

# KIC 008582533

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008582533-01	OBS	No	0.909274	131.700974	13.2	2.781	10.4	5.5	2.57	6832	1.12	28951.67
008582533-02	OBS	No	0.908819	132.293136	14.5	10.630	8.7	3.7	2.57	6832	1.09	28970.99

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008582533-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
008582533-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—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.

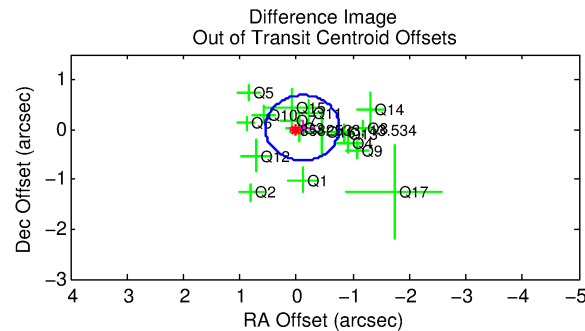
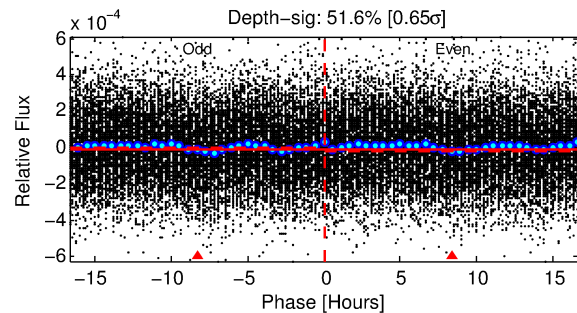
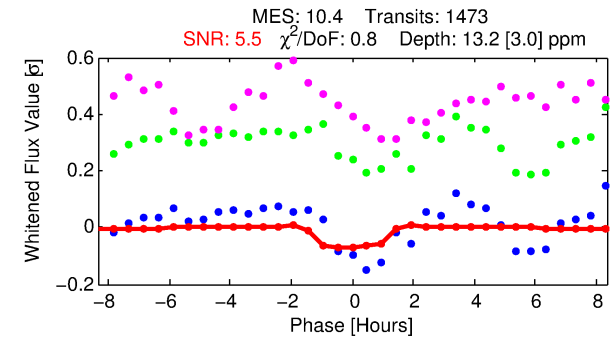
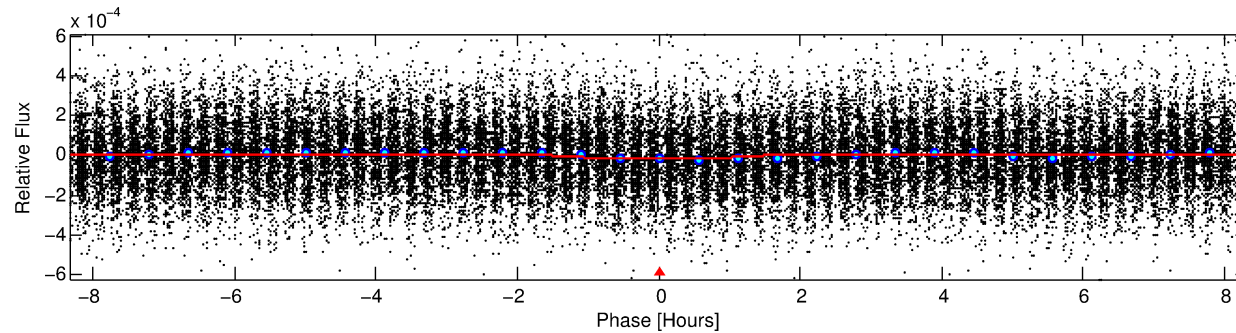
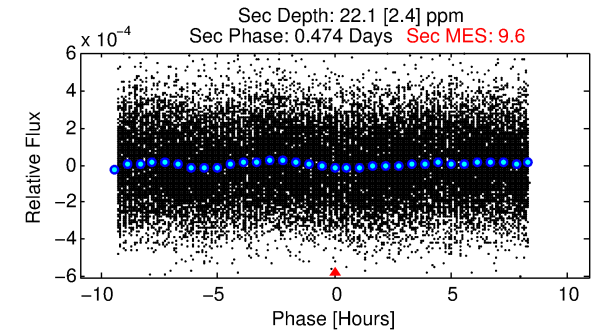
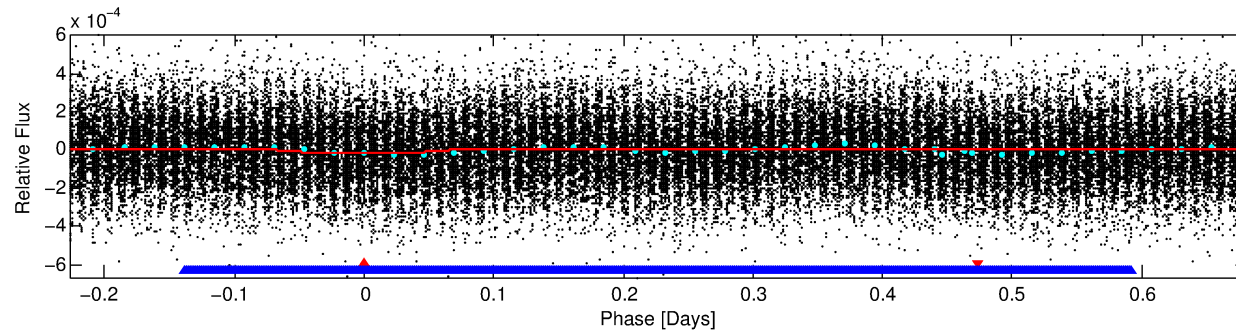
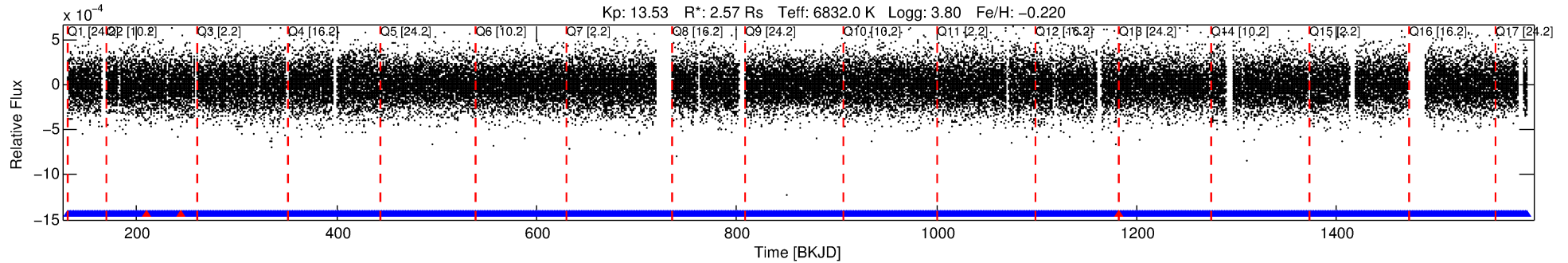
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008582533-01

No Significant Match Found

# DV One-Page Summary

KIC: 8582533 Candidate: 1 of 2 Period: 0.909 d



## DV Fit Results:

Period = 0.90927 [0.00002] d  
Epoch = 131.7010 [0.0057] BKJD  
Rp/R\* = 0.0040 [0.0017]  
a/R\* = 1.34 [1.56]  
b = 0.93 [0.38]  
Seff = 28951.67 [22116.30]  
Teq = 3326 [635] K  
Rp = 1.12 [0.72] Re  
a = 0.0211 [0.0098] AU  
Ag = 4.34 [4.99] [0.67σ]  
Teffp = 7422 [1655] K [2.31σ]

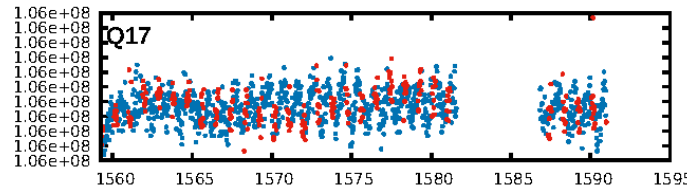
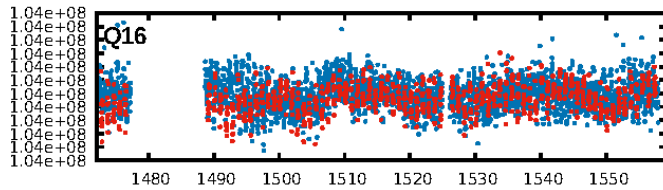
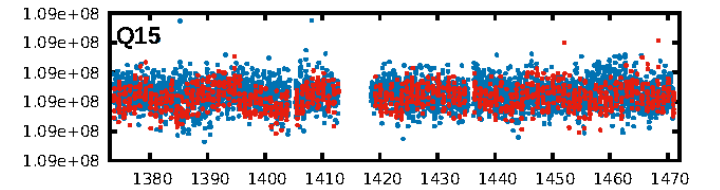
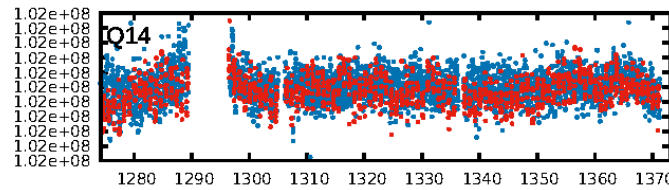
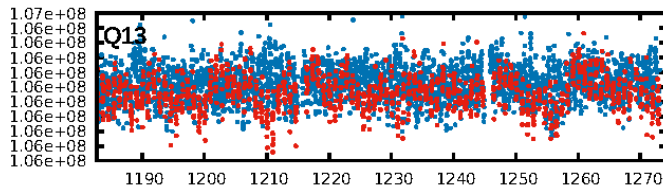
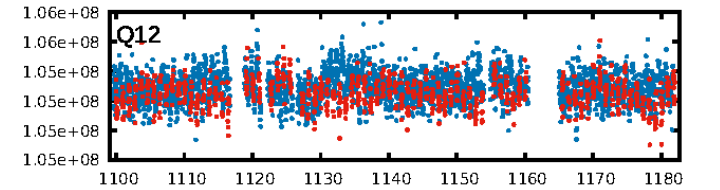
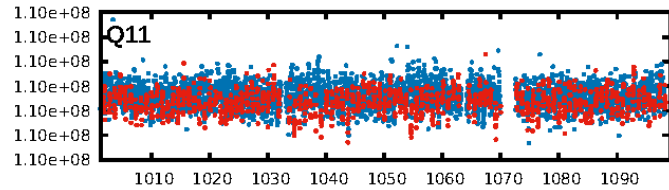
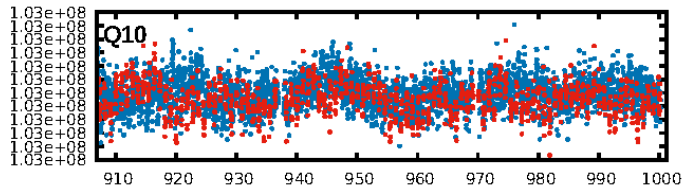
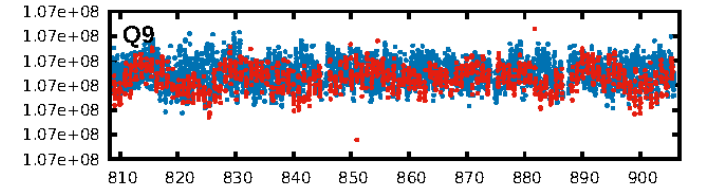
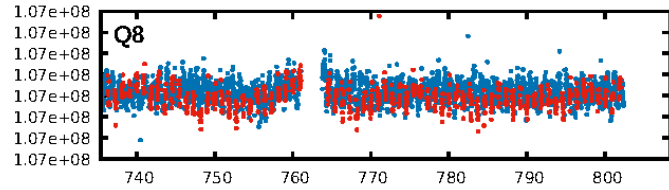
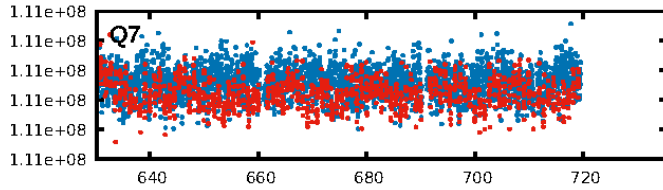
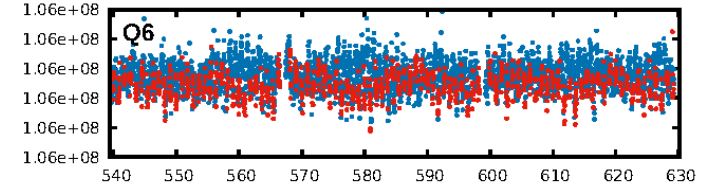
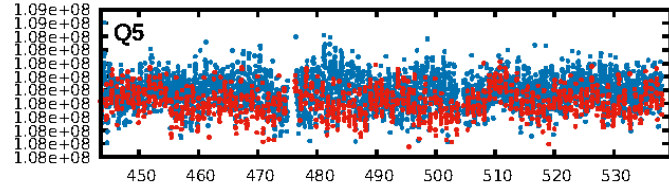
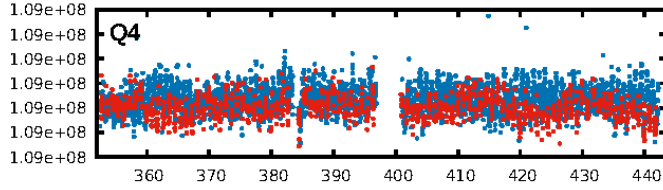
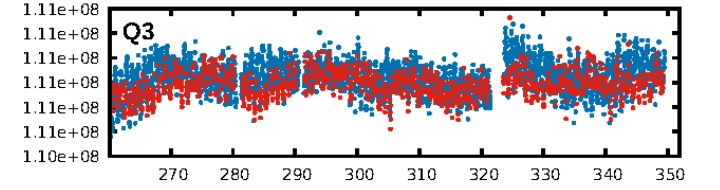
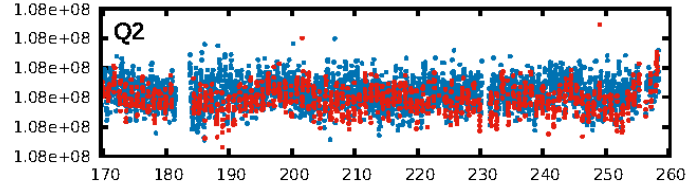
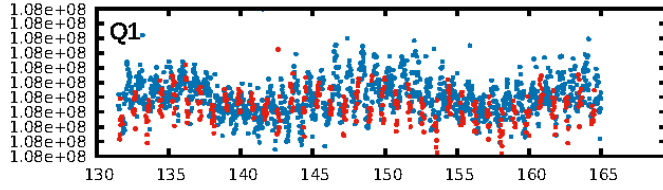
## DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1404/1407]  
GhostDiagnostic-chr: 0.6822  
Centroid-sig: 75.7%  
Centroid-so: 1.090 arcsec [0.54σ]  
OotOffset-rm: 0.107 arcsec [0.49σ]  
KicOffset-rm: 0.180 arcsec [1.20σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.94 [16/17]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:03:54 Z

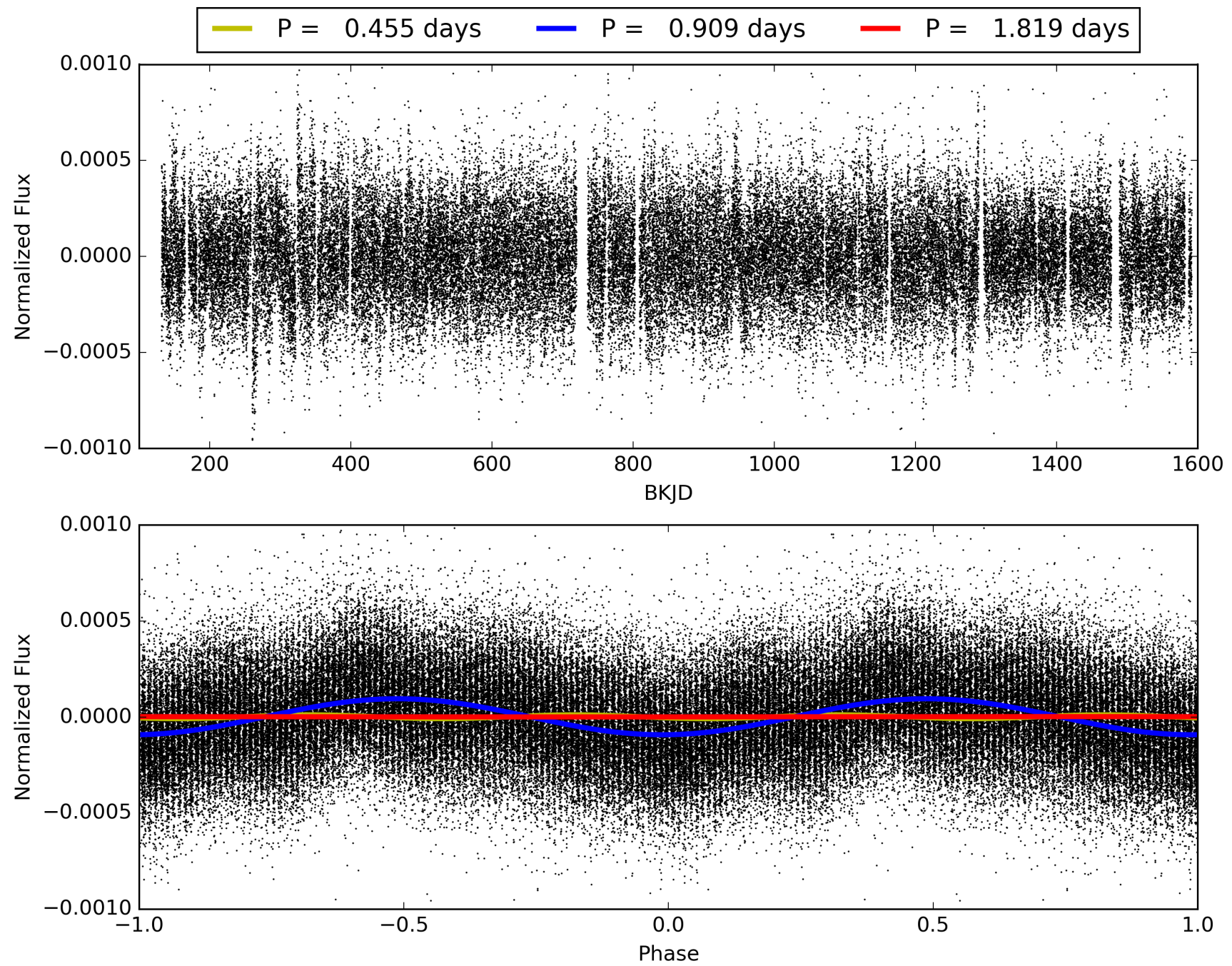
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 00582533-01, PDC Light Curves



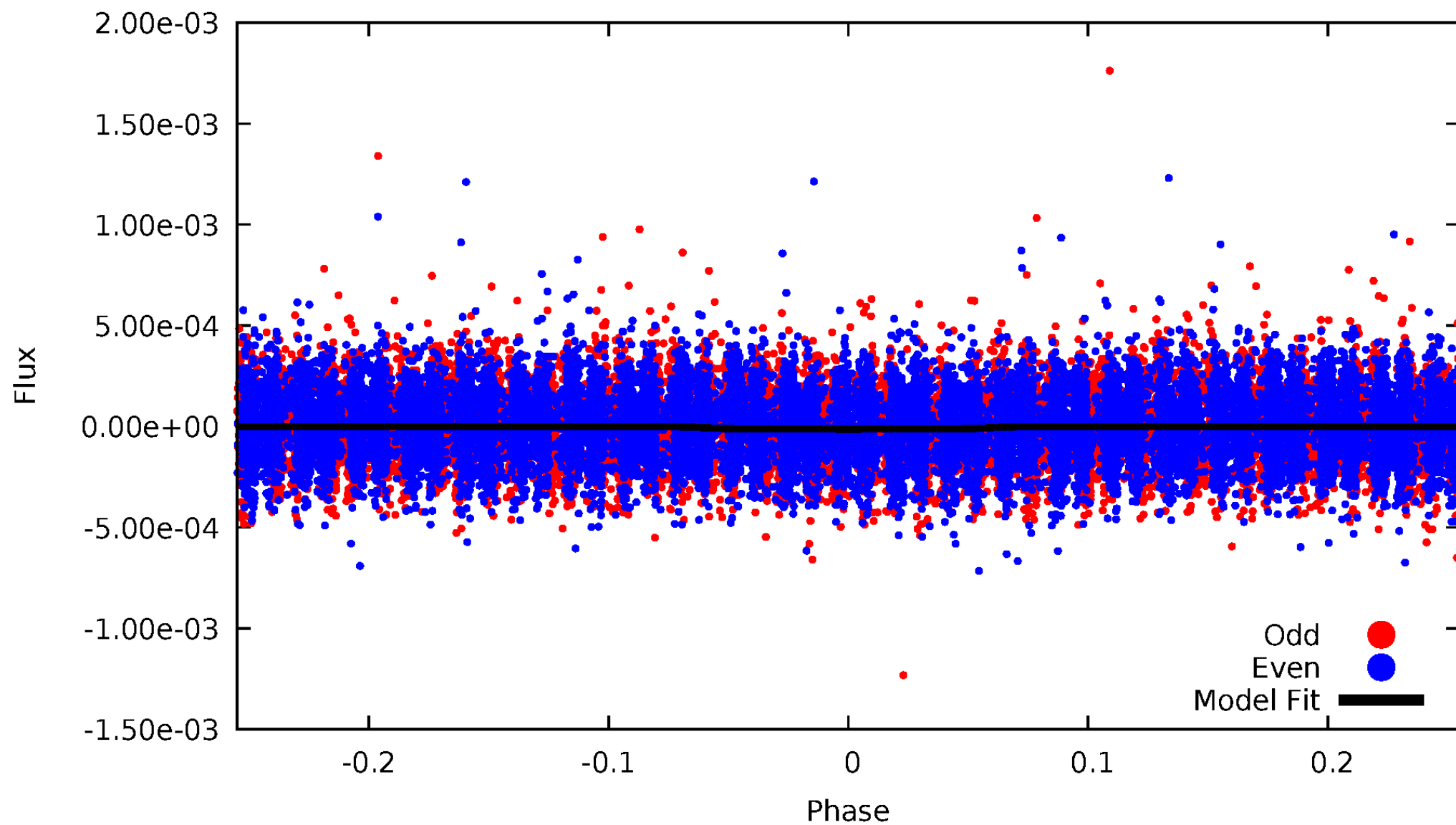


TCE 008582533-01



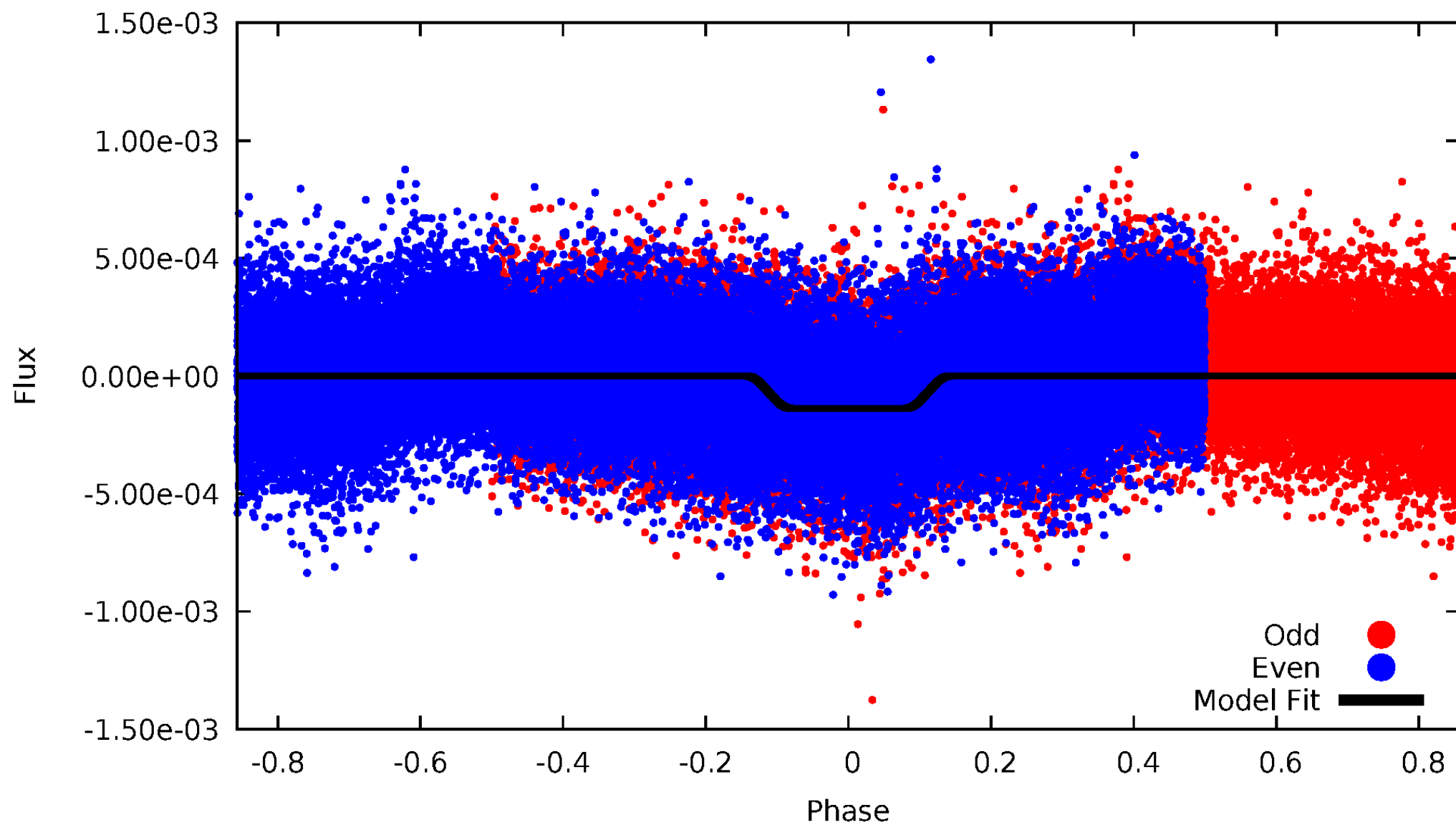
# DV Odd/Even

TCE 008582533-01



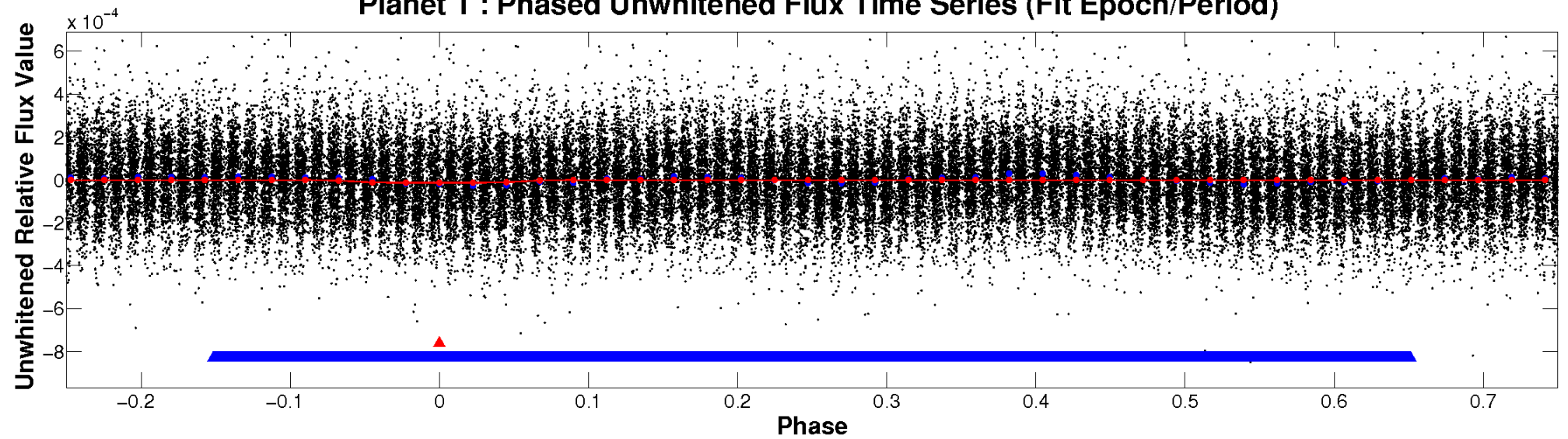
# ALT Odd/Even

TCE 008582533-01

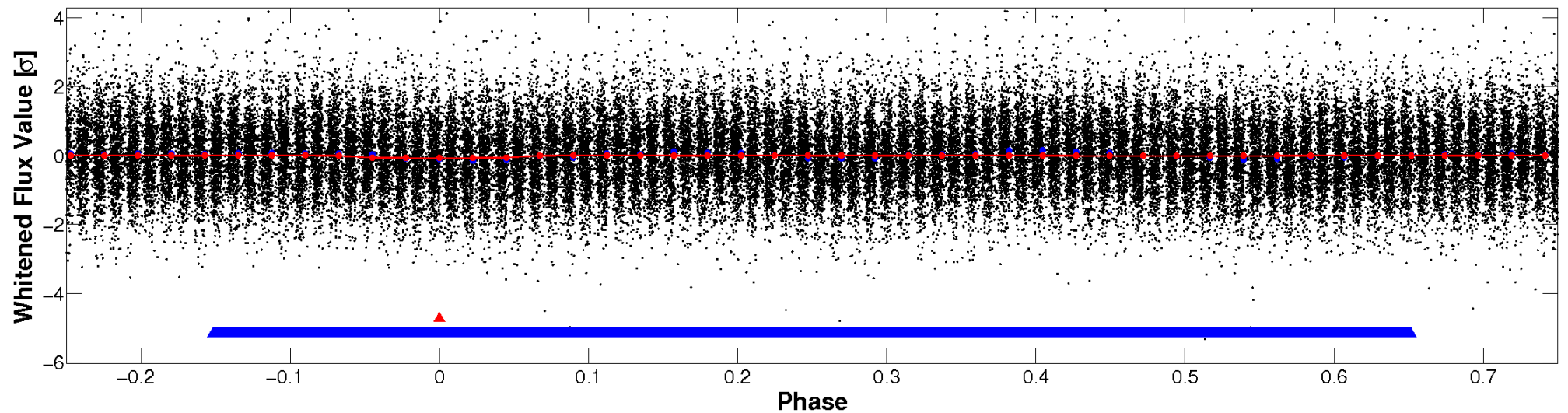


# Non-Whitened Vs. Whitened Light Curve

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



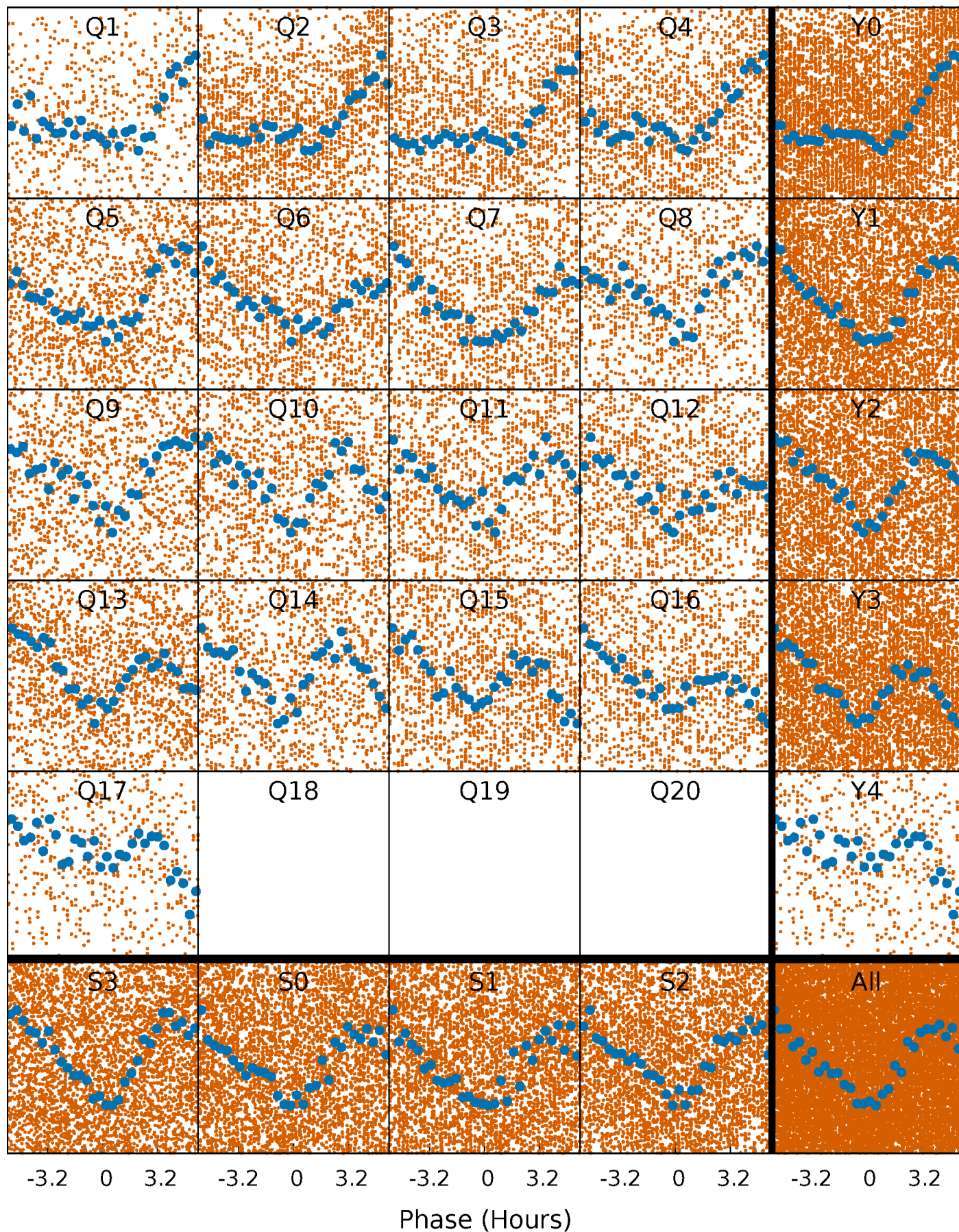
**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





# PDC Quarter-Phased Transit Curves

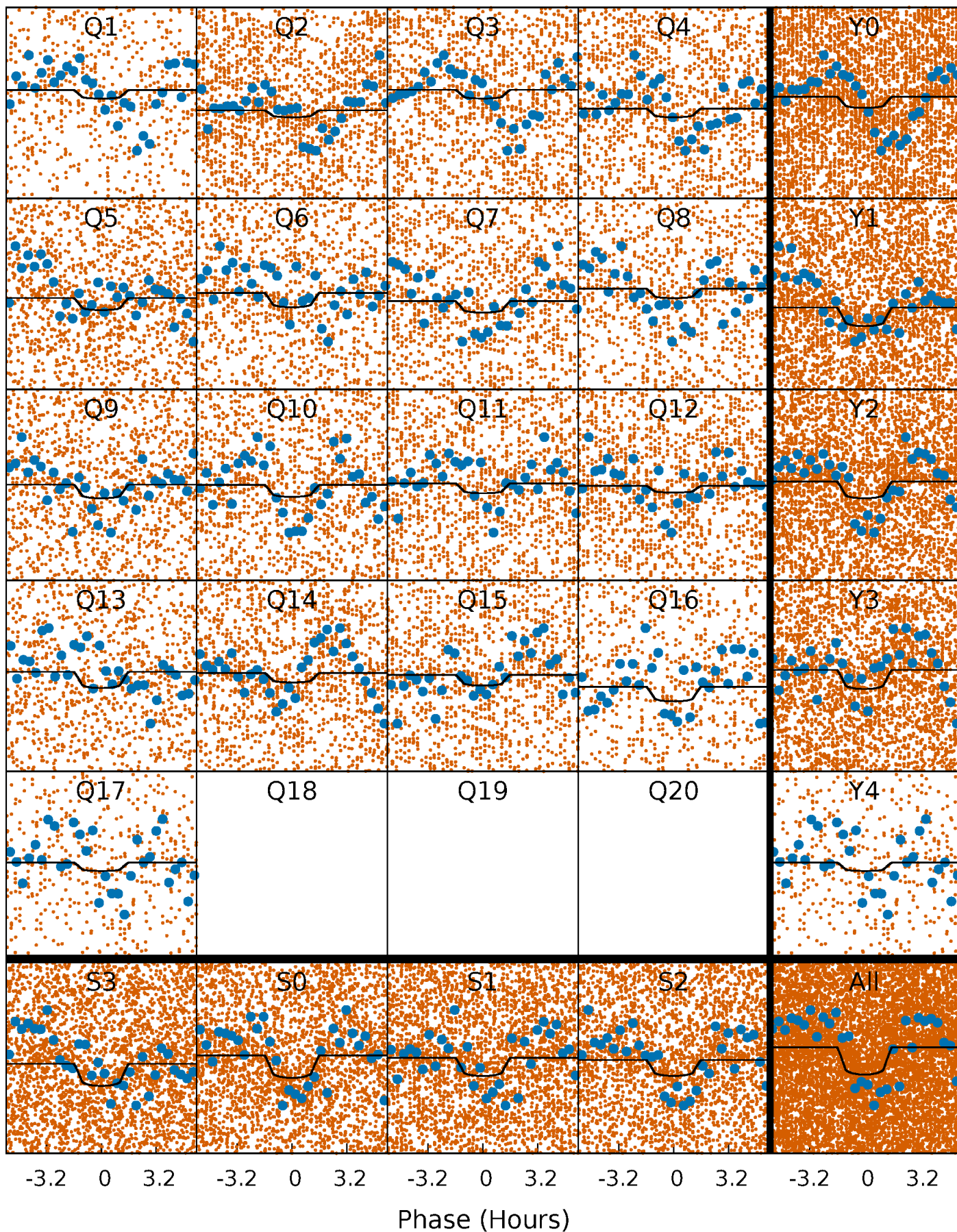
TCE 008582533-01 P= 0.909274 Days  $T_0=131.700975$  (BKJD)





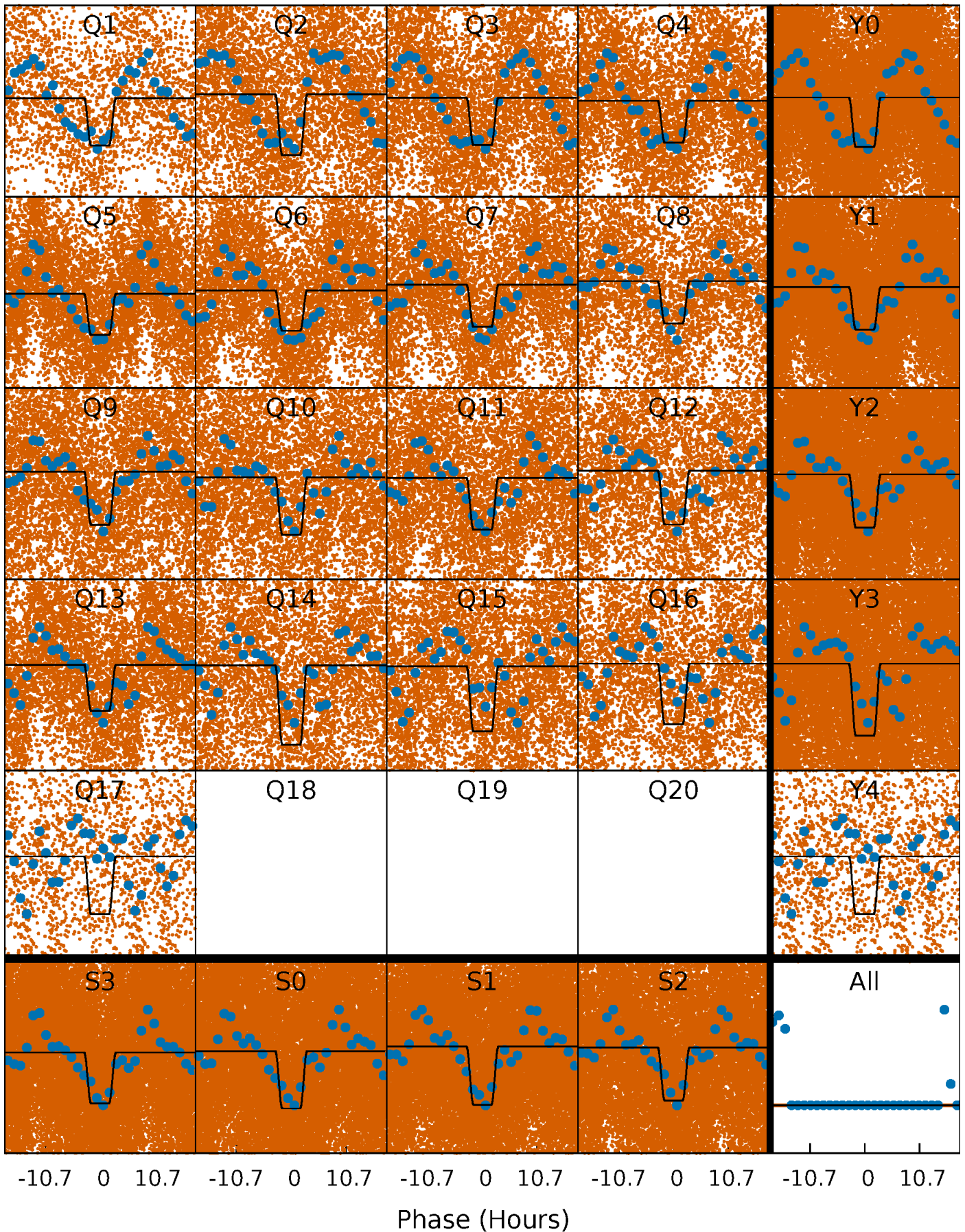
# DV Quarter-Phased Transit Curves

TCE 008582533-01 P= 0.909274 Days  $T_0=131.700975$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008582533-01 P= 0.909218 Days  $T_0=131.735086$  (BKJD)

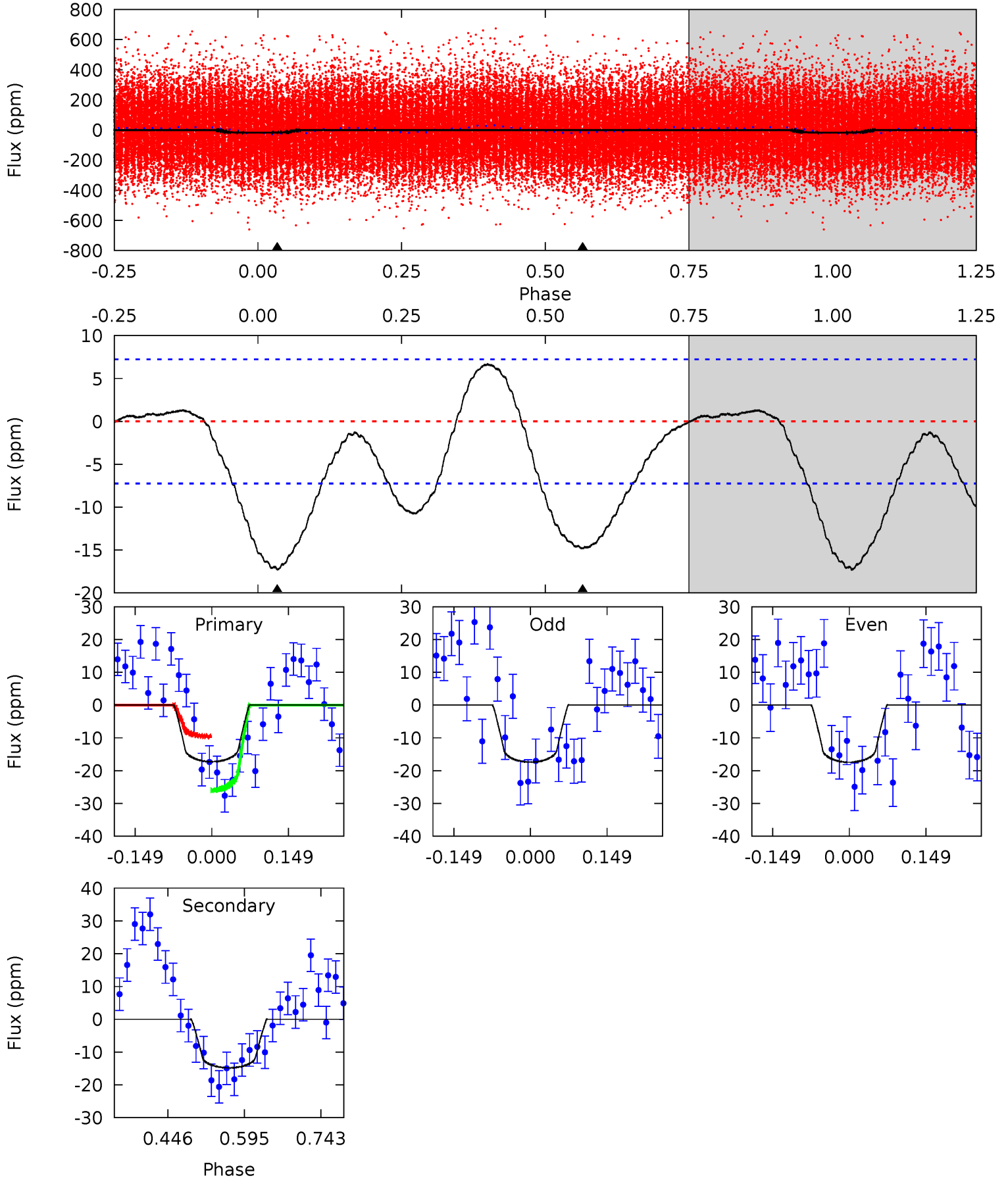




# DV Model-Shift Uniqueness Test

008582533-01, P = 0.909274 Days, E = 130.791701 Days

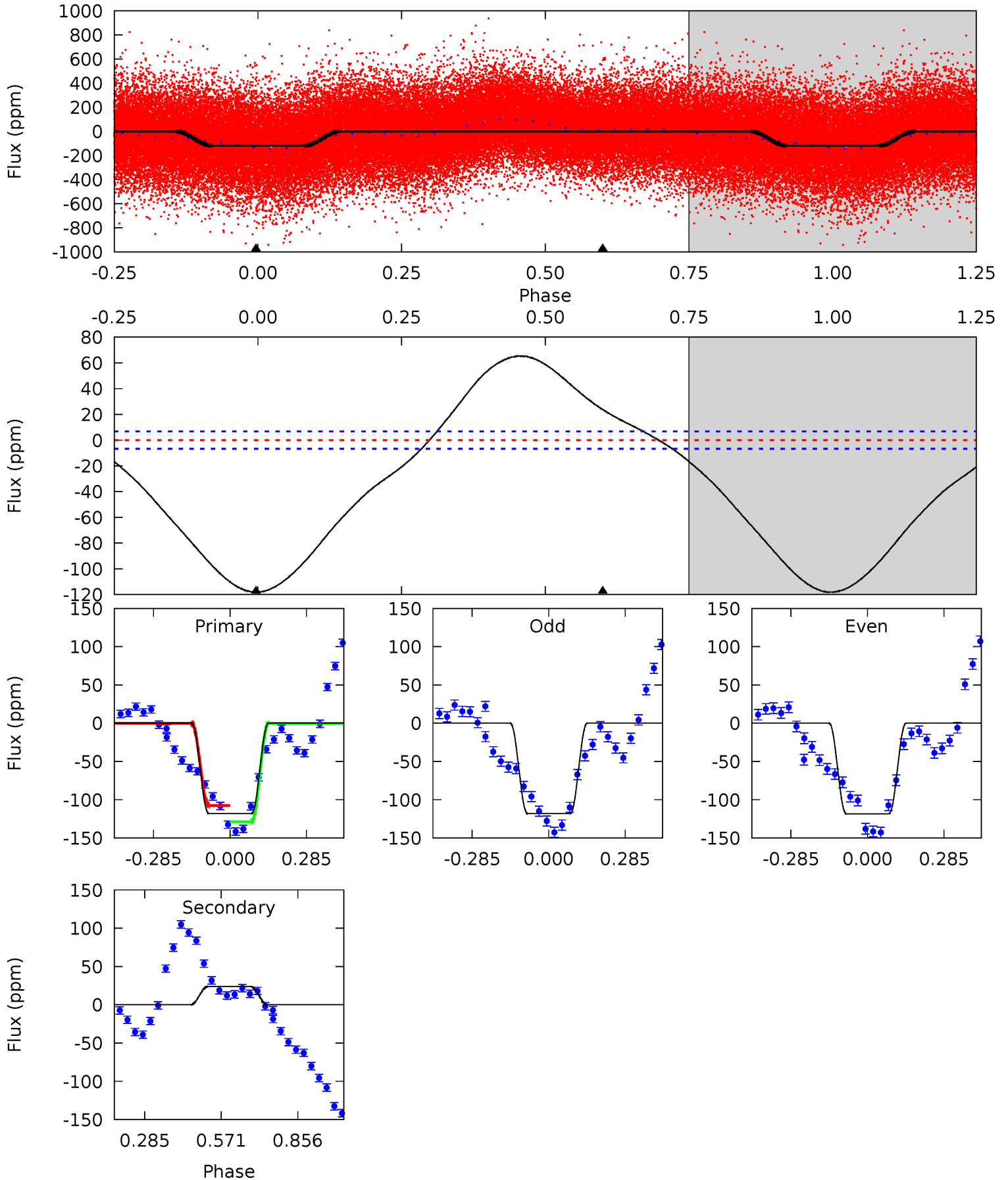
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	9.17	0	0	4.48	1.44	3.10	10.7	10.7	9.17	9.17	0.01	0.94	0.28	5.06



# Alt Model-Shift Uniqueness Test

008582533-01, P = 0.909218 Days, E = 130.825868 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
75.7	-15.2	0	0	4.34	1.07	9.19	75.7	75.7	-15.2	-15.2	0.08	1.00	0.36	6.88





### Stellar Parameters For KIC 008582533

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6832^{+214}_{-285}$	$3.799^{+0.440}_{-0.110}$	$-0.220^{+0.250}_{-0.300}$	$2.572^{+0.522}_{-1.217}$	$1.519^{+0.199}_{-0.369}$	$0.126^{+0.496}_{-0.045}$
	+3%/-4%	+12%/-3%	+114%/-136%	+20%/-47%	+13%/-24%	+395%/-35%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 008582533-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-15 \pm 2$	$1.01^{+0.50}_{-0.46}$	$4494^{+373}_{-522}$	$6480^{+2838}_{-1185}$	$3.565^{+8.268}_{-2.055}$
Alt.	$24 \pm 2$	$3.04^{+0.77}_{-0.83}$	$4488^{+370}_{-511}$	$-4951^{+278}_{-272}$	$-0.627^{+0.219}_{-0.469}$

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

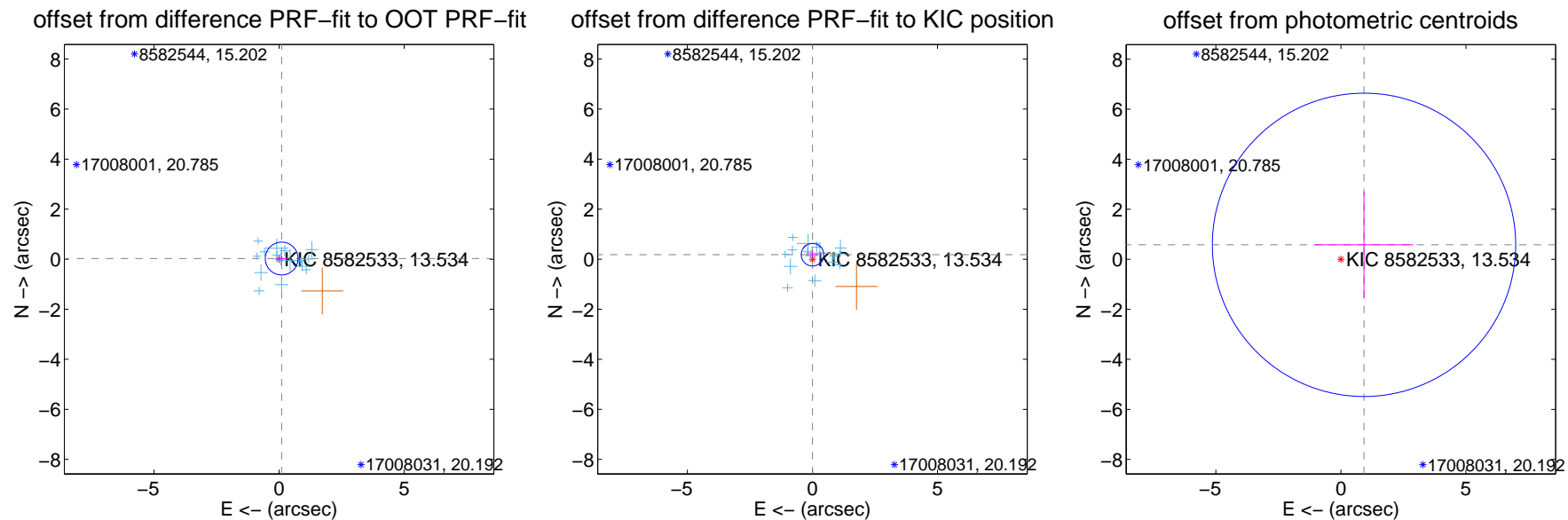
## DV Centroid Data

Supplemental centroid analysis for 008582533-01. Kepler magnitude: 13.53. Transit SNR 5.50

There are 16 quarters with good PRF difference image offsets

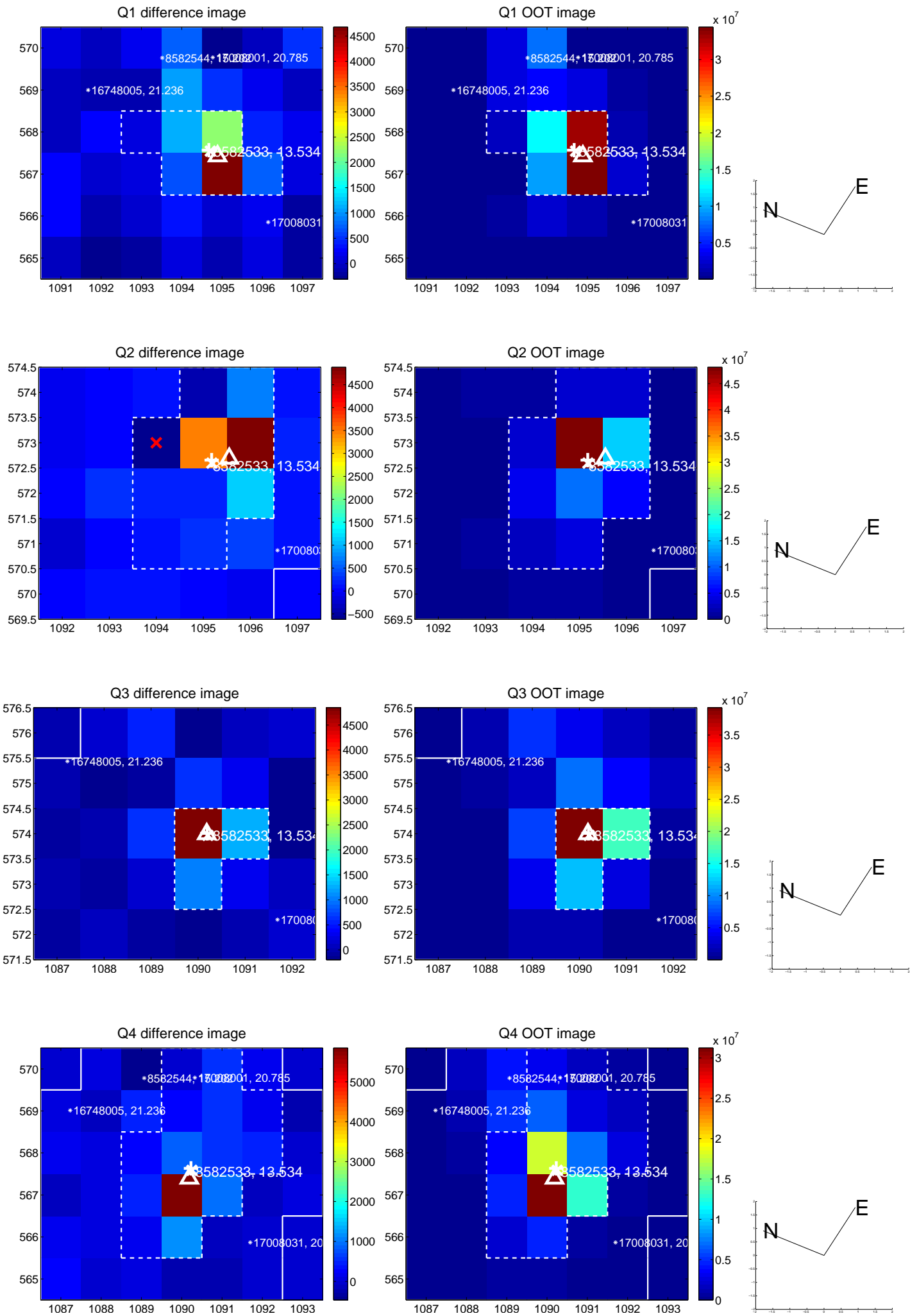
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.107 \pm 0.219$	0.49	$-0.104 \pm 0.223$	$0.026 \pm 0.126$
PRF-fit source offset from KIC position	$0.180 \pm 0.150$	1.20	$-0.004 \pm 0.213$	$0.180 \pm 0.151$
photometric centroid source offset	$1.09 \pm 2.02$	0.54	$-0.92 \pm 1.98$	$0.58 \pm 2.12$

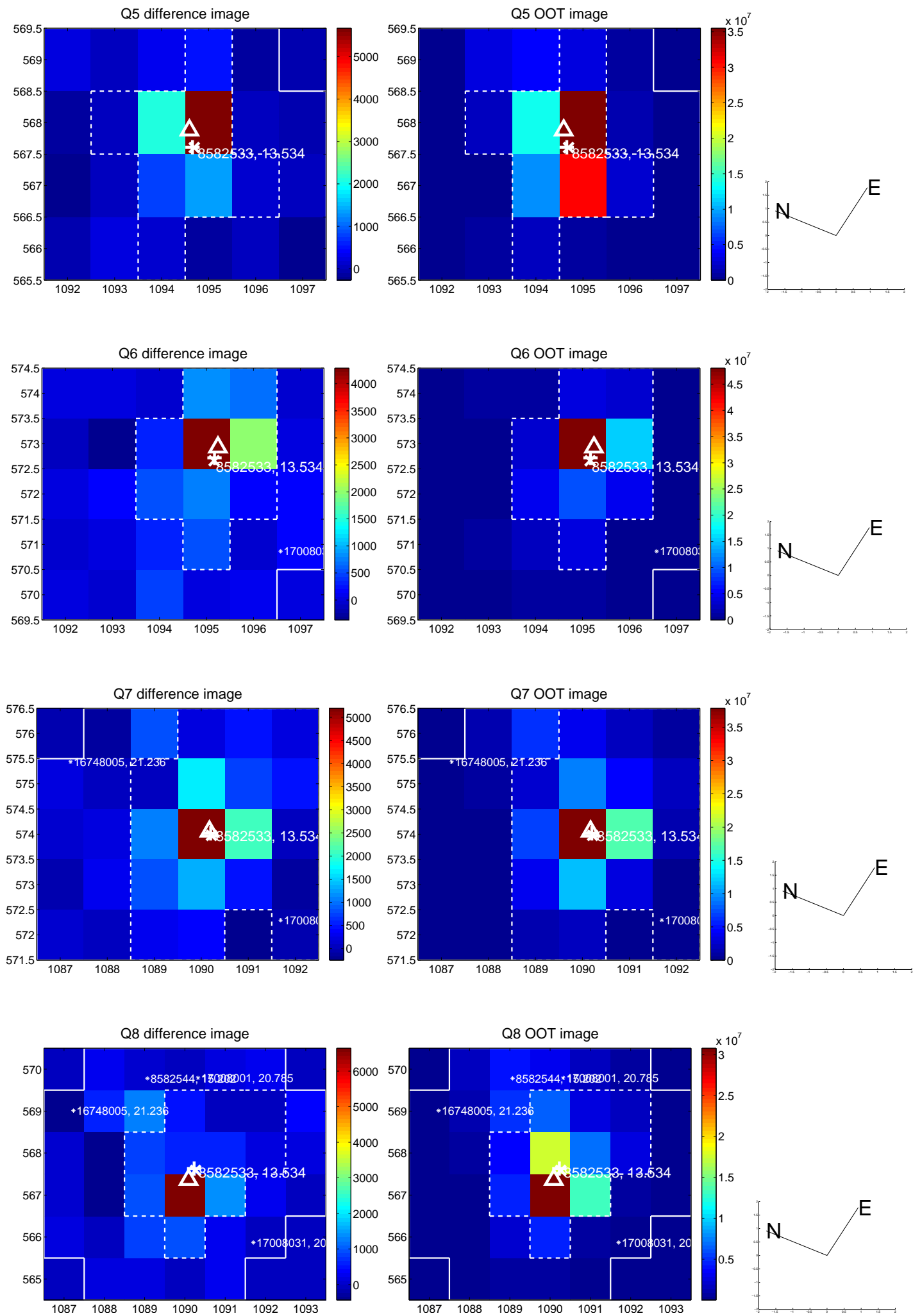


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

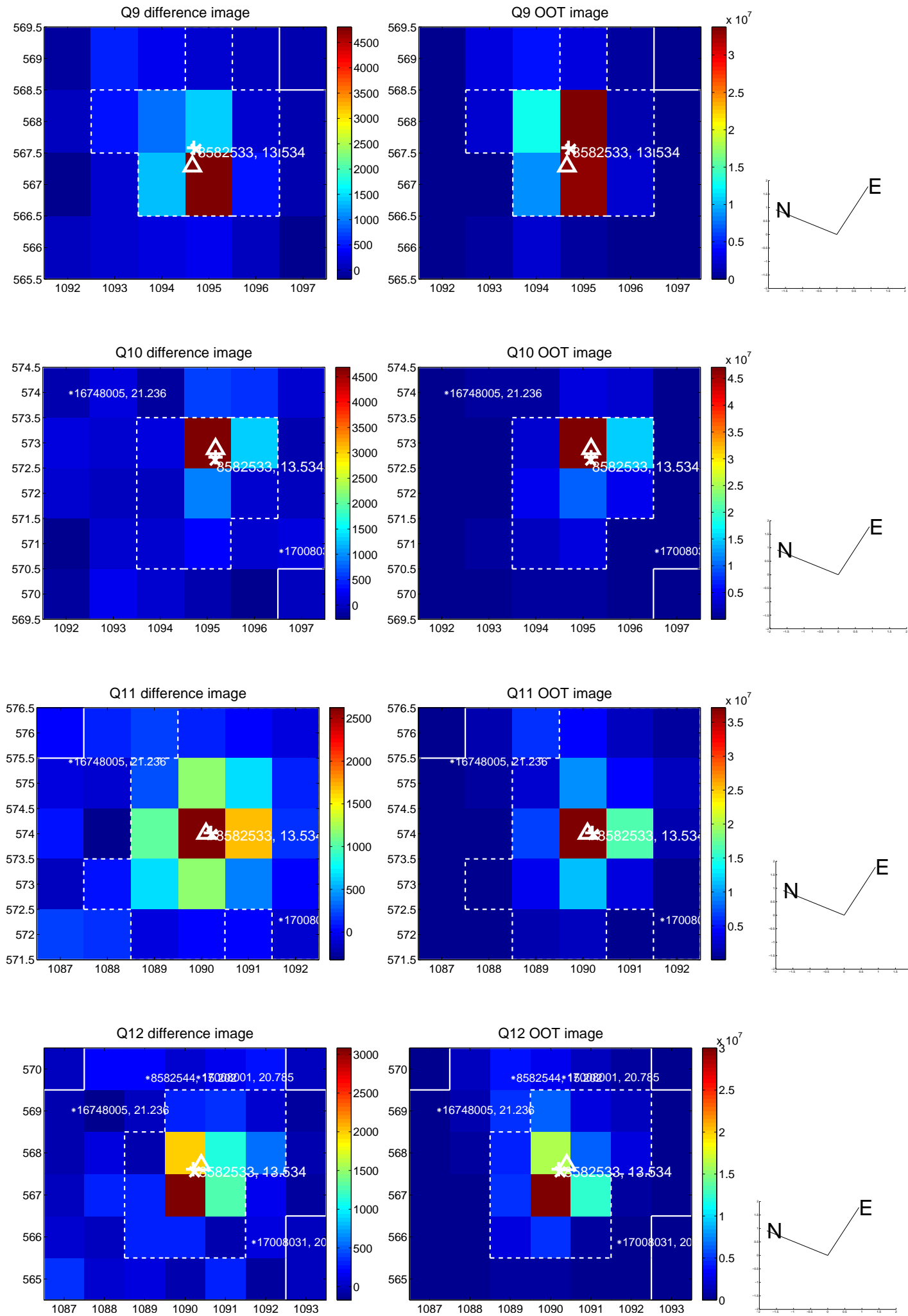


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

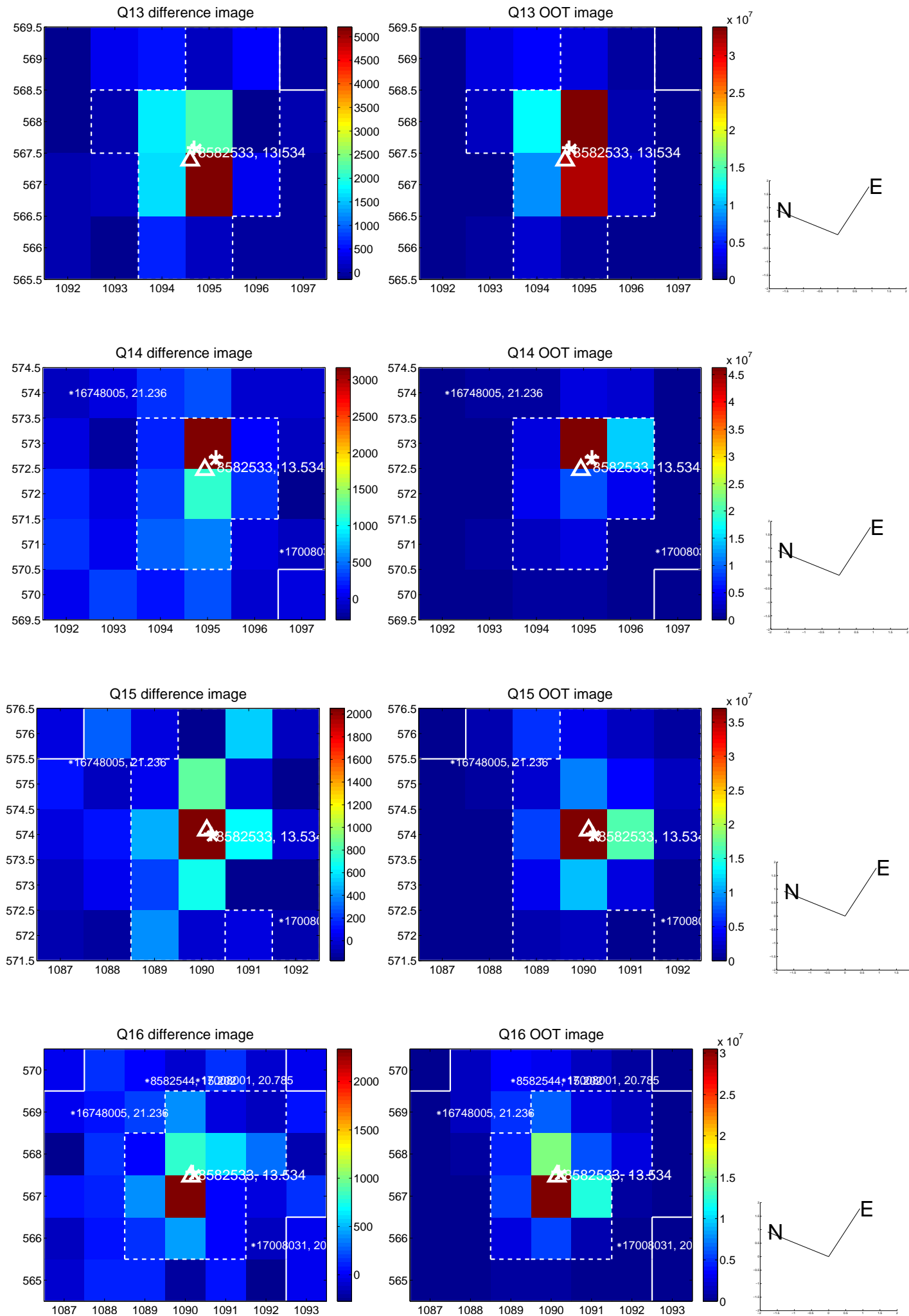




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

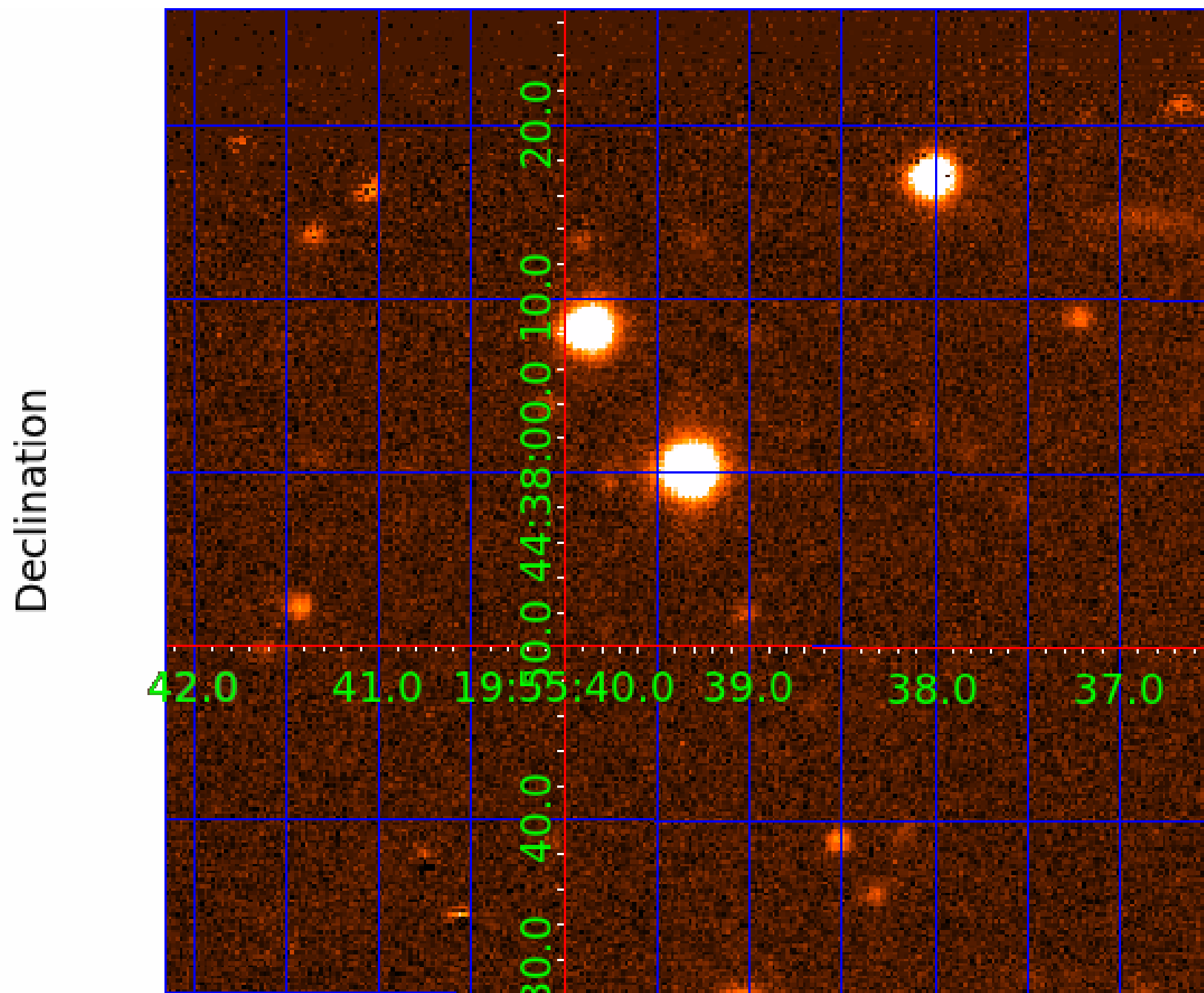


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image





# KIC 008582533

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008582533-01	OBS	No	0.909274	131.700974	13.2	2.781	10.4	5.5	2.57	6832	1.12	28951.67
008582533-02	OBS	No	0.908819	132.293136	14.5	10.630	8.7	3.7	2.57	6832	1.09	28970.99

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008582533-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
008582533-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—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.

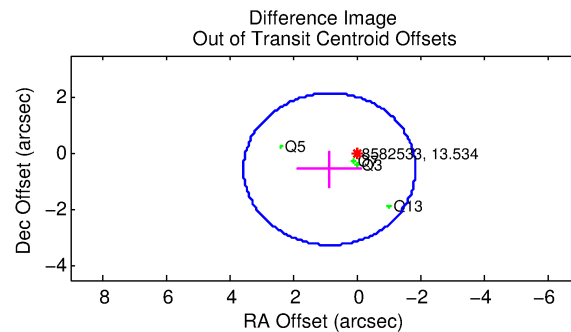
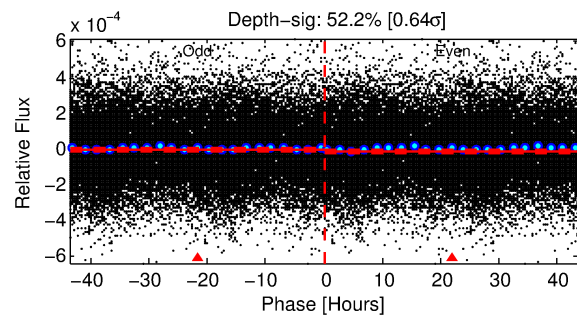
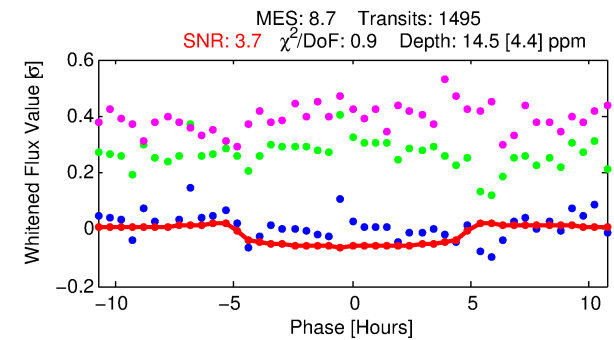
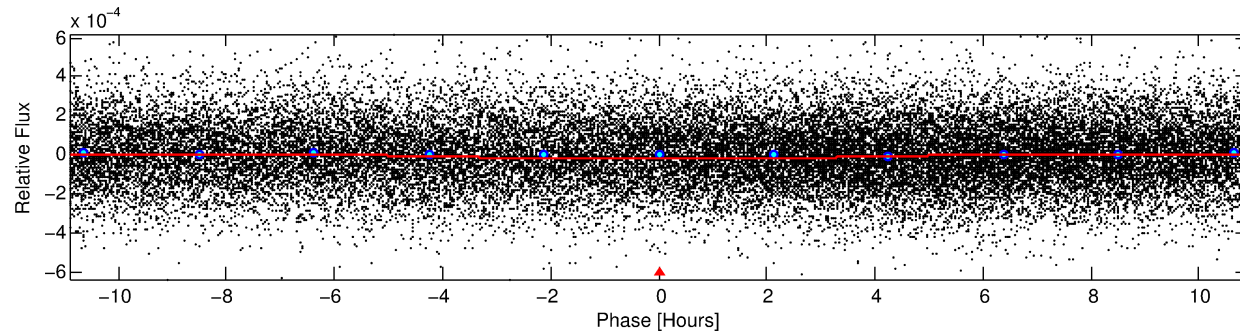
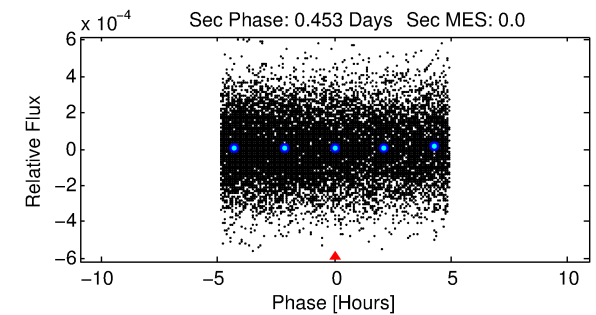
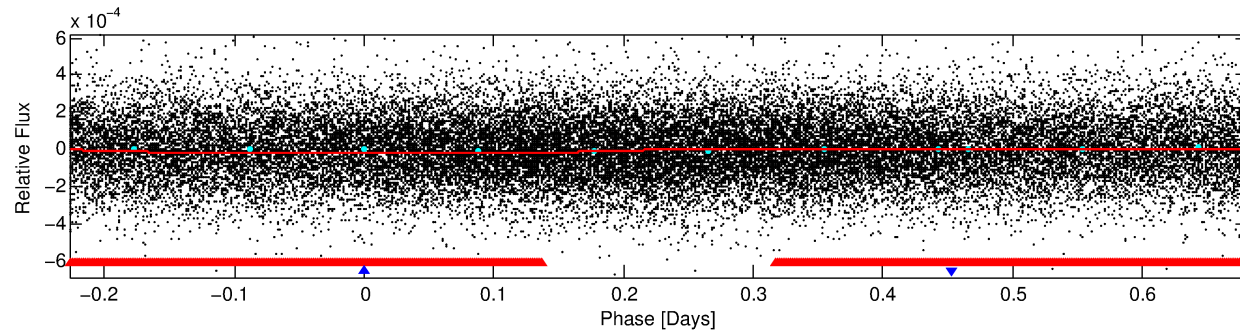
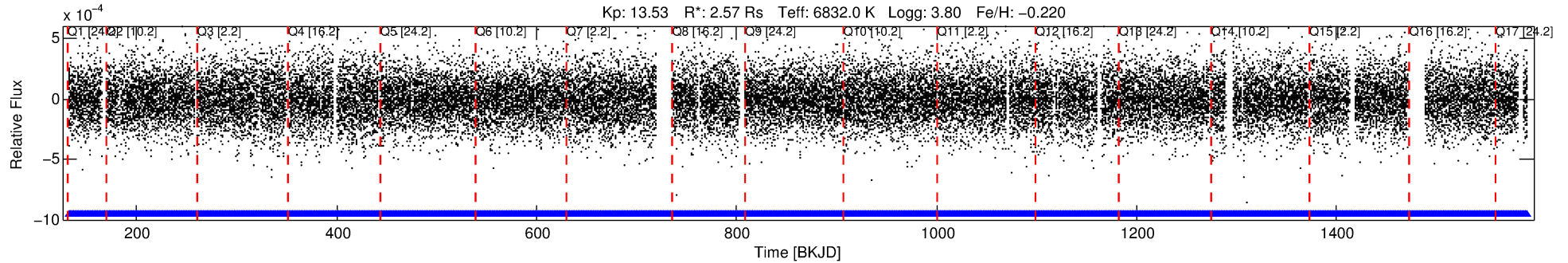
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008582533-02

No Significant Match Found

# DV One-Page Summary

KIC: 8582533 Candidate: 2 of 2 Period: 0.909 d



## DV Fit Results:

Period = 0.90882 [0.00005] d  
Epoch = 132.2931 [0.0222] BKJD  
Rp/R\* = 0.0039 [0.0020]  
a/R\* = 1.00 [0.02]  
b = 0.83 [1.15]  
Seff = 28970.99 [22131.06]  
Teq = 3327 [635] K  
Rp = 1.09 [0.77] Re  
a = 0.0211 [0.0098] AU  
Ag = N/A  
Teffp = N/A

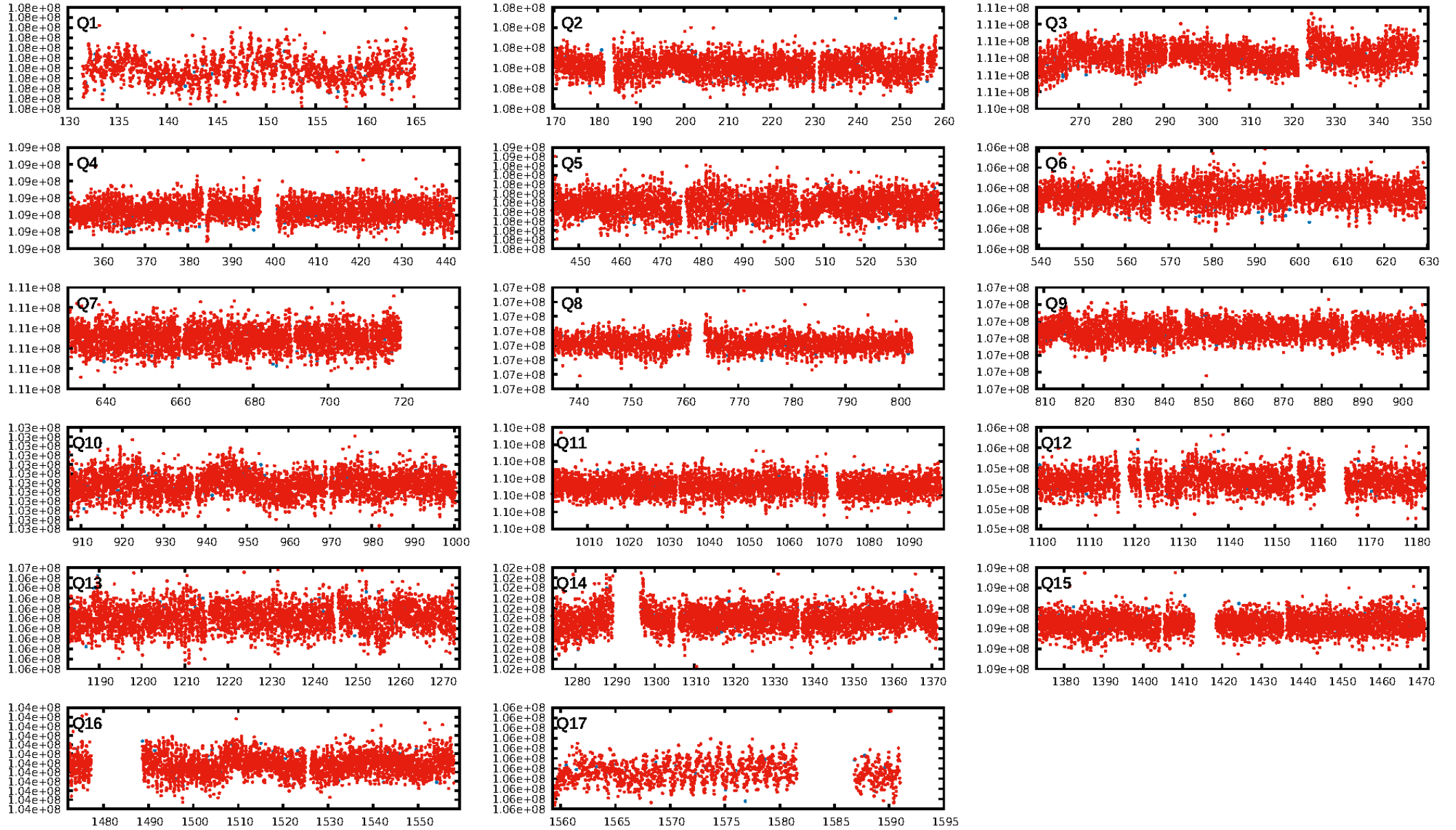
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.1% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1428/1428]  
GhostDiagnostic-chr: 2.598  
Centroid-sig: 71.6%  
Centroid-so: 0.721 arcsec [0.66σ]  
OotOffset-rm: 1.008 arcsec [1.12σ]  
OotOffset-st: 0.2/0/2 [4]  
KicOffset-rm: 0.963 arcsec [1.07σ]  
KicOffset-st: 0.2/0/2 [4]  
DiffImageQuality-fgm: 0.25 [1/4]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 02:04:10 Z

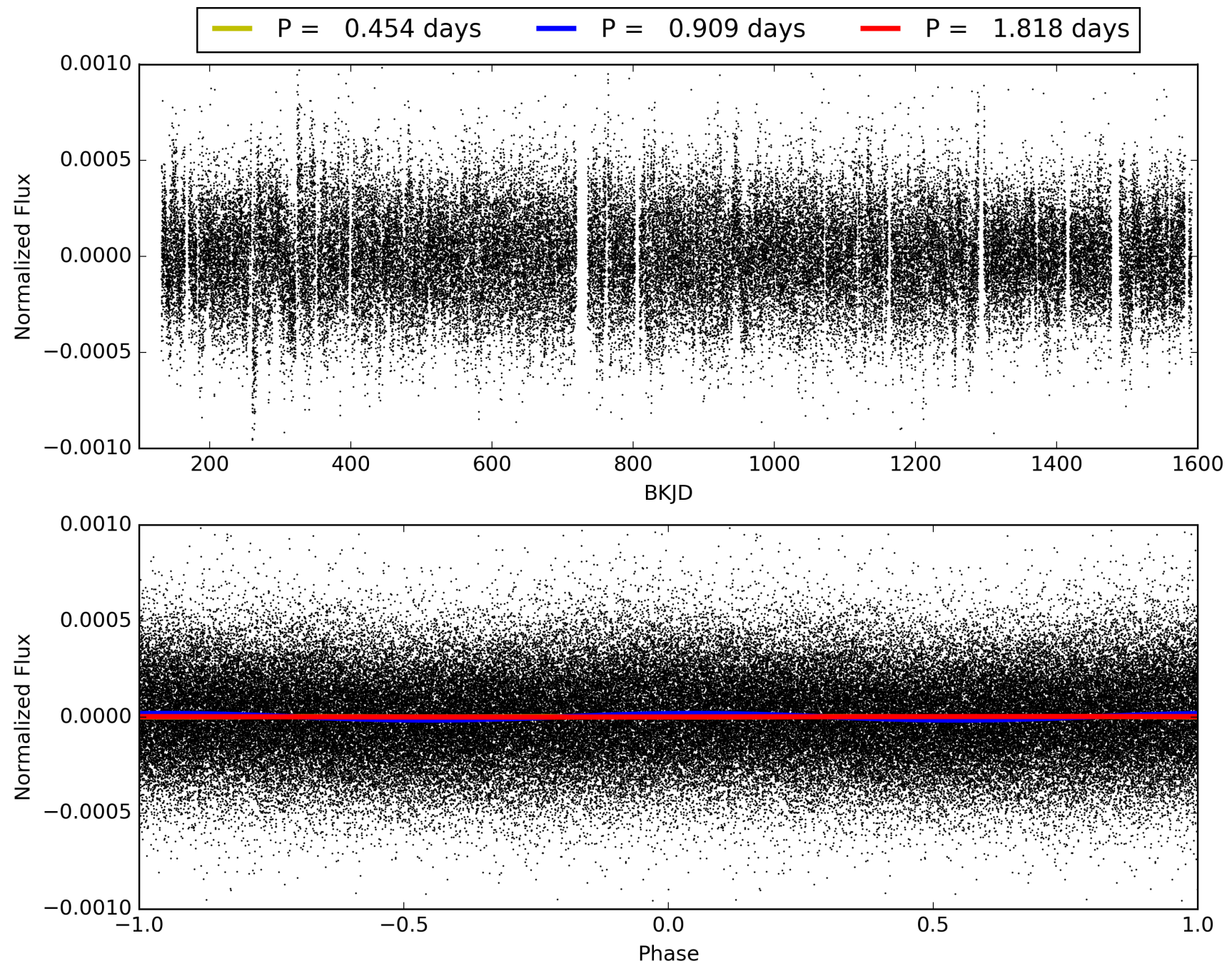
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 00582533-02, PDC Light Curves





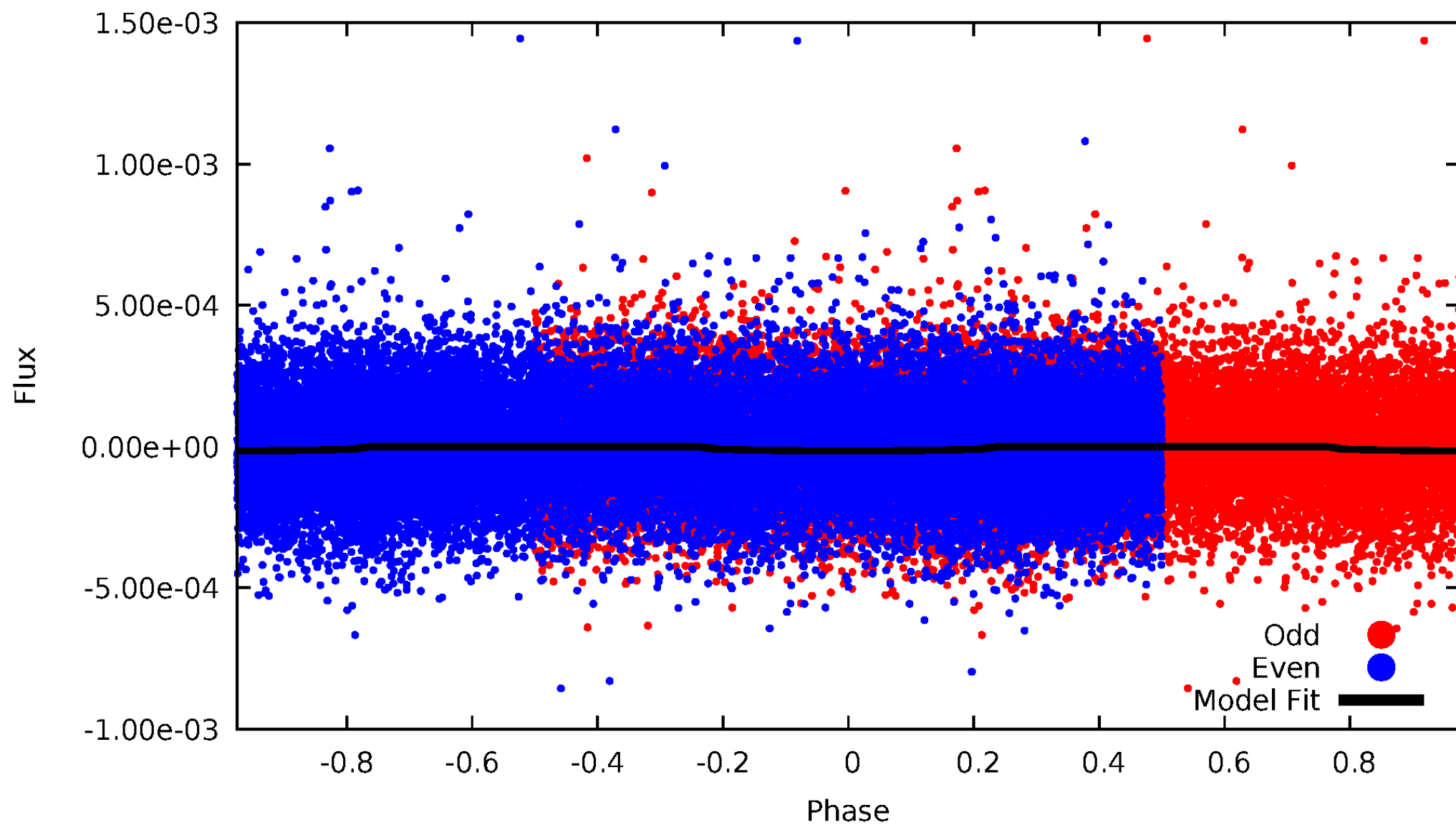
TCE 008582533-02





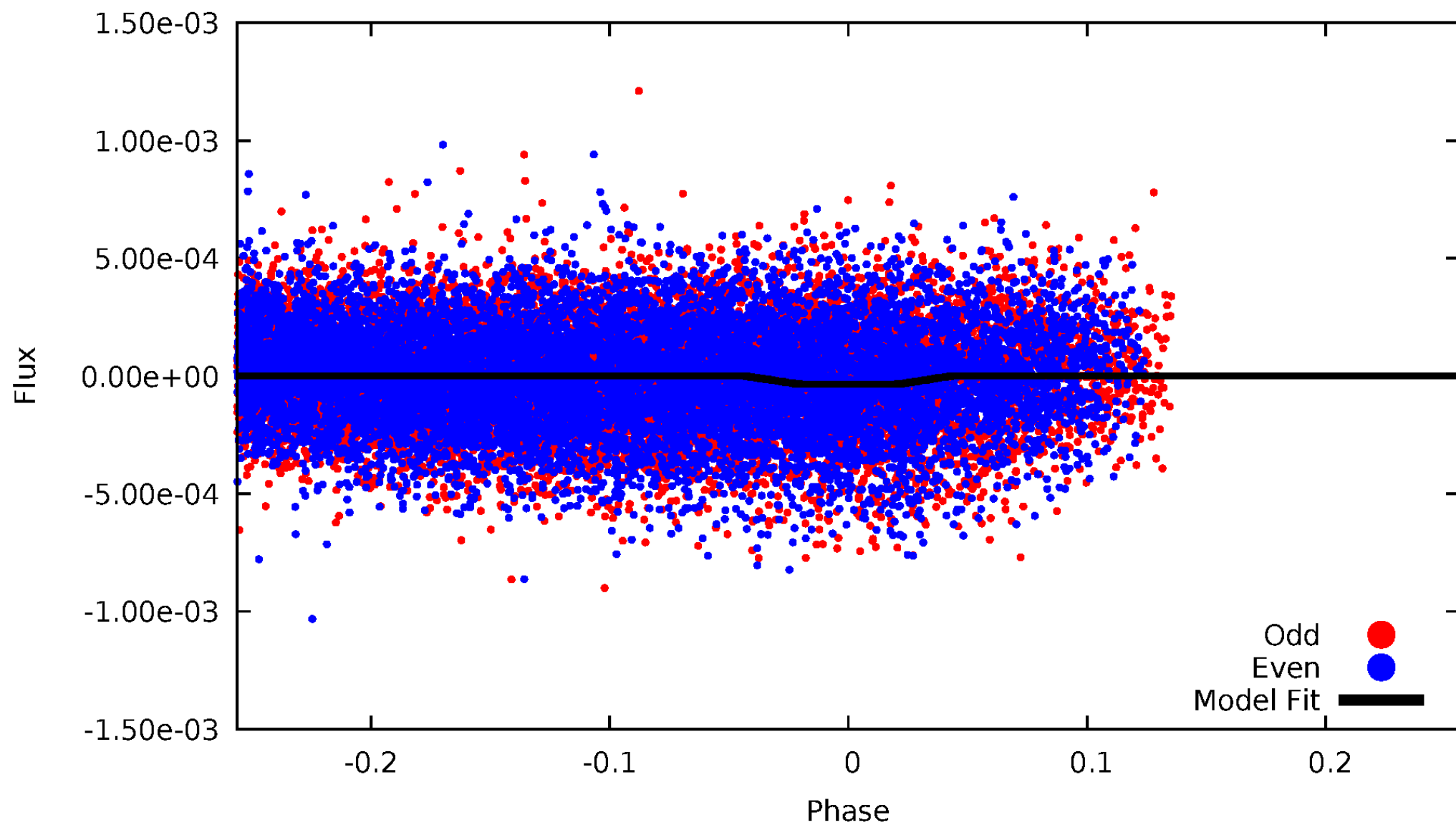
# DV Odd/Even

TCE 008582533-02



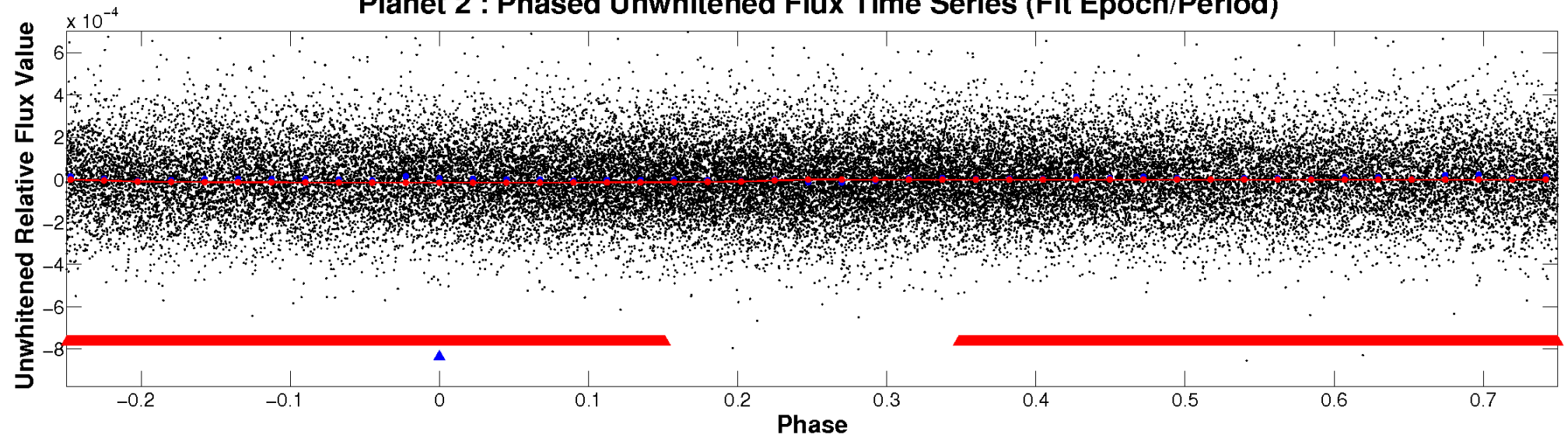
ALT Odd/Even

TCE 008582533-02

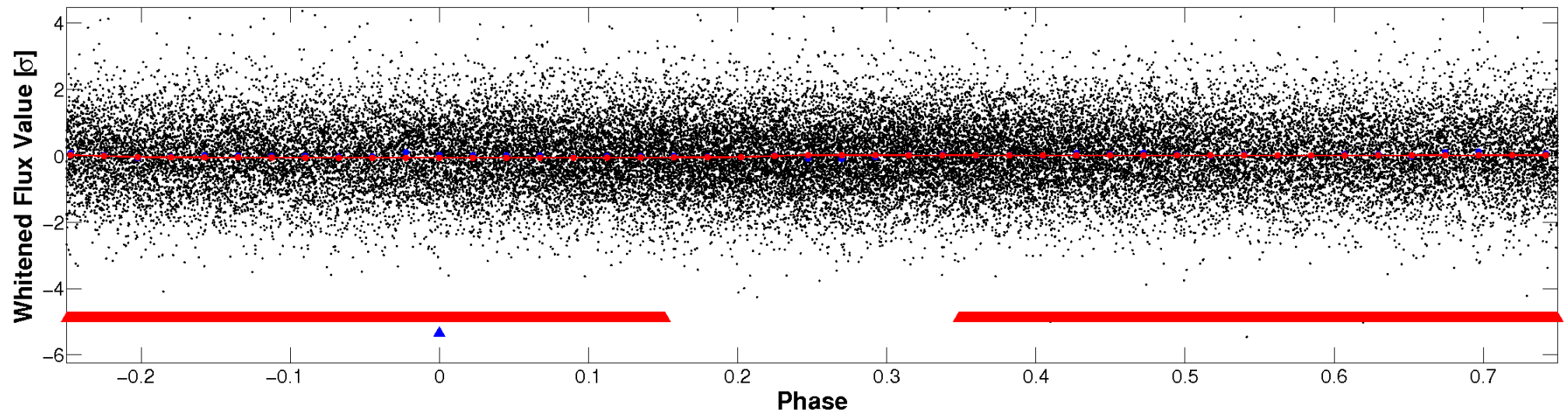


# Non-Whitened Vs. Whitened Light Curve

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

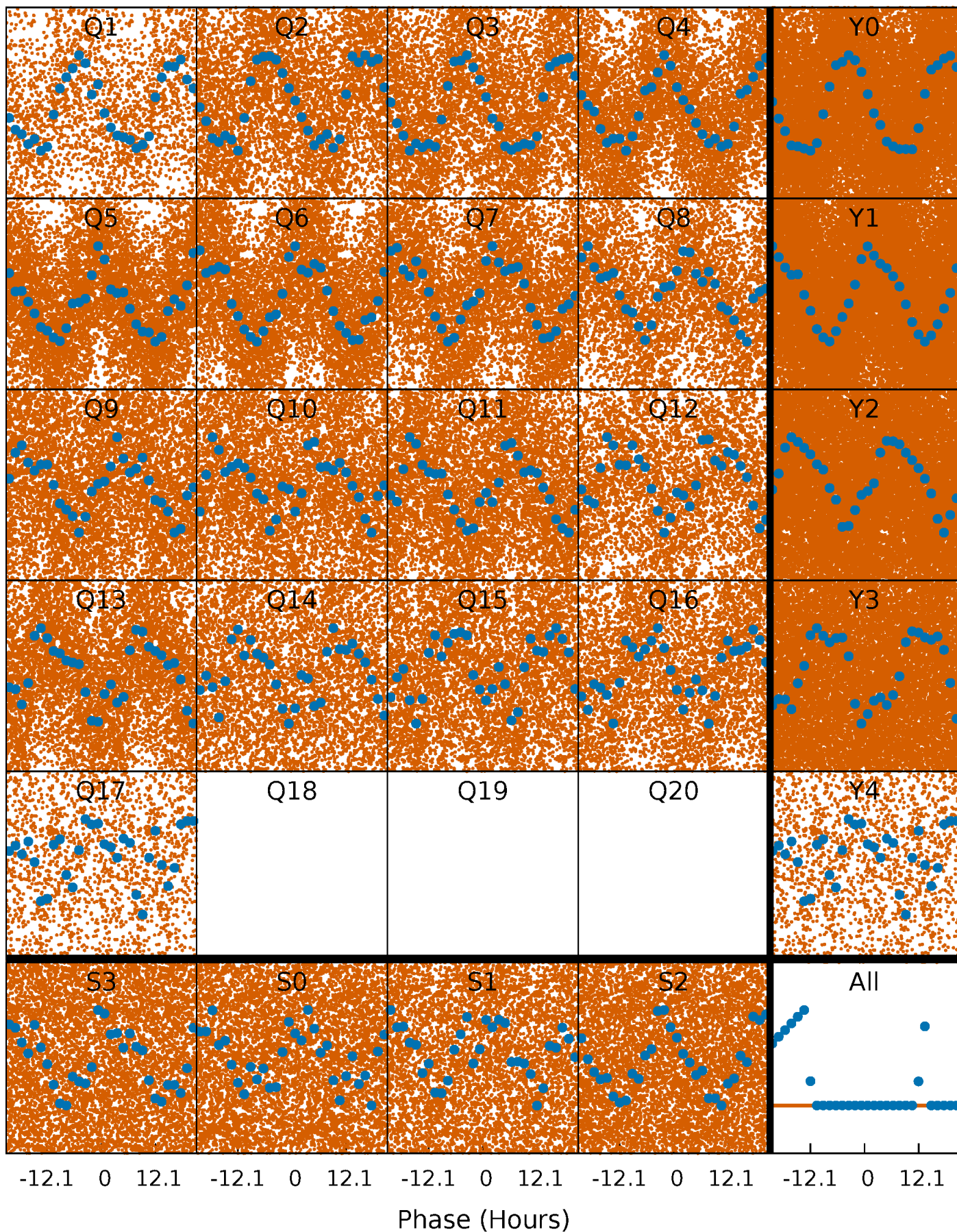


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

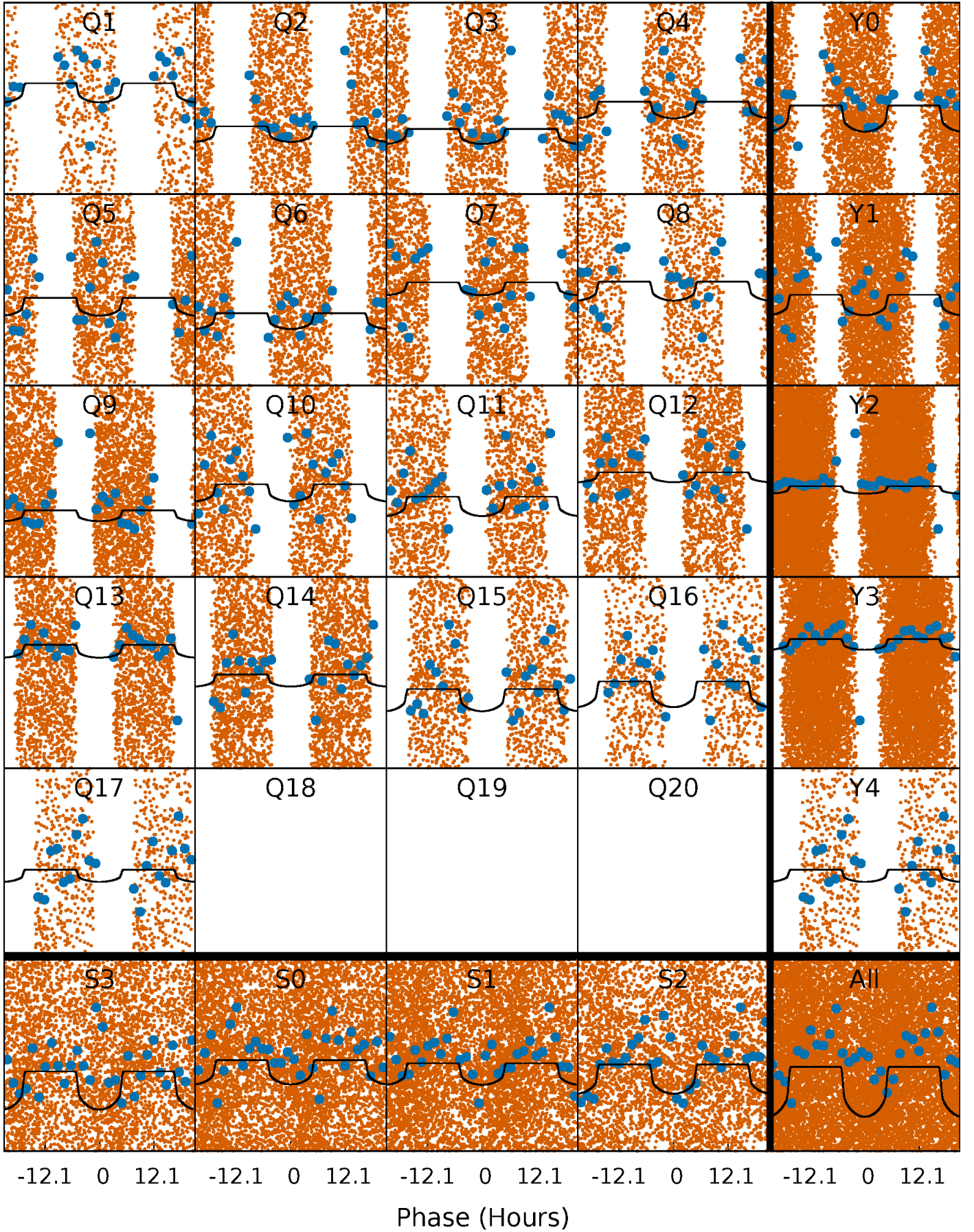
TCE 008582533-02   P= 0.908819 Days    $T_0=132.293136$  (BKJD)





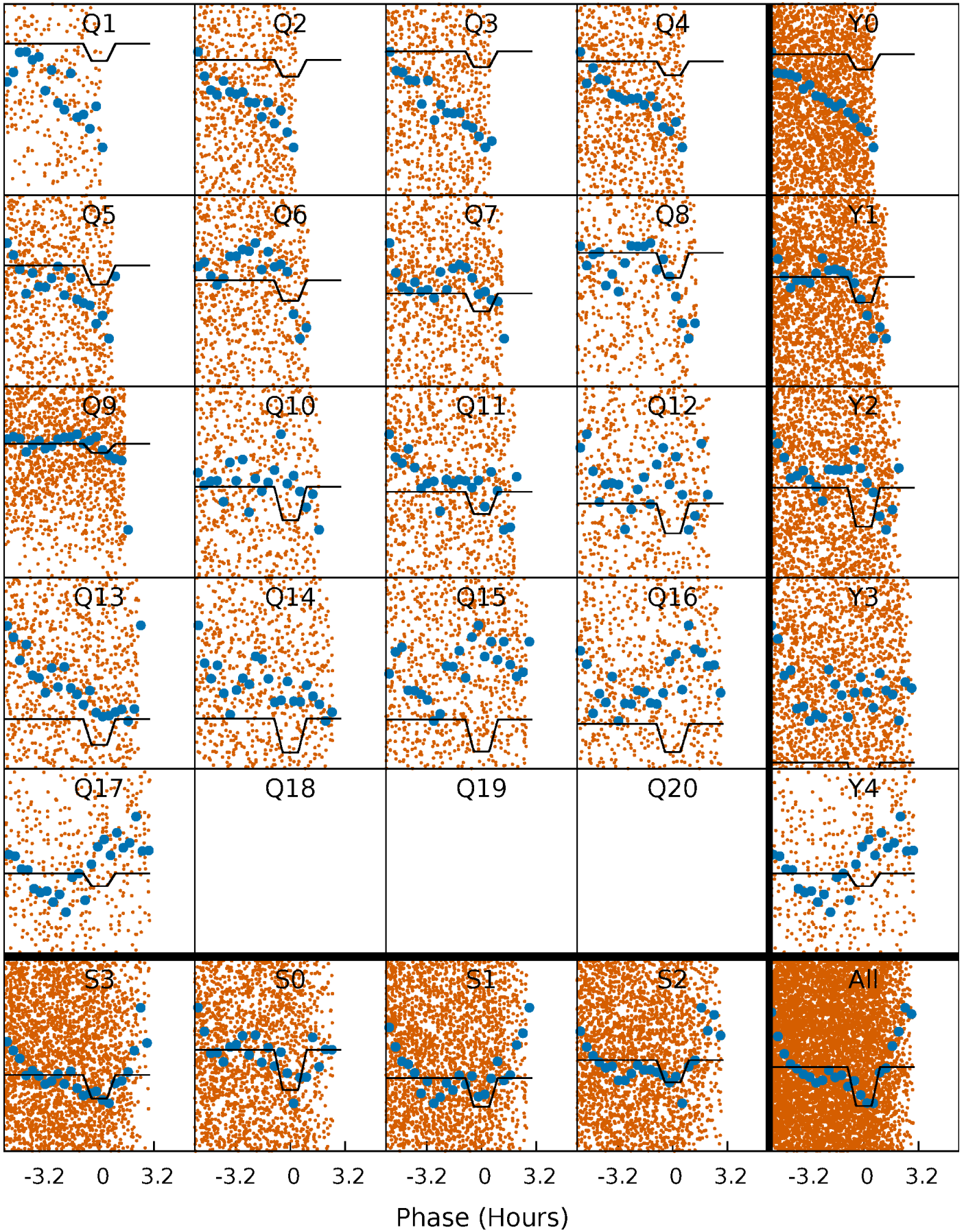
# DV Quarter-Phased Transit Curves

TCE 008582533-02   P= 0.908819 Days    $T_0=132.293136$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008582533-02   P= 0.909197 Days    $T_0=132.422957$  (BKJD)

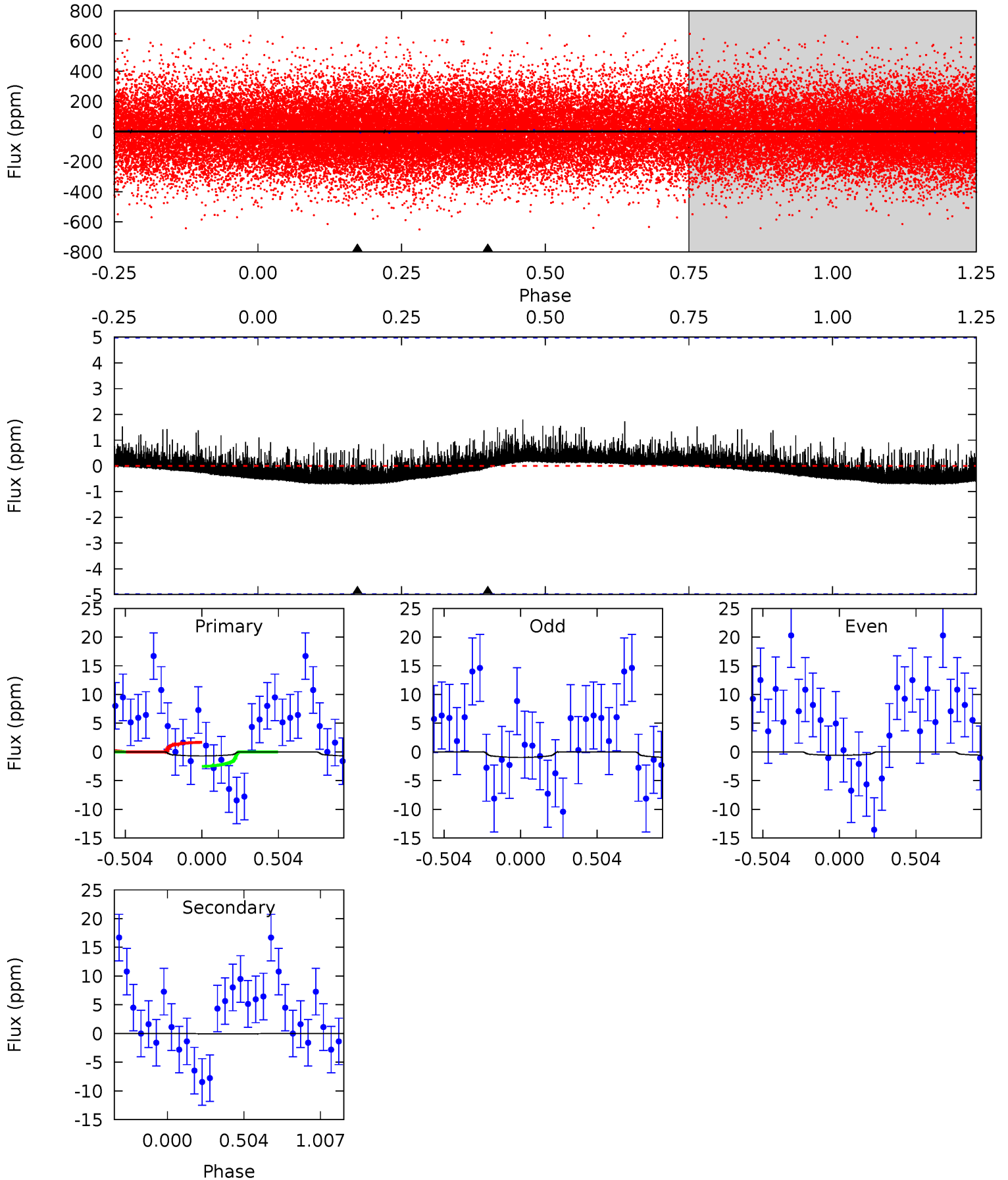




# DV Model-Shift Uniqueness Test

008582533-02, P = 0.908819 Days, E = 131.384317 Days

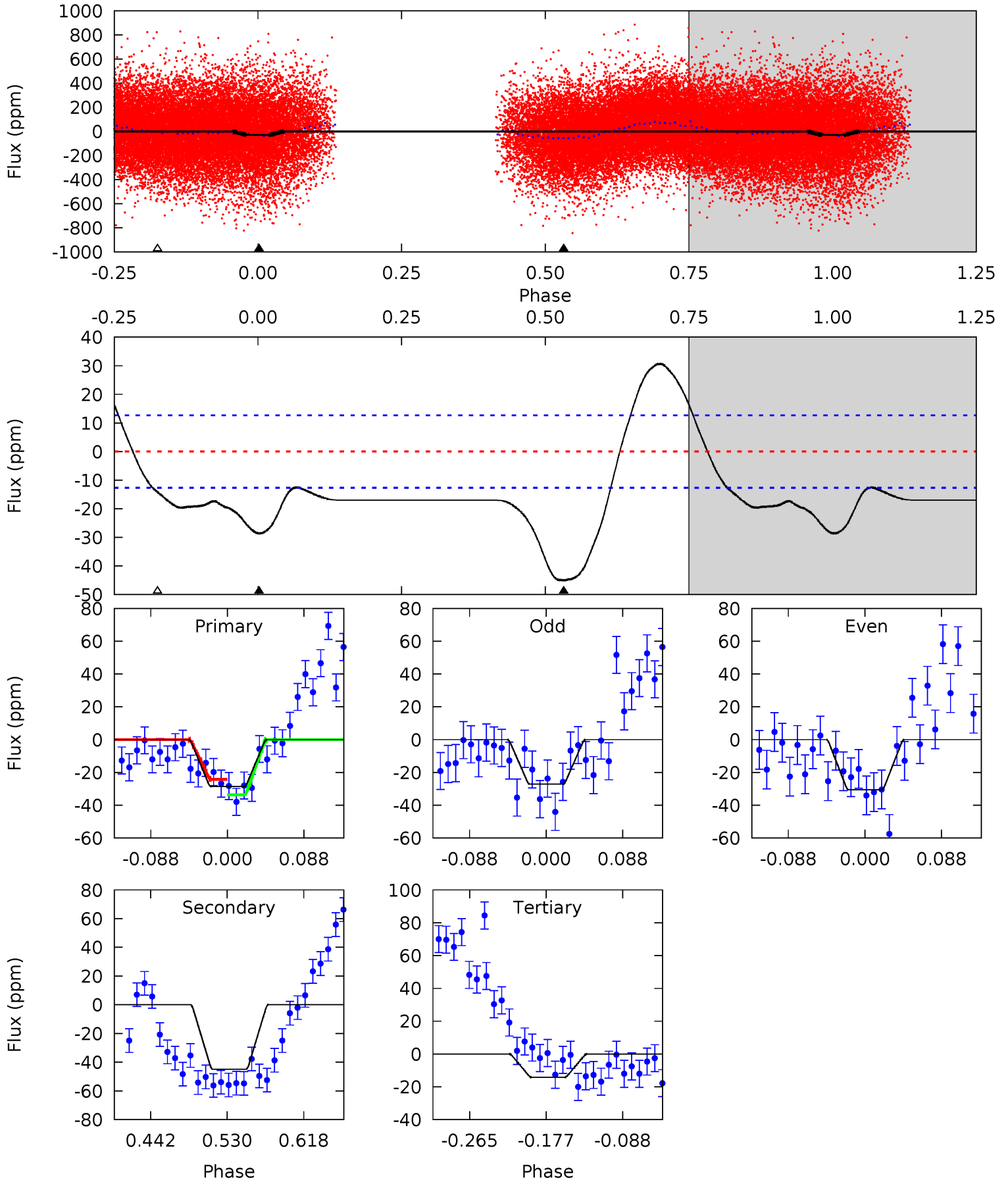
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.60	0.06	0	0	4.21	0.67	0.13	0.60	0.60	0.06	0.06	0.16	6.19	0.72	0.37



# Alt Model-Shift Uniqueness Test

008582533-02, P = 0.909197 Days, E = 130.604563 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
10.4	16.3	5.12	0	4.59	1.70	6.71	5.23	10.4	11.2	16.3	0.60	1.92	0.41	1.66



### Stellar Parameters For KIC 008582533

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6832^{+214}_{-285}$	$3.799^{+0.440}_{-0.110}$	$-0.220^{+0.250}_{-0.300}$	$2.572^{+0.522}_{-1.217}$	$1.519^{+0.199}_{-0.369}$	$0.126^{+0.496}_{-0.045}$
	+3%/-4%	+12%/-3%	+114%/-136%	+20%/-47%	+13%/-24%	+395%/-35%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 008582533-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-0 \pm 1$	$0.99^{+0.54}_{-0.51}$	$4490^{+355}_{-557}$	$-3904^{+7288}_{-670}$	$0.015^{+0.413}_{-0.344}$
Alt.	$-45 \pm 3$	$1.50^{+0.63}_{-0.61}$	$4487^{+367}_{-571}$	$7203^{+2197}_{-1169}$	$4.873^{+9.190}_{-2.405}$

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

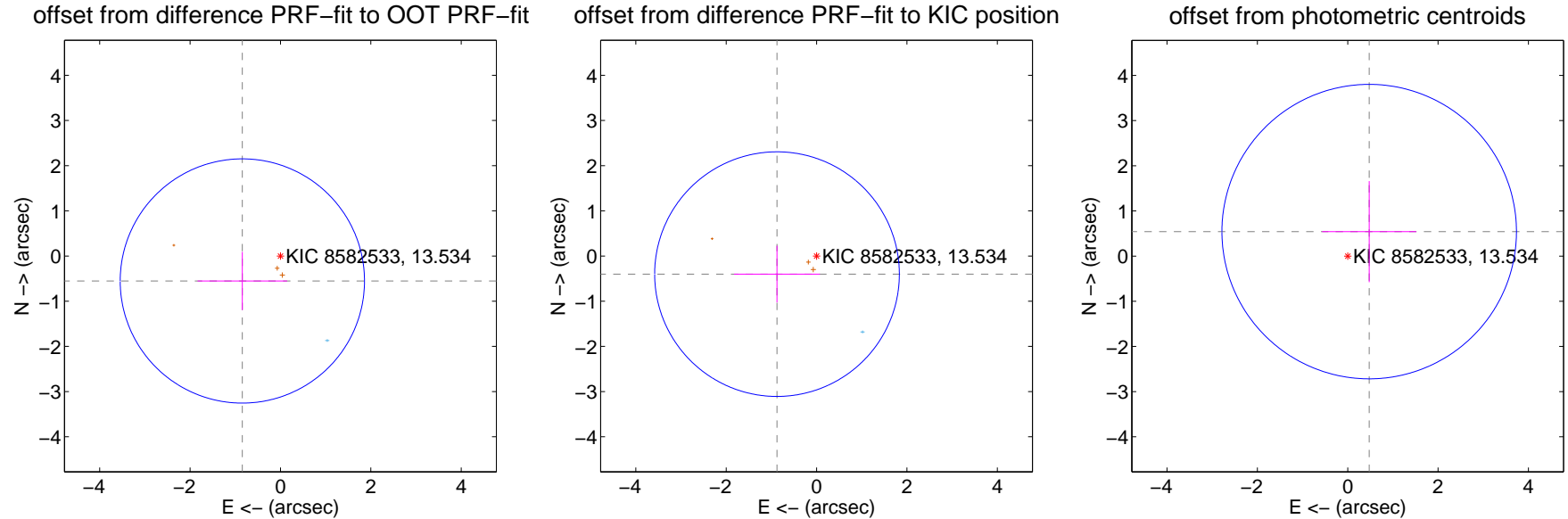
## DV Centroid Data

Supplemental centroid analysis for 008582533-02. Kepler magnitude: 13.53. Transit SNR 3.67

There are 1 quarters with good PRF difference image offsets

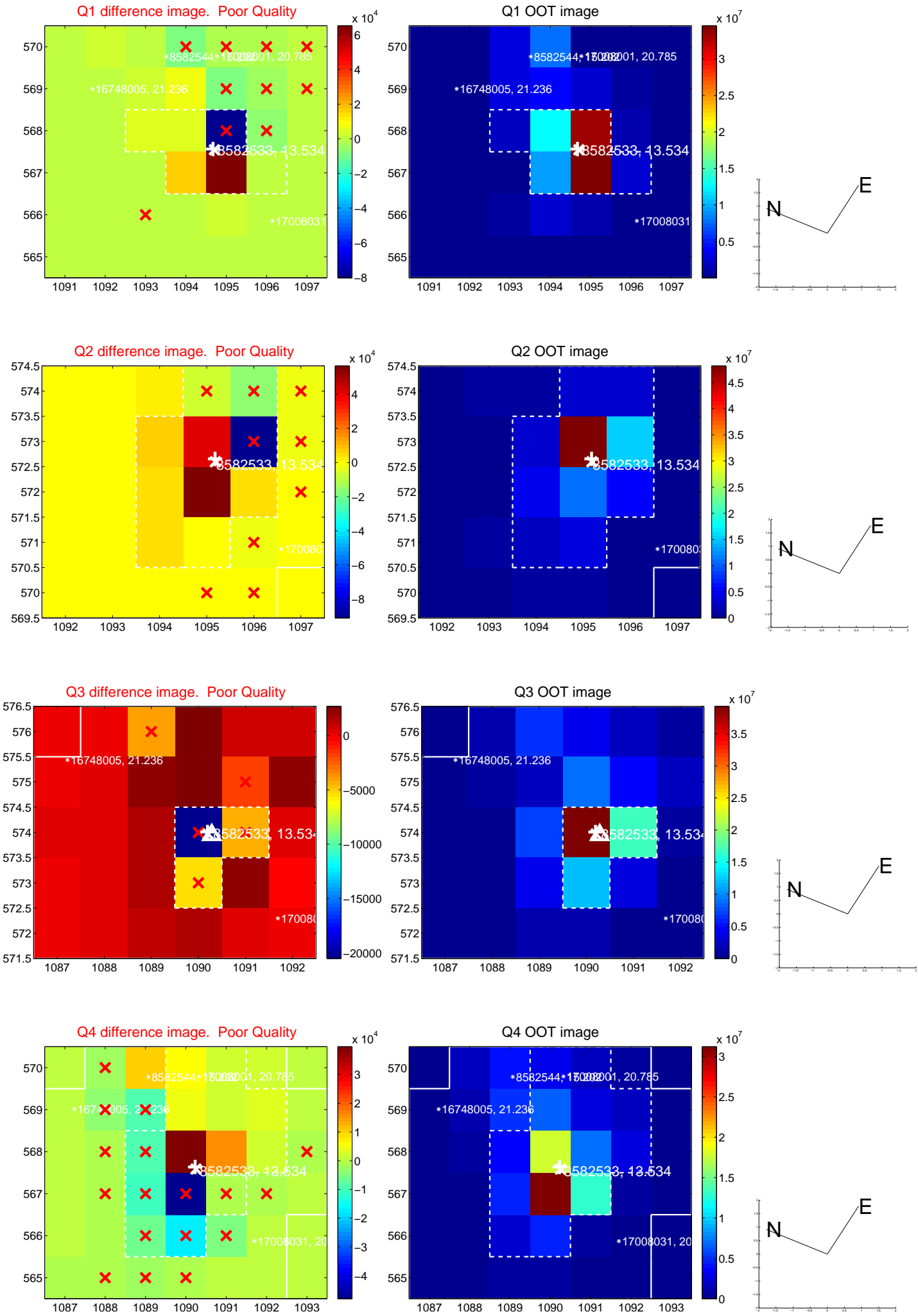
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.008 \pm 0.901$	1.12	$0.843 \pm 0.991$	$-0.552 \pm 0.643$
PRF-fit source offset from KIC position	$0.963 \pm 0.902$	1.07	$0.876 \pm 0.950$	$-0.401 \pm 0.627$
photometric centroid source offset	$0.72 \pm 1.09$	0.66	$-0.48 \pm 1.04$	$0.54 \pm 1.12$

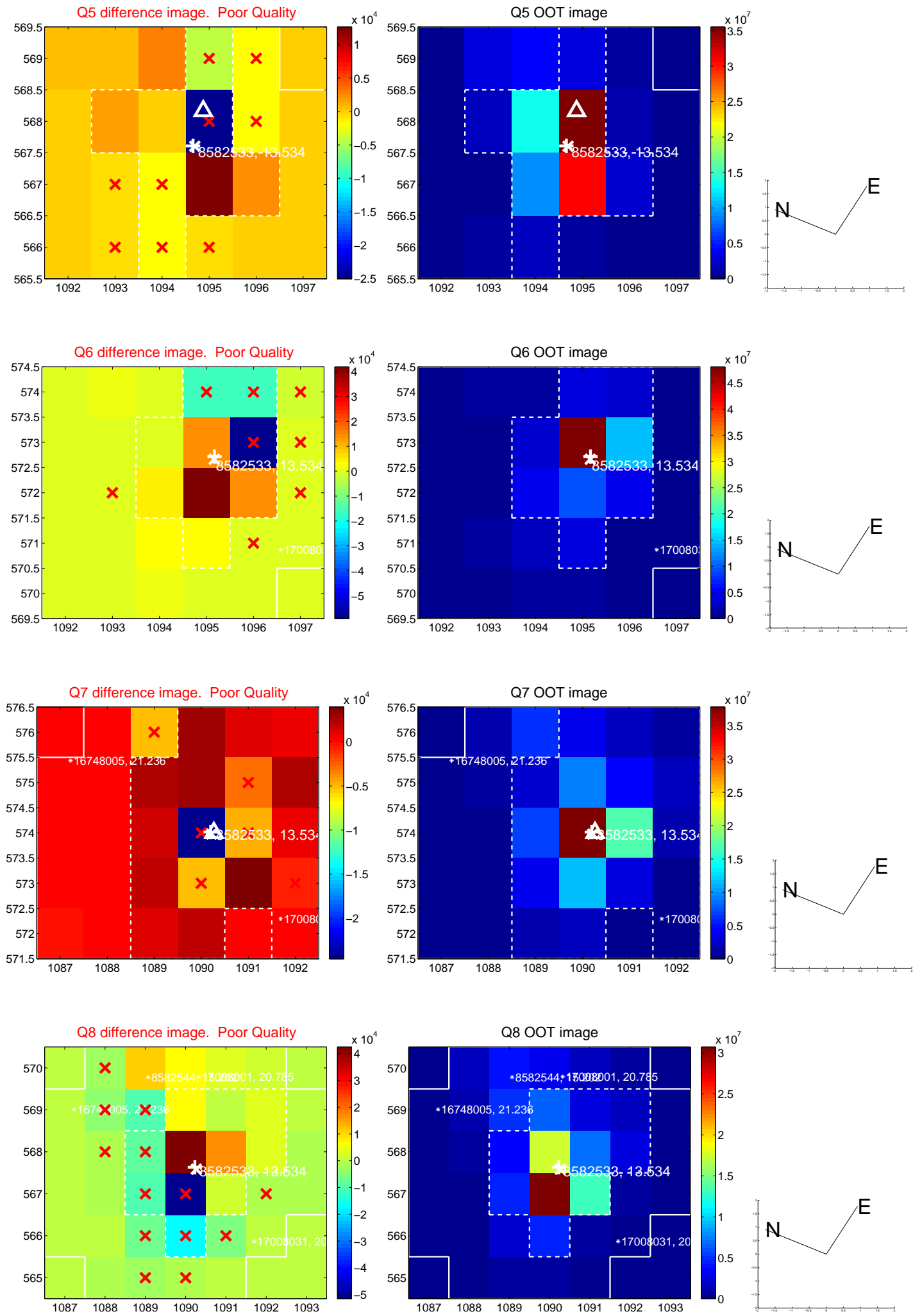


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

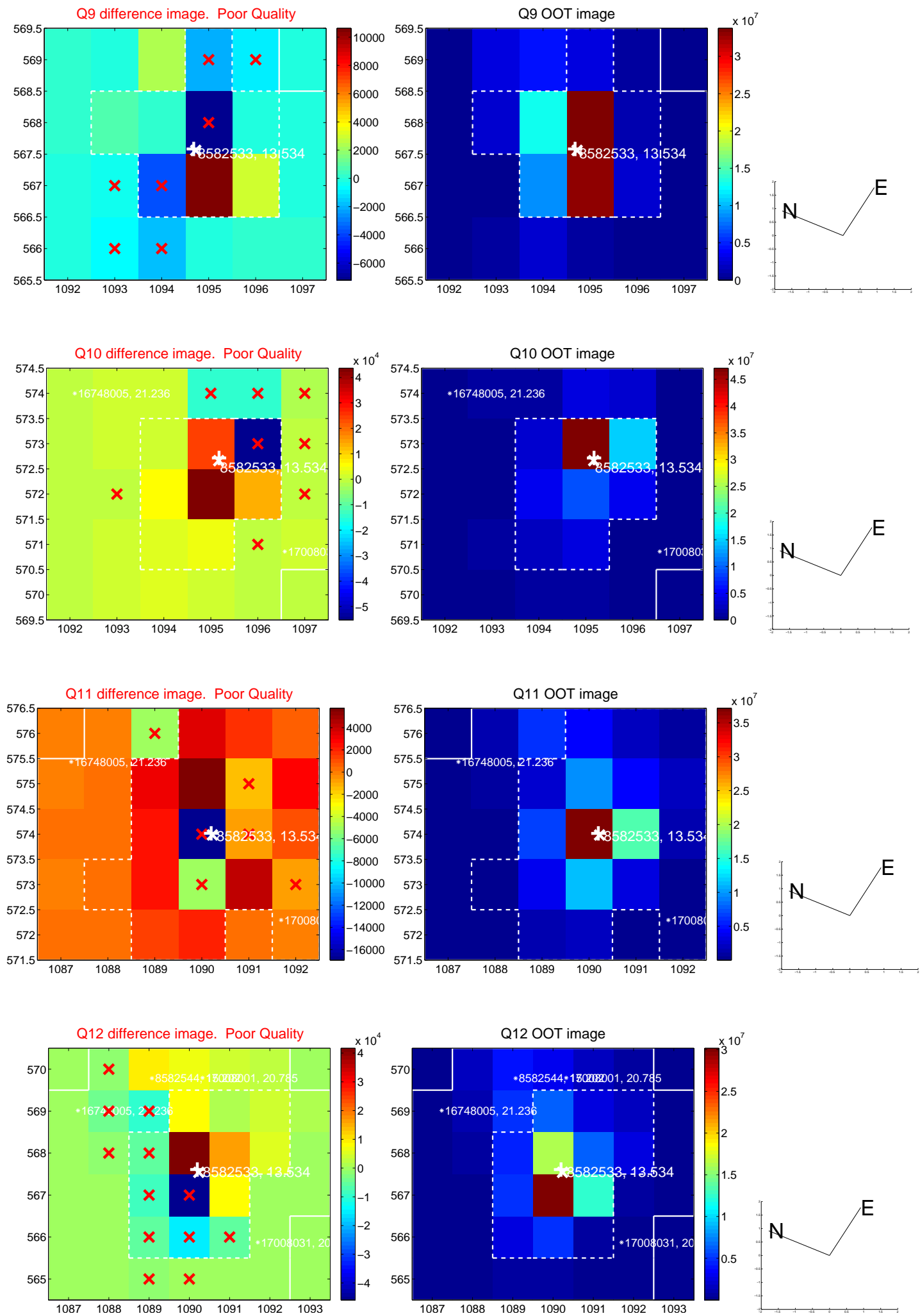


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

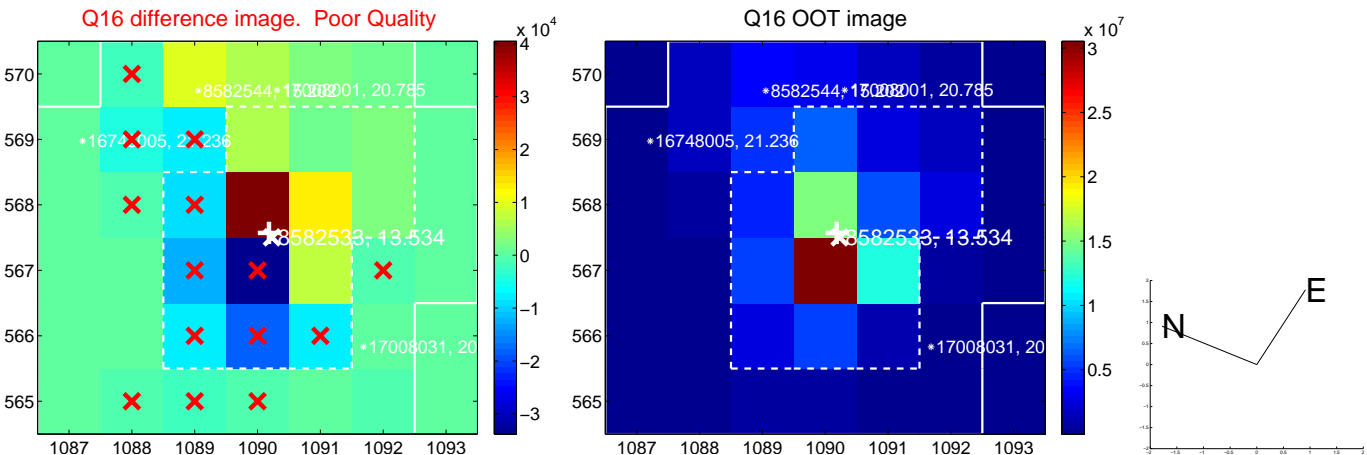
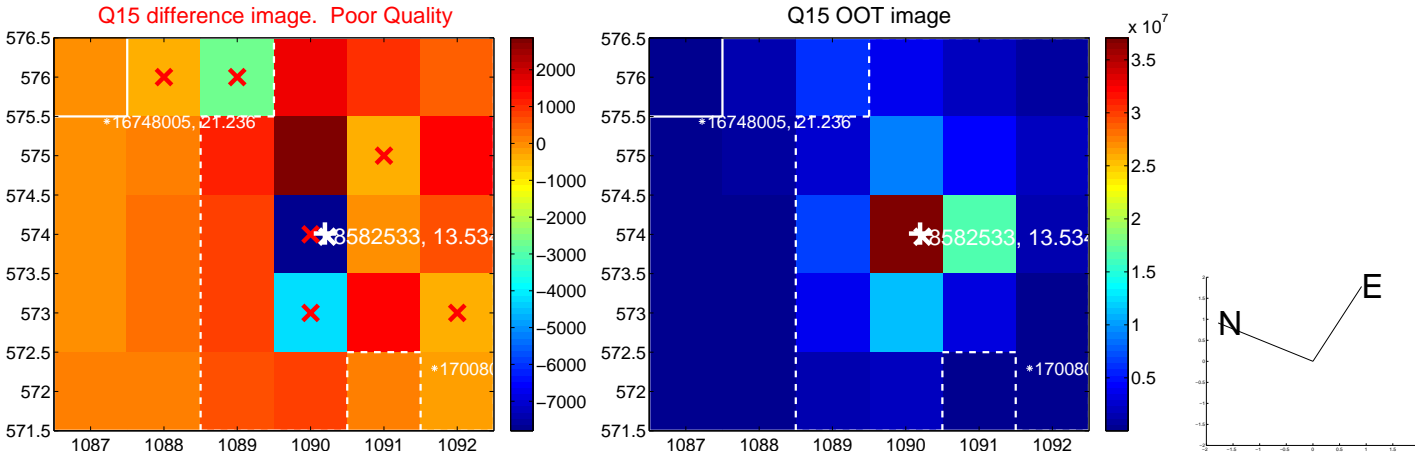
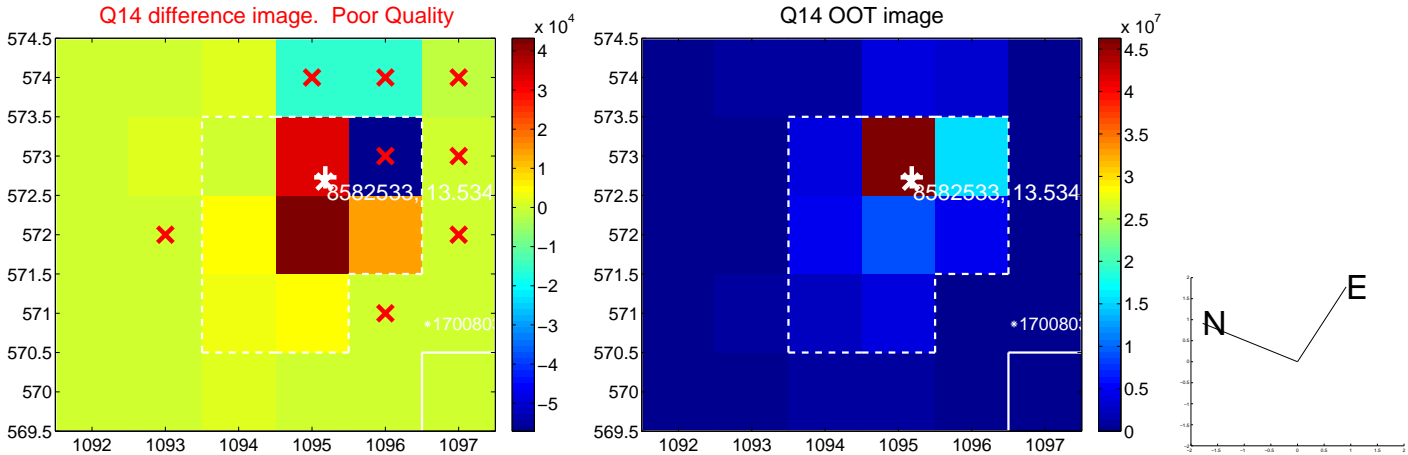
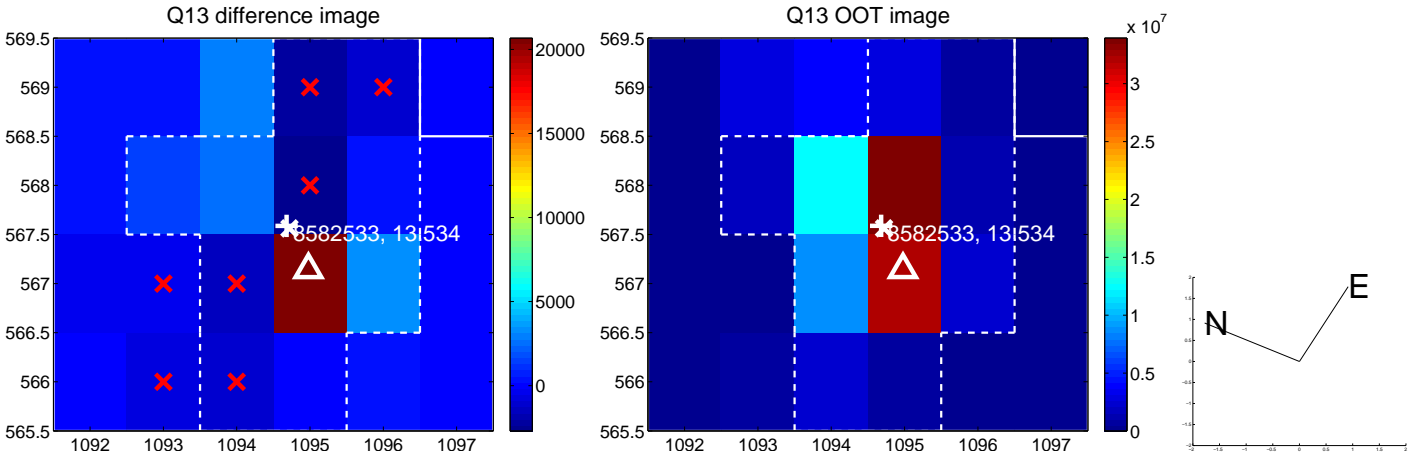




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white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

