

# KIC 007582689

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007582689-01	OBS	3097.01	11.921574	137.479280	47.4	5.012	12.6	13.3	1.08	6006	0.87	124.24
007582689-02	OBS	3097.02	6.802610	138.041330	30.7	4.587	11.2	11.1	1.08	6006	0.68	262.51
007582689-03	OBS	3097.03	8.703127	140.153539	32.8	4.834	10.2	10.4	1.08	6006	0.73	189.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007582689-01	OBS	PC	0.98	0	0	0	0	NO_COMMENT
007582689-02	OBS	PC	0.98	0	0	0	0	NO_COMMENT
007582689-03	OBS	PC	1.00	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.

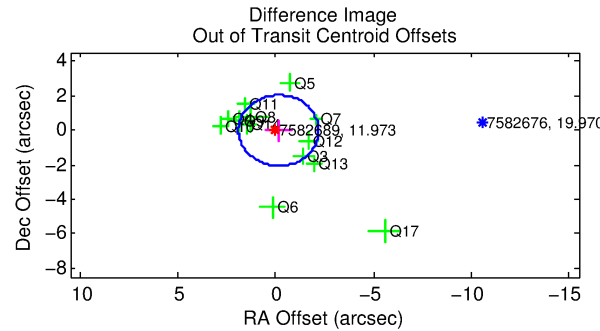
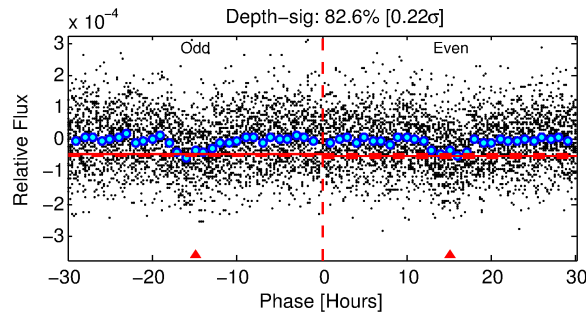
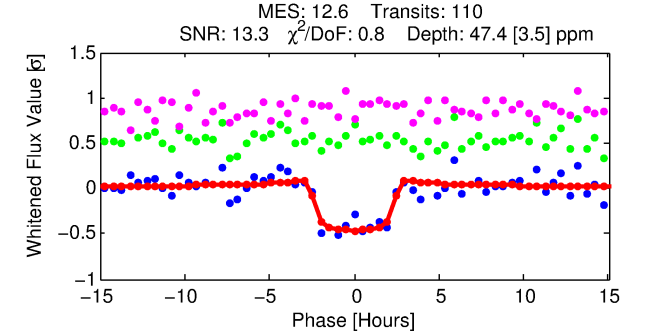
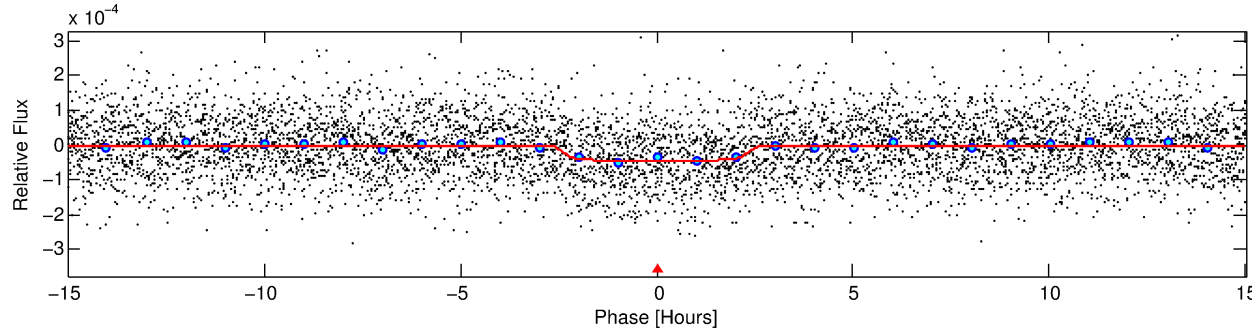
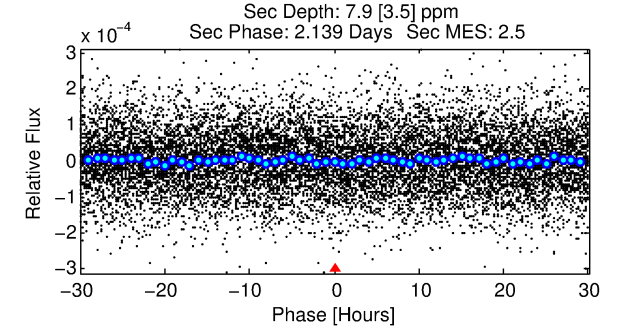
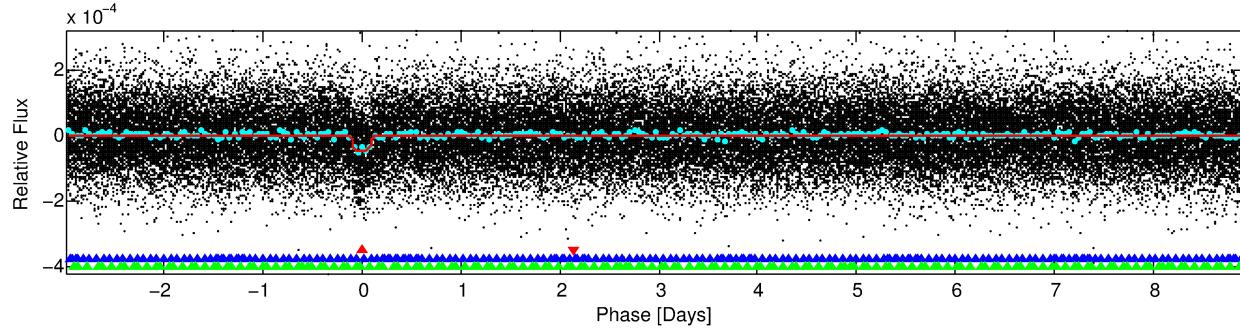
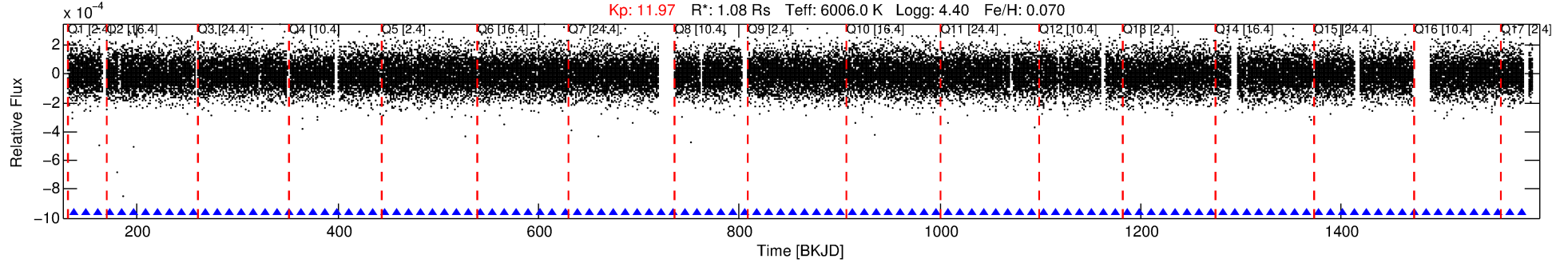
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007582689-01

No Significant Match Found

# DV One-Page Summary

KIC: 7582689 Candidate: 1 of 3 Period: 11.922 d  
KOI: K03097.01 Name: Kepler-431d Corr: 0.990



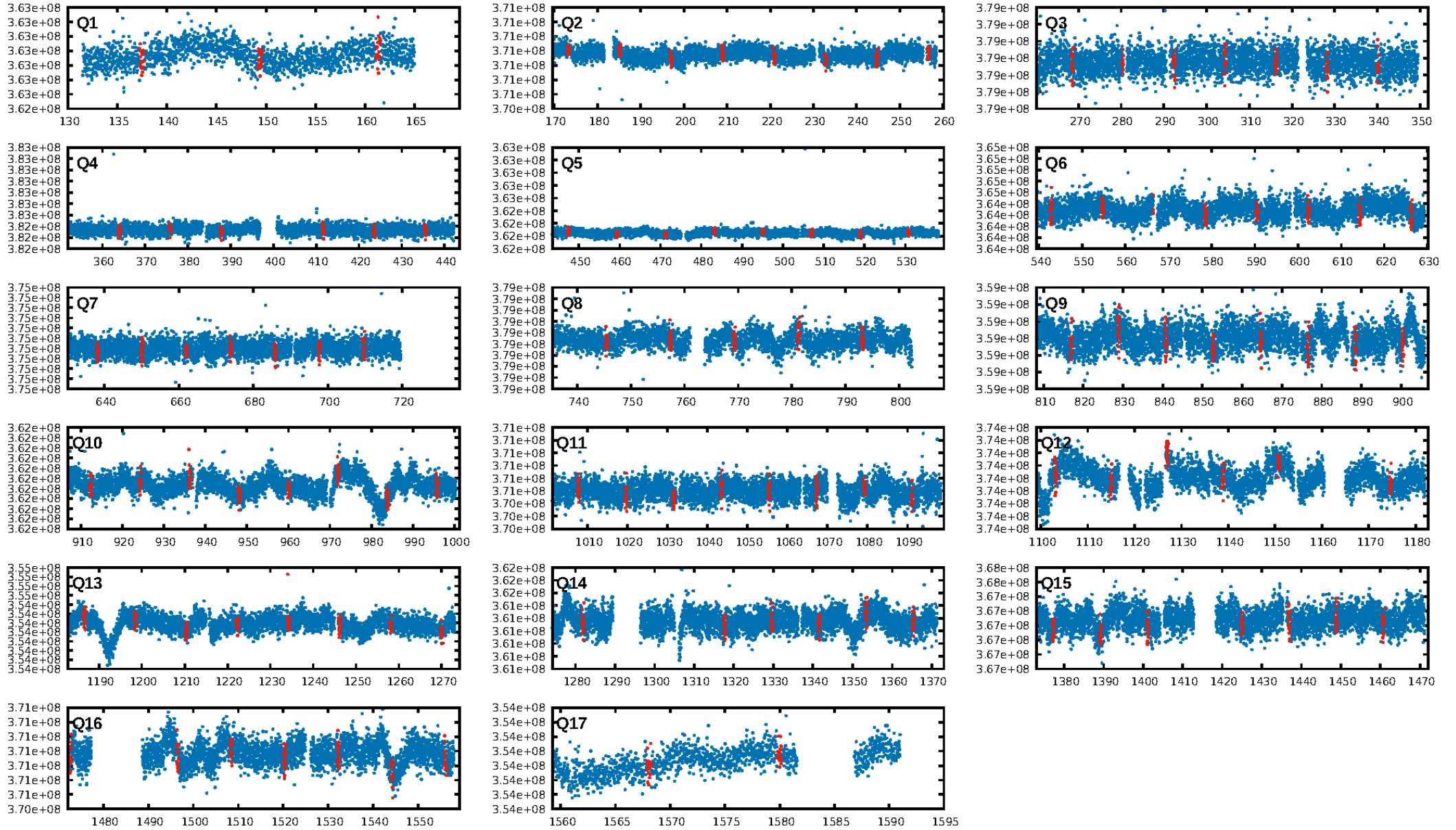
## DV Fit Results:

Period = 11.92157 [0.00009] d  
Epoch = 137.4793 [0.0063] BKJD  
Rp/R\* = 0.0074 [0.0022]  
a/R\* = 8.57 [12.83]  
b = 0.89 [0.35]  
Seff = 124.24 [27.05]  
Teq = 851 [46] K  
Rp = 0.87 [0.30] Re  
a = 0.1048 [0.0149] AU  
Ag = 62.23 [48.57] [1.26σ]  
Teffp = 3697 [696] K [4.08σ]

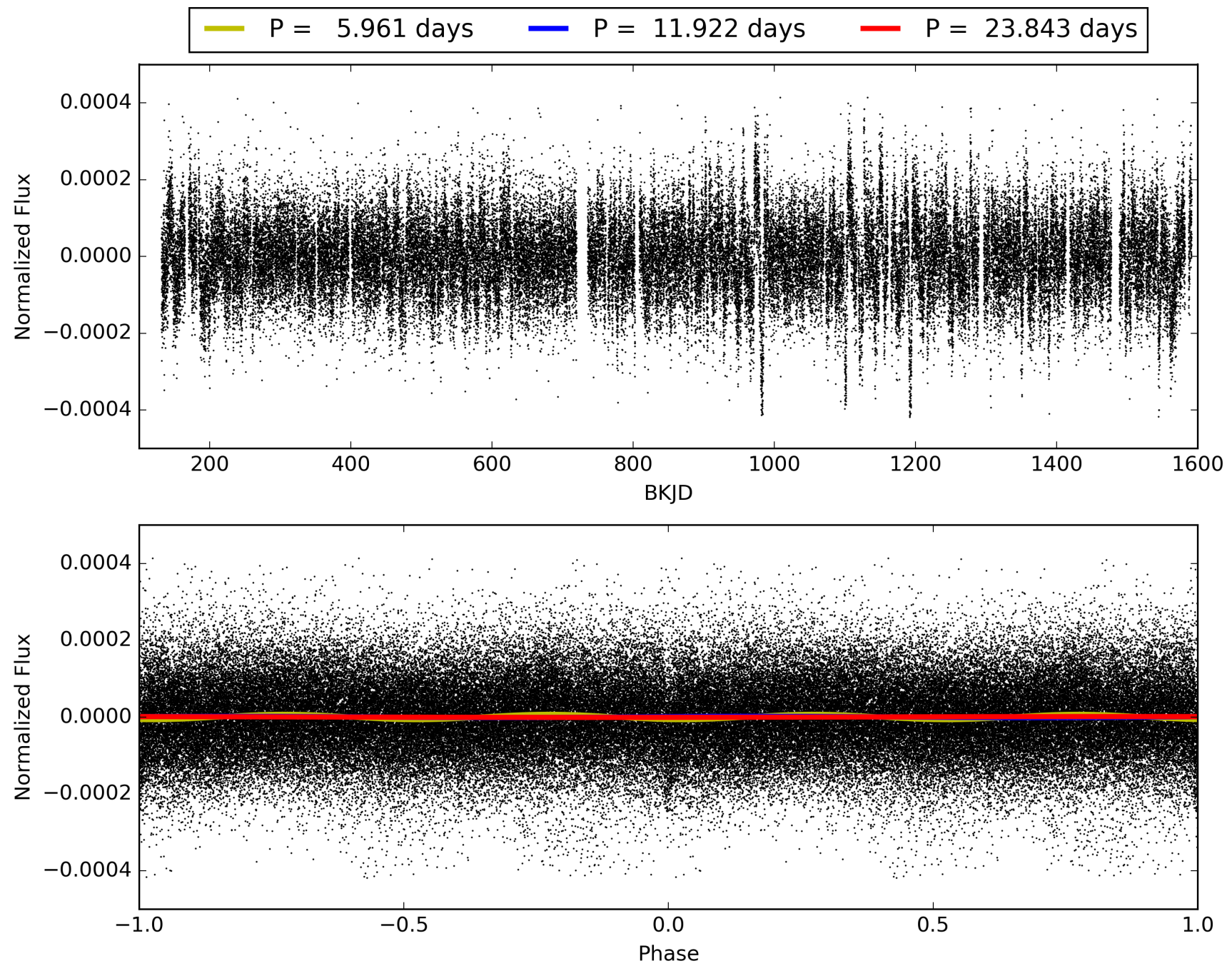
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.09σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 6.23e-34  
RollingBand-fgt: 1.00 [105/105]  
GhostDiagnostic-chr: 4.274  
Centroid-sig: 0.2%  
Centroid-so: 1.705 arcsec [1.86σ]  
OotOffset-rm: 0.142 arcsec [0.21σ]  
KicOffset-rm: 0.141 arcsec [0.20σ]  
OotOffset-st: 3/3/3/4 [13]  
KicOffset-st: 3/3/3/4 [13]  
DiffImageQuality-fgm: 0.77 [10/13]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 007582689-01, PDC Light Curves



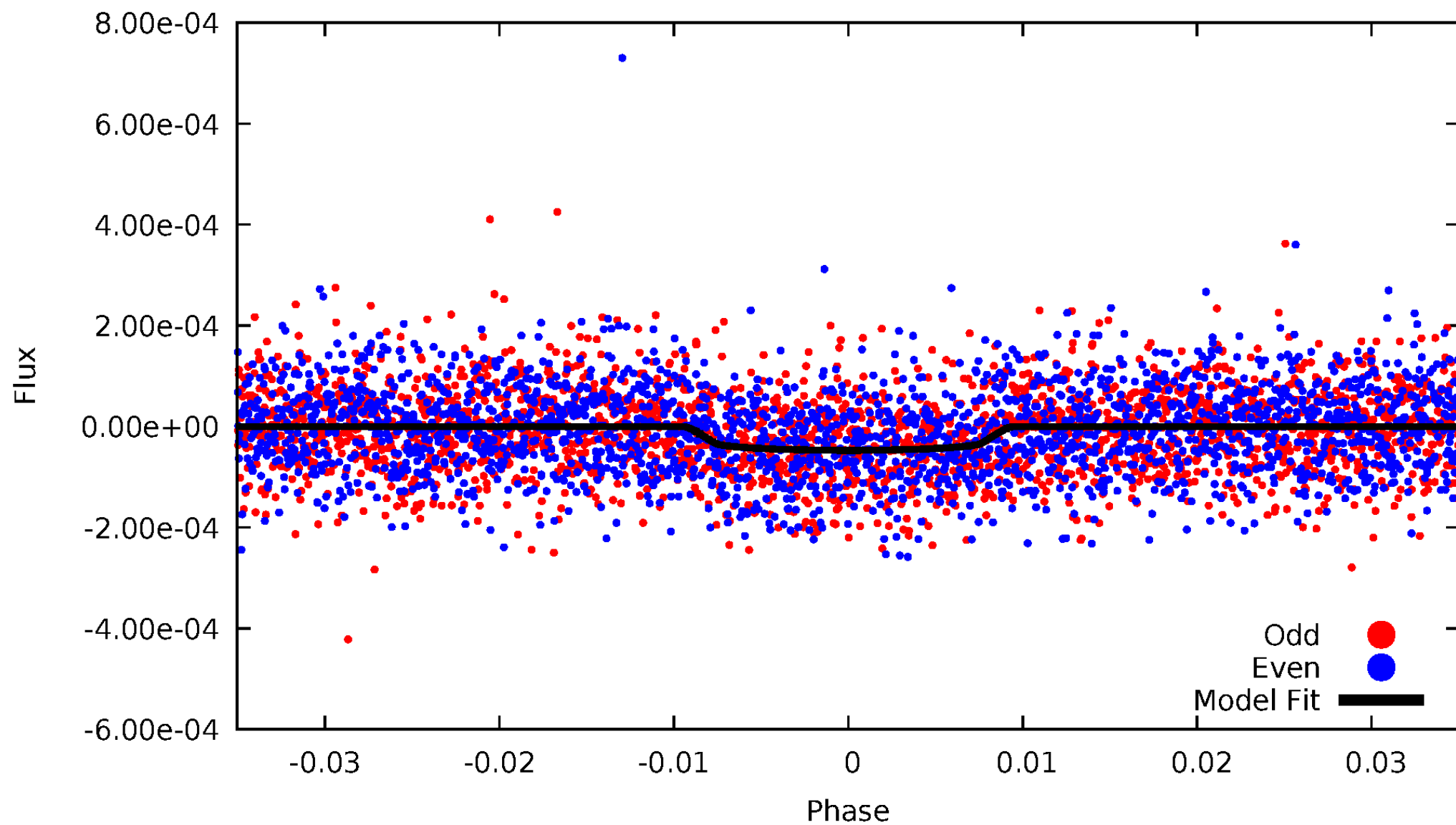
TCE 007582689-01





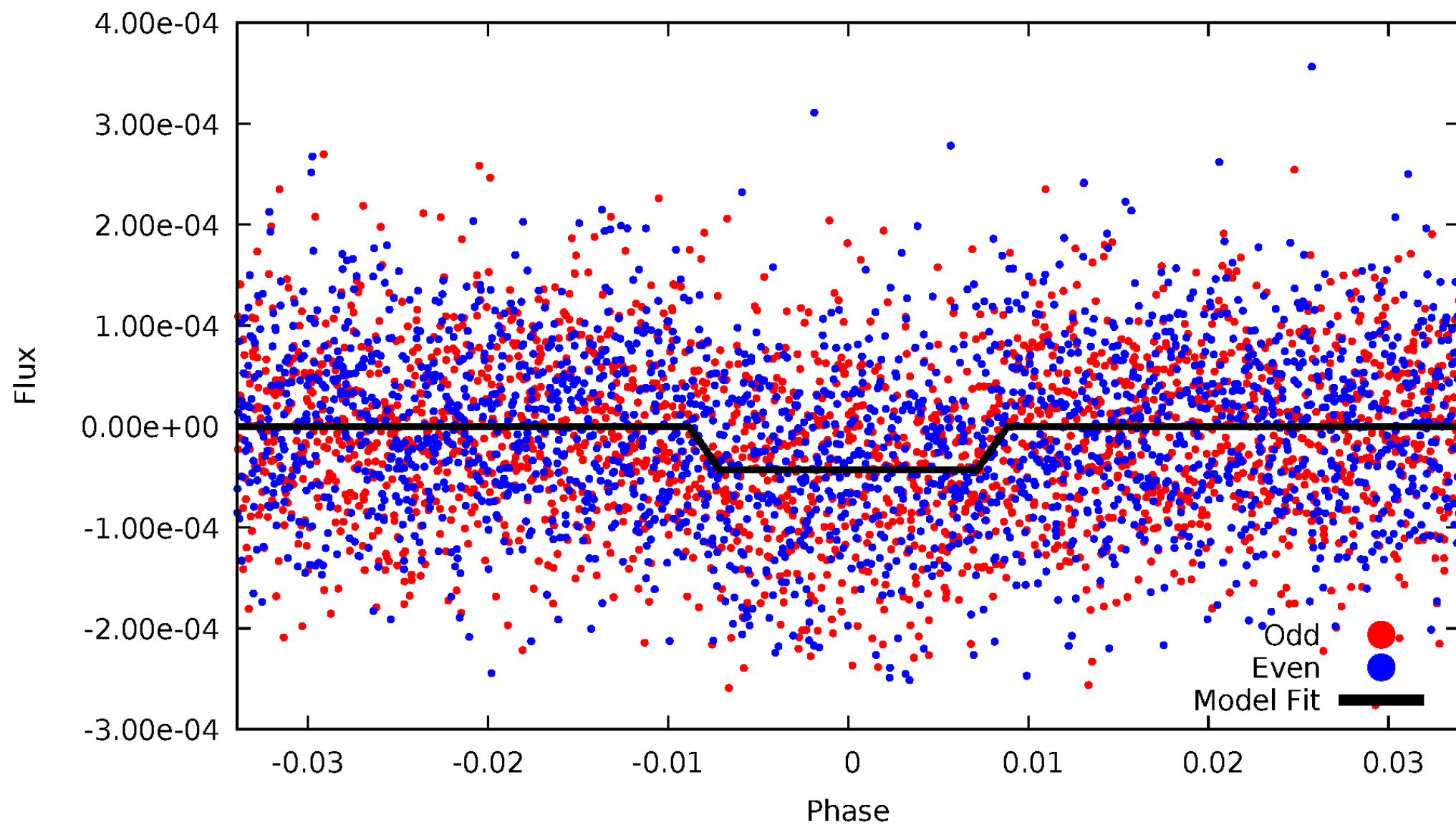
# DV Odd/Even

TCE 007582689-01

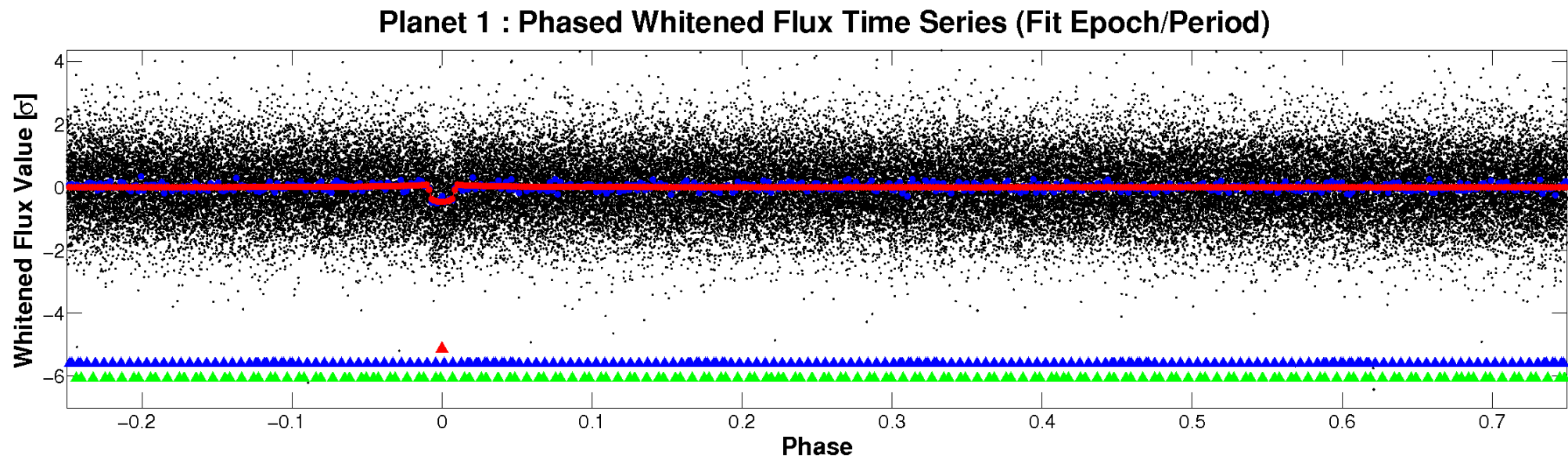
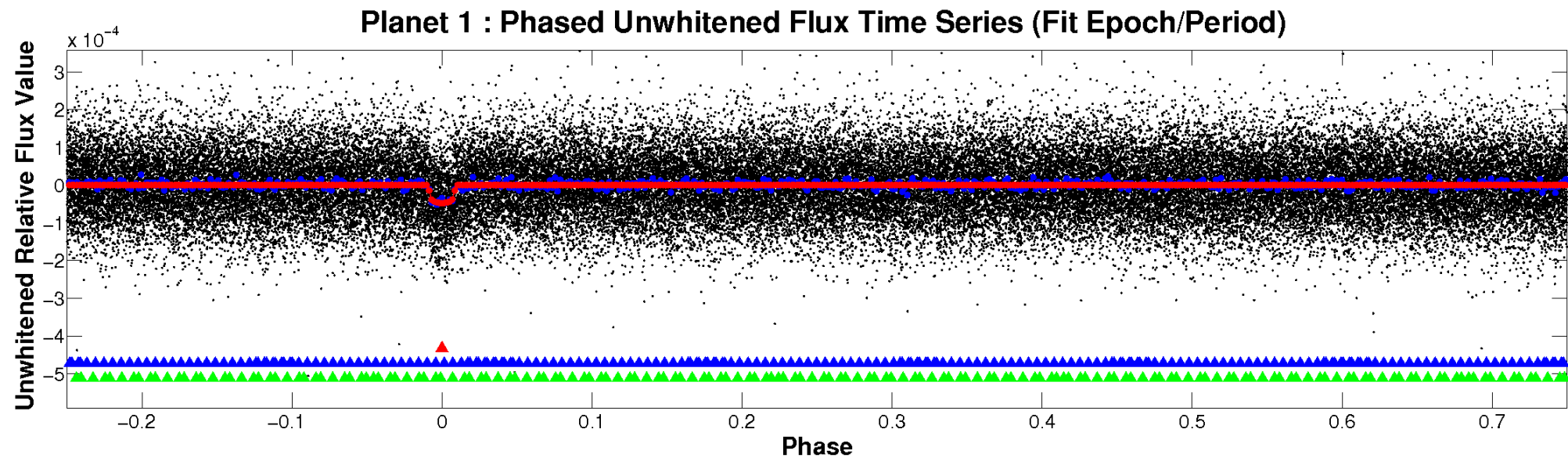


# ALT Odd/Even

TCE 007582689-01

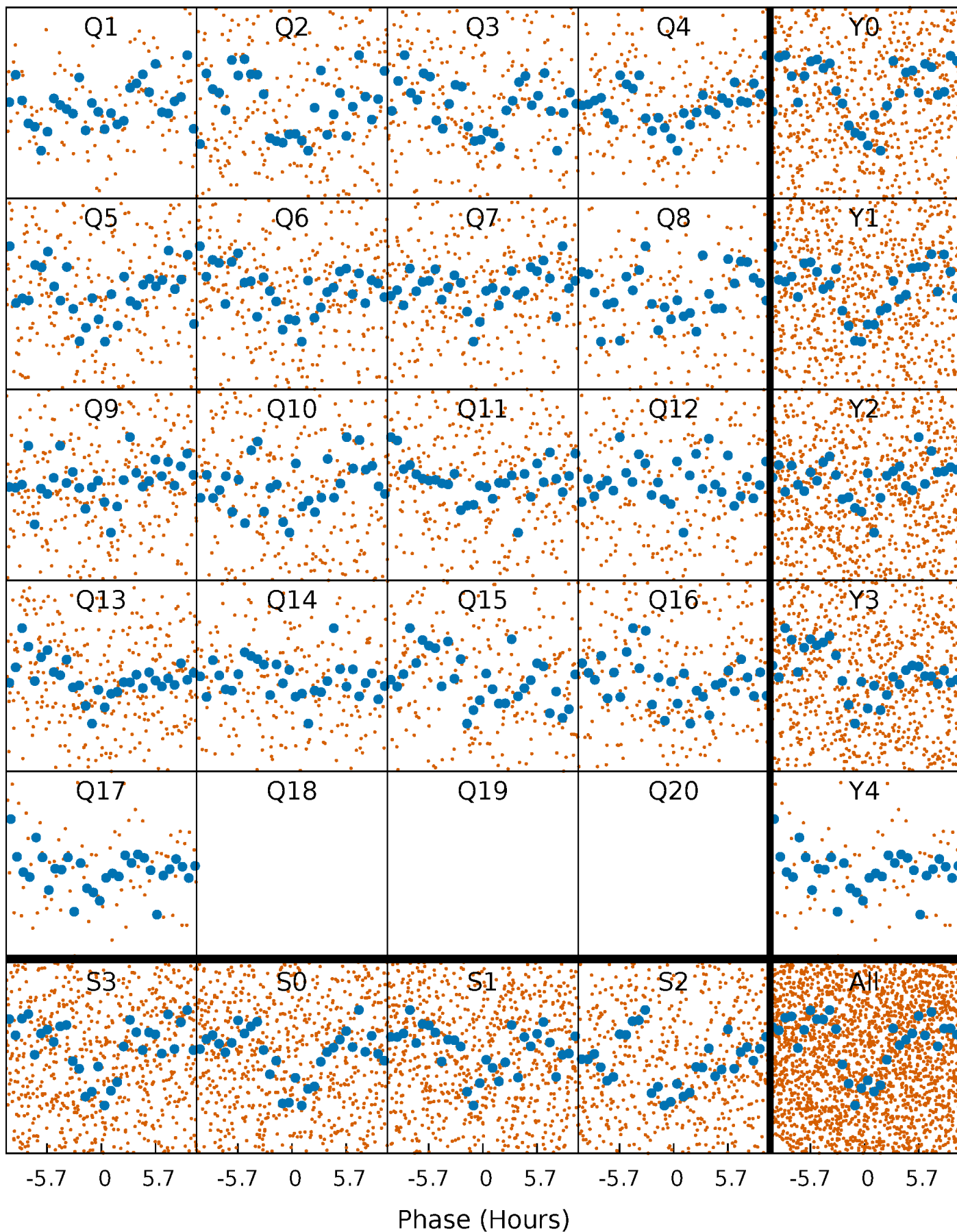


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

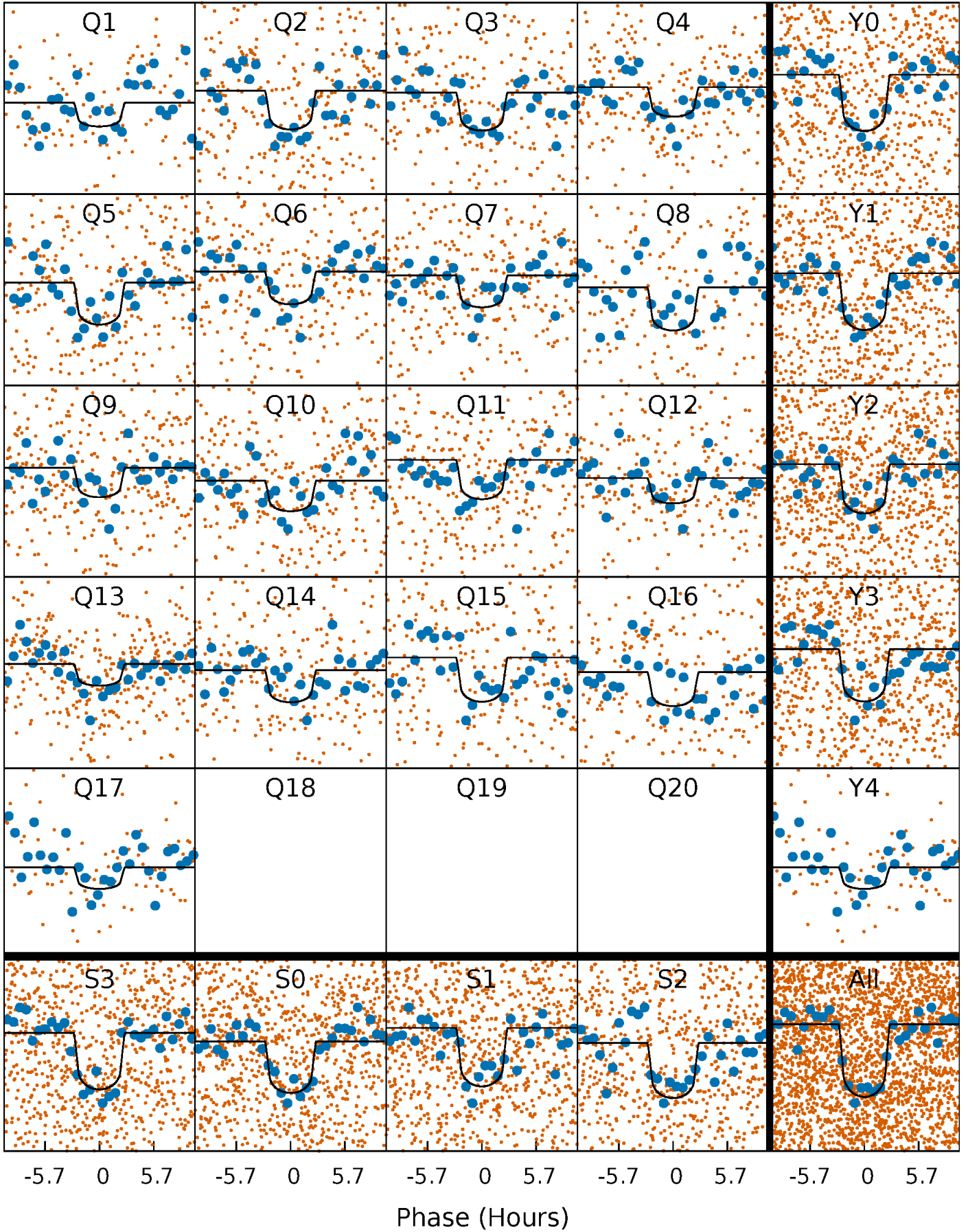
TCE 007582689-01 P= 11.921574 Days  $T_0=137.479280$  (BKJD)





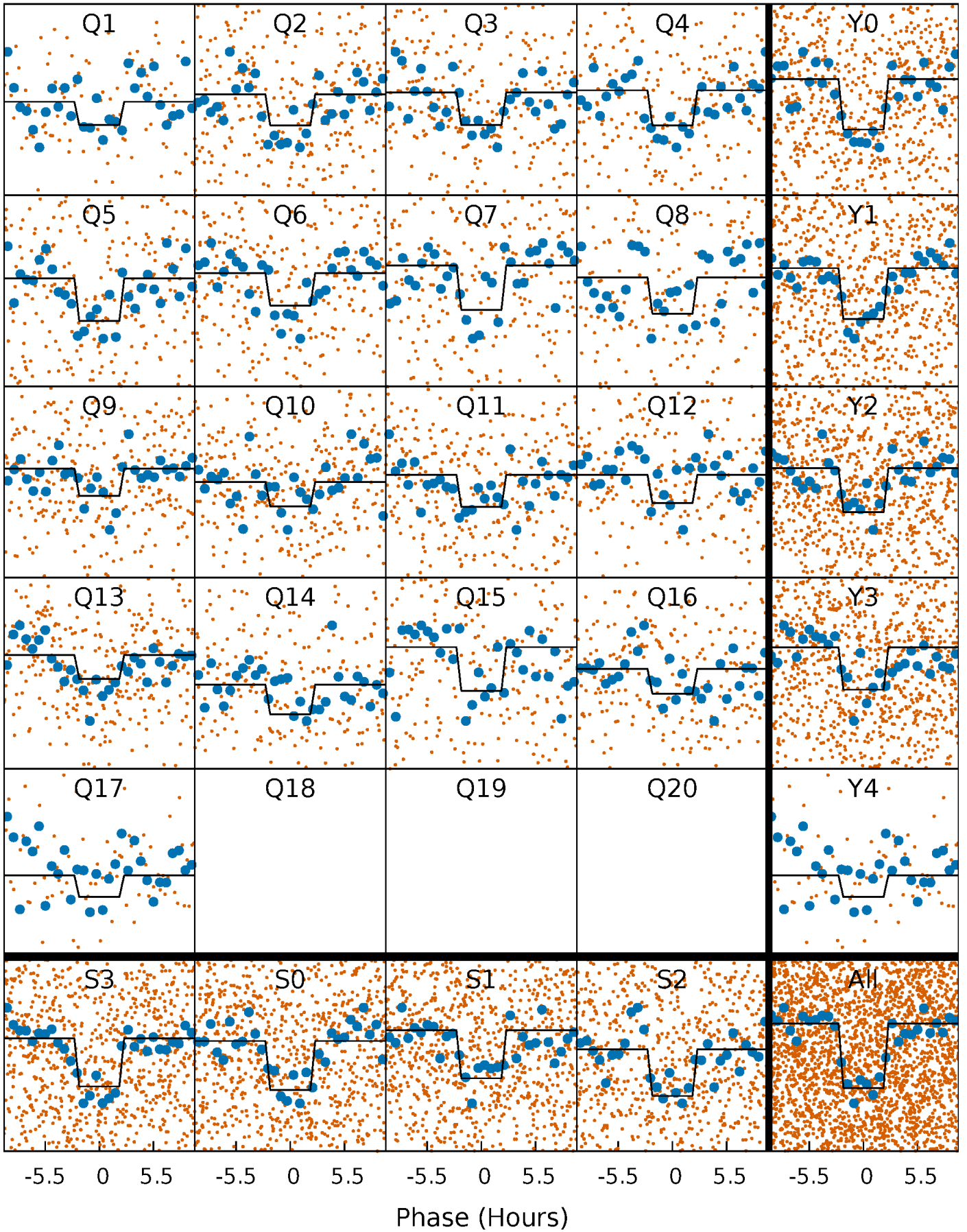
# DV Quarter-Phased Transit Curves

TCE 007582689-01 P= 11.921574 Days  $T_0=137.479280$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

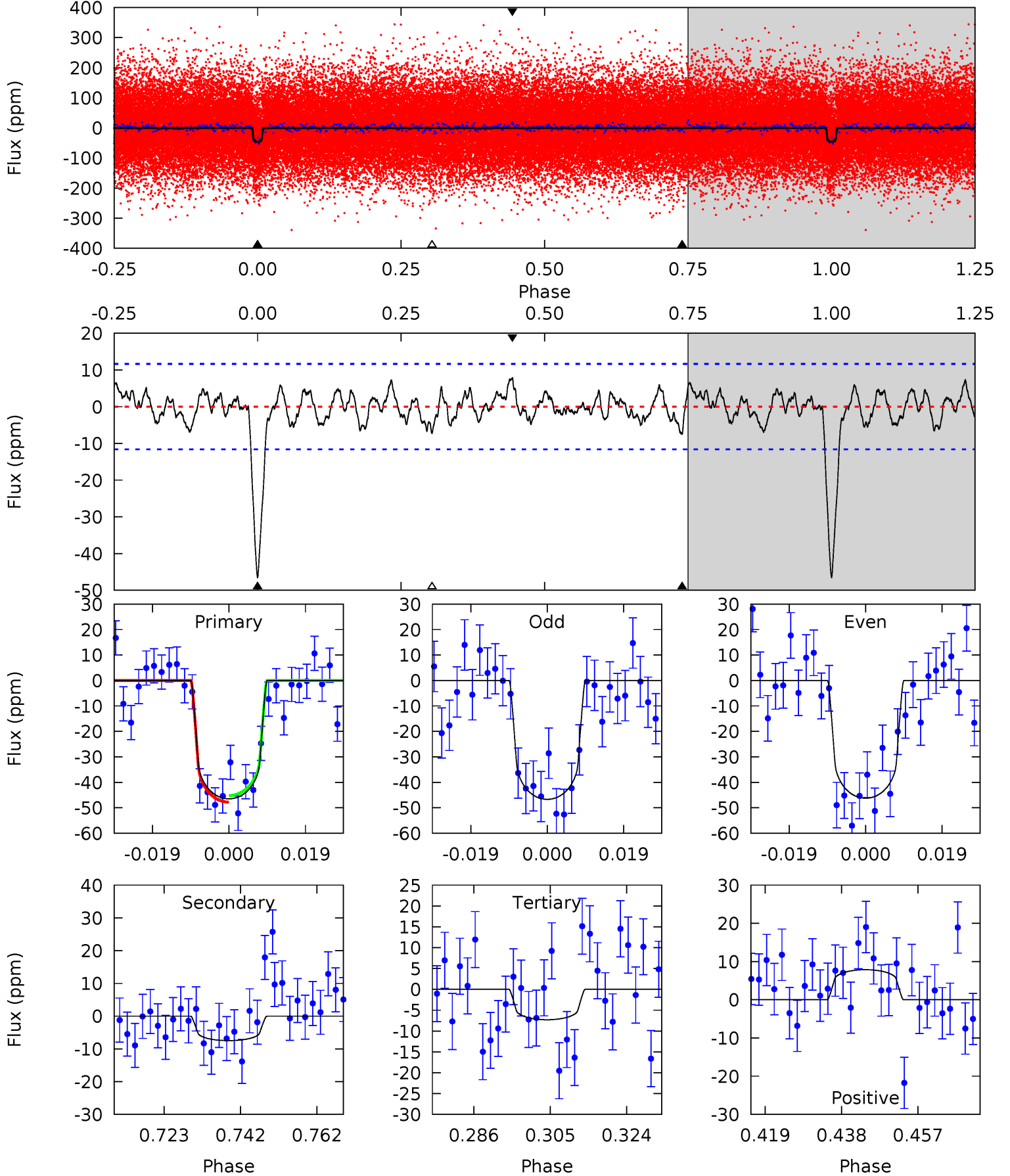
TCE 007582689-01 P= 11.921468 Days  $T_0=137.485591$  (BKJD)



# DV Model-Shift Uniqueness Test

007582689-01, P = 11.921574 Days, E = 125.557706 Days

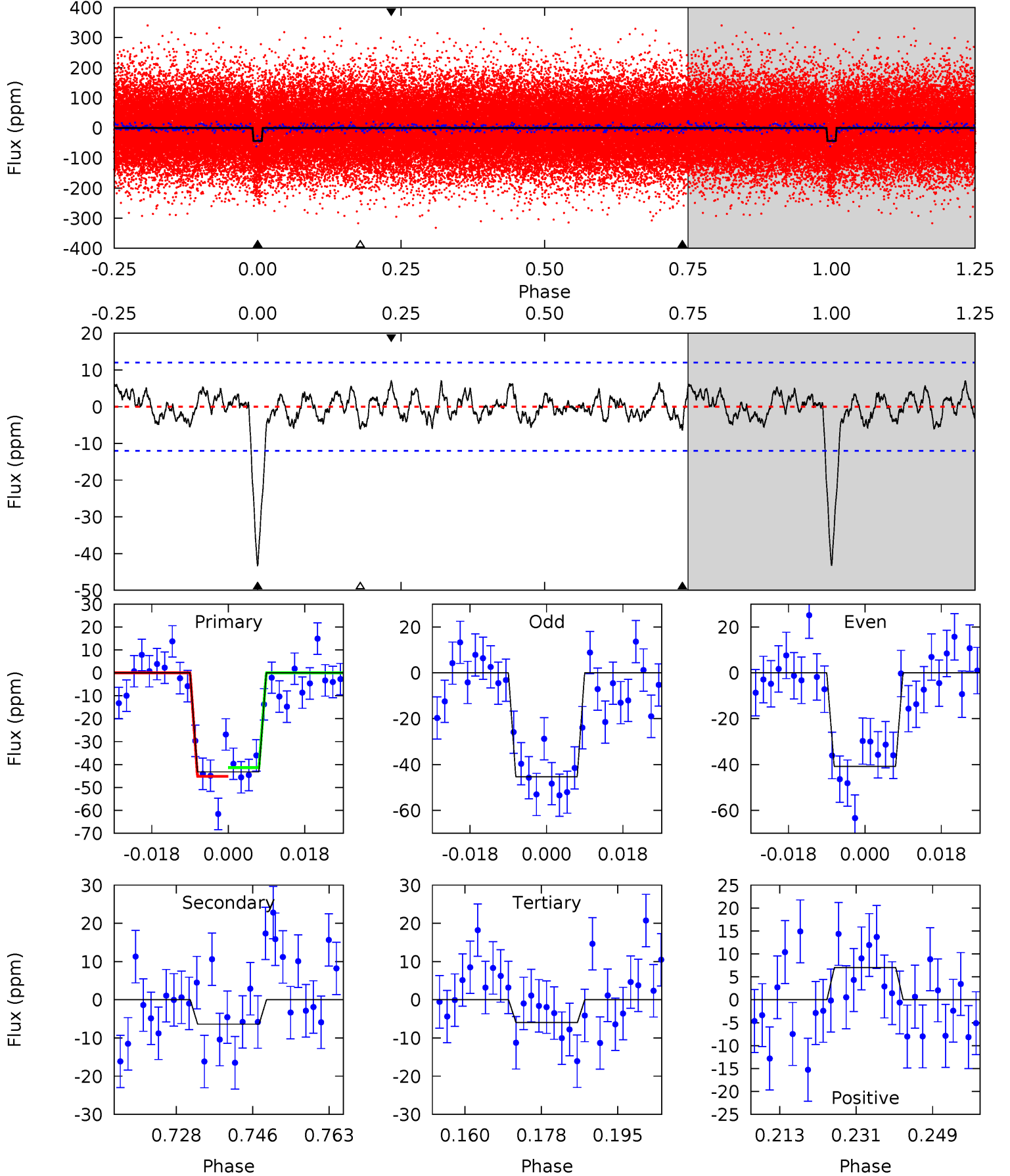
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.6	3.15	3.07	3.31	4.90	2.34	1.25	16.5	16.3	0.08	-0.16	0.10	1.04	0.14	0.55



# Alt Model-Shift Uniqueness Test

007582689-01, P = 11.921468 Days, E = 125.564123 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.7	2.61	2.44	2.87	4.92	2.37	1.10	15.2	14.8	0.17	-0.25	0.94	1.03	0.14	0.77





### Stellar Parameters For KIC 007582689

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6006^{+72}_{-84}$	$4.403^{+0.054}_{-0.117}$	$0.070^{+0.150}_{-0.150}$	$1.082^{+0.178}_{-0.076}$	$1.081^{+0.078}_{-0.070}$	$1.201^{+0.248}_{-0.427}$
	+1%/-1%	+1%/-3%	+214%/-214%	+16%/-7%	+7%/-6%	+21%/-36%
Source	SPE84	SPE84	SPE84	DSEP		

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

### Secondary Eclipse Parameters for KIC 007582689-01 / KOI 3097.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-7 \pm 2$	$0.89^{+0.28}_{-0.28}$	$1196^{+52}_{-36}$	$3966^{+609}_{-398}$	$56^{+66}_{-27}$
Alt.	$-6 \pm 2$	$0.78^{+0.29}_{-0.27}$	$1195^{+50}_{-31}$	$4052^{+726}_{-513}$	$62^{+93}_{-33}$

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

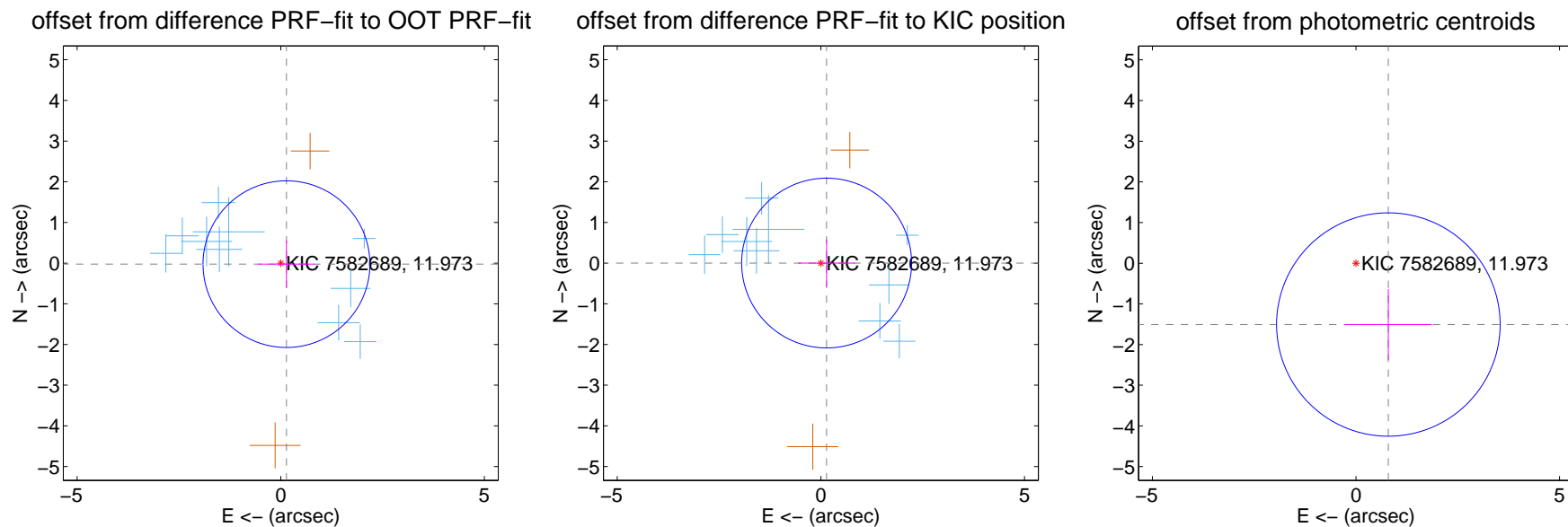
## DV Centroid Data

Supplemental centroid analysis for 007582689-01. **Kepler magnitude: 11.97.** Transit SNR 13.35

There are 10 quarters with good PRF difference image offsets

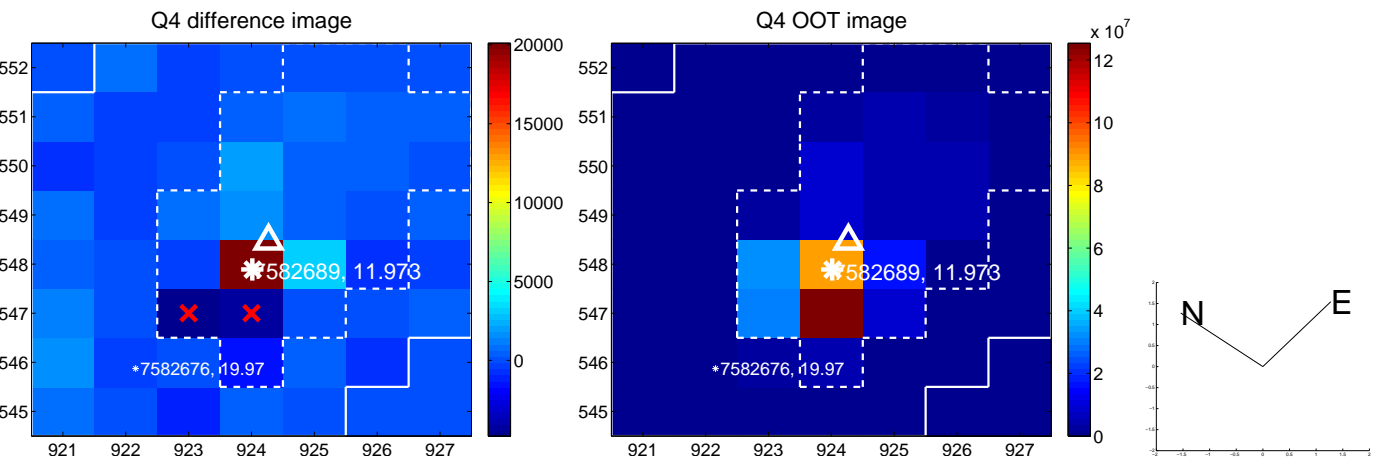
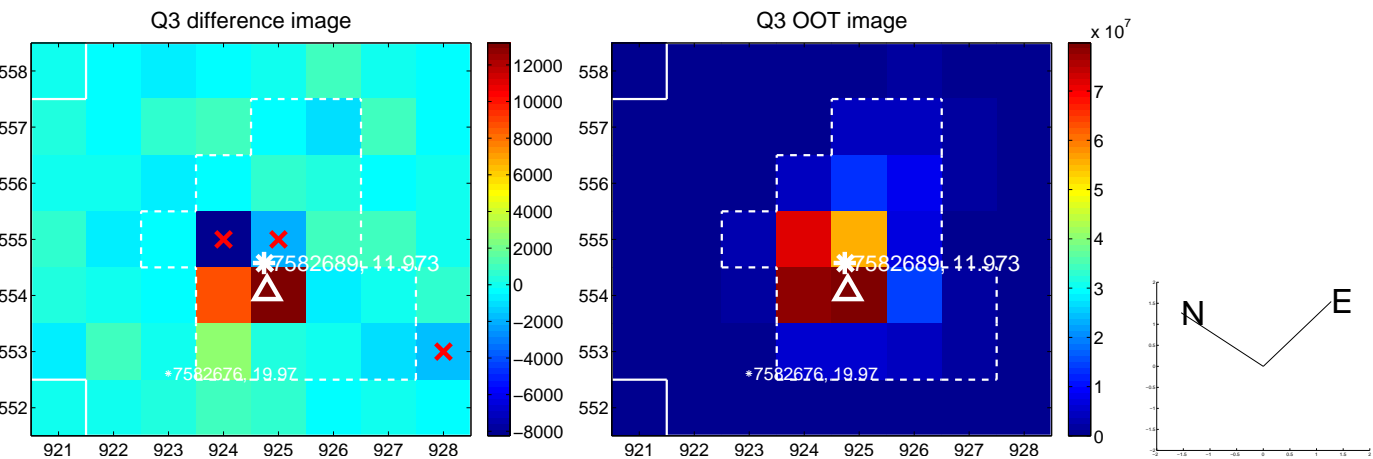
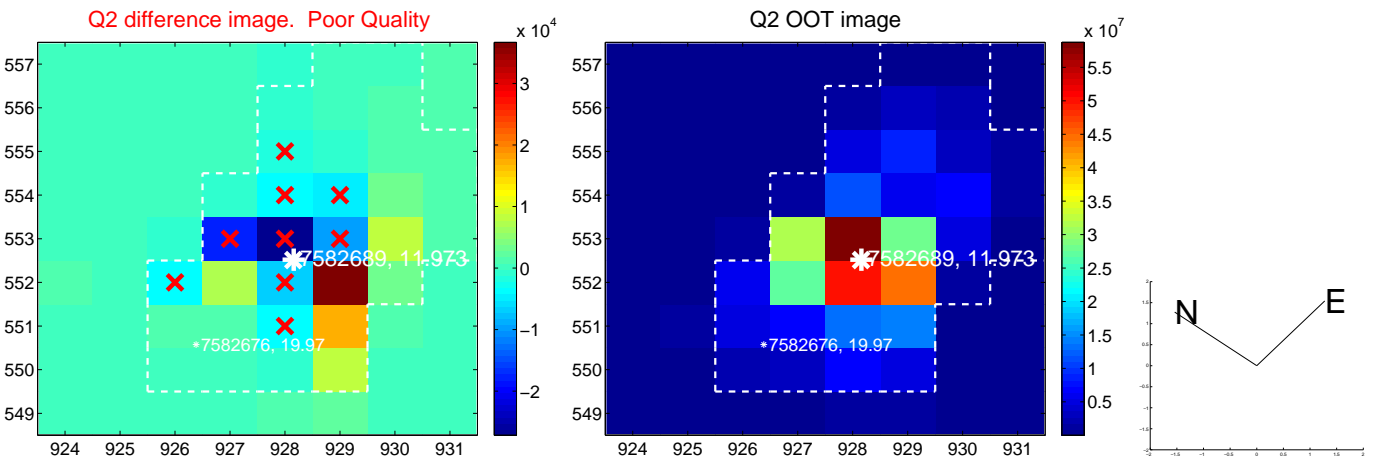
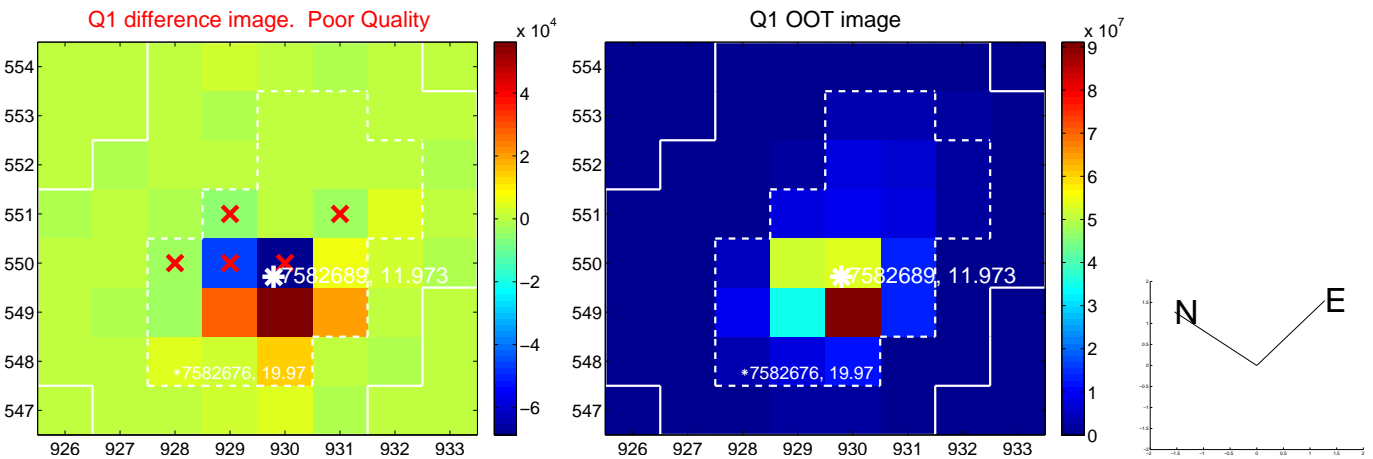
The direct PRF centroid is offset from the target star catalog position by about 0.00 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.142 \pm 0.683$	0.21	$-0.140 \pm 0.686$	$-0.024 \pm 0.584$
PRF-fit source offset from KIC position	$0.141 \pm 0.695$	0.20	$-0.141 \pm 0.695$	$0.002 \pm 0.586$
photometric centroid source offset	$1.70 \pm 0.92$	1.86	$-0.80 \pm 1.06$	$-1.51 \pm 0.87$

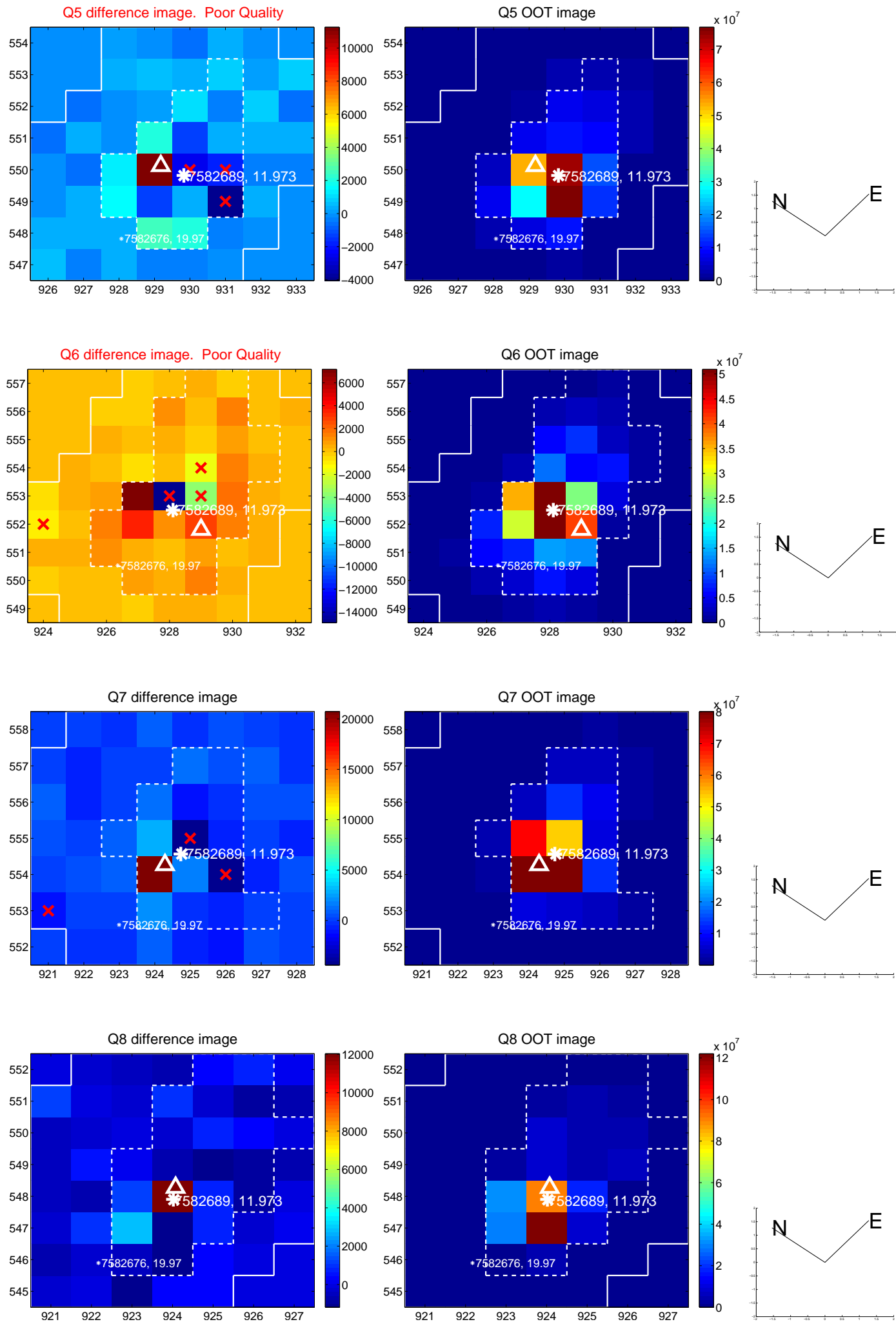


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

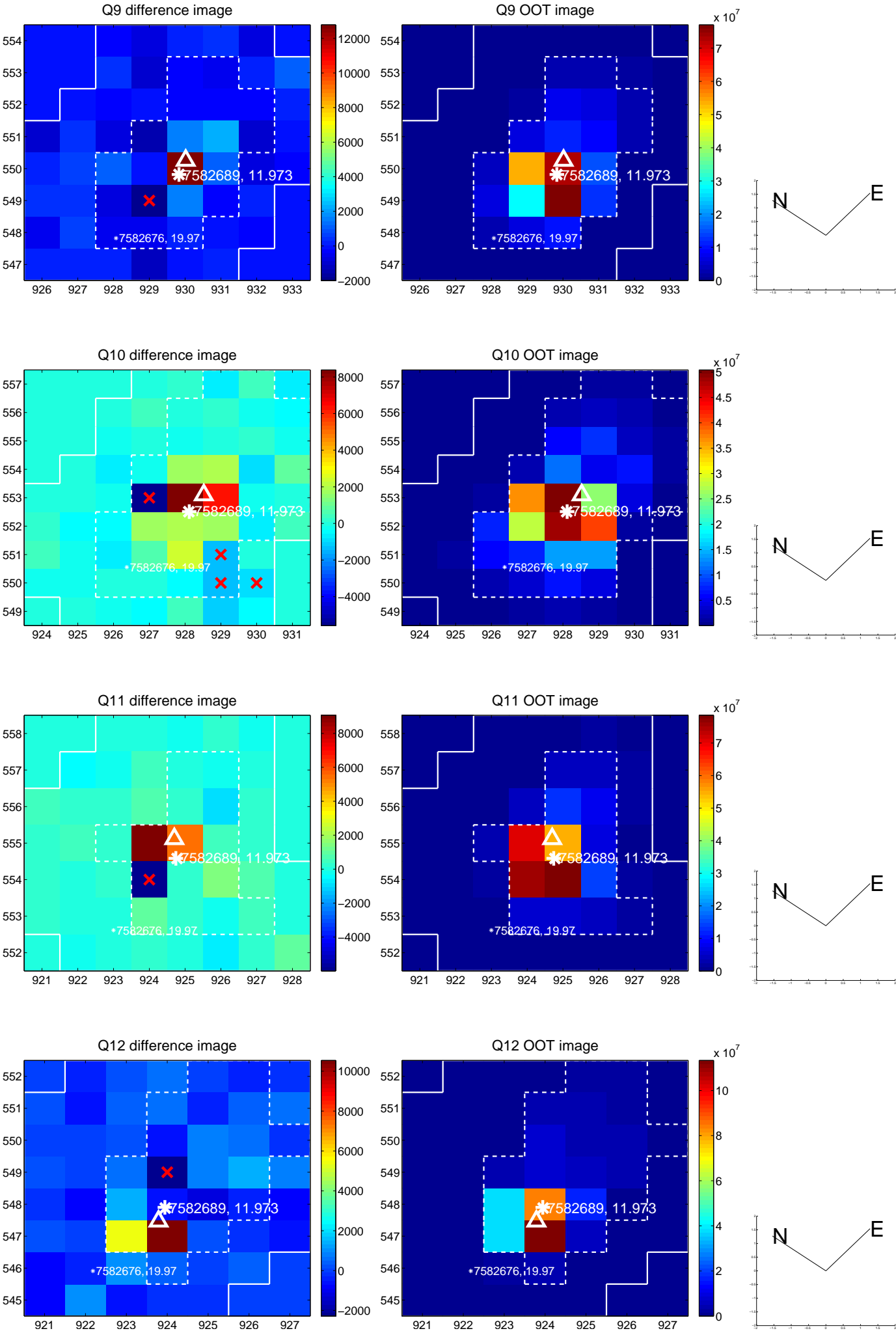


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

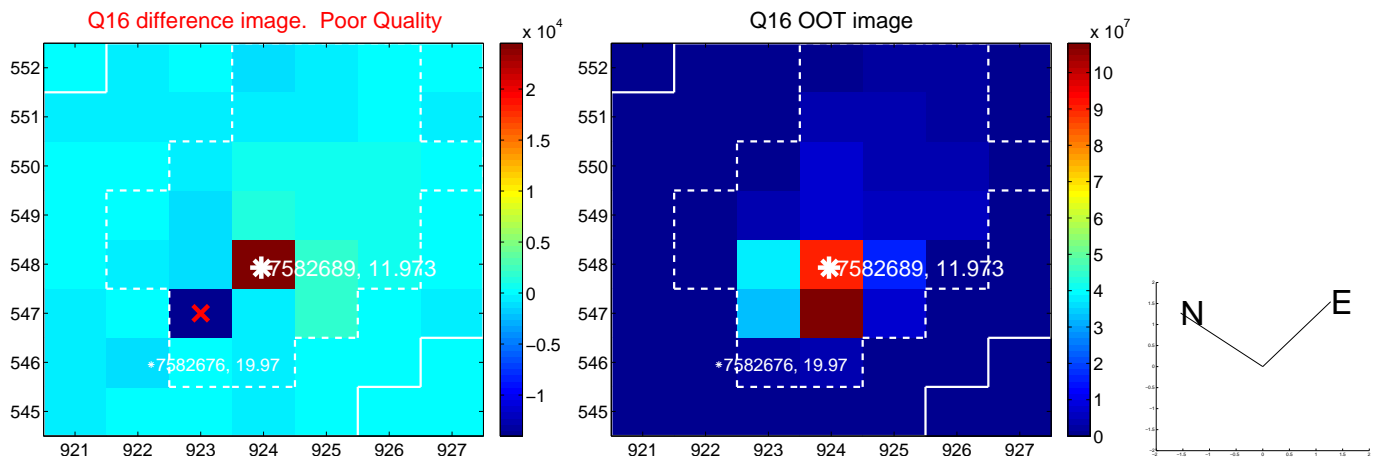
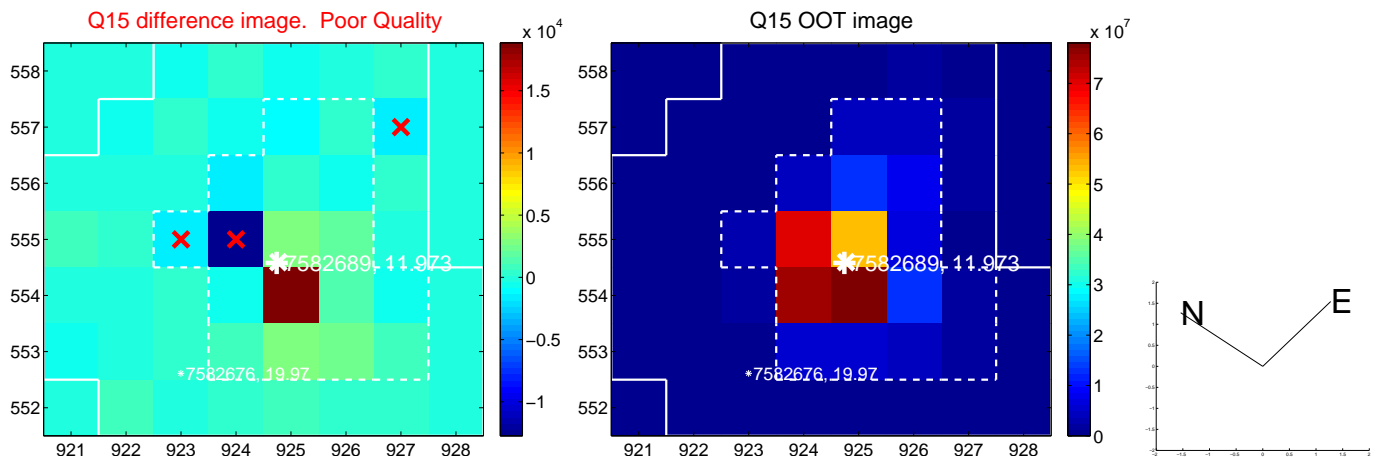
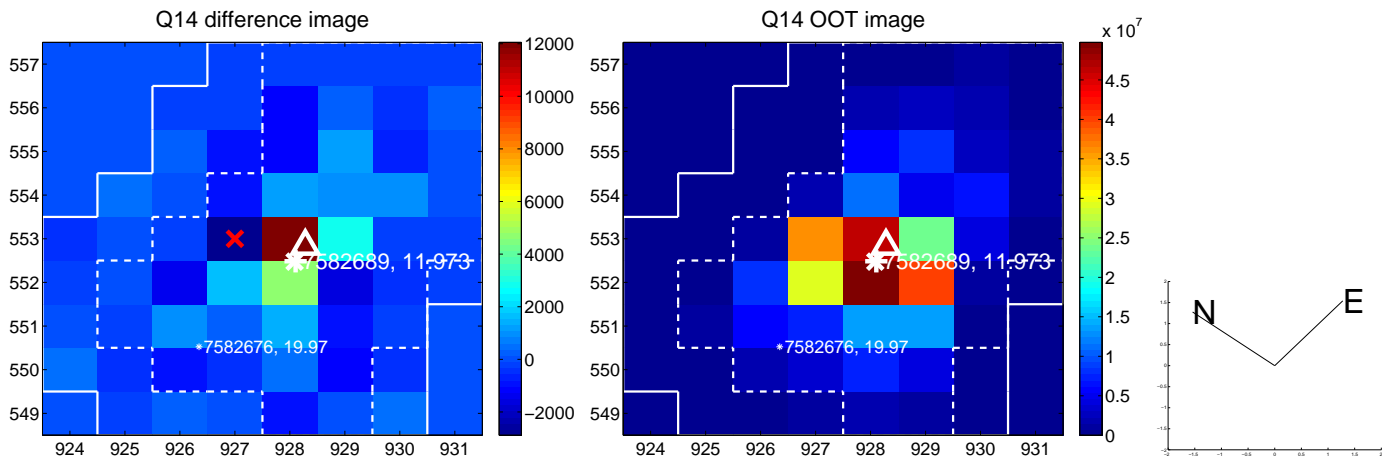
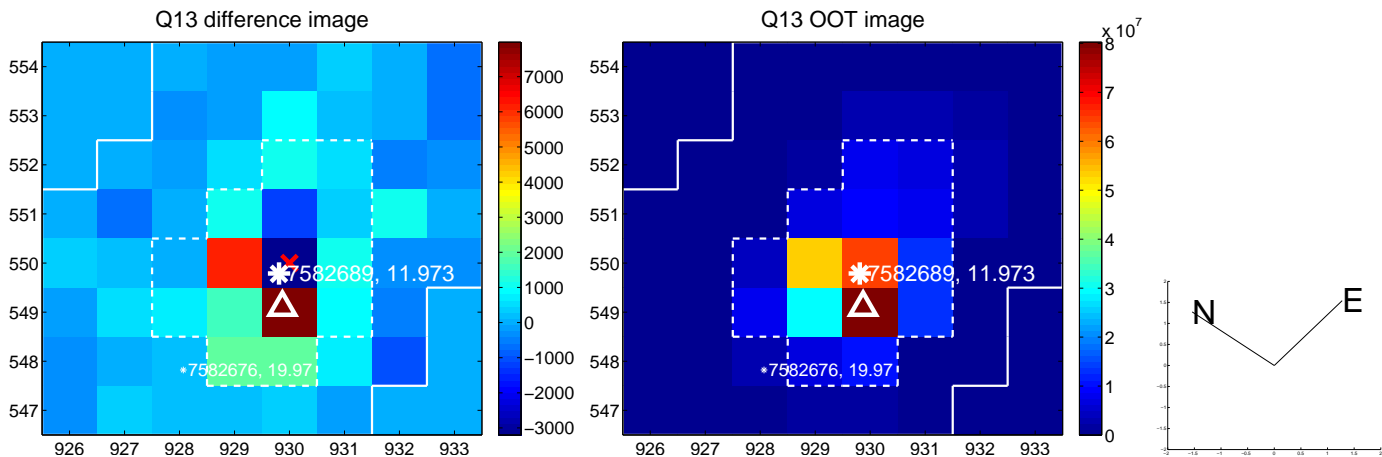




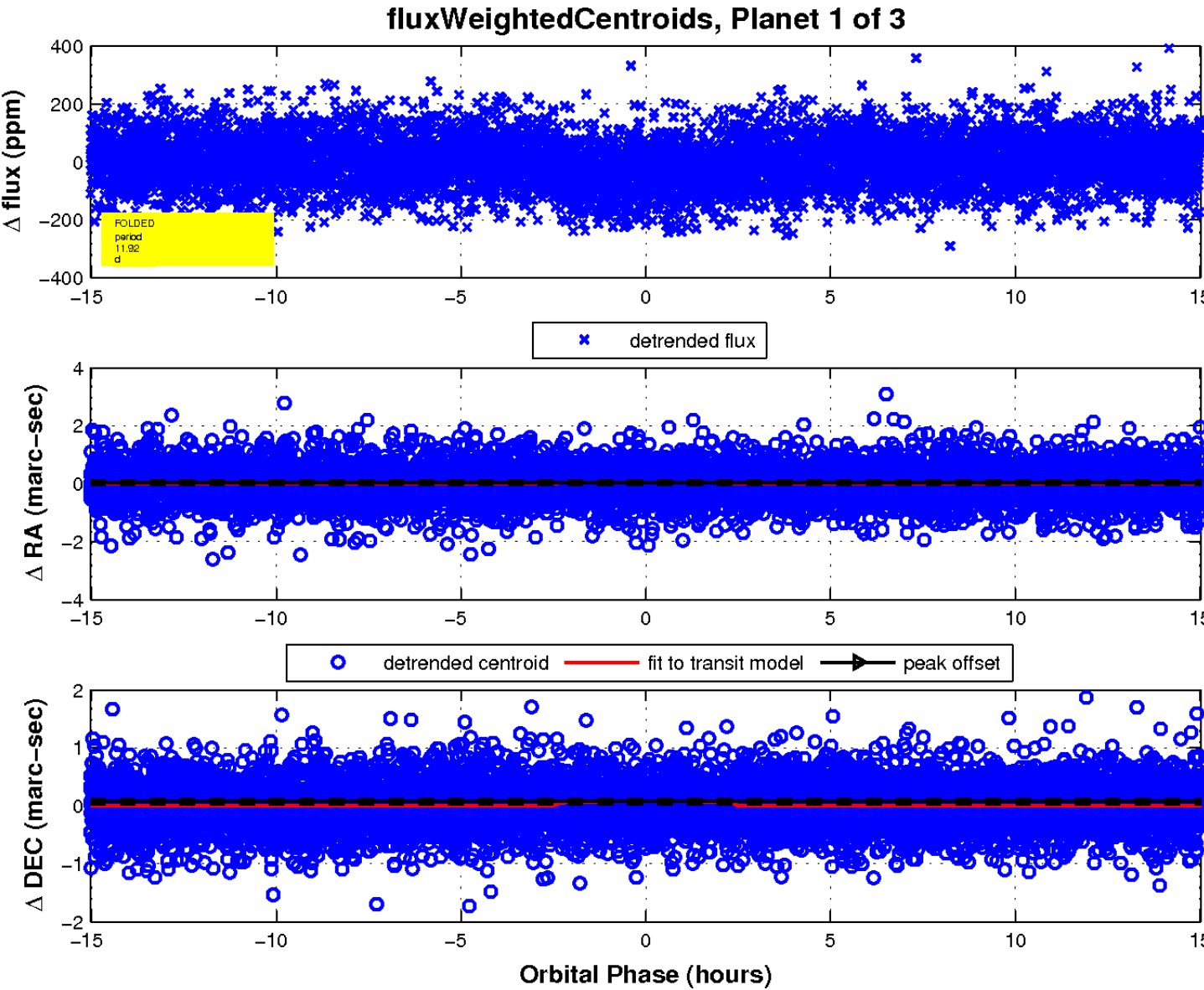
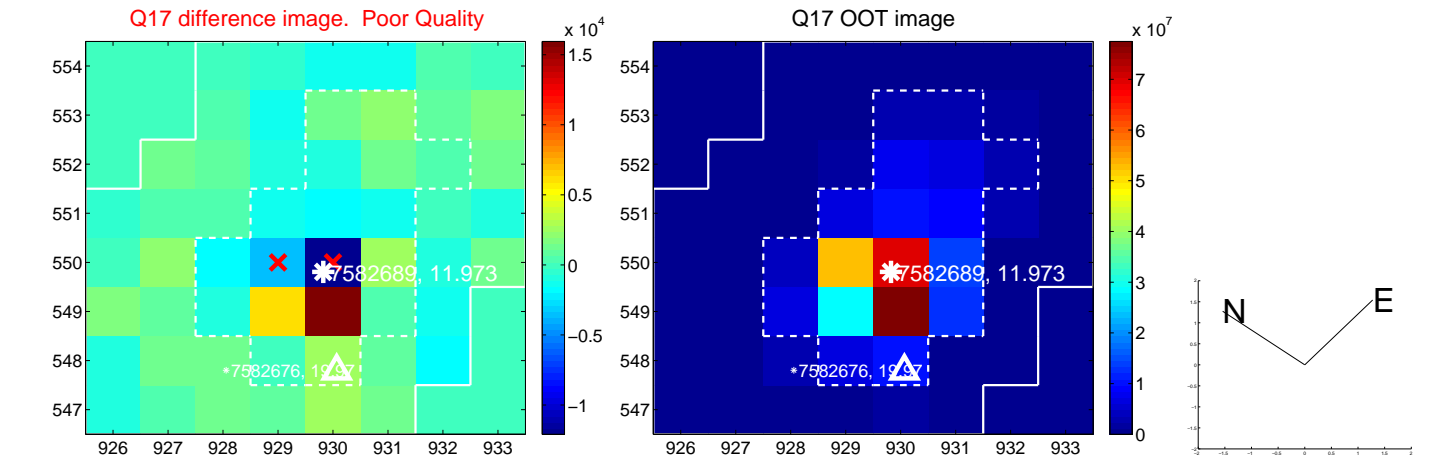
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

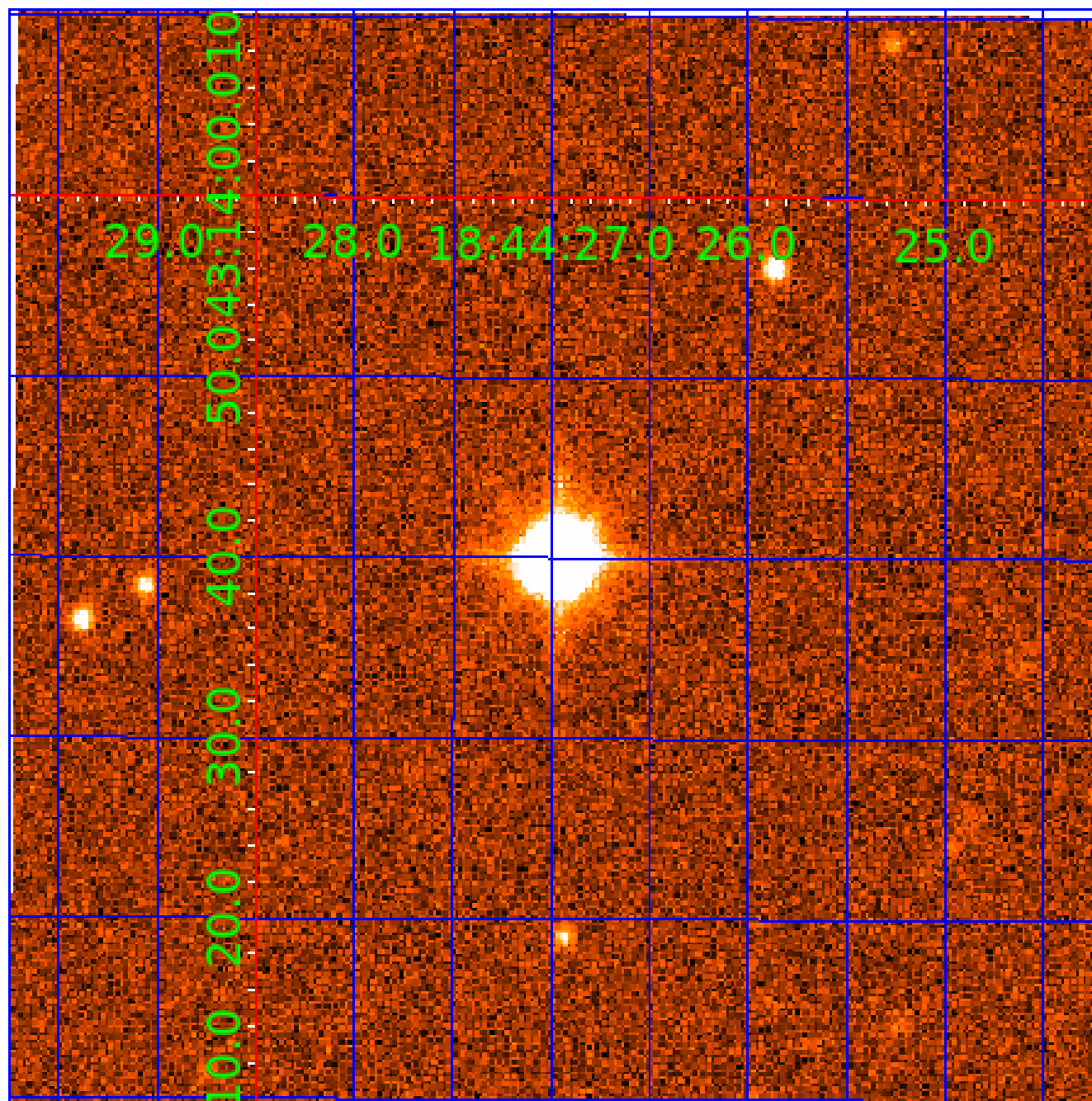


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



# UKIRT Image

Declination





# KIC 007582689

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007582689-01	OBS	3097.01	11.921574	137.479280	47.4	5.012	12.6	13.3	1.08	6006	0.87	124.24
007582689-02	OBS	3097.02	6.802610	138.041330	30.7	4.587	11.2	11.1	1.08	6006	0.68	262.51
007582689-03	OBS	3097.03	8.703127	140.153539	32.8	4.834	10.2	10.4	1.08	6006	0.73	189.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007582689-01	OBS	PC	0.98	0	0	0	0	NO_COMMENT
007582689-02	OBS	PC	0.98	0	0	0	0	NO_COMMENT
007582689-03	OBS	PC	1.00	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.

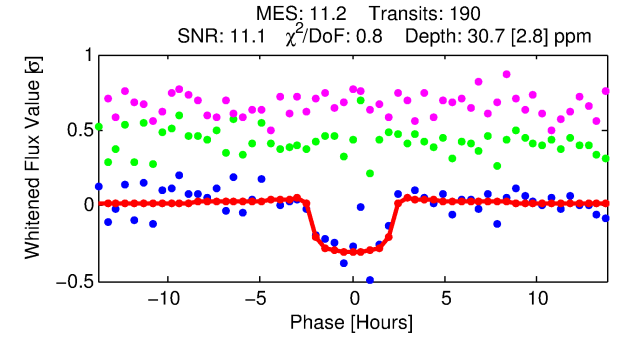
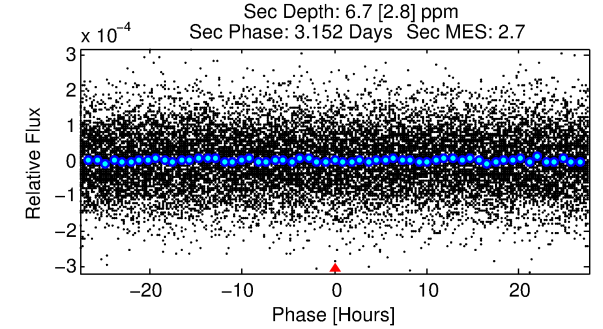
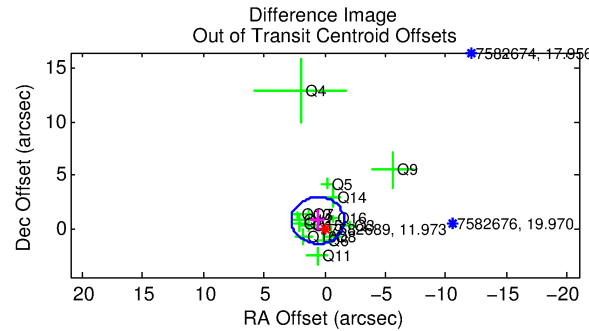
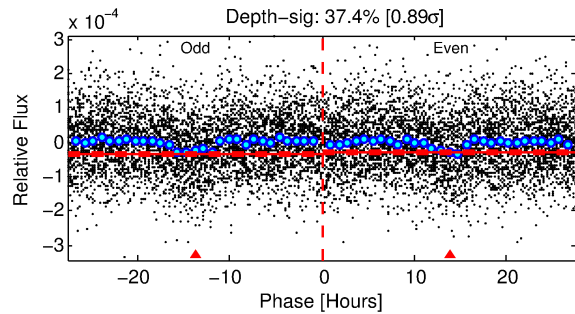
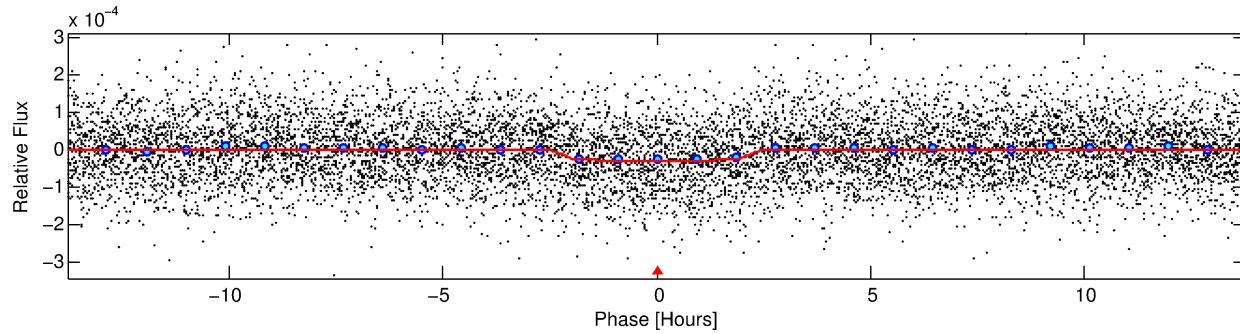
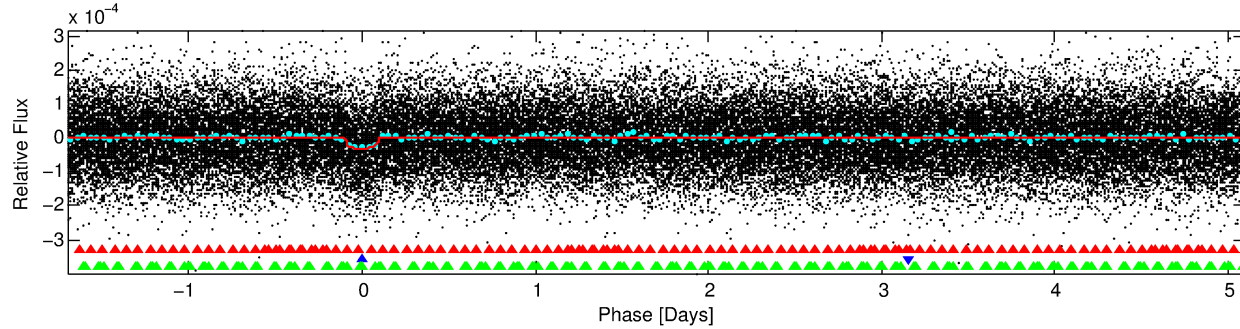
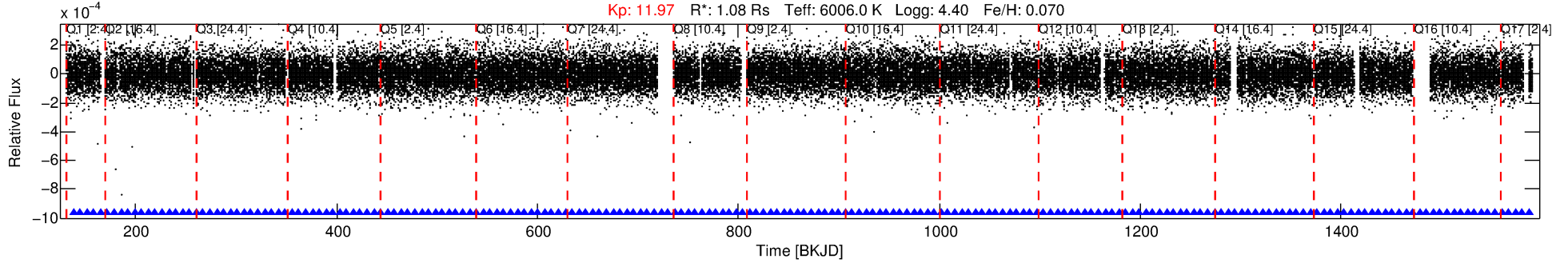
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 007582689-02

No Significant Match Found

# DV One-Page Summary

KIC: 7582689 Candidate: 2 of 3 Period: 6.803 d  
KOI: K03097.02 Name: Kepler-431b Corr: 0.921



## DV Fit Results:

Period = 6.80261 [0.00006] d  
Epoch = 138.0413 [0.0062] BKJD  
 $R_p/R^*$  = 0.0058 [0.0021]  
 $a/R^*$  = 6.16 [10.52]  
 $b$  = 0.85 [0.58]  
 $\text{Seff}$  = 262.51 [57.16]  
 $T_{\text{eq}}$  = 1026 [56] K  
 $R_p$  = 0.68 [0.27]  $R_e$   
 $a$  = 0.0721 [0.0102] AU  
 $A_g$  = 40.91 [35.06] [1.14 $\sigma$ ]  
 $T_{\text{eff}}$  = 4013 [835] K [3.57 $\sigma$ ]

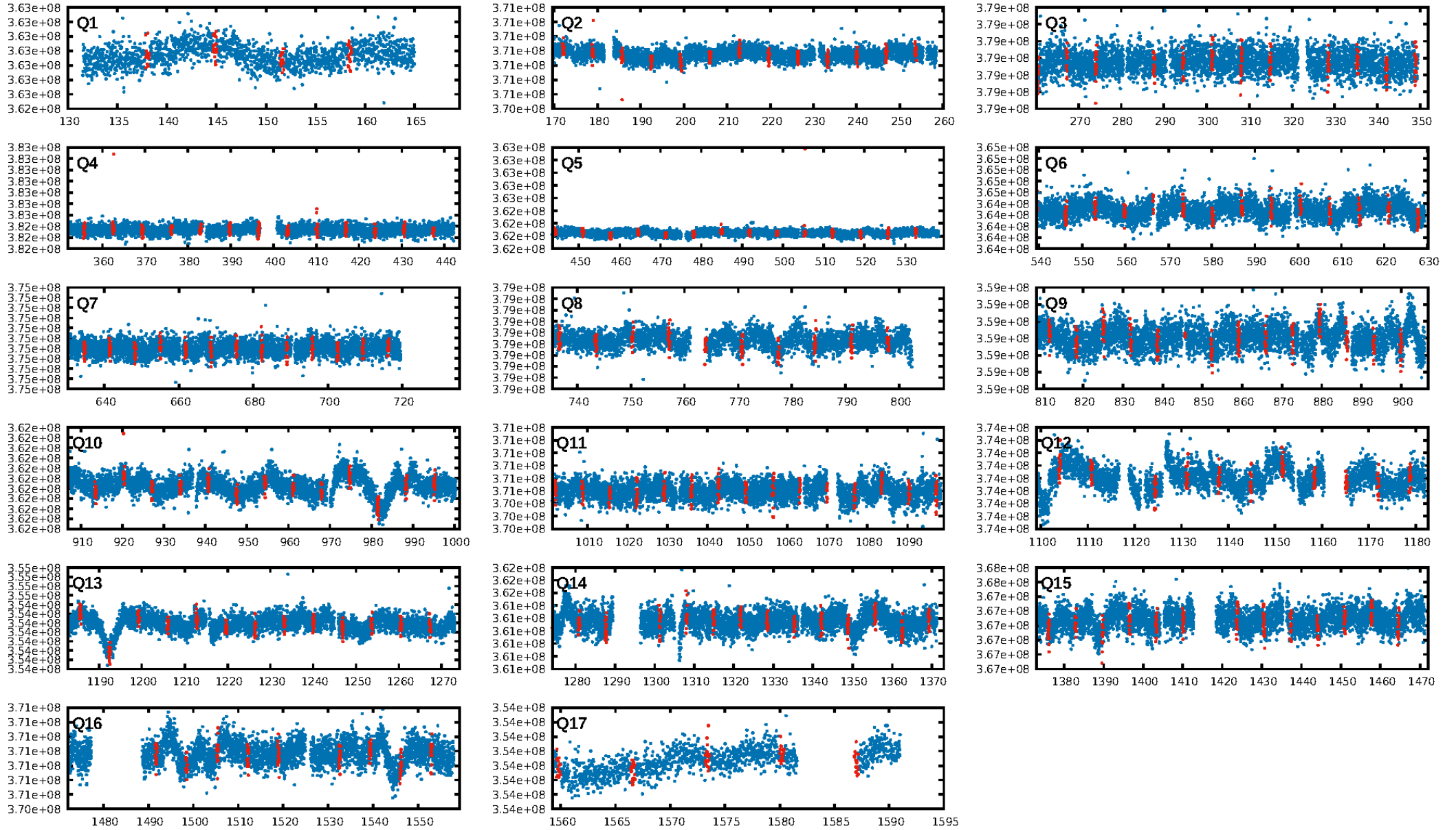
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [6.84 $\sigma$ ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGoF-sig: 100.0%  
Bootstrap-pfa: 5.01e-27  
RollingBand-fgt: 1.00 [182/182]  
GhostDiagnostic-chr: 3.057  
Centroid-sig: 4.9%  
Centroid-so: 1.839 arcsec [1.54 $\sigma$ ]  
OotOffset-rm: 0.967 arcsec [1.33 $\sigma$ ]  
KicOffset-rm: 1.009 arcsec [1.20 $\sigma$ ]  
OotOffset-st: 4/4/4/3 [15]  
KicOffset-st: 4/4/4/3 [15]  
DiffImageQuality-fgm: 0.73 [11/15]  
DiffImageOverlap-fno: 1.00 [17/17]

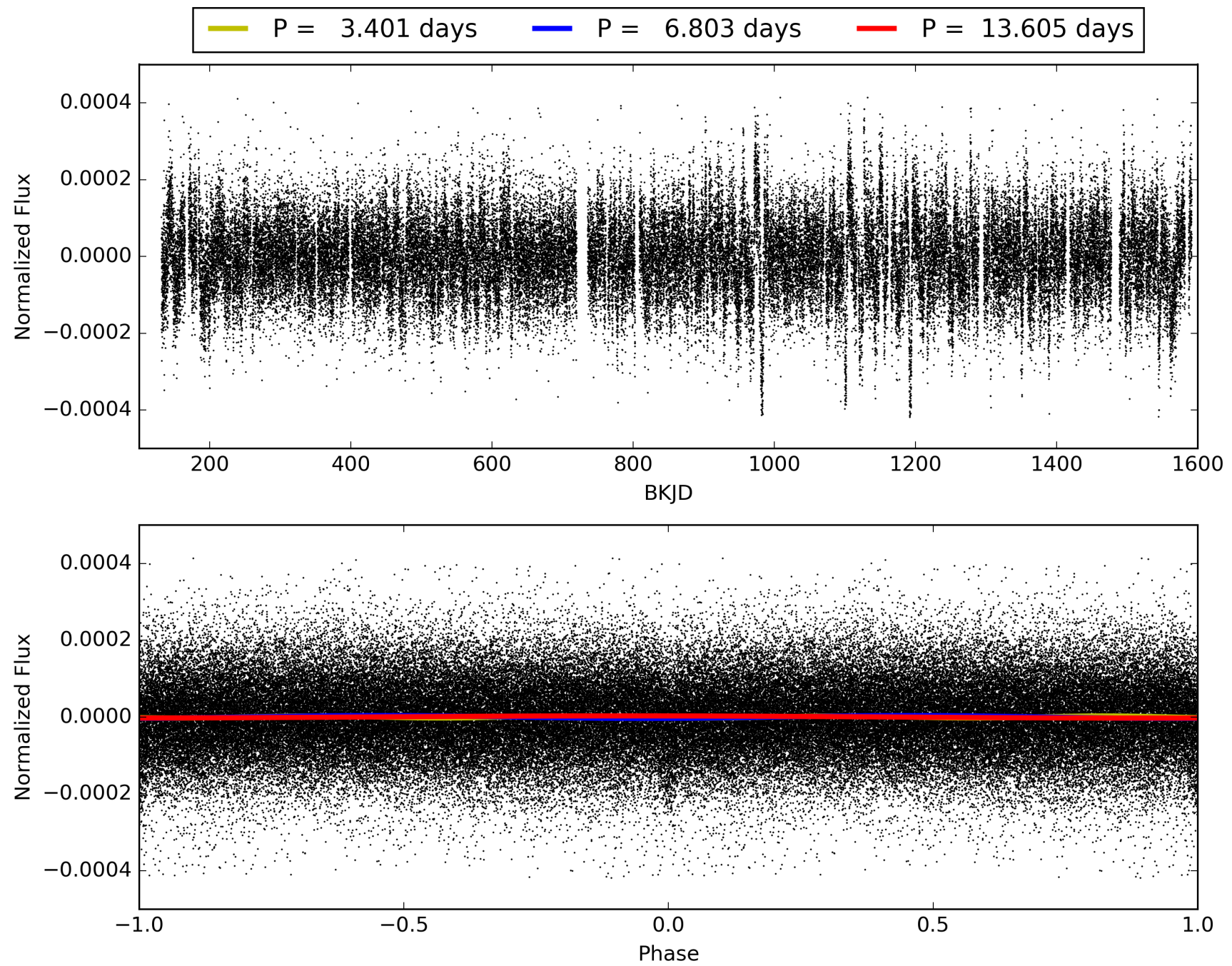
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:06:18 Z

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

# TCE 007582689-02, PDC Light Curves

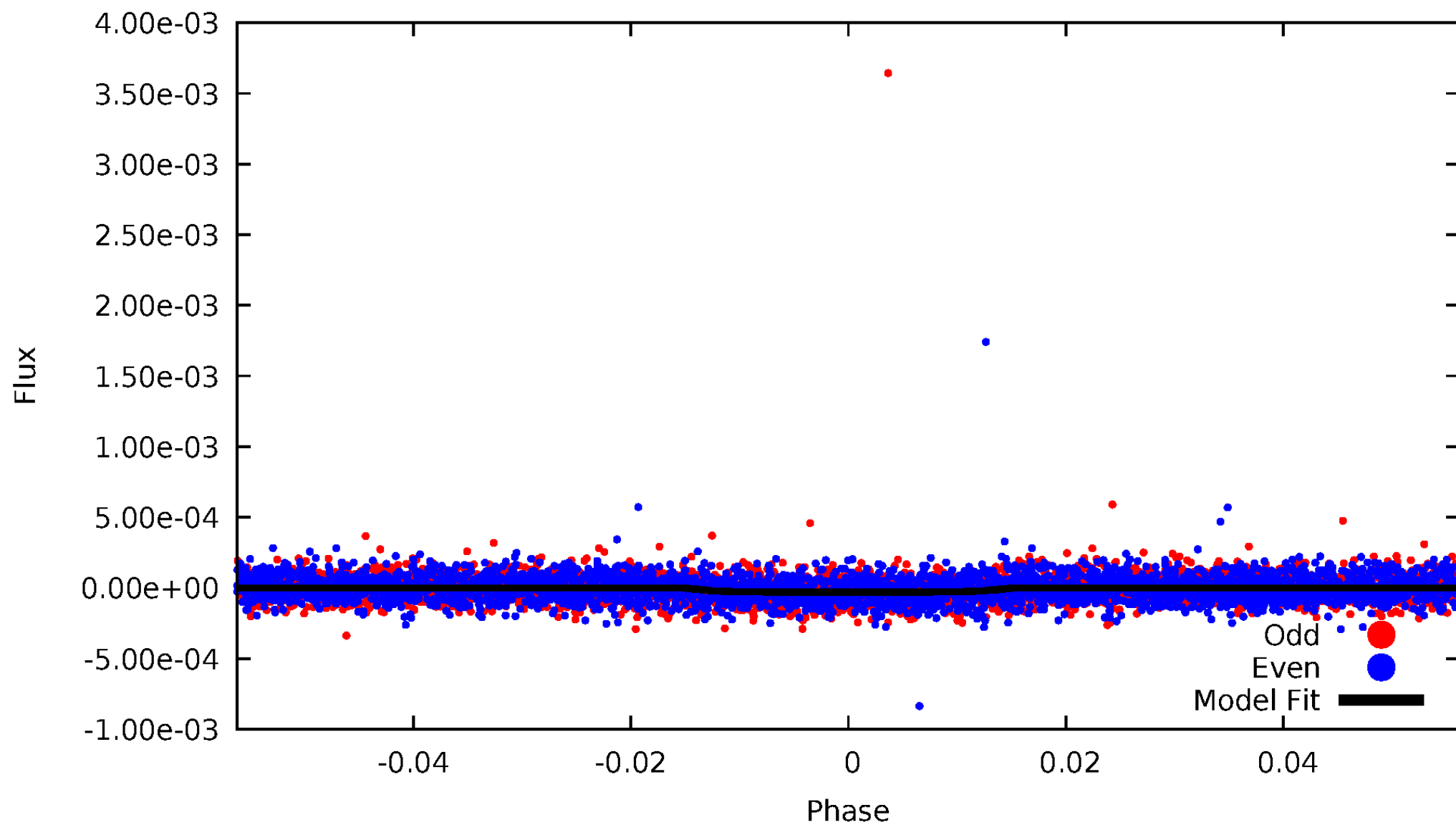


TCE 007582689-02



# DV Odd/Even

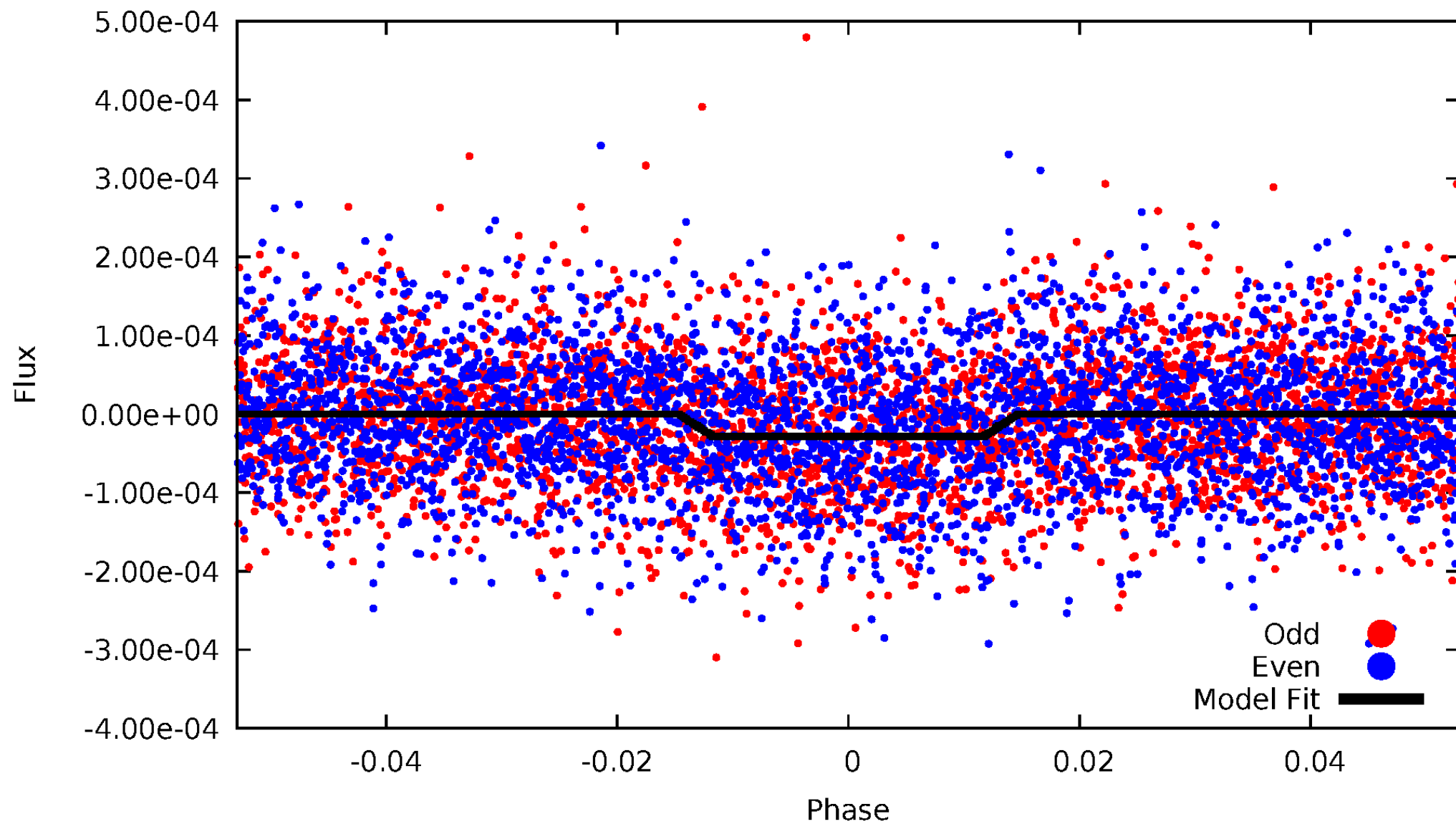
TCE 007582689-02





# ALT Odd/Even

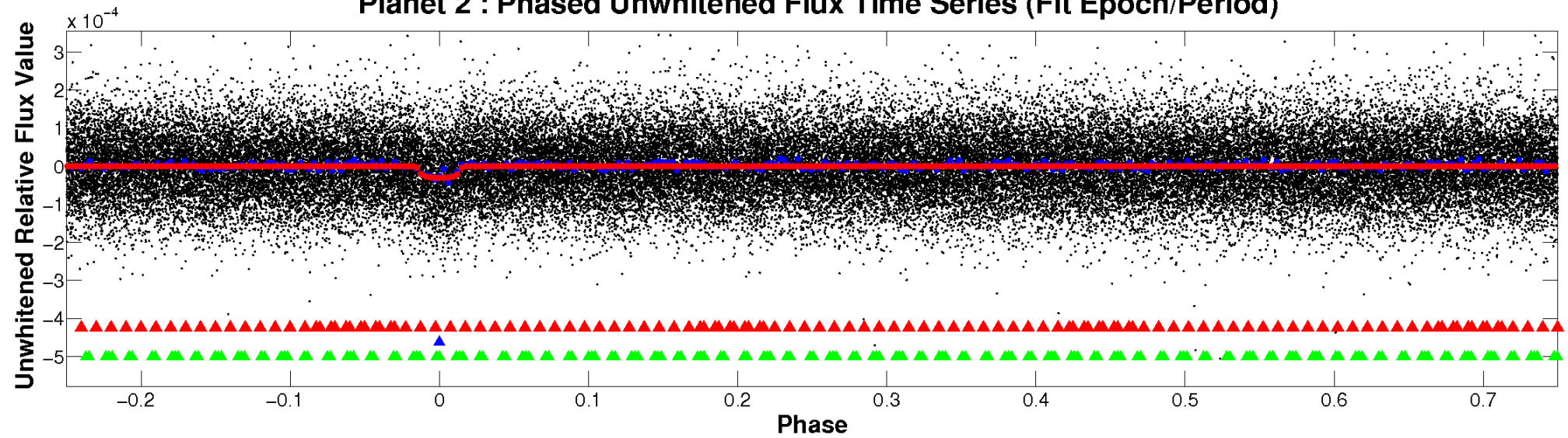
TCE 007582689-02



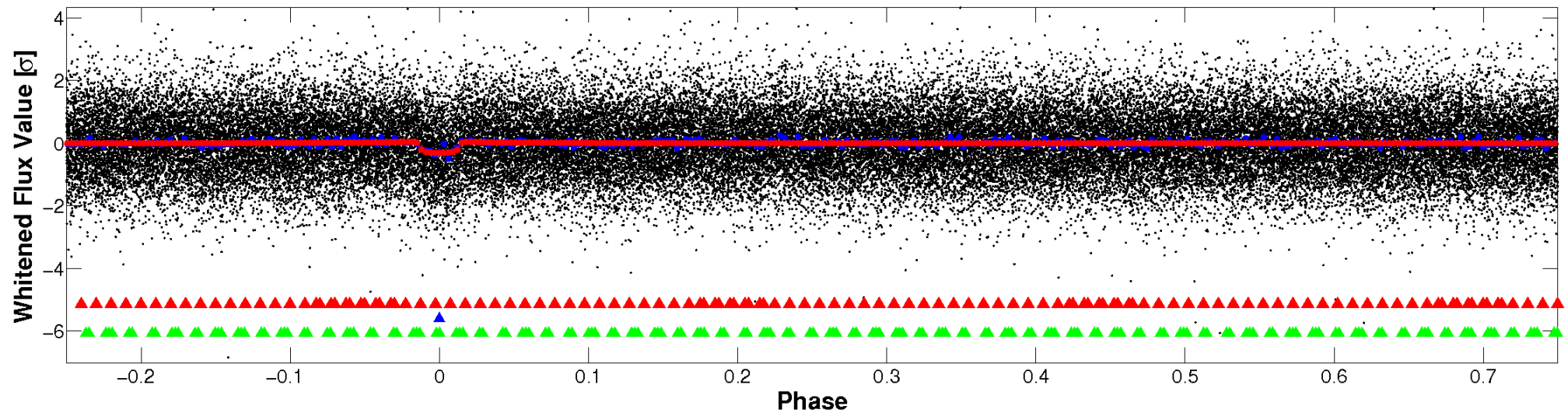


# Non-Whitened Vs. Whitened Light Curve

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

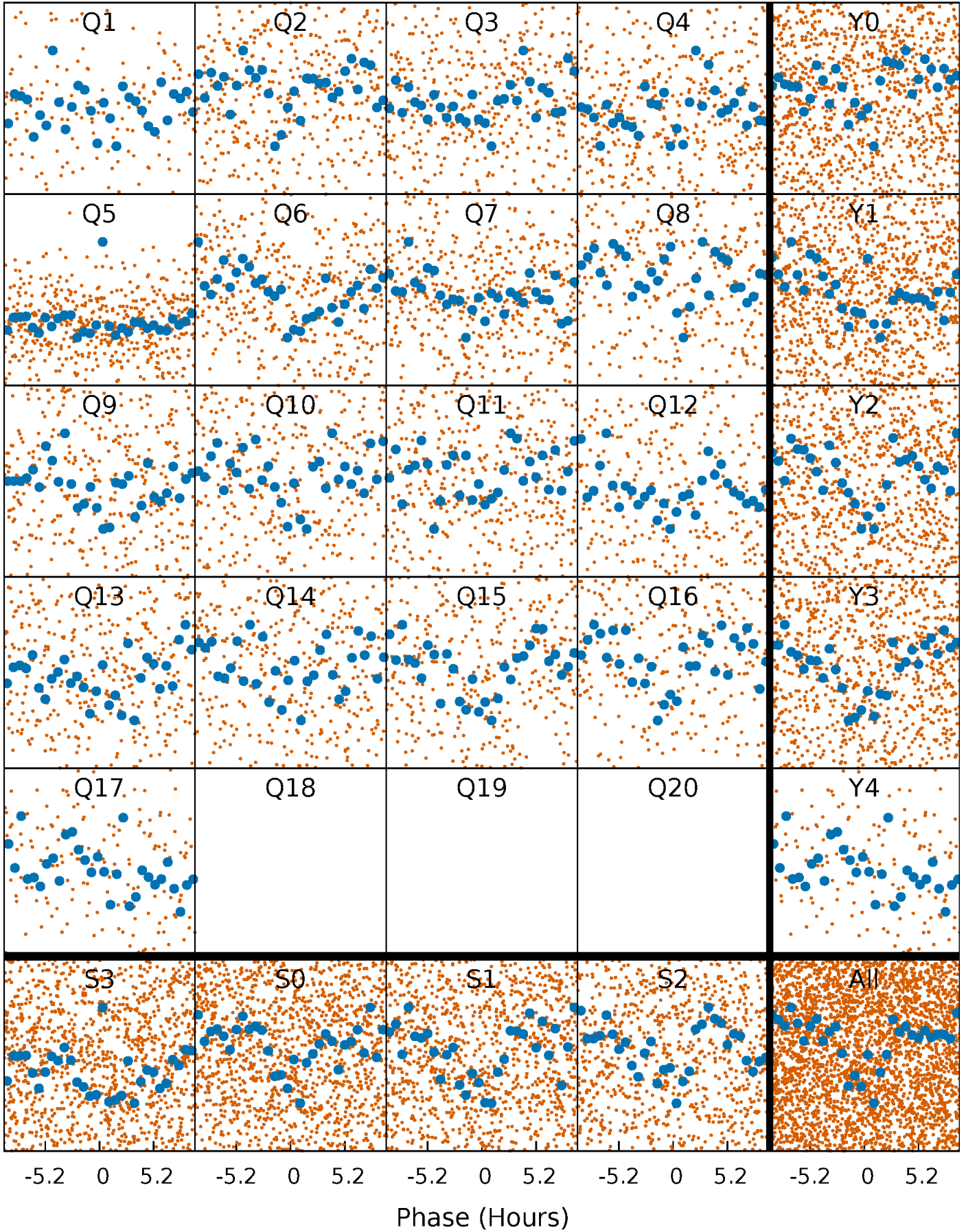


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



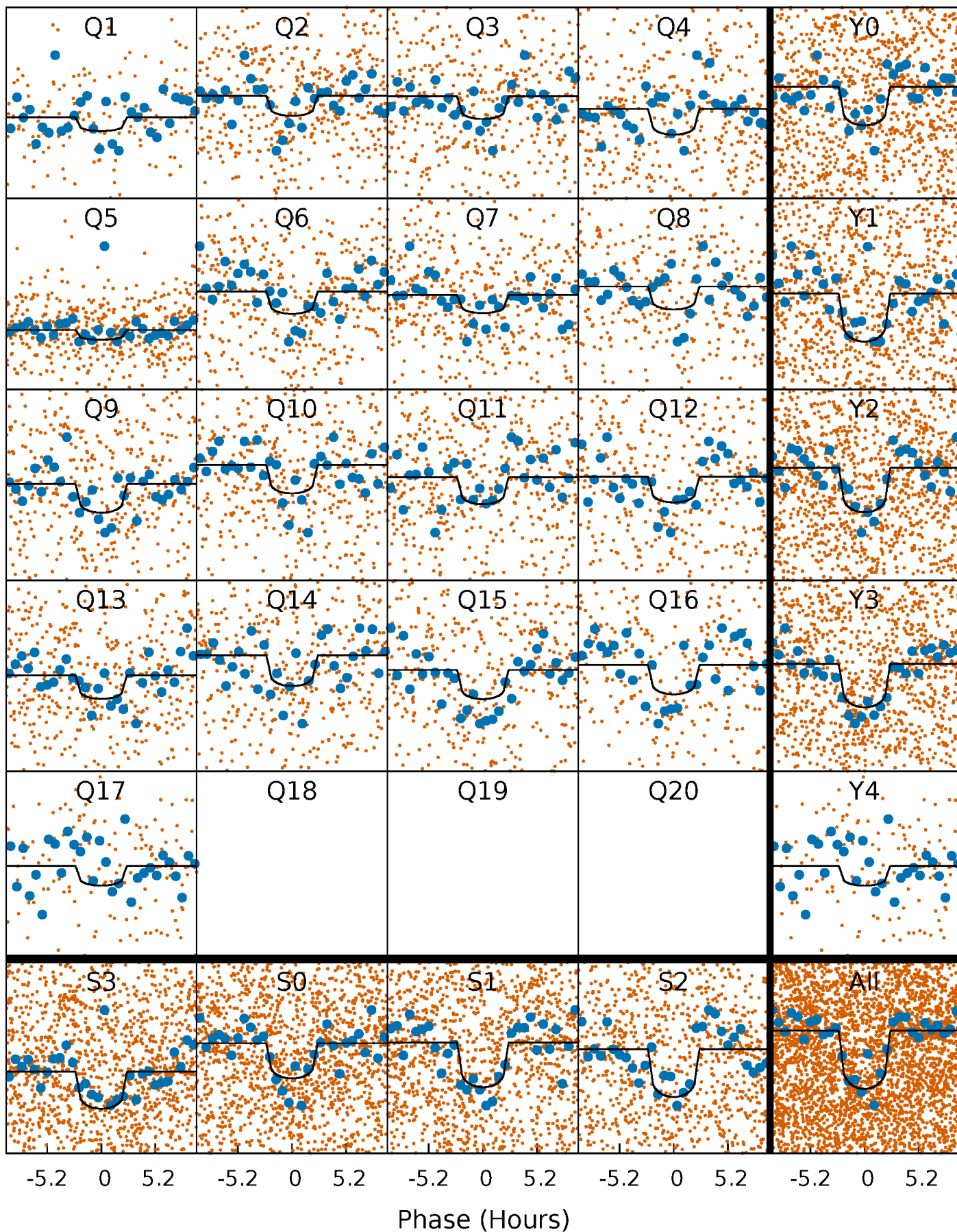
# PDC Quarter-Phased Transit Curves

TCE 007582689-02   P= 6.802610 Days    $T_0=138.041330$  (BKJD)



# DV Quarter-Phased Transit Curves

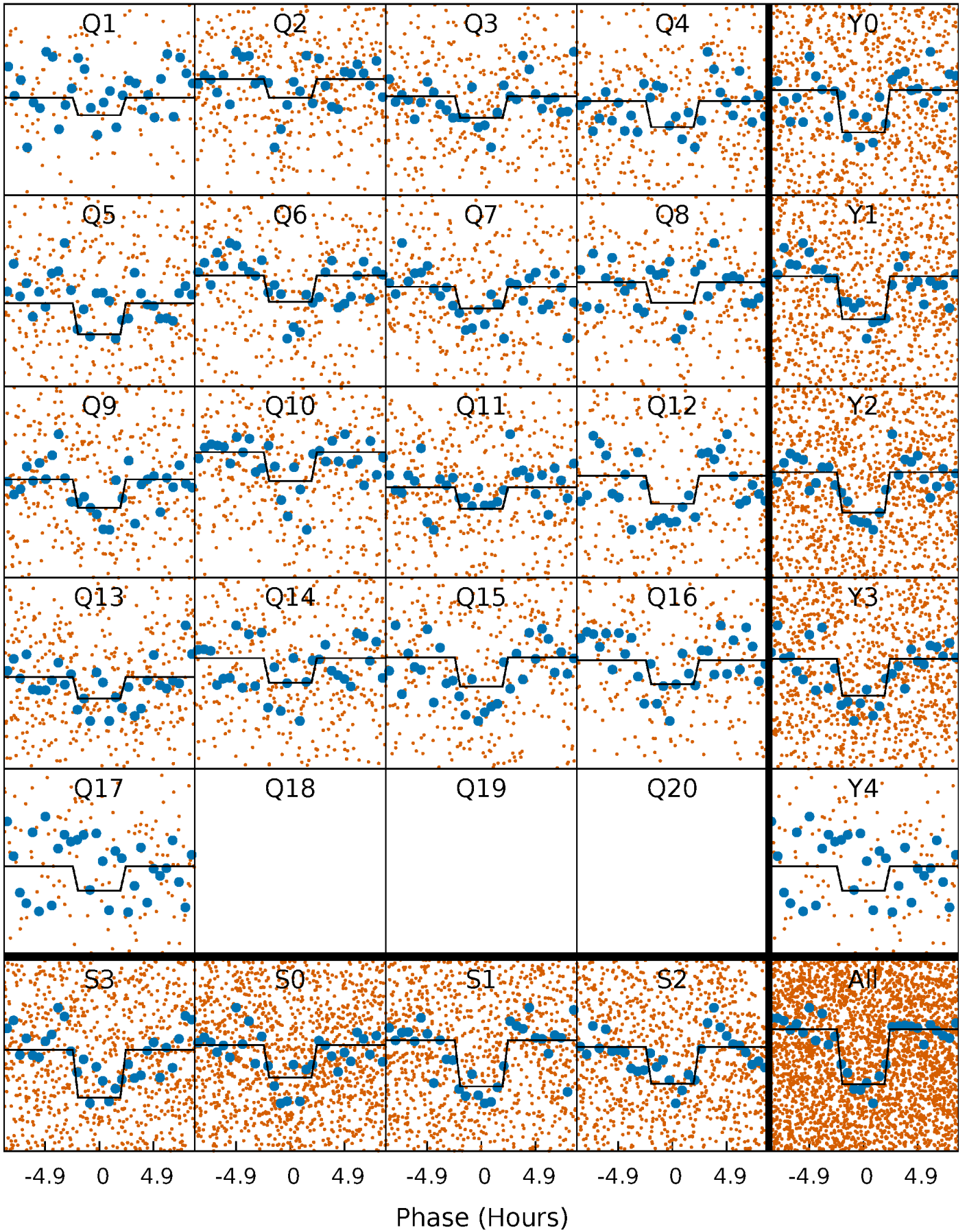
TCE 007582689-02 P= 6.802610 Days  $T_0=138.041330$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

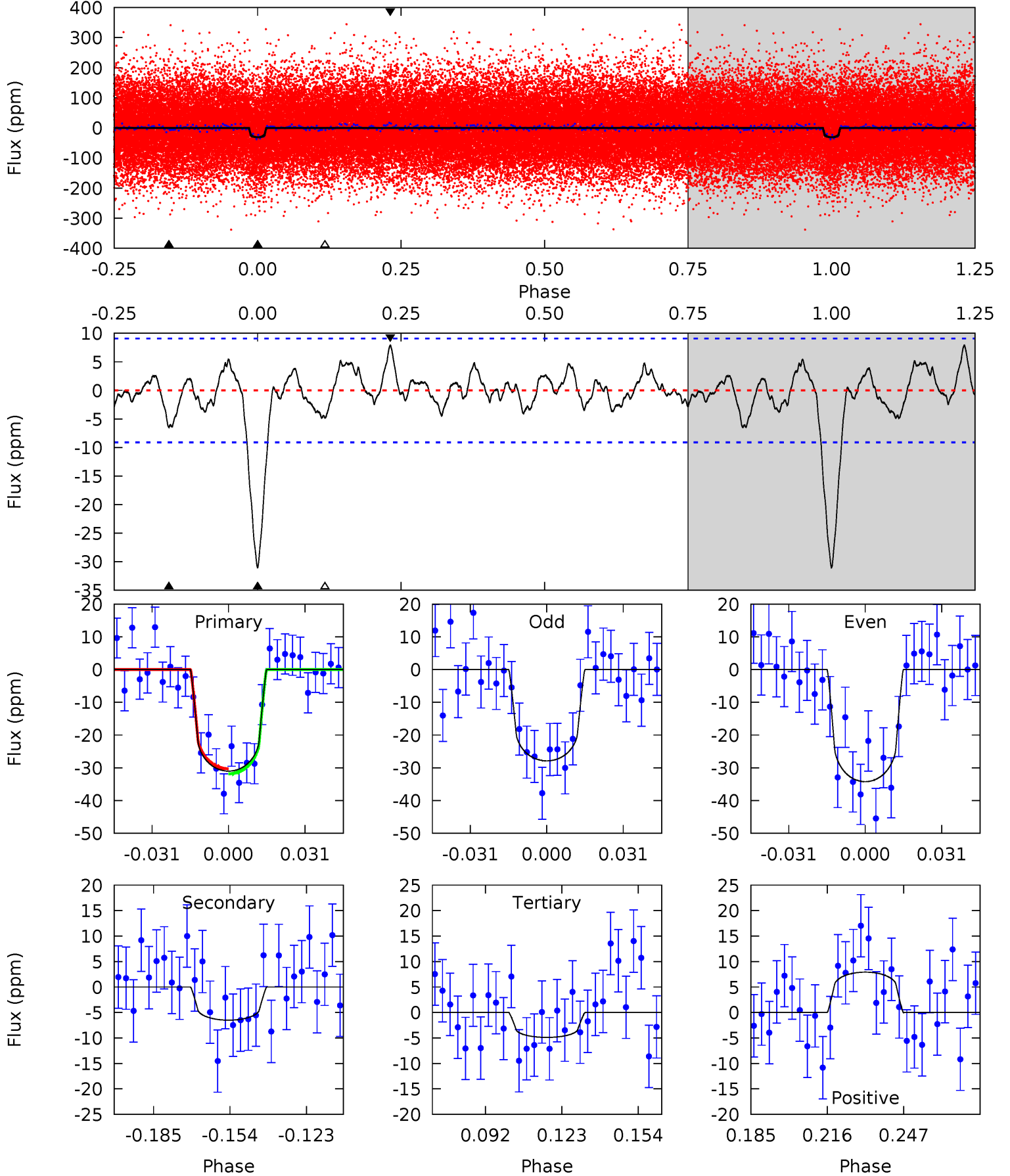
TCE 007582689-02 P= 6.802624 Days  $T_0=138.041622$  (BKJD)



# DV Model-Shift Uniqueness Test

007582689-02, P = 6.802610 Days, E = 131.238720 Days

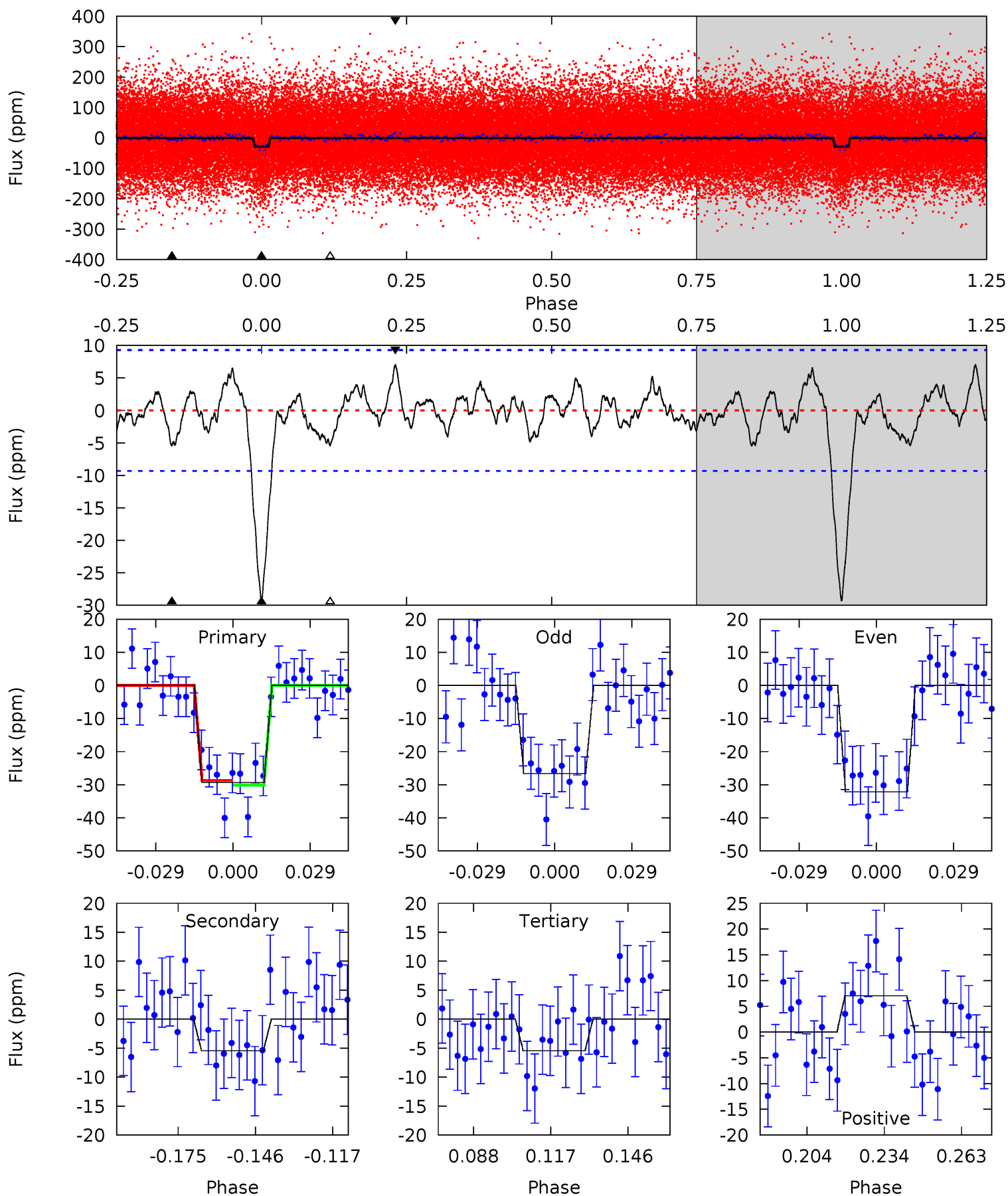
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.4	3.44	2.59	4.19	4.81	2.16	1.25	13.8	12.2	0.85	-0.75	1.69	0.85	0.20	0.41



# Alt Model-Shift Uniqueness Test

007582689-02, P = 6.802624 Days, E = 131.238998 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	2.82	2.82	3.64	4.82	2.18	1.20	12.4	11.5	0.00	-0.83	1.43	1.01	0.19	0.36



### Stellar Parameters For KIC 007582689

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6006^{+72}_{-84}$	$4.403^{+0.054}_{-0.117}$	$0.070^{+0.150}_{-0.150}$	$1.082^{+0.178}_{-0.076}$	$1.081^{+0.078}_{-0.070}$	$1.201^{+0.248}_{-0.427}$
	+1%/-1%	+1%/-3%	+214%/-214%	+16%/-7%	+7%/-6%	+21%/-36%
Source	SPE84	SPE84	SPE84	DSEP		

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

### Secondary Eclipse Parameters for KIC 007582689-02 / KOI 3097.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-7 \pm 2$	$0.70^{+0.26}_{-0.23}$	$1439^{+60}_{-37}$	$4197^{+804}_{-483}$	$37^{+52}_{-19}$
Alt.	$-5 \pm 2$	$0.66^{+0.25}_{-0.25}$	$1442^{+54}_{-39}$	$4201^{+925}_{-543}$	$37^{+63}_{-20}$

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



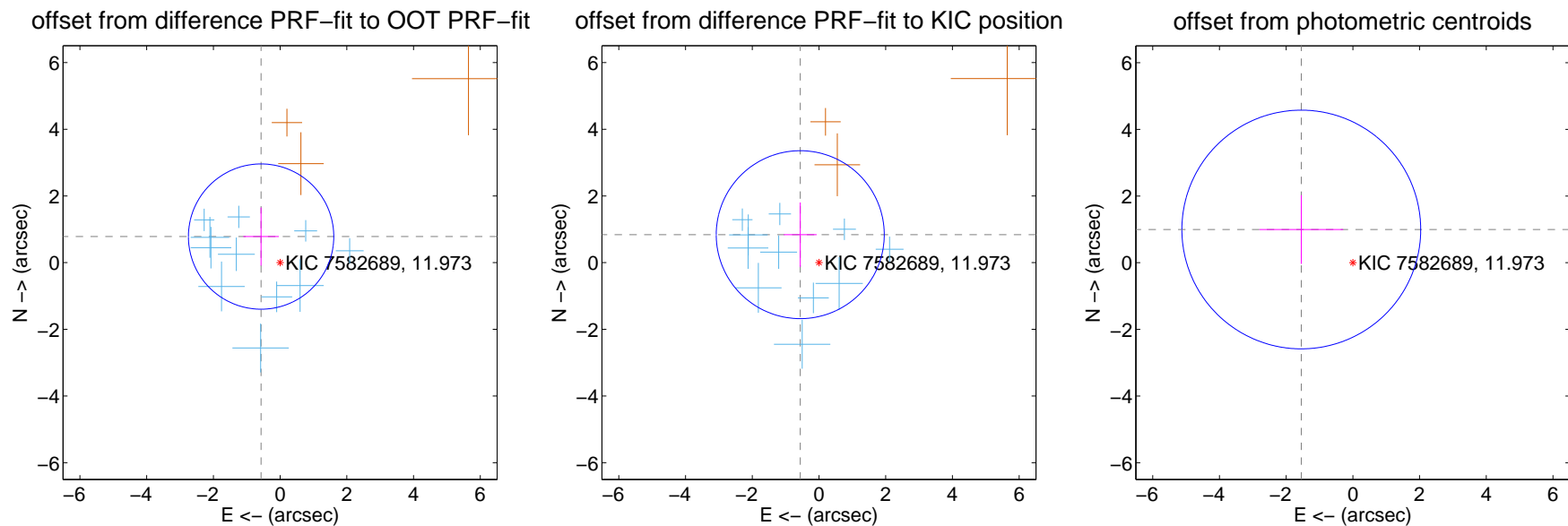
## DV Centroid Data

Supplemental centroid analysis for 007582689-02. **Kepler magnitude: 11.97.** Transit SNR 11.13

There are 11 quarters with good PRF difference image offsets

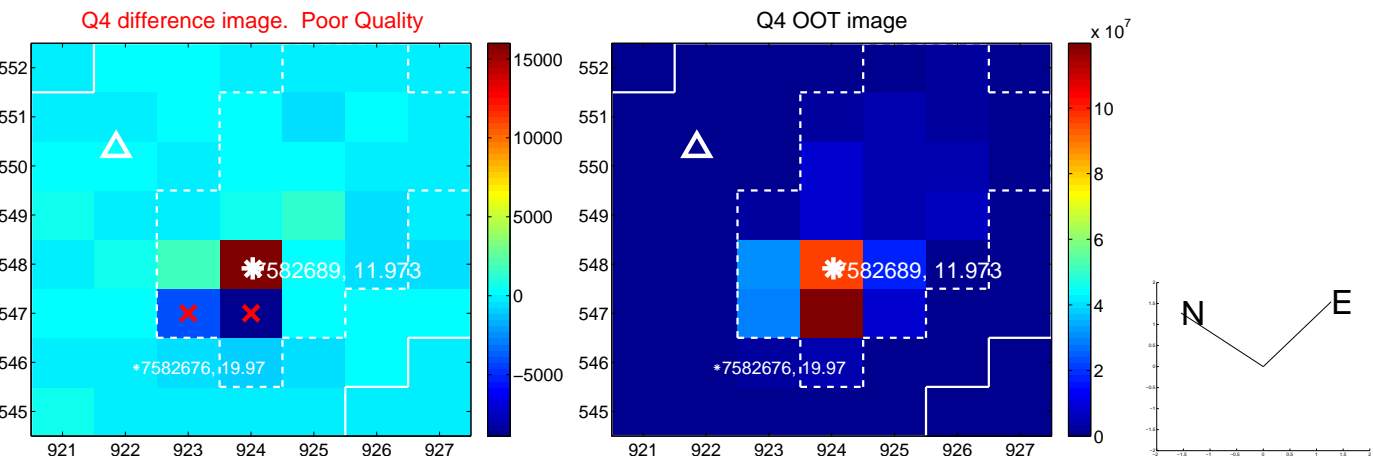
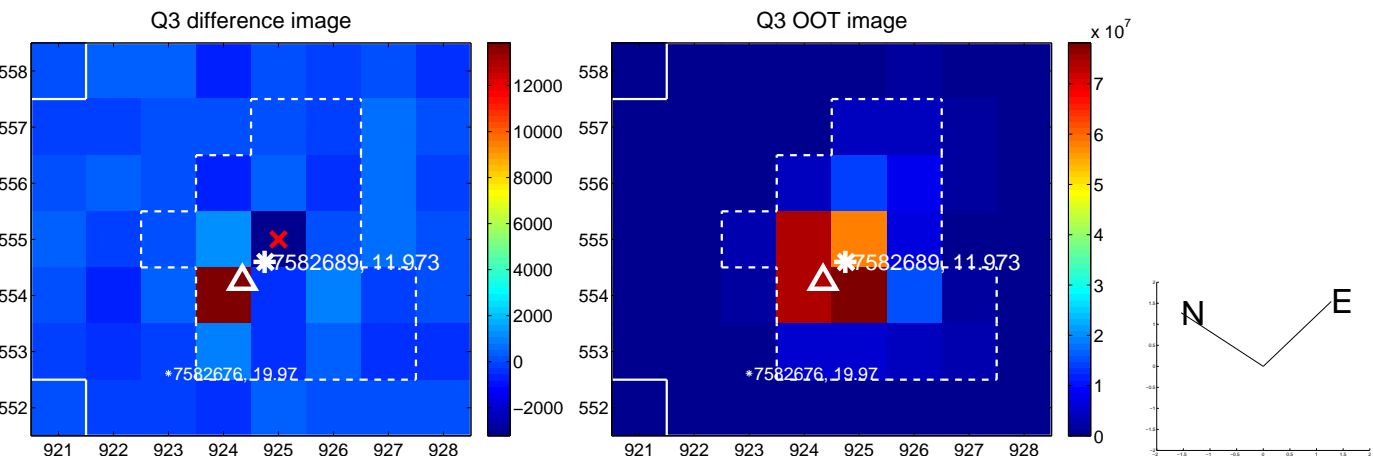
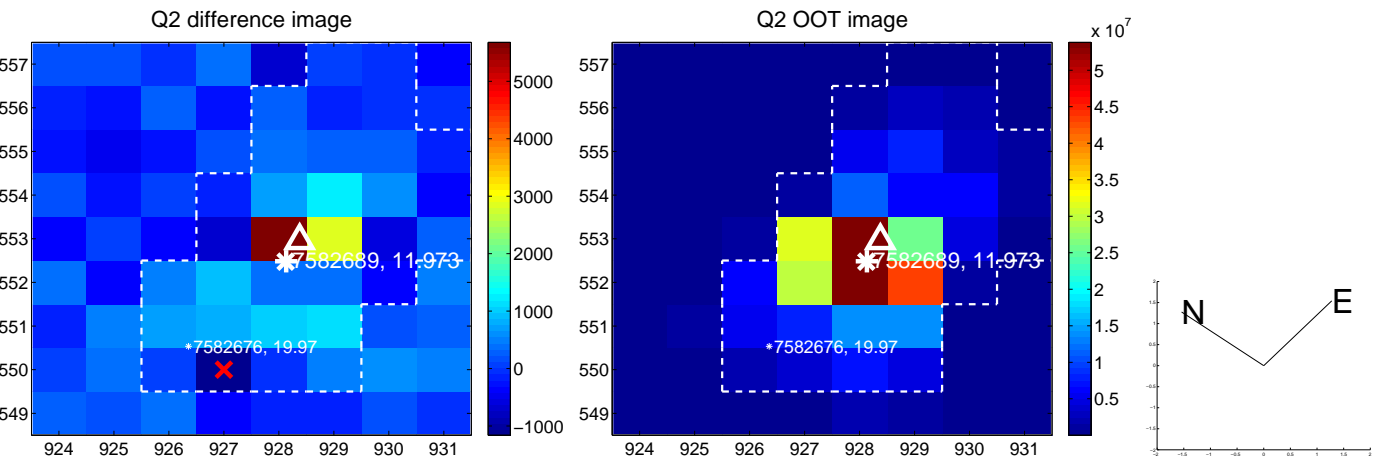
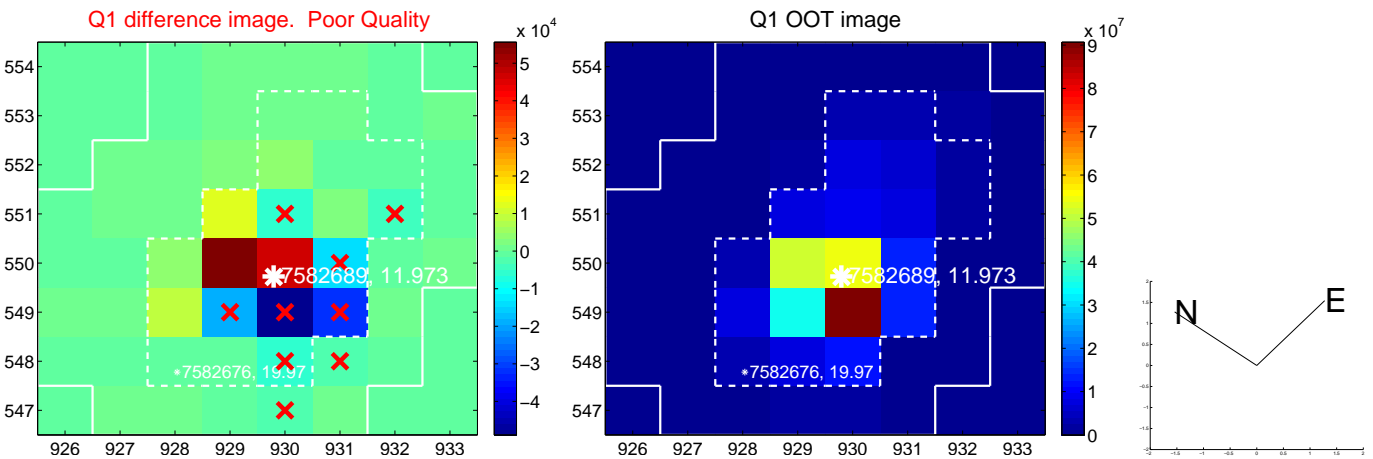
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.967 \pm 0.726$	1.33	$0.570 \pm 0.531$	$0.782 \pm 0.868$
PRF-fit source offset from KIC position	$1.009 \pm 0.839$	1.20	$0.562 \pm 0.491$	$0.839 \pm 0.967$
photometric centroid source offset	$1.84 \pm 1.19$	1.54	$1.55 \pm 1.25$	$1.00 \pm 1.03$

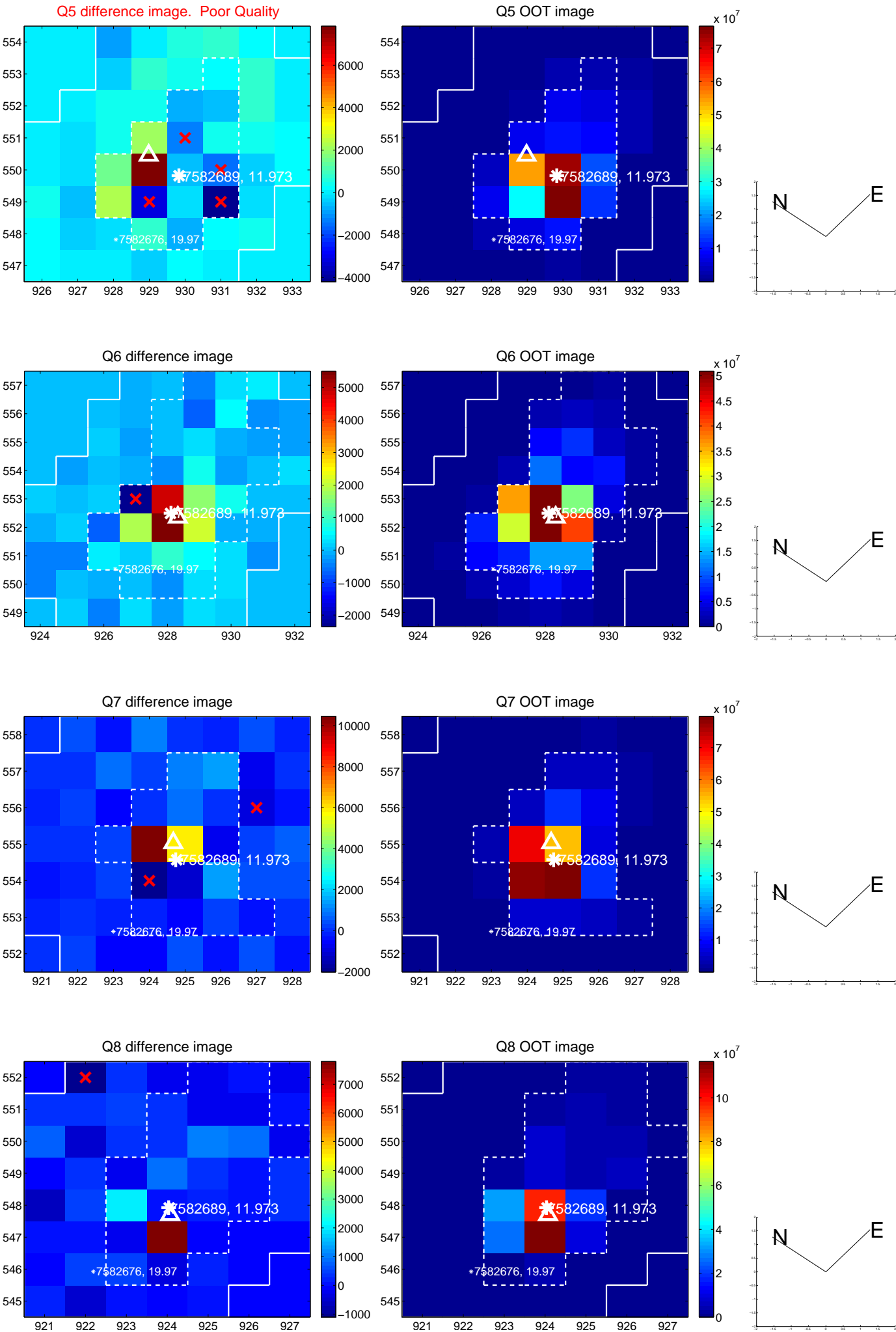


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

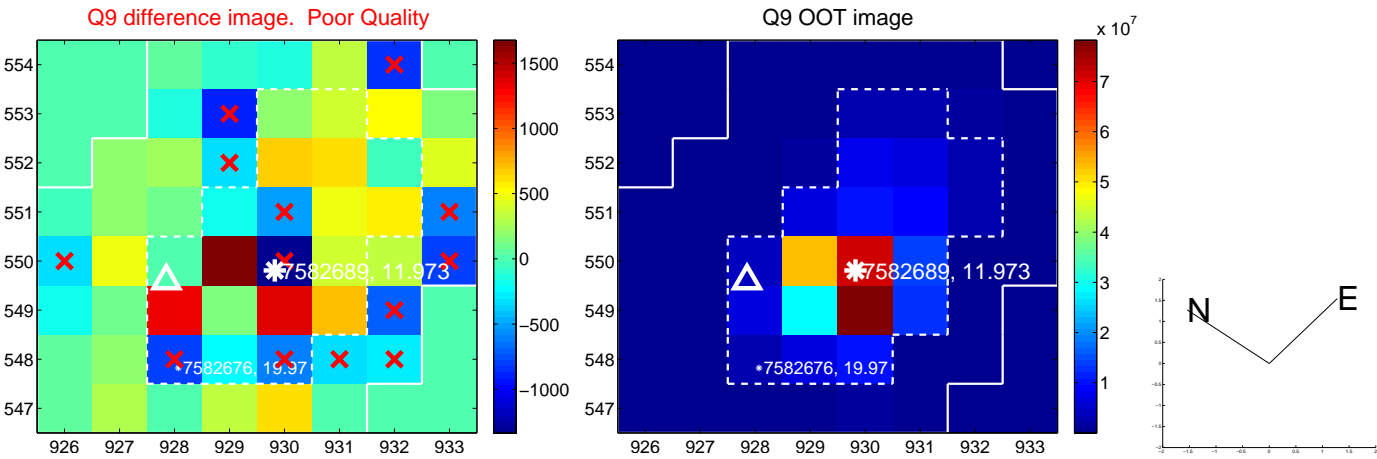
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



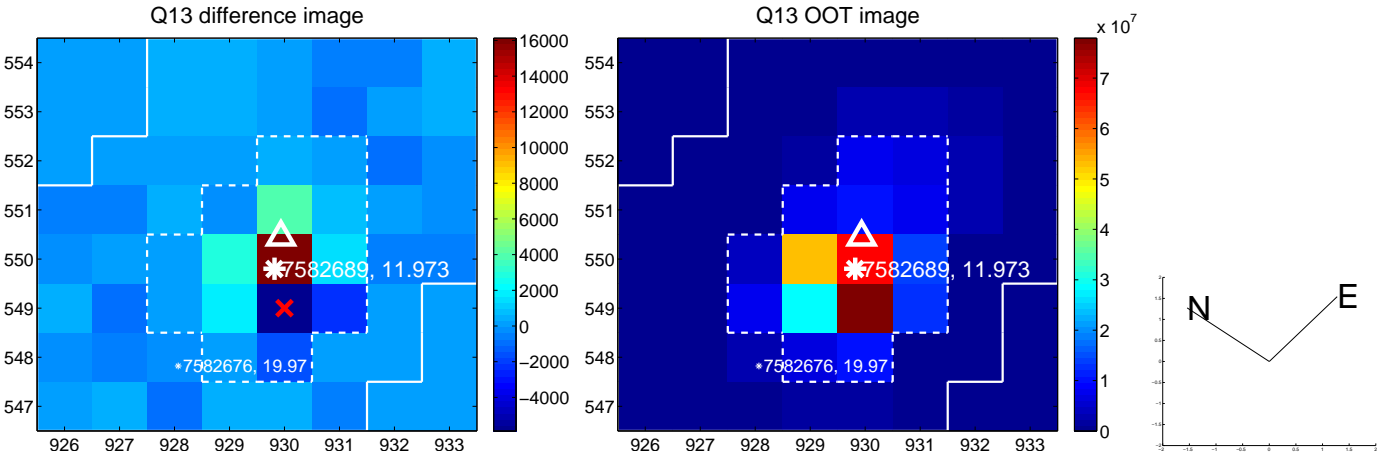
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



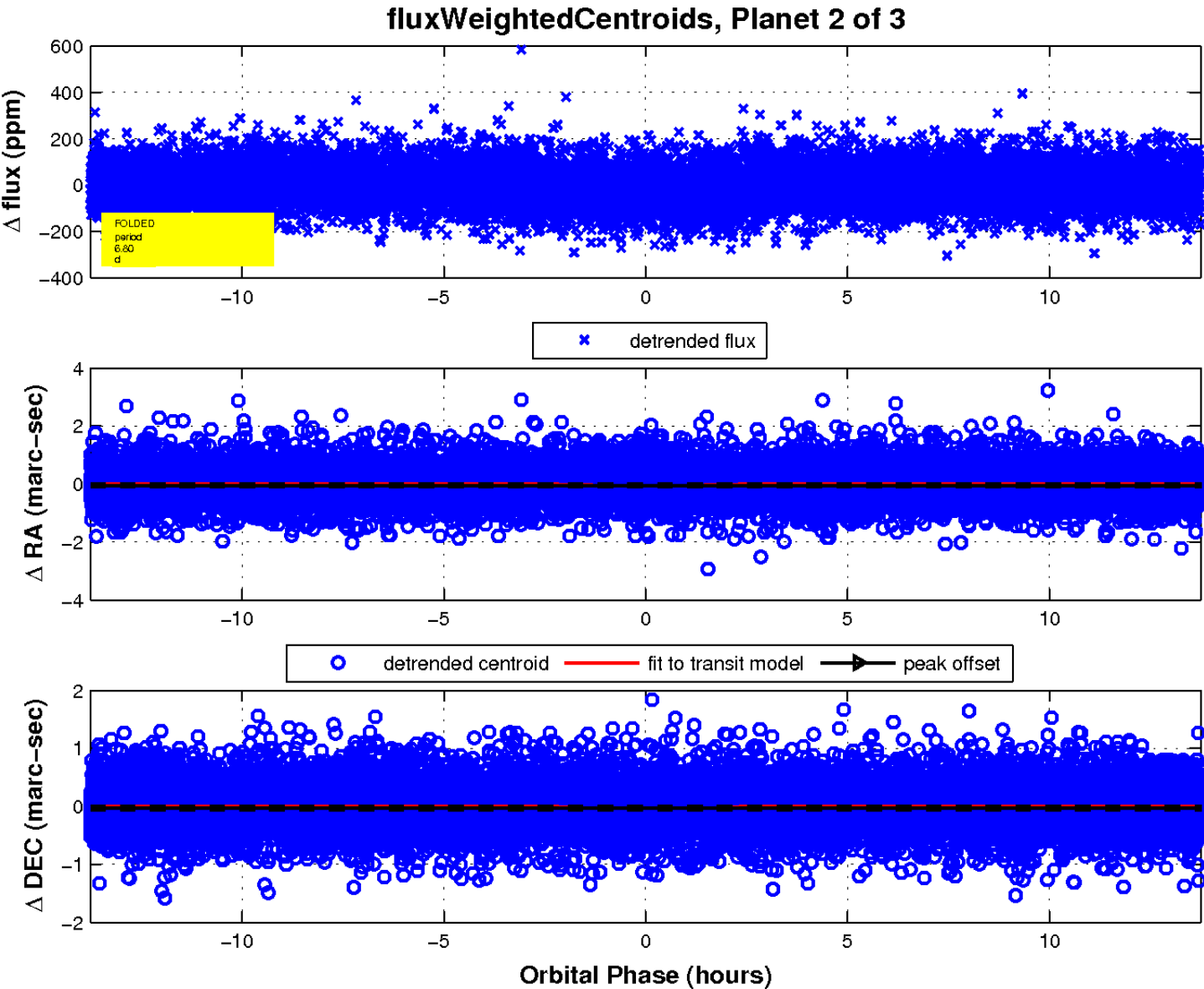
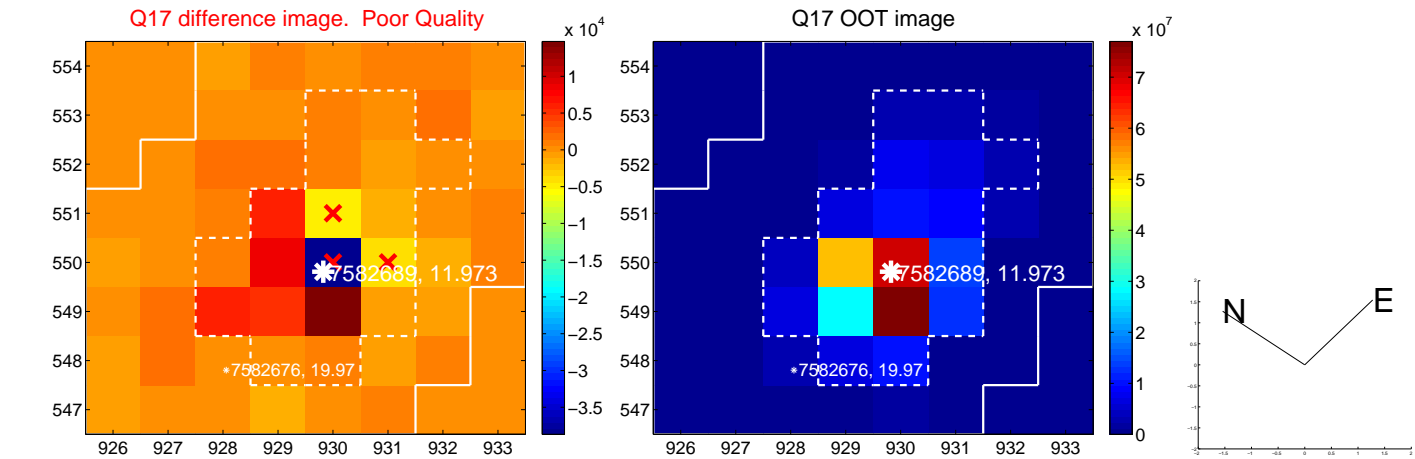
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

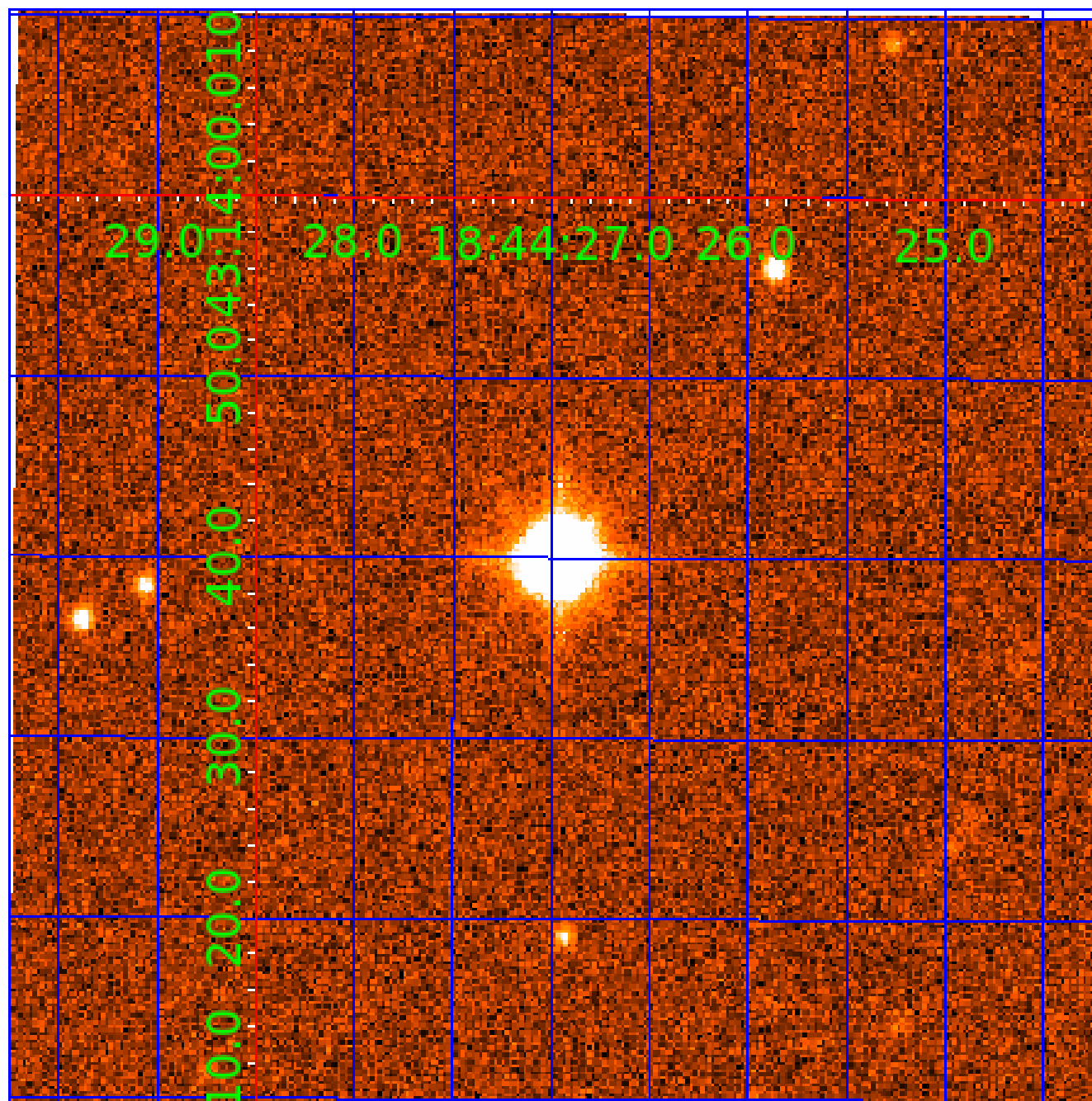


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 007582689

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007582689-01	OBS	3097.01	11.921574	137.479280	47.4	5.012	12.6	13.3	1.08	6006	0.87	124.24
007582689-02	OBS	3097.02	6.802610	138.041330	30.7	4.587	11.2	11.1	1.08	6006	0.68	262.51
007582689-03	OBS	3097.03	8.703127	140.153539	32.8	4.834	10.2	10.4	1.08	6006	0.73	189.01

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007582689-01	OBS	PC	0.98	0	0	0	0	NO_COMMENT
007582689-02	OBS	PC	0.98	0	0	0	0	NO_COMMENT
007582689-03	OBS	PC	1.00	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.

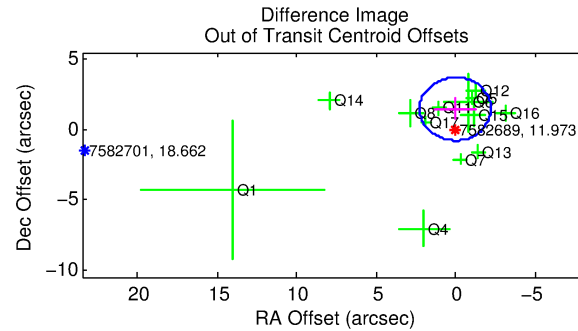
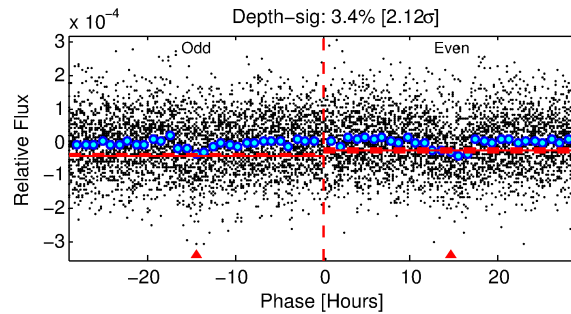
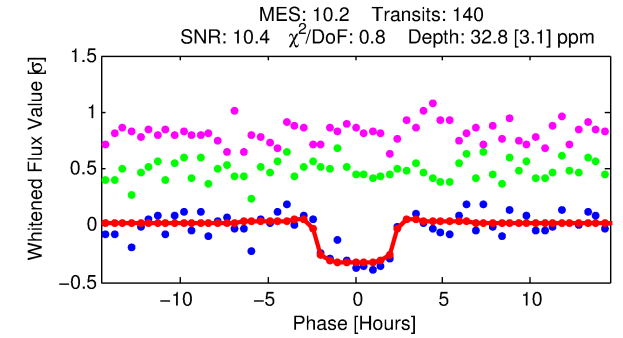
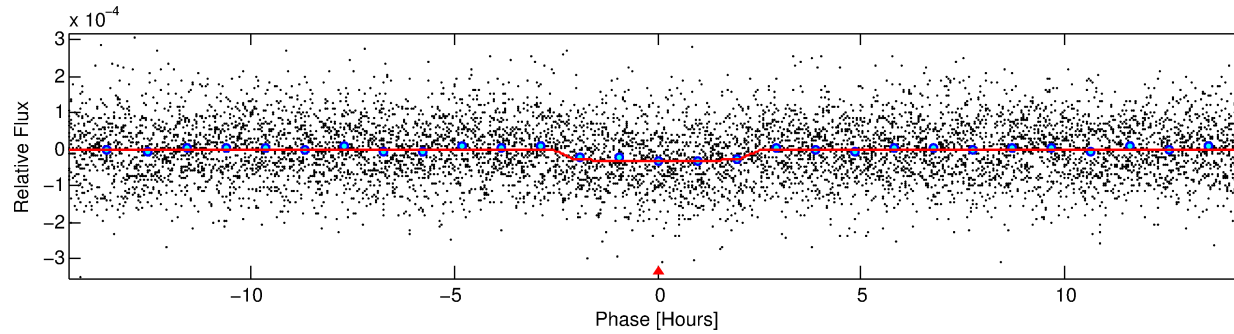
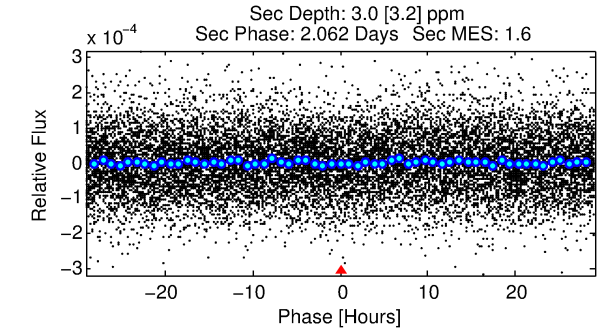
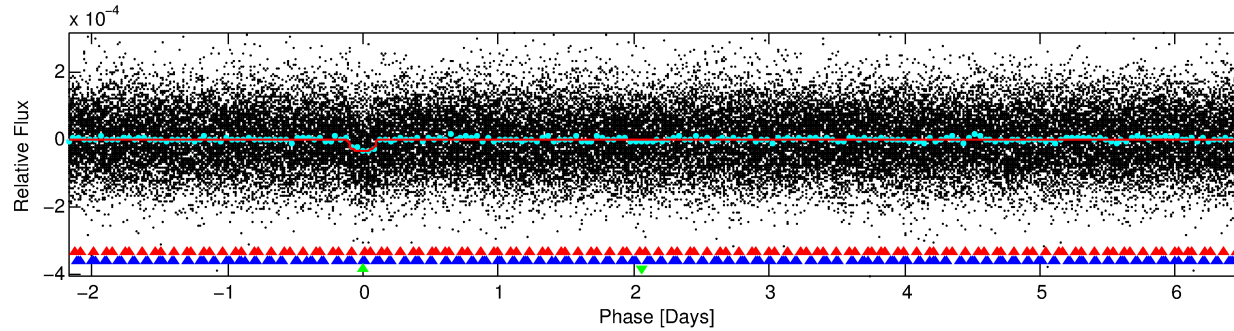
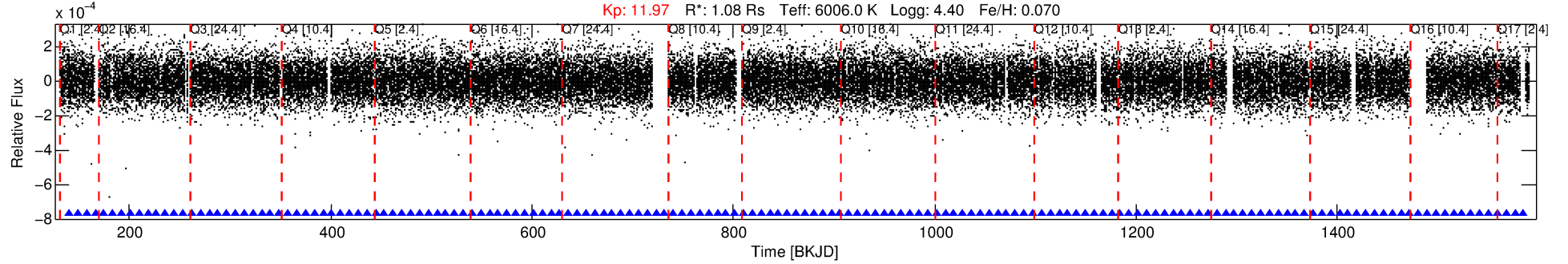
## Ephemeris Match Information For 007582689-03

No Significant Match Found

# DV One-Page Summary

KIC: 7582689 Candidate: 3 of 3 Period: 8.703 d  
KOI: K03097.03 Name: Kepler-431c Corr: 0.817

Kp: 11.97 R\*: 1.08 Rs Teff: 6006.0 K Logg: 4.40 Fe/H: 0.070



## DV Fit Results:

Period = 8.70313 [0.00008] d  
Epoch = 140.1535 [0.0075] BKJD  
Rp/R\* = 0.0062 [0.0024]  
a/R\* = 6.22 [12.04]  
b = 0.90 [0.42]  
Seff = 189.01 [41.16]  
Teq = 945 [51] K  
Rp = 0.73 [0.31] Re  
a = 0.0850 [0.0120] AU  
Ag = 22.13 [29.52] [0.72σ]  
Teffp = 3171 [1045] K [2.13σ]

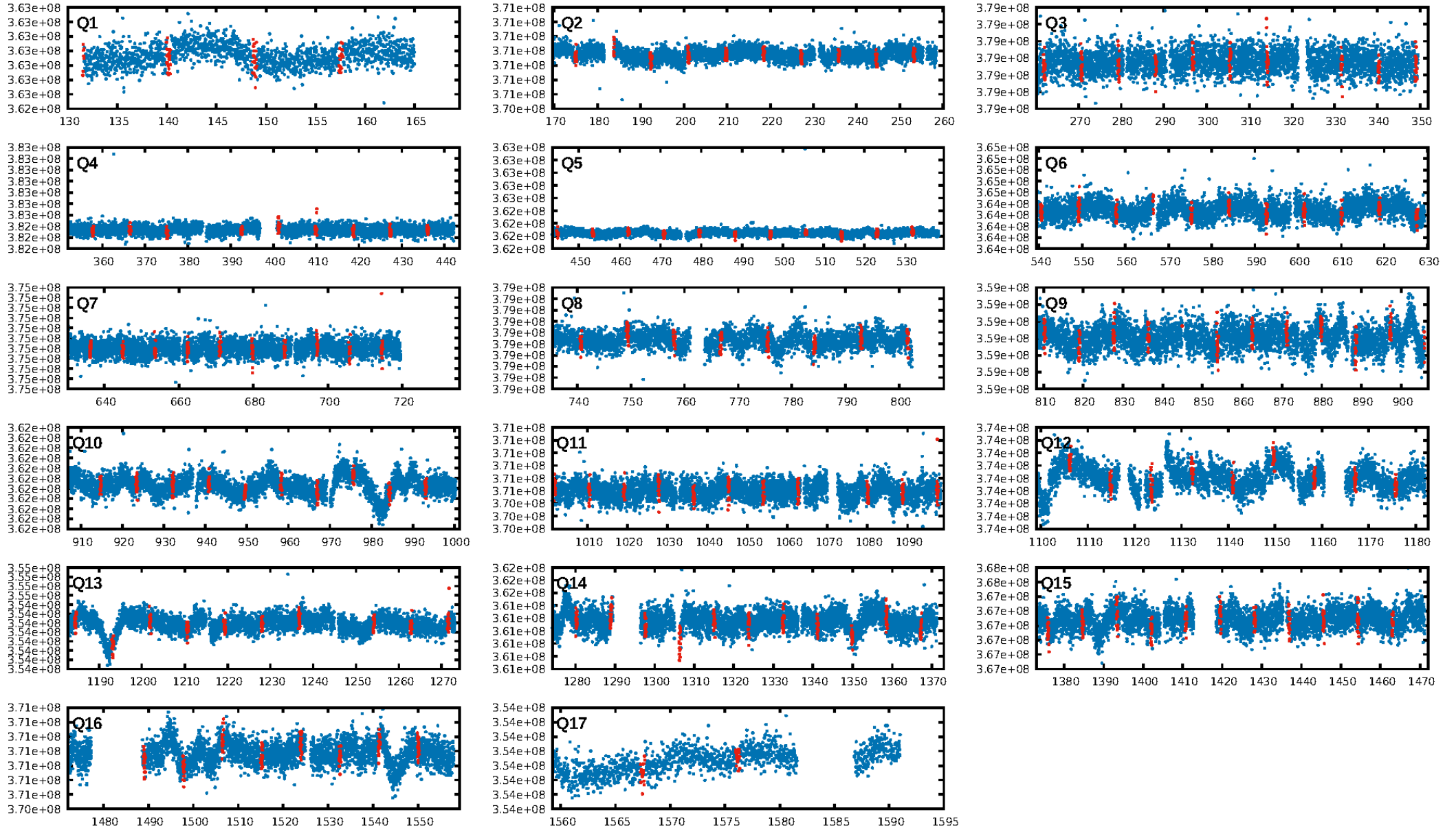
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [6.84σ]  
LongPeriod-sig: 100.0% [11.09σ]  
ModelChiSquare2-sig: 83.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.36e-23  
RollingBand-fgt: 1.00 [134/134]  
GhostDiagnostic-chr: 4.842  
Centroid-sig: 8.0%  
Centroid-so: 1.655 arcsec [1.36σ]  
OotOffset-rm: 1.462 arcsec [1.96σ]  
KicOffset-rm: 1.516 arcsec [2.05σ]  
OotOffset-st: 2/3/4/4 [13]  
KicOffset-st: 2/3/4/4 [13]  
DiffImageQuality-fgm: 0.54 [7/13]  
DiffImageOverlap-fno: 1.00 [17/17]

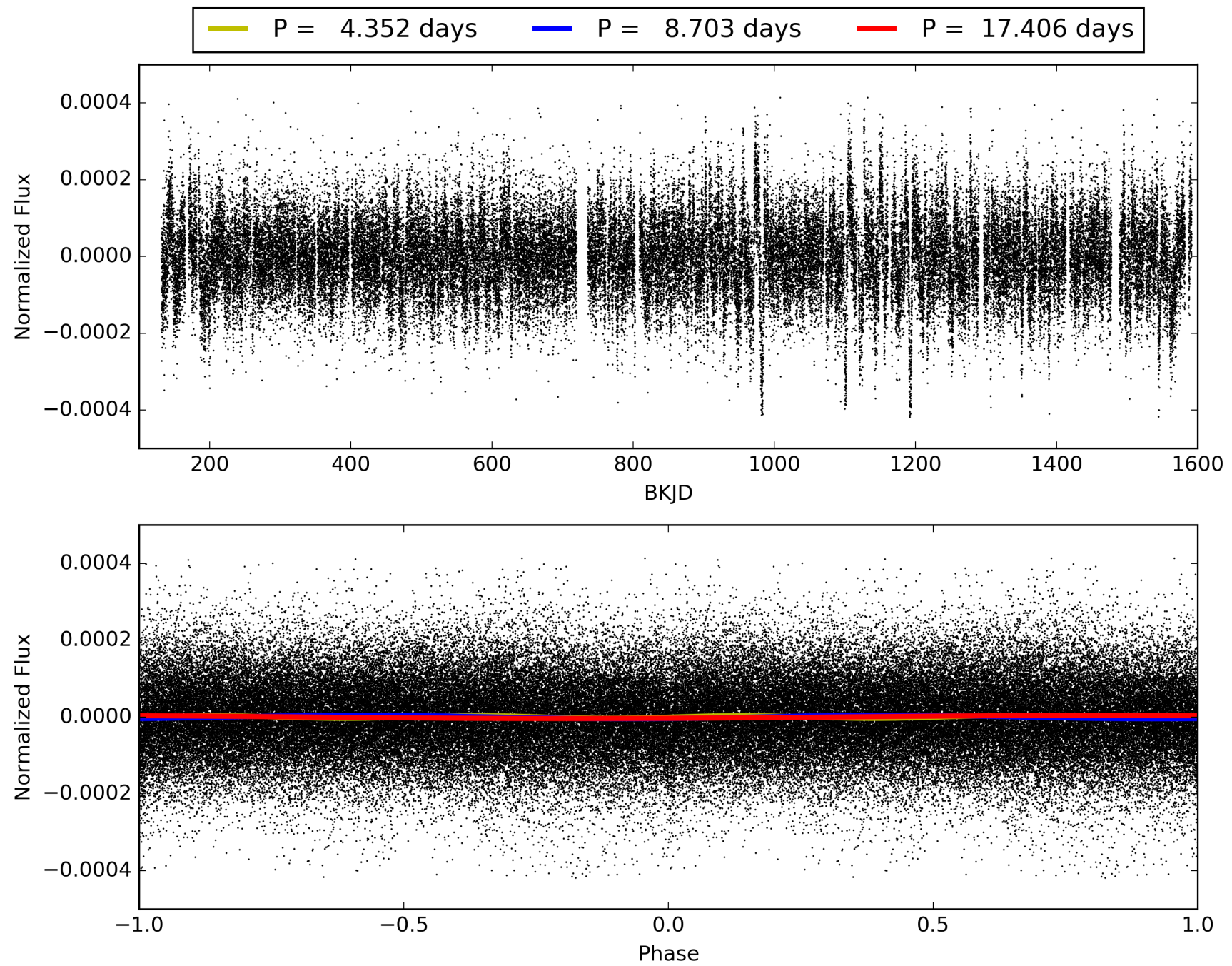
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:06:25 Z

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

# TCE 007582689-03, PDC Light Curves

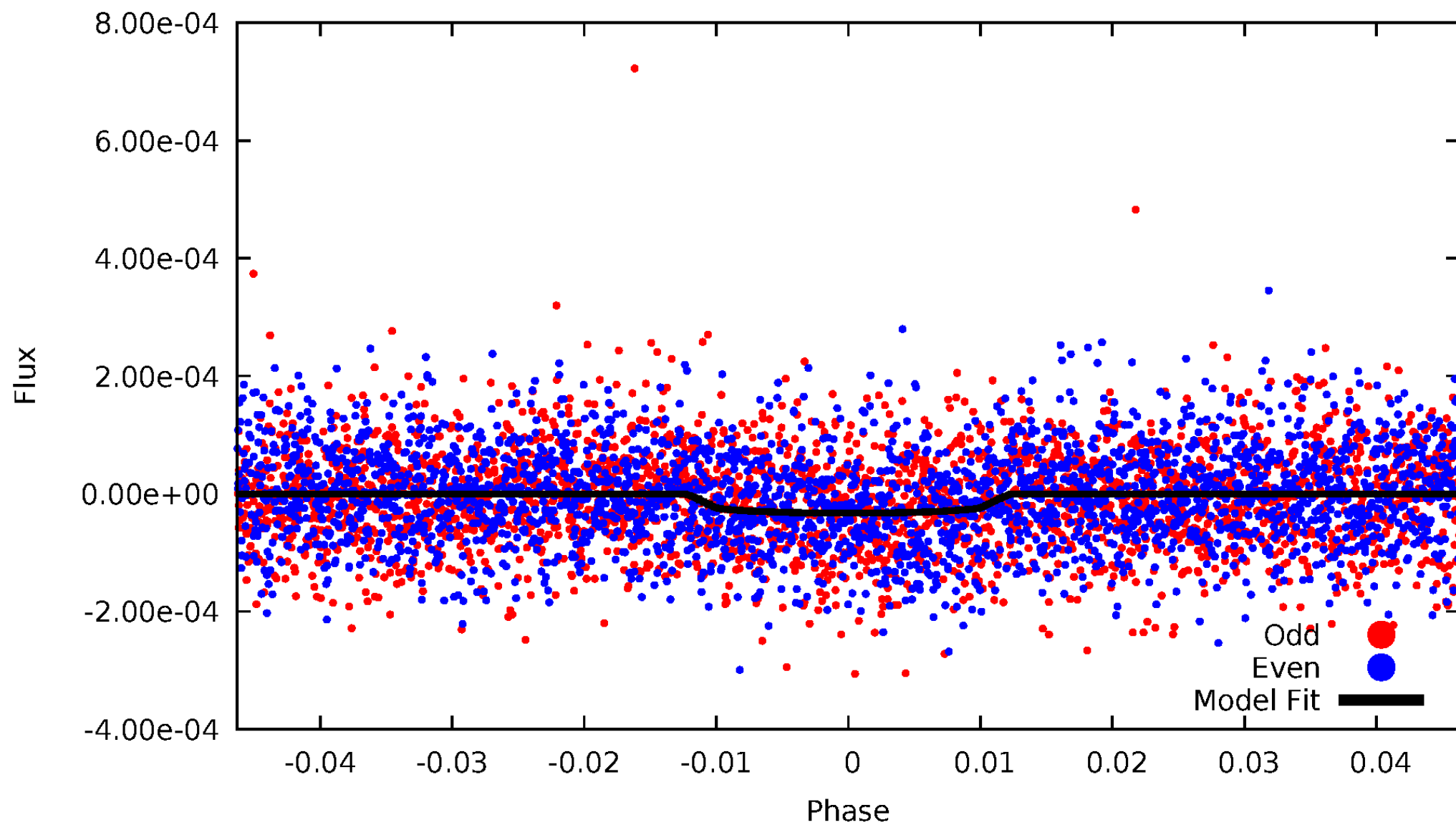


TCE 007582689-03



# DV Odd/Even

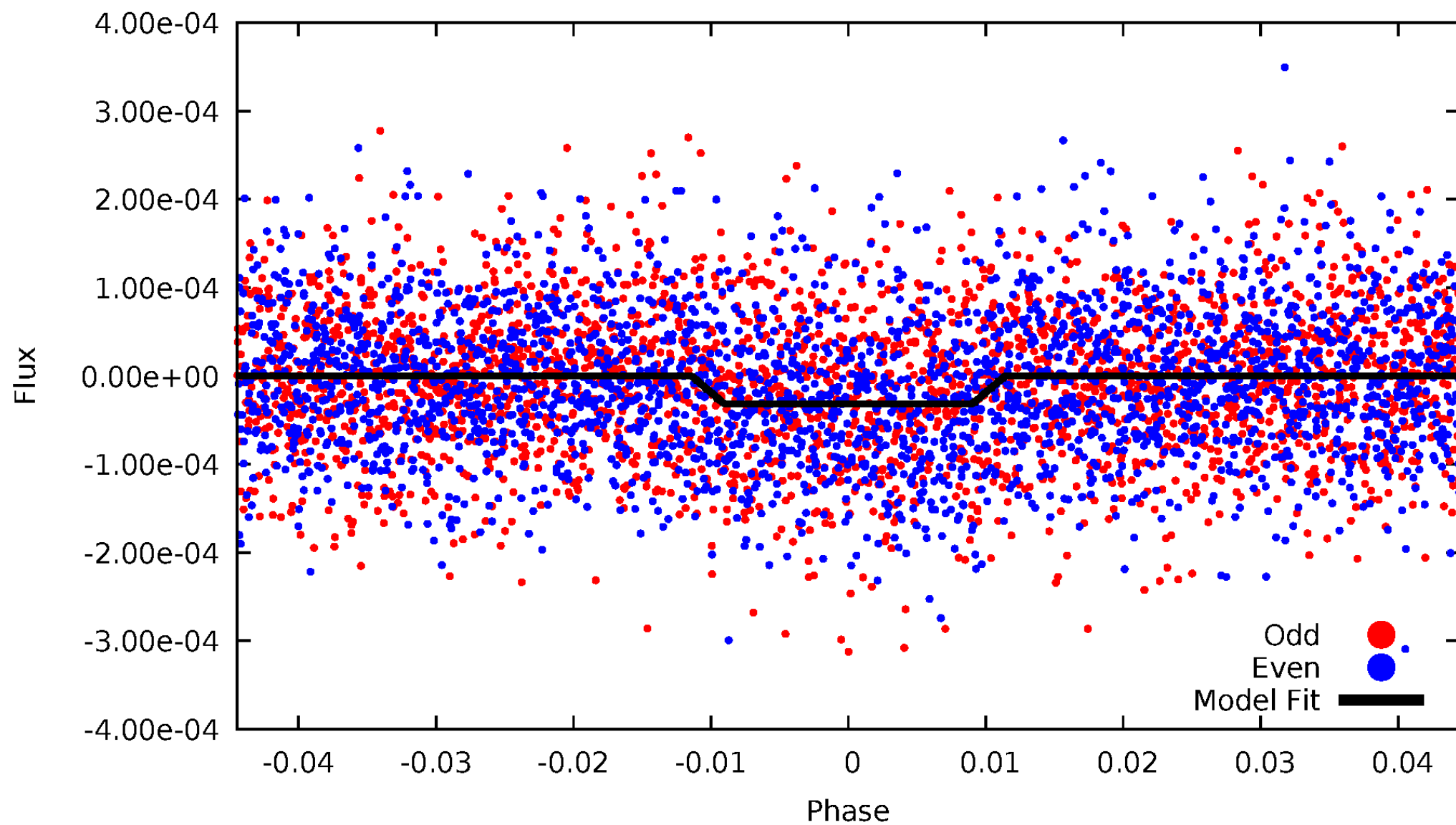
TCE 007582689-03





# ALT Odd/Even

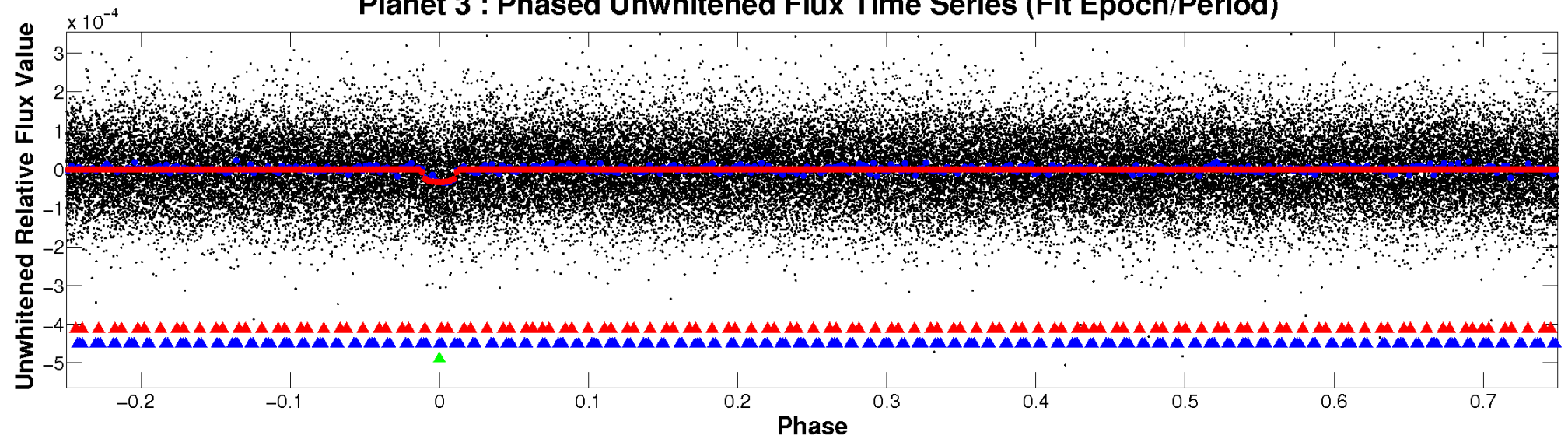
TCE 007582689-03



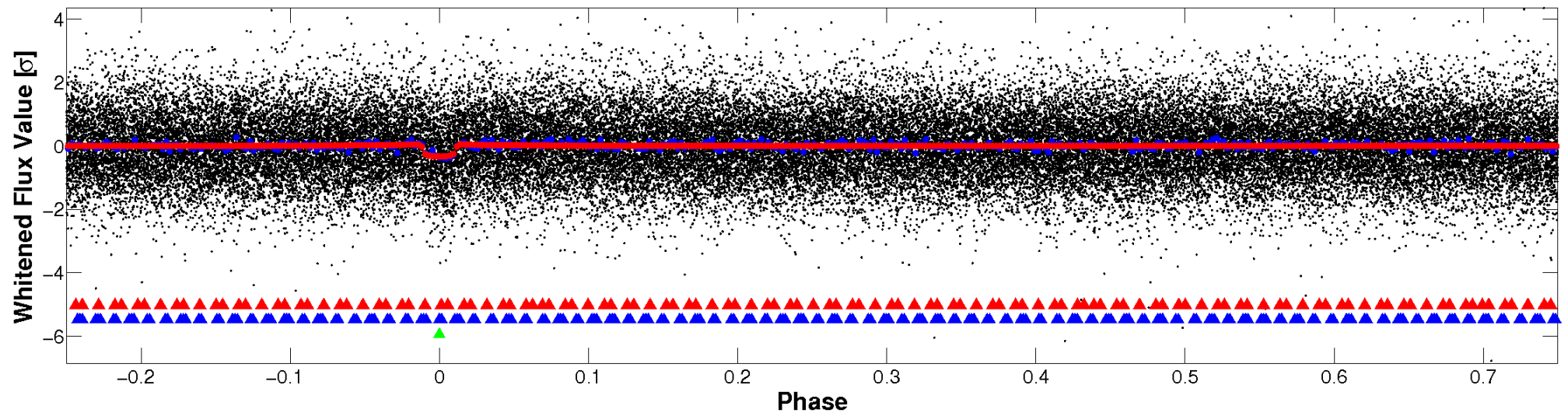


# Non-Whitened Vs. Whitened Light Curve

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

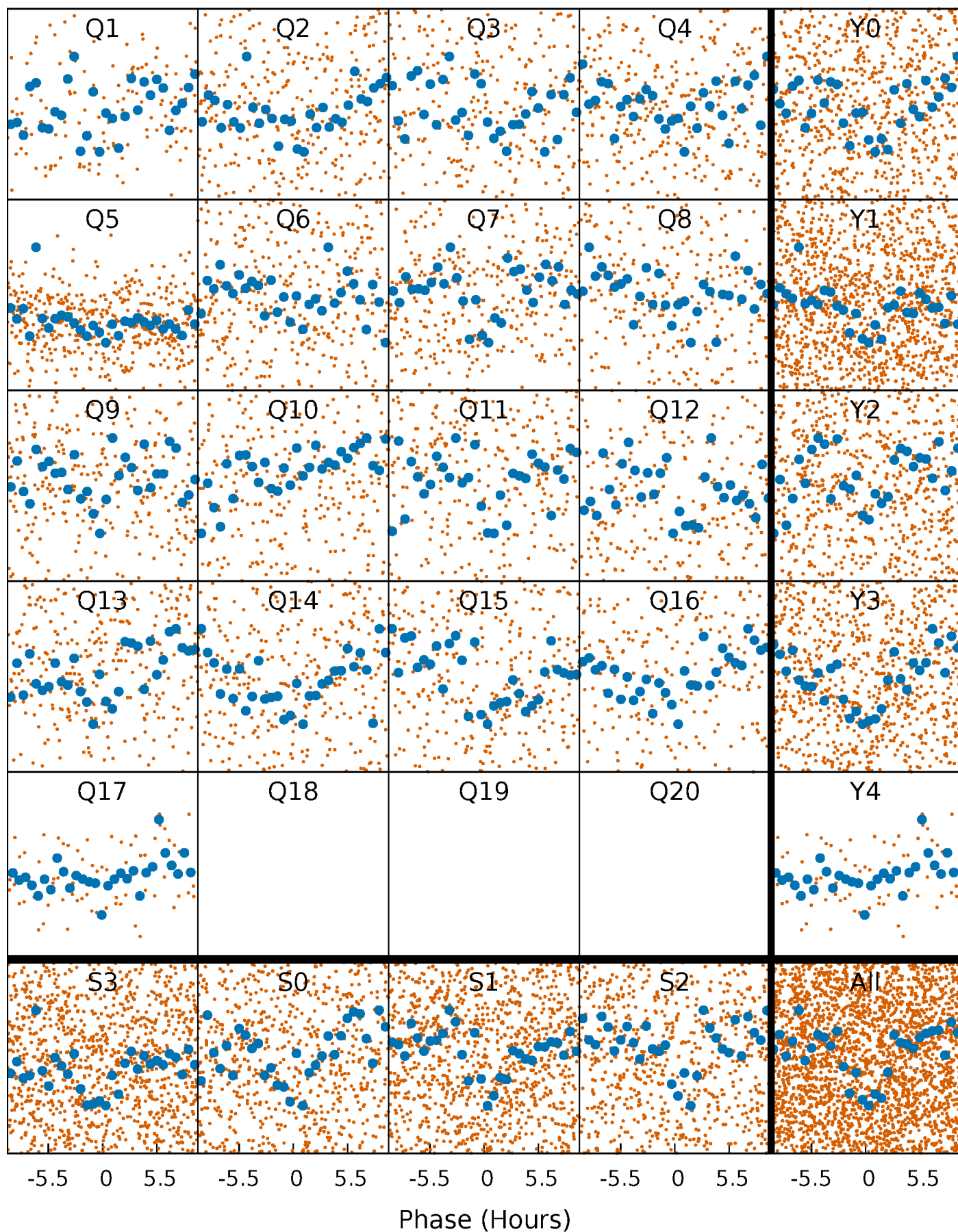


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



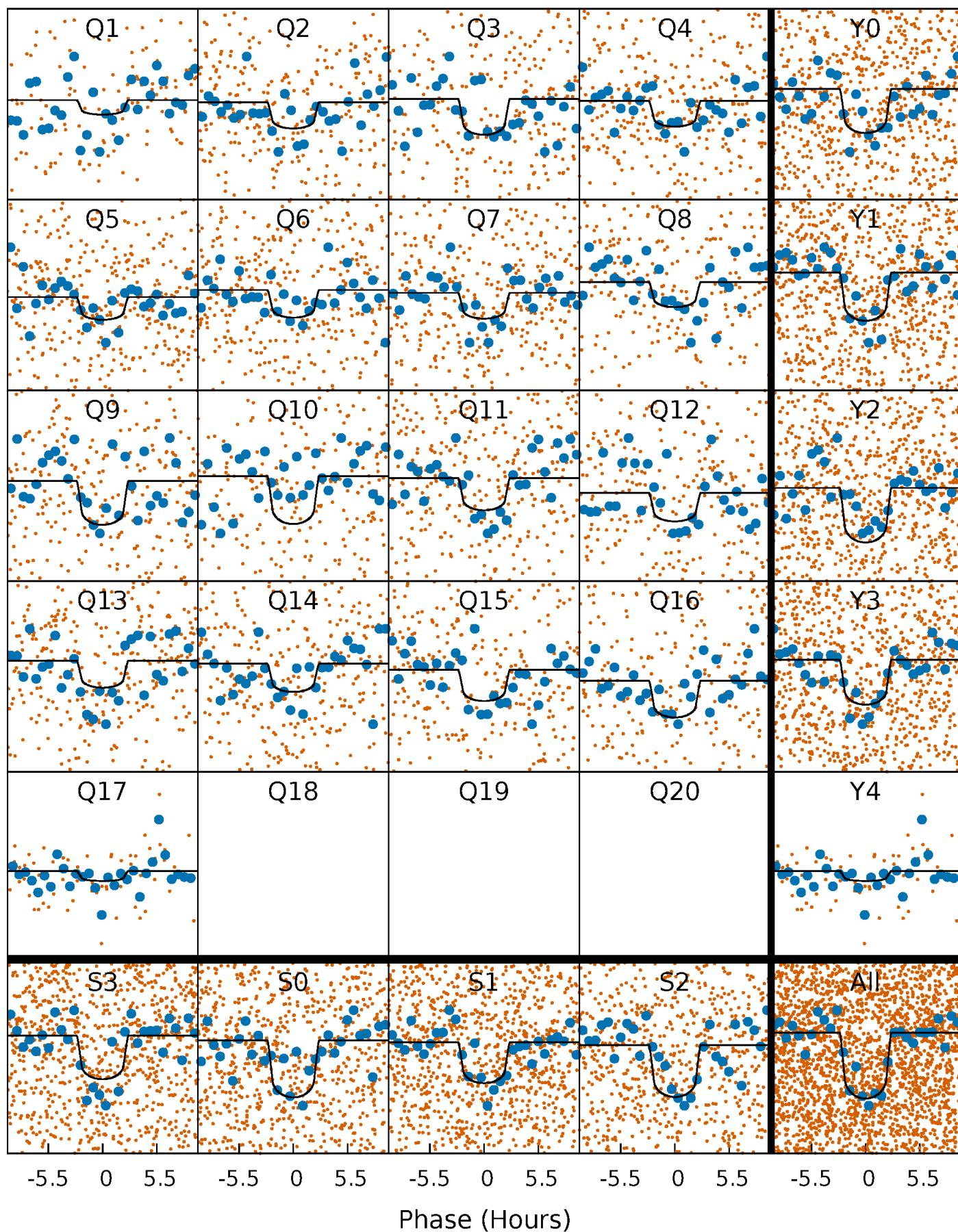
# PDC Quarter-Phased Transit Curves

TCE 007582689-03 P= 8.703127 Days  $T_0=140.153539$  (BKJD)



# DV Quarter-Phased Transit Curves

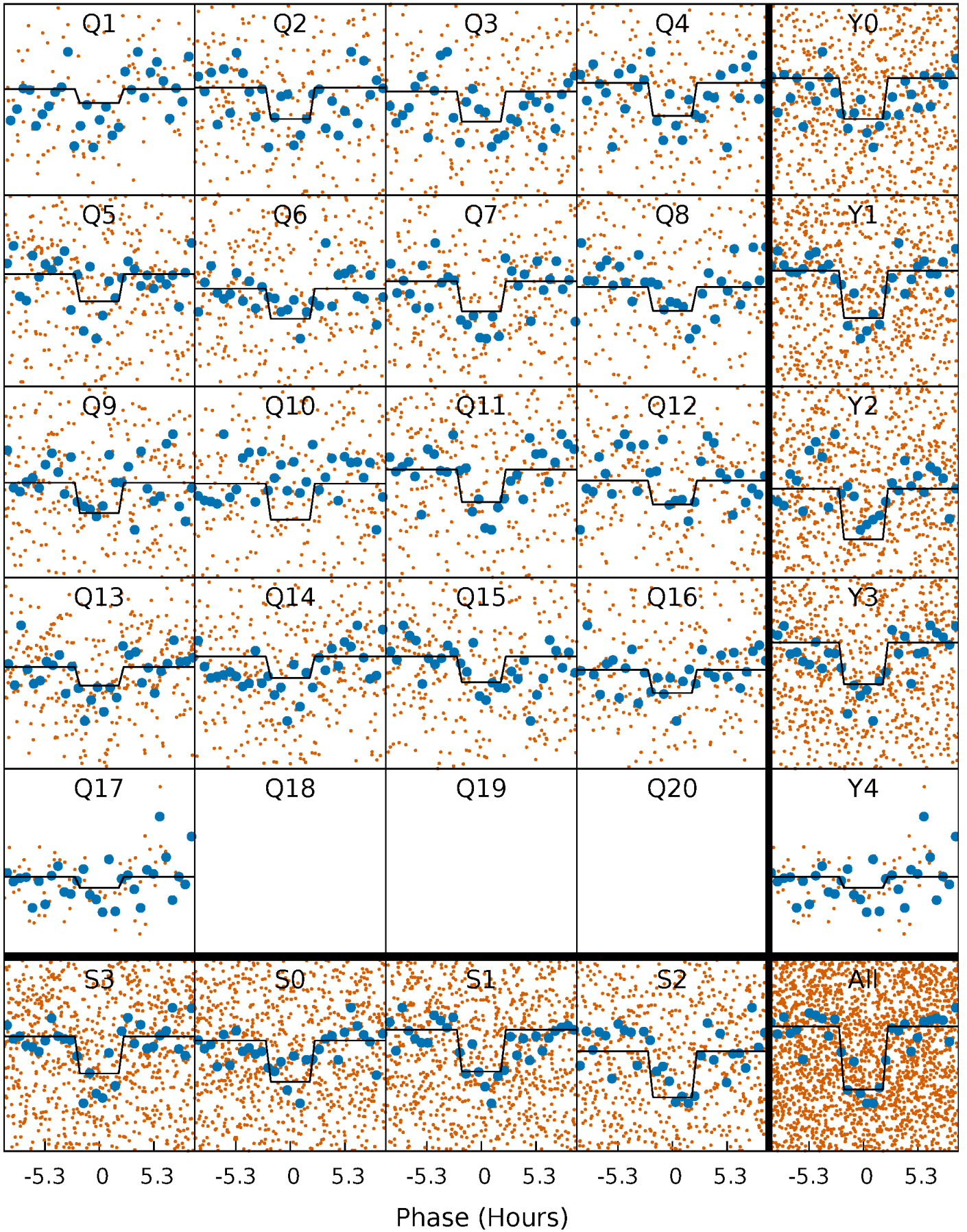
TCE 007582689-03 P= 8.703127 Days  $T_0=140.153539$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

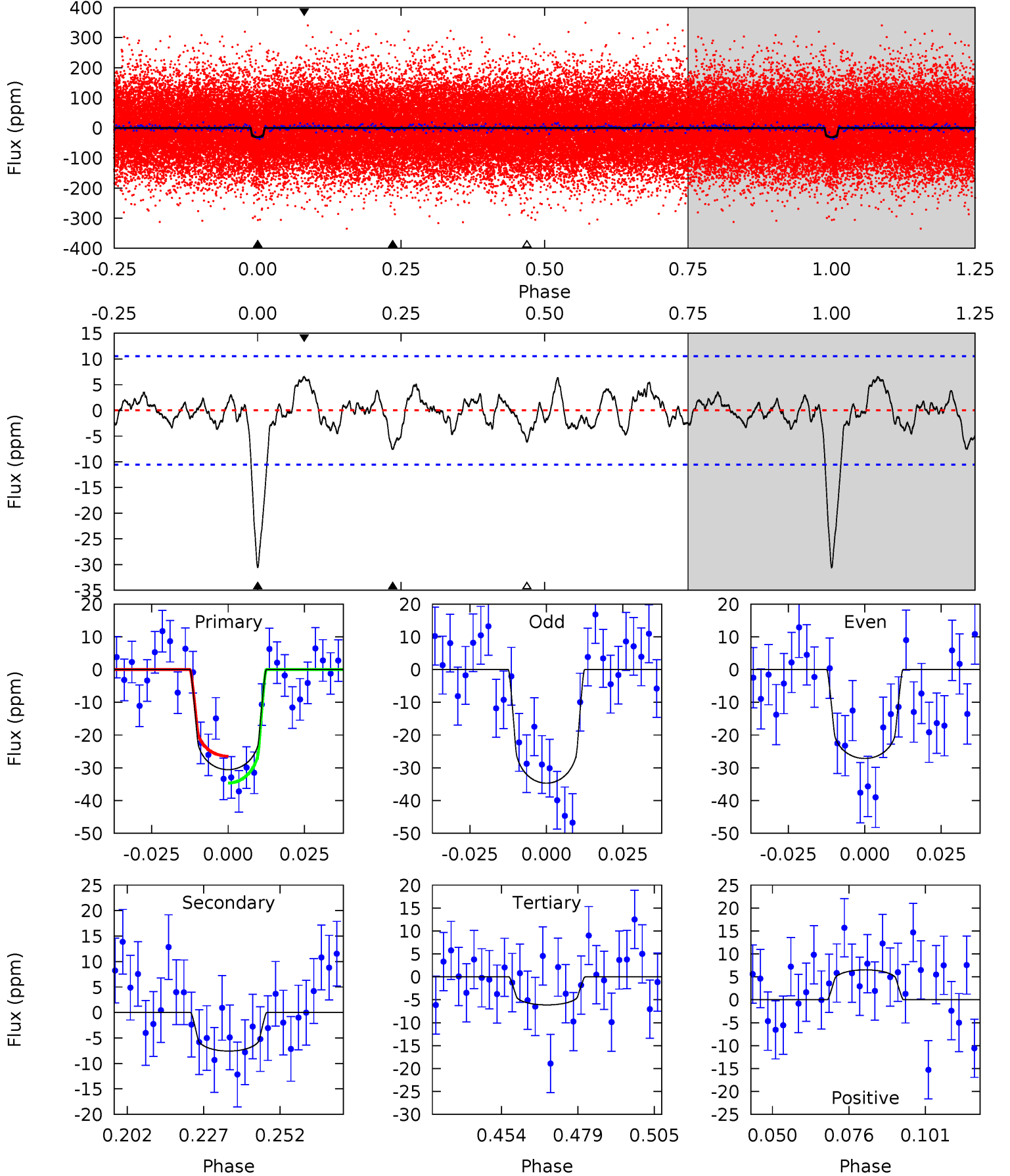
TCE 007582689-03 P= 8.703042 Days  $T_0=140.161330$  (BKJD)



# DV Model-Shift Uniqueness Test

007582689-03, P = 8.703127 Days, E = 131.450412 Days

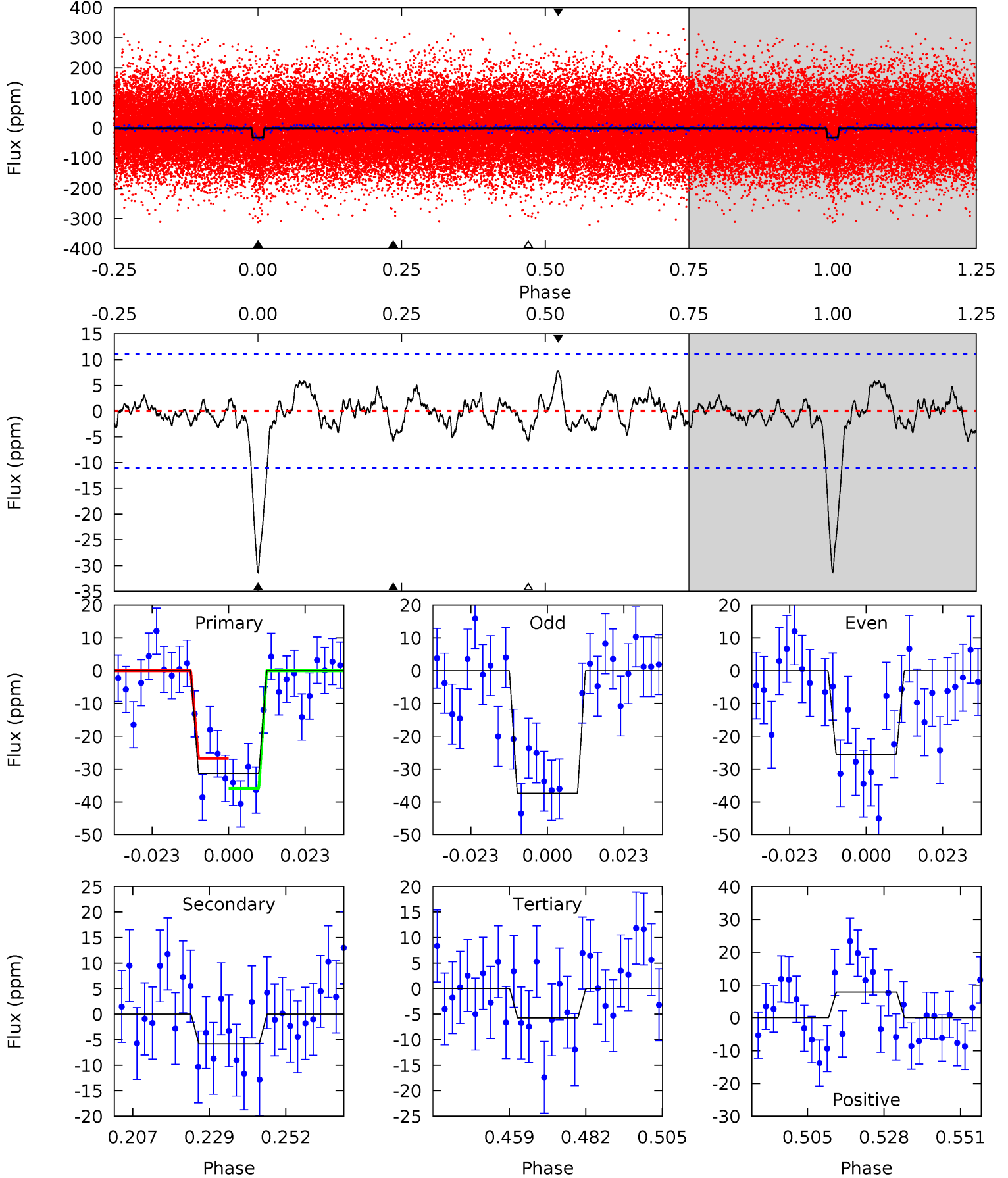
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	3.48	2.81	3.00	4.85	2.24	1.14	11.2	11.0	0.67	0.48	1.74	1.03	0.18	1.88



# Alt Model-Shift Uniqueness Test

007582689-03, P = 8.703042 Days, E = 131.458288 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	2.55	2.53	3.46	4.86	2.27	1.03	11.3	10.3	0.02	-0.91	2.62	0.94	0.20	2.00



### Stellar Parameters For KIC 007582689

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$6006^{+72}_{-84}$	$4.403^{+0.054}_{-0.117}$	$0.070^{+0.150}_{-0.150}$	$1.082^{+0.178}_{-0.076}$	$1.081^{+0.078}_{-0.070}$	$1.201^{+0.248}_{-0.427}$
	+1%/-1%	+1%/-3%	+214%/-214%	+16%/-7%	+7%/-6%	+21%/-36%
Source	SPE84	SPE84	SPE84	DSEP		

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

### Secondary Eclipse Parameters for KIC 007582689-03 / KOI 3097.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-8 \pm 2$	$0.74^{+0.30}_{-0.28}$	$1328^{+54}_{-38}$	$4248^{+885}_{-546}$	$55^{+87}_{-29}$
Alt.	$-6 \pm 2$	$0.68^{+0.29}_{-0.29}$	$1329^{+54}_{-37}$	$4162^{+1060}_{-593}$	$49^{+100}_{-29}$

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



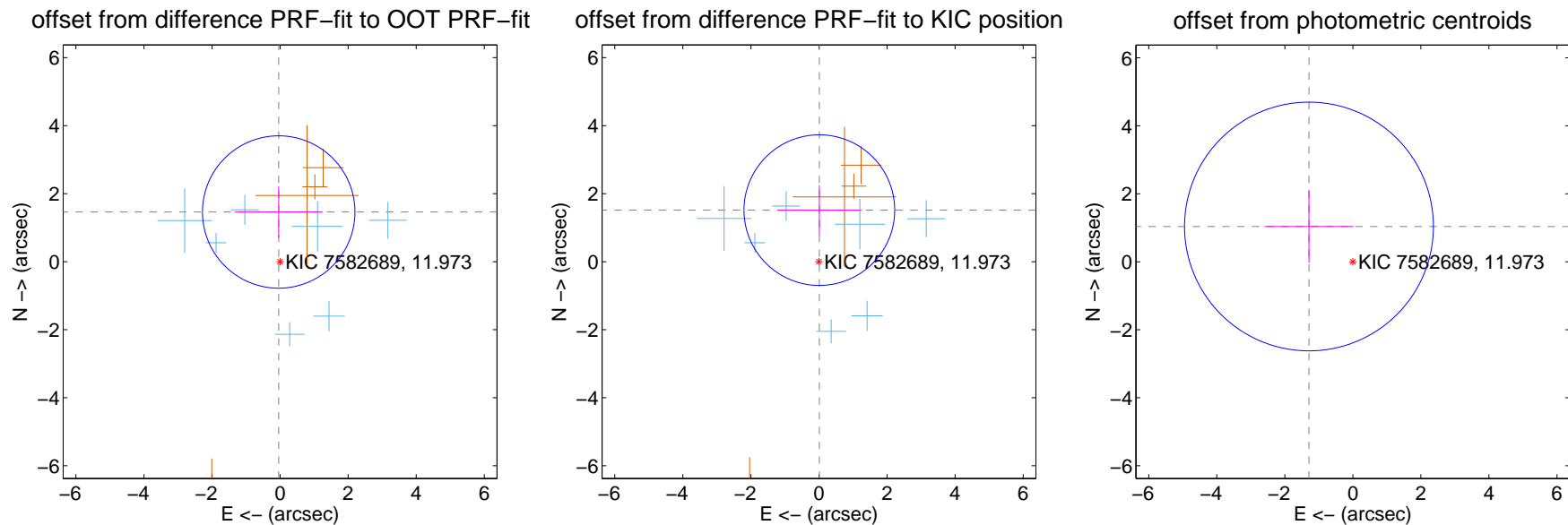
## DV Centroid Data

Supplemental centroid analysis for 007582689-03. **Kepler magnitude: 11.97.** Transit SNR 10.44

There are 7 quarters with good PRF difference image offsets

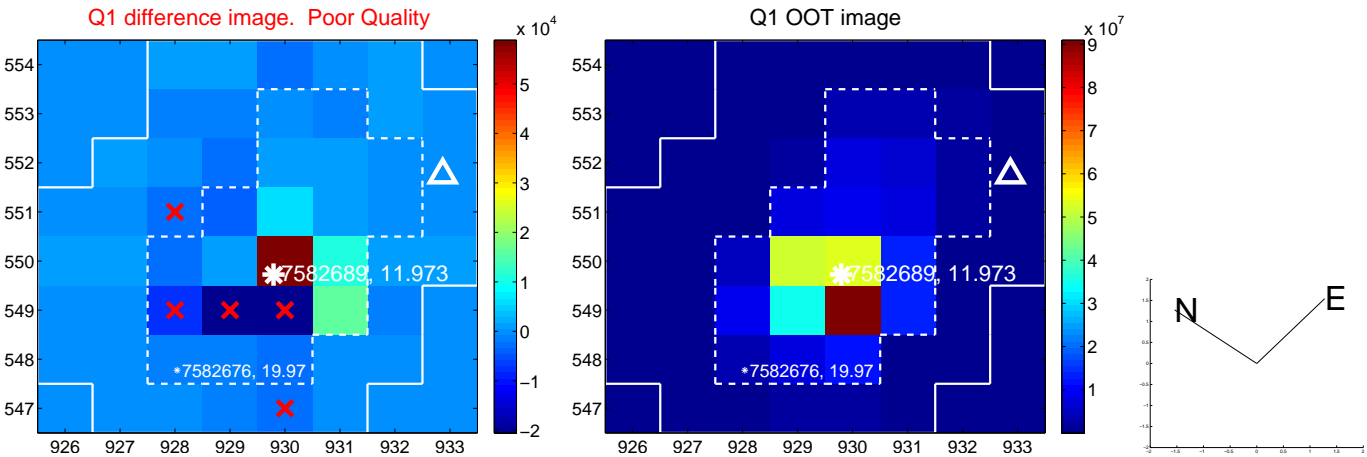
The direct PRF centroid is offset from the target star catalog position by about 0.00 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.462 \pm 0.747$	1.96	$0.041 \pm 1.291$	$1.461 \pm 0.757$
PRF-fit source offset from KIC position	$1.516 \pm 0.738$	2.05	$-0.010 \pm 1.237$	$1.516 \pm 0.735$
photometric centroid source offset	$1.66 \pm 1.22$	1.36	$1.29 \pm 1.31$	$1.04 \pm 1.07$

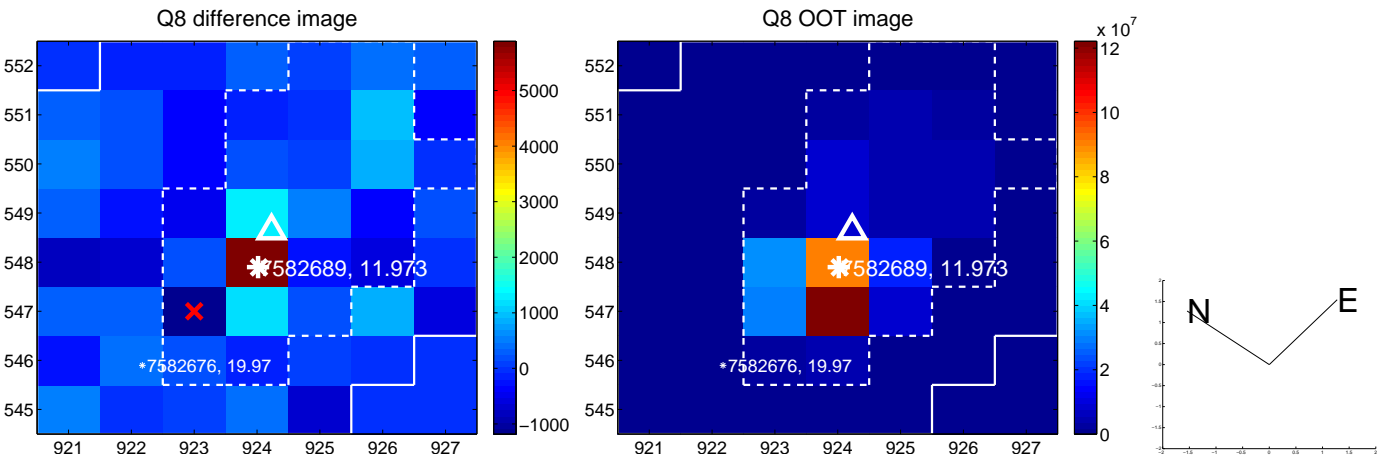
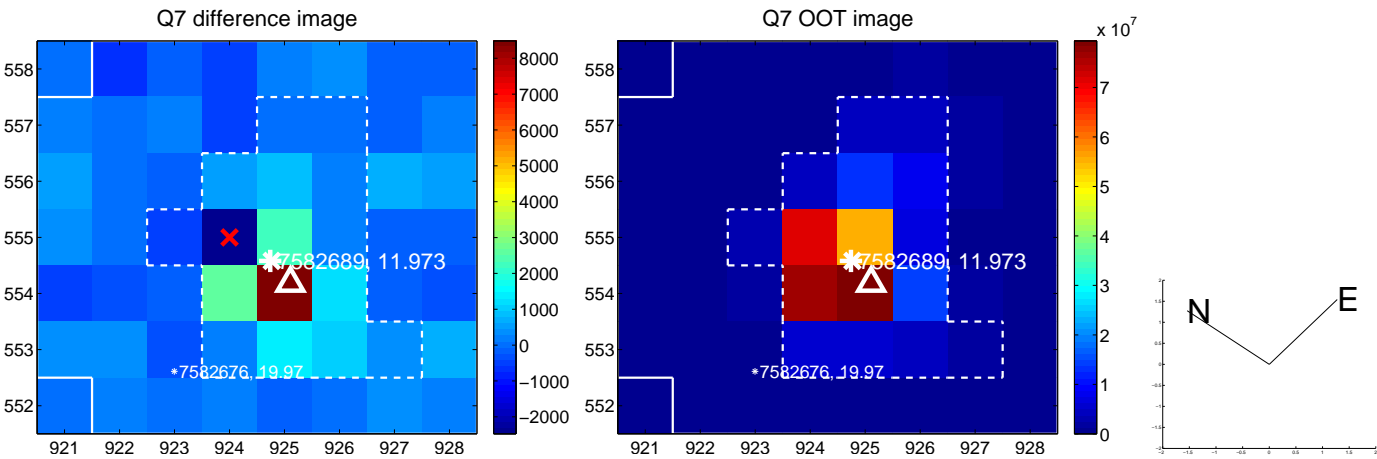
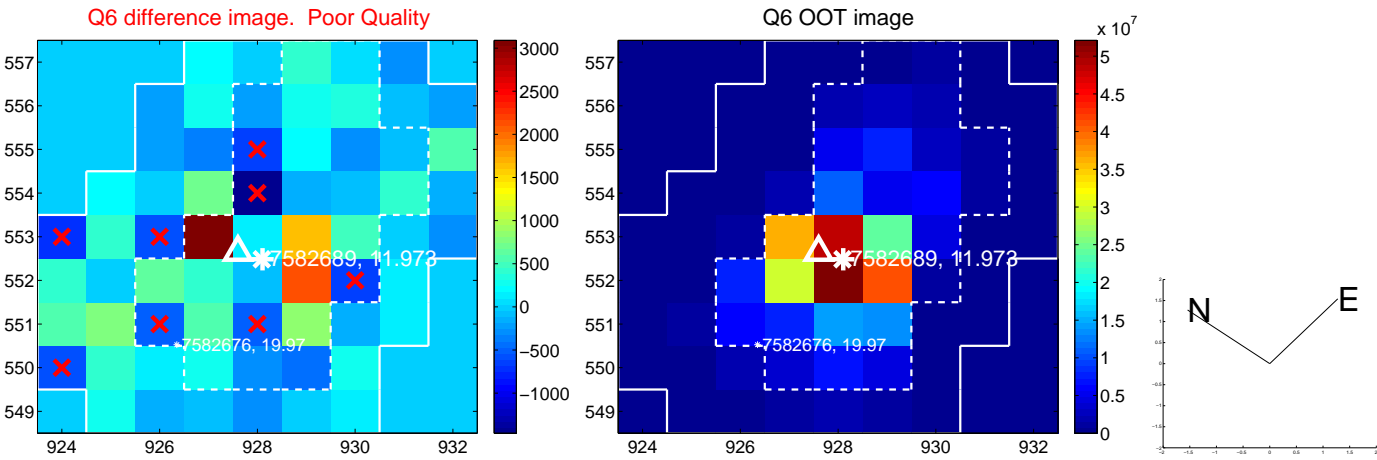
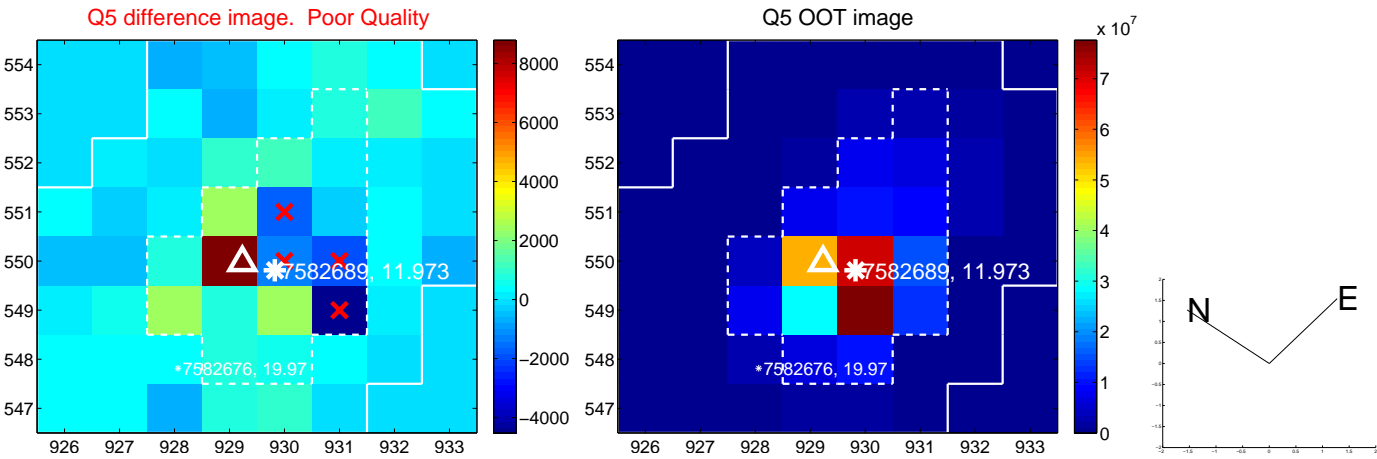


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

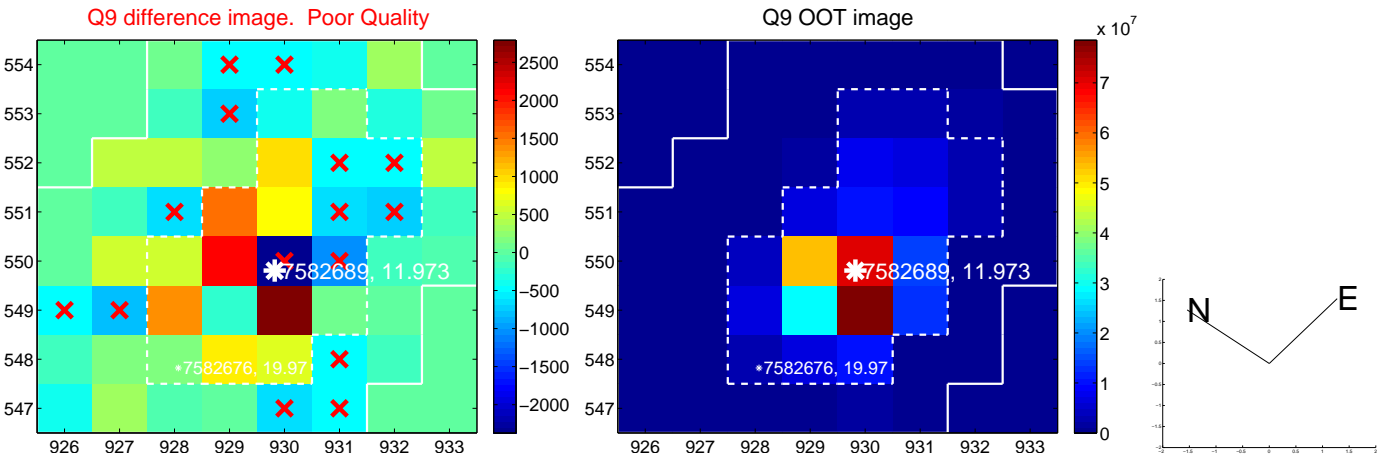
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



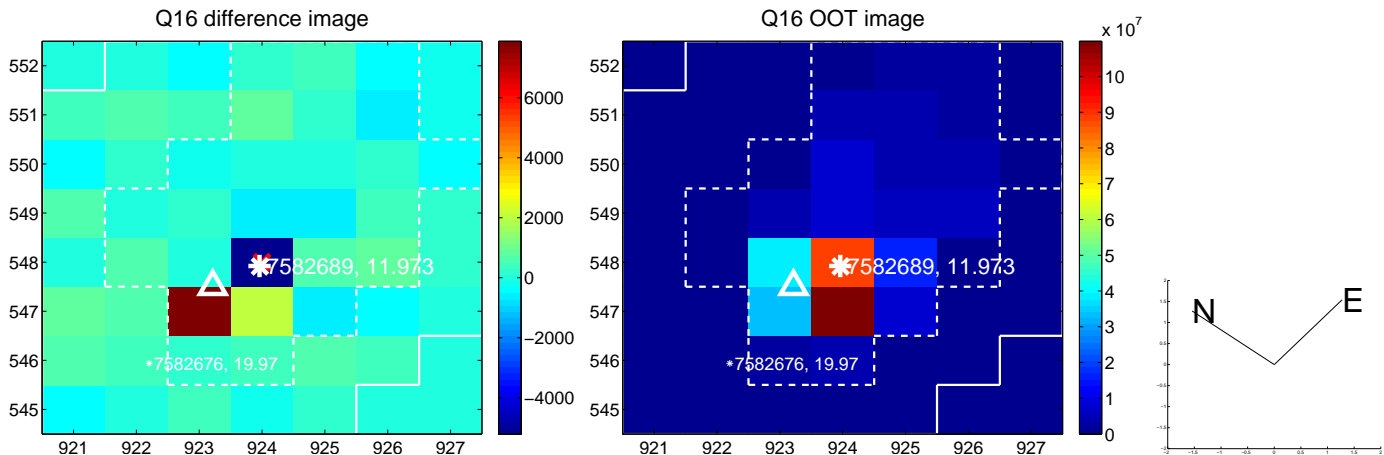
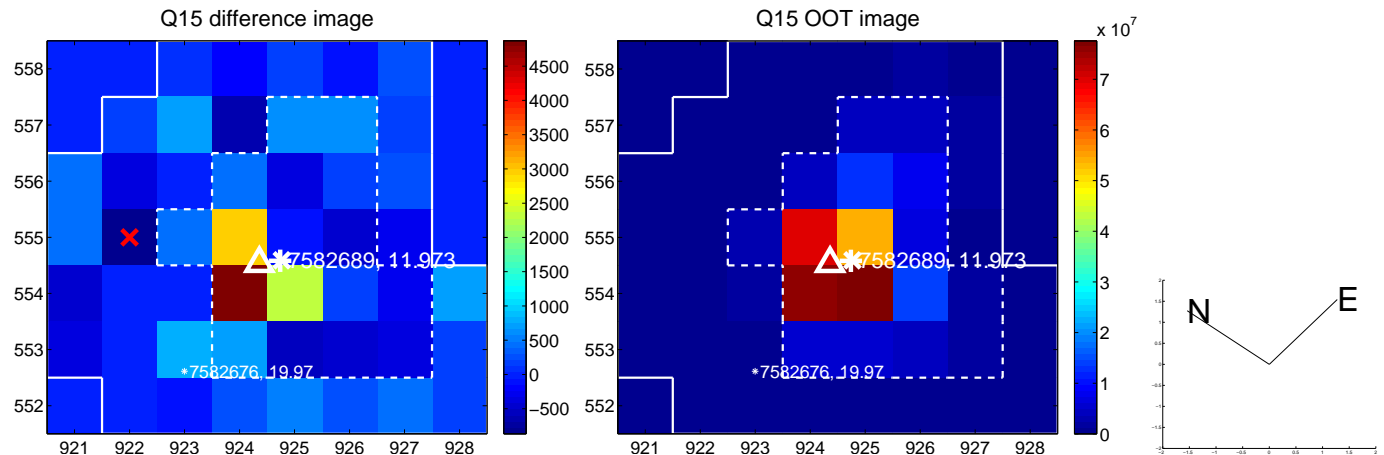
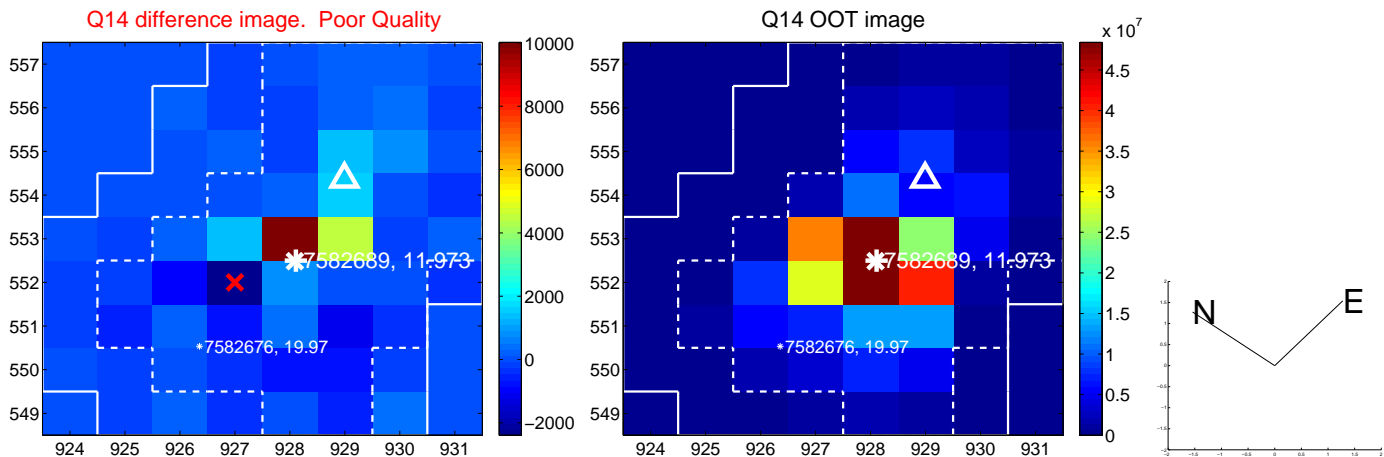
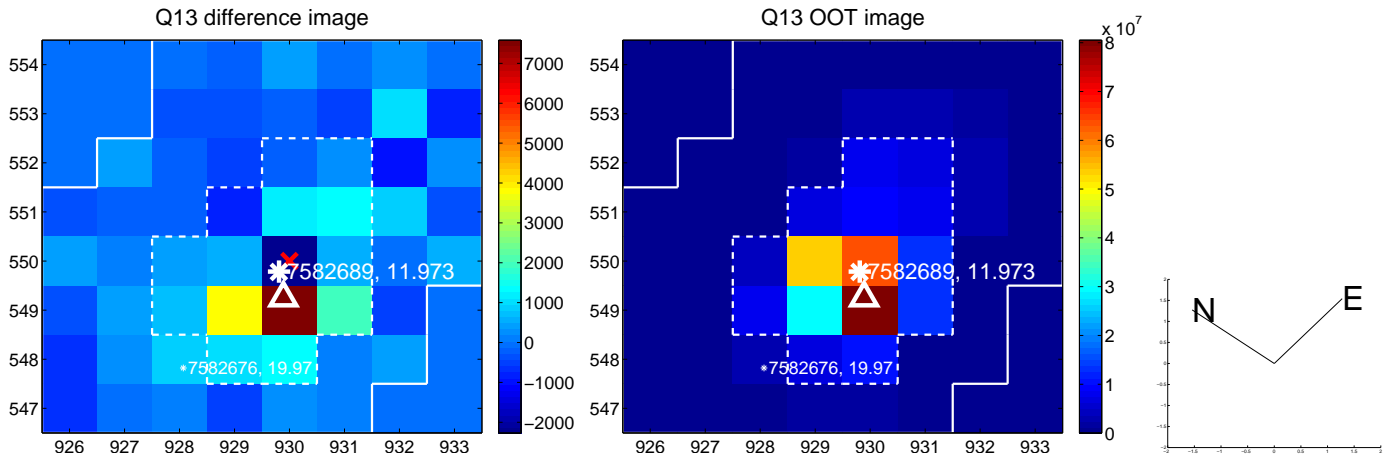
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



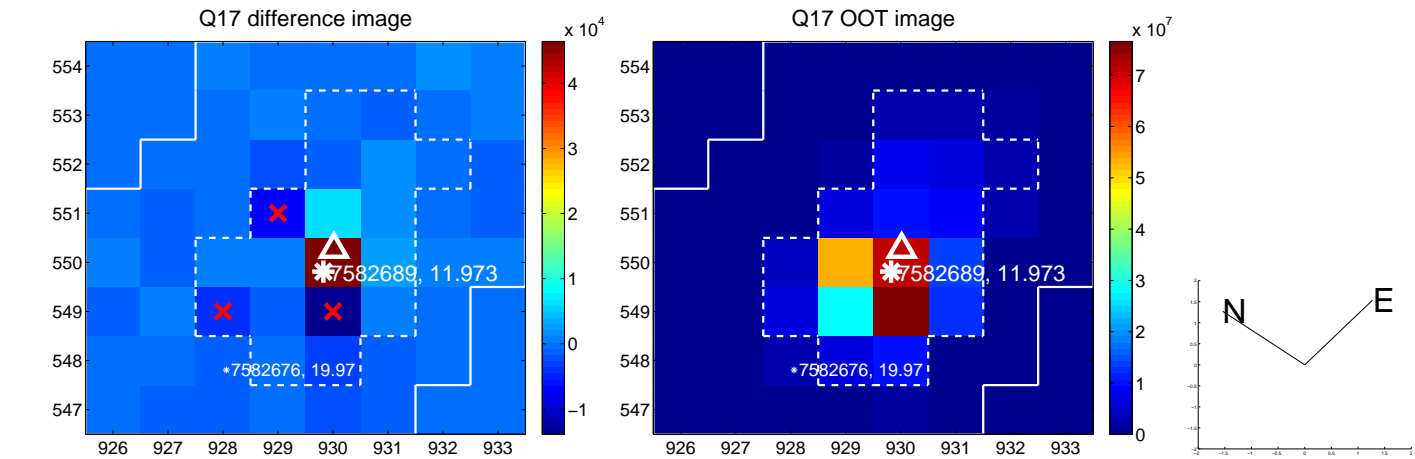
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



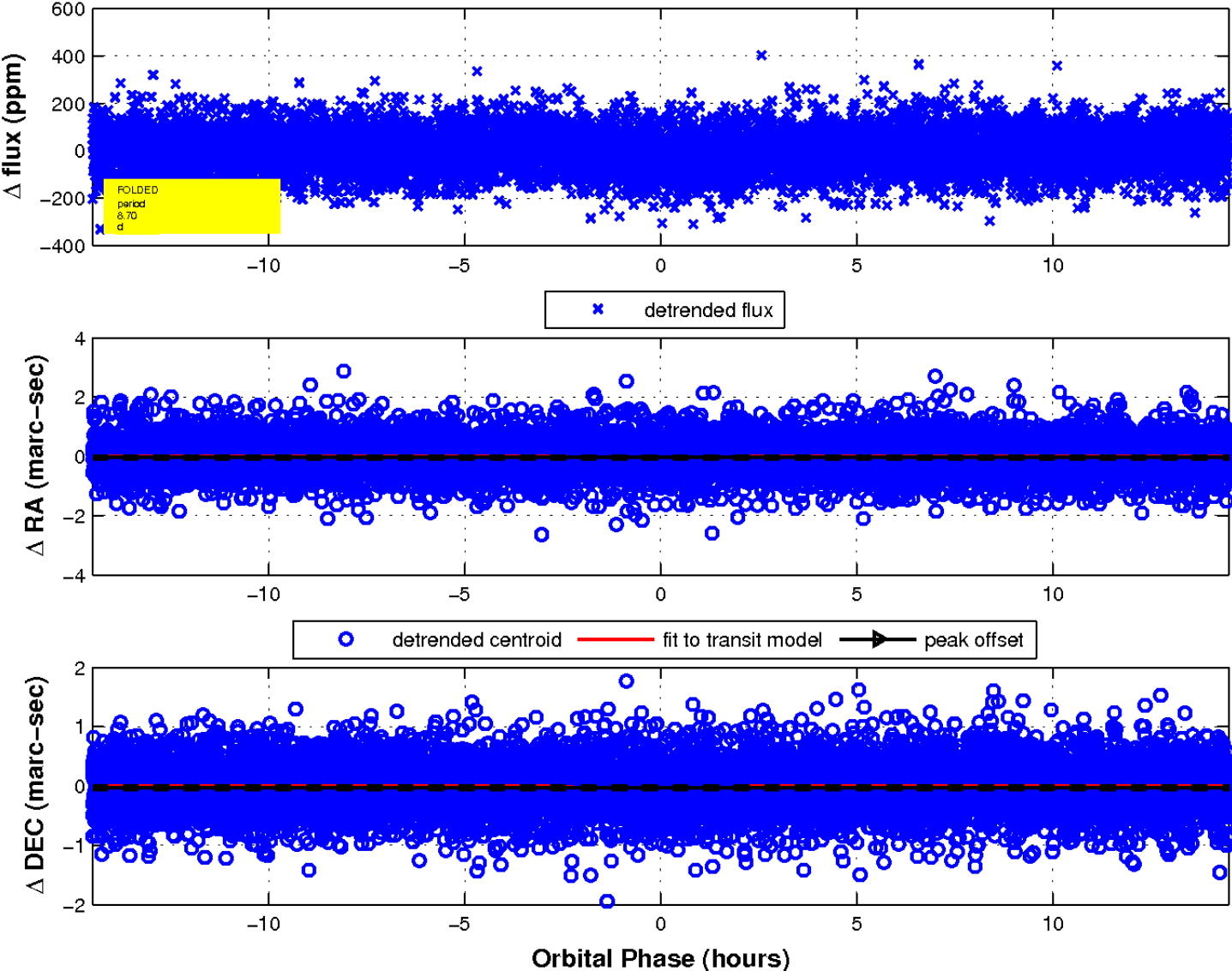
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

