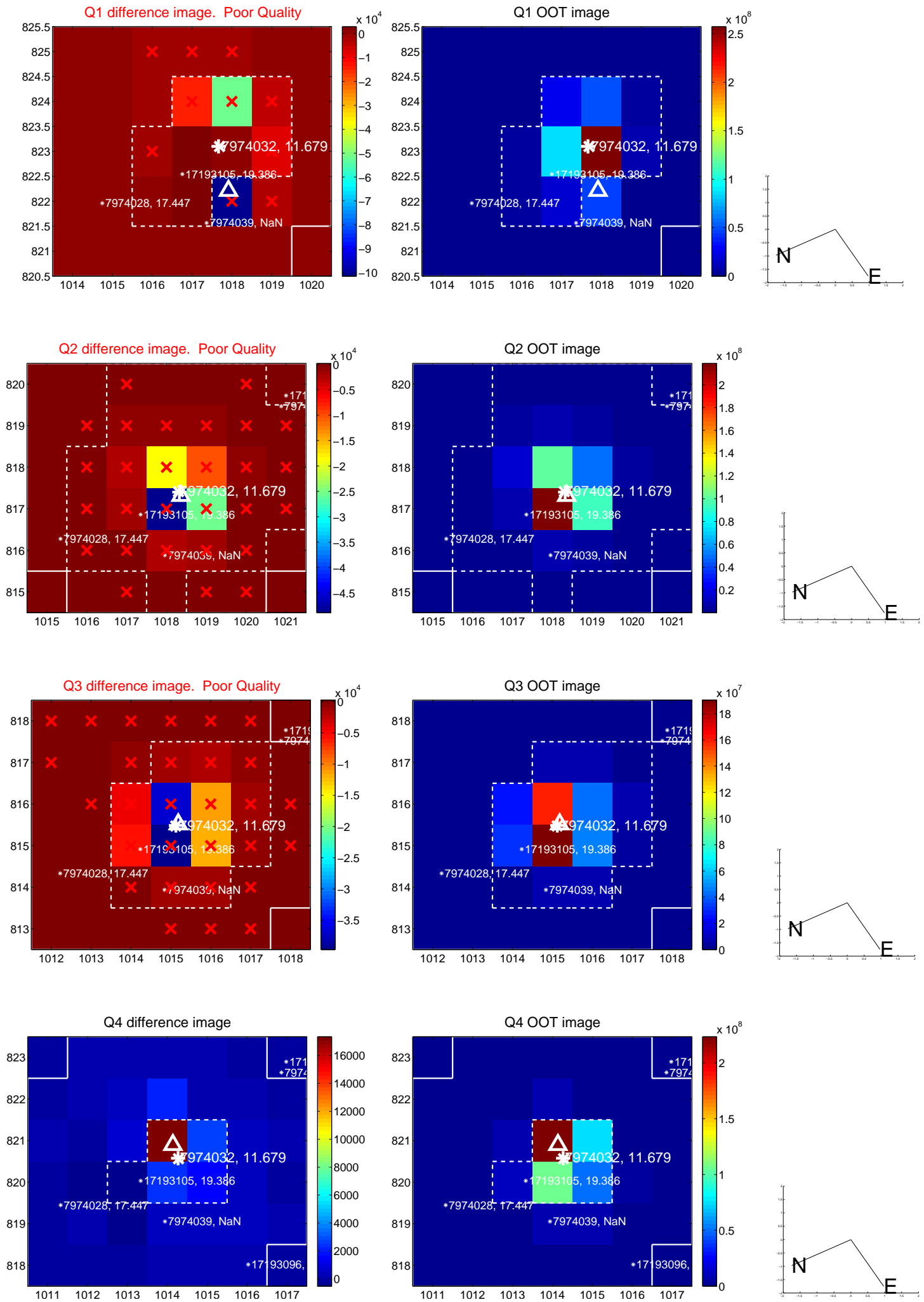
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.100 \pm 0.386$	0.26	$-0.100 \pm 0.379$	$-0.012 \pm 0.206$
PRF-fit source offset from KIC position	$0.120 \pm 0.400$	0.30	$-0.112 \pm 0.386$	$-0.041 \pm 0.241$
photometric centroid source offset	—	—	—	—

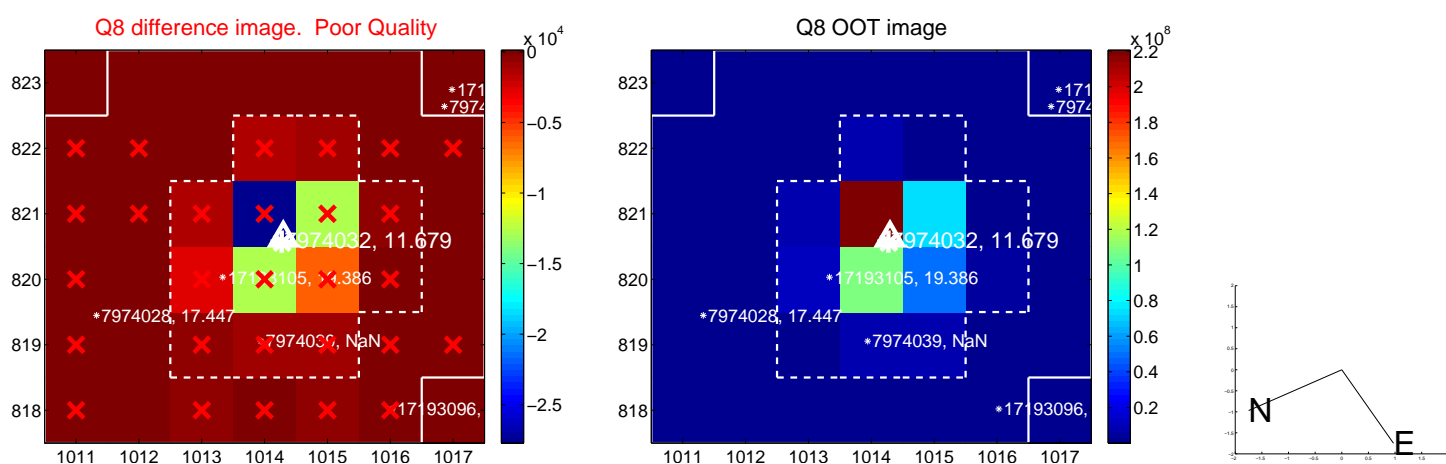
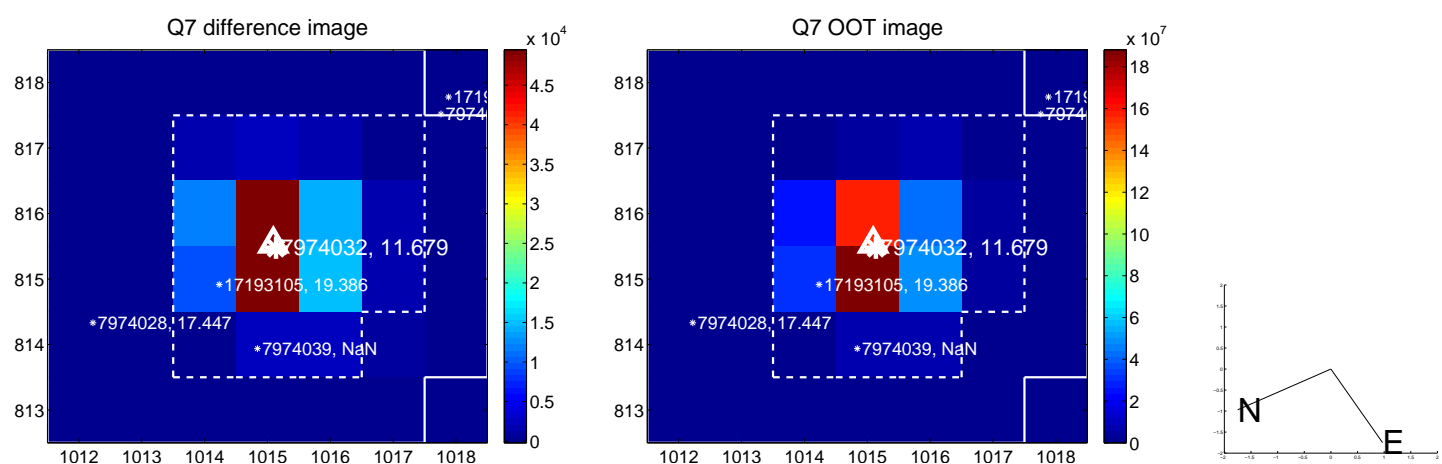
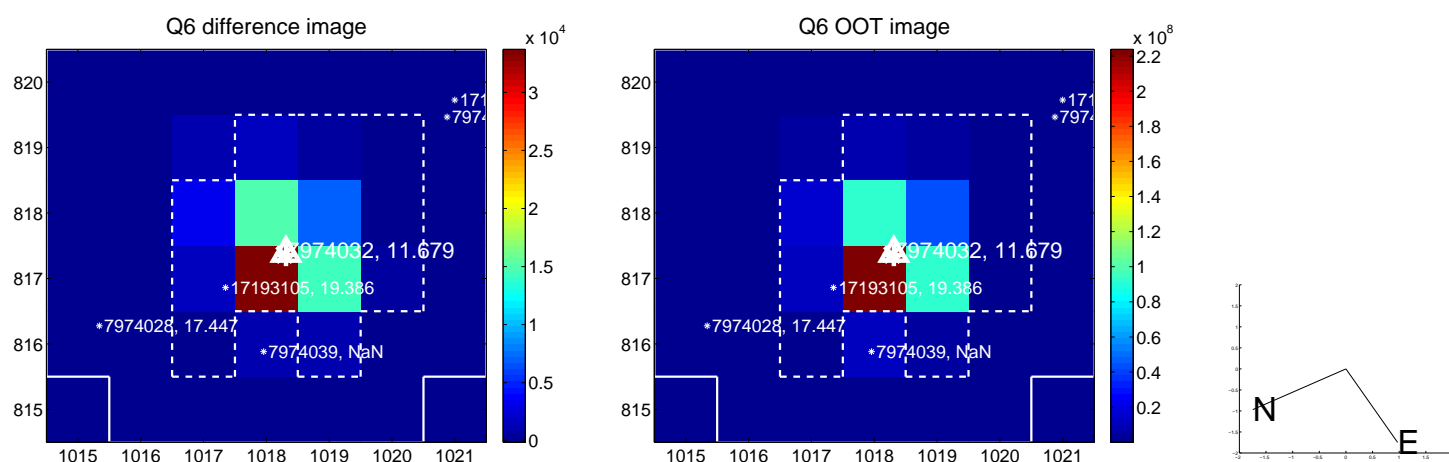
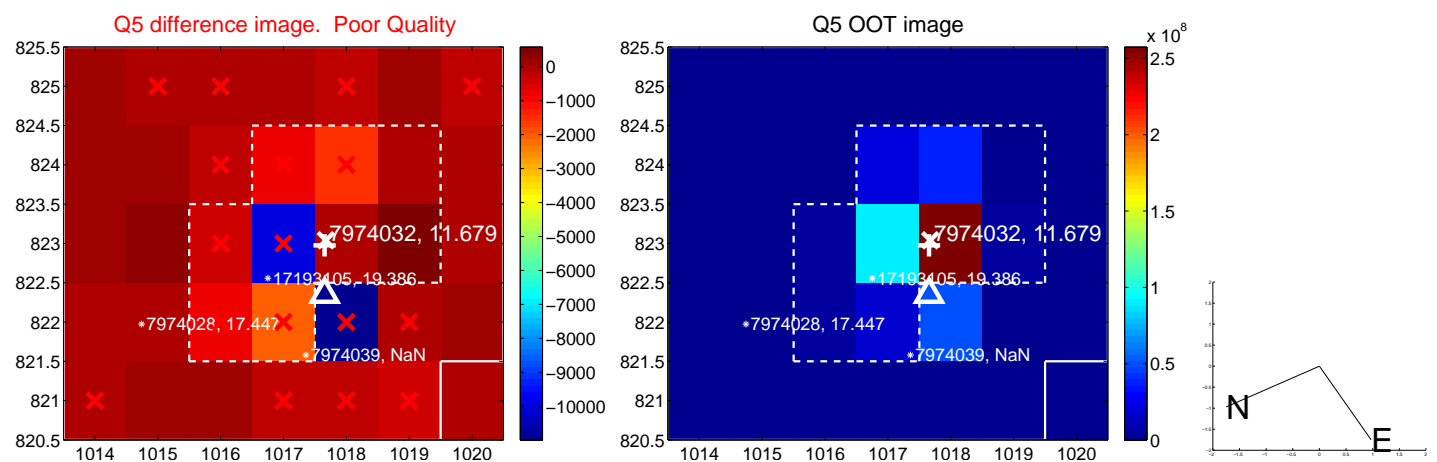


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

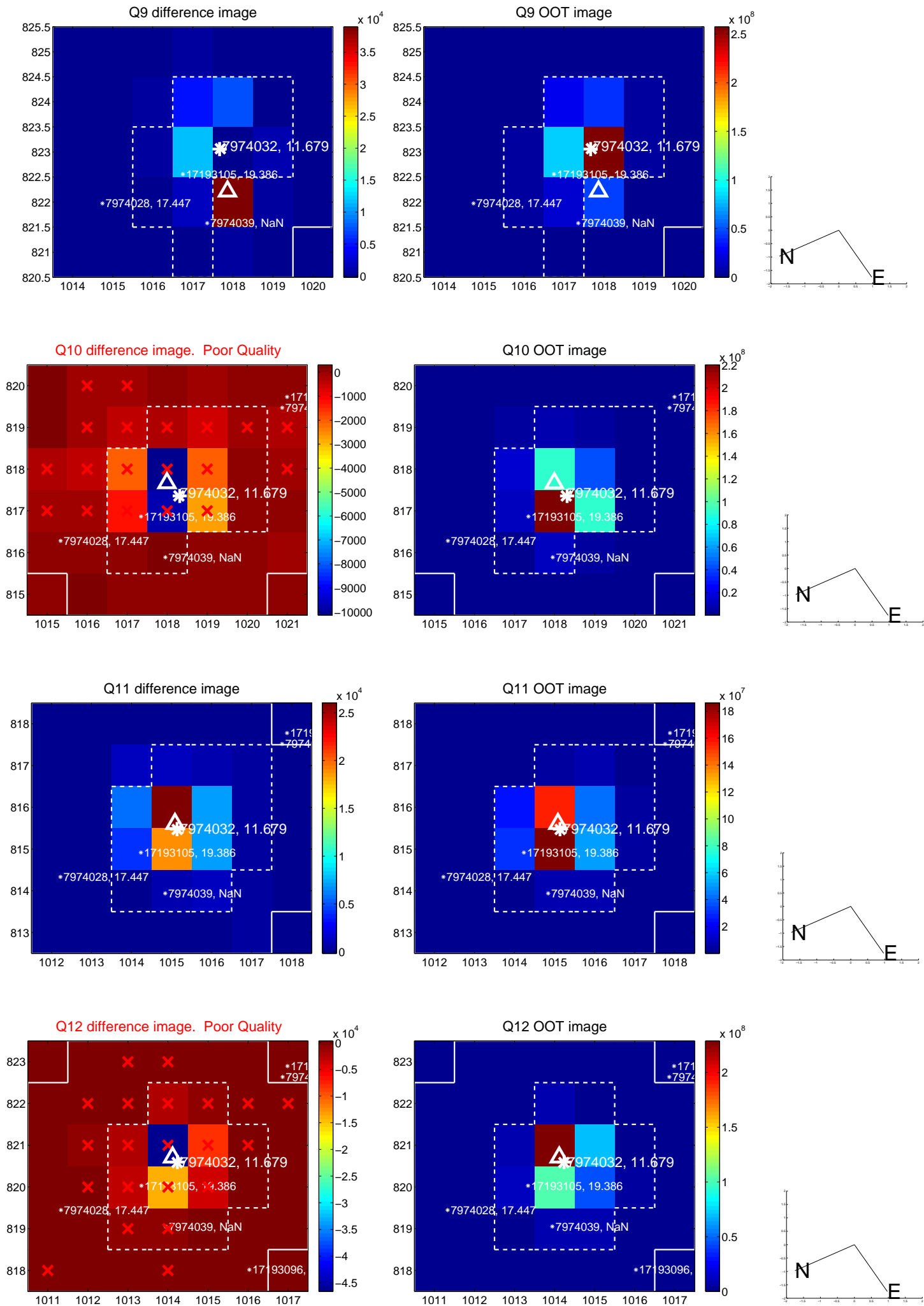


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



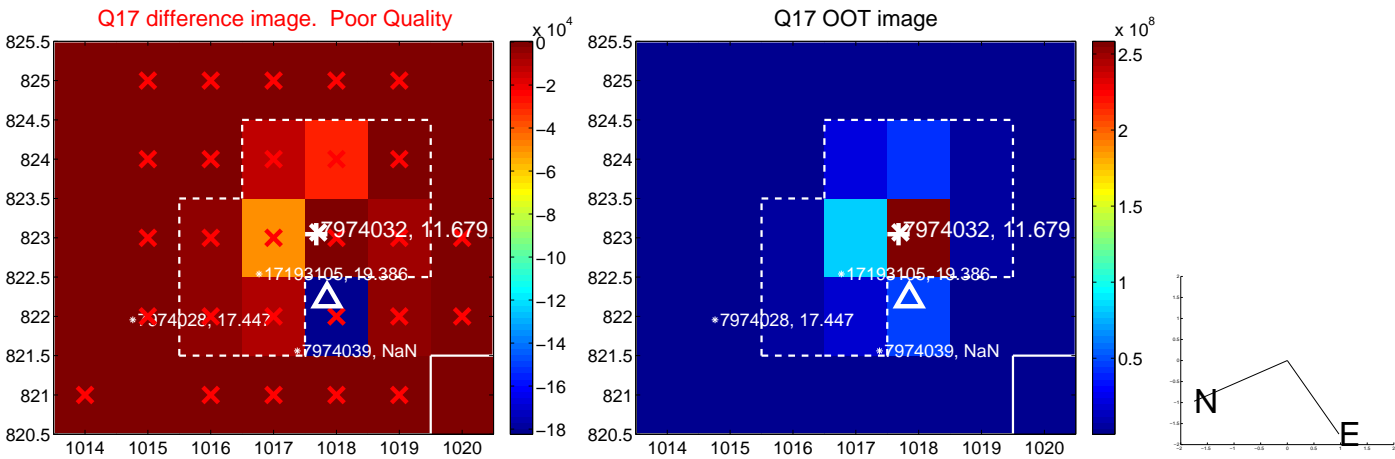


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



folded centroid time series figure for this object.

# UKIRT Image

Declination

