

# KIC 008589526

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008589526-01	OBS	No	4.254168	133.079701	34.6	15.964	12.9	10.4	3.52	6309	2.42	5026.47
008589526-02	OBS	No	642.447956	212.200155	151.7	8.476	9.6	5.1	3.52	6309	4.94	6.25
008589526-03	OBS	No	114.630115	209.246884	170.4	7.153	8.8	8.0	3.52	6309	8.31	62.22
008589526-04	OBS	No	480.642300	318.856889	181.2	16.033	8.7	7.2	3.52	6309	5.05	9.20
008589526-05	OBS	No	174.602635	283.418289	171.5	3.739	7.8	8.1	3.52	6309	5.83	35.50
008589526-06	OBS	No	176.727621	169.486699	276.9	2.426	8.2	8.8	3.52	6309	6.86	34.94
008589526-07	OBS	No	94.024694	132.390744	198.3	3.242	7.6	8.4	3.52	6309	6.61	81.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008589526-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
008589526-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
008589526-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED
008589526-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

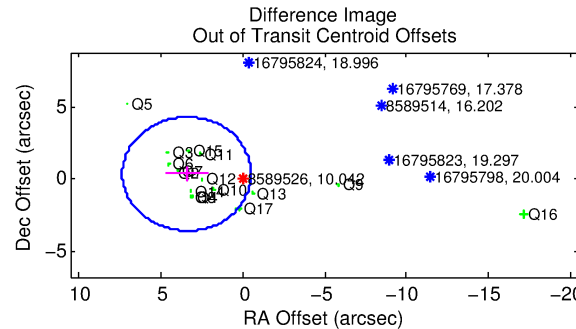
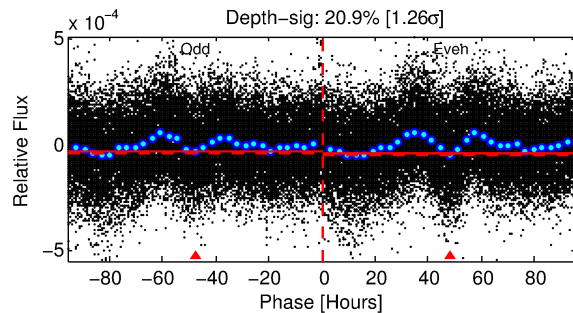
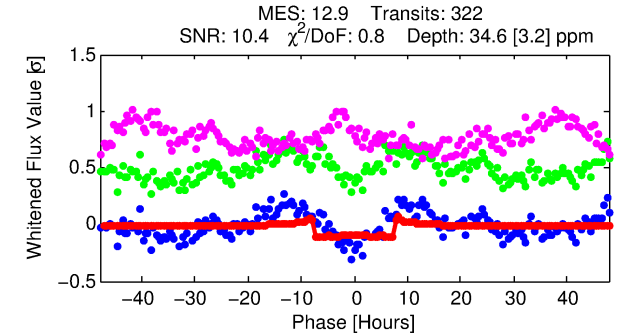
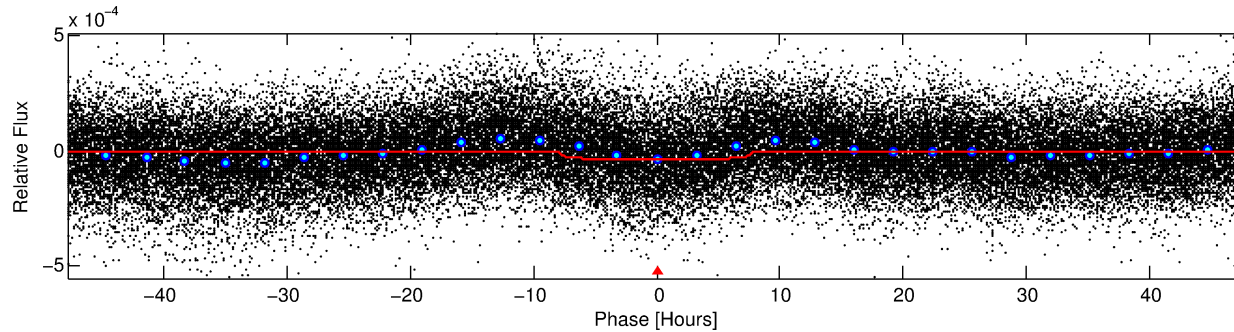
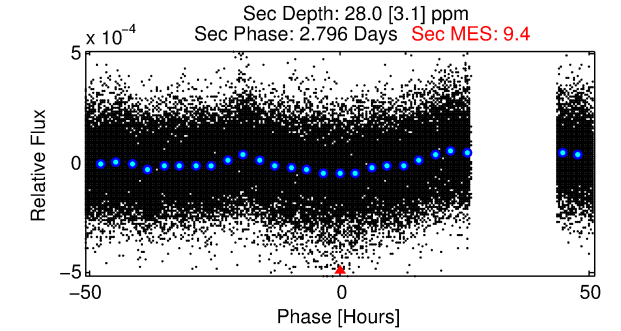
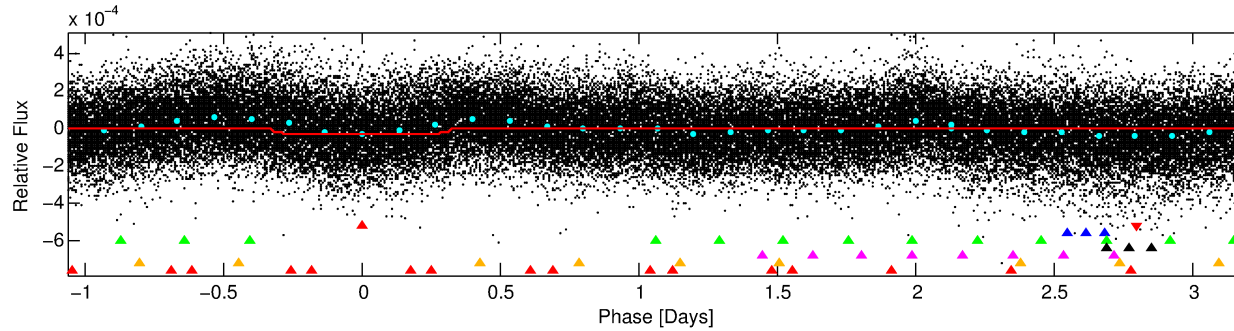
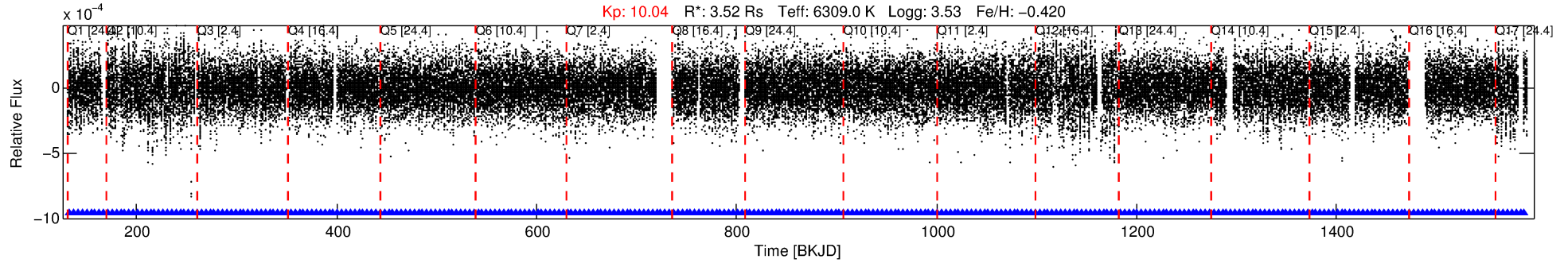
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008589526-01

No Significant Match Found

# DV One-Page Summary

KIC: 8589526 Candidate: 1 of 7 Period: 4.254 d



## DV Fit Results:

Period = 4.25417 [0.00004] d  
Epoch = 133.0797 [0.0057] BKJD  
 $R_p/R^* = 0.0063$  [0.0005]  
 $a/R^* = 1.31$  [0.17]  
 $b = 0.90$  [0.07]  
 $\text{Seff} = 5026.47$  [3351.20]  
 $T_{\text{eq}} = 2147$  [358] K  
 $R_p = 2.42$  [1.07]  $R_e$   
 $a = 0.0591$  [0.0245] AU  
 $A_g = 9.20$  [6.28] [1.30σ]  
 **$T_{\text{eff}} = 5781$  [311] K [7.66σ]**

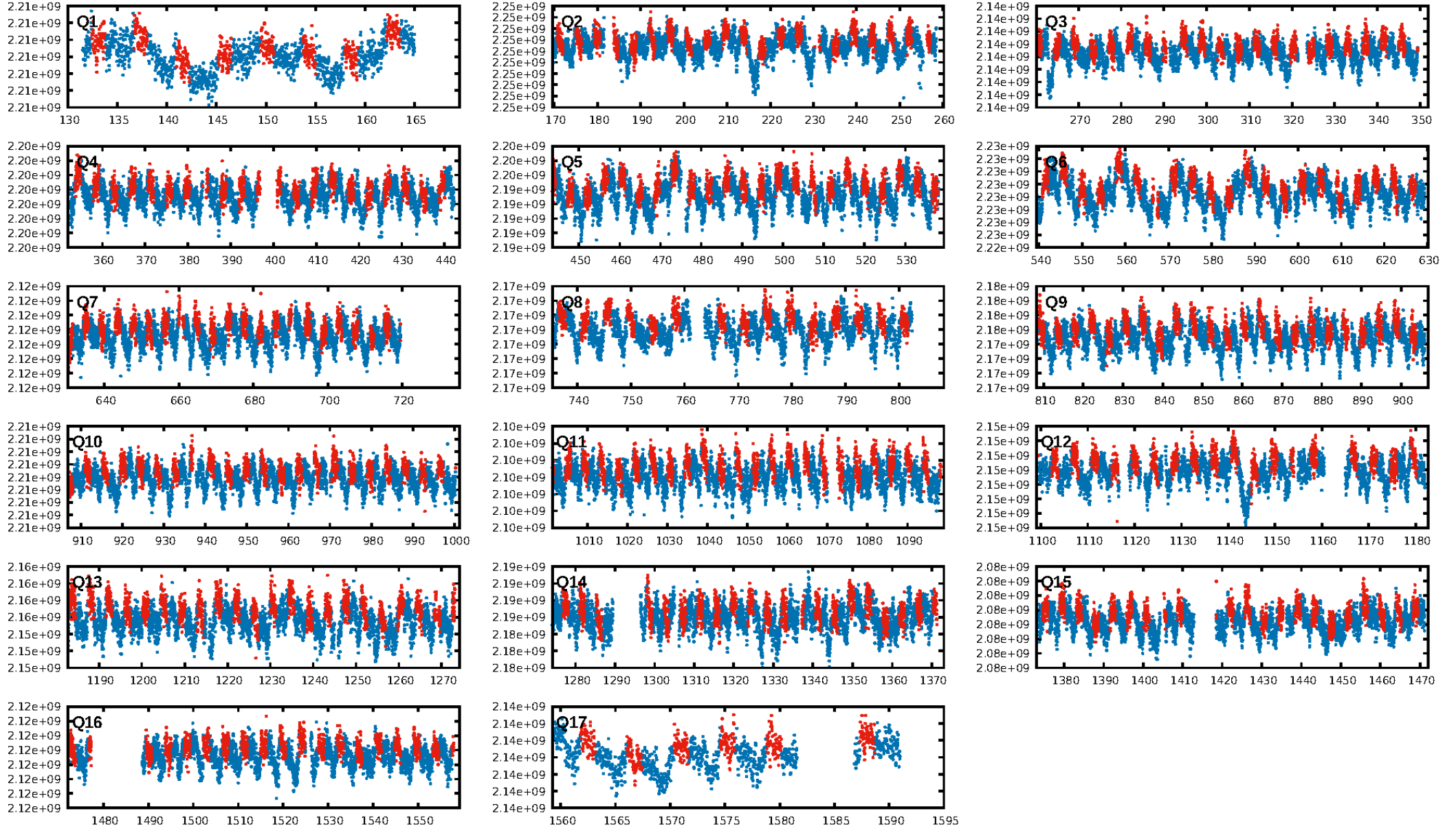
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [132.26σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 4.54e-19  
RollingBand-fgt: 1.00 [308/308]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 89.3%  
Centroid-so: 0.410 arcsec [0.61σ]  
OotOffset-rm: 3.416 arcsec [2.61σ]  
KicOffset-rm: 3.875 arcsec [2.92σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.00 [0/16]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:45:41 Z

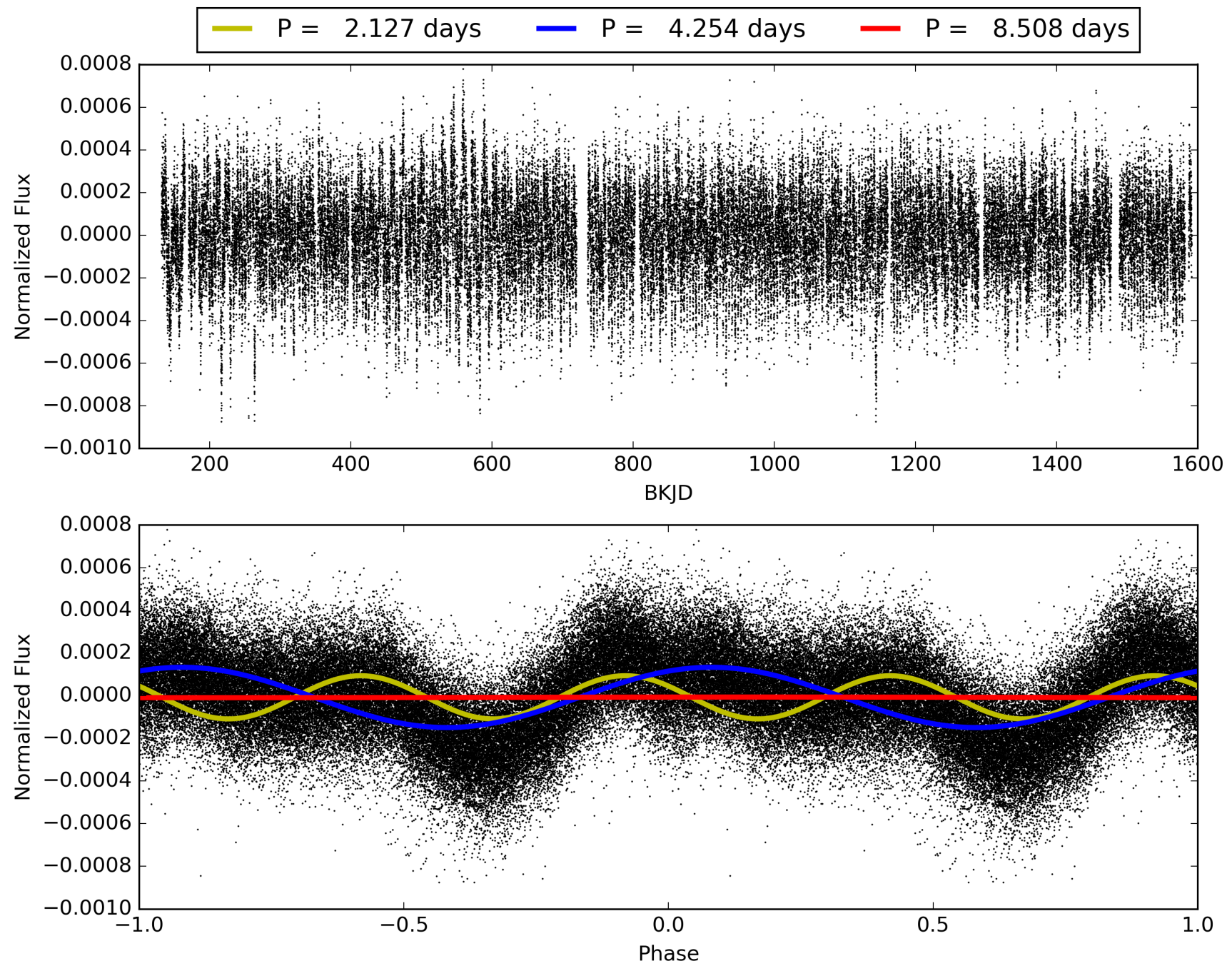
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 00589526-01, PDC Light Curves





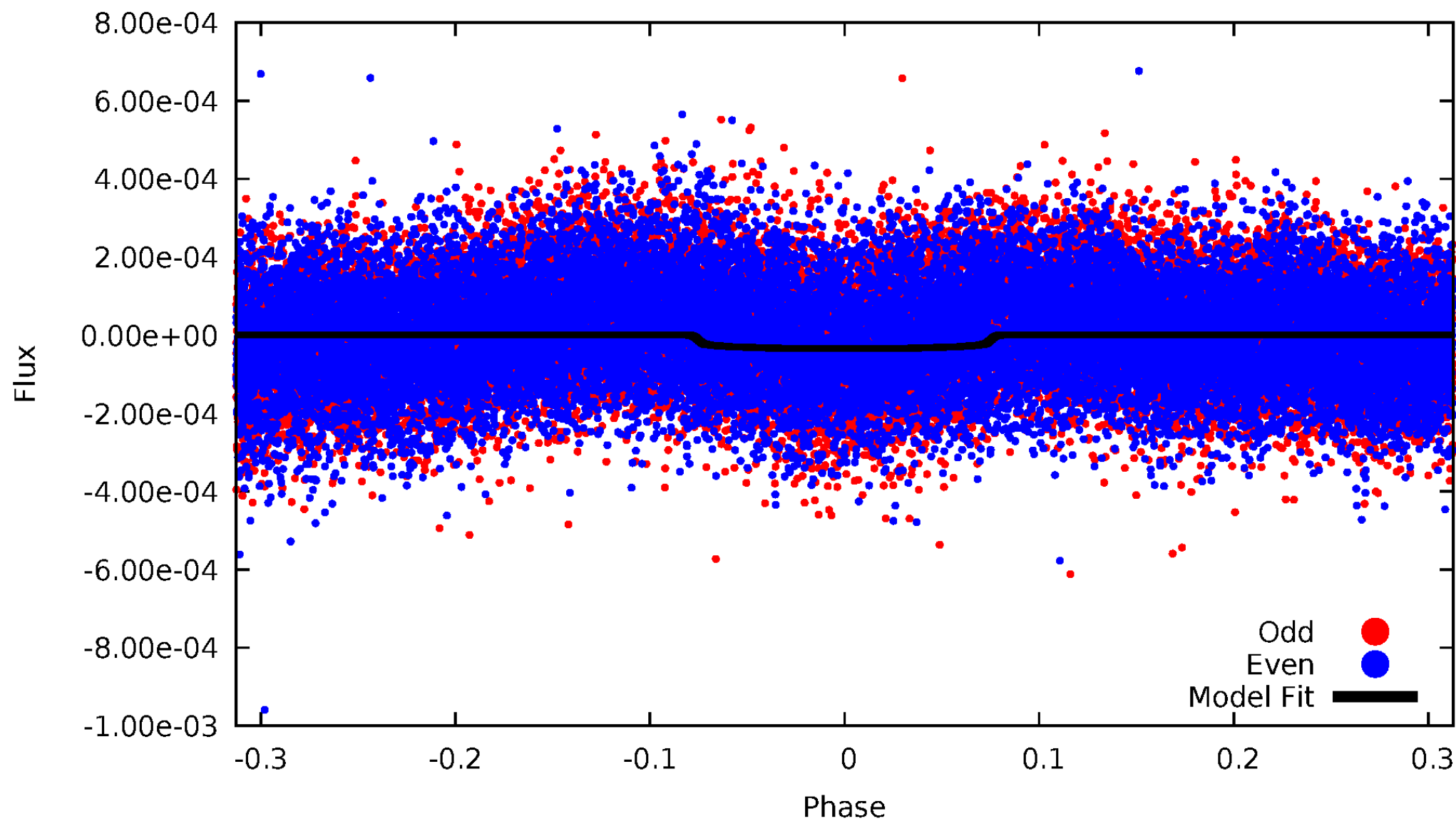
TCE 008589526-01





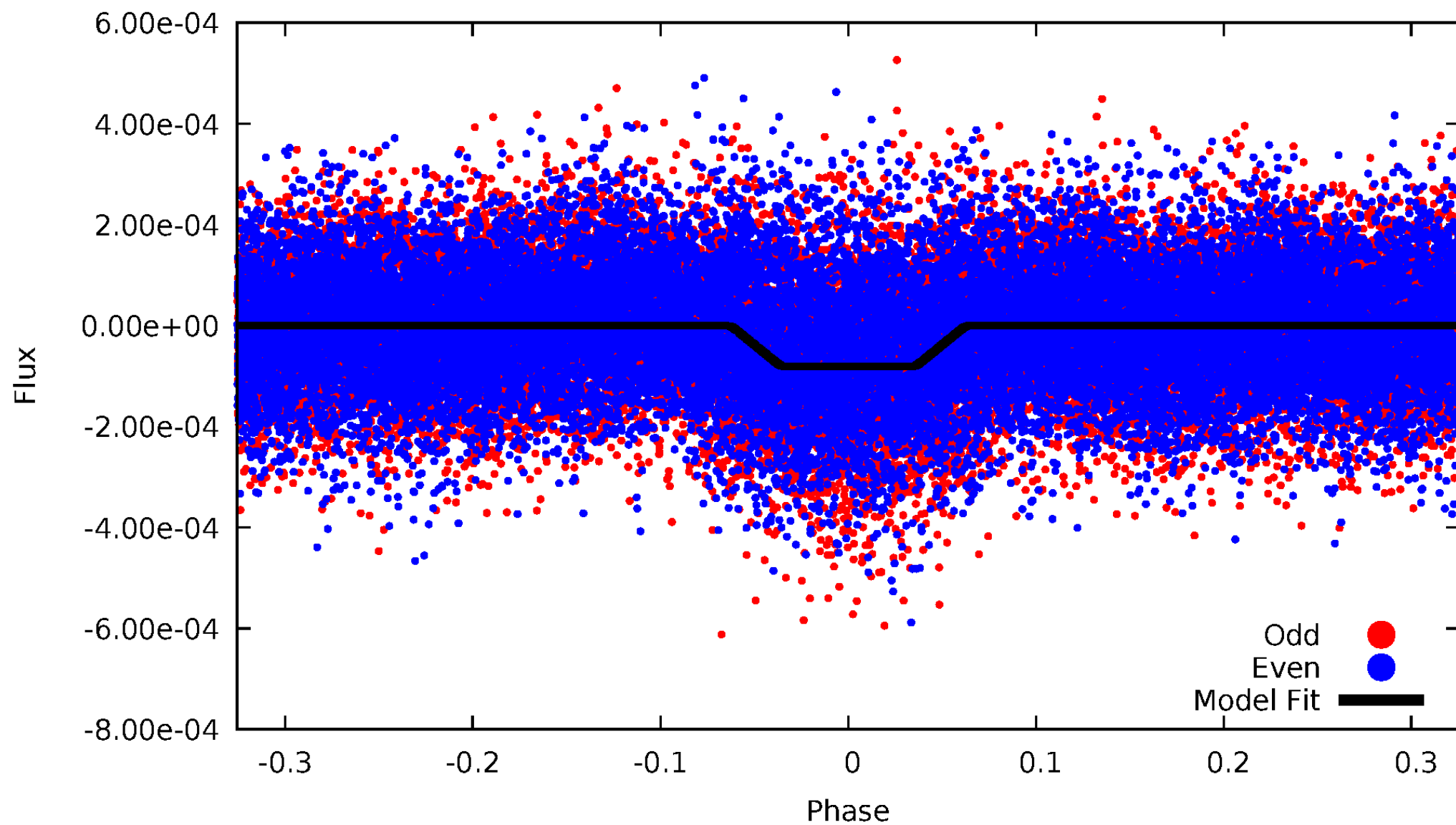
# DV Odd/Even

TCE 008589526-01

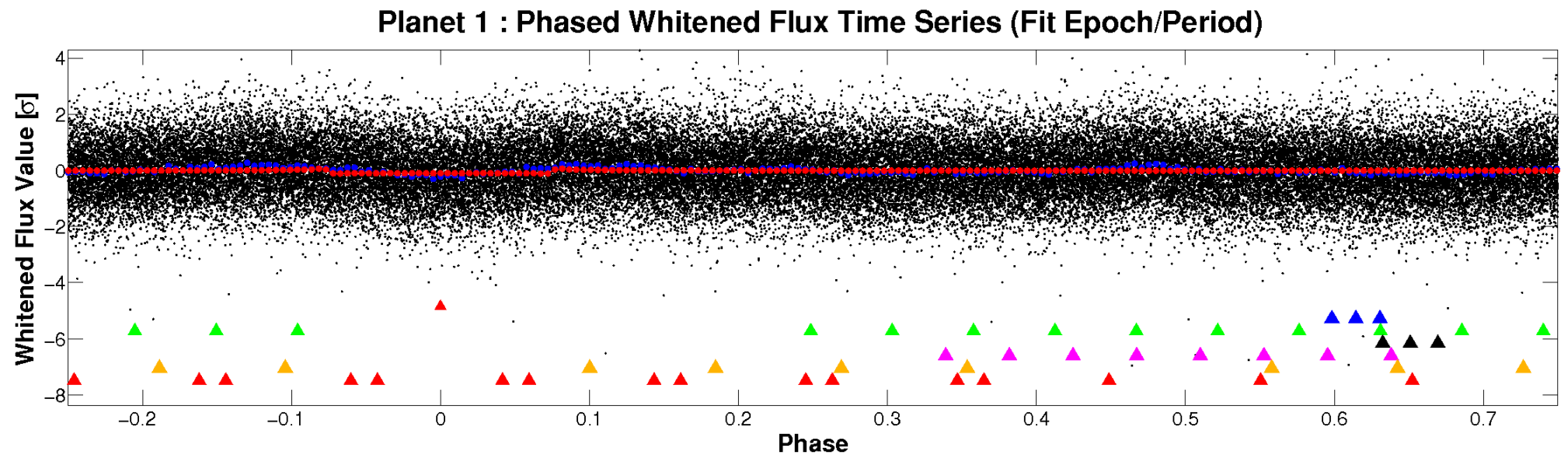
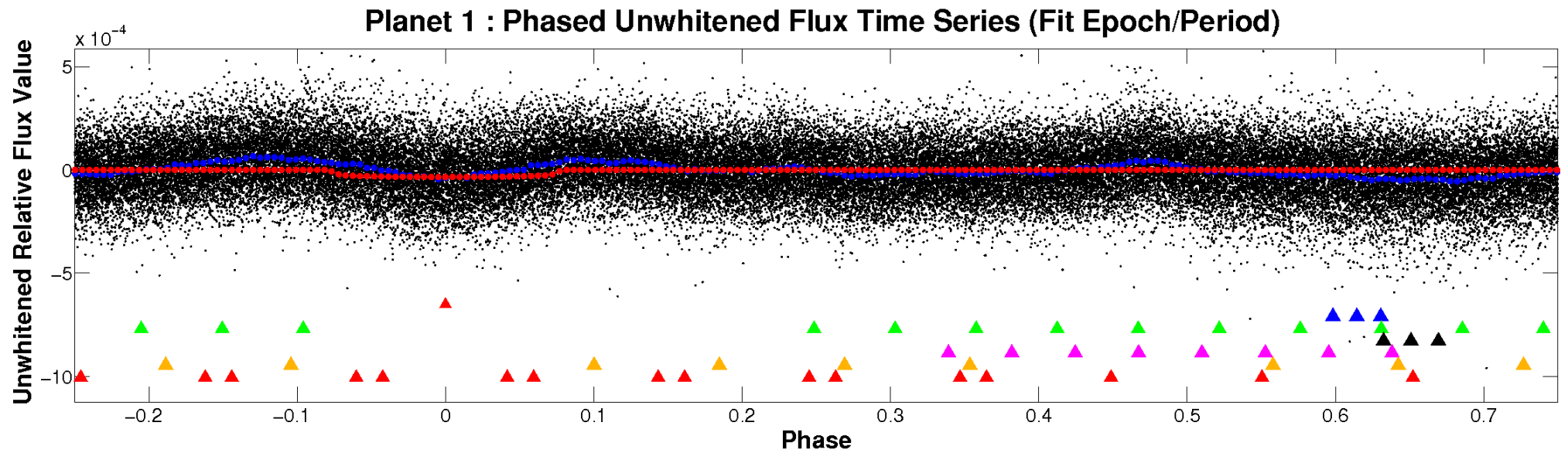


# ALT Odd/Even

TCE 008589526-01



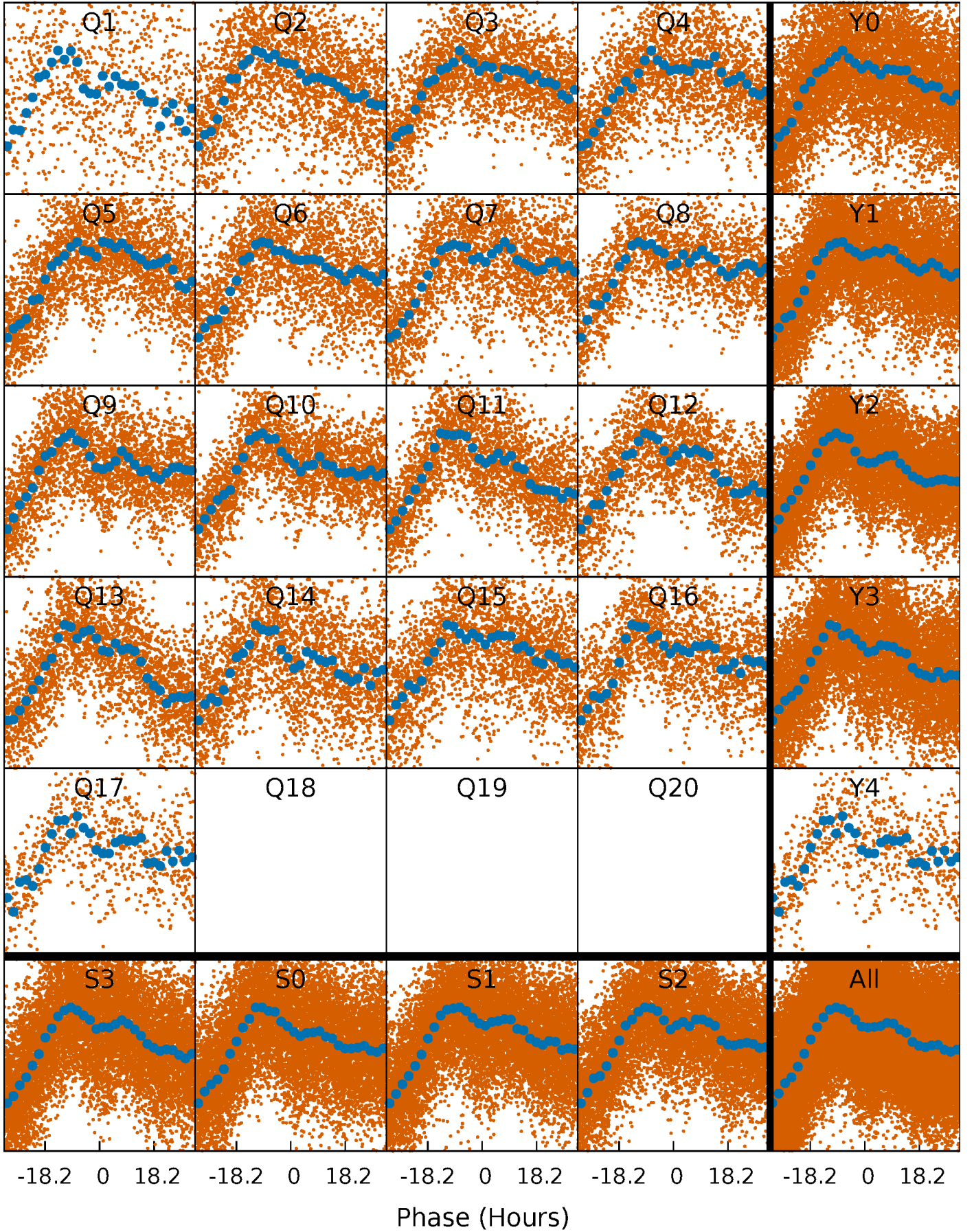
# Non-Whitened Vs. Whitened Light Curve





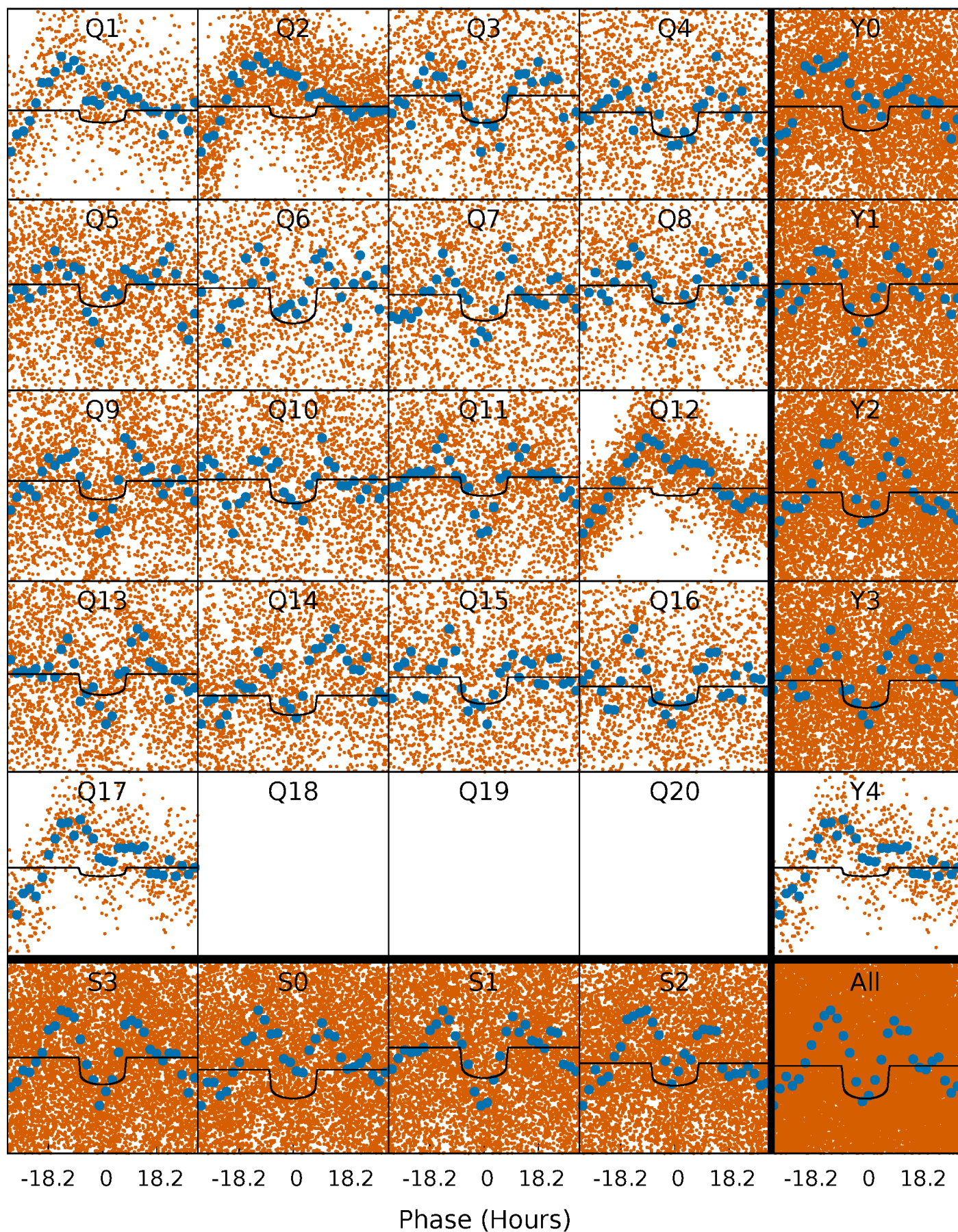
# PDC Quarter-Phased Transit Curves

TCE 008589526-01   P= 4.254168 Days    $T_0=133.079701$  (BKJD)



# DV Quarter-Phased Transit Curves

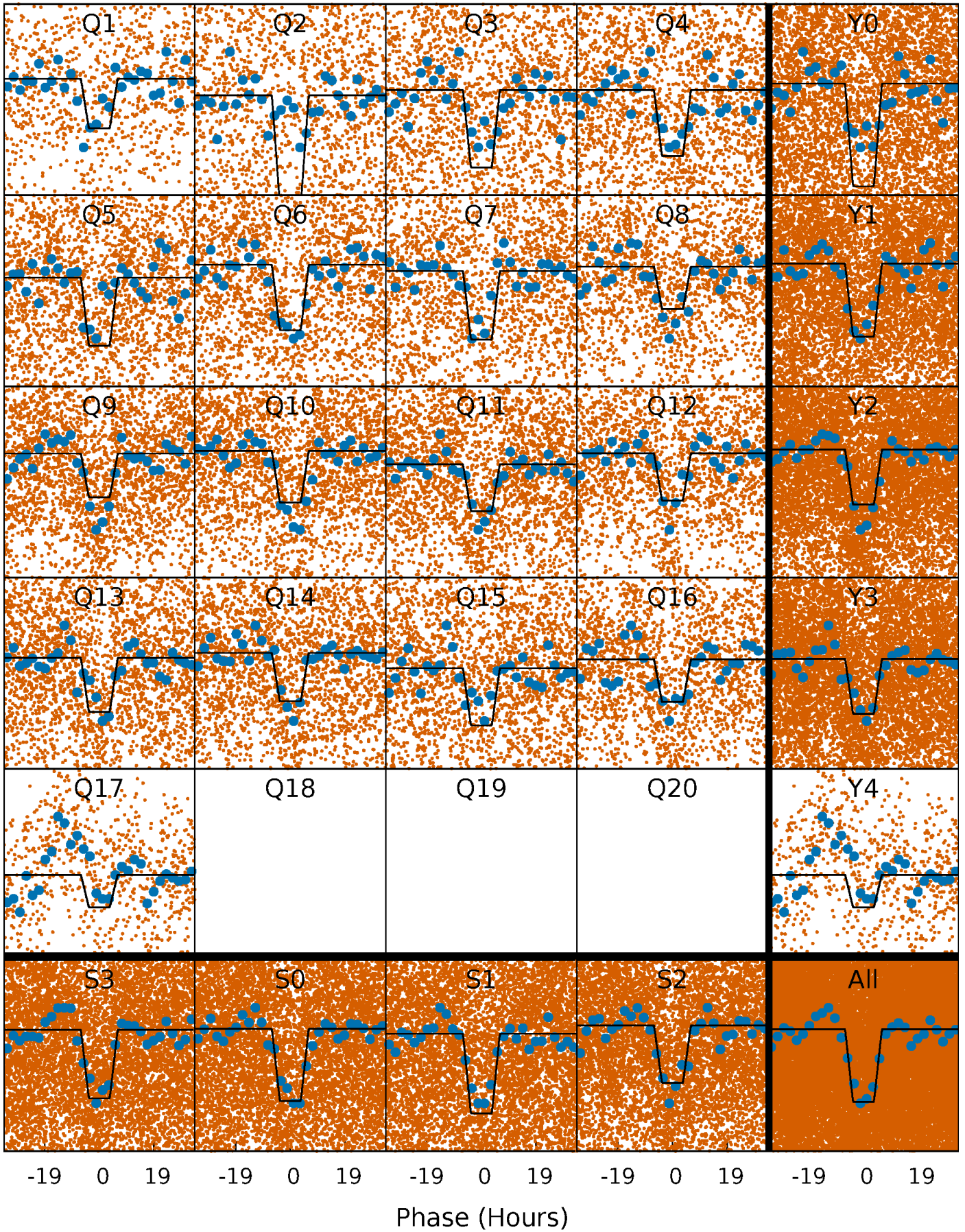
TCE 008589526-01 P= 4.254168 Days  $T_0=133.079701$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008589526-01 P= 4.254053 Days  $T_0=133.110624$  (BKJD)

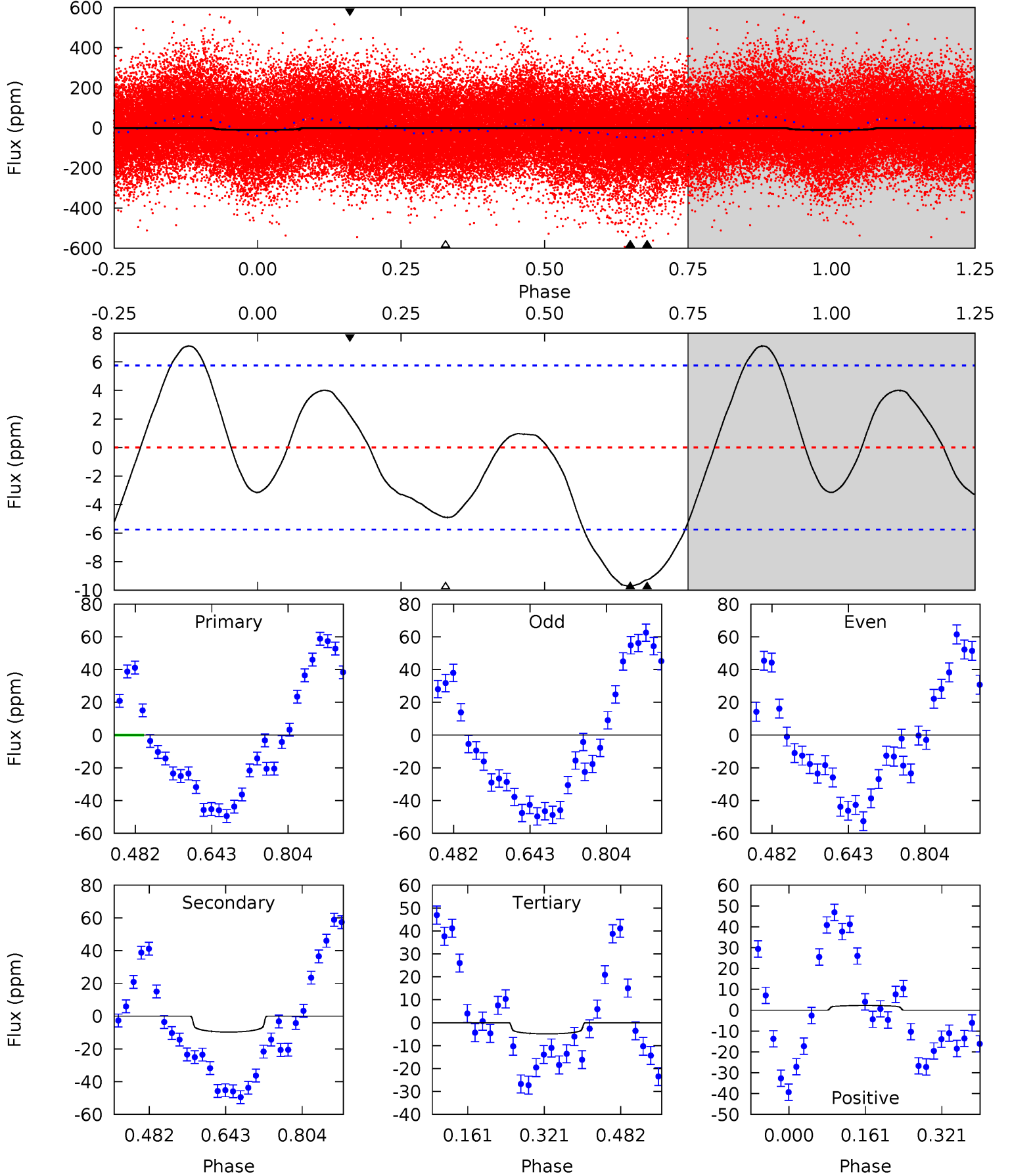




# DV Model-Shift Uniqueness Test

008589526-01, P = 4.254168 Days, E = 128.825533 Days

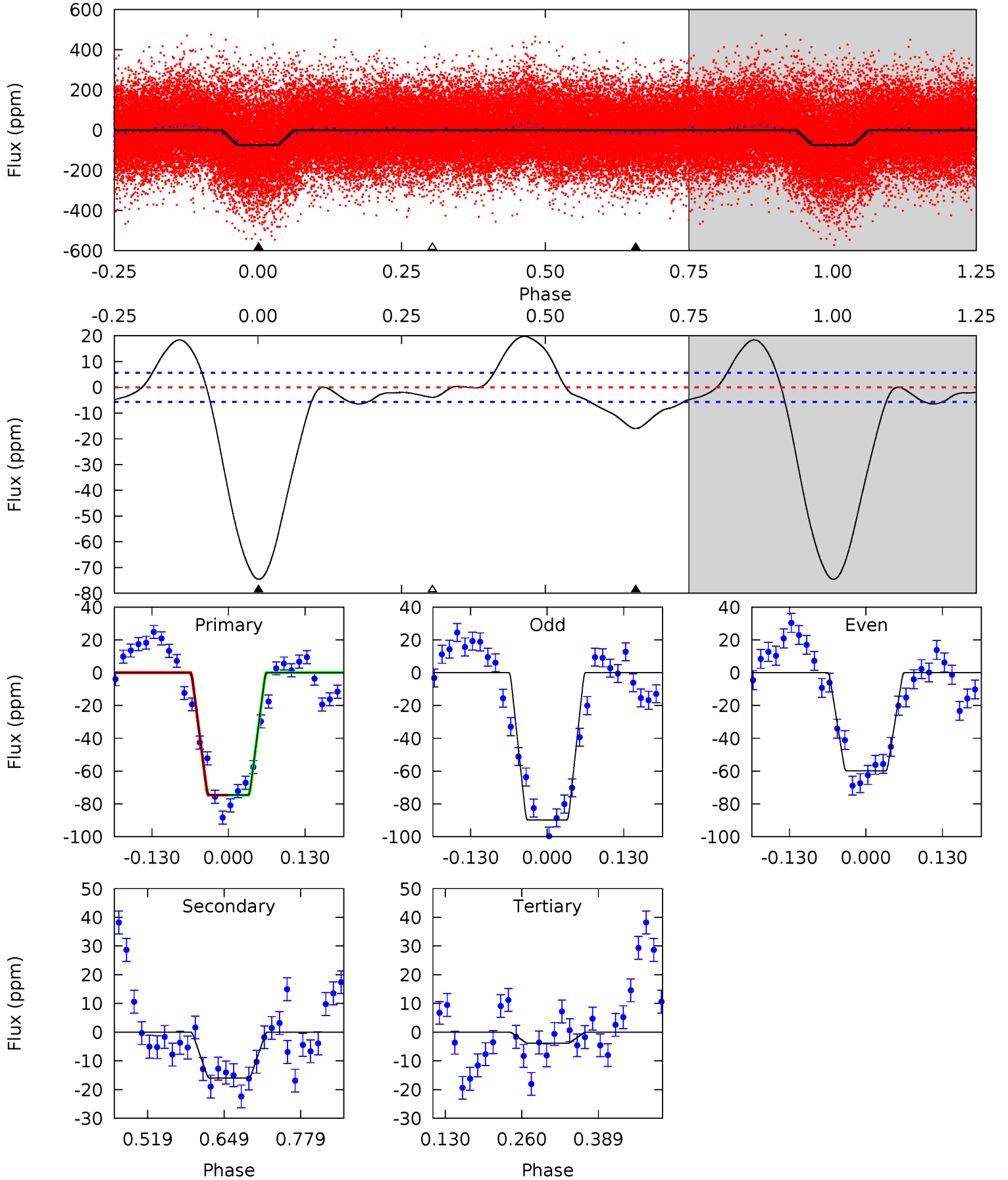
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.19	7.55	3.80	1.76	4.46	1.40	2.69	3.39	5.43	3.75	5.79	1.78	0.57	0.42	0.11



# Alt Model-Shift Uniqueness Test

008589526-01, P = 4.254053 Days, E = 128.856571 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
59.5	12.7	3.10	0	4.51	1.51	6.78	56.4	59.5	9.65	12.7	11.9	0.97	0.21	0.01



### Stellar Parameters For KIC 008589526

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6309^{+173}_{-157}$	$3.528^{+0.384}_{-0.096}$	$-0.420^{+0.400}_{-0.300}$	$3.519^{+0.616}_{-1.539}$	$1.523^{+0.216}_{-0.401}$	$0.049^{+0.170}_{-0.016}$
	+3%/-2%	+11%/-3%	+95%/-71%	+18%/-44%	+14%/-26%	+344%/-32%
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 008589526-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-10 \pm 1$	$2.31^{+0.40}_{-0.53}$	$2926^{+205}_{-300}$	$4504^{+236}_{-197}$	$3.520^{+2.090}_{-0.949}$
Alt.	$-16 \pm 1$	$3.37^{+0.46}_{-0.77}$	$2962^{+157}_{-318}$	$4321^{+146}_{-140}$	$2.768^{+1.460}_{-0.605}$

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



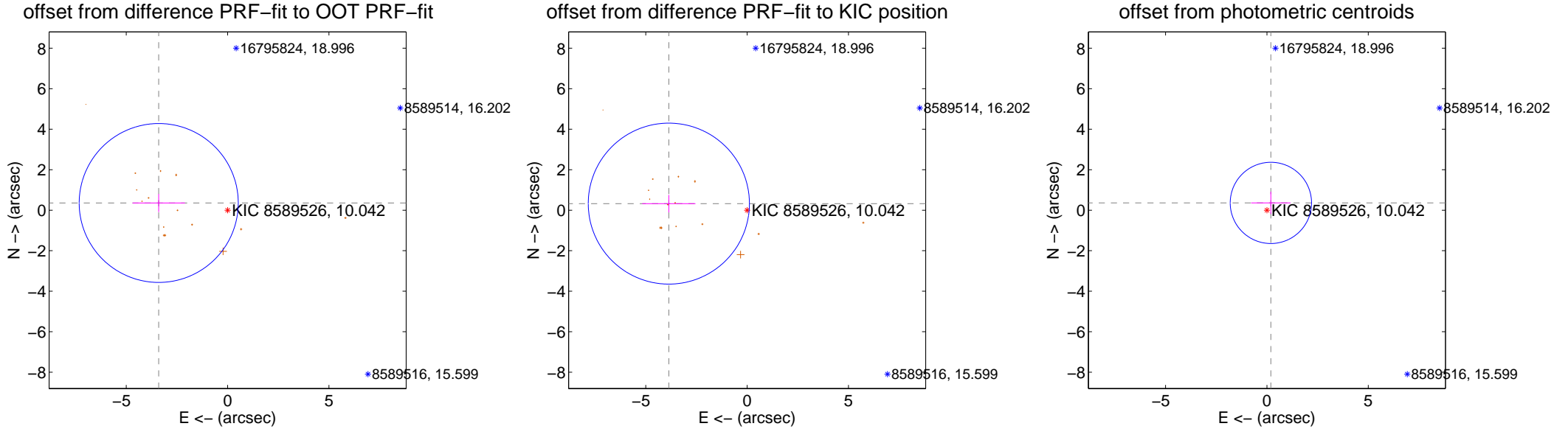
## DV Centroid Data

Supplemental centroid analysis for 008589526-01. **Kepler magnitude: 10.04.** Transit SNR 10.42

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

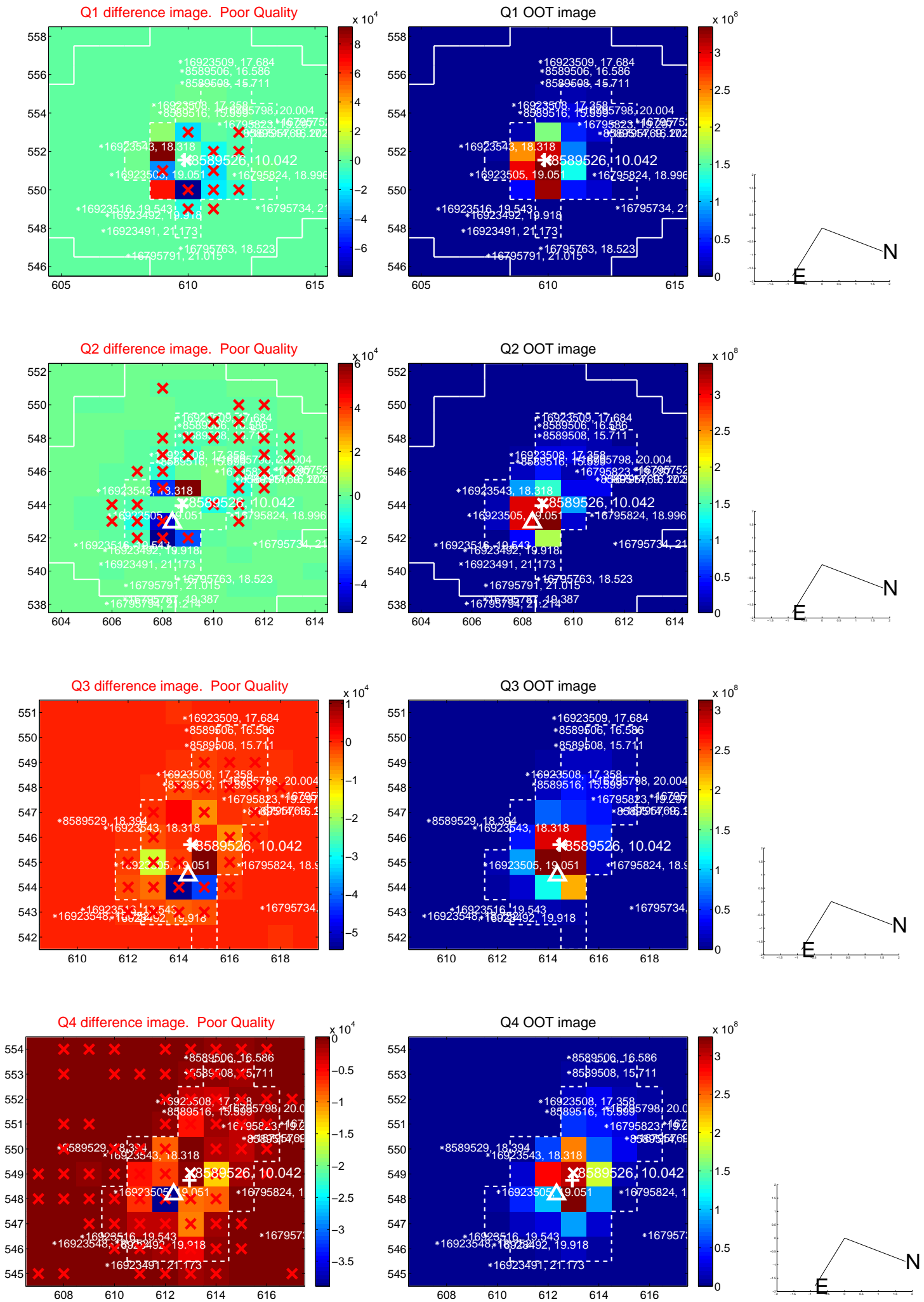
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.416 \pm 1.308$	2.61	$3.397 \pm 1.289$	$0.357 \pm 0.446$
PRF-fit source offset from KIC position	$3.875 \pm 1.325$	2.92	$3.861 \pm 1.311$	$0.325 \pm 0.429$
photometric centroid source offset	$0.41 \pm 0.67$	0.61	$-0.20 \pm 0.97$	$0.36 \pm 0.55$

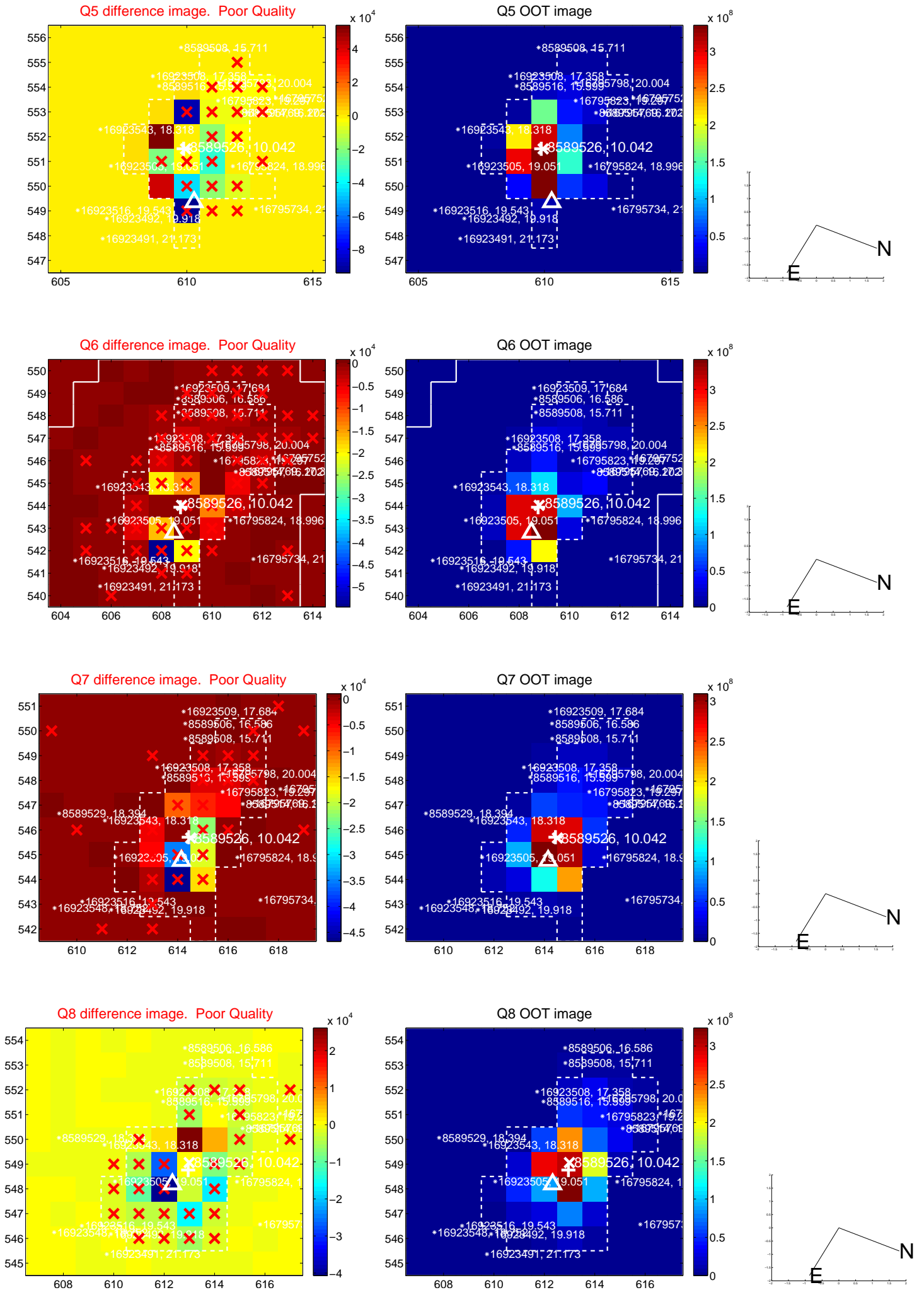


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

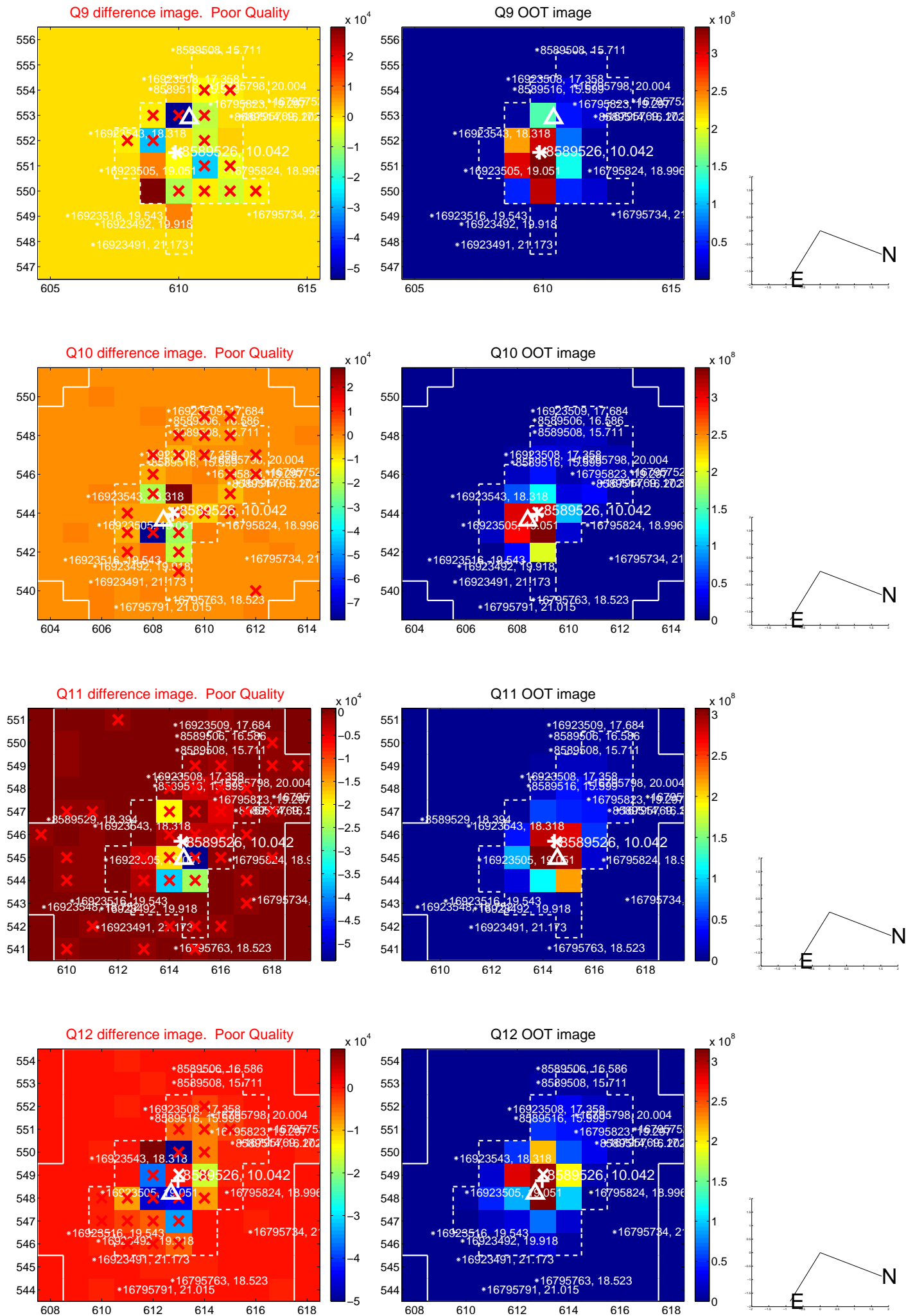


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

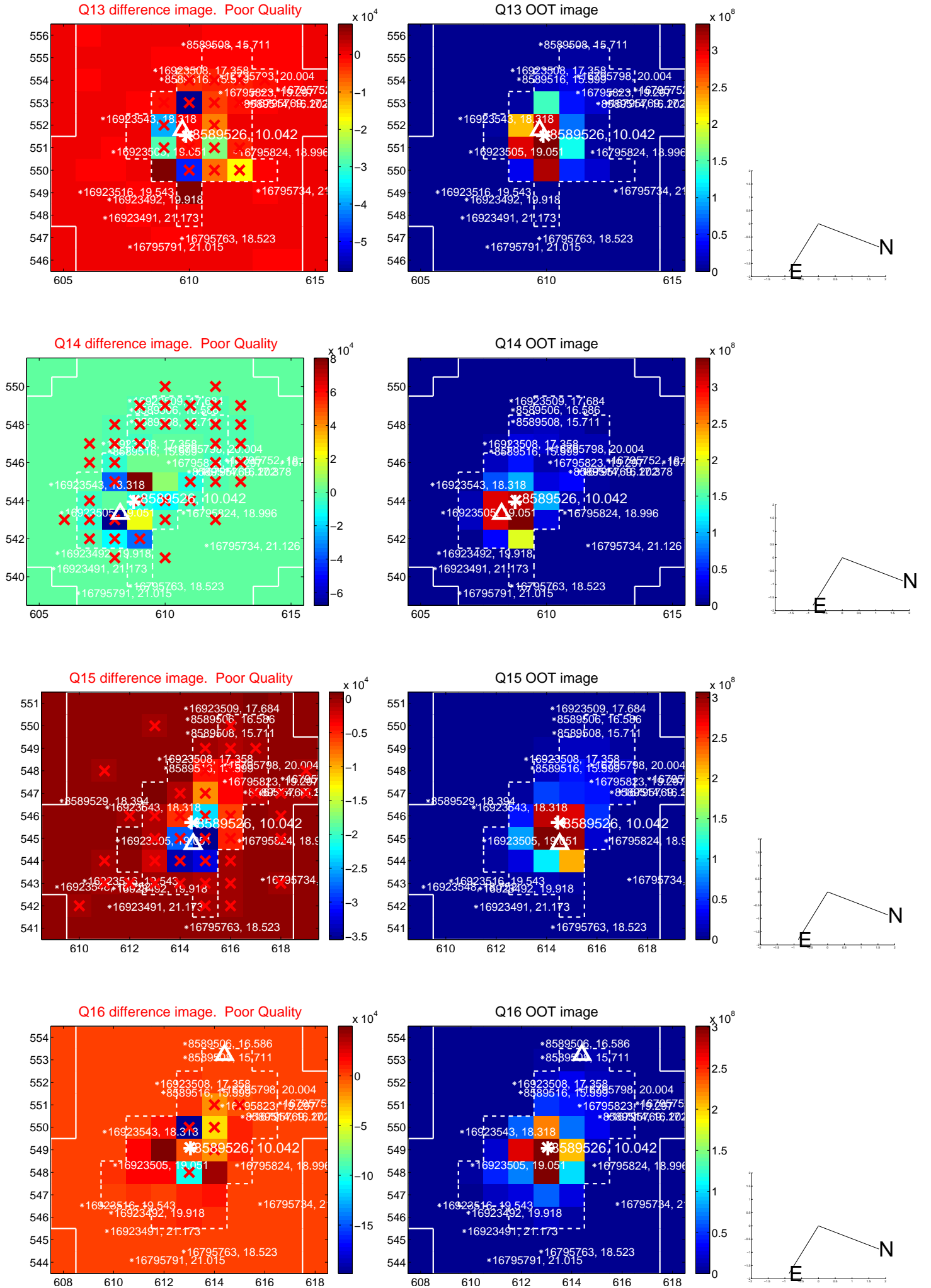




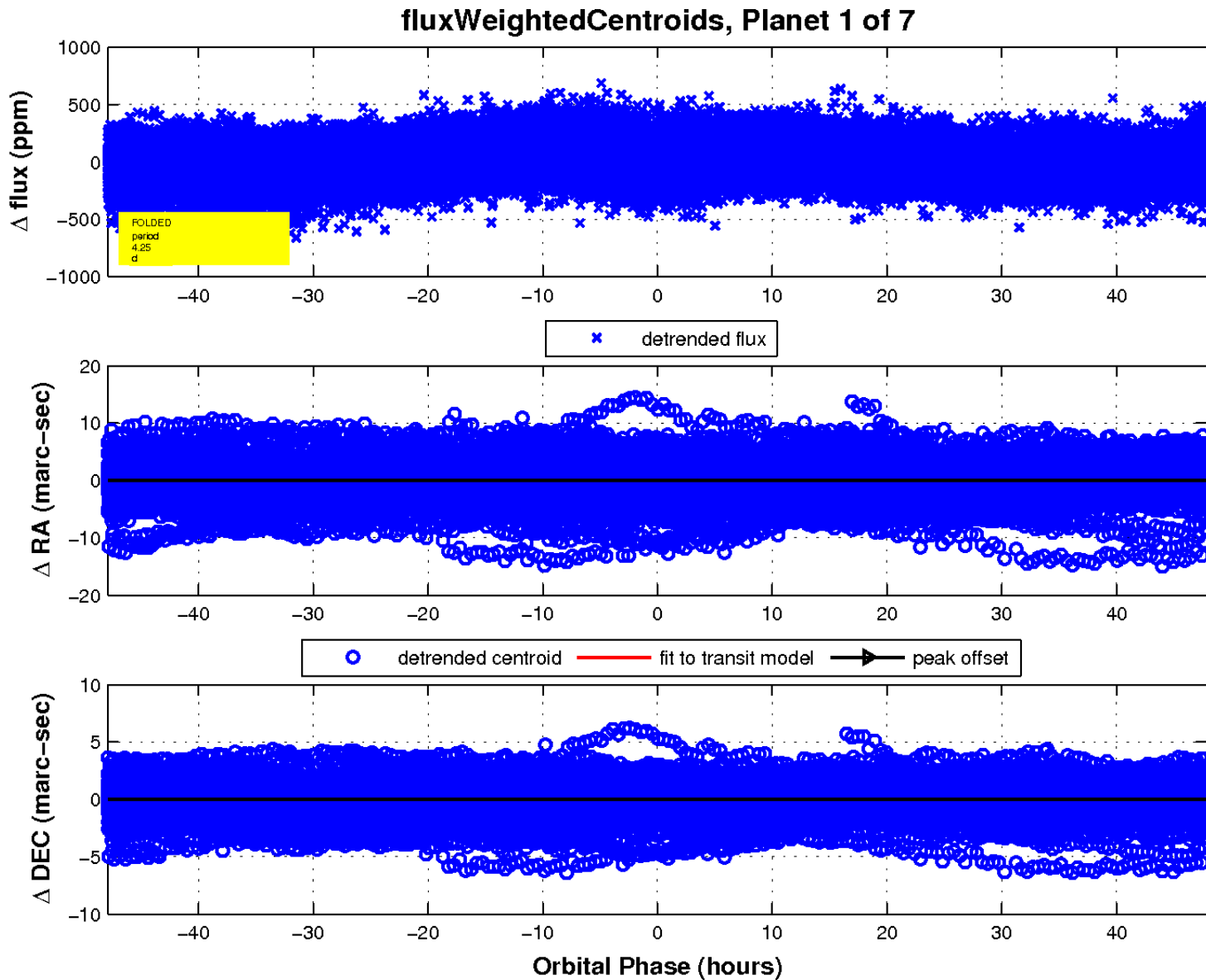
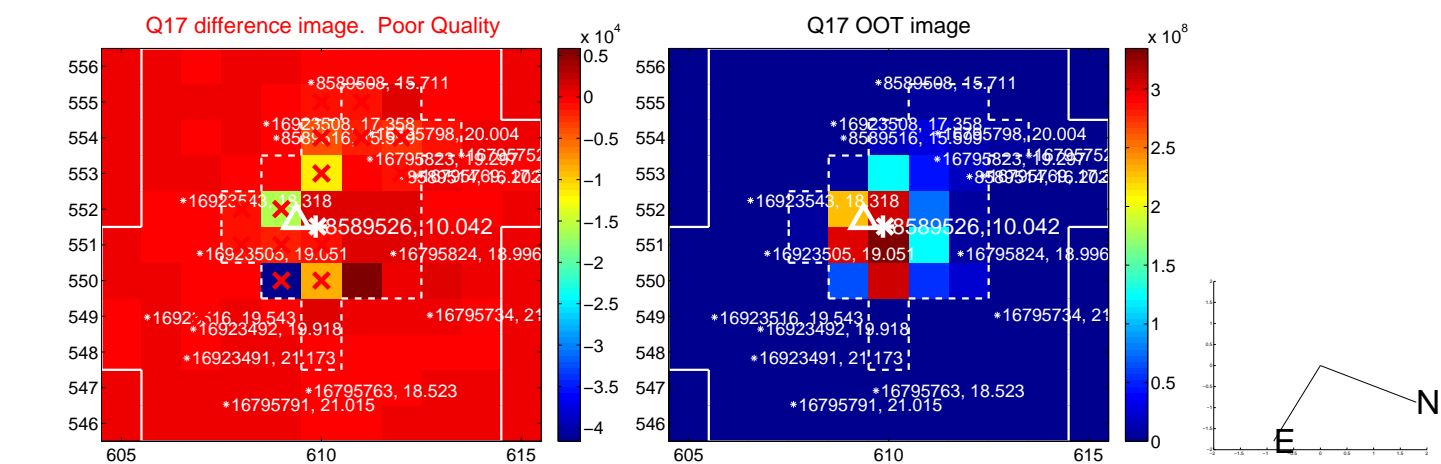
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



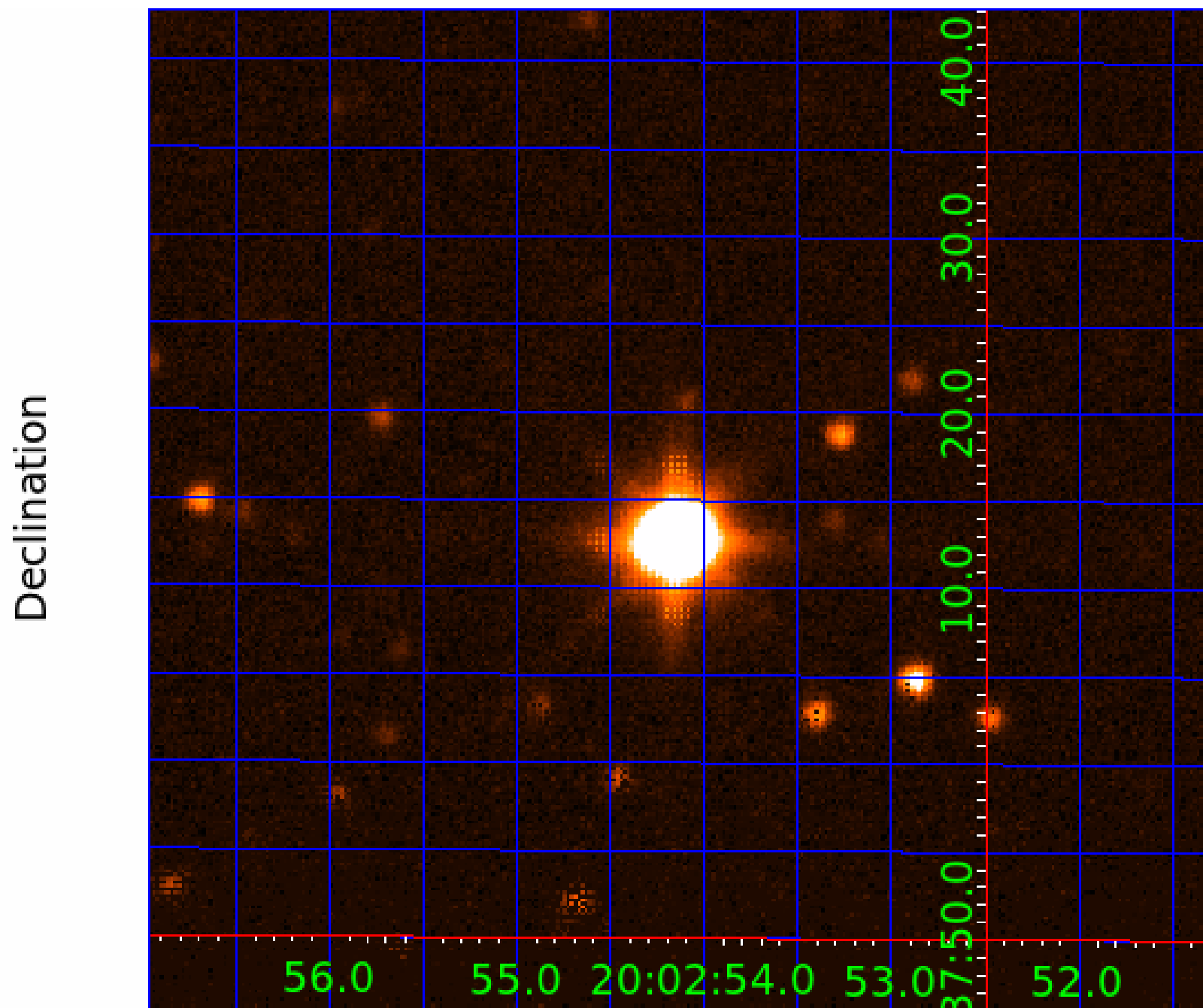
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UKIRT Image



# KIC 008589526

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008589526-01	OBS	No	4.254168	133.079701	34.6	15.964	12.9	10.4	3.52	6309	2.42	5026.47
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008589526-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
008589526-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
008589526-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED
008589526-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

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

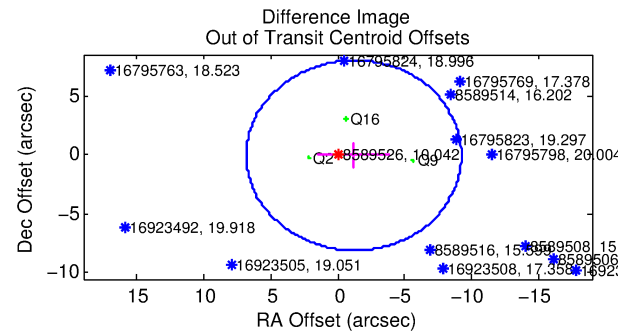
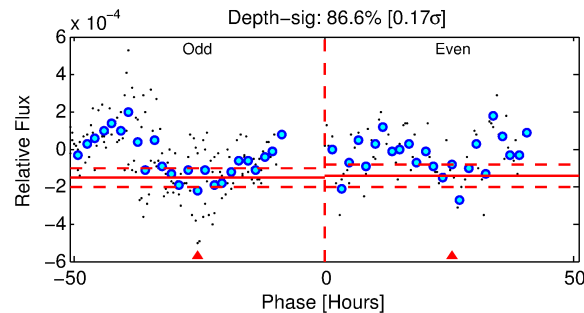
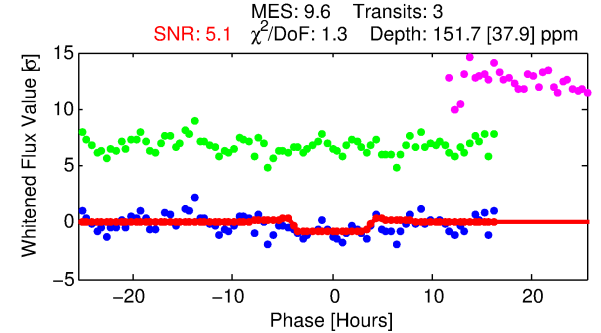
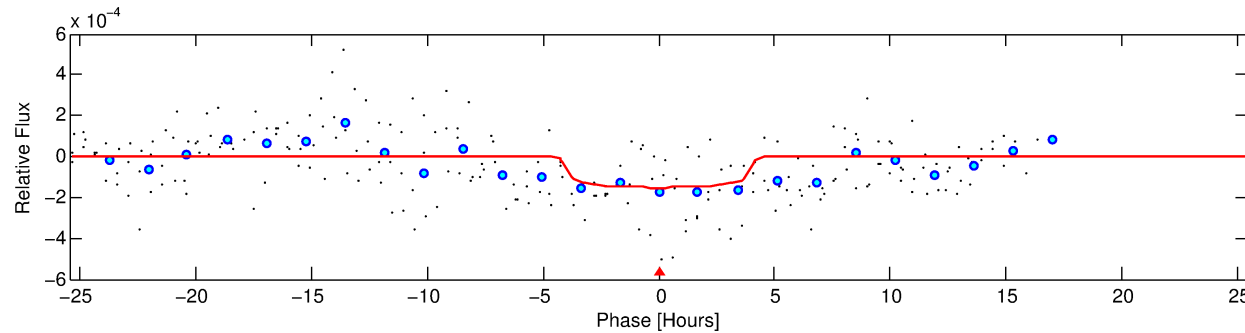
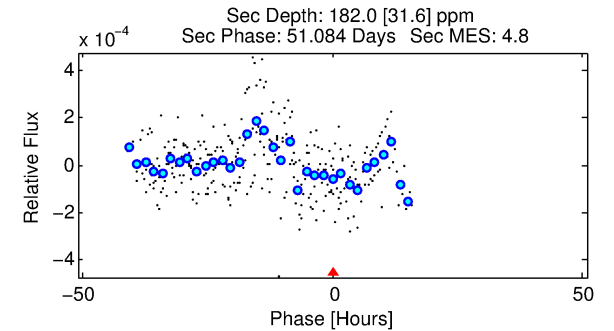
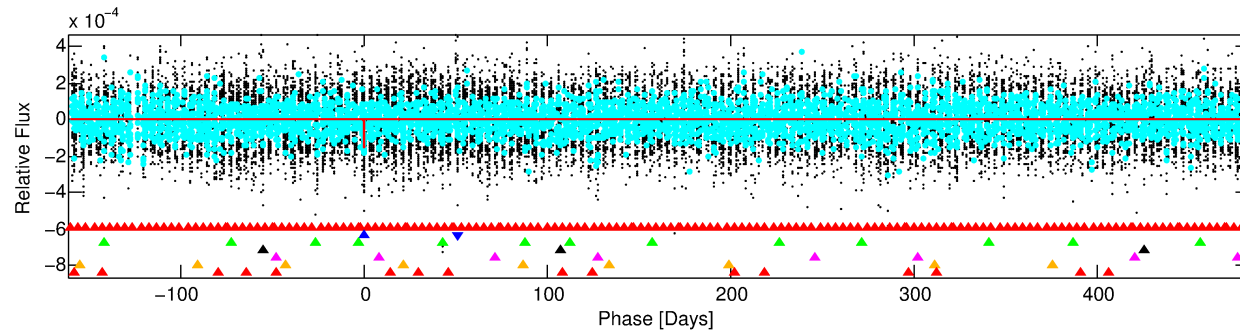
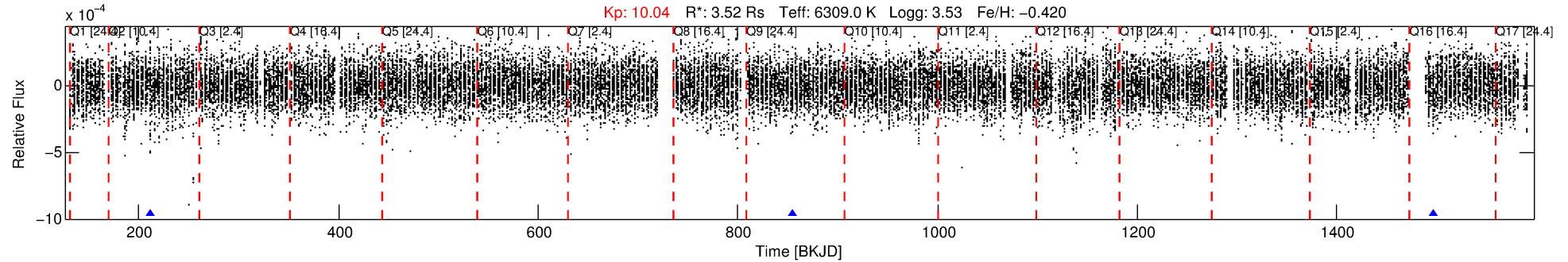
Ephemeris Match Information For 008589526-02

No Significant Match Found



# DV One-Page Summary

KIC: 8589526 Candidate: 2 of 7 Period: 642.448 d



## DV Fit Results:

Period = 642.44796 [0.01359] d  
Epoch = 212.2002 [0.0177] BKJD  
 $R_p/R^*$  = 0.0129 [0.0043]  
 $a/R^*$  = 305.44 [491.08]  
 $b$  = 0.86 [0.48]  
 $S_{\text{eff}}$  = 6.25 [4.17]  
 $T_{\text{eq}}$  = 403 [67] K  
 $R_p$  = 4.94 [2.71]  $R_{\text{e}}$   
 $a$  = 1.6770 [0.6952] AU  
 $A_g$  = 11528.77 [10941.80] [1.05σ]  
 $T_{\text{eff}}$  = 6459 [1119] K [5.40σ]

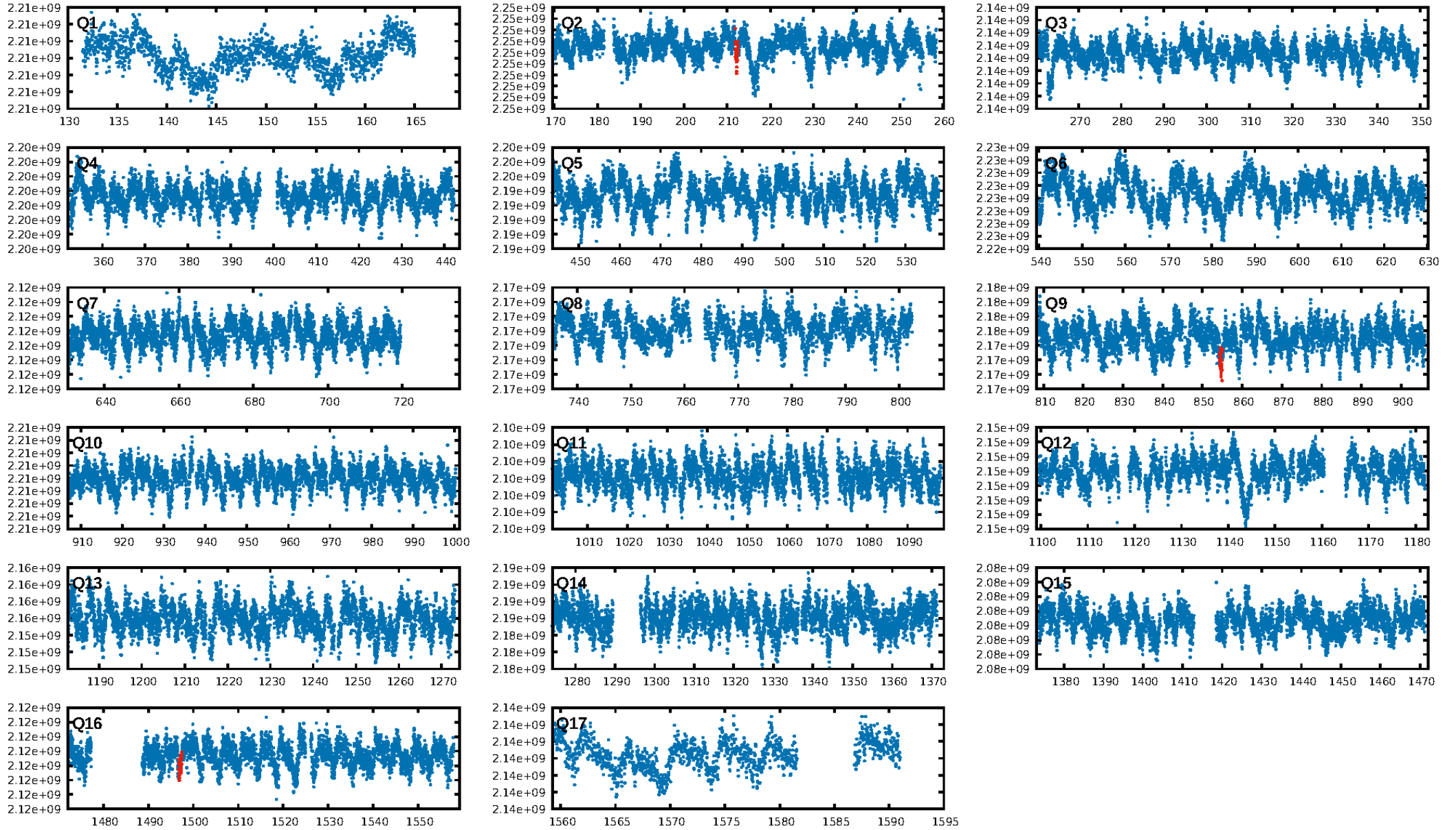
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [214.12σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 10.7%  
ModelChiSquareGof-sig: 94.6%  
**Bootstrap-pfa: 3.42e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 59.0%  
Centroid-so: 1.672 arcsec [0.93σ]  
OotOffset-rm: 1.220 arcsec [0.46σ]  
OotOffset-st: 1/0/1/1 [3]  
KicOffset-rm: 0.700 arcsec [0.24σ]  
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DiffImageQuality-fgm: 0.00 [0/3]  
DiffImageOverlap-fno: 1.00 [3/3]

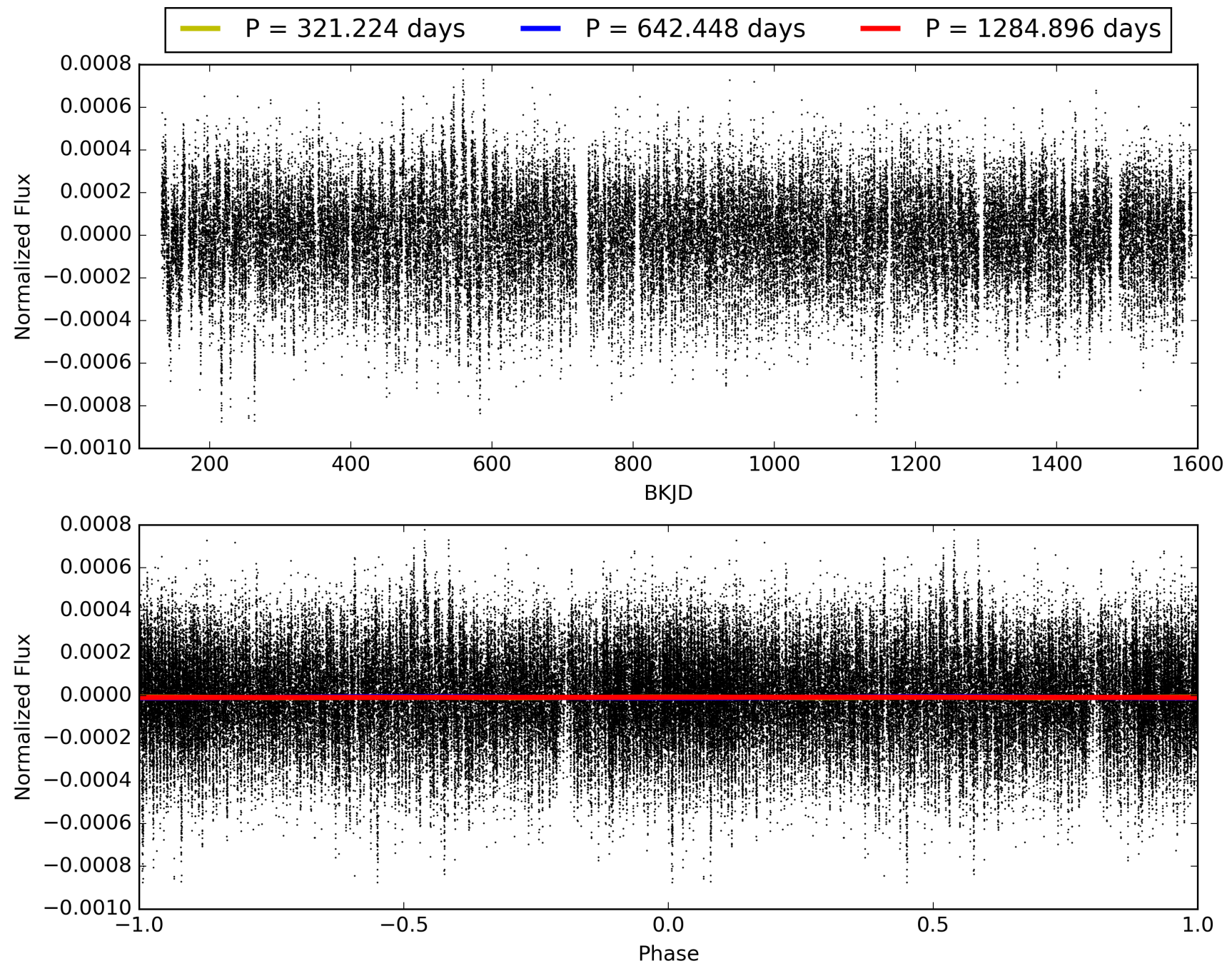
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:45:55 Z

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

# TCE 008589526-02, PDC Light Curves

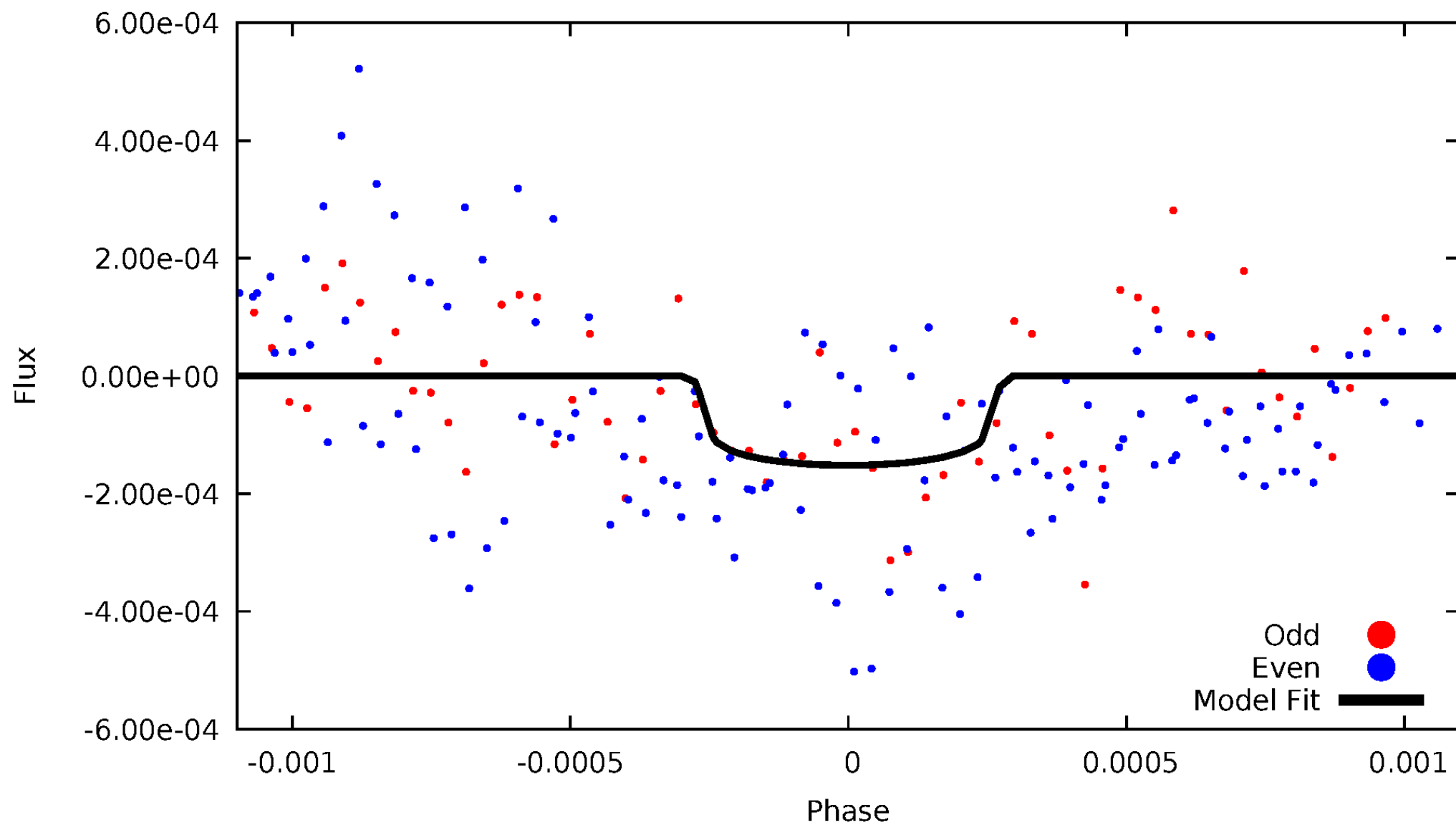


TCE 008589526-02



# DV Odd/Even

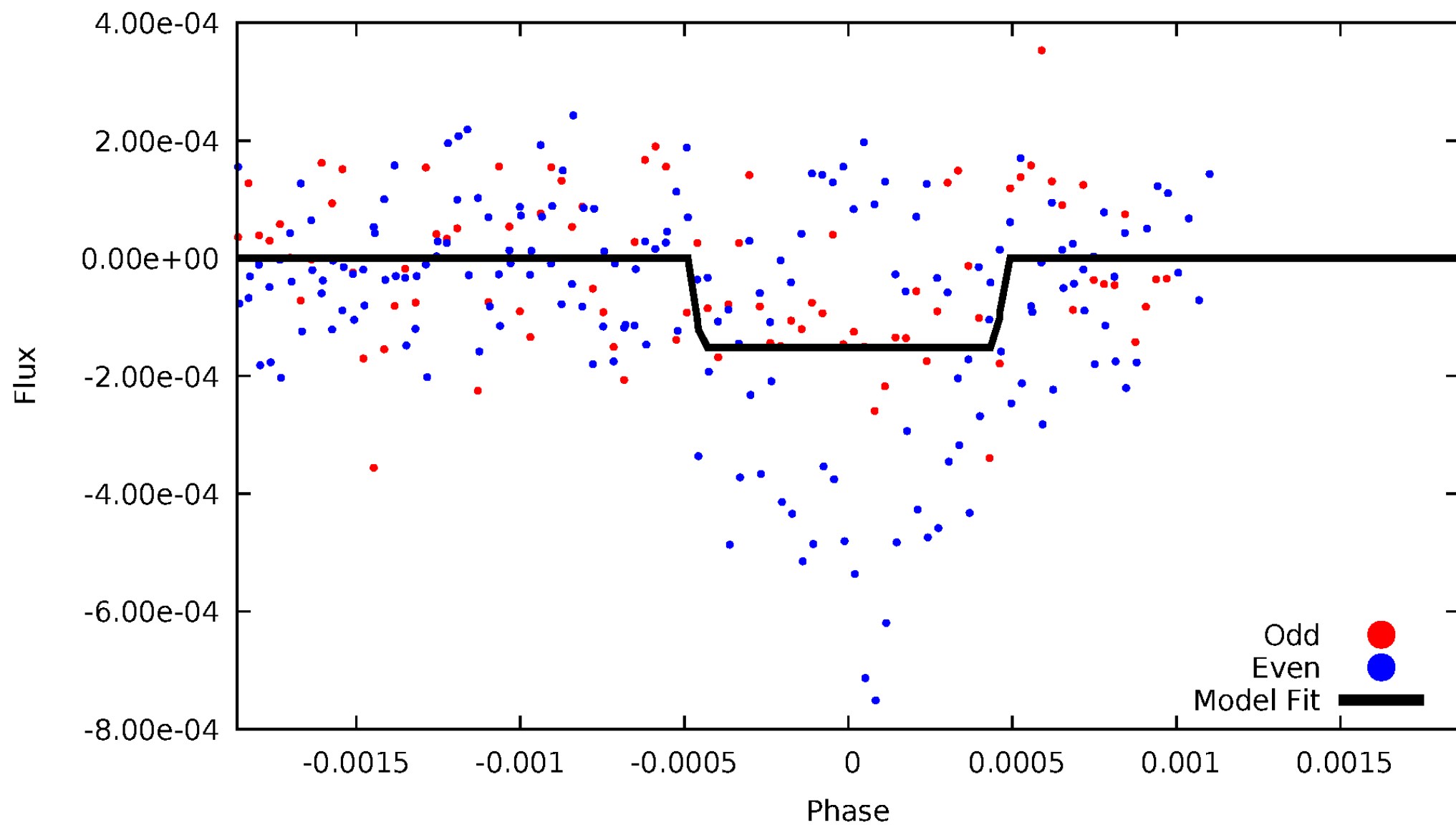
TCE 008589526-02





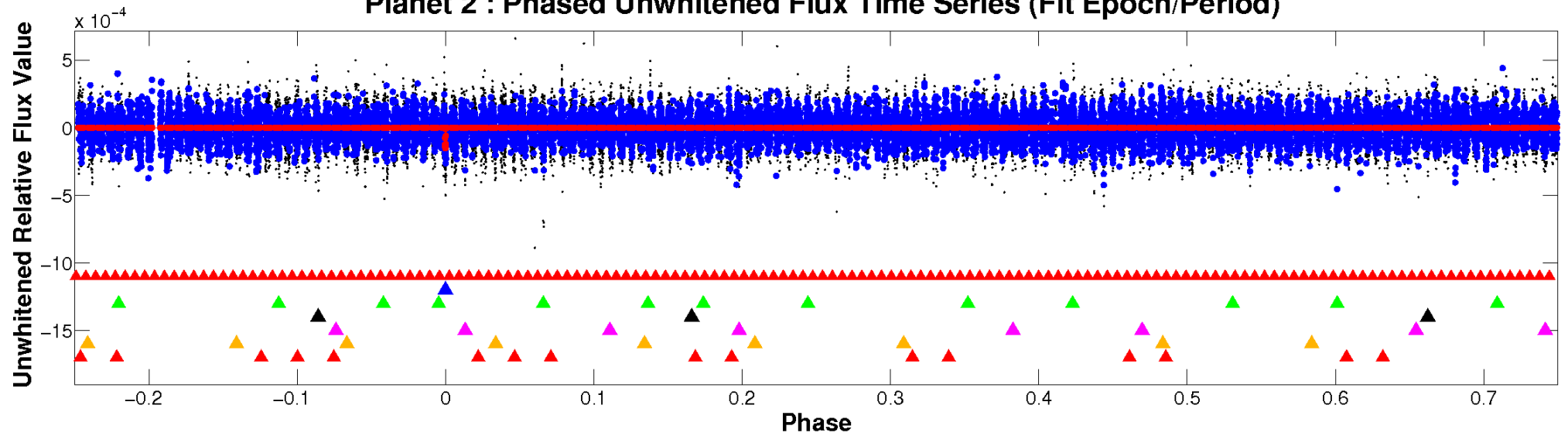
# ALT Odd/Even

TCE 008589526-02

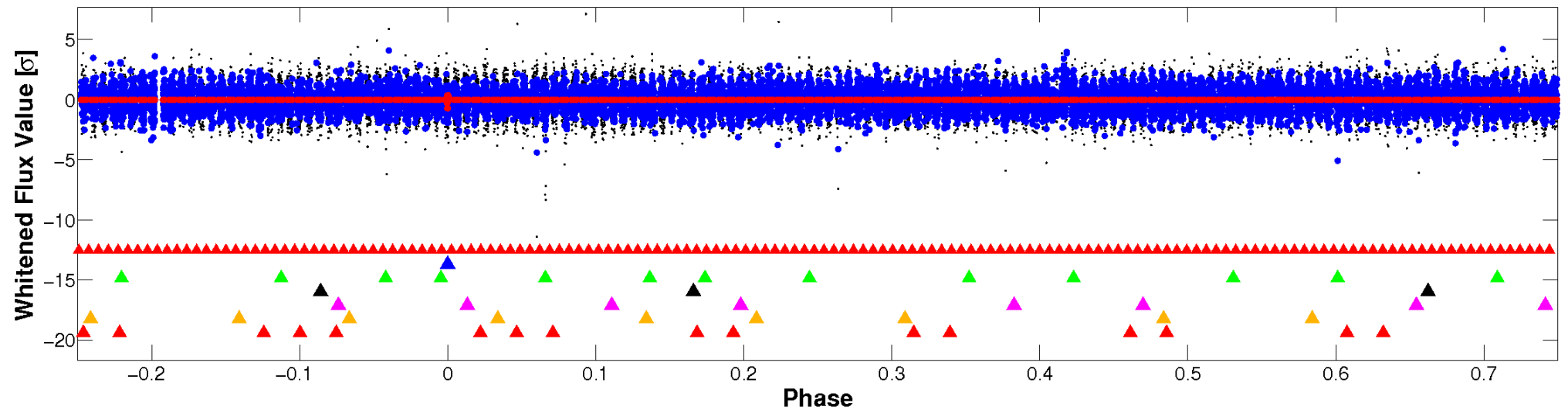


# Non-Whitened Vs. Whitened Light Curve

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

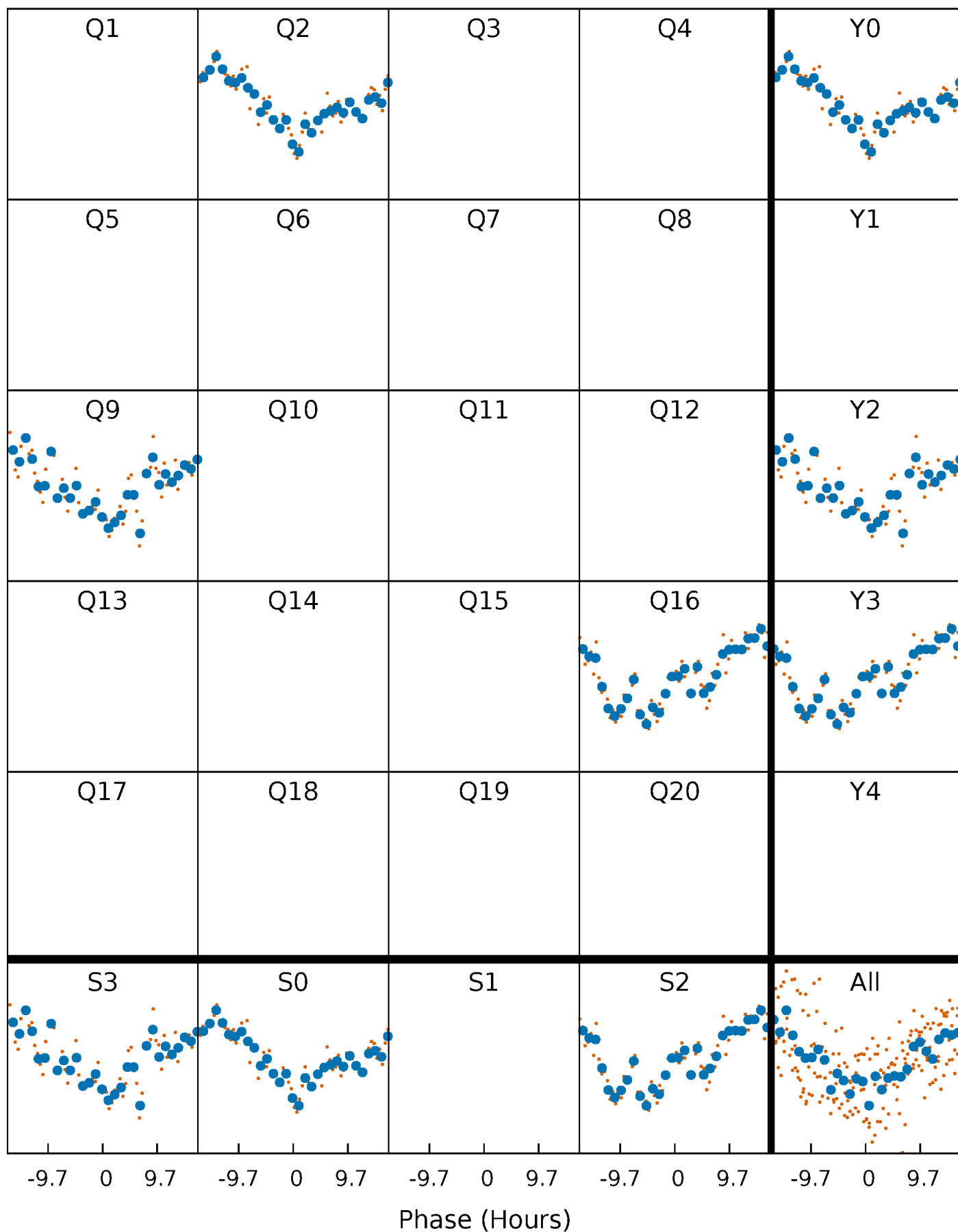


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



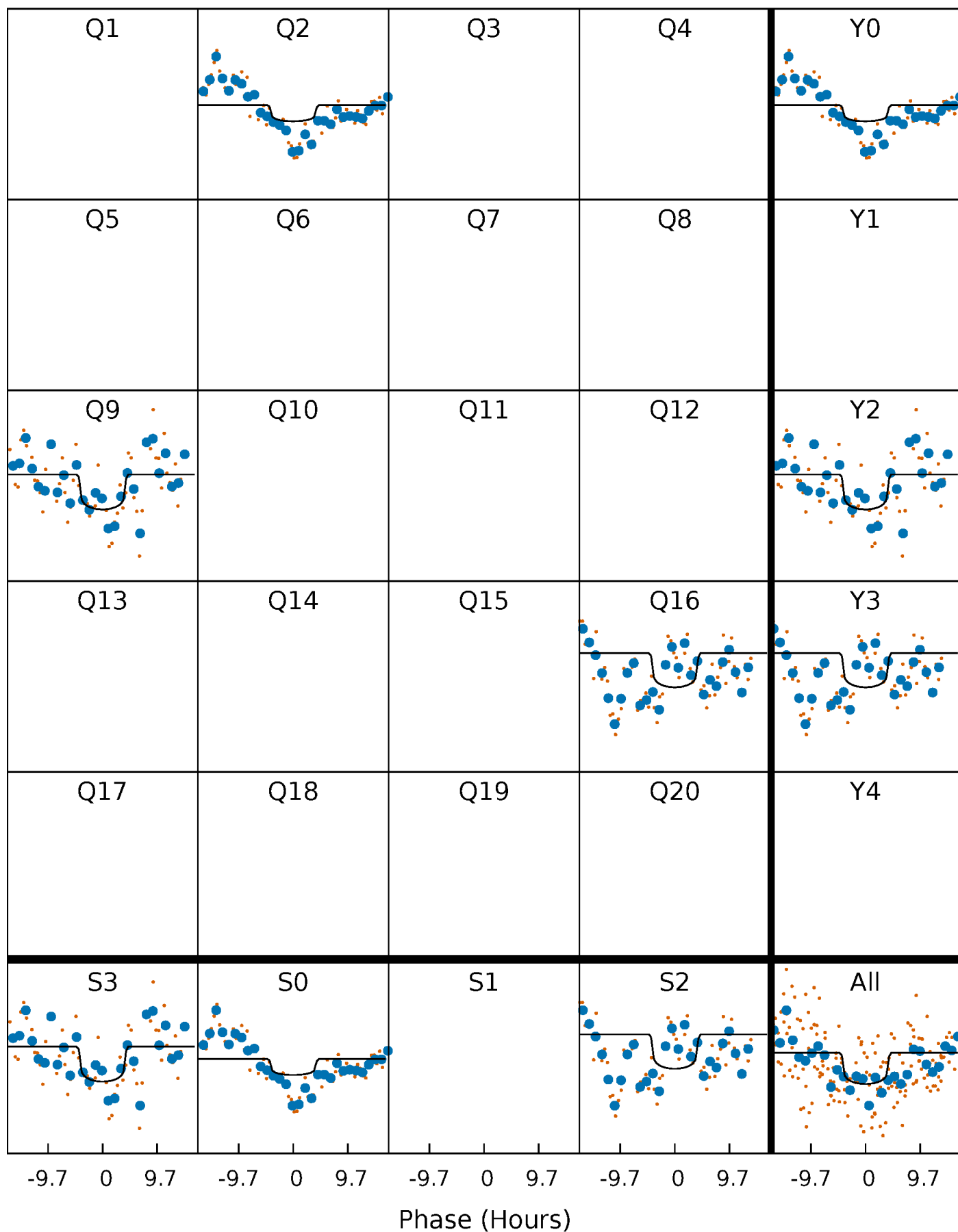
# PDC Quarter-Phased Transit Curves

TCE 008589526-02     $P=642.447956$  Days     $T_0=212.200155$  (BKJD)



# DV Quarter-Phased Transit Curves

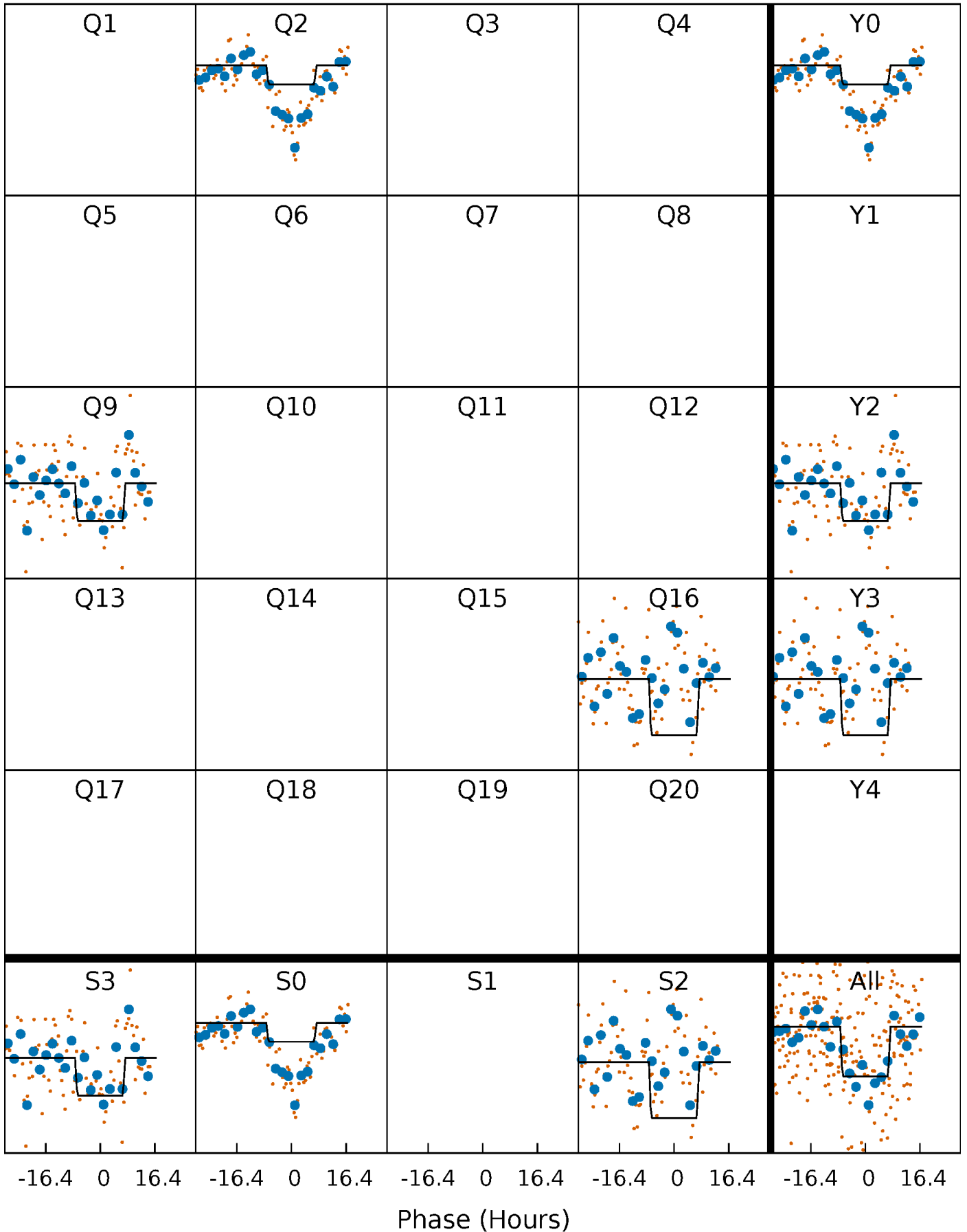
TCE 008589526-02 P=642.447956 Days  $T_0=212.200155$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

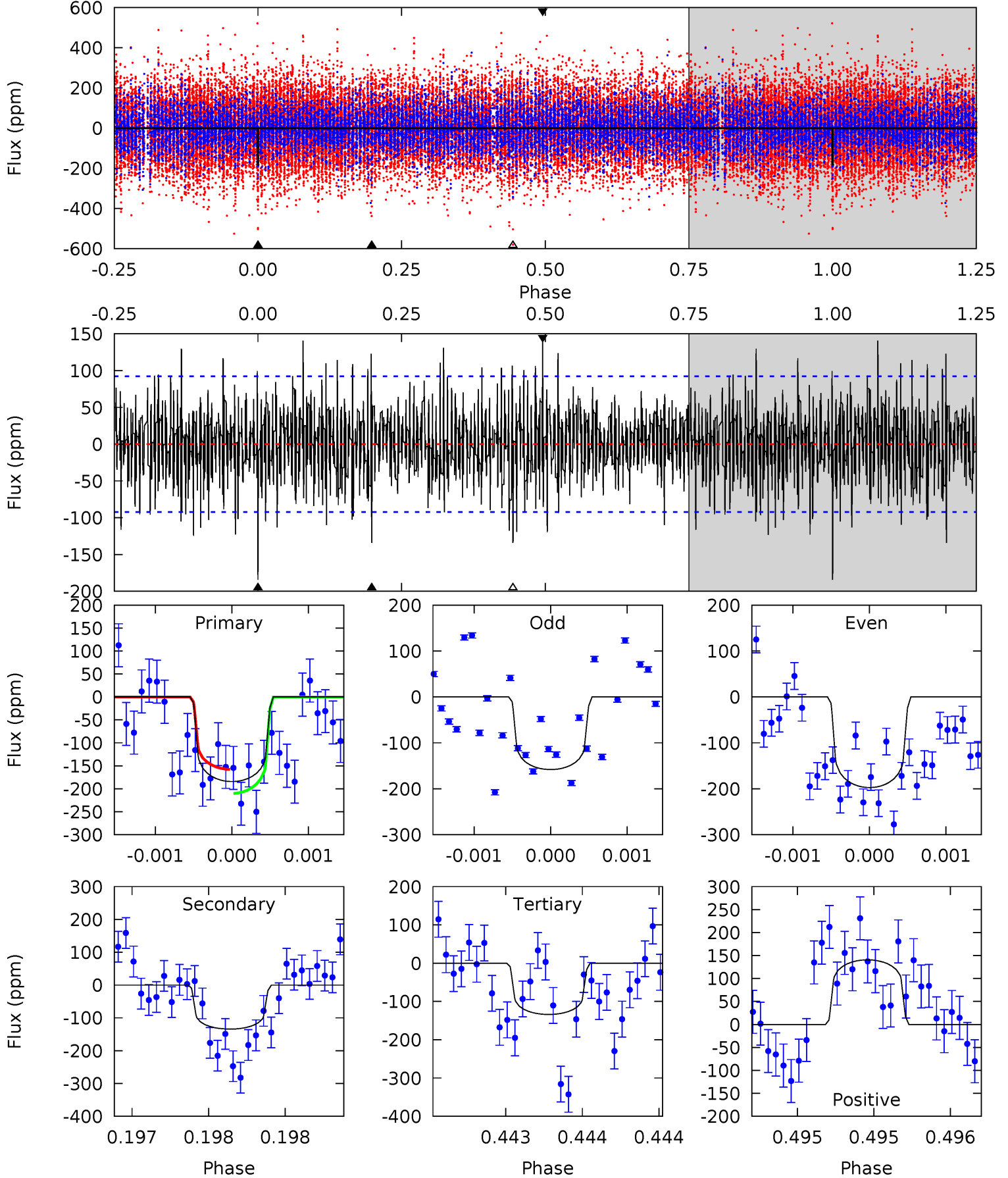
TCE 008589526-02 P=642.471994 Days  $T_0=212.173363$  (BKJD)



# DV Model-Shift Uniqueness Test

008589526-02, P = 642.447956 Days, E = 212.200155 Days

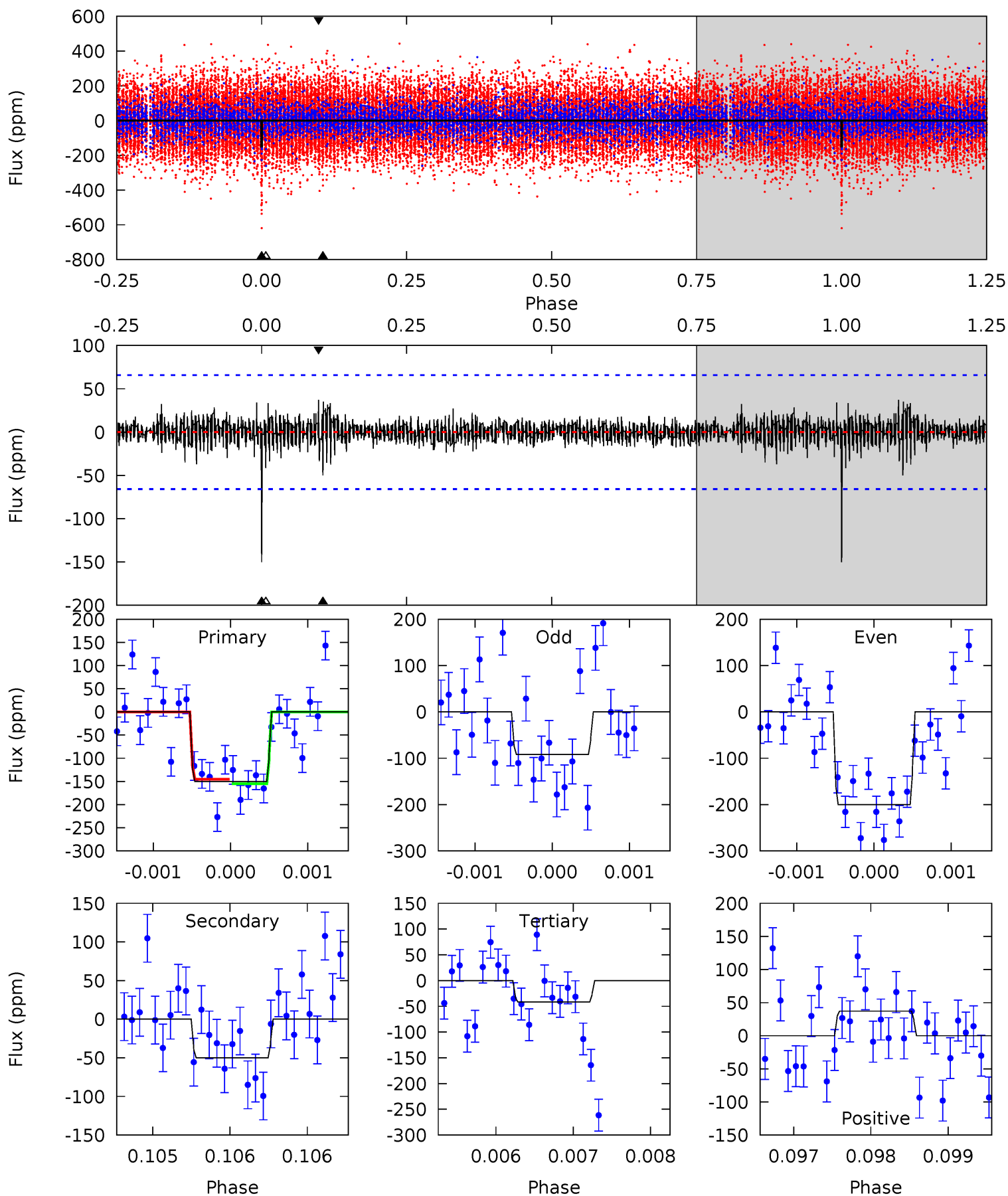
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	8.08	8.06	8.46	5.56	3.46	2.32	3.03	2.63	0.02	-0.38	1.13	1.17	0.43	1.57



# Alt Model-Shift Uniqueness Test

008589526-02, P = 642.471994 Days, E = 212.173363 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	4.15	3.46	3.09	5.46	3.31	0.69	9.01	9.37	0.69	1.06	4.30	1.81	0.20	0.41



### Stellar Parameters For KIC 008589526

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$6309^{+173}_{-157}$	$3.528^{+0.384}_{-0.096}$	$-0.420^{+0.400}_{-0.300}$	$3.519^{+0.616}_{-1.539}$	$1.523^{+0.216}_{-0.401}$	$0.049^{+0.170}_{-0.016}$
	+3%/-2%	+11%/-3%	+95%/-71%	+18%/-44%	+14%/-26%	+344%/-32%
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 008589526-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-134 \pm 17$	$4.52^{+1.87}_{-1.65}$	$555^{+29}_{-63}$	$5971^{+1456}_{-768}$	$10231^{+14181}_{-5180}$
Alt.	$-50 \pm 12$	$4.28^{+1.88}_{-1.53}$	$550^{+36}_{-61}$	$4873^{+1031}_{-577}$	$4105^{+6064}_{-2066}$

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



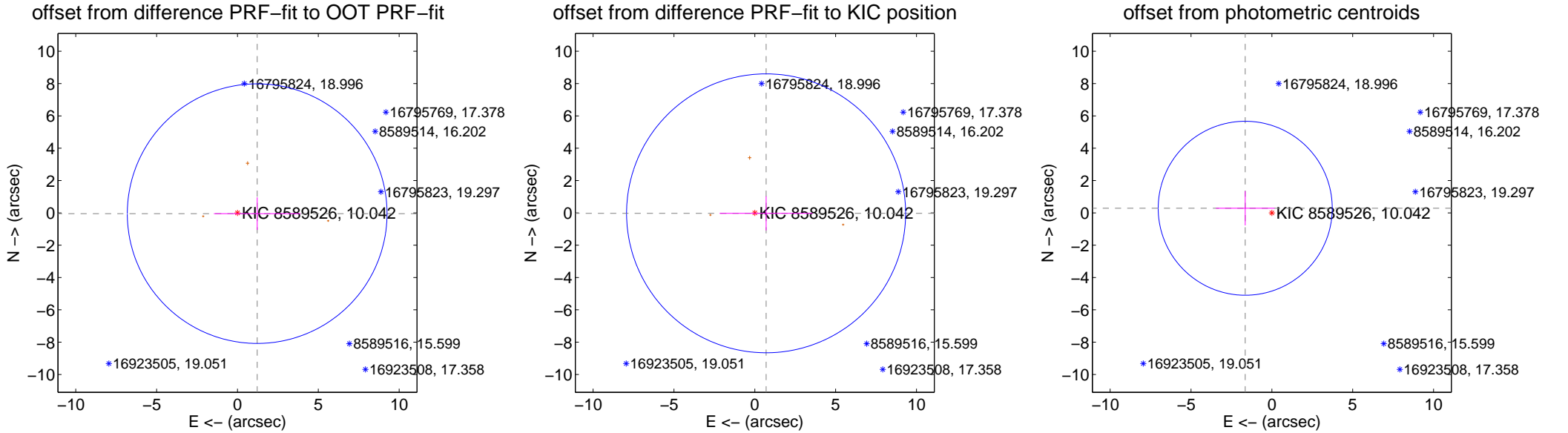
## DV Centroid Data

Supplemental centroid analysis for 008589526-02. **Kepler magnitude: 10.04.** Transit SNR 5.09

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

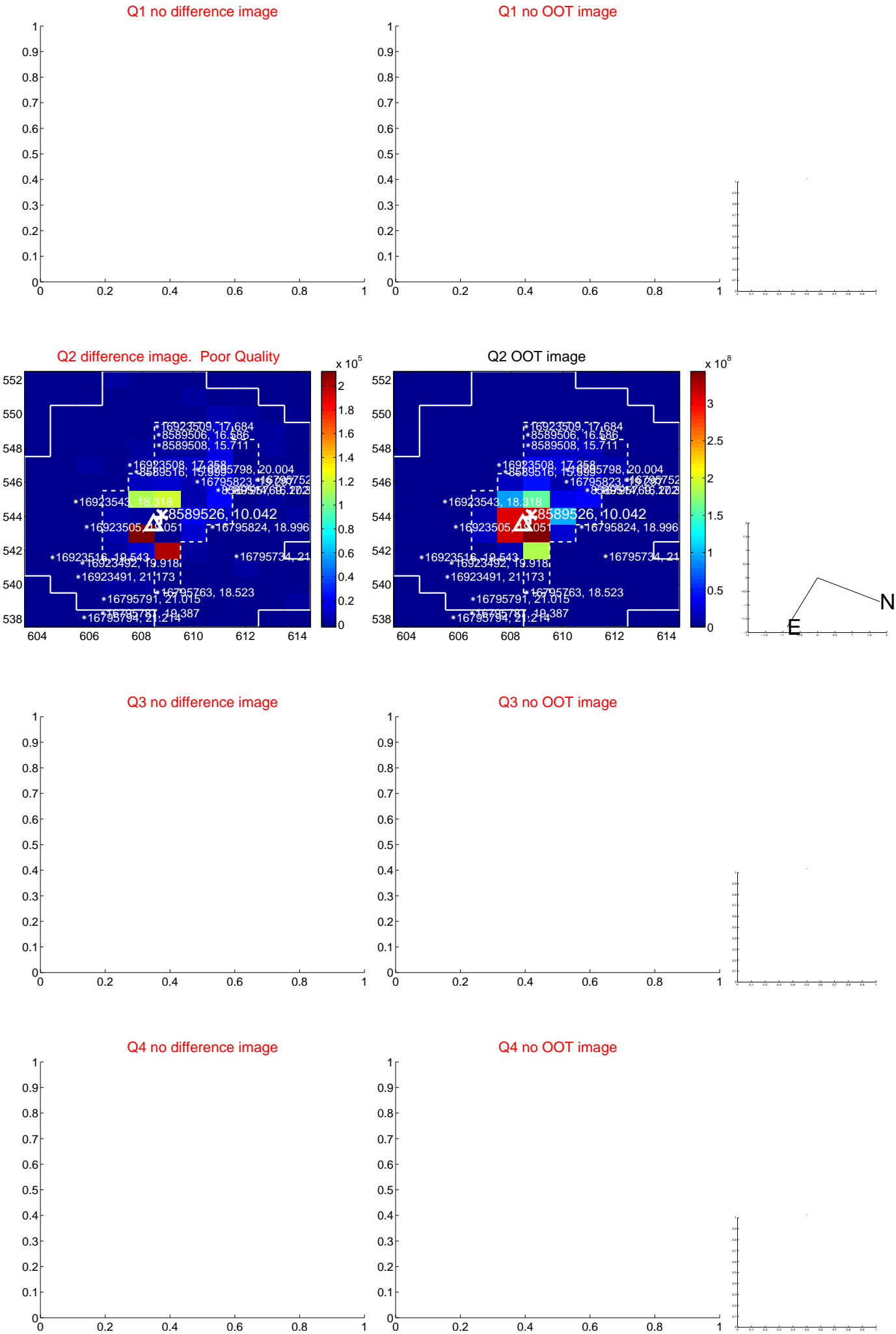
The direct PRF centroid is offset from the target star catalog position by about 1.00 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.220 \pm 2.677$	0.46	$-1.220 \pm 2.679$	$-0.047 \pm 1.006$
PRF-fit source offset from KIC position	$0.700 \pm 2.876$	0.24	$-0.699 \pm 2.878$	$-0.028 \pm 1.054$
photometric centroid source offset	$1.67 \pm 1.79$	0.93	$1.65 \pm 1.81$	$0.29 \pm 1.06$



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 are from the UKIRT catalog.

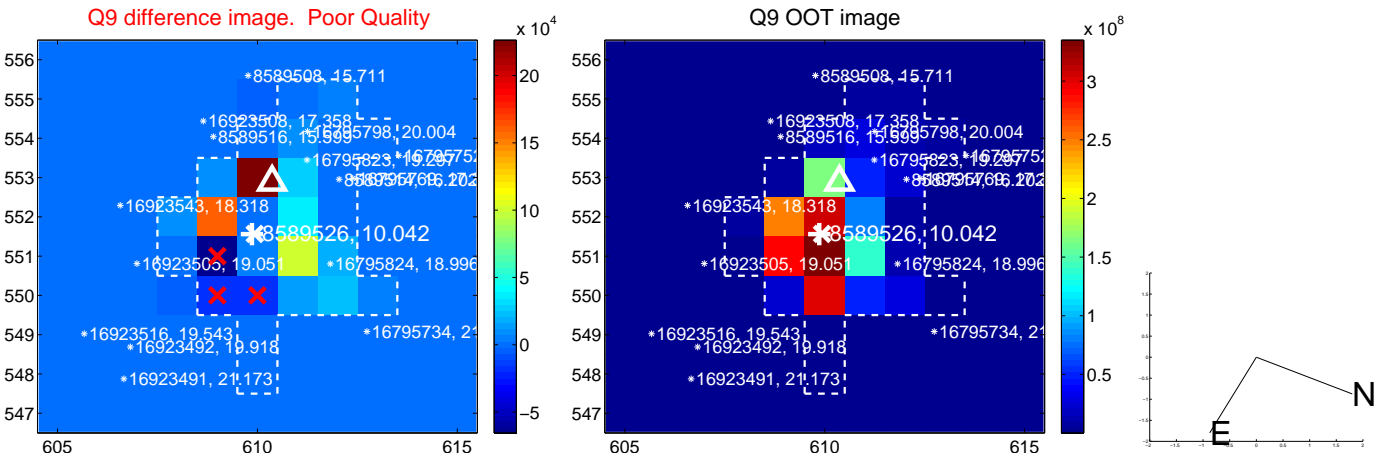
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



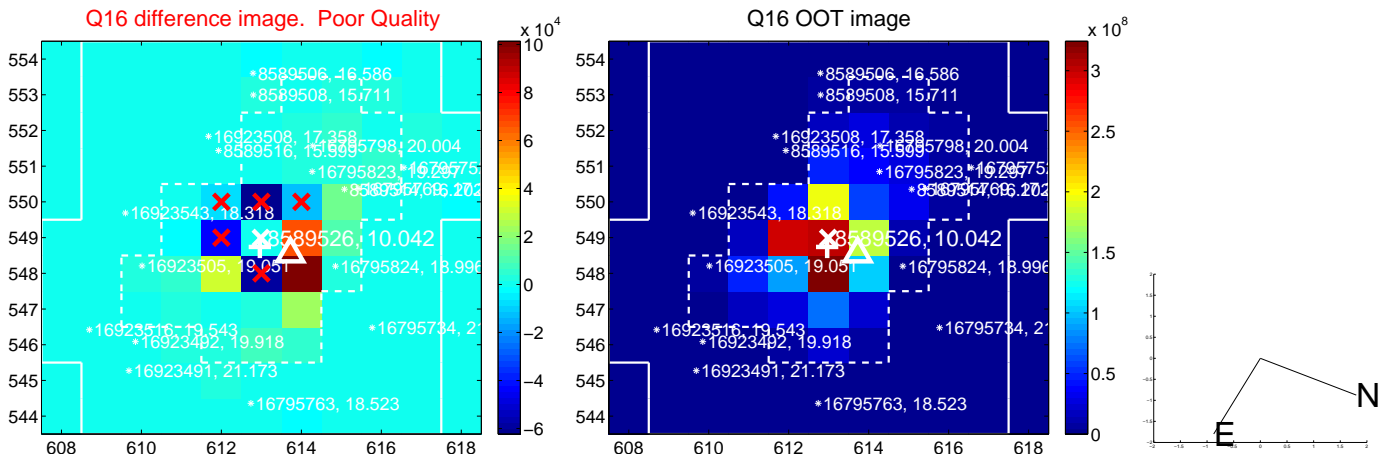
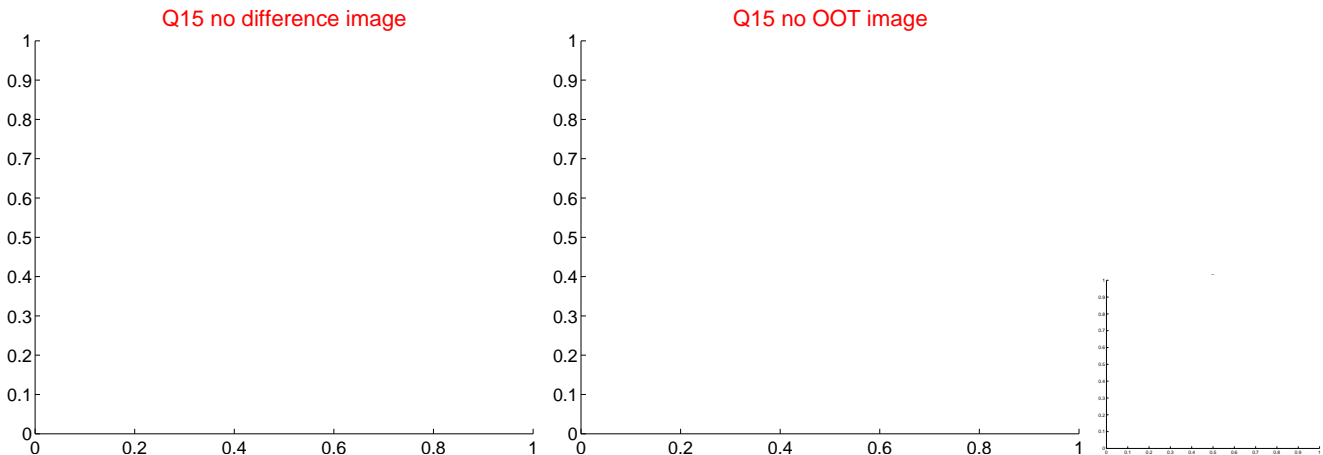
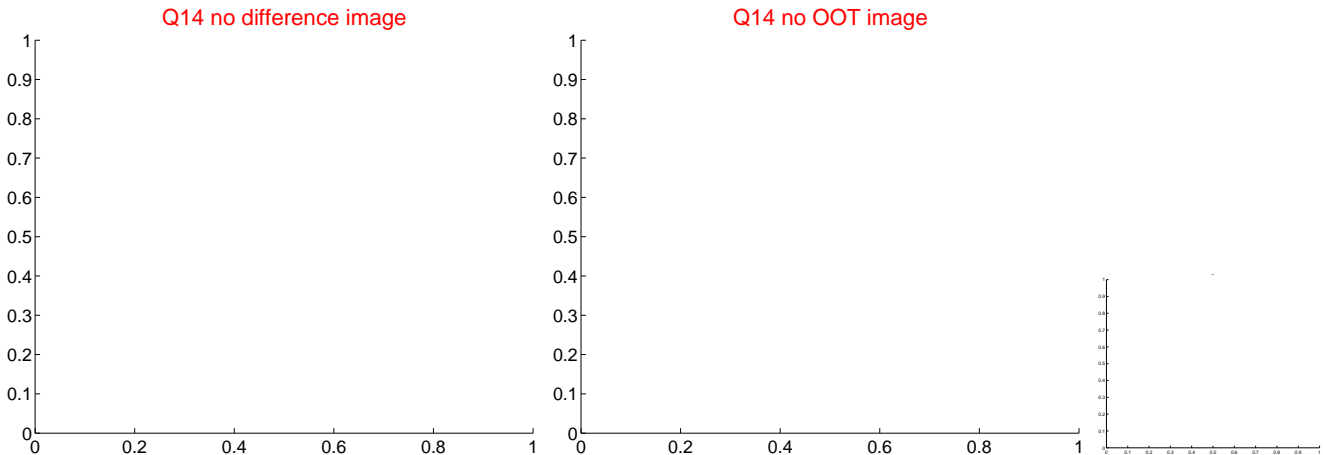
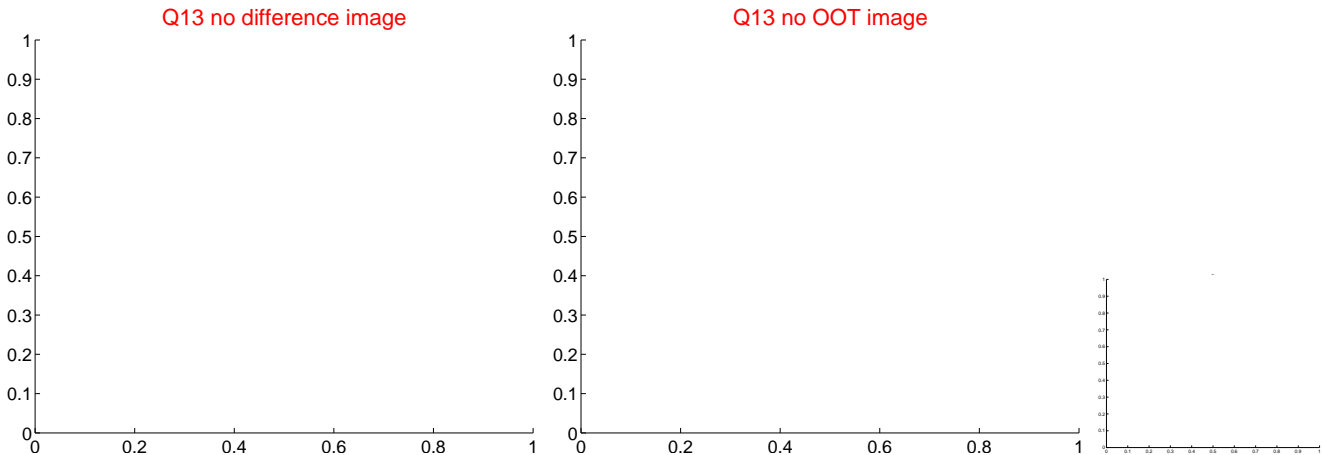
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

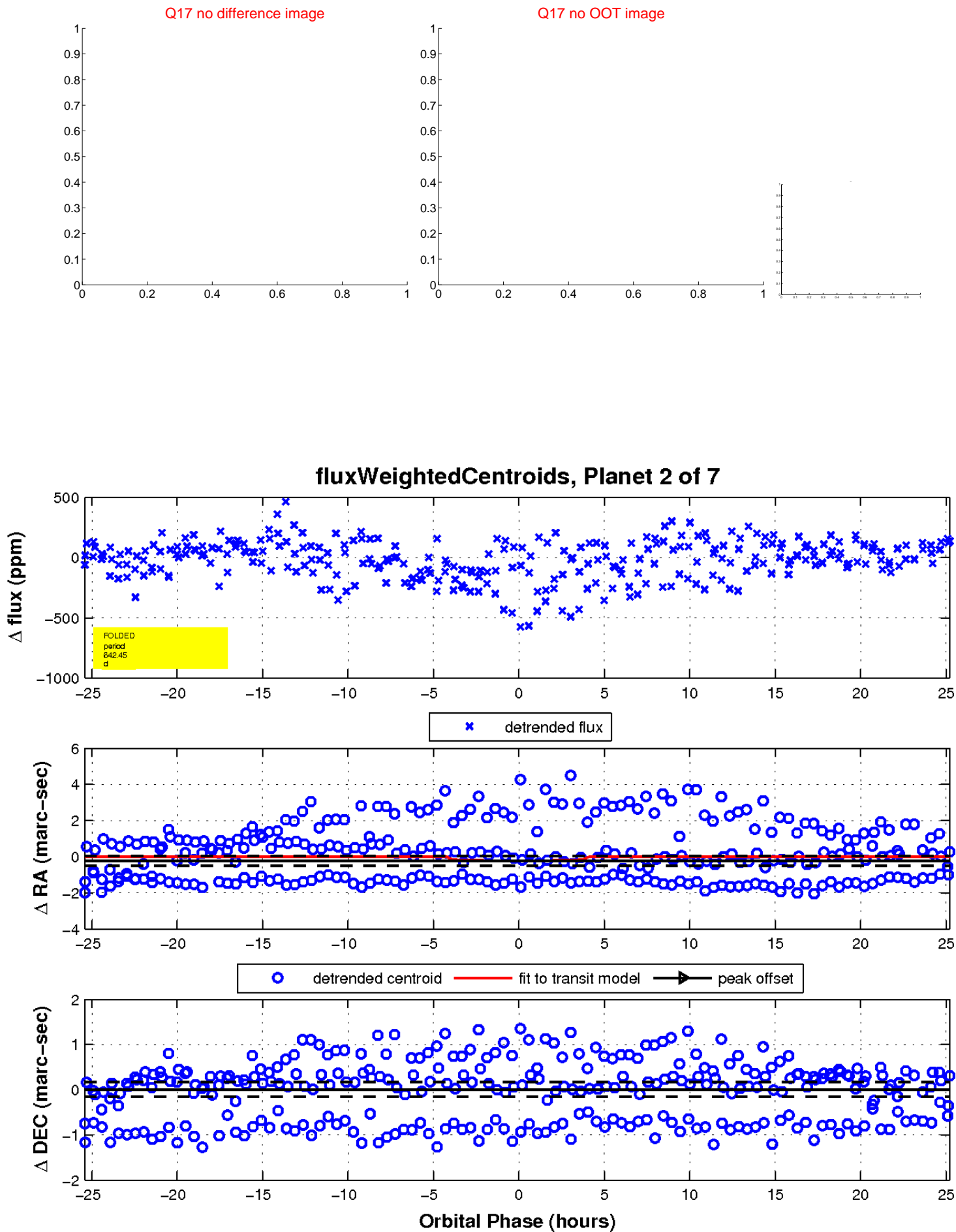


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value

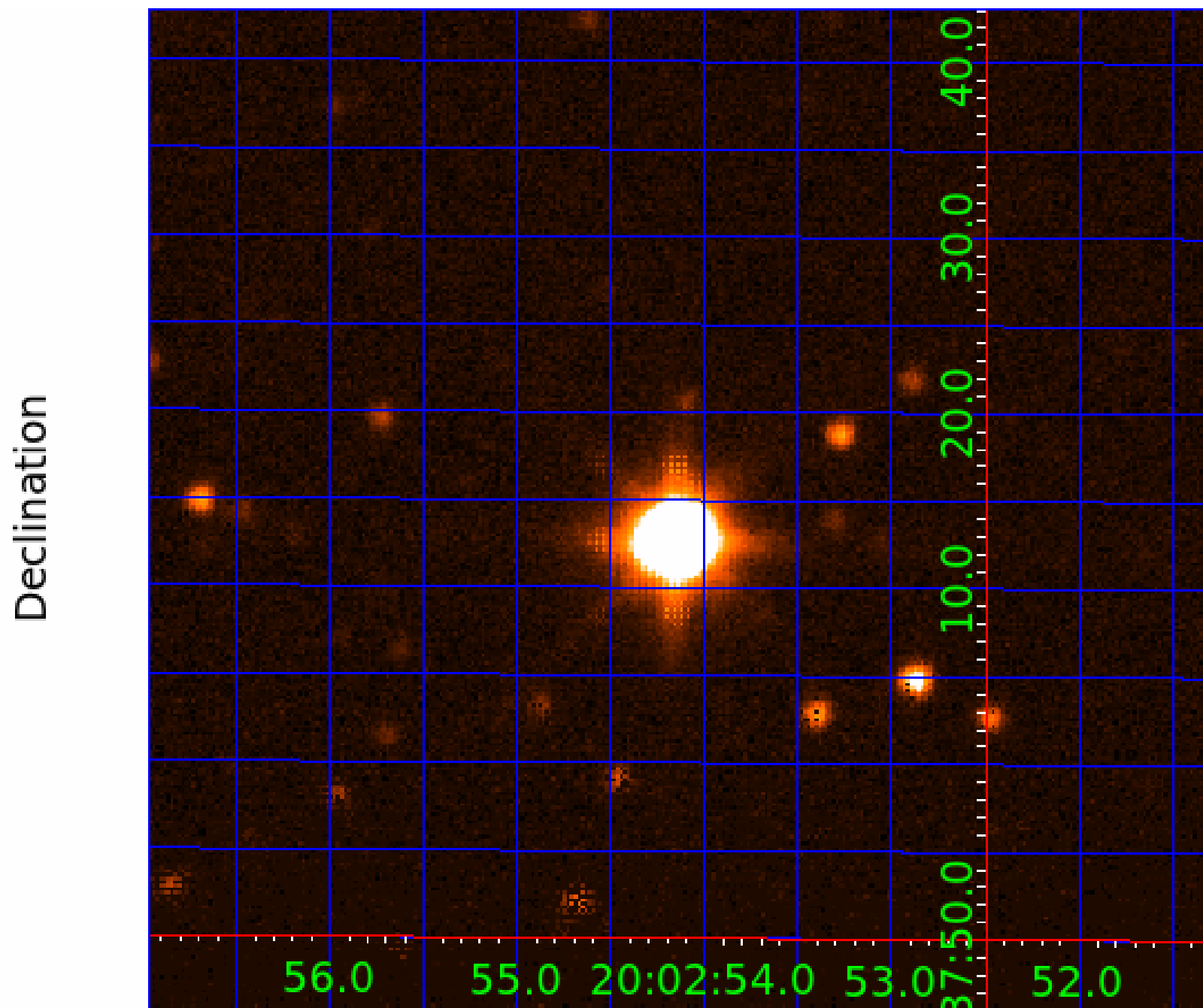




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



# KIC 008589526

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008589526-01	OBS	No	4.254168	133.079701	34.6	15.964	12.9	10.4	3.52	6309	2.42	5026.47
008589526-02	OBS	No	642.447956	212.200155	151.7	8.476	9.6	5.1	3.52	6309	4.94	6.25
008589526-03	OBS	No	114.630115	209.246884	170.4	7.153	8.8	8.0	3.52	6309	8.31	62.22
008589526-04	OBS	No	480.642300	318.856889	181.2	16.033	8.7	7.2	3.52	6309	5.05	9.20
008589526-05	OBS	No	174.602635	283.418289	171.5	3.739	7.8	8.1	3.52	6309	5.83	35.50
008589526-06	OBS	No	176.727621	169.486699	276.9	2.426	8.2	8.8	3.52	6309	6.86	34.94
008589526-07	OBS	No	94.024694	132.390744	198.3	3.242	7.6	8.4	3.52	6309	6.61	81.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008589526-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
008589526-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
008589526-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED
008589526-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

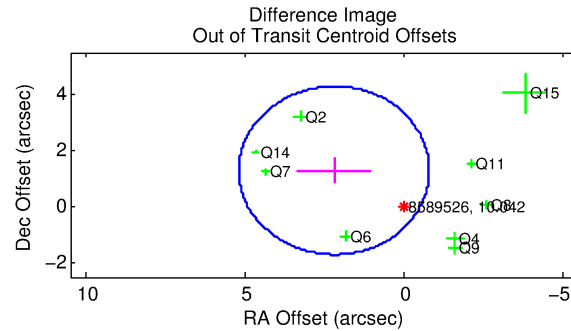
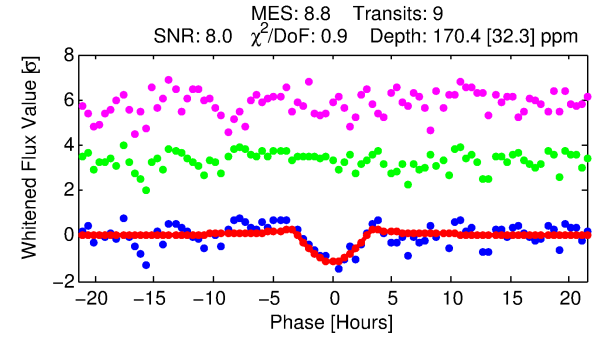
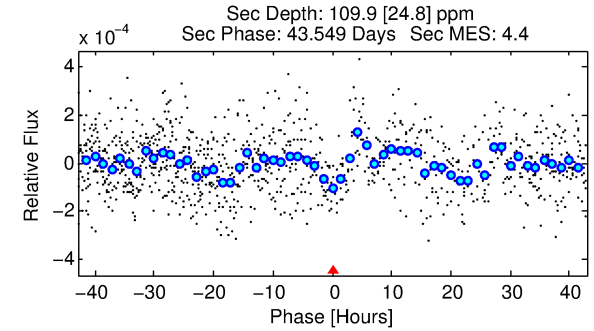
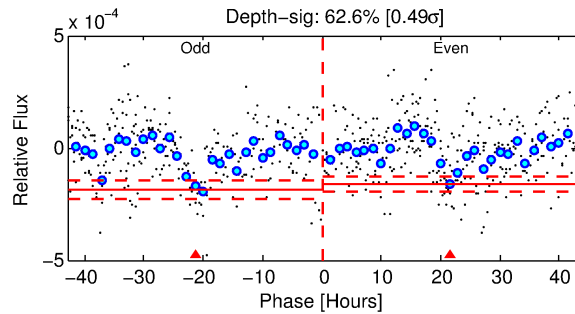
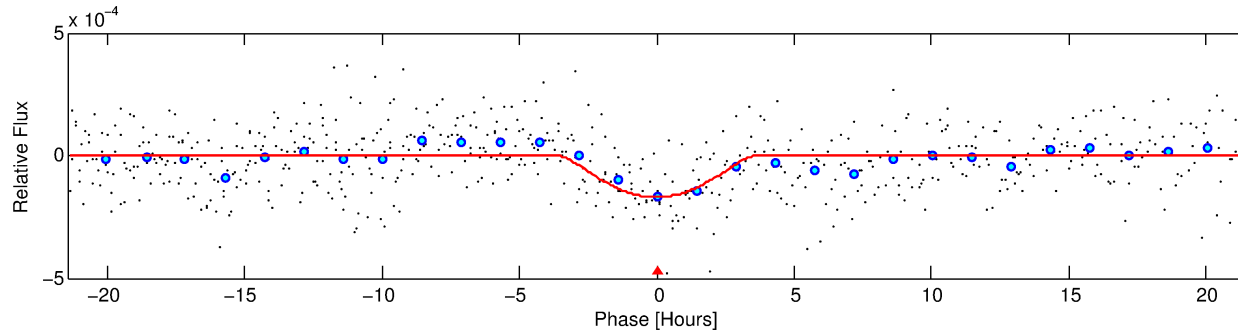
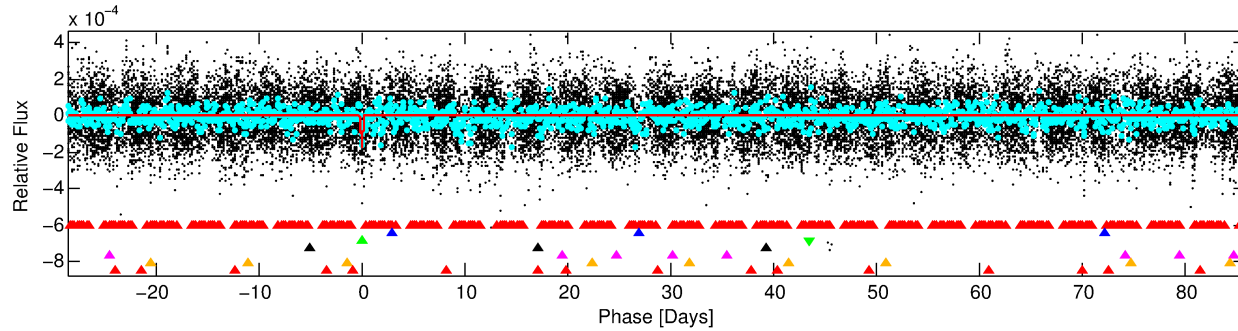
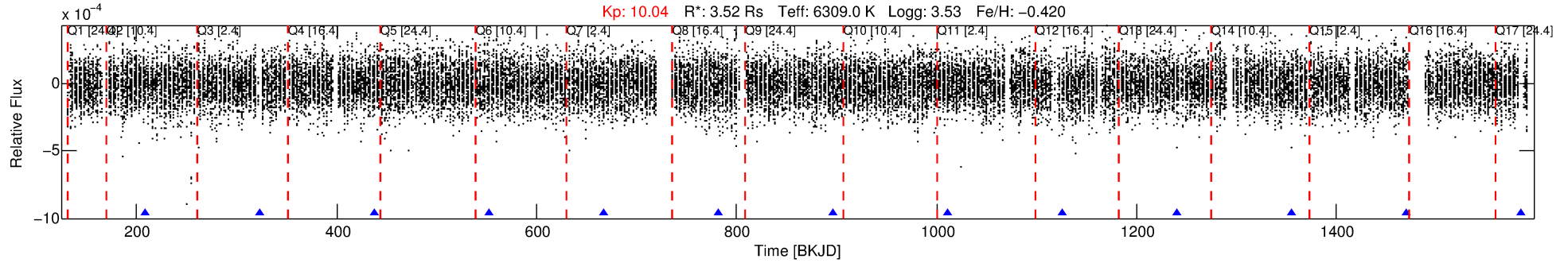
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008589526-03

No Significant Match Found

# DV One-Page Summary

KIC: 8589526 Candidate: 3 of 7 Period: 114.630 d



## DV Fit Results:

Period = 114.63011 [0.00405] d  
Epoch = 209.2469 [0.0298] BKJD  
 $R_p/R^* = 0.0216$  [0.0491]  
 $a/R^* = 27.54$  [19.46]  
 $b = 1.00$  [0.08]  
 $S_{\text{eff}} = 62.22$  [41.48]  
 $T_{\text{eq}} = 716$  [119] K  
 $R_p = 8.31$  [19.22]  $R_e$   
 $a = 0.5315$  [0.2204] AU  
 $A_g = 247.47$  [1137.67] [0.22 $\sigma$ ]  
 $T_{\text{eff}} = 4392$  [4997] K [0.74 $\sigma$ ]

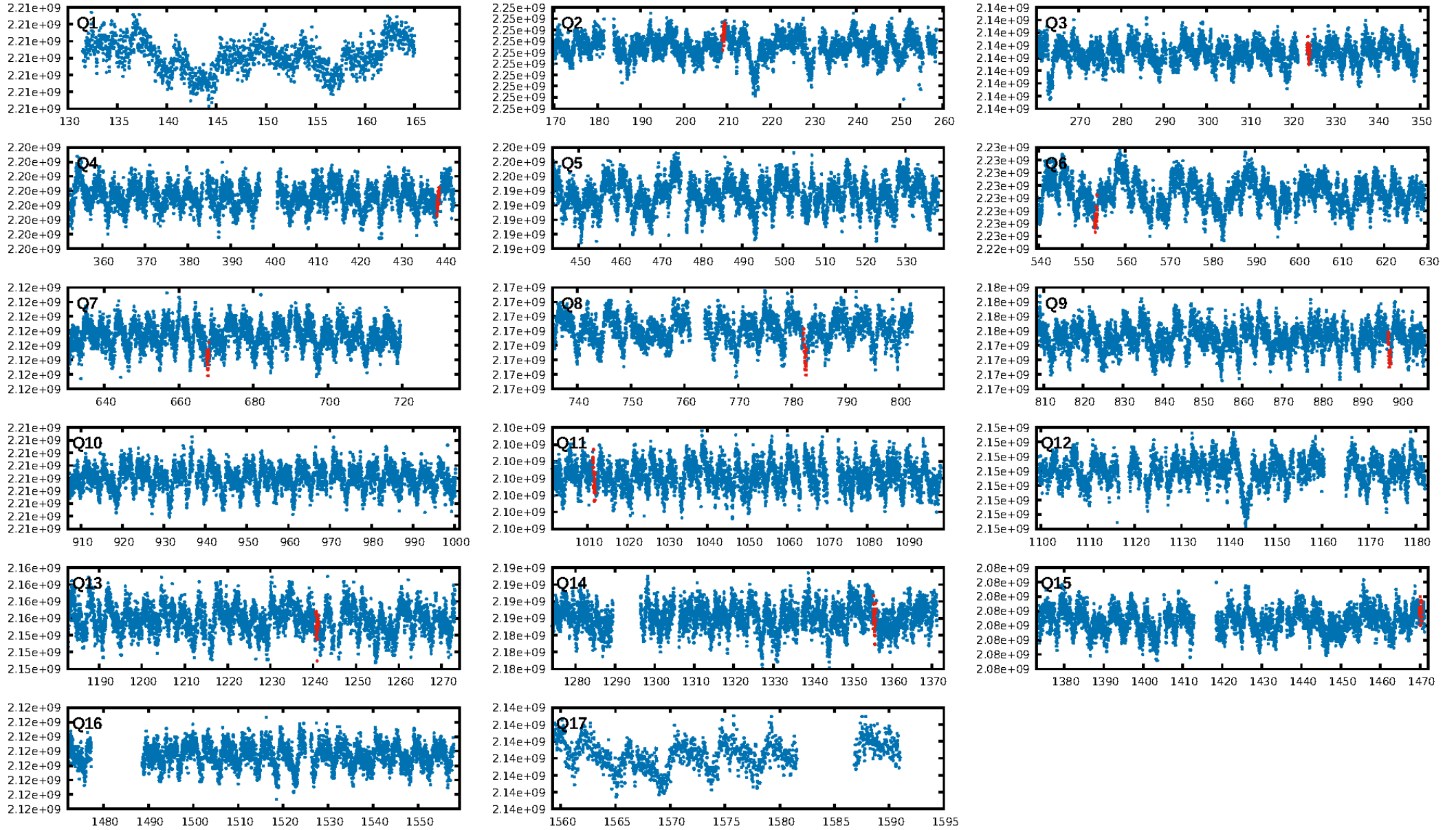
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [62.97 $\sigma$ ]  
LongPeriod-sig: 100.0% [178.33 $\sigma$ ]  
ModelChiSquare2-sig: 83.5%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 4.29e-10**  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 64.8%  
Centroid-so: 0.387 arcsec [0.33 $\sigma$ ]  
OotOffset-rm: 2.556 arcsec [2.56 $\sigma$ ]  
KicOffset-rm: 2.635 arcsec [2.53 $\sigma$ ]  
OotOffset-st: 3/3/2/1 [9]  
KicOffset-st: 3/3/2/1 [9]  
DiffImageQuality-fgm: 0.56 [5/9]  
DiffImageOverlap-fno: 0.78 [7/9]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:46:00 Z

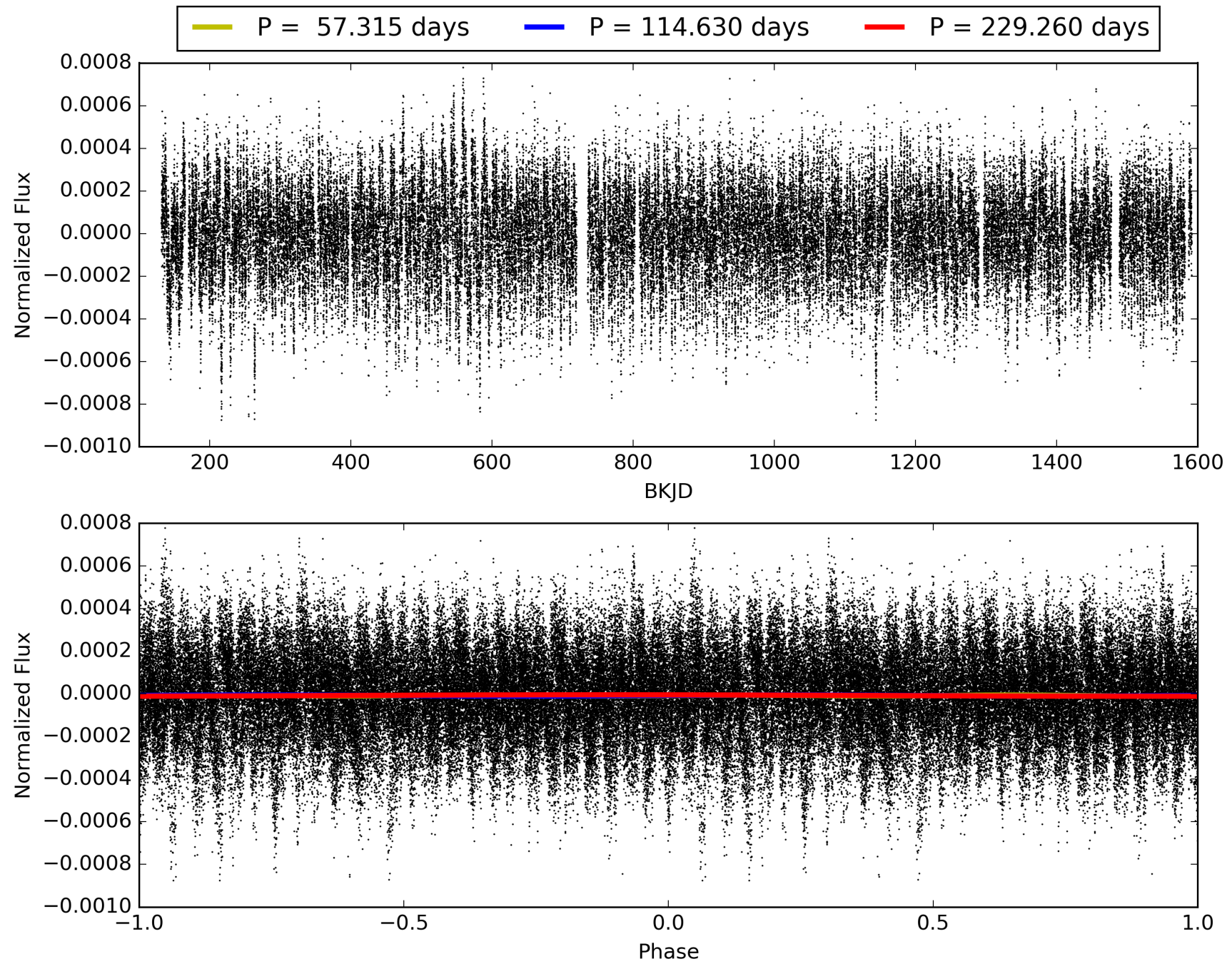
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008589526-03, PDC Light Curves



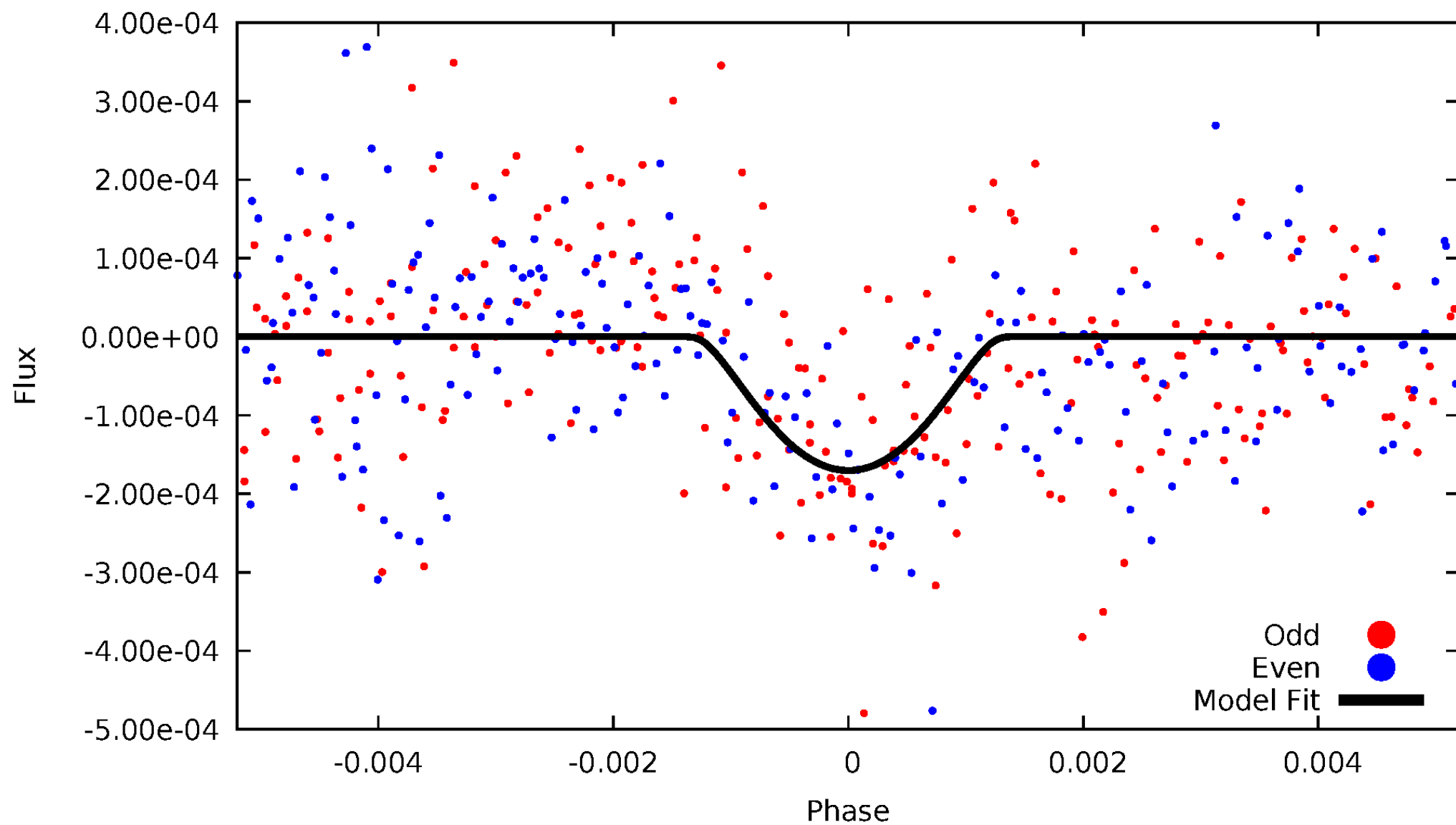


TCE 008589526-03



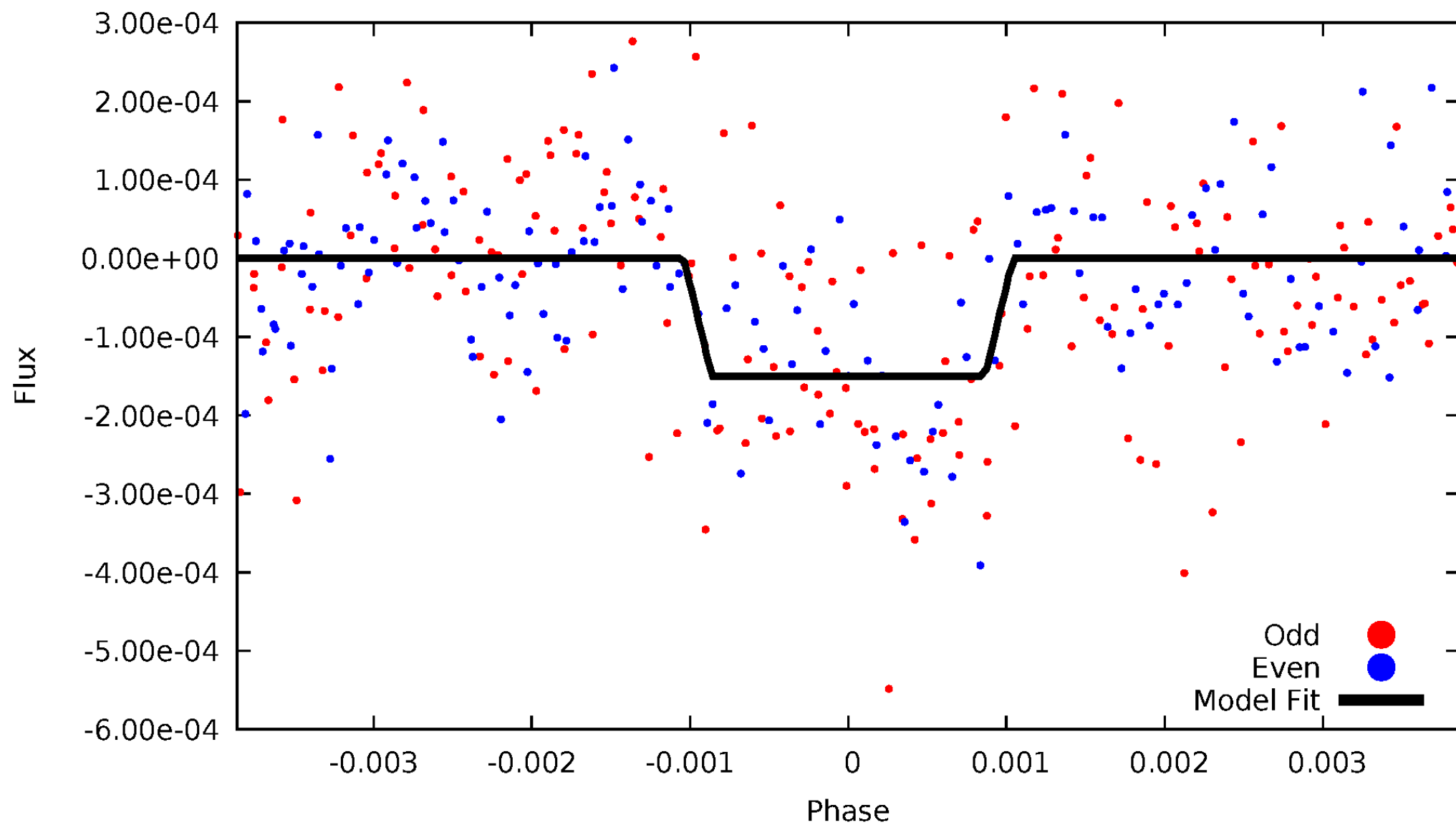
# DV Odd/Even

TCE 008589526-03



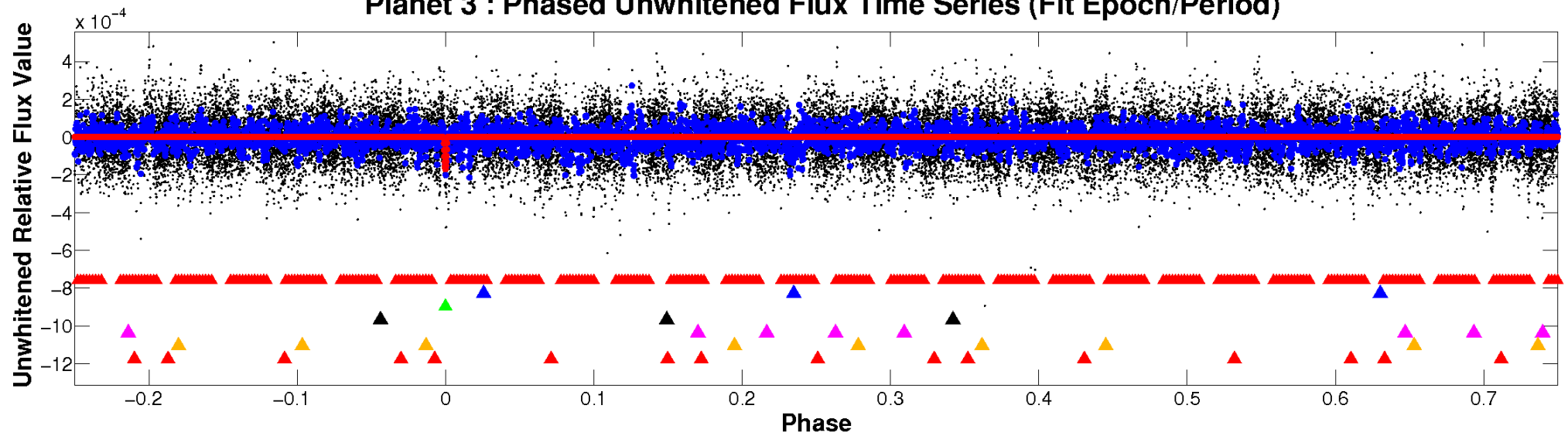
# ALT Odd/Even

TCE 008589526-03

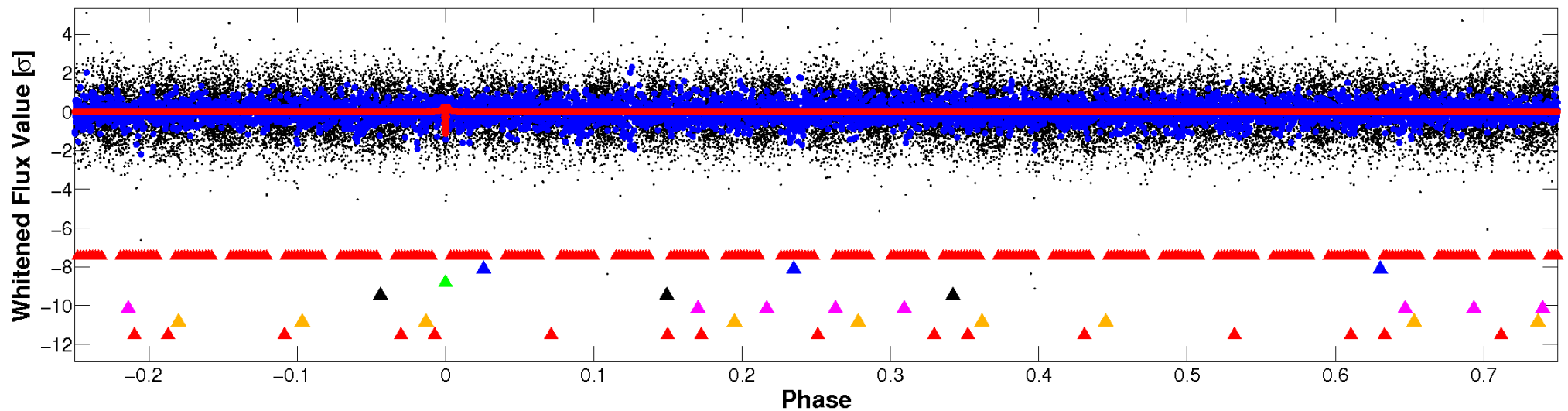


# Non-Whitened Vs. Whitened Light Curve

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

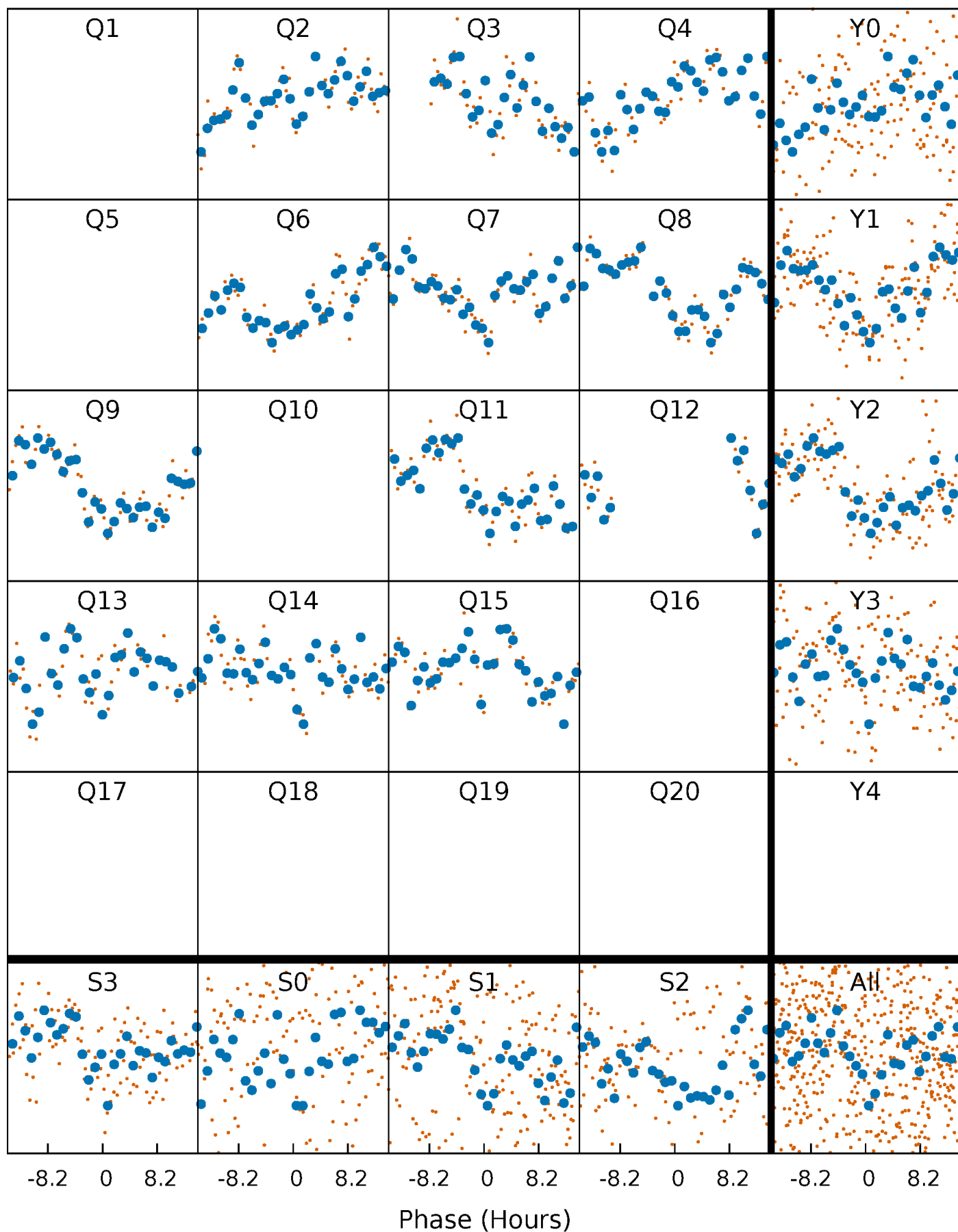


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

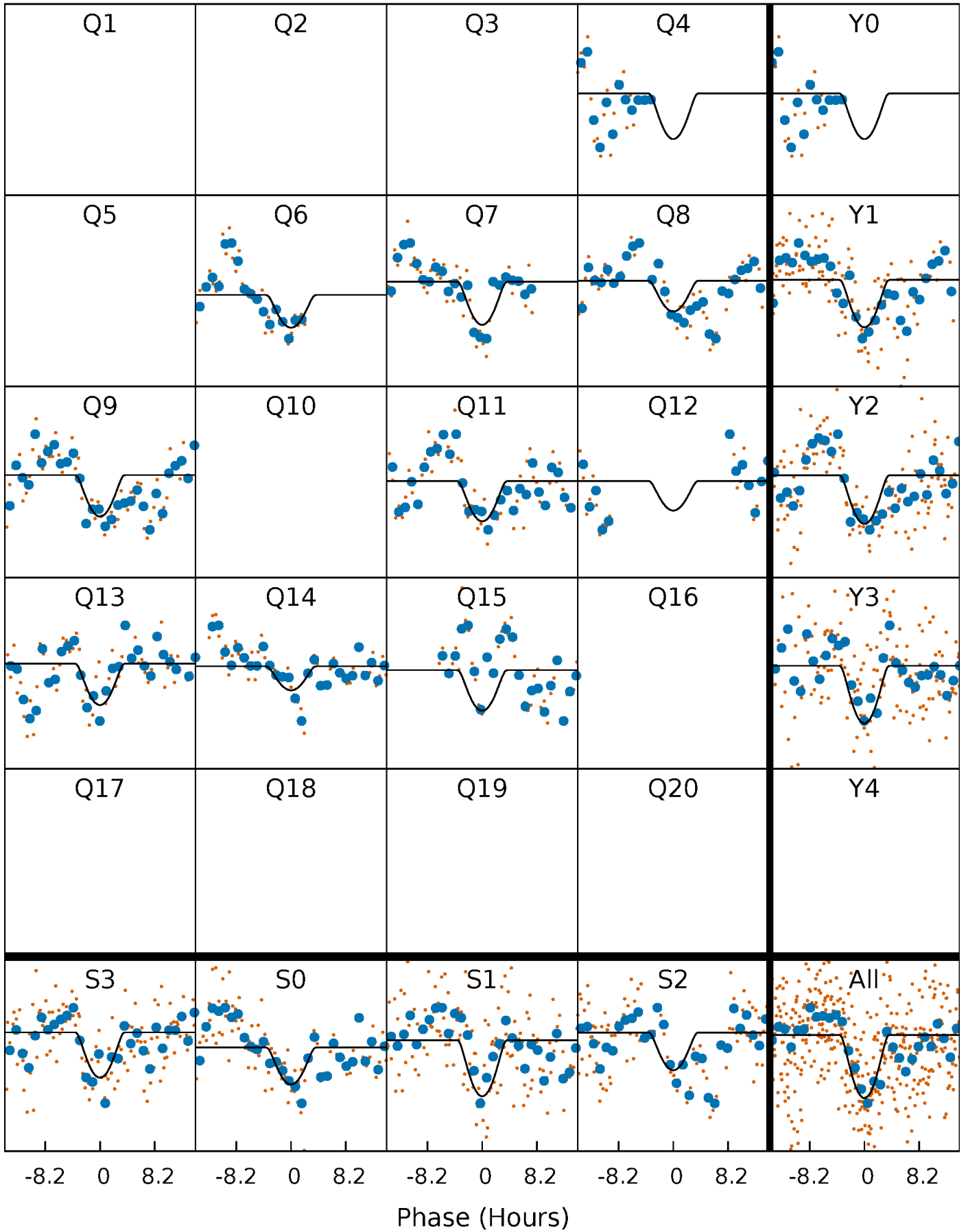
TCE 008589526-03 P=114.630115 Days  $T_0=209.246884$  (BKJD)





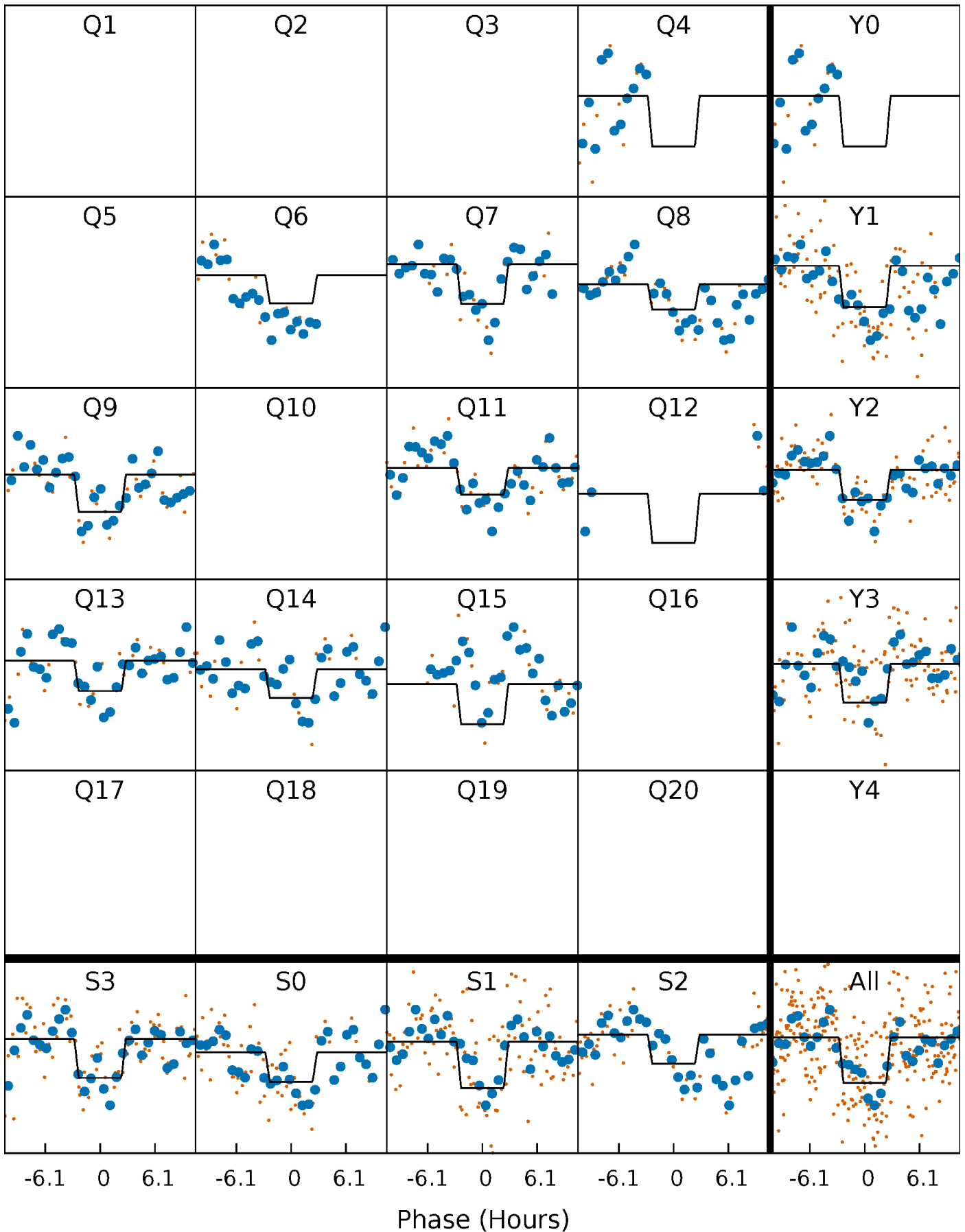
# DV Quarter-Phased Transit Curves

TCE 008589526-03     $P=114.630115$  Days     $T_0=209.246884$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

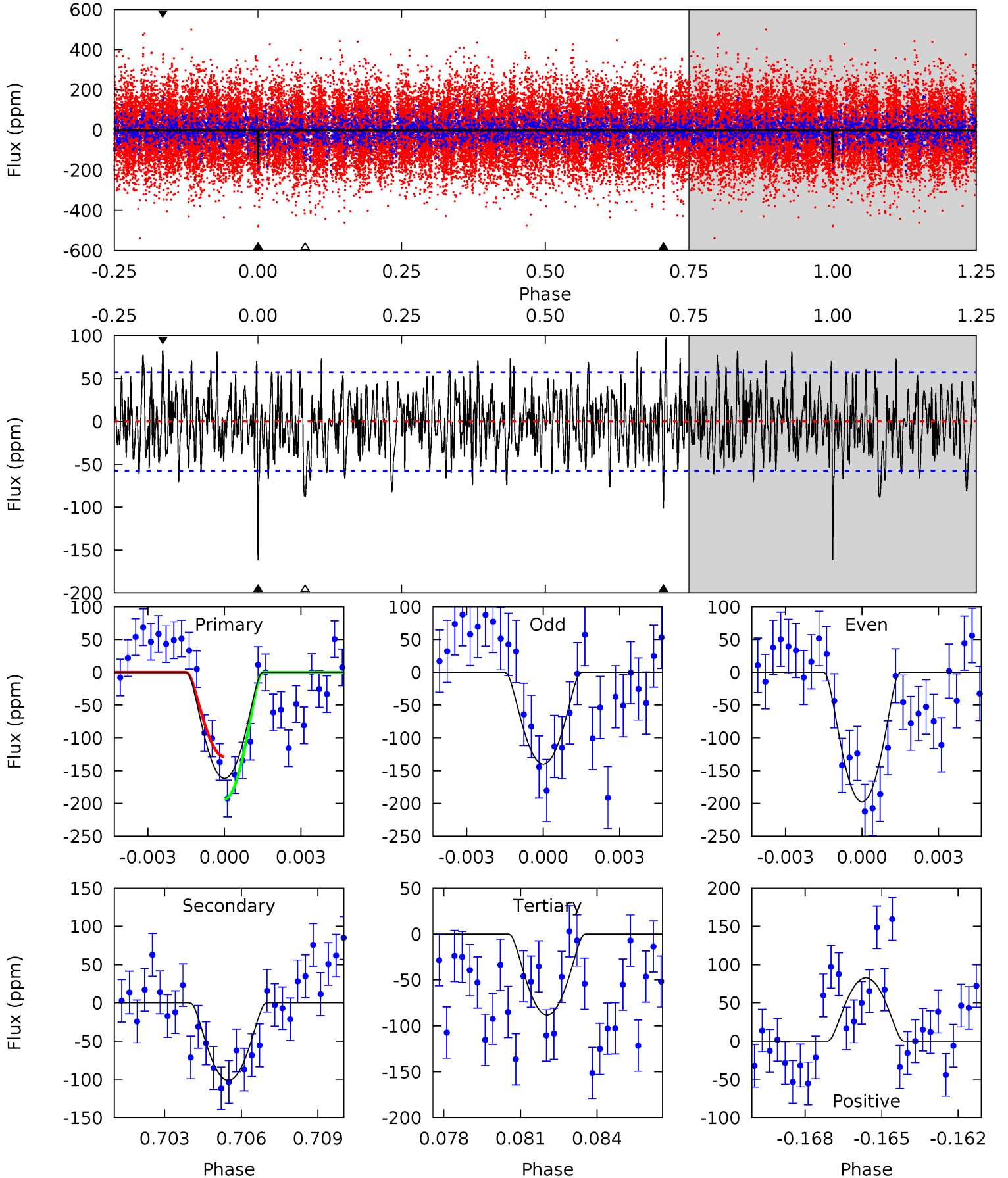
TCE 008589526-03   P=114.630410 Days    $T_0=209.230218$  (BKJD)



# DV Model-Shift Uniqueness Test

008589526-03, P = 114.630115 Days, E = 94.616769 Days

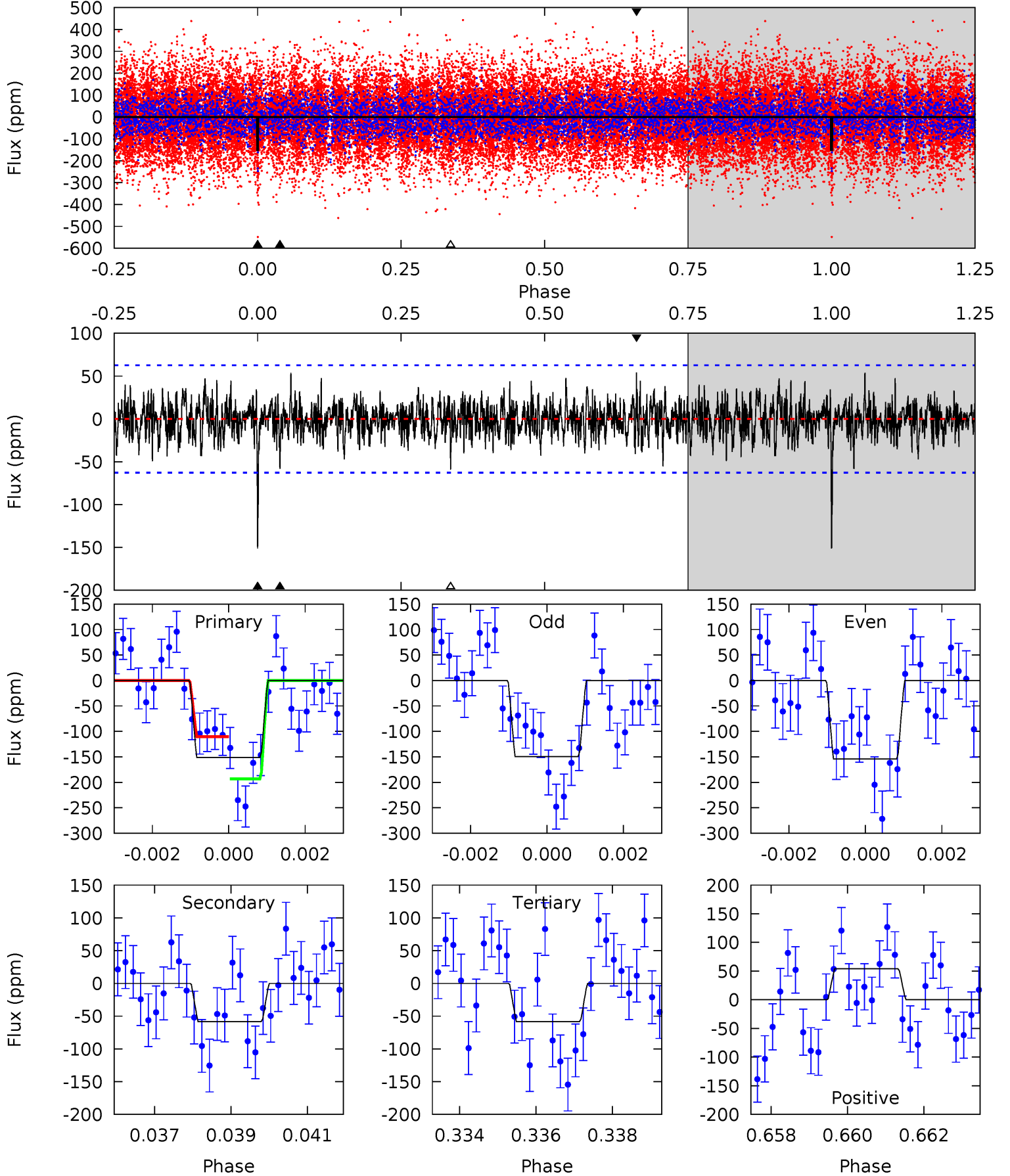
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.8	9.29	8.08	7.58	5.27	3.00	2.70	6.76	7.25	1.22	1.71	2.60	0.89	0.38	2.96



# Alt Model-Shift Uniqueness Test

008589526-03, P = 114.630410 Days, E = 94.599808 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	4.95	4.94	4.60	5.32	3.08	1.31	7.89	8.23	0.01	0.35	0.20	0.94	0.26	3.52



### Stellar Parameters For KIC 008589526

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6309^{+173}_{-157}$	$3.528^{+0.384}_{-0.096}$	$-0.420^{+0.400}_{-0.300}$	$3.519^{+0.616}_{-1.539}$	$1.523^{+0.216}_{-0.401}$	$0.049^{+0.170}_{-0.016}$
	+3%/-2%	+11%/-3%	+95%/-71%	+18%/-44%	+14%/-26%	+344%/-32%
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 008589526-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-101 \pm 11$	$14.79^{+15.06}_{-9.93}$	$975^{+65}_{-107}$	$3562^{+1876}_{-655}$	$74^{+591}_{-55}$
Alt.	$-58 \pm 12$	$13.63^{+13.99}_{-9.48}$	$983^{+57}_{-96}$	$3340^{+1763}_{-583}$	$49^{+515}_{-38}$

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



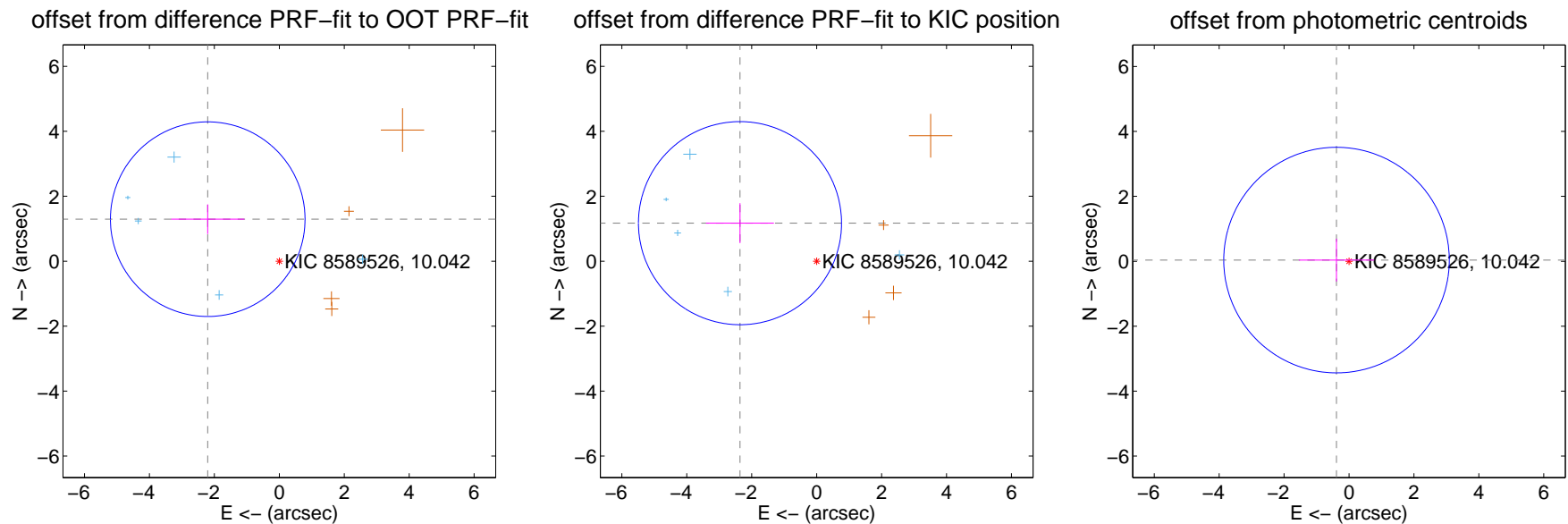
## DV Centroid Data

Supplemental centroid analysis for 008589526-03. **Kepler magnitude: 10.04.** Transit SNR 7.96

There are 5 quarters with good PRF difference image offsets

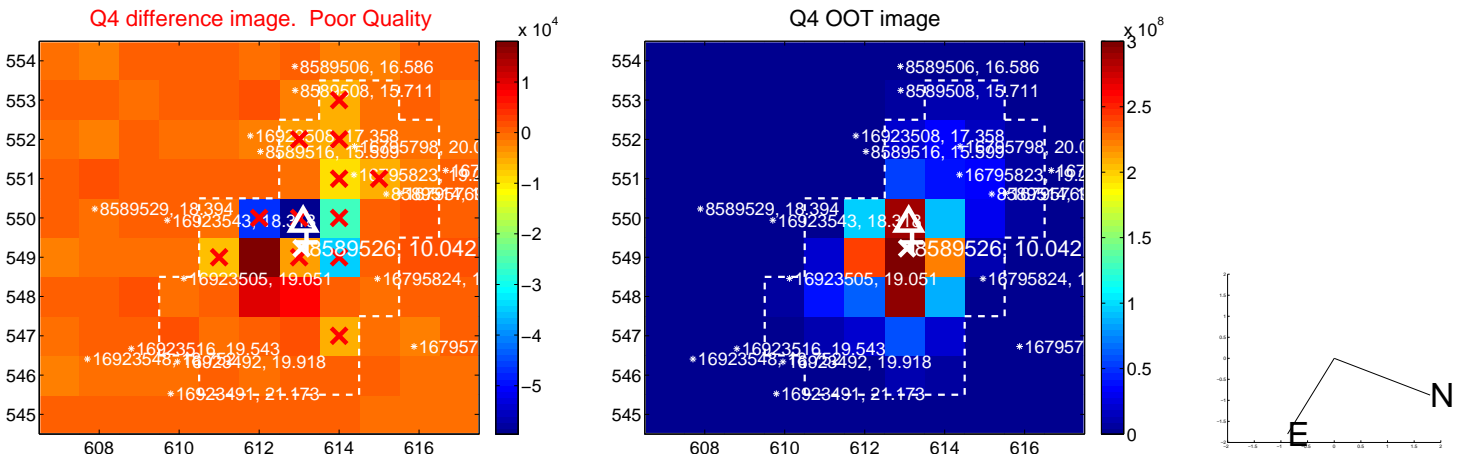
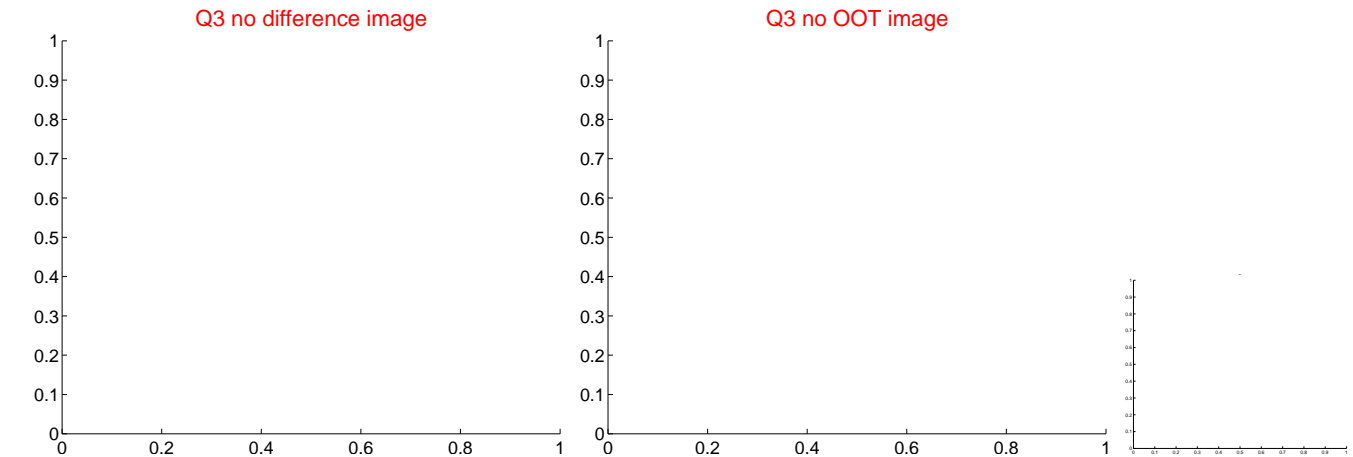
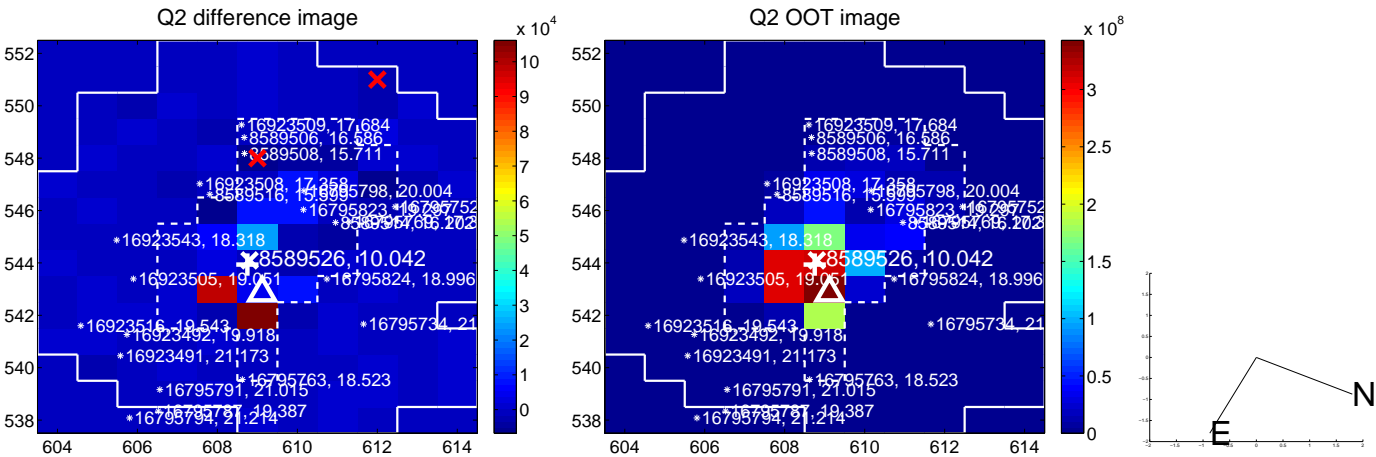
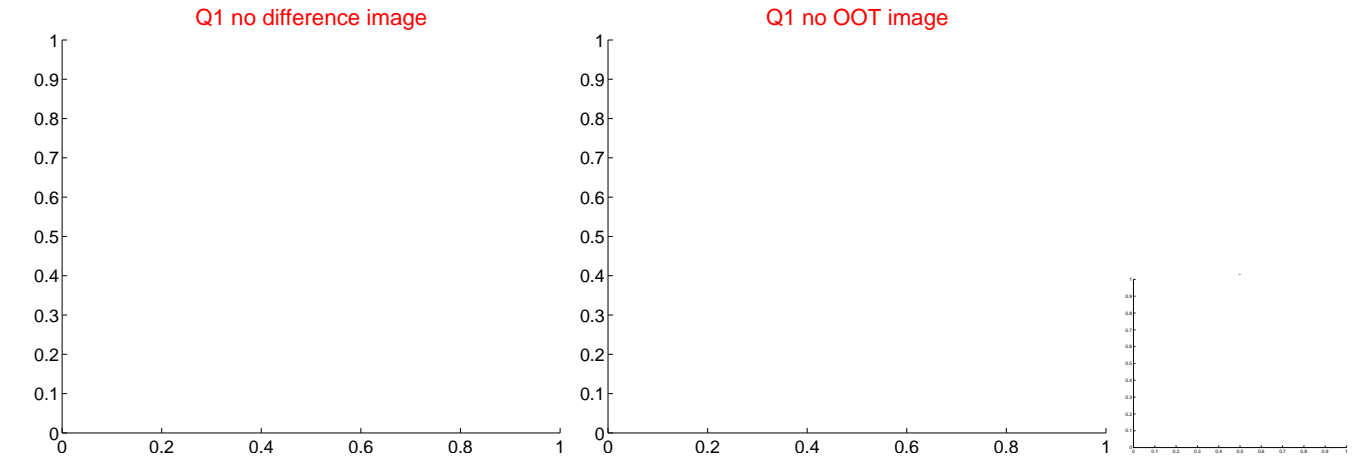
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.556 \pm 0.999$	2.56	$2.205 \pm 1.127$	$1.294 \pm 0.456$
PRF-fit source offset from KIC position	$2.635 \pm 1.042$	2.53	$2.361 \pm 1.045$	$1.171 \pm 0.615$
photometric centroid source offset	$0.39 \pm 1.16$	0.33	$0.38 \pm 1.16$	$0.04 \pm 0.66$

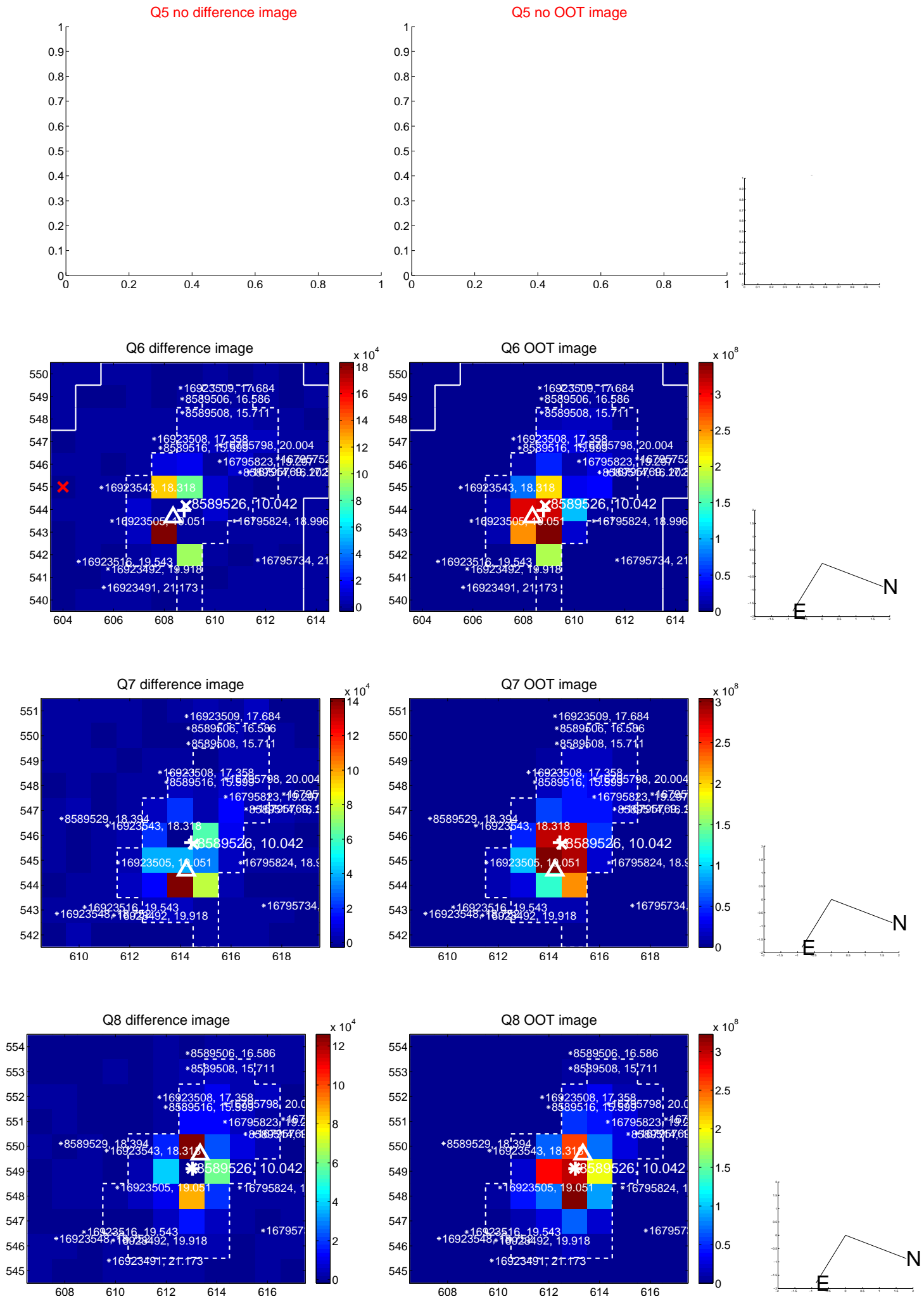


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

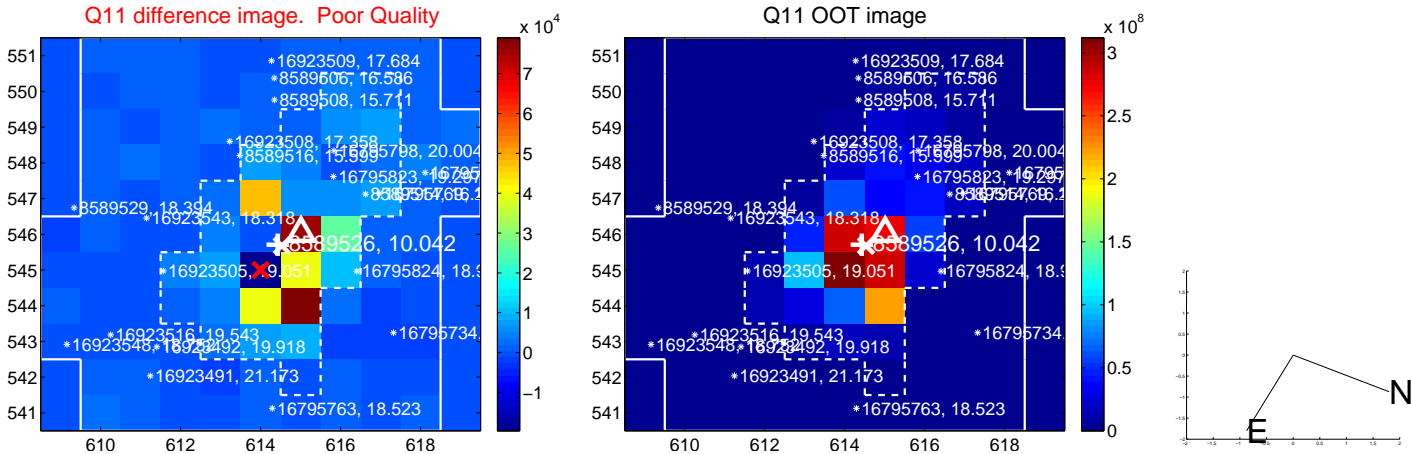
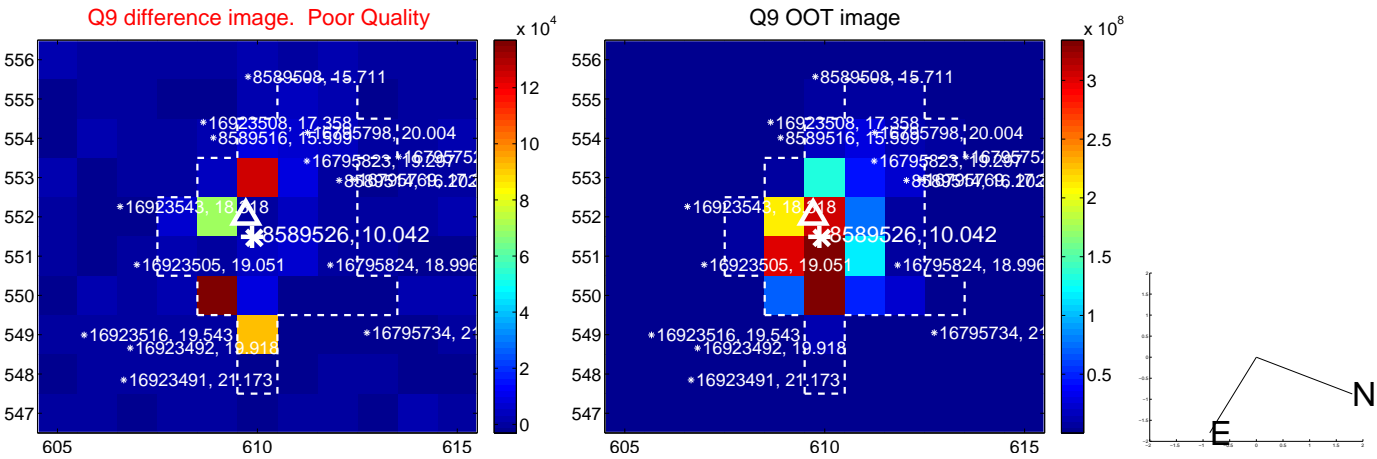
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



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

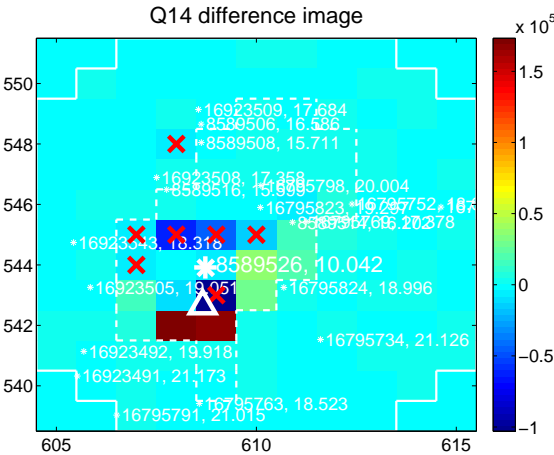
Q13 no difference image



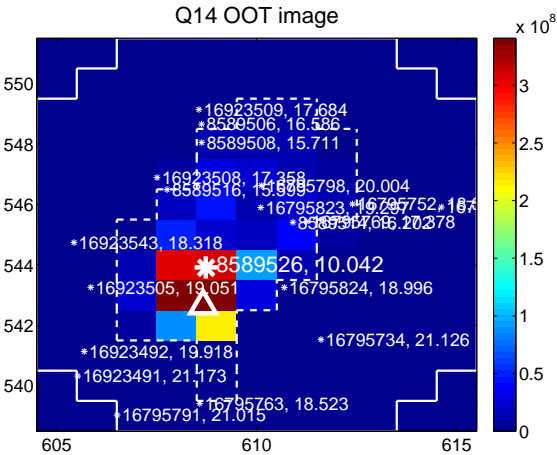
Q13 no OOT image



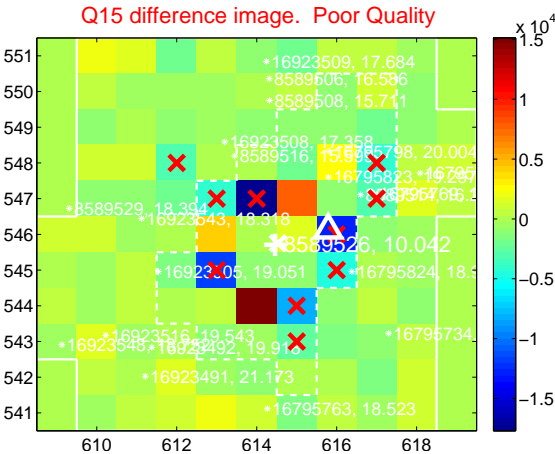
Q14 difference image



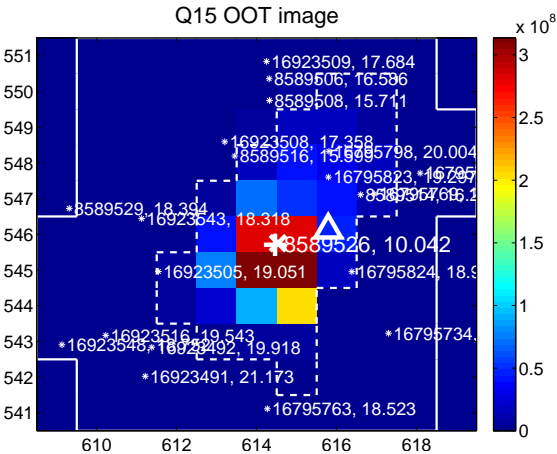
Q14 OOT image



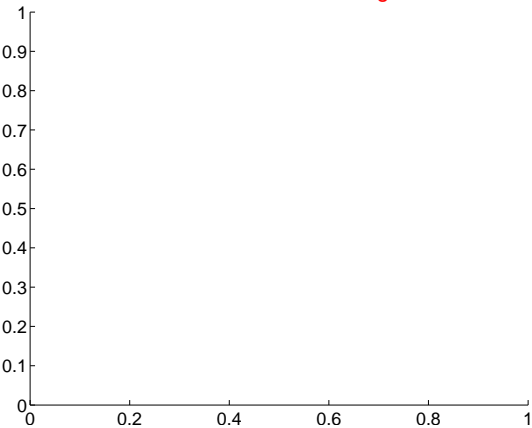
Q15 difference image. Poor Quality



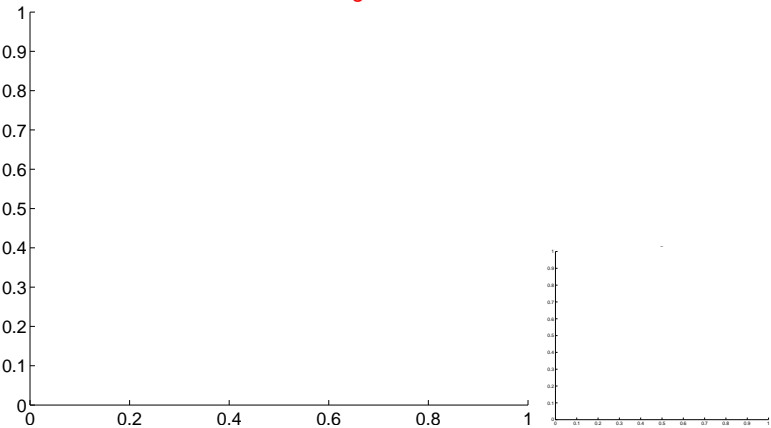
Q15 OOT image



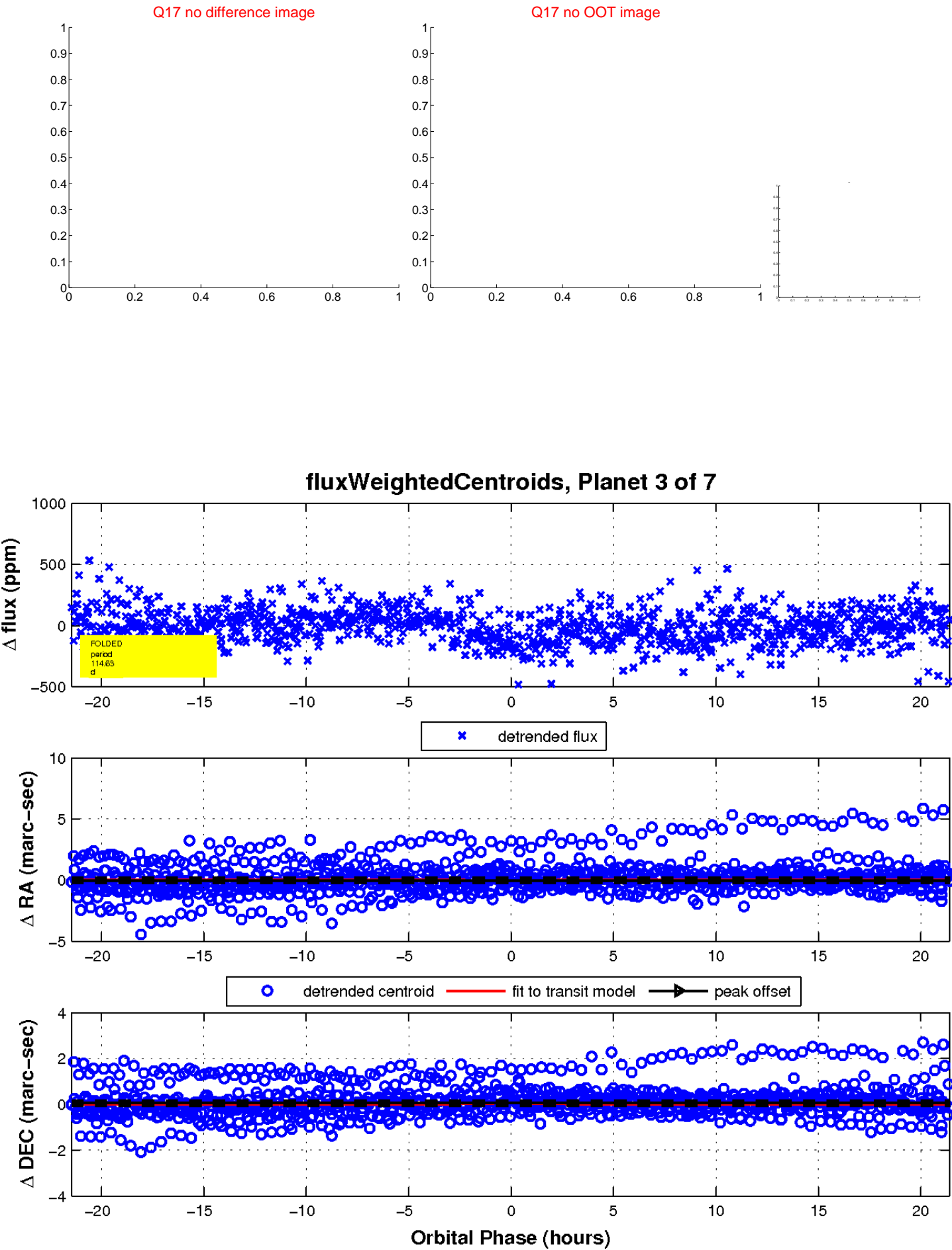
Q16 no difference image



Q16 no OOT image

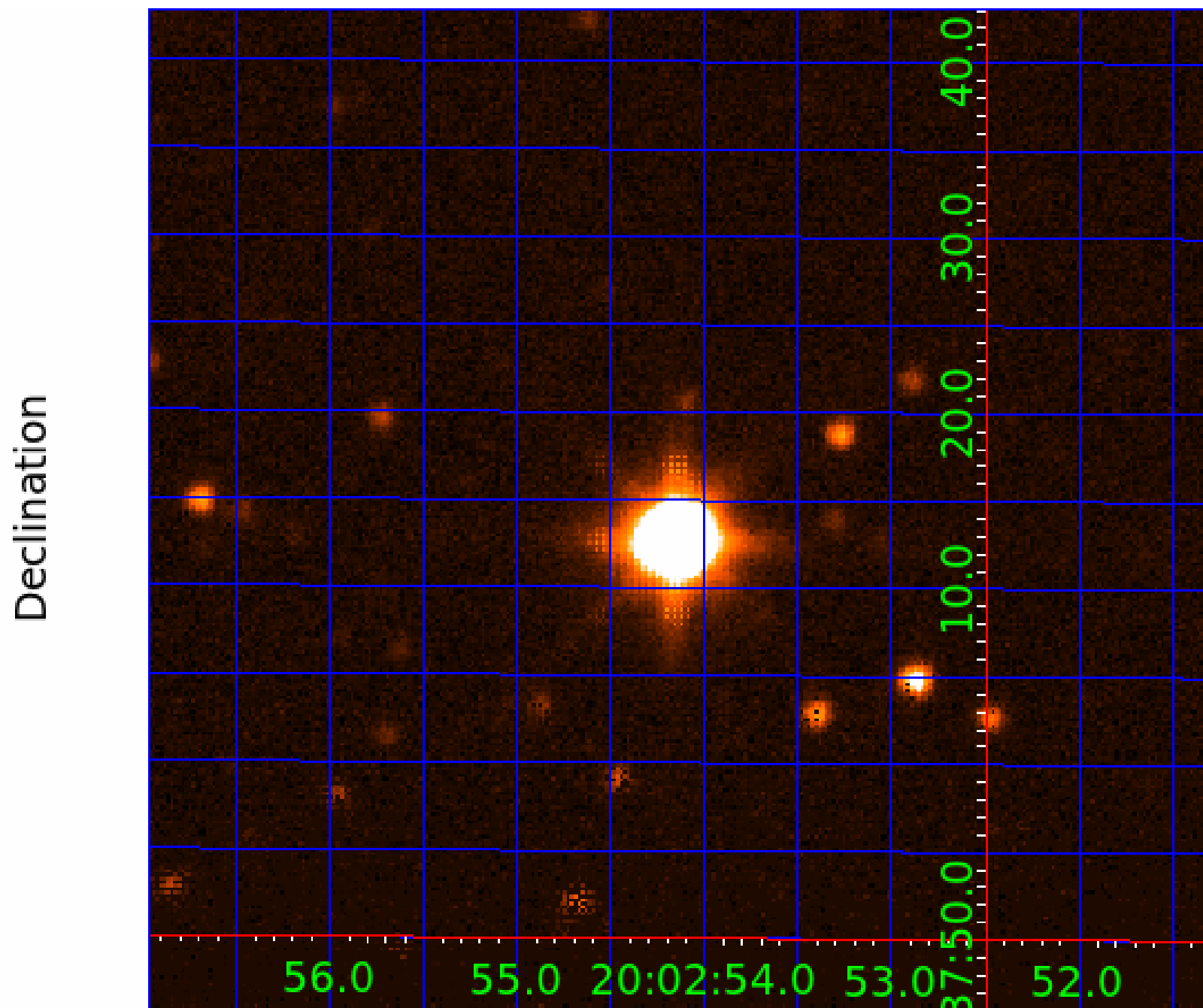


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image



# KIC 008589526

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008589526-01	OBS	No	4.254168	133.079701	34.6	15.964	12.9	10.4	3.52	6309	2.42	5026.47
008589526-02	OBS	No	642.447956	212.200155	151.7	8.476	9.6	5.1	3.52	6309	4.94	6.25
008589526-03	OBS	No	114.630115	209.246884	170.4	7.153	8.8	8.0	3.52	6309	8.31	62.22
008589526-04	OBS	No	480.642300	318.856889	181.2	16.033	8.7	7.2	3.52	6309	5.05	9.20
008589526-05	OBS	No	174.602635	283.418289	171.5	3.739	7.8	8.1	3.52	6309	5.83	35.50
008589526-06	OBS	No	176.727621	169.486699	276.9	2.426	8.2	8.8	3.52	6309	6.86	34.94
008589526-07	OBS	No	94.024694	132.390744	198.3	3.242	7.6	8.4	3.52	6309	6.61	81.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008589526-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
008589526-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
008589526-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED
008589526-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

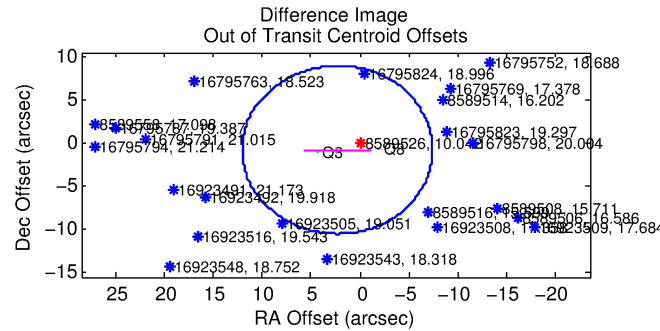
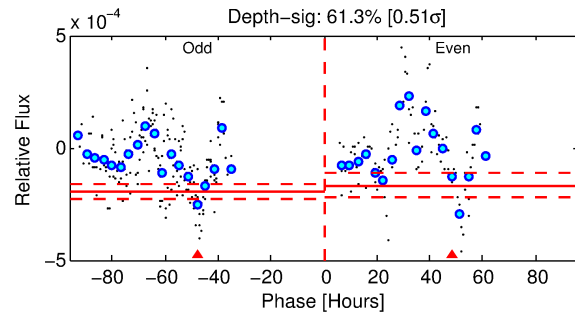
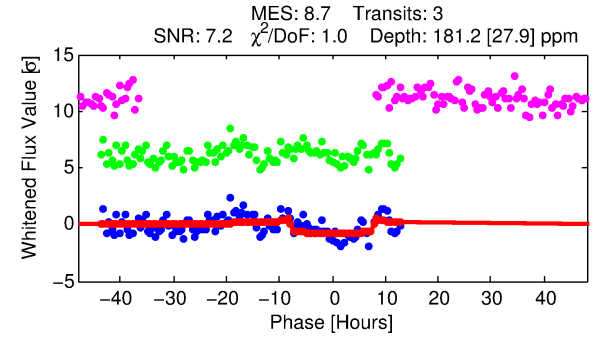
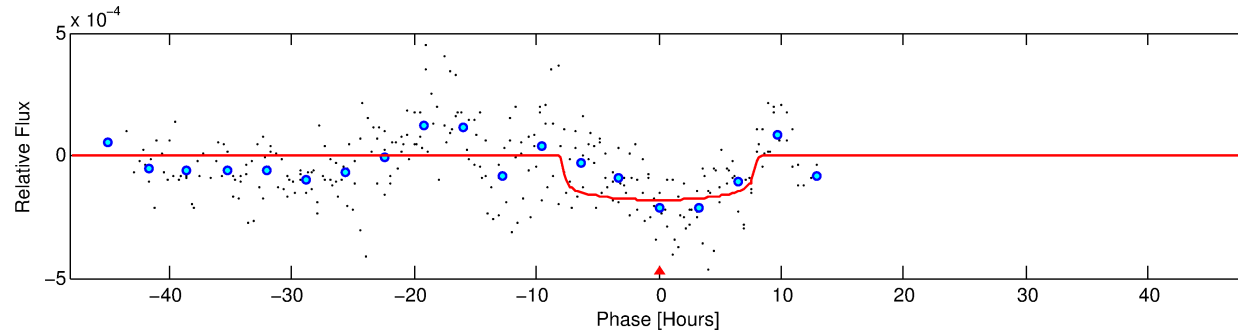
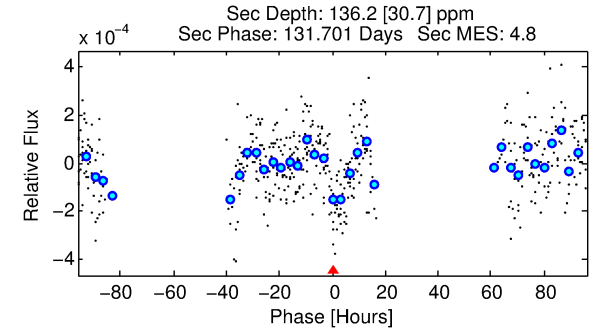
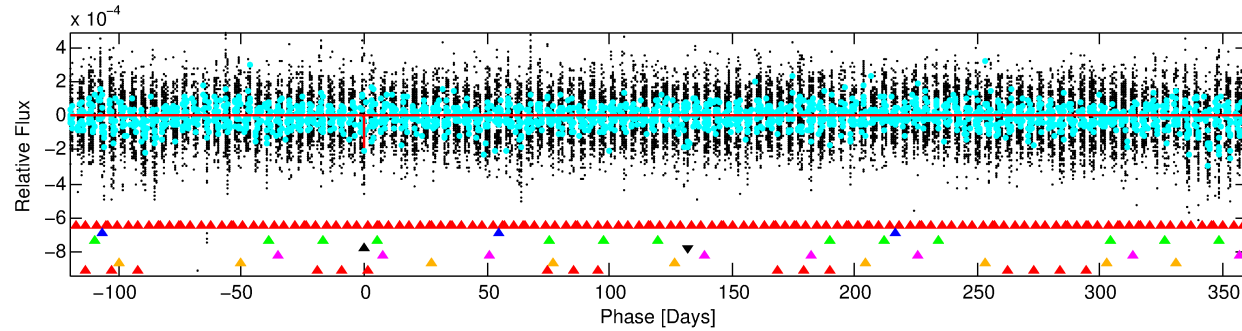
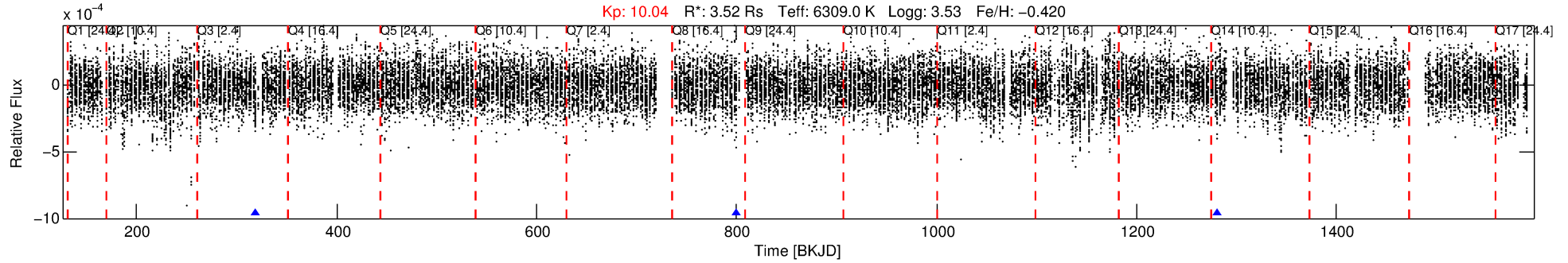
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008589526-04

No Significant Match Found

# DV One-Page Summary

KIC: 8589526 Candidate: 4 of 7 Period: 480.642 d



## DV Fit Results:

Period = 480.64230 [0.01201] d  
Epoch = 318.8569 [0.0162] BKJD  
 $R_p/R^* = 0.0131$  [0.0034]  
 $a/R^* = 171.52$  [222.00]  
 $b = 0.68$  [1.02]  
 $\text{Seff} = 9.20$  [6.14]  
 $T_{\text{eq}} = 444$  [74] K  
 $R_p = 5.05$  [2.56]  $R_e$   
 $a = 1.3821$  [0.5730] AU  
 $A_g = 5619.72$  [4868.30] [1.15σ]  
 $T_{\text{eff}} = 5945$  [854] K [6.42σ]

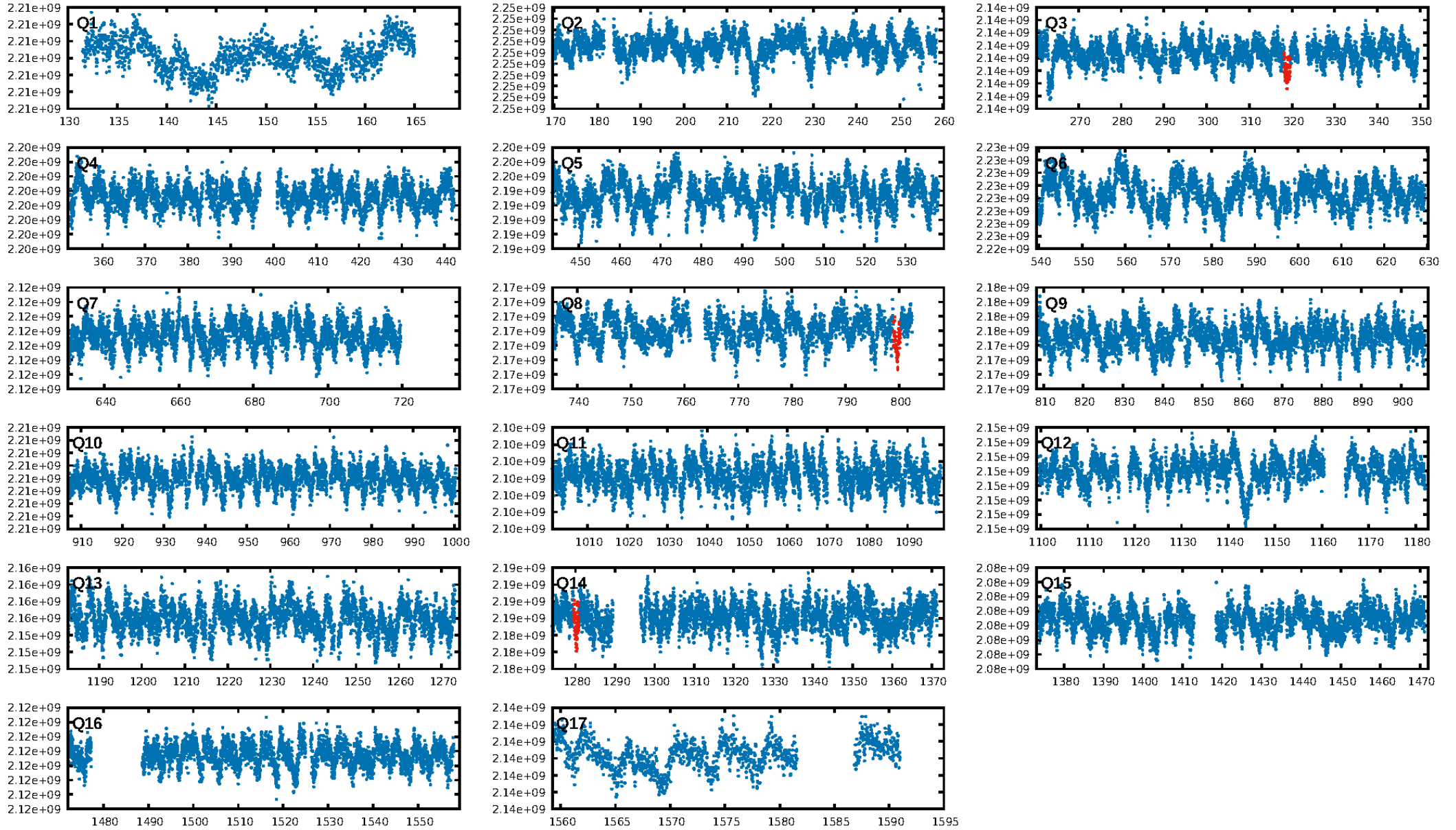
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [449.80σ]  
LongPeriod-sig: 100.0% [214.12σ]  
ModelChiSquare2-sig: 28.3%  
ModelChiSquareGof-sig: 99.7%  
**Bootstrap-pfa: 1.36e-10**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 8.4%  
Centroid-so: 0.689 arcsec [0.75σ]  
OotOffset-rm: 2.453 arcsec [0.76σ]  
KicOffset-rm: 2.288 arcsec [0.63σ]  
OotOffset-st: 0/1/1/0 [2]  
KicOffset-st: 0/1/1/0 [2]  
DiffImageQuality-fgm: 0.50 [1/2]  
DiffImageOverlap-fno: 0.50 [1/2]

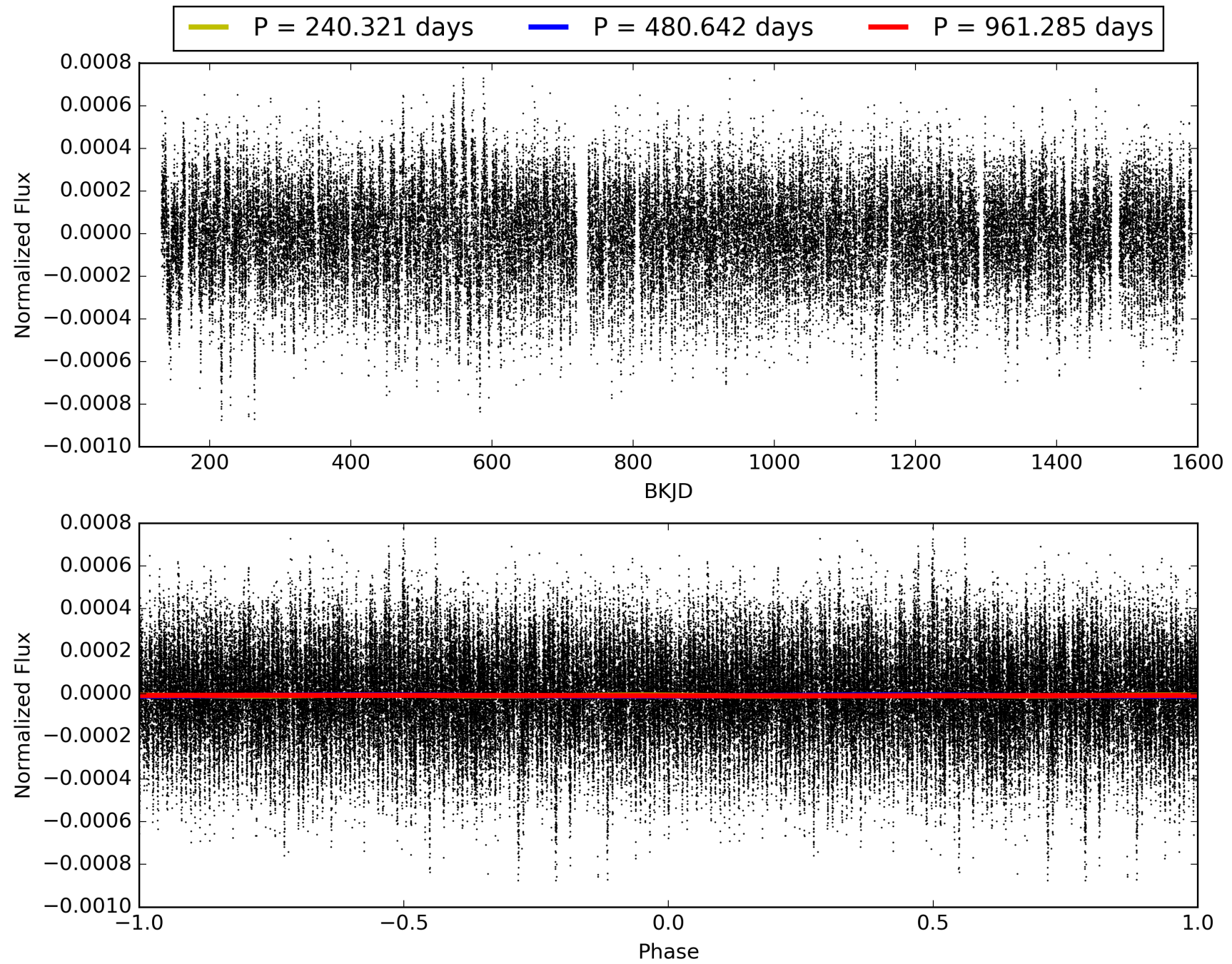
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:46:07 Z

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

# TCE 008589526-04, PDC Light Curves



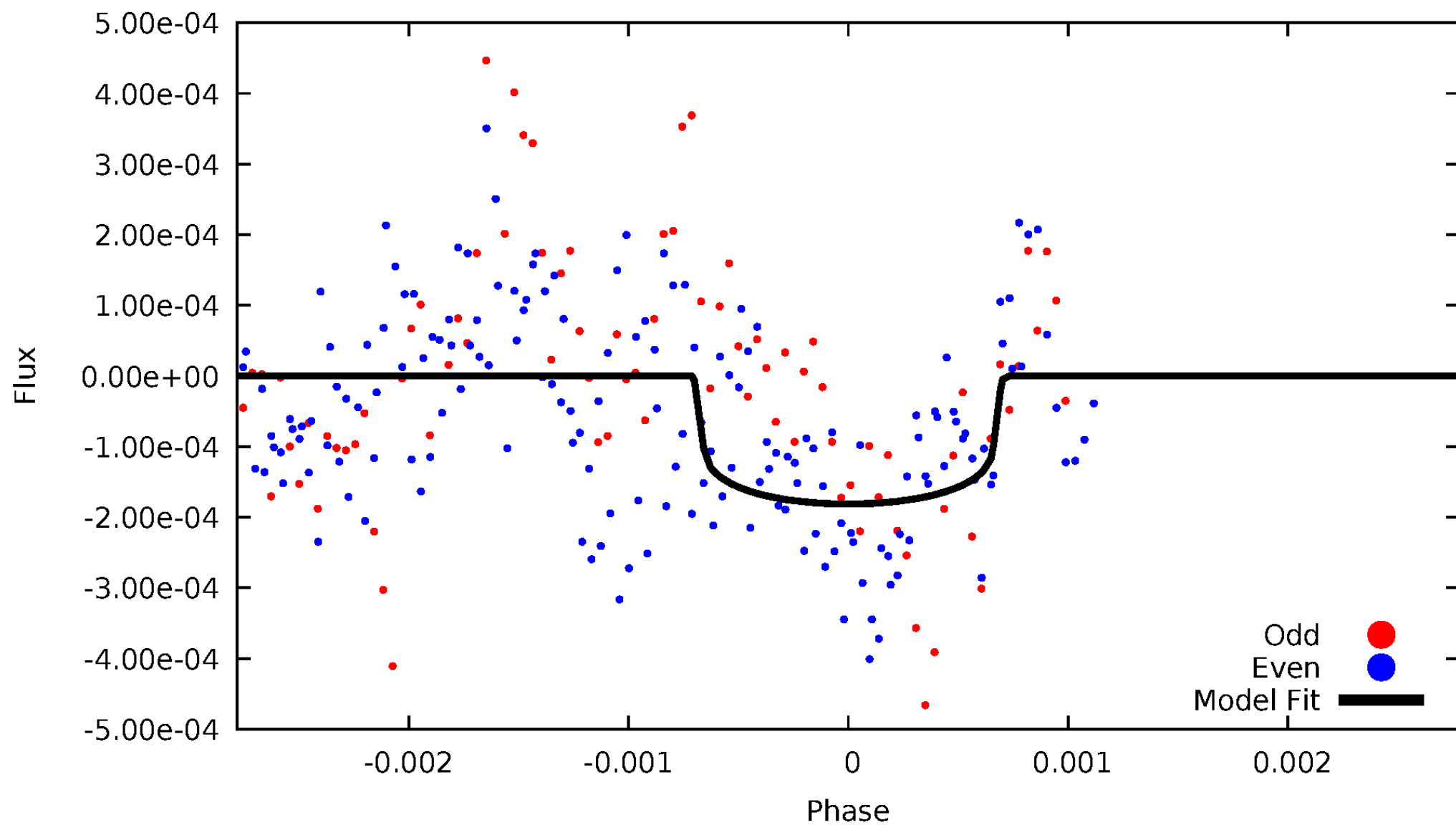
TCE 008589526-04





# DV Odd/Even

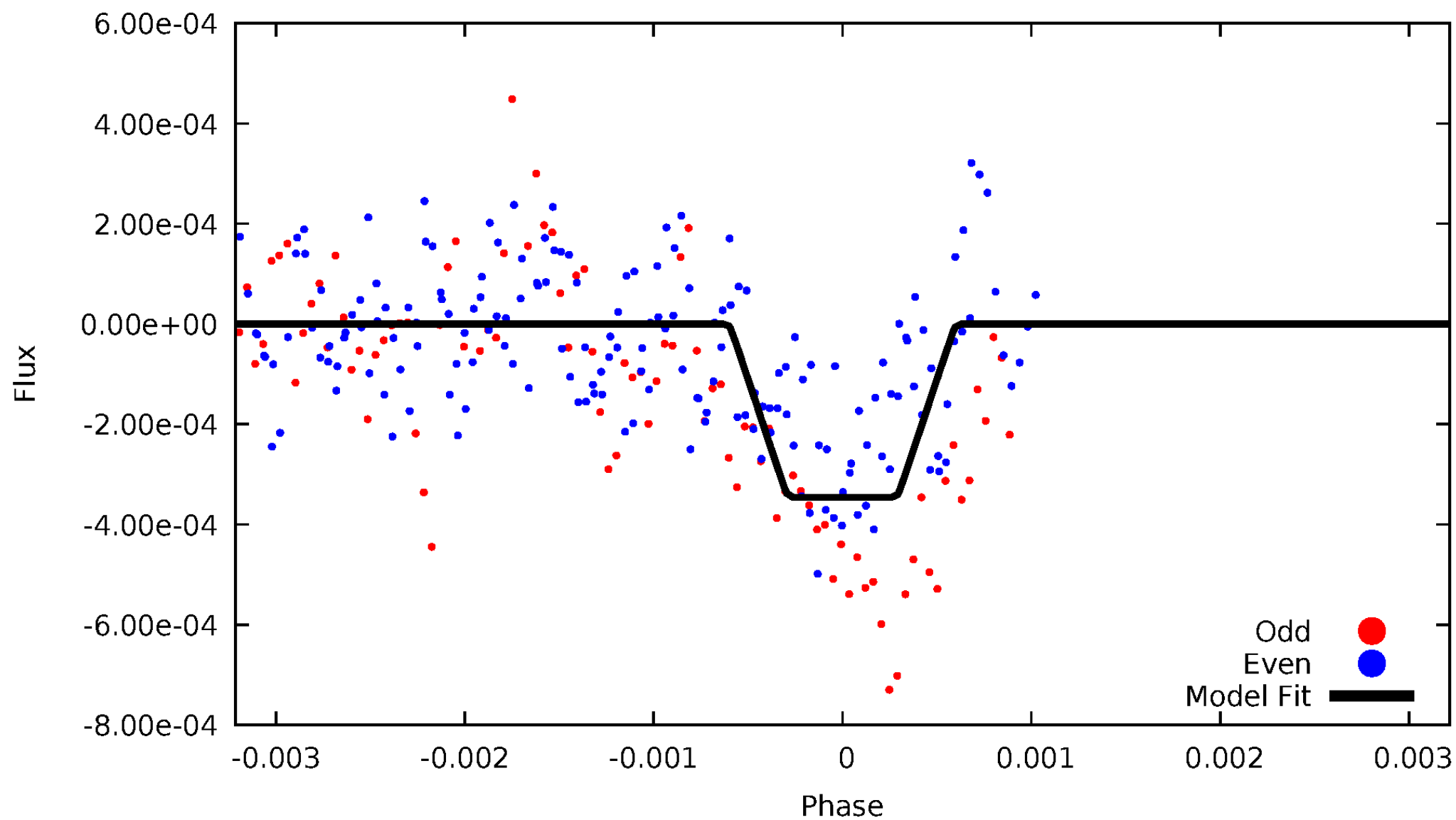
TCE 008589526-04





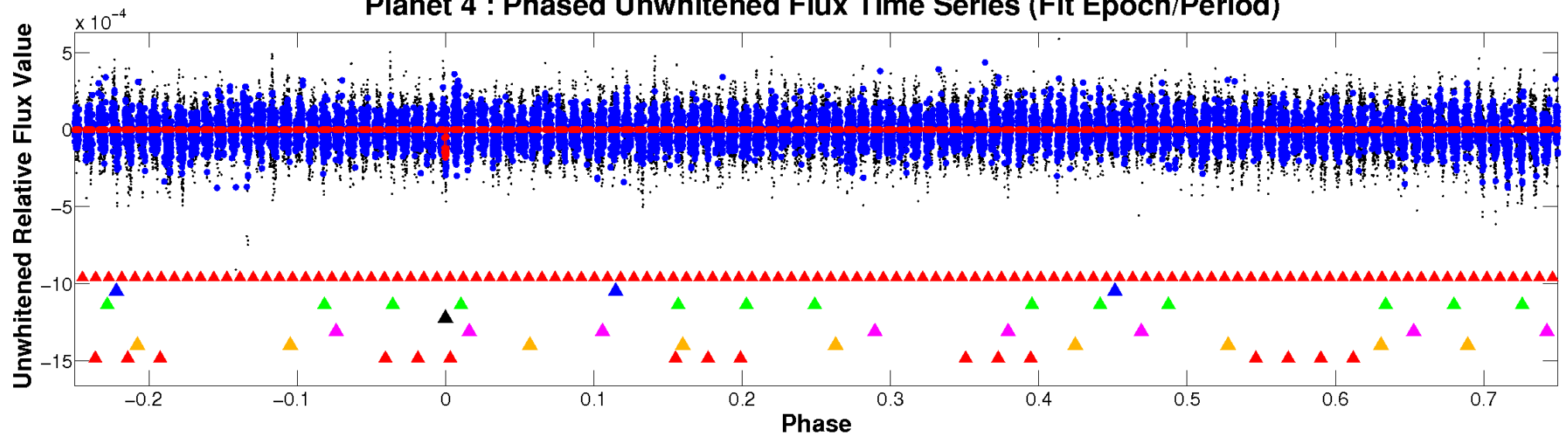
# ALT Odd/Even

TCE 008589526-04

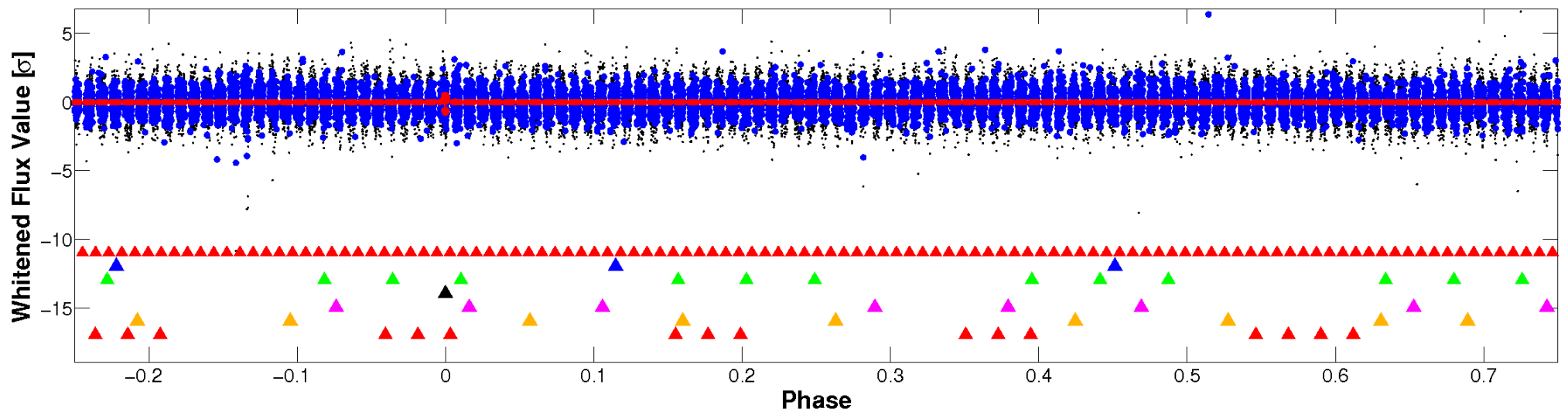


# Non-Whitened Vs. Whitened Light Curve

## Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

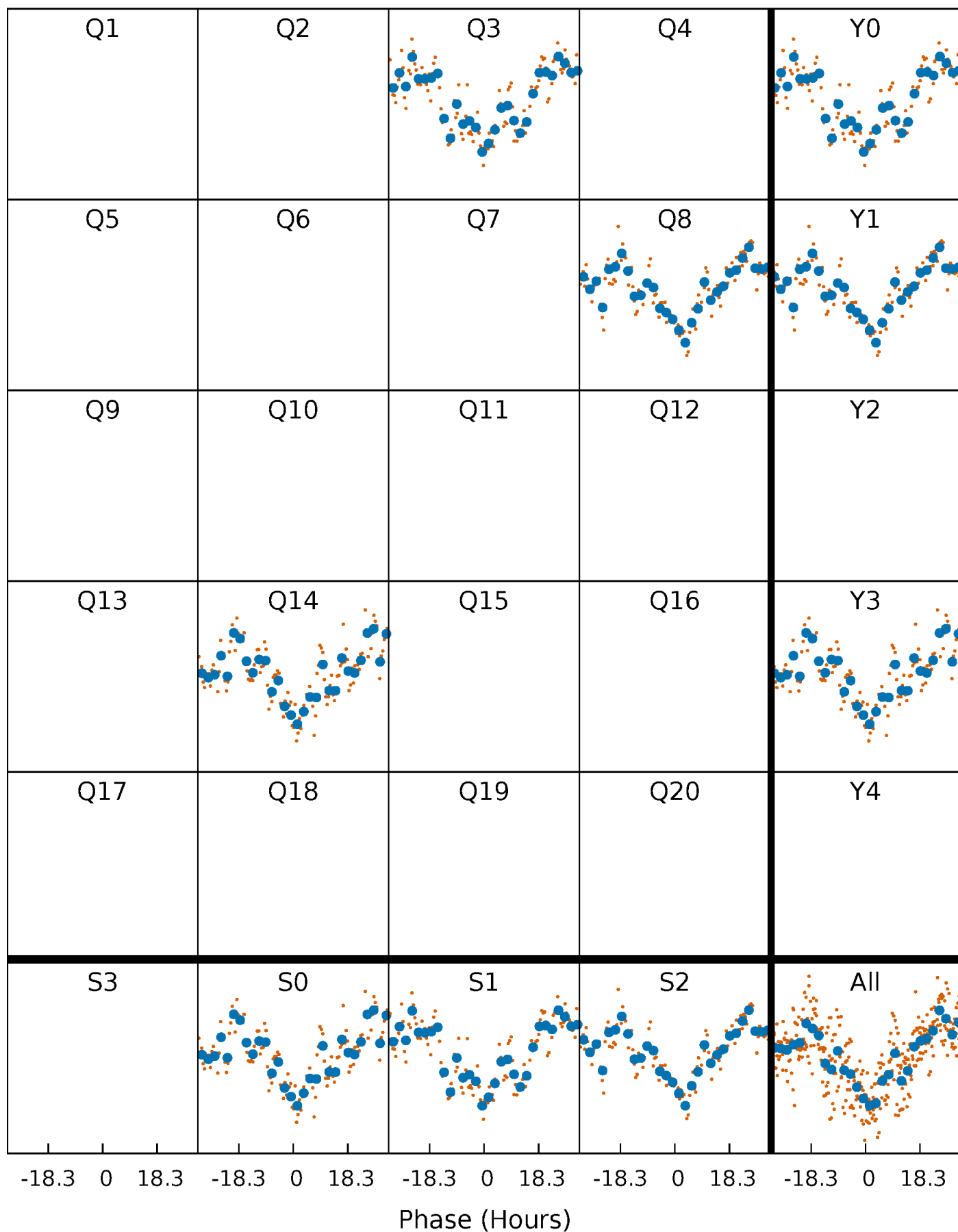


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



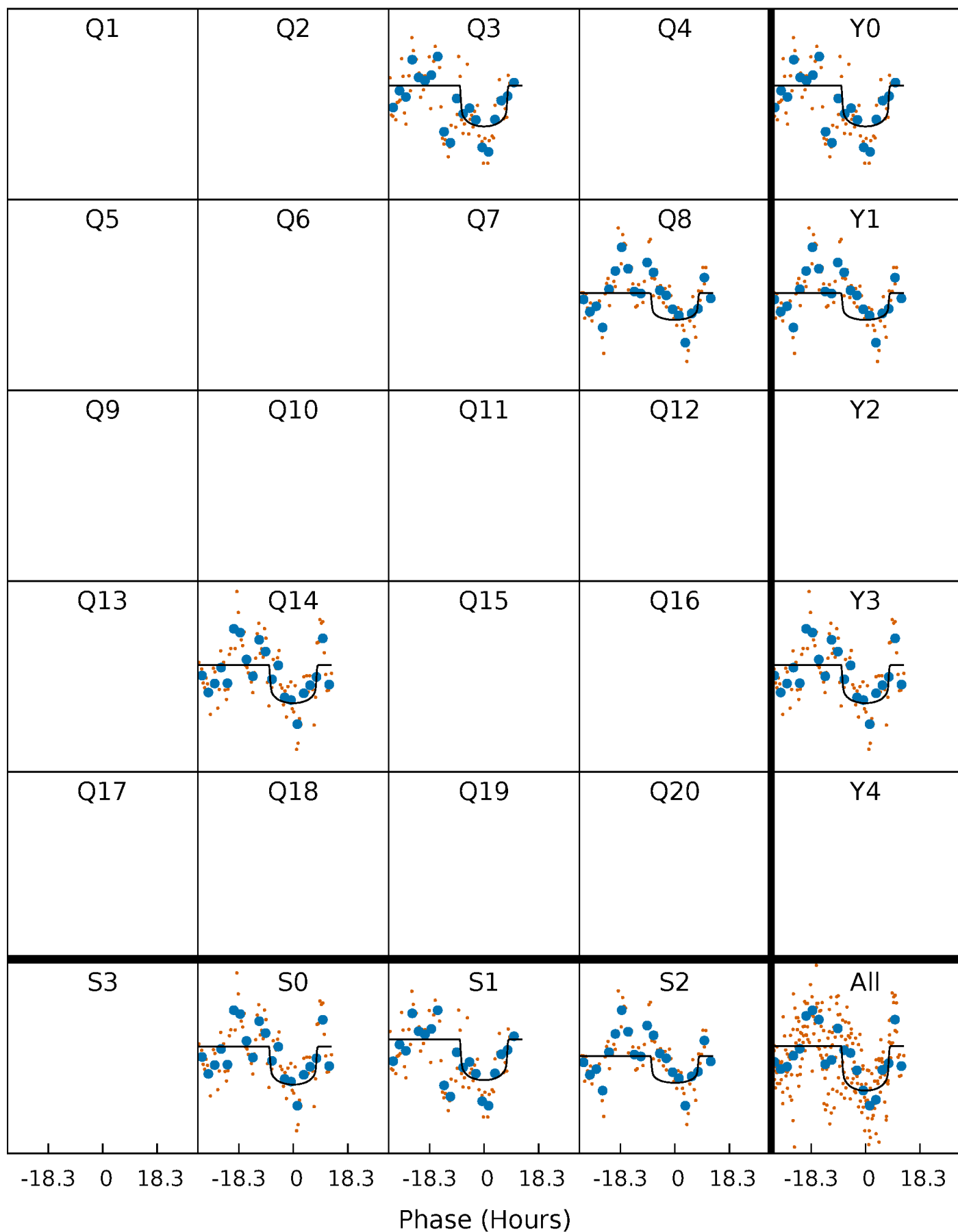
# PDC Quarter-Phased Transit Curves

TCE 008589526-04     $P=480.642300$  Days     $T_0=318.856889$  (BKJD)



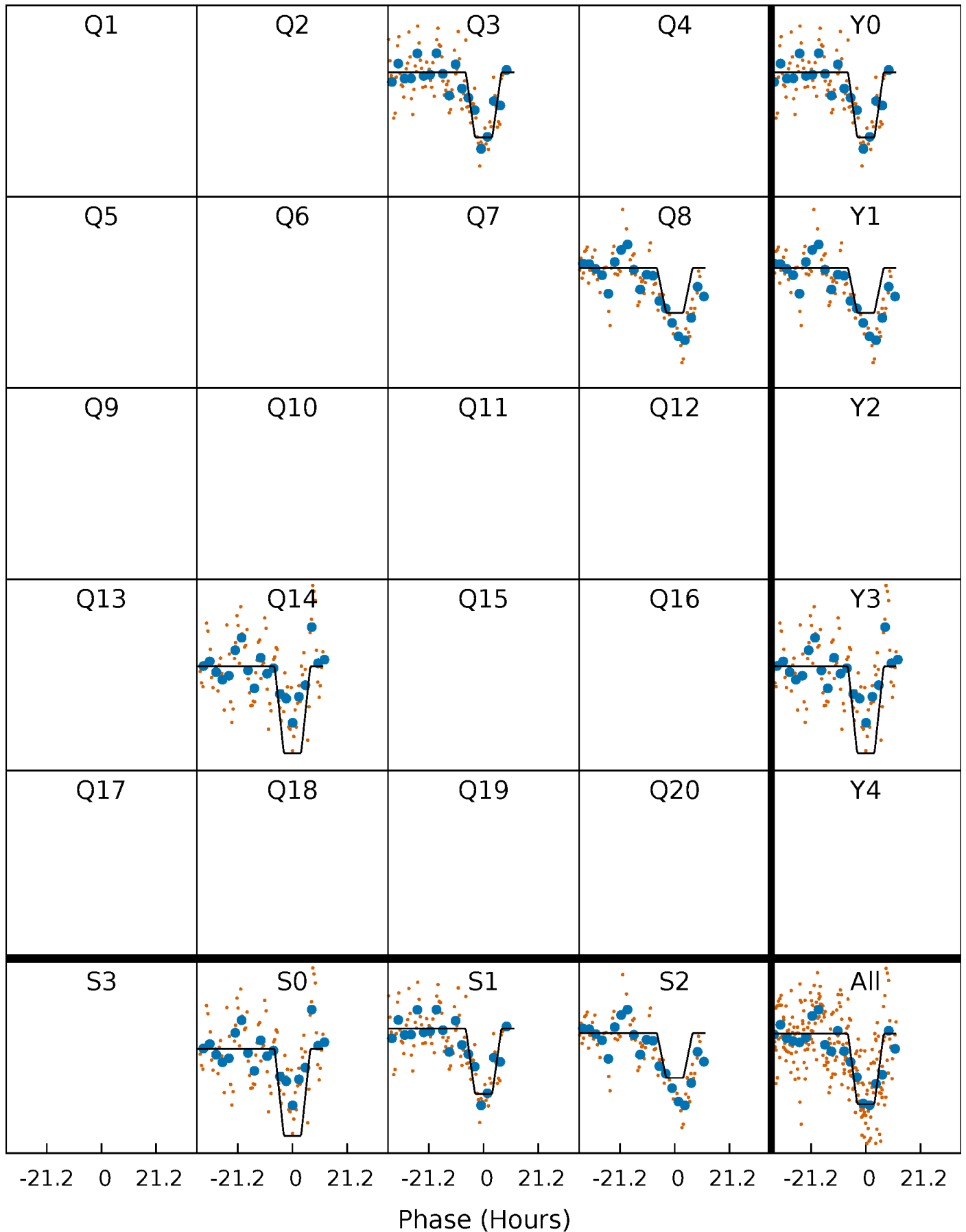
# DV Quarter-Phased Transit Curves

TCE 008589526-04     $P=480.642300$  Days     $T_0=318.856889$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

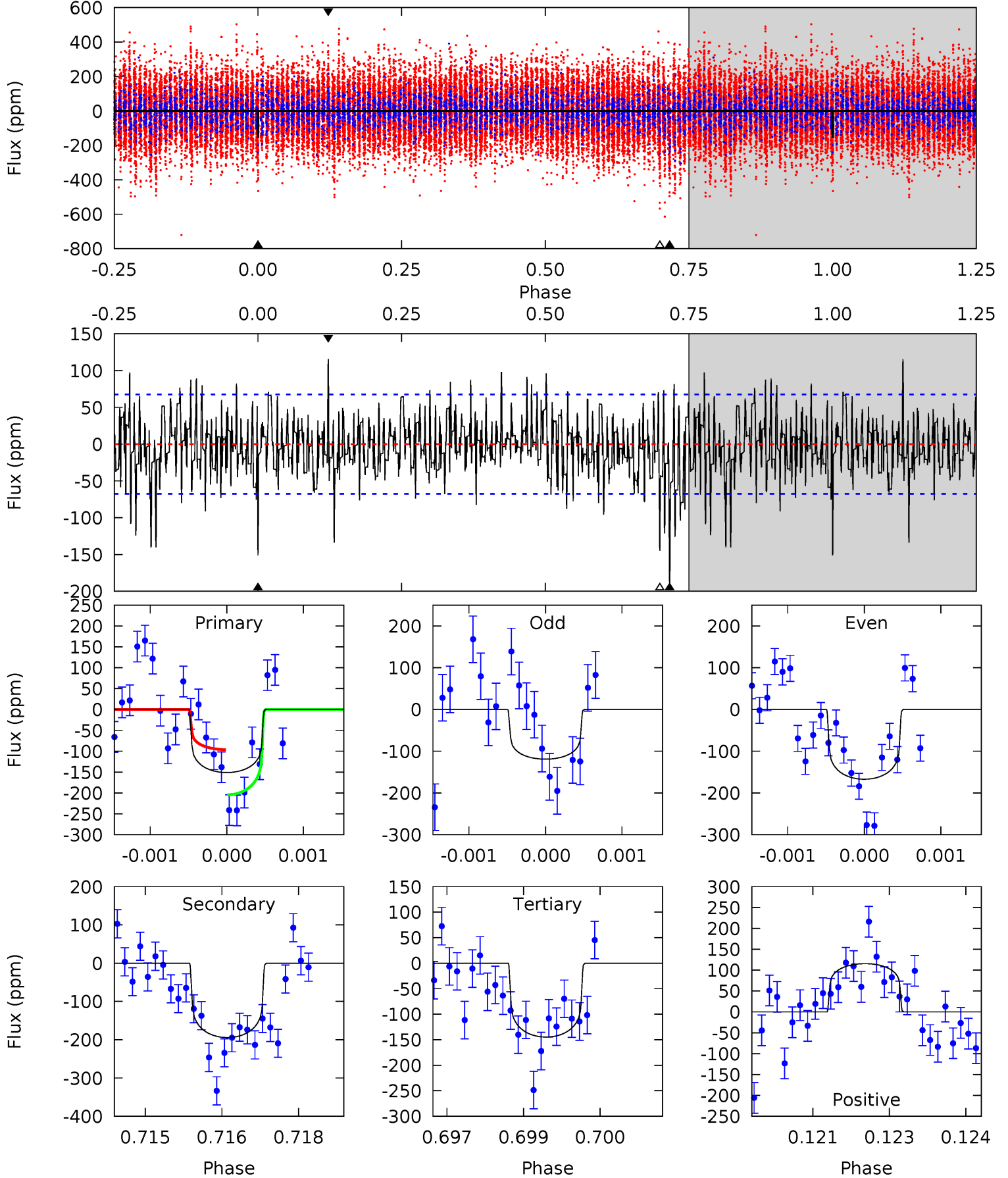
TCE 008589526-04   P=480.638198 Days    $T_0=318.910221$  (BKJD)



# DV Model-Shift Uniqueness Test

008589526-04, P = 480.642300 Days, E = 318.856889 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	15.5	11.5	9.20	5.39	3.19	2.90	0.51	2.83	3.95	6.27	1.84	1.03	0.37	4.31

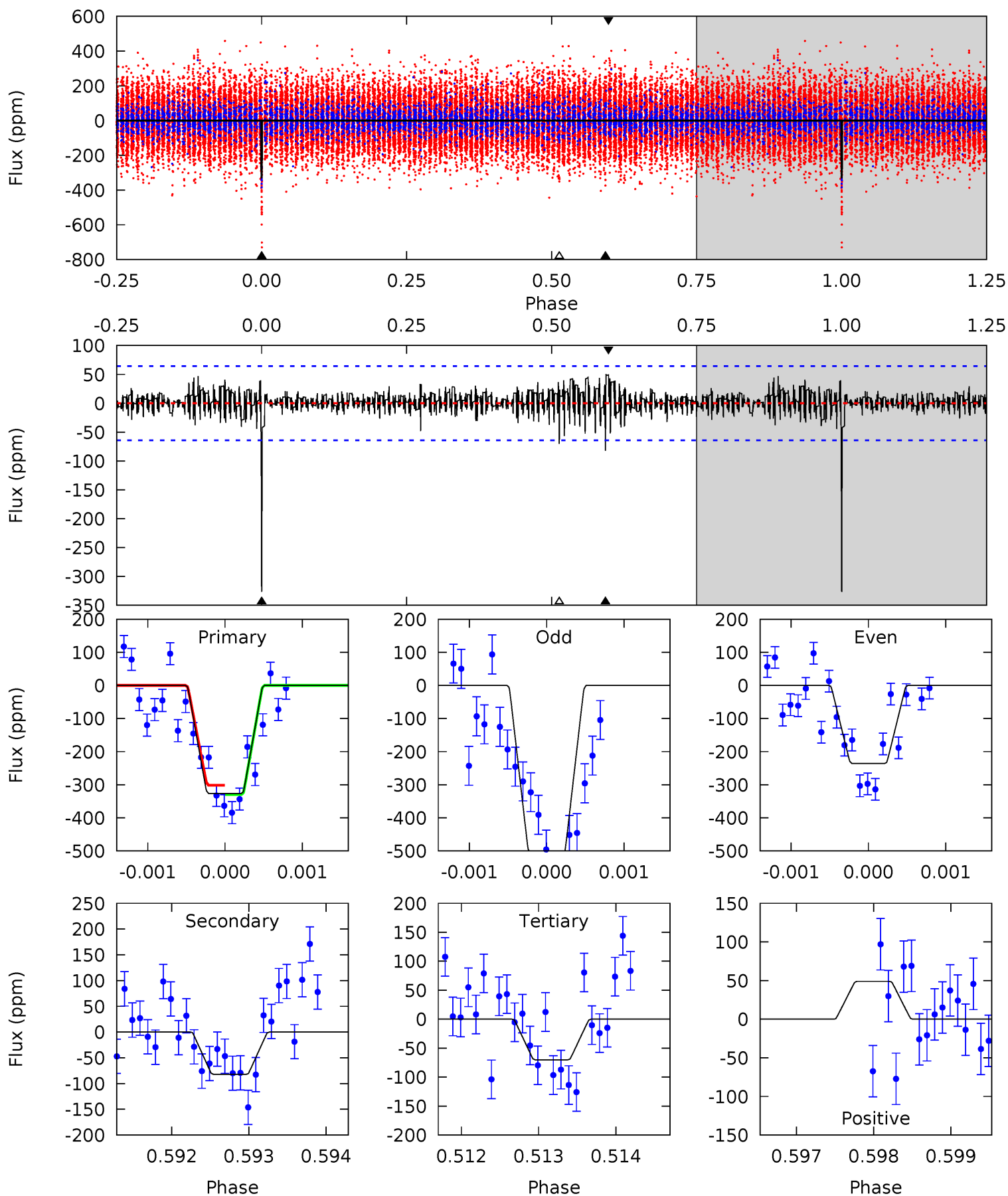




# Alt Model-Shift Uniqueness Test

008589526-04, P = 480.638198 Days, E = 318.910221 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
27.5	6.91	5.90	4.12	5.41	3.23	1.12	21.6	23.4	1.01	2.79	10.7	1.03	0.13	1.17



### Stellar Parameters For KIC 008589526

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6309^{+173}_{-157}$	$3.528^{+0.384}_{-0.096}$	$-0.420^{+0.400}_{-0.300}$	$3.519^{+0.616}_{-1.539}$	$1.523^{+0.216}_{-0.401}$	$0.049^{+0.170}_{-0.016}$
	+3%/-2%	+11%/-3%	+95%/-71%	+18%/-44%	+14%/-26%	+344%/-32%
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 008589526-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-194 \pm 13$	$4.61^{+1.65}_{-1.45}$	$611^{+36}_{-68}$	$6506^{+1129}_{-751}$	$9511^{+9917}_{-4234}$
Alt.	$-82 \pm 12$	$6.78^{+1.73}_{-1.76}$	$607^{+38}_{-62}$	$4543^{+434}_{-299}$	$1880^{+1473}_{-683}$

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

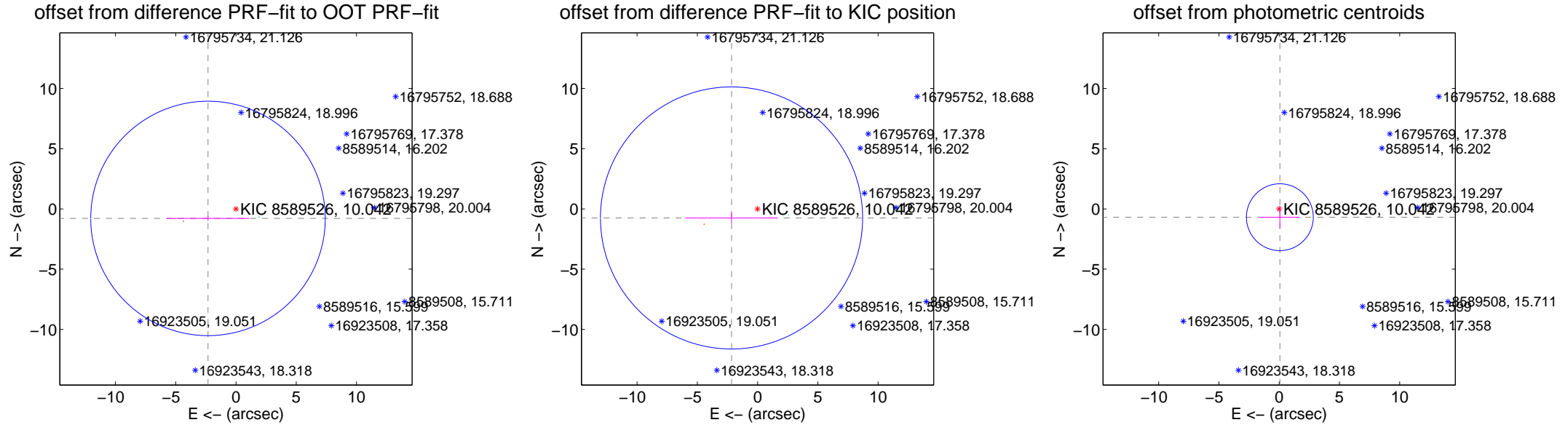
## DV Centroid Data

Supplemental centroid analysis for 008589526-04. **Kepler magnitude: 10.04.** Transit SNR 7.19

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

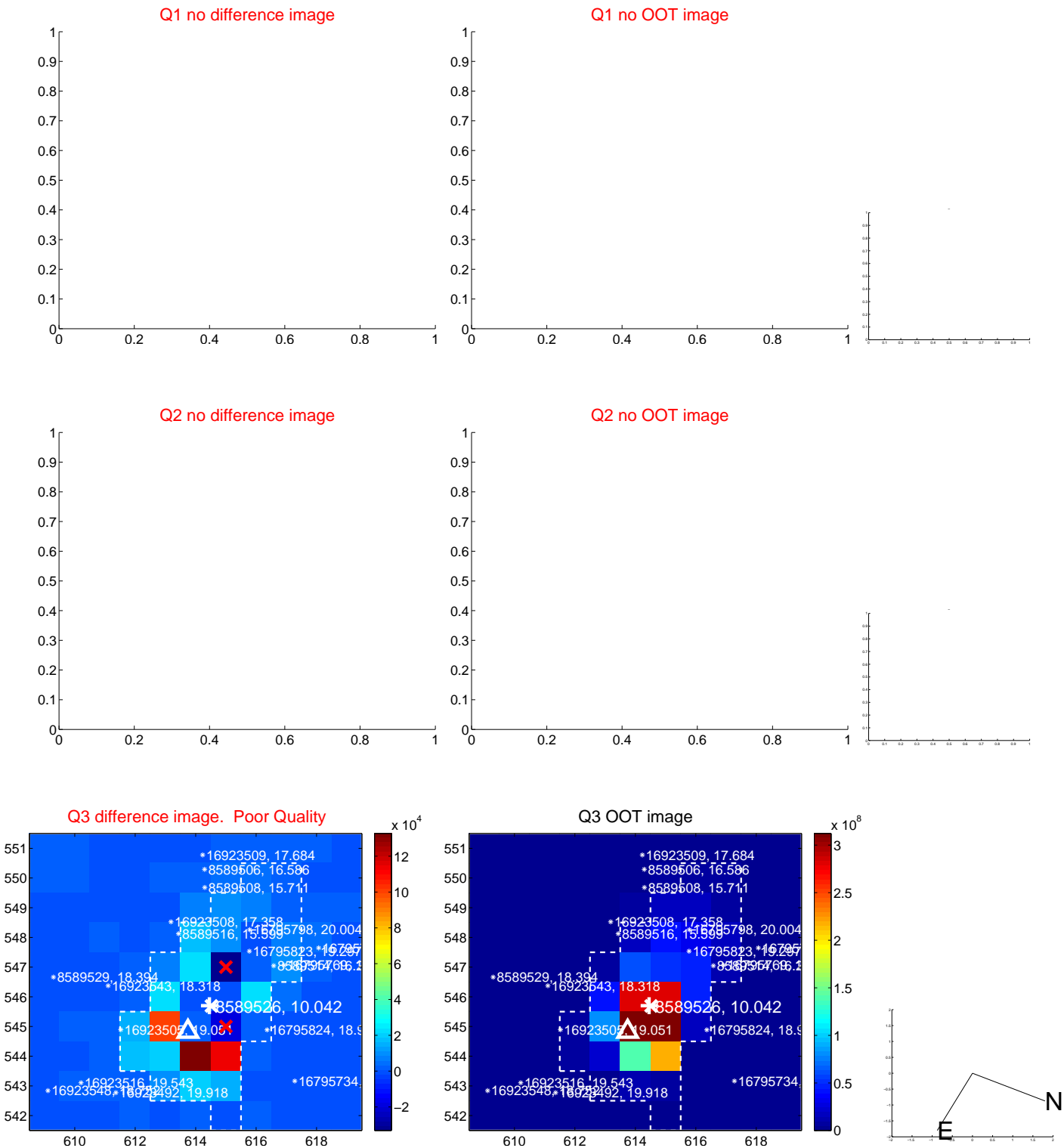
The direct PRF centroid is offset from the target star catalog position by about 0.69 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.453 \pm 3.244$	0.76	$2.323 \pm 3.424$	$-0.788 \pm 0.203$
PRF-fit source offset from KIC position	$2.288 \pm 3.626$	0.63	$2.163 \pm 3.834$	$-0.748 \pm 0.434$
photometric centroid source offset	$0.69 \pm 0.92$	0.75	$-0.06 \pm 1.65$	$-0.69 \pm 0.92$

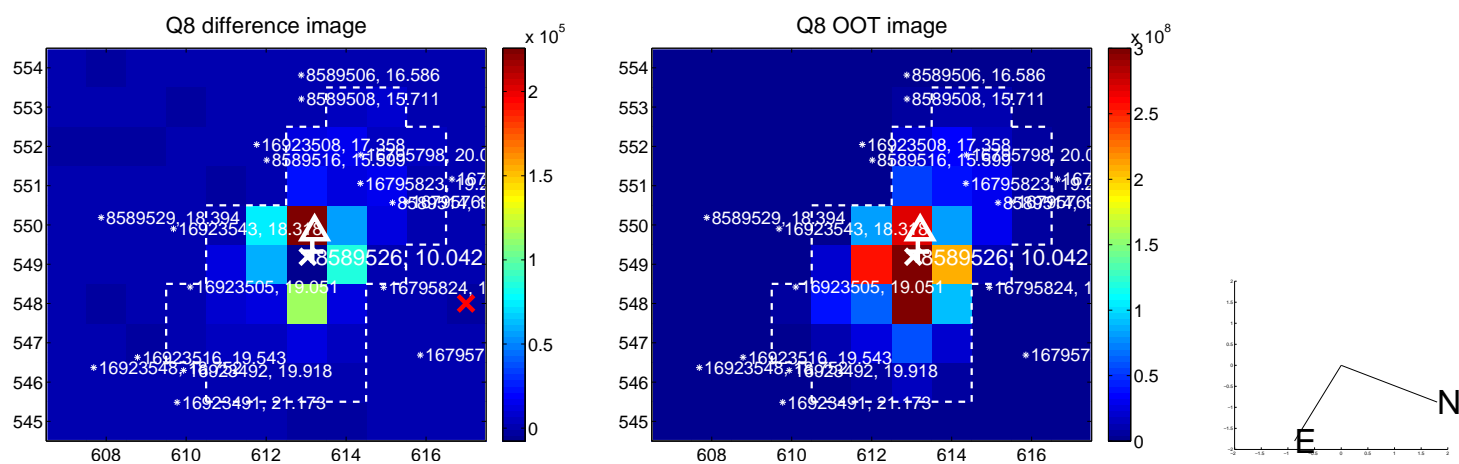
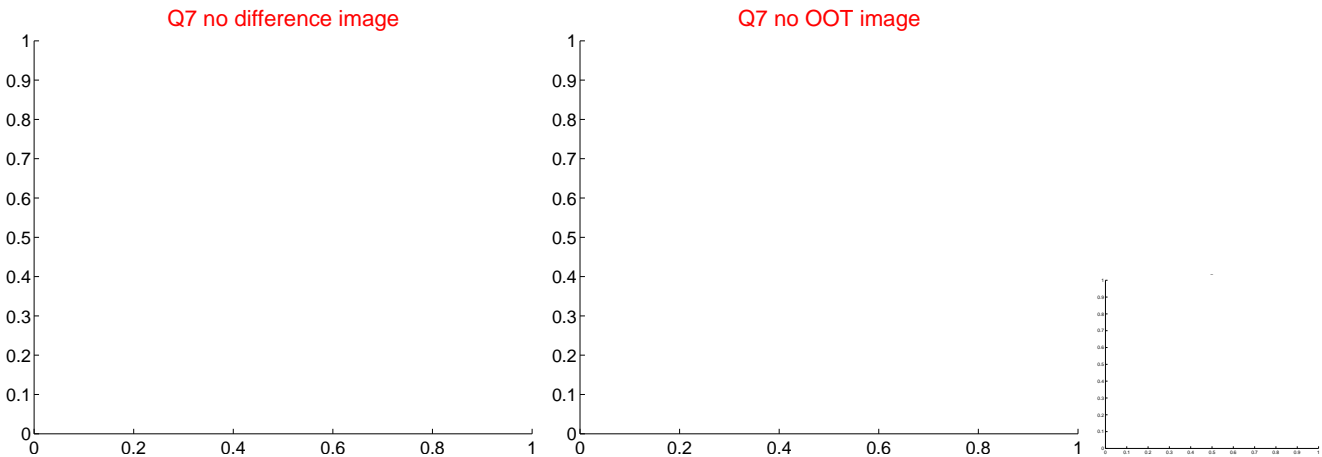
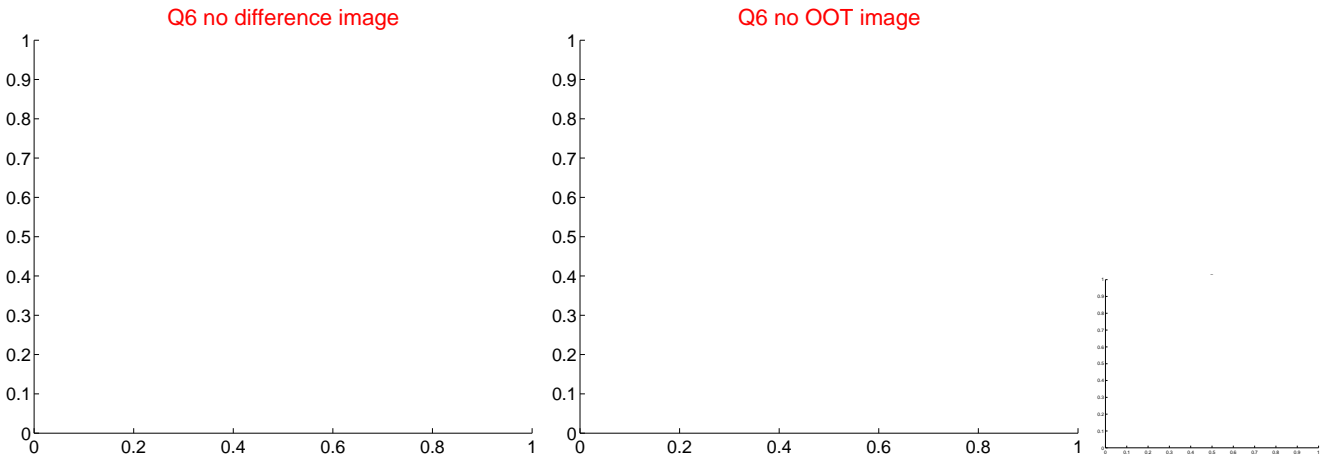
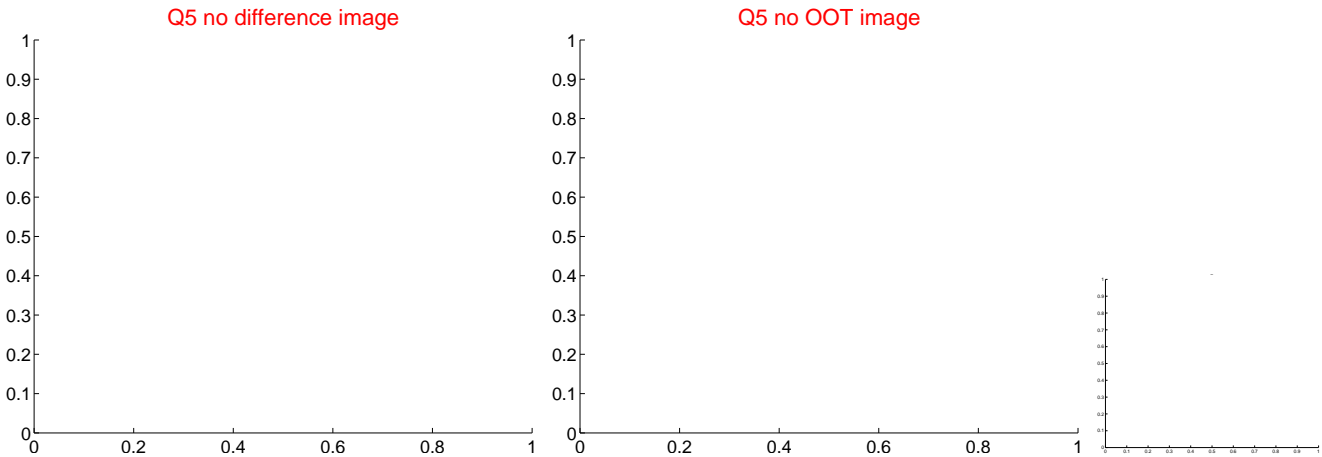


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

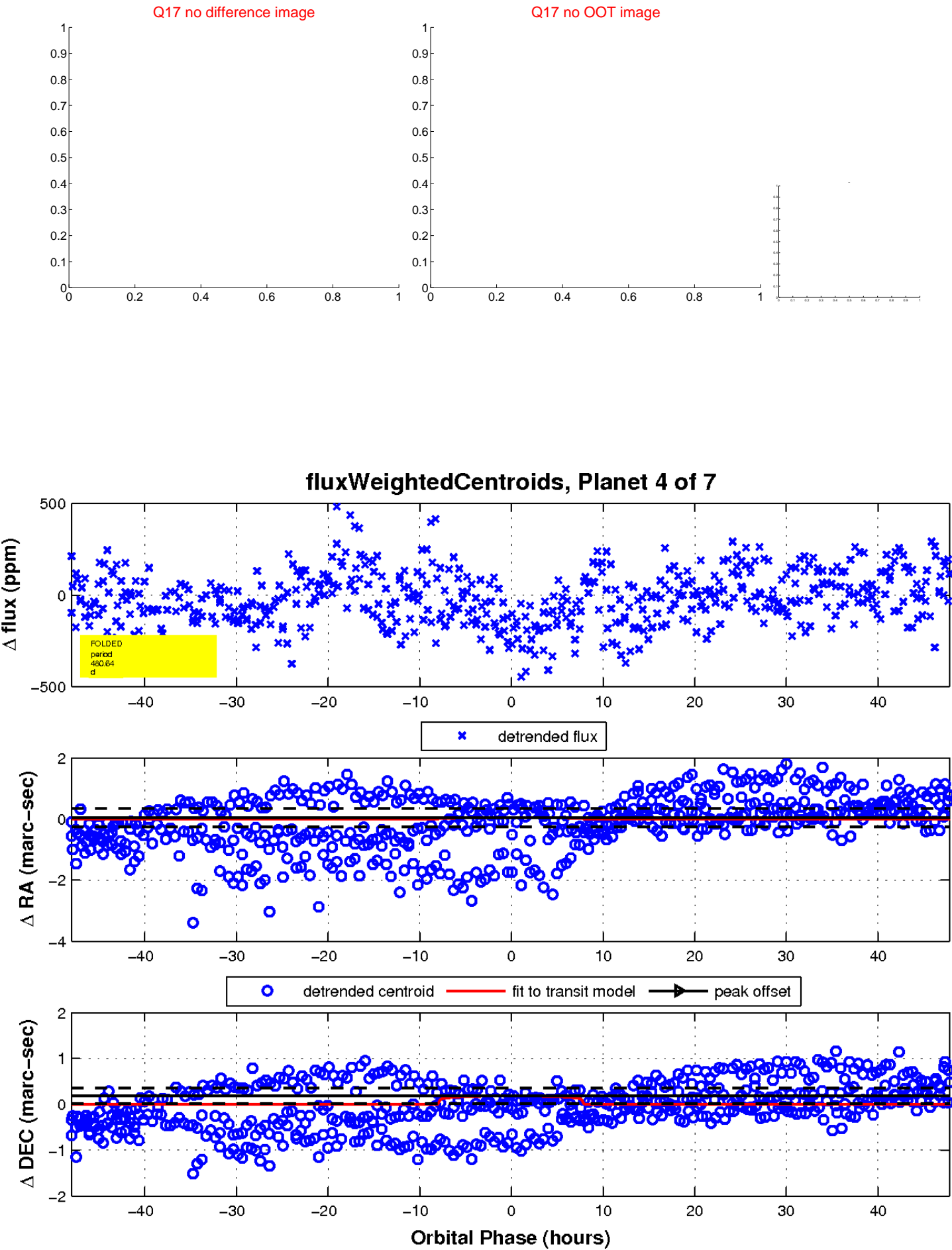




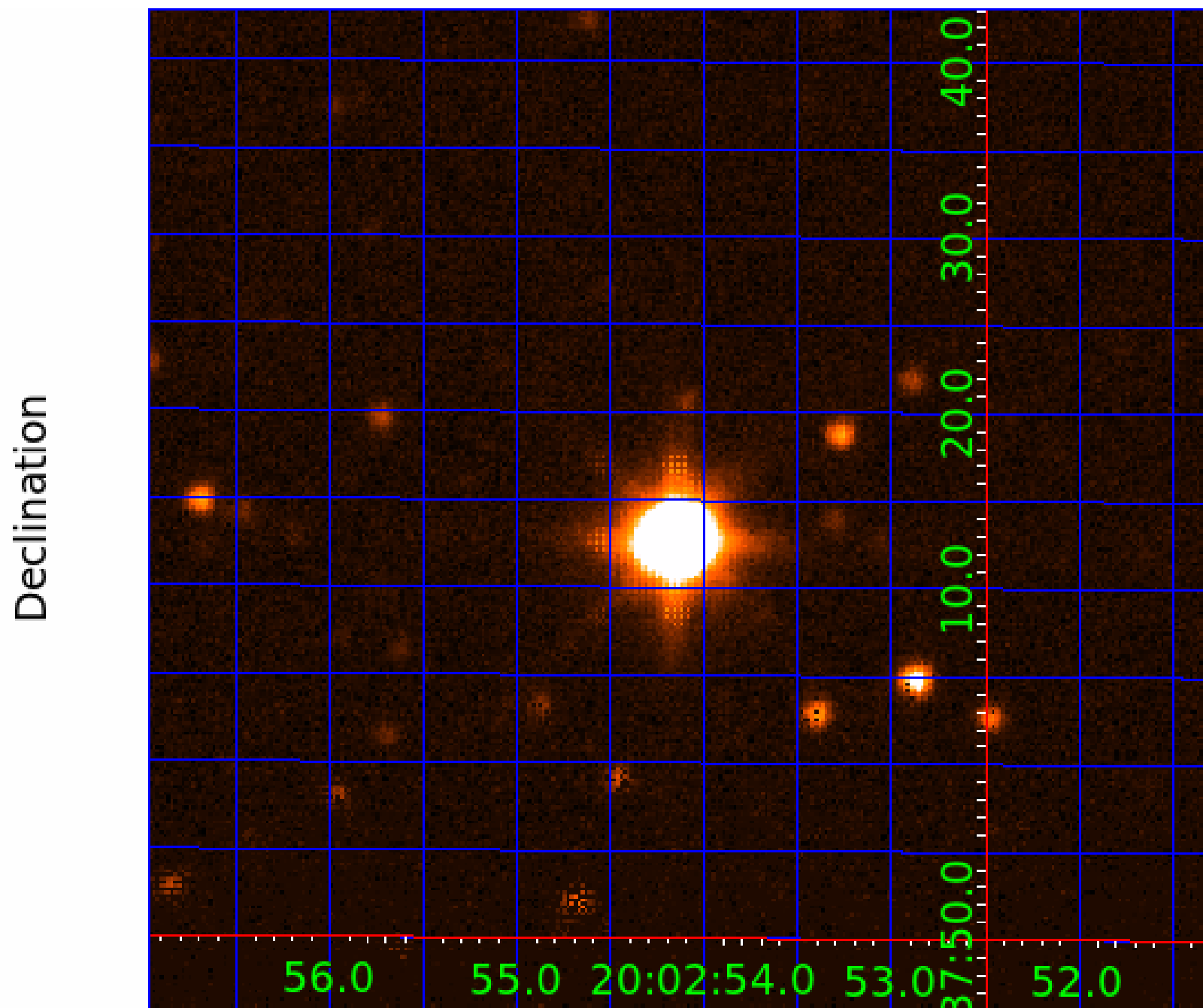
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white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image



# KIC 008589526

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008589526-01	OBS	No	4.254168	133.079701	34.6	15.964	12.9	10.4	3.52	6309	2.42	5026.47
008589526-02	OBS	No	642.447956	212.200155	151.7	8.476	9.6	5.1	3.52	6309	4.94	6.25
008589526-03	OBS	No	114.630115	209.246884	170.4	7.153	8.8	8.0	3.52	6309	8.31	62.22
008589526-04	OBS	No	480.642300	318.856889	181.2	16.033	8.7	7.2	3.52	6309	5.05	9.20
008589526-05	OBS	No	174.602635	283.418289	171.5	3.739	7.8	8.1	3.52	6309	5.83	35.50
008589526-06	OBS	No	176.727621	169.486699	276.9	2.426	8.2	8.8	3.52	6309	6.86	34.94
008589526-07	OBS	No	94.024694	132.390744	198.3	3.242	7.6	8.4	3.52	6309	6.61	81.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008589526-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
008589526-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
008589526-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED
008589526-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

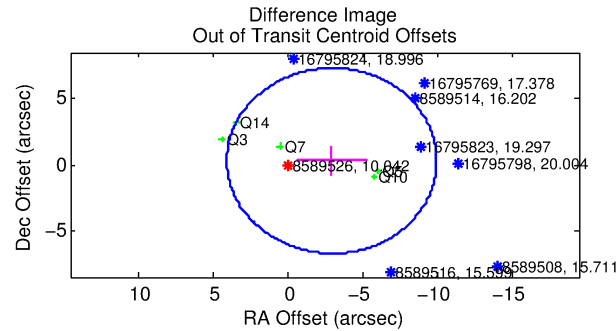
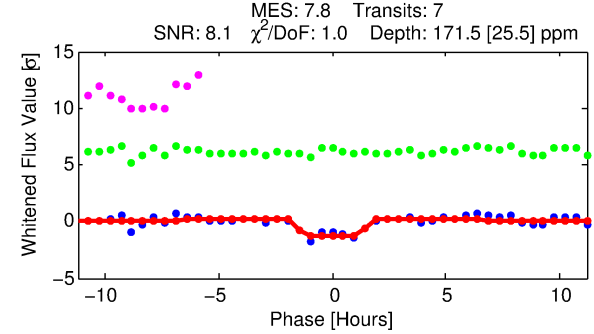
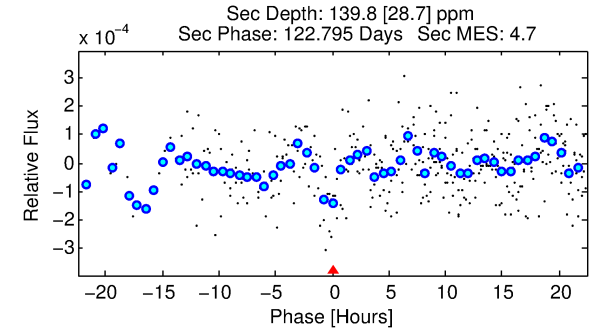
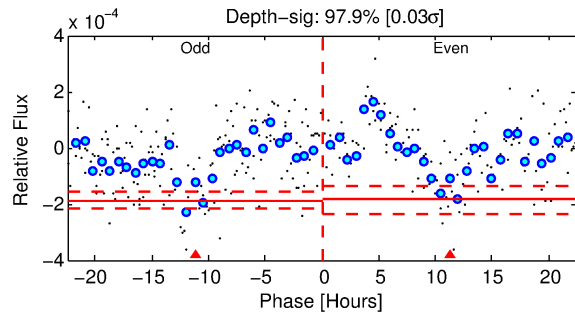
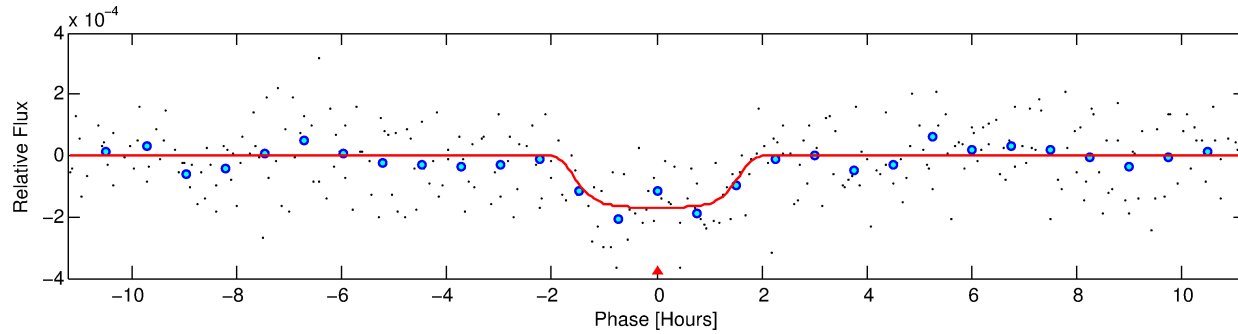
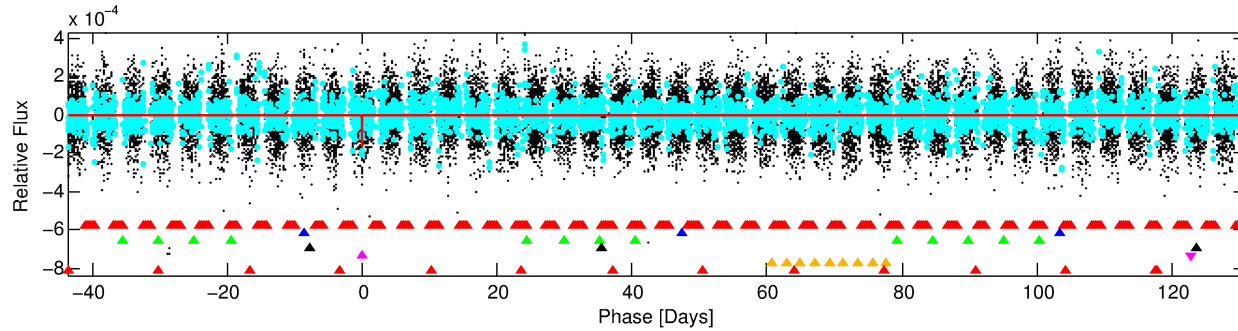
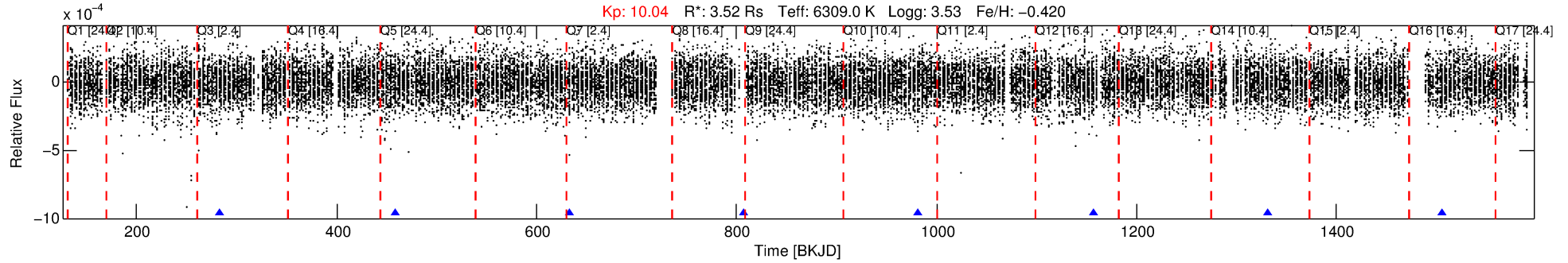
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008589526-05

No Significant Match Found

# DV One-Page Summary

KIC: 8589526 Candidate: 5 of 7 Period: 174.603 d



## DV Fit Results:

Period = 174.60263 [0.00206] d  
Epoch = 283.4183 [0.0087] BKJD  
 $R_p/R^* = 0.0152$  [0.0018]  
 $a/R^* = 115.40$  [52.92]  
 $b = 0.96$  [0.04]  
 $S_{\text{eff}} = 35.50$  [23.67]  
 $T_{\text{eq}} = 622$  [104] K  
 $R_p = 5.83$  [2.64]  $R_e$   
 $a = 0.7036$  [0.2917] AU  
 $A_g = 1119.91$  [816.04] [1.37 $\sigma$ ]  
 $T_{\text{eff}} = 5567$  [463] K [10.43 $\sigma$ ]

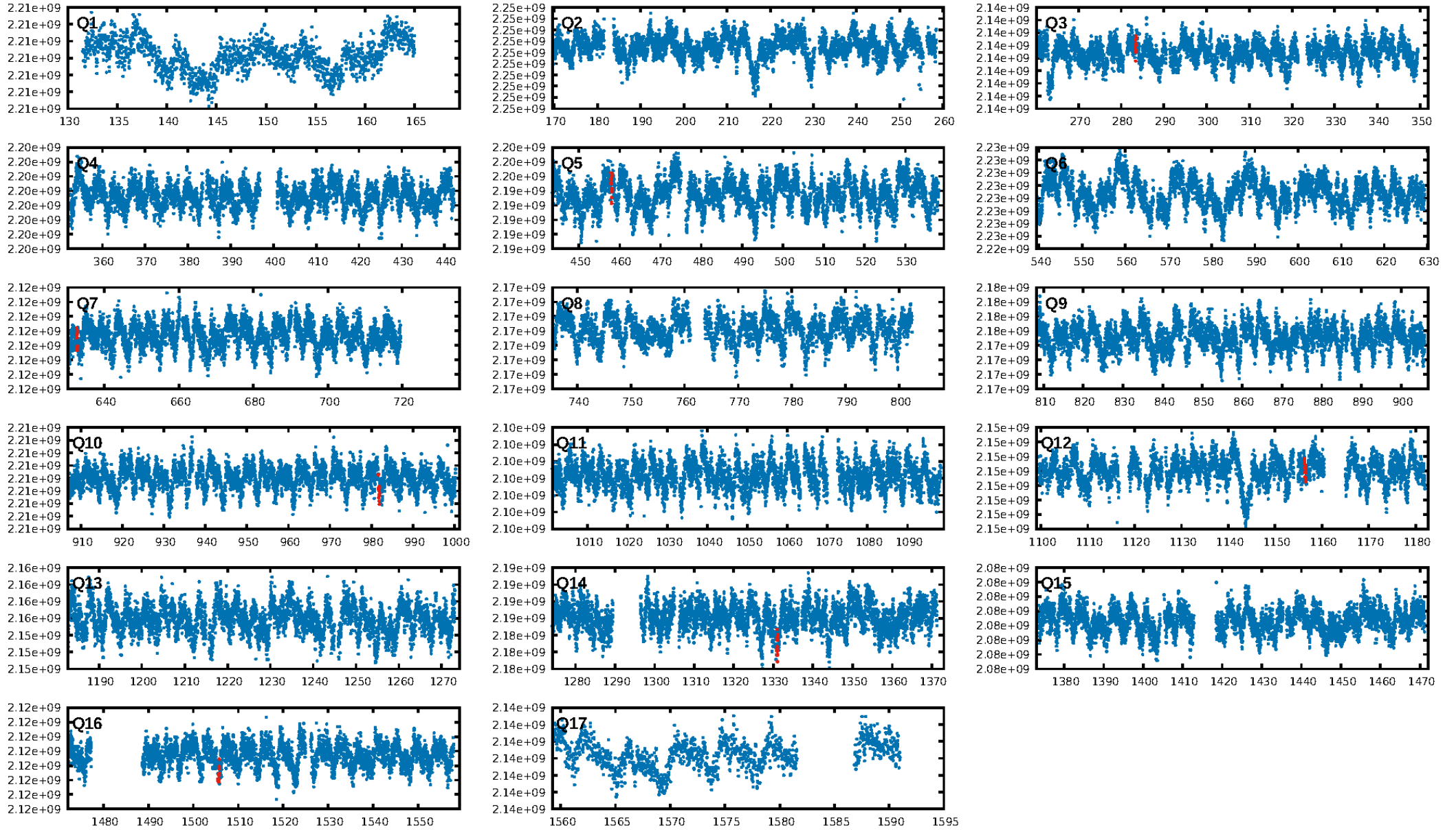
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [178.33 $\sigma$ ]  
LongPeriod-sig: 100.0% [11.44 $\sigma$ ]  
ModelChiSquare2-sig: 32.6%  
ModelChiSquareGof-sig: 99.7%  
**Bootstrap-pfa: 1.29e-08**  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 26.7%  
Centroid-so: 1.111 arcsec [1.09 $\sigma$ ]  
OotOffset-rm: 2.992 arcsec [1.28 $\sigma$ ]  
KicOffset-rm: 2.861 arcsec [1.21 $\sigma$ ]  
OotOffset-st: 2/2/0/1 [5]  
KicOffset-st: 2/2/0/1 [5]  
DiffImageQuality-fgm: 0.80 [4/5]  
DiffImageOverlap-fno: 1.00 [6/6]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:46:13 Z

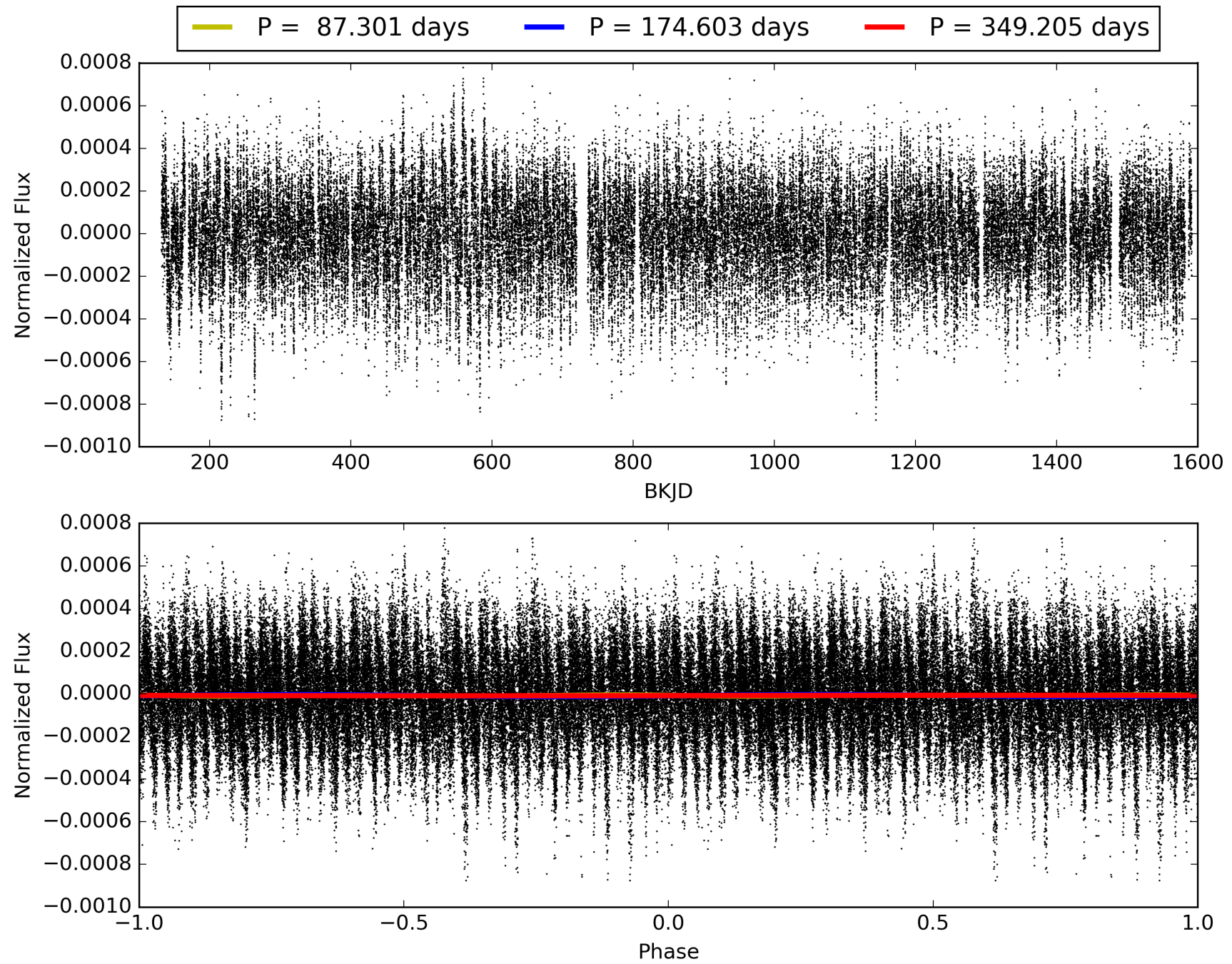
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008589526-05, PDC Light Curves



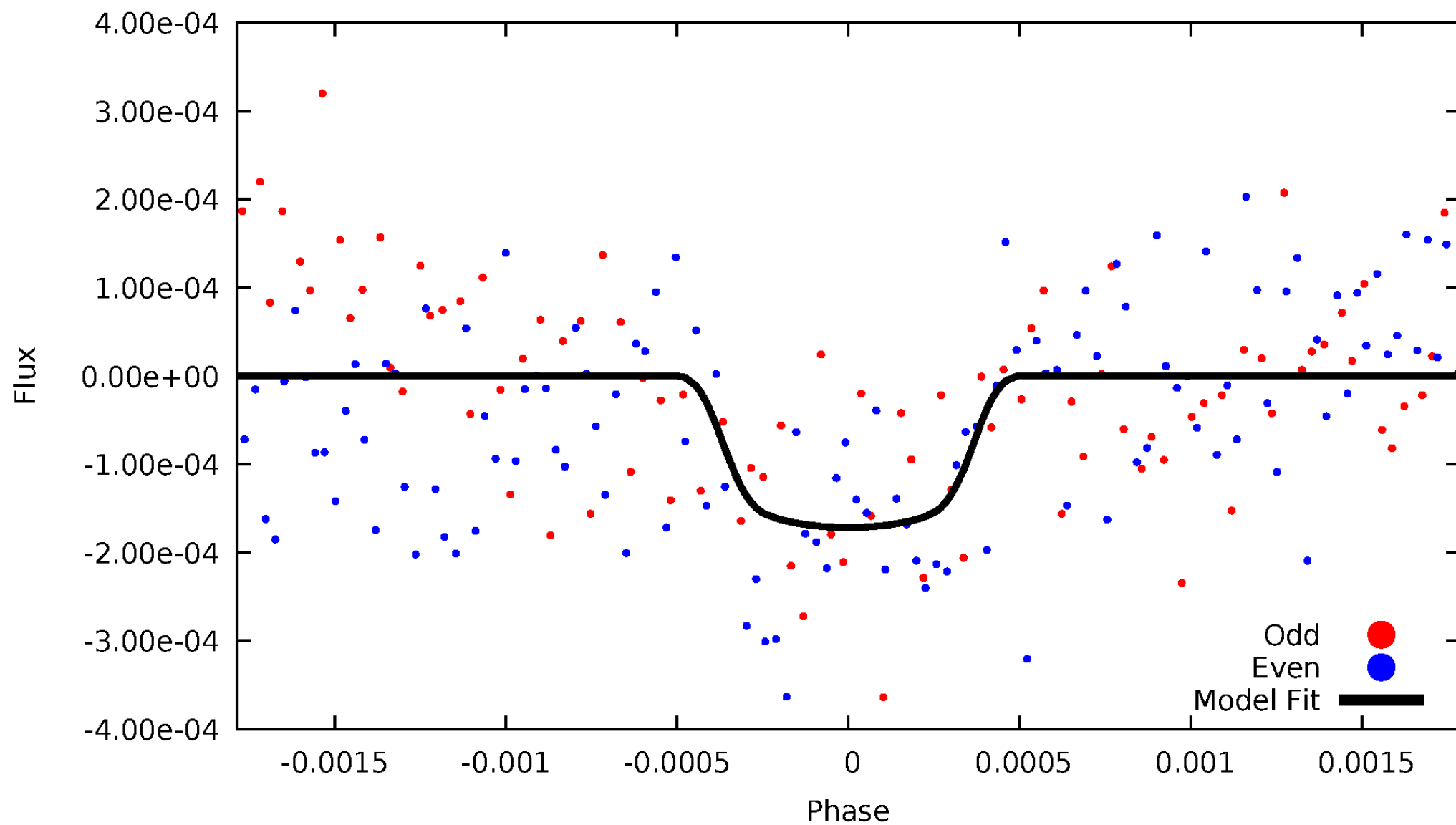


TCE 008589526-05



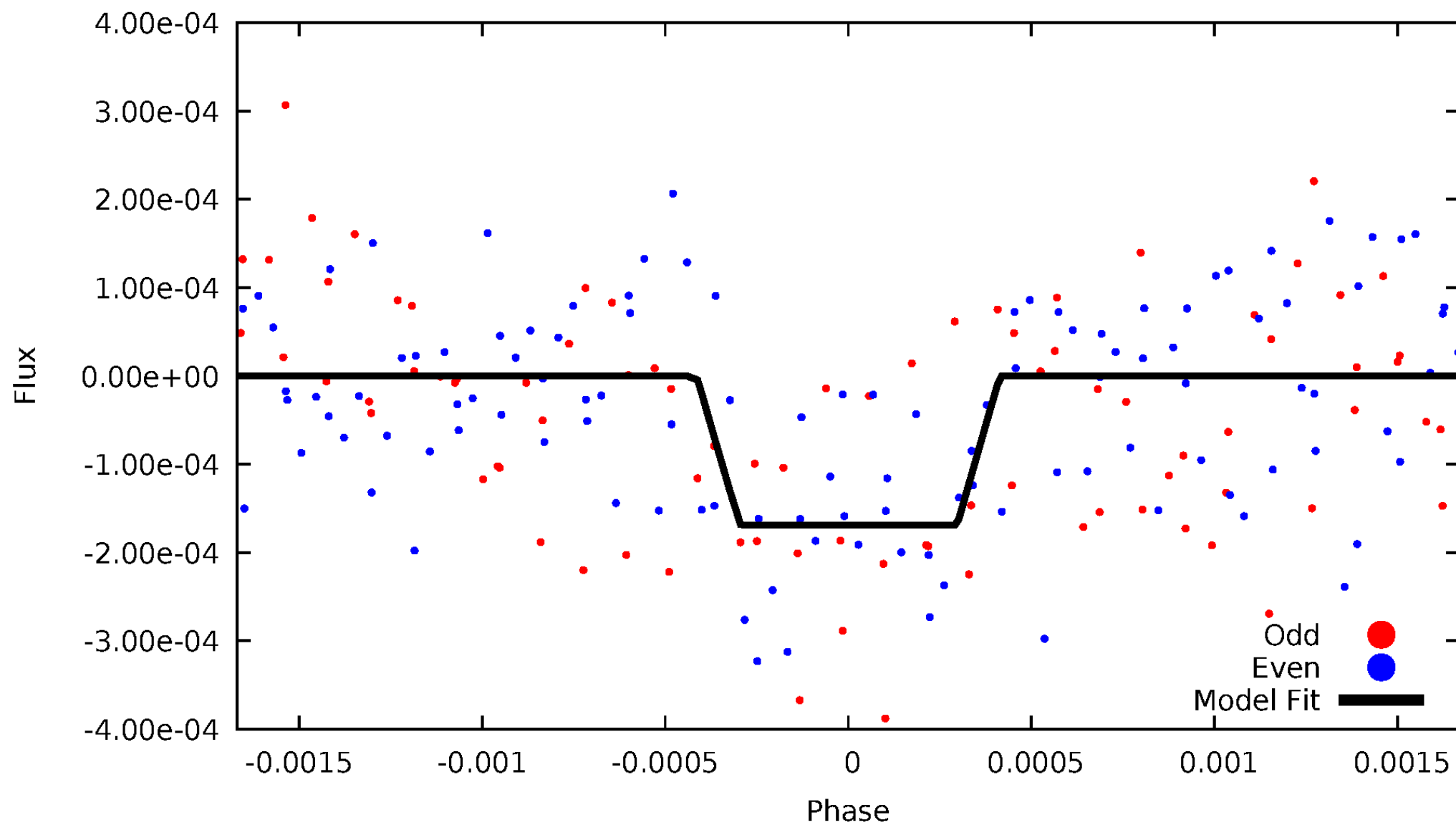
# DV Odd/Even

TCE 008589526-05



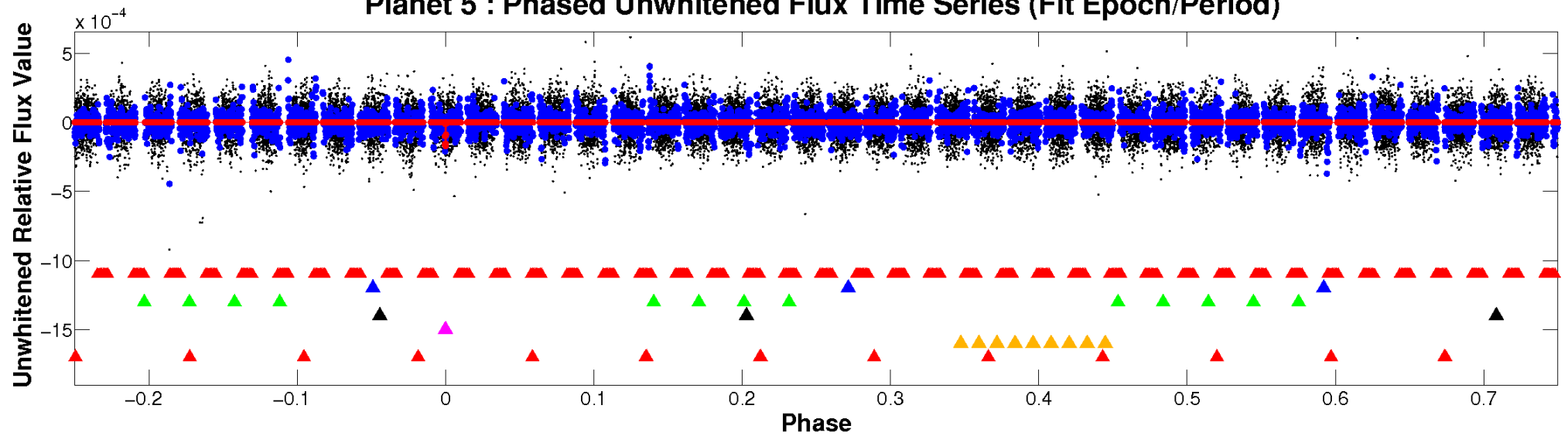
# ALT Odd/Even

TCE 008589526-05

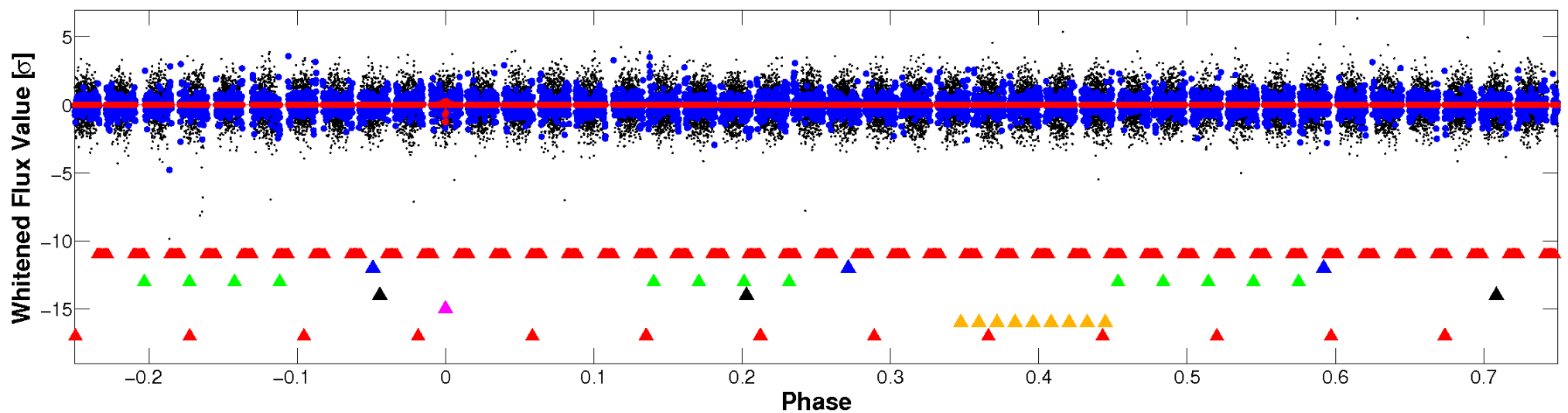


# Non-Whitened Vs. Whitened Light Curve

## Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

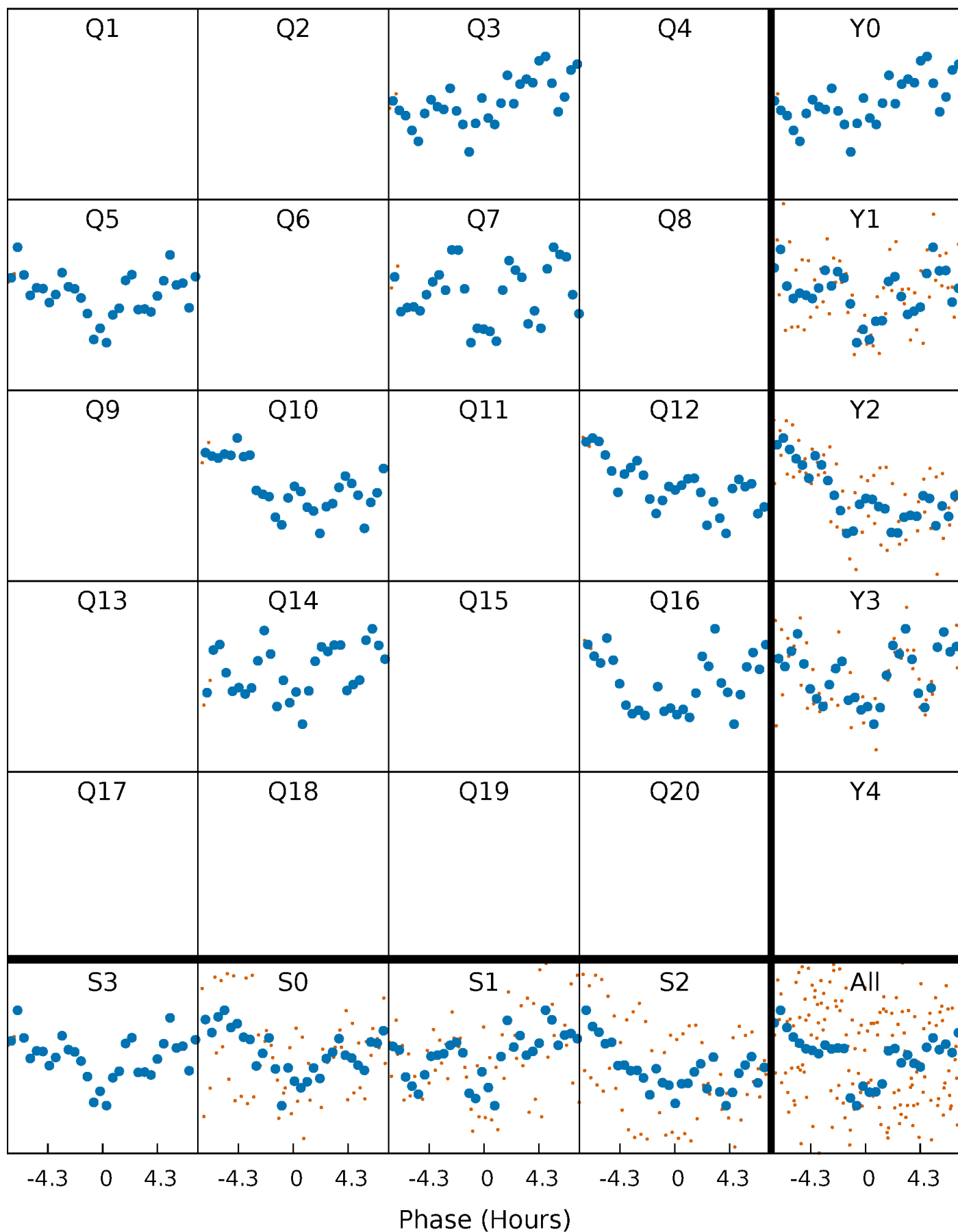


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



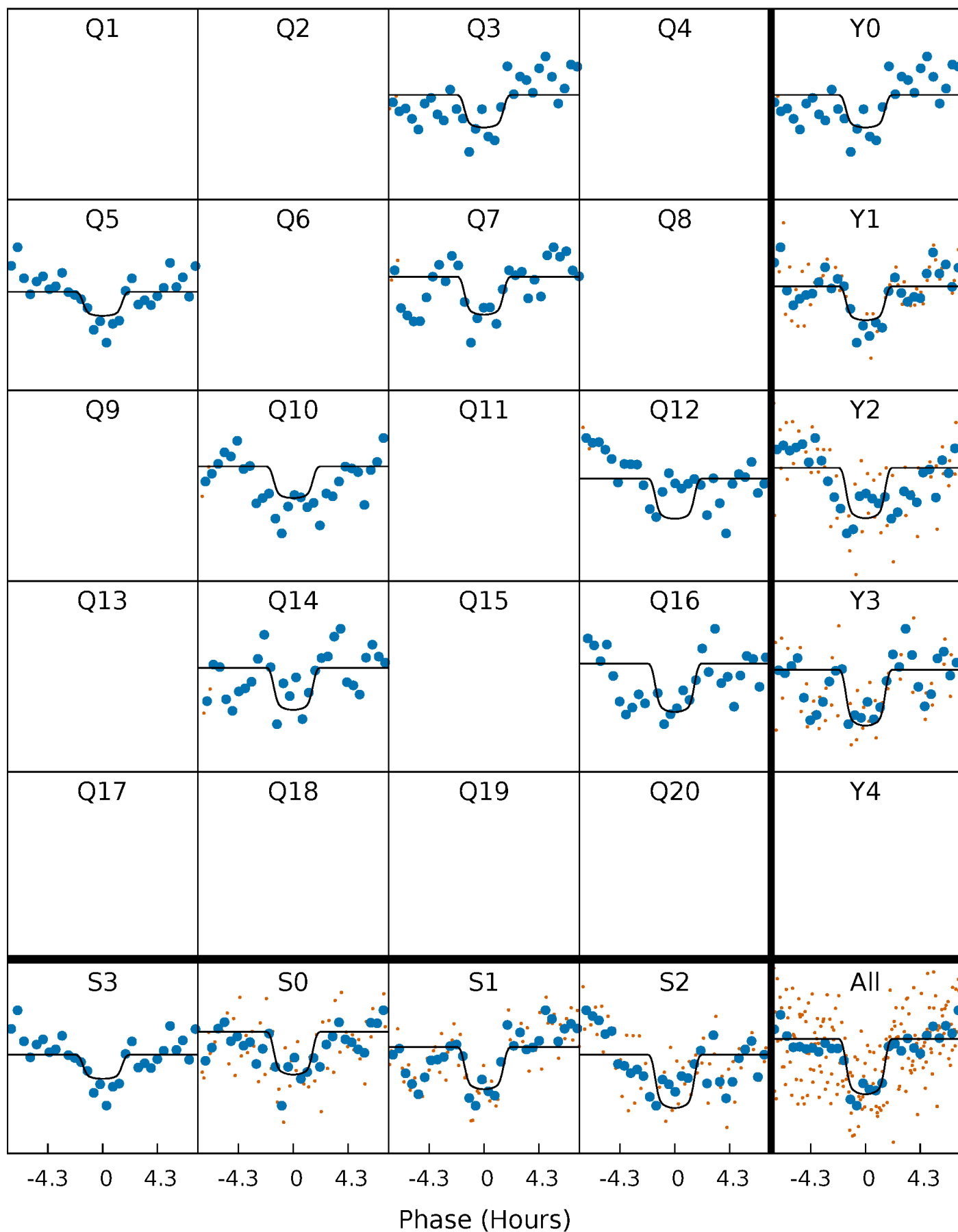
# PDC Quarter-Phased Transit Curves

TCE 008589526-05     $P=174.602635$  Days     $T_0=283.418289$  (BKJD)



# DV Quarter-Phased Transit Curves

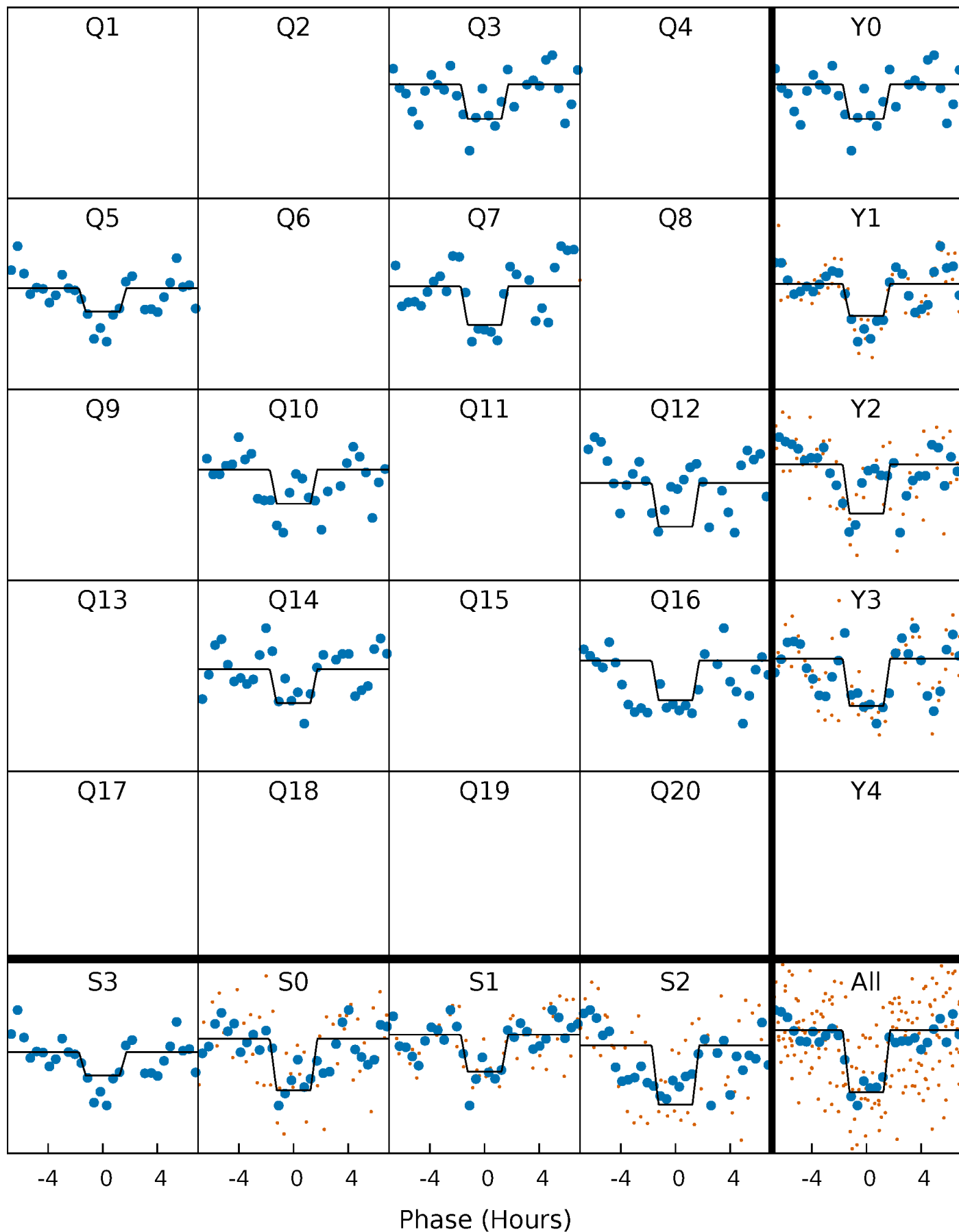
TCE 008589526-05     $P=174.602635$  Days     $T_0=283.418289$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

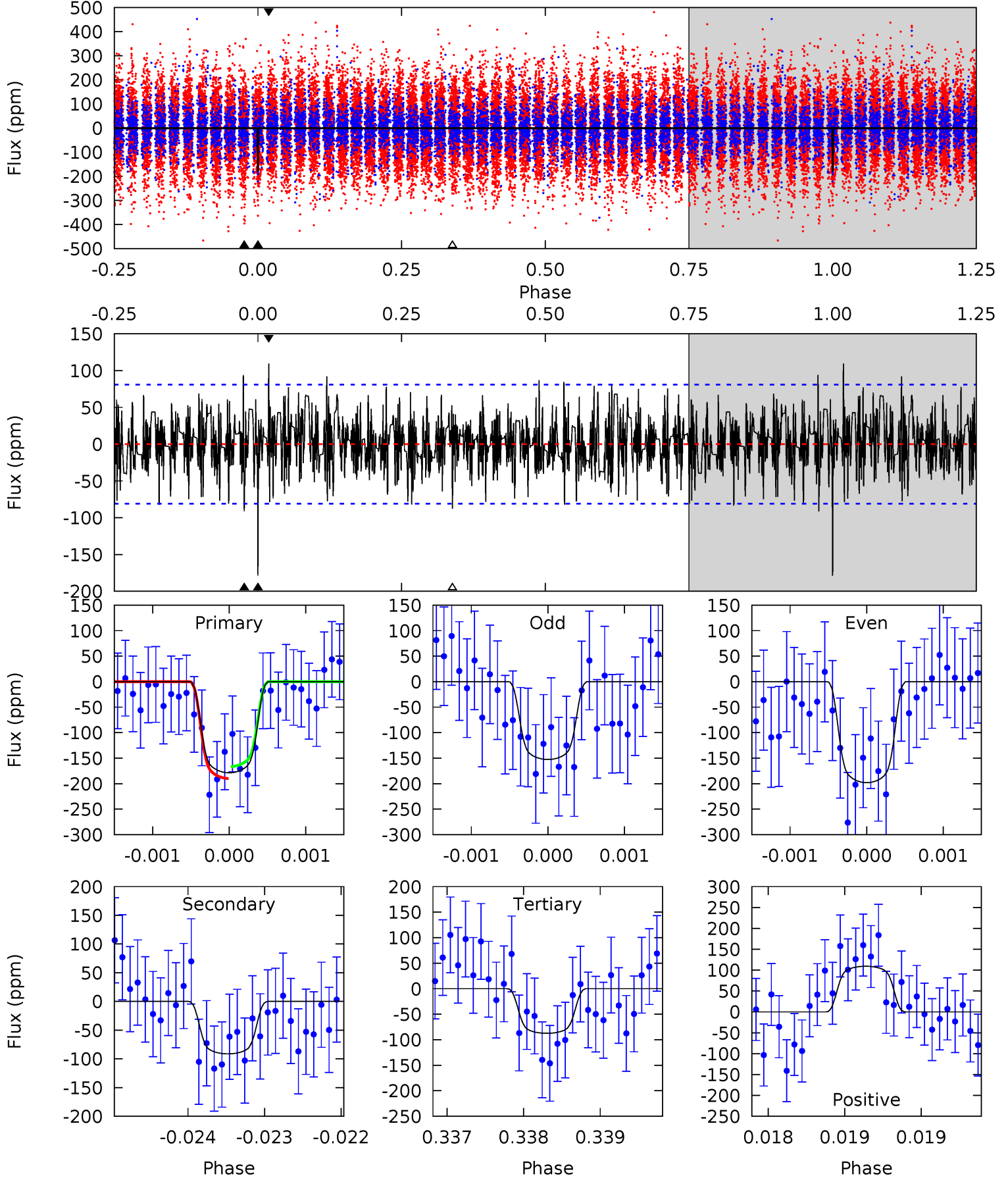
TCE 008589526-05   P=174.601753 Days    $T_0=283.419346$  (BKJD)



# DV Model-Shift Uniqueness Test

008589526-05, P = 174.602635 Days, E = 108.815654 Days

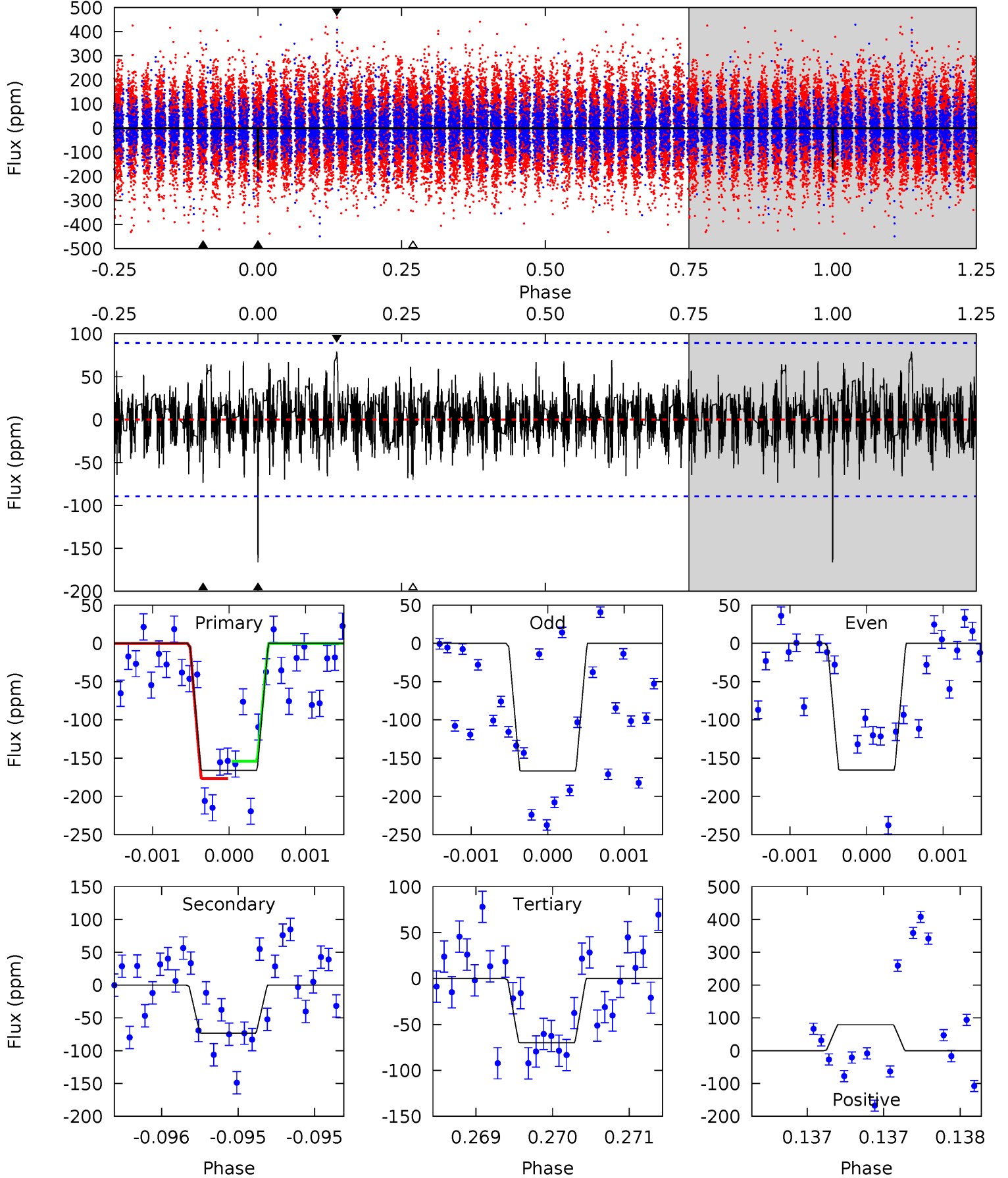
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	6.15	5.89	7.37	5.46	3.30	1.90	6.14	4.67	0.26	-1.22	1.51	0.91	0.38	0.78



# Alt Model-Shift Uniqueness Test

008589526-05,  $P = 174.601753$  Days,  $E = 108.817593$  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
10.2	4.51	4.30	4.87	5.49	3.35	1.28	5.92	5.35	0.21	-0.36	0.04	0.96	0.32	0.69



### Stellar Parameters For KIC 008589526

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6309^{+173}_{-157}$	$3.528^{+0.384}_{-0.096}$	$-0.420^{+0.400}_{-0.300}$	$3.519^{+0.616}_{-1.539}$	$1.523^{+0.216}_{-0.401}$	$0.049^{+0.170}_{-0.016}$
	+3%/-2%	+11%/-3%	+95%/-71%	+18%/-44%	+14%/-26%	+344%/-32%
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 008589526-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-91 \pm 15$	$5.57^{+1.09}_{-1.32}$	$852^{+54}_{-86}$	$5088^{+338}_{-314}$	$807^{+527}_{-245}$
Alt.	$-73 \pm 16$	$4.66^{+1.10}_{-1.11}$	$850^{+56}_{-93}$	$5168^{+456}_{-386}$	$943^{+598}_{-385}$

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

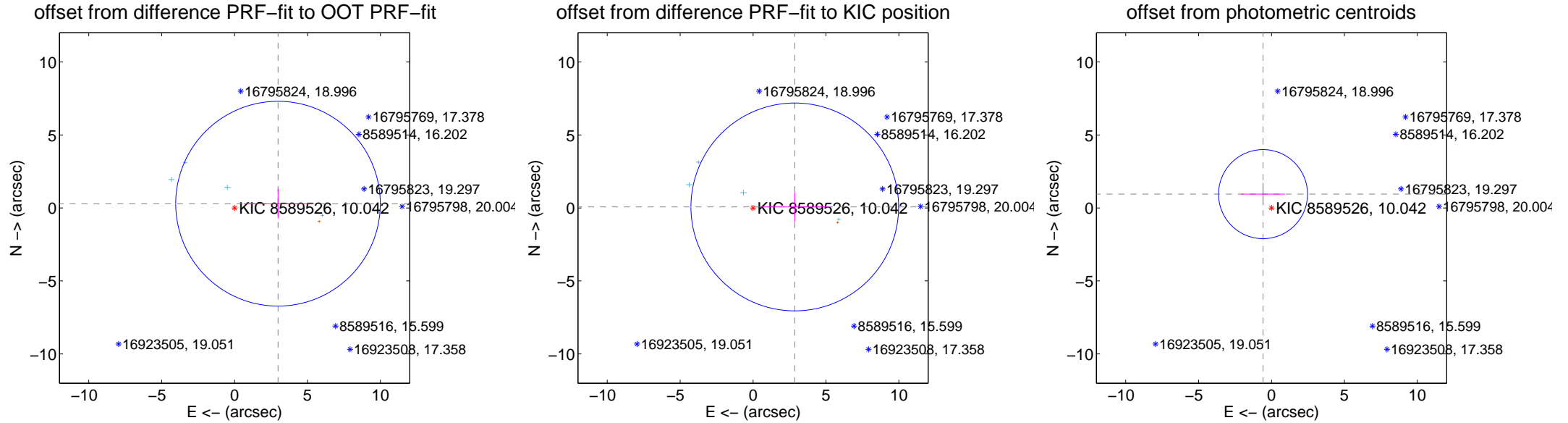
## DV Centroid Data

Supplemental centroid analysis for 008589526-05. **Kepler magnitude: 10.04.** Transit SNR 8.10

There are 4 quarters with good PRF difference image offsets

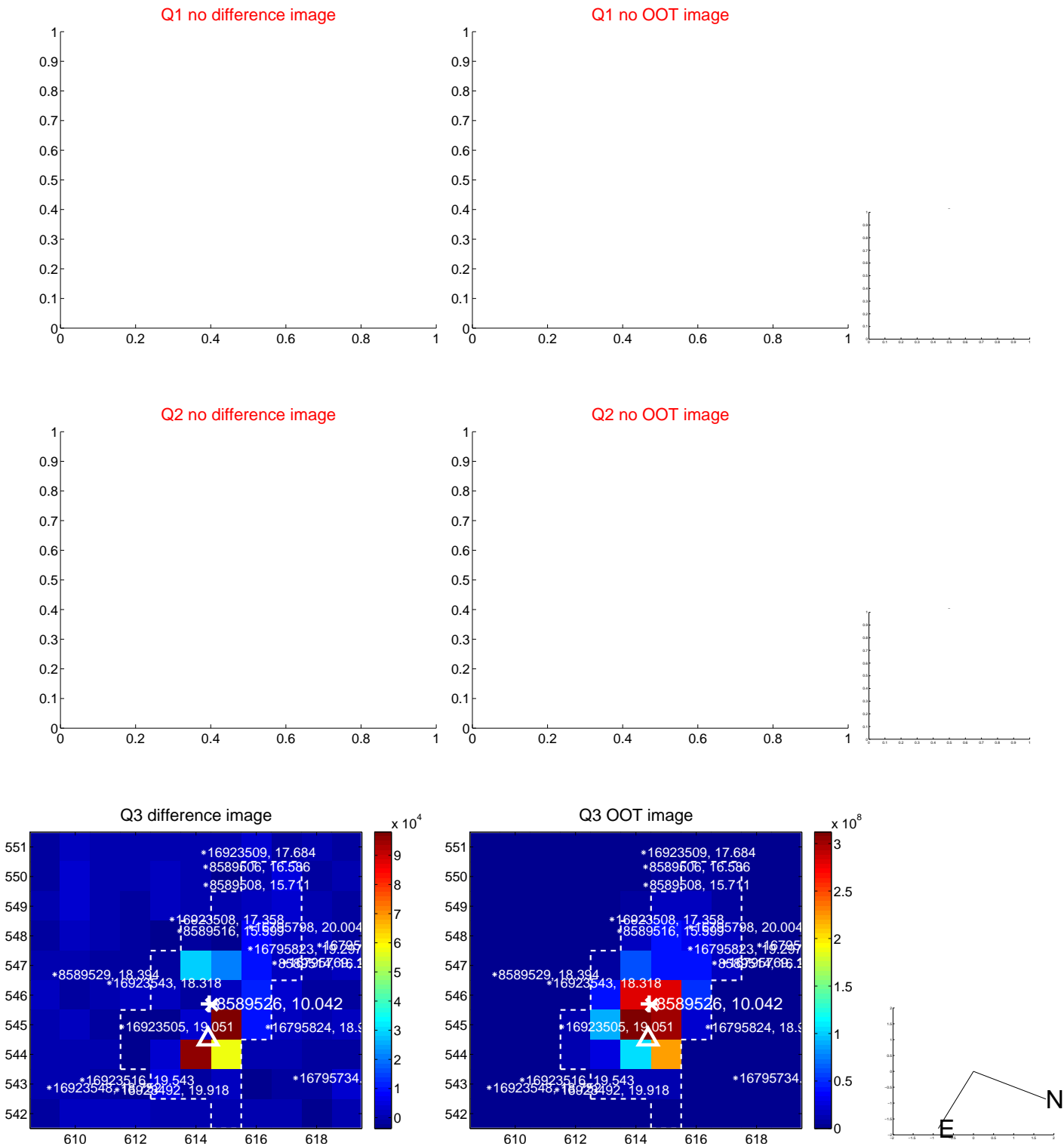
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.992 \pm 2.338$	1.28	$-2.978 \pm 2.347$	$0.291 \pm 1.010$
PRF-fit source offset from KIC position	$2.861 \pm 2.373$	1.21	$-2.861 \pm 2.373$	$0.069 \pm 1.011$
photometric centroid source offset	$1.11 \pm 1.02$	1.09	$0.58 \pm 1.50$	$0.95 \pm 0.76$

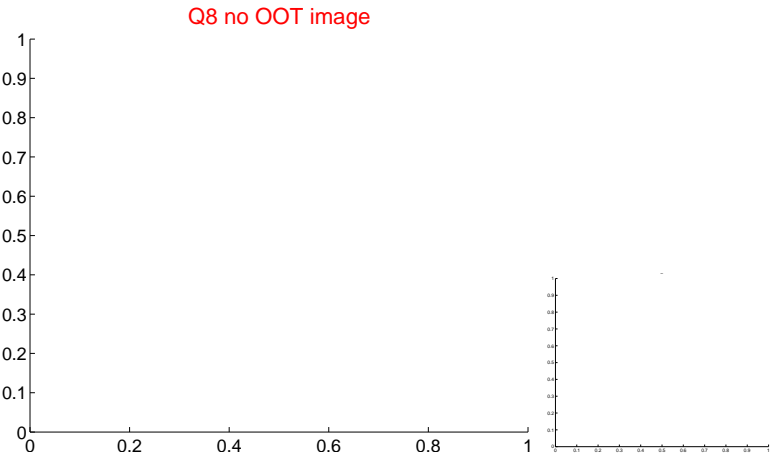
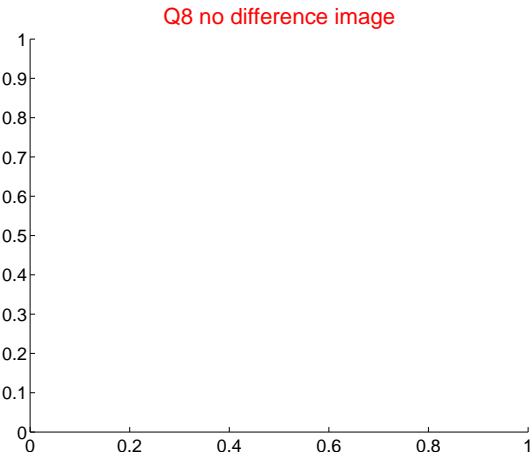
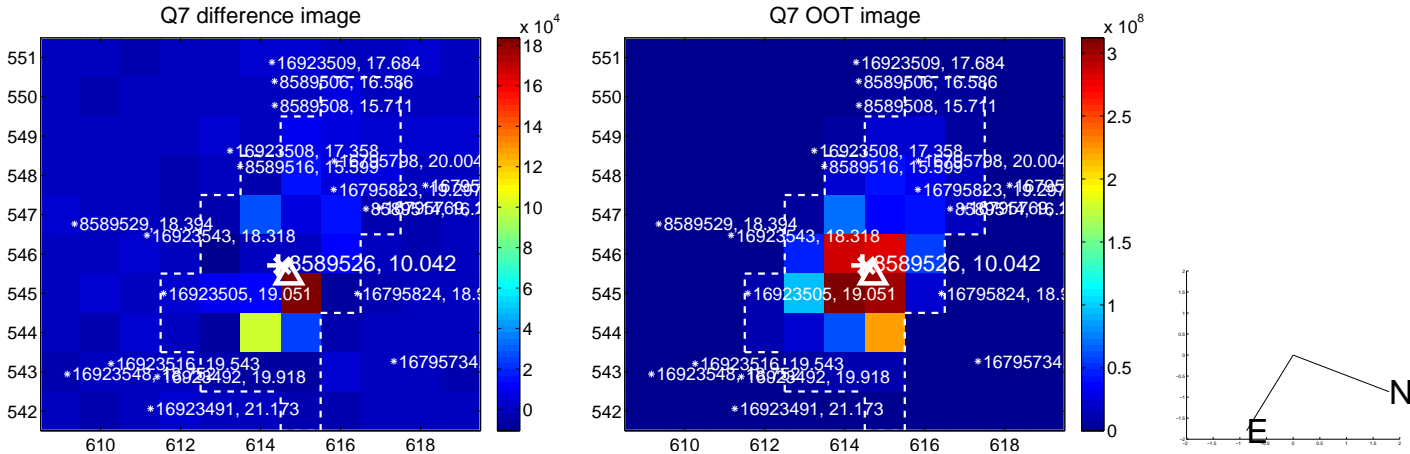
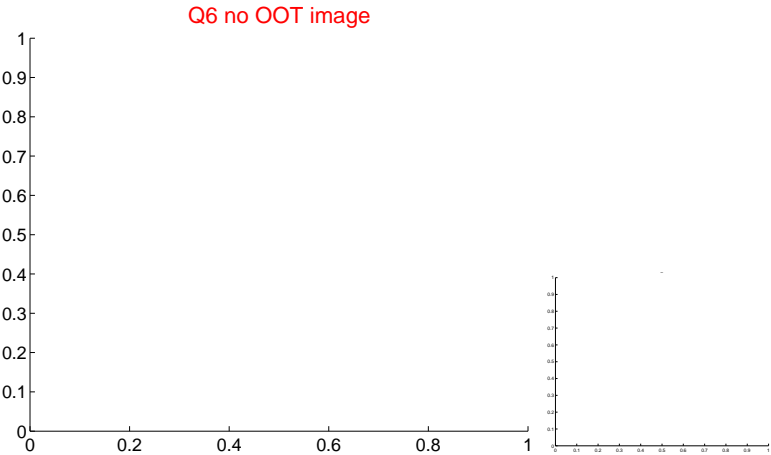
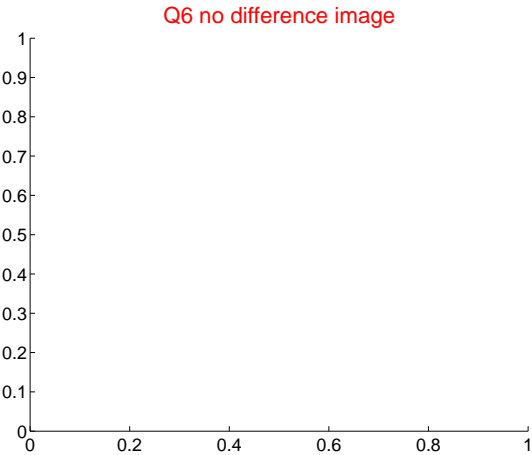
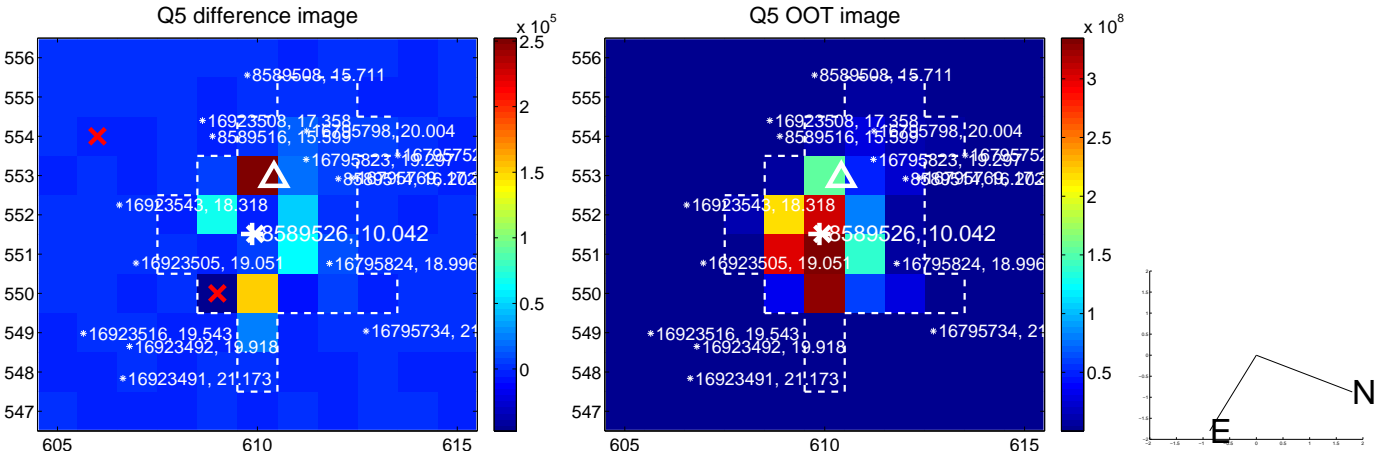


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

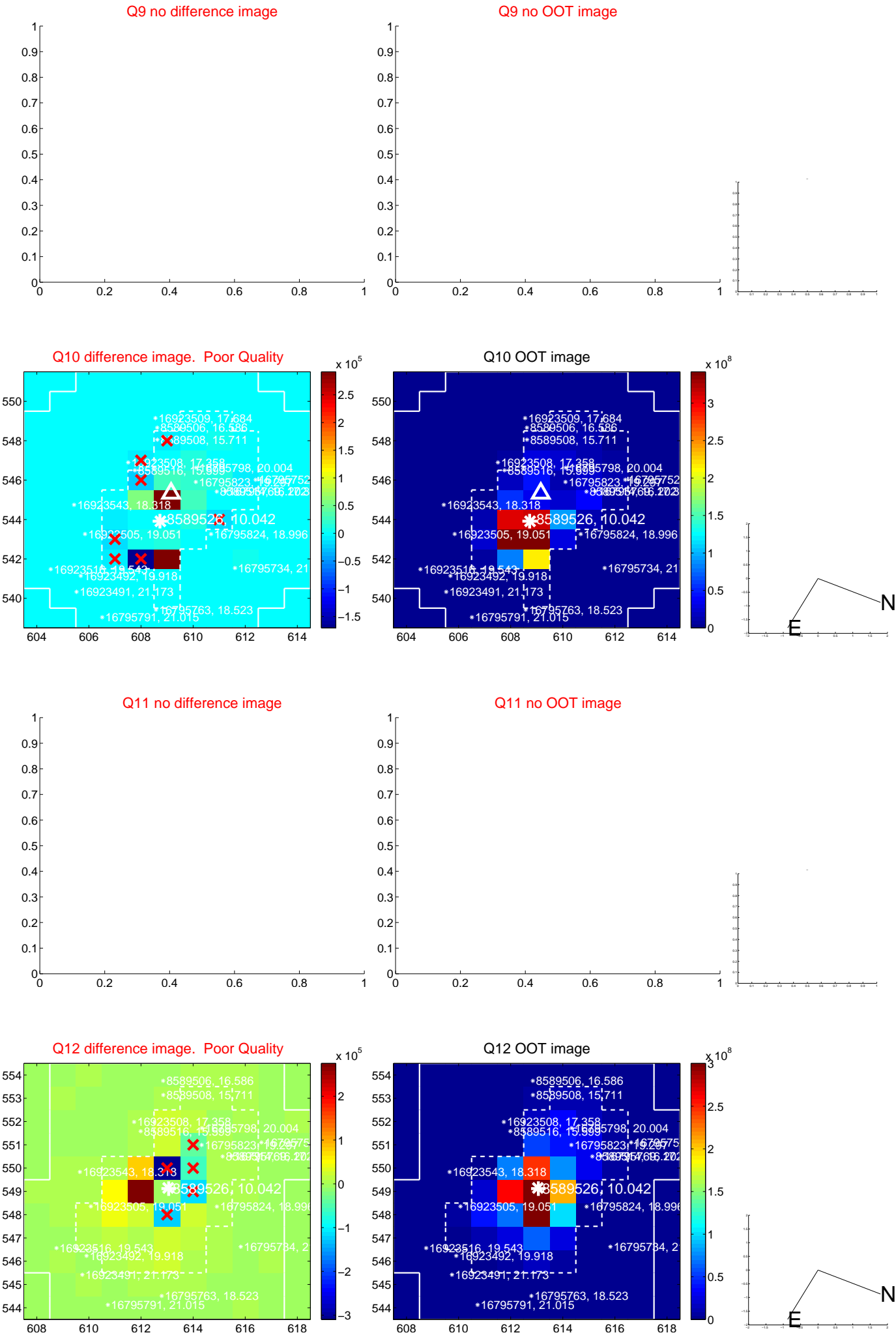


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



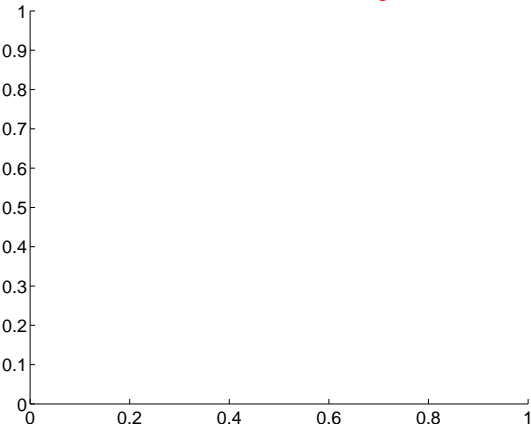


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

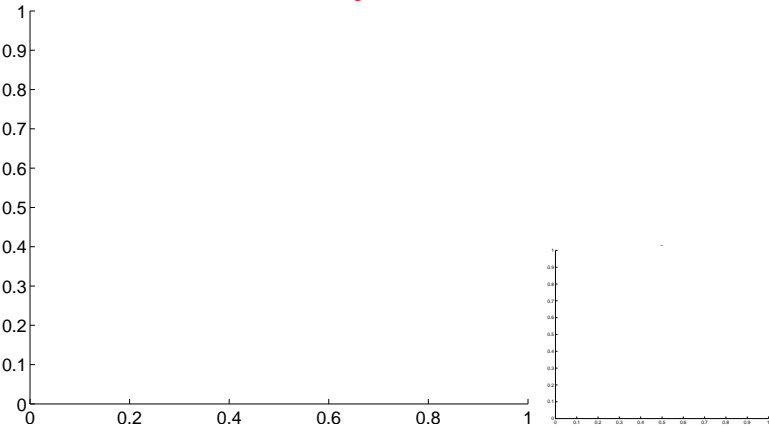


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

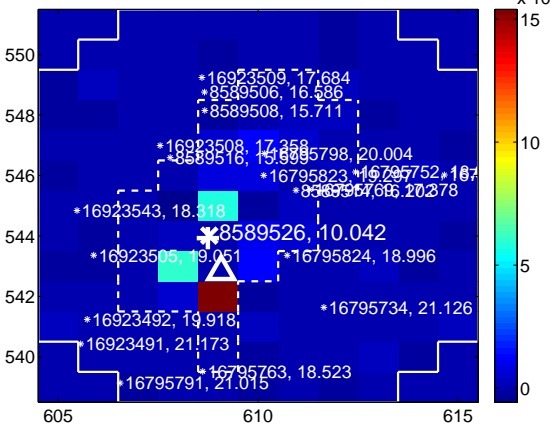
Q13 no difference image



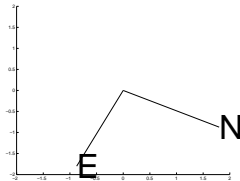
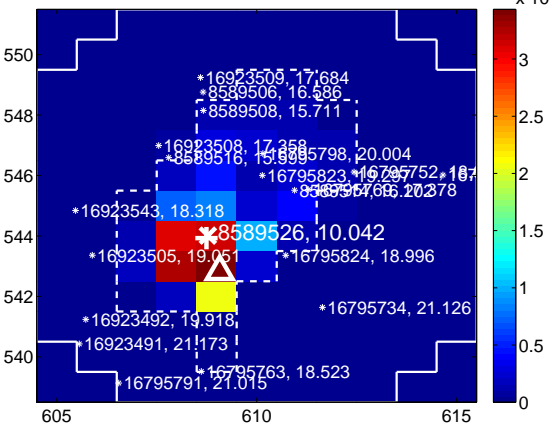
Q13 no OOT image



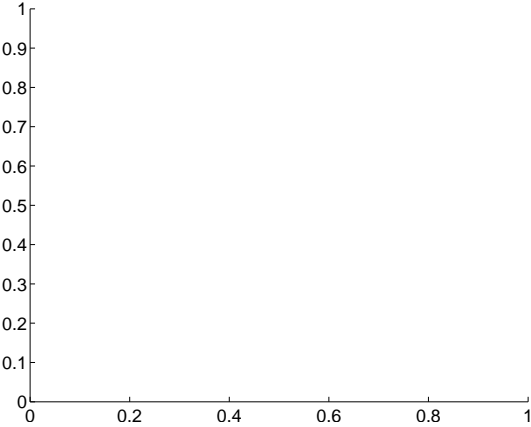
Q14 difference image



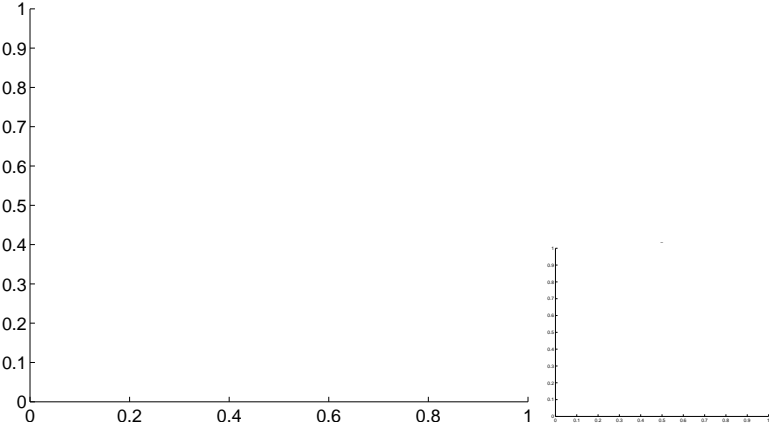
Q14 OOT image



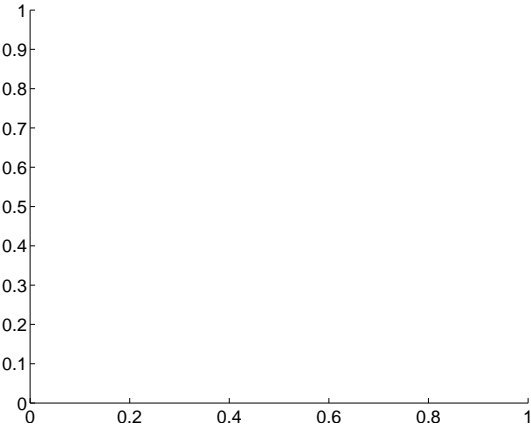
Q15 no difference image



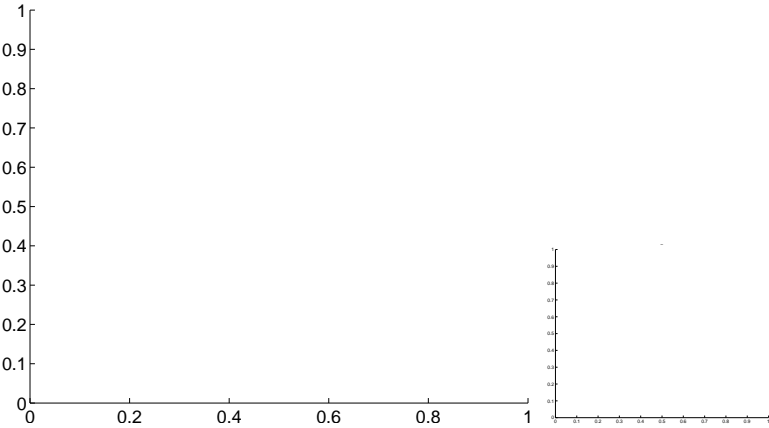
Q15 no OOT image



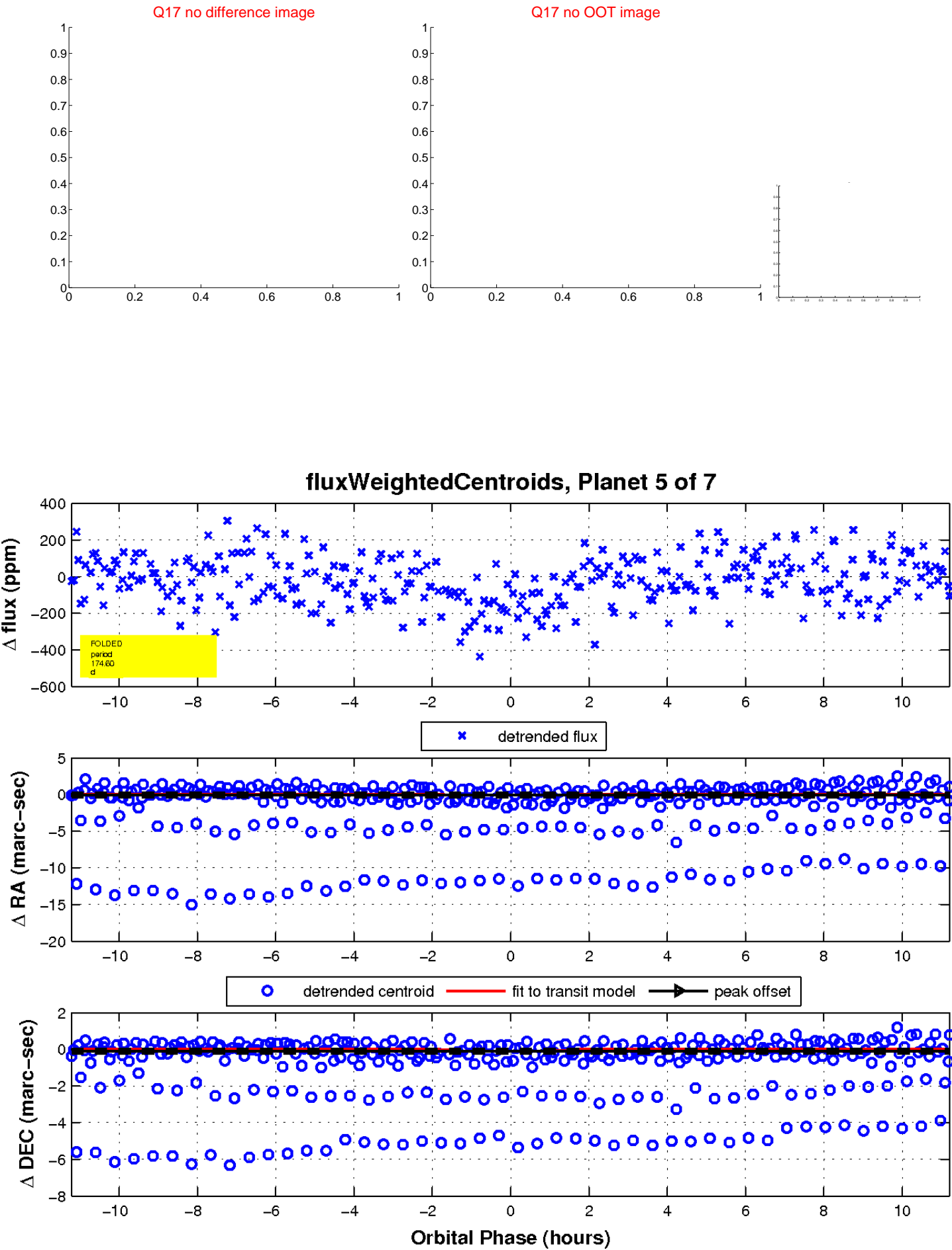
Q16 no difference image



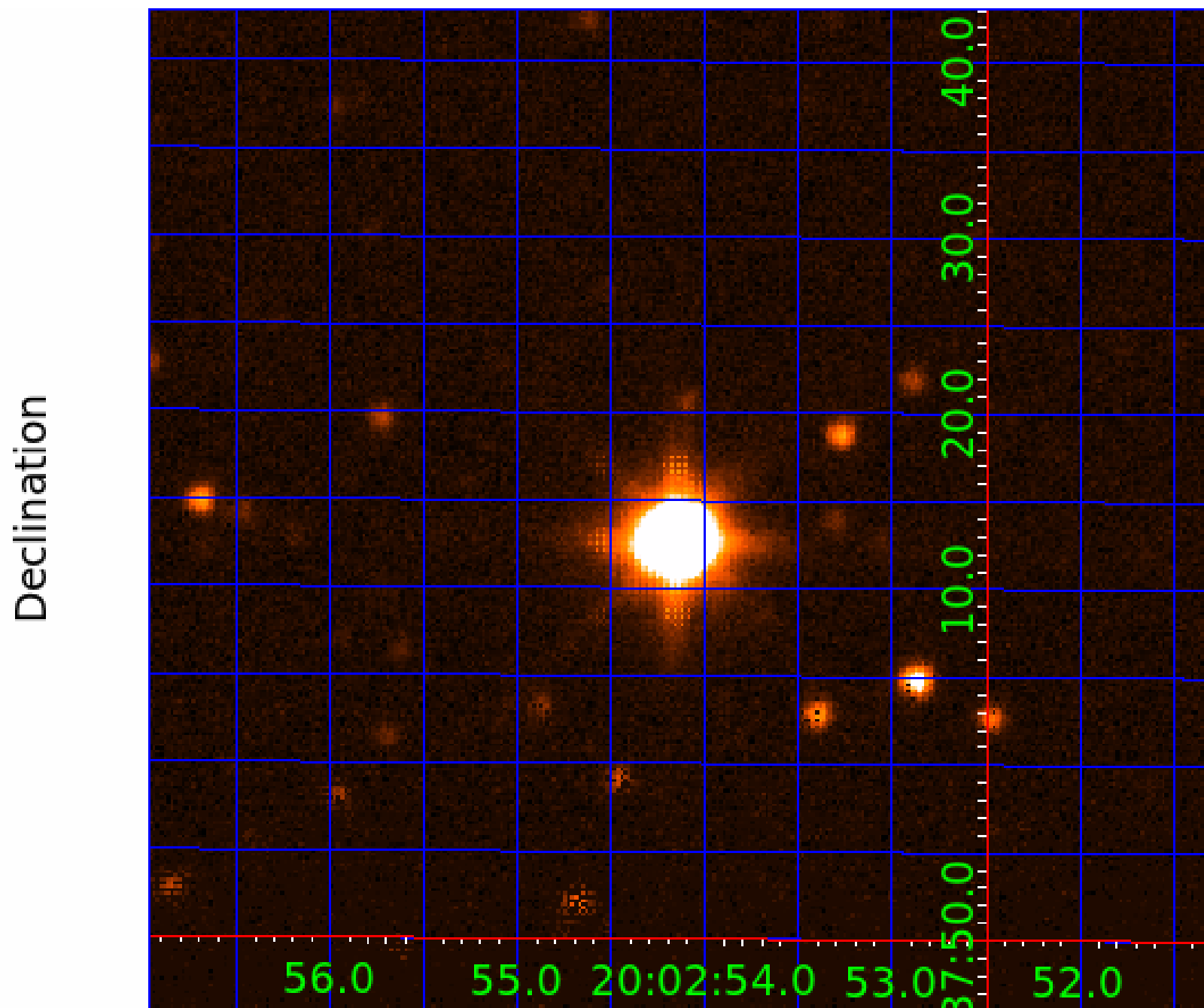
Q16 no OOT image



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



UKIRT Image



# KIC 008589526

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008589526-01	OBS	No	4.254168	133.079701	34.6	15.964	12.9	10.4	3.52	6309	2.42	5026.47
008589526-02	OBS	No	642.447956	212.200155	151.7	8.476	9.6	5.1	3.52	6309	4.94	6.25
008589526-03	OBS	No	114.630115	209.246884	170.4	7.153	8.8	8.0	3.52	6309	8.31	62.22
008589526-04	OBS	No	480.642300	318.856889	181.2	16.033	8.7	7.2	3.52	6309	5.05	9.20
008589526-05	OBS	No	174.602635	283.418289	171.5	3.739	7.8	8.1	3.52	6309	5.83	35.50
008589526-06	OBS	No	176.727621	169.486699	276.9	2.426	8.2	8.8	3.52	6309	6.86	34.94
008589526-07	OBS	No	94.024694	132.390744	198.3	3.242	7.6	8.4	3.52	6309	6.61	81.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008589526-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
008589526-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
008589526-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED
008589526-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

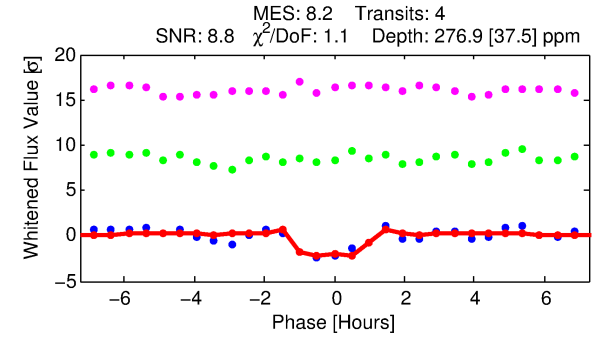
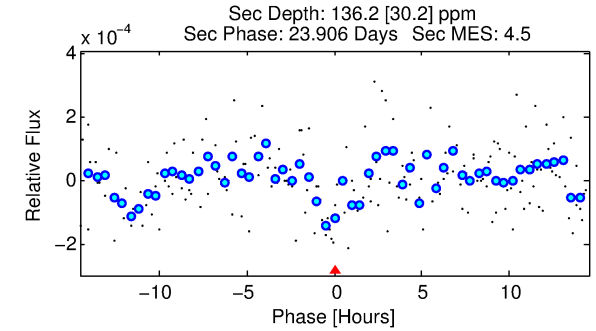
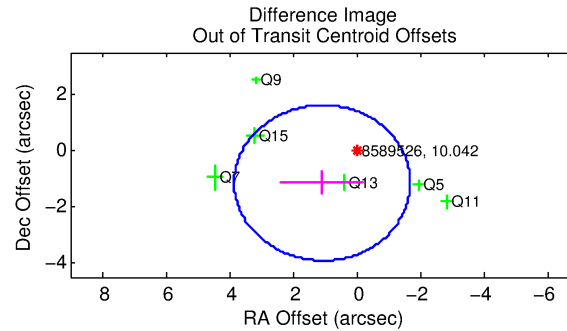
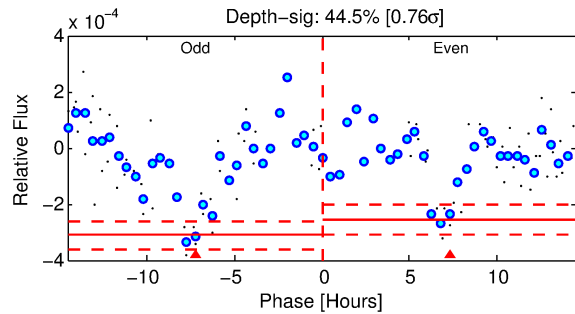
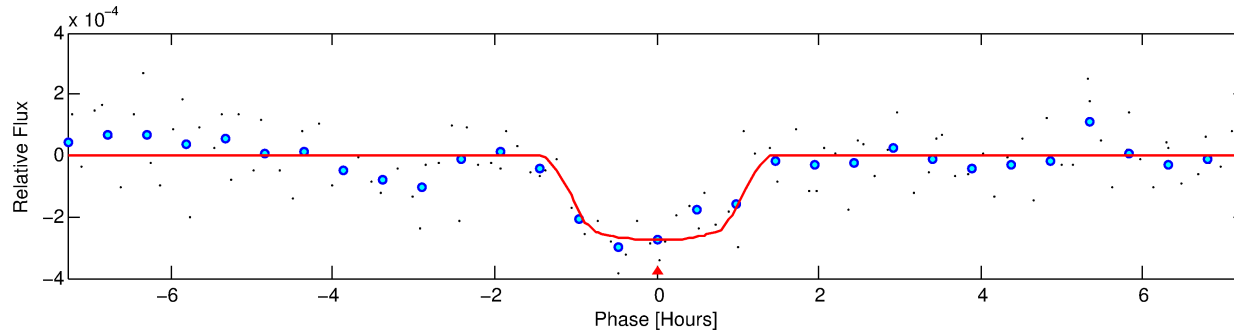
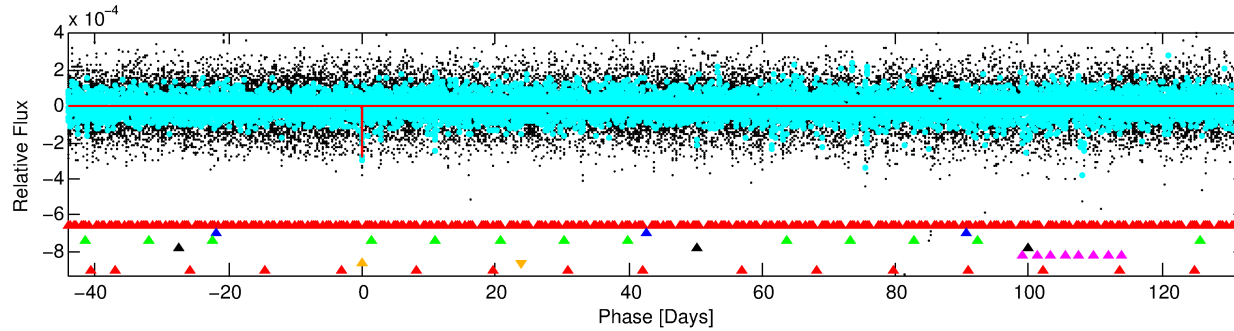
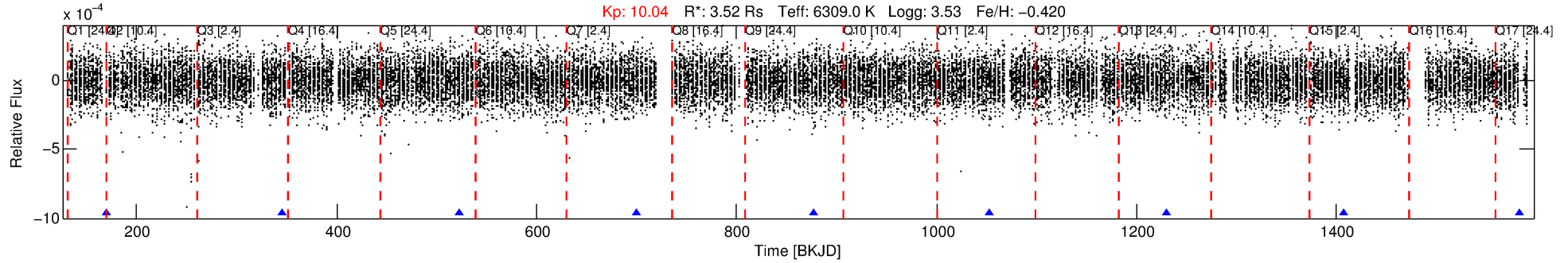
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008589526-06

No Significant Match Found

# DV One-Page Summary

KIC: 8589526 Candidate: 6 of 7 Period: 176.728 d



## DV Fit Results:

Period = 176.72762 [0.00136] d  
Epoch = 169.4867 [0.0070] BKJD  
 $R_p/R^*$  = 0.0179 [0.0060]  
 $a/R^*$  = 264.59 [485.95]  
 $b$  = 0.90 [0.39]  
 $S_{\text{eff}}$  = 34.94 [23.29]  
 $T_{\text{eq}}$  = 620 [103] K  
 $R_p$  = 6.86 [3.78]  $R_e$   
 $a$  = 0.7093 [0.2941] AU  
 $A_g$  = 802.48 [774.01] [1.04 $\sigma$ ]  
 $T_{\text{eff}}$  = 5101 [911] K [4.89 $\sigma$ ]

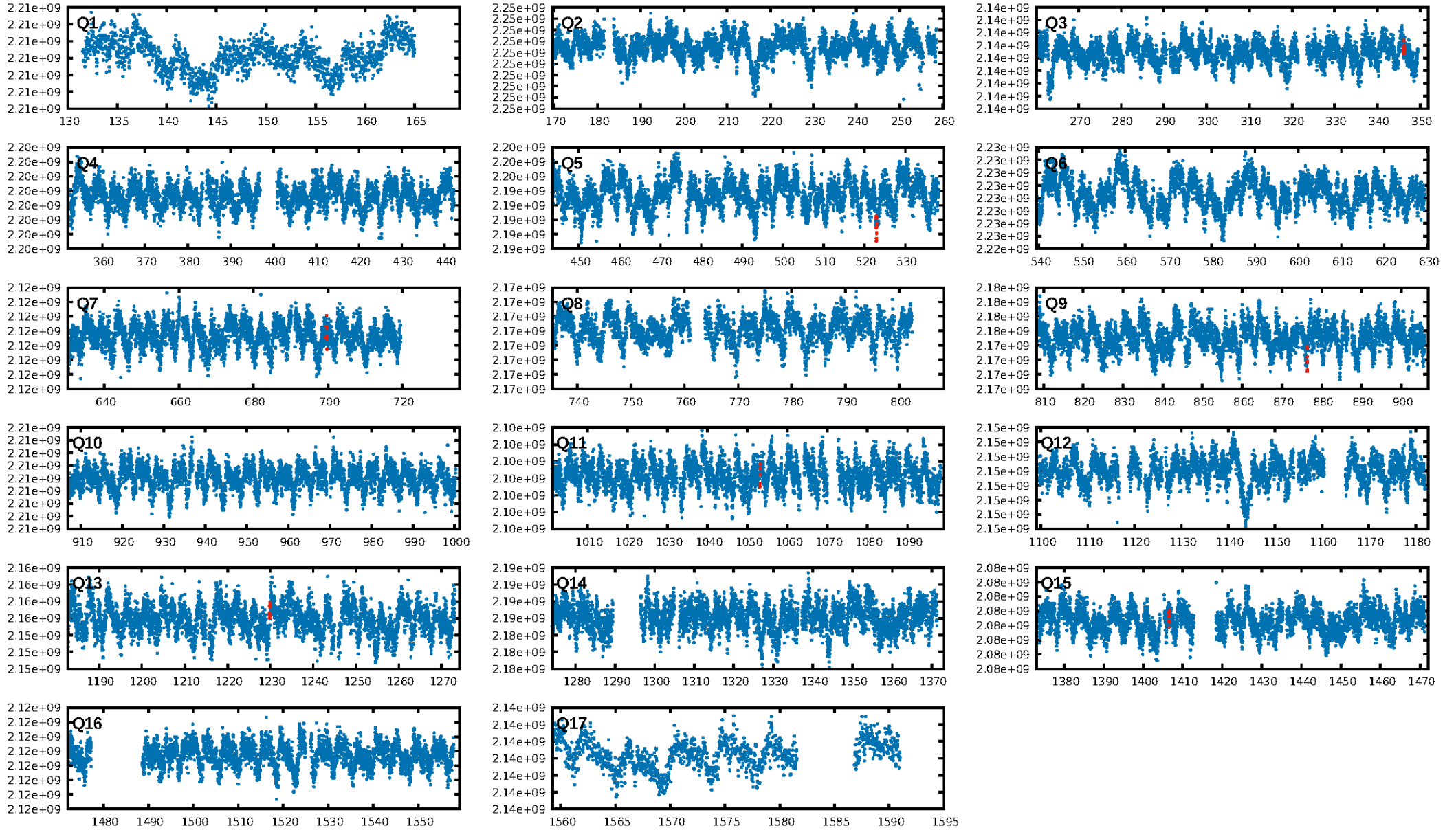
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.44 $\sigma$ ]  
LongPeriod-sig: 100.0% [449.80 $\sigma$ ]  
ModelChiSquare2-sig: 51.1%  
ModelChiSquareGof-sig: 92.7%  
**Bootstrap-pfa: 8.95e-10**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 55.0%  
Centroid-so: 0.370 arcsec [0.48 $\sigma$ ]  
OotOffset-rm: 1.574 arcsec [1.71 $\sigma$ ]  
OotOffset-st: 0/3/0/3 [6]  
KicOffset-rm: 1.780 arcsec [2.02 $\sigma$ ]  
KicOffset-st: 0/3/0/3 [6]  
DiffImageQuality-fgm: 0.33 [2/6]  
DiffImageOverlap-fno: 0.86 [6/7]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:46:22 Z

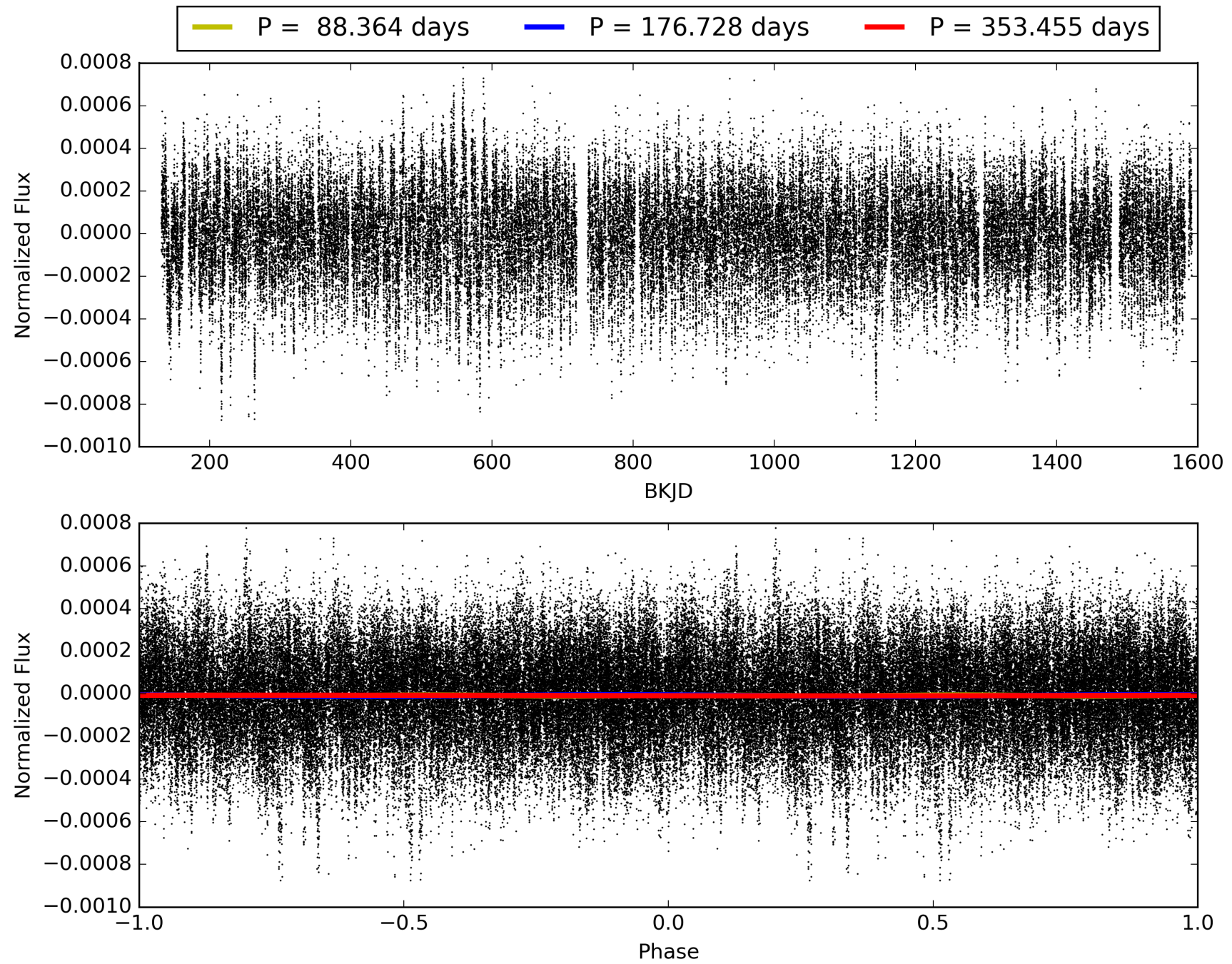
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008589526-06, PDC Light Curves



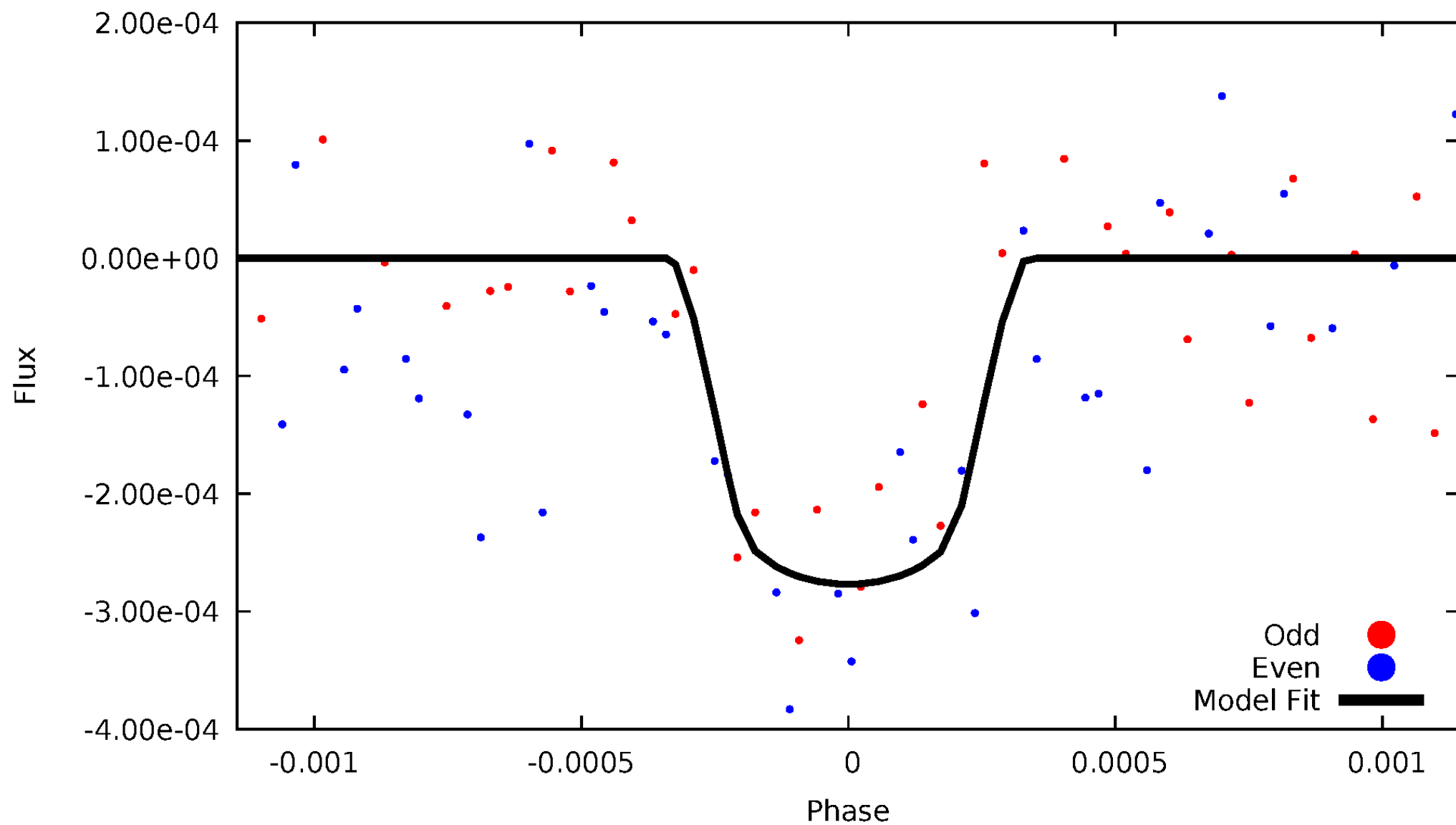


TCE 008589526-06



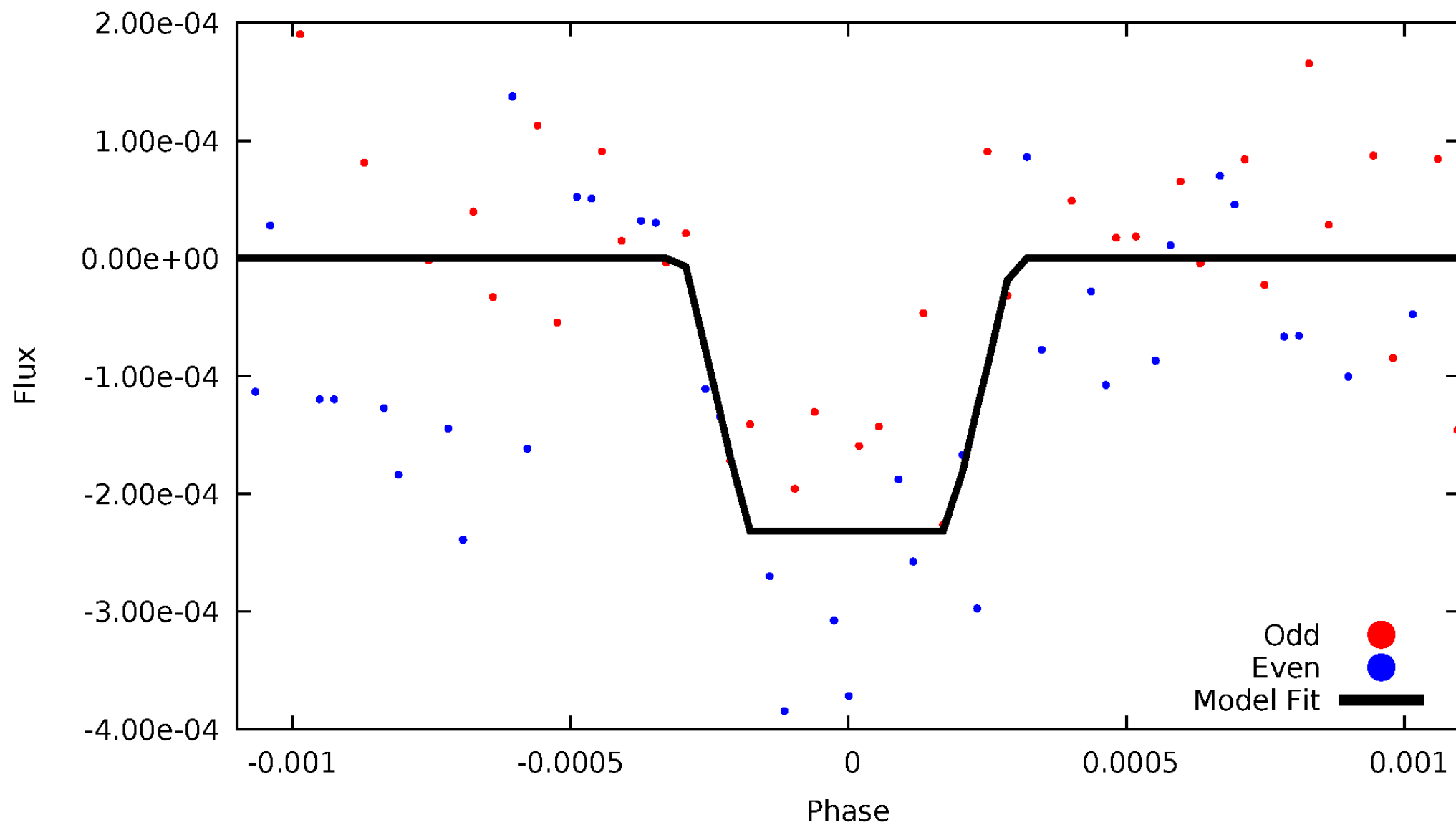
# DV Odd/Even

TCE 008589526-06



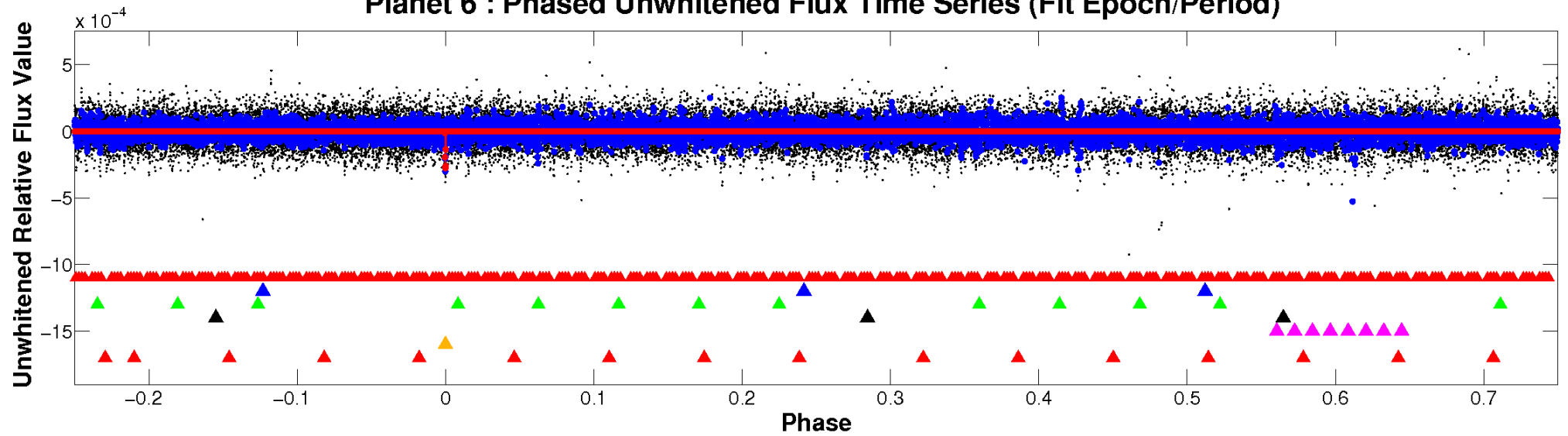
# ALT Odd/Even

TCE 008589526-06

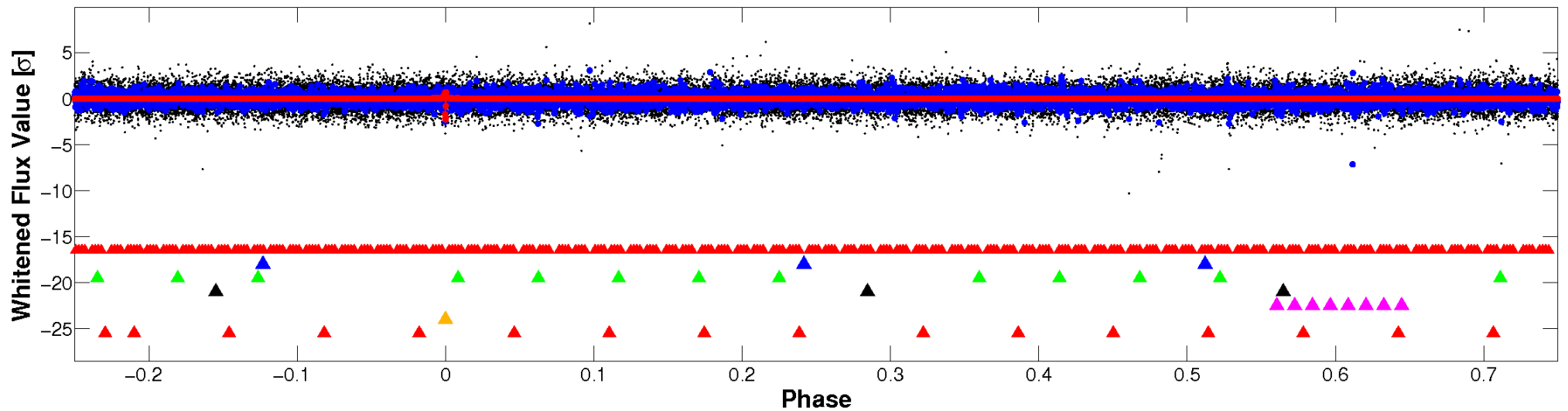


# Non-Whitened Vs. Whitened Light Curve

## Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

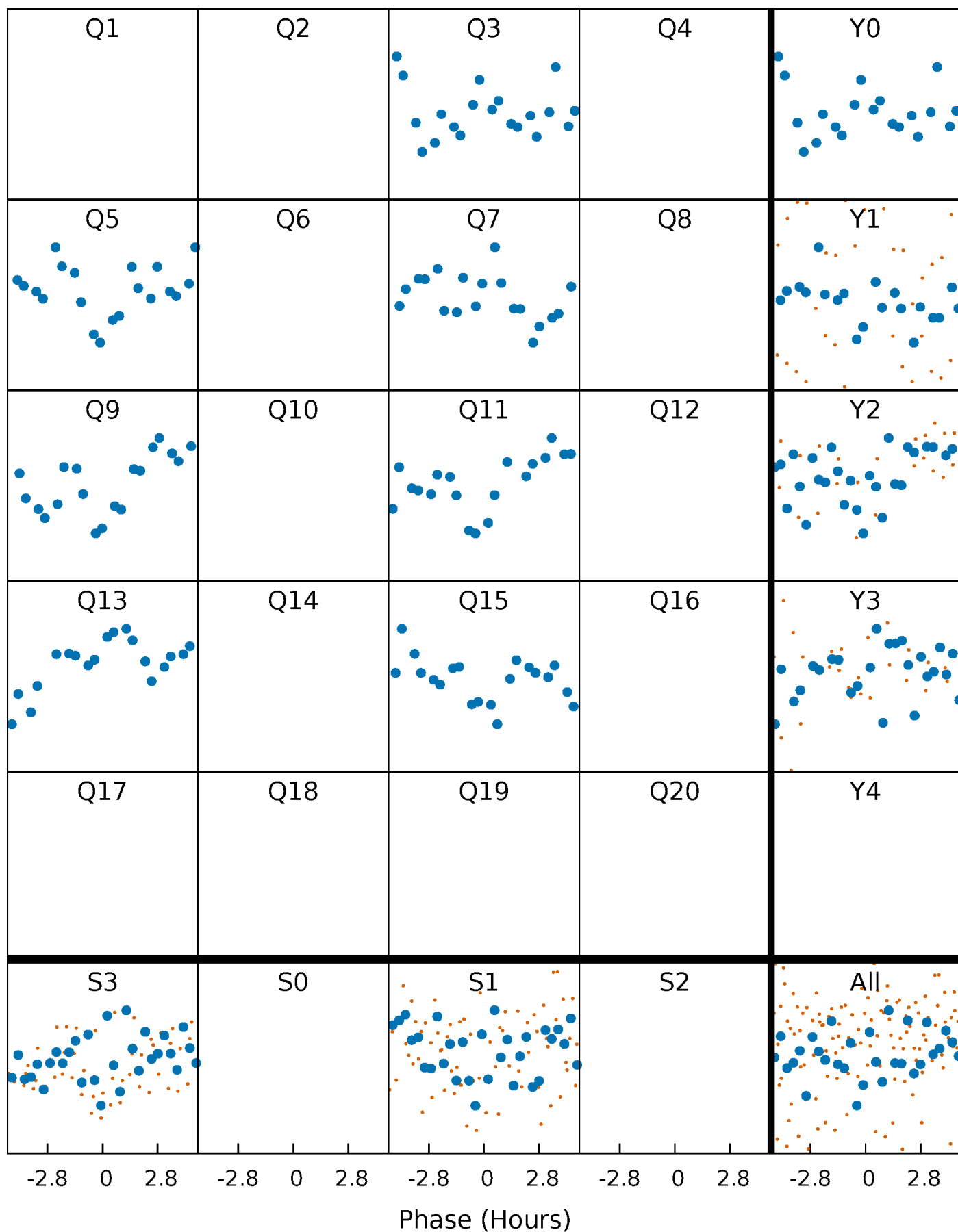


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



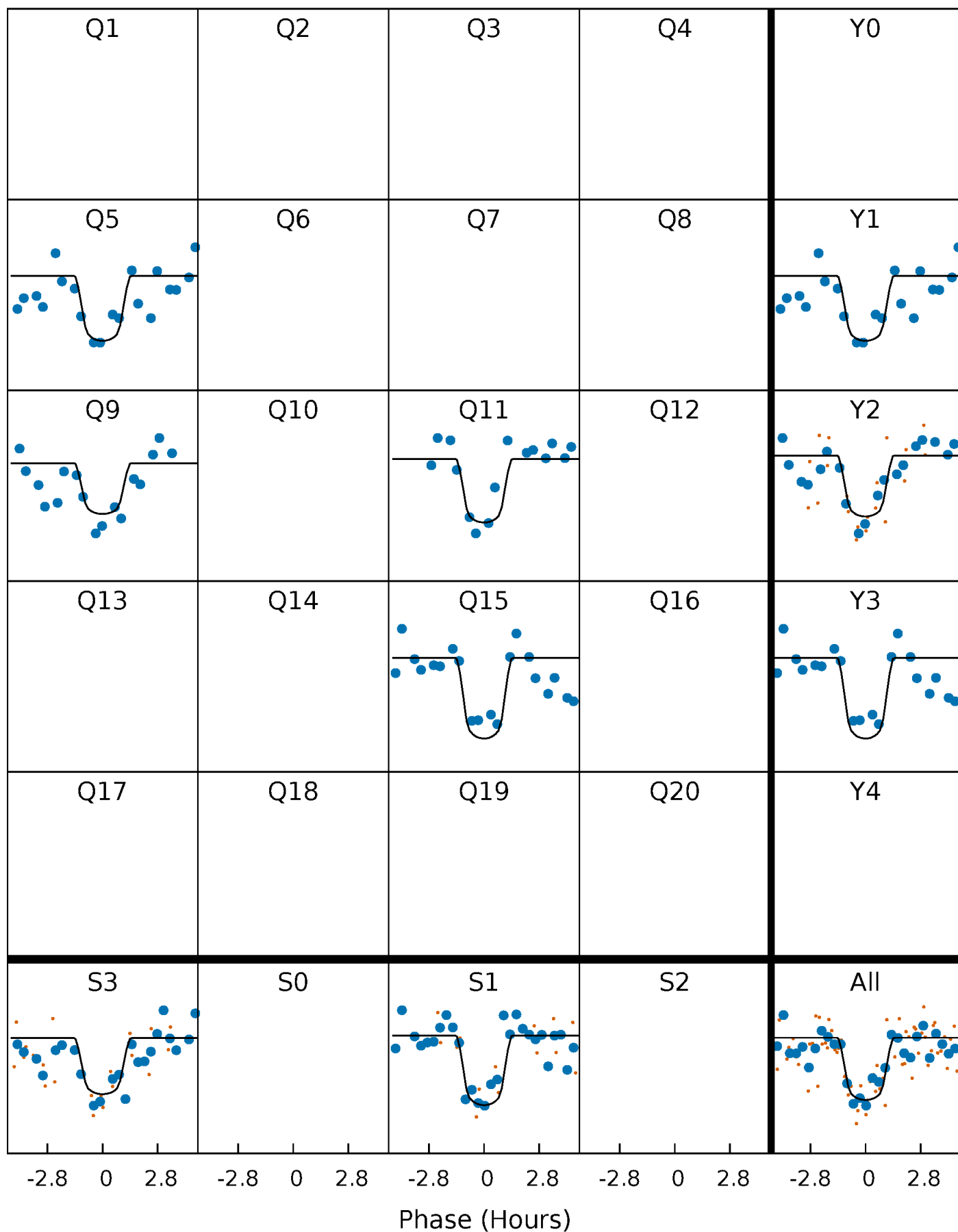
# PDC Quarter-Phased Transit Curves

TCE 008589526-06 P=176.727621 Days  $T_0=169.486699$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 008589526-06     $P=176.727621$  Days     $T_0=169.486699$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008589526-06 P=176.727461 Days  $T_0=169.488228$  (BKJD)

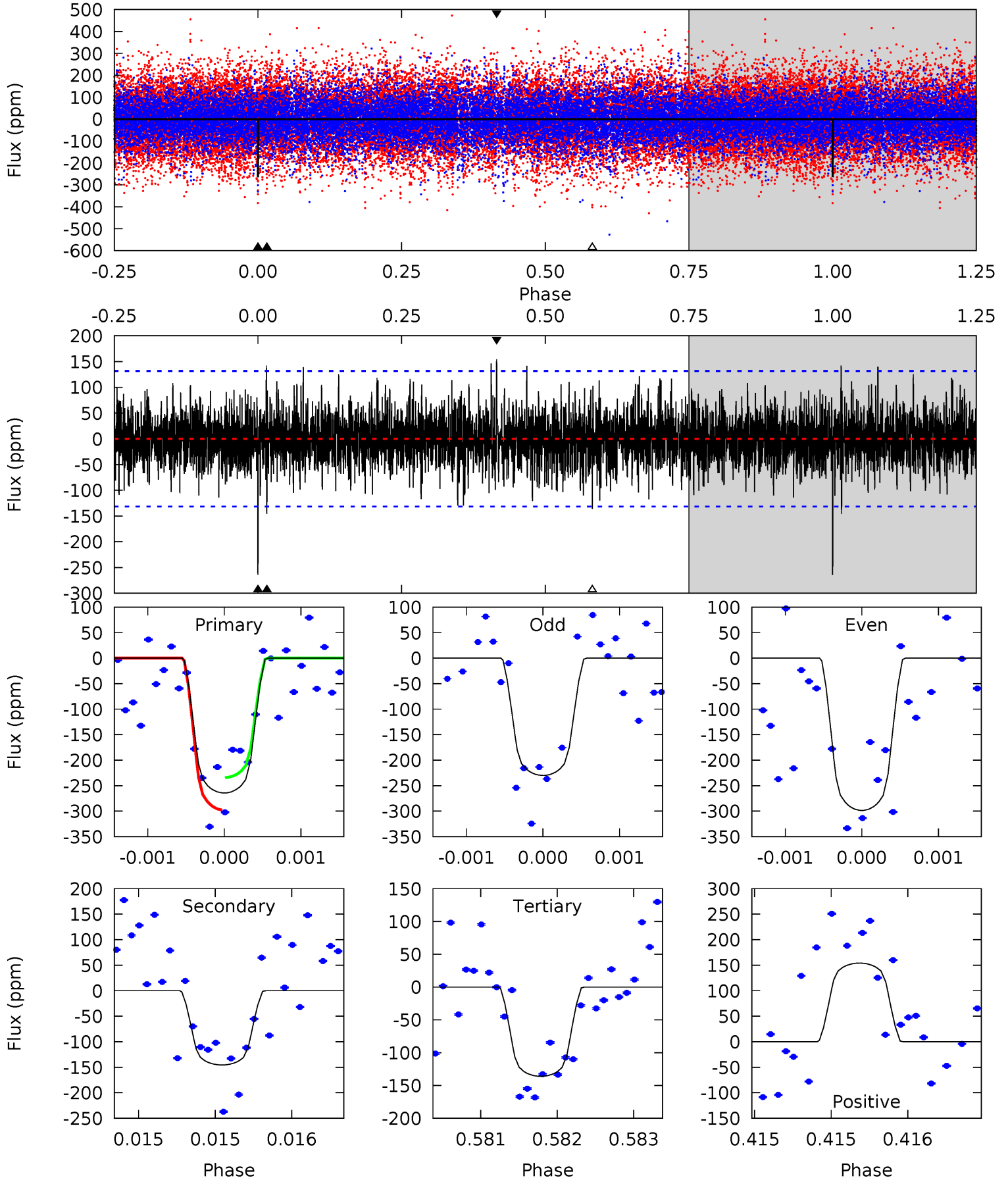




# DV Model-Shift Uniqueness Test

008589526-06, P = 176.727621 Days, E = 169.486699 Days

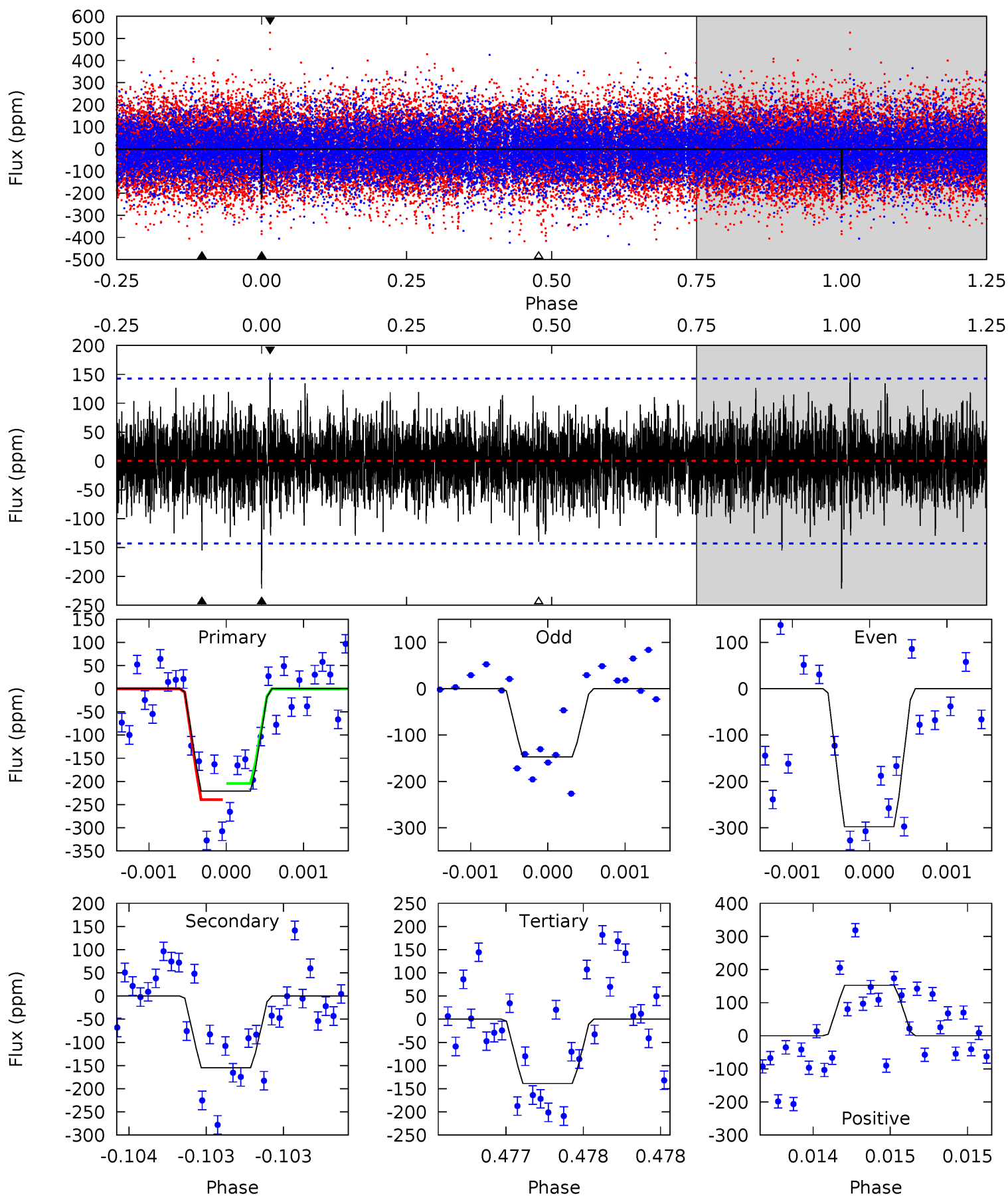
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	6.13	5.73	6.49	5.54	3.42	1.62	5.40	4.64	0.40	-0.36	1.44	1.07	0.37	1.33



# Alt Model-Shift Uniqueness Test

008589526-06, P = 176.727461 Days, E = 169.488228 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
8.59	6.03	5.40	5.93	5.56	3.46	1.48	3.19	2.66	0.63	0.10	2.93	1.08	0.41	0.67



### Stellar Parameters For KIC 008589526

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6309^{+173}_{-157}$	$3.528^{+0.384}_{-0.096}$	$-0.420^{+0.400}_{-0.300}$	$3.519^{+0.616}_{-1.539}$	$1.523^{+0.216}_{-0.401}$	$0.049^{+0.170}_{-0.016}$
	+3%/-2%	+11%/-3%	+95%/-71%	+18%/-44%	+14%/-26%	+344%/-32%
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 008589526-06 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-146 \pm 24$	$6.23^{+2.68}_{-2.45}$	$849^{+50}_{-91}$	$5253^{+1221}_{-675}$	$1035^{+1658}_{-531}$
Alt.	$-155 \pm 26$	$5.25^{+2.39}_{-2.24}$	$841^{+58}_{-94}$	$5688^{+1791}_{-778}$	$1532^{+2997}_{-812}$

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

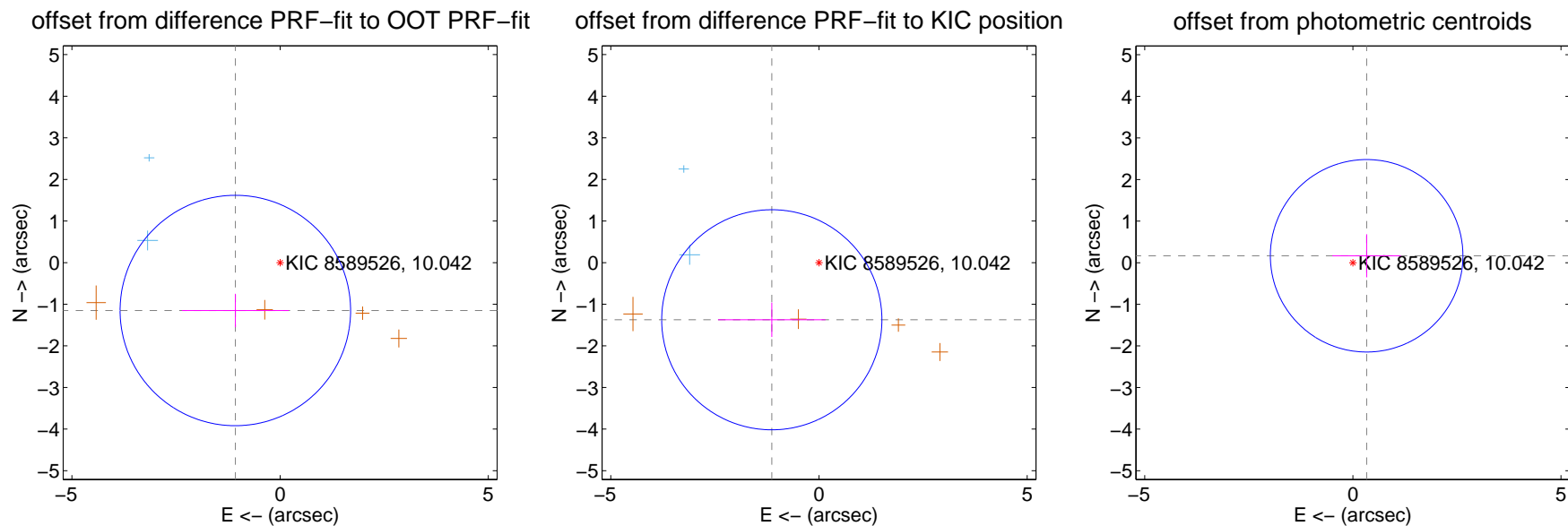
## DV Centroid Data

Supplemental centroid analysis for 008589526-06. **Kepler magnitude: 10.04.** Transit SNR 8.85

**There are 2 quarters with good PRF difference image offsets**

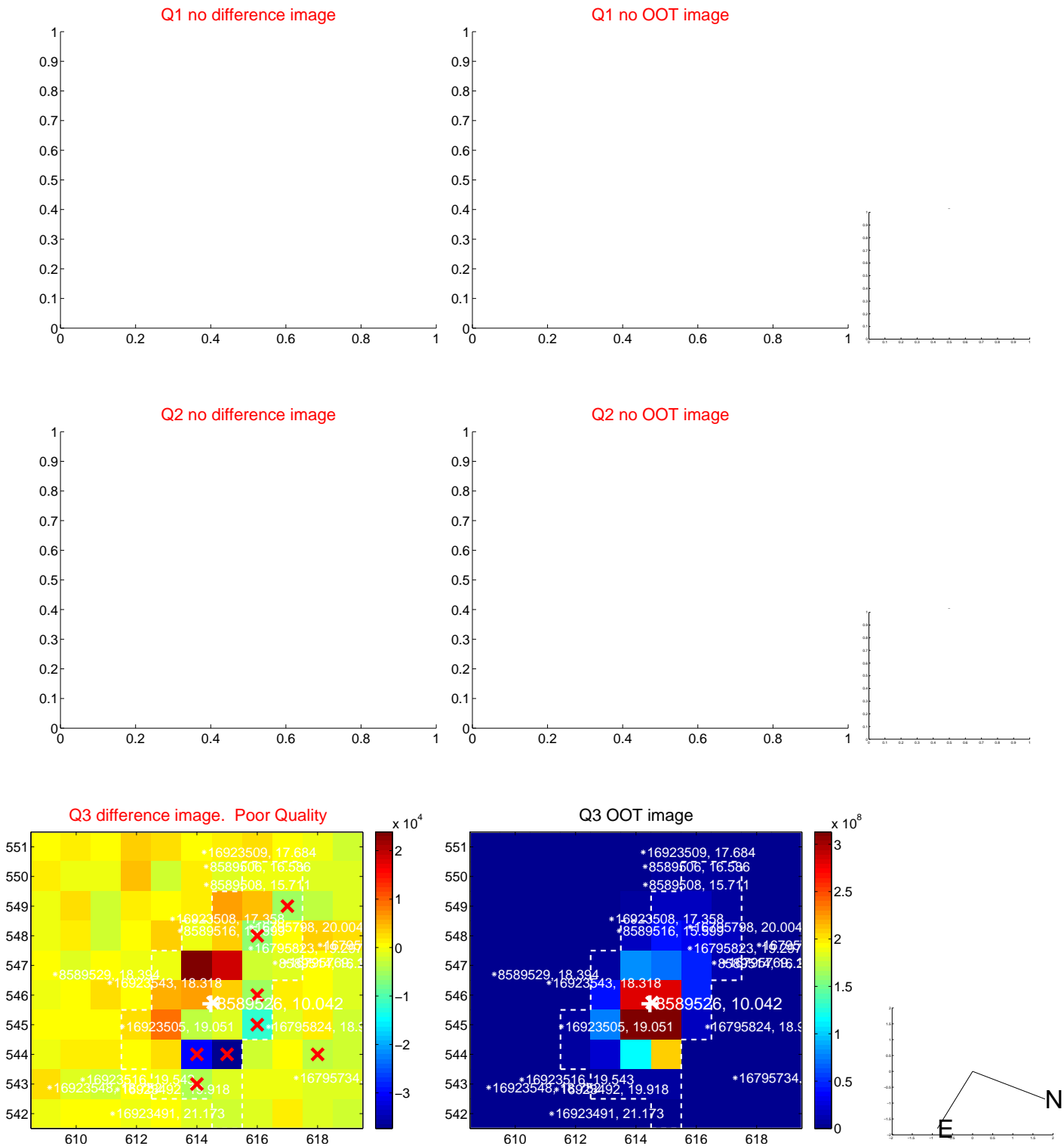
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.574 \pm 0.923$	1.71	$1.075 \pm 1.281$	$-1.150 \pm 0.402$
PRF-fit source offset from KIC position	$1.780 \pm 0.881$	2.02	$1.133 \pm 1.291$	$-1.373 \pm 0.413$
photometric centroid source offset	$0.37 \pm 0.77$	0.48	$-0.33 \pm 0.82$	$0.17 \pm 0.52$

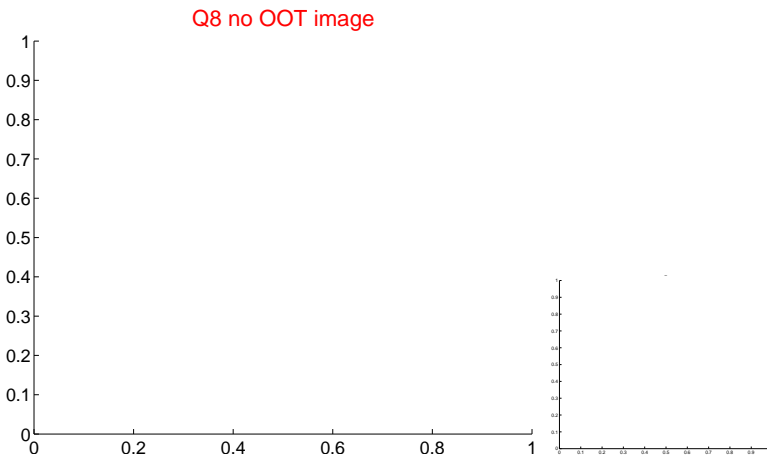
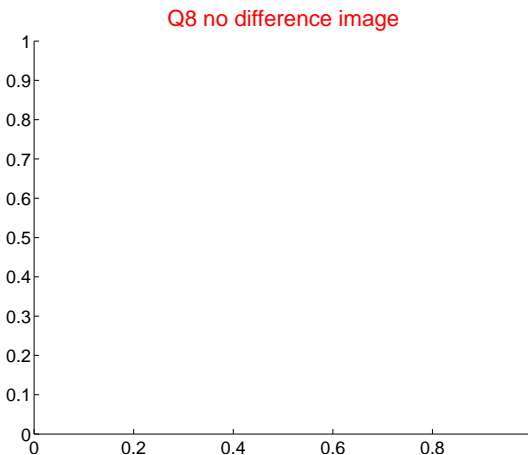
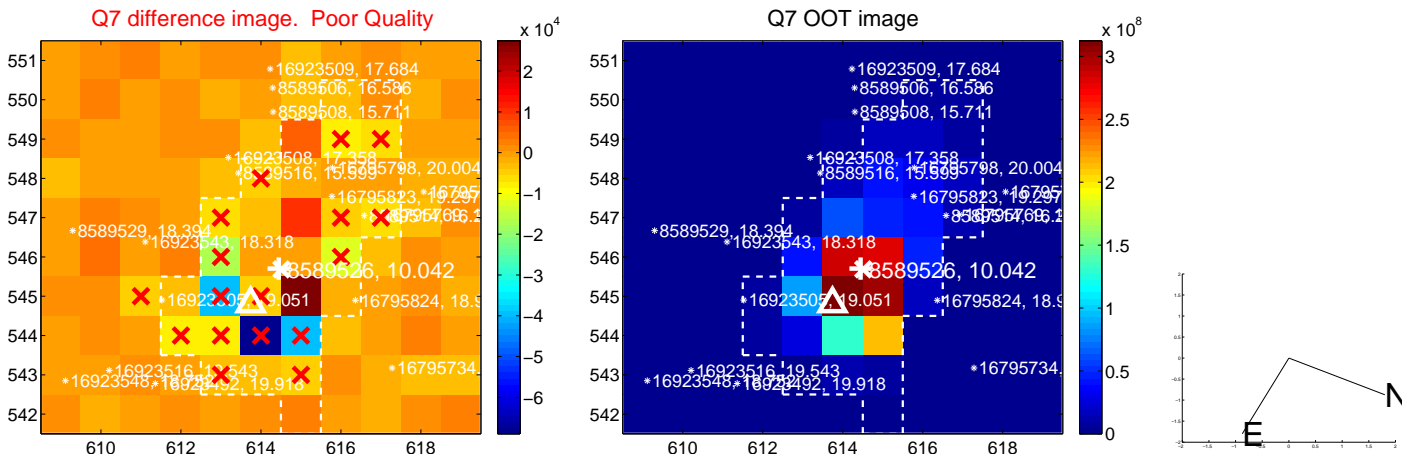
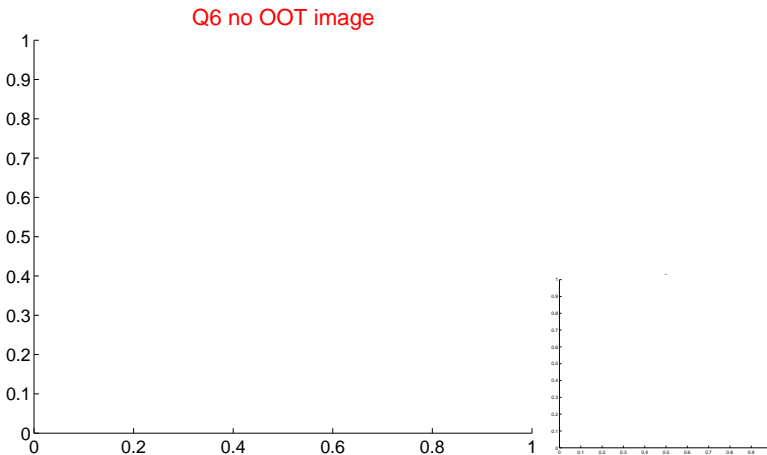
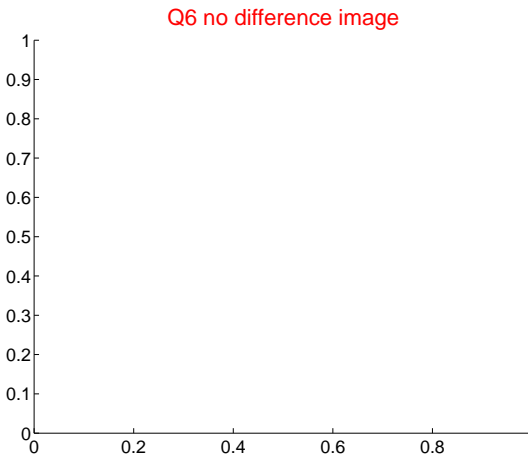
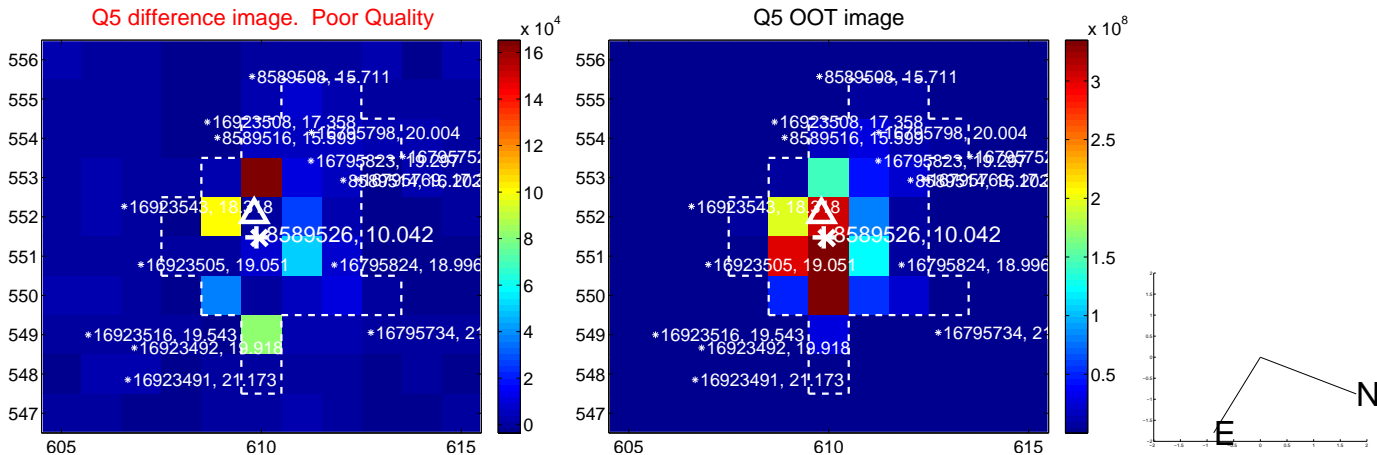


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

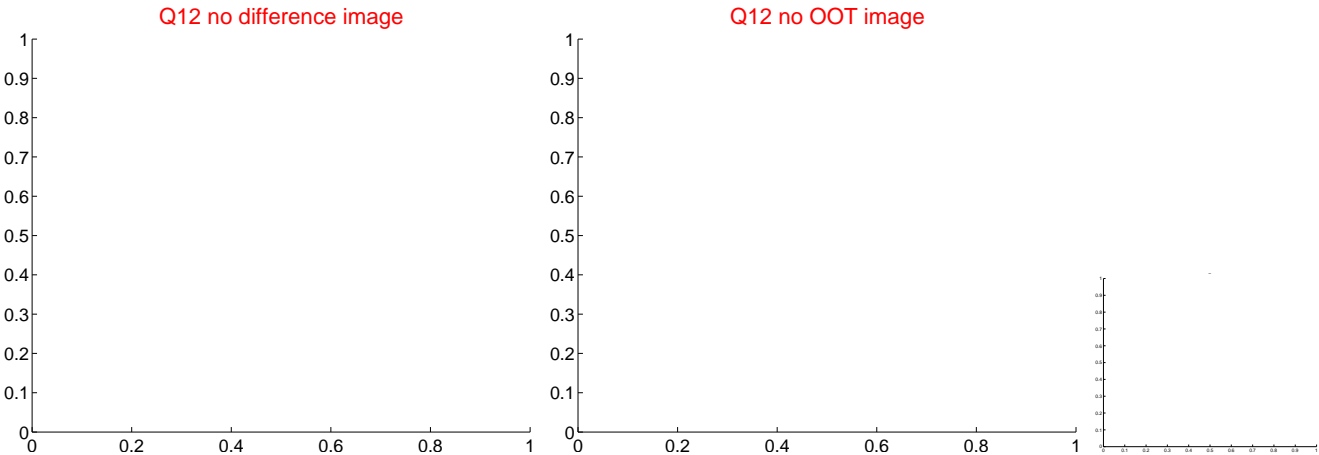
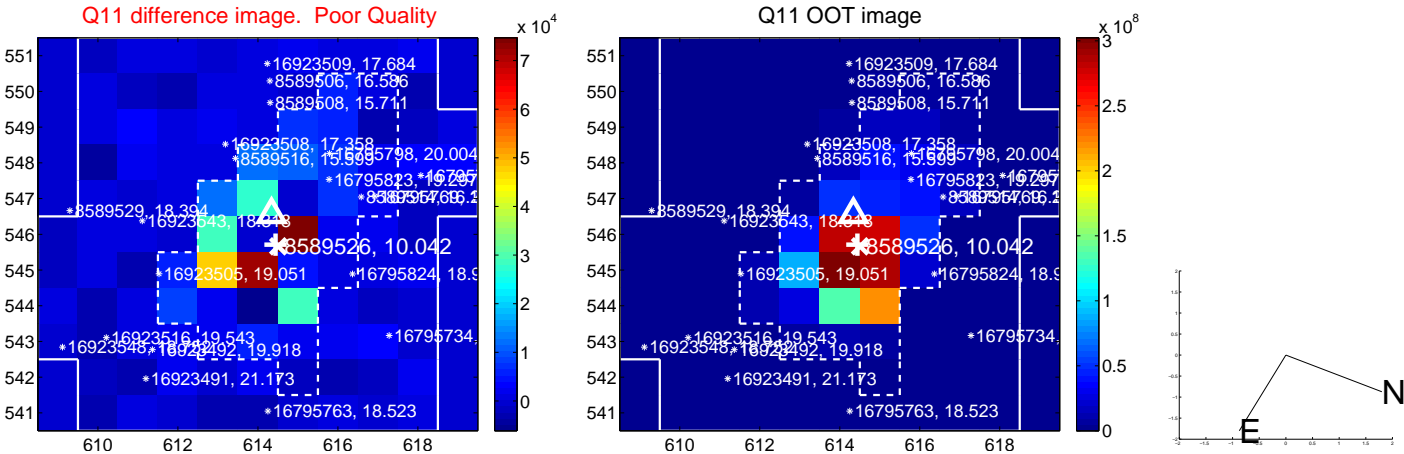
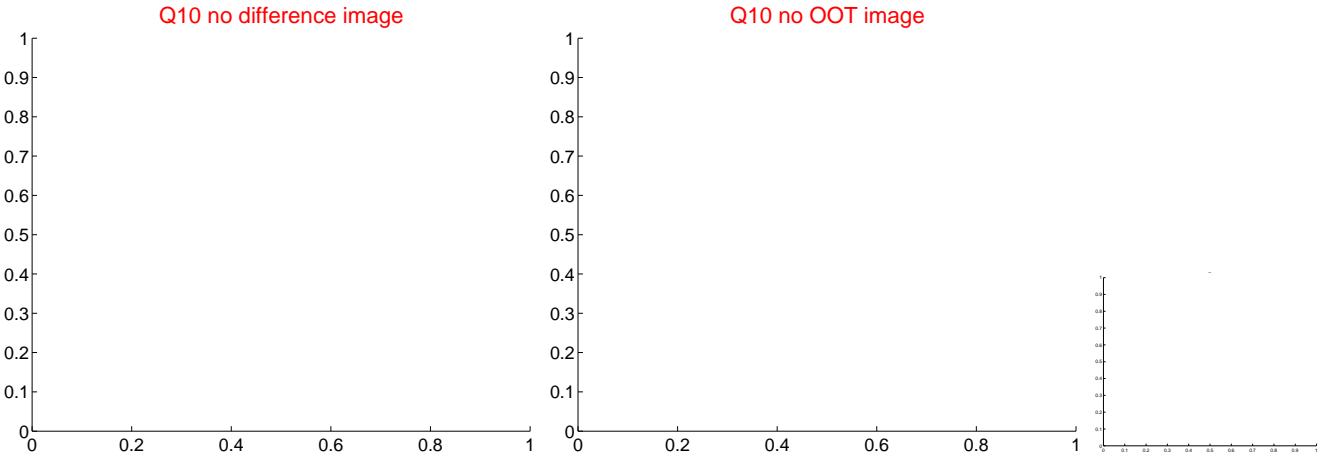
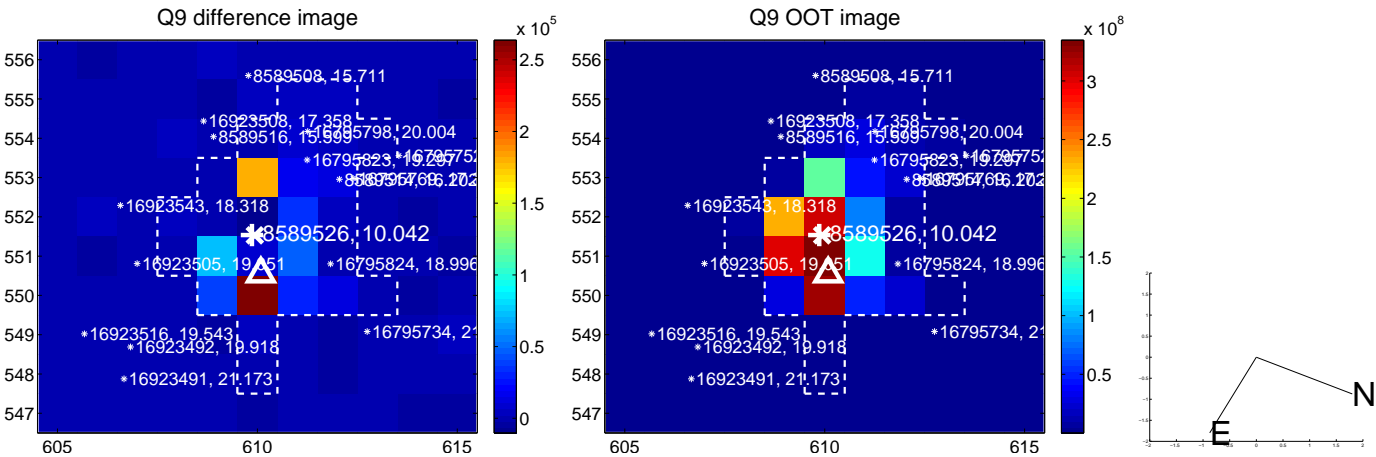
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

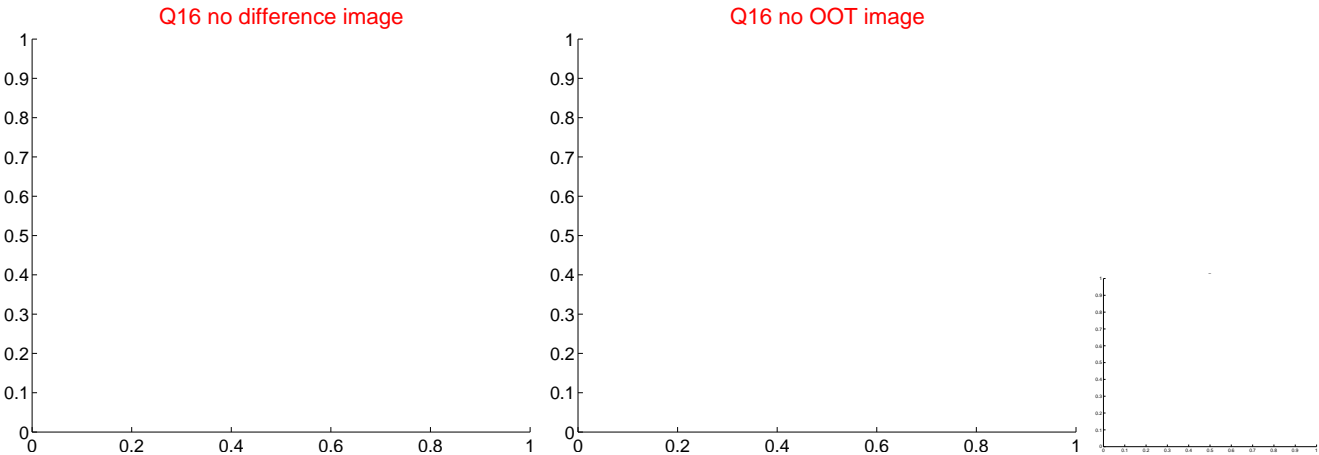
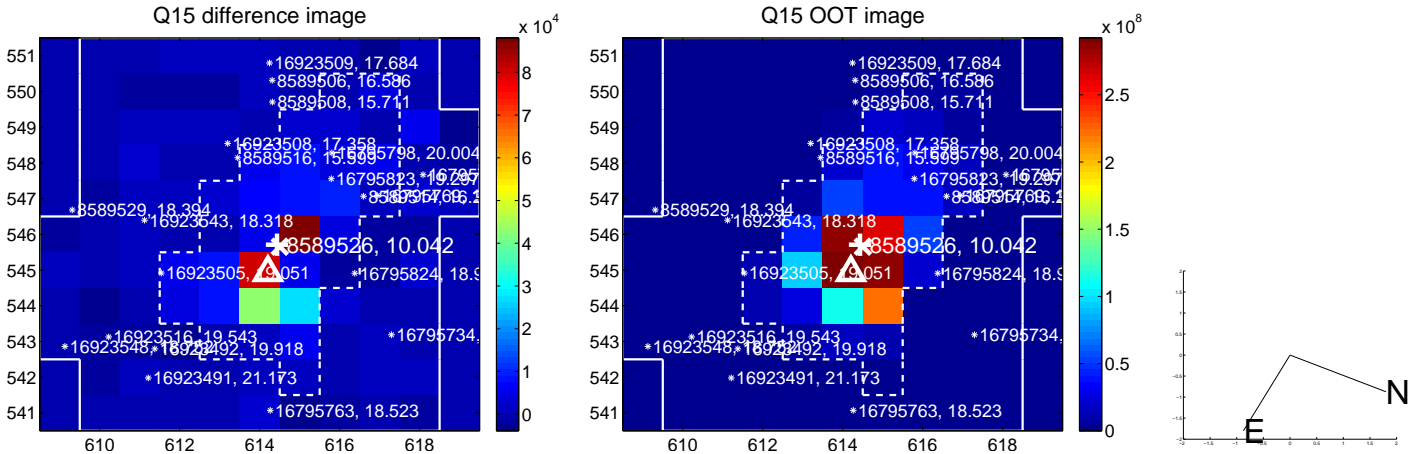
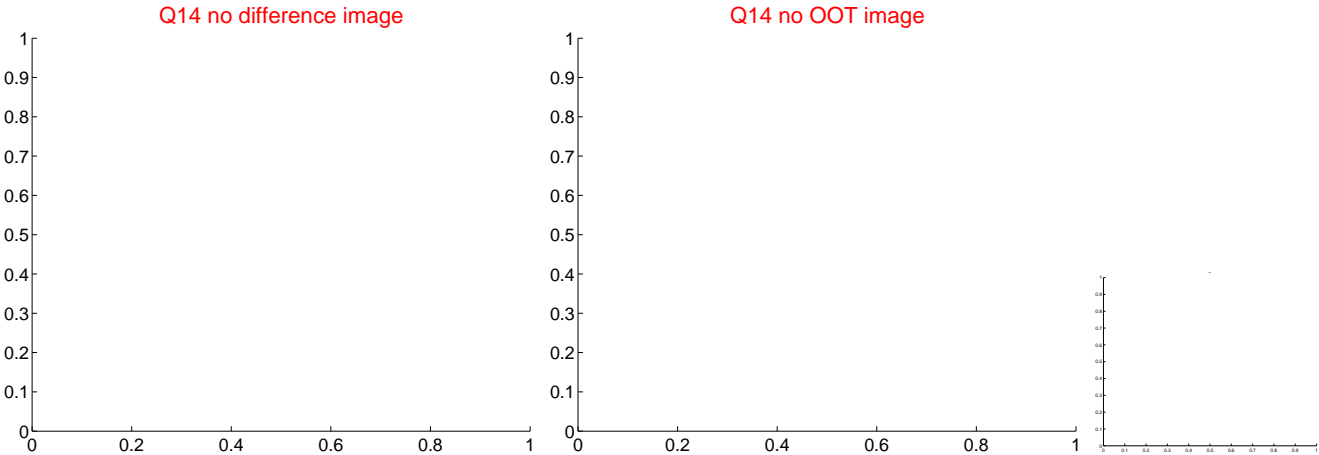
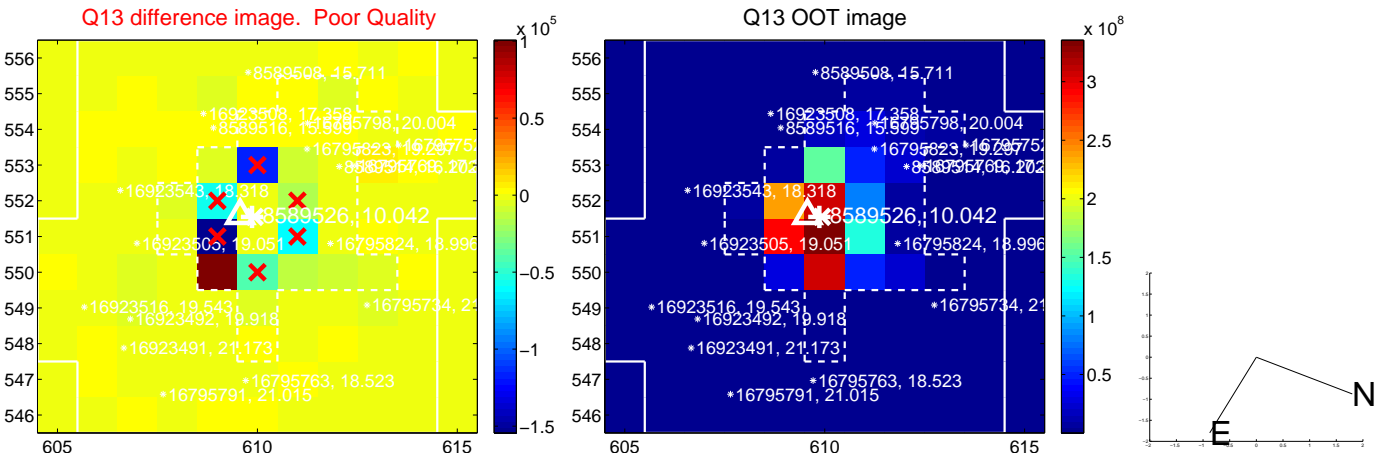


white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

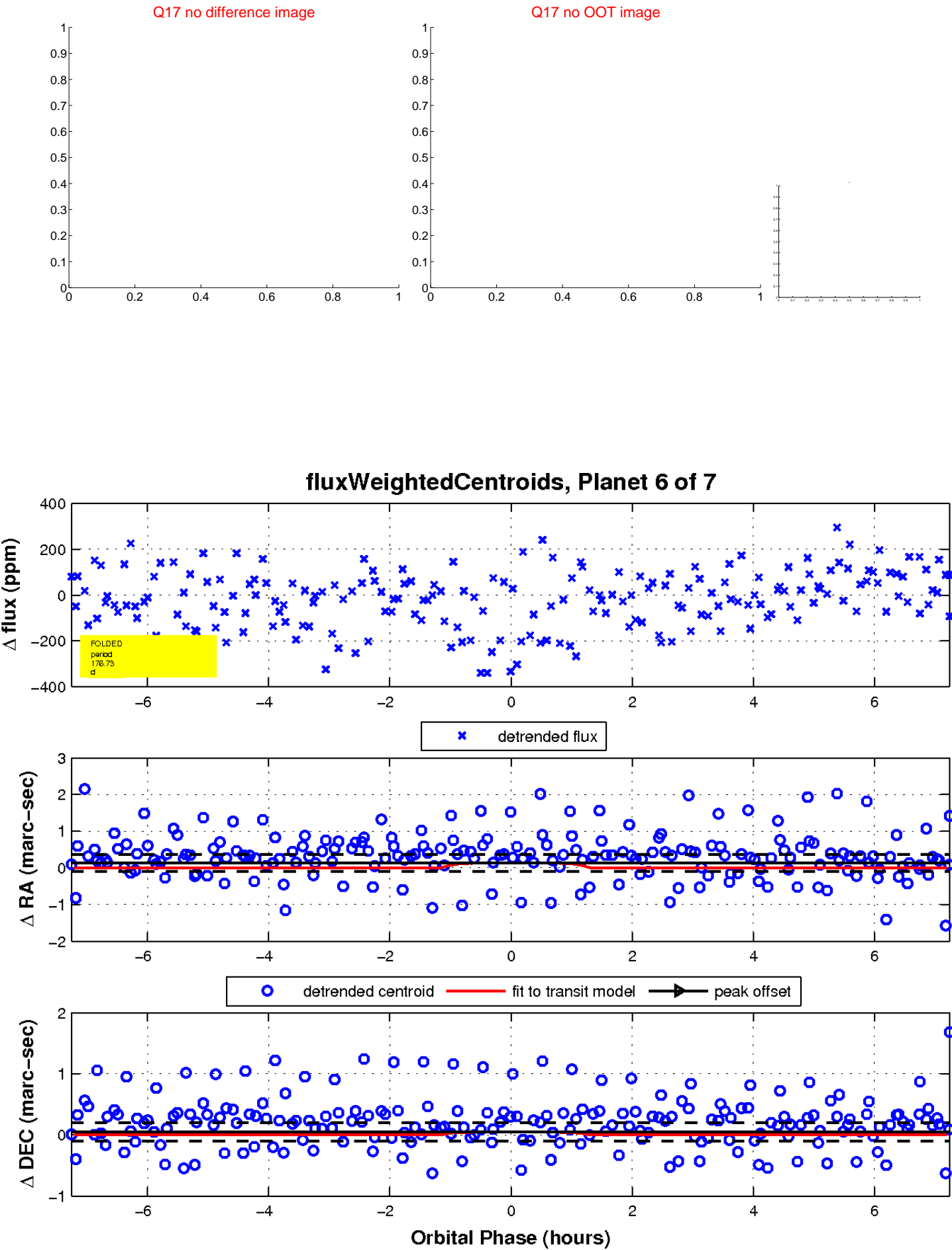




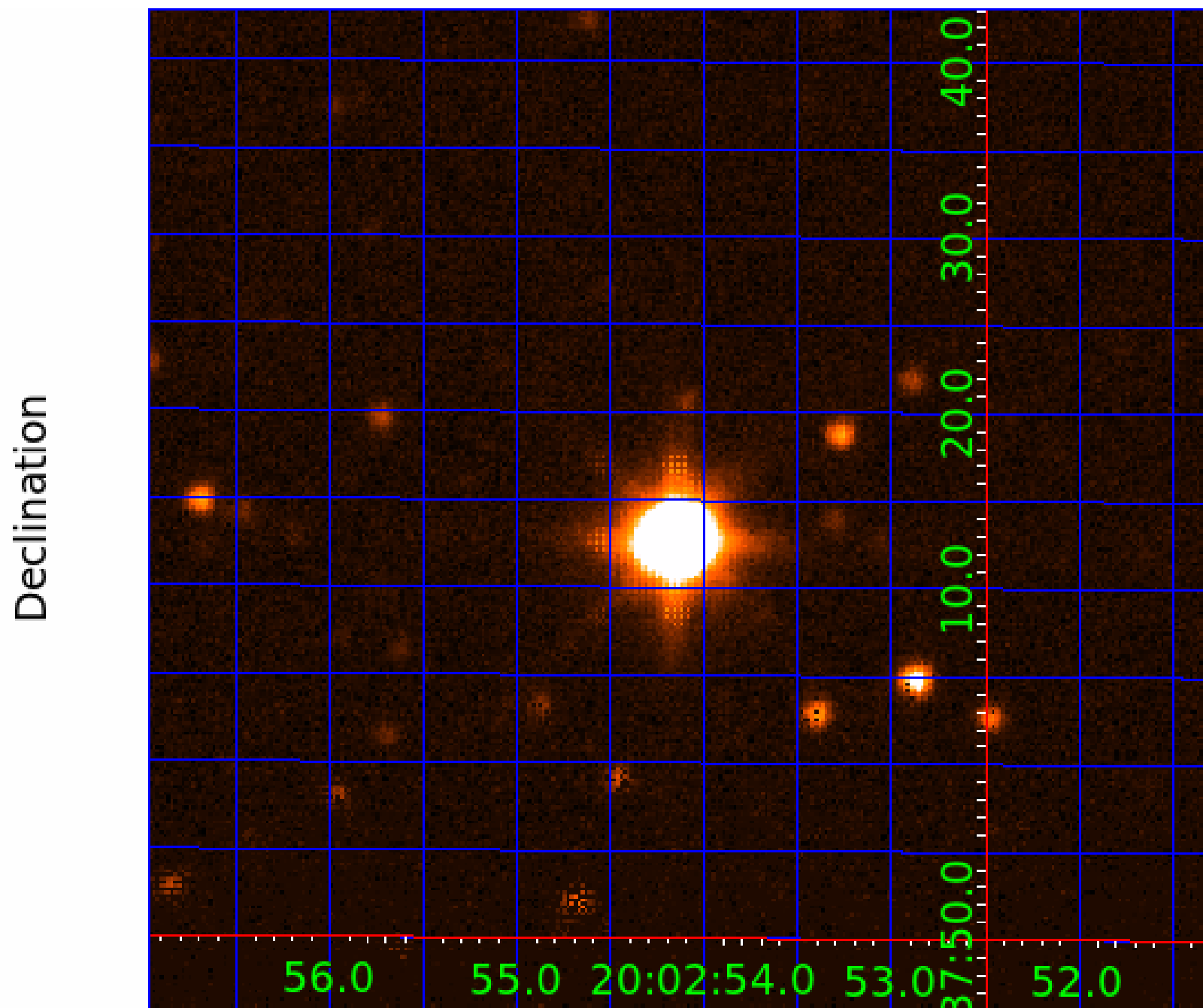
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image



# KIC 008589526

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008589526-01	OBS	No	4.254168	133.079701	34.6	15.964	12.9	10.4	3.52	6309	2.42	5026.47
008589526-02	OBS	No	642.447956	212.200155	151.7	8.476	9.6	5.1	3.52	6309	4.94	6.25
008589526-03	OBS	No	114.630115	209.246884	170.4	7.153	8.8	8.0	3.52	6309	8.31	62.22
008589526-04	OBS	No	480.642300	318.856889	181.2	16.033	8.7	7.2	3.52	6309	5.05	9.20
008589526-05	OBS	No	174.602635	283.418289	171.5	3.739	7.8	8.1	3.52	6309	5.83	35.50
008589526-06	OBS	No	176.727621	169.486699	276.9	2.426	8.2	8.8	3.52	6309	6.86	34.94
008589526-07	OBS	No	94.024694	132.390744	198.3	3.242	7.6	8.4	3.52	6309	6.61	81.04

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008589526-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
008589526-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_SATURATED
008589526-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_SATURATED
008589526-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-06	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
008589526-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

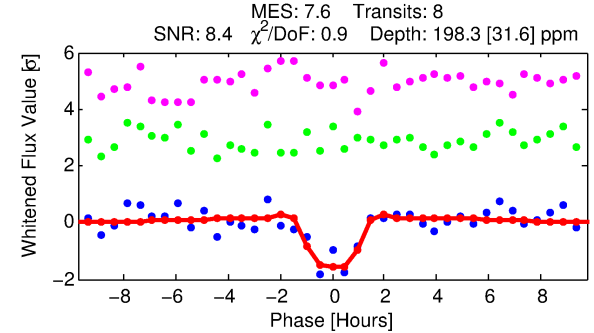
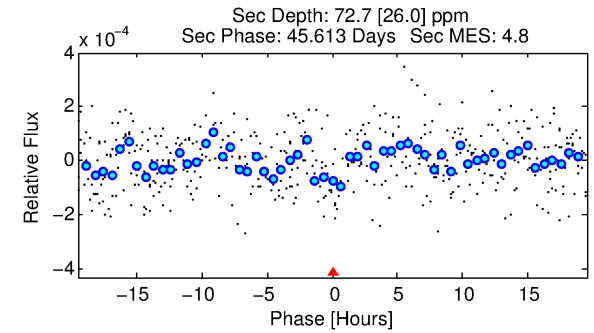
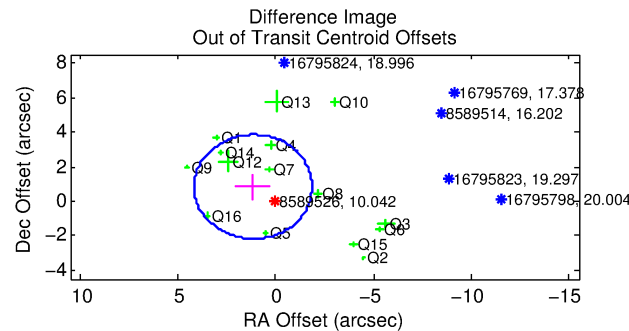
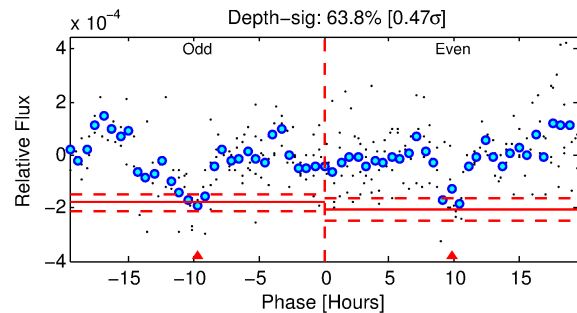
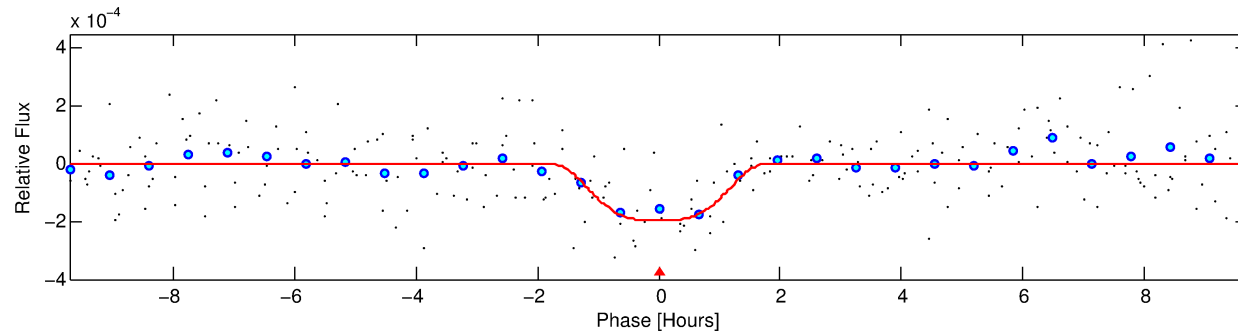
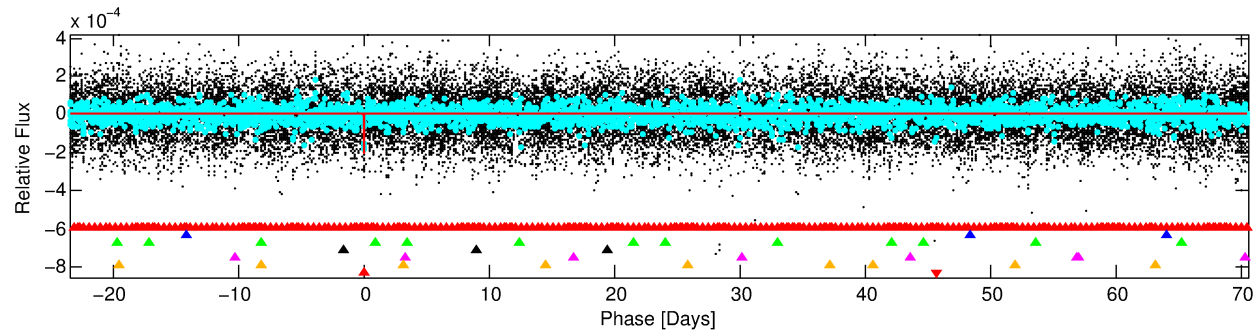
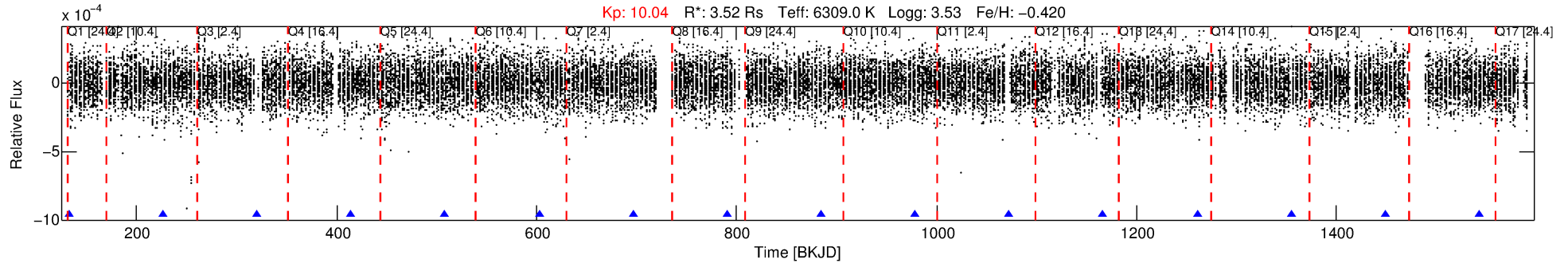
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008589526-07

No Significant Match Found

# DV One-Page Summary

KIC: 8589526 Candidate: 7 of 7 Period: 94.025 d



## DV Fit Results:

Period = 94.02469 [0.00107] d  
Epoch = 132.3907 [0.0109] BKJD  
 $R_p/R^* = 0.0172$  [0.0018]  
 $a/R^* = 60.34$  [13.07]  
 $b = 0.98$  [0.01]  
 $\text{Seff} = 81.04$  [54.03]  
 $T_{\text{eq}} = 765$  [128] K  
 $R_p = 6.61$  [2.97]  $R_e$   
 $a = 0.4657$  [0.1931] AU  
 $A_g = 198.75$  [154.43] [1.28 $\sigma$ ]  
 $T_{\text{eff}} = 4441$  [475] K [7.47 $\sigma$ ]

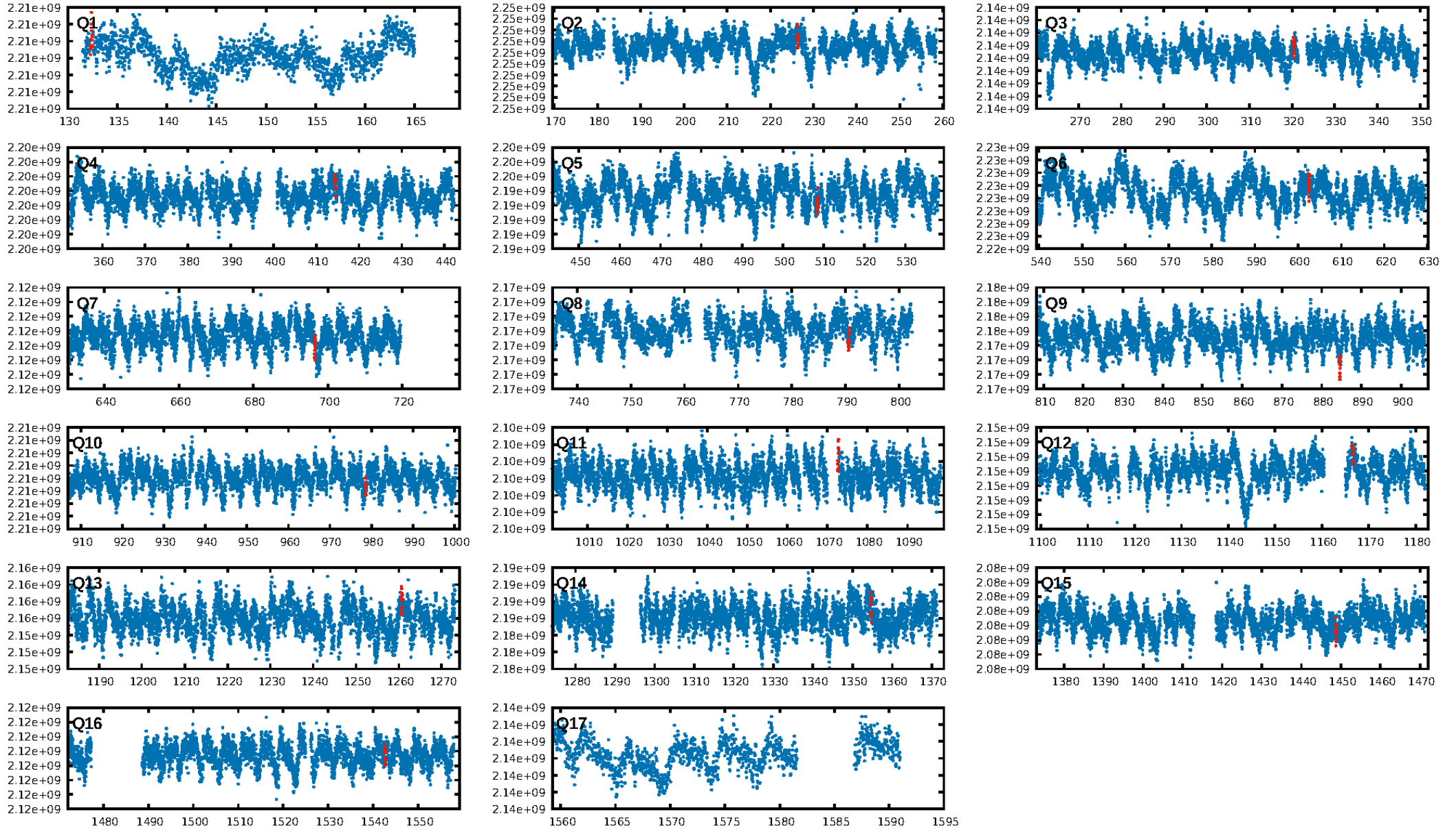
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [132.26 $\sigma$ ]  
LongPeriod-sig: 100.0% [62.97 $\sigma$ ]  
ModelChiSquare2-sig: 77.4%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 2.26e-08**  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: N/A  
Centroid-sig: 24.2%  
Centroid-so: 0.162 arcsec [0.23 $\sigma$ ]  
OotOffset-rm: 1.429 arcsec [1.42 $\sigma$ ]  
KicOffset-rm: 1.371 arcsec [1.57 $\sigma$ ]  
OotOffset-st: 4/3/4/4 [15]  
KicOffset-st: 4/3/4/4 [15]  
DiffImageQuality-fgm: 0.33 [5/15]  
DiffImageOverlap-fno: 0.67 [10/15]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:46:28 Z

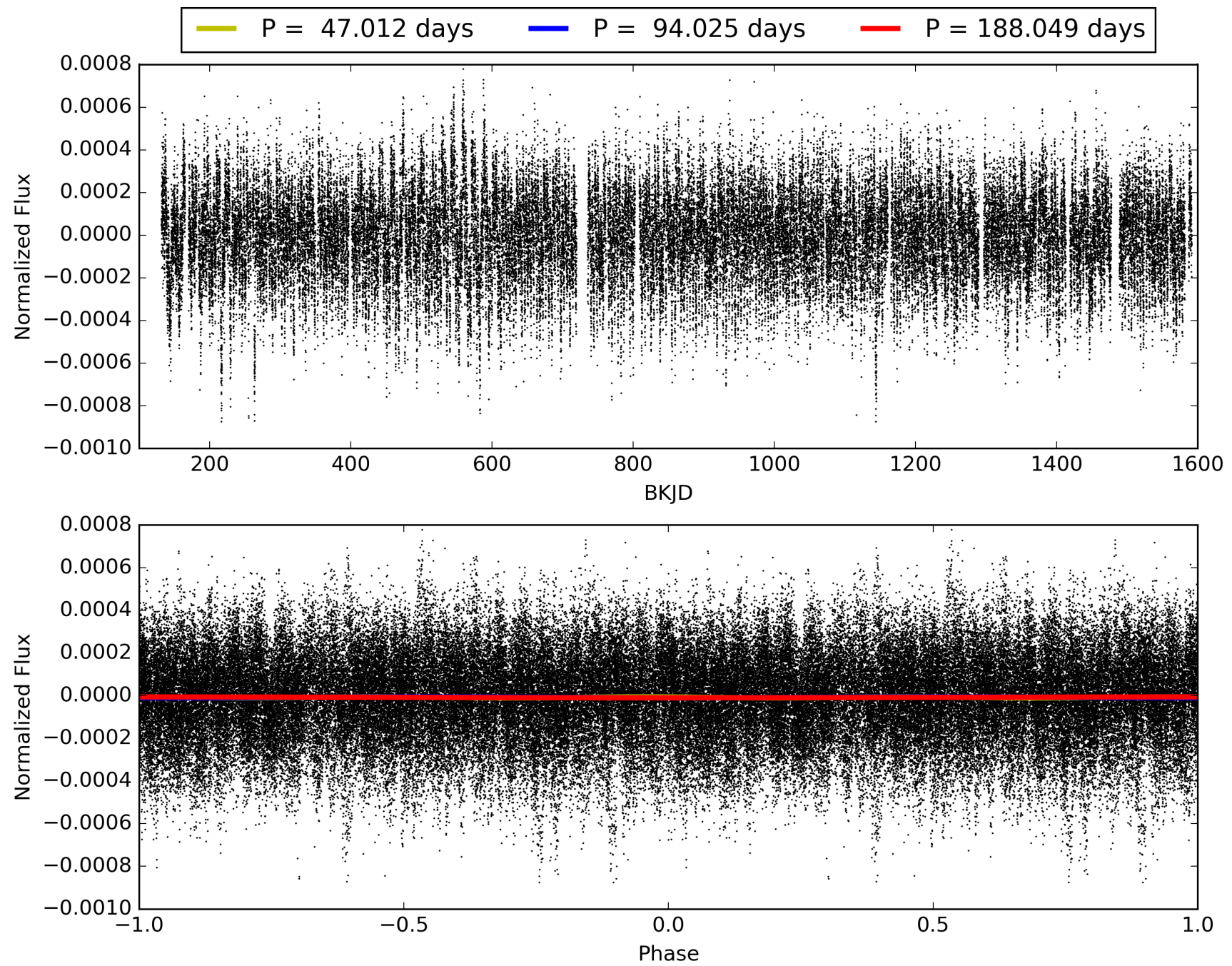
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008589526-07, PDC Light Curves





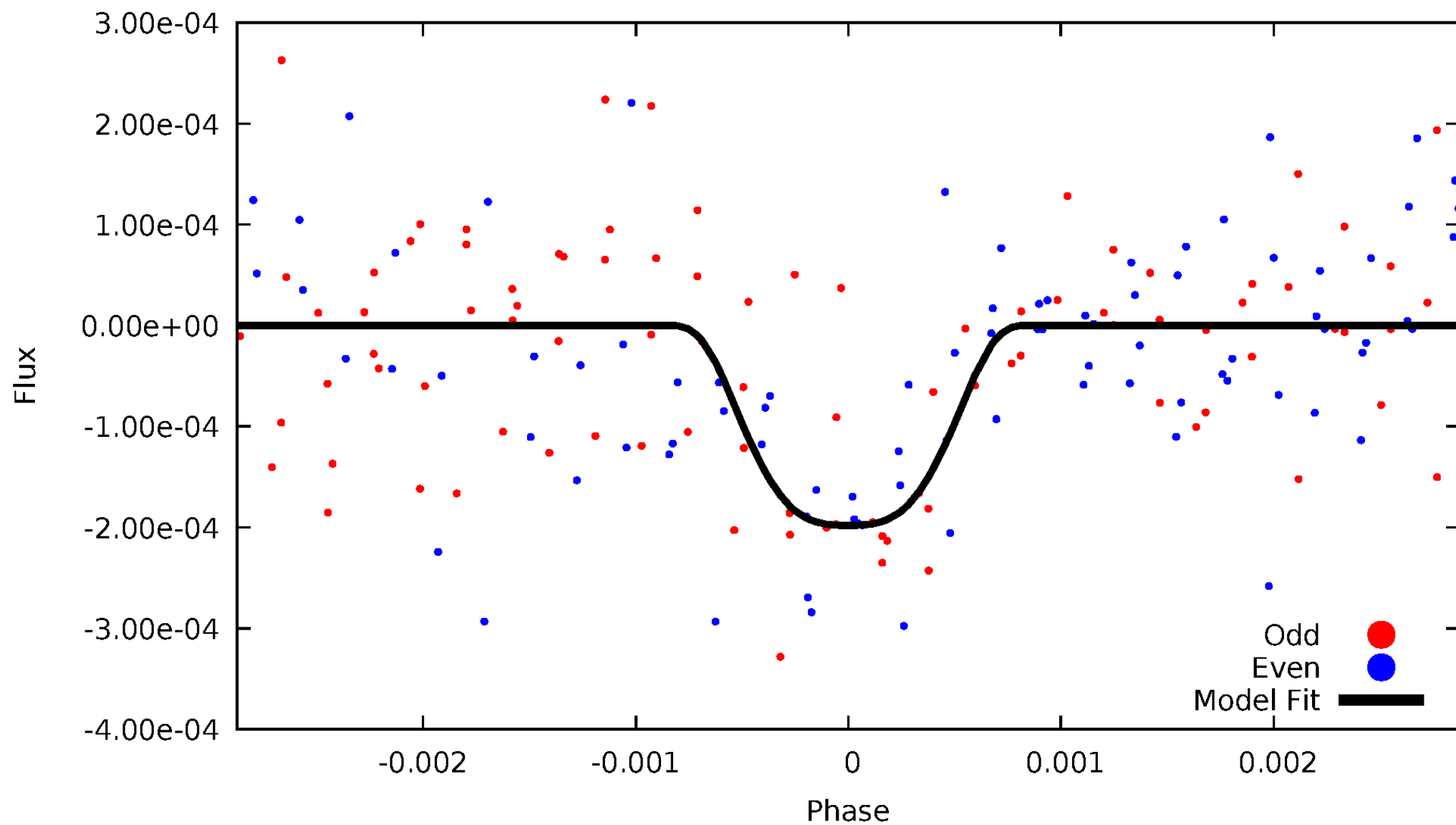
TCE 008589526-07





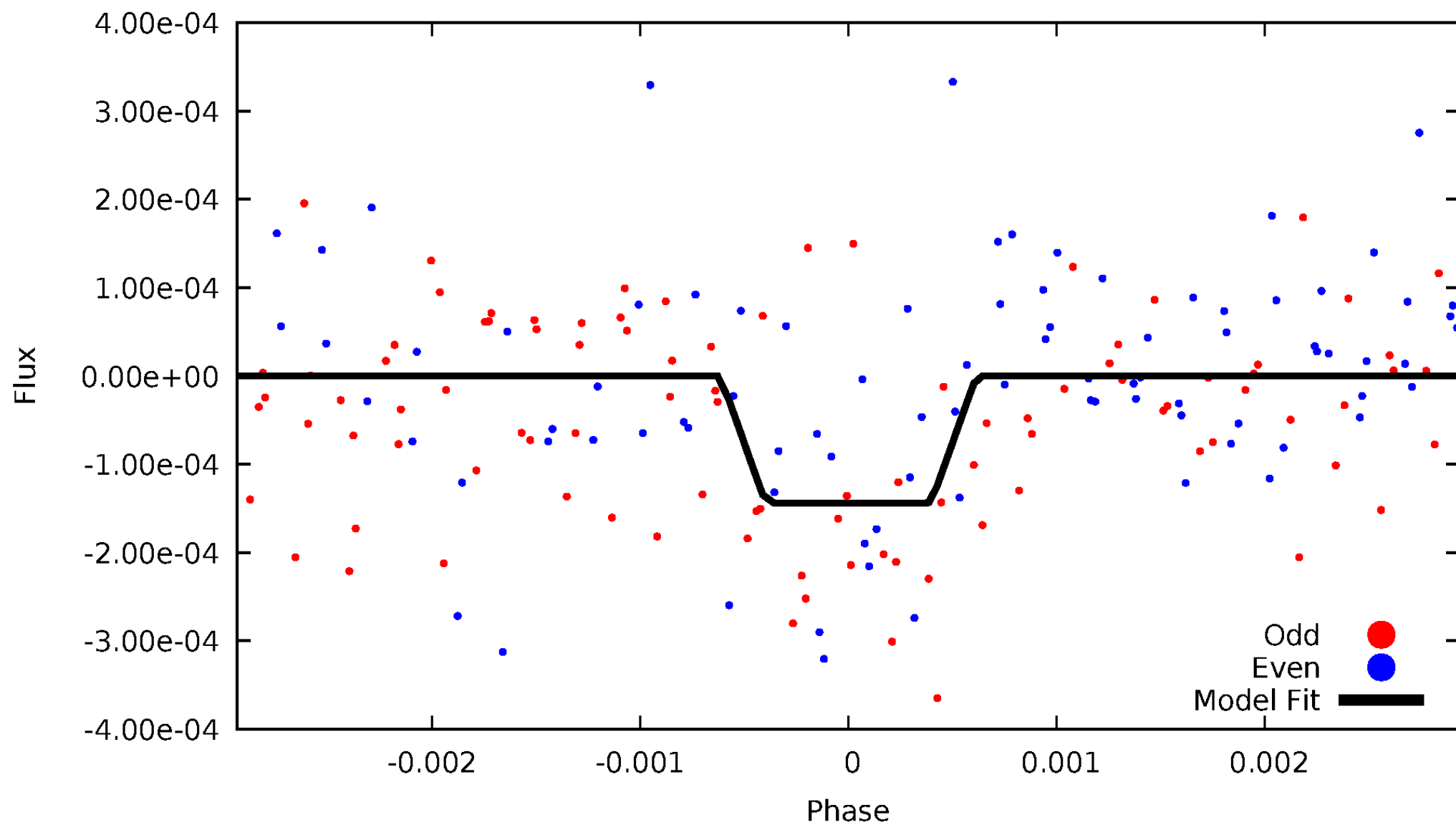
# DV Odd/Even

TCE 008589526-07



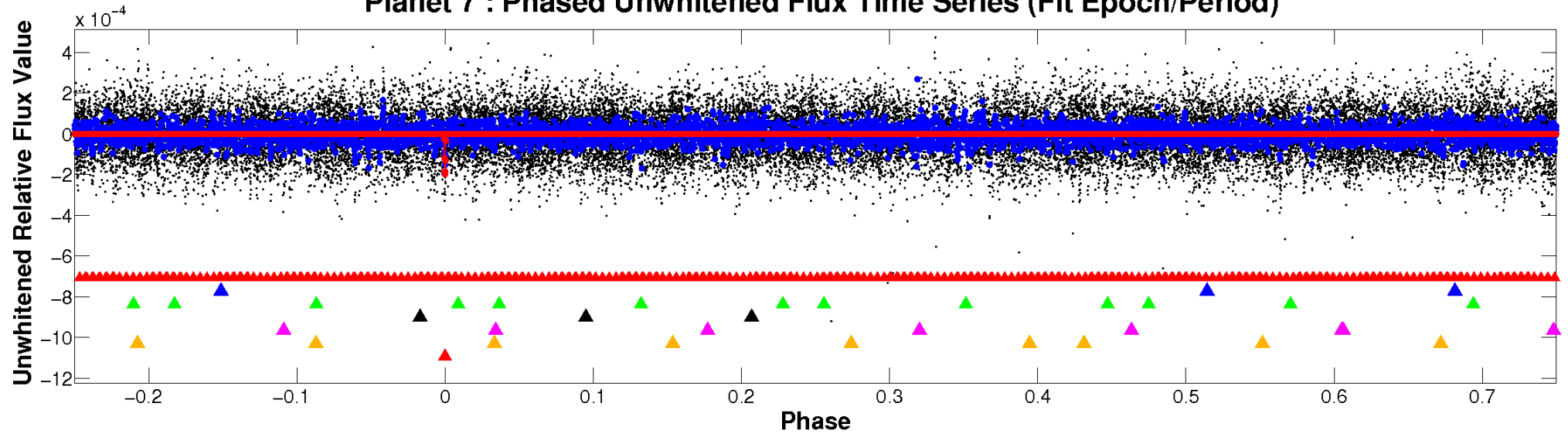
# ALT Odd/Even

TCE 008589526-07

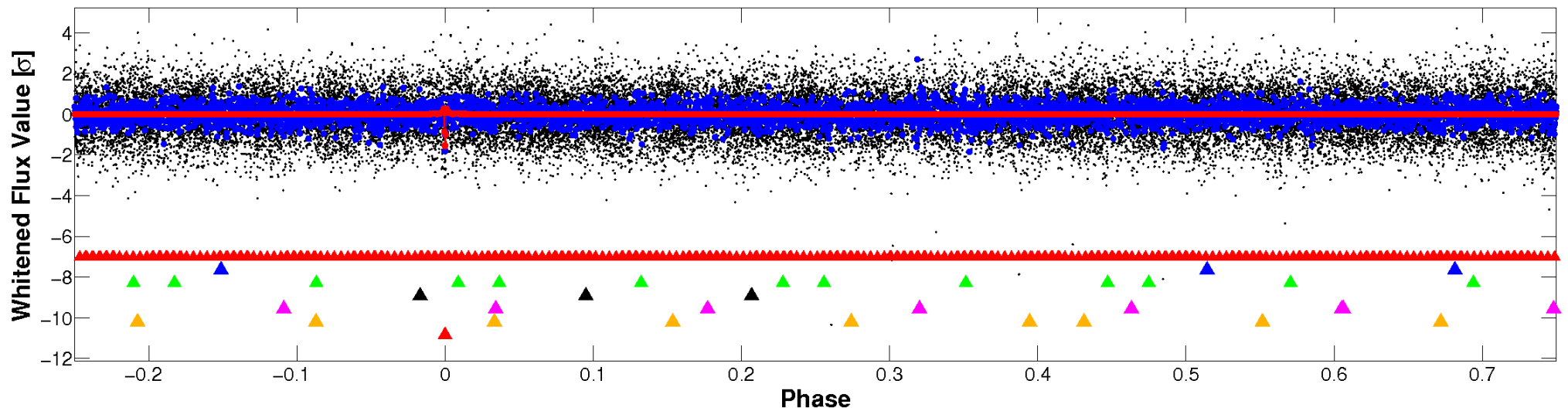


# Non-Whitened Vs. Whitened Light Curve

## Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

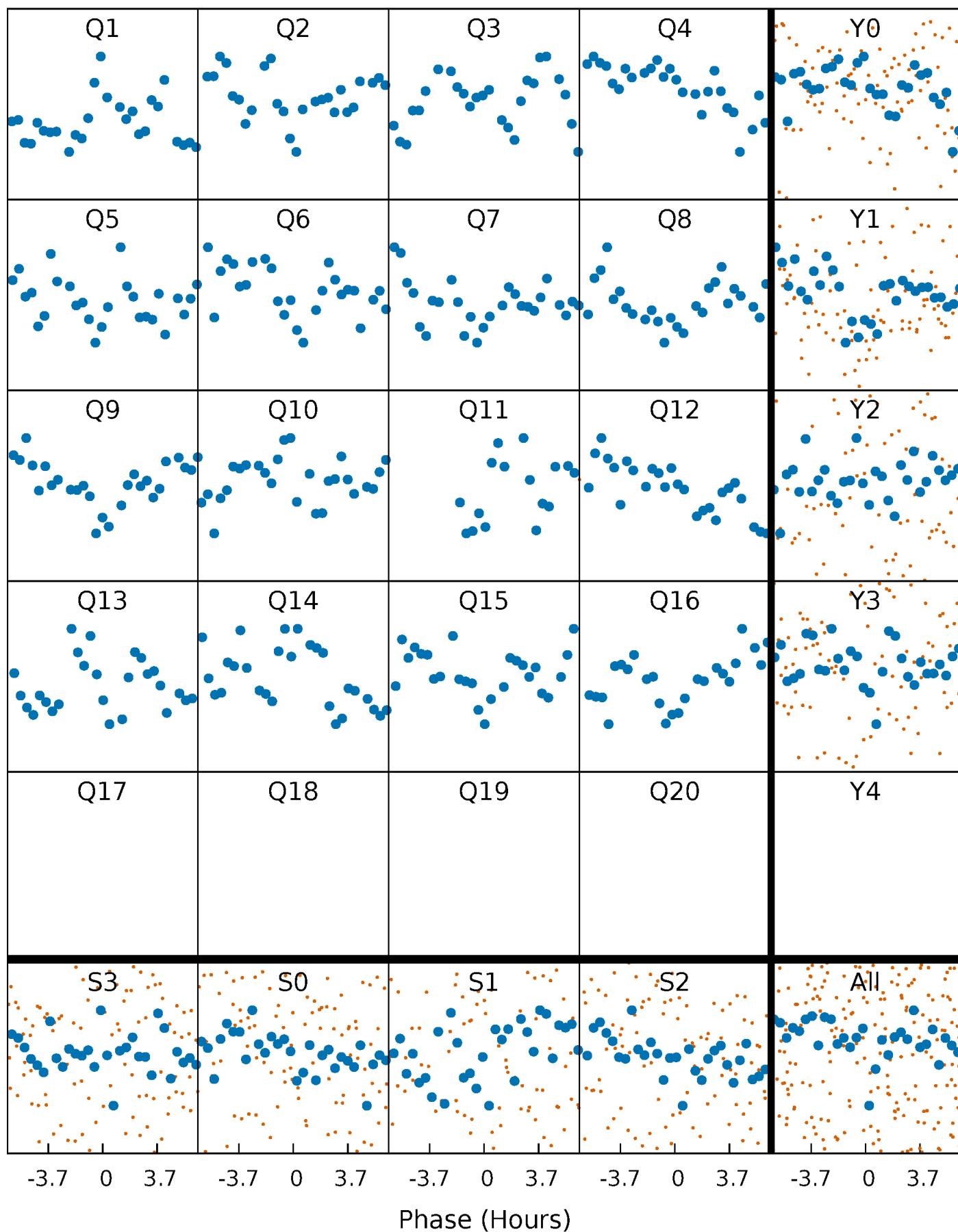


## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



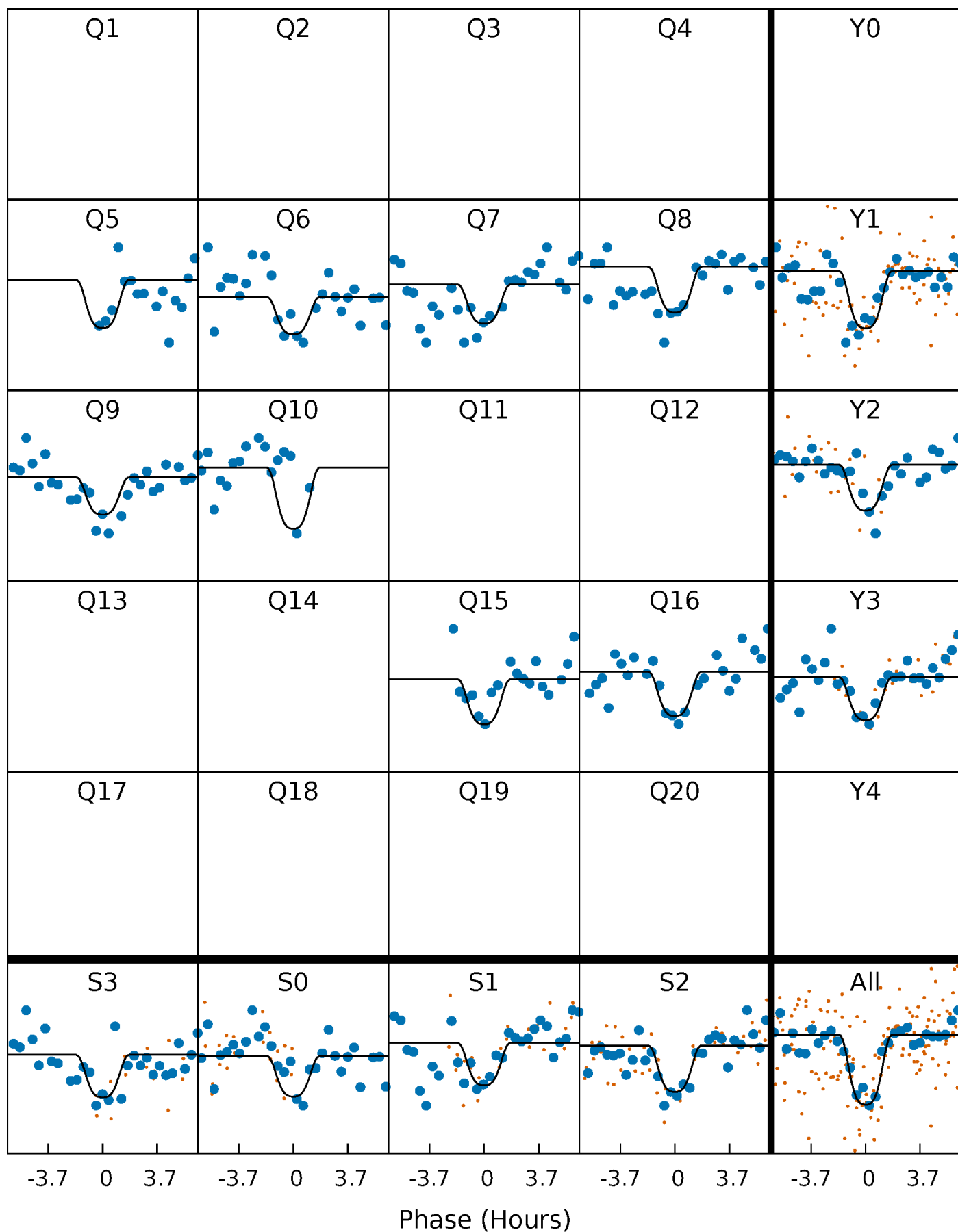
# PDC Quarter-Phased Transit Curves

TCE 008589526-07     $P = 94.024694$  Days     $T_0 = 132.390744$  (BKJD)



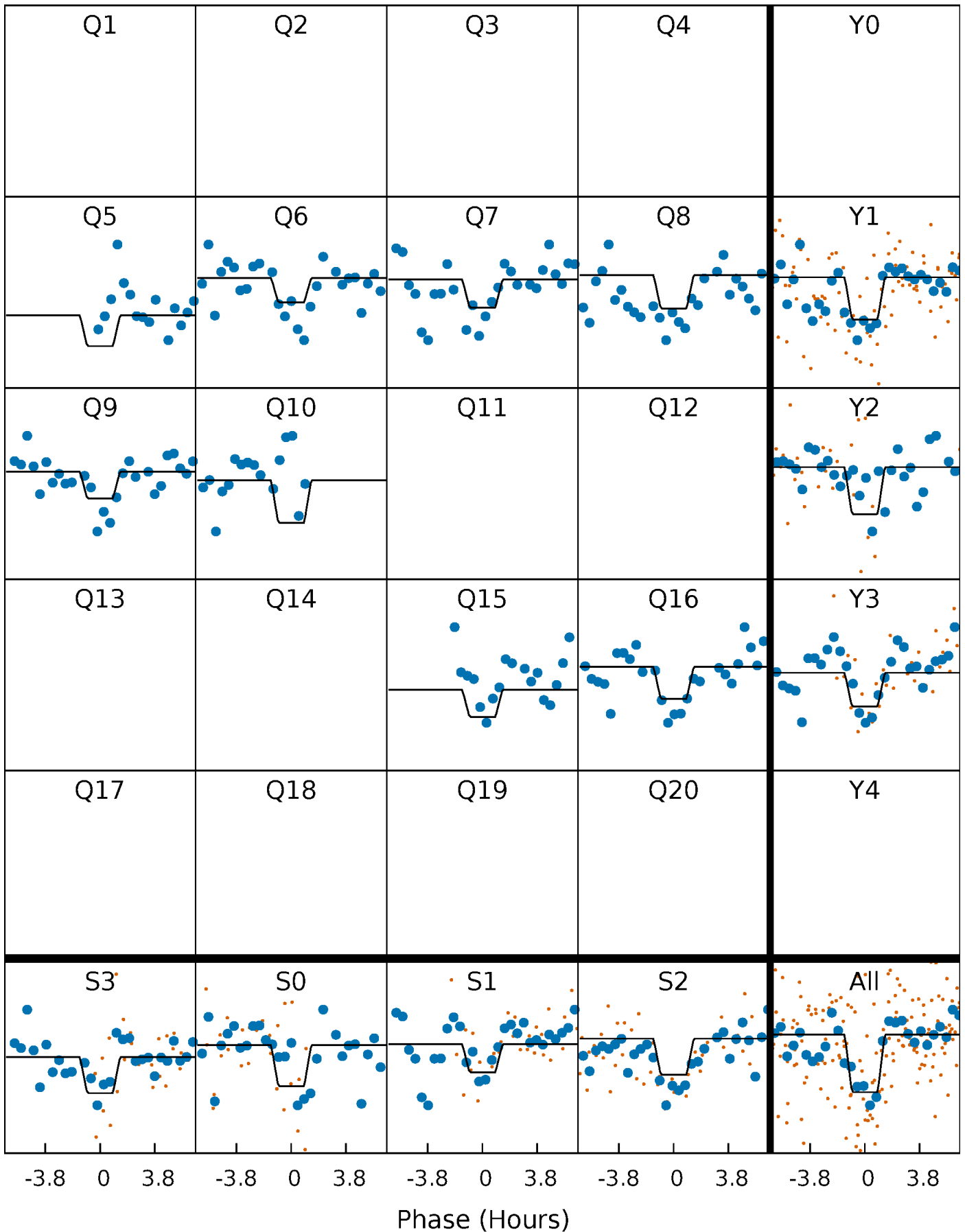
# DV Quarter-Phased Transit Curves

TCE 008589526-07     $P = 94.024694$  Days     $T_0 = 132.390744$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

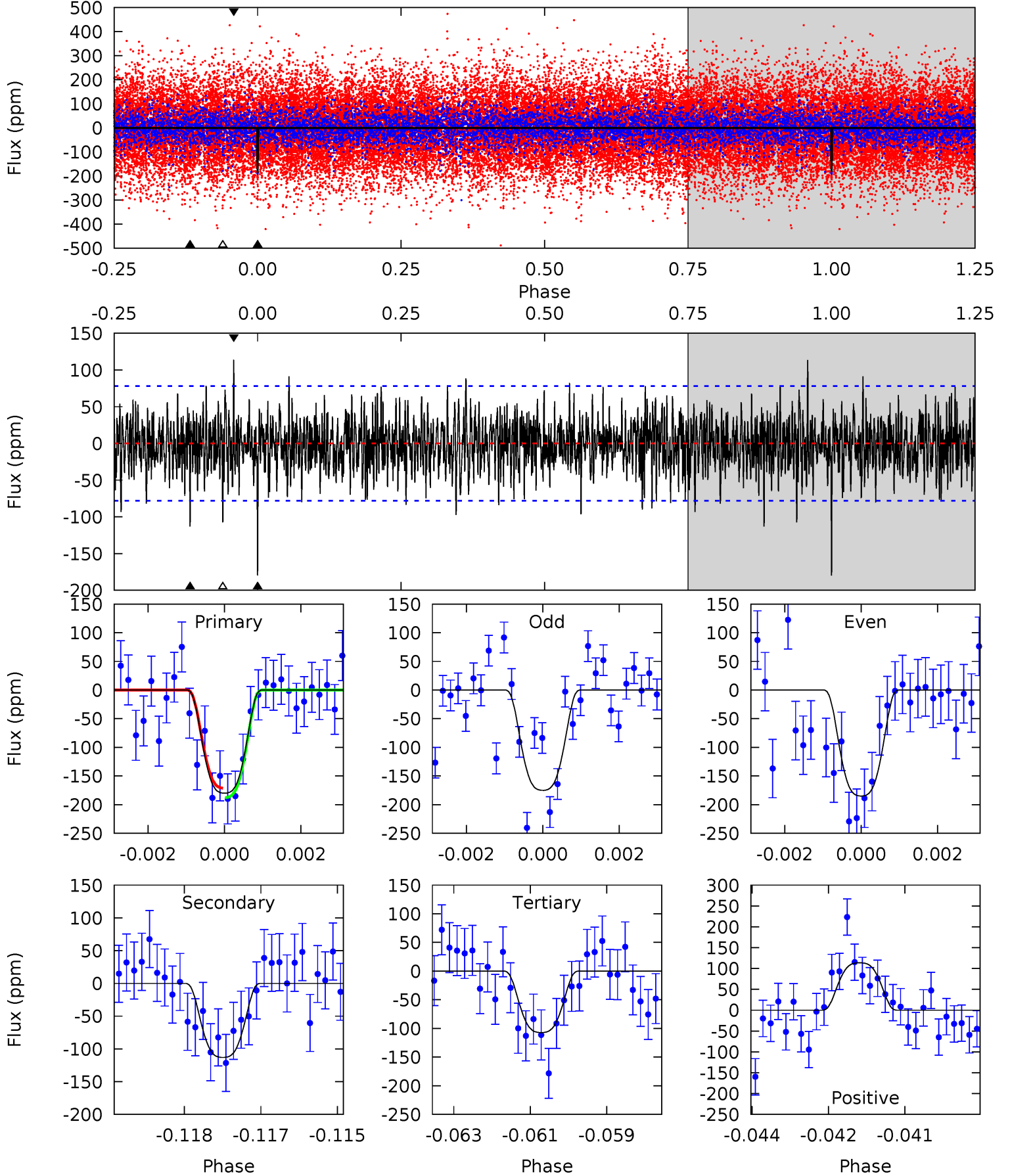
TCE 008589526-07   P= 94.024494 Days    $T_0=132.387112$  (BKJD)



# DV Model-Shift Uniqueness Test

008589526-07, P = 94.024694 Days, E = 38.366050 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
12.4	7.76	7.36	7.81	5.36	3.14	1.98	5.00	4.55	0.40	-0.04	0.34	0.87	0.39	0.57

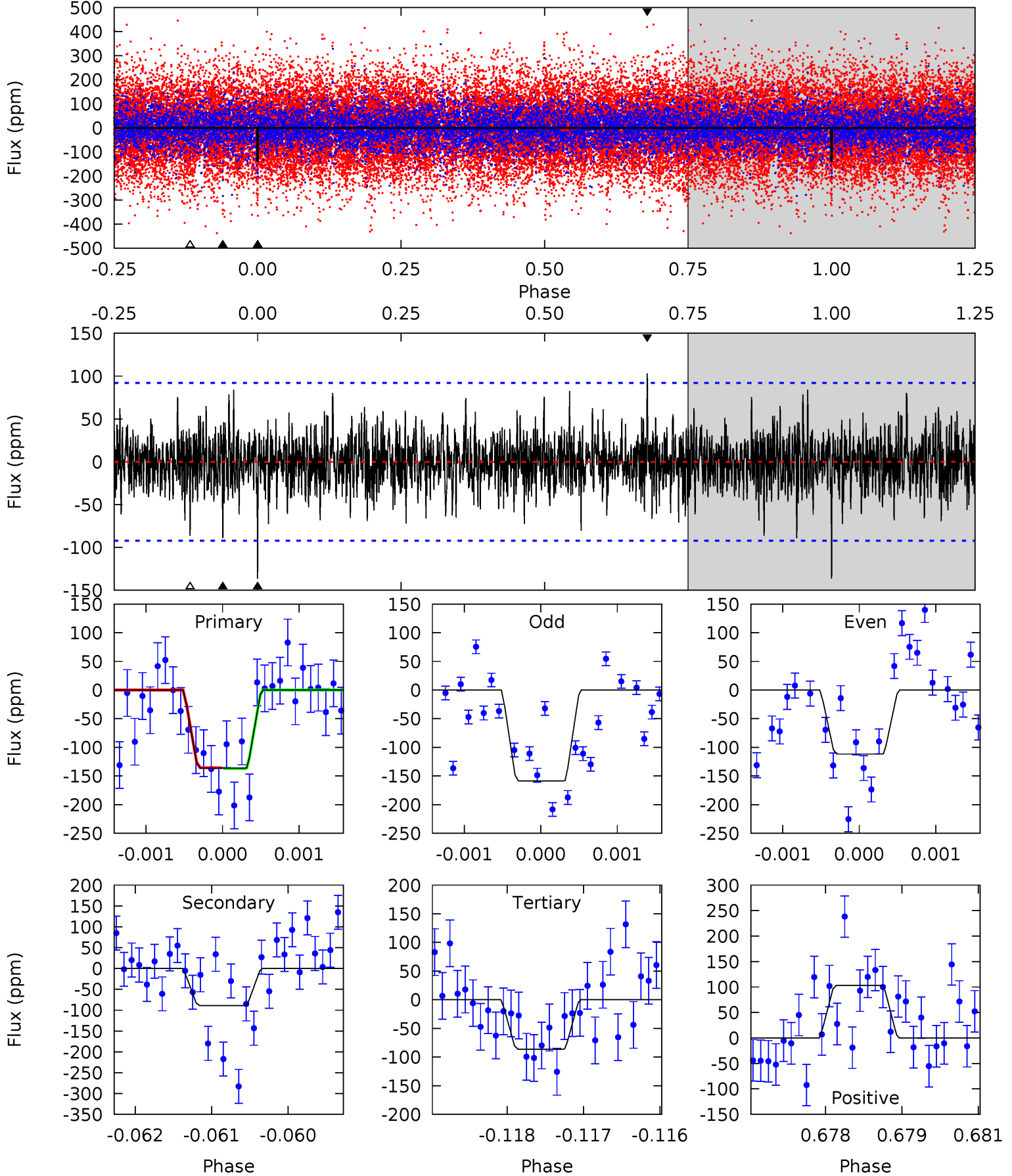




# Alt Model-Shift Uniqueness Test

008589526-07, P = 94.024494 Days, E = 38.362618 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
8.01	5.24	5.07	6.06	5.42	3.23	1.37	2.94	1.95	0.17	-0.82	1.38	0.66	0.43	0.05



### Stellar Parameters For KIC 008589526

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6309^{+173}_{-157}$	$3.528^{+0.384}_{-0.096}$	$-0.420^{+0.400}_{-0.300}$	$3.519^{+0.616}_{-1.539}$	$1.523^{+0.216}_{-0.401}$	$0.049^{+0.170}_{-0.016}$
	+3%/-2%	+11%/-3%	+95%/-71%	+18%/-44%	+14%/-26%	+344%/-32%
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 008589526-07 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-113 \pm 15$	$6.23^{+1.19}_{-1.54}$	$1044^{+69}_{-114}$	$5048^{+282}_{-273}$	$353^{+218}_{-106}$
Alt.	$-89 \pm 17$	$4.33^{+1.00}_{-1.07}$	$1043^{+68}_{-106}$	$5619^{+487}_{-462}$	$566^{+408}_{-209}$

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

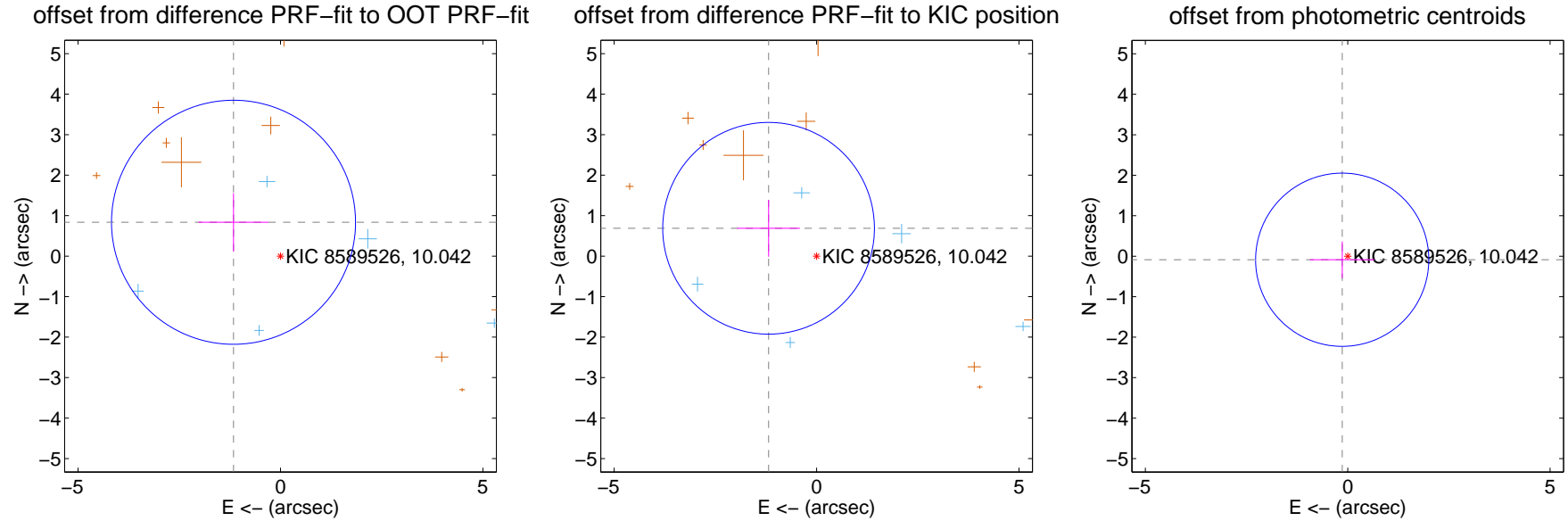
## DV Centroid Data

Supplemental centroid analysis for 008589526-07. **Kepler magnitude: 10.04.** Transit SNR 8.39

There are 5 quarters with good PRF difference image offsets

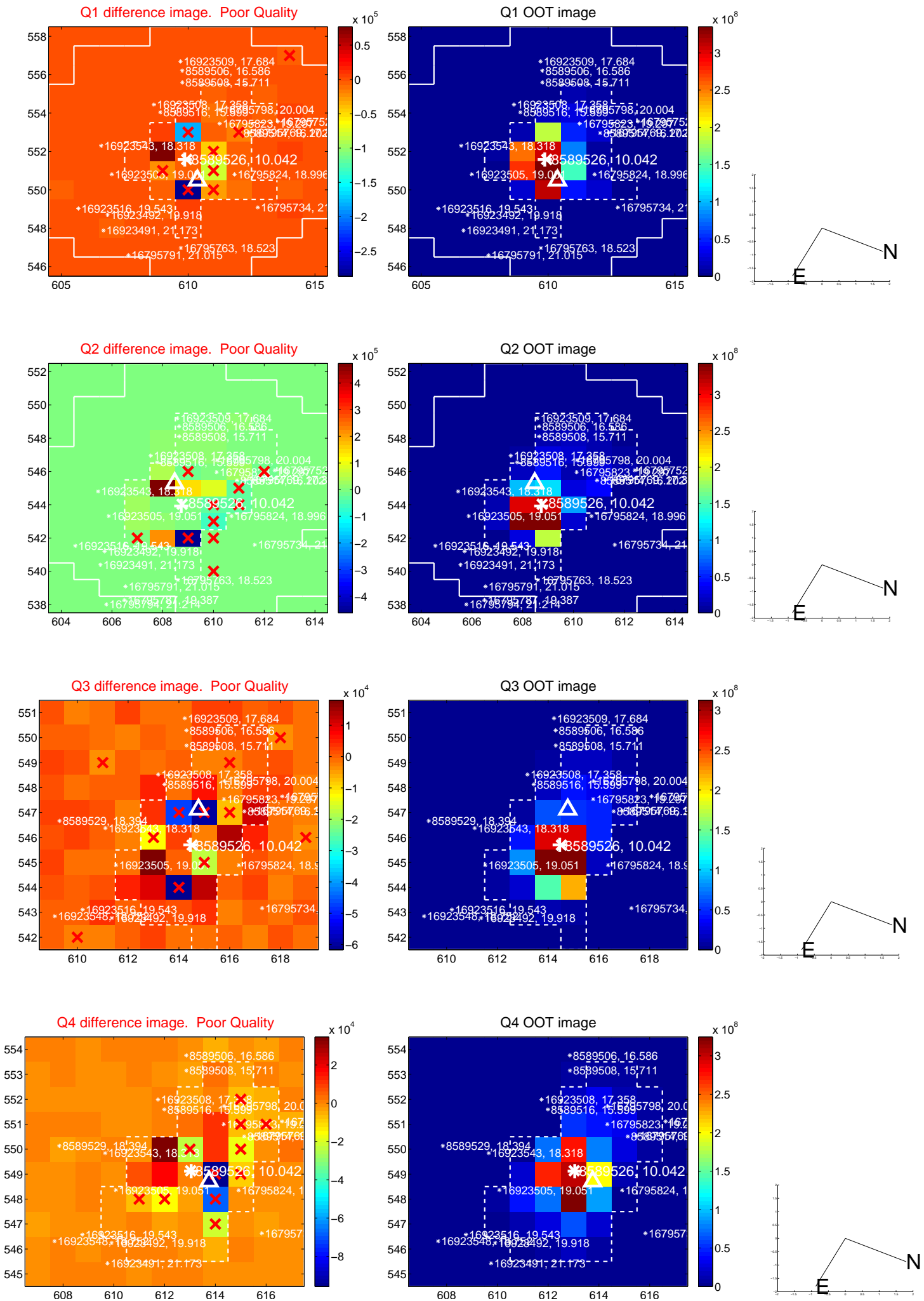
The direct PRF centroid is offset from the target star catalog position by about 0.60 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.429 \pm 1.005$	1.42	$1.159 \pm 0.868$	$0.836 \pm 0.718$
PRF-fit source offset from KIC position	$1.371 \pm 0.871$	1.57	$1.186 \pm 0.776$	$0.688 \pm 0.702$
photometric centroid source offset	$0.16 \pm 0.71$	0.23	$0.14 \pm 0.80$	$-0.09 \pm 0.45$

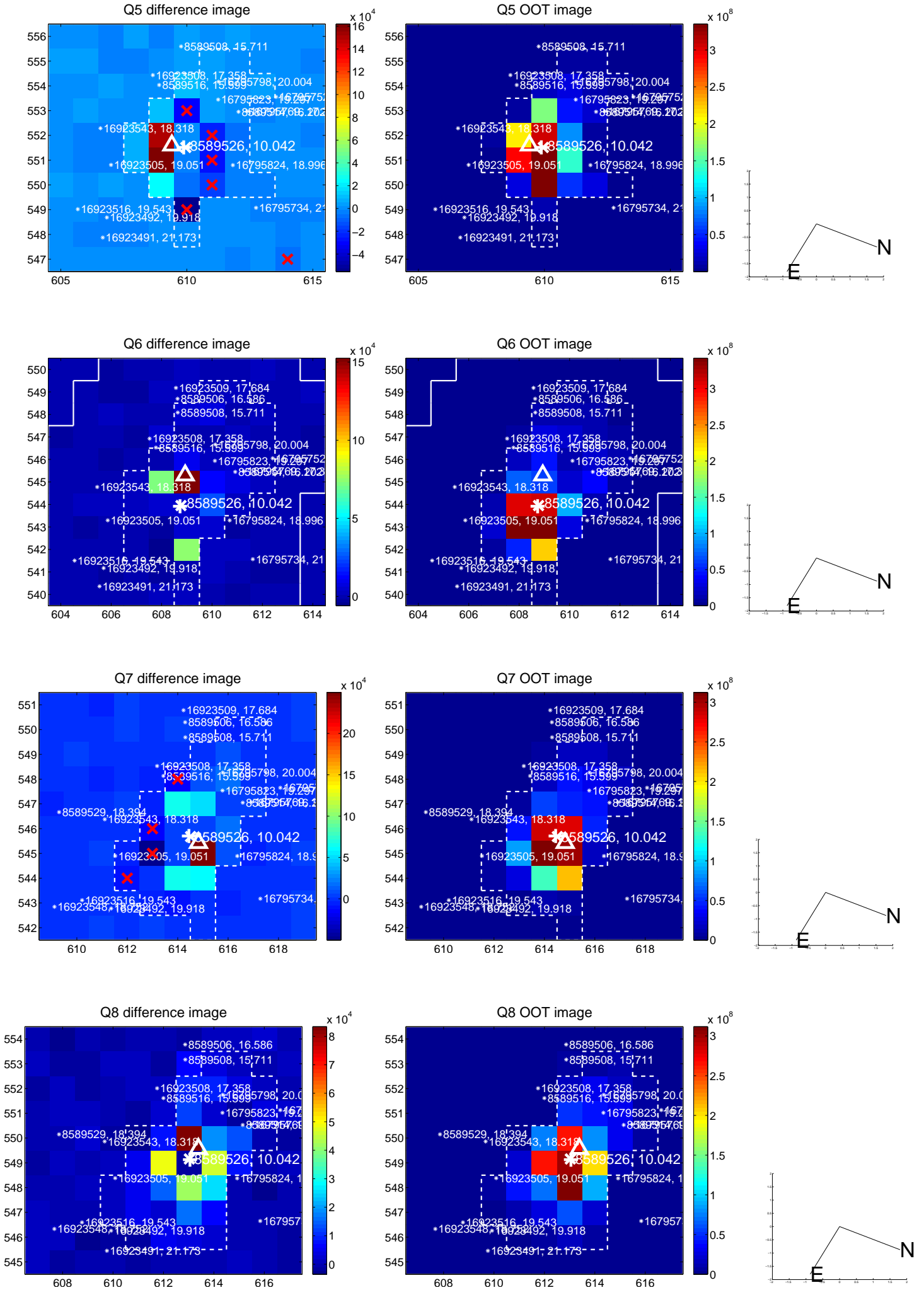


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

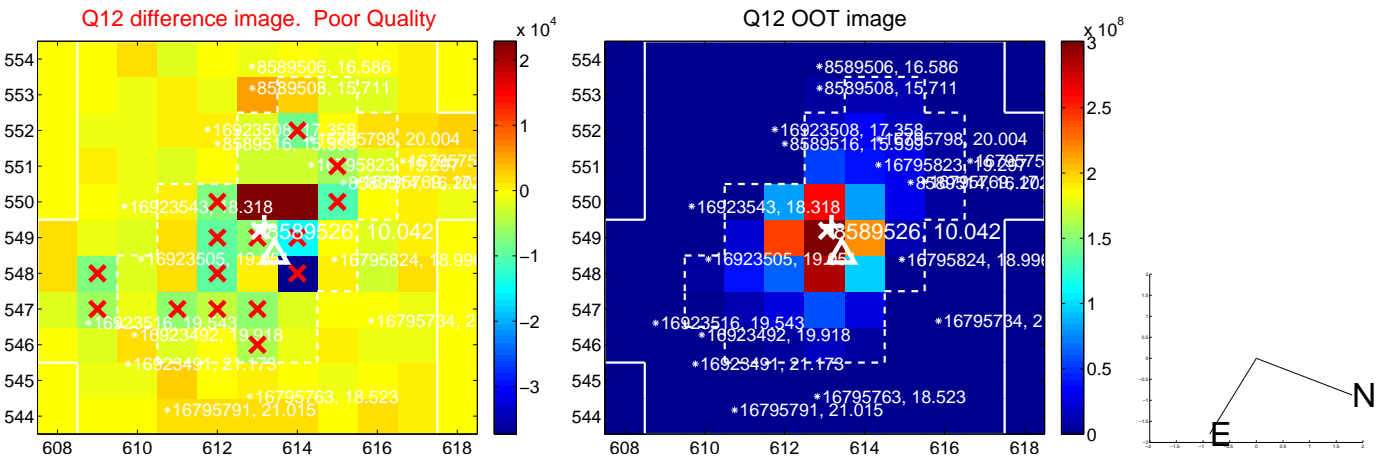
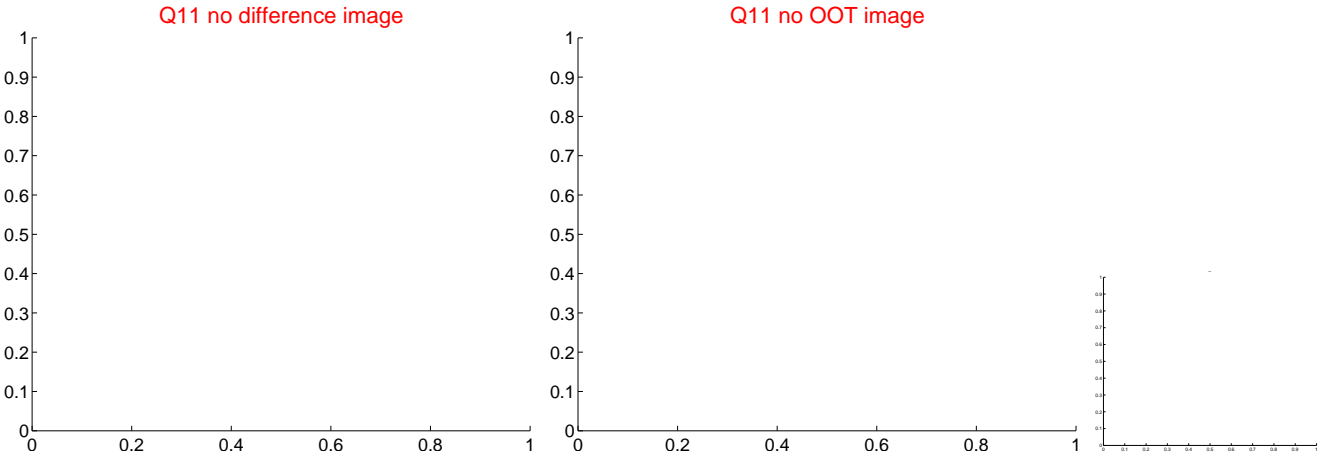
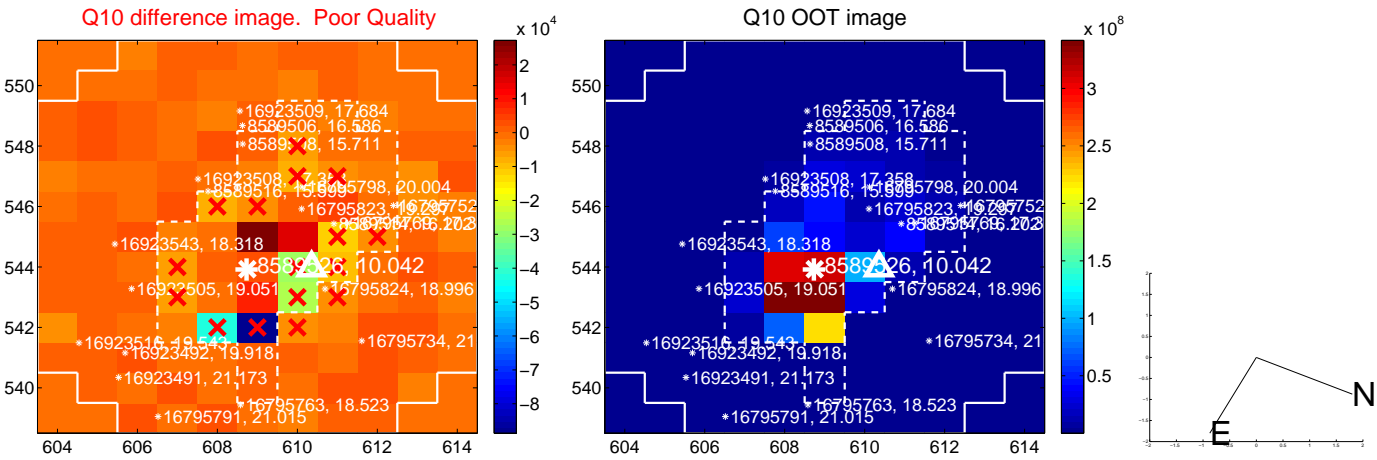
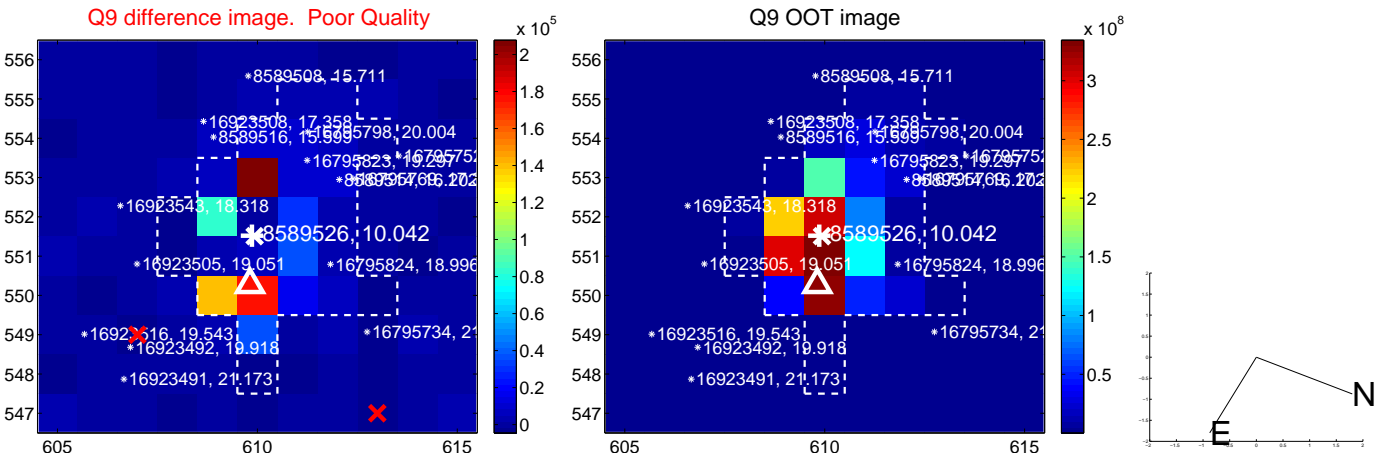
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



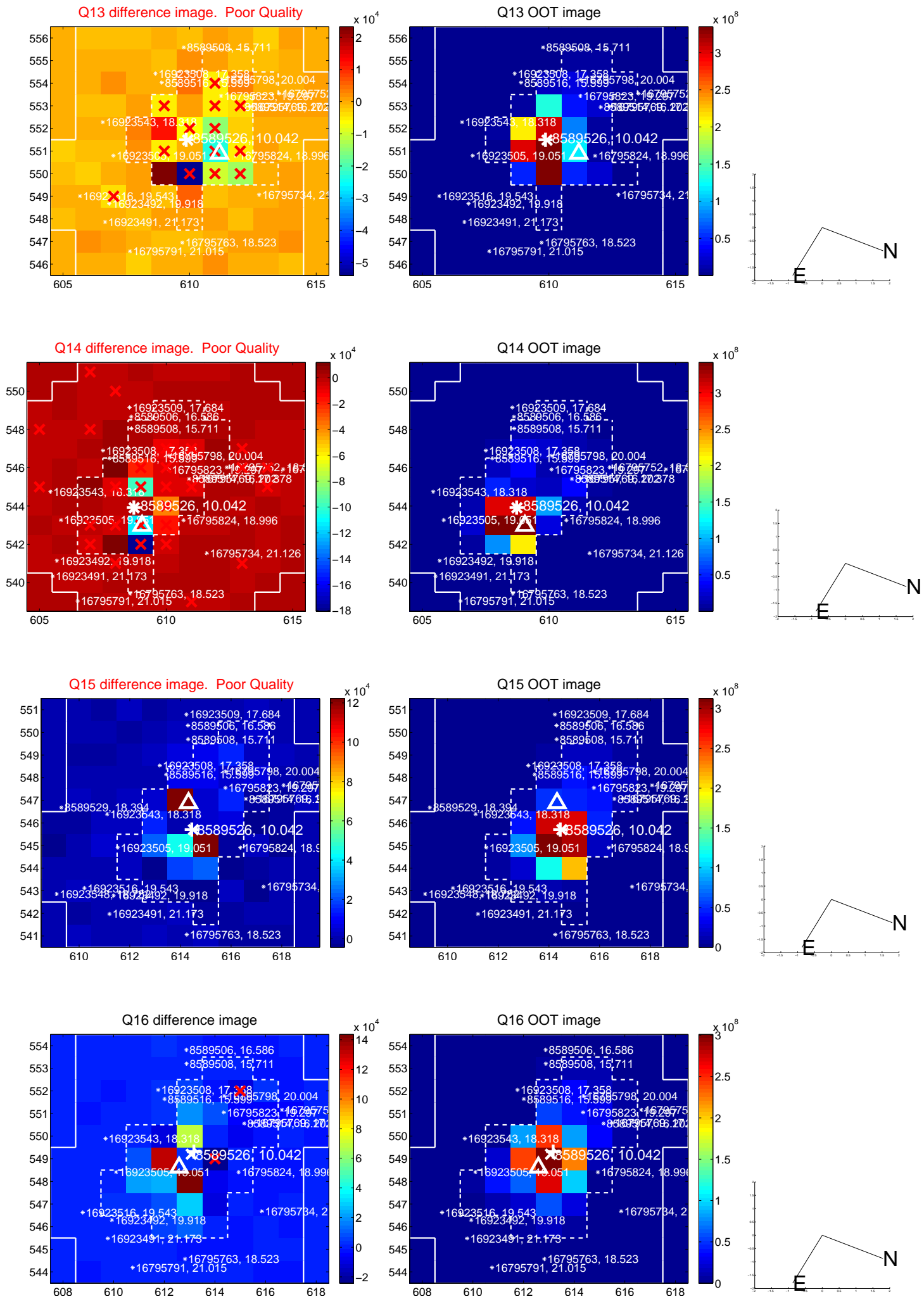
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

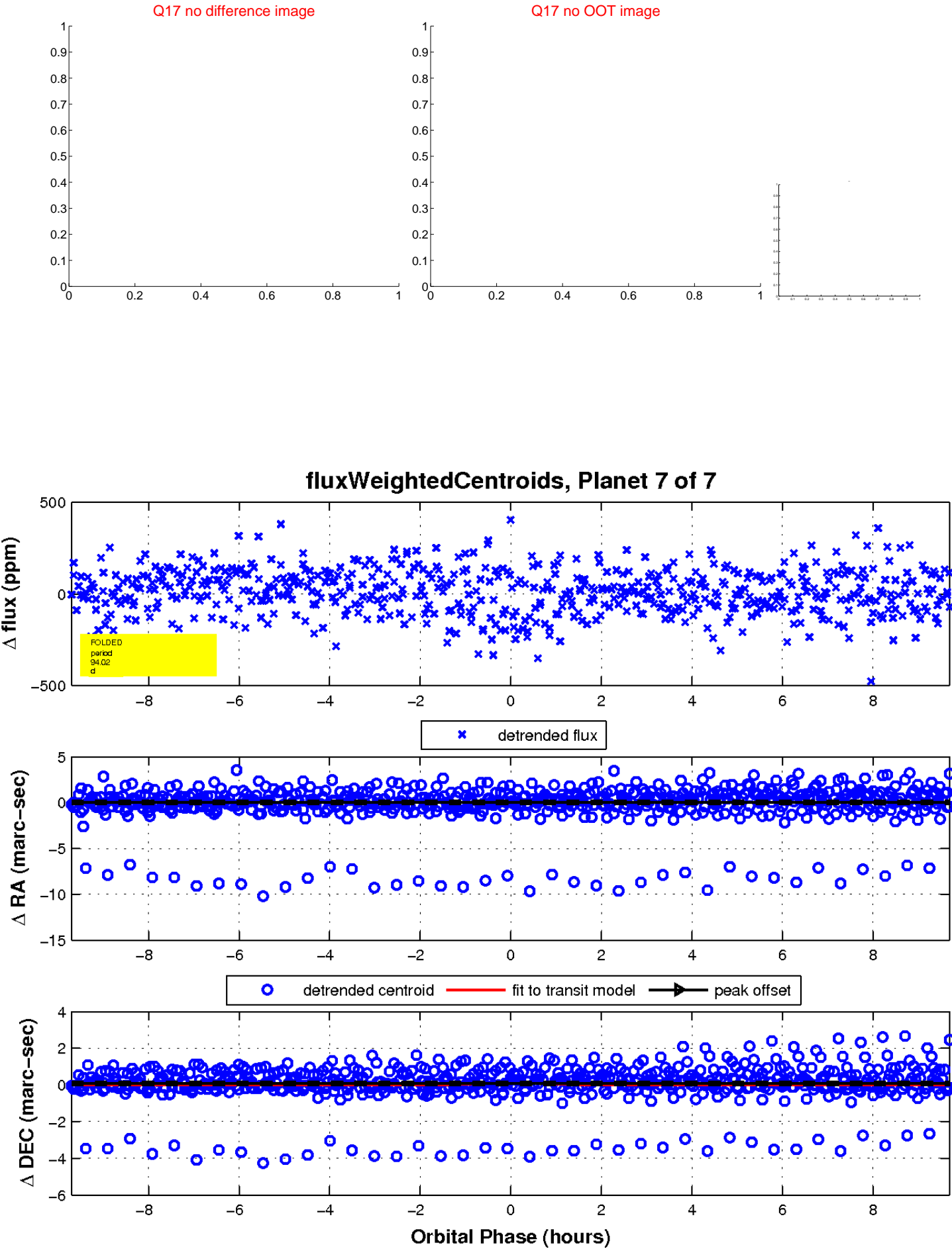


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

