

# KIC 007289317

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007289317-01	OBS	2450.01	16.831987	140.533609	327.0	3.987	18.1	20.3	1.01	5518	1.92	53.56
007289317-02	OBS	2450.02	7.192934	137.293656	123.9	3.103	9.7	10.2	1.01	5518	1.32	166.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007289317-01	OBS	PC	0.97	0	0	0	0	NO_COMMENT
007289317-02	OBS	PC	0.98	0	0	0	0	NO_COMMENT

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

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

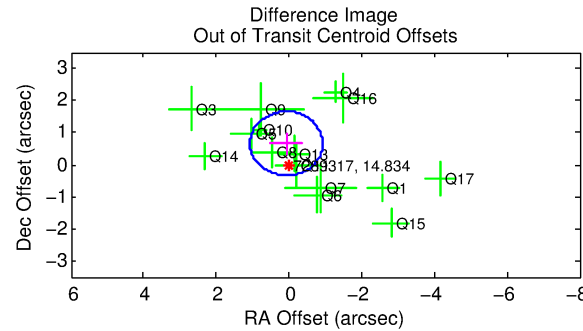
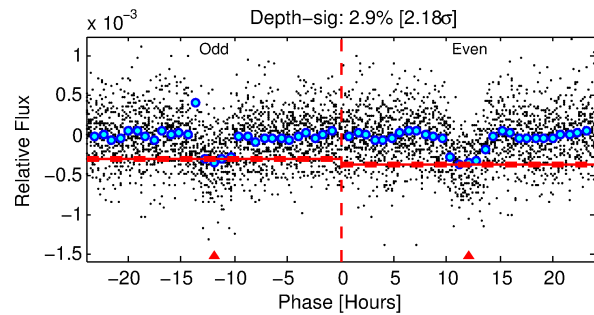
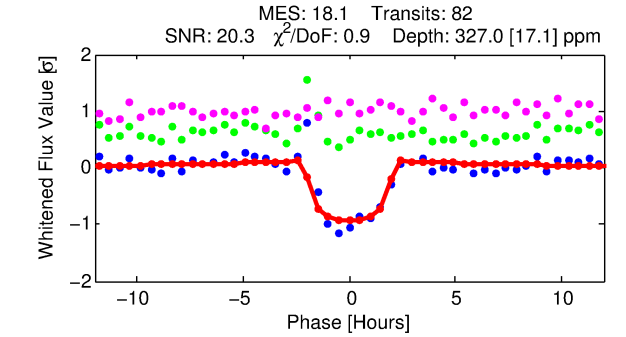
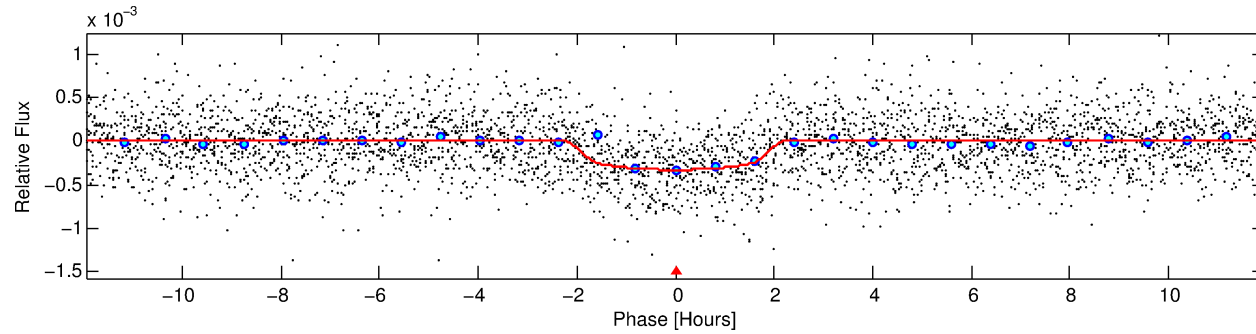
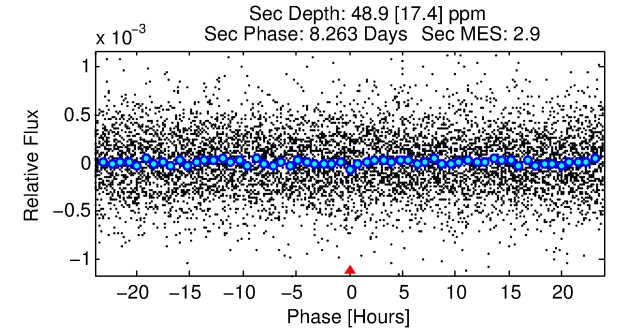
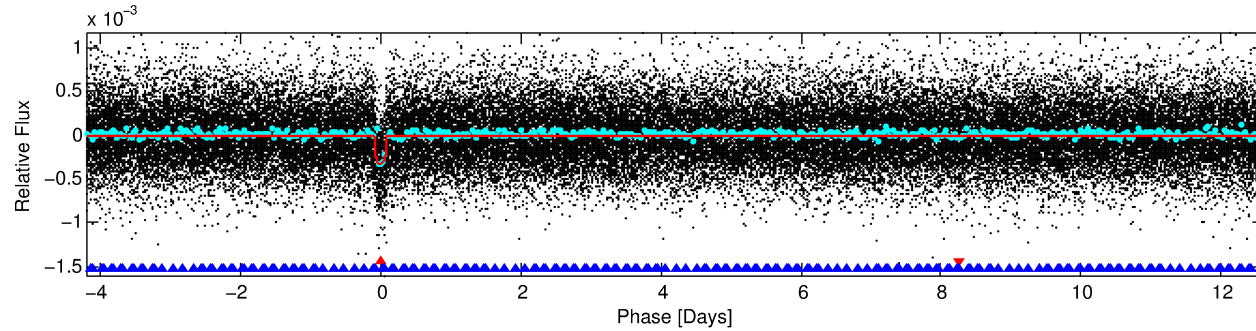
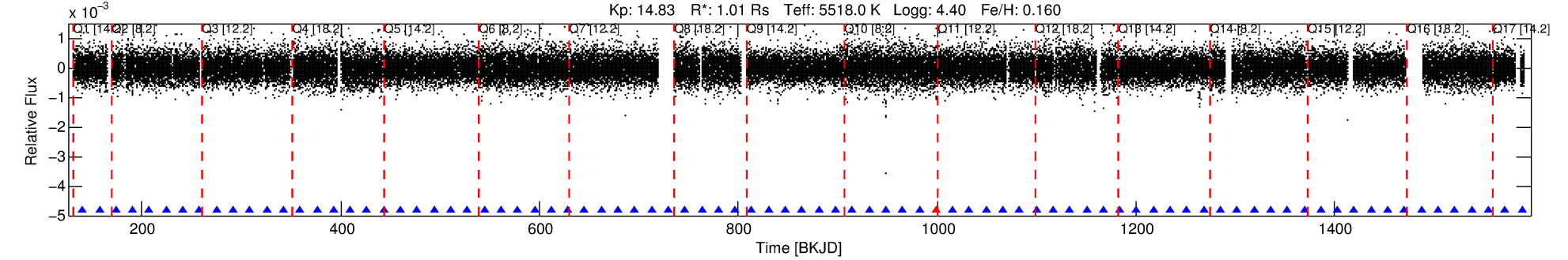
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007289317-01

No Significant Match Found

# DV One-Page Summary

KIC: 7289317 Candidate: 1 of 2 Period: 16.832 d  
KOI: K02450.01 Corr: 0.986



## DV Fit Results:

Period = 16.83199 [0.00008] d  
Epoch = 140.5336 [0.0040] BKJD  
Rp/R\* = 0.0174 [0.0115]  
a/R\* = 25.21 [66.11]  
b = 0.65 [2.35]  
Seff = 53.56 [10.08]  
Teff = 690 [32] K  
Rp = 1.92 [1.29] Re  
a = 0.1255 [0.0149] AU  
Ag = 115.41 [159.49] [0.72σ]  
Teffp = 3496 [1199] K [2.34σ]

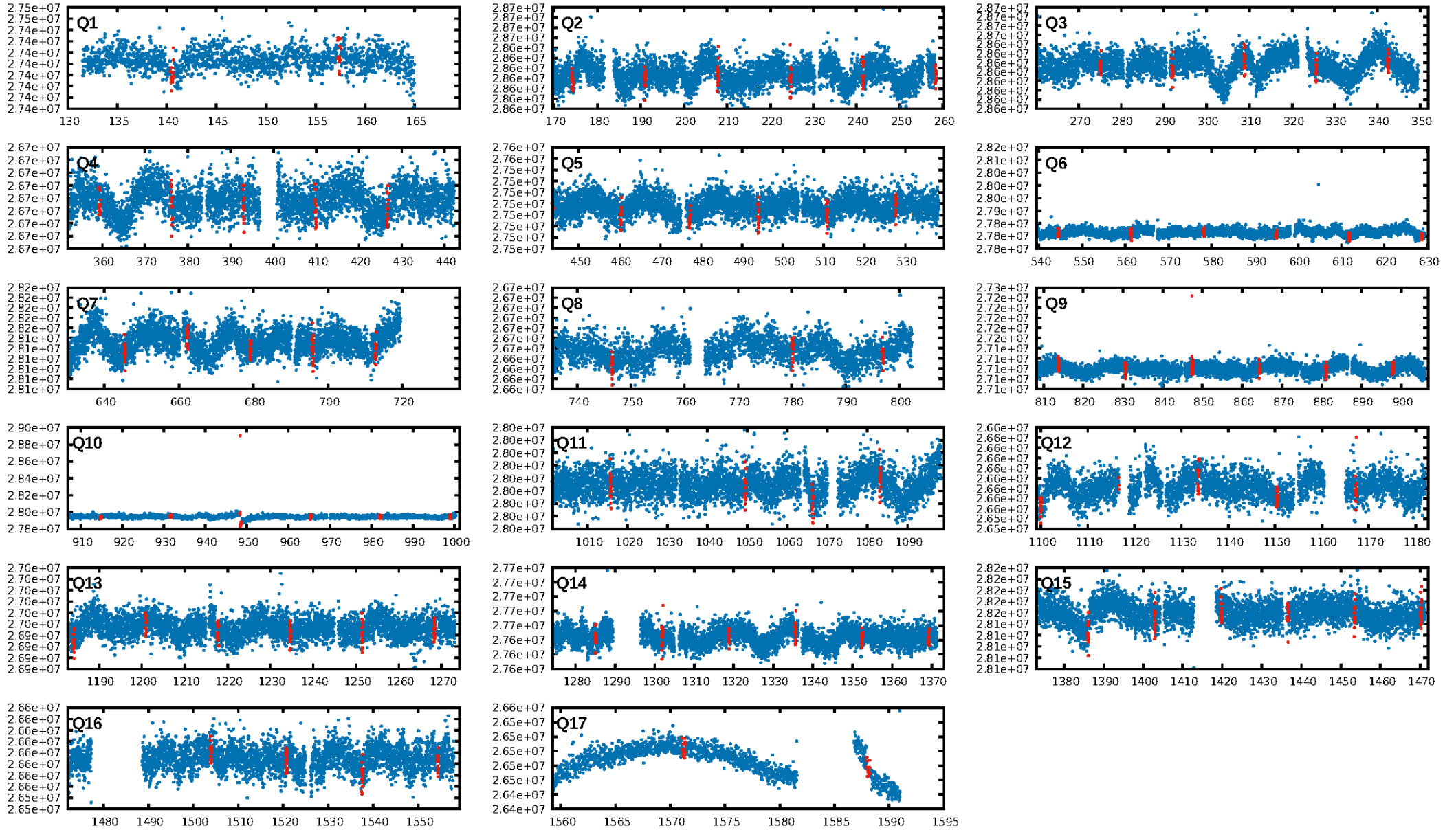
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [45.79σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 93.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.52e-70  
RollingBand-fgt: 0.99 [77/78]  
GhostDiagnostic-chr: -16.44  
Centroid-sig: 0.3%  
Centroid-so: 1.662 arcsec [2.50σ]  
OotOffset-rm: 0.664 arcsec [2.00σ]  
KicOffset-rm: 0.505 arcsec [1.66σ]  
OotOffset-st: 3/4/3/5 [15]  
KicOffset-st: 3/4/3/5 [15]  
DiffImageQuality-fgm: 0.80 [12/15]  
DiffImageOverlap-fno: 1.00 [17/17]

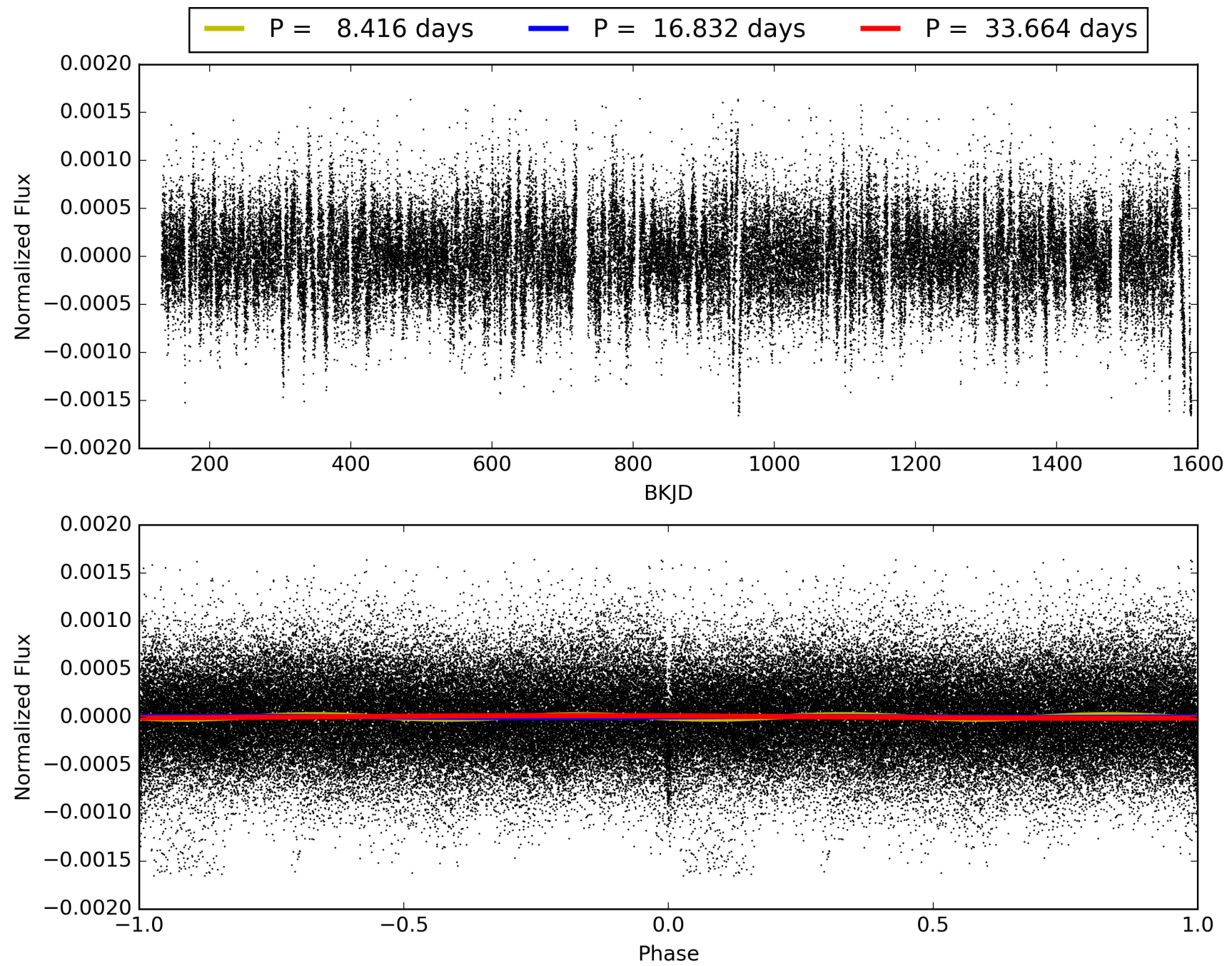
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:53:33 Z

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

# TCE 007289317-01, PDC Light Curves

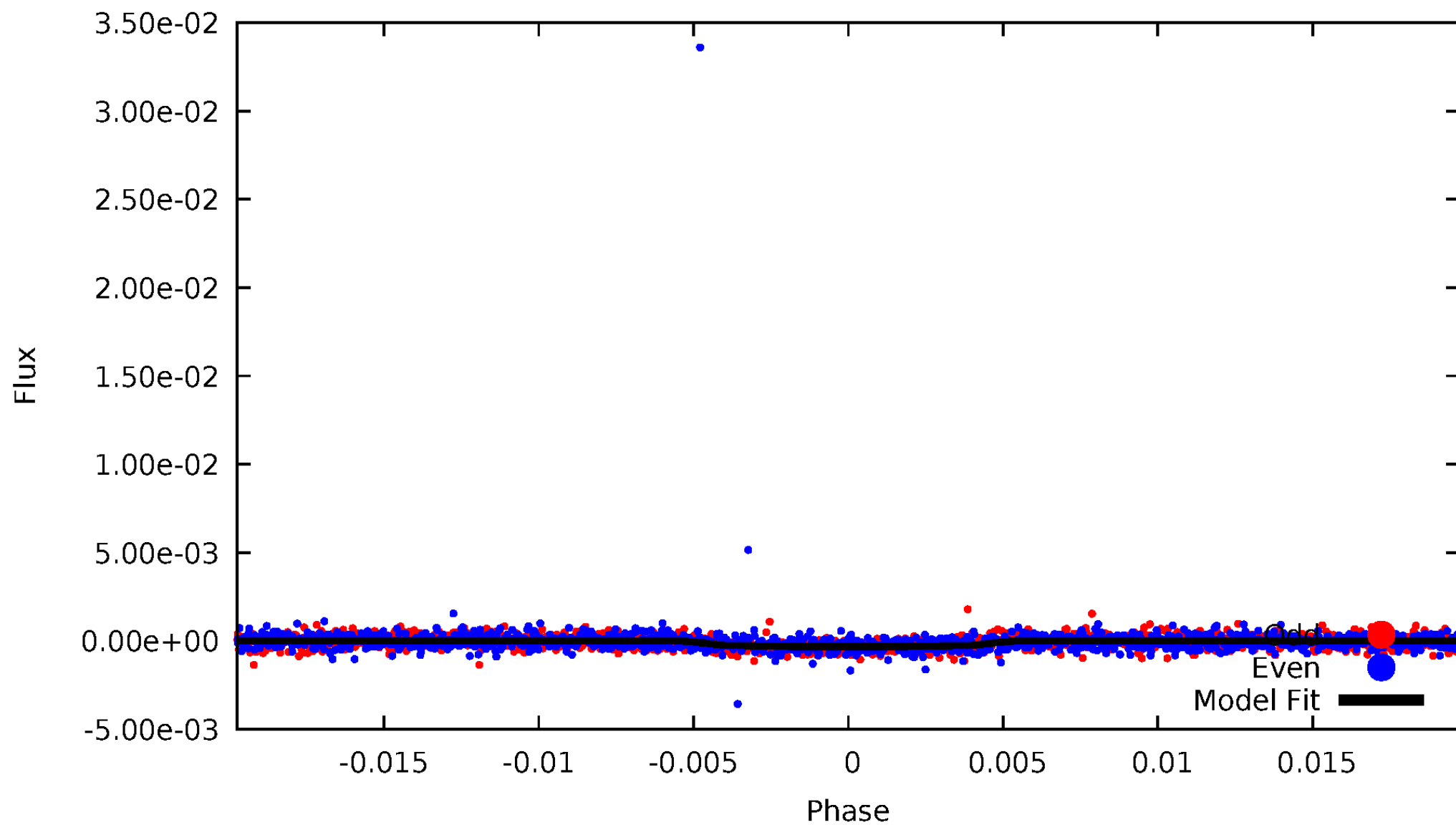


TCE 007289317-01



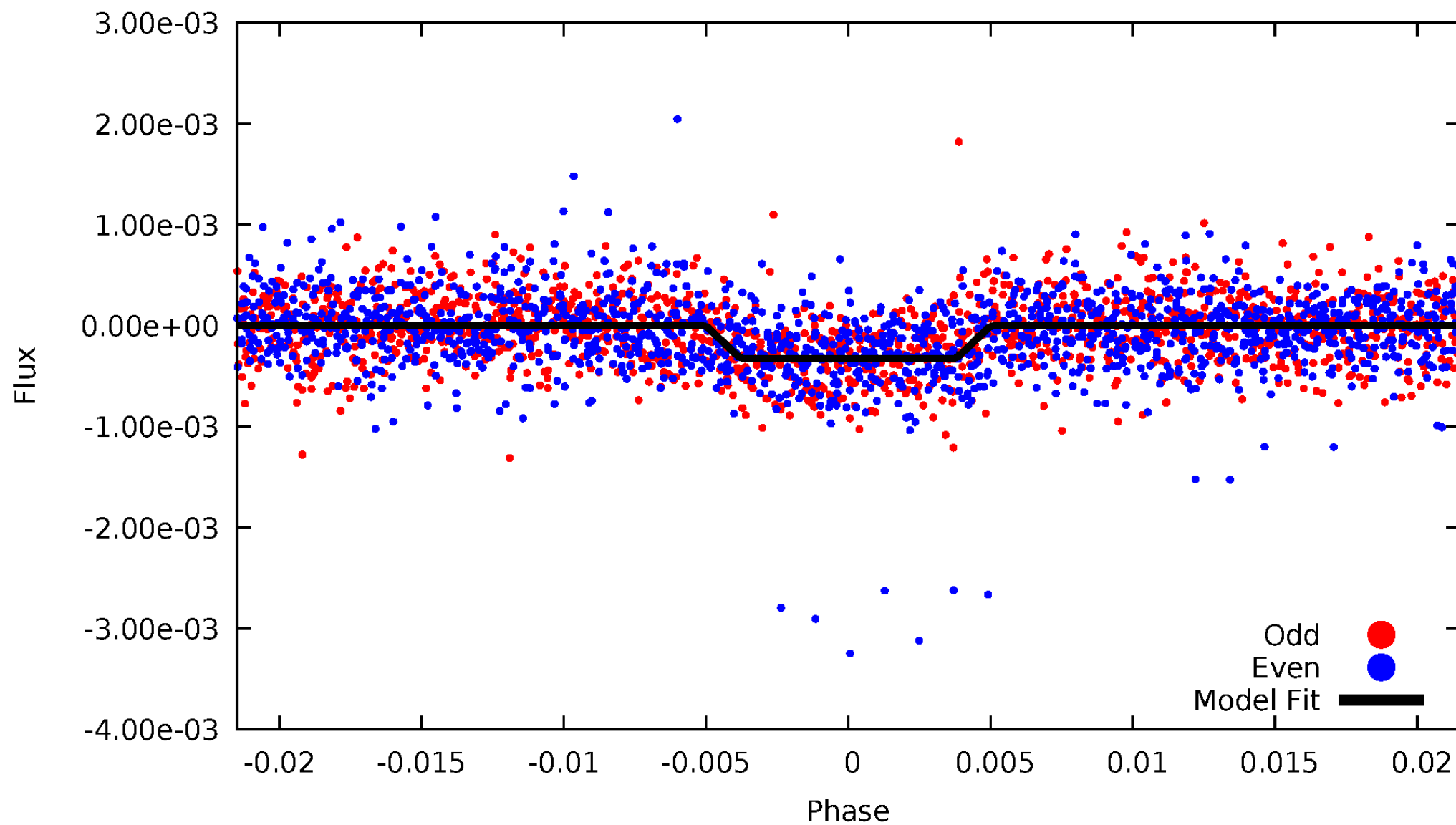
# DV Odd/Even

TCE 007289317-01



# ALT Odd/Even

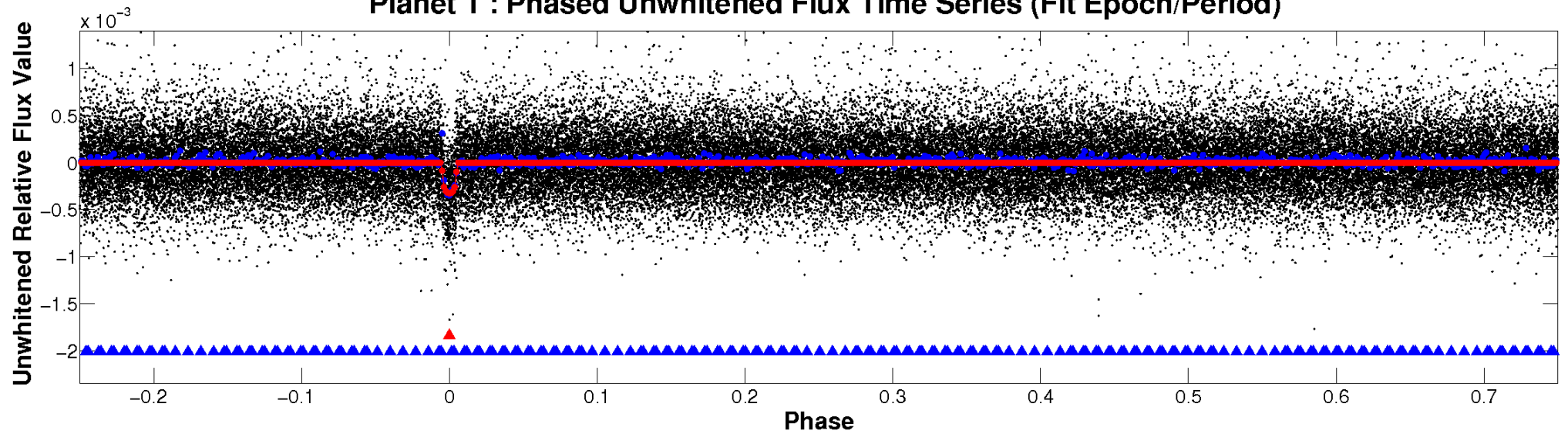
TCE 007289317-01



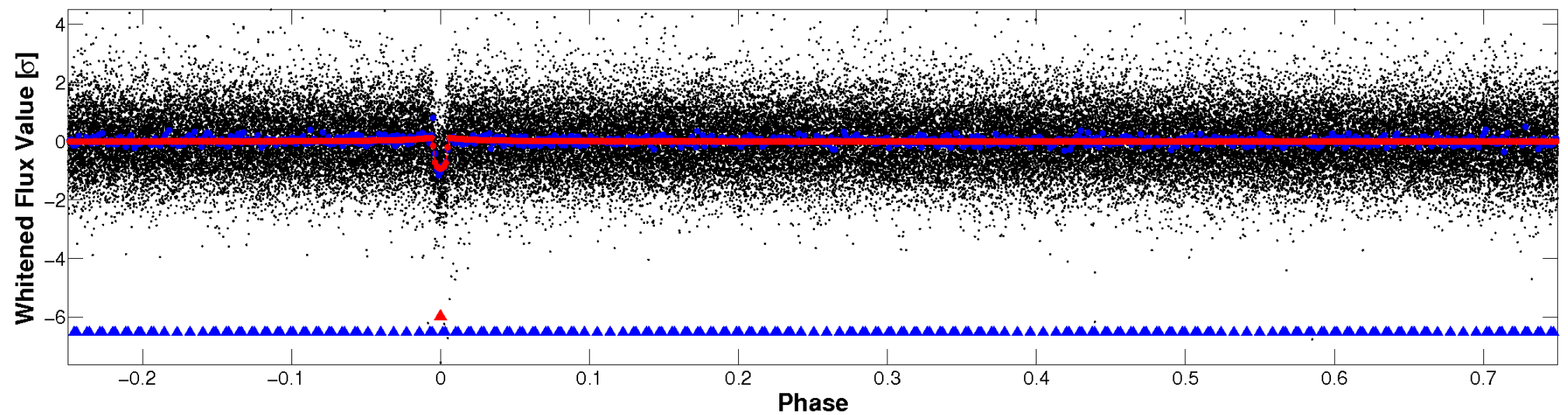


# Non-Whitened Vs. Whitened Light Curve

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

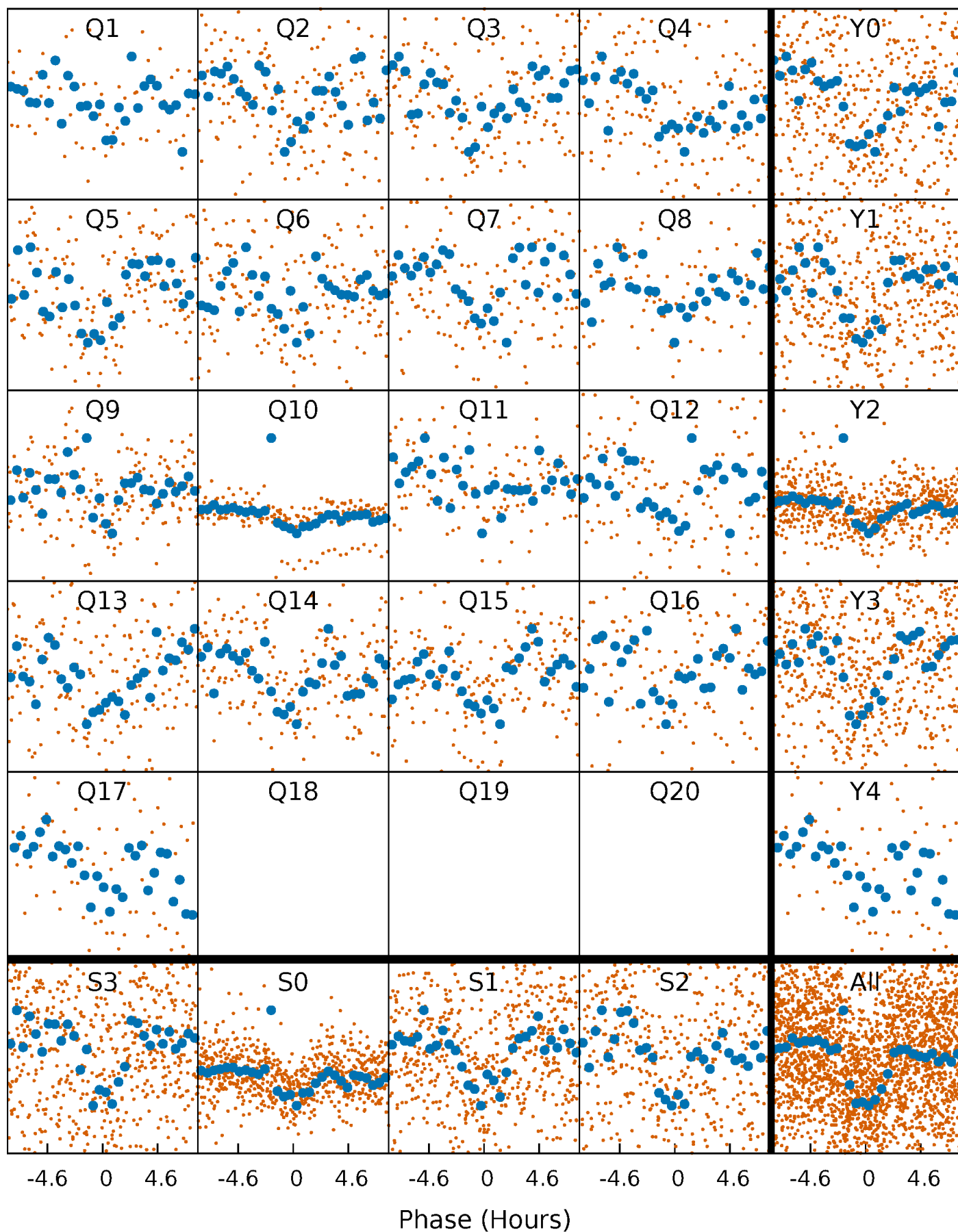


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

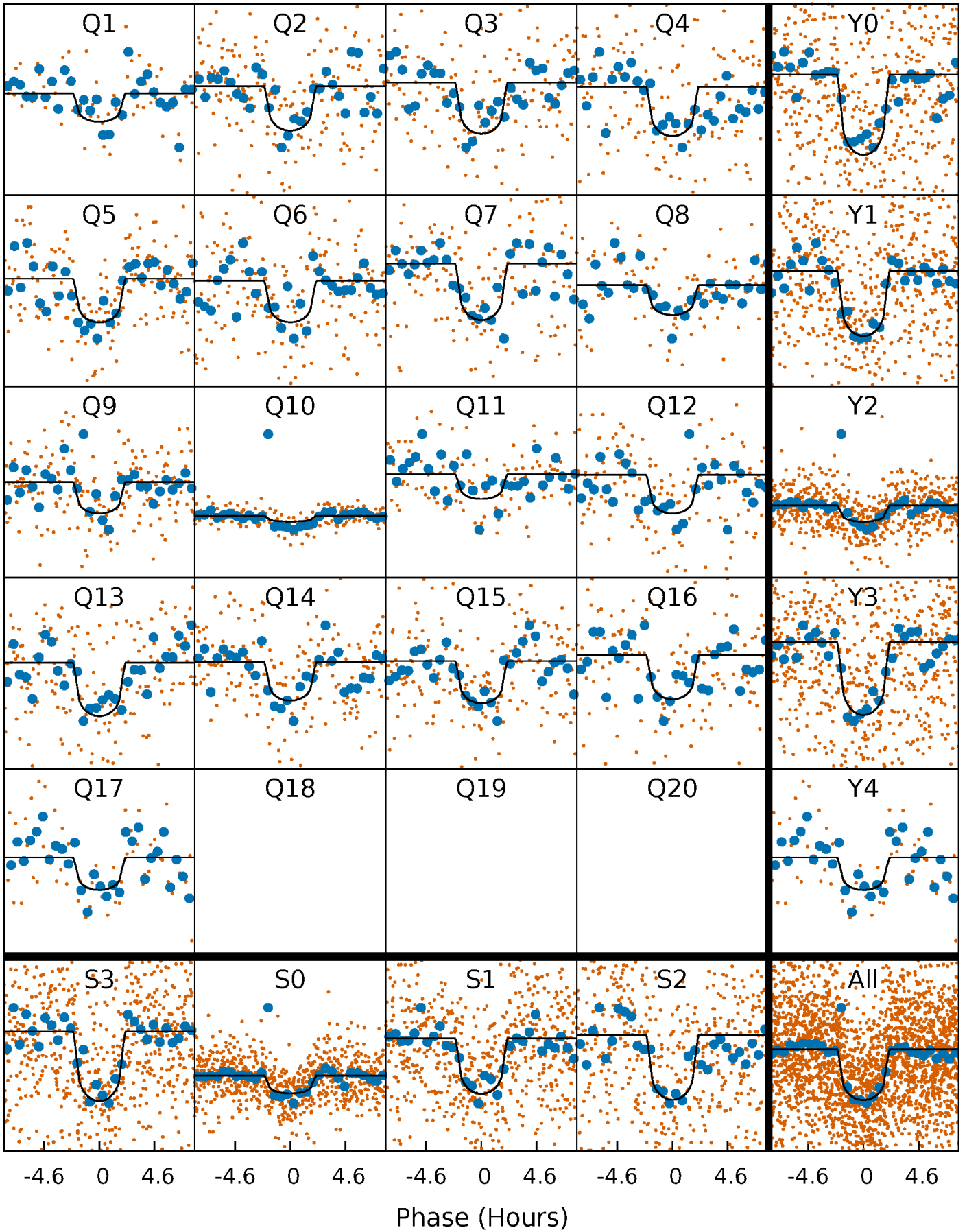
TCE 007289317-01 P= 16.831987 Days  $T_0=140.533609$  (BKJD)





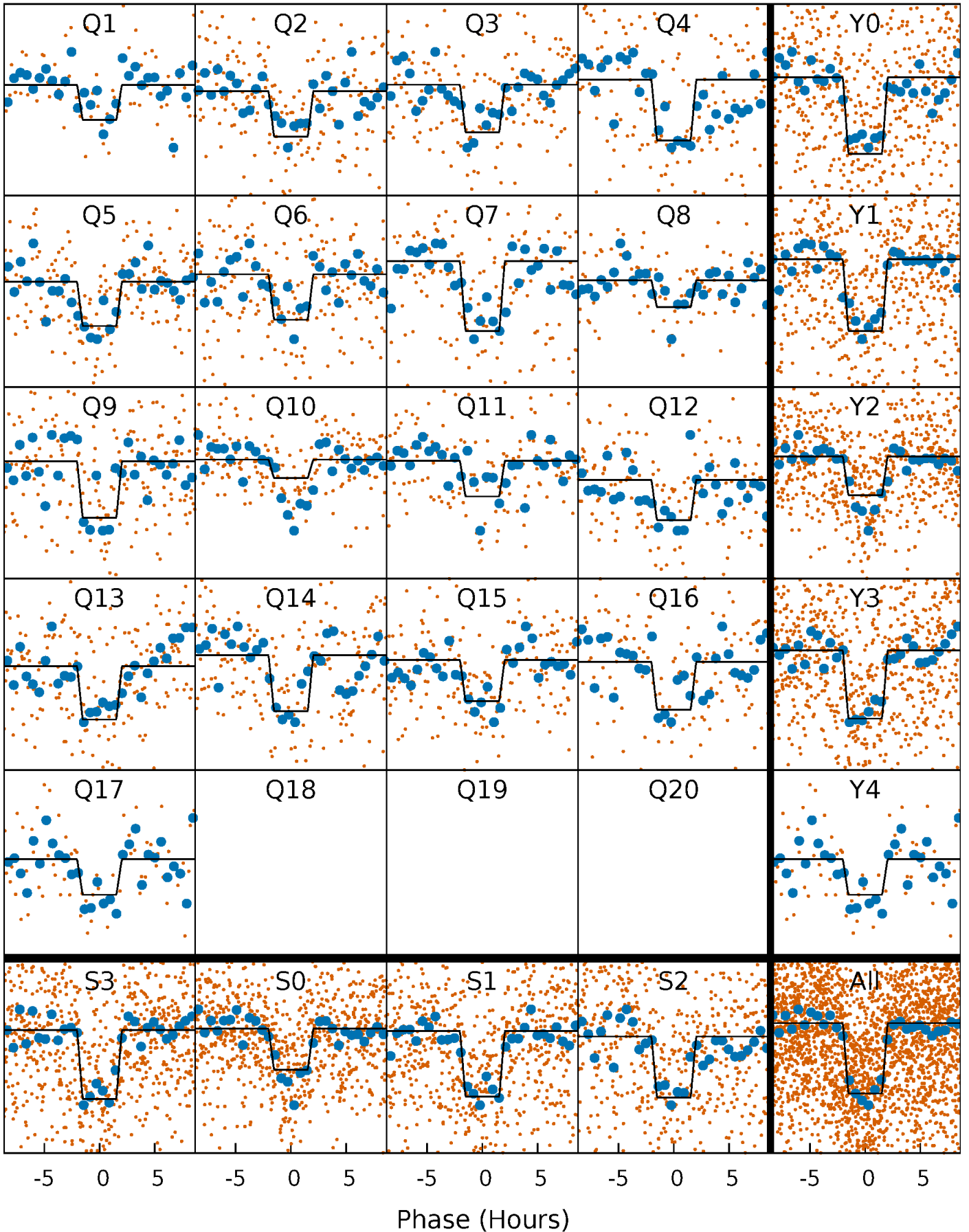
# DV Quarter-Phased Transit Curves

TCE 007289317-01 P= 16.831987 Days  $T_0=140.533609$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

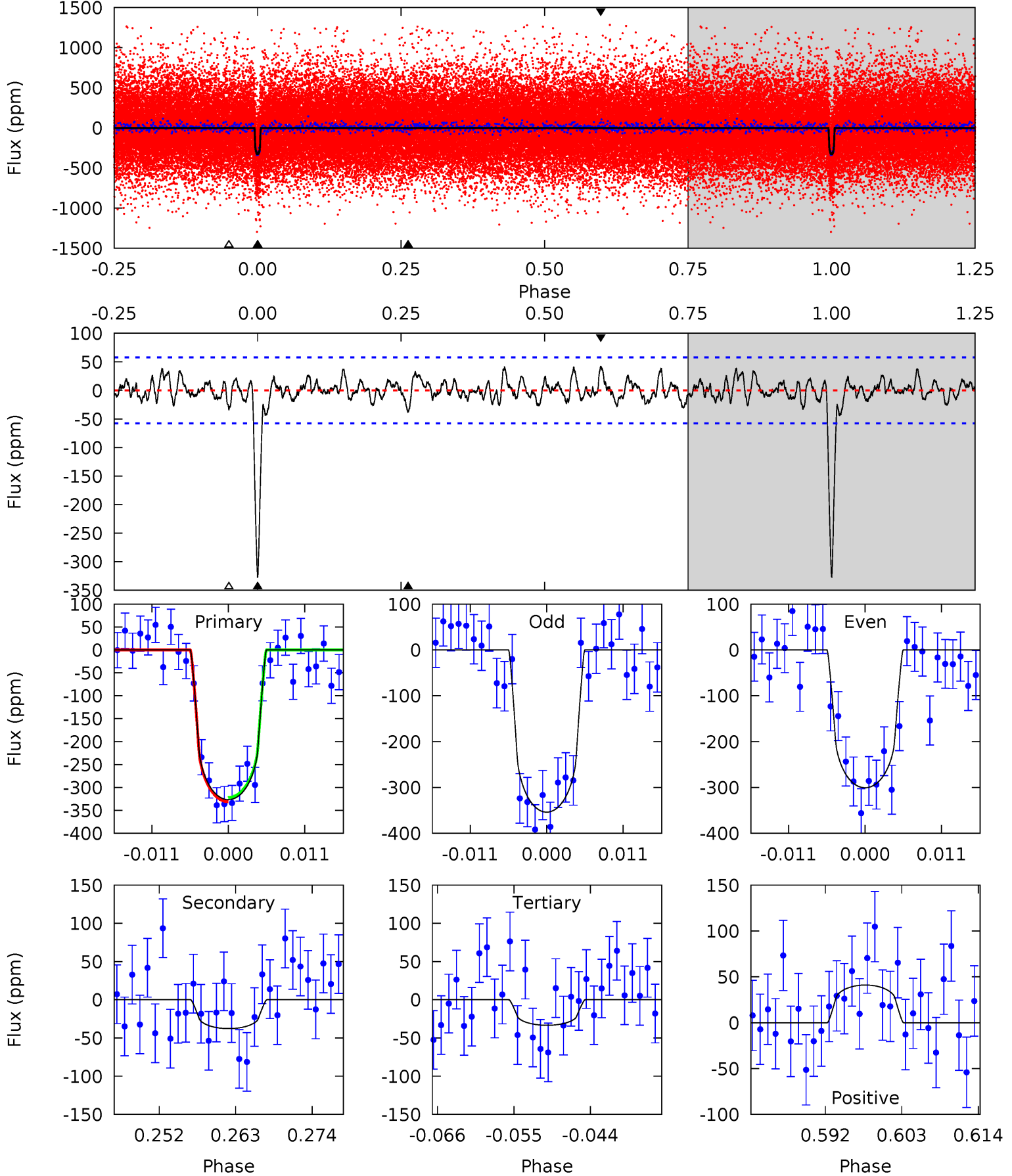
TCE 007289317-01 P= 16.831955 Days  $T_0=140.535235$  (BKJD)



# DV Model-Shift Uniqueness Test

007289317-01, P = 16.831987 Days, E = 123.701622 Days

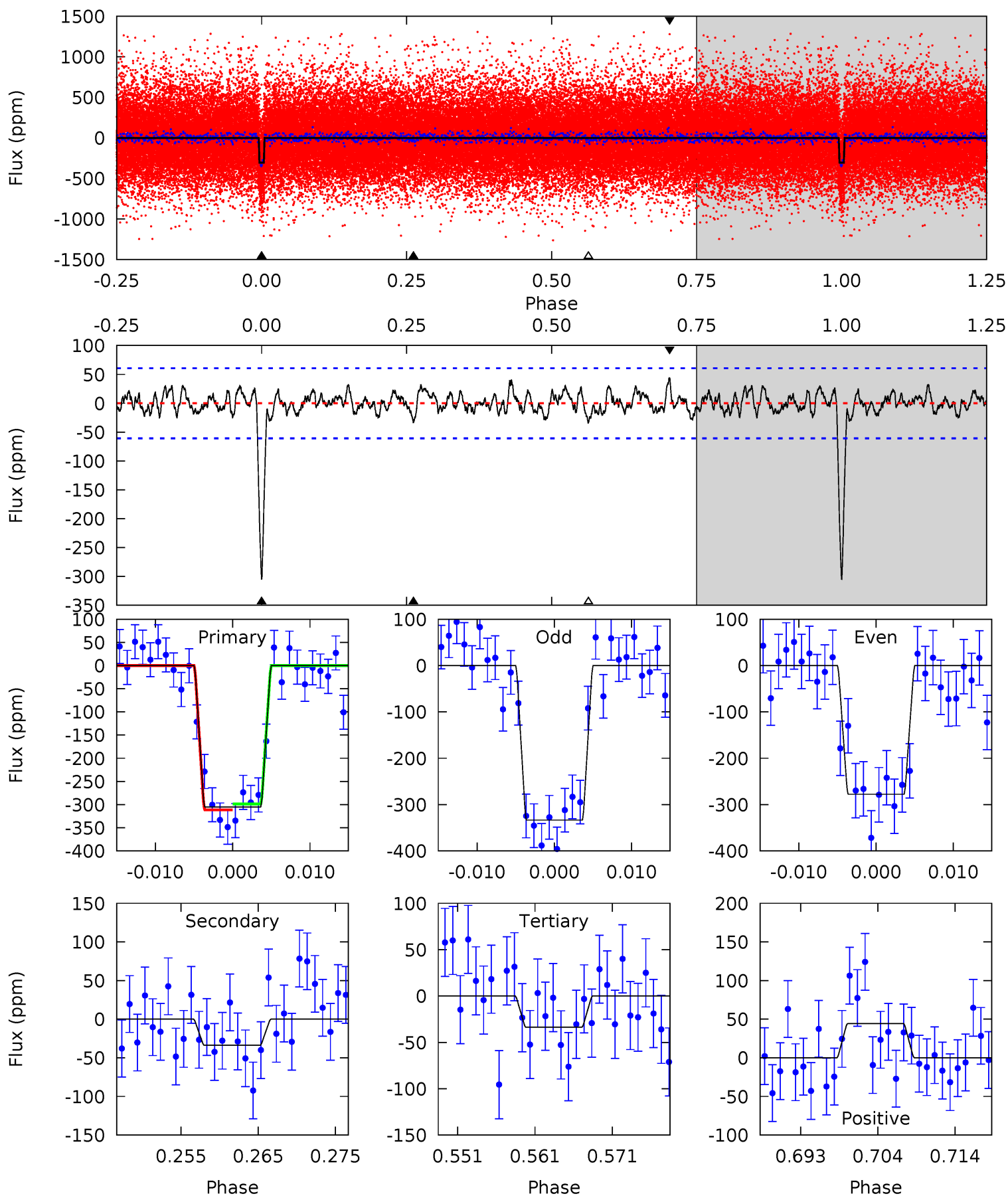
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.3	3.27	2.90	3.56	5.01	2.54	1.26	25.4	24.8	0.38	-0.29	2.31	1.01	0.11	0.39



# Alt Model-Shift Uniqueness Test

007289317-01, P = 16.831955 Days, E = 123.703280 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
25.2	2.80	2.79	3.66	5.02	2.57	1.15	22.4	21.6	0.01	-0.87	2.31	1.15	0.13	0.53



### Stellar Parameters For KIC 007289317

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5518^{+74}_{-83}$	$4.400^{+0.100}_{-0.100}$	$0.160^{+0.150}_{-0.150}$	$1.008^{+0.137}_{-0.099}$	$0.932^{+0.054}_{-0.049}$	$1.280^{+0.486}_{-0.385}$
	+1%/-2%	+2%/-2%	+94%/-94%	+14%/-10%	+6%/-5%	+38%/-30%
Source	SPE90	SPE90	SPE90	DSEP		

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

### Secondary Eclipse Parameters for KIC 007289317-01 / KOI 2450.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-38 \pm 12$	$1.97^{+1.23}_{-0.98}$	$962^{+37}_{-31}$	$3617^{+1135}_{-506}$	$83^{+273}_{-55}$
Alt.	$-34 \pm 12$	$2.11^{+1.24}_{-1.13}$	$963^{+39}_{-35}$	$3468^{+1087}_{-482}$	$63^{+236}_{-40}$

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



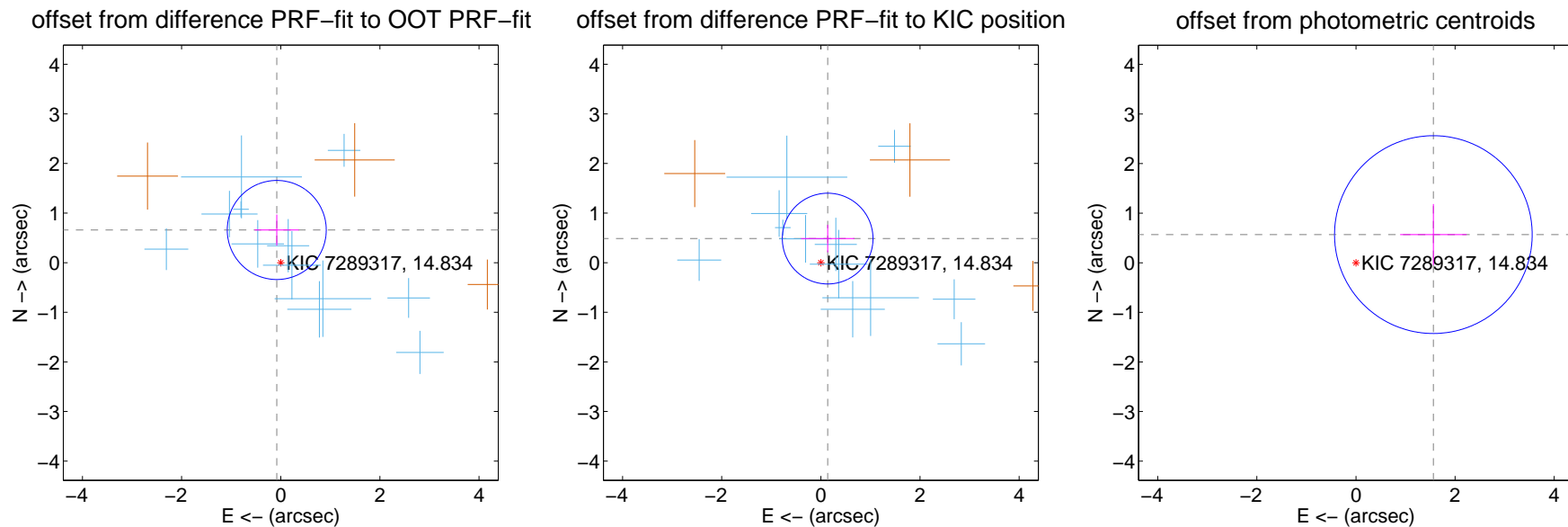
## DV Centroid Data

Supplemental centroid analysis for 007289317-01. Kepler magnitude: 14.83. Transit SNR 20.29

There are 12 quarters with good PRF difference image offsets

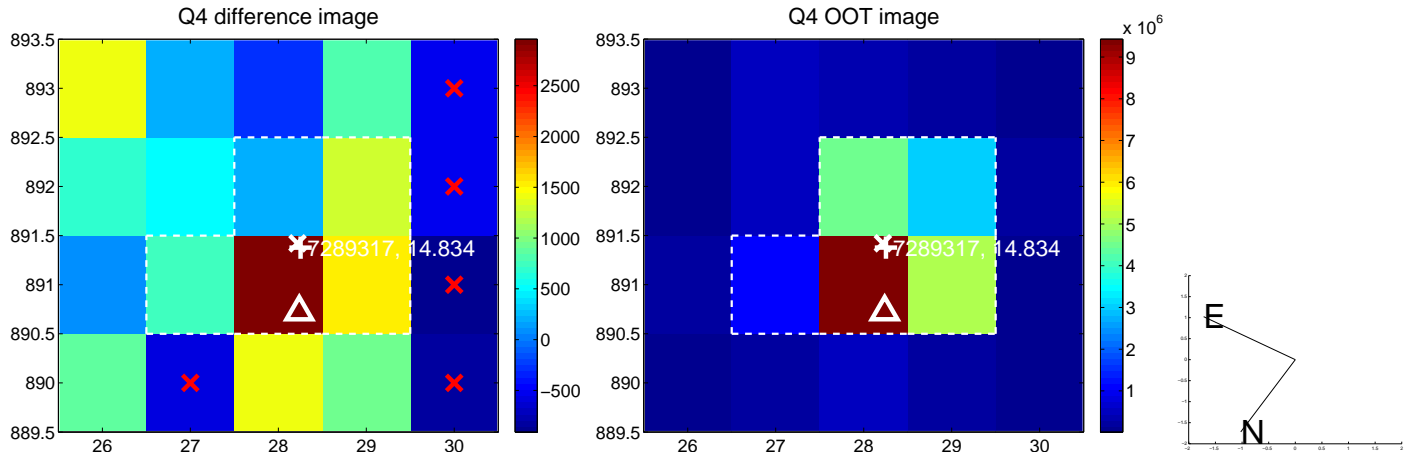
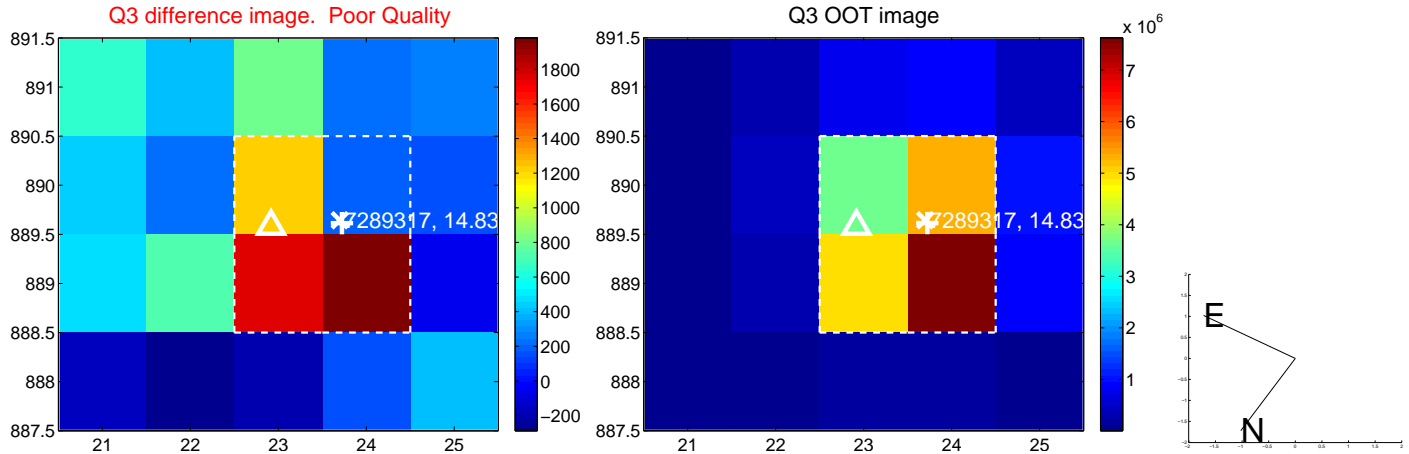
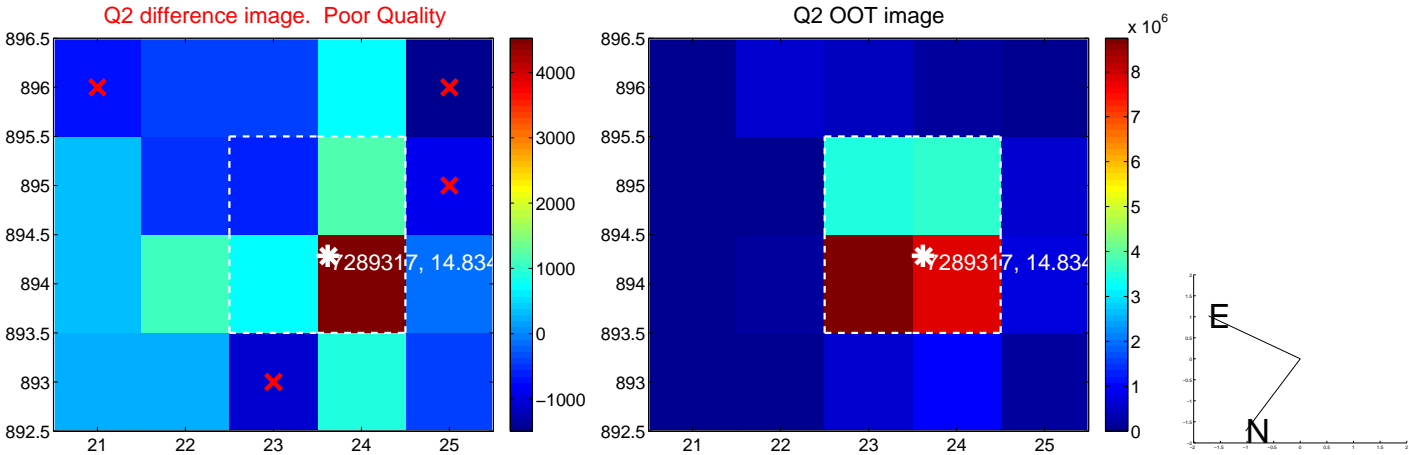
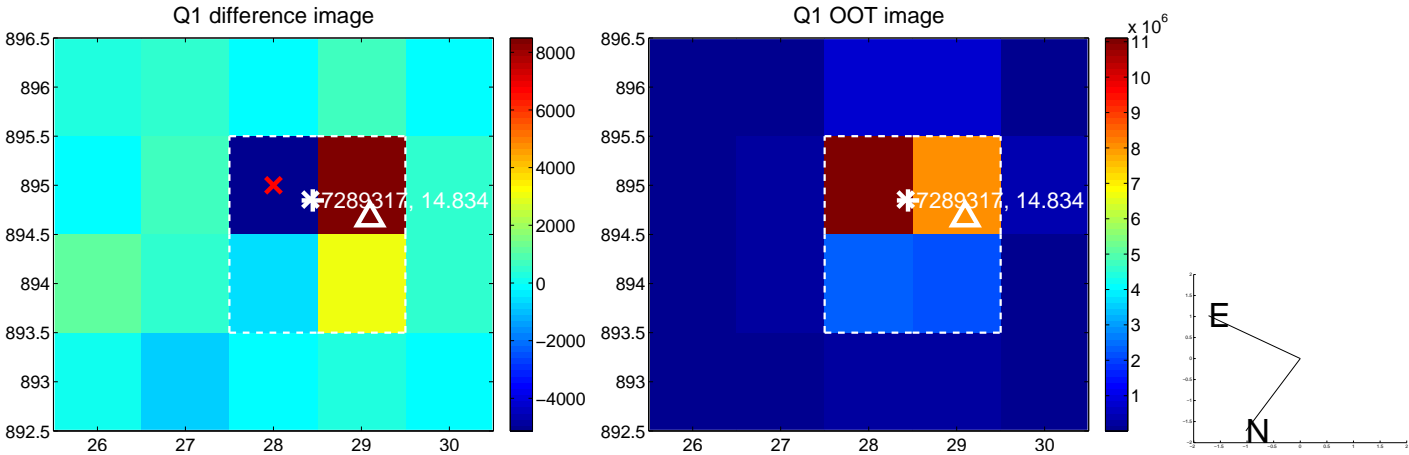
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.664 \pm 0.333$	2.00	$0.081 \pm 0.445$	$0.659 \pm 0.311$
PRF-fit source offset from KIC position	$0.505 \pm 0.305$	1.66	$-0.137 \pm 0.538$	$0.486 \pm 0.278$
photometric centroid source offset	$1.66 \pm 0.66$	2.50	$-1.56 \pm 0.67$	$0.57 \pm 0.62$

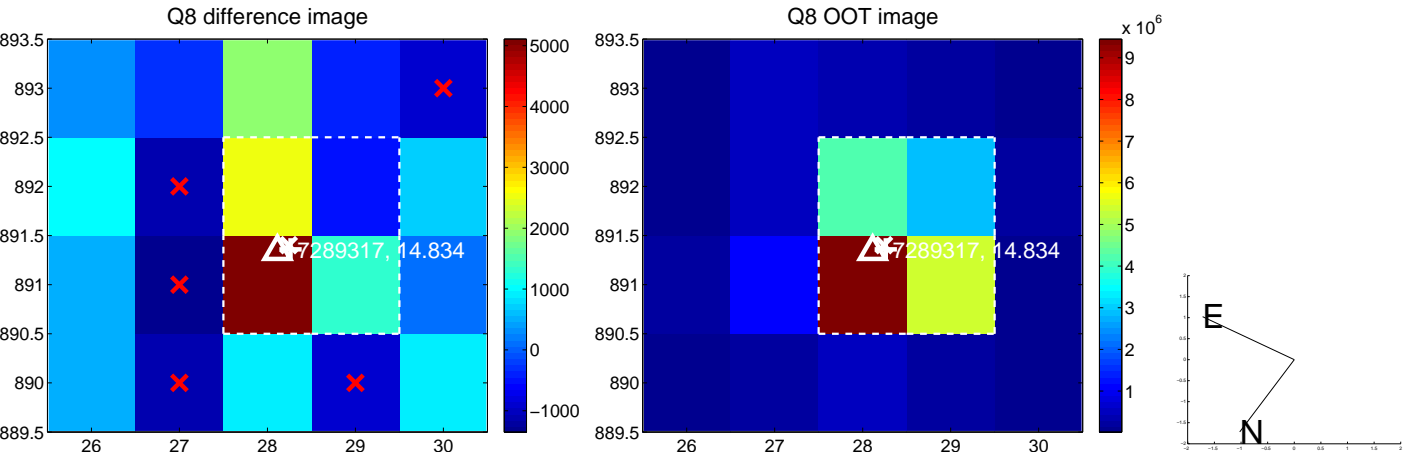
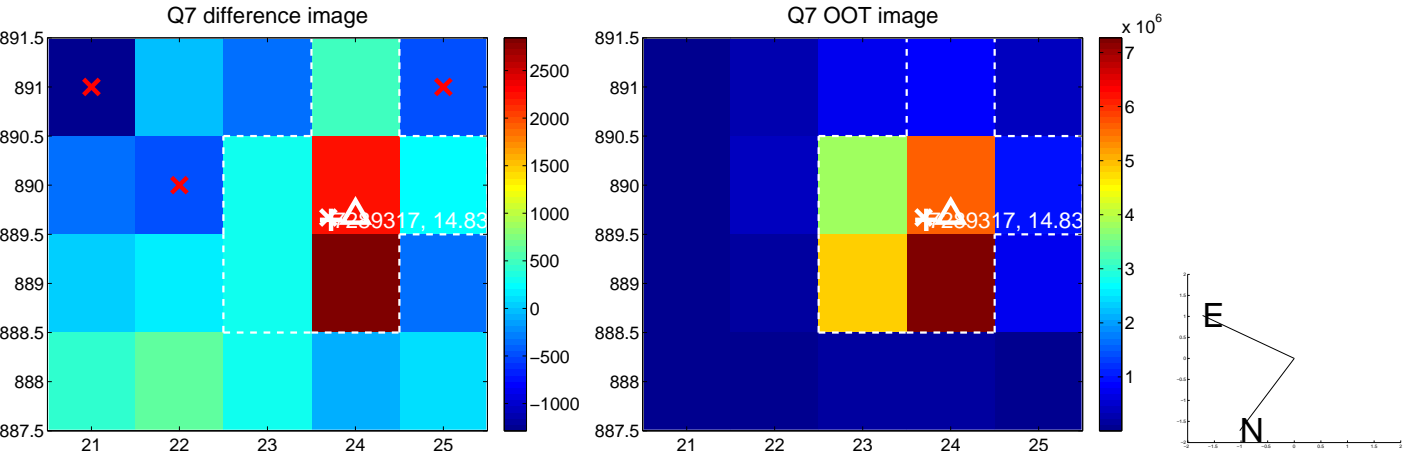
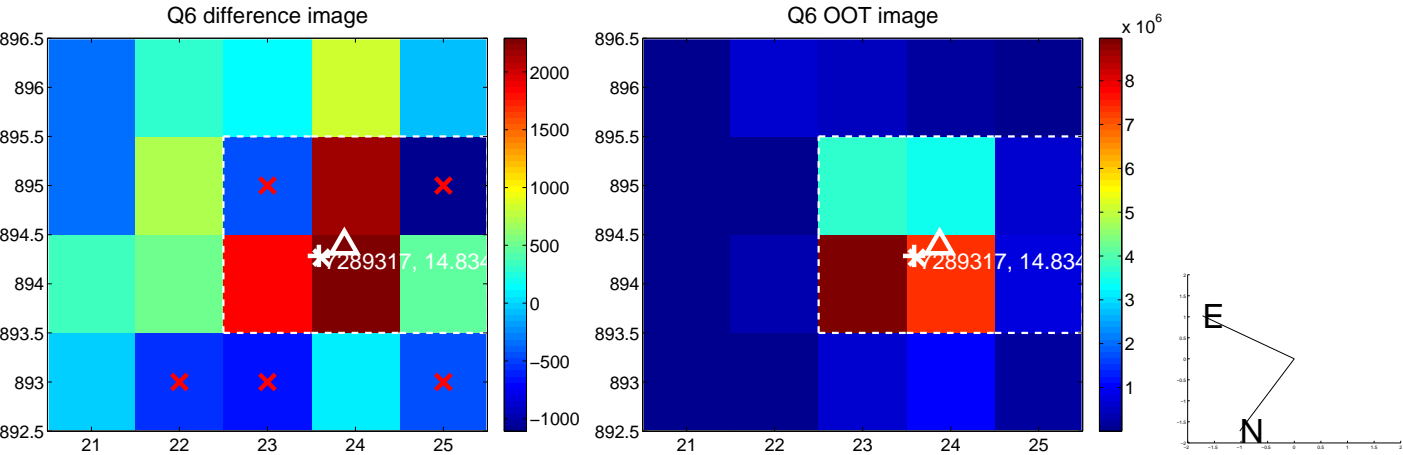
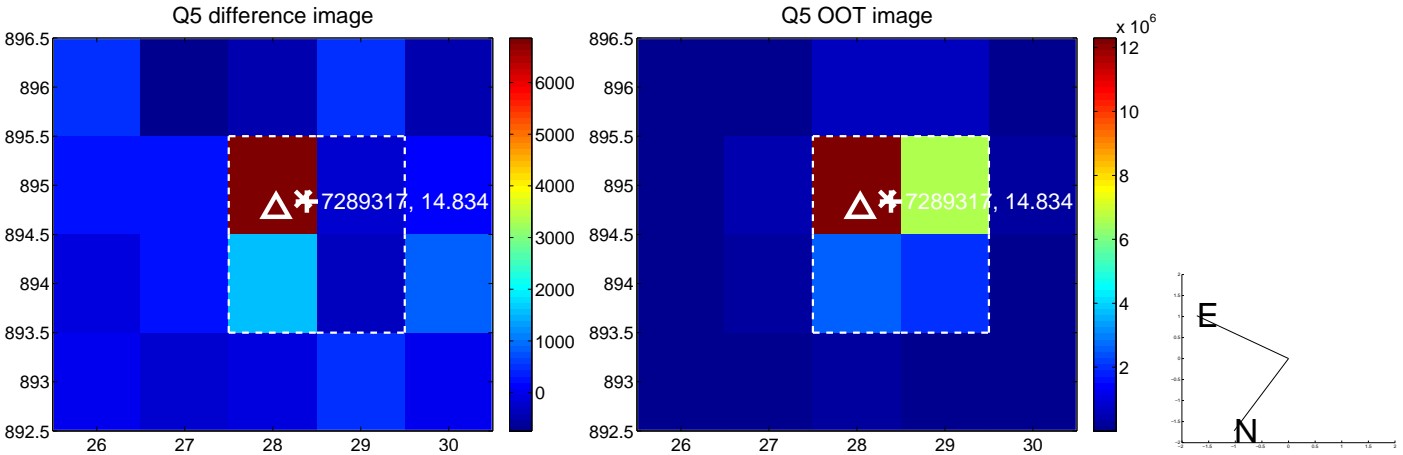


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

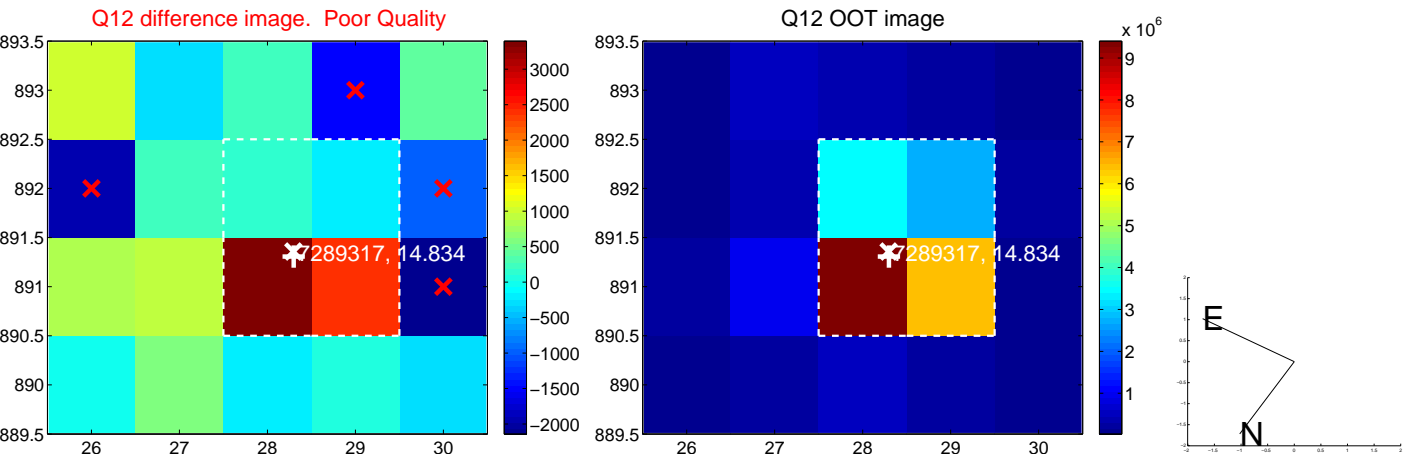
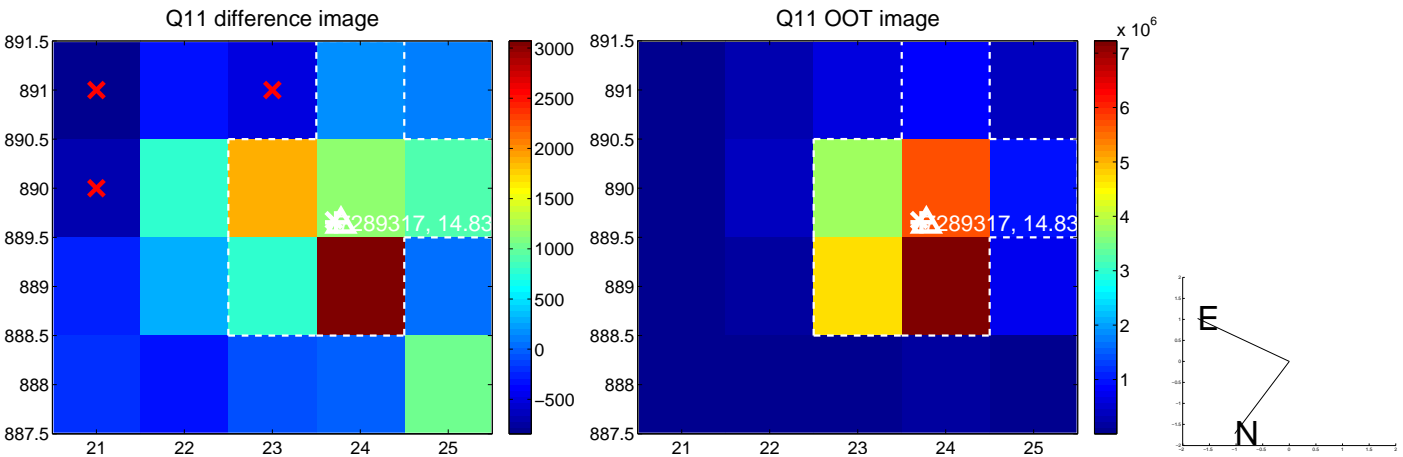
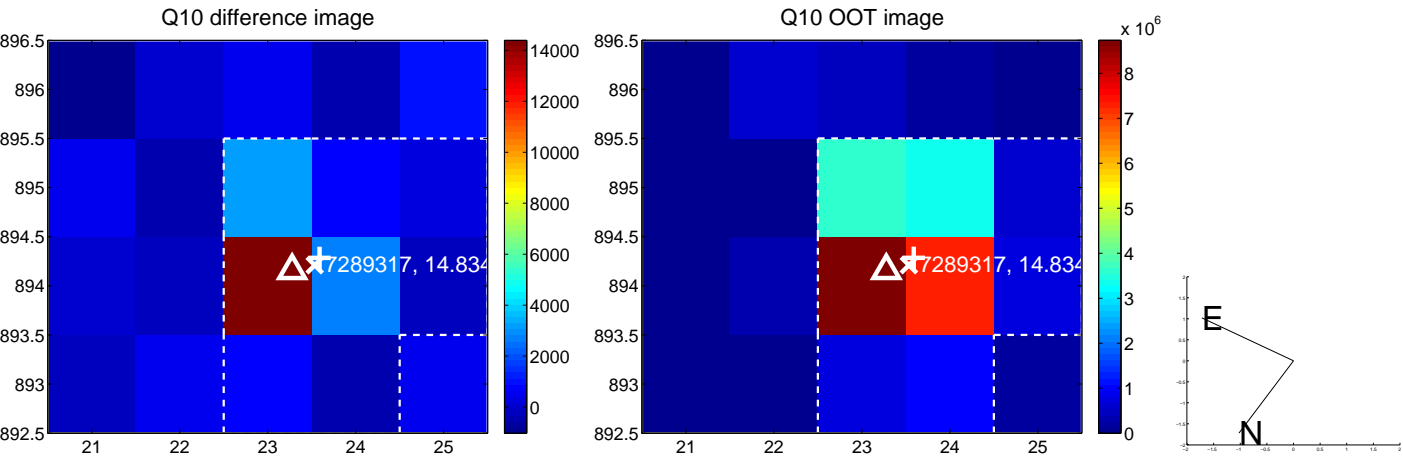
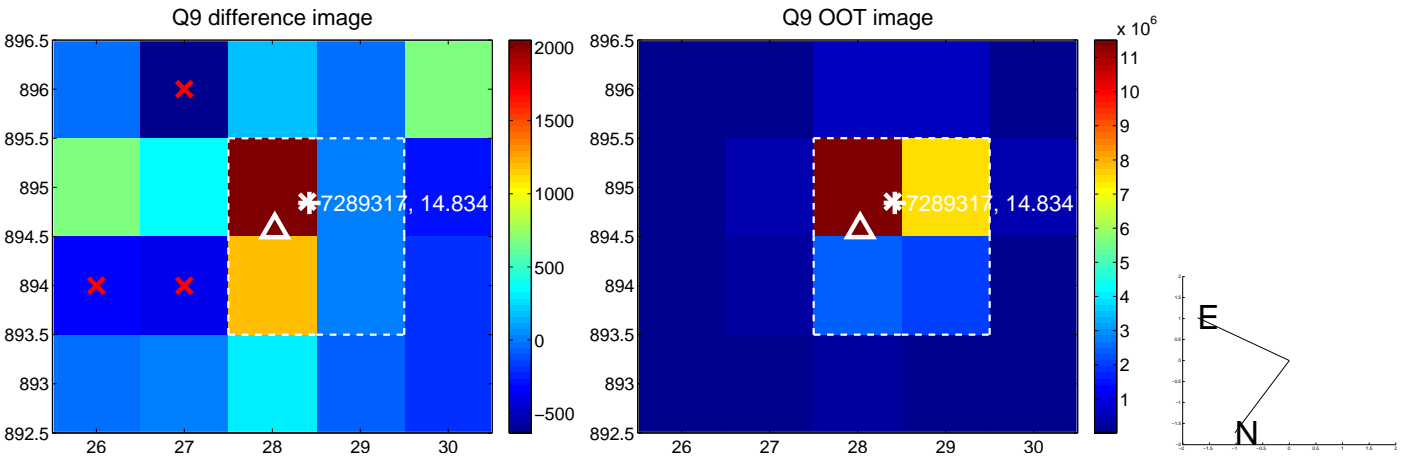
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



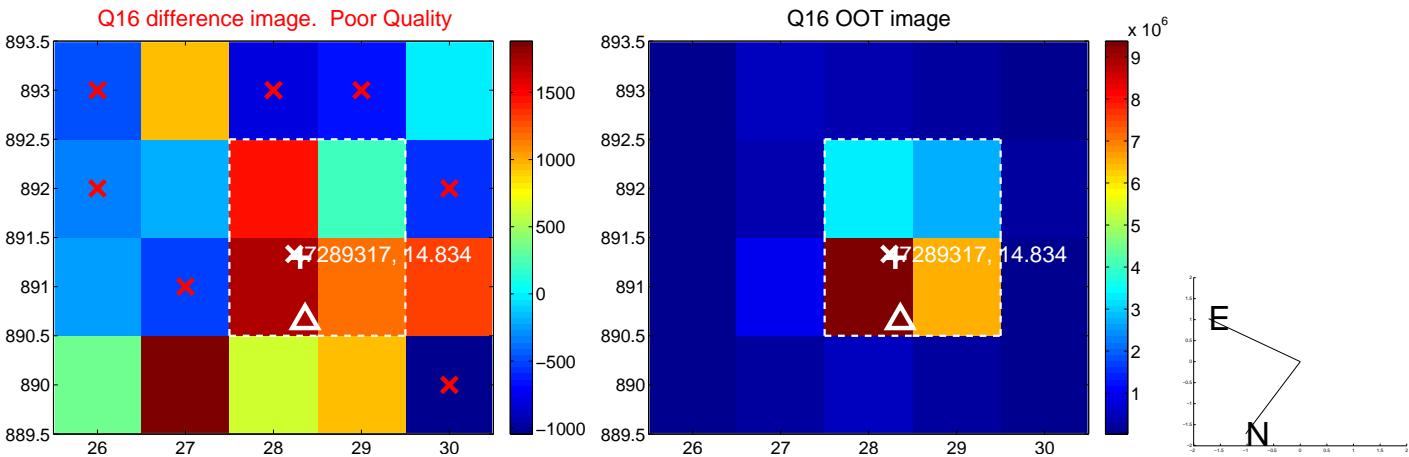
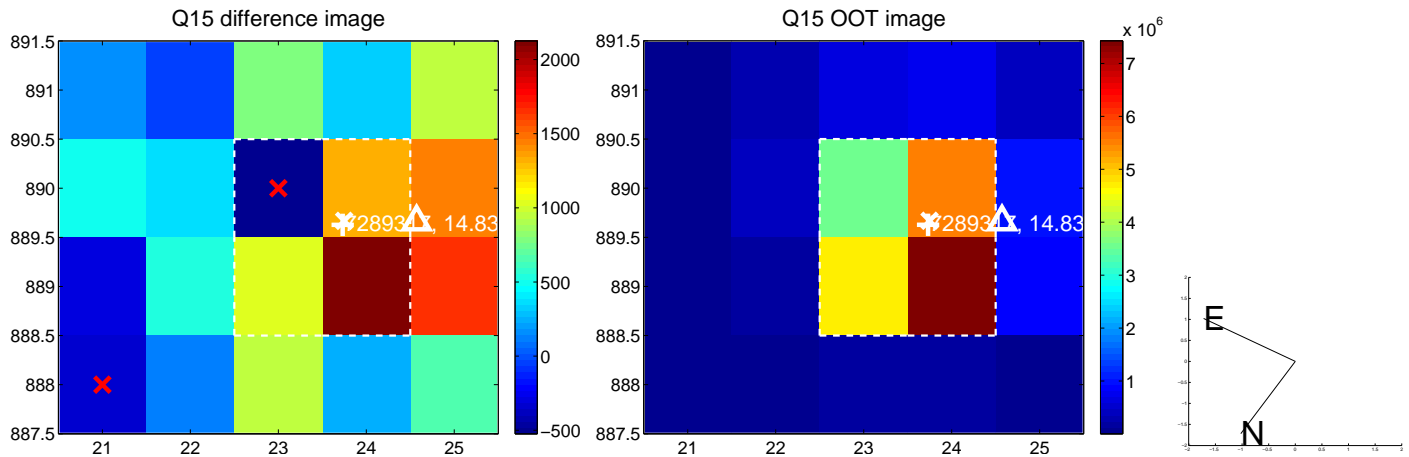
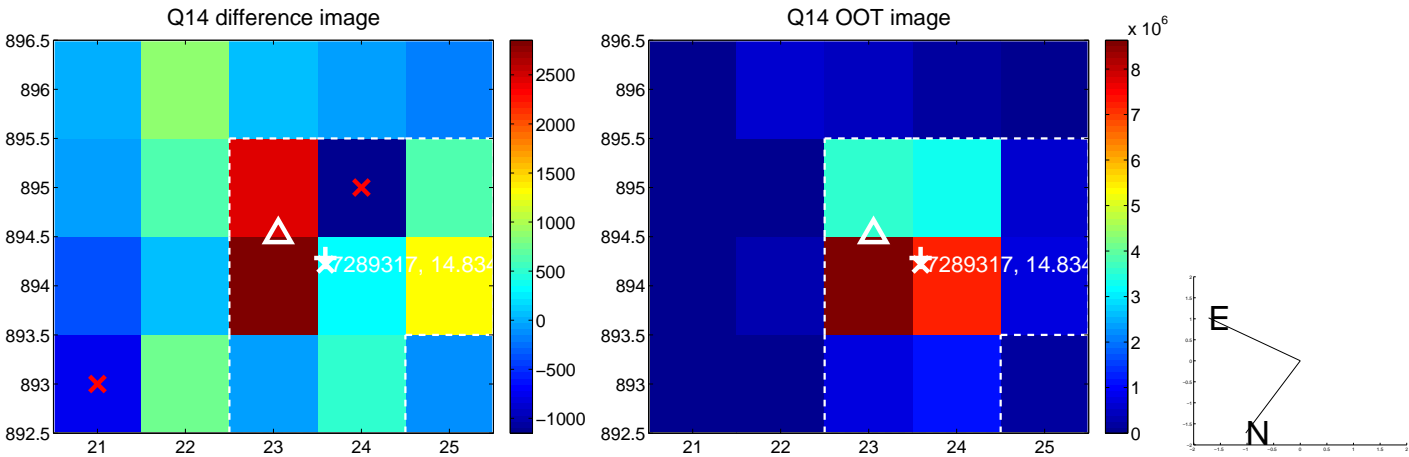
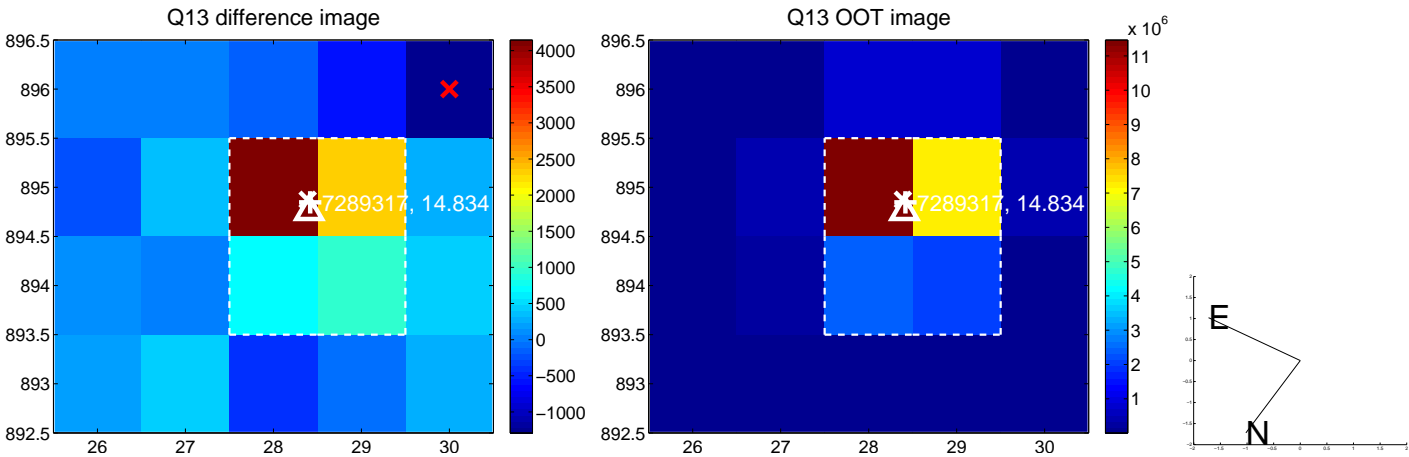
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

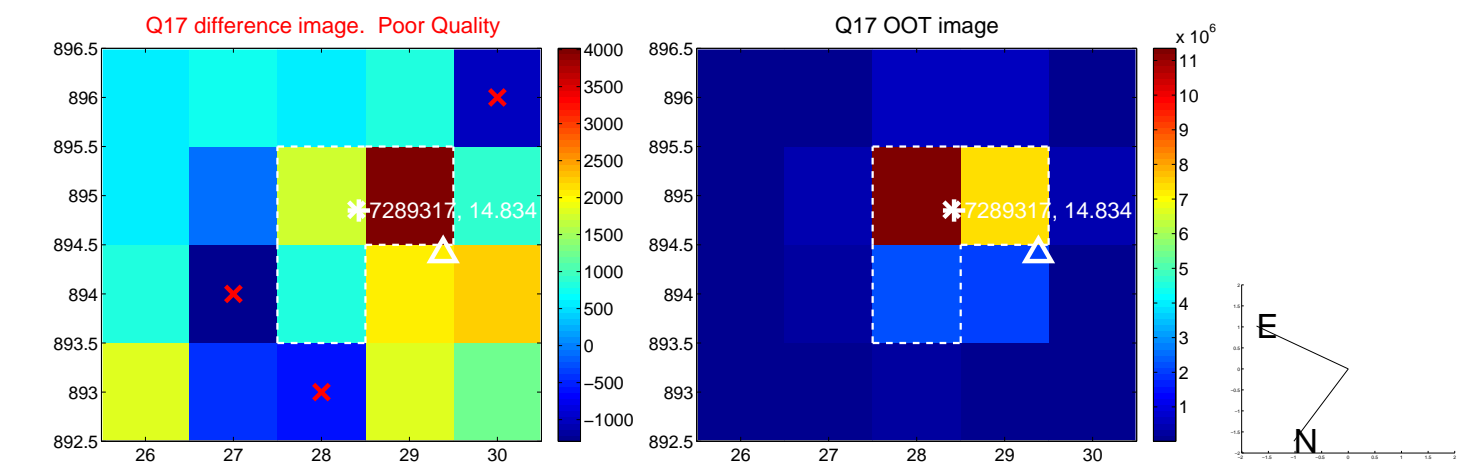


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

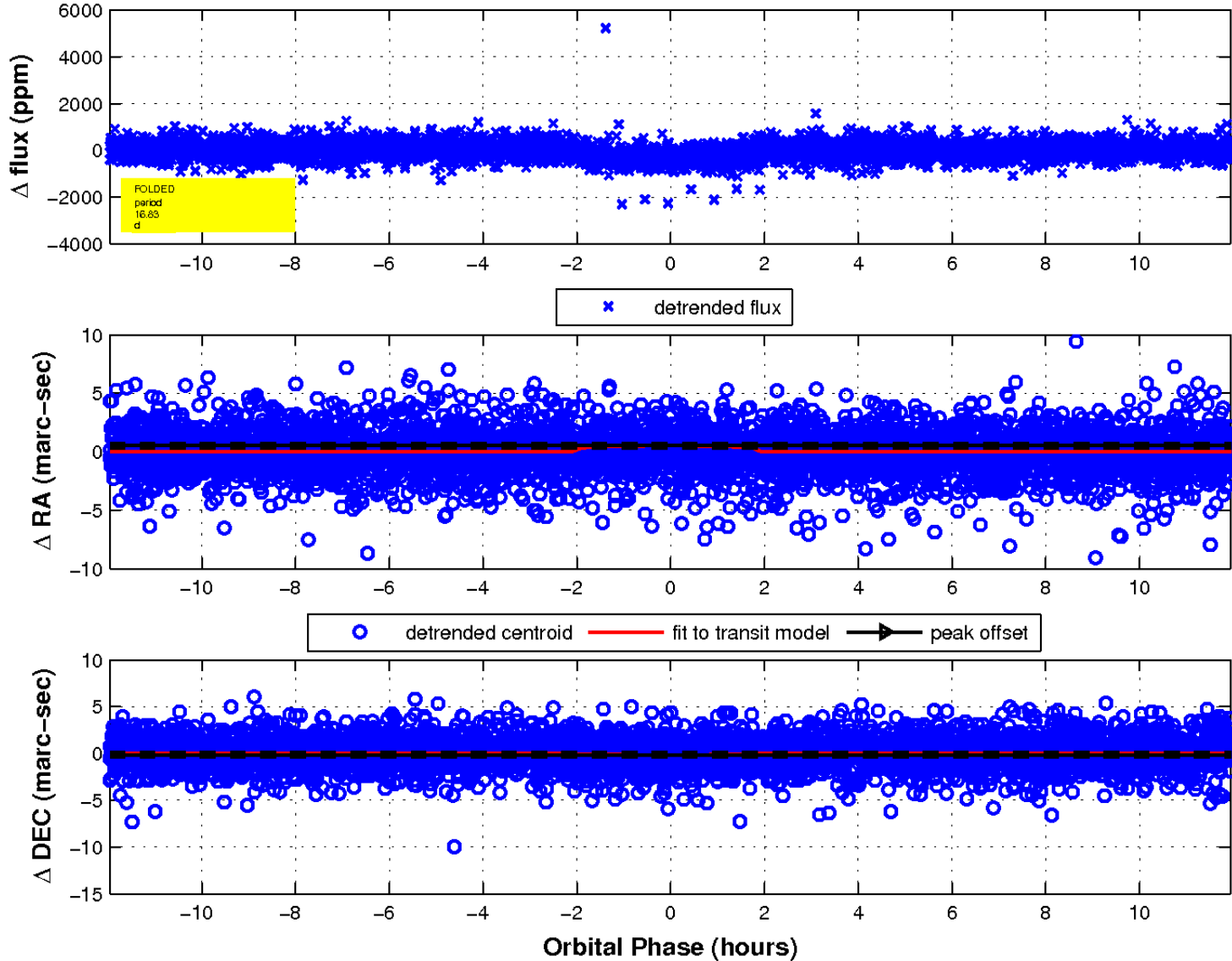




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

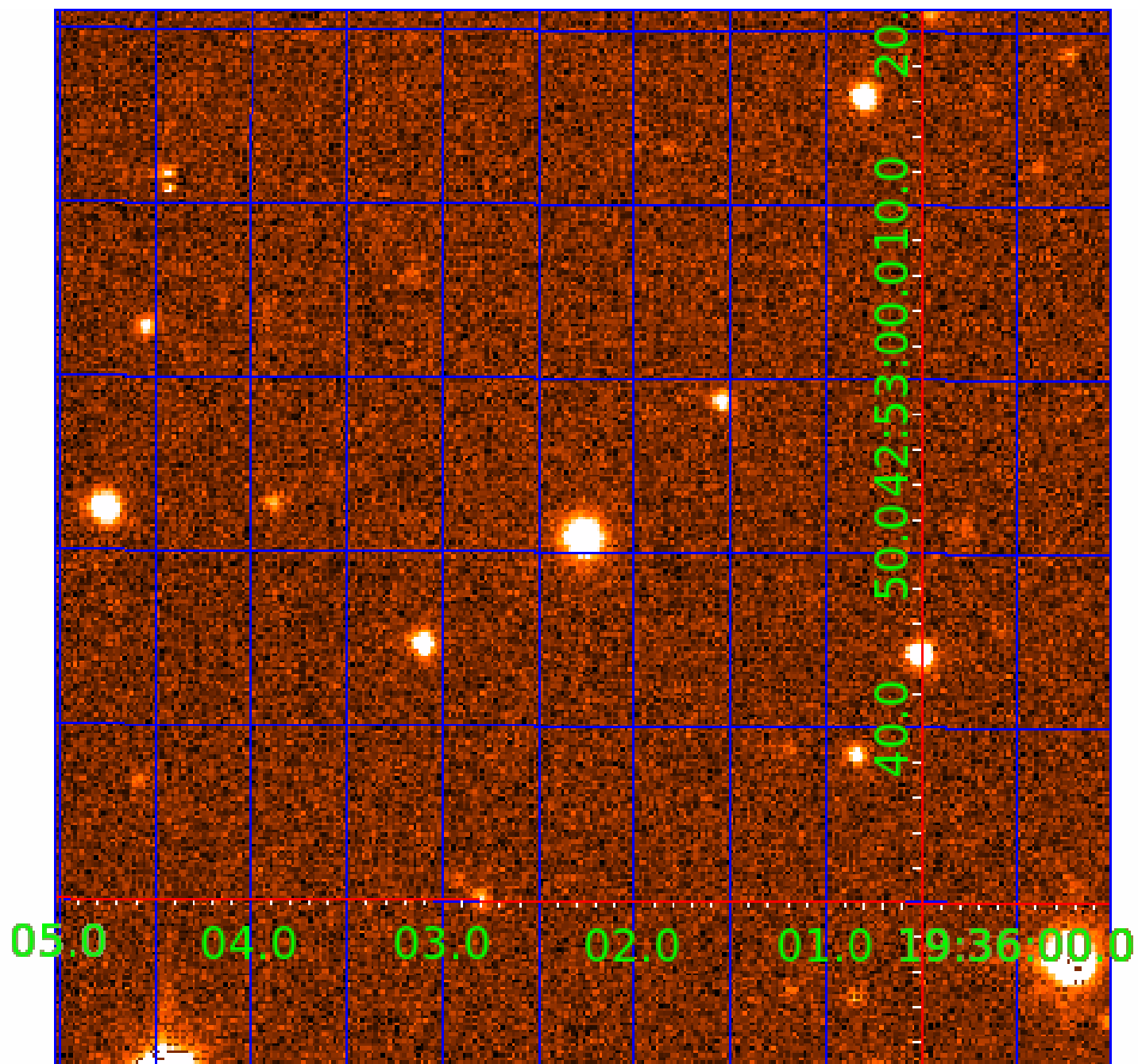


fluxWeightedCentroids, Planet 1 of 2



# UKIRT Image

Declination



# KIC 007289317

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007289317-01	OBS	2450.01	16.831987	140.533609	327.0	3.987	18.1	20.3	1.01	5518	1.92	53.56
007289317-02	OBS	2450.02	7.192934	137.293656	123.9	3.103	9.7	10.2	1.01	5518	1.32	166.39

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007289317-01	OBS	PC	0.97	0	0	0	0	NO_COMMENT
007289317-02	OBS	PC	0.98	0	0	0	0	NO_COMMENT

**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.

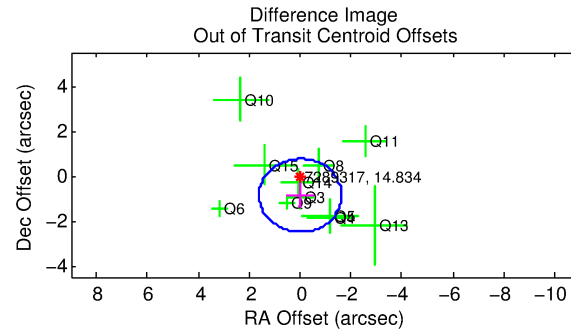
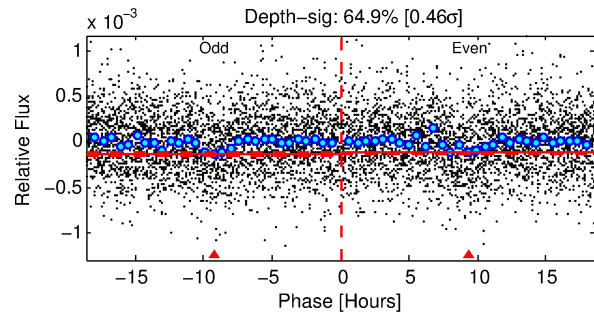
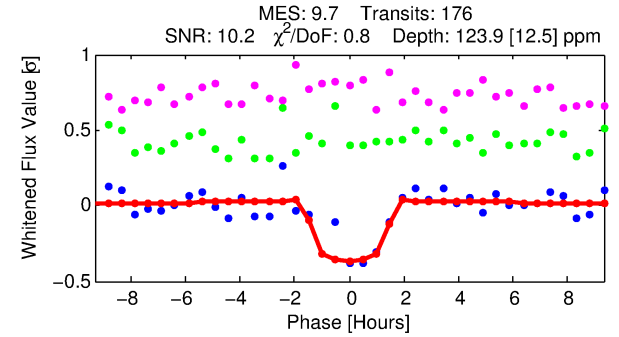
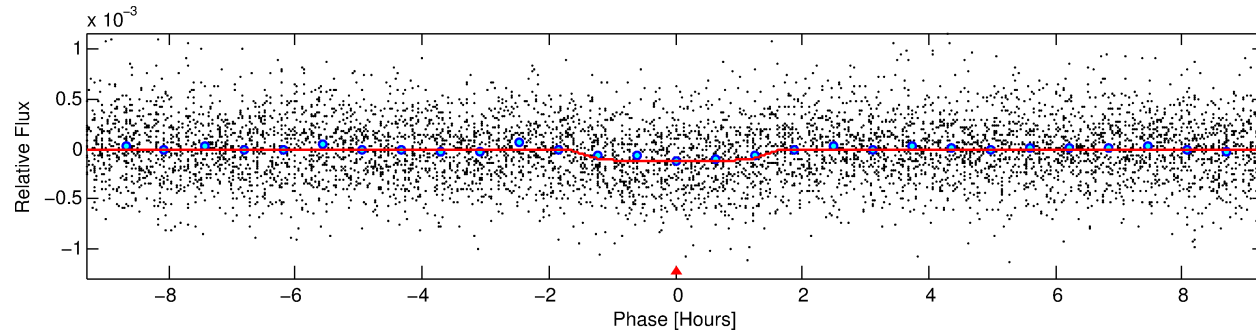
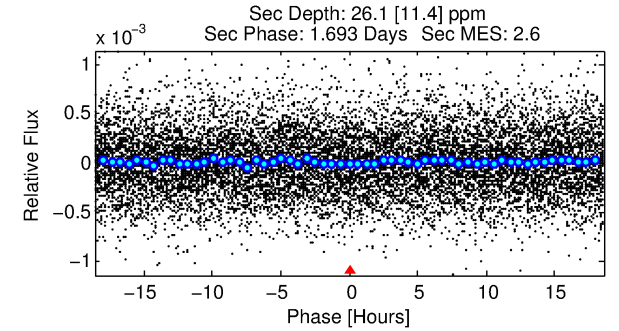
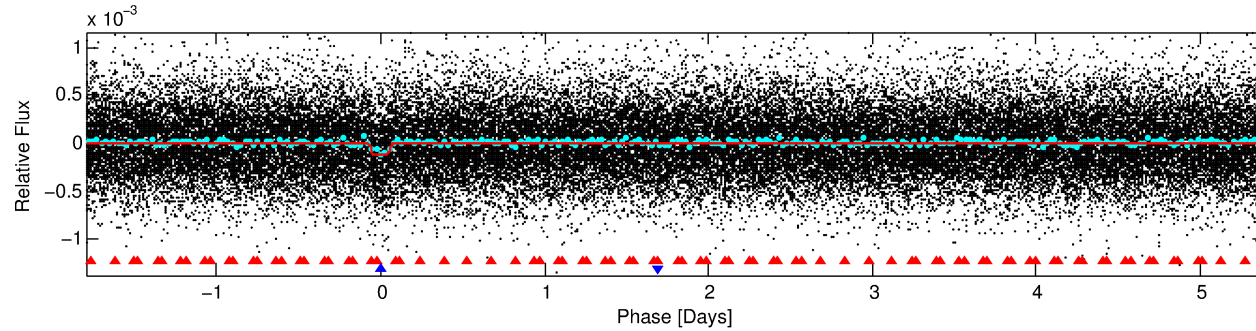
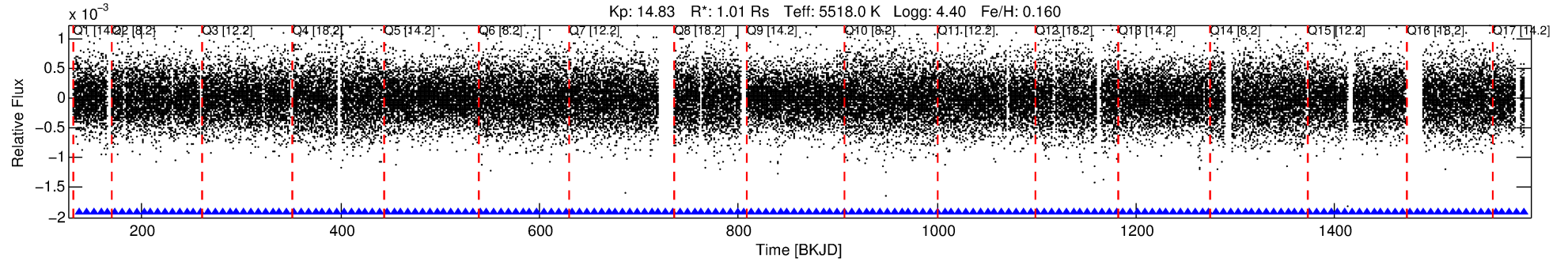
## Ephemeris Match Information For 007289317-02

No Significant Match Found

# DV One-Page Summary

KIC: 7289317 Candidate: 2 of 2 Period: 7.193 d

KOI: K02450.02 Corr: 0.892



## DV Fit Results:

Period = 7.19293 [0.00005] d  
Epoch = 137.2937 [0.0057] BKJD  
Rp/R\* = 0.0120 [0.0080]  
a/R\* = 9.02 [26.00]  
b = 0.88 [0.79]  
Seff = 166.39 [31.30]  
Teff = 916 [43] K  
Rp = 1.32 [0.90] Re  
a = 0.0712 [0.0085] AU  
Ag = 42.09 [59.96] [0.69σ]  
Teffp = 3607 [1276] K [2.11σ]

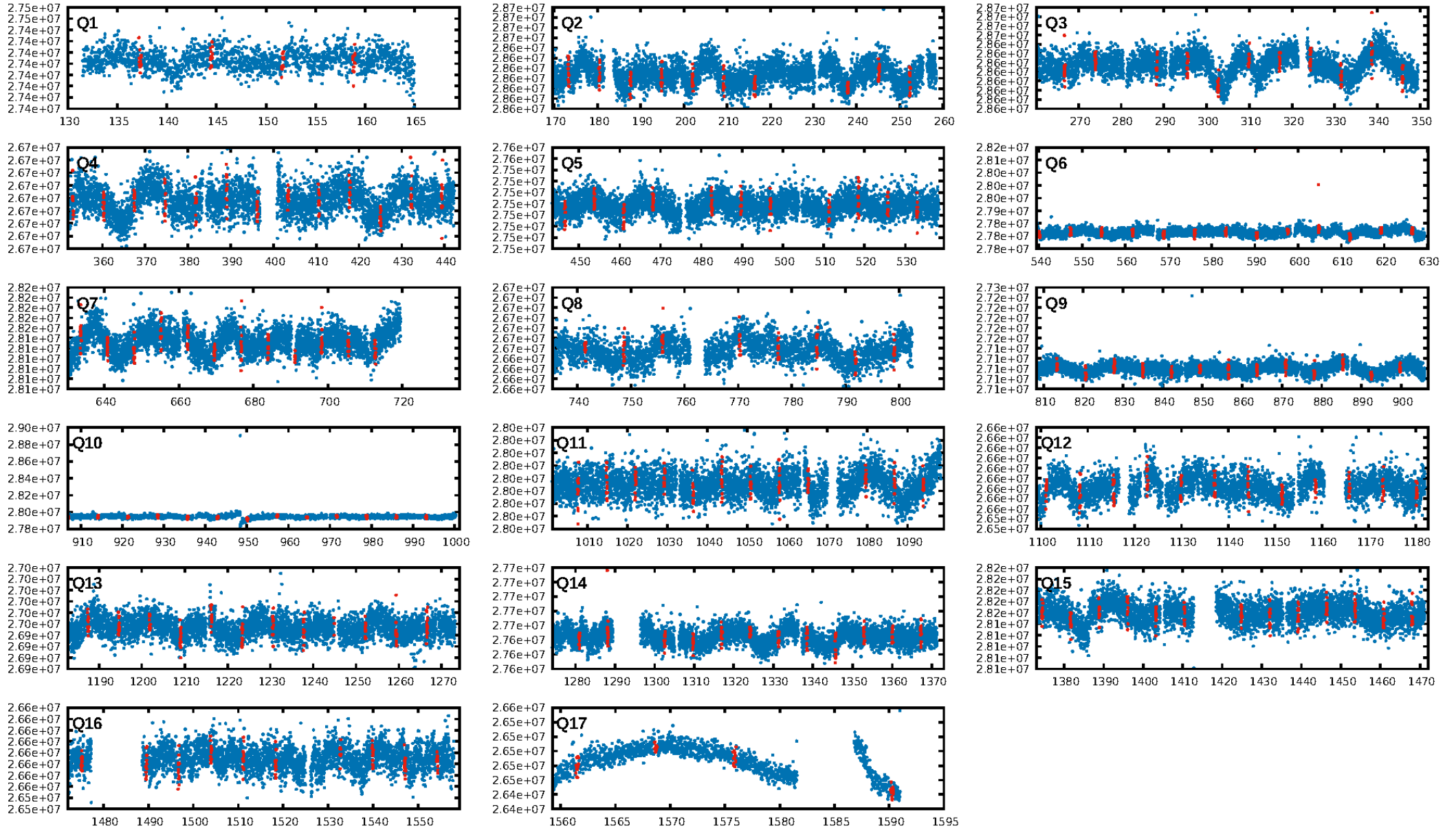
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [45.79σ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.02e-21  
RollingBand-fgt: 1.00 [168/168]  
GhostDiagnostic-chr: 2.946  
Centroid-sig: 26.3%  
Centroid-so: 1.473 arcsec [1.12σ]  
OotOffset-rm: 0.869 arcsec [1.60σ]  
KicOffset-rm: 0.871 arcsec [1.70σ]  
OotOffset-st: 3/3/2/3 [11]  
KicOffset-st: 3/3/2/3 [11]  
DiffImageQuality-fgm: 0.45 [5/11]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:53:40 Z

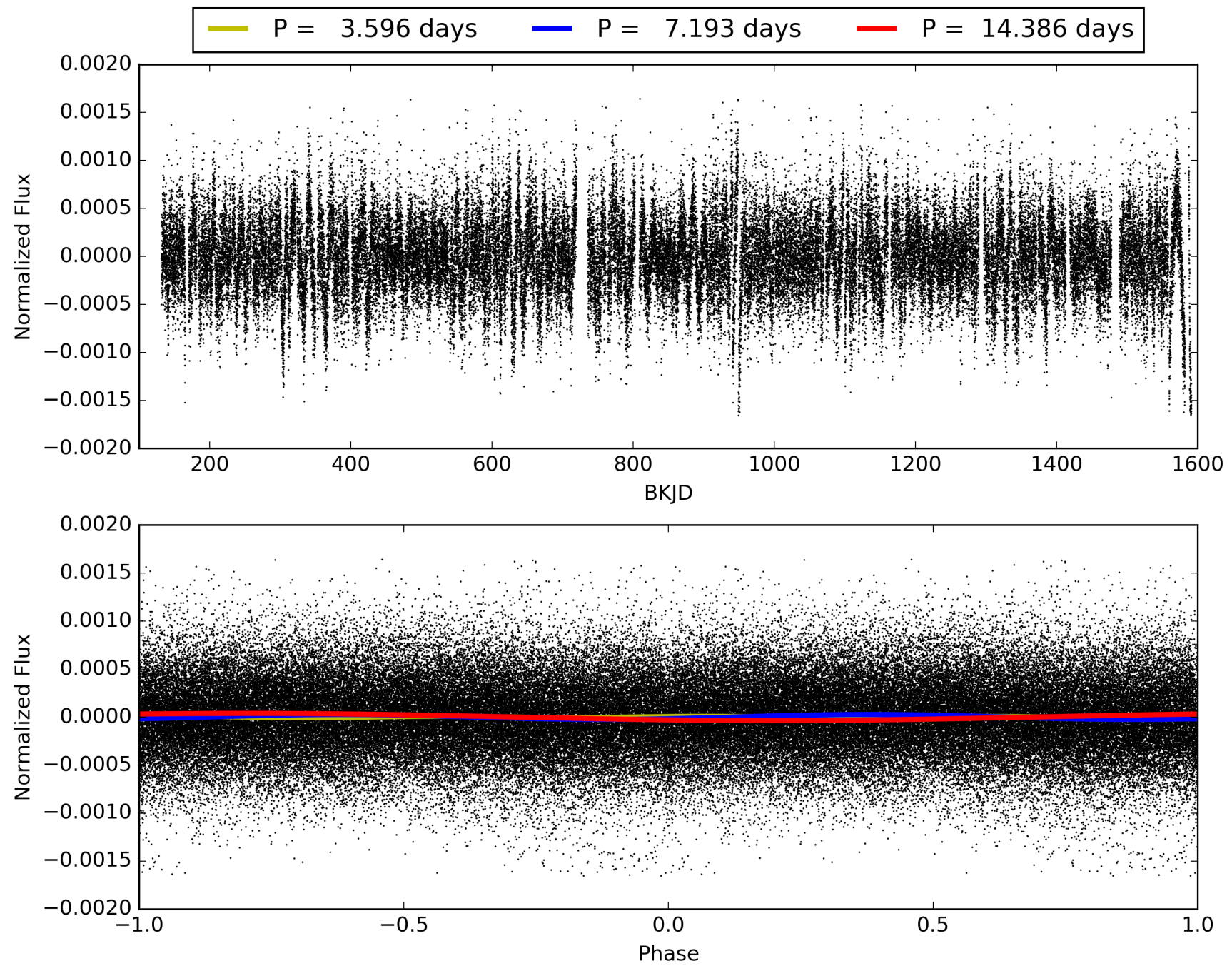
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007289317-02, PDC Light Curves



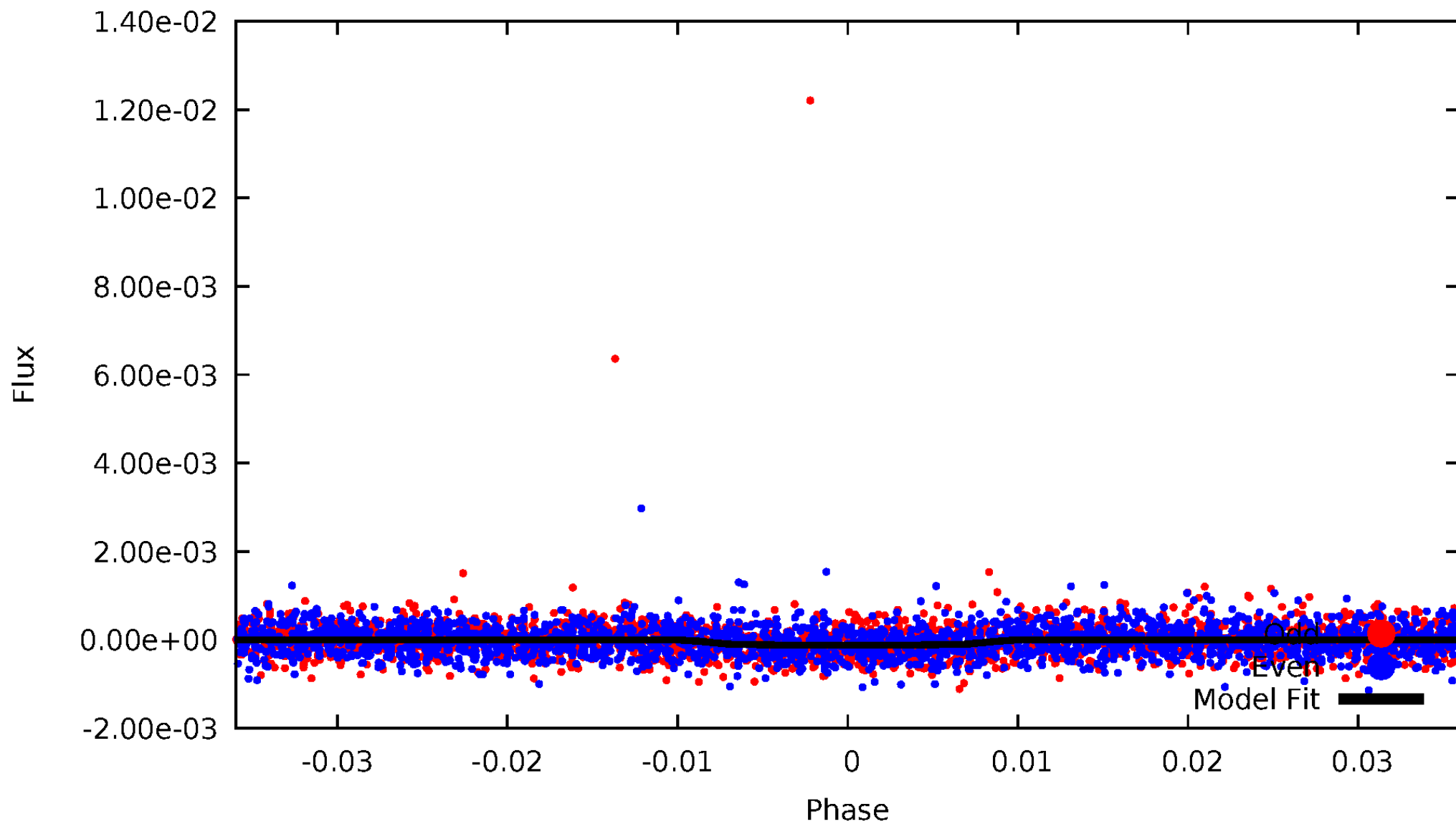


TCE 007289317-02



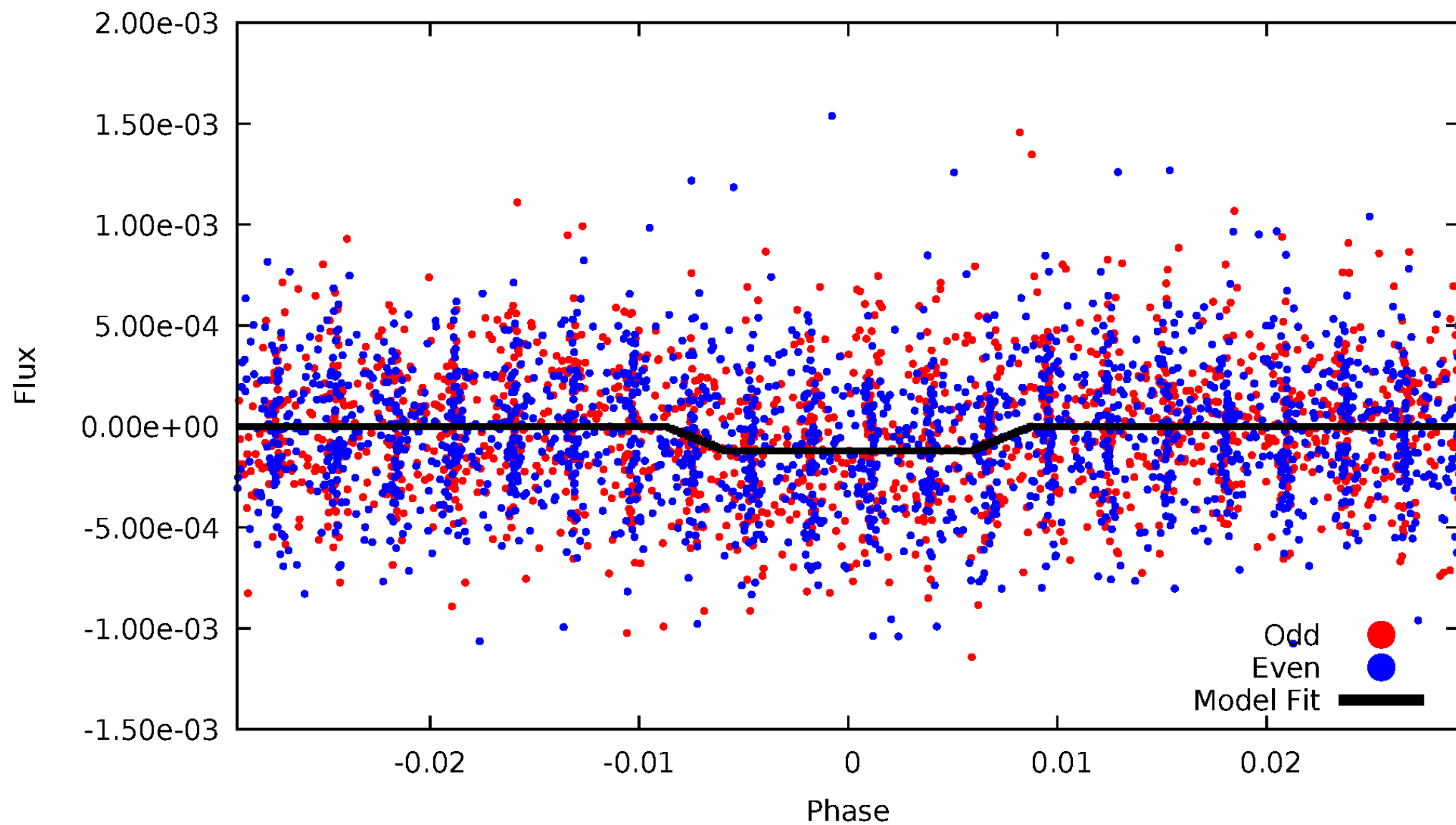
# DV Odd/Even

TCE 007289317-02



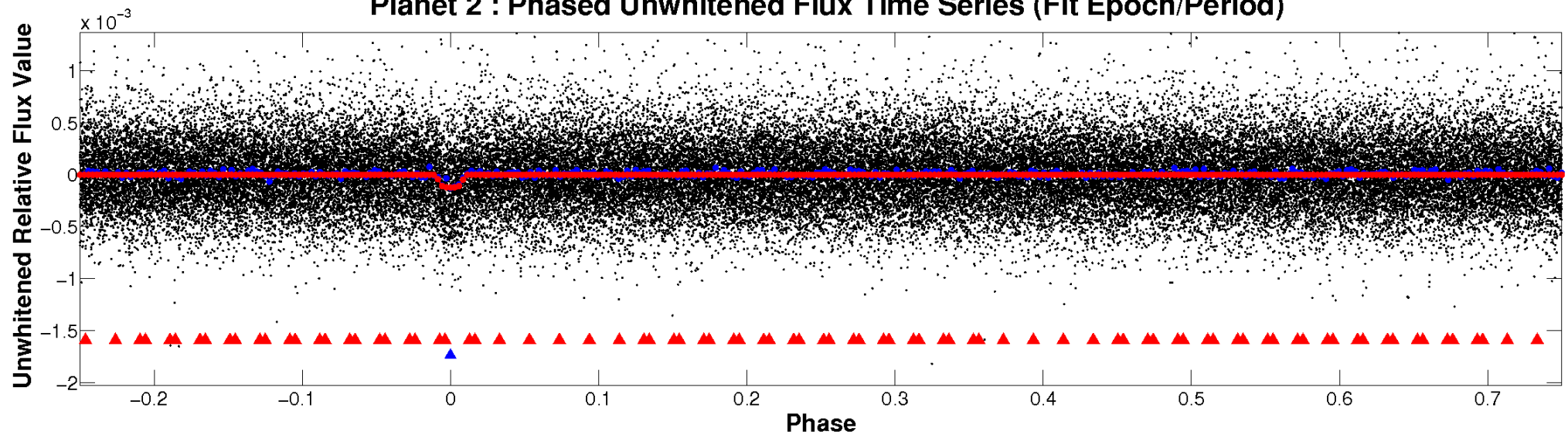
# ALT Odd/Even

TCE 007289317-02

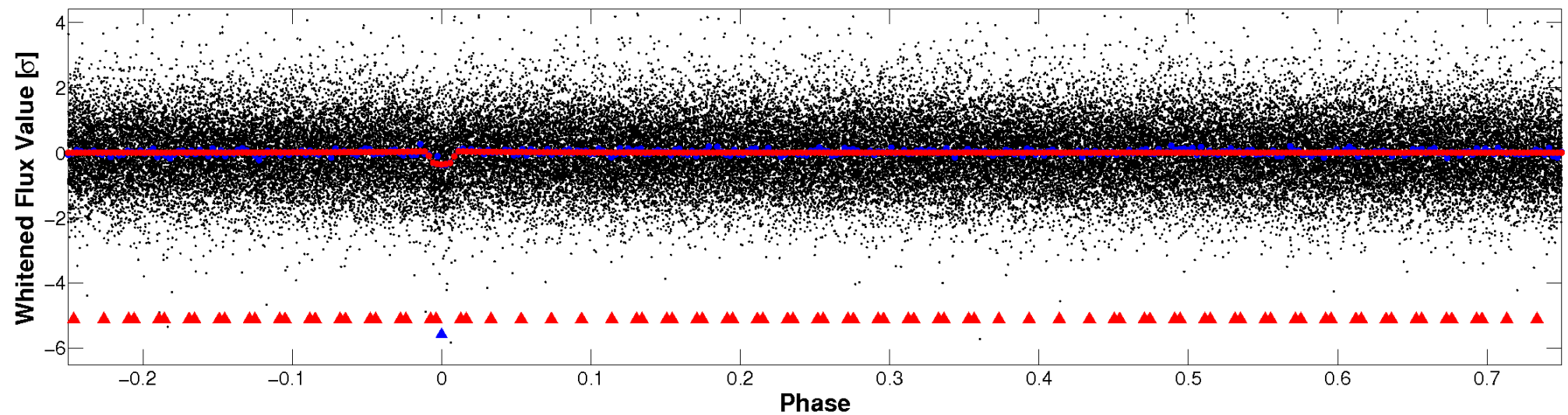


# Non-Whitened Vs. Whitened Light Curve

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

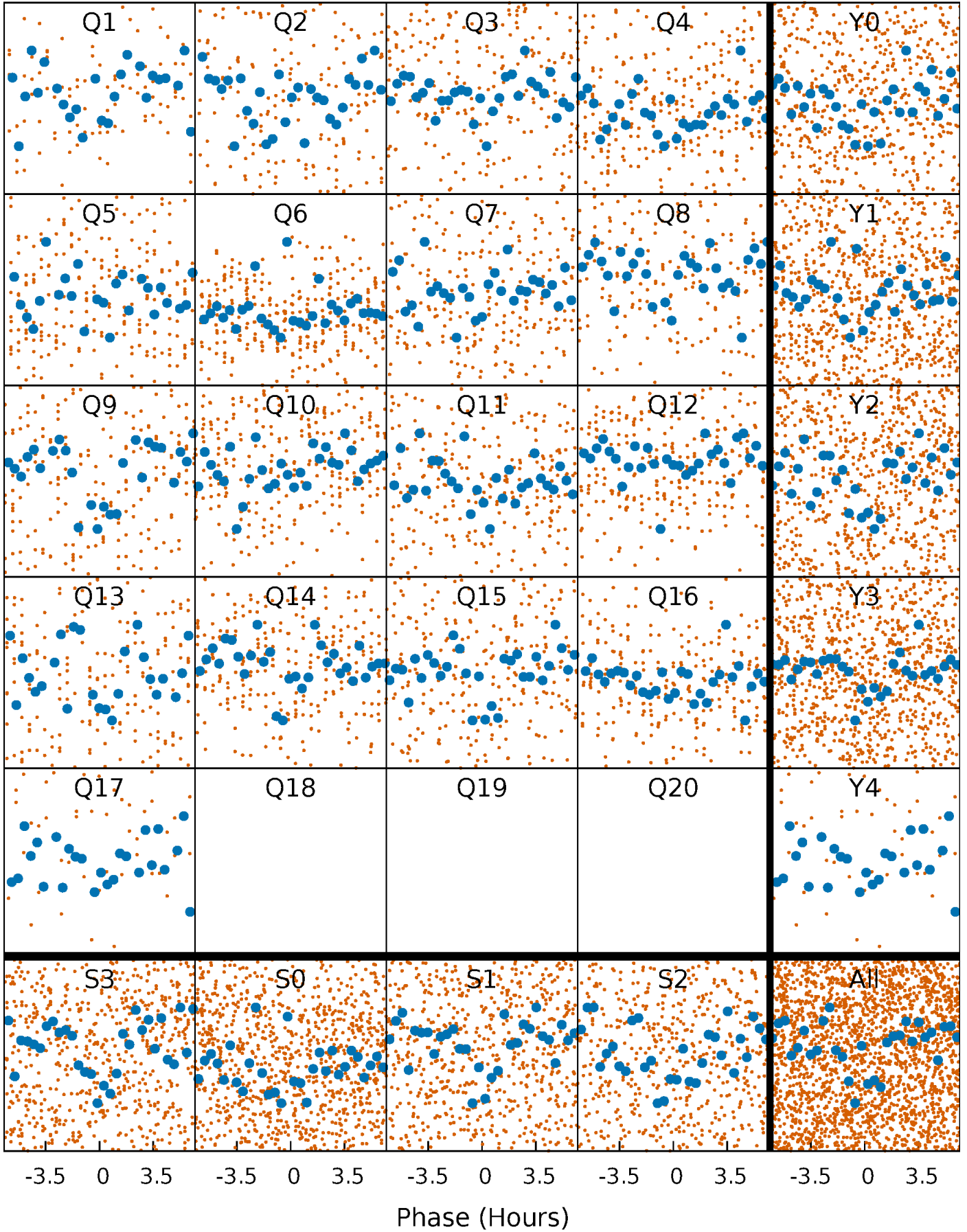


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

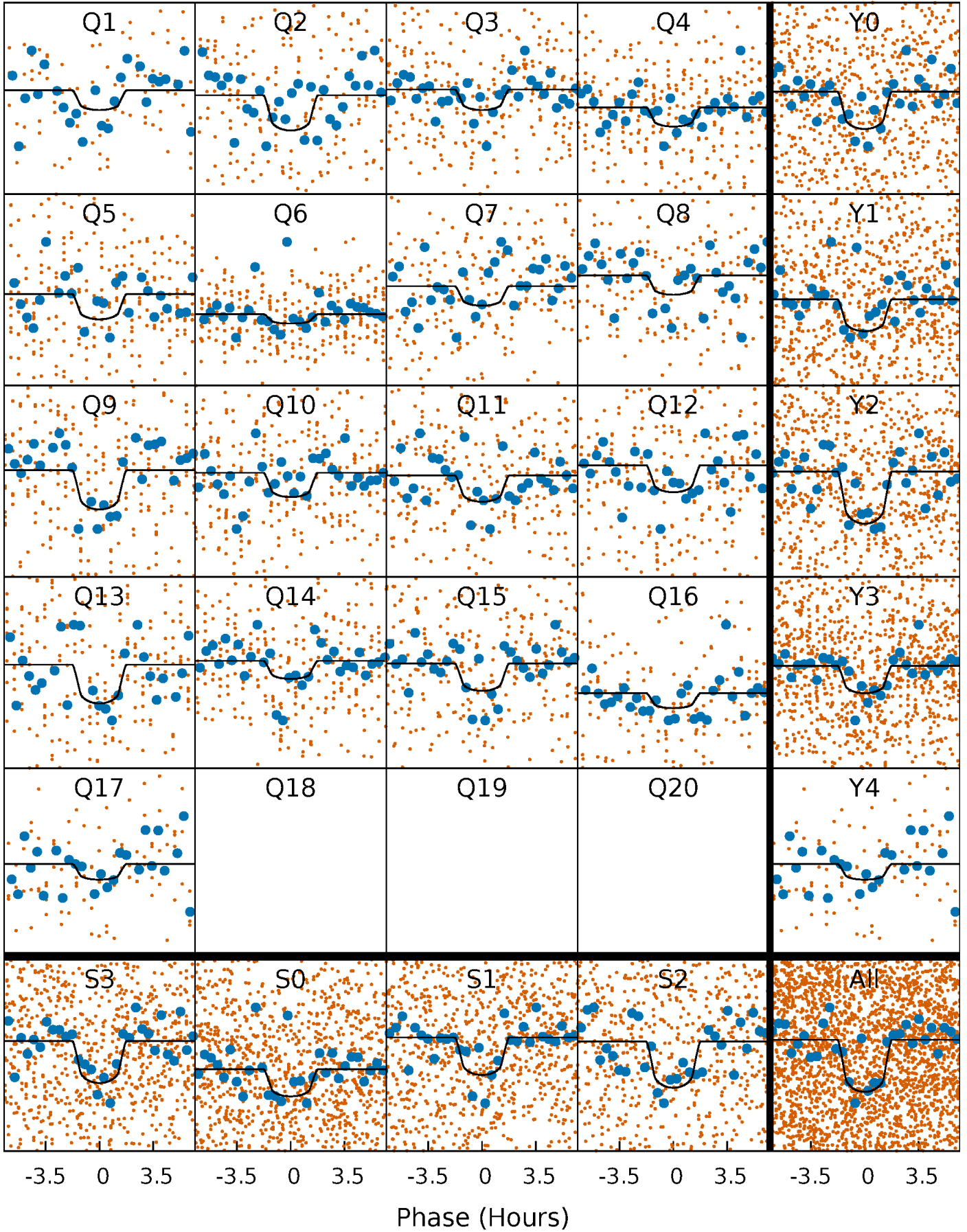
TCE 007289317-02   P= 7.192934 Days    $T_0=137.293656$  (BKJD)





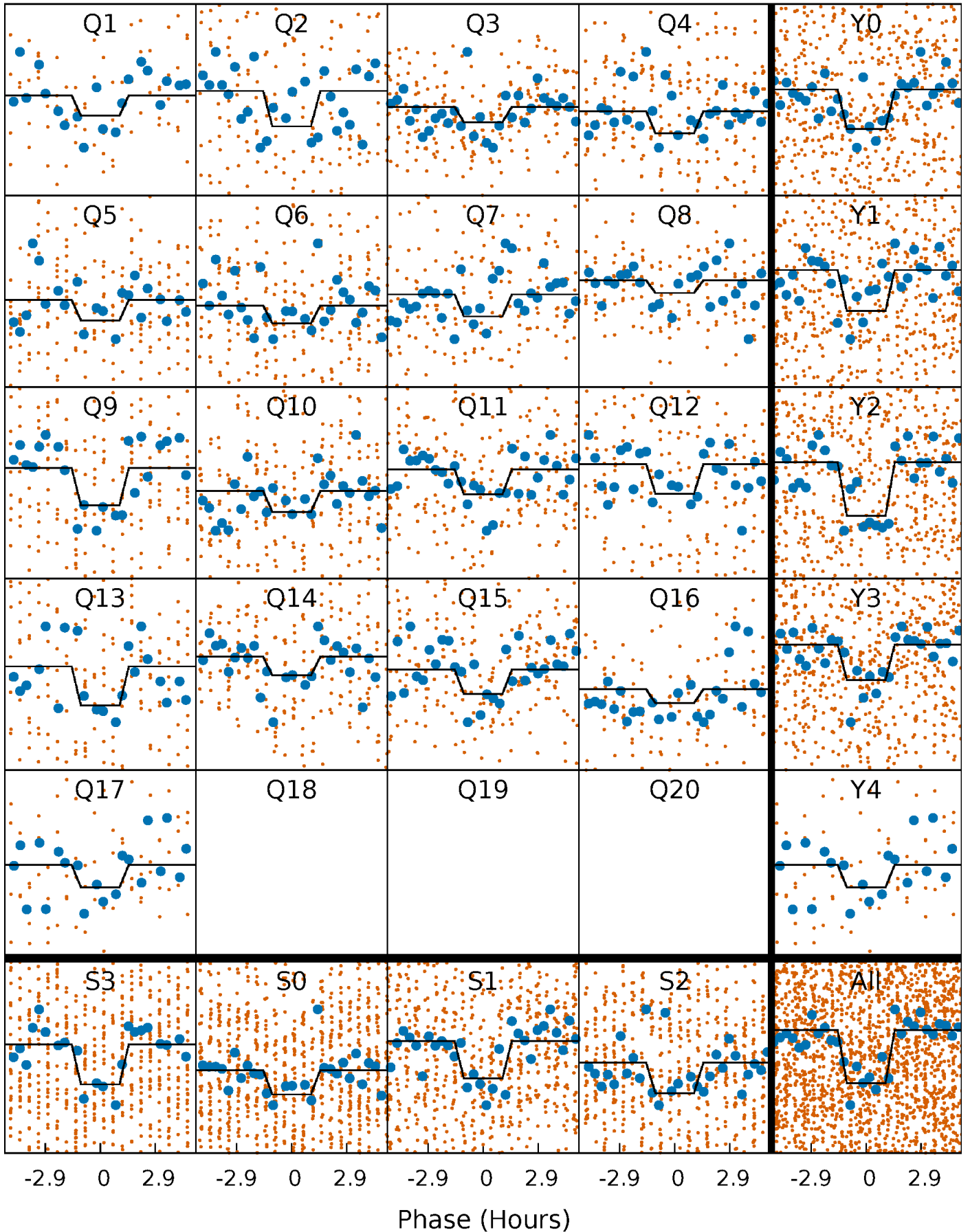
# DV Quarter-Phased Transit Curves

TCE 007289317-02   P= 7.192934 Days    $T_0=137.293656$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

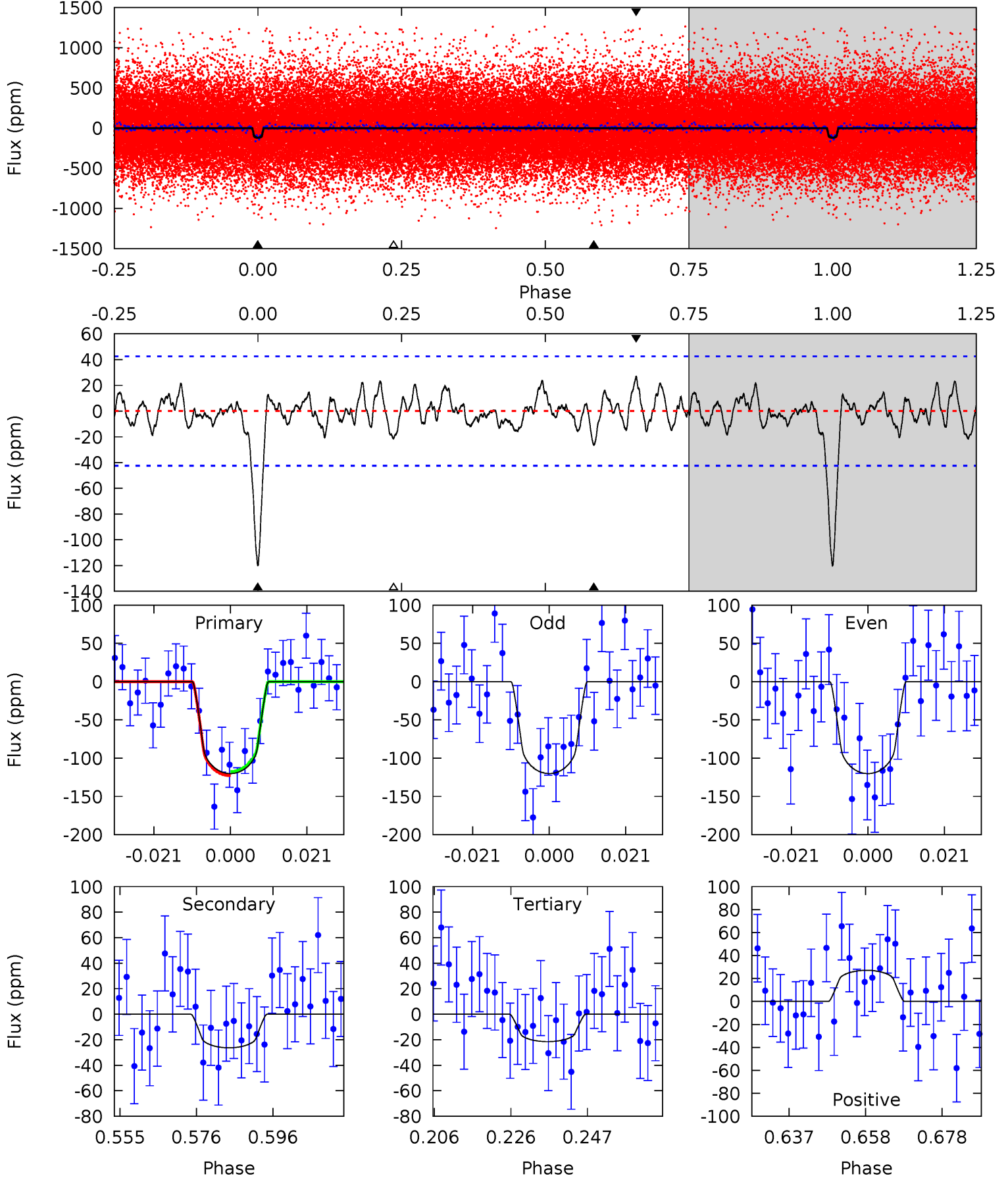
TCE 007289317-02 P= 7.193022 Days  $T_0=137.287784$  (BKJD)



# DV Model-Shift Uniqueness Test

007289317-02, P = 7.192934 Days, E = 130.100722 Days

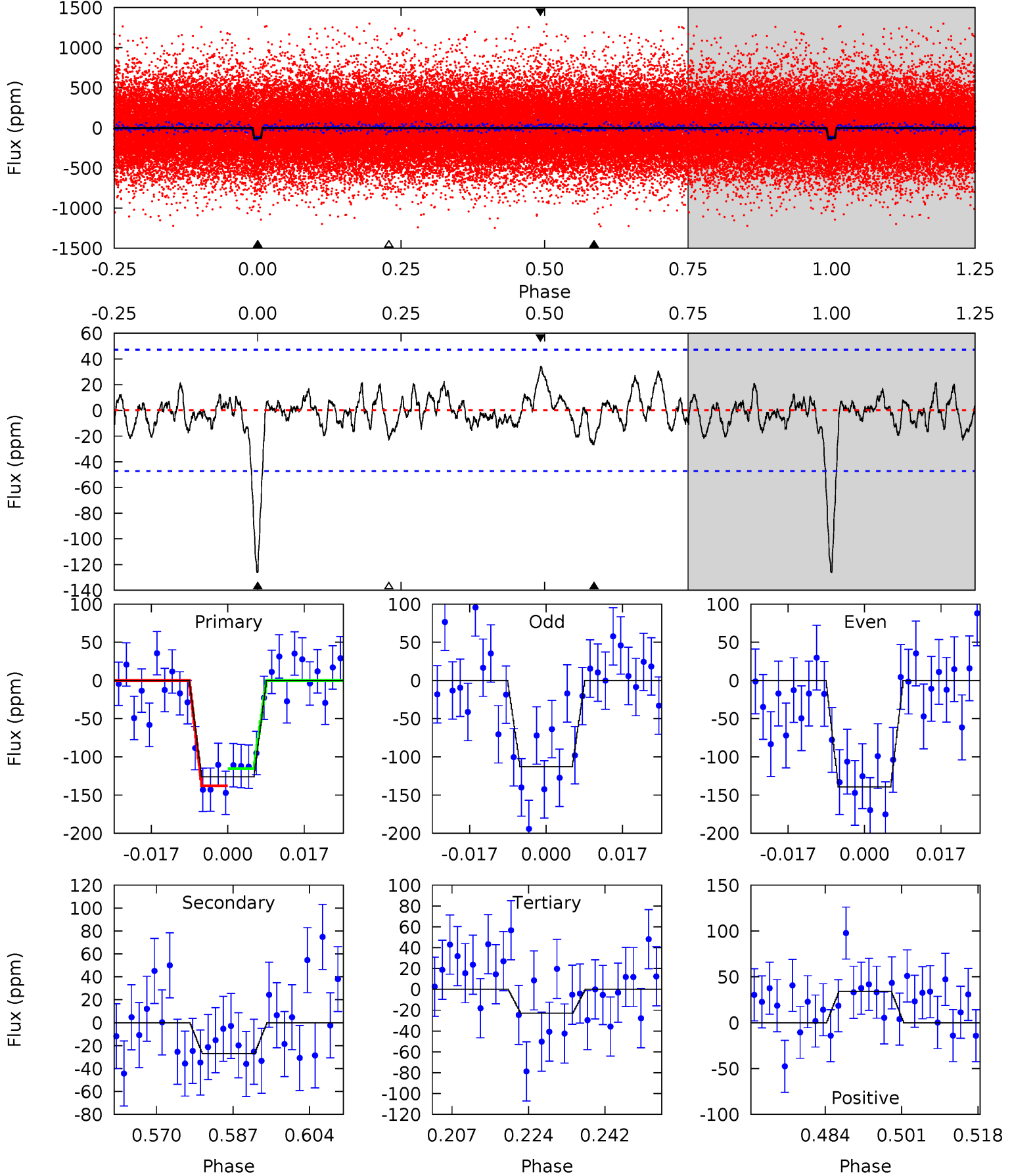
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	3.03	2.47	3.12	4.89	2.32	1.07	11.4	10.7	0.56	-0.09	0.00	0.90	0.18	0.30



# Alt Model-Shift Uniqueness Test

007289317-02, P = 7.193022 Days, E = 130.094762 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	2.80	2.38	3.57	4.92	2.38	1.08	10.8	9.60	0.43	-0.76	1.38	0.92	0.21	1.18



### Stellar Parameters For KIC 007289317

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5518^{+74}_{-83}$	$4.400^{+0.100}_{-0.100}$	$0.160^{+0.150}_{-0.150}$	$1.008^{+0.137}_{-0.099}$	$0.932^{+0.054}_{-0.049}$	$1.280^{+0.486}_{-0.385}$
	+1%/-2%	+2%/-2%	+94%/-94%	+14%/-10%	+6%/-5%	+38%/-30%
Source	SPE90	SPE90	SPE90	DSEP		

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

### Secondary Eclipse Parameters for KIC 007289317-02 / KOI 2450.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-26 \pm 9$	$1.36^{+0.78}_{-0.76}$	$1278^{+49}_{-42}$	$3897^{+1461}_{-587}$	$40^{+160}_{-25}$
Alt.	$-27 \pm 10$	$1.28^{+0.85}_{-0.73}$	$1275^{+51}_{-42}$	$3922^{+1765}_{-624}$	$42^{+208}_{-27}$

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

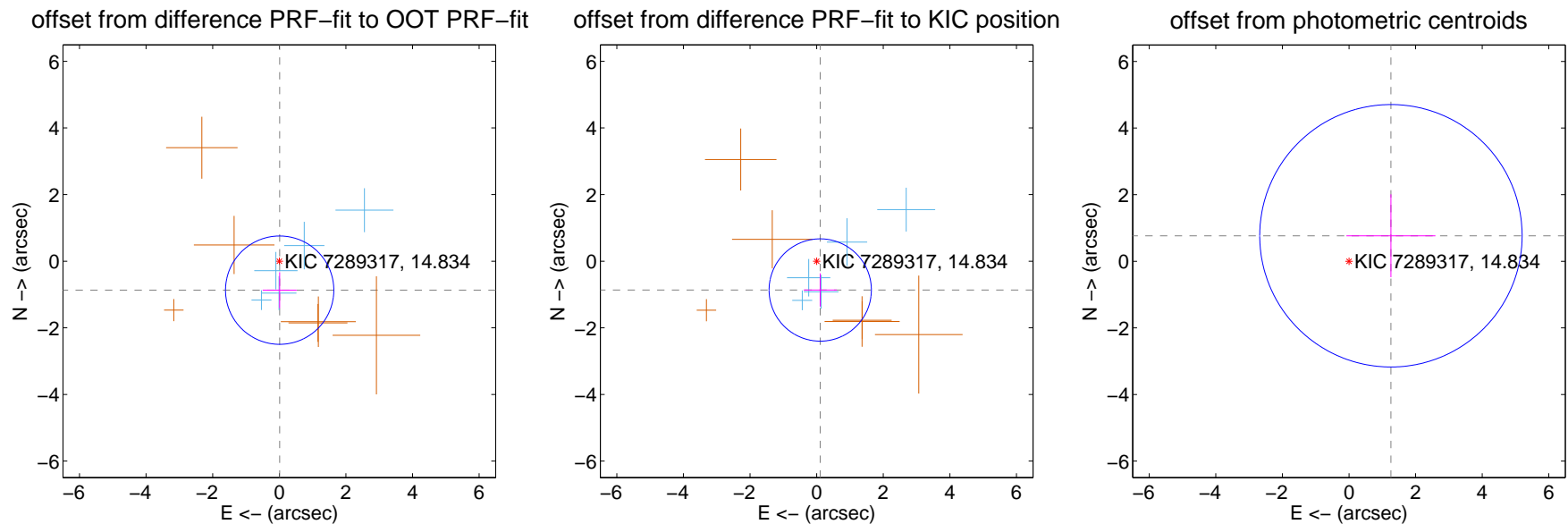
## DV Centroid Data

Supplemental centroid analysis for 007289317-02. Kepler magnitude: 14.83. Transit SNR 10.19

There are 5 quarters with good PRF difference image offsets

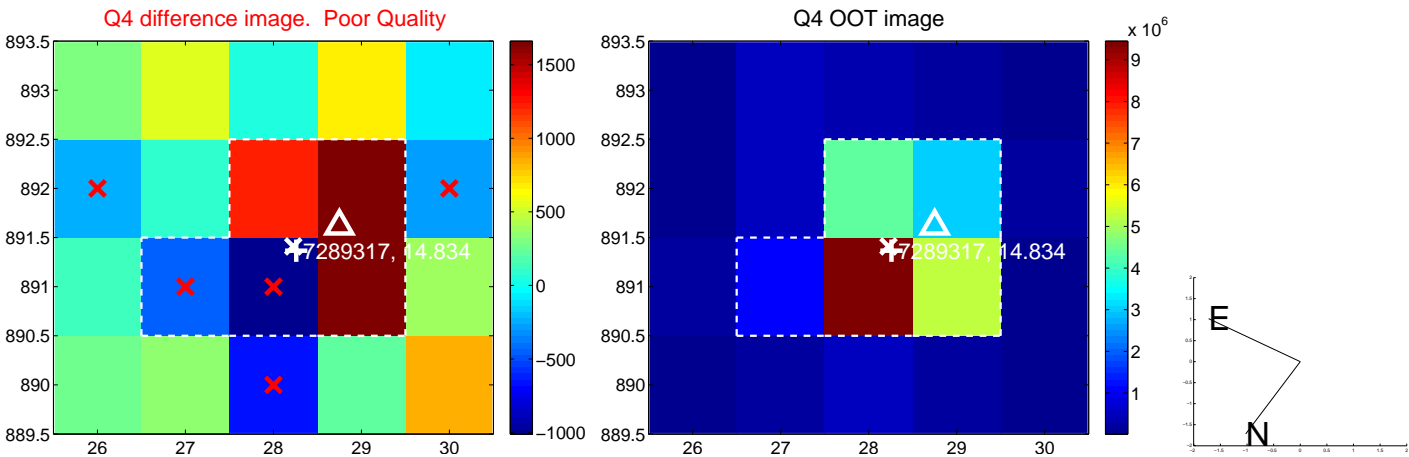
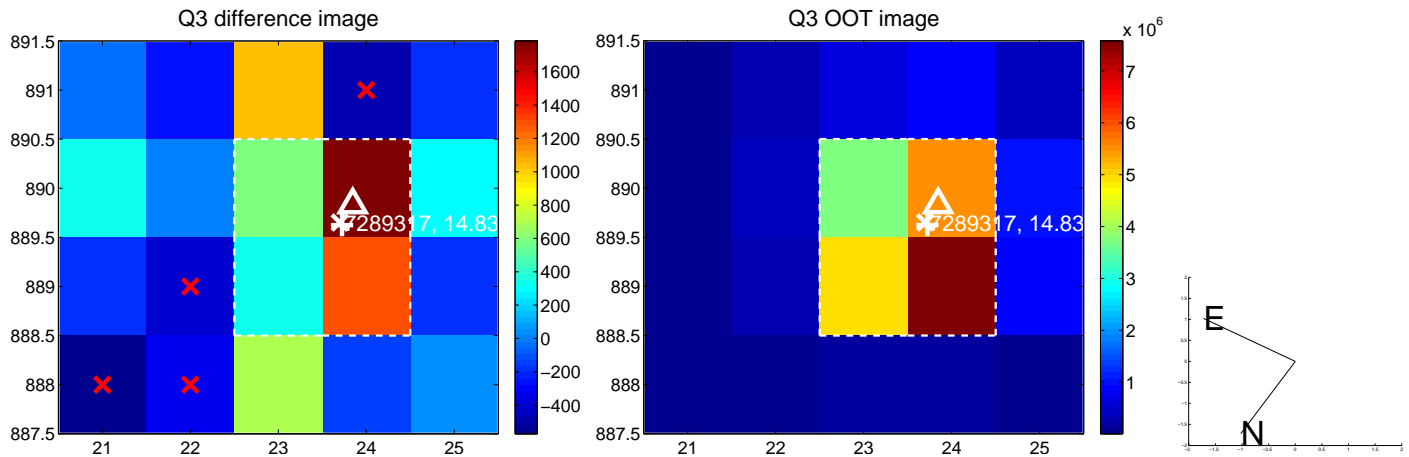
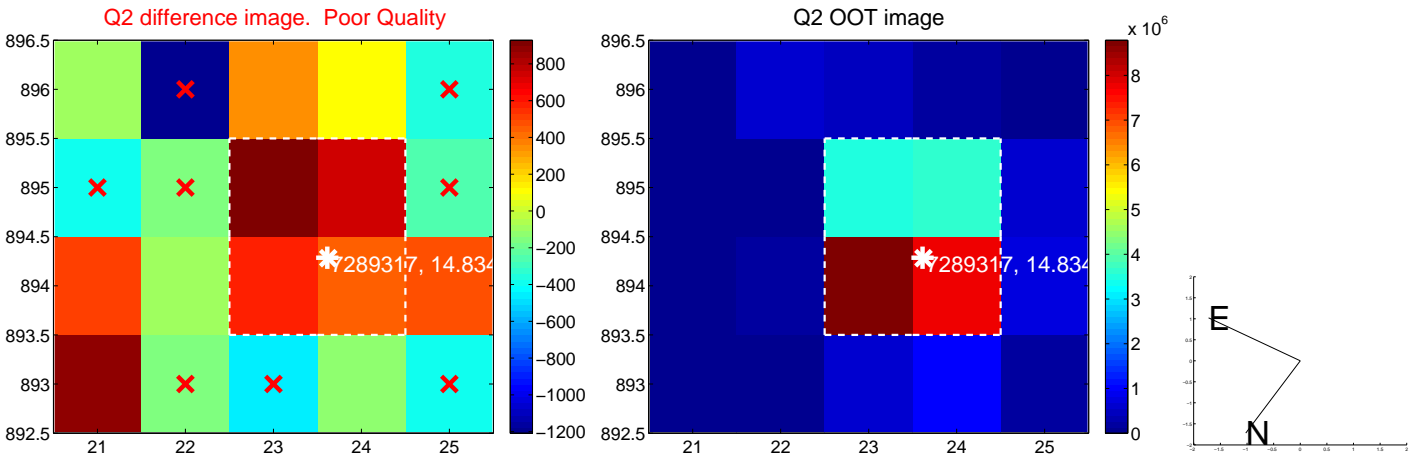
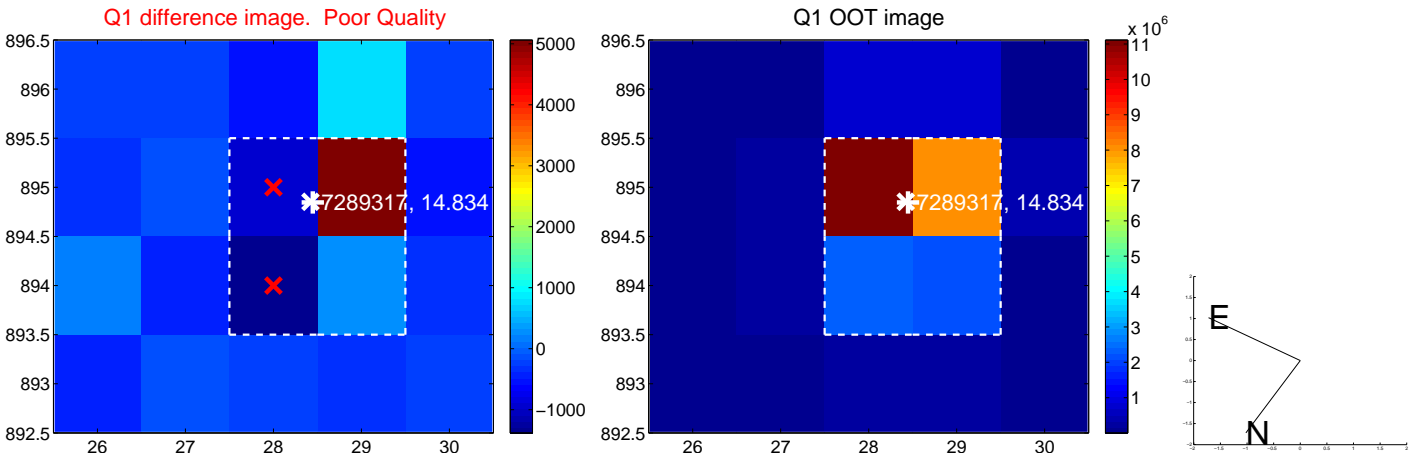
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.869 \pm 0.542$	1.60	$-0.011 \pm 0.511$	$-0.869 \pm 0.540$
PRF-fit source offset from KIC position	$0.871 \pm 0.512$	1.70	$-0.107 \pm 0.496$	$-0.865 \pm 0.500$
photometric centroid source offset	$1.47 \pm 1.31$	1.12	$-1.26 \pm 1.34$	$0.77 \pm 1.24$



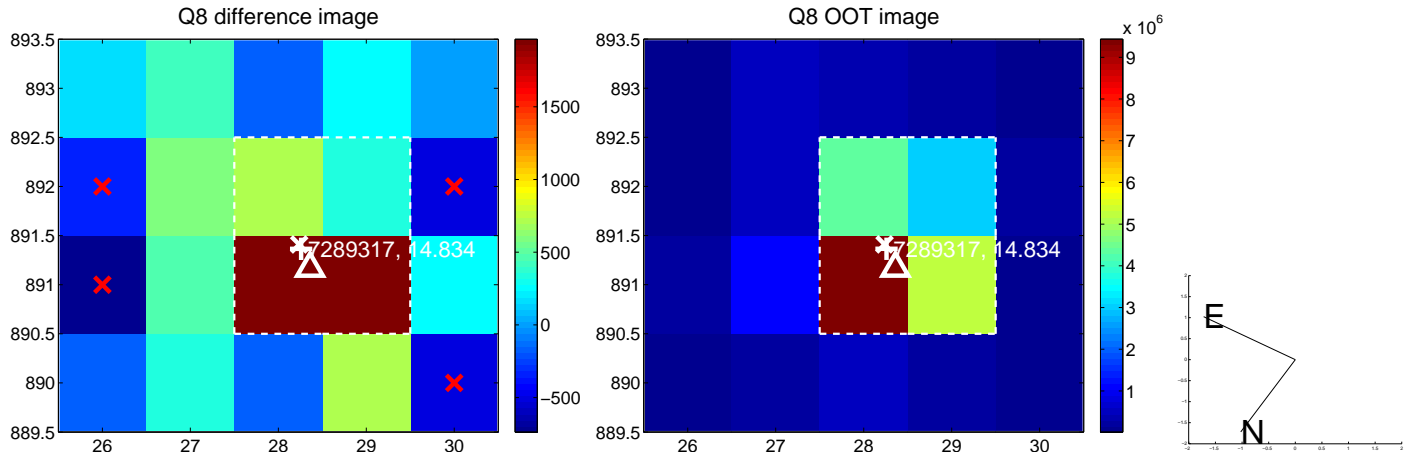
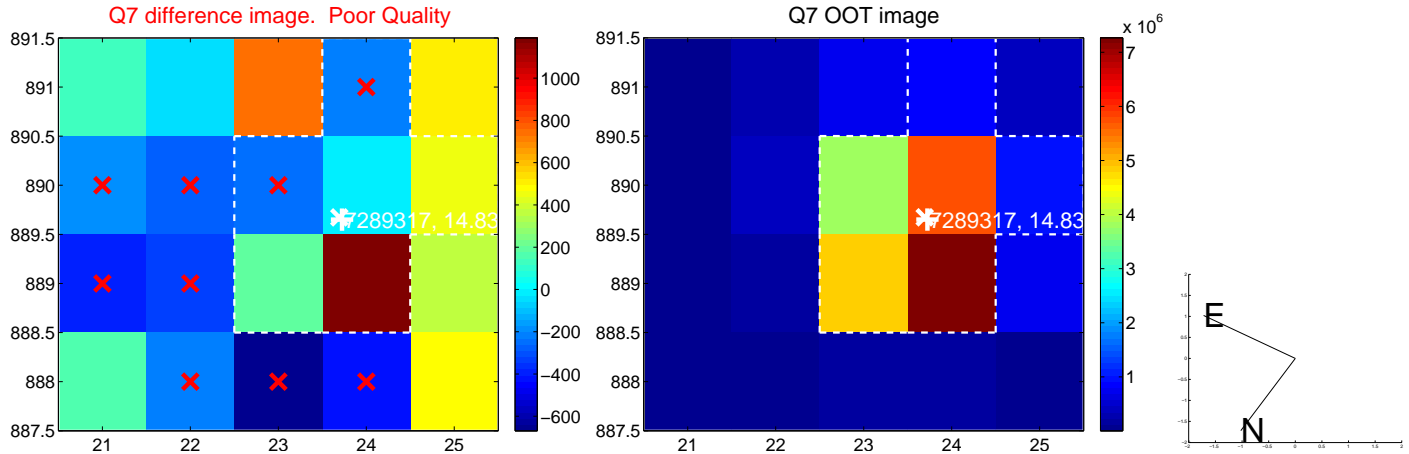
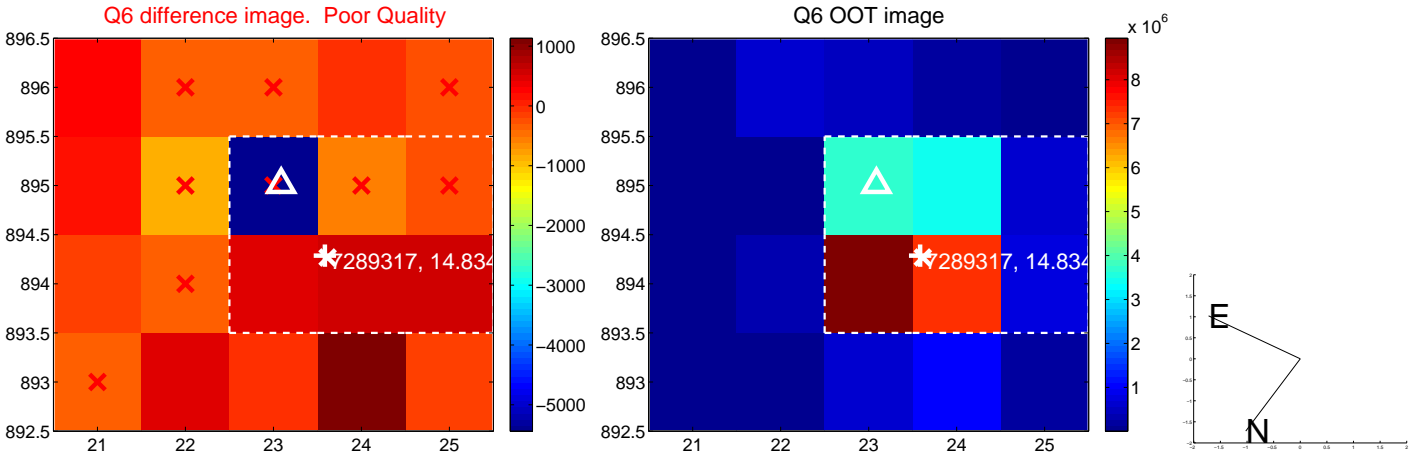
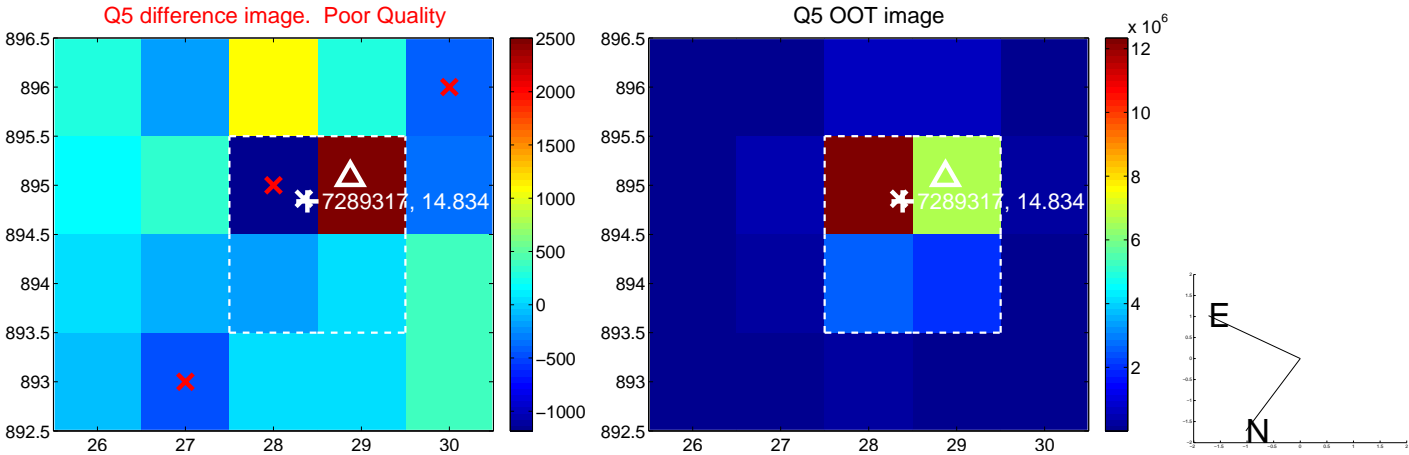
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

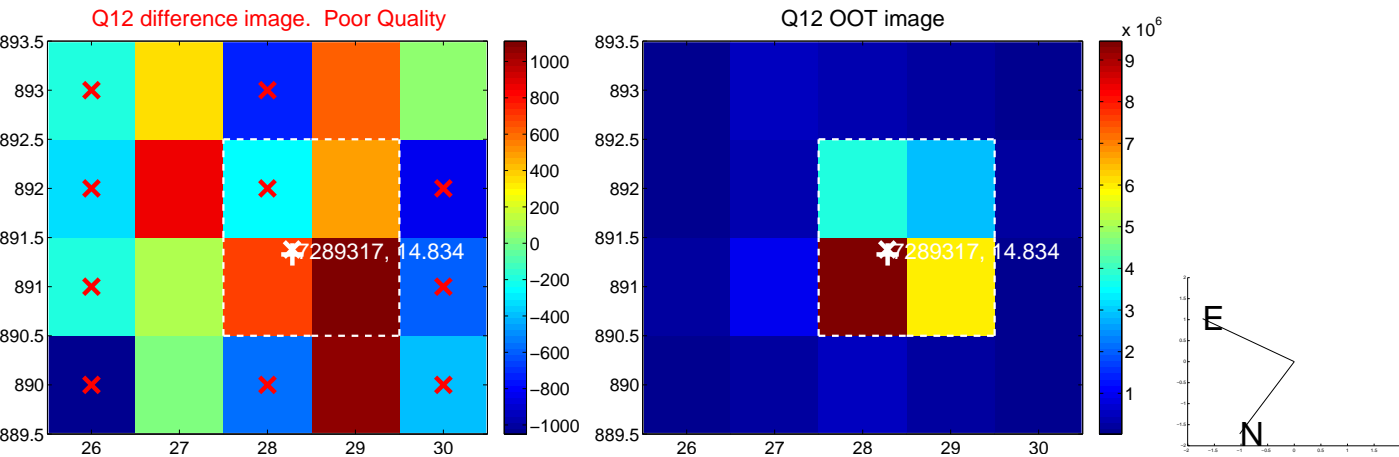
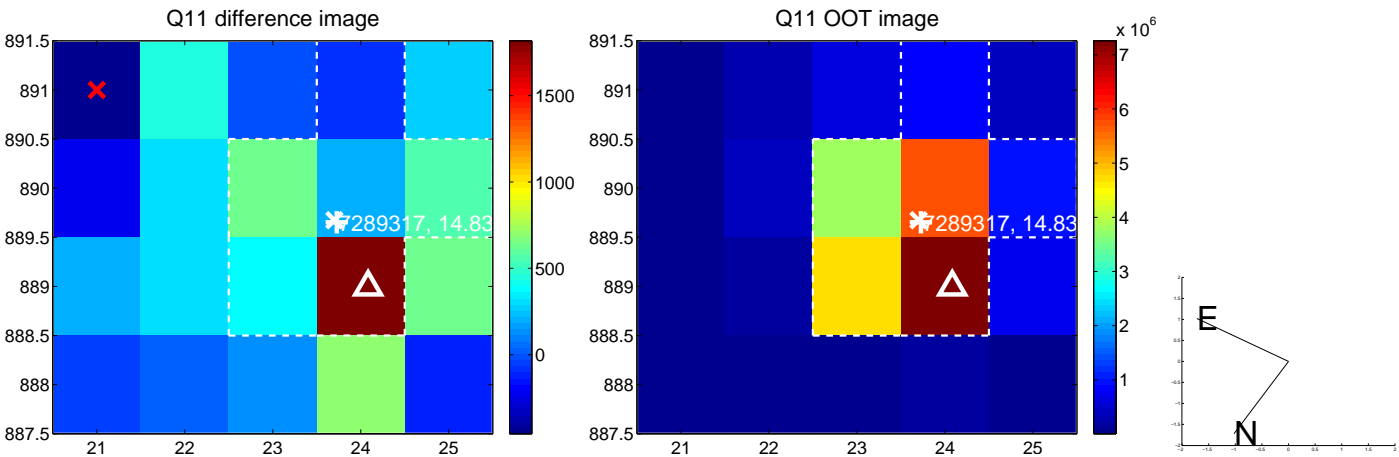
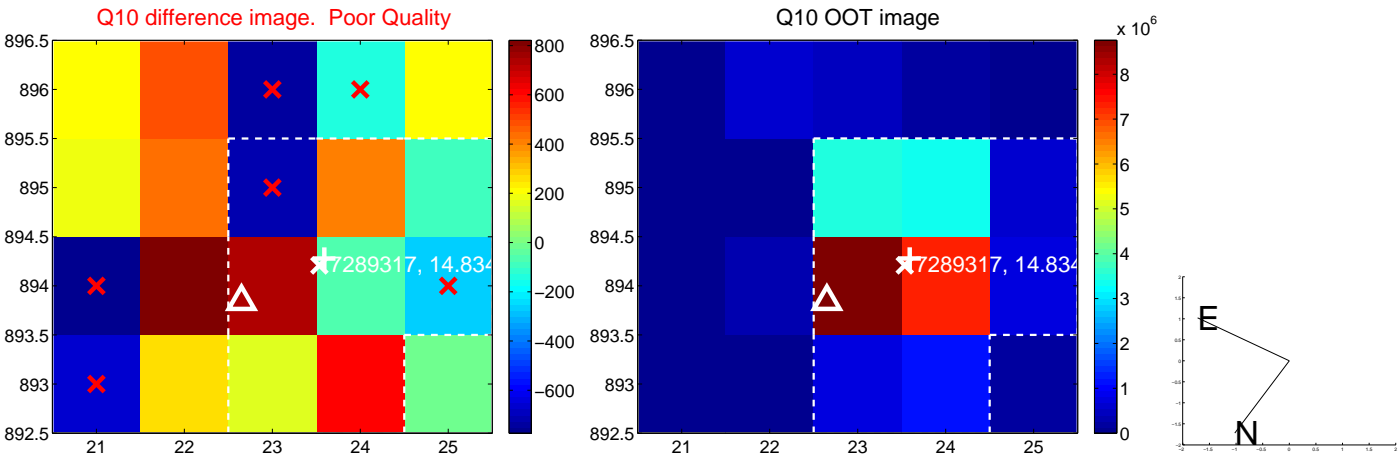
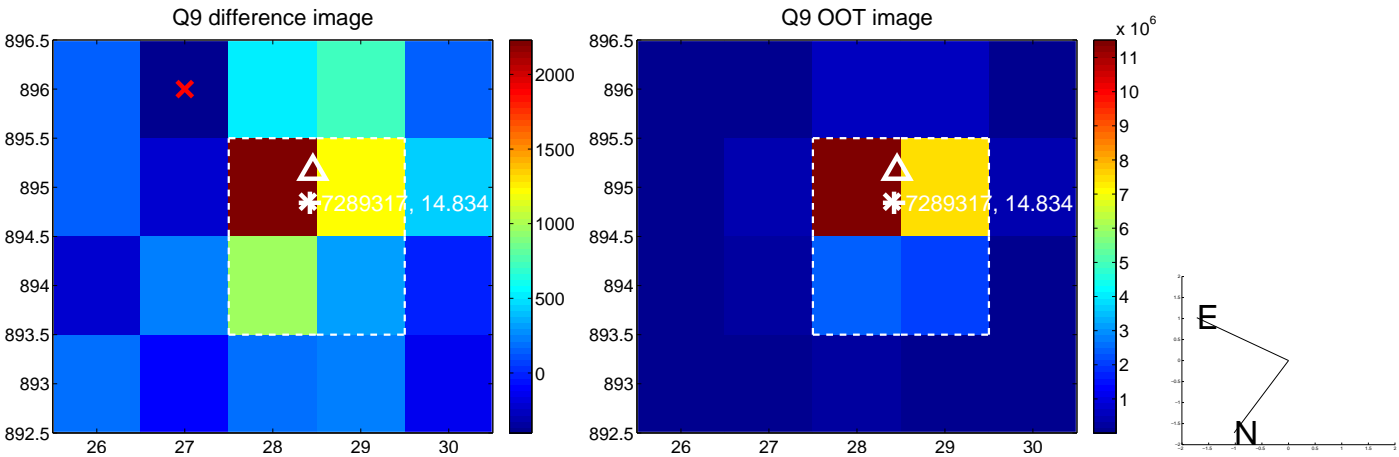




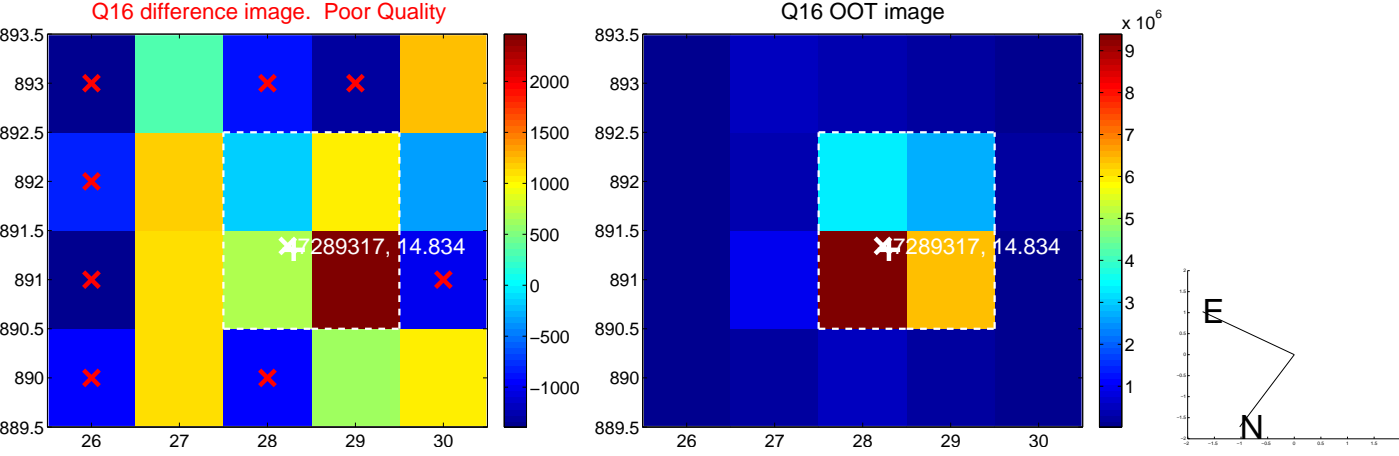
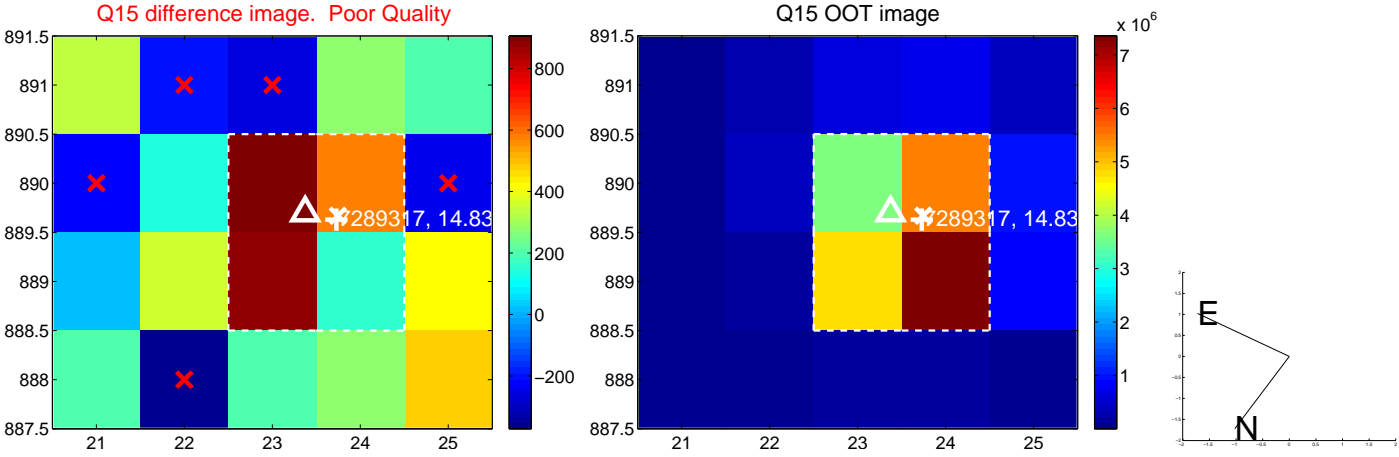
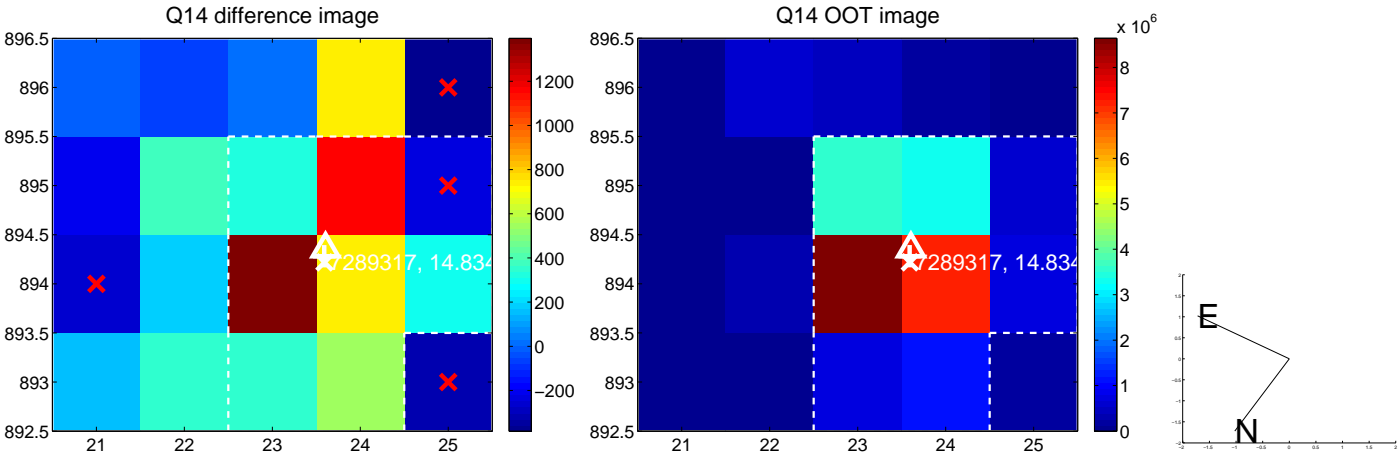
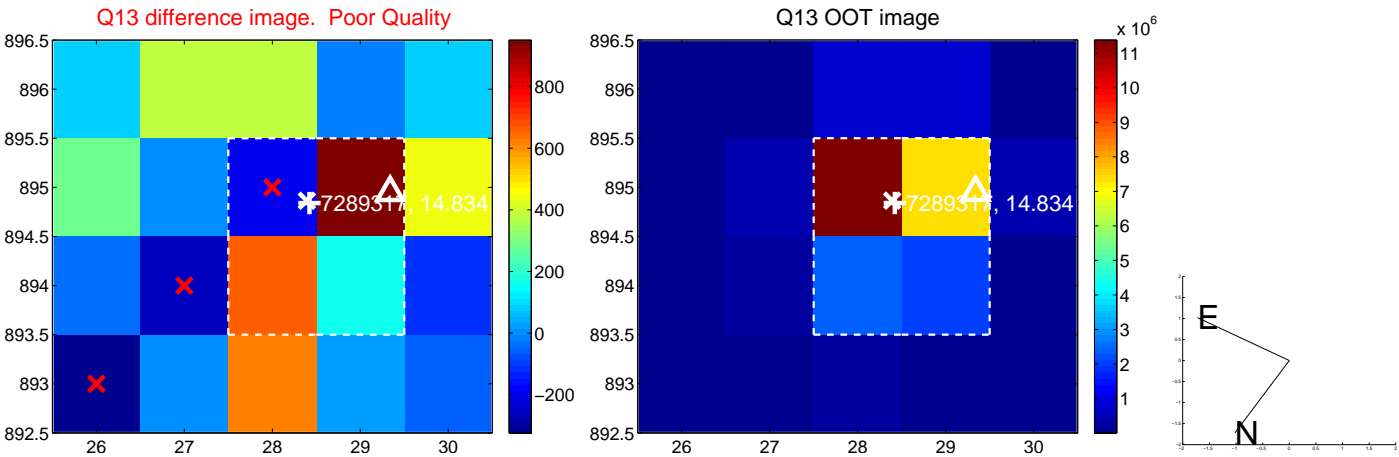
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



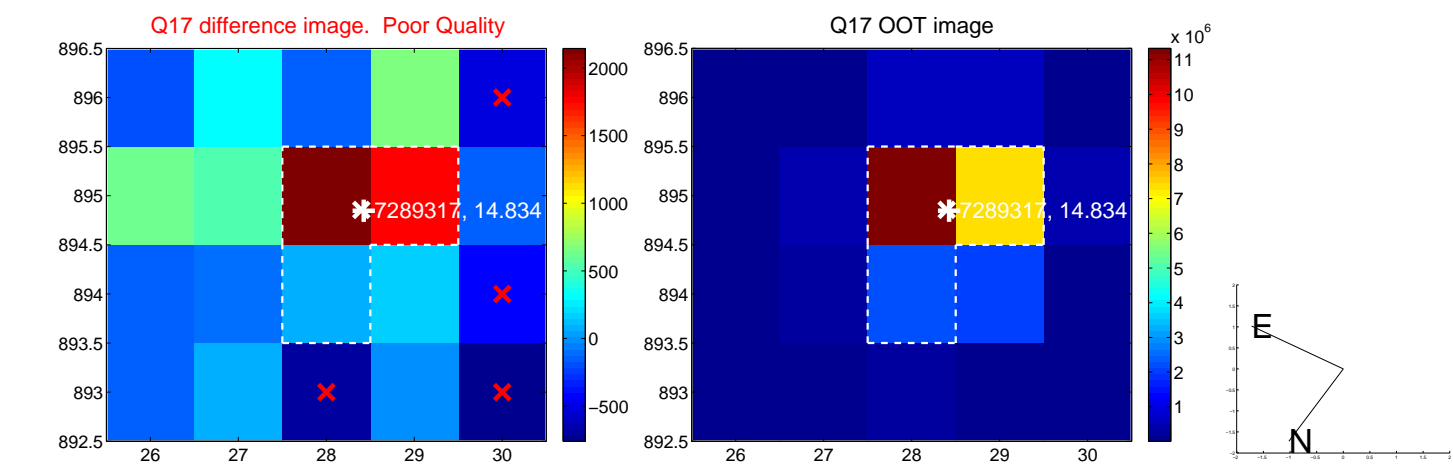
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



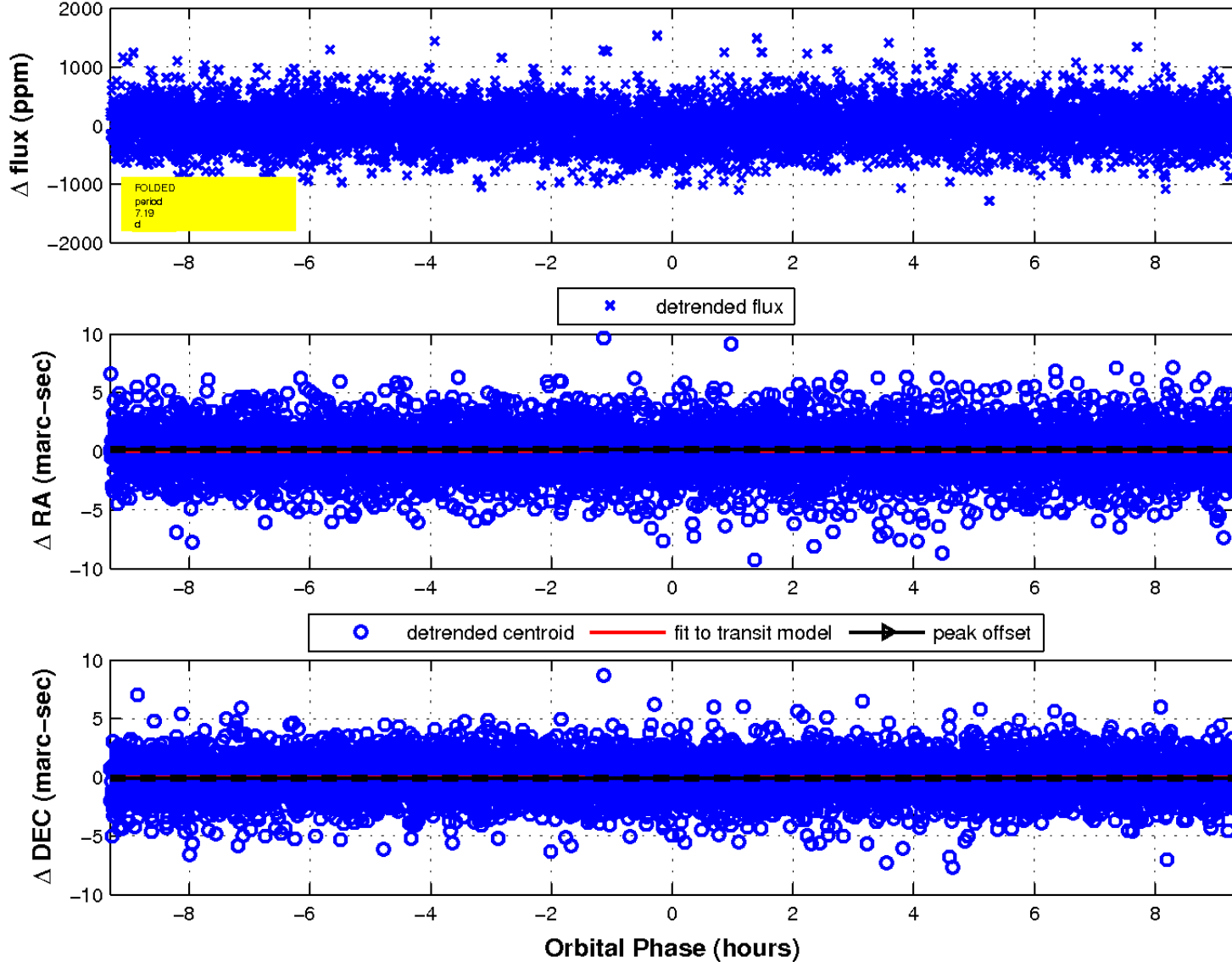
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



# UKIRT Image

Declination

