

# KIC 002854953

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002854953-01	OBS	No	1.724690	131.957540	3.6	12.301	12.9	1.9	1.73	7392	0.35	7685.78
002854953-02	OBS	No	39.194267	155.527838	440.4	1.412	10.5	11.0	1.73	7392	3.70	119.40
002854953-03	OBS	No	21.711992	143.629034	225.3	2.139	10.6	11.3	1.73	7392	3.01	262.44
002854953-04	OBS	No	26.850442	145.650419	210.7	2.229	9.8	11.5	1.73	7392	2.92	197.71
002854953-05	OBS	No	36.967356	155.079665	277.4	1.613	8.8	9.7	1.73	7392	3.21	129.09
002854953-06	OBS	No	82.036741	159.261308	172.1	6.074	9.1	7.8	1.73	7392	2.63	44.60
002854953-07	OBS	No	31.648645	140.935509	339.1	1.534	8.7	10.3	1.73	7392	3.58	158.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002854953-01	OBS	FP	0.00	1	0	0	0	LPP_DV
002854953-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
002854953-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002854953-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
002854953-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002854953-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002854953-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST

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

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

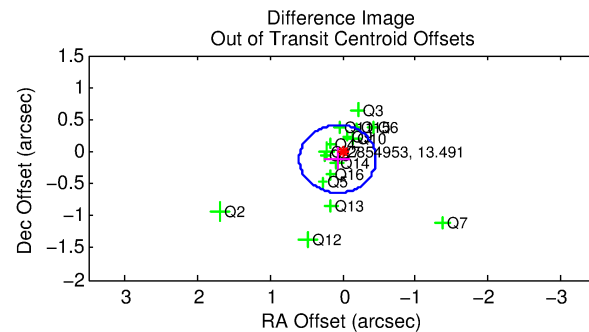
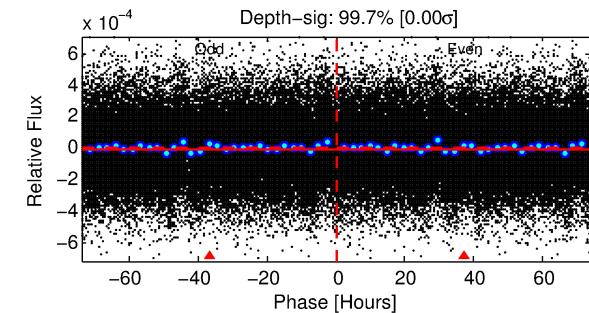
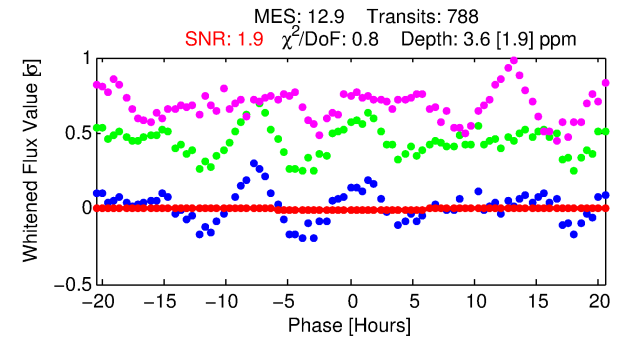
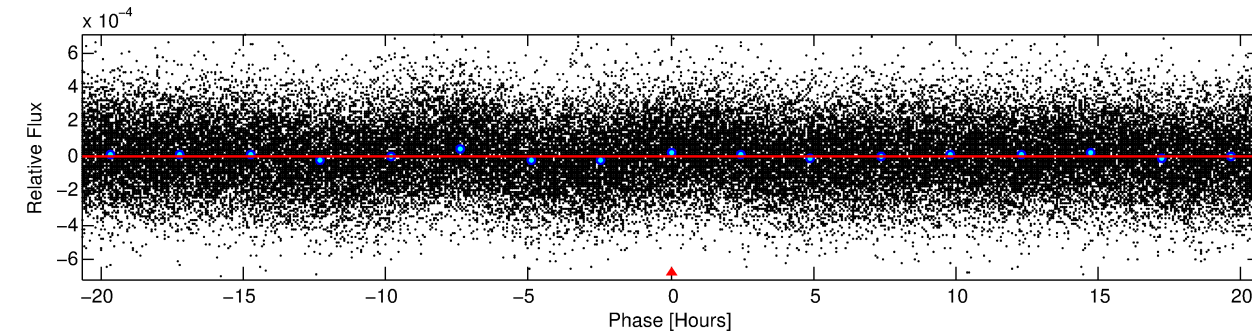
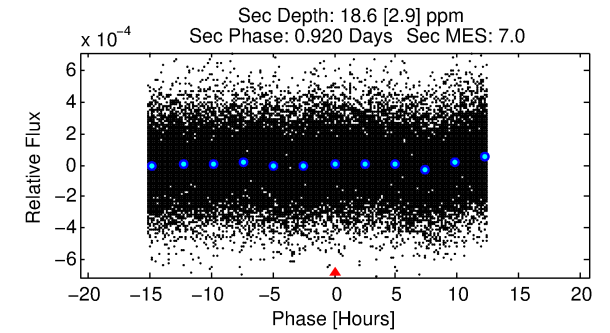
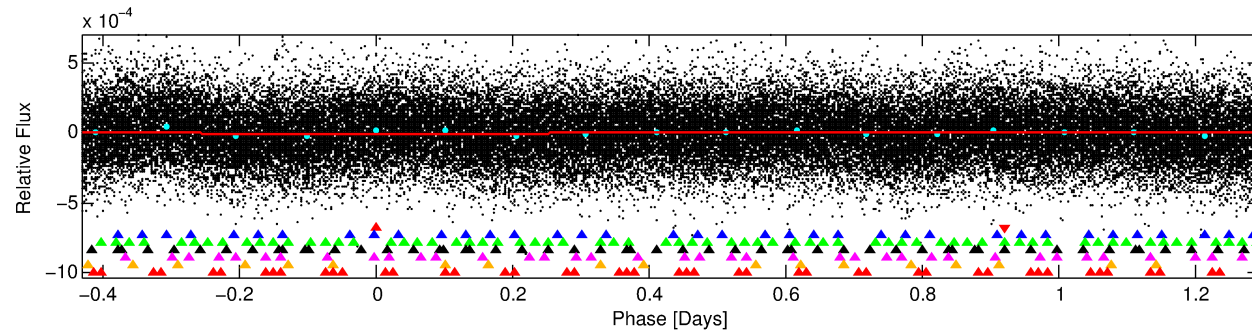
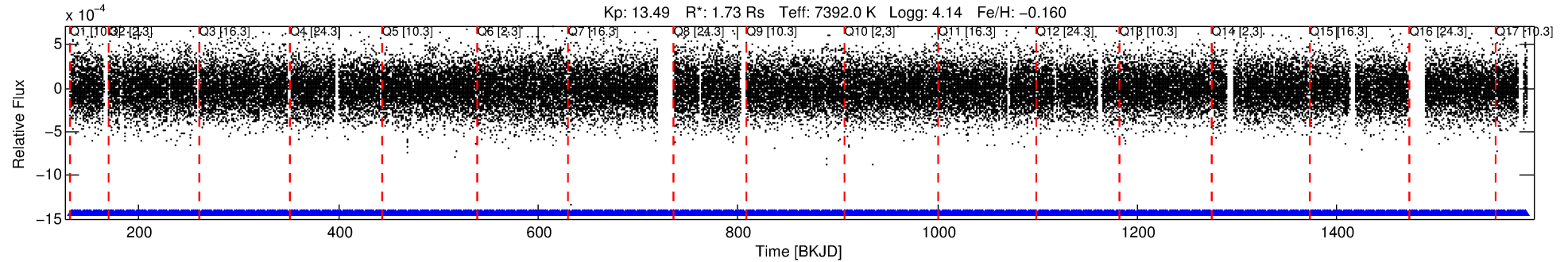
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 002854953-01

No Significant Match Found

# DV One-Page Summary

KIC: 2854953 Candidate: 1 of 7 Period: 1.725 d



## DV Fit Results:

Period = 1.72469 [0.00016] d  
Epoch = 131.9575 [0.0460] BKJD  
Rp/R\* = 0.0019 [0.0031]  
a/R\* = 1.14 [2.48]  
b = 0.70 [7.30]  
Seff = 7685.78 [2893.26]  
Teq = 2388 [225] K  
Rp = 0.35 [0.60] Re  
a = 0.0322 [0.0078] AU  
Ag = 85.45 [286.17] [0.30σ]  
Teffp = 11223 [9360] K [0.94σ]

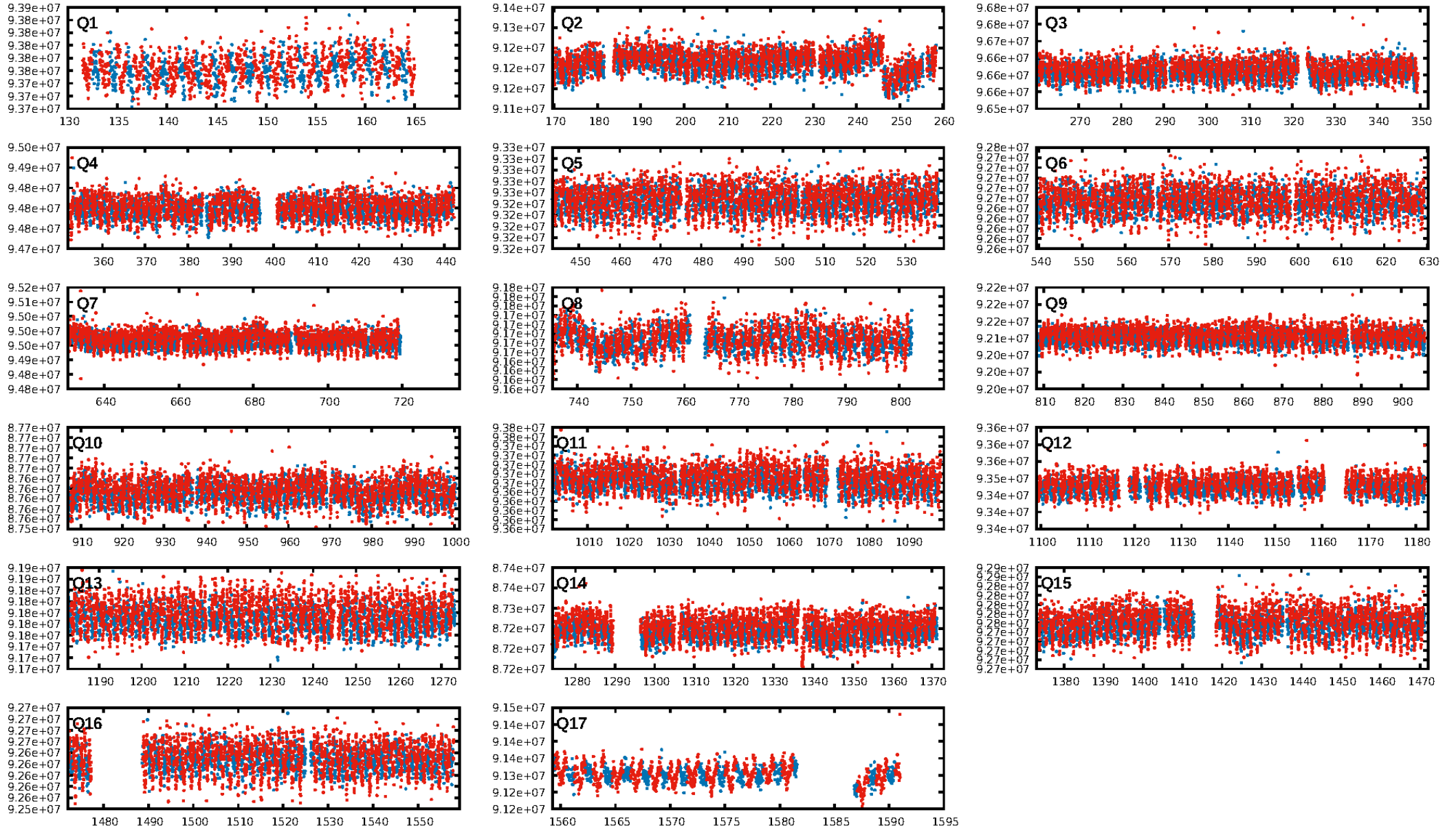
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [38.42σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.36e-24  
RollingBand-fgt: 1.00 [752/752]  
GhostDiagnostic-chr: N/A  
Centroid-sig: N/A  
Centroid-so: N/A  
OotOffset-rm: 0.133 arcsec [0.76σ]  
KicOffset-rm: 0.112 arcsec [0.60σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 1.00 [16/16]  
DiffImageOverlap-fno: 1.00 [17/17]

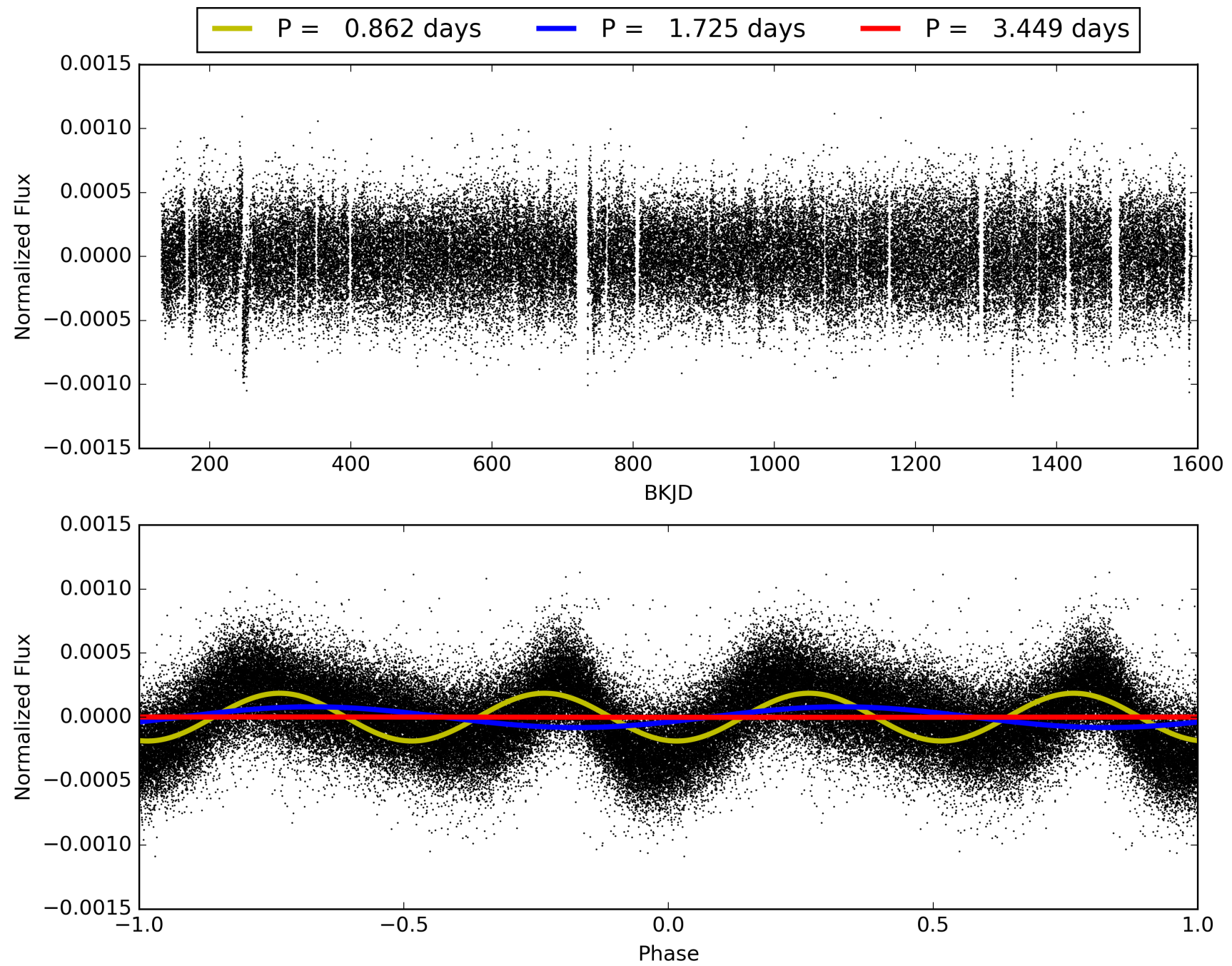
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:18:56 Z

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

# TCE 002854953-01, PDC Light Curves



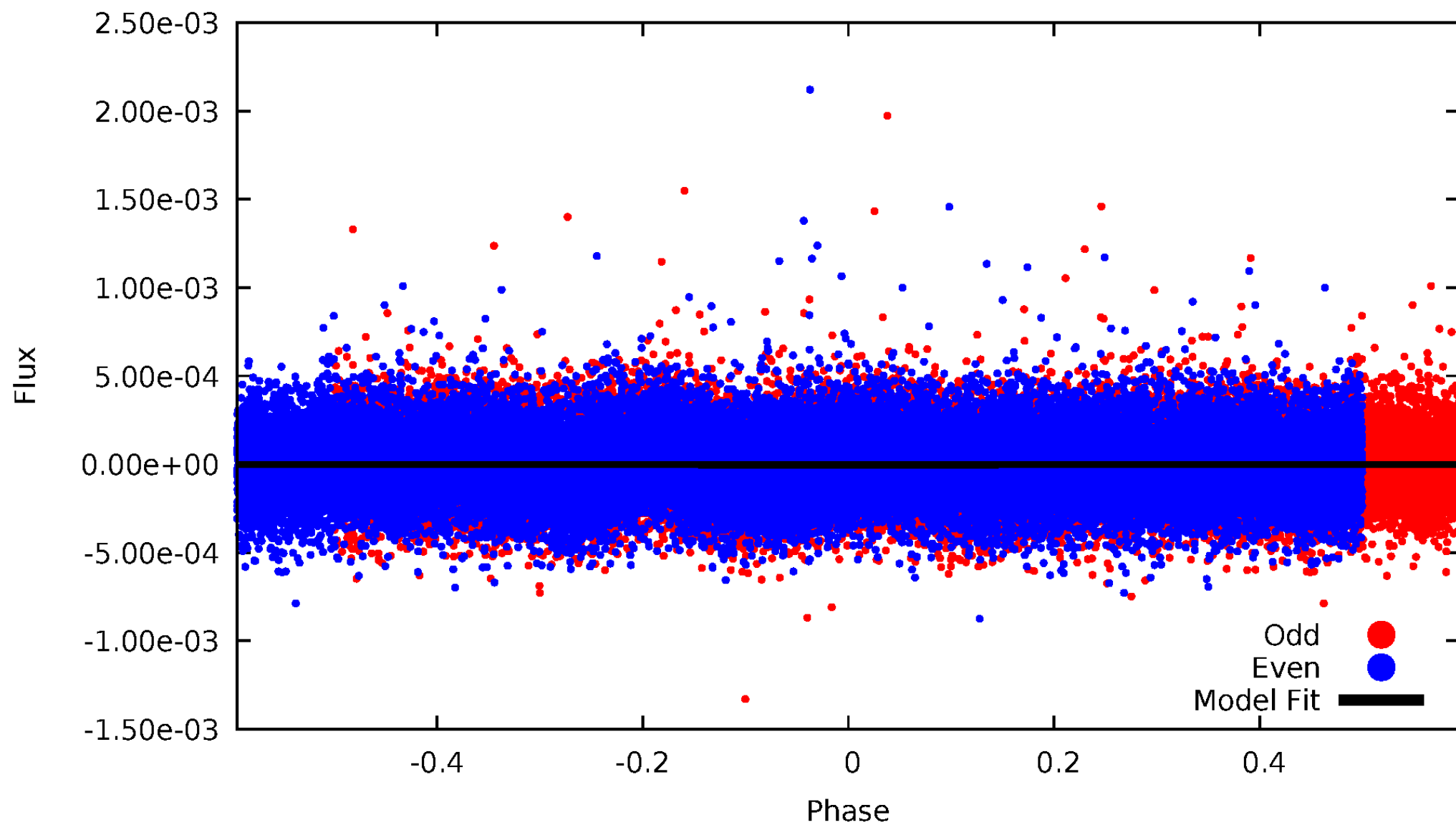
TCE 002854953-01





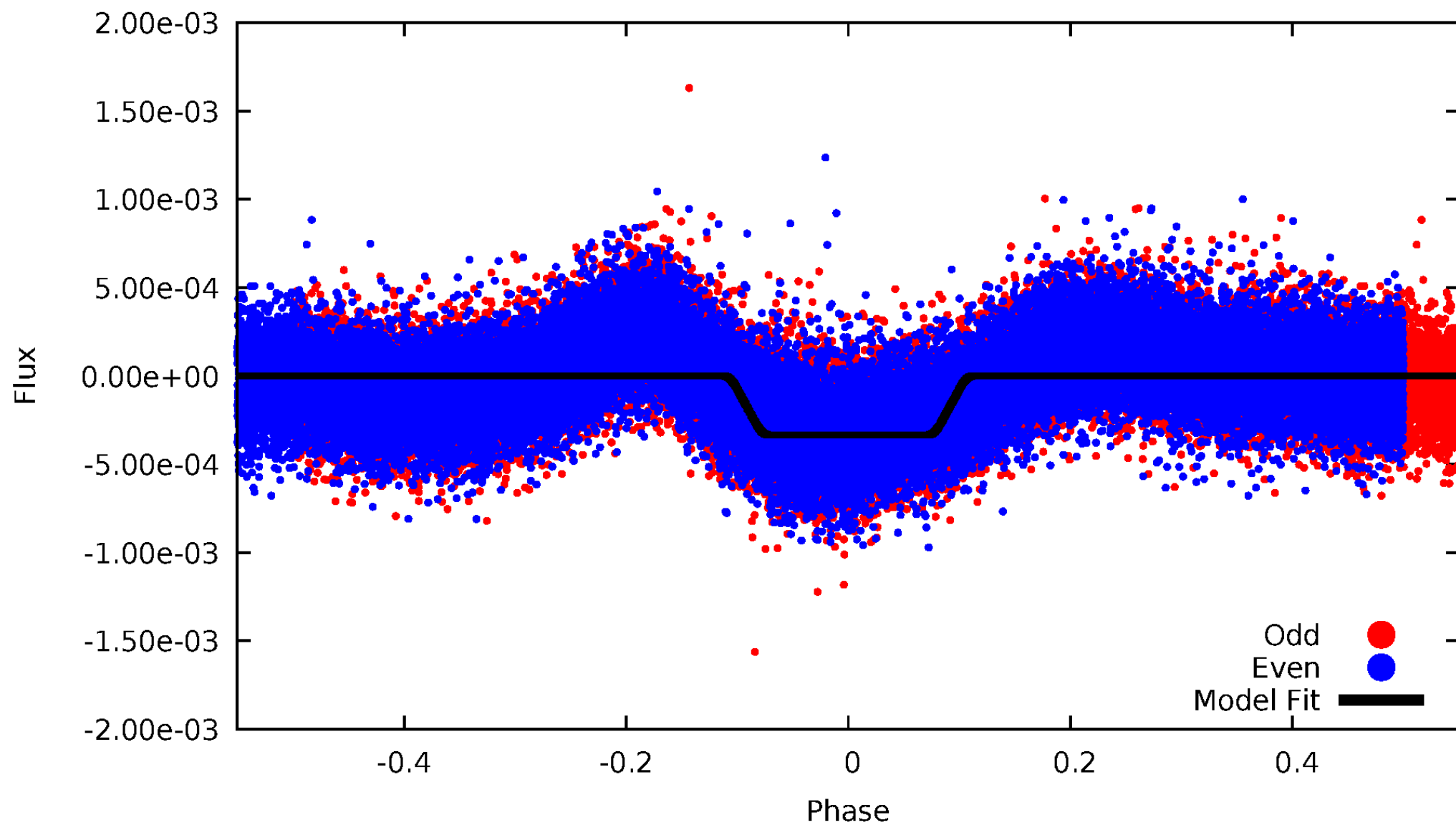
# DV Odd/Even

TCE 002854953-01

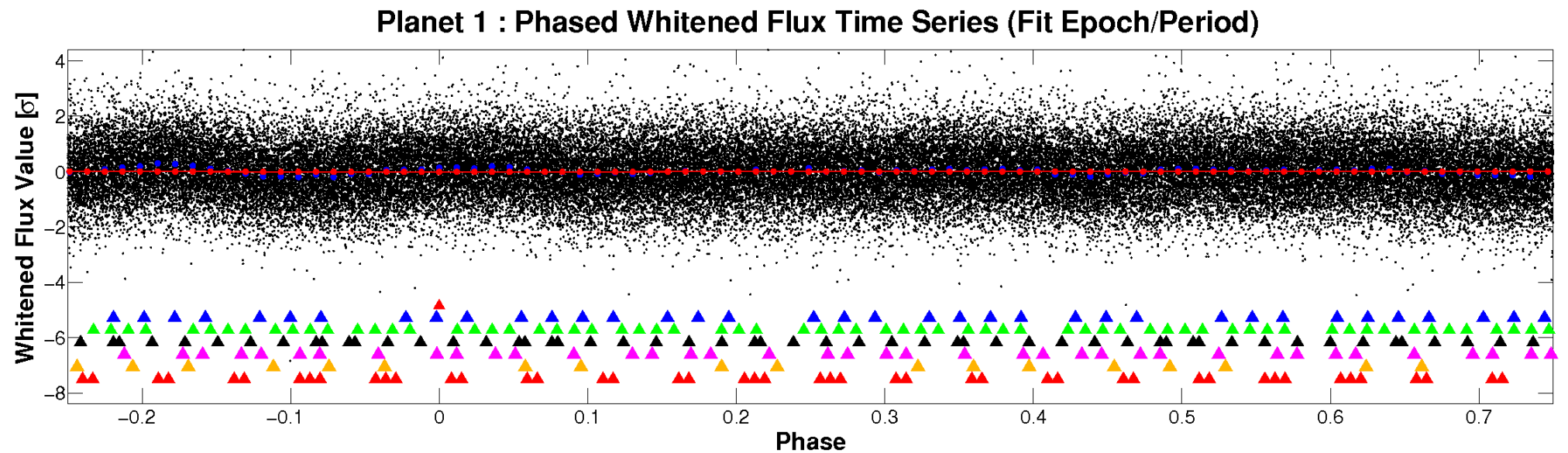
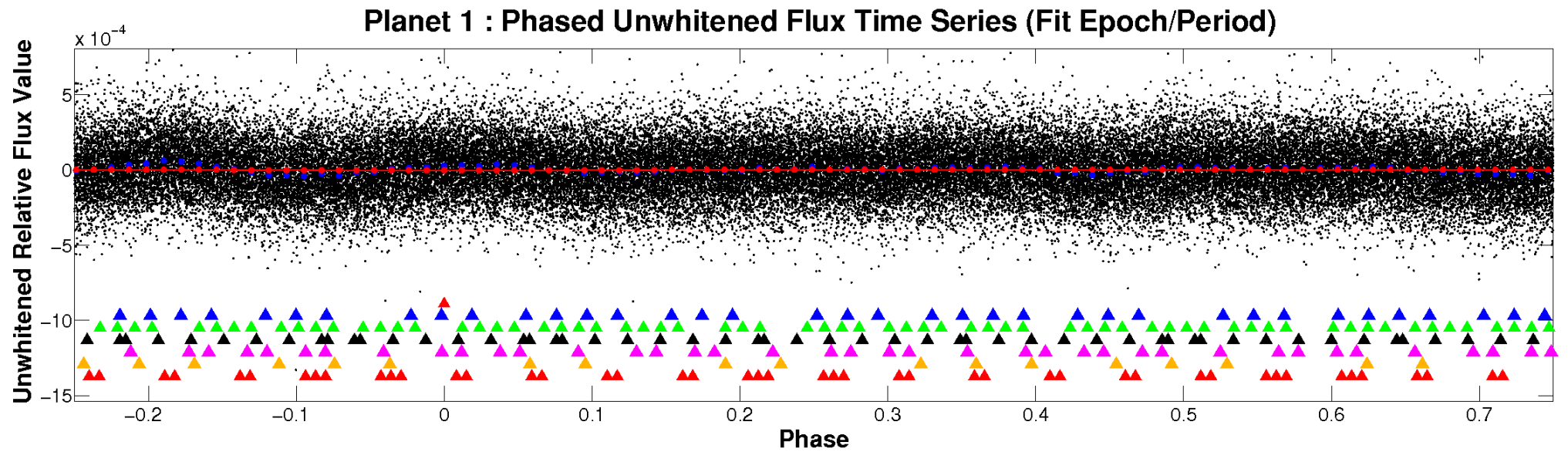


# ALT Odd/Even

TCE 002854953-01

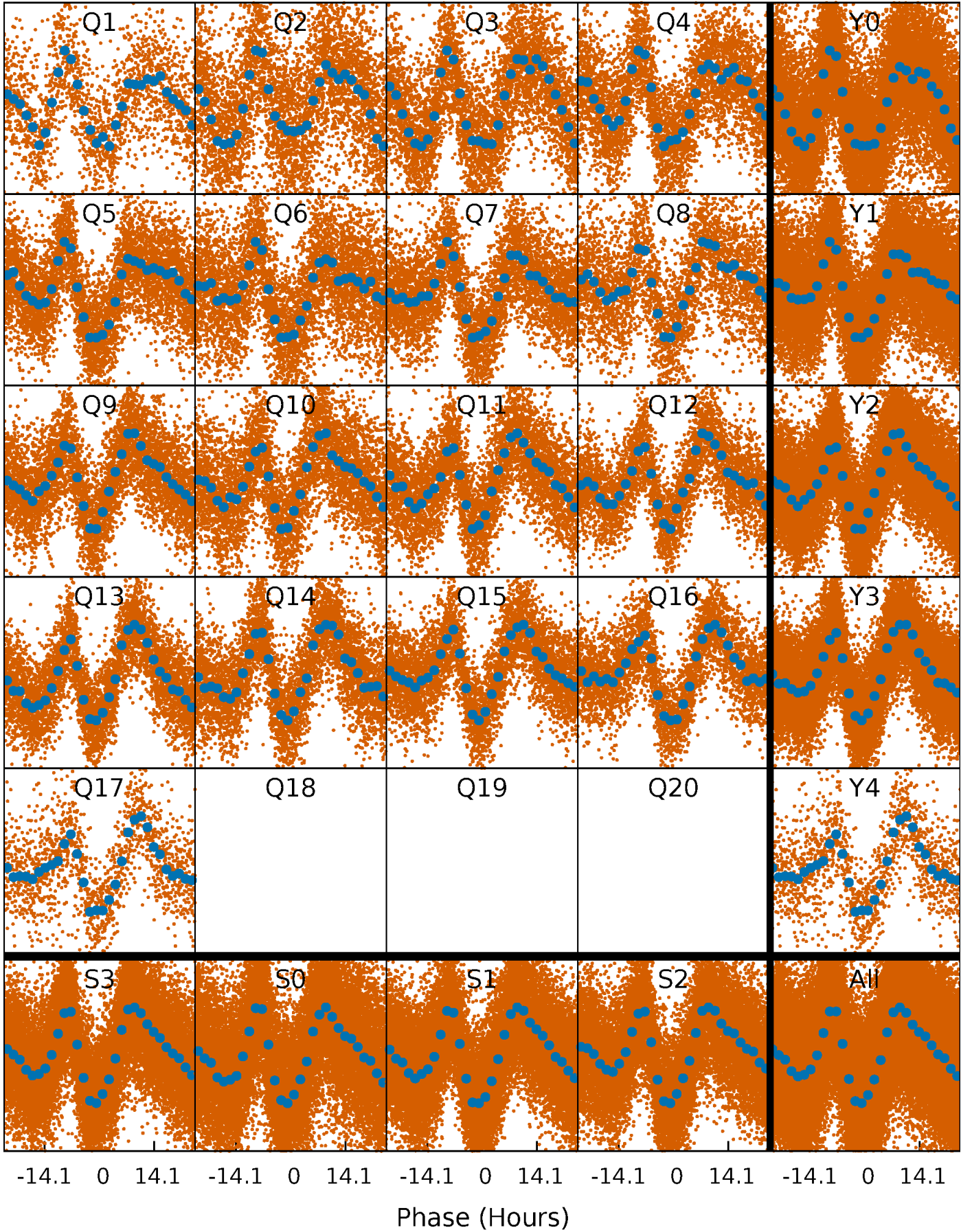


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

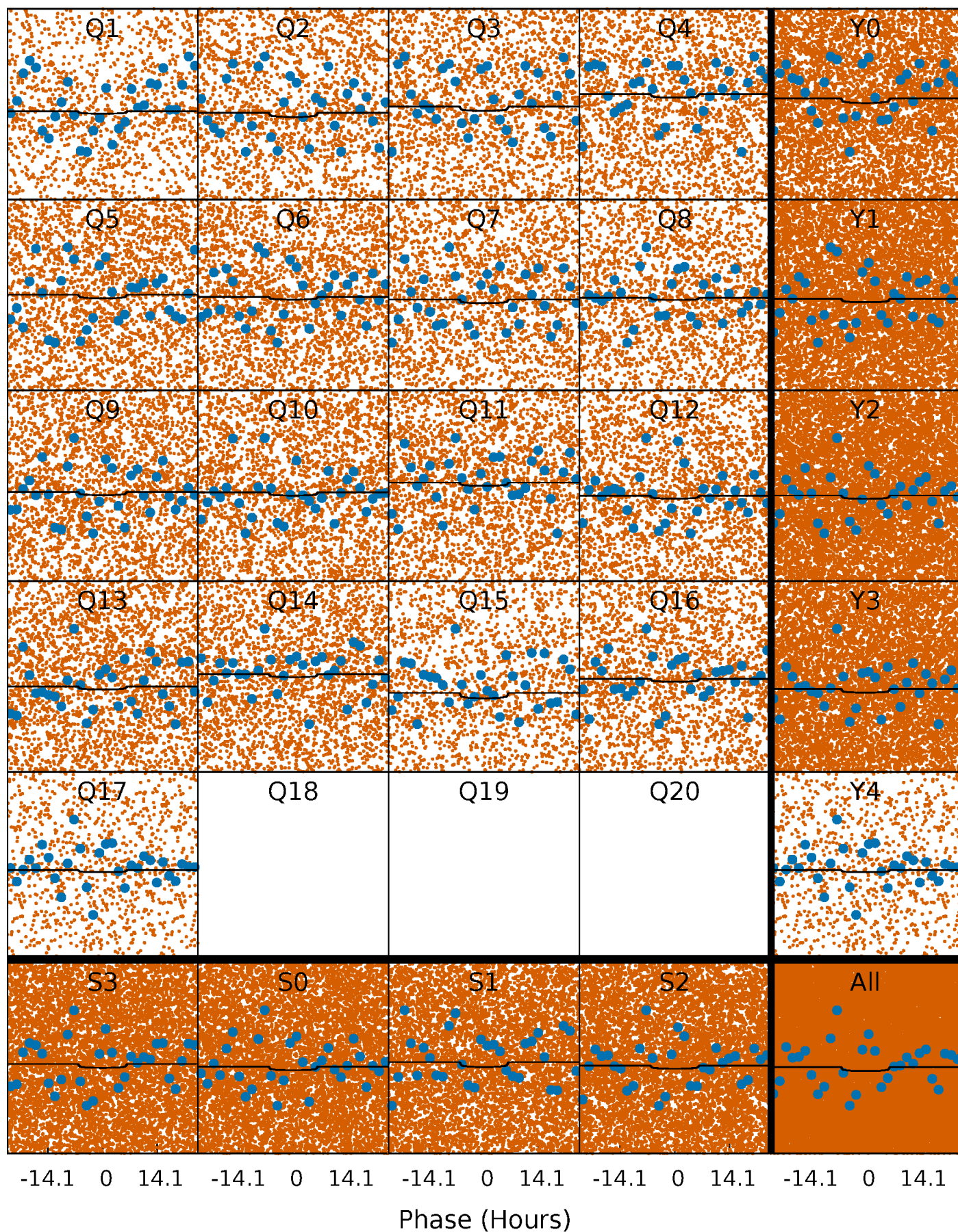
TCE 002854953-01   P= 1.724690 Days    $T_0=131.957540$  (BKJD)





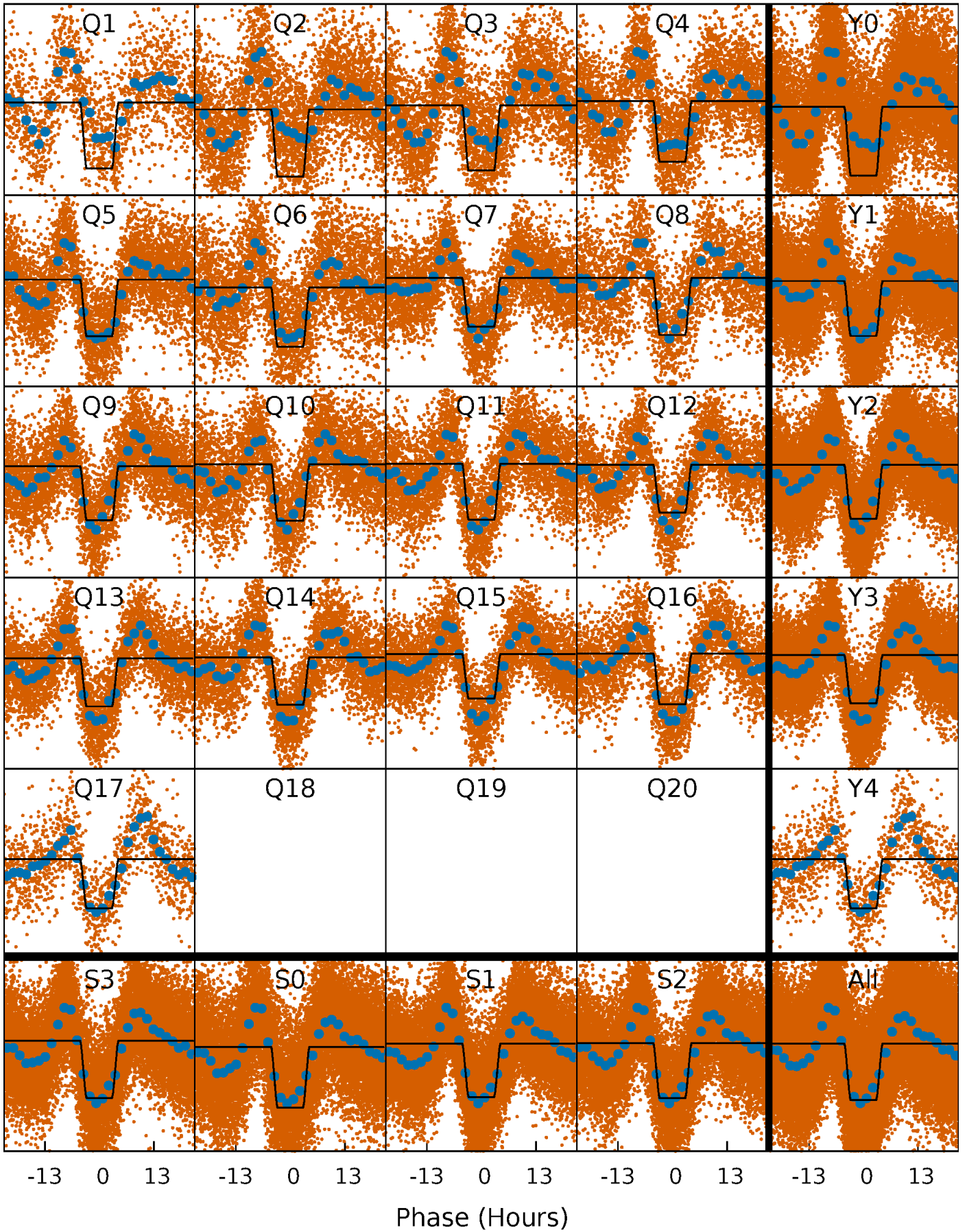
# DV Quarter-Phased Transit Curves

TCE 002854953-01 P= 1.724690 Days  $T_0=131.957540$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 002854953-01 P= 1.724735 Days  $T_0=131.916601$  (BKJD)

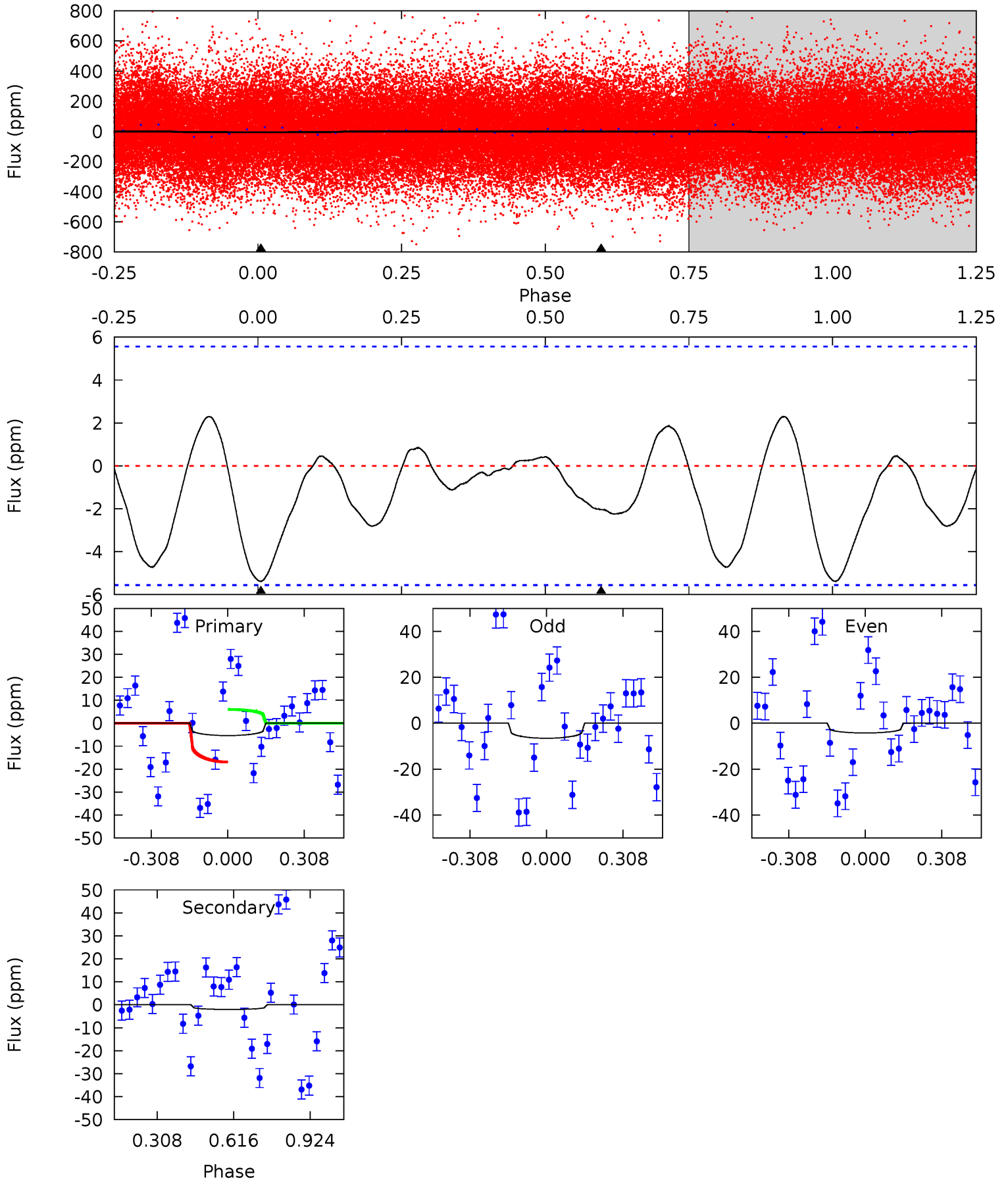




# DV Model-Shift Uniqueness Test

002854953-01, P = 1.724690 Days, E = 130.232850 Days

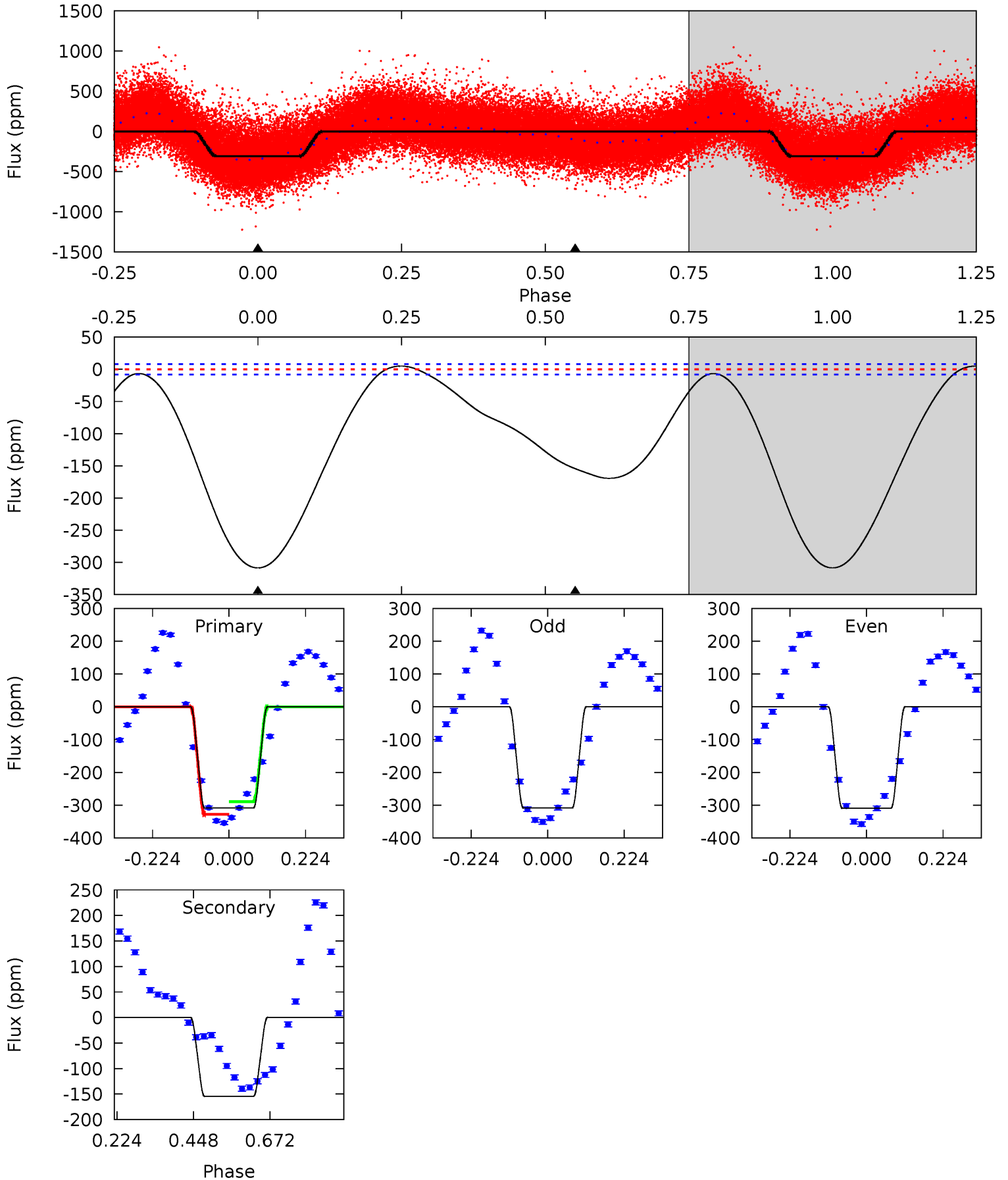
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.18	1.59	0	0	4.32	1.02	0.57	4.18	4.18	1.59	1.59	0.90	0.65	0.30	4.17



# Alt Model-Shift Uniqueness Test

002854953-01, P = 1.724735 Days, E = 130.191866 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
166.8	83.5	0	0	4.39	1.22	5.14	166.8	166.8	83.5	83.5	0.25	0.98	0.02	10.6





### Stellar Parameters For KIC 002854953

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7392^{+230}_{-307}$	$4.139^{+0.144}_{-0.176}$	$-0.160^{+0.250}_{-0.350}$	$1.726^{+0.525}_{-0.350}$	$1.493^{+0.209}_{-0.232}$	$0.409^{+0.315}_{-0.208}$
	+3%/-4%	+3%/-4%	+156%/-219%	+30%/-20%	+14%/-16%	+77%/-51%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 002854953-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-2 \pm 1$	$0.57^{+0.55}_{-0.37}$	$3356^{+227}_{-224}$	$4778^{+4123}_{-1483}$	$3.017^{+26.911}_{-2.424}$
Alt.	$-154 \pm 2$	$3.46^{+0.81}_{-0.70}$	$3355^{+240}_{-215}$	$5975^{+627}_{-499}$	$7.348^{+3.847}_{-2.613}$

$T_{\text{max}}$  = 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

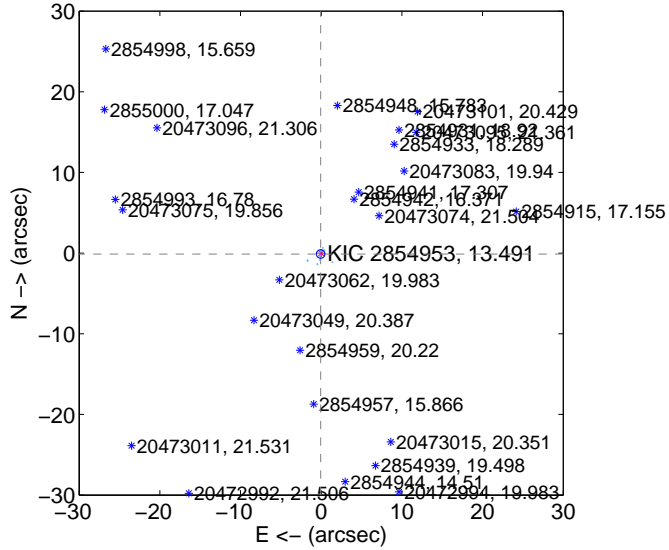
Supplemental centroid analysis for 002854953-01. Kepler magnitude: 13.49. Transit SNR 1.90

There are 16 quarters with good PRF difference image offsets

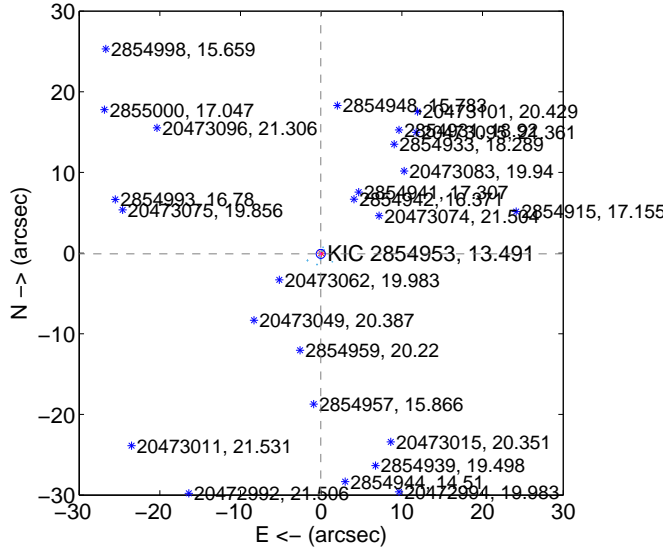
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.133 \pm 0.176$	0.76	$0.069 \pm 0.169$	$-0.114 \pm 0.160$
PRF-fit source offset from KIC position	$0.112 \pm 0.187$	0.60	$0.053 \pm 0.168$	$-0.099 \pm 0.178$
photometric centroid source offset	—	—	—	—

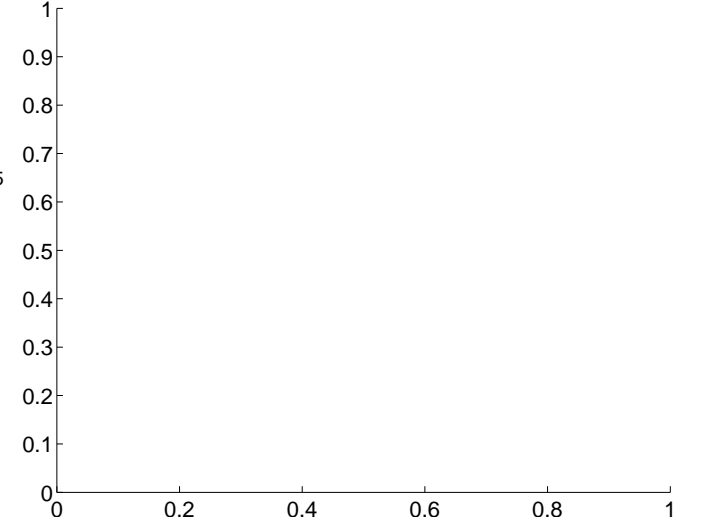
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

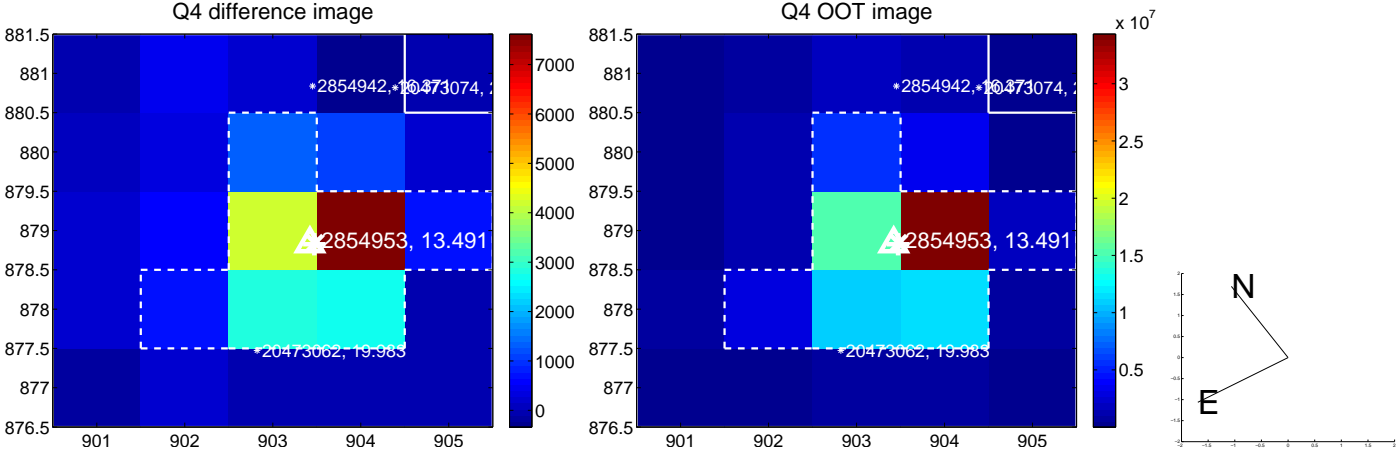
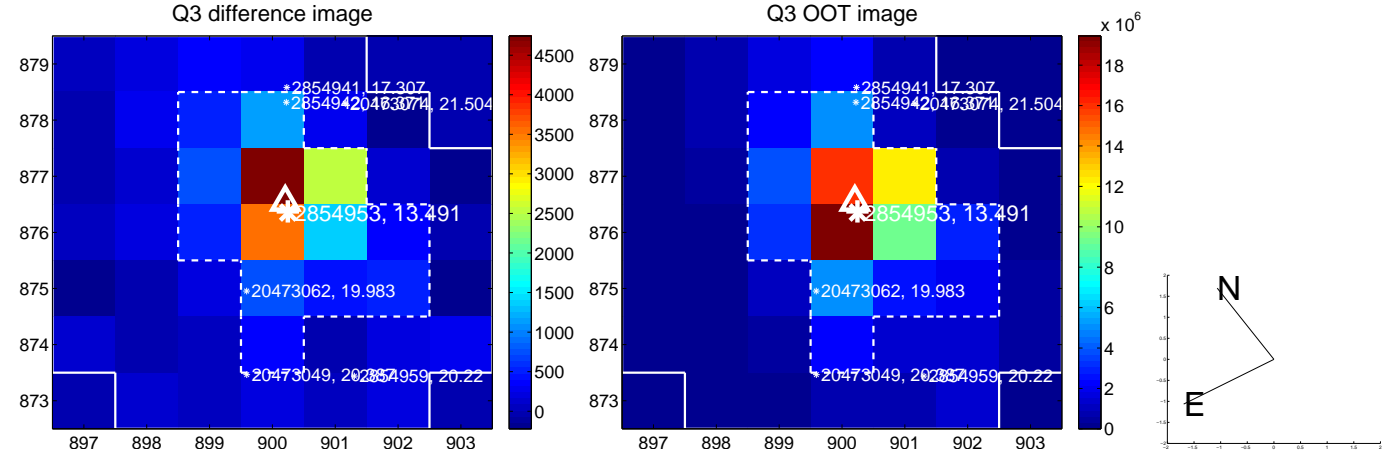
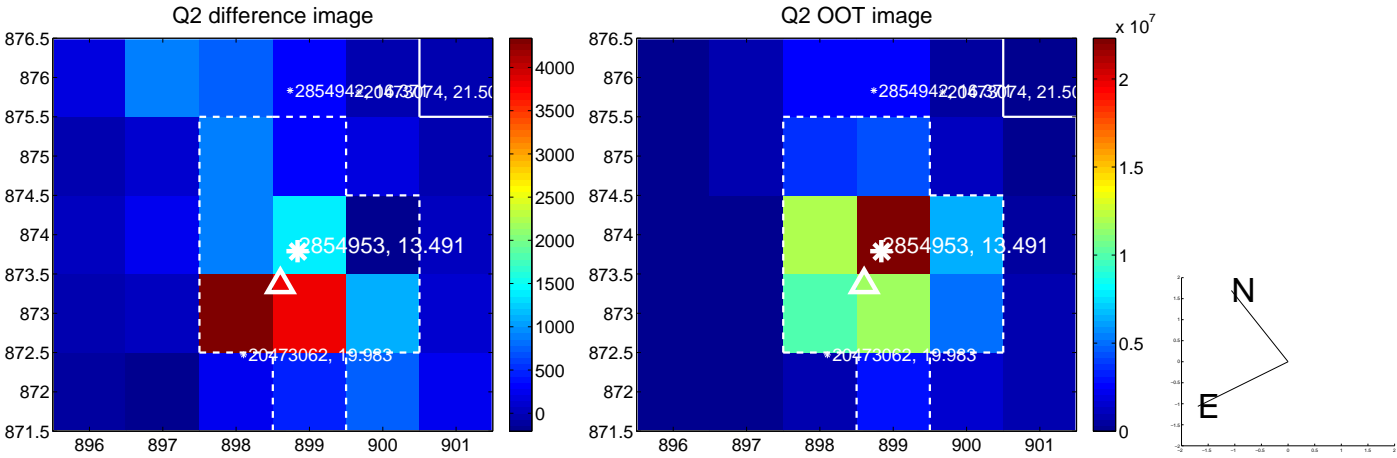
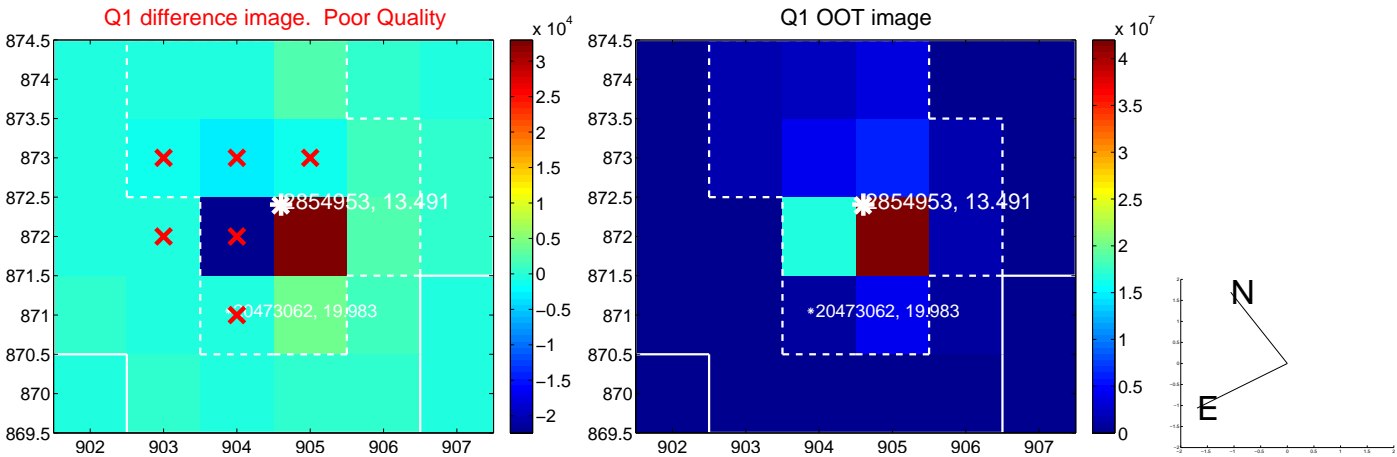


There are no photometric centroids

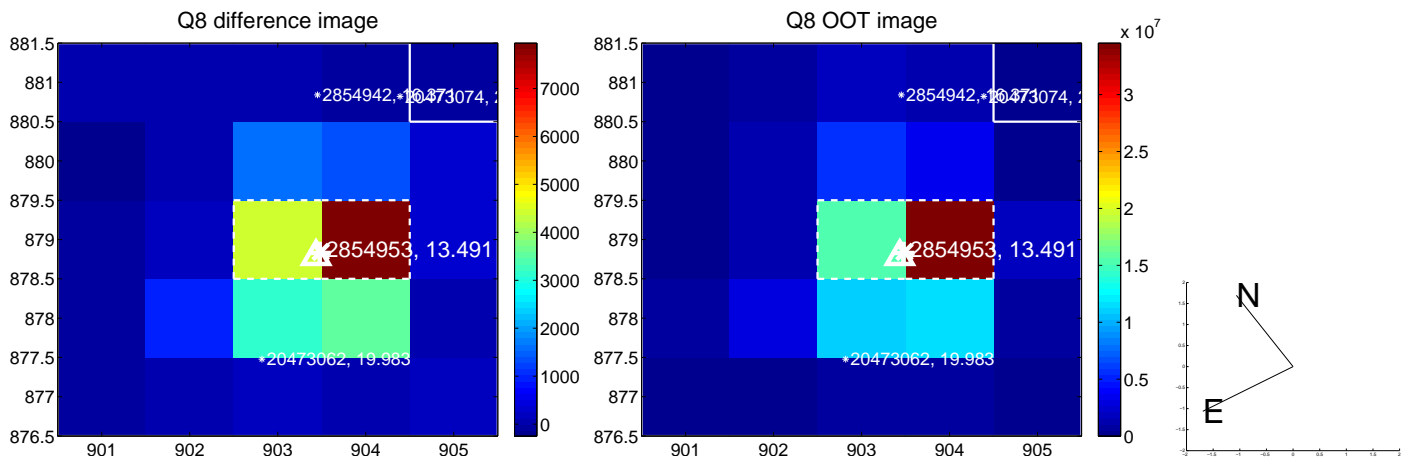
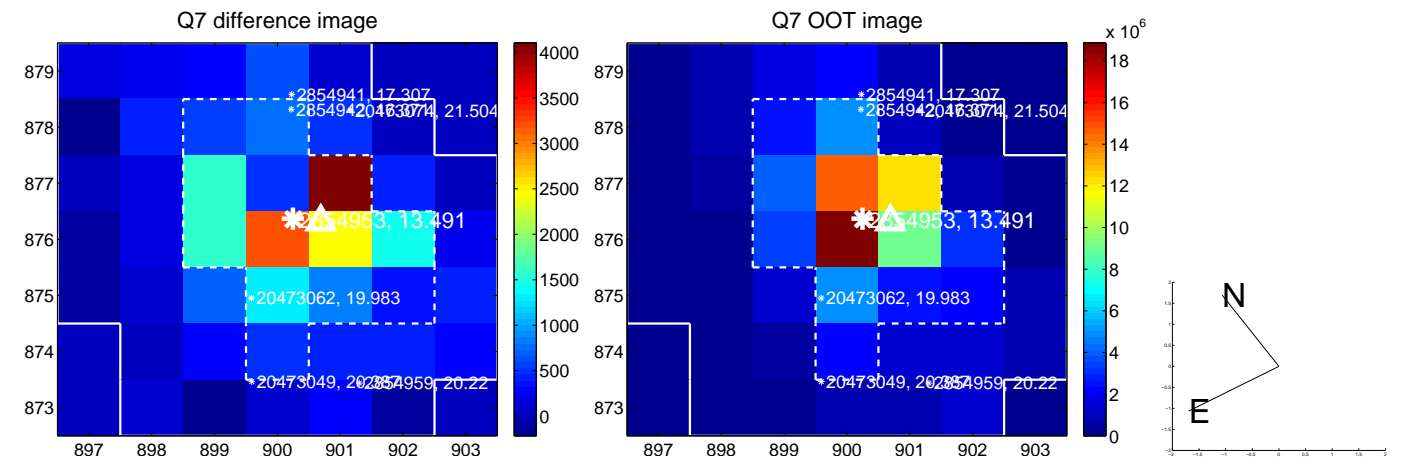
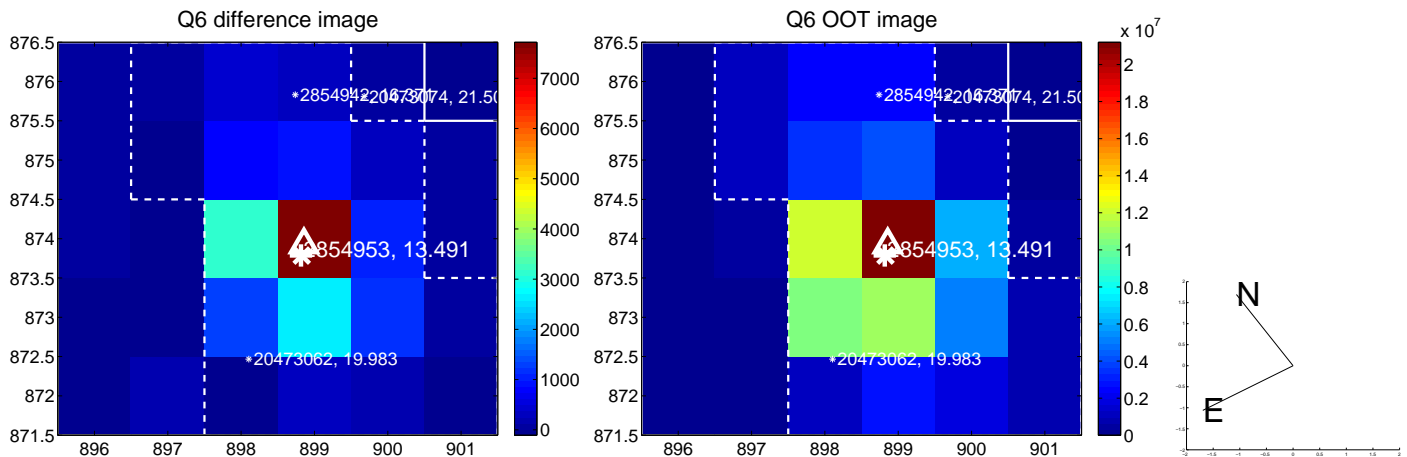
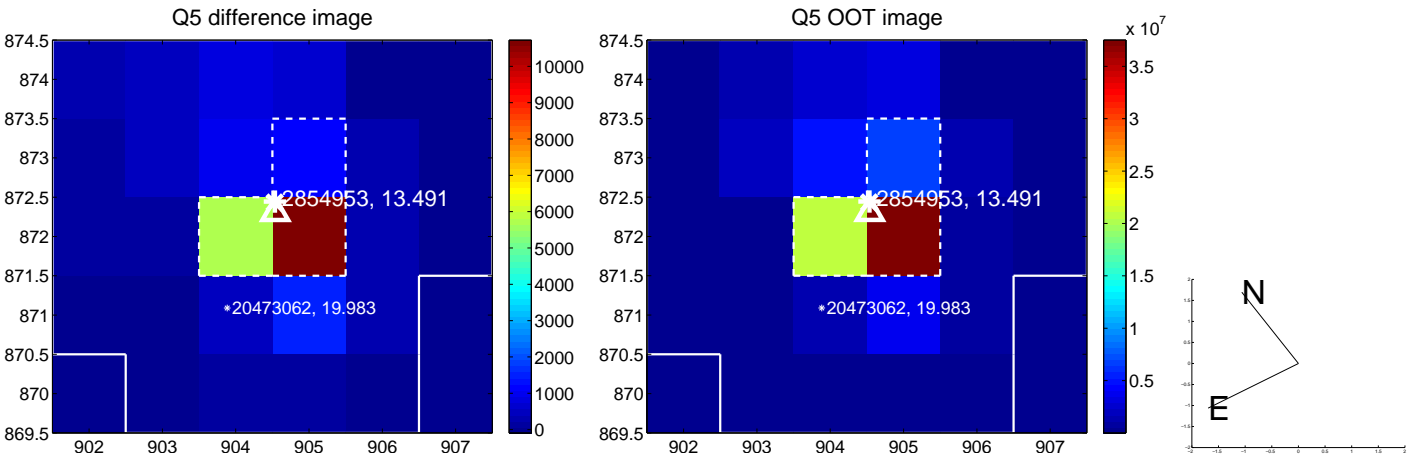


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

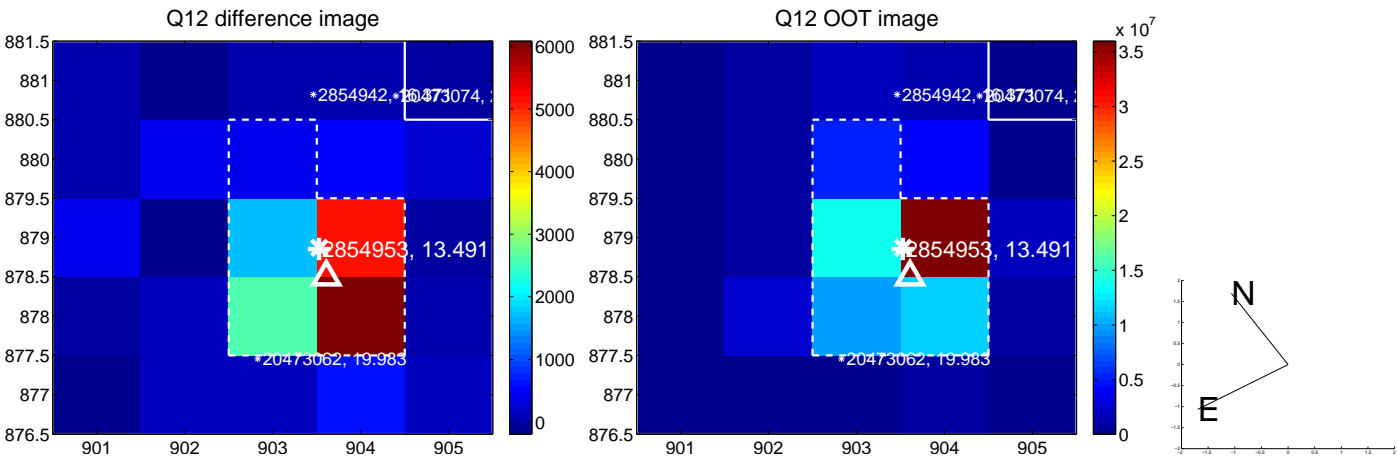
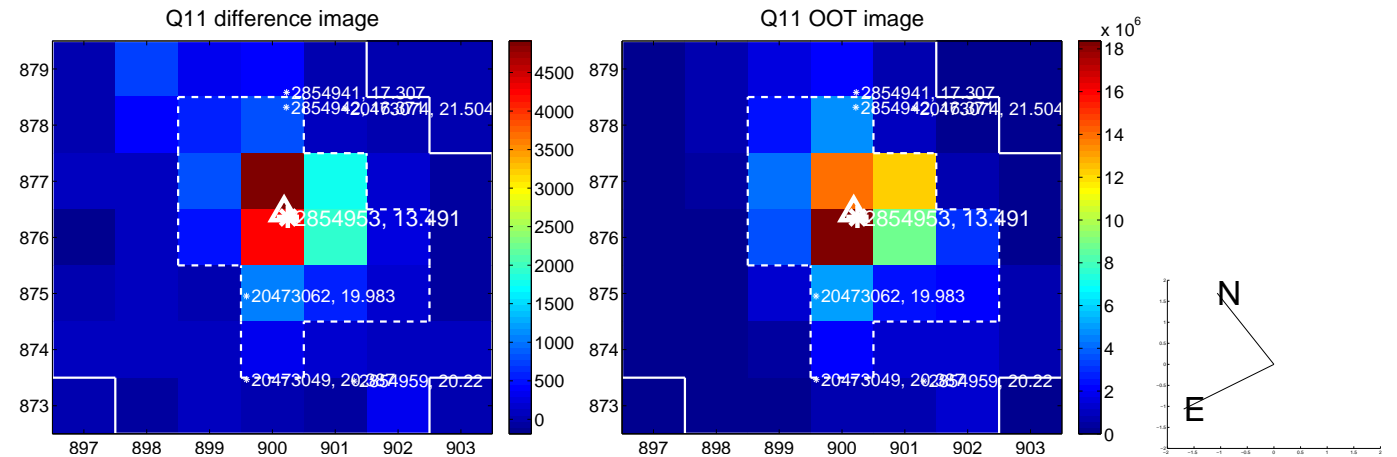
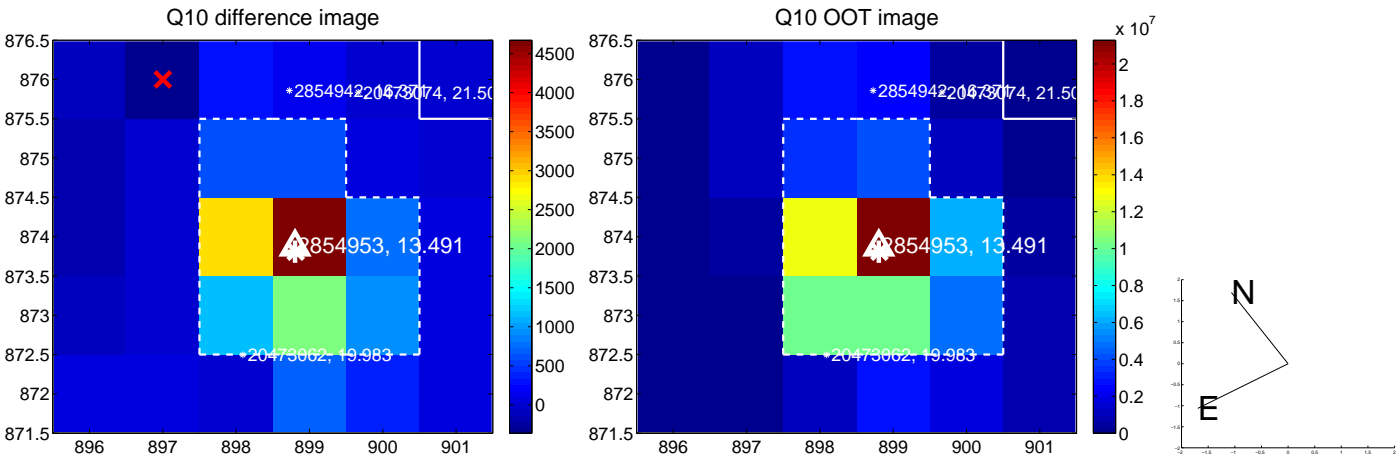
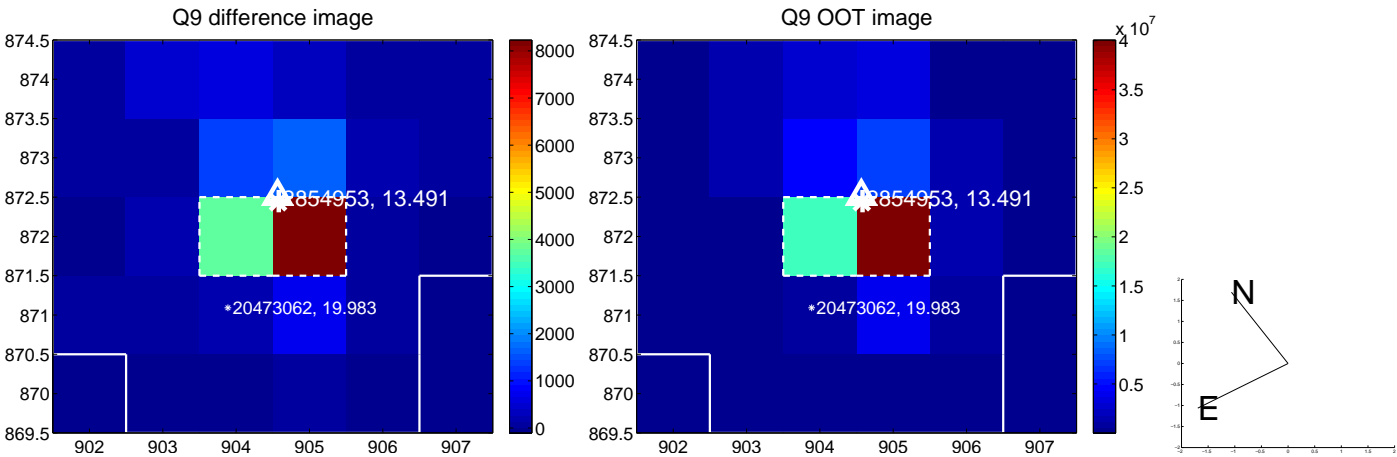


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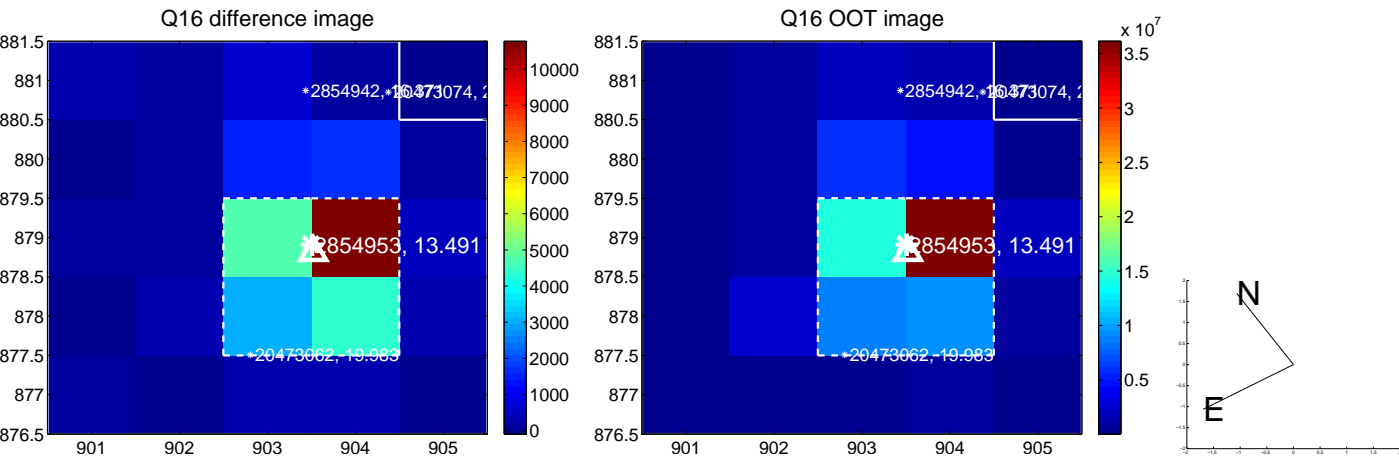
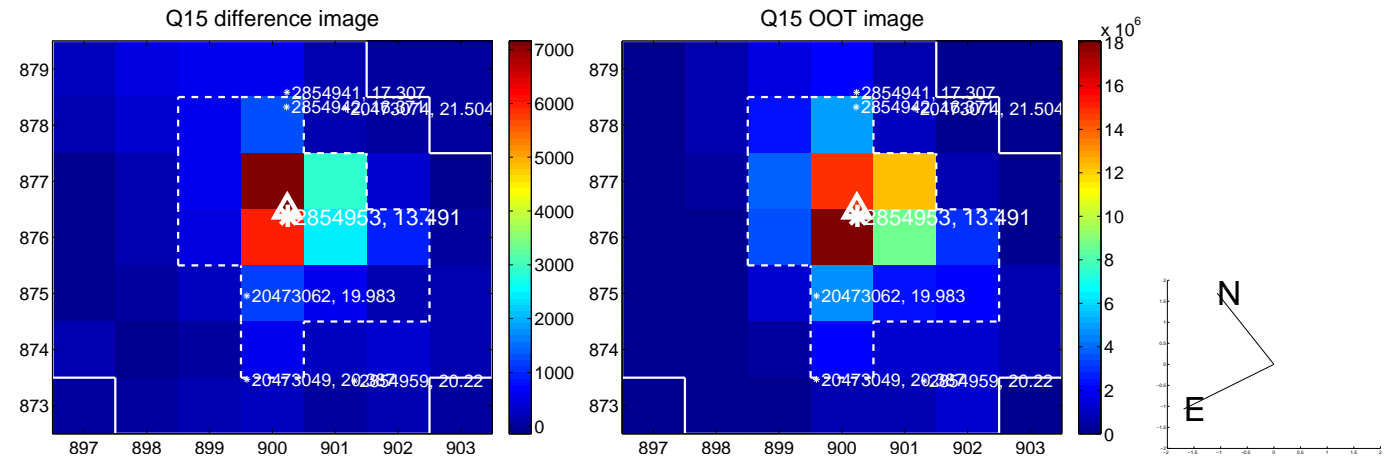
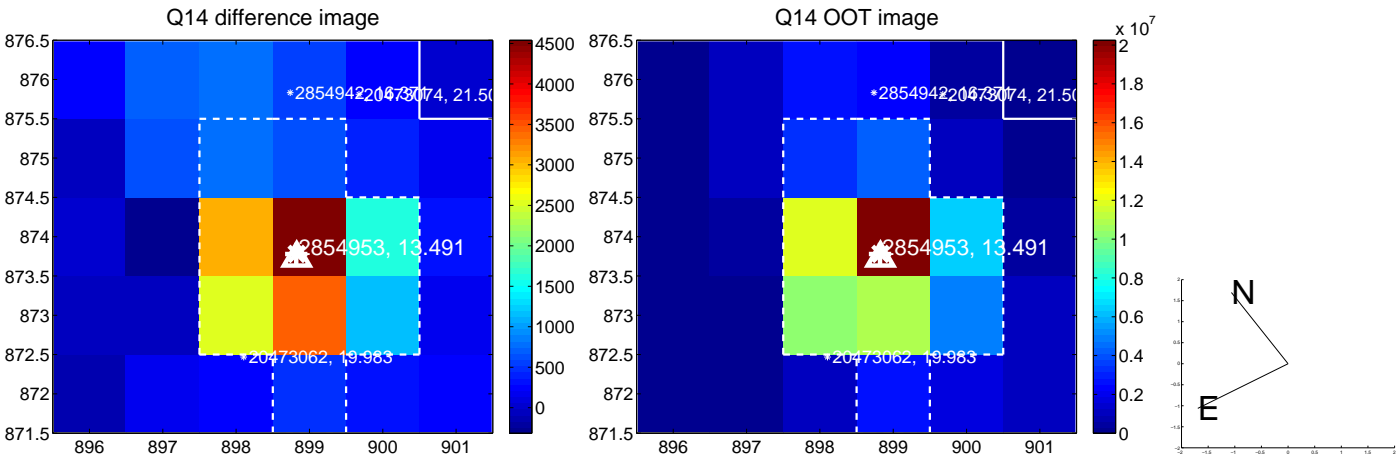
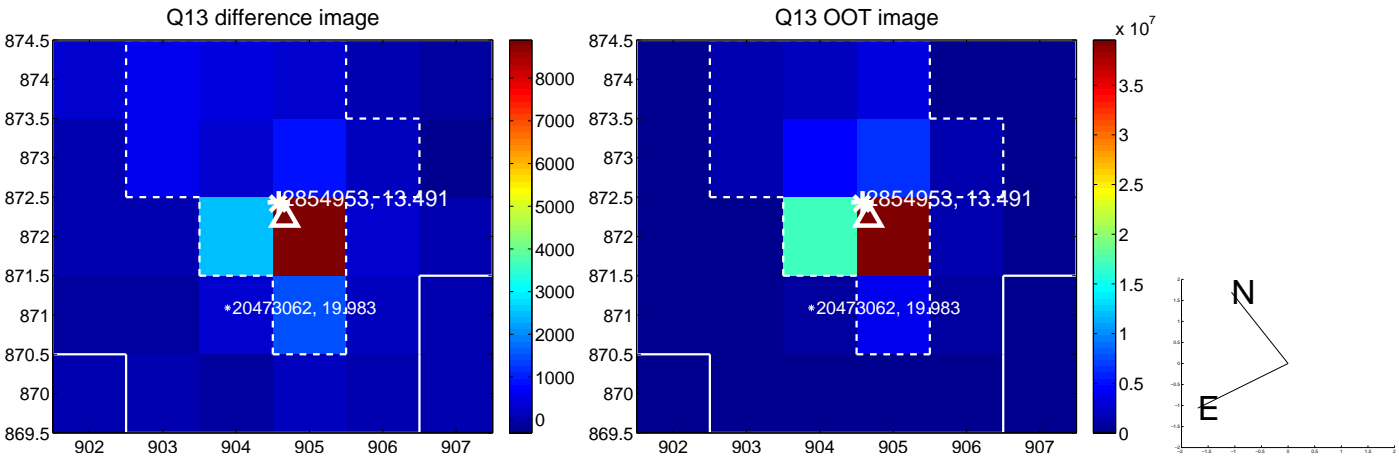




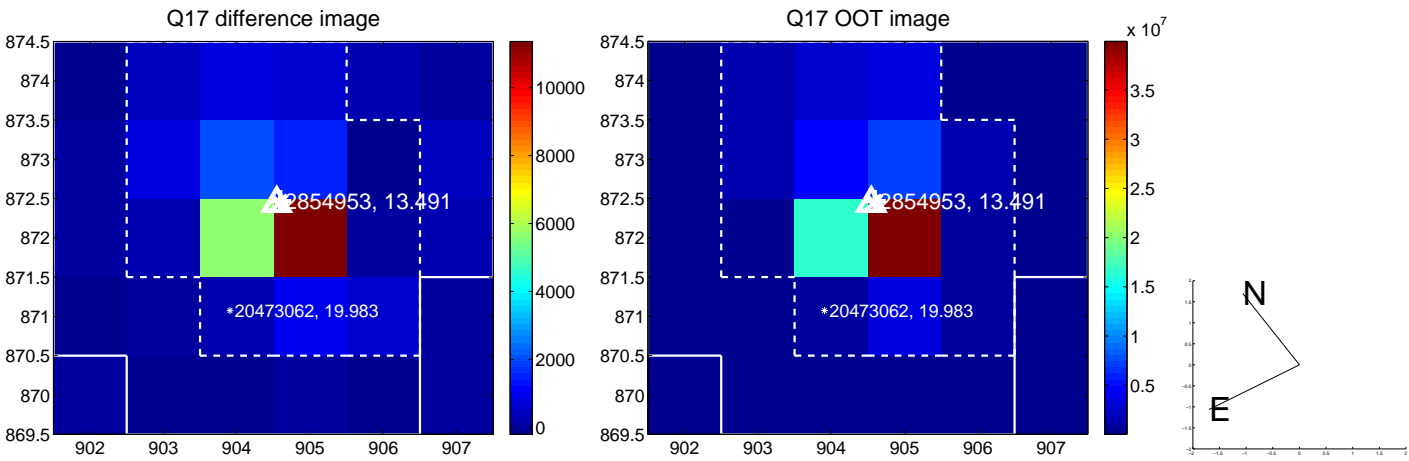
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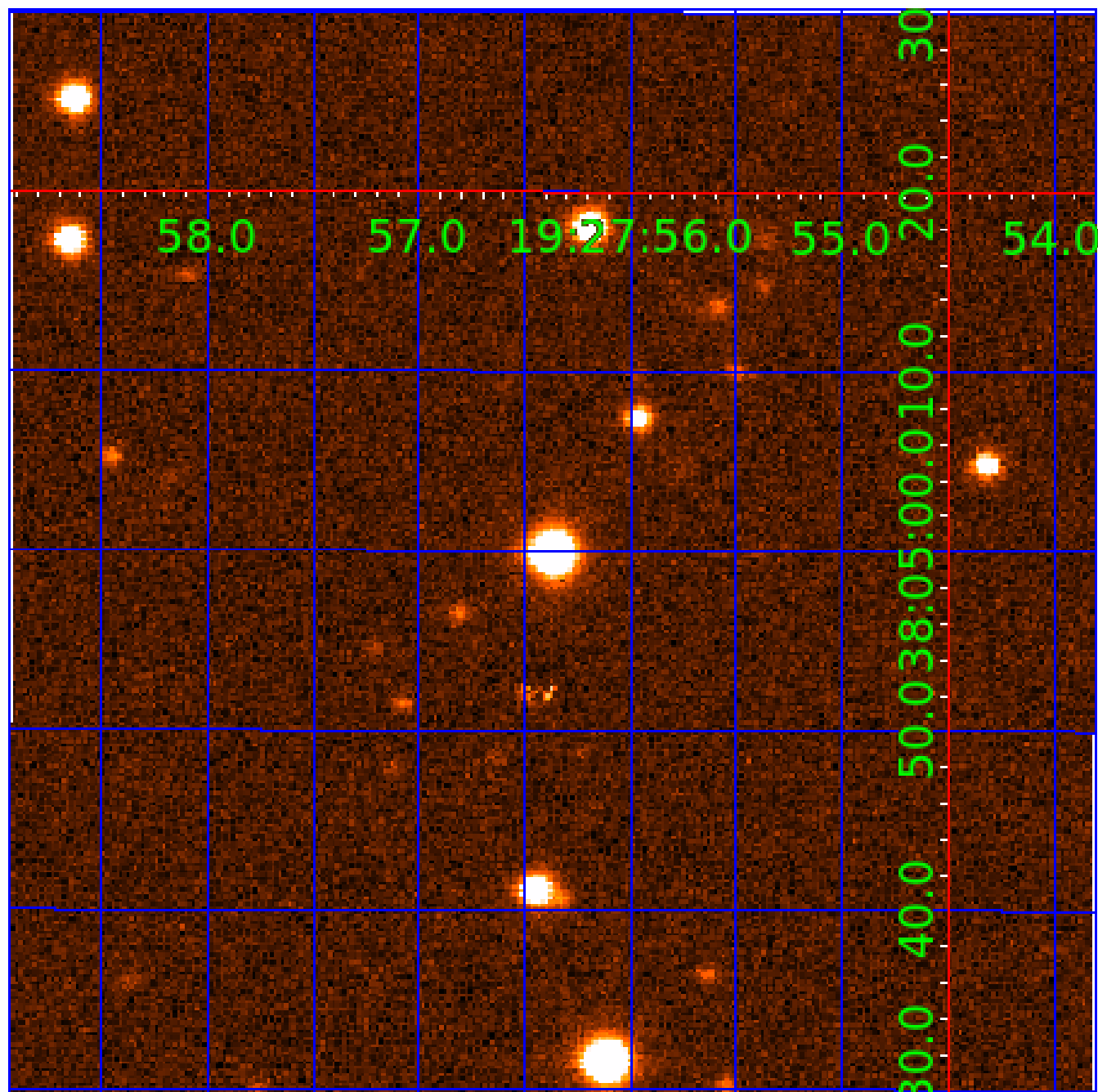
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination





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002854953-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
002854953-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
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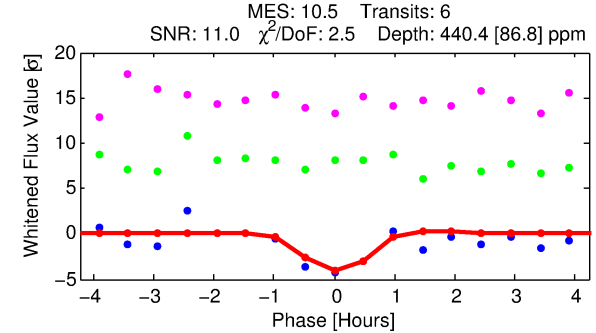
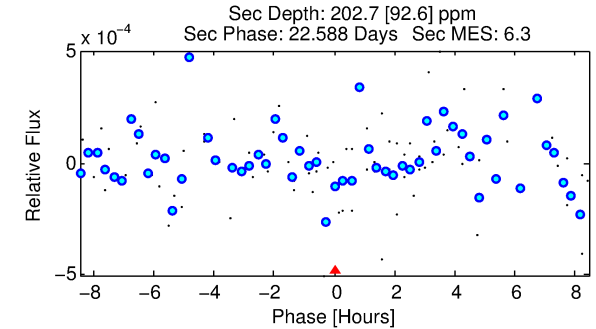
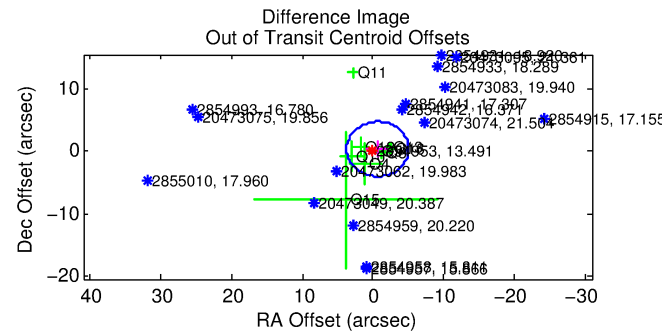
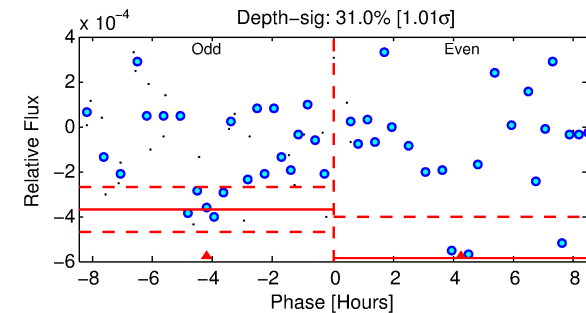
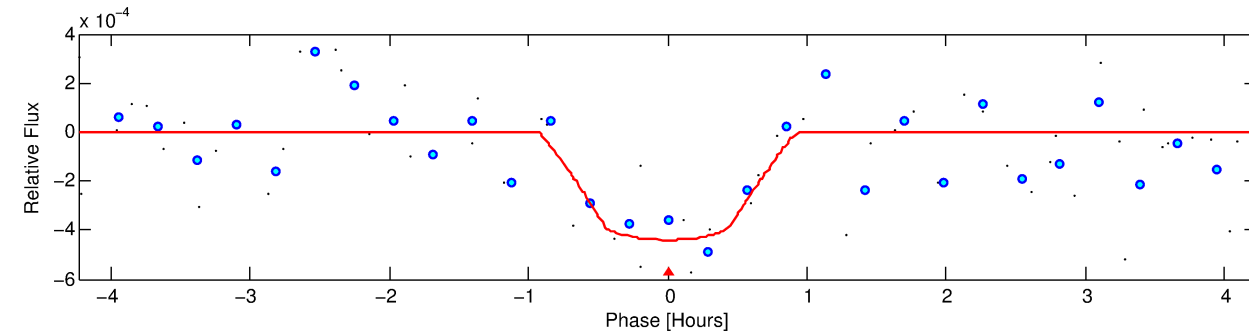
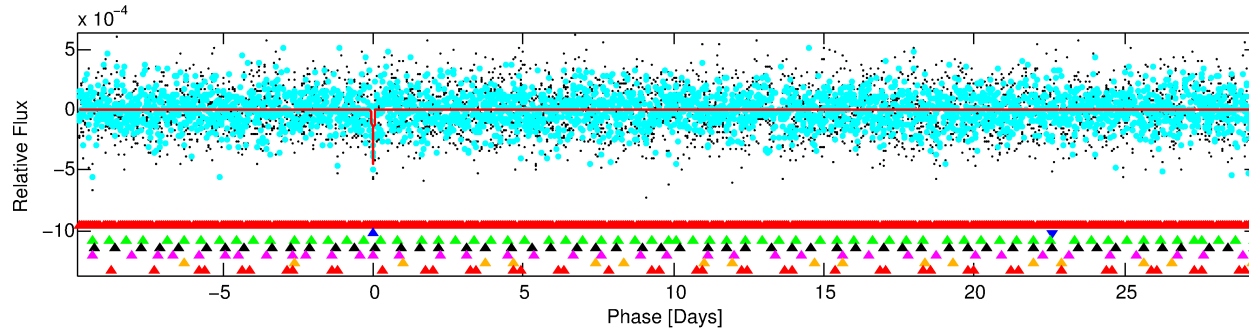
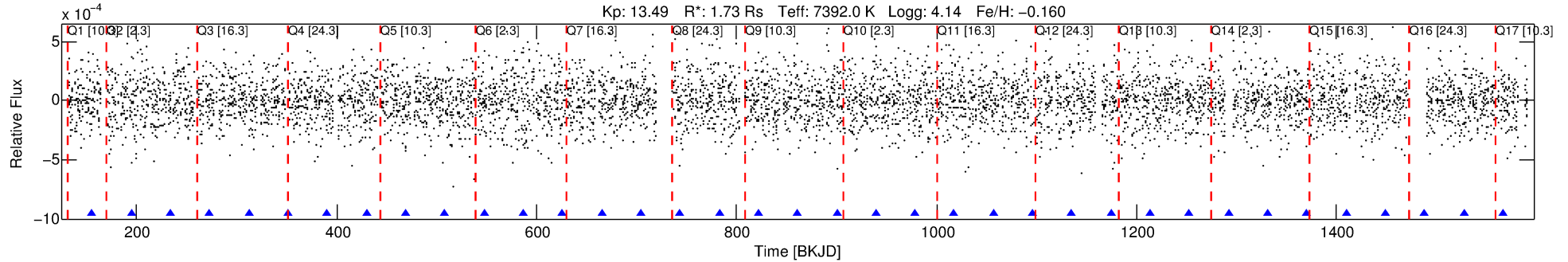
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002854953-02

No Significant Match Found

# DV One-Page Summary

KIC: 2854953 Candidate: 2 of 7 Period: 39.194 d



## DV Fit Results:

Period = 39.19427 [0.00083] d  
Epoch = 155.5278 [0.0193] BKJD  
Rp/R\* = 0.0197 [0.0435]  
a/R\* = 206.77 [2635.99]  
b = 0.30 [38.95]  
Seff = 119.40 [44.95]  
Teq = 843 [79] K  
Rp = 3.70 [8.27] Re  
a = 0.2583 [0.0629] AU  
Ag = 543.15 [2423.11] [0.22σ]  
Teffp = 6291 [7002] K [0.78σ]

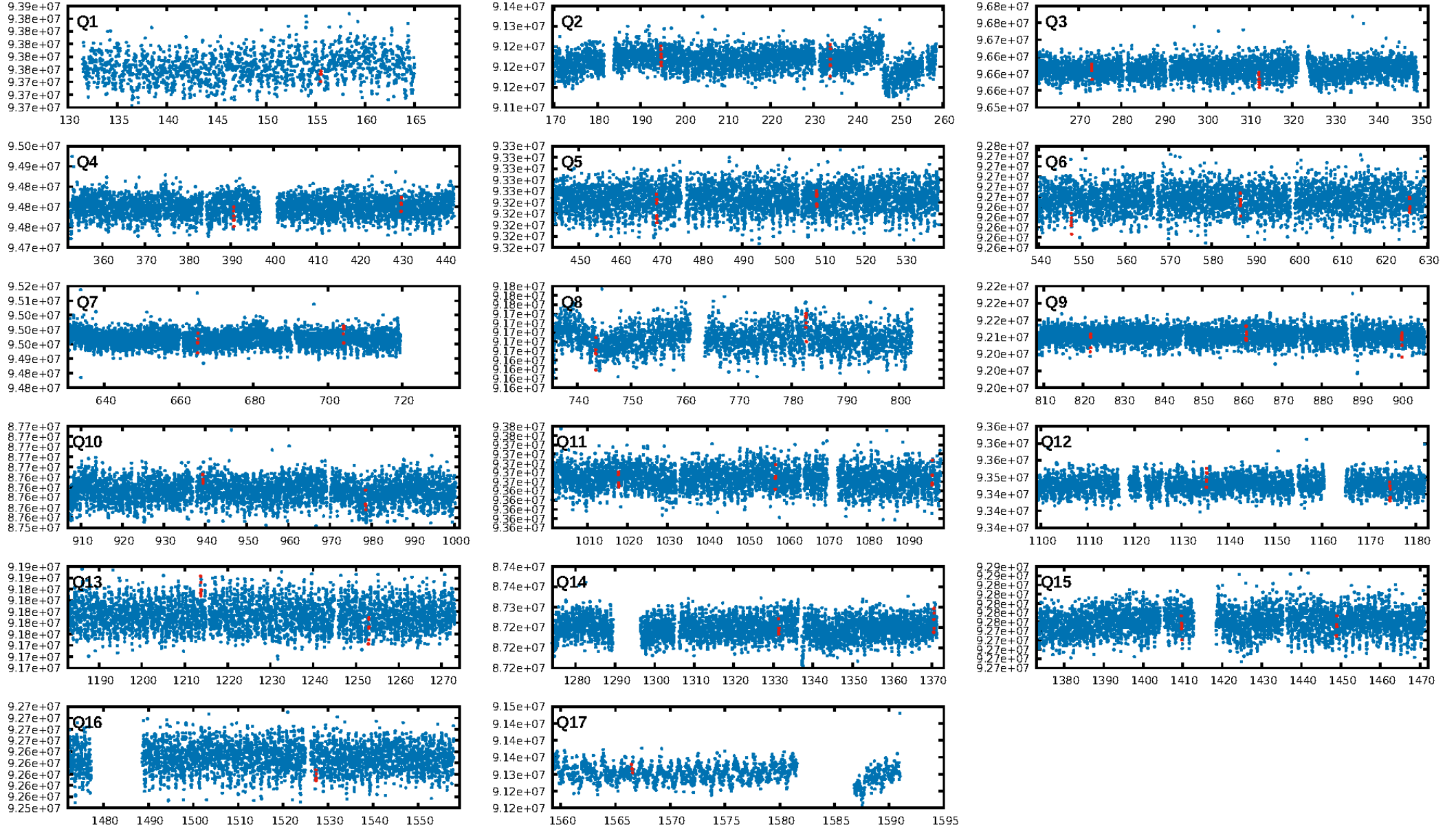
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [24.93σ]  
LongPeriod-sig: 100.0% [164.88σ]  
ModelChiSquare2-sig: 5.7%  
ModelChiSquareGof-sig: 73.9%  
**Bootstrap-pfa: 4.89e-09**  
RollingBand-fgt: 1.00 [6/6]  
GhostDiagnostic-chr: 1.09  
Centroid-sig: 4.0%  
Centroid-so: 1.052 arcsec [1.93σ]  
OotOffset-rm: 0.725 arcsec [0.50σ]  
KicOffset-rm: 0.754 arcsec [0.52σ]  
OotOffset-st: 1/2/4/2 [9]  
KicOffset-st: 1/2/4/2 [9]  
DiffImageQuality-fgm: 0.22 [2/9]  
DiffImageOverlap-fno: 0.53 [9/17]

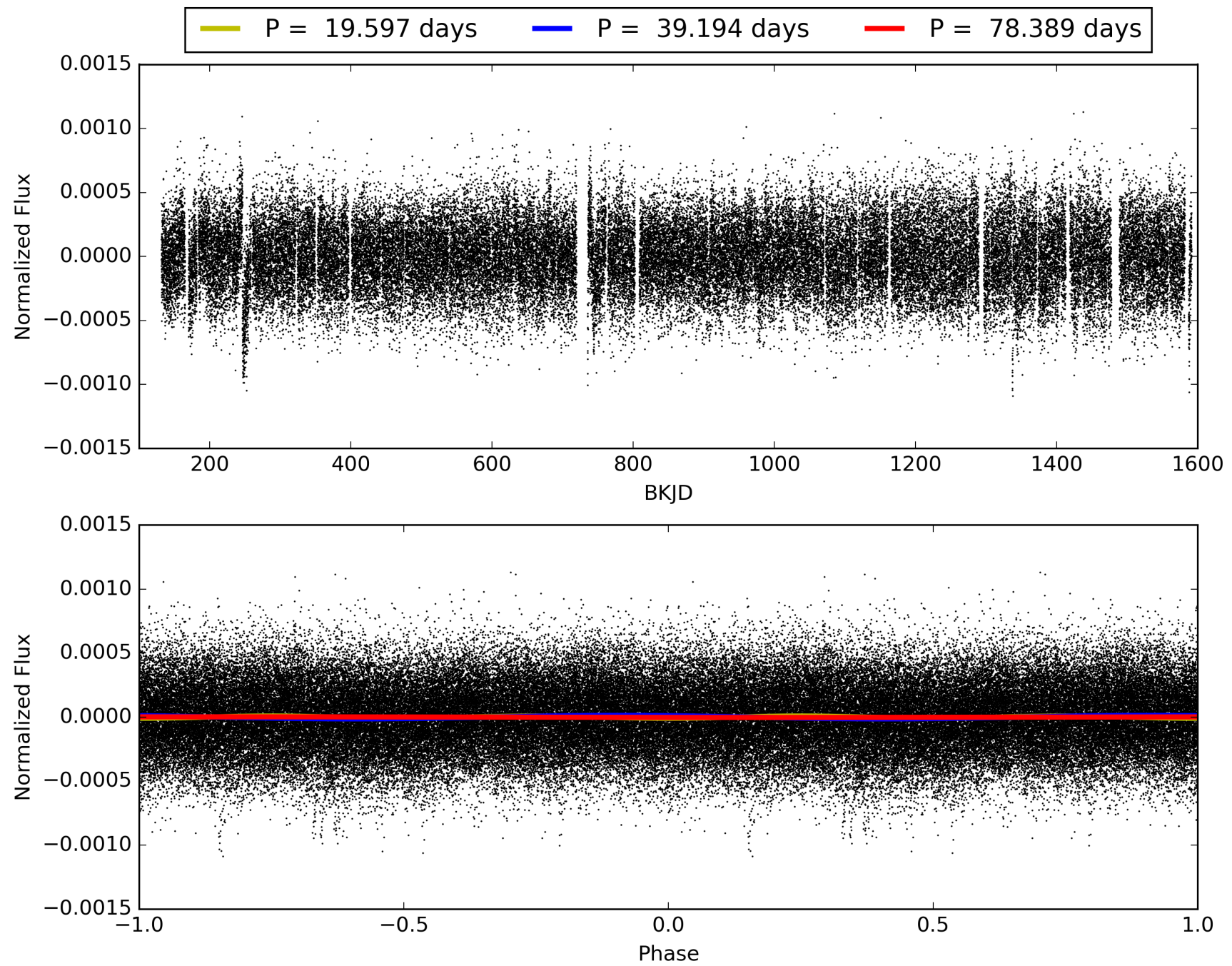
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:19:07 Z

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

# TCE 002854953-02, PDC Light Curves

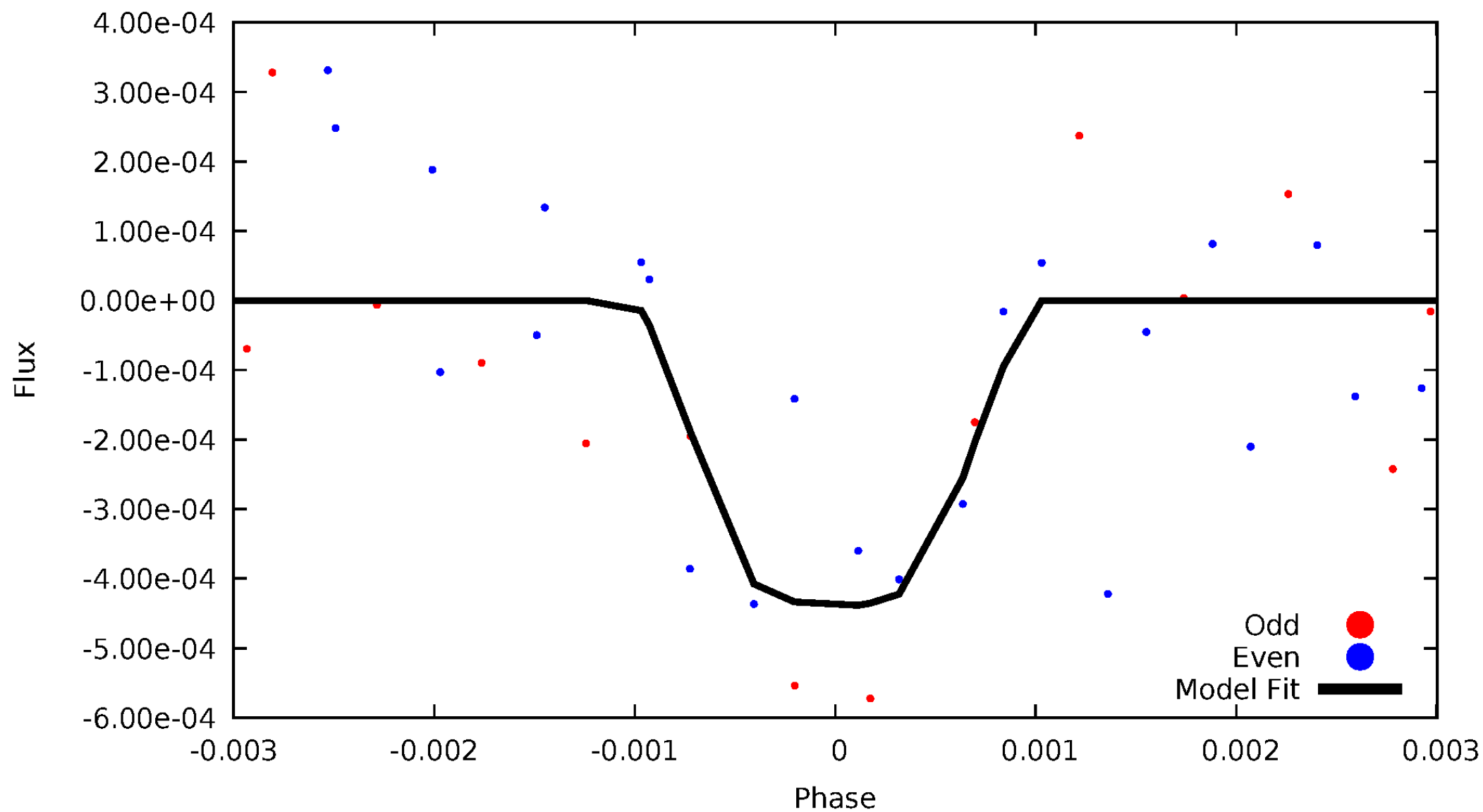


TCE 002854953-02



# DV Odd/Even

TCE 002854953-02





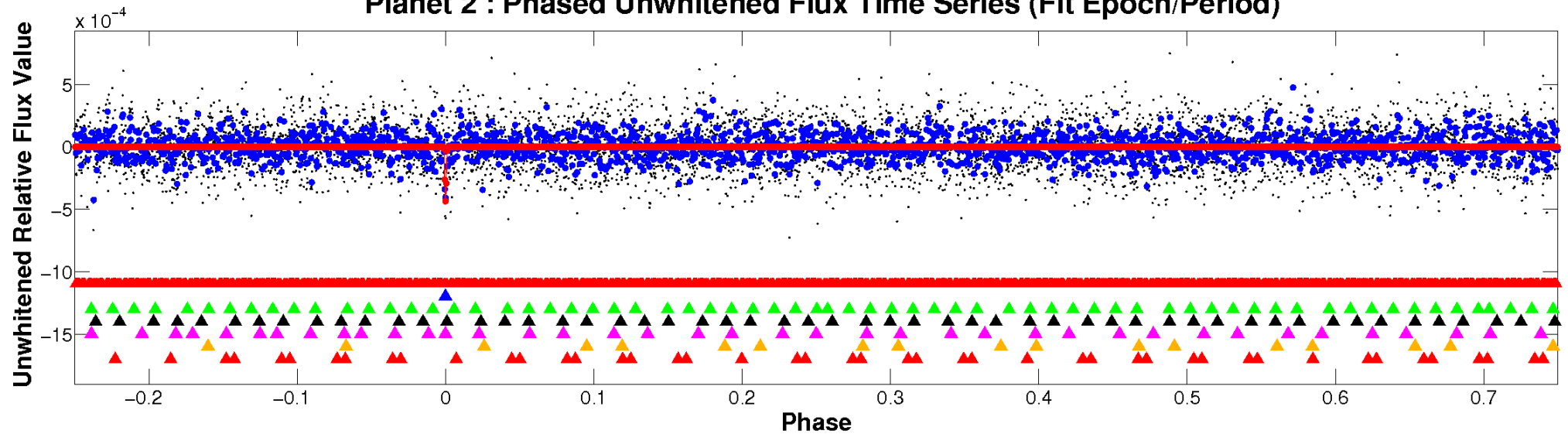


ALT Odd/Even

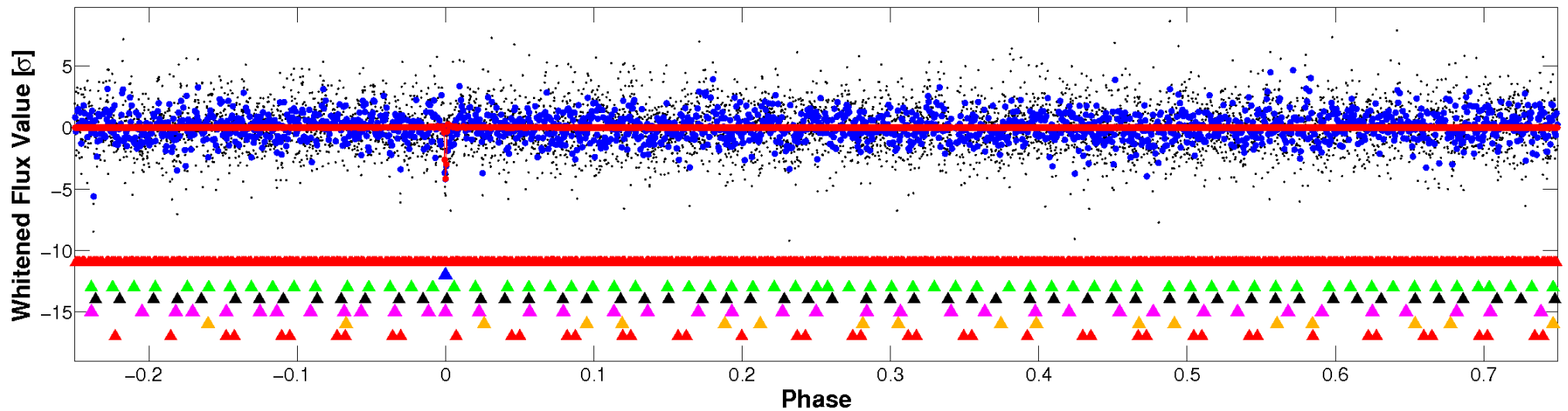
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

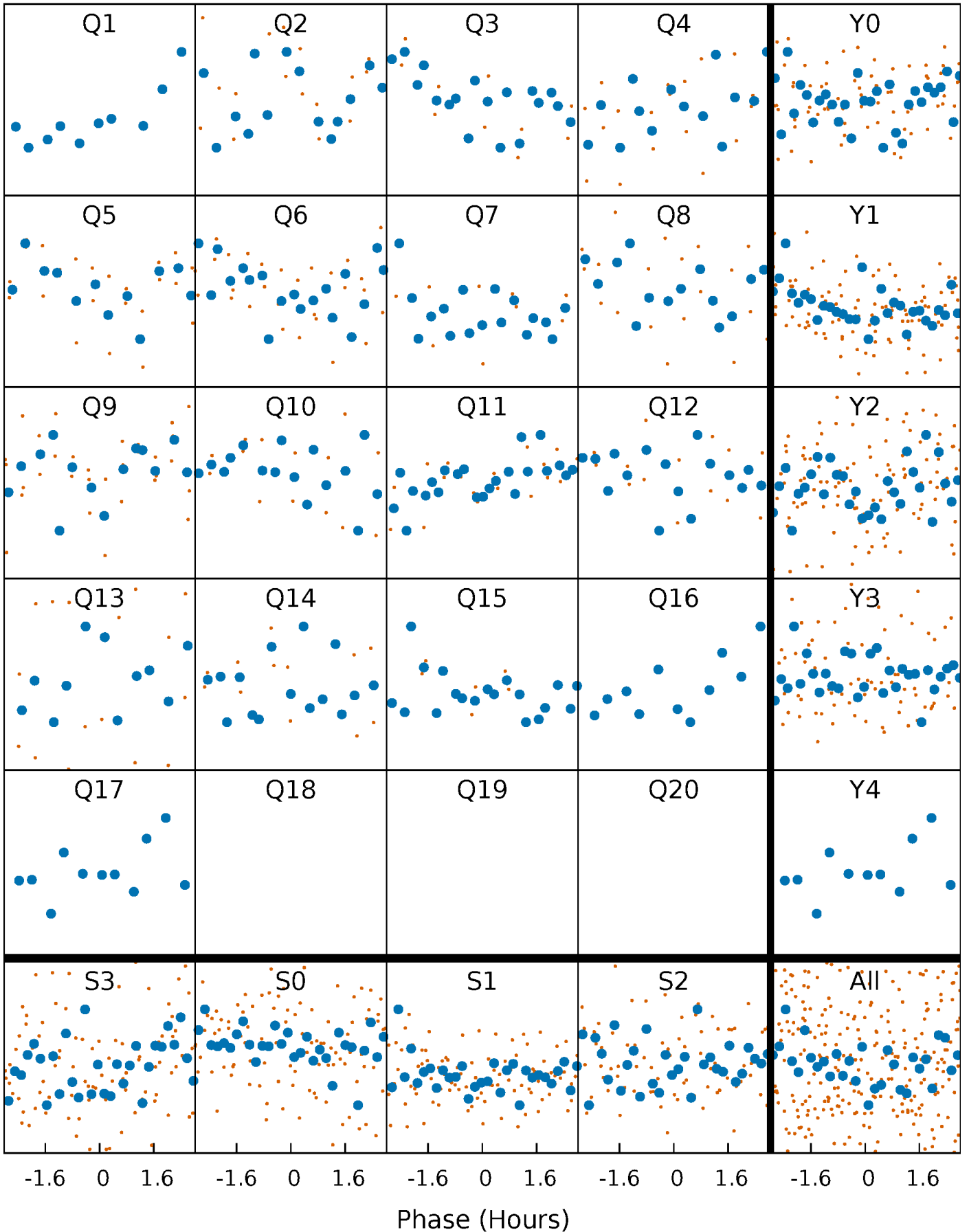


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



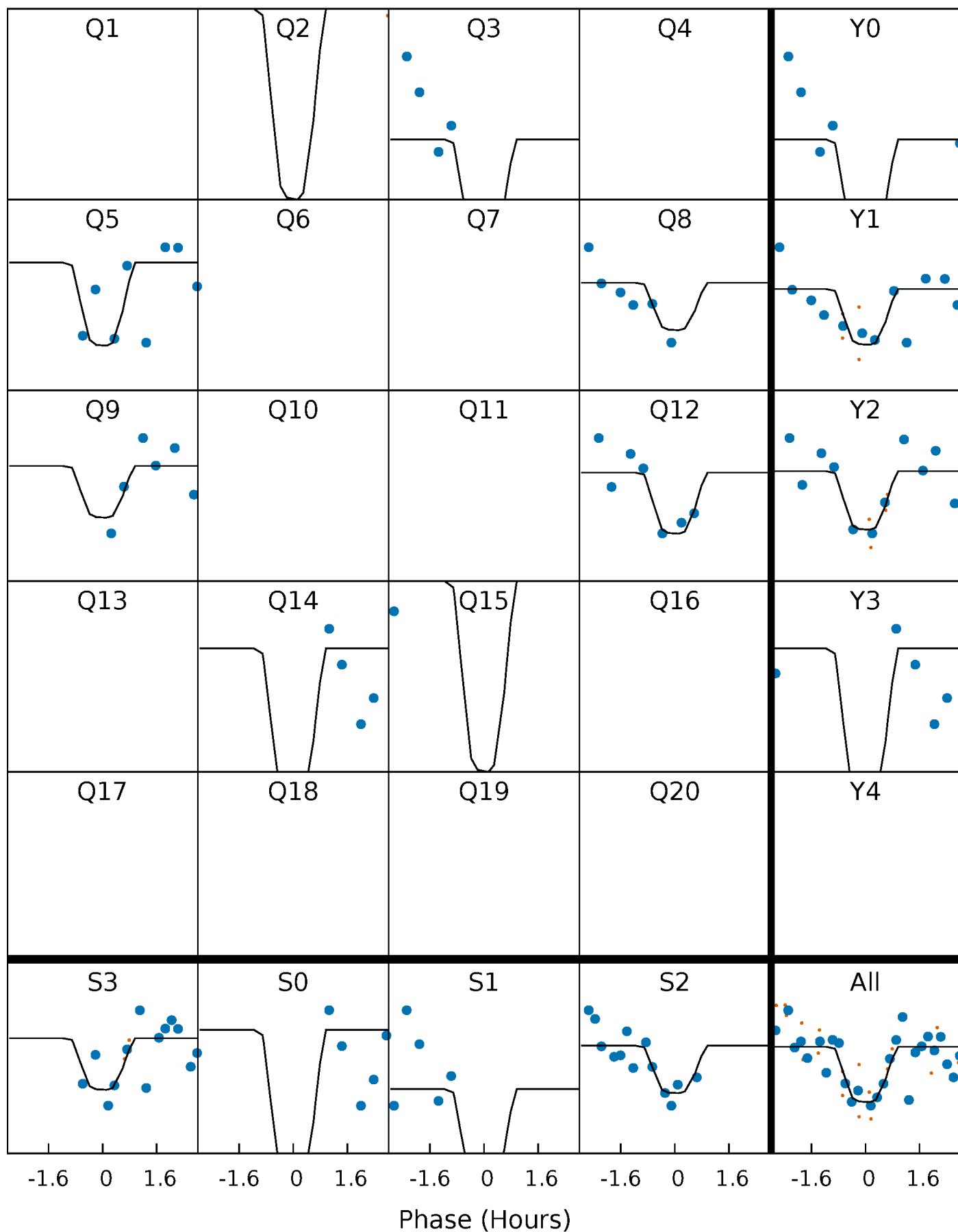
# PDC Quarter-Phased Transit Curves

TCE 002854953-02   P= 39.194267 Days    $T_0=155.527838$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 002854953-02 P= 39.194267 Days  $T_0=155.527838$  (BKJD)



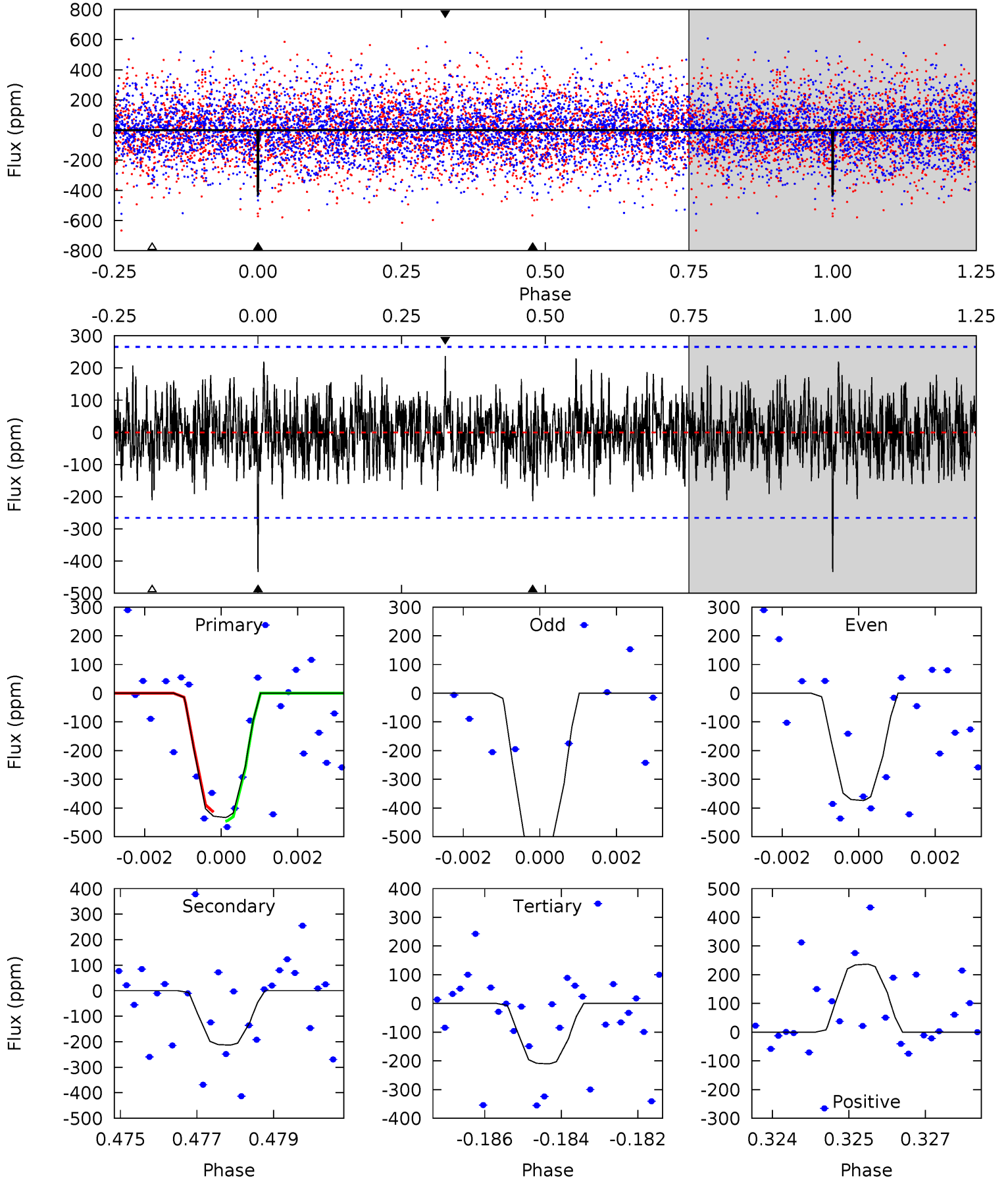


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

002854953-02, P = 39.194267 Days, E = 116.333571 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
8.68	4.27	4.22	4.75	5.33	3.09	1.40	4.46	3.94	0.06	-0.47	1.53	0.95	0.35	0.33



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 002854953

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7392^{+230}_{-307}$	$4.139^{+0.144}_{-0.176}$	$-0.160^{+0.250}_{-0.350}$	$1.726^{+0.525}_{-0.350}$	$1.493^{+0.209}_{-0.232}$	$0.409^{+0.315}_{-0.208}$
	+3%/-4%	+3%/-4%	+156%/-219%	+30%/-20%	+14%/-16%	+77%/-51%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 002854953-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-213 \pm 50$	$7.10^{+6.95}_{-4.89}$	$1178^{+83}_{-73}$	$4665^{+3581}_{-1051}$	$145^{+1377}_{-109}$
Alt.	N/A	N/A	N/A	N/A	N/A

$T_{\text{max}}$  = 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

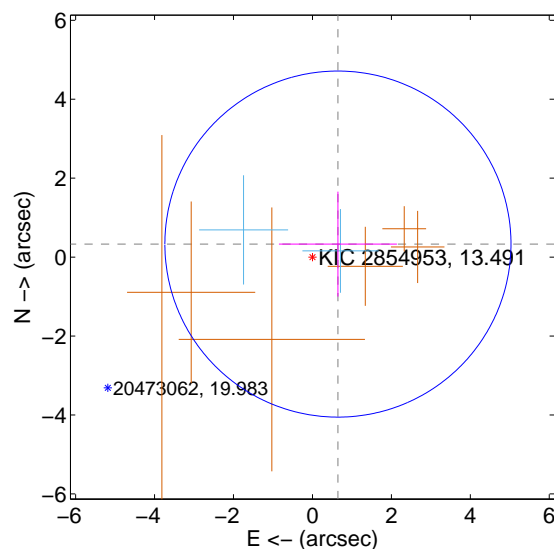
Supplemental centroid analysis for 002854953-02. Kepler magnitude: 13.49. Transit SNR 11.02

There are 2 quarters with good PRF difference image offsets

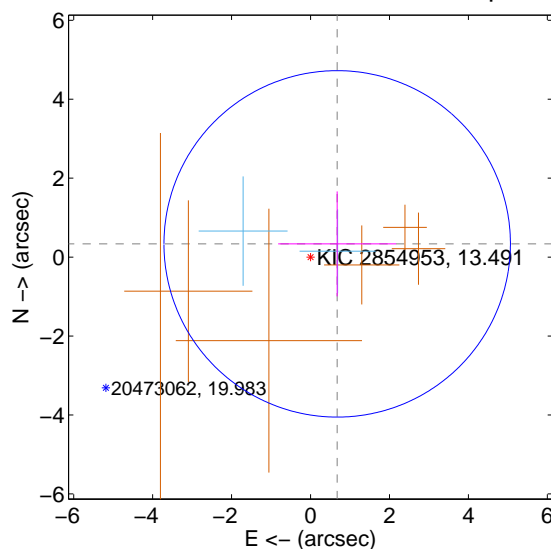
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.725 \pm 1.462$	0.50	$-0.646 \pm 1.494$	$0.330 \pm 1.329$
PRF-fit source offset from KIC position	$0.754 \pm 1.463$	0.52	$-0.676 \pm 1.494$	$0.335 \pm 1.329$
photometric centroid source offset	$1.05 \pm 0.55$	1.93	$1.02 \pm 0.54$	$-0.27 \pm 0.62$

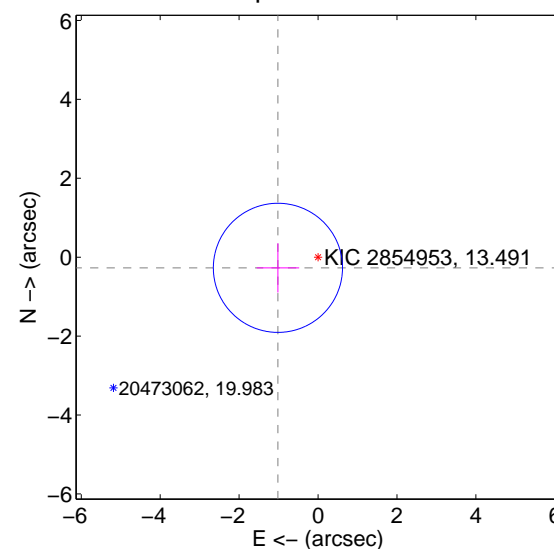
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



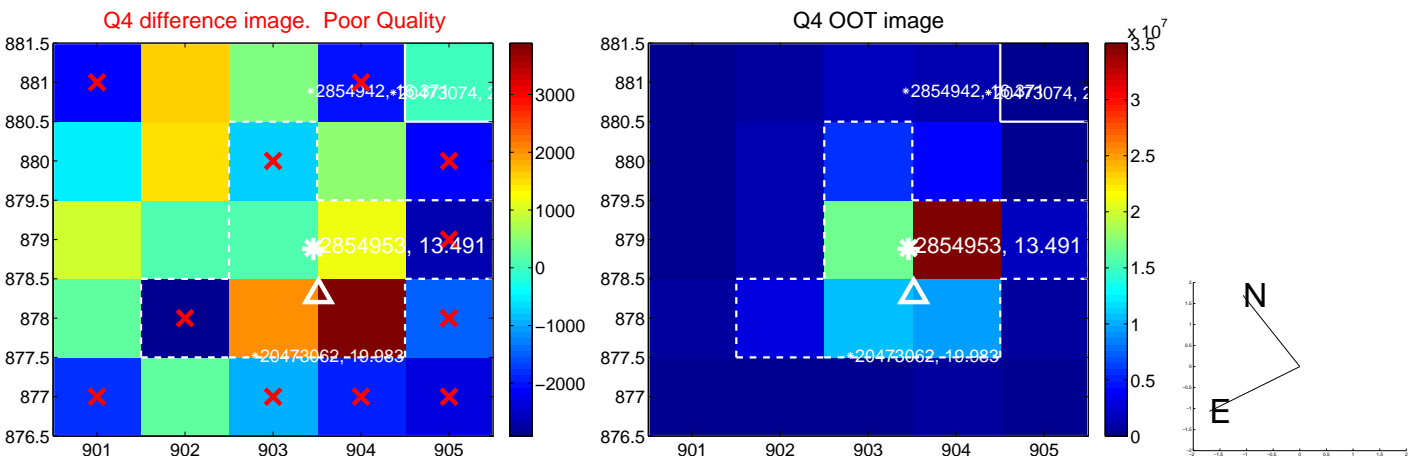
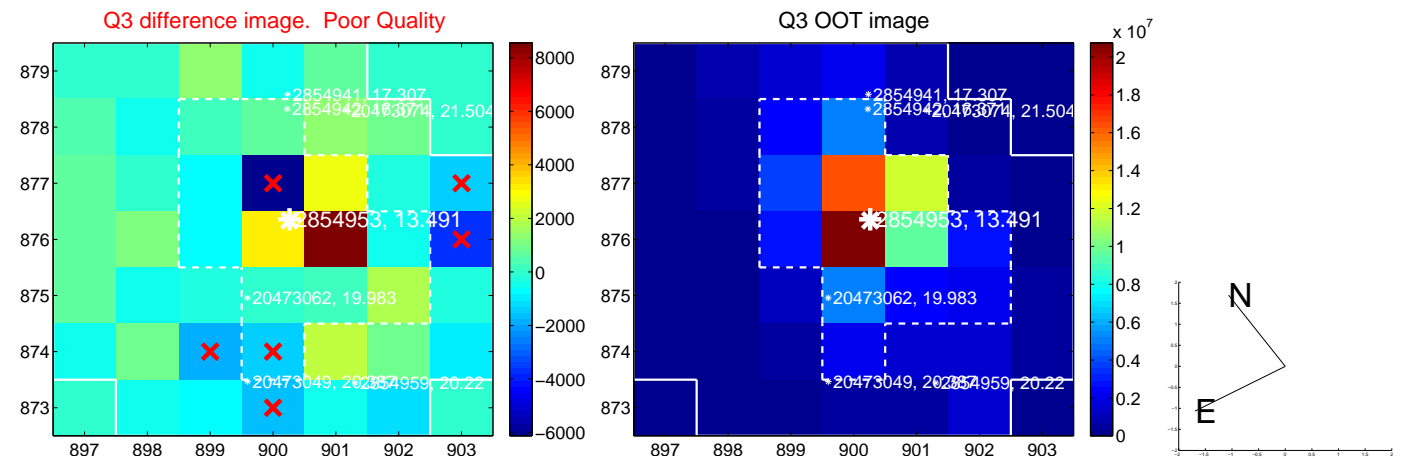
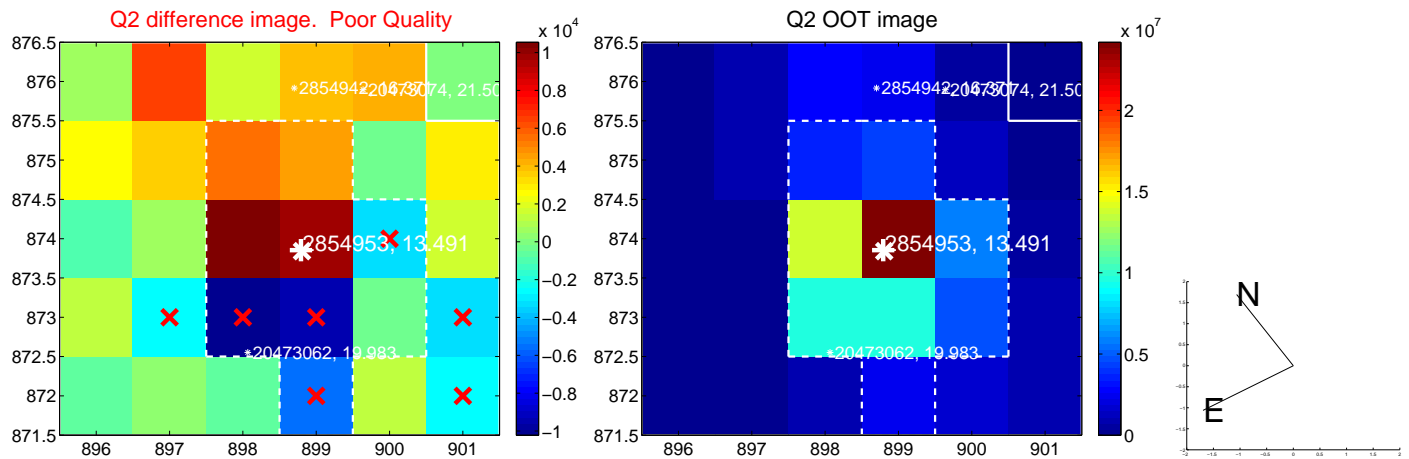
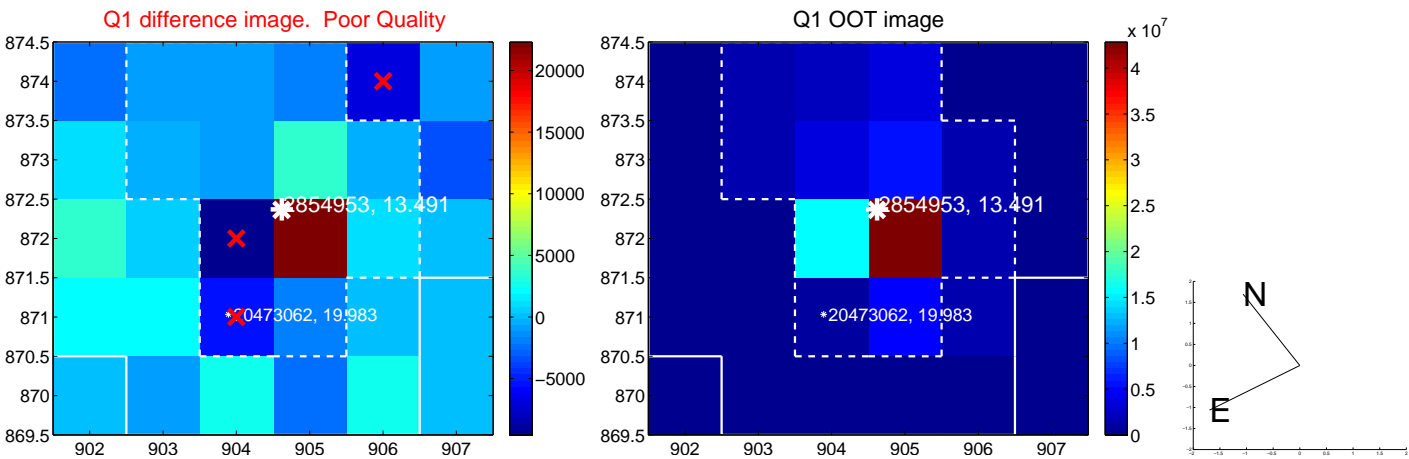
offset from photometric centroids



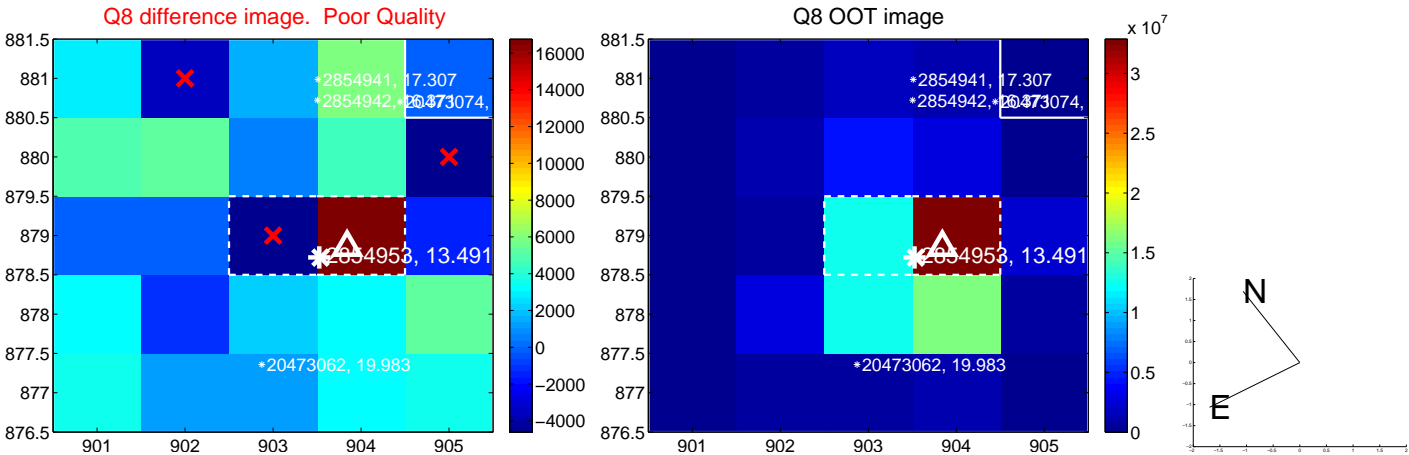
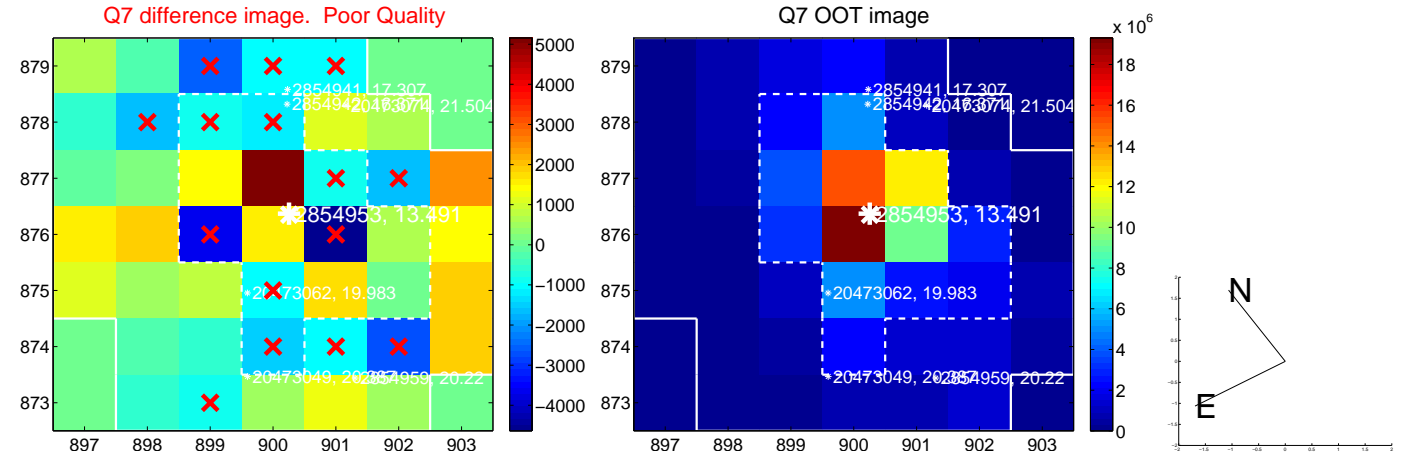
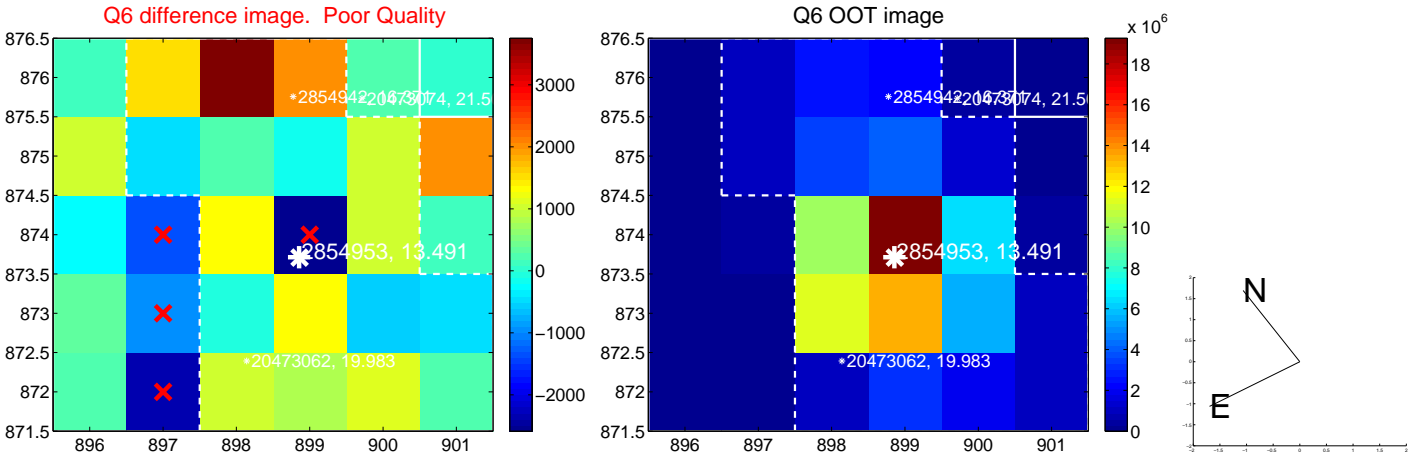
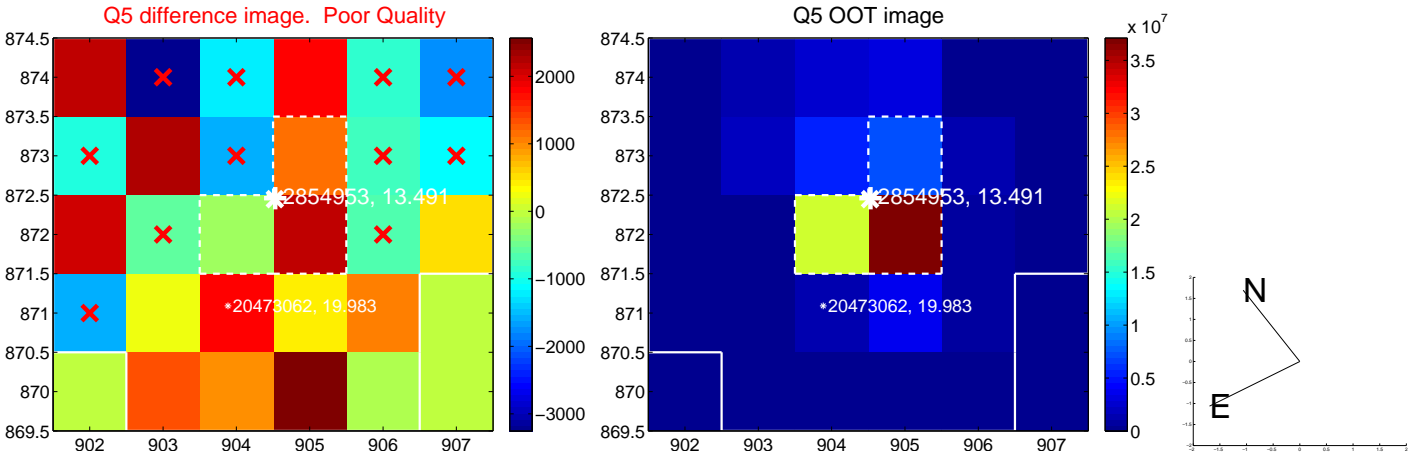
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



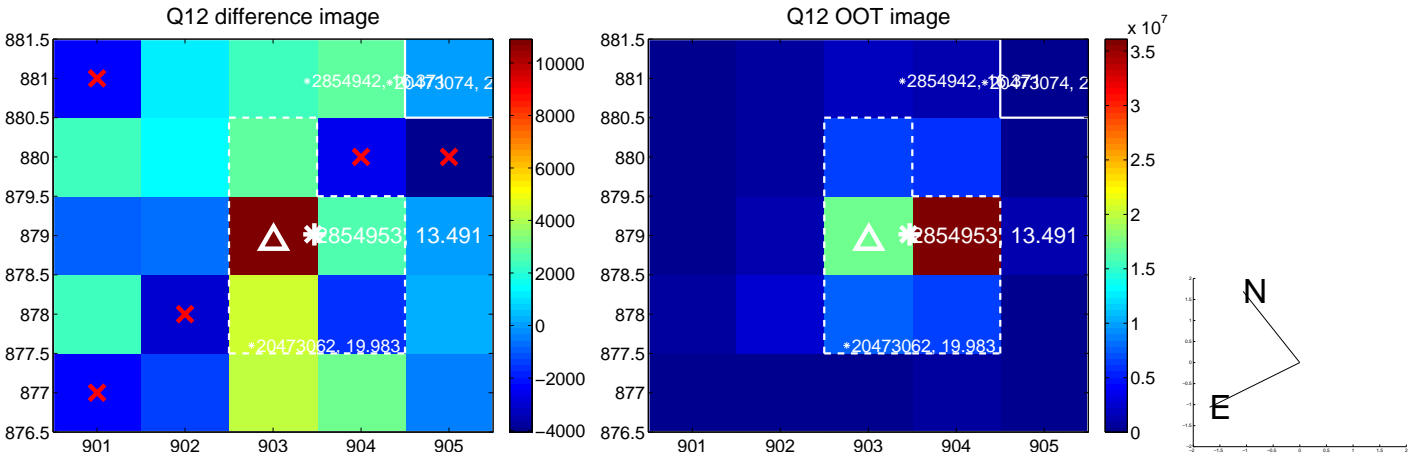
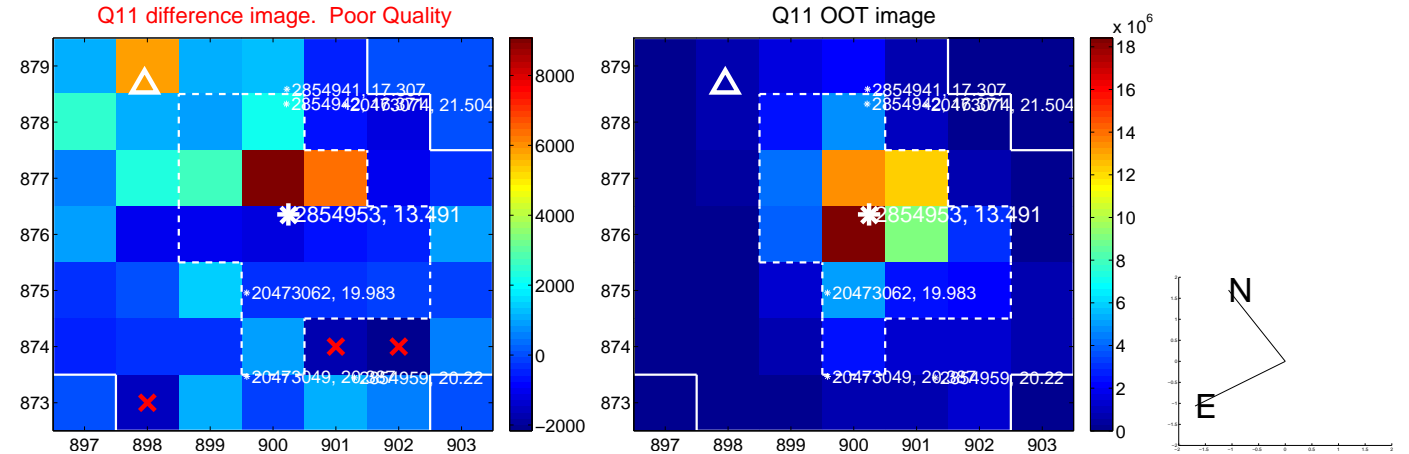
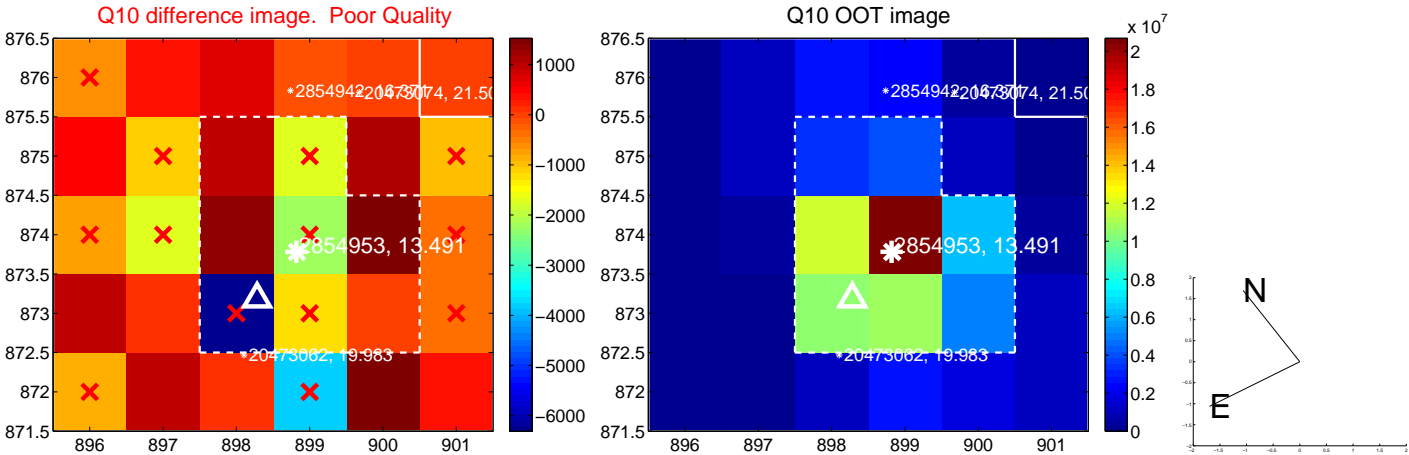
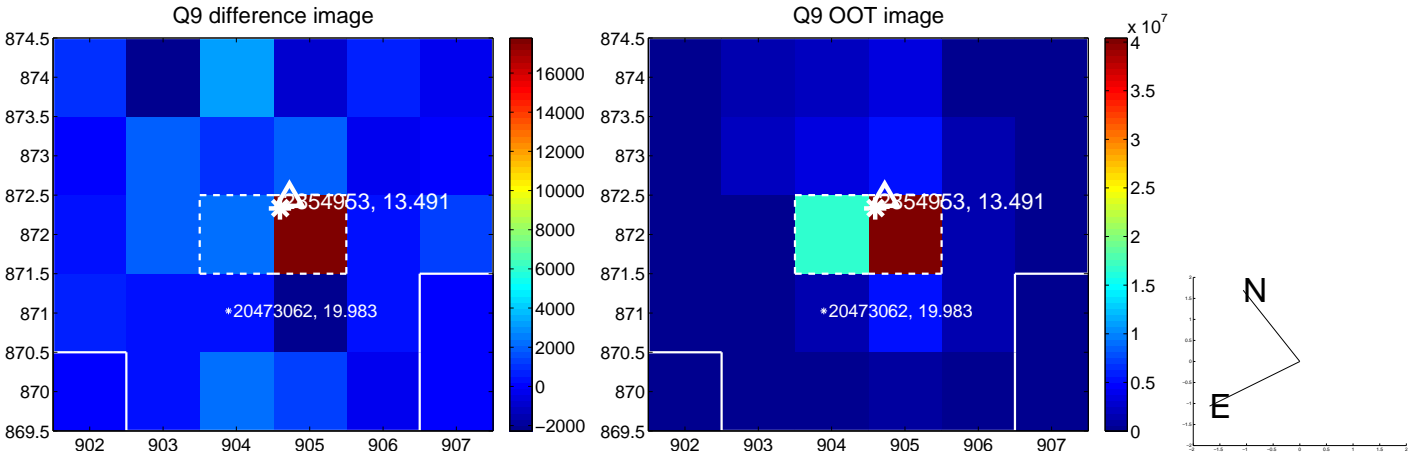
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



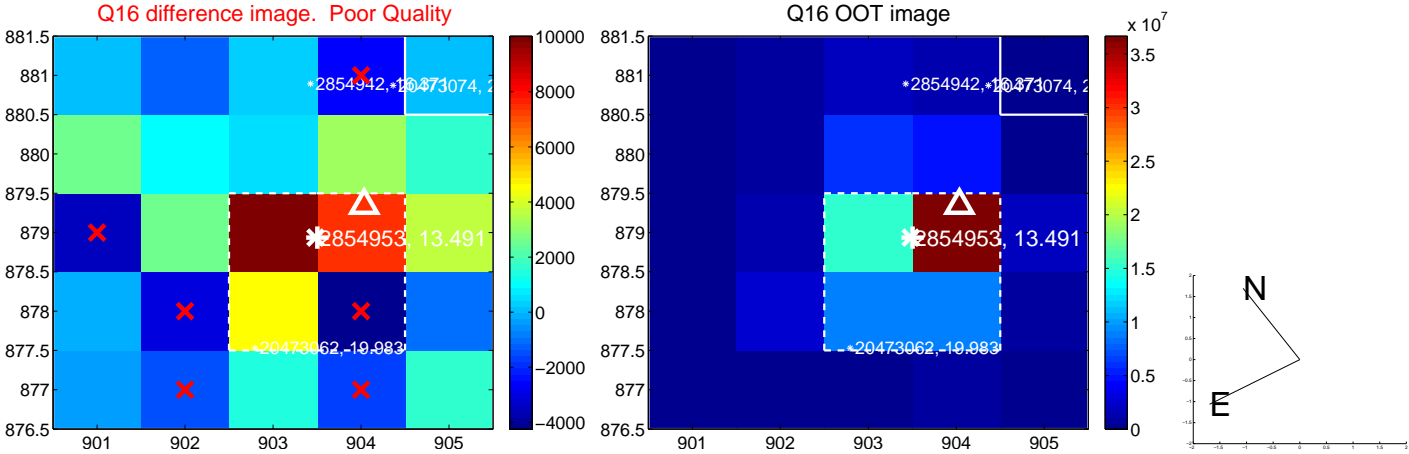
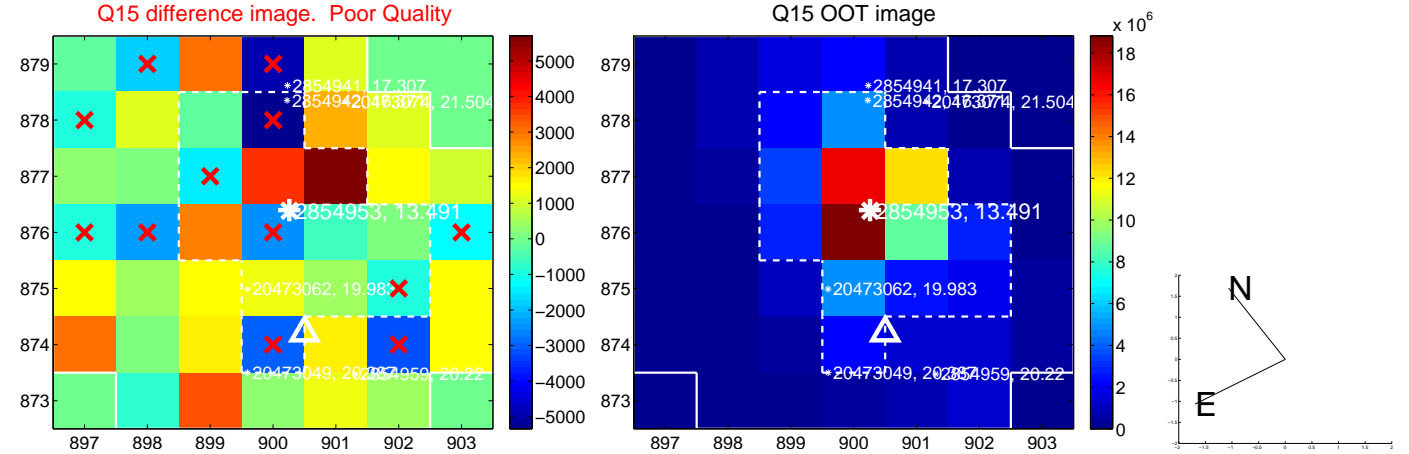
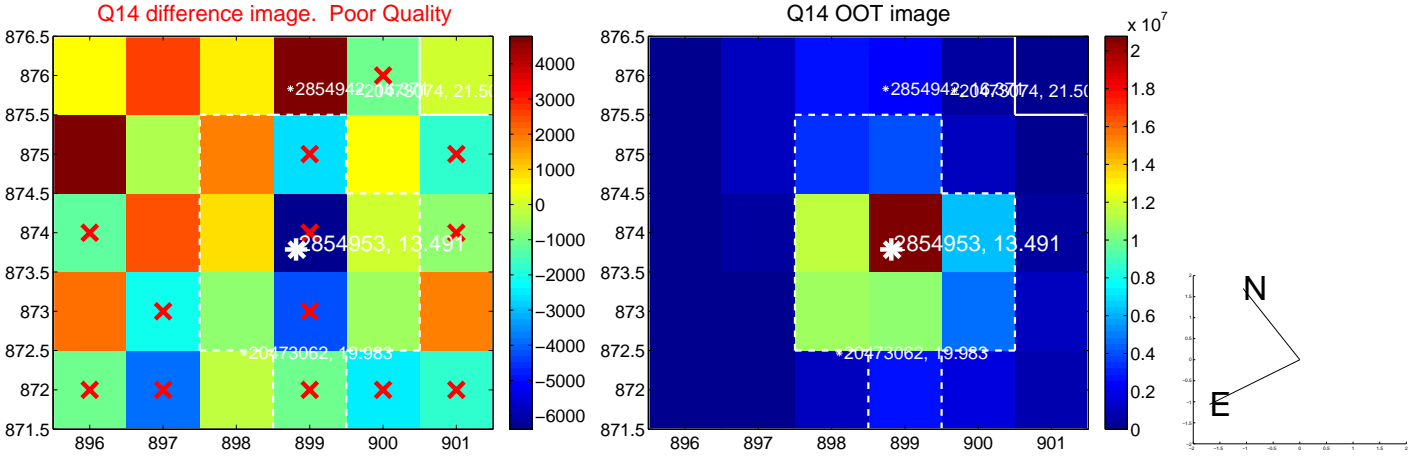
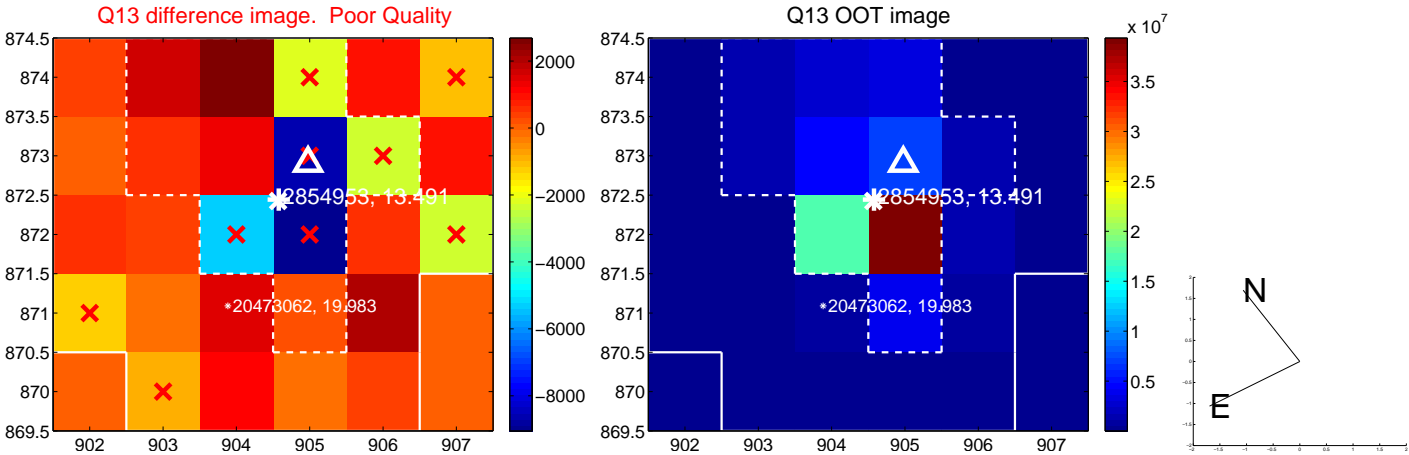
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



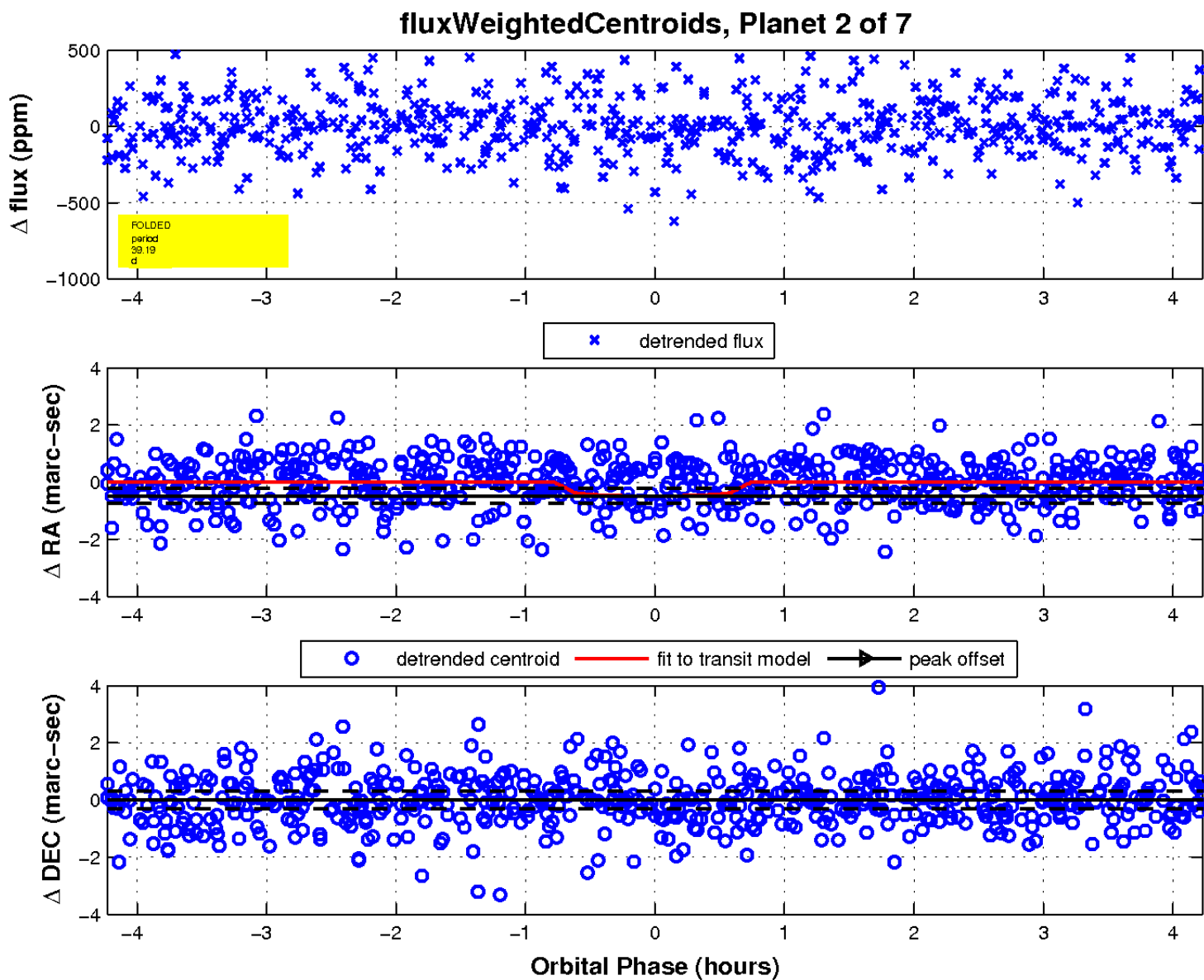
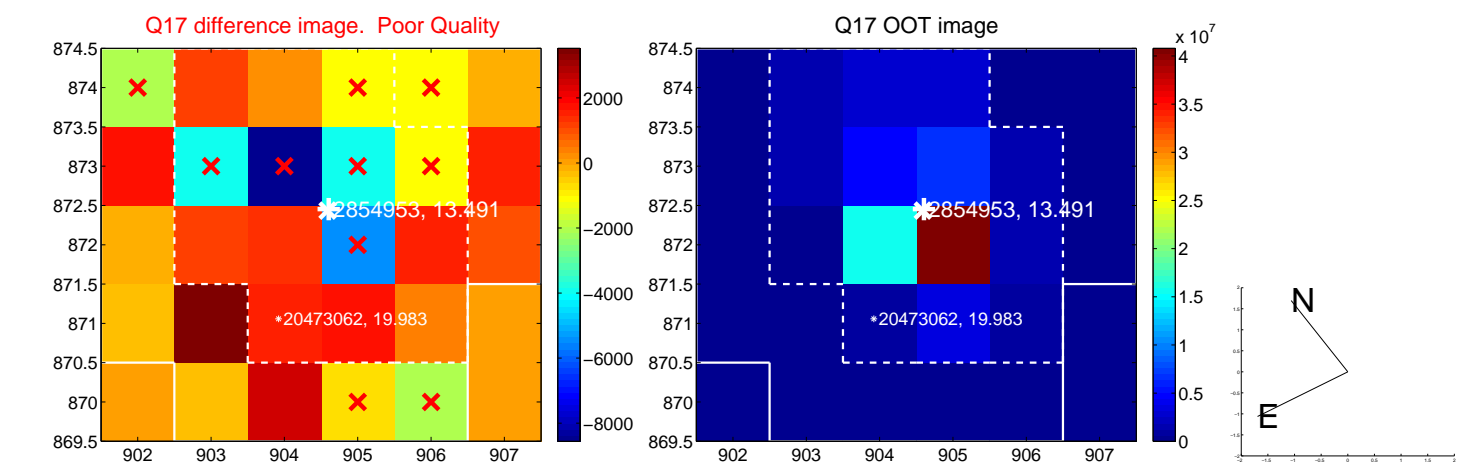
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



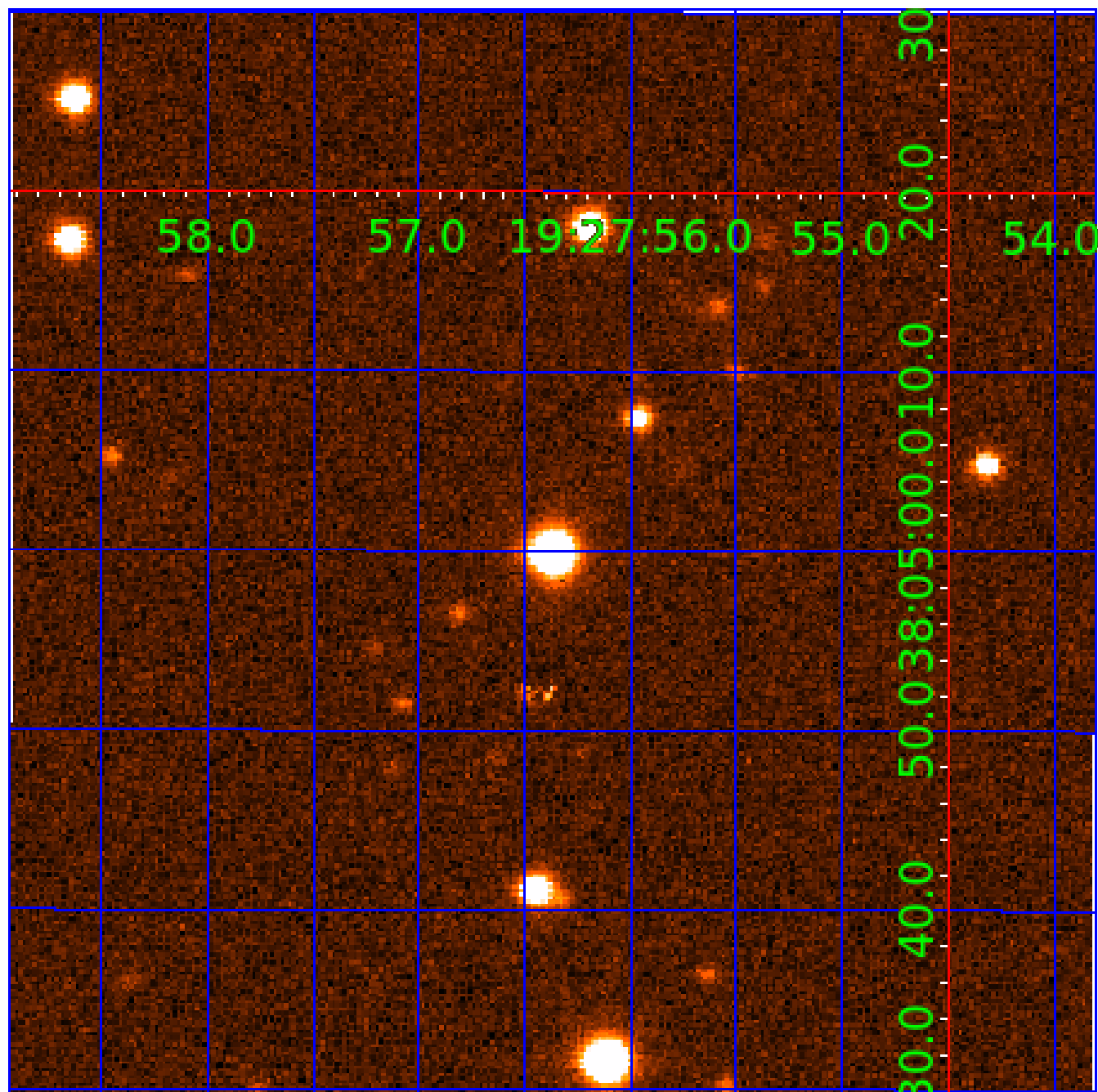
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 002854953

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002854953-01	OBS	No	1.724690	131.957540	3.6	12.301	12.9	1.9	1.73	7392	0.35	7685.78
002854953-02	OBS	No	39.194267	155.527838	440.4	1.412	10.5	11.0	1.73	7392	3.70	119.40
002854953-03	OBS	No	21.711992	143.629034	225.3	2.139	10.6	11.3	1.73	7392	3.01	262.44
002854953-04	OBS	No	26.850442	145.650419	210.7	2.229	9.8	11.5	1.73	7392	2.92	197.71
002854953-05	OBS	No	36.967356	155.079665	277.4	1.613	8.8	9.7	1.73	7392	3.21	129.09
002854953-06	OBS	No	82.036741	159.261308	172.1	6.074	9.1	7.8	1.73	7392	2.63	44.60
002854953-07	OBS	No	31.648645	140.935509	339.1	1.534	8.7	10.3	1.73	7392	3.58	158.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002854953-01	OBS	FP	0.00	1	0	0	0	LPP_DV
002854953-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
002854953-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002854953-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
002854953-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002854953-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002854953-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST

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

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

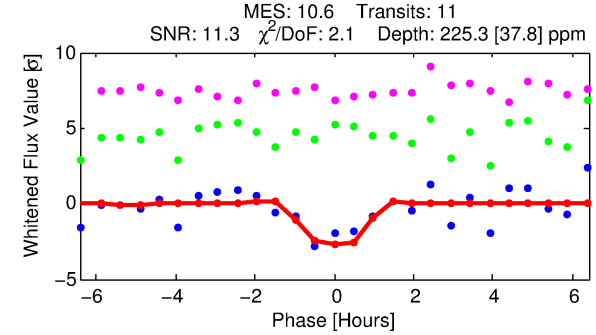
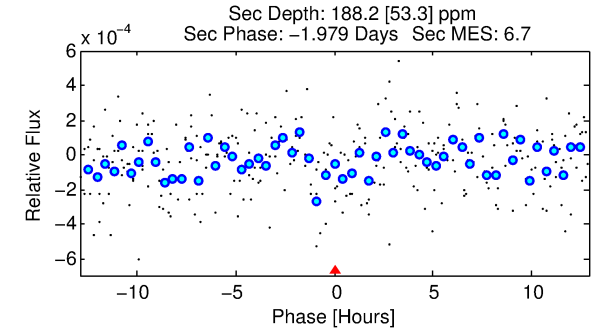
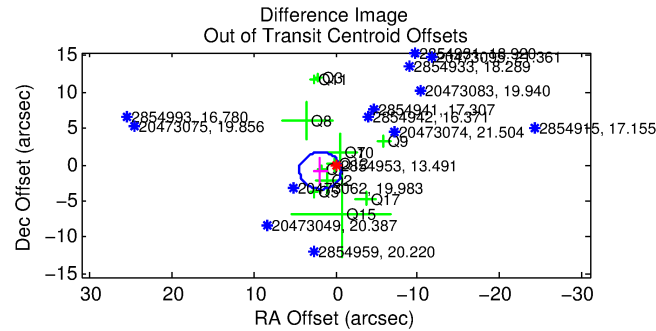
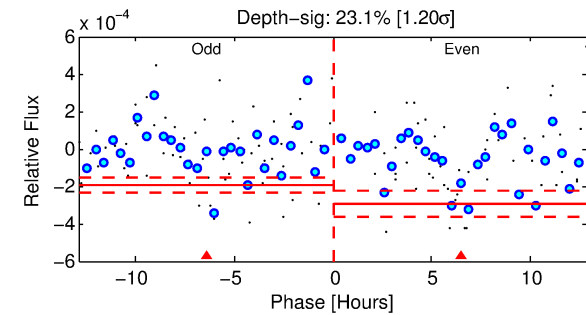
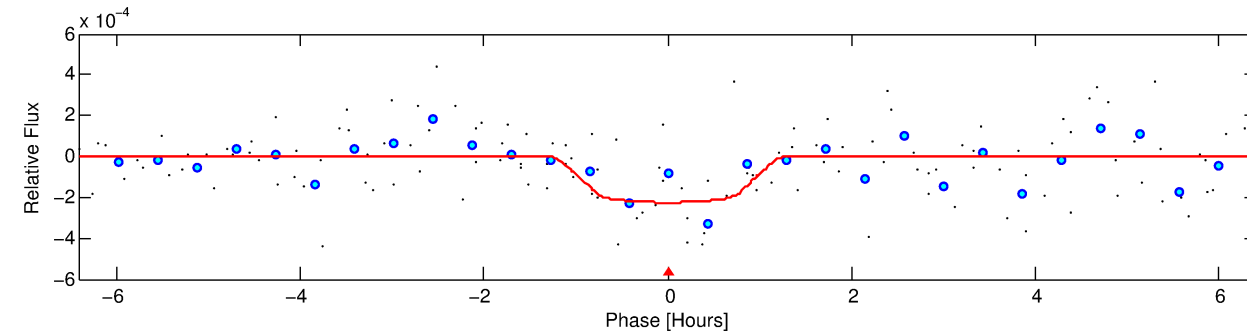
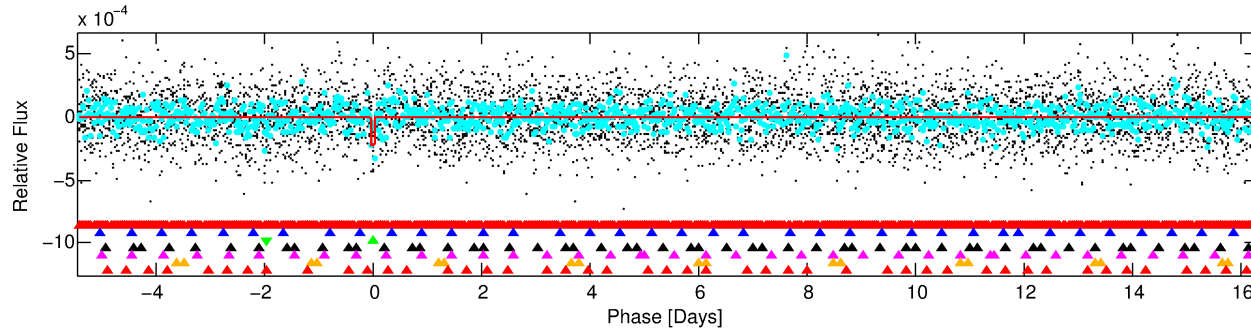
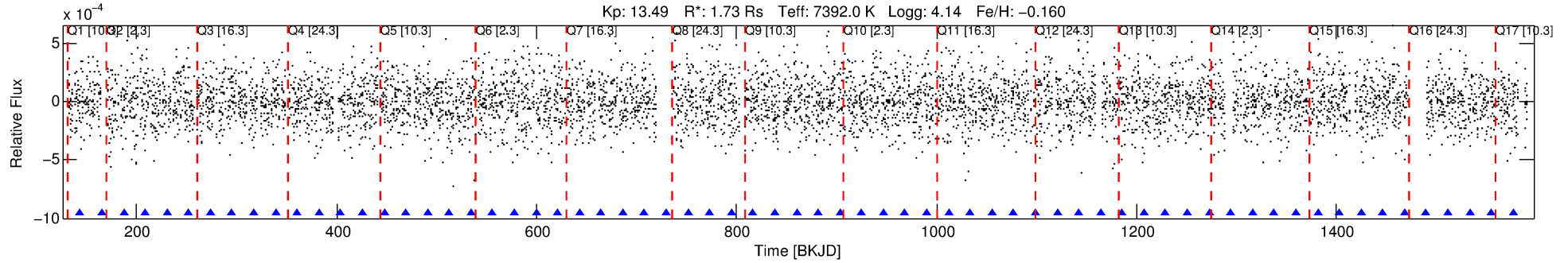
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 002854953-03

No Significant Match Found

# DV One-Page Summary

KIC: 2854953 Candidate: 3 of 7 Period: 21.712 d



## DV Fit Results:

Period = 21.71199 [0.00023] d  
Epoch = 143.6290 [0.0094] BKJD  
Rp/R\* = 0.0160 [0.0216]  
a/R\* = 37.29 [306.80]  
b = 0.90 [1.86]  
Seff = 262.44 [98.80]  
Teq = 1026 [97] K  
Rp = 3.01 [4.16] Re  
a = 0.1743 [0.0425] AU  
Ag = 348.03 [952.79] [0.36 $\sigma$ ]  
Teffp = 6854 [4664] K [1.25 $\sigma$ ]

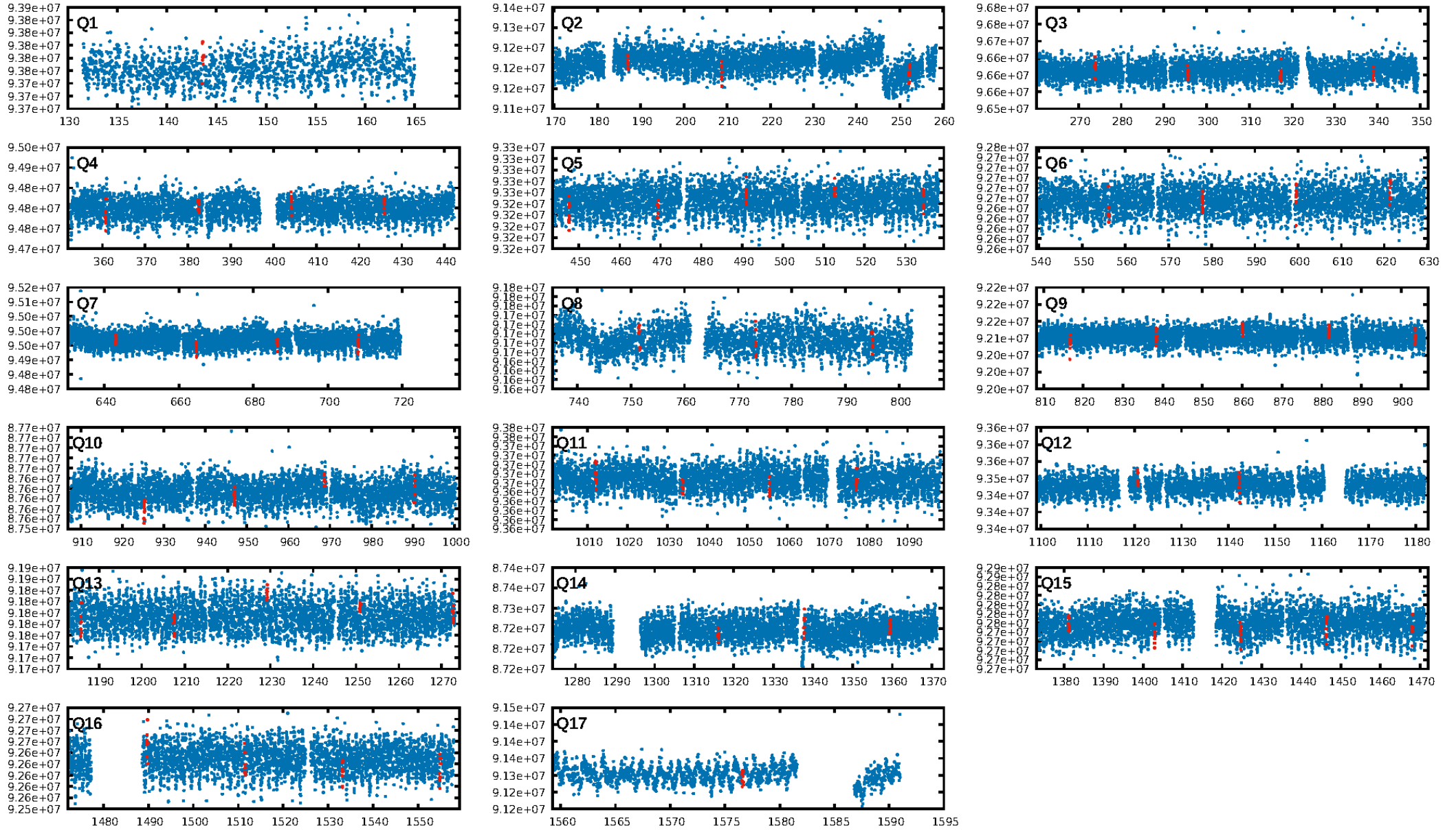
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [38.42 $\sigma$ ]  
LongPeriod-sig: 100.0% [39.92 $\sigma$ ]  
ModelChiSquare2-sig: 1.1%  
ModelChiSquareGof-sig: 96.5%  
**Bootstrap-pfa: 1.97e-09**  
RollingBand-fgt: 1.00 [11/11]  
GhostDiagnostic-chr: 9.255  
Centroid-sig: 81.3%  
Centroid-so: 0.075 arcsec [0.10 $\sigma$ ]  
OotOffset-rm: 2.039 arcsec [2.40 $\sigma$ ]  
KicOffset-rm: 2.018 arcsec [2.47 $\sigma$ ]  
OotOffset-st: 2/4/2/4 [12]  
KicOffset-st: 2/4/2/4 [12]  
DiffImageQuality-fgm: 0.08 [1/12]  
DiffImageOverlap-fno: 0.76 [13/17]

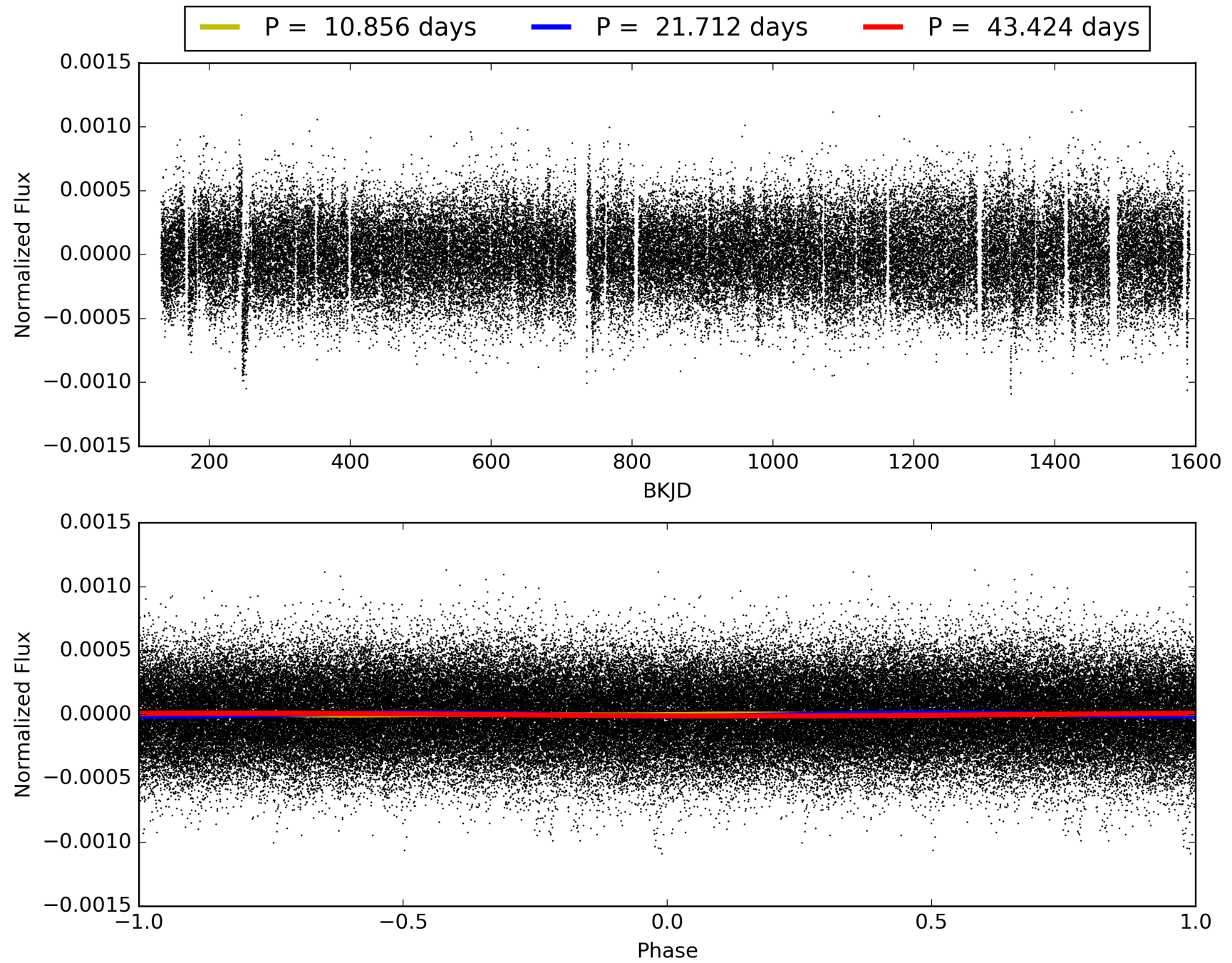
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:19:10 Z

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

# TCE 002854953-03, PDC Light Curves

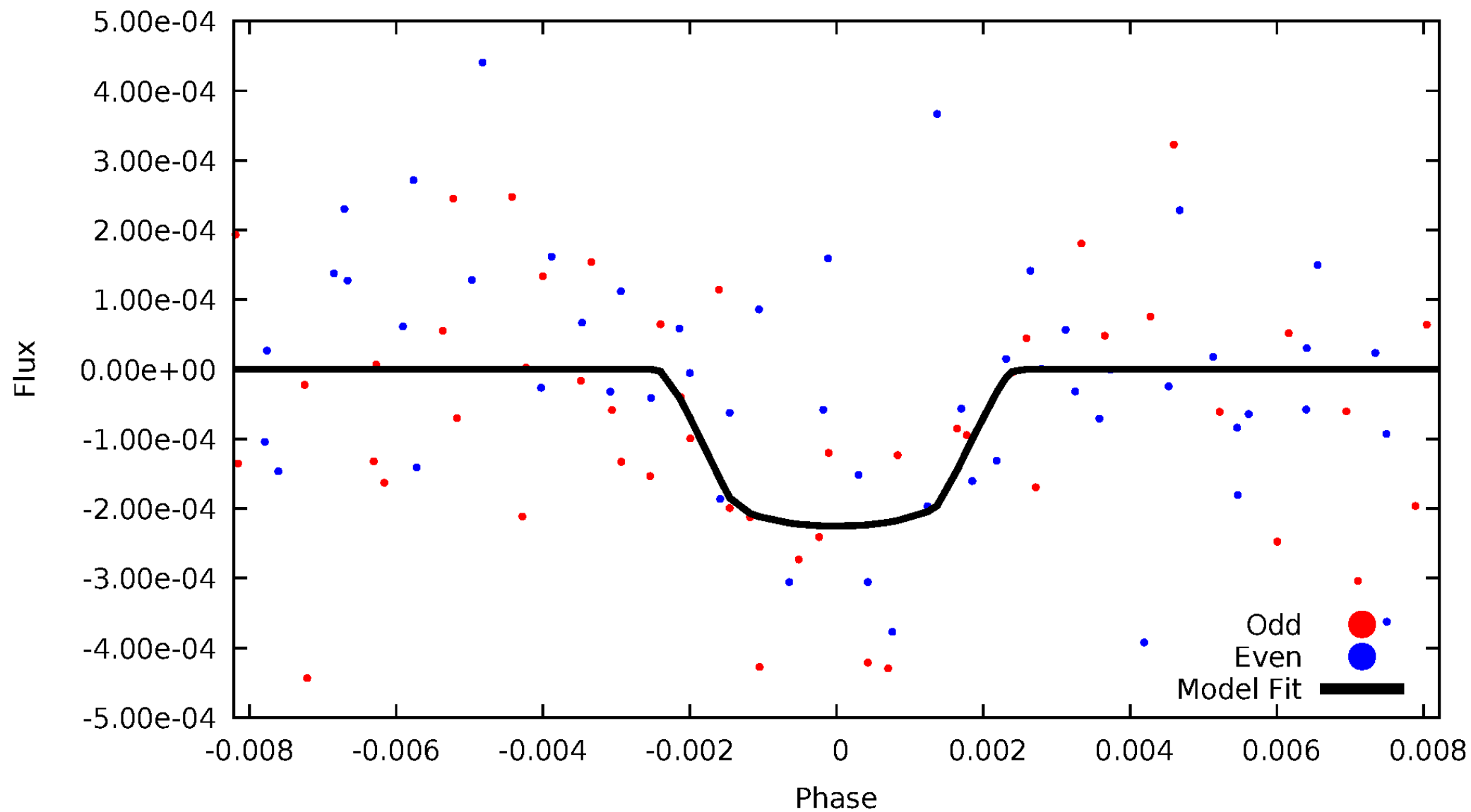


TCE 002854953-03



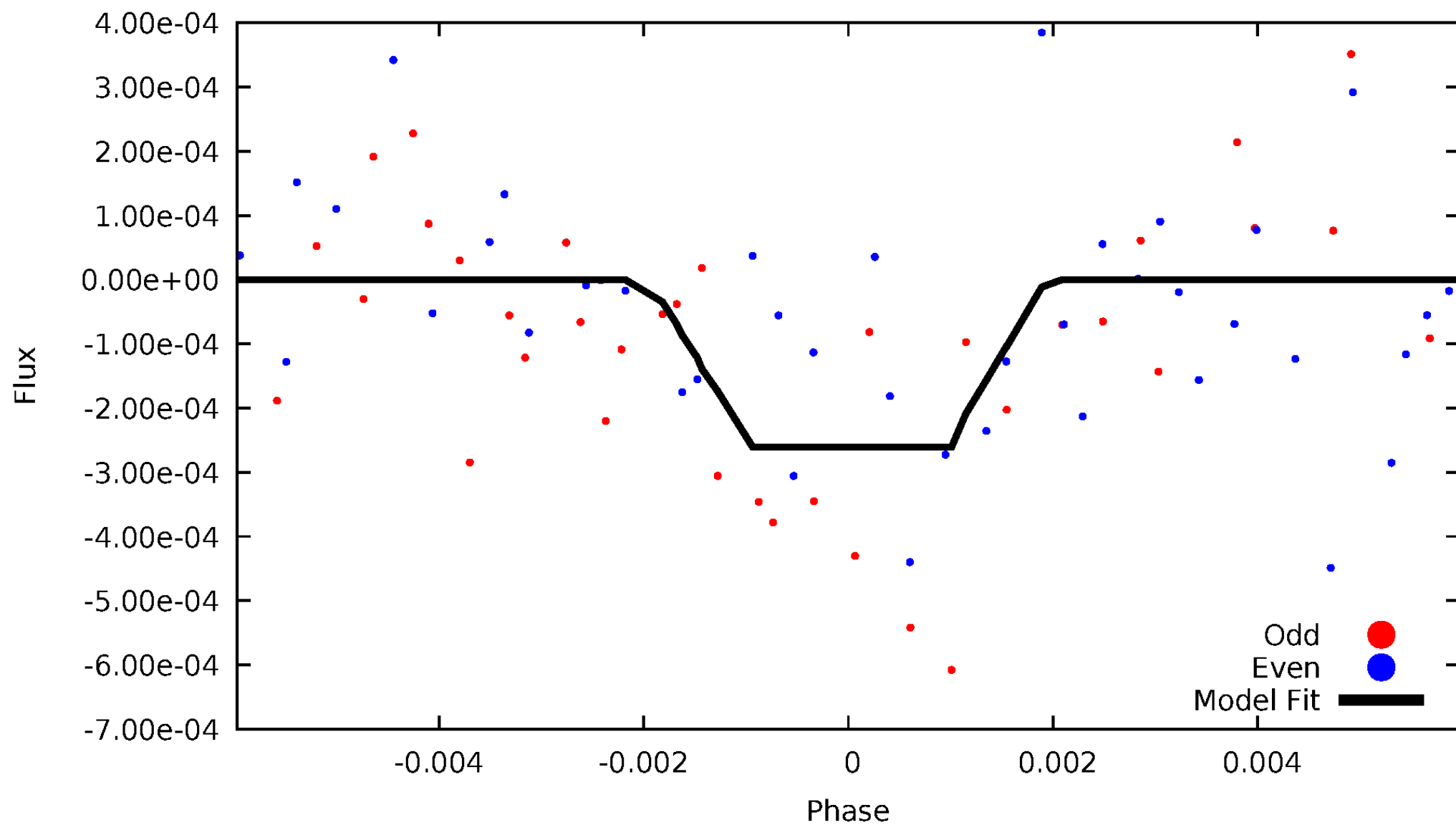
# DV Odd/Even

TCE 002854953-03



# ALT Odd/Even

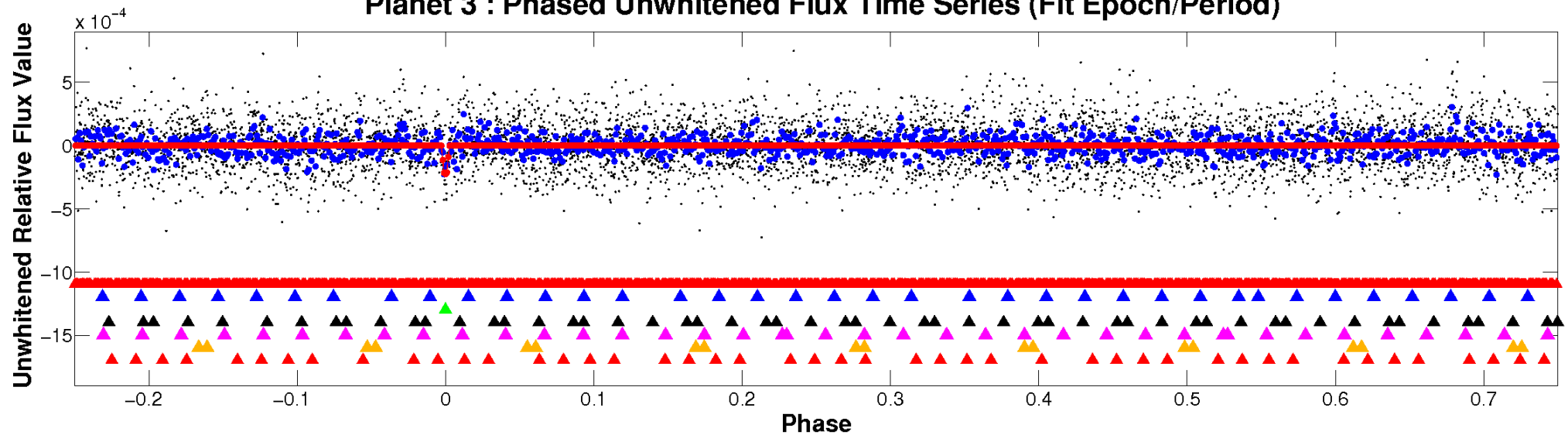
TCE 002854953-03



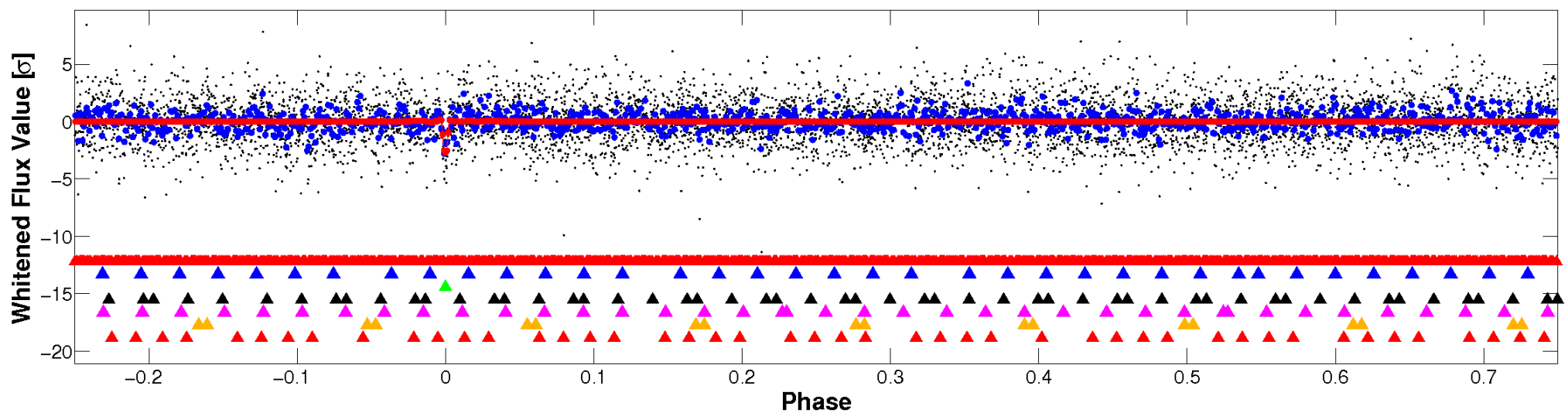


# Non-Whitened Vs. Whitened Light Curve

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

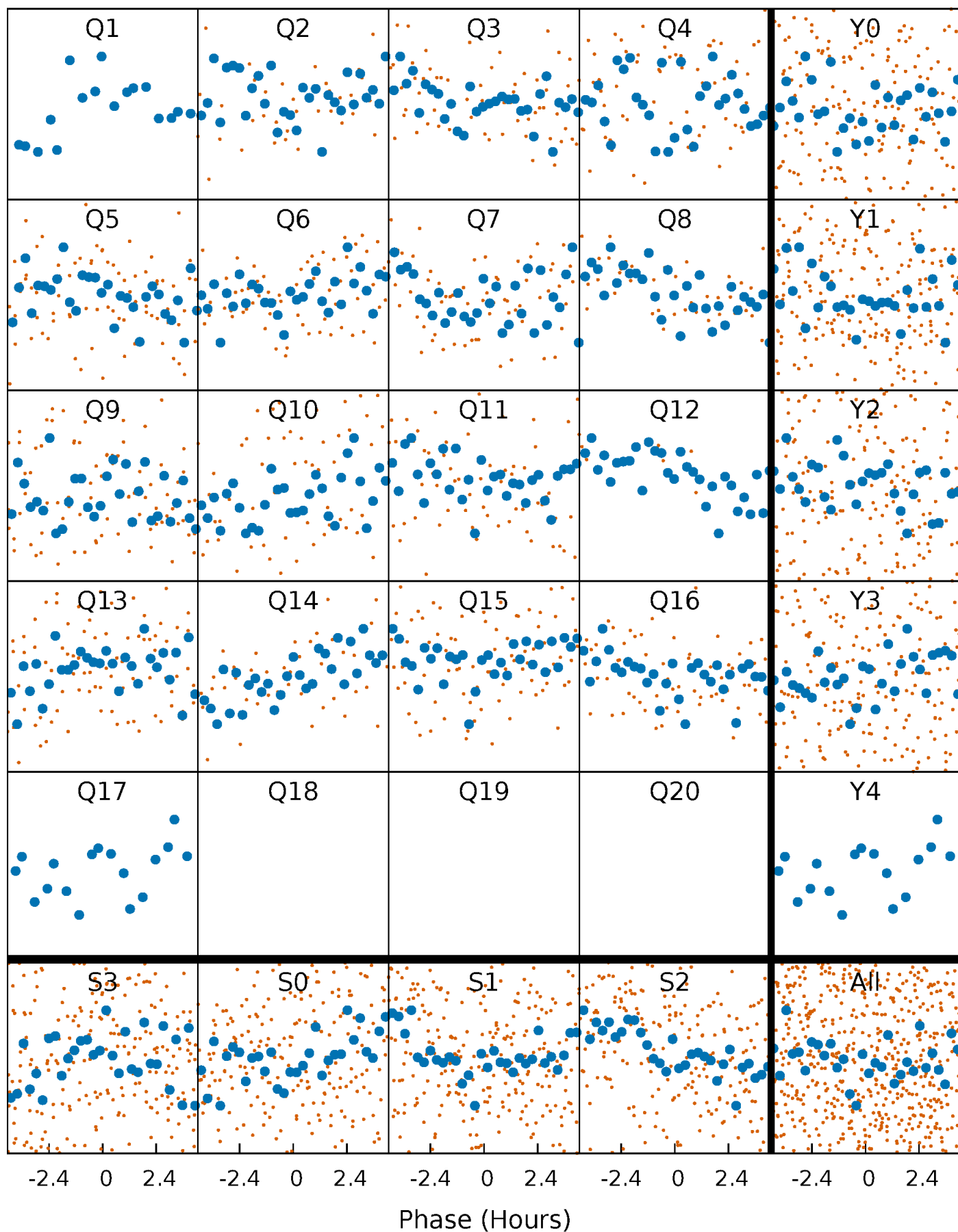


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



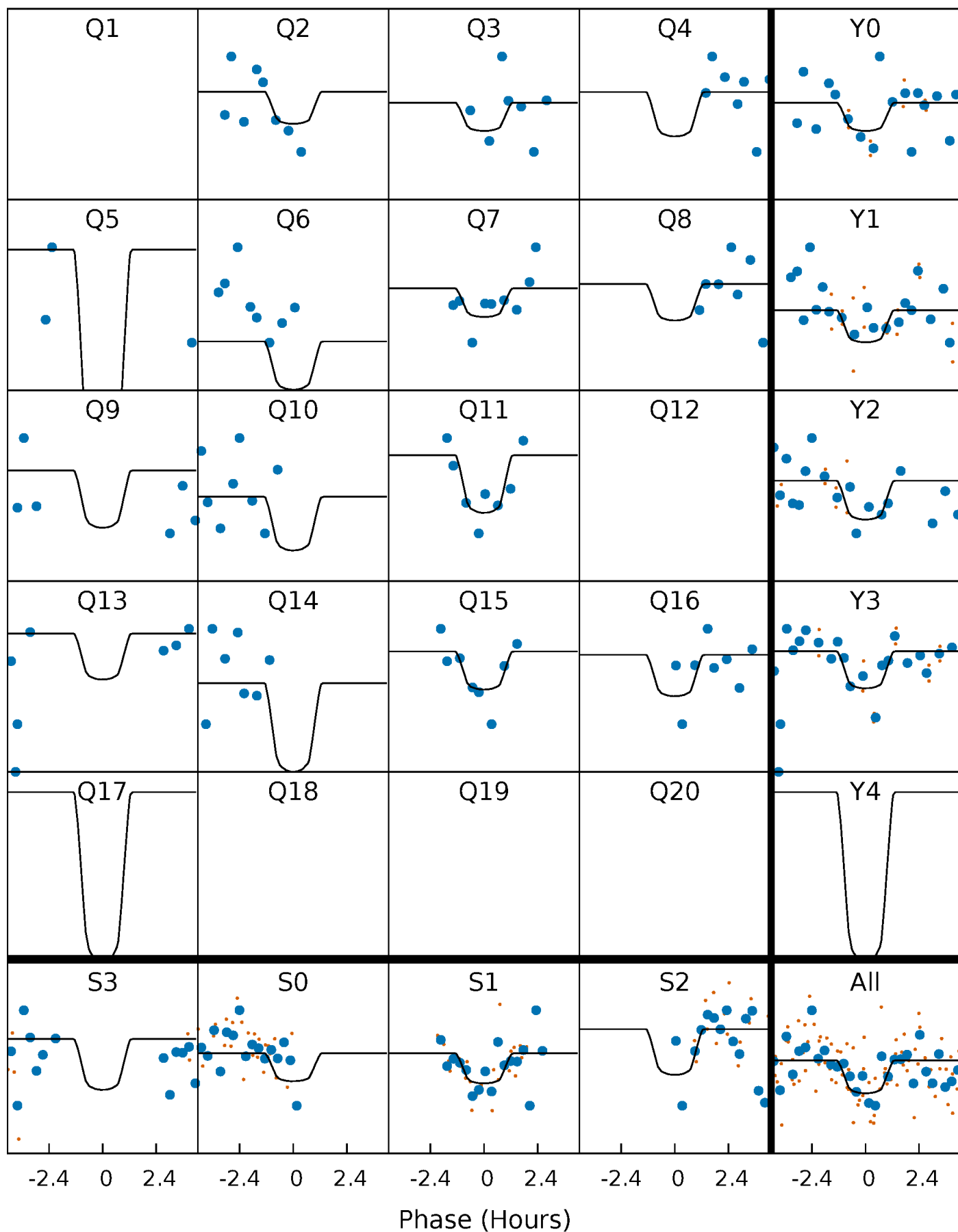
# PDC Quarter-Phased Transit Curves

TCE 002854953-03 P= 21.711992 Days  $T_0=143.629034$  (BKJD)



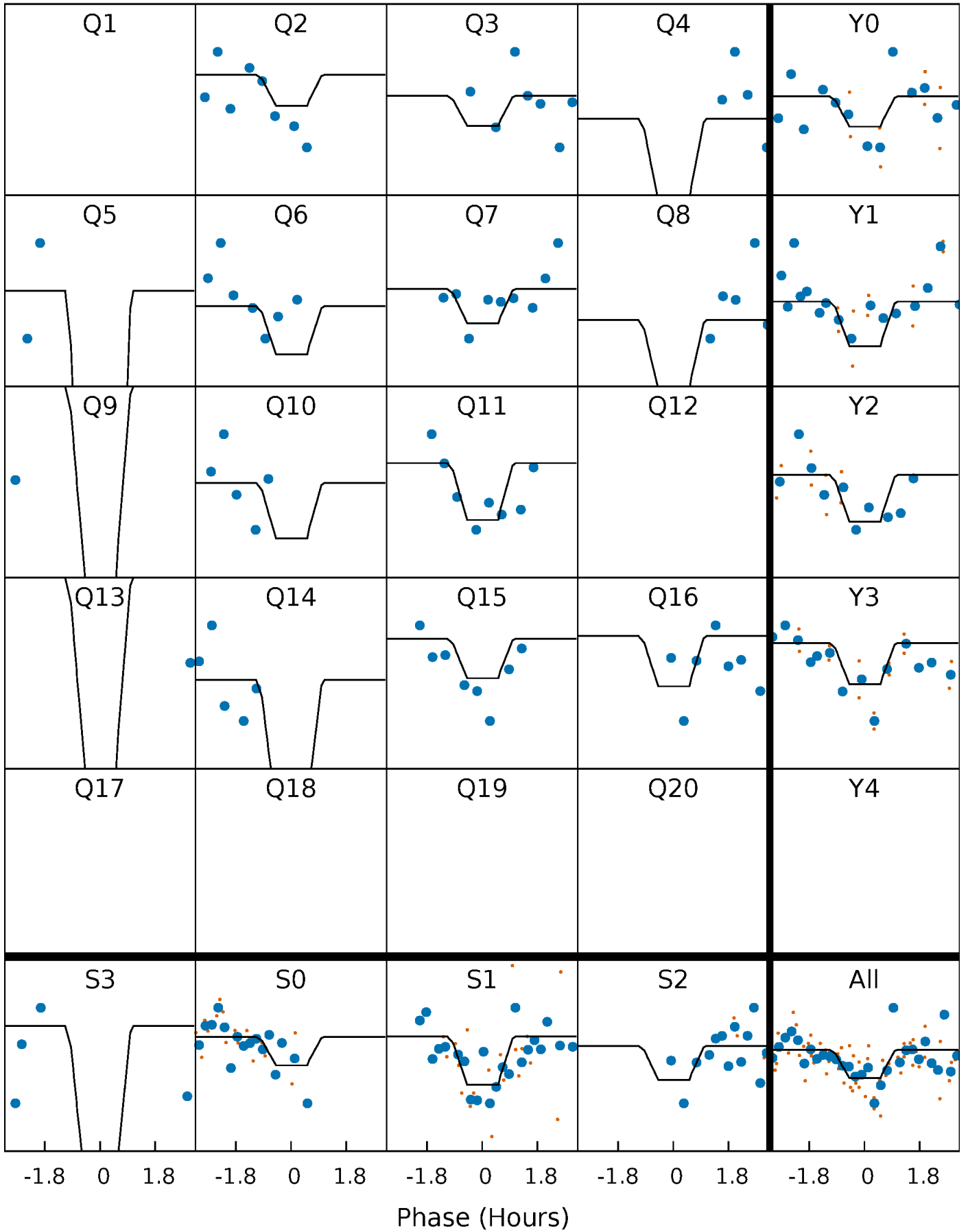
# DV Quarter-Phased Transit Curves

TCE 002854953-03 P= 21.711992 Days  $T_0=143.629034$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

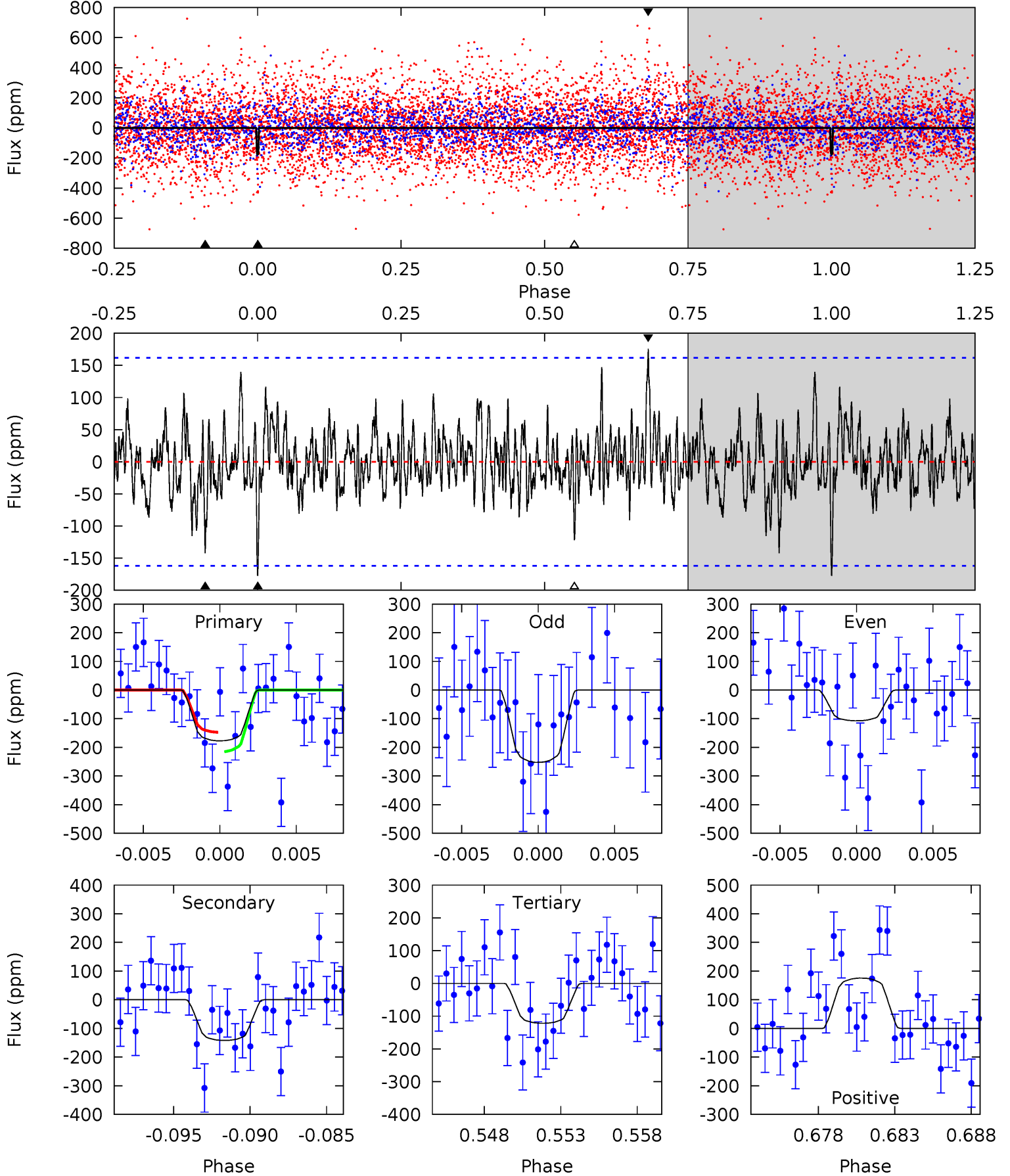
TCE 002854953-03 P= 21.712255 Days  $T_0=143.615622$  (BKJD)



# DV Model-Shift Uniqueness Test

002854953-03, P = 21.711992 Days, E = 121.917042 Days

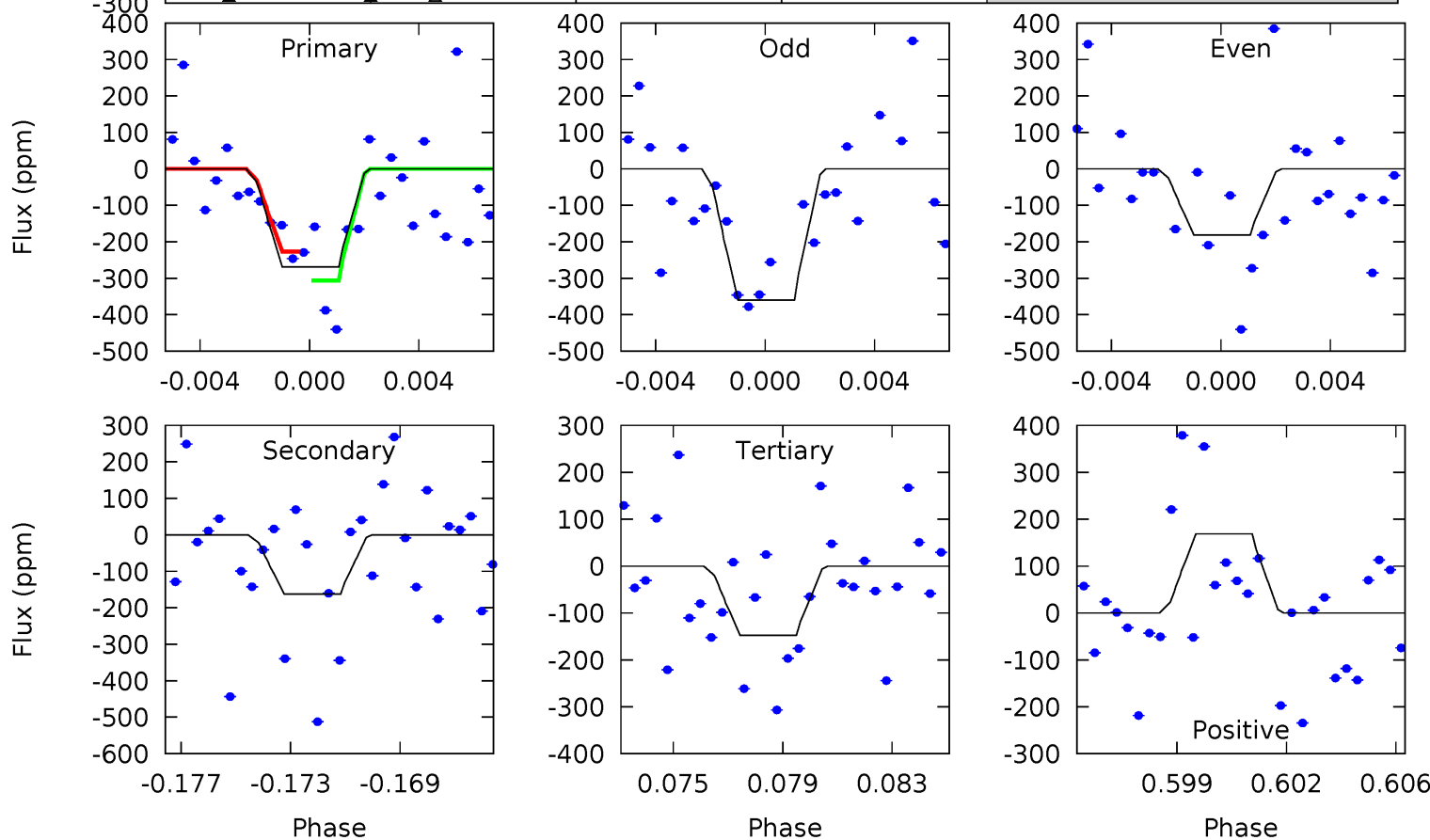
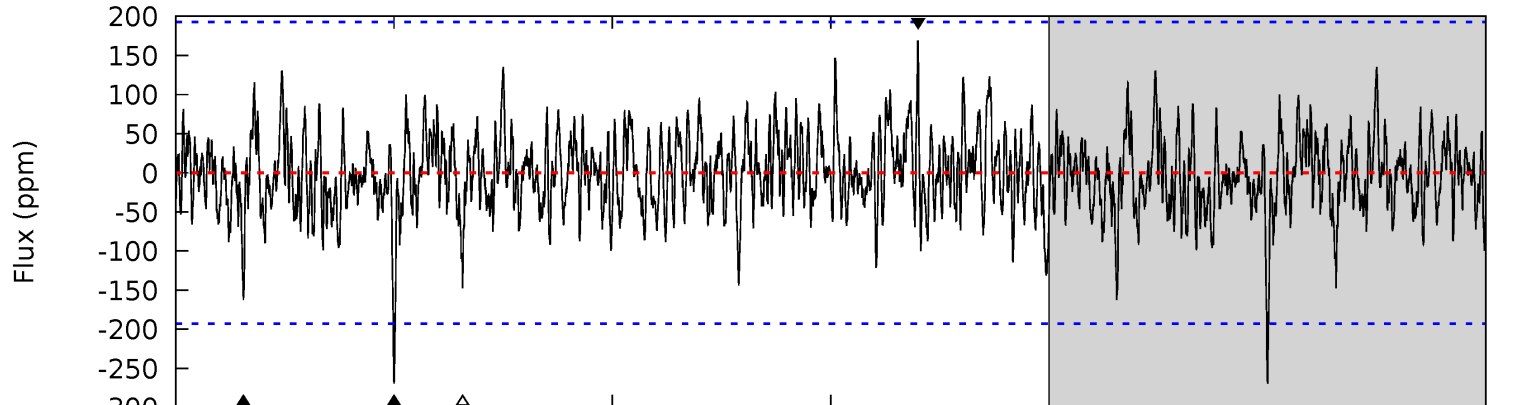
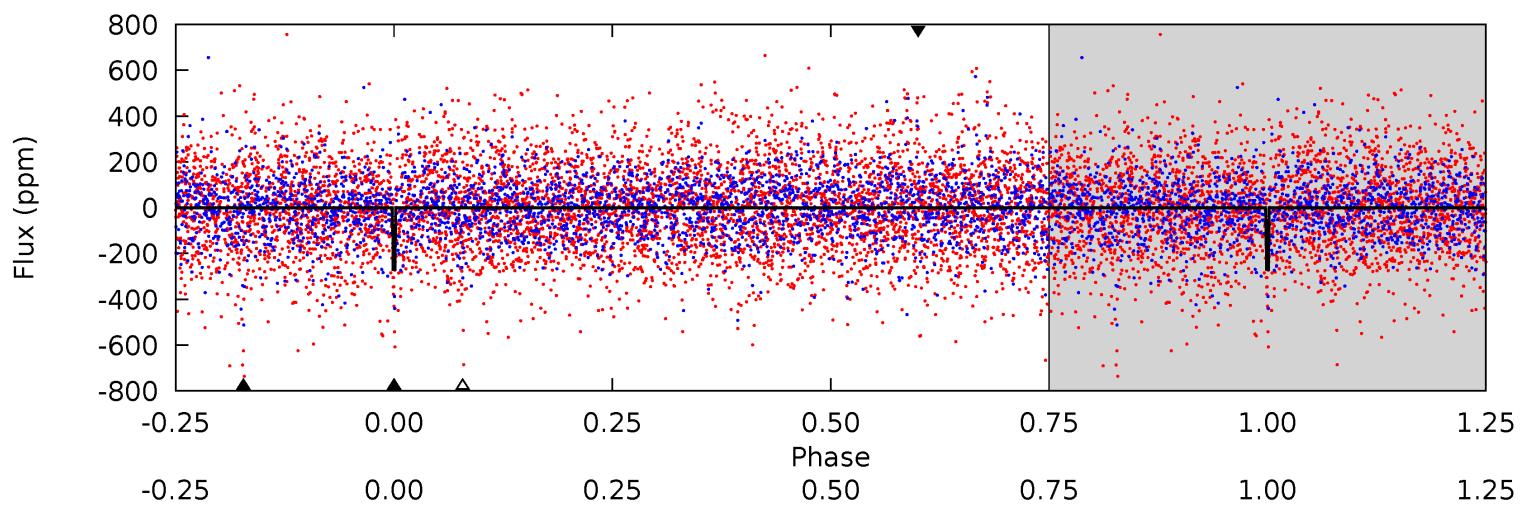
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.66	4.53	3.89	5.60	5.16	2.81	1.30	1.77	0.06	0.64	-1.07	2.33	0.73	0.50	1.08



# Alt Model-Shift Uniqueness Test

002854953-03, P = 21.712255 Days, E = 121.903367 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
7.28	4.40	3.99	4.56	5.21	2.90	1.22	3.29	2.72	0.41	-0.16	2.40	0.95	0.39	1.07



### Stellar Parameters For KIC 002854953

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7392^{+230}_{-307}$	$4.139^{+0.144}_{-0.176}$	$-0.160^{+0.250}_{-0.350}$	$1.726^{+0.525}_{-0.350}$	$1.493^{+0.209}_{-0.232}$	$0.409^{+0.315}_{-0.208}$
	+3%/-4%	+3%/-4%	+156%/-219%	+30%/-20%	+14%/-16%	+77%/-51%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 002854953-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-142 \pm 31$	$4.11^{+3.71}_{-2.67}$	$1440^{+107}_{-99}$	$5437^{+4090}_{-1285}$	$137^{+927}_{-101}$
Alt.	$-163 \pm 37$	$4.15^{+3.60}_{-2.67}$	$1431^{+106}_{-96}$	$5501^{+4386}_{-1255}$	$155^{+1009}_{-112}$

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



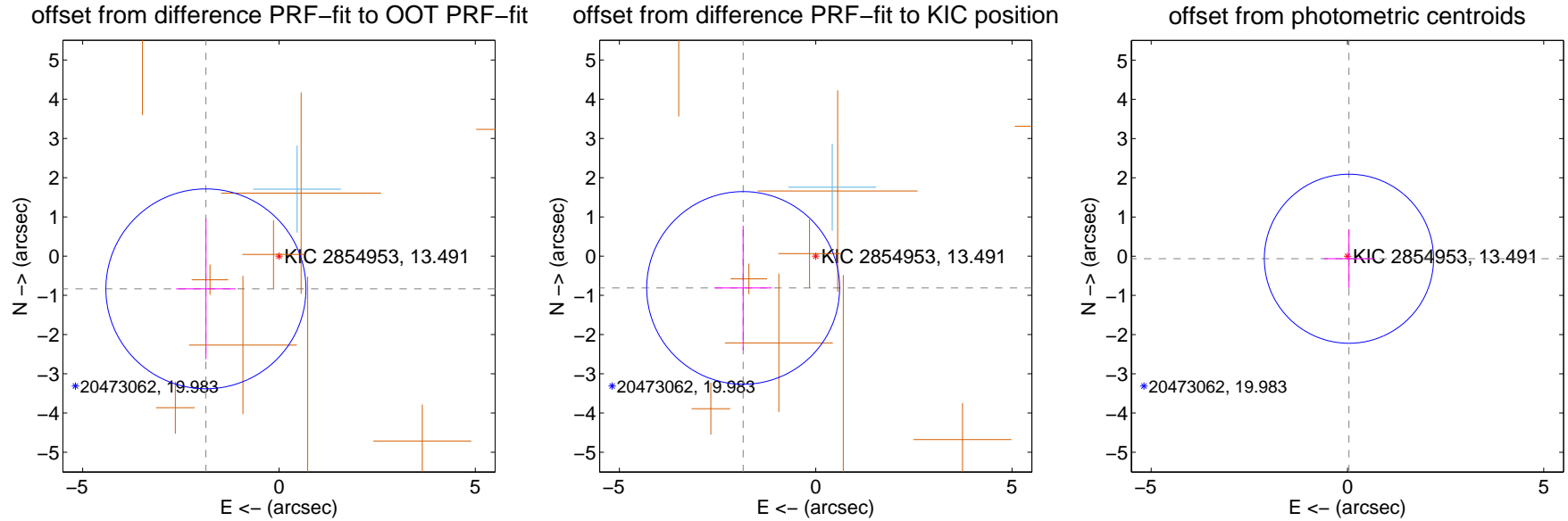
## DV Centroid Data

Supplemental centroid analysis for 002854953-03. Kepler magnitude: 13.49. Transit SNR 11.31

There are 1 quarters with good PRF difference image offsets

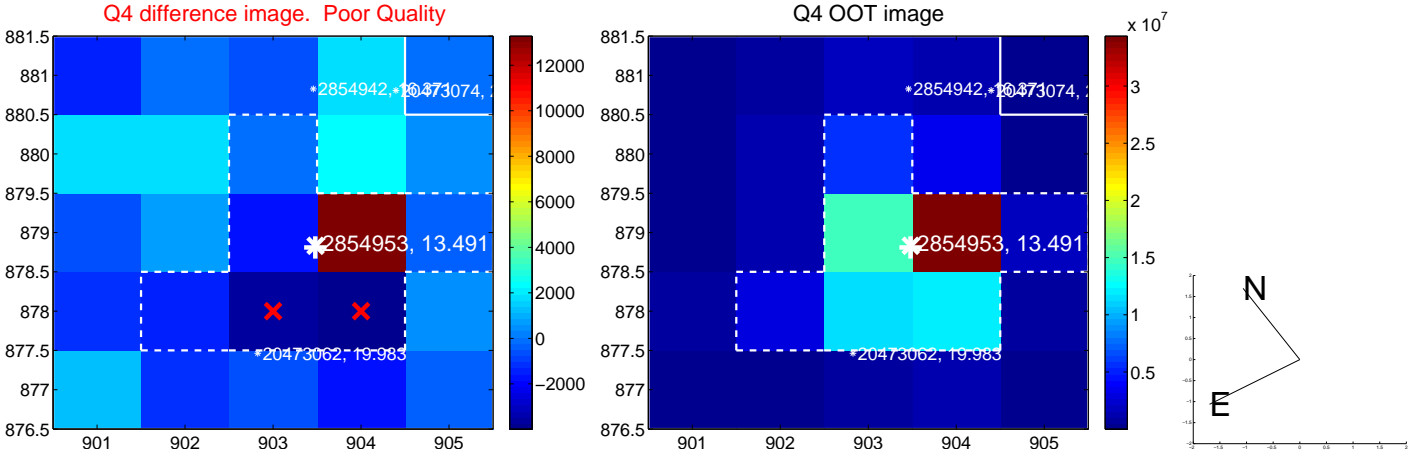
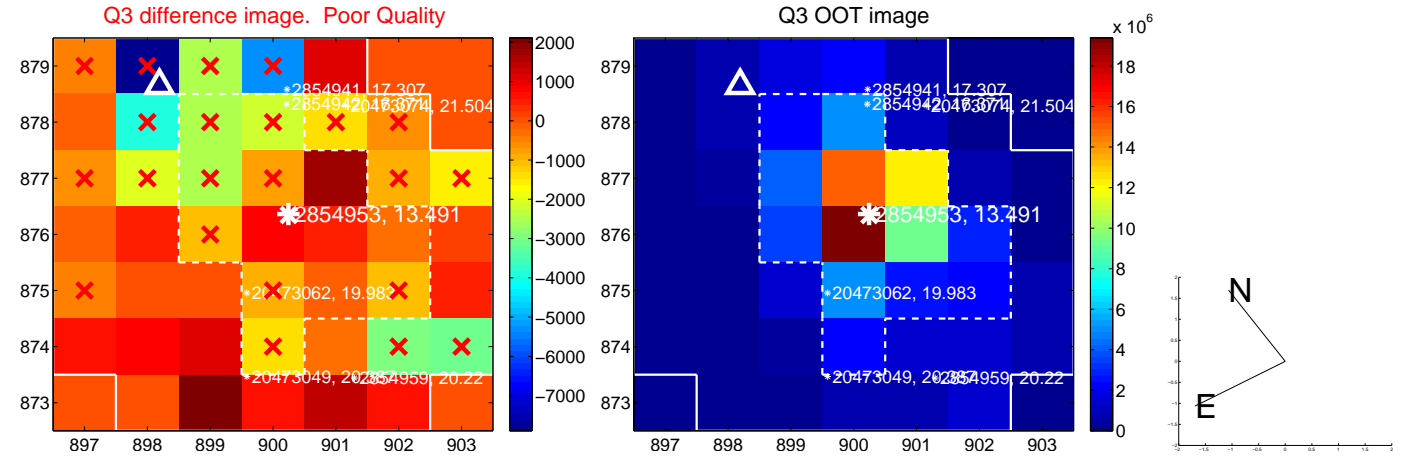
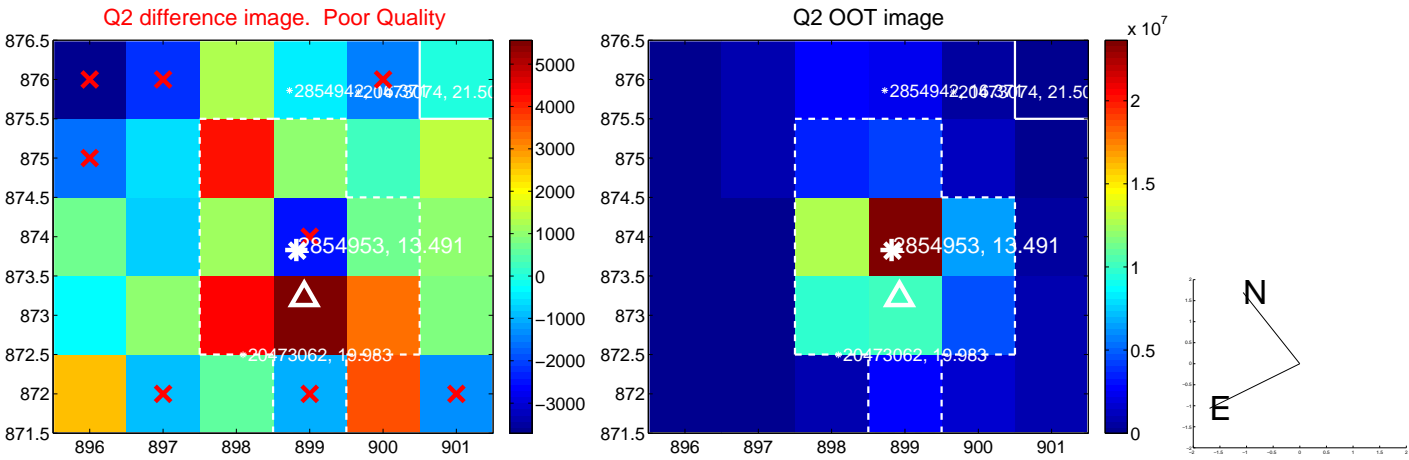
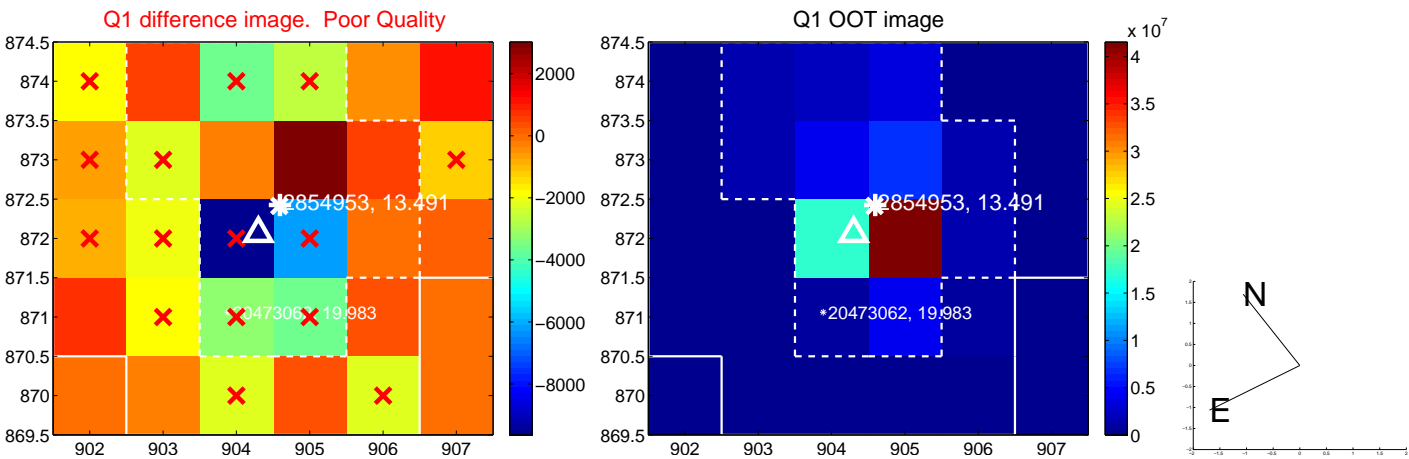
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.039 \pm 0.849$	2.40	$1.861 \pm 0.759$	$-0.834 \pm 1.792$
PRF-fit source offset from KIC position	$2.018 \pm 0.819$	2.47	$1.848 \pm 0.736$	$-0.811 \pm 1.584$
photometric centroid source offset	$0.07 \pm 0.72$	0.10	$-0.04 \pm 0.64$	$-0.06 \pm 0.74$

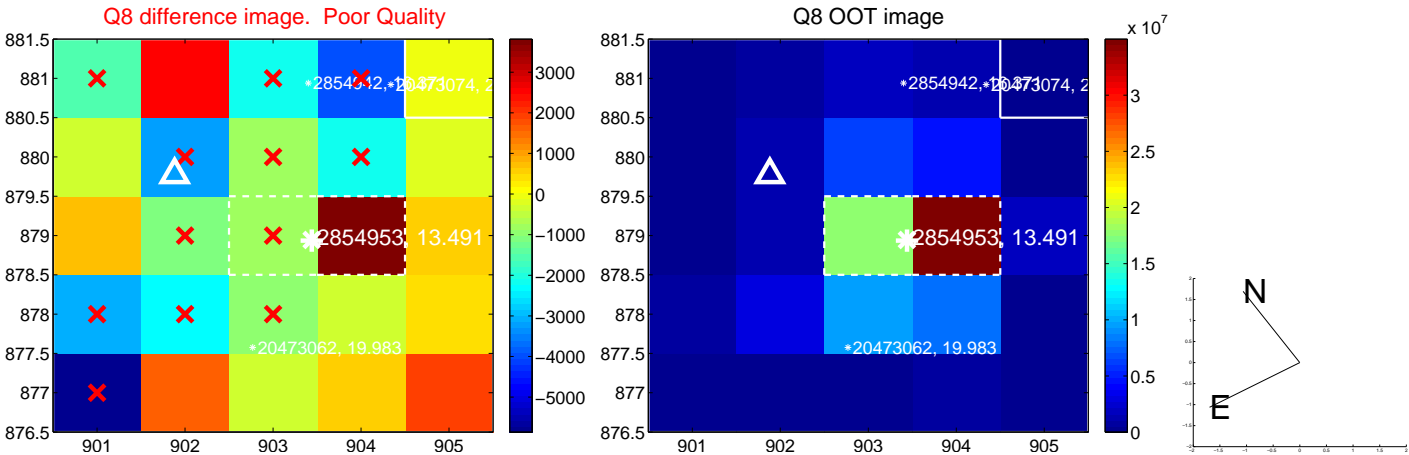
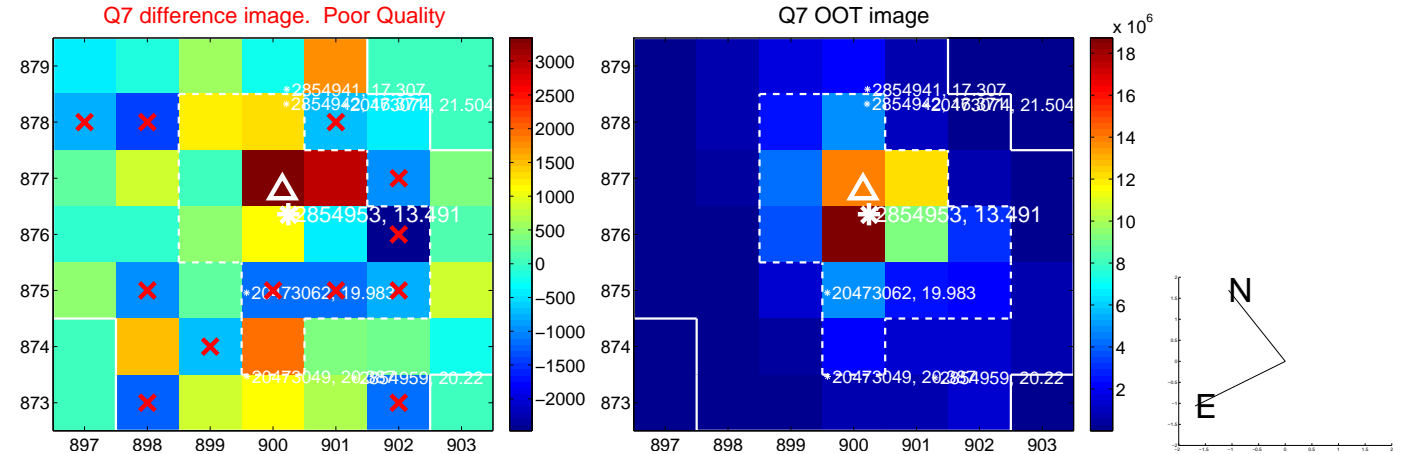
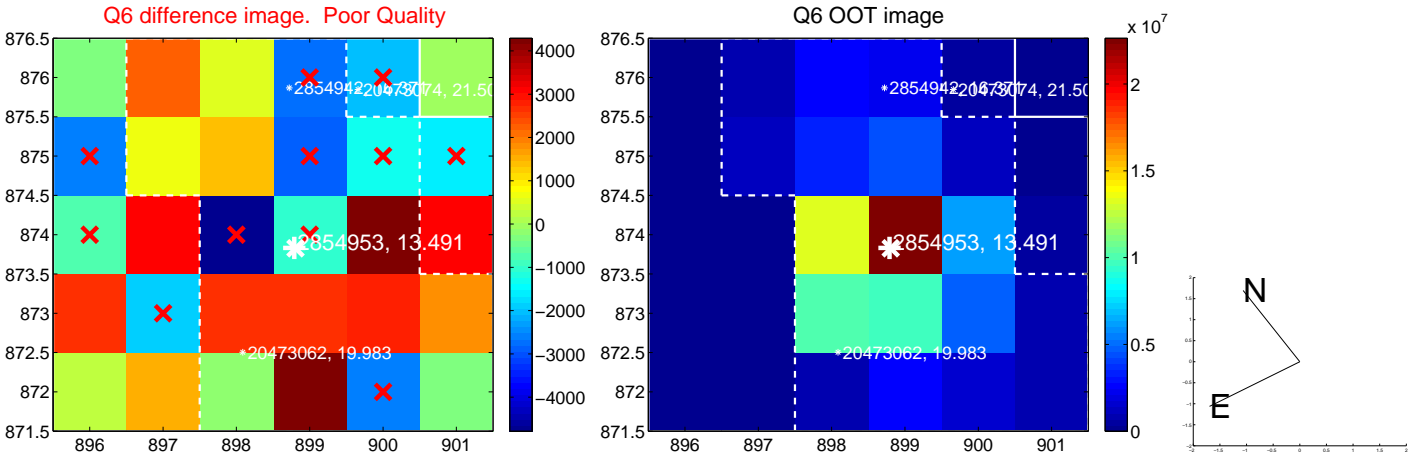
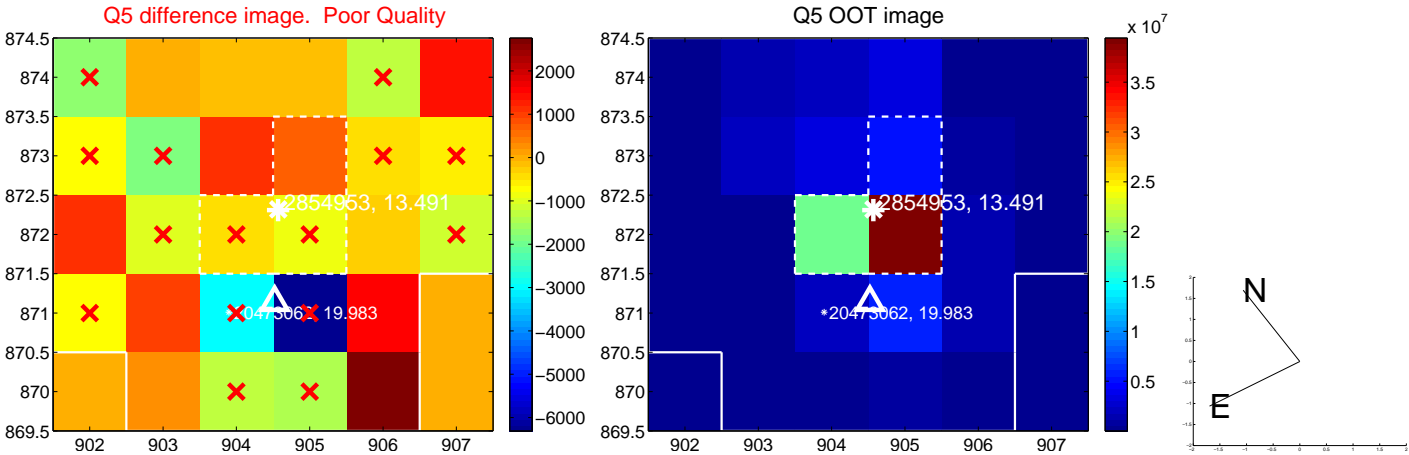


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

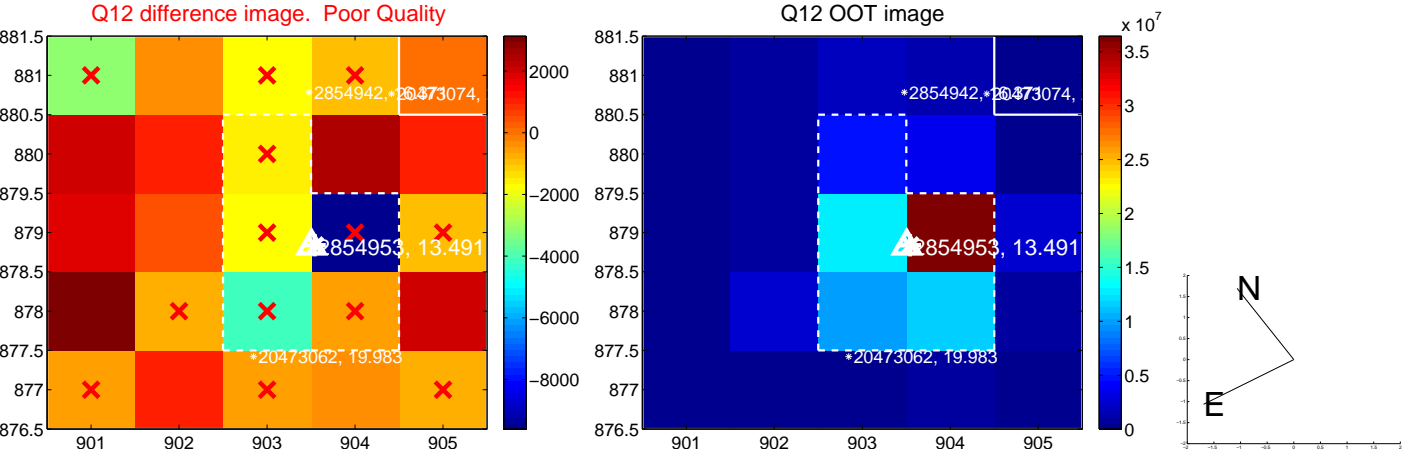
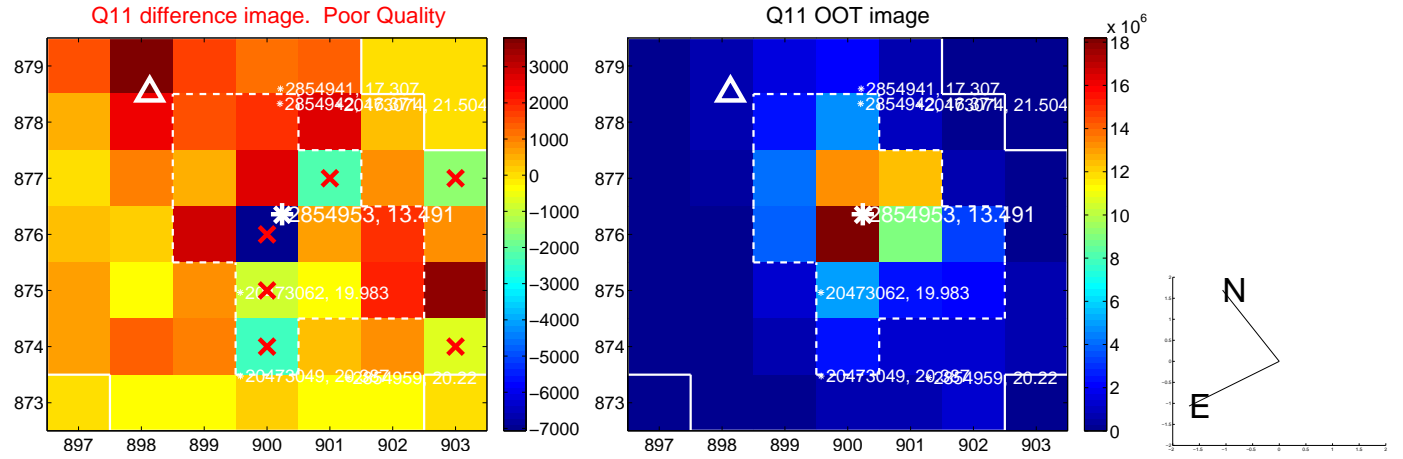
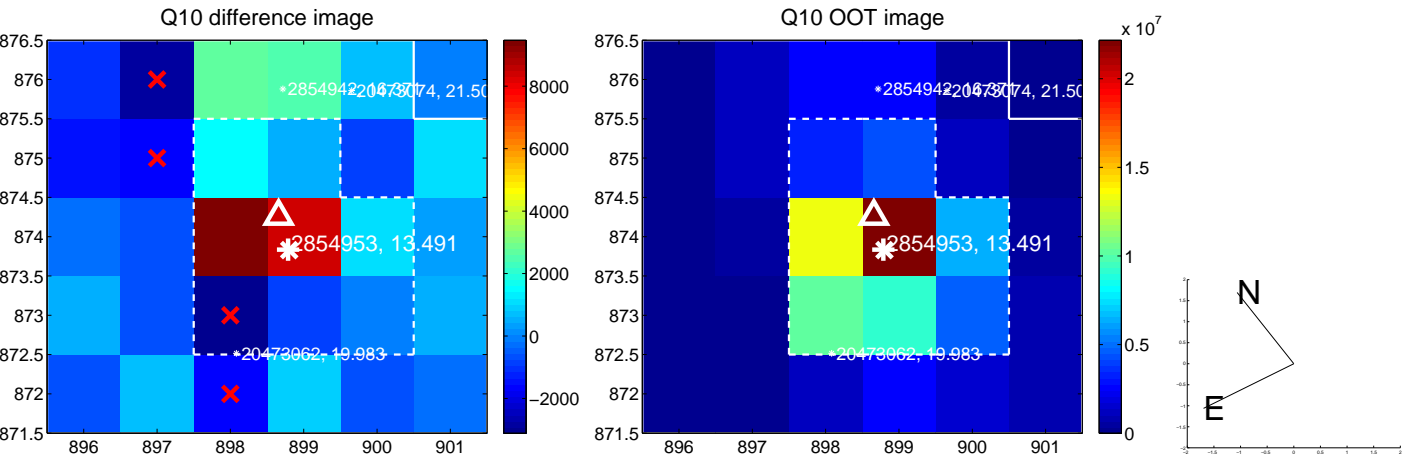
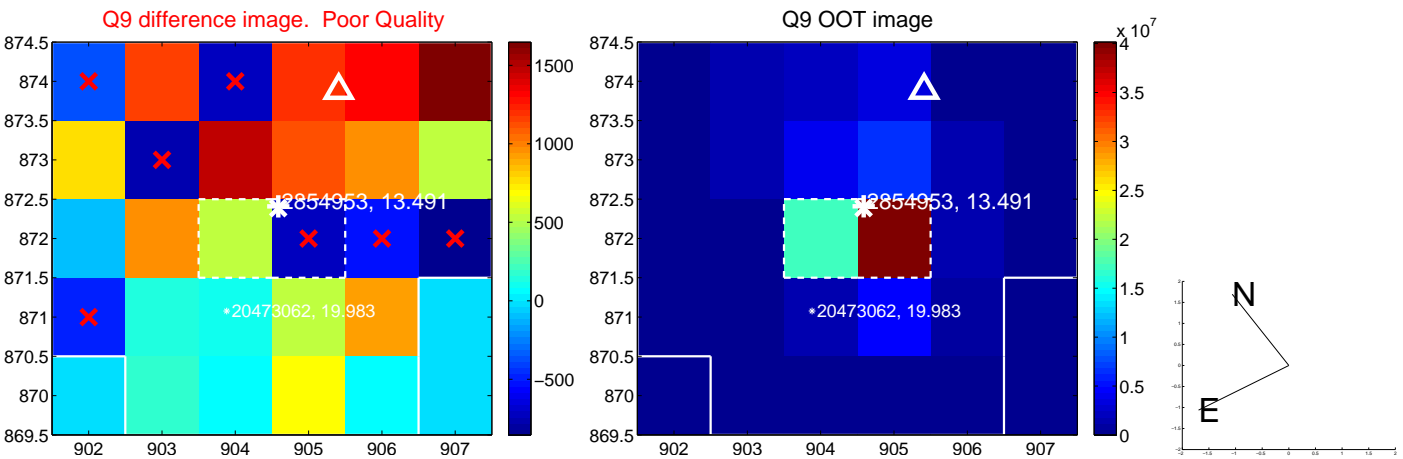
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



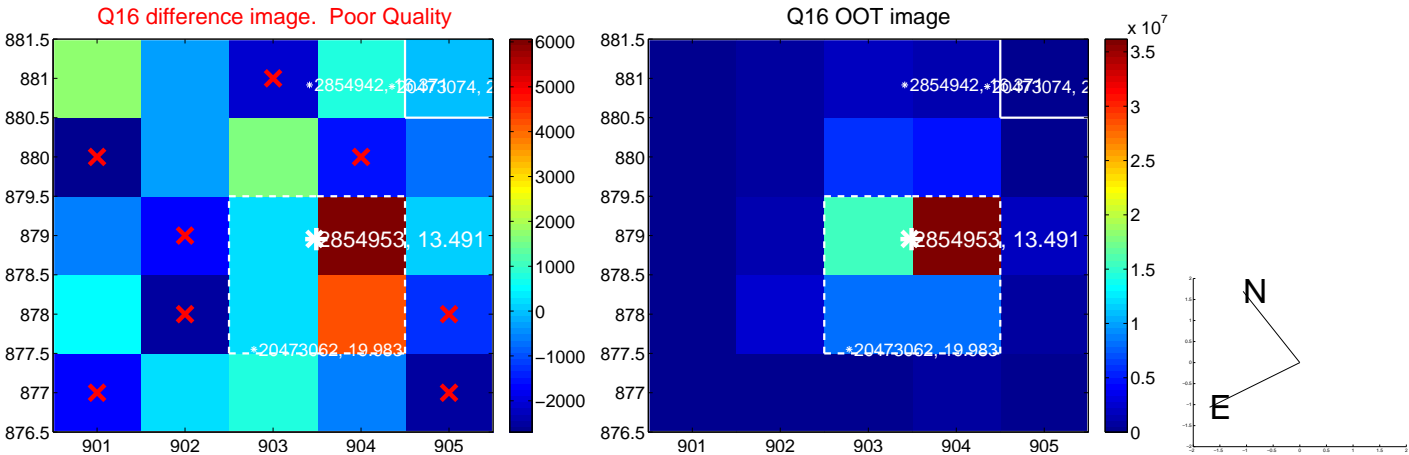
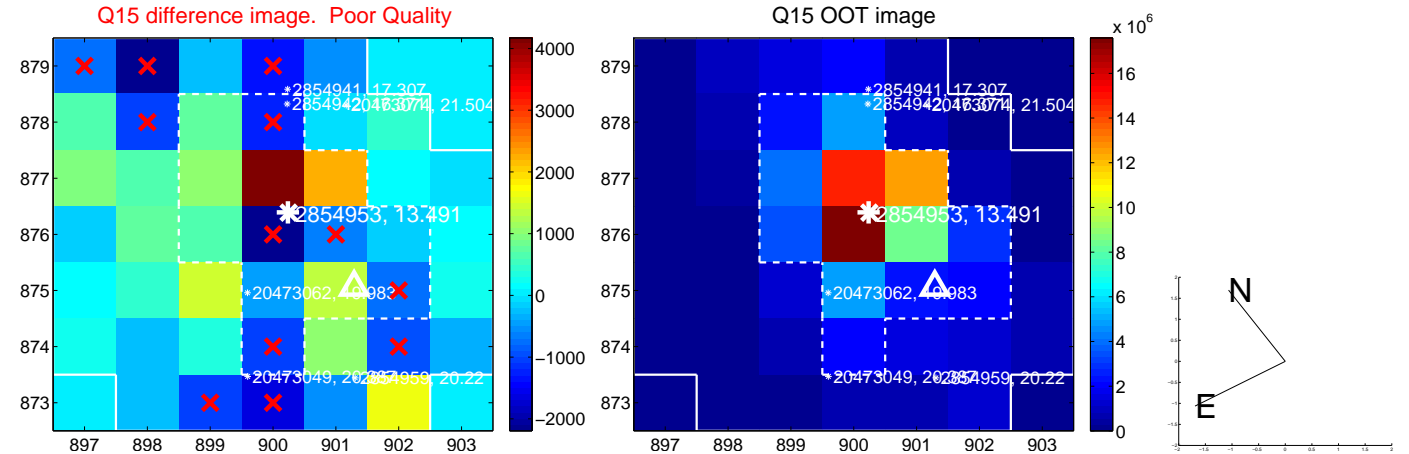
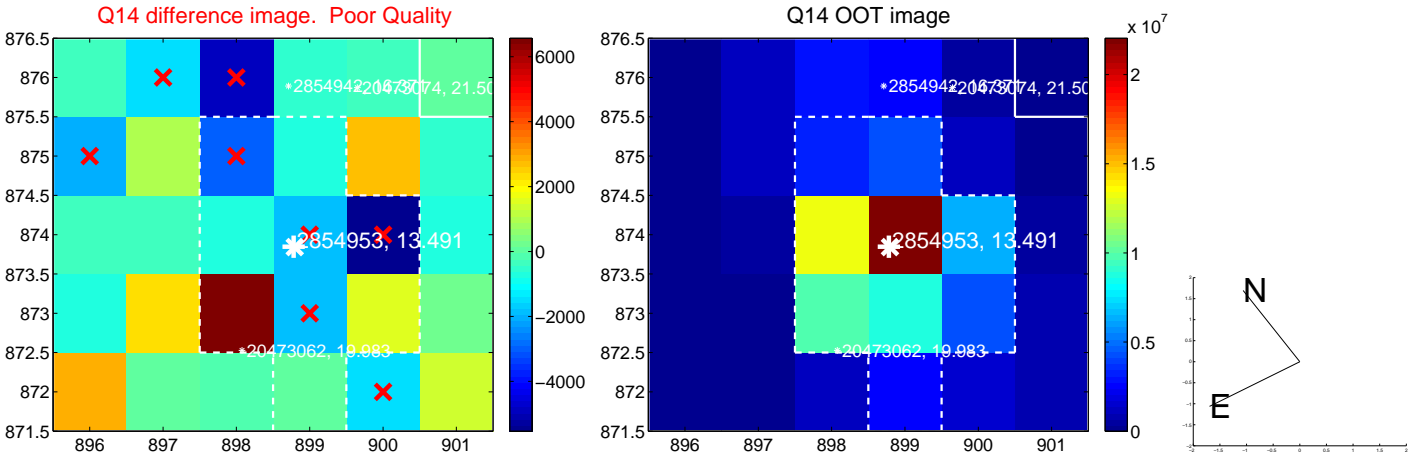
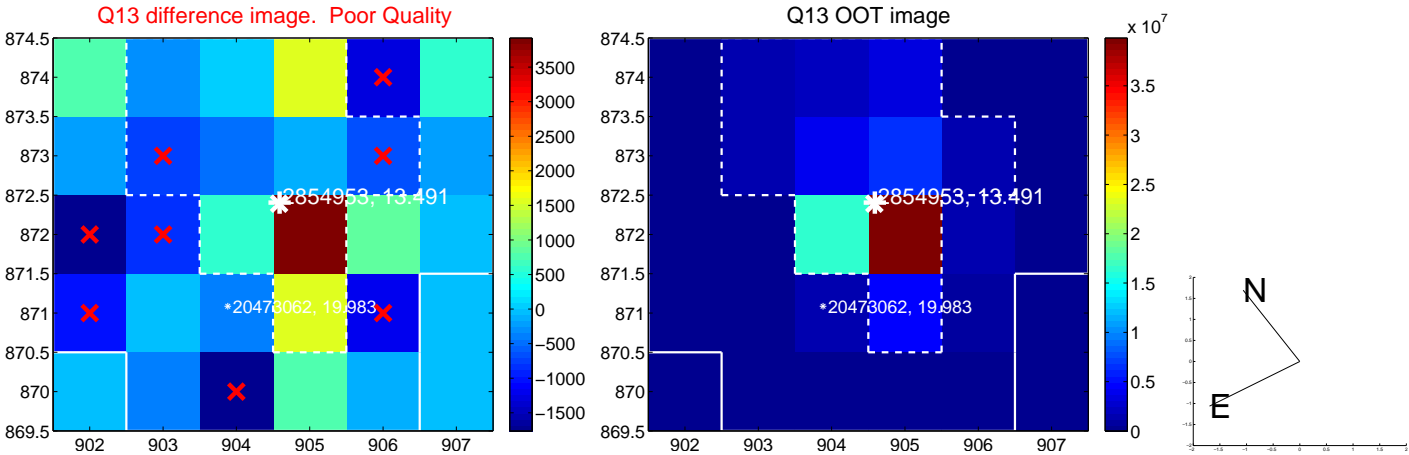
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



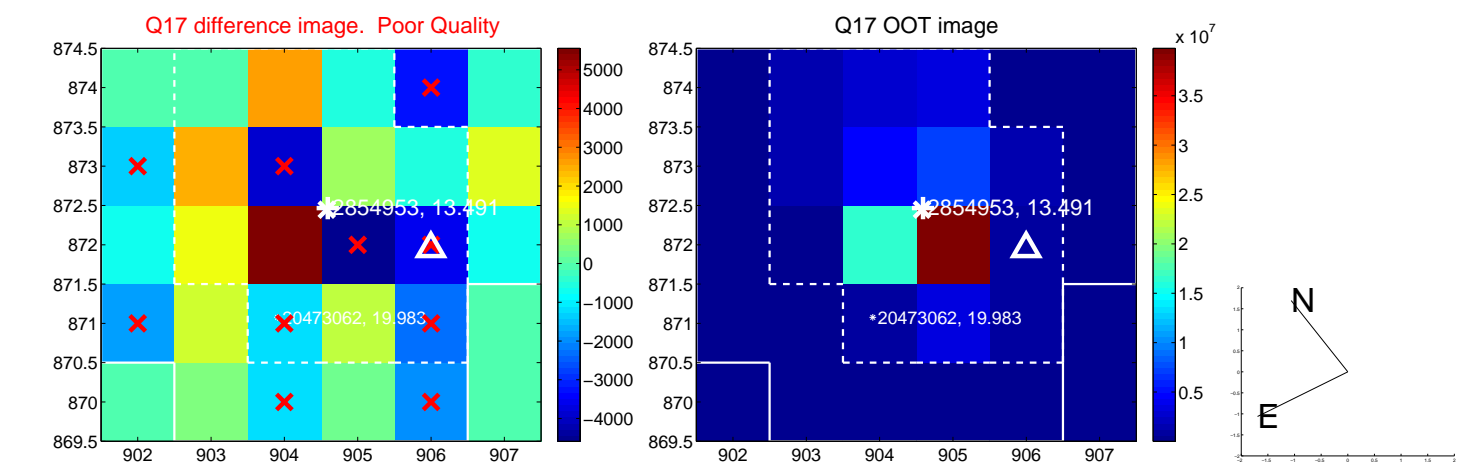
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



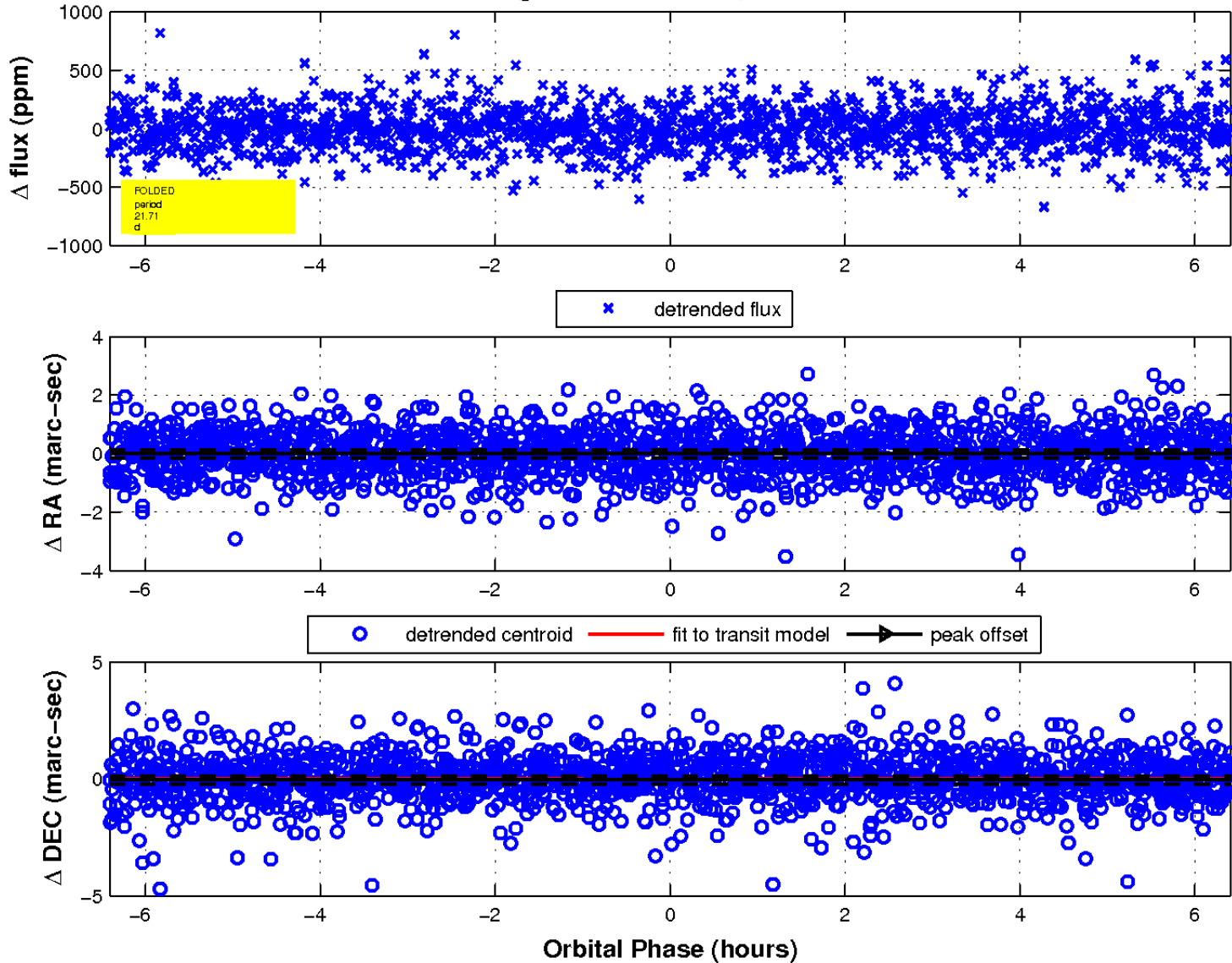
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

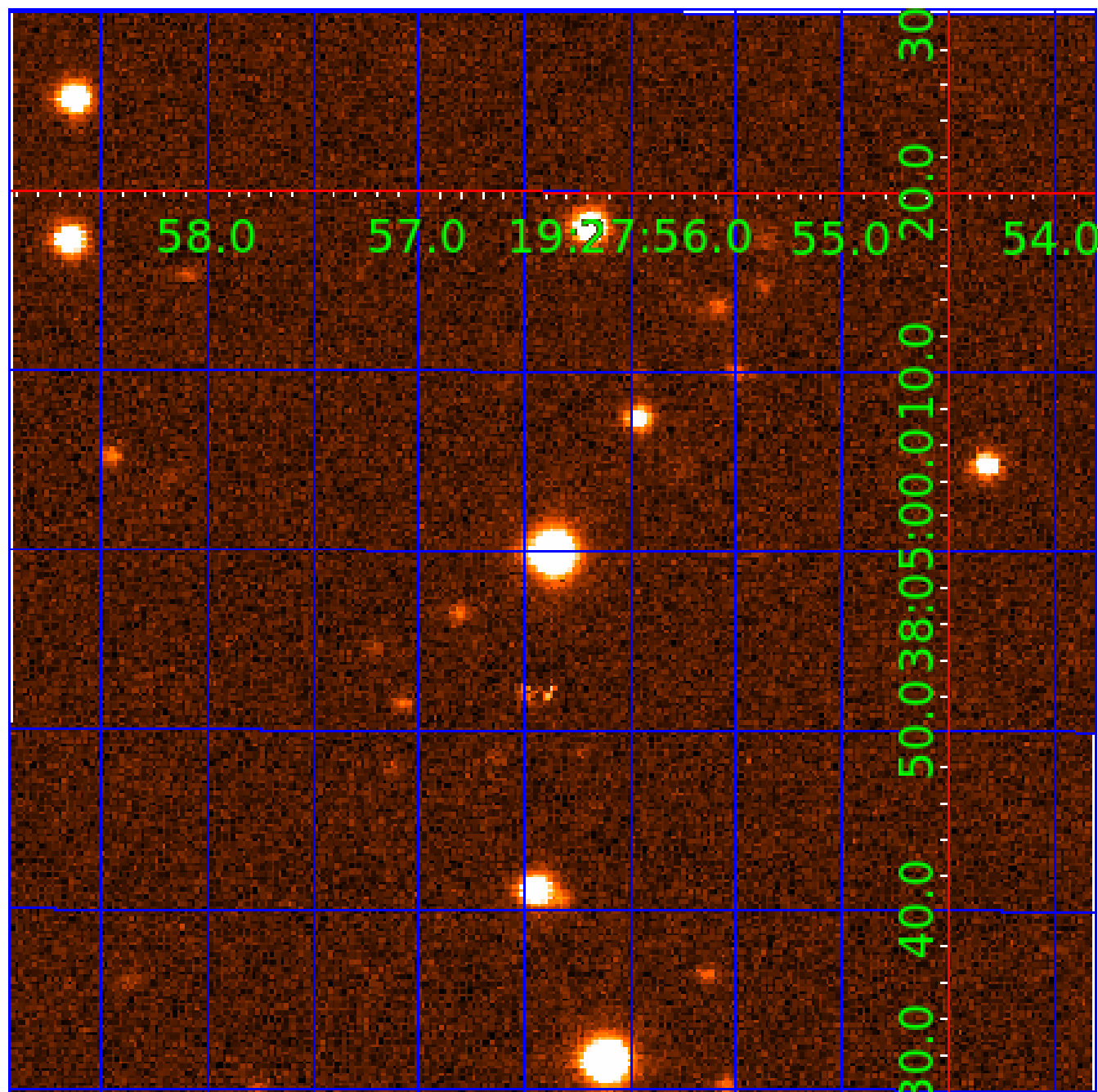


fluxWeightedCentroids, Planet 3 of 7



UKIRT Image

Declination





# KIC 002854953

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002854953-01	OBS	No	1.724690	131.957540	3.6	12.301	12.9	1.9	1.73	7392	0.35	7685.78
002854953-02	OBS	No	39.194267	155.527838	440.4	1.412	10.5	11.0	1.73	7392	3.70	119.40
002854953-03	OBS	No	21.711992	143.629034	225.3	2.139	10.6	11.3	1.73	7392	3.01	262.44
002854953-04	OBS	No	26.850442	145.650419	210.7	2.229	9.8	11.5	1.73	7392	2.92	197.71
002854953-05	OBS	No	36.967356	155.079665	277.4	1.613	8.8	9.7	1.73	7392	3.21	129.09
002854953-06	OBS	No	82.036741	159.261308	172.1	6.074	9.1	7.8	1.73	7392	2.63	44.60
002854953-07	OBS	No	31.648645	140.935509	339.1	1.534	8.7	10.3	1.73	7392	3.58	158.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002854953-01	OBS	FP	0.00	1	0	0	0	LPP_DV
002854953-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
002854953-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002854953-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
002854953-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002854953-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002854953-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST

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

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

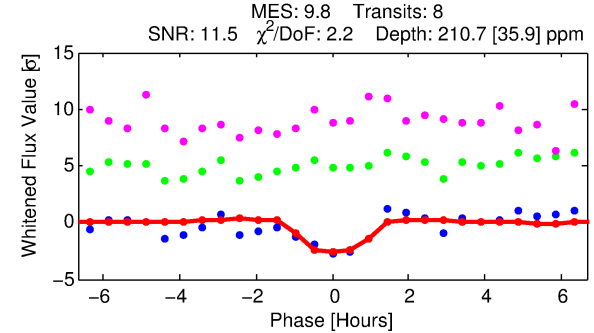
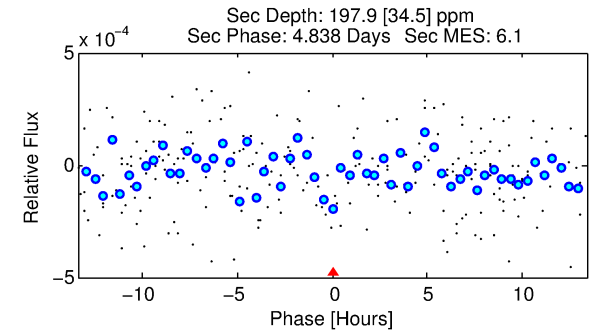
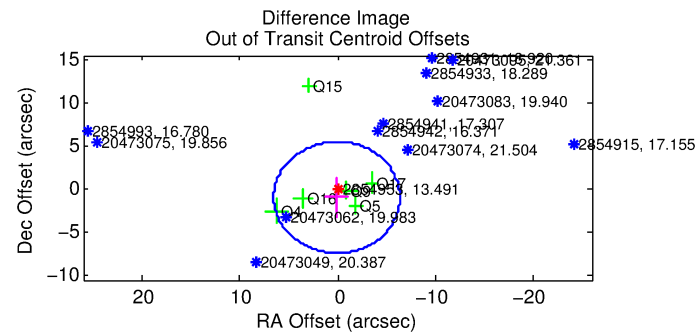
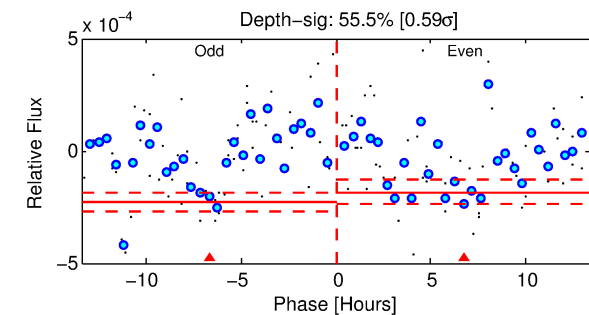
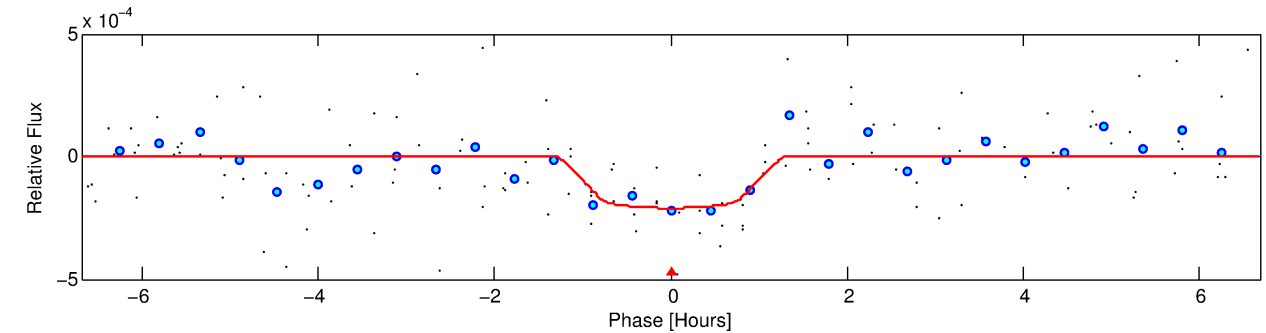
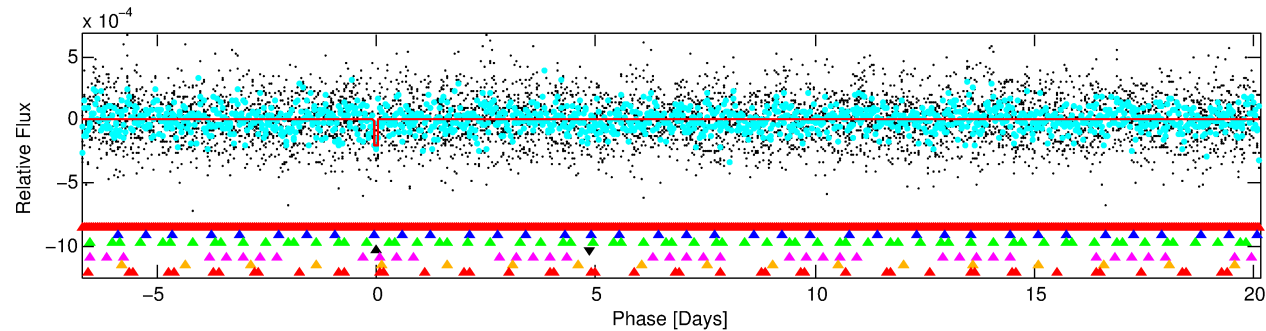
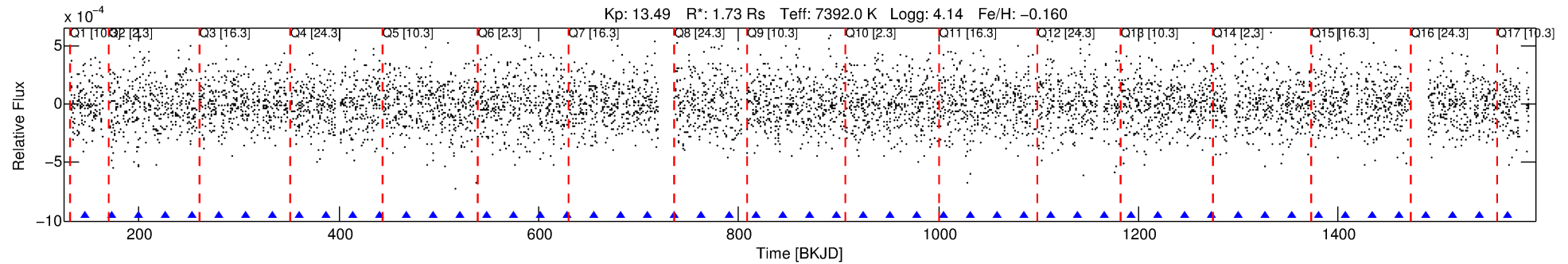
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 002854953-04

No Significant Match Found

# DV One-Page Summary

KIC: 2854953 Candidate: 4 of 7 Period: 26.850 d



## DV Fit Results:

Period = 26.85044 [0.00025] d  
Epoch = 145.6504 [0.0076] BKJD  
Rp/R\* = 0.0155 [0.0141]  
a/R\* = 43.25 [240.90]  
b = 0.90 [1.18]  
Seff = 197.71 [74.43]  
Teq = 956 [90] K  
Rp = 2.92 [2.80] Re  
a = 0.2008 [0.0489] AU  
Ag = 515.46 [958.52] [0.54σ]  
Teffp = 7044 [3233] K [1.88σ]

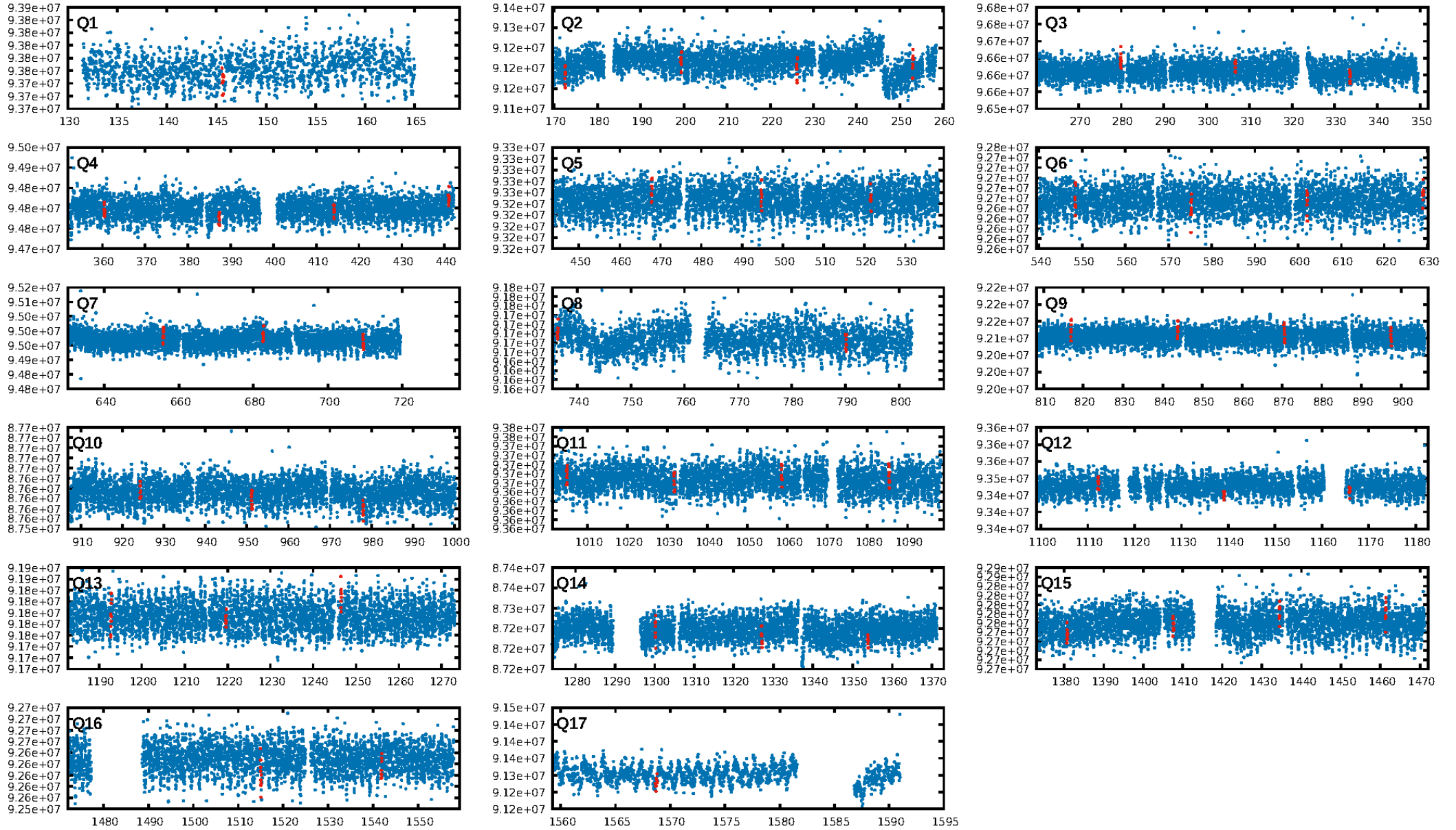
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [39.92σ]  
LongPeriod-sig: 100.0% [42.55σ]  
ModelChiSquare2-sig: 38.0%  
ModelChiSquareGof-sig: 94.9%  
**Bootstrap-pfa: 1.94e-08**  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: 0.1748  
Centroid-sig: 0.9%  
Centroid-so: 1.665 arcsec [1.83σ]  
OotOffset-rm: 0.954 arcsec [0.44σ]  
KicOffset-rm: 0.948 arcsec [0.45σ]  
OotOffset-st: 0/1/2/3 [6]  
KicOffset-st: 0/1/2/3 [6]  
DiffImageQuality-fgm: 0.17 [1/6]  
DiffImageOverlap-fno: 0.76 [13/17]

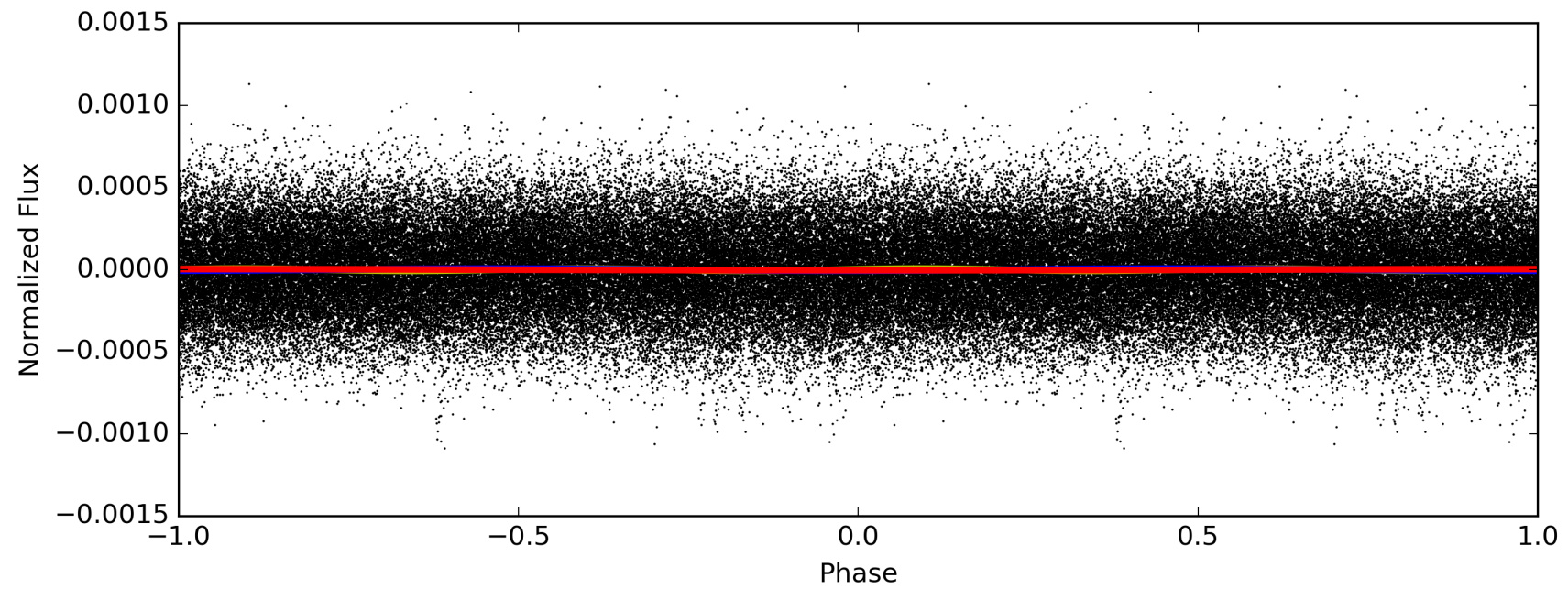
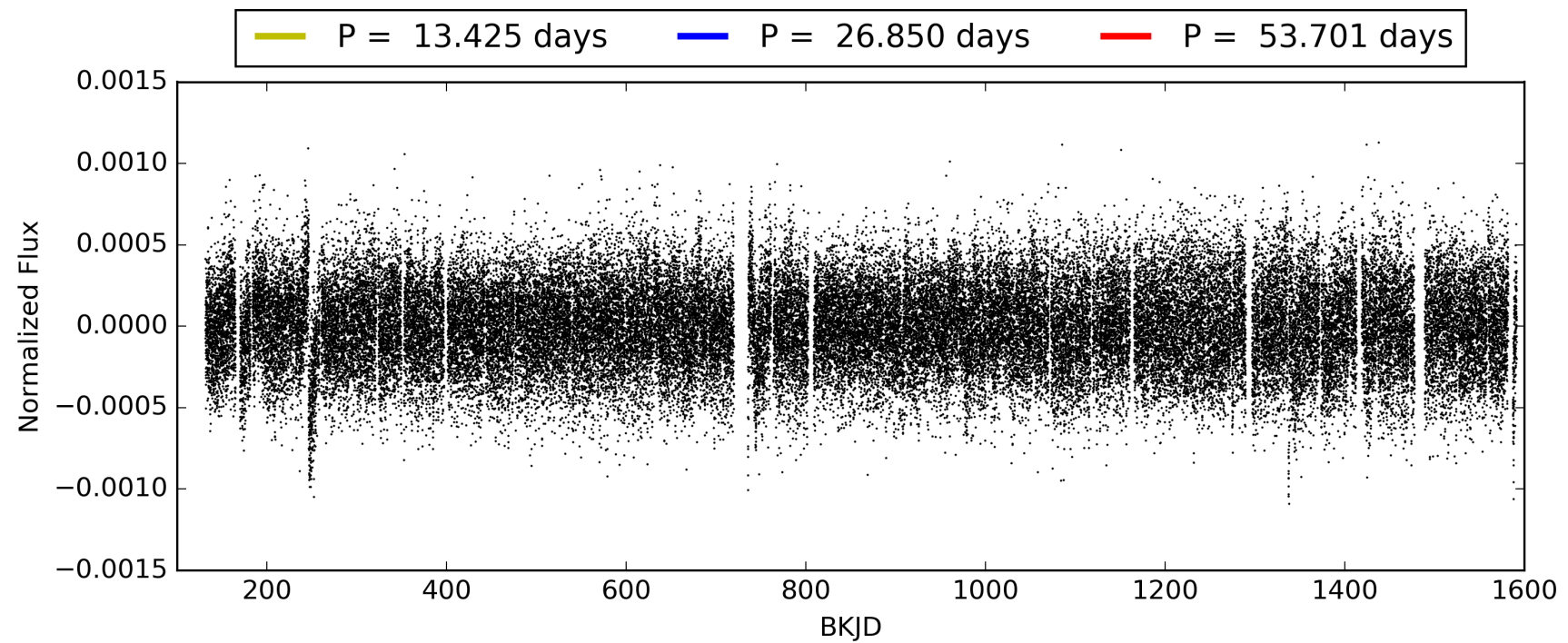
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:19:13 Z

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

# TCE 002854953-04, PDC Light Curves

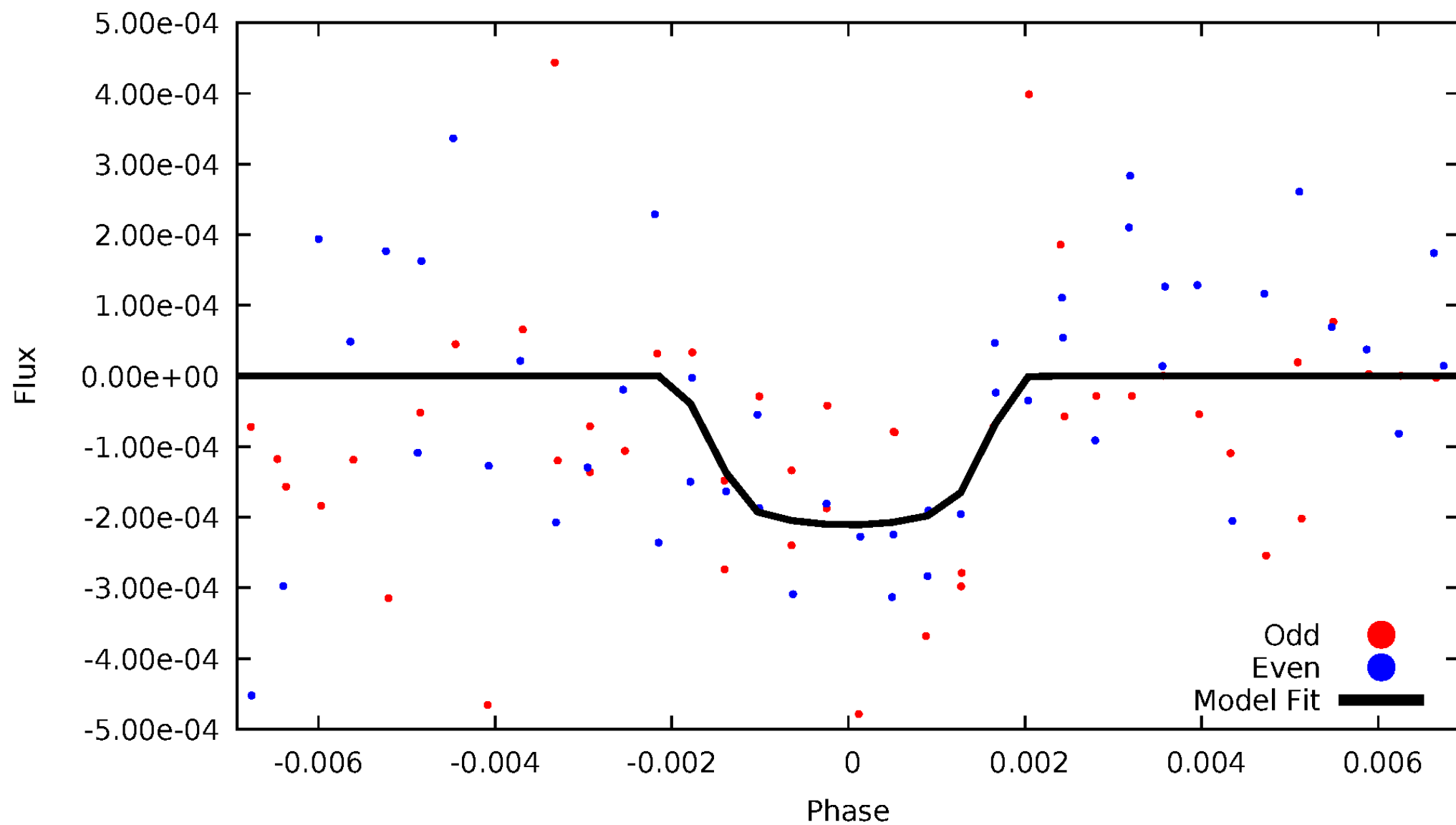


TCE 002854953-04



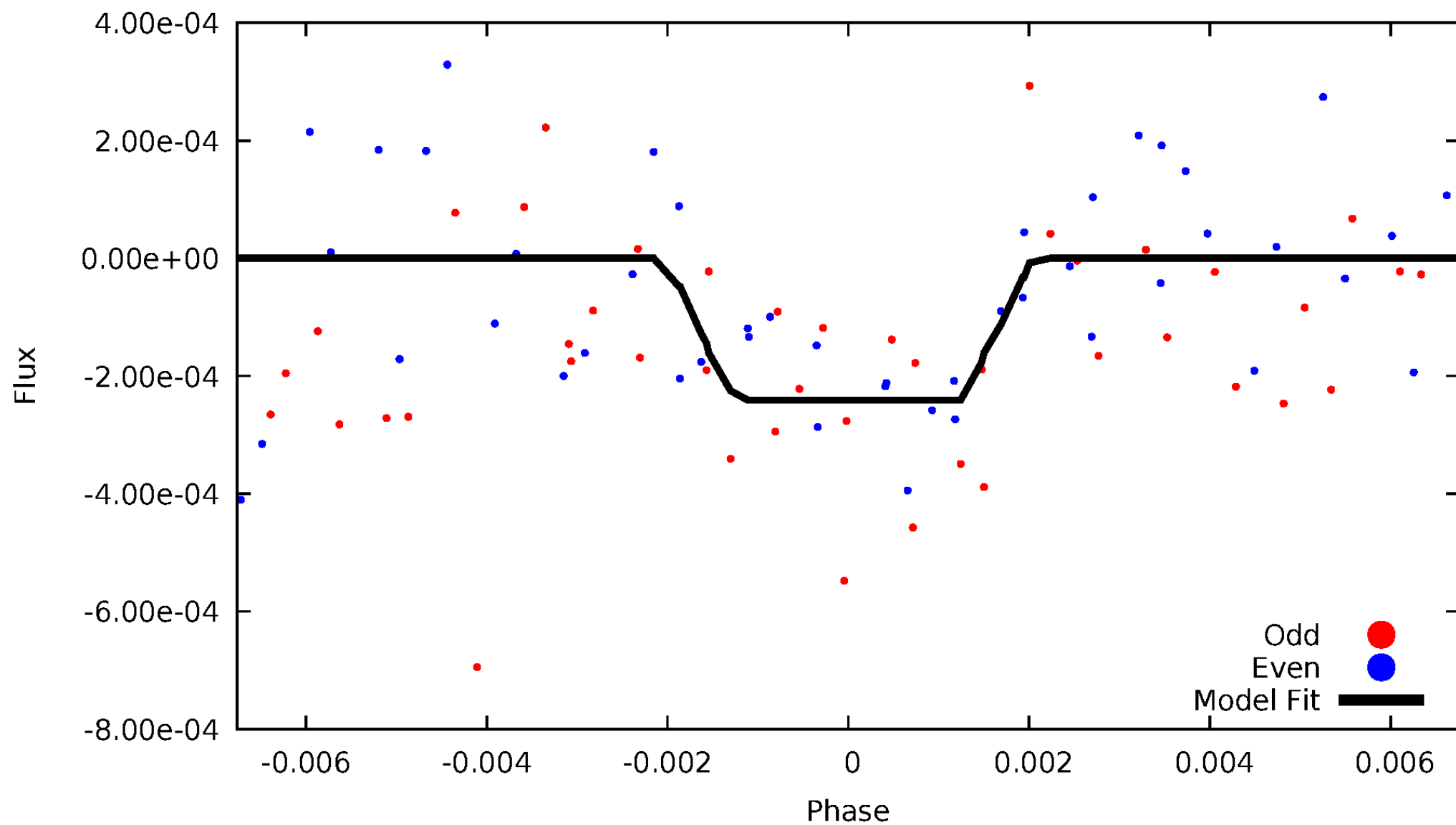
# DV Odd/Even

TCE 002854953-04



# ALT Odd/Even

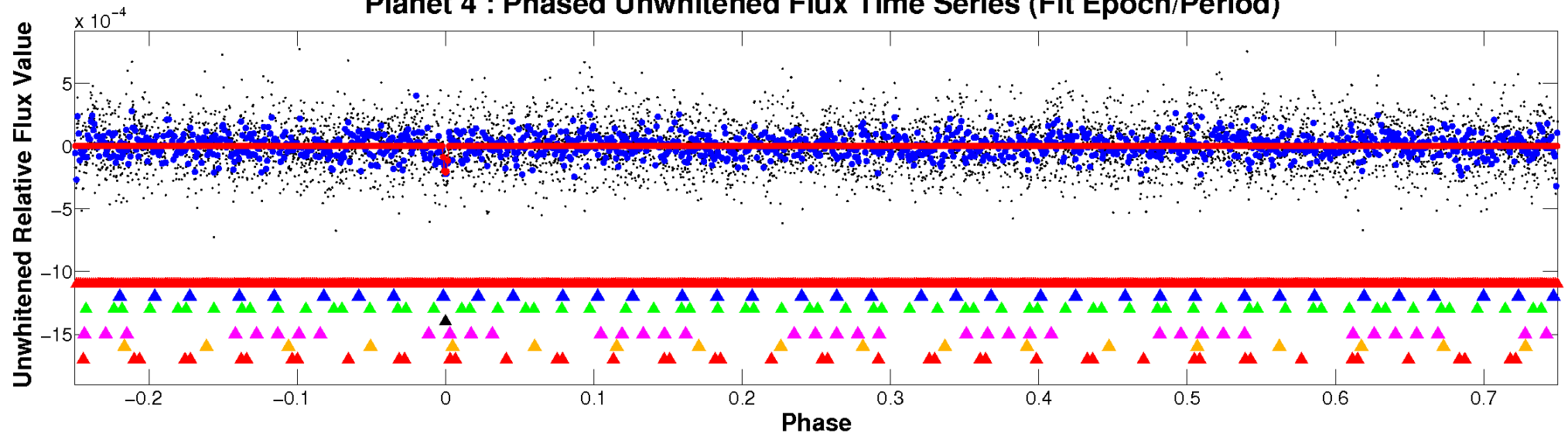
TCE 002854953-04



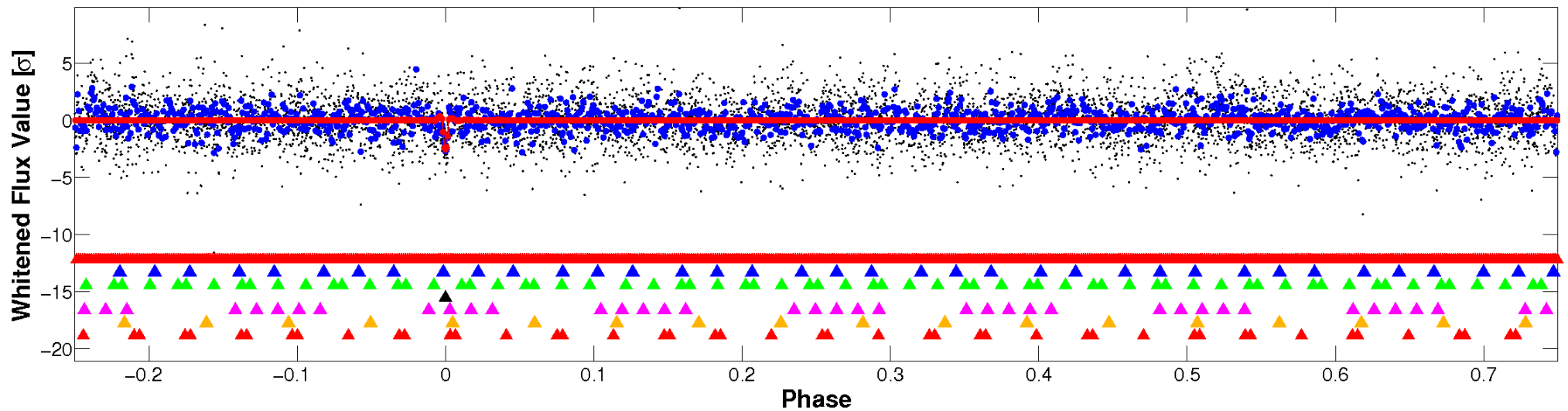


# Non-Whitened Vs. Whitened Light Curve

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



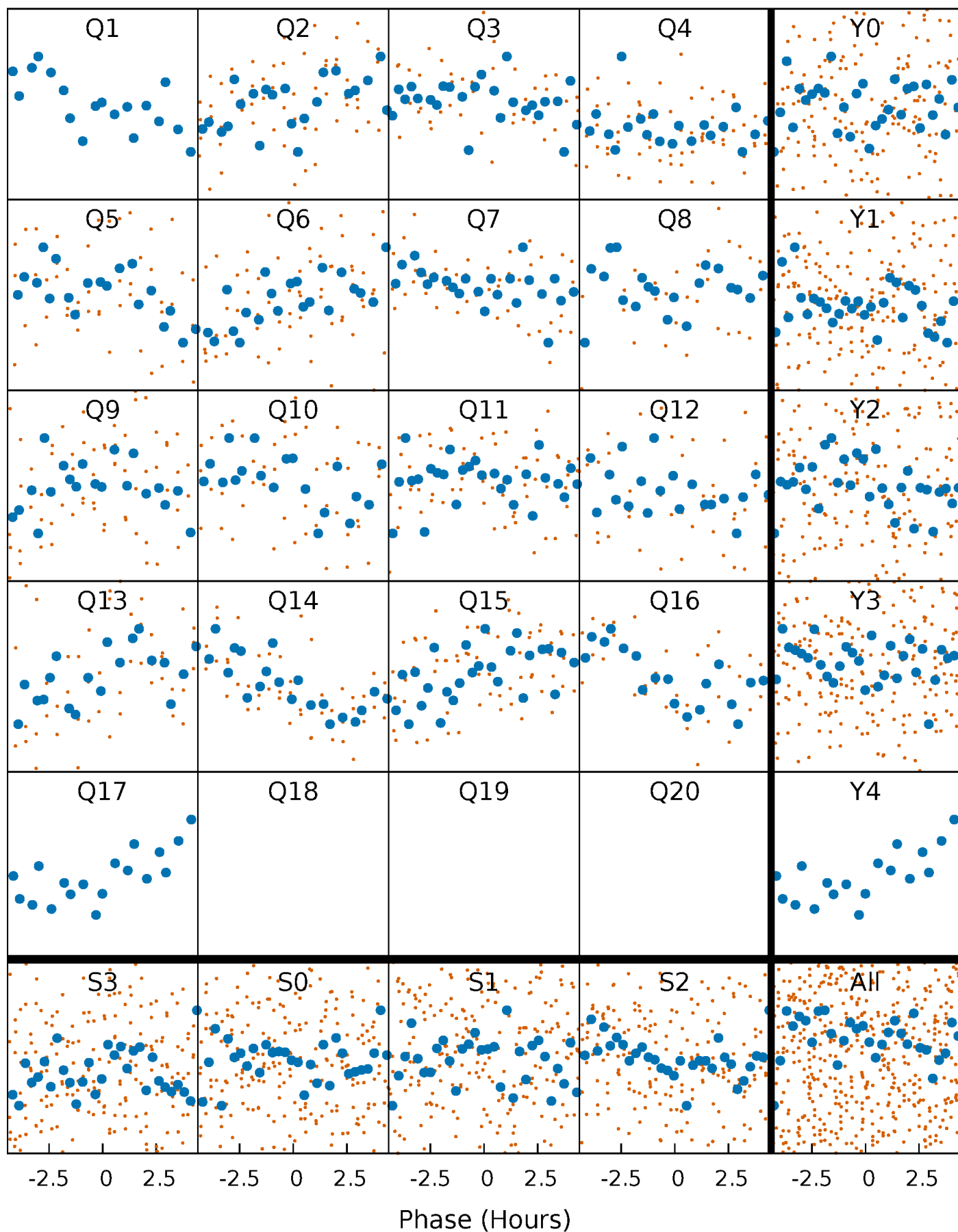
## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)





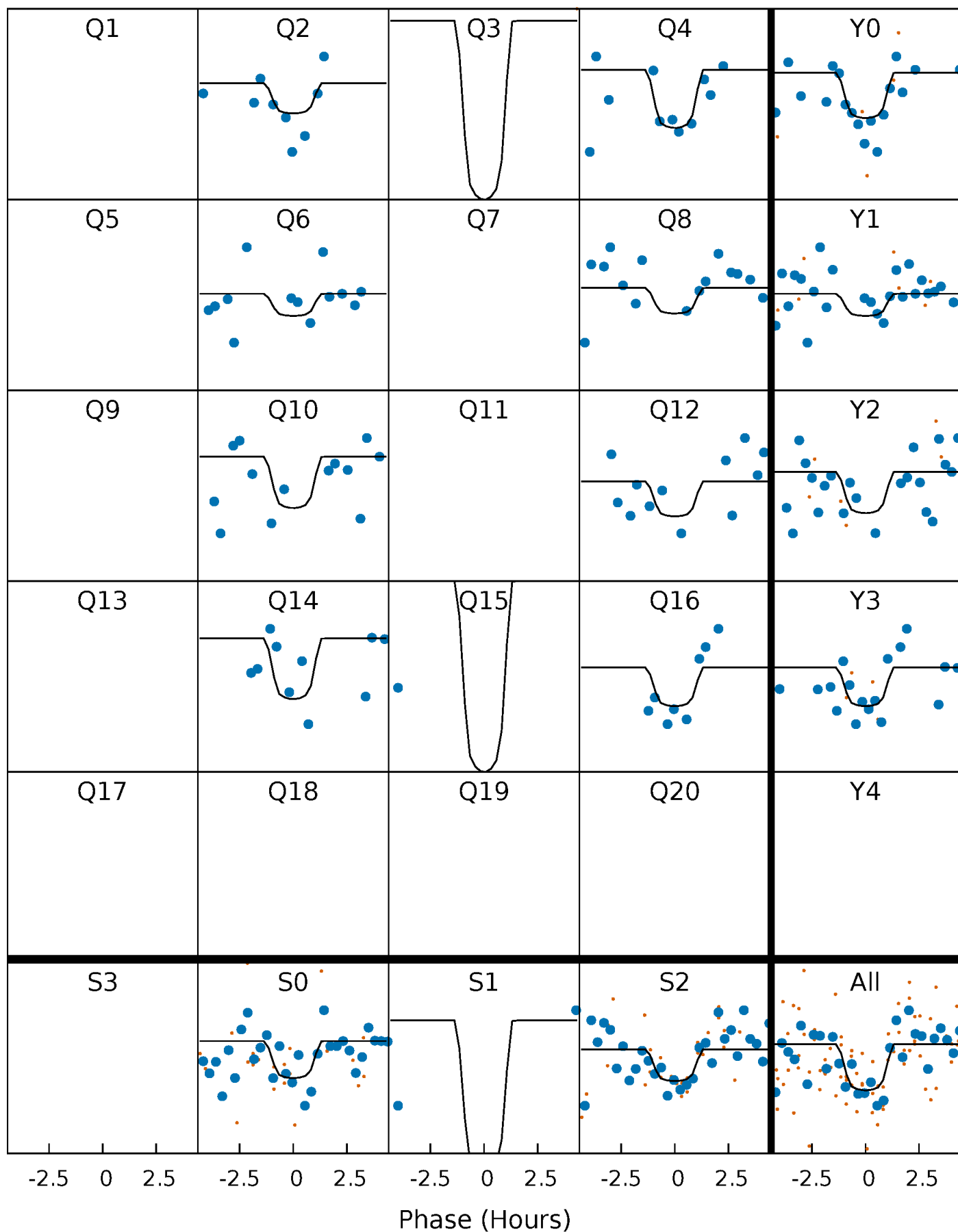
# PDC Quarter-Phased Transit Curves

TCE 002854953-04 P= 26.850442 Days  $T_0=145.650419$  (BKJD)



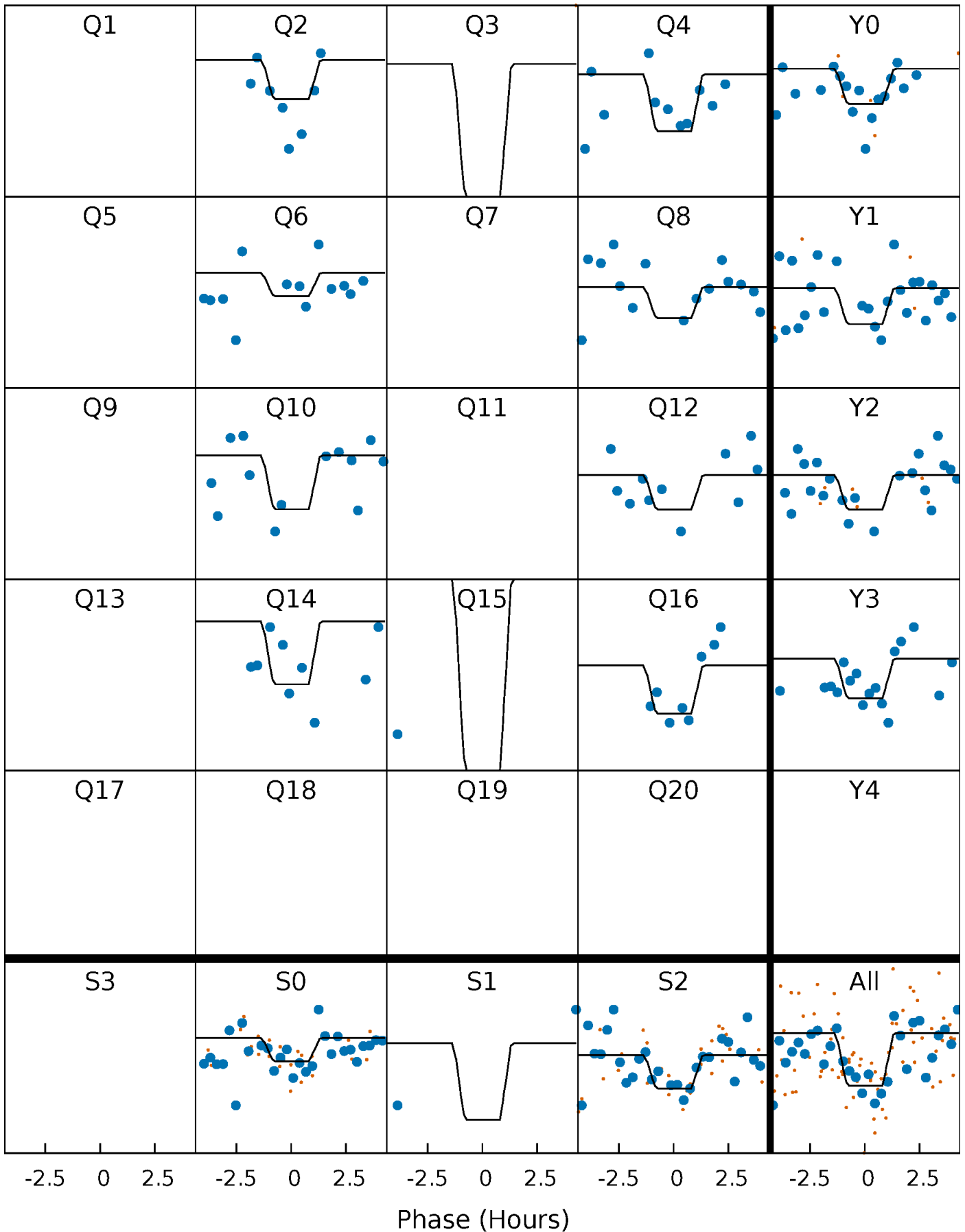
# DV Quarter-Phased Transit Curves

TCE 002854953-04 P= 26.850442 Days  $T_0=145.650419$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

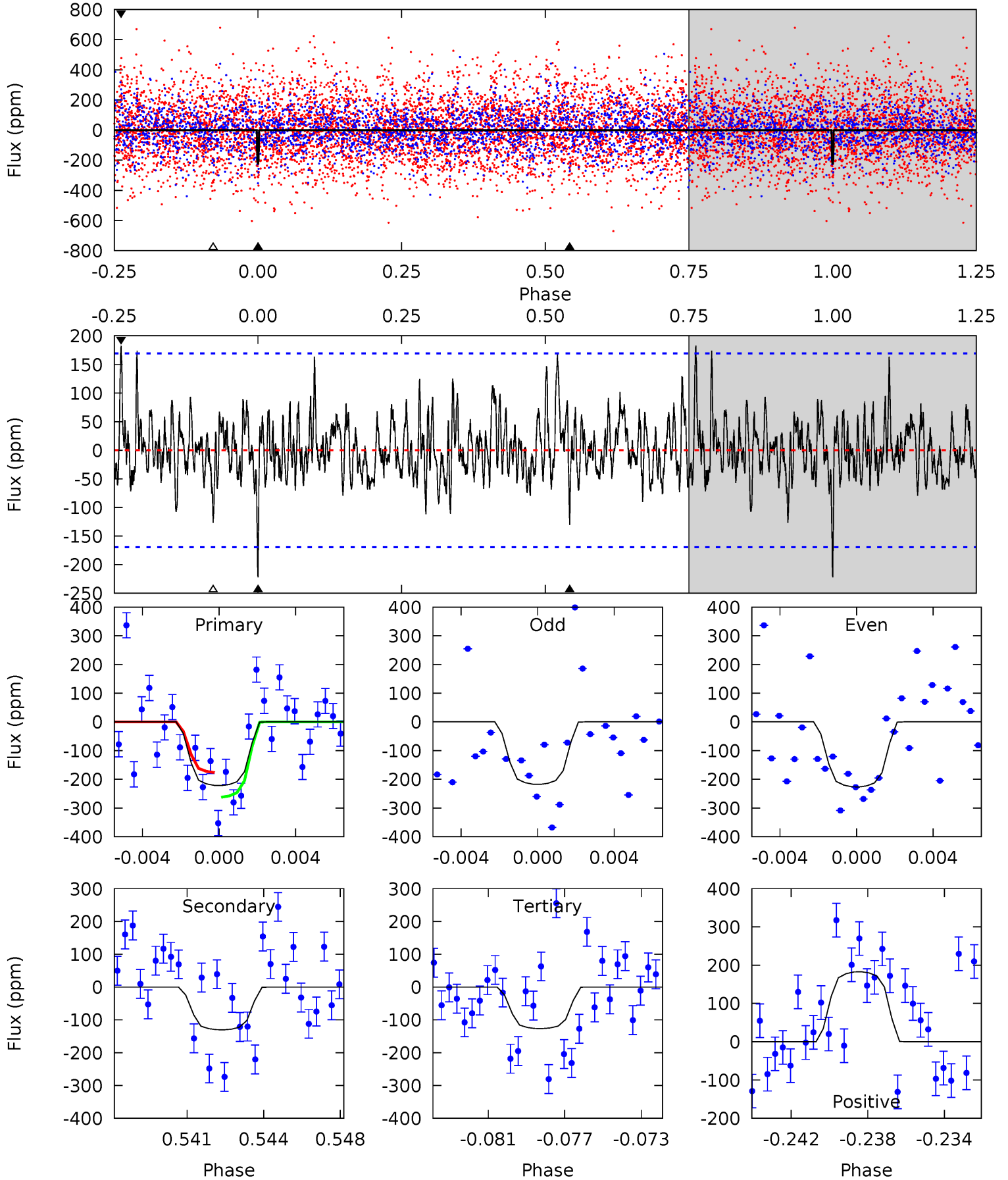
TCE 002854953-04 P= 26.850205 Days  $T_0=145.655088$  (BKJD)



# DV Model-Shift Uniqueness Test

002854953-04, P = 26.850442 Days, E = 118.799977 Days

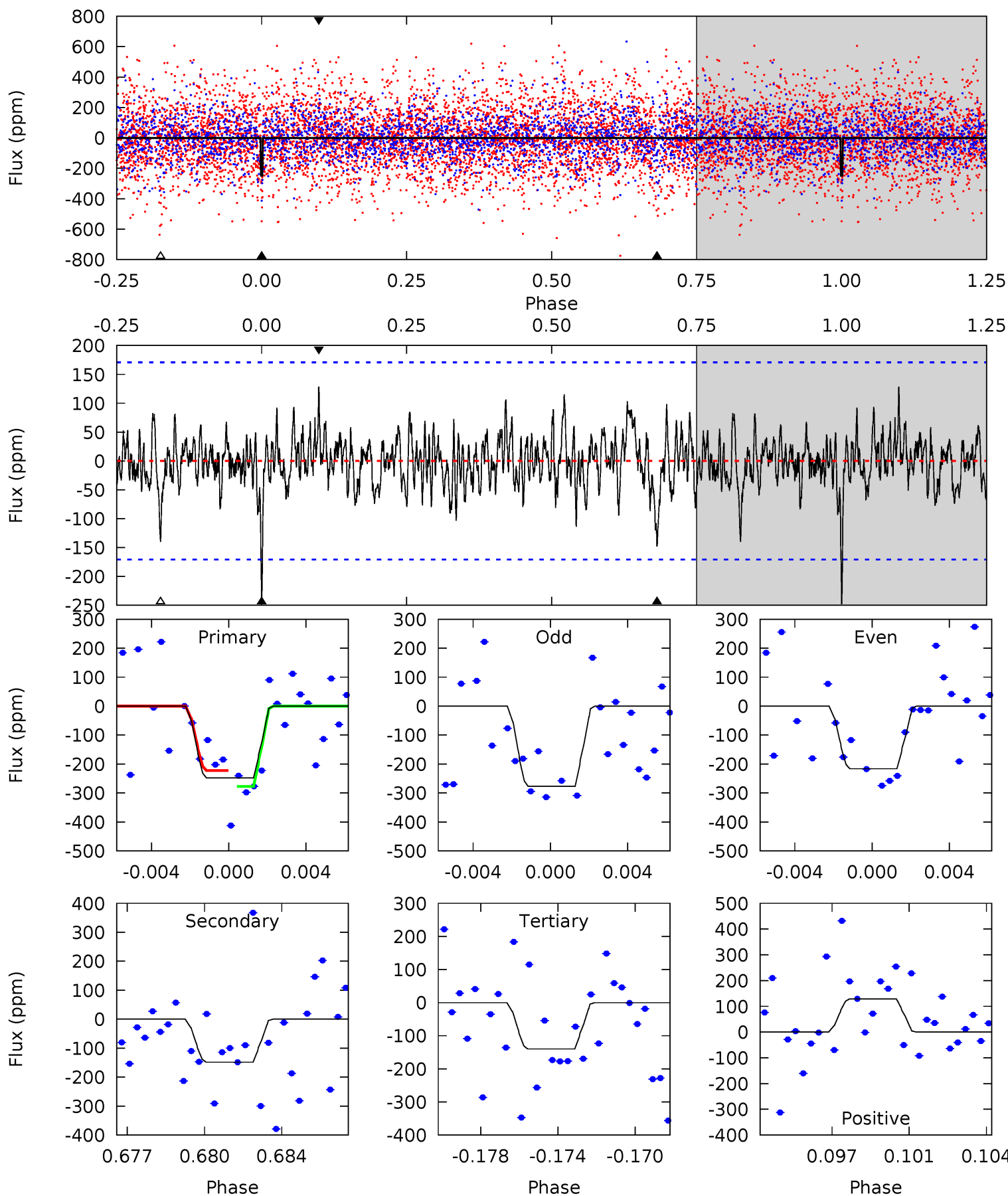
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.82	4.01	3.90	5.62	5.21	2.89	1.40	2.93	1.20	0.11	-1.61	0.14	1.03	0.45	1.32



# Alt Model-Shift Uniqueness Test

002854953-04, P = 26.850205 Days, E = 118.804883 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
7.56	4.52	4.27	3.92	5.21	2.89	1.16	3.29	3.65	0.25	0.60	0.93	1.05	0.34	0.84



### Stellar Parameters For KIC 002854953

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7392^{+230}_{-307}$	$4.139^{+0.144}_{-0.176}$	$-0.160^{+0.250}_{-0.350}$	$1.726^{+0.525}_{-0.350}$	$1.493^{+0.209}_{-0.232}$	$0.409^{+0.315}_{-0.208}$
	+3%/-4%	+3%/-4%	+156%/-219%	+30%/-20%	+14%/-16%	+77%/-51%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 002854953-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-130 \pm 33$	$3.38^{+2.55}_{-2.14}$	$1340^{+105}_{-86}$	$5784^{+4577}_{-1239}$	$245^{+1479}_{-166}$
Alt.	$-148 \pm 33$	$3.28^{+2.45}_{-2.01}$	$1336^{+103}_{-94}$	$6068^{+5159}_{-1373}$	$295^{+1930}_{-196}$

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

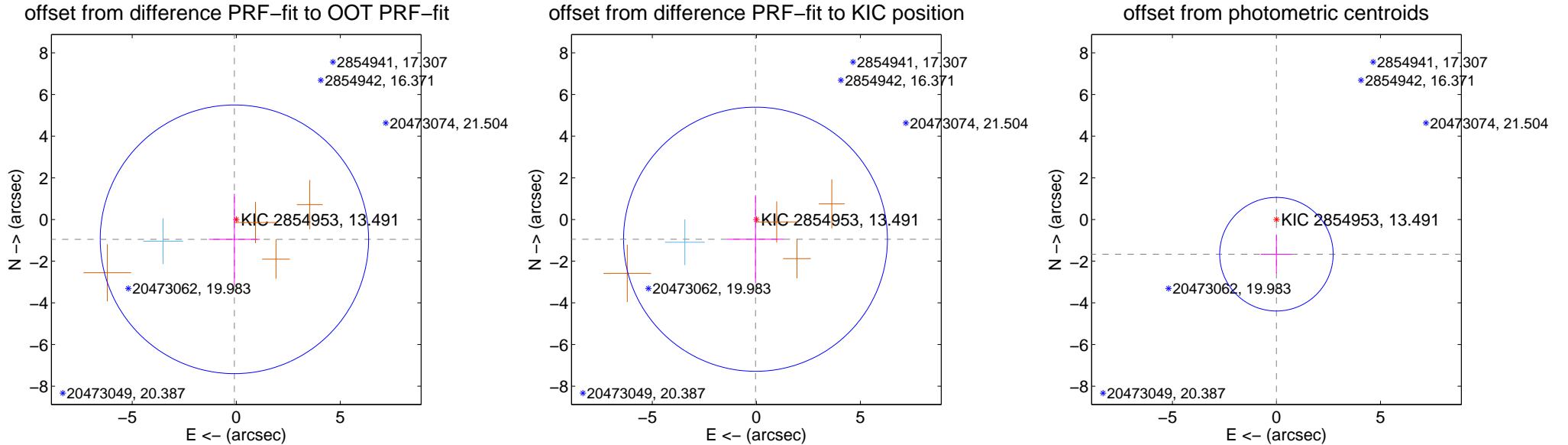
## DV Centroid Data

Supplemental centroid analysis for 002854953-04. Kepler magnitude: 13.49. Transit SNR 11.45

There are 1 quarters with good PRF difference image offsets

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

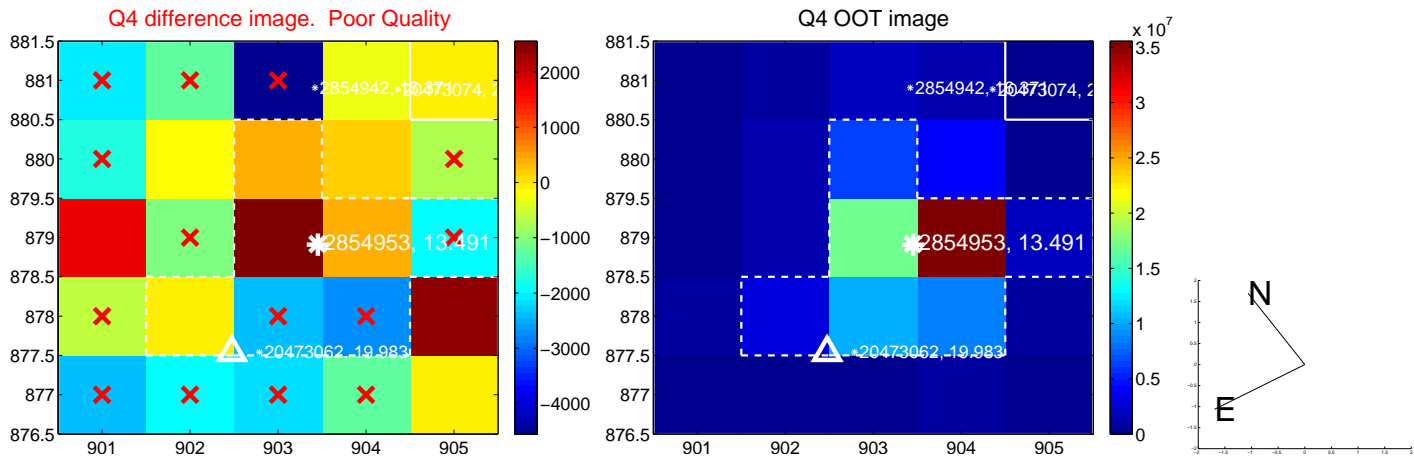
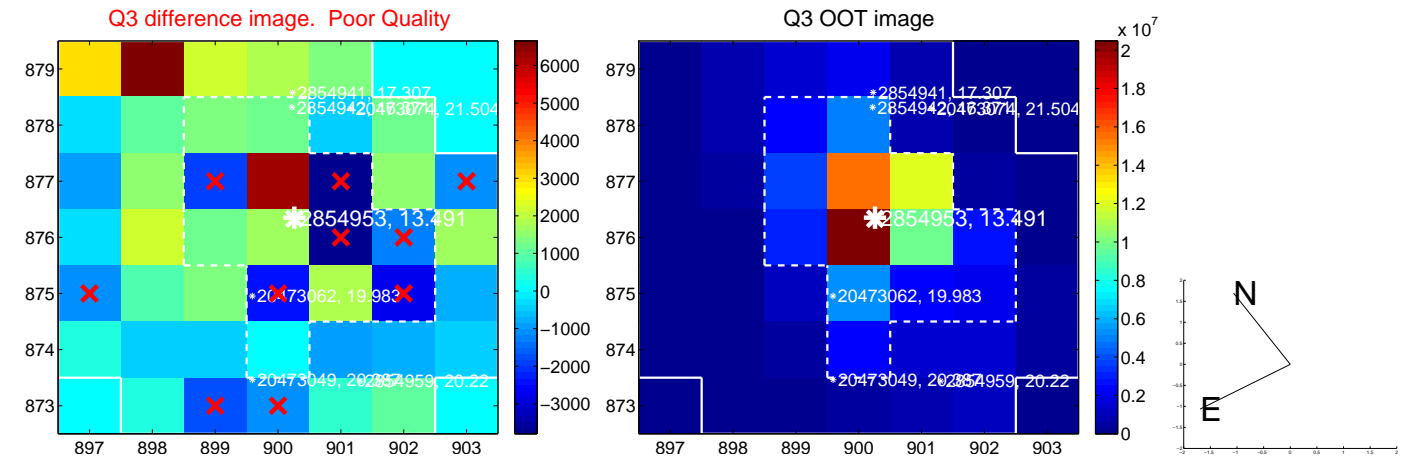
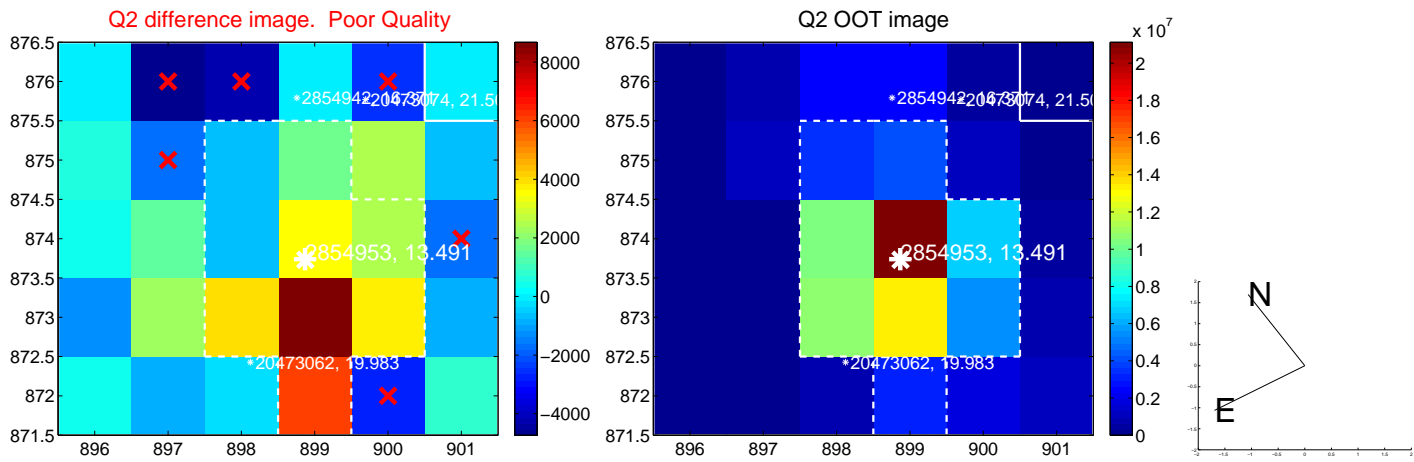
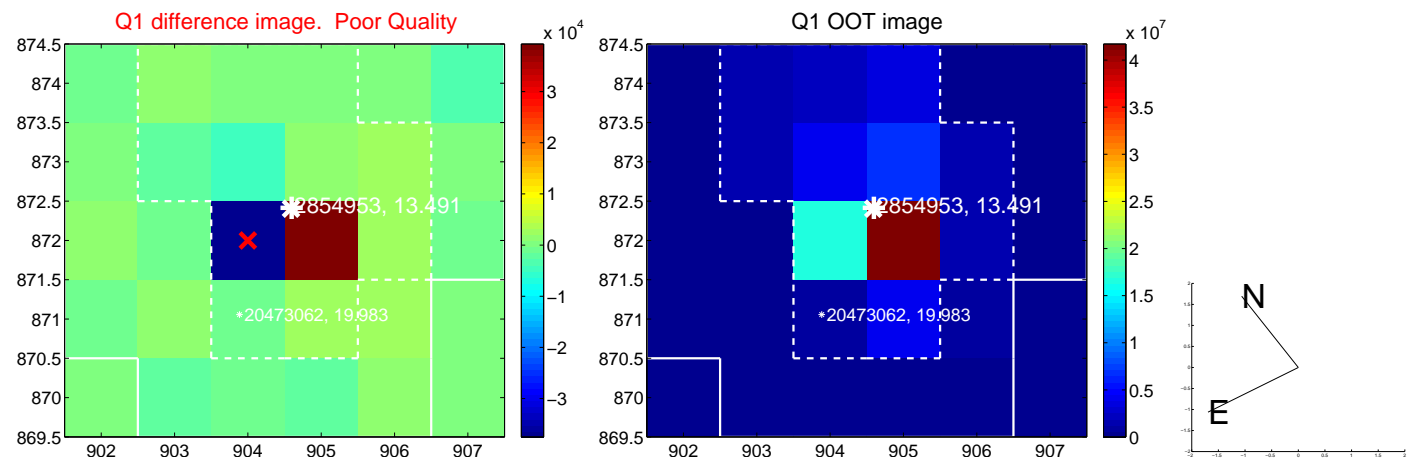
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.954 \pm 2.149$	0.44	$0.089 \pm 1.220$	$-0.950 \pm 2.184$
PRF-fit source offset from KIC position	$0.948 \pm 2.113$	0.45	$0.042 \pm 1.366$	$-0.947 \pm 2.118$
photometric centroid source offset	$1.66 \pm 0.91$	1.83	$0.00 \pm 0.76$	$-1.66 \pm 0.91$



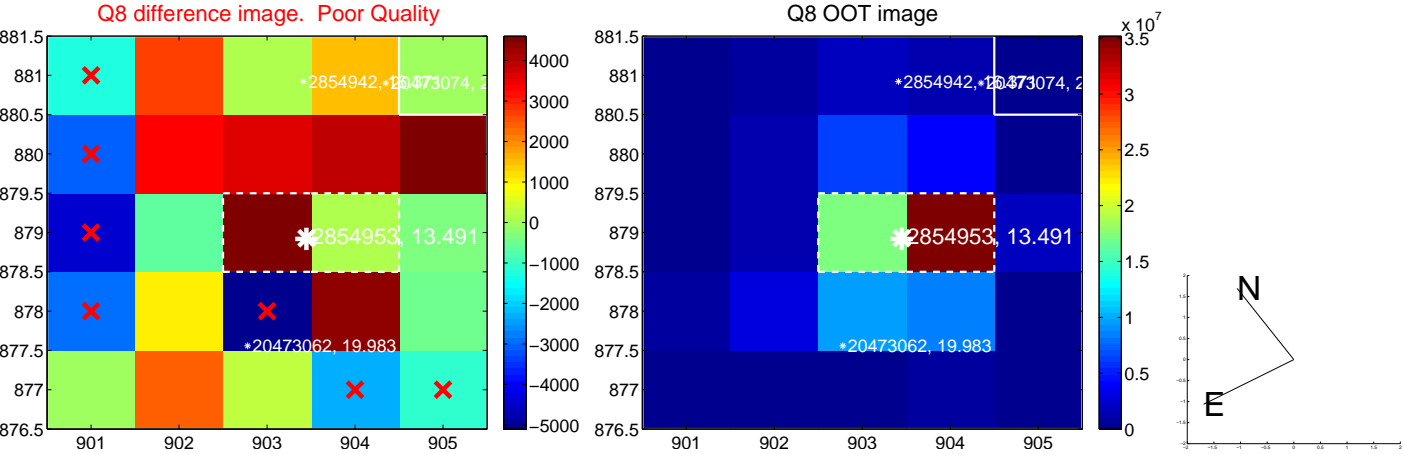
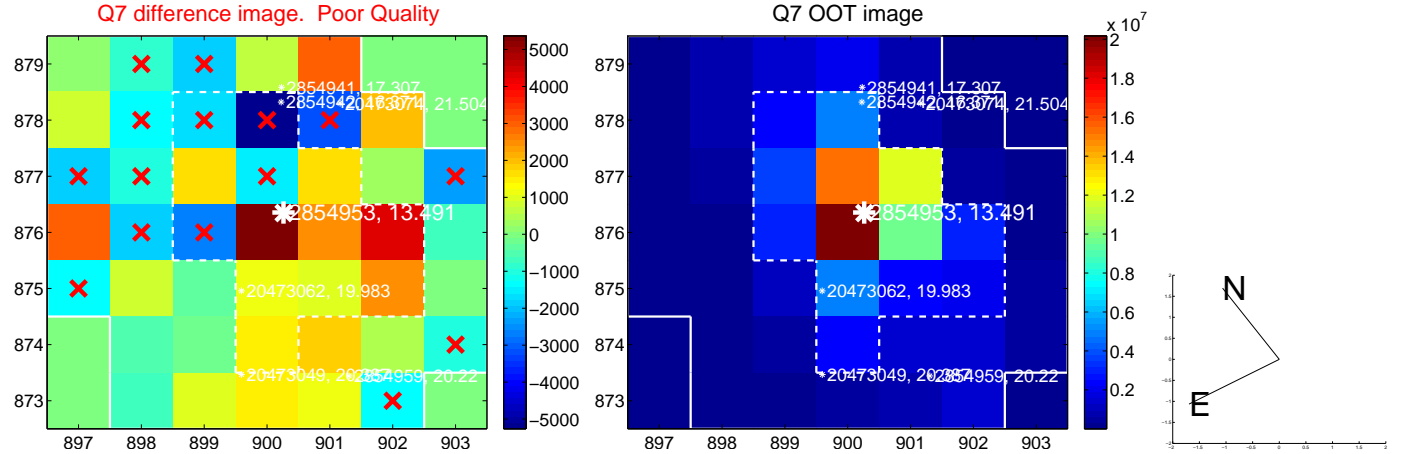
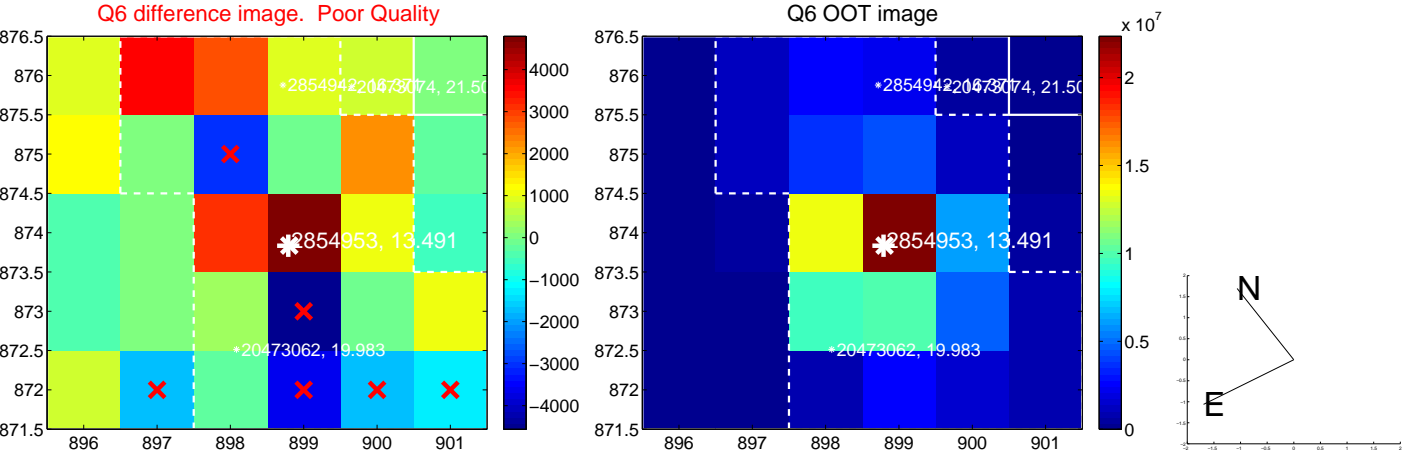
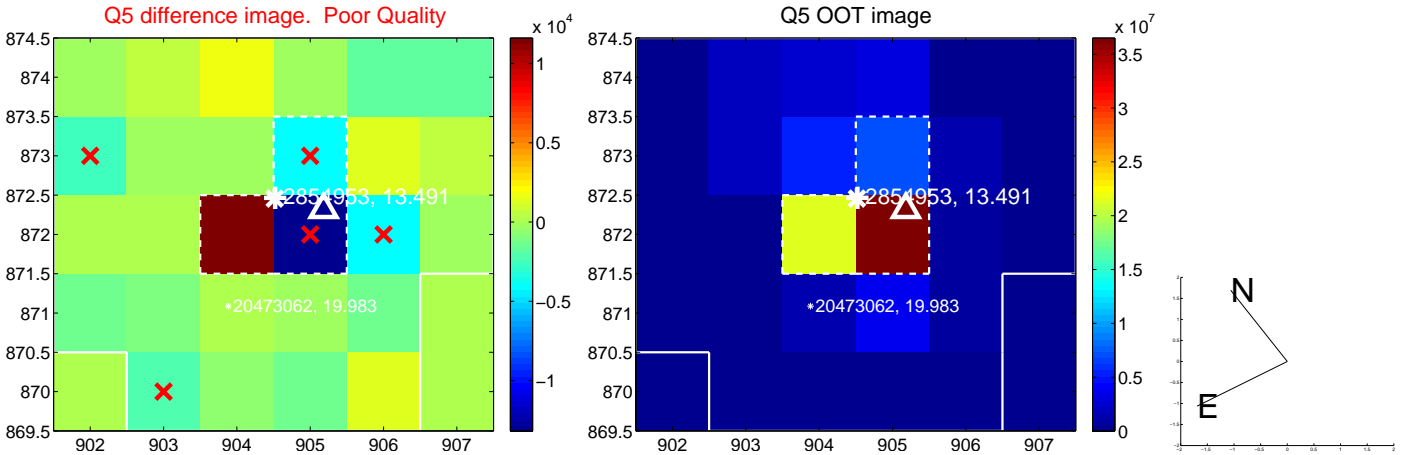
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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



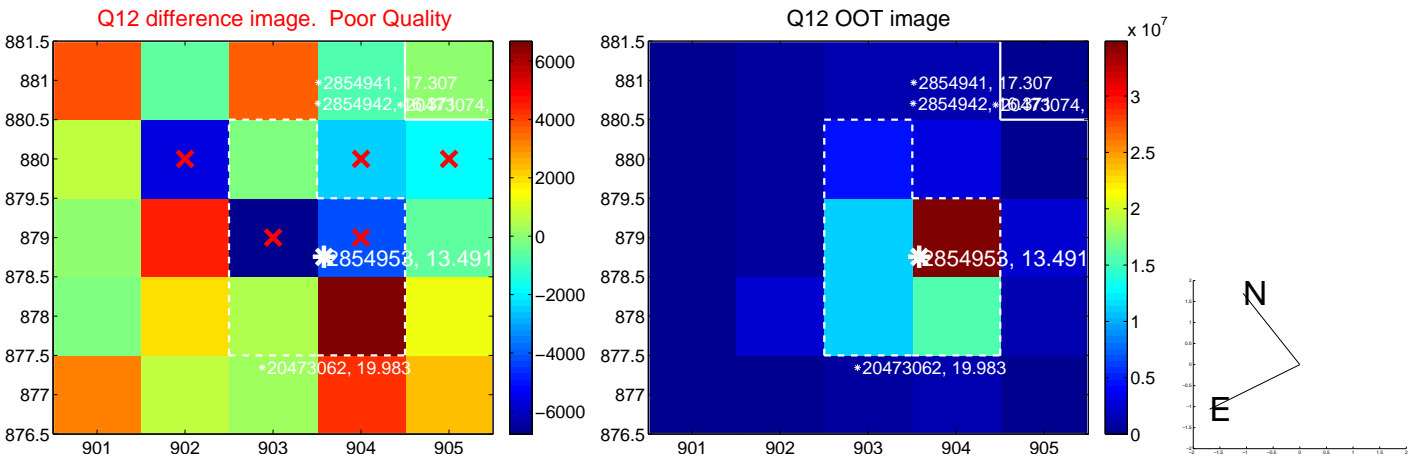
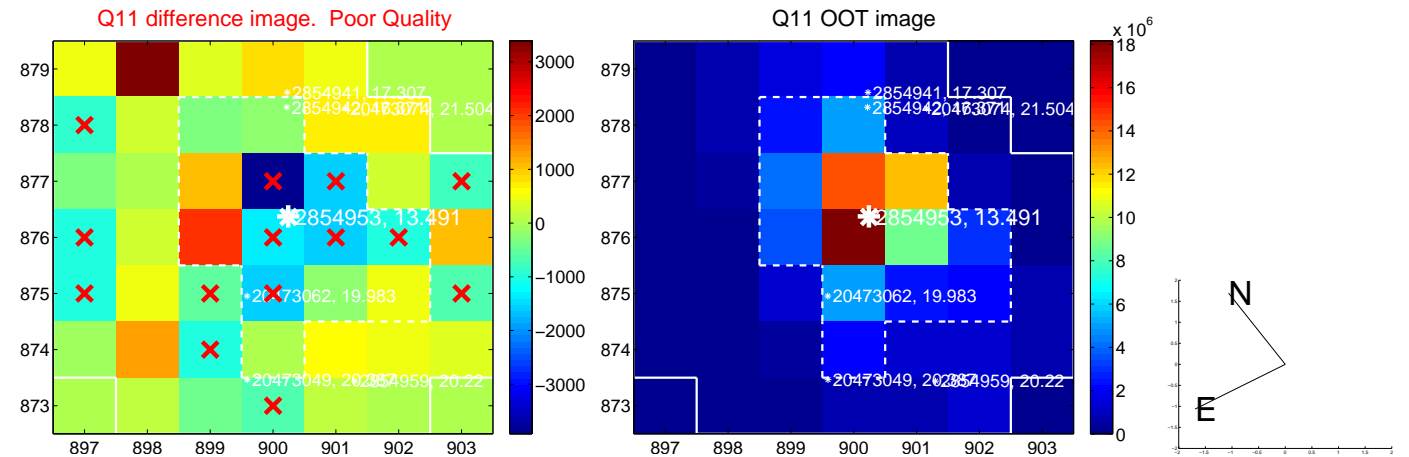
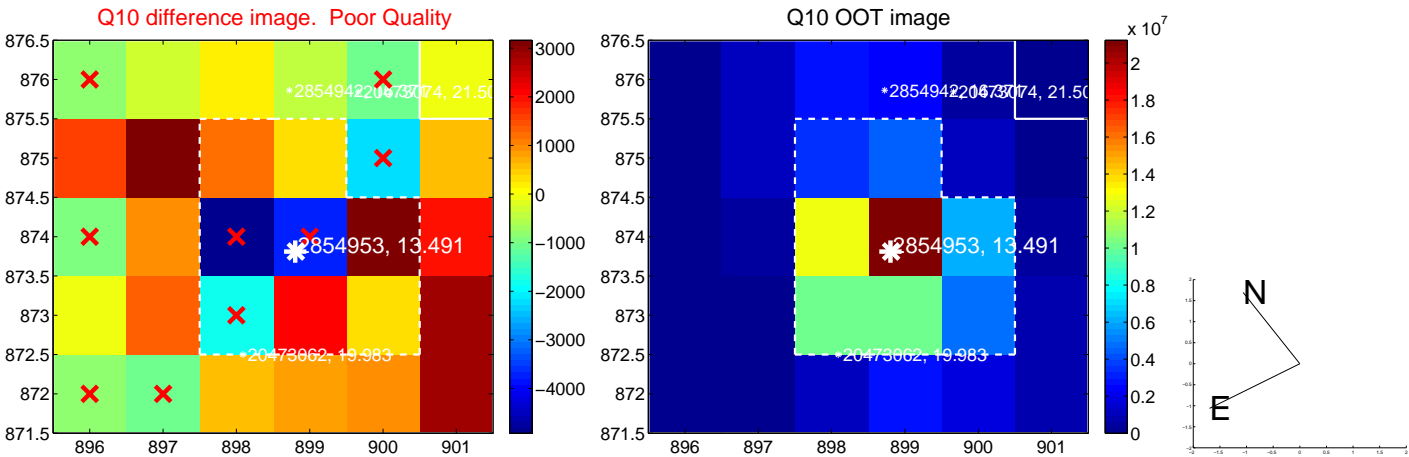
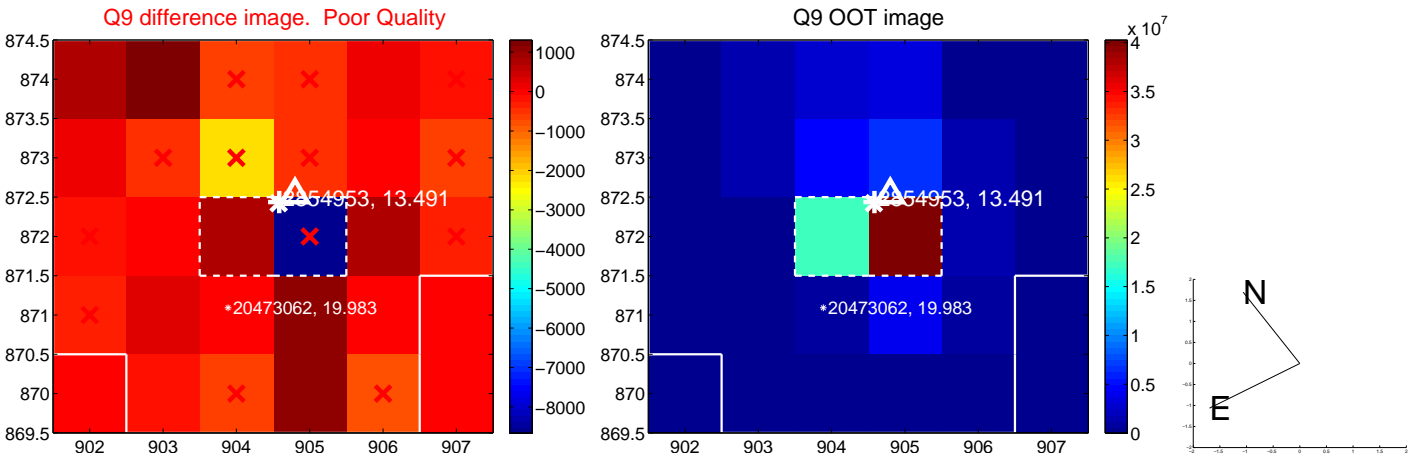
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



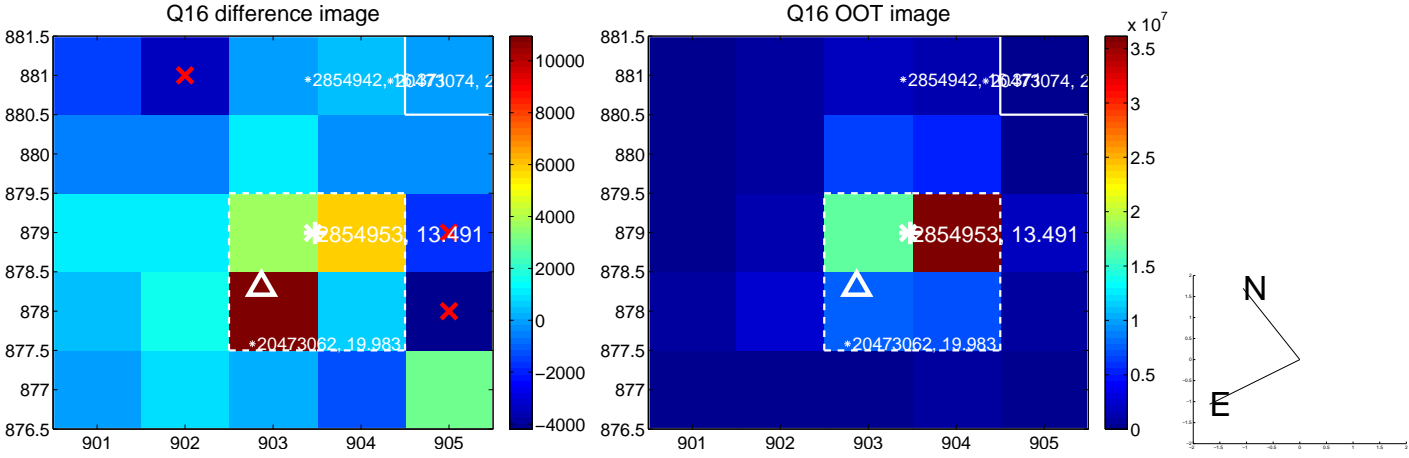
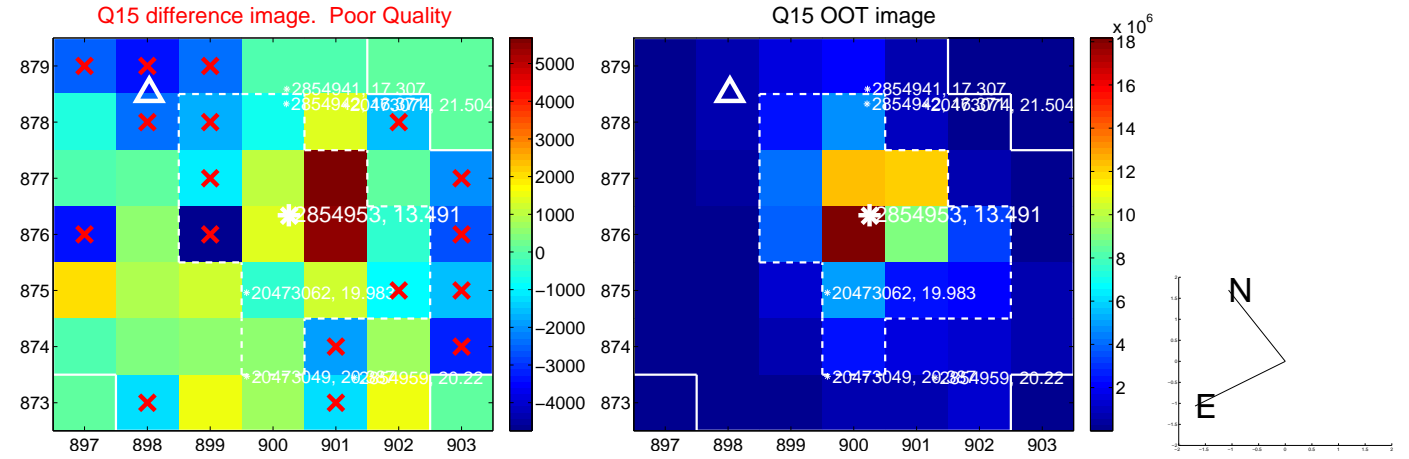
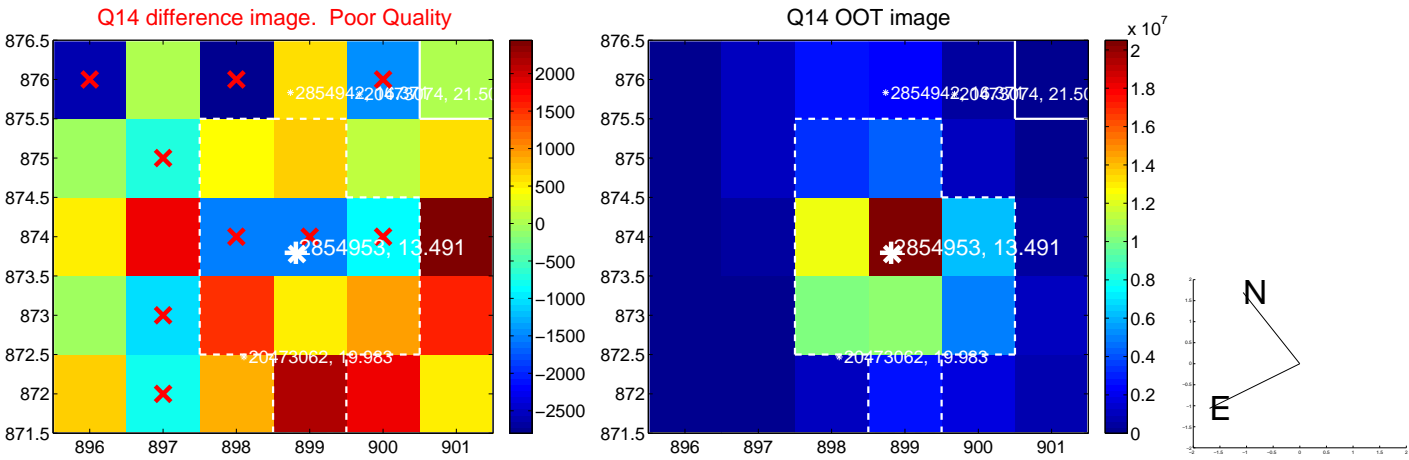
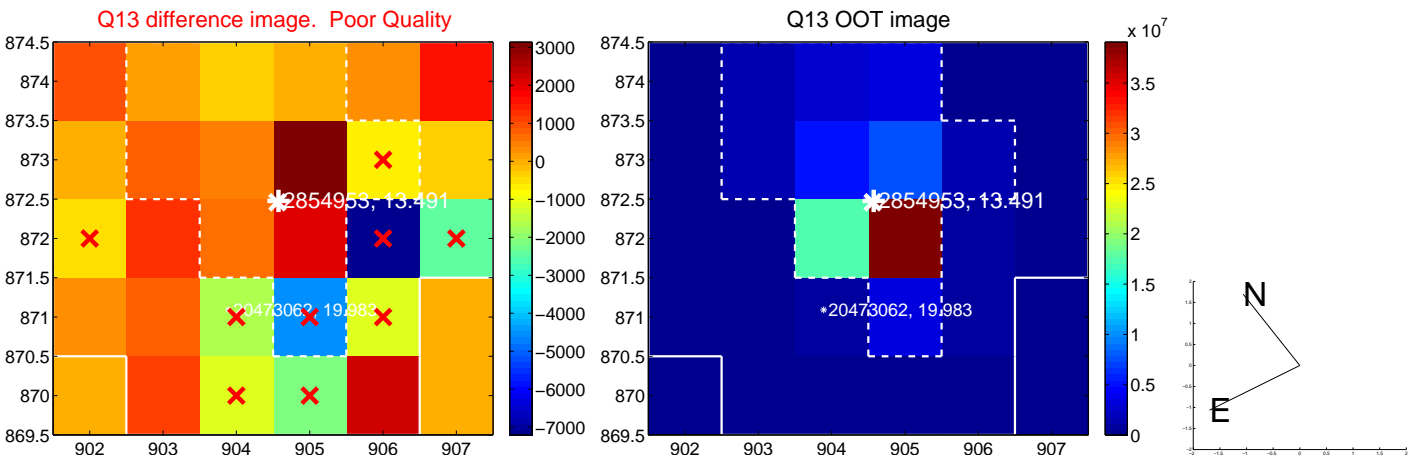
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



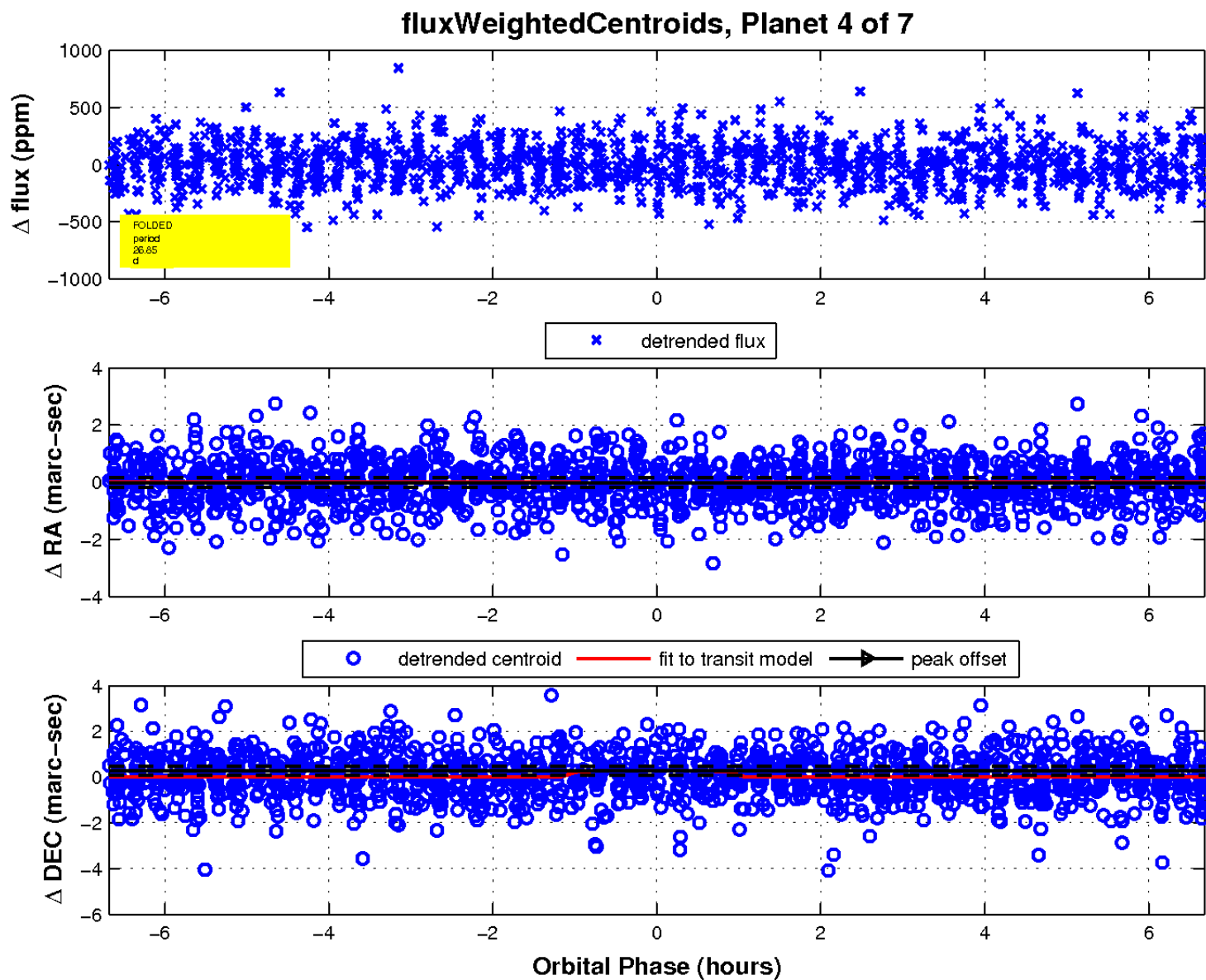
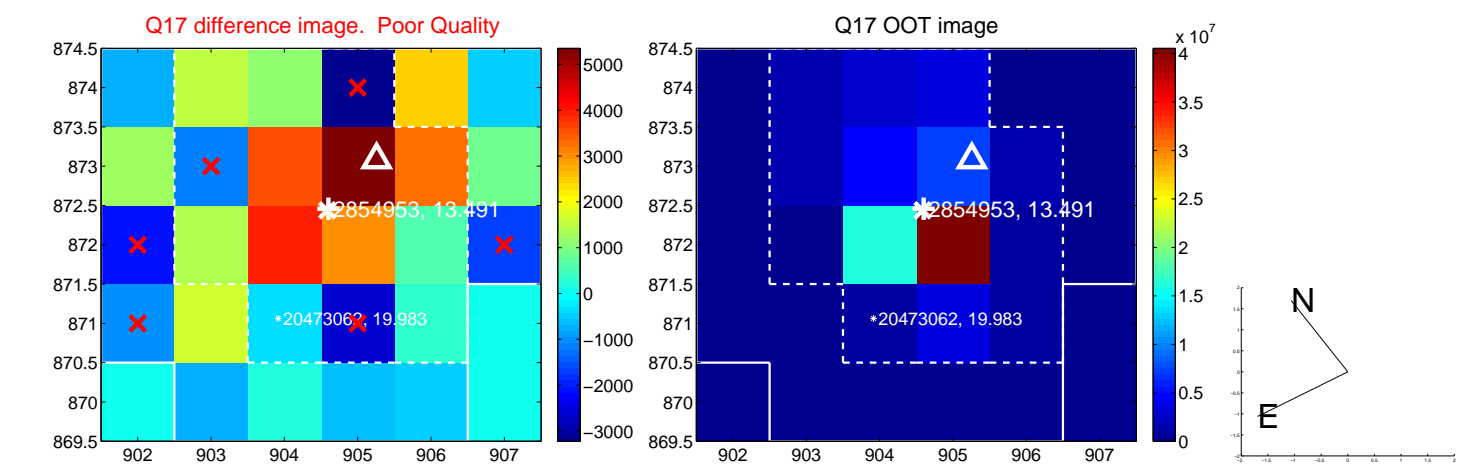
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

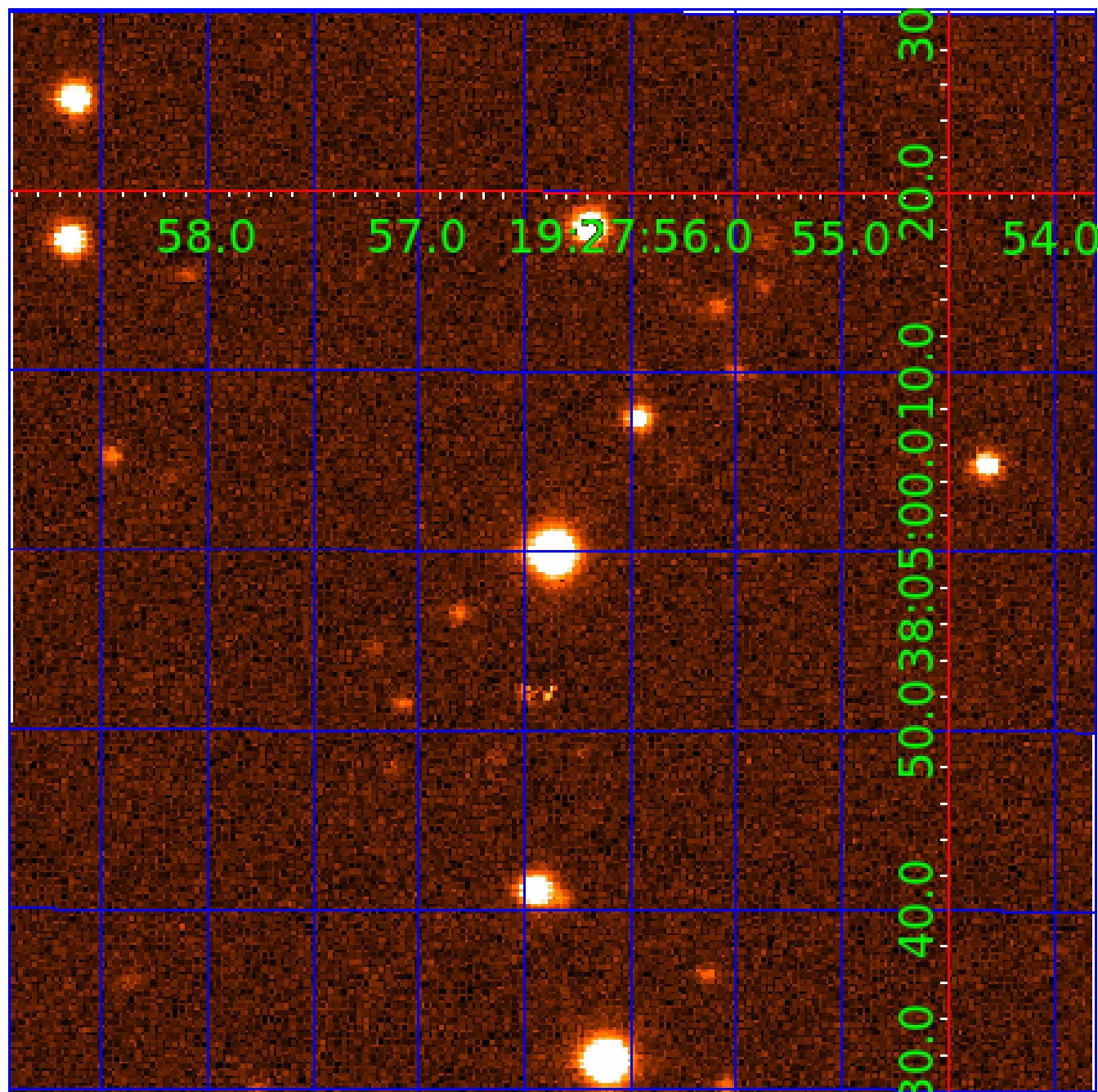


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 002854953

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002854953-01	OBS	No	1.724690	131.957540	3.6	12.301	12.9	1.9	1.73	7392	0.35	7685.78
002854953-02	OBS	No	39.194267	155.527838	440.4	1.412	10.5	11.0	1.73	7392	3.70	119.40
002854953-03	OBS	No	21.711992	143.629034	225.3	2.139	10.6	11.3	1.73	7392	3.01	262.44
002854953-04	OBS	No	26.850442	145.650419	210.7	2.229	9.8	11.5	1.73	7392	2.92	197.71
002854953-05	OBS	No	36.967356	155.079665	277.4	1.613	8.8	9.7	1.73	7392	3.21	129.09
002854953-06	OBS	No	82.036741	159.261308	172.1	6.074	9.1	7.8	1.73	7392	2.63	44.60
002854953-07	OBS	No	31.648645	140.935509	339.1	1.534	8.7	10.3	1.73	7392	3.58	158.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002854953-01	OBS	FP	0.00	1	0	0	0	LPP_DV
002854953-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
002854953-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002854953-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
002854953-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002854953-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002854953-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST

**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.

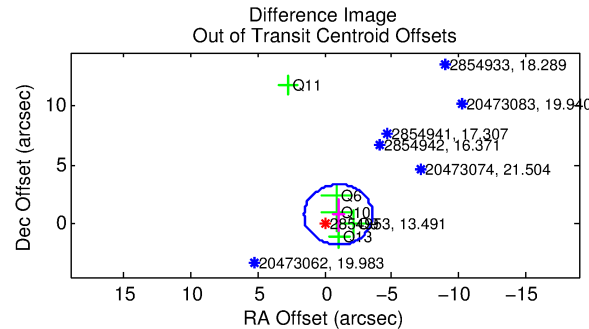
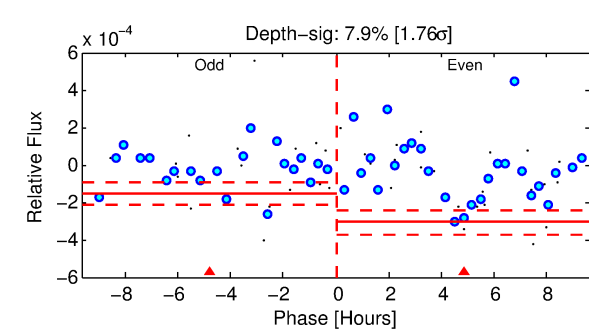
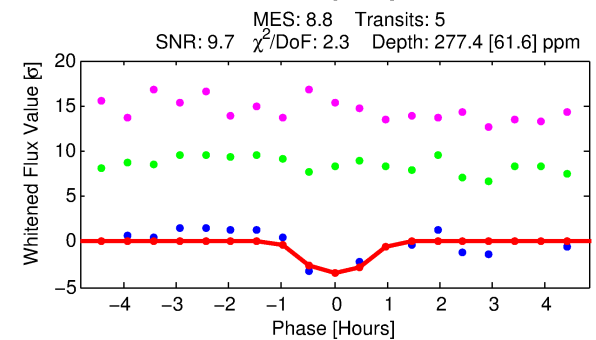
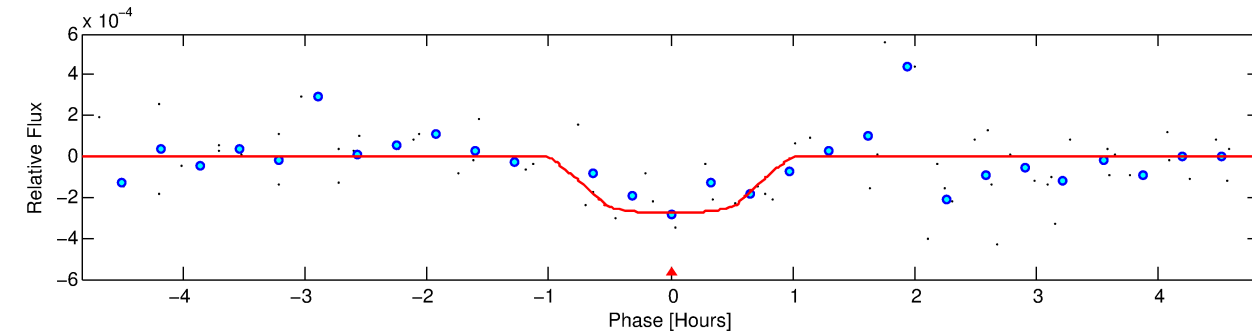
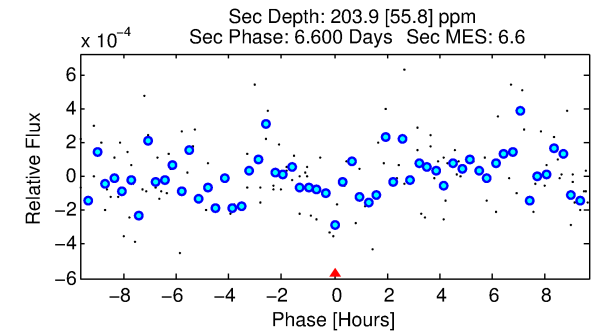
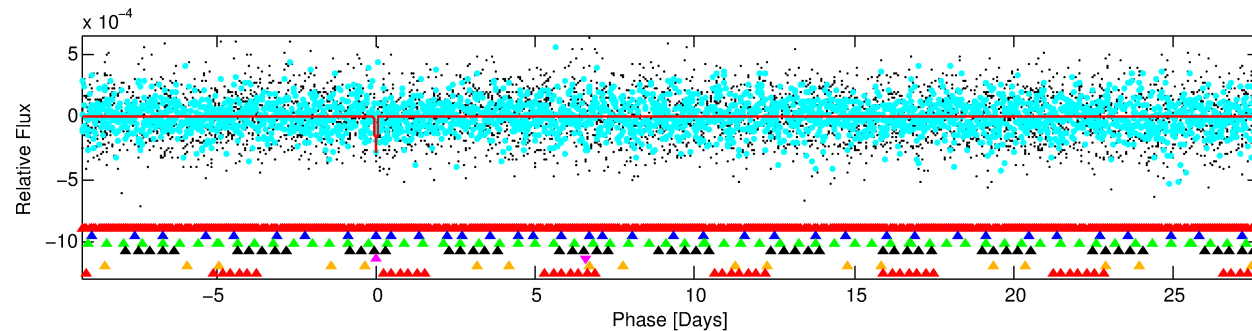
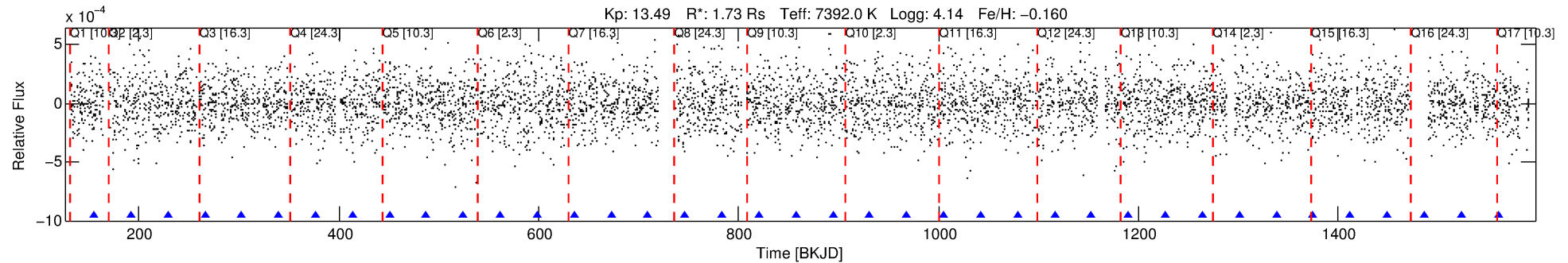
Ephemeris Match Information For 002854953-05

No Significant Match Found



# DV One-Page Summary

KIC: 2854953 Candidate: 5 of 7 Period: 36.967 d



## DV Fit Results:

Period = 36.96736 [0.00051] d  
Epoch = 155.0797 [0.0124] BKJD  
Rp/R\* = 0.0170 [0.0249]  
a/R\* = 104.90 [906.11]  
b = 0.82 [3.44]  
Seff = 129.09 [48.59]  
Teq = 859 [81] K  
Rp = 3.21 [4.78] Re  
a = 0.2485 [0.0605] AU  
Ag = 673.09 [1986.92] [0.34σ]  
Teffp = 6769 [4970] K [1.19σ]

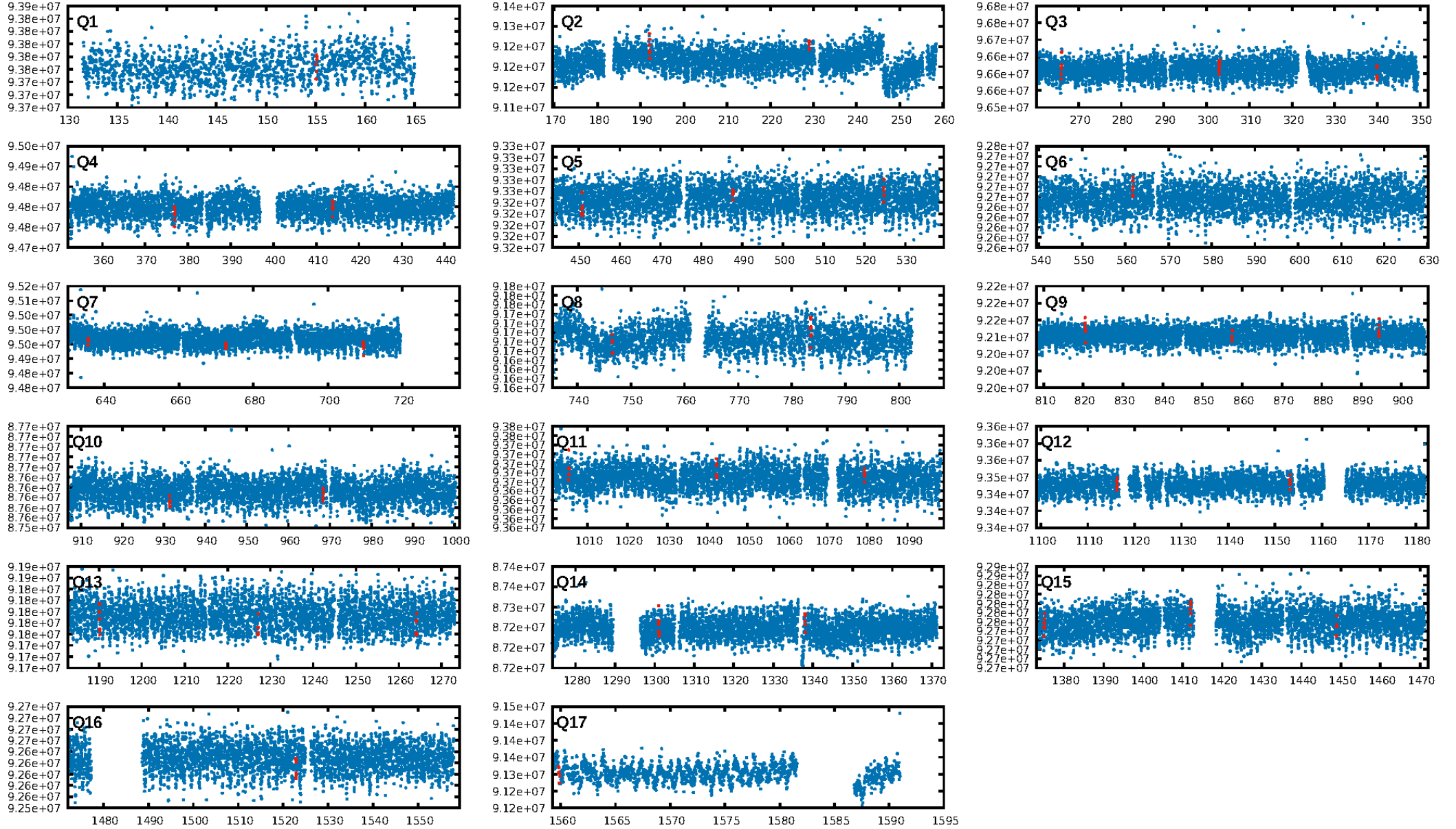
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [57.34σ]  
LongPeriod-sig: 100.0% [24.93σ]  
ModelChiSquare2-sig: 5.5%  
ModelChiSquareGof-sig: 93.1%  
**Bootstrap-pfa: 4.00e-07**  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: 0.8911  
Centroid-sig: 8.7%  
Centroid-so: 0.782 arcsec [0.91σ]  
OotOffset-rm: 1.268 arcsec [1.49σ]  
KicOffset-rm: 1.457 arcsec [1.74σ]  
OotOffset-st: 2/1/0/2 [5]  
KicOffset-st: 2/1/0/2 [5]  
DiffImageQuality-fgm: 0.40 [2/5]  
DiffImageOverlap-fno: 0.75 [12/16]

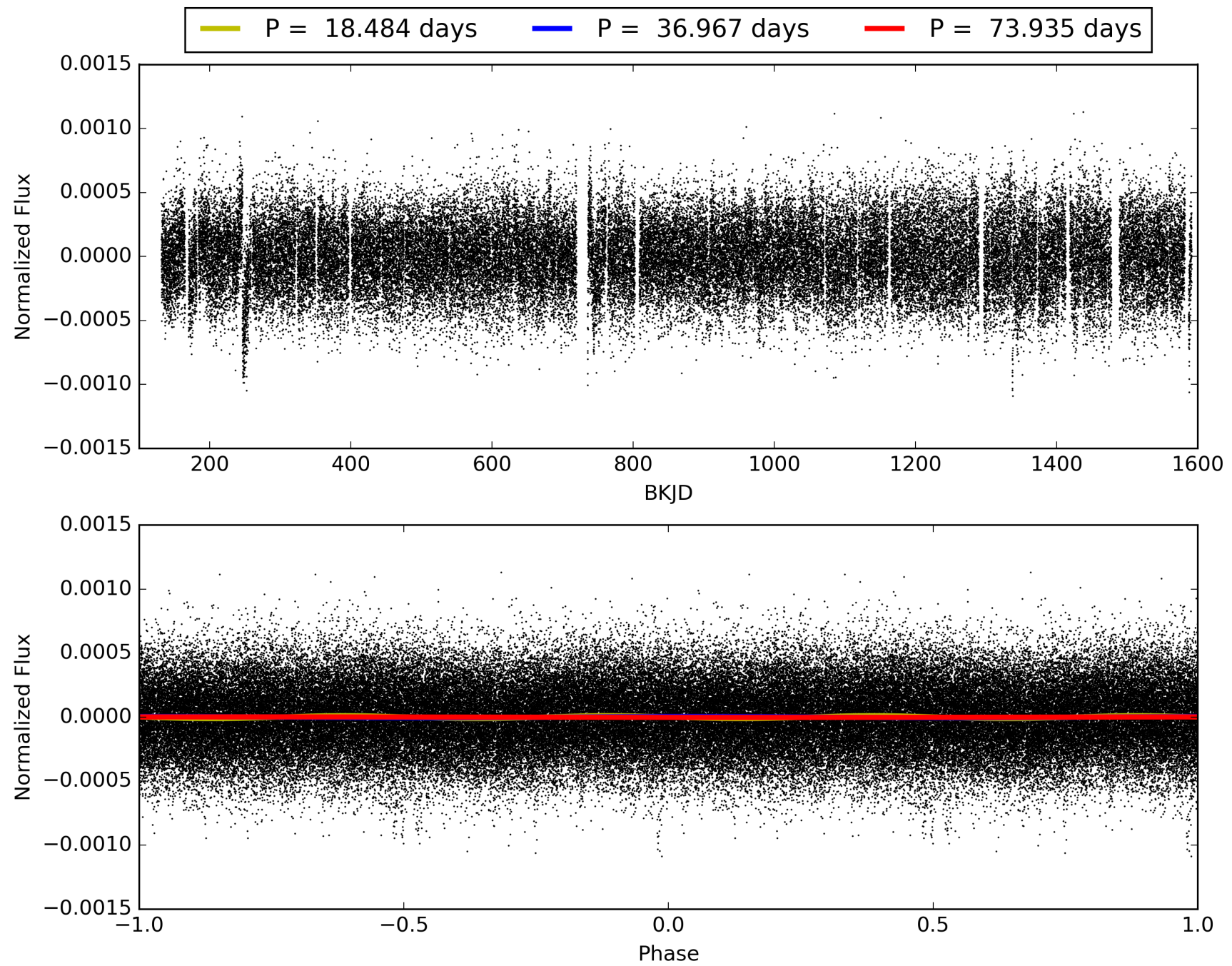
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:19:16 Z

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

# TCE 002854953-05, PDC Light Curves

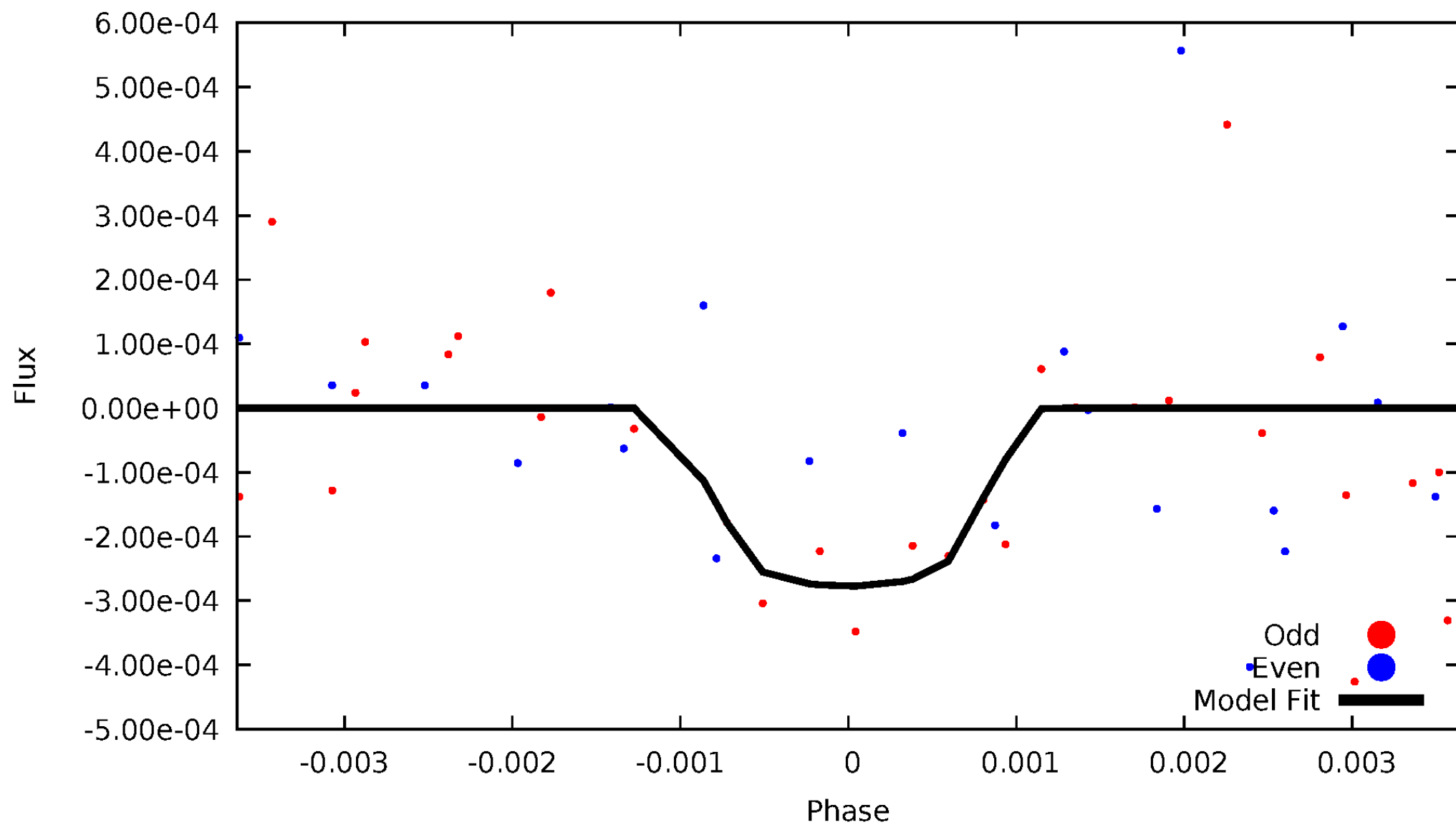


TCE 002854953-05



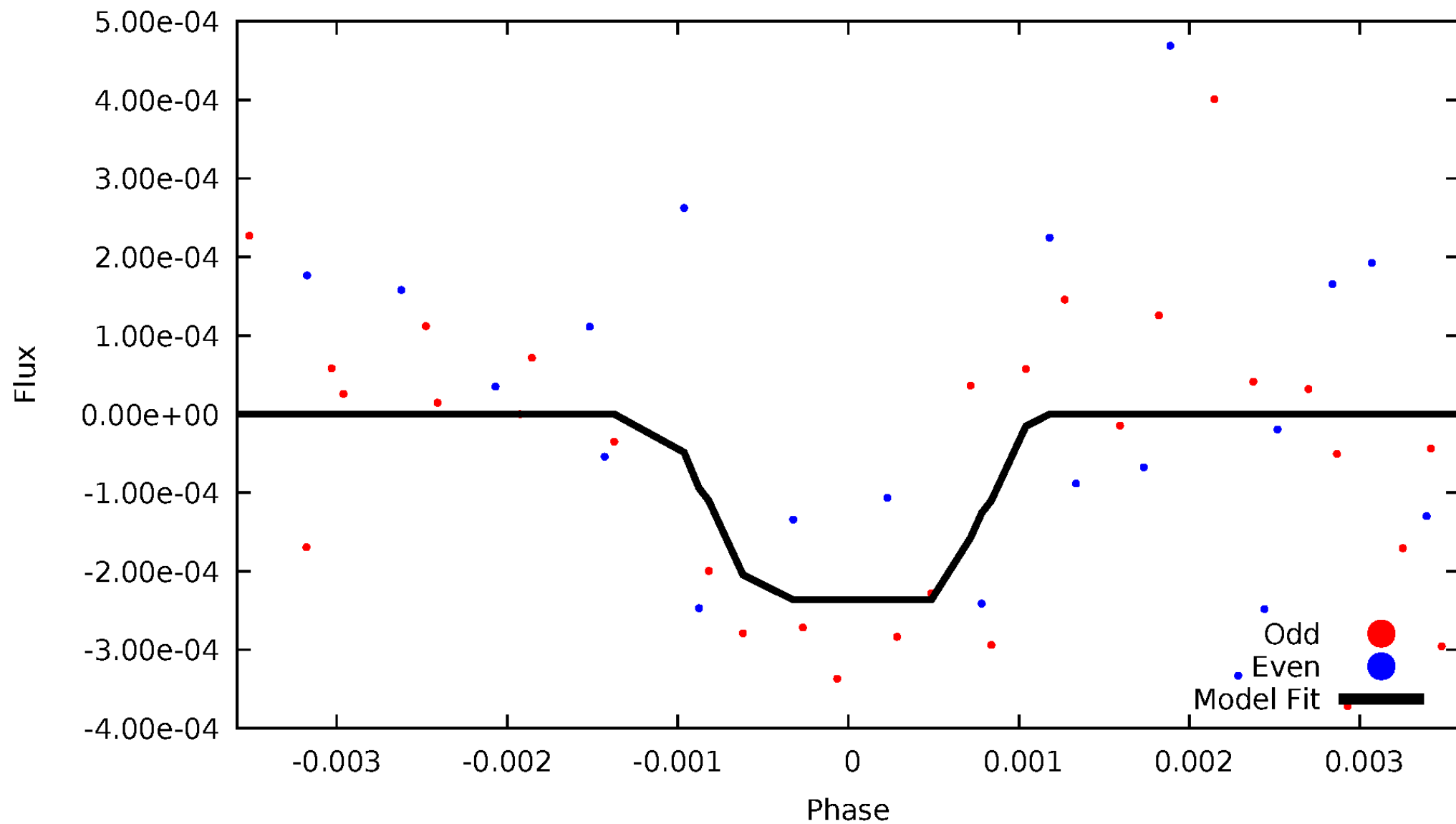
# DV Odd/Even

TCE 002854953-05



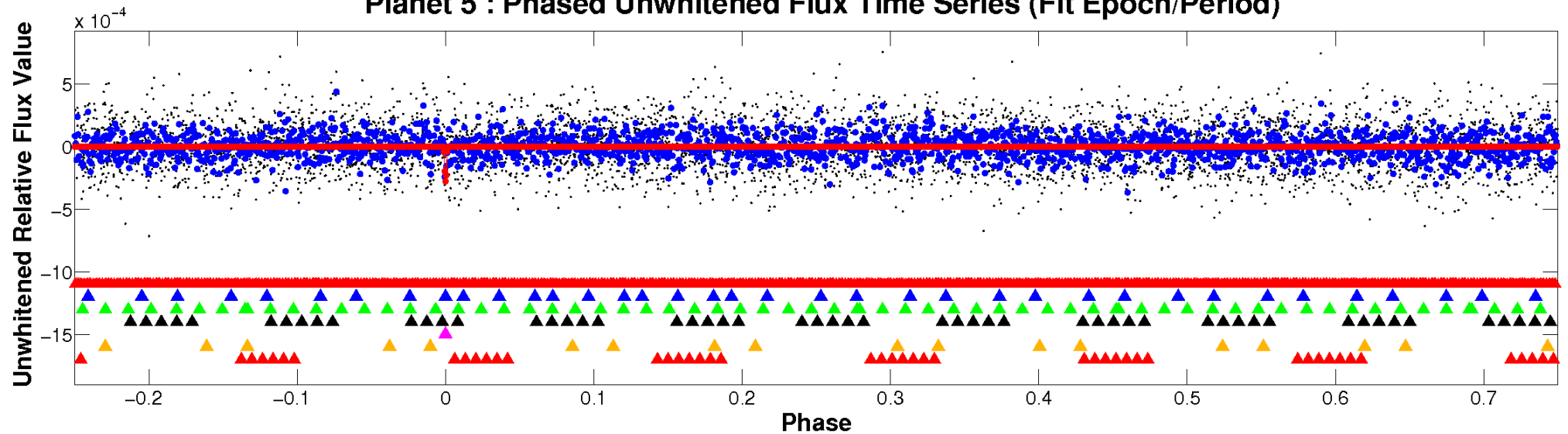
# ALT Odd/Even

TCE 002854953-05

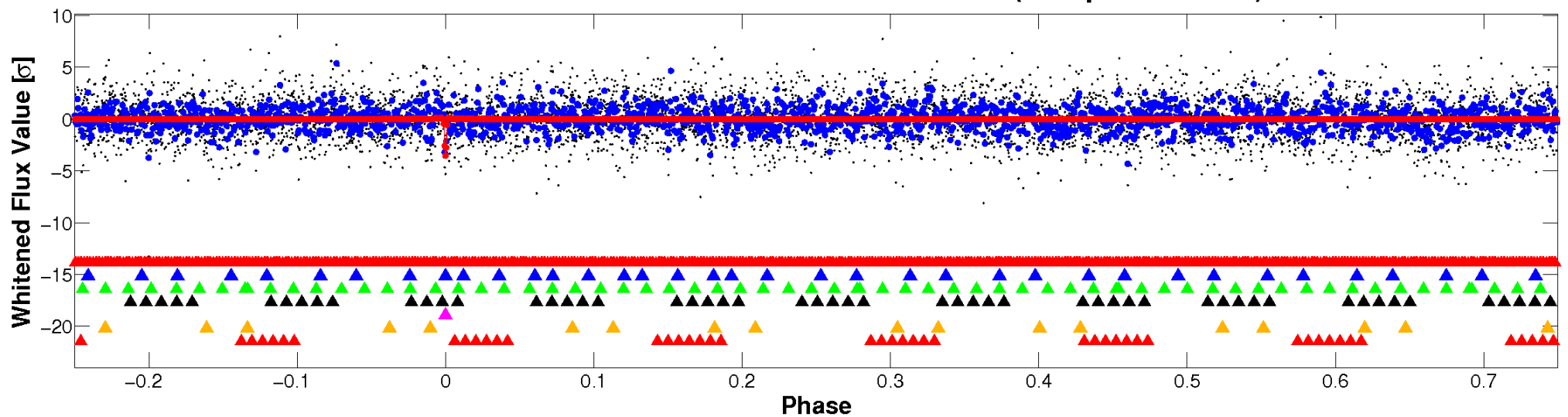


# Non-Whitened Vs. Whitened Light Curve

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

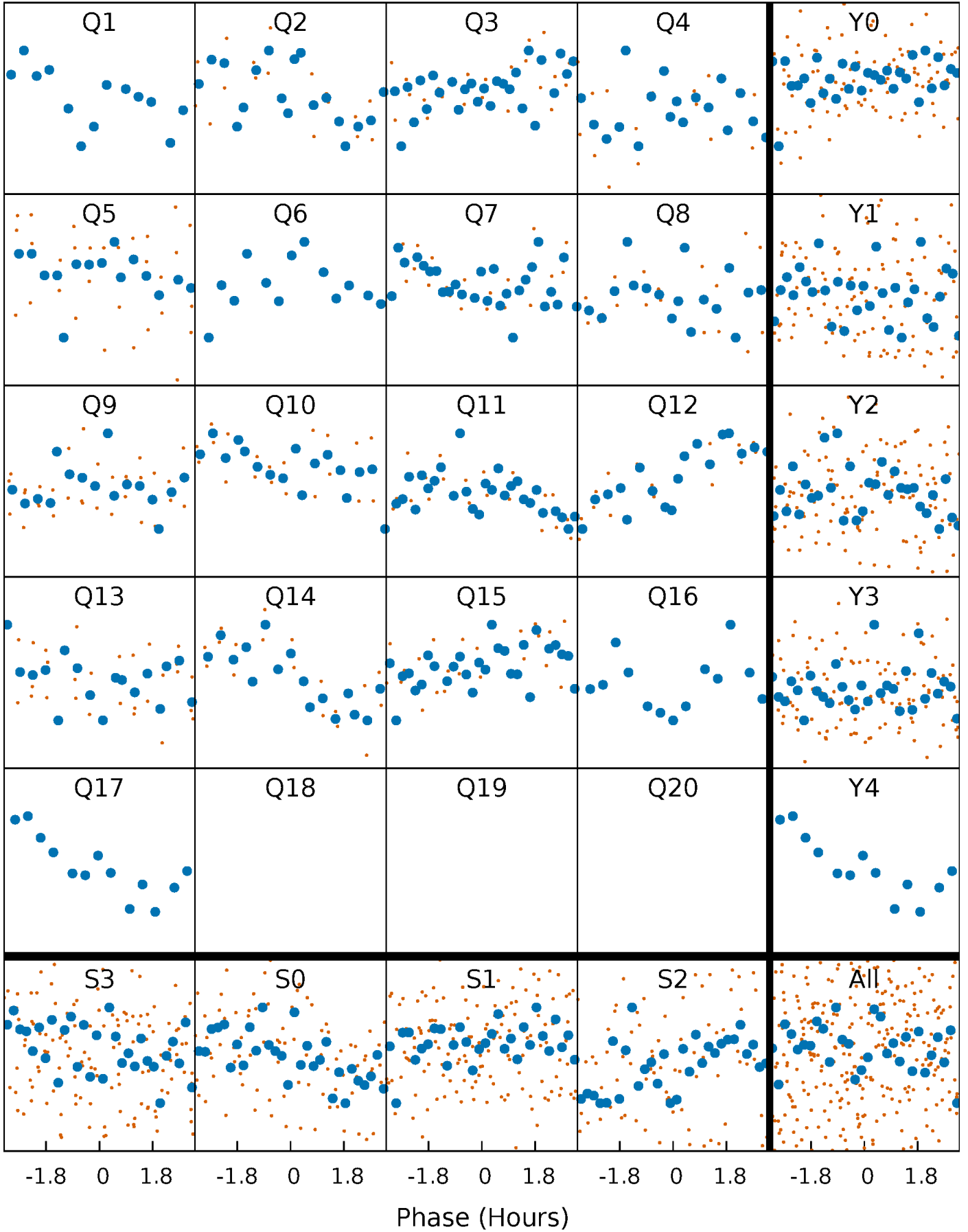


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

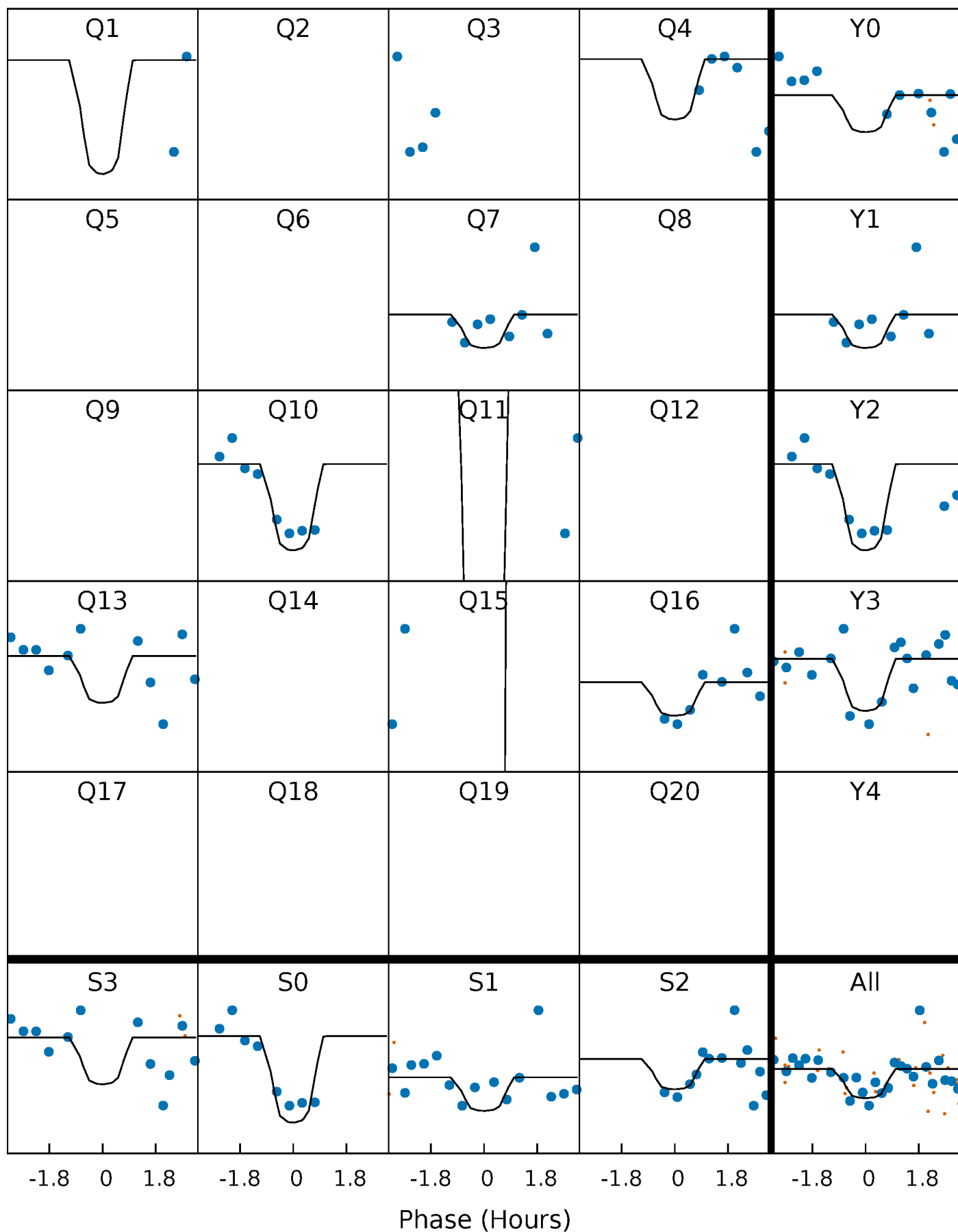
TCE 002854953-05   P= 36.967356 Days    $T_0=155.079665$  (BKJD)





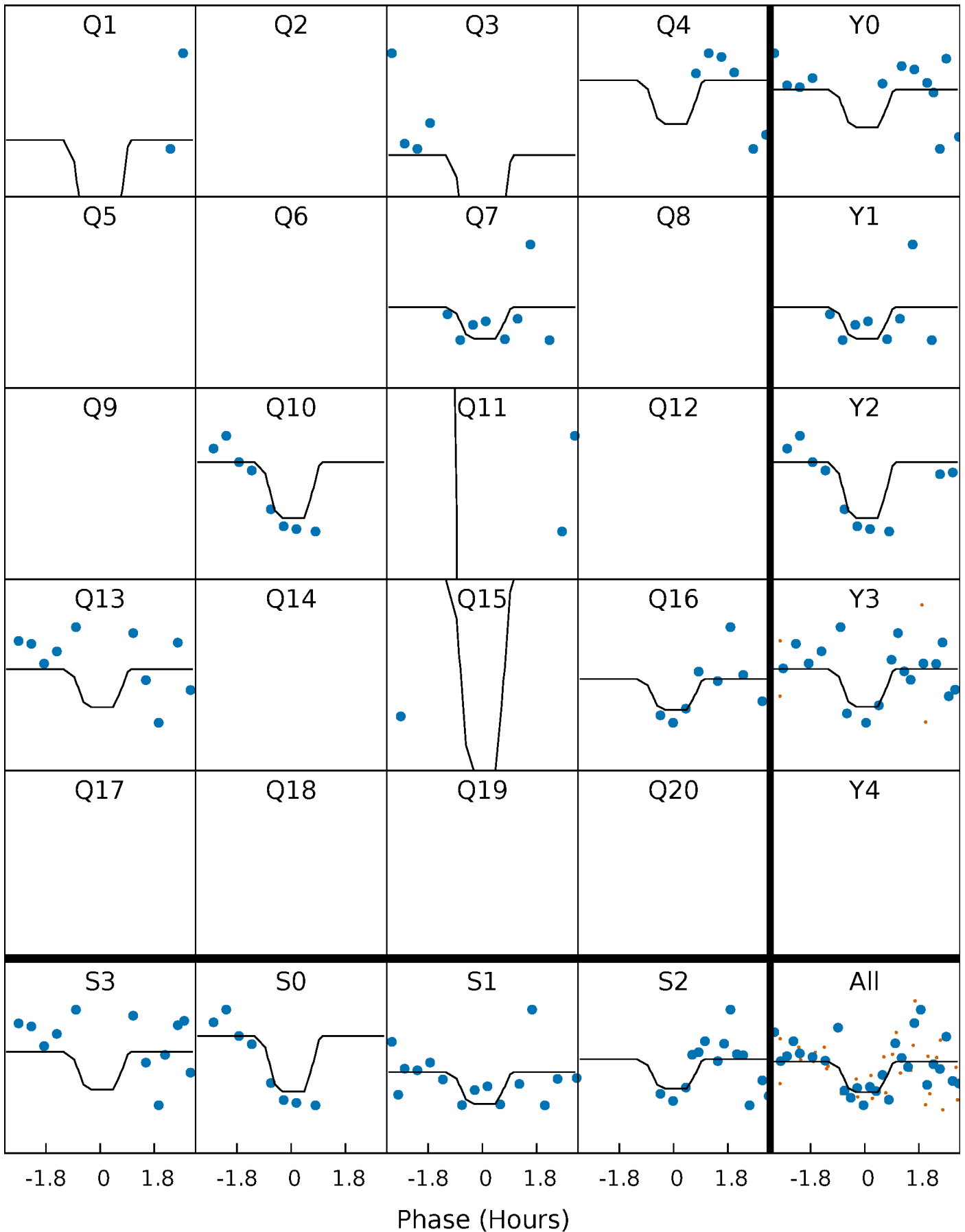
# DV Quarter-Phased Transit Curves

TCE 002854953-05   P= 36.967356 Days    $T_0=155.079665$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

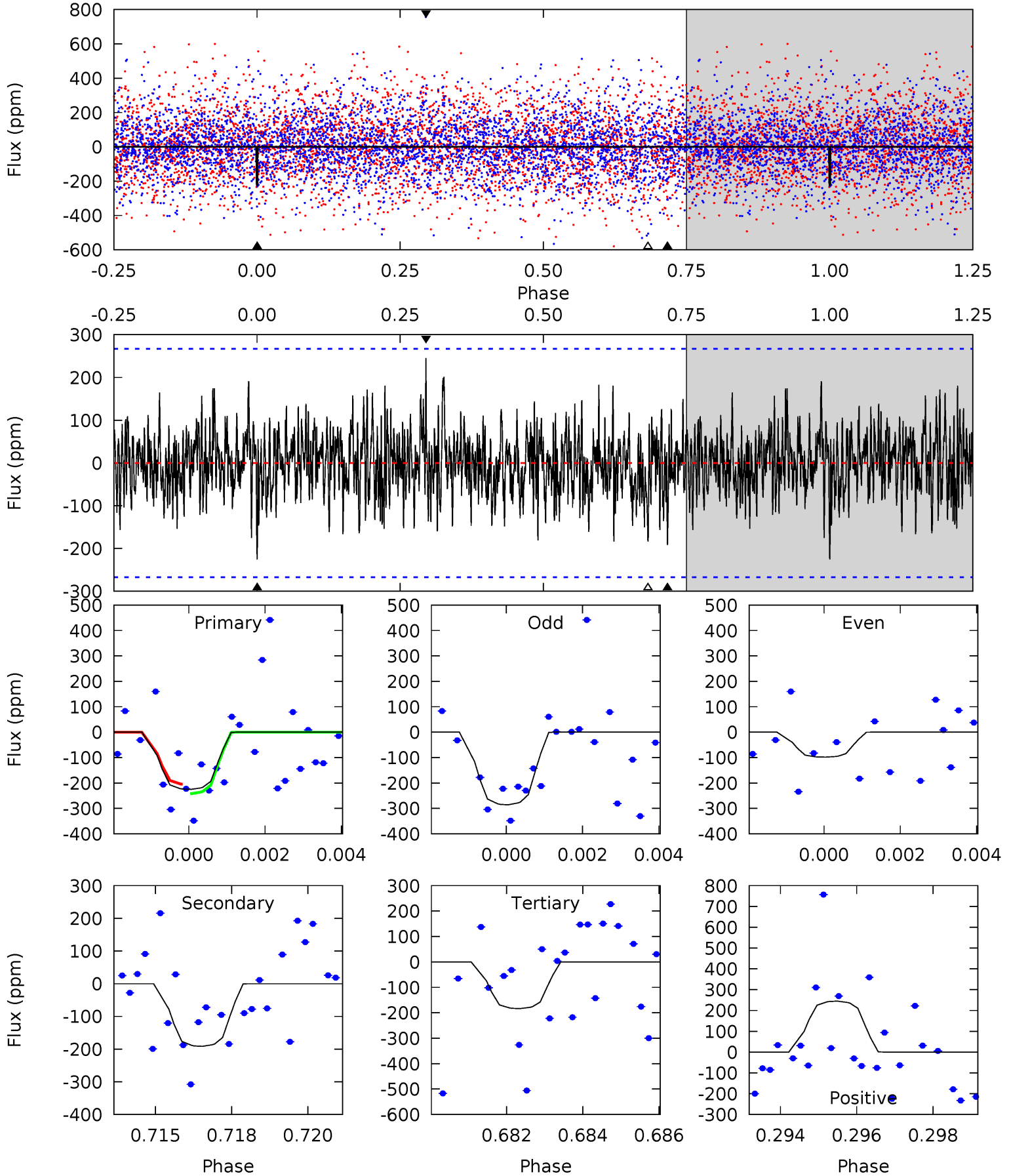
TCE 002854953-05   P= 36.967383 Days    $T_0=155.082676$  (BKJD)



# DV Model-Shift Uniqueness Test

002854953-05, P = 36.967356 Days, E = 118.112309 Days

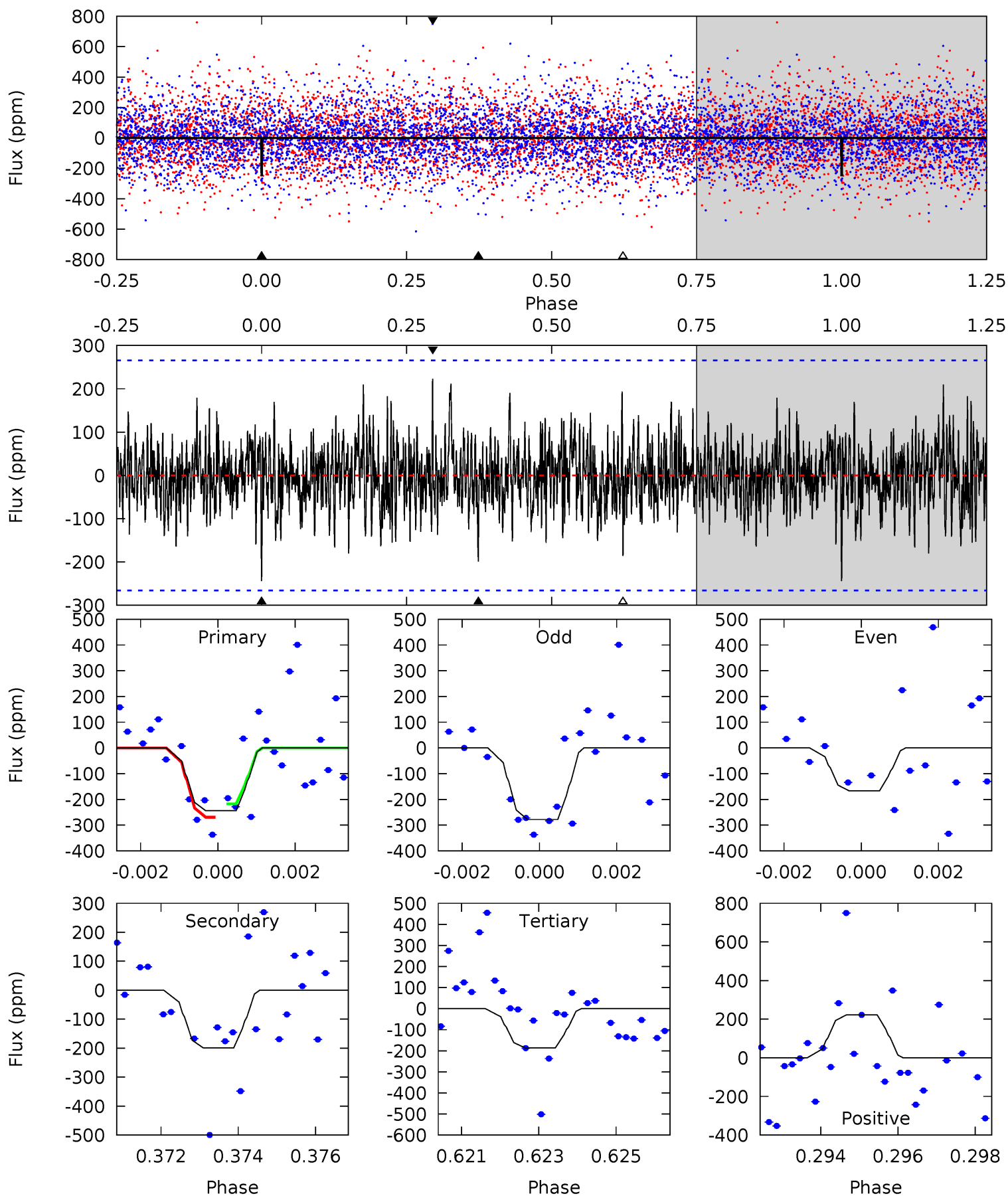
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.49	3.82	3.66	4.88	5.32	3.08	1.27	0.83	-0.39	0.16	-1.06	1.62	0.94	0.52	0.35



# Alt Model-Shift Uniqueness Test

002854953-05, P = 36.967383 Days, E = 118.115293 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
4.88	3.99	3.72	4.46	5.32	3.08	1.23	1.16	0.42	0.26	-0.48	0.97	0.92	0.48	0.52



### Stellar Parameters For KIC 002854953

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7392^{+230}_{-307}$	$4.139^{+0.144}_{-0.176}$	$-0.160^{+0.250}_{-0.350}$	$1.726^{+0.525}_{-0.350}$	$1.493^{+0.209}_{-0.232}$	$0.409^{+0.315}_{-0.208}$
	+3%/-4%	+3%/-4%	+156%/-219%	+30%/-20%	+14%/-16%	+77%/-51%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 002854953-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-192 \pm 50$	$4.61^{+4.38}_{-3.02}$	$1199^{+90}_{-79}$	$5452^{+4950}_{-1317}$	$283^{+2462}_{-209}$
Alt.	$-199 \pm 50$	$4.73^{+3.88}_{-3.32}$	$1206^{+92}_{-80}$	$5530^{+5907}_{-1238}$	$304^{+2963}_{-217}$

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

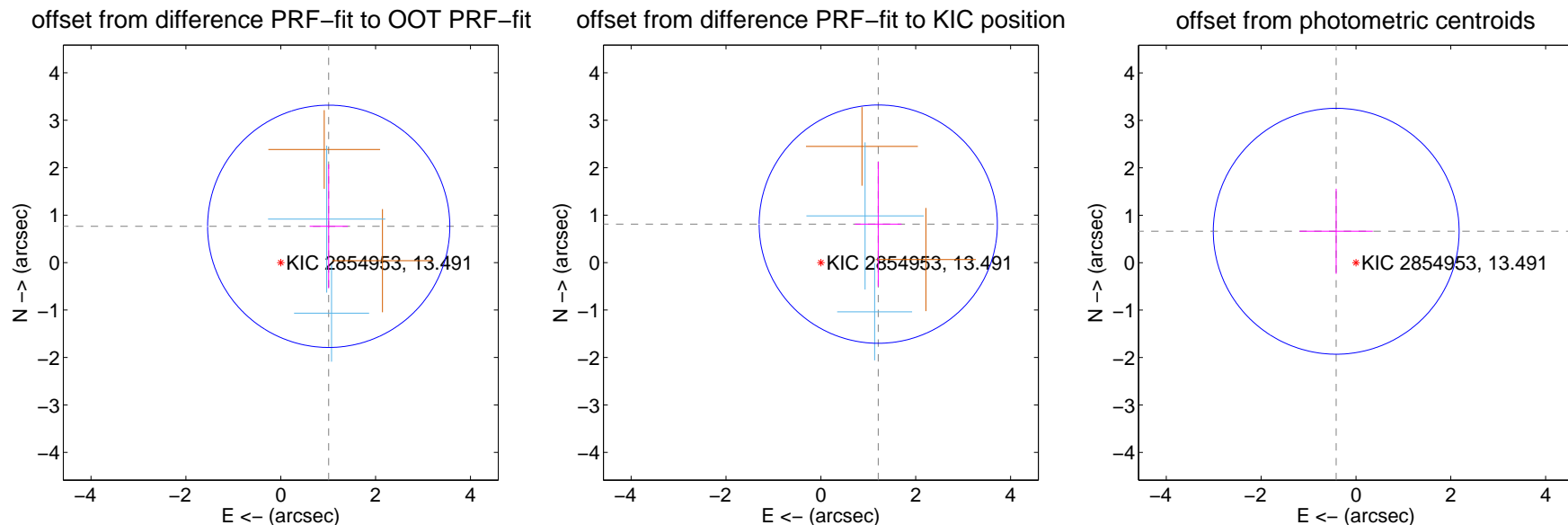
## DV Centroid Data

Supplemental centroid analysis for 002854953-05. Kepler magnitude: 13.49. Transit SNR 9.70

There are 2 quarters with good PRF difference image offsets

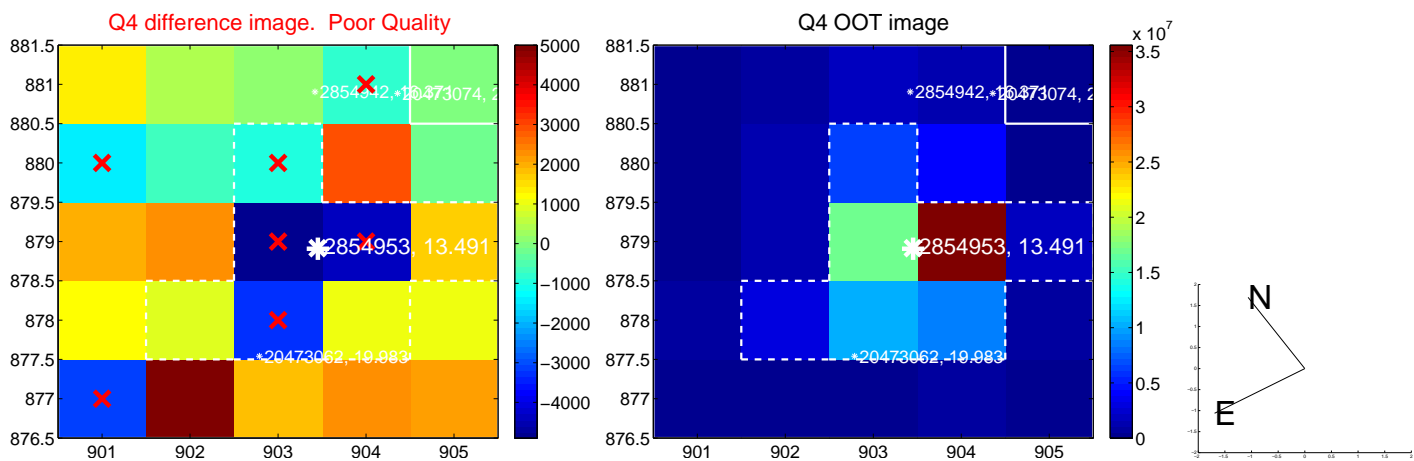
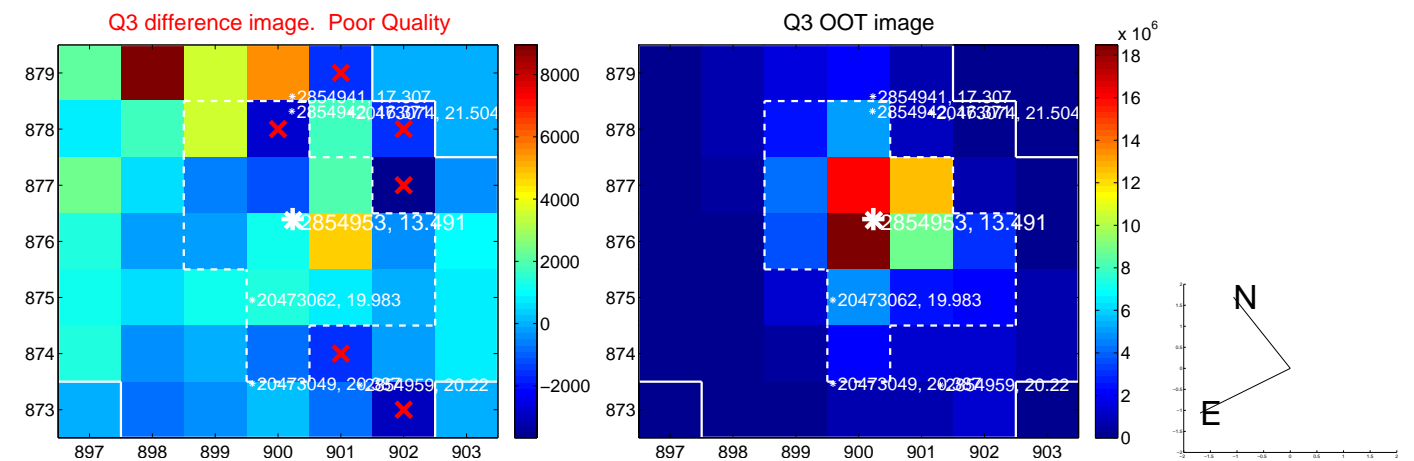
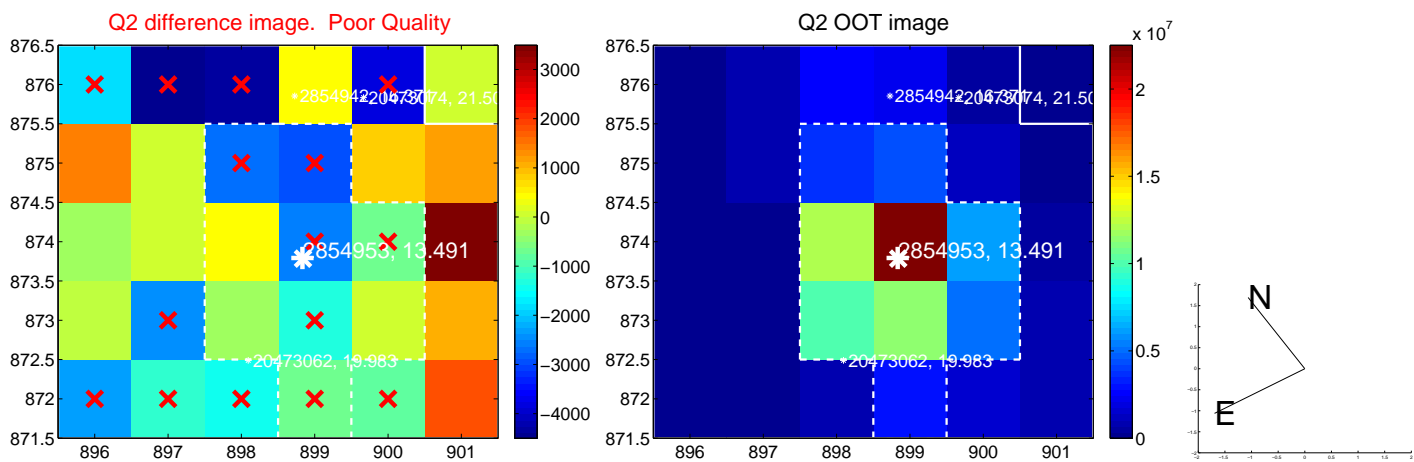
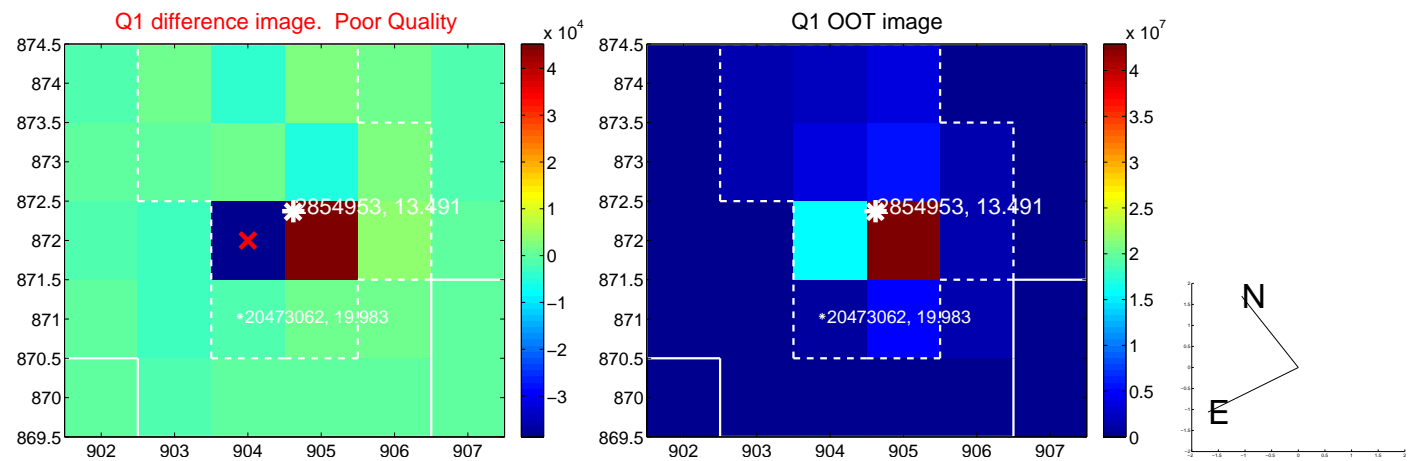
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.268 \pm 0.851$	1.49	$-1.011 \pm 0.403$	$0.765 \pm 1.307$
PRF-fit source offset from KIC position	$1.457 \pm 0.837$	1.74	$-1.210 \pm 0.493$	$0.811 \pm 1.312$
photometric centroid source offset	$0.78 \pm 0.86$	0.91	$0.42 \pm 0.77$	$0.66 \pm 0.90$



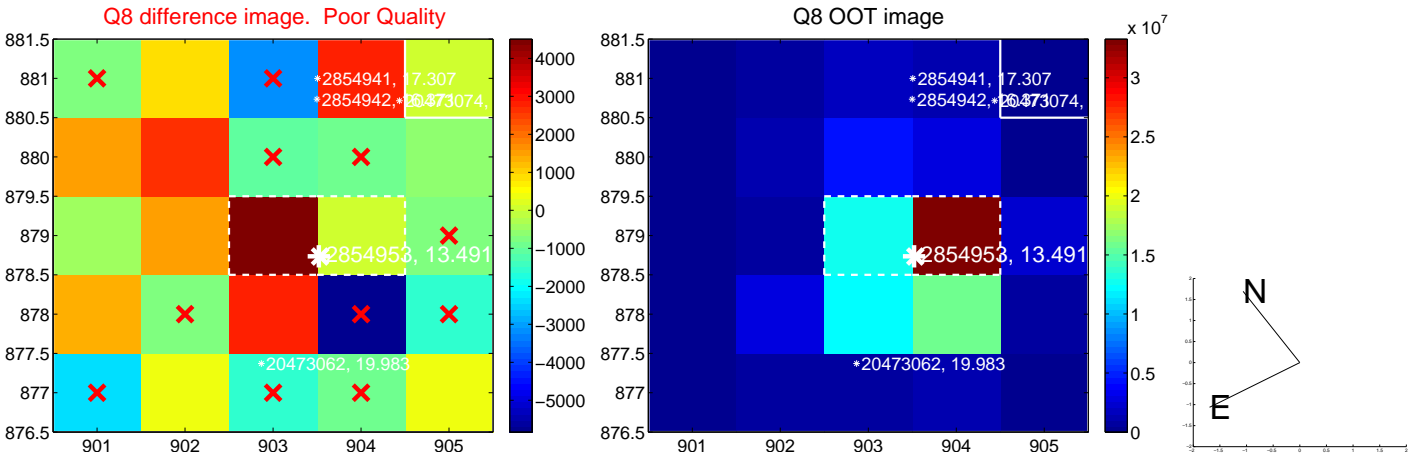
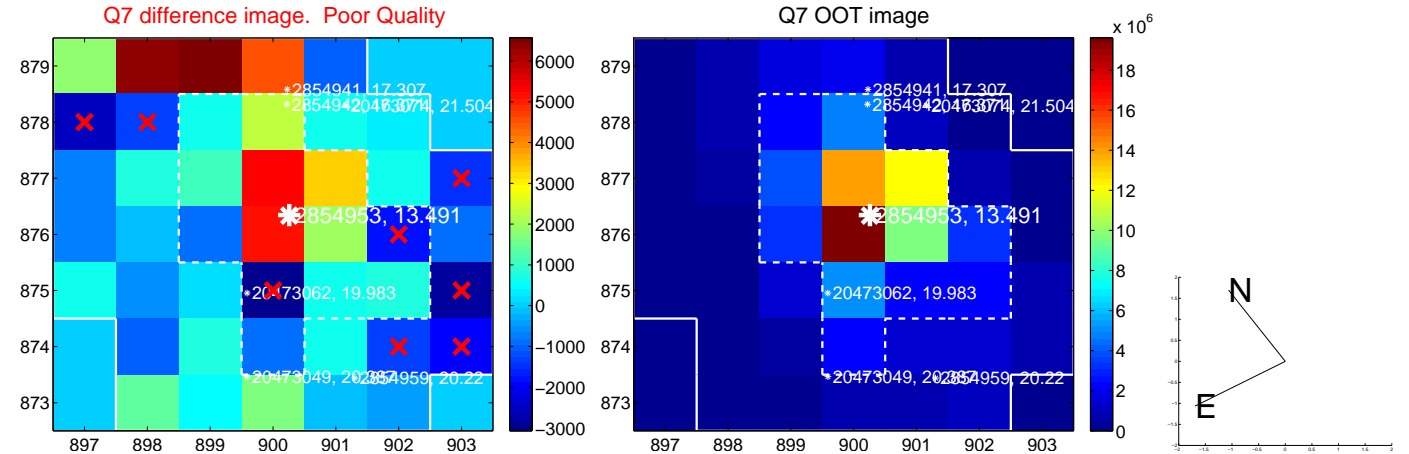
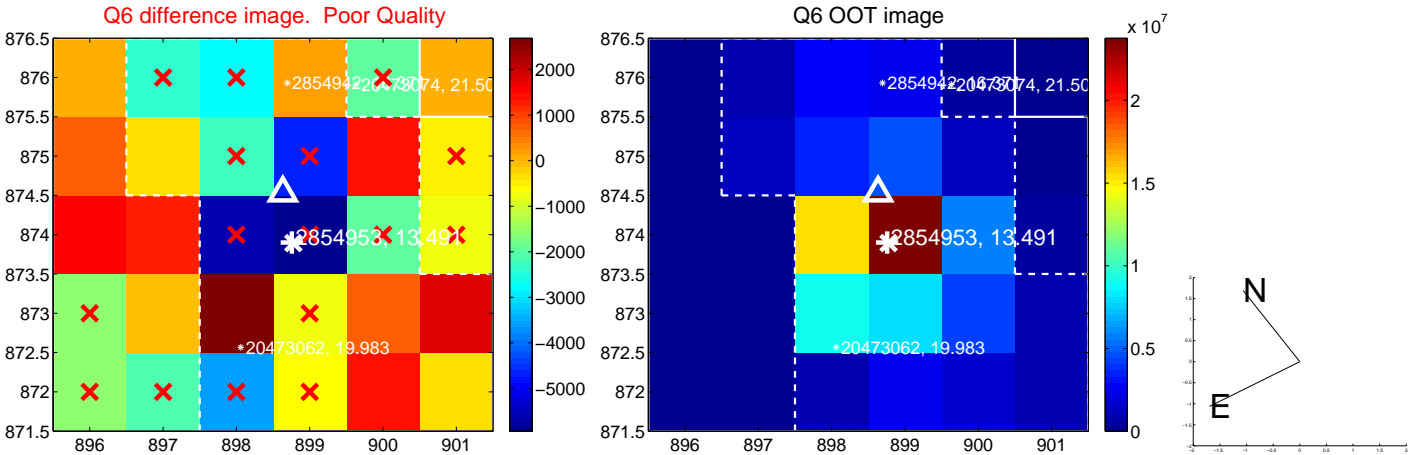
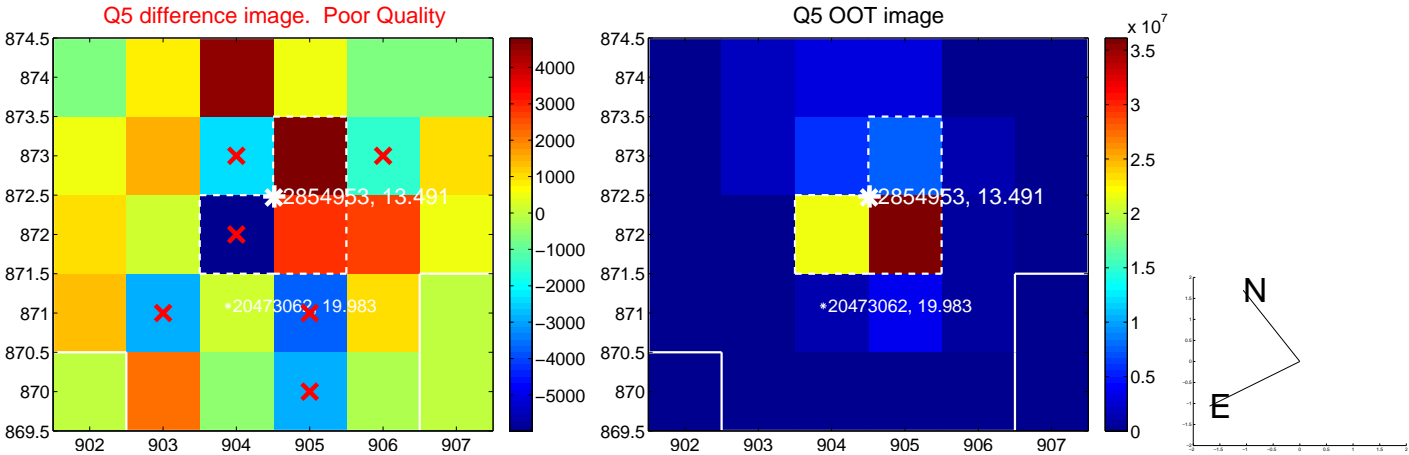
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

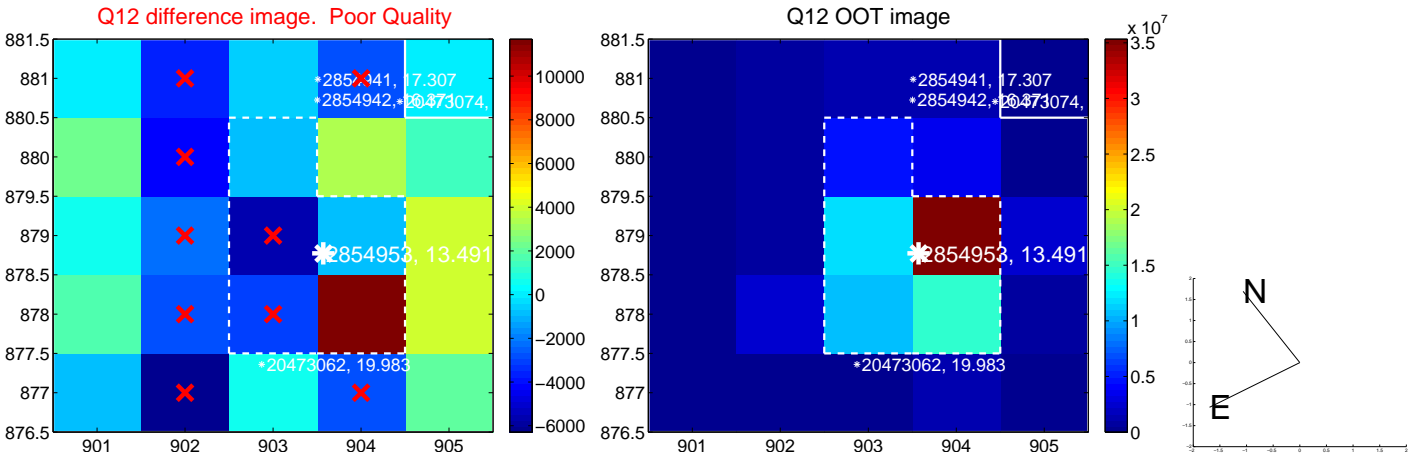
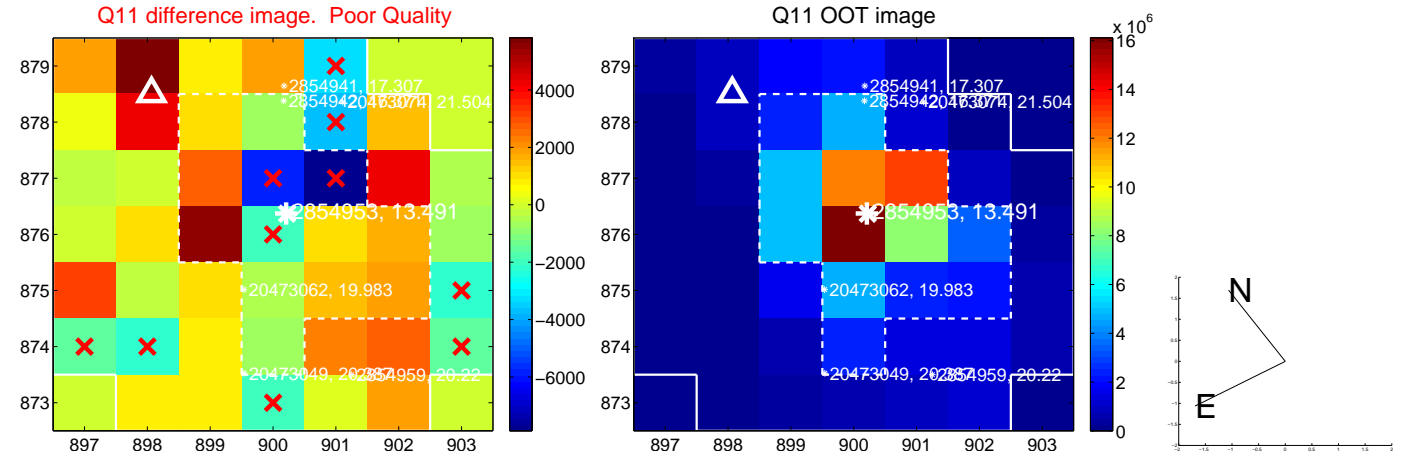
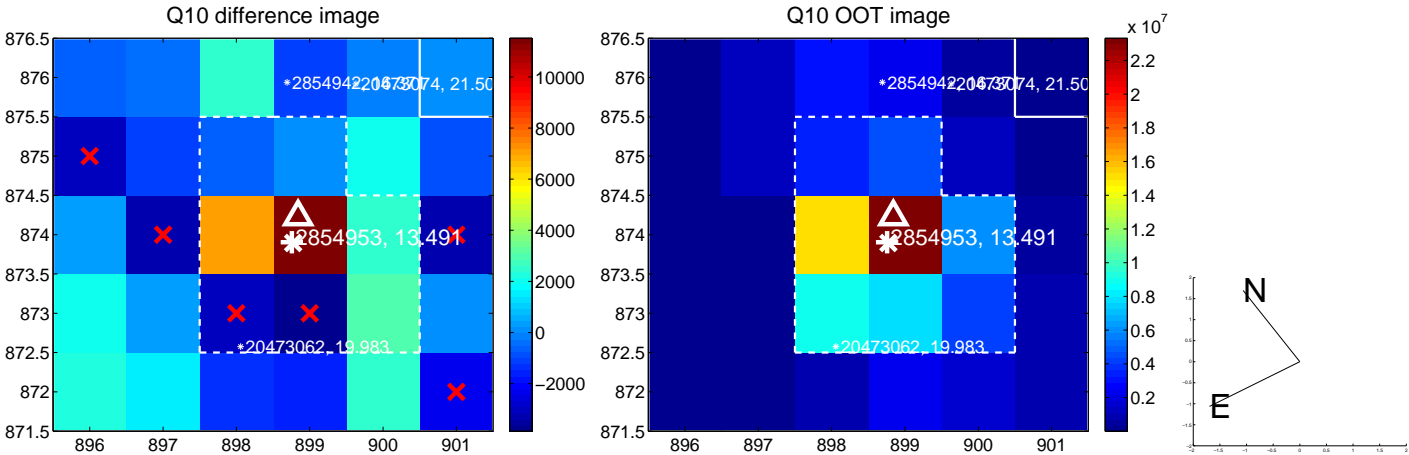
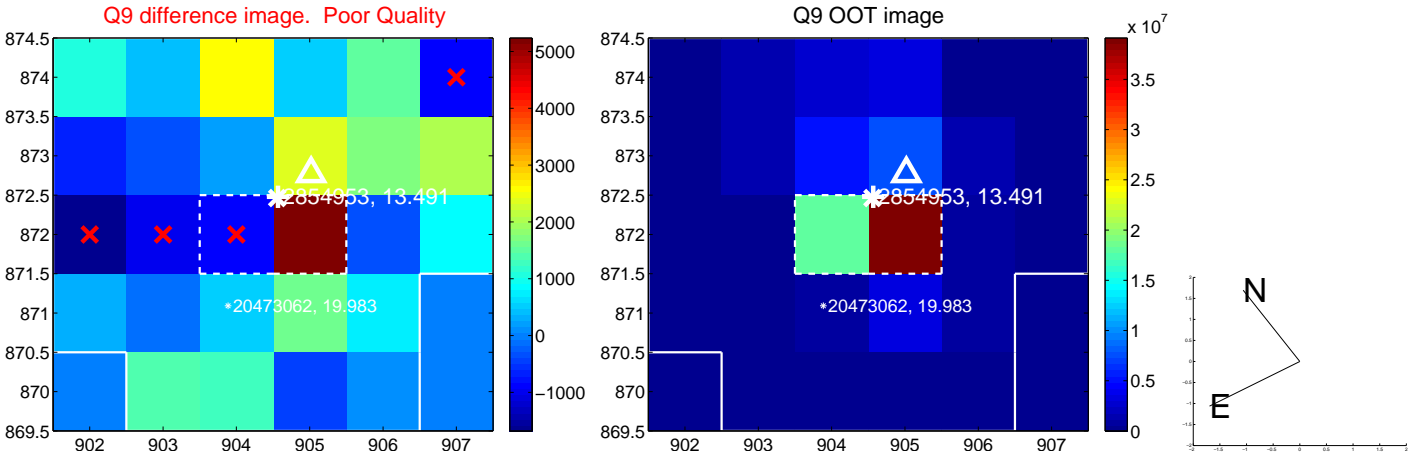




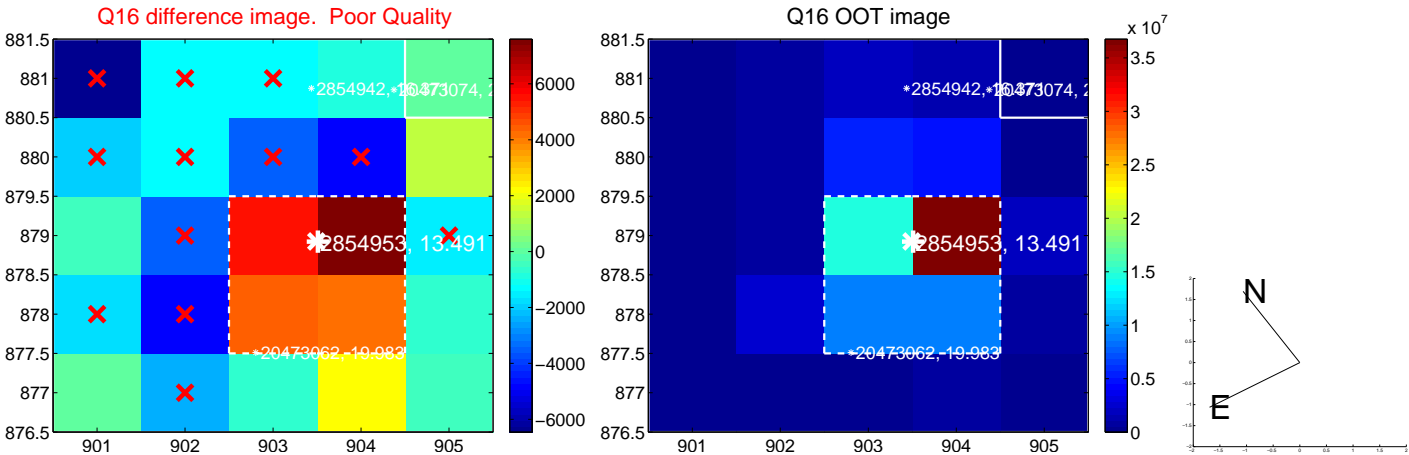
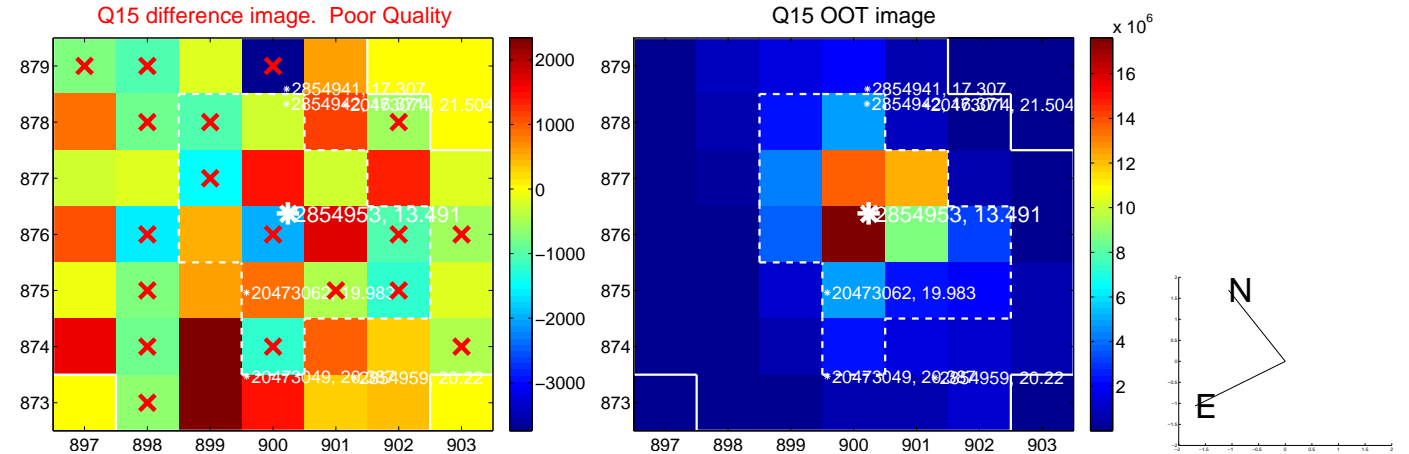
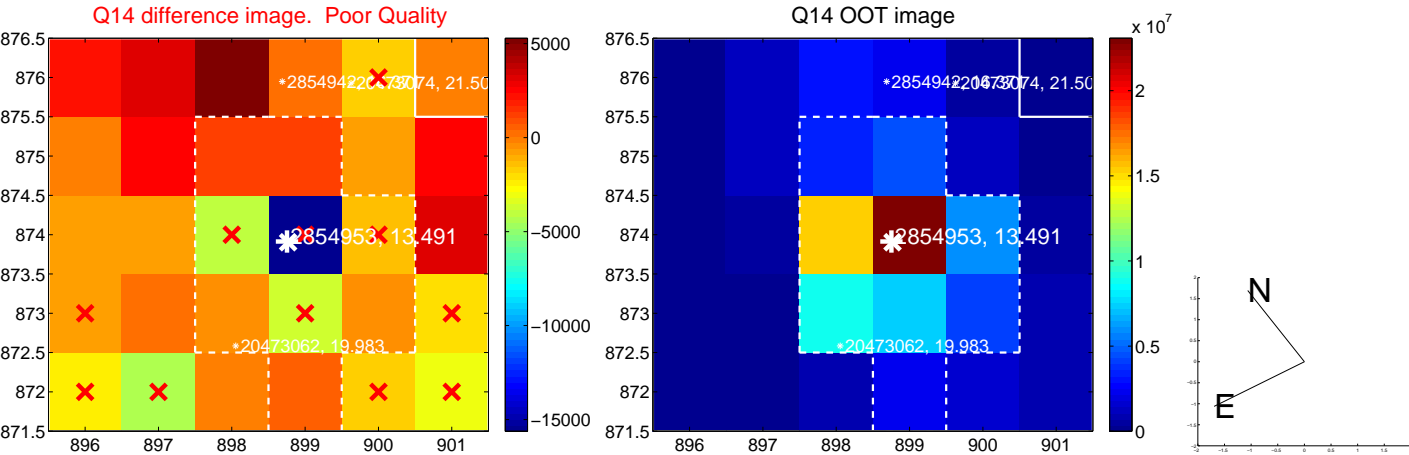
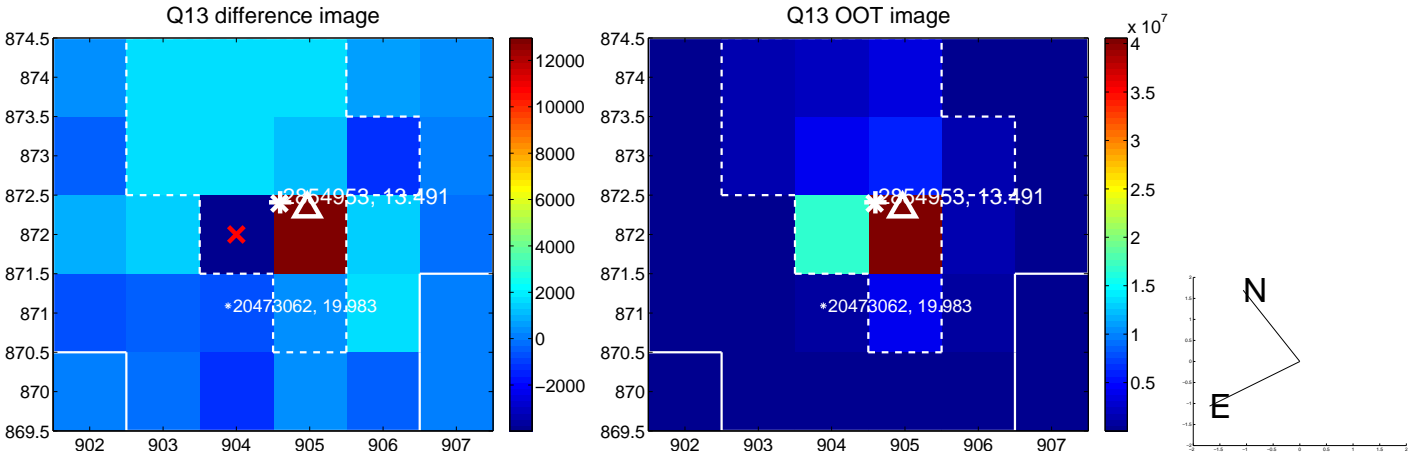
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



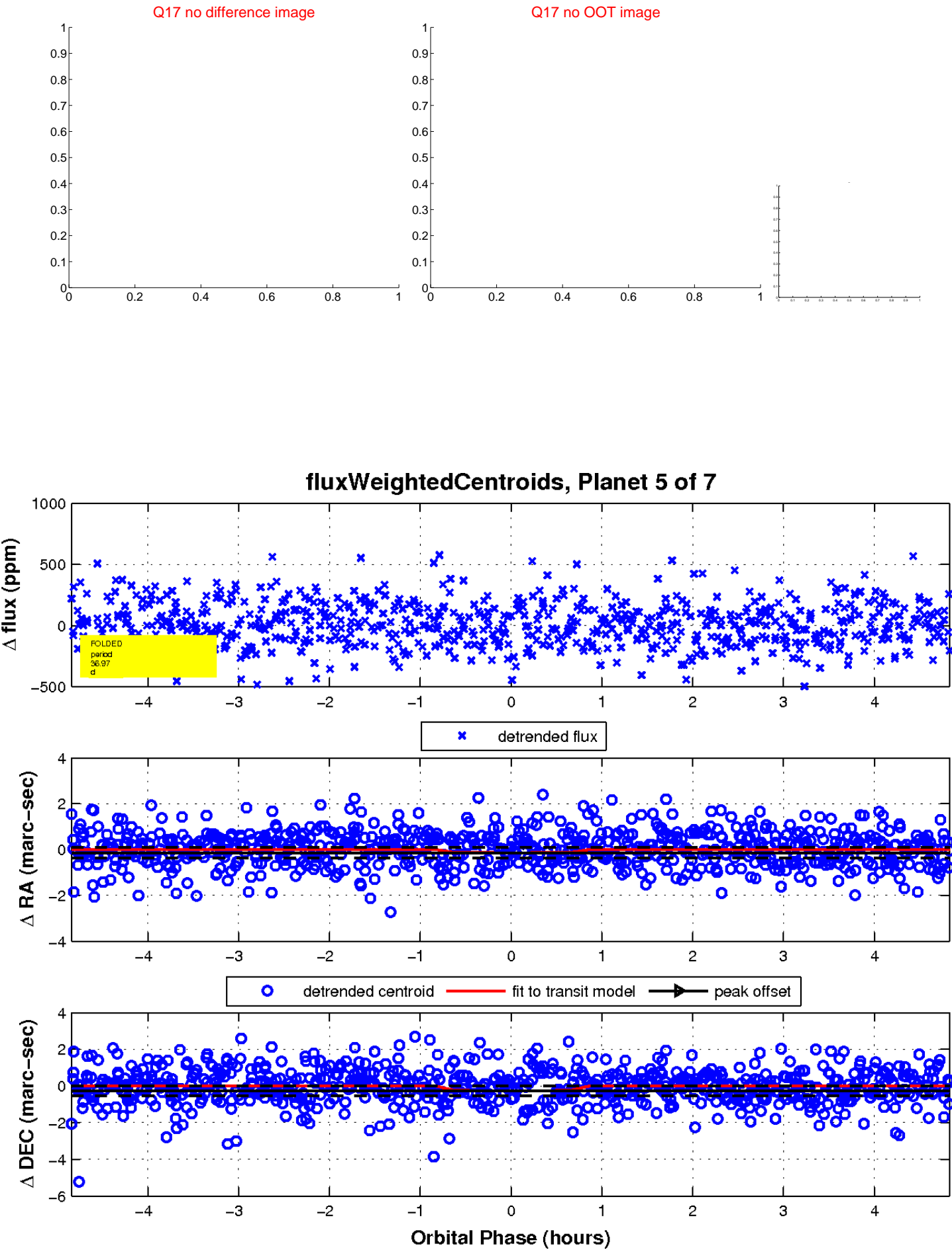
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

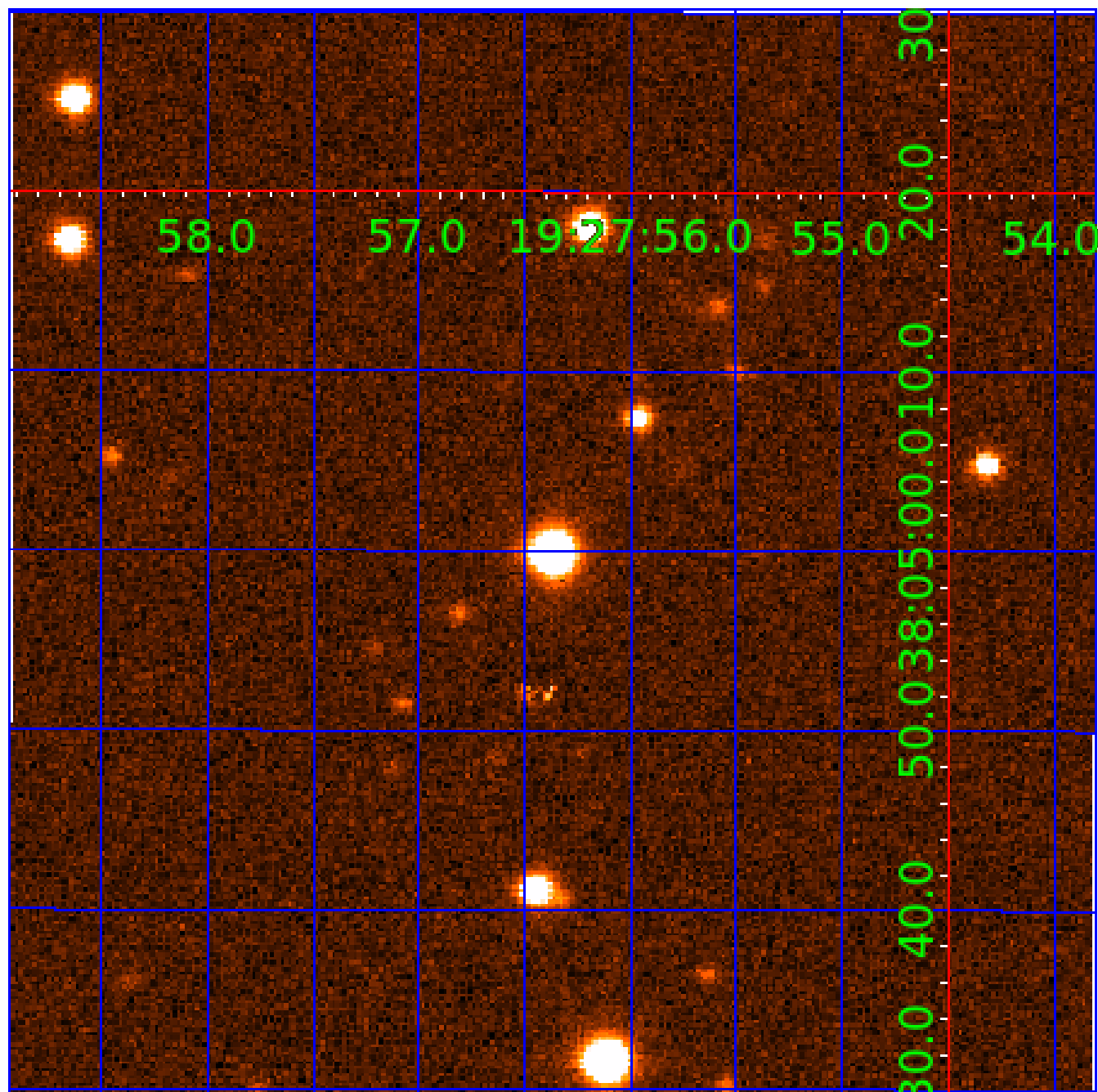


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 002854953

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002854953-01	OBS	No	1.724690	131.957540	3.6	12.301	12.9	1.9	1.73	7392	0.35	7685.78
002854953-02	OBS	No	39.194267	155.527838	440.4	1.412	10.5	11.0	1.73	7392	3.70	119.40
002854953-03	OBS	No	21.711992	143.629034	225.3	2.139	10.6	11.3	1.73	7392	3.01	262.44
002854953-04	OBS	No	26.850442	145.650419	210.7	2.229	9.8	11.5	1.73	7392	2.92	197.71
002854953-05	OBS	No	36.967356	155.079665	277.4	1.613	8.8	9.7	1.73	7392	3.21	129.09
002854953-06	OBS	No	82.036741	159.261308	172.1	6.074	9.1	7.8	1.73	7392	2.63	44.60
002854953-07	OBS	No	31.648645	140.935509	339.1	1.534	8.7	10.3	1.73	7392	3.58	158.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002854953-01	OBS	FP	0.00	1	0	0	0	LPP_DV
002854953-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
002854953-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002854953-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
002854953-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002854953-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002854953-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST

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

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

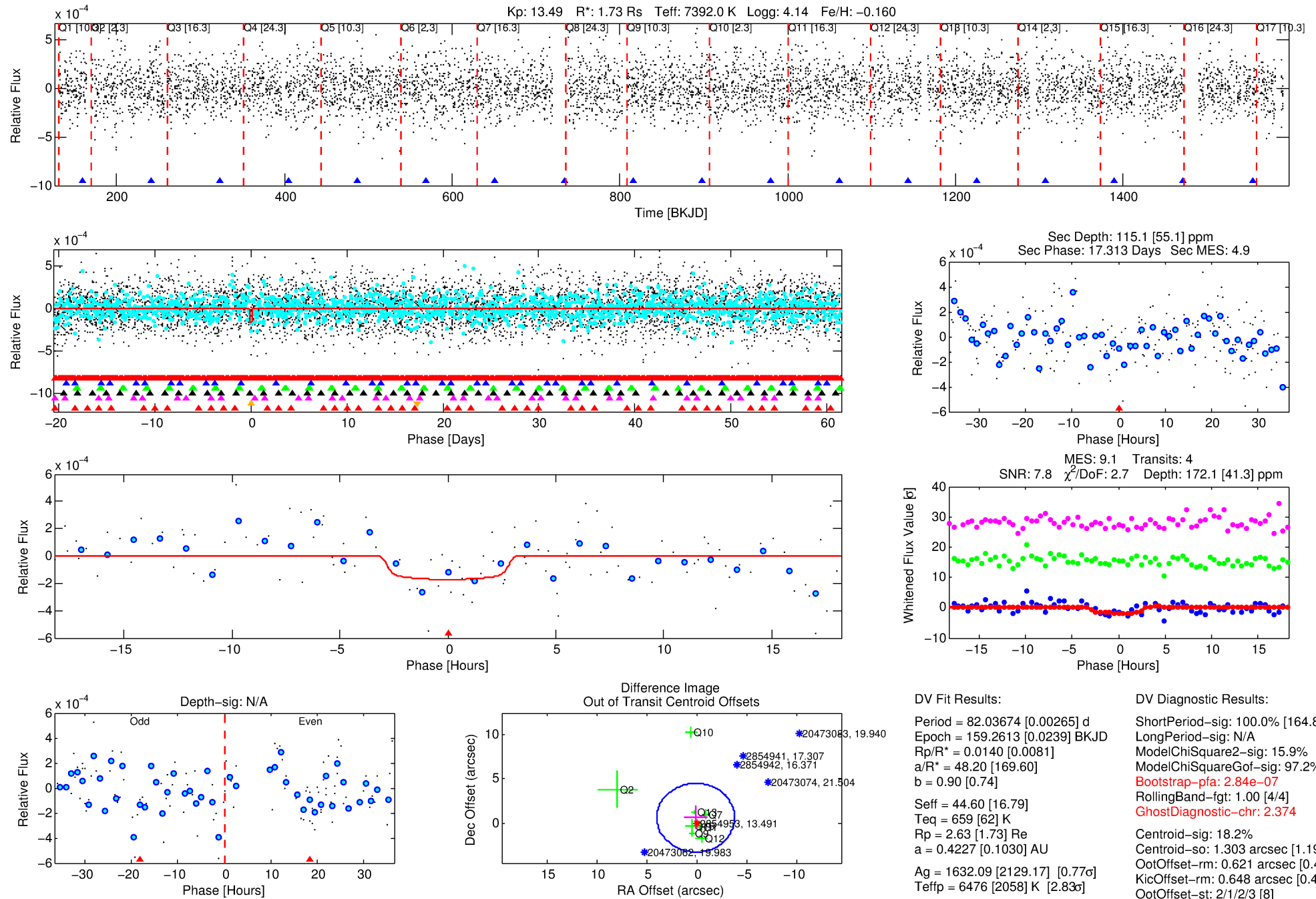
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 002854953-06

No Significant Match Found

# DV One-Page Summary

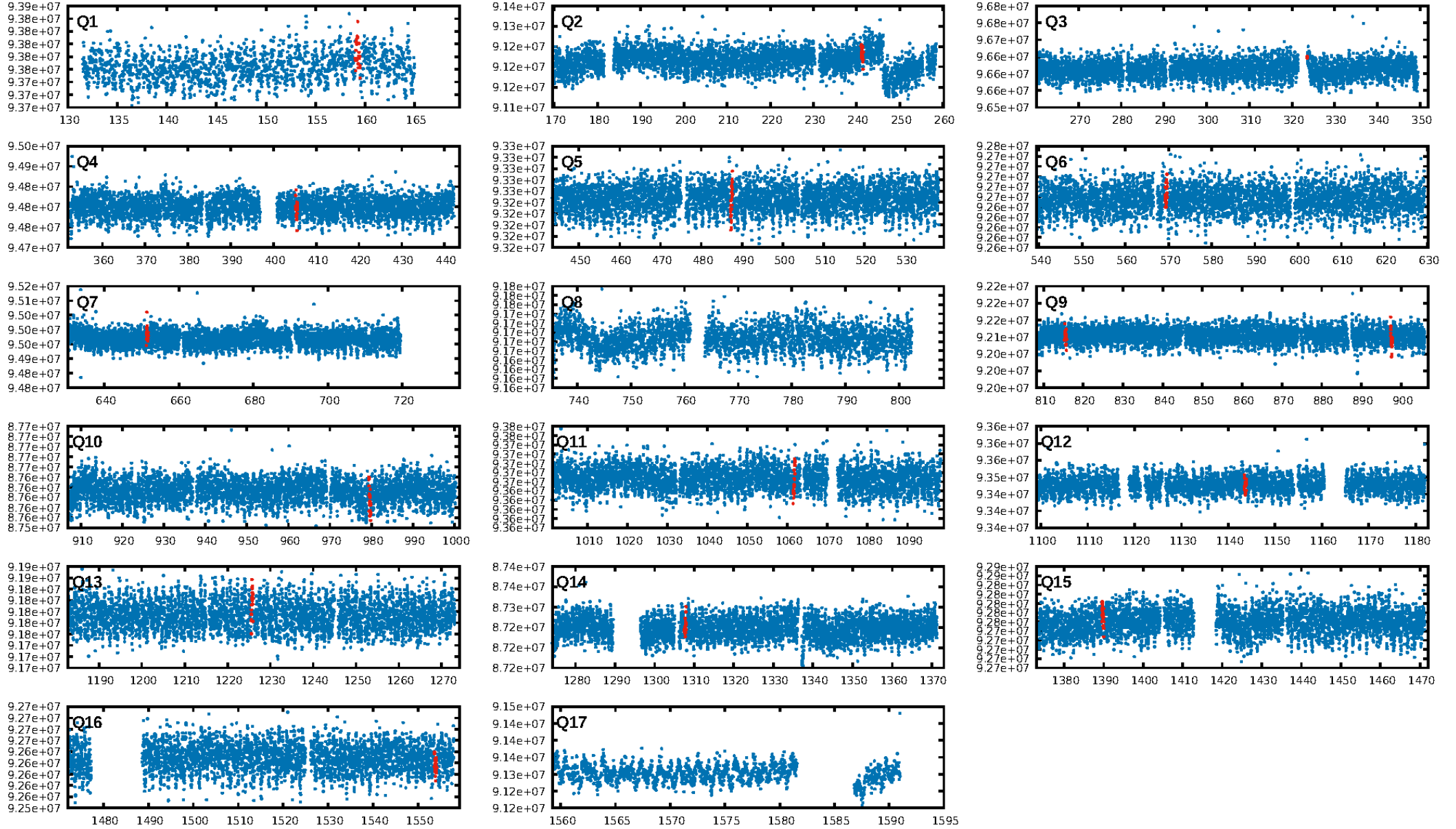
KIC: 2854953 Candidate: 6 of 7 Period: 82.037 d



Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:19:19 Z

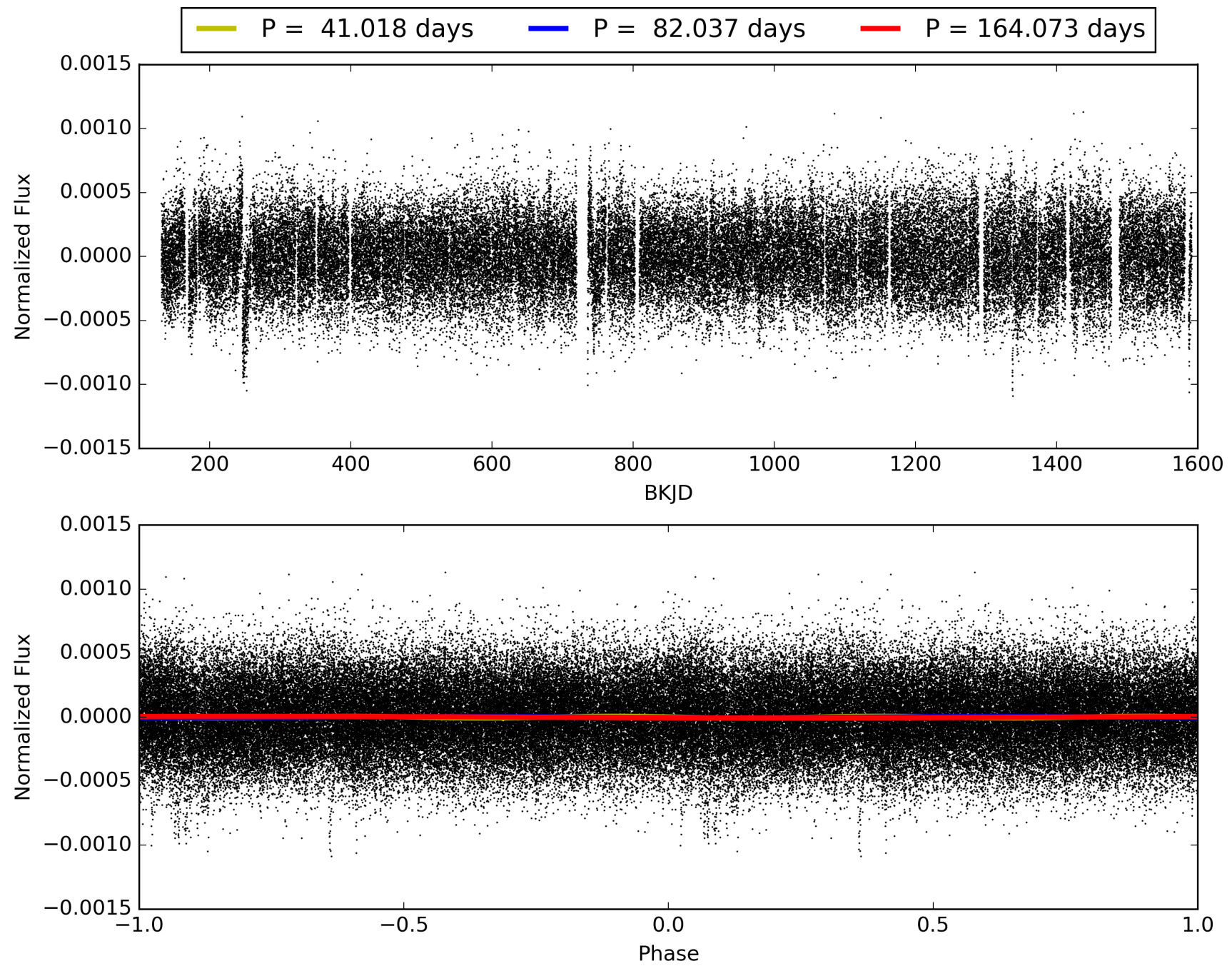
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 002854953-06, PDC Light Curves



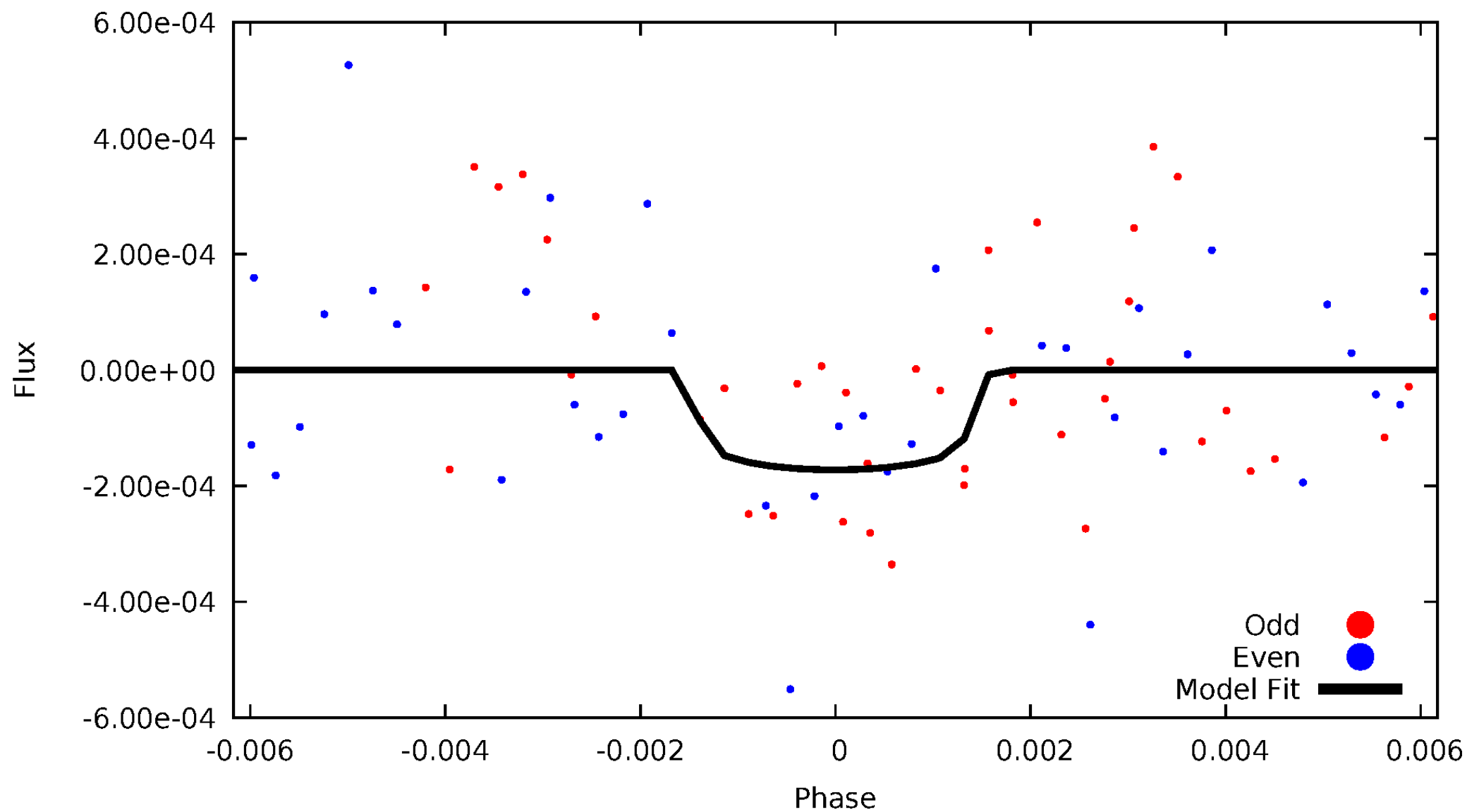


TCE 002854953-06



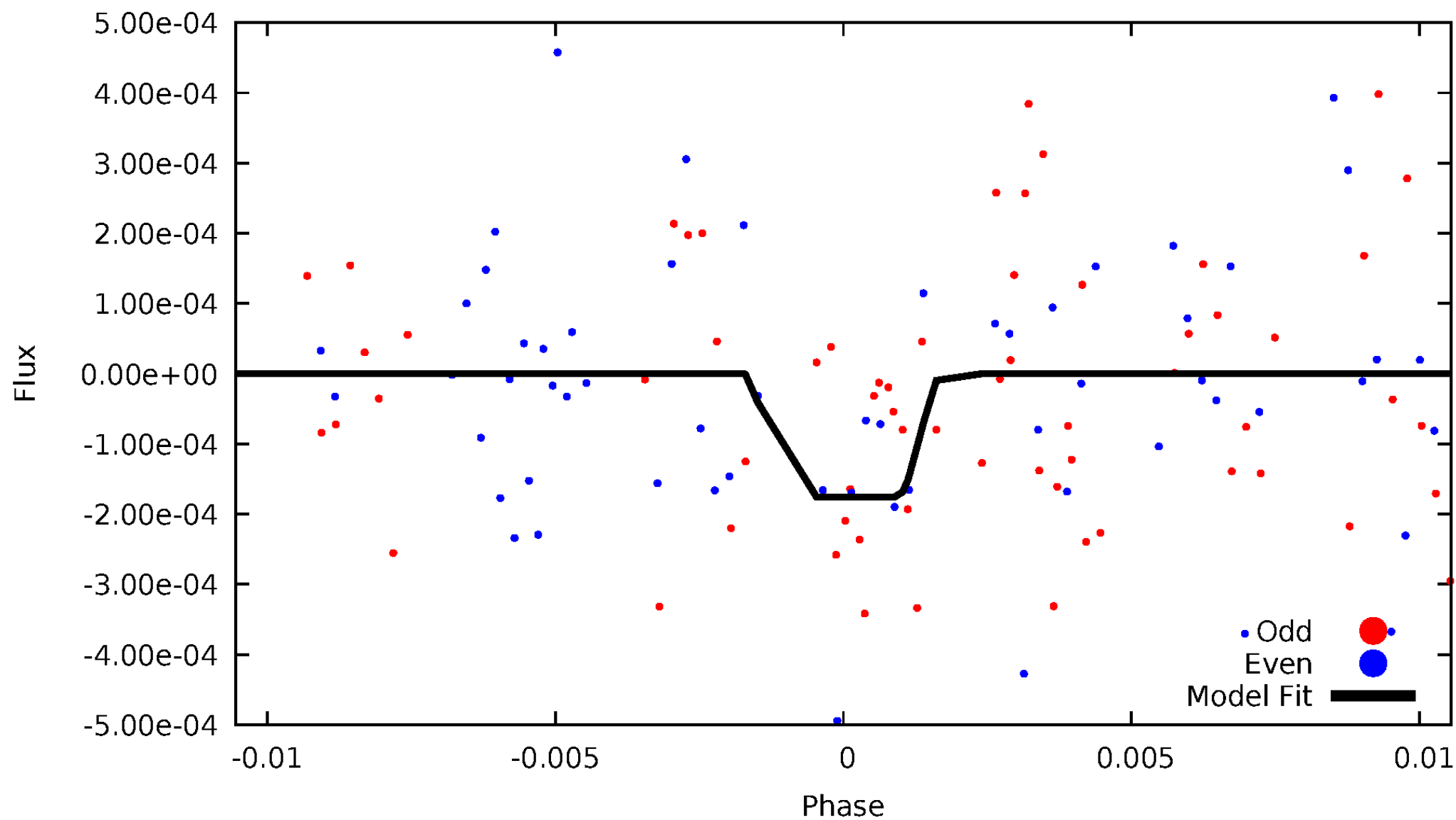
# DV Odd/Even

TCE 002854953-06



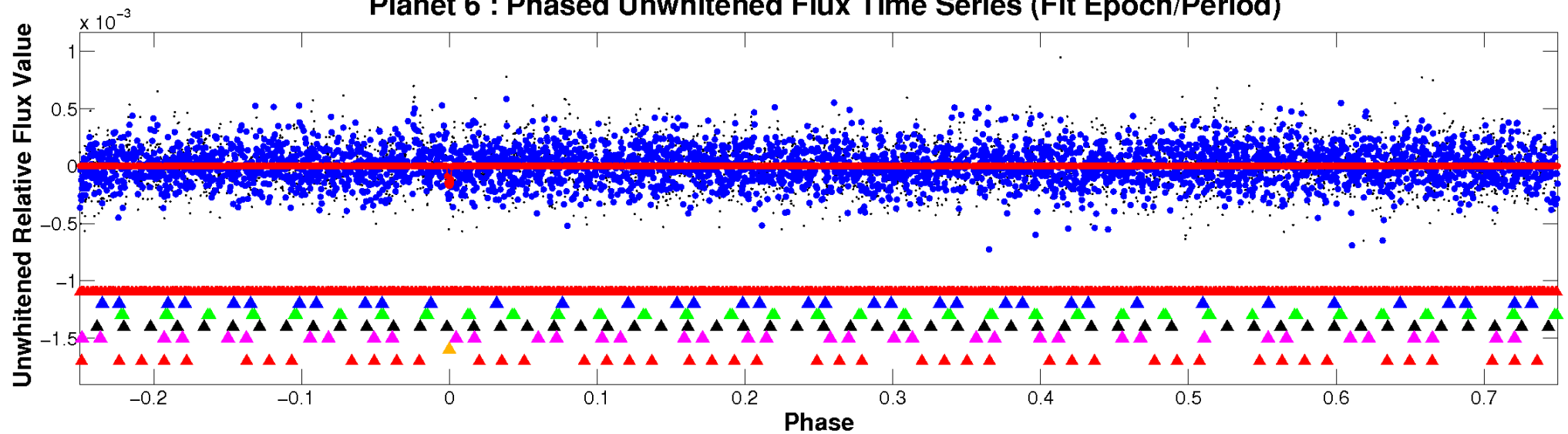
# ALT Odd/Even

TCE 002854953-06

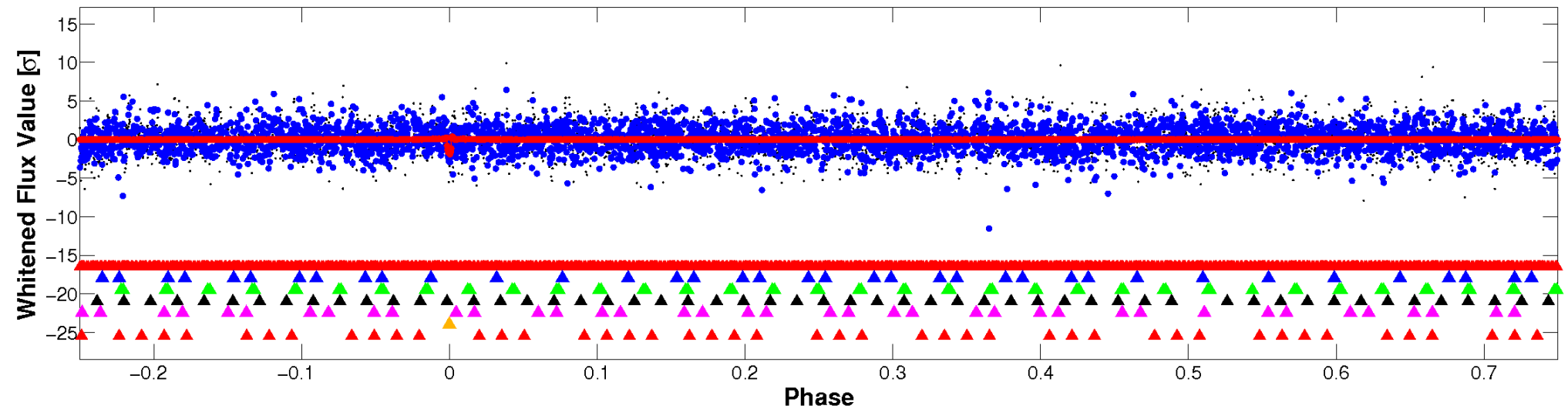


# Non-Whitened Vs. Whitened Light Curve

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

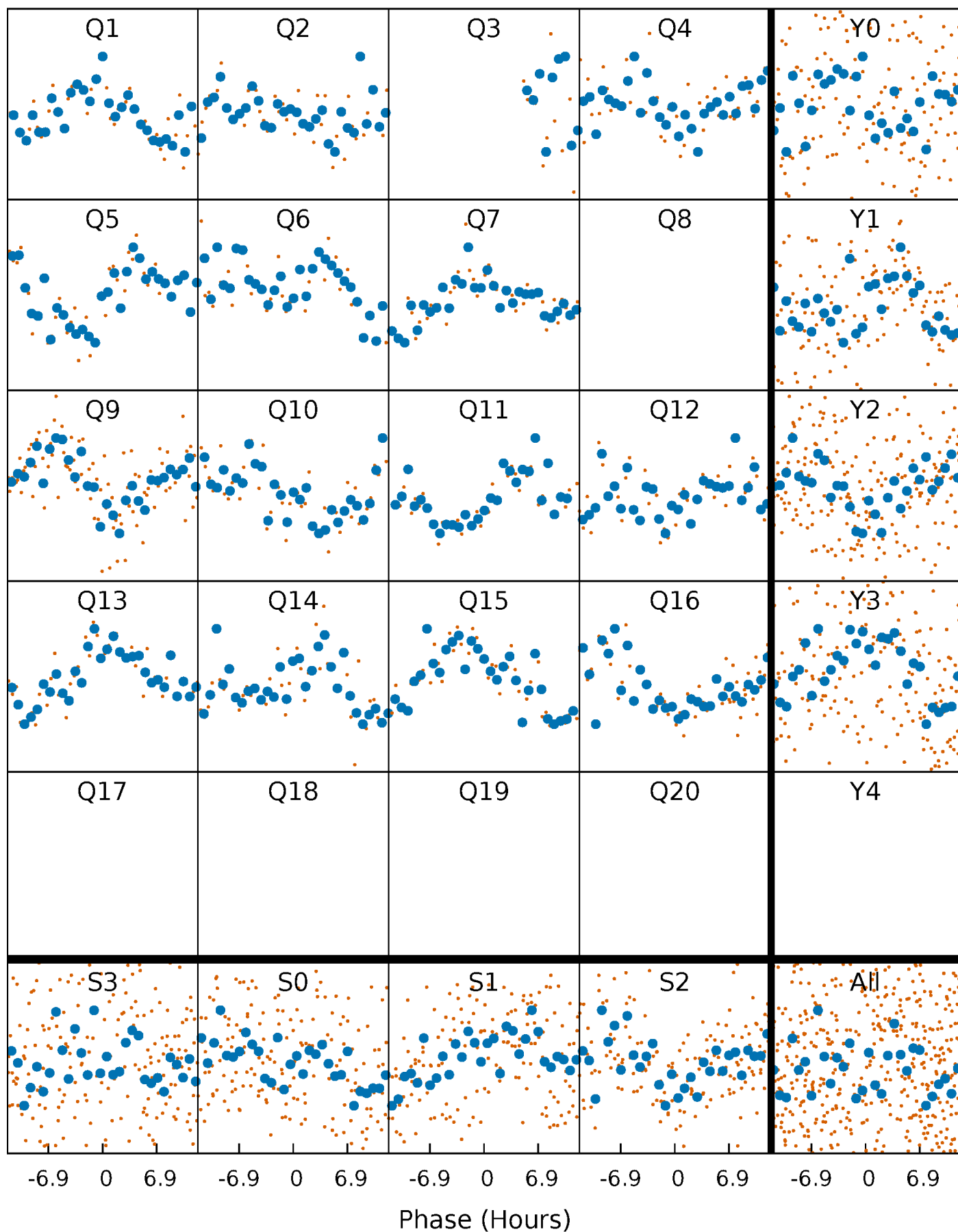


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



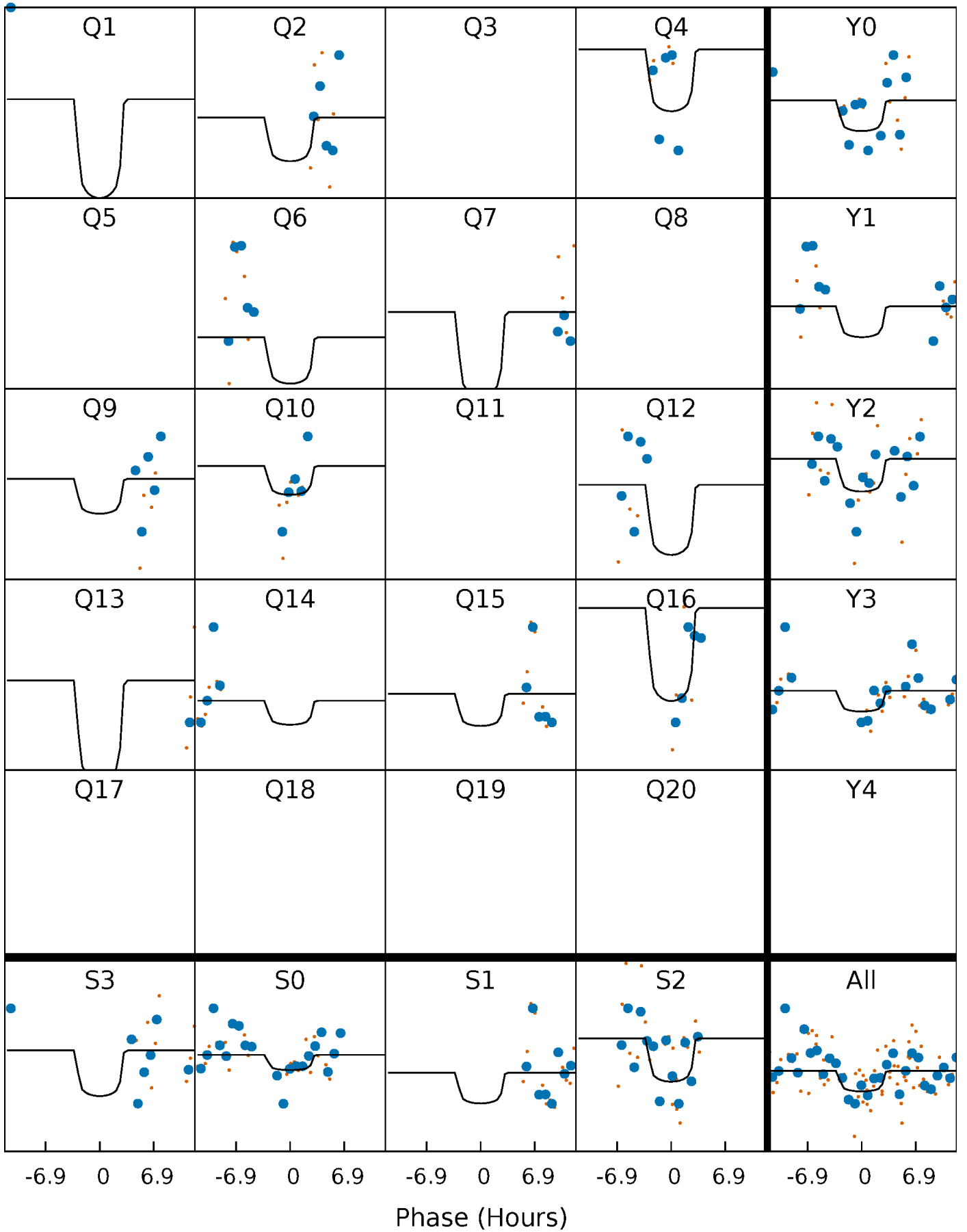
# PDC Quarter-Phased Transit Curves

TCE 002854953-06 P= 82.036741 Days  $T_0=159.261308$  (BKJD)



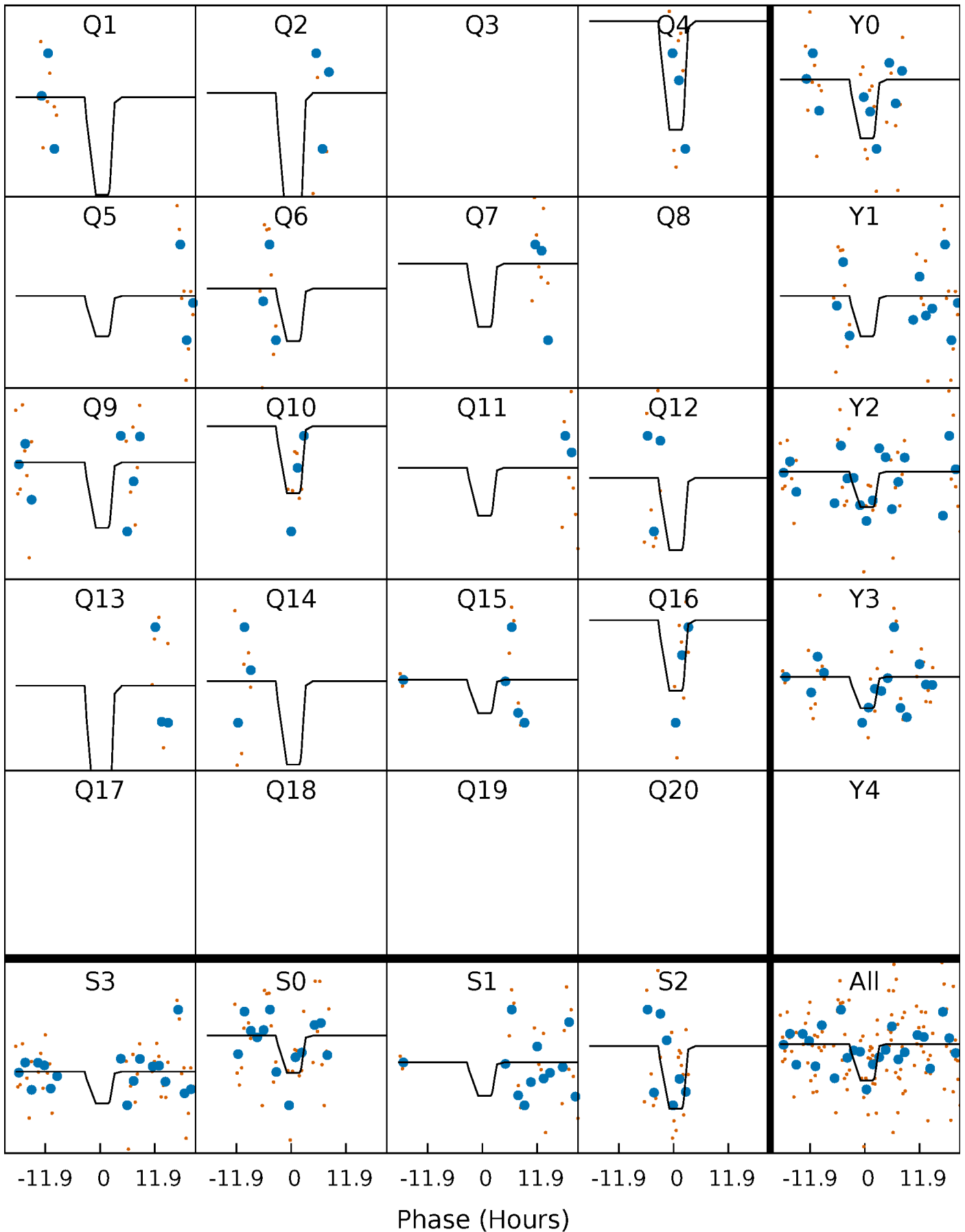
# DV Quarter-Phased Transit Curves

TCE 002854953-06 P= 82.036741 Days  $T_0=159.261308$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

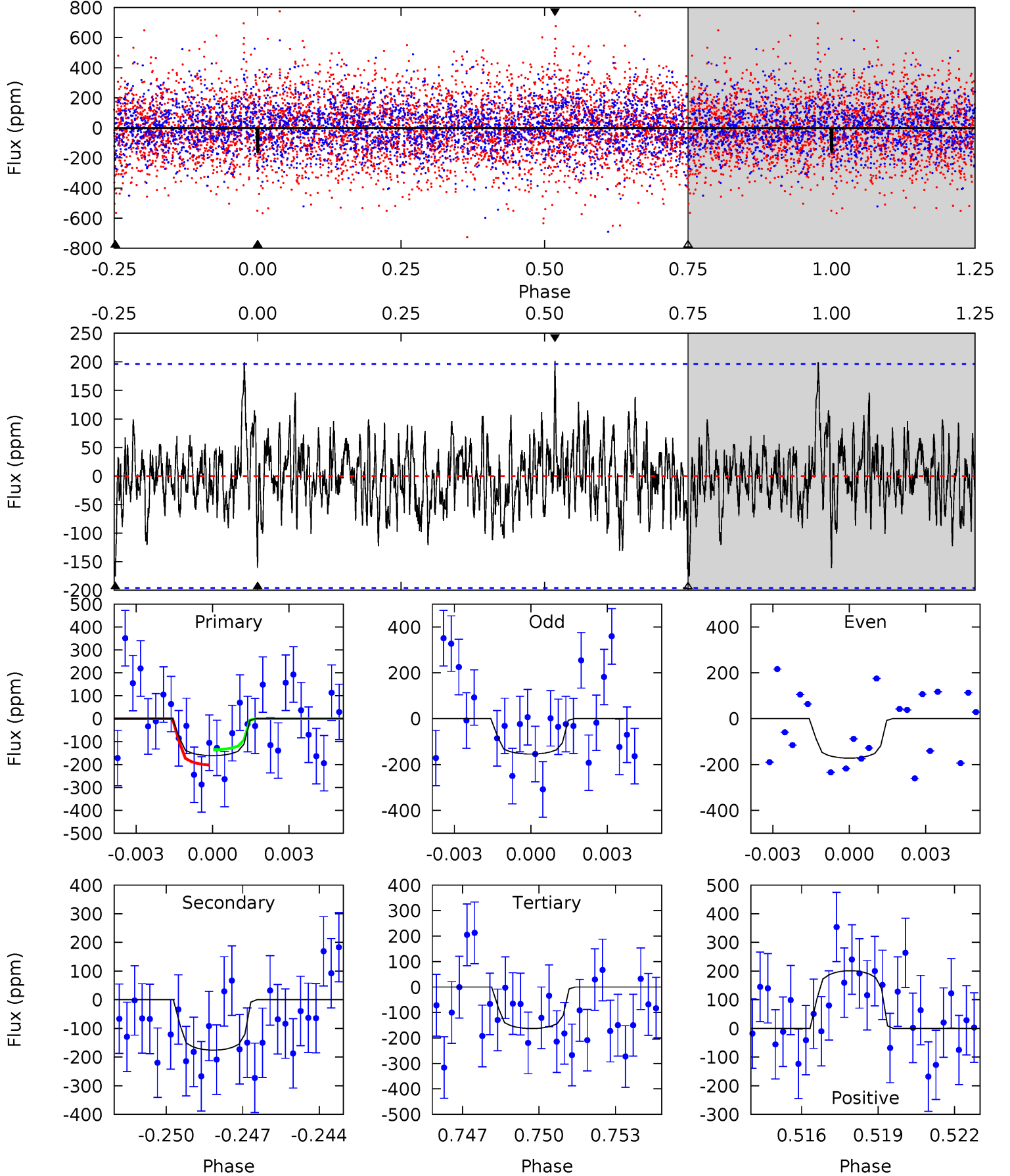
TCE 002854953-06 P= 82.043364 Days  $T_0=159.165752$  (BKJD)



# DV Model-Shift Uniqueness Test

002854953-06, P = 82.036741 Days, E = 77.224567 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
4.31	4.70	4.36	5.38	5.24	2.95	1.29	-0.05	-1.07	0.34	-0.68	0.22	1.07	0.53	0.83

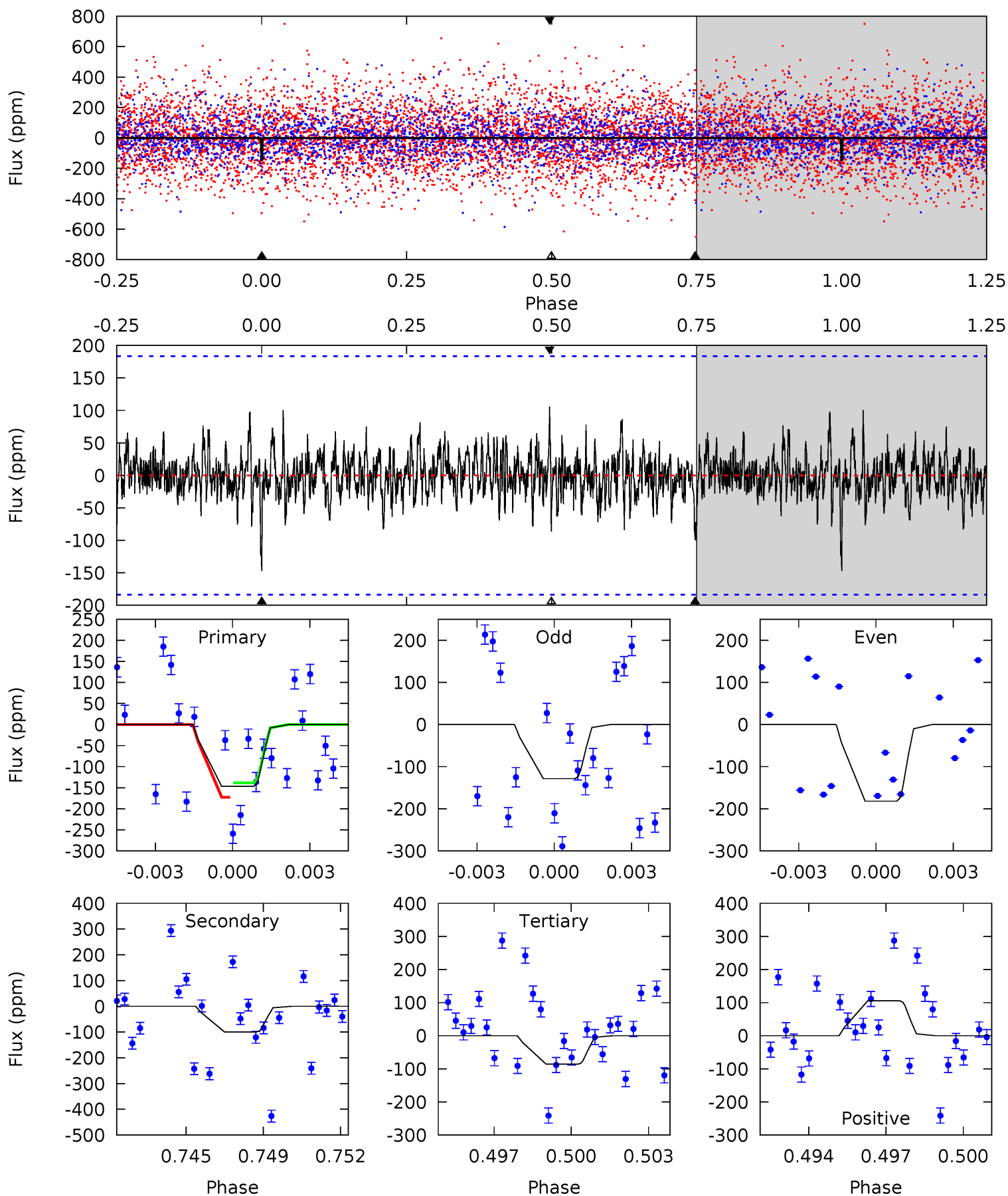




# Alt Model-Shift Uniqueness Test

002854953-06, P = 82.043364 Days, E = 77.122388 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
4.19	2.84	2.46	3.02	5.23	2.94	0.80	1.73	1.17	0.39	-0.18	0.74	0.90	0.42	0.43



### Stellar Parameters For KIC 002854953

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7392^{+230}_{-307}$	$4.139^{+0.144}_{-0.176}$	$-0.160^{+0.250}_{-0.350}$	$1.726^{+0.525}_{-0.350}$	$1.493^{+0.209}_{-0.232}$	$0.409^{+0.315}_{-0.208}$
	+3%/-4%	+3%/-4%	+156%/-219%	+30%/-20%	+14%/-16%	+77%/-51%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 002854953-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-176 \pm 37$	$2.69^{+1.75}_{-1.41}$	$923^{+73}_{-54}$	$7157^{+4302}_{-1631}$	$2320^{+8101}_{-1474}$
Alt.	$-100 \pm 35$	$2.57^{+1.62}_{-1.41}$	$924^{+70}_{-66}$	$6178^{+3646}_{-1368}$	$1397^{+5101}_{-942}$

$T_{max}$  = 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

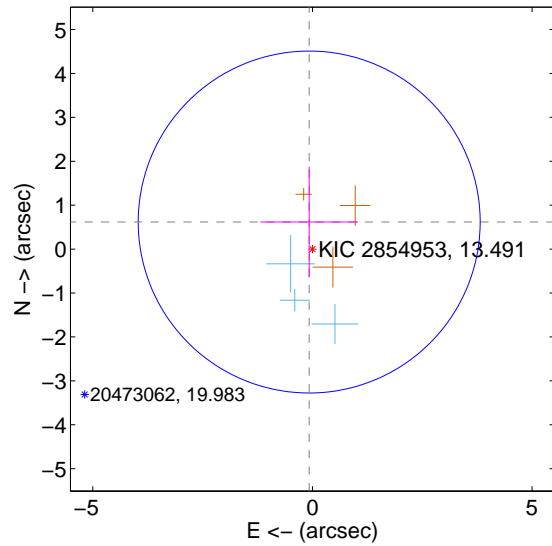
Supplemental centroid analysis for 002854953-06. Kepler magnitude: 13.49. Transit SNR 7.83

There are 3 quarters with good PRF difference image offsets

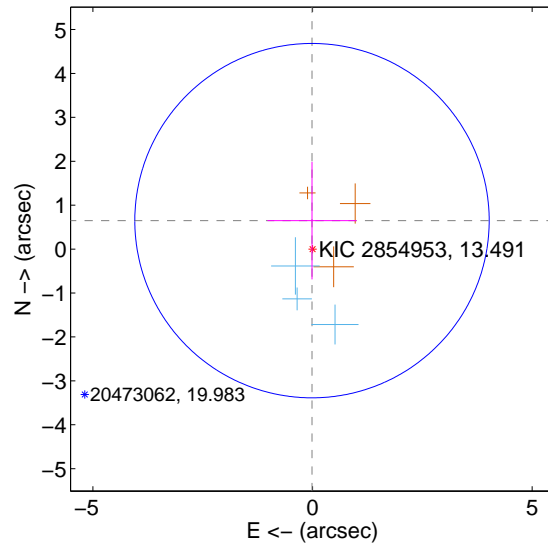
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.621 \pm 1.298$	0.48	$0.074 \pm 1.113$	$0.616 \pm 1.260$
PRF-fit source offset from KIC position	$0.648 \pm 1.345$	0.48	$0.012 \pm 1.015$	$0.648 \pm 1.339$
photometric centroid source offset	$1.30 \pm 1.10$	1.19	$0.91 \pm 1.02$	$-0.93 \pm 1.16$

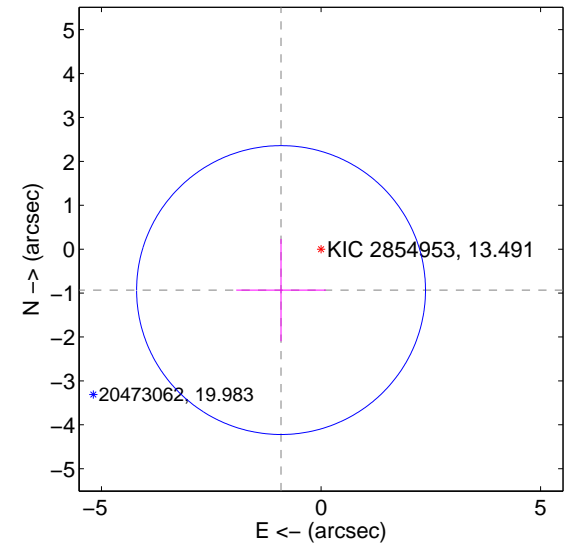
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

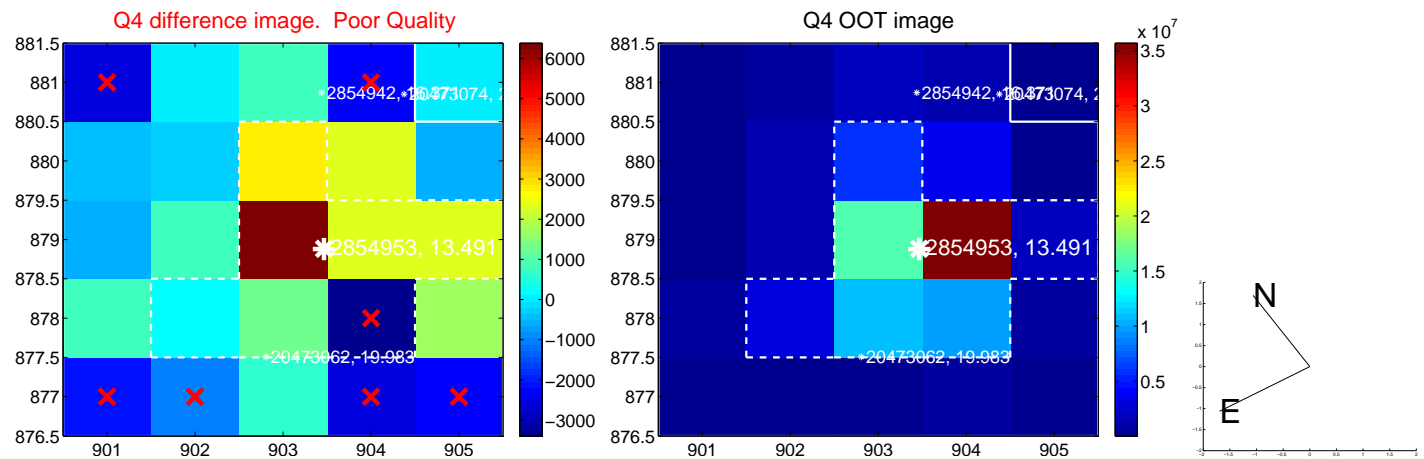
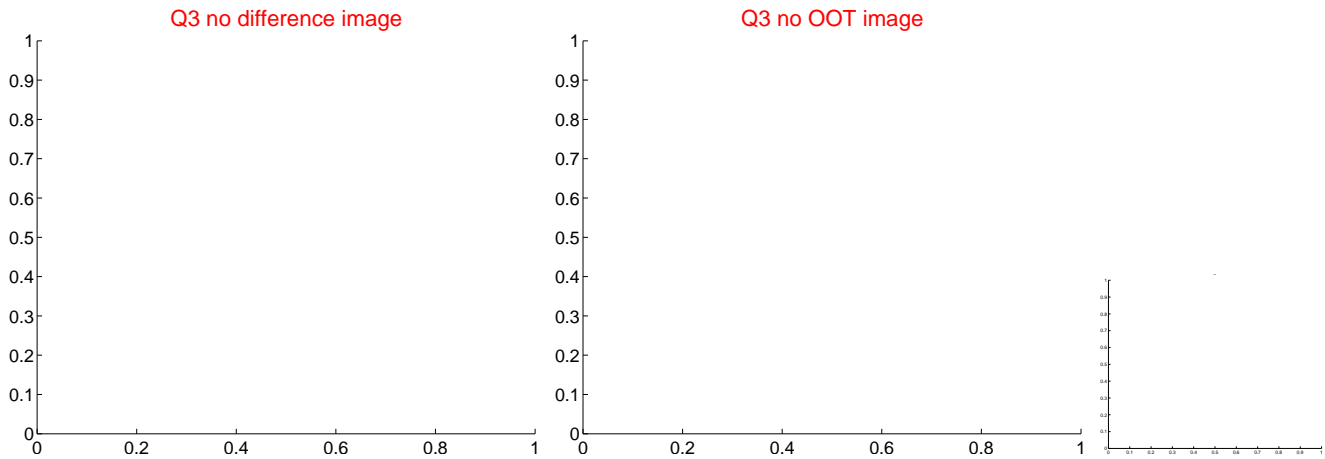
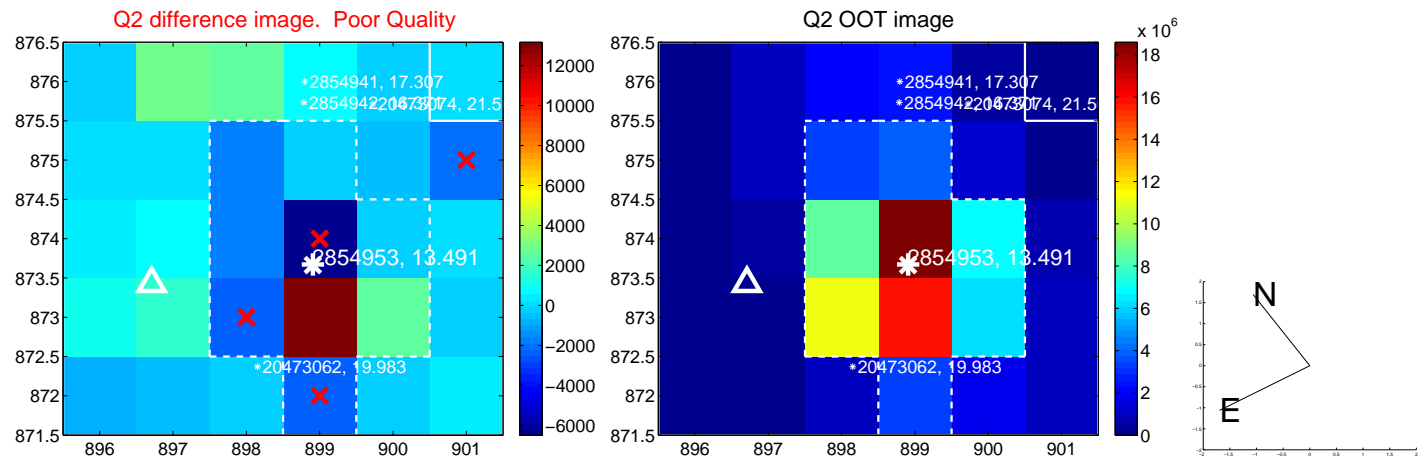
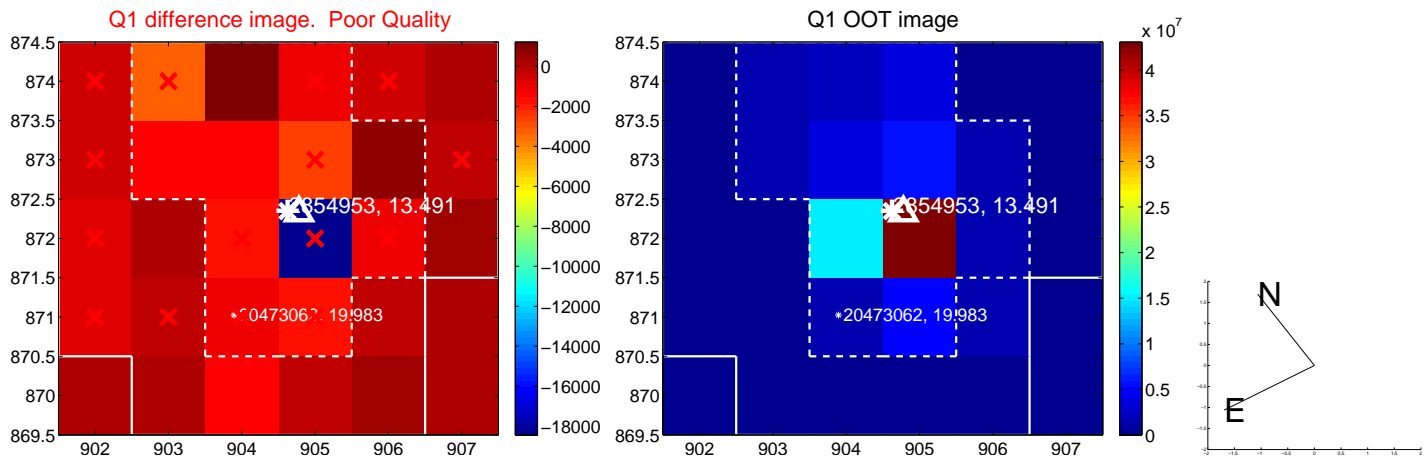


offset from photometric centroids

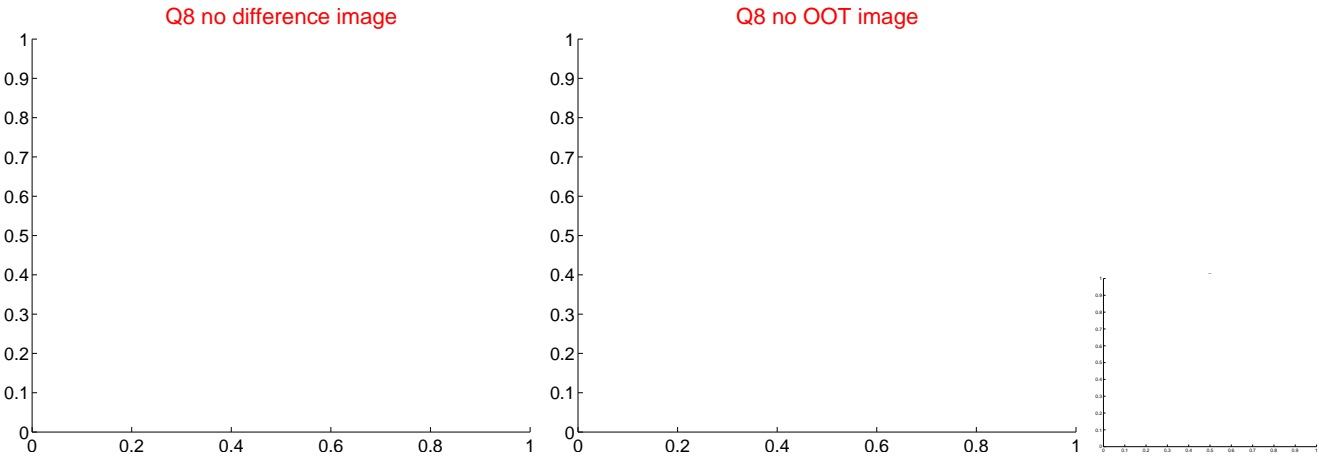
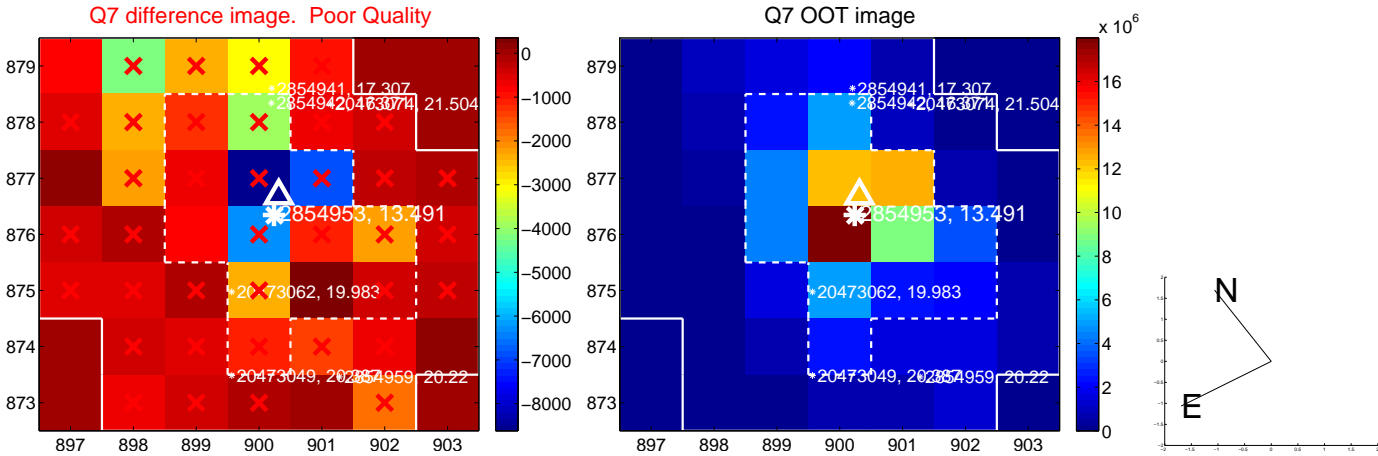
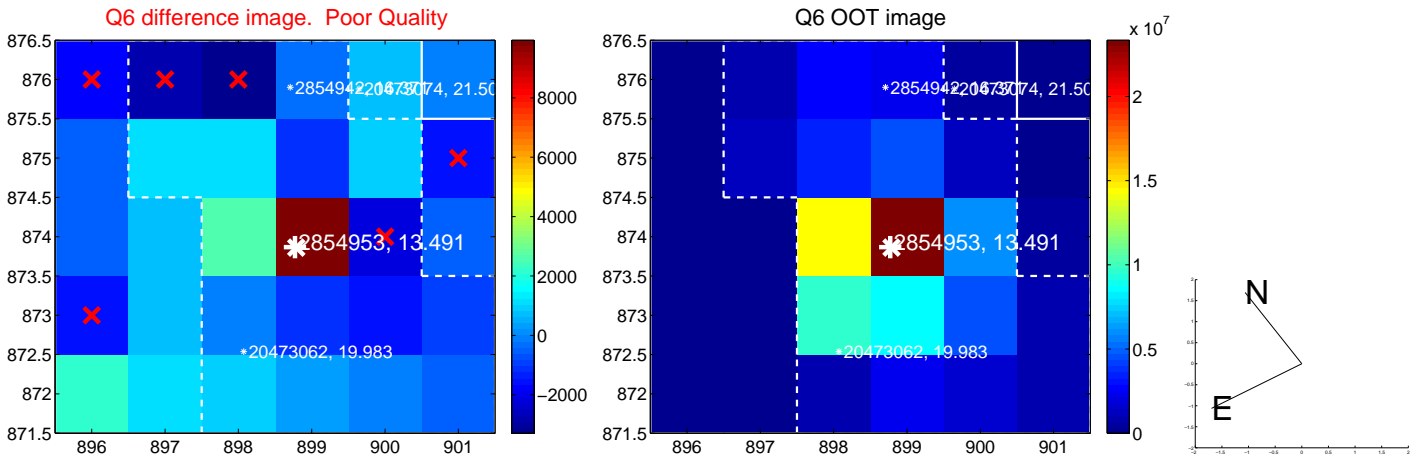
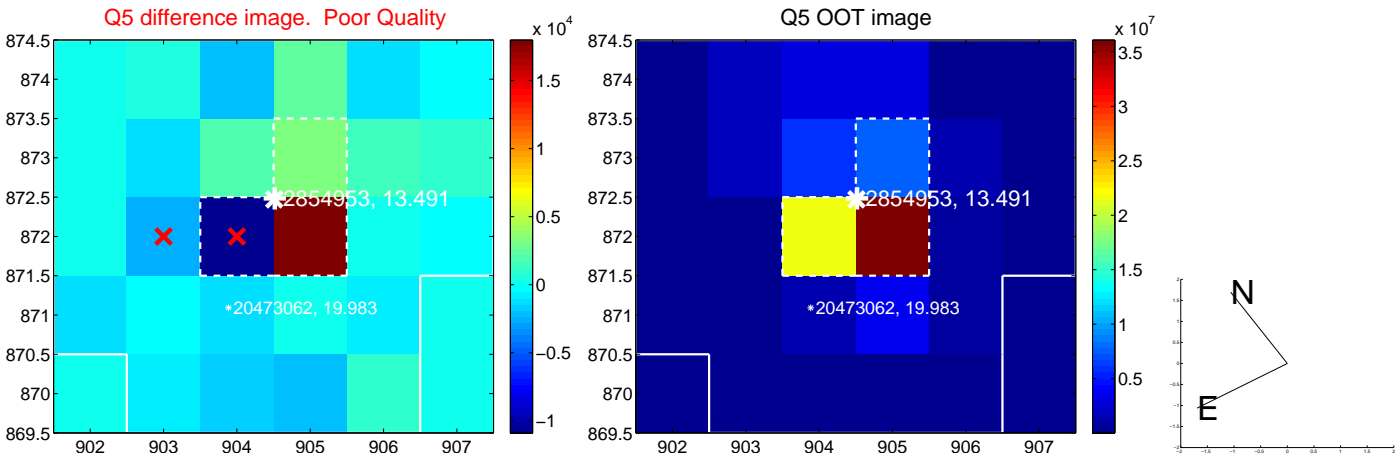


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

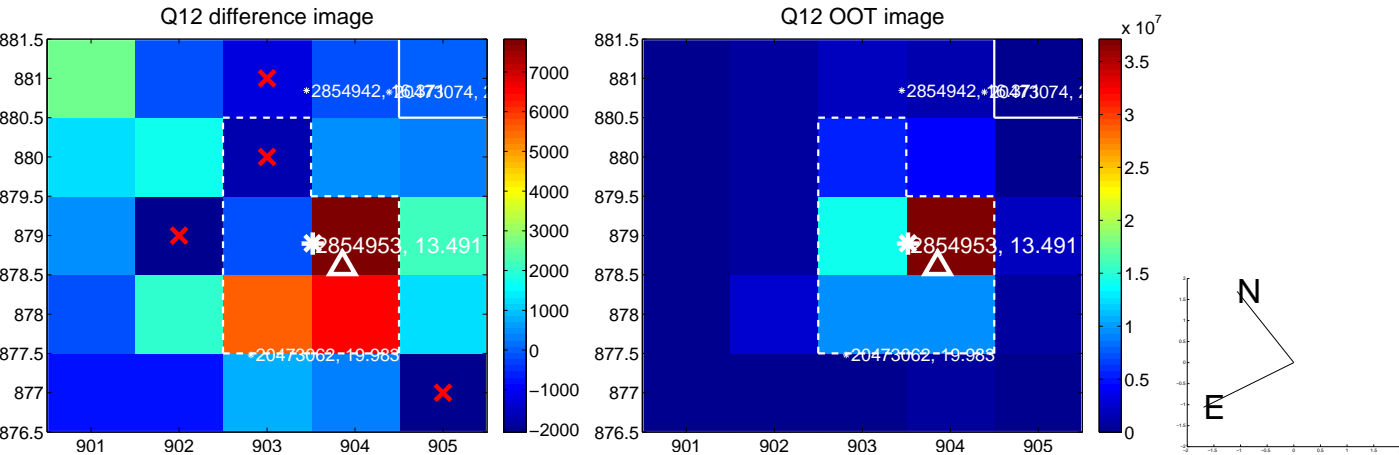
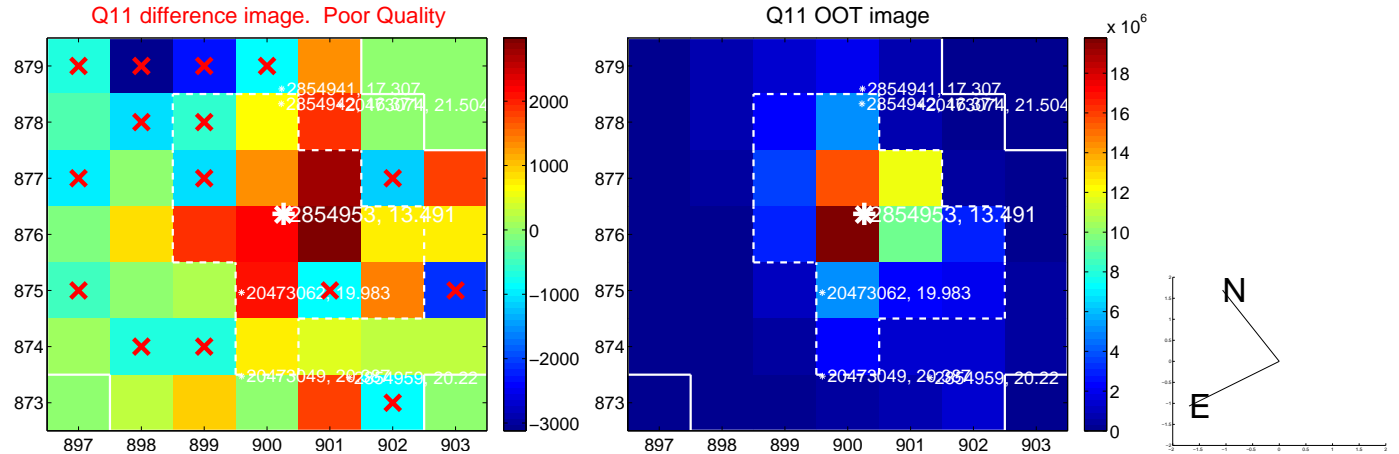
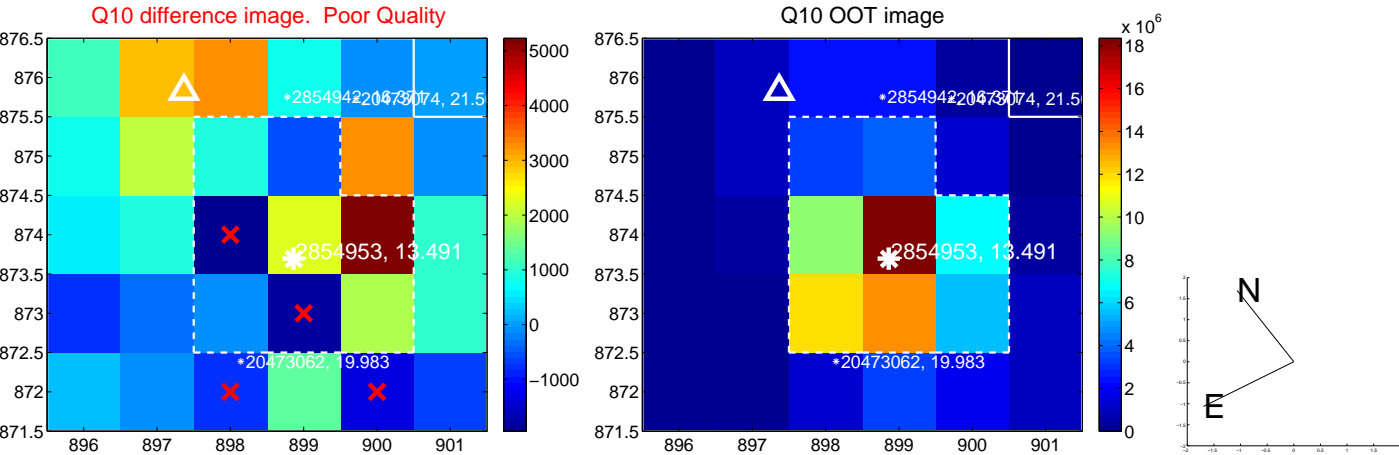
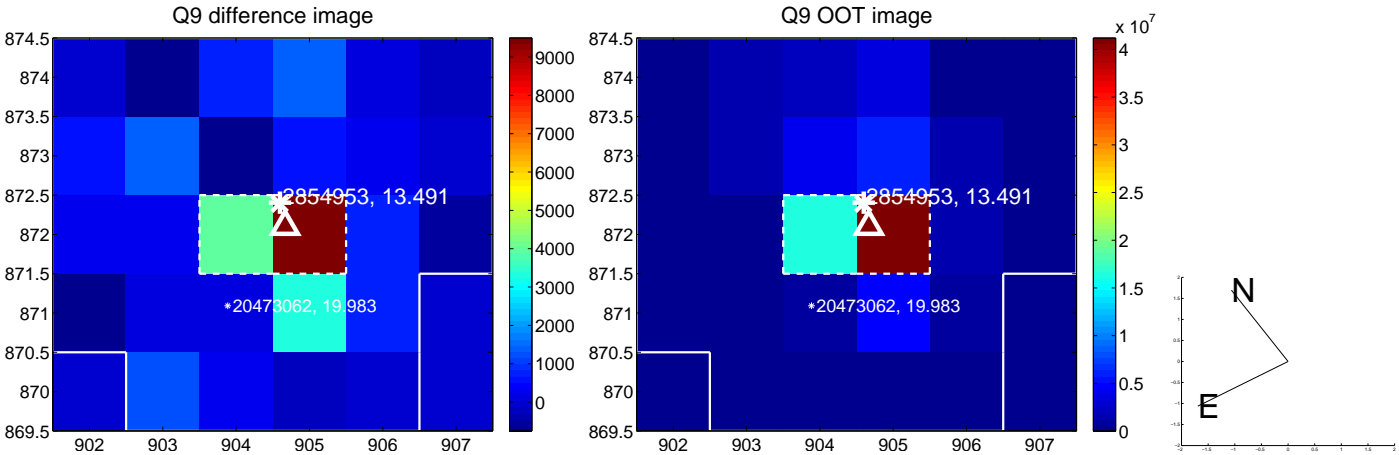
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



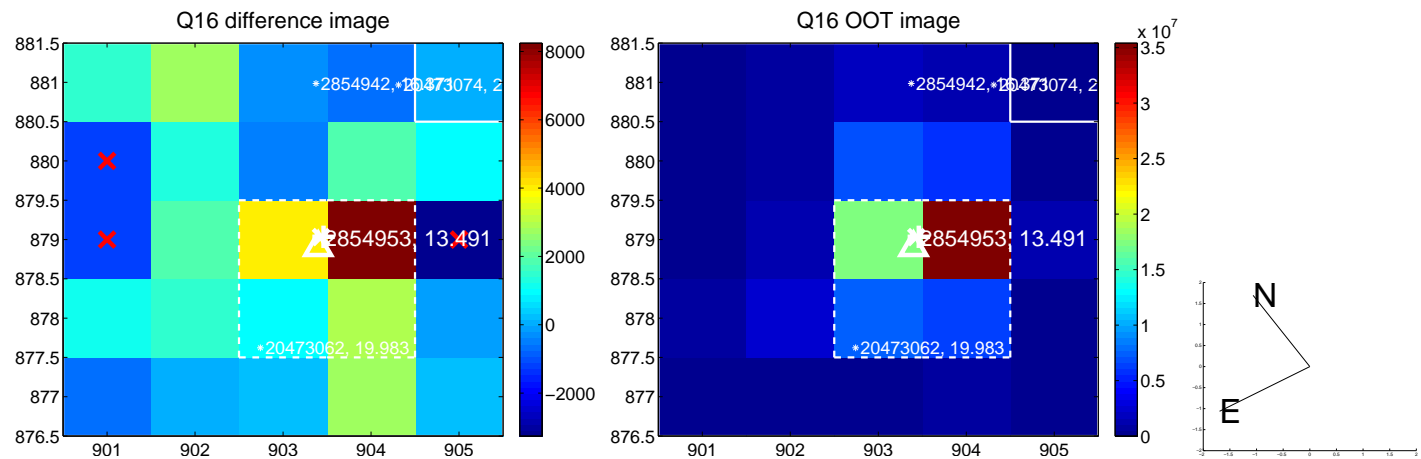
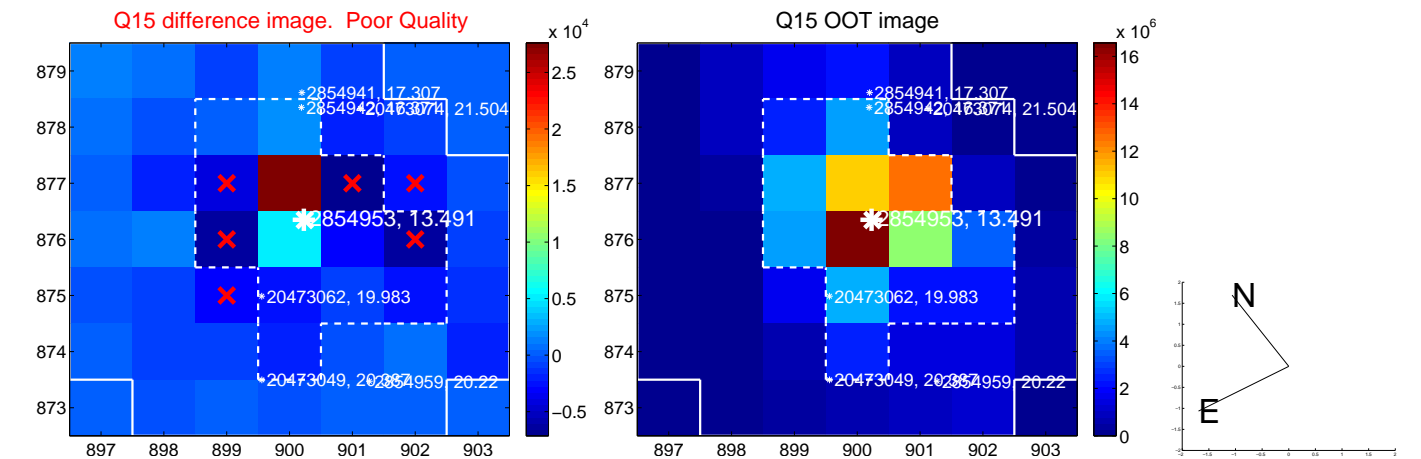
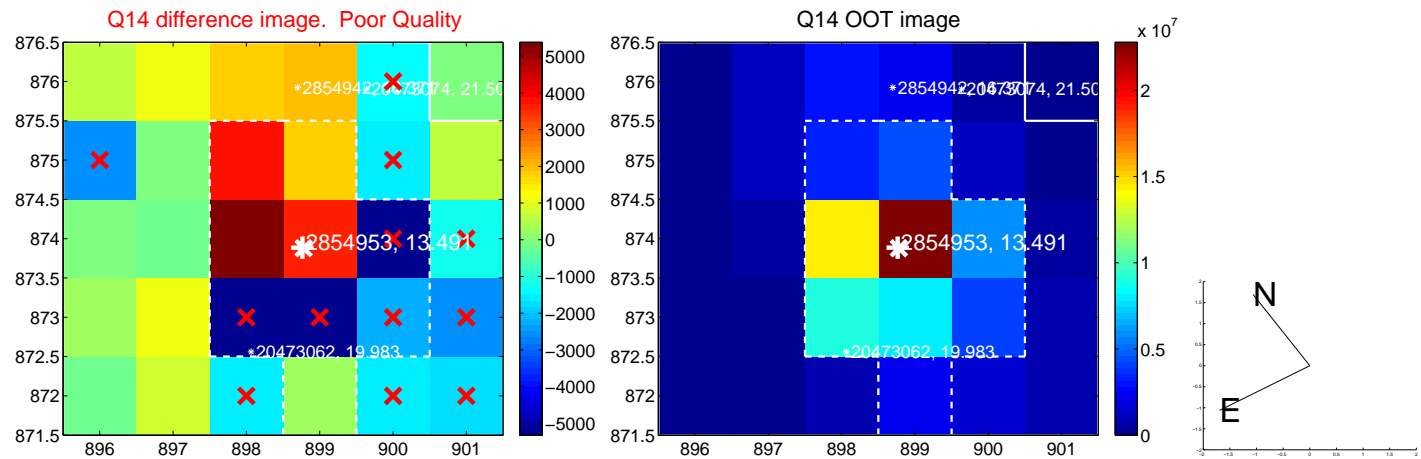
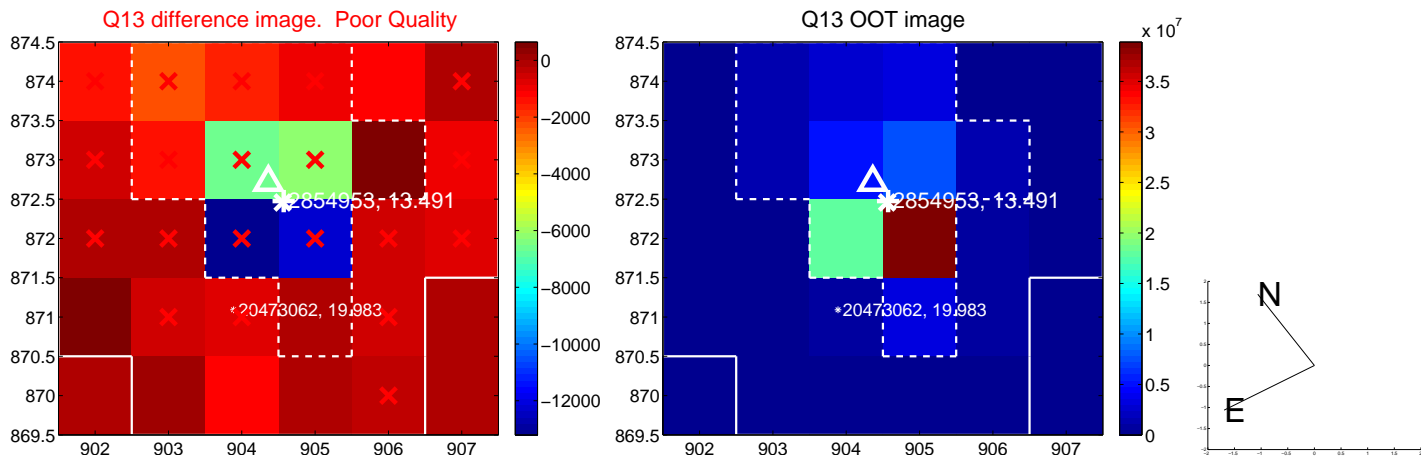
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



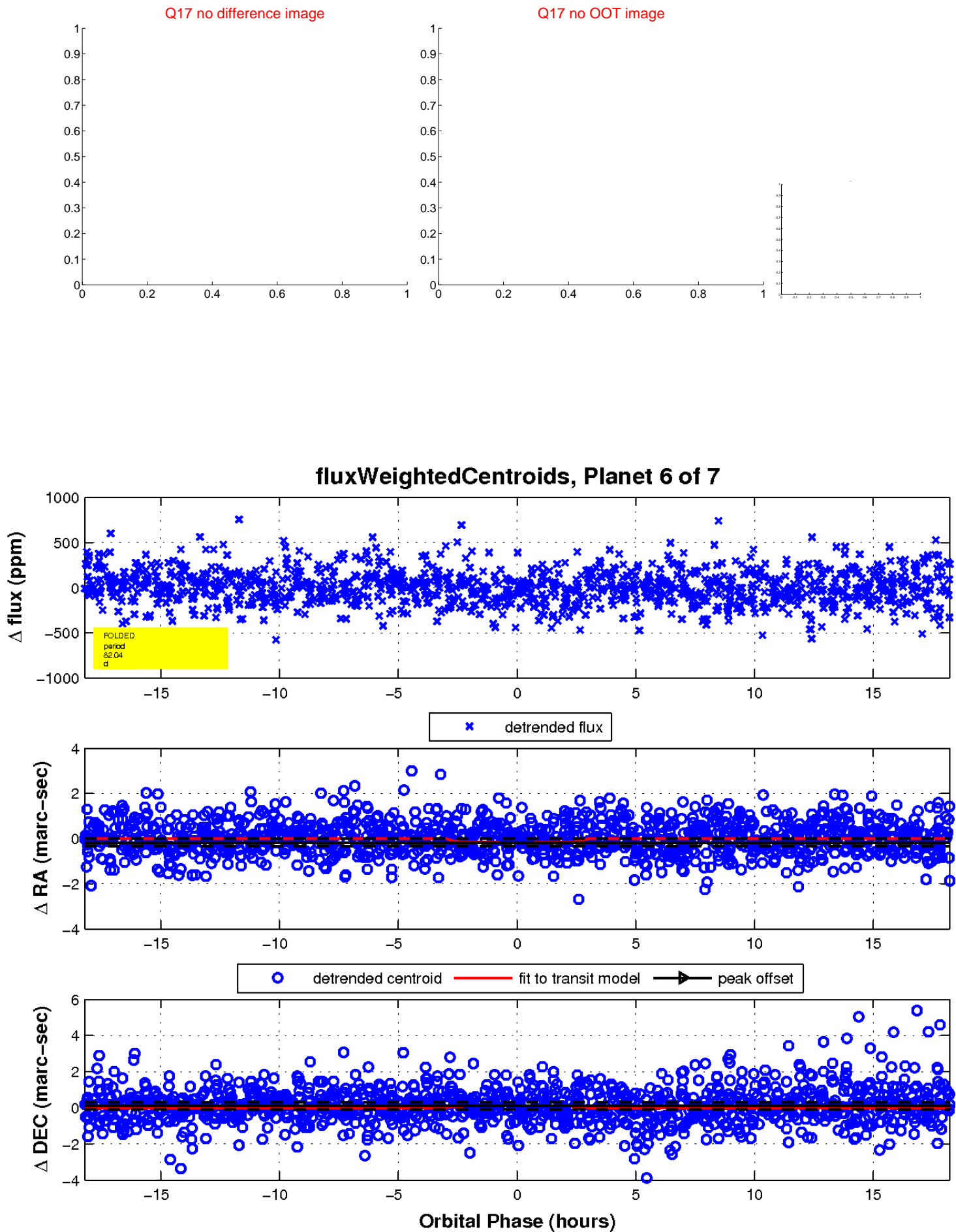
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



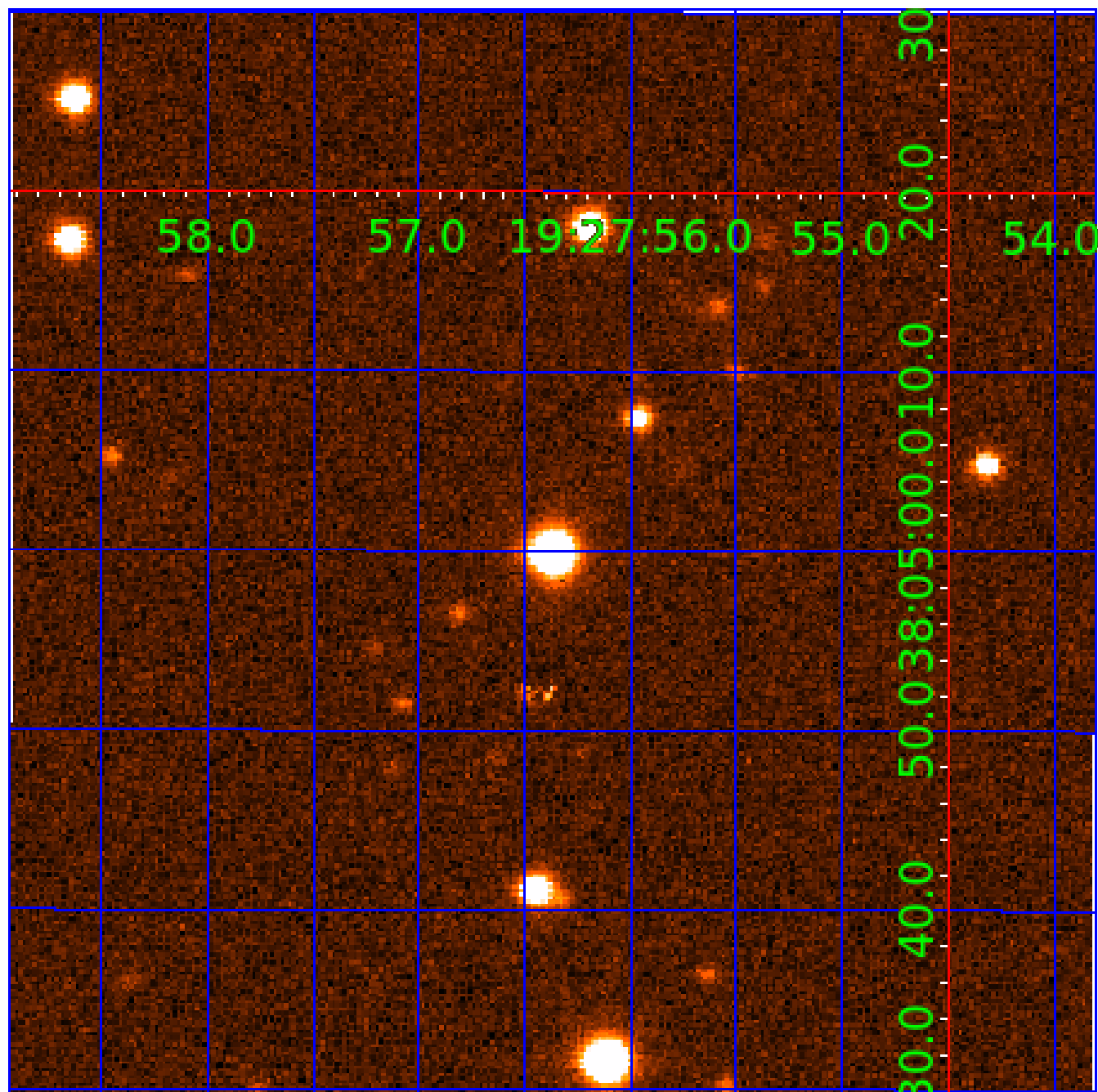
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 002854953

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
002854953-01	OBS	No	1.724690	131.957540	3.6	12.301	12.9	1.9	1.73	7392	0.35	7685.78
002854953-02	OBS	No	39.194267	155.527838	440.4	1.412	10.5	11.0	1.73	7392	3.70	119.40
002854953-03	OBS	No	21.711992	143.629034	225.3	2.139	10.6	11.3	1.73	7392	3.01	262.44
002854953-04	OBS	No	26.850442	145.650419	210.7	2.229	9.8	11.5	1.73	7392	2.92	197.71
002854953-05	OBS	No	36.967356	155.079665	277.4	1.613	8.8	9.7	1.73	7392	3.21	129.09
002854953-06	OBS	No	82.036741	159.261308	172.1	6.074	9.1	7.8	1.73	7392	2.63	44.60
002854953-07	OBS	No	31.648645	140.935509	339.1	1.534	8.7	10.3	1.73	7392	3.58	158.79

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002854953-01	OBS	FP	0.00	1	0	0	0	LPP_DV
002854953-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV
002854953-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
002854953-04	OBS	FP	0.00	1	0	1	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS—HALO_GHOST
002854953-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002854953-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
002854953-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS—HALO_GHOST

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

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

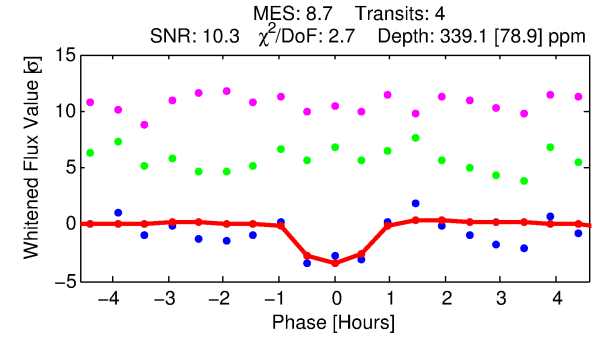
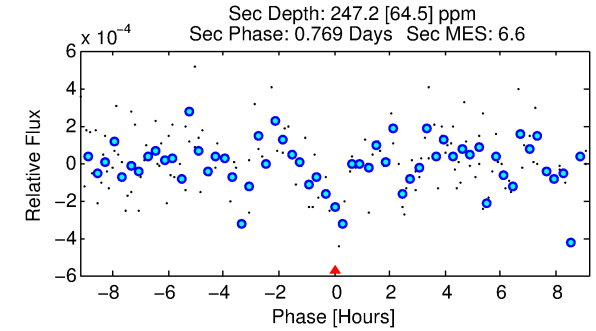
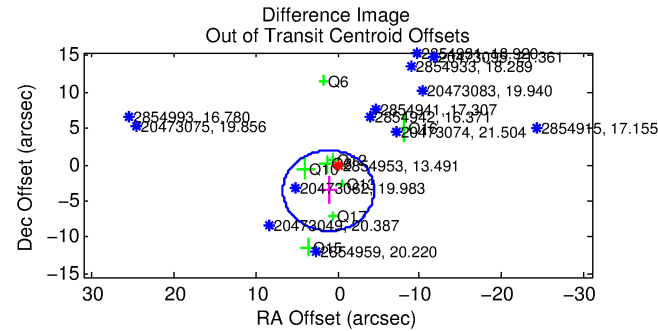
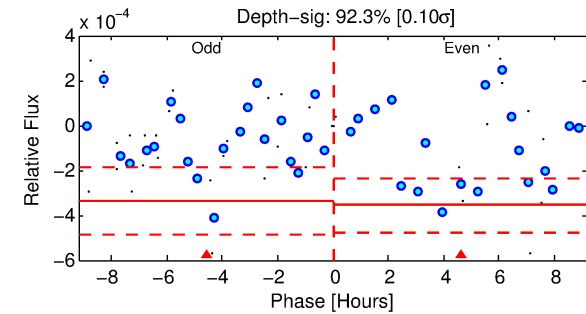
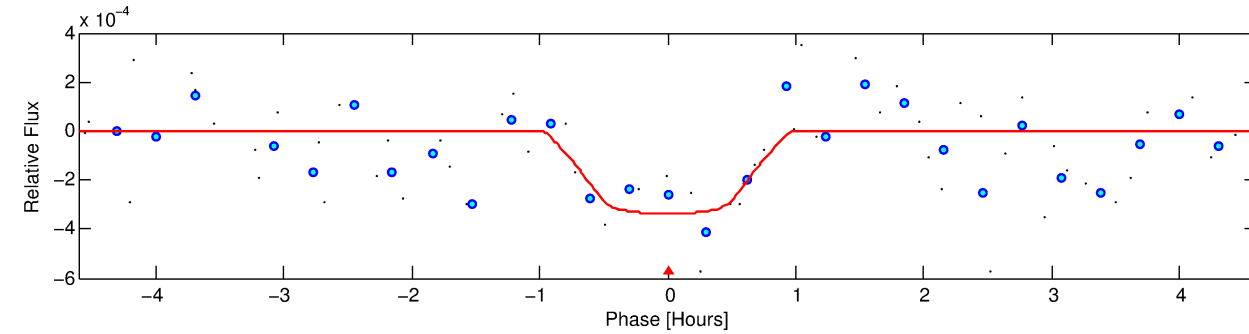
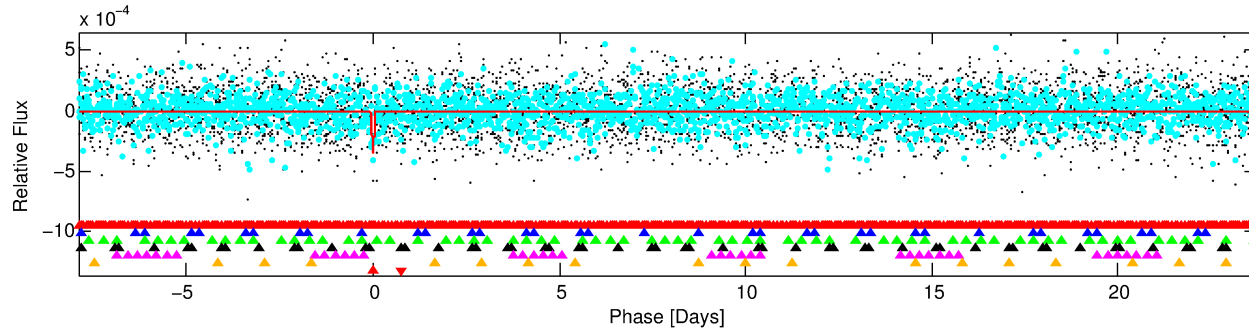
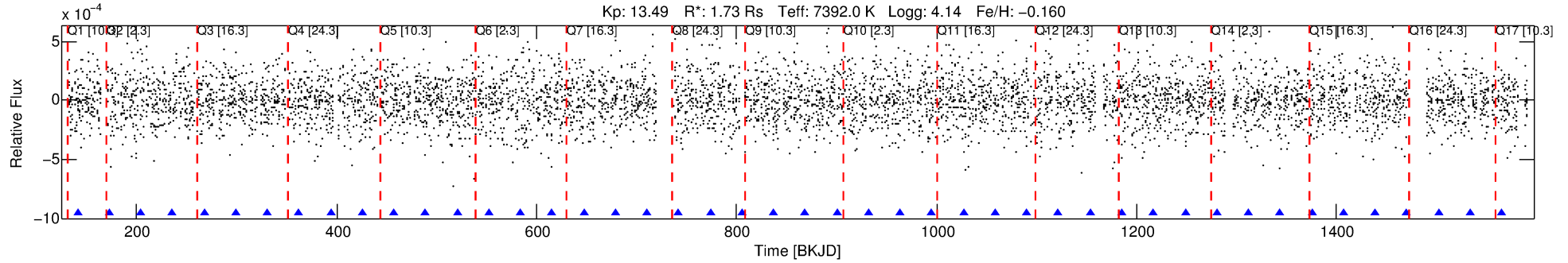
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 002854953-07

No Significant Match Found

# DV One-Page Summary

KIC: 2854953 Candidate: 7 of 7 Period: 31.649 d



## DV Fit Results:

Period = 31.64864 [0.00052] d  
Epoch = 140.9355 [0.0135] BKJD  
Rp/R\* = 0.0190 [0.0346]  
a/R\* = 90.67 [948.11]  
b = 0.84 [3.73]  
Seff = 158.79 [59.78]  
Teq = 905 [85] K  
Rp = 3.58 [6.61] Re  
a = 0.2240 [0.0546] AU  
Ag = 532.68 [1953.04] [0.27 $\sigma$ ]  
Teffp = 6723 [6143] K [0.95 $\sigma$ ]

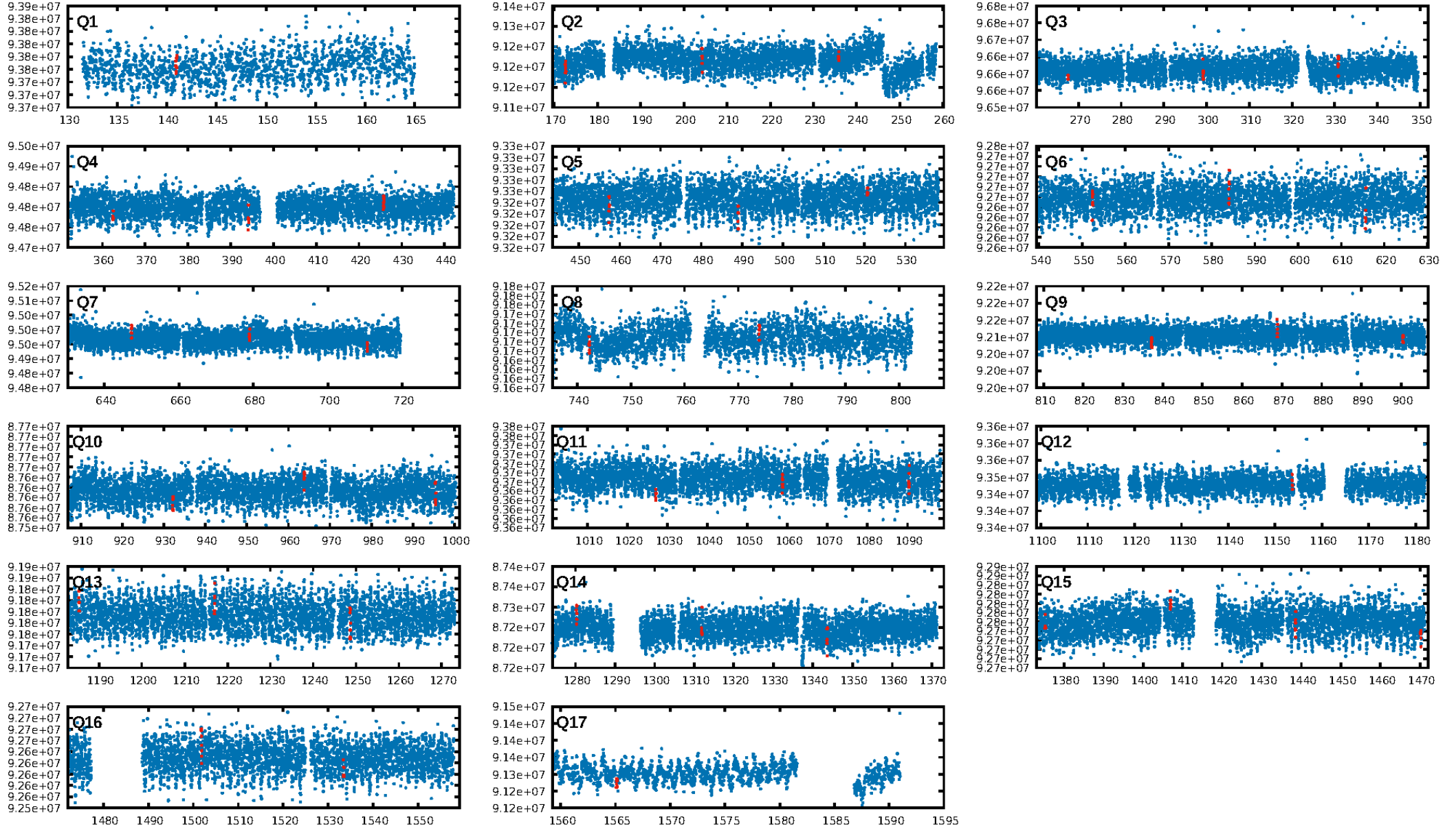
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [42.55 $\sigma$ ]  
LongPeriod-sig: 100.0% [57.34 $\sigma$ ]  
ModelChiSquare2-sig: 98.1%  
ModelChiSquareGof-sig: 96.5%  
**Bootstrap-pfa: 8.22e-07**  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 0.2392  
Centroid-sig: 36.8%  
Centroid-so: 0.579 arcsec [0.94 $\sigma$ ]  
OotOffset-rm: 3.767 arcsec [2.03 $\sigma$ ]  
OotOffset-st: 2/2/2/2 [8]  
KicOffset-rm: 3.737 arcsec [1.47 $\sigma$ ]  
KicOffset-st: 2/2/2/2 [8]  
DiffImageQuality-fgm: 0.00 [0/8]  
DiffImageOverlap-fno: 0.65 [11/17]

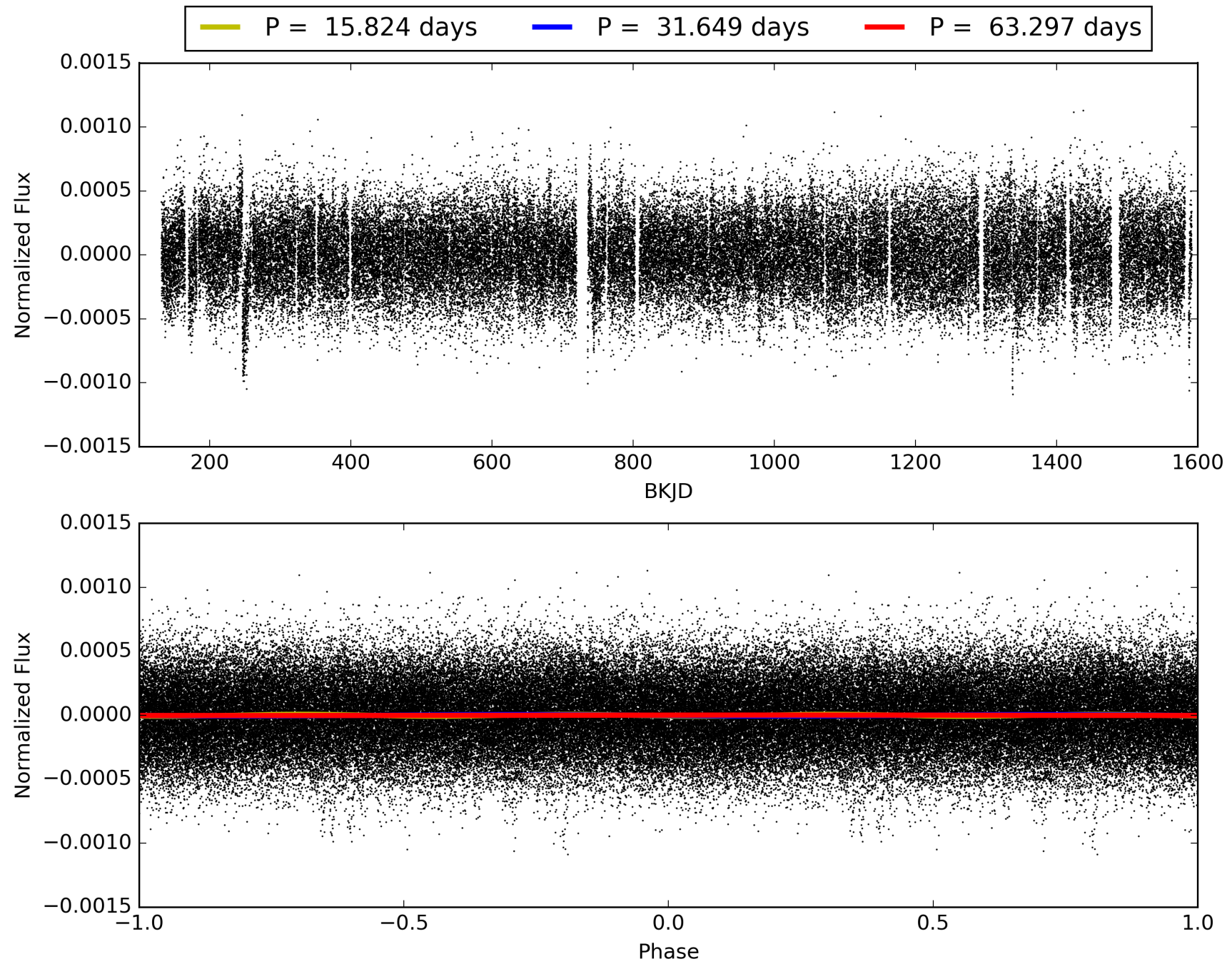
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:19:22 Z

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

# TCE 002854953-07, PDC Light Curves

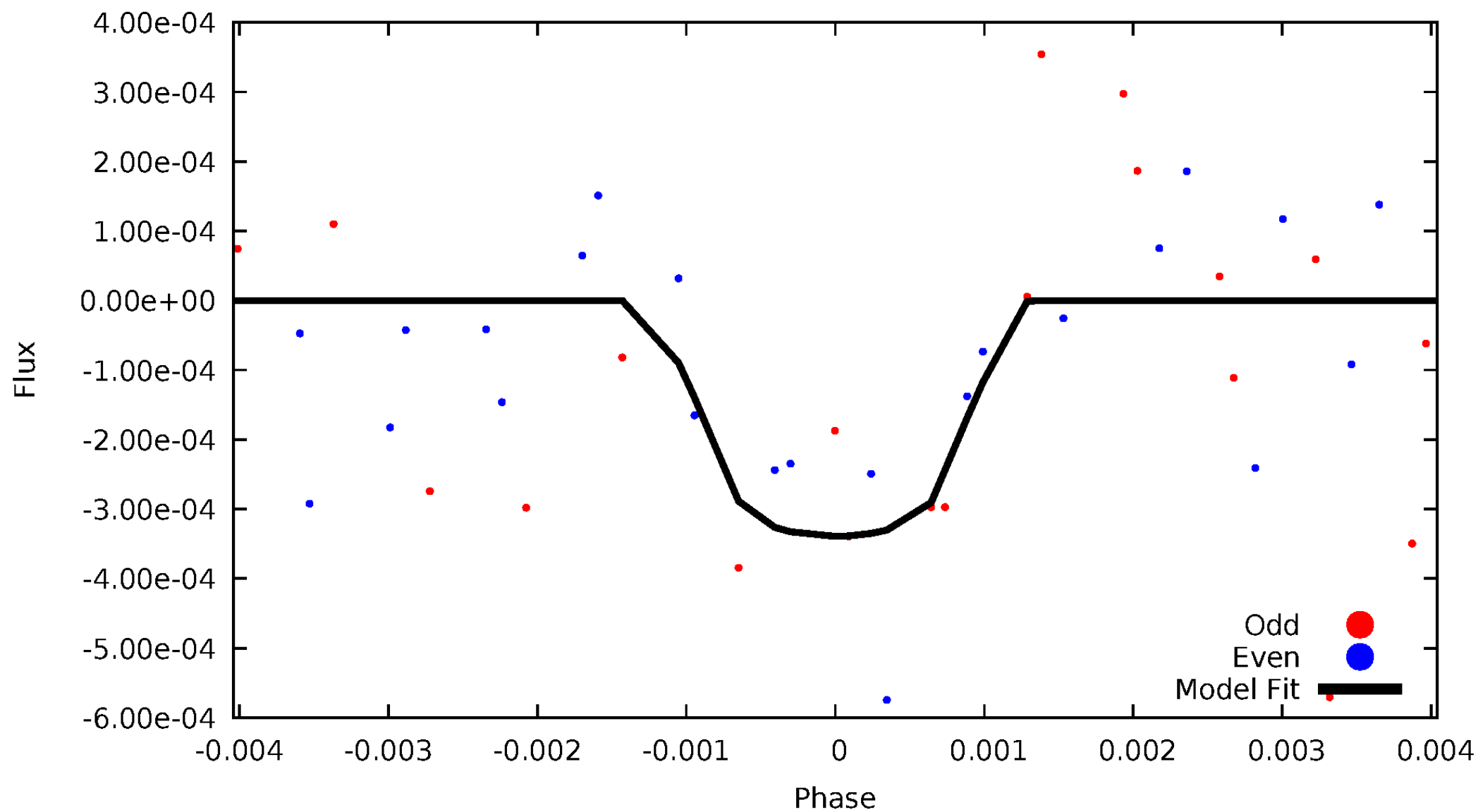


TCE 002854953-07



# DV Odd/Even

TCE 002854953-07





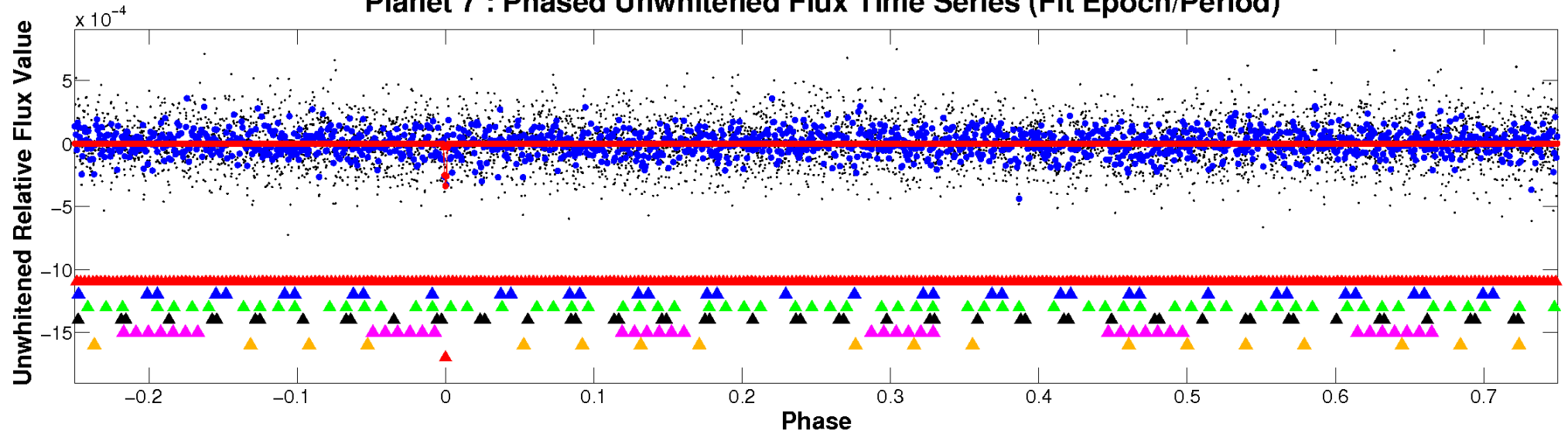
ALT Odd/Even

This plot does not exist for this TCE.

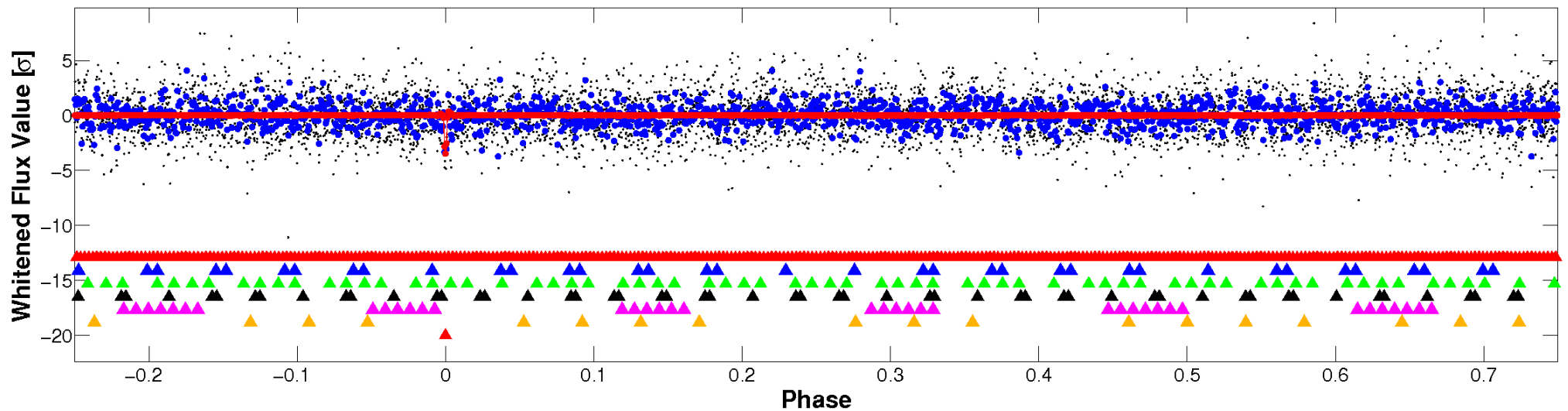


# Non-Whitened Vs. Whitened Light Curve

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

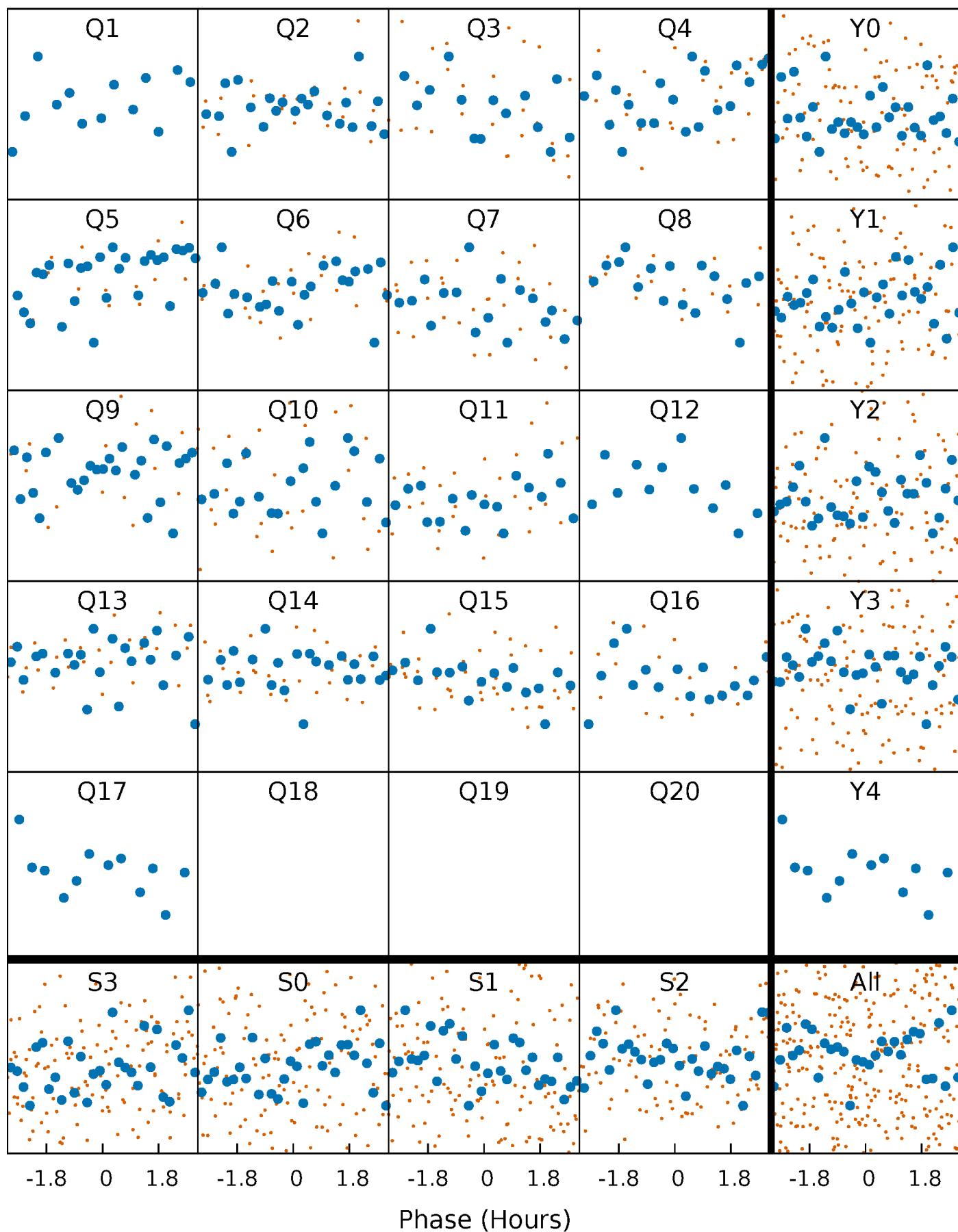


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



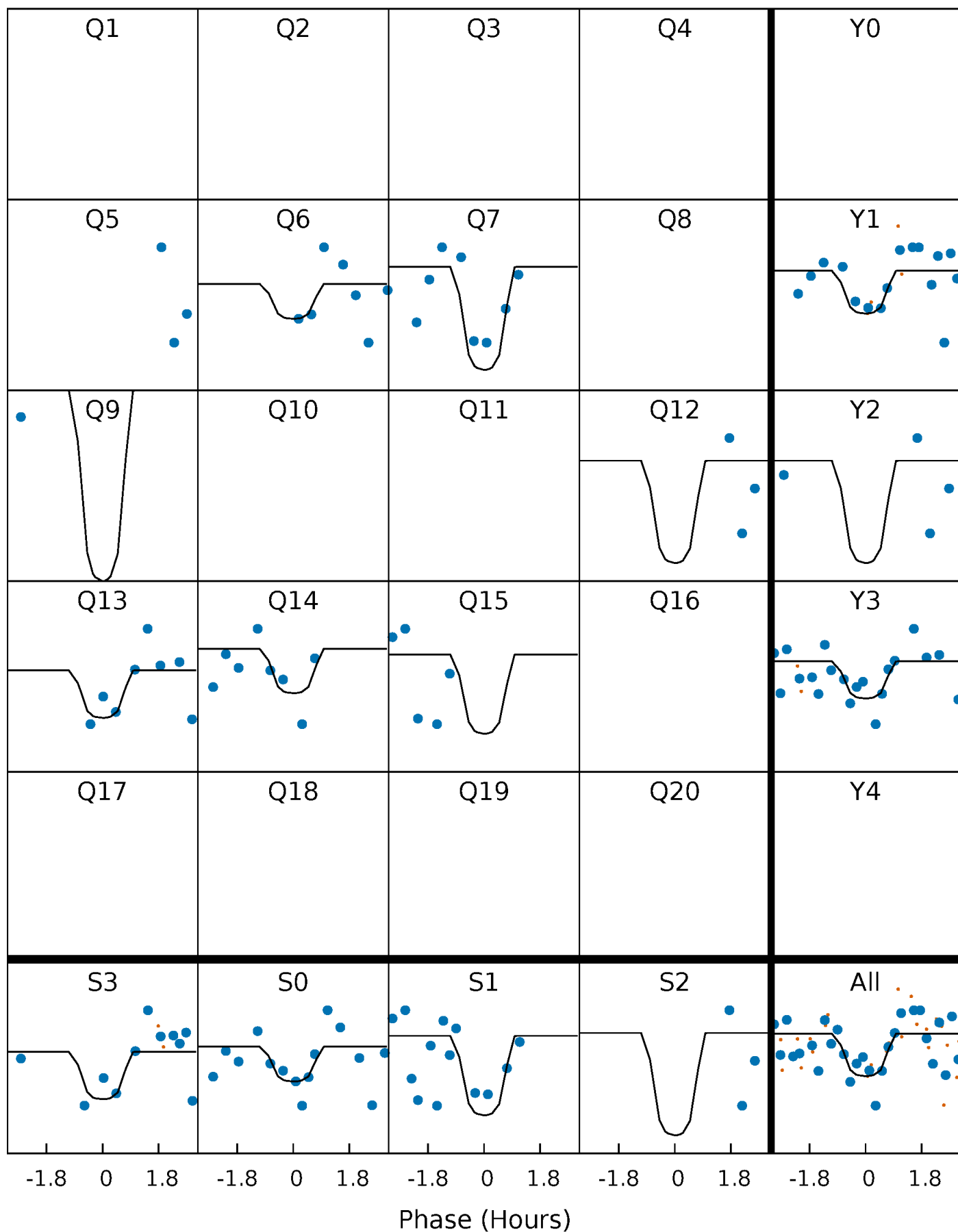
# PDC Quarter-Phased Transit Curves

TCE 002854953-07     $P = 31.648645$  Days     $T_0 = 140.935509$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 002854953-07     $P = 31.648645$  Days     $T_0 = 140.935509$  (BKJD)

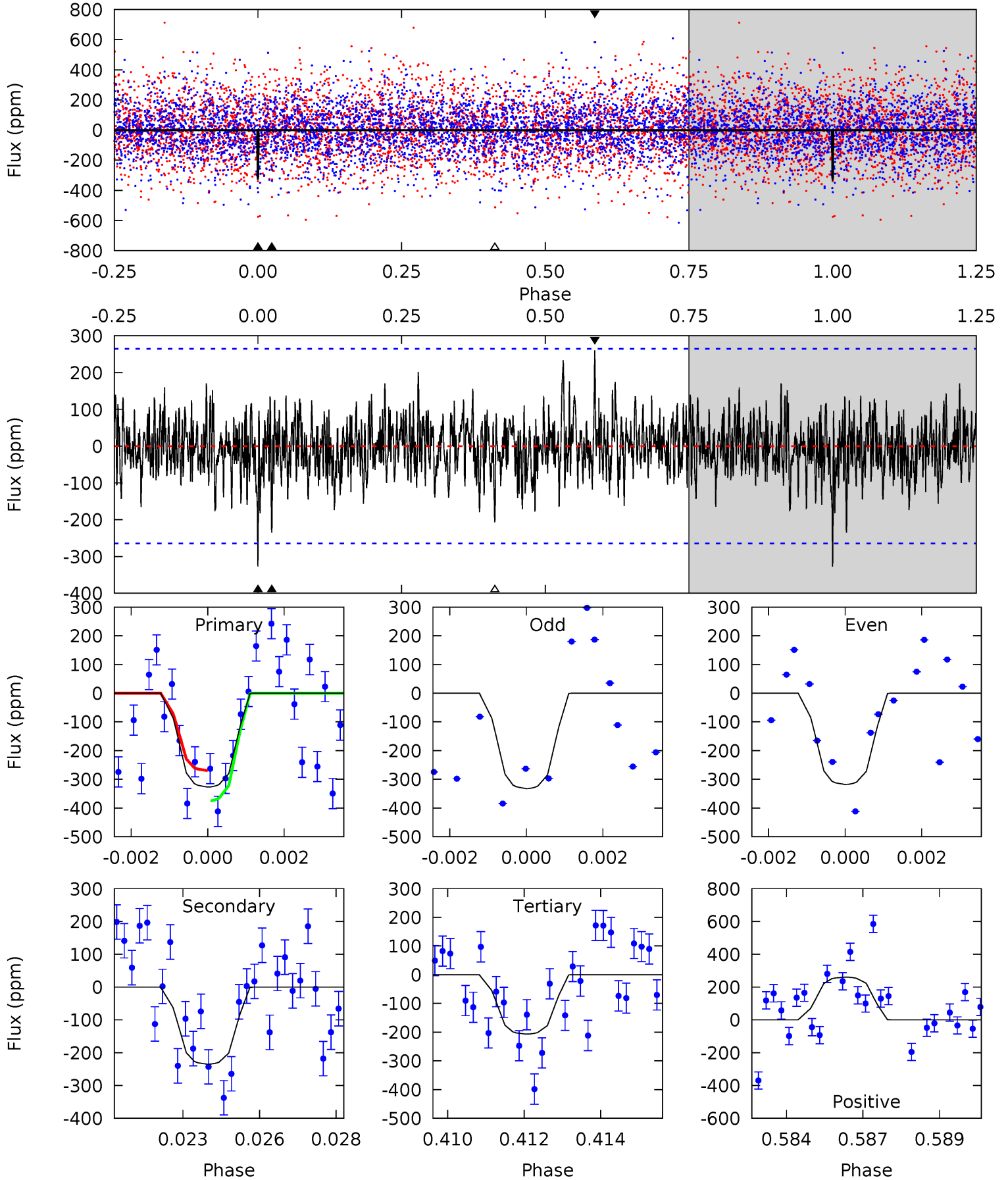


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

002854953-07, P = 31.648645 Days, E = 109.286864 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.55	4.71	4.14	5.21	5.30	3.04	1.24	2.41	1.33	0.57	-0.51	0.14	0.98	0.44	1.00



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 002854953

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$7392^{+230}_{-307}$	$4.139^{+0.144}_{-0.176}$	$-0.160^{+0.250}_{-0.350}$	$1.726^{+0.525}_{-0.350}$	$1.493^{+0.209}_{-0.232}$	$0.409^{+0.315}_{-0.208}$
	+3%/-4%	+3%/-4%	+156%/-219%	+30%/-20%	+14%/-16%	+77%/-51%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 002854953-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-235 \pm 50$	$6.29^{+5.39}_{-4.47}$	$1264^{+94}_{-82}$	$5006^{+4426}_{-1074}$	$166^{+1706}_{-122}$
Alt.	N/A	N/A	N/A	N/A	N/A

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

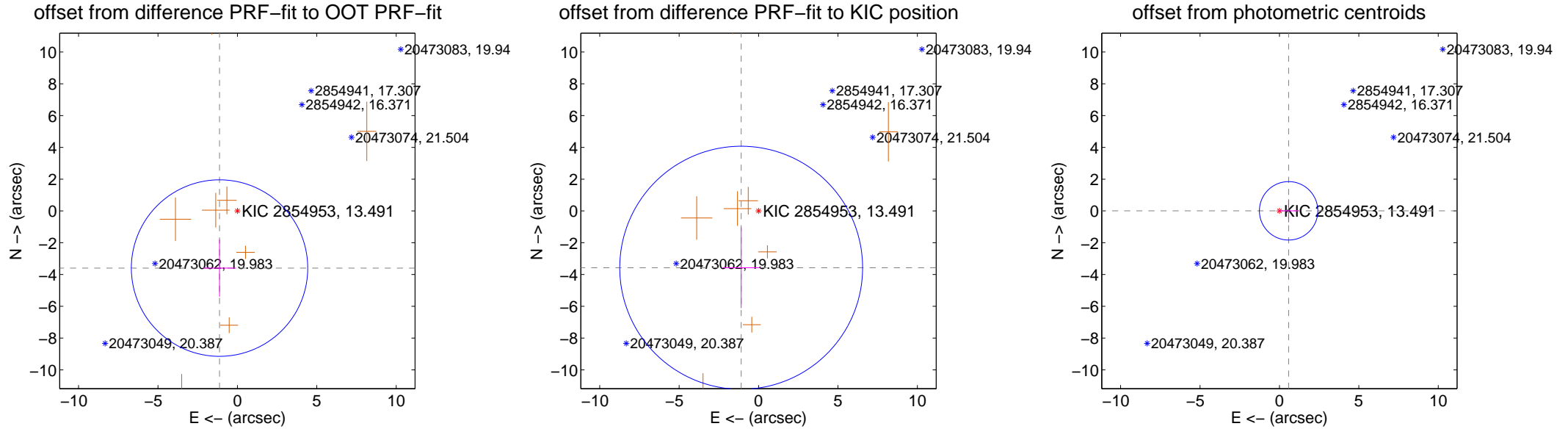
## DV Centroid Data

Supplemental centroid analysis for 002854953-07. Kepler magnitude: 13.49. Transit SNR 10.27

There are 0 quarters with good PRF difference image offsets

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

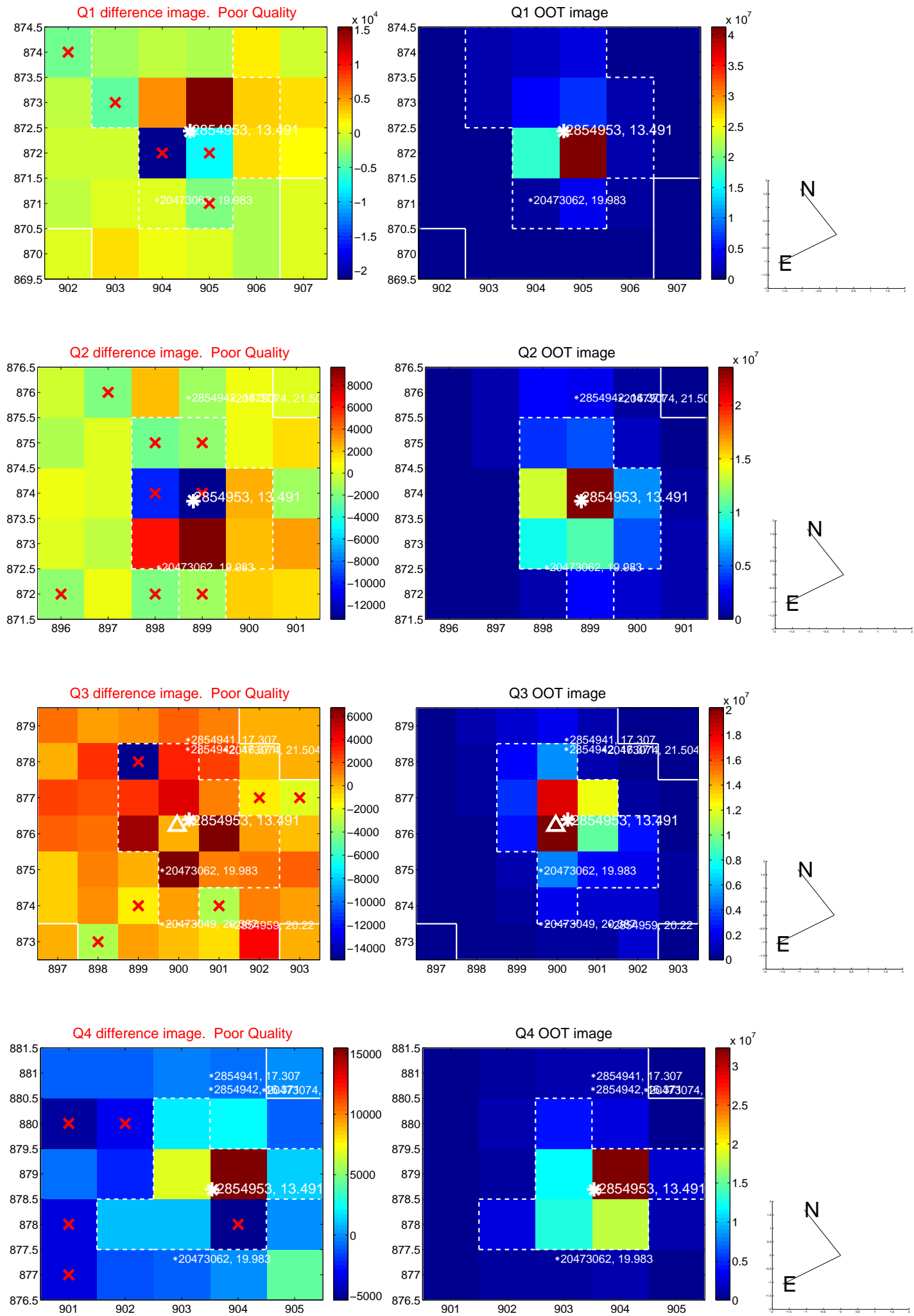
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.767 \pm 1.851$	2.03	$1.124 \pm 1.034$	$-3.595 \pm 1.799$
PRF-fit source offset from KIC position	$3.737 \pm 2.549$	1.47	$1.094 \pm 1.164$	$-3.574 \pm 2.536$
photometric centroid source offset	$0.58 \pm 0.61$	0.94	$-0.58 \pm 0.61$	$0.01 \pm 0.72$



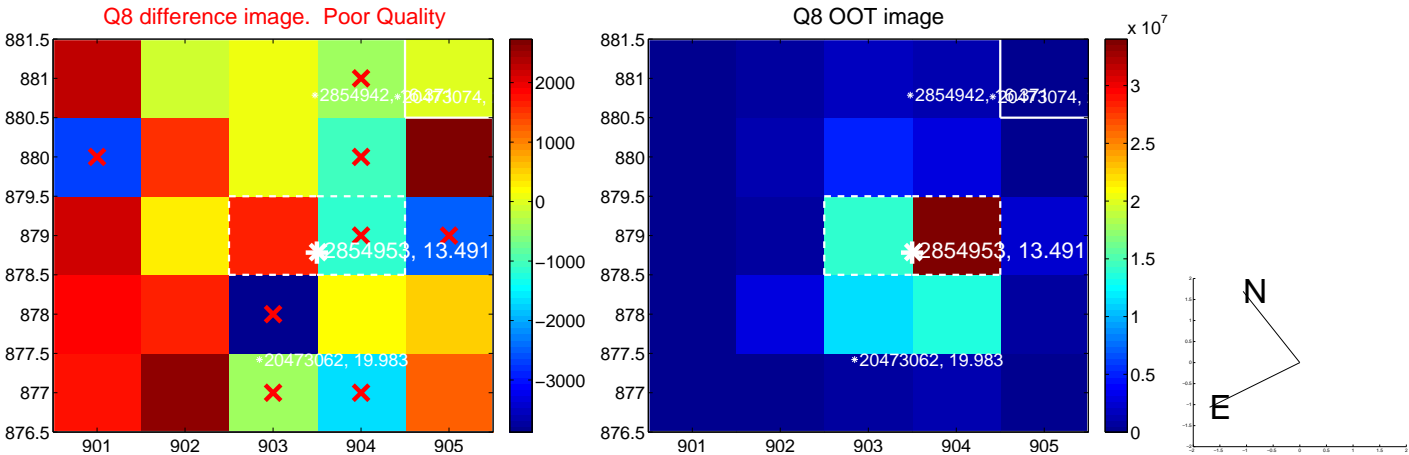
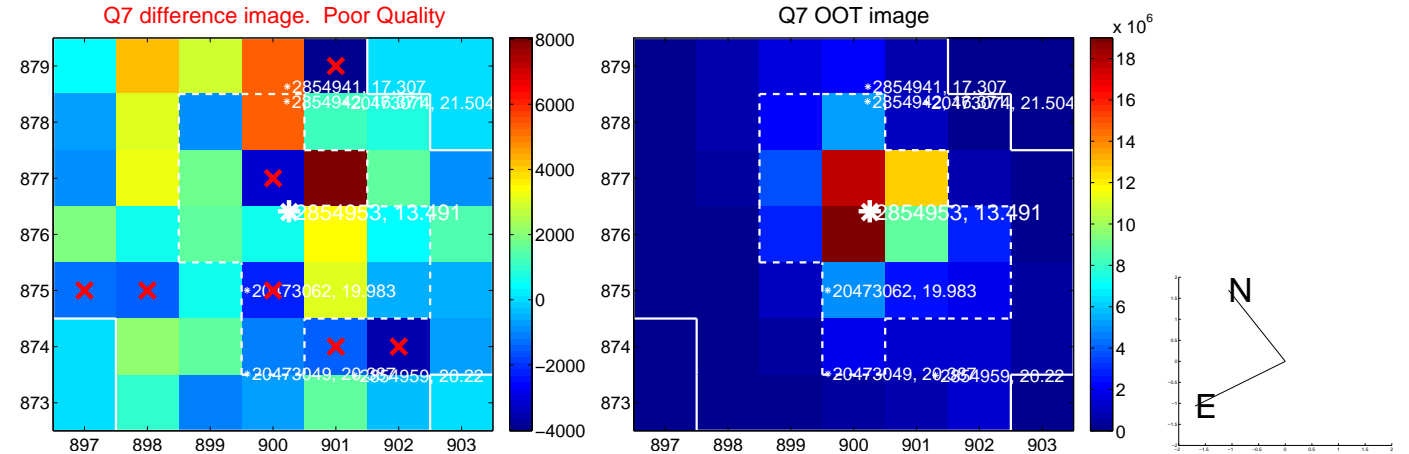
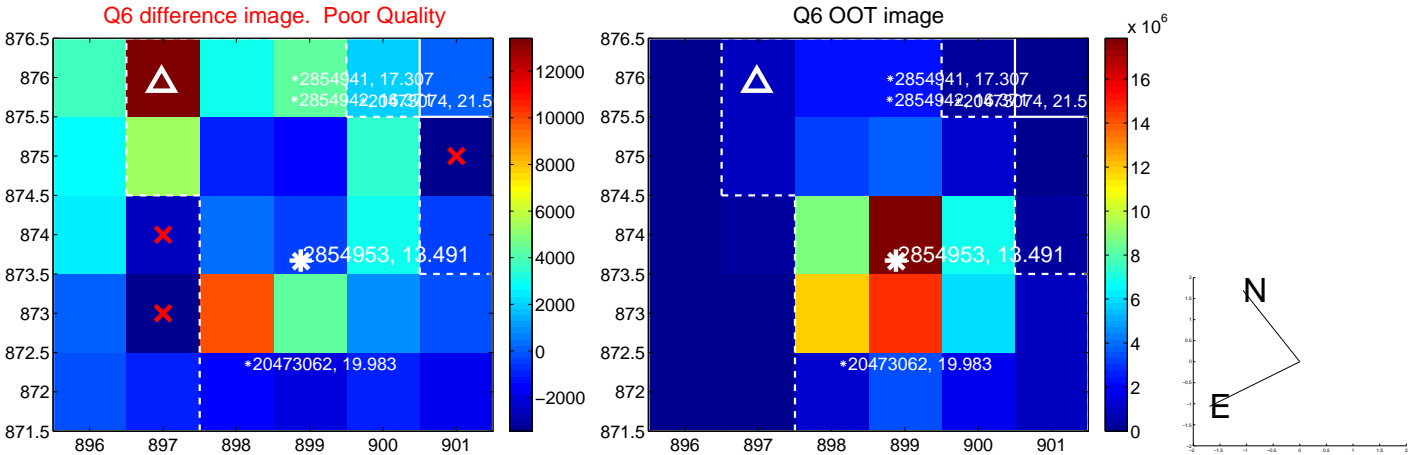
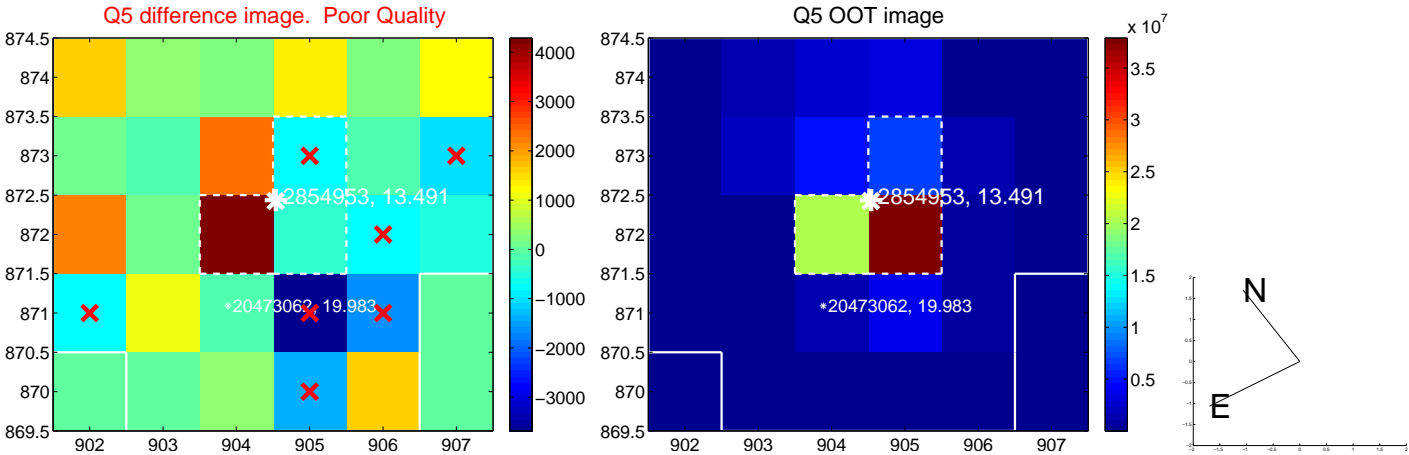
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



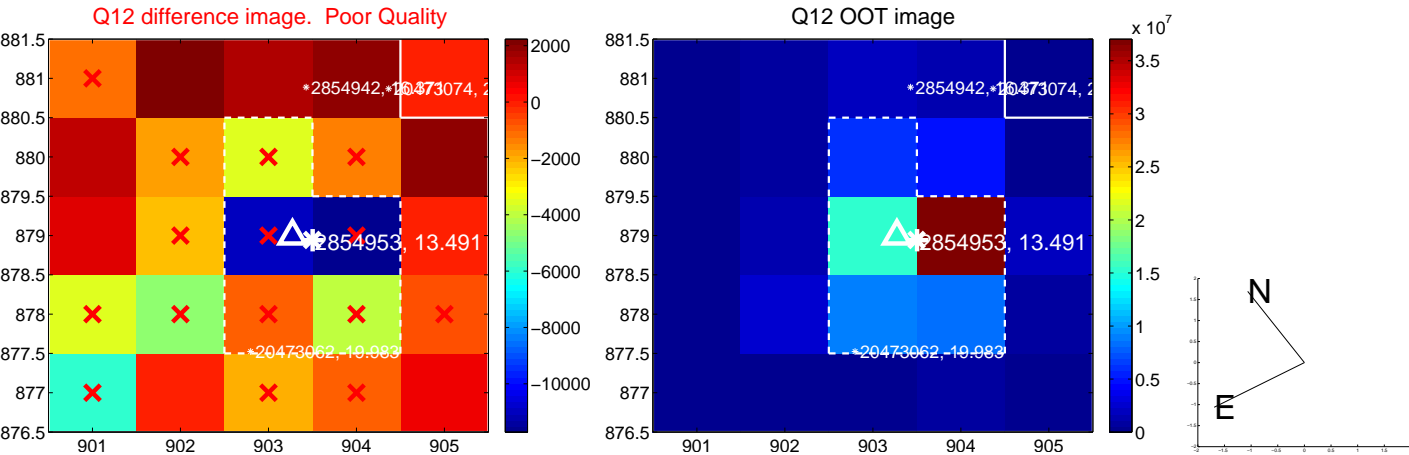
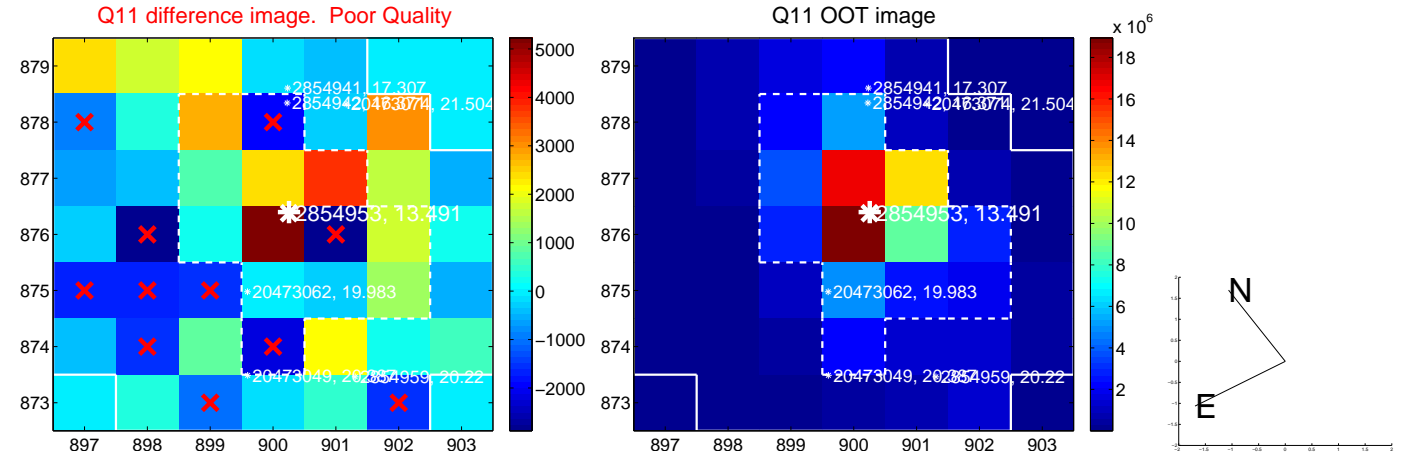
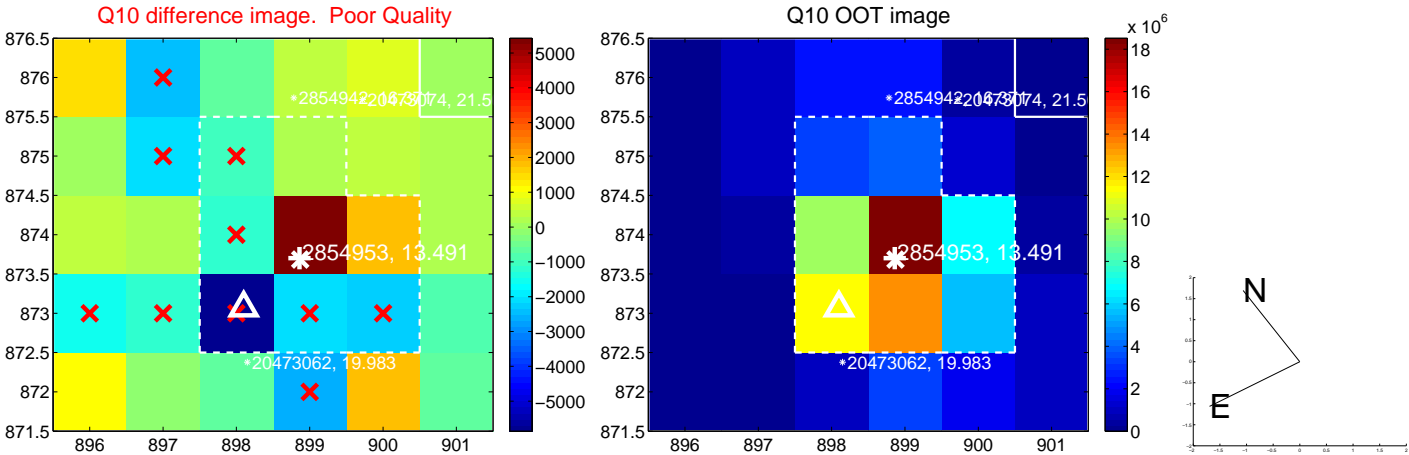
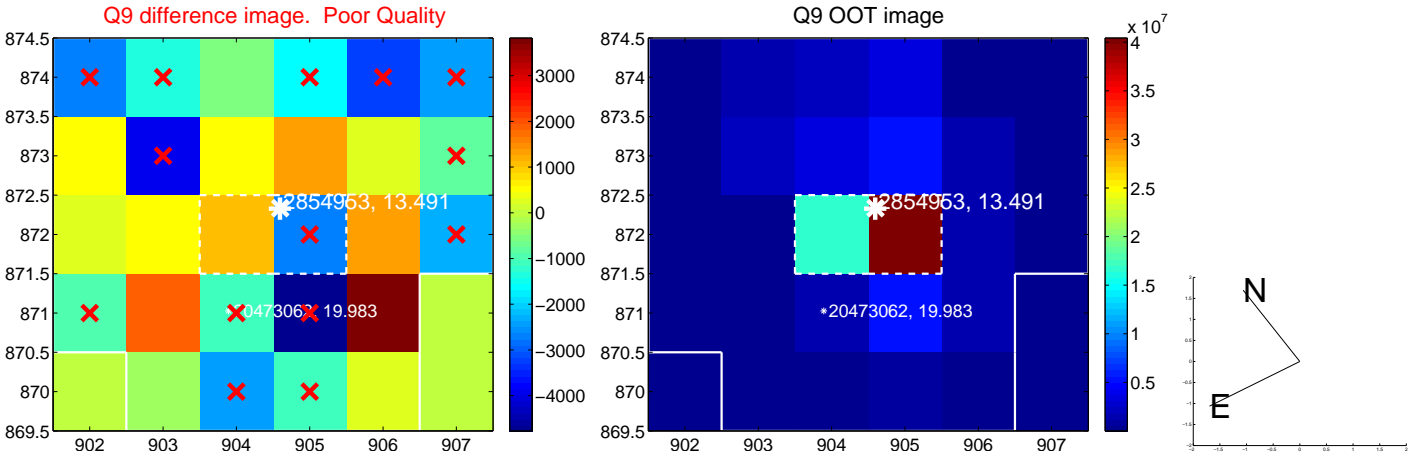
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



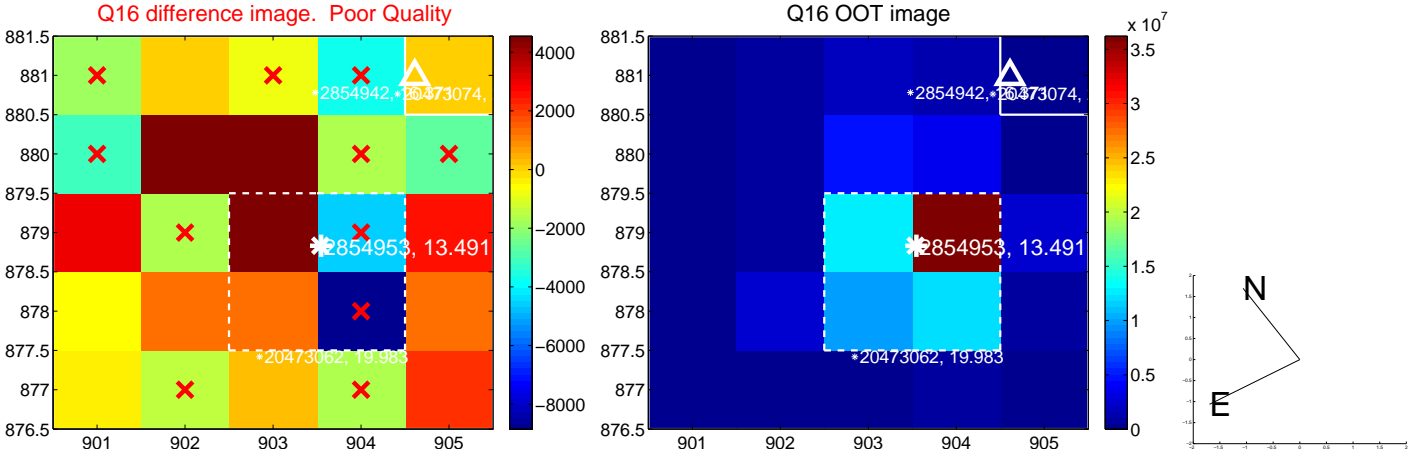
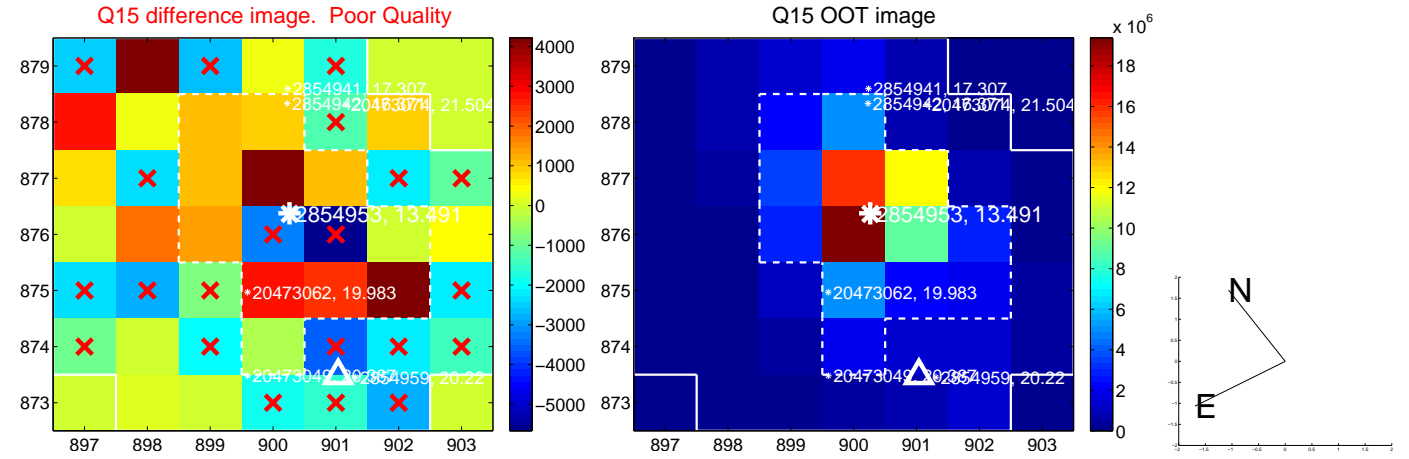
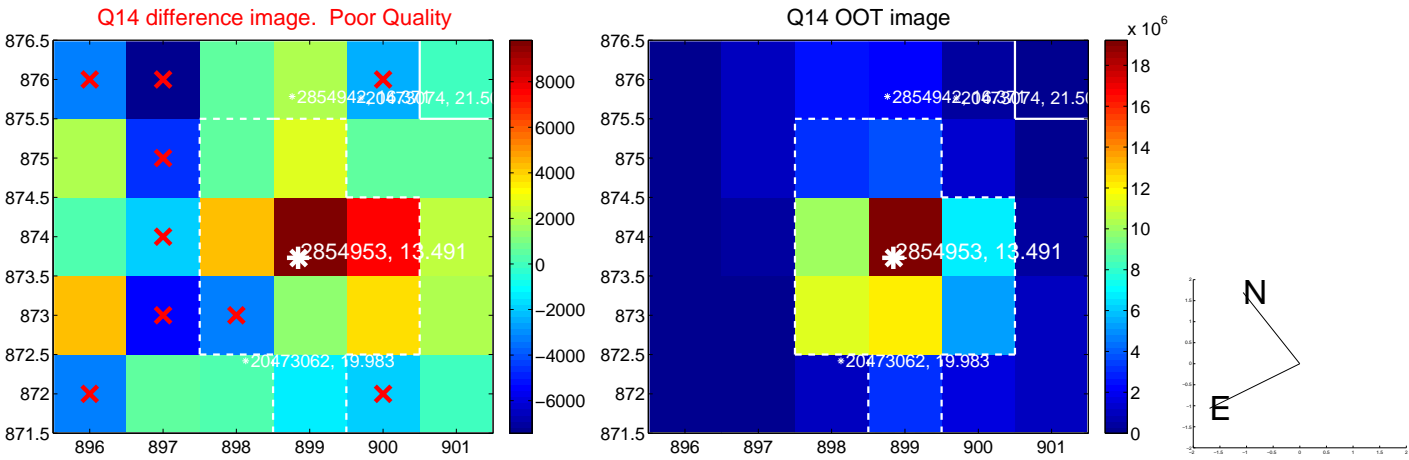
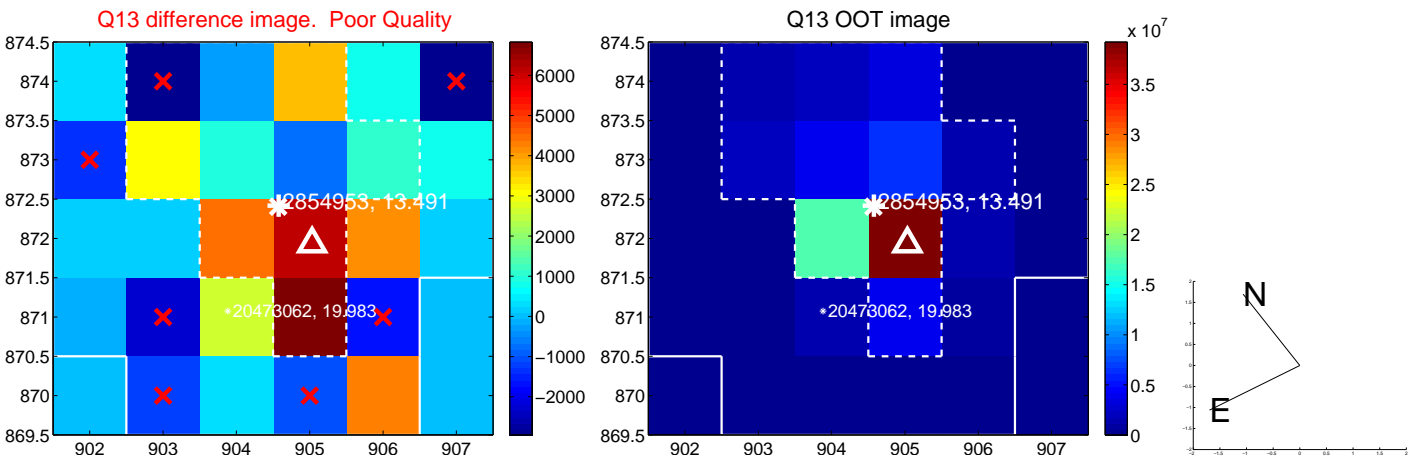
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



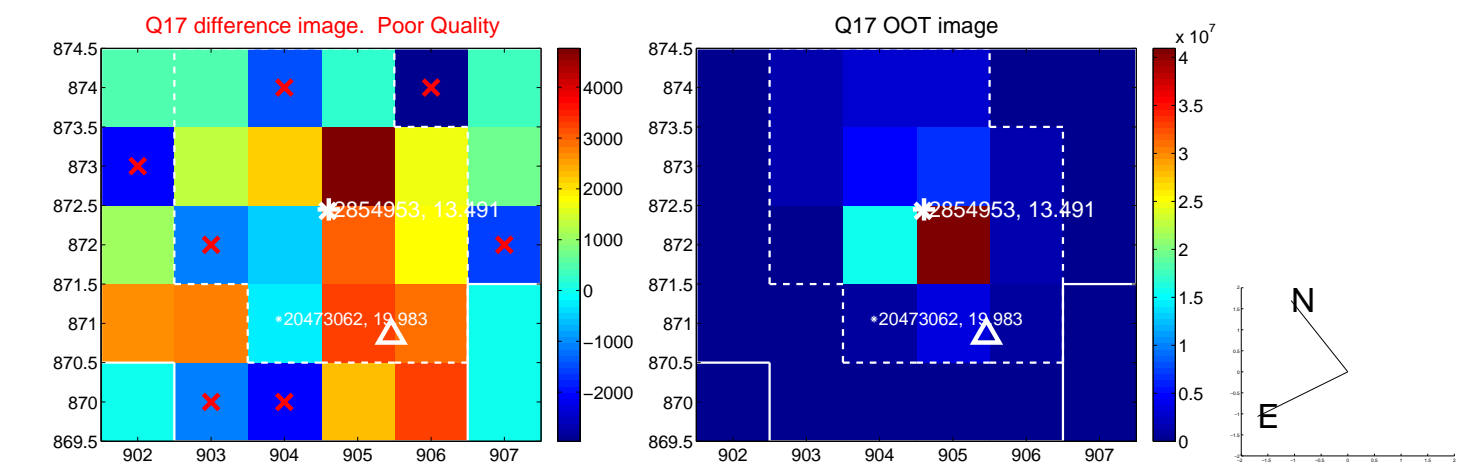
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



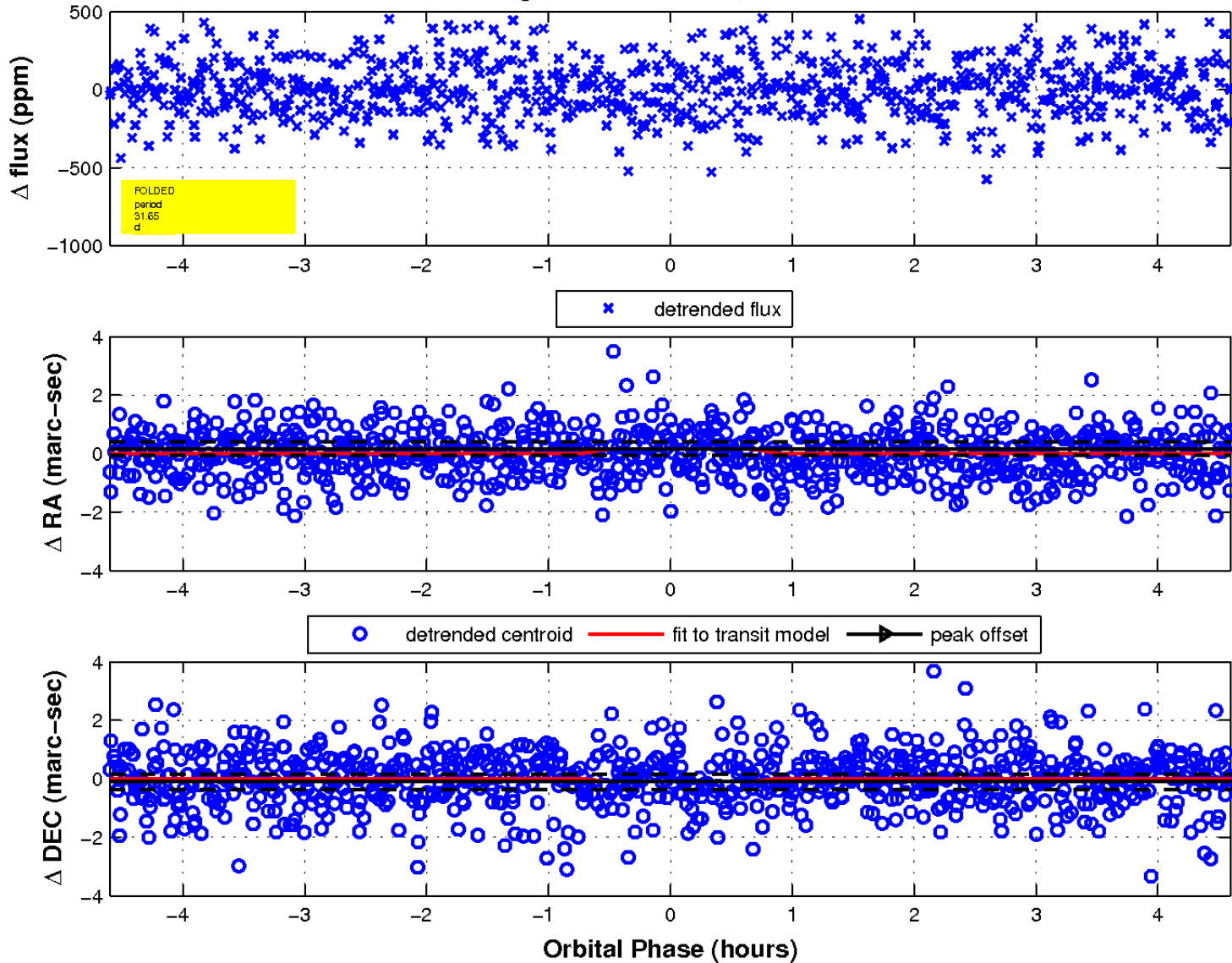
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



### fluxWeightedCentroids, Planet 7 of 7



UKIRT Image

Declination

