

# KIC 005888009

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005888009-01	OBS	No	1.224306	132.166658	42.6	7.035	7.5	8.0	0.81	5079	0.51	881.53
005888009-02	OBS	No	441.957098	137.685714	696.6	8.475	15.1	9.4	0.81	5079	2.36	0.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005888009-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
005888009-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

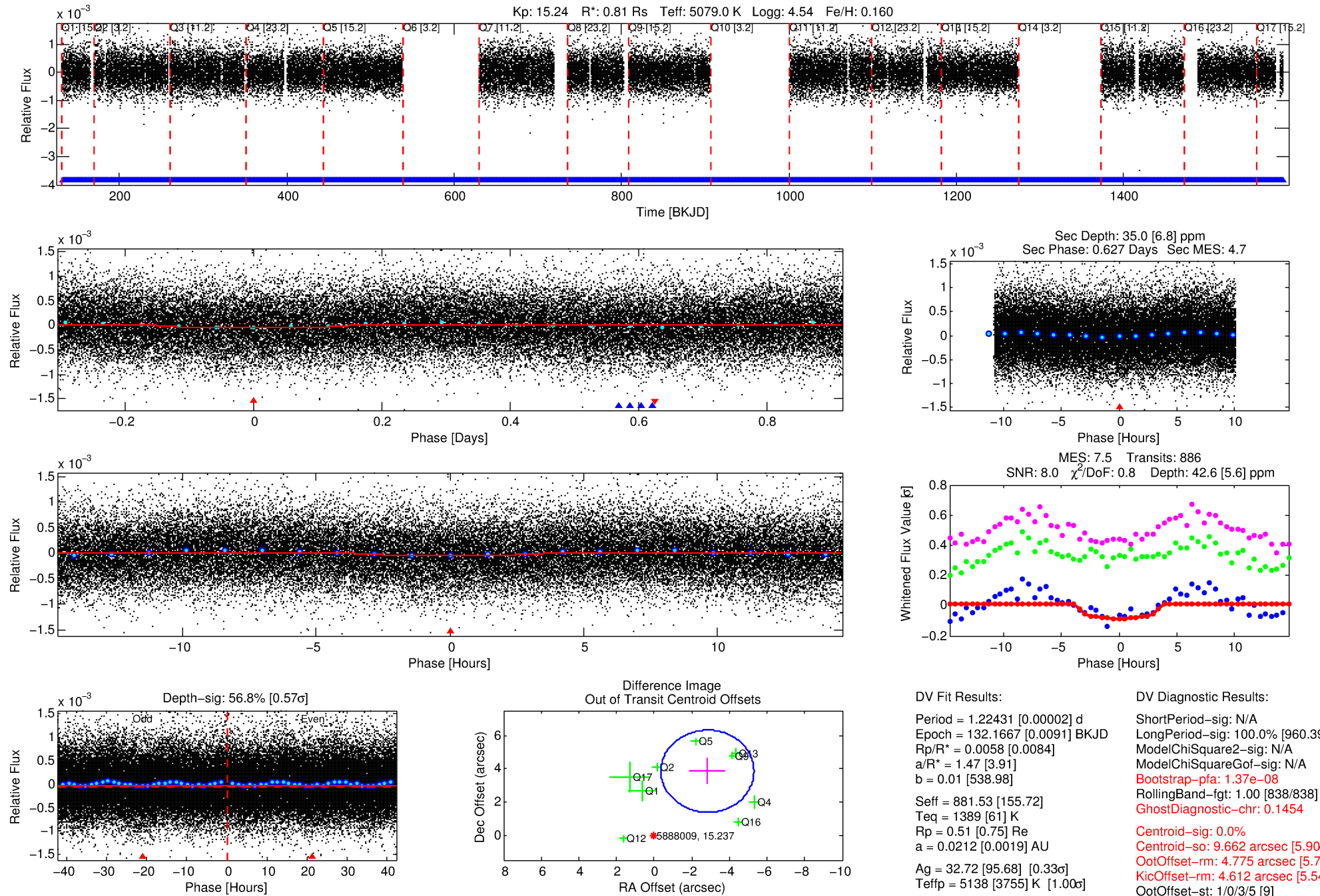
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005888009-01

No Significant Match Found

# DV One-Page Summary

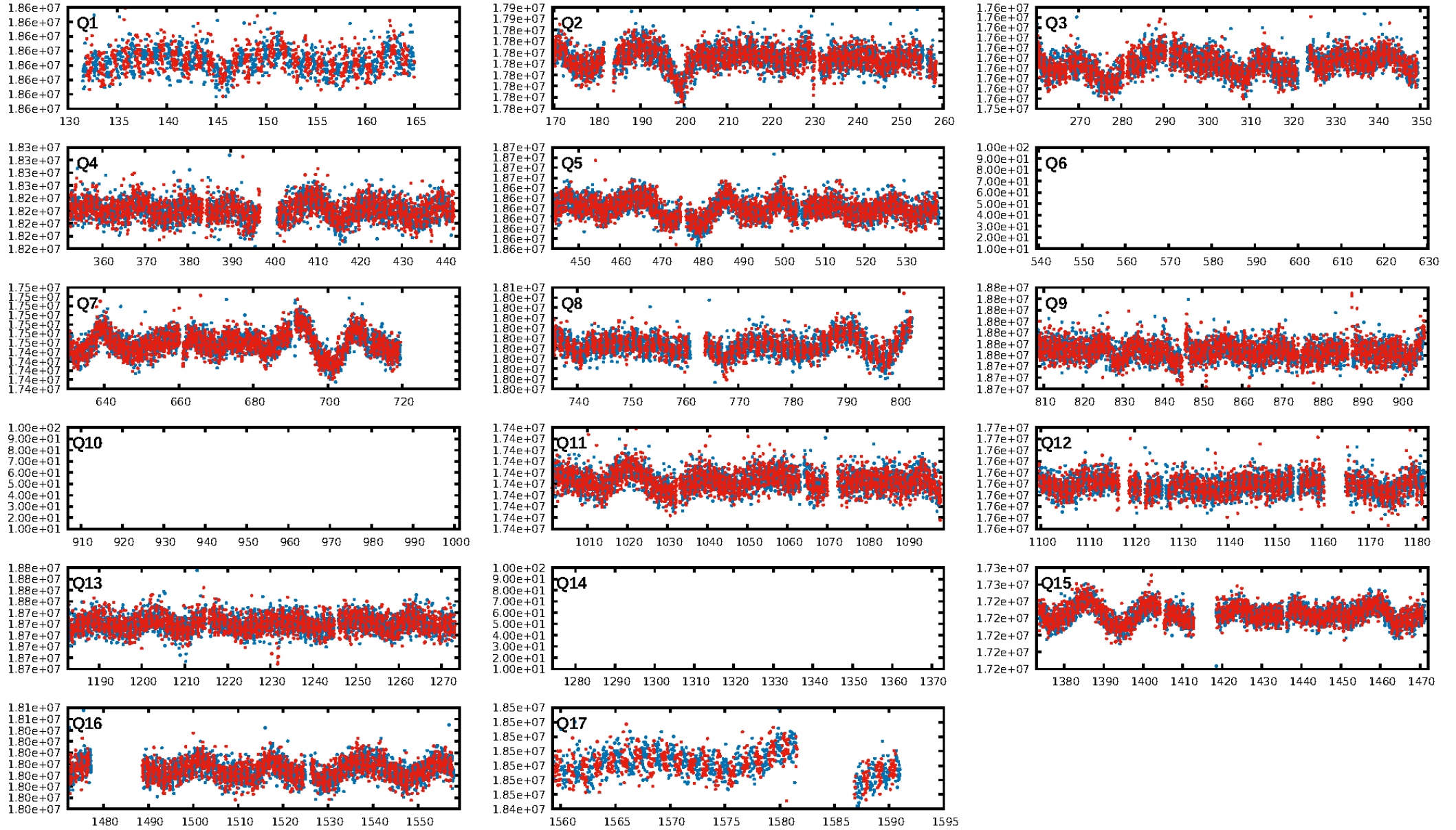
KIC: 5888009 Candidate: 1 of 2 Period: 1.224 d



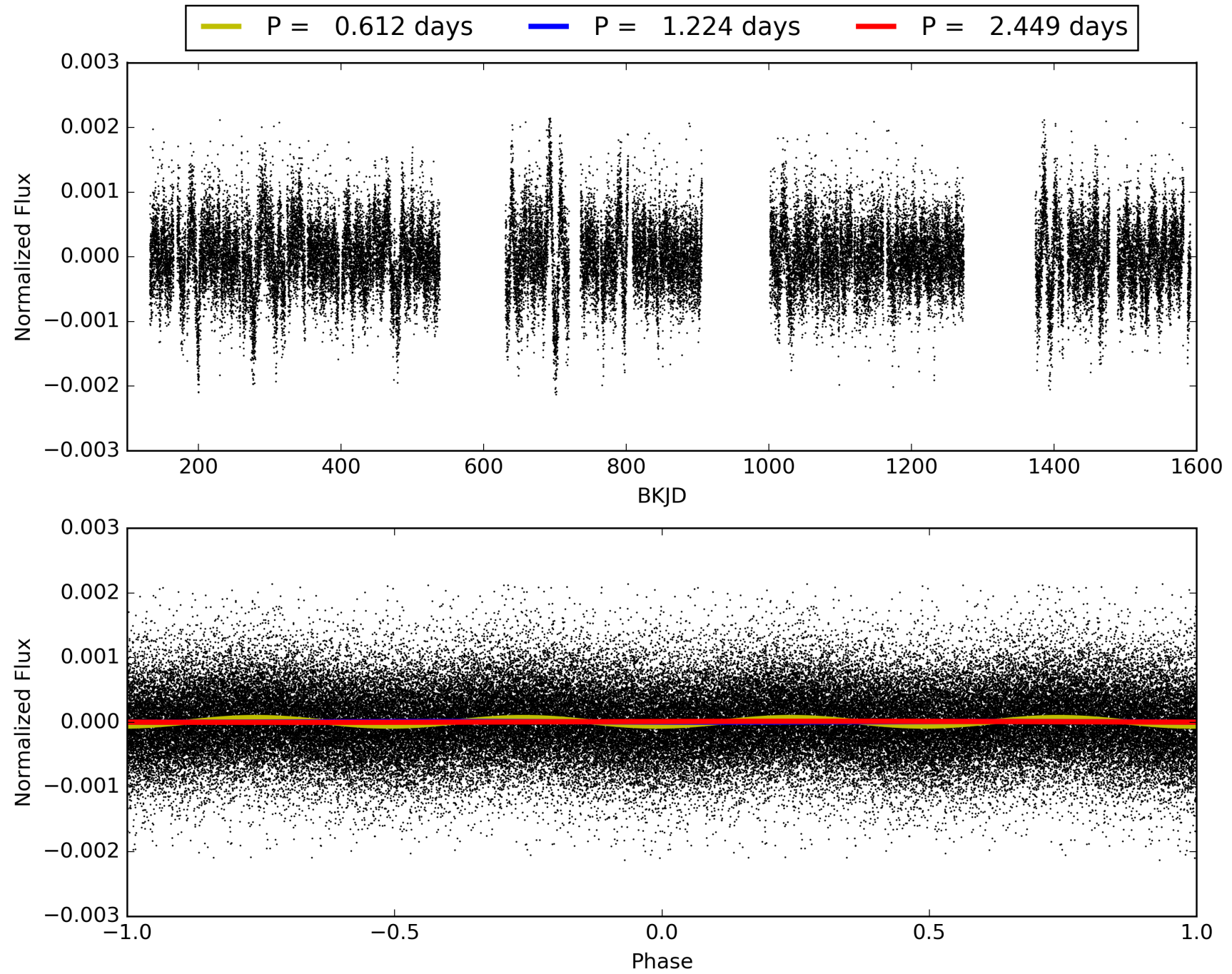
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:36:34 Z

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

# TCE 005888009-01, PDC Light Curves

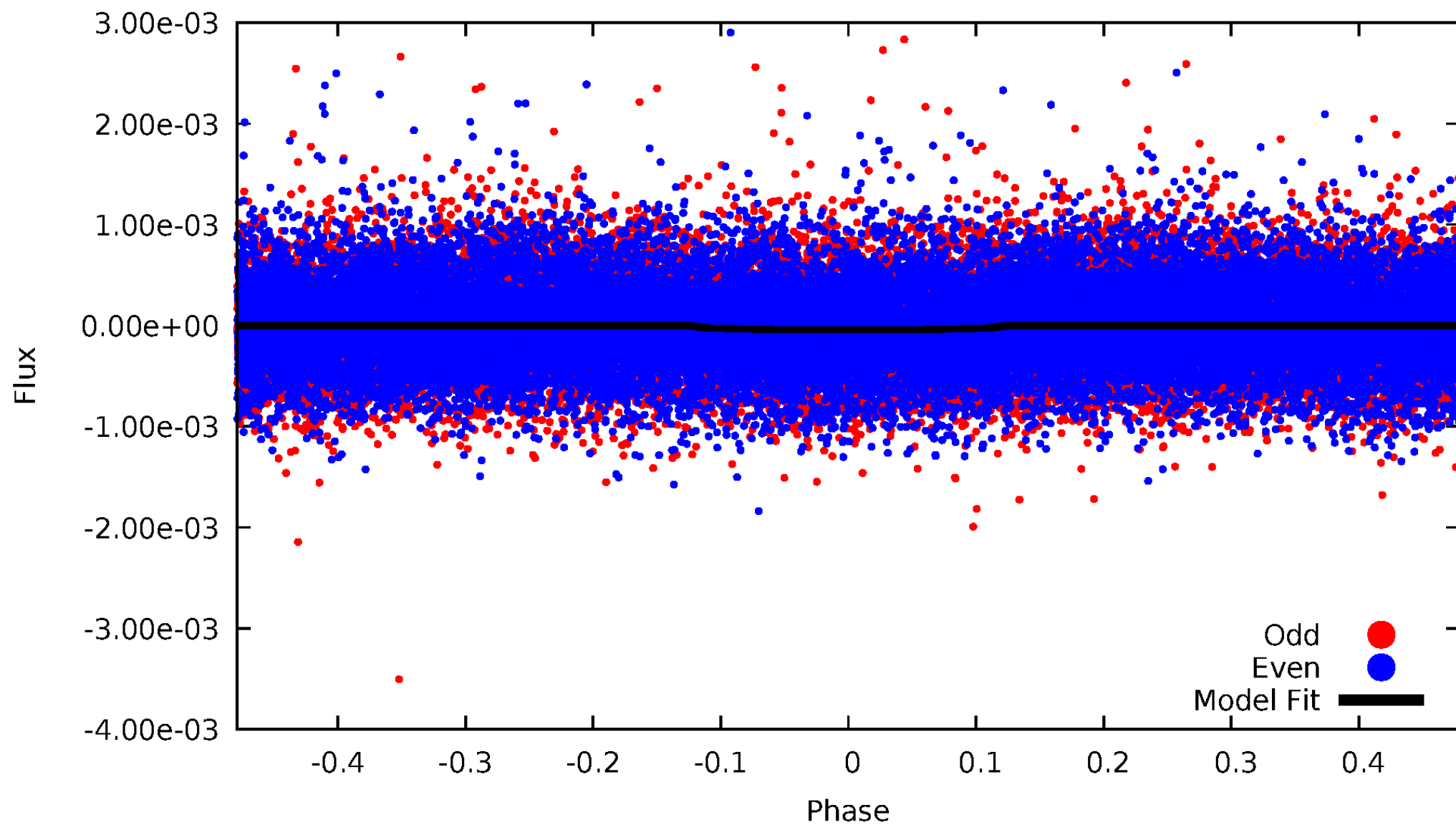


# TCE 005888009-01



# DV Odd/Even

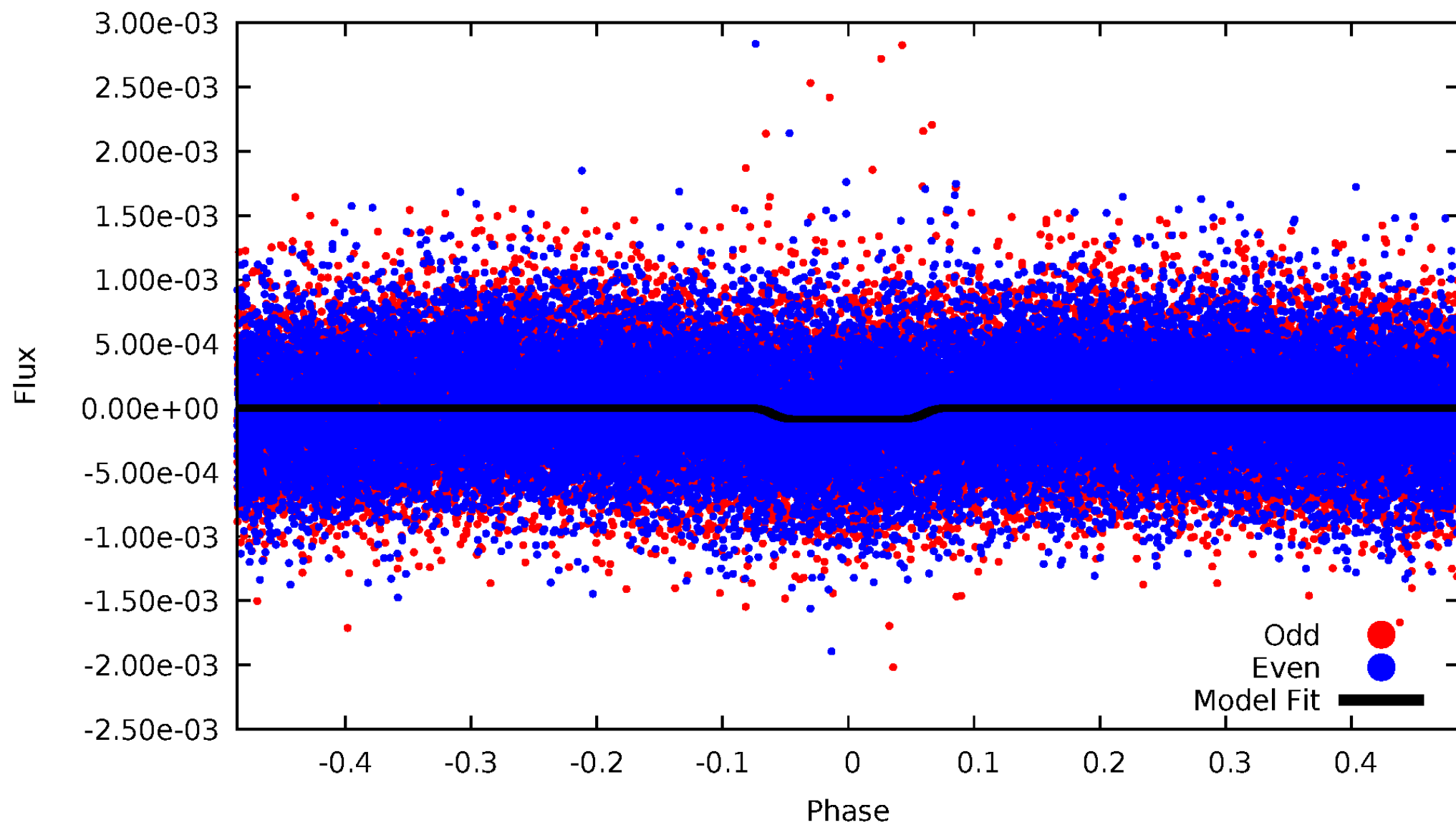
TCE 005888009-01





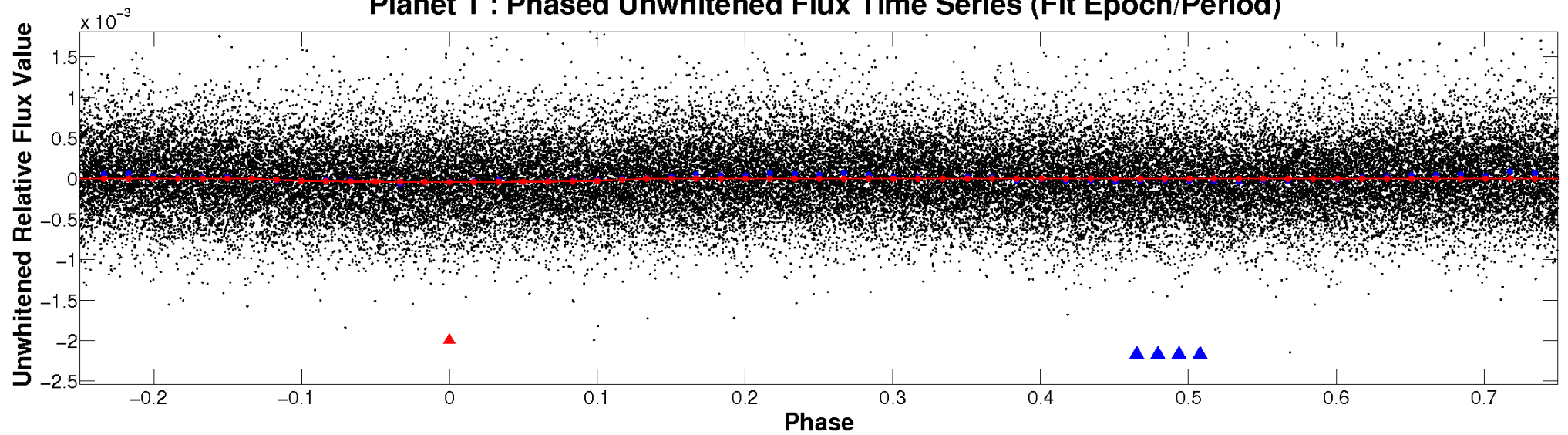
# ALT Odd/Even

TCE 005888009-01

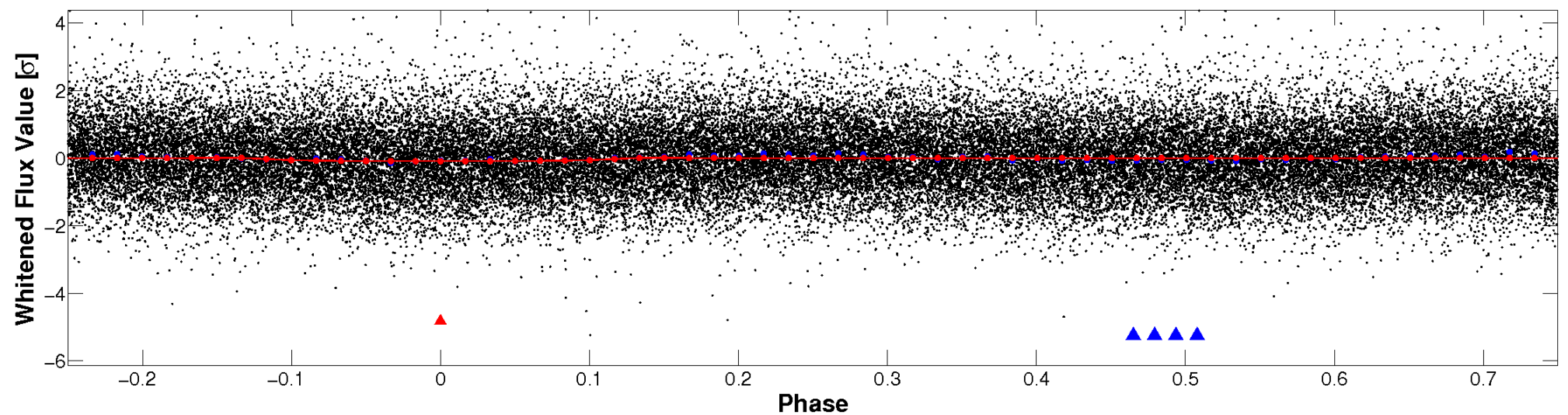


# Non-Whitened Vs. Whitened Light Curve

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

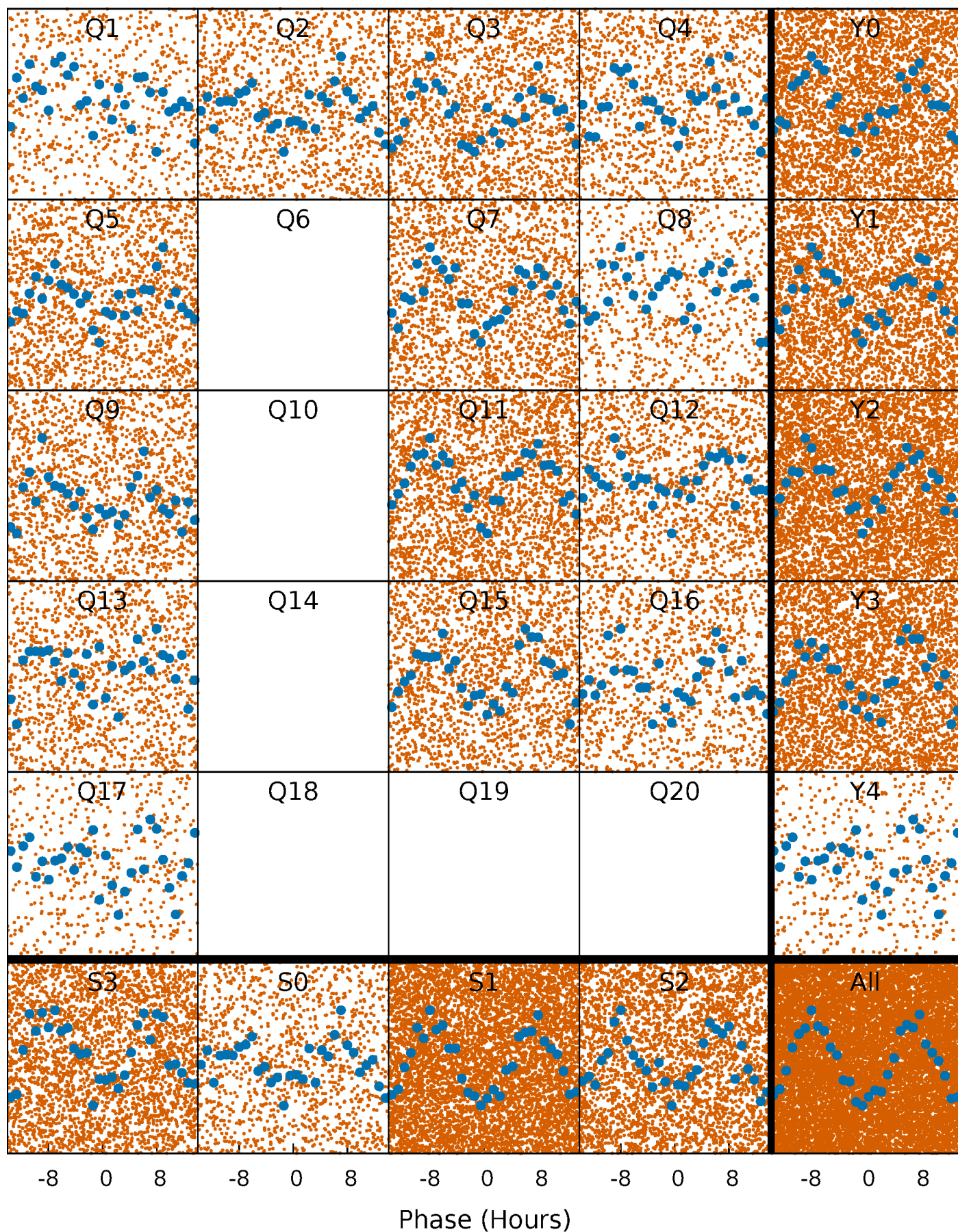


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

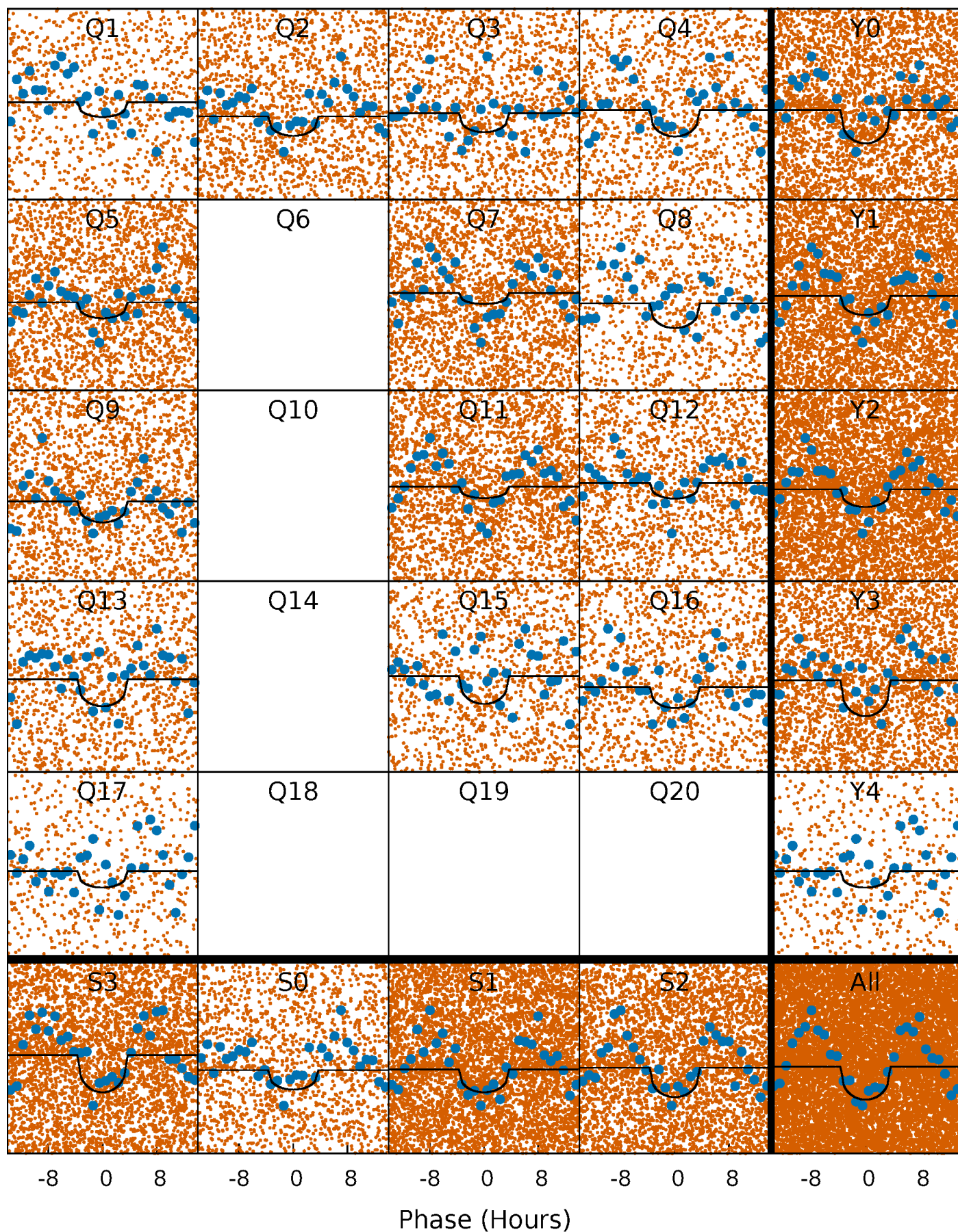
TCE 005888009-01 P= 1.224306 Days  $T_0=132.166659$  (BKJD)





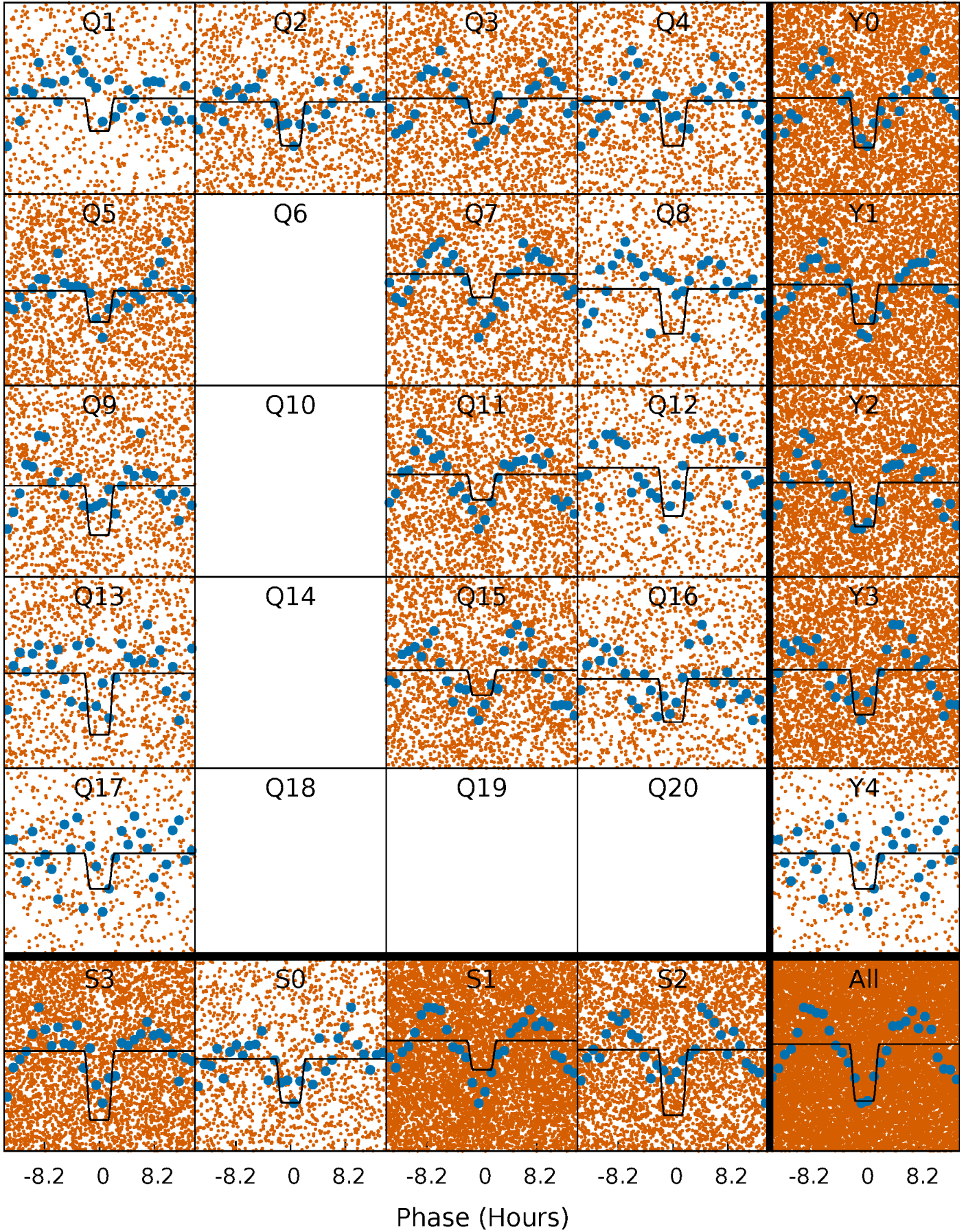
# DV Quarter-Phased Transit Curves

TCE 005888009-01 P= 1.224306 Days  $T_0=132.166659$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005888009-01 P= 1.224439 Days  $T_0=132.086169$  (BKJD)

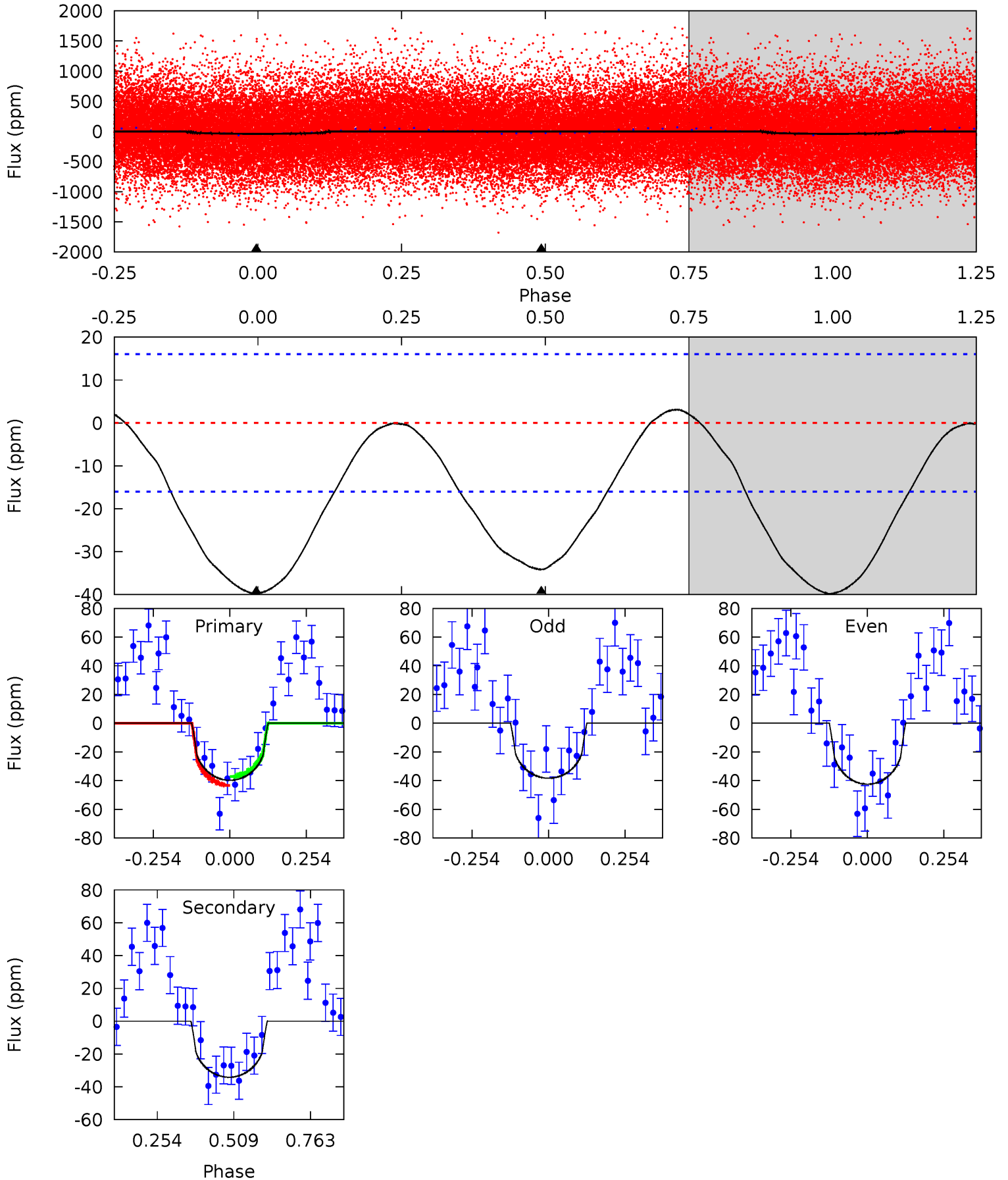




# DV Model-Shift Uniqueness Test

005888009-01, P = 1.224306 Days, E = 130.942353 Days

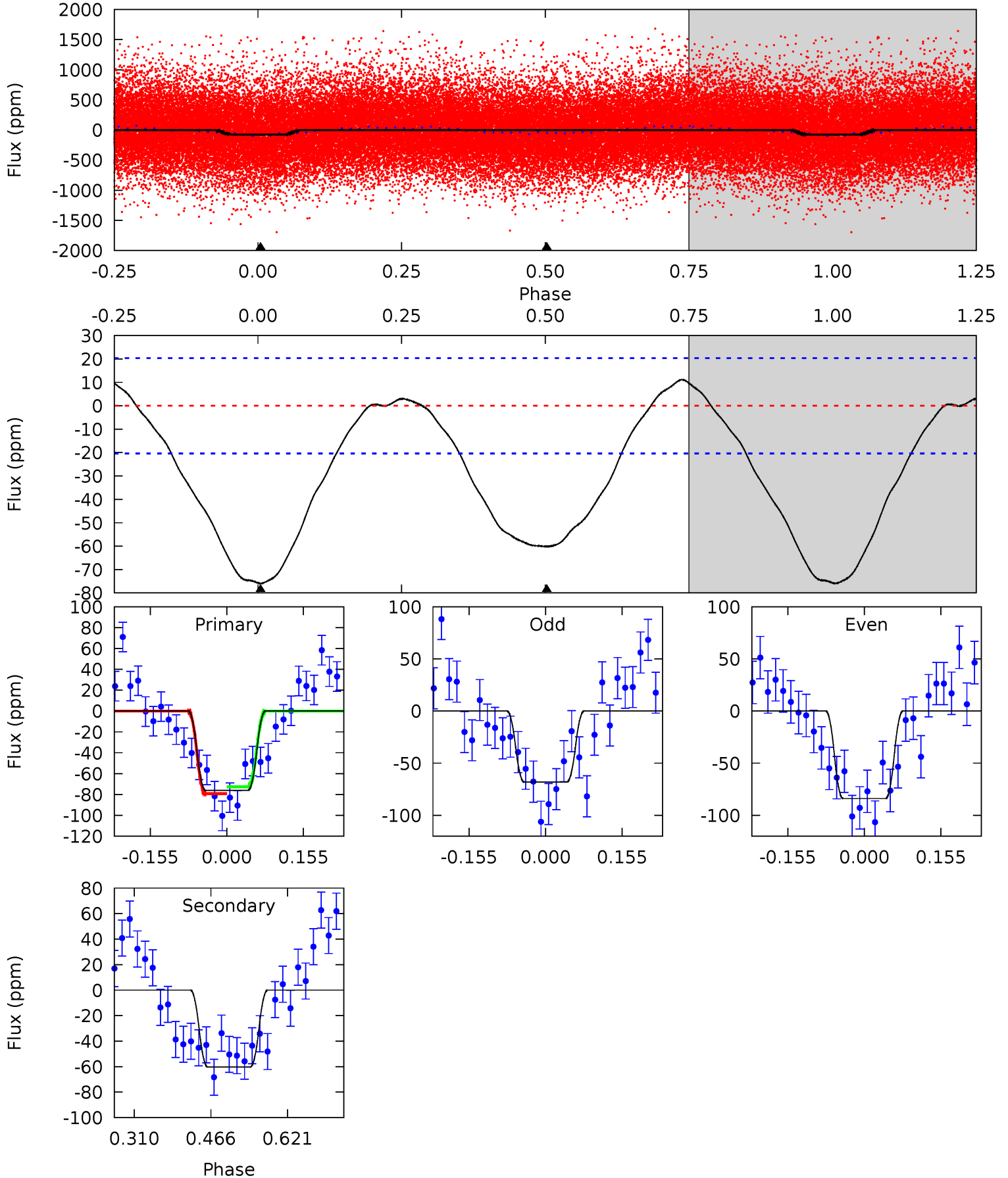
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	9.30	0	0	4.36	1.14	0.40	10.8	10.8	9.30	9.30	0.57	1.19	0.07	0.87



# Alt Model-Shift Uniqueness Test

005888009-01, P = 1.224439 Days, E = 130.861730 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.7	13.2	0	0	4.47	1.42	1.62	16.7	16.7	13.2	13.2	1.73	1.11	0.13	0.72





### Stellar Parameters For KIC 005888009

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5079^{+151}_{-136}$	$4.543^{+0.048}_{-0.072}$	$0.160^{+0.250}_{-0.300}$	$0.814^{+0.085}_{-0.071}$	$0.842^{+0.062}_{-0.074}$	$2.200^{+0.482}_{-0.511}$
	+3%/-3%	+1%/-2%	+156%/-188%	+10%/-9%	+7%/-9%	+22%/-23%
Source	PHO1	KIC0	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 005888009-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-34 \pm 4$	$0.76^{+0.61}_{-0.50}$	$1954^{+81}_{-67}$	$4386^{+2818}_{-896}$	$15^{+116}_{-10}$
Alt.	$-60 \pm 5$	$0.93^{+0.70}_{-0.60}$	$1952^{+74}_{-67}$	$4465^{+2967}_{-835}$	$17^{+125}_{-11}$

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

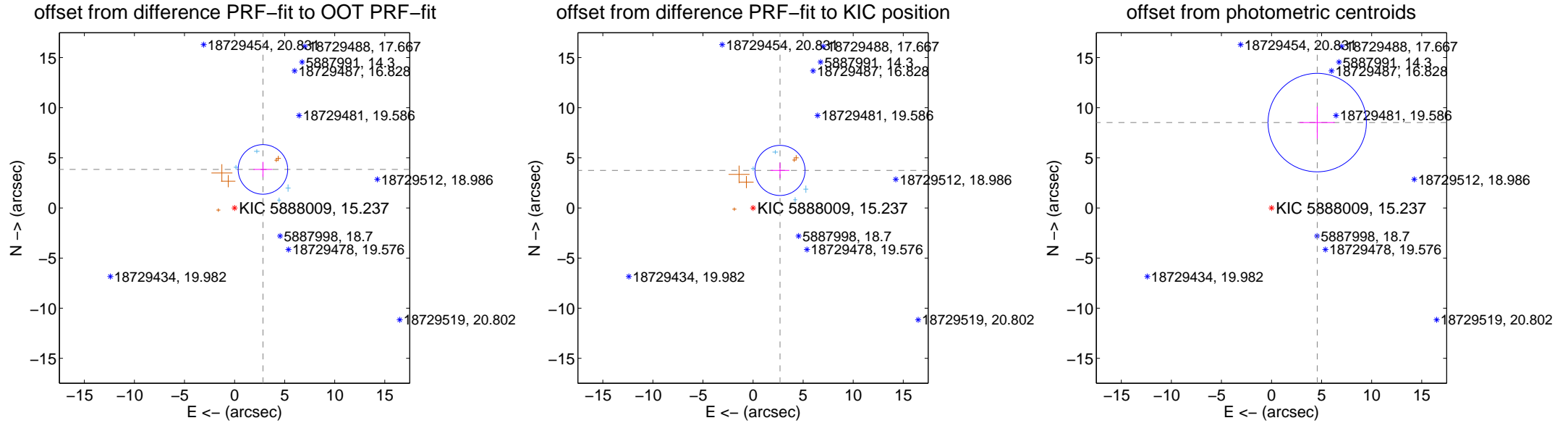
## DV Centroid Data

Supplemental centroid analysis for 005888009-01. Kepler magnitude: 15.24. Transit SNR 8.02

There are 4 quarters with good PRF difference image offsets

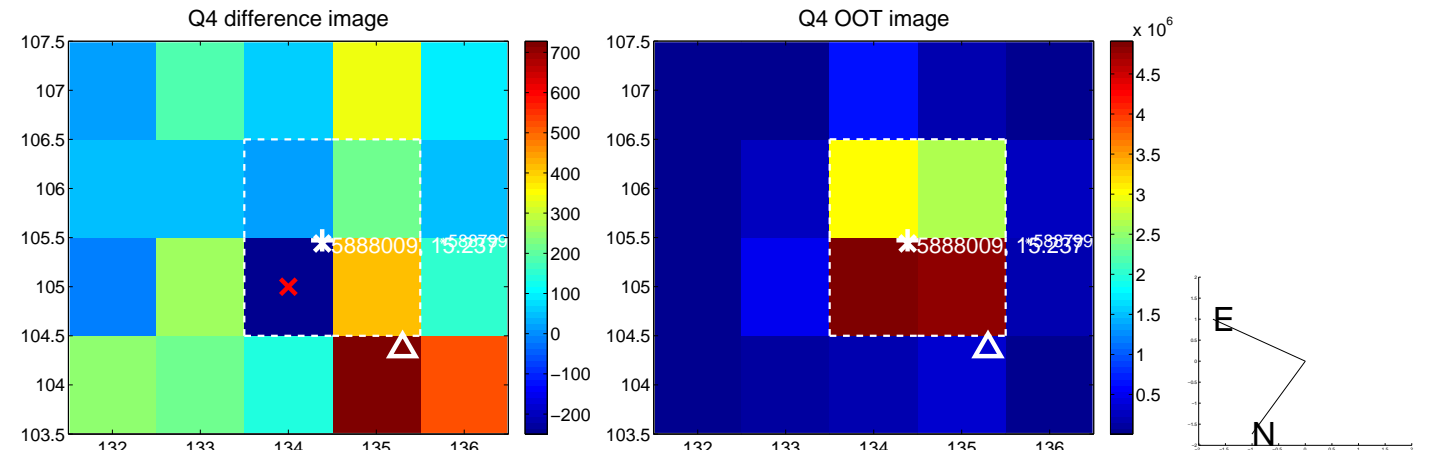
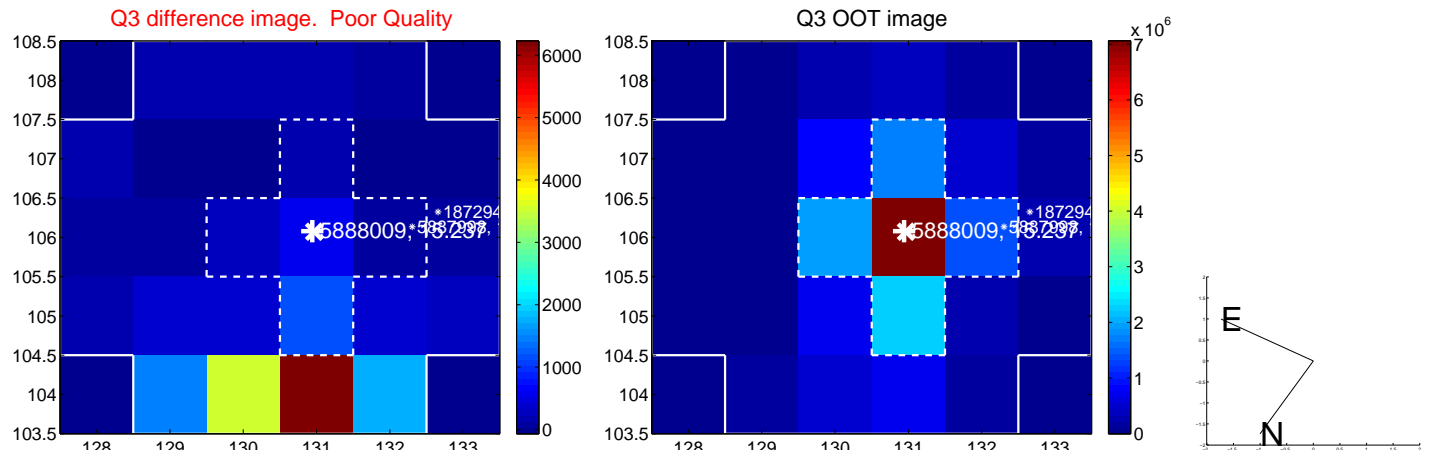
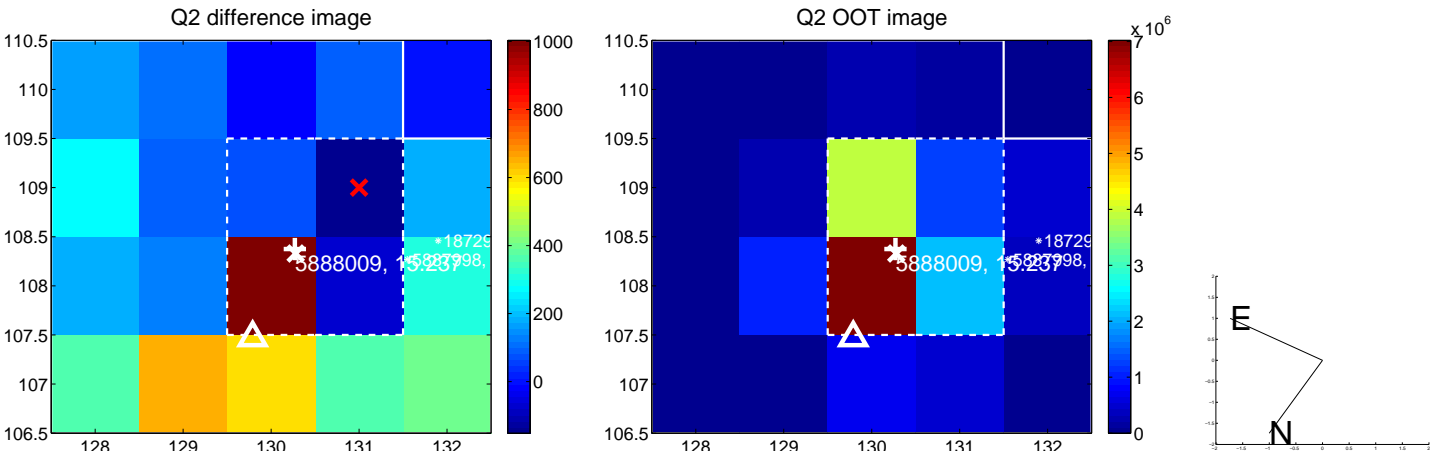
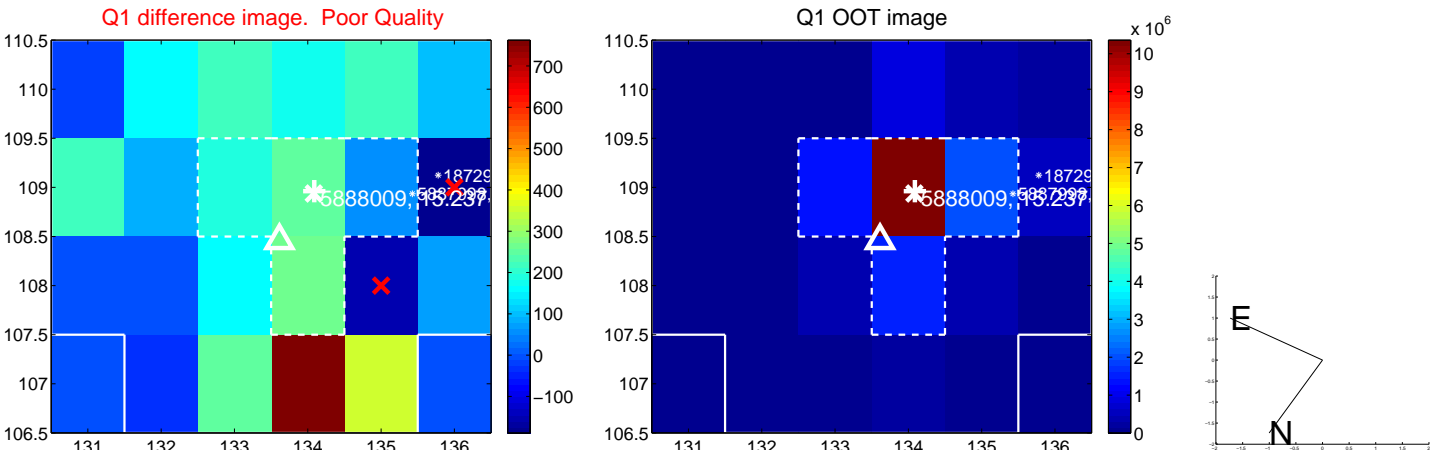
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.775 \pm 0.824$	<b>5.79</b>	$-2.832 \pm 0.938$	$3.844 \pm 0.755$
PRF-fit source offset from KIC position	$4.612 \pm 0.833$	<b>5.54</b>	$-2.692 \pm 0.939$	$3.744 \pm 0.772$
photometric centroid source offset	$9.66 \pm 1.64$	<b>5.90</b>	$-4.56 \pm 1.75$	$8.52 \pm 1.60$

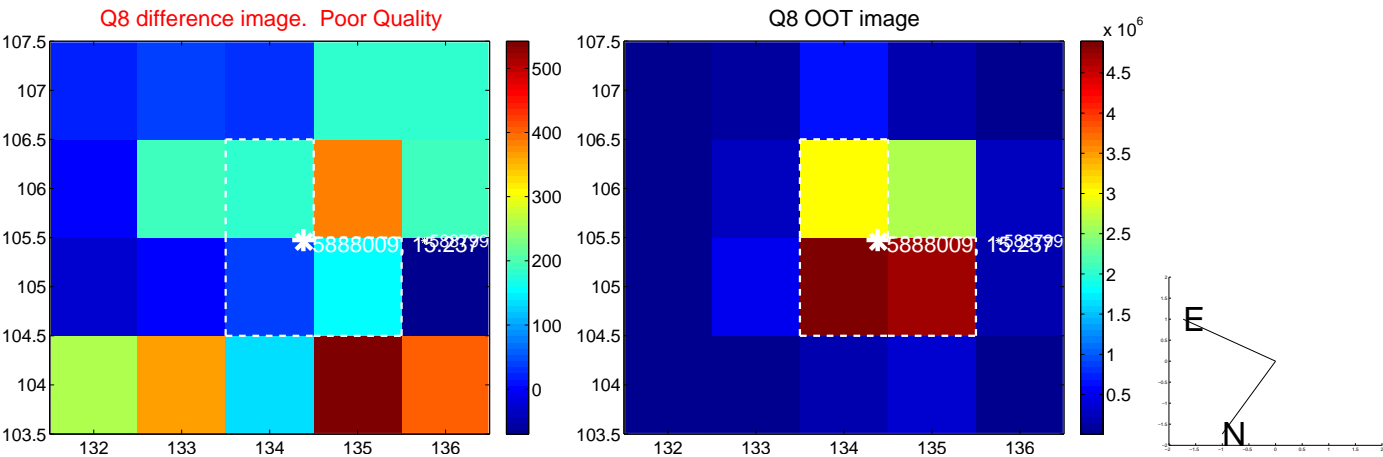
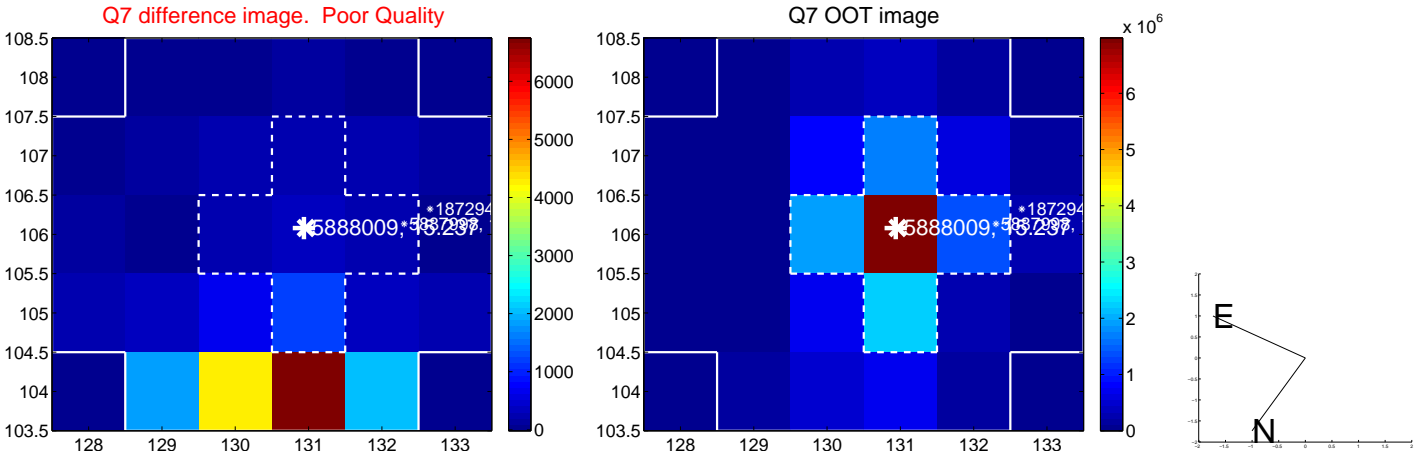
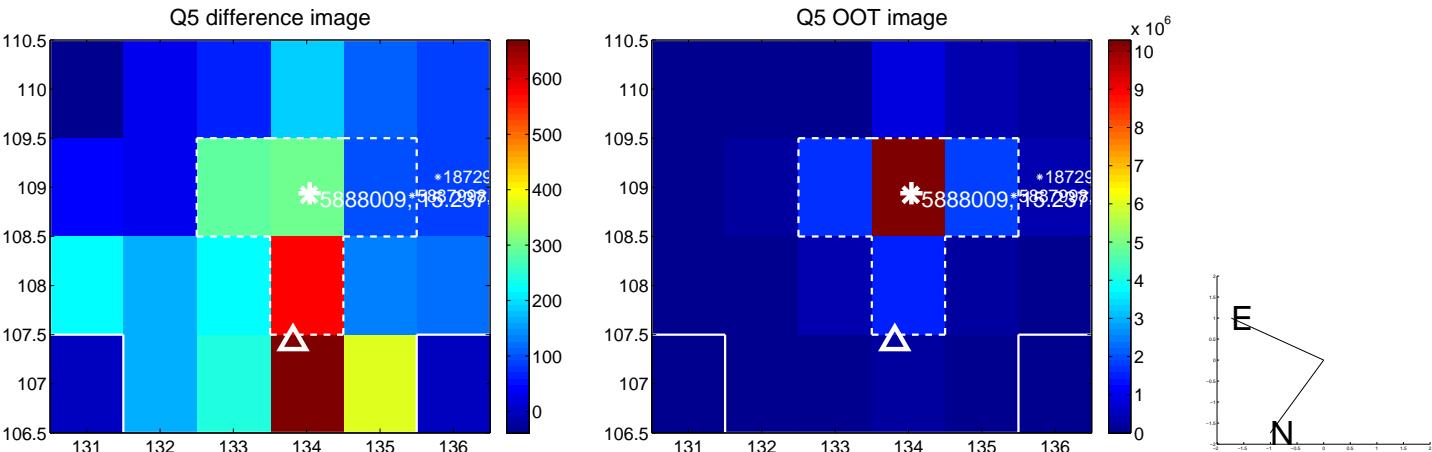


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

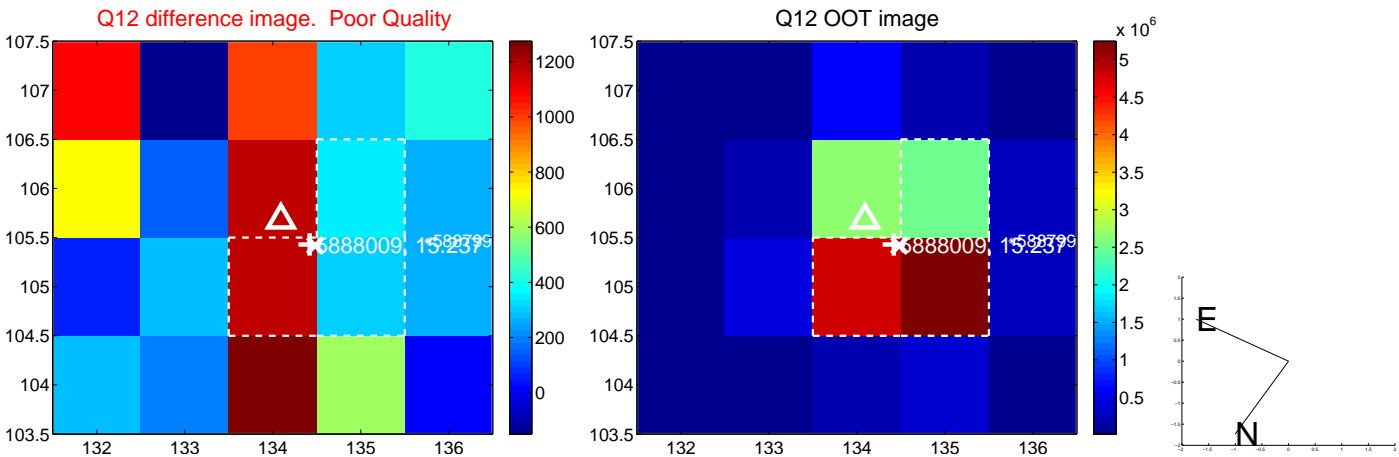
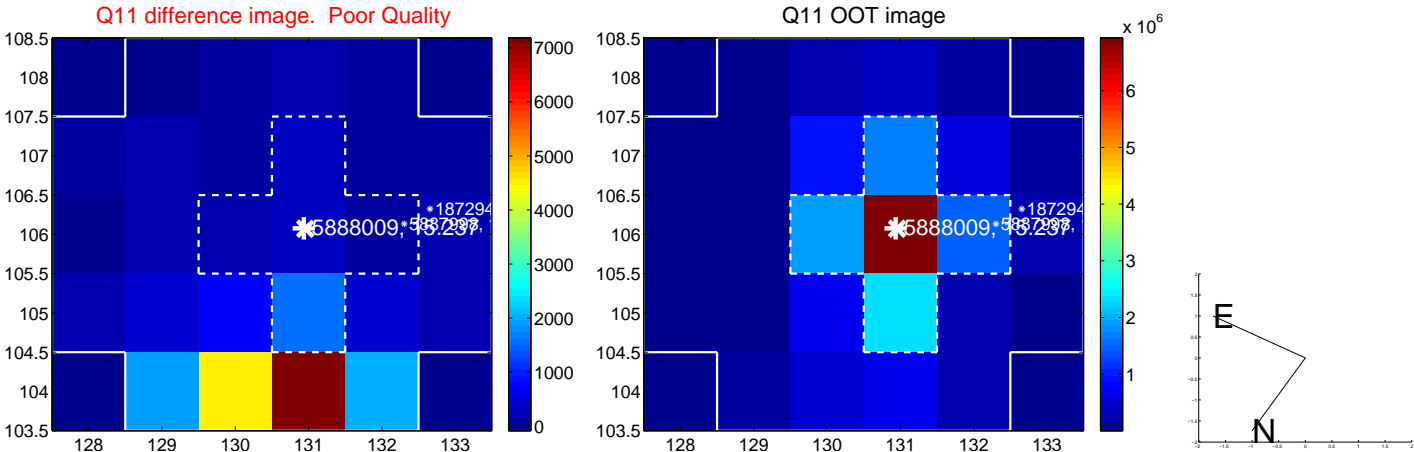
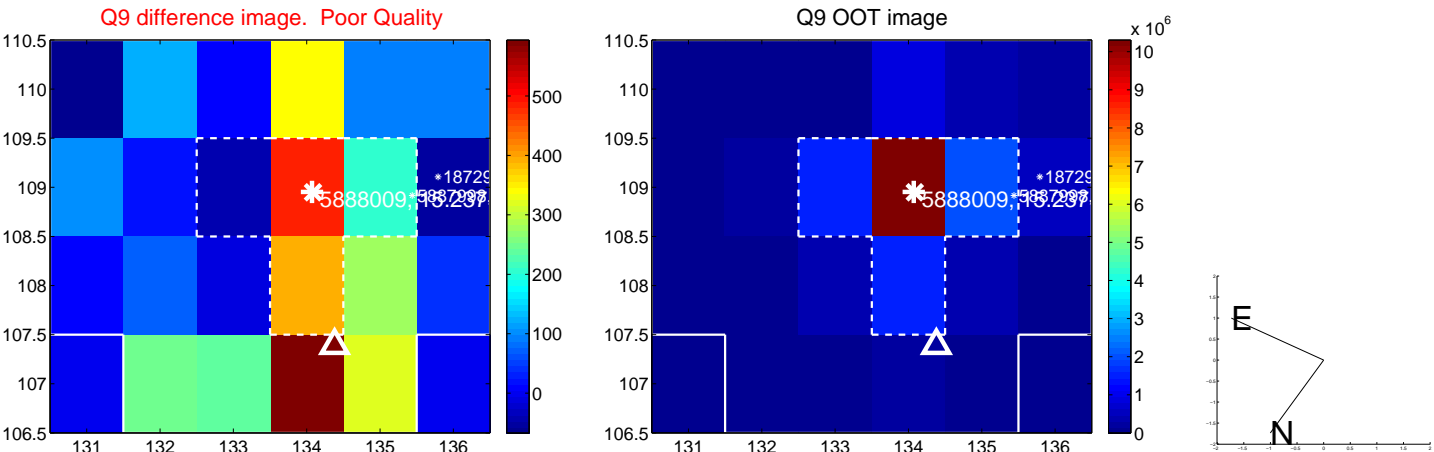


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

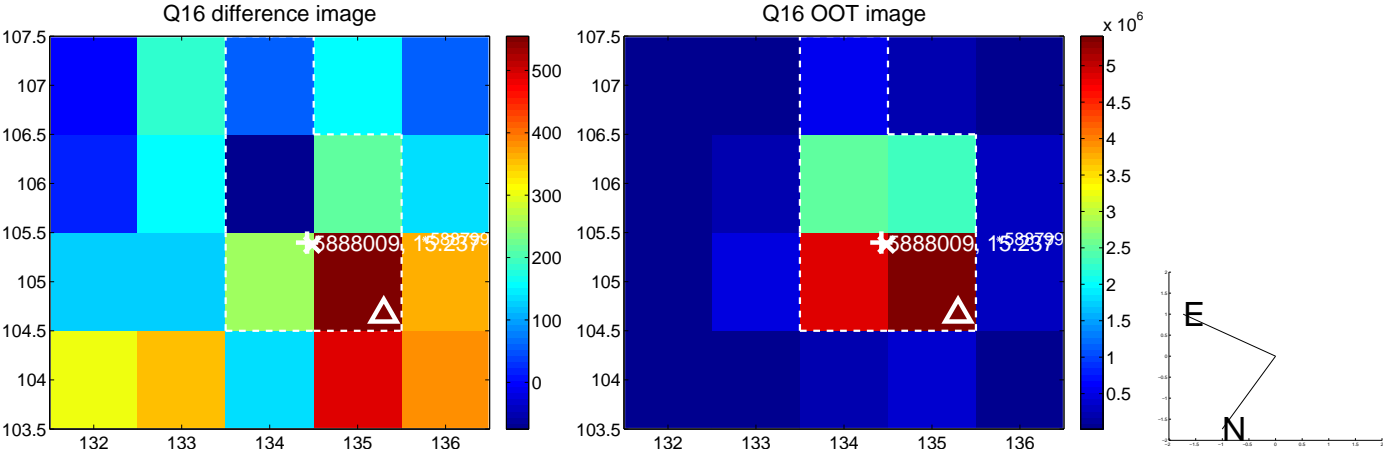
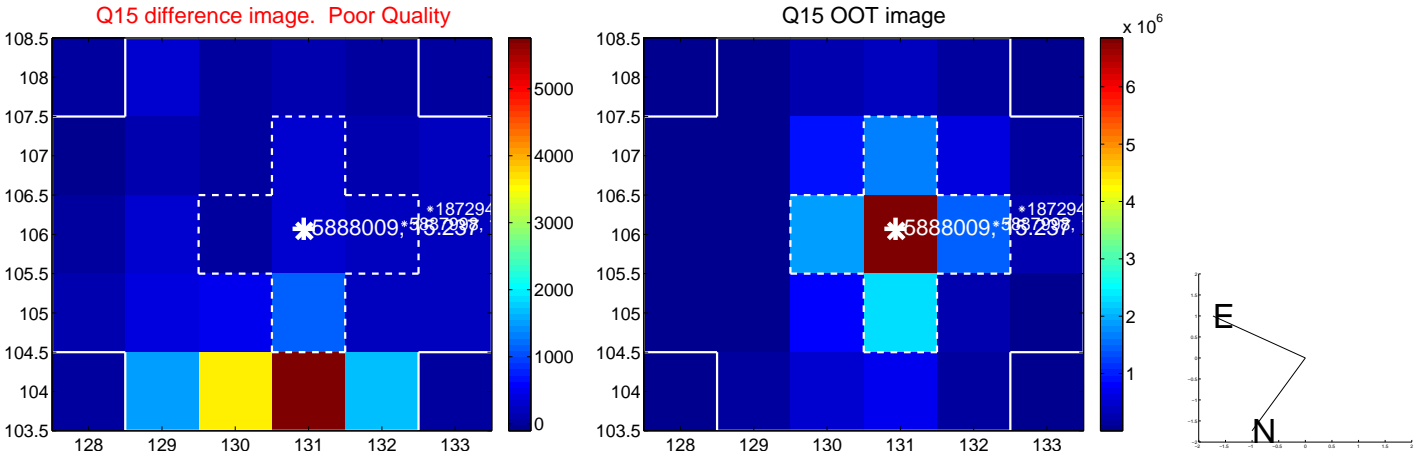
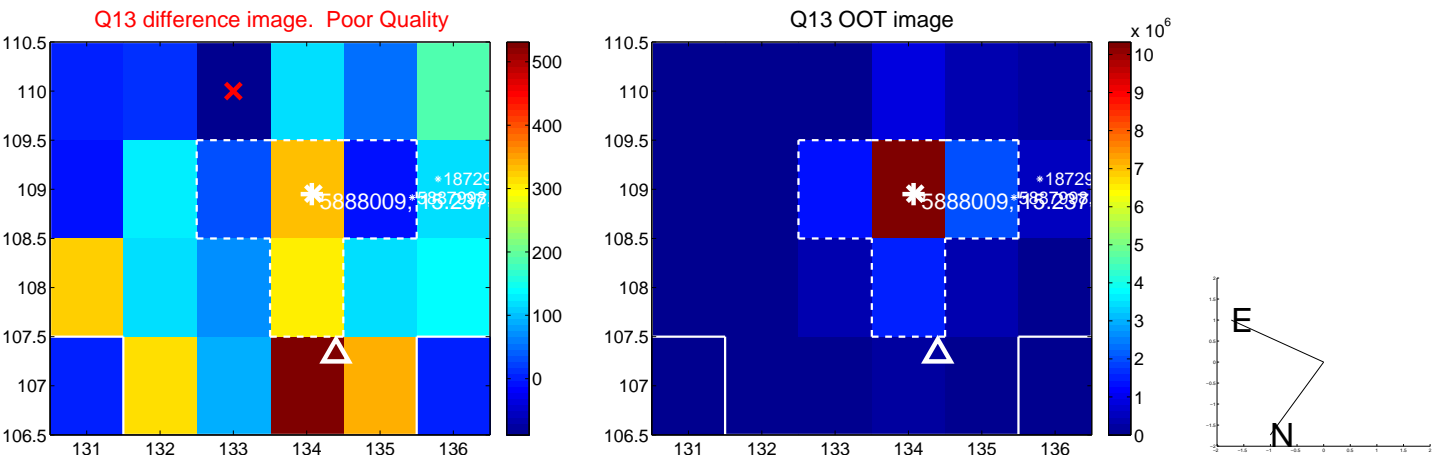




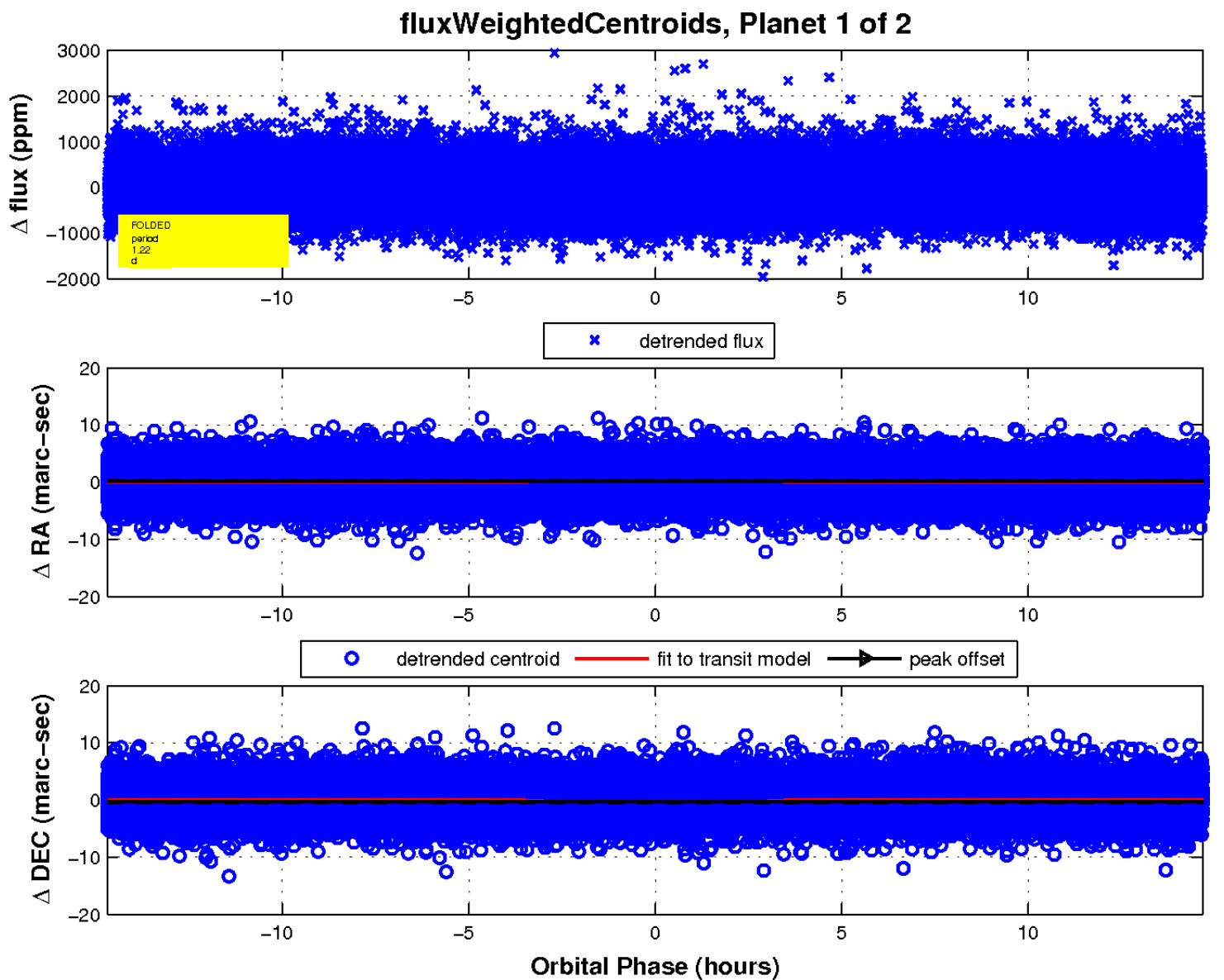
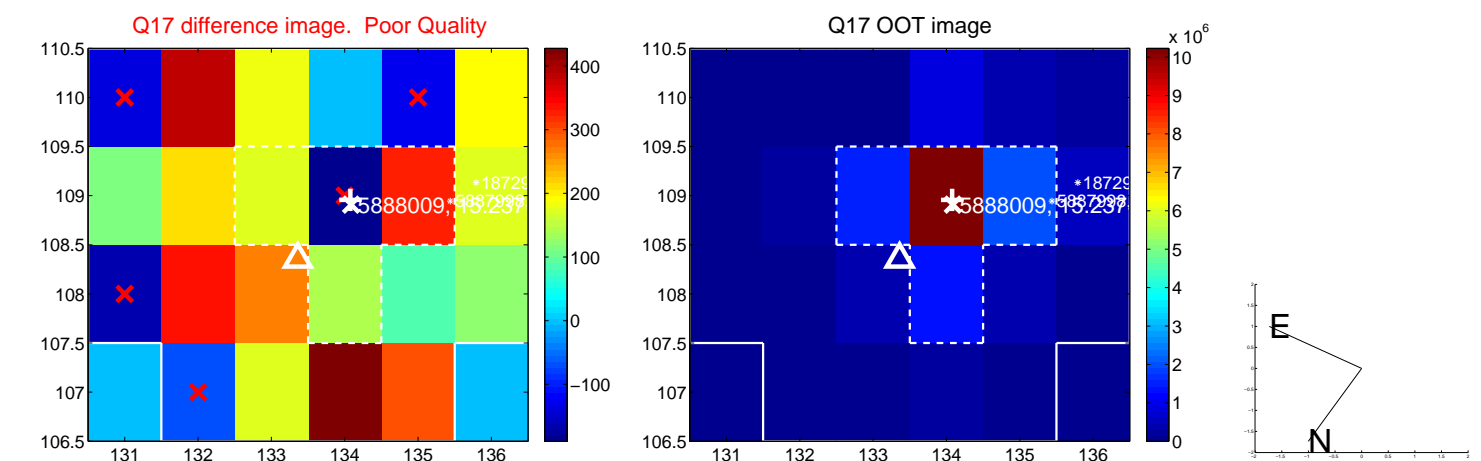
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

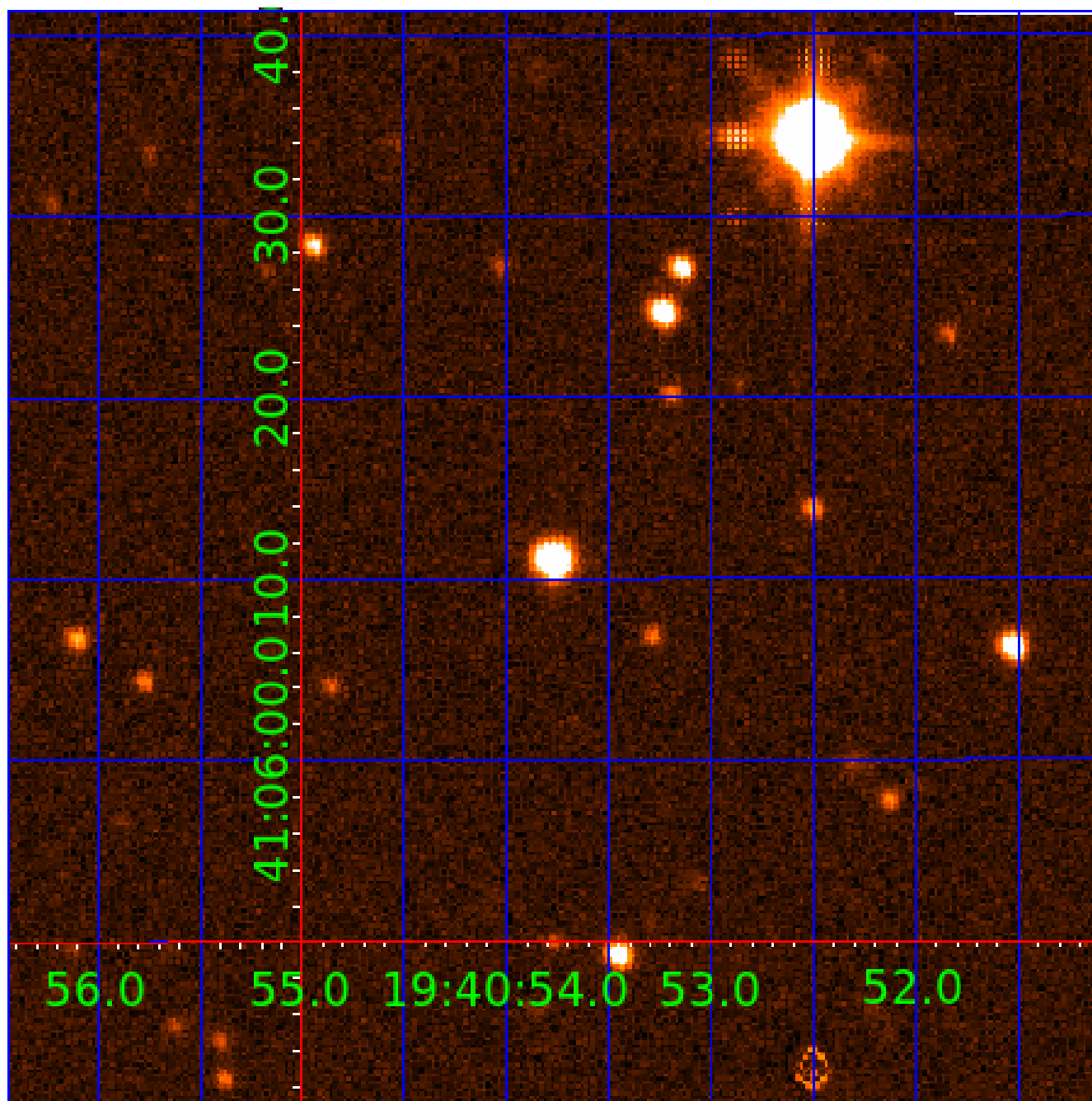


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005888009

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005888009-01	OBS	No	1.224306	132.166658	42.6	7.035	7.5	8.0	0.81	5079	0.51	881.53
005888009-02	OBS	No	441.957098	137.685714	696.6	8.475	15.1	9.4	0.81	5079	2.36	0.34

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005888009-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—CENT_RESOLVED_OFFSET—HALO_GHOST
005888009-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

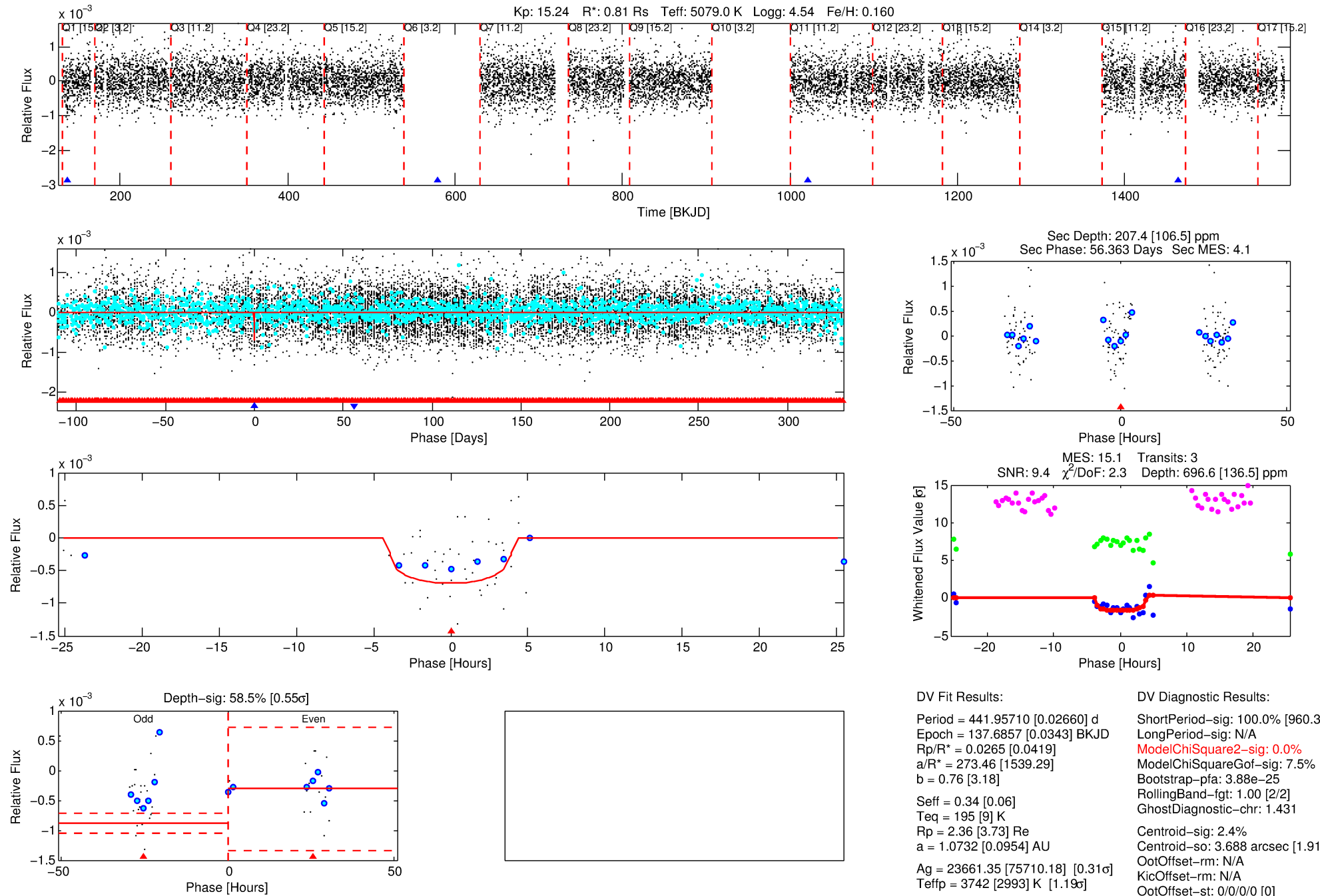
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005888009-02

No Significant Match Found

# DV One-Page Summary

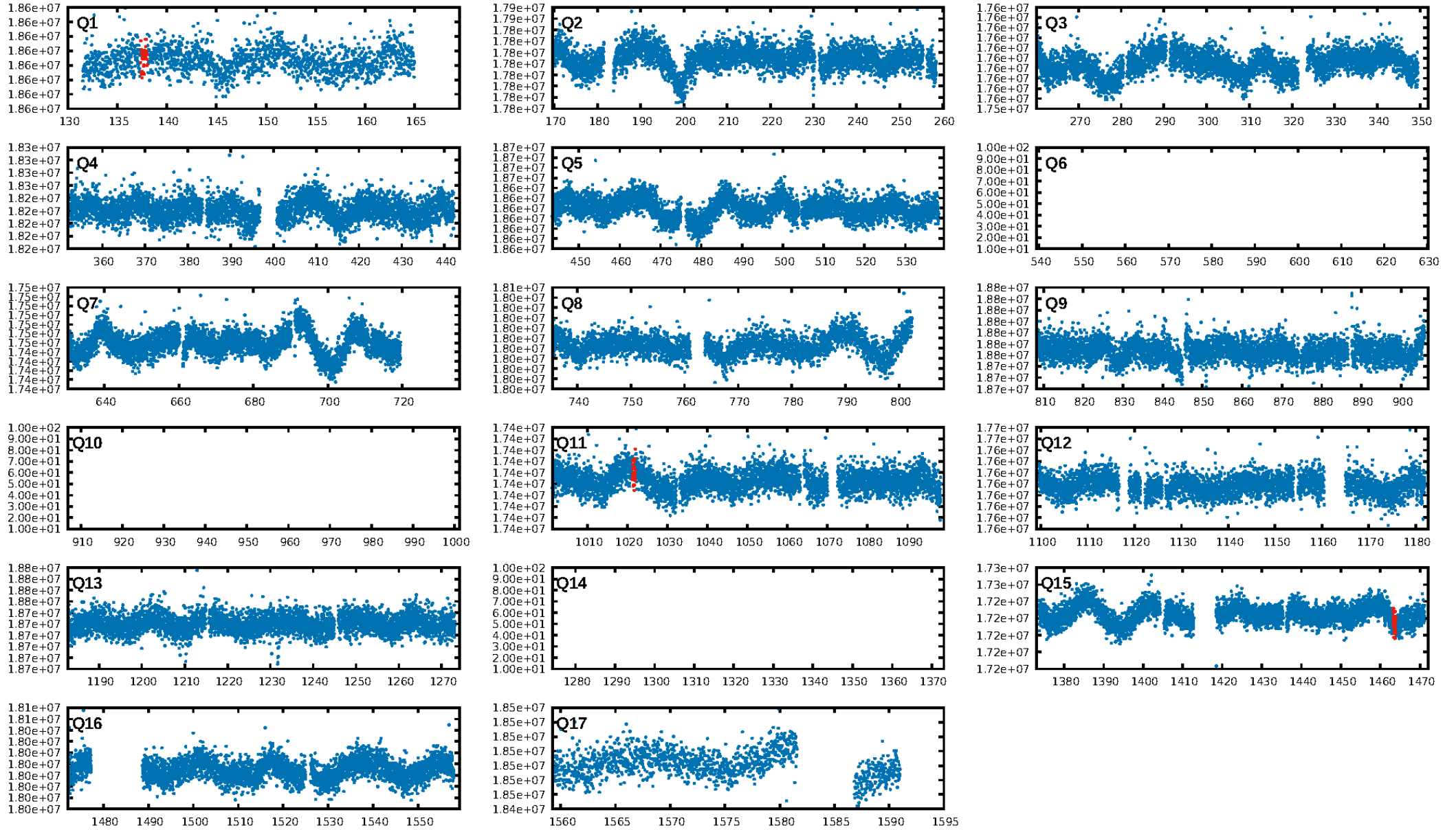
KIC: 5888009 Candidate: 2 of 2 Period: 441.957 d



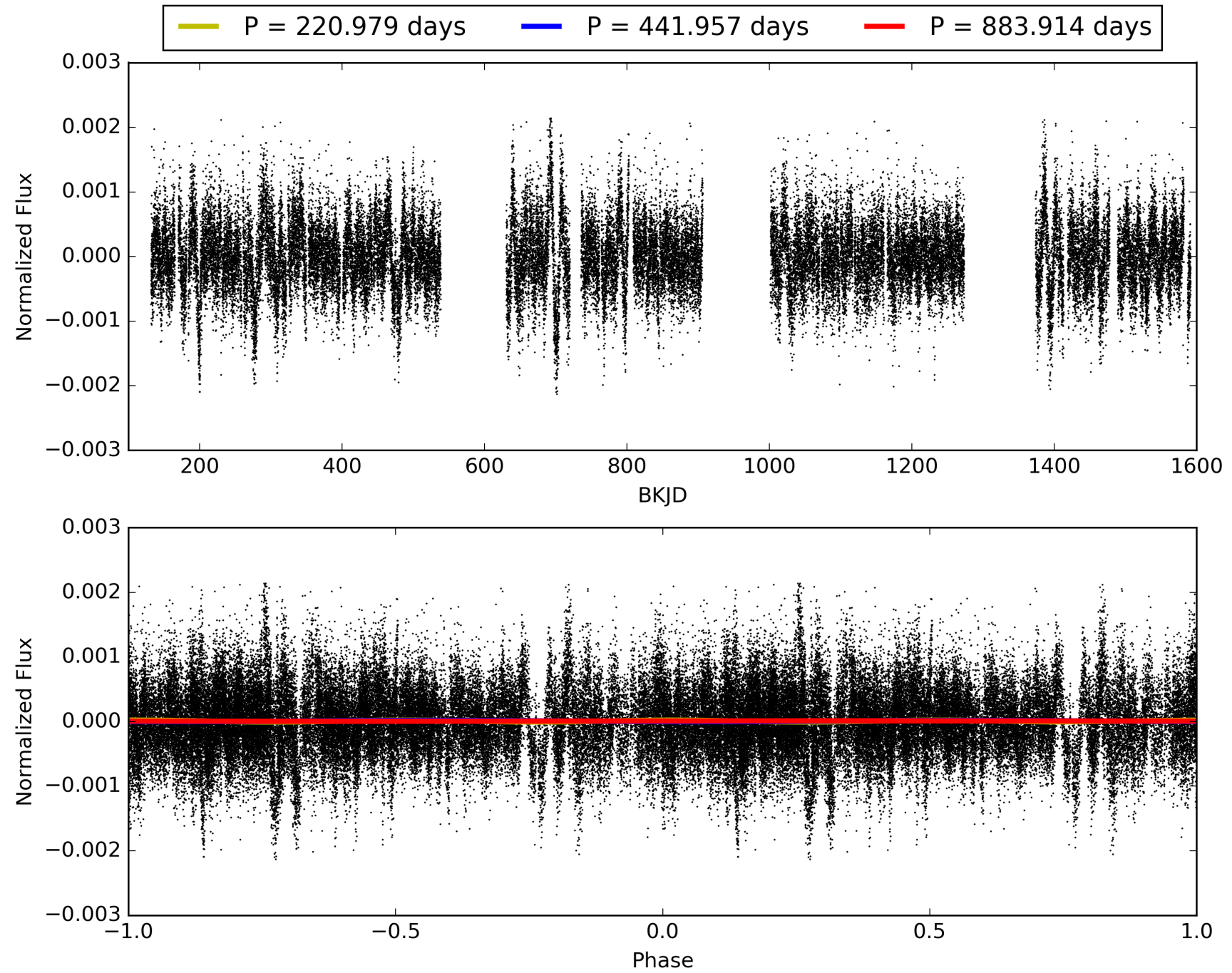
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:36:44 Z

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

# TCE 005888009-02, PDC Light Curves

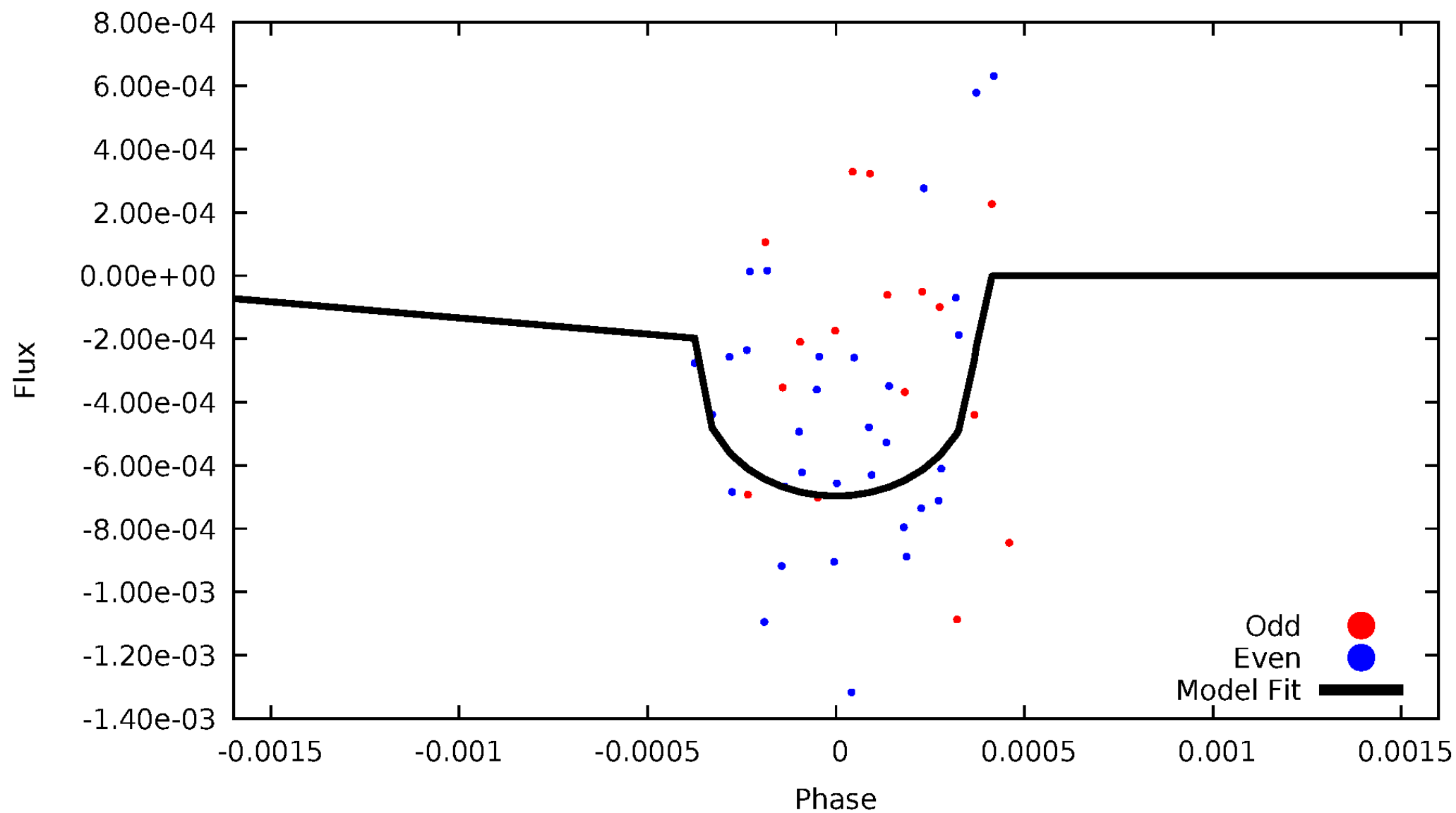


TCE 005888009-02



# DV Odd/Even

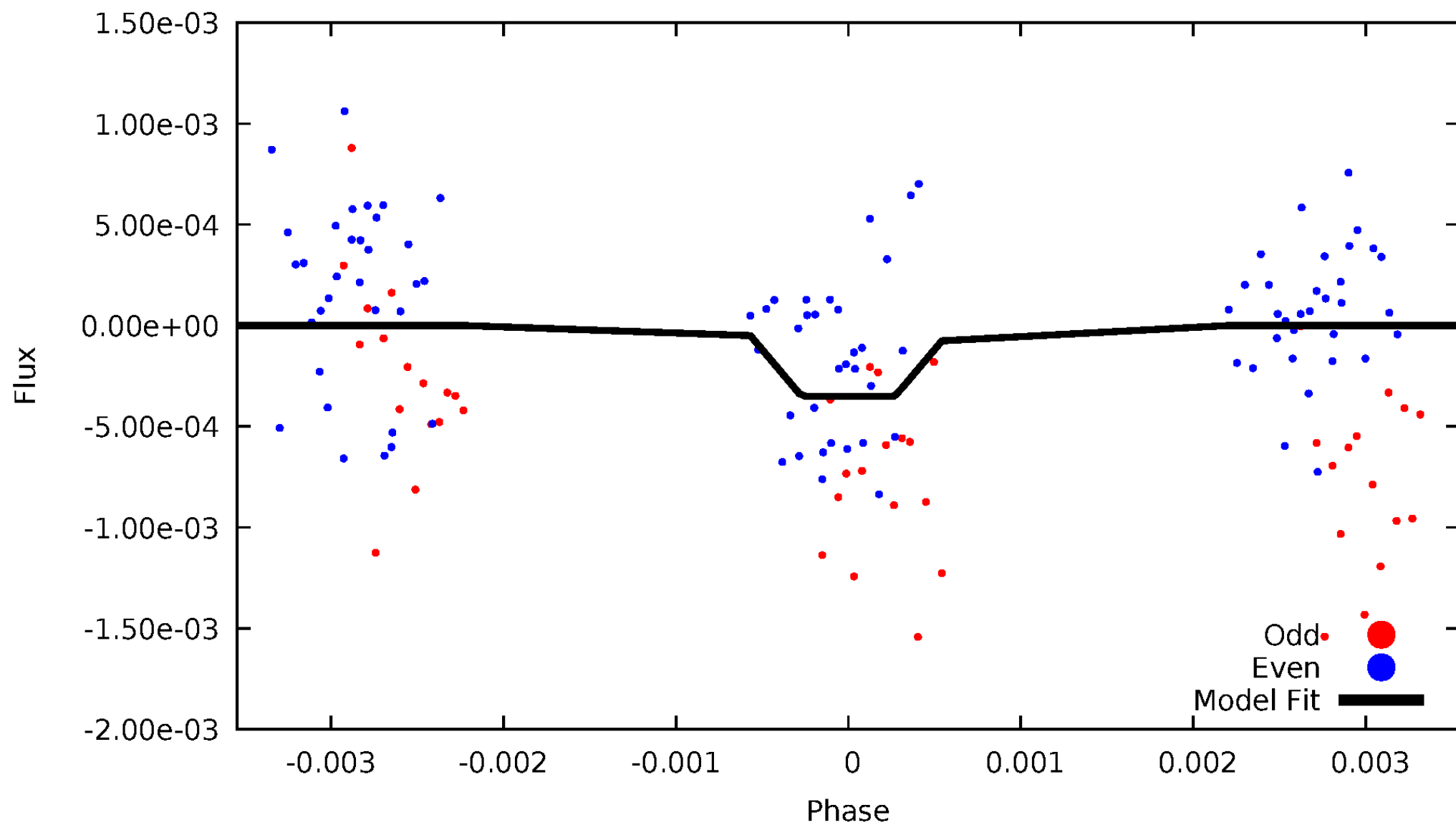
TCE 005888009-02





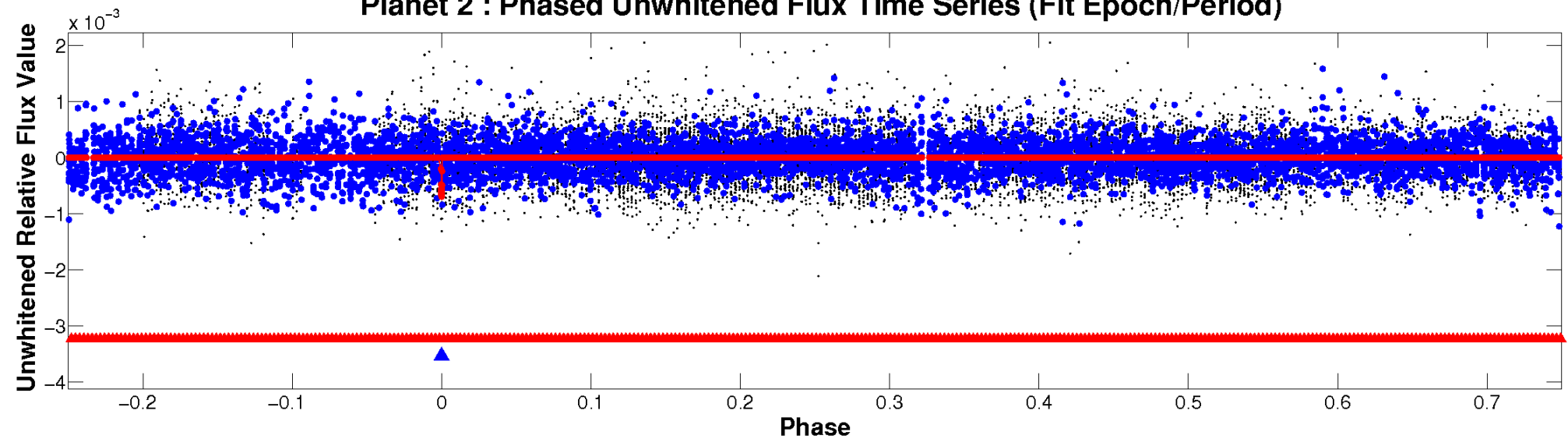
# ALT Odd/Even

TCE 005888009-02

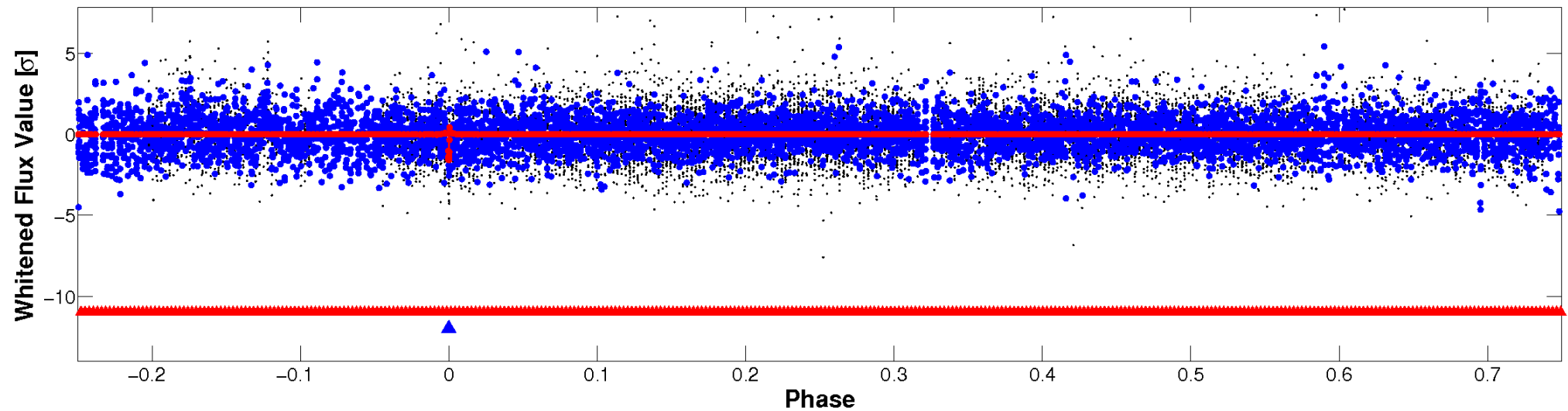


# Non-Whitened Vs. Whitened Light Curve

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

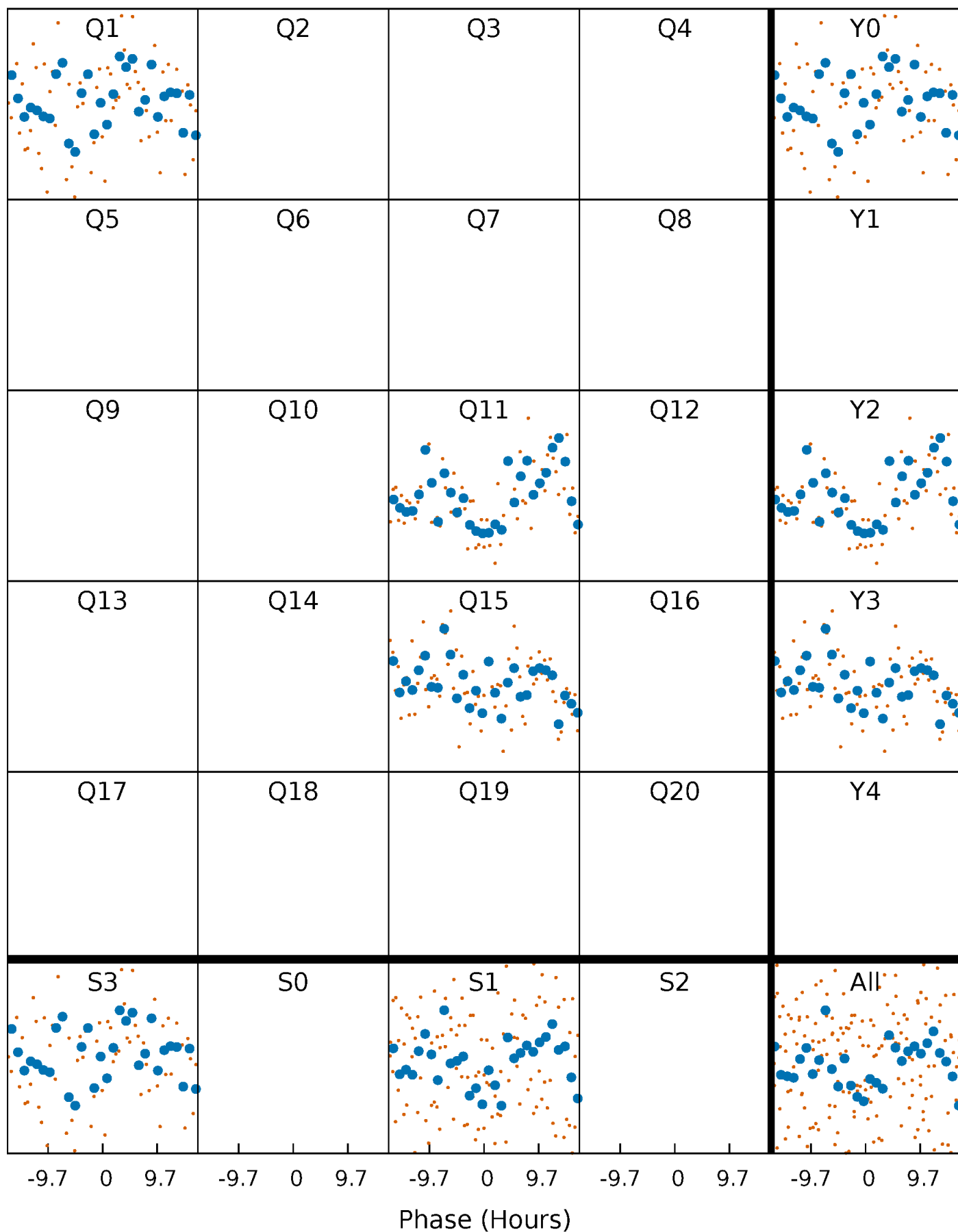


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



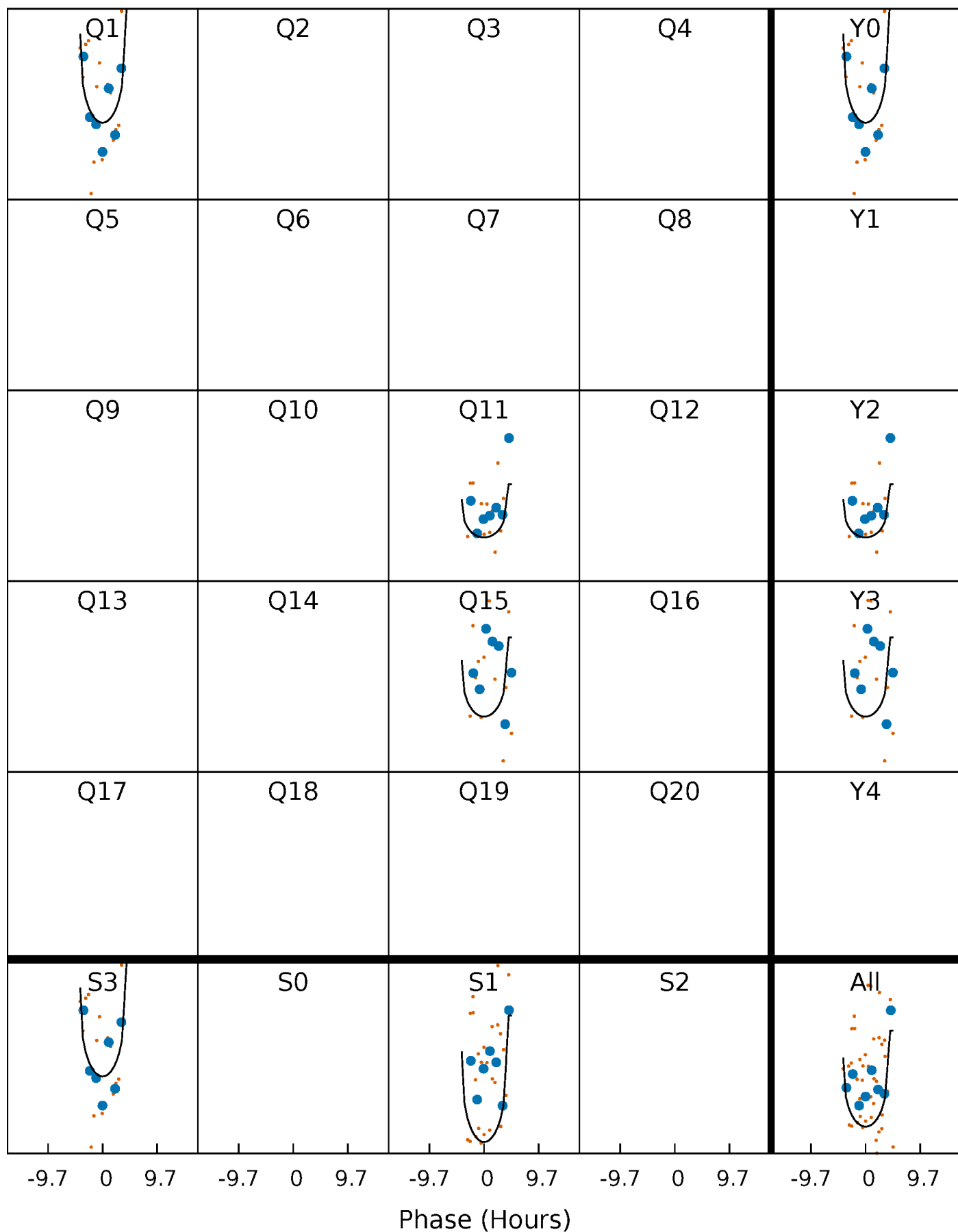
# PDC Quarter-Phased Transit Curves

TCE 005888009-02 P=441.957098 Days  $T_0=137.685714$  (BKJD)



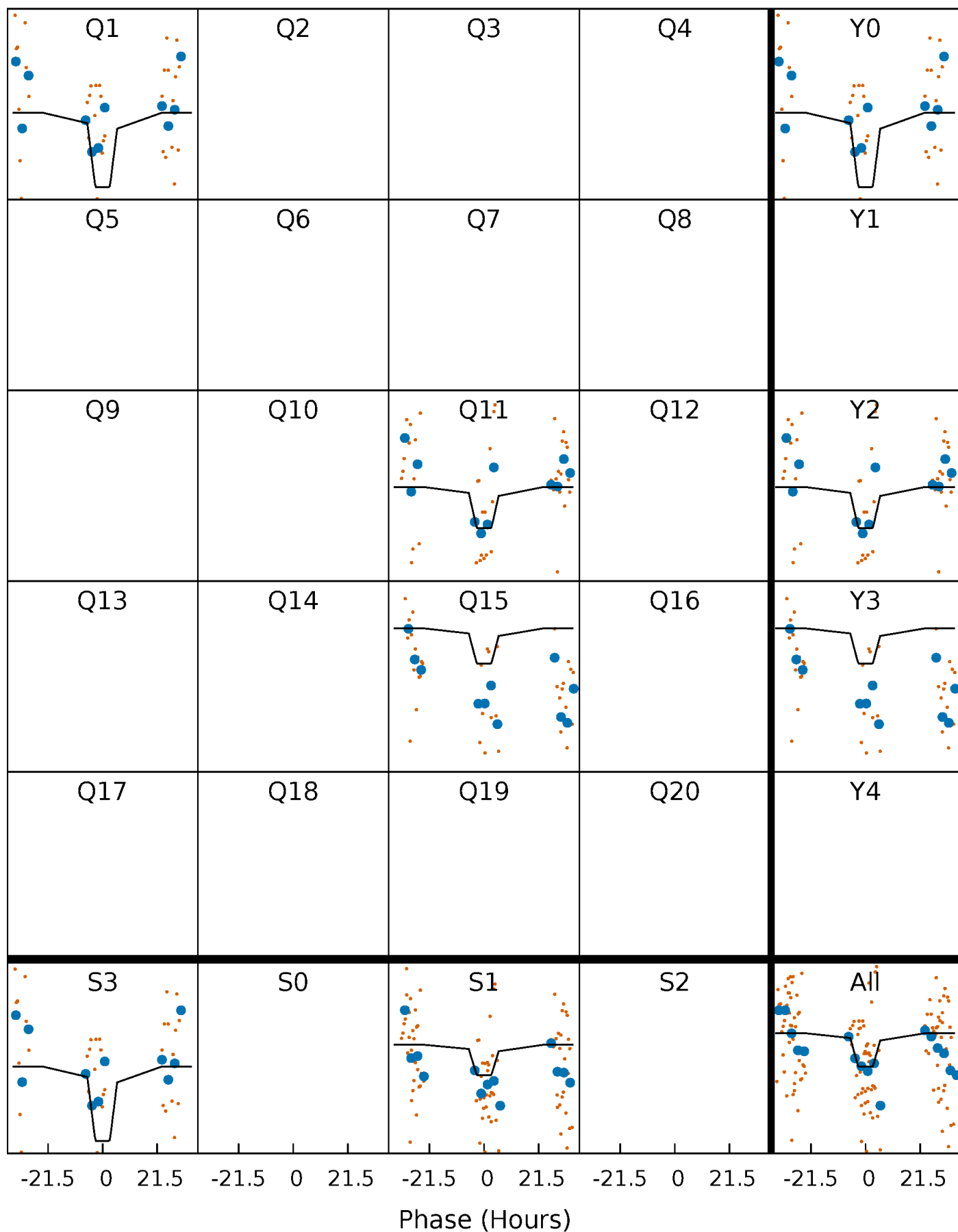
# DV Quarter-Phased Transit Curves

TCE 005888009-02 P=441.957098 Days  $T_0=137.685714$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005888009-02 P=441.916602 Days  $T_0=137.770911$  (BKJD)

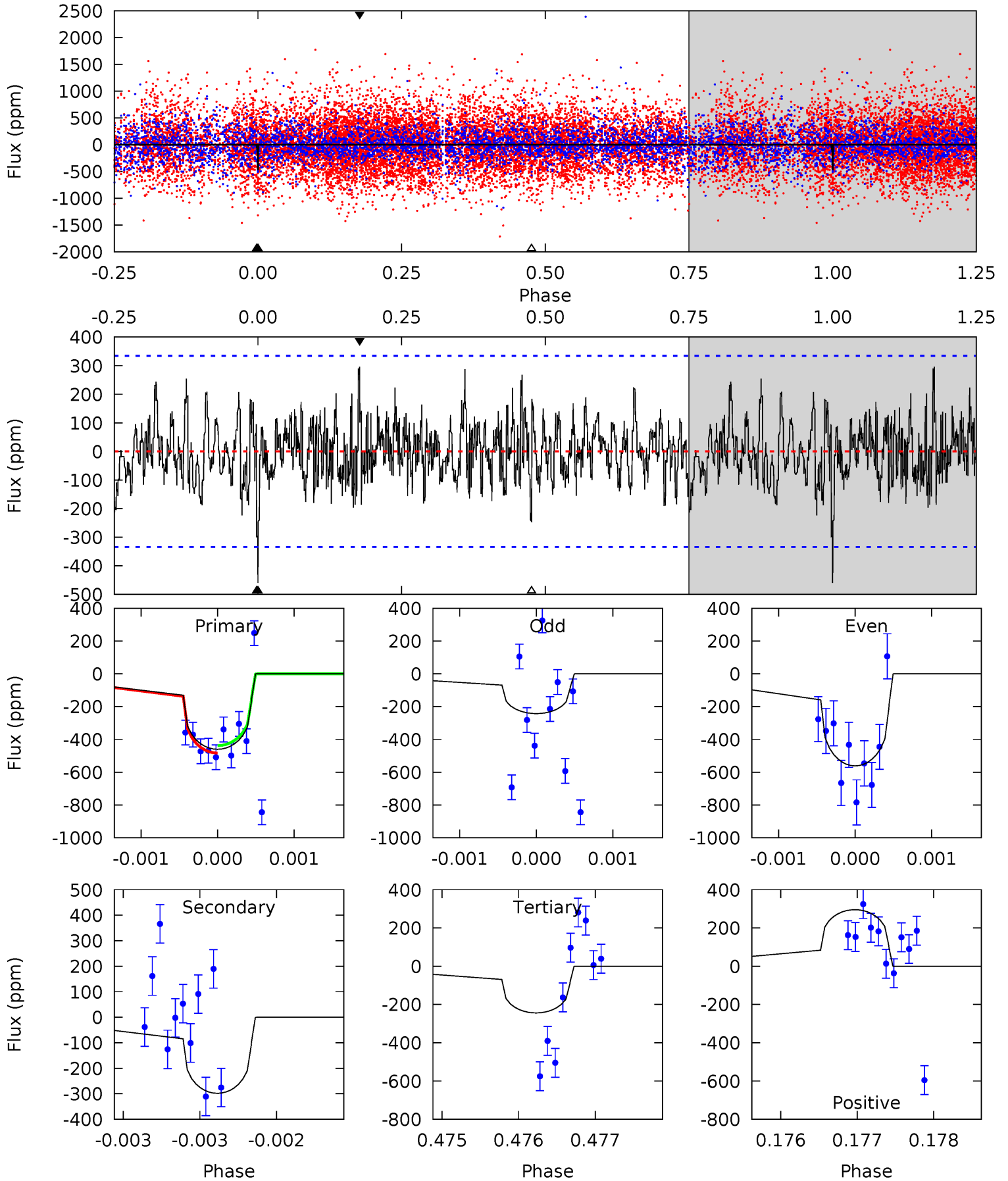




# DV Model-Shift Uniqueness Test

005888009-02, P = 441.957098 Days, E = 137.685714 Days

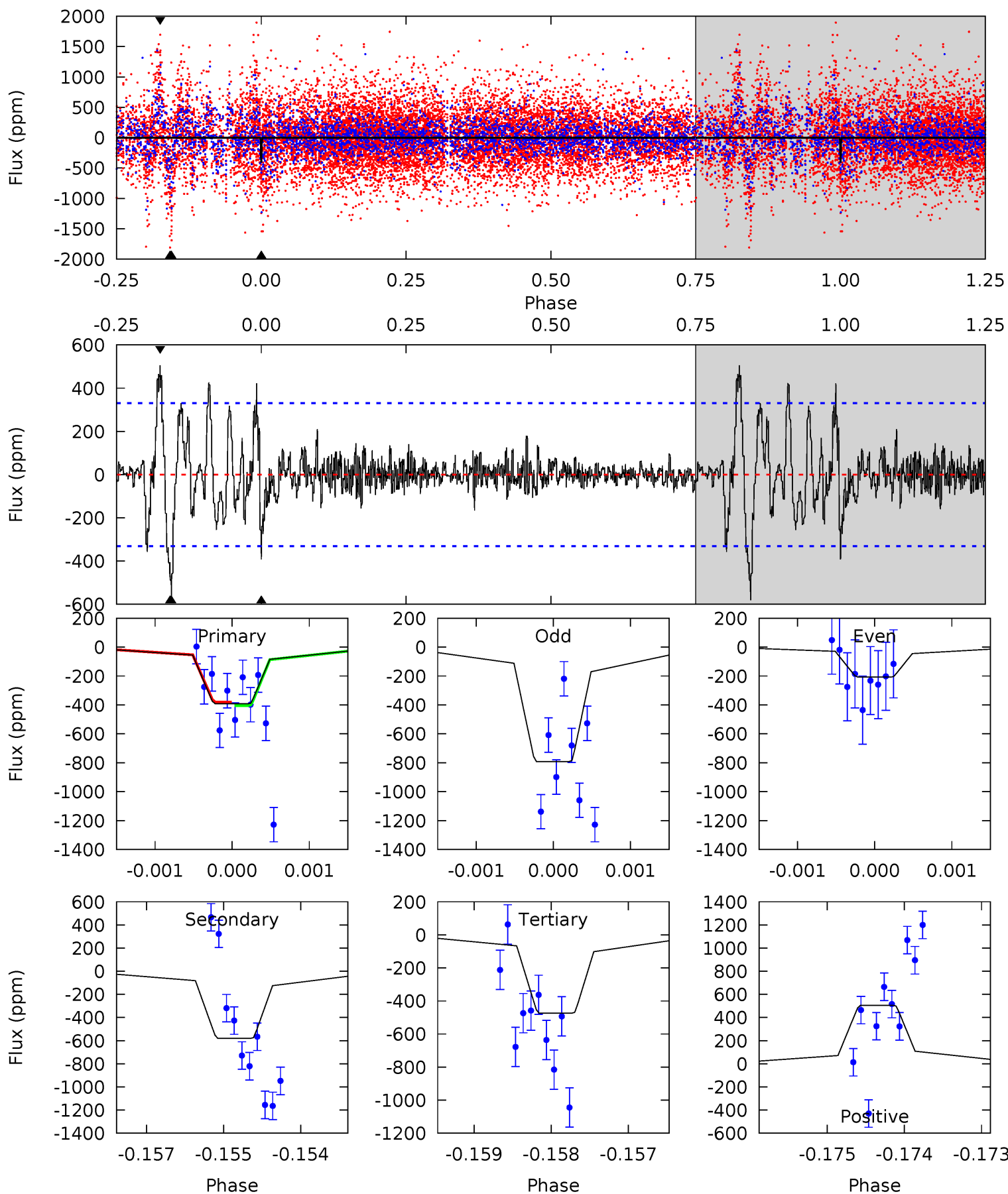
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.55	4.89	4.00	4.85	5.48	3.34	1.38	3.54	2.70	0.89	0.04	2.44	1.10	0.39	0.37



# Alt Model-Shift Uniqueness Test

005888009-02, P = 441.916602 Days, E = 137.770911 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
6.44	9.53	7.78	8.29	5.43	3.26	1.51	-1.34	-1.85	1.75	1.24	4.44	1.48	0.47	0.19



### Stellar Parameters For KIC 005888009

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	$5079^{+151}_{-136}$	$4.543^{+0.048}_{-0.072}$	$0.160^{+0.250}_{-0.300}$	$0.814^{+0.085}_{-0.071}$	$0.842^{+0.062}_{-0.074}$	$2.200^{+0.482}_{-0.511}$
	+3%/-3%	+1%/-2%	+156%/-188%	+10%/-9%	+7%/-9%	+22%/-23%
Source	PHO1	KIC0	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 005888009-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-298 \pm 61$	$3.49^{+3.19}_{-2.22}$	$274^{+11}_{-9}$	$3717^{+1847}_{-700}$	$14889^{+104294}_{-11123}$
Alt.	$-581 \pm 61$	$3.20^{+3.21}_{-2.19}$	$274^{+11}_{-10}$	$4326^{+3130}_{-896}$	$34652^{+344333}_{-25814}$

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

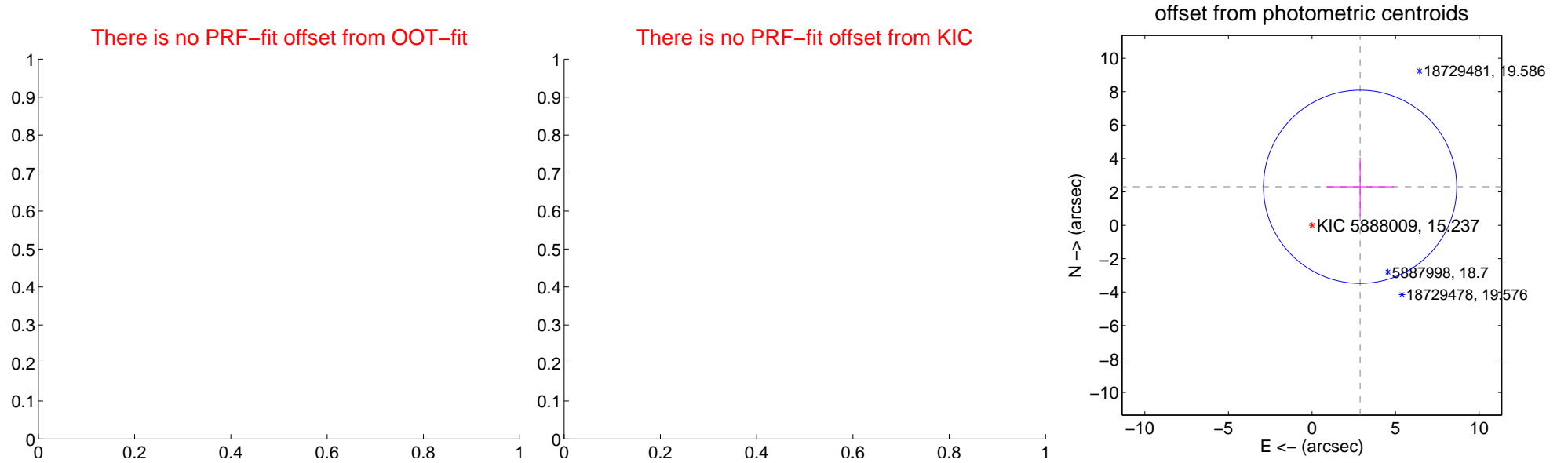
## DV Centroid Data

Supplemental centroid analysis for 005888009-02. Kepler magnitude: 15.24. Transit SNR 9.43

There are 0 quarters with good PRF difference image offsets

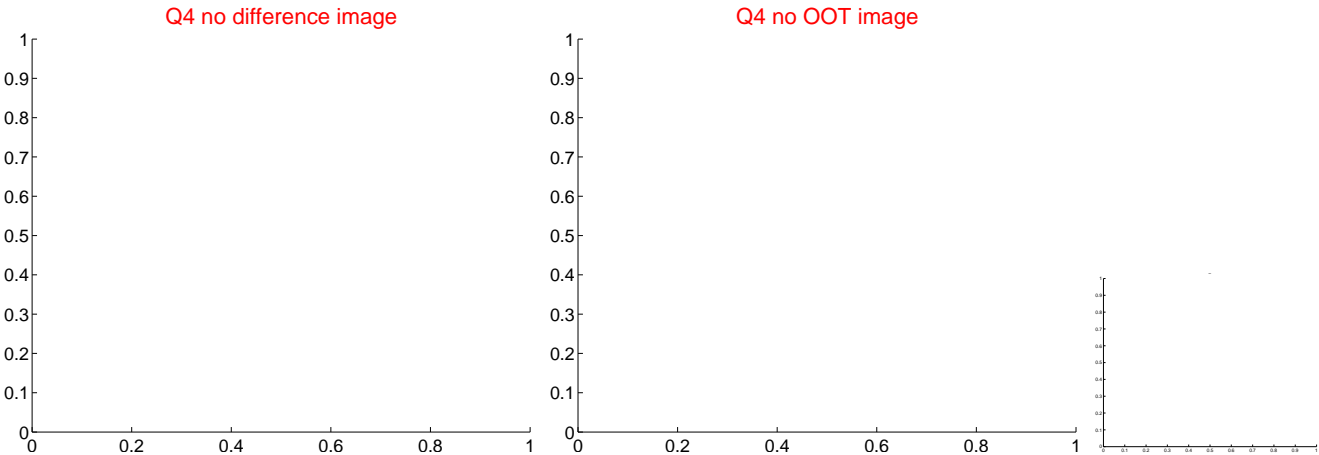
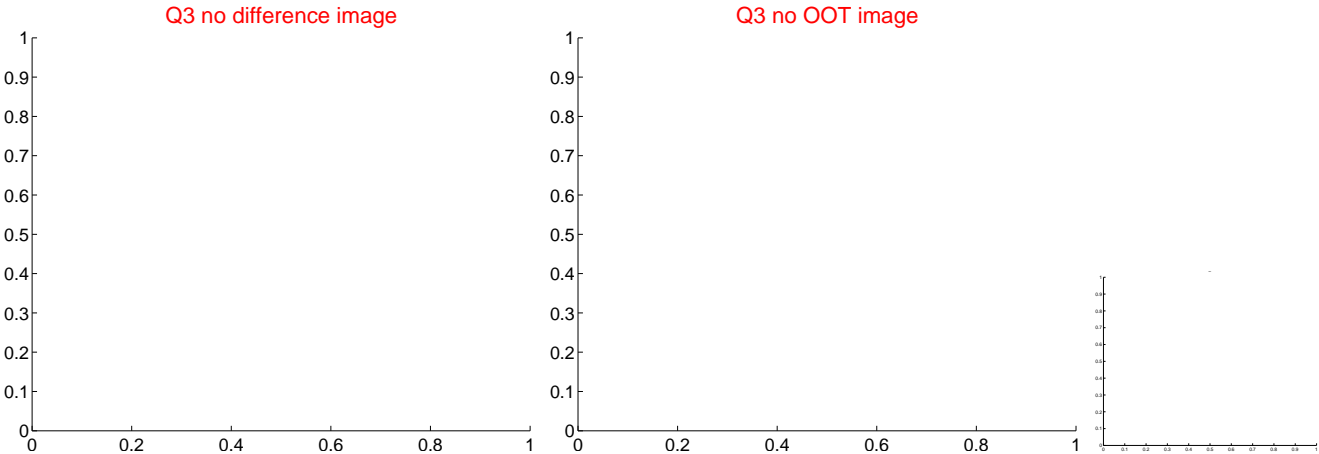
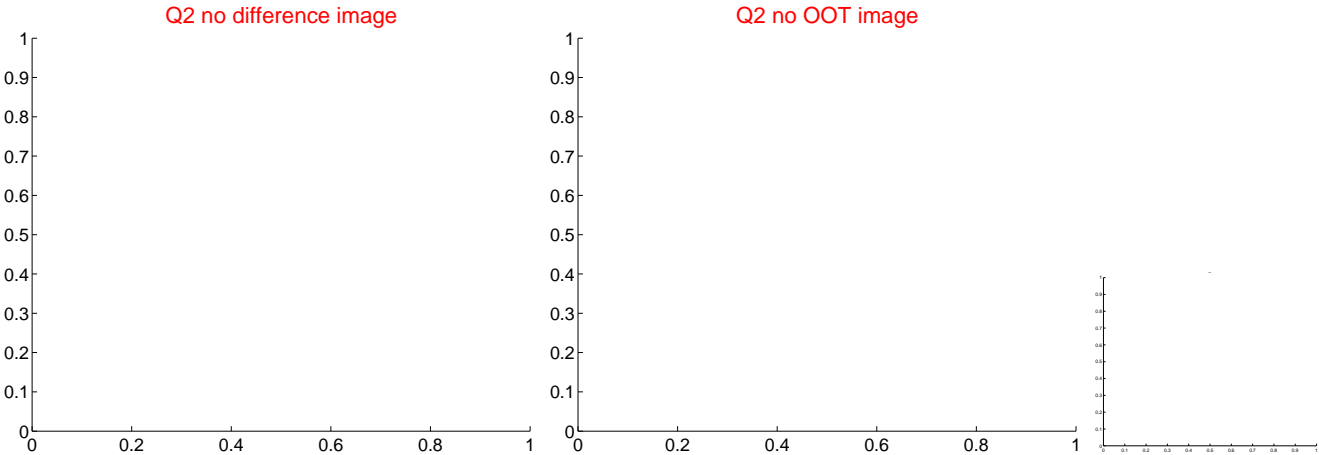
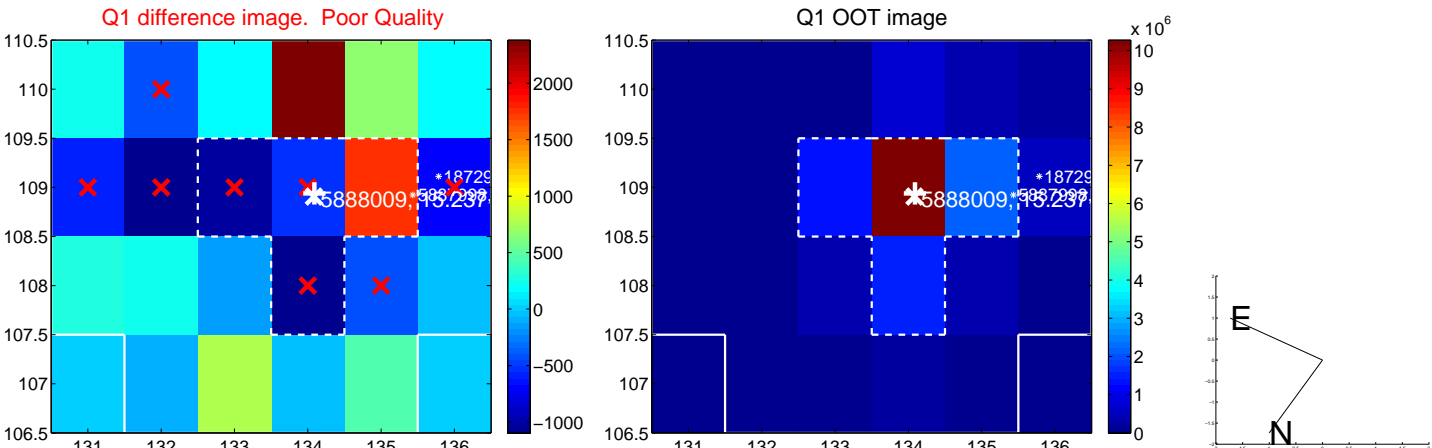
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$3.69 \pm 1.93$	1.91	$-2.88 \pm 2.03$	$2.30 \pm 1.75$



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





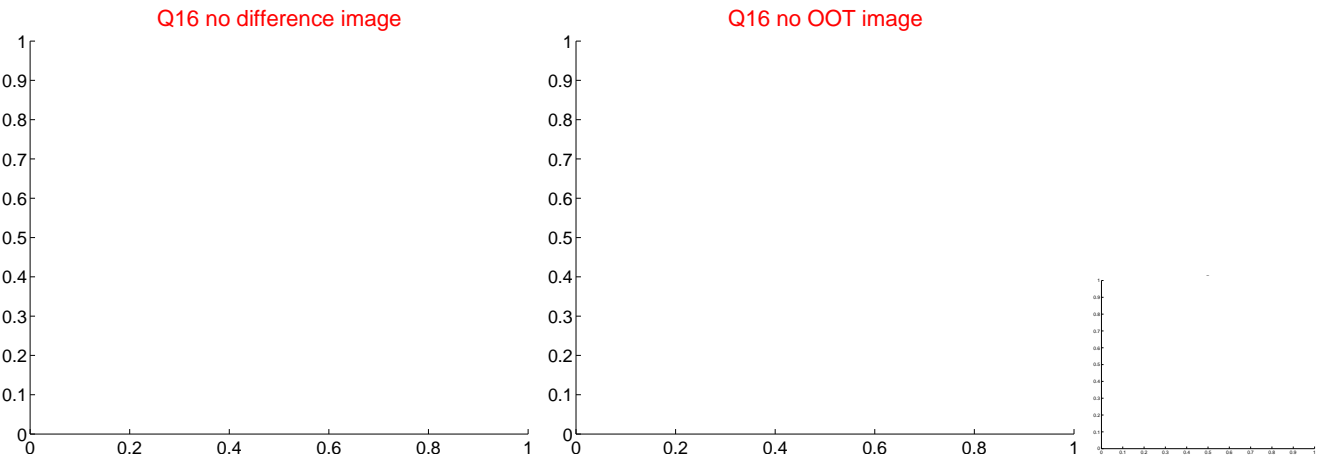
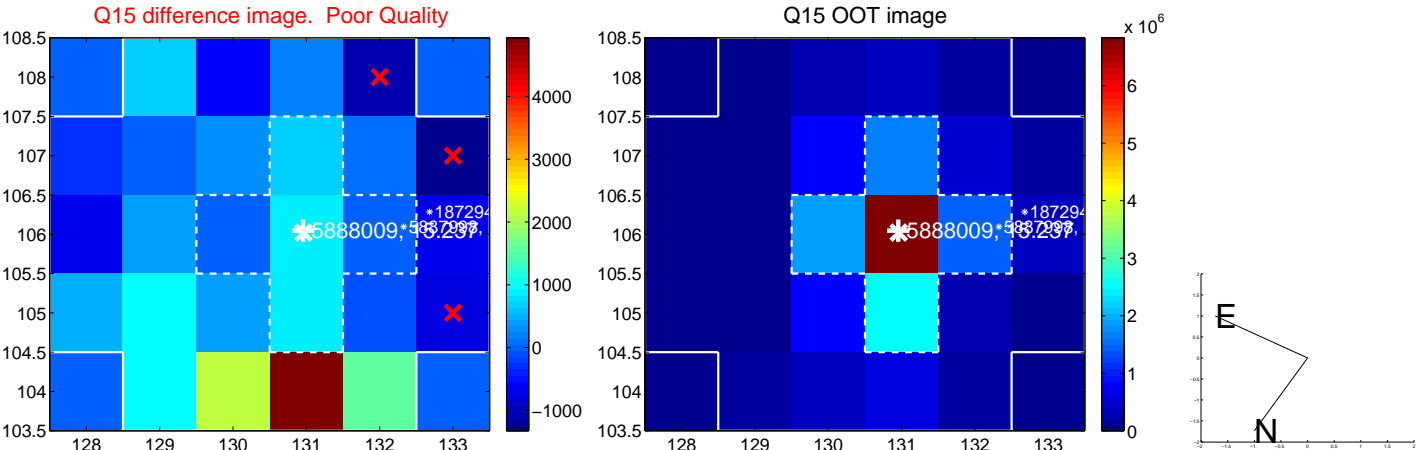
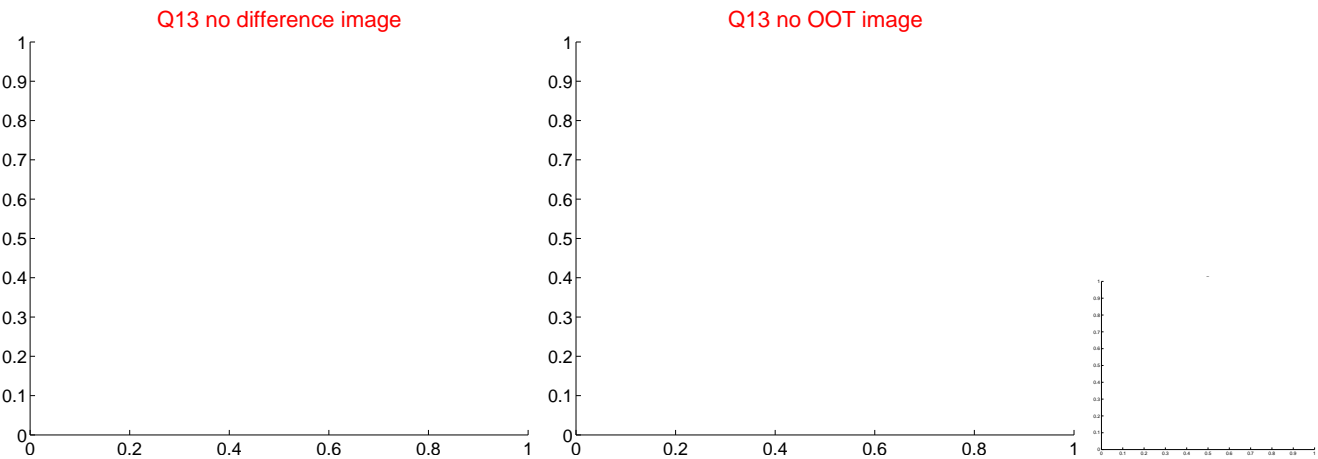
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



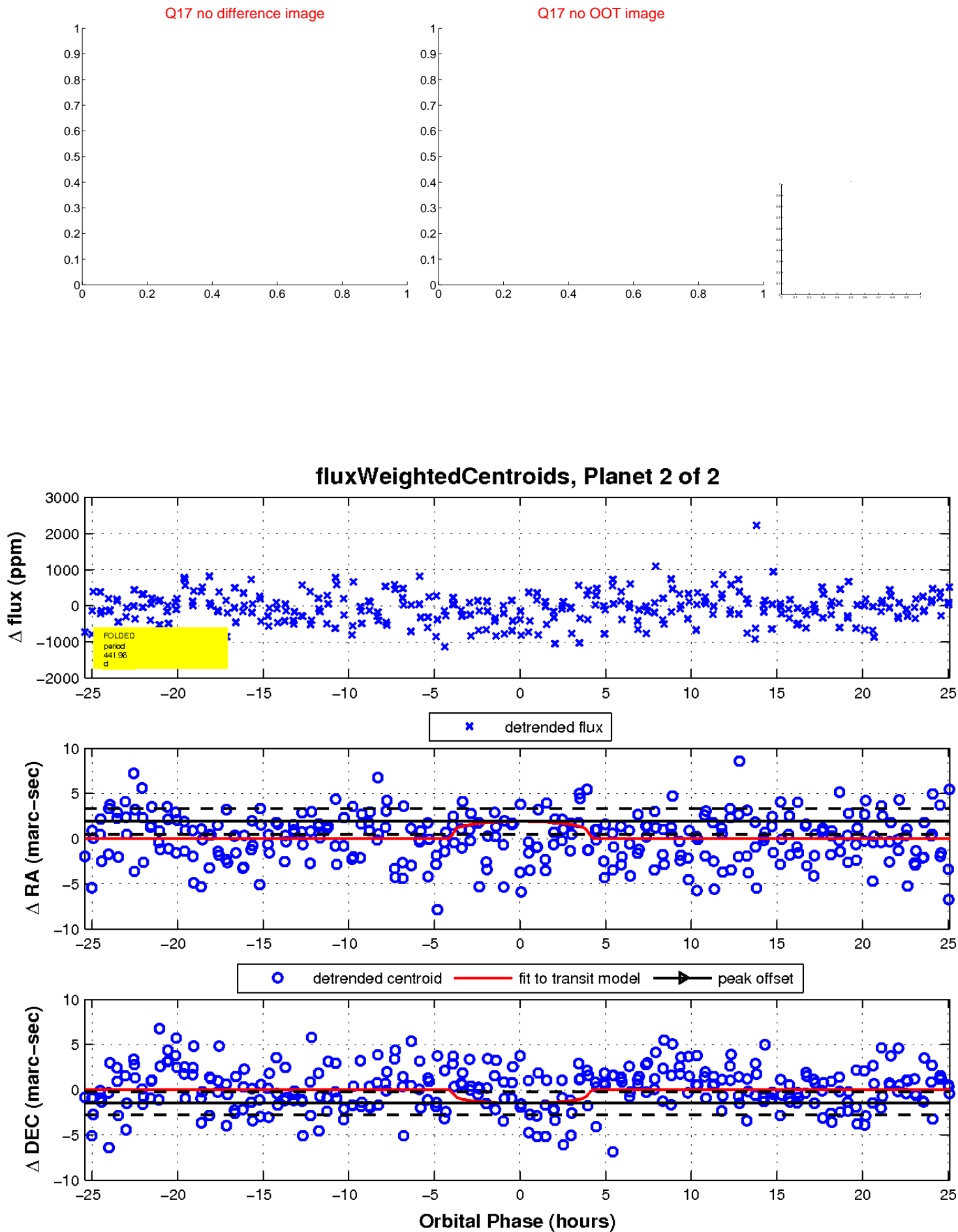
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.



UKIRT Image

Declination

