

# KIC 005558085

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005558085-01	OBS	No	2.822114	132.346274	23.5	11.000	8.6	7.4	2.21	6495	1.28	4097.92
005558085-02	OBS	No	293.930746	403.175240	295.7	11.347	12.3	7.5	2.21	6495	4.14	8.36
005558085-03	OBS	No	412.447895	269.113007	180.2	20.883	8.8	5.5	2.21	6495	3.35	5.32
005558085-04	OBS	No	228.512946	159.552624	227.2	10.563	7.6	8.1	2.21	6495	6.49	11.70
005558085-05	OBS	No	54.431982	138.166320	151.1	6.370	7.4	8.6	2.21	6495	2.85	79.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005558085-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005558085-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
005558085-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005558085-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005558085-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT

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

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

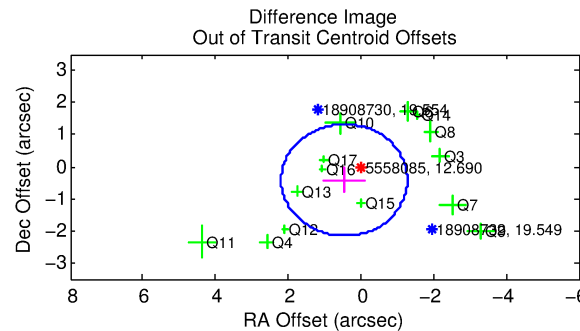
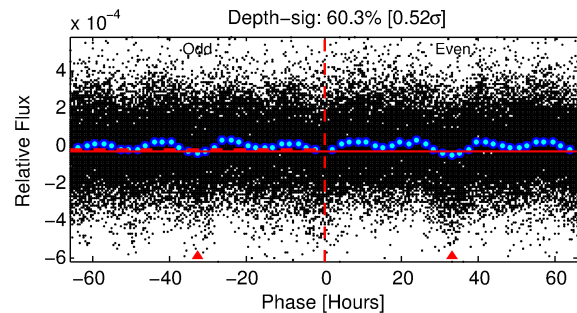
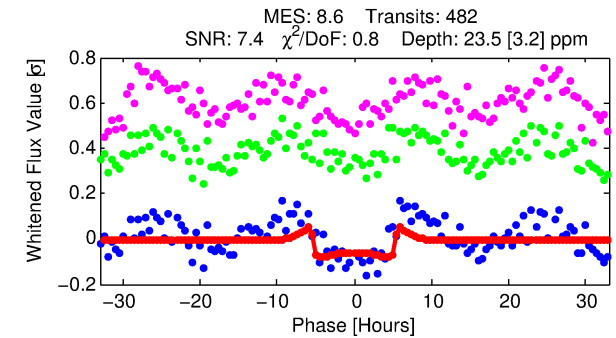
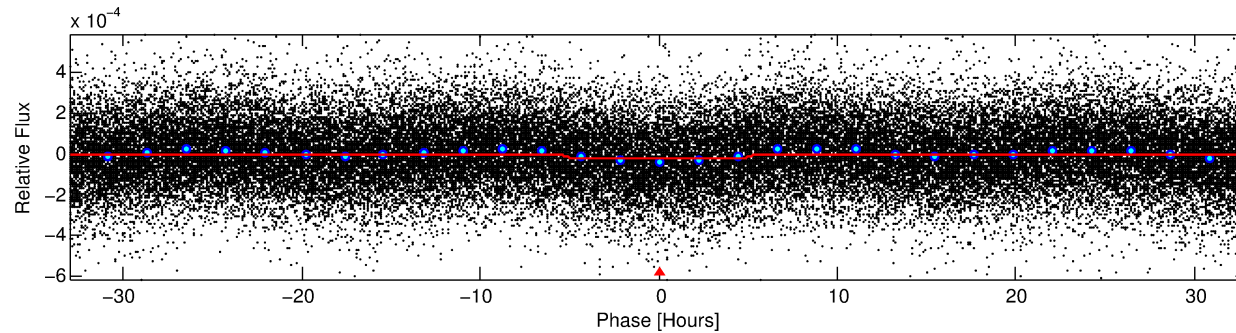
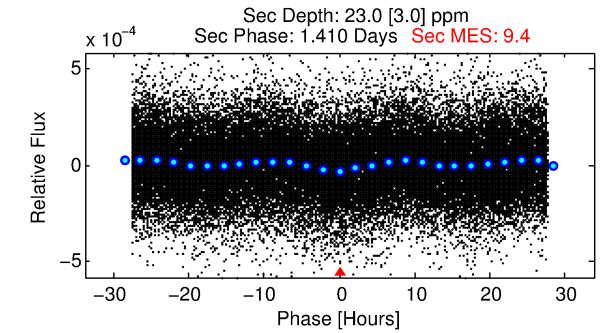
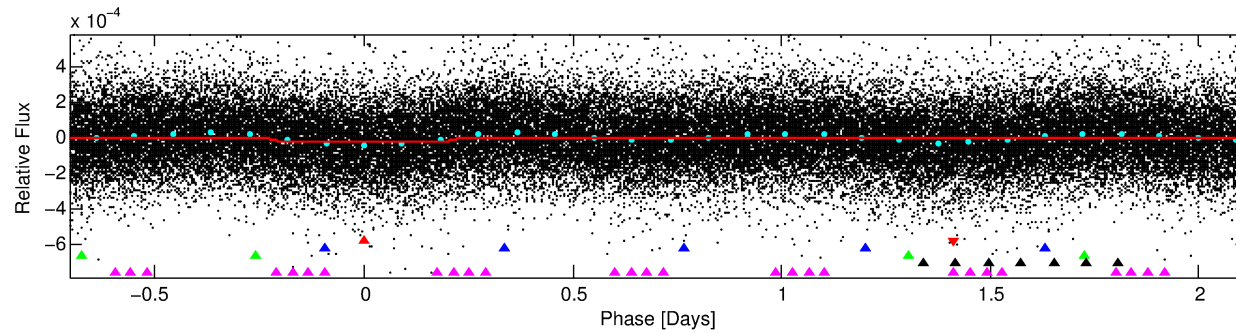
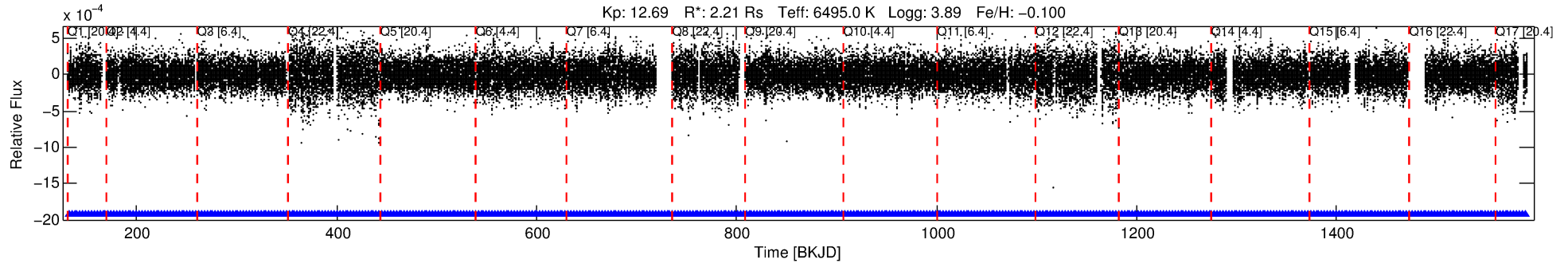
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005558085-01

No Significant Match Found

# DV One-Page Summary

KIC: 5558085 Candidate: 1 of 5 Period: 2.822 d



## DV Fit Results:

Period = 2.82211 [0.00003] d  
Epoch = 132.3463 [0.0064] BKJD  
Rp/R\* = 0.0053 [0.0008]  
a/R\* = 1.23 [0.31]  
b = 0.92 [0.12]  
Seff = 4097.92 [2090.13]  
Teq = 2040 [260] K  
Rp = 1.28 [0.45] Re  
a = 0.0437 [0.0135] AU  
Ag = 14.76 [8.69] [1.58σ]  
**Teffp = 6182 [526] K [7.06σ]**

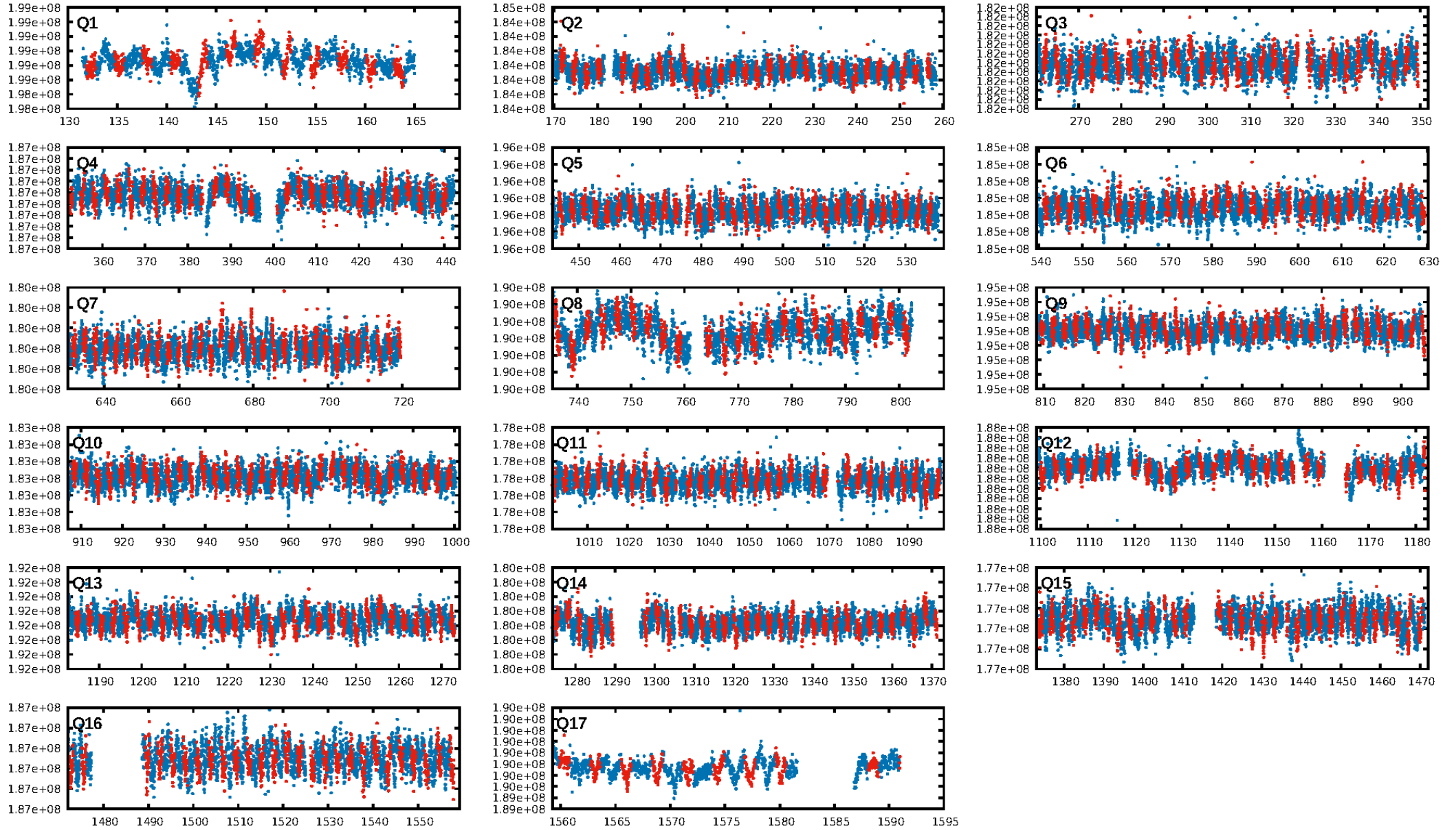
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [97.44σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 1.77e-12**  
RollingBand-fgt: 1.00 [461/461]  
GhostDiagnostic-chr: 1.623  
Centroid-sig: 1.1%  
Centroid-so: 1.237 arcsec [1.68σ]  
OotOffset-rm: 0.623 arcsec [1.08σ]  
KicOffset-rm: 0.707 arcsec [1.15σ]  
OotOffset-st: 3/4/4/3 [14]  
KicOffset-st: 3/4/4/3 [14]  
DiffImageQuality-fgm: 0.64 [9/14]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:45:59 Z

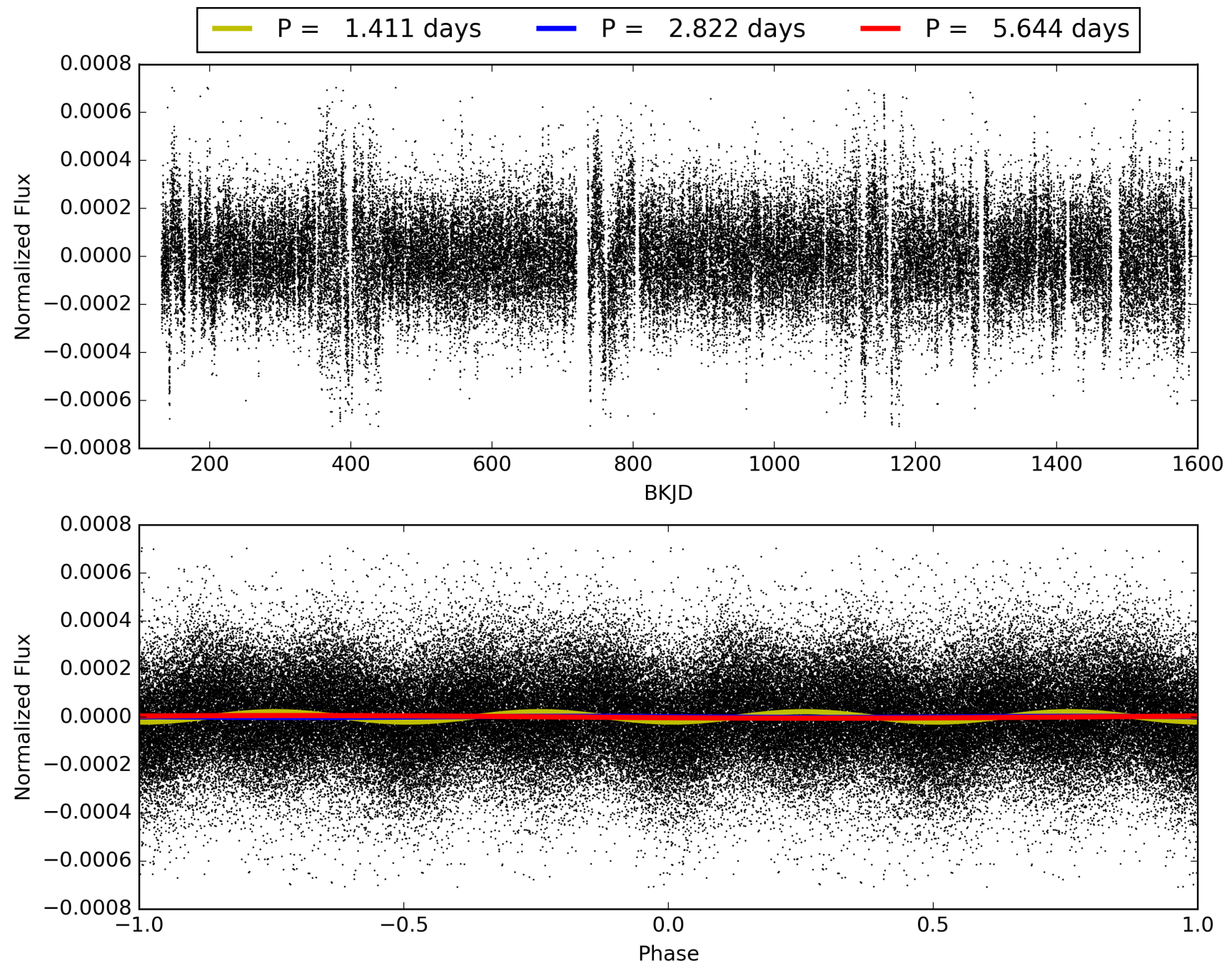
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 005558085-01, PDC Light Curves





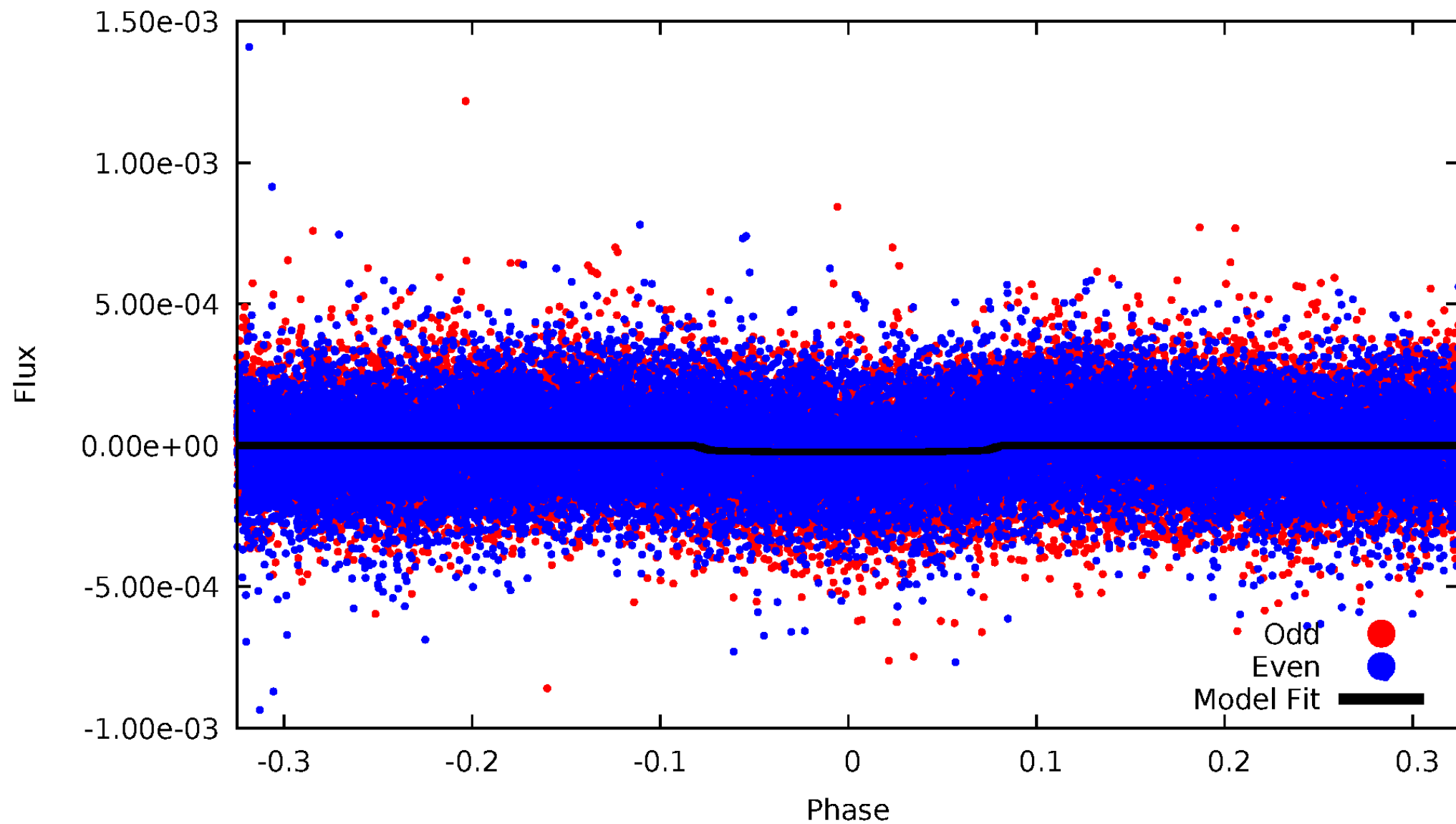
TCE 005558085-01





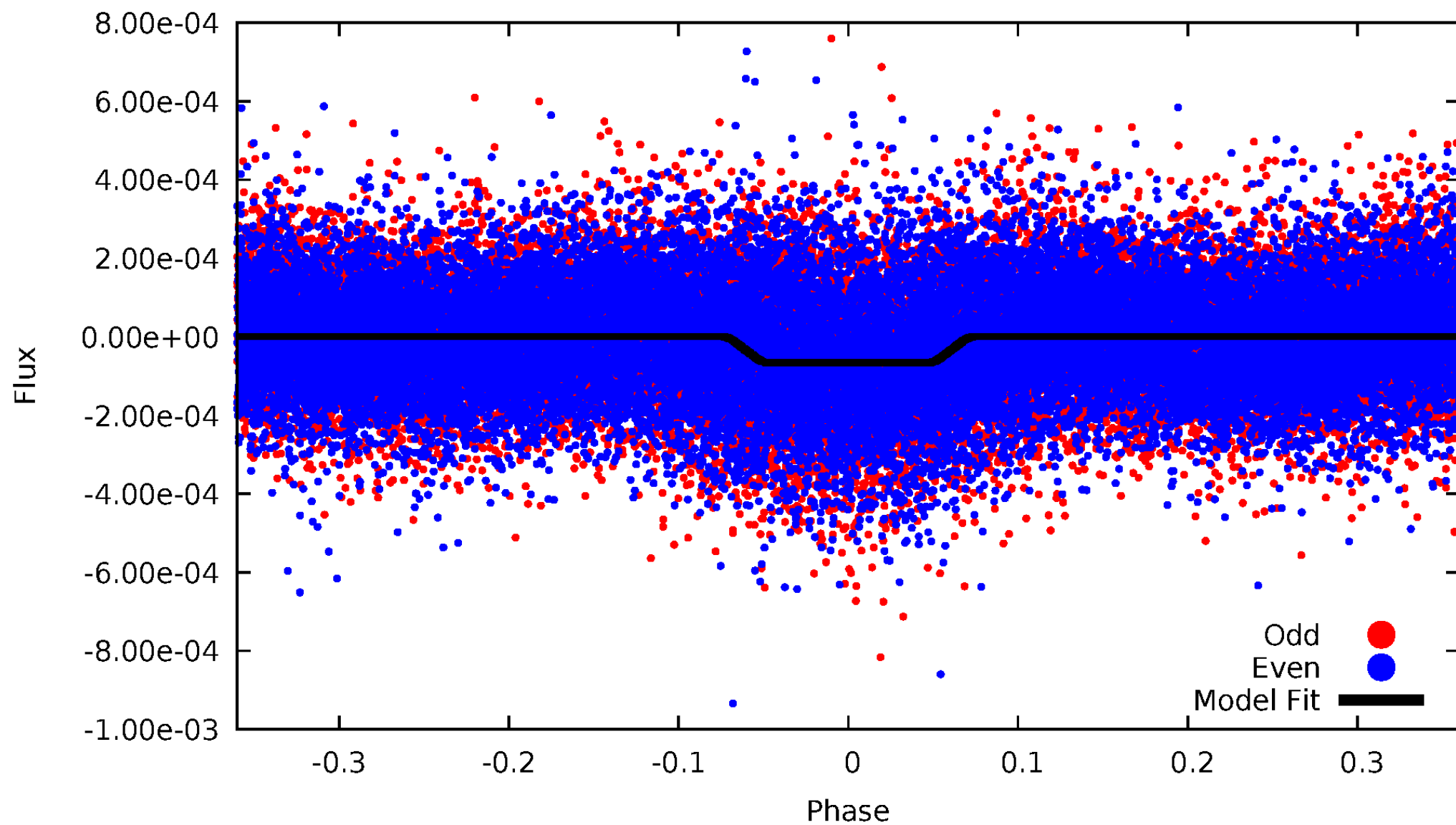
# DV Odd/Even

TCE 005558085-01



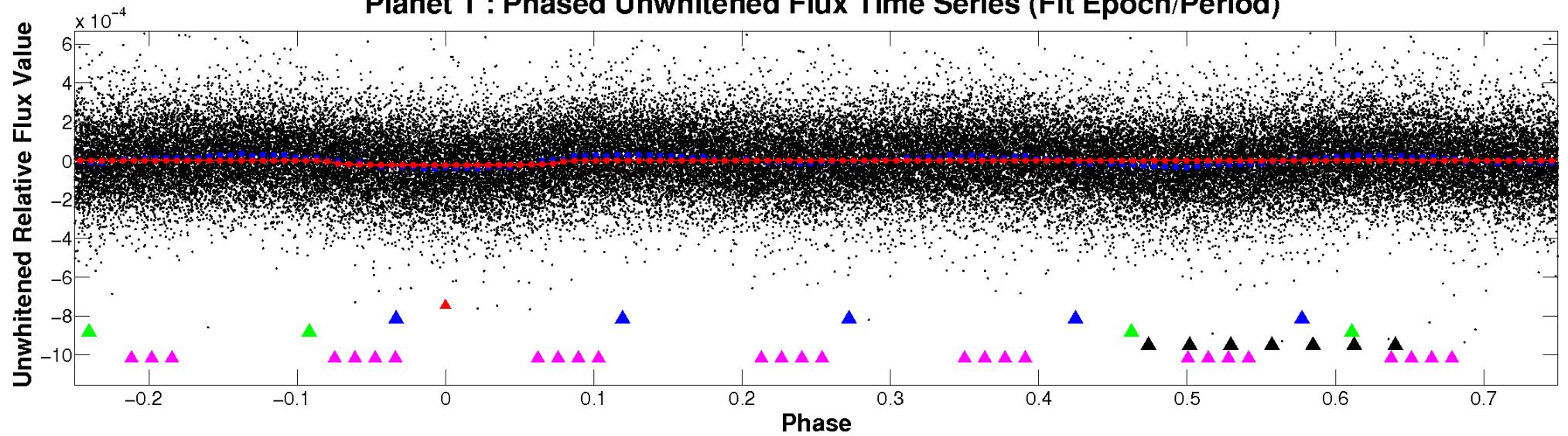
# ALT Odd/Even

TCE 005558085-01

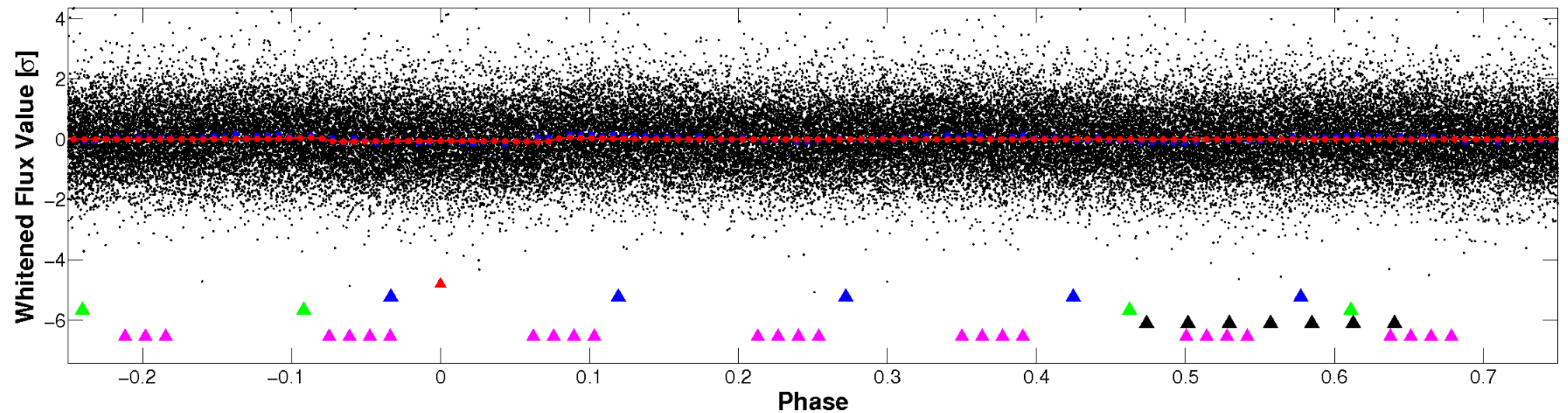


# Non-Whitened Vs. Whitened Light Curve

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



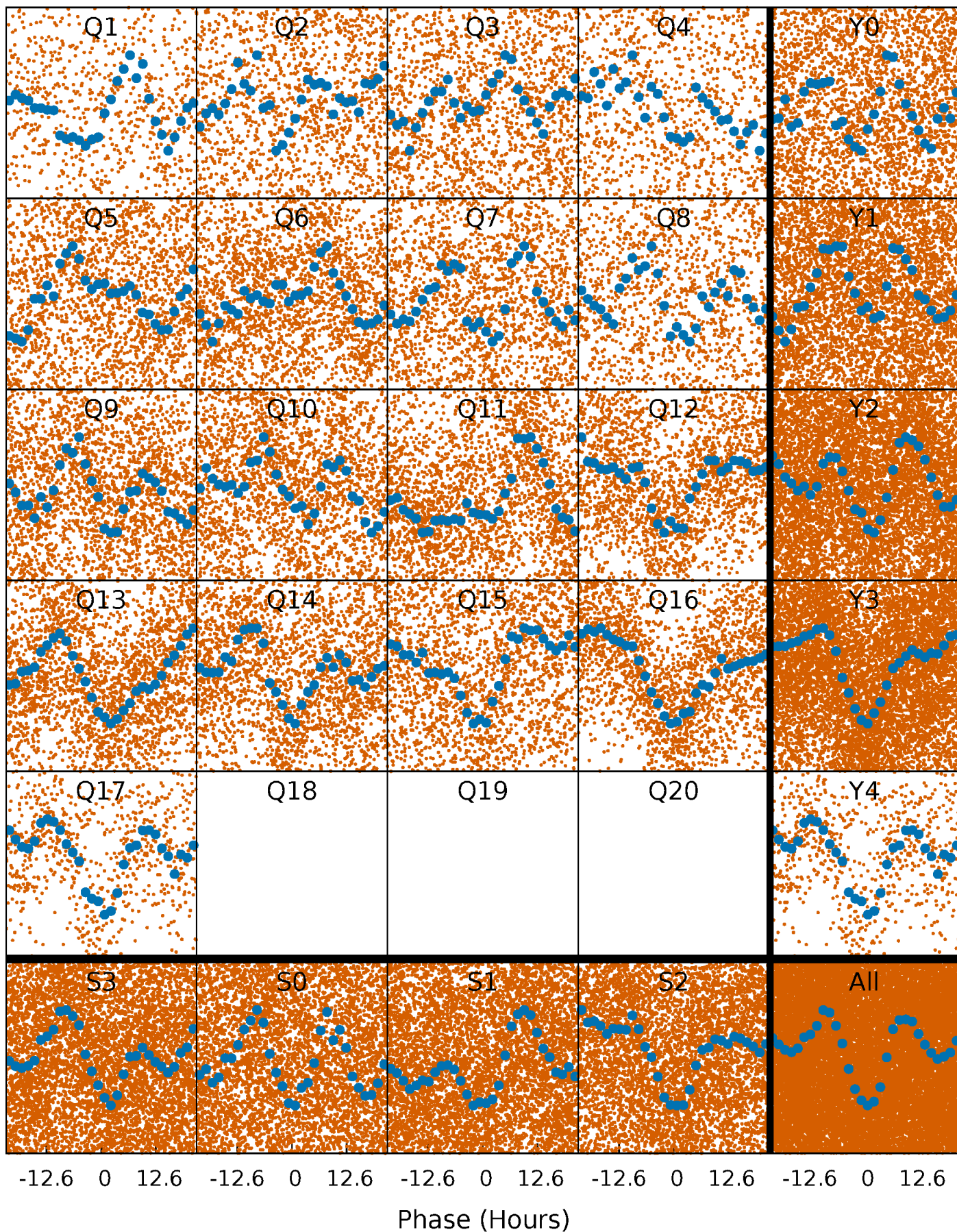
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

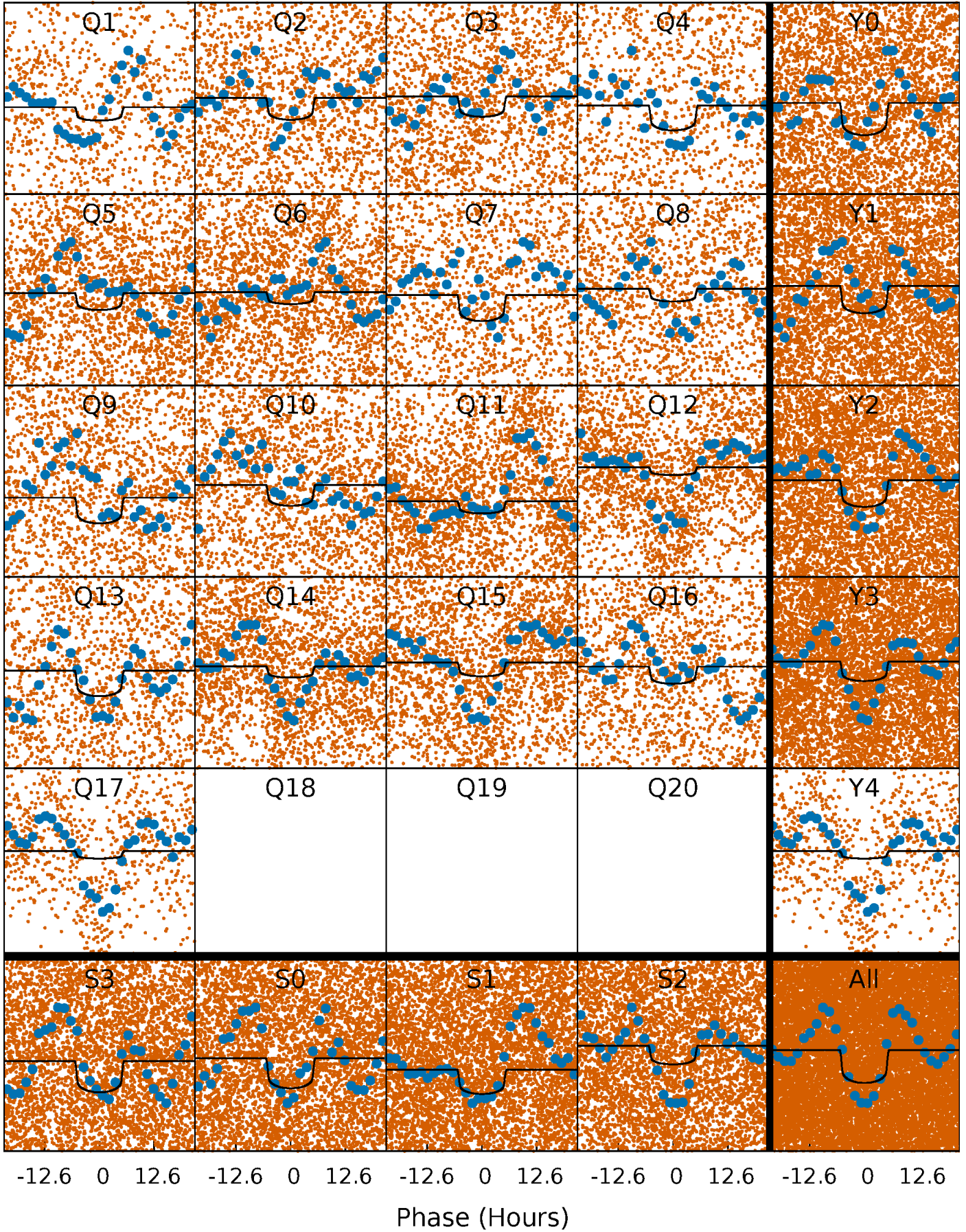
TCE 005558085-01 P= 2.822114 Days  $T_0=132.346274$  (BKJD)





# DV Quarter-Phased Transit Curves

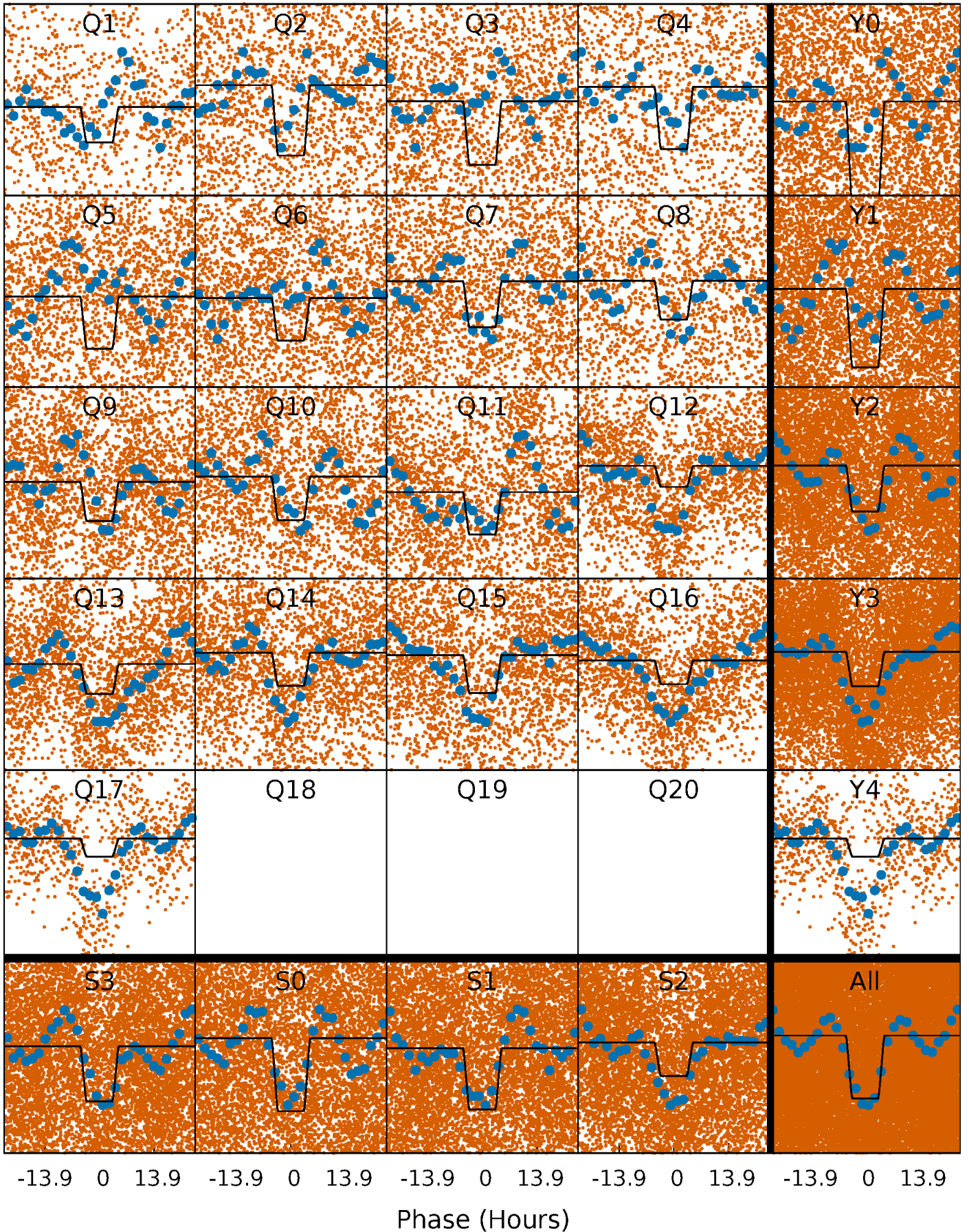
TCE 005558085-01 P= 2.822114 Days  $T_0=132.346274$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 005558085-01 P= 2.822159 Days  $T_0=132.349324$  (BKJD)

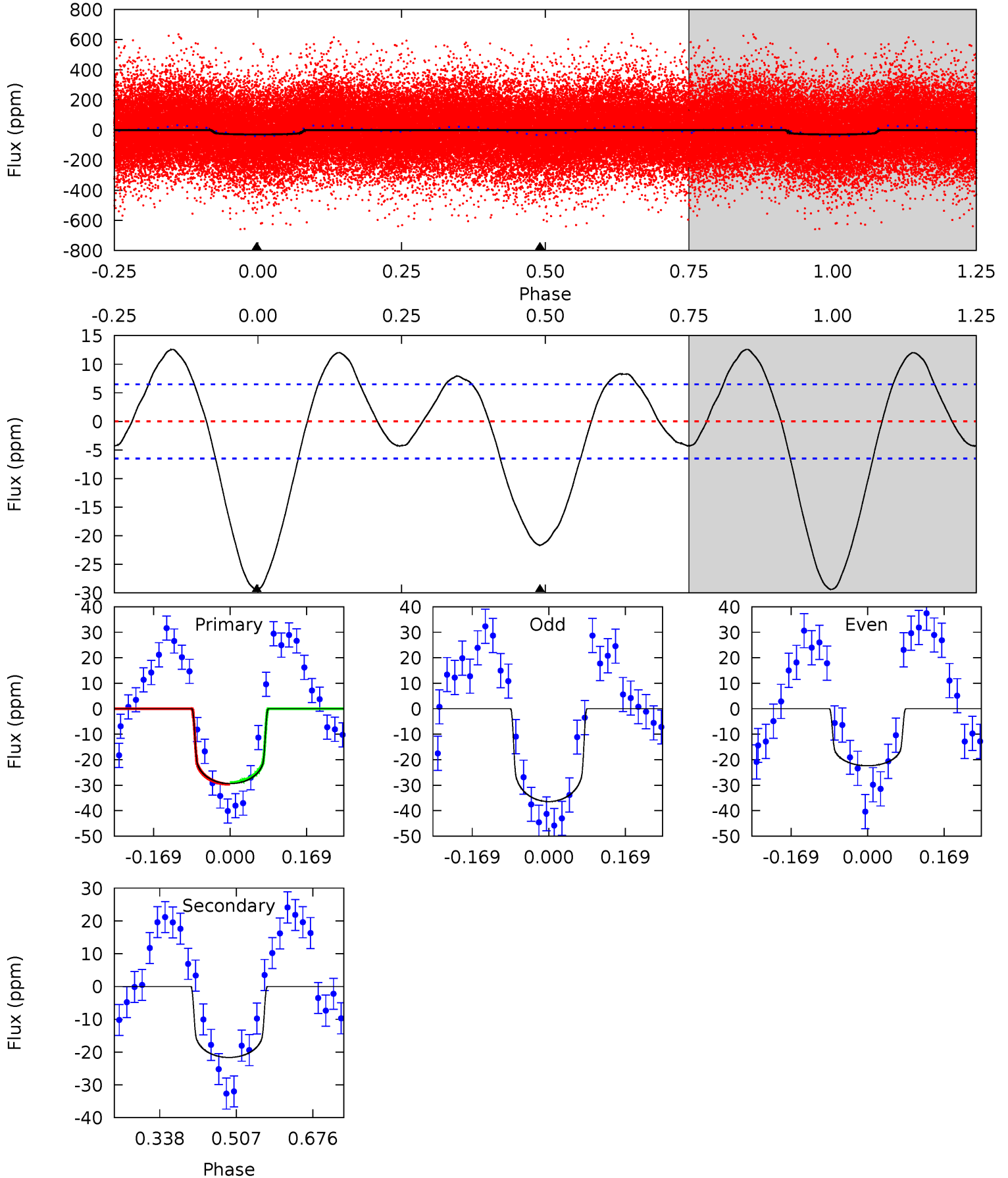




# DV Model-Shift Uniqueness Test

005558085-01, P = 2.822114 Days, E = 129.524160 Days

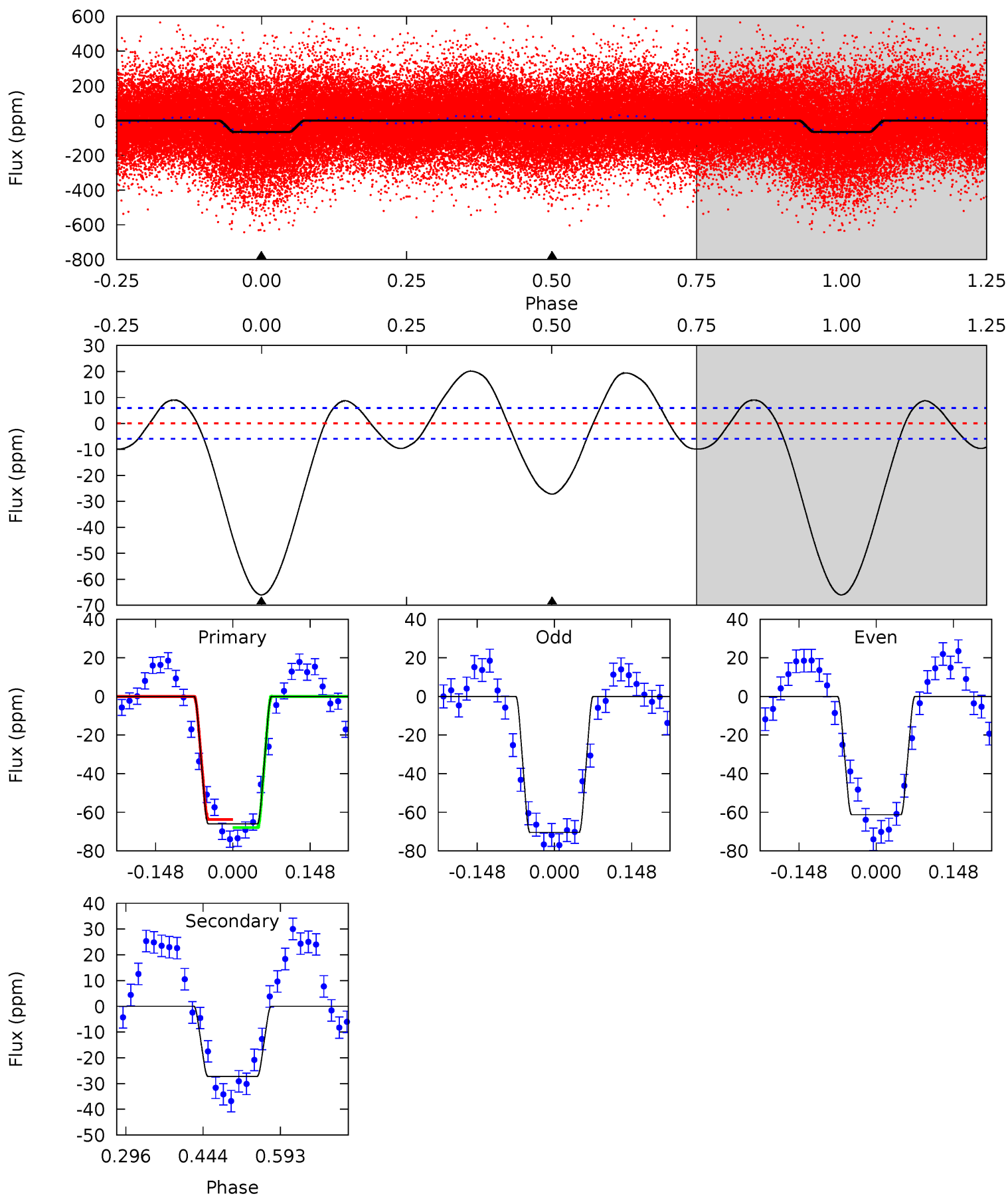
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.2	14.9	0	0	4.45	1.38	2.77	20.2	20.2	14.9	14.9	4.83	1.18	0.30	0.23



# Alt Model-Shift Uniqueness Test

005558085-01, P = 2.822159 Days, E = 129.527165 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
49.8	20.5	0	0	4.48	1.45	6.54	49.8	49.8	20.5	20.5	3.46	1.18	0.23	1.60



### Stellar Parameters For KIC 005558085

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6495^{+156}_{-195}$	$3.892^{+0.292}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.214^{+0.469}_{-0.703}$	$1.396^{+0.210}_{-0.257}$	$0.181^{+0.331}_{-0.065}$
	+2%/-3%	+8%/-3%	+300%/-250%	+21%/-32%	+15%/-18%	+182%/-36%
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 005558085-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-22 \pm 1$	$1.22^{+0.27}_{-0.25}$	$2808^{+172}_{-230}$	$6012^{+545}_{-393}$	$15^{+8}_{-5}$
Alt.	$-27 \pm 1$	$1.90^{+0.36}_{-0.35}$	$2798^{+188}_{-237}$	$5189^{+288}_{-255}$	$7.994^{+3.636}_{-2.172}$

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



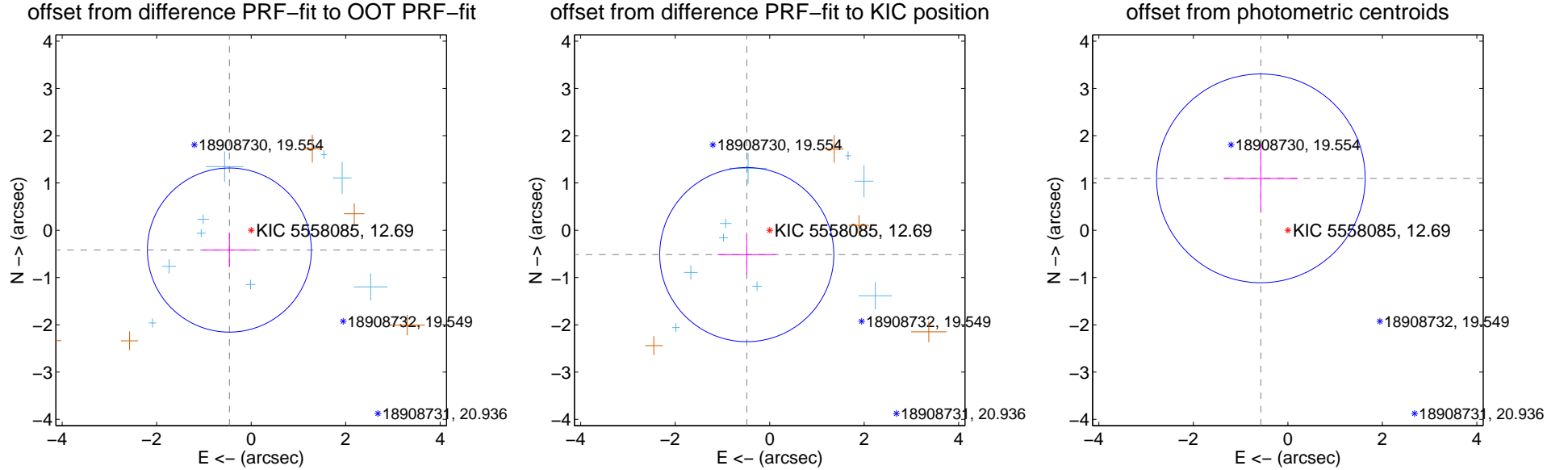
## DV Centroid Data

Supplemental centroid analysis for 005558085-01. Kepler magnitude: 12.69. Transit SNR 7.38

There are 9 quarters with good PRF difference image offsets

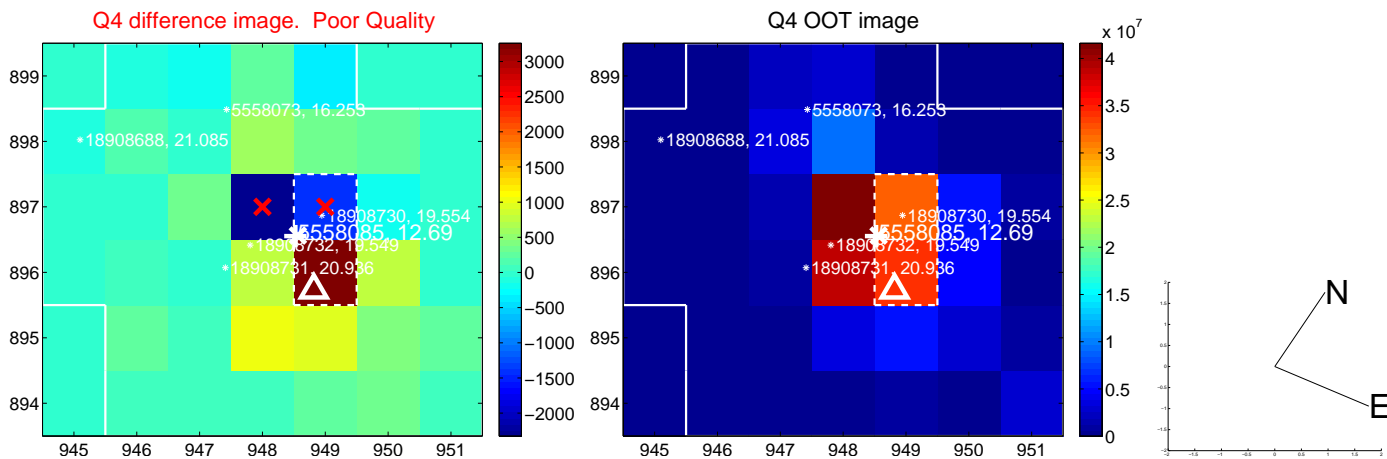
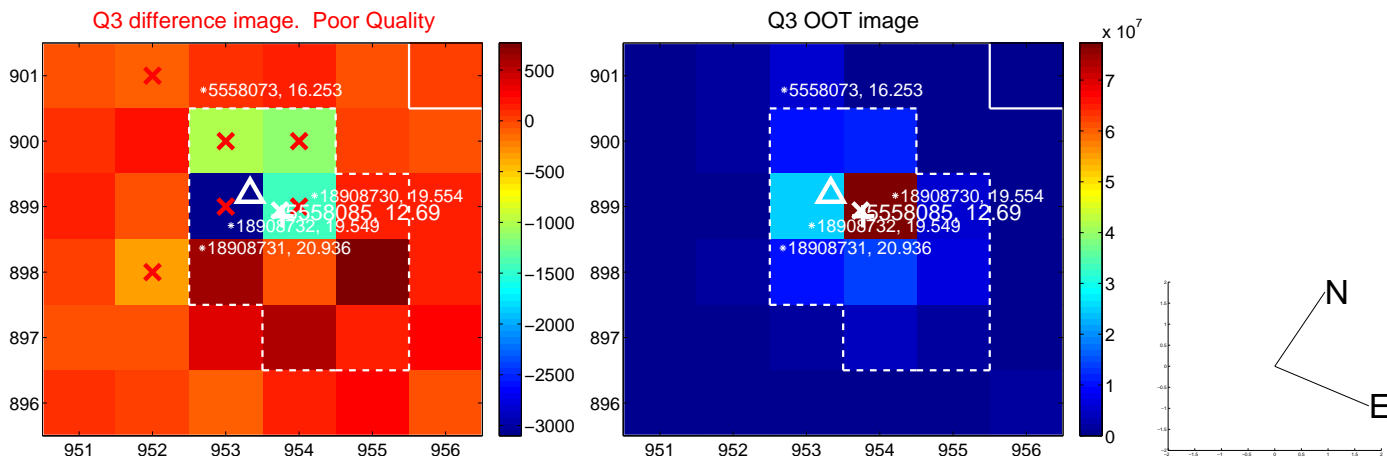
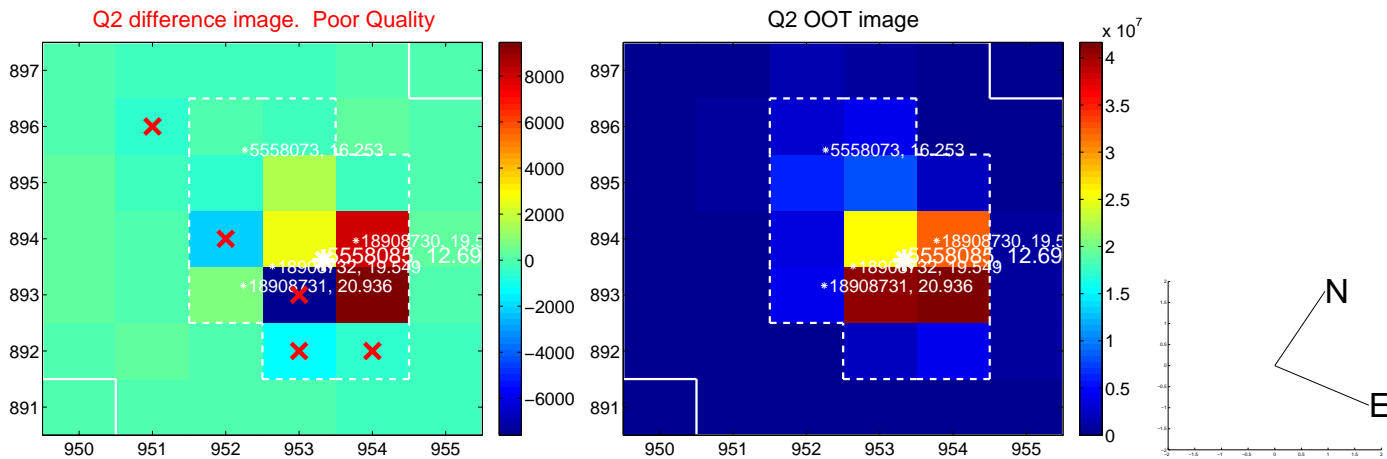
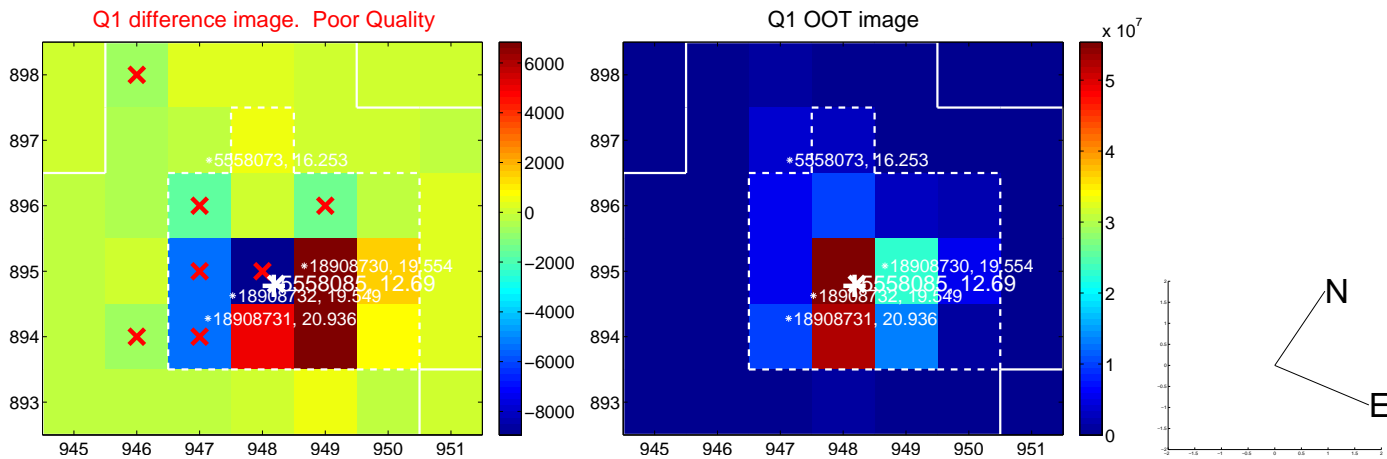
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.623 \pm 0.579$	1.08	$0.461 \pm 0.563$	$-0.420 \pm 0.364$
PRF-fit source offset from KIC position	$0.707 \pm 0.614$	1.15	$0.485 \pm 0.617$	$-0.515 \pm 0.431$
photometric centroid source offset	$1.24 \pm 0.74$	1.68	$0.57 \pm 0.78$	$1.10 \pm 0.72$

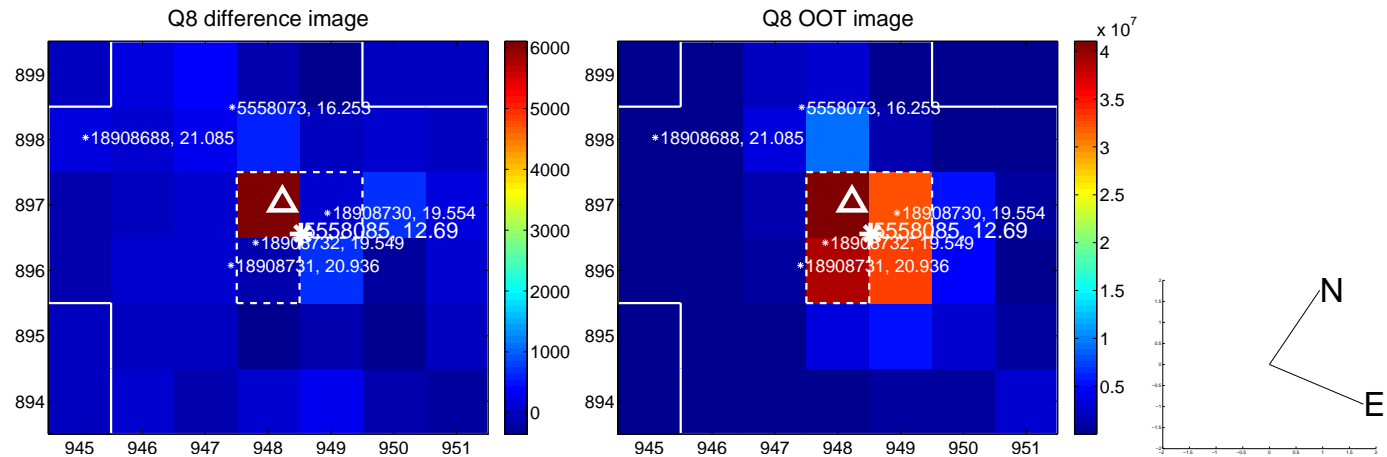
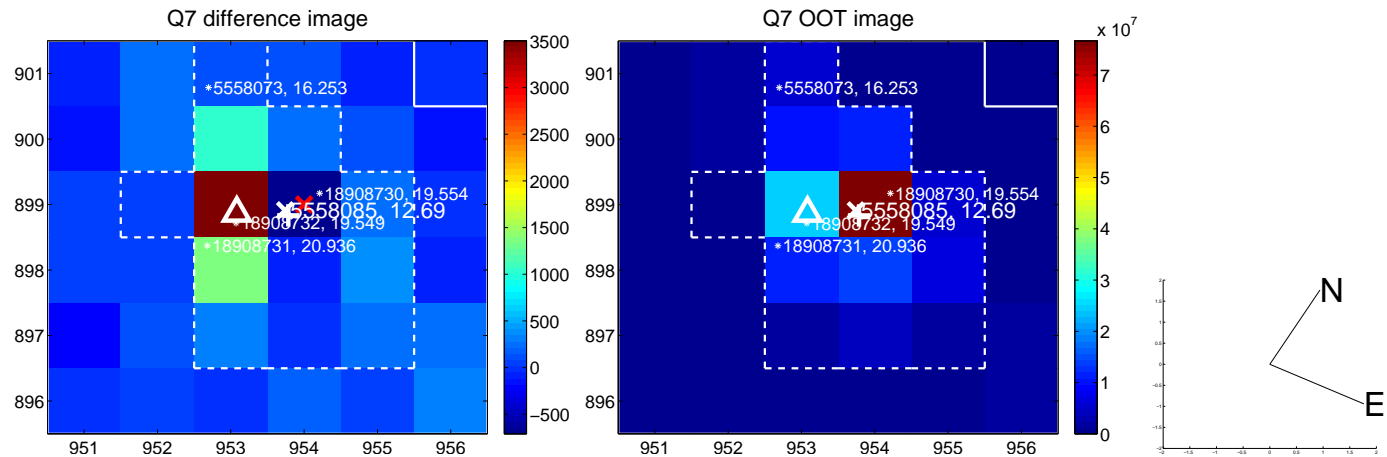
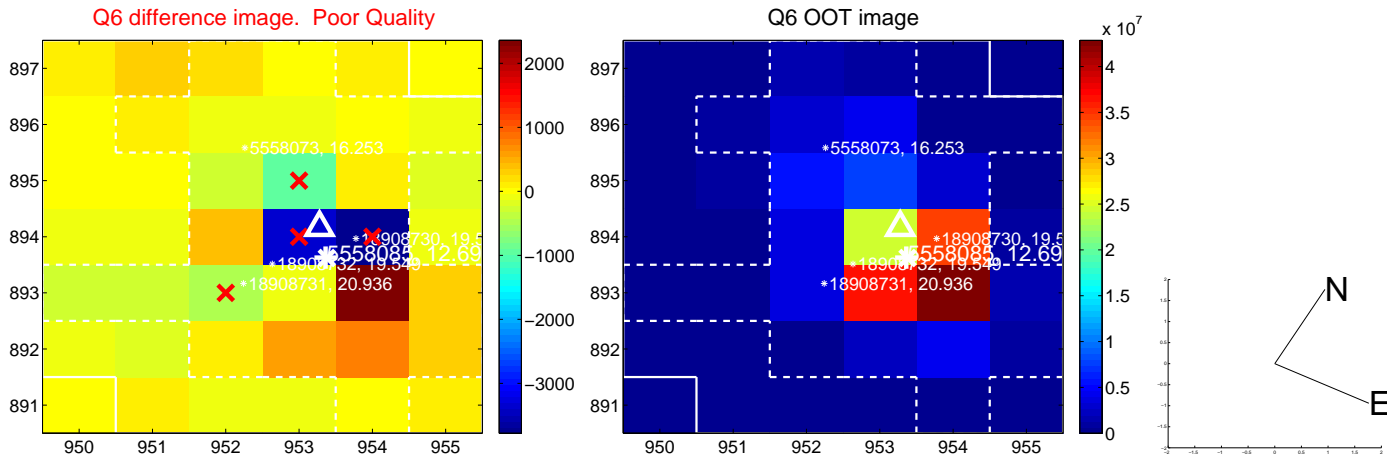
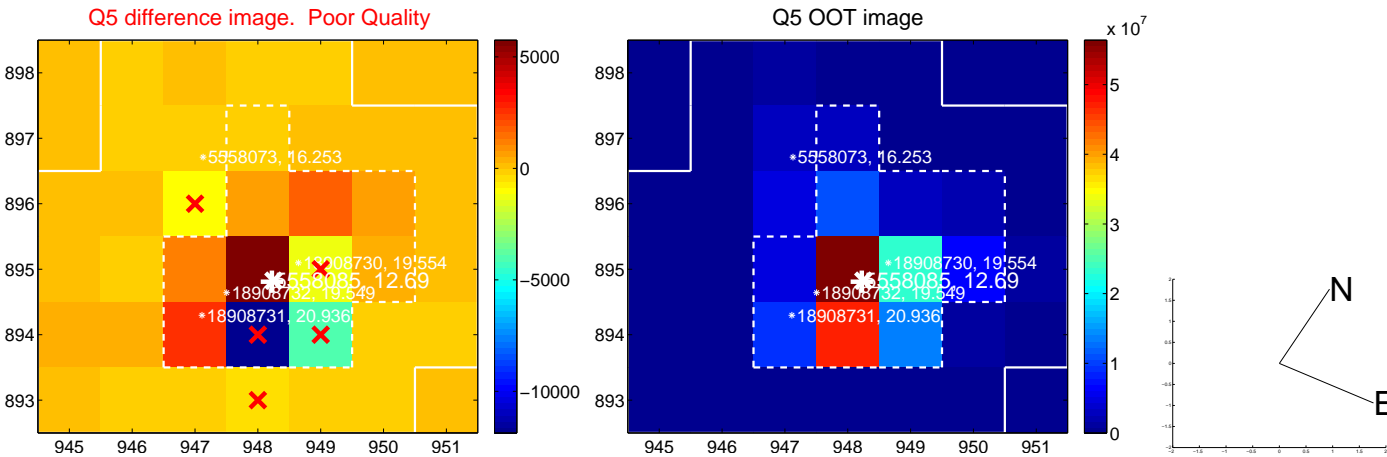


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

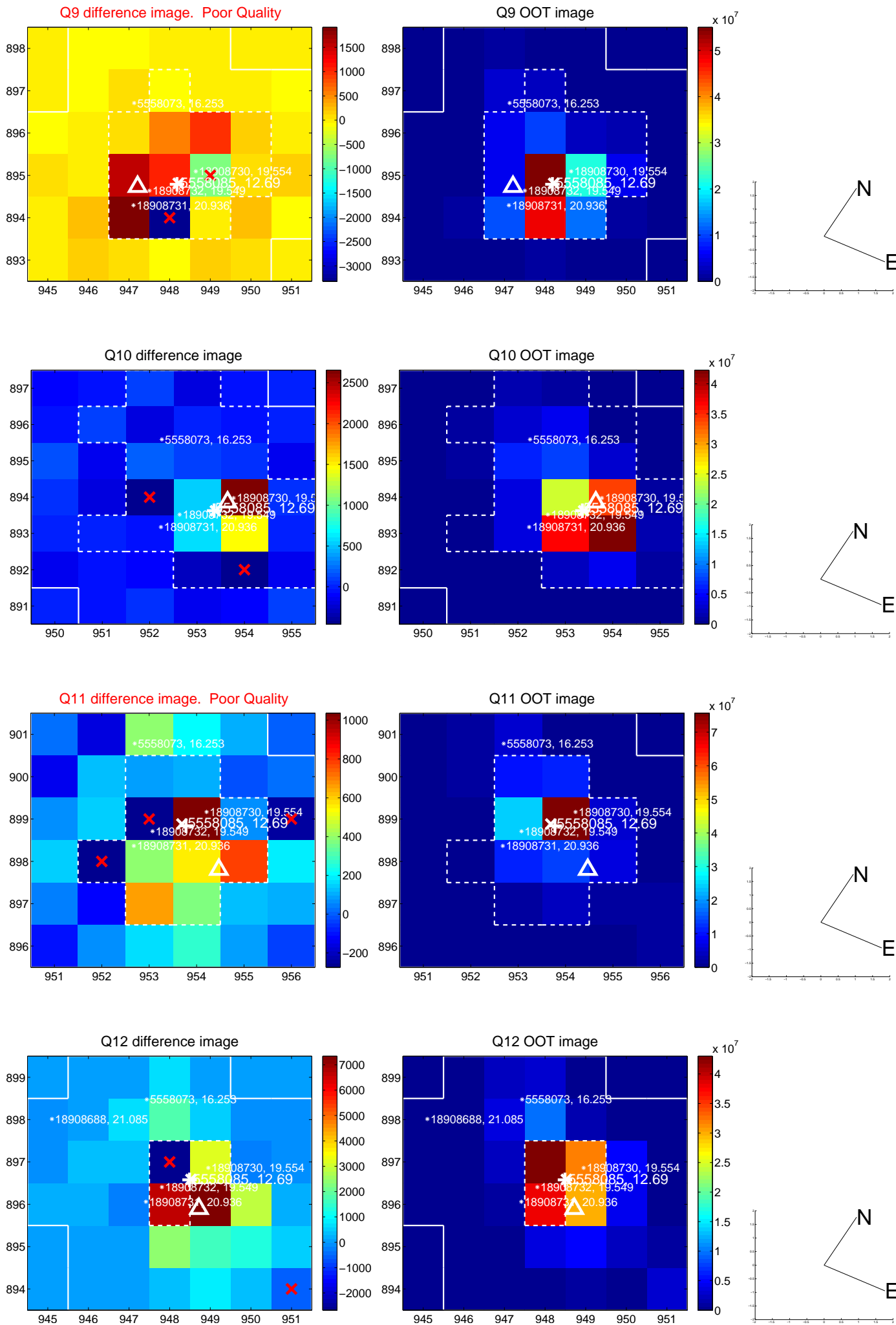
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



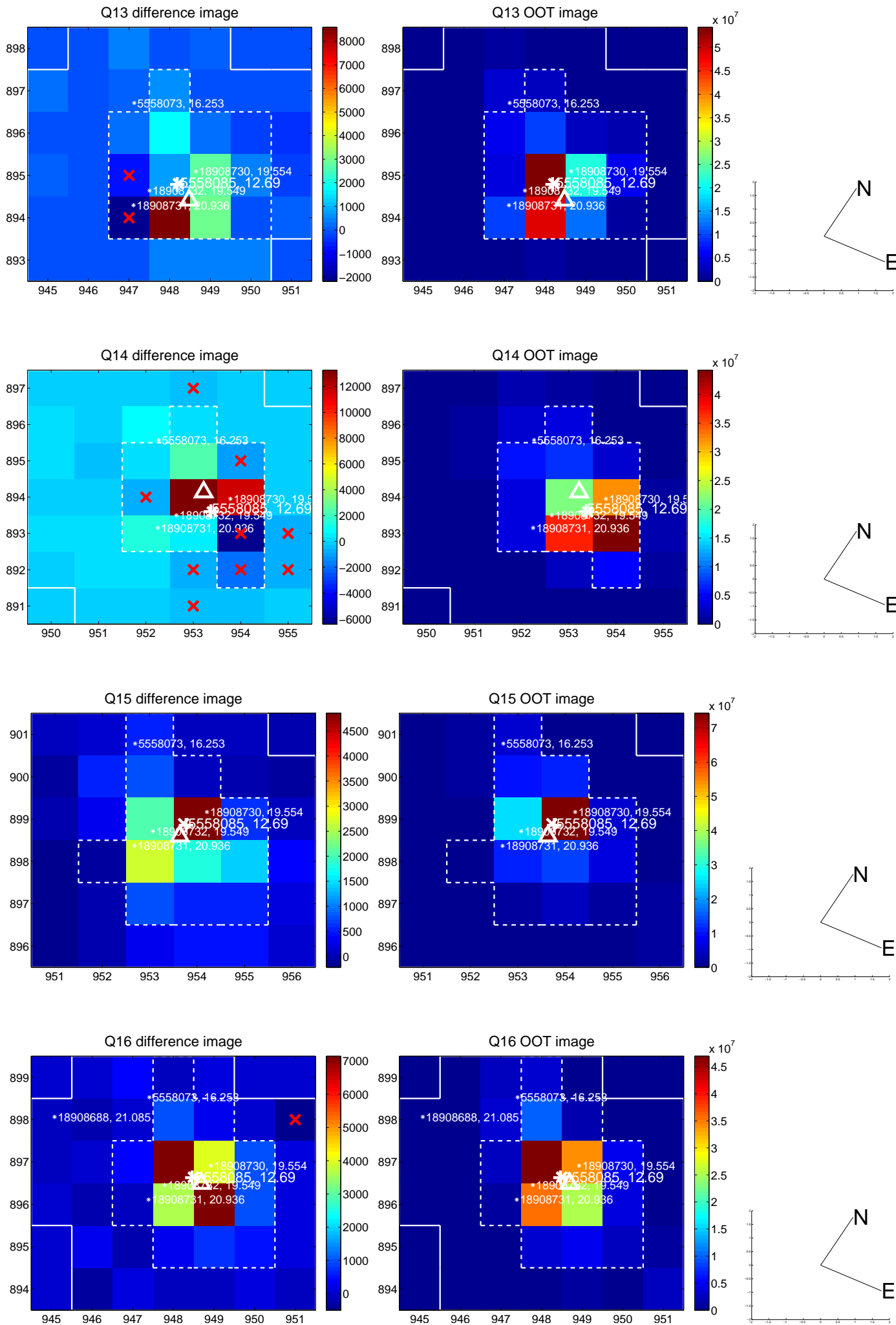
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

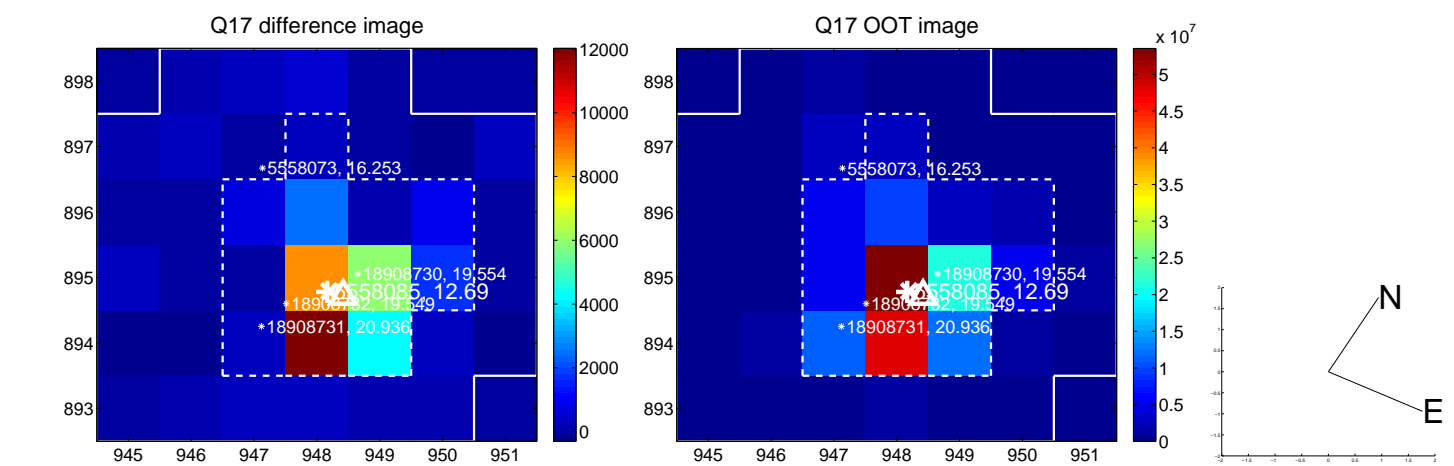


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

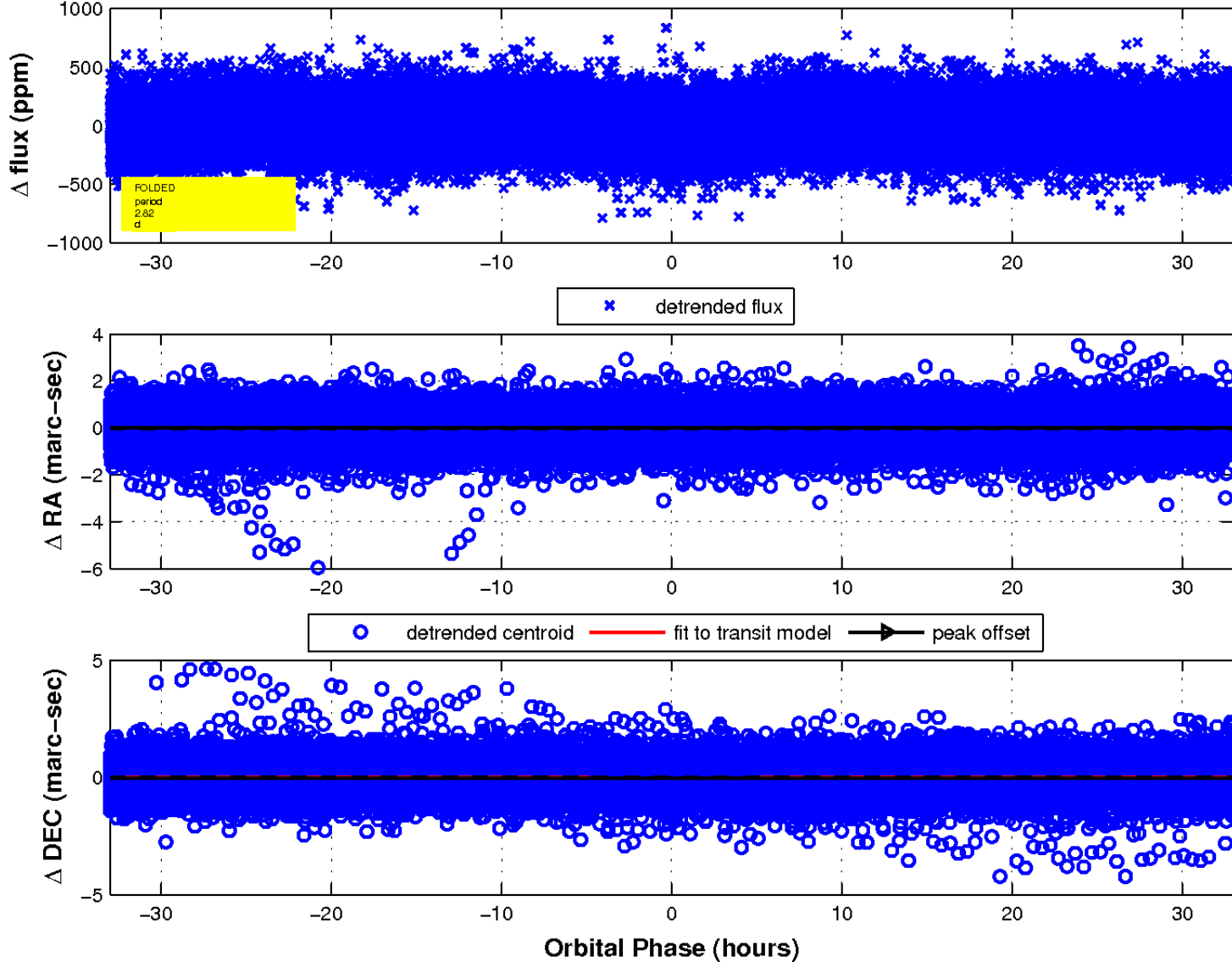




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

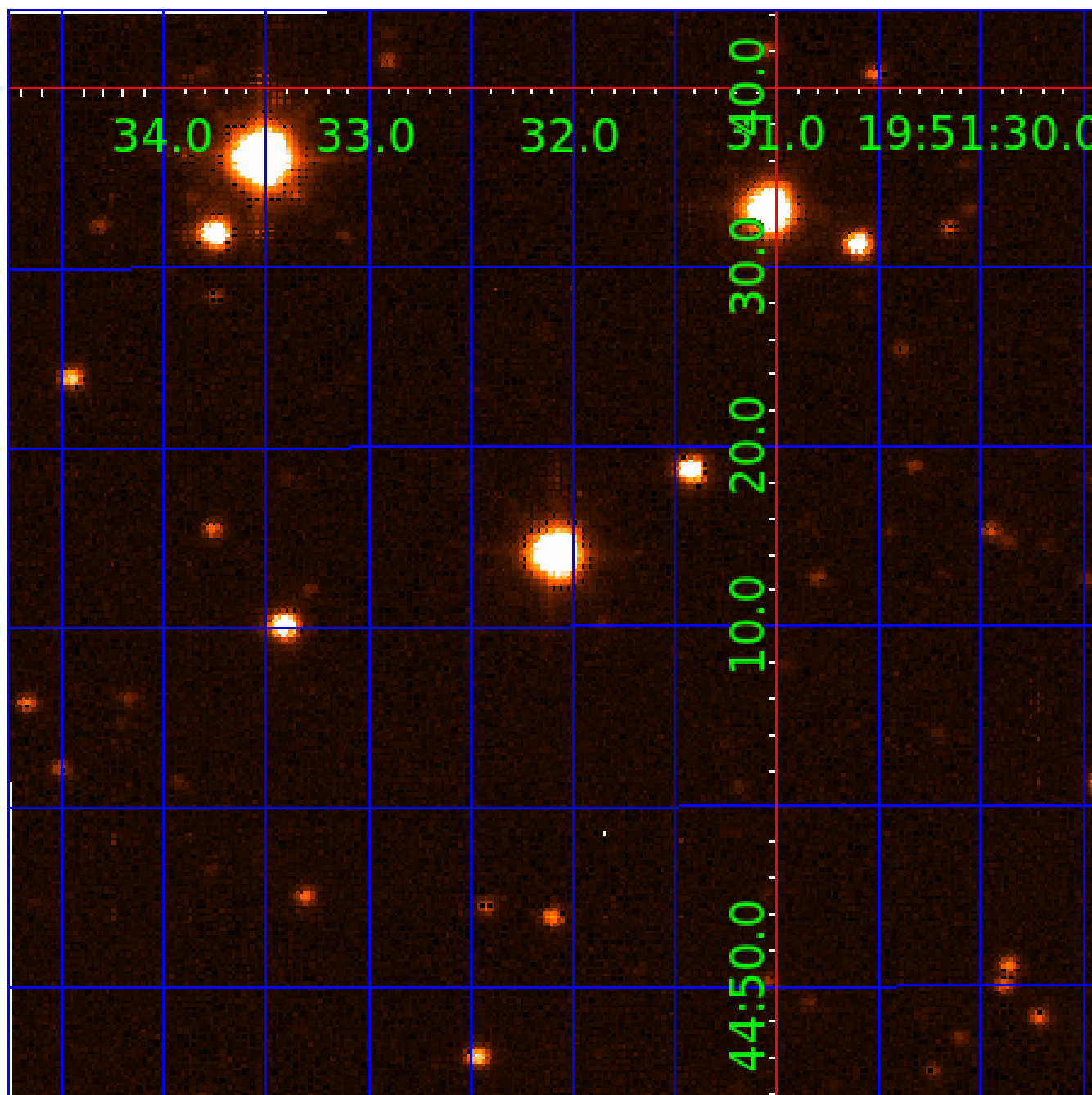


fluxWeightedCentroids, Planet 1 of 5



UKIRT Image

Declination



# KIC 005558085

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005558085-01	OBS	No	2.822114	132.346274	23.5	11.000	8.6	7.4	2.21	6495	1.28	4097.92
005558085-02	OBS	No	293.930746	403.175240	295.7	11.347	12.3	7.5	2.21	6495	4.14	8.36
005558085-03	OBS	No	412.447895	269.113007	180.2	20.883	8.8	5.5	2.21	6495	3.35	5.32
005558085-04	OBS	No	228.512946	159.552624	227.2	10.563	7.6	8.1	2.21	6495	6.49	11.70
005558085-05	OBS	No	54.431982	138.166320	151.1	6.370	7.4	8.6	2.21	6495	2.85	79.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005558085-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005558085-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
005558085-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005558085-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005558085-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT

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

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

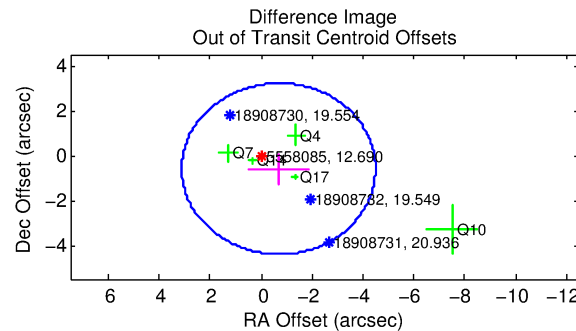
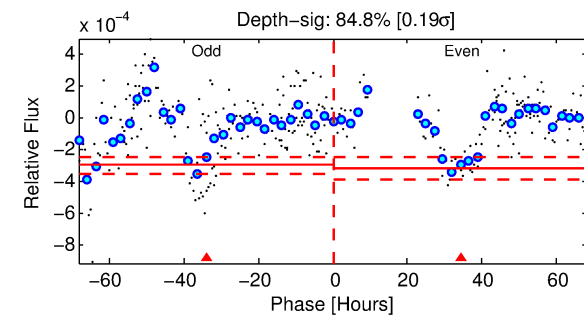
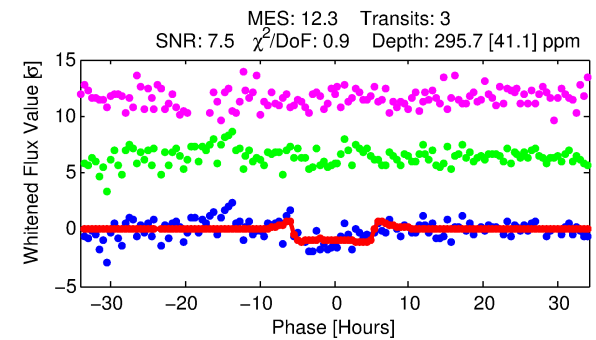
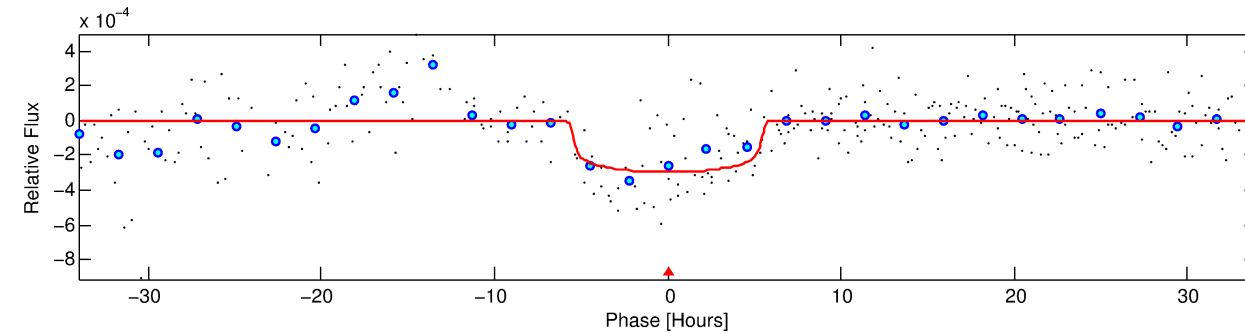
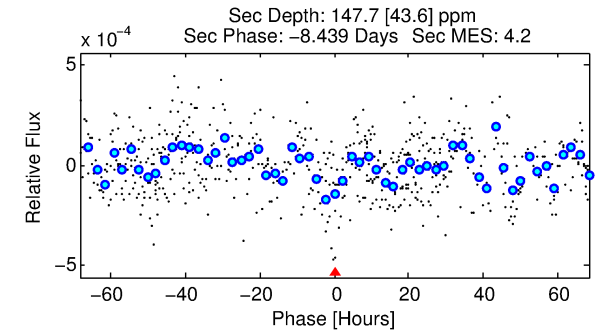
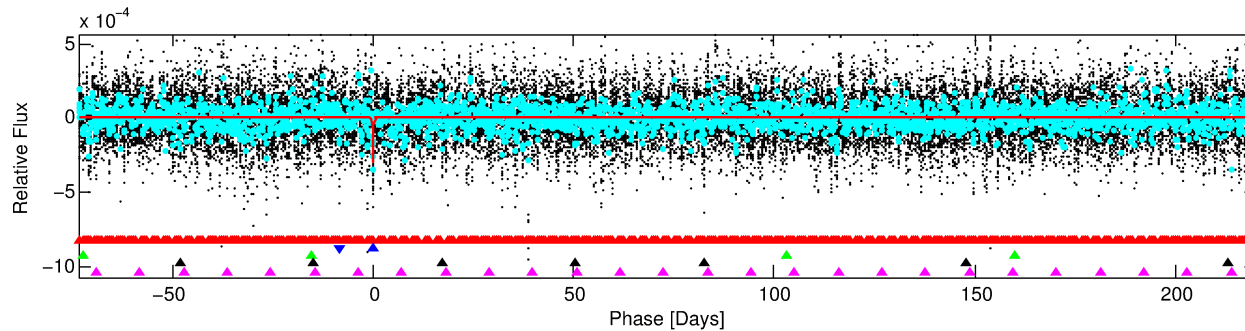
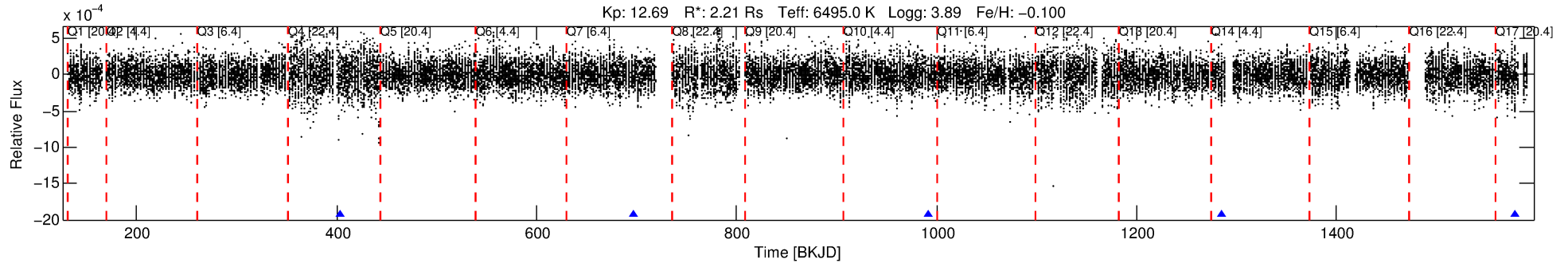
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005558085-02

No Significant Match Found

# DV One-Page Summary

KIC: 5558085 Candidate: 2 of 5 Period: 293.931 d



## DV Fit Results:

Period = 293.93075 [0.00955] d  
Epoch = 403.1752 [0.0315] BKJD  
Rp/R\* = 0.0171 [0.0049]  
a/R\* = 134.77 [198.87]  
b = 0.76 [0.84]  
Seff = 8.36 [4.27]  
Teq = 434 [55] K  
Rp = 4.14 [1.76] Re  
a = 0.9667 [0.2980] AU  
Ag = 4434.72 [3591.95] [1.23σ]  
Teffp = 5471 [891] K [5.64σ]

## DV Diagnostic Results:

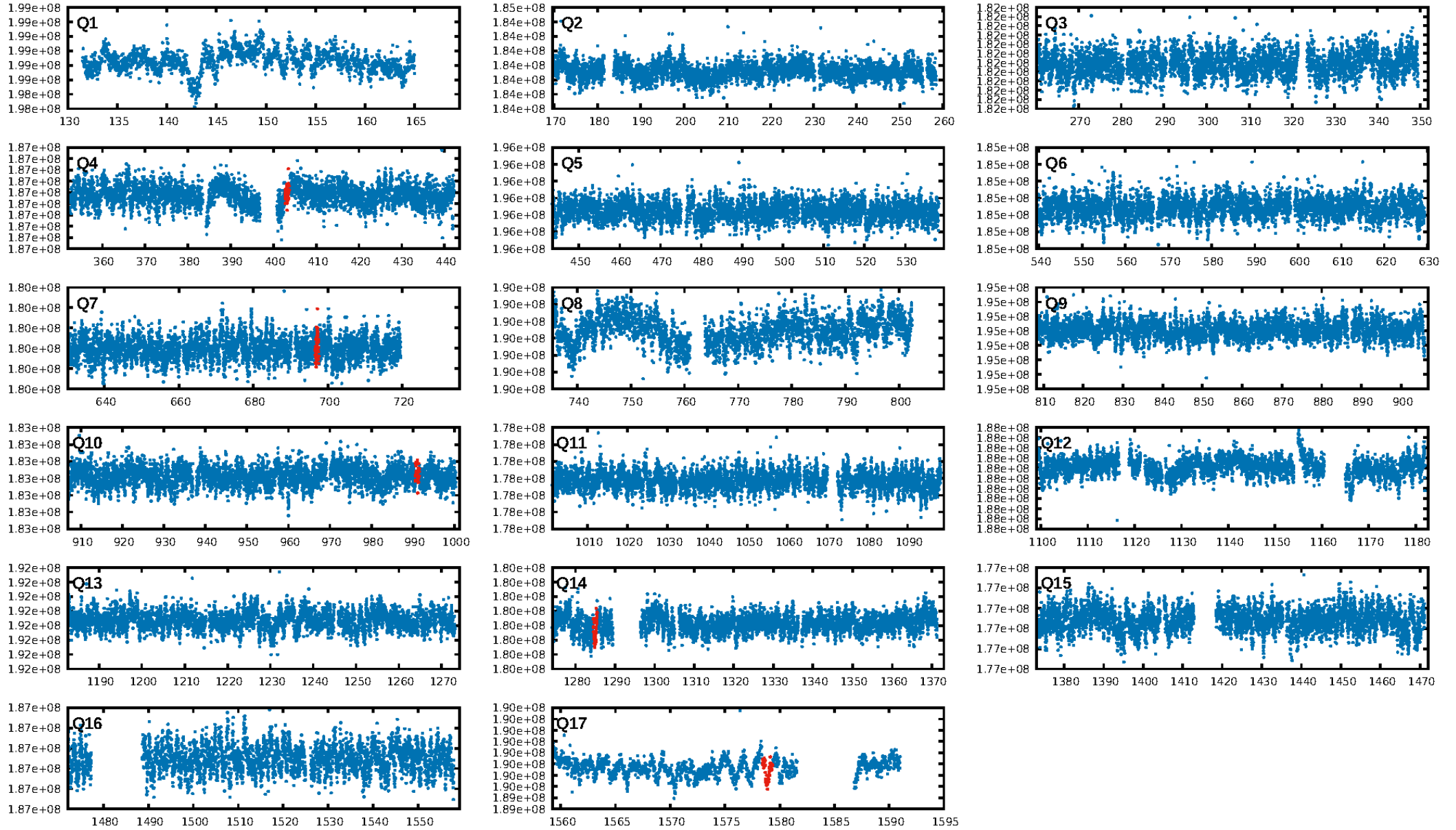
ShortPeriod-sig: 100.0% [101.27σ]  
LongPeriod-sig: 100.0% [119.68σ]  
ModelChiSquare2-sig: 58.2%  
ModelChiSquareGof-sig: 99.9%  
Bootstrap-pfa: 1.38e-19  
RollingBand-fgt: 1.00 [2/2]  
GhostDiagnostic-chr: 48.62  
Centroid-sig: 22.3%  
Centroid-so: 0.787 arcsec [1.15σ]  
OotOffset-rm: 0.915 arcsec [0.72σ]  
KicOffset-rm: 1.013 arcsec [0.74σ]  
OotOffset-st: 2/1/1/1 [5]  
KicOffset-st: 2/1/1/1 [5]  
DiffImageQuality-fgm: 0.60 [3/5]  
DiffImageOverlap-fno: 0.40 [2/5]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:46:10 Z

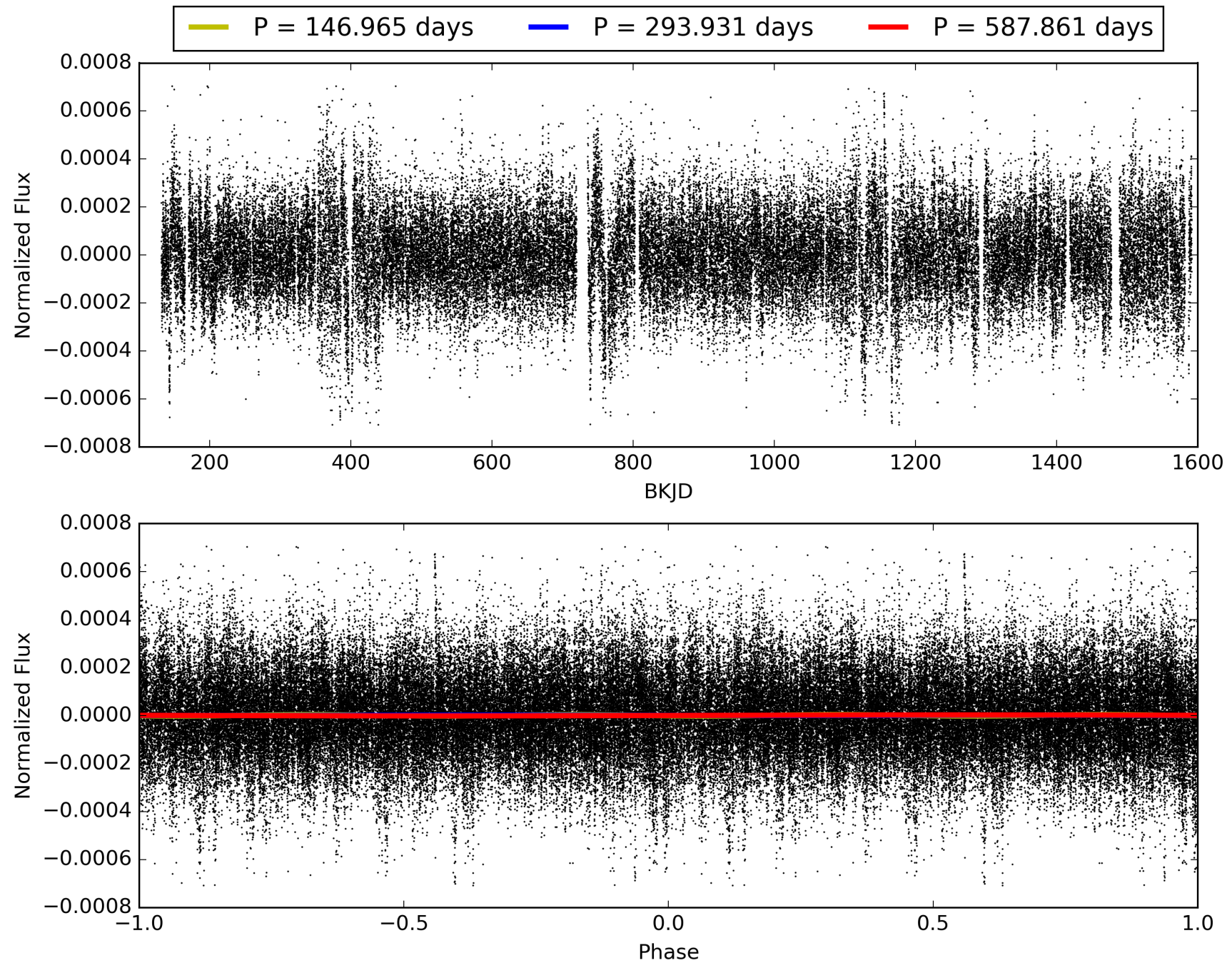
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 005558085-02, PDC Light Curves

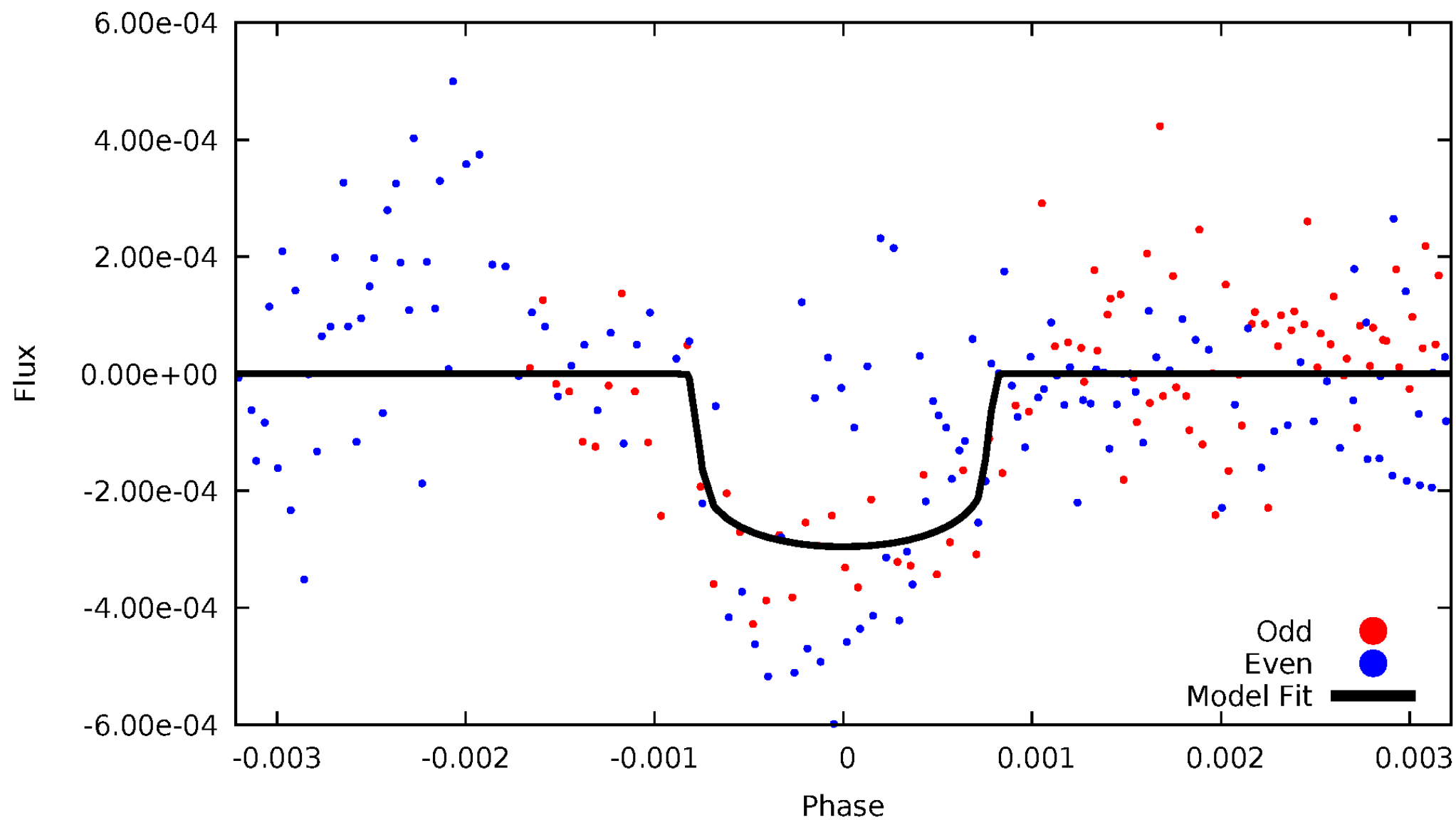


TCE 005558085-02



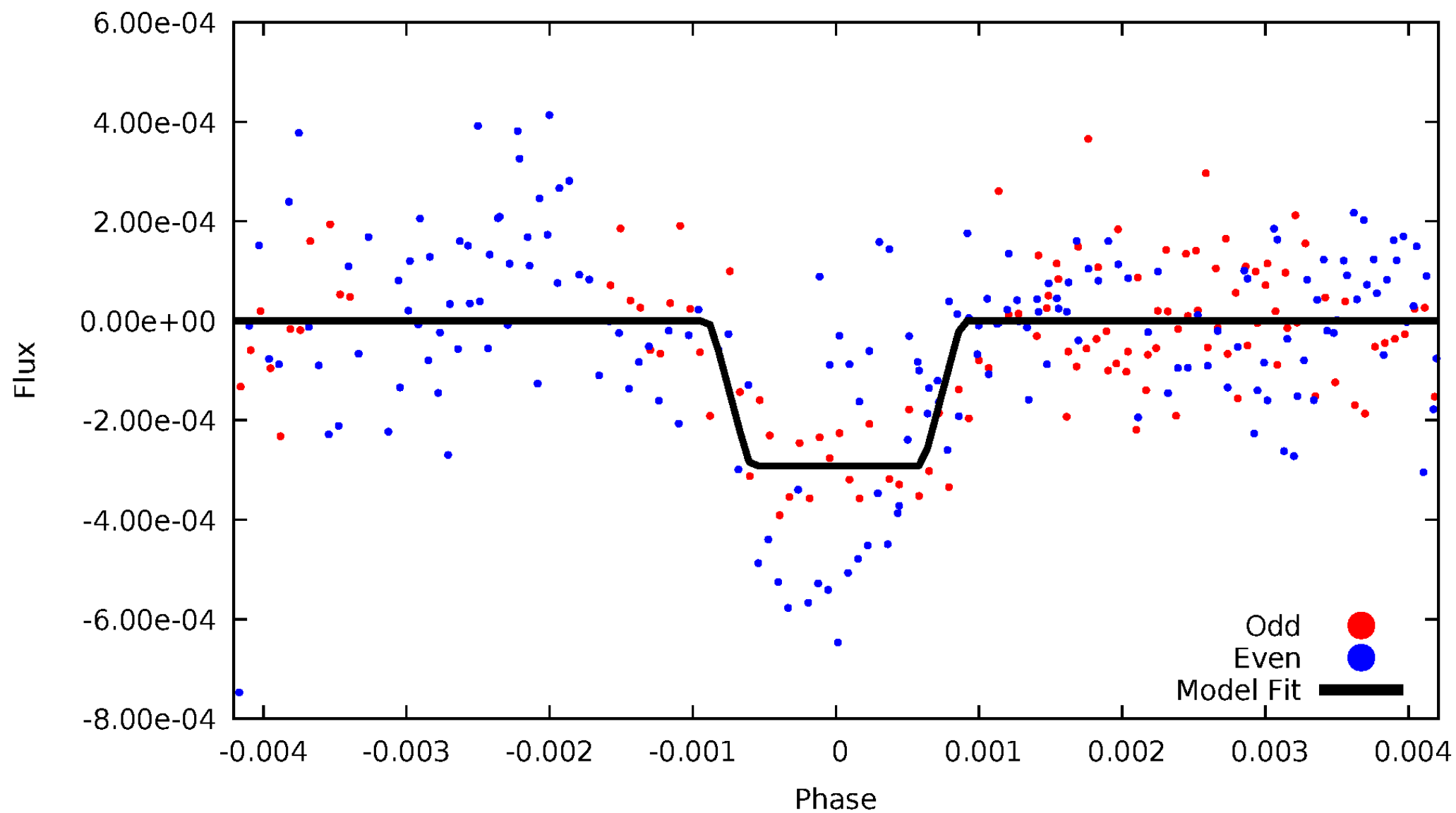
# DV Odd/Even

TCE 005558085-02



# ALT Odd/Even

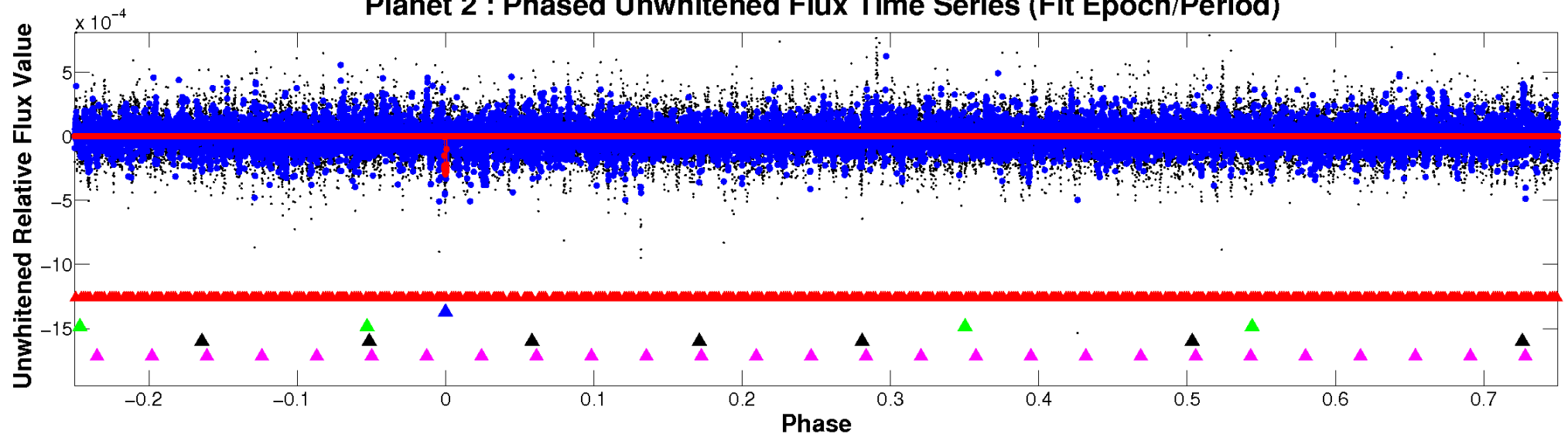
TCE 005558085-02



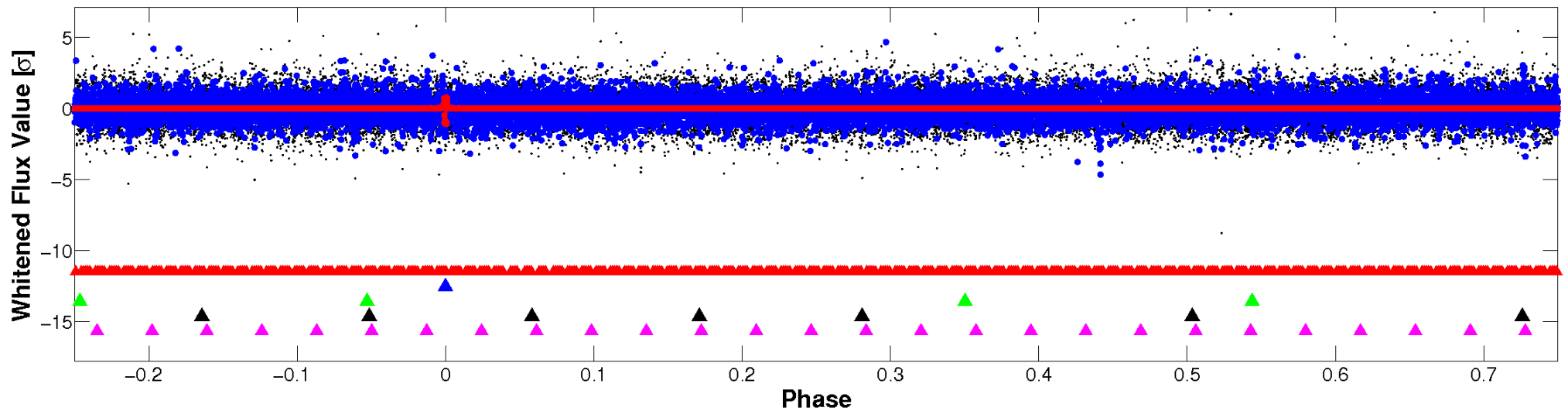


# Non-Whitened Vs. Whitened Light Curve

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

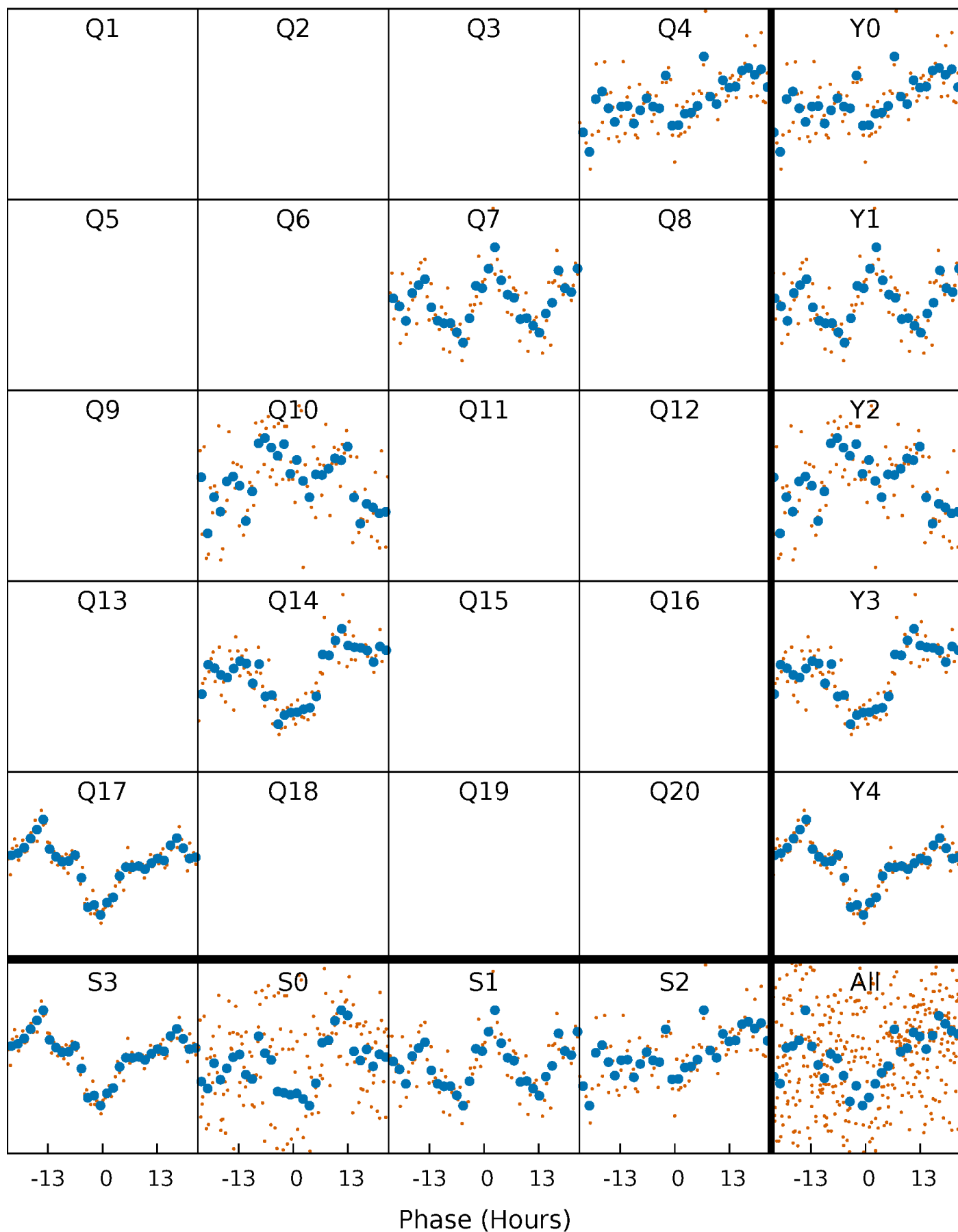


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



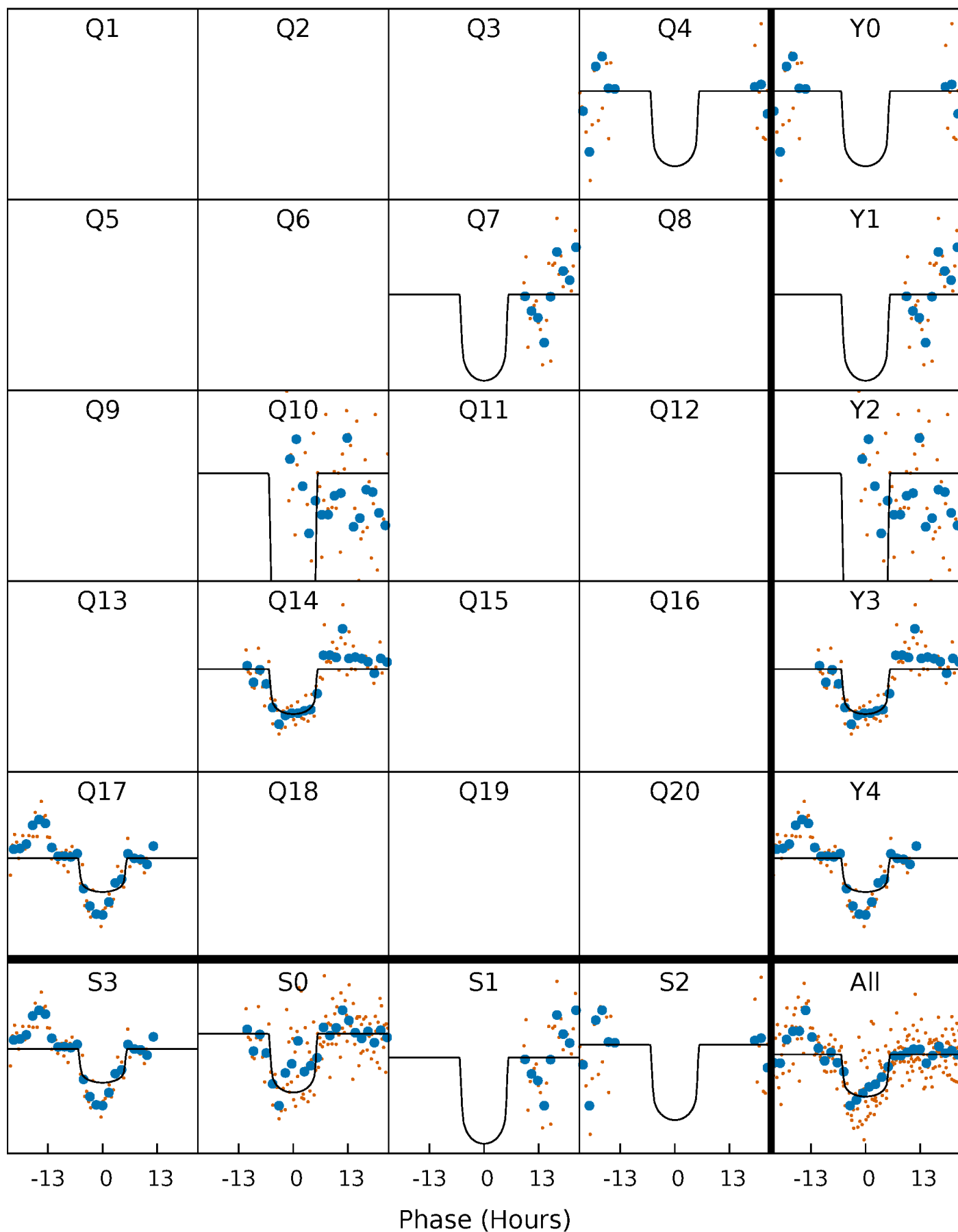
# PDC Quarter-Phased Transit Curves

TCE 005558085-02     $P=293.930746$  Days     $T_0=403.175240$  (BKJD)



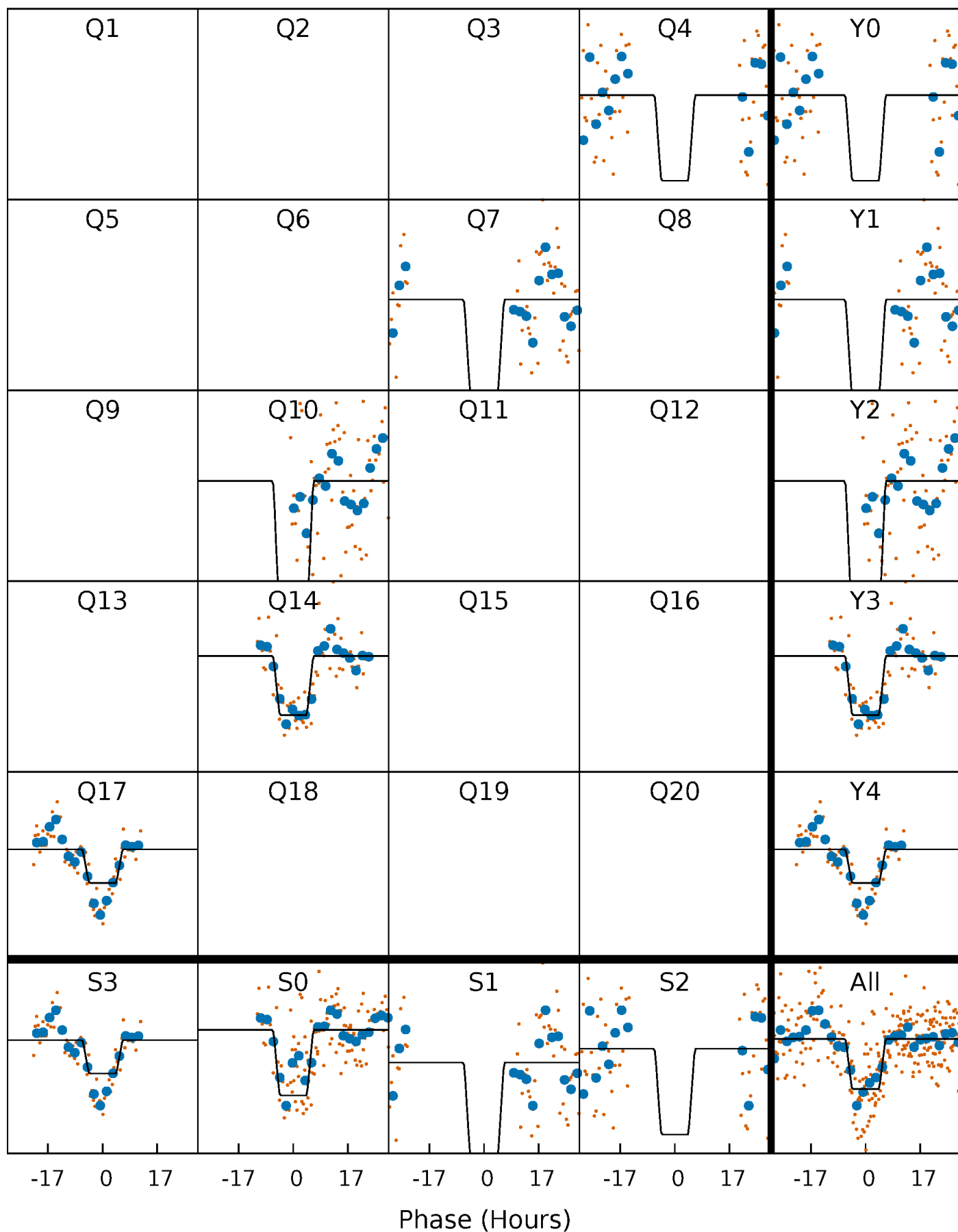
# DV Quarter-Phased Transit Curves

TCE 005558085-02 P=293.930746 Days  $T_0=403.175240$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005558085-02 P=293.936761 Days  $T_0=403.132160$  (BKJD)

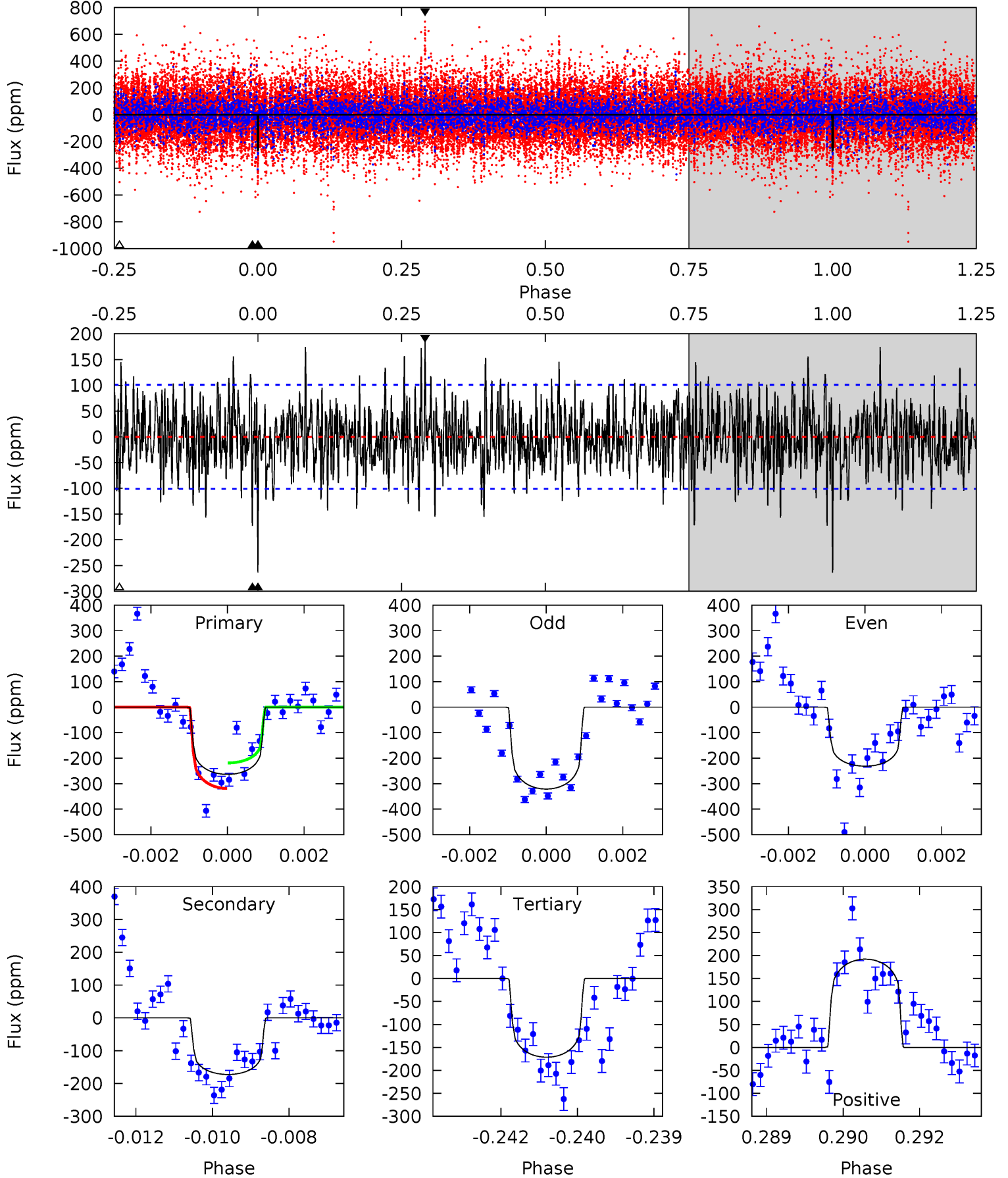




# DV Model-Shift Uniqueness Test

005558085-02, P = 293.930746 Days, E = 109.244494 Days

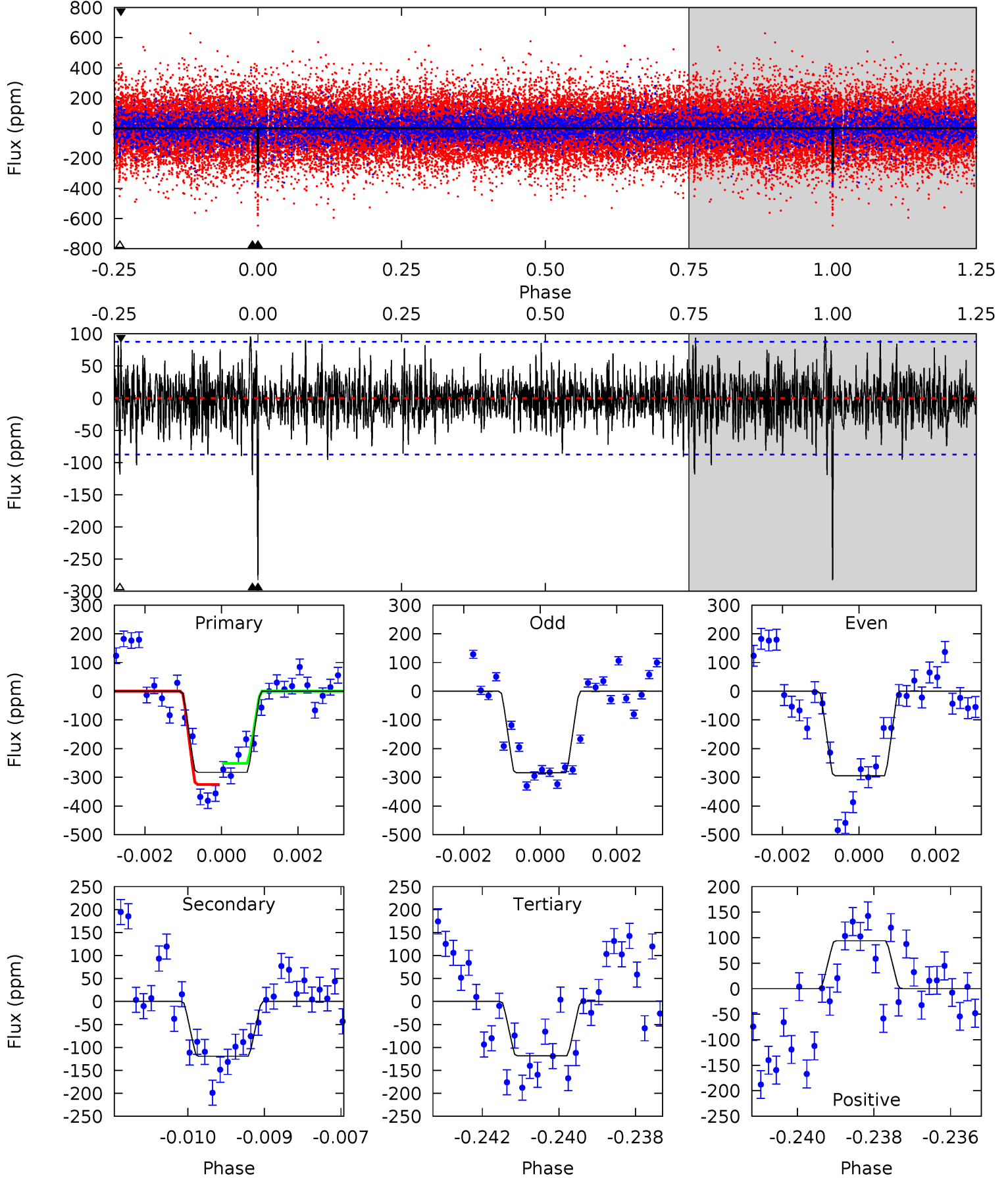
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	9.15	9.09	10.2	5.36	3.14	2.64	4.89	3.79	0.06	-1.04	2.28	0.74	0.42	2.64



# Alt Model-Shift Uniqueness Test

005558085-02,  $P = 293.936761$  Days,  $E = 109.195399$  Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.2	7.28	7.22	5.73	5.35	3.13	1.66	10.0	11.5	0.06	1.55	0.31	0.89	0.25	2.19



### Stellar Parameters For KIC 005558085

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$\rho_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6495^{+156}_{-195}$	$3.892^{+0.292}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.214^{+0.469}_{-0.703}$	$1.396^{+0.210}_{-0.257}$	$0.181^{+0.331}_{-0.065}$
	+2%/-3%	+8%/-3%	+300%/-250%	+21%/-32%	+15%/-18%	+182%/-36%
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 005558085-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-173 \pm 19$	$3.83^{+1.36}_{-1.12}$	$595^{+38}_{-46}$	$5768^{+1041}_{-685}$	$6063^{+6172}_{-2763}$
Alt.	$-119 \pm 16$	$3.89^{+1.33}_{-1.19}$	$594^{+41}_{-47}$	$5252^{+912}_{-576}$	$3924^{+4761}_{-1662}$

$T_{\text{max}}$  = 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

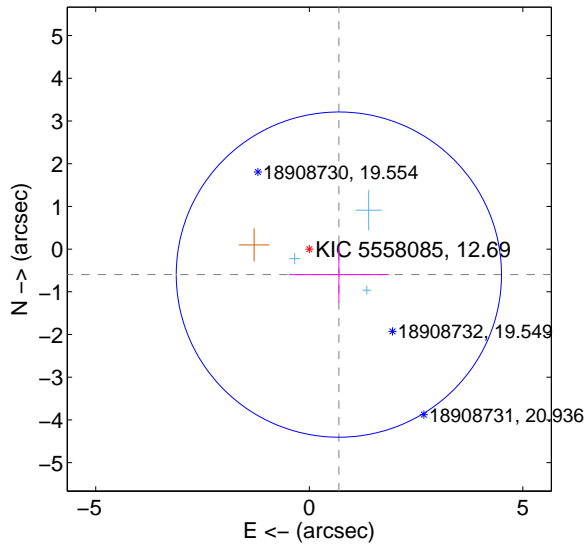
Supplemental centroid analysis for 005558085-02. Kepler magnitude: 12.69. Transit SNR 7.51

There are 3 quarters with good PRF difference image offsets

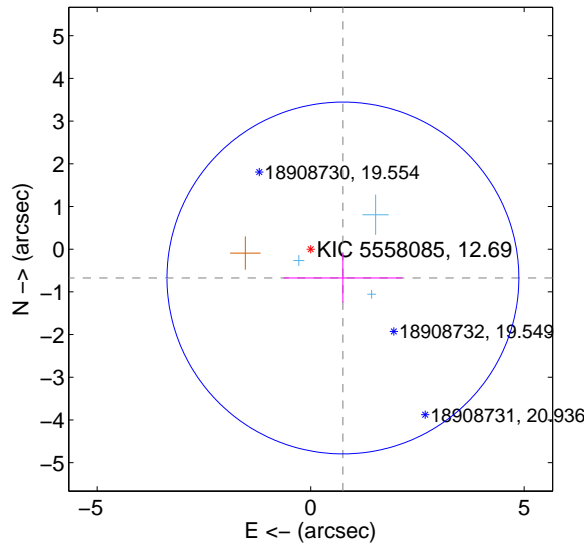
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.915 \pm 1.269$	0.72	$-0.693 \pm 1.168$	$-0.597 \pm 0.657$
PRF-fit source offset from KIC position	$1.013 \pm 1.373$	0.74	$-0.756 \pm 1.390$	$-0.675 \pm 0.573$
photometric centroid source offset	$0.79 \pm 0.68$	1.15	$0.79 \pm 0.68$	$-0.01 \pm 0.56$

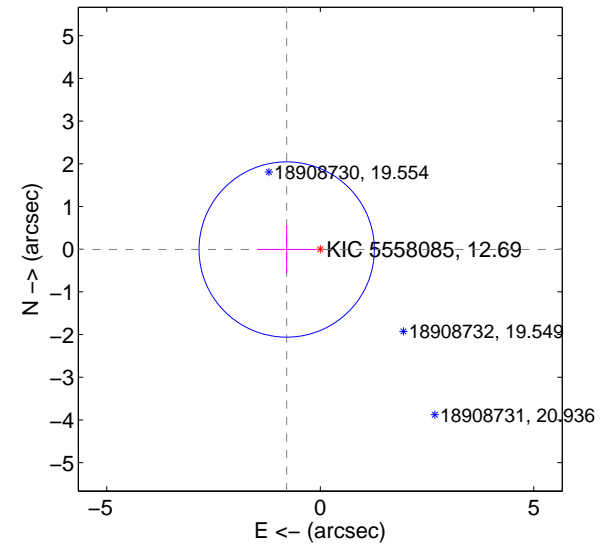
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



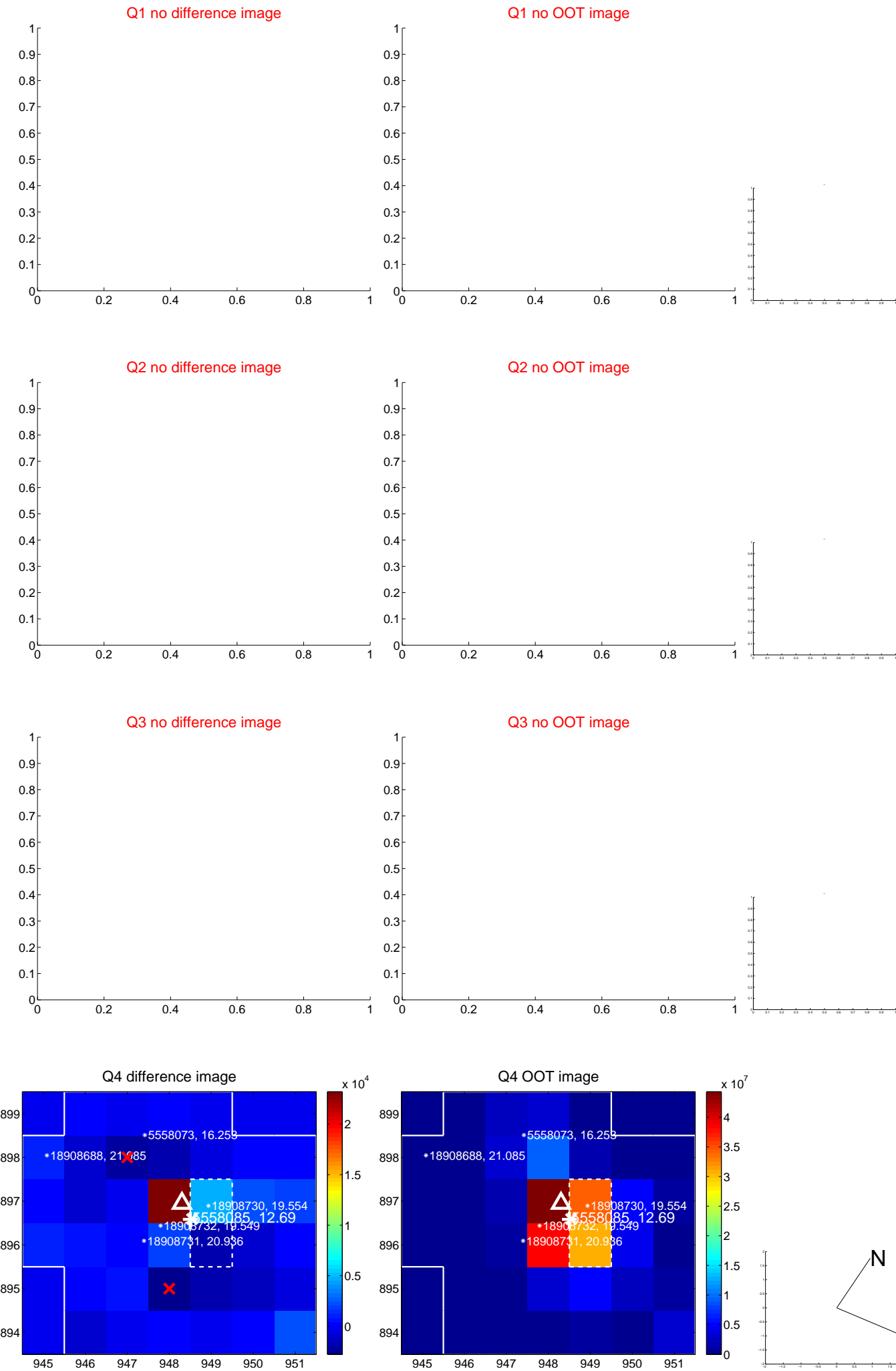
offset from photometric centroids



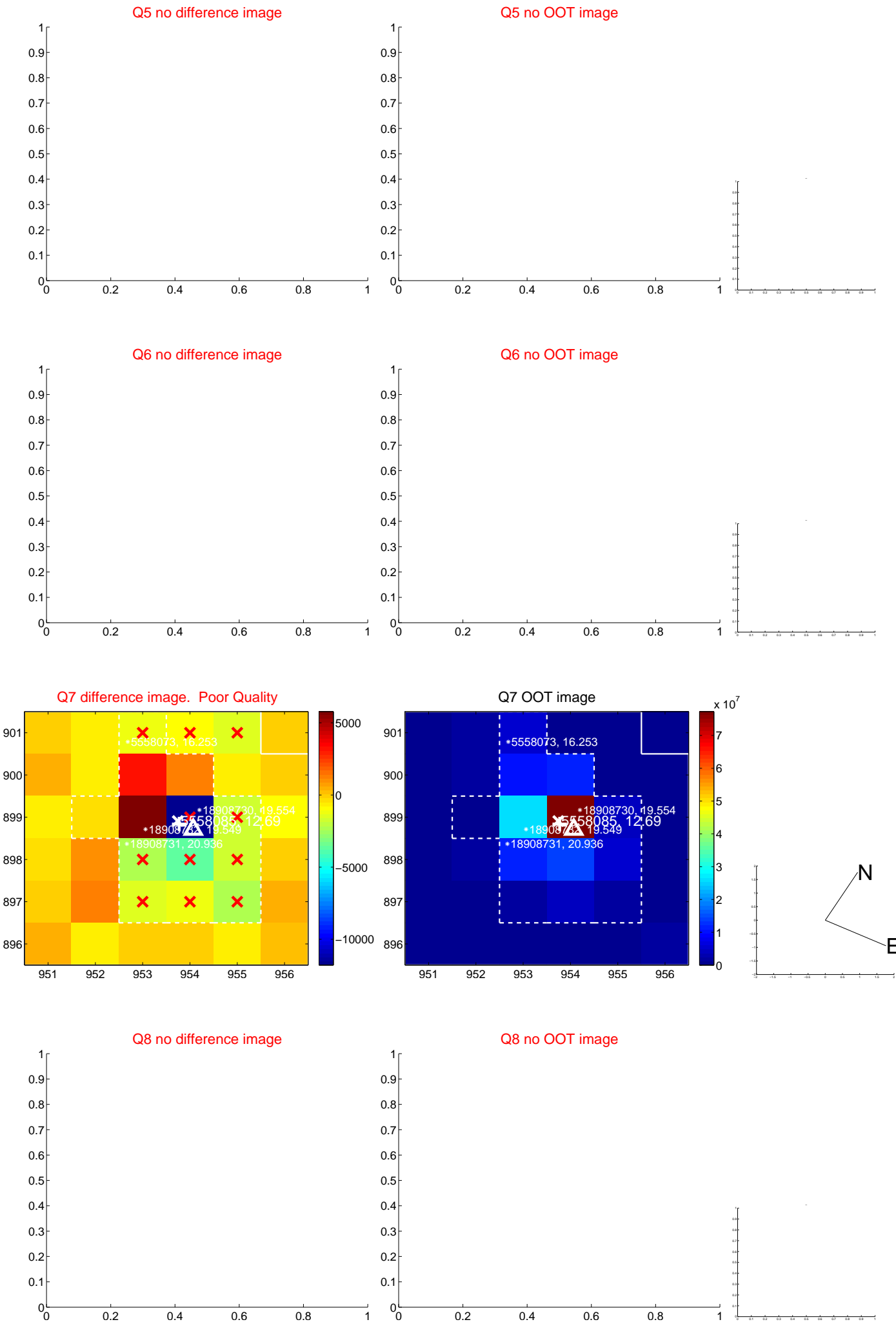
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

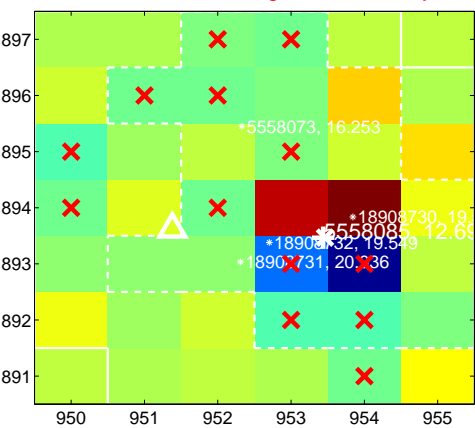
Q9 no difference image



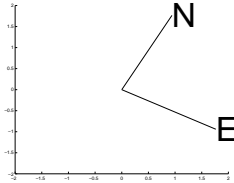
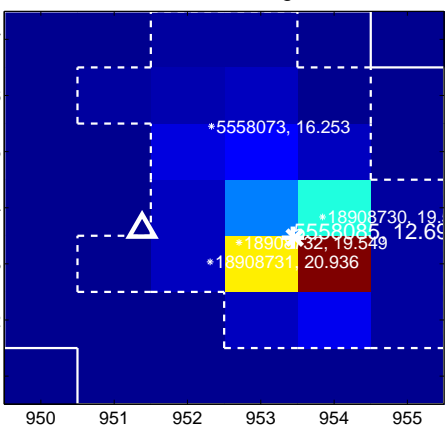
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



Q11 no difference image



Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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

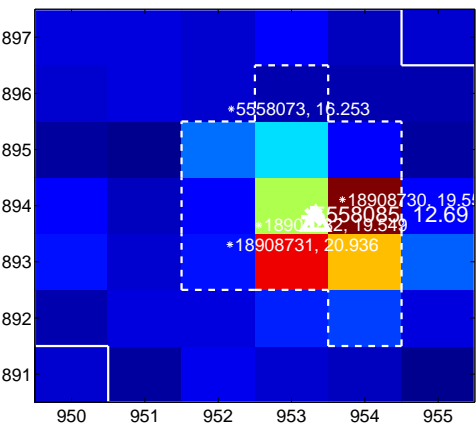
Q13 no difference image



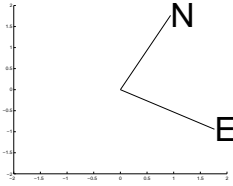
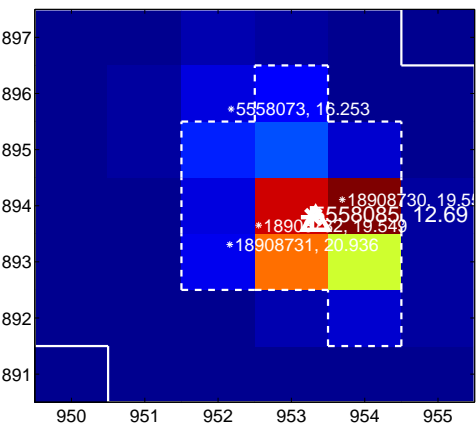
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



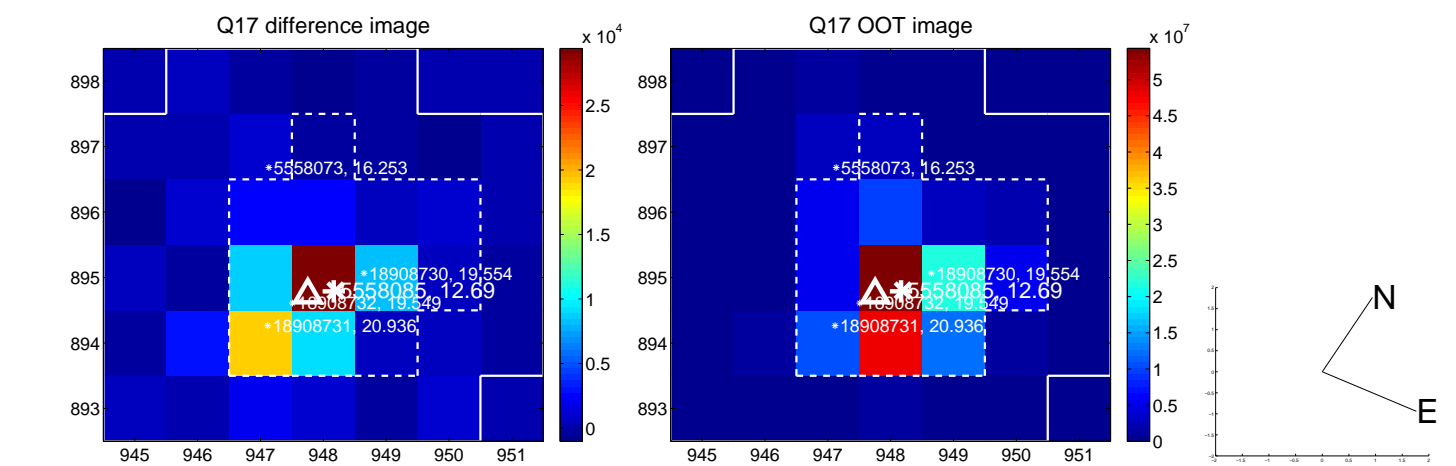
Q16 no difference image



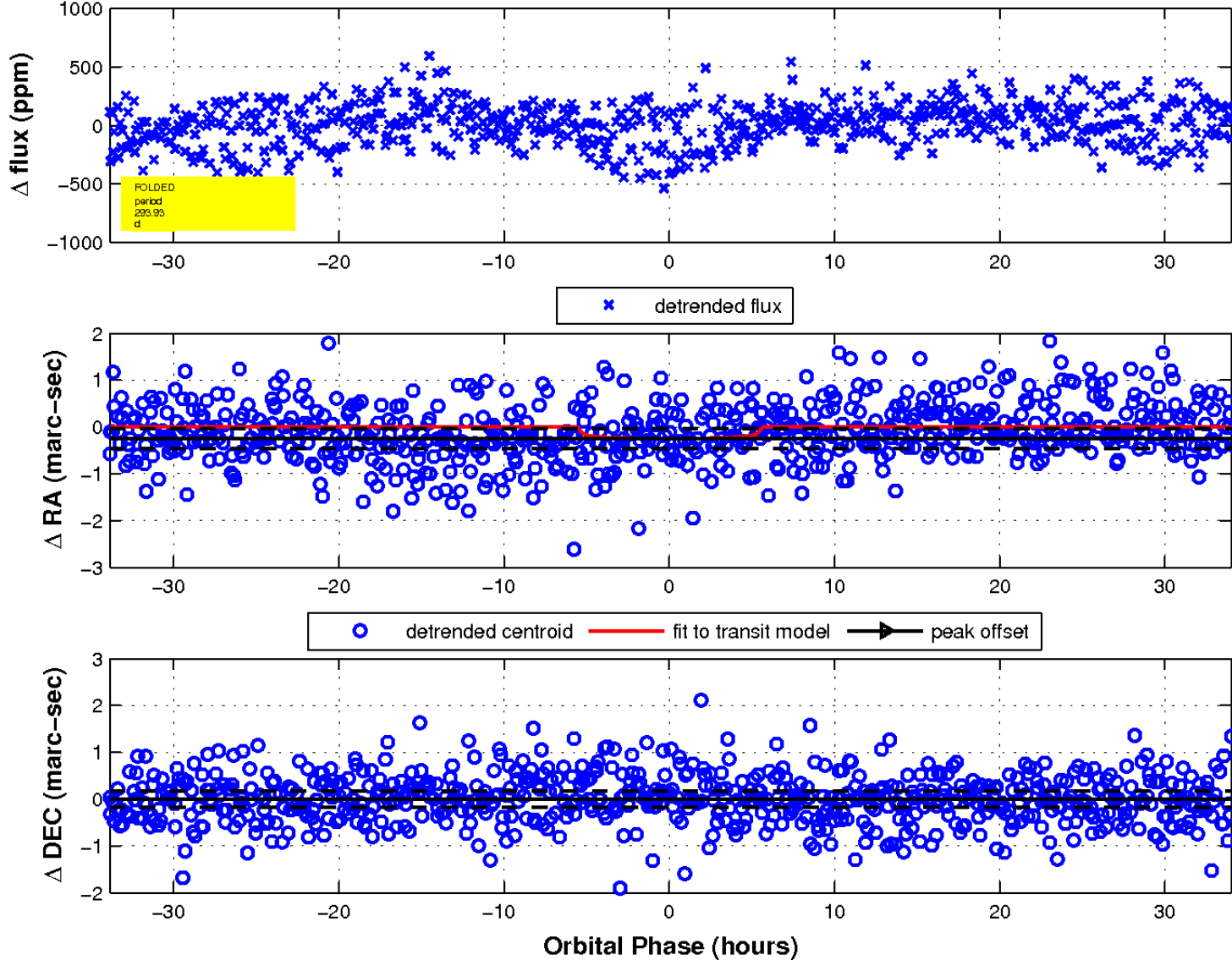
Q16 no OOT image



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



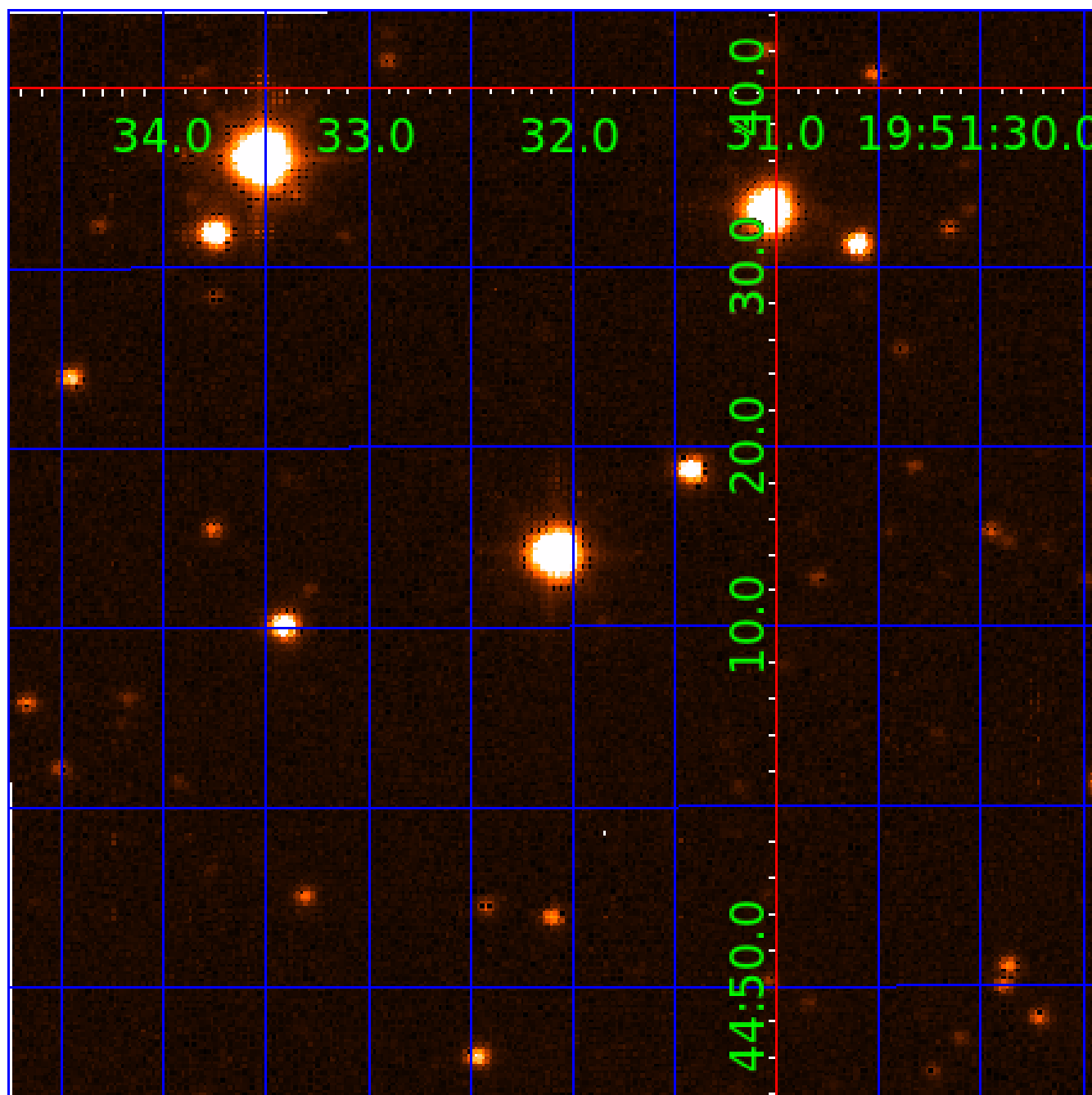
fluxWeightedCentroids, Planet 2 of 5





UKIRT Image

Declination



# KIC 005558085

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005558085-01	OBS	No	2.822114	132.346274	23.5	11.000	8.6	7.4	2.21	6495	1.28	4097.92
005558085-02	OBS	No	293.930746	403.175240	295.7	11.347	12.3	7.5	2.21	6495	4.14	8.36
005558085-03	OBS	No	412.447895	269.113007	180.2	20.883	8.8	5.5	2.21	6495	3.35	5.32
005558085-04	OBS	No	228.512946	159.552624	227.2	10.563	7.6	8.1	2.21	6495	6.49	11.70
005558085-05	OBS	No	54.431982	138.166320	151.1	6.370	7.4	8.6	2.21	6495	2.85	79.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005558085-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005558085-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
005558085-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005558085-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005558085-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT

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

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

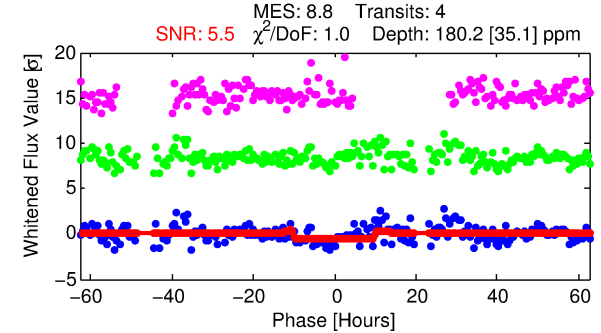
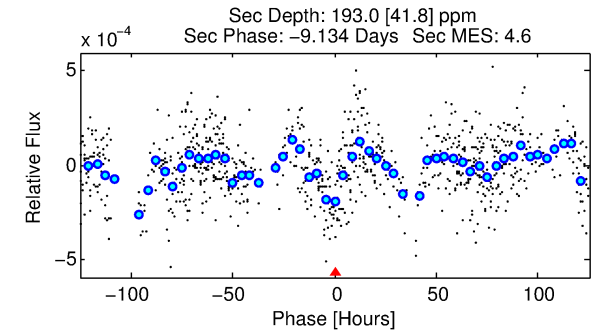
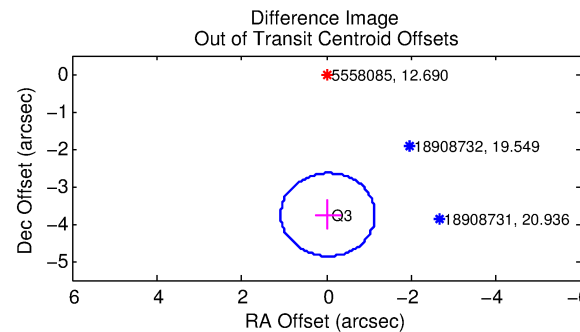
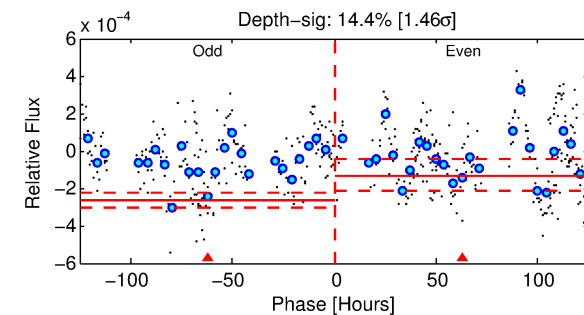
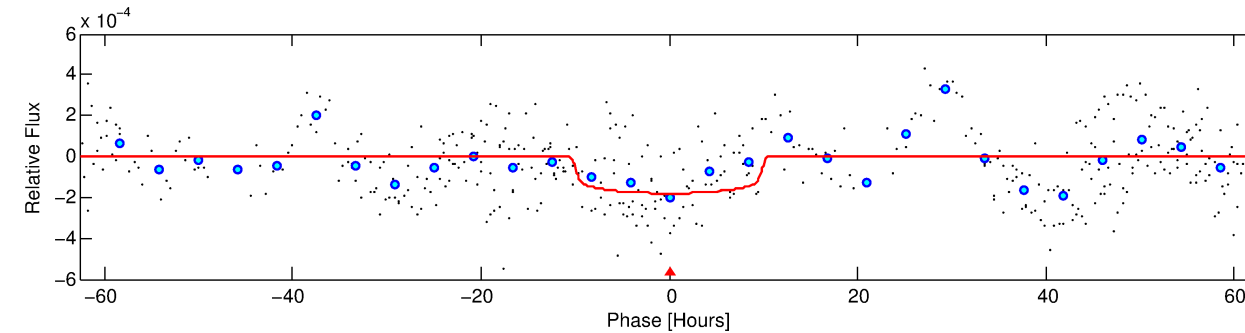
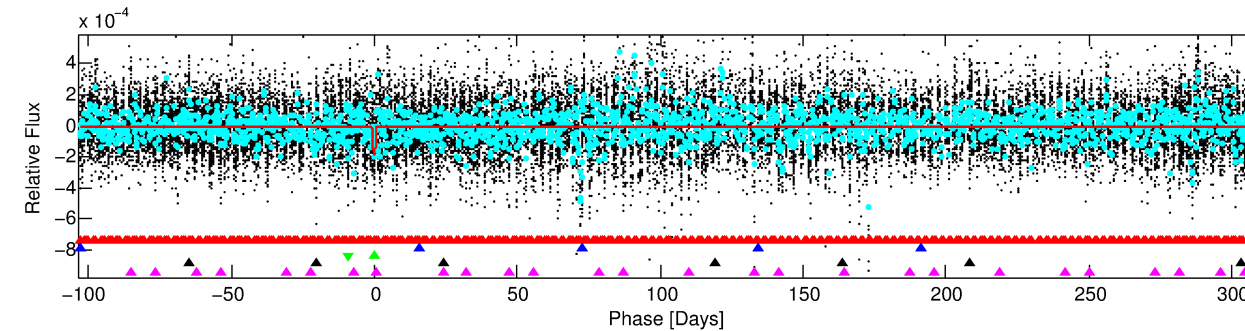
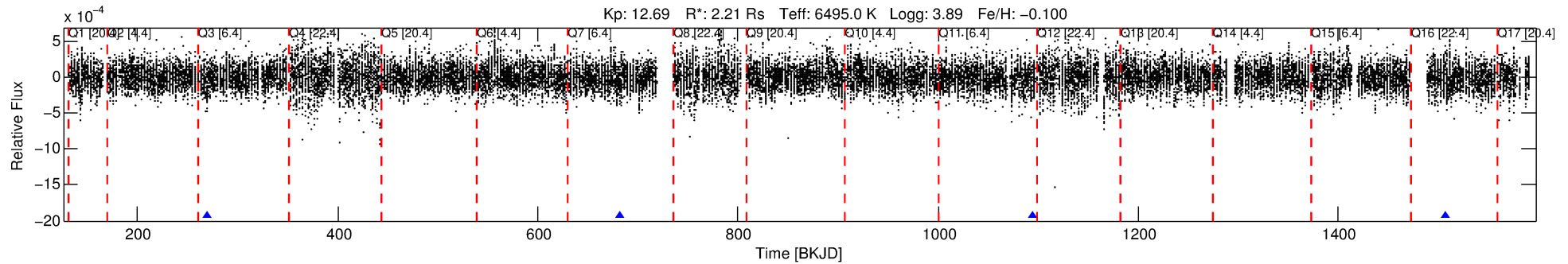
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005558085-03

No Significant Match Found

# DV One-Page Summary

KIC: 5558085 Candidate: 3 of 5 Period: 412.448 d



## DV Fit Results:

Period = 412.44789 [0.03277] d  
Epoch = 269.1130 [0.0216] BKJD  
Rp/R\* = 0.0139 [0.0026]  
a/R\* = 83.95 [71.71]  
b = 0.85 [0.28]  
Seff = 5.32 [2.72]  
Teq = 387 [49] K  
Rp = 3.35 [1.24] Re  
a = 1.2117 [0.3735] AU  
Ag = 13850.78 [9124.16] [1.52 $\sigma$ ]  
Teffp = 6496 [731] K [8.34 $\sigma$ ]

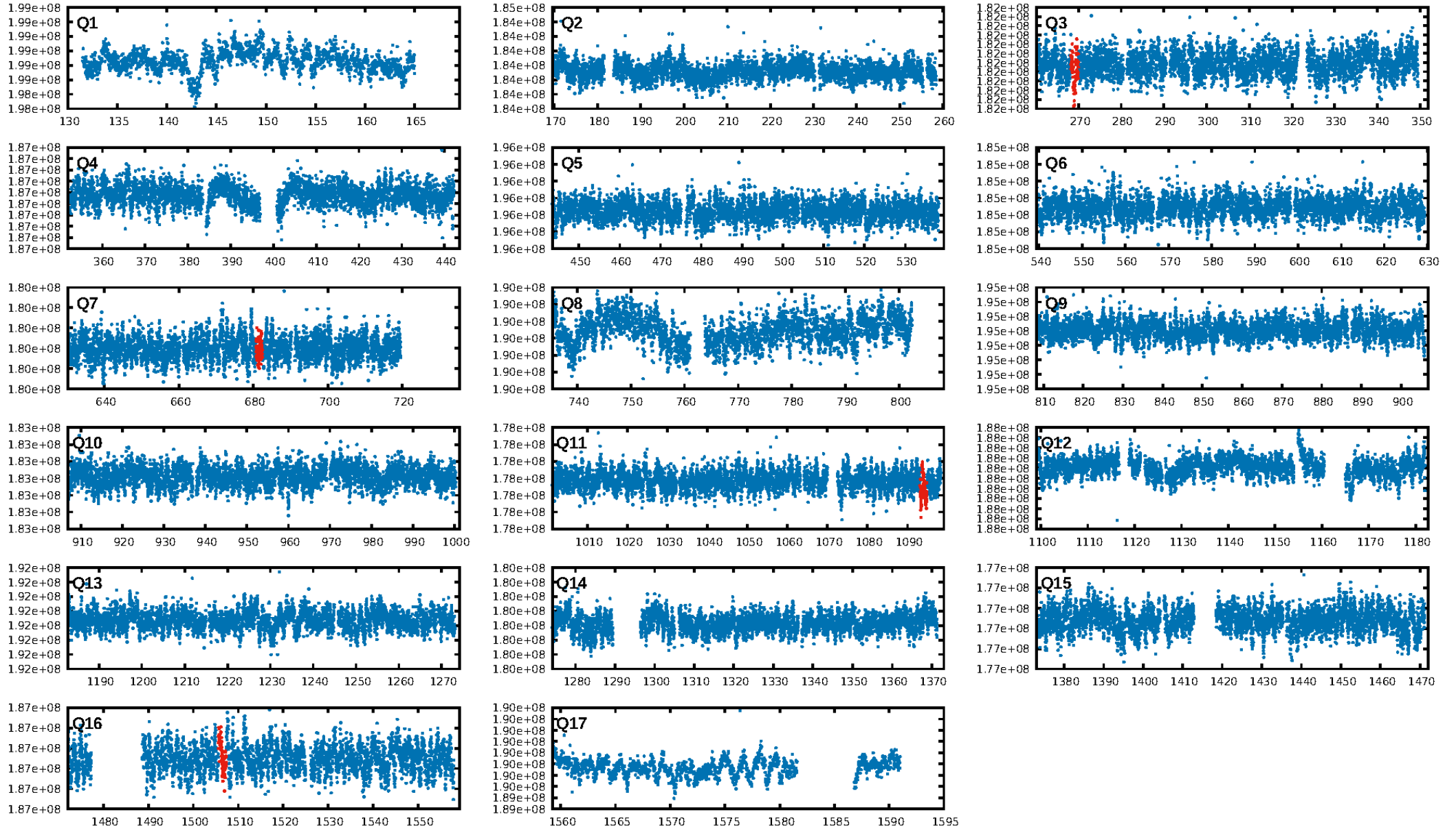
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [119.68 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 53.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 6.15e-11  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 0.8615  
Centroid-sig: 25.0%  
Centroid-so: 1.059 arcsec [1.13 $\sigma$ ]  
OotOffset-rm: 3.755 arcsec [10.16 $\sigma$ ]  
KicOffset-rm: 4.004 arcsec [10.84 $\sigma$ ]  
OotOffset-st: 0/1/0/0 [1]  
KicOffset-st: 0/1/0/0 [1]  
DiffImageQuality-fgm: 1.00 [1/1]  
DiffImageOverlap-fno: 0.00 [0/2]

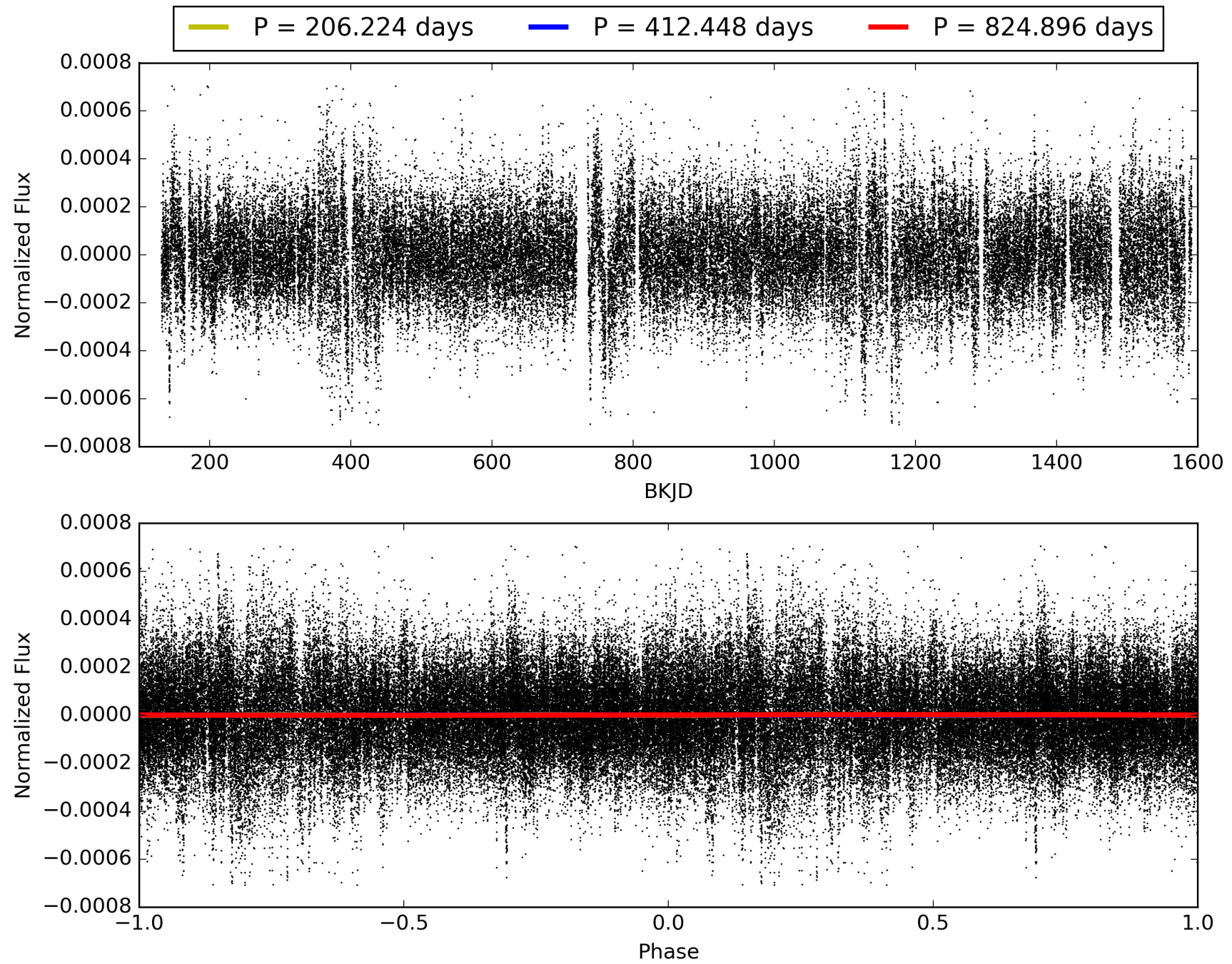
Software Revision: svn-ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:46:16 Z

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

# TCE 005558085-03, PDC Light Curves



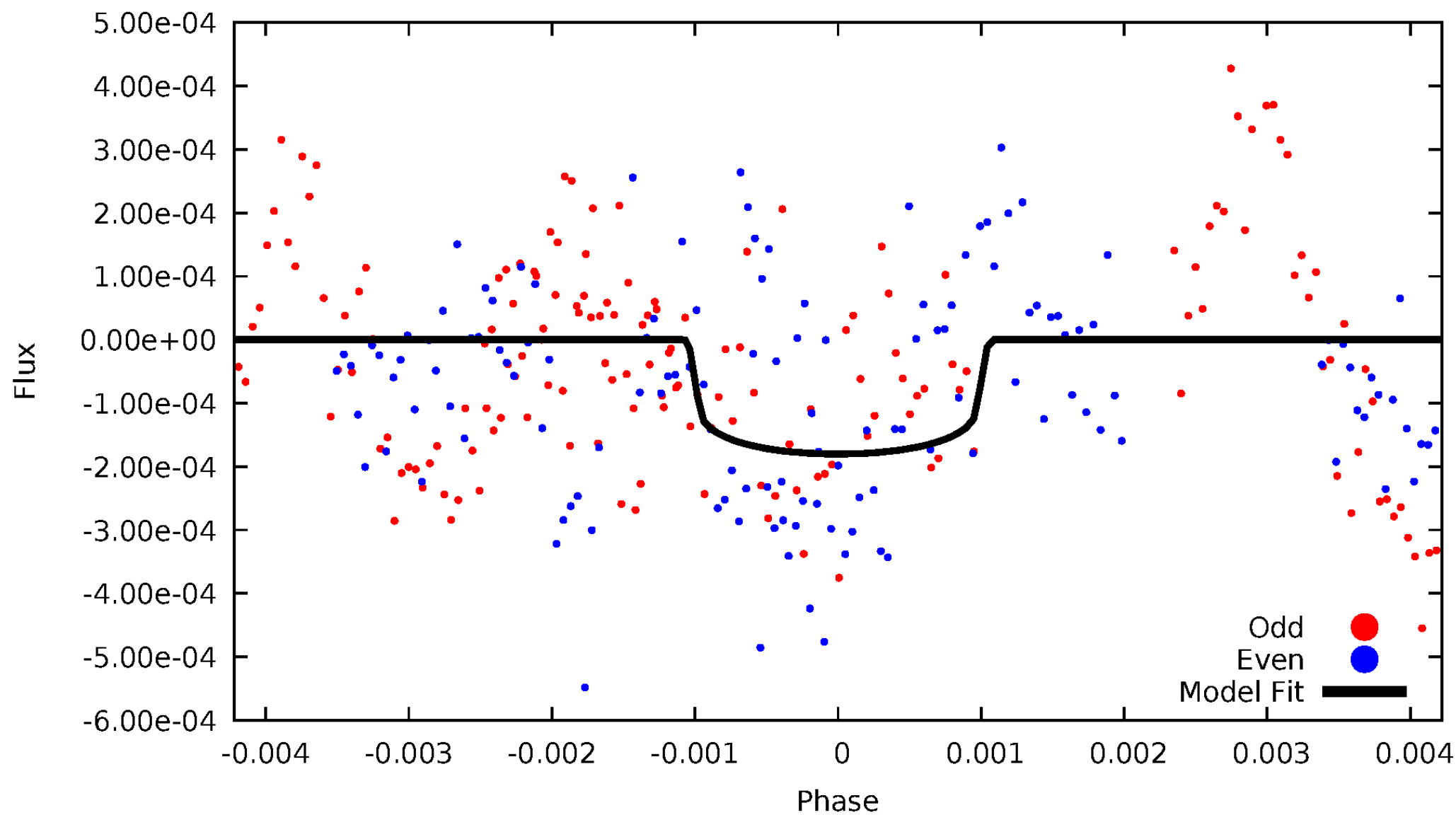
TCE 005558085-03





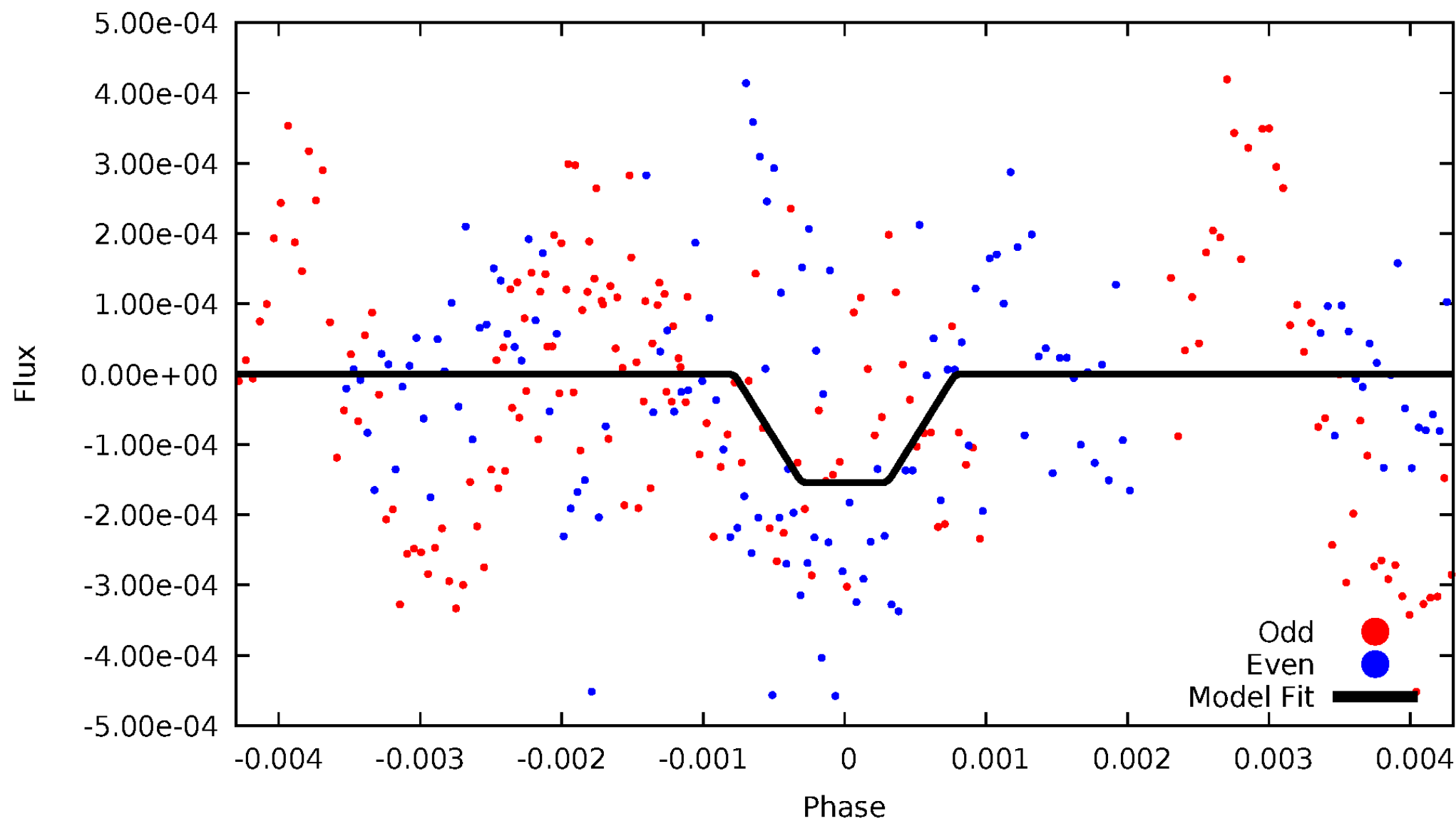
# DV Odd/Even

TCE 005558085-03



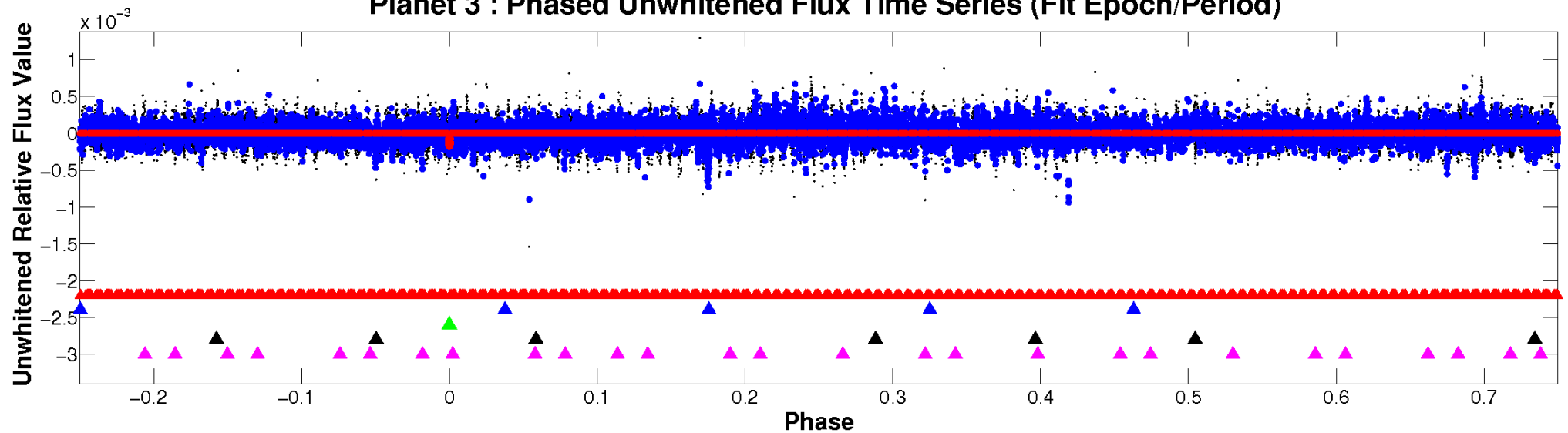
# ALT Odd/Even

TCE 005558085-03

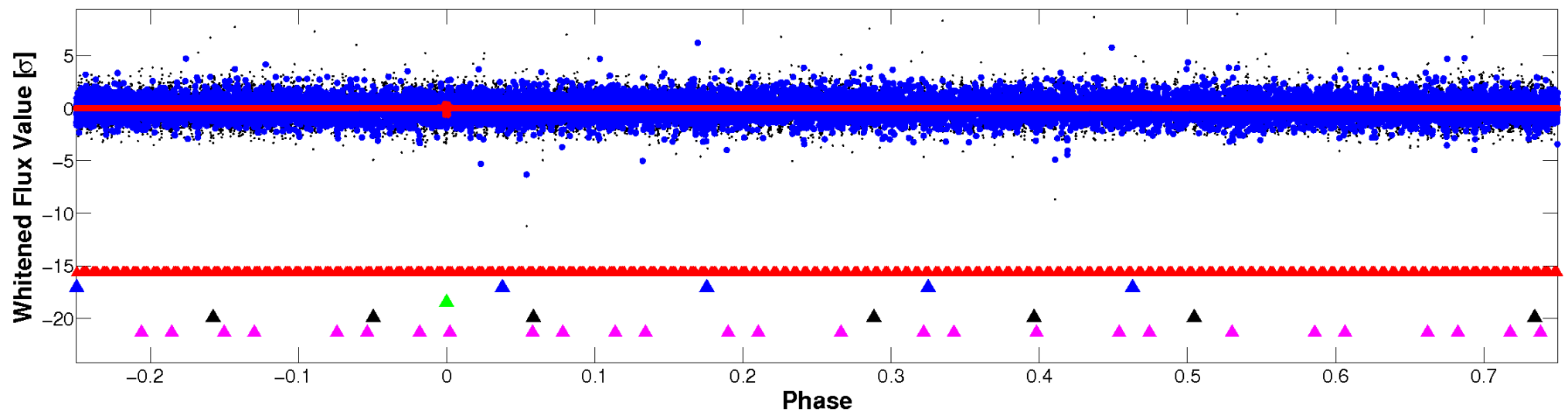


# Non-Whitened Vs. Whitened Light Curve

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

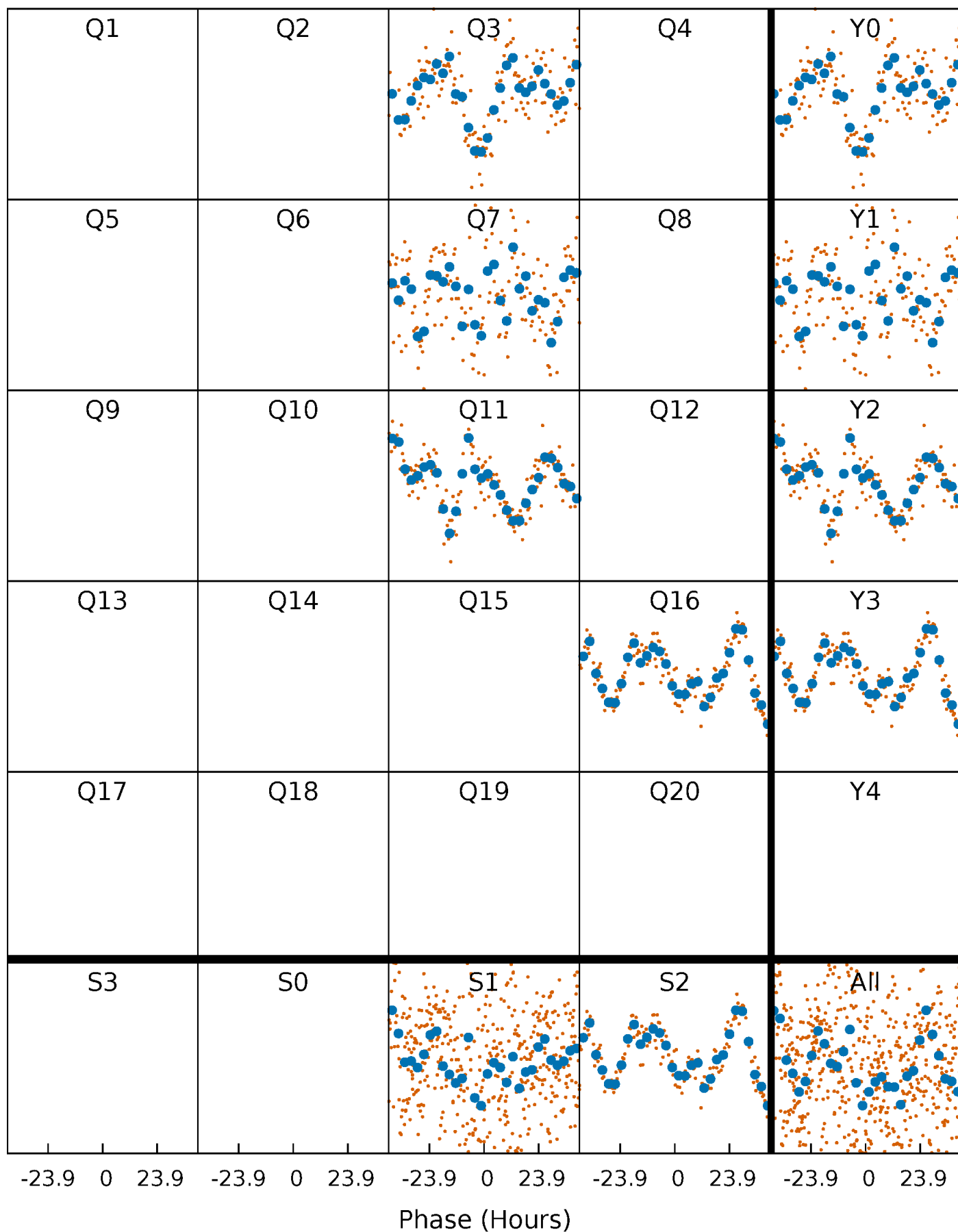


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



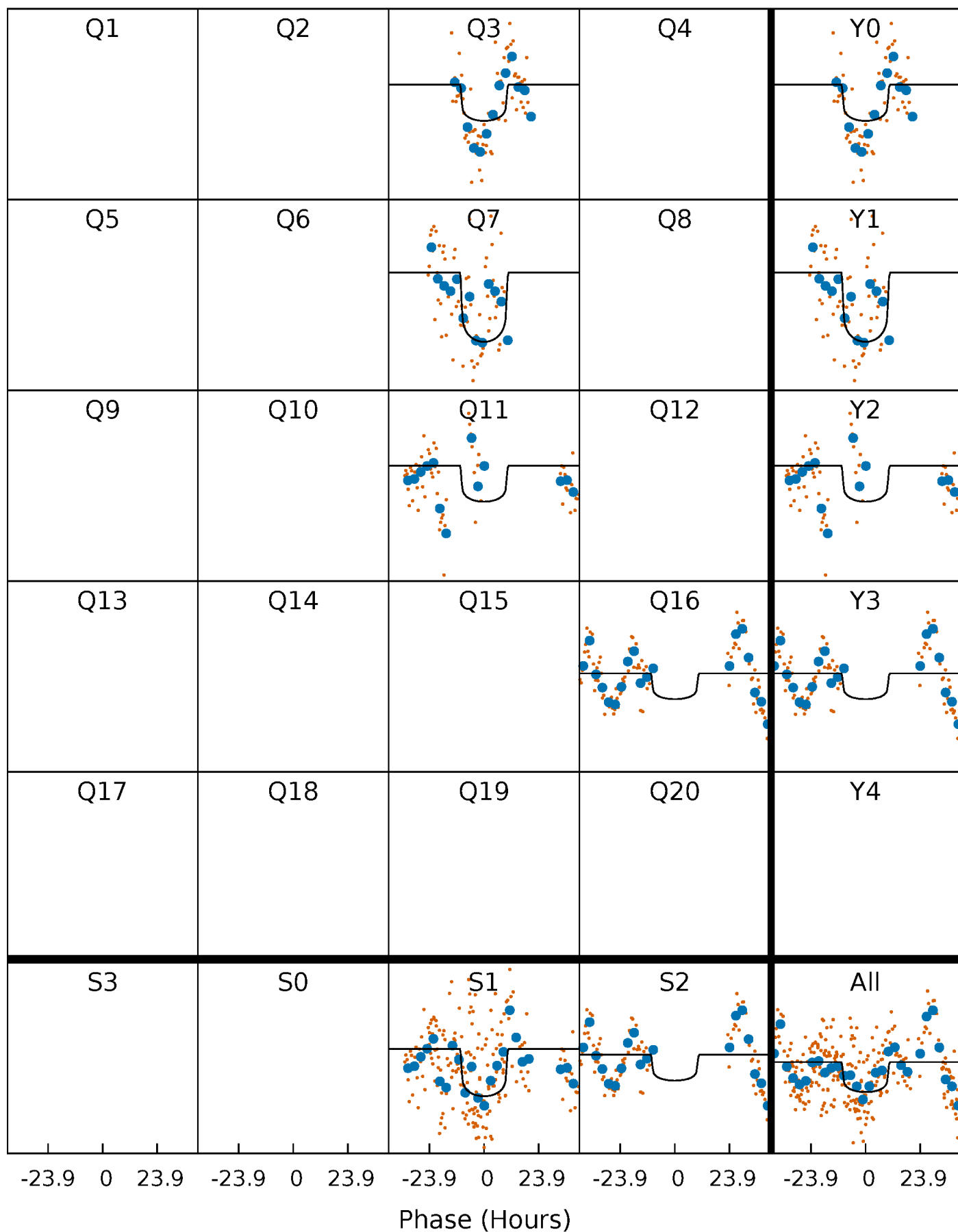
# PDC Quarter-Phased Transit Curves

TCE 005558085-03 P=412.447895 Days  $T_0=269.113007$  (BKJD)



# DV Quarter-Phased Transit Curves

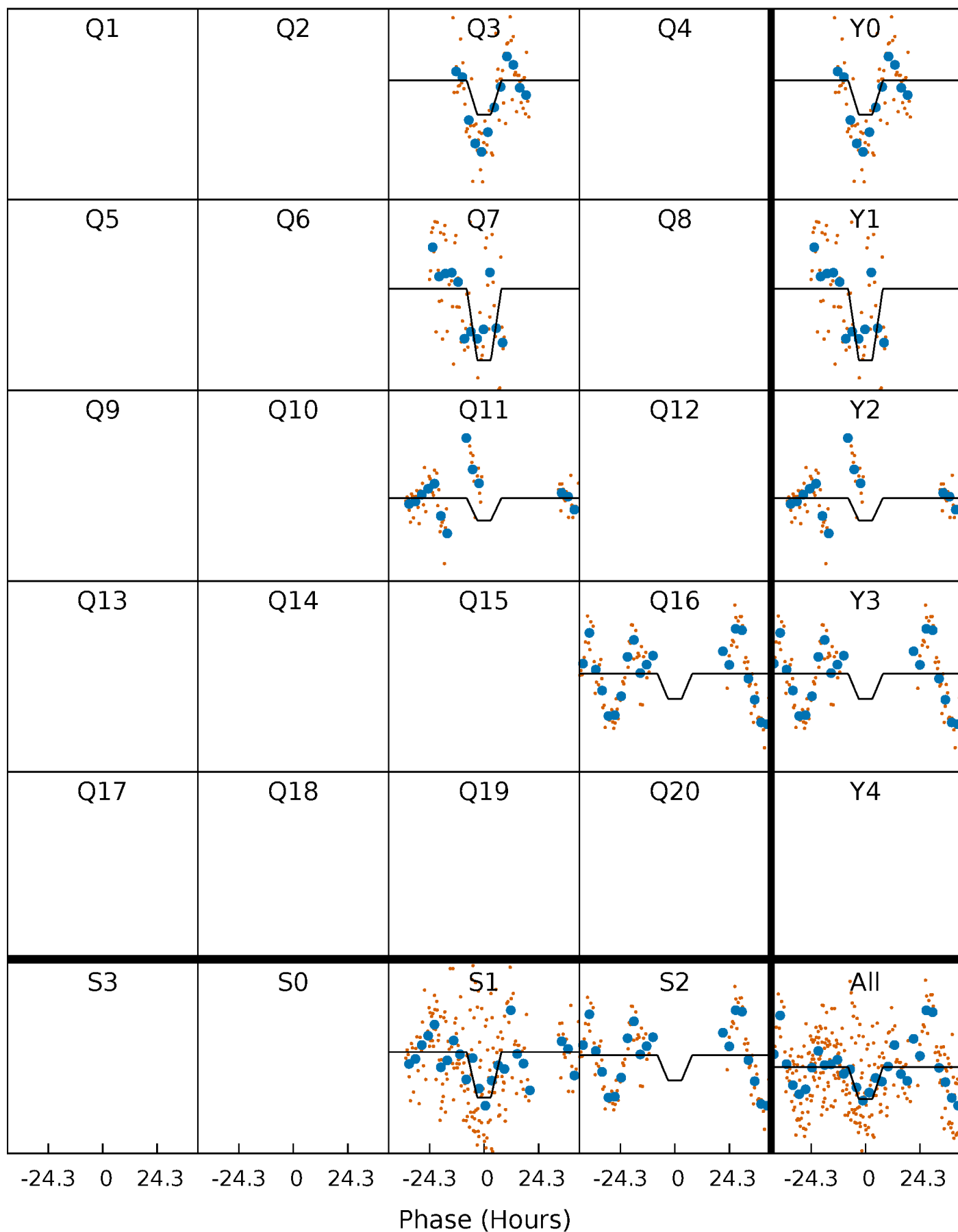
TCE 005558085-03     $P=412.447895$  Days     $T_0=269.113007$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

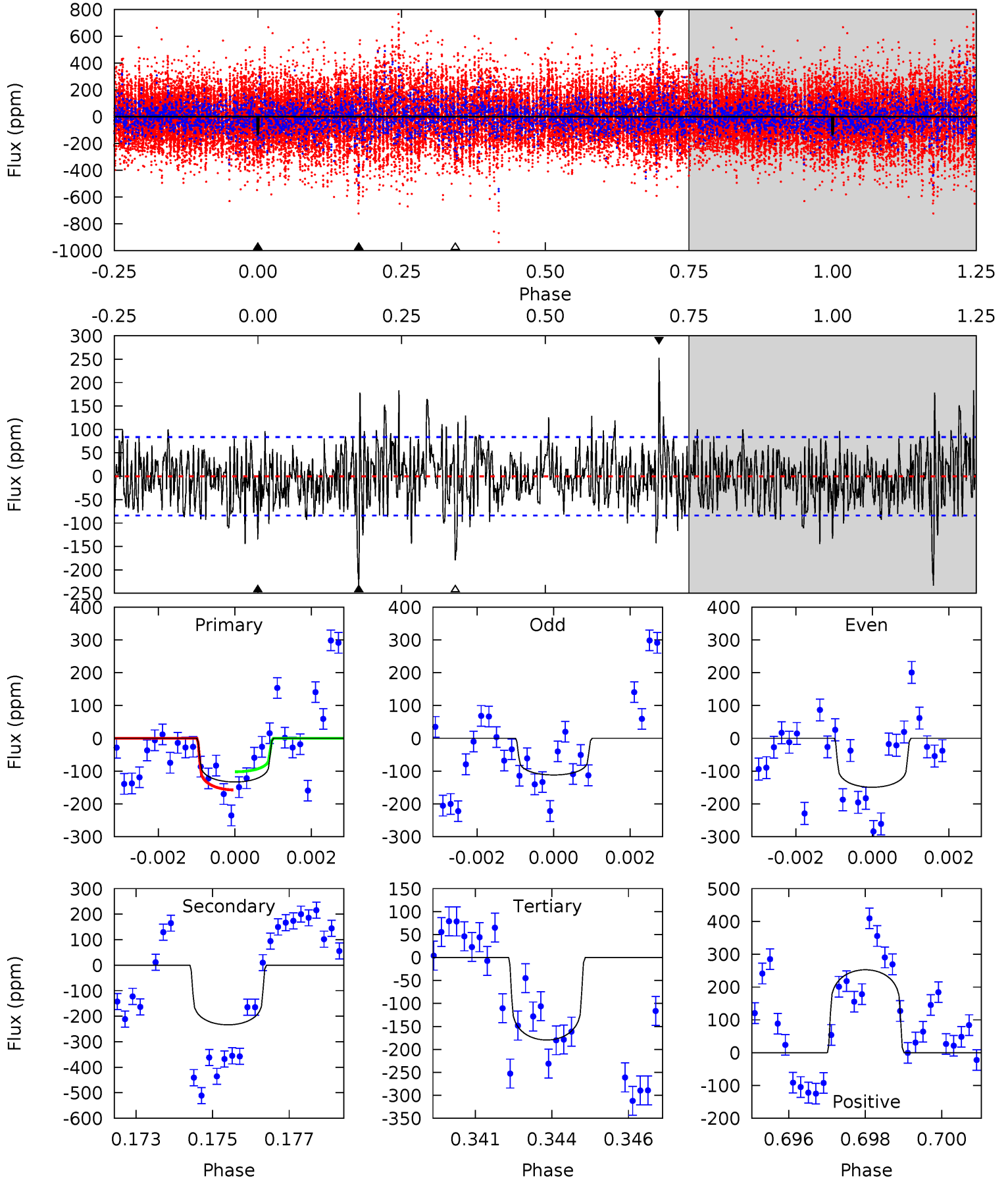
TCE 005558085-03 P=412.458220 Days  $T_0=269.099380$  (BKJD)



# DV Model-Shift Uniqueness Test

005558085-03, P = 412.447895 Days, E = 269.113007 Days

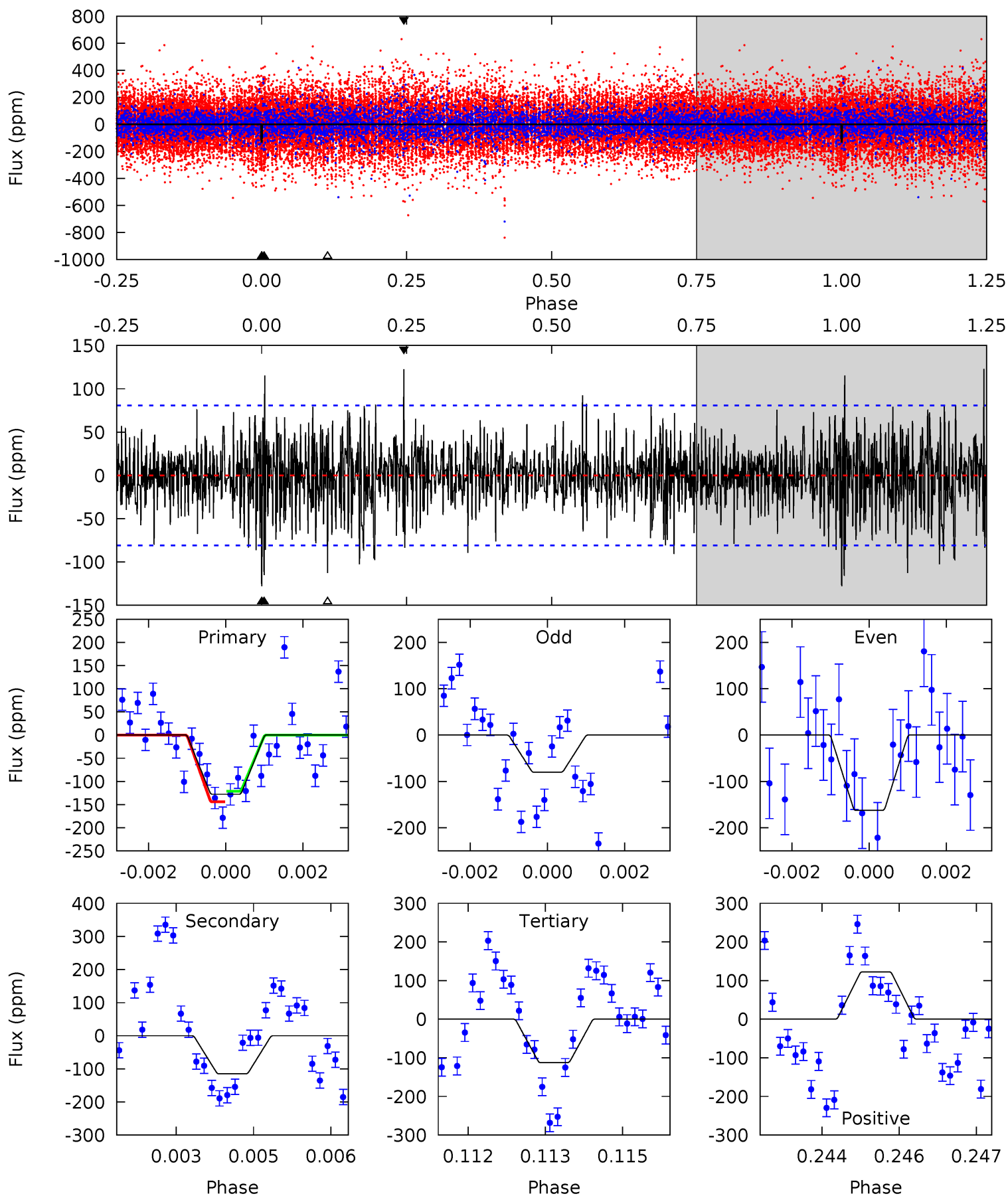
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.45	14.8	11.4	16.0	5.31	3.07	3.03	-2.94	-7.57	3.44	-1.20	1.18	0.88	0.52	1.73



# Alt Model-Shift Uniqueness Test

005558085-03, P = 412.458220 Days, E = 269.099380 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
8.49	7.64	7.48	8.15	5.37	3.16	1.86	1.01	0.34	0.16	-0.51	2.72	0.86	0.49	0.73



### Stellar Parameters For KIC 005558085

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6495^{+156}_{-195}$	$3.892^{+0.292}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.214^{+0.469}_{-0.703}$	$1.396^{+0.210}_{-0.257}$	$0.181^{+0.331}_{-0.065}$
	+2%/-3%	+8%/-3%	+300%/-250%	+21%/-32%	+15%/-18%	+182%/-36%
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 005558085-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-234 \pm 16$	$3.16^{+0.81}_{-0.78}$	$532^{+35}_{-47}$	$6836^{+876}_{-602}$	$18684^{+14300}_{-6782}$
Alt.	$-115 \pm 15$	$2.87^{+0.80}_{-0.73}$	$530^{+36}_{-46}$	$5981^{+828}_{-547}$	$11452^{+8900}_{-4622}$

$T_{\text{max}}$  = 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

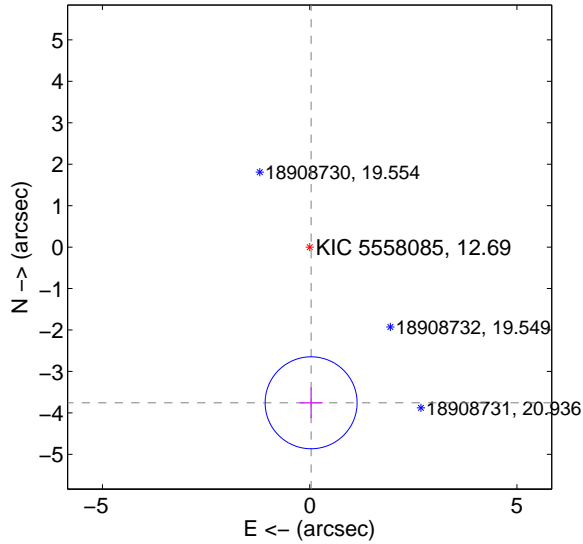
Supplemental centroid analysis for 005558085-03. Kepler magnitude: 12.69. Transit SNR 5.48

There are 1 quarters with good PRF difference image offsets

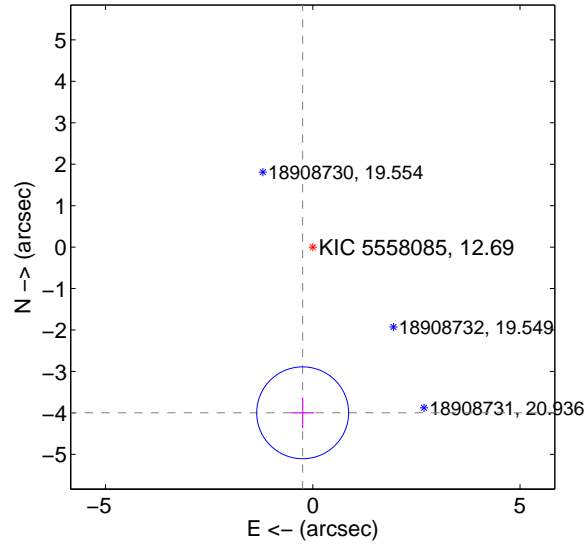
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.755 \pm 0.370$	10.16	$-0.035 \pm 0.279$	$-3.755 \pm 0.370$
PRF-fit source offset from KIC position	$4.004 \pm 0.369$	10.84	$0.244 \pm 0.279$	$-3.997 \pm 0.370$
photometric centroid source offset	$1.06 \pm 0.94$	1.13	$-0.96 \pm 0.95$	$0.45 \pm 0.89$

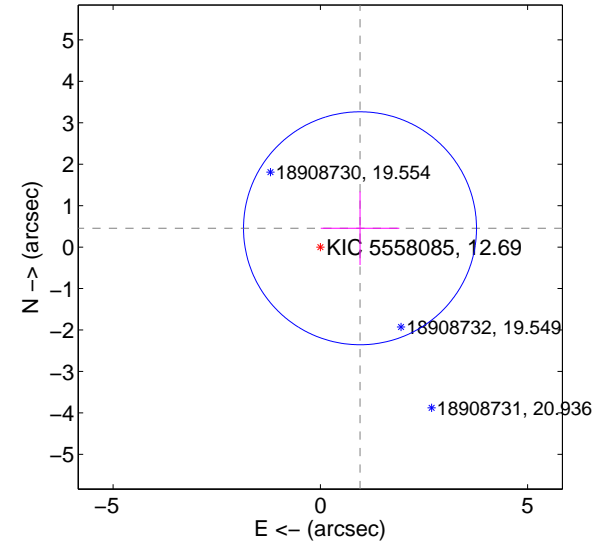
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

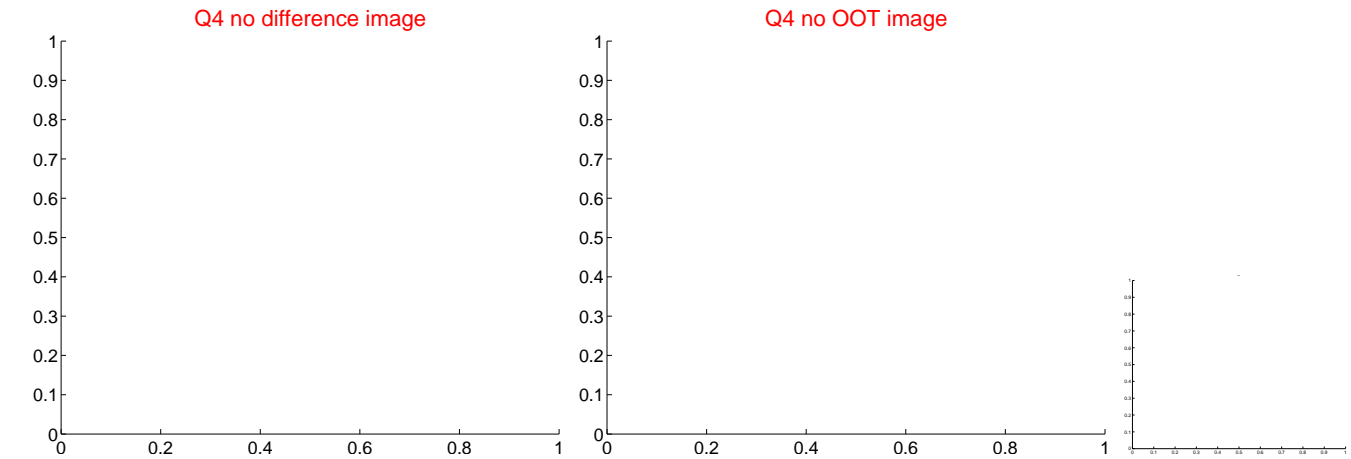
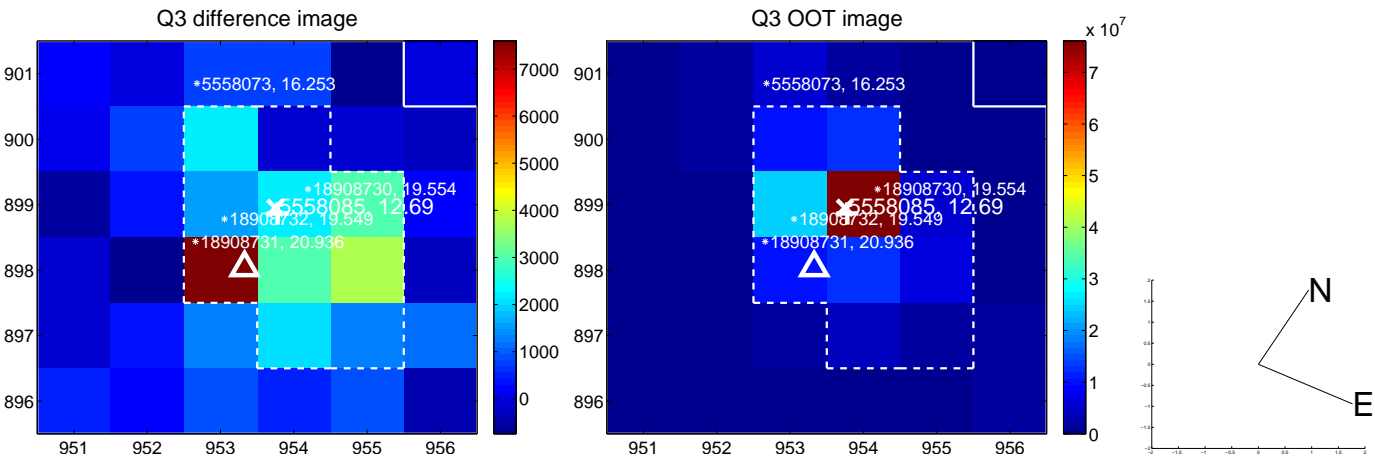
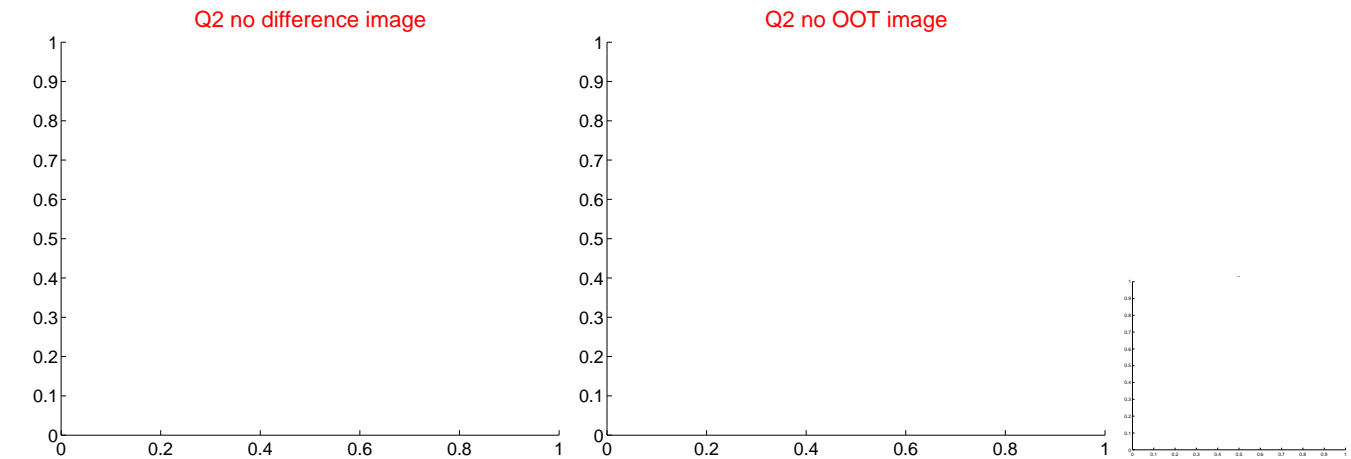
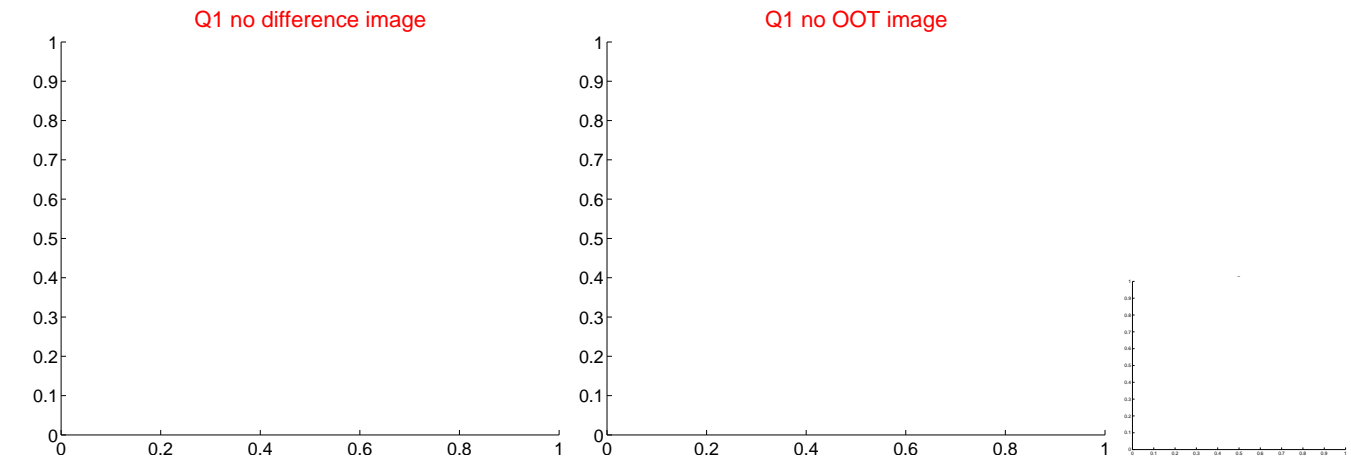


offset from photometric centroids



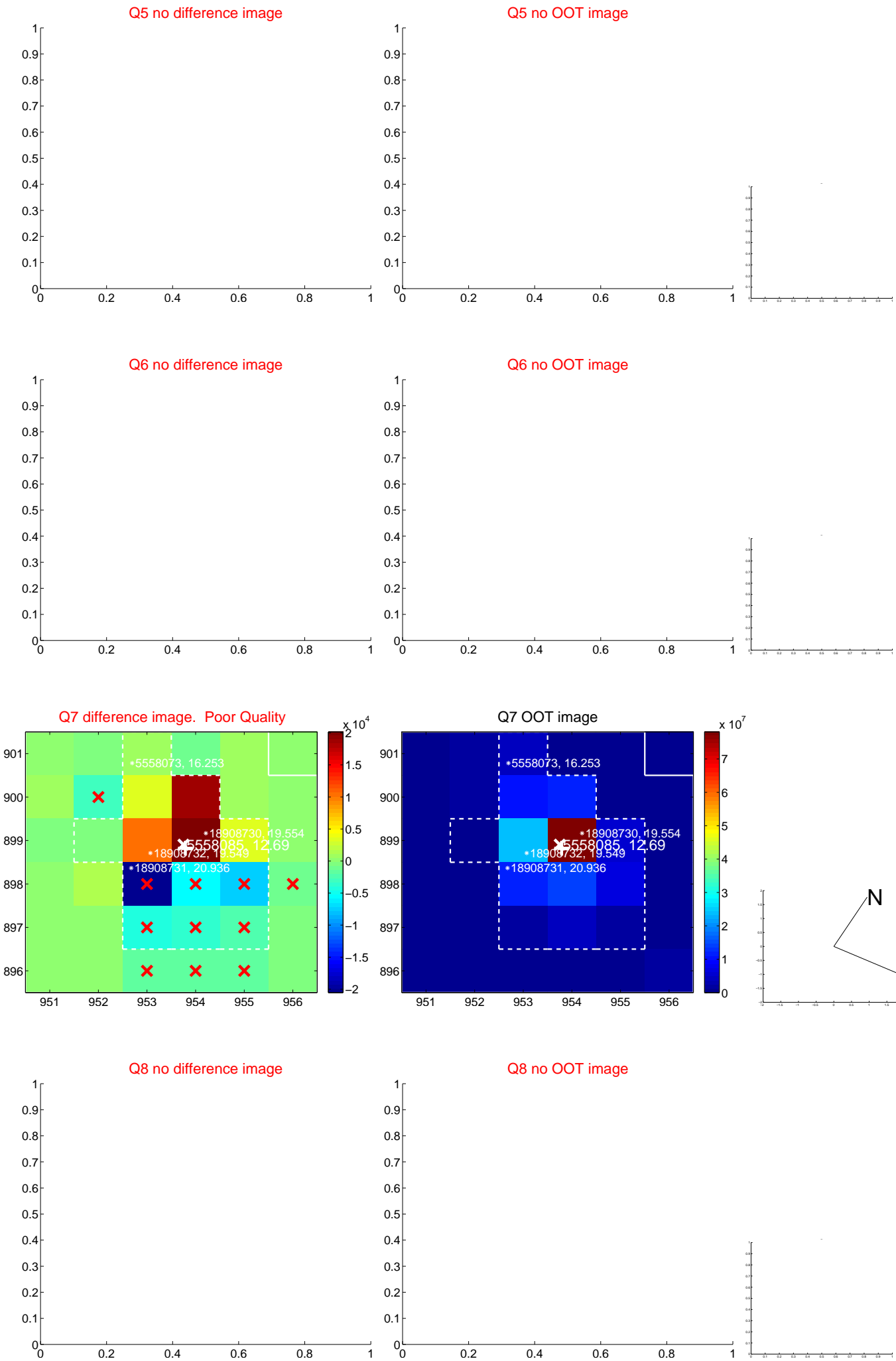
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



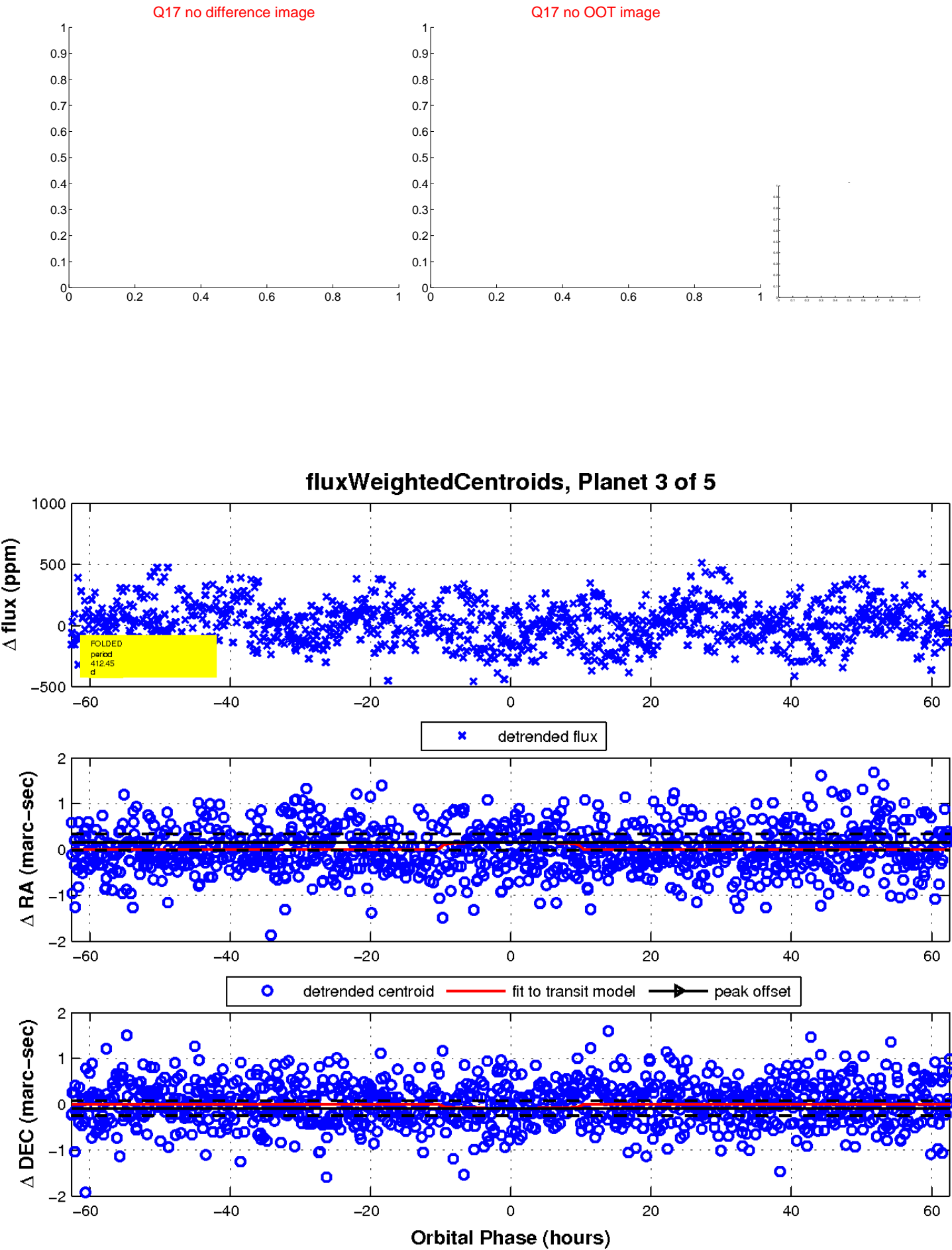
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

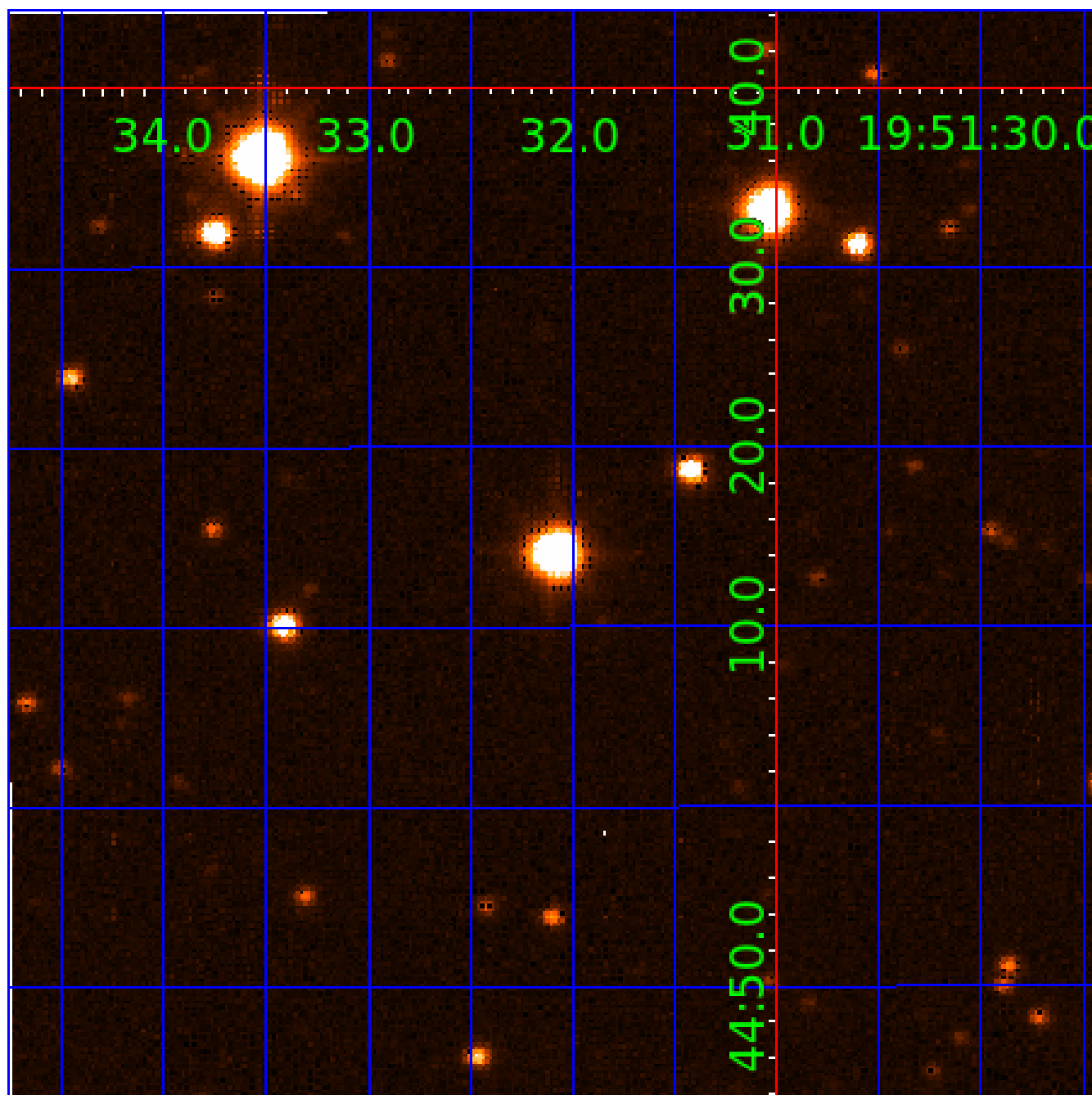


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 005558085

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005558085-01	OBS	No	2.822114	132.346274	23.5	11.000	8.6	7.4	2.21	6495	1.28	4097.92
005558085-02	OBS	No	293.930746	403.175240	295.7	11.347	12.3	7.5	2.21	6495	4.14	8.36
005558085-03	OBS	No	412.447895	269.113007	180.2	20.883	8.8	5.5	2.21	6495	3.35	5.32
005558085-04	OBS	No	228.512946	159.552624	227.2	10.563	7.6	8.1	2.21	6495	6.49	11.70
005558085-05	OBS	No	54.431982	138.166320	151.1	6.370	7.4	8.6	2.21	6495	2.85	79.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005558085-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005558085-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
005558085-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005558085-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005558085-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT

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

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

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

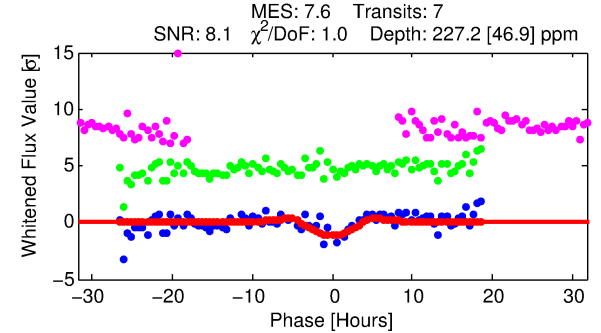
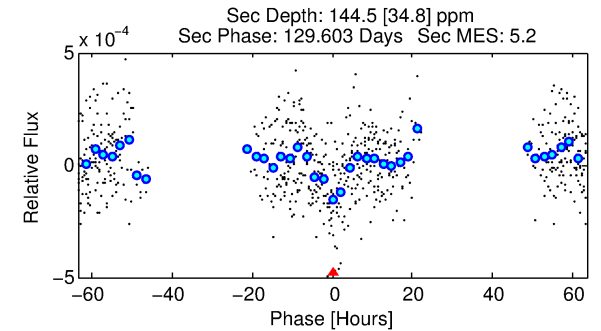
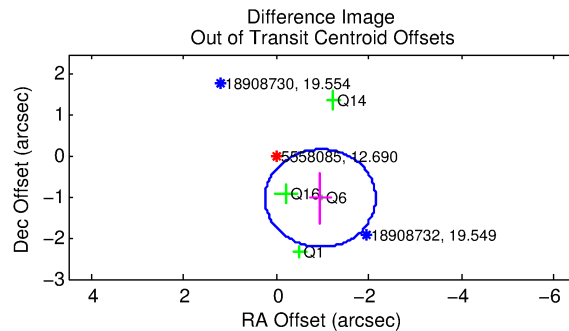
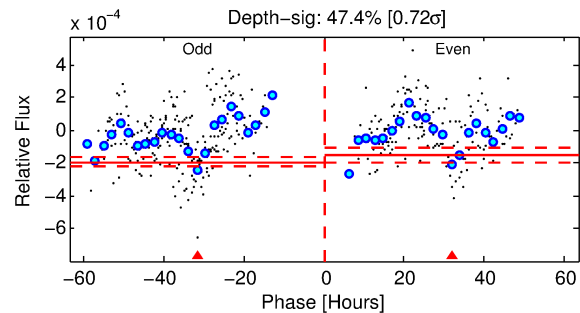
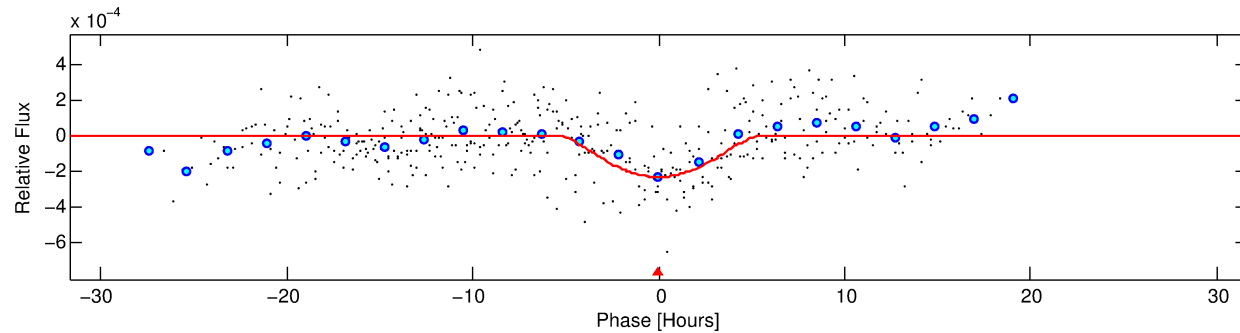
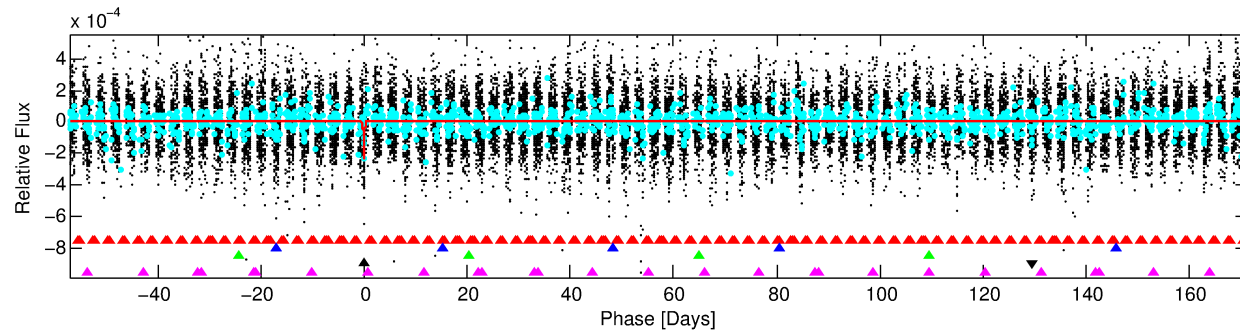
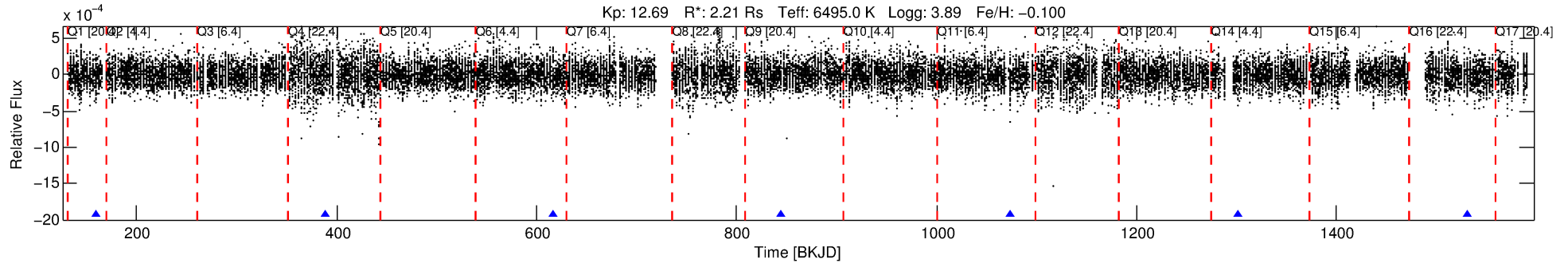
## Ephemeris Match Information For 005558085-04

No Significant Match Found



# DV One-Page Summary

KIC: 5558085 Candidate: 4 of 5 Period: 228.513 d



## DV Fit Results:

Period = 228.51295 [0.00593] d  
Epoch = 159.5526 [0.0219] BKJD  
Rp/R\* = 0.0269 [0.0677]  
a/R\* = 38.95 [26.59]  
b = 1.00 [0.10]  
Seff = 11.70 [5.97]  
Teq = 472 [60] K  
Rp = 6.49 [16.48] Re  
a = 0.8174 [0.2520] AU  
Ag = 1259.67 [6380.47] [0.20 $\sigma$ ]  
Teffp = 4344 [5476] K [0.71 $\sigma$ ]

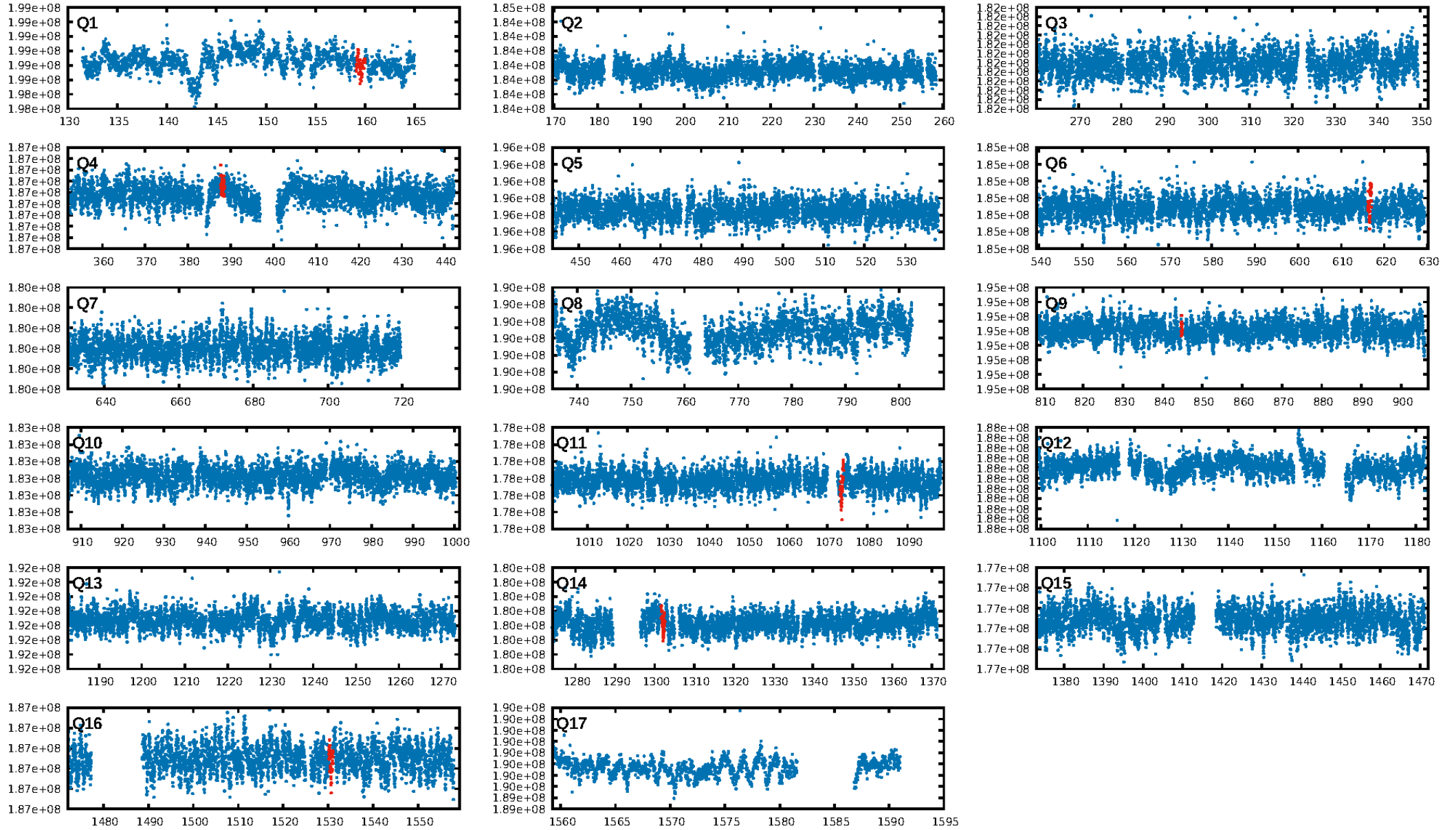
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [338.71 $\sigma$ ]  
LongPeriod-sig: 100.0% [101.27 $\sigma$ ]  
ModelChiSquare2-sig: 43.8%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.61e-09**  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: 1.701  
Centroid-sig: 59.5%  
Centroid-so: 0.555 arcsec [0.60 $\sigma$ ]  
**OotOffset-rm: 1.398 arcsec [3.50 $\sigma$ ]**  
**KicOffset-rm: 1.461 arcsec [3.81 $\sigma$ ]**  
OotOffset-st: 2/0/1/1 [4]  
KicOffset-st: 2/0/1/1 [4]  
DiffImageQuality-fgm: 1.00 [4/4]  
DiffImageOverlap-fno: 0.80 [4/5]

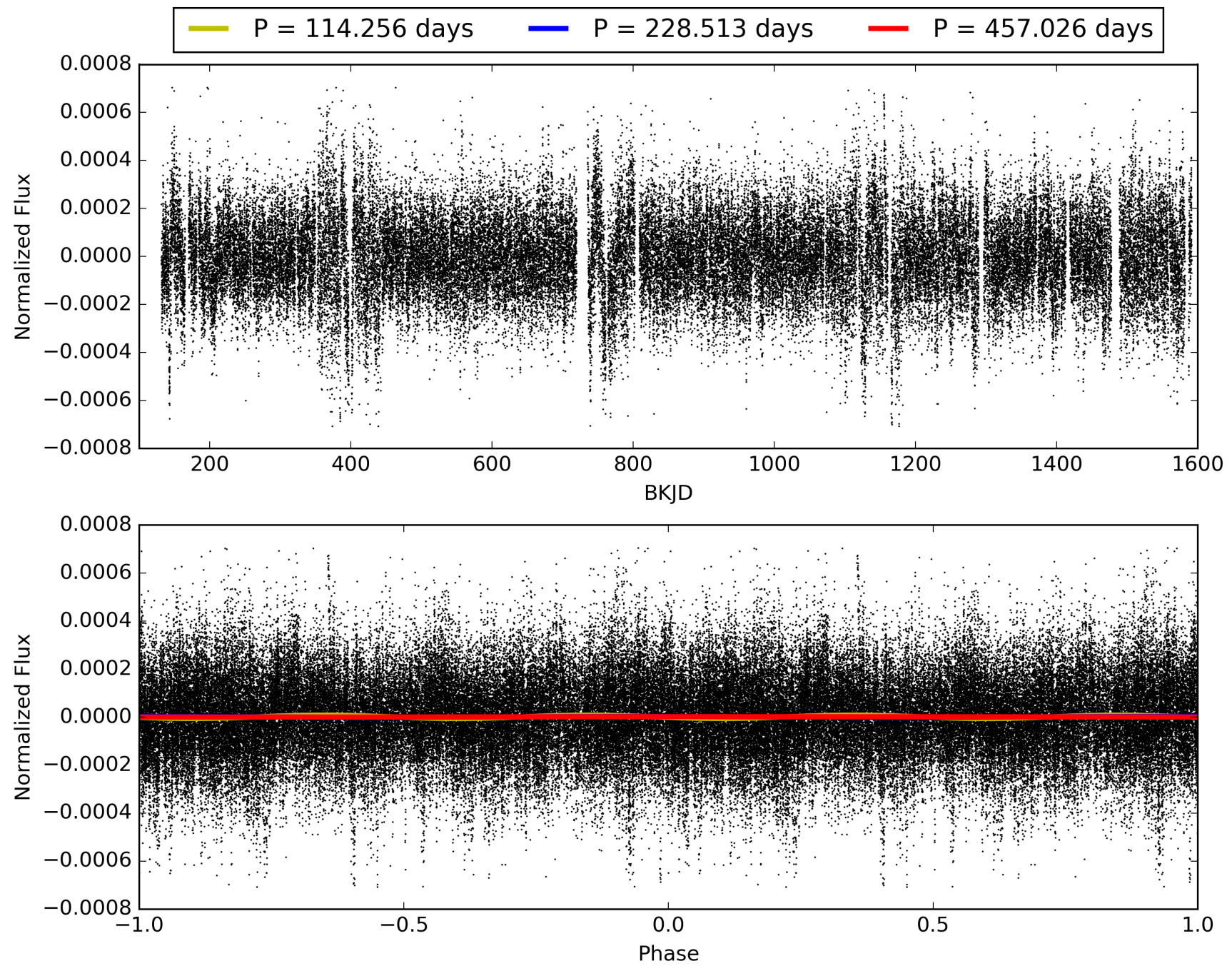
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:46:22 Z

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

# TCE 005558085-04, PDC Light Curves

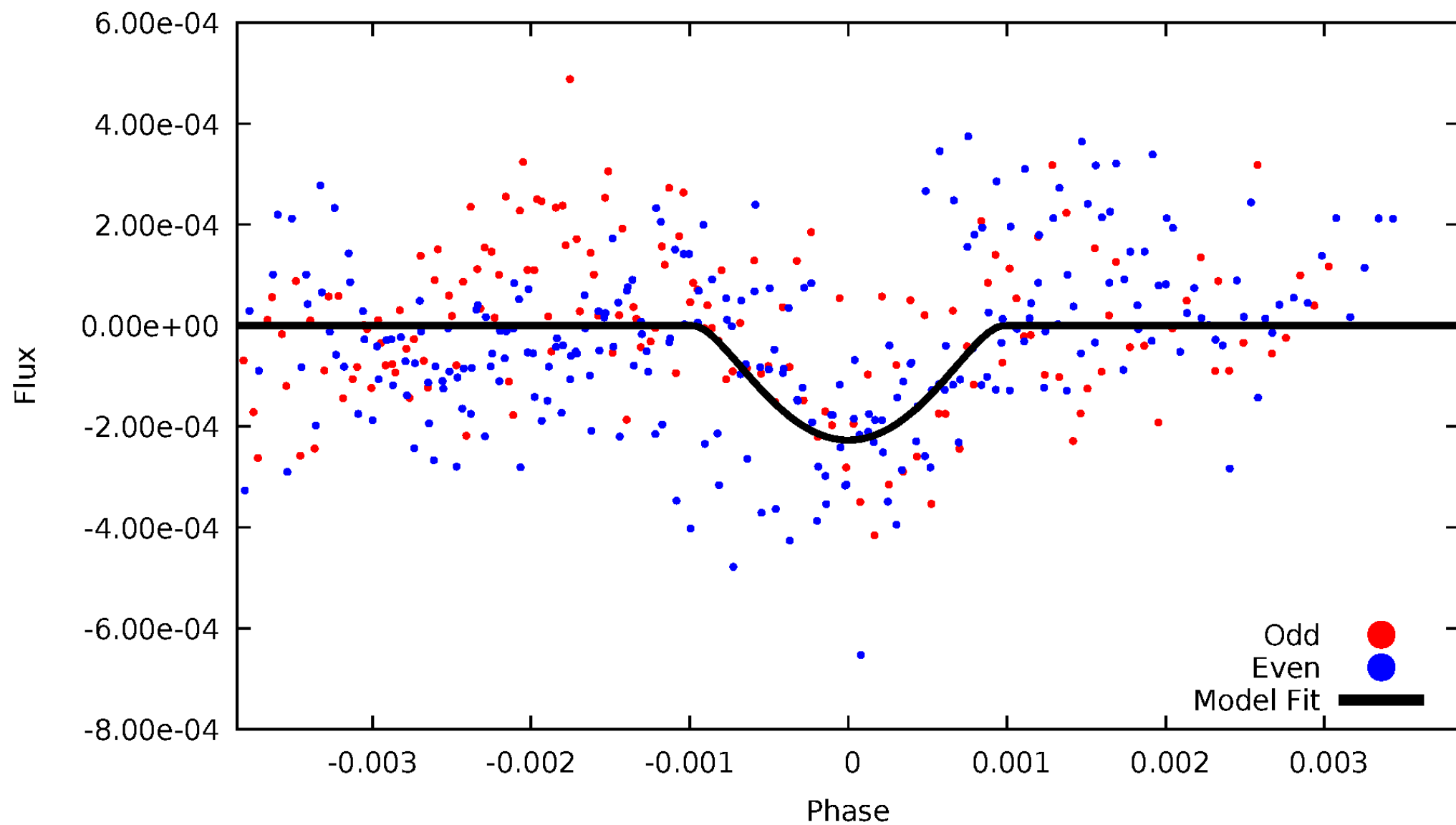


TCE 005558085-04



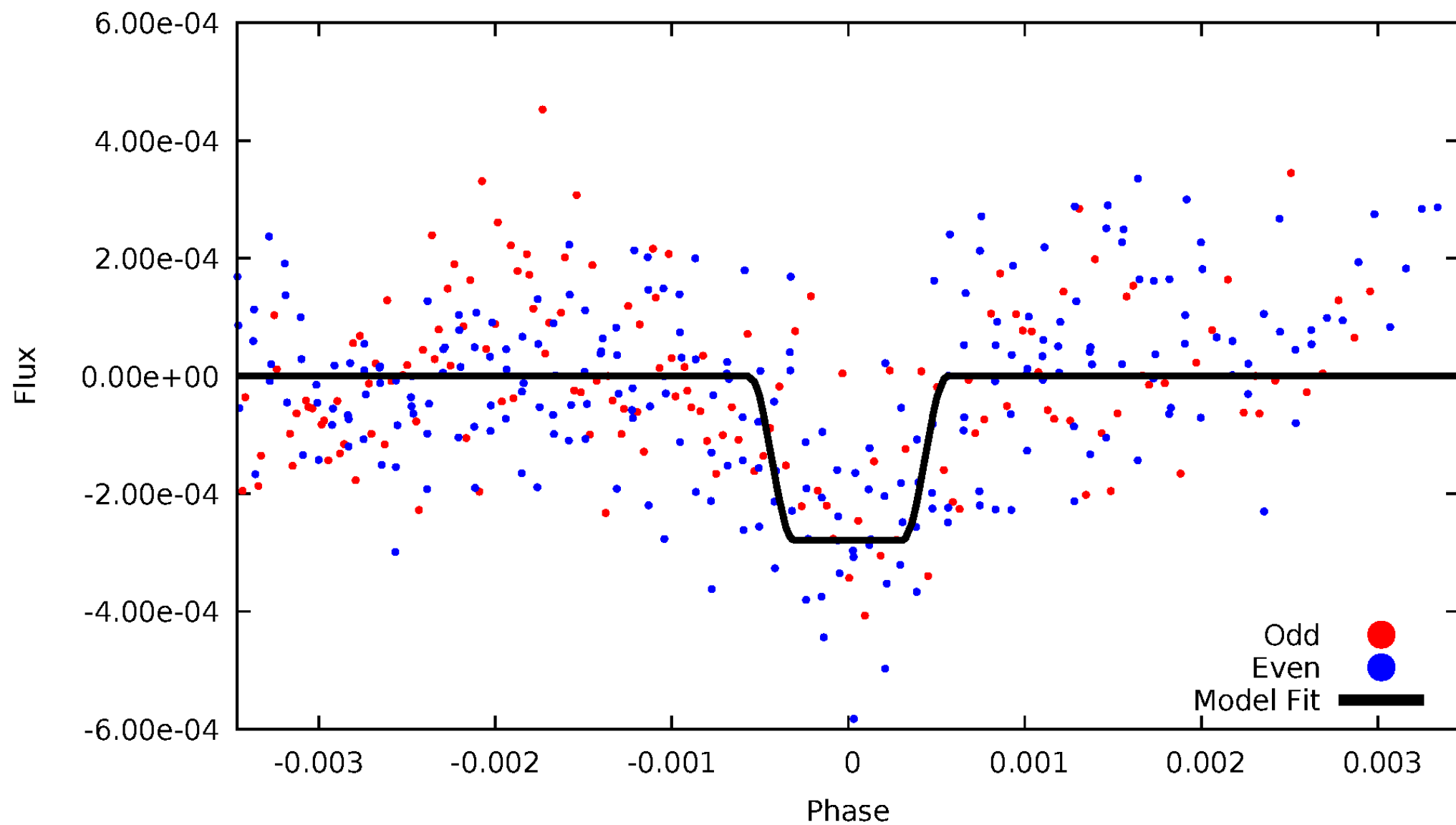
# DV Odd/Even

TCE 005558085-04



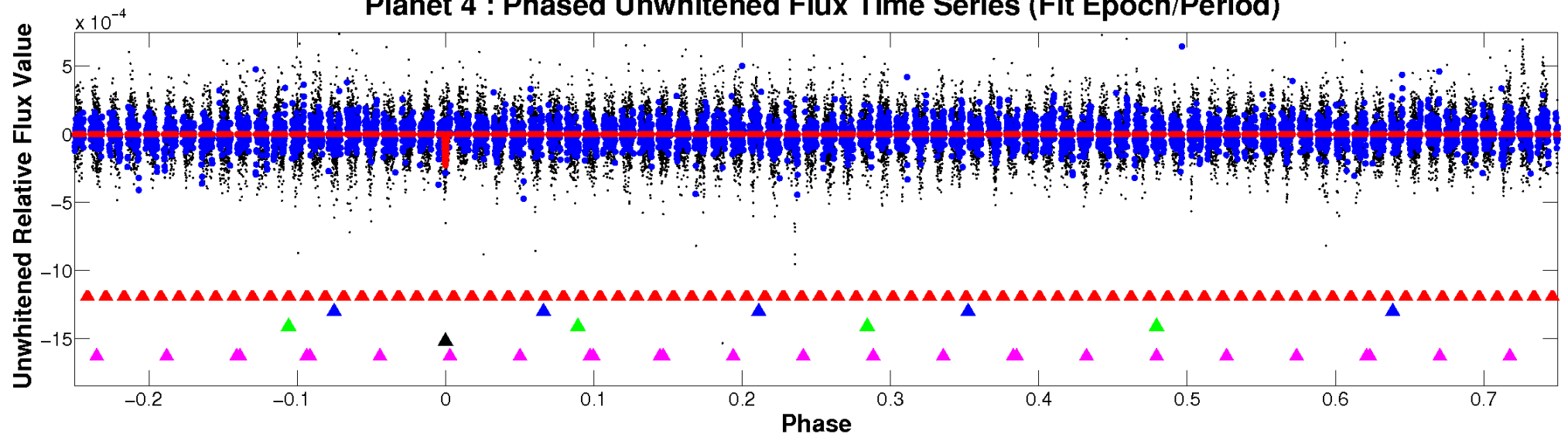
# ALT Odd/Even

TCE 005558085-04

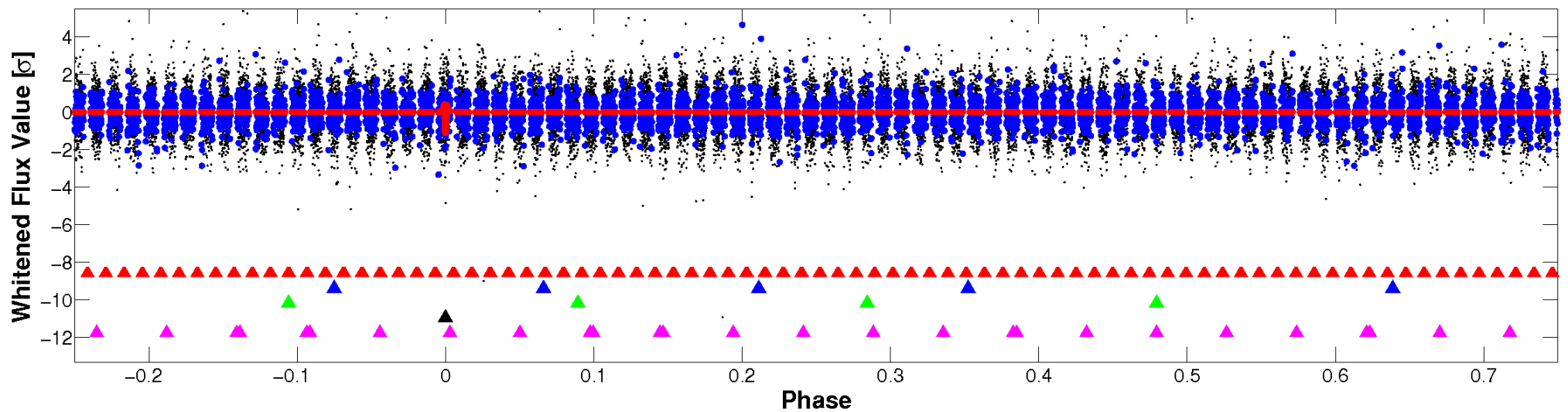


# Non-Whitened Vs. Whitened Light Curve

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



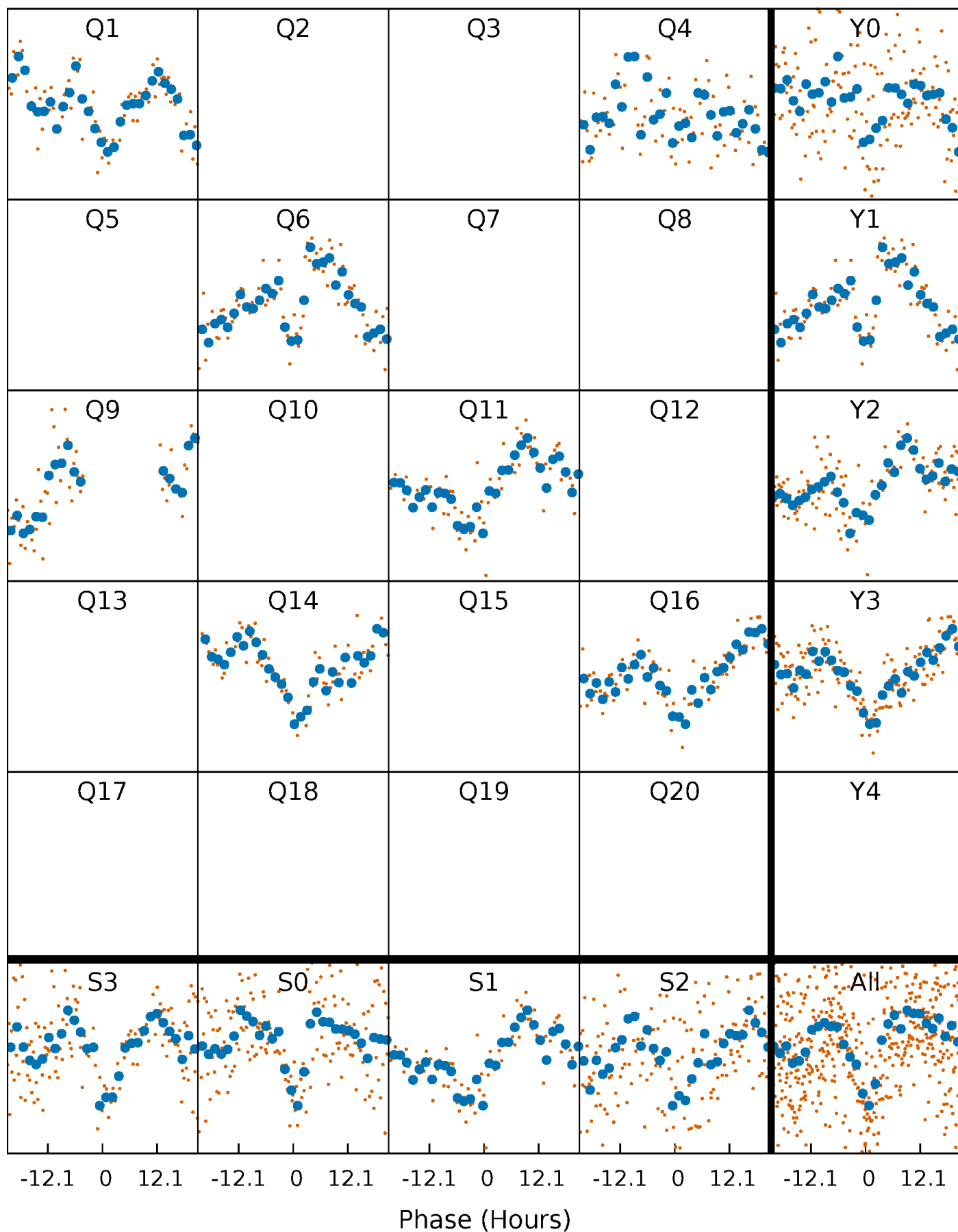
## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)





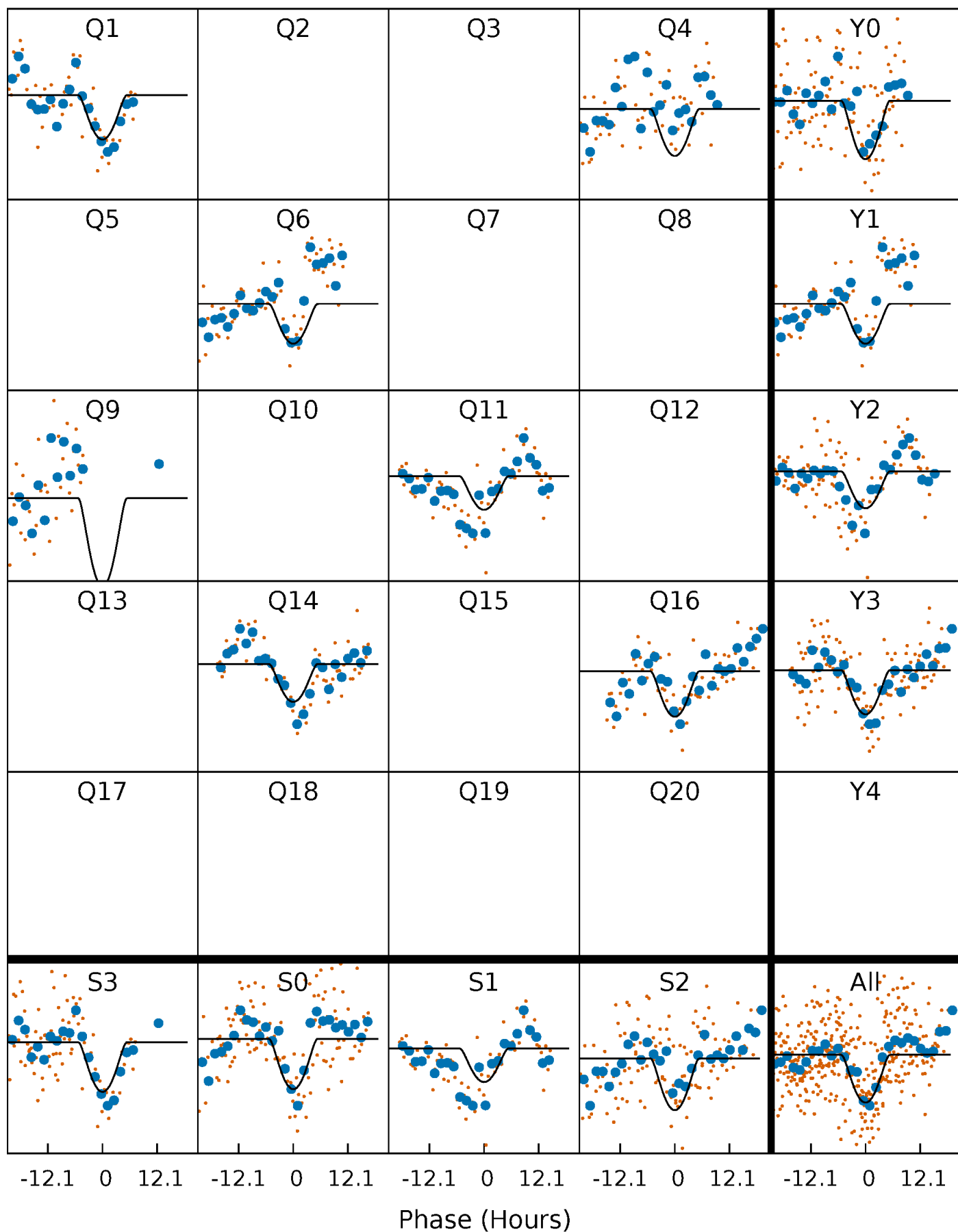
# PDC Quarter-Phased Transit Curves

TCE 005558085-04 P=228.512946 Days  $T_0=159.552624$  (BKJD)



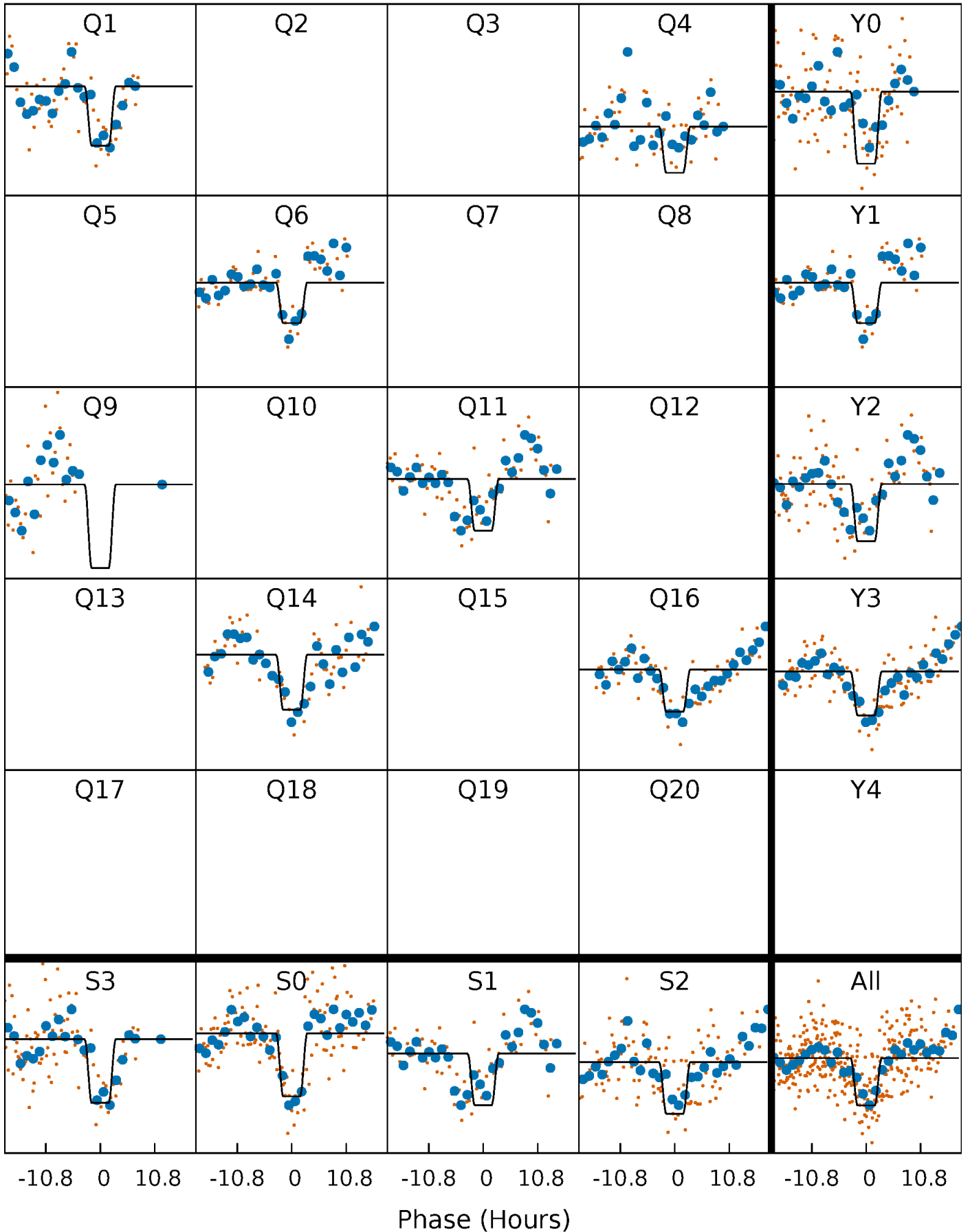
# DV Quarter-Phased Transit Curves

TCE 005558085-04 P=228.512946 Days  $T_0=159.552624$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

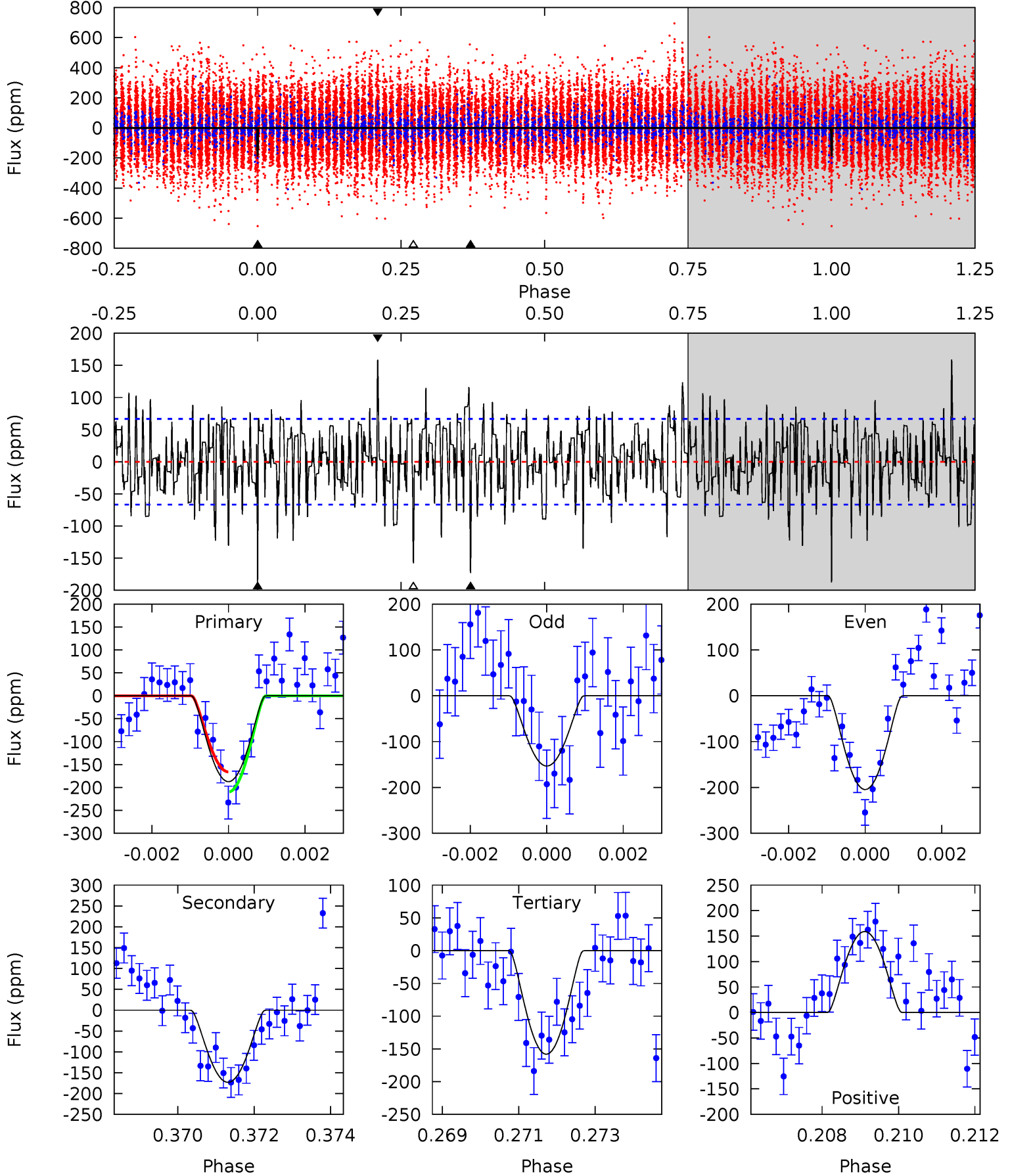
TCE 005558085-04     $P=228.518309$  Days     $T_0=159.542163$  (BKJD)



# DV Model-Shift Uniqueness Test

005558085-04, P = 228.512946 Days, E = 159.552624 Days

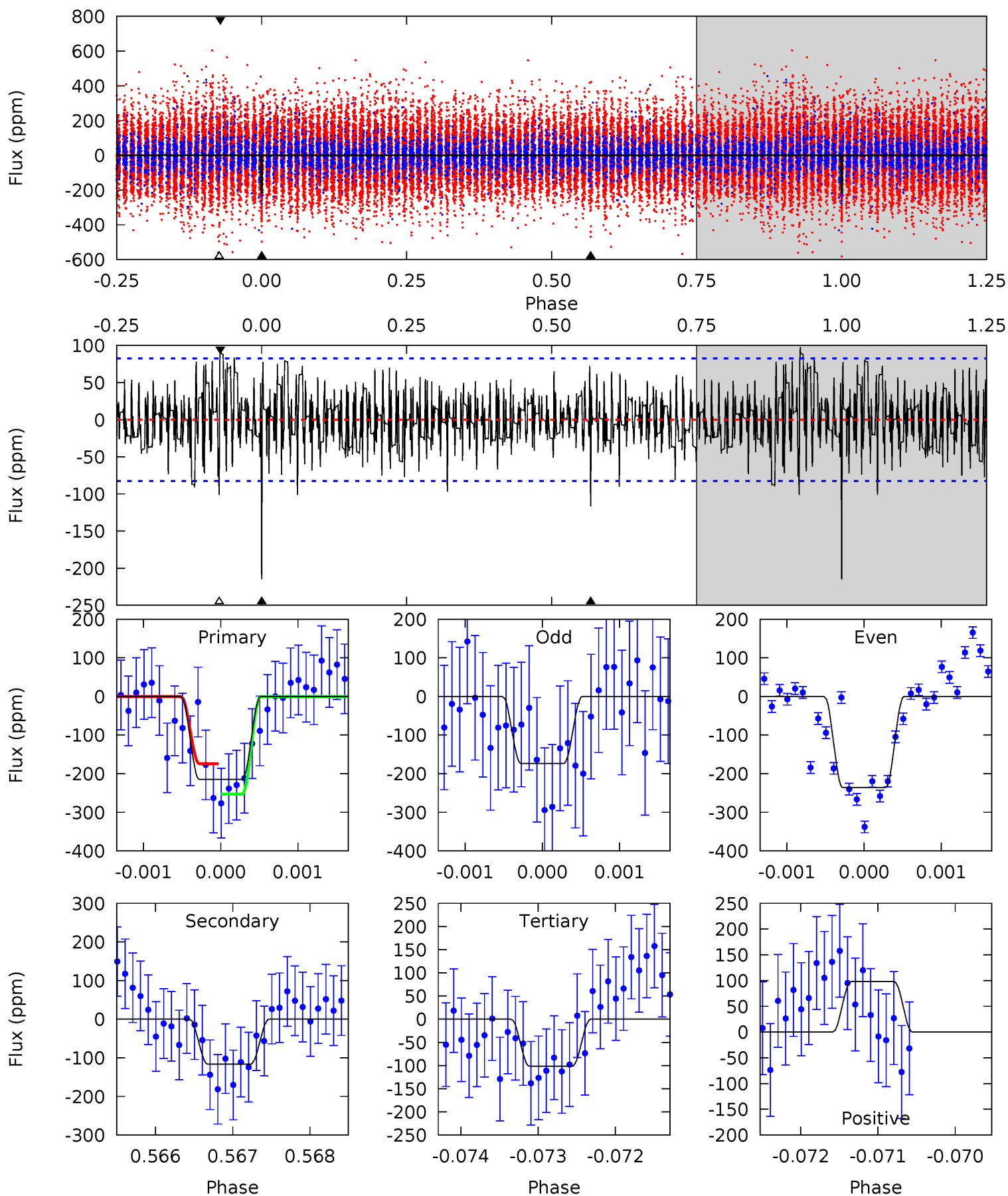
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.0	13.8	12.6	12.7	5.32	3.09	3.54	2.34	2.28	1.18	1.12	1.94	0.38	0.46	1.74



# Alt Model-Shift Uniqueness Test

005558085-04, P = 228.518309 Days, E = 159.542163 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
14.2	7.67	6.67	6.46	5.44	3.26	1.91	7.48	7.70	1.00	1.21	1.93	0.87	0.31	2.60



### Stellar Parameters For KIC 005558085

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6495^{+156}_{-195}$	$3.892^{+0.292}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.214^{+0.469}_{-0.703}$	$1.396^{+0.210}_{-0.257}$	$0.181^{+0.331}_{-0.065}$
	+2%/-3%	+8%/-3%	+300%/-250%	+21%/-32%	+15%/-18%	+182%/-36%
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 005558085-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-173 \pm 13$	$13.59^{+12.91}_{-9.08}$	$648^{+42}_{-57}$	$3525^{+1800}_{-600}$	$346^{+2704}_{-253}$
Alt.	$-116 \pm 15$	$11.97^{+13.22}_{-8.08}$	$644^{+44}_{-47}$	$3417^{+1799}_{-624}$	$289^{+2707}_{-223}$

$T_{\text{max}}$  = 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

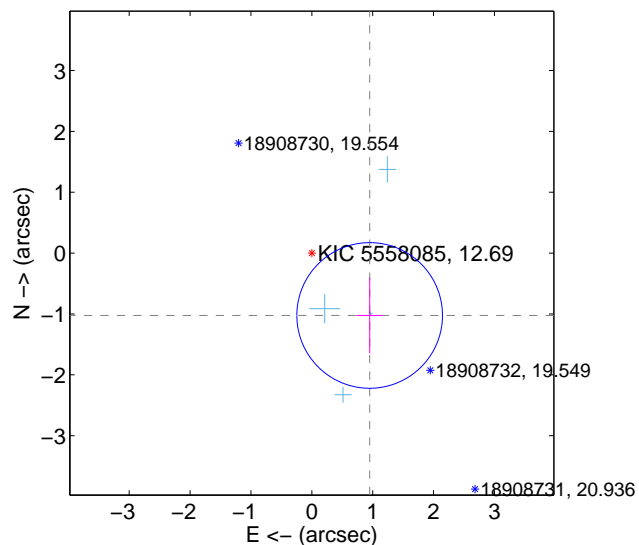
Supplemental centroid analysis for 005558085-04. Kepler magnitude: 12.69. Transit SNR 8.06

There are 4 quarters with good PRF difference image offsets

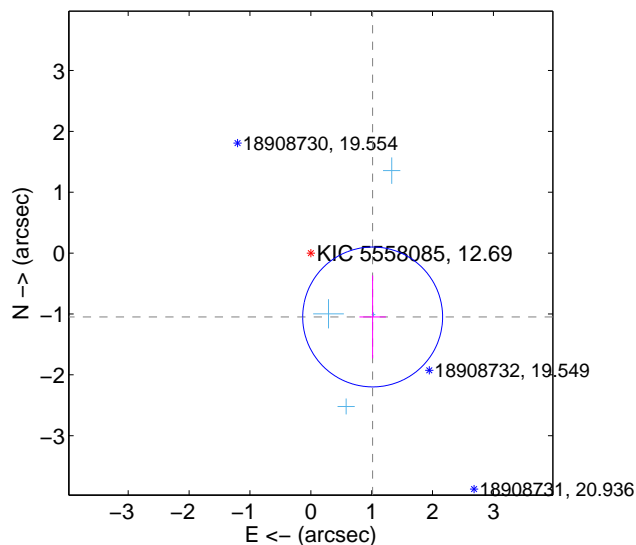
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.398 \pm 0.399$	<b>3.50</b>	$-0.951 \pm 0.218$	$-1.025 \pm 0.624$
PRF-fit source offset from KIC position	$1.461 \pm 0.383$	<b>3.81</b>	$-1.016 \pm 0.218$	$-1.049 \pm 0.682$
photometric centroid source offset	$0.55 \pm 0.92$	0.60	$0.51 \pm 0.92$	$-0.22 \pm 0.90$

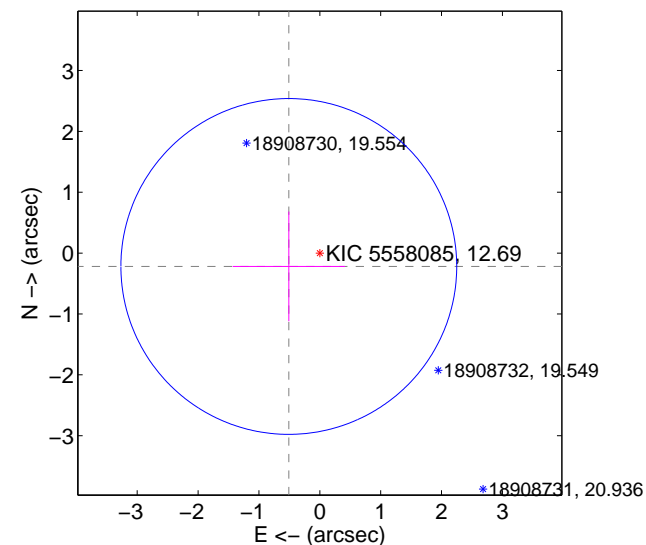
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

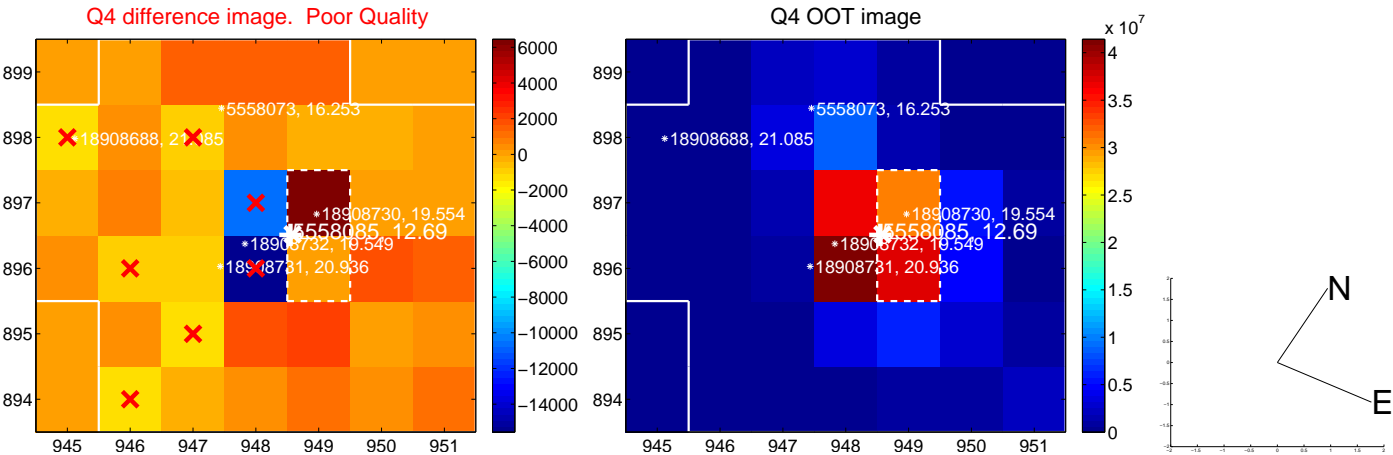
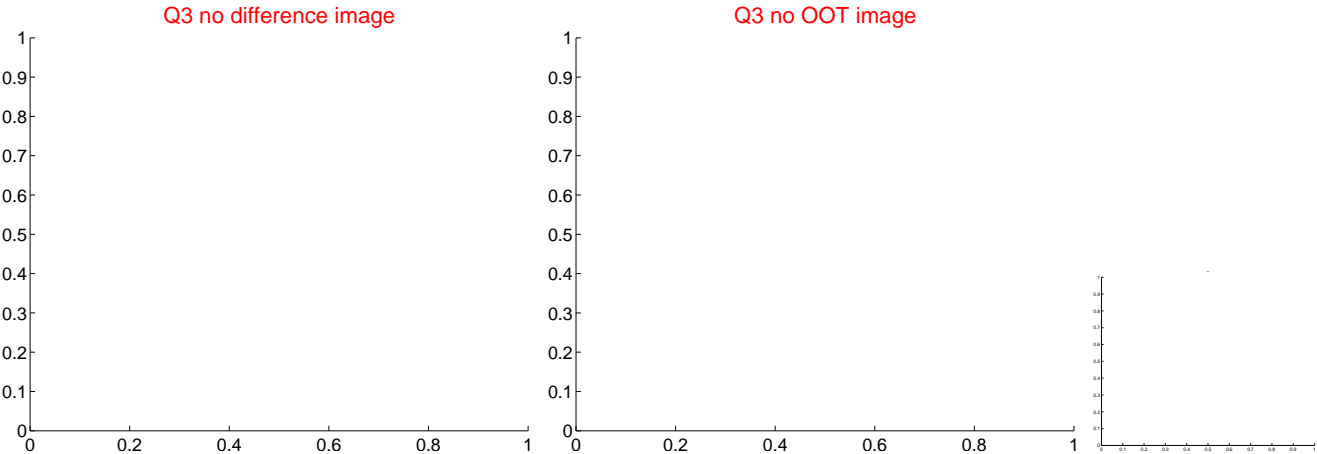
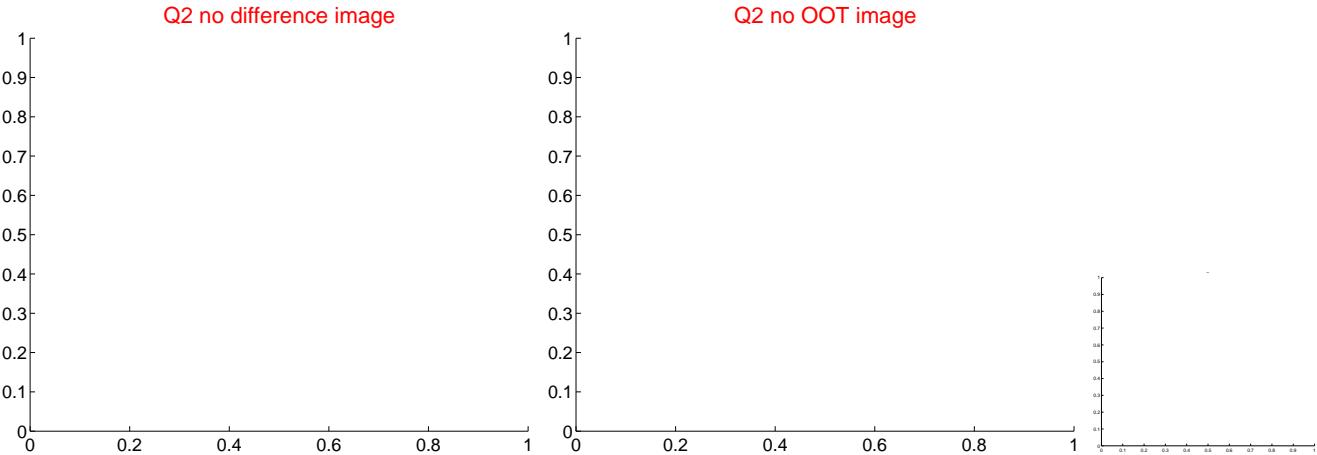
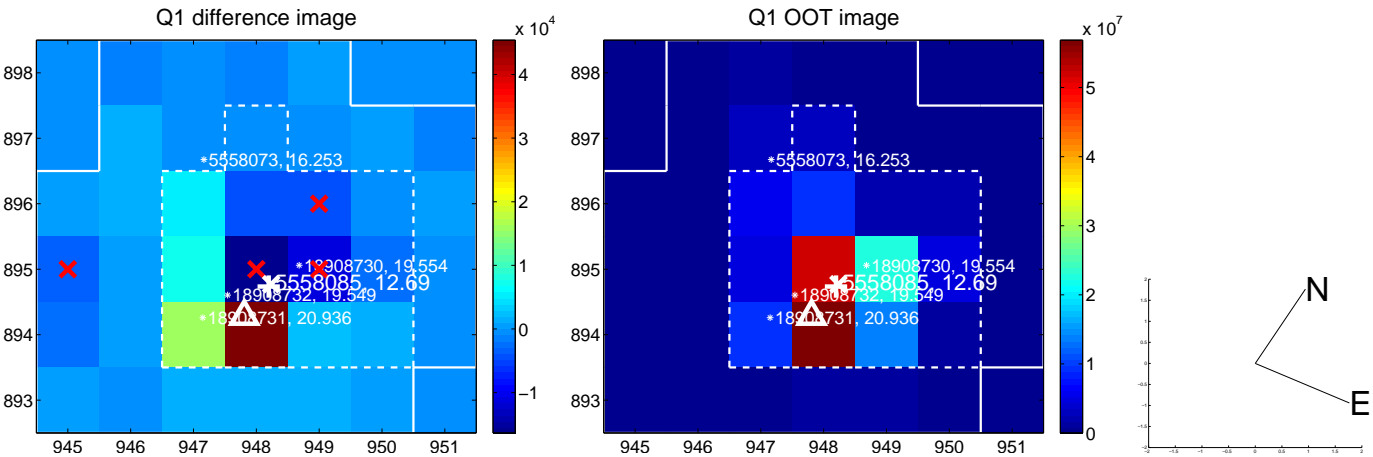


offset from photometric centroids

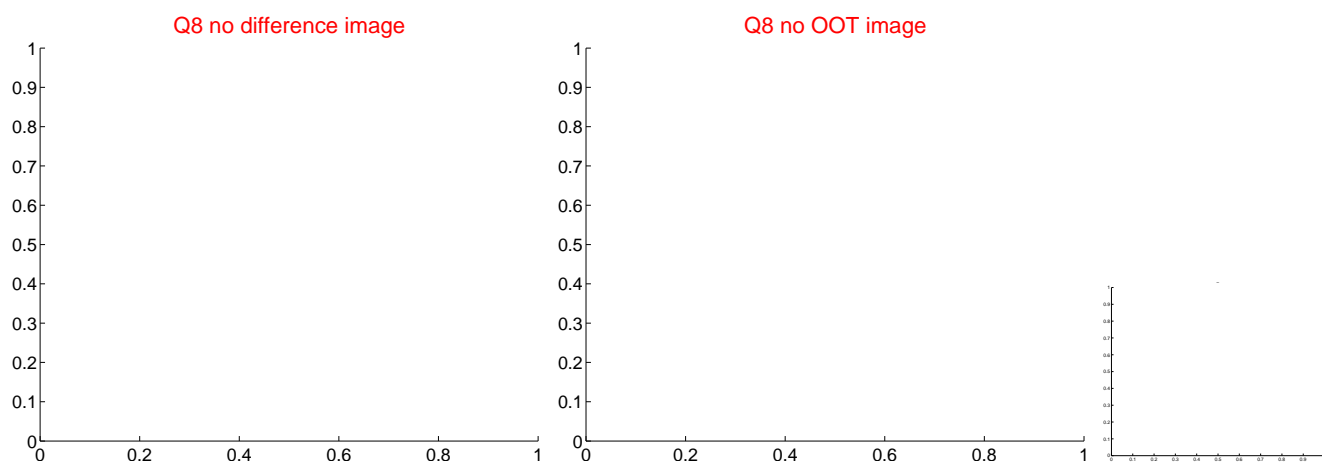
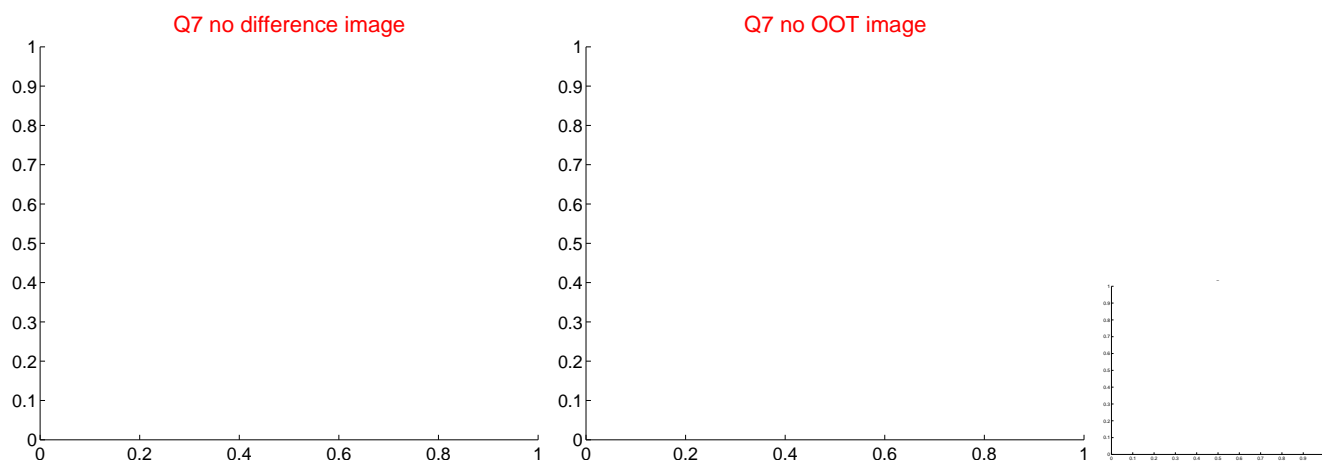
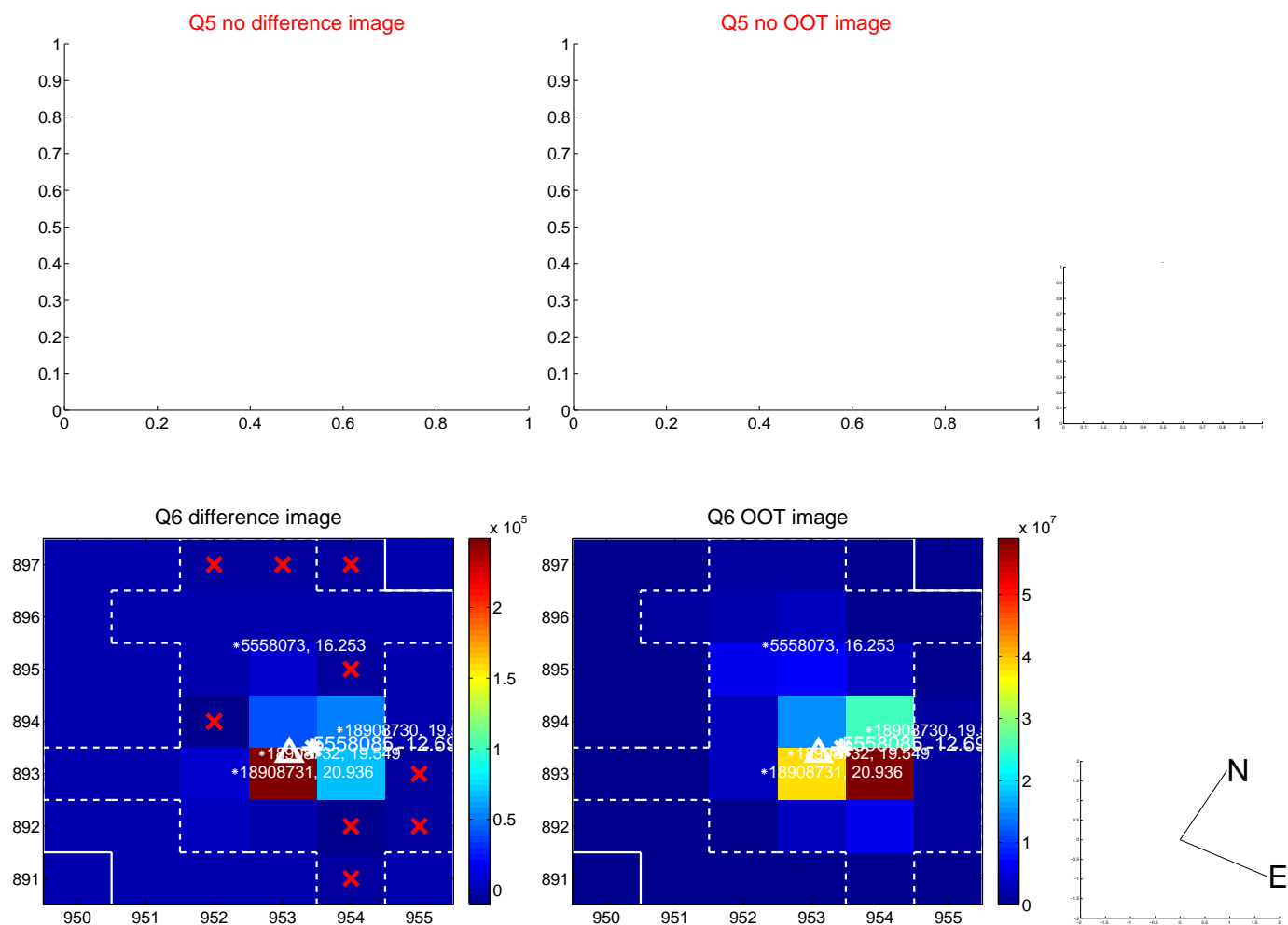


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



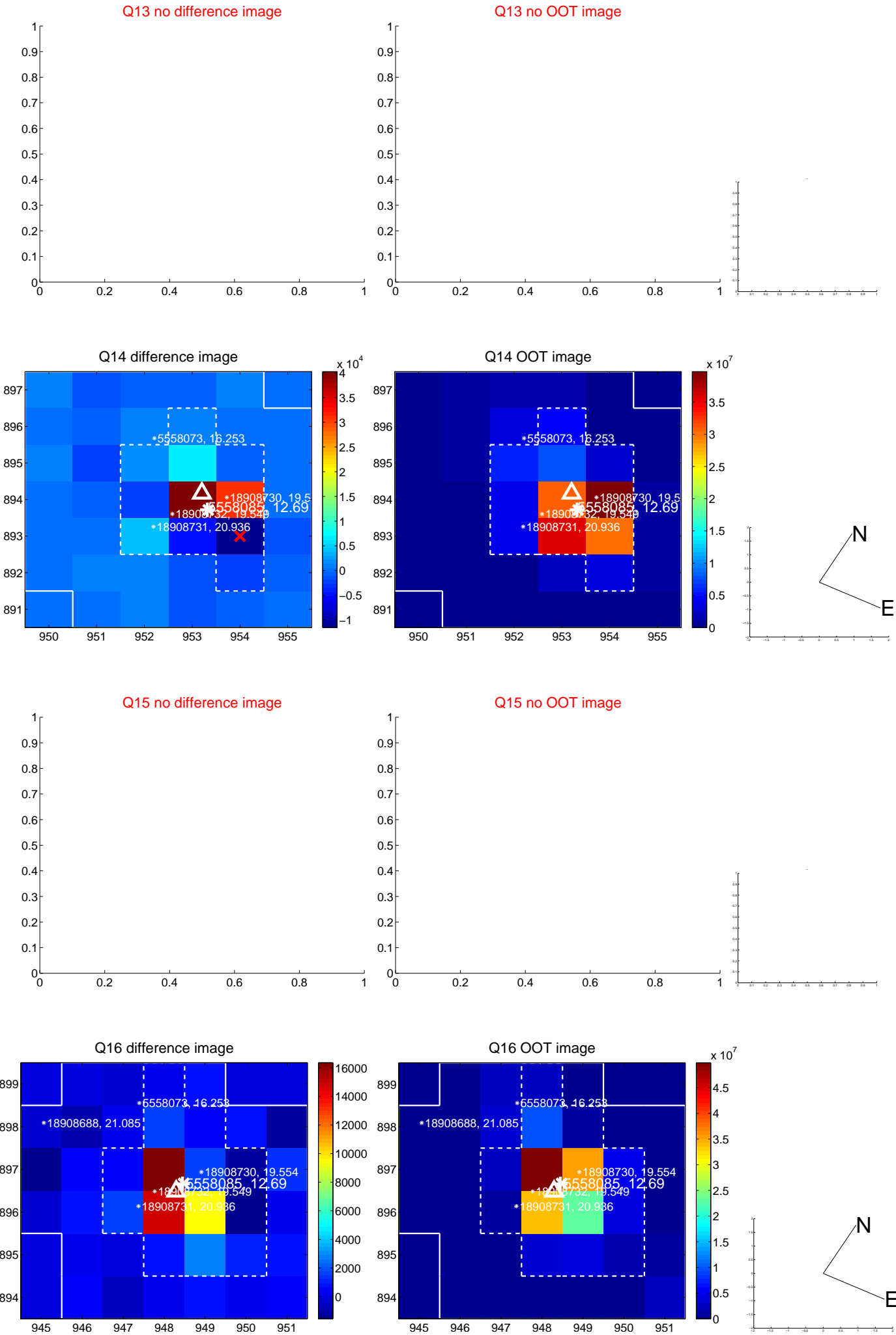
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



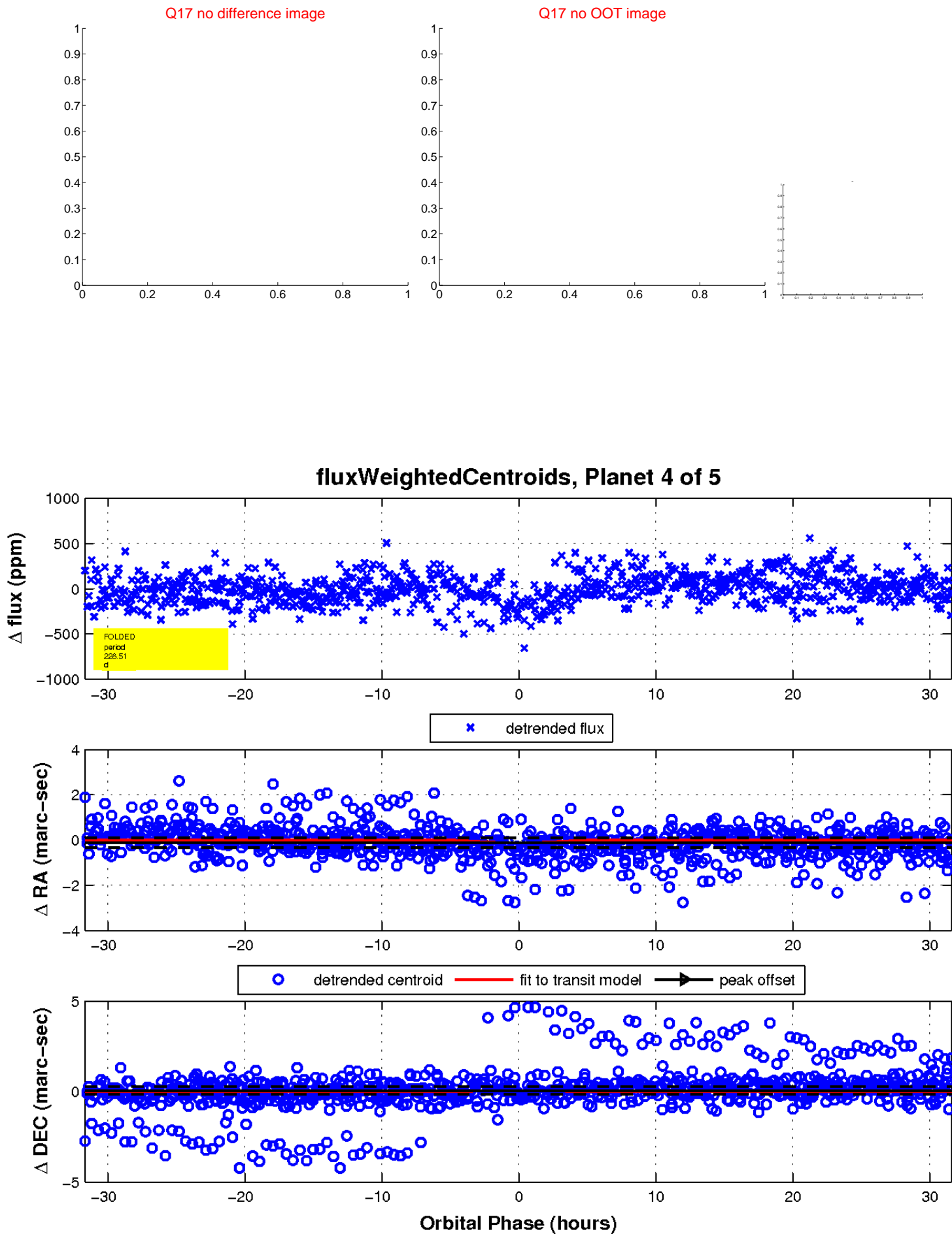
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

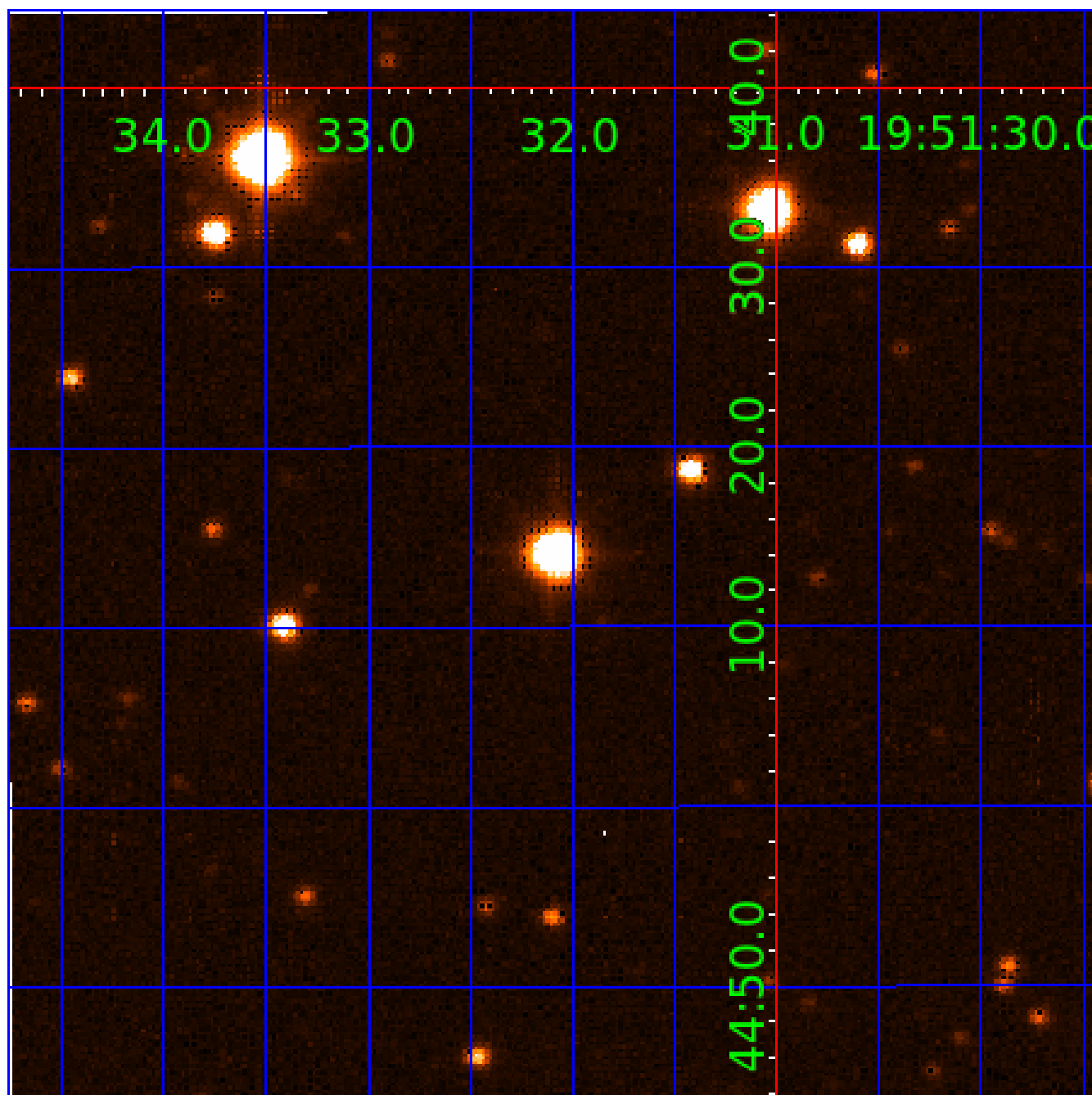


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 005558085

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005558085-01	OBS	No	2.822114	132.346274	23.5	11.000	8.6	7.4	2.21	6495	1.28	4097.92
005558085-02	OBS	No	293.930746	403.175240	295.7	11.347	12.3	7.5	2.21	6495	4.14	8.36
005558085-03	OBS	No	412.447895	269.113007	180.2	20.883	8.8	5.5	2.21	6495	3.35	5.32
005558085-04	OBS	No	228.512946	159.552624	227.2	10.563	7.6	8.1	2.21	6495	6.49	11.70
005558085-05	OBS	No	54.431982	138.166320	151.1	6.370	7.4	8.6	2.21	6495	2.85	79.22

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005558085-01	OBS	FP	0.00	1	0	0	0	LPP_DV
005558085-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
005558085-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005558085-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
005558085-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT

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

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

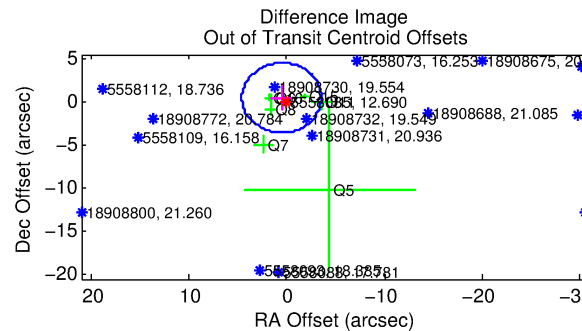
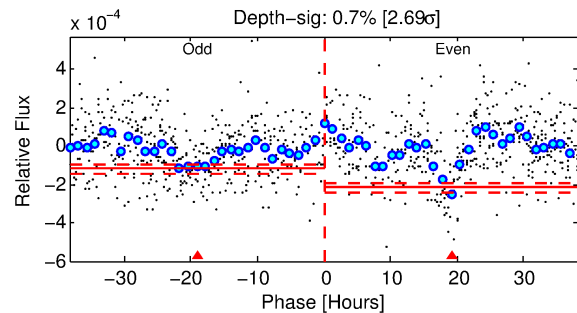
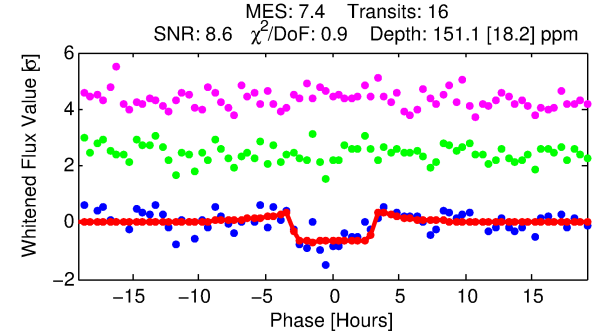
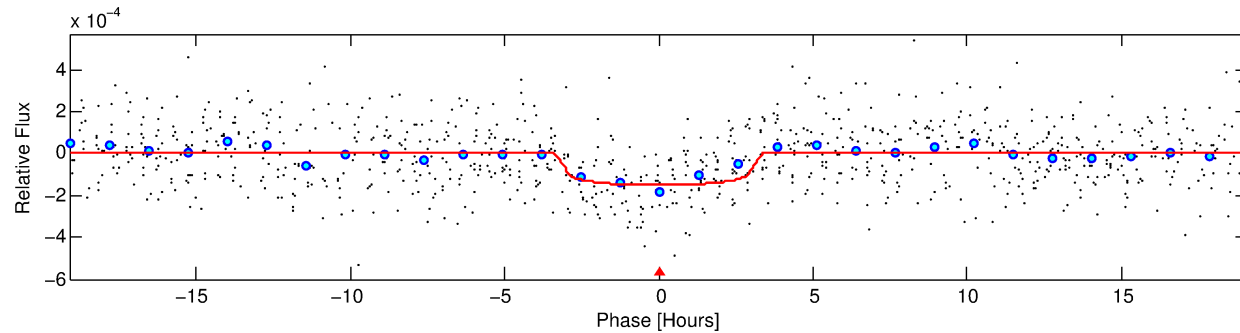
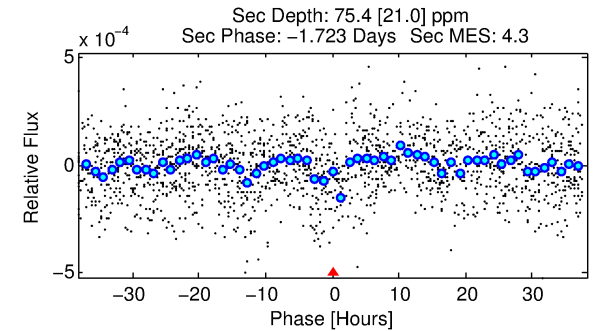
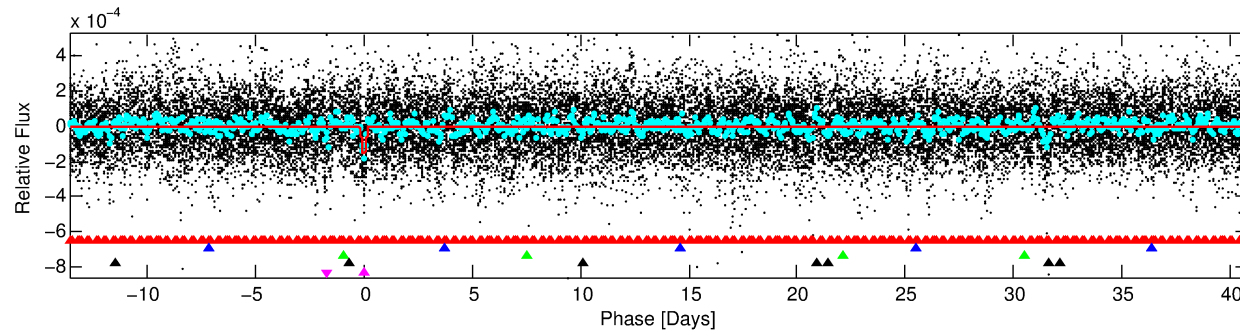
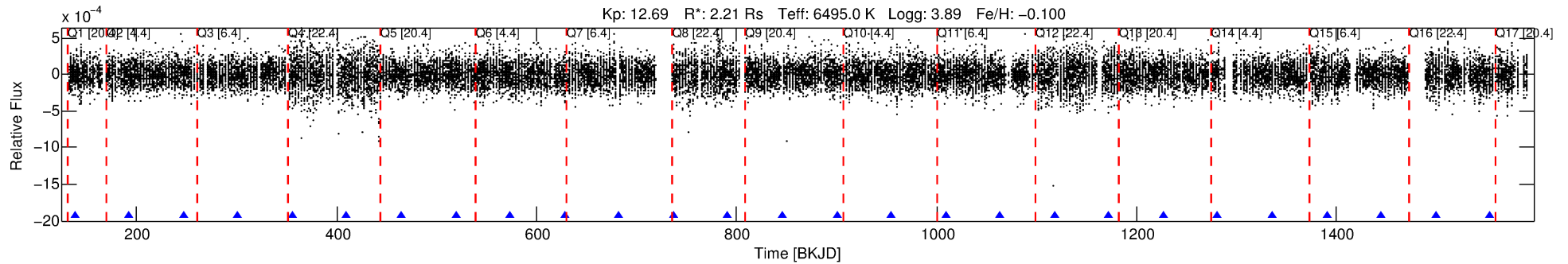
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005558085-05

No Significant Match Found

# DV One-Page Summary

KIC: 5558085 Candidate: 5 of 5 Period: 54.432 d



## DV Fit Results:

Period = 54.43198 [0.00053] d  
Epoch = 138.1663 [0.0085] BKJD  
Rp/R\* = 0.0118 [0.0060]  
a/R\* = 53.43 [144.95]  
b = 0.59 [2.96]  
Seff = 79.22 [40.41]  
Teq = 761 [97] K  
Rp = 2.85 [1.71] Re  
a = 0.3141 [0.0968] AU  
Ag = 503.71 [587.72] [0.86σ]  
Teffp = 5572 [1481] K [3.24σ]

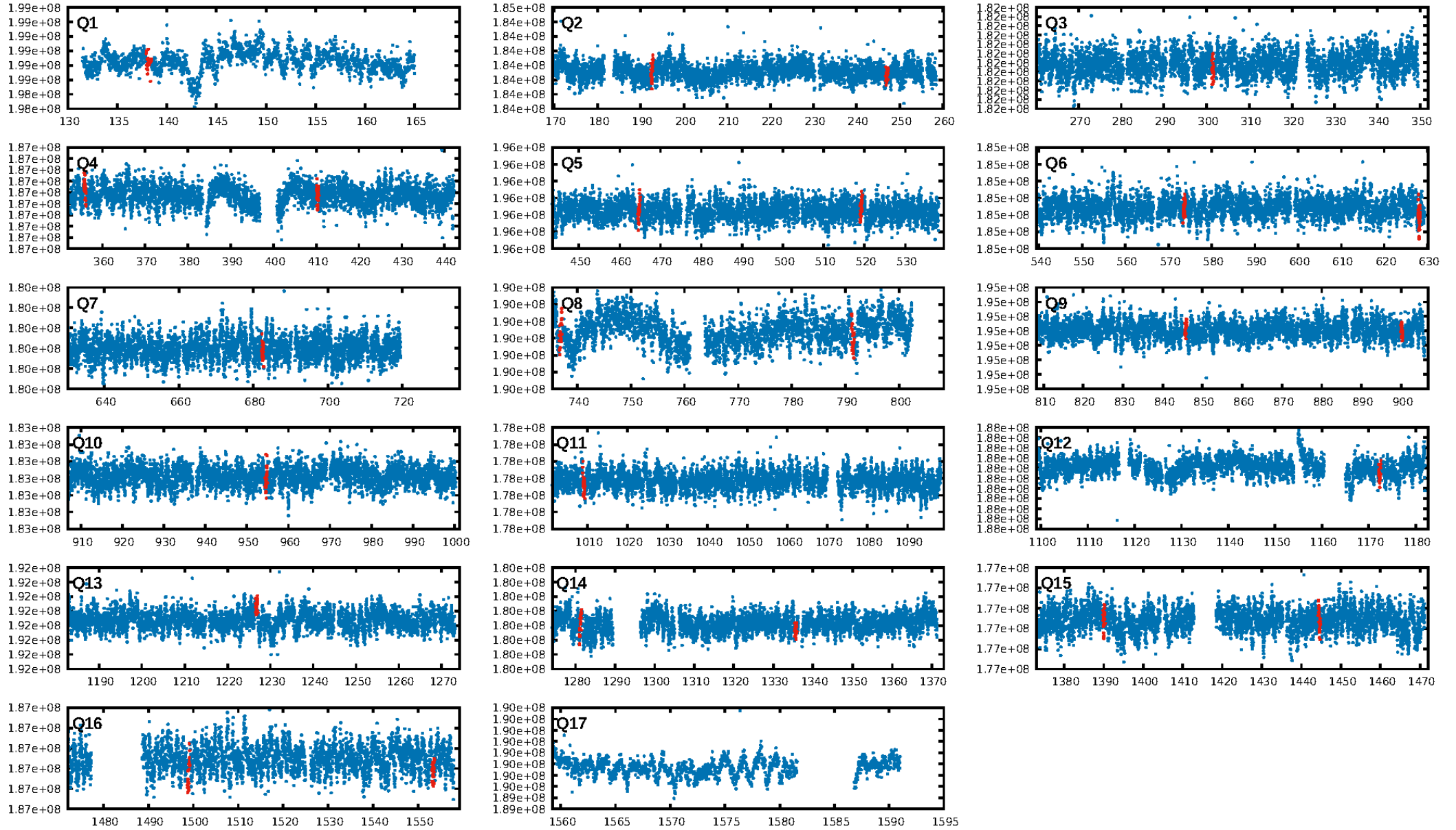
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [97.44σ]  
LongPeriod-sig: 100.0% [338.71σ]  
ModelChiSquare2-sig: 72.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.20e-09  
RollingBand-fgt: 1.00 [16/16]  
GhostDiagnostic-chr: 4.4  
Centroid-sig: 0.0%  
Centroid-so: 1.586 arcsec [2.63σ]  
OotOffset-rm: 0.716 arcsec [0.53σ]  
KicOffset-rm: 0.752 arcsec [0.54σ]  
OotOffset-st: 1/3/2/1 [7]  
KicOffset-st: 1/3/2/1 [7]  
DiffImageQuality-fgm: 0.57 [4/7]  
DiffImageOverlap-fno: 0.64 [9/14]

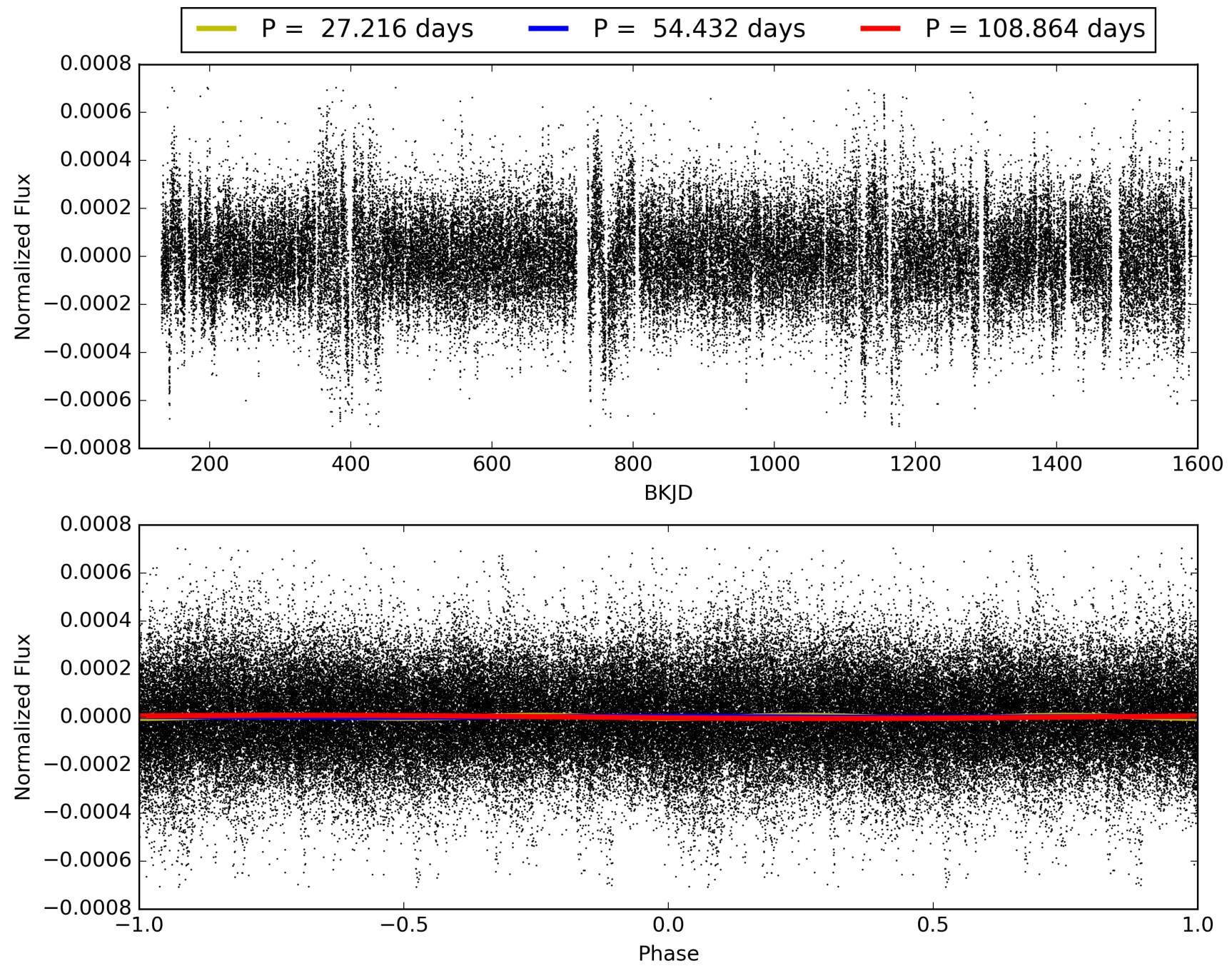
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:46:27 Z

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

# TCE 005558085-05, PDC Light Curves

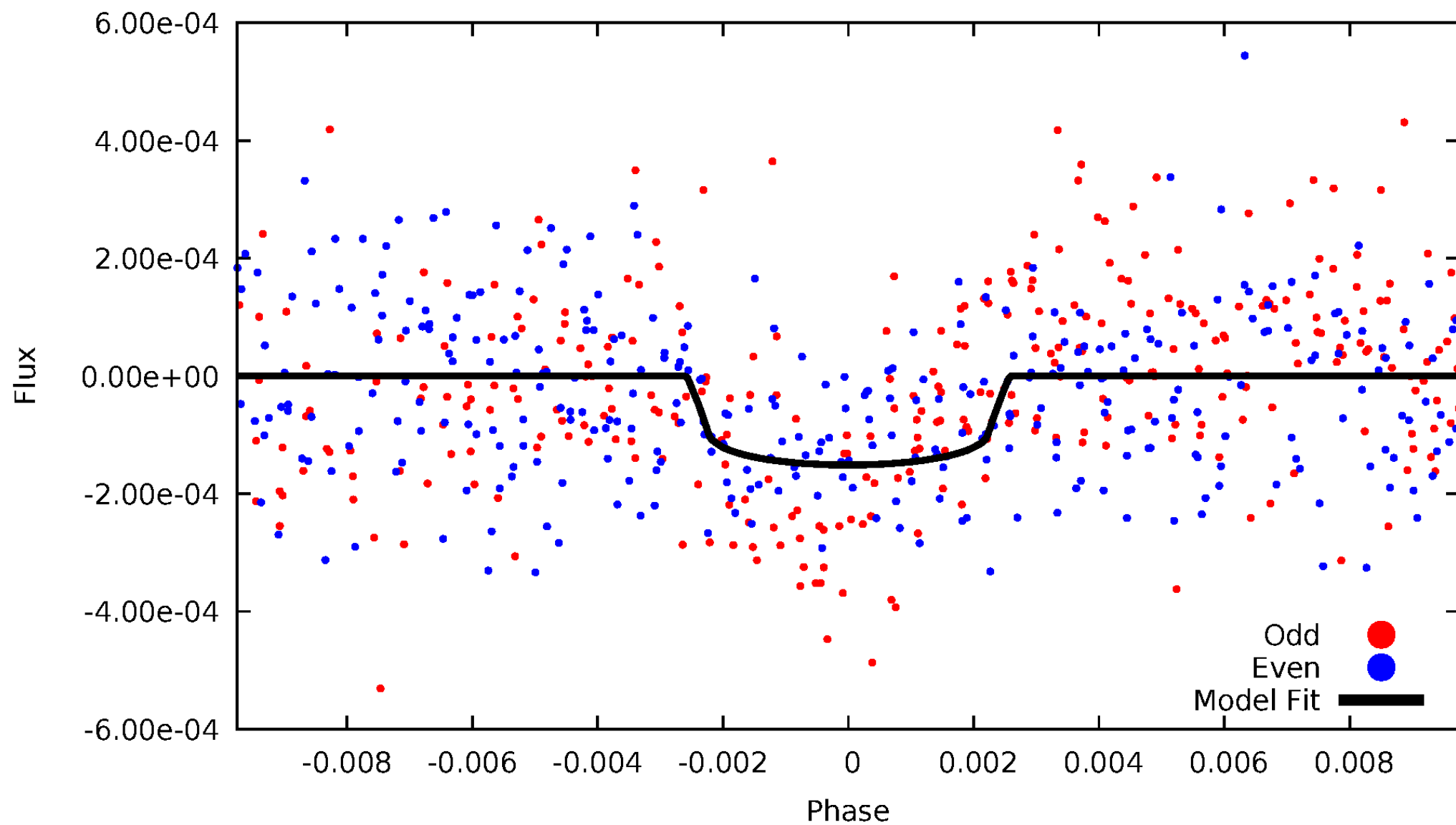


TCE 005558085-05



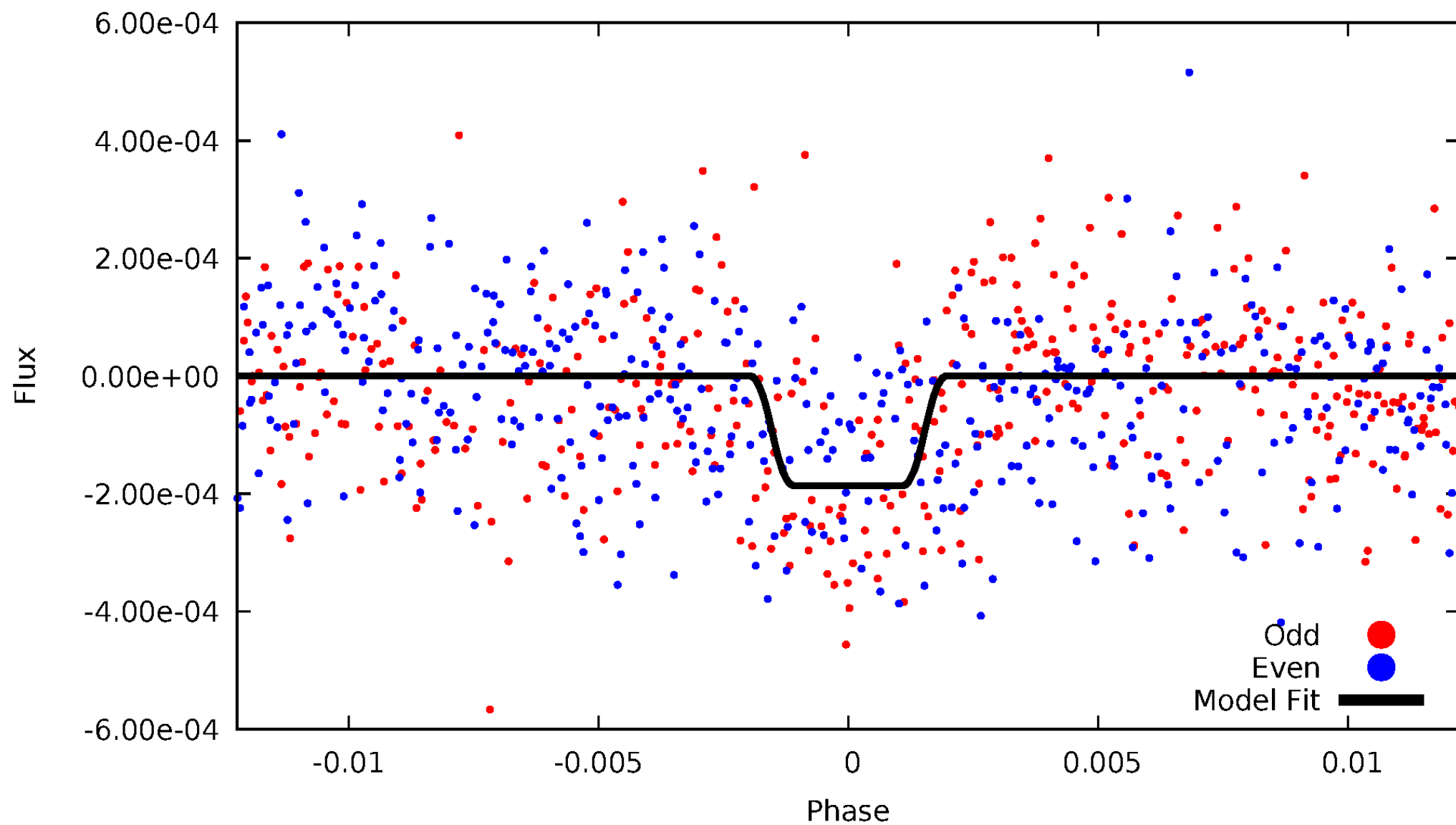
# DV Odd/Even

TCE 005558085-05



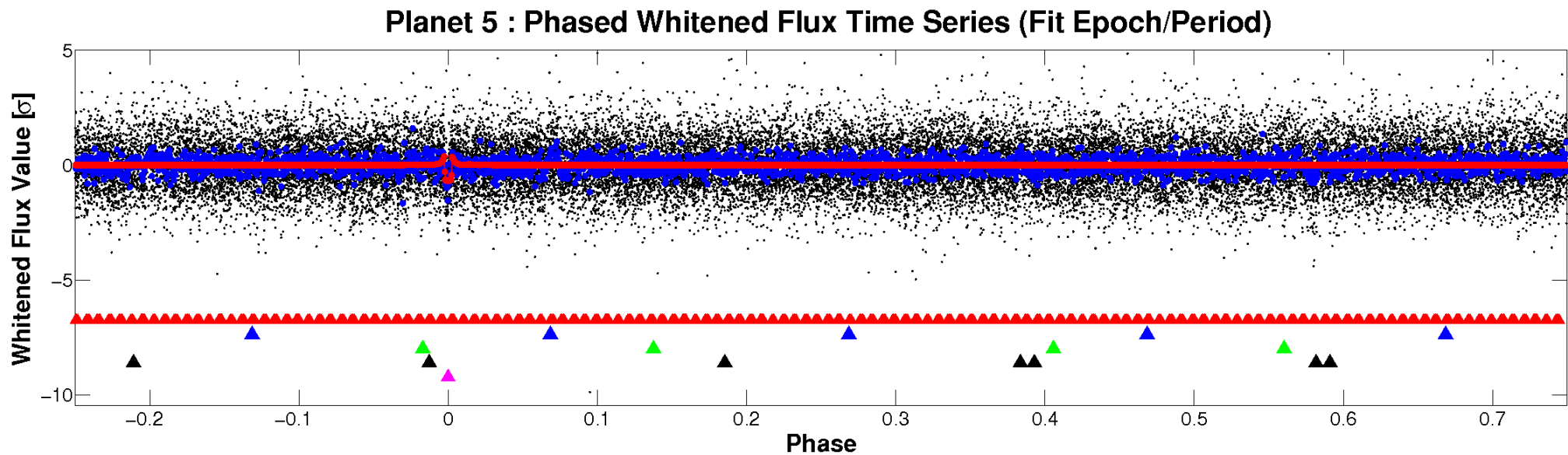
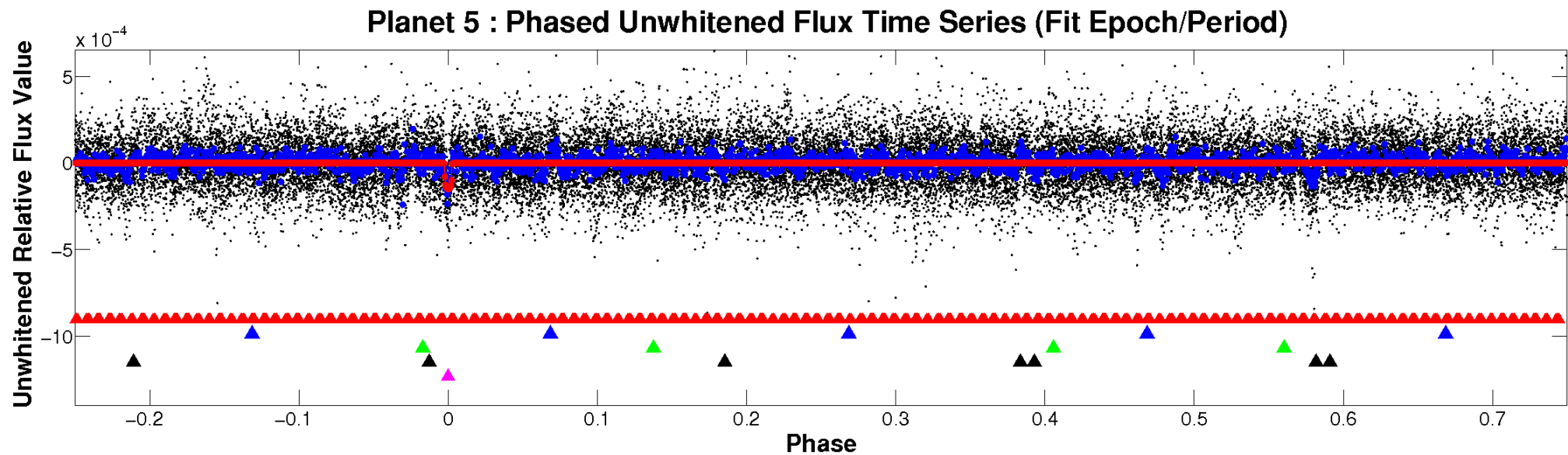
# ALT Odd/Even

TCE 005558085-05





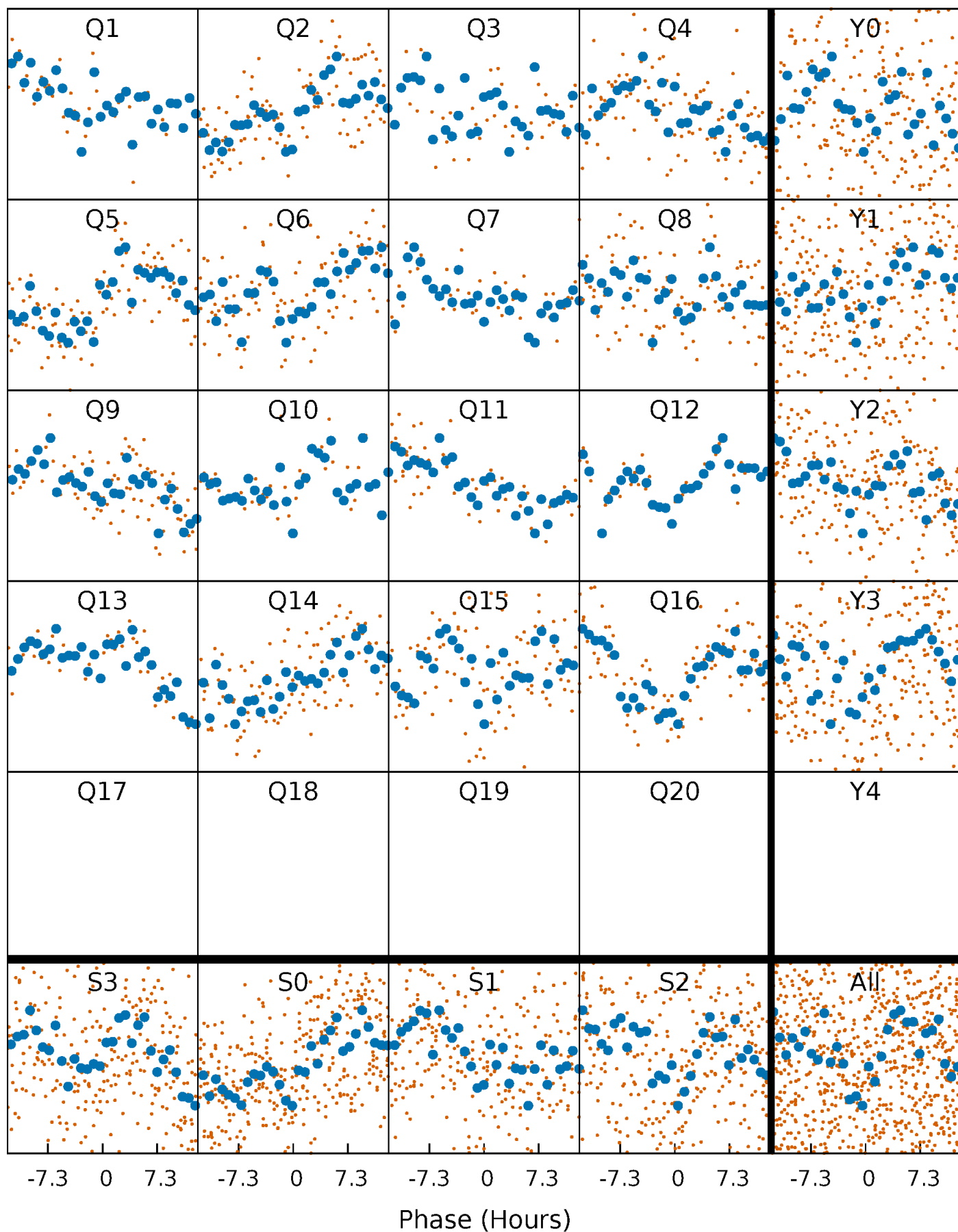
# Non-Whitened Vs. Whitened Light Curve





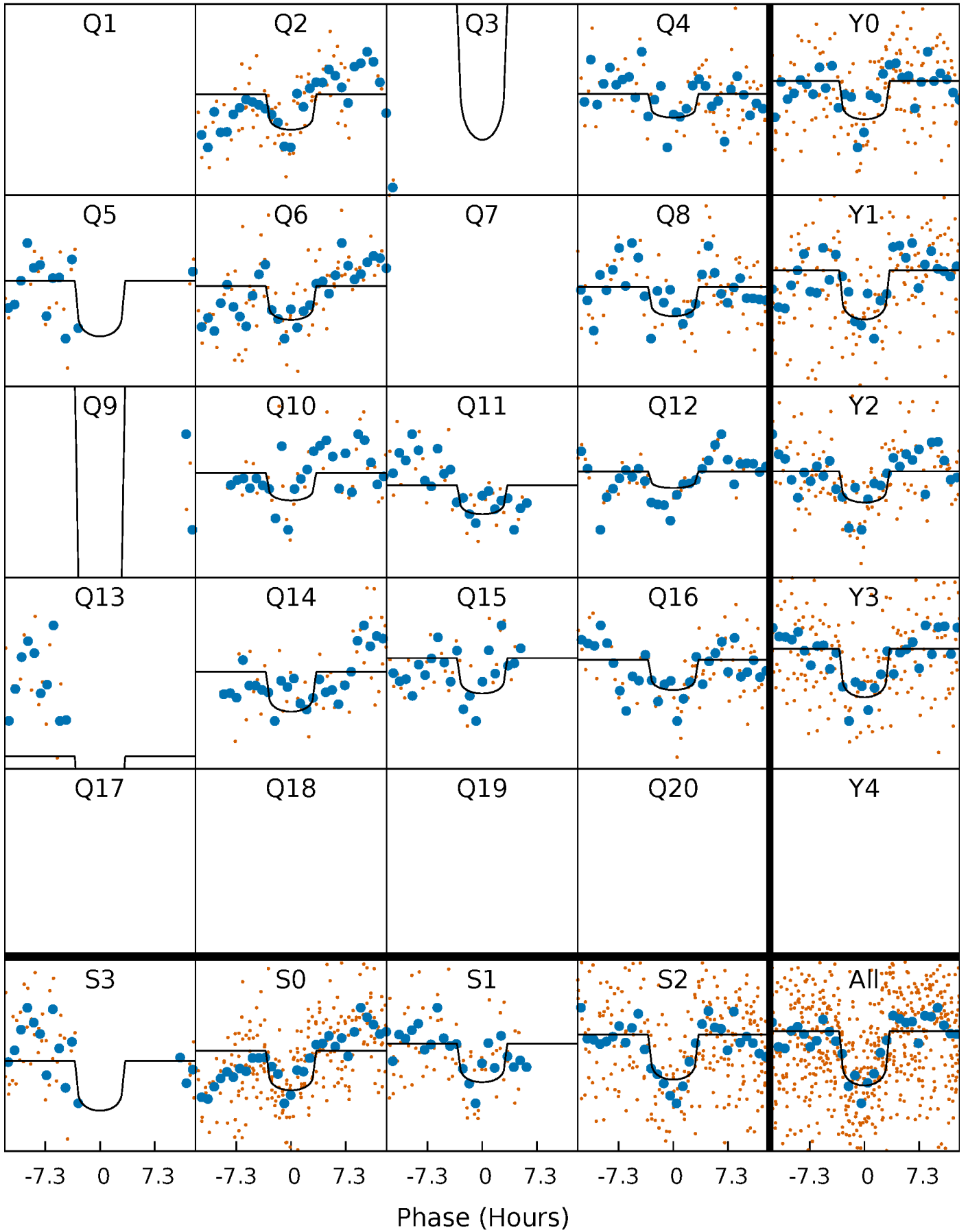
# PDC Quarter-Phased Transit Curves

TCE 005558085-05     $P = 54.431982$  Days     $T_0 = 138.166320$  (BKJD)



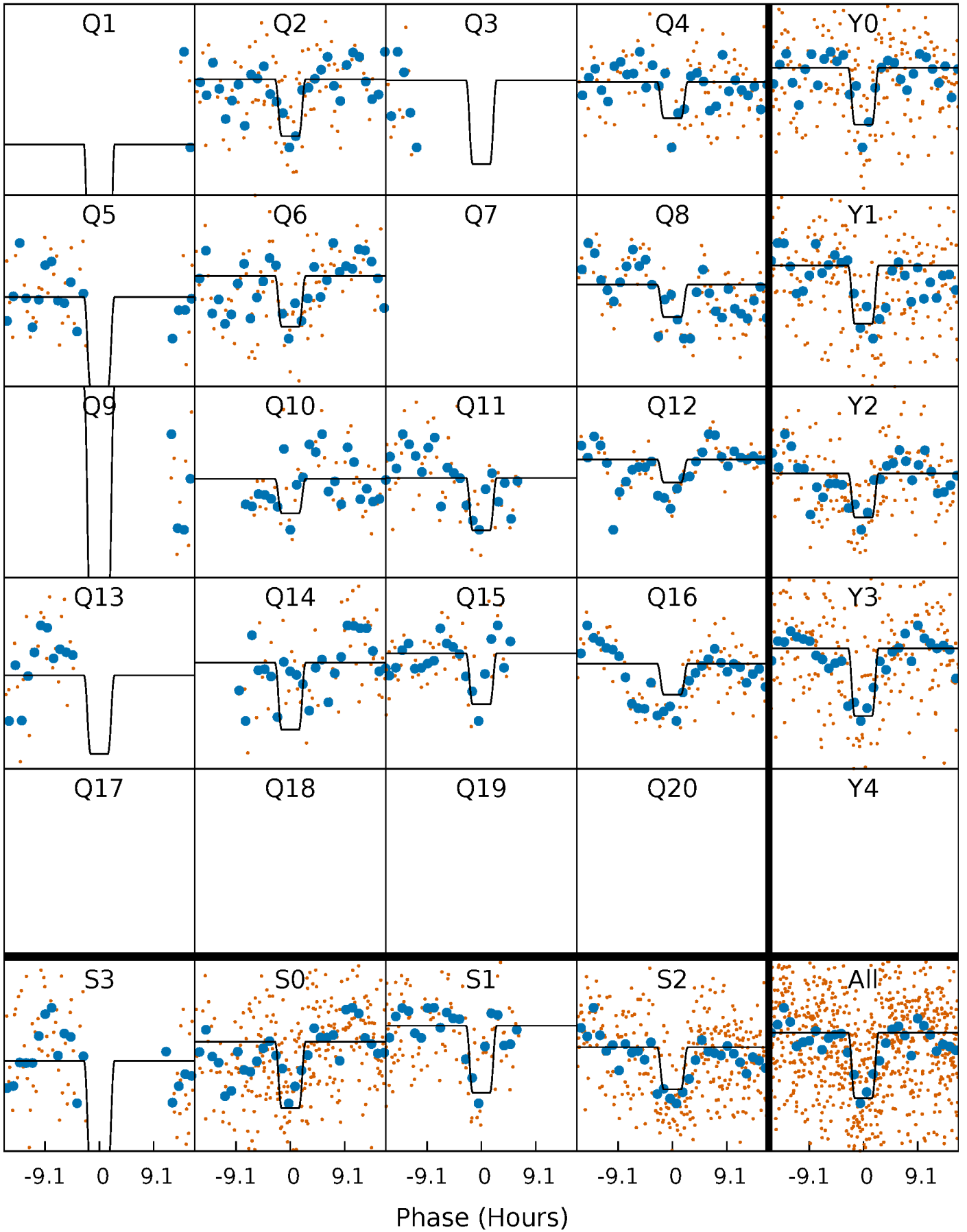
# DV Quarter-Phased Transit Curves

TCE 005558085-05 P= 54.431982 Days  $T_0=138.166320$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

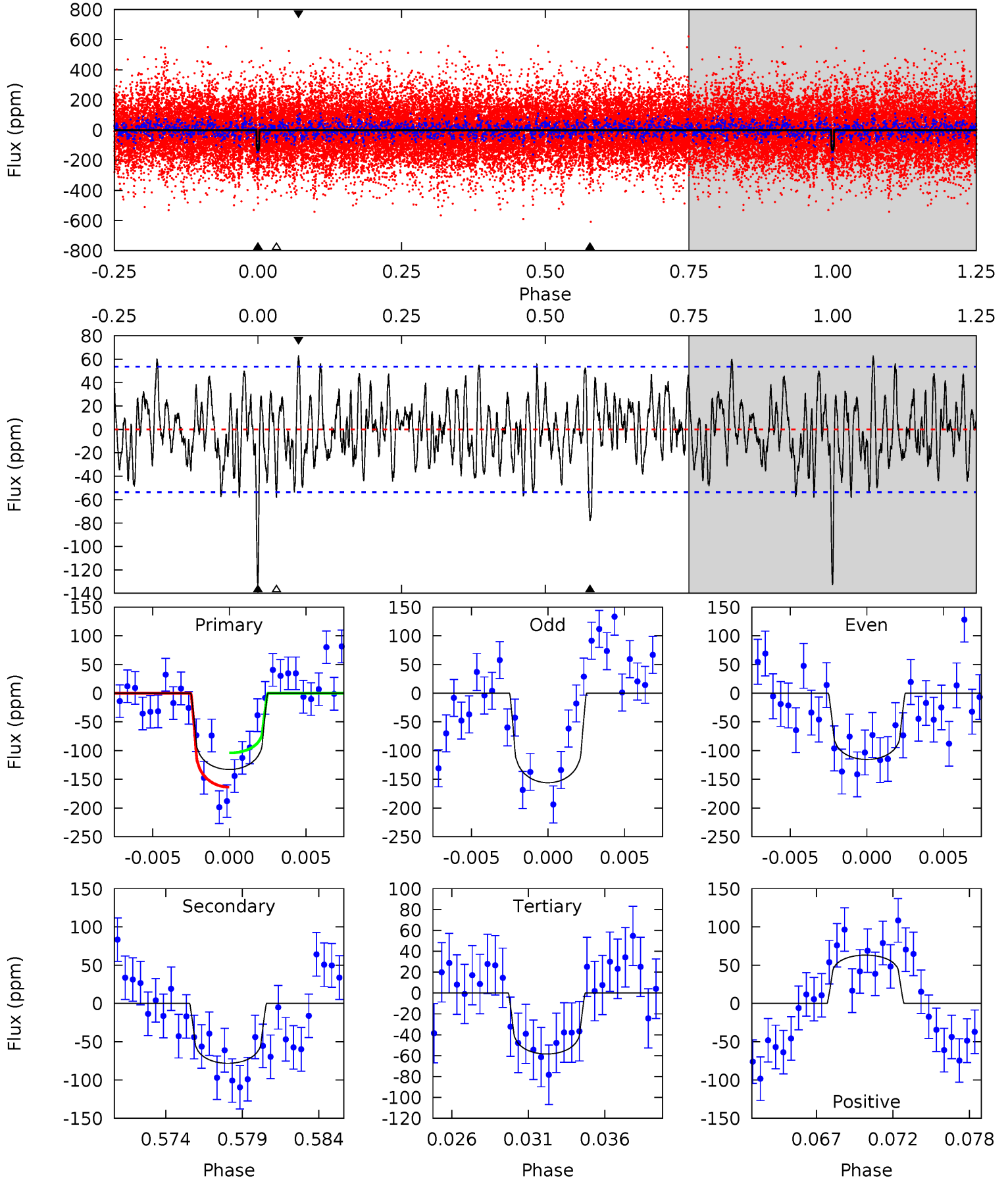
TCE 005558085-05   P= 54.432737 Days    $T_0=138.136180$  (BKJD)



# DV Model-Shift Uniqueness Test

005558085-05, P = 54.431982 Days, E = 83.734338 Days

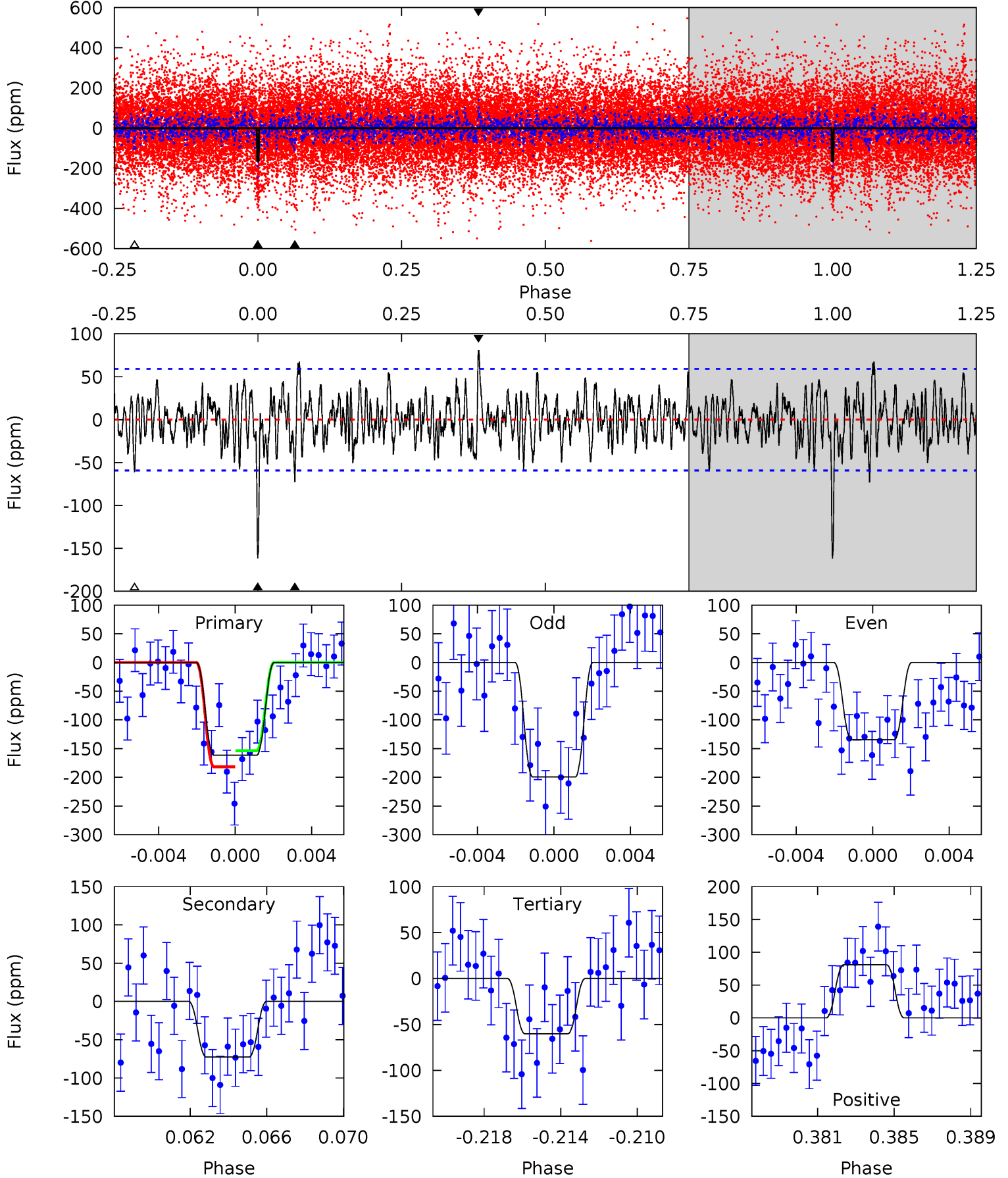
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	7.51	5.61	6.07	5.15	2.80	2.17	7.16	6.70	1.90	1.45	1.95	1.17	0.32	2.87



# Alt Model-Shift Uniqueness Test

005558085-05, P = 54.432737 Days, E = 83.703443 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
14.2	6.38	5.30	7.11	5.20	2.89	1.92	8.91	7.09	1.08	-0.73	2.83	1.21	0.33	1.23



### Stellar Parameters For KIC 005558085

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6495^{+156}_{-195}$	$3.892^{+0.292}_{-0.117}$	$-0.100^{+0.300}_{-0.250}$	$2.214^{+0.469}_{-0.703}$	$1.396^{+0.210}_{-0.257}$	$0.181^{+0.331}_{-0.065}$
	+2%/-3%	+8%/-3%	+300%/-250%	+21%/-32%	+15%/-18%	+182%/-36%
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 005558085-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-78 \pm 10$	$2.79^{+1.56}_{-1.36}$	$1043^{+71}_{-86}$	$5538^{+2241}_{-931}$	$549^{+1578}_{-321}$
Alt.	$-73 \pm 11$	$3.00^{+1.62}_{-1.29}$	$1041^{+64}_{-94}$	$5201^{+1688}_{-740}$	$433^{+878}_{-246}$

$T_{max}$  = 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

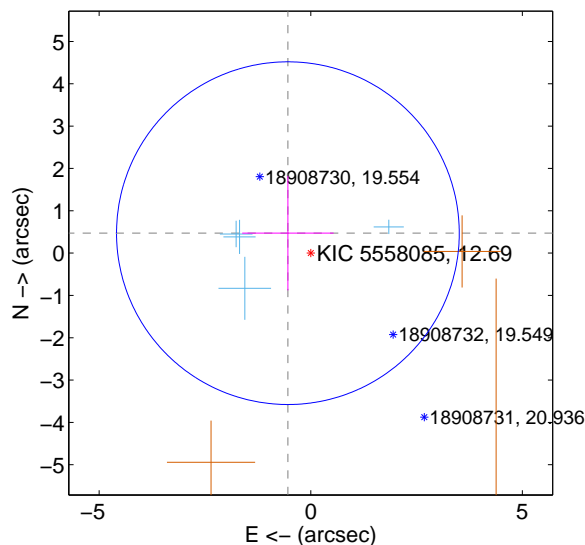
Supplemental centroid analysis for 005558085-05. Kepler magnitude: 12.69. Transit SNR 8.57

There are 4 quarters with good PRF difference image offsets

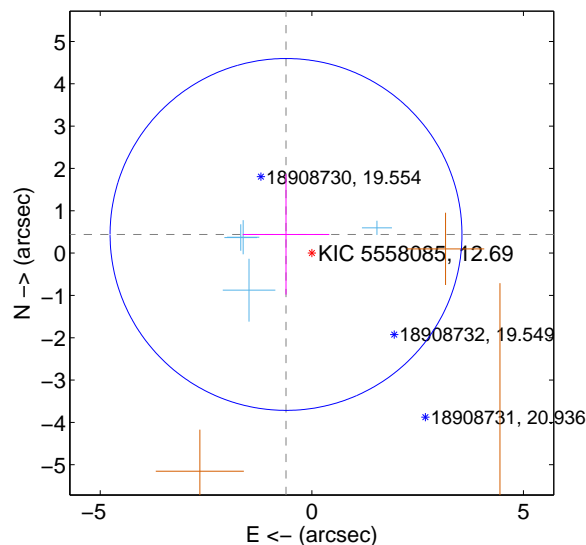
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.716 \pm 1.349$	0.53	$0.540 \pm 1.079$	$0.471 \pm 1.352$
PRF-fit source offset from KIC position	$0.752 \pm 1.385$	0.54	$0.610 \pm 1.023$	$0.441 \pm 1.423$
photometric centroid source offset	$1.59 \pm 0.60$	2.63	$-0.89 \pm 0.65$	$1.31 \pm 0.58$

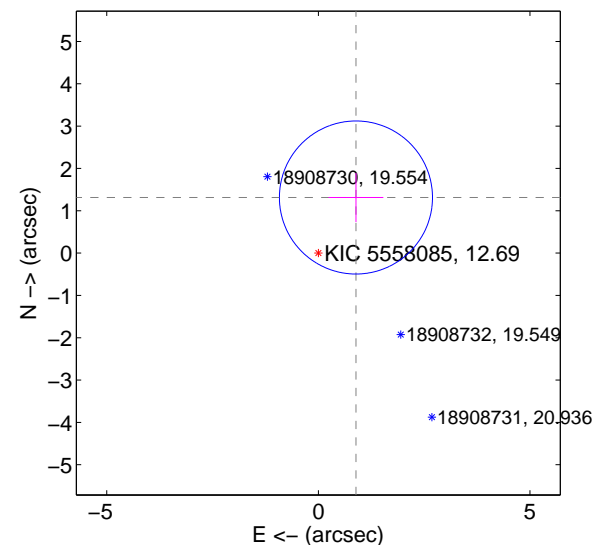
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



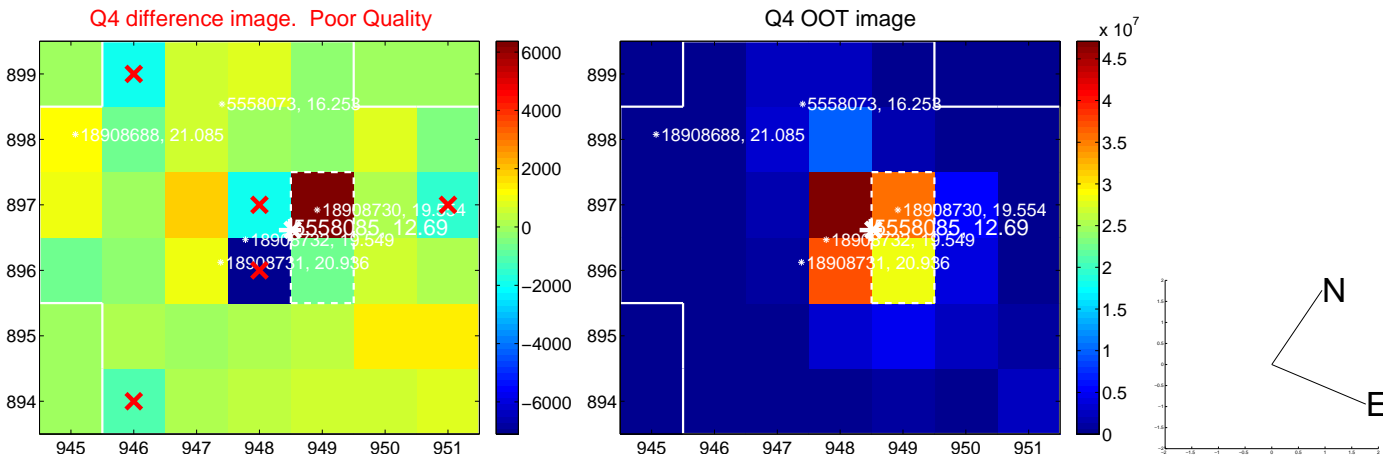
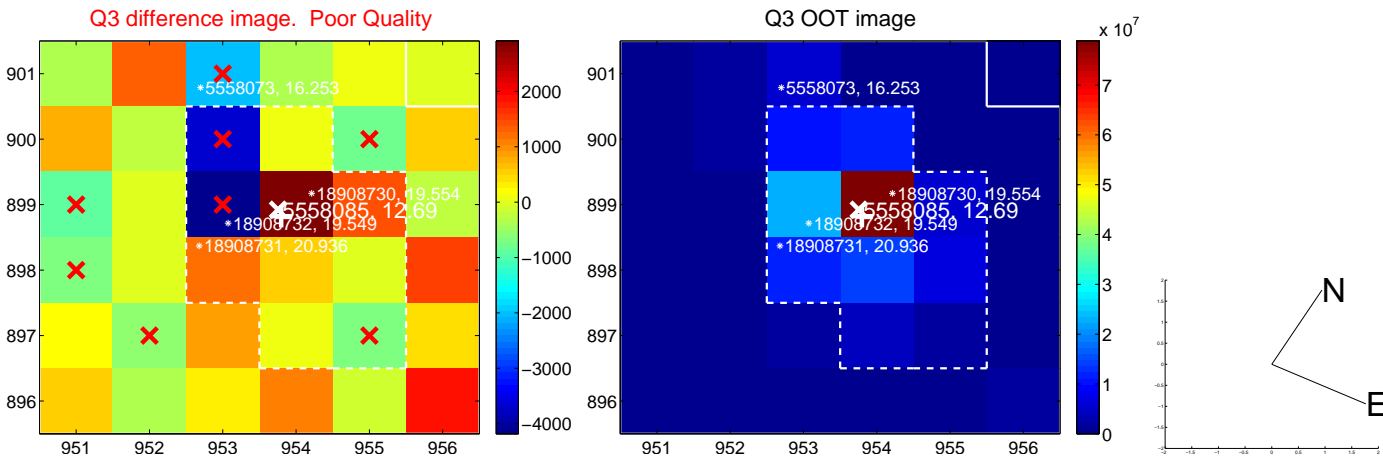
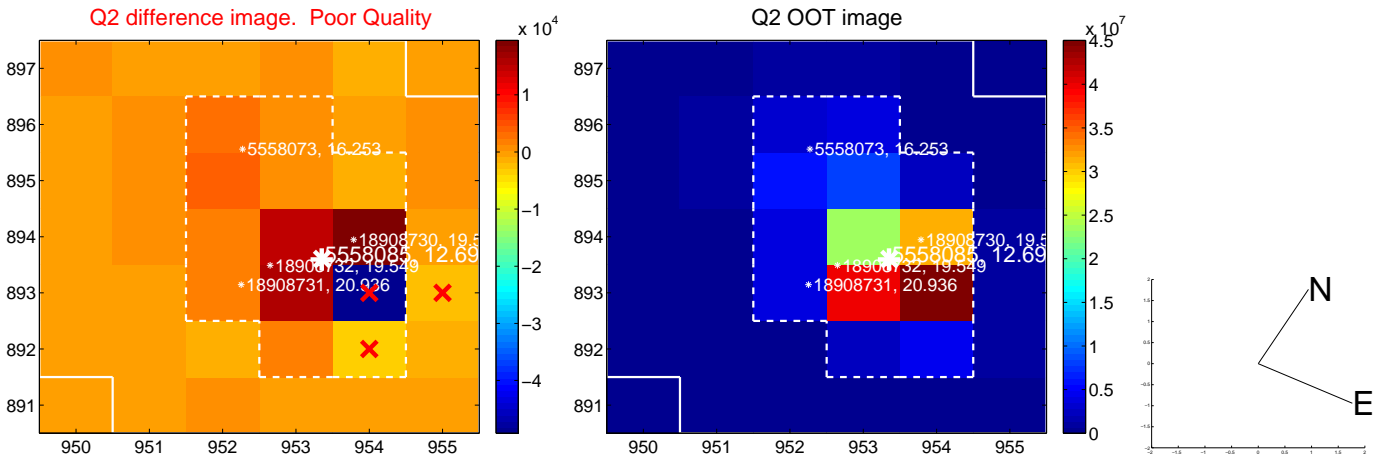
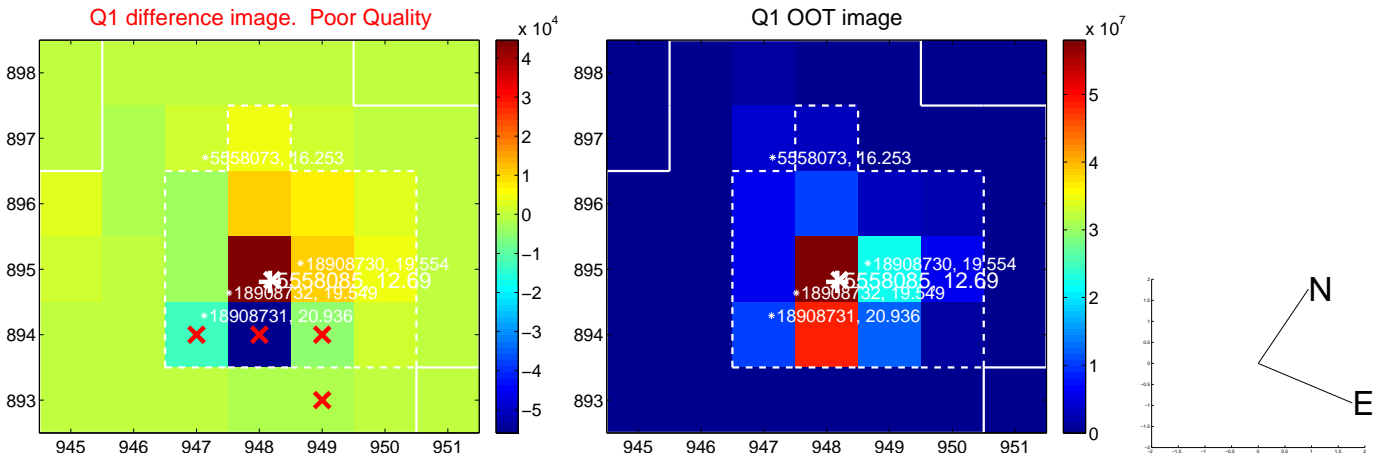
offset from photometric centroids



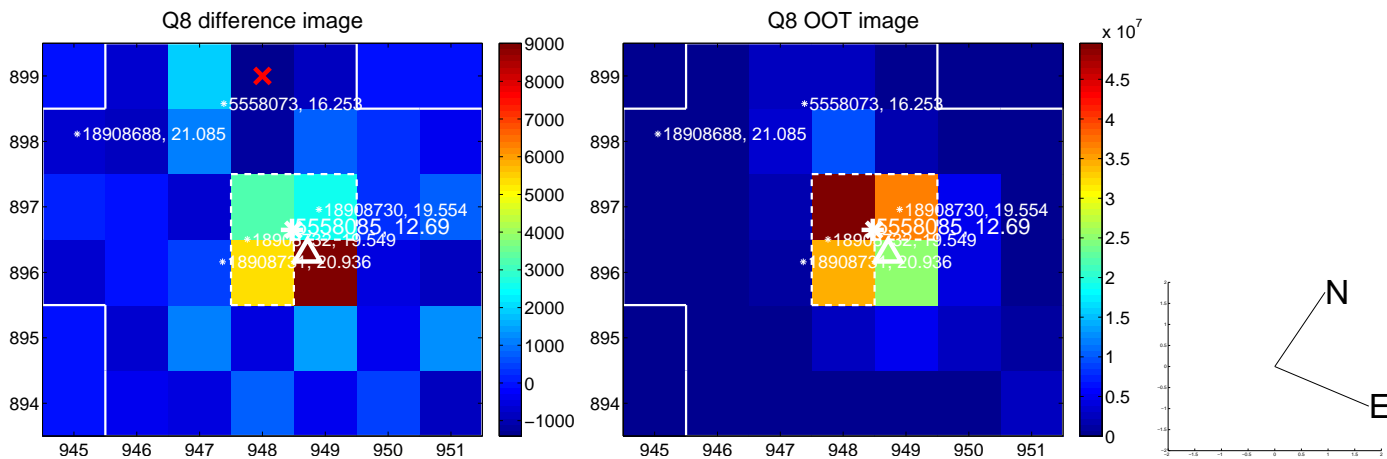
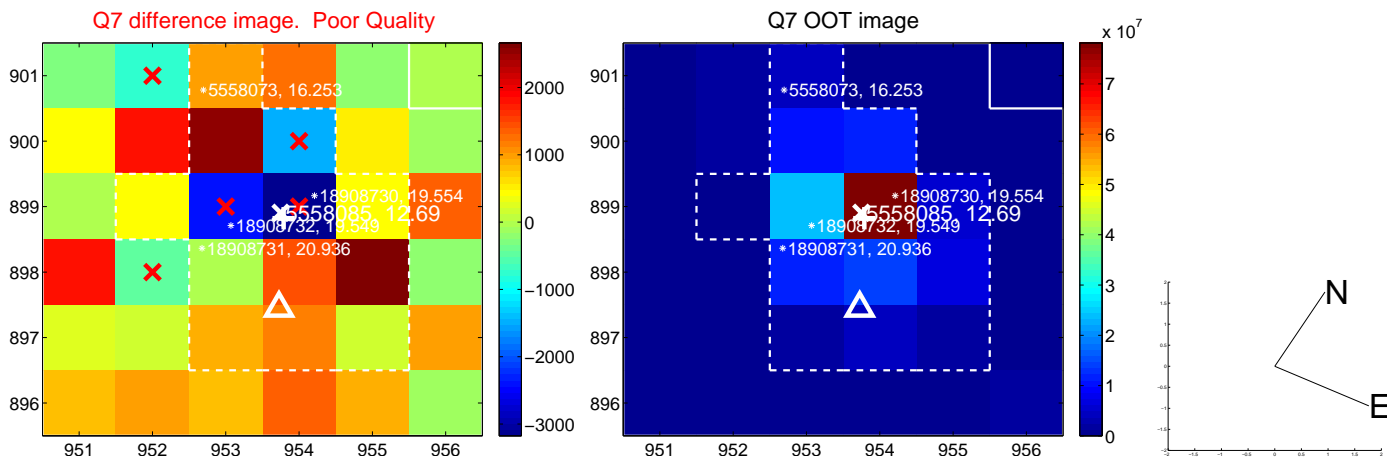
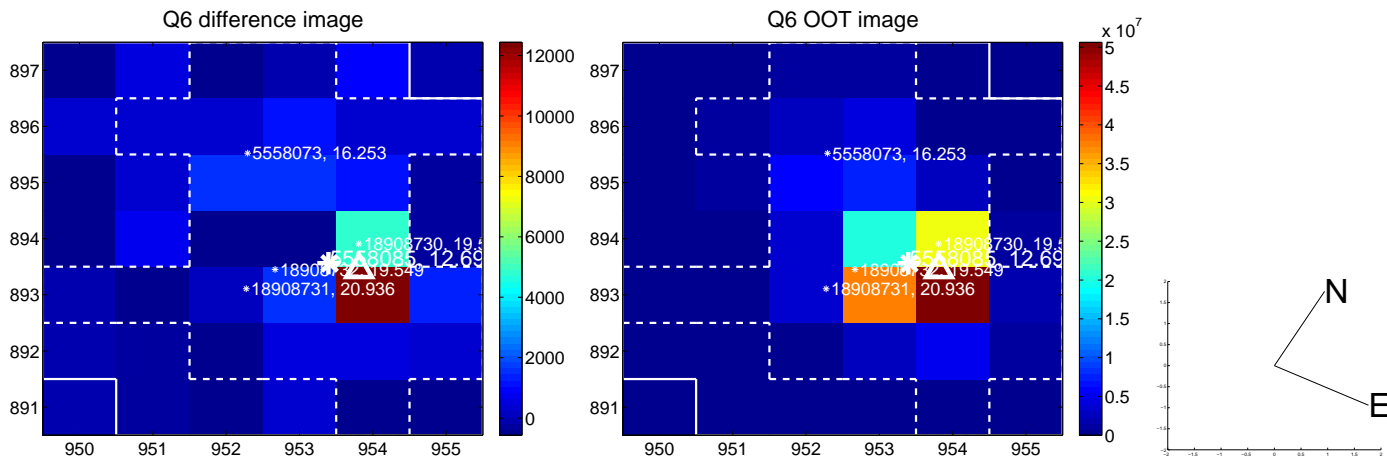
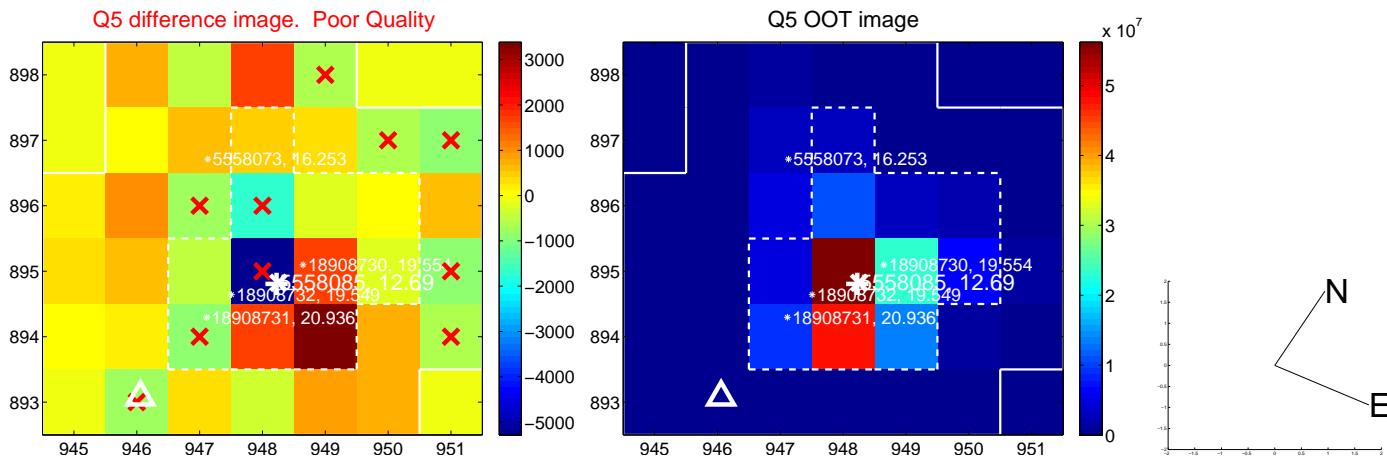
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



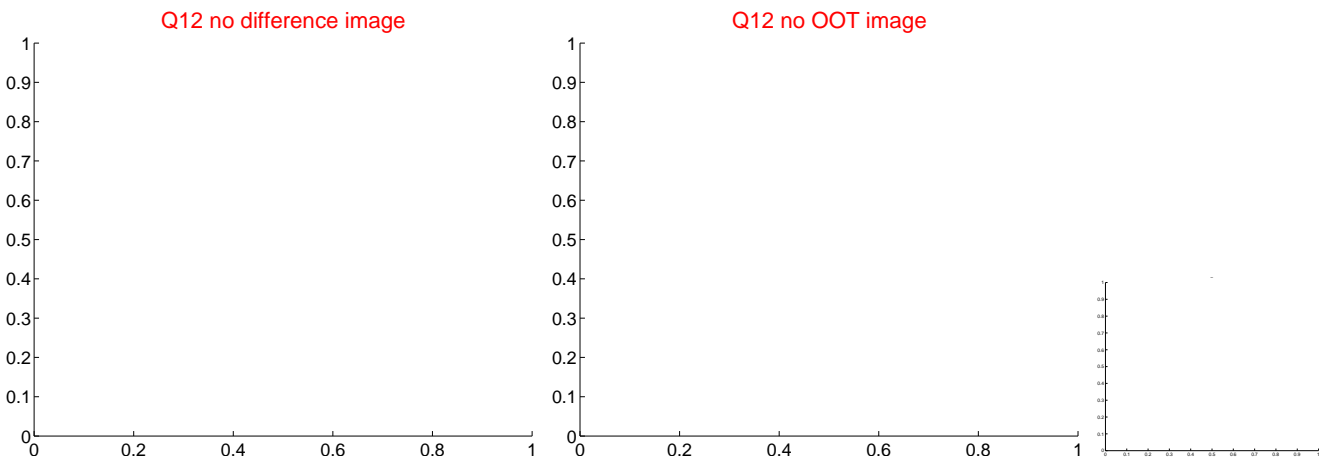
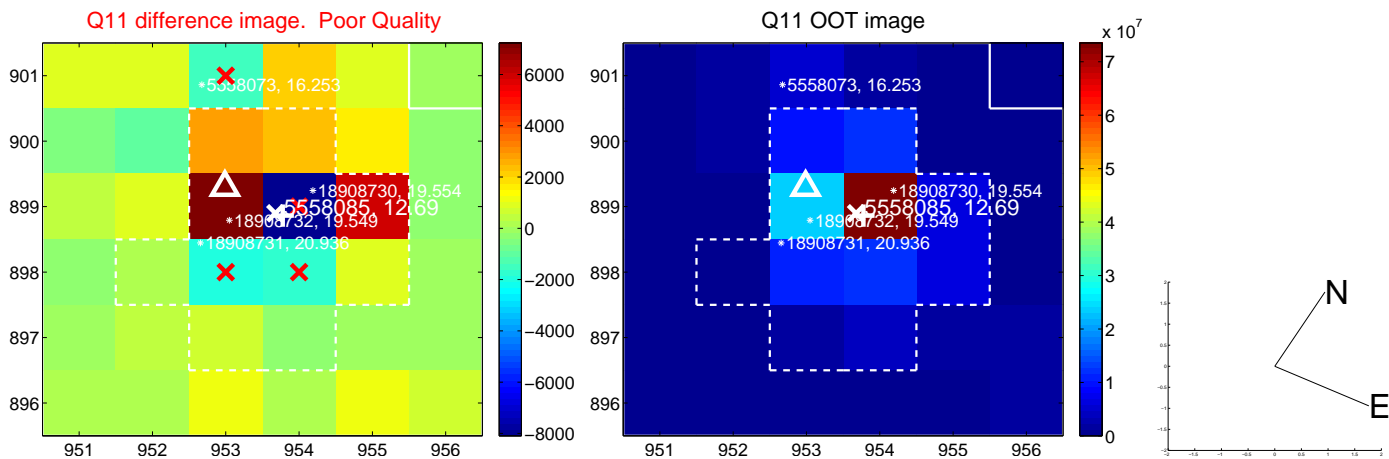
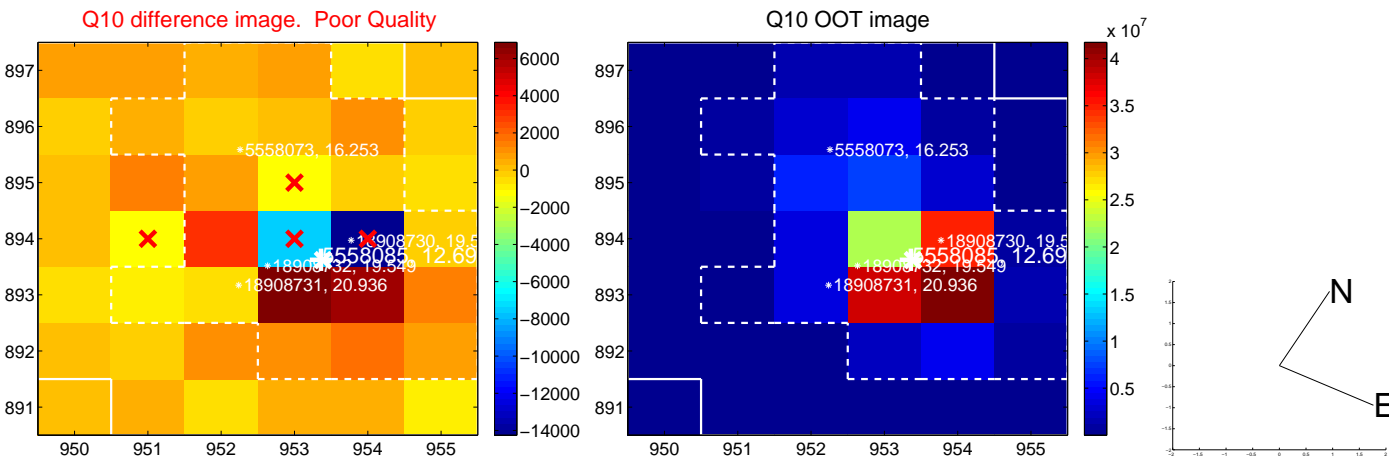
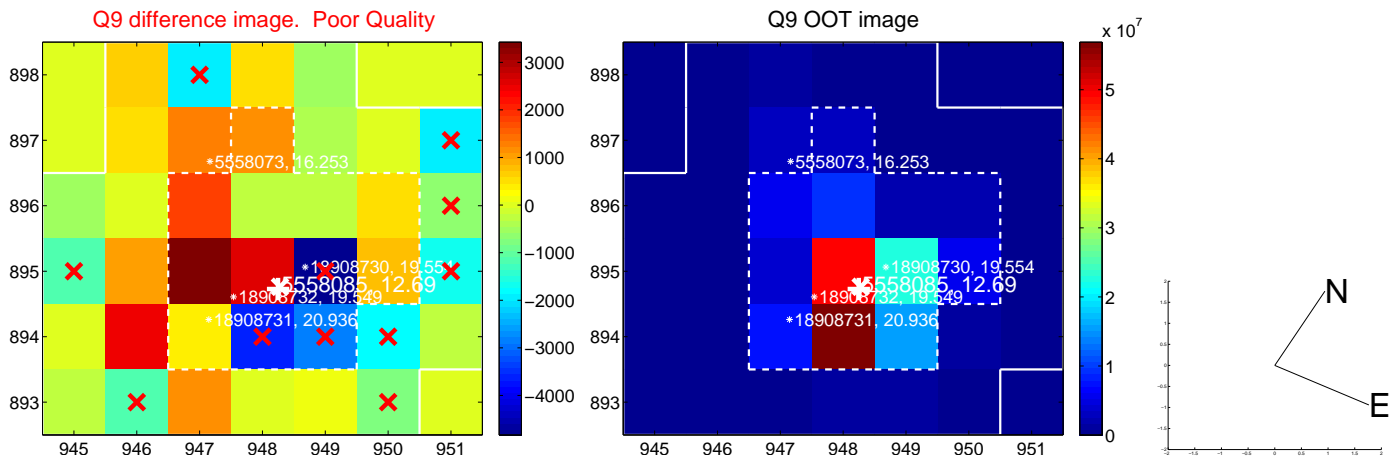
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.

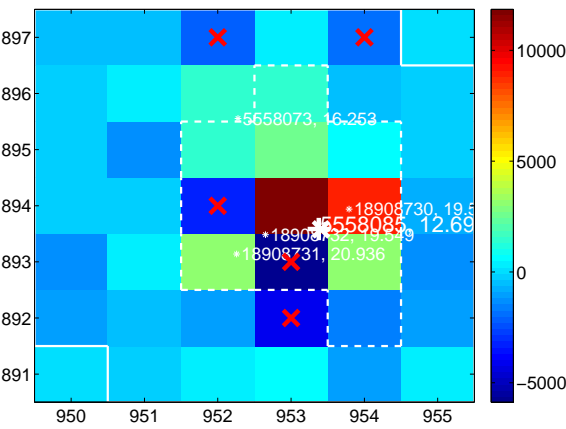
Q13 no difference image



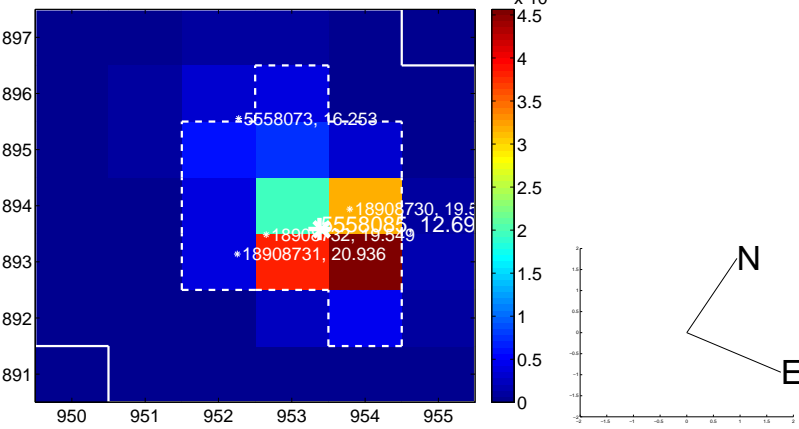
Q13 no OOT image



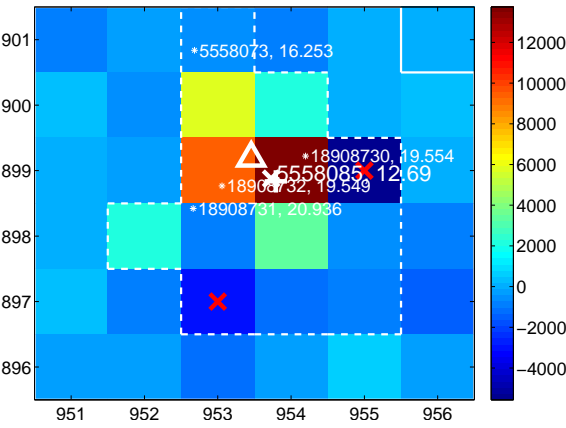
Q14 difference image. Poor Quality



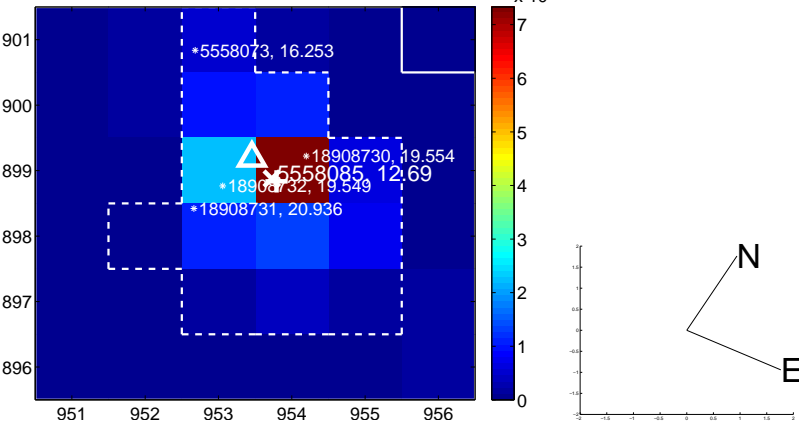
Q14 OOT image



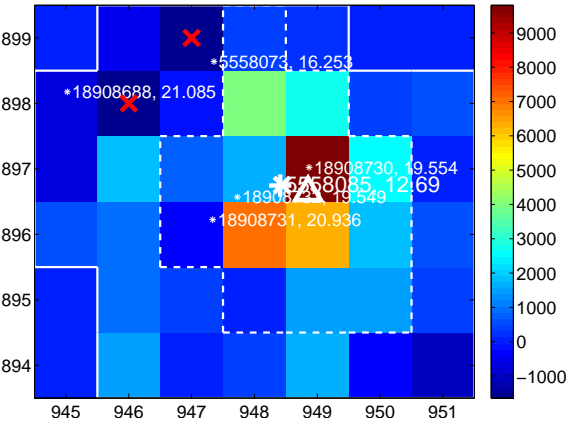
Q15 difference image



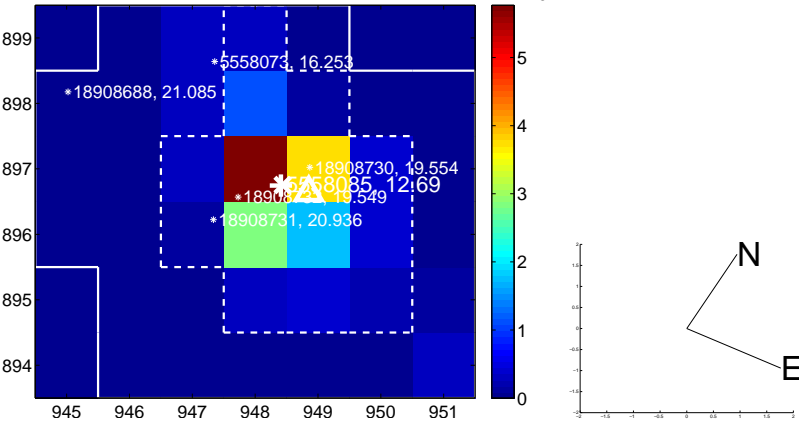
Q15 OOT image



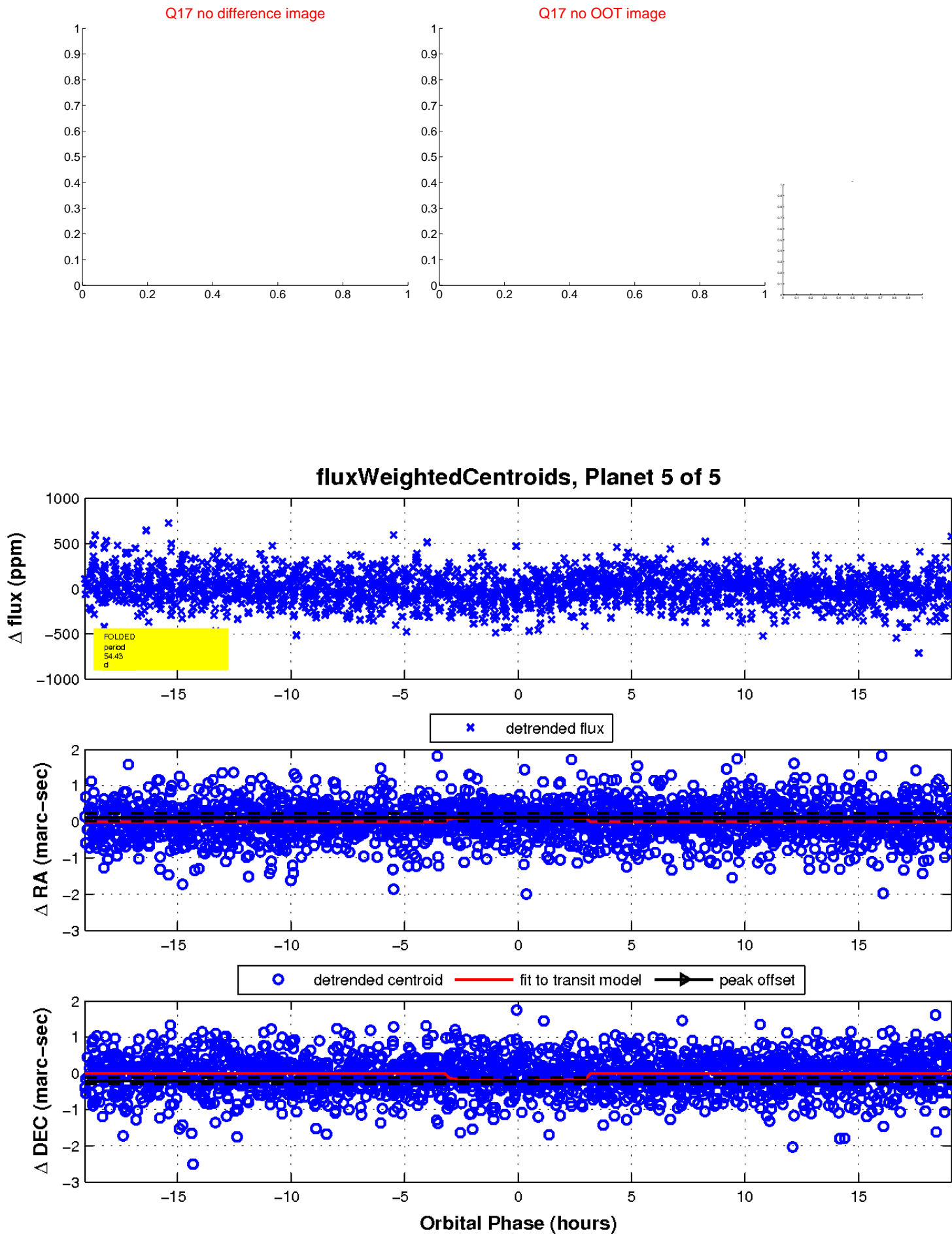
Q16 difference image



Q16 OOT image



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



UKIRT Image

Declination

