

# KIC 008095321

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008095321-01	OBS	No	3.153212	134.386568	12.4	18.220	12.0	5.9	1.84	6745	0.69	2837.87
008095321-02	OBS	No	249.074696	356.960121	195.5	13.576	25.5	11.7	1.84	6745	2.60	8.37
008095321-03	OBS	No	1.576593	133.233313	29.5	14.327	13.9	11.7	1.84	6745	1.02	7151.05

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008095321-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
008095321-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008095321-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—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.

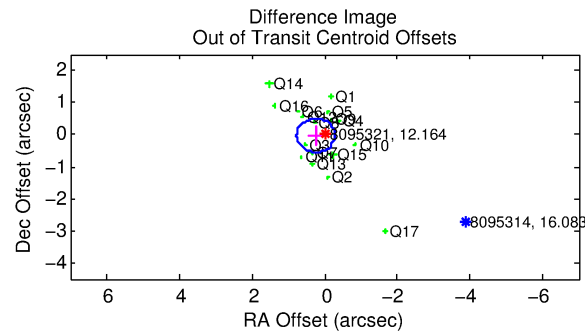
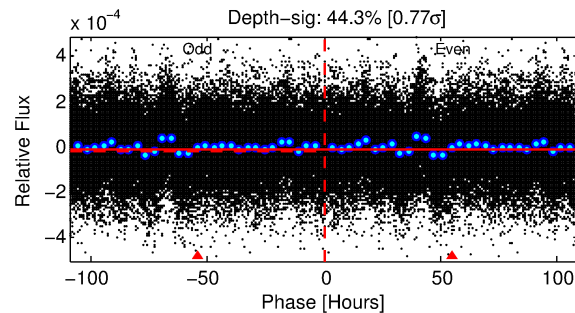
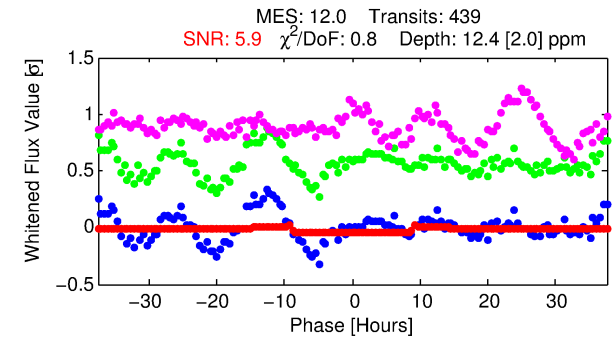
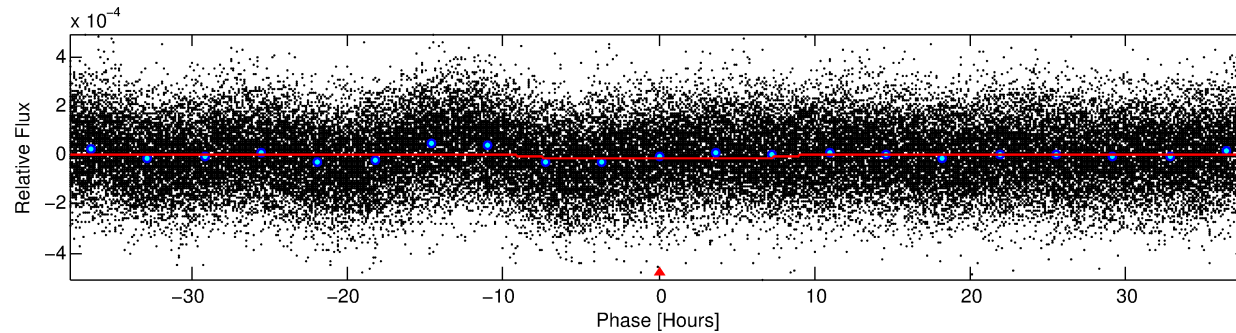
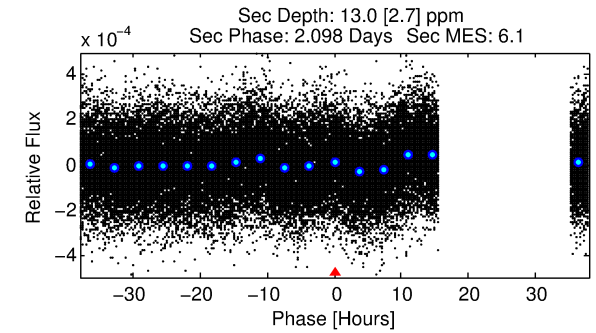
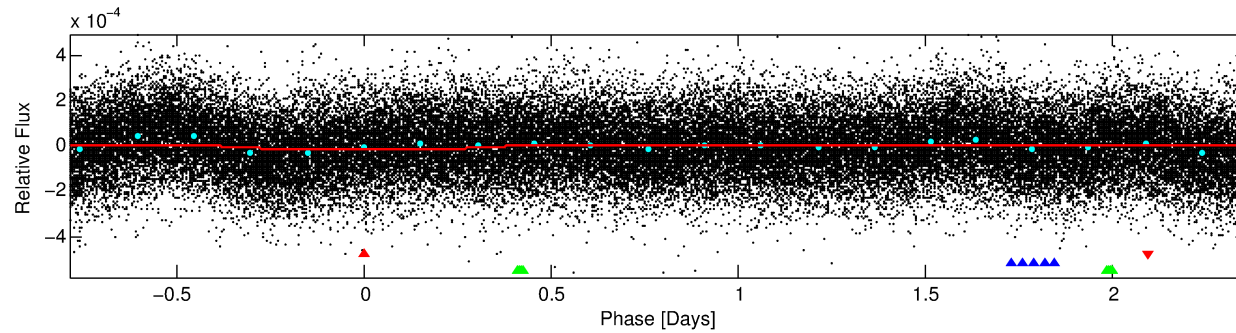
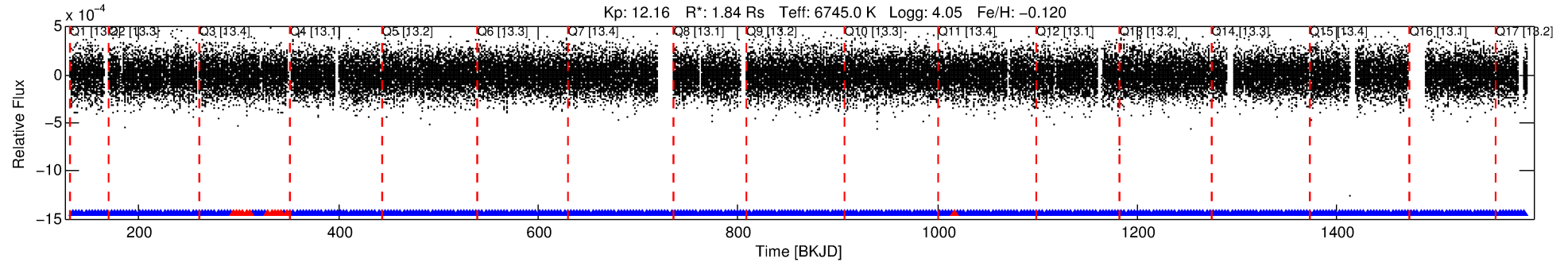
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008095321-01

No Significant Match Found

# DV One-Page Summary

KIC: 8095321 Candidate: 1 of 3 Period: 3.153 d



## DV Fit Results:

Period = 3.15321 [0.00007] d  
Epoch = 134.3866 [0.0131] BKJD  
Rp/R\* = 0.0034 [0.0013]  
a/R\* = 1.30 [1.12]  
b = 0.64 [1.99]  
Seff = 2837.87 [847.11]  
Teq = 1861 [139] K  
Rp = 0.69 [0.30] Re  
a = 0.0471 [0.0091] AU  
Ag = 33.84 [28.37] [1.16σ]  
Teffp = 6940 [1364] K [3.70σ]

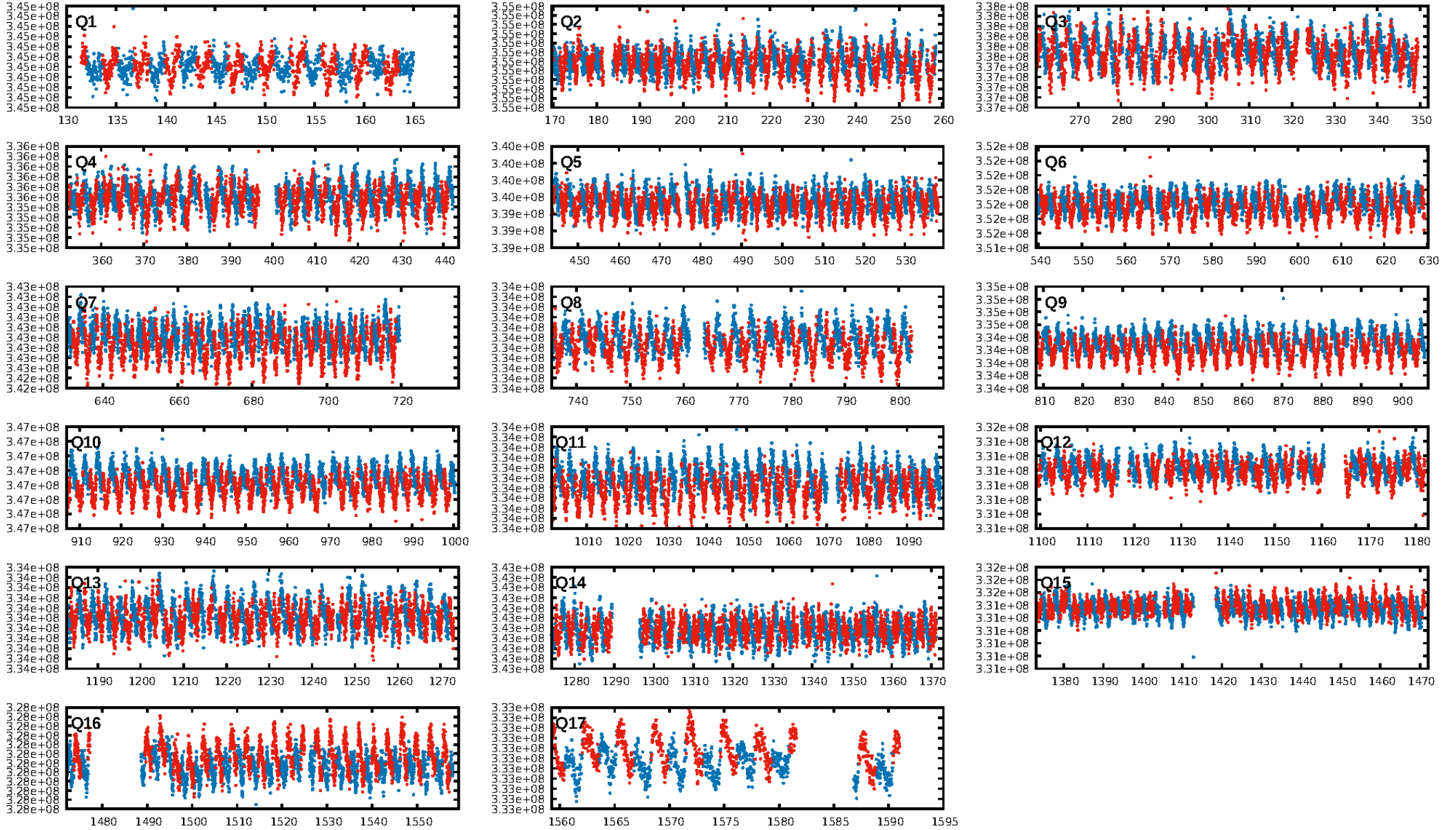
## DV Diagnostic Results:

ShortPeriod-sig: 89.7% [1.63σ]  
LongPeriod-sig: 100.0% [259.76σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.97 [405/418]  
GhostDiagnostic-chr: 1.074  
Centroid-sig: 47.1%  
Centroid-so: 0.775 arcsec [0.72σ]  
OotOffset-rm: 0.250 arcsec [1.43σ]  
KicOffset-rm: 0.160 arcsec [0.69σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.76 [13/17]  
DiffImageOverlap-fno: 0.00 [0/17]

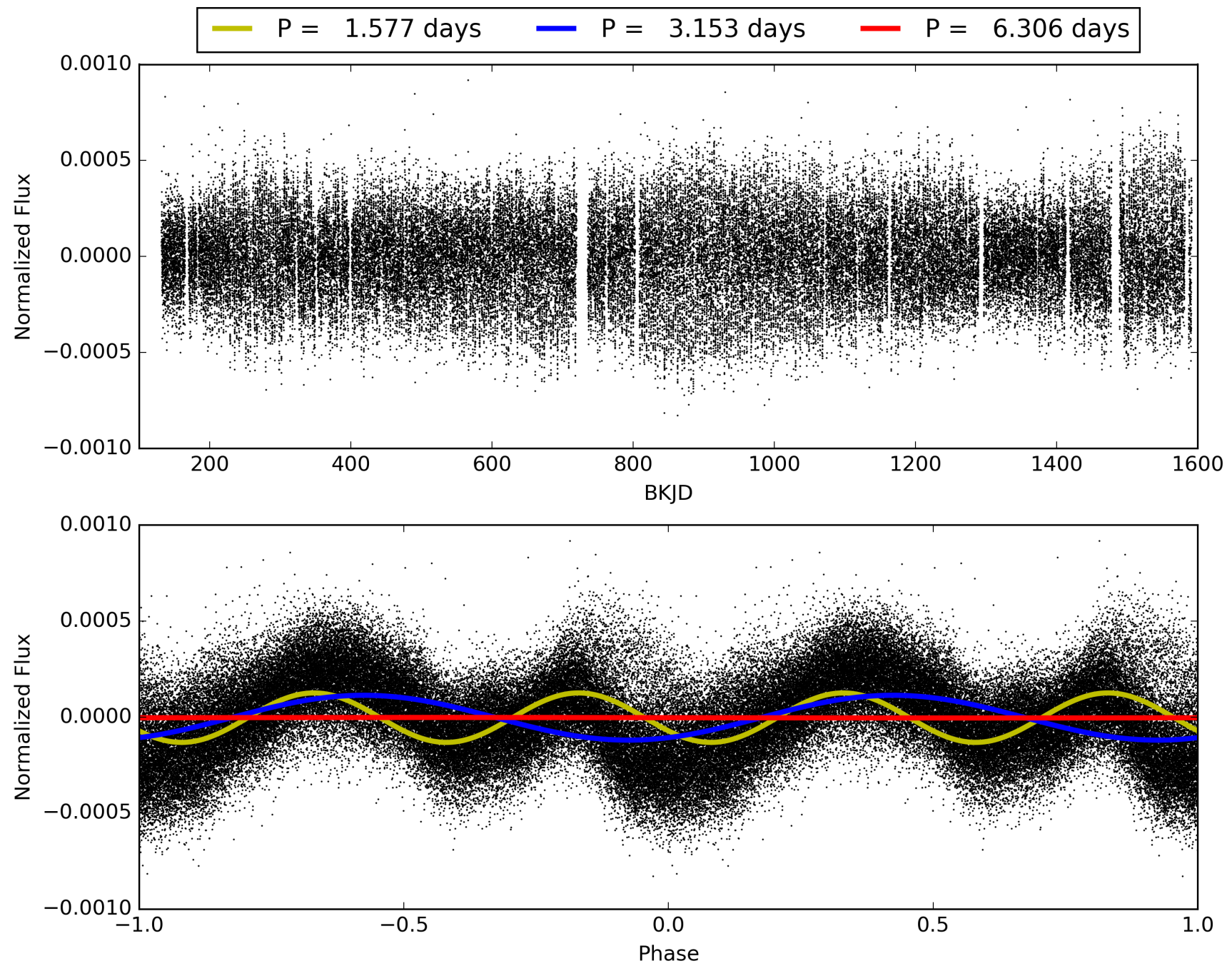
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:06:48 Z

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

# TCE 008095321-01, PDC Light Curves



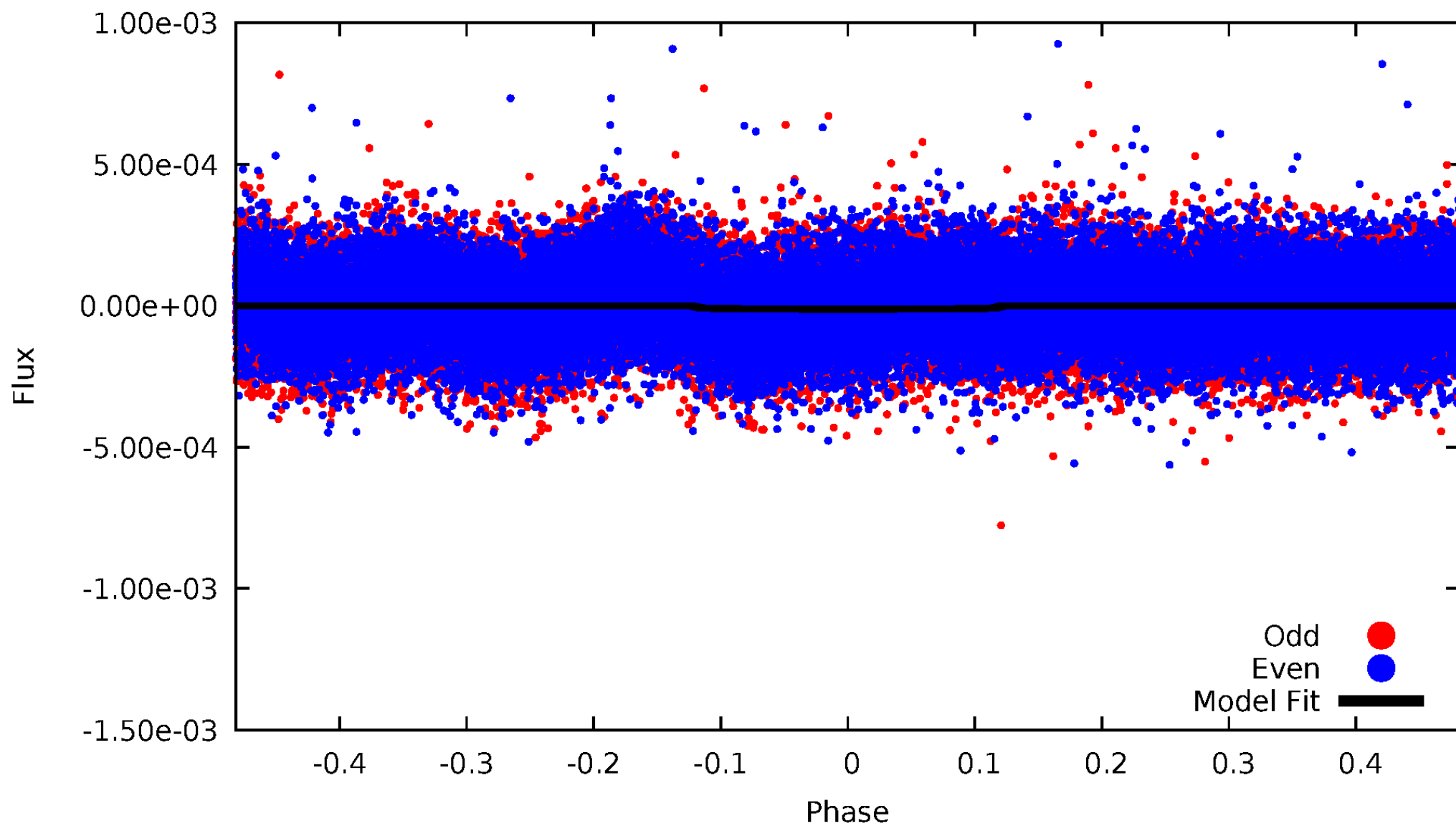
TCE 008095321-01





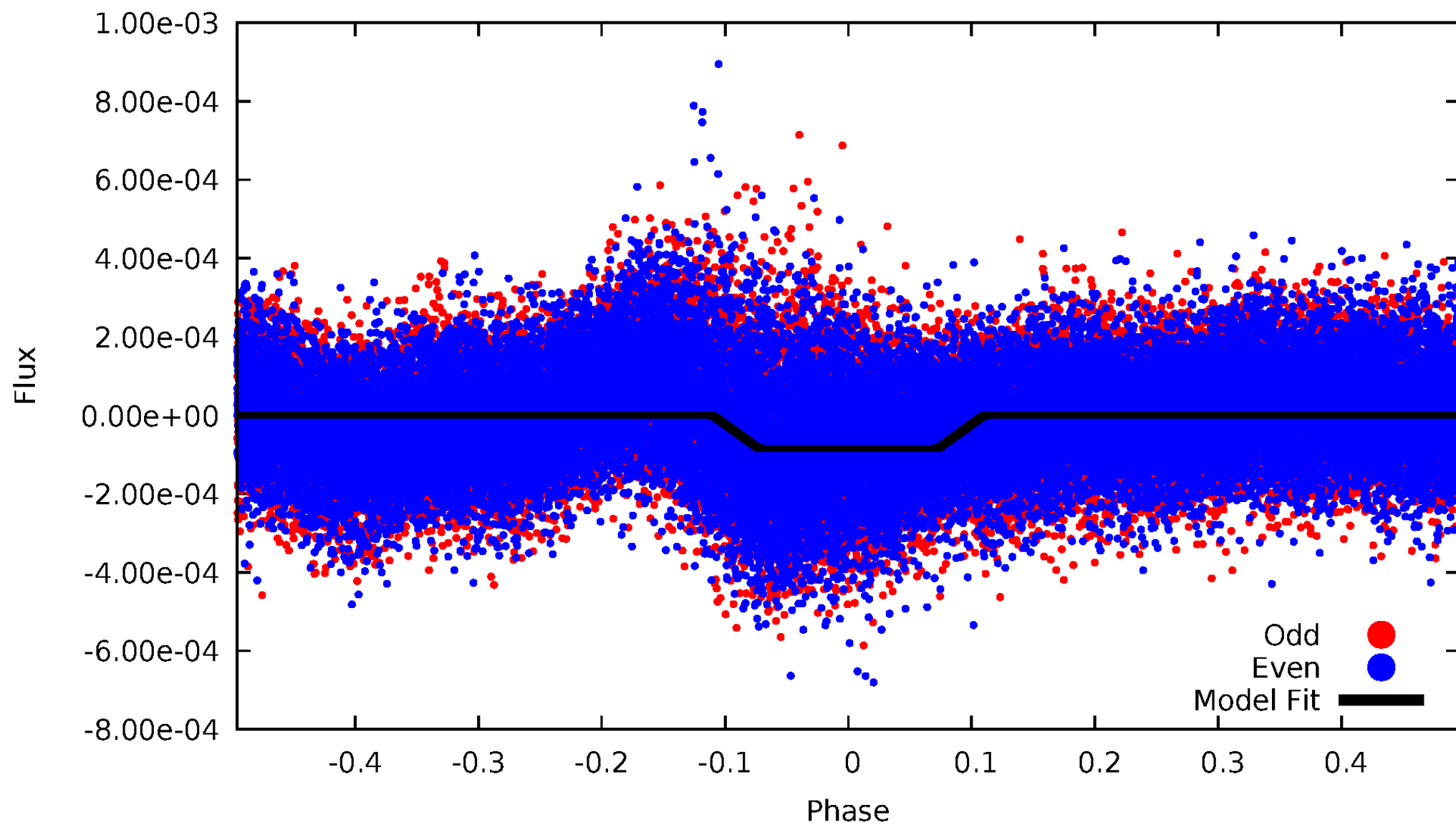
# DV Odd/Even

TCE 008095321-01

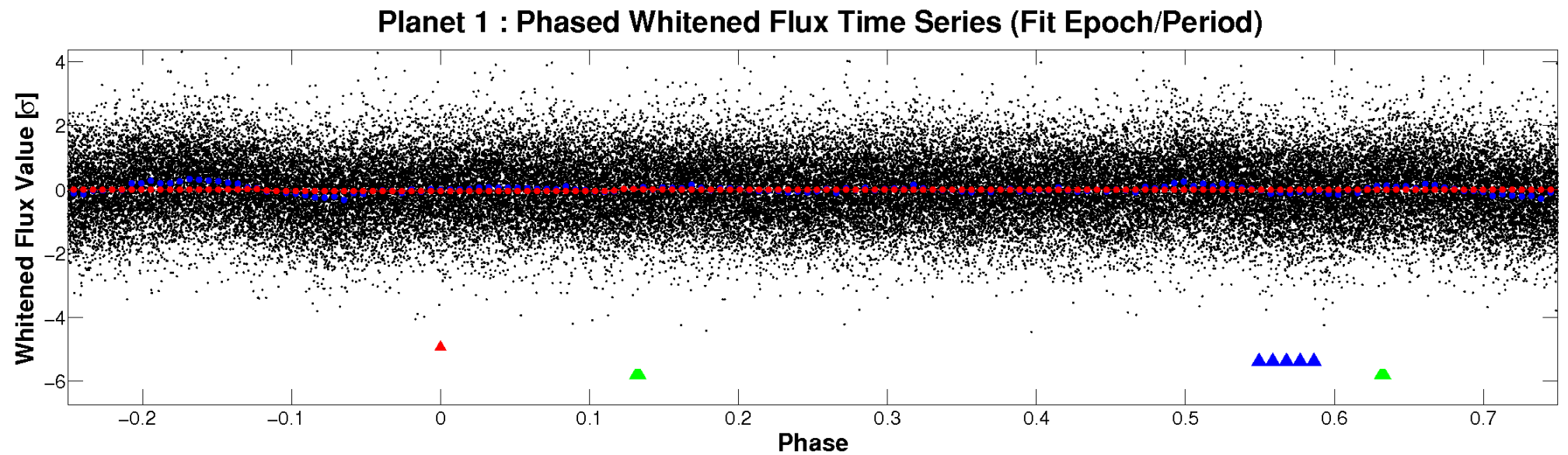
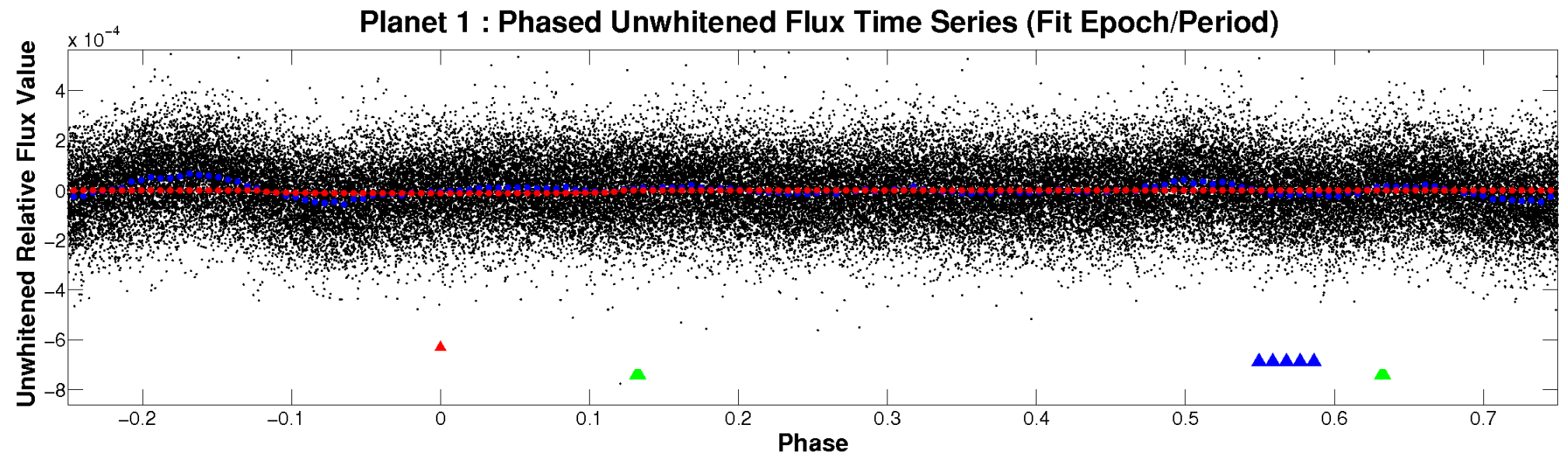


# ALT Odd/Even

TCE 008095321-01

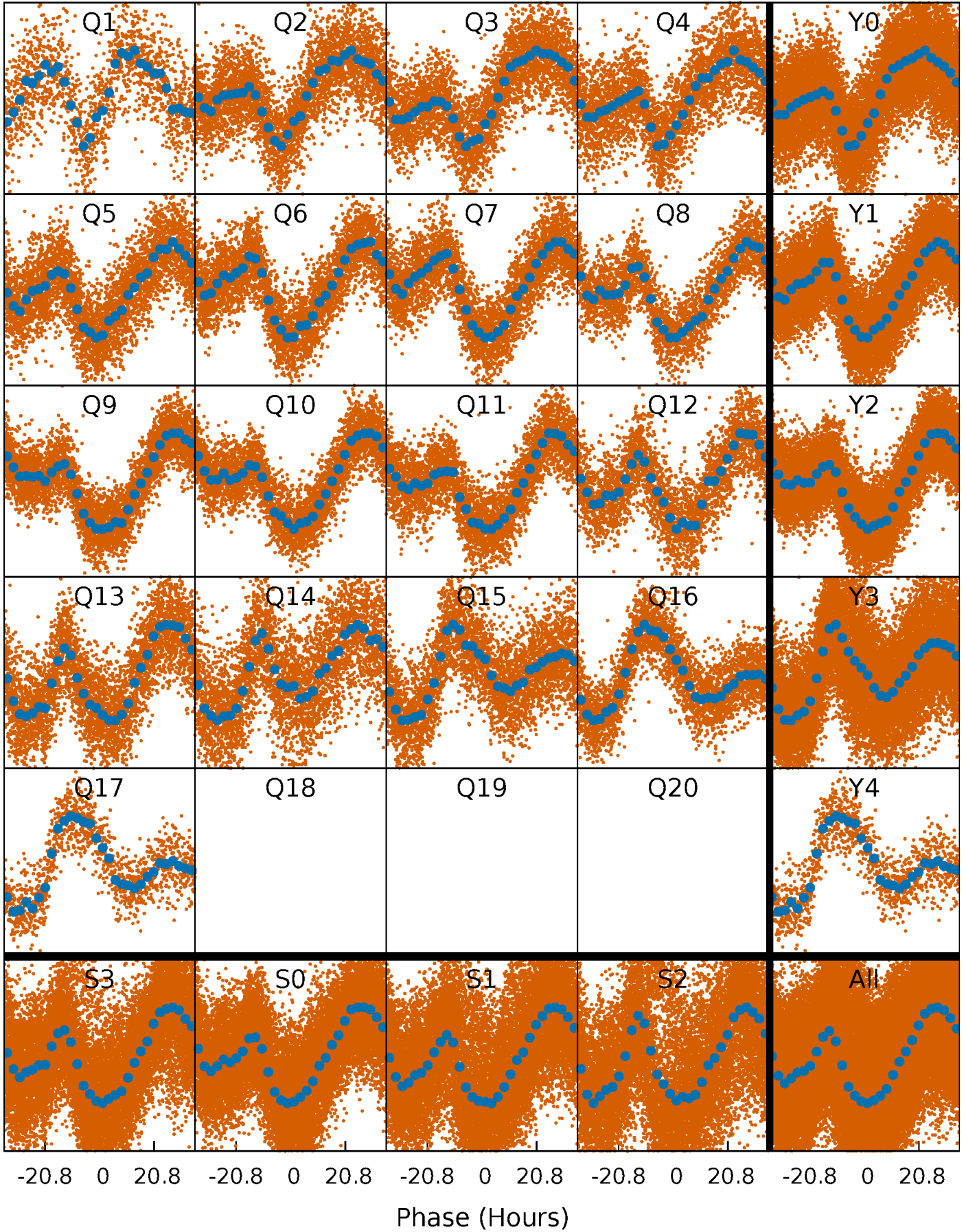


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

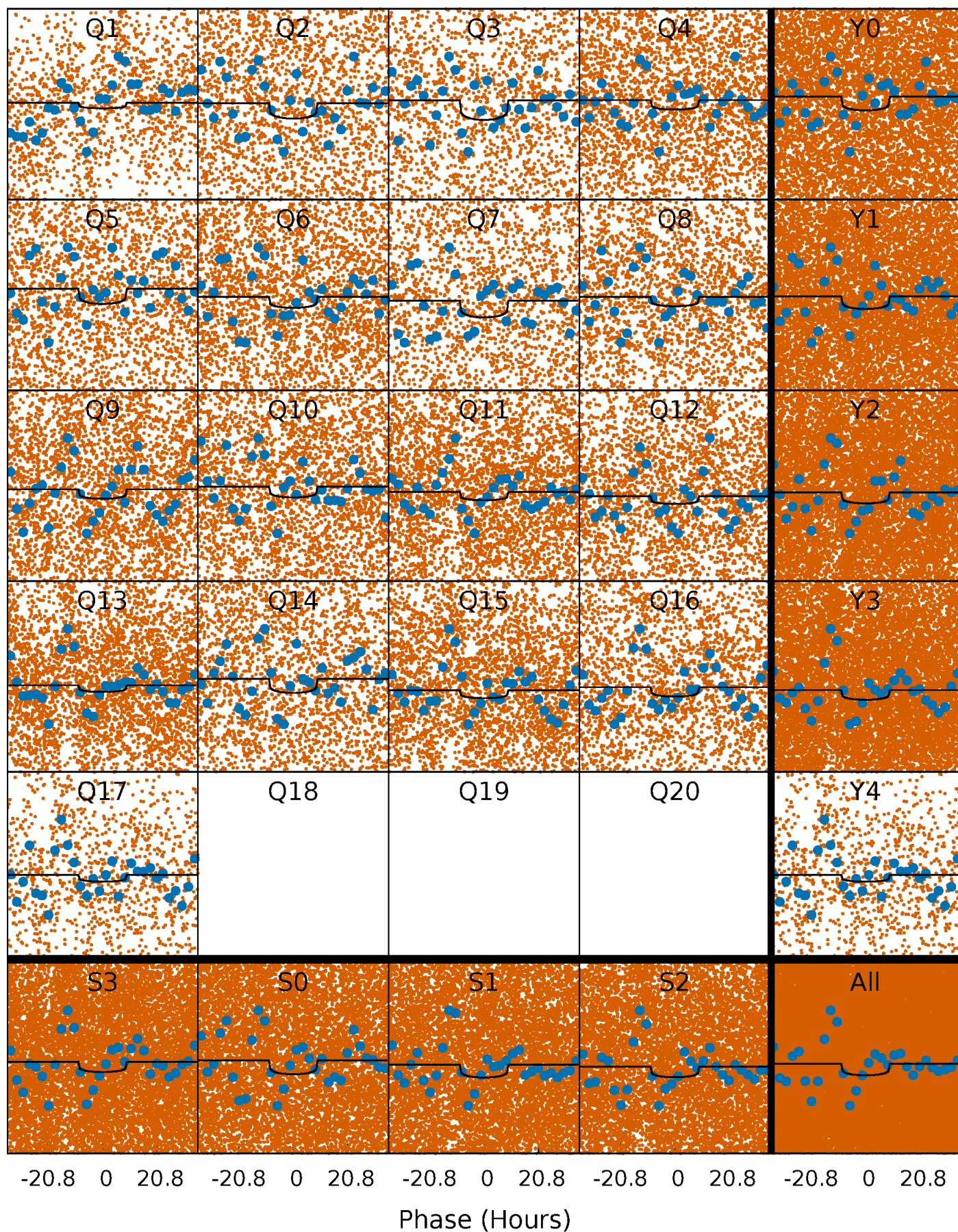
TCE 008095321-01 P= 3.153212 Days  $T_0=134.386568$  (BKJD)





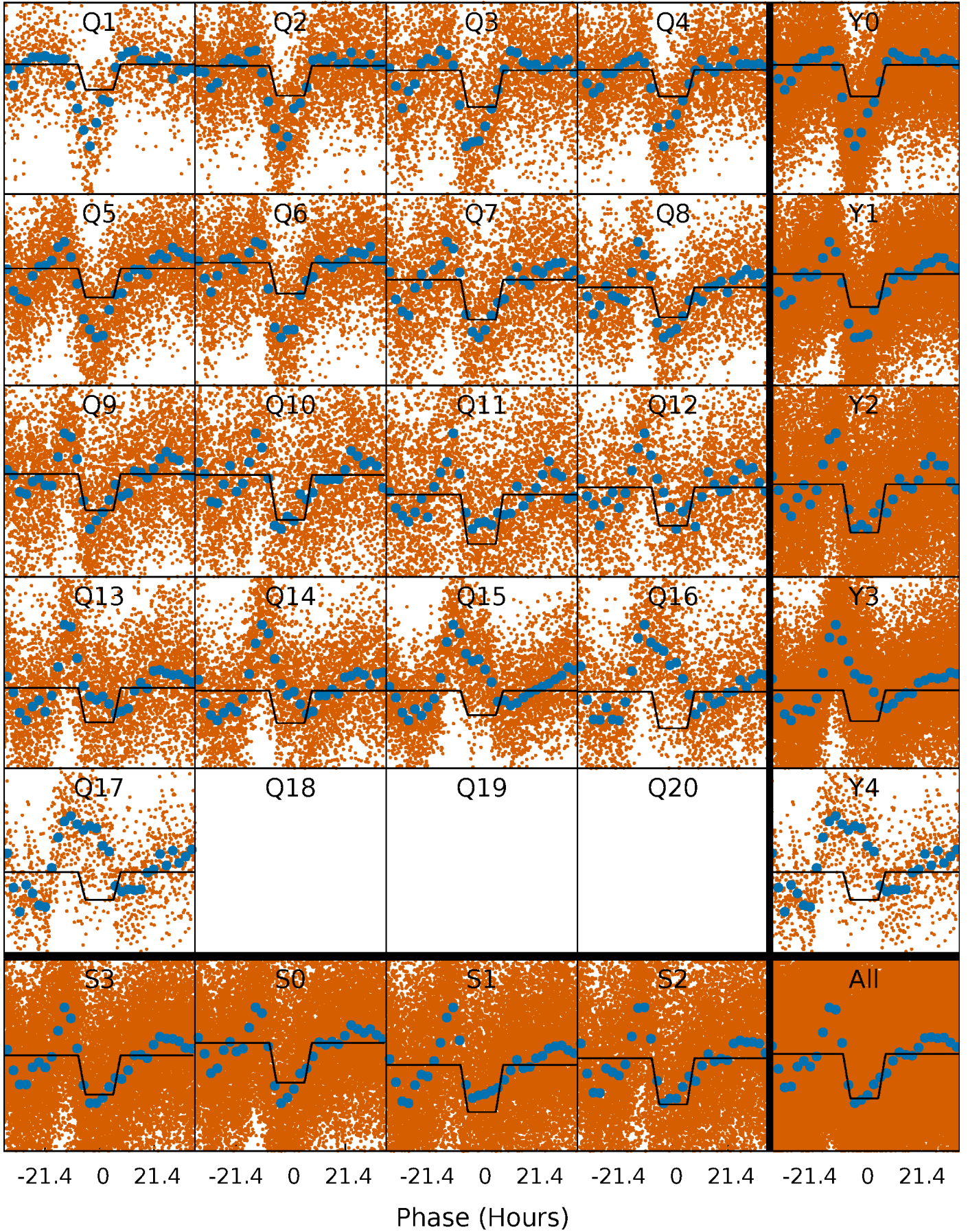
# DV Quarter-Phased Transit Curves

TCE 008095321-01   P= 3.153212 Days    $T_0=134.386568$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008095321-01 P= 3.153250 Days  $T_0=134.342783$  (BKJD)

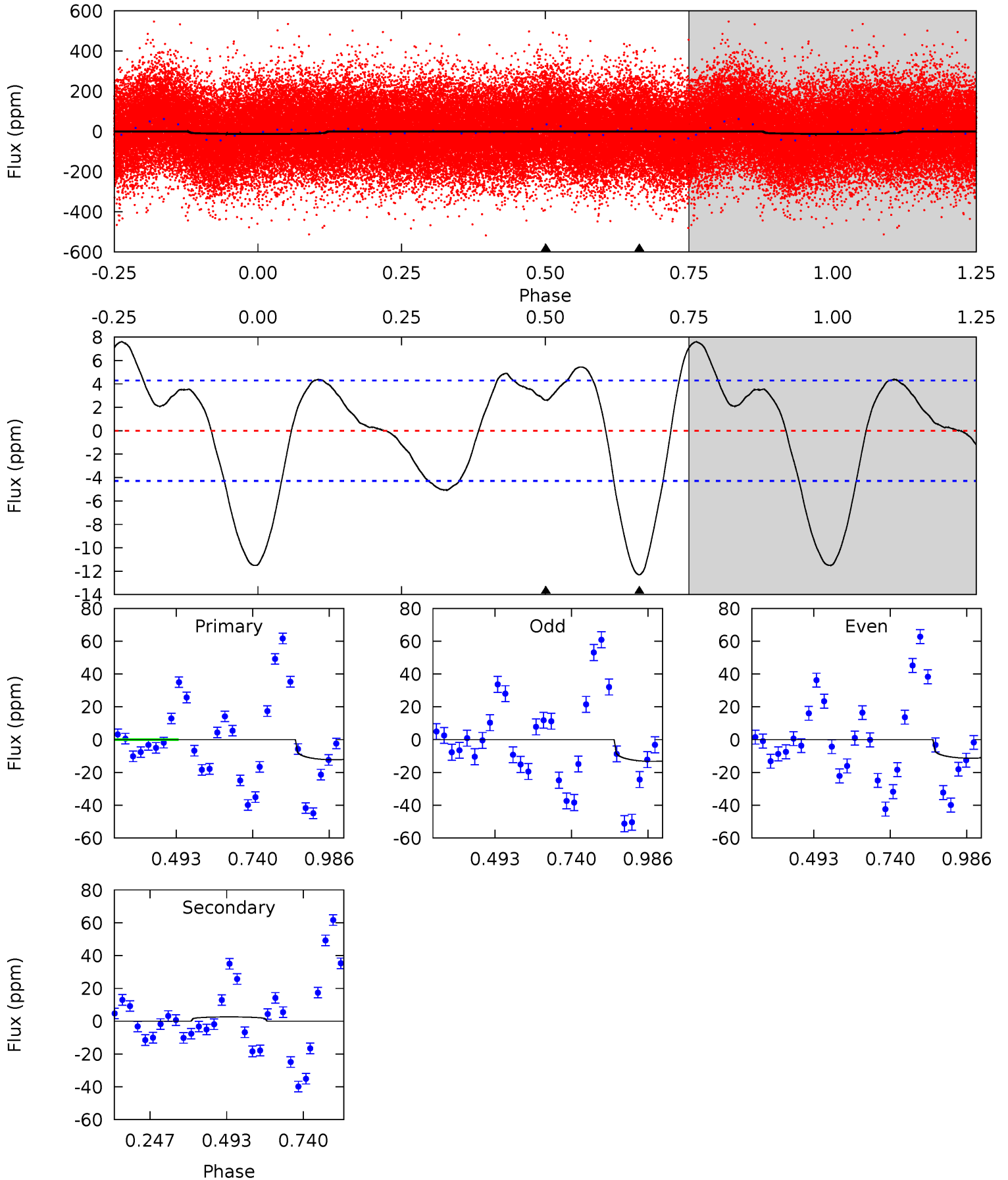




# DV Model-Shift Uniqueness Test

008095321-01, P = 3.153212 Days, E = 131.233356 Days

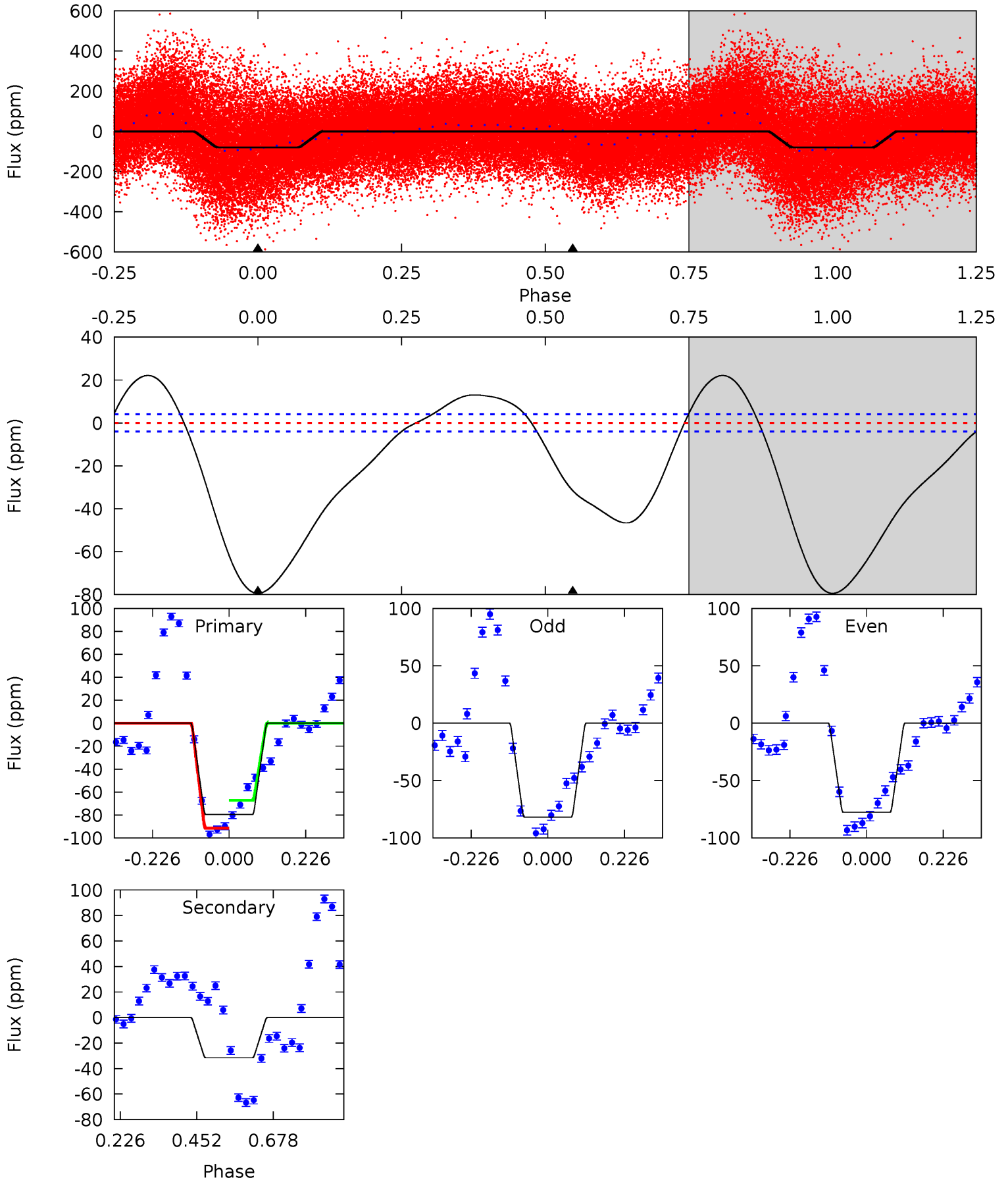
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	-2.65	0	0	4.37	1.16	5.10	12.5	12.5	-2.65	-2.65	0.98	1.05	0.38	12.4



# Alt Model-Shift Uniqueness Test

008095321-01, P = 3.153250 Days, E = 131.189533 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
86.6	34.4	0	0	4.39	1.21	5.73	86.6	86.6	34.4	34.4	2.29	0.89	0.22	13.0





### Stellar Parameters For KIC 008095321

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6745^{+71}_{-81}$	$4.054^{+0.168}_{-0.112}$	$-0.120^{+0.200}_{-0.150}$	$1.844^{+0.323}_{-0.394}$	$1.408^{+0.103}_{-0.129}$	$0.316^{+0.280}_{-0.110}$
	+1%/-1%	+4%/-3%	+167%/-125%	+18%/-21%	+7%/-9%	+88%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 008095321-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$3\pm 1$	$0.67^{+0.28}_{-0.24}$	$2591^{+115}_{-139}$	$-4707^{+628}_{-1172}$	$-6.339^{+3.512}_{-11.475}$
Alt.	$-32\pm 1$	$1.84^{+0.32}_{-0.32}$	$2593^{+113}_{-147}$	$5240^{+400}_{-285}$	$11^{+5}_{-3}$

$T_{\text{max}}$  = 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

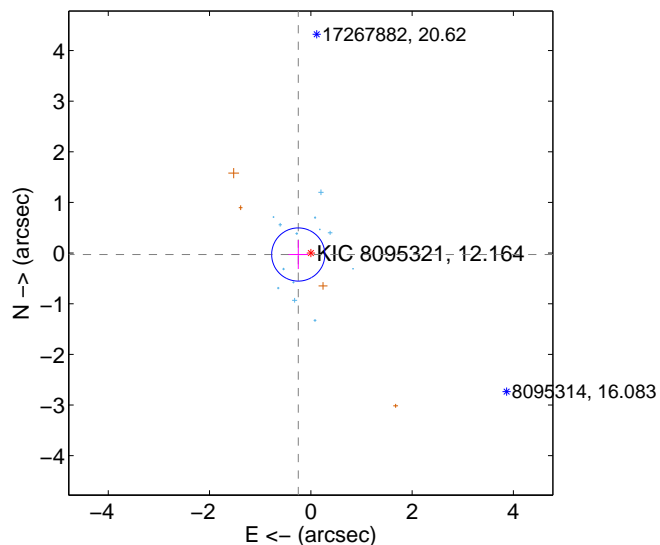
Supplemental centroid analysis for 008095321-01. Kepler magnitude: 12.16. Transit SNR 5.89

There are 13 quarters with good PRF difference image offsets

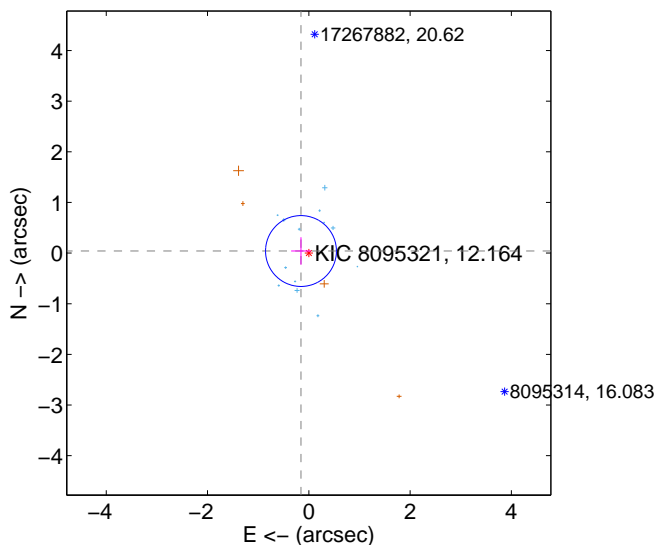
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.250 \pm 0.175$	1.43	$0.248 \pm 0.192$	$-0.028 \pm 0.285$
PRF-fit source offset from KIC position	$0.160 \pm 0.233$	0.69	$0.155 \pm 0.194$	$0.041 \pm 0.272$
photometric centroid source offset	$0.77 \pm 1.07$	0.72	$0.77 \pm 1.07$	$0.02 \pm 1.06$

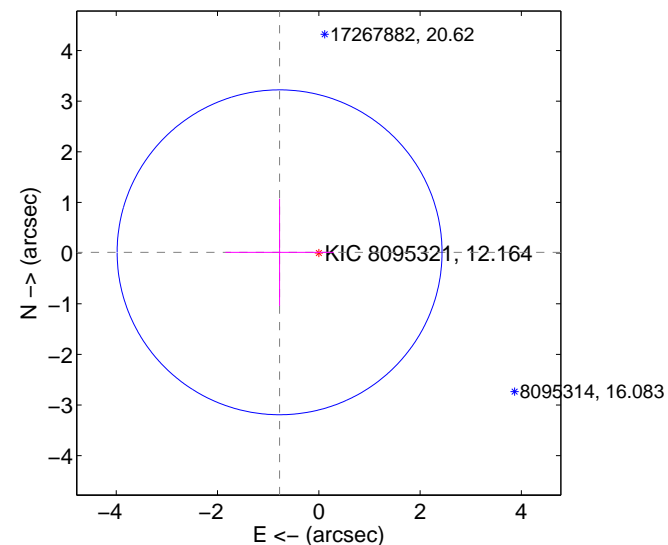
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

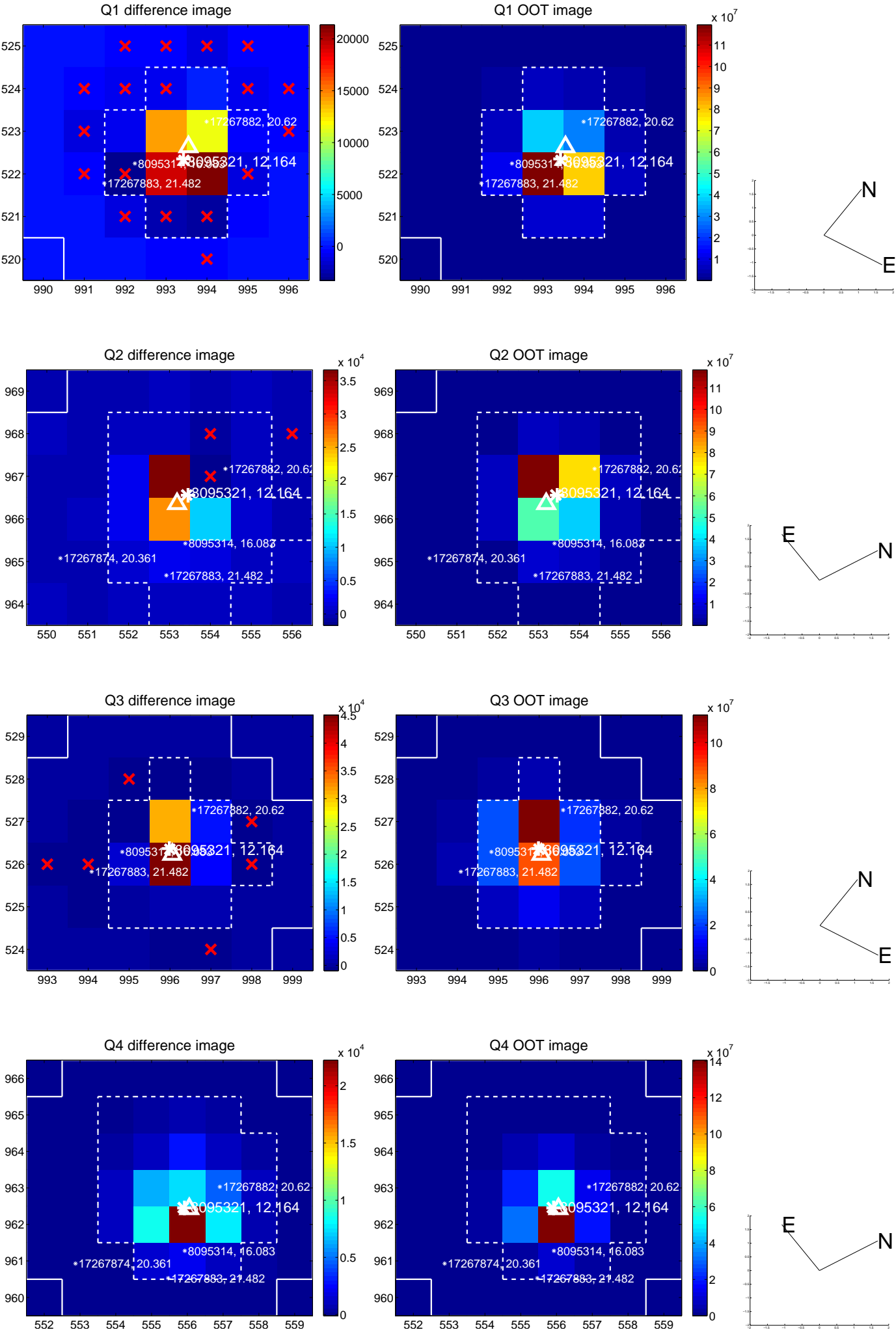


offset from photometric centroids

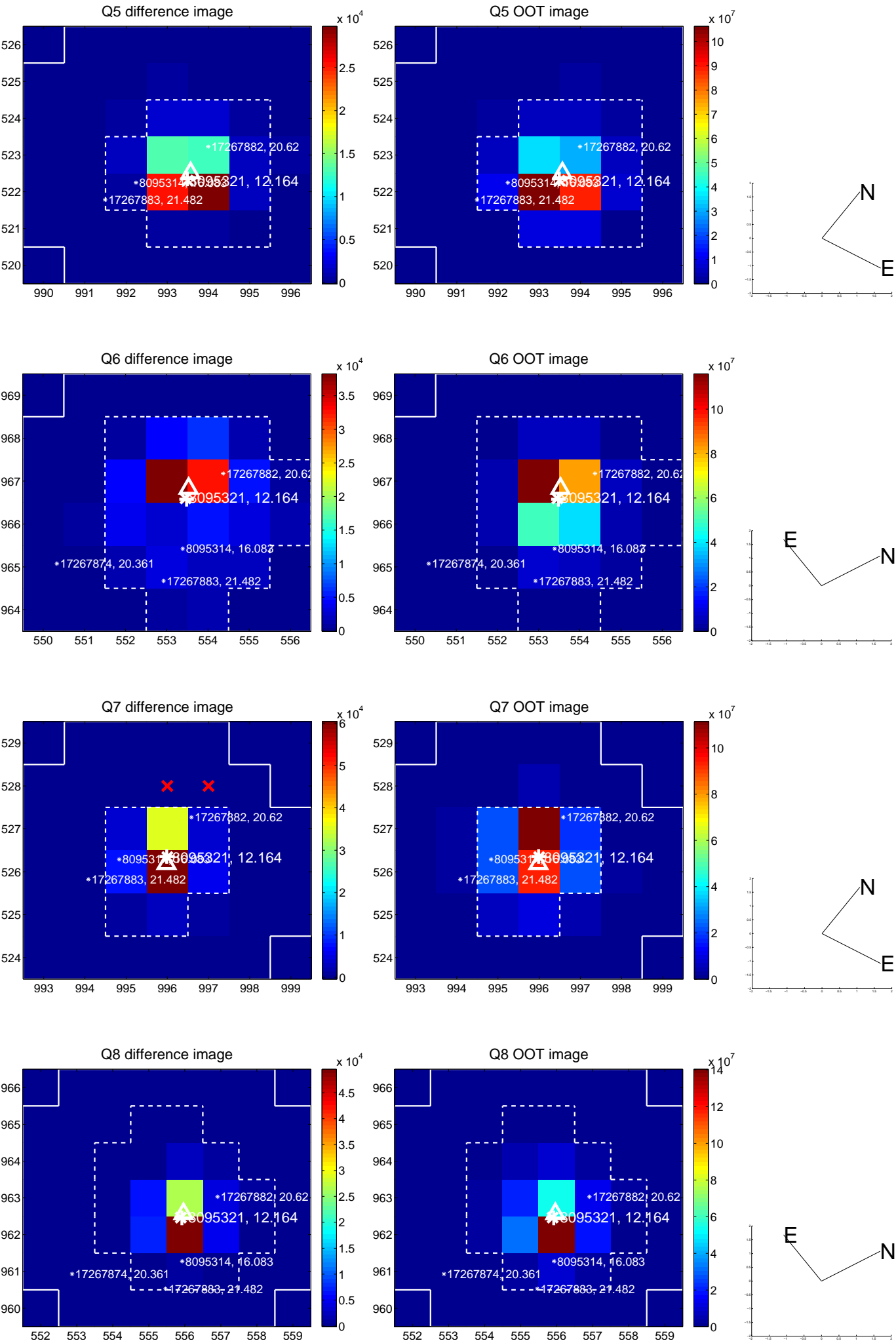


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

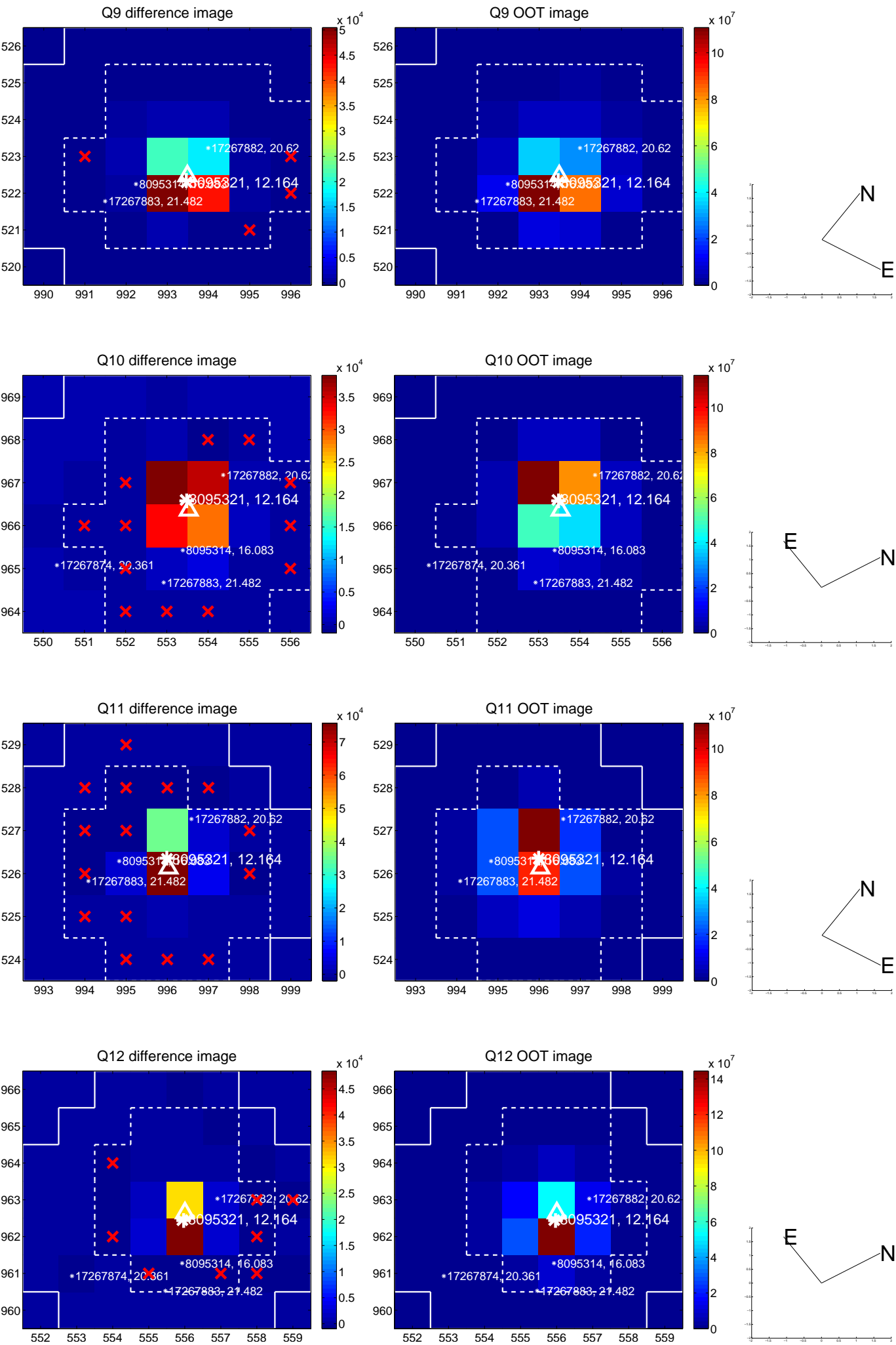


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

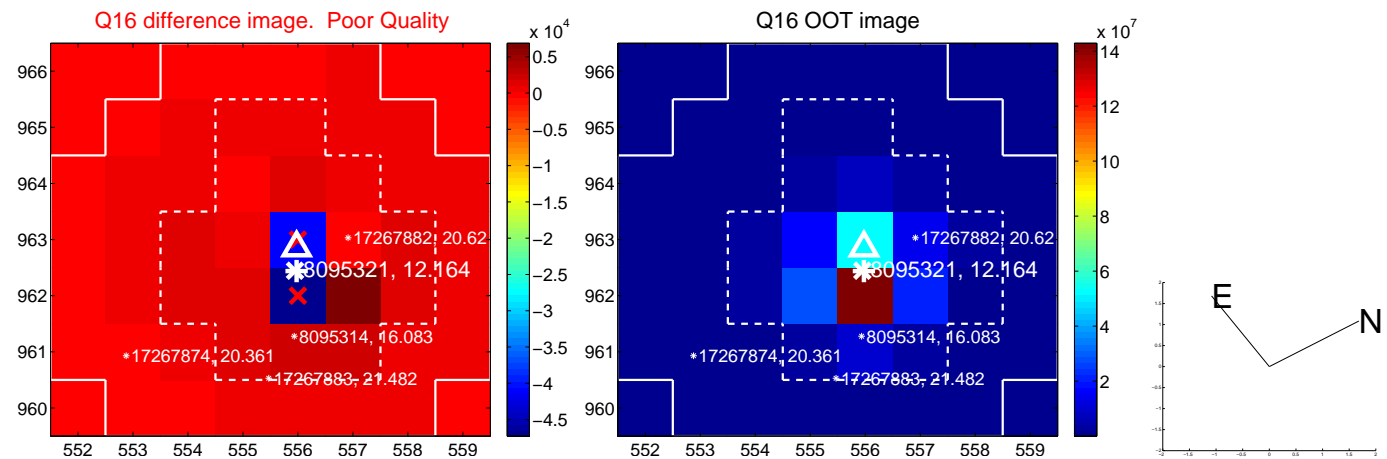
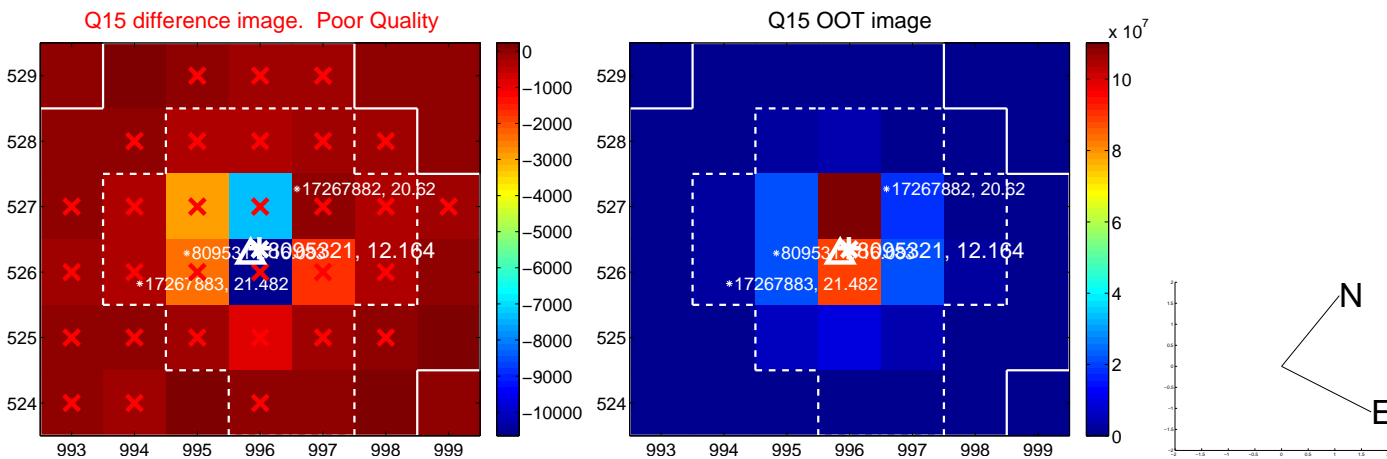
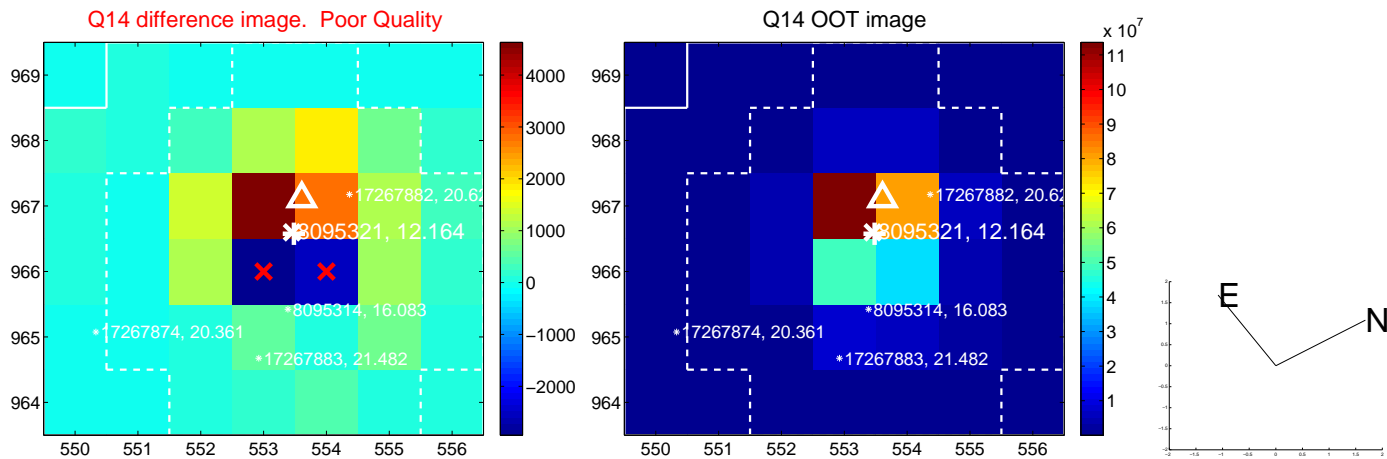
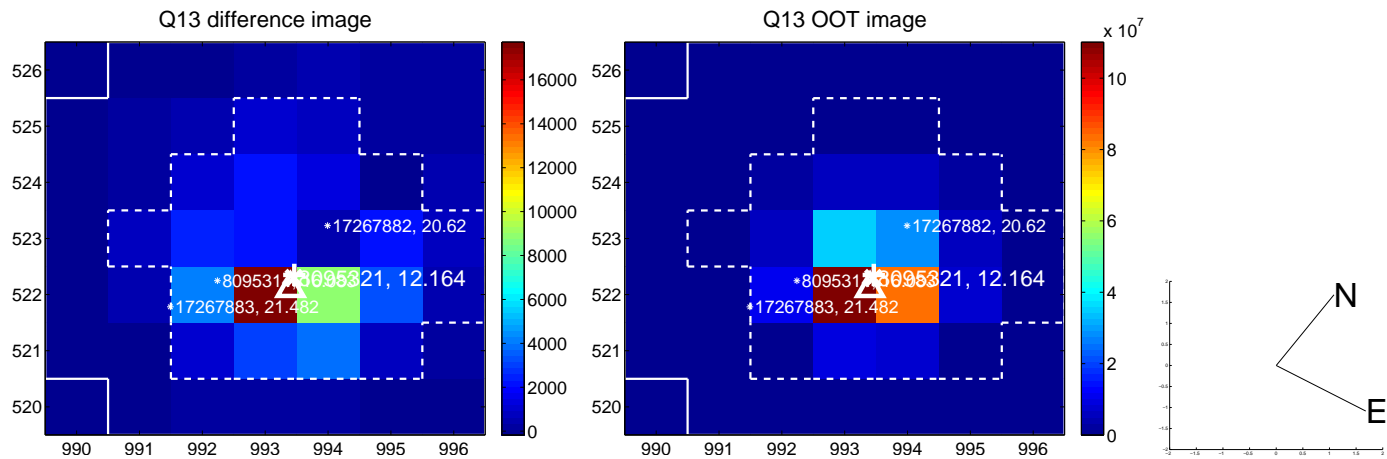




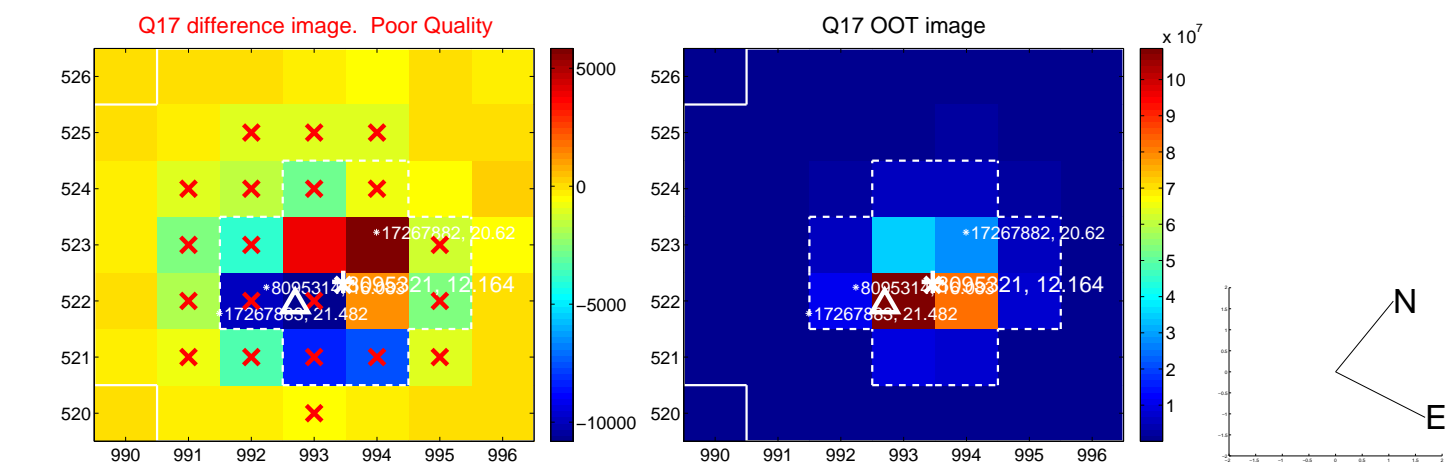
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



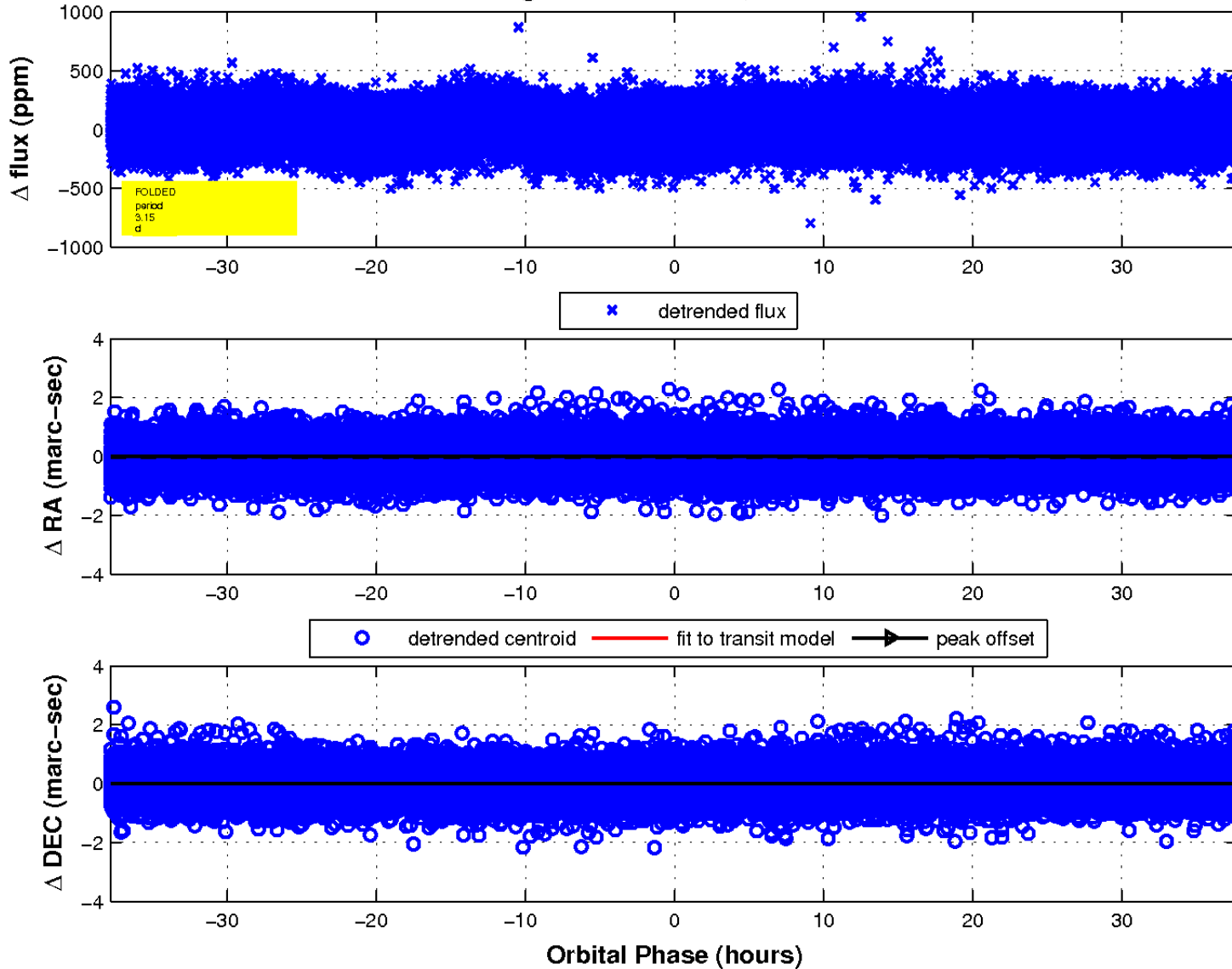
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

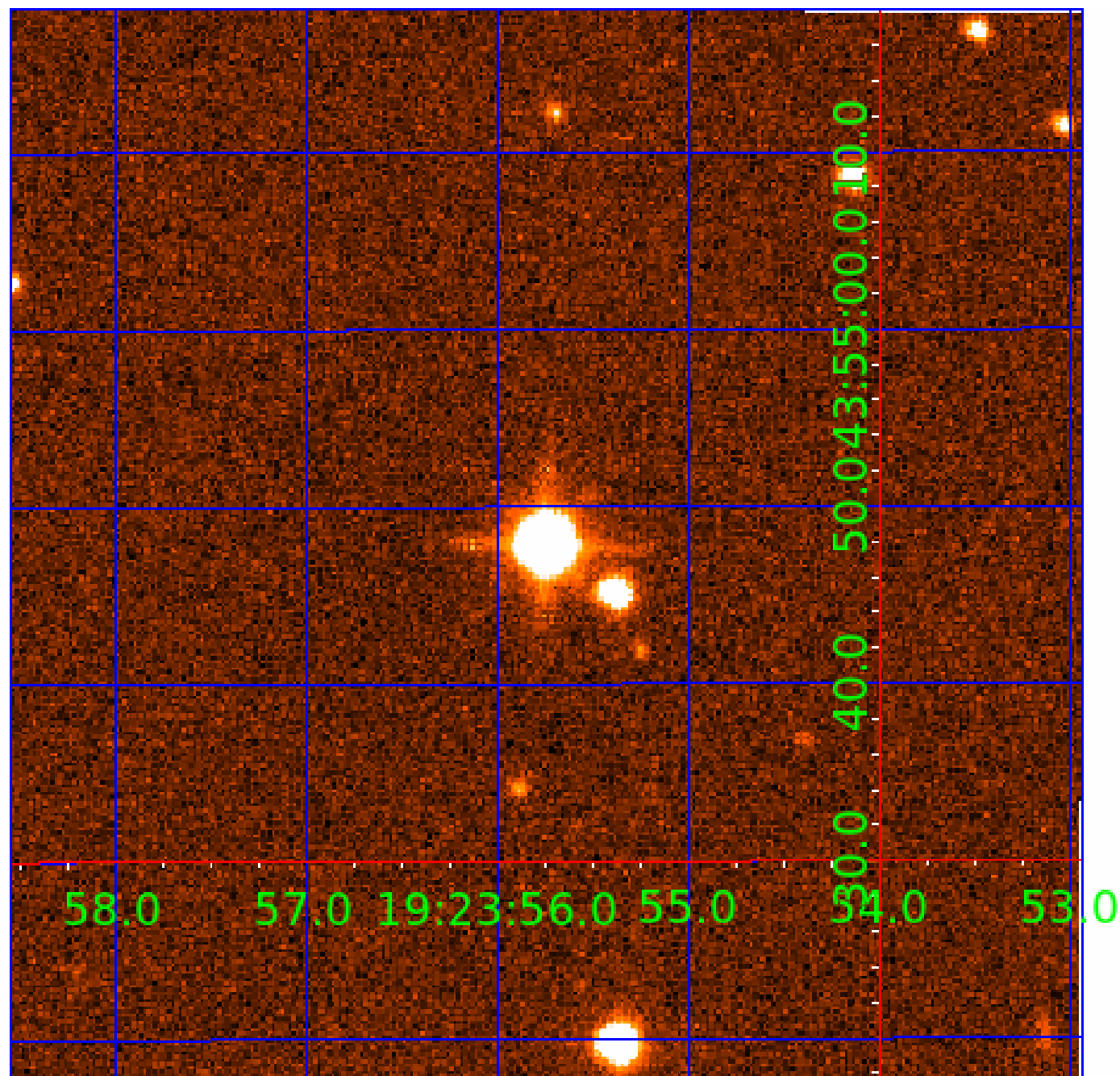


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 008095321

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008095321-01	OBS	No	3.153212	134.386568	12.4	18.220	12.0	5.9	1.84	6745	0.69	2837.87
008095321-02	OBS	No	249.074696	356.960121	195.5	13.576	25.5	11.7	1.84	6745	2.60	8.37
008095321-03	OBS	No	1.576593	133.233313	29.5	14.327	13.9	11.7	1.84	6745	1.02	7151.05

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008095321-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
008095321-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008095321-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—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.

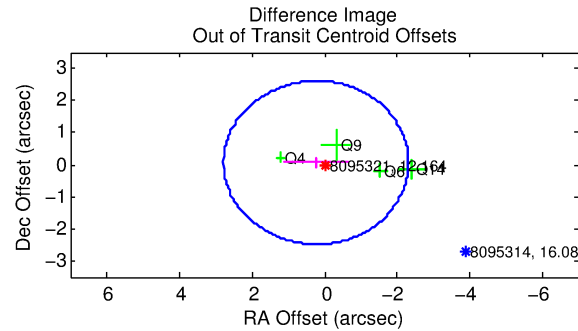
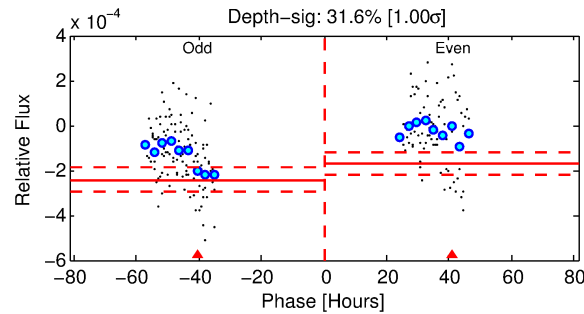
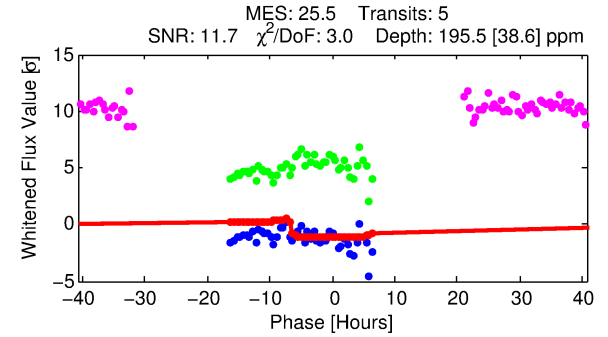
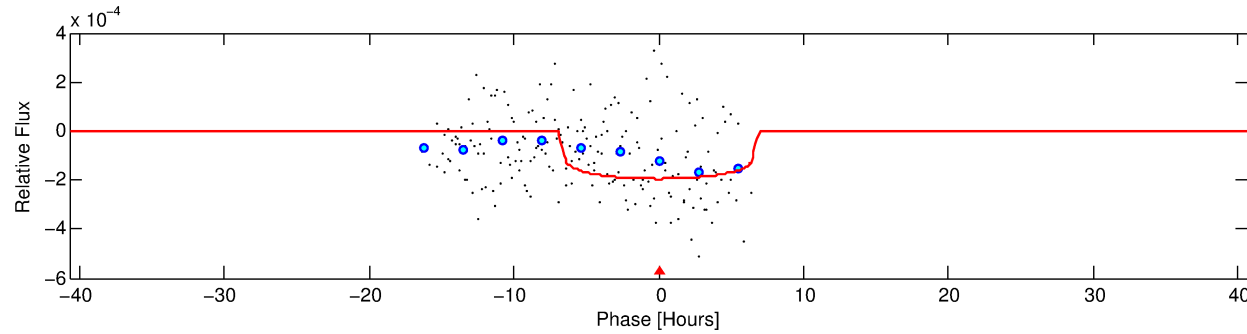
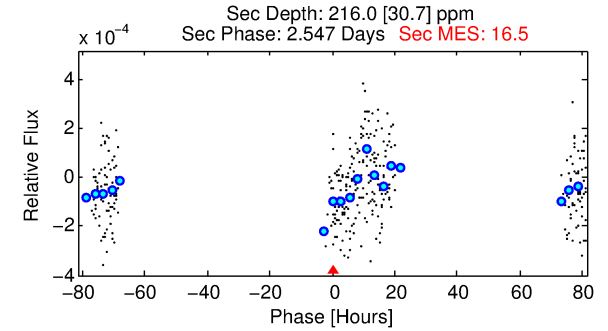
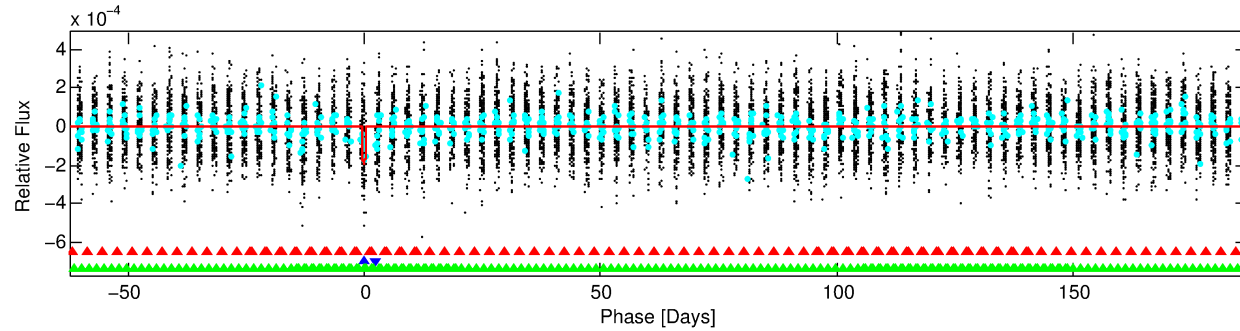
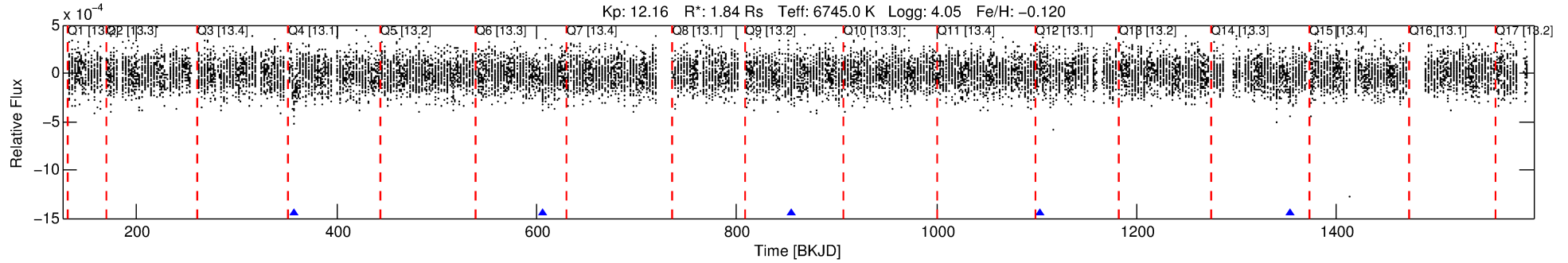
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008095321-02

No Significant Match Found

# DV One-Page Summary

KIC: 8095321 Candidate: 2 of 3 Period: 249.075 d



## DV Fit Results:

Period = 249.07470 [0.00843] d  
Epoch = 356.9601 [0.0418] BKJD  
Rp/R\* = 0.0129 [0.0197]  
a/R\* = 141.84 [1179.52]  
b = 0.04 [188.81]  
Seff = 8.37 [2.50]  
Teq = 434 [32] K  
Rp = 2.60 [4.01] Re  
a = 0.8678 [0.1667] AU  
Ag = 13269.53 [40780.72] [0.33σ]  
Teffp = 7198 [5505] K [1.23σ]

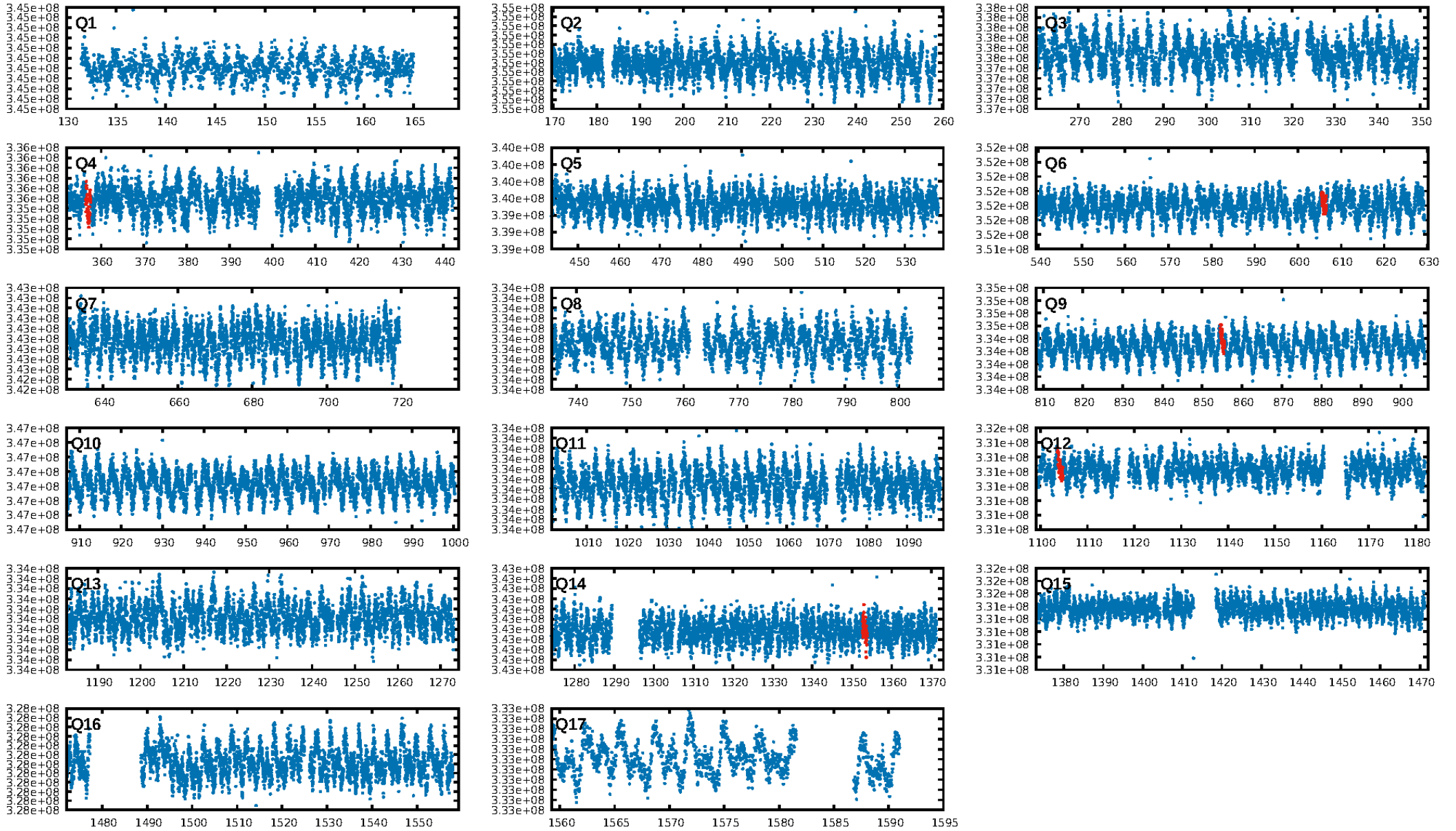
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [259.76σ]  
LongPeriod-sig: N/A  
**ModelChiSquare2-sig: 0.0%**  
**ModelChiSquareGof-sig: 0.0%**  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 2.034  
Centroid-sig: 1.4%  
Centroid-so: 1.115 arcsec [1.58σ]  
OotOffset-rm: 0.244 arcsec [0.29σ]  
OotOffset-st: 2/0/1/1 [4]  
KicOffset-rm: 0.182 arcsec [0.31σ]  
KicOffset-st: 2/0/1/1 [4]  
DiffImageQuality-fgm: 0.75 [3/4]  
DiffImageOverlap-fno: 0.00 [0/4]

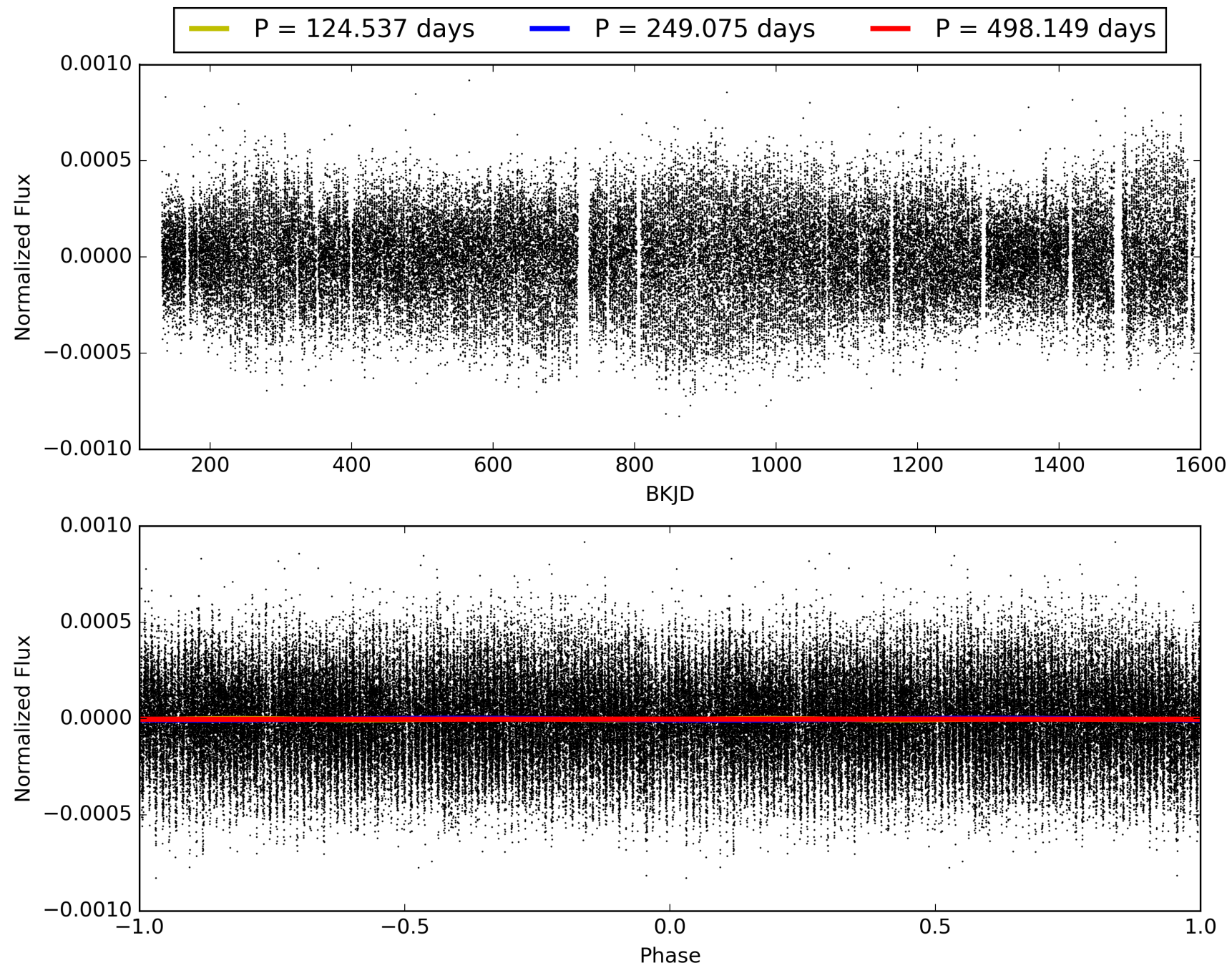
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:06:59 Z

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

# TCE 008095321-02, PDC Light Curves



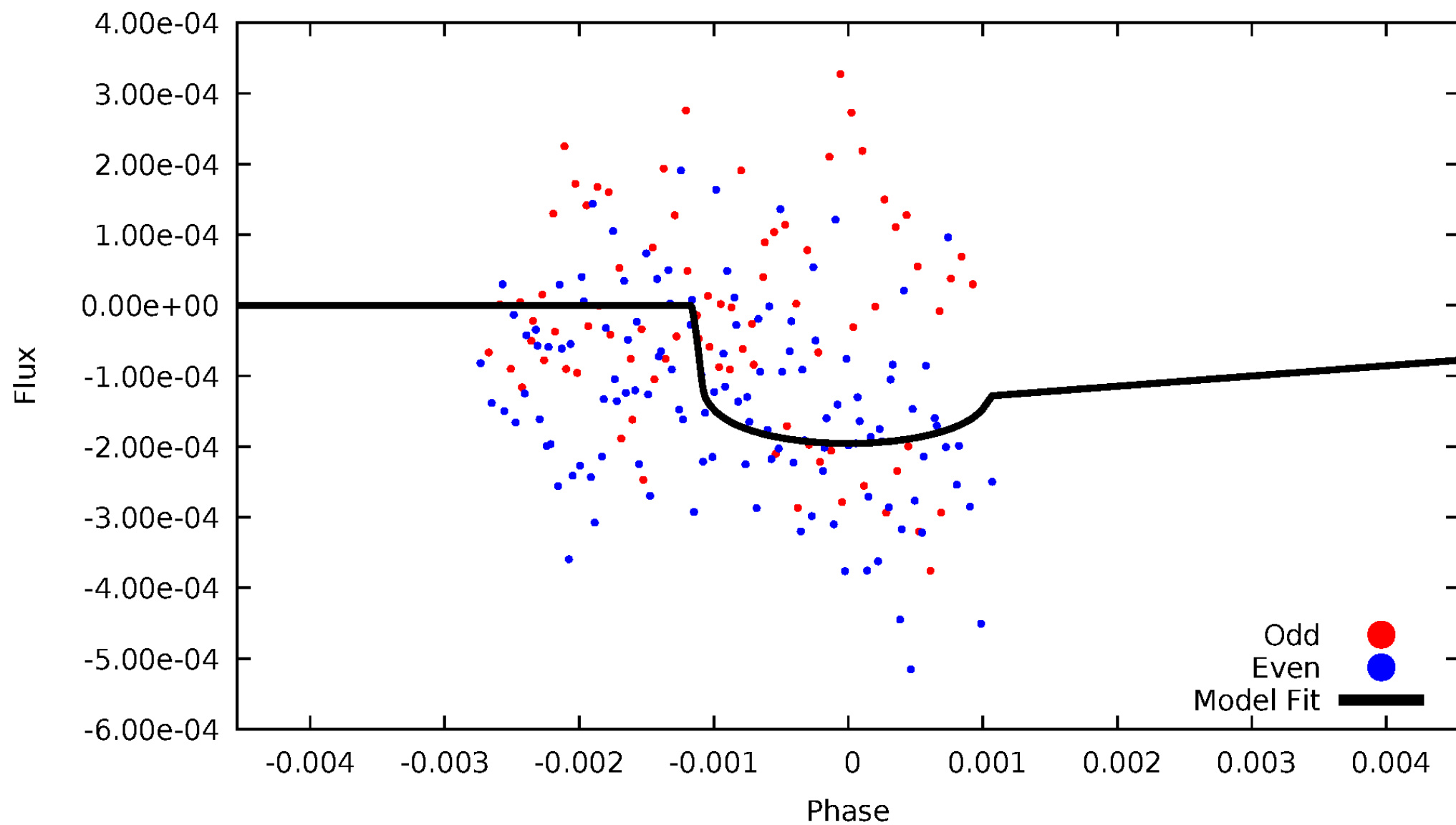
TCE 008095321-02





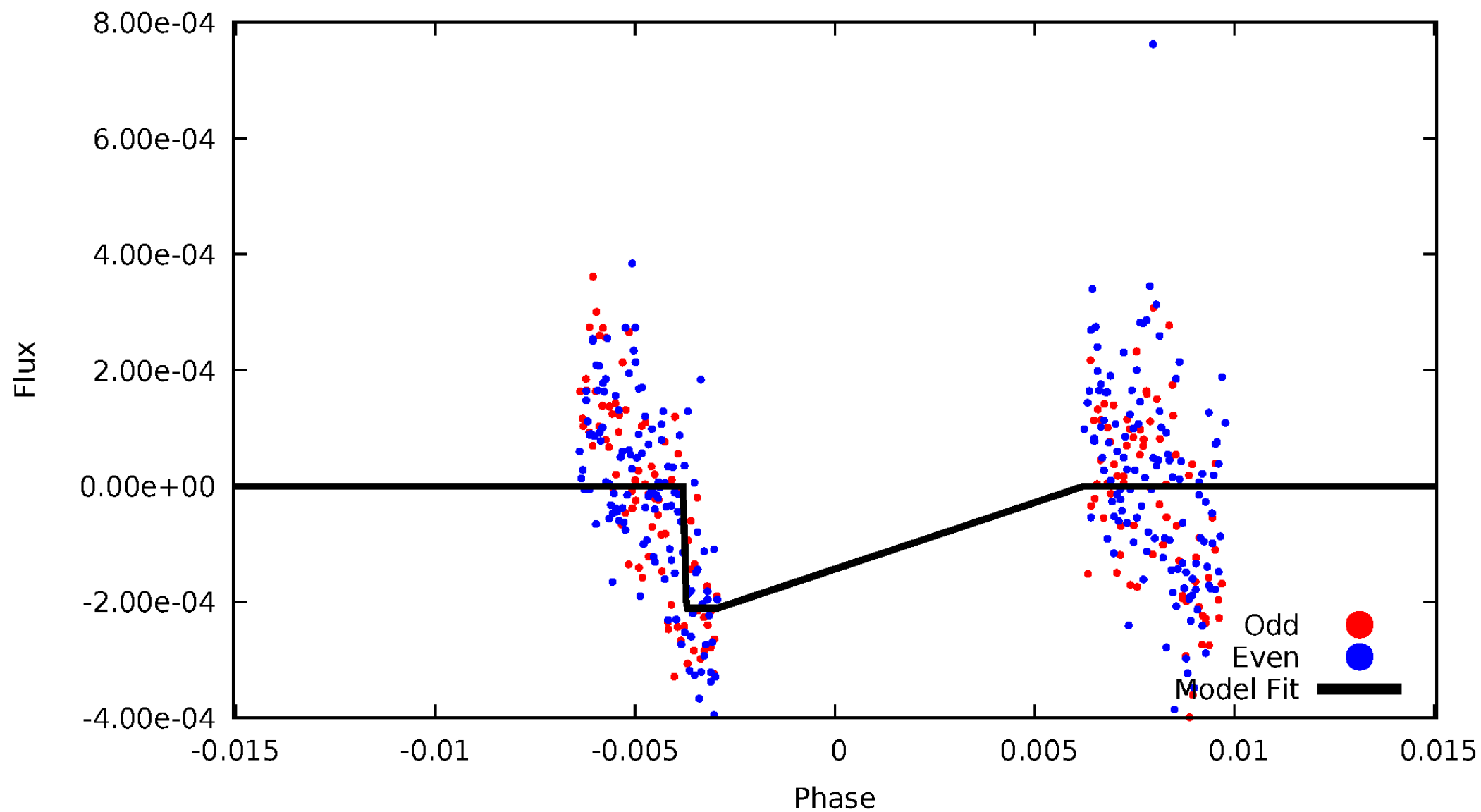
# DV Odd/Even

TCE 008095321-02



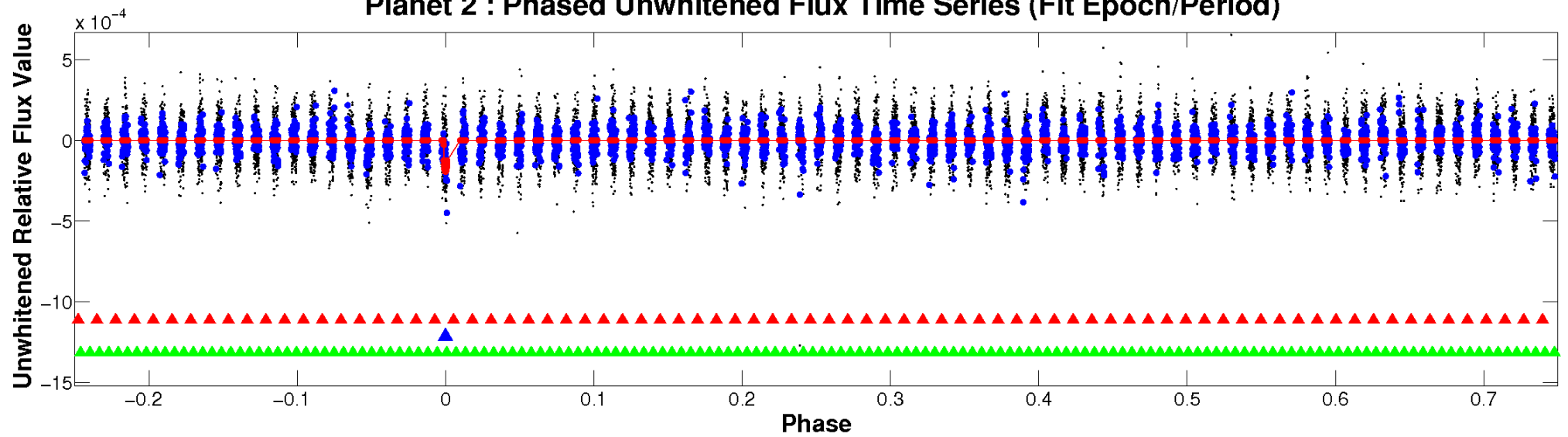
# ALT Odd/Even

TCE 008095321-02

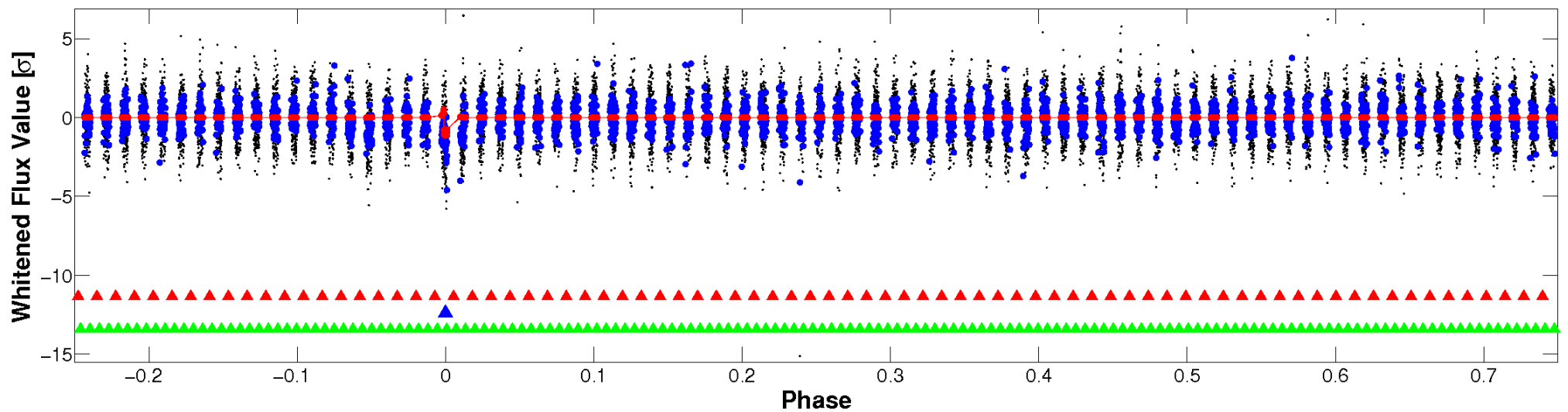


# Non-Whitened Vs. Whitened Light Curve

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

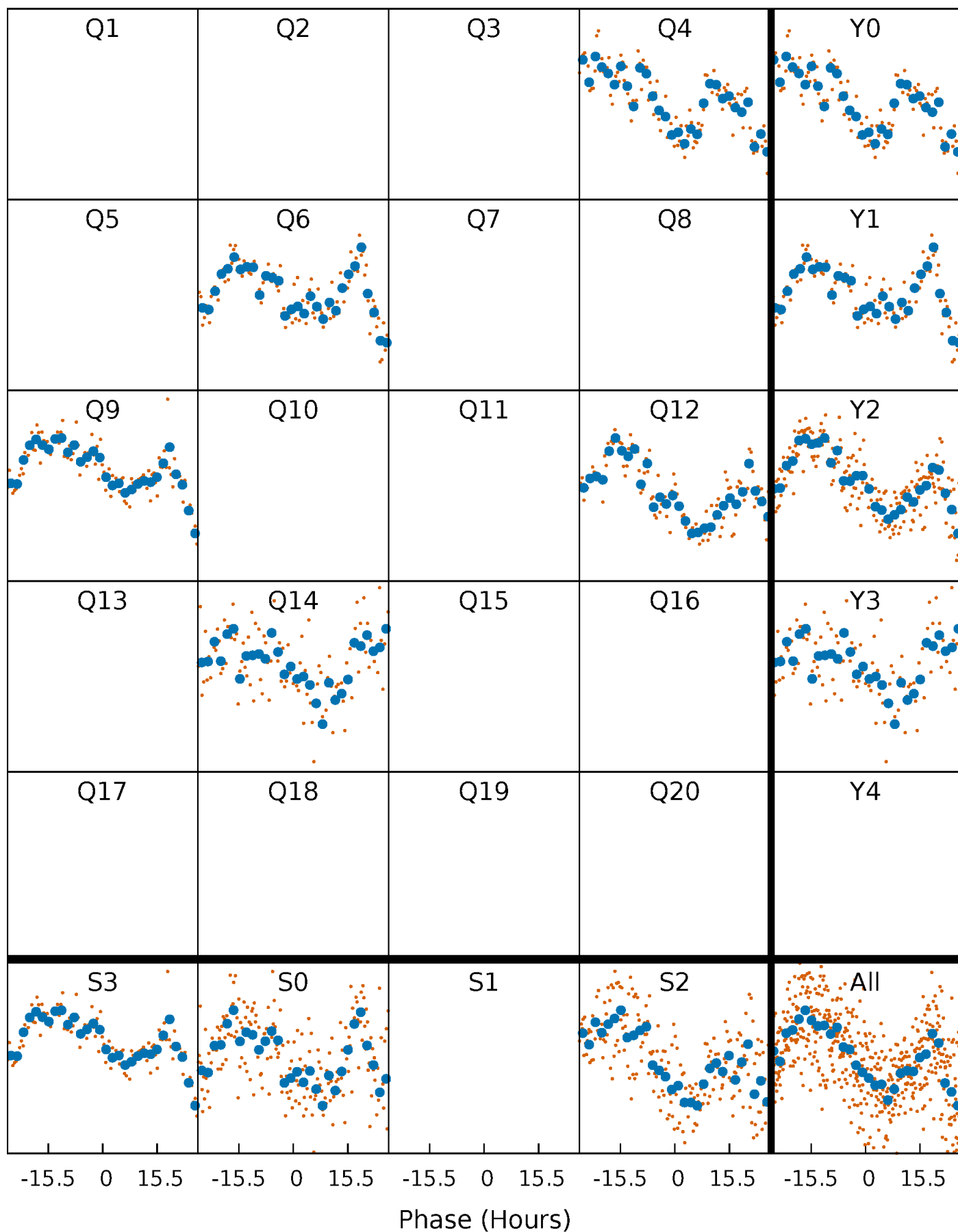


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



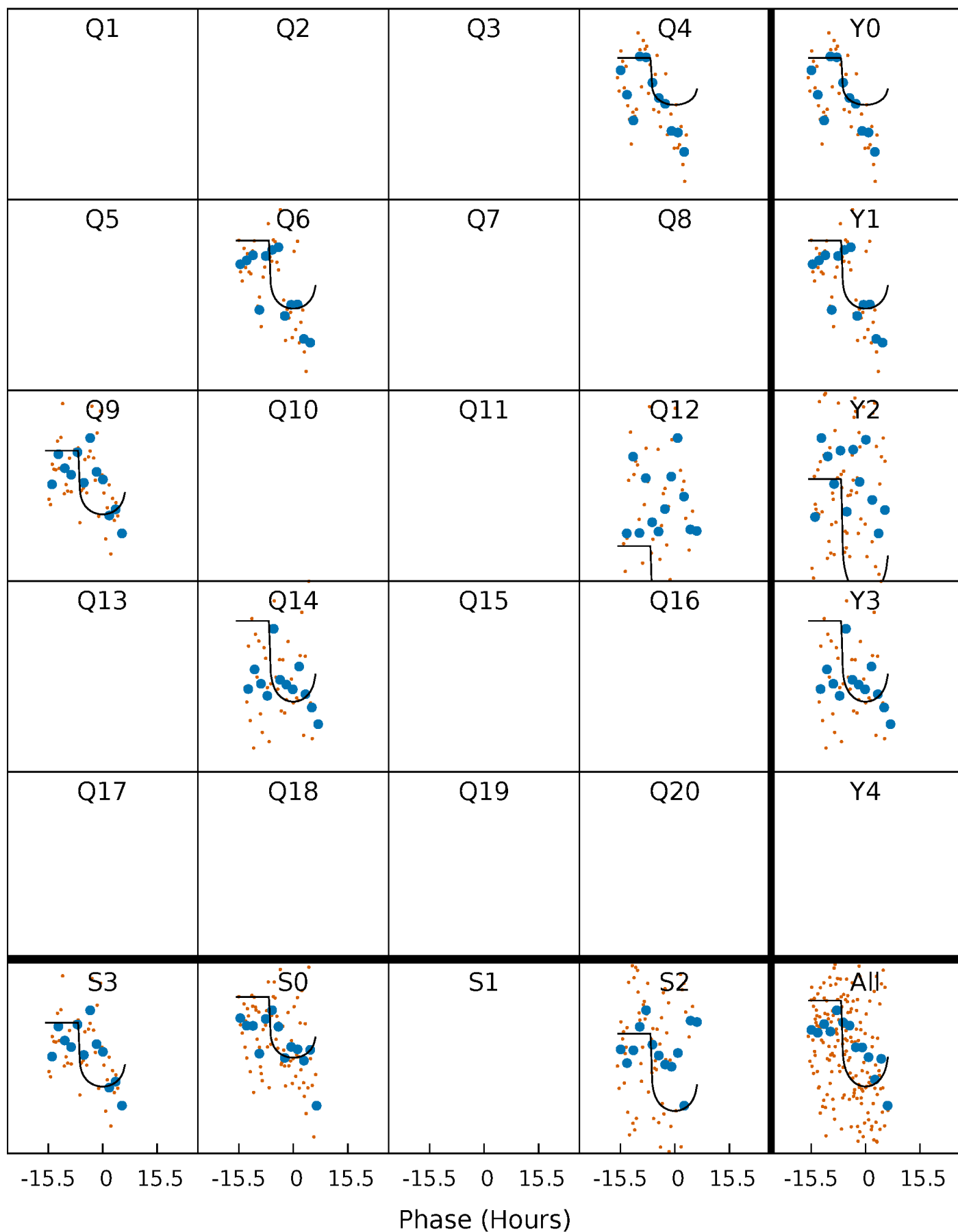
# PDC Quarter-Phased Transit Curves

TCE 008095321-02   P=249.074696 Days    $T_0=356.960121$  (BKJD)



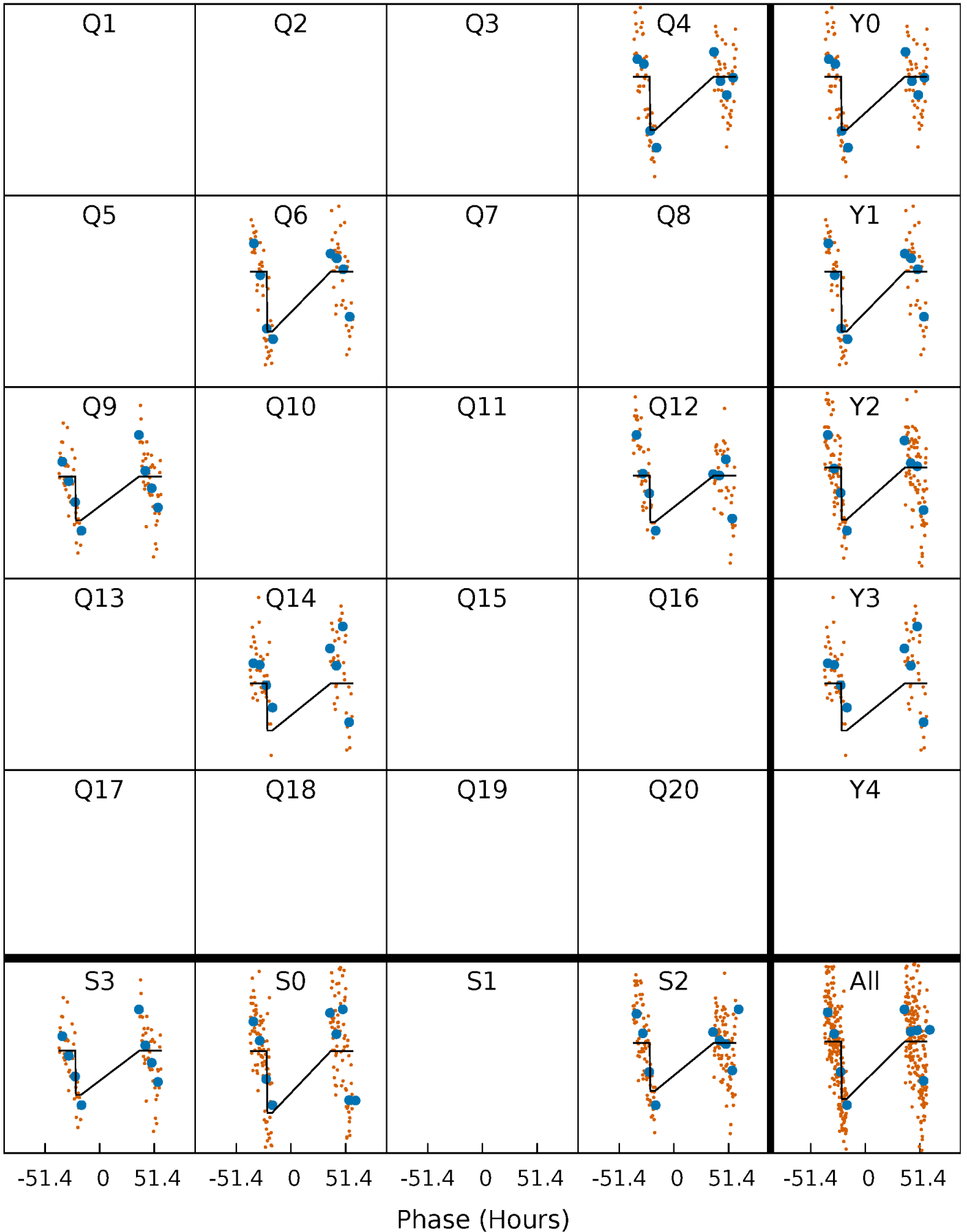
# DV Quarter-Phased Transit Curves

TCE 008095321-02 P=249.074696 Days  $T_0=356.960121$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008095321-02 P=249.112341 Days  $T_0=357.829917$  (BKJD)

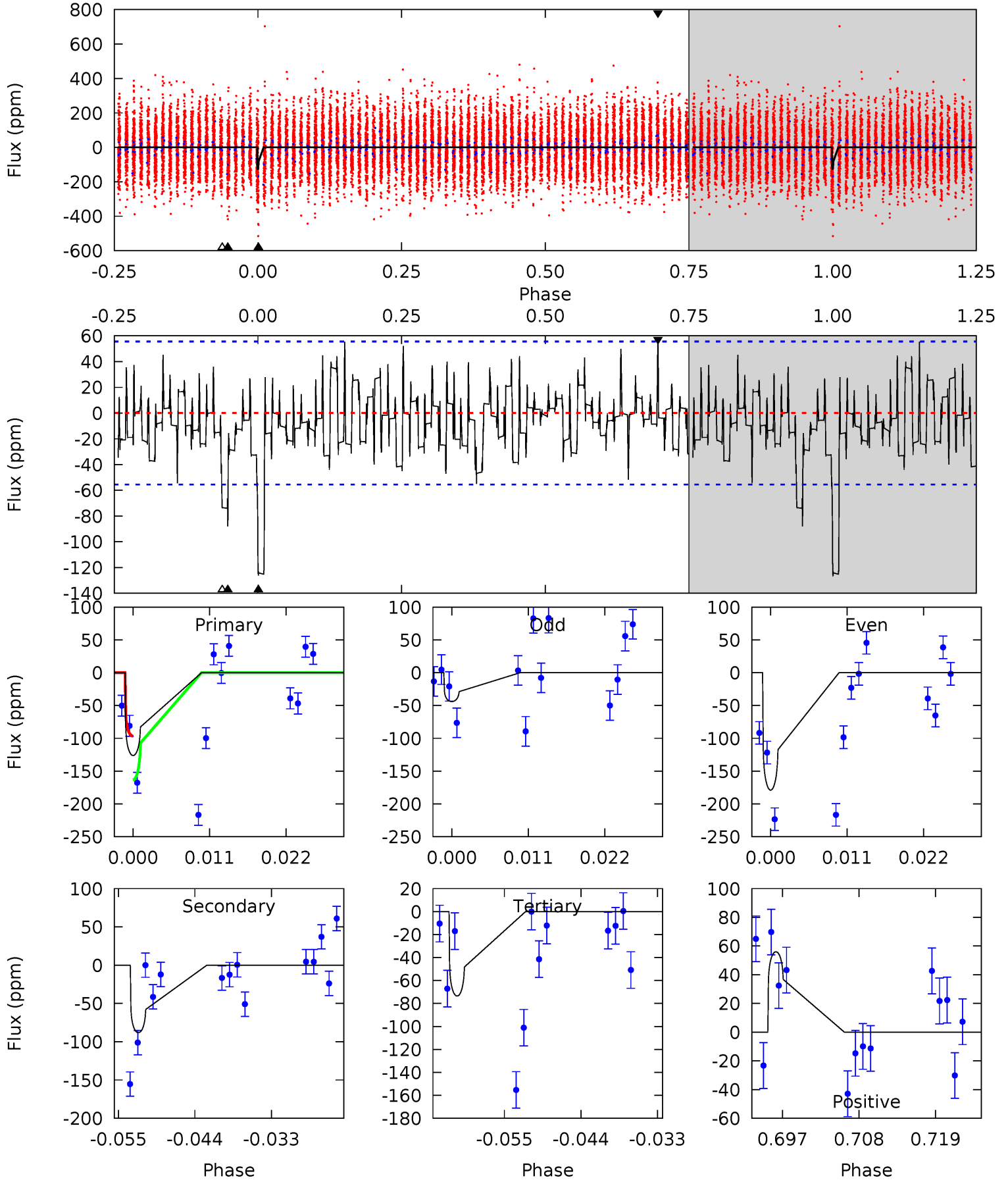




# DV Model-Shift Uniqueness Test

008095321-02, P = 249.074696 Days, E = 107.885425 Days

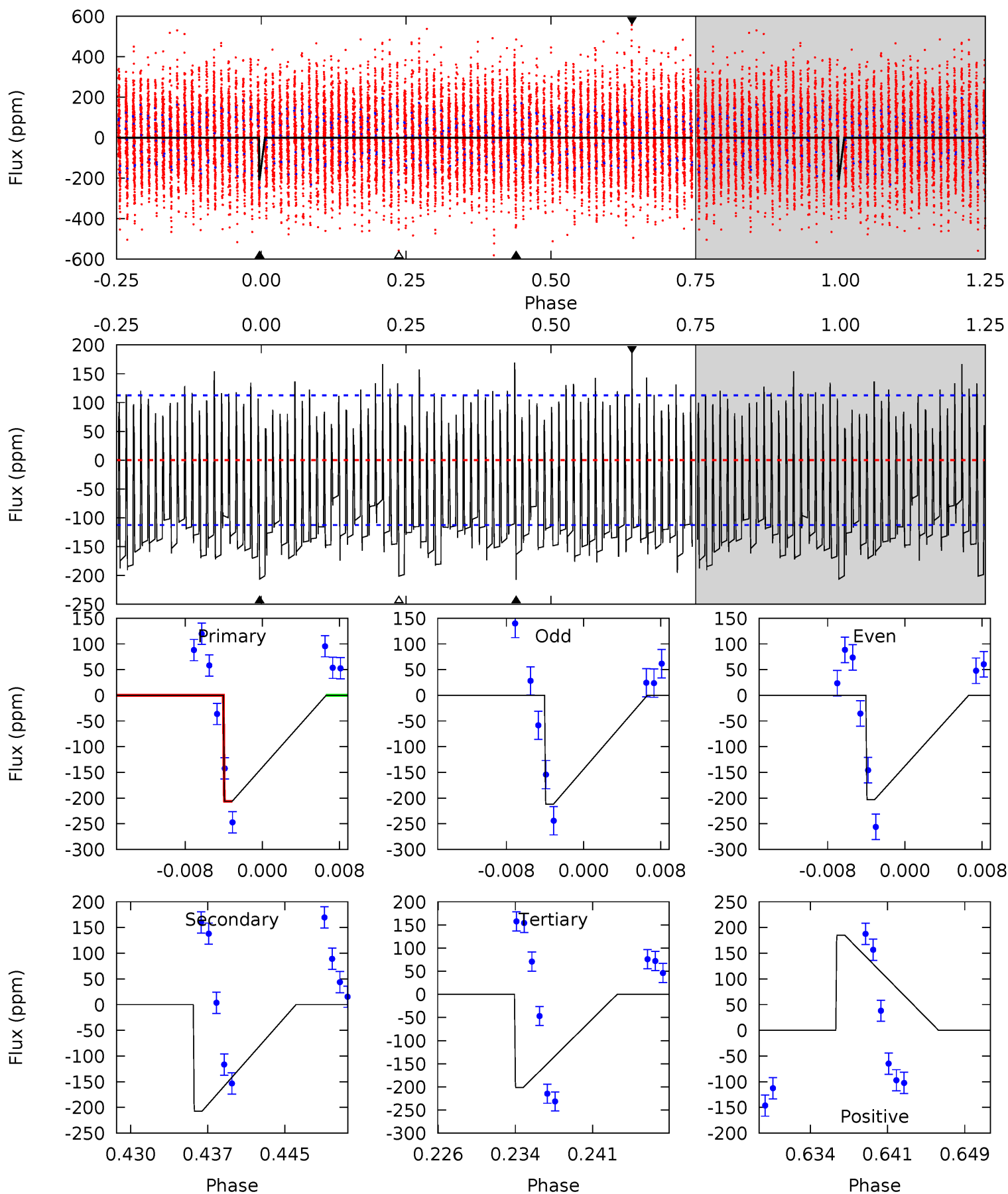
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	7.94	6.63	5.04	5.01	2.54	1.86	4.75	6.33	1.32	2.90	5.94	0.83	0.31	2.96



# Alt Model-Shift Uniqueness Test

008095321-02, P = 249.112341 Days, E = 108.717576 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
9.33	9.37	9.09	8.37	5.08	2.67	3.72	0.24	0.96	0.28	1.00	0.20	0	0.47	0



### Stellar Parameters For KIC 008095321

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6745^{+71}_{-81}$	$4.054^{+0.168}_{-0.112}$	$-0.120^{+0.200}_{-0.150}$	$1.844^{+0.323}_{-0.394}$	$1.408^{+0.103}_{-0.129}$	$0.316^{+0.280}_{-0.110}$
	+1%/-1%	+4%/-3%	+167%/-125%	+18%/-21%	+7%/-9%	+88%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 008095321-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-88 \pm 11$	$4.05^{+3.33}_{-2.80}$	$604^{+28}_{-34}$	$4657^{+3743}_{-892}$	$2170^{+21852}_{-1497}$
Alt.	$-207 \pm 22$	$3.80^{+3.56}_{-2.51}$	$606^{+27}_{-33}$	$5869^{+5475}_{-1444}$	$6026^{+45558}_{-4449}$

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

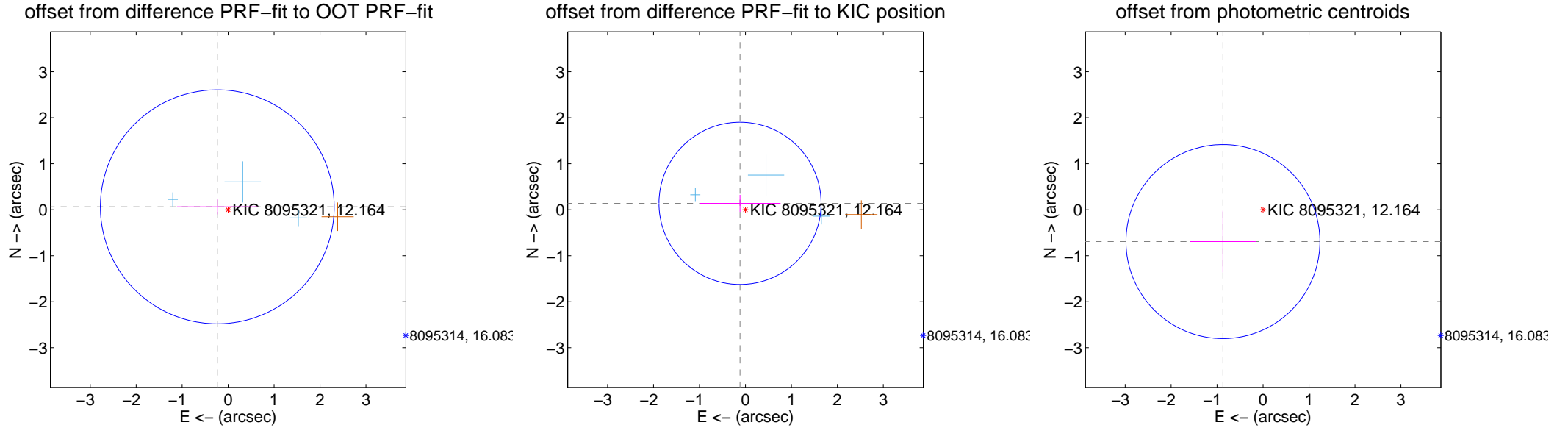
## DV Centroid Data

Supplemental centroid analysis for 008095321-02. Kepler magnitude: 12.16. Transit SNR 11.69

There are 3 quarters with good PRF difference image offsets

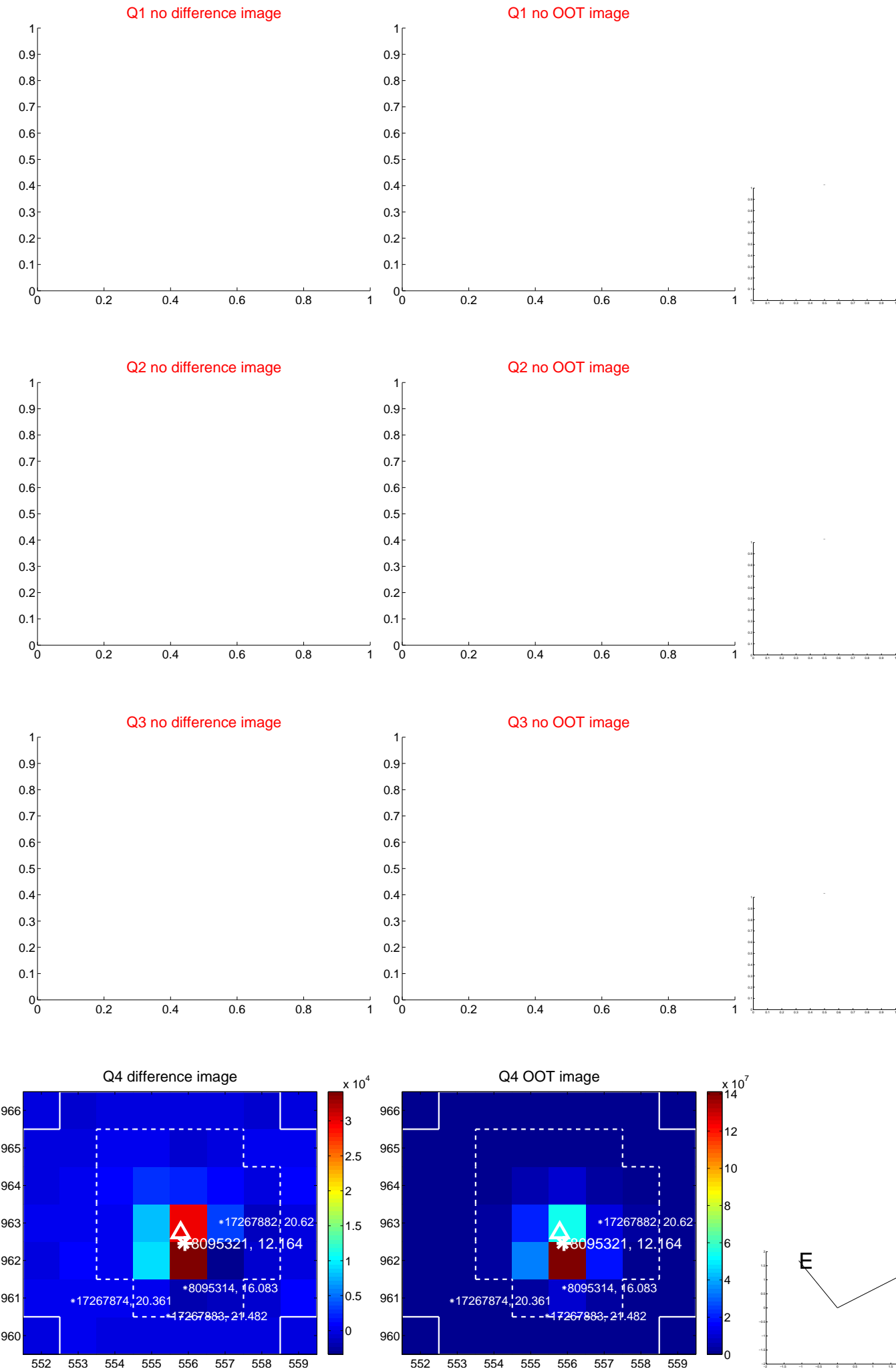
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.244 \pm 0.848$	0.29	$0.236 \pm 0.877$	$0.063 \pm 0.164$
PRF-fit source offset from KIC position	$0.182 \pm 0.588$	0.31	$0.118 \pm 0.882$	$0.139 \pm 0.185$
photometric centroid source offset	$1.11 \pm 0.70$	1.58	$0.87 \pm 0.72$	$-0.69 \pm 0.67$



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.

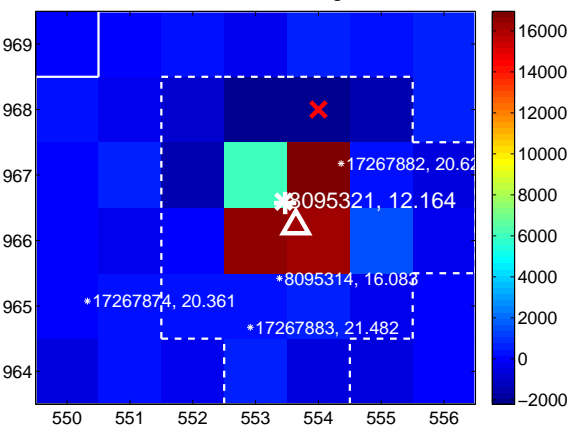
Q5 no difference image



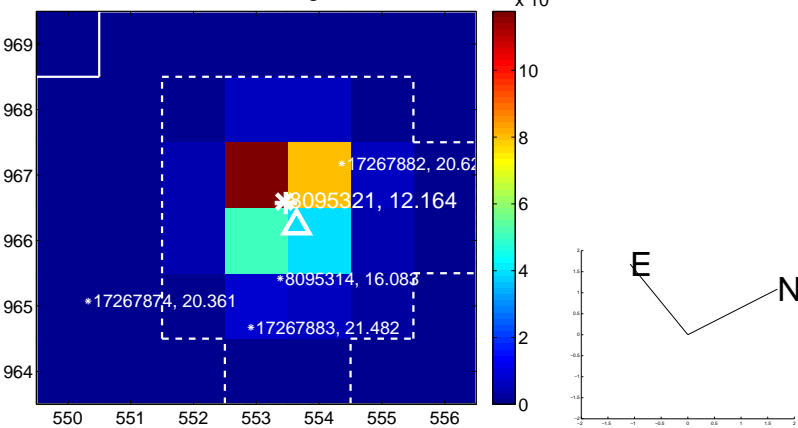
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



Q7 no OOT image



Q8 no difference image

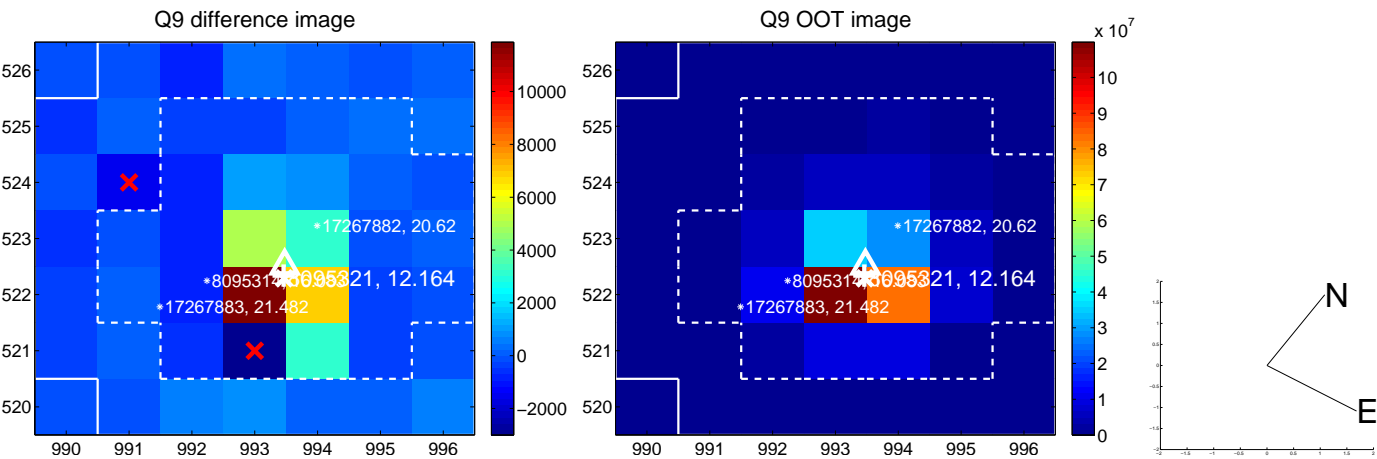


Q8 no OOT image

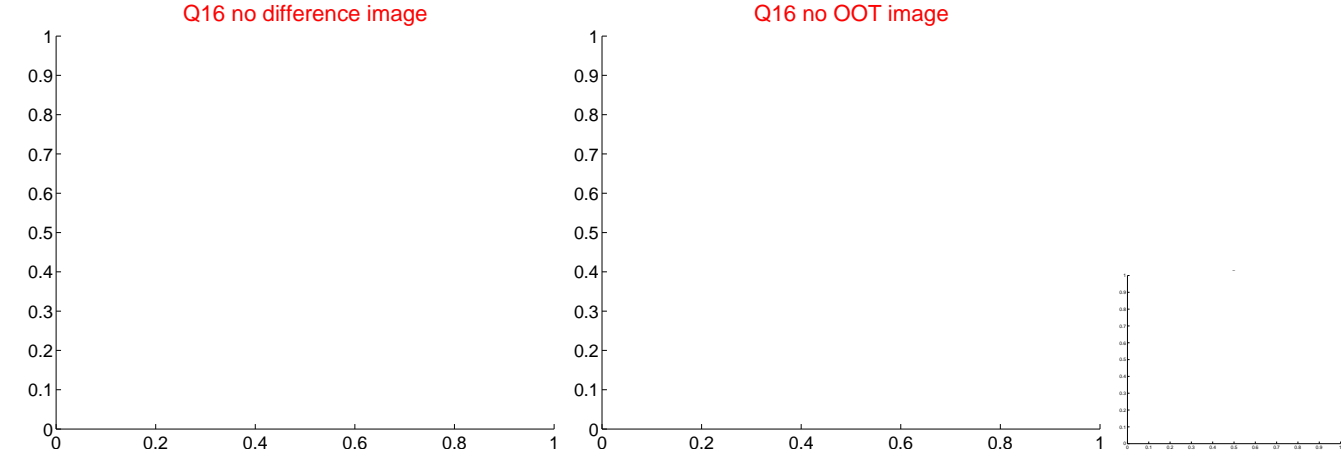
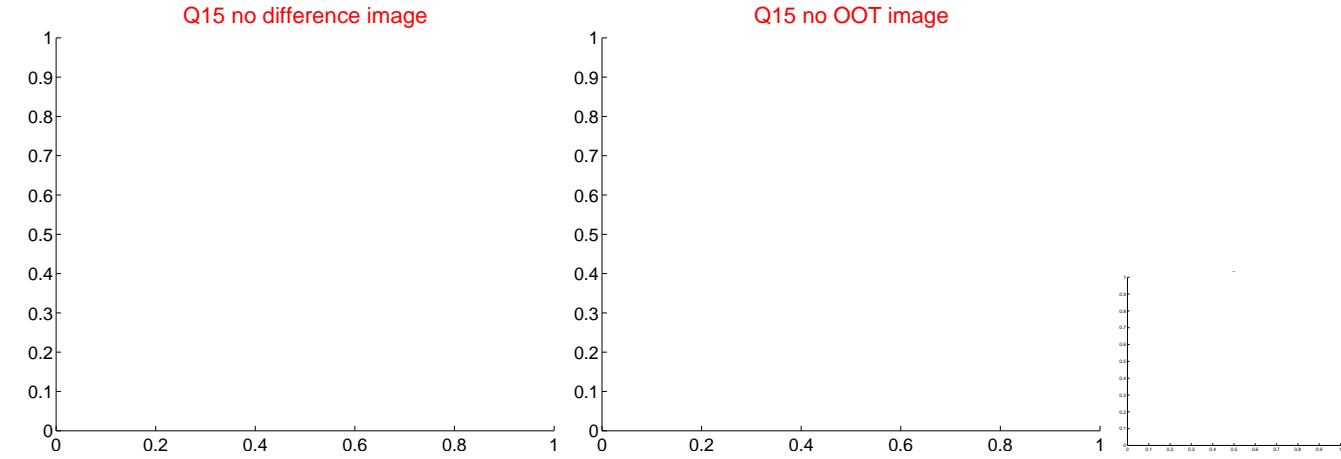
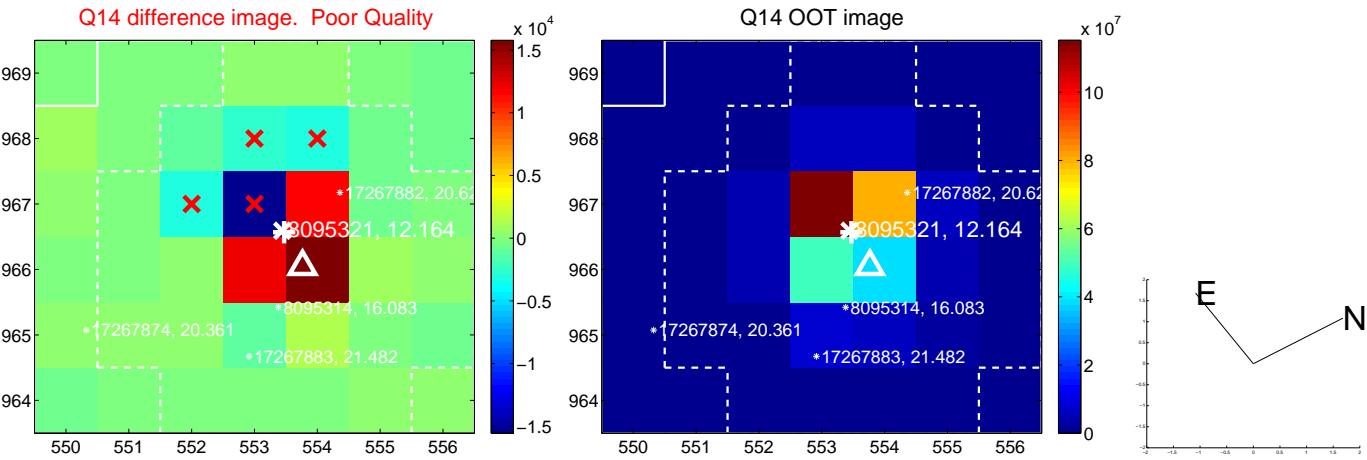




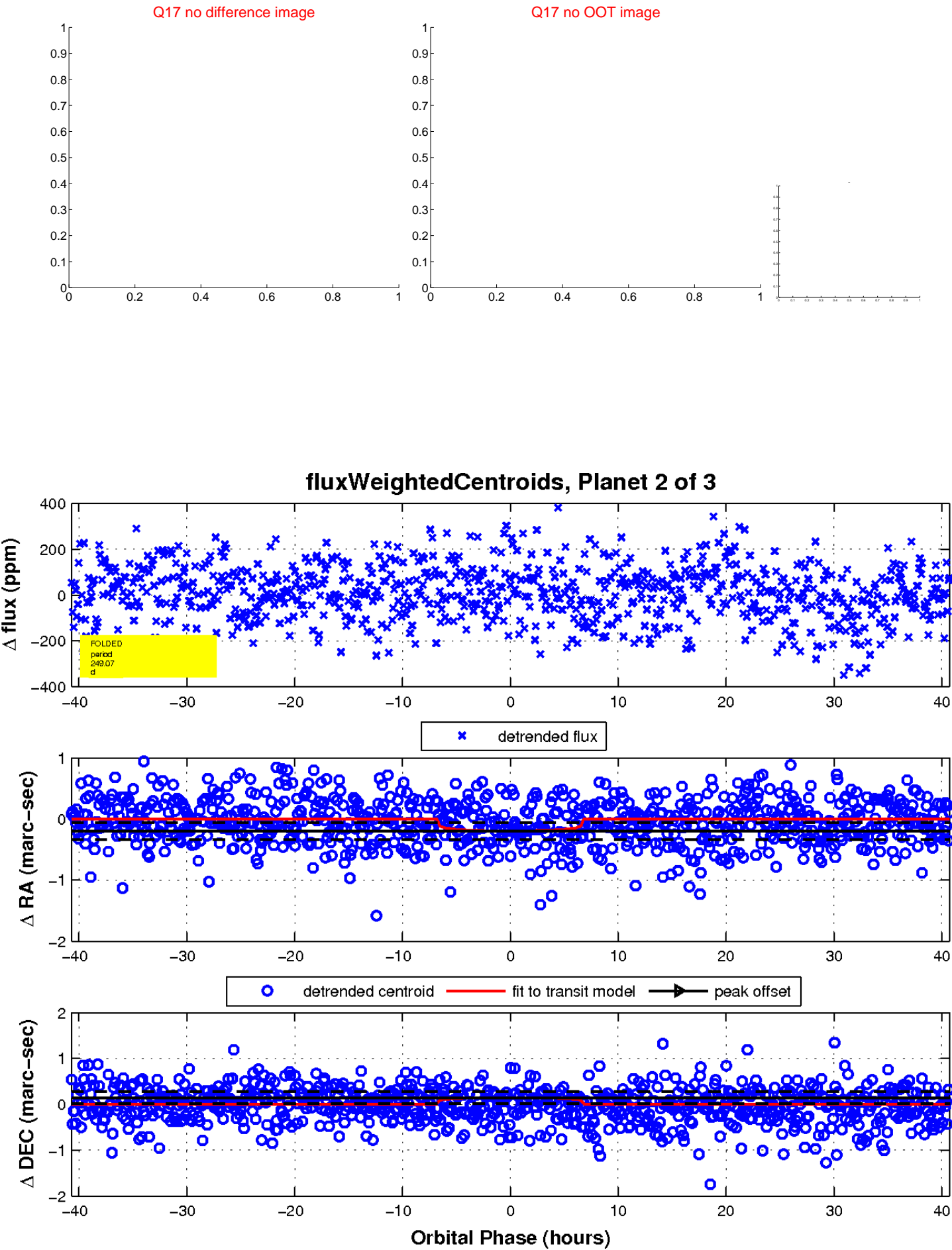
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

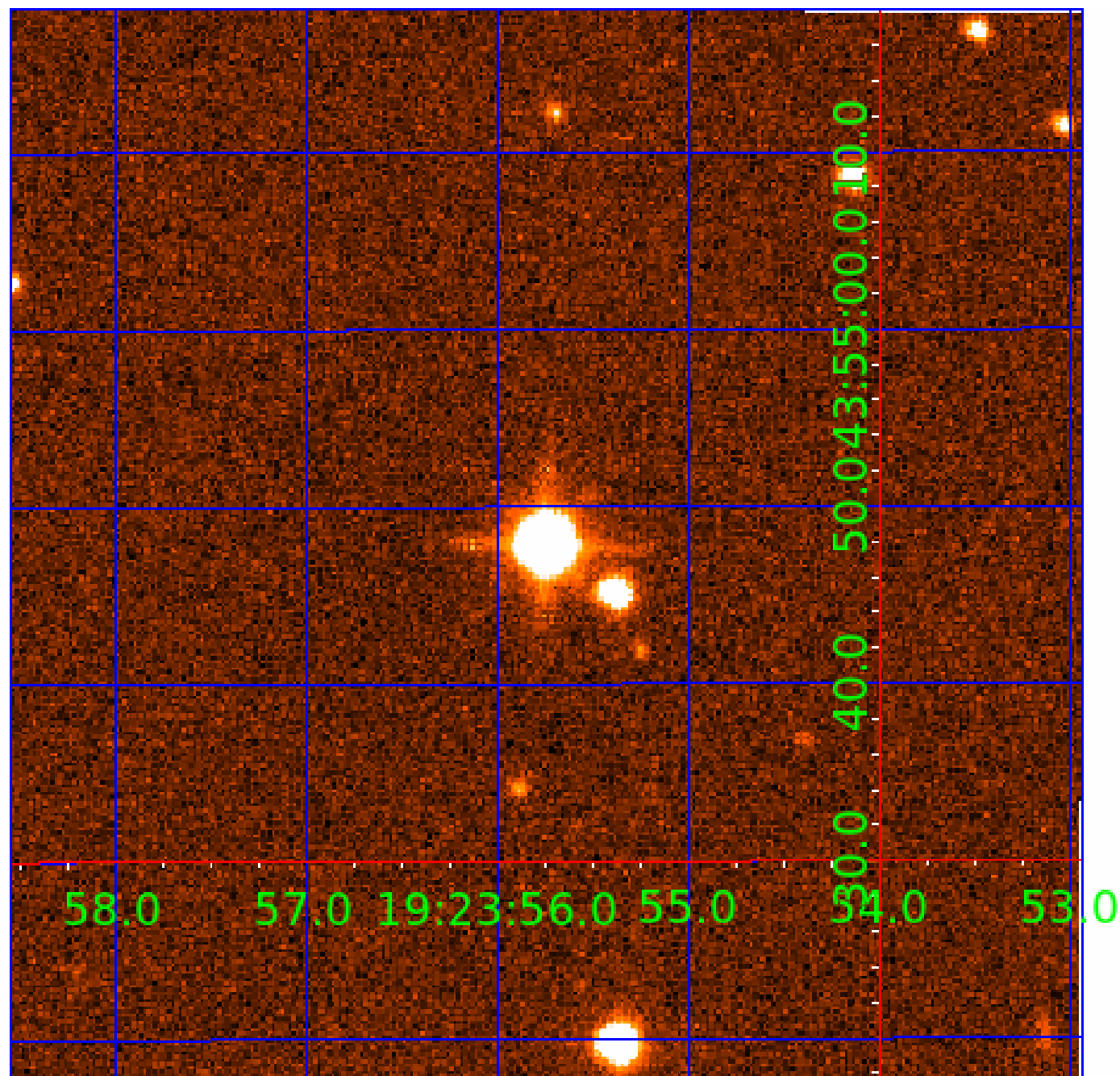


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008095321

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008095321-01	OBS	No	3.153212	134.386568	12.4	18.220	12.0	5.9	1.84	6745	0.69	2837.87
008095321-02	OBS	No	249.074696	356.960121	195.5	13.576	25.5	11.7	1.84	6745	2.60	8.37
008095321-03	OBS	No	1.576593	133.233313	29.5	14.327	13.9	11.7	1.84	6745	1.02	7151.05

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008095321-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
008095321-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
008095321-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—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.

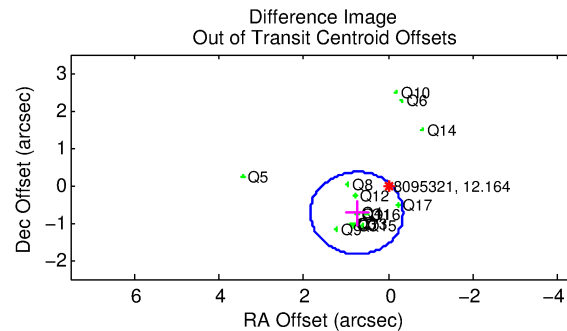
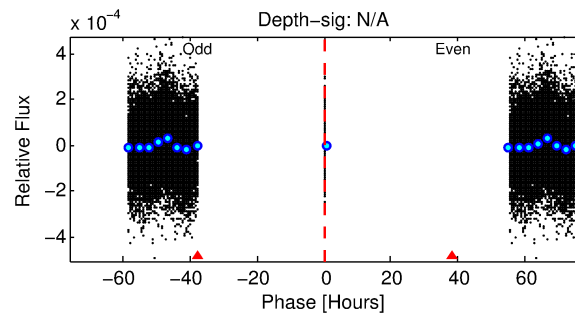
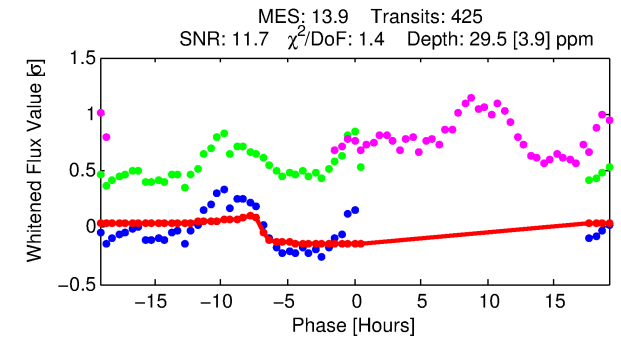
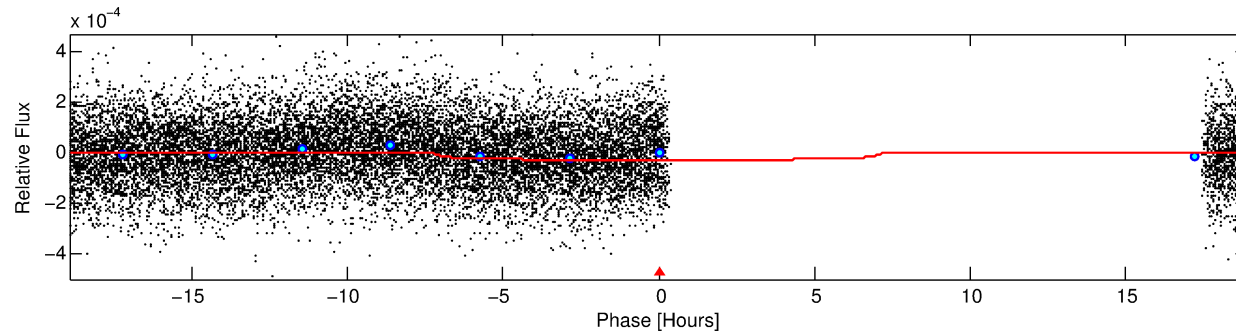
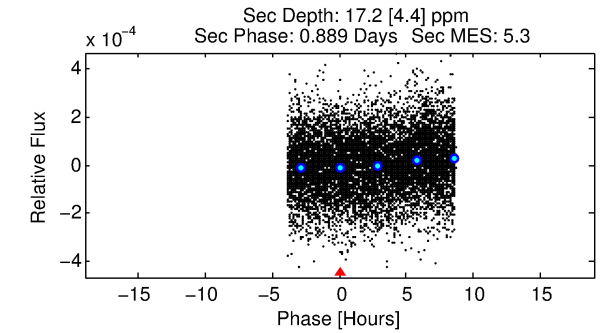
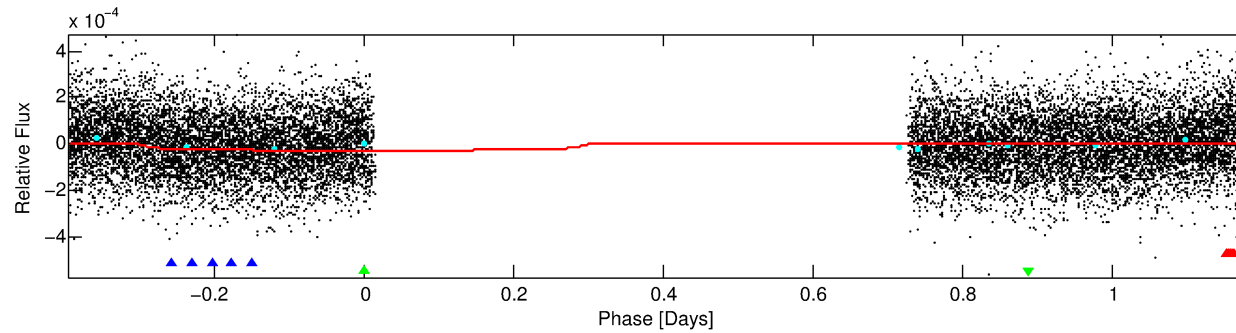
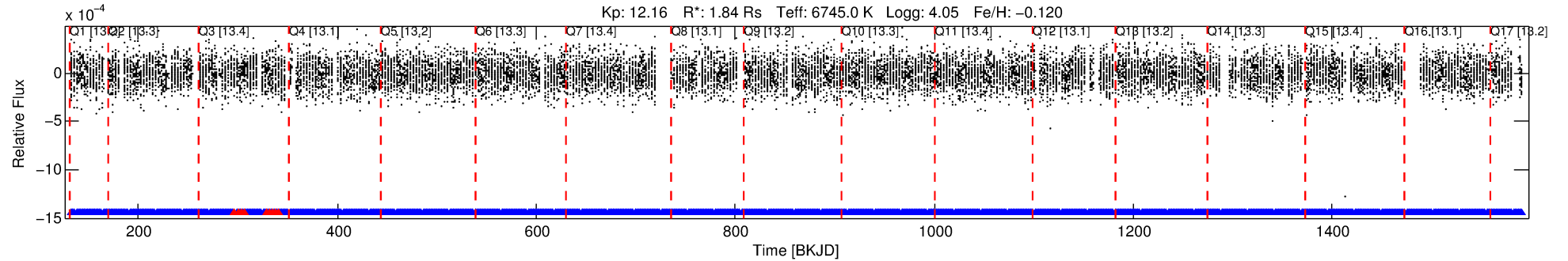
## Ephemeris Match Information For 008095321-03

No Significant Match Found



# DV One-Page Summary

KIC: 8095321 Candidate: 3 of 3 Period: 1.577 d



## DV Fit Results:

Period = 1.57659 [0.00004] d  
Epoch = 133.2333 [0.0301] BKJD  
Rp/R\* = 0.0051 [0.0046]  
a/R\* = 1.07 [0.70]  
b = 0.35 [12.84]  
Seff = 7151.05 [2134.62]  
Teq = 2345 [175] K  
Rp = 1.02 [0.95] Re  
a = 0.0297 [0.0057] AU  
Ag = 8.03 [14.93] [0.47σ]  
Teffp = 6104 [2801] K [1.34σ]

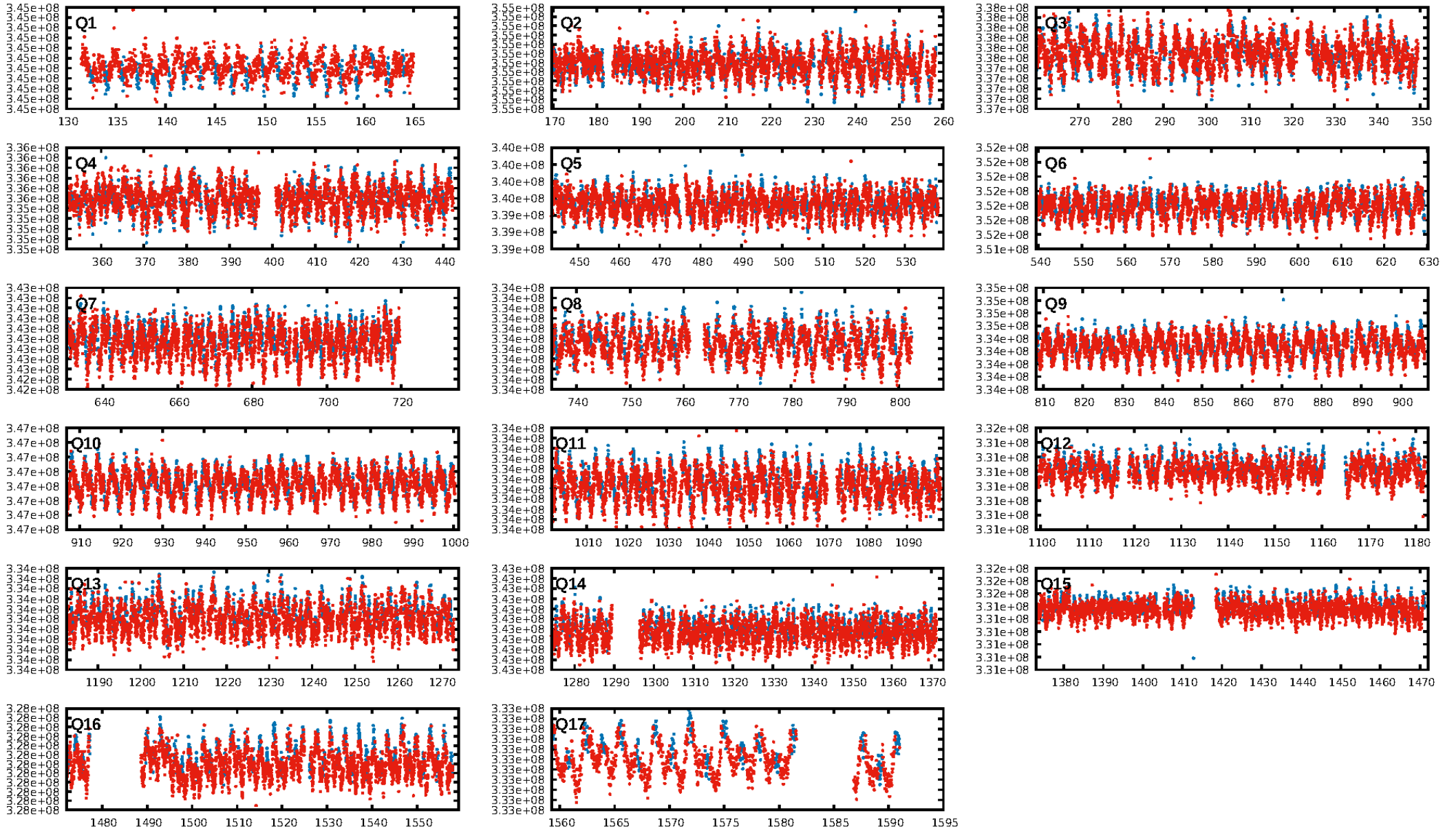
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 89.7% [1.63σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 0.98 [396/405]  
GhostDiagnostic-chr: 0.8086  
Centroid-sig: 0.0%  
Centroid-so: 1.122 arcsec [3.46σ]  
OotOffset-rm: 1.047 arcsec [2.86σ]  
KicOffset-rm: 0.936 arcsec [2.78σ]  
OotOffset-st: 3/4/4/4 [15]  
KicOffset-st: 3/4/4/4 [15]  
DiffImageQuality-fgm: 1.00 [15/15]  
DiffImageOverlap-fno: 1.00 [17/17]

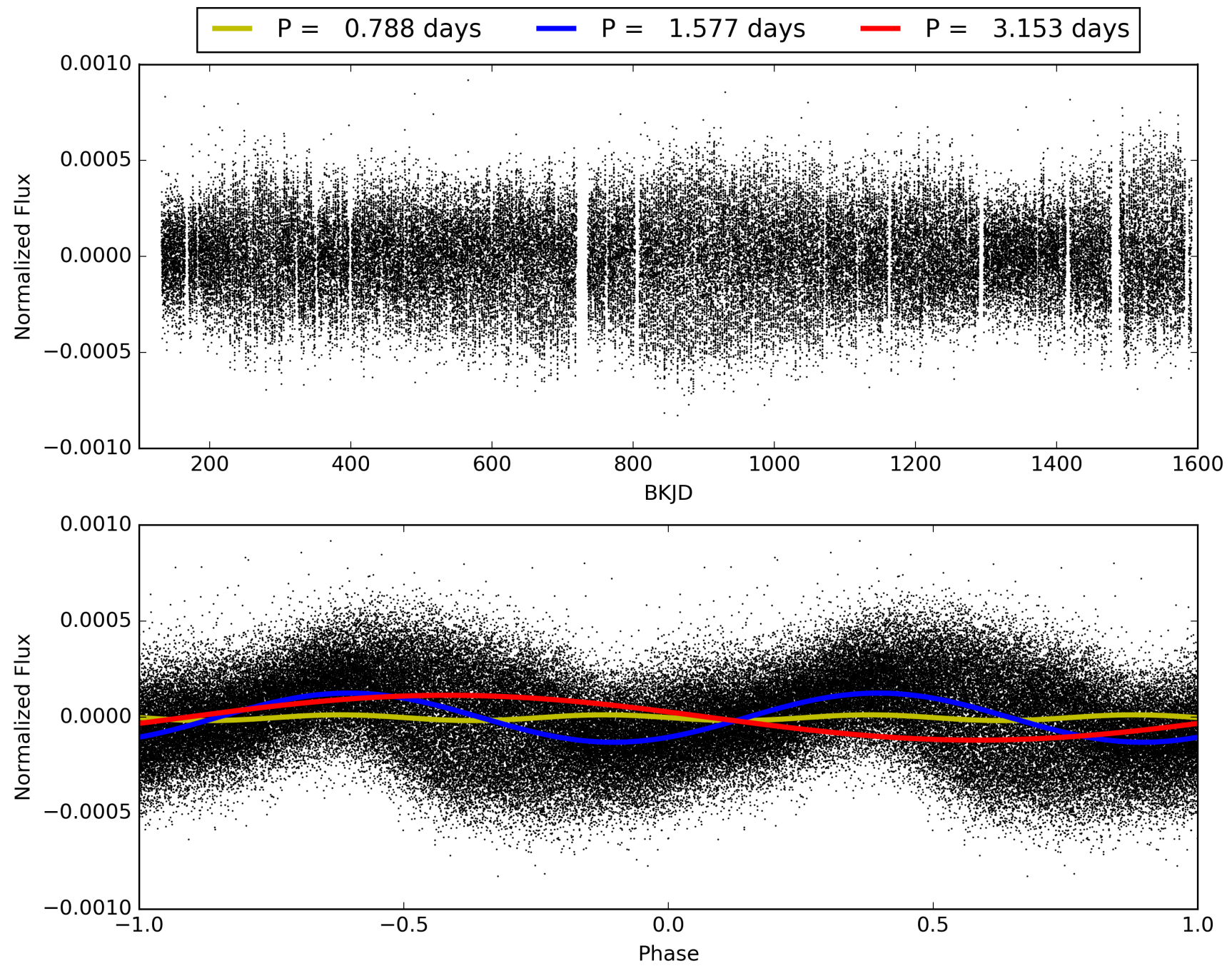
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 00:07:07 Z

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

# TCE 008095321-03, PDC Light Curves

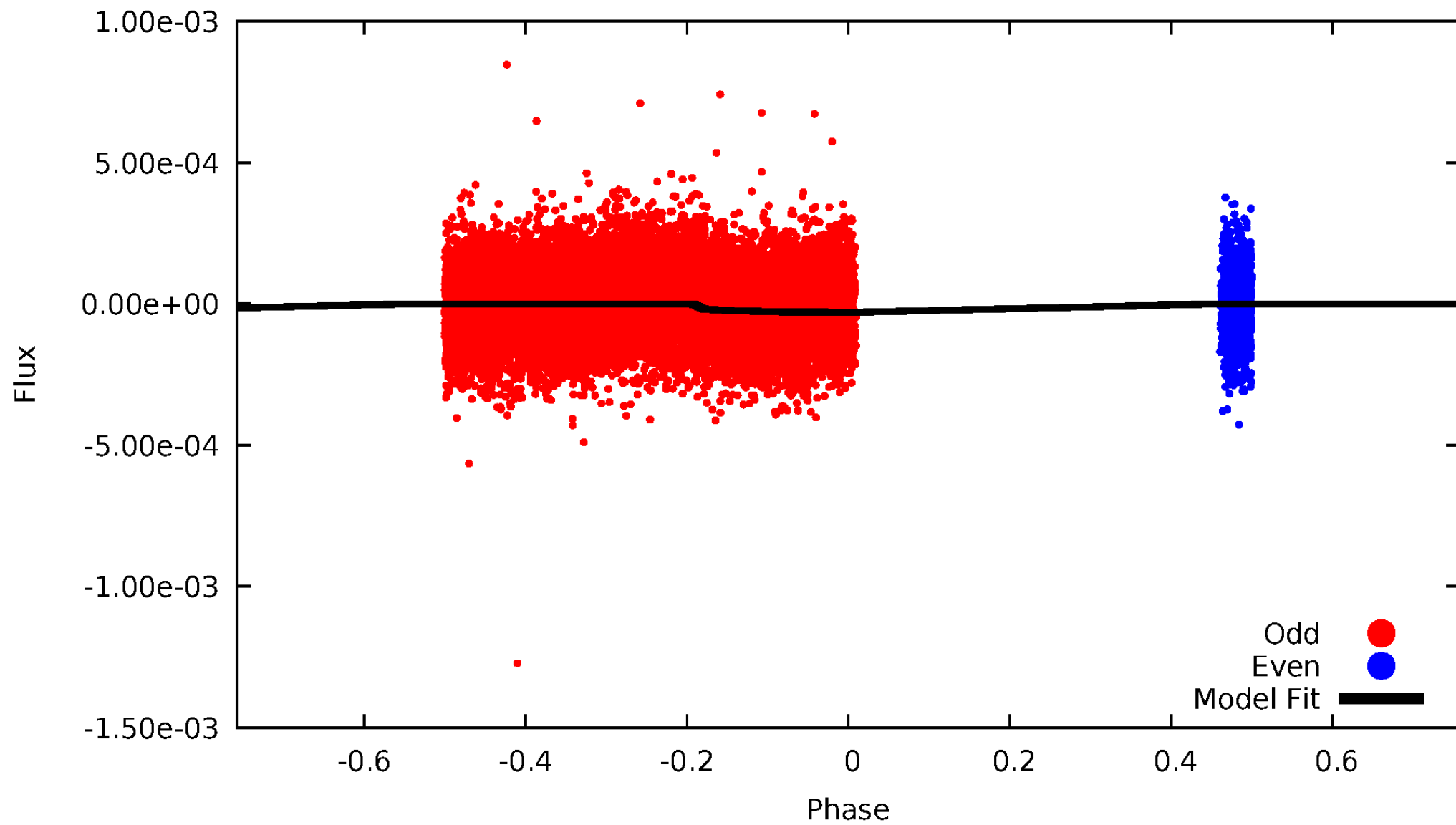


TCE 008095321-03



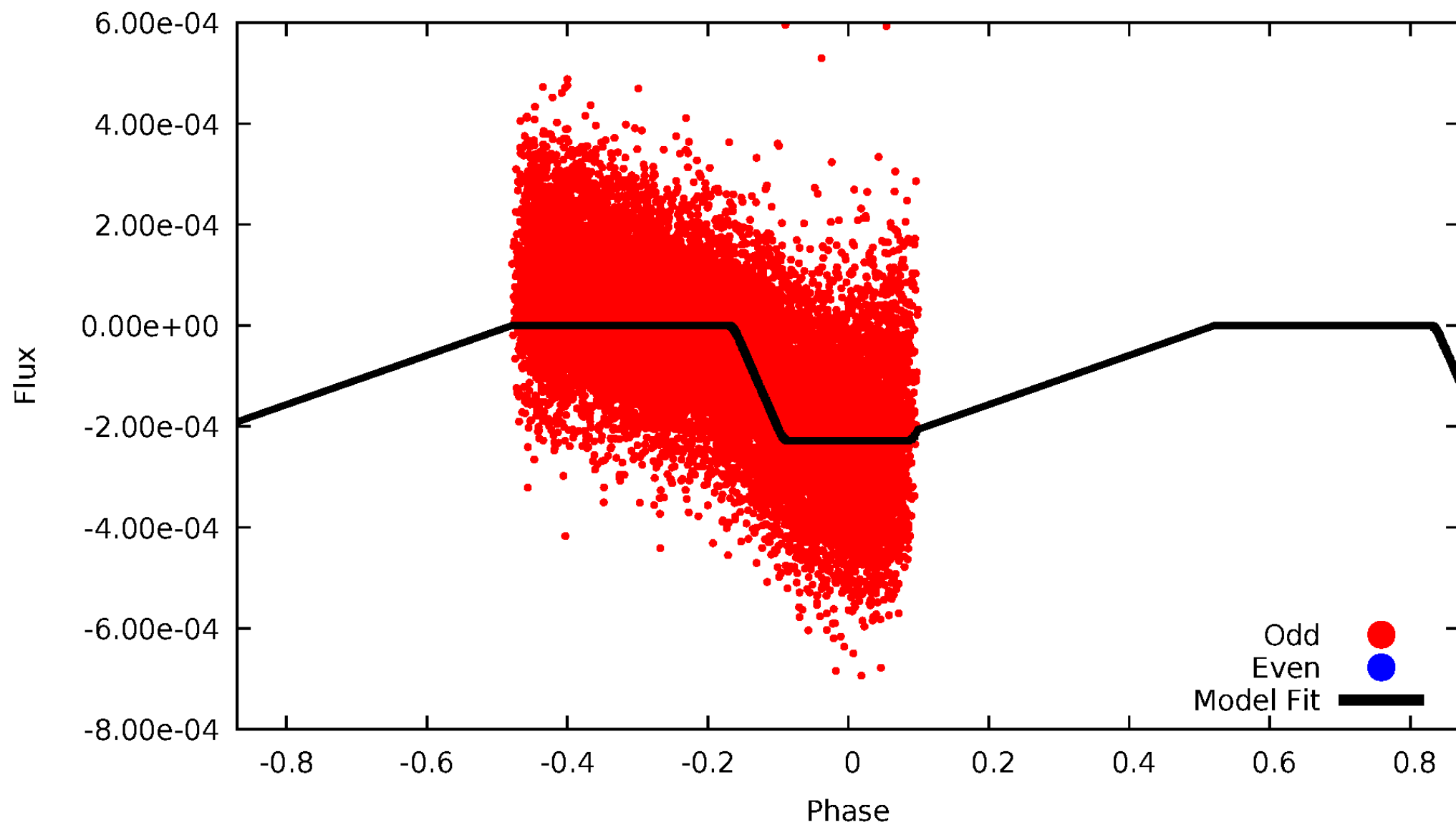
# DV Odd/Even

TCE 008095321-03



# ALT Odd/Even

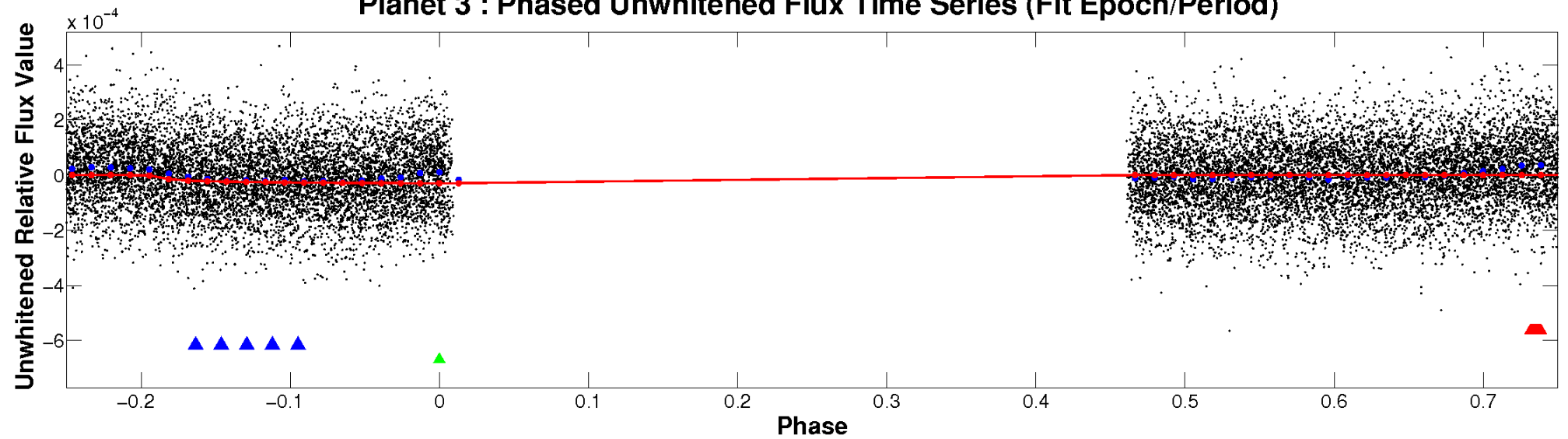
TCE 008095321-03



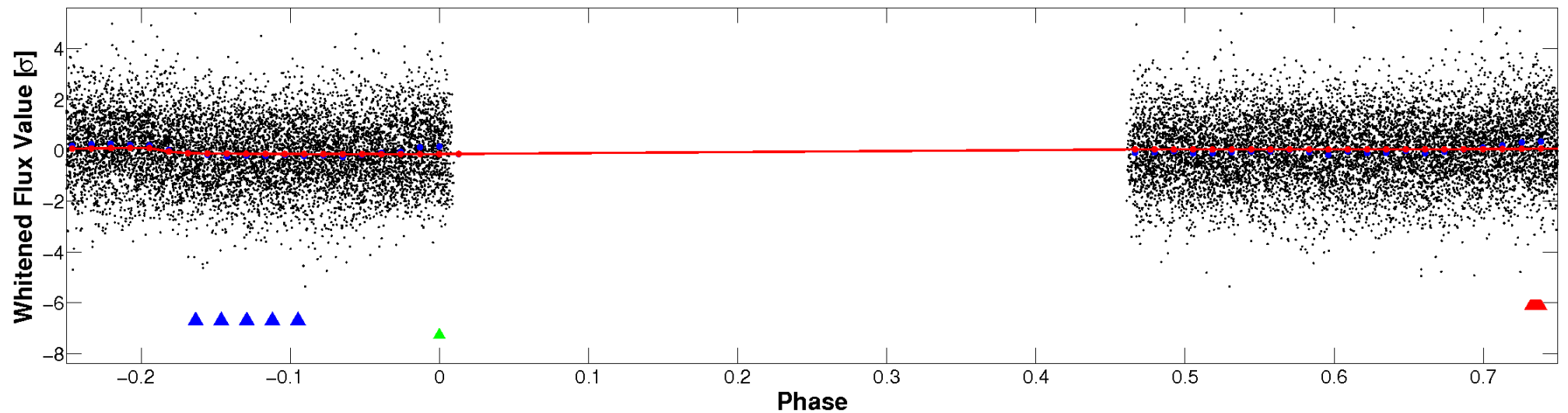


# Non-Whitened Vs. Whitened Light Curve

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

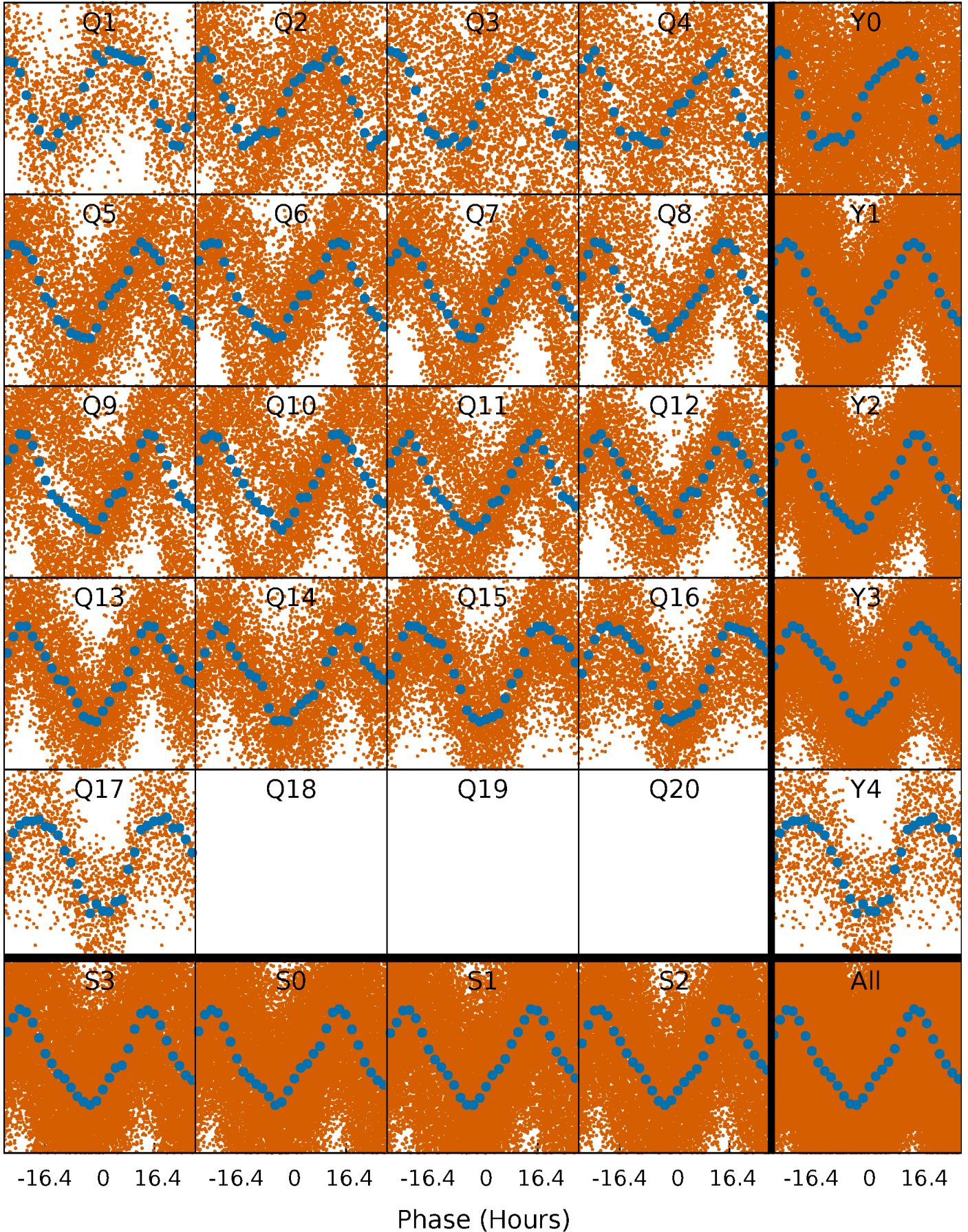


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



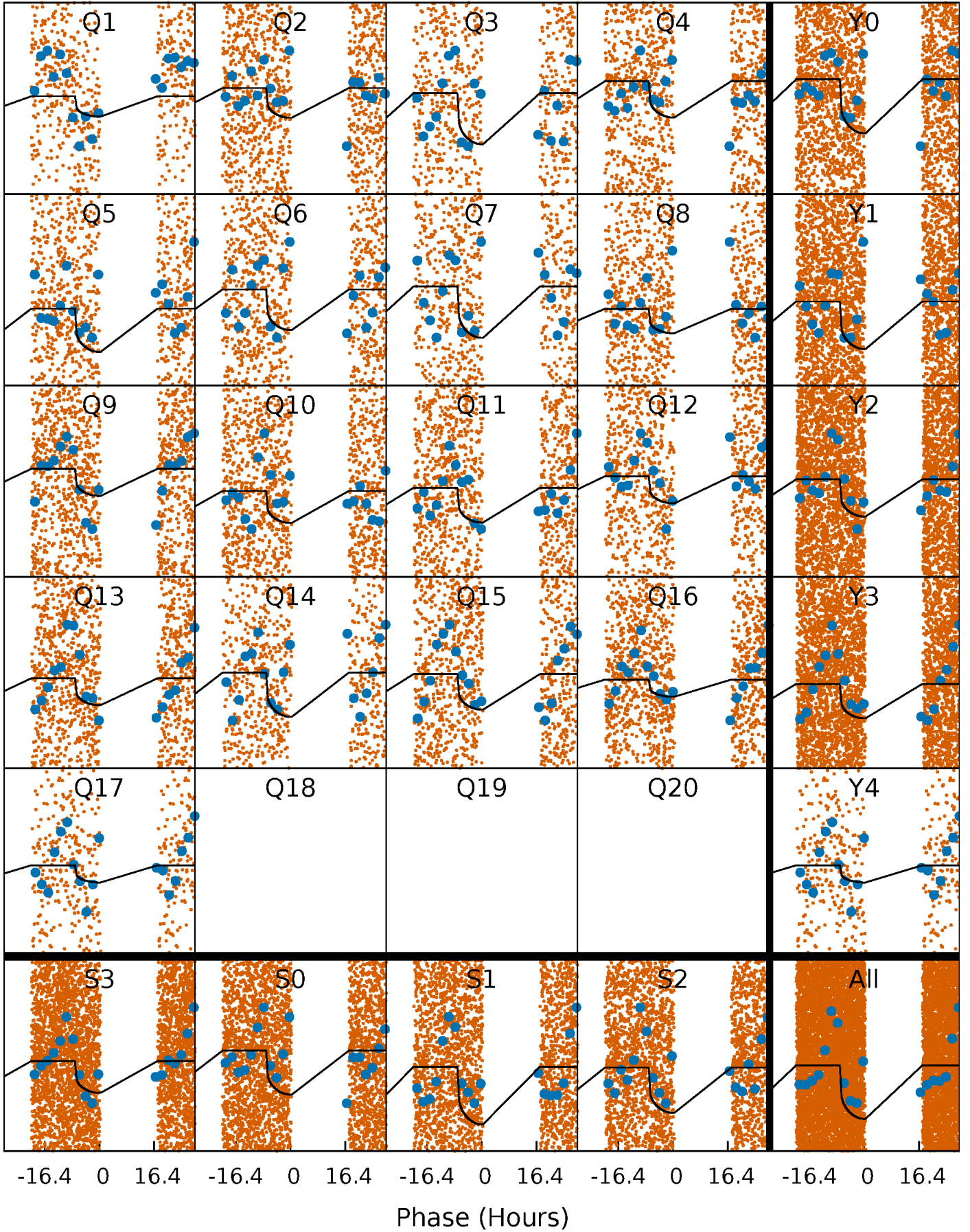
# PDC Quarter-Phased Transit Curves

TCE 008095321-03     $P = 1.576593$  Days     $T_0 = 133.233313$  (BKJD)



# DV Quarter-Phased Transit Curves

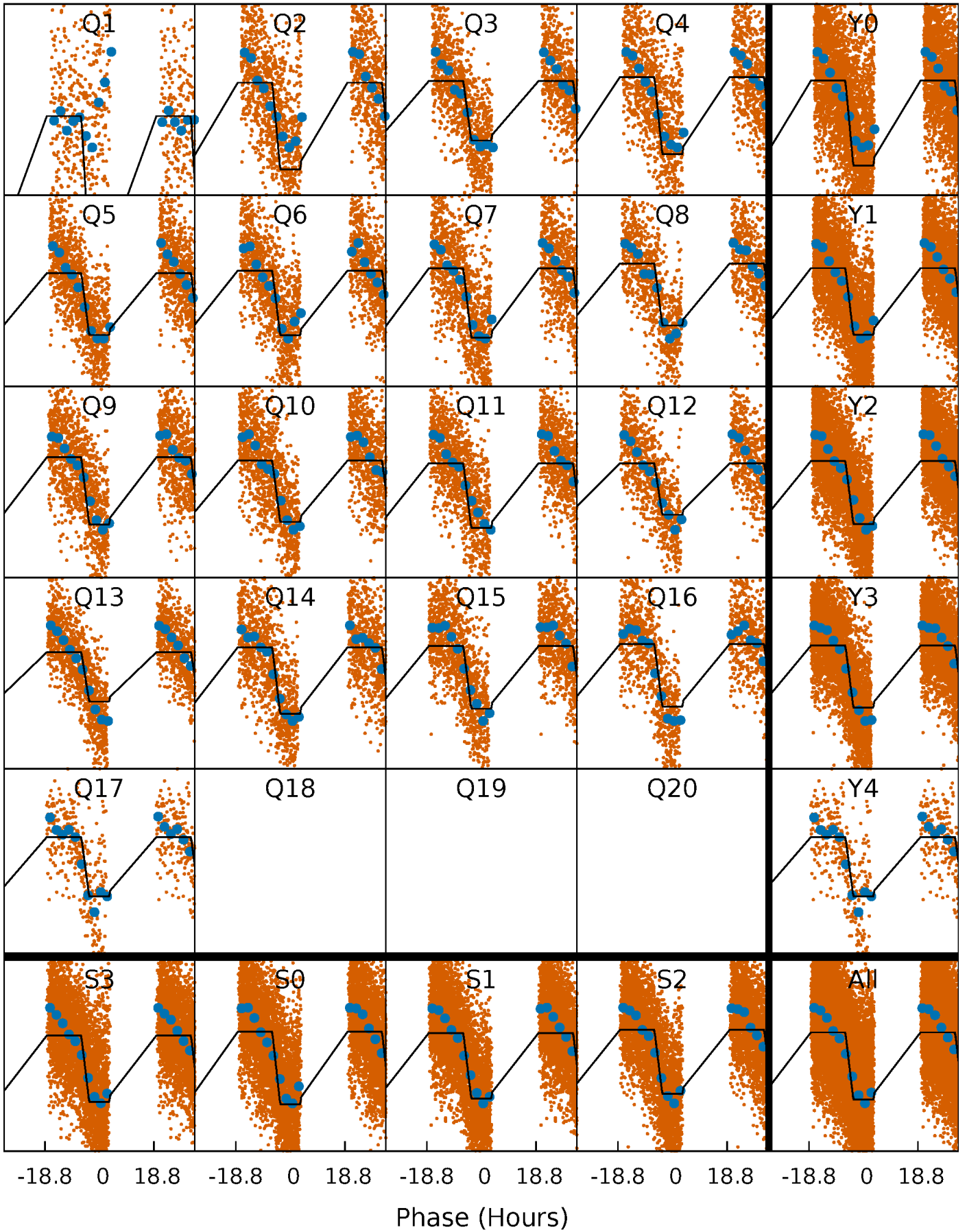
TCE 008095321-03   P= 1.576593 Days    $T_0=133.233313$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

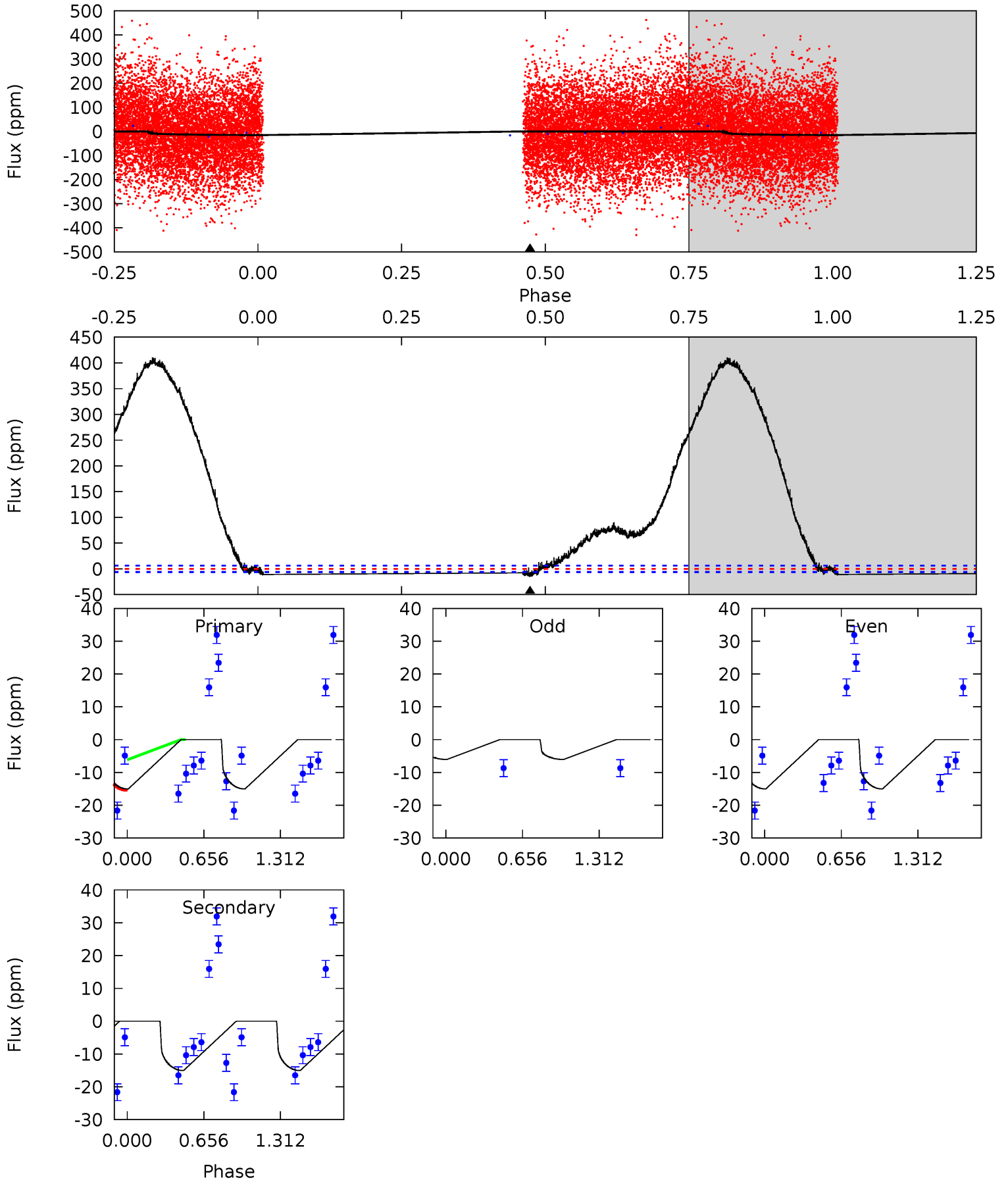
TCE 008095321-03   P= 1.576669 Days    $T_0=133.080063$  (BKJD)



# DV Model-Shift Uniqueness Test

008095321-03, P = 1.576593 Days, E = 131.656720 Days

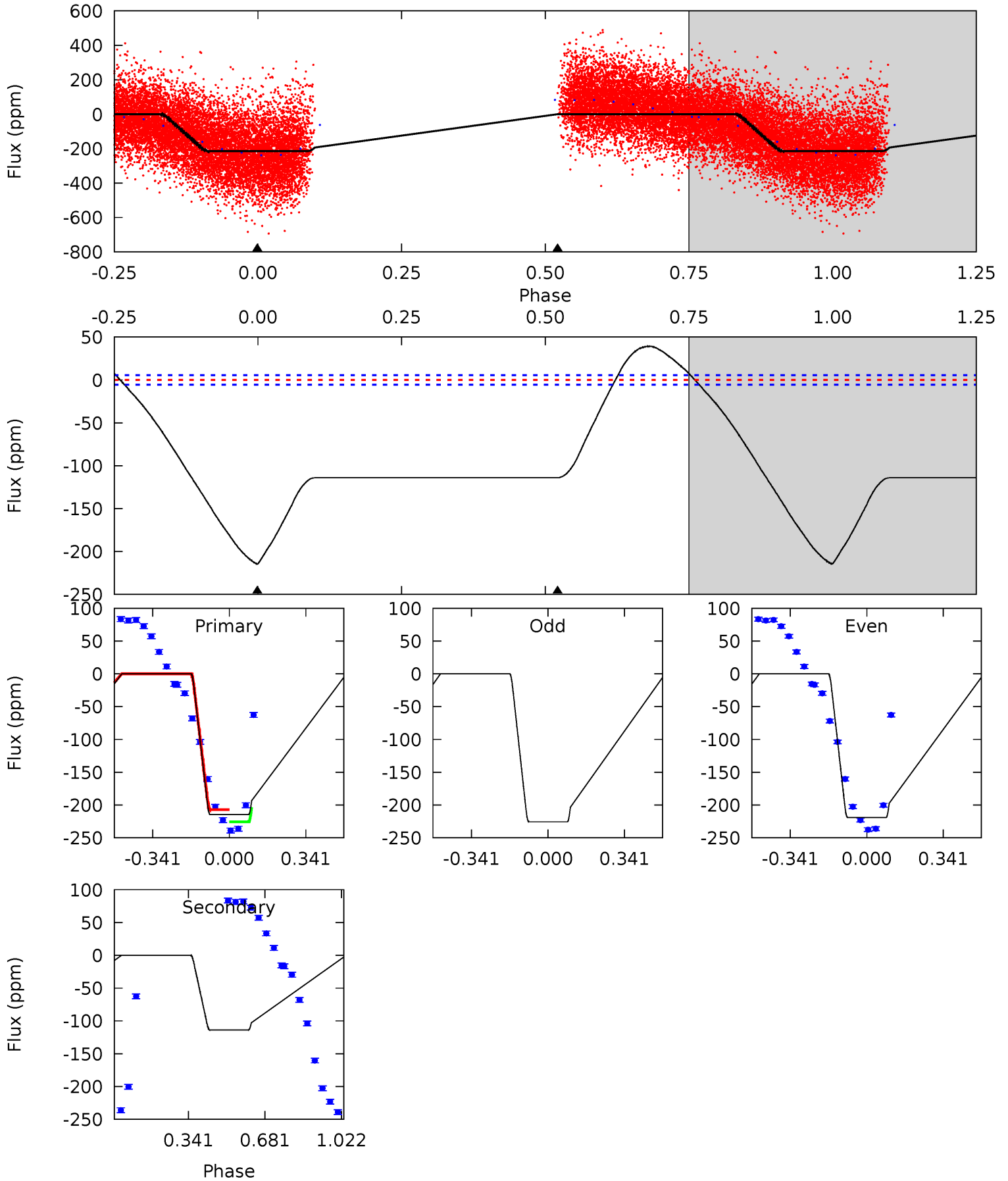
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	10.1	0	0	4.15	0.45	13.3	10.1	10.1	10.1	10.1	1.14	0.93	0.96	1.19



# Alt Model-Shift Uniqueness Test

008095321-03, P = 1.576669 Days, E = 131.503394 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
167.8	89.2	0	0	4.30	0.95	8.85	167.8	167.8	89.2	89.2	1.99	0.95	0.15	5.19





### Stellar Parameters For KIC 008095321

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6745^{+71}_{-81}$	$4.054^{+0.168}_{-0.112}$	$-0.120^{+0.200}_{-0.150}$	$1.844^{+0.323}_{-0.394}$	$1.408^{+0.103}_{-0.129}$	$0.316^{+0.280}_{-0.110}$
	+1%/-1%	+4%/-3%	+167%/-125%	+18%/-21%	+7%/-9%	+88%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

### Secondary Eclipse Parameters for KIC 008095321-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-15 \pm 1$	$1.16^{+0.86}_{-0.72}$	$3273^{+148}_{-186}$	$5407^{+4028}_{-1160}$	$5.386^{+32.109}_{-3.627}$
Alt.	$-114 \pm 1$	$2.95^{+0.96}_{-0.90}$	$3282^{+143}_{-188}$	$5628^{+1079}_{-663}$	$6.295^{+7.057}_{-2.789}$

$T_{max}$  = 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

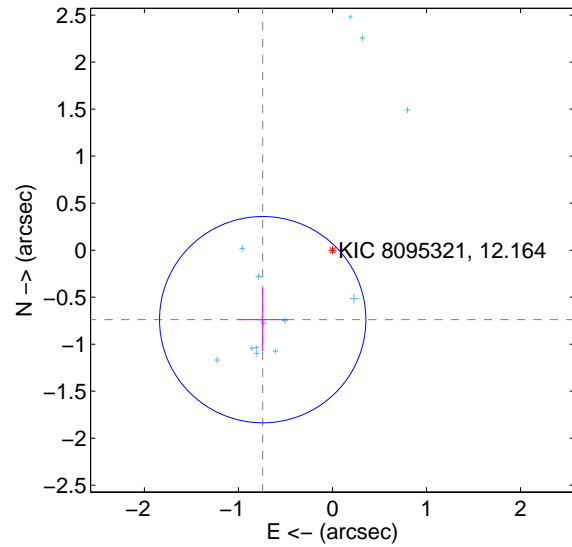
Supplemental centroid analysis for 008095321-03. Kepler magnitude: 12.16. Transit SNR 11.66

There are 15 quarters with good PRF difference image offsets

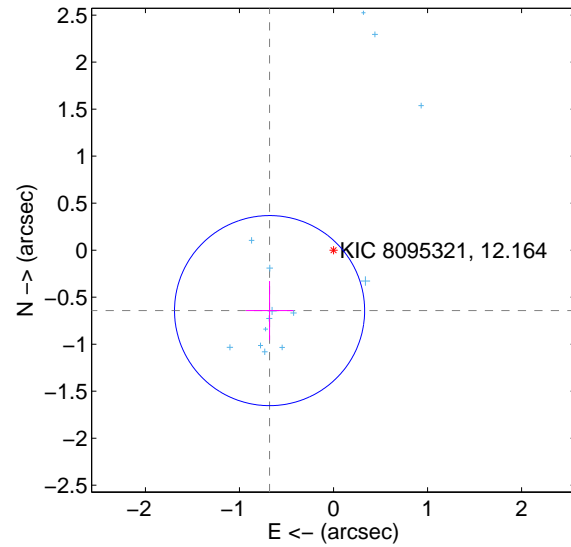
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.047 \pm 0.366$	2.86	$0.742 \pm 0.272$	$-0.739 \pm 0.336$
PRF-fit source offset from KIC position	$0.936 \pm 0.337$	2.78	$0.680 \pm 0.252$	$-0.643 \pm 0.315$
photometric centroid source offset	$1.12 \pm 0.32$	3.46	$-0.22 \pm 0.33$	$1.10 \pm 0.32$

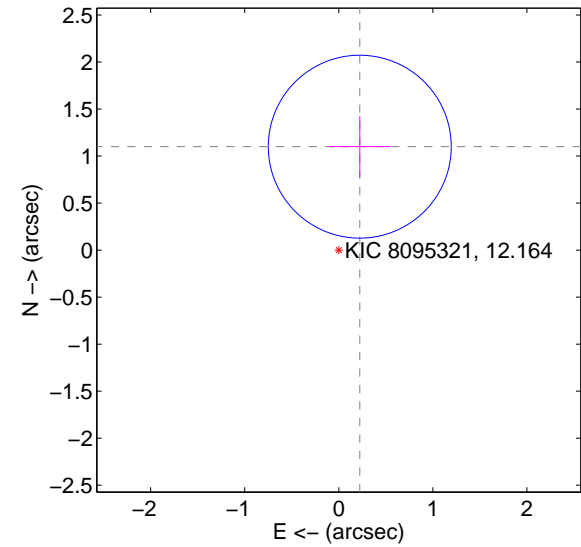
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

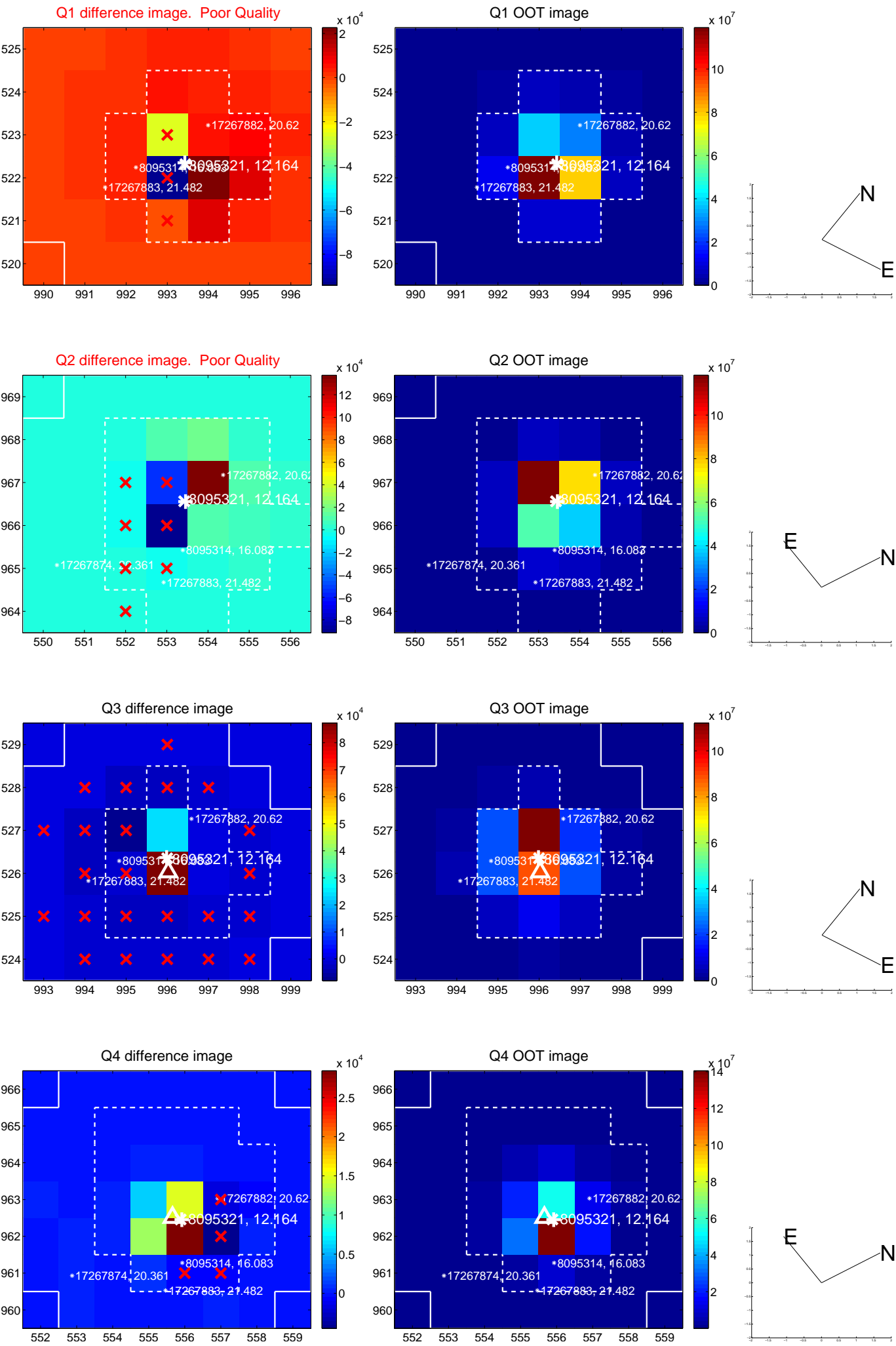


offset from photometric centroids

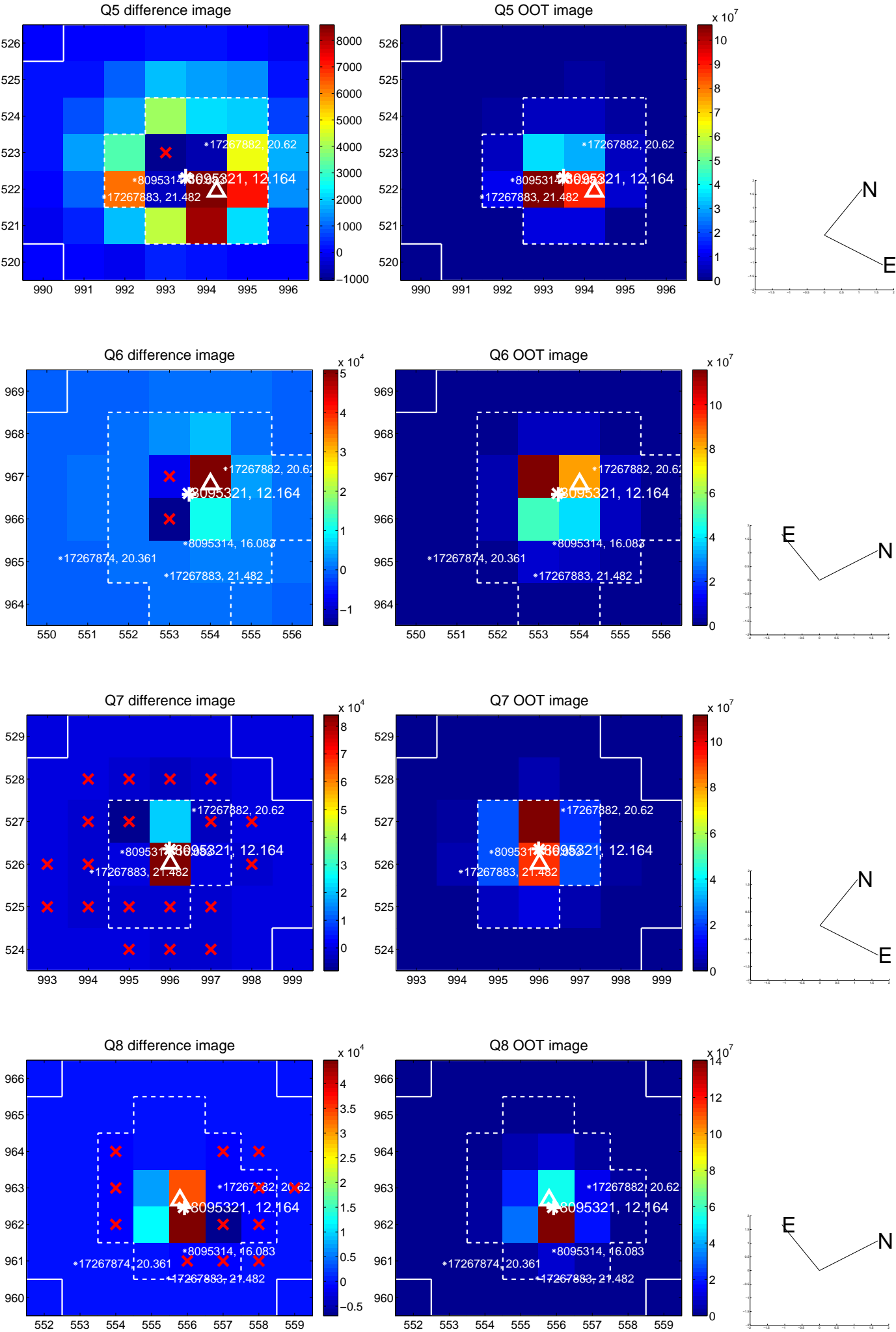


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

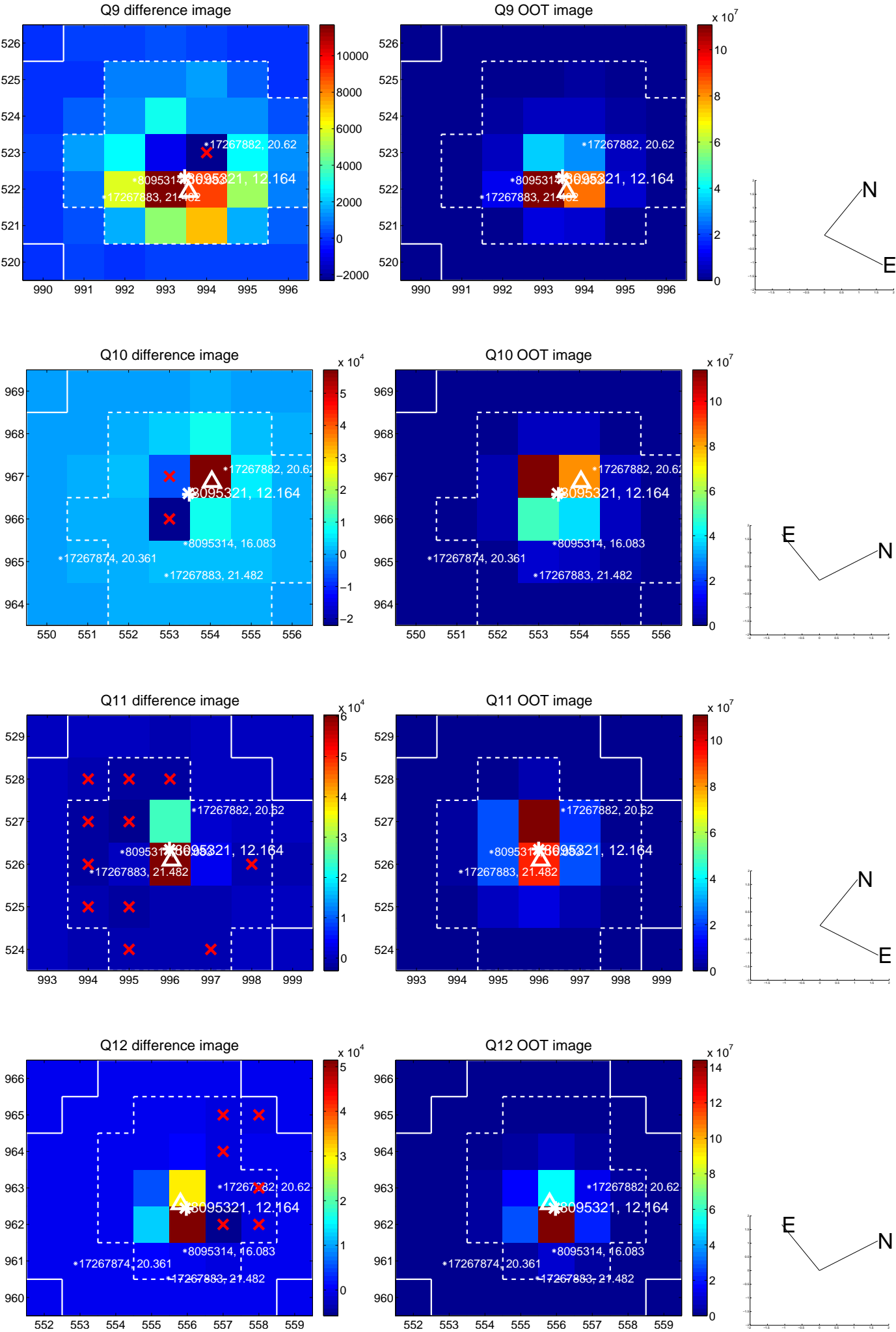
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



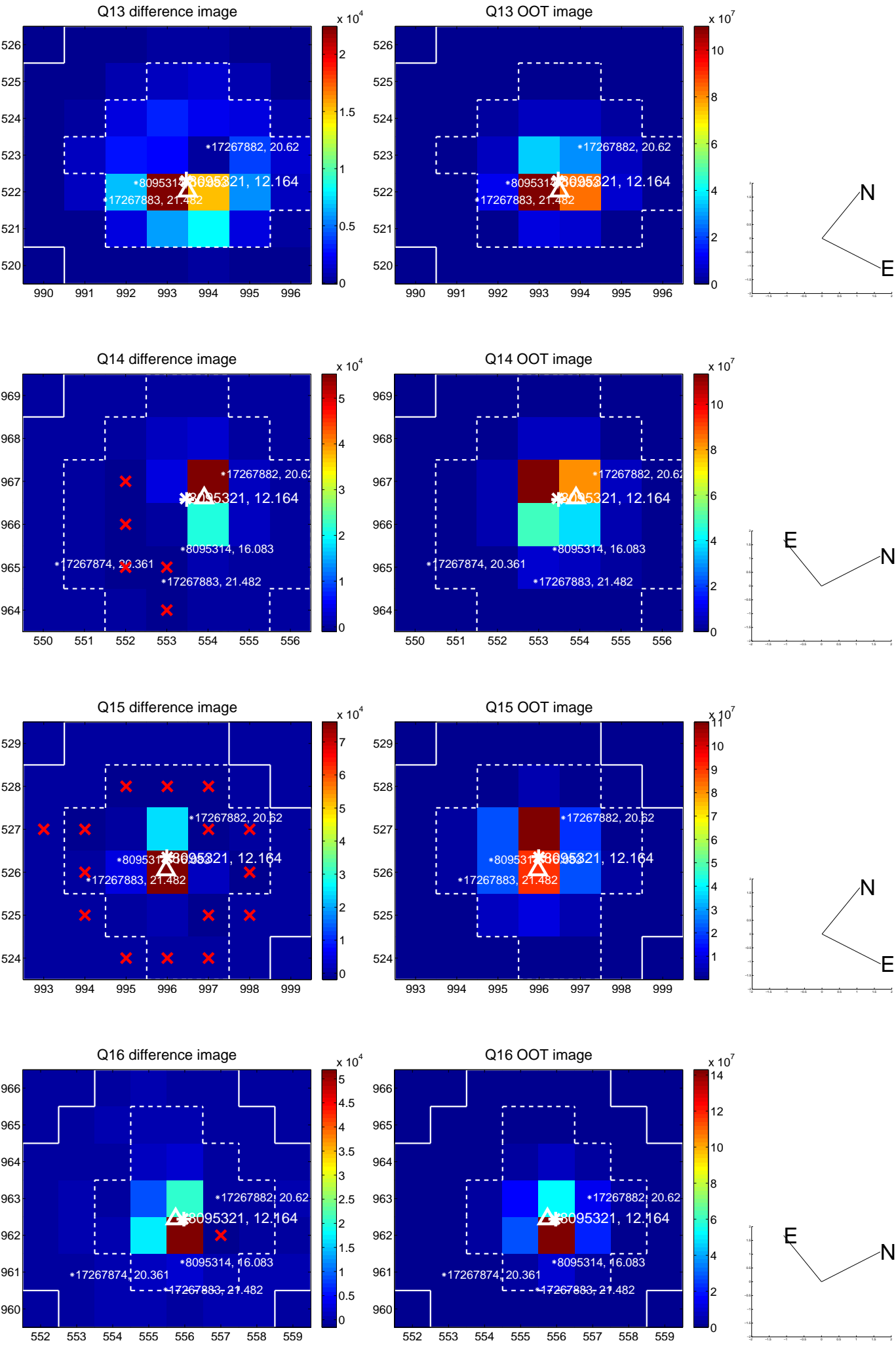
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

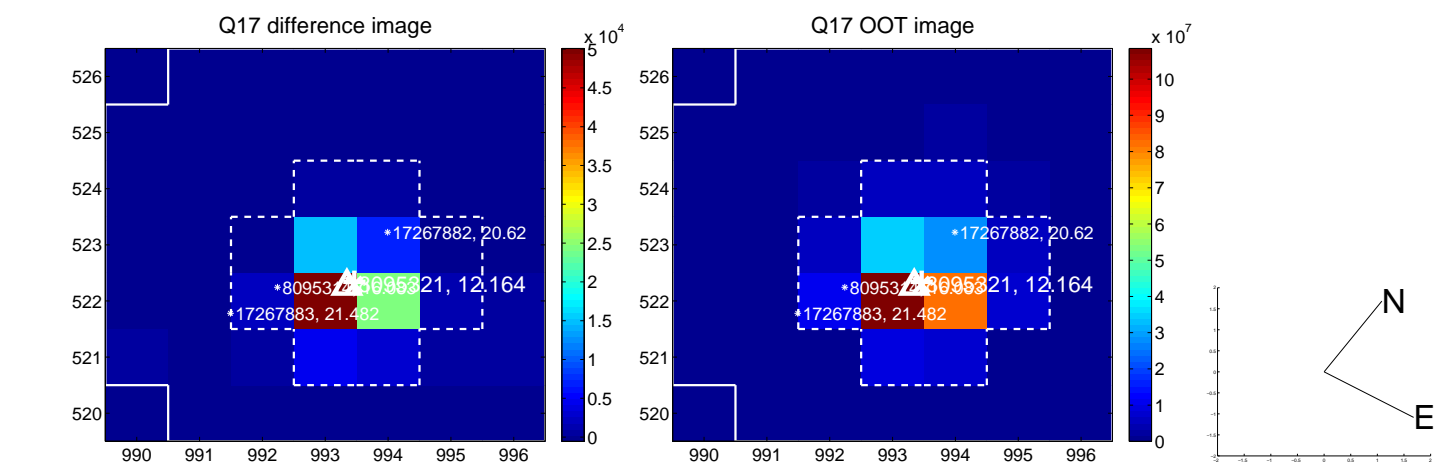


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

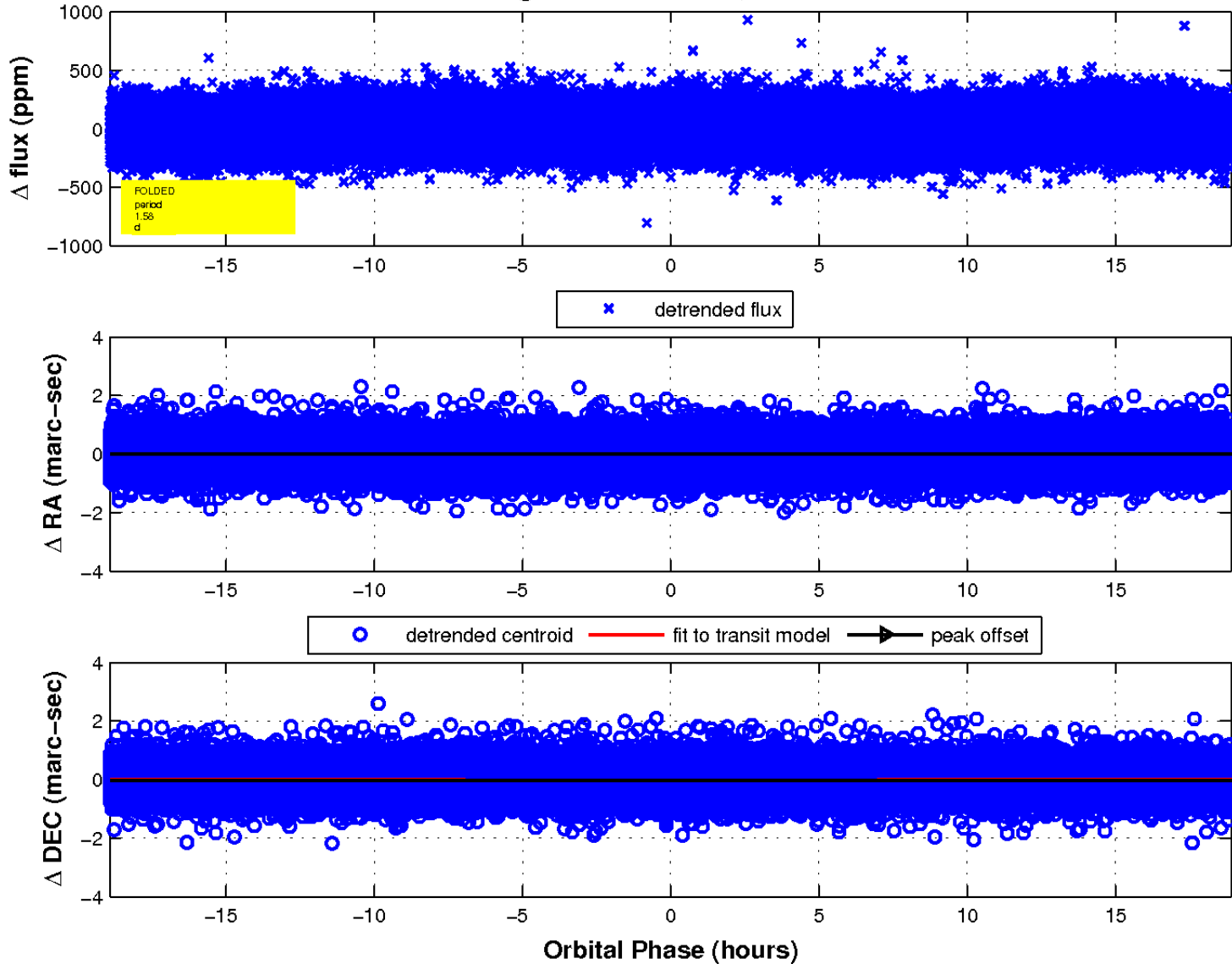




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

