

# KIC 009650390

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009650390-01	OBS	No	0.569342	131.839638	85.1	1.702	9.5	10.2	3.05	8572	3.27	156407.82
009650390-02	OBS	No	0.569353	131.544259	95.8	1.682	10.6	12.3	3.05	8572	3.50	156403.73
009650390-03	OBS	No	0.657935	132.031827	32.8	2.500	11.0	-1.0	3.05	8572	1.78	128977.08

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650390-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009650390-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
009650390-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

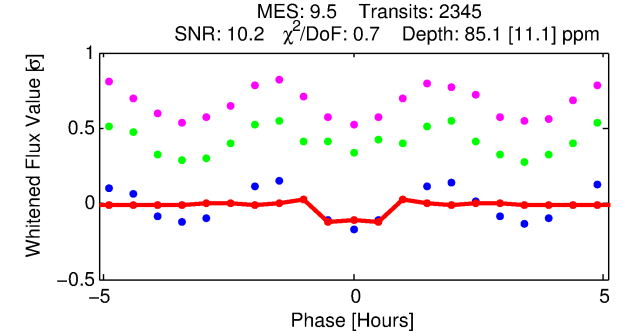
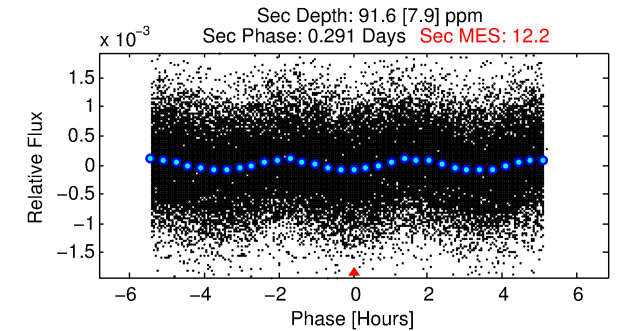
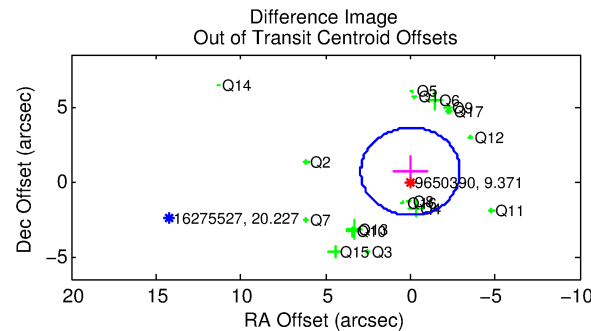
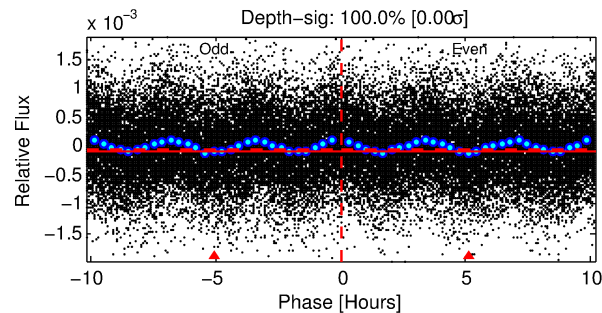
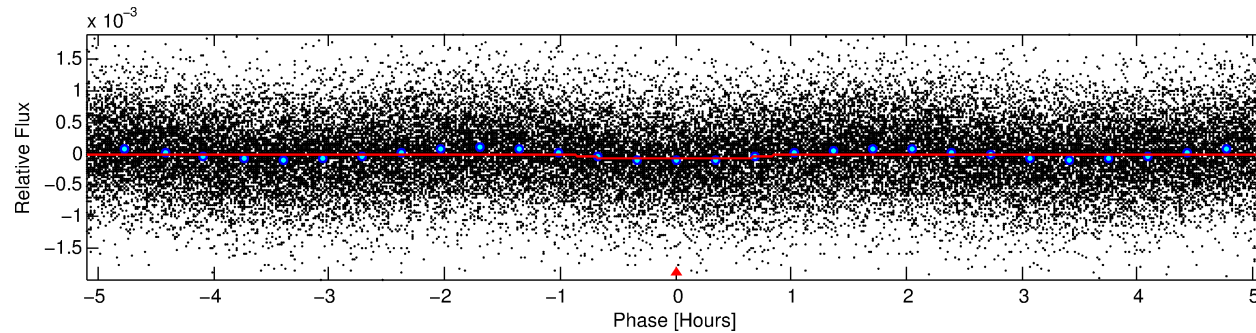
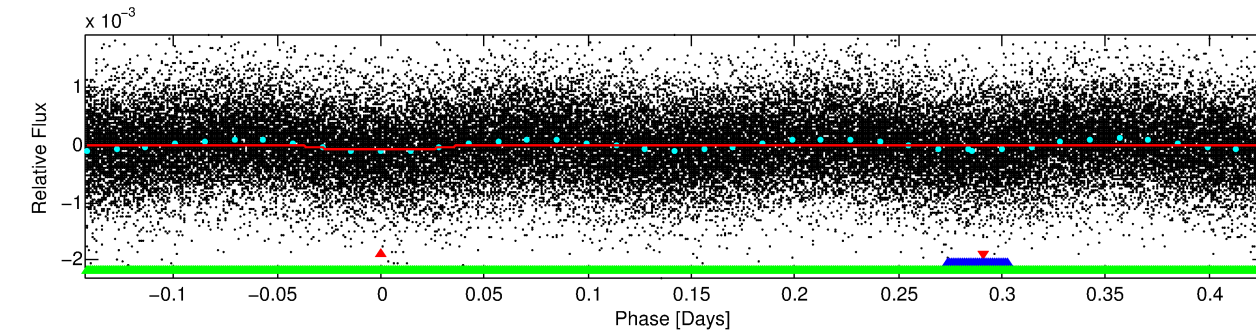
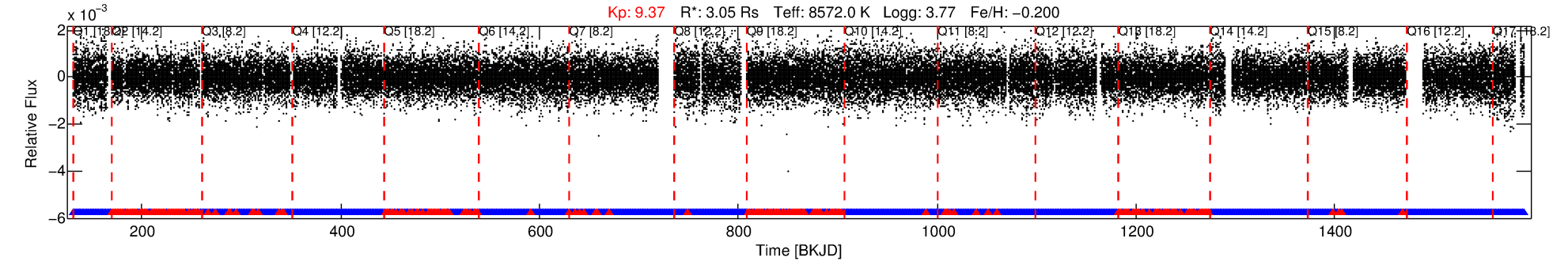
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009650390-01

No Significant Match Found

# DV One-Page Summary

KIC: 9650390 Candidate: 1 of 3 Period: 0.569 d



## DV Fit Results:

Period = 0.56934 [0.00001] d  
Epoch = 131.8396 [0.0012] BKJD  
Rp/R\* = 0.0098 [0.0020]  
a/R\* = 1.50 [1.05]  
b = 0.90 [0.27]  
Seff = 156407.82 [107513.96]  
Teff = 5071 [871] K  
Rp = 3.27 [1.53] Re  
a = 0.0170 [0.0070] AU  
Ag = 1.36 [1.06] [0.34 $\sigma$ ]  
Teffp = 8466 [939] K [2.65 $\sigma$ ]

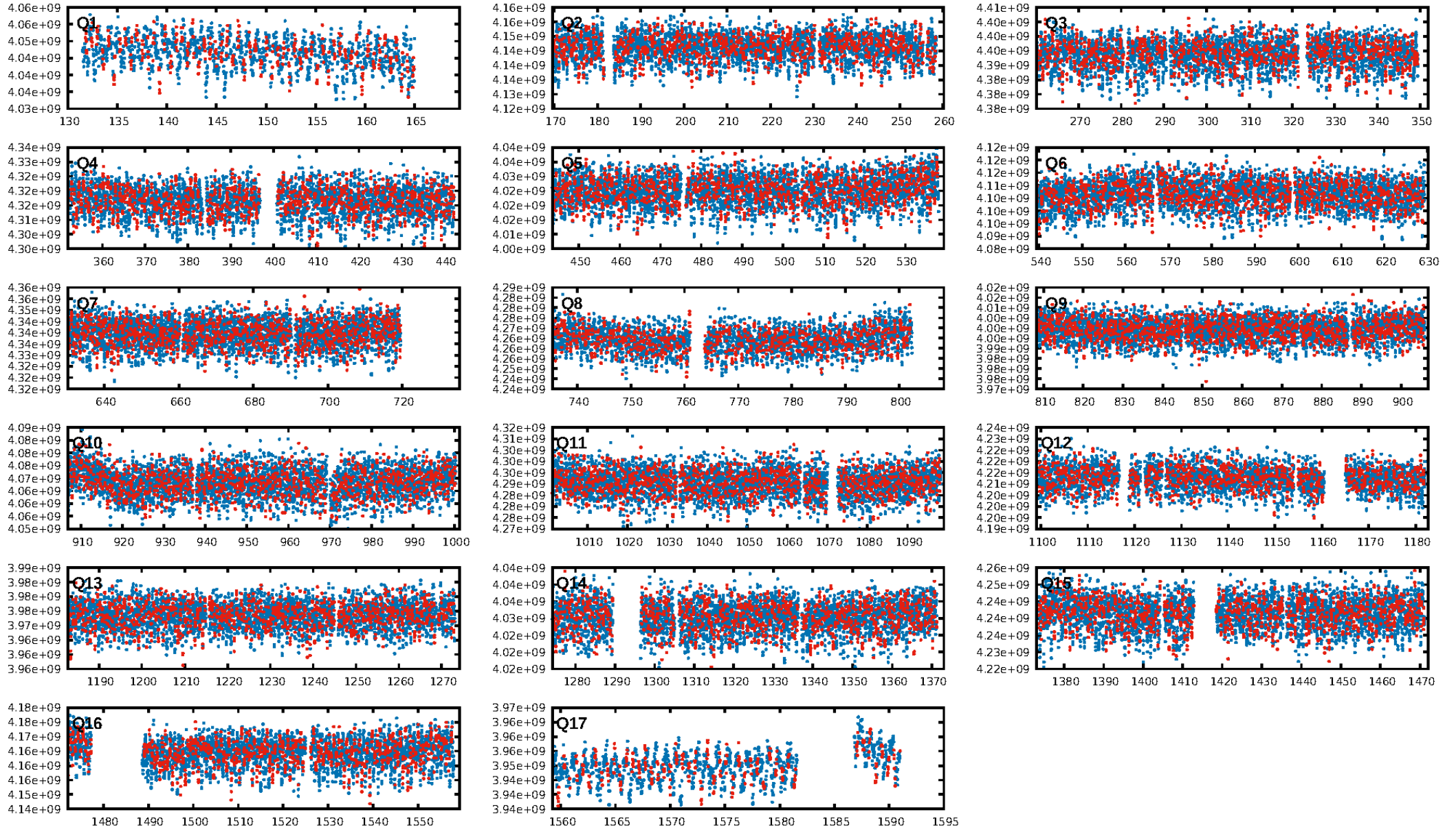
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.88 [1973/2241]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 0.0%  
Centroid-so: 2.079 arcsec [6.18 $\sigma$ ]  
OotOffset-rm: 0.680 arcsec [0.70 $\sigma$ ]  
KicOffset-rm: 1.296 arcsec [1.40 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.06 [1/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:04:54 Z

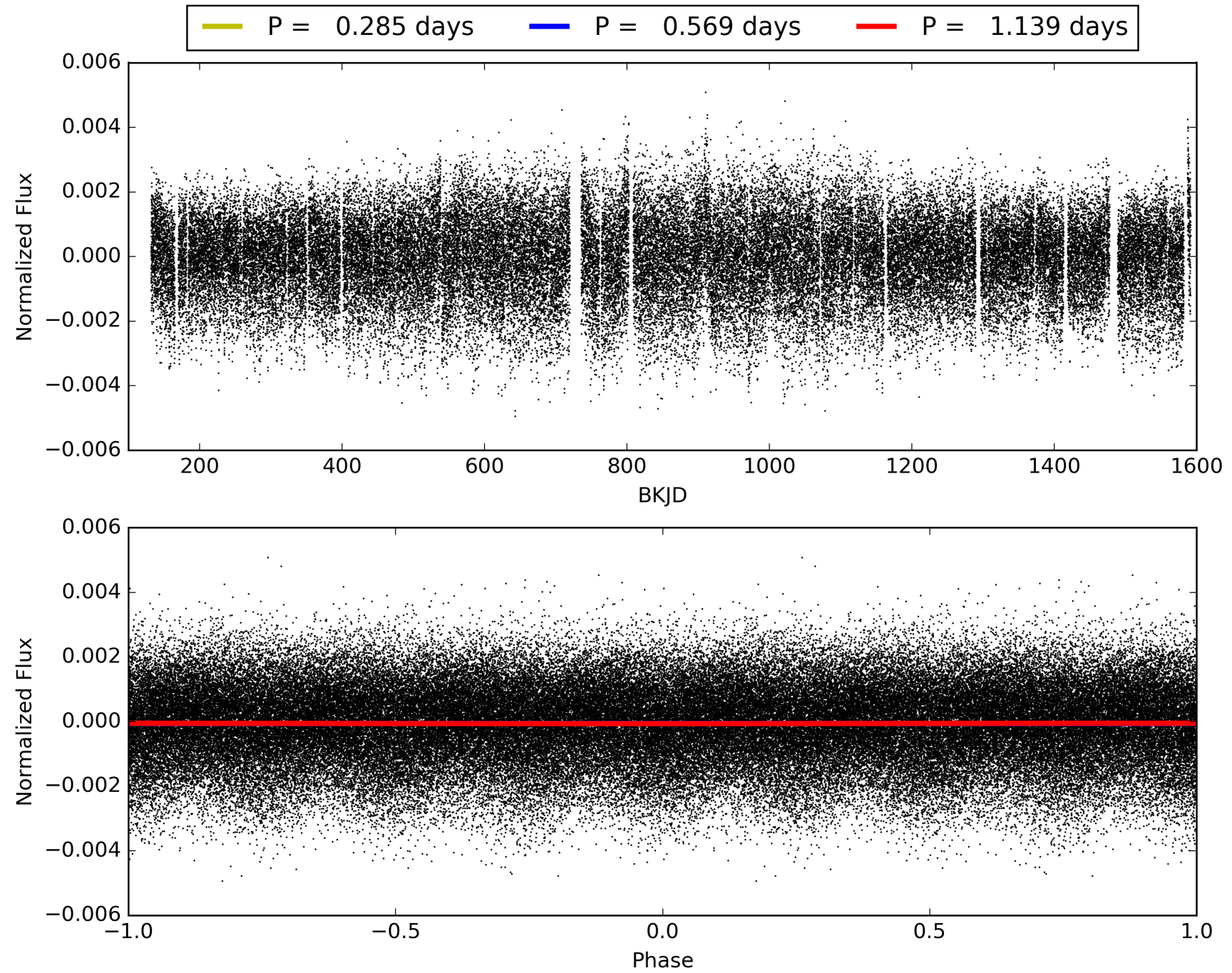
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009650390-01, PDC Light Curves





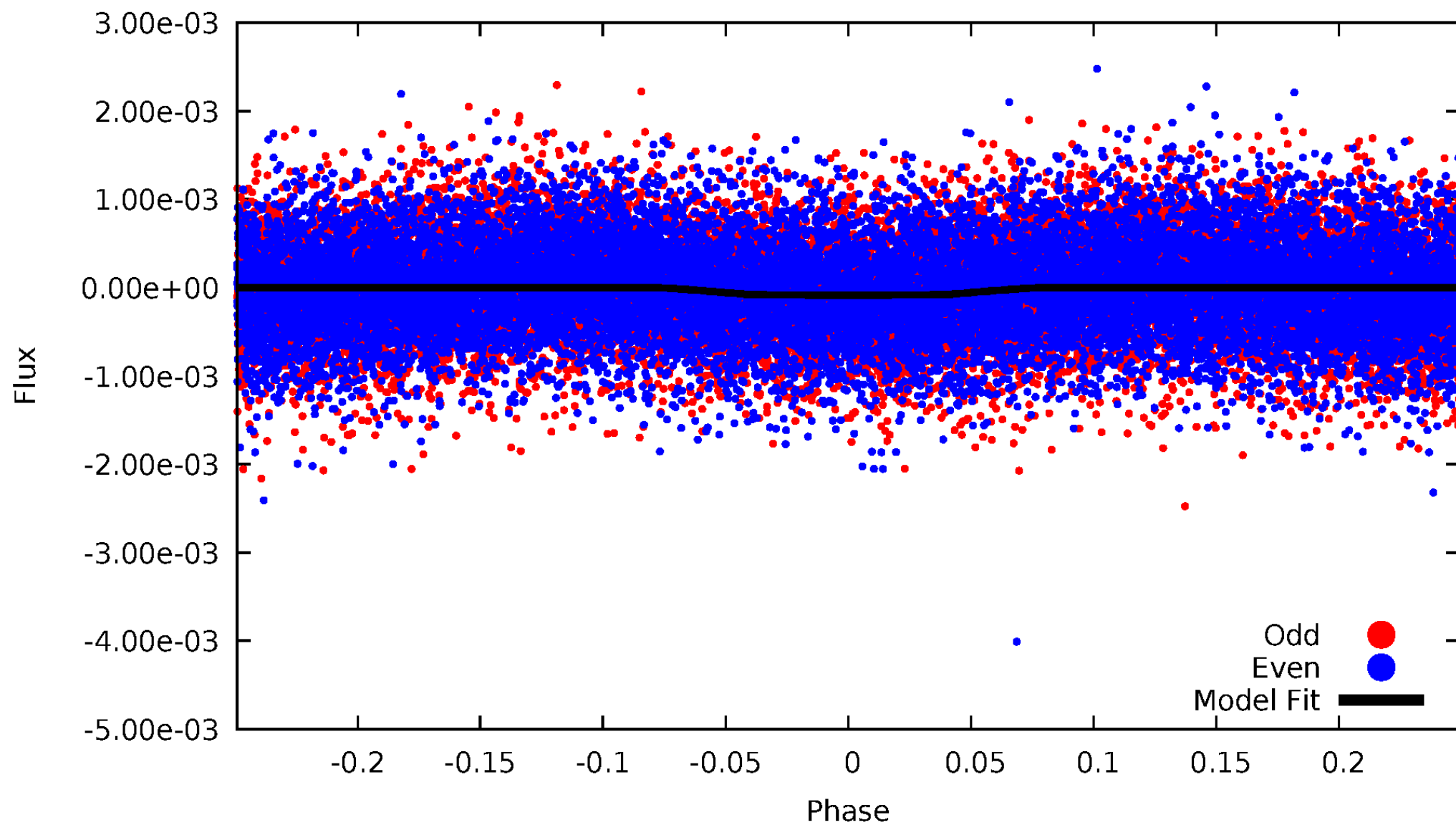
TCE 009650390-01





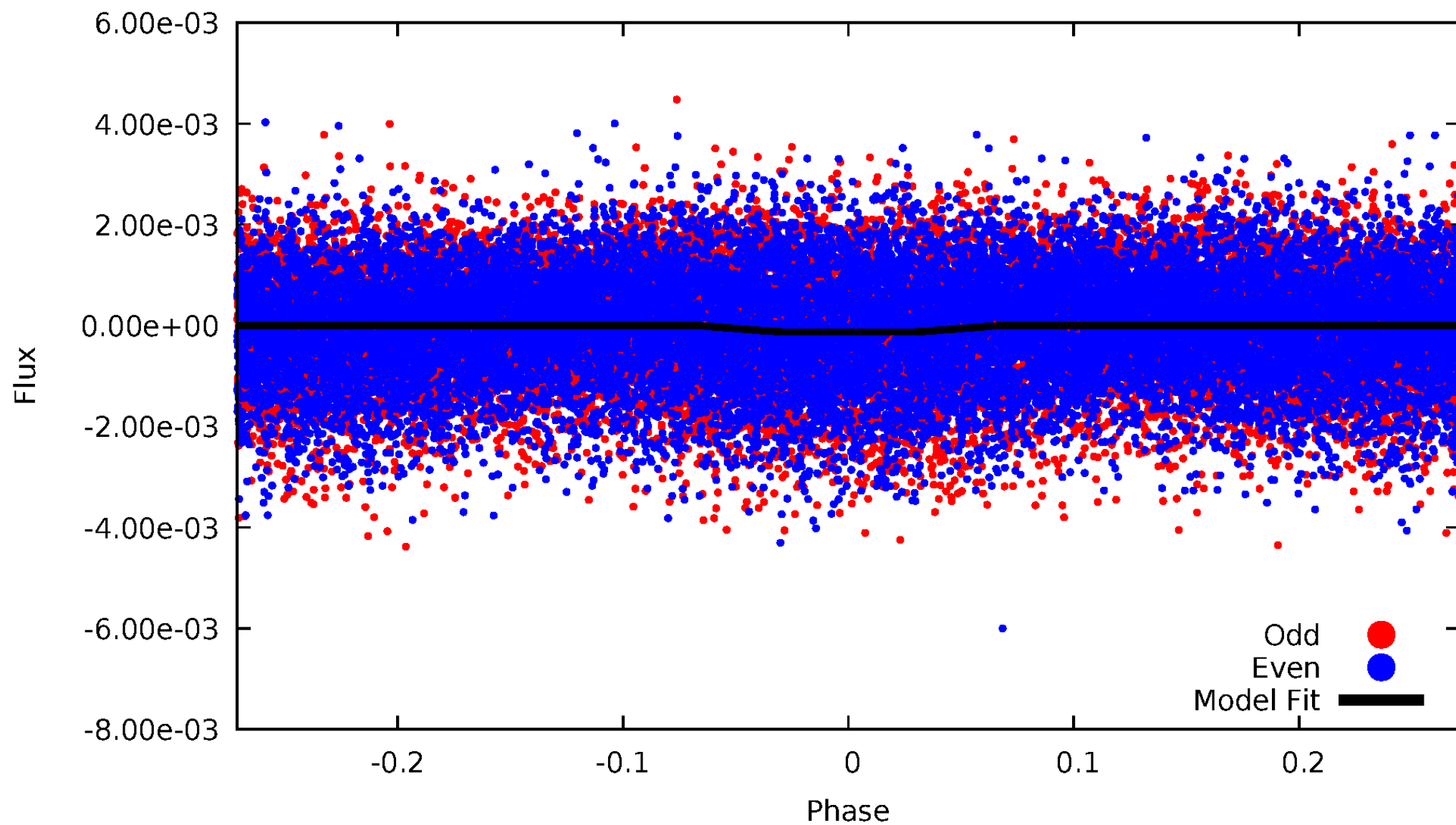
# DV Odd/Even

TCE 009650390-01

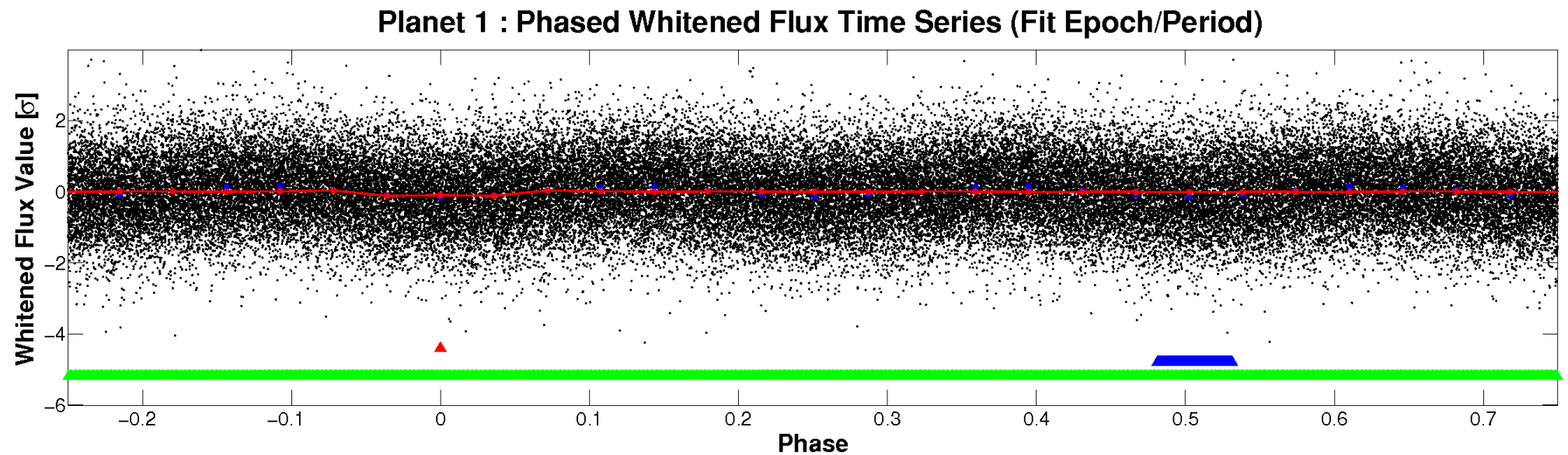
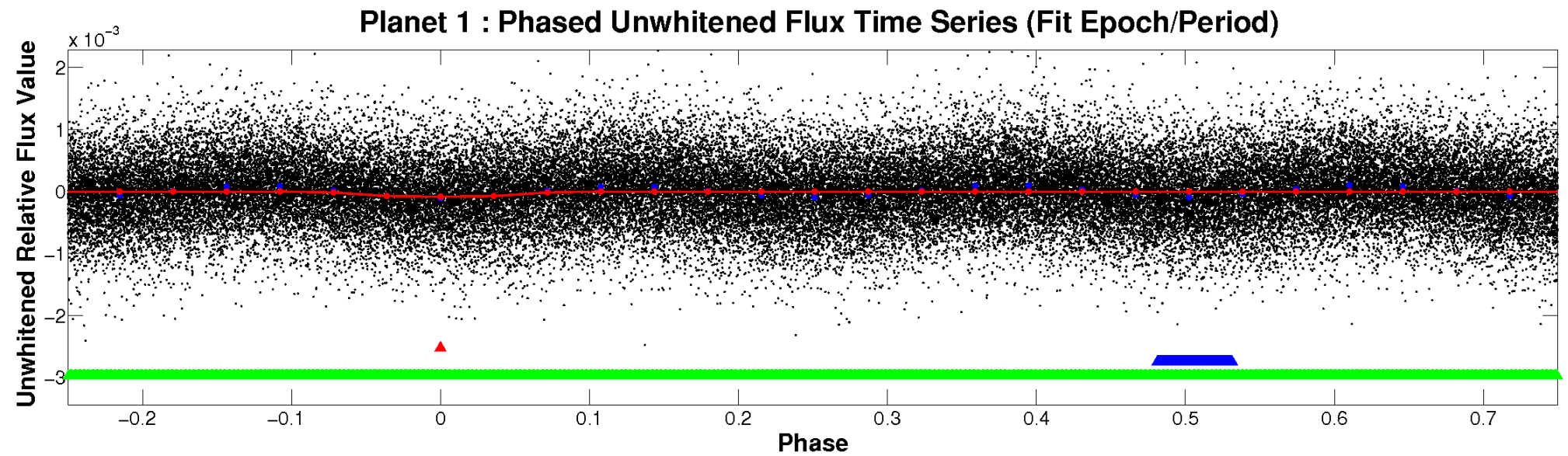


# ALT Odd/Even

TCE 009650390-01



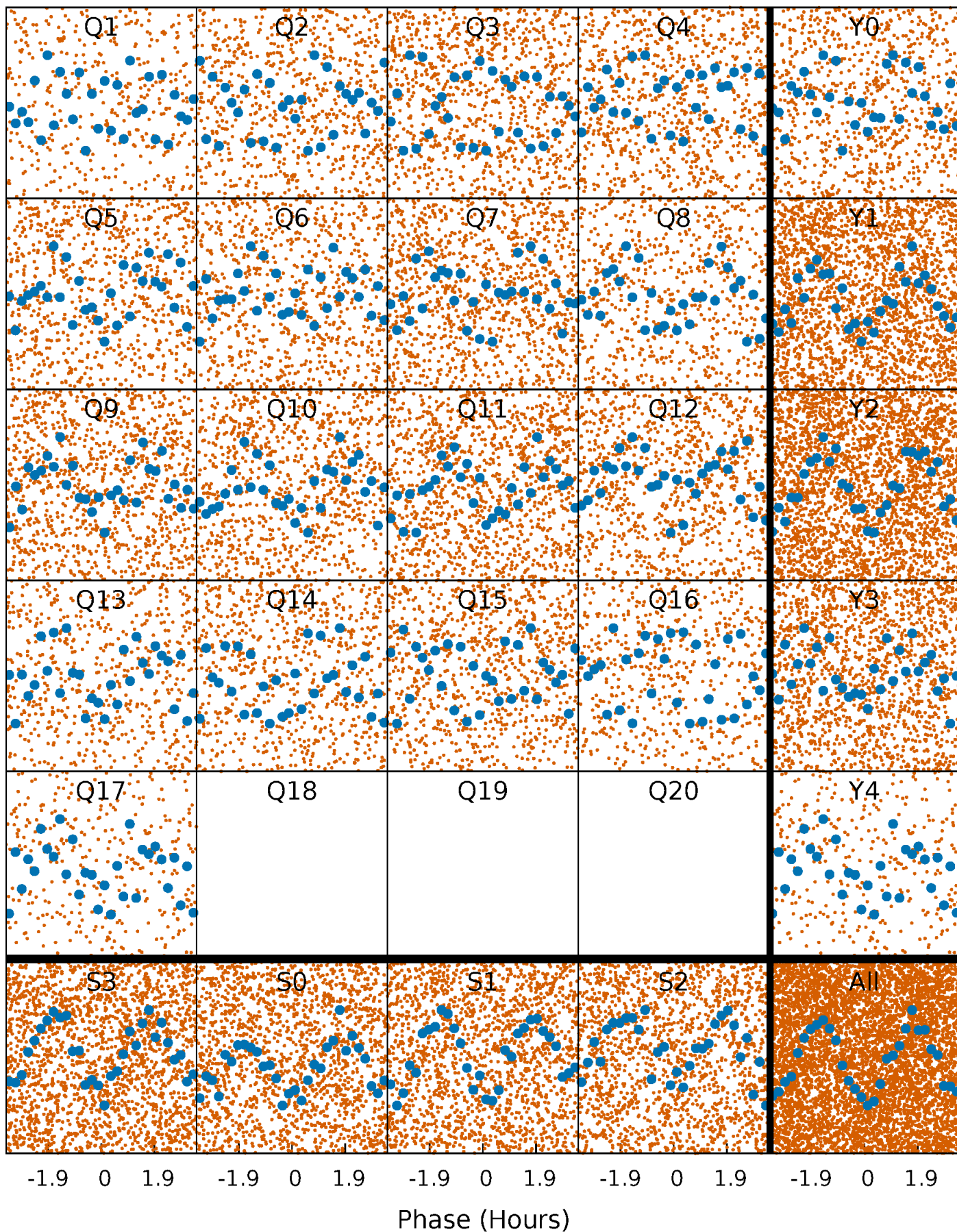
# Non-Whitened Vs. Whitened Light Curve





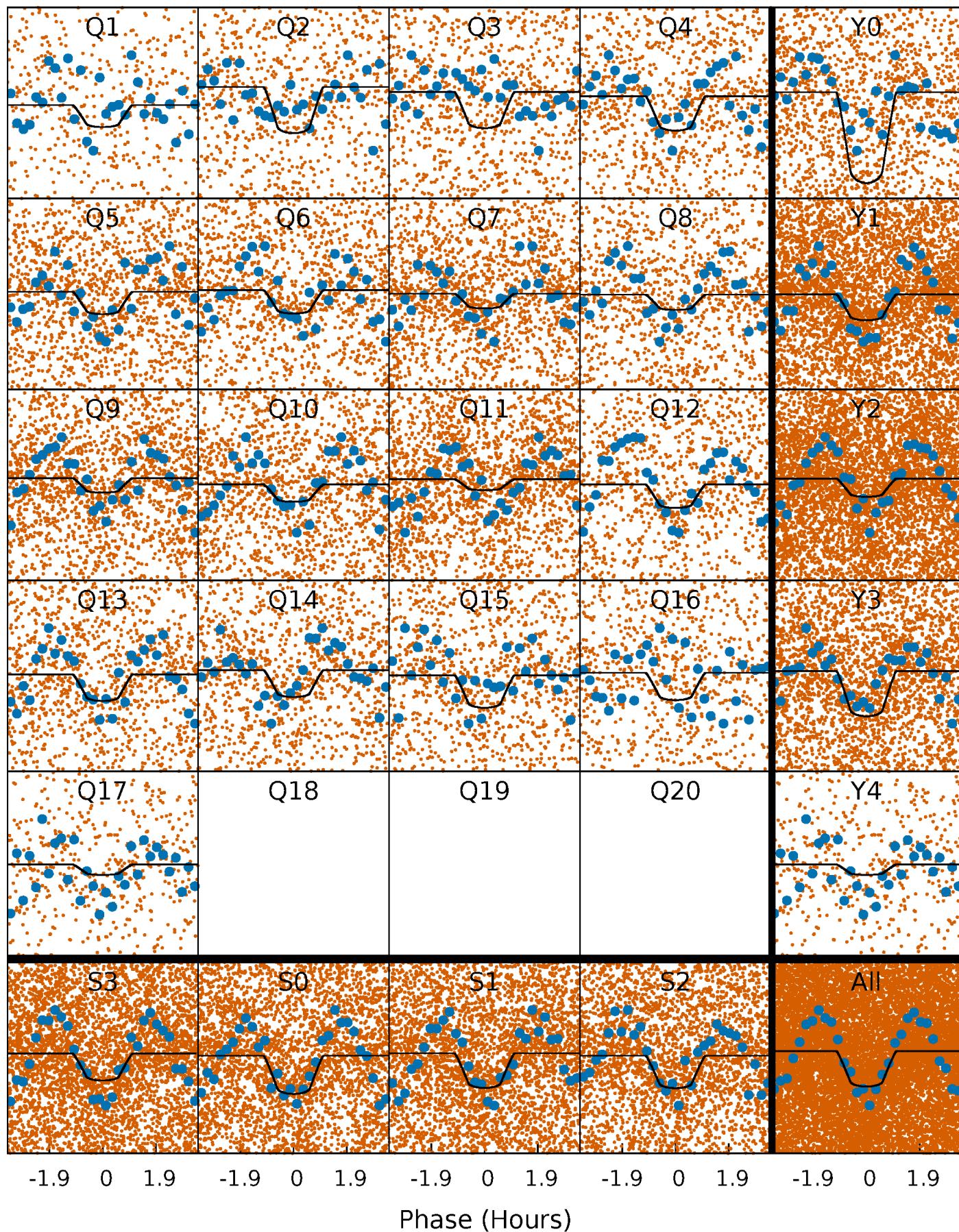
# PDC Quarter-Phased Transit Curves

TCE 009650390-01   P= 0.569342 Days    $T_0=131.839638$  (BKJD)



# DV Quarter-Phased Transit Curves

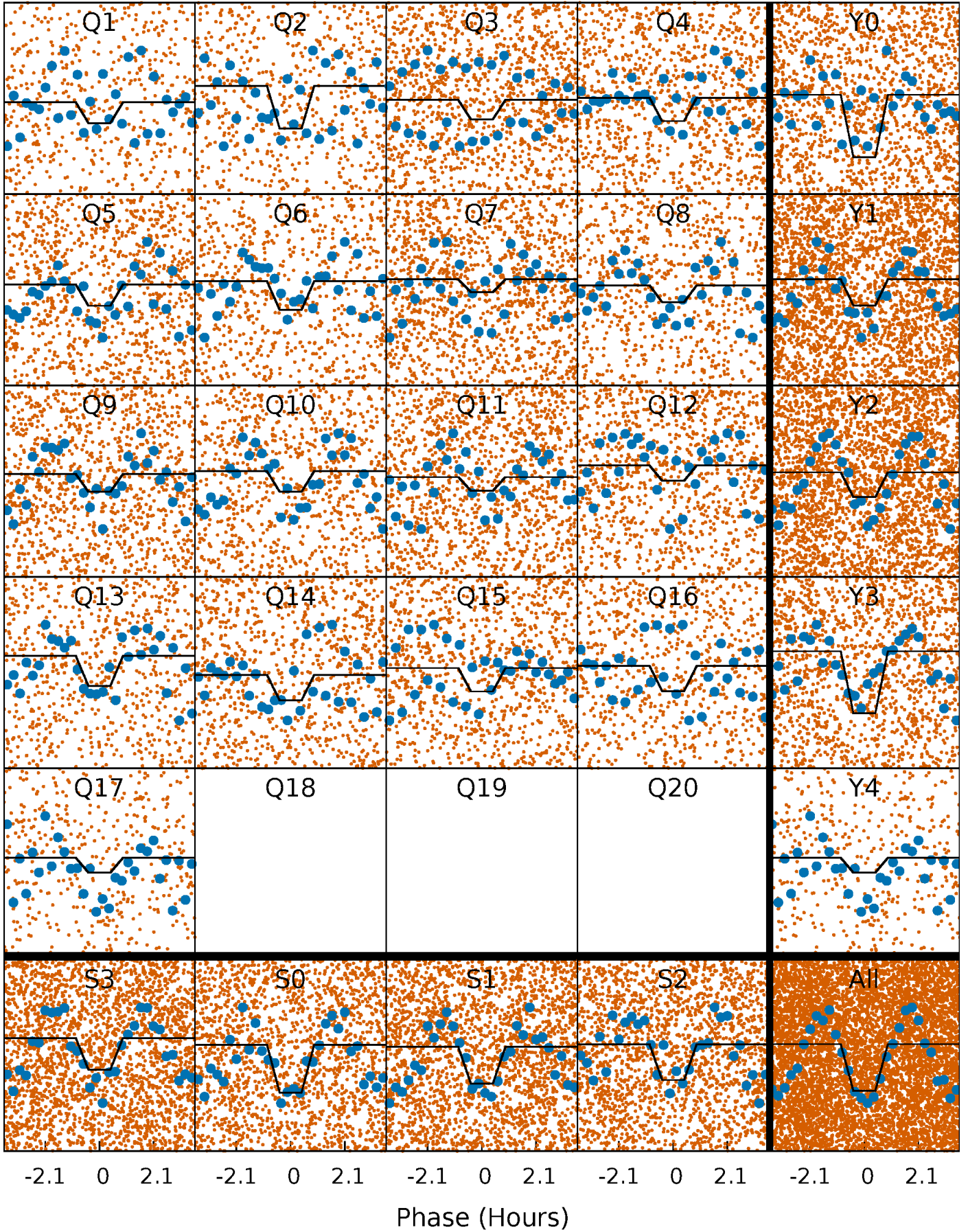
TCE 009650390-01 P= 0.569342 Days  $T_0=131.839638$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 009650390-01 P= 0.569342 Days  $T_0=131.839367$  (BKJD)

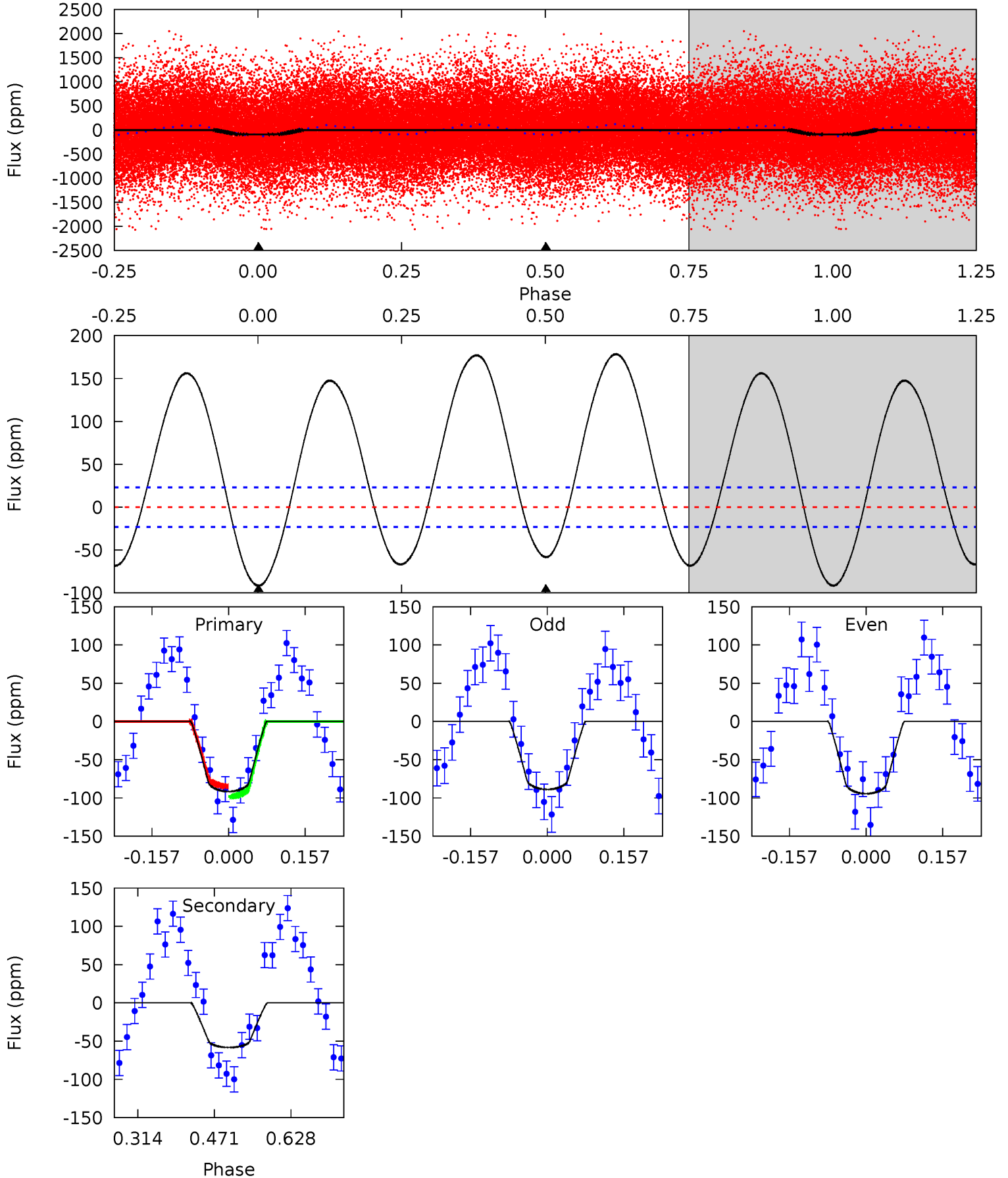




# DV Model-Shift Uniqueness Test

009650390-01, P = 0.569342 Days, E = 131.270296 Days

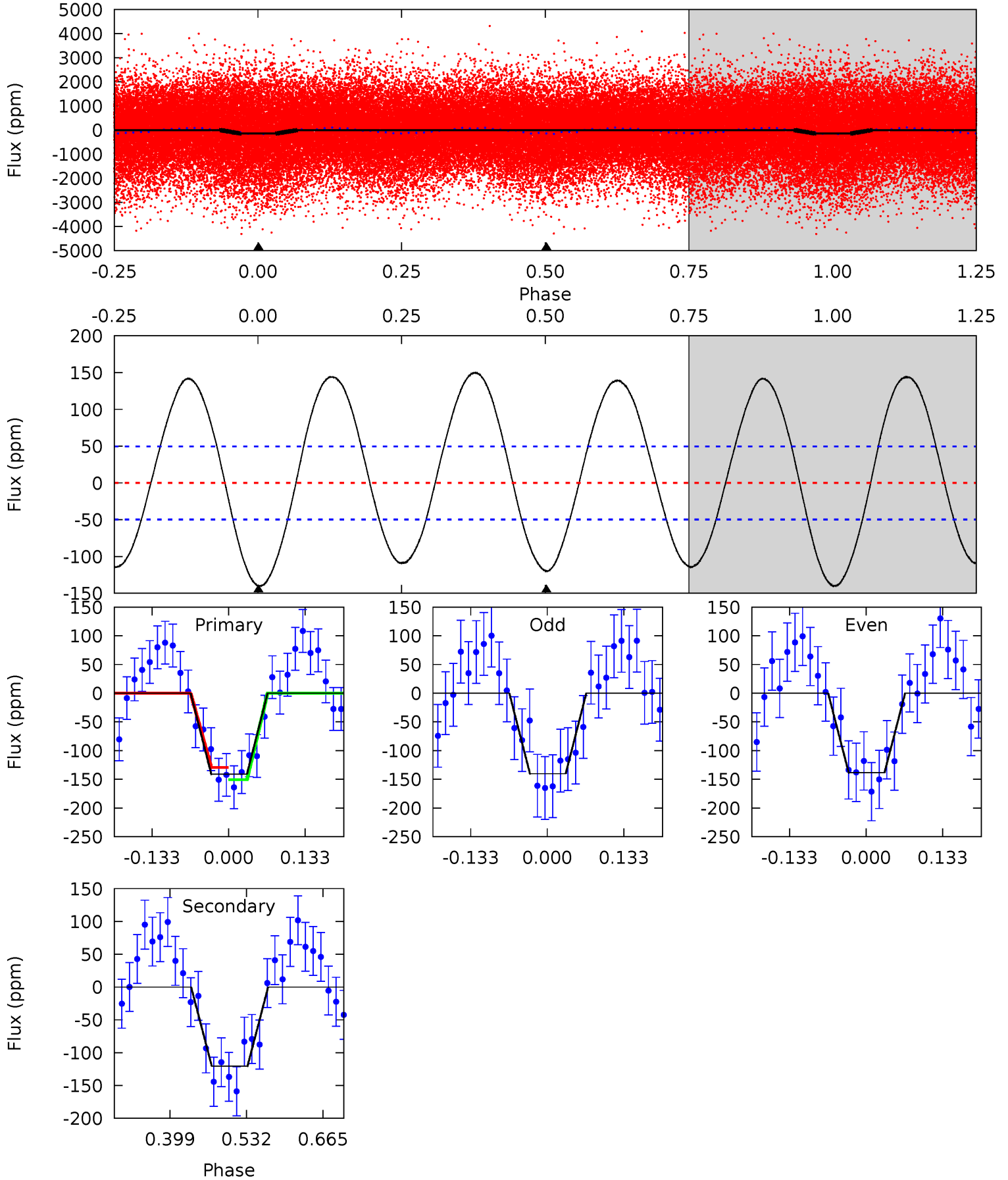
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.7	11.3	0	0	4.47	1.42	12.0	17.7	17.7	11.3	11.3	0.54	0.93	0.66	1.29



# Alt Model-Shift Uniqueness Test

009650390-01, P = 0.569342 Days, E = 131.270025 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
12.8	10.9	0	0	4.50	1.50	7.87	12.8	12.8	10.9	10.9	0.07	2.06	0.52	0.89



### Stellar Parameters For KIC 009650390

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8572^{+237}_{-373}$	$3.772^{+0.392}_{-0.168}$	$-0.200^{+0.400}_{-0.350}$	$3.050^{+1.059}_{-1.295}$	$2.009^{+0.482}_{-0.438}$	$0.100^{+0.333}_{-0.046}$
	+3%/-4%	+10%/-4%	+200%/-175%	+35%/-42%	+24%/-22%	+334%/-46%
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 009650390-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-58 \pm 5$	$3.08^{+0.90}_{-0.88}$	$6893^{+634}_{-806}$	$6668^{+1180}_{-1017}$	$1.014^{+0.880}_{-0.419}$
Alt.	$-121 \pm 11$	$3.56^{+1.03}_{-1.01}$	$6917^{+640}_{-831}$	$7823^{+1348}_{-998}$	$1.500^{+1.418}_{-0.555}$

$T_{max}$  = 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

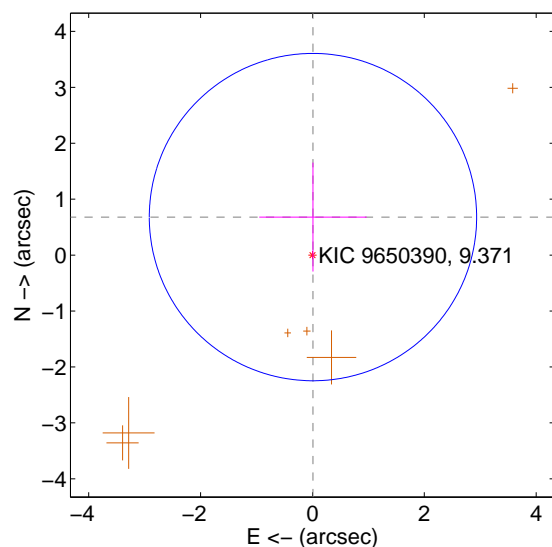
Supplemental centroid analysis for 009650390-01. **Kepler magnitude: 9.37.** Transit SNR 10.21

**There are 1 quarters with good PRF difference image offsets**

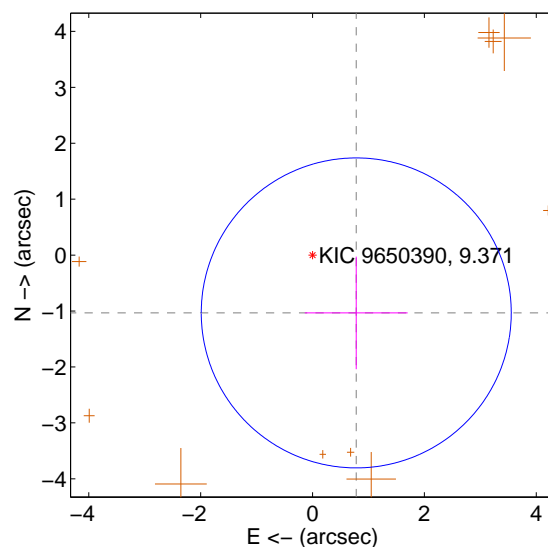
The direct PRF centroid is offset from the target star catalog position by about 1.30 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.680 \pm 0.976$	0.70	$-0.009 \pm 0.961$	$0.680 \pm 0.974$
PRF-fit source offset from KIC position	$1.296 \pm 0.924$	1.40	$-0.782 \pm 0.920$	$-1.034 \pm 1.007$
photometric centroid source offset	$2.08 \pm 0.34$	<b>6.18</b>	$-1.89 \pm 0.36$	$-0.86 \pm 0.22$

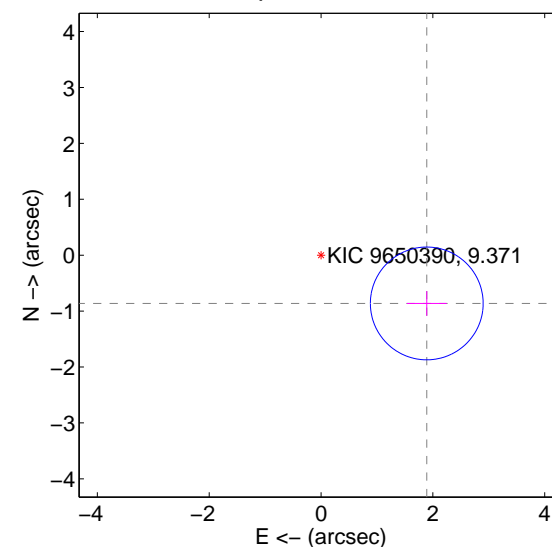
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

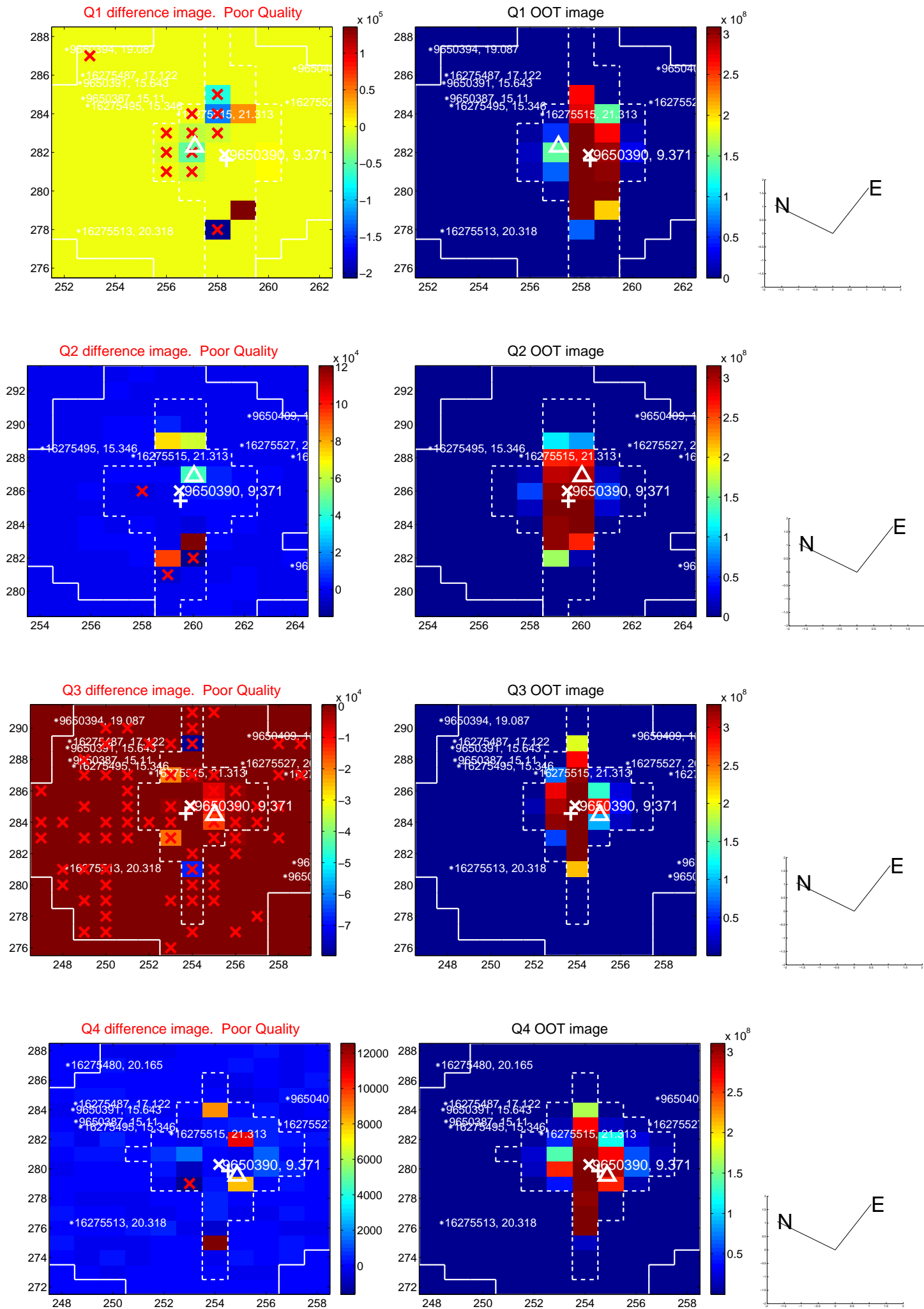


offset from photometric centroids

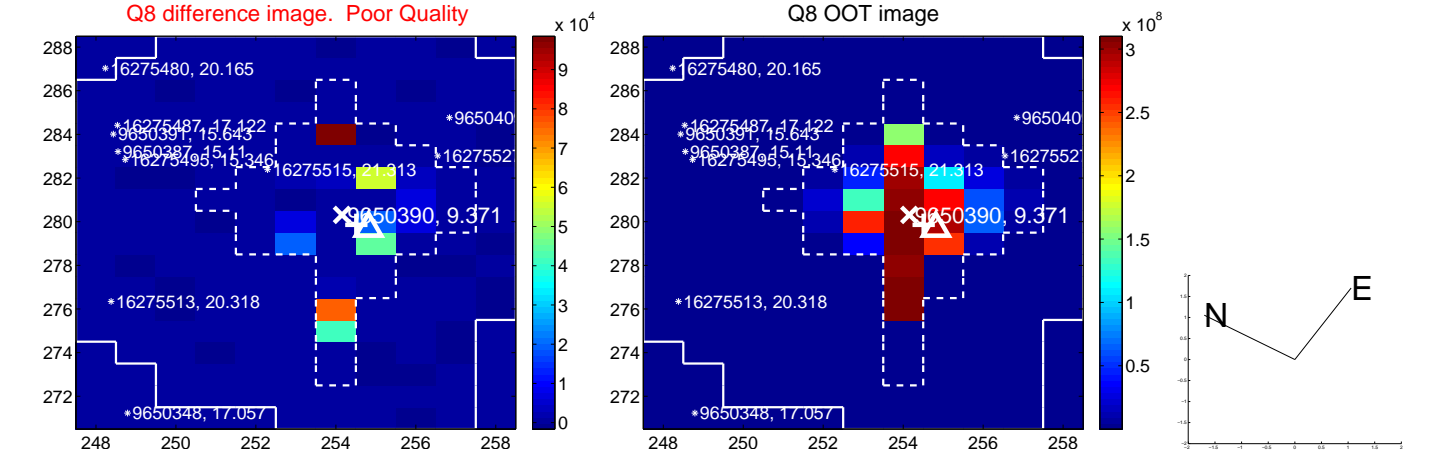
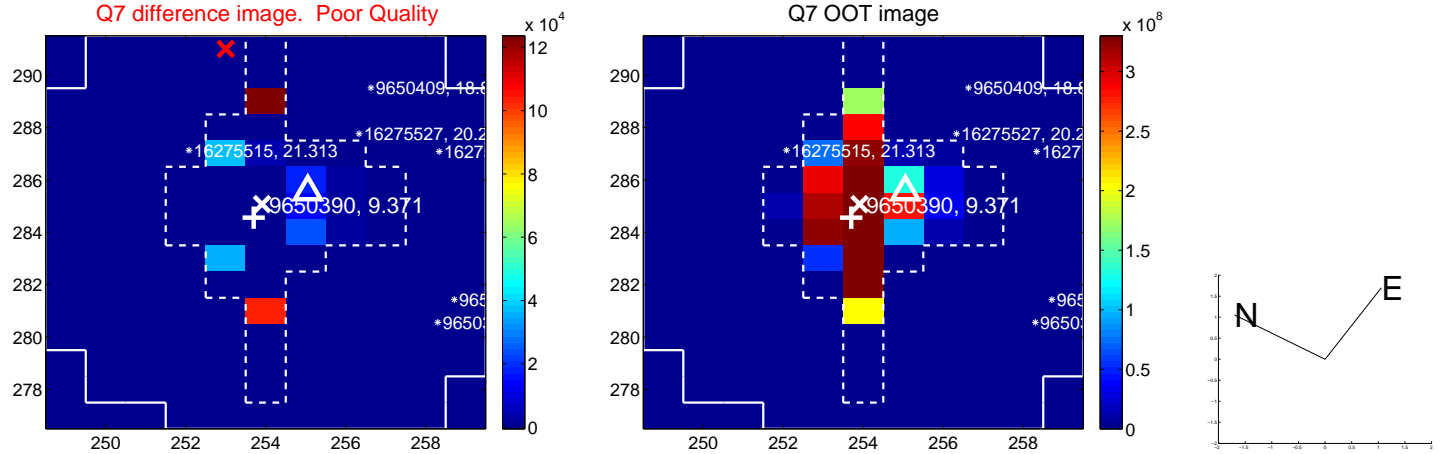
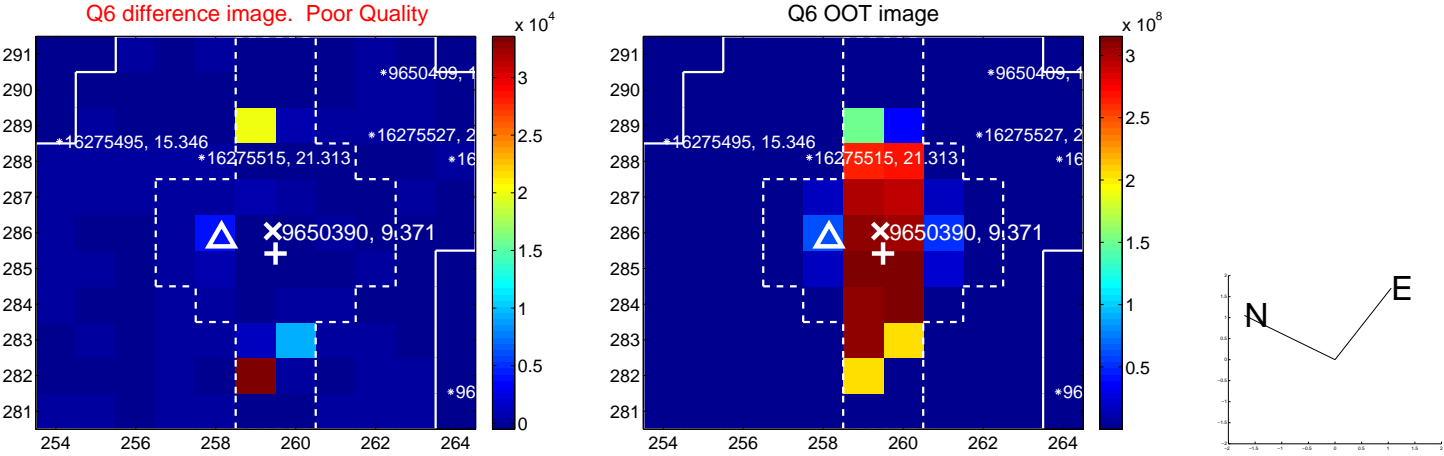
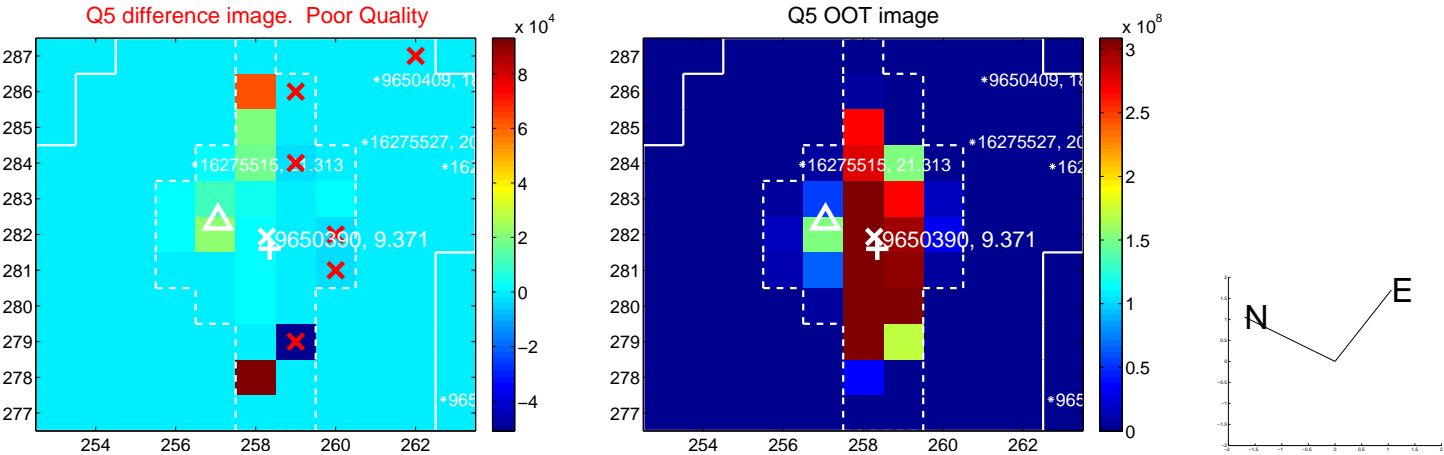


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

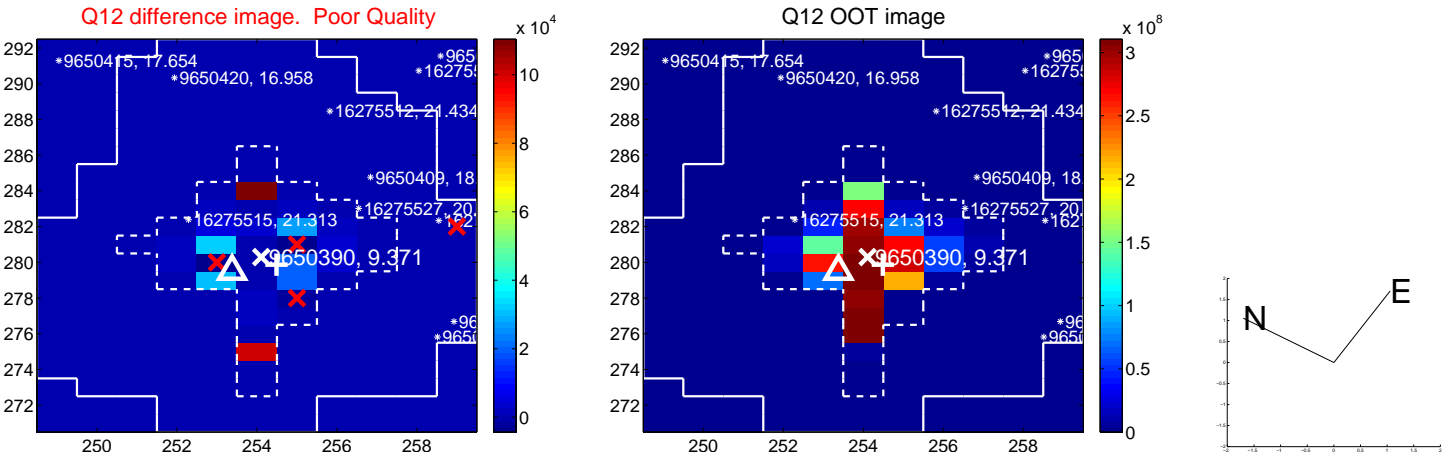
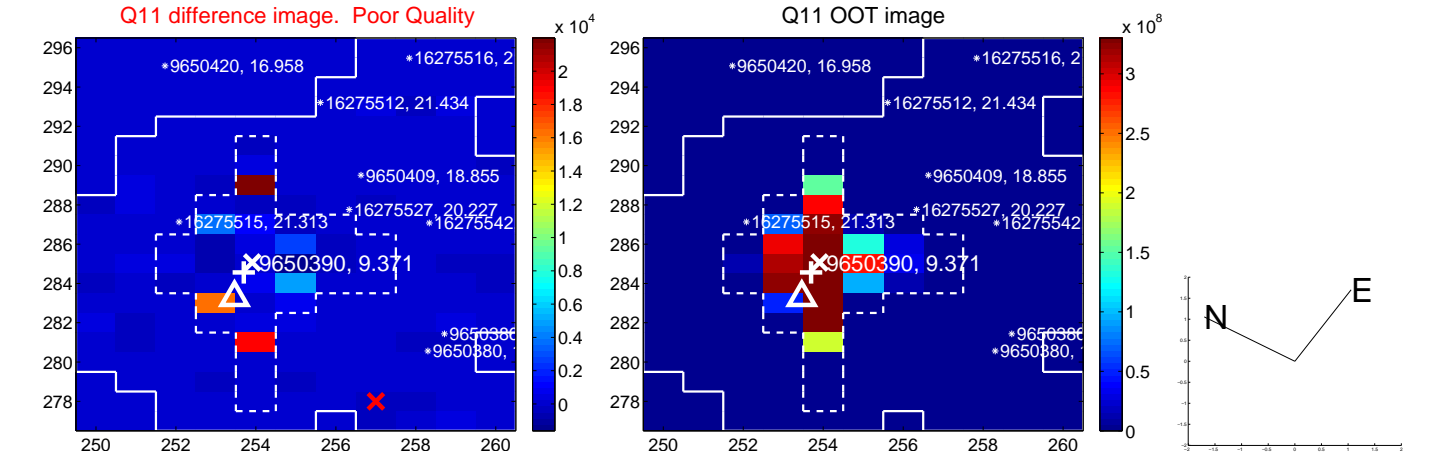
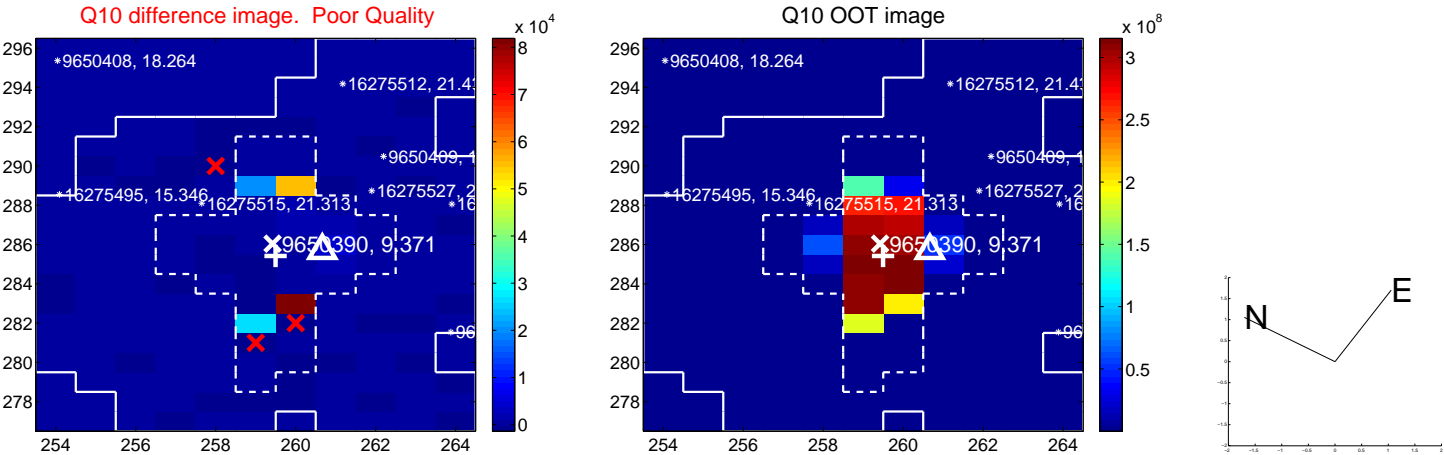
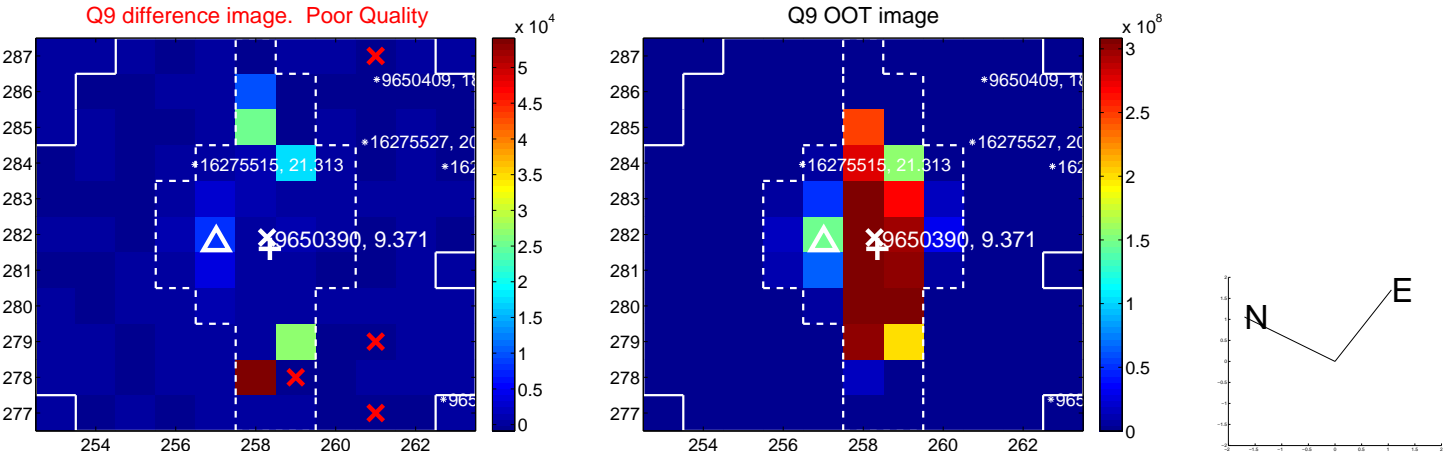


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

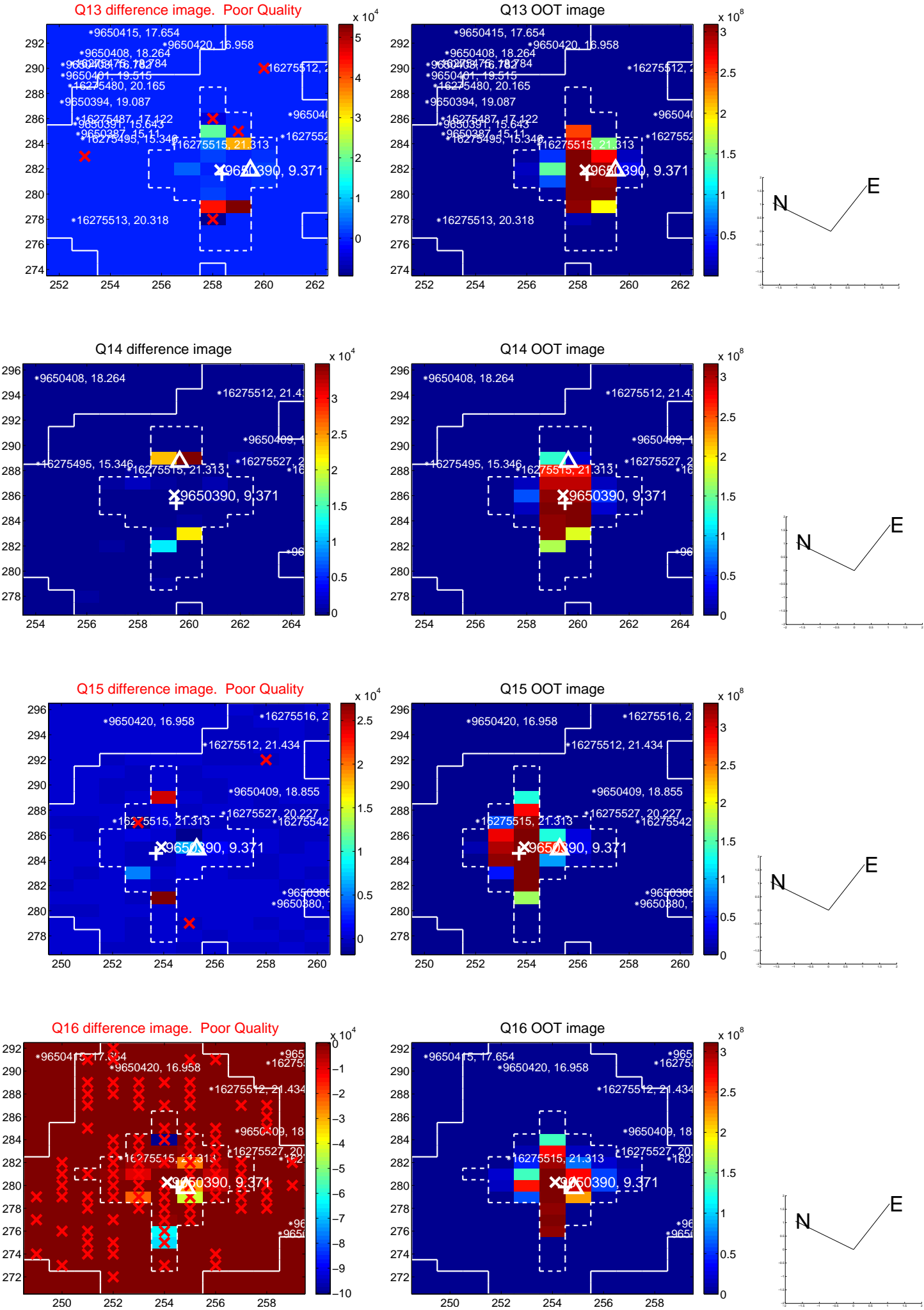




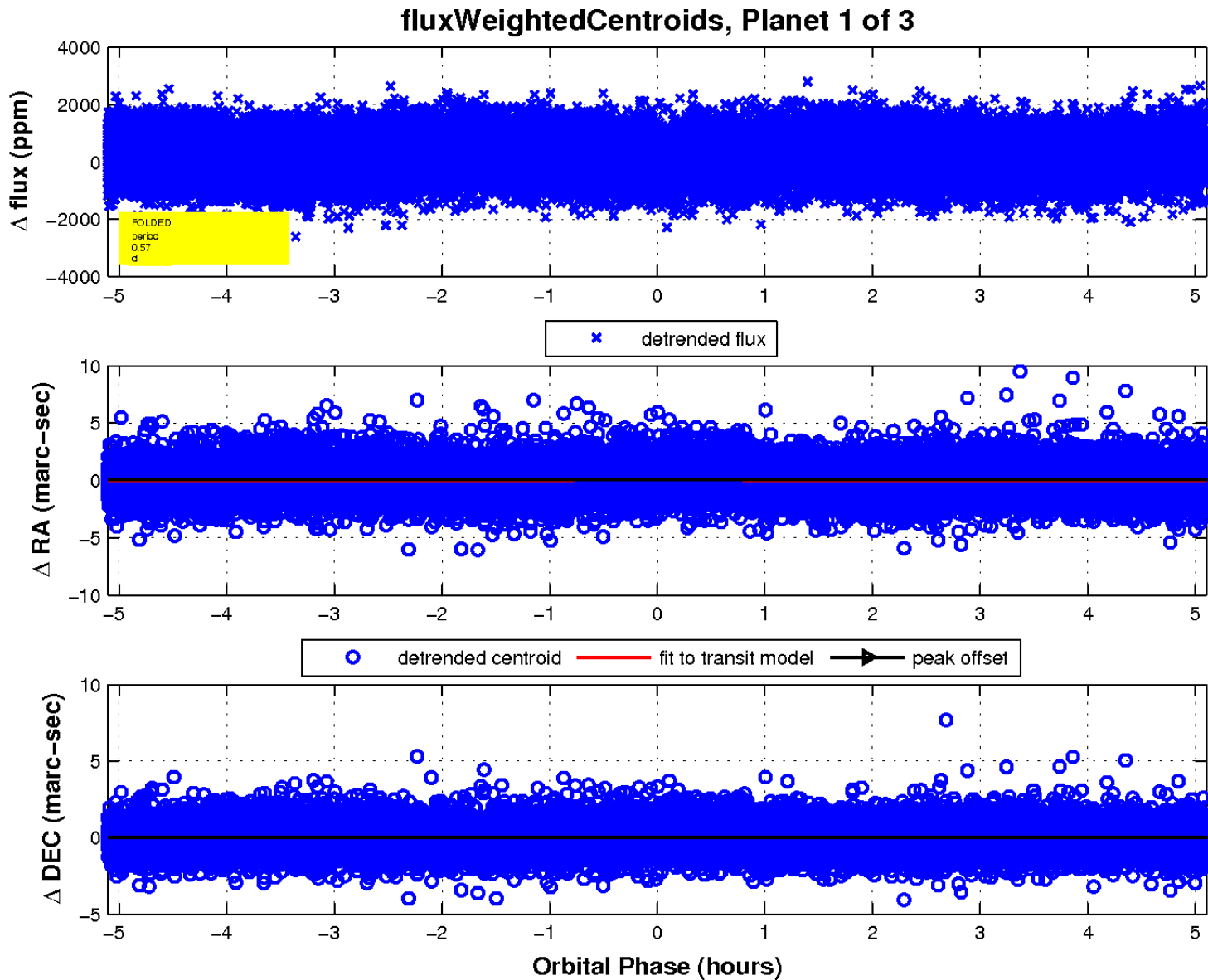
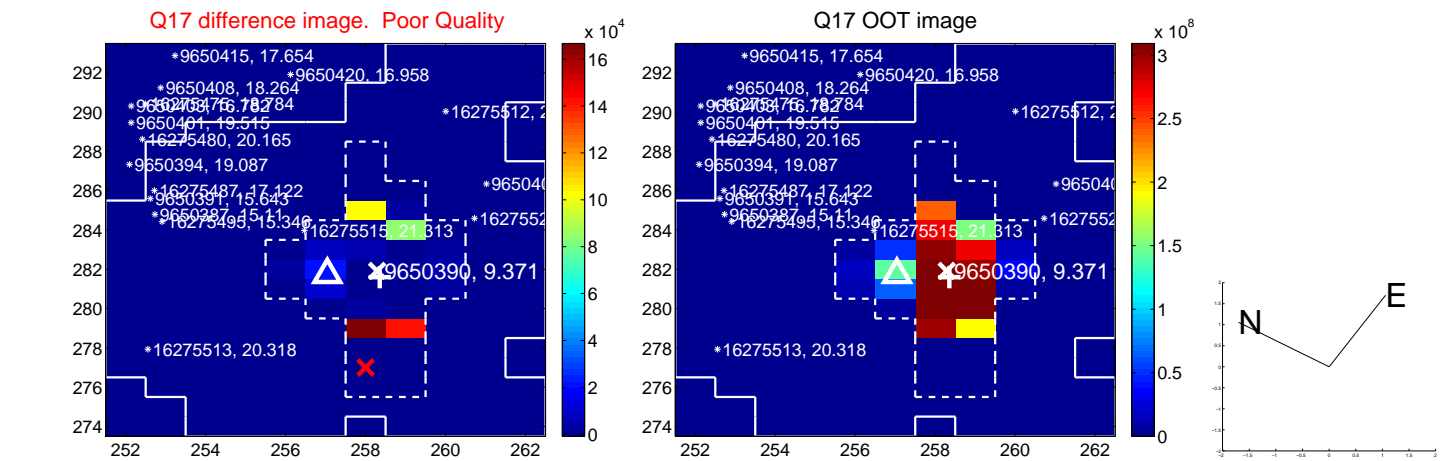
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

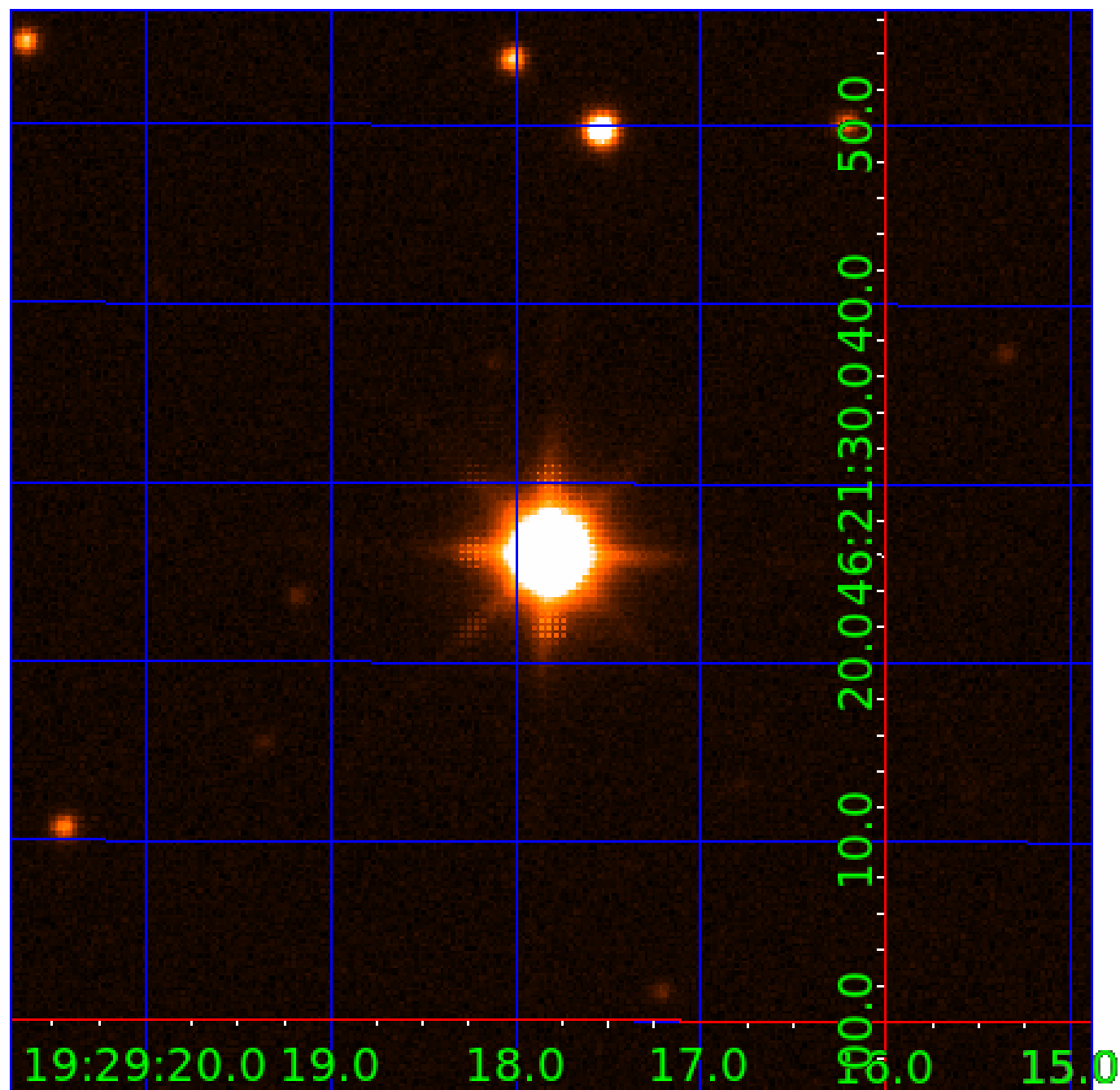


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 009650390

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009650390-01	OBS	No	0.569342	131.839638	85.1	1.702	9.5	10.2	3.05	8572	3.27	156407.82
009650390-02	OBS	No	0.569353	131.544259	95.8	1.682	10.6	12.3	3.05	8572	3.50	156403.73
009650390-03	OBS	No	0.657935	132.031827	32.8	2.500	11.0	-1.0	3.05	8572	1.78	128977.08

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650390-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009650390-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
009650390-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

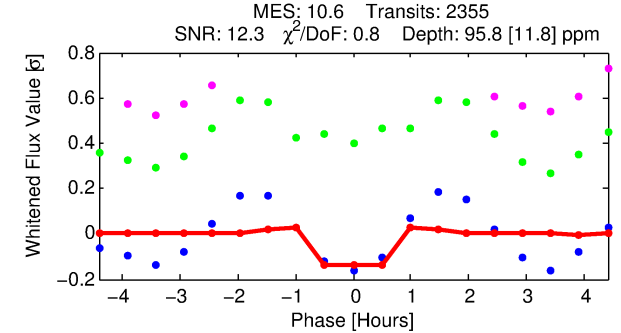
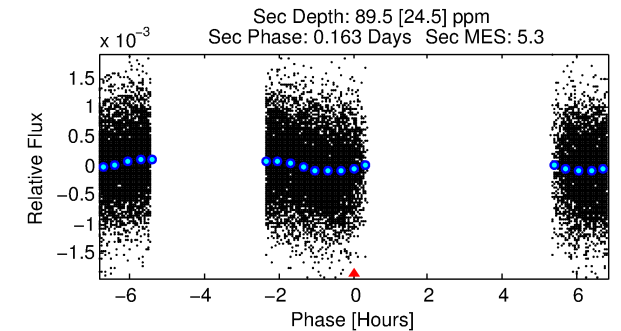
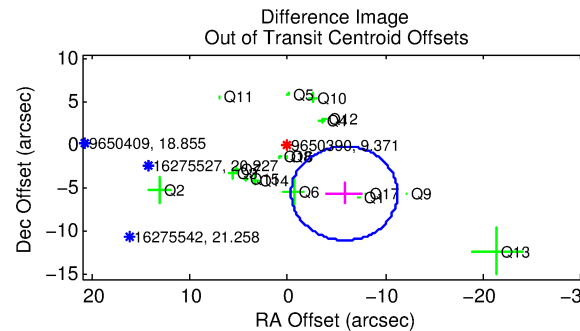
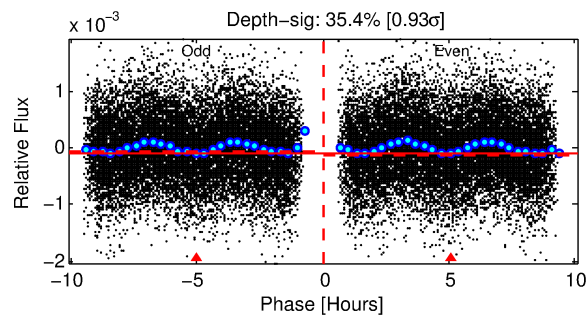
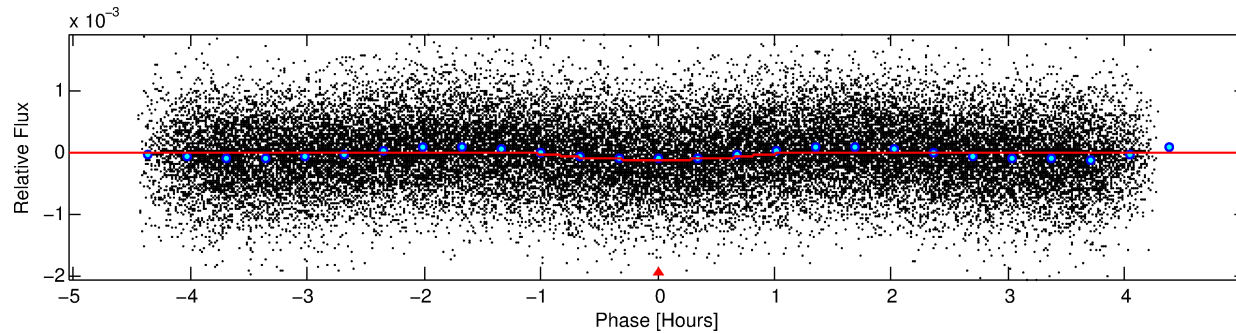
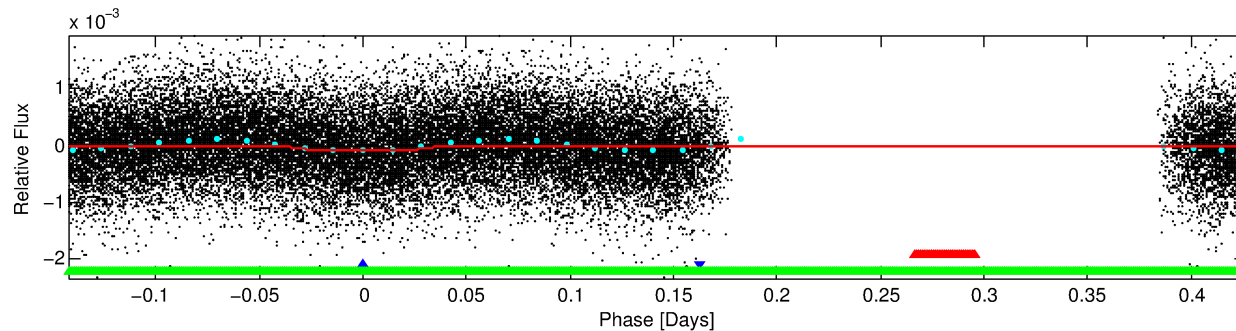
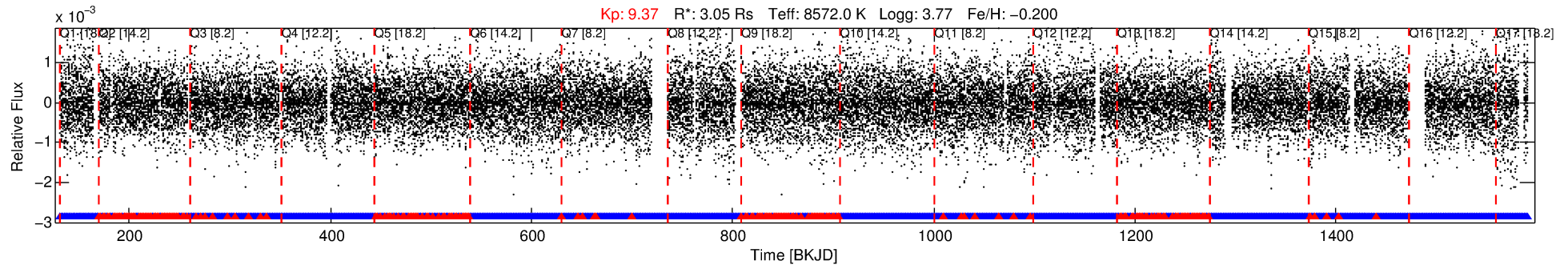
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009650390-02

No Significant Match Found

# DV One-Page Summary

KIC: 9650390 Candidate: 2 of 3 Period: 0.569 d



## DV Fit Results:

Period = 0.56935 [0.00001] d  
Epoch = 131.5443 [0.0012] BKJD  
 $R_p/R^*$  = 0.0105 [0.0025]  
 $a/R^*$  = 1.47 [1.22]  
 $b$  = 0.91 [0.29]  
 $\text{Seff}$  = 156403.73 [107511.15]  
 $T_{\text{eq}}$  = 5071 [871] K  
 $R_p$  = 3.50 [1.70]  $R_e$   
 $a$  = 0.0170 [0.0070] AU  
 $A_g$  = 1.16 [1.00] [0.16 $\sigma$ ]  
 $T_{\text{effp}}$  = 8131 [1173] K [2.09 $\sigma$ ]

## DV Diagnostic Results:

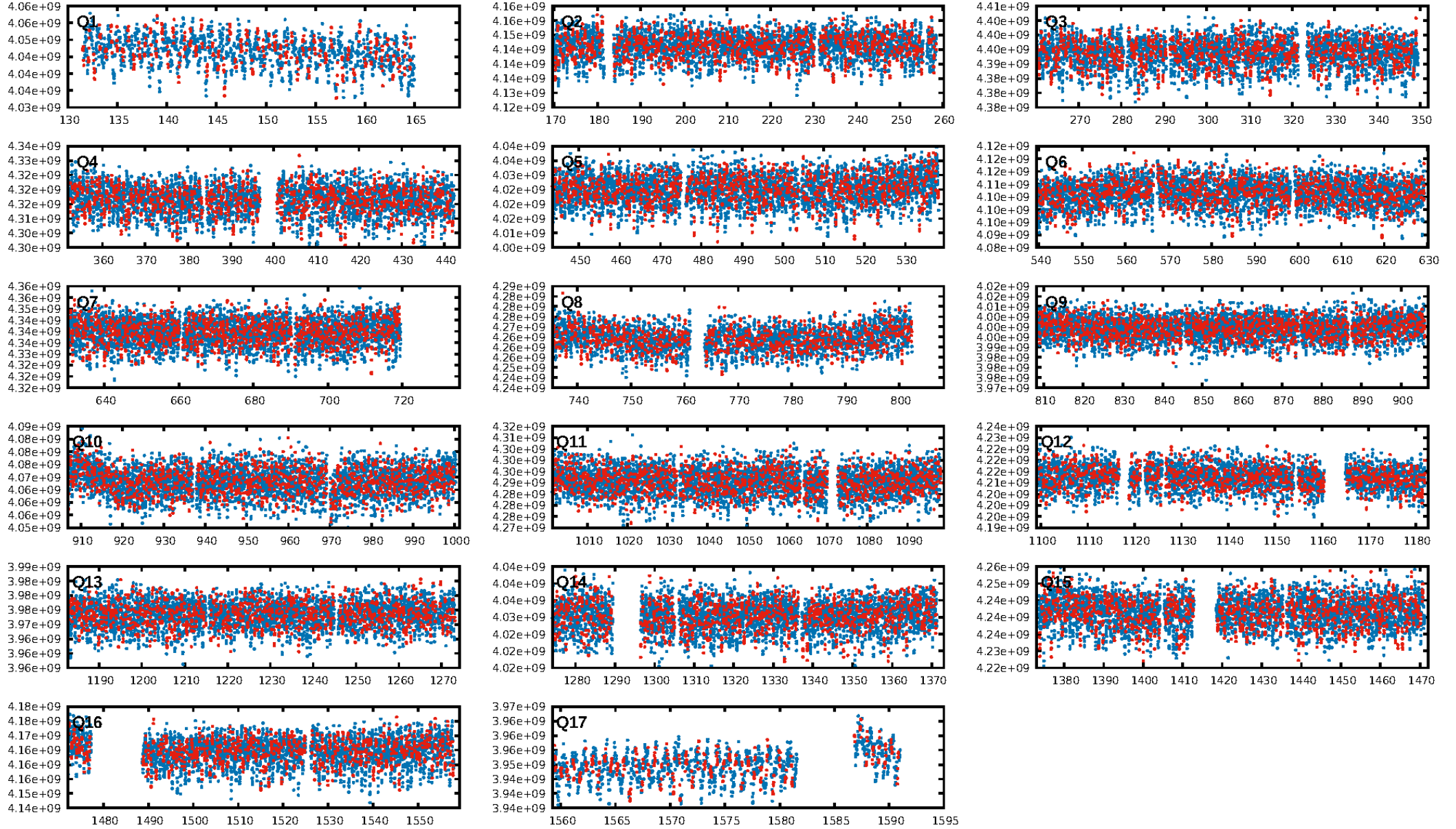
ShortPeriod-sig: 0.0% [0.00 $\sigma$ ]  
LongPeriod-sig: 52.0% [0.71 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.88 [1986/2249]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 19.1%  
Centroid-so: 1.172 arcsec [4.57 $\sigma$ ]  
OotOffset-rm: 8.052 arcsec [4.45 $\sigma$ ]  
KicOffset-rm: 9.269 arcsec [4.94 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.06 [1/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:05:06 Z

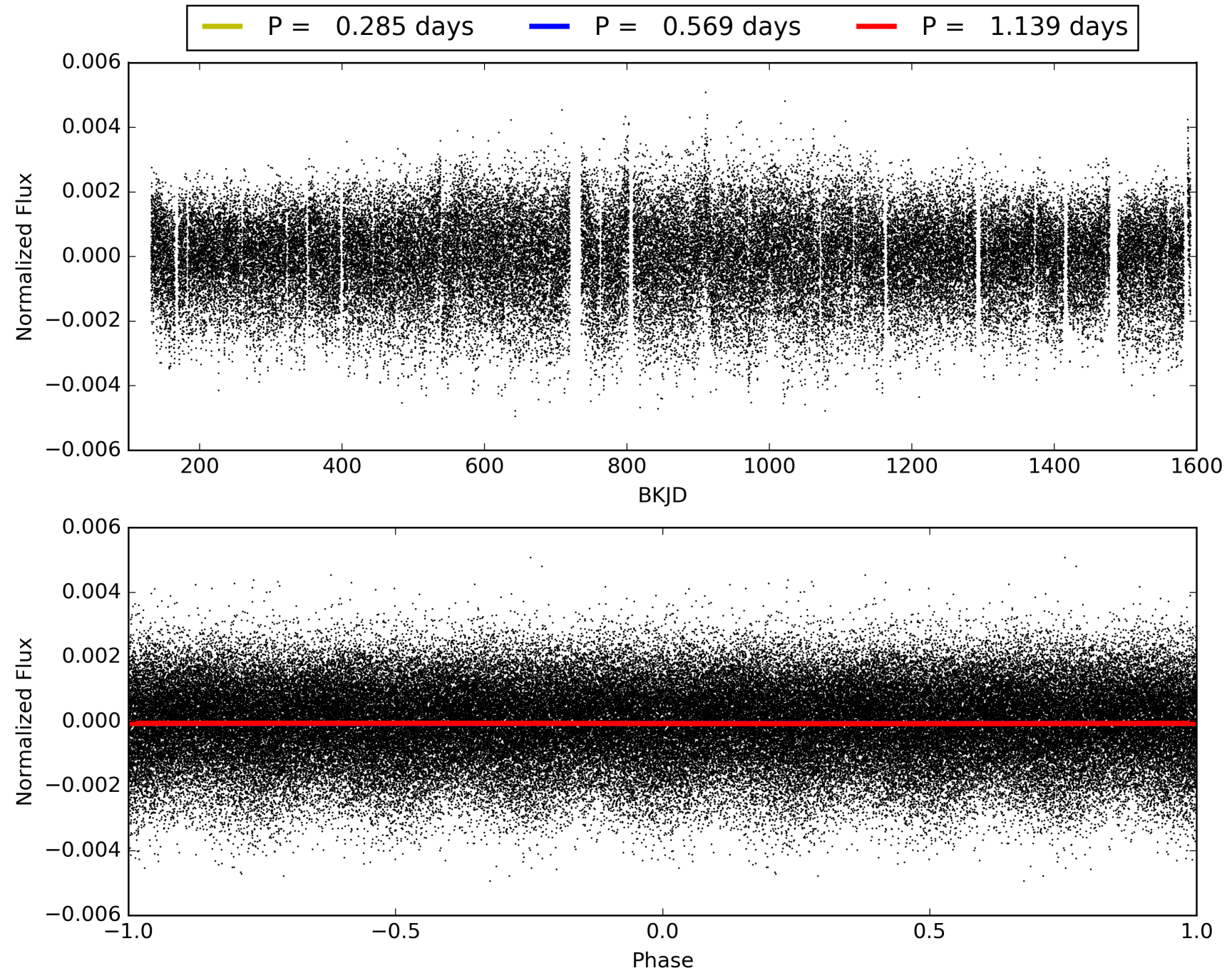
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 009650390-02, PDC Light Curves

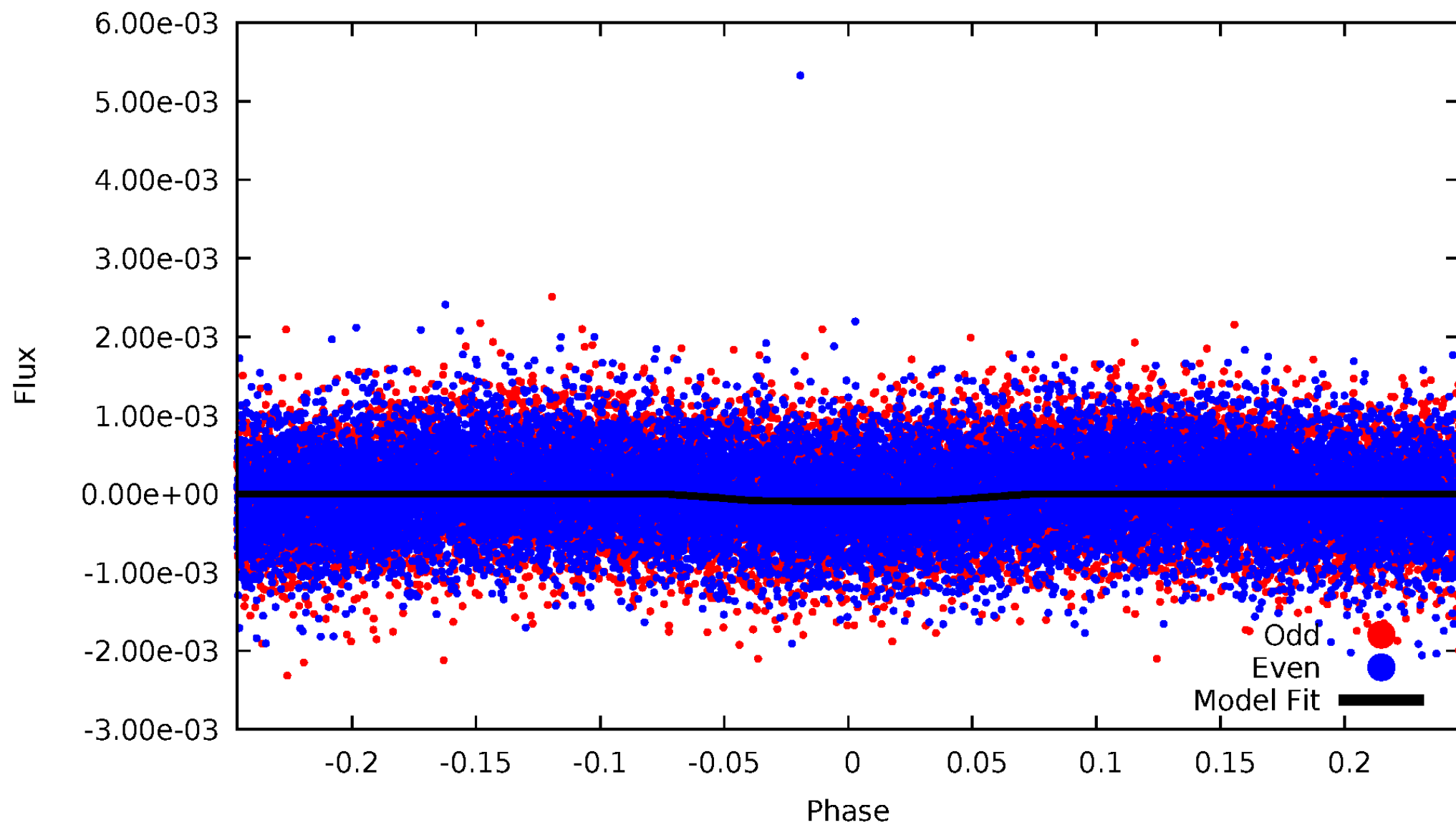


TCE 009650390-02



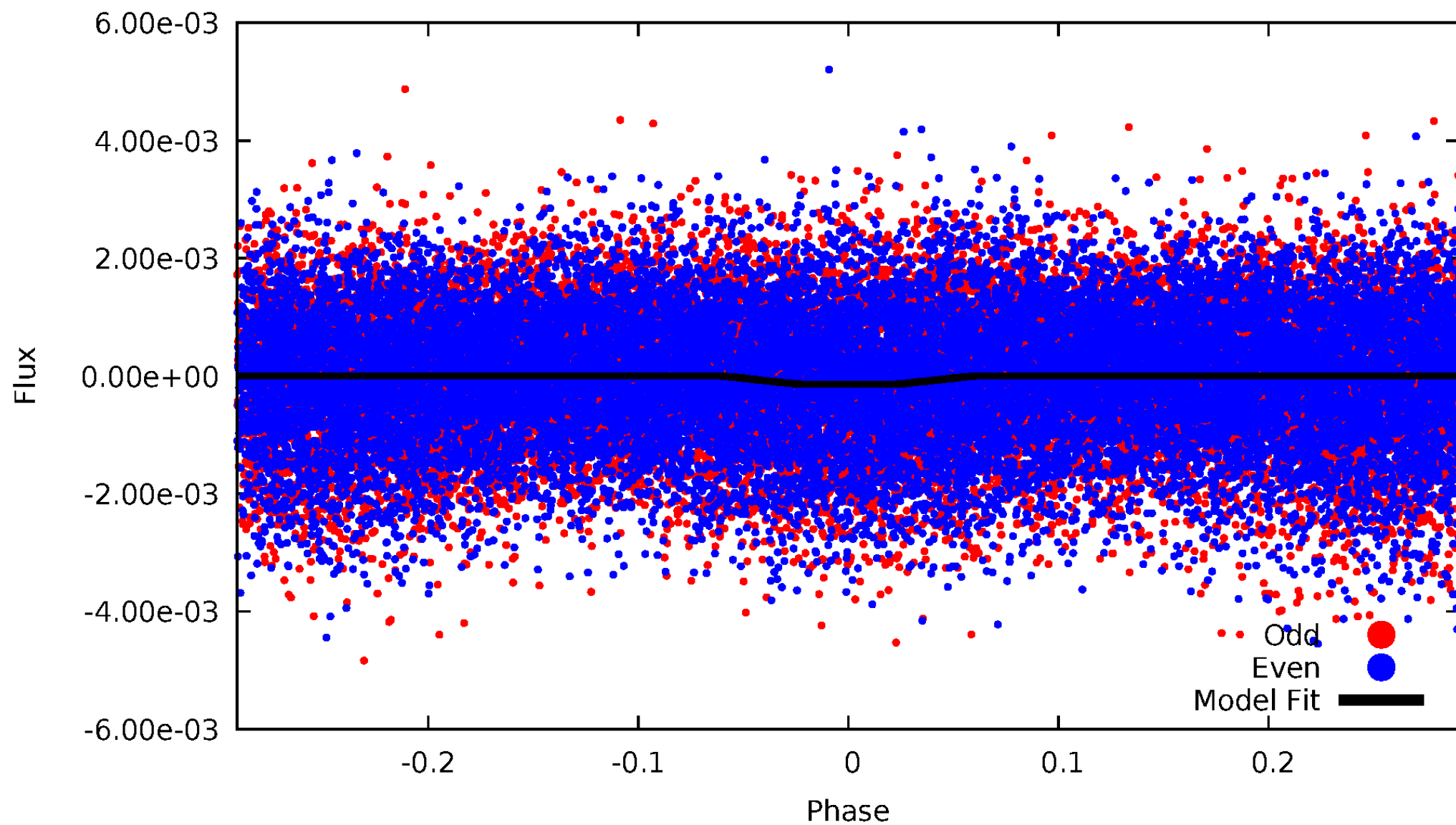
# DV Odd/Even

TCE 009650390-02



# ALT Odd/Even

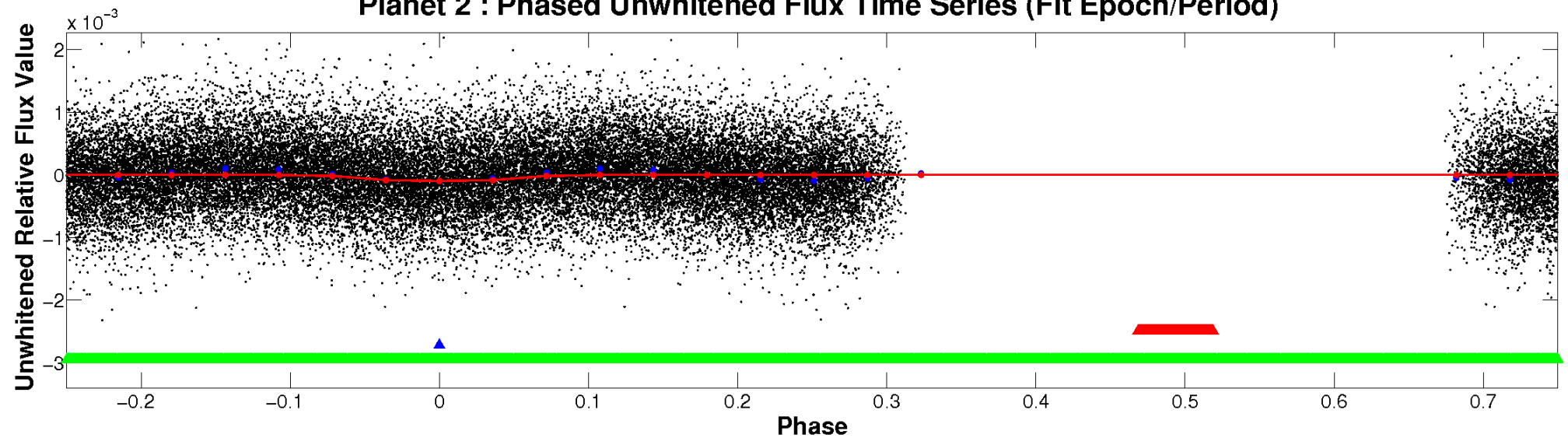
TCE 009650390-02



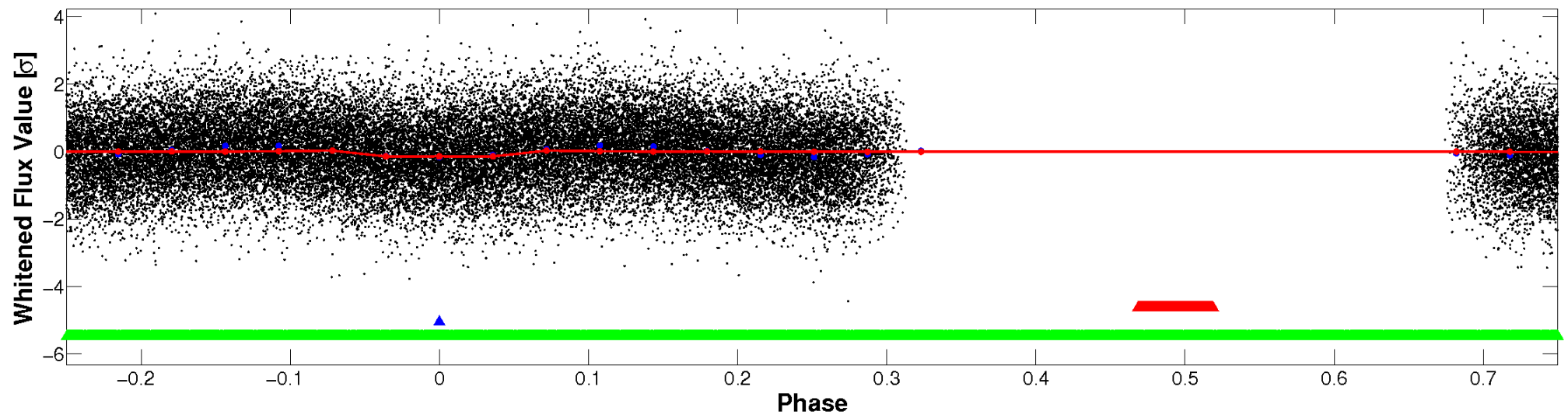


# Non-Whitened Vs. Whitened Light Curve

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

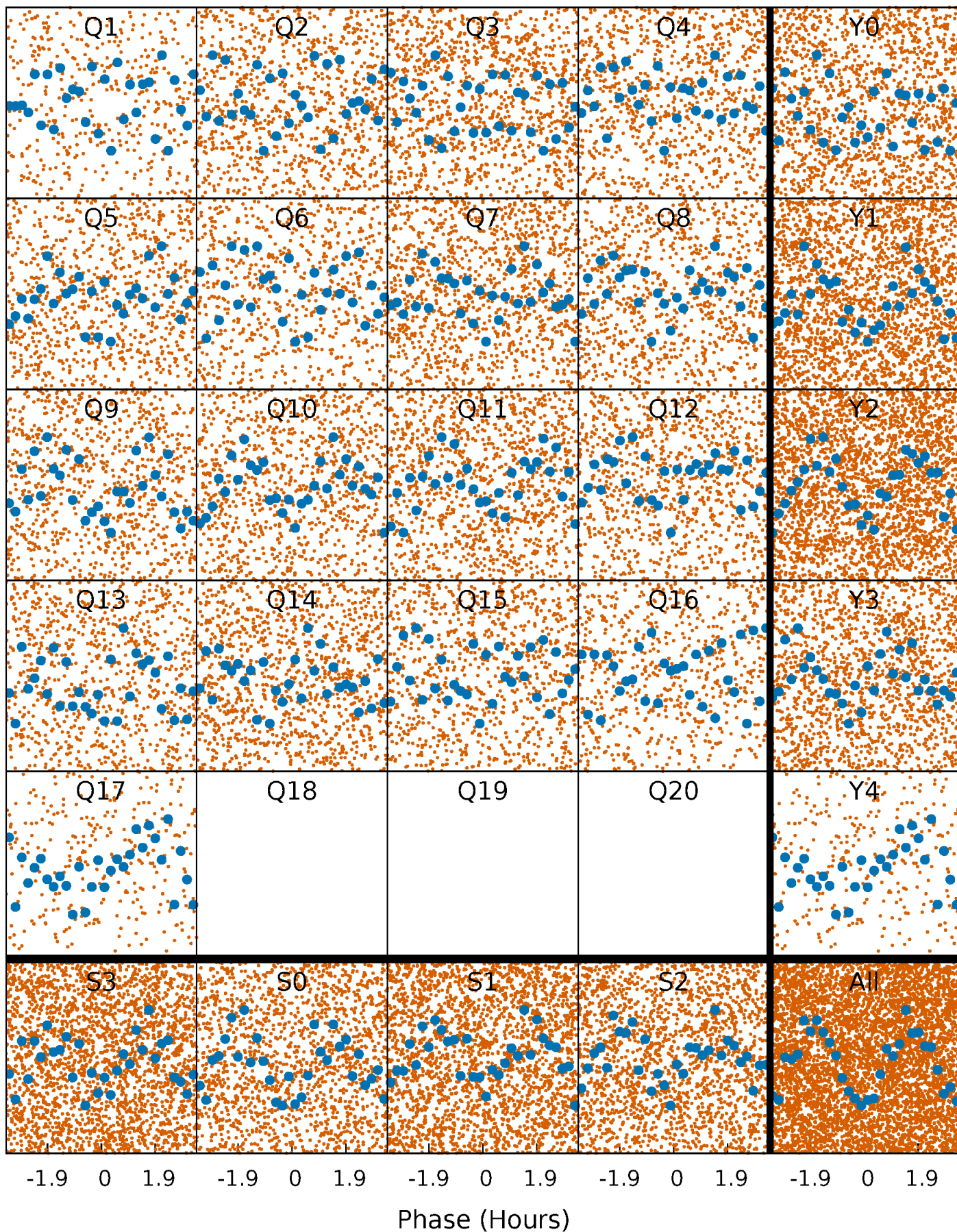


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

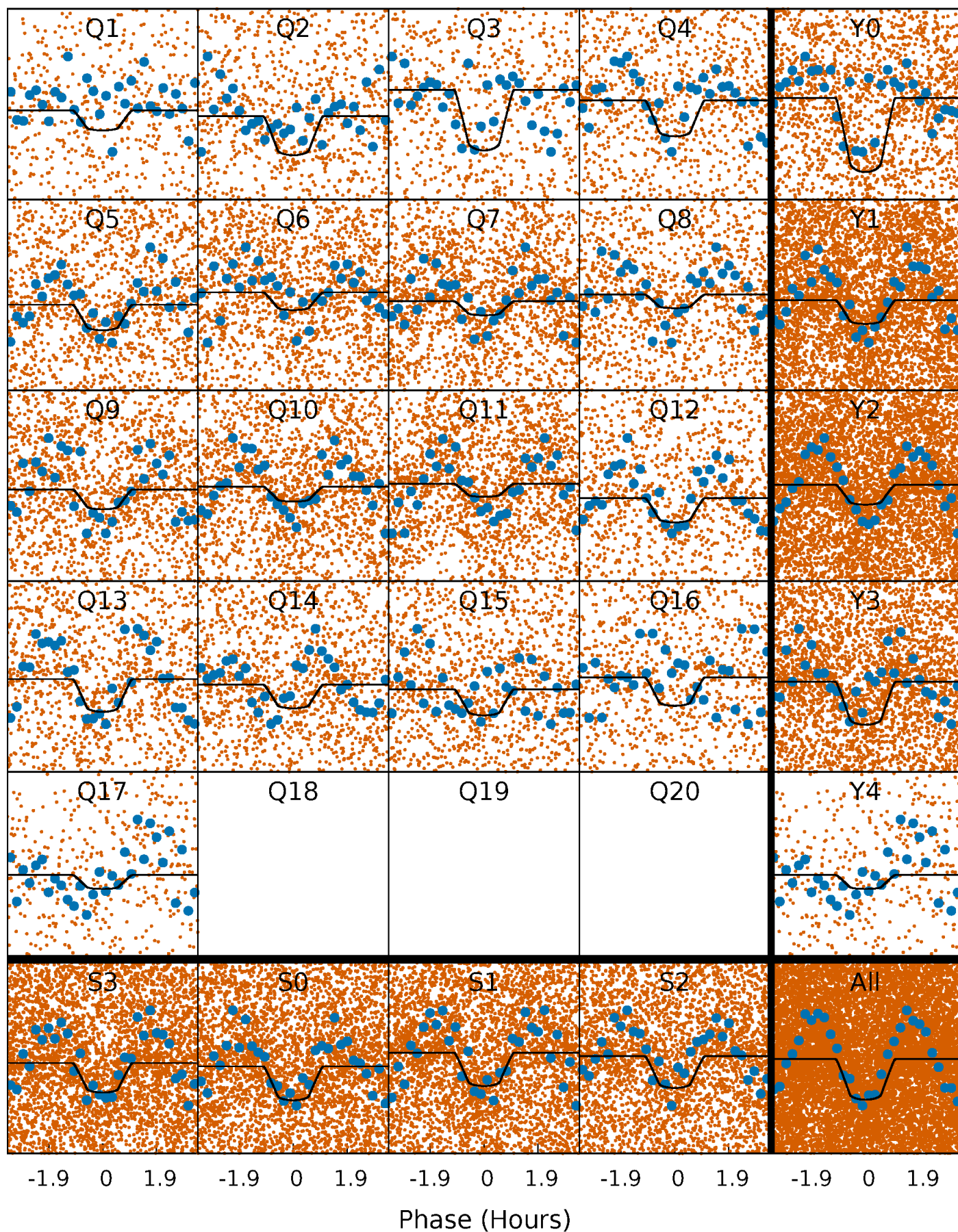
TCE 009650390-02   P= 0.569353 Days    $T_0=131.544259$  (BKJD)





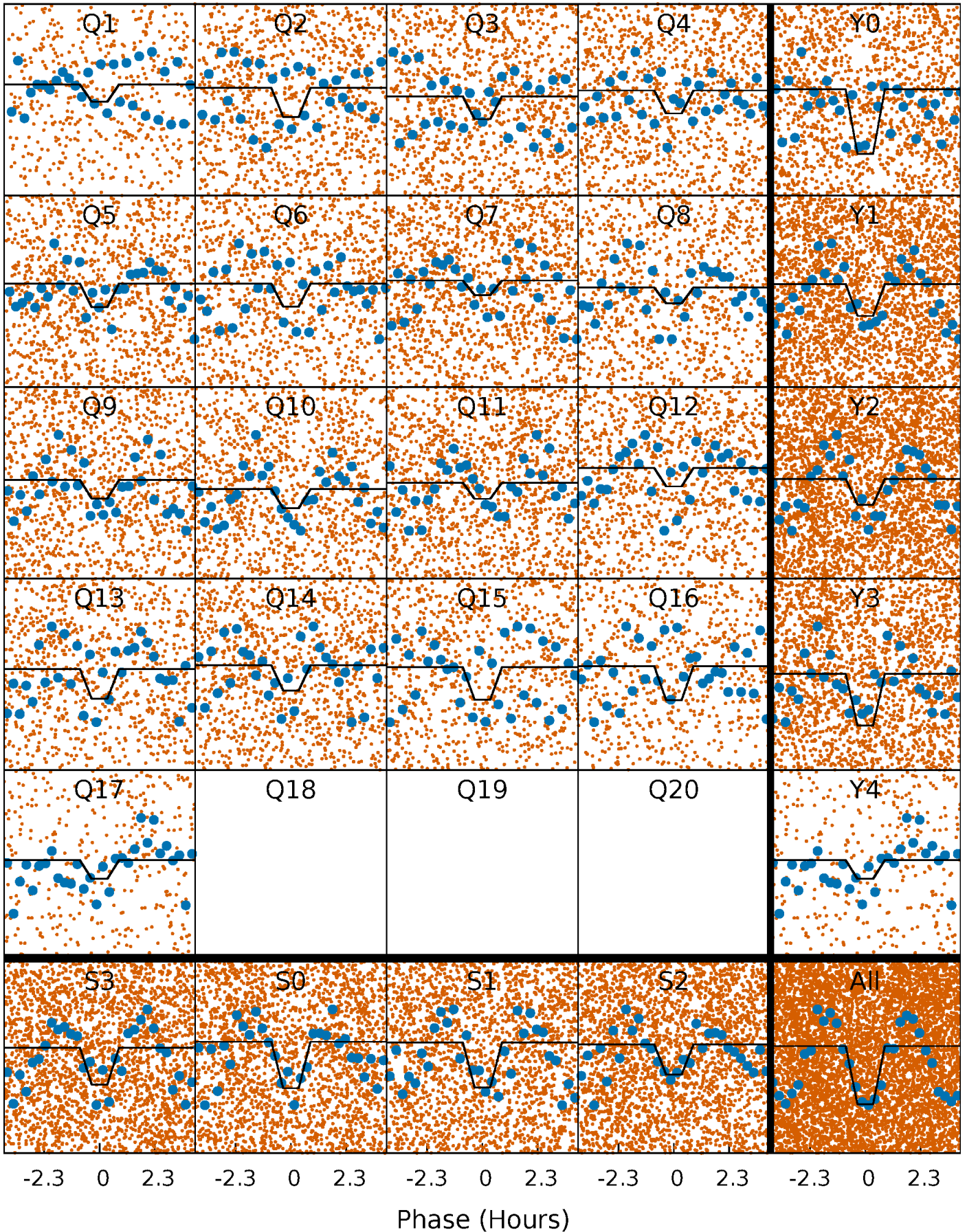
# DV Quarter-Phased Transit Curves

TCE 009650390-02     $P = 0.569353$  Days     $T_0 = 131.544259$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 009650390-02     $P = 0.569347$  Days     $T_0 = 131.544809$  (BKJD)

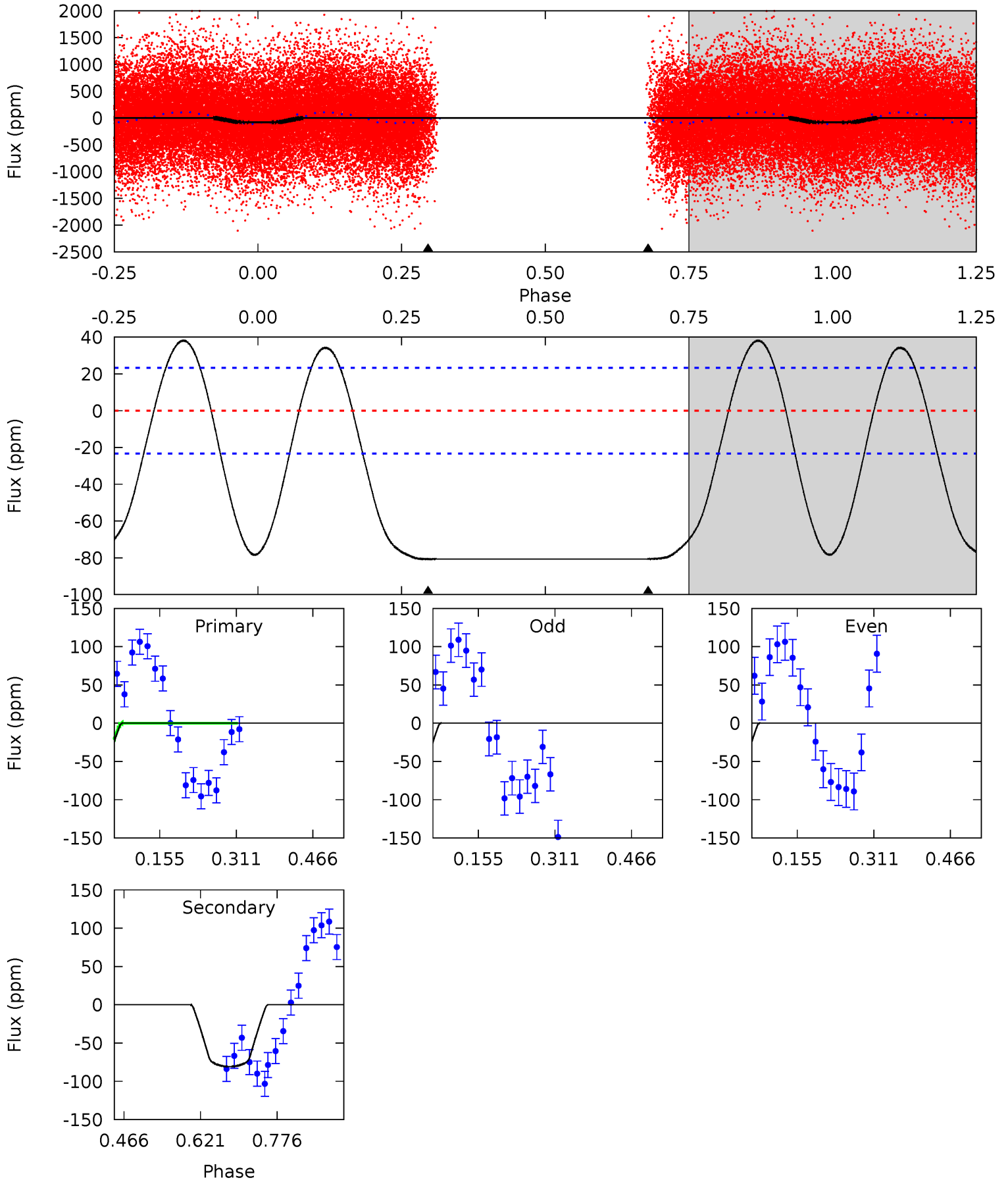




# DV Model-Shift Uniqueness Test

009650390-02, P = 0.569353 Days, E = 130.974906 Days

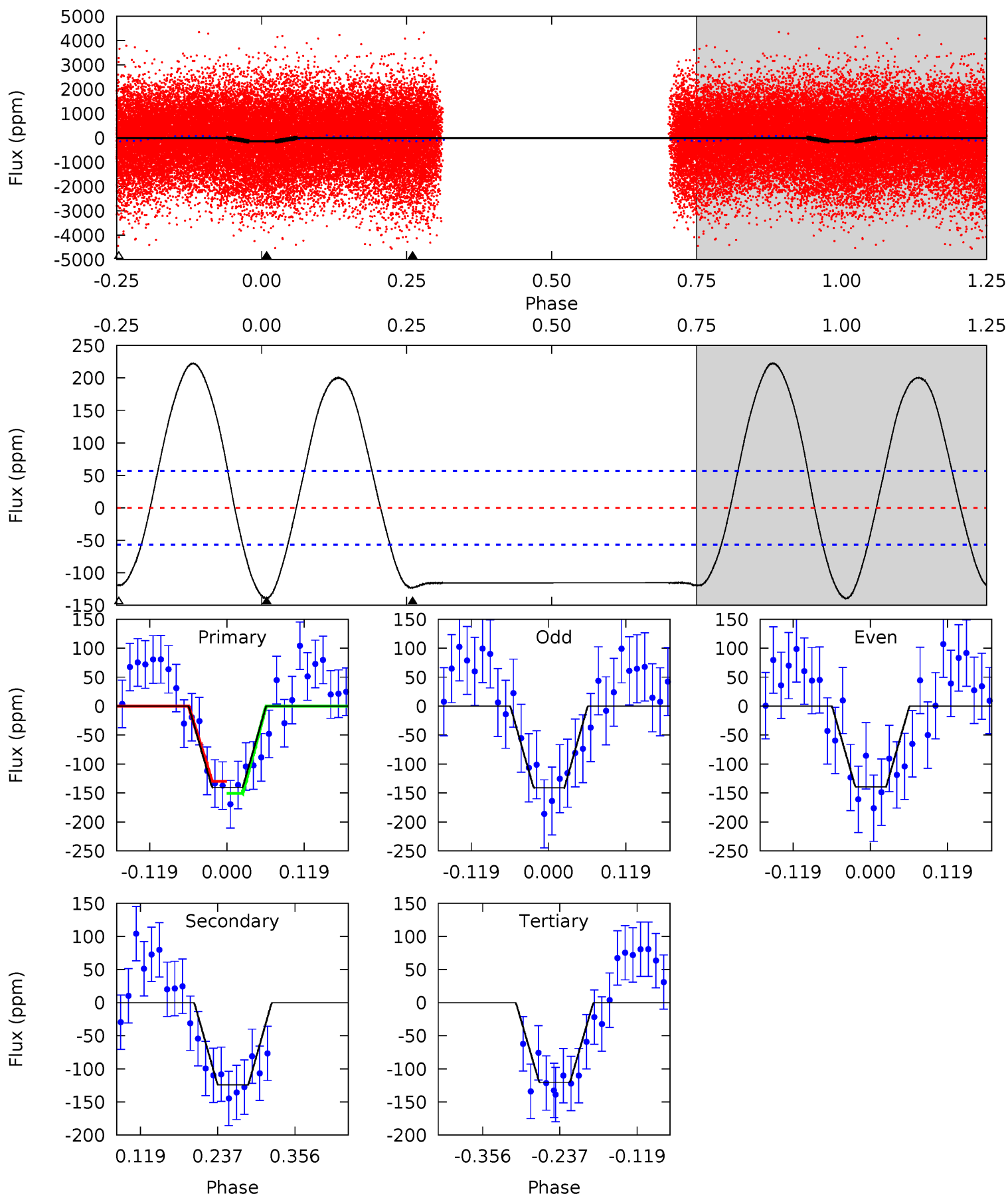
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.5	15.5	0	0	4.47	1.42	8.02	15.5	15.5	15.5	15.5	0.00	0.93	0.32	2.70



# Alt Model-Shift Uniqueness Test

009650390-02, P = 0.569347 Days, E = 130.975462 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
11.2	9.90	9.61	0	4.53	1.56	10.8	1.59	11.2	0.29	9.90	0.06	2.20	0.61	0.78



### Stellar Parameters For KIC 009650390

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8572^{+237}_{-373}$	$3.772^{+0.392}_{-0.168}$	$-0.200^{+0.400}_{-0.350}$	$3.050^{+1.059}_{-1.295}$	$2.009^{+0.482}_{-0.438}$	$0.100^{+0.333}_{-0.046}$
	+3%/-4%	+10%/-4%	+200%/-175%	+35%/-42%	+24%/-22%	+334%/-46%
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 009650390-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-81 \pm 5$	$3.32^{+1.09}_{-1.00}$	$6850^{+668}_{-702}$	$7023^{+1496}_{-1016}$	$1.175^{+1.170}_{-0.486}$
Alt.	$-124 \pm 13$	$3.72^{+1.17}_{-1.03}$	$6933^{+605}_{-795}$	$7640^{+1577}_{-1234}$	$1.439^{+1.238}_{-0.624}$

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

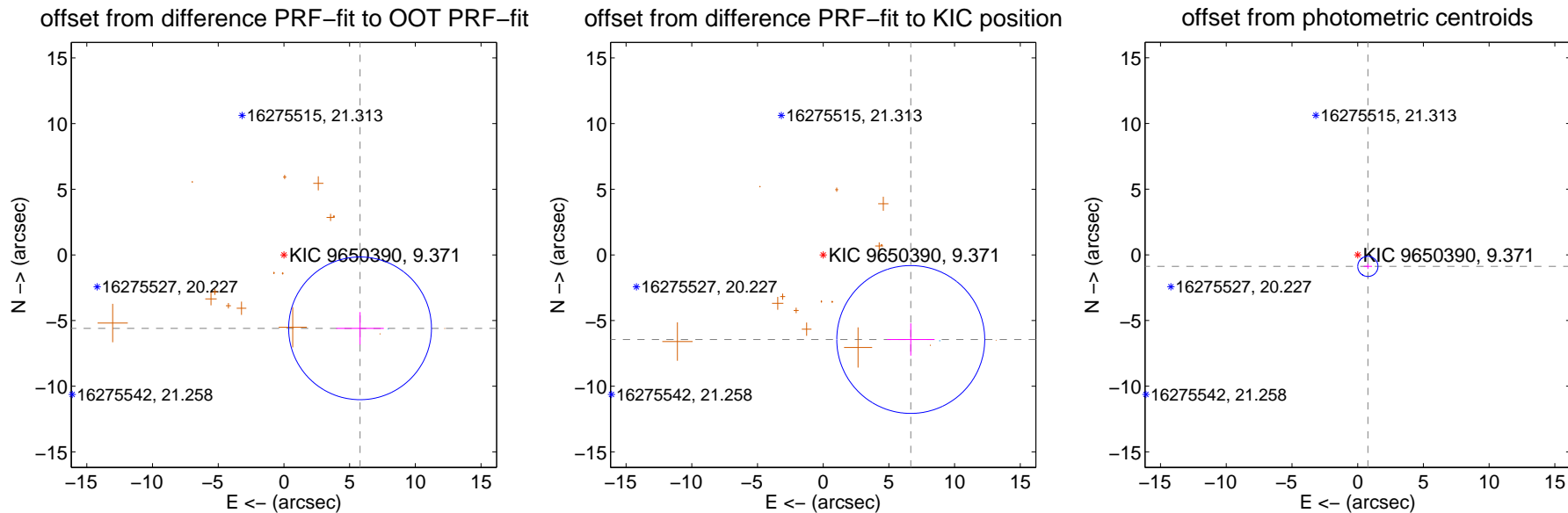
## DV Centroid Data

Supplemental centroid analysis for 009650390-02. **Kepler magnitude: 9.37.** Transit SNR 12.27

**There are 1 quarters with good PRF difference image offsets**

The direct PRF centroid is offset from the target star catalog position by about 1.30 arcsec

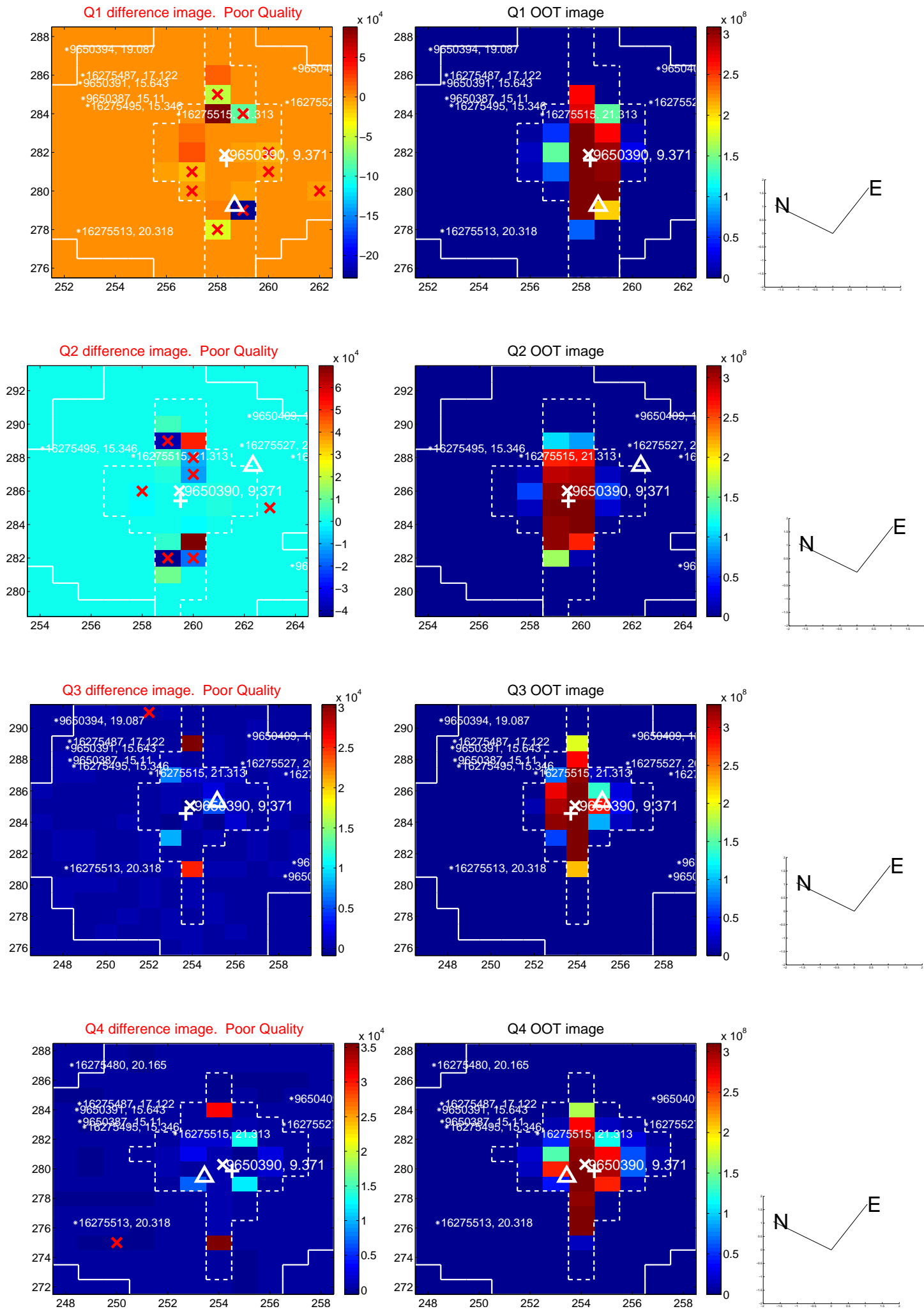
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$8.052 \pm 1.811$	<b>4.45</b>	$-5.794 \pm 1.811$	$-5.591 \pm 1.239$
PRF-fit source offset from KIC position	$9.269 \pm 1.876$	<b>4.94</b>	$-6.664 \pm 1.804$	$-6.441 \pm 1.227$
photometric centroid source offset	$1.17 \pm 0.26$	<b>4.57</b>	$-0.77 \pm 0.32$	$-0.88 \pm 0.20$



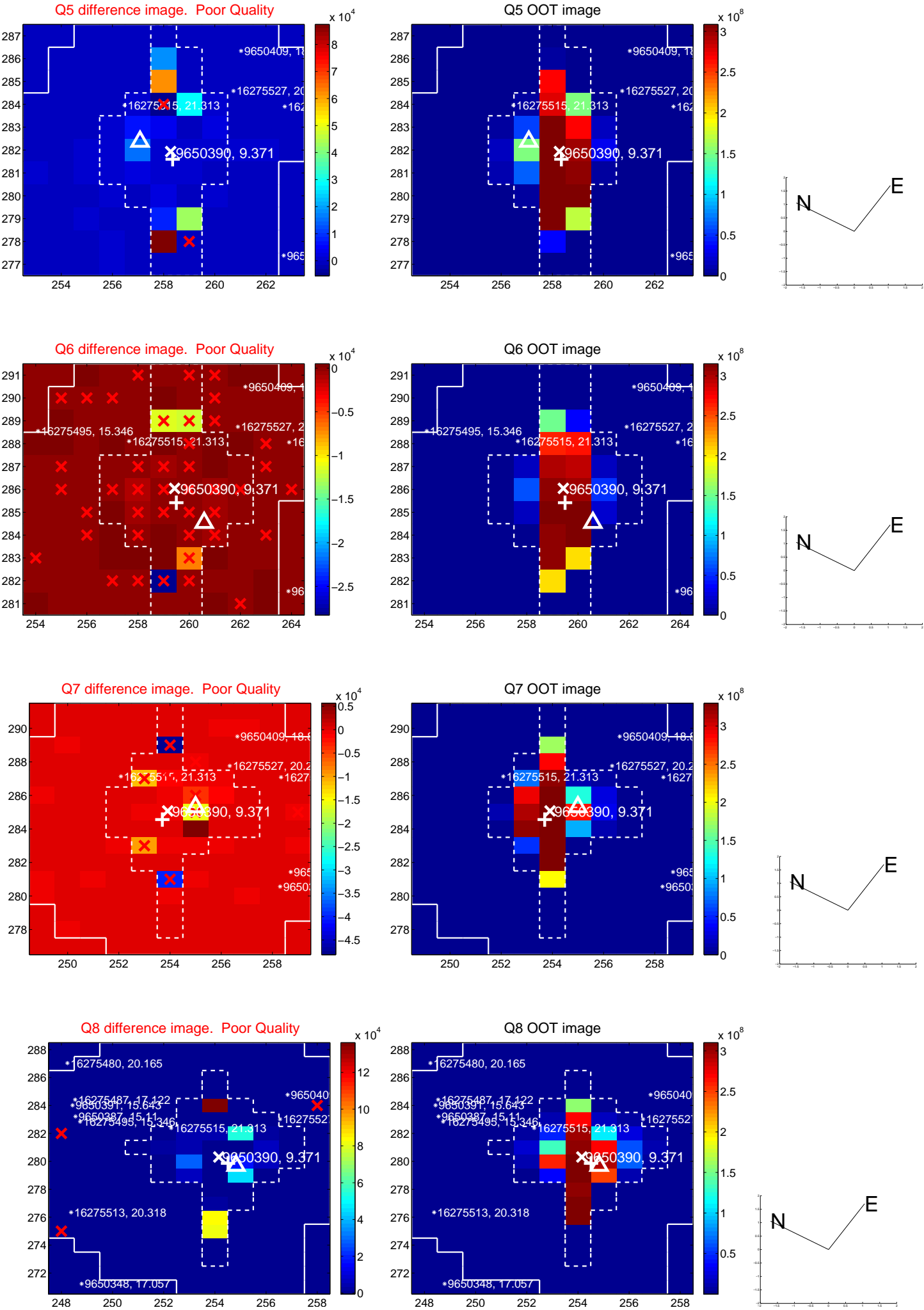
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



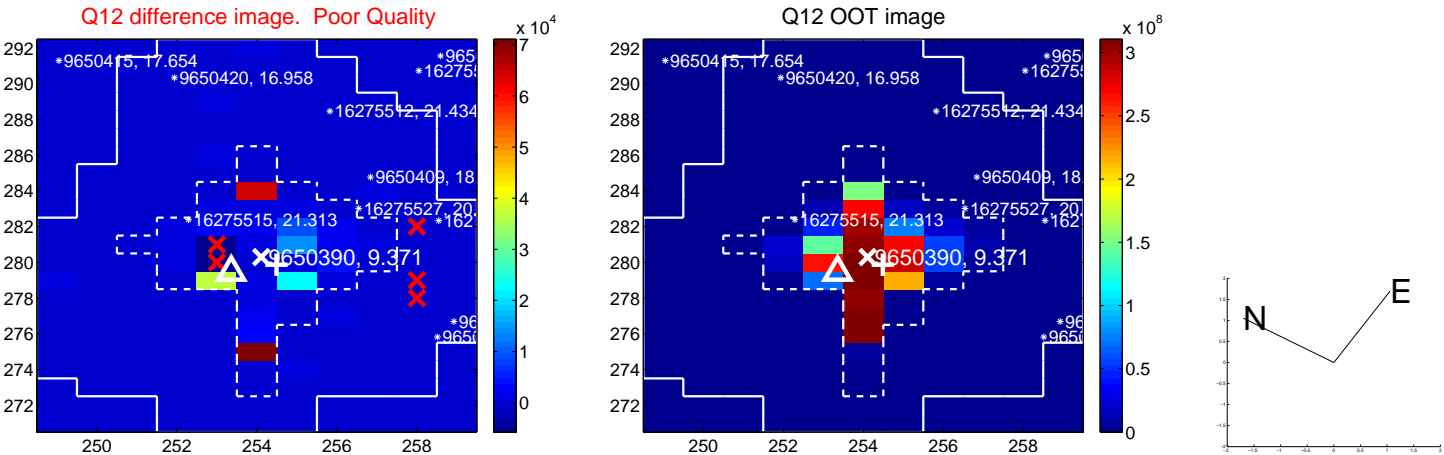
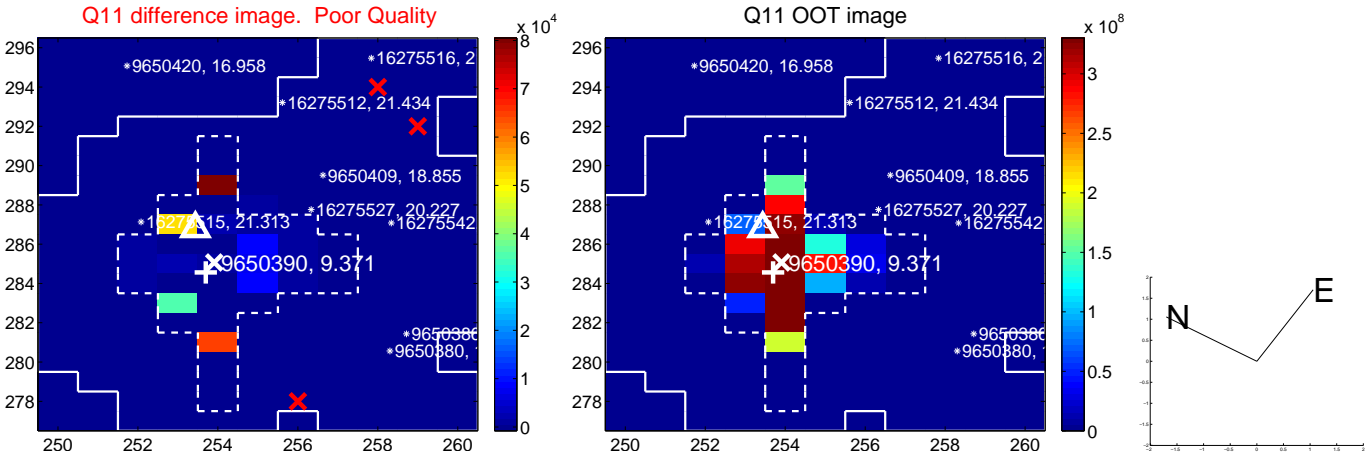
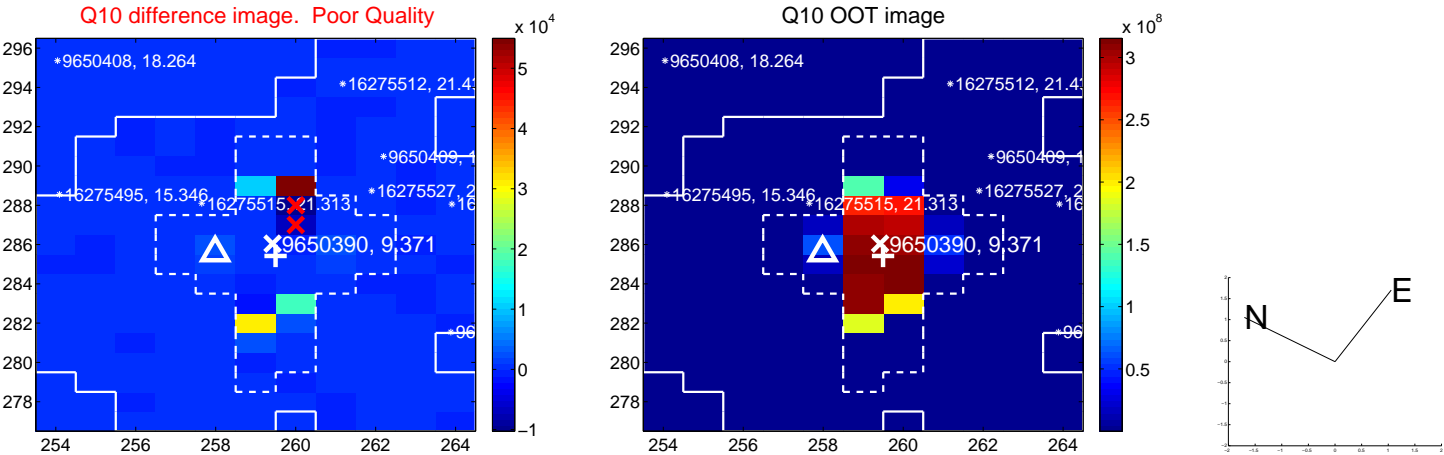
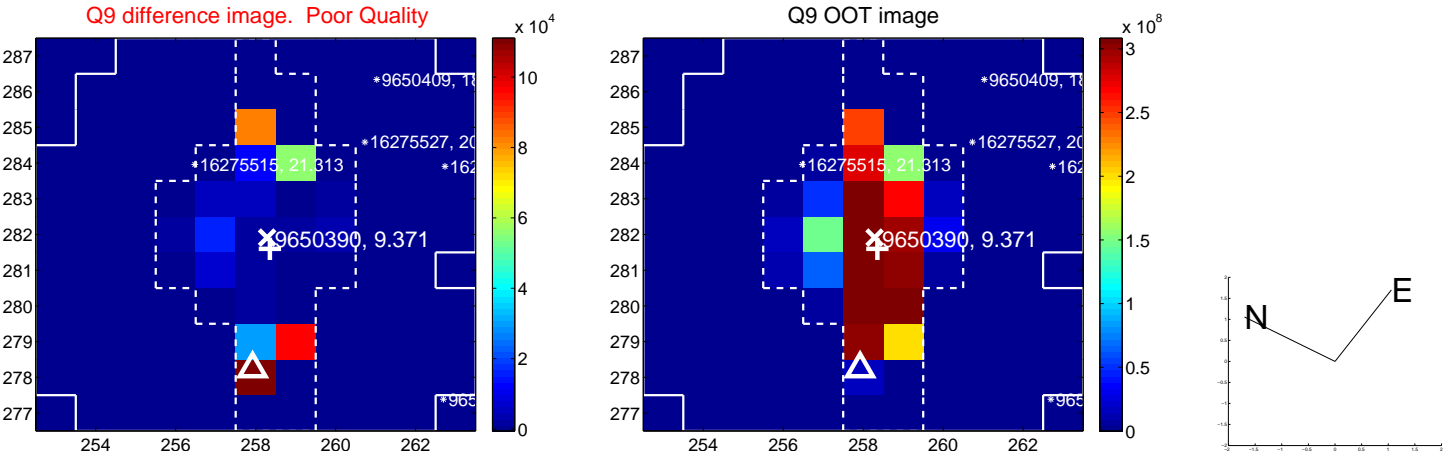
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



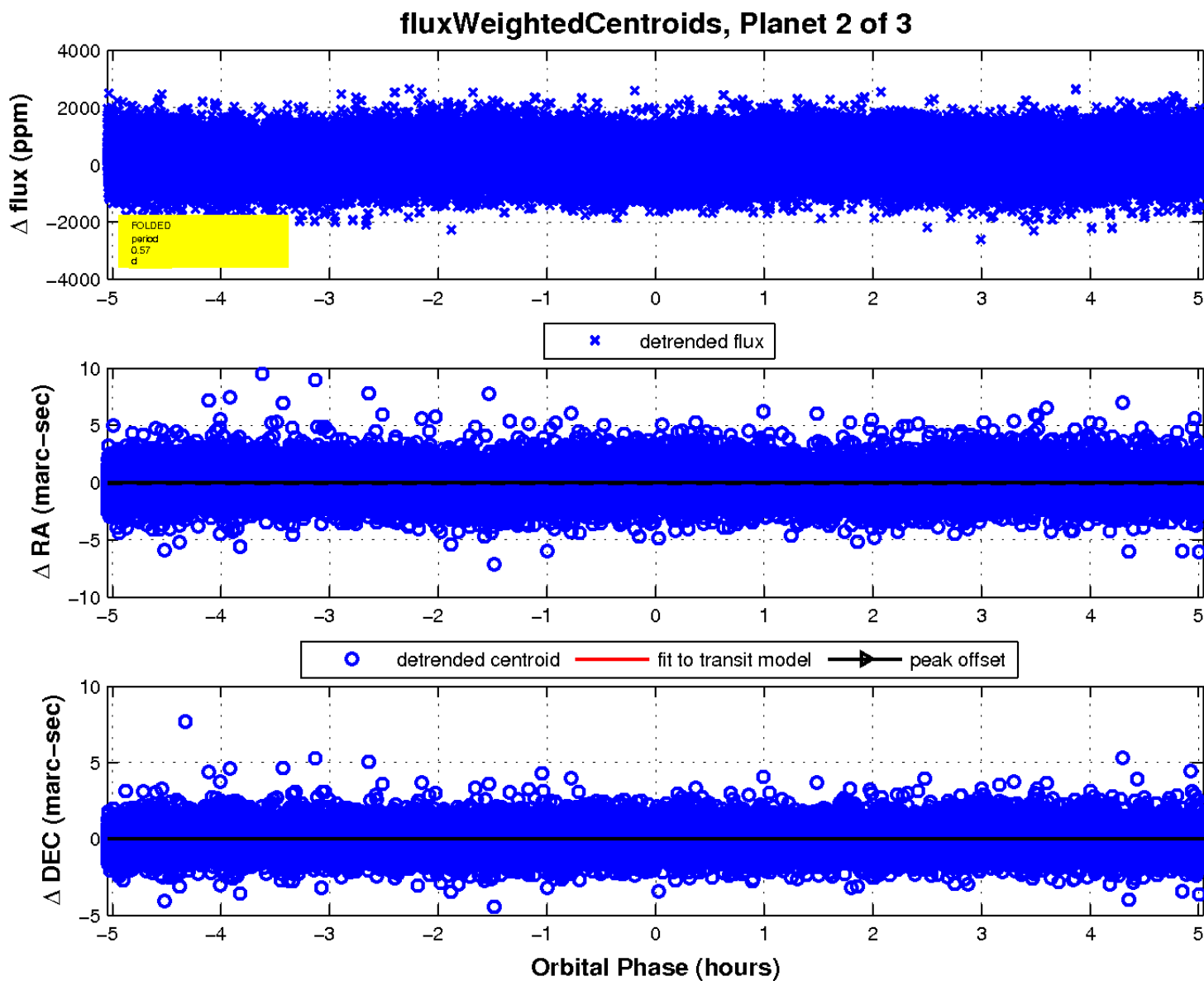
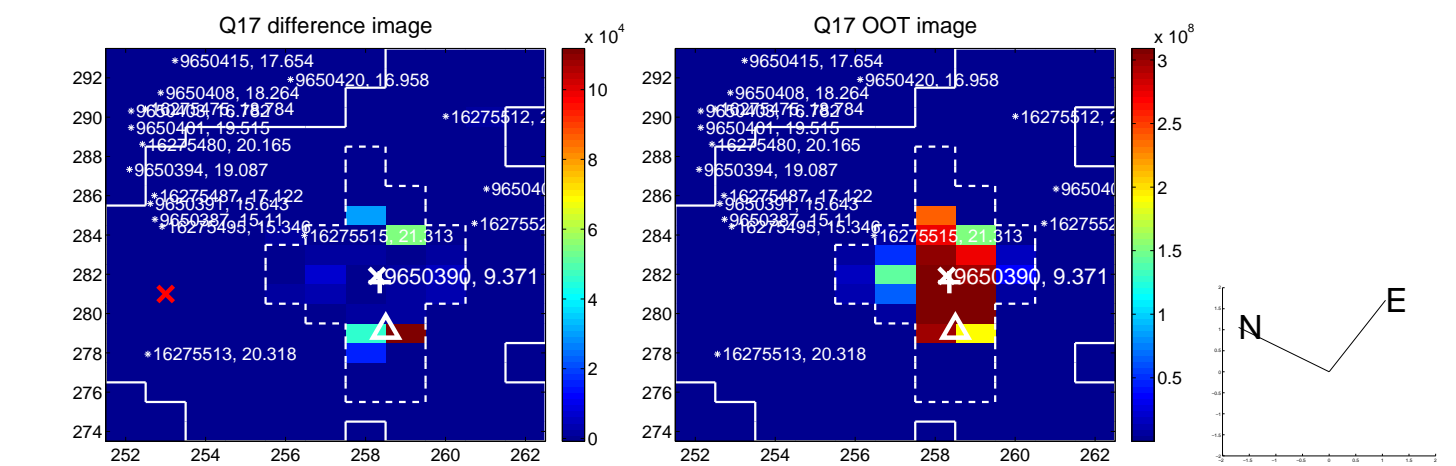
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





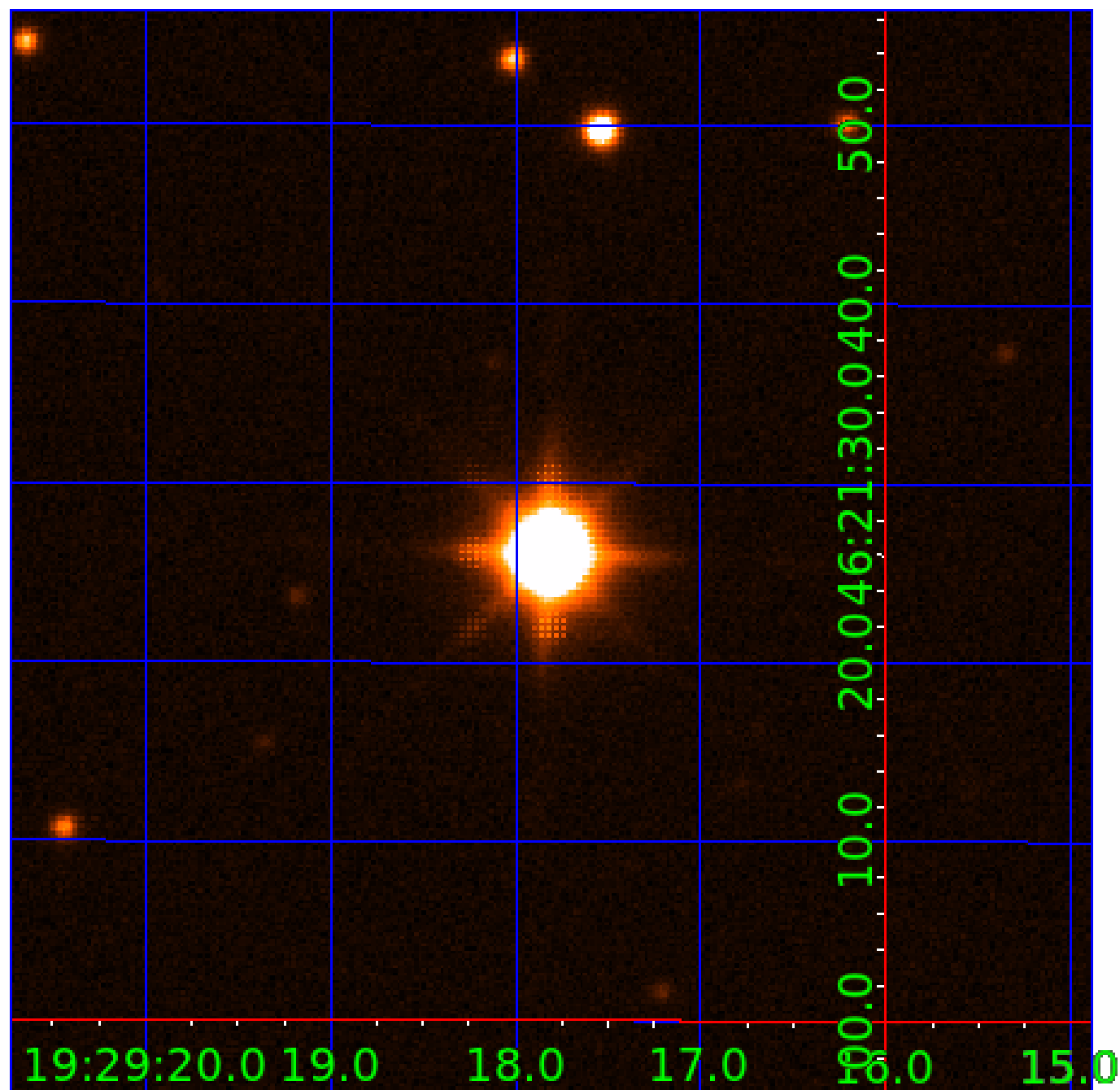


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 009650390

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
009650390-01	OBS	No	0.569342	131.839638	85.1	1.702	9.5	10.2	3.05	8572	3.27	156407.82
009650390-02	OBS	No	0.569353	131.544259	95.8	1.682	10.6	12.3	3.05	8572	3.50	156403.73
009650390-03	OBS	No	0.657935	132.031827	32.8	2.500	11.0	-1.0	3.05	8572	1.78	128977.08

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650390-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
009650390-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_SATURATED
009650390-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED

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

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

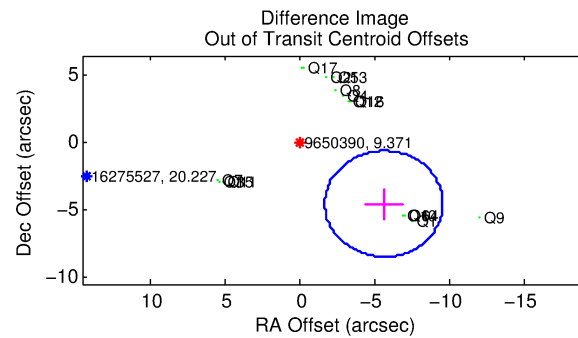
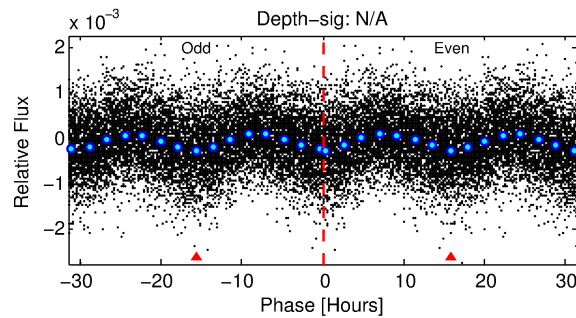
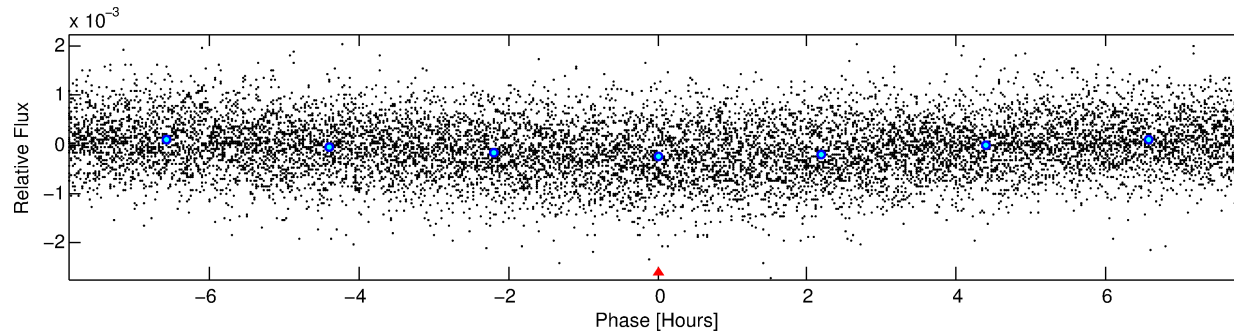
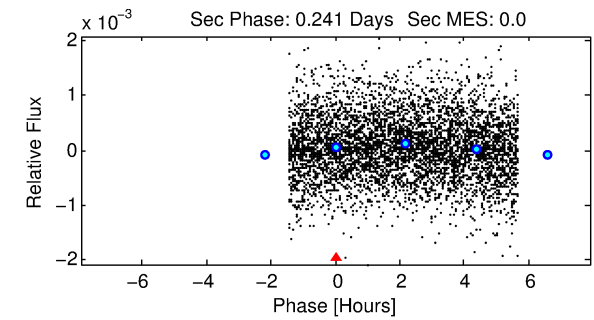
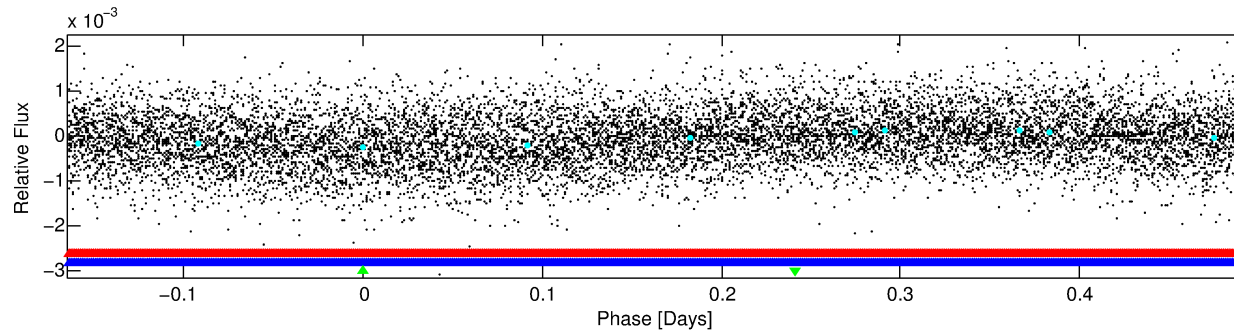
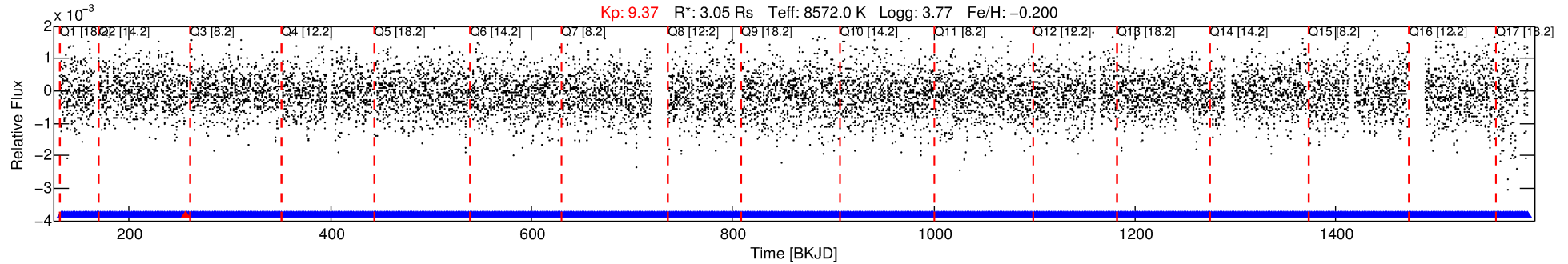
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 009650390-03

No Significant Match Found

# DV One-Page Summary

KIC: 9650390 Candidate: 3 of 3 Period: 0.658 d



## TPS TCE Results:

Period = 0.65793 d  
Epoch = 132.0318 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

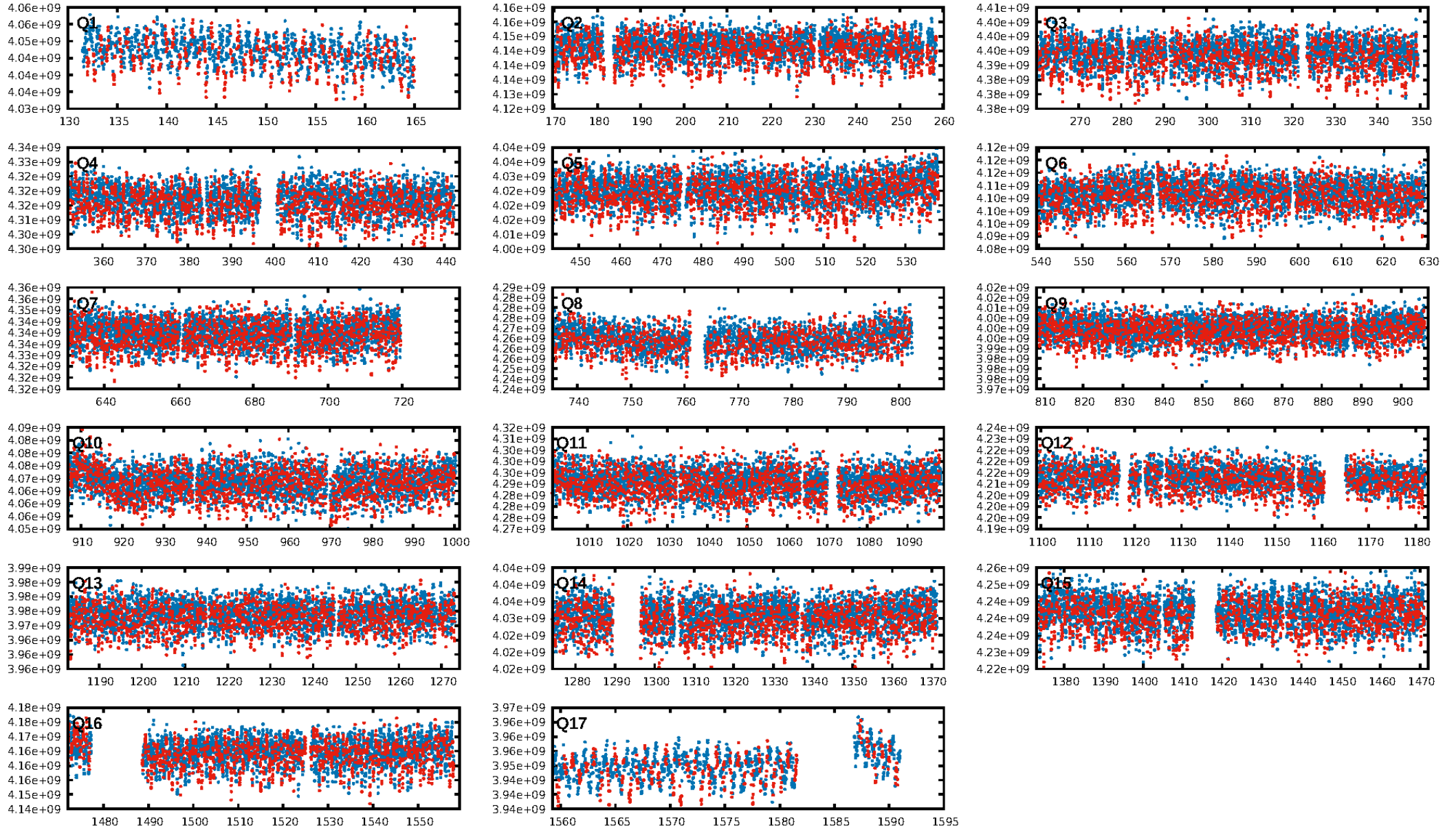
ShortPeriod-sig: 52.0% [0.71 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1721/1722]  
GhostDiagnostic-chr: N/A

Centroid-sig: 0.0%  
Centroid-so: 1.271 arcsec [35.77 $\sigma$ ]  
OotOffset-rm: 7.256 arcsec [5.52 $\sigma$ ]  
KicOffset-rm: 9.392 arcsec [7.43 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.00 [0/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:05:19 Z

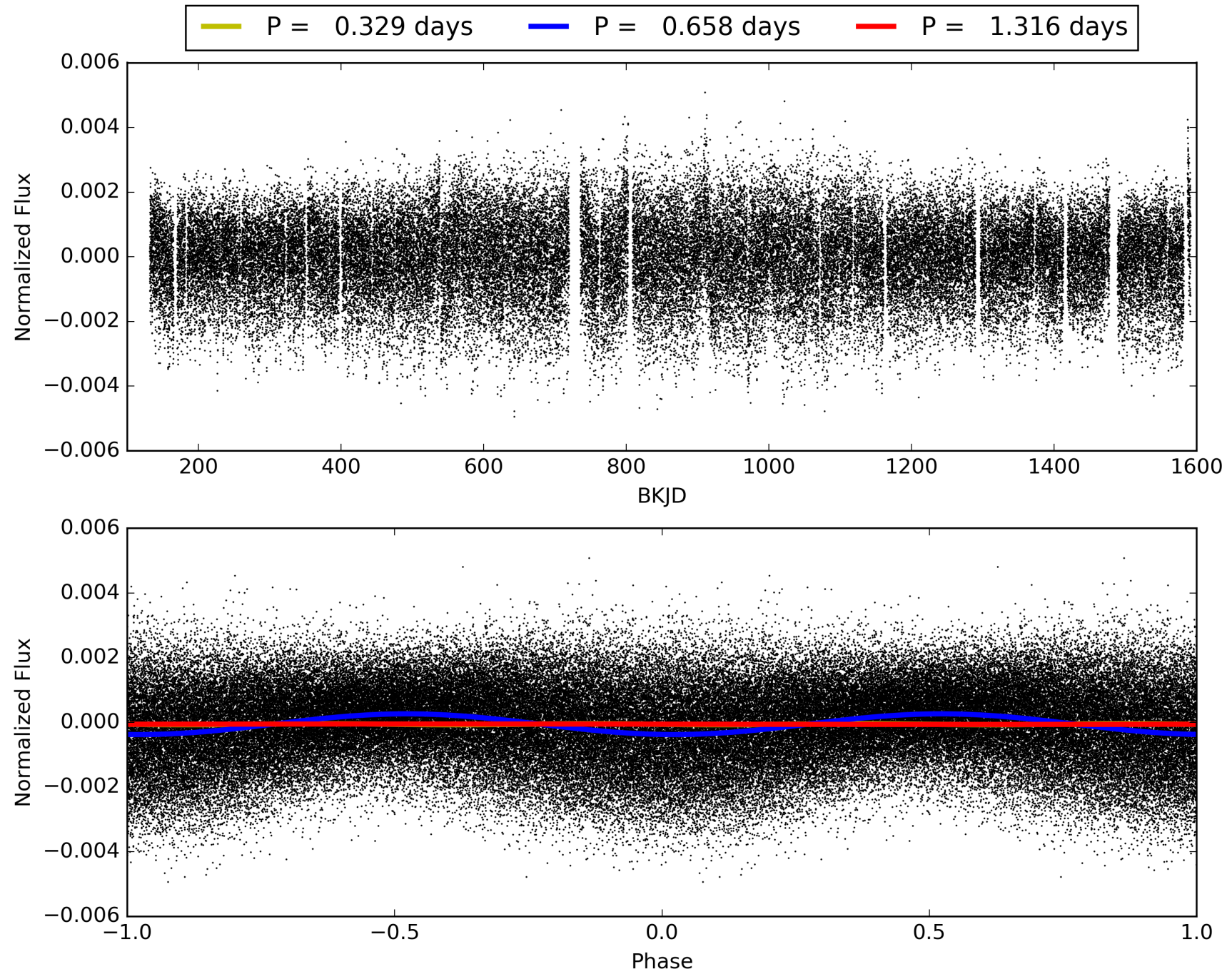
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 009650390-03, PDC Light Curves



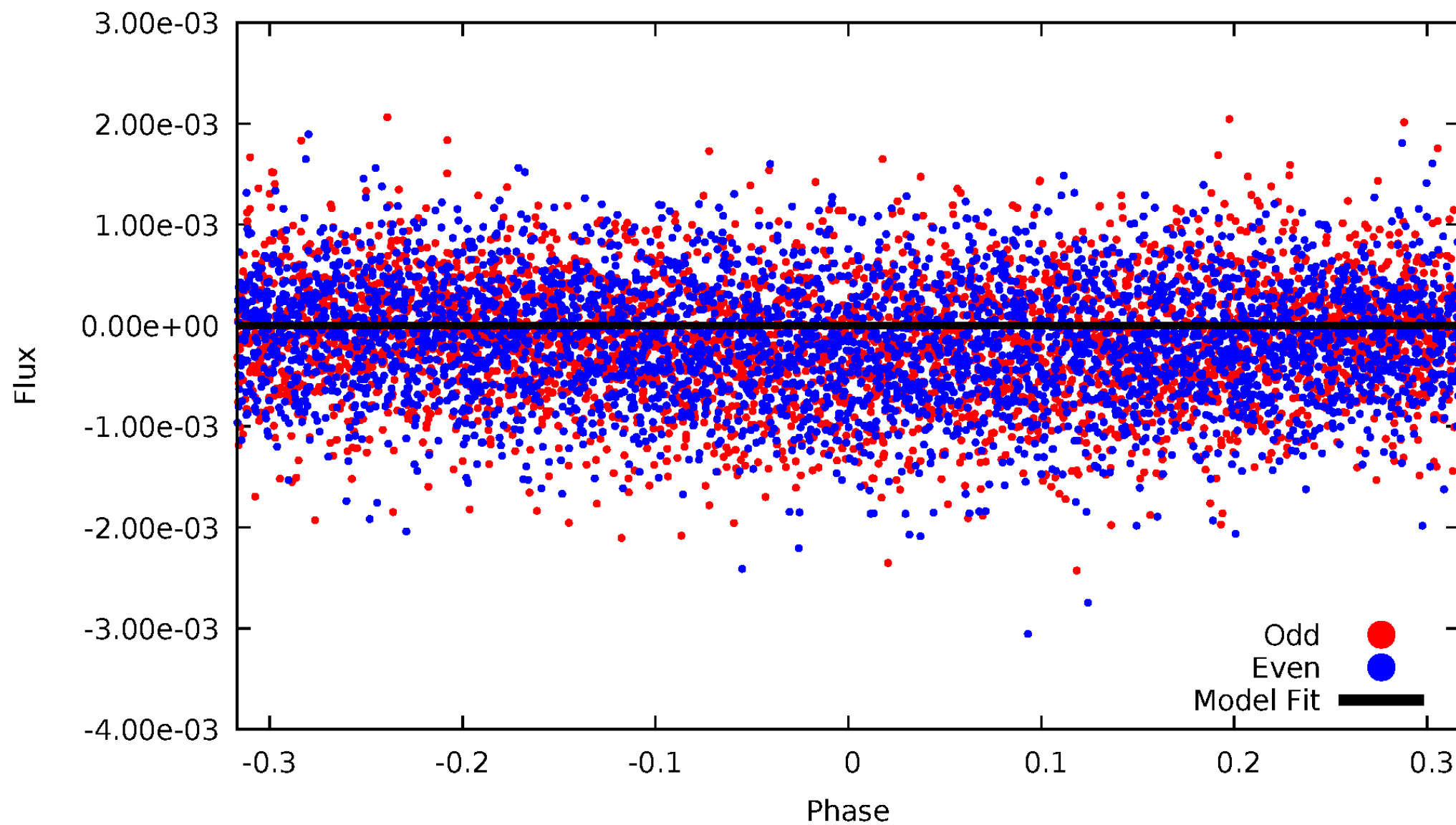


TCE 009650390-03



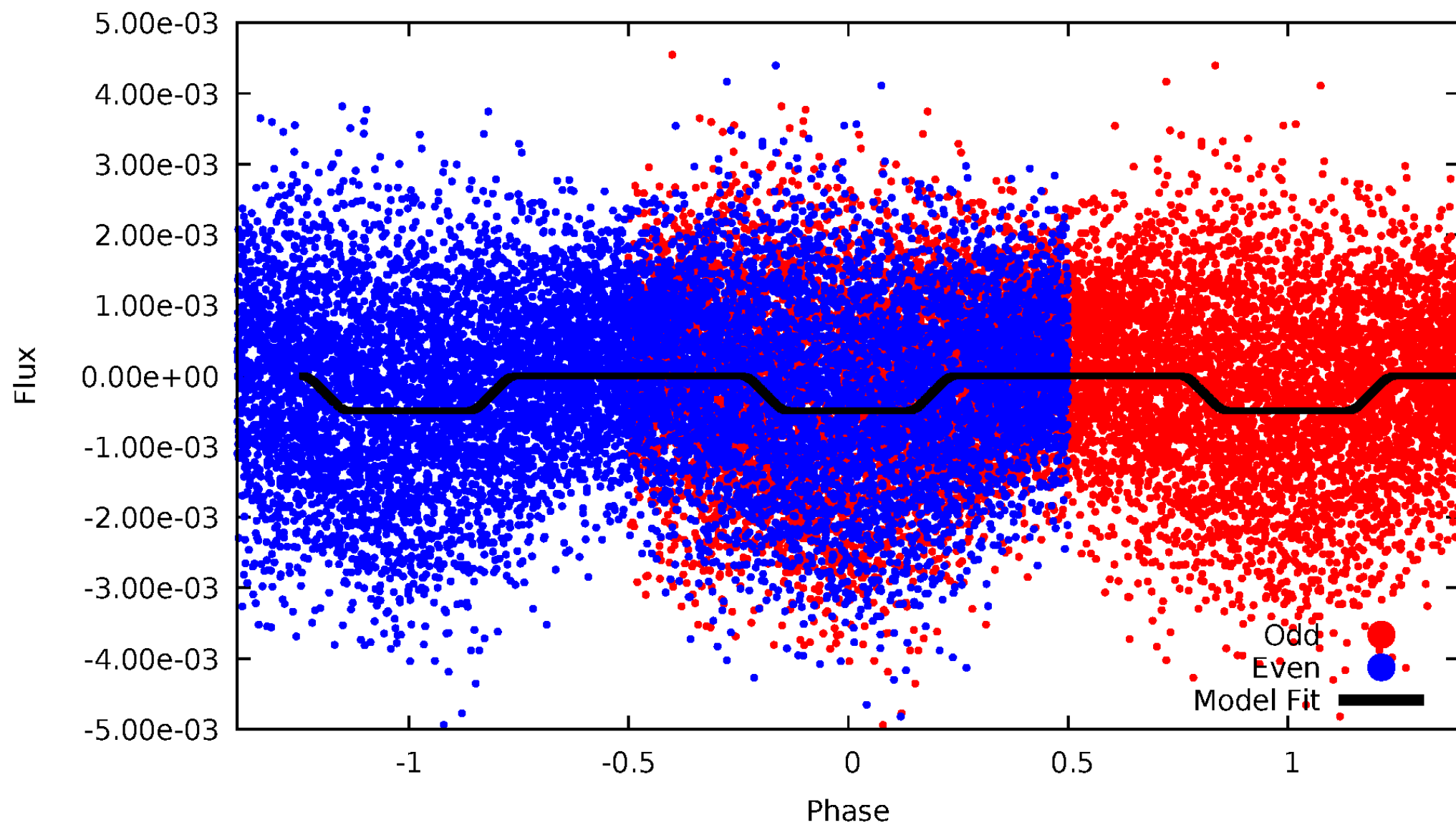
DV Odd/Even

TCE 009650390-03

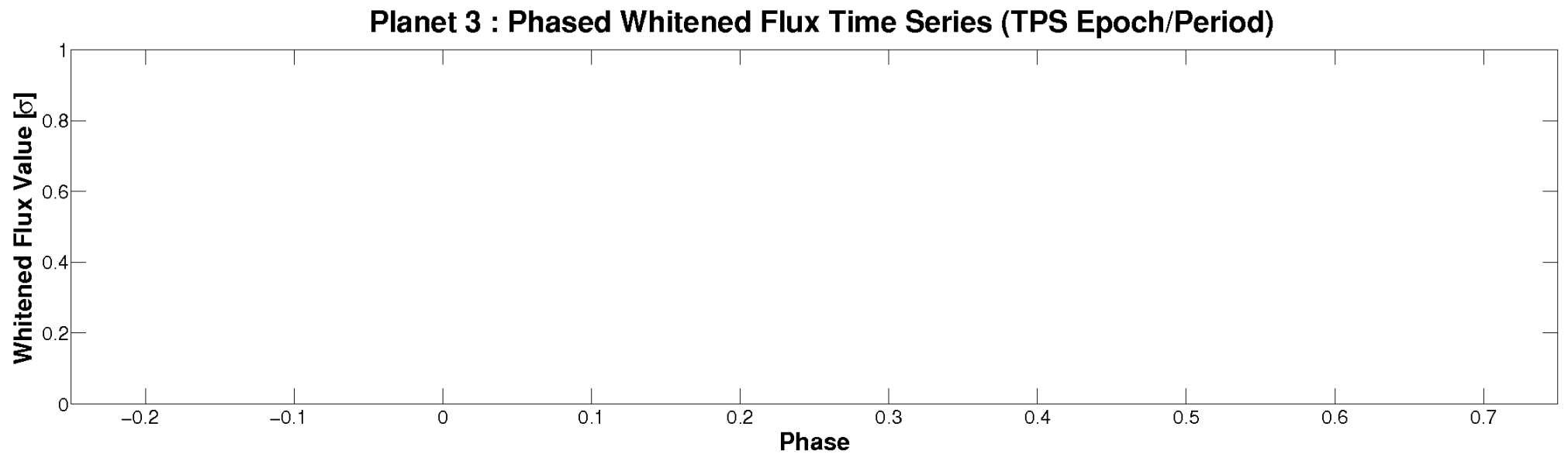
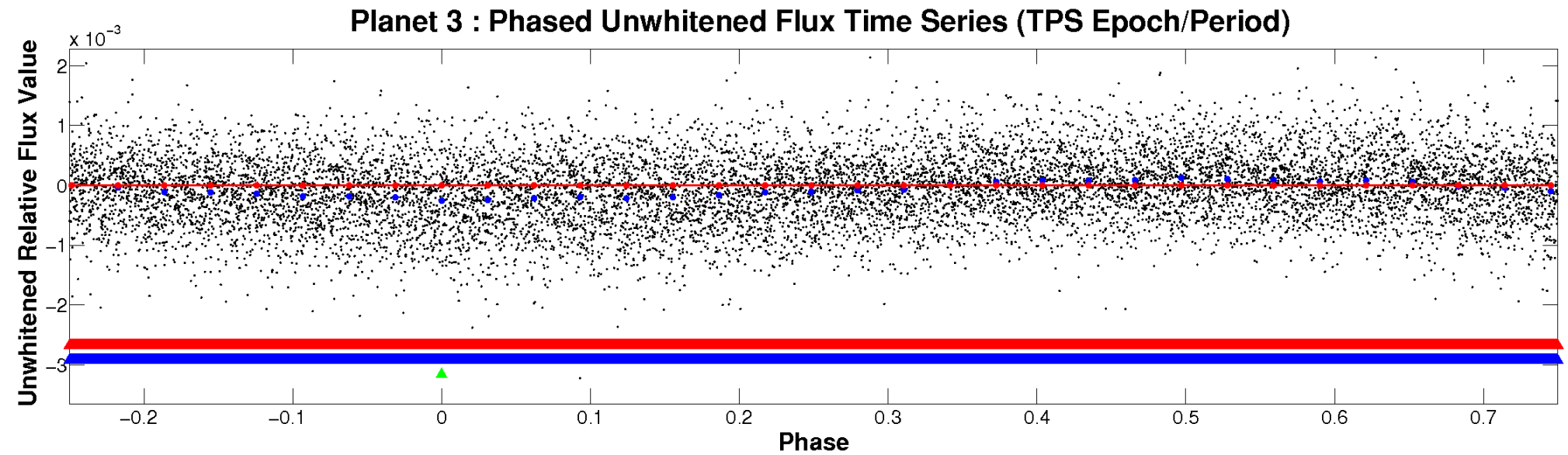


# ALT Odd/Even

TCE 009650390-03



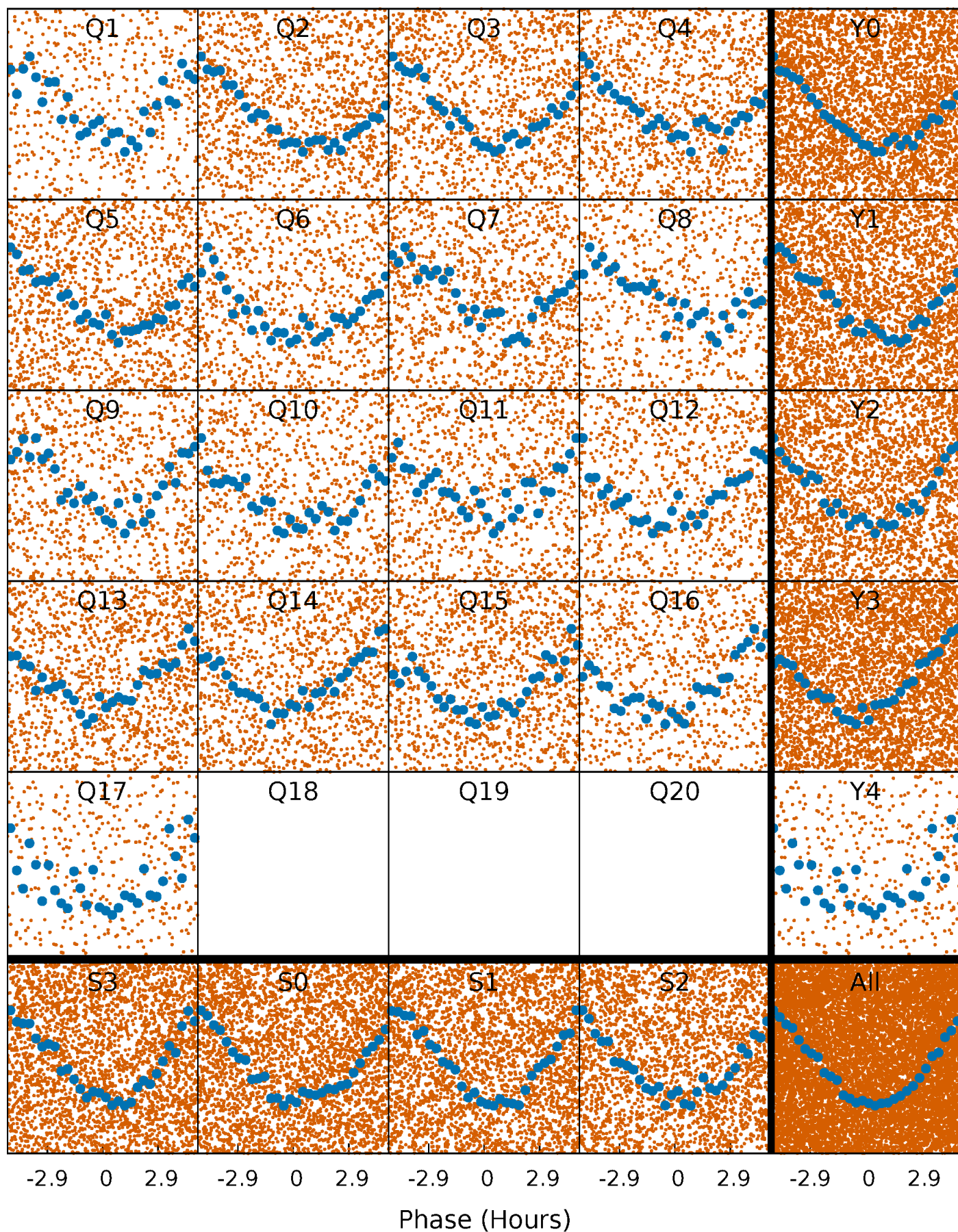
# Non-Whitened Vs. Whitened Light Curve





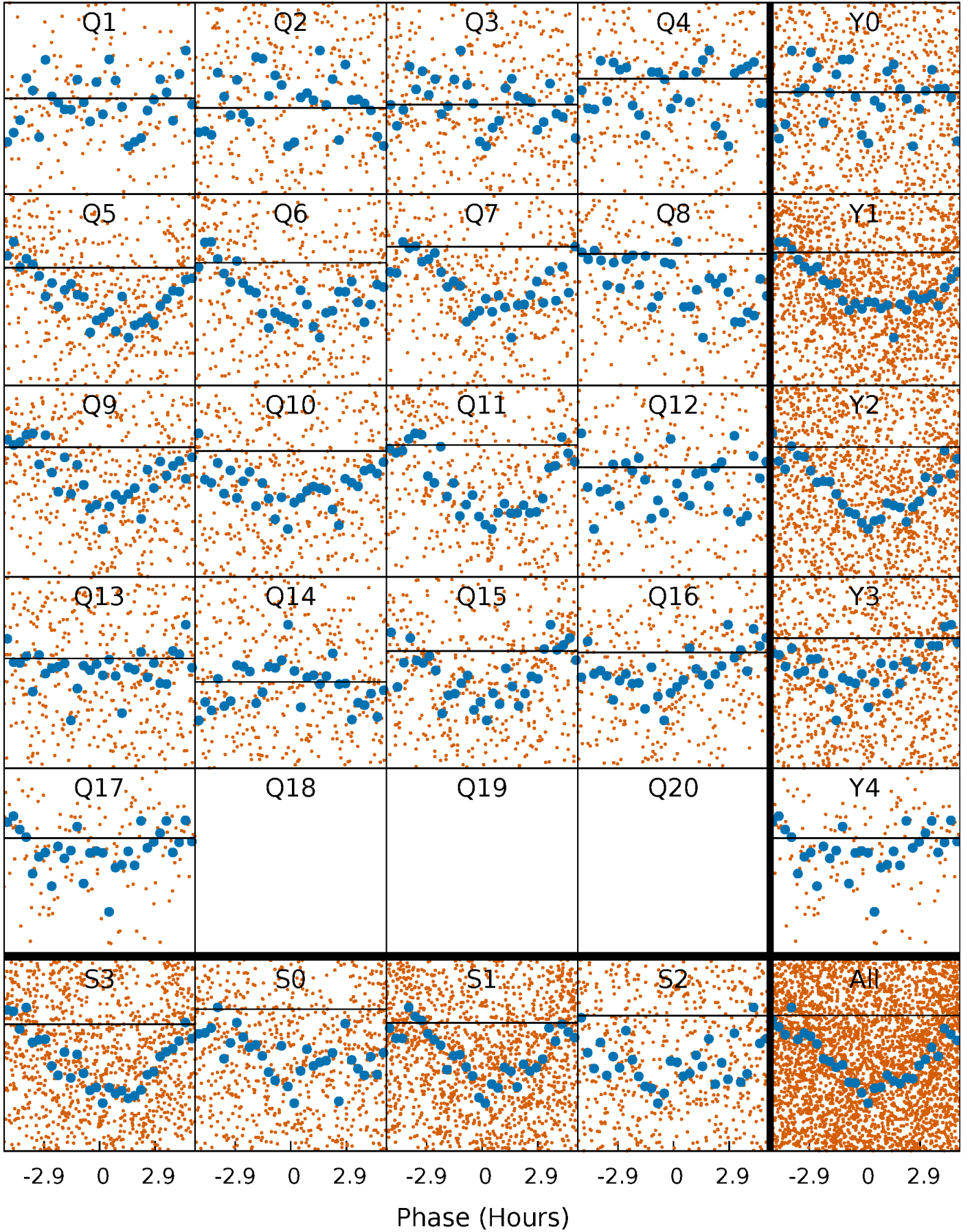
# PDC Quarter-Phased Transit Curves

TCE 009650390-03 P= 0.657935 Days  $T_0=132.031827$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 009650390-03     $P = 0.657935$  Days     $T_0 = 132.031827$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

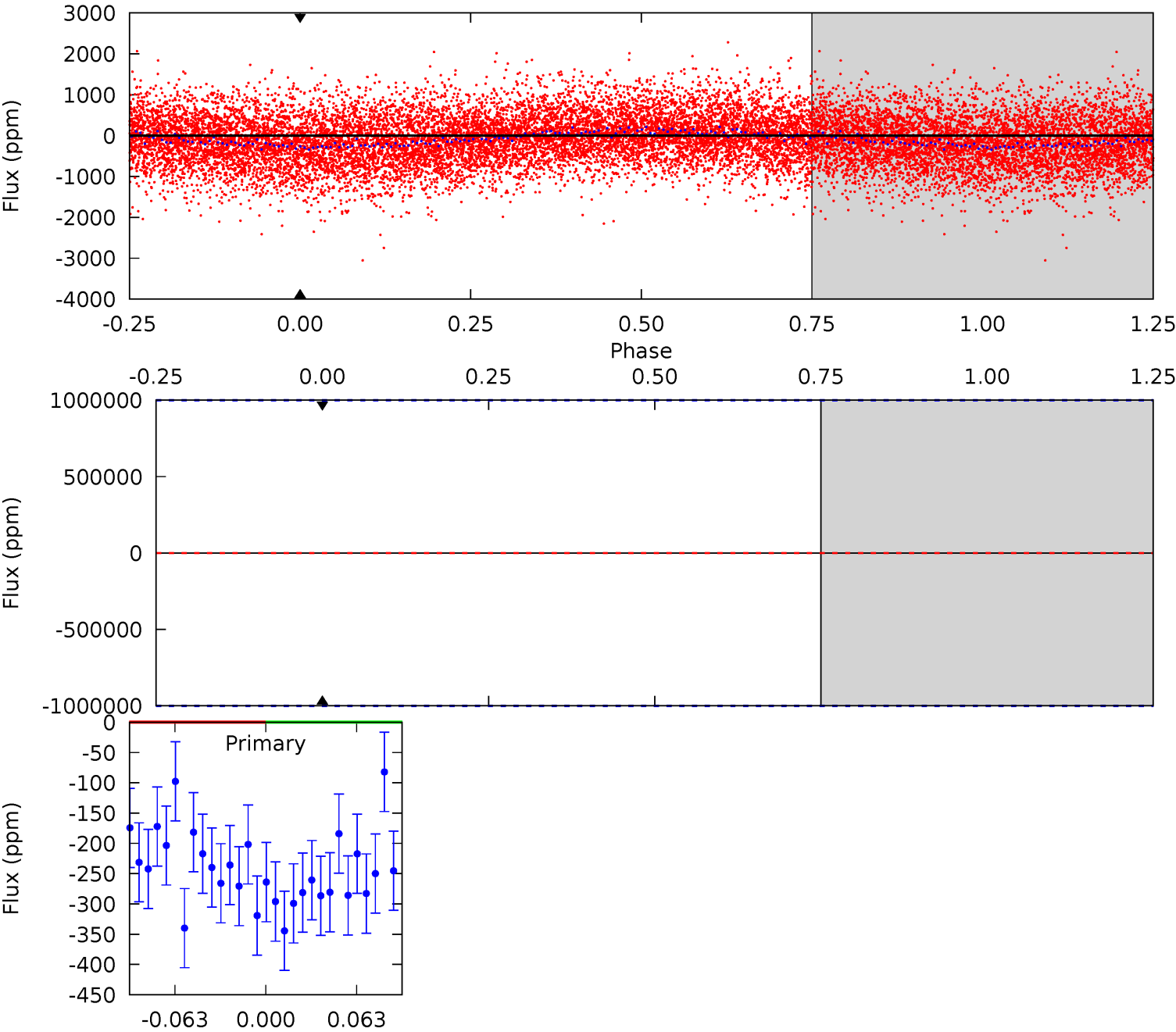
TCE 009650390-03   P= 0.657935 Days    $T_0=132.050525$  (BKJD)



# DV Model-Shift Uniqueness Test

009650390-03, P = 0.657935 Days, E = 131.373892 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

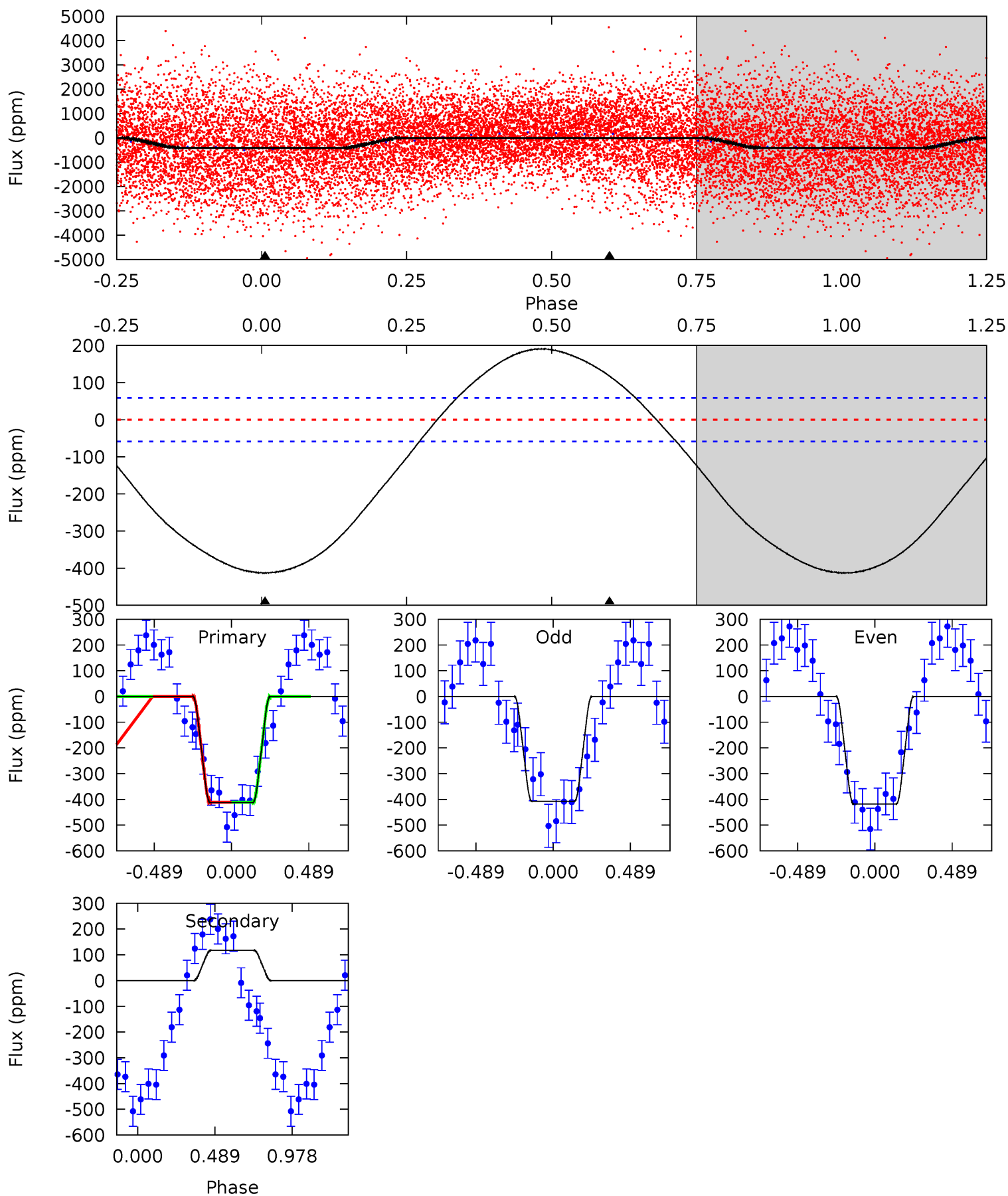




# Alt Model-Shift Uniqueness Test

009650390-03, P = 0.657935 Days, E = 131.392590 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
29.6	-8.44	0	0	4.22	0.69	3.77	29.6	29.6	-8.44	-8.44	0.36	1.11	0.32	0.00



### Stellar Parameters For KIC 009650390

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$8572^{+237}_{-373}$	$3.772^{+0.392}_{-0.168}$	$-0.200^{+0.400}_{-0.350}$	$3.050^{+1.059}_{-1.295}$	$2.009^{+0.482}_{-0.438}$	$0.100^{+0.333}_{-0.046}$
	+3%/-4%	+10%/-4%	+200%/-175%	+35%/-42%	+24%/-22%	+334%/-46%
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 009650390-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$22.08^{+23.41}_{-15.26}$	$6597^{+583}_{-729}$	$-6254^{+62305}_{-47553}$	$-0.331^{+67.601}_{-63.797}$
Alt.	$118 \pm 14$	$24.20^{+26.67}_{-16.89}$	$6604^{+615}_{-796}$	$-5571^{+581}_{-1002}$	$-0.039^{+0.030}_{-0.379}$

$T_{max}$  = 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

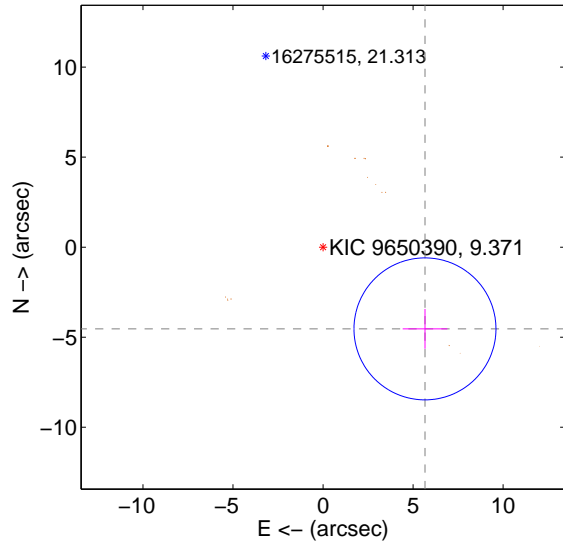
Supplemental centroid analysis for 009650390-03. **Kepler magnitude: 9.37.** Transit SNR -1.00

**There are 0 quarters with good PRF difference image offsets**

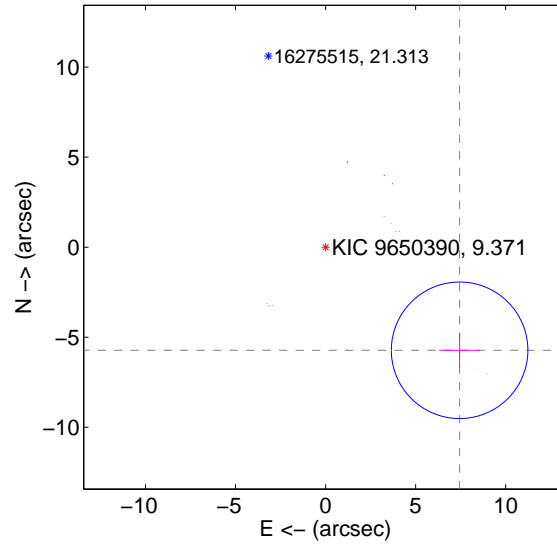
The direct PRF centroid is offset from the target star catalog position by about 1.30 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	<b><math>7.256 \pm 1.314</math></b>	<b>5.52</b>	$-5.661 \pm 1.241$	$-4.539 \pm 1.108$
PRF-fit source offset from KIC position	<b><math>9.392 \pm 1.264</math></b>	<b>7.43</b>	$-7.444 \pm 1.133$	$-5.728 \pm 0.960$
photometric centroid source offset	<b><math>1.27 \pm 0.04</math></b>	<b>35.77</b>	$-0.99 \pm 0.04$	$-0.80 \pm 0.03$

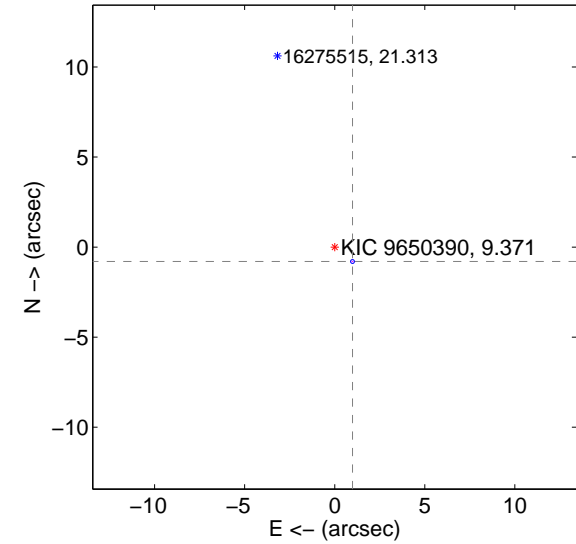
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

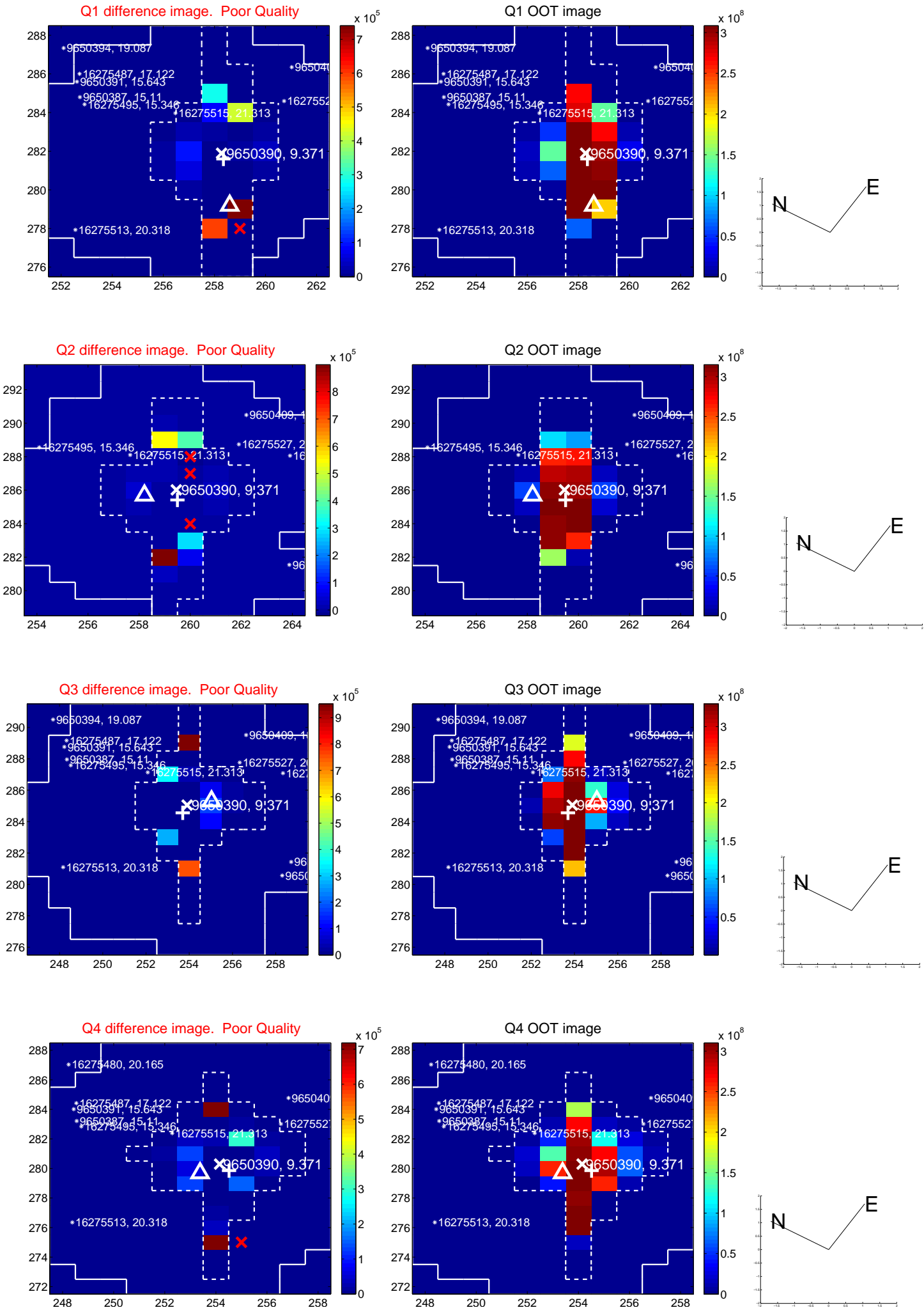


offset from photometric centroids



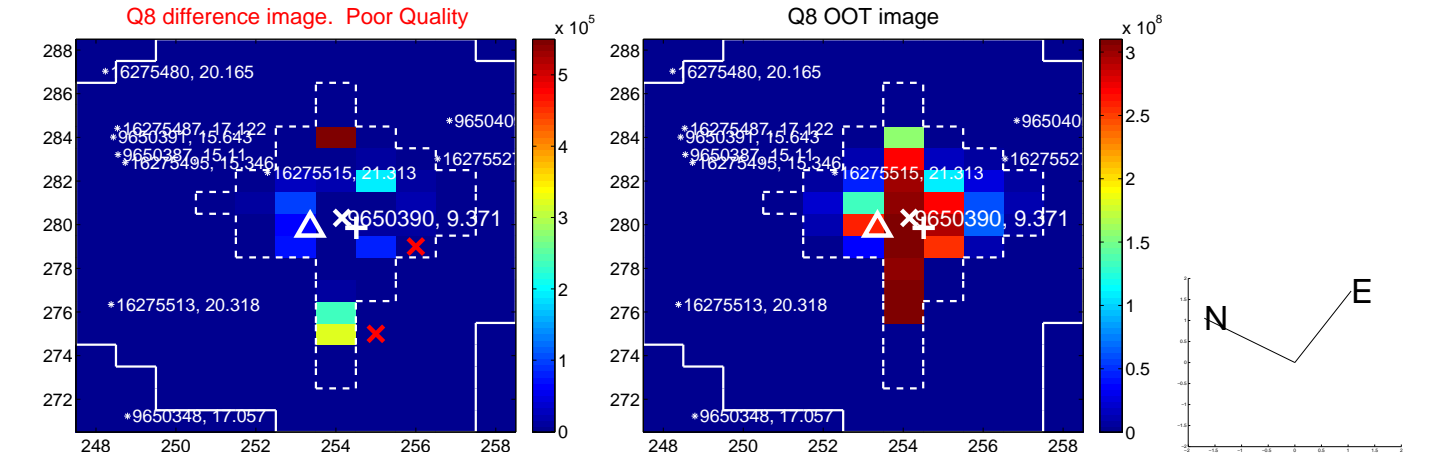
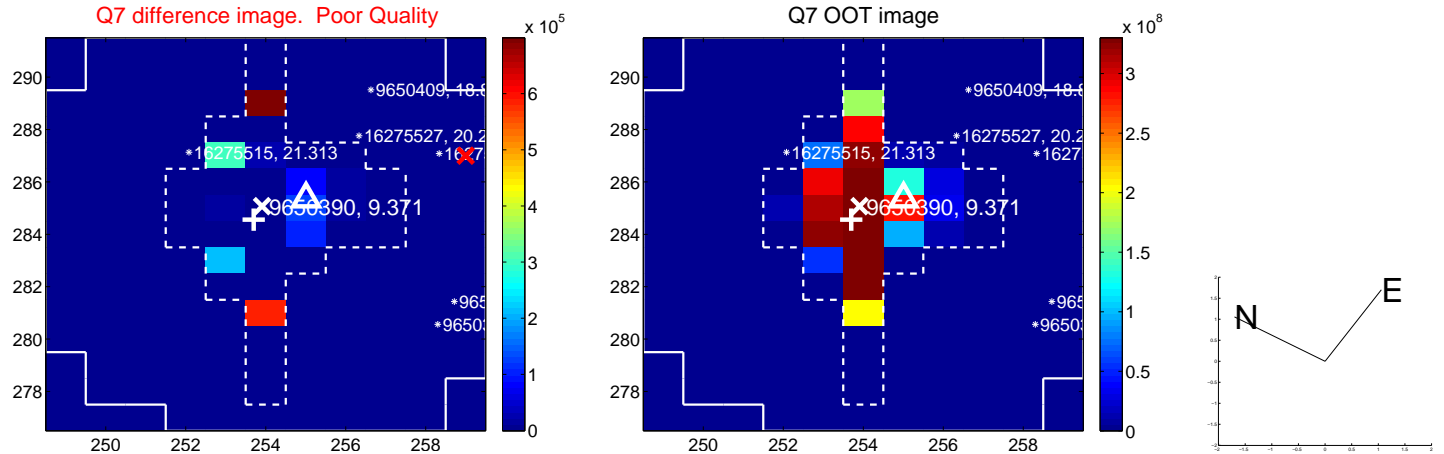
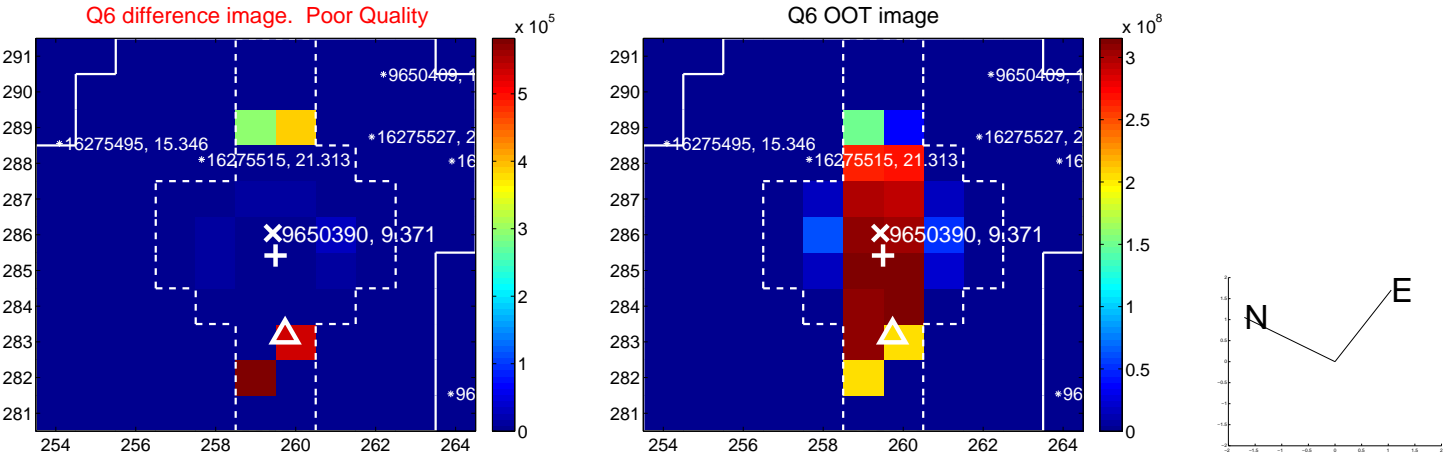
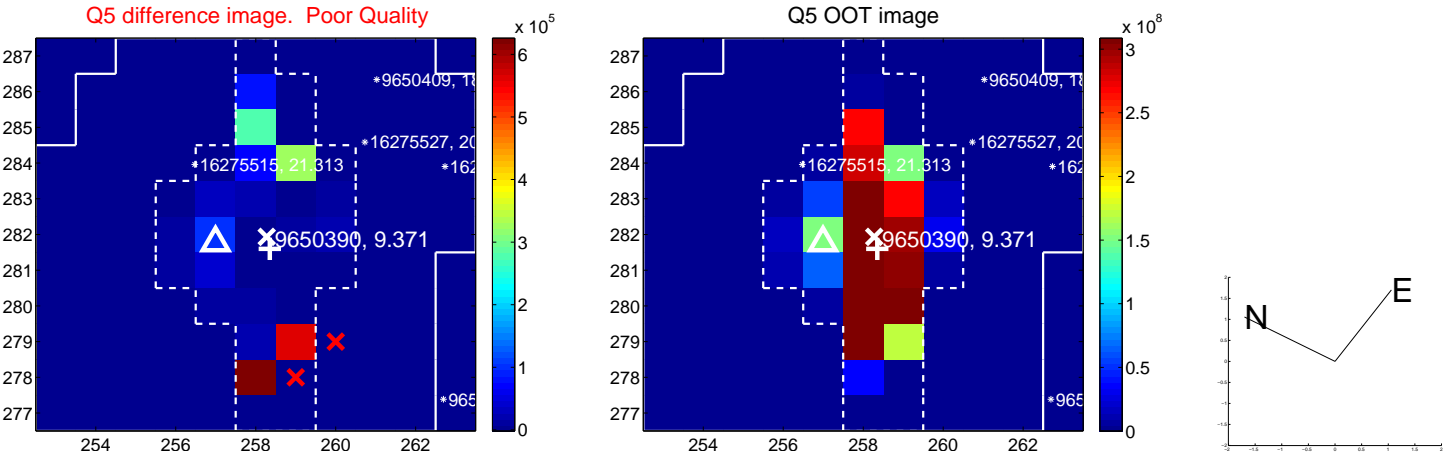
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

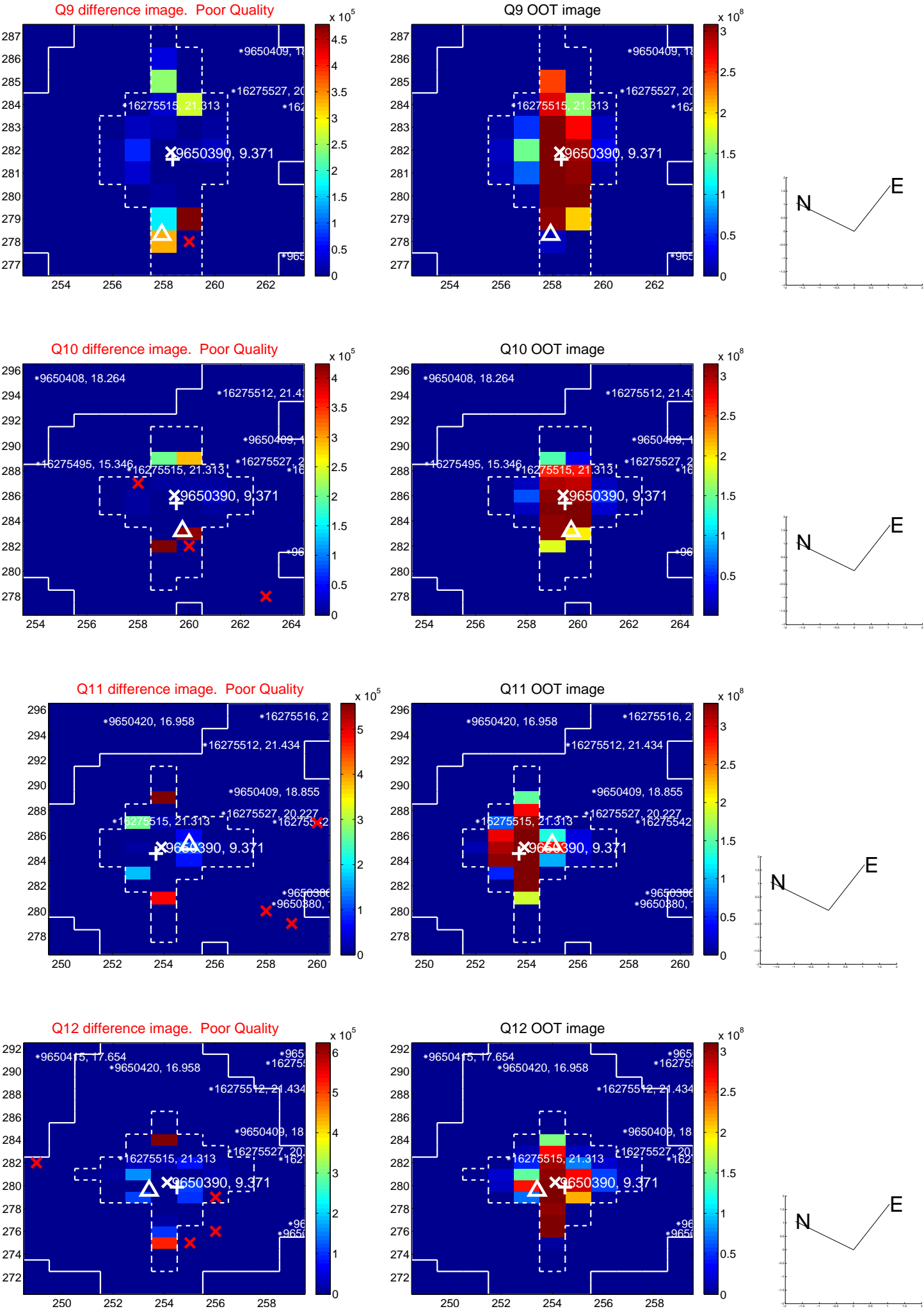




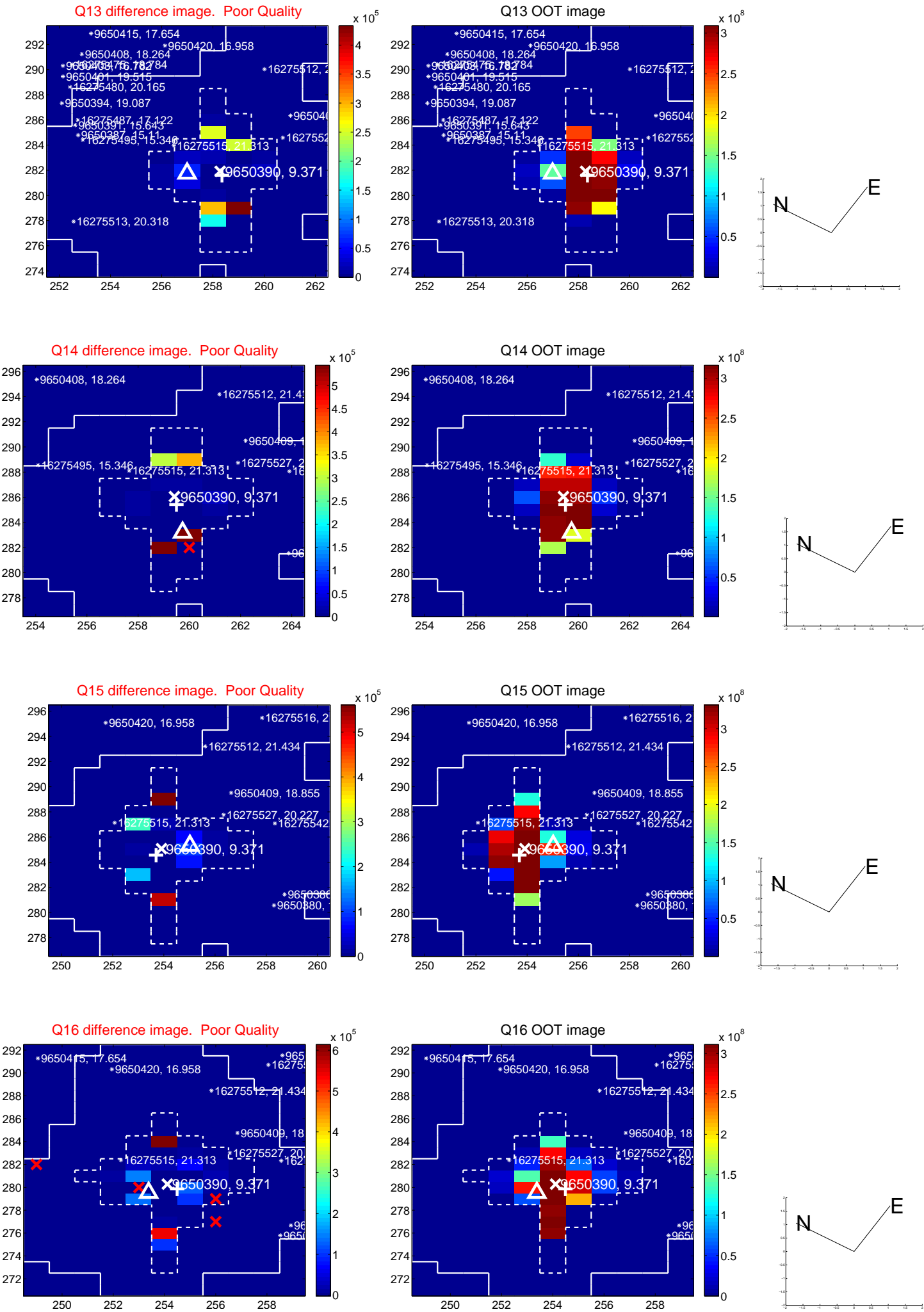
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



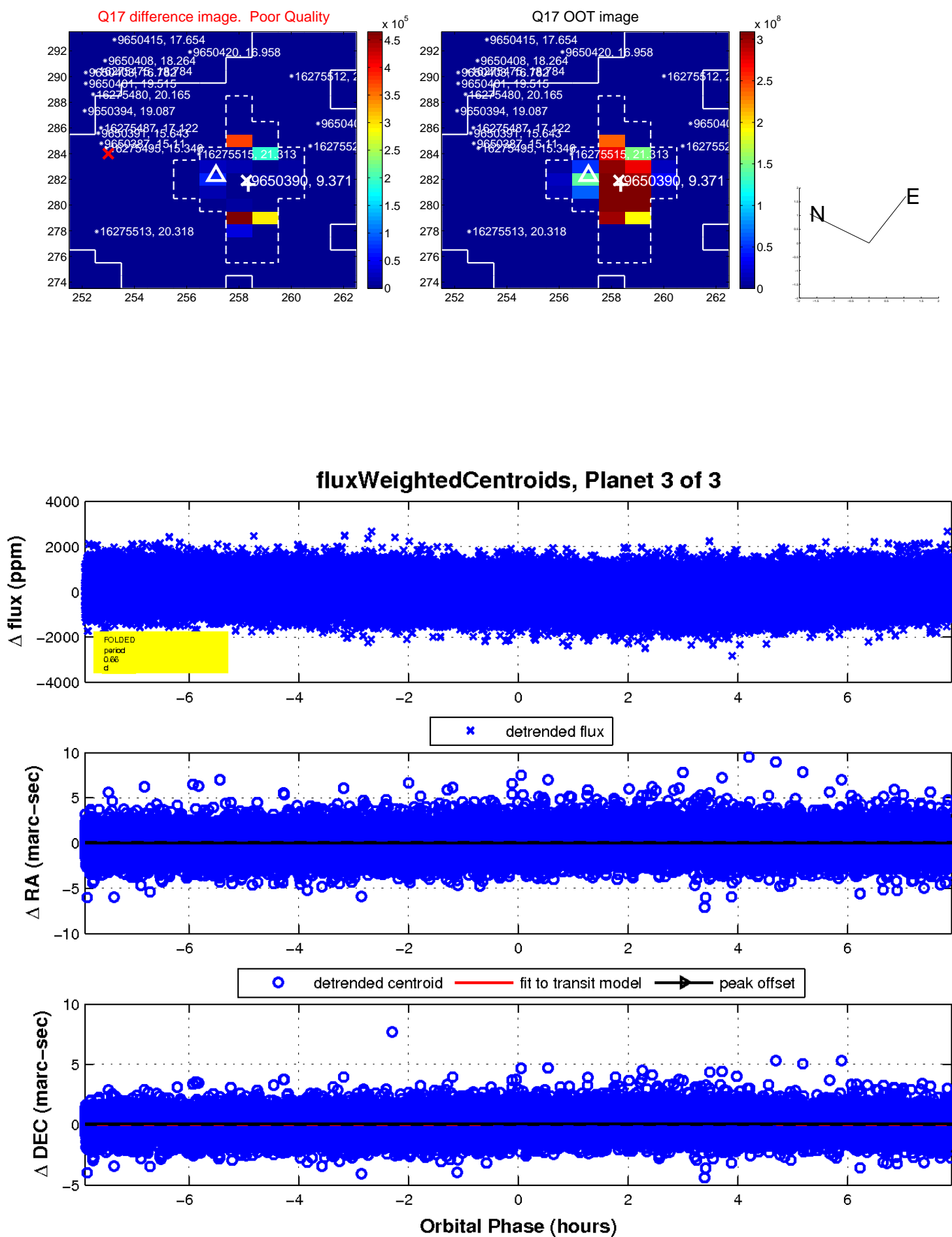
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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



UKIRT Image

Declination

