

# KIC 012257835

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012257835-01	OBS	No	1.173880	131.831120	113.2	3.500	8.0	-1.0	2.70	7016	2.90	22244.52
012257835-02	OBS	No	234.031739	169.550184	204.3	3.789	7.9	7.6	2.70	7016	4.40	19.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012257835-01	OBS	FP	0.00	1	0	0	0	<del>SWEET_NTL</del> — <del>LPP_DV</del> — <del>CENT_NOFITS</del>
012257835-02	OBS	FP	0.00	1	0	0	0	<del>INDIV_TRANS_RUBBLE_MARSHALL</del> — <del>ALL_TRANS_CHASES</del> — <del>MOD_NONUNIQ_ALT</del>

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

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

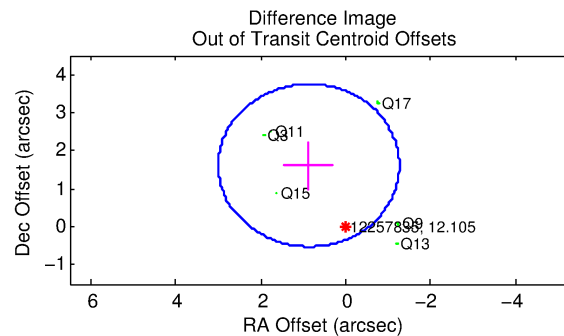
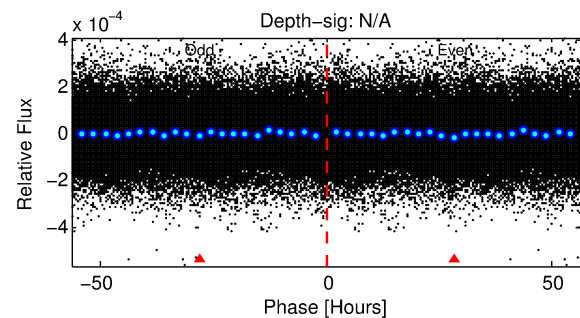
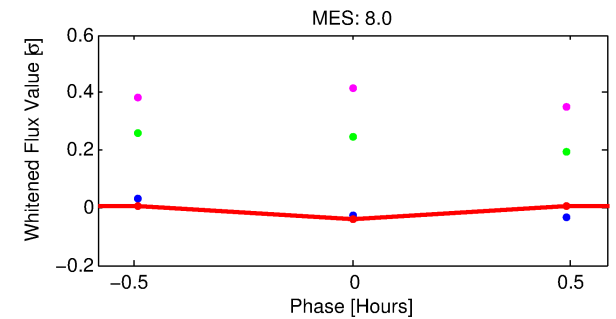
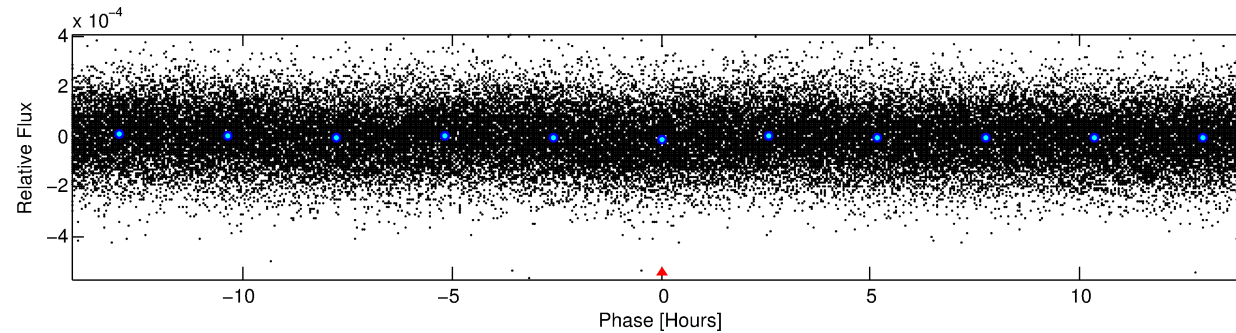
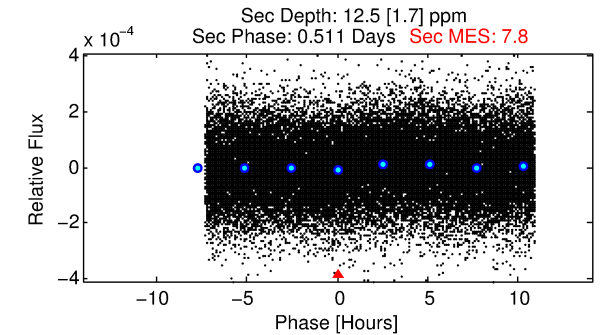
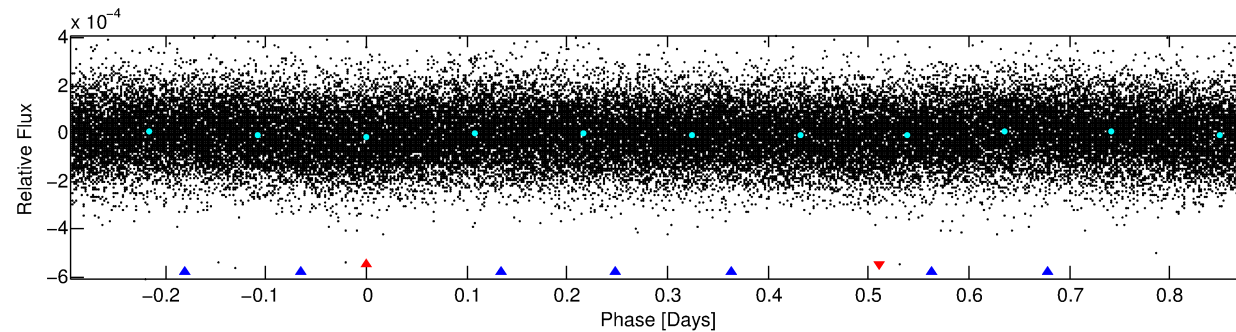
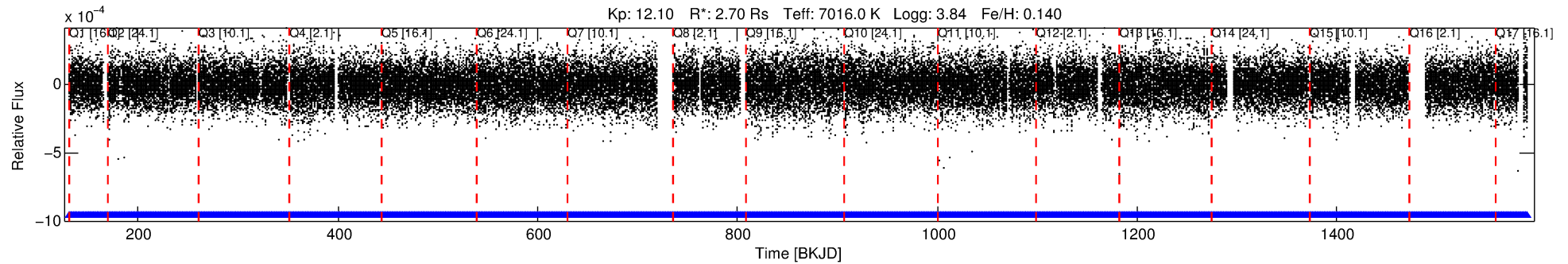
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012257835-01

No Significant Match Found

# DV One-Page Summary

KIC: 12257835 Candidate: 1 of 2 Period: 1.174 d



## TPS TCE Results:

Period = 1.17388 d  
Epoch = 131.8311 BKJD

DV fit results are unavailable

## DV Diagnostic Results:

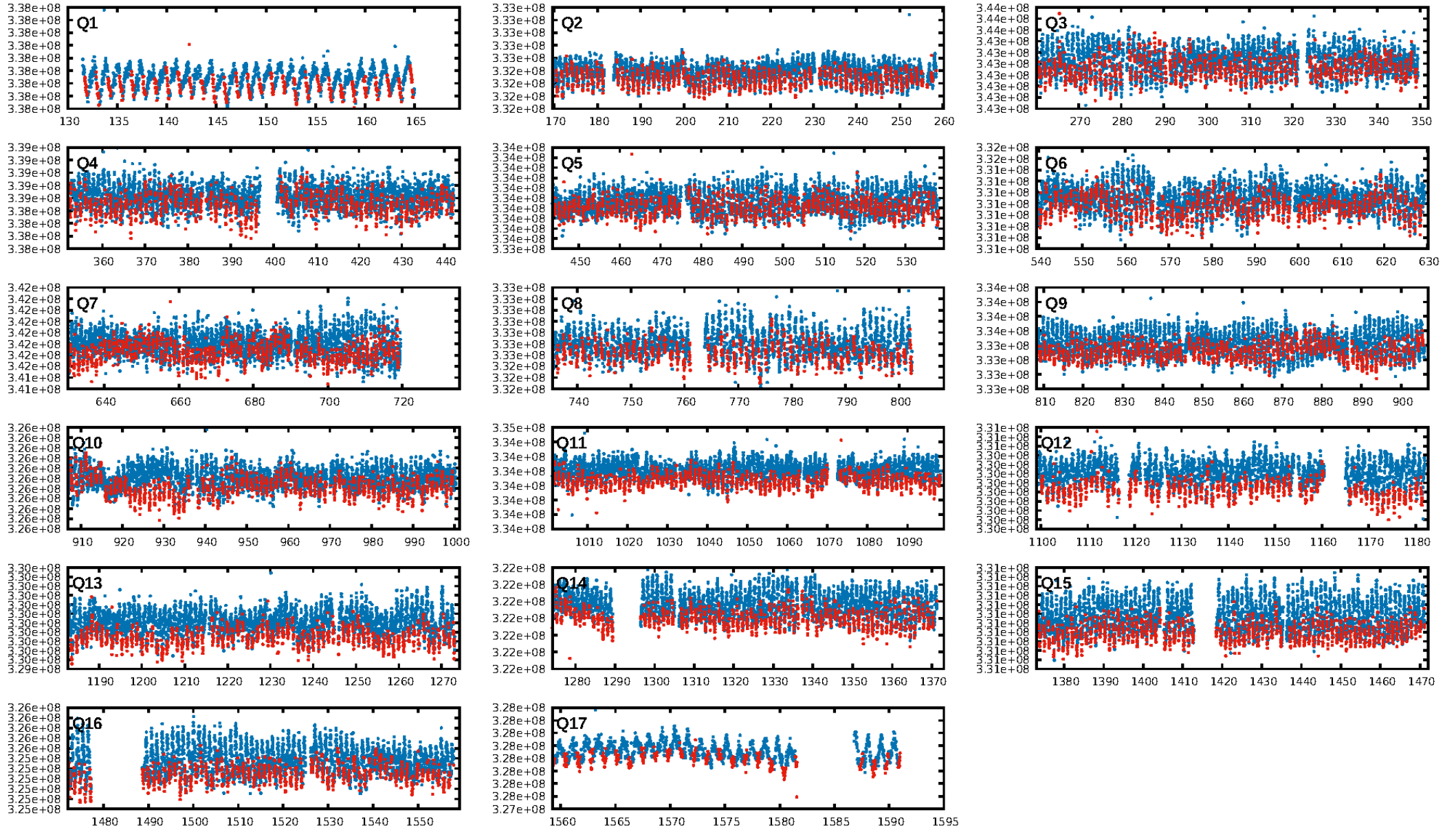
ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [1083.49σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 5.03e-13  
RollingBand-fgt: 1.00 [1112/1112]  
**GhostDiagnostic-chr: 0.2958**

Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 1.831 arcsec [2.57σ]  
KicOffset-rm: 1.787 arcsec [2.55σ]  
OotOffset-st: 0/3/0/3 [6]  
KicOffset-st: 0/3/0/3 [6]  
DiffImageQuality-fgm: 0.50 [3/6]  
DiffImageOverlap-fno: 1.00 [17/17]

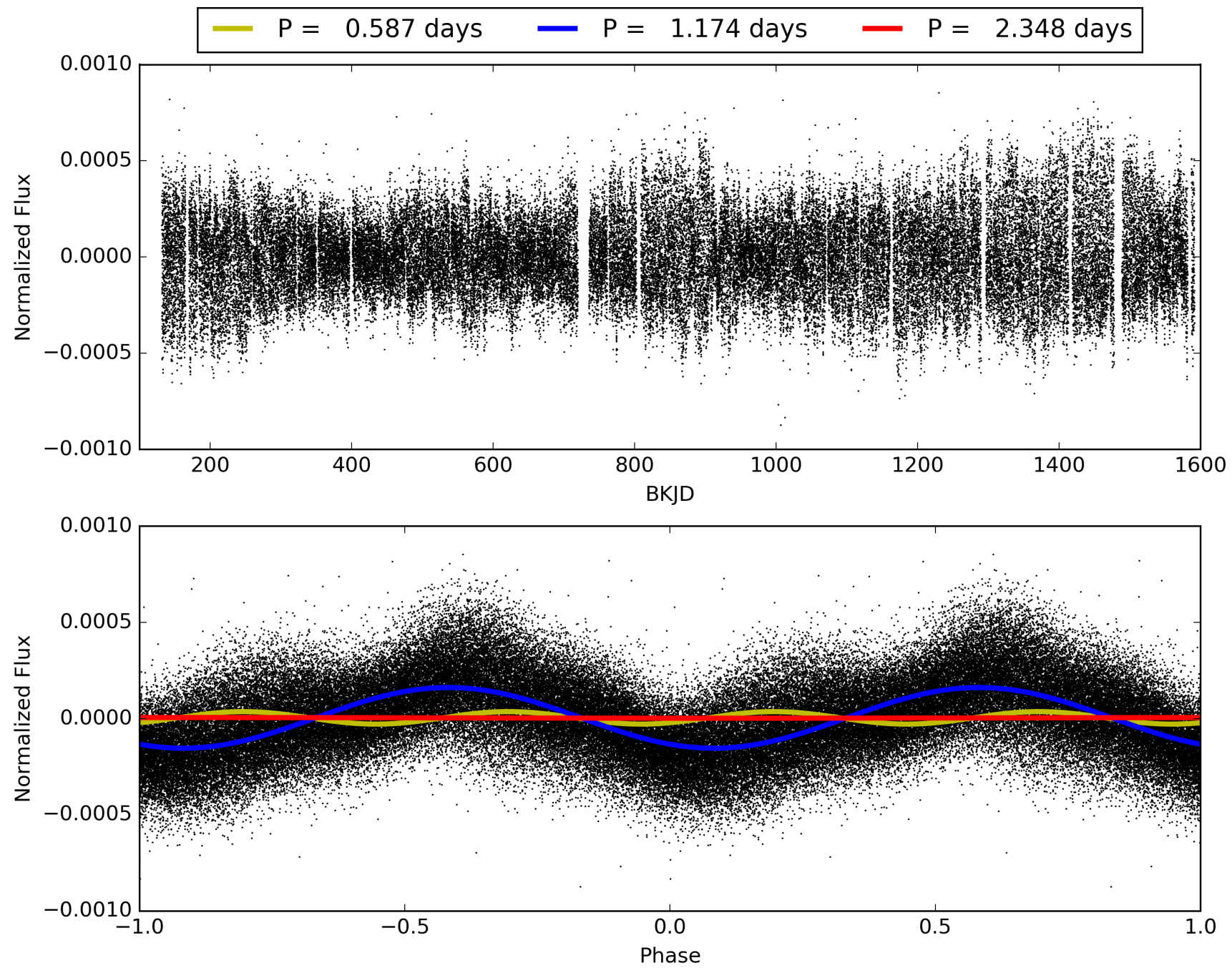
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 03:35:33 Z

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

# TCE 012257835-01, PDC Light Curves

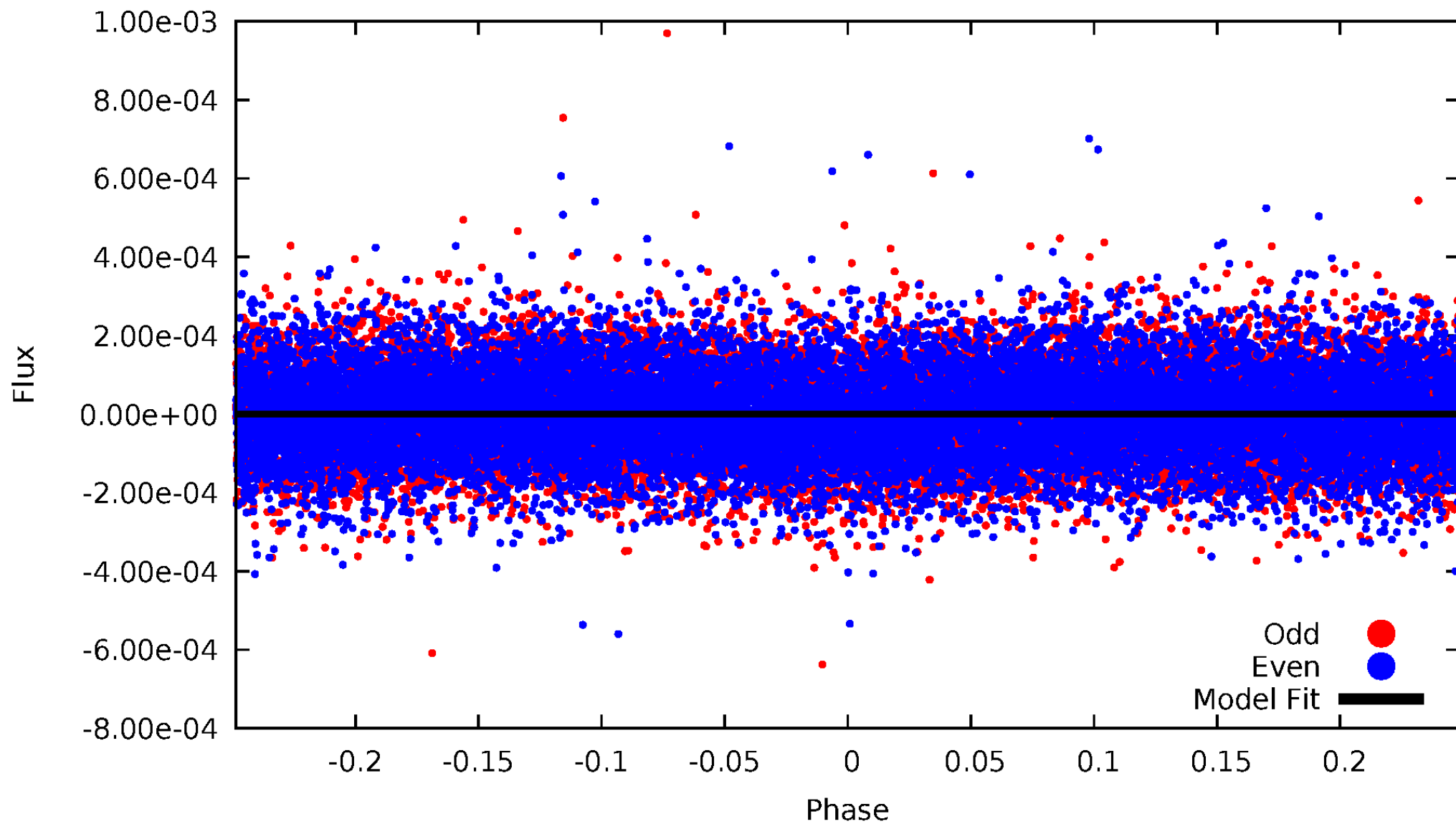


TCE 012257835-01



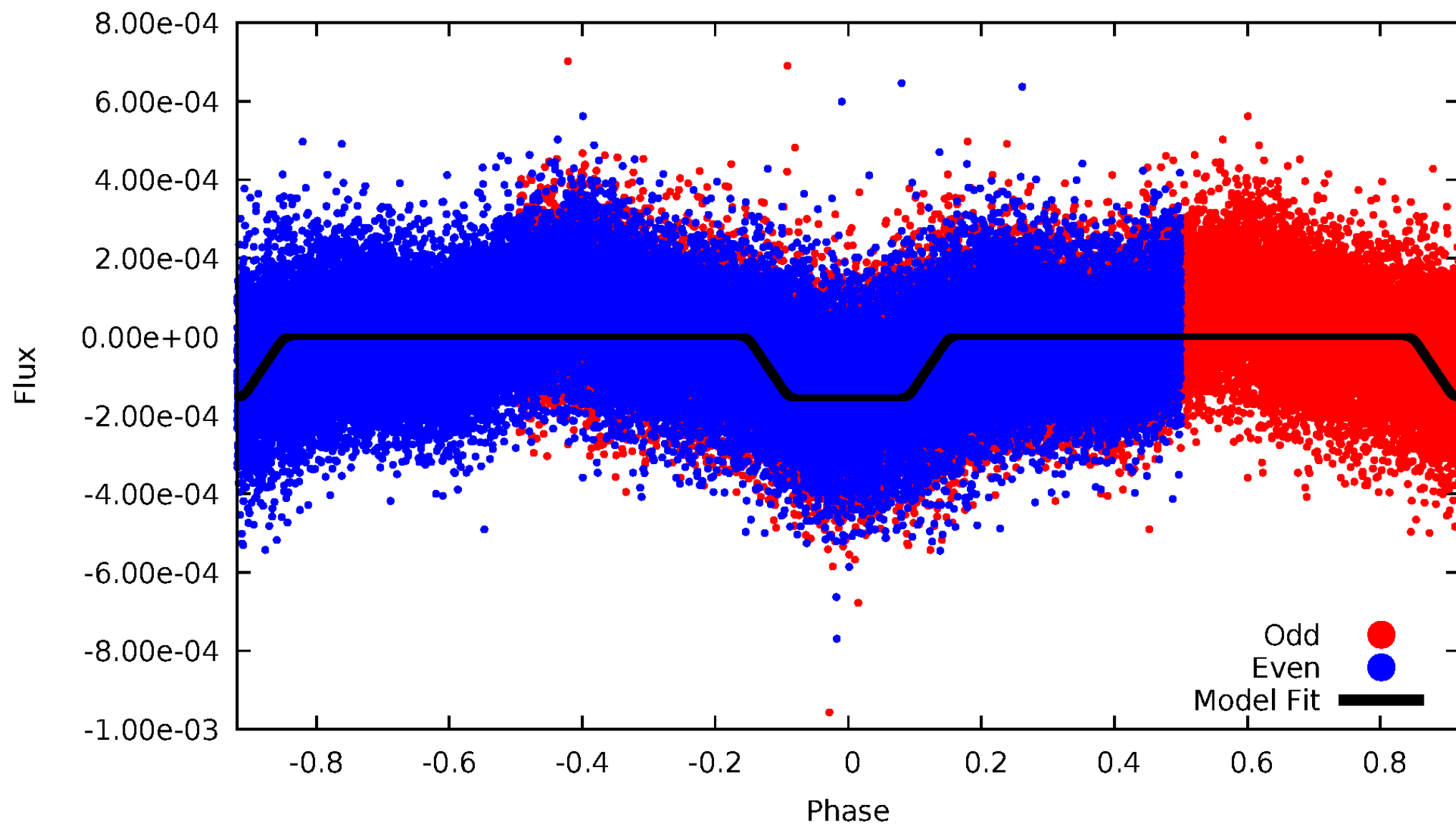
# DV Odd/Even

TCE 012257835-01

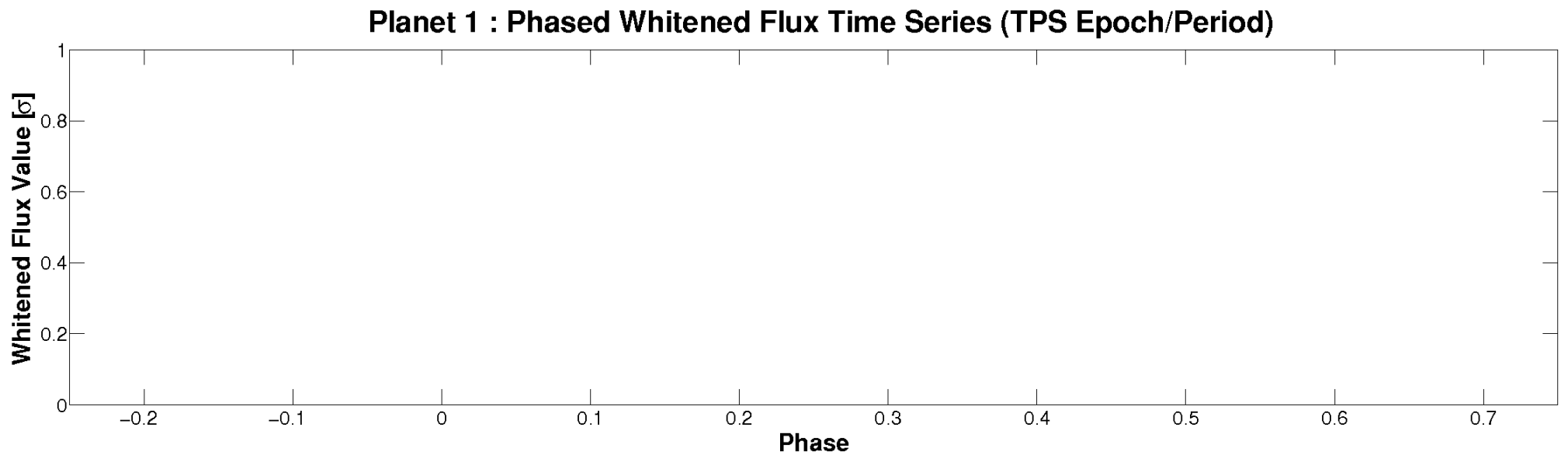
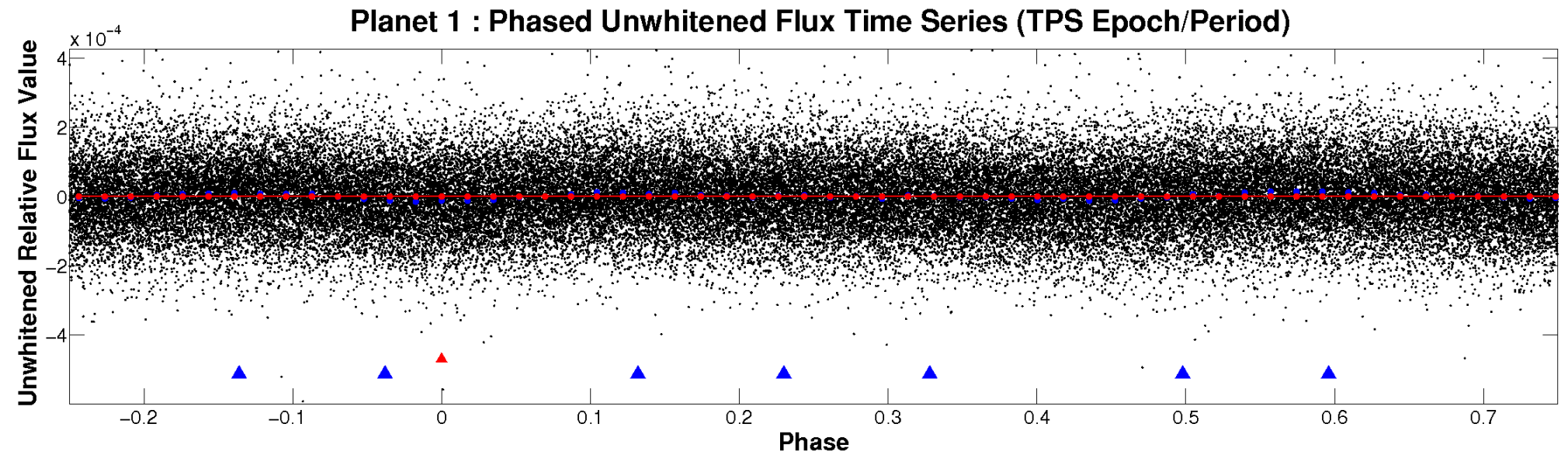


# ALT Odd/Even

TCE 012257835-01

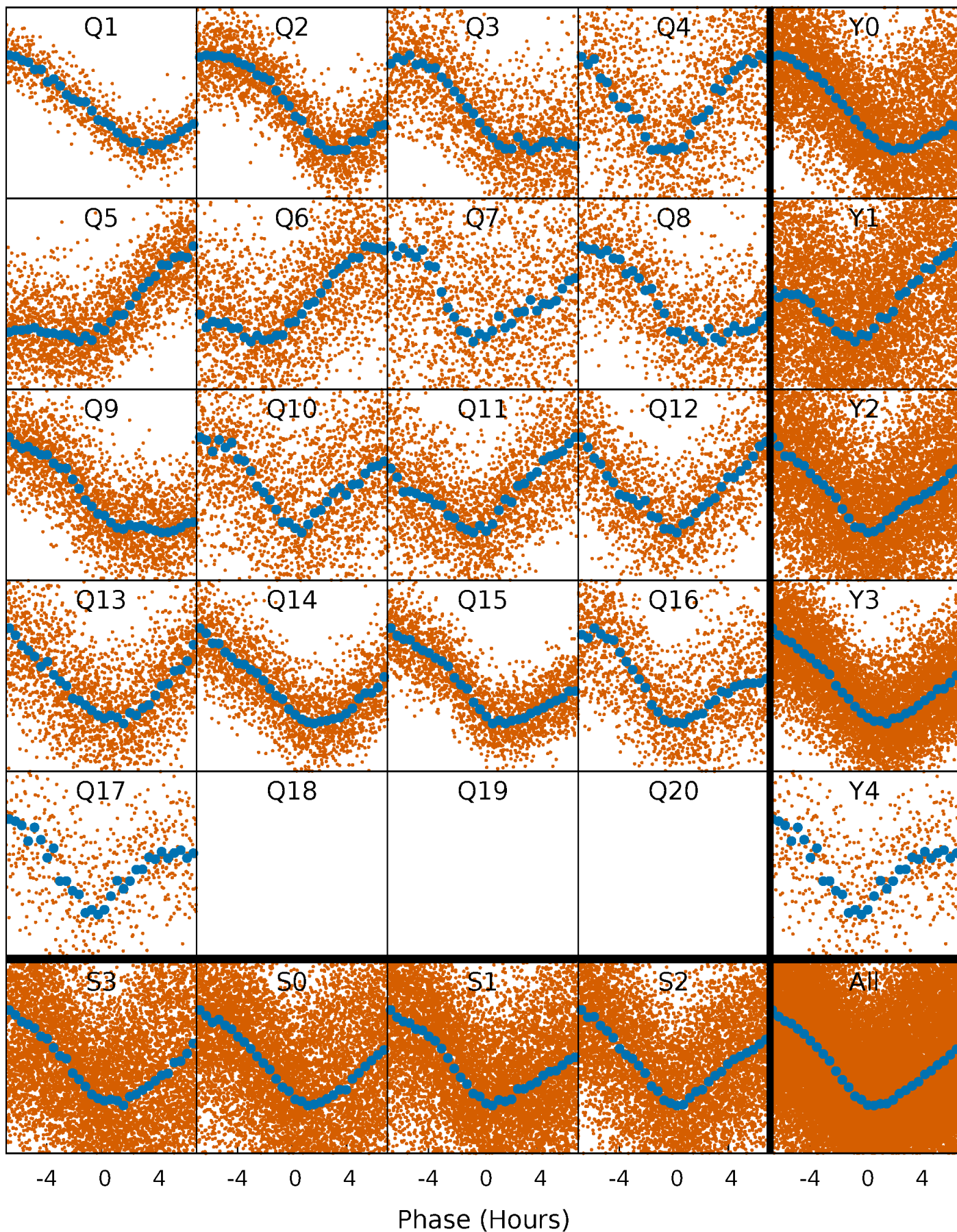


# Non-Whitened Vs. Whitened Light Curve



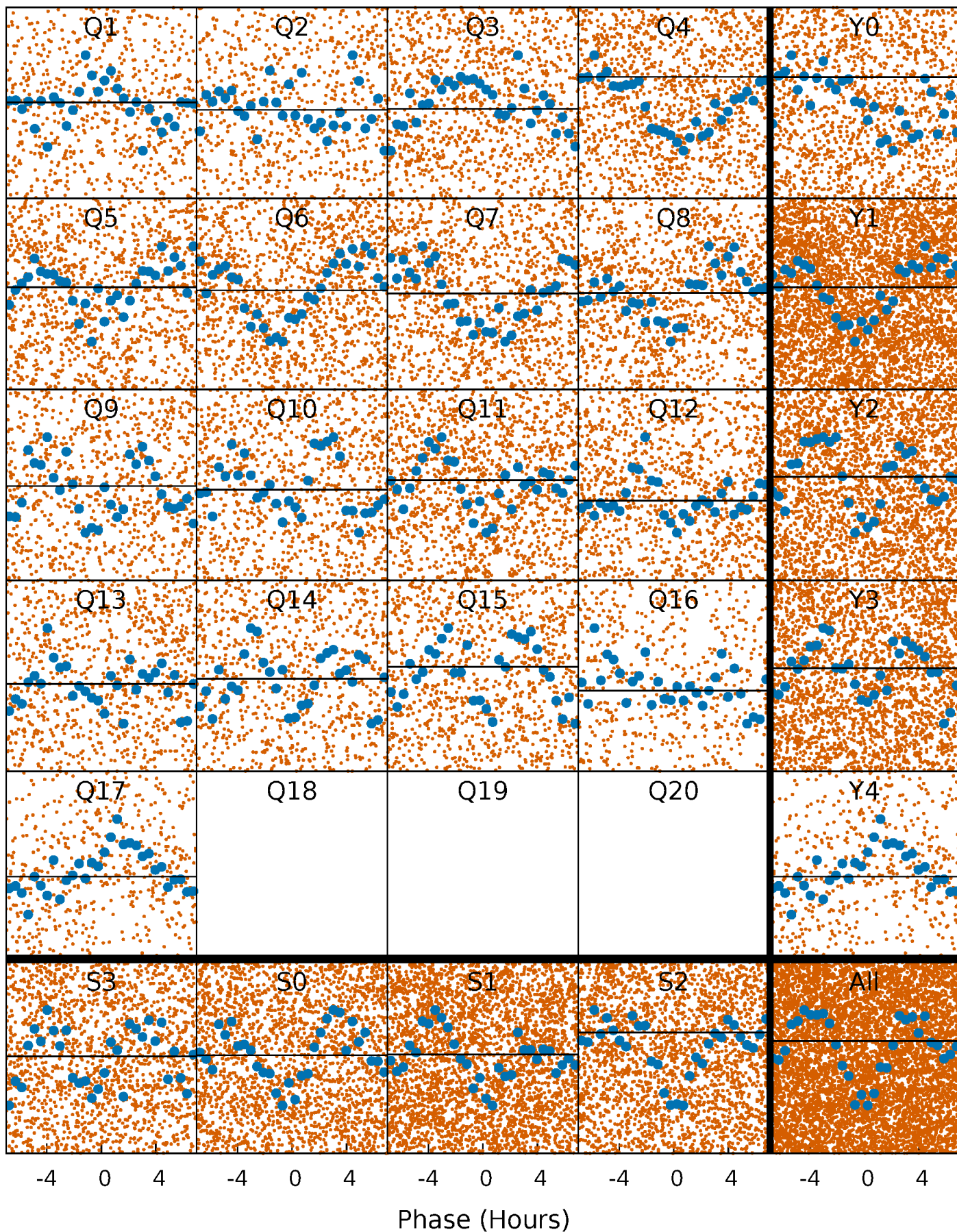
# PDC Quarter-Phased Transit Curves

TCE 012257835-01 P= 1.173880 Days  $T_0=131.831120$  (BKJD)



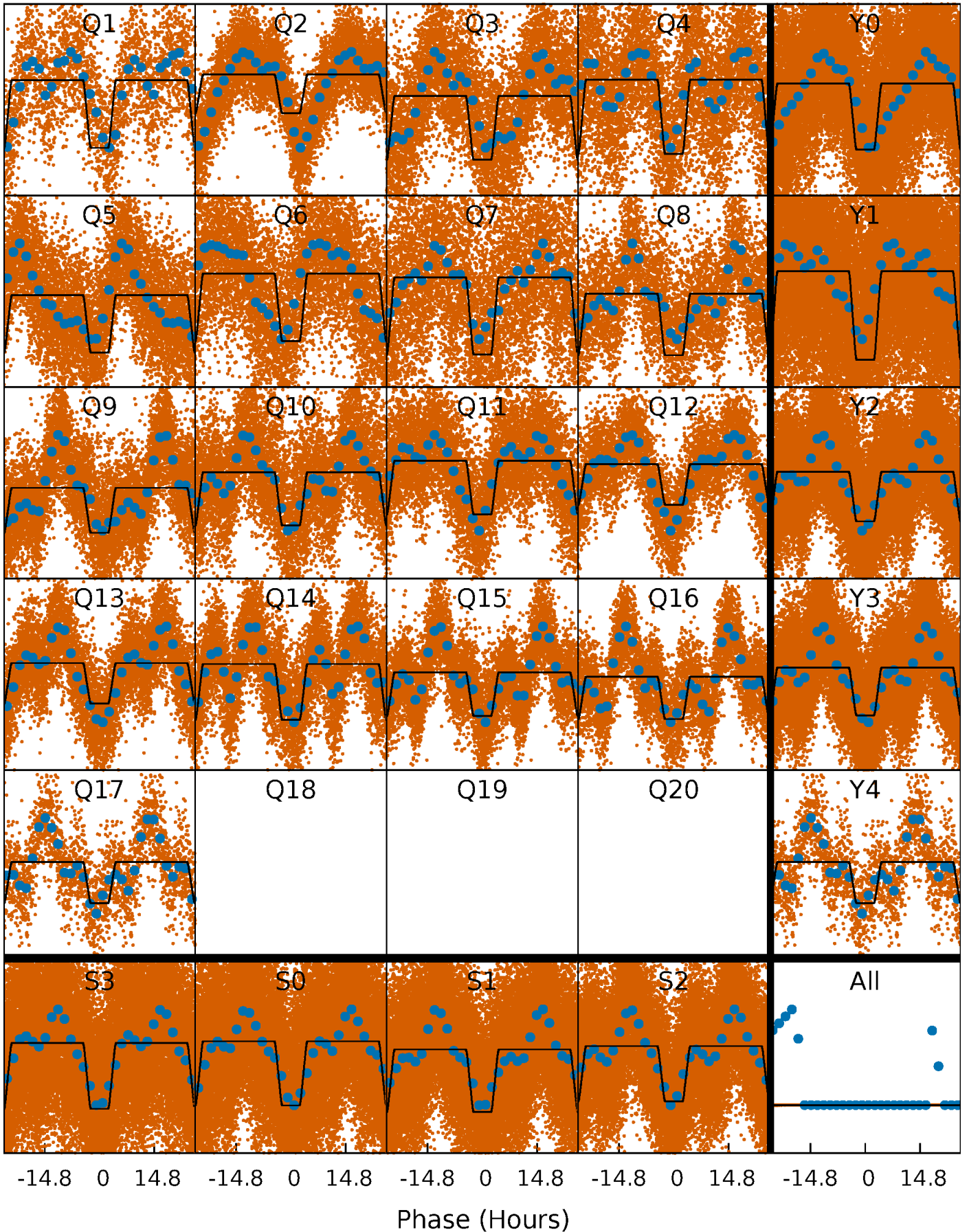
# DV Quarter-Phased Transit Curves

TCE 012257835-01 P= 1.173880 Days  $T_0=131.831120$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

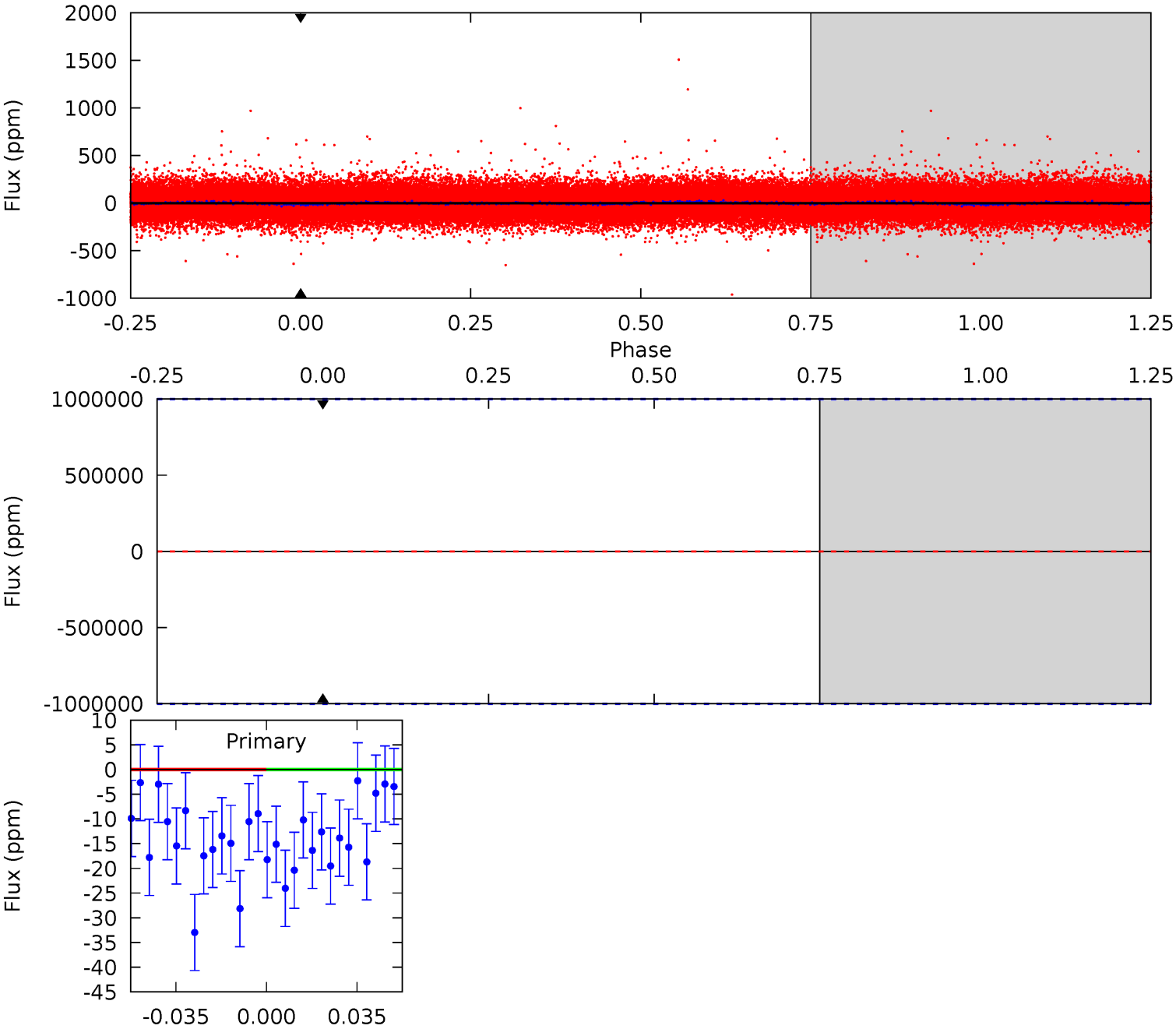
TCE 012257835-01   P= 1.173880 Days    $T_0=131.852567$  (BKJD)



# DV Model-Shift Uniqueness Test

012257835-01, P = 1.173880 Days, E = 130.657240 Days

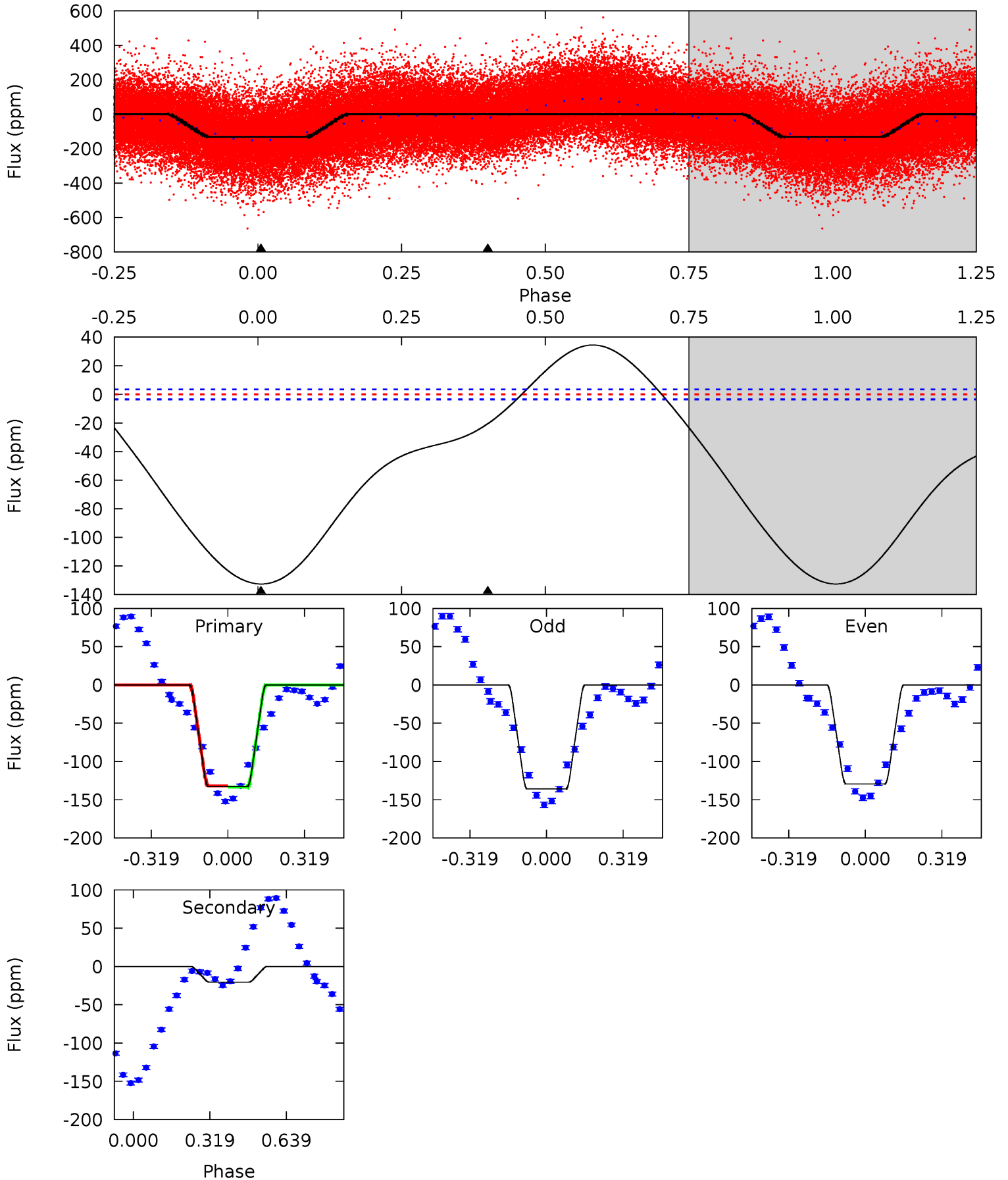
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

012257835-01, P = 1.173880 Days, E = 130.678687 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
165.1	25.5	0	0	4.31	1.00	16.6	165.1	165.1	25.5	25.5	4.04	1.03	0.21	1.03



### Stellar Parameters For KIC 012257835

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7016^{+168}_{-232}$	$3.839^{+0.252}_{-0.108}$	$0.140^{+0.200}_{-0.300}$	$2.699^{+0.464}_{-0.861}$	$1.835^{+0.177}_{-0.355}$	$0.132^{+0.217}_{-0.045}$
	+2%/-3%	+7%/-3%	+143%/-214%	+17%/-32%	+10%/-19%	+165%/-34%
Source	PHO1	FLK73	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 012257835-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$20.09^{+20.12}_{-14.06}$	$4296^{+255}_{-311}$	$-5723^{+38517}_{-25245}$	$-1.904^{+153.340}_{-143.108}$
Alt.	$-21 \pm 1$	$20.63^{+22.04}_{-13.99}$	$4294^{+240}_{-366}$	$-3751^{+526}_{-209}$	$0.018^{+0.158}_{-0.013}$

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

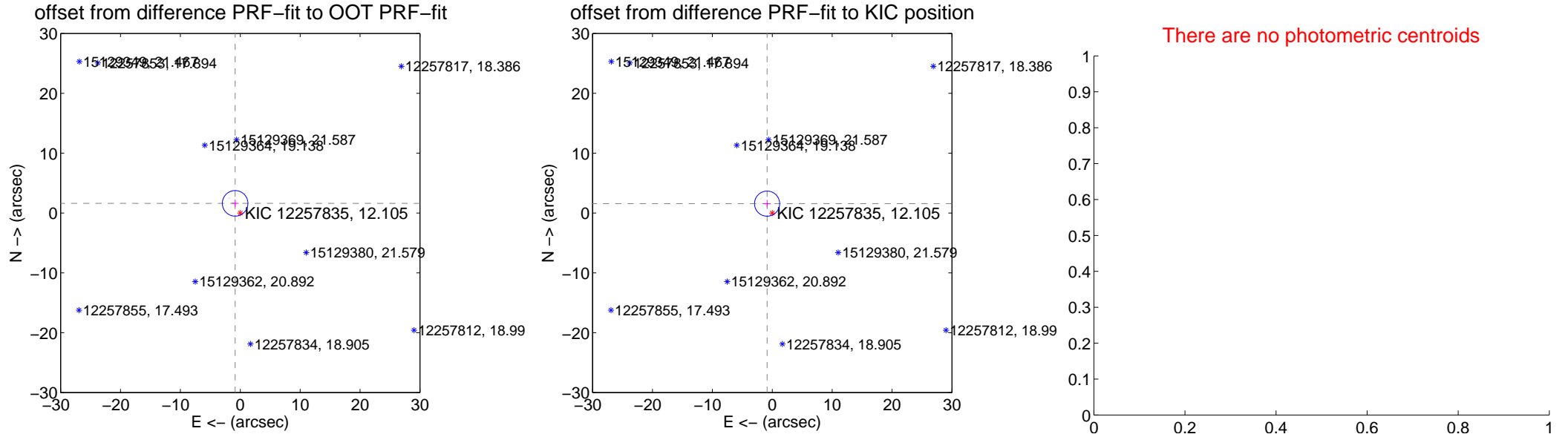
## DV Centroid Data

Supplemental centroid analysis for 012257835-01. Kepler magnitude: 12.11. Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

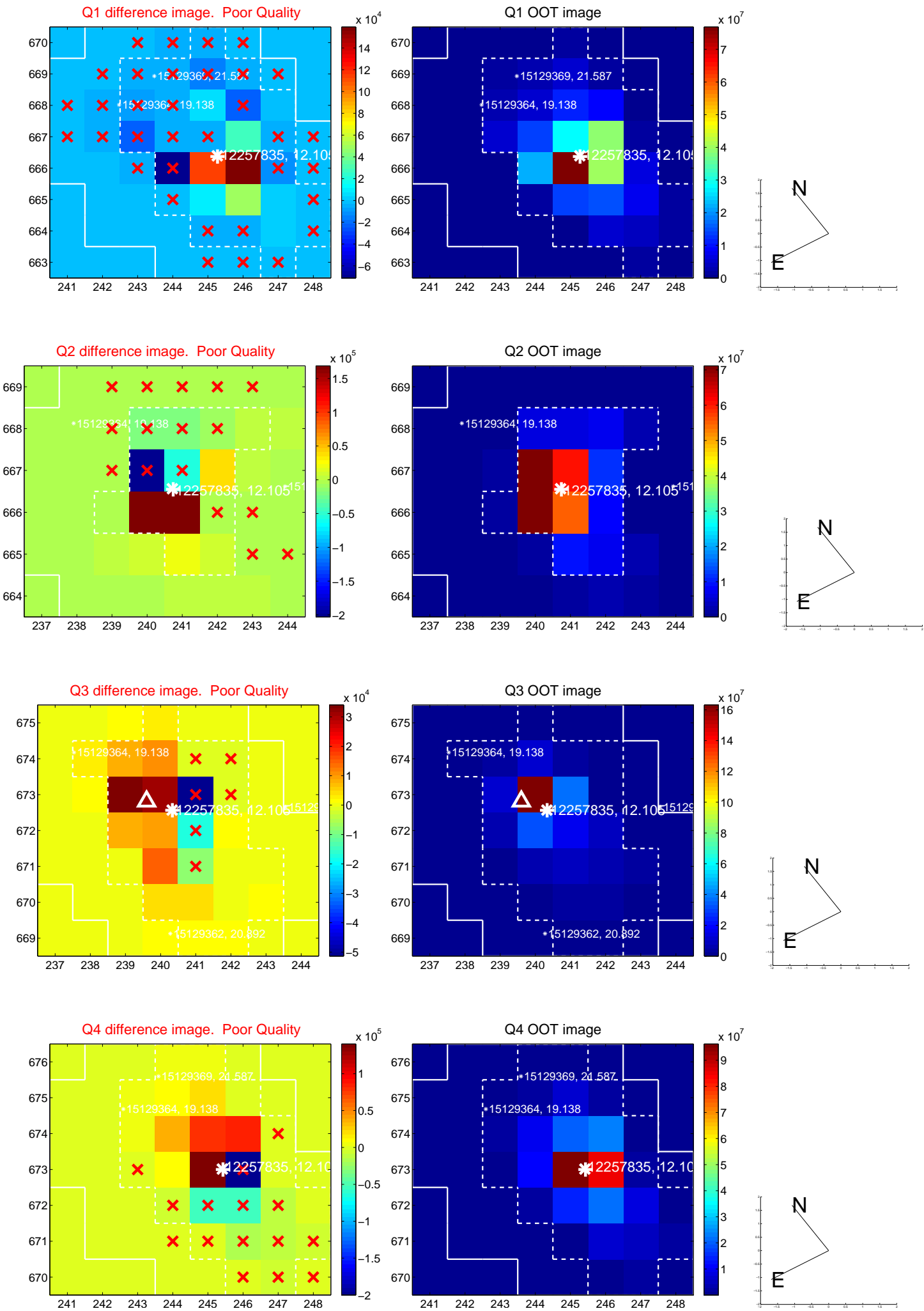
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.831 \pm 0.712$	2.57	$0.862 \pm 0.567$	$1.615 \pm 0.617$
PRF-fit source offset from KIC position	$1.787 \pm 0.699$	2.55	$0.862 \pm 0.615$	$1.565 \pm 0.622$
photometric centroid source offset	—	—	—	—

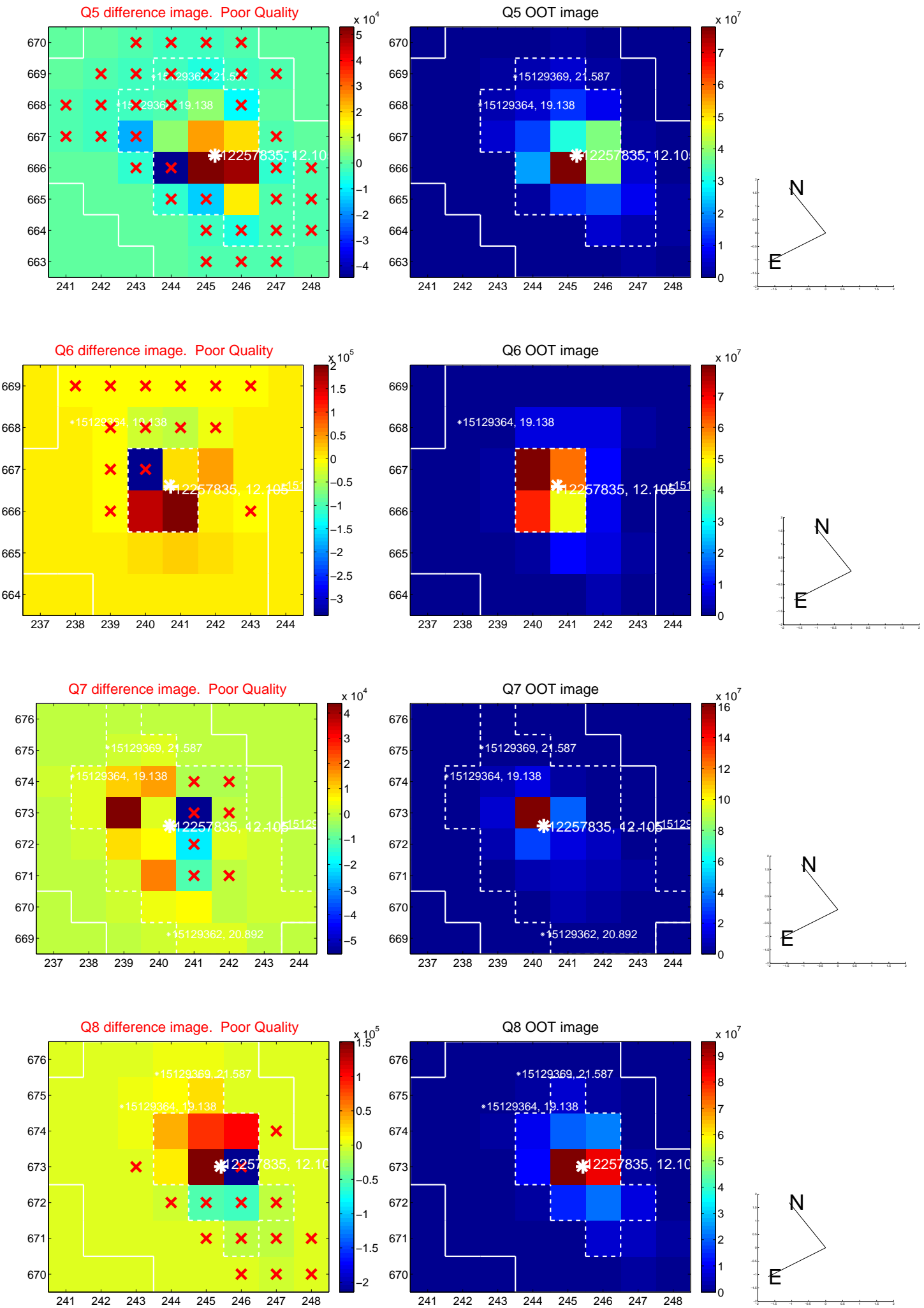


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

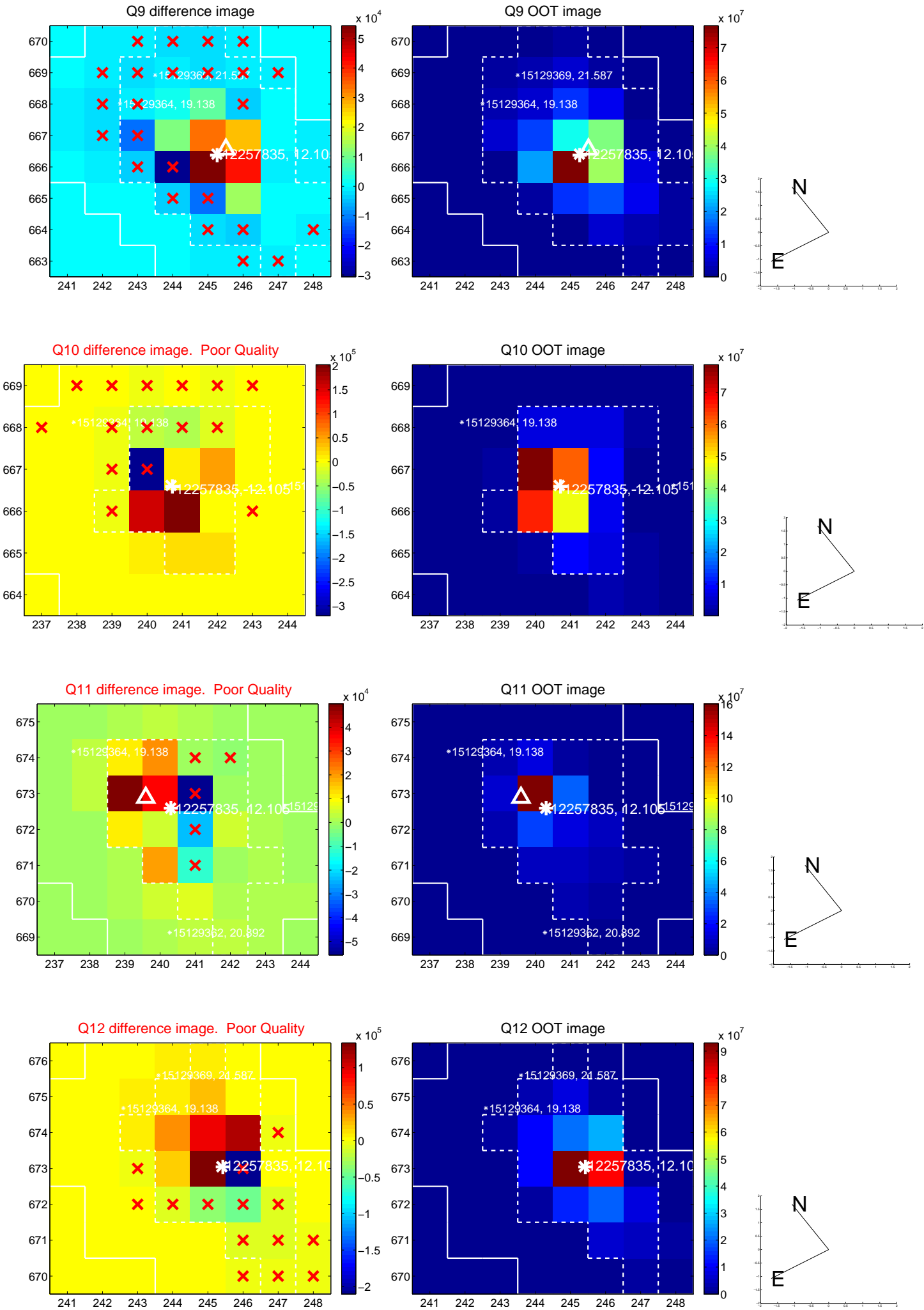
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



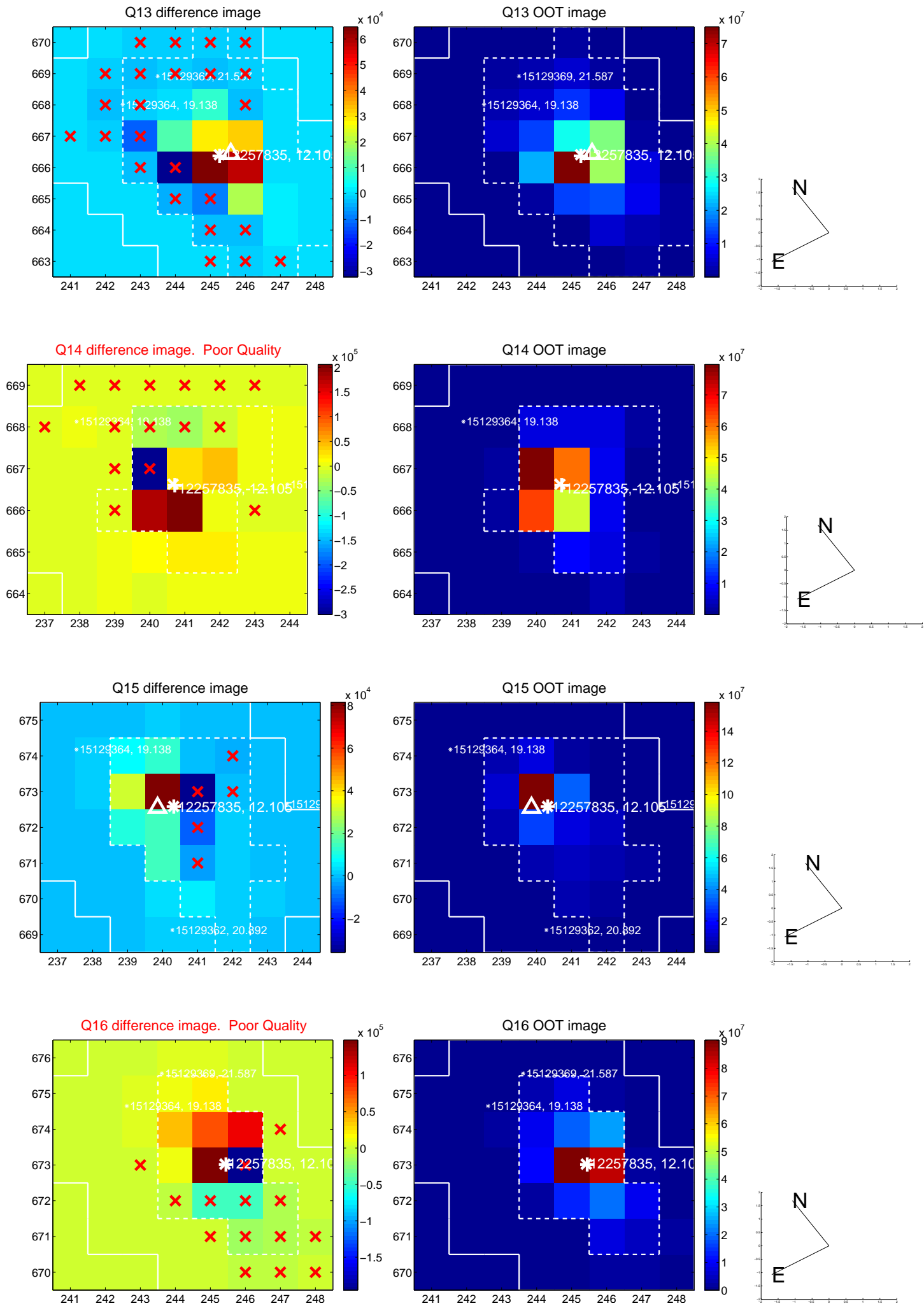
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



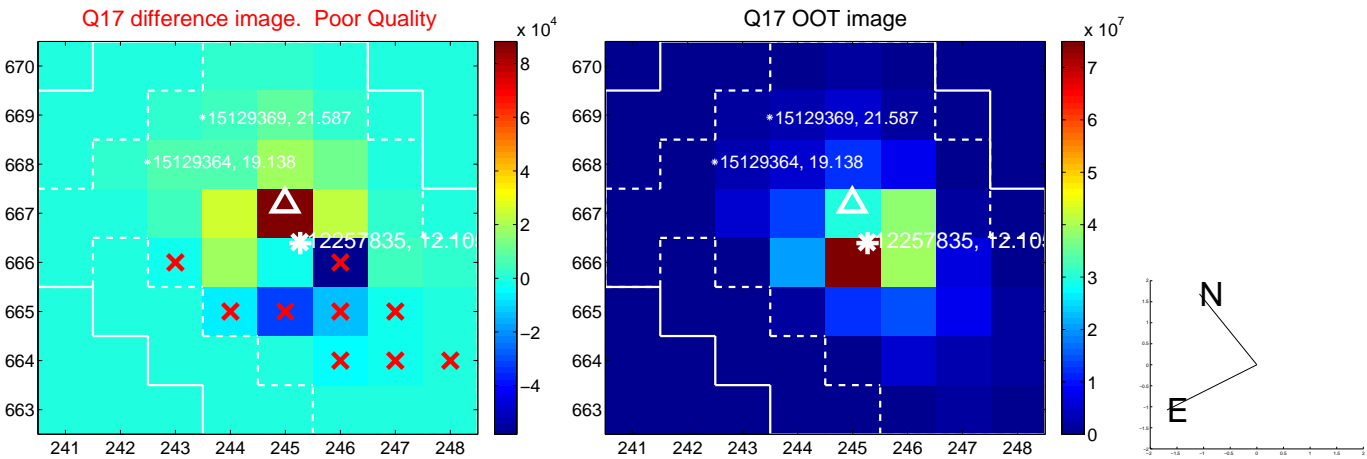
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



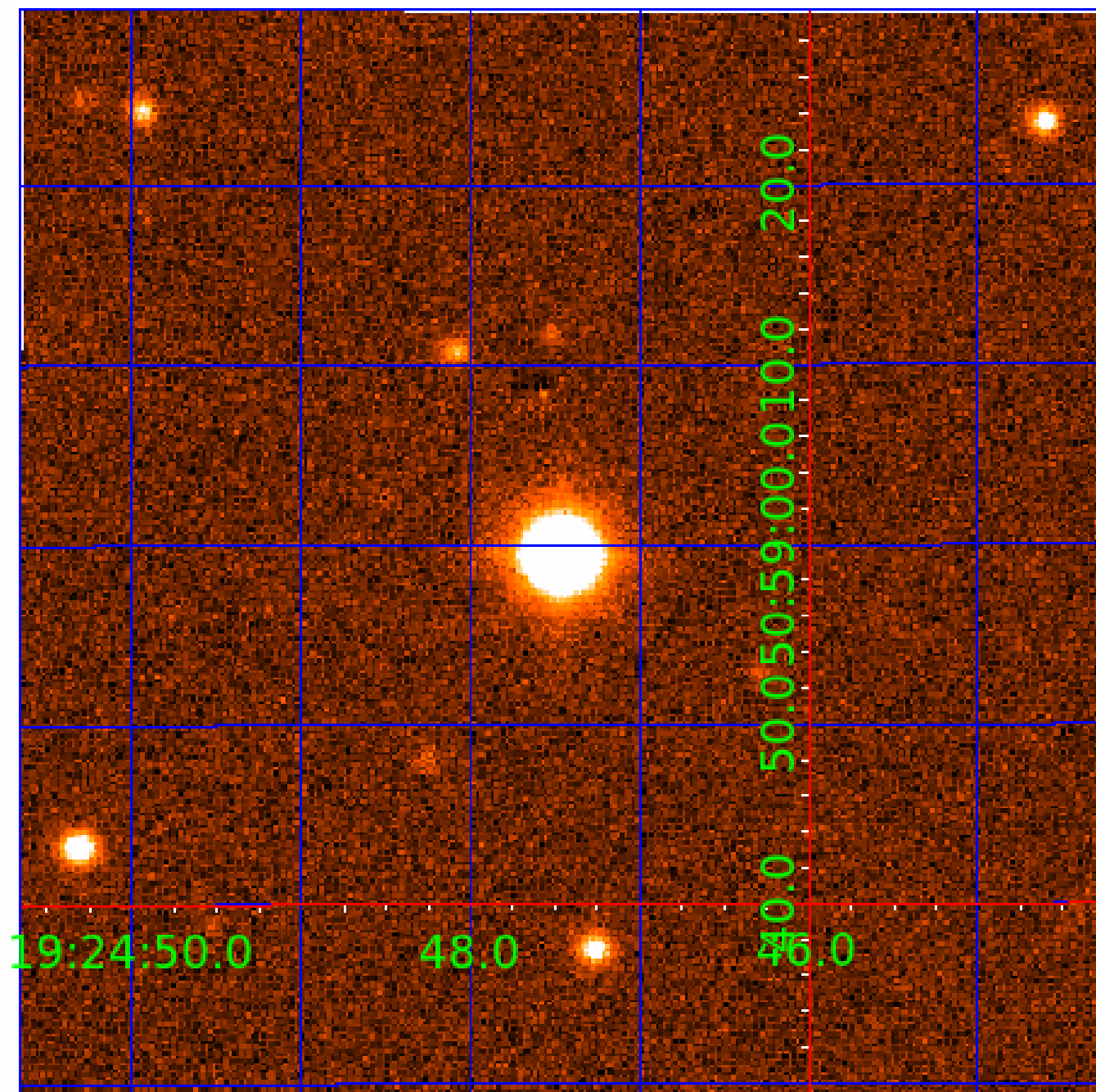
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



# KIC 012257835

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
012257835-01	OBS	No	1.173880	131.831120	113.2	3.500	8.0	-1.0	2.70	7016	2.90	22244.52
012257835-02	OBS	No	234.031739	169.550184	204.3	3.789	7.9	7.6	2.70	7016	4.40	19.10

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012257835-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_NOFITS
012257835-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT

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

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

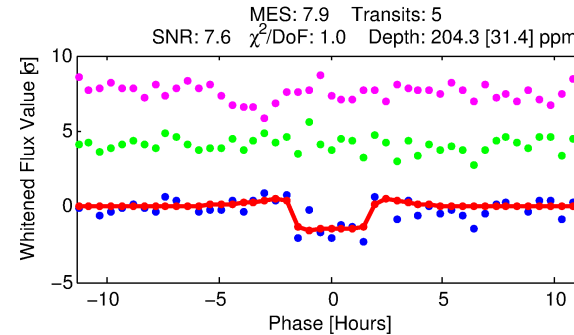
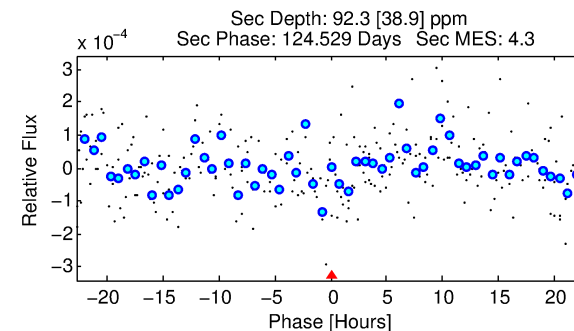
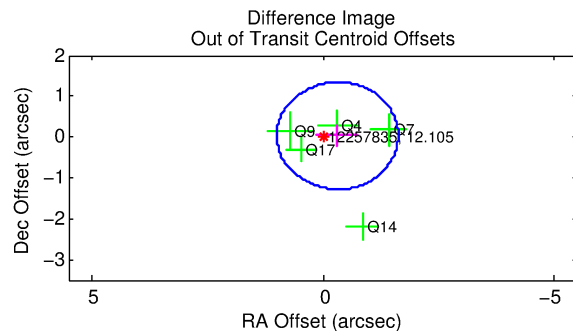
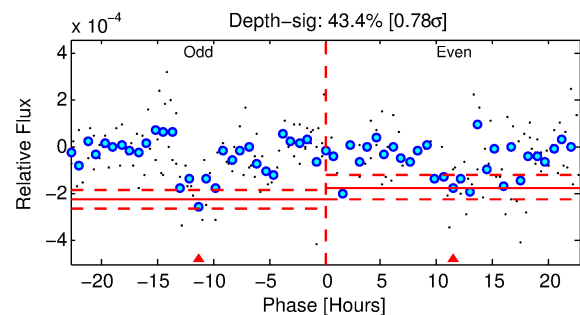
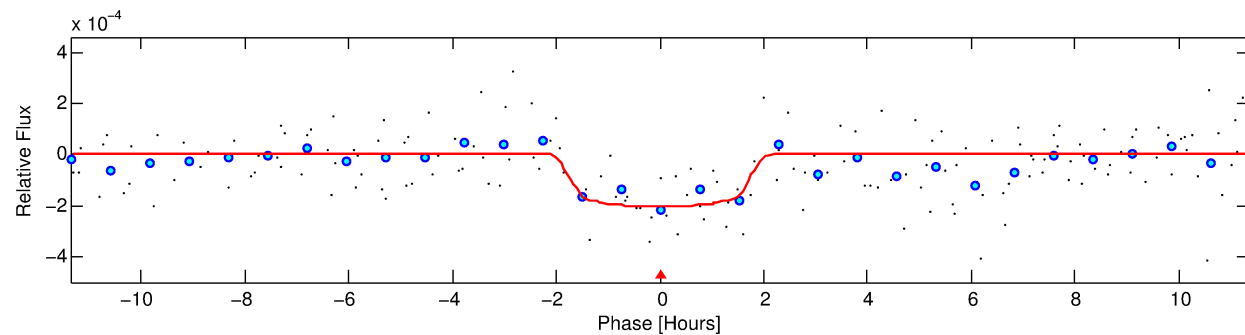
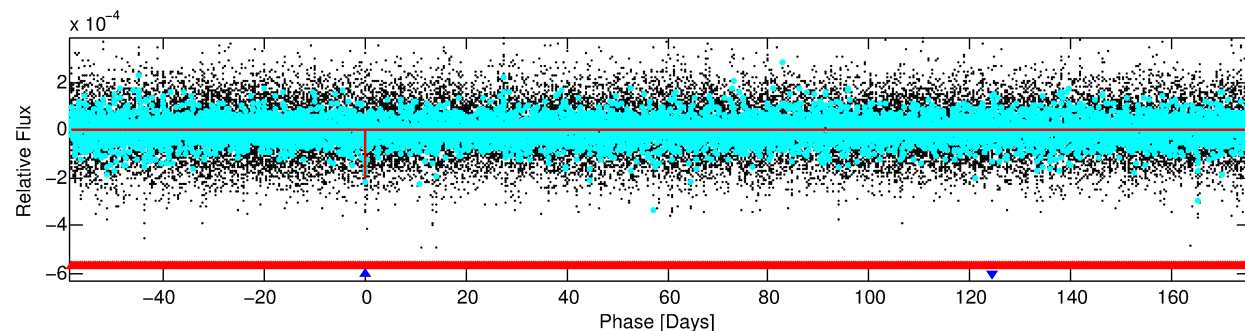
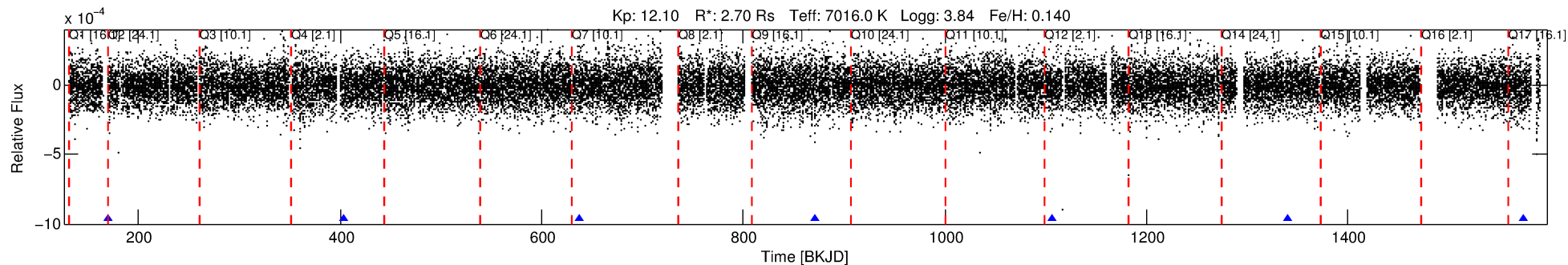
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 012257835-02

No Significant Match Found

# DV One-Page Summary

KIC: 12257835 Candidate: 2 of 2 Period: 234.032 d



## DV Fit Results:

Period = 234.03174 [0.00245] d  
Epoch = 169.5502 [0.0110] BKJD  
Rp/R\* = 0.0149 [0.0075]  
a/R\* = 245.04 [723.20]  
b = 0.87 [0.82]  
Seff = 19.10 [8.80]  
Teq = 533 [61] K  
Rp = 4.40 [2.62] Re  
a = 0.9099 [0.2616] AU  
Ag = 2170.55 [2553.51] [0.85 $\sigma$ ]  
Teffp = 5626 [1545] K [3.29 $\sigma$ ]

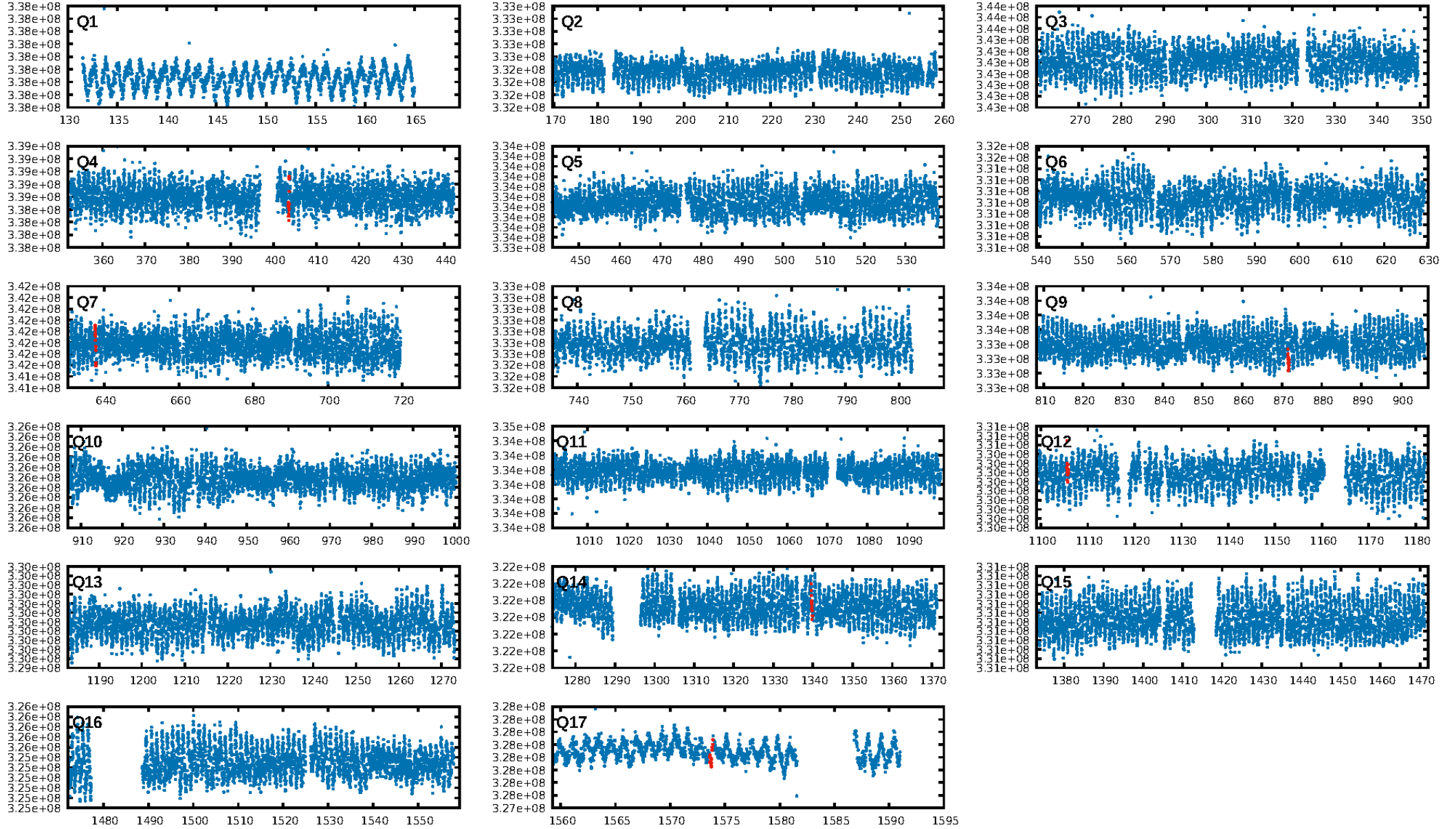
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1083.49 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 64.4%  
ModelChiSquareGof-sig: 99.8%  
**Bootstrap-pfa: 6.84e-11**  
RollingBand-fgt: 1.00 [4/4]  
**GhostDiagnostic-chr: 0.8788**  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.316 arcsec [0.72 $\sigma$ ]  
KicOffset-rm: 0.349 arcsec [0.77 $\sigma$ ]  
OotOffset-st: 1/1/1/2 [5]  
KicOffset-st: 1/1/1/2 [5]  
DiffImageQuality-fgm: 0.80 [4/5]  
DiffImageOverlap-fno: 0.00 [0/6]

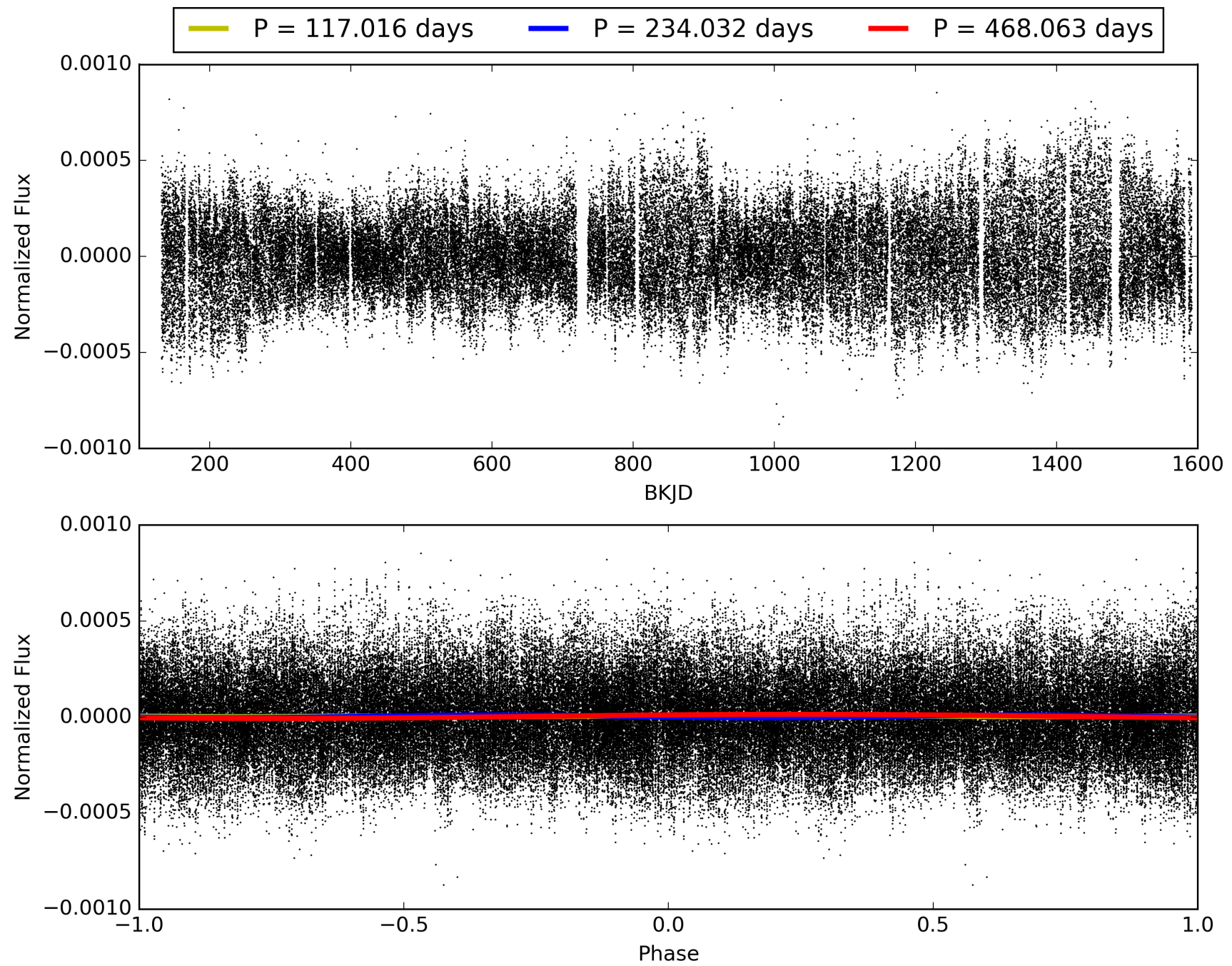
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 03:35:48 Z

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

# TCE 012257835-02, PDC Light Curves

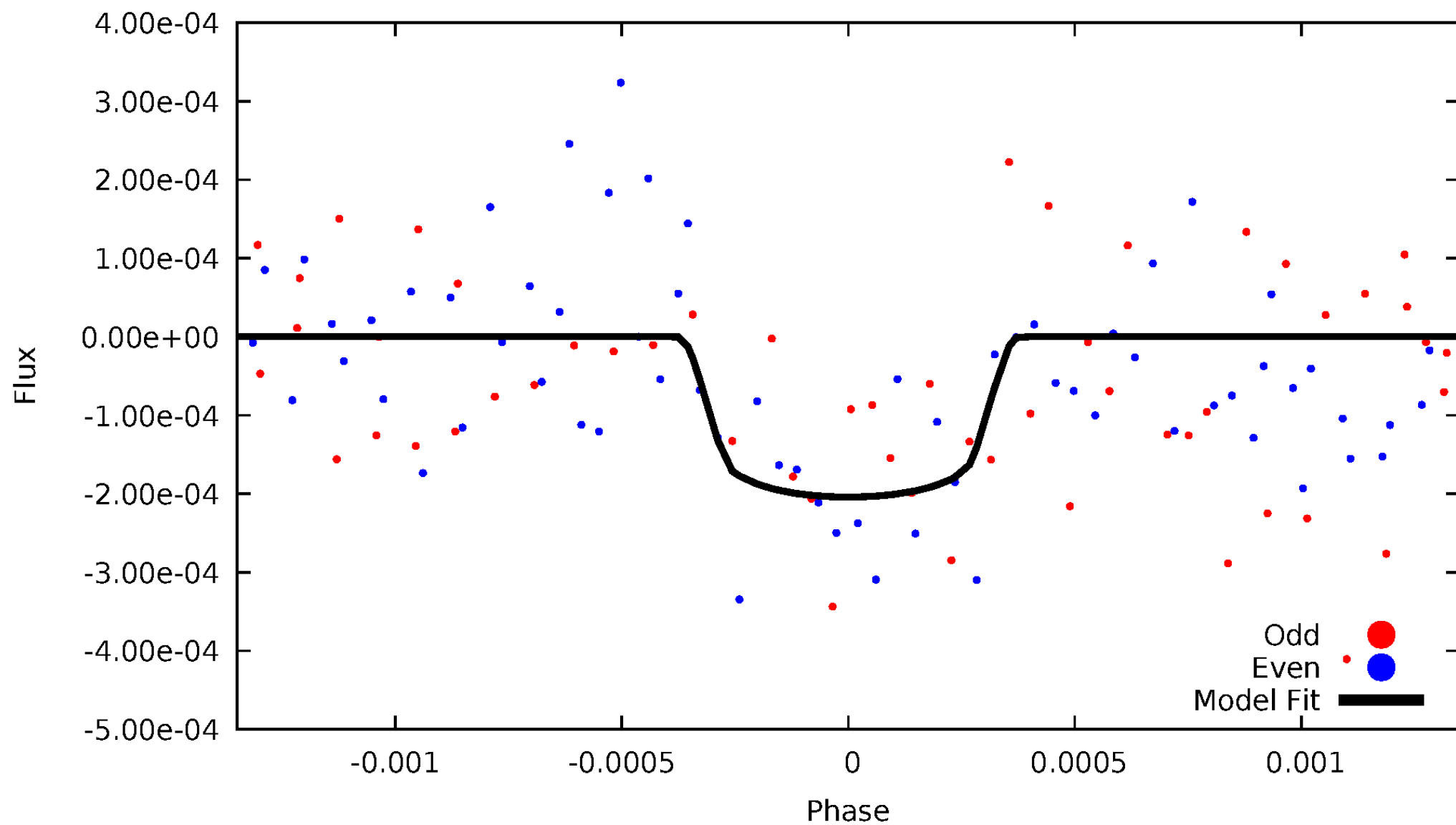


TCE 012257835-02



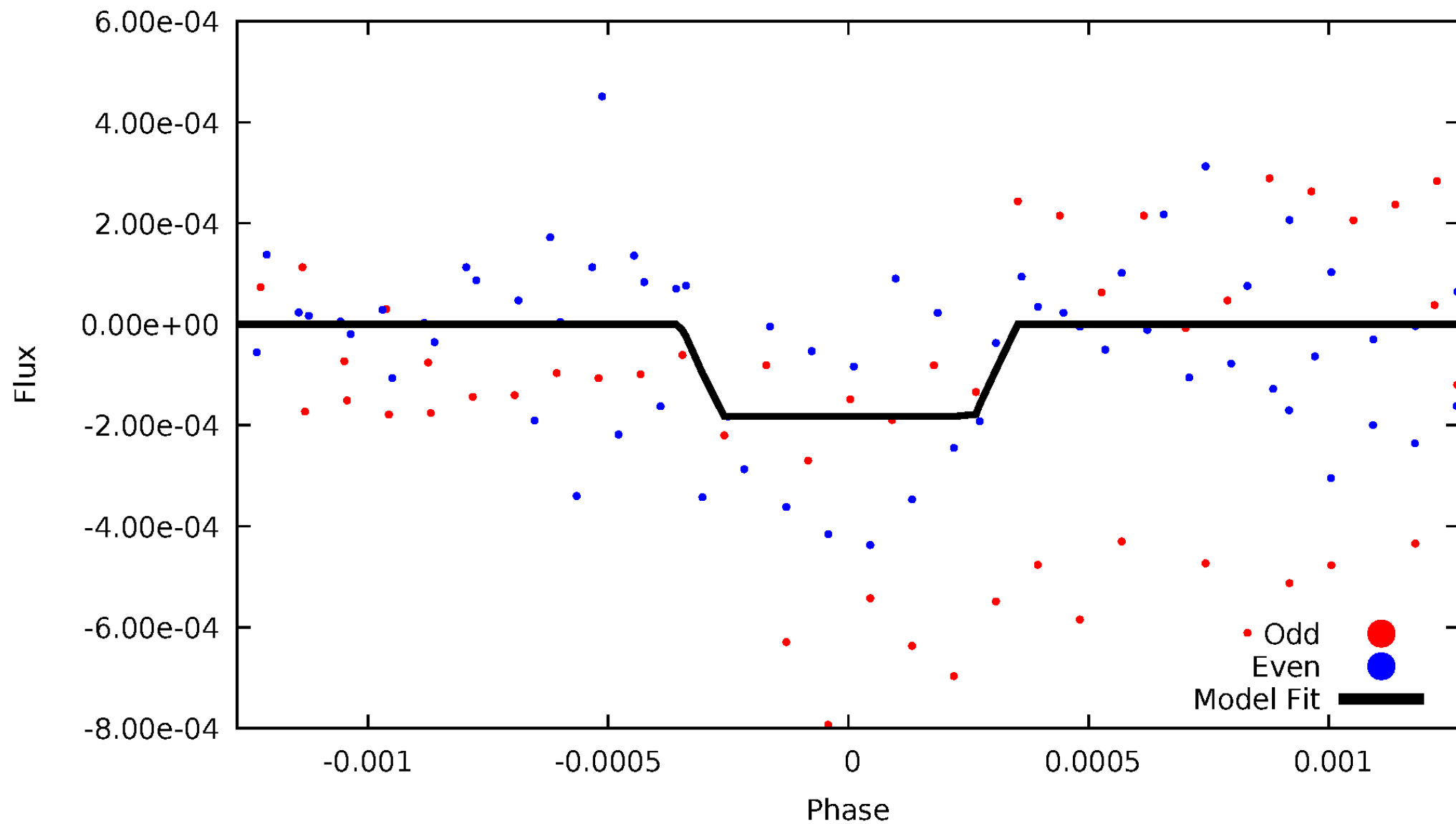
# DV Odd/Even

TCE 012257835-02



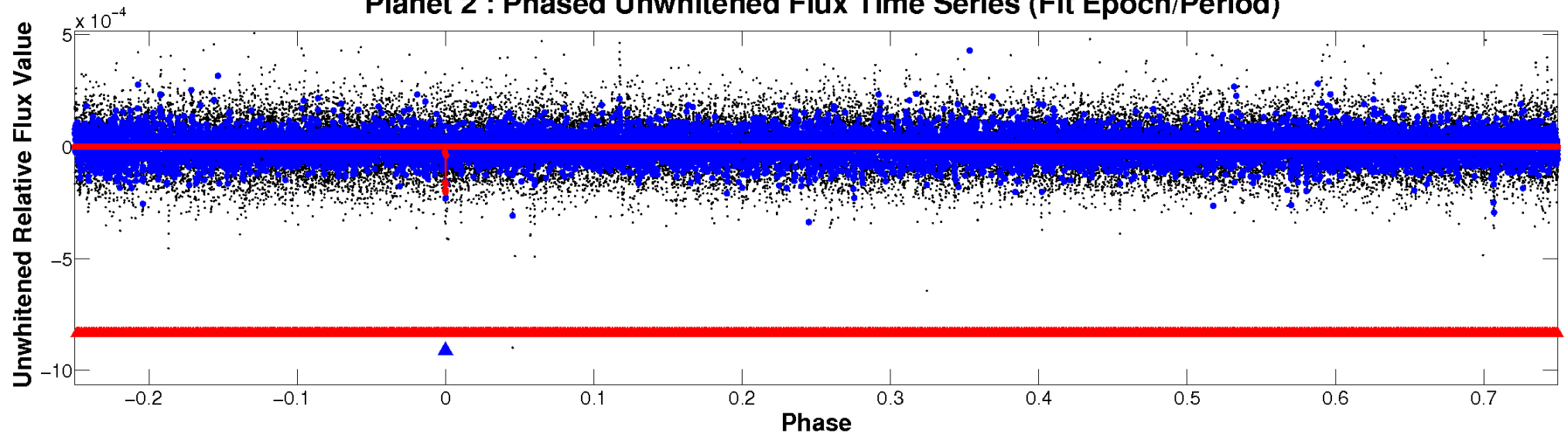
# ALT Odd/Even

TCE 012257835-02

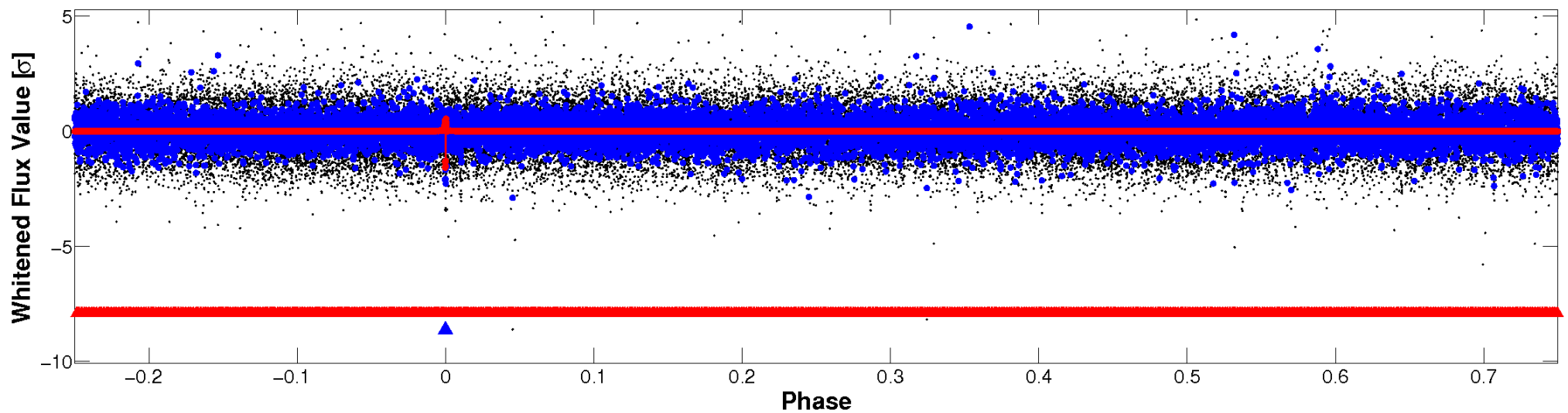


# Non-Whitened Vs. Whitened Light Curve

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

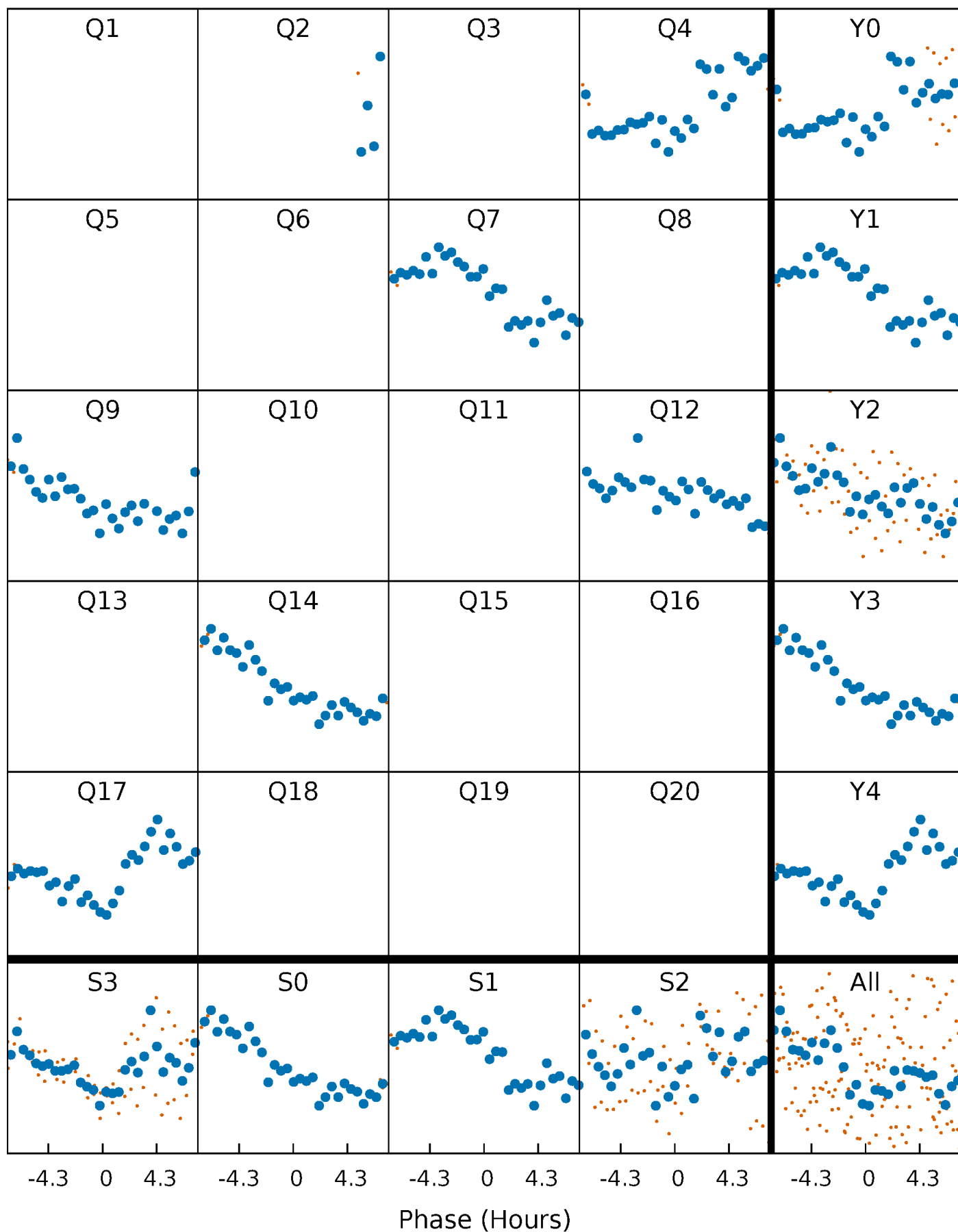


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



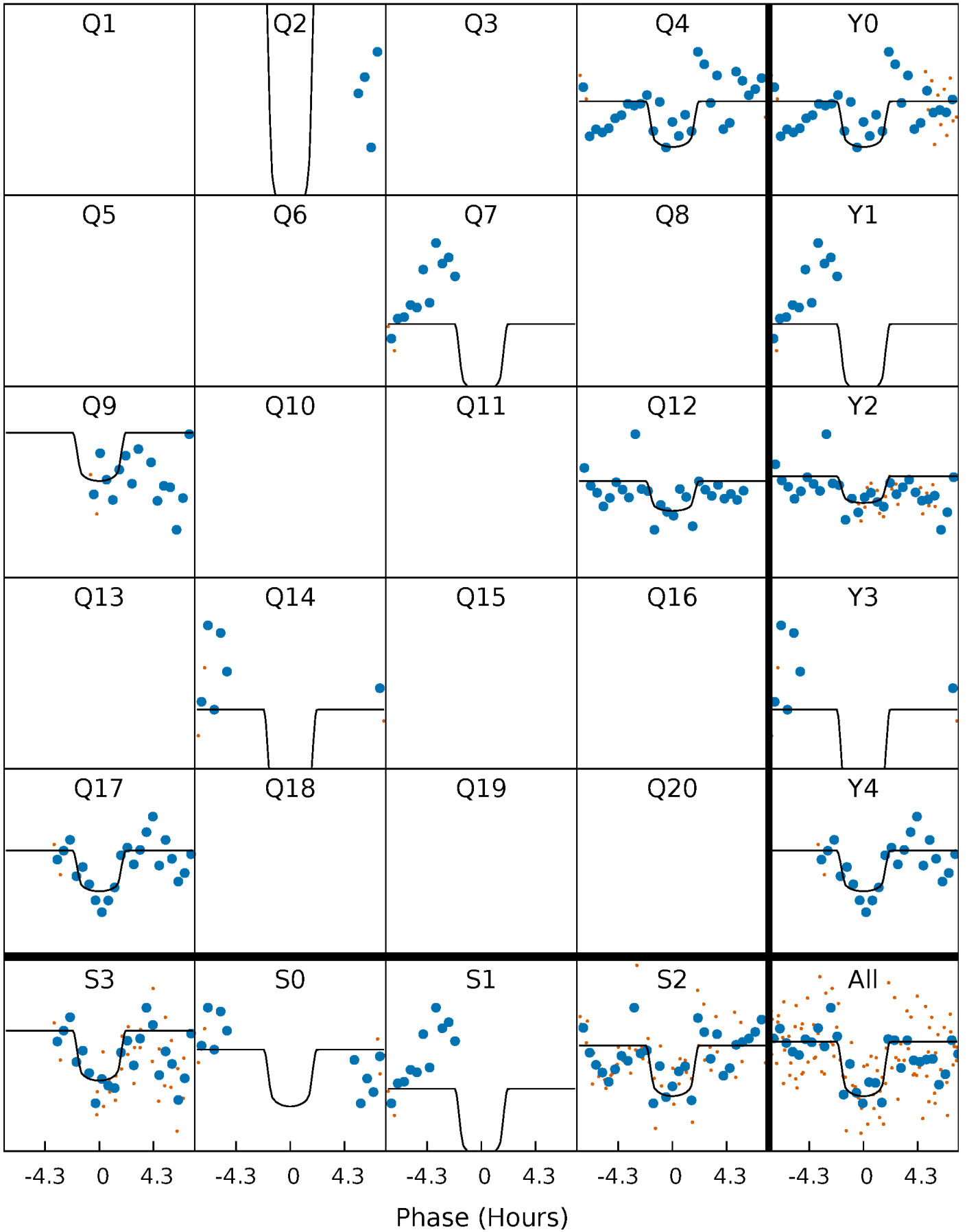
# PDC Quarter-Phased Transit Curves

TCE 012257835-02   P=234.031739 Days    $T_0=169.550184$  (BKJD)



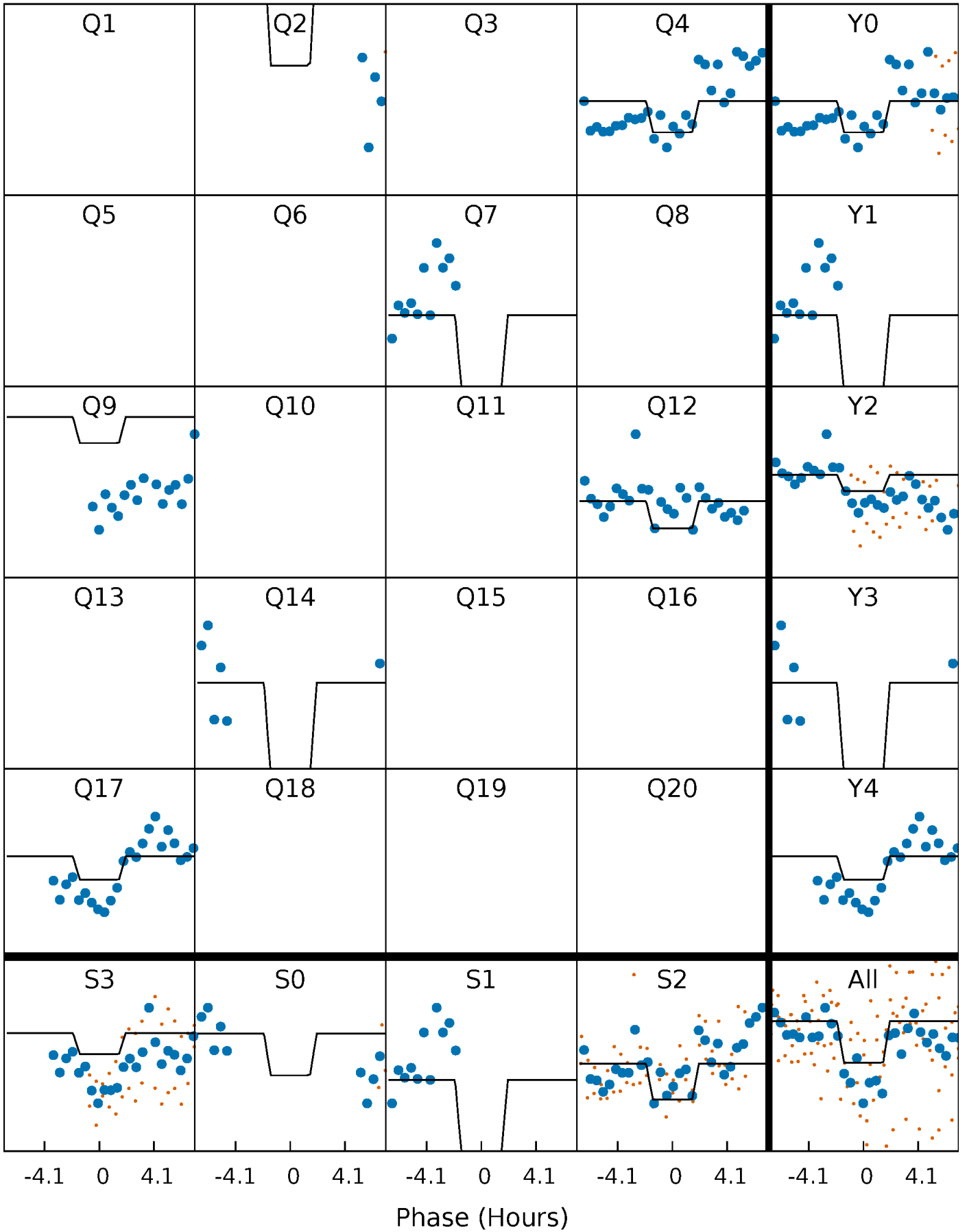
# DV Quarter-Phased Transit Curves

TCE 012257835-02     $P=234.031739$  Days     $T_0=169.550184$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

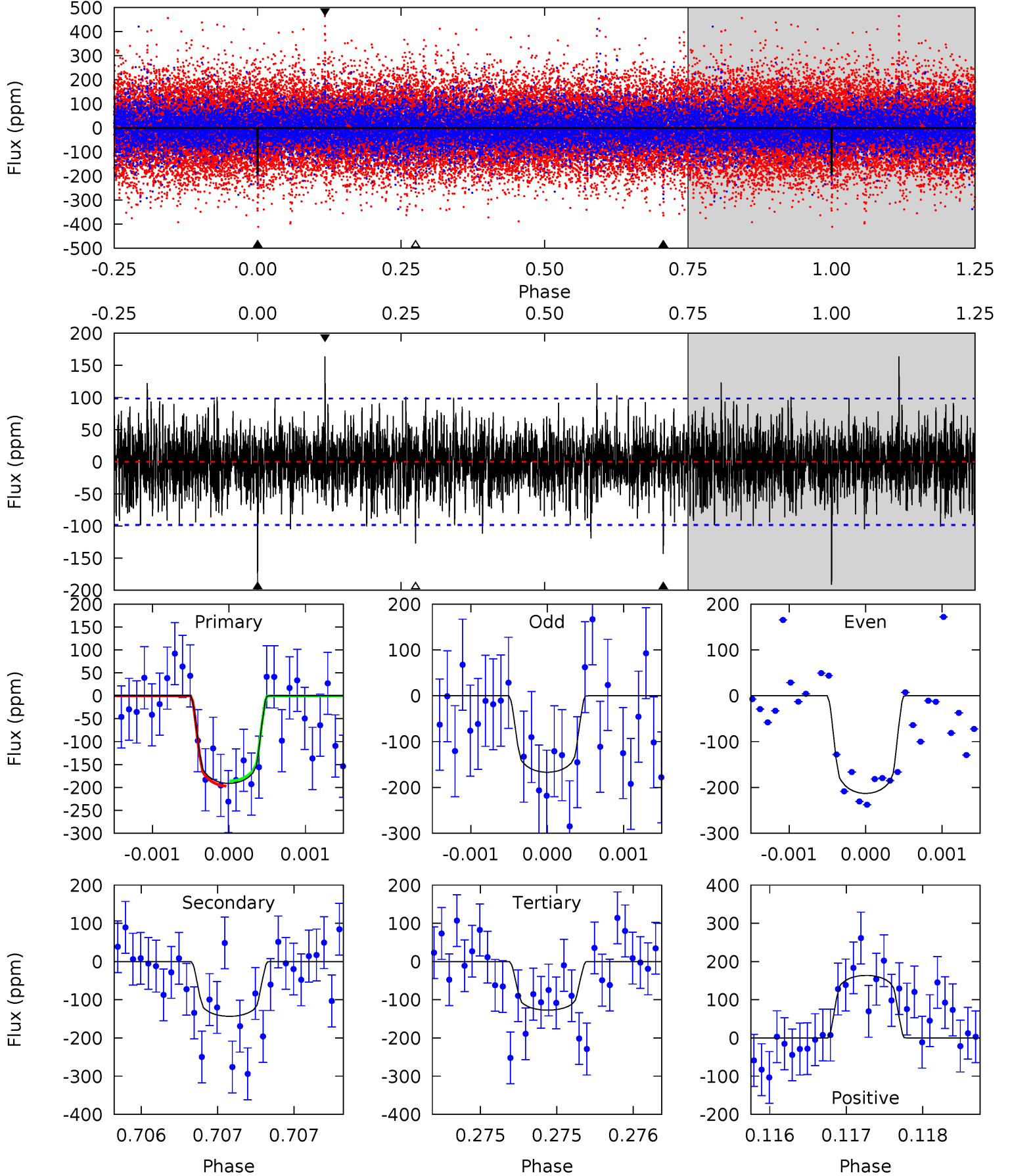
TCE 012257835-02 P=234.032382 Days  $T_0=169.549965$  (BKJD)



# DV Model-Shift Uniqueness Test

012257835-02, P = 234.031739 Days, E = 169.550184 Days

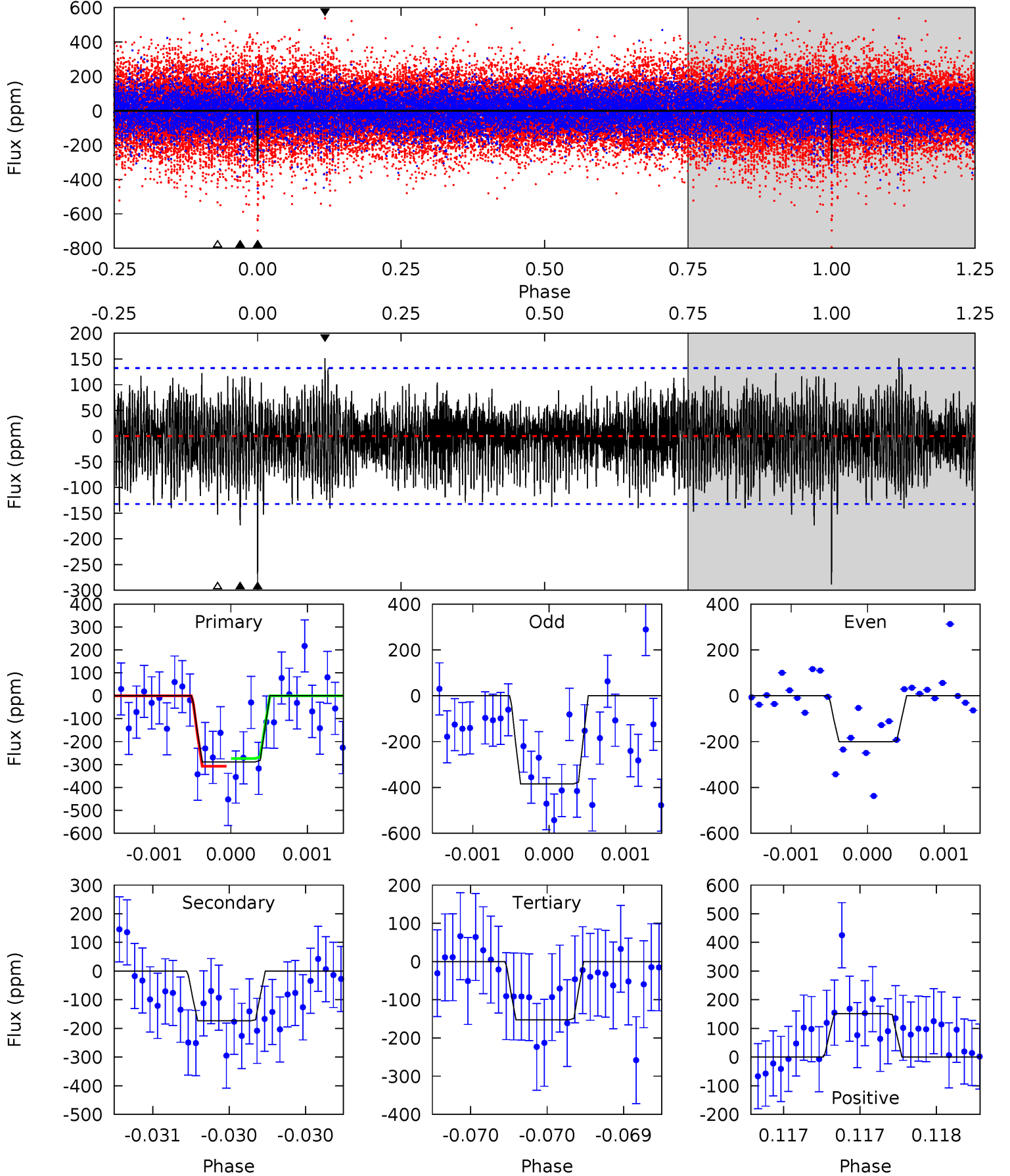
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	8.02	7.12	9.16	5.50	3.37	1.89	3.58	1.53	0.90	-1.14	1.29	0.91	0.46	0.31



# Alt Model-Shift Uniqueness Test

012257835-02, P = 234.032382 Days, E = 169.549965 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
12.0	7.23	6.36	6.31	5.52	3.39	1.93	5.67	5.72	0.87	0.93	3.85	1.22	0.34	0.70



### Stellar Parameters For KIC 012257835

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7016^{+168}_{-232}$	$3.839^{+0.252}_{-0.108}$	$0.140^{+0.200}_{-0.300}$	$2.699^{+0.464}_{-0.861}$	$1.835^{+0.177}_{-0.355}$	$0.132^{+0.217}_{-0.045}$
	+2%/-3%	+7%/-3%	+143%/-214%	+17%/-32%	+10%/-19%	+165%/-34%
Source	PHO1	FLK73	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 012257835-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-143 \pm 18$	$4.32^{+2.20}_{-2.04}$	$732^{+48}_{-58}$	$6127^{+2492}_{-1039}$	$3513^{+8954}_{-1978}$
Alt.	$-173 \pm 24$	$3.80^{+2.28}_{-2.01}$	$734^{+45}_{-61}$	$6776^{+4139}_{-1339}$	$5302^{+18314}_{-3164}$

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

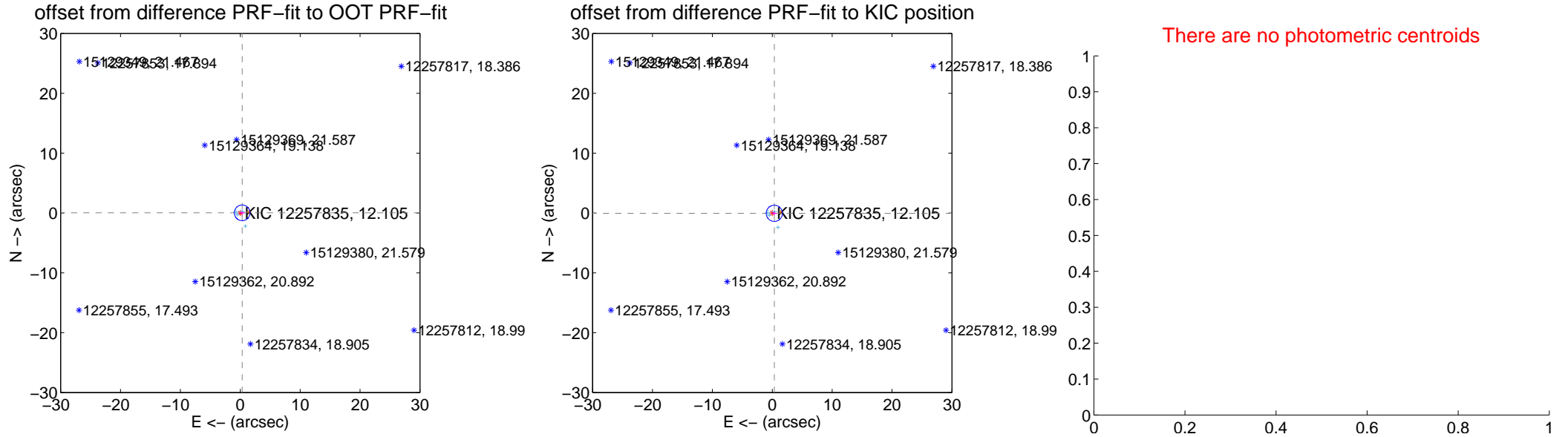
## DV Centroid Data

Supplemental centroid analysis for 012257835-02. Kepler magnitude: 12.11. Transit SNR 7.60

There are 4 quarters with good PRF difference image offsets

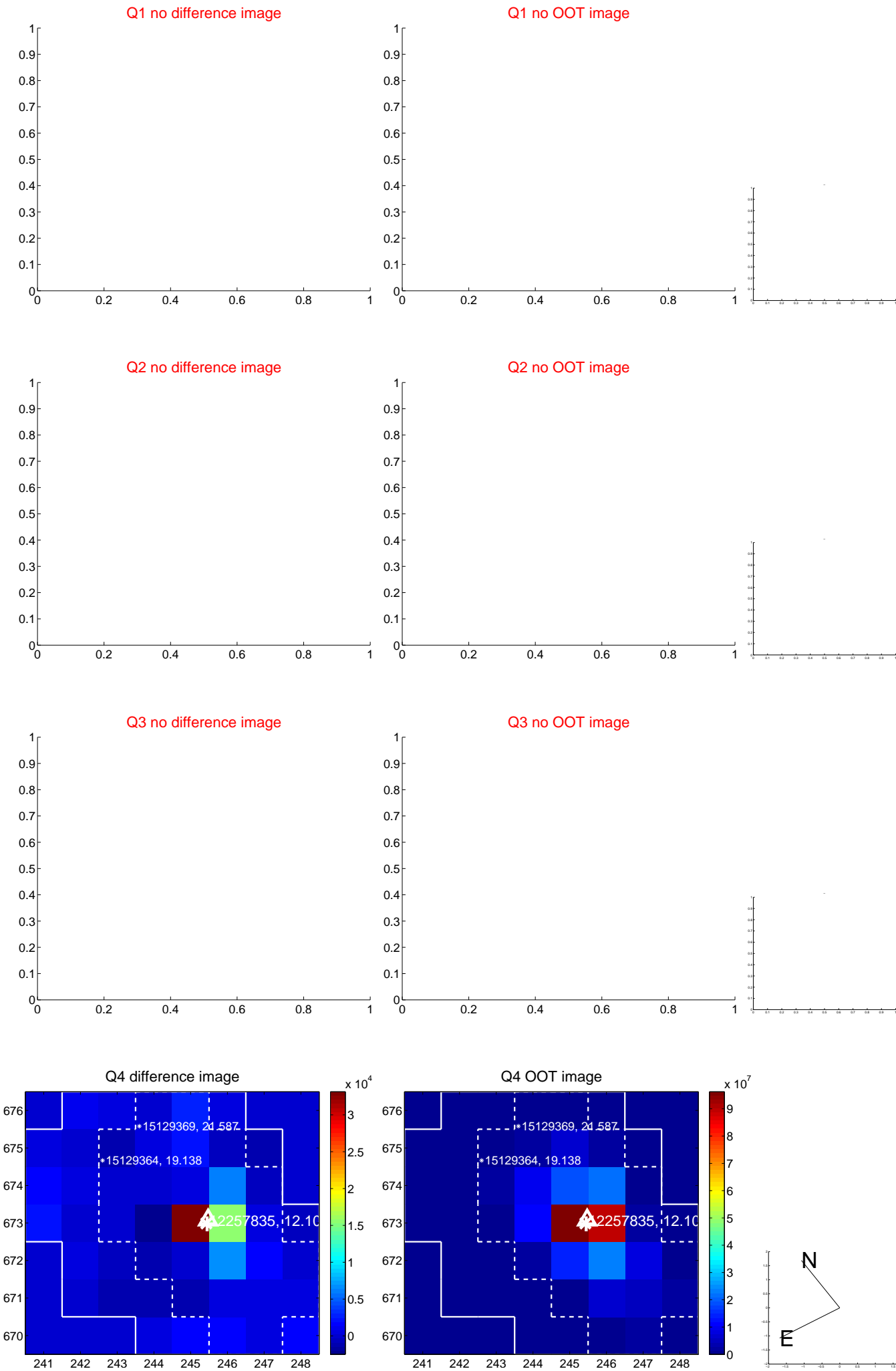
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.316 \pm 0.437$	0.72	$-0.314 \pm 0.438$	$0.031 \pm 0.254$
PRF-fit source offset from KIC position	$0.349 \pm 0.451$	0.77	$-0.345 \pm 0.455$	$-0.052 \pm 0.265$
photometric centroid source offset	—	—	—	—

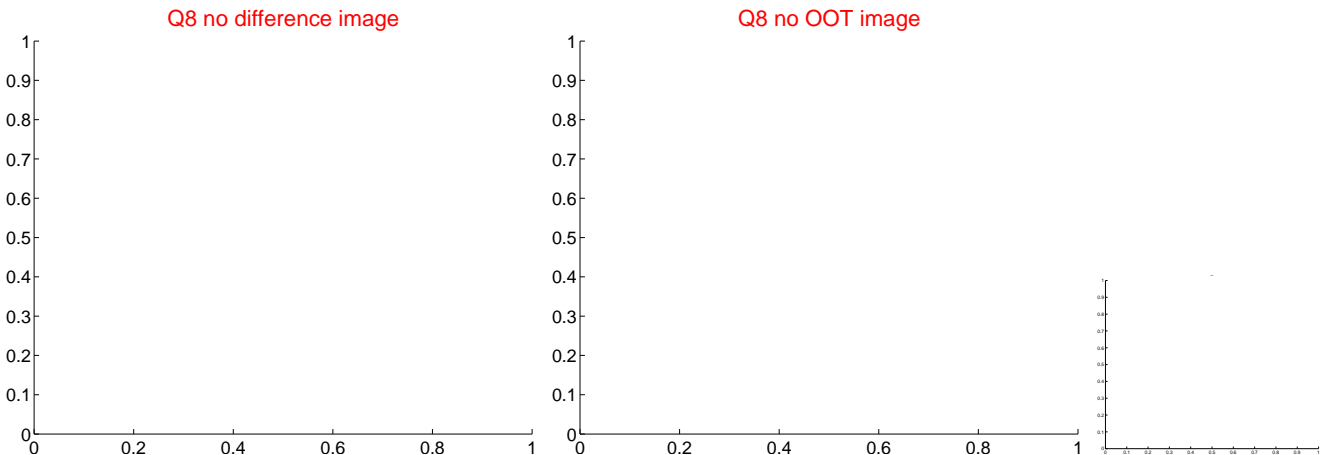
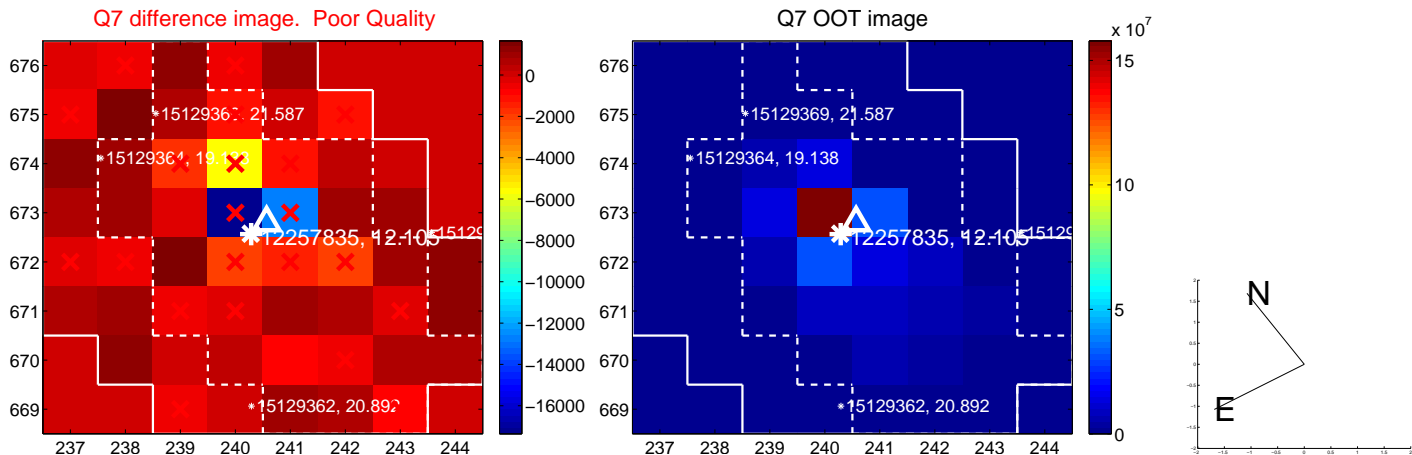
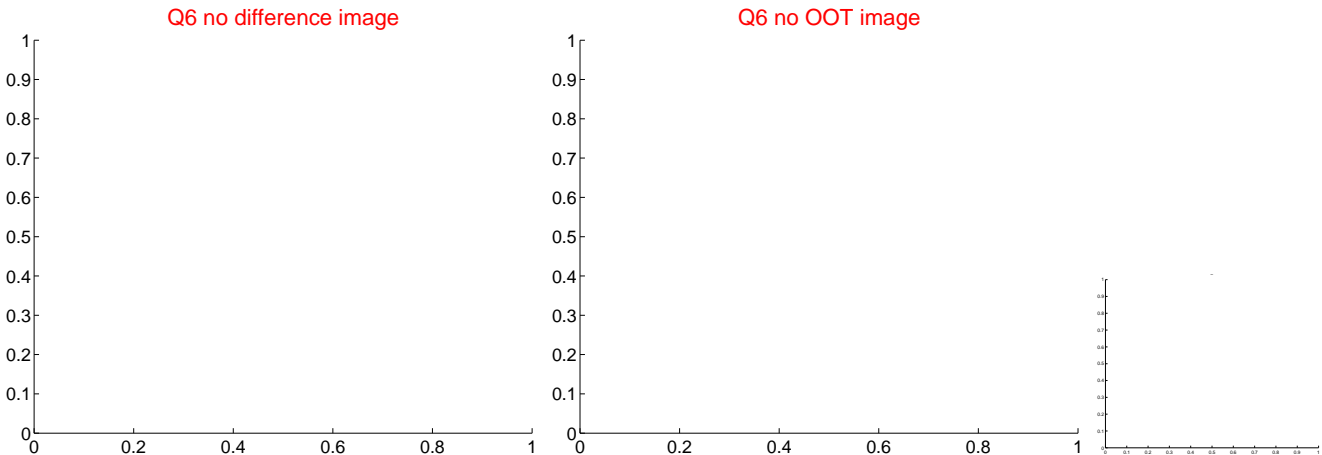
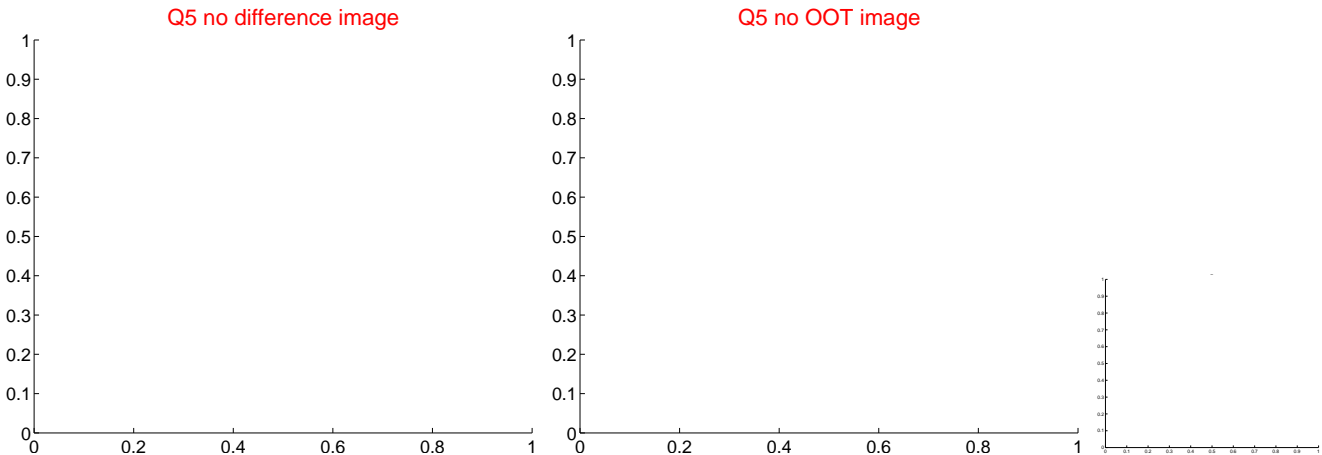


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

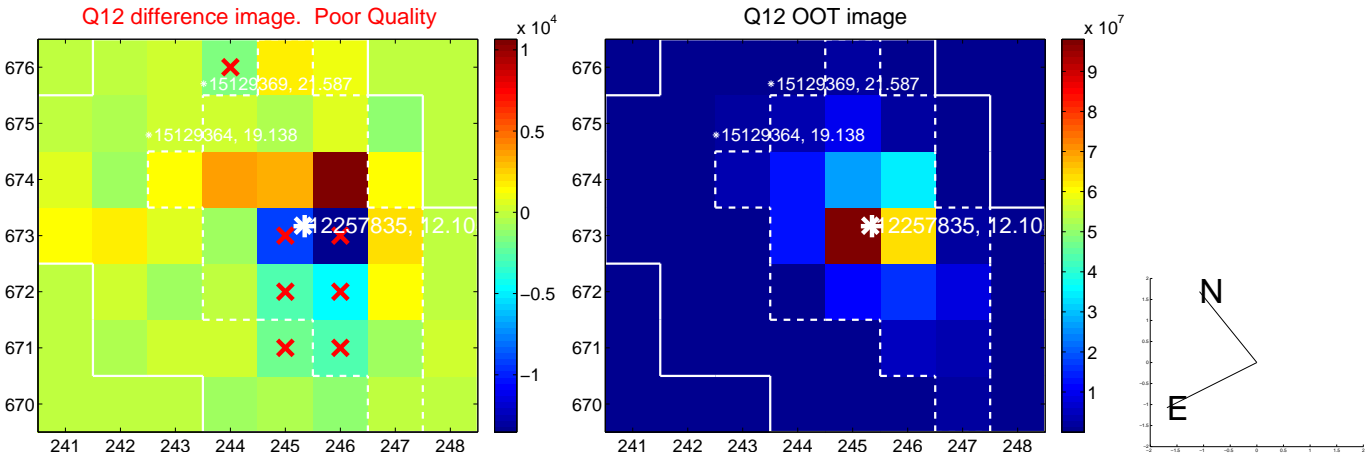
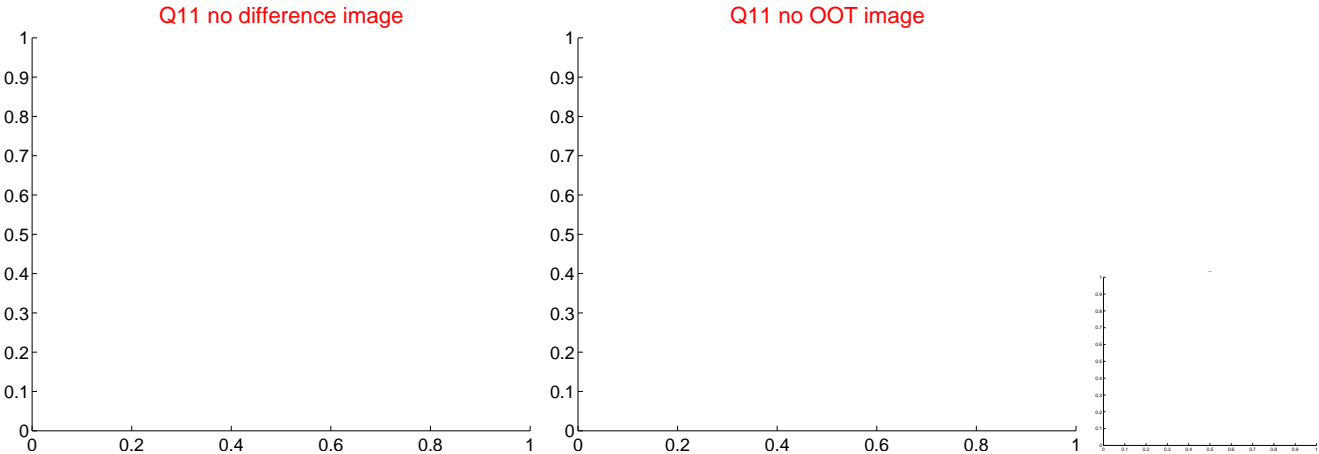
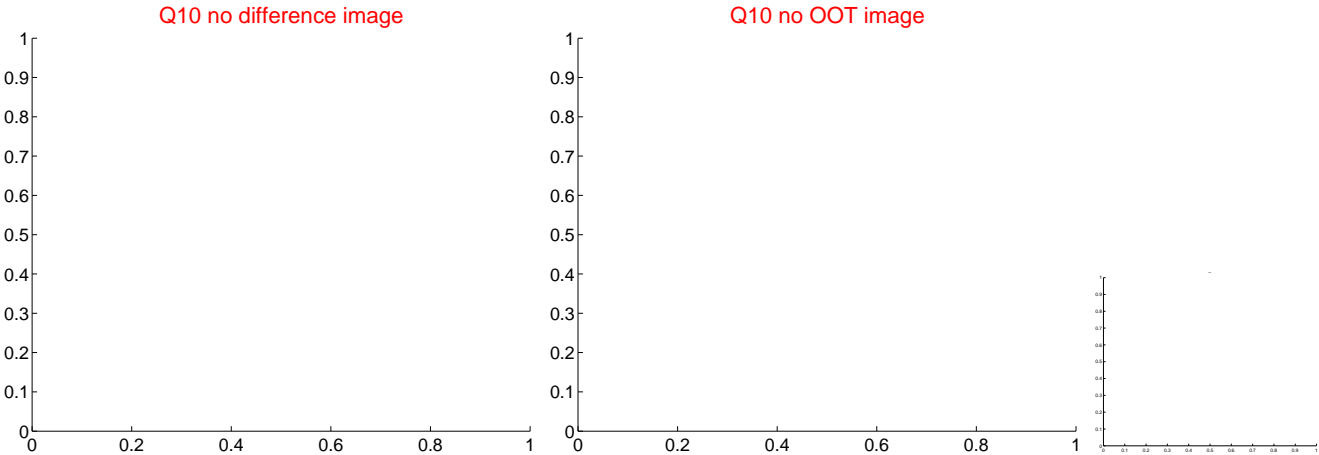
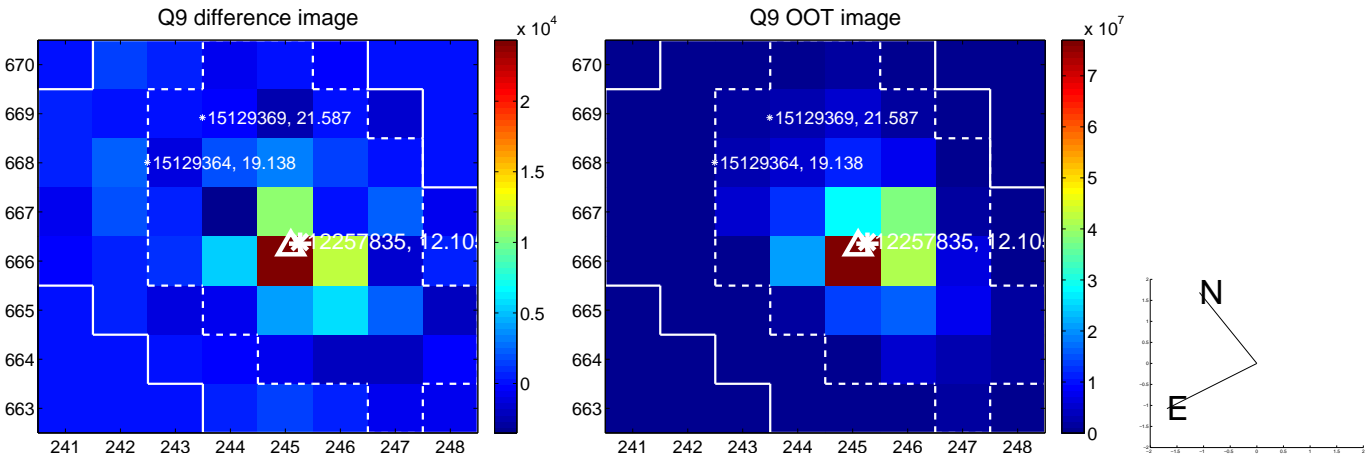
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

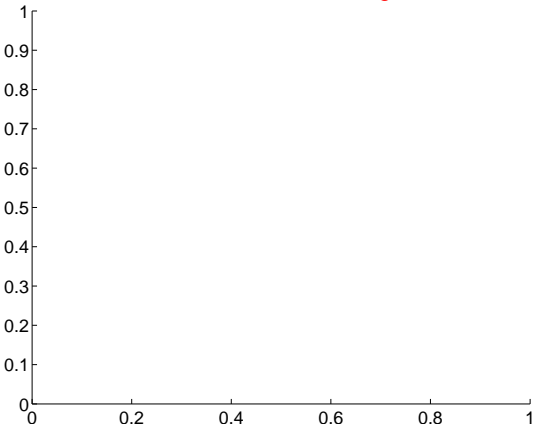


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

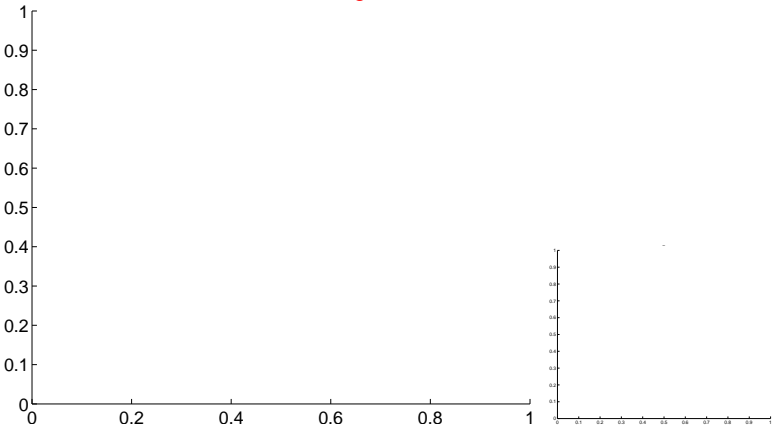


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

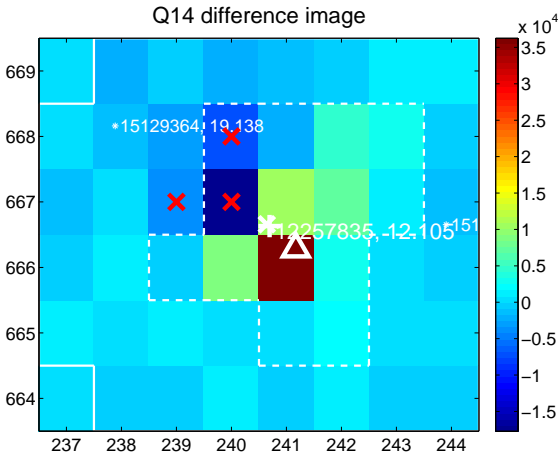
Q13 no difference image



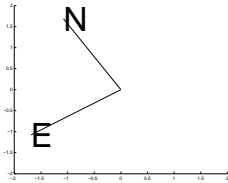
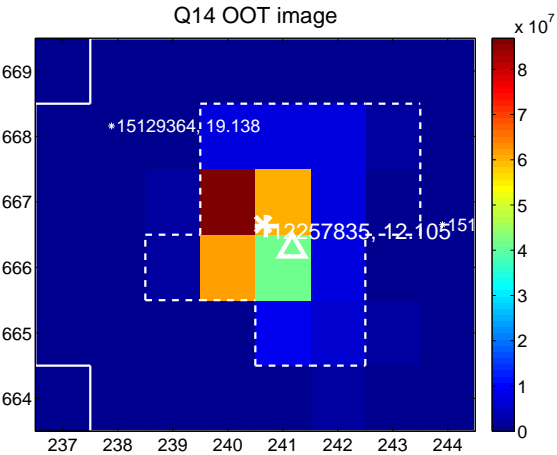
Q13 no OOT image



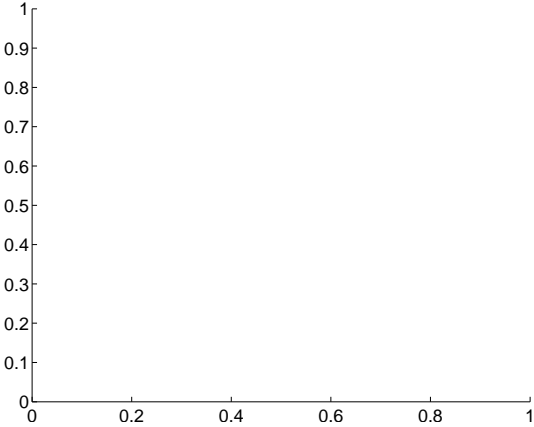
Q14 difference image



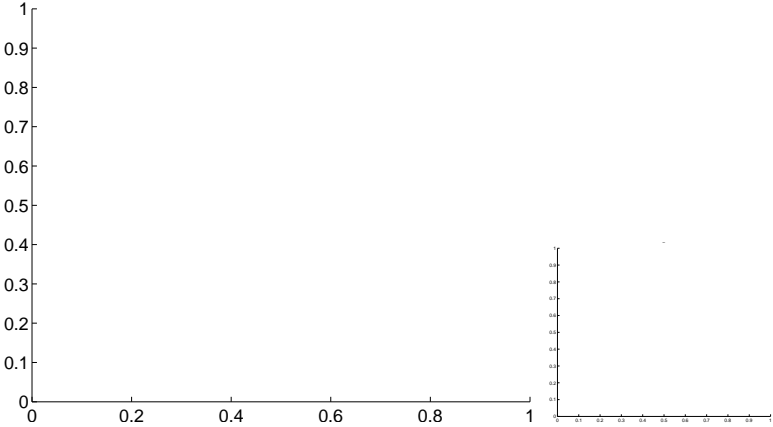
Q14 OOT image



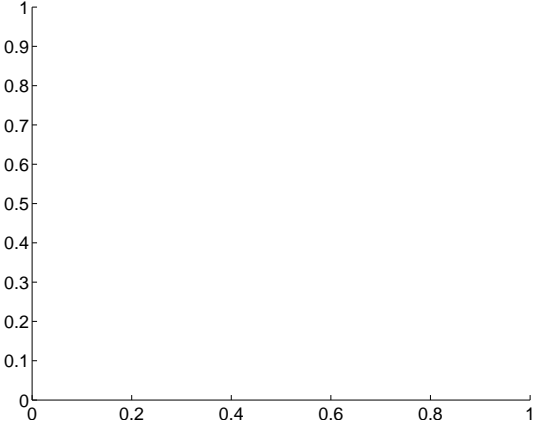
Q15 no difference image



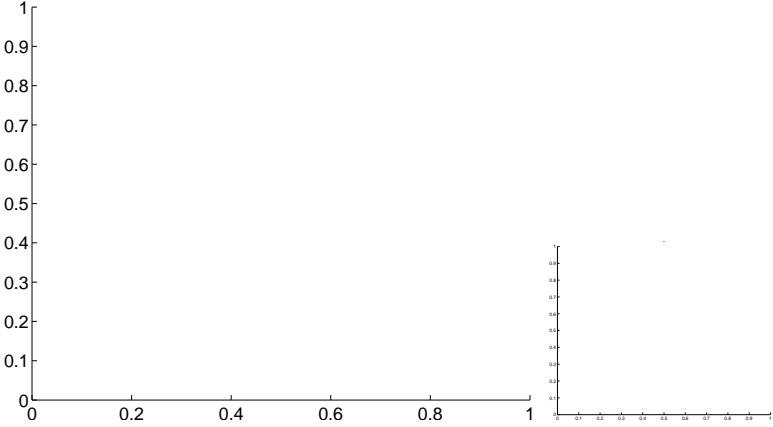
Q15 no OOT image



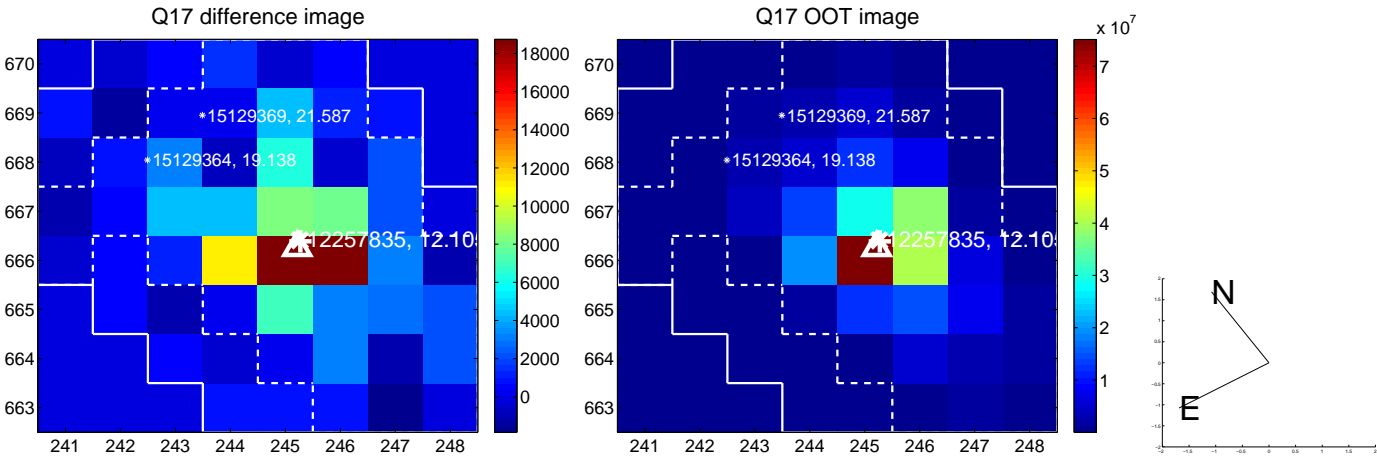
Q16 no difference image



Q16 no OOT image



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

