

# KIC 008950675

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008950675-01	OBS	No	1.712462	132.881956	12.4	6.790	7.9	4.4	2.94	6810	1.47	13951.26
008950675-02	OBS	No	140.643213	151.584969	198.1	15.179	10.1	8.0	2.94	6810	4.53	39.08
008950675-04	OBS	No	190.355524	234.716215	154.6	10.084	8.2	6.3	2.94	6810	3.95	26.10
008950675-05	OBS	No	109.750423	193.518535	222.9	2.329	7.4	7.6	2.94	6810	4.66	54.40

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008950675-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008950675-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
008950675-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV
008950675-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

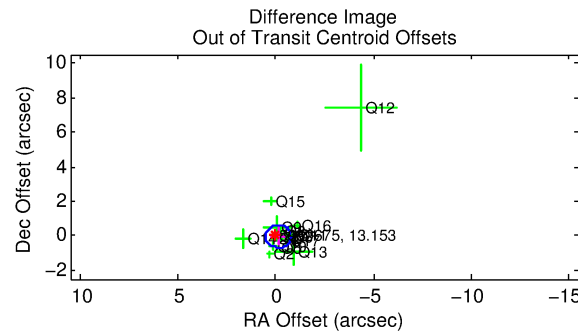
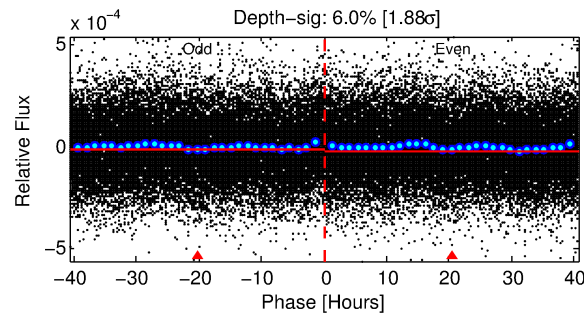
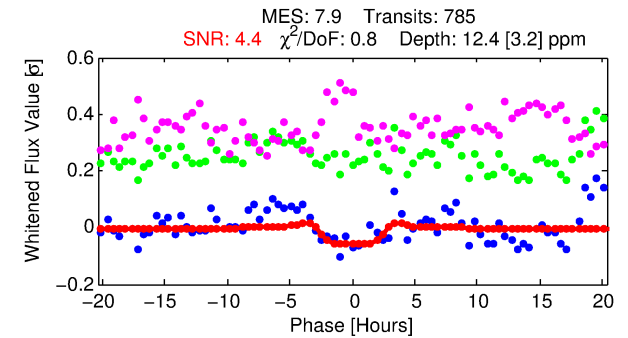
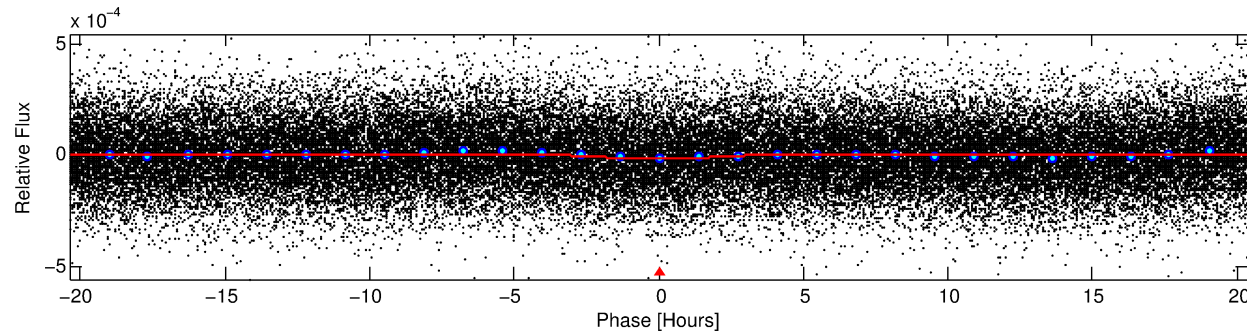
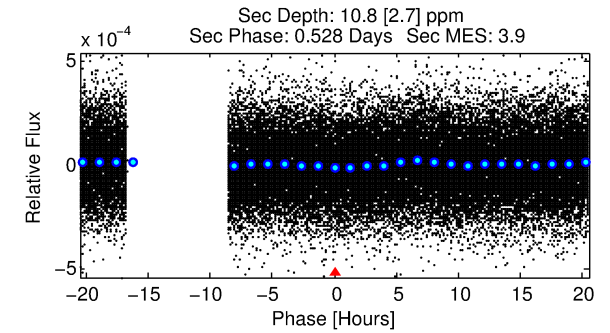
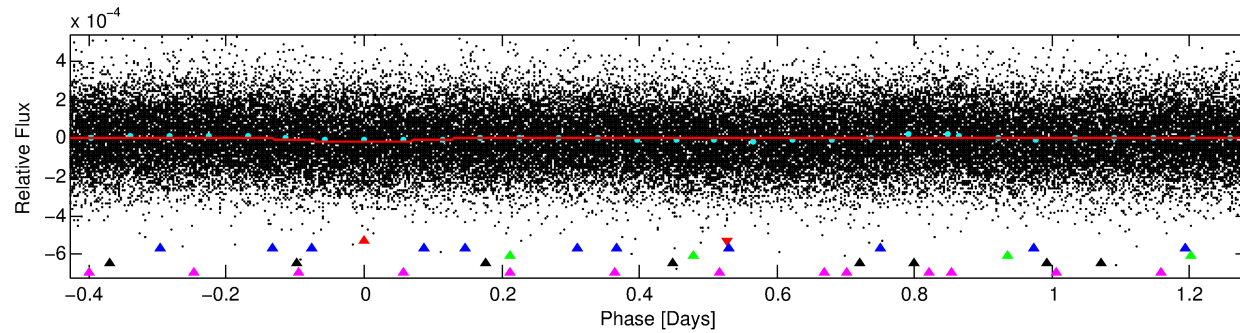
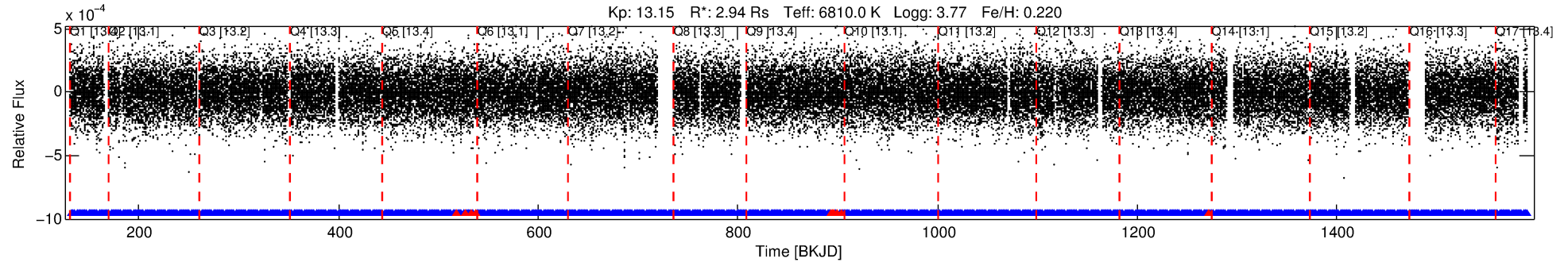
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008950675-01

No Significant Match Found

# DV One-Page Summary

KIC: 8950675 Candidate: 1 of 5 Period: 1.712 d



## DV Fit Results:

Period = 1.71246 [0.00005] d  
Epoch = 132.8820 [0.0179] BKJD  
Rp/R\* = 0.0046 [0.0007]  
a/R\* = 1.04 [0.03]  
b = 0.99 [0.01]  
Seff = 13951.26 [10221.95]  
Teff = 2771 [508] K  
Rp = 1.47 [0.74] Re  
a = 0.0346 [0.0156] AU  
Ag = 3.30 [2.68] [0.86σ]  
Teffp = 5776 [606] K [3.80σ]

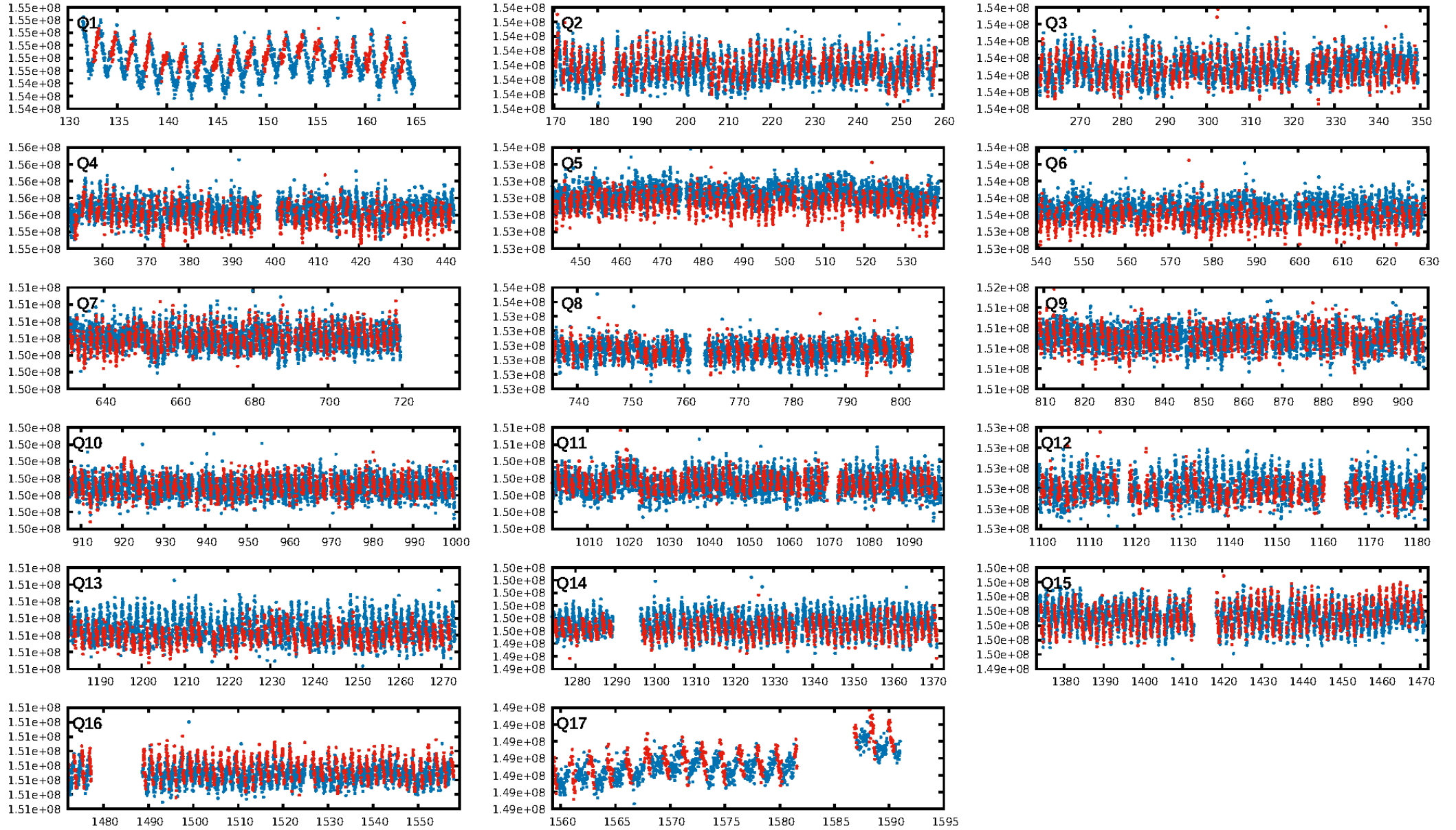
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [361.19σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
**Bootstrap-pfa: 8.36e-10**  
RollingBand-fgt: 0.99 [739/749]  
GhostDiagnostic-chr: 5.638  
**Centroid-sig: 0.0%**  
Centroid-so: 4.113 arcsec [2.42σ]  
OotOffset-rm: 0.132 arcsec [0.60σ]  
KicOffset-rm: 0.094 arcsec [0.26σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 0.69 [11/16]  
DiffImageOverlap-fno: 1.00 [17/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:39:55 Z

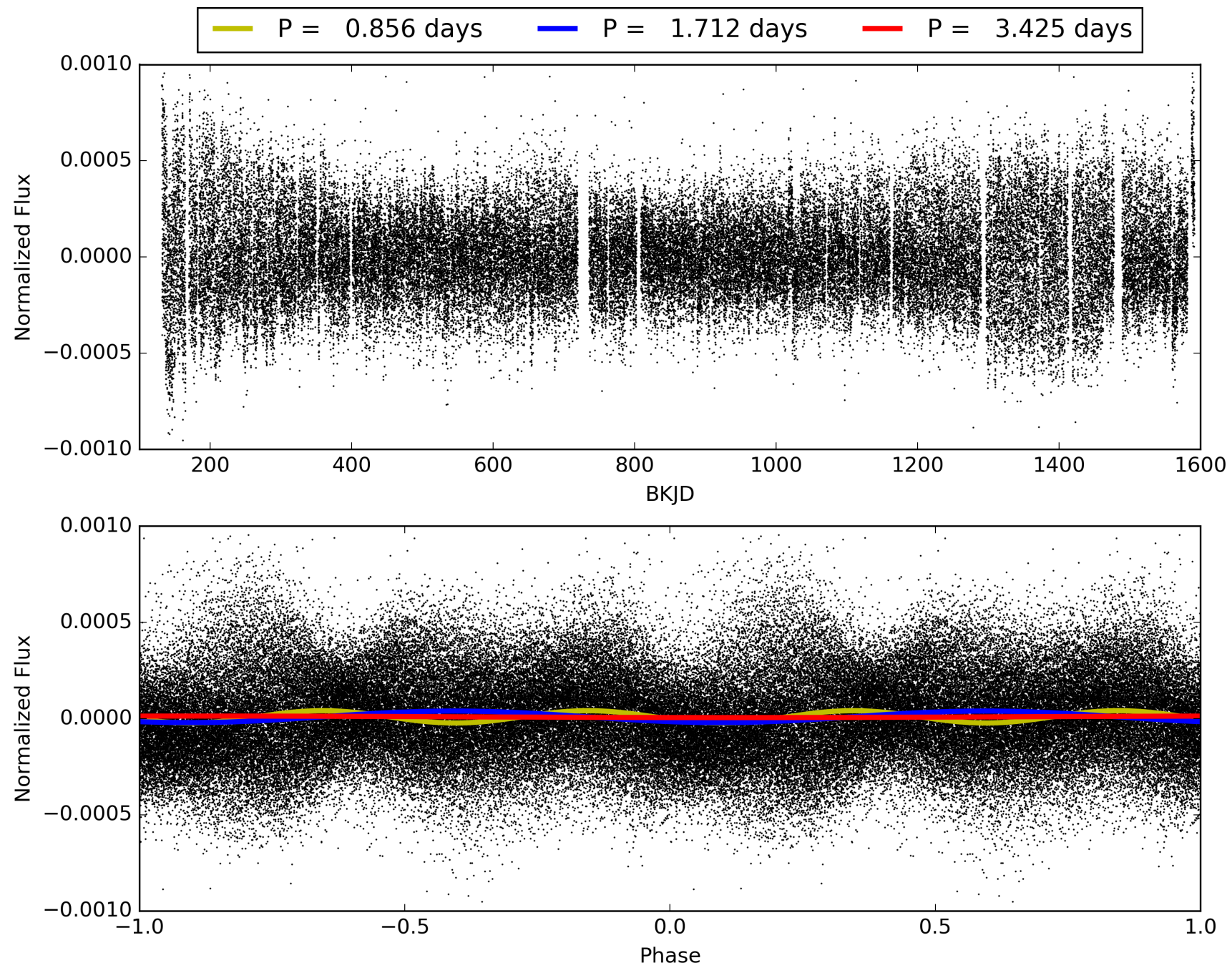
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008950675-01, PDC Light Curves





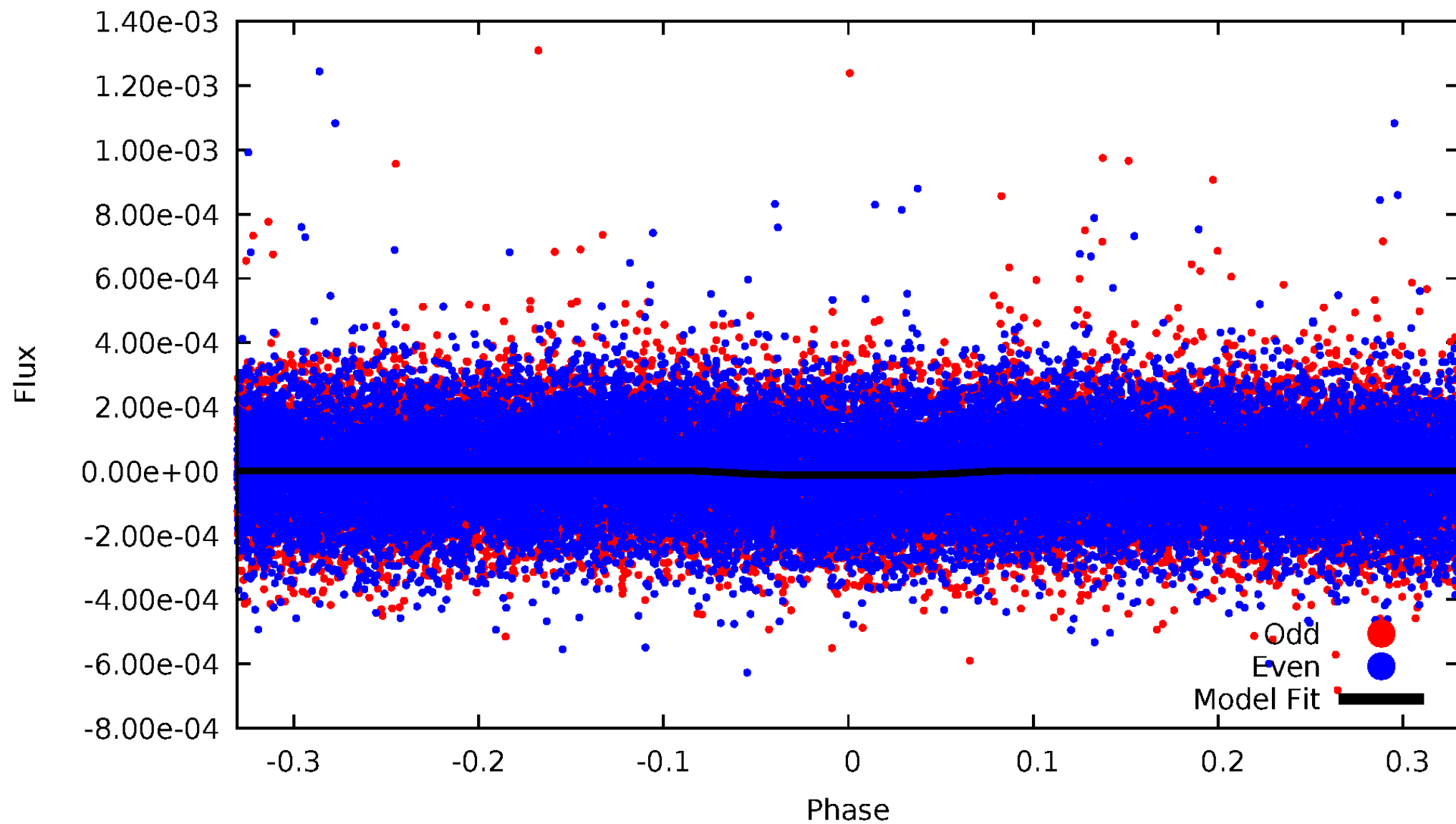
TCE 008950675-01





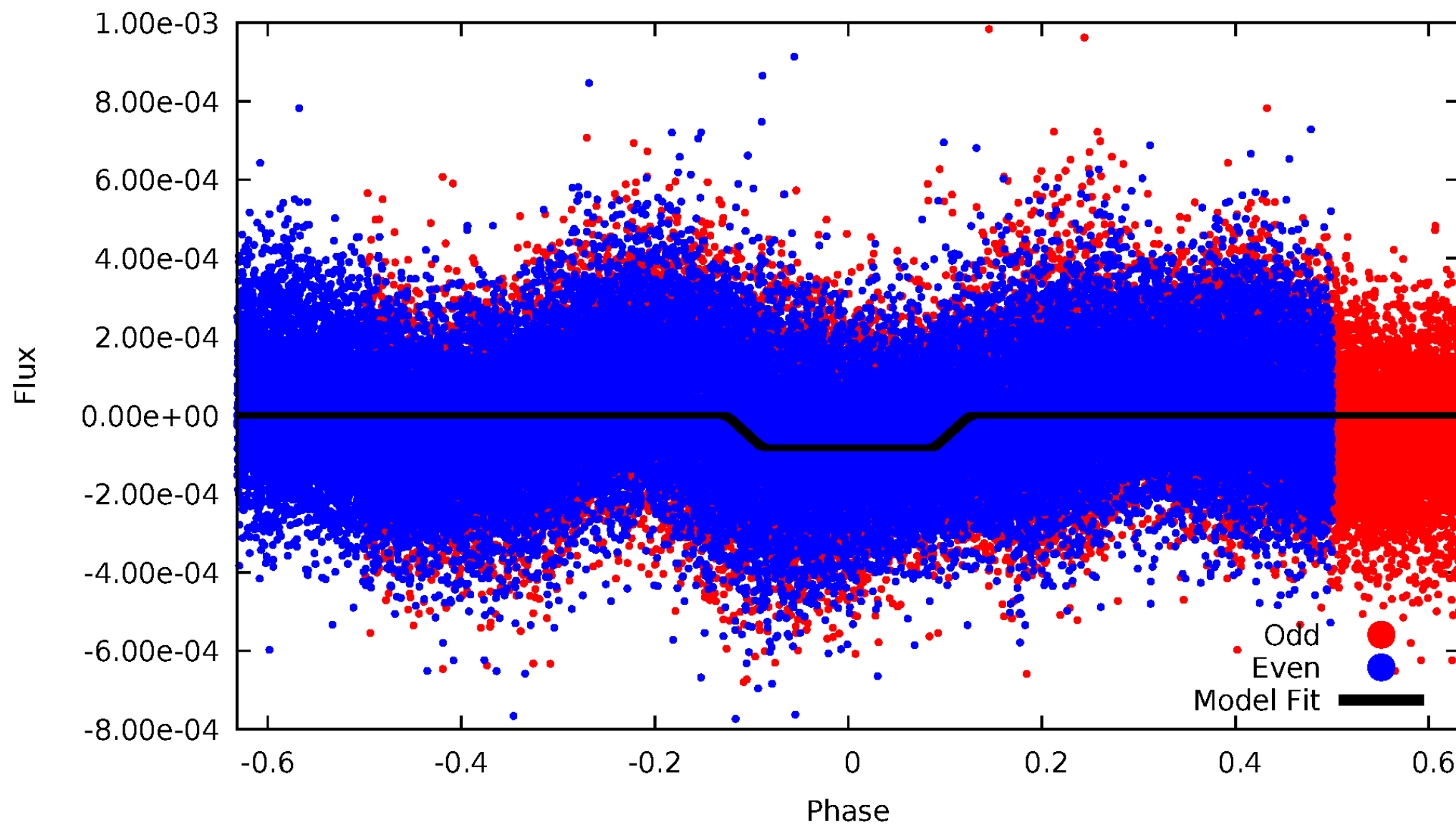
# DV Odd/Even

TCE 008950675-01

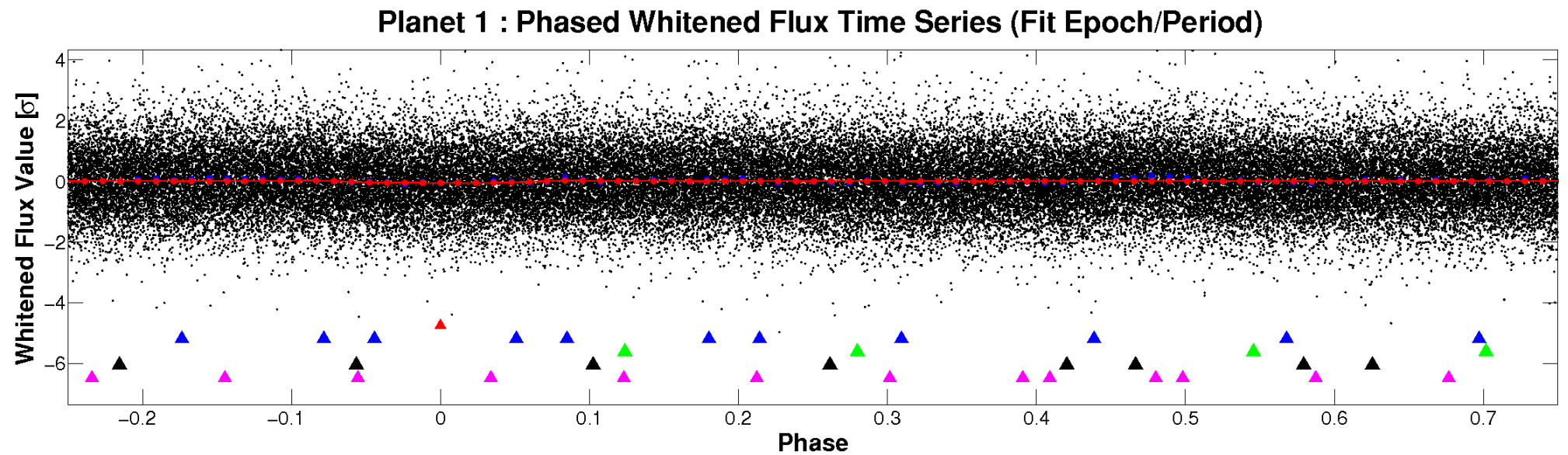
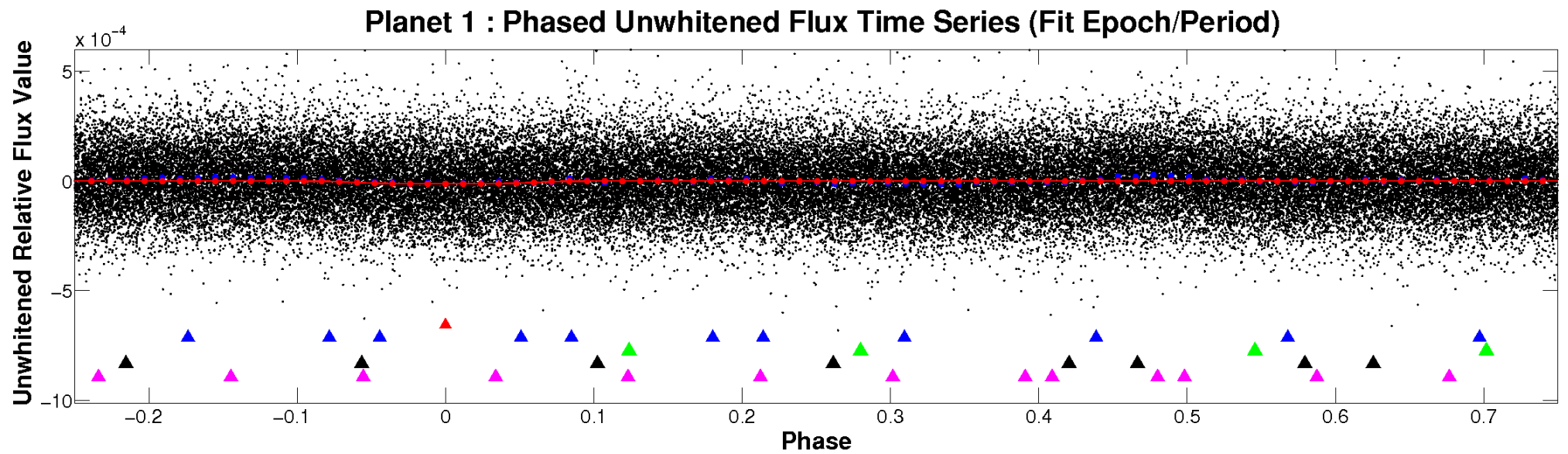


# ALT Odd/Even

TCE 008950675-01



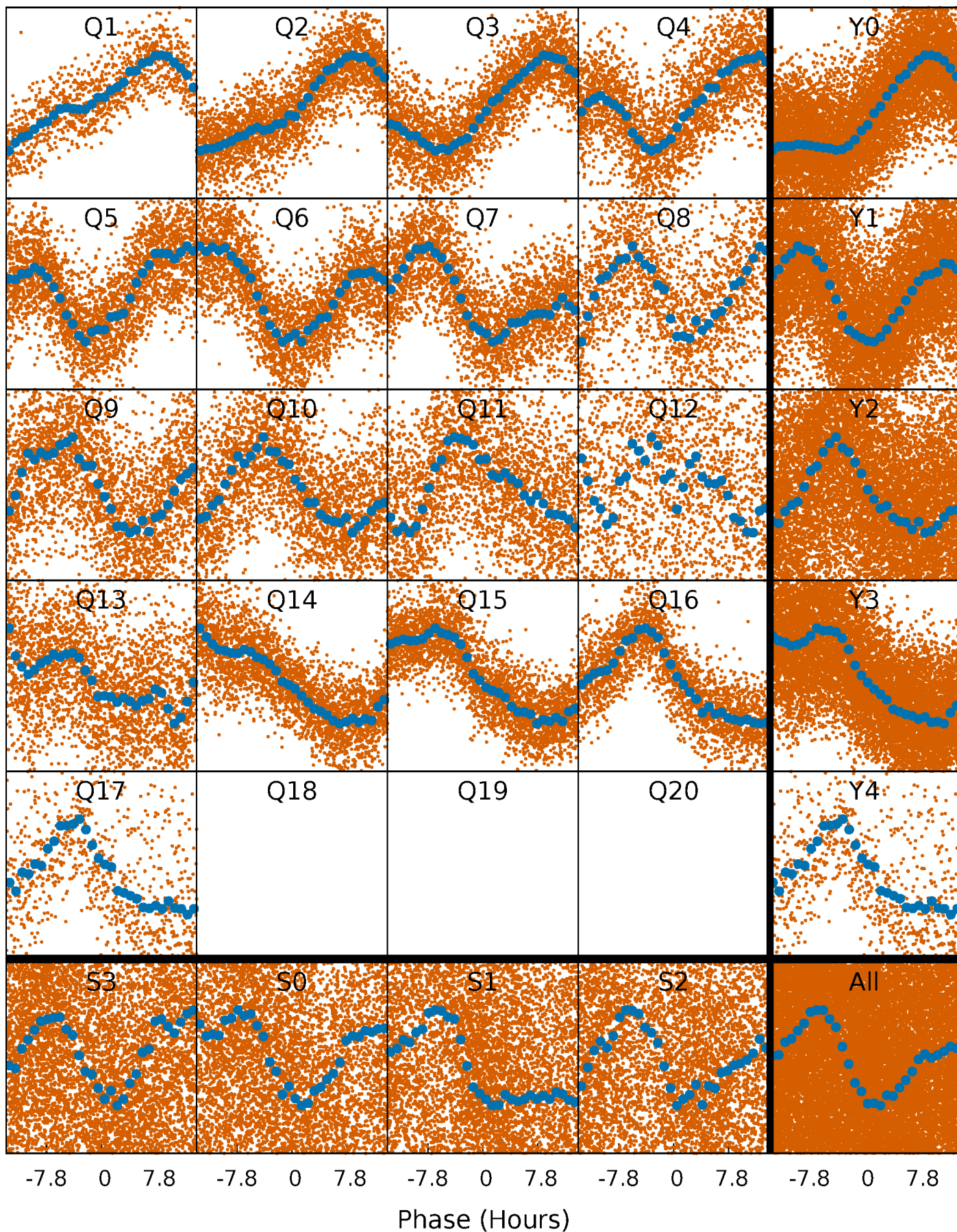
# Non-Whitened Vs. Whitened Light Curve





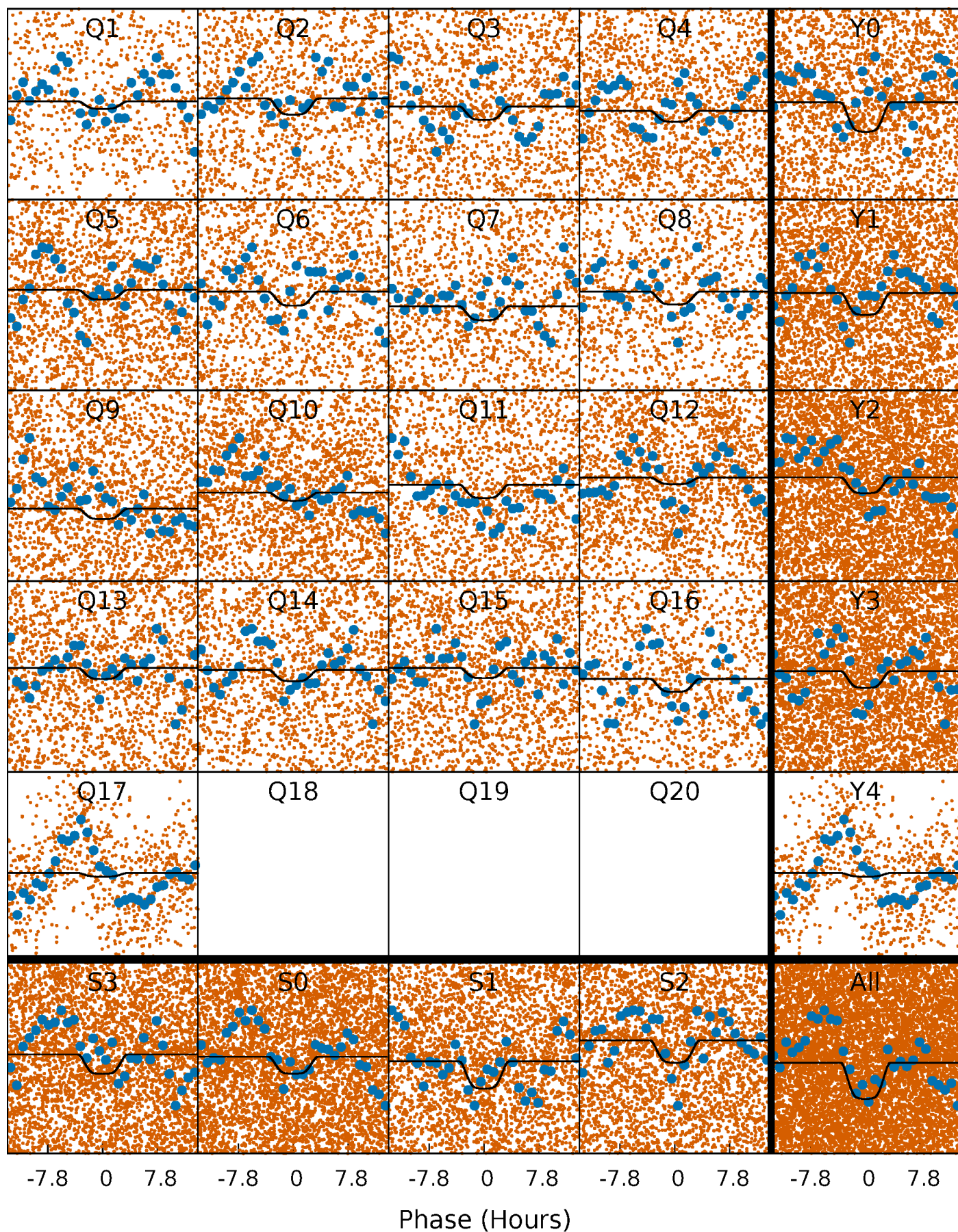
# PDC Quarter-Phased Transit Curves

TCE 008950675-01 P= 1.712462 Days  $T_0=132.881956$  (BKJD)



# DV Quarter-Phased Transit Curves

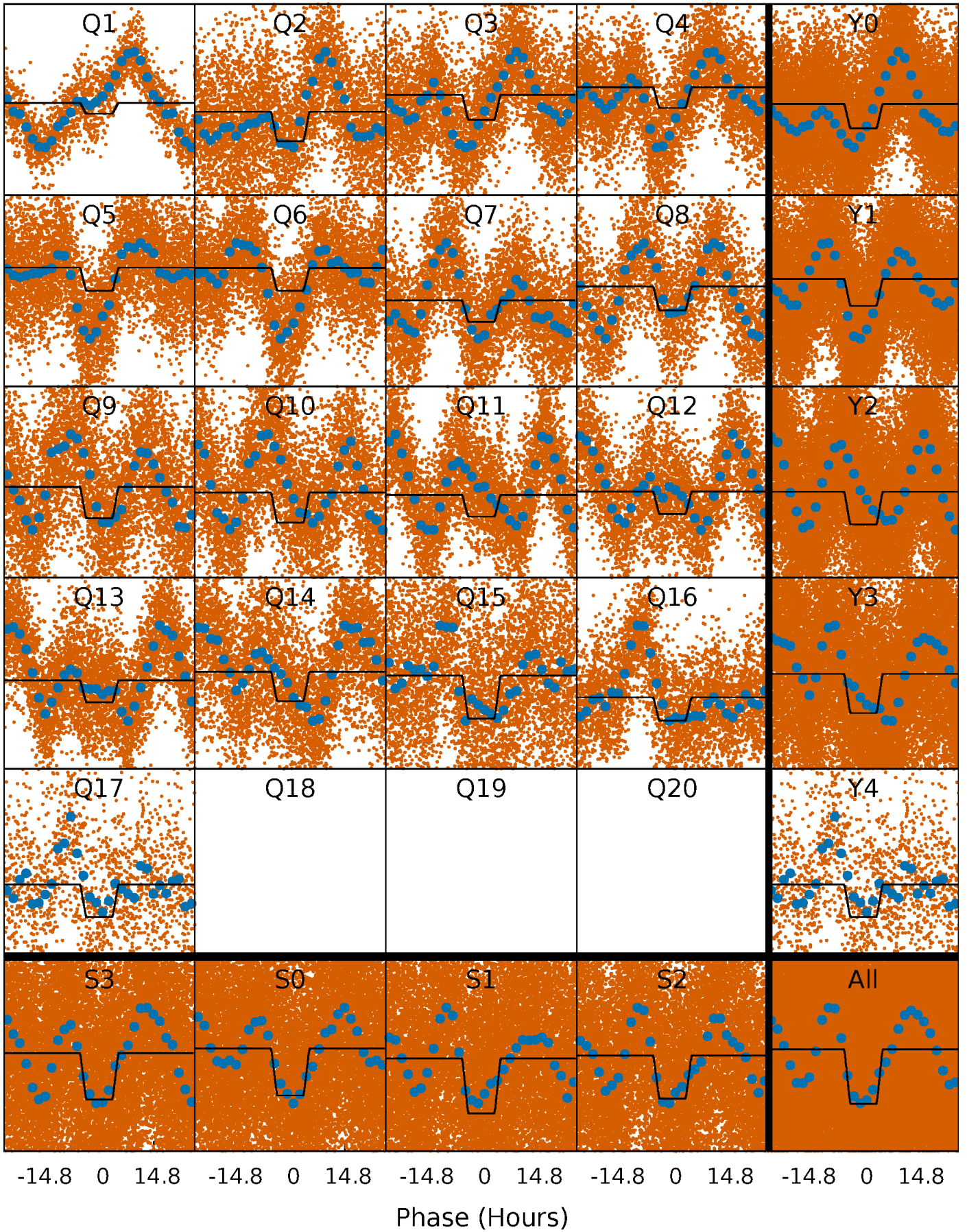
TCE 008950675-01 P= 1.712462 Days  $T_0=132.881956$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

TCE 008950675-01 P= 1.712731 Days  $T_0=132.863366$  (BKJD)

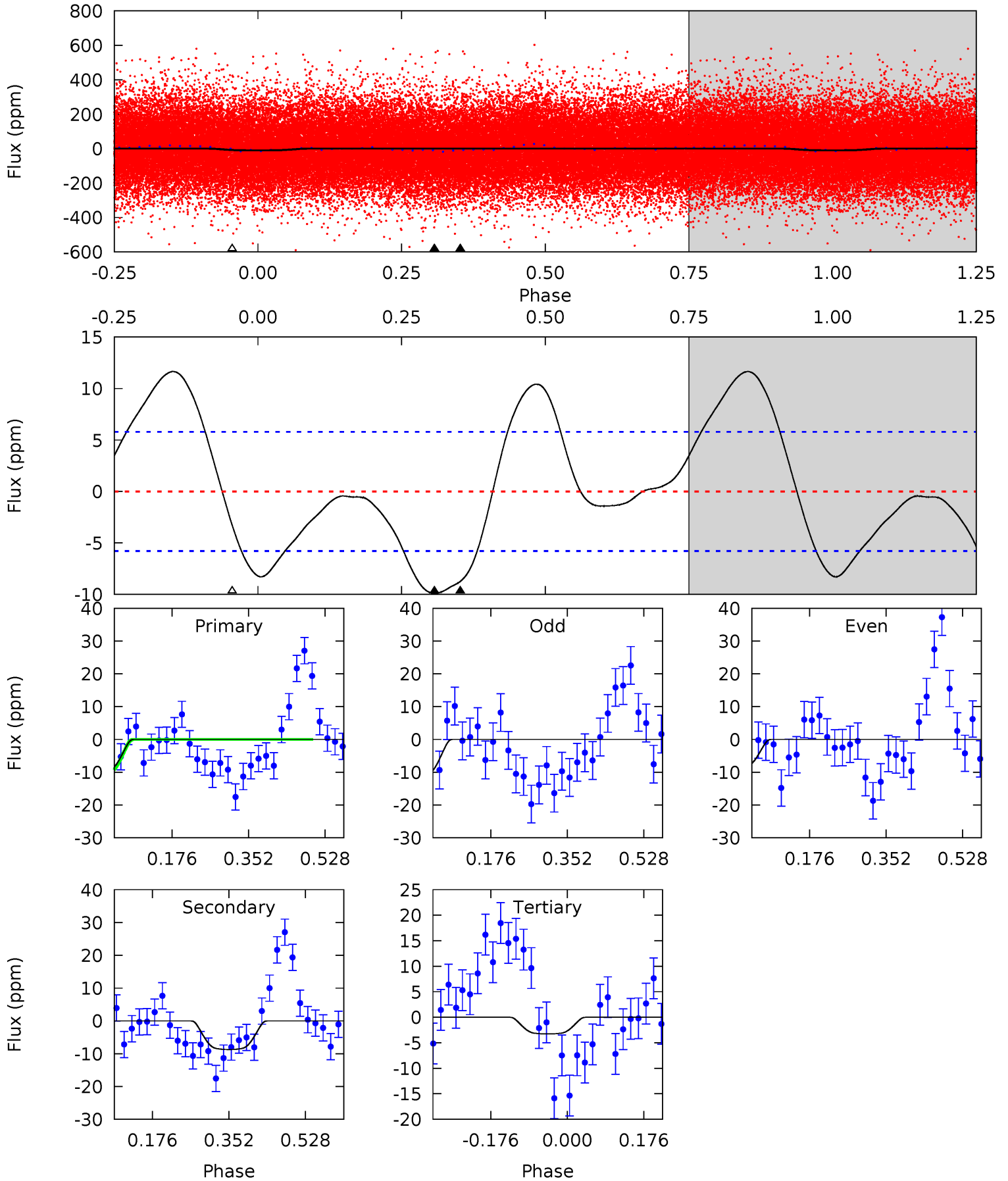




# DV Model-Shift Uniqueness Test

008950675-01, P = 1.712462 Days, E = 131.169494 Days

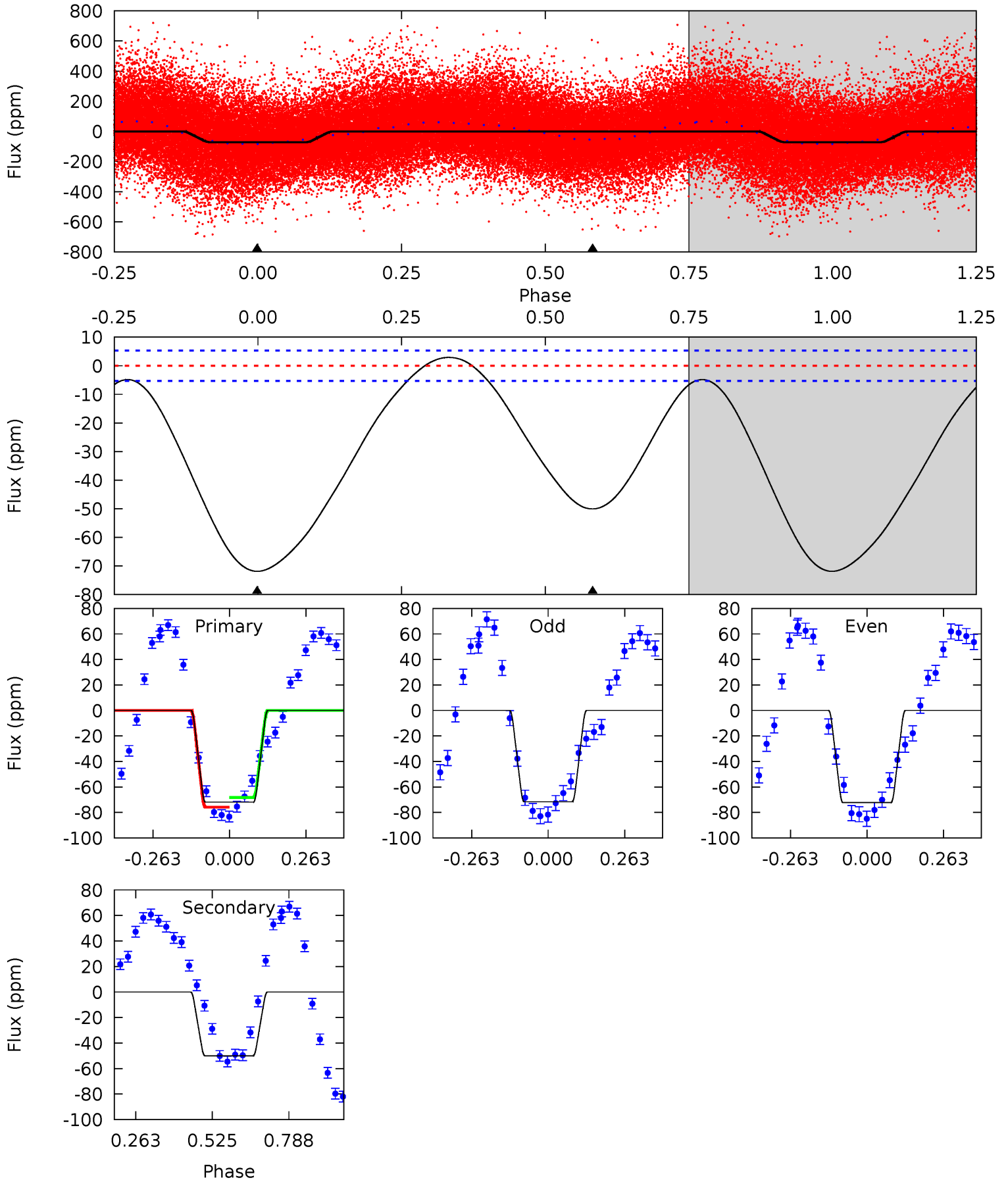
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.59	6.70	2.50	0	4.44	1.35	4.28	5.09	7.59	4.20	6.70	0.94	0.70	0.54	0.73



# Alt Model-Shift Uniqueness Test

008950675-01, P = 1.712731 Days, E = 131.150635 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
59.2	41.2	0	0	4.36	1.12	3.21	59.2	59.2	41.2	41.2	0.28	1.08	0.04	2.95



### Stellar Parameters For KIC 008950675

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6810^{+185}_{-278}$	$3.775^{+0.416}_{-0.104}$	$0.220^{+0.200}_{-0.300}$	$2.944^{+0.565}_{-1.413}$	$1.884^{+0.172}_{-0.516}$	$0.104^{+0.411}_{-0.041}$
	+3%/-4%	+11%/-3%	+91%/-136%	+19%/-48%	+9%/-27%	+395%/-40%
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 008950675-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-9 \pm 1$	$1.36^{+0.32}_{-0.35}$	$3749^{+286}_{-426}$	$5326^{+500}_{-421}$	$3.064^{+2.349}_{-1.093}$
Alt.	$-50 \pm 1$	$2.78^{+0.44}_{-0.69}$	$3760^{+286}_{-418}$	$5850^{+303}_{-291}$	$4.242^{+2.592}_{-1.012}$

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



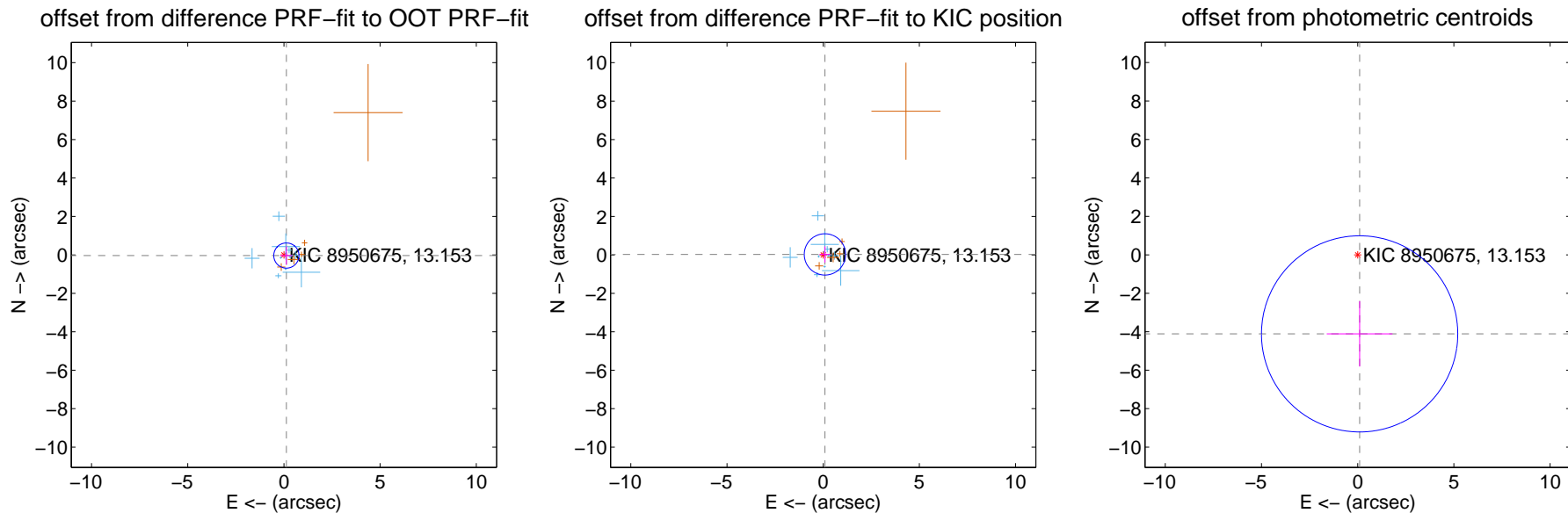
## DV Centroid Data

Supplemental centroid analysis for 008950675-01. Kepler magnitude: 13.15. Transit SNR 4.44

There are 11 quarters with good PRF difference image offsets

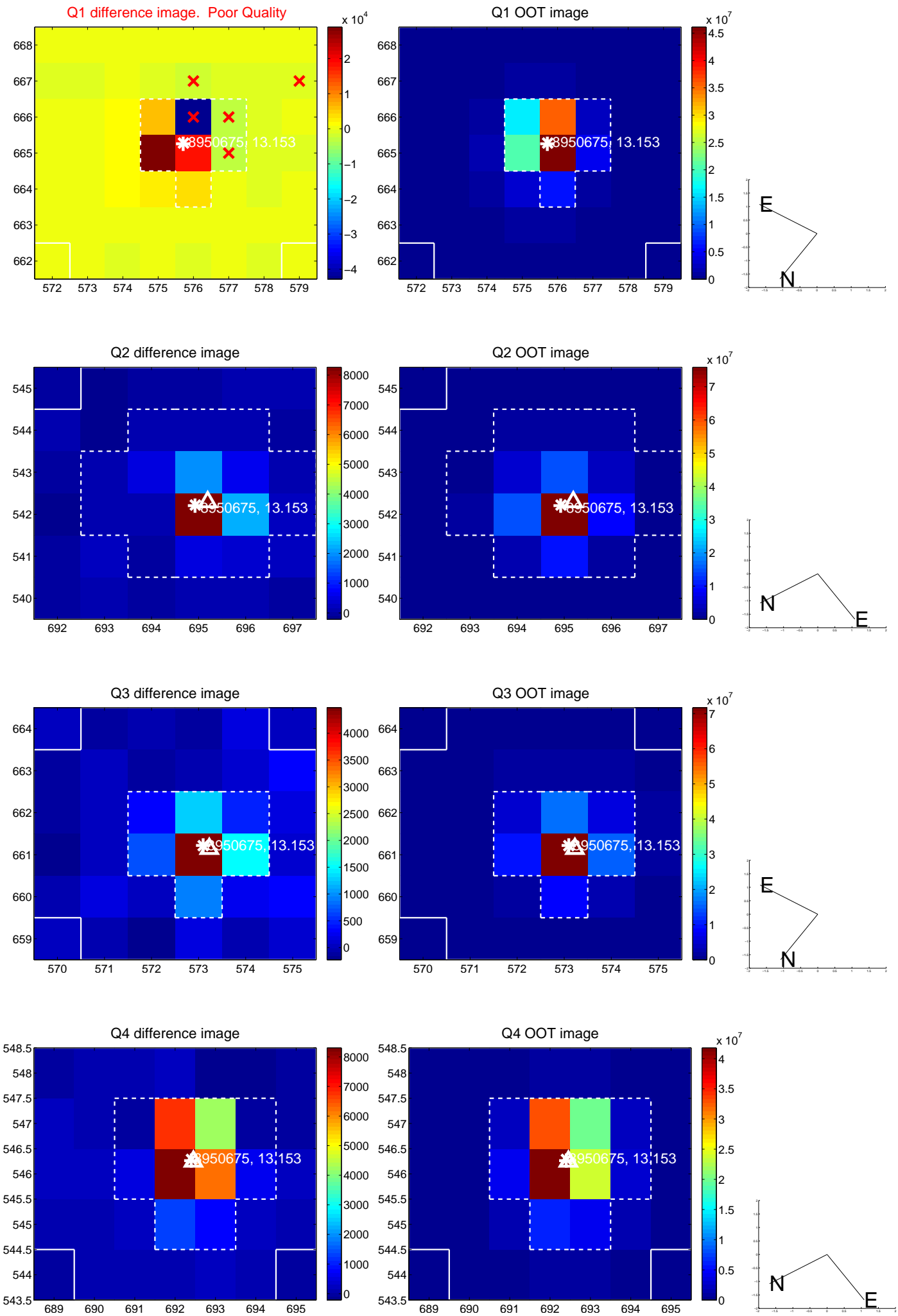
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.132 \pm 0.219$	0.60	$-0.128 \pm 0.309$	$-0.034 \pm 0.478$
PRF-fit source offset from KIC position	$0.094 \pm 0.358$	0.26	$-0.091 \pm 0.279$	$0.025 \pm 0.418$
photometric centroid source offset	$4.11 \pm 1.70$	2.42	$-0.10 \pm 1.71$	$-4.11 \pm 1.70$

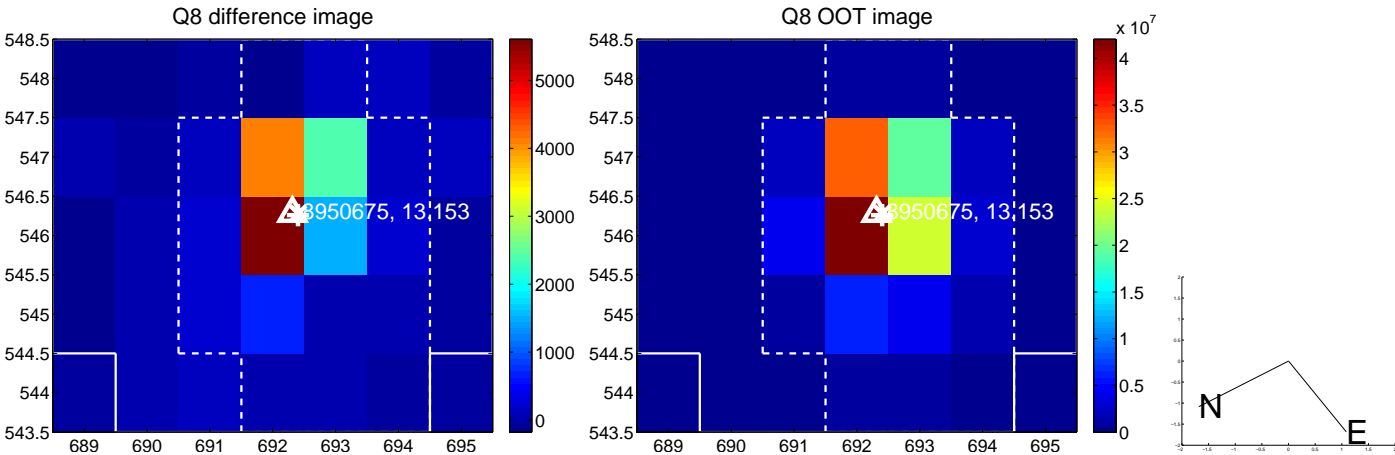
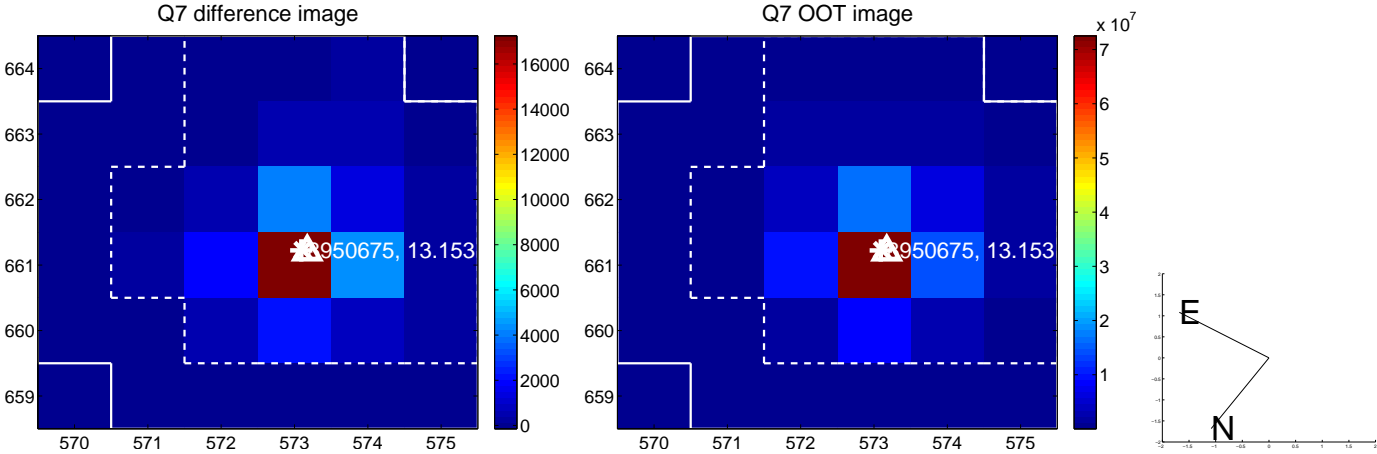
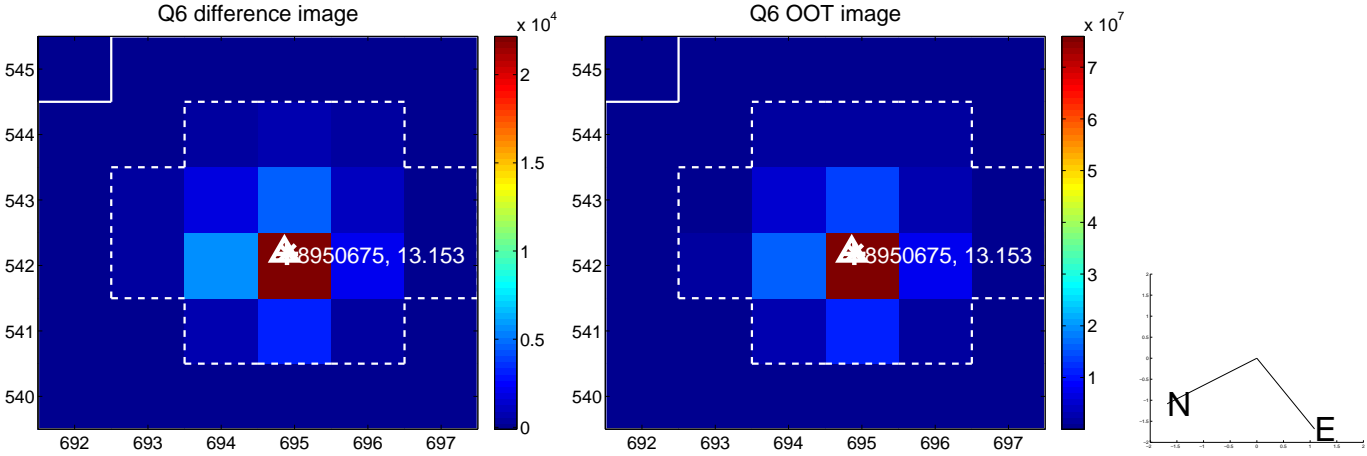
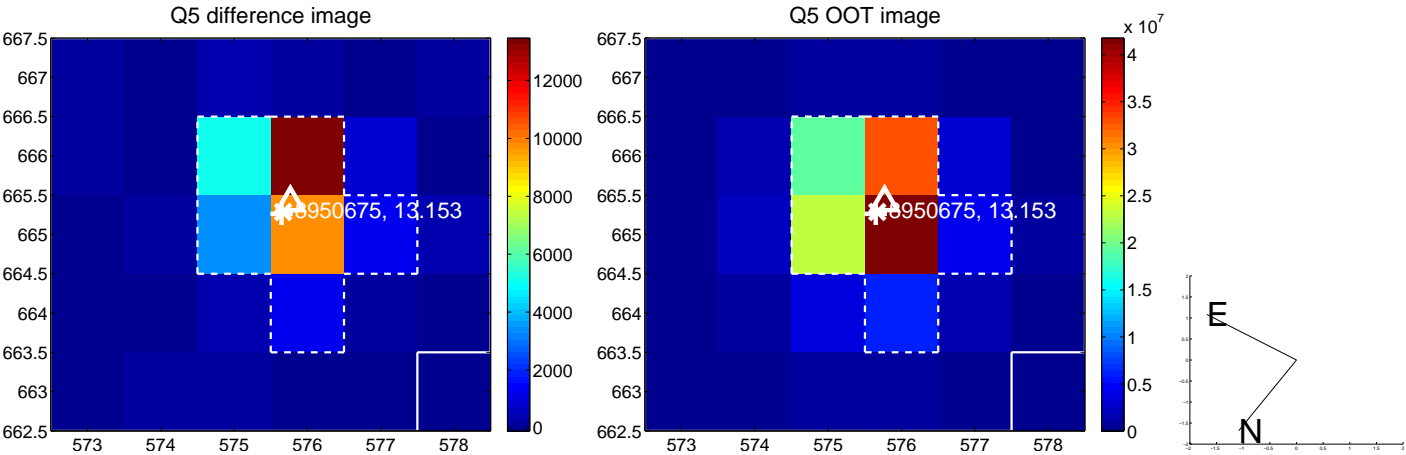


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

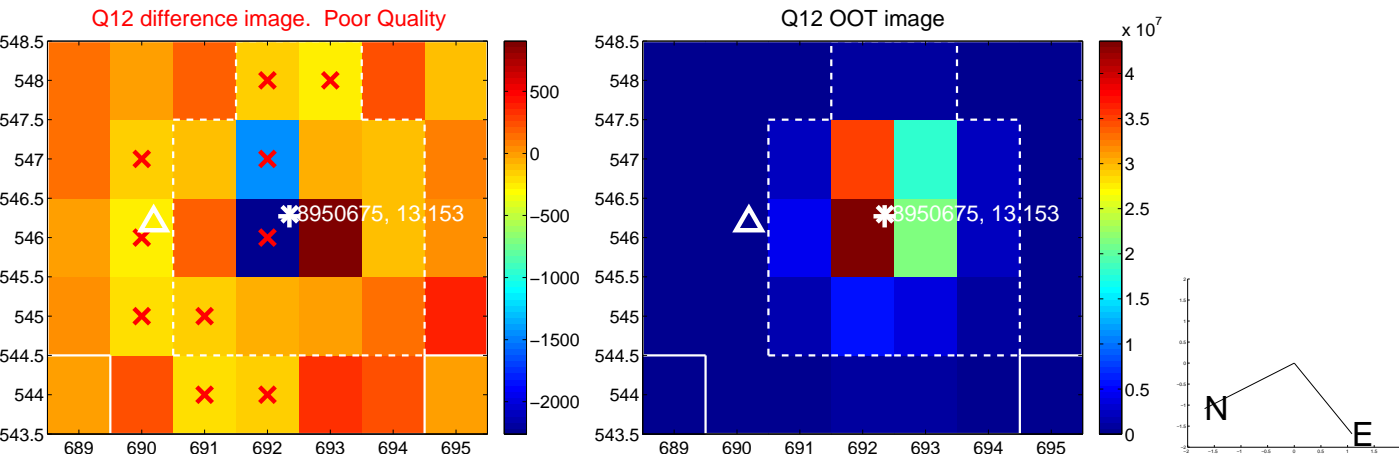
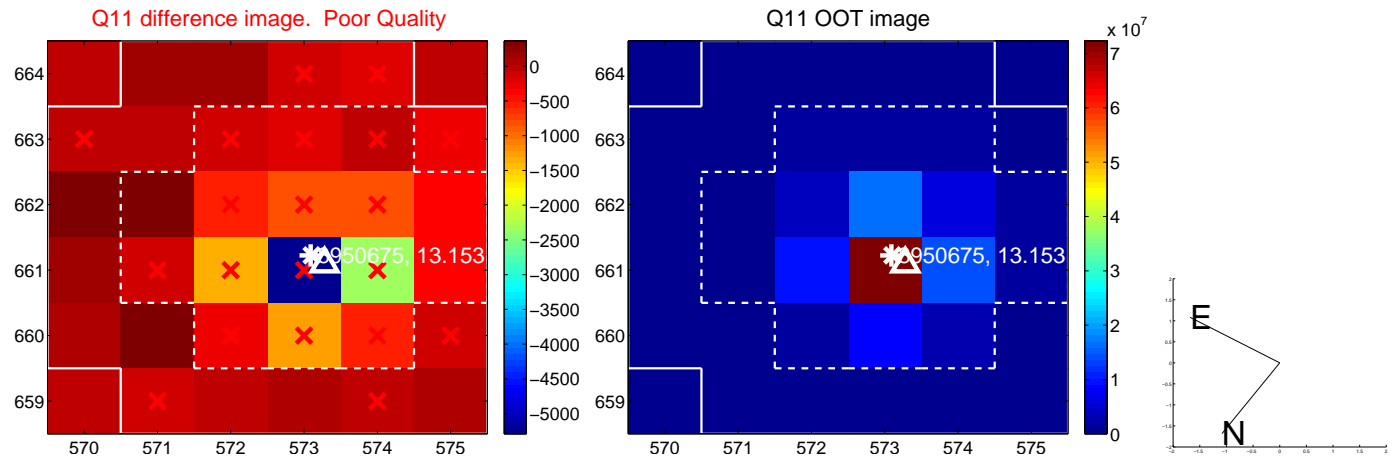
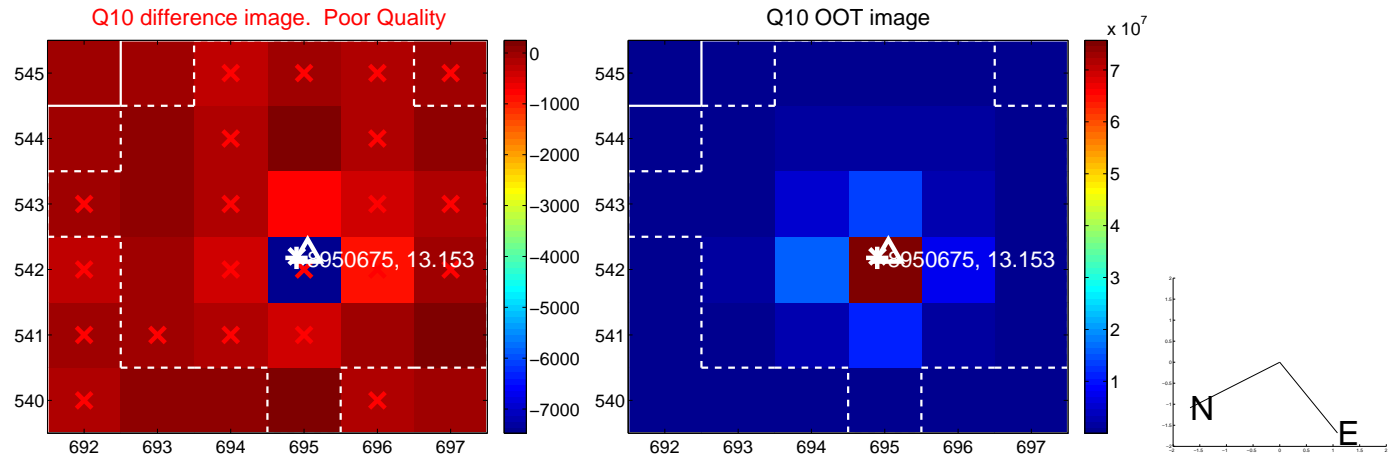
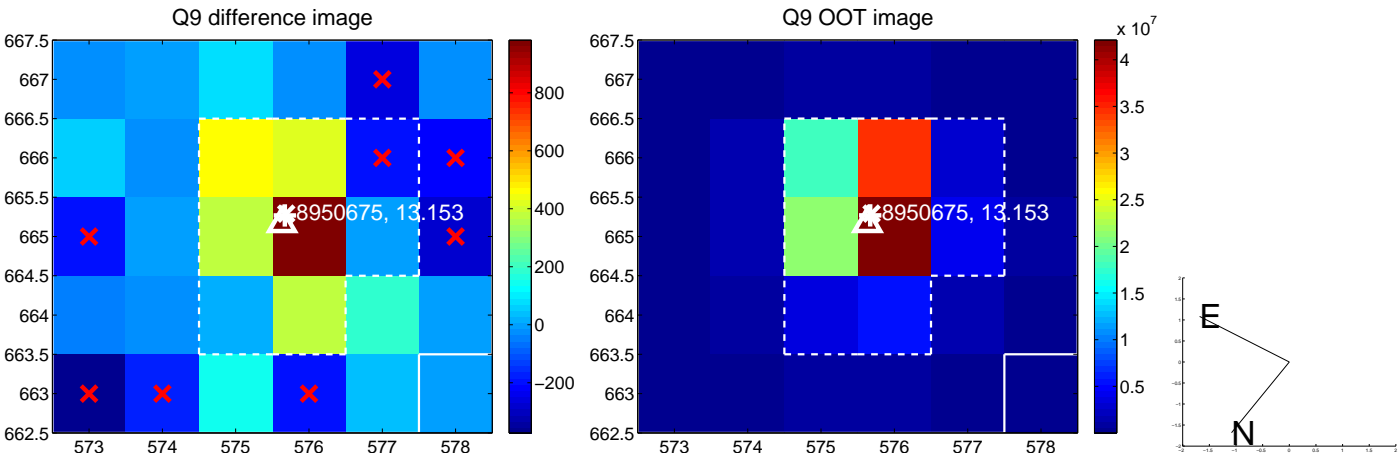


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

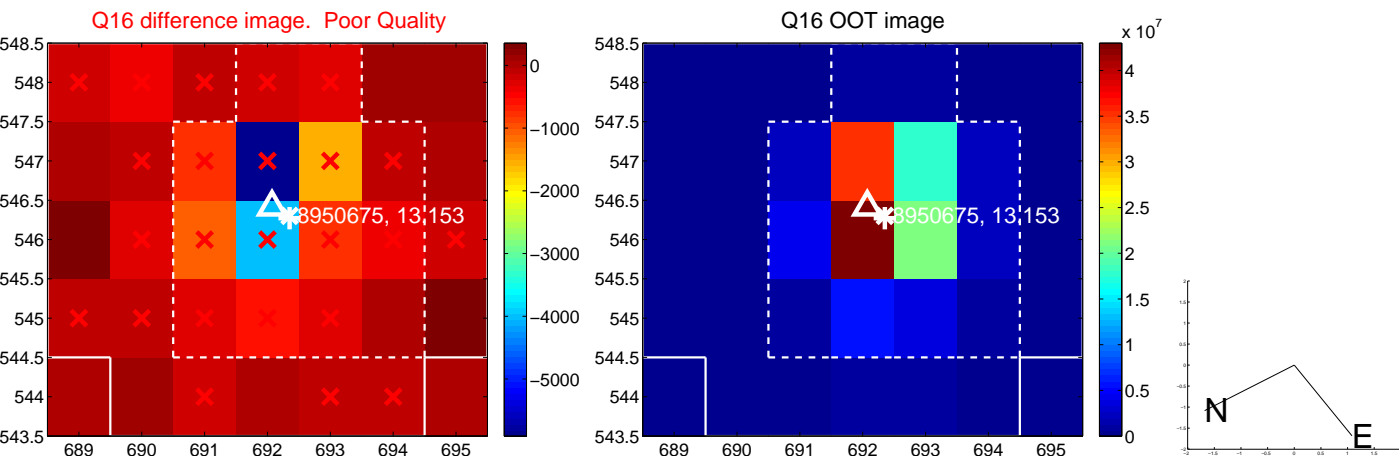
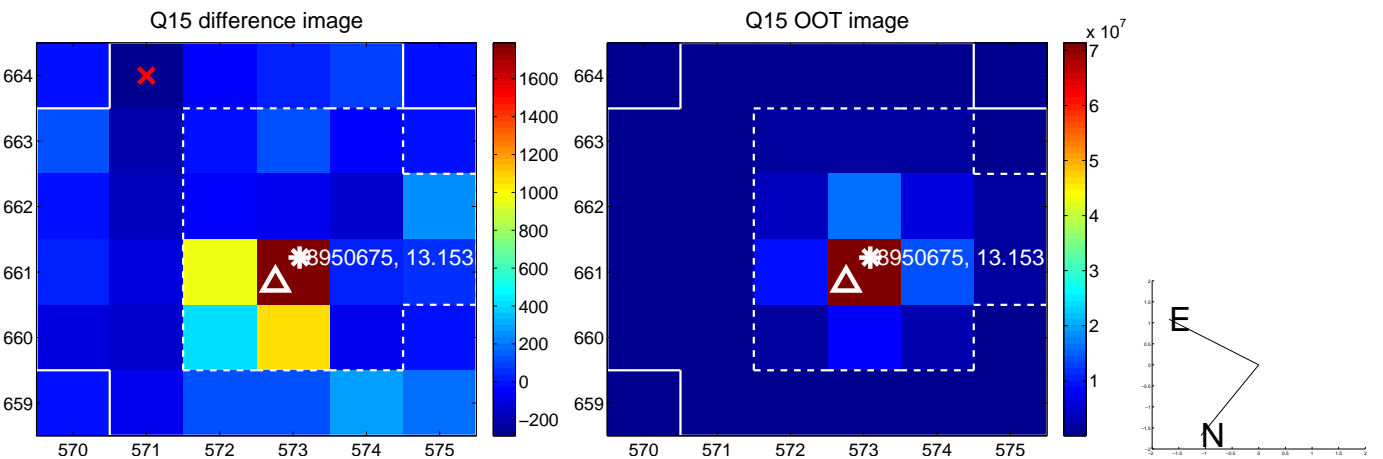
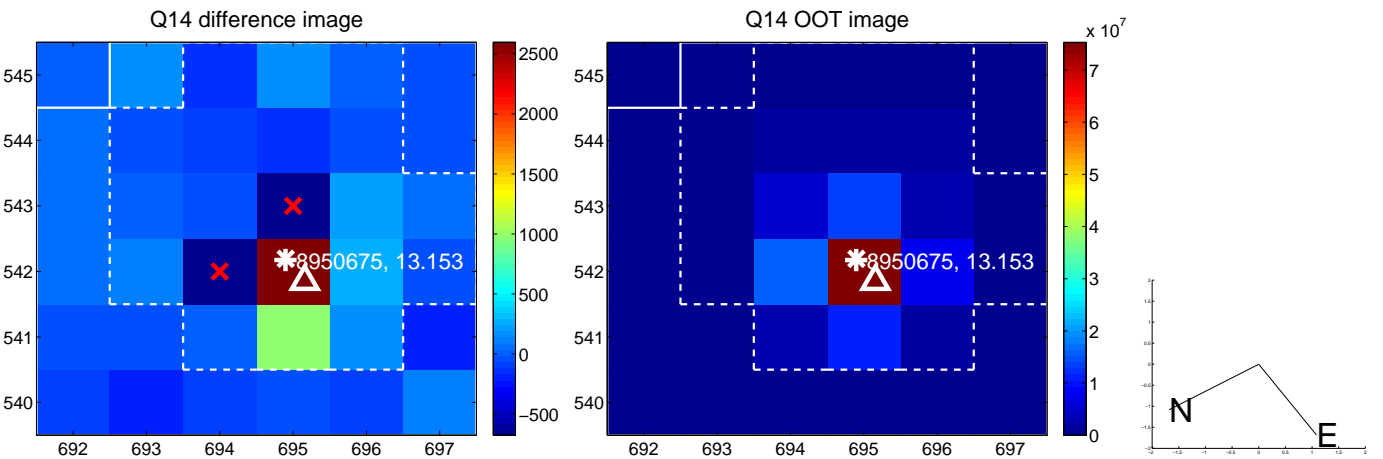
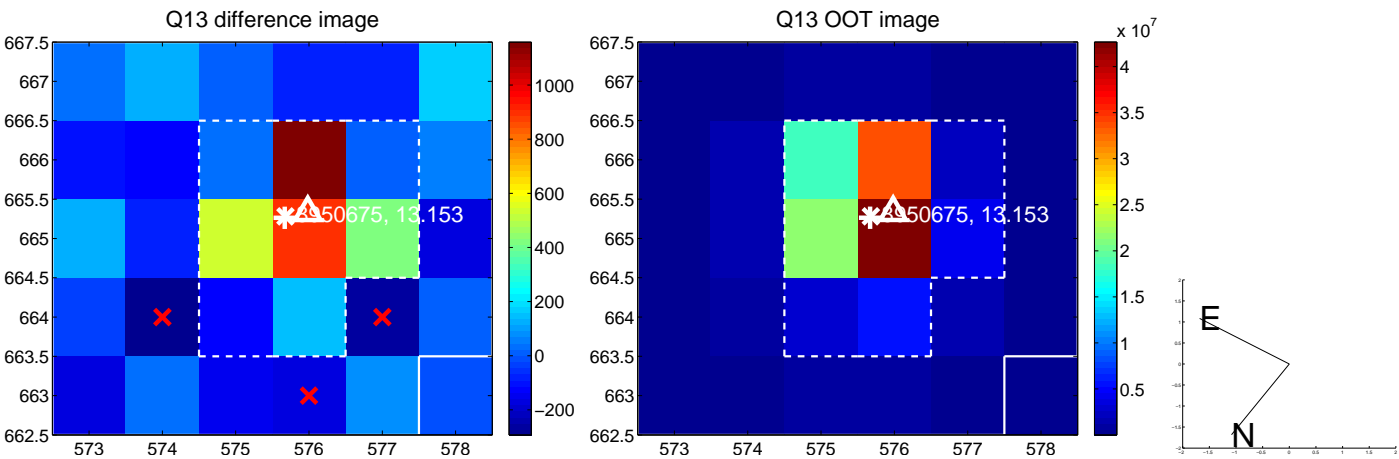




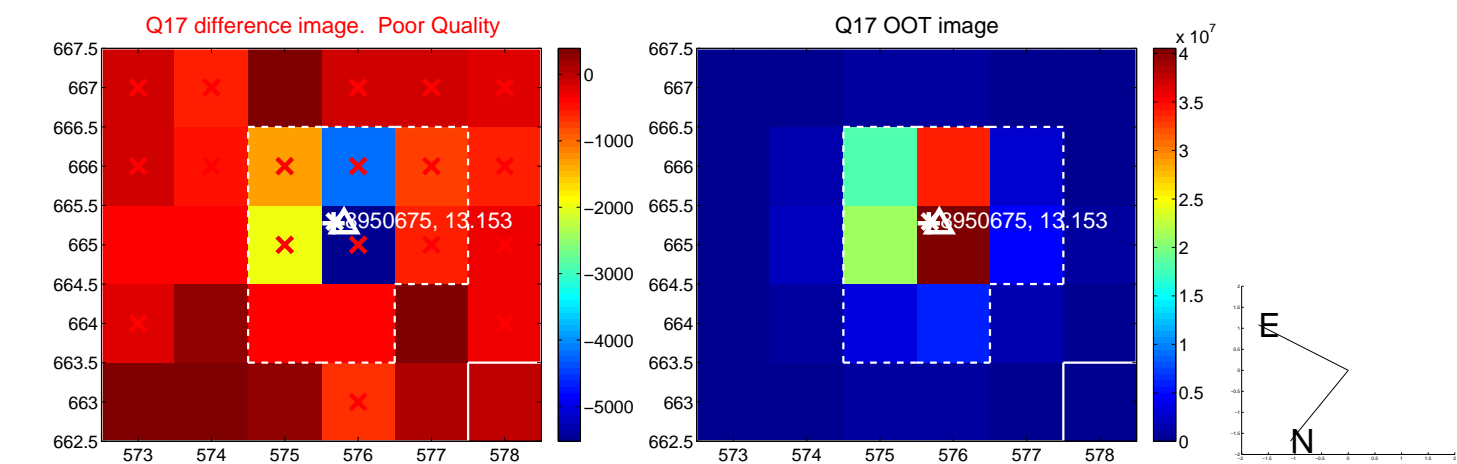
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



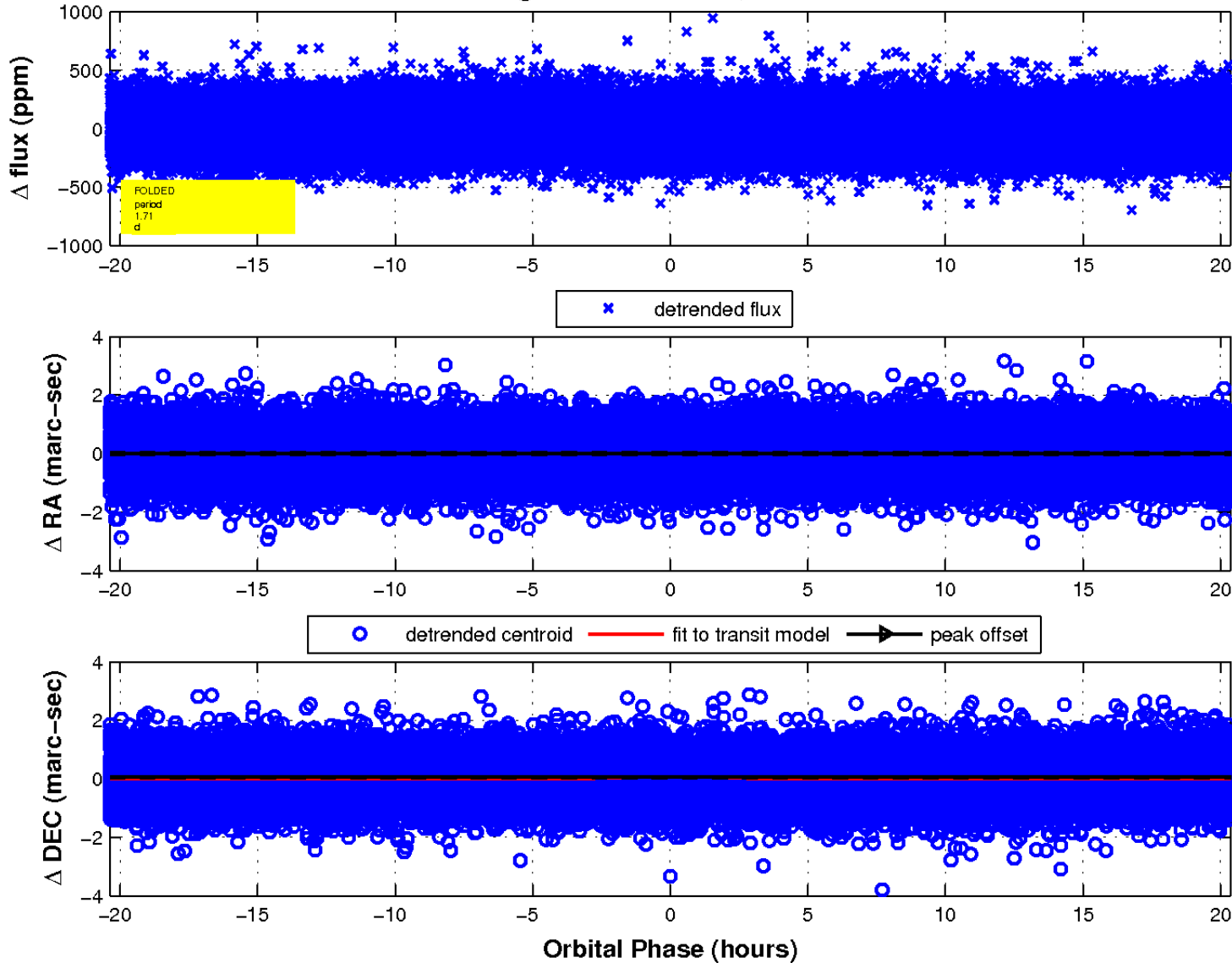
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

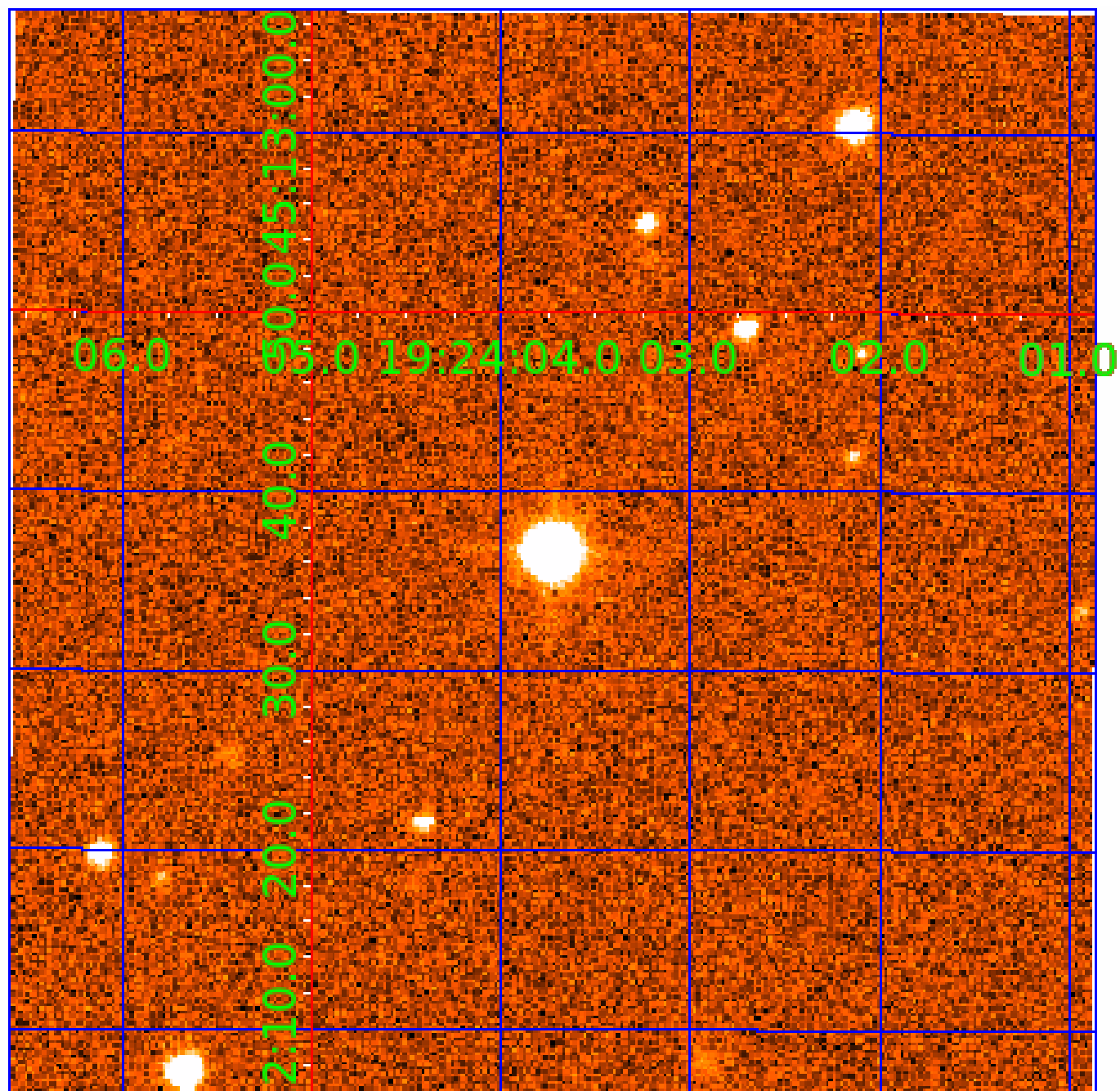


fluxWeightedCentroids, Planet 1 of 5



# UKIRT Image

Declination



# KIC 008950675

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008950675-01	OBS	No	1.712462	132.881956	12.4	6.790	7.9	4.4	2.94	6810	1.47	13951.26
008950675-02	OBS	No	140.643213	151.584969	198.1	15.179	10.1	8.0	2.94	6810	4.53	39.08
008950675-04	OBS	No	190.355524	234.716215	154.6	10.084	8.2	6.3	2.94	6810	3.95	26.10
008950675-05	OBS	No	109.750423	193.518535	222.9	2.329	7.4	7.6	2.94	6810	4.66	54.40

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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008950675-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
008950675-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV
008950675-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

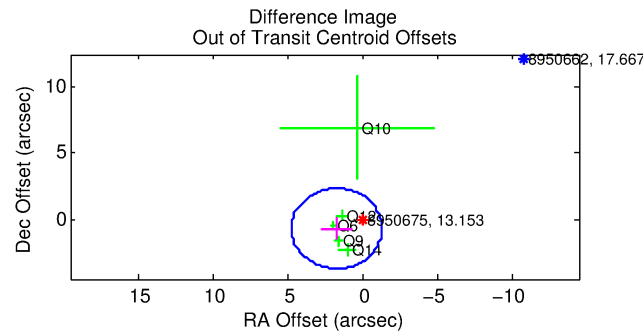
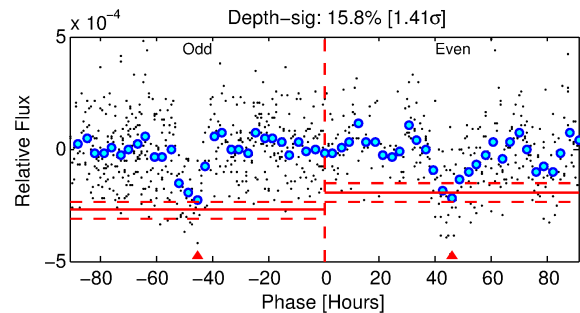
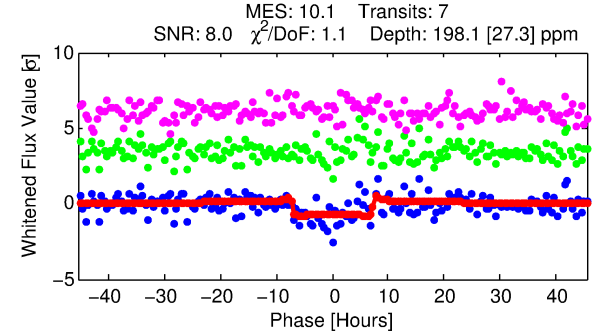
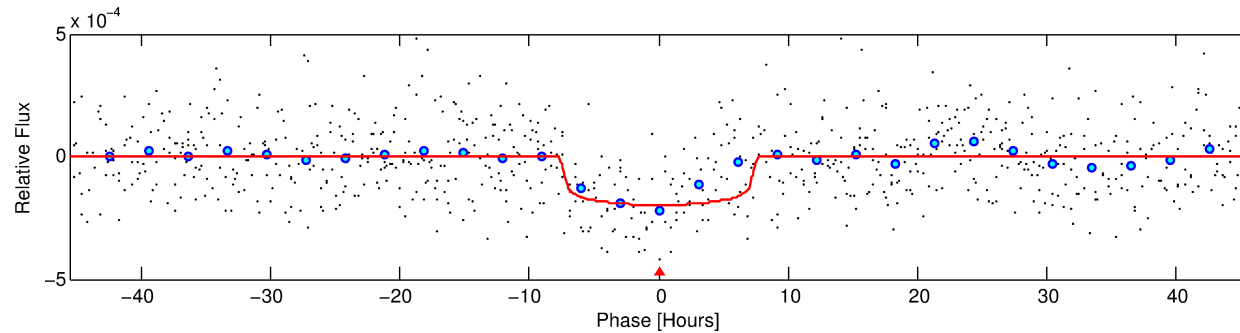
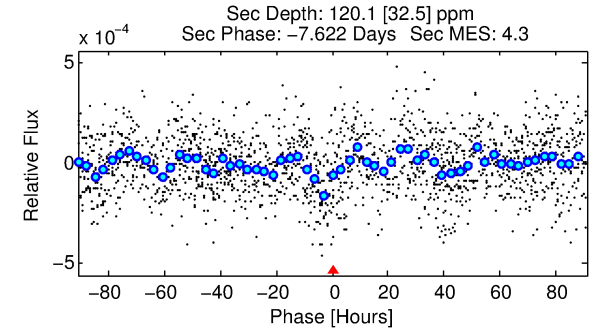
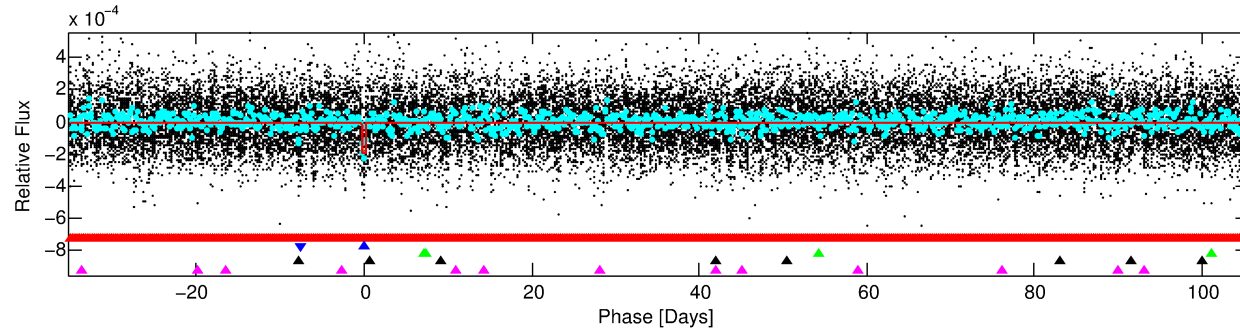
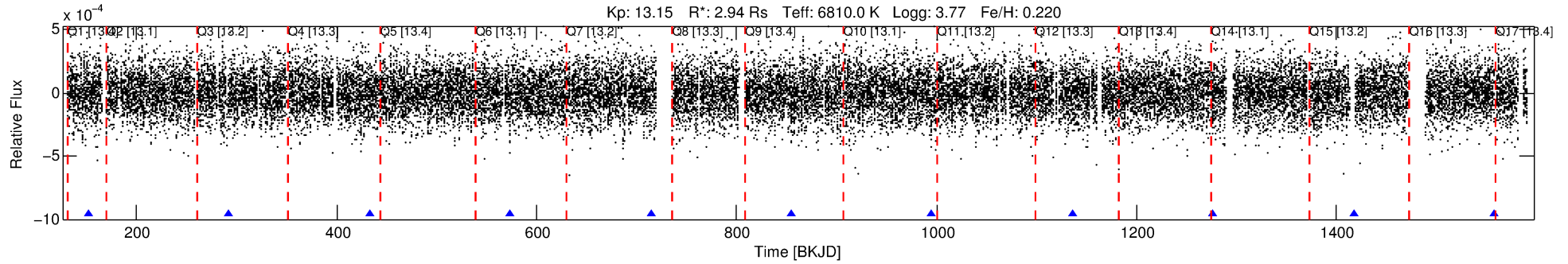
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008950675-02

No Significant Match Found

# DV One-Page Summary

KIC: 8950675 Candidate: 2 of 5 Period: 140.643 d



## DV Fit Results:

Period = 140.64321 [0.00531] d  
Epoch = 151.5850 [0.0258] BKJD  
Rp/R\* = 0.0141 [0.0035]  
a/R\* = 46.20 [61.34]  
b = 0.78 [0.69]  
Seff = 39.08 [28.63]  
Teq = 638 [117] K  
Rp = 4.53 [2.45] Re  
a = 0.6537 [0.2955] AU  
Ag = 1374.44 [1250.52] [1.10 $\sigma$ ]  
Teffp = 6002 [880] K [6.04 $\sigma$ ]

## DV Diagnostic Results:

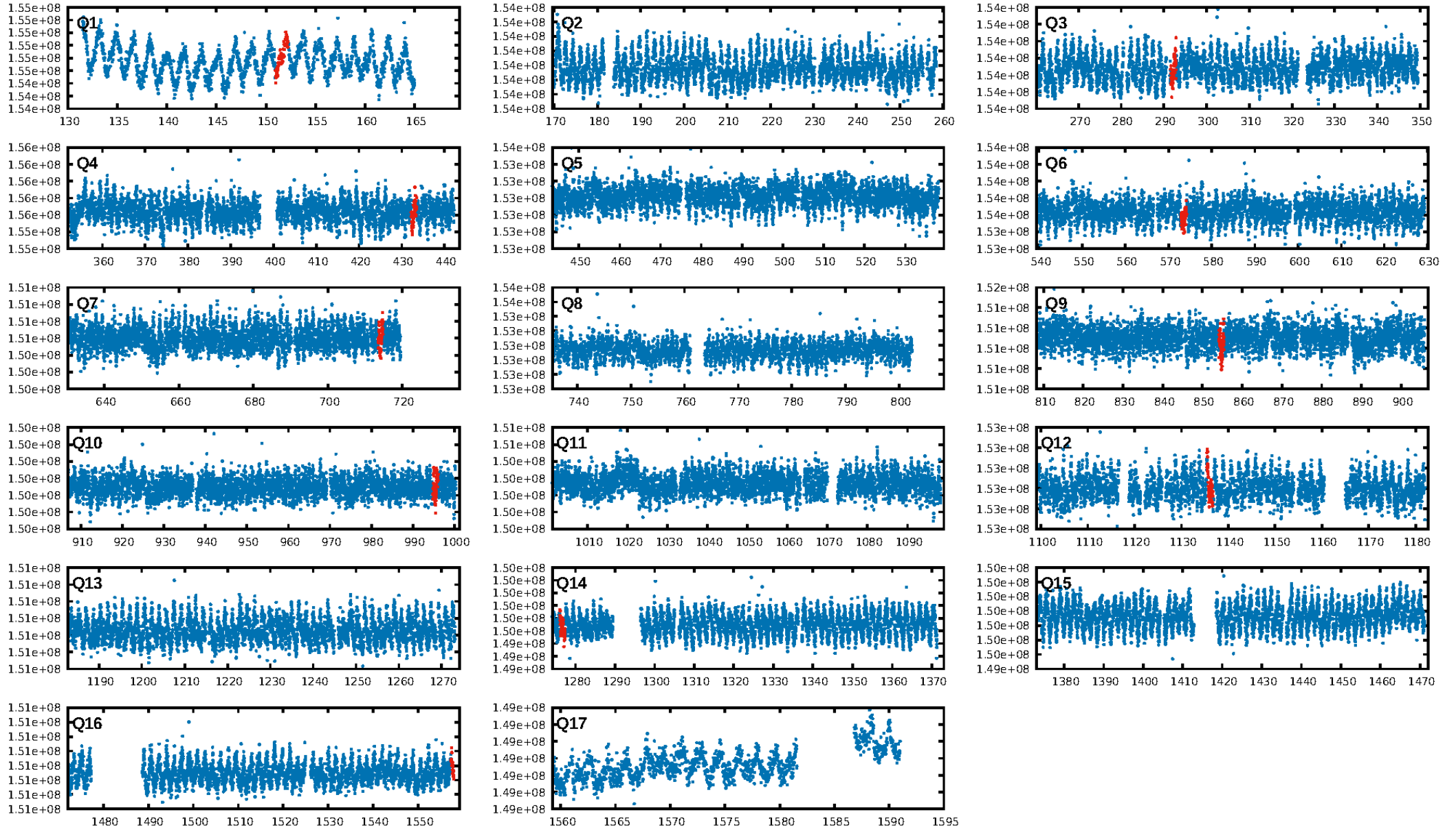
ShortPeriod-sig: 100.0% [48.28 $\sigma$ ]  
LongPeriod-sig: 100.0% [65.47 $\sigma$ ]  
ModelChiSquare2-sig: 18.9%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 8.69e-14  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: 5.144  
Centroid-sig: 0.5%  
Centroid-so: 1.156 arcsec [1.89 $\sigma$ ]  
OotOffset-rm: 1.834 arcsec [1.81 $\sigma$ ]  
KicOffset-rm: 1.838 arcsec [1.80 $\sigma$ ]  
OotOffset-st: 3/0/1/1 [5]  
KicOffset-st: 3/0/1/1 [5]  
DiffImageQuality-fgm: 0.60 [3/5]  
DiffImageOverlap-fno: 0.00 [0/7]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:40:05 Z

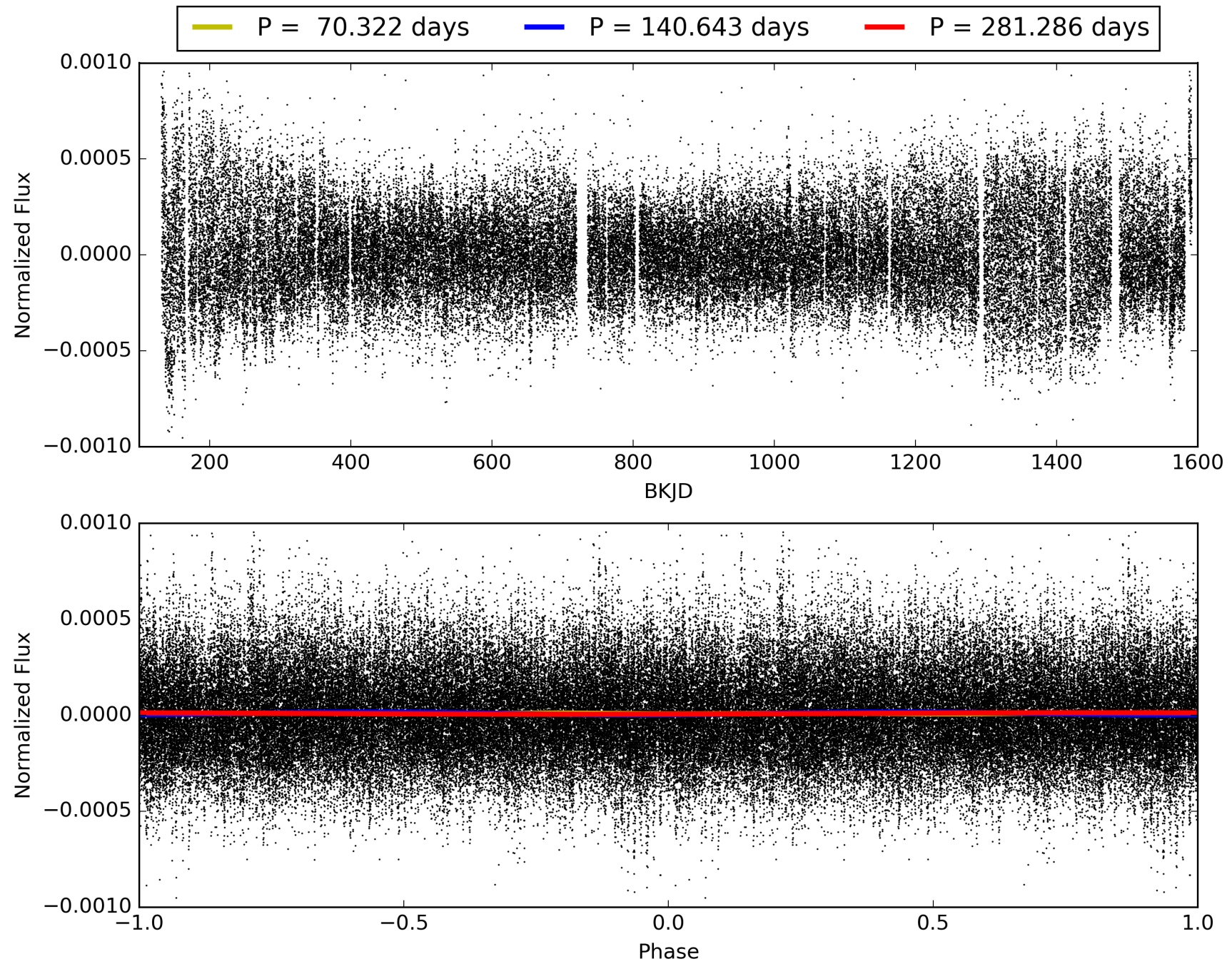
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 008950675-02, PDC Light Curves

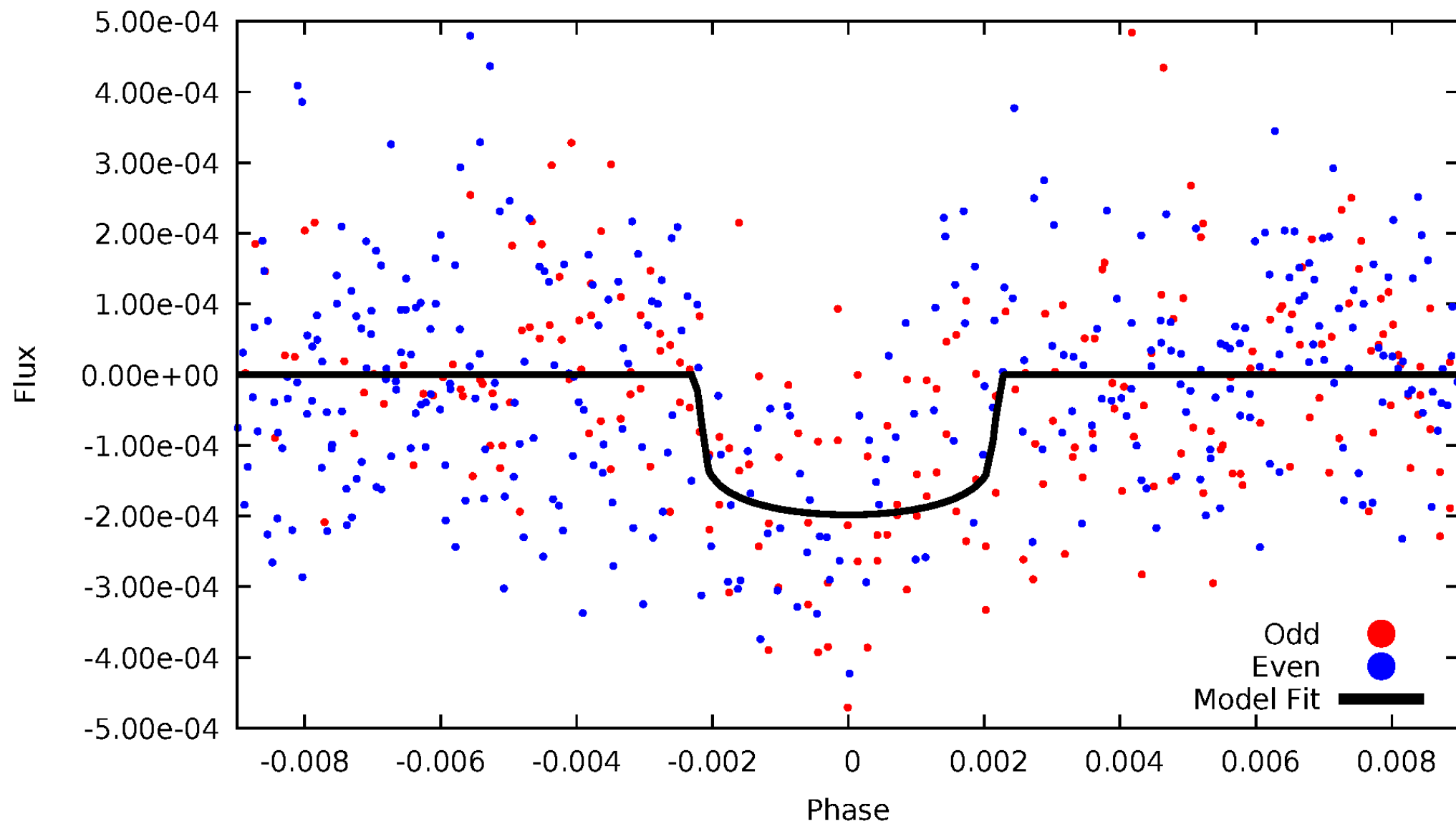


TCE 008950675-02



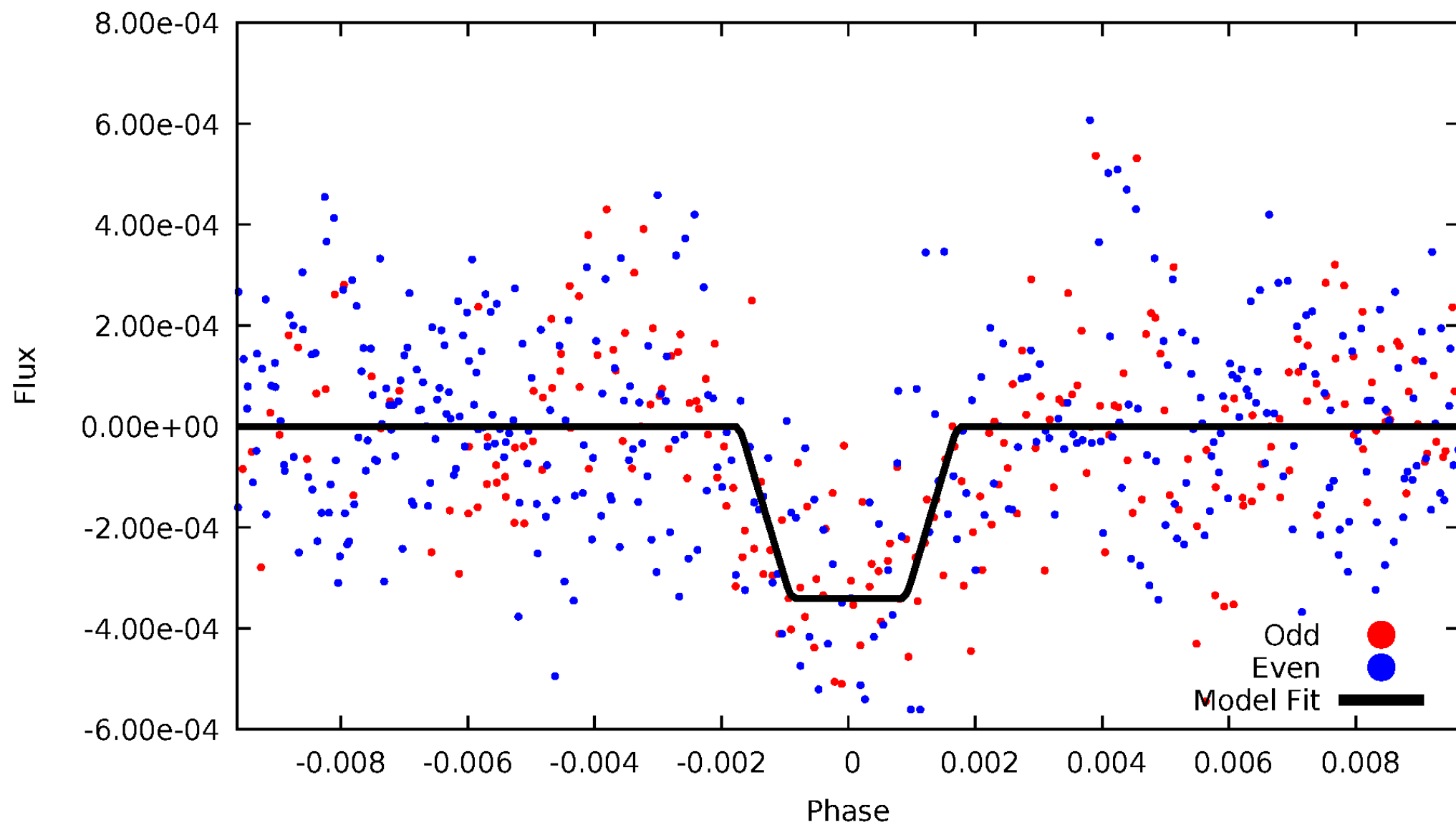
# DV Odd/Even

TCE 008950675-02



# ALT Odd/Even

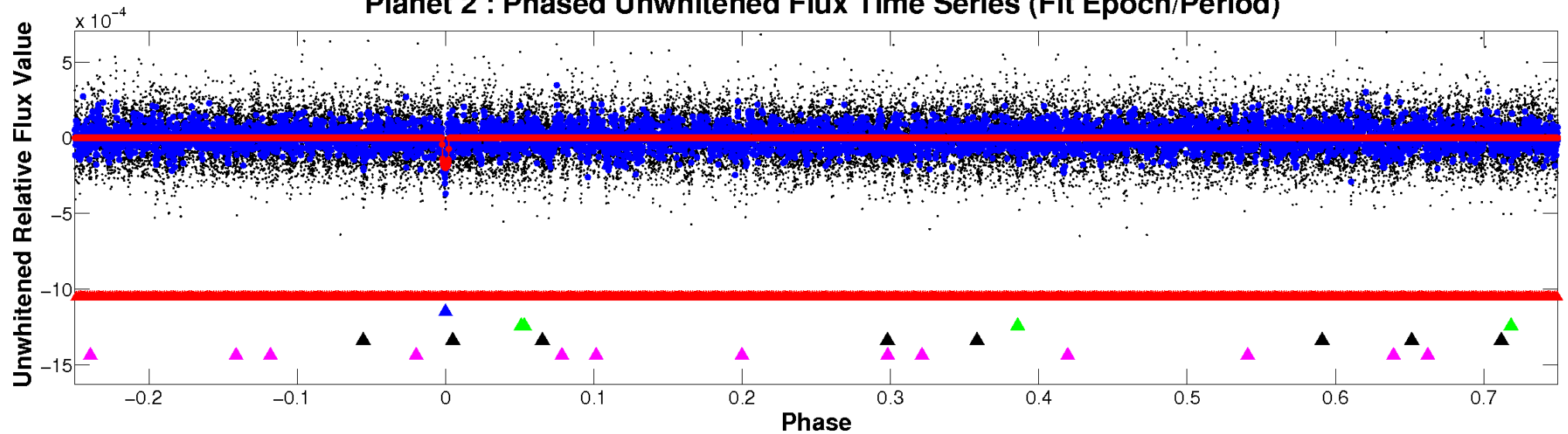
TCE 008950675-02



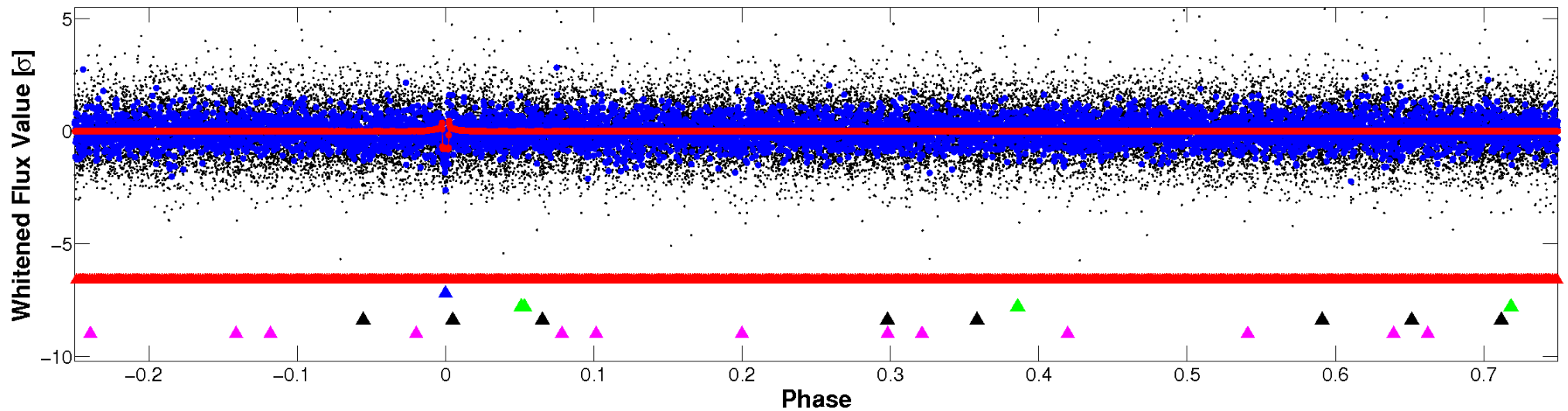


# Non-Whitened Vs. Whitened Light Curve

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

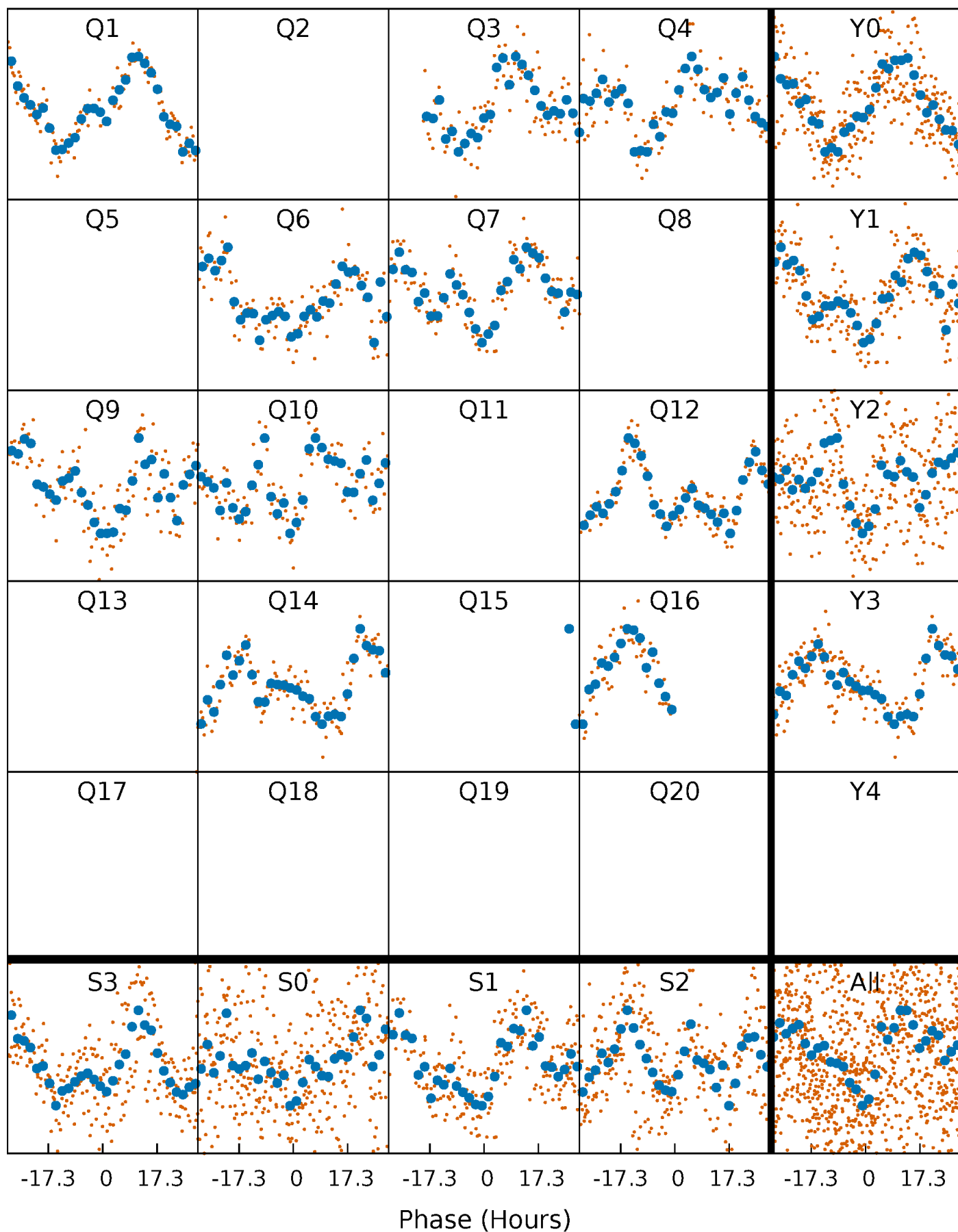


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



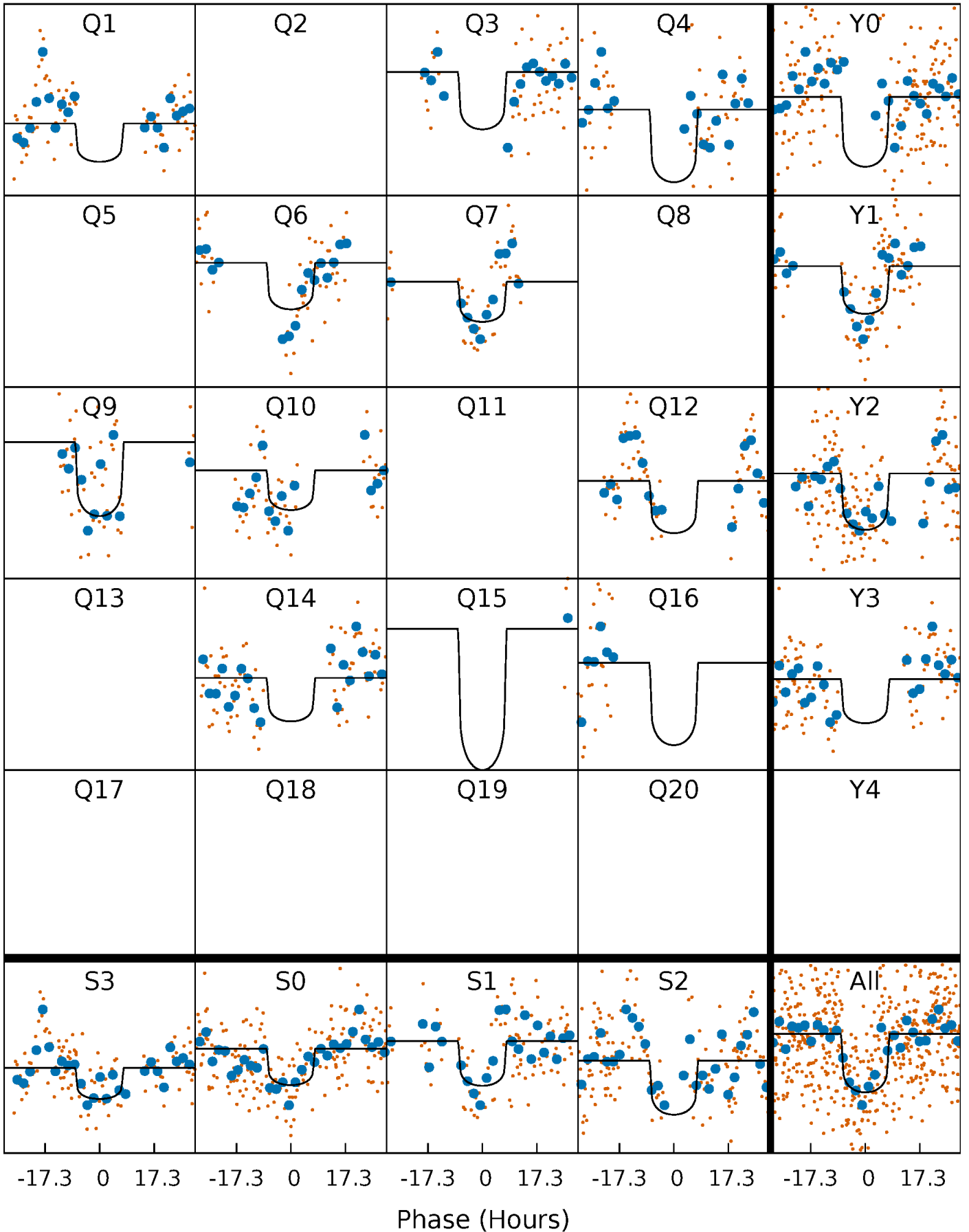
# PDC Quarter-Phased Transit Curves

TCE 008950675-02 P=140.643213 Days  $T_0=151.584969$  (BKJD)



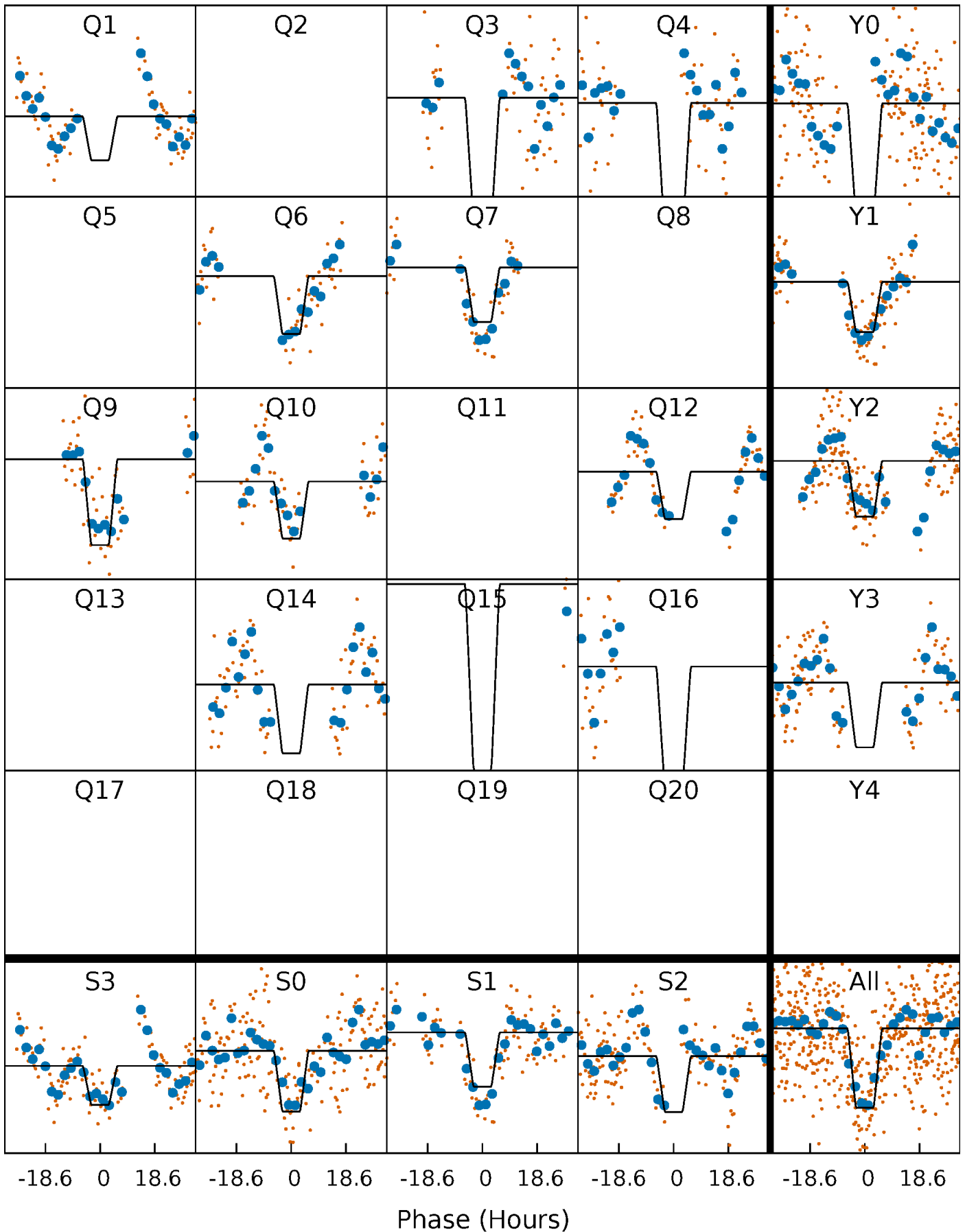
# DV Quarter-Phased Transit Curves

TCE 008950675-02 P=140.643213 Days  $T_0=151.584969$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008950675-02 P=140.630571 Days  $T_0=151.636015$  (BKJD)

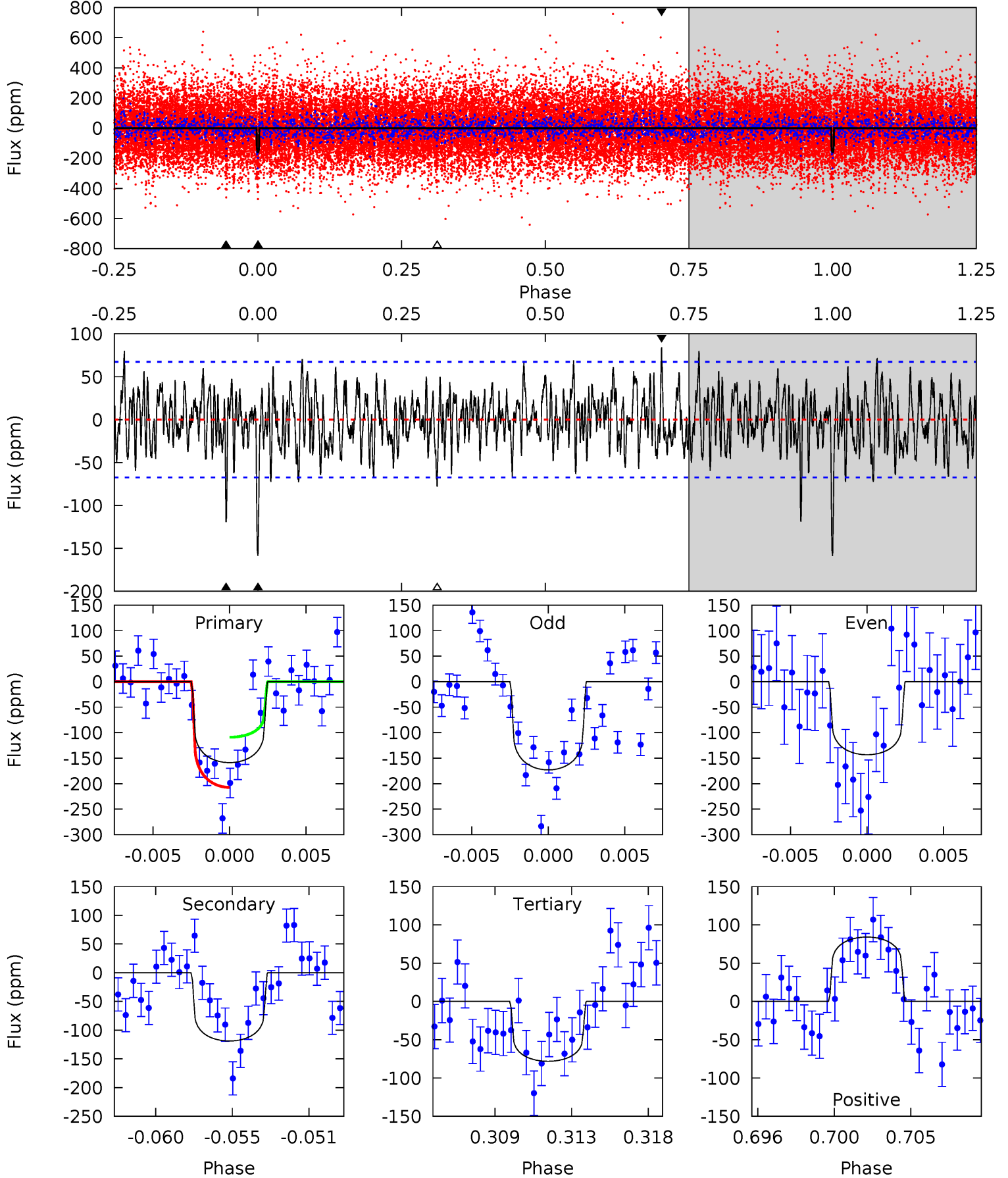




# DV Model-Shift Uniqueness Test

008950675-02, P = 140.643213 Days, E = 10.941756 Days

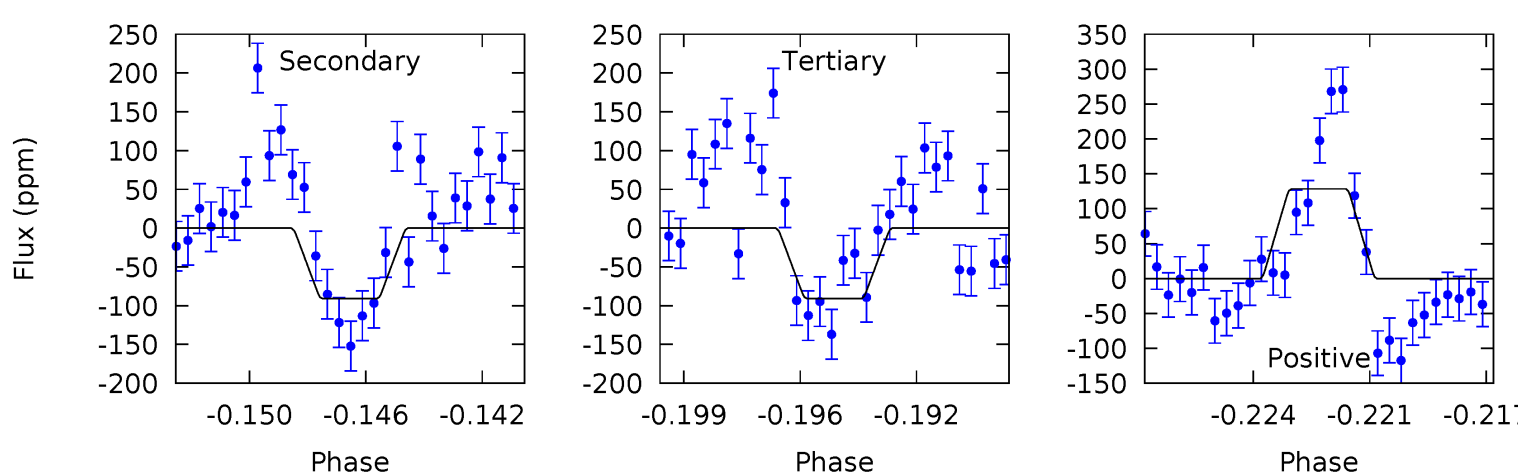
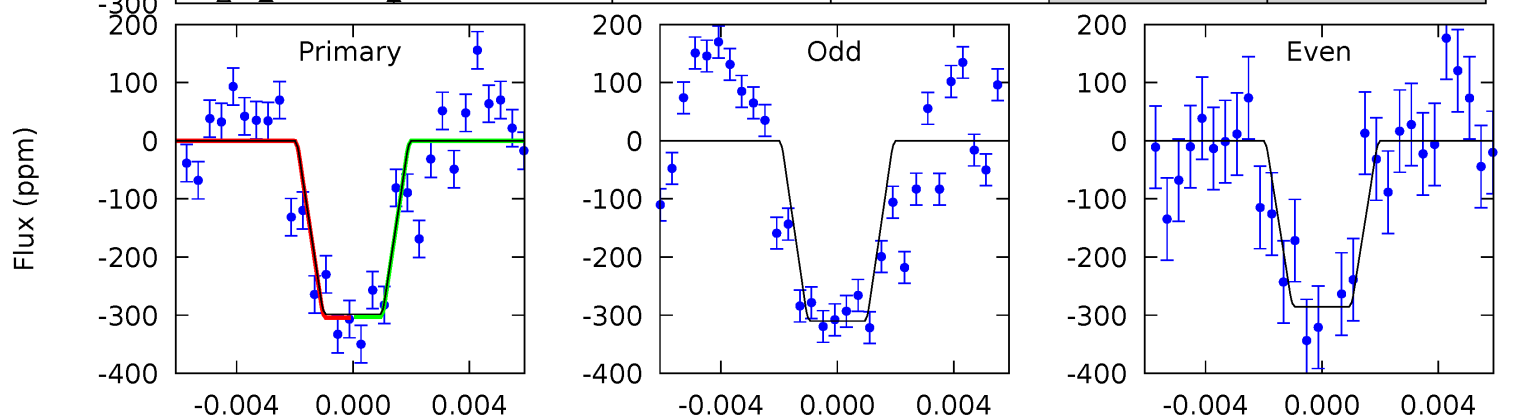
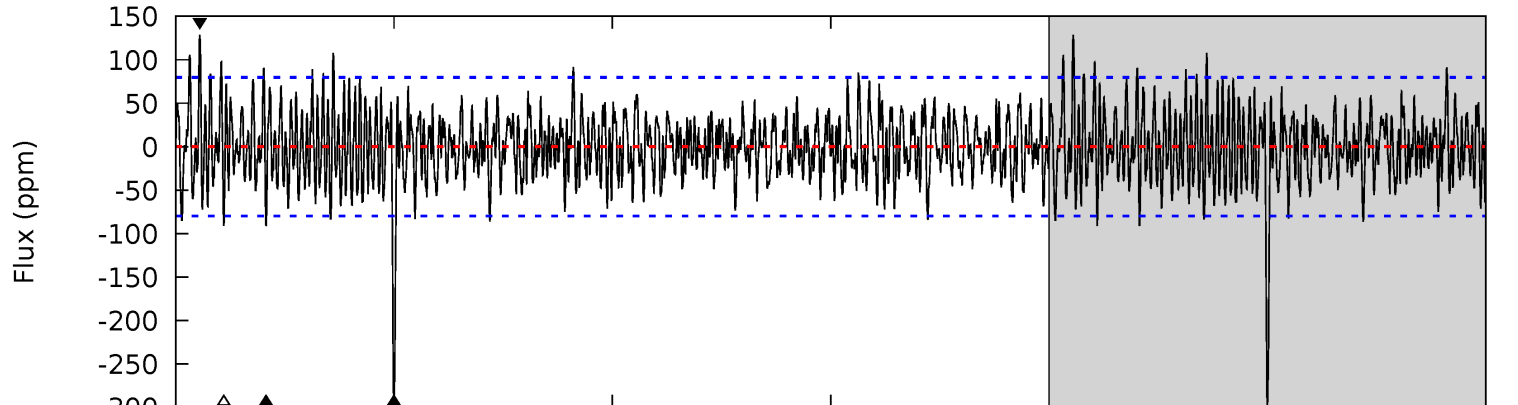
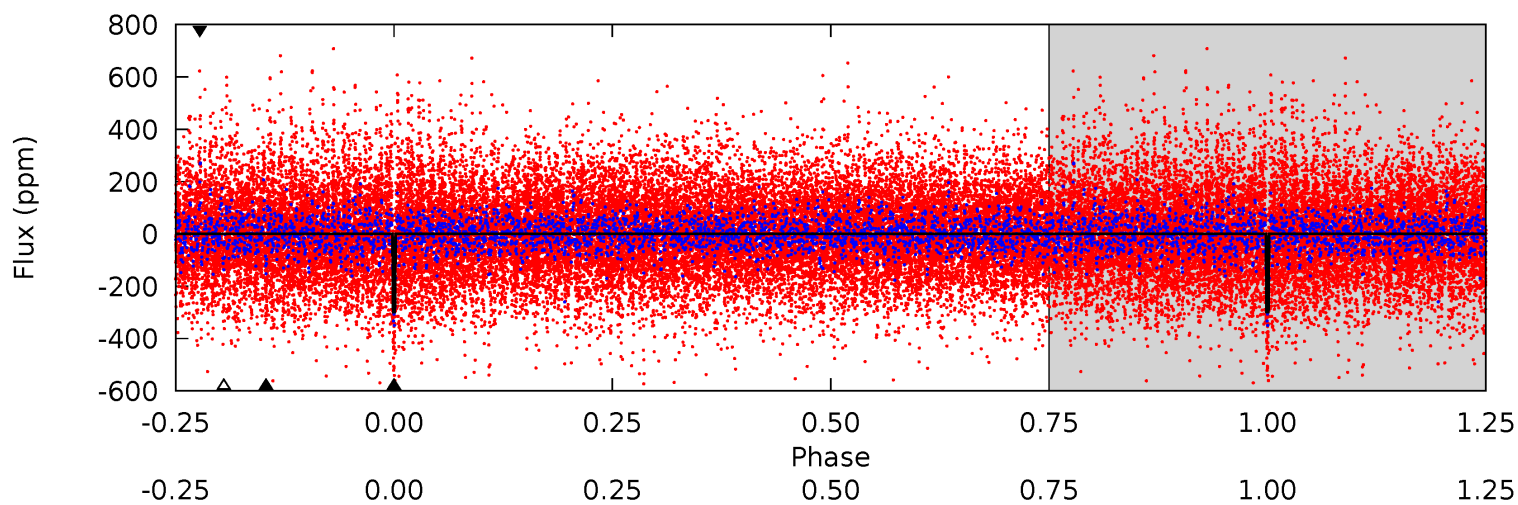
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	9.13	6.01	6.47	5.17	2.83	2.01	6.19	5.73	3.13	2.66	1.15	0.98	0.35	3.78



# Alt Model-Shift Uniqueness Test

008950675-02, P = 140.630571 Days, E = 11.005444 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.5	5.96	5.95	8.41	5.22	2.91	2.13	13.6	11.1	0.01	-2.45	0.81	0.80	0.30	0.04



### Stellar Parameters For KIC 008950675

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6810^{+185}_{-278}$	$3.775^{+0.416}_{-0.104}$	$0.220^{+0.200}_{-0.300}$	$2.944^{+0.565}_{-1.413}$	$1.884^{+0.172}_{-0.516}$	$0.104^{+0.411}_{-0.041}$
	+3%/-4%	+11%/-3%	+91%/-136%	+19%/-48%	+9%/-27%	+395%/-40%
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 008950675-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-119 \pm 13$	$4.12^{+1.47}_{-1.27}$	$861^{+71}_{-101}$	$5872^{+1036}_{-602}$	$1602^{+1710}_{-728}$
Alt.	$-91 \pm 15$	$5.44^{+1.44}_{-1.51}$	$865^{+66}_{-99}$	$4957^{+524}_{-391}$	$721^{+585}_{-289}$

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

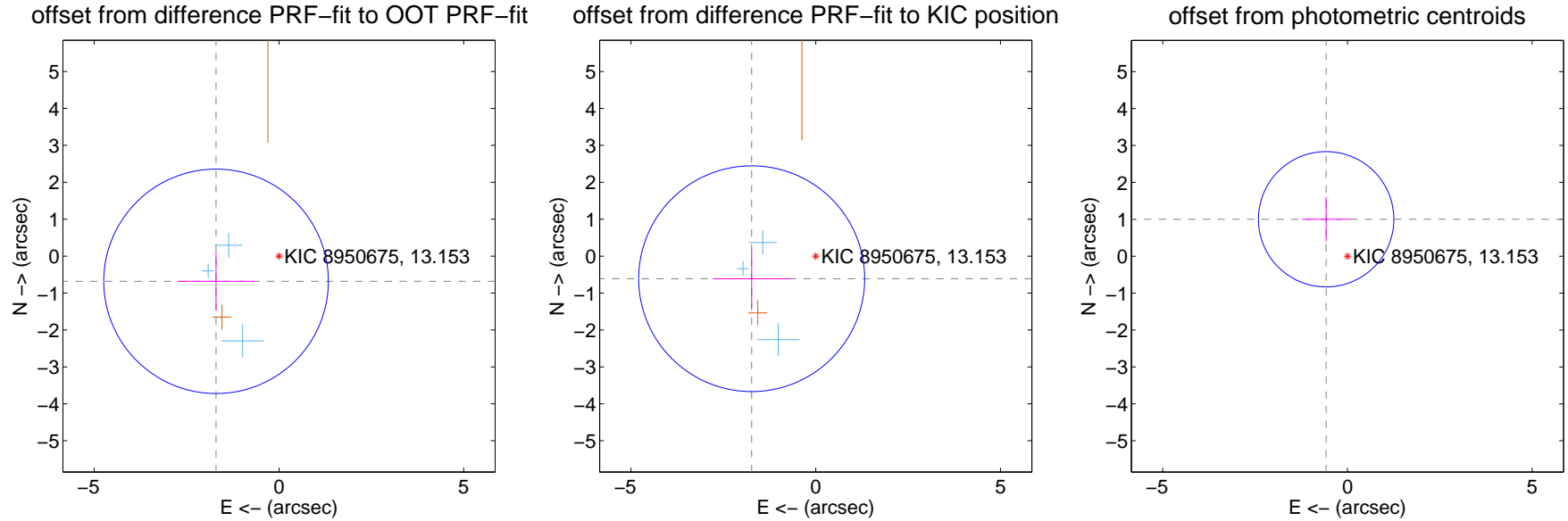
## DV Centroid Data

Supplemental centroid analysis for 008950675-02. Kepler magnitude: 13.15. Transit SNR 7.99

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

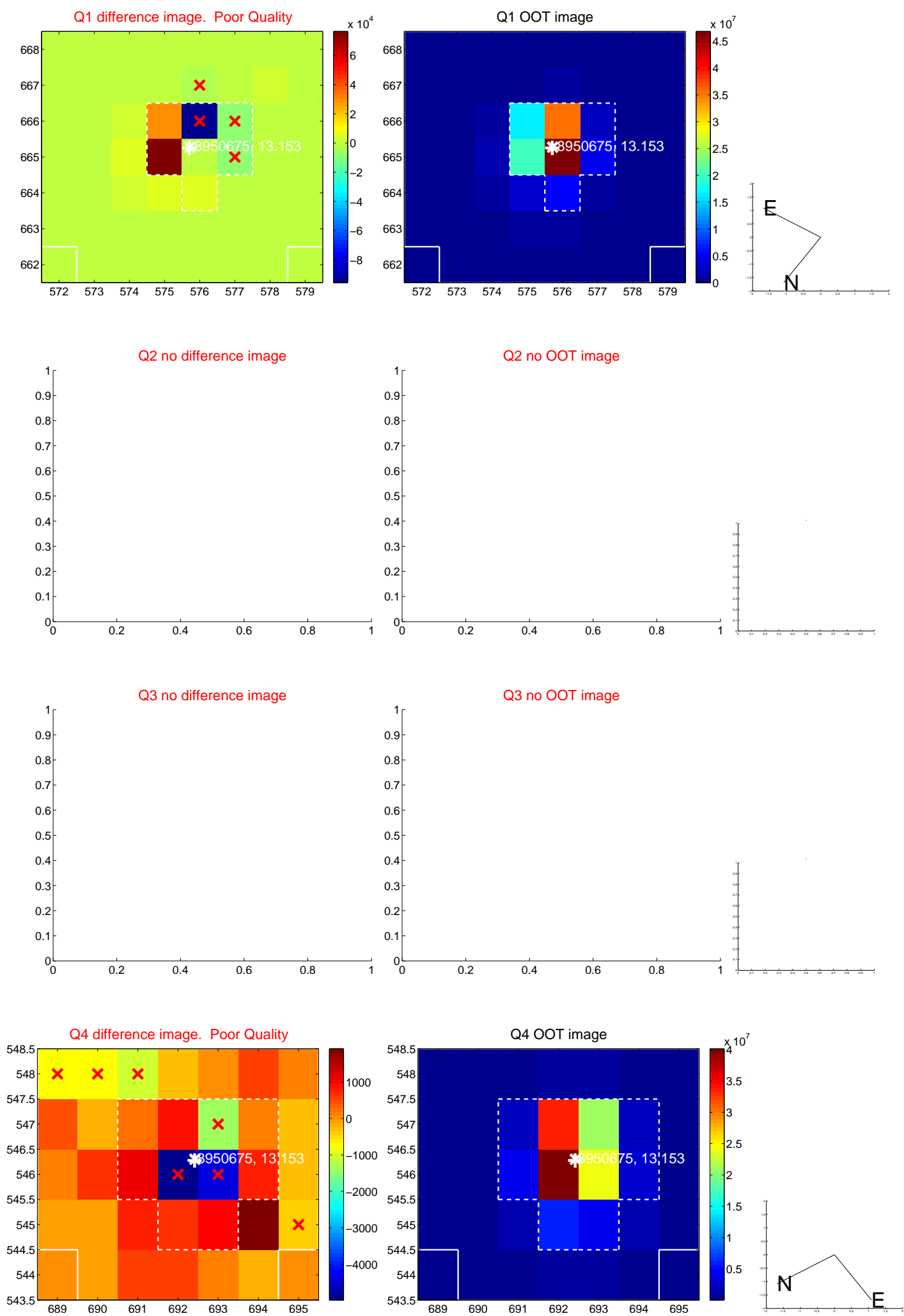
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.834 \pm 1.013$	1.81	$1.703 \pm 1.044$	$-0.682 \pm 0.794$
PRF-fit source offset from KIC position	$1.838 \pm 1.019$	1.80	$1.733 \pm 1.044$	$-0.612 \pm 0.794$
photometric centroid source offset	$1.16 \pm 0.61$	1.89	$0.58 \pm 0.65$	$1.00 \pm 0.60$



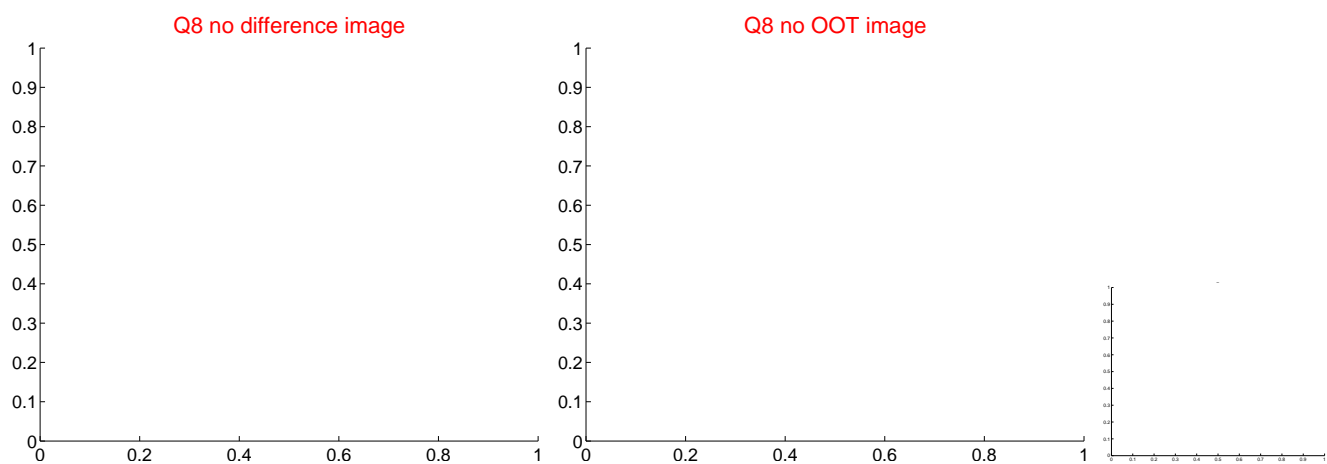
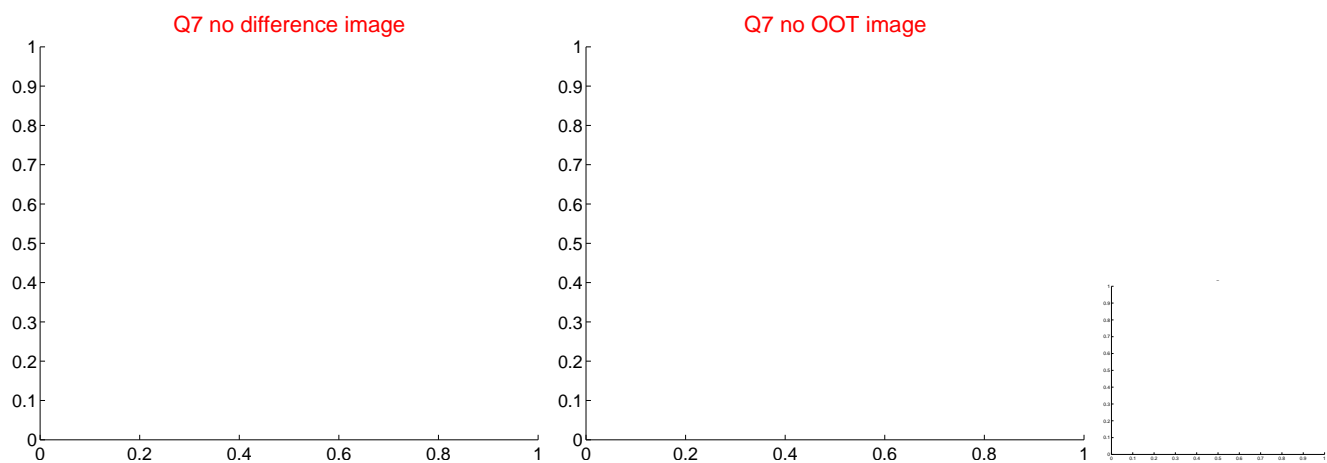
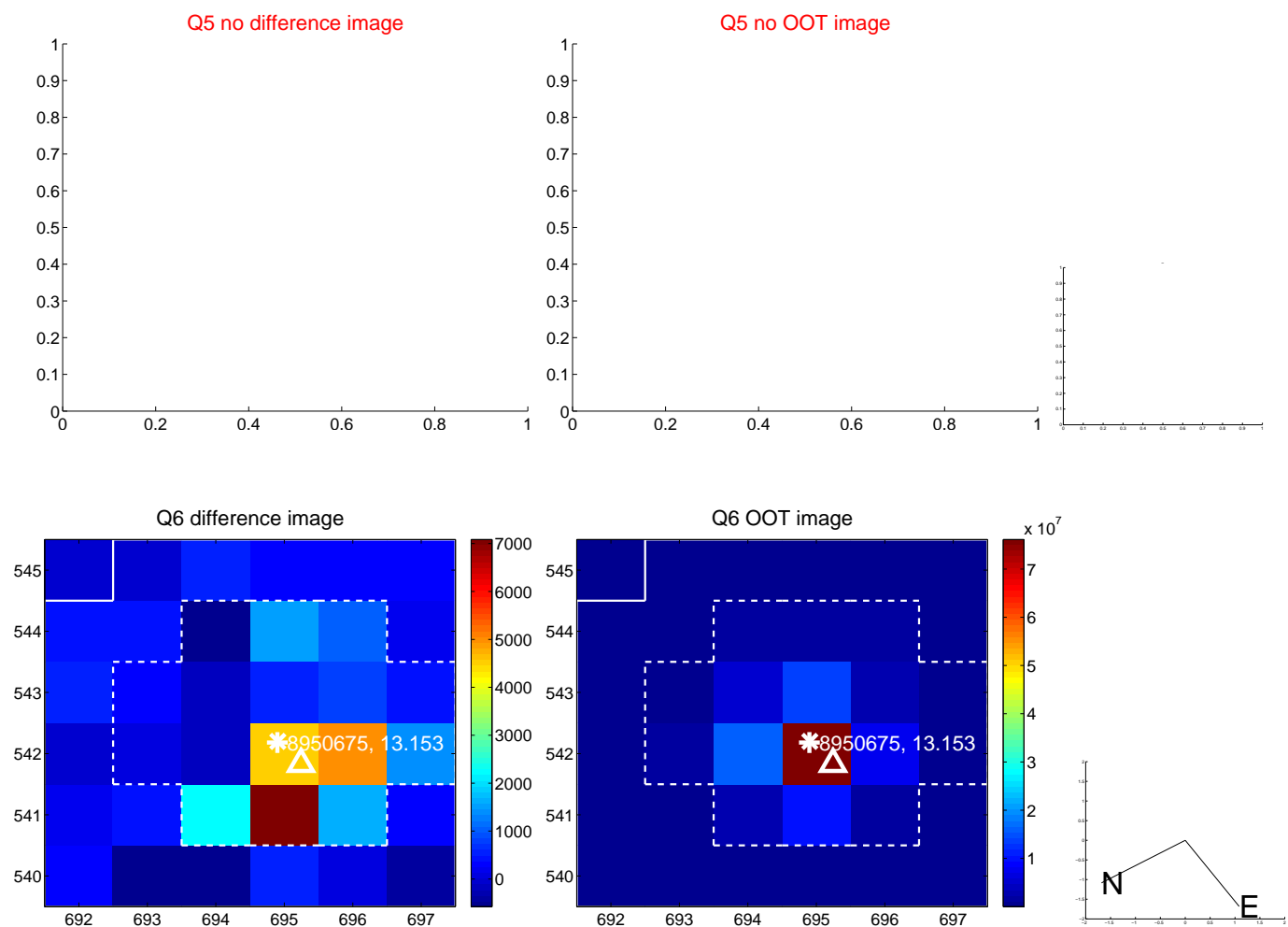
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



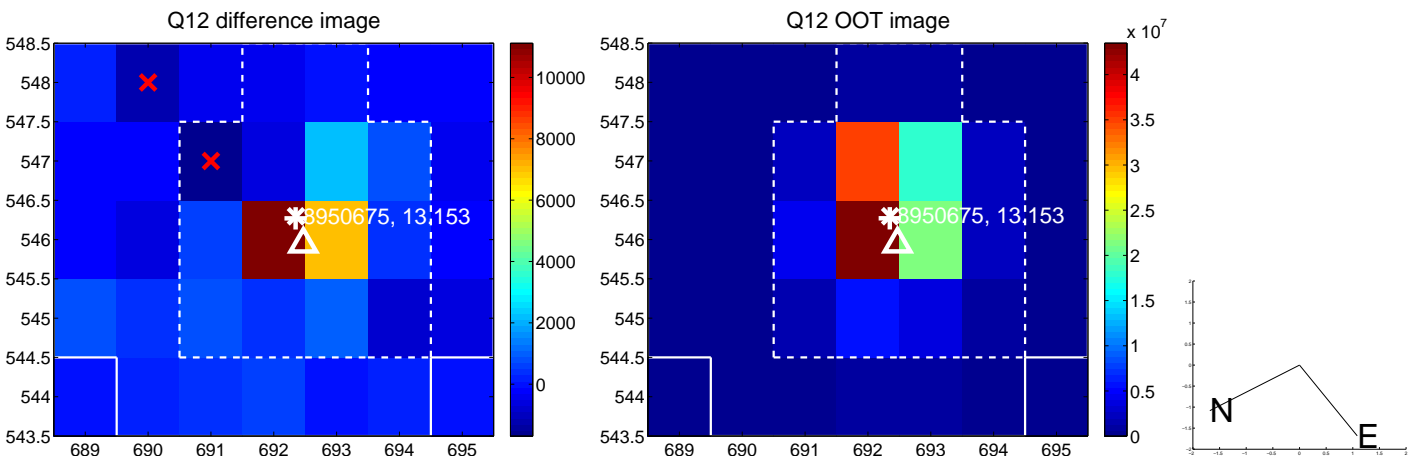
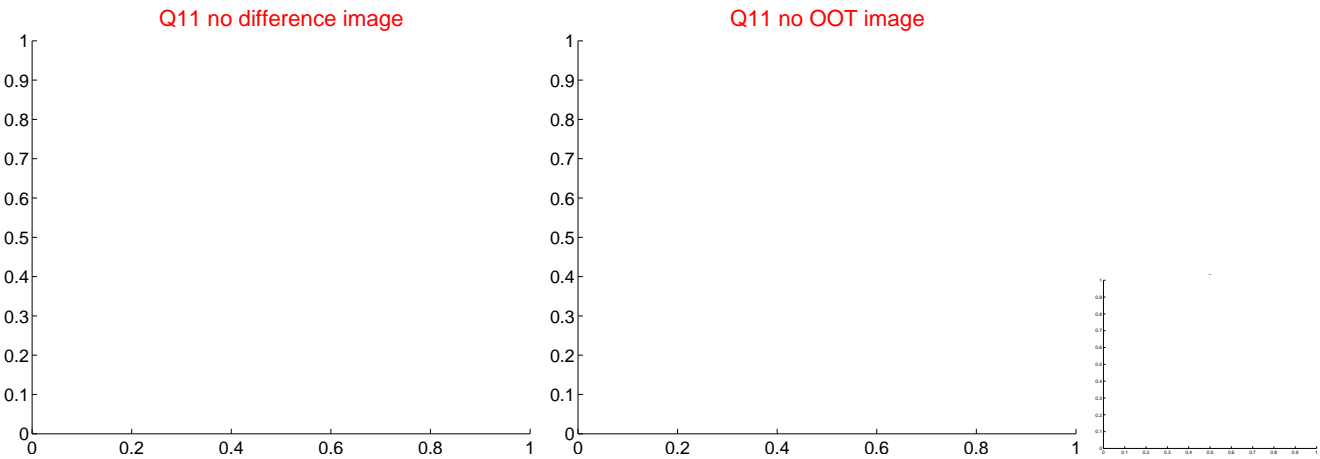
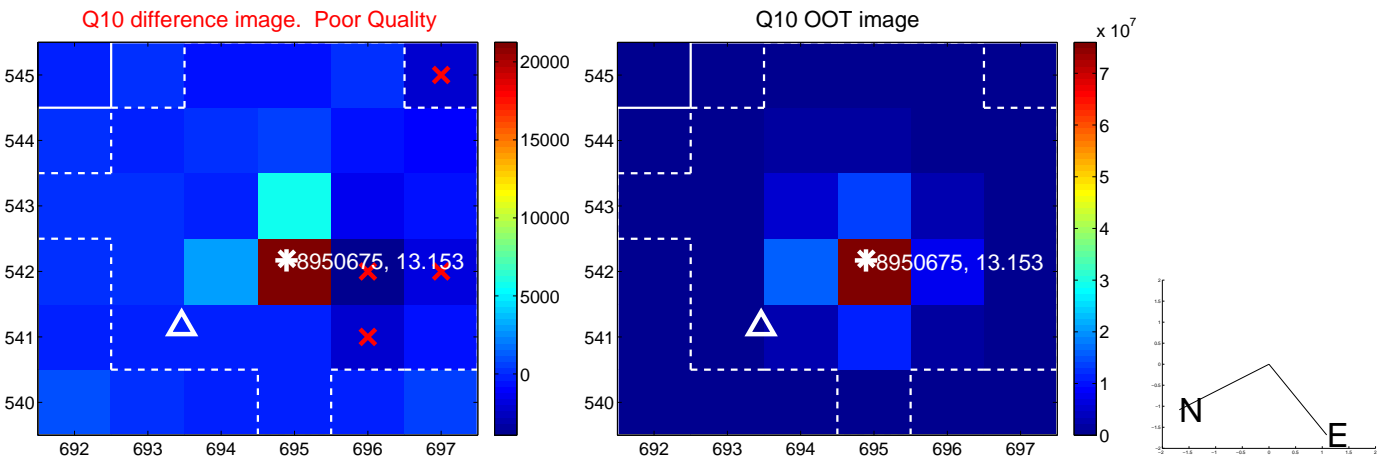
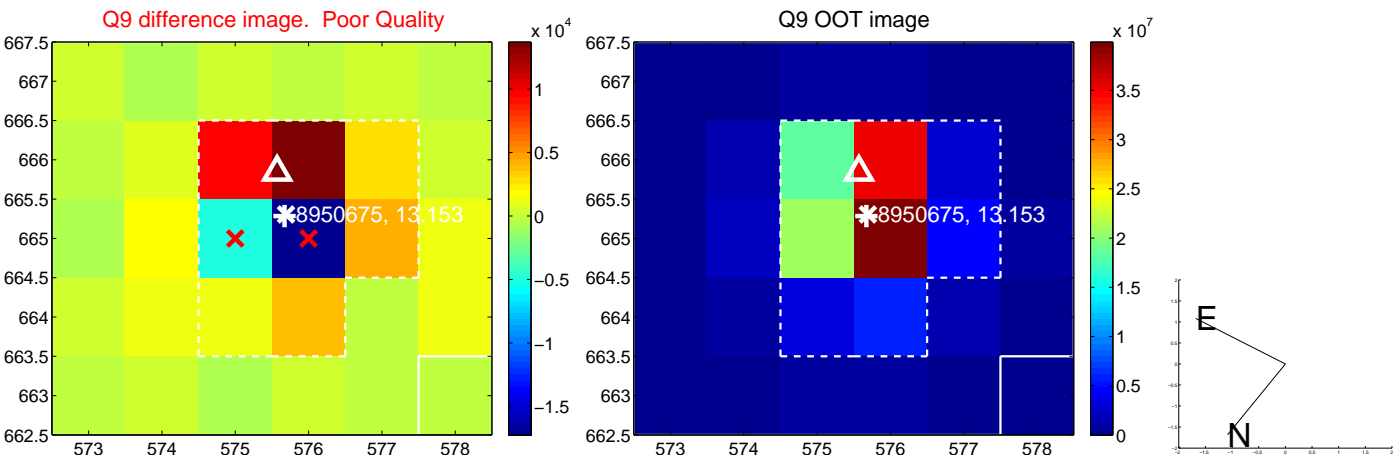
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



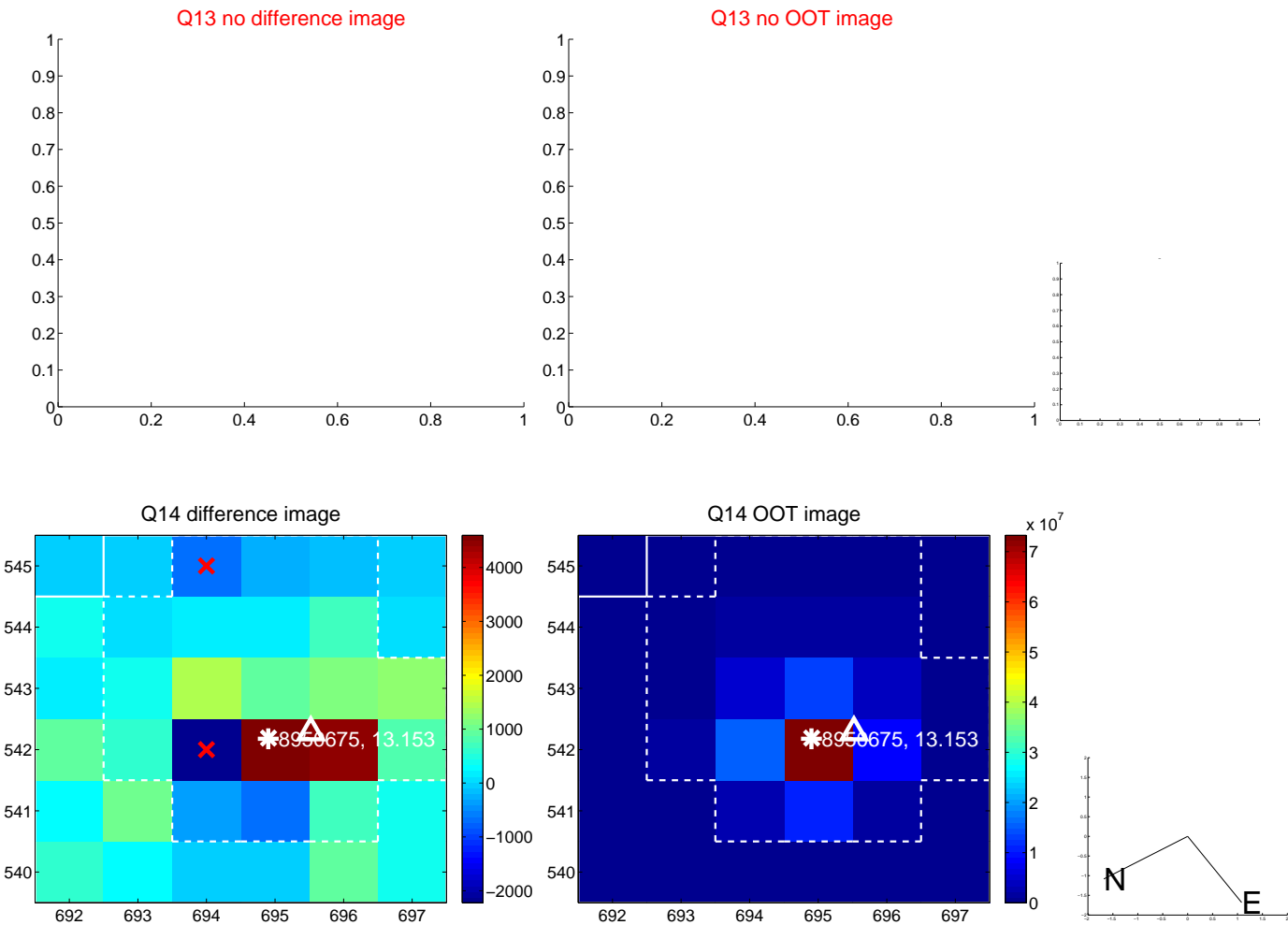
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



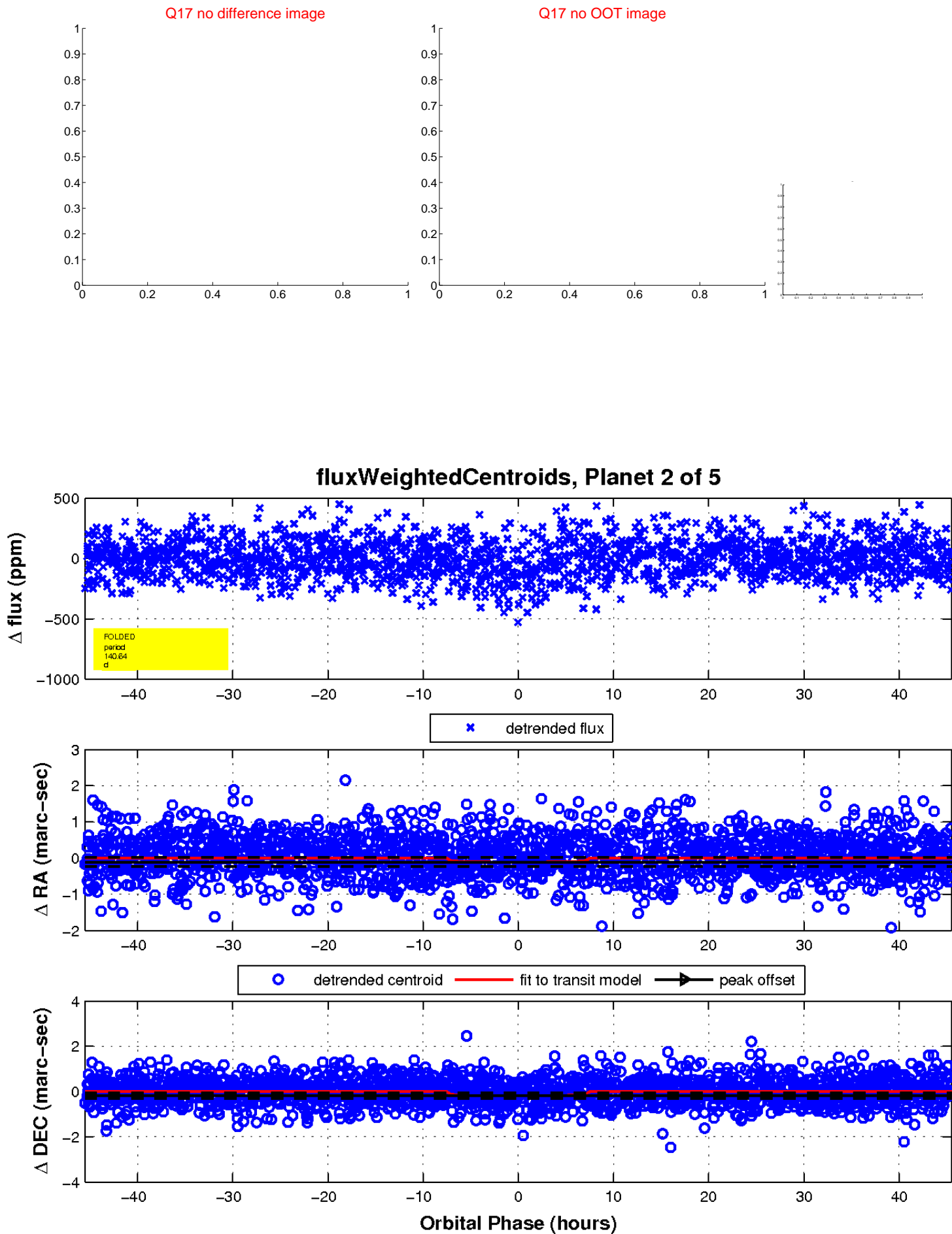
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

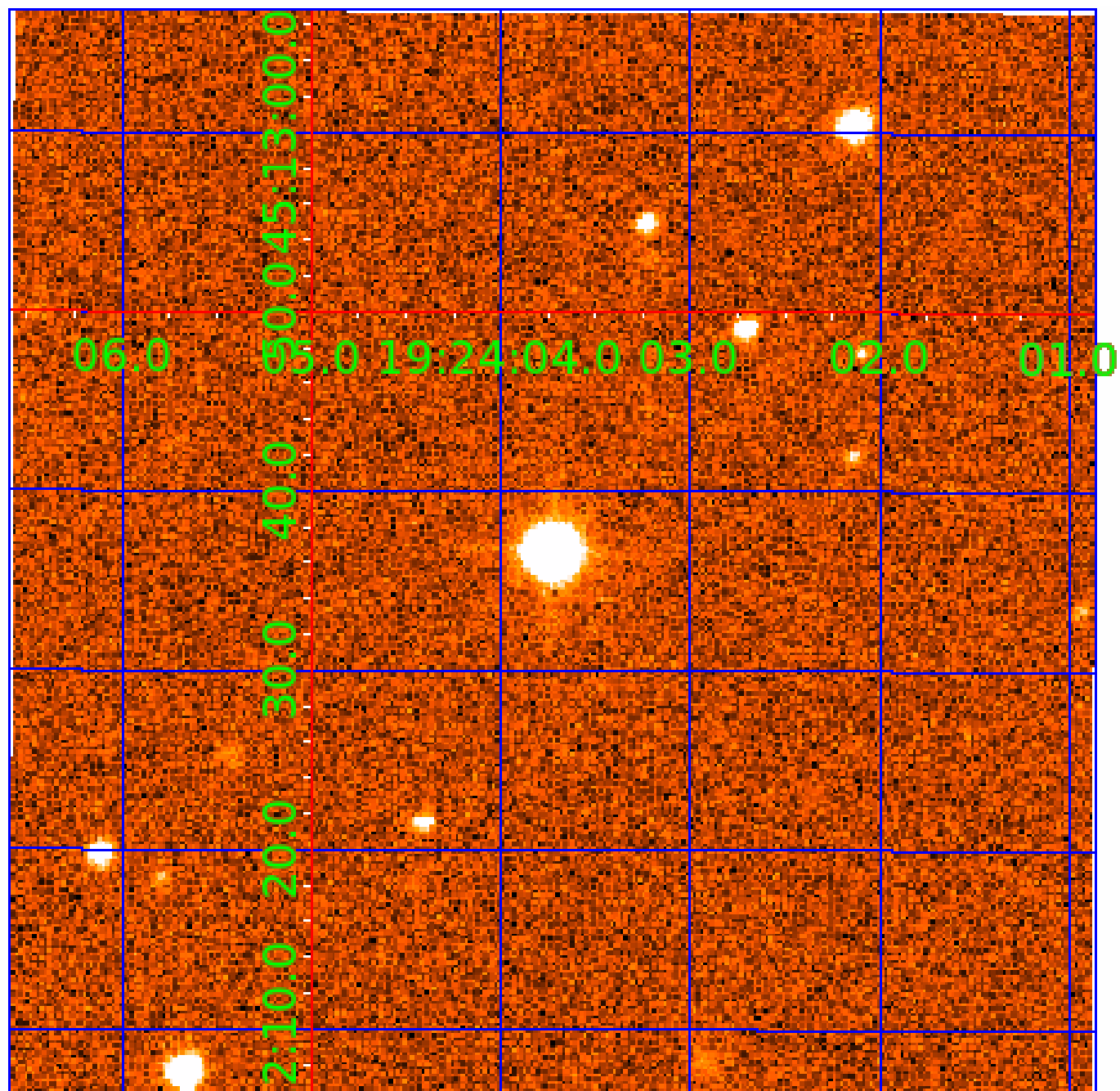


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 008950675

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008950675-01	OBS	No	1.712462	132.881956	12.4	6.790	7.9	4.4	2.94	6810	1.47	13951.26
008950675-02	OBS	No	140.643213	151.584969	198.1	15.179	10.1	8.0	2.94	6810	4.53	39.08
008950675-04	OBS	No	190.355524	234.716215	154.6	10.084	8.2	6.3	2.94	6810	3.95	26.10
008950675-05	OBS	No	109.750423	193.518535	222.9	2.329	7.4	7.6	2.94	6810	4.66	54.40

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008950675-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008950675-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
008950675-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV
008950675-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

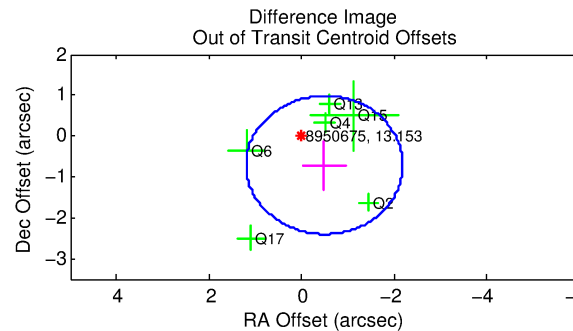
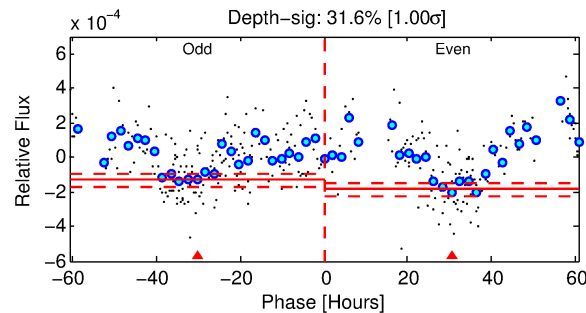
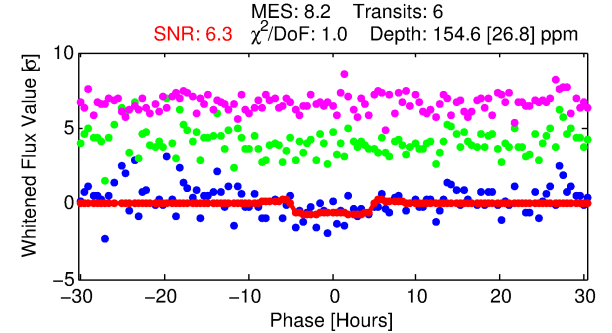
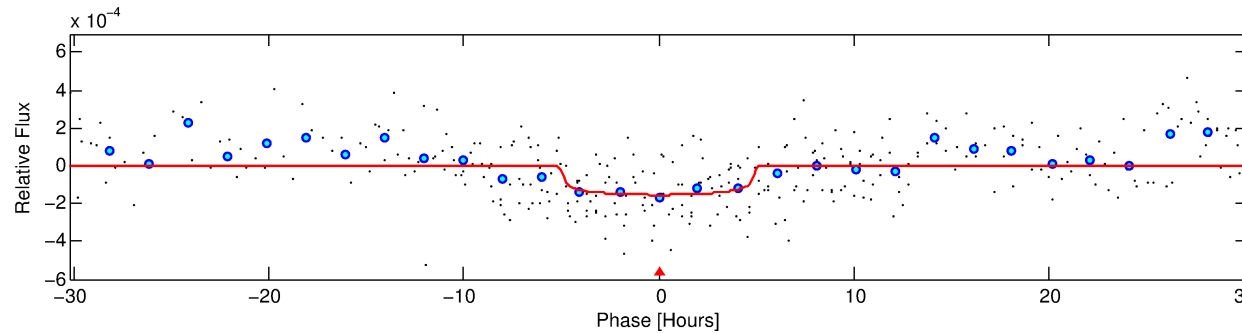
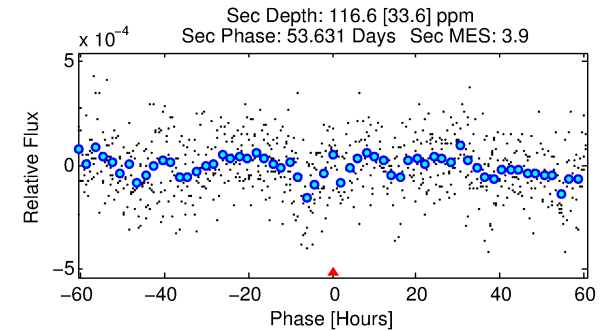
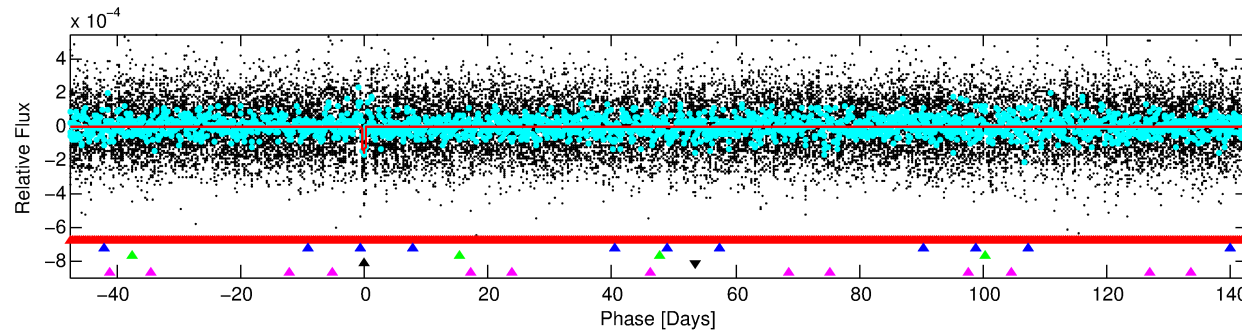
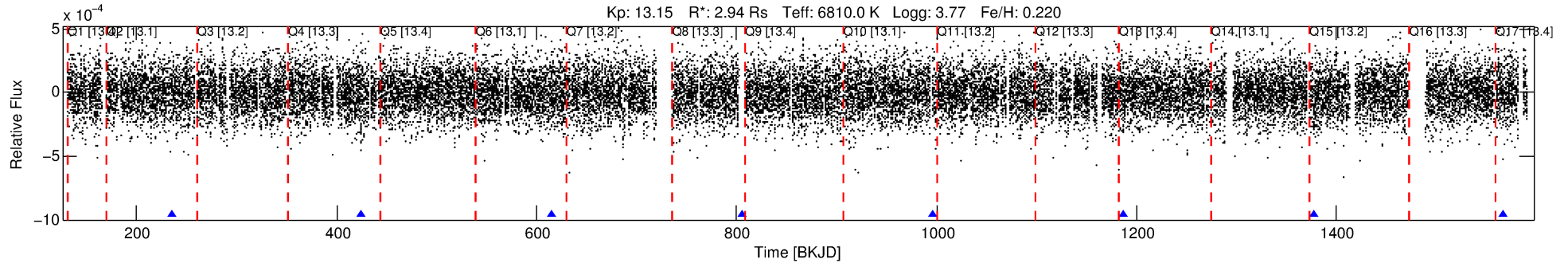
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008950675-04

No Significant Match Found

# DV One-Page Summary

KIC: 8950675 Candidate: 4 of 5 Period: 190.356 d



## DV Fit Results:

Period = 190.35552 [0.00389] d  
Epoch = 234.7162 [0.0172] BKJD  
Rp/R\* = 0.0123 [0.0050]  
a/R\* = 100.30 [225.02]  
b = 0.74 [1.41]  
Seff = 26.10 [19.13]  
Teff = 576 [106] K  
Rp = 3.95 [2.49] Re  
a = 0.7999 [0.3616] AU  
Ag = 2624.19 [2948.18] [0.89σ]  
Teffp = 6378 [1407] K [4.11σ]

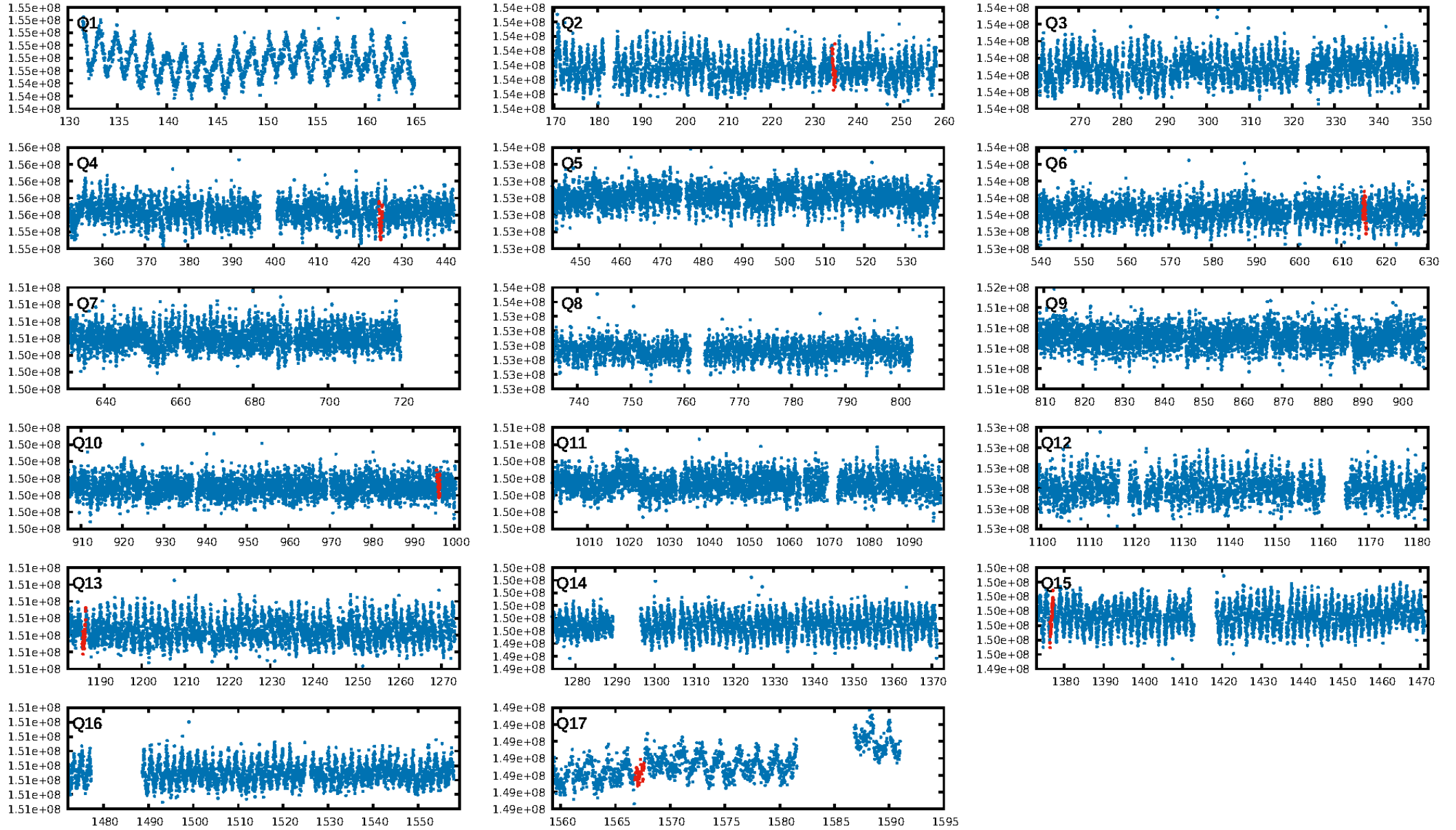
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [65.47σ]  
LongPeriod-sig: 100.0% [273.60σ]  
ModelChiSquare2-sig: 50.9%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 1.74e-10**  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 1.232  
Centroid-sig: 68.3%  
Centroid-so: 0.701 arcsec [0.63σ]  
OotOffset-rm: 0.866 arcsec [1.53σ]  
KicOffset-rm: 0.783 arcsec [1.40σ]  
OotOffset-st: 2/1/1/2 [6]  
KicOffset-st: 2/1/1/2 [6]  
DiffImageQuality-fgm: 0.50 [3/6]  
DiffImageOverlap-fno: 0.00 [0/7]

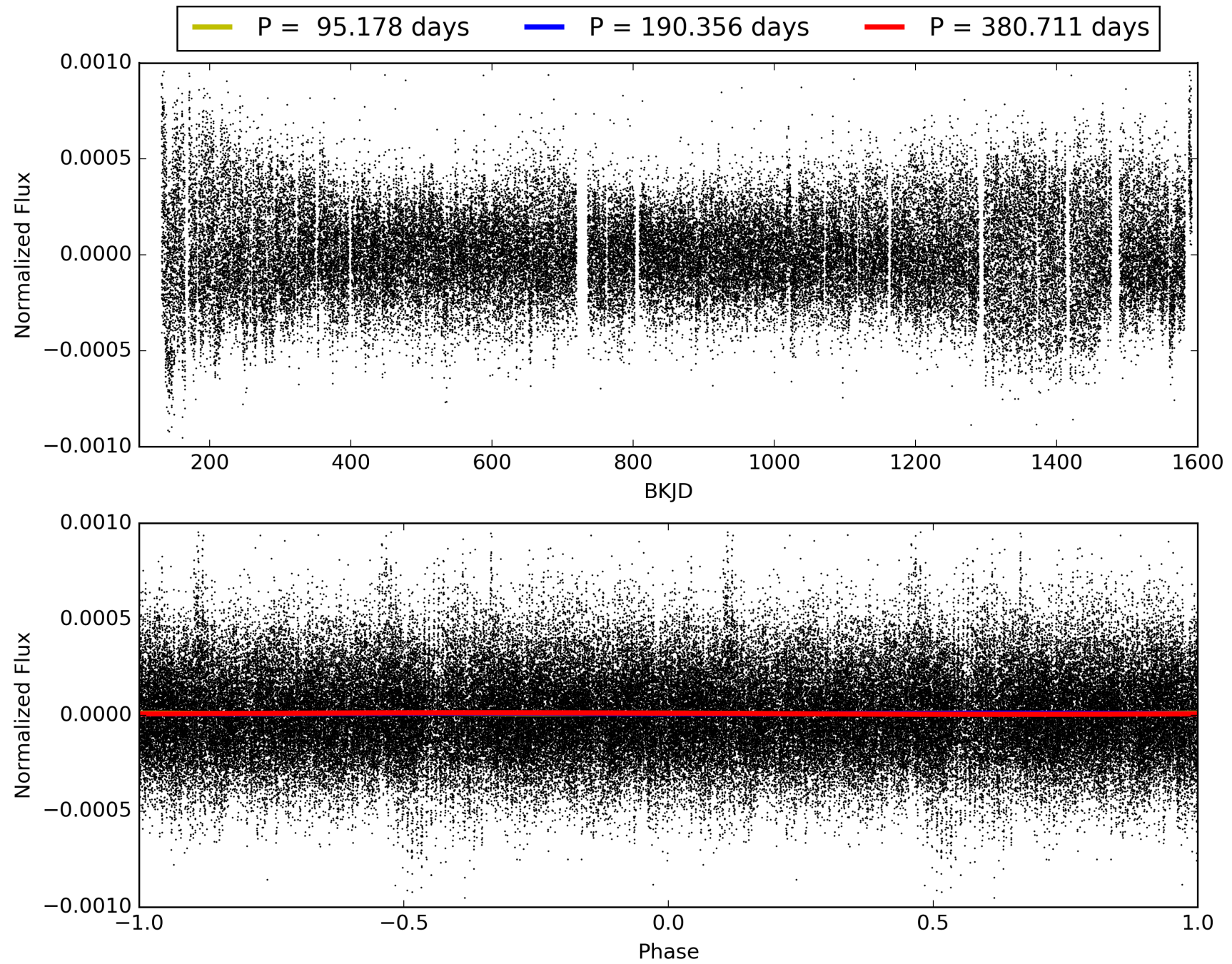
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:40:18 Z

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

# TCE 008950675-04, PDC Light Curves

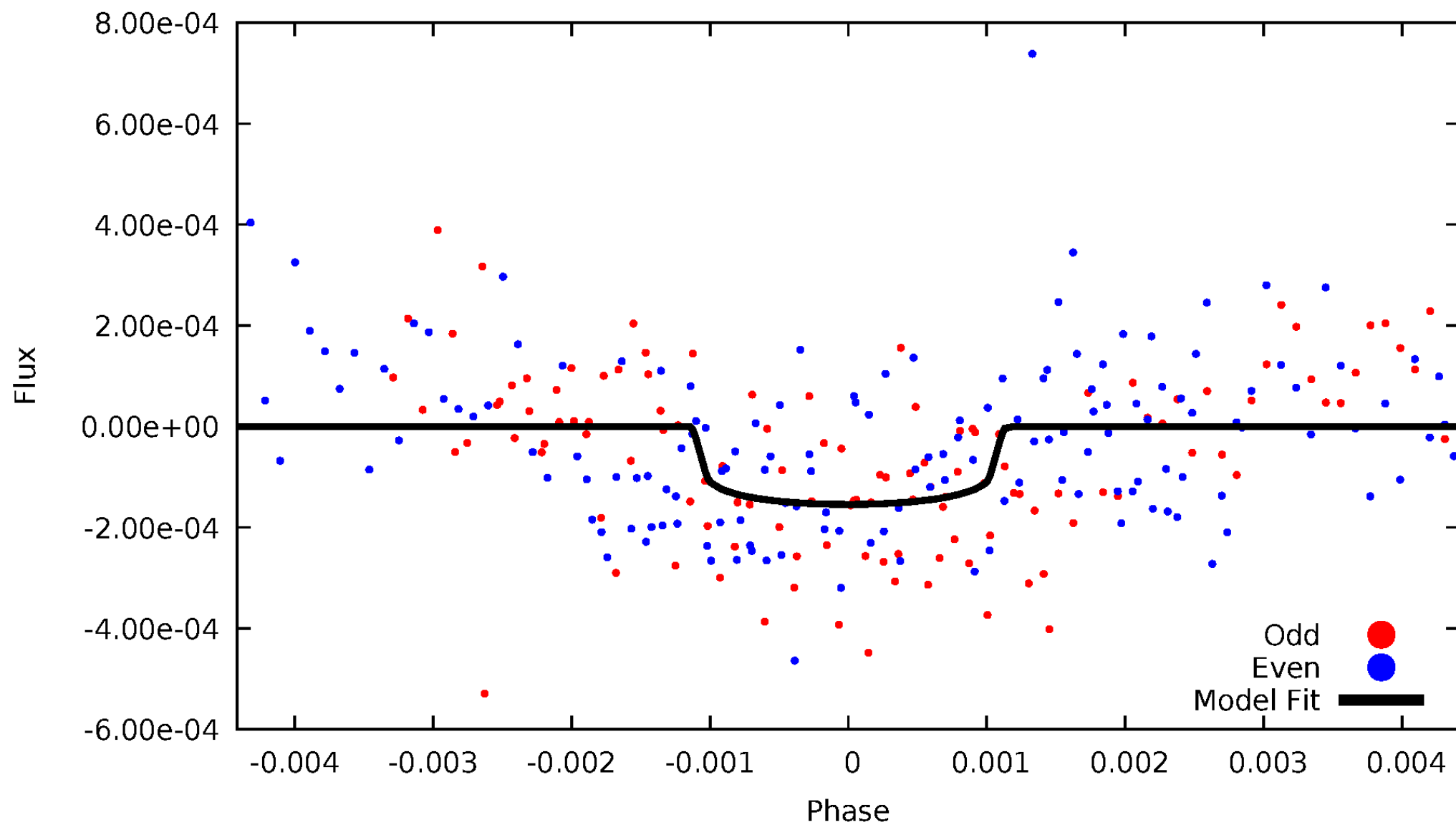


TCE 008950675-04



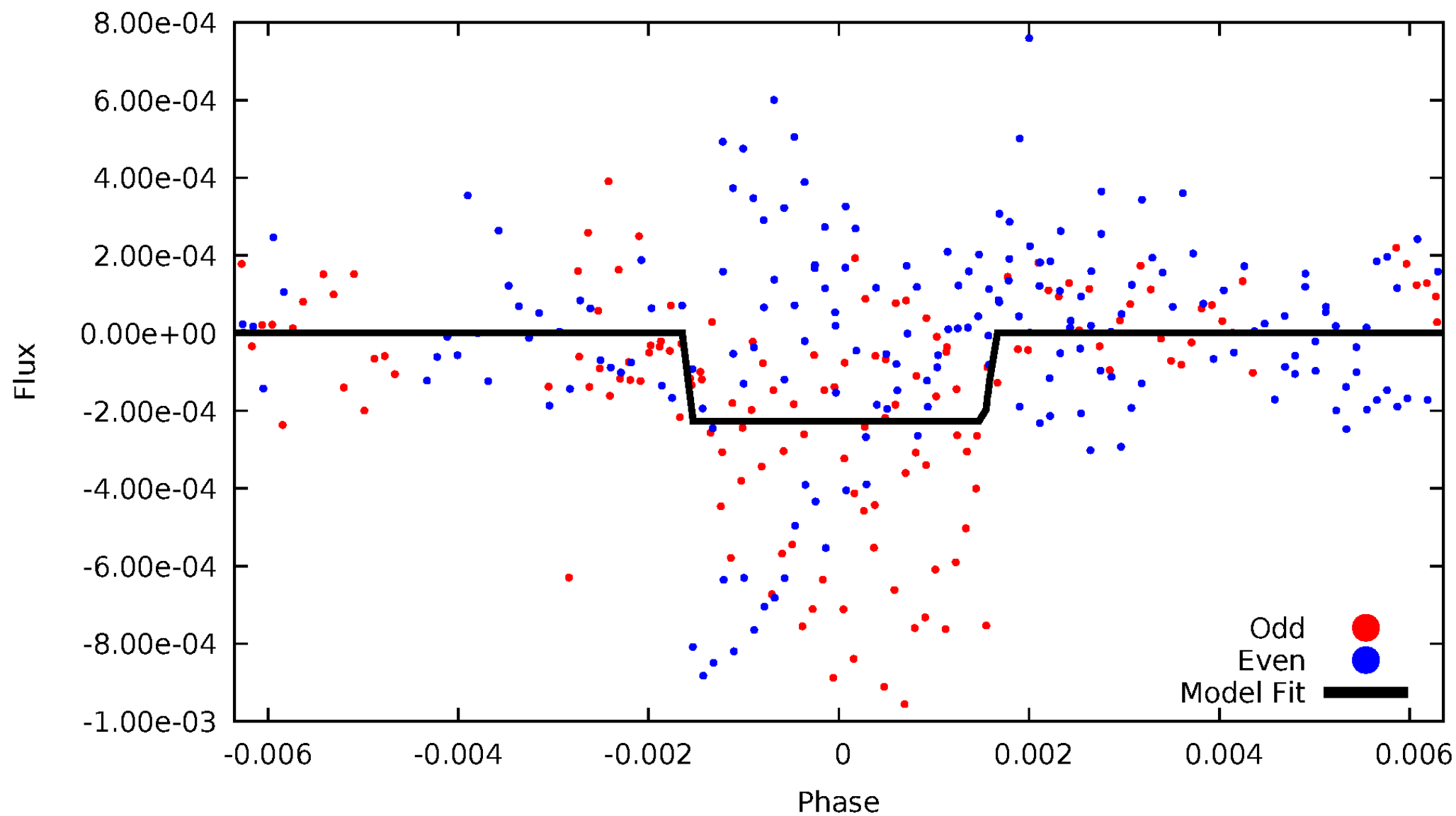
# DV Odd/Even

TCE 008950675-04



# ALT Odd/Even

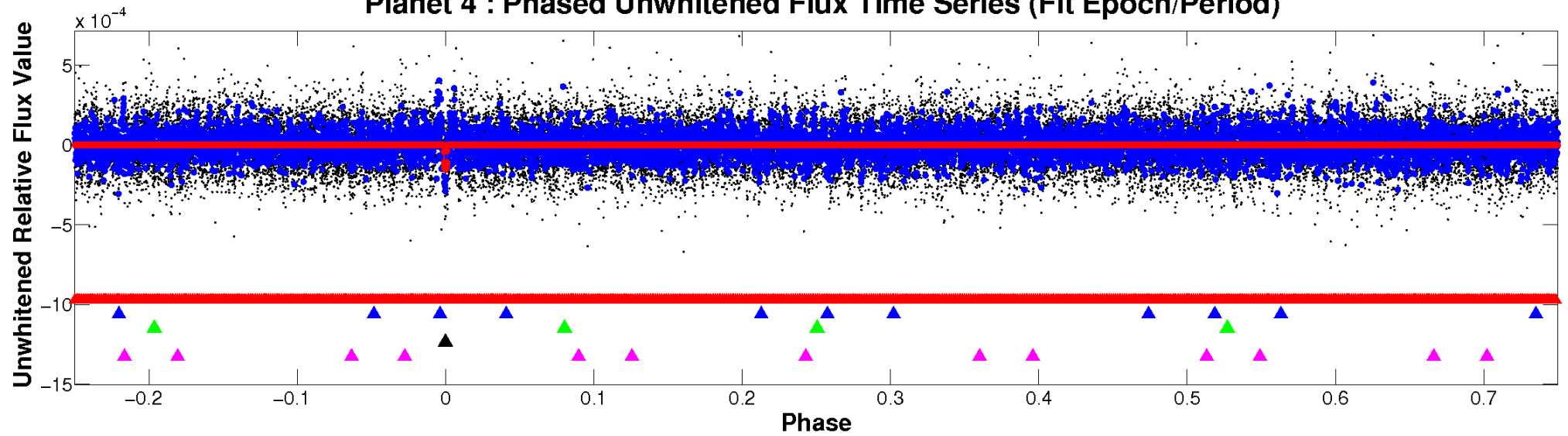
TCE 008950675-04



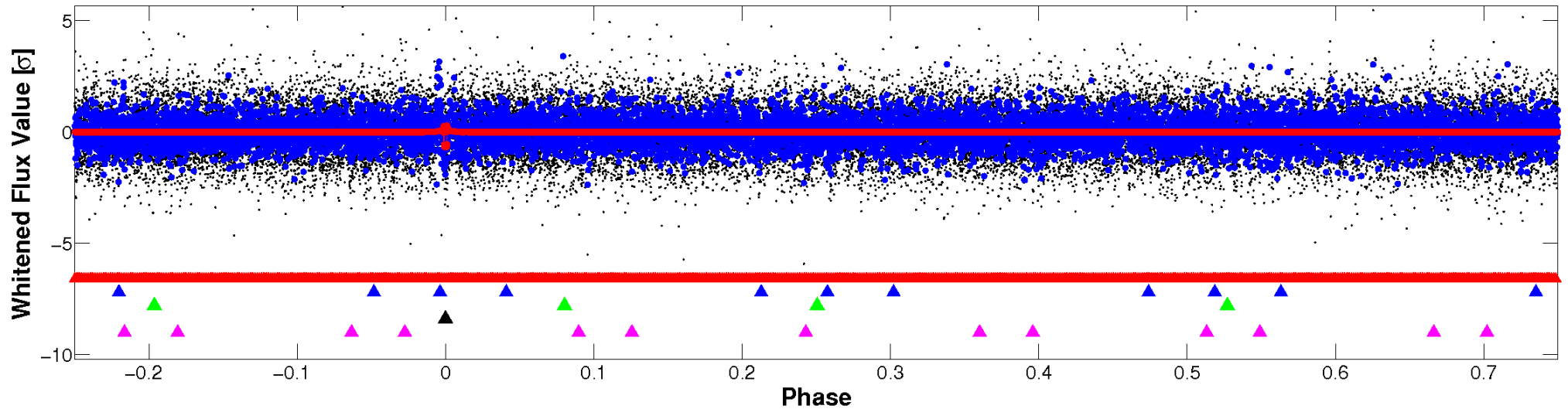


# Non-Whitened Vs. Whitened Light Curve

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

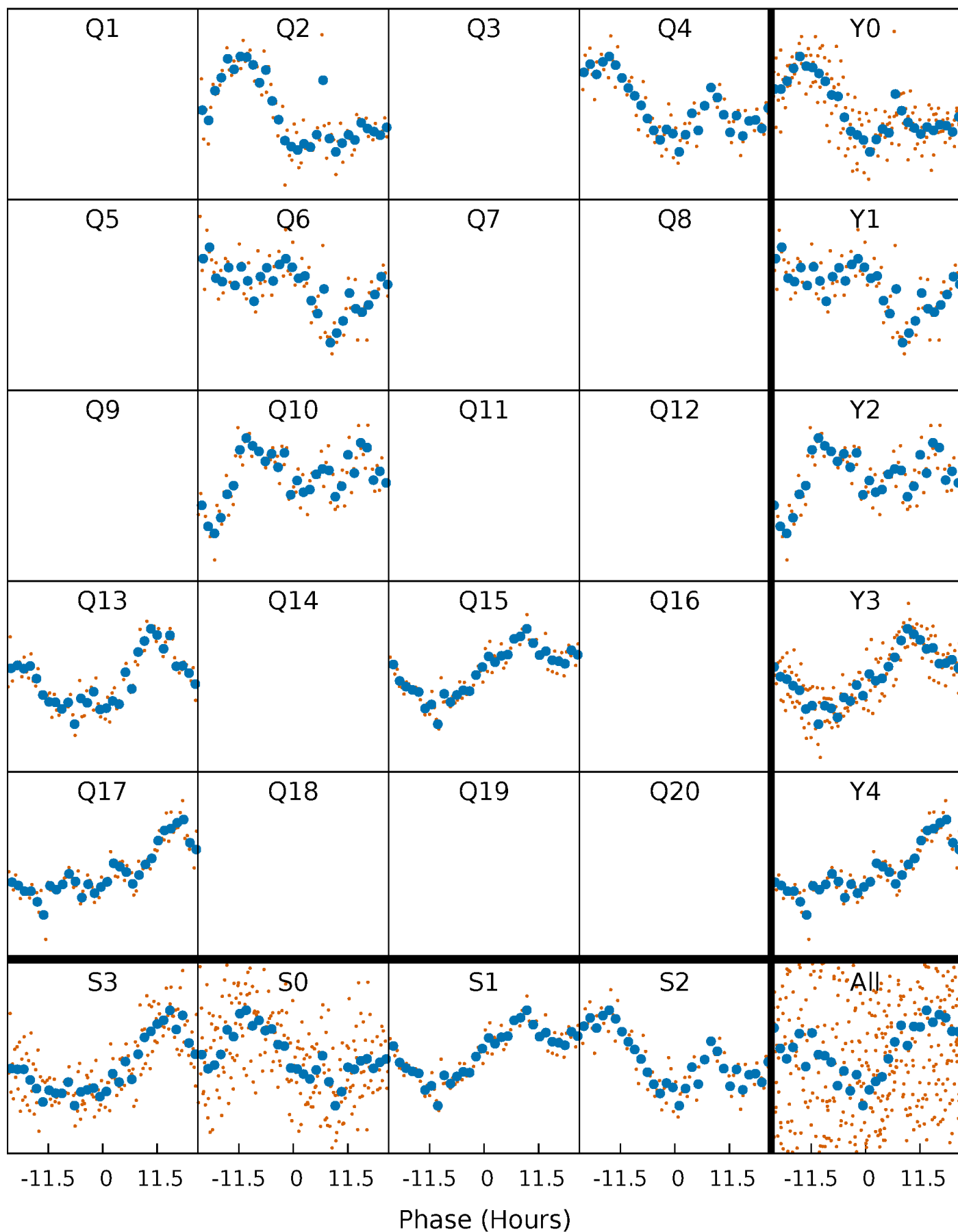


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



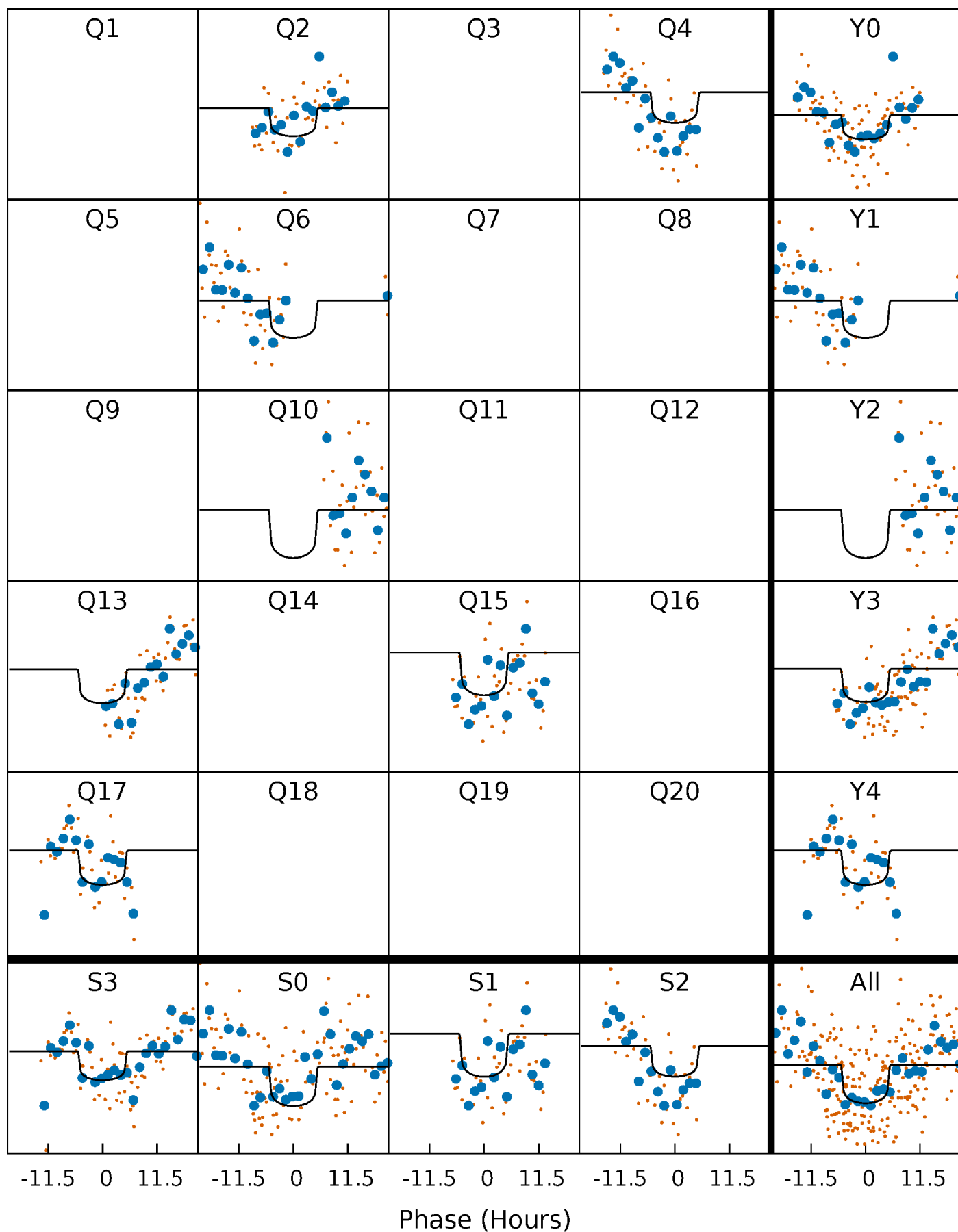
# PDC Quarter-Phased Transit Curves

TCE 008950675-04     $P=190.355524$  Days     $T_0=234.716215$  (BKJD)



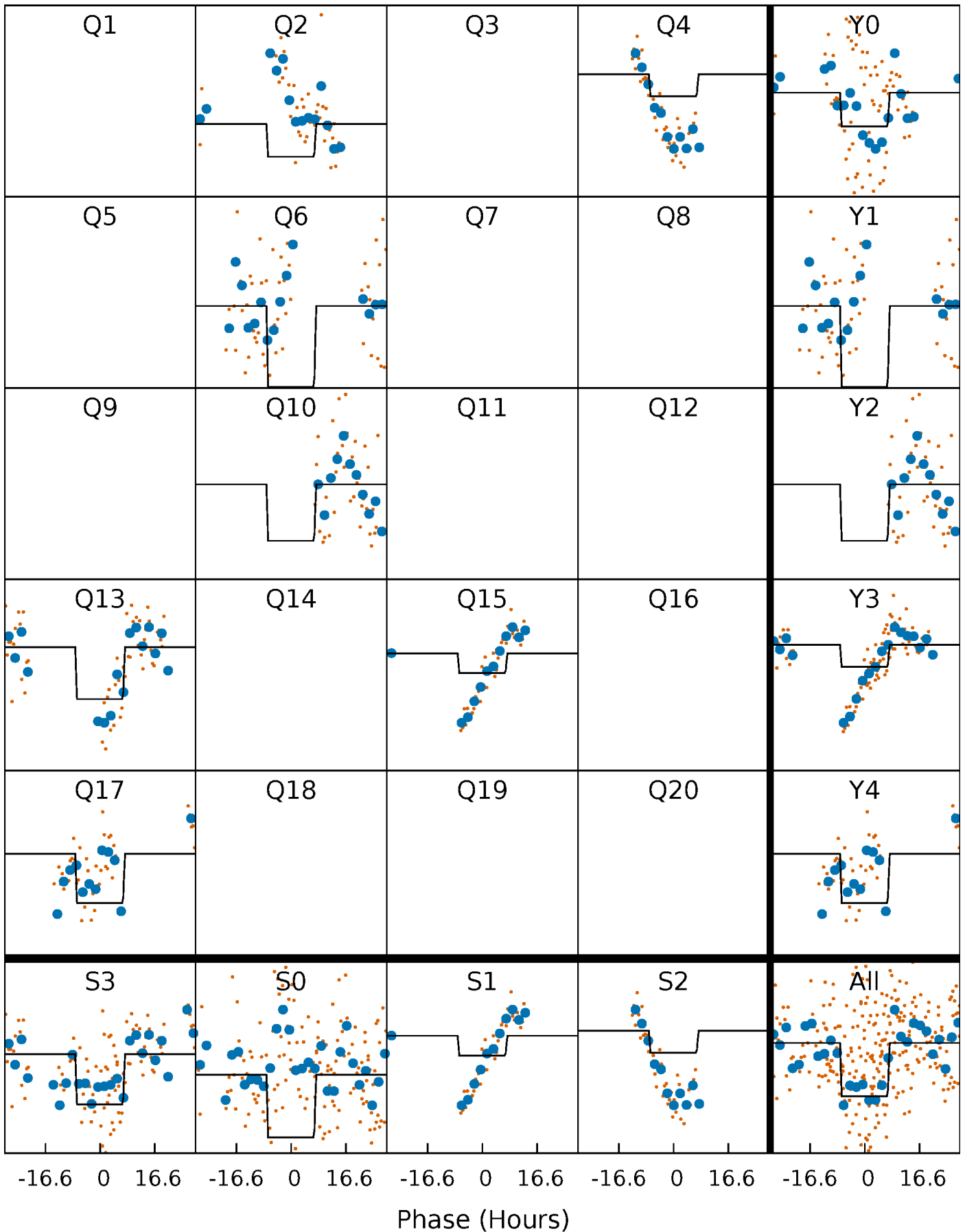
# DV Quarter-Phased Transit Curves

TCE 008950675-04     $P=190.355524$  Days     $T_0=234.716215$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

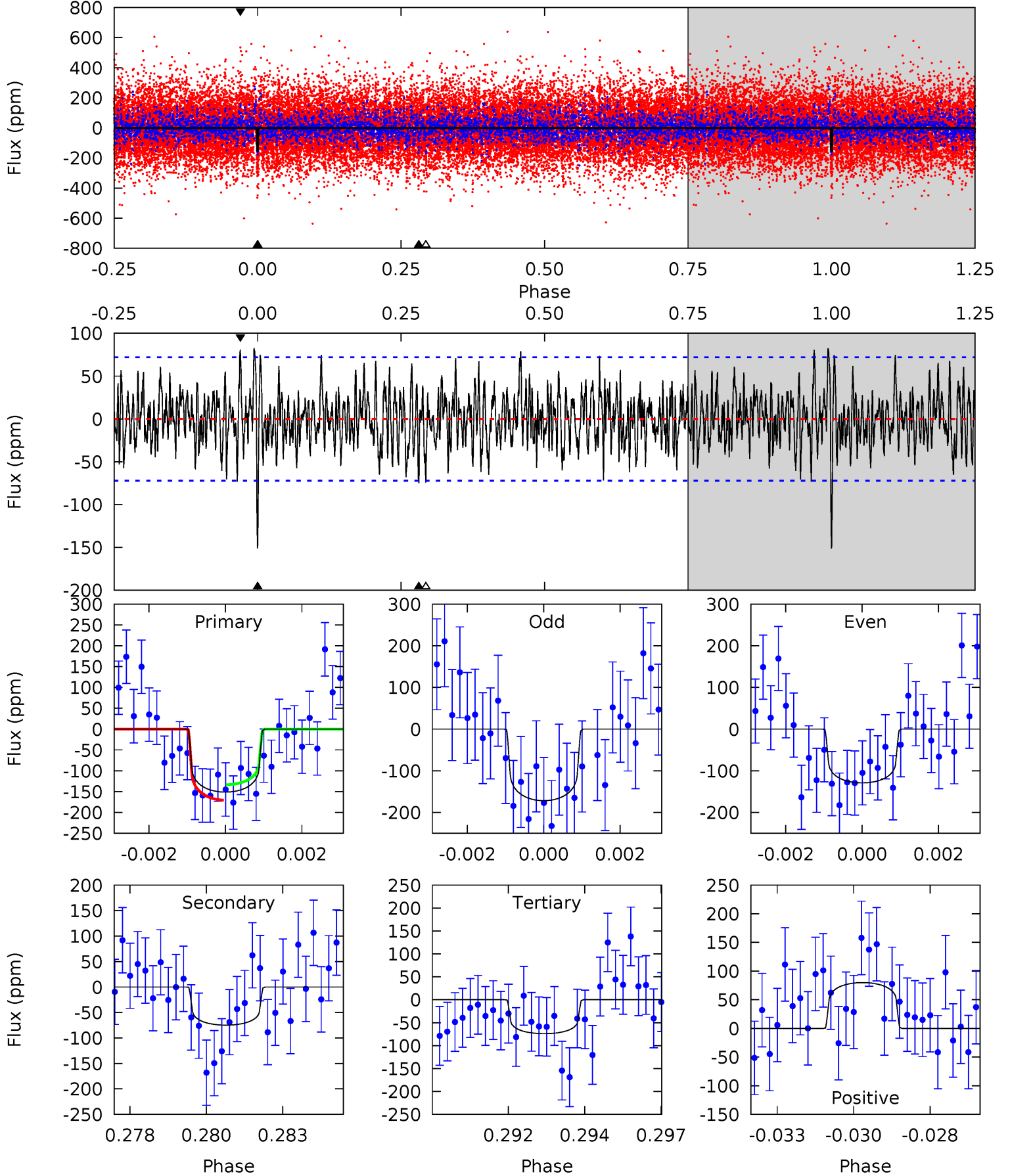
TCE 008950675-04 P=190.379479 Days  $T_0=234.588513$  (BKJD)



# DV Model-Shift Uniqueness Test

008950675-04, P = 190.355524 Days, E = 44.360691 Days

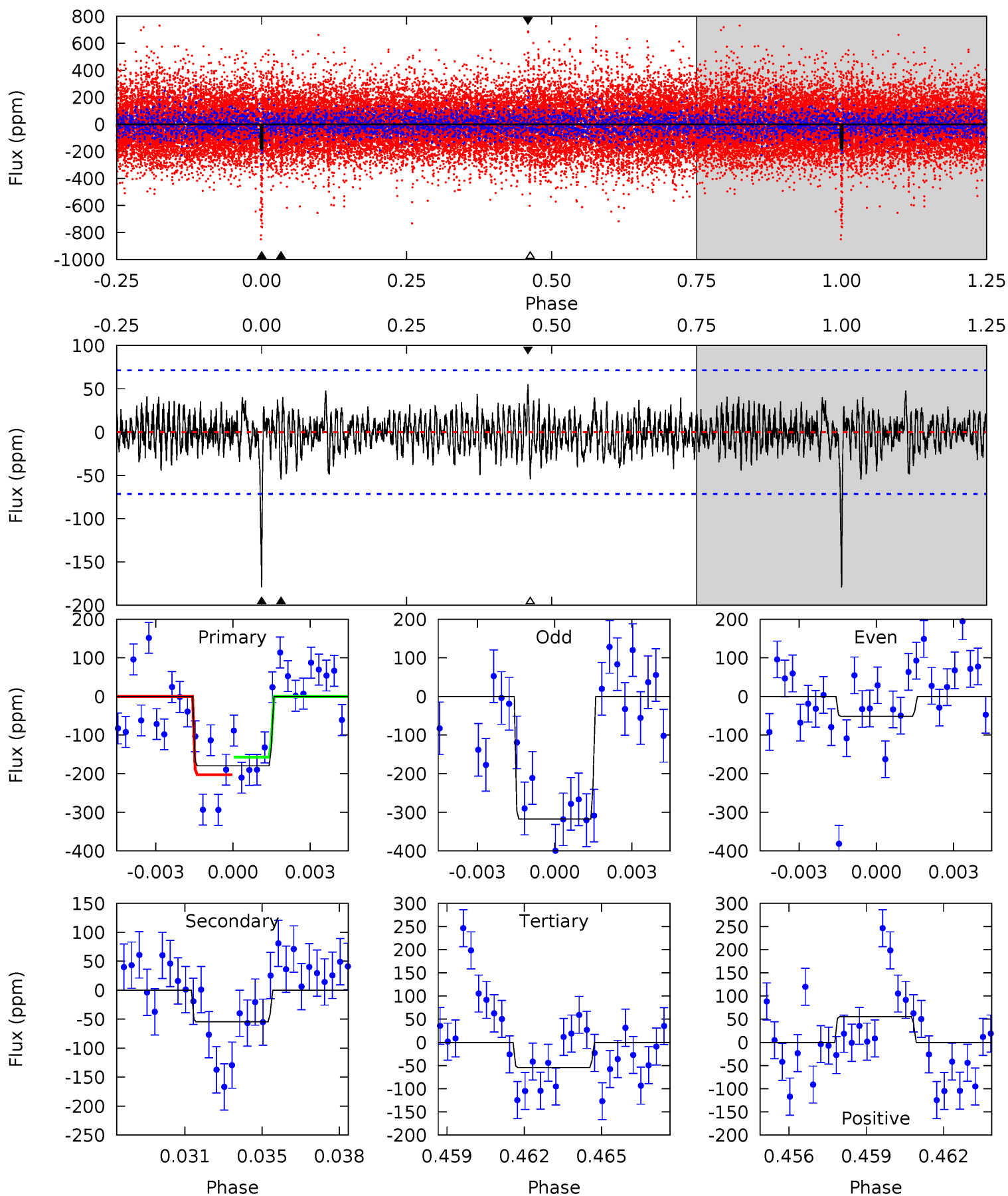
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.1	5.50	5.44	5.88	5.30	3.04	1.93	5.68	5.24	0.06	-0.38	1.57	1.08	0.35	1.37



# Alt Model-Shift Uniqueness Test

008950675-04, P = 190.379479 Days, E = 44.209034 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	4.02	4.00	4.07	5.24	2.95	1.21	9.20	9.13	0.02	-0.05	10.1	1.05	0.24	1.66





### Stellar Parameters For KIC 008950675

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6810^{+185}_{-278}$	$3.775^{+0.416}_{-0.104}$	$0.220^{+0.200}_{-0.300}$	$2.944^{+0.565}_{-1.413}$	$1.884^{+0.172}_{-0.516}$	$0.104^{+0.411}_{-0.041}$
	+3%/-4%	+11%/-3%	+91%/-136%	+19%/-48%	+9%/-27%	+395%/-40%
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 008950675-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-75 \pm 14$	$3.50^{+1.90}_{-1.53}$	$783^{+59}_{-91}$	$5636^{+1831}_{-848}$	$2018^{+4213}_{-1152}$
Alt.	$-55 \pm 14$	$4.38^{+1.89}_{-1.72}$	$780^{+61}_{-85}$	$4806^{+1104}_{-572}$	$956^{+1600}_{-520}$

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

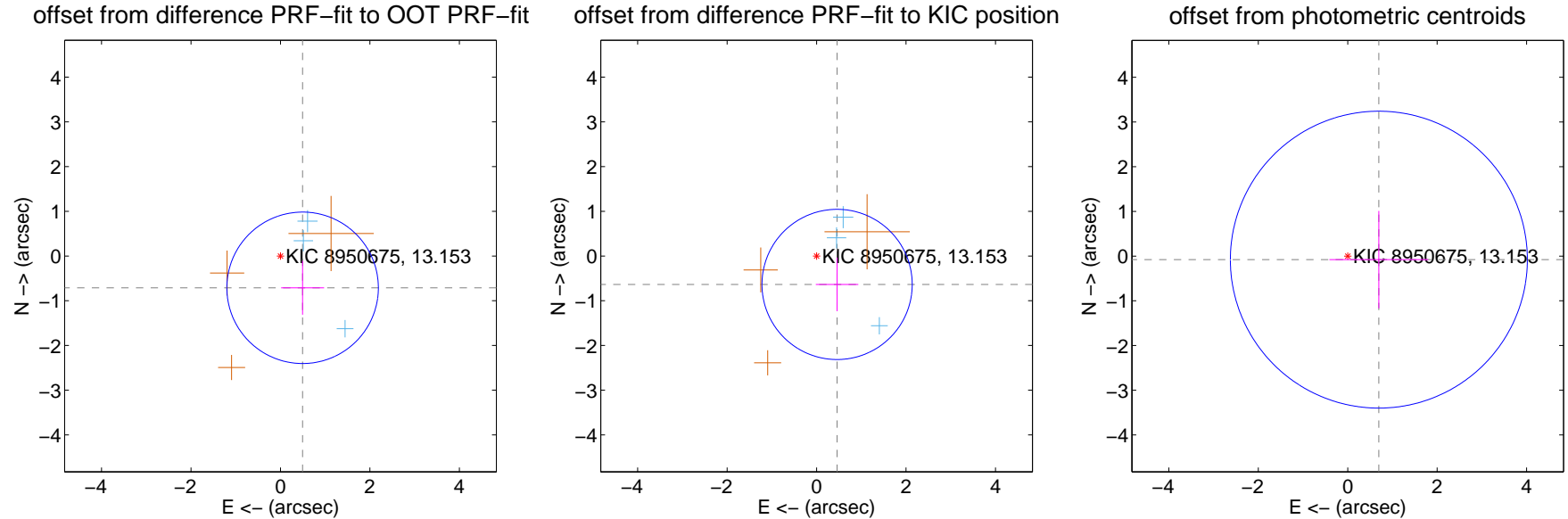
## DV Centroid Data

Supplemental centroid analysis for 008950675-04. Kepler magnitude: 13.15. Transit SNR 6.28

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.866 \pm 0.565$	1.53	$-0.495 \pm 0.480$	$-0.711 \pm 0.601$
PRF-fit source offset from KIC position	$0.783 \pm 0.560$	1.40	$-0.459 \pm 0.475$	$-0.635 \pm 0.599$
photometric centroid source offset	$0.70 \pm 1.11$	0.63	$-0.70 \pm 1.11$	$-0.08 \pm 1.09$



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.

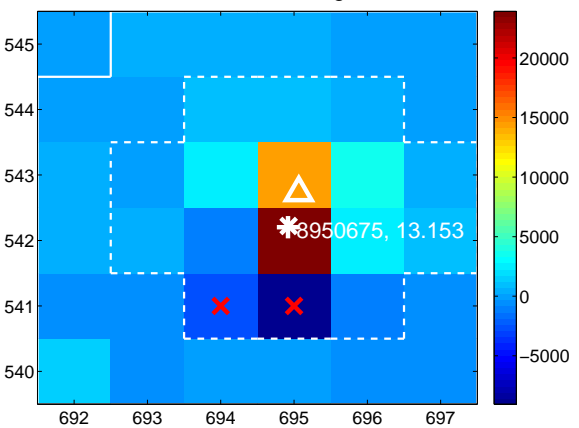
Q1 no difference image



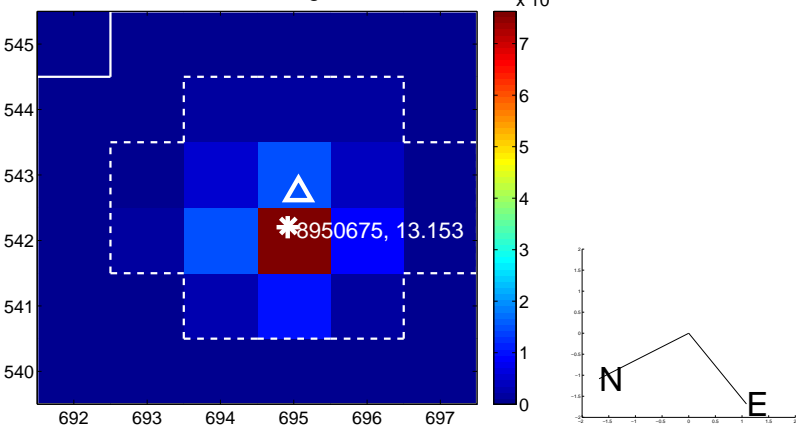
Q1 no OOT image



Q2 difference image



Q2 OOT image



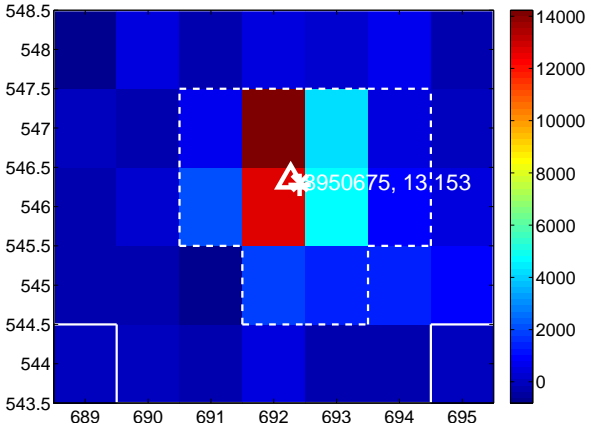
Q3 no difference image



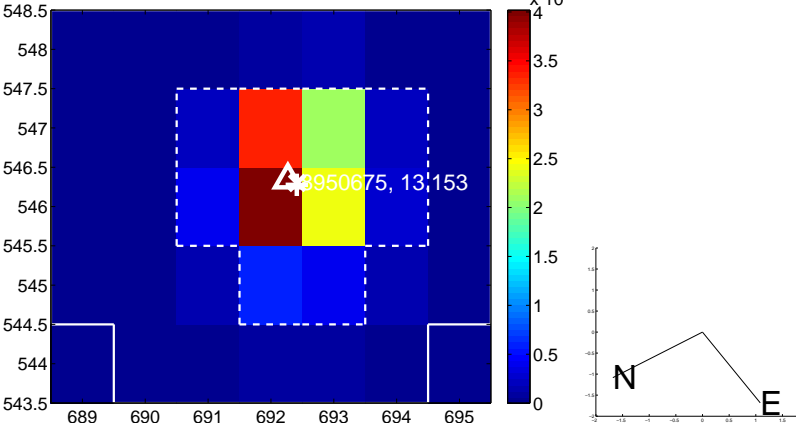
Q3 no OOT image



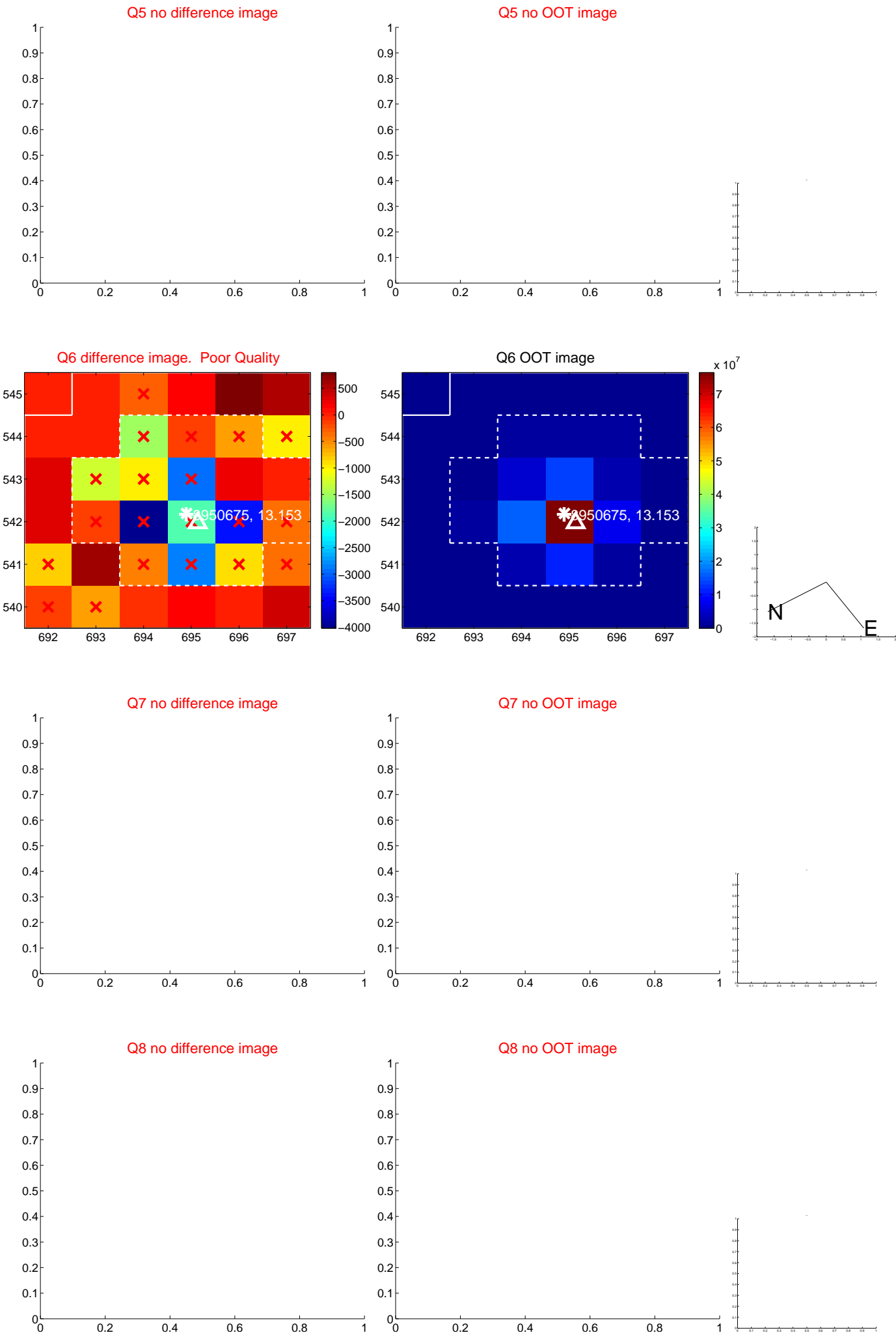
Q4 difference image



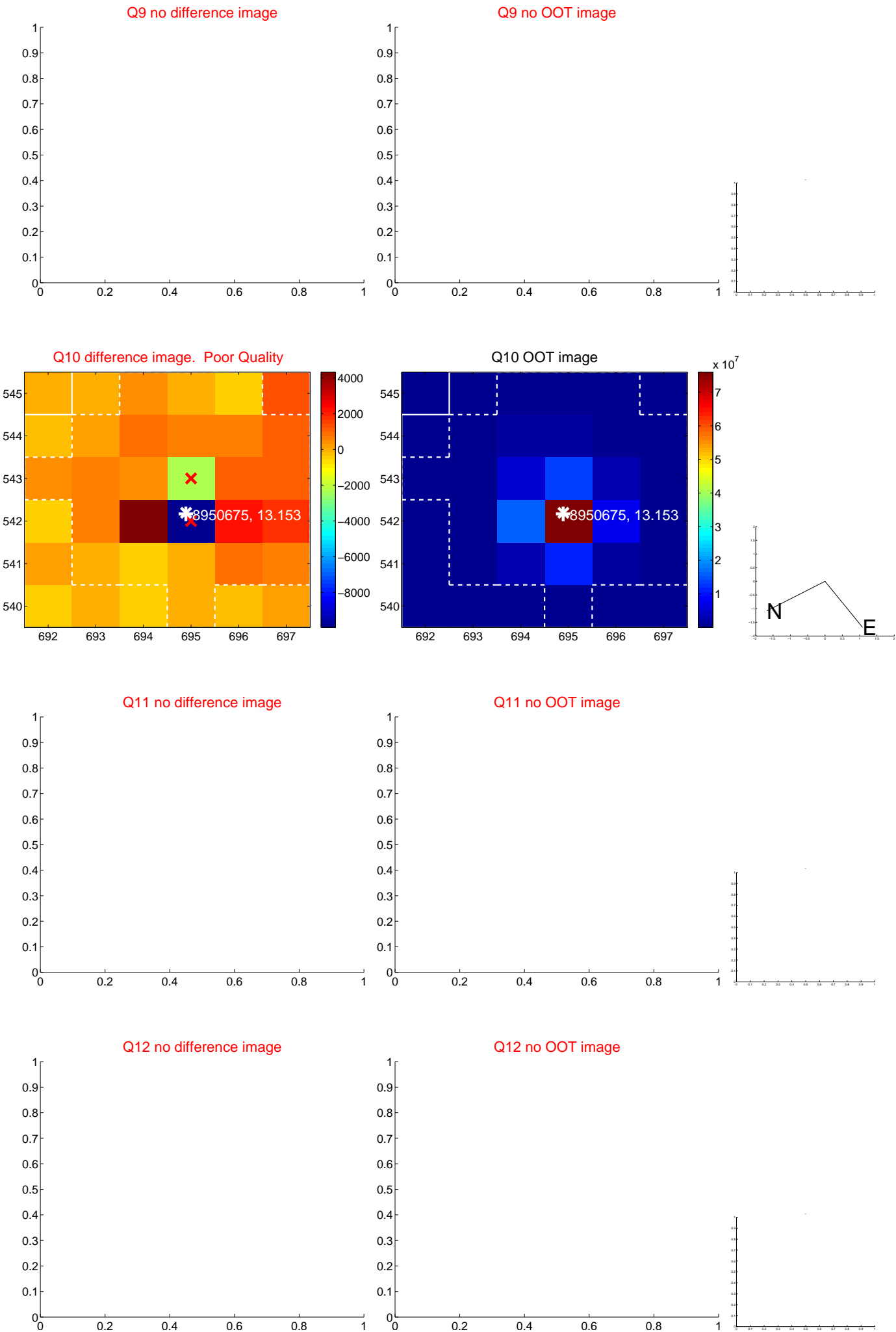
Q4 OOT image



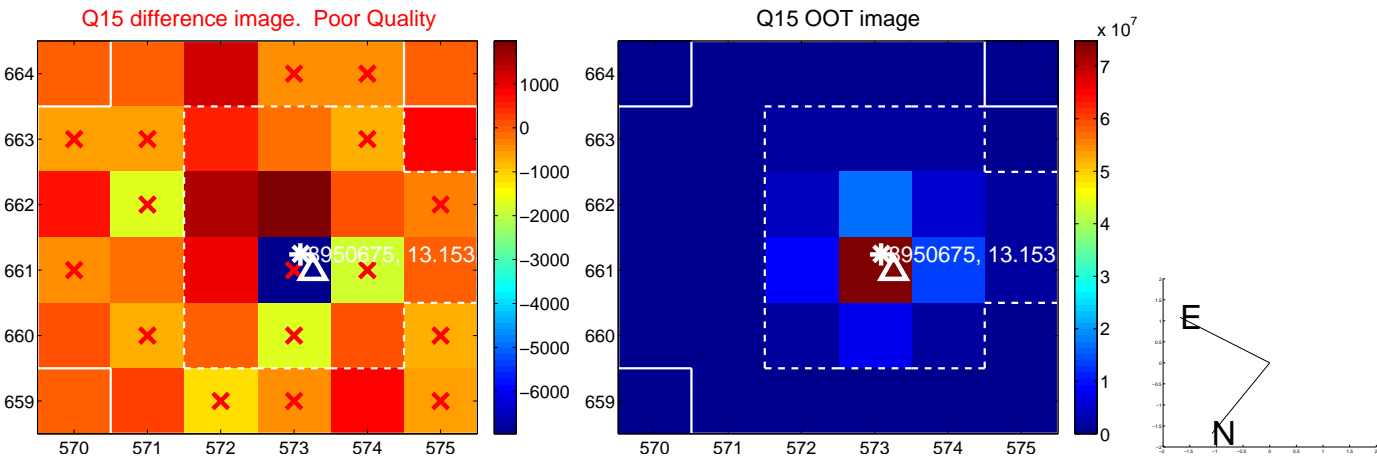
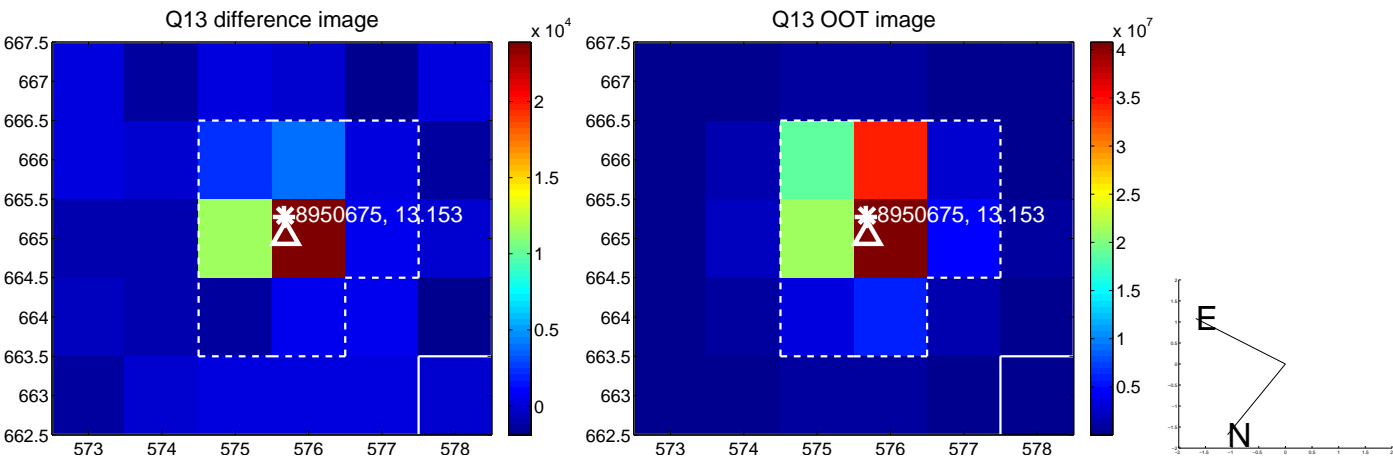
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

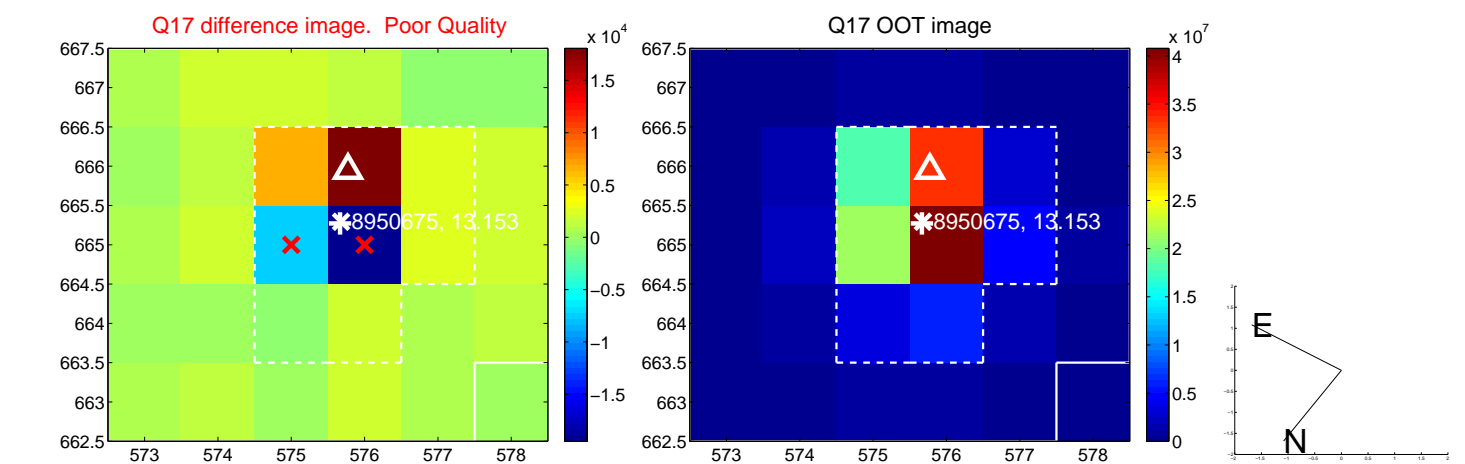


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

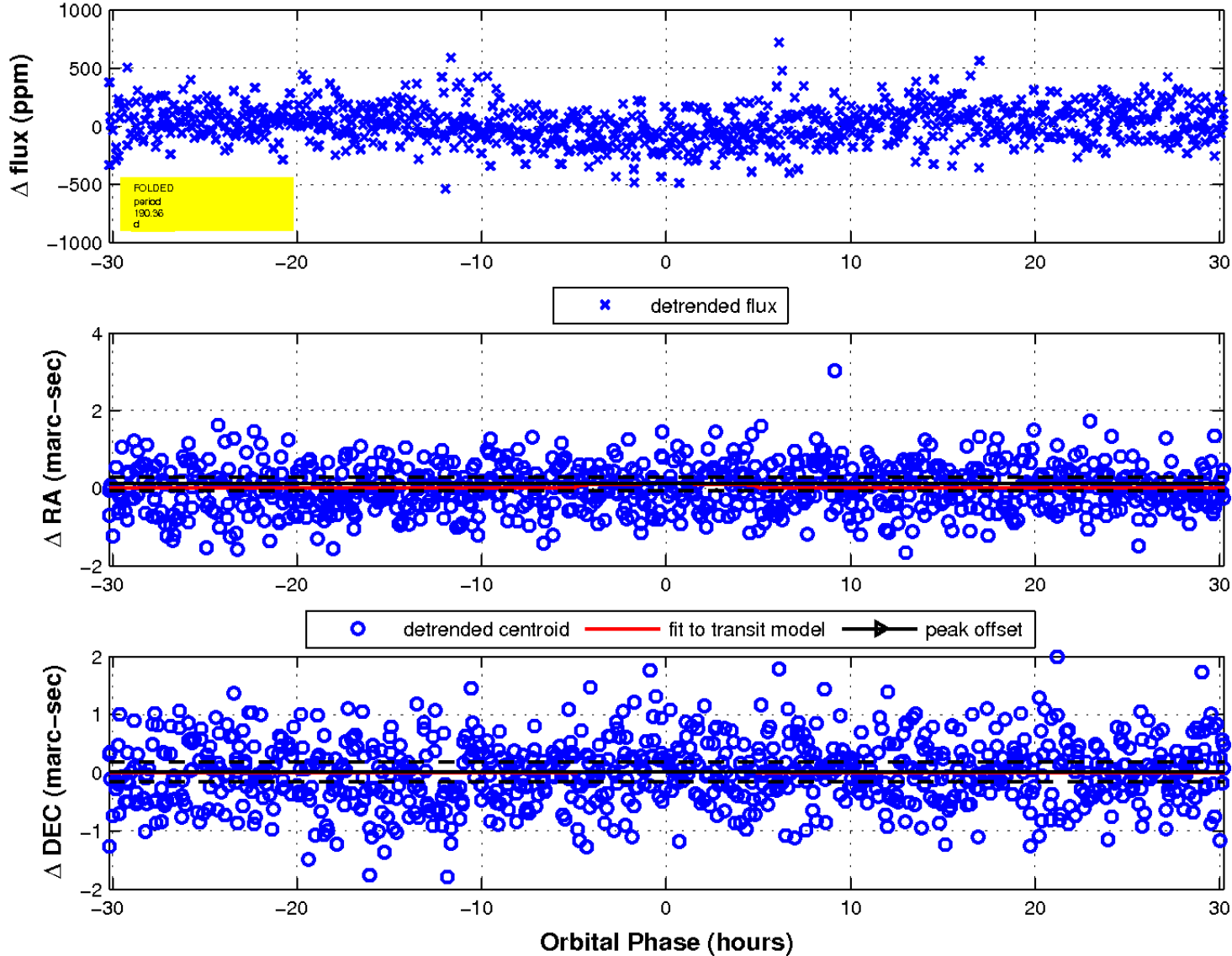




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

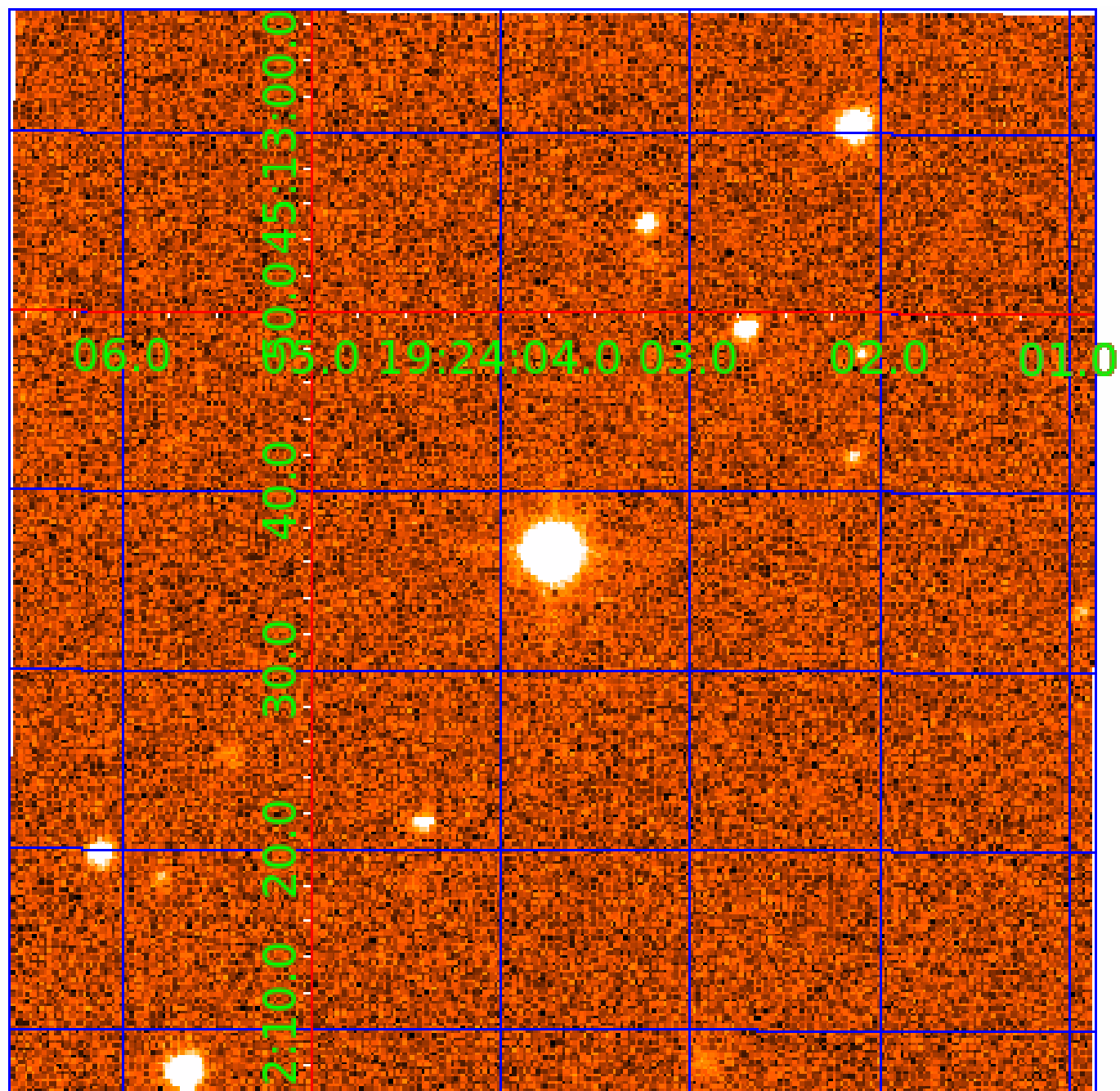


fluxWeightedCentroids, Planet 4 of 5



UKIRT Image

Declination



# KIC 008950675

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008950675-01	OBS	No	1.712462	132.881956	12.4	6.790	7.9	4.4	2.94	6810	1.47	13951.26
008950675-02	OBS	No	140.643213	151.584969	198.1	15.179	10.1	8.0	2.94	6810	4.53	39.08
008950675-04	OBS	No	190.355524	234.716215	154.6	10.084	8.2	6.3	2.94	6810	3.95	26.10
008950675-05	OBS	No	109.750423	193.518535	222.9	2.329	7.4	7.6	2.94	6810	4.66	54.40

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008950675-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
008950675-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS
008950675-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV
008950675-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_POS_ALT

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

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

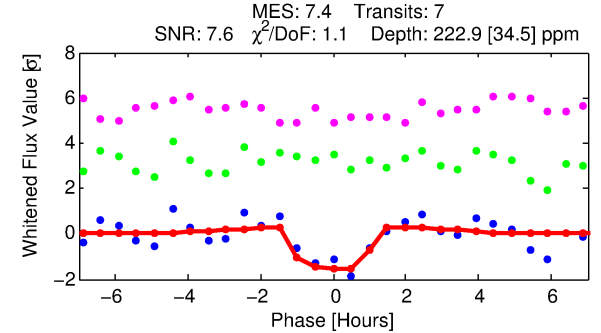
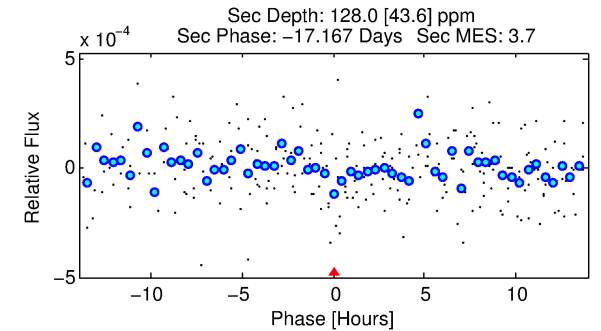
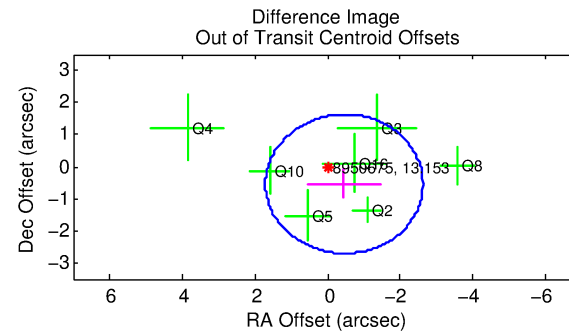
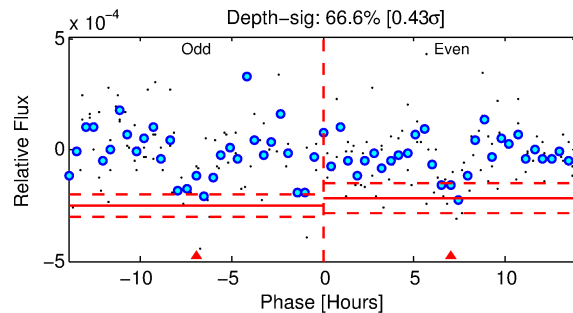
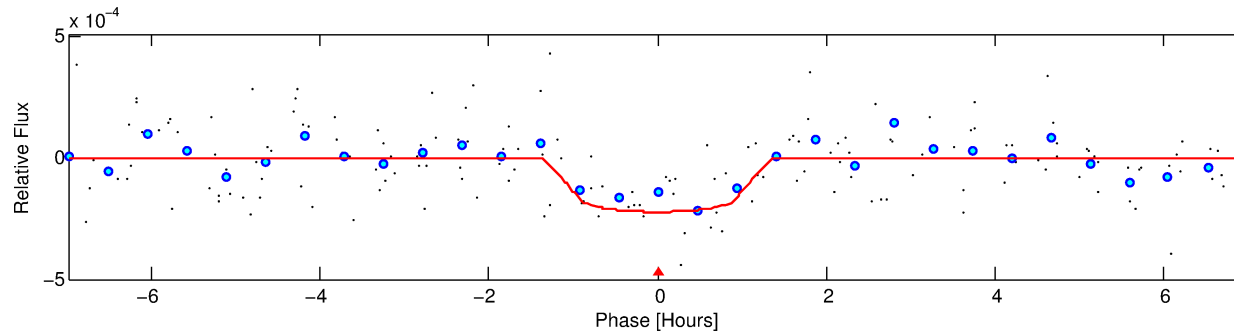
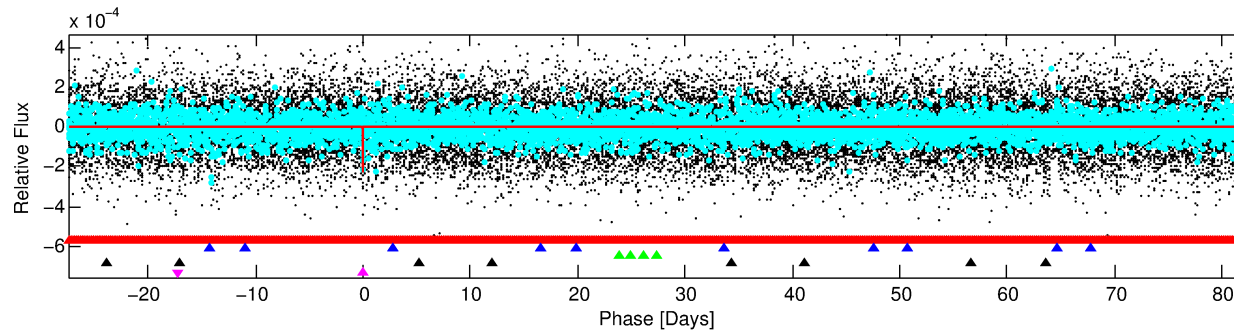
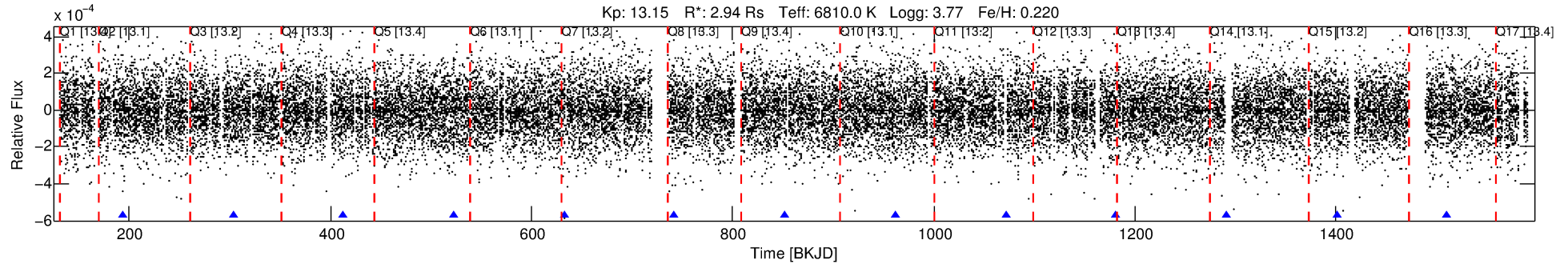
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 008950675-05

No Significant Match Found

# DV One-Page Summary

KIC: 8950675 Candidate: 5 of 5 Period: 109.750 d



## DV Fit Results:

Period = 109.75042 [0.00083] d  
Epoch = 193.5185 [0.0053] BKJD  
Rp/R\* = 0.0145 [0.0120]  
a/R\* = 281.47 [1310.57]  
b = 0.65 [4.22]  
Seff = 54.40 [39.86]  
Teq = 692 [127] K  
Rp = 4.66 [4.46] Re  
a = 0.5541 [0.2505] AU  
Ag = 997.43 [1830.49] [0.54 $\sigma$ ]  
Teffp = 6017 [2555] K [2.08 $\sigma$ ]

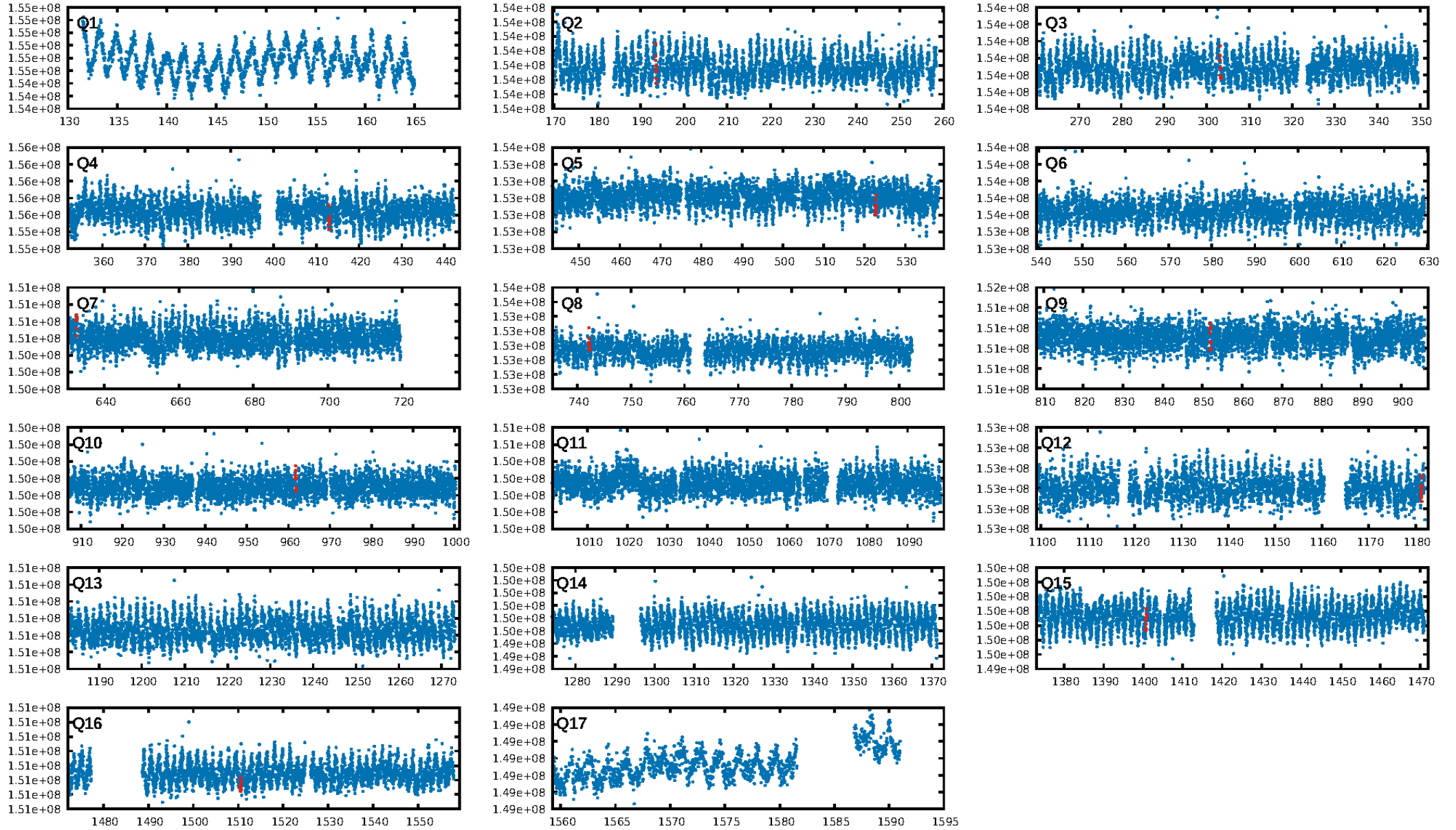
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [361.19 $\sigma$ ]  
LongPeriod-sig: 100.0% [48.28 $\sigma$ ]  
ModelChiSquare2-sig: 64.1%  
ModelChiSquareGof-sig: 97.1%  
**Bootstrap-pfa: 1.19e-10**  
RollingBand-fgt: 1.00 [7/7]  
GhostDiagnostic-chr: -1.493  
Centroid-sig: 14.1%  
Centroid-so: 1.518 arcsec [1.33 $\sigma$ ]  
OotOffset-rm: 0.710 arcsec [0.98 $\sigma$ ]  
KicOffset-rm: 0.645 arcsec [0.86 $\sigma$ ]  
OotOffset-st: 2/1/3/1 [7]  
KicOffset-st: 2/1/3/1 [7]  
DiffImageQuality-fgm: 0.43 [3/7]  
DiffImageOverlap-fno: 0.55 [6/11]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 07:40:25 Z

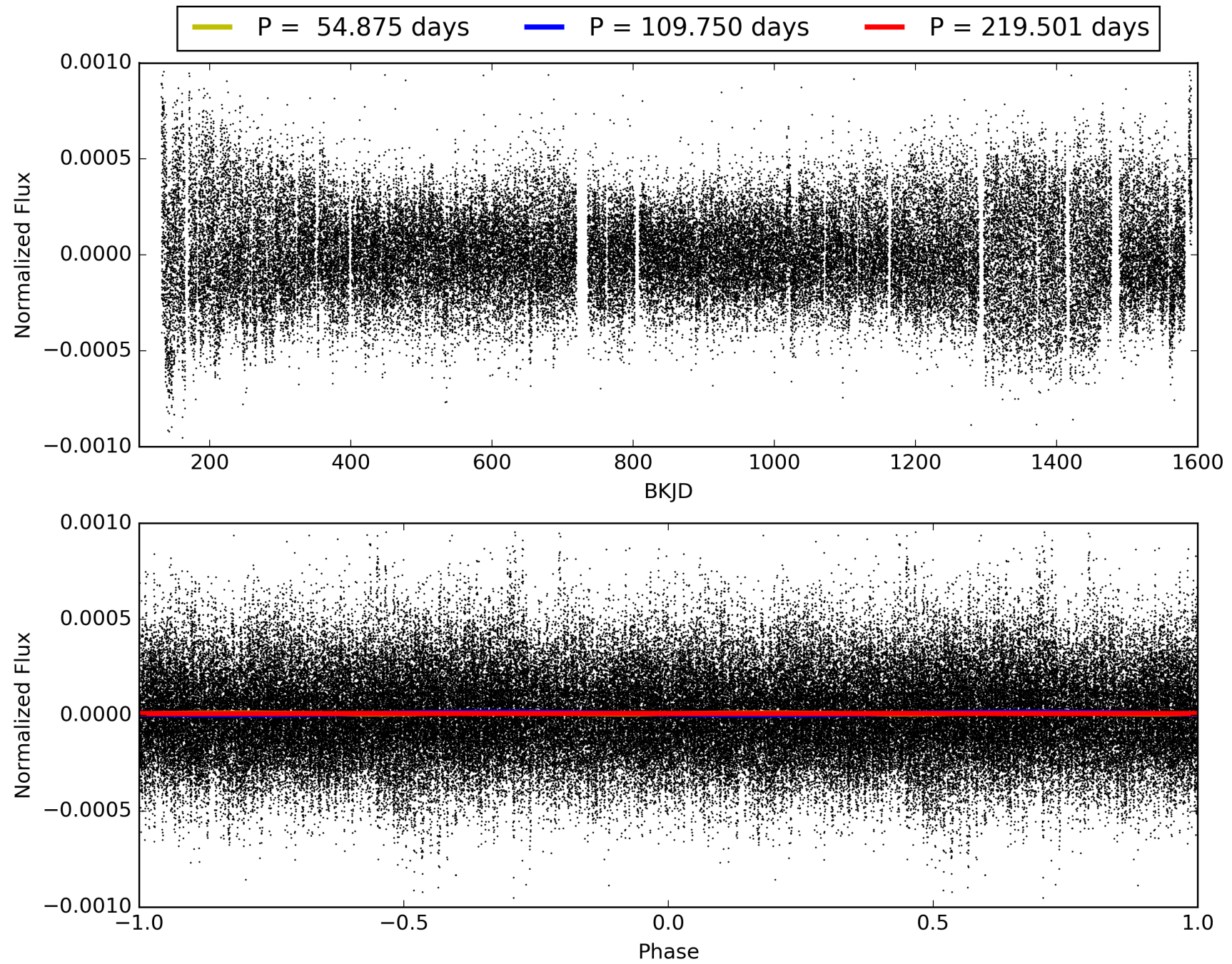
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008950675-05, PDC Light Curves



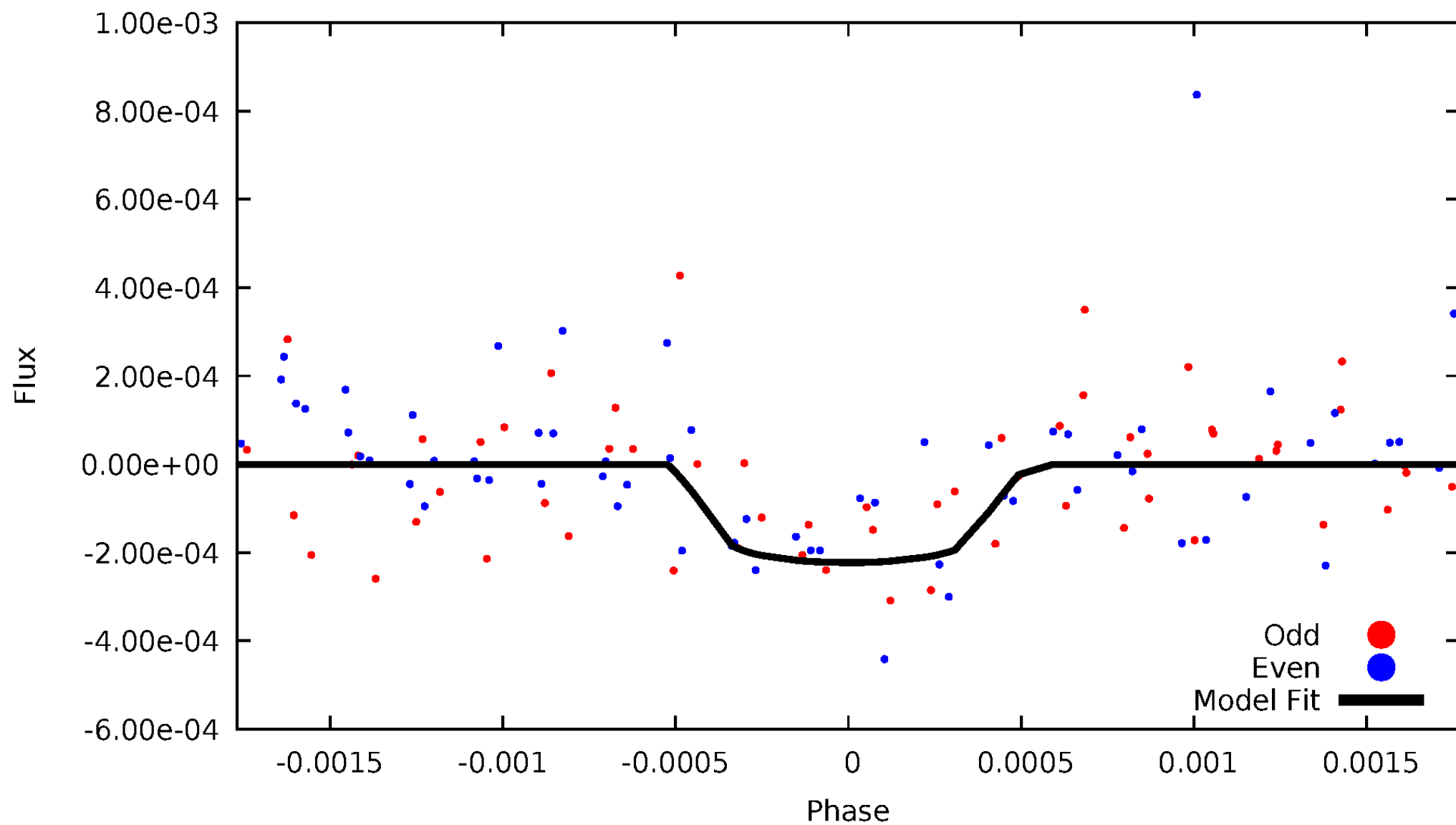


TCE 008950675-05



# DV Odd/Even

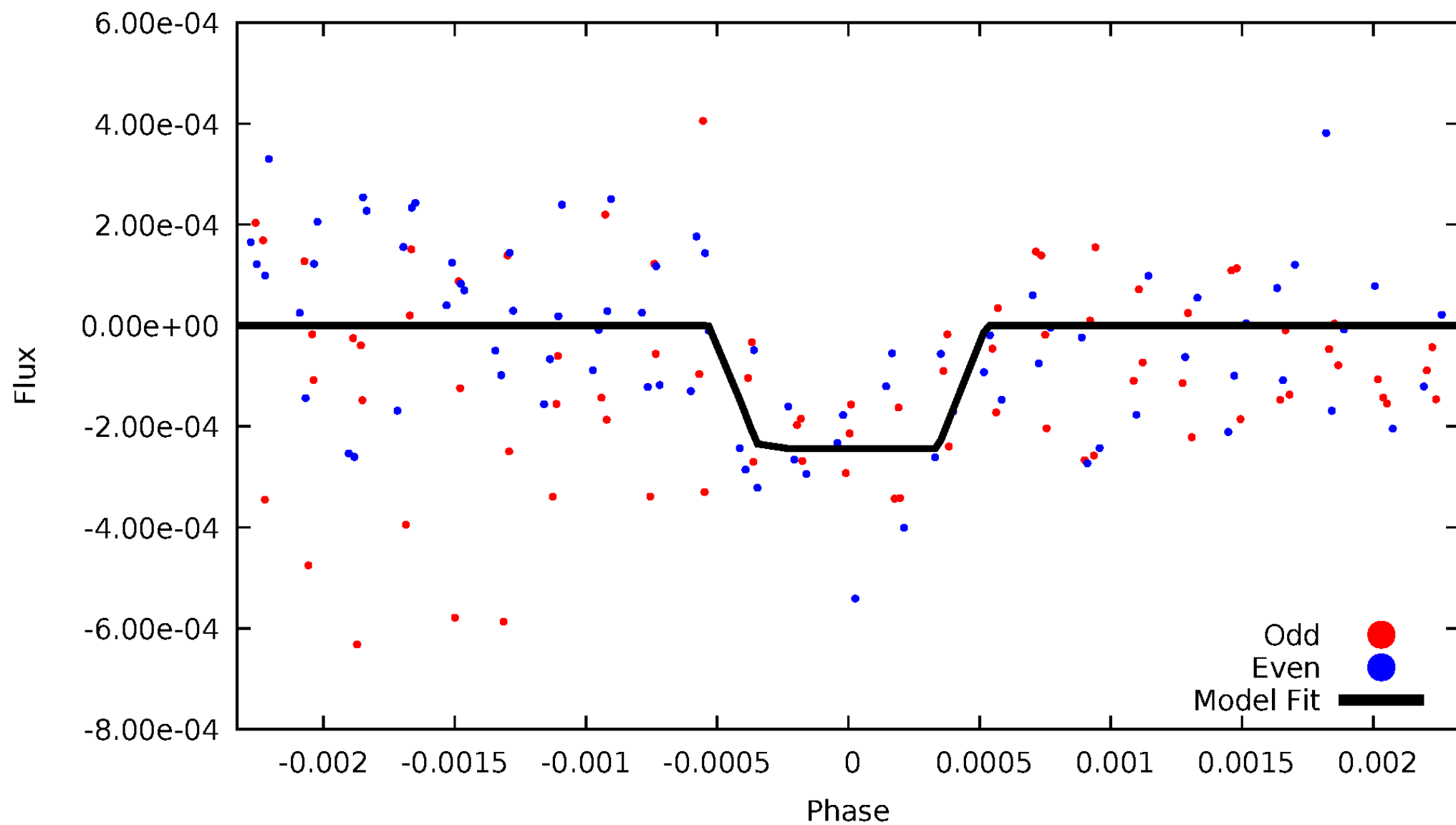
TCE 008950675-05



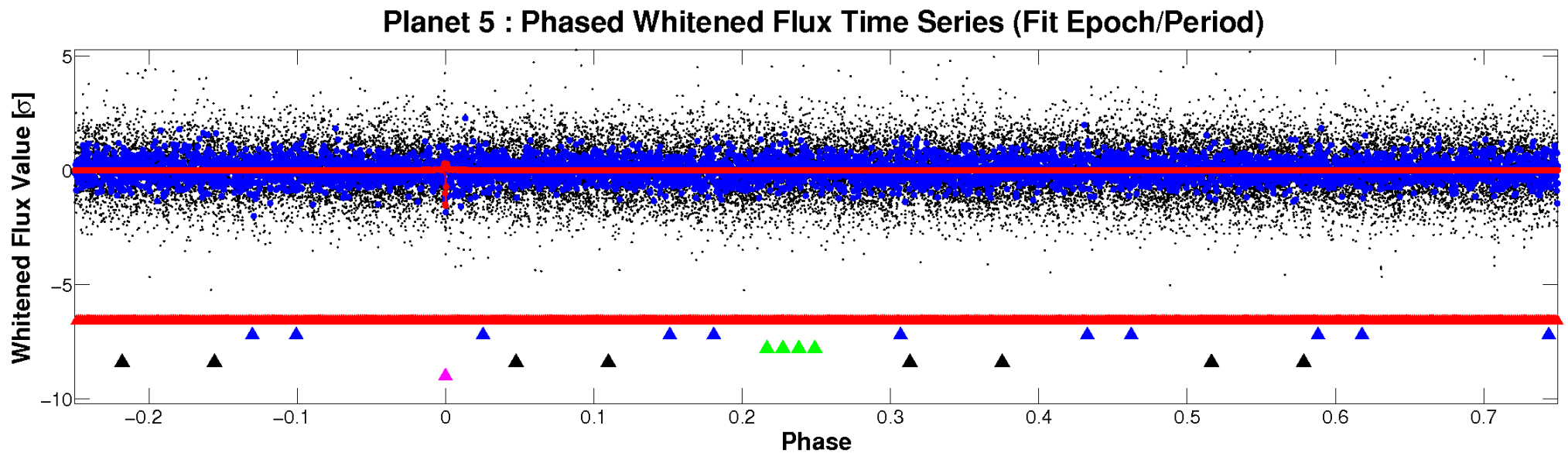
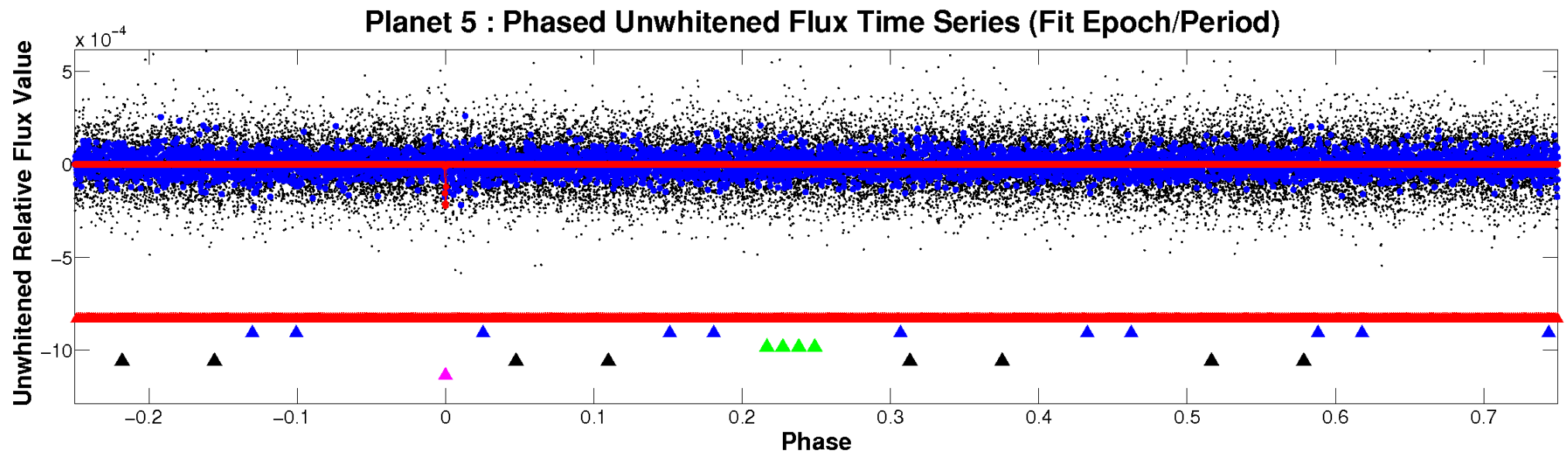


# ALT Odd/Even

TCE 008950675-05

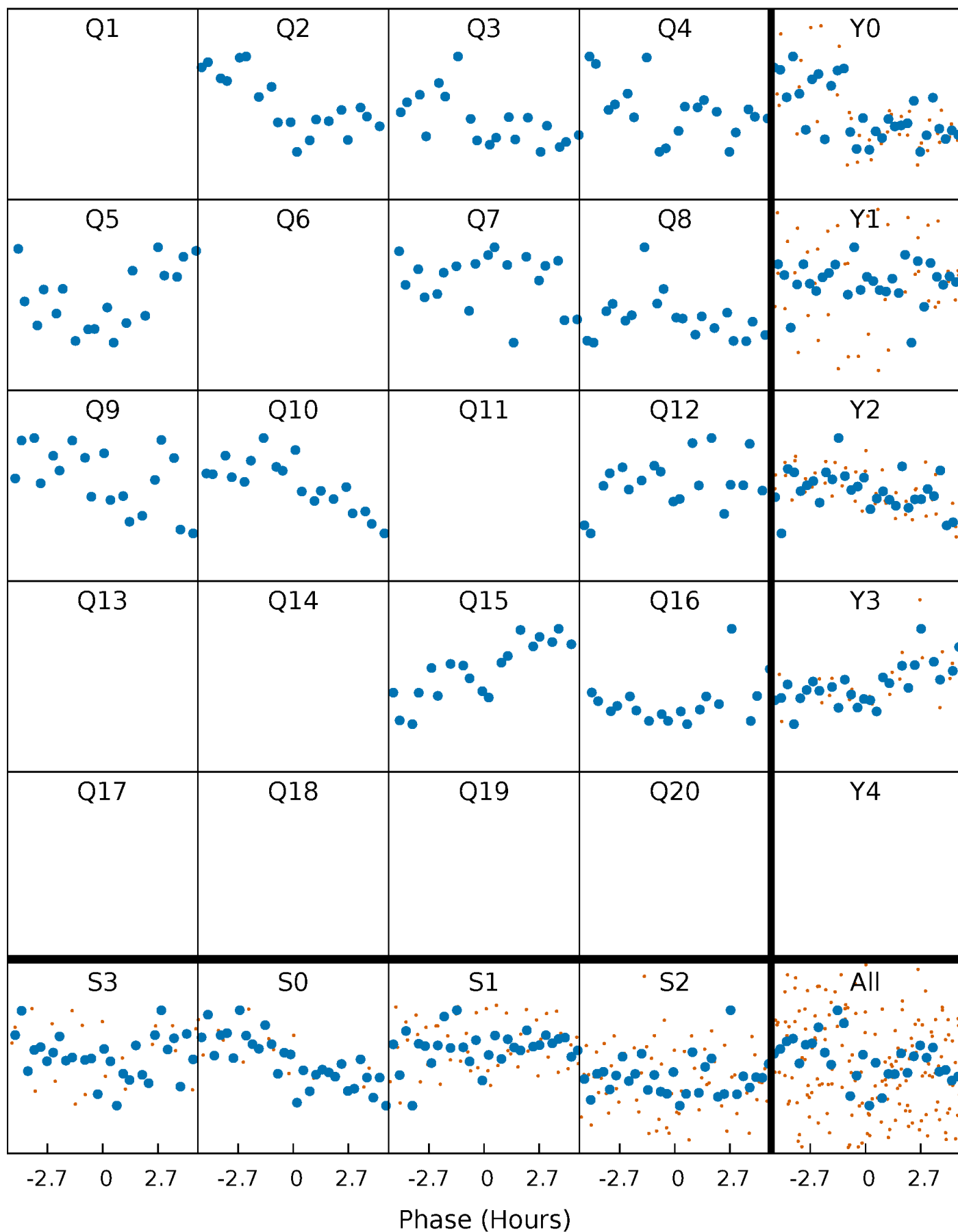


# Non-Whitened Vs. Whitened Light Curve



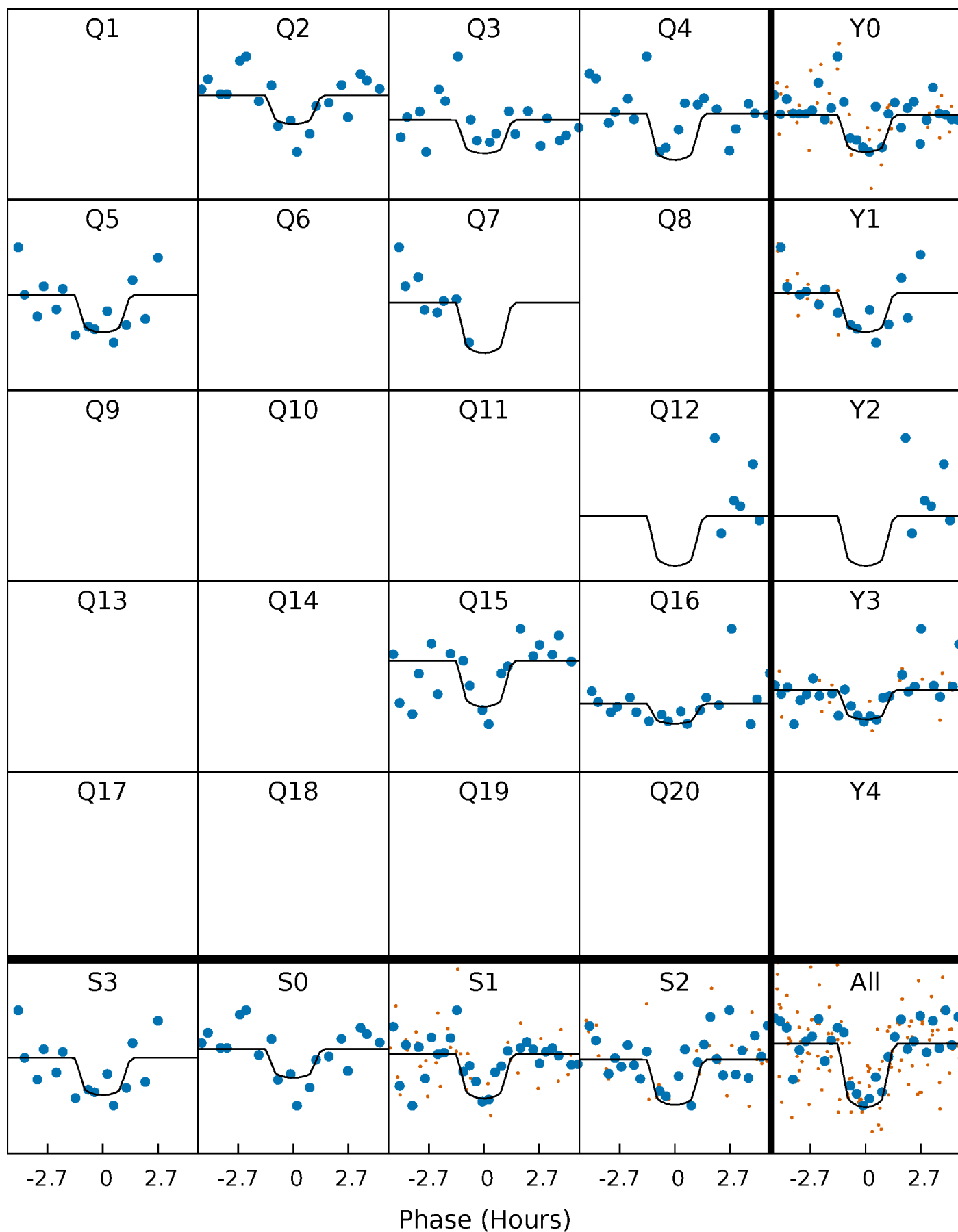
# PDC Quarter-Phased Transit Curves

TCE 008950675-05     $P=109.750423$  Days     $T_0=193.518535$  (BKJD)



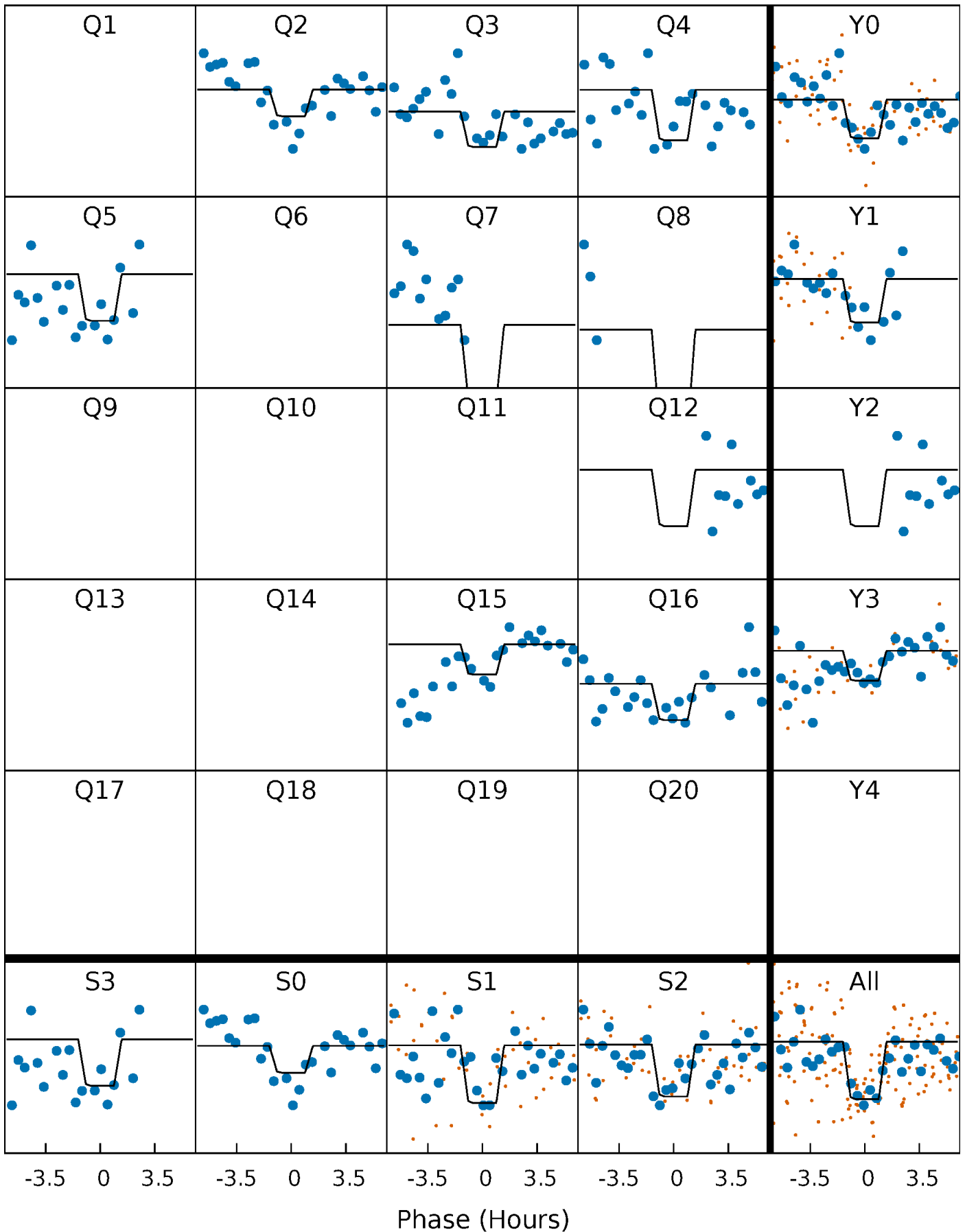
# DV Quarter-Phased Transit Curves

TCE 008950675-05     $P=109.750423$  Days     $T_0=193.518535$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

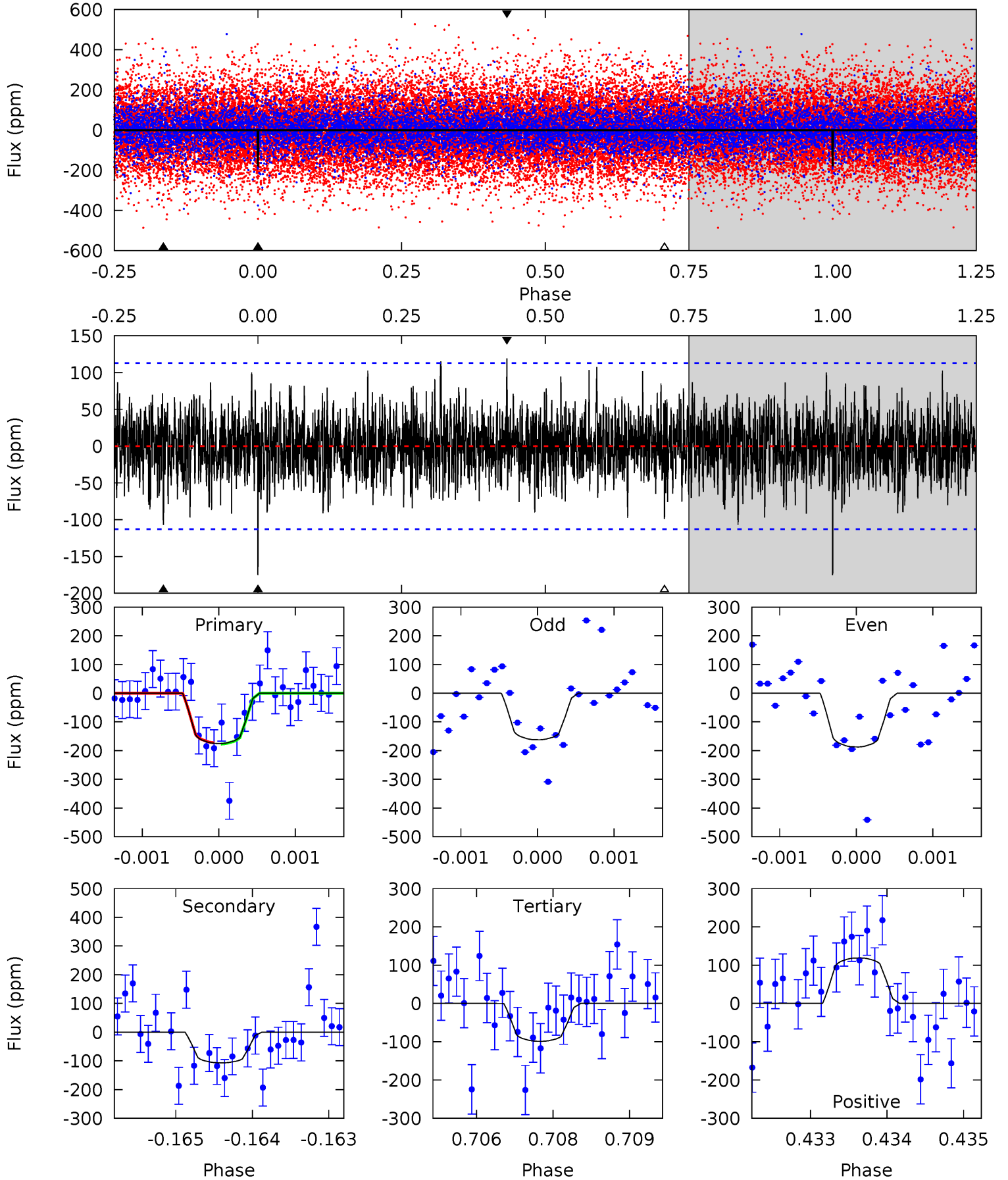
TCE 008950675-05 P=109.749092 Days  $T_0=193.527131$  (BKJD)



# DV Model-Shift Uniqueness Test

008950675-05, P = 109.750423 Days, E = 83.768112 Days

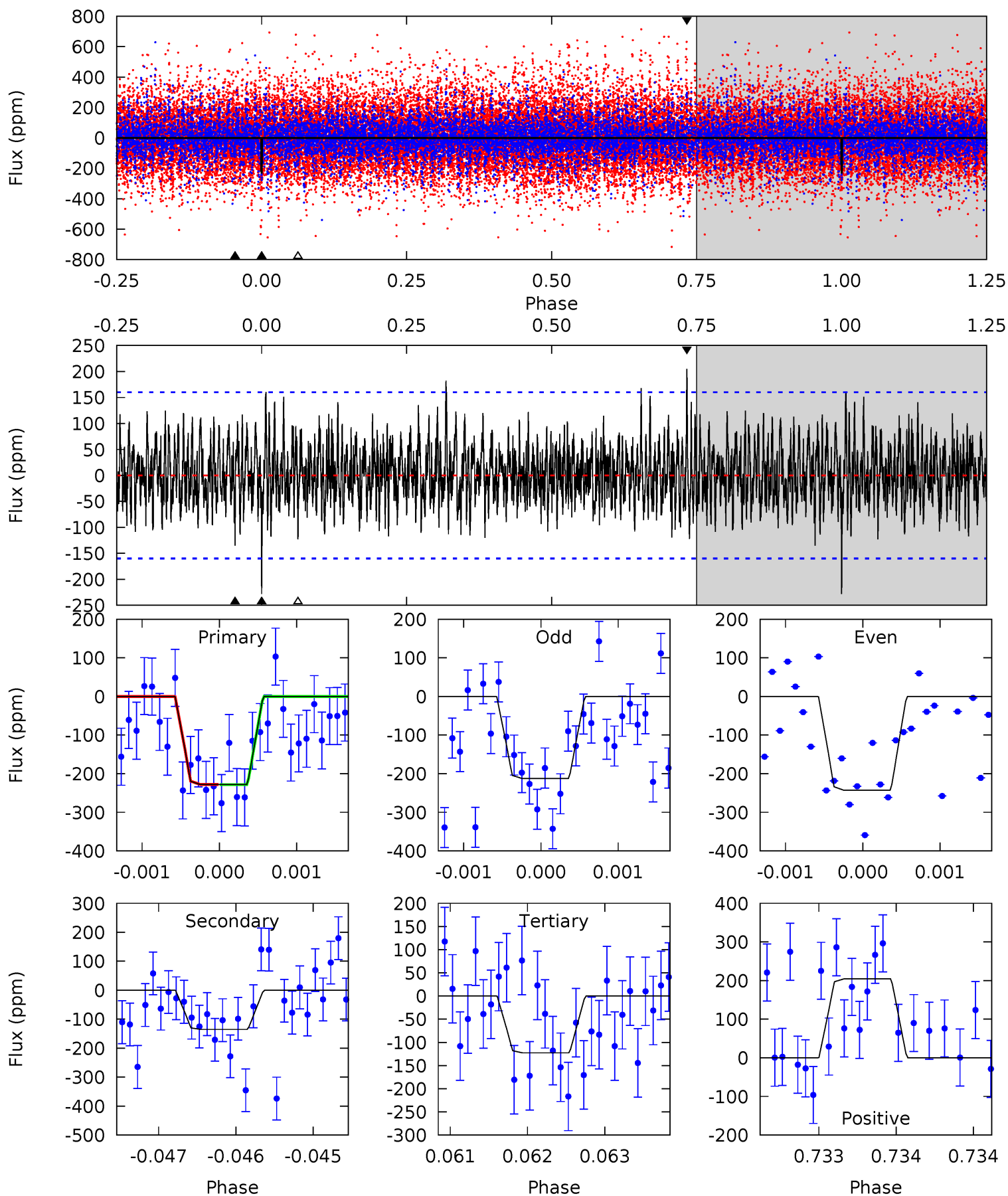
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.45	5.14	4.76	5.73	5.43	3.26	1.51	3.68	2.72	0.38	-0.59	0.61	0.94	0.40	0.10



# Alt Model-Shift Uniqueness Test

008950675-05, P = 109.749092 Days, E = 83.778039 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.80	4.63	4.19	6.99	5.46	3.31	1.61	3.61	0.81	0.44	-2.36	0.52	1.06	0.47	0.01





### Stellar Parameters For KIC 008950675

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6810^{+185}_{-278}$	$3.775^{+0.416}_{-0.104}$	$0.220^{+0.200}_{-0.300}$	$2.944^{+0.565}_{-1.413}$	$1.884^{+0.172}_{-0.516}$	$0.104^{+0.411}_{-0.041}$
	+3%/-4%	+11%/-3%	+91%/-136%	+19%/-48%	+9%/-27%	+395%/-40%
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 008950675-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-107 \pm 21$	$4.49^{+3.61}_{-2.66}$	$931^{+78}_{-103}$	$5534^{+3378}_{-1156}$	$873^{+4334}_{-614}$
Alt.	$-135 \pm 29$	$5.03^{+3.58}_{-3.17}$	$942^{+63}_{-107}$	$5616^{+3876}_{-1143}$	$893^{+5489}_{-608}$

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

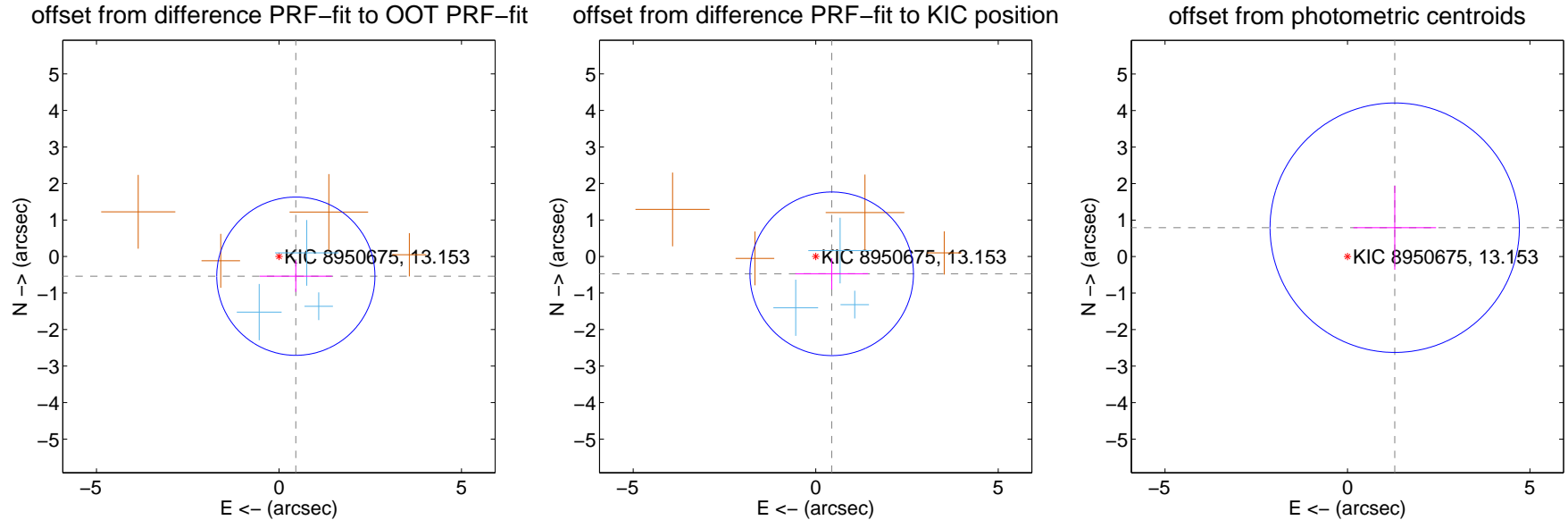
## DV Centroid Data

Supplemental centroid analysis for 008950675-05. Kepler magnitude: 13.15. Transit SNR 7.57

There are 3 quarters with good PRF difference image offsets

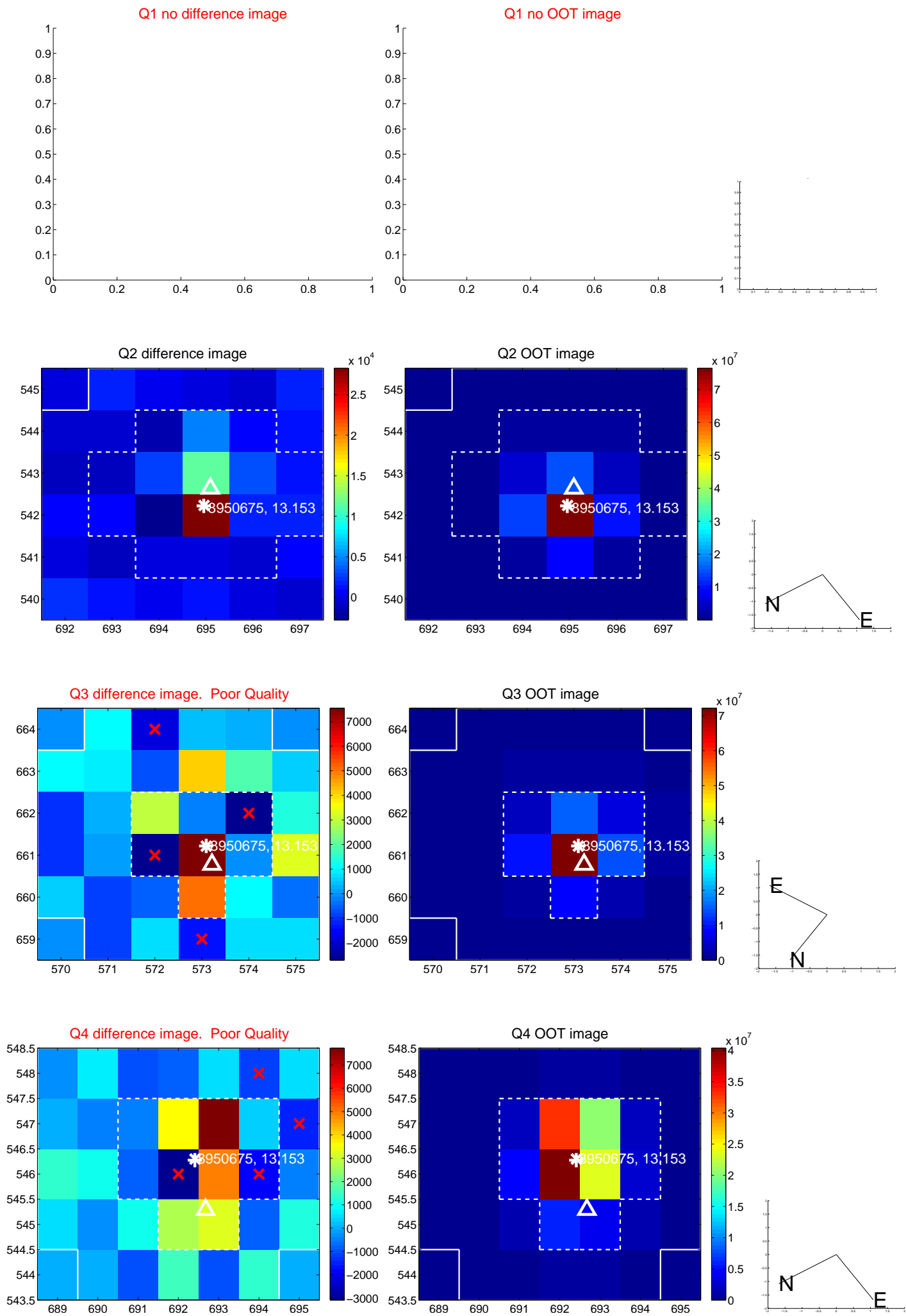
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.710 \pm 0.722$	0.98	$-0.462 \pm 0.990$	$-0.539 \pm 0.429$
PRF-fit source offset from KIC position	$0.645 \pm 0.747$	0.86	$-0.438 \pm 0.997$	$-0.473 \pm 0.429$
photometric centroid source offset	$1.52 \pm 1.14$	1.33	$-1.29 \pm 1.13$	$0.79 \pm 1.15$

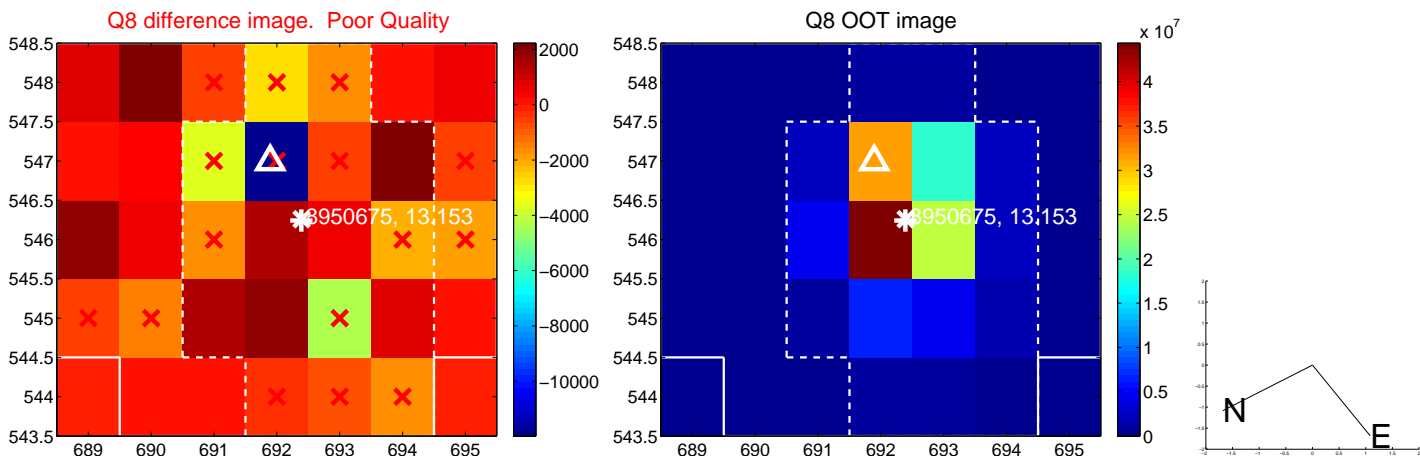
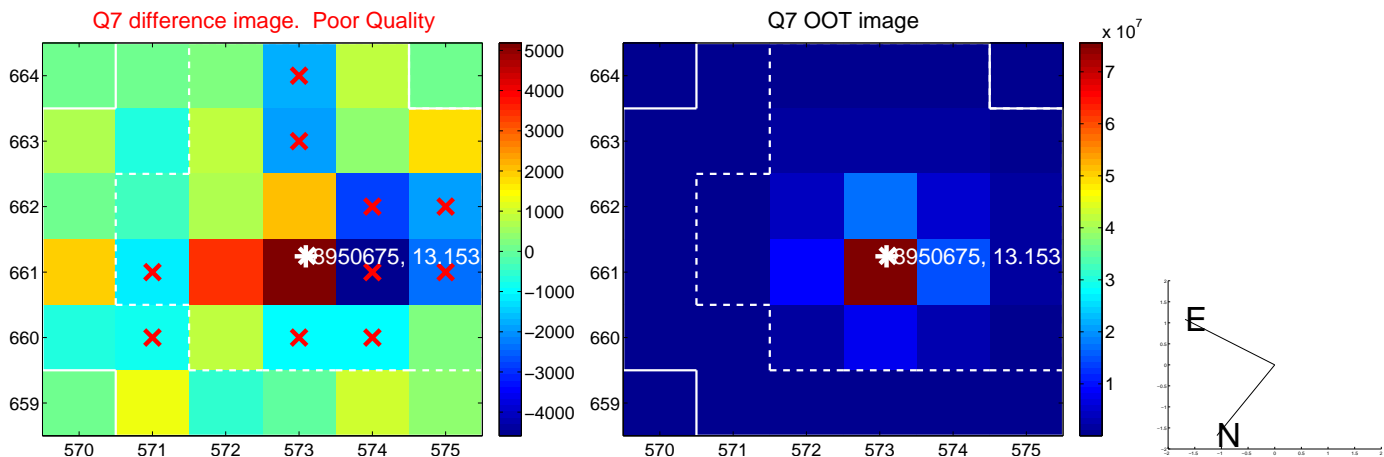
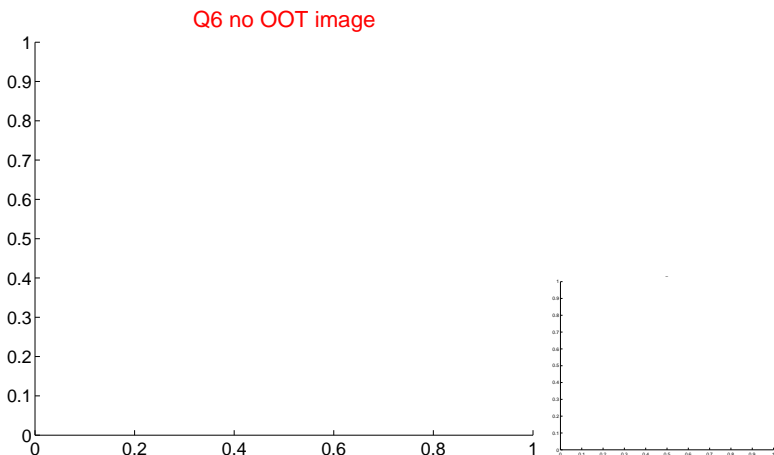
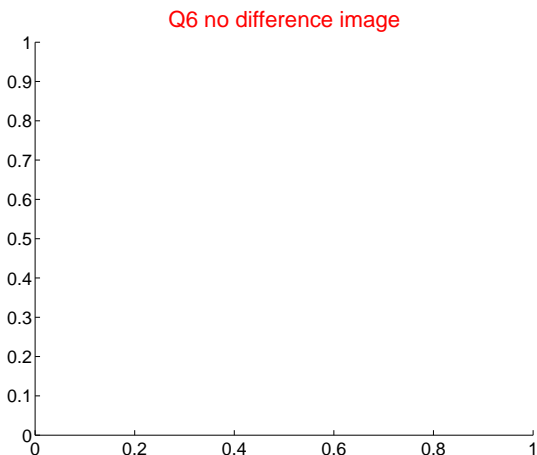
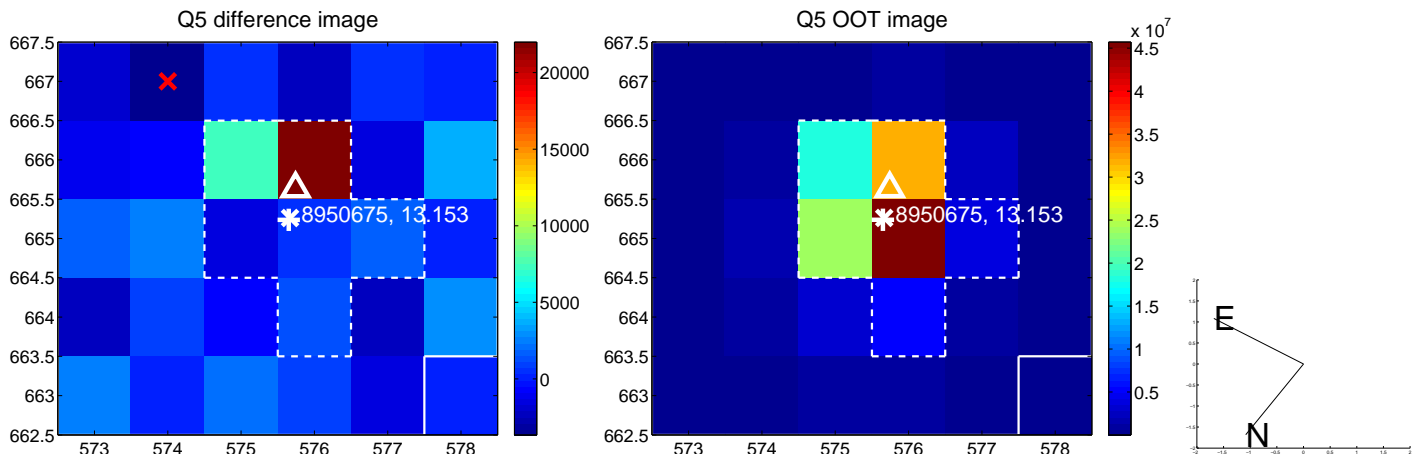


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

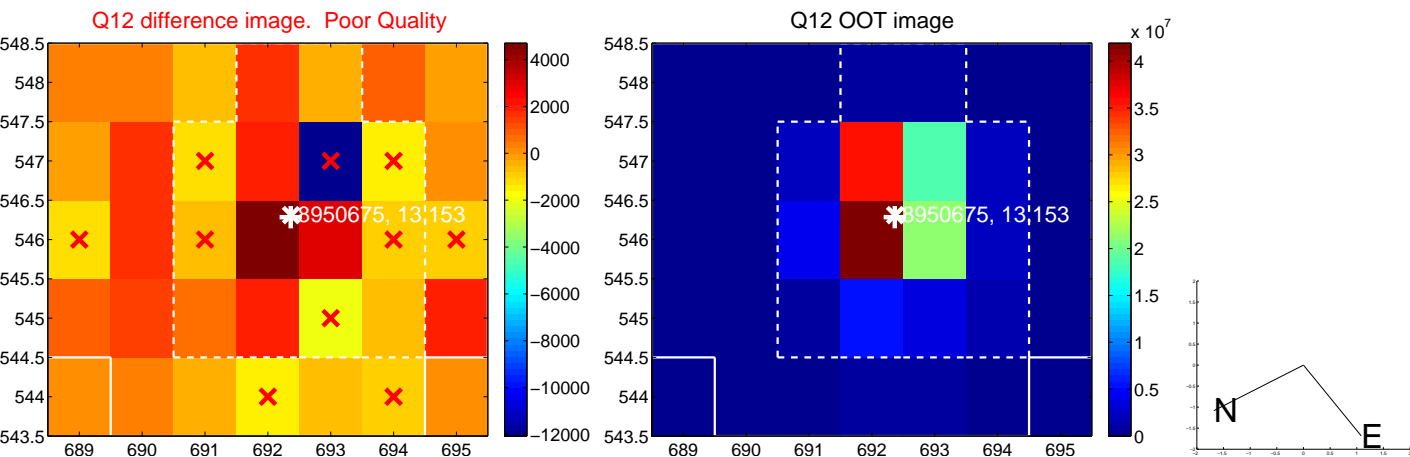
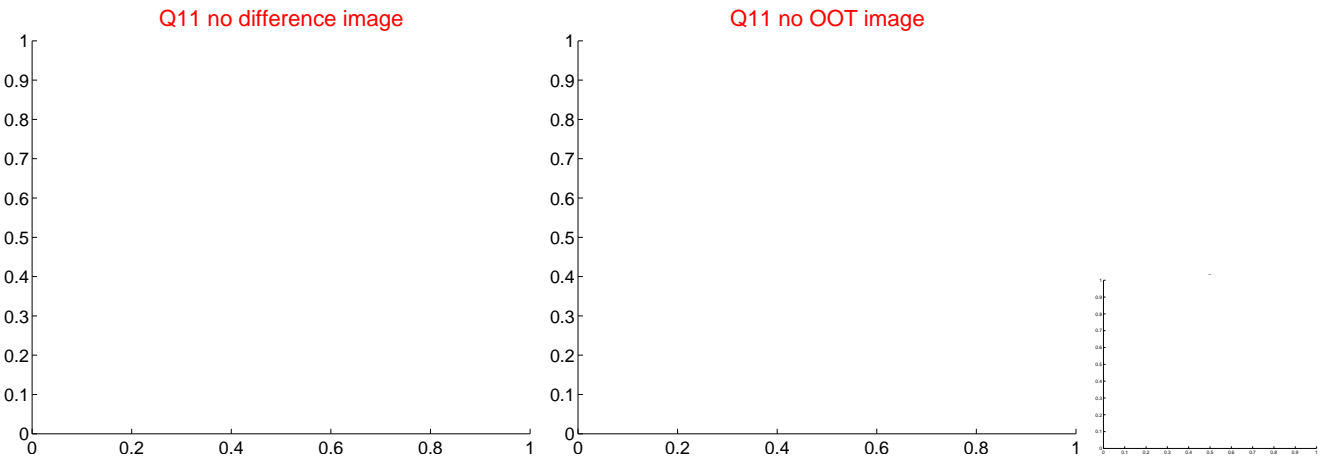
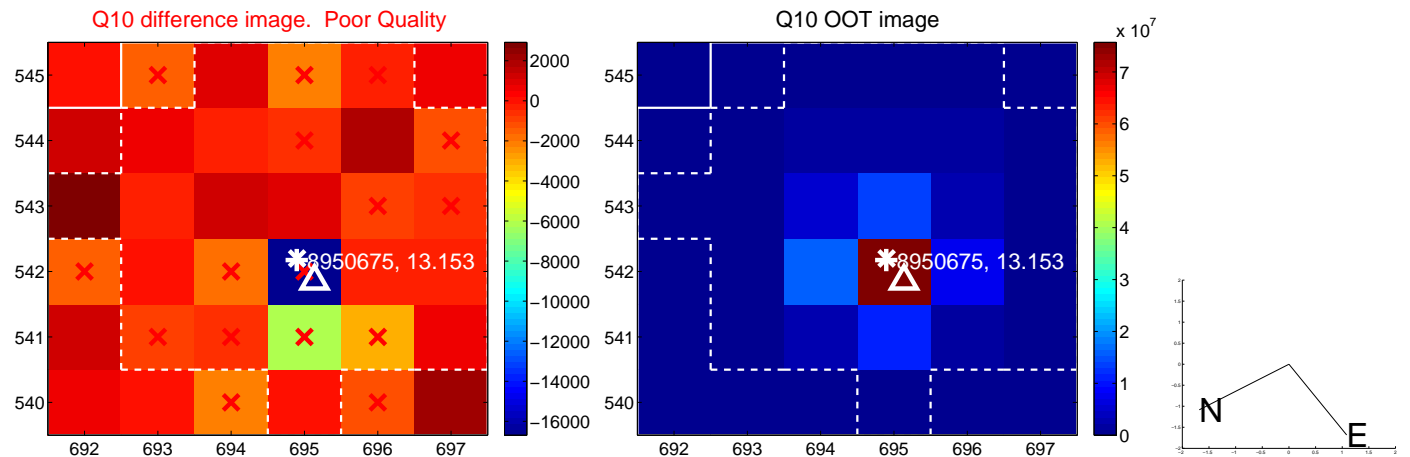
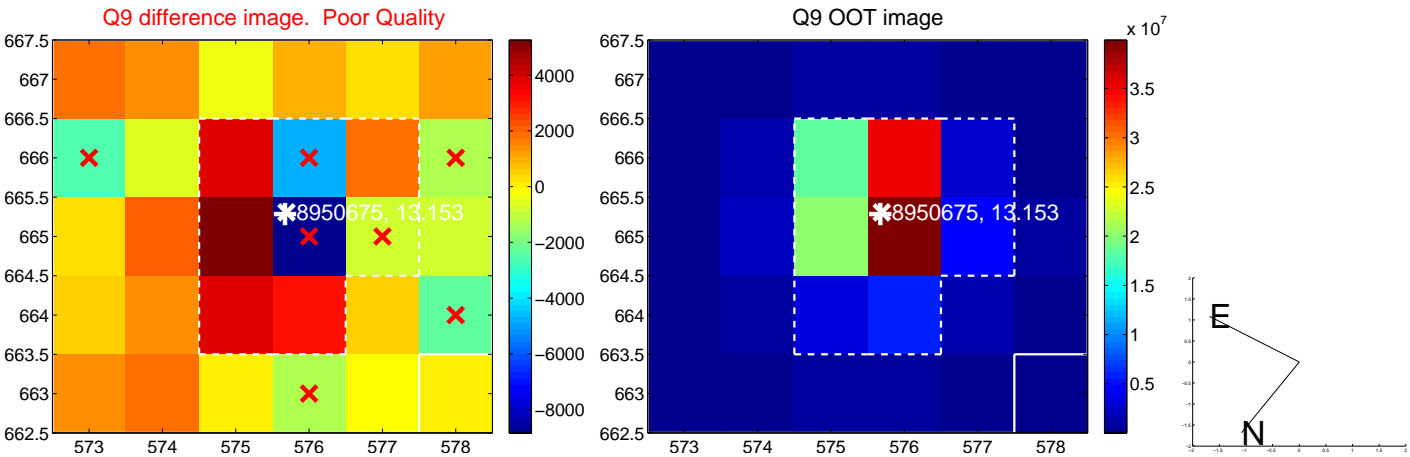
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

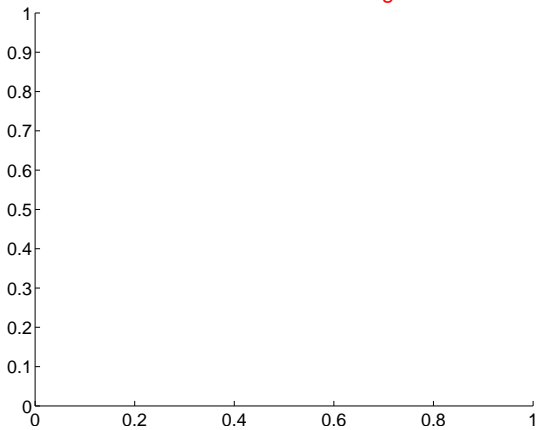


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

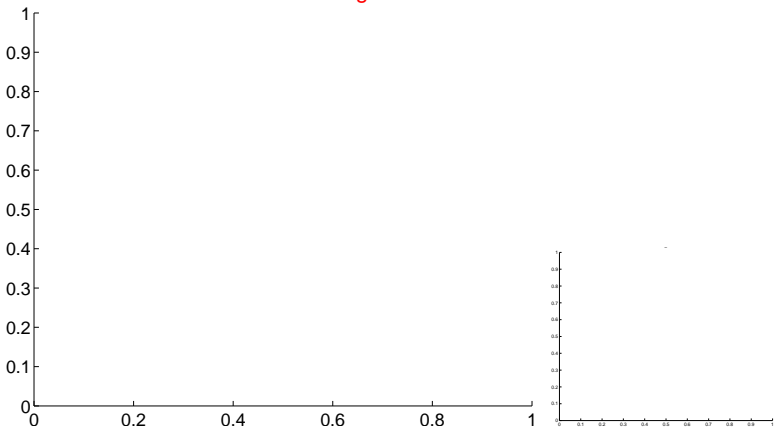


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

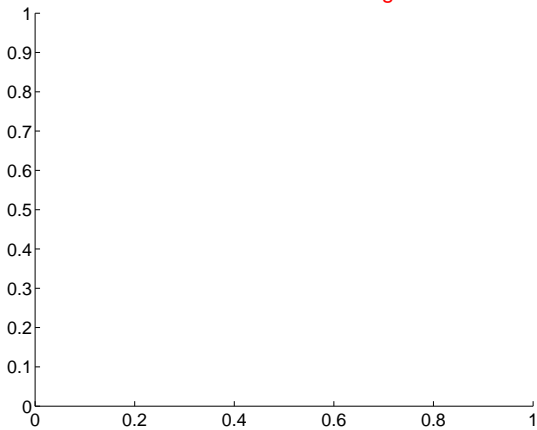
Q13 no difference image



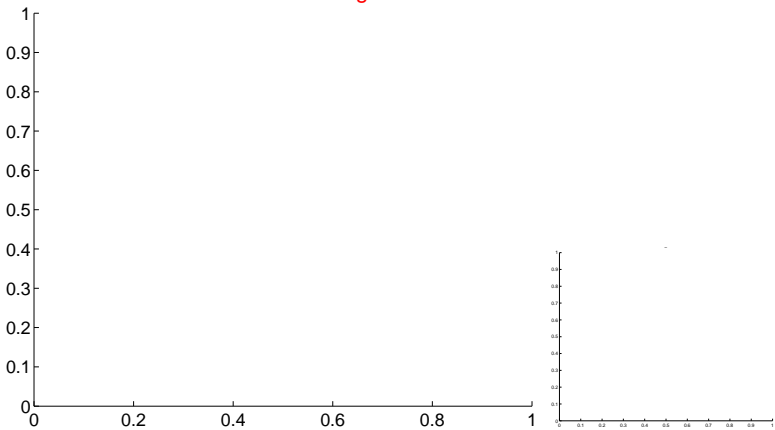
Q13 no OOT image



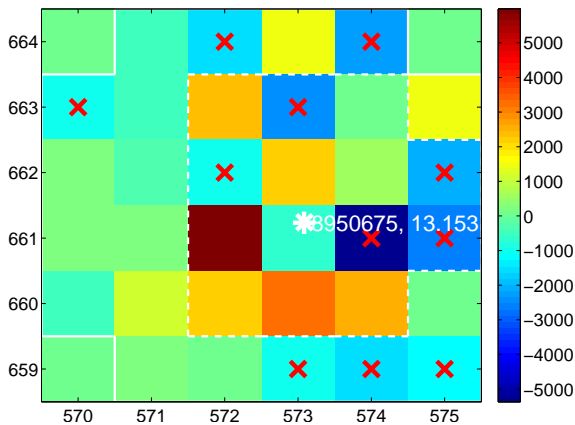
Q14 no difference image



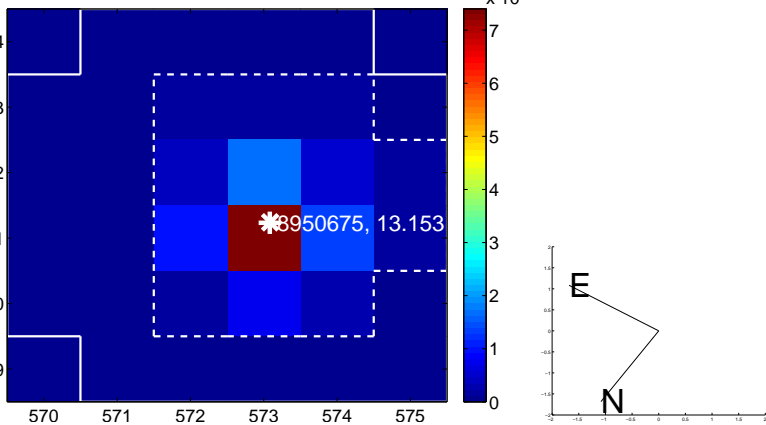
Q14 no OOT image



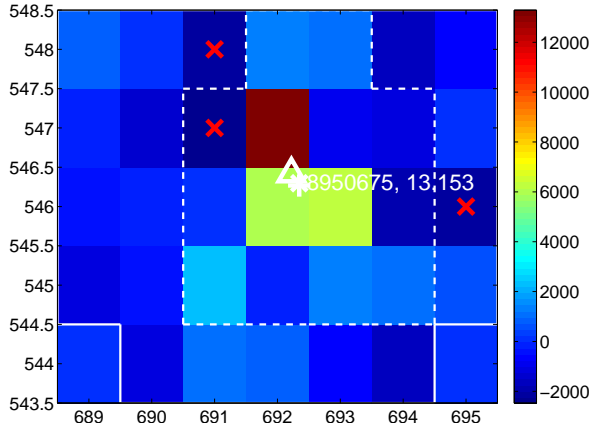
Q15 difference image. Poor Quality



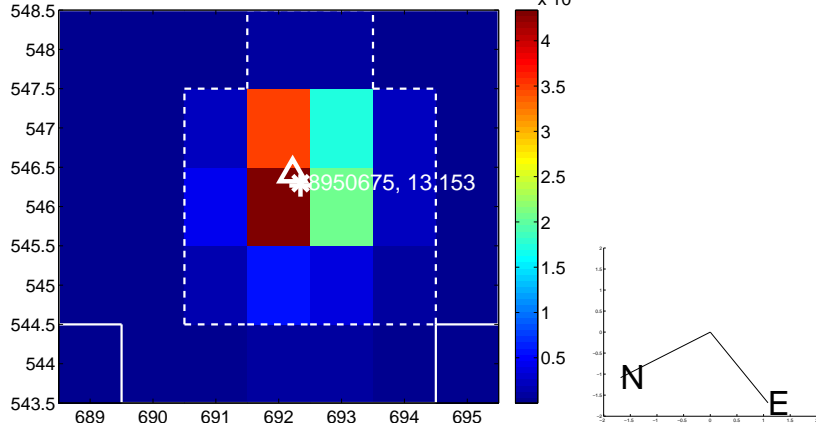
Q15 OOT image



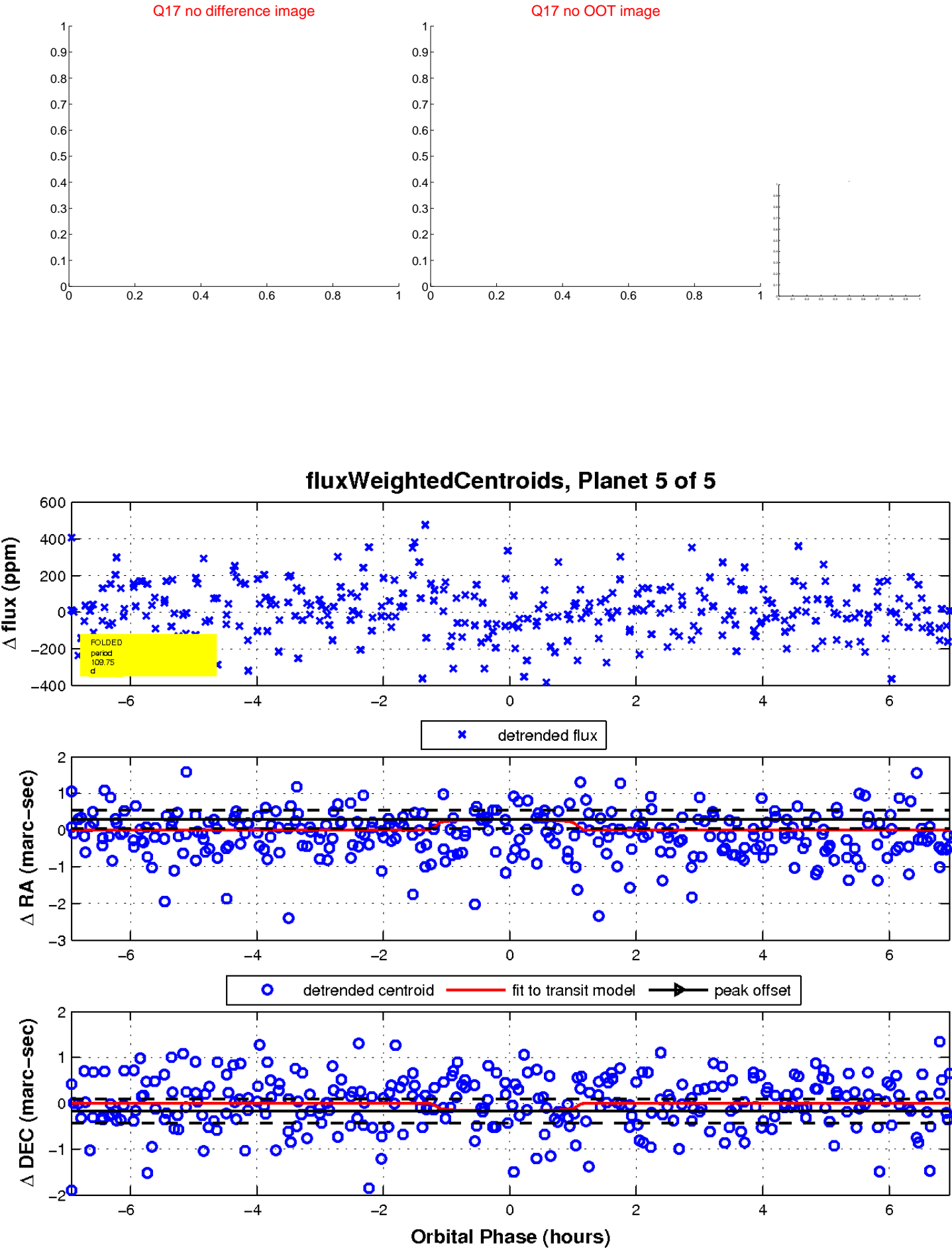
Q16 difference image



Q16 OOT image



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





# UKIRT Image

Declination

