

# KIC 007502608

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007502608-01	OBS	No	0.728064	132.116531	18.1	5.186	7.2	7.0	0.49	4390	0.22	507.37
007502608-02	OBS	No	50.391271	173.637283	1923.4	1.813	14.3	10.8	0.49	4390	2.22	1.78
007502608-03	OBS	No	40.741440	151.504948	1481.5	2.000	13.2	-1.0	0.49	4390	1.87	2.37
007502608-05	OBS	No	15.856753	137.039151	403.8	4.745	17.2	6.5	0.49	4390	1.17	8.34
007502608-06	OBS	No	33.994192	139.375761	278.7	8.062	11.2	4.0	0.49	4390	0.88	3.02
007502608-07	OBS	No	47.068117	169.666095	1915.9	1.379	10.8	10.9	0.49	4390	2.27	1.96

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007502608-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
007502608-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007502608-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007502608-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007502608-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
007502608-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS

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

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

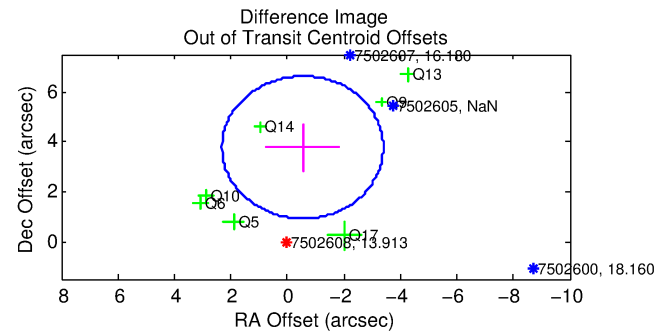
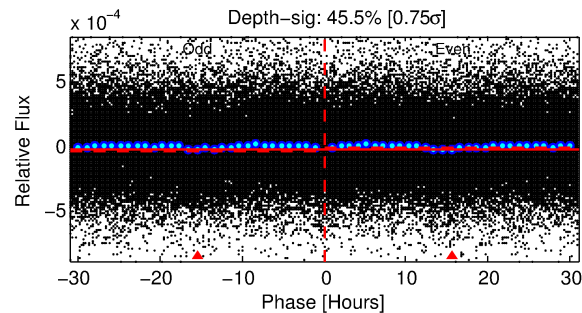
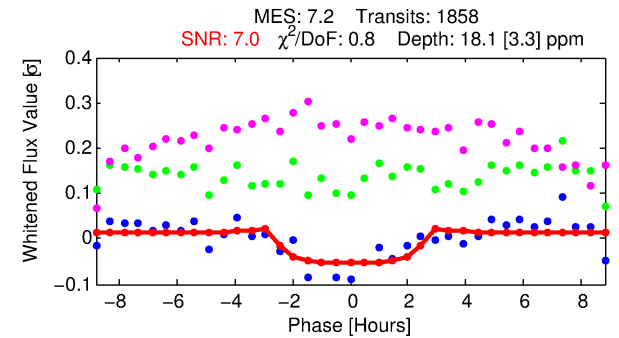
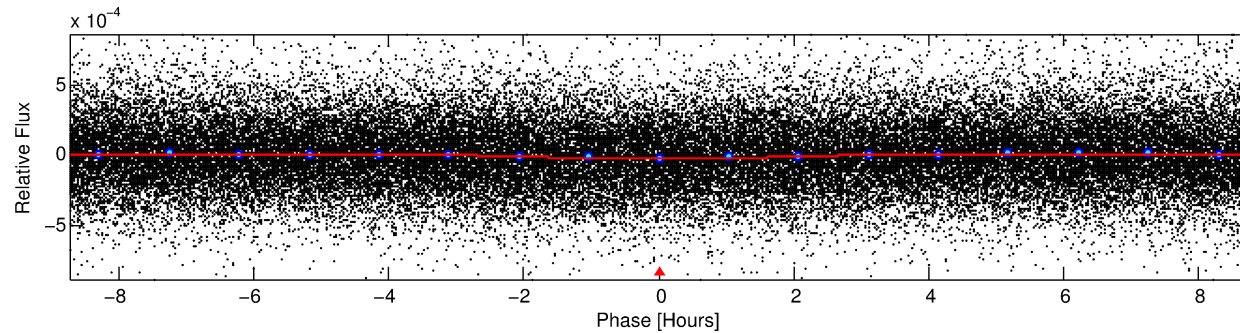
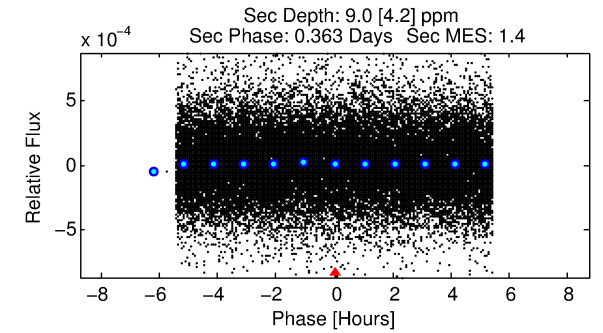
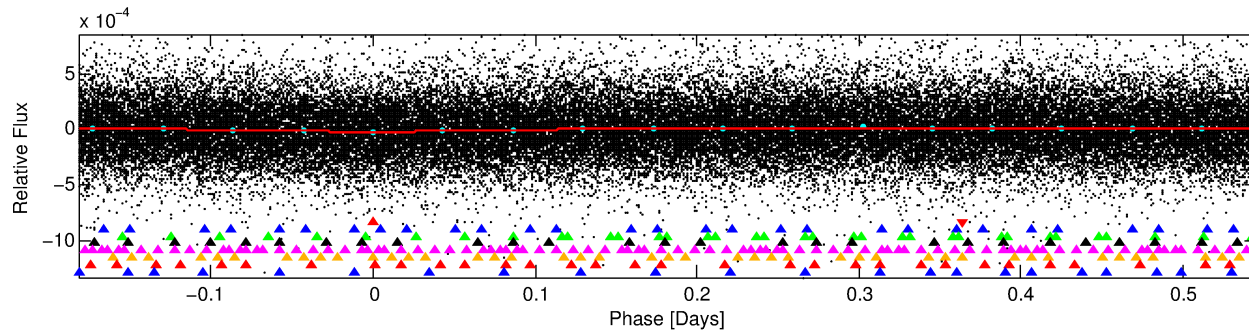
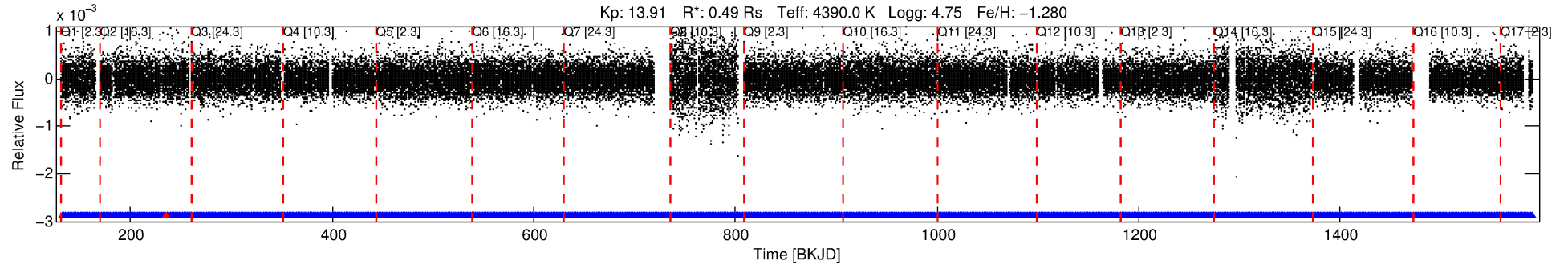
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007502608-01

No Significant Match Found

# DV One-Page Summary

KIC: 7502608 Candidate: 1 of 8 Period: 0.728 d



## DV Fit Results:

Period = 0.72806 [0.00002] d  
Epoch = 132.1165 [0.0064] BKJD  
Rp/R\* = 0.0042 [0.0043]  
a/R\* = 1.14 [1.20]  
b = 0.70 [3.46]  
Seff = 507.37 [88.86]  
Teff = 1210 [53] K  
Rp = 0.22 [0.23] Re  
a = 0.0125 [0.0010] AU  
Ag = 15.84 [33.32] [0.45σ]  
Teffp = 3733 [1963] K [1.28σ]

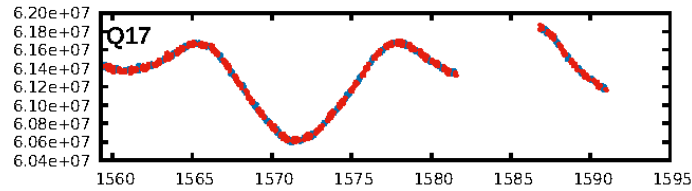
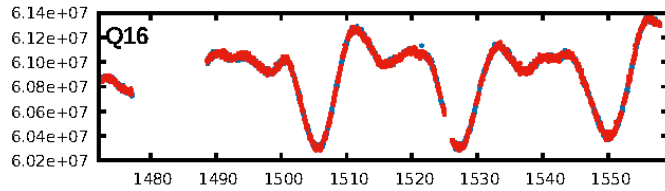
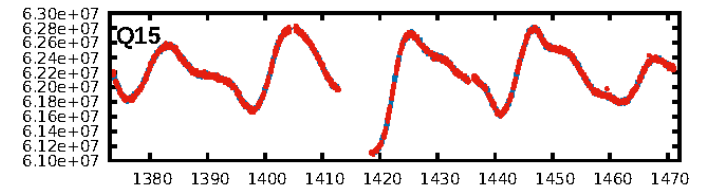
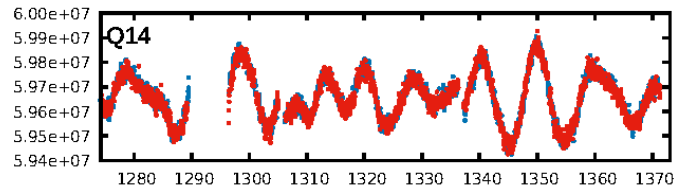
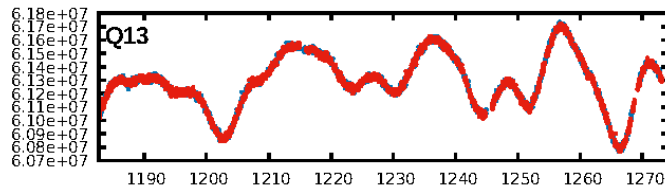
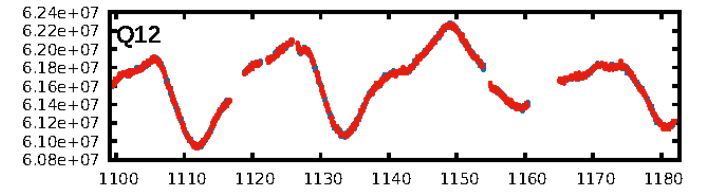
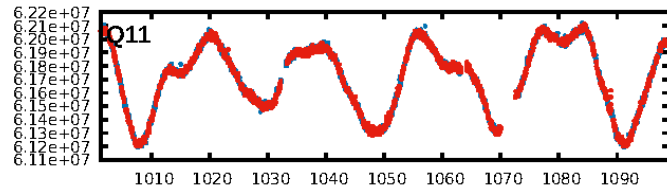
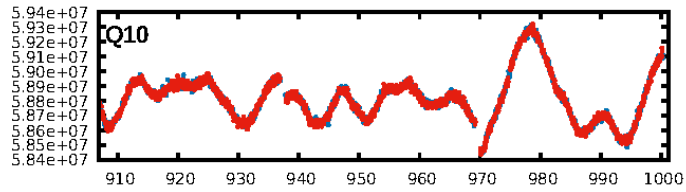
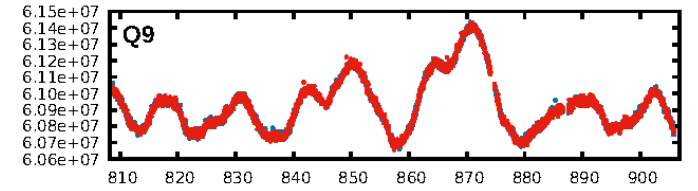
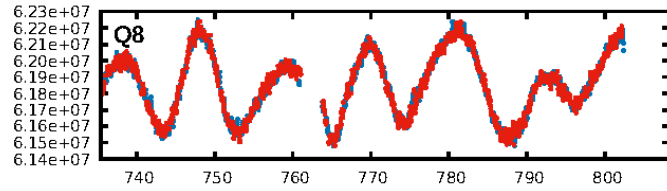
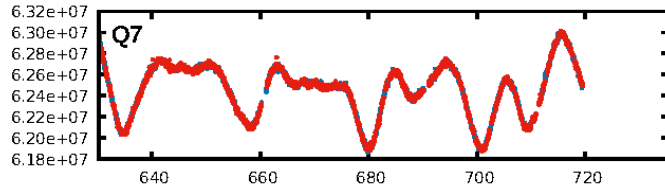
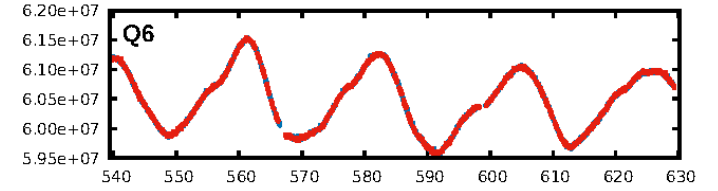
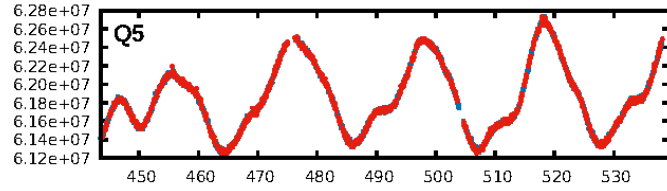
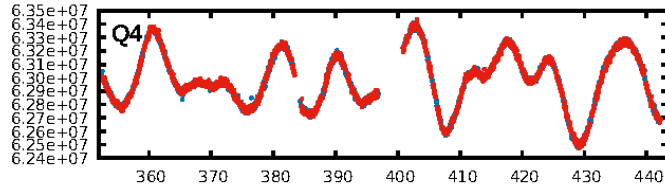
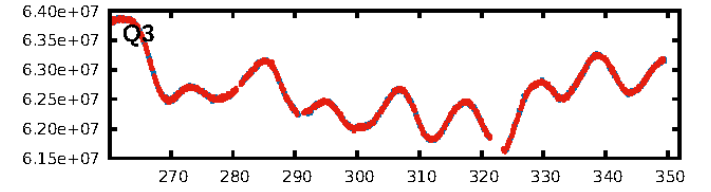
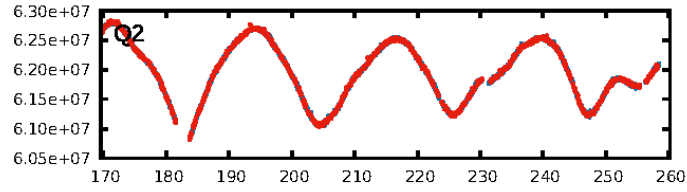
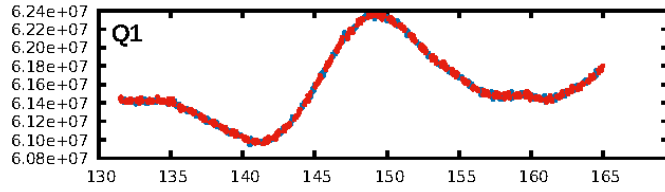
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [51.66σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [1774/1775]  
GhostDiagnostic-chr: 0.2081  
Centroid-sig: 0.0%  
Centroid-so: 8.886 arcsec [5.66σ]  
OotOffset-rm: 3.810 arcsec [4.01σ]  
KicOffset-rm: 3.823 arcsec [3.54σ]  
OotOffset-st: 3/0/0/4 [7]  
KicOffset-st: 3/0/0/4 [7]  
DiffImageQuality-fgm: 0.29 [2/7]  
DiffImageOverlap-fno: 1.00 [17/17]

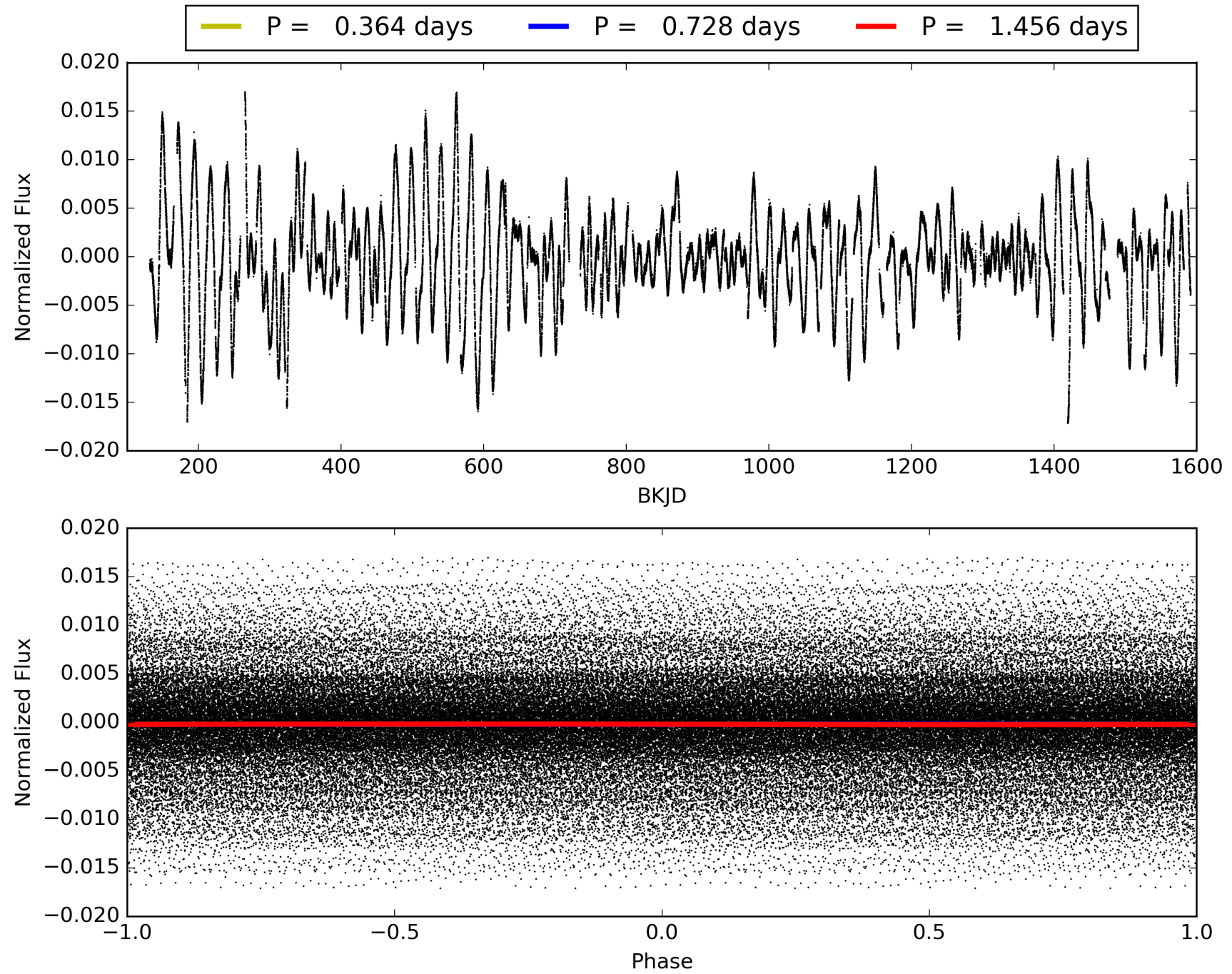
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:09:27 Z

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

# TCE 007502608-01, PDC Light Curves



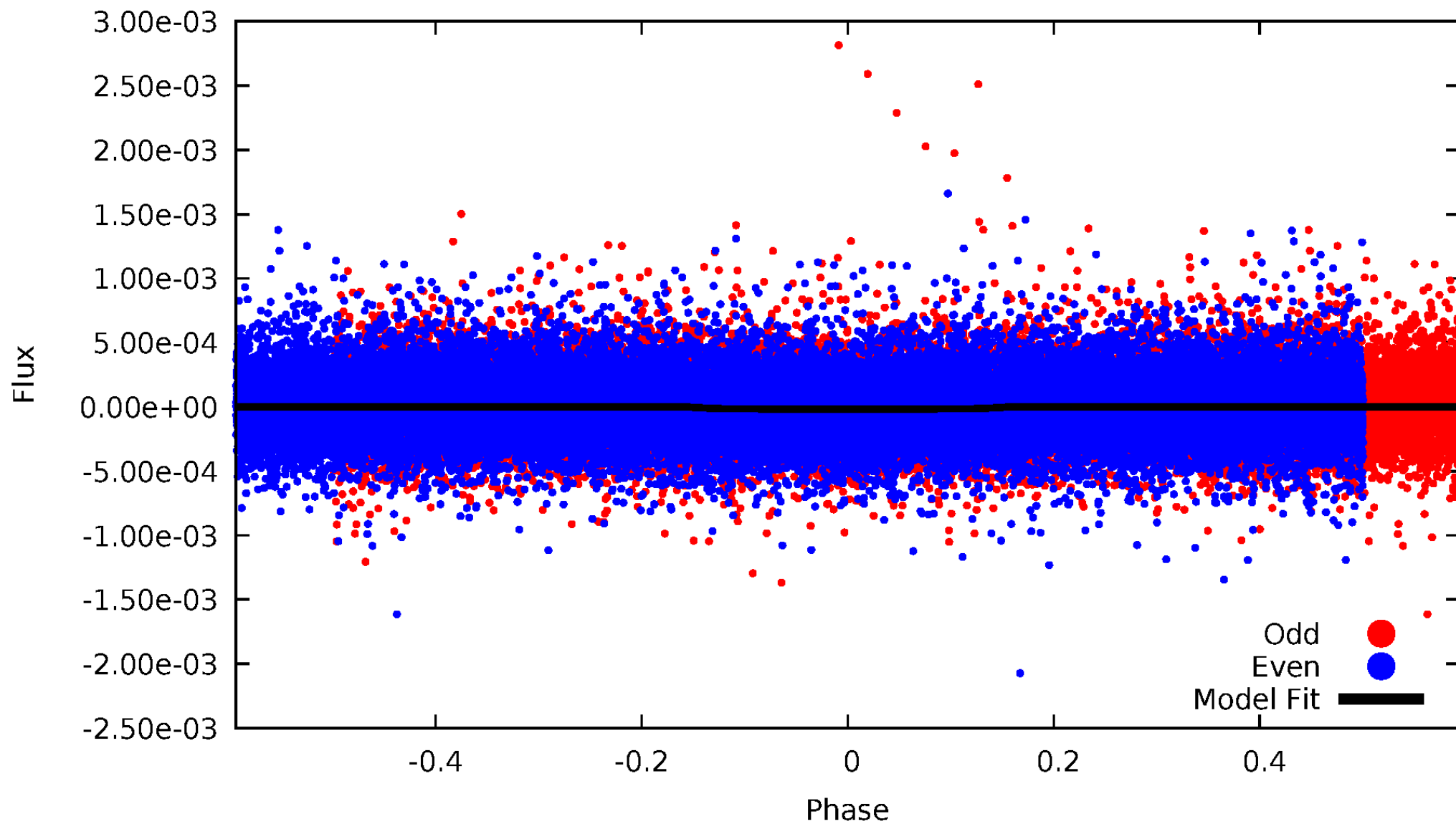
TCE 007502608-01





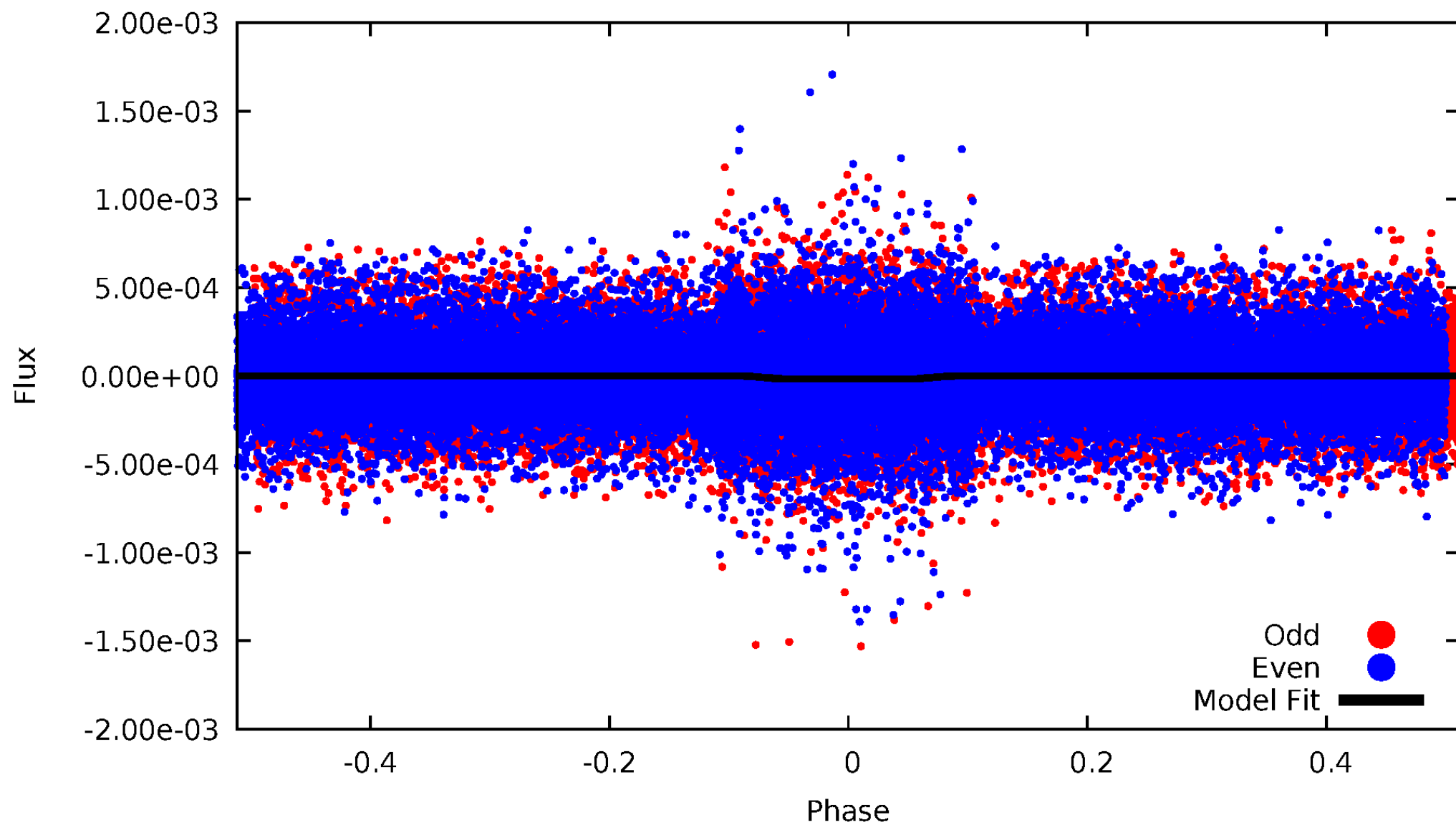
# DV Odd/Even

TCE 007502608-01



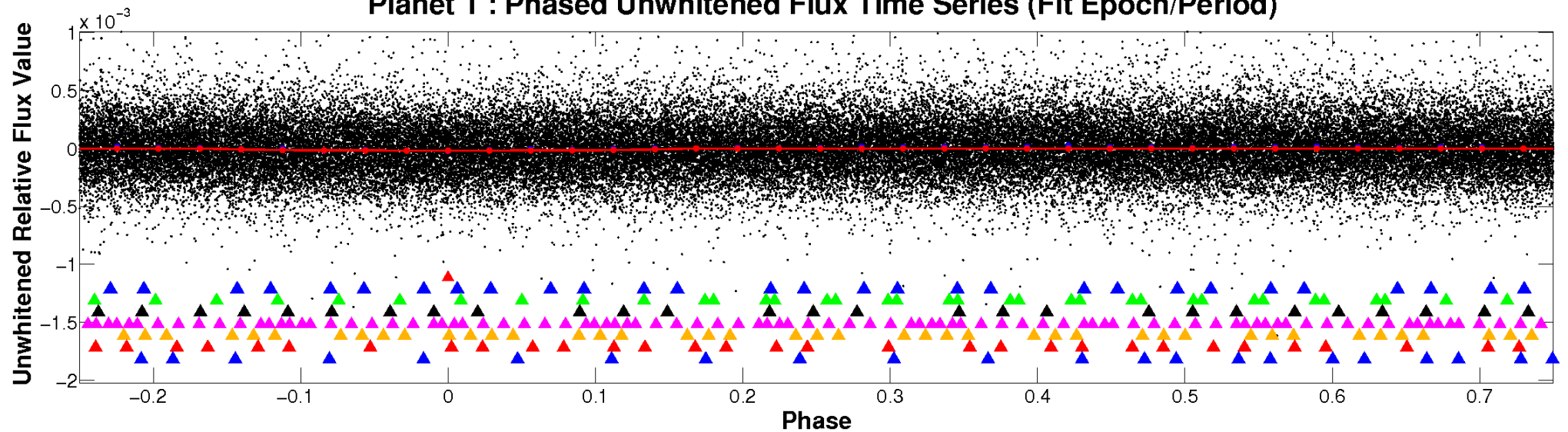
# ALT Odd/Even

TCE 007502608-01

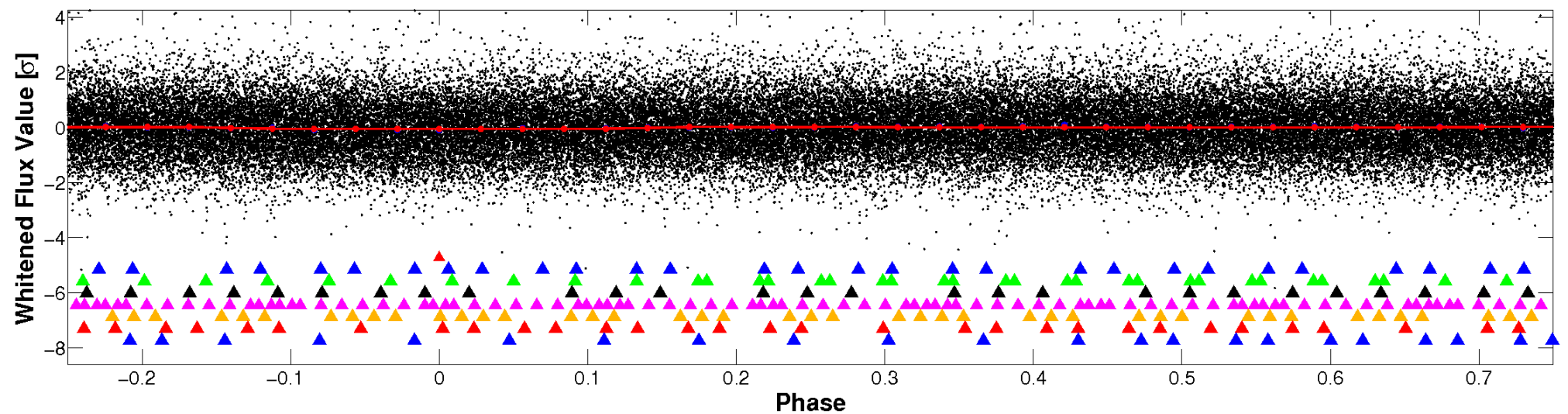


# Non-Whitened Vs. Whitened Light Curve

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

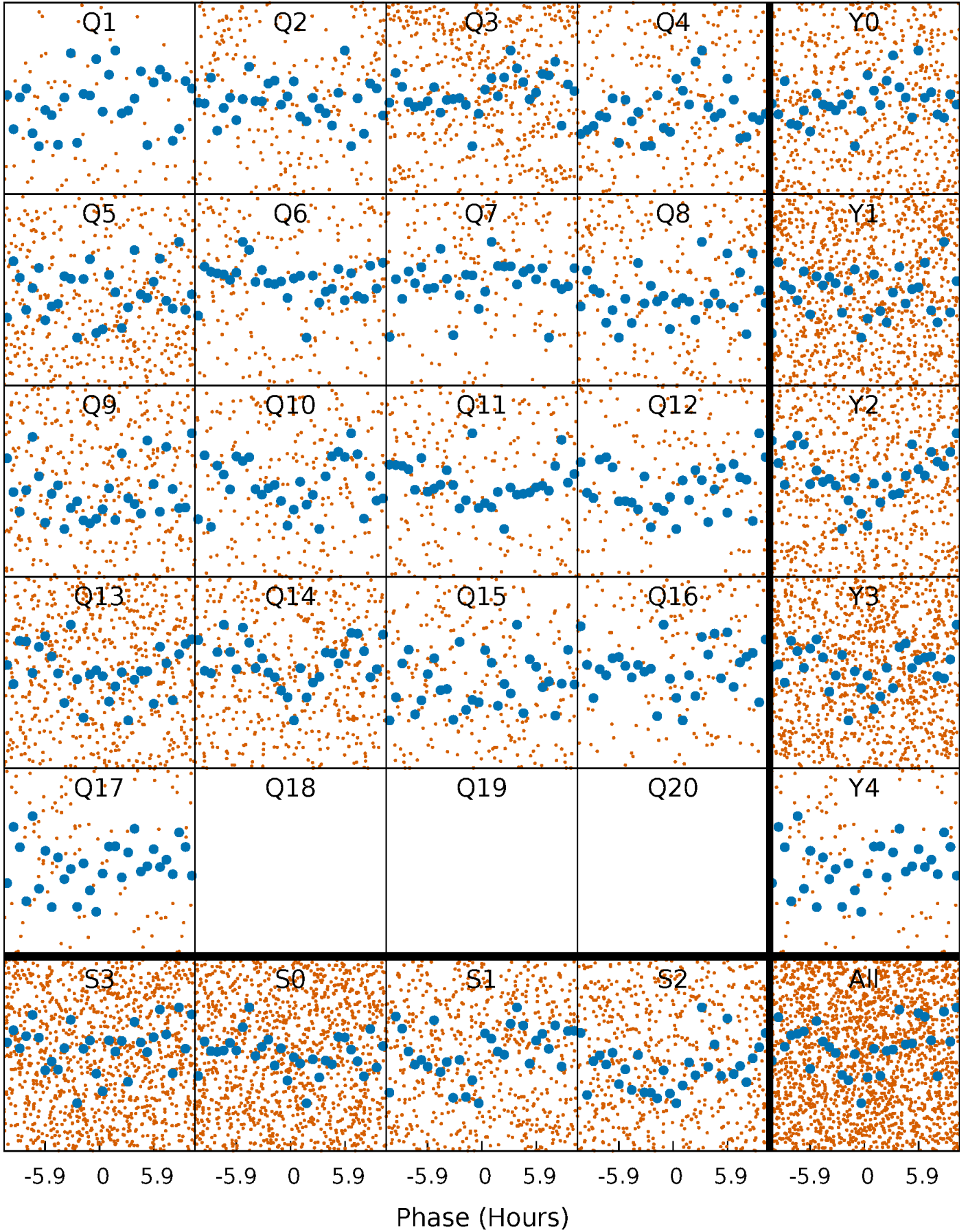


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

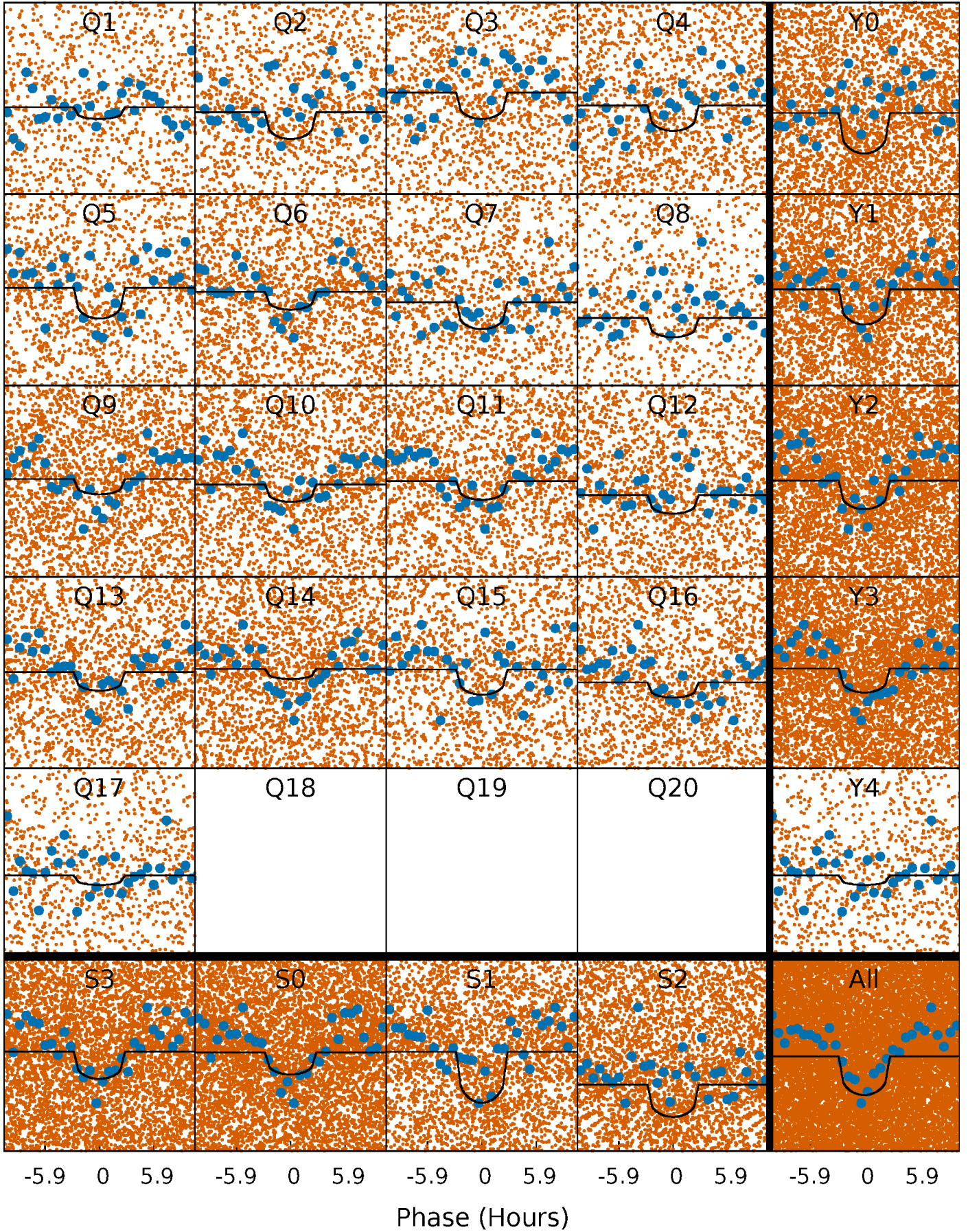
TCE 007502608-01   P= 0.728064 Days    $T_0=132.116531$  (BKJD)





# DV Quarter-Phased Transit Curves

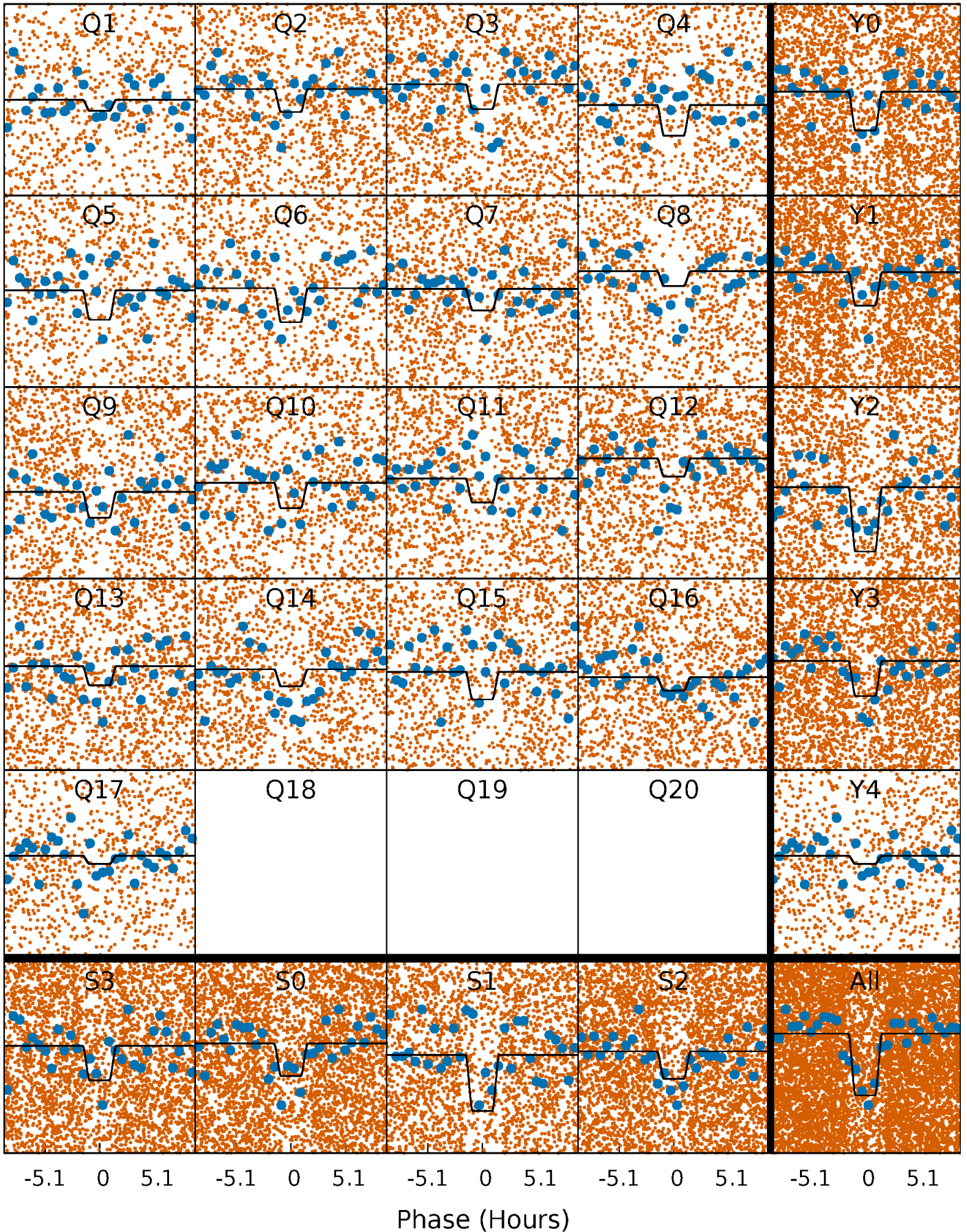
TCE 007502608-01 P= 0.728064 Days  $T_0=132.116531$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

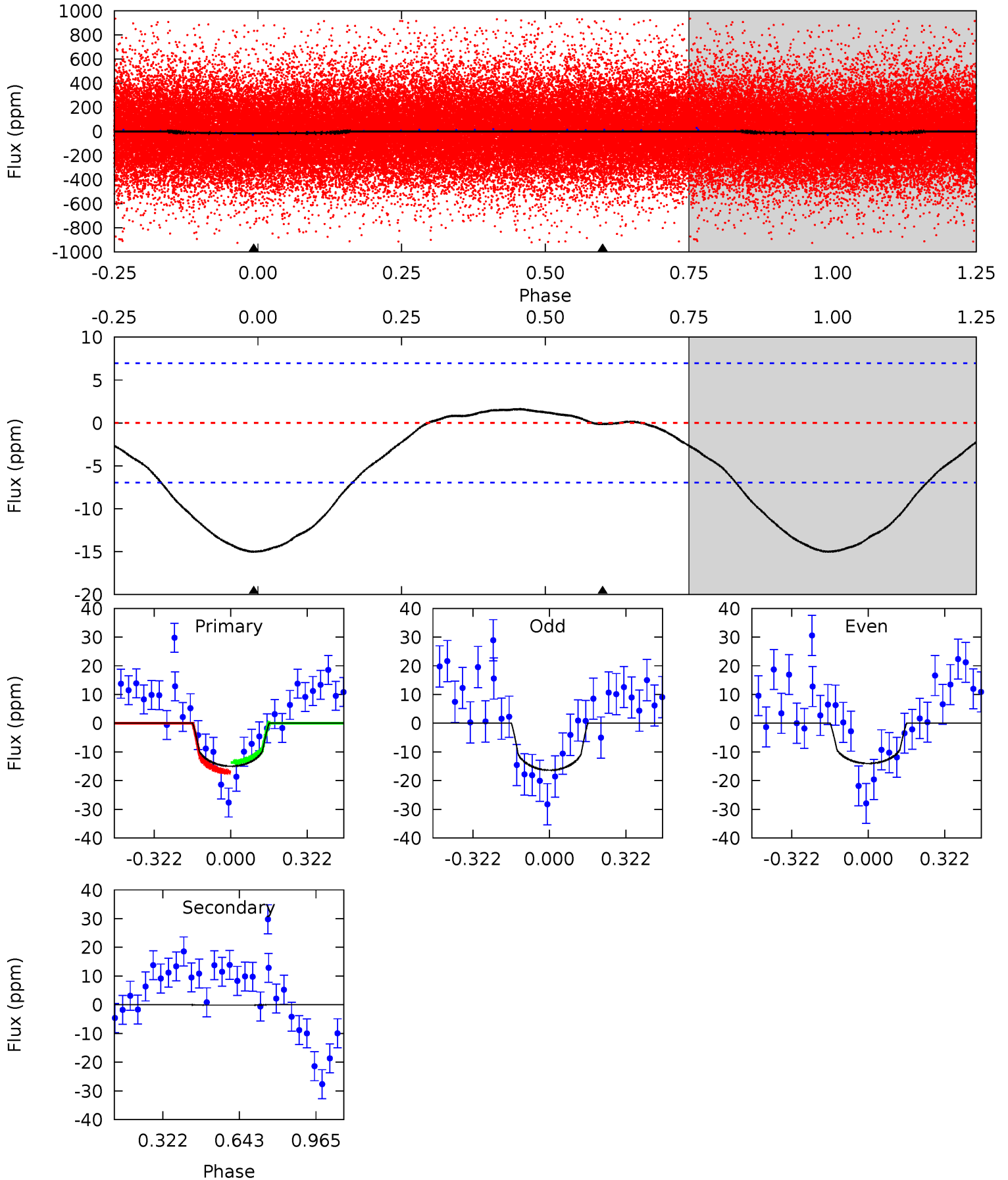
TCE 007502608-01 P= 0.728040 Days  $T_0=132.127055$  (BKJD)



# DV Model-Shift Uniqueness Test

007502608-01, P = 0.728064 Days, E = 131.388467 Days

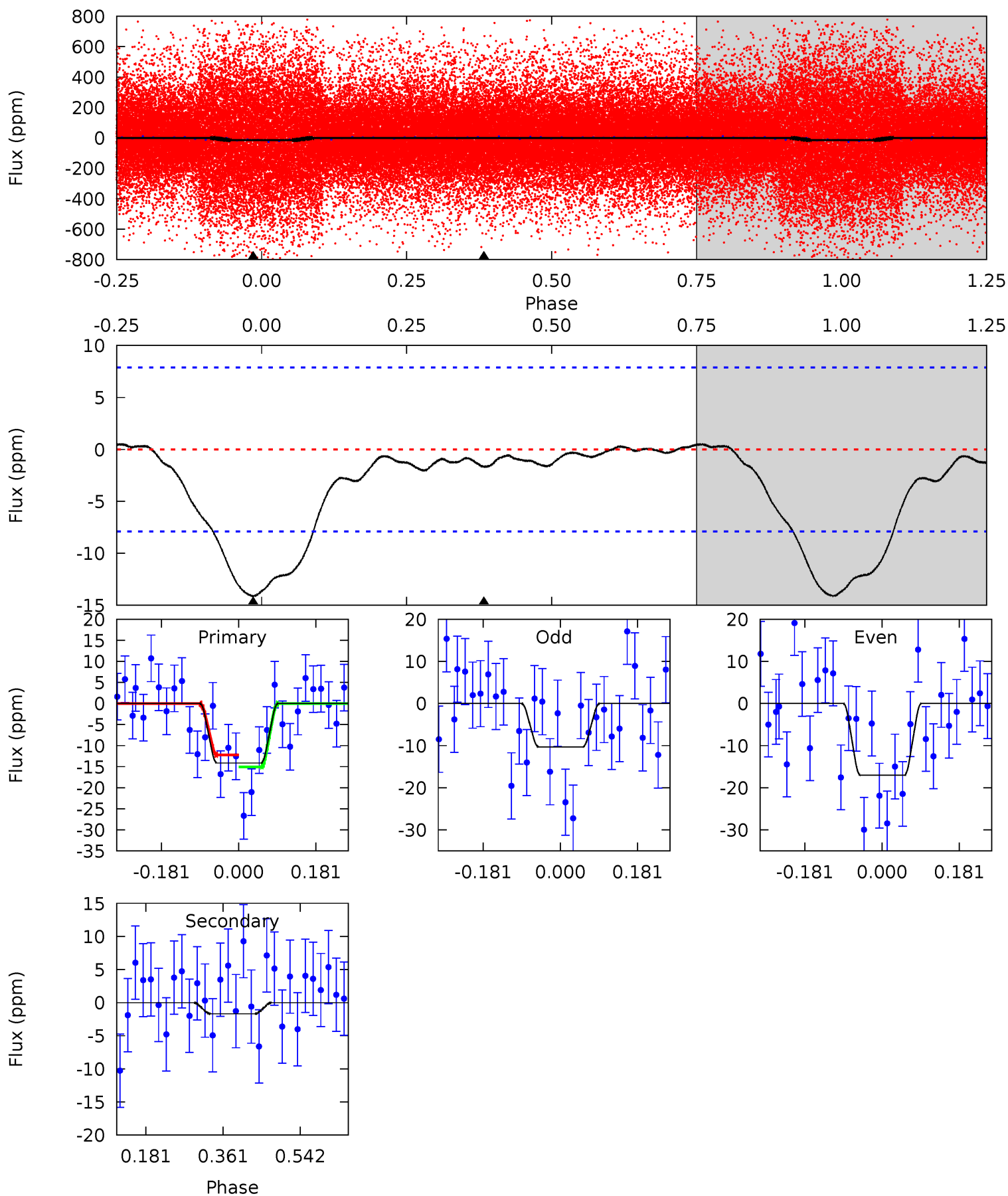
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.30	0.08	0	0	4.31	0.99	0.63	9.30	9.30	0.08	0.08	0.74	0.69	0.10	1.03



# Alt Model-Shift Uniqueness Test

007502608-01, P = 0.728040 Days, E = 131.399015 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
7.95	0.95	0	0	4.44	1.34	0.43	7.95	7.95	0.95	0.95	1.90	1.63	0.03	0.80





### Stellar Parameters For KIC 007502608

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4390^{+124}_{-140}$	$4.754^{+0.065}_{-0.030}$	$-1.280^{+0.300}_{-0.350}$	$0.490^{+0.033}_{-0.049}$	$0.496^{+0.036}_{-0.036}$	$5.955^{+1.727}_{-0.763}$
	+3%/-3%	+1%/-1%	+23%/-27%	+7%/-10%	+7%/-7%	+29%/-13%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007502608-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-0 \pm 2$	$0.27^{+0.20}_{-0.17}$	$1676^{+58}_{-59}$	$-2151^{+5231}_{-787}$	$0.105^{+4.088}_{-2.571}$
Alt.	$-2 \pm 2$	$0.25^{+0.21}_{-0.17}$	$1680^{+58}_{-62}$	$2788^{+1195}_{-4939}$	$2.047^{+18.392}_{-1.918}$

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

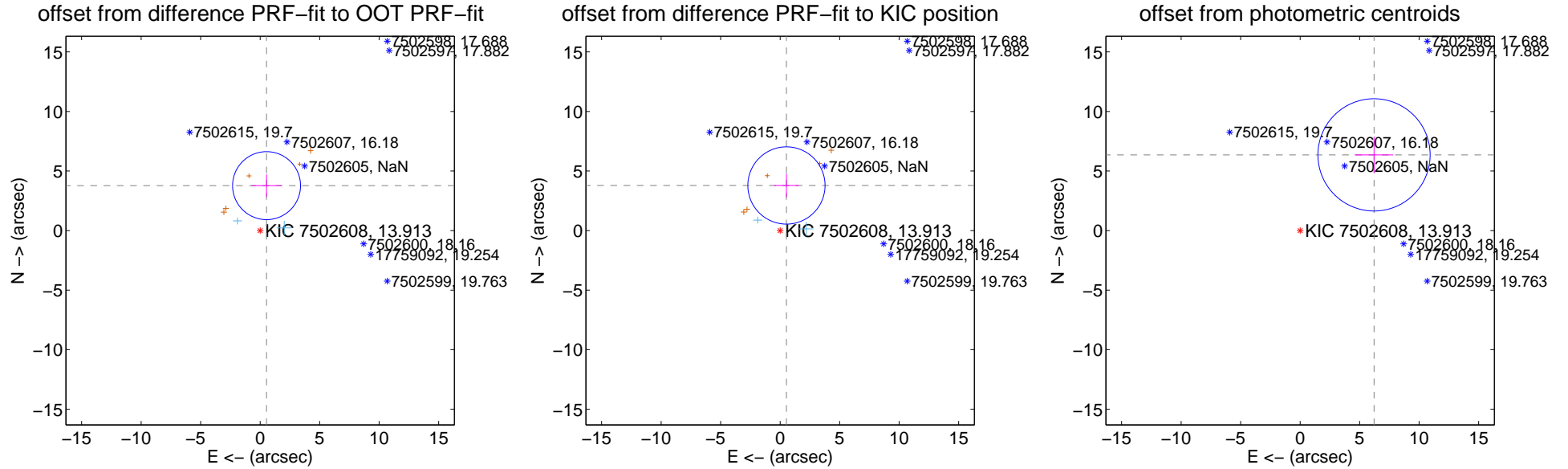
## DV Centroid Data

Supplemental centroid analysis for 007502608-01. Kepler magnitude: 13.91. Transit SNR 7.00

There are 2 quarters with good PRF difference image offsets

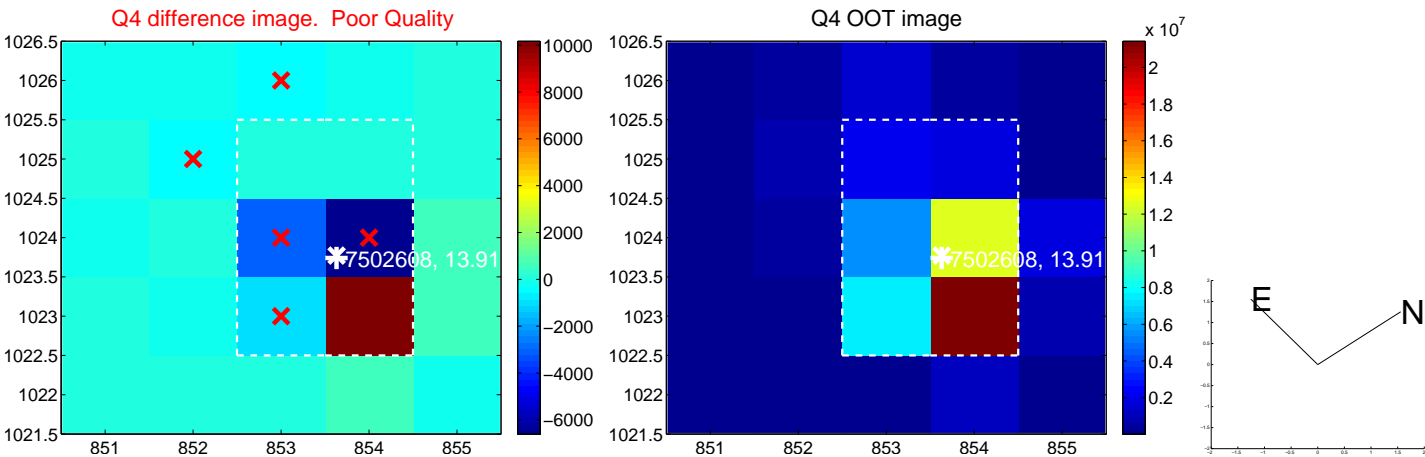
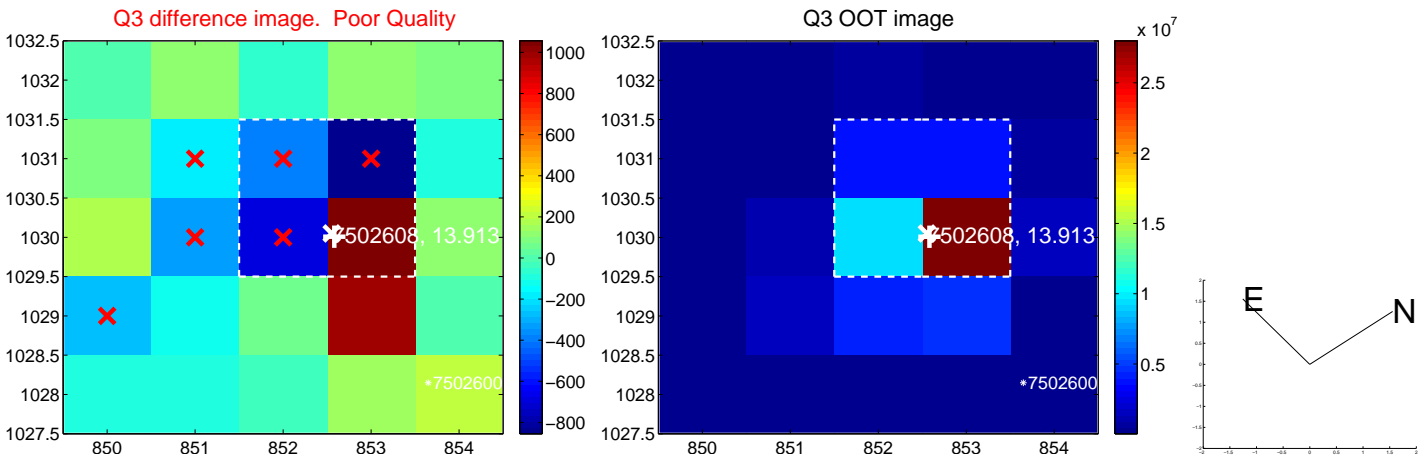
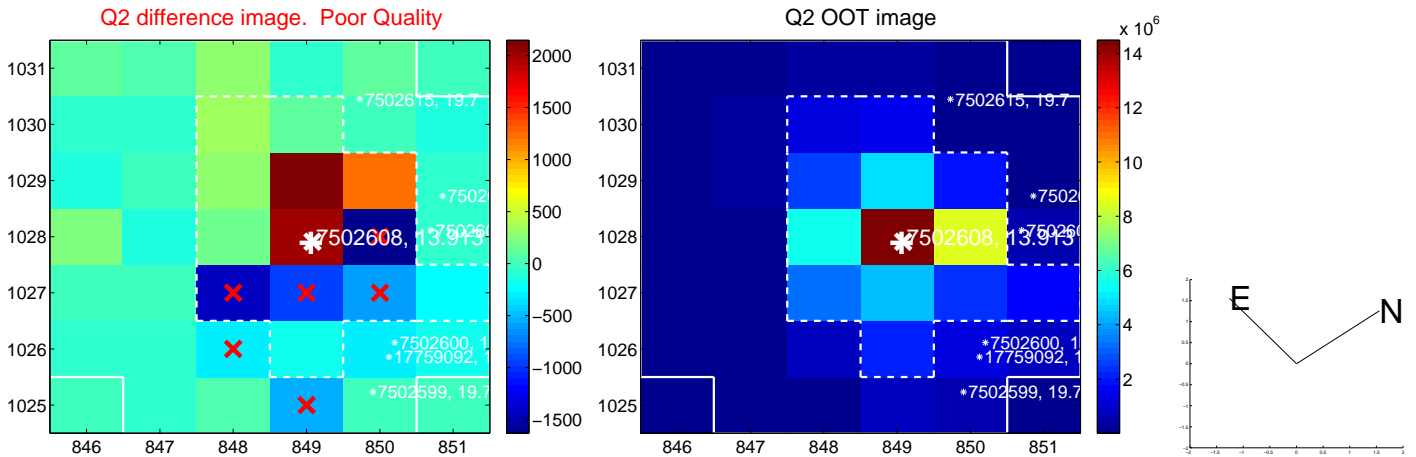
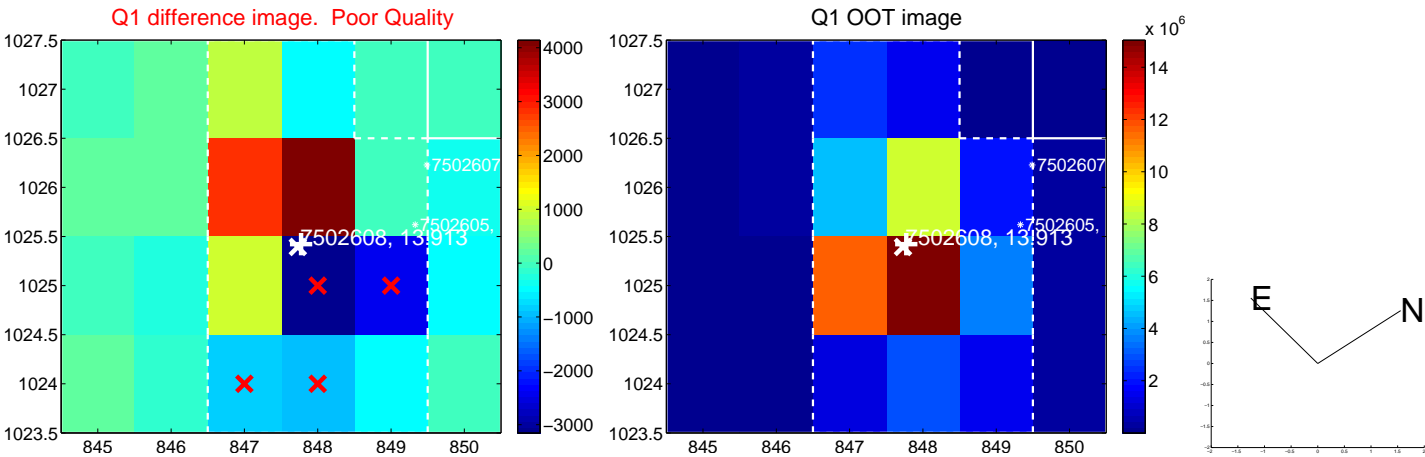
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.810 \pm 0.951$	4.01	$-0.538 \pm 1.275$	$3.772 \pm 0.944$
PRF-fit source offset from KIC position	$3.823 \pm 1.081$	3.54	$-0.530 \pm 1.044$	$3.786 \pm 0.986$
photometric centroid source offset	$8.89 \pm 1.57$	5.66	$-6.21 \pm 1.62$	$6.36 \pm 1.52$

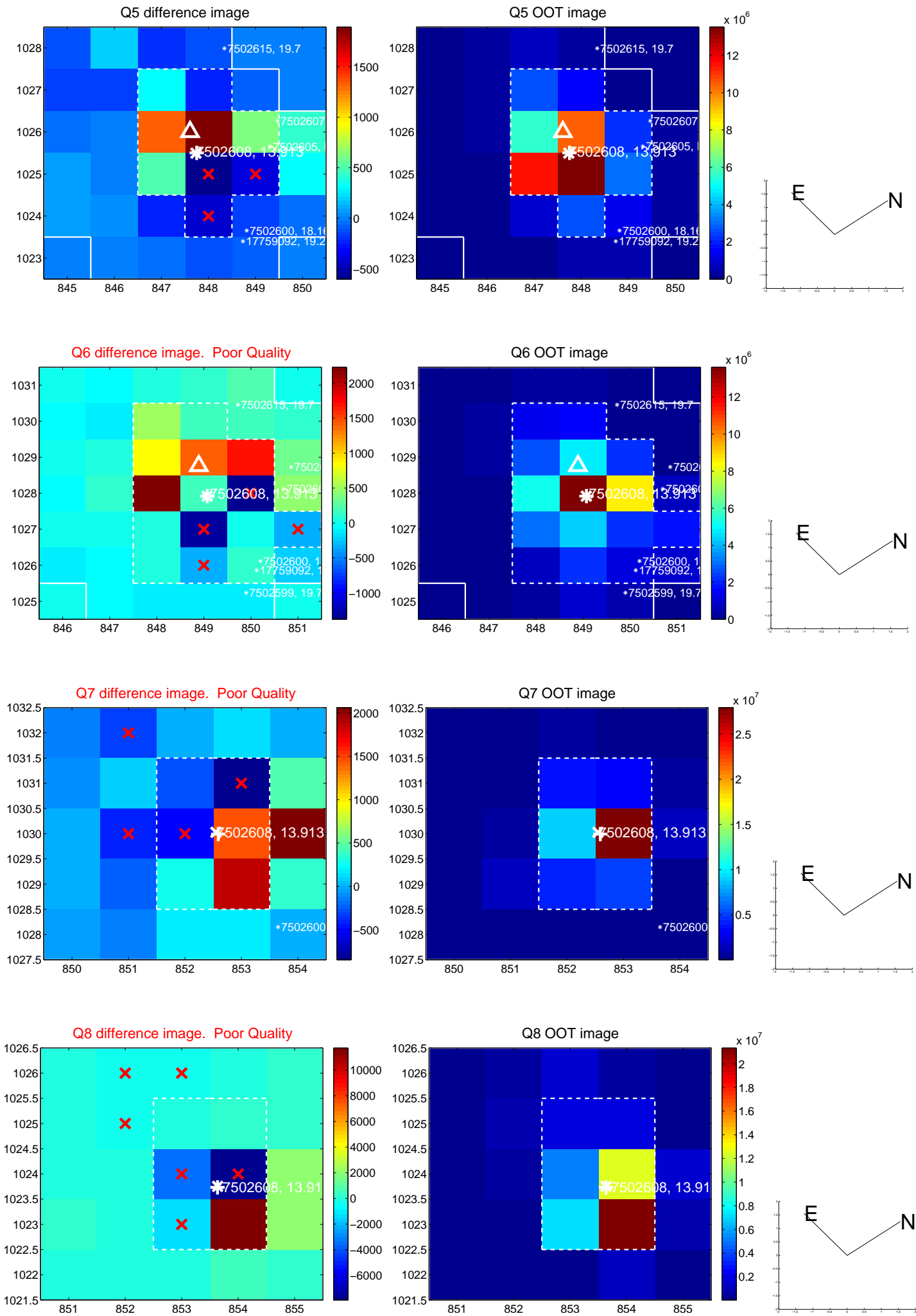


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

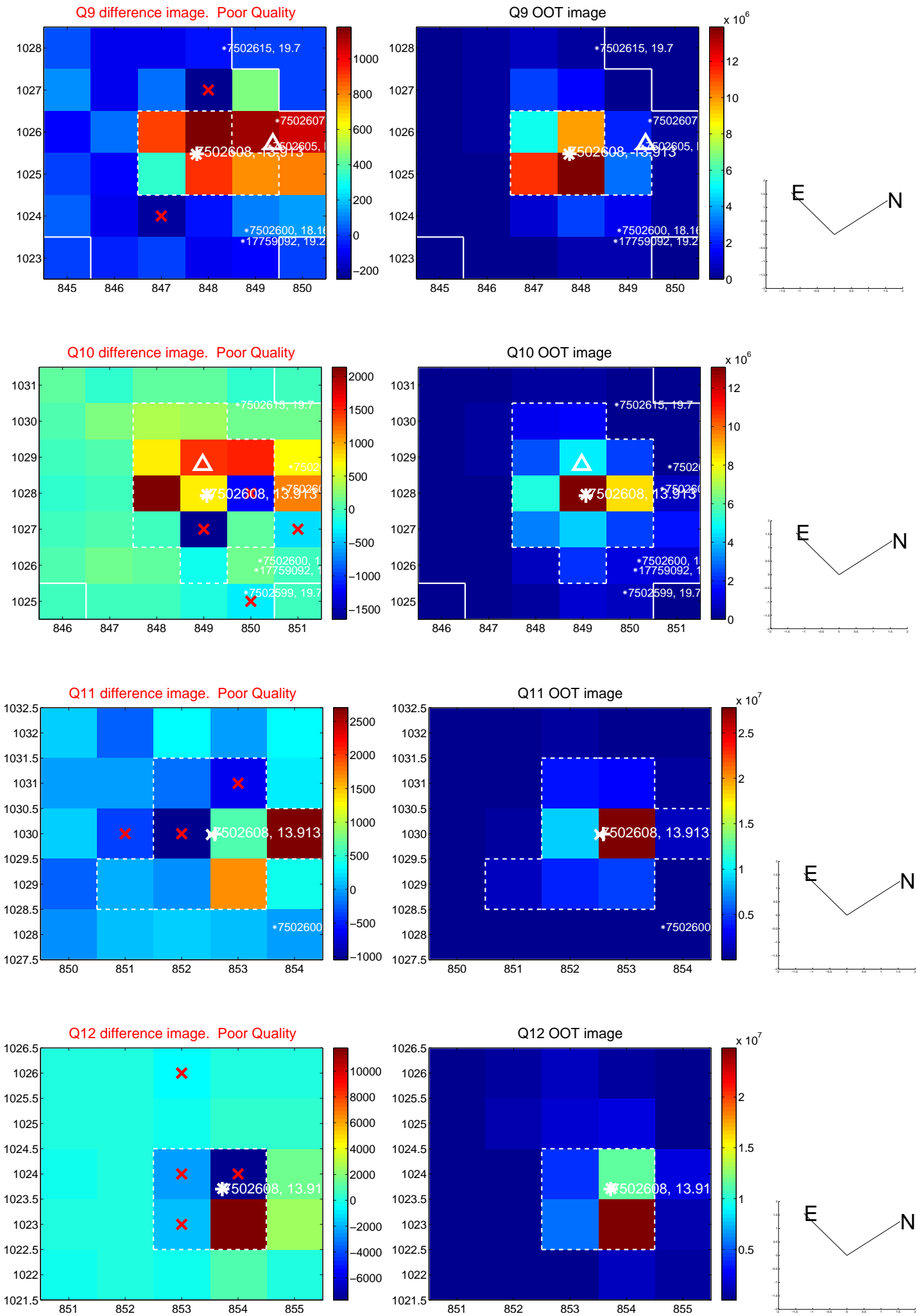


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

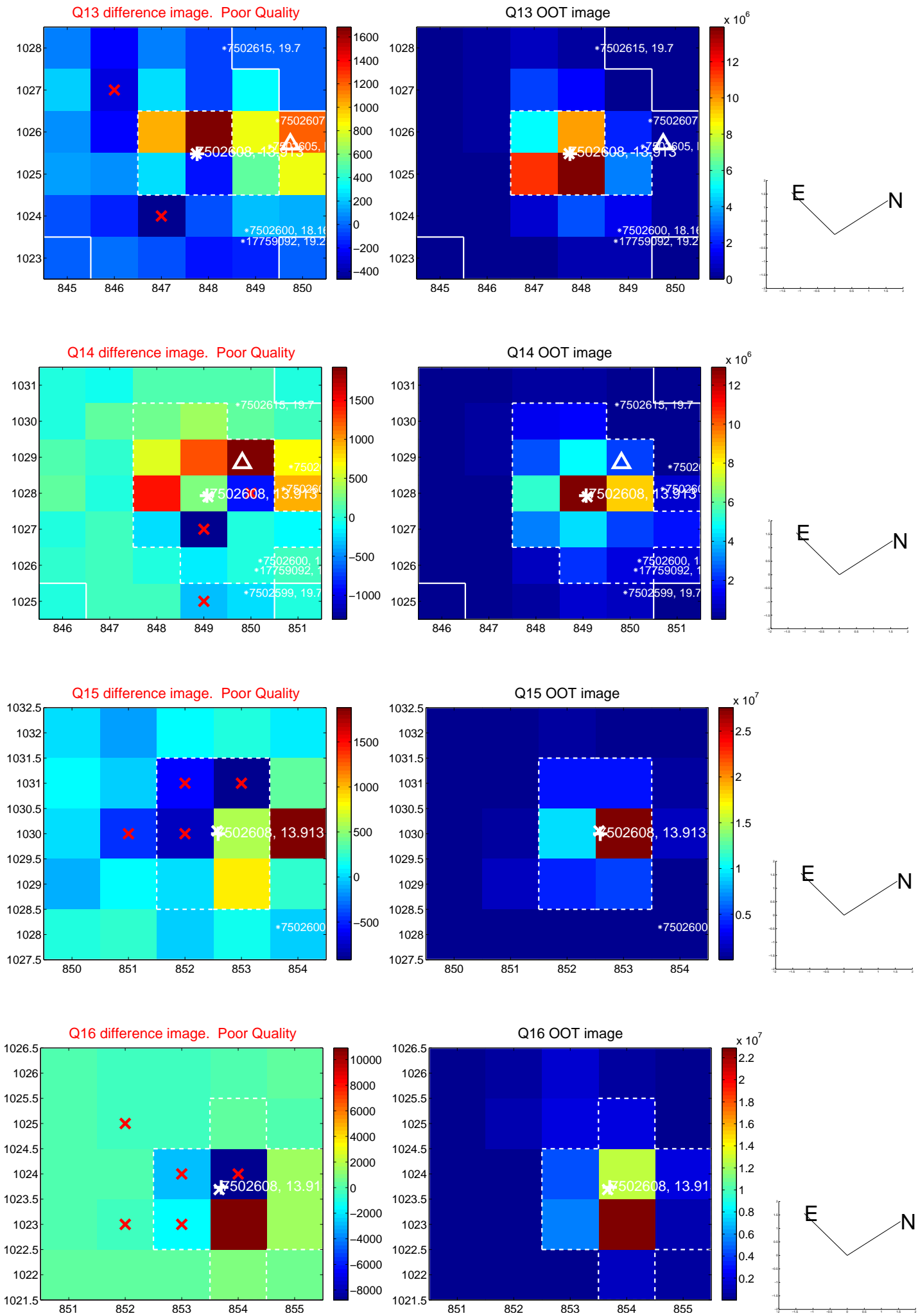




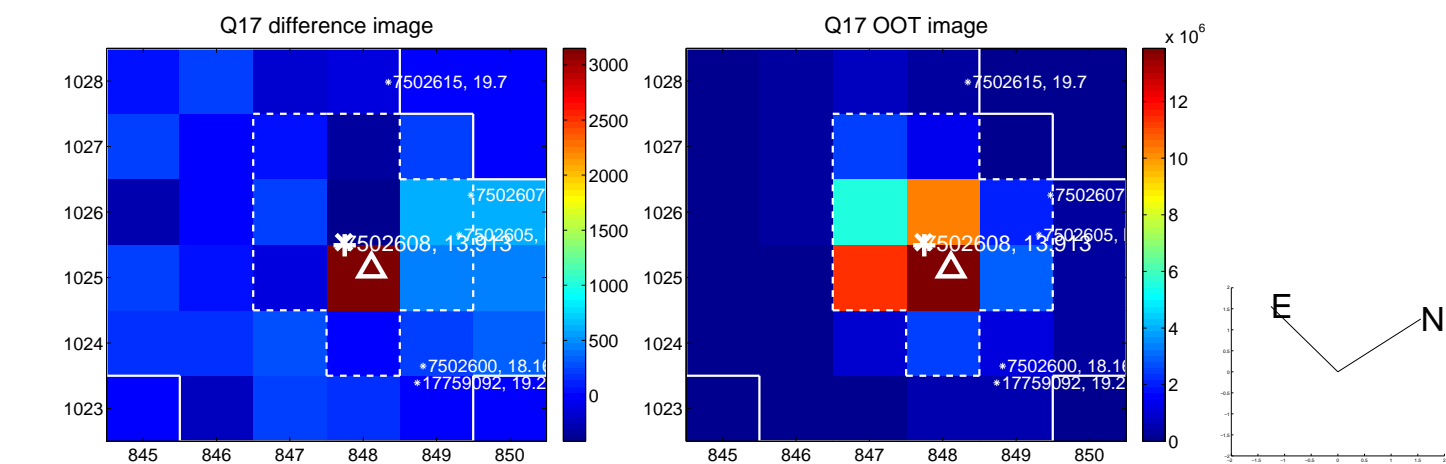
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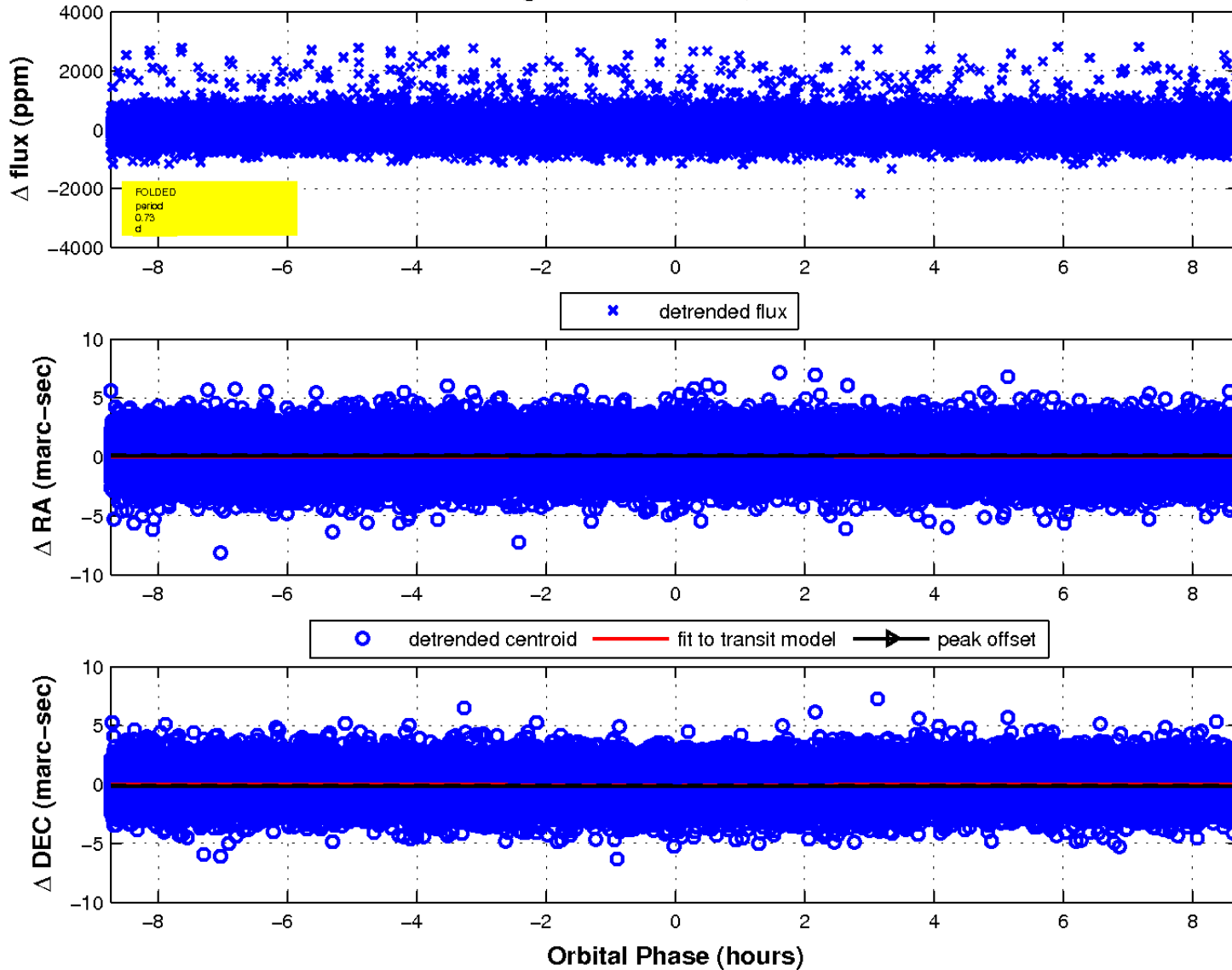
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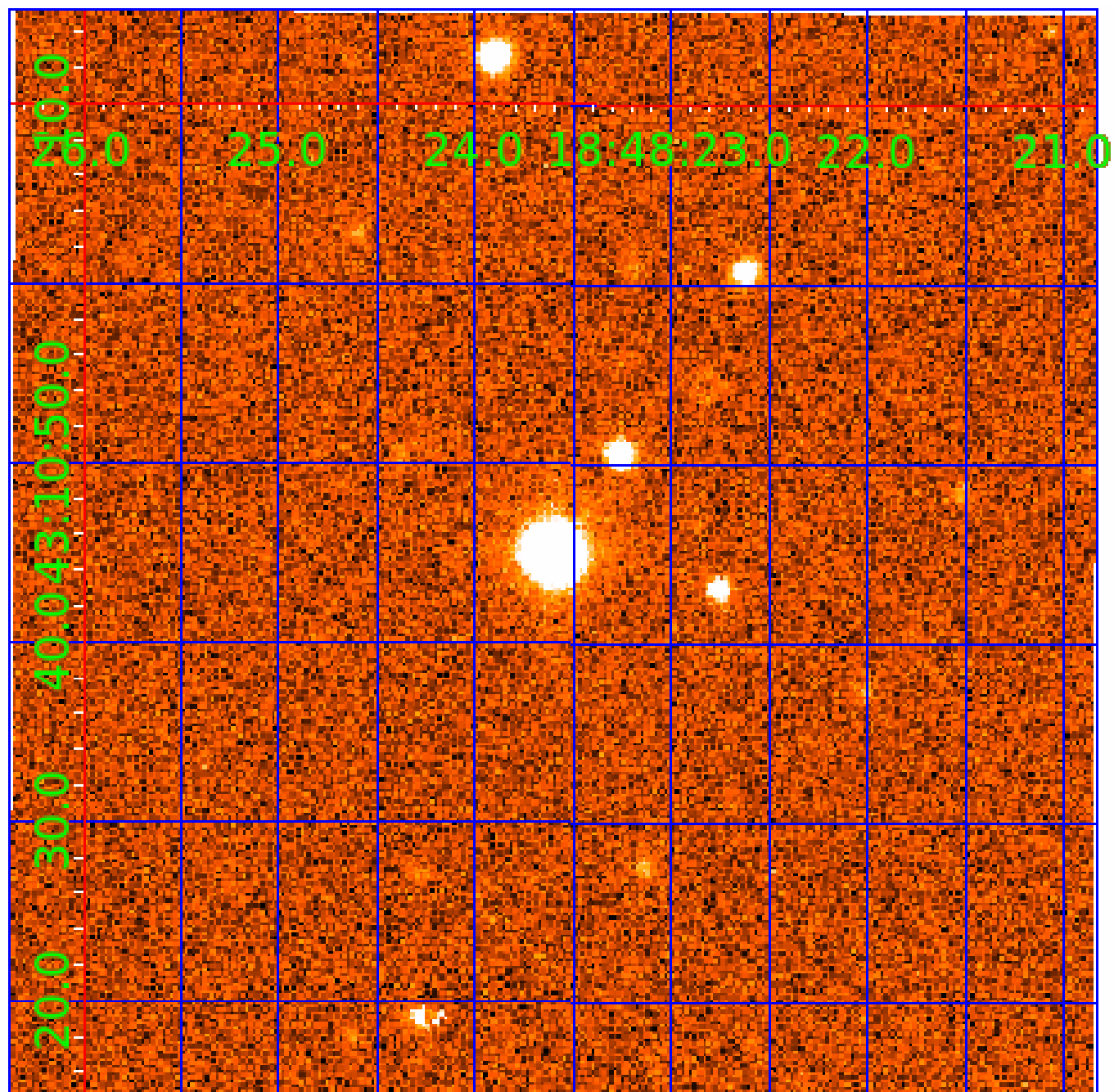


fluxWeightedCentroids, Planet 1 of 8



UKIRT Image

Declination



# KIC 007502608

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
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007502608-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007502608-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007502608-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
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**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.

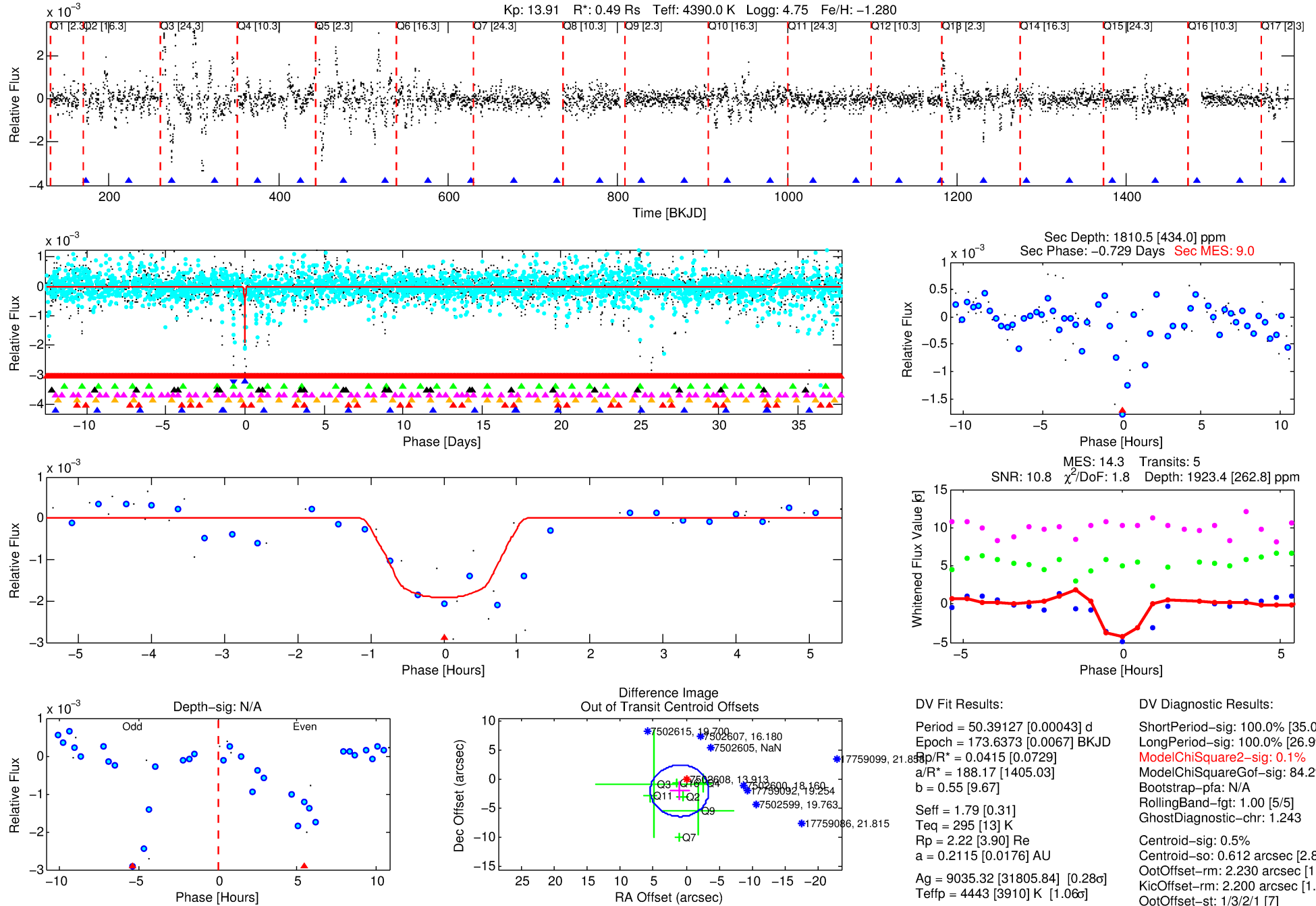
Ephemeris Match Information For 007502608-02

No Significant Match Found



# DV One-Page Summary

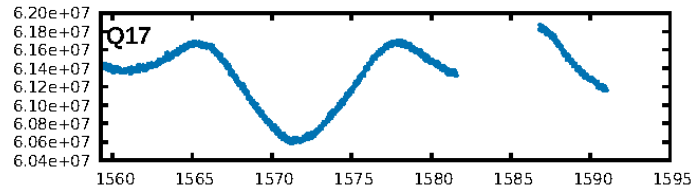
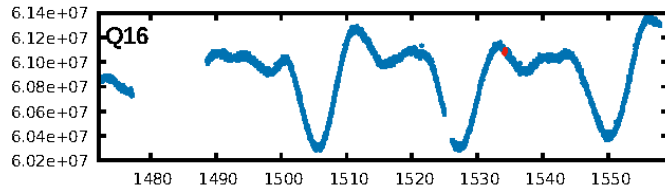
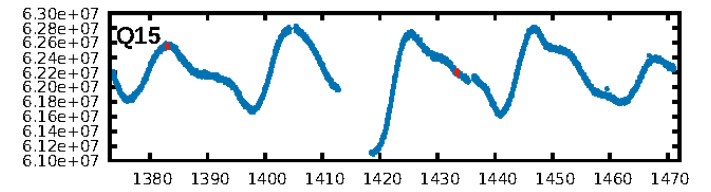
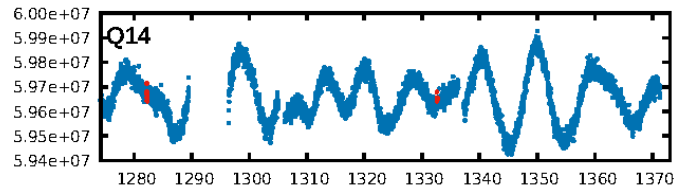
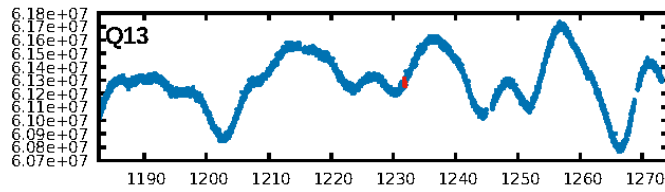
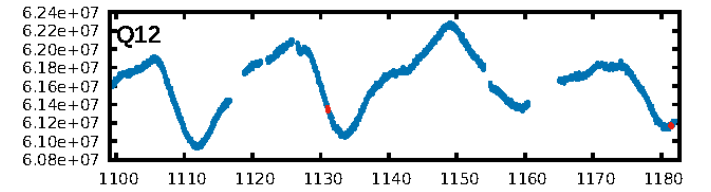
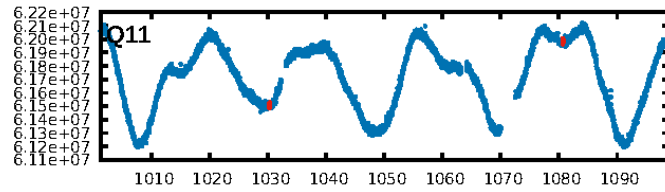
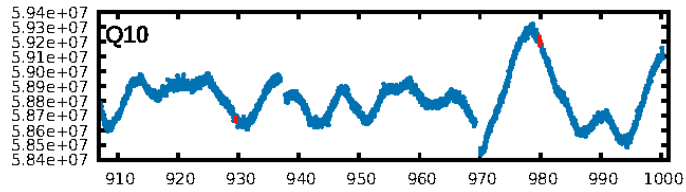
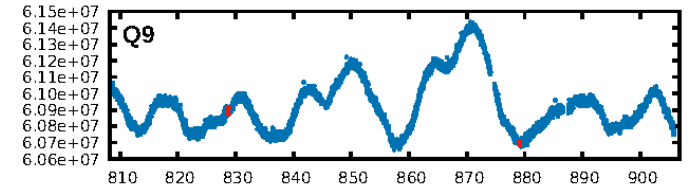
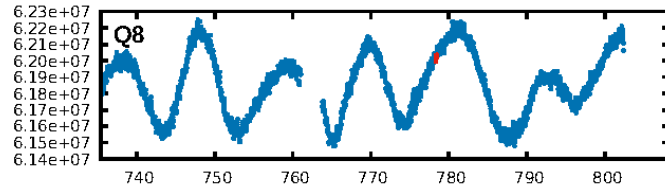
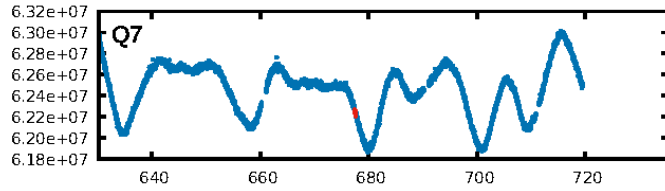
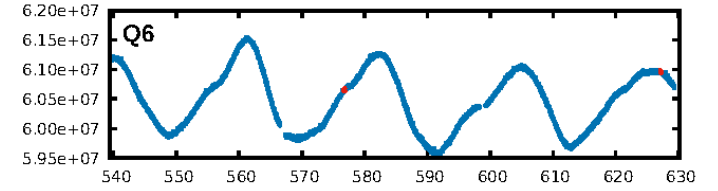
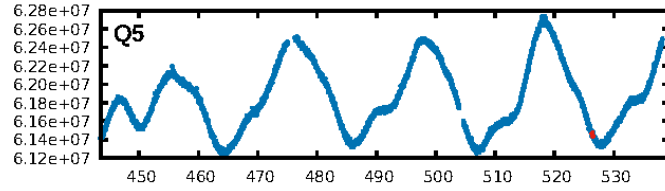
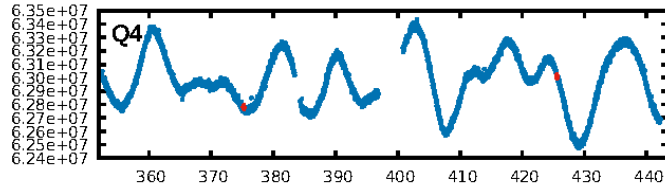
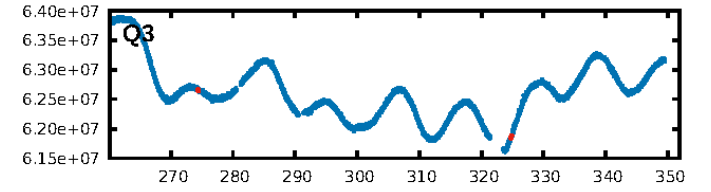
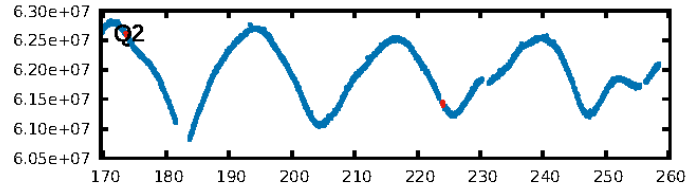
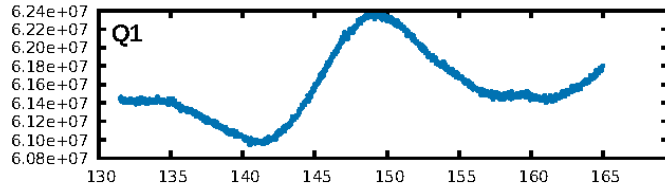
KIC: 7502608 Candidate: 2 of 8 Period: 50.391 d



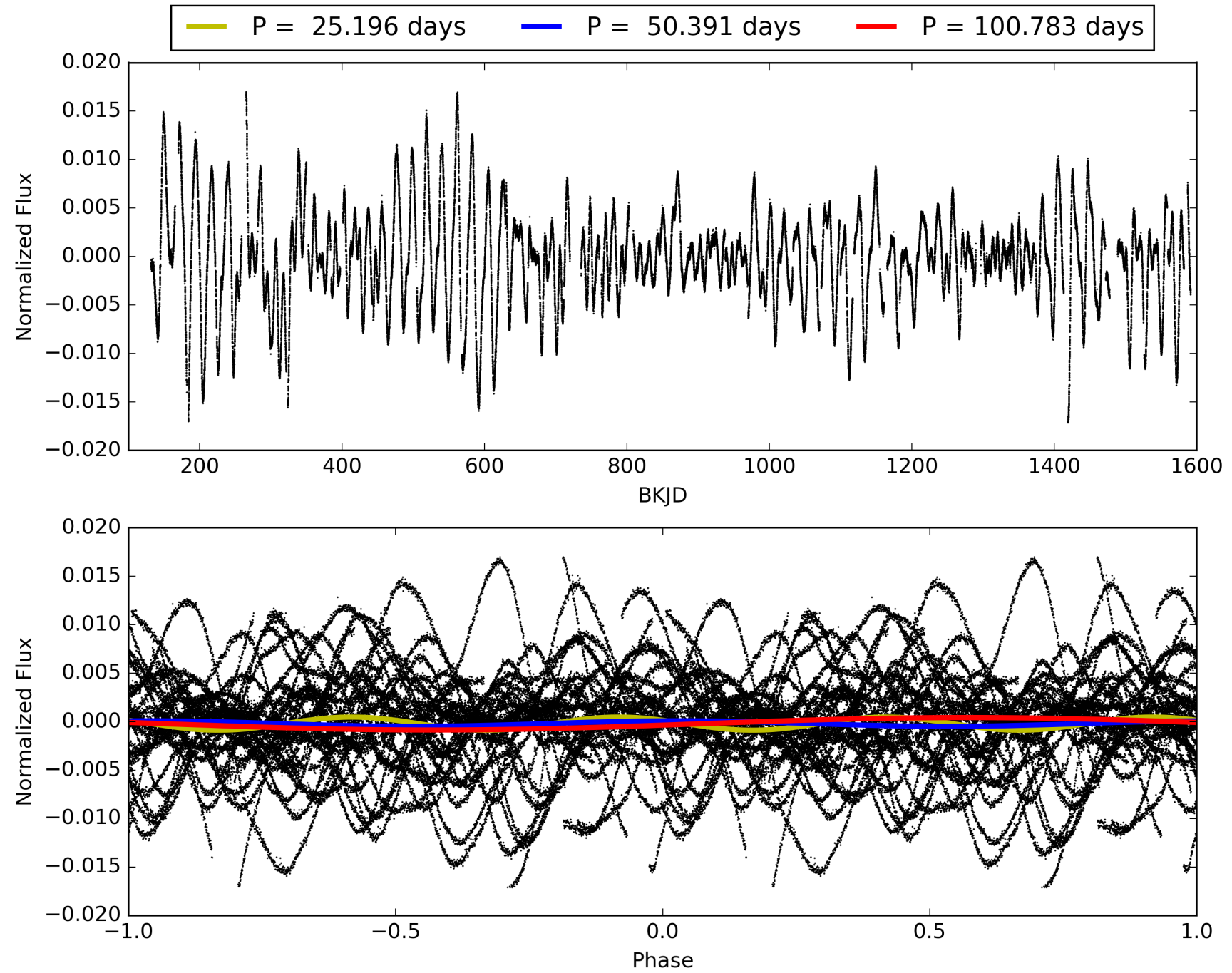
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:09:38 Z

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

# TCE 007502608-02, PDC Light Curves

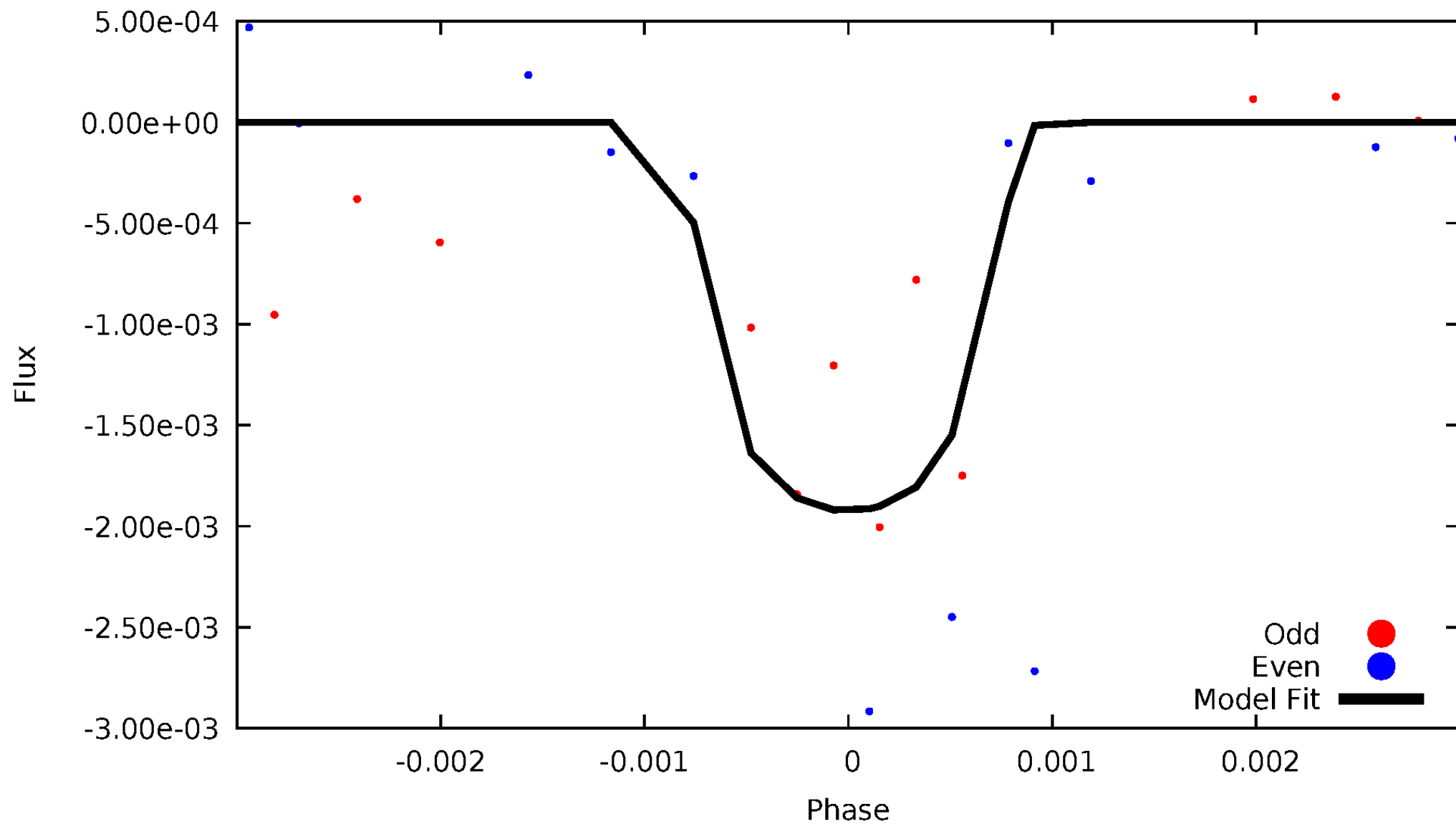


TCE 007502608-02



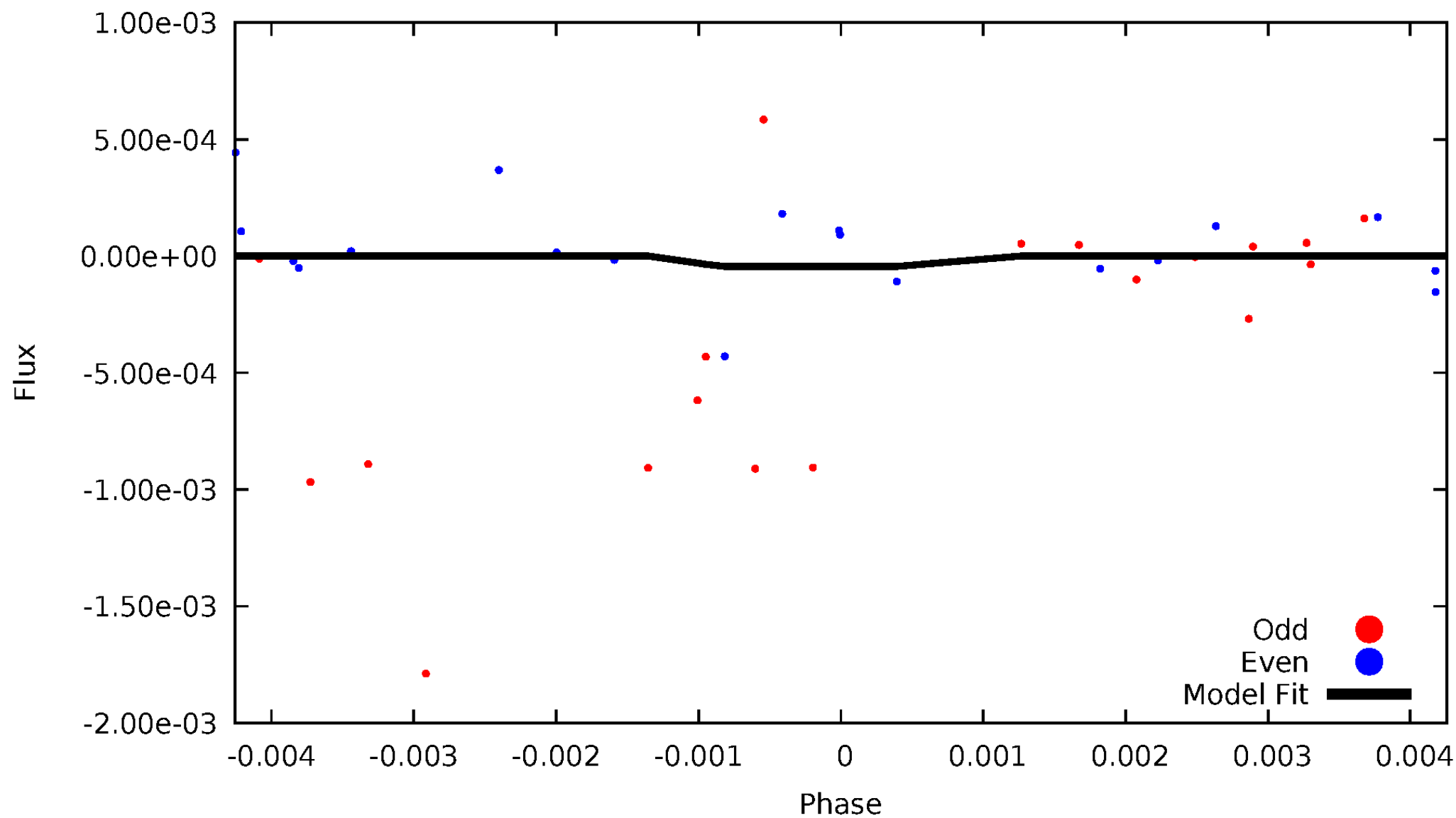
# DV Odd/Even

TCE 007502608-02



# ALT Odd/Even

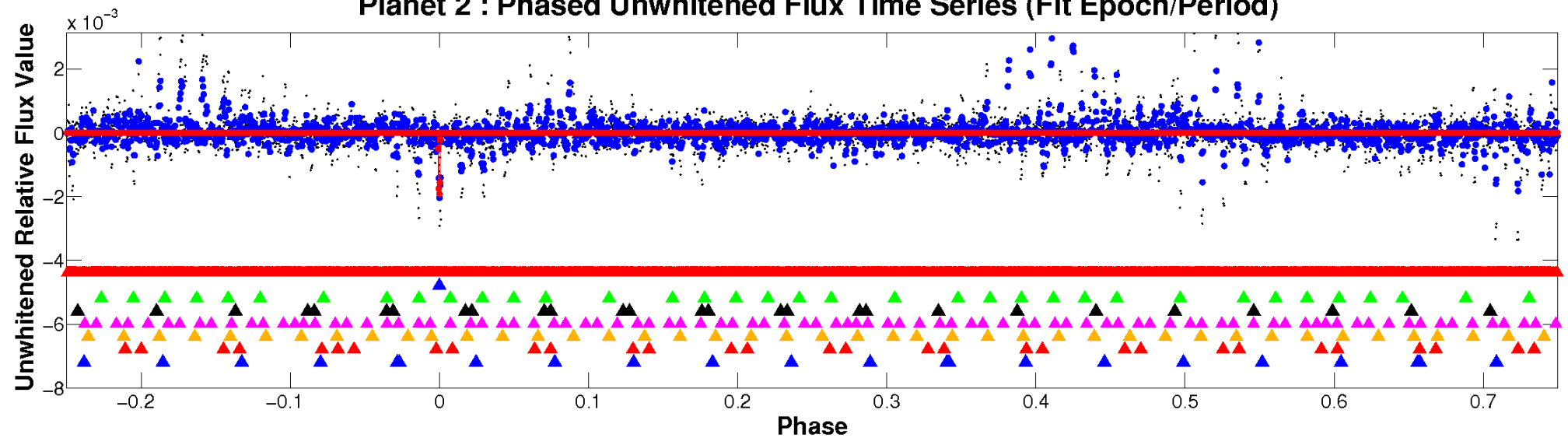
TCE 007502608-02



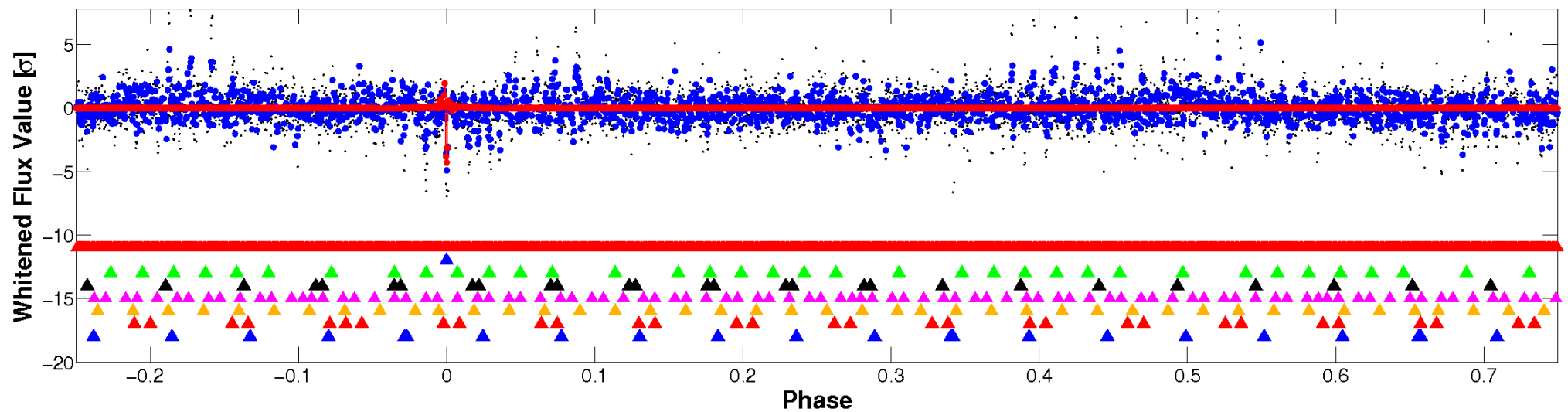


# Non-Whitened Vs. Whitened Light Curve

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

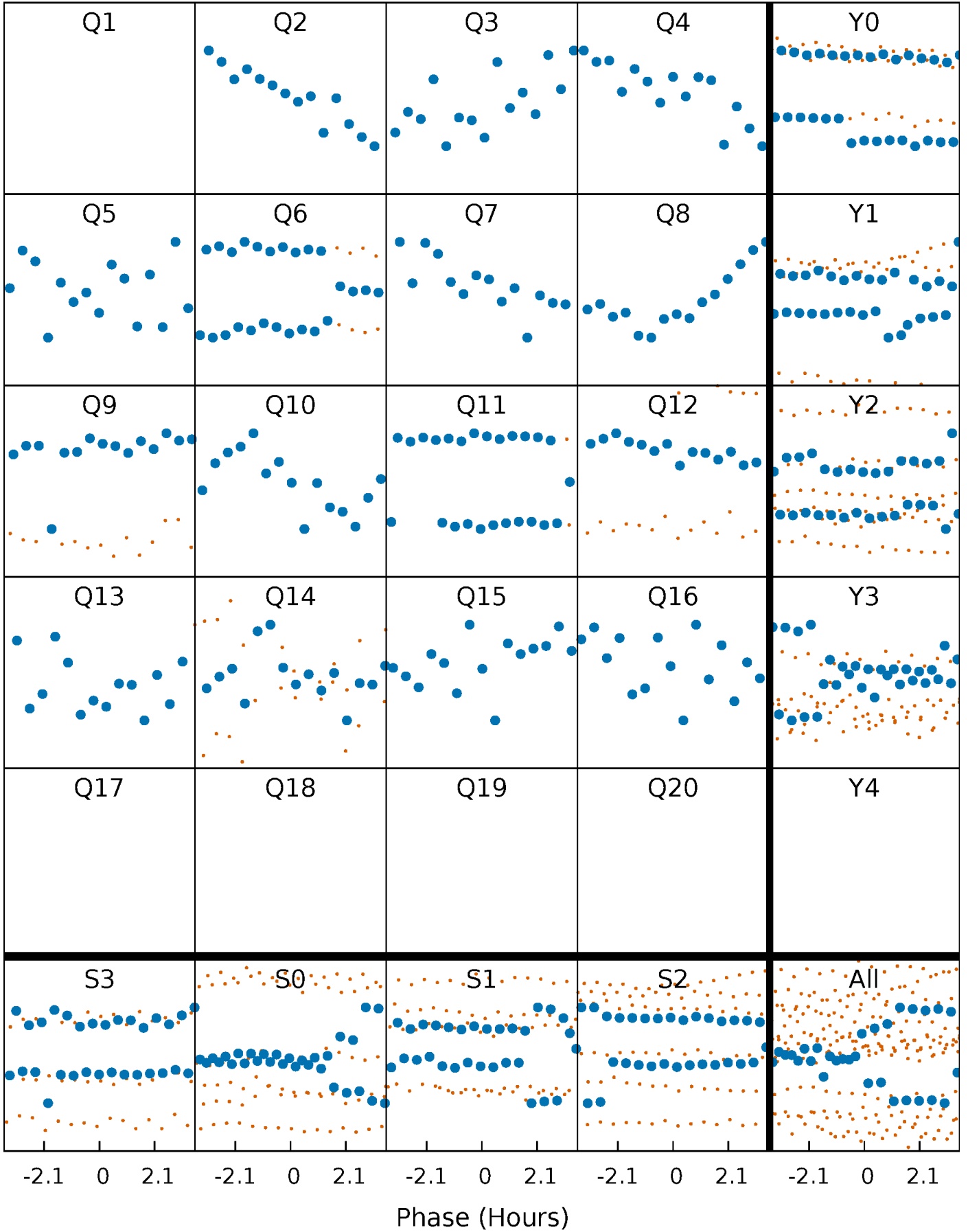


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



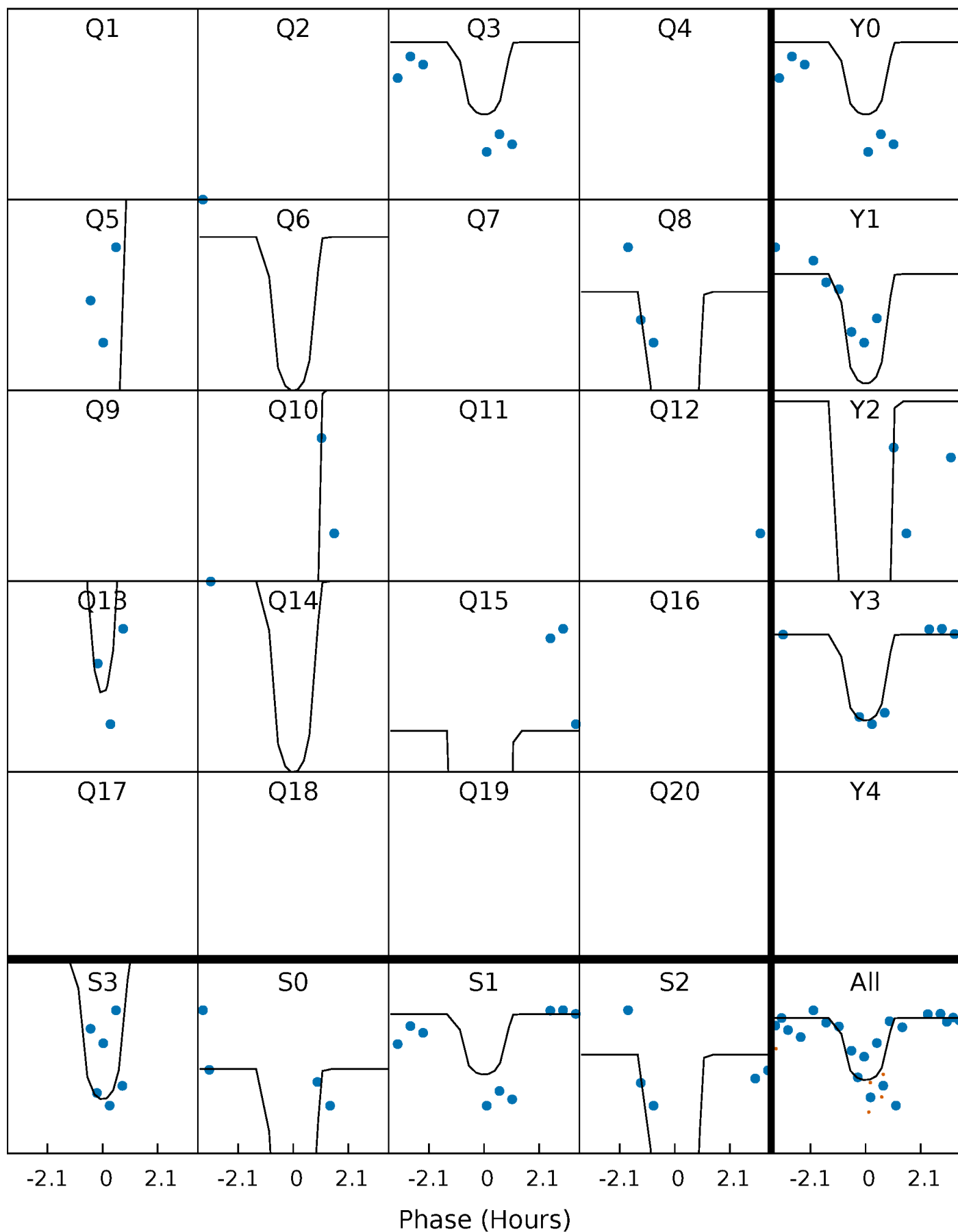
# PDC Quarter-Phased Transit Curves

TCE 007502608-02     $P = 50.391271$  Days     $T_0 = 173.637283$  (BKJD)



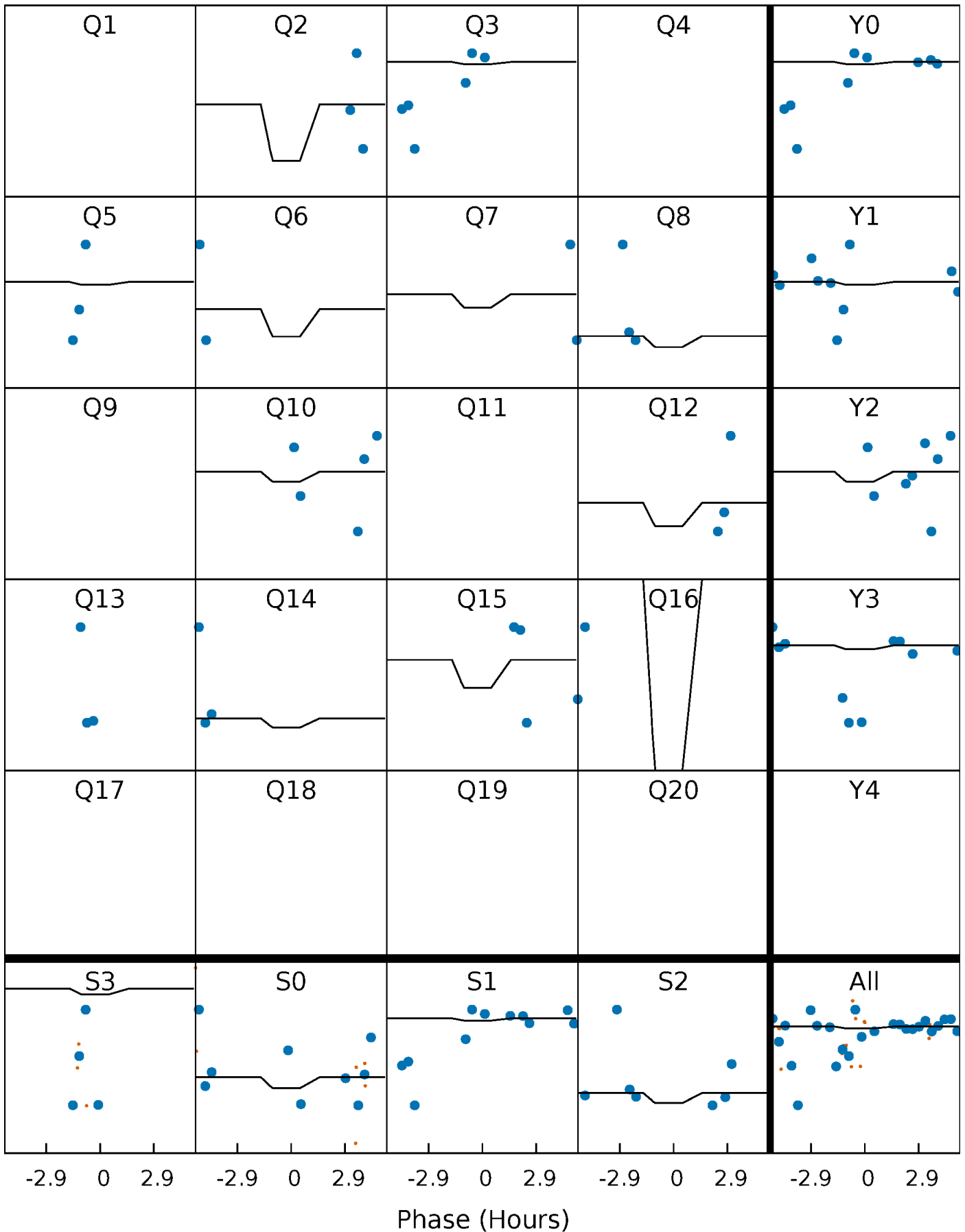
# DV Quarter-Phased Transit Curves

TCE 007502608-02 P= 50.391271 Days  $T_0=173.637283$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

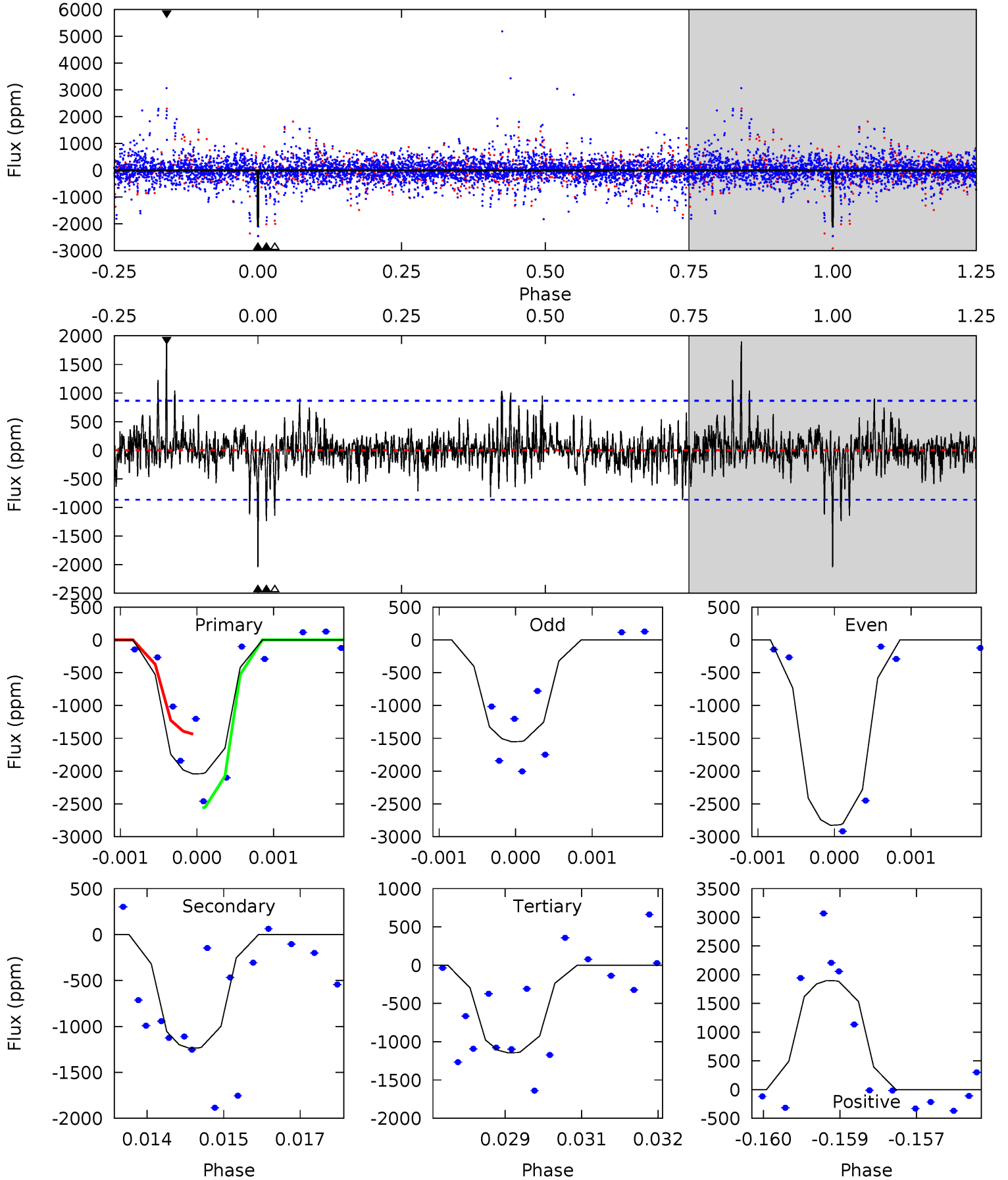
TCE 007502608-02 P= 50.390834 Days  $T_0=173.684510$  (BKJD)



# DV Model-Shift Uniqueness Test

007502608-02, P = 50.391271 Days, E = 123.246012 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	7.71	7.14	11.8	5.39	3.20	1.49	5.60	0.90	0.58	-4.12	3.43	0.99	0.48	3.22

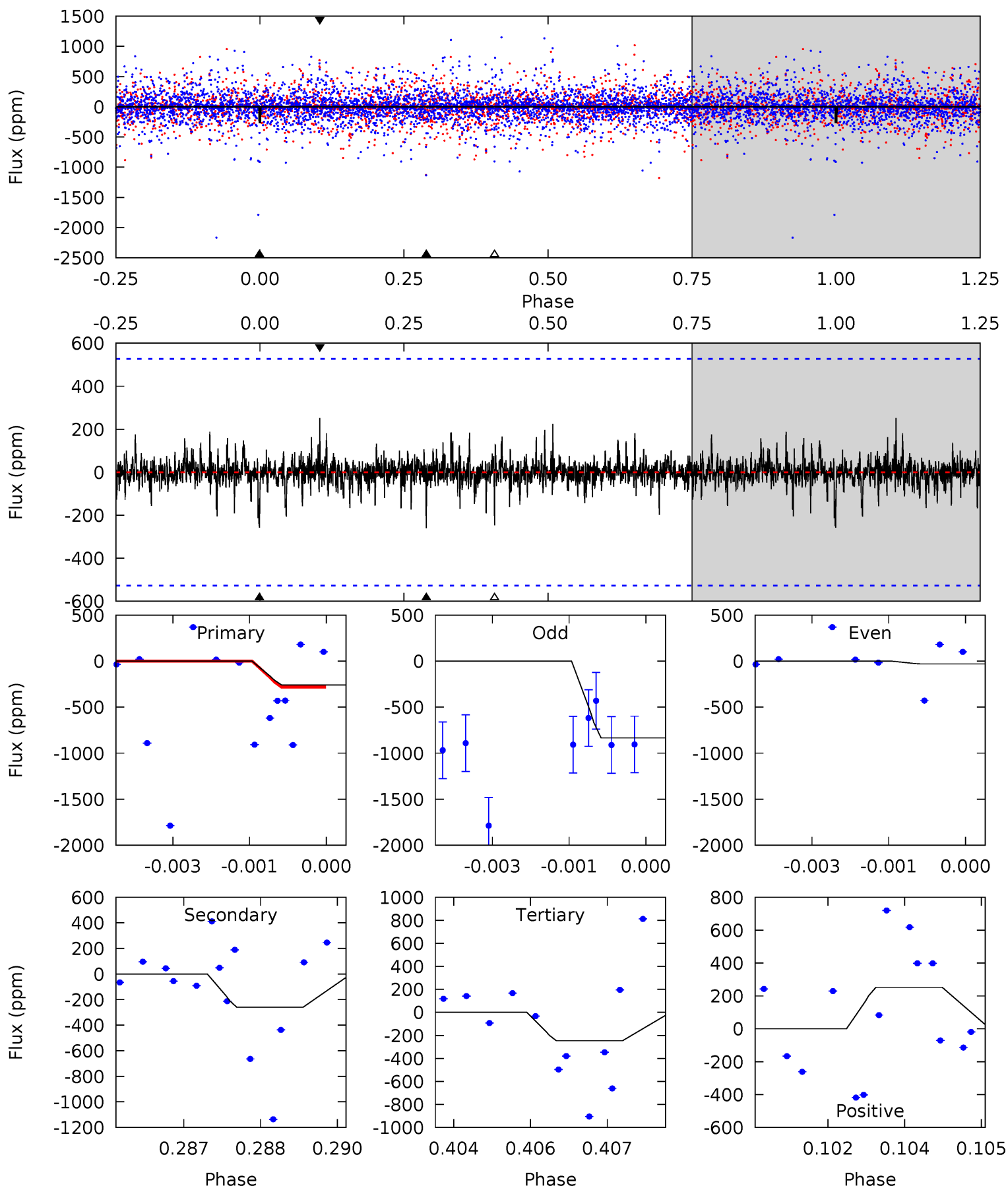




# Alt Model-Shift Uniqueness Test

007502608-02,  $P = 50.390834$  Days,  $E = 123.293676$  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
2.64	2.66	2.52	2.58	5.39	3.19	0.48	0.12	0.06	0.14	0.08	3.90	0	0.49	1.33



### Stellar Parameters For KIC 007502608

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4390^{+124}_{-140}$	$4.754^{+0.065}_{-0.030}$	$-1.280^{+0.300}_{-0.350}$	$0.490^{+0.033}_{-0.049}$	$0.496^{+0.036}_{-0.036}$	$5.955^{+1.727}_{-0.763}$
	+3%/-3%	+1%/-1%	+23%/-27%	+7%/-10%	+7%/-7%	+29%/-13%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007502608-02 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-1237 \pm 160$	$3.61^{+3.30}_{-2.38}$	$409^{+14}_{-16}$	$3477^{+1842}_{-607}$	$2278^{+19144}_{-1650}$
Alt.	$-260 \pm 98$	$2.74^{+2.99}_{-1.89}$	$409^{+14}_{-15}$	$2951^{+1320}_{-522}$	$778^{+7189}_{-600}$

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

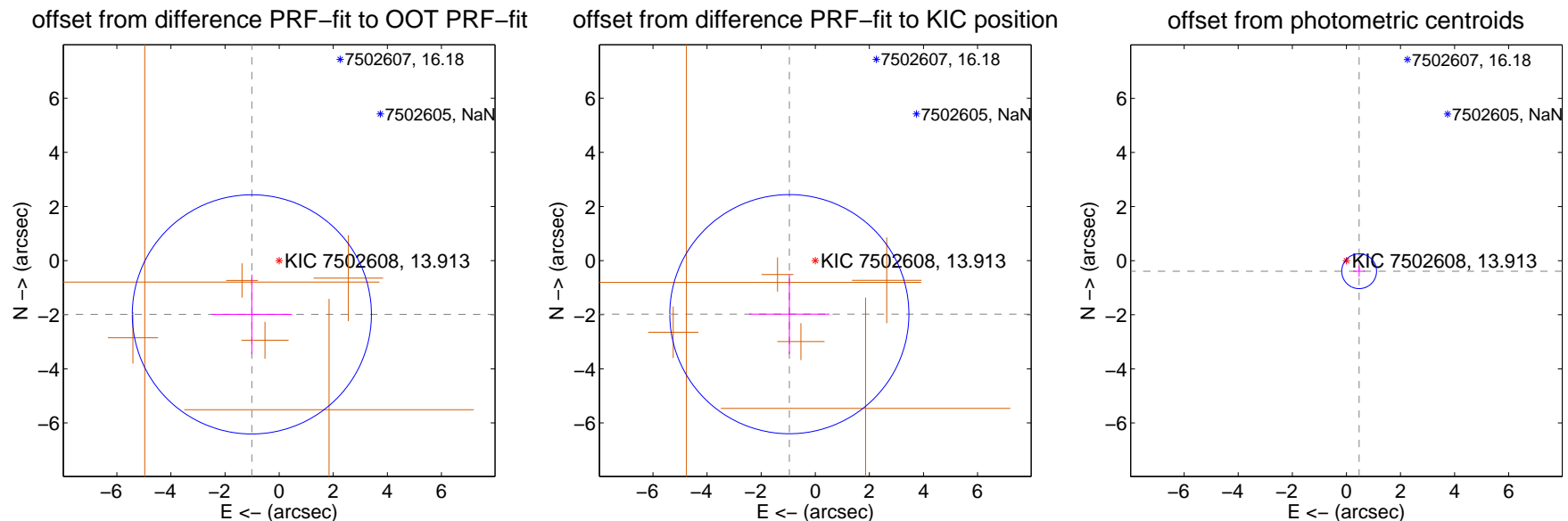
## DV Centroid Data

Supplemental centroid analysis for 007502608-02. Kepler magnitude: 13.91. Transit SNR 10.78

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

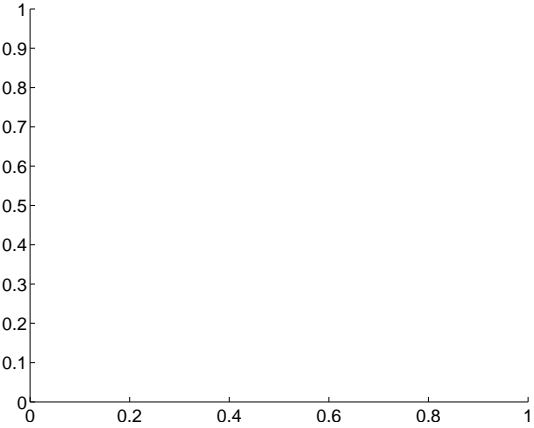
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.230 \pm 1.474$	1.51	$1.009 \pm 1.486$	$-1.988 \pm 1.470$
PRF-fit source offset from KIC position	$2.200 \pm 1.473$	1.49	$0.958 \pm 1.486$	$-1.980 \pm 1.470$
photometric centroid source offset	$0.61 \pm 0.21$	2.85	$-0.47 \pm 0.22$	$-0.39 \pm 0.21$



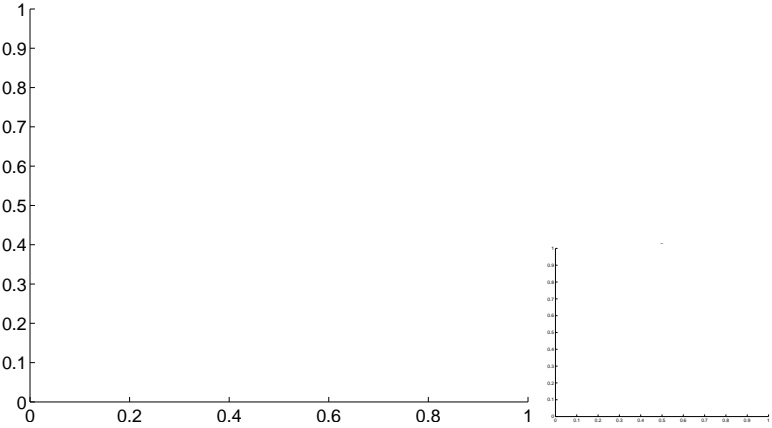
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

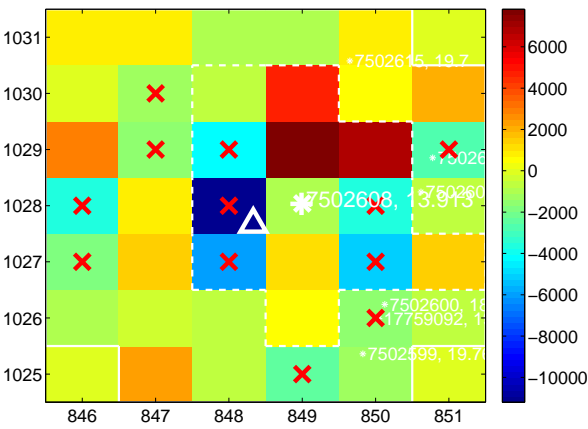
Q1 no difference image



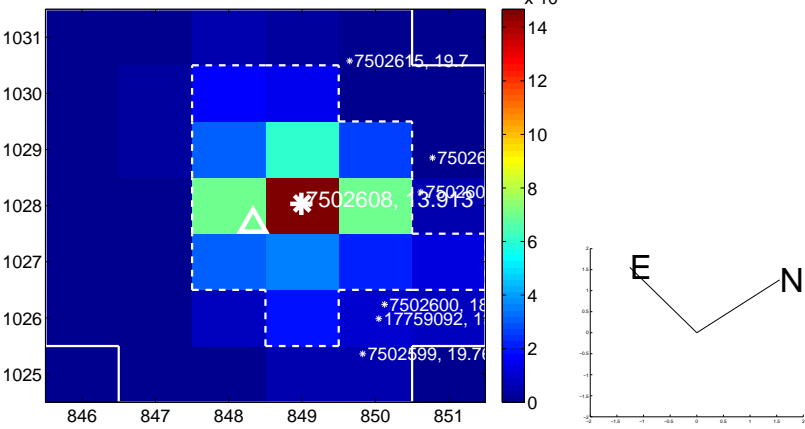
Q1 no OOT image



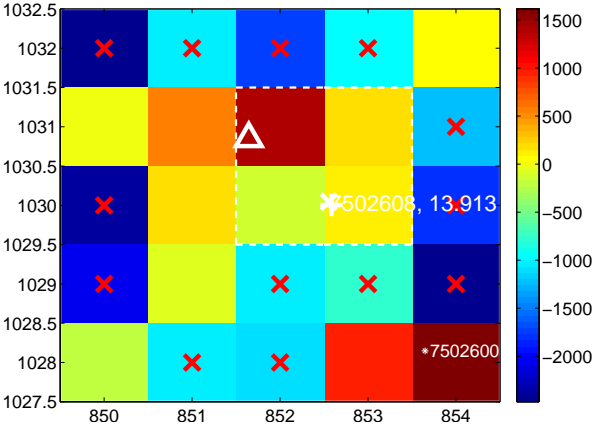
Q2 difference image. Poor Quality



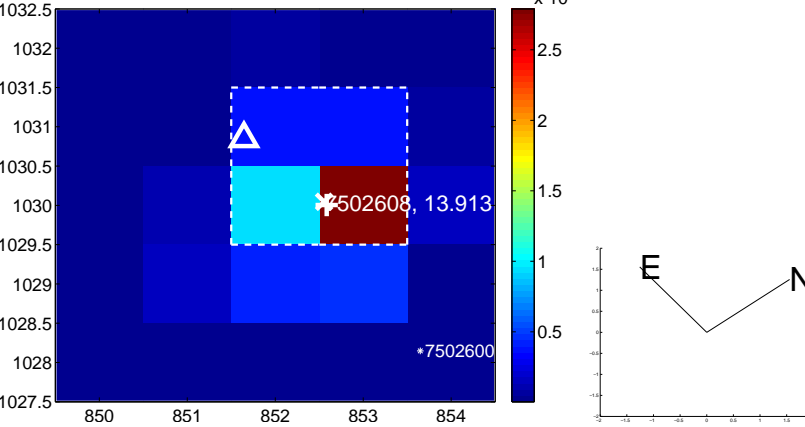
Q2 OOT image



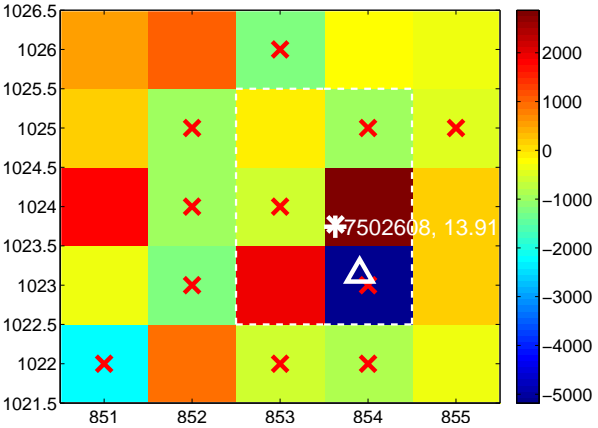
Q3 difference image. Poor Quality



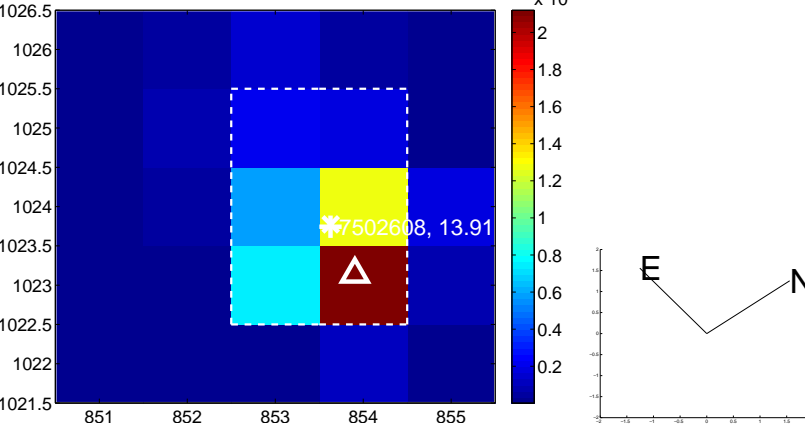
Q3 OOT image



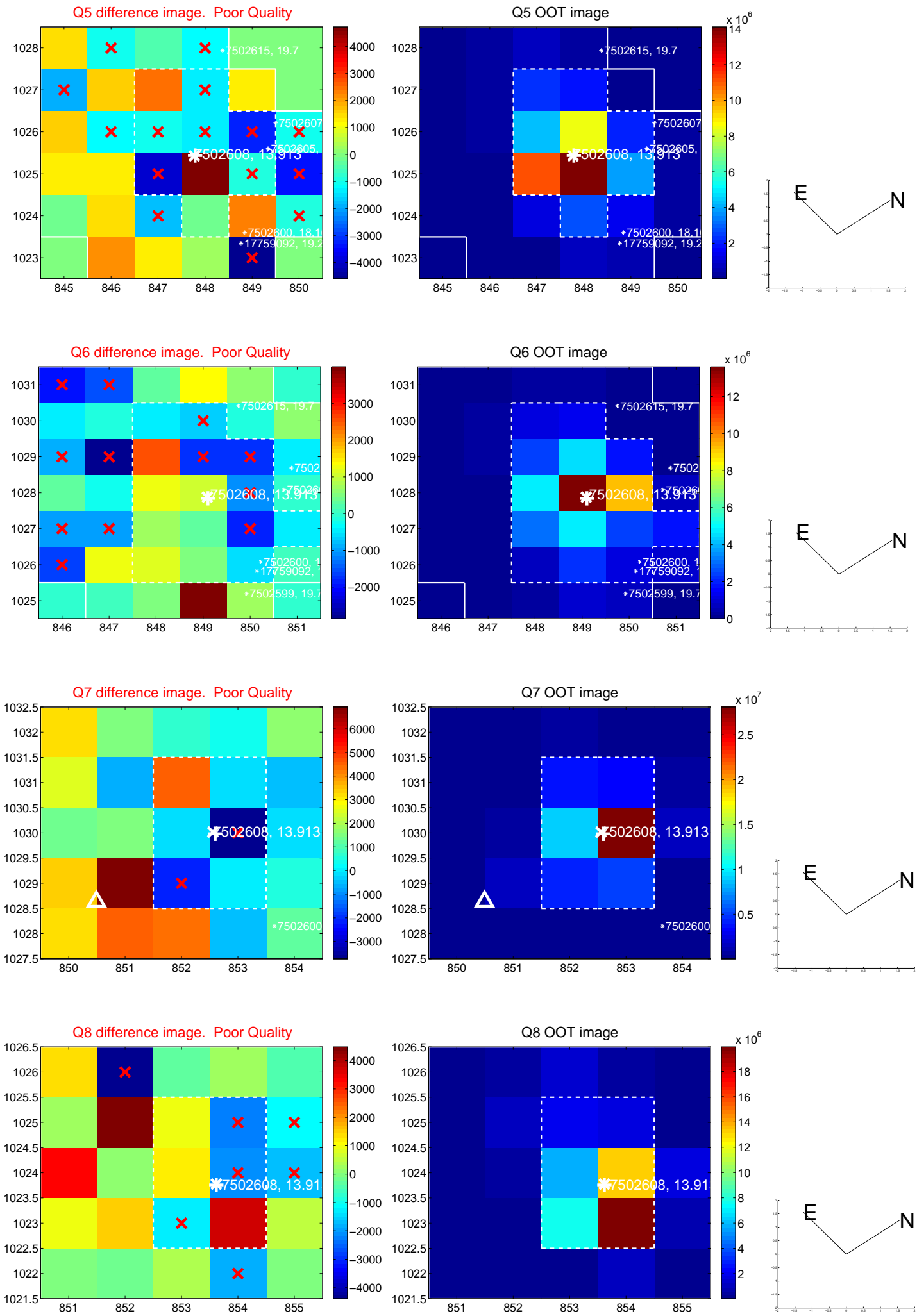
Q4 difference image. Poor Quality



Q4 OOT image

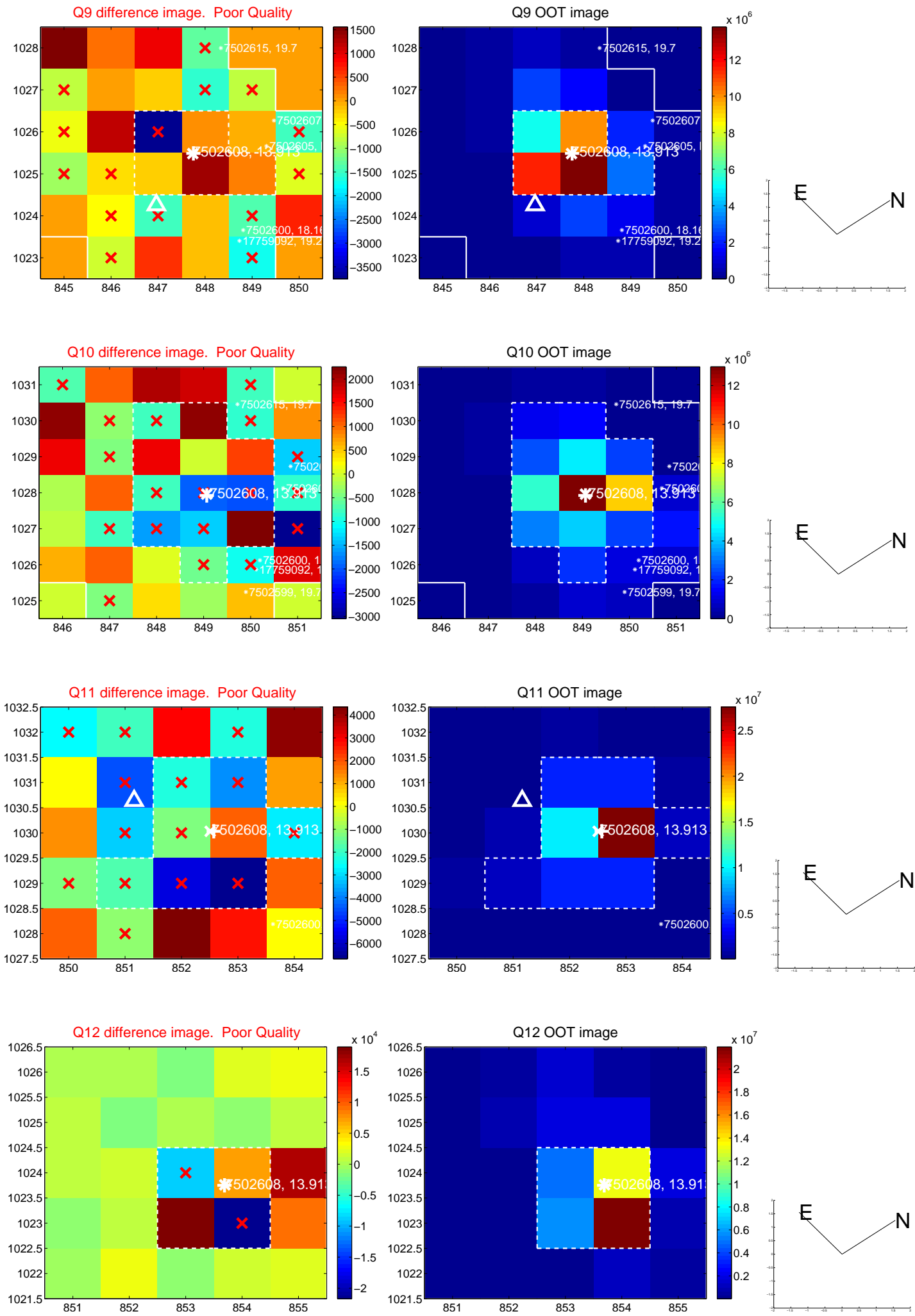


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



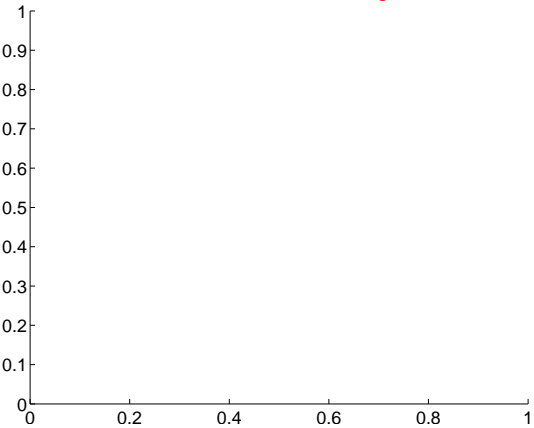


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

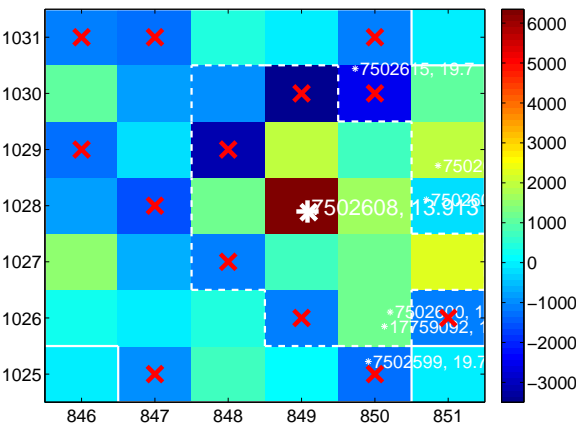
Q13 no difference image



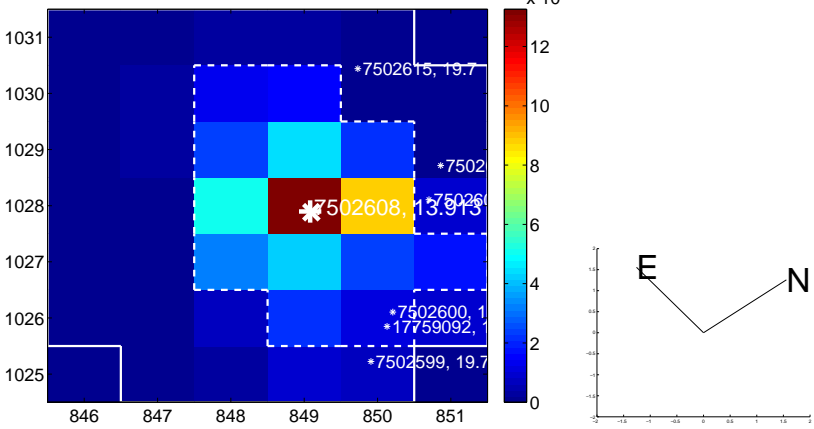
Q13 no OOT image



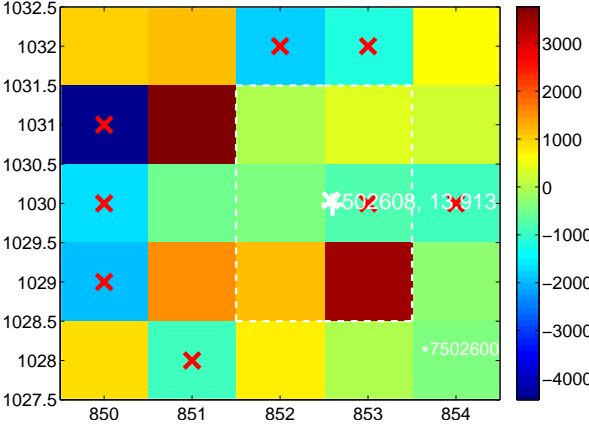
Q14 difference image. Poor Quality



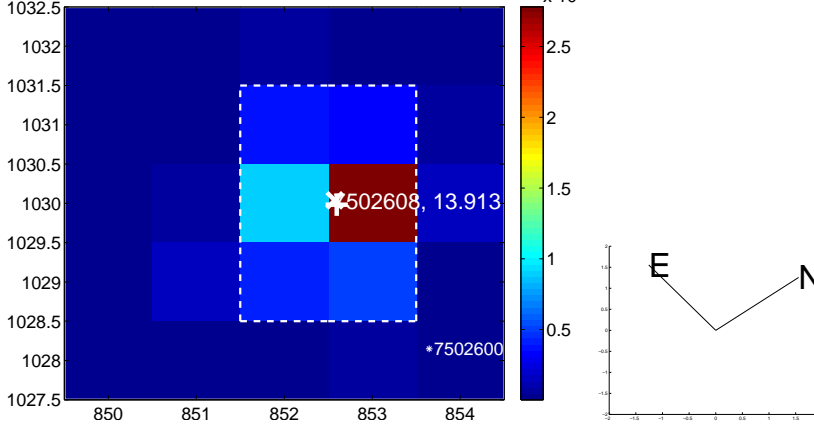
Q14 OOT image



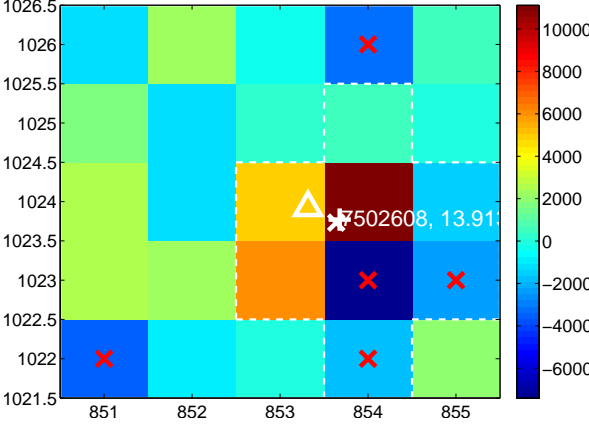
Q15 difference image. Poor Quality



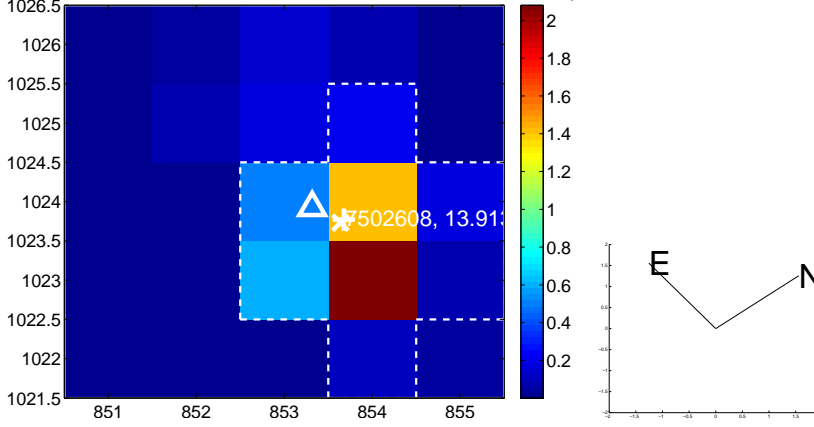
Q15 OOT image



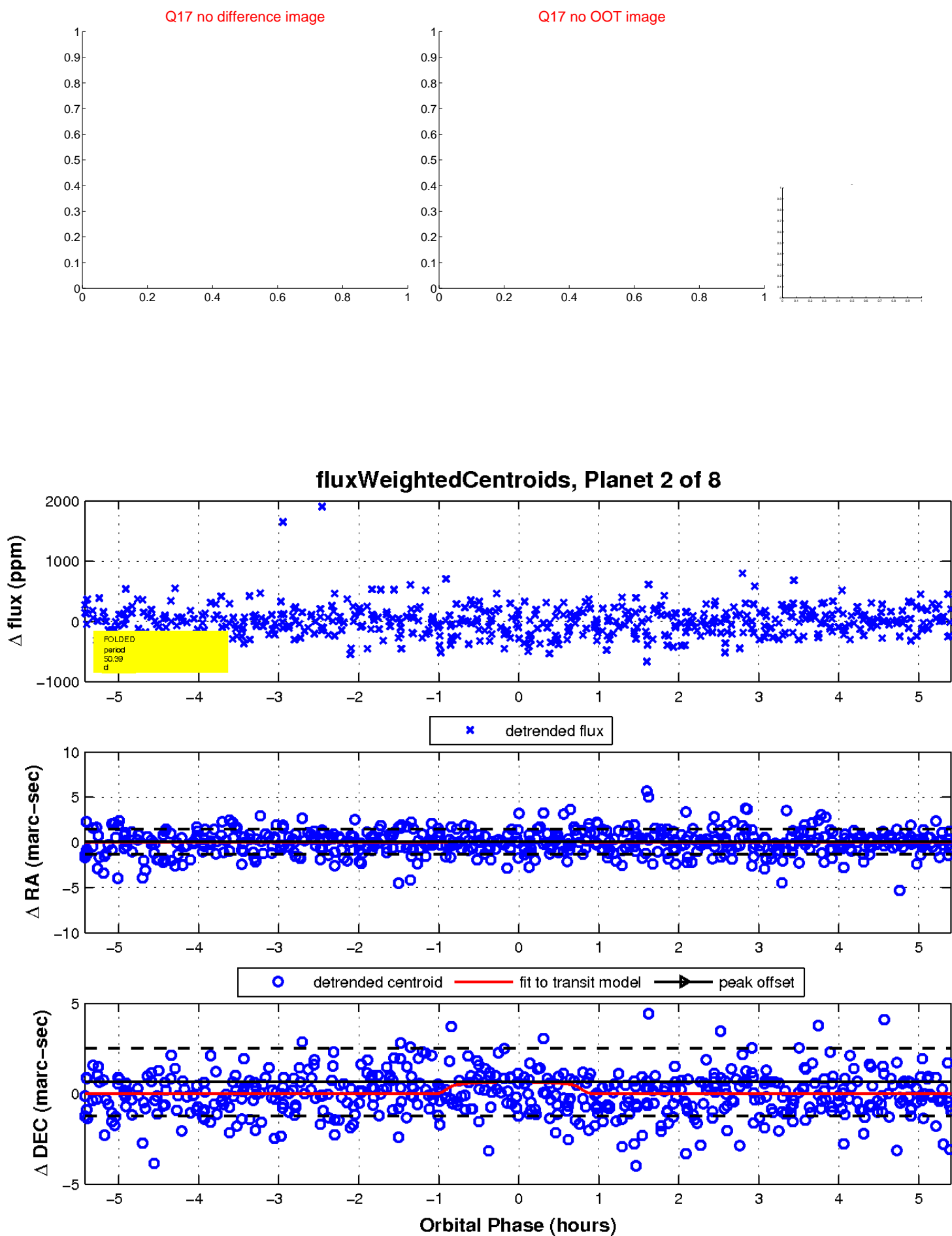
Q16 difference image. Poor Quality



Q16 OOT image

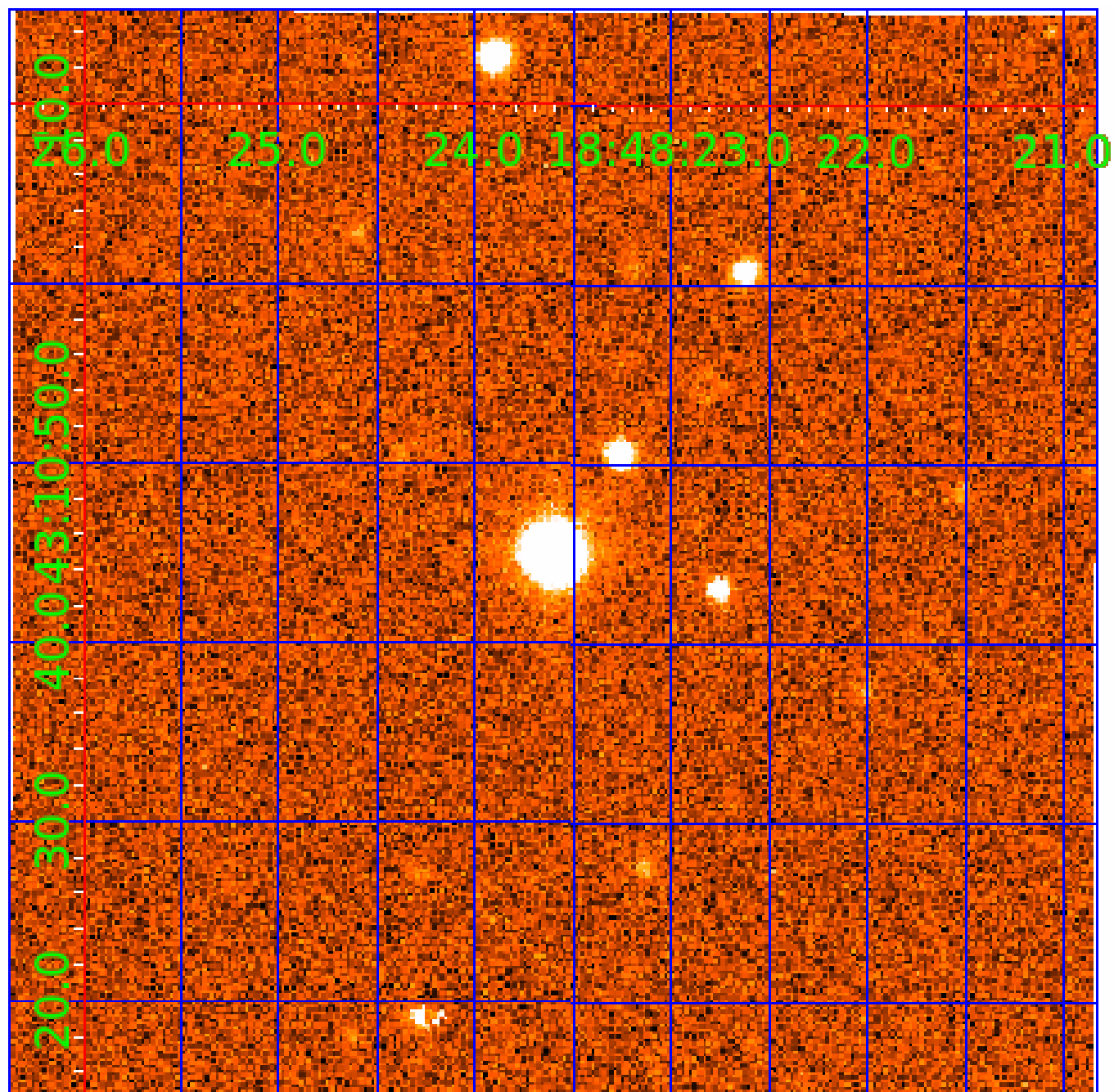


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 007502608

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007502608-01	OBS	No	0.728064	132.116531	18.1	5.186	7.2	7.0	0.49	4390	0.22	507.37
007502608-02	OBS	No	50.391271	173.637283	1923.4	1.813	14.3	10.8	0.49	4390	2.22	1.78
007502608-03	OBS	No	40.741440	151.504948	1481.5	2.000	13.2	-1.0	0.49	4390	1.87	2.37
007502608-05	OBS	No	15.856753	137.039151	403.8	4.745	17.2	6.5	0.49	4390	1.17	8.34
007502608-06	OBS	No	33.994192	139.375761	278.7	8.062	11.2	4.0	0.49	4390	0.88	3.02
007502608-07	OBS	No	47.068117	169.666095	1915.9	1.379	10.8	10.9	0.49	4390	2.27	1.96

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007502608-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
007502608-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007502608-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007502608-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007502608-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
007502608-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS

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

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

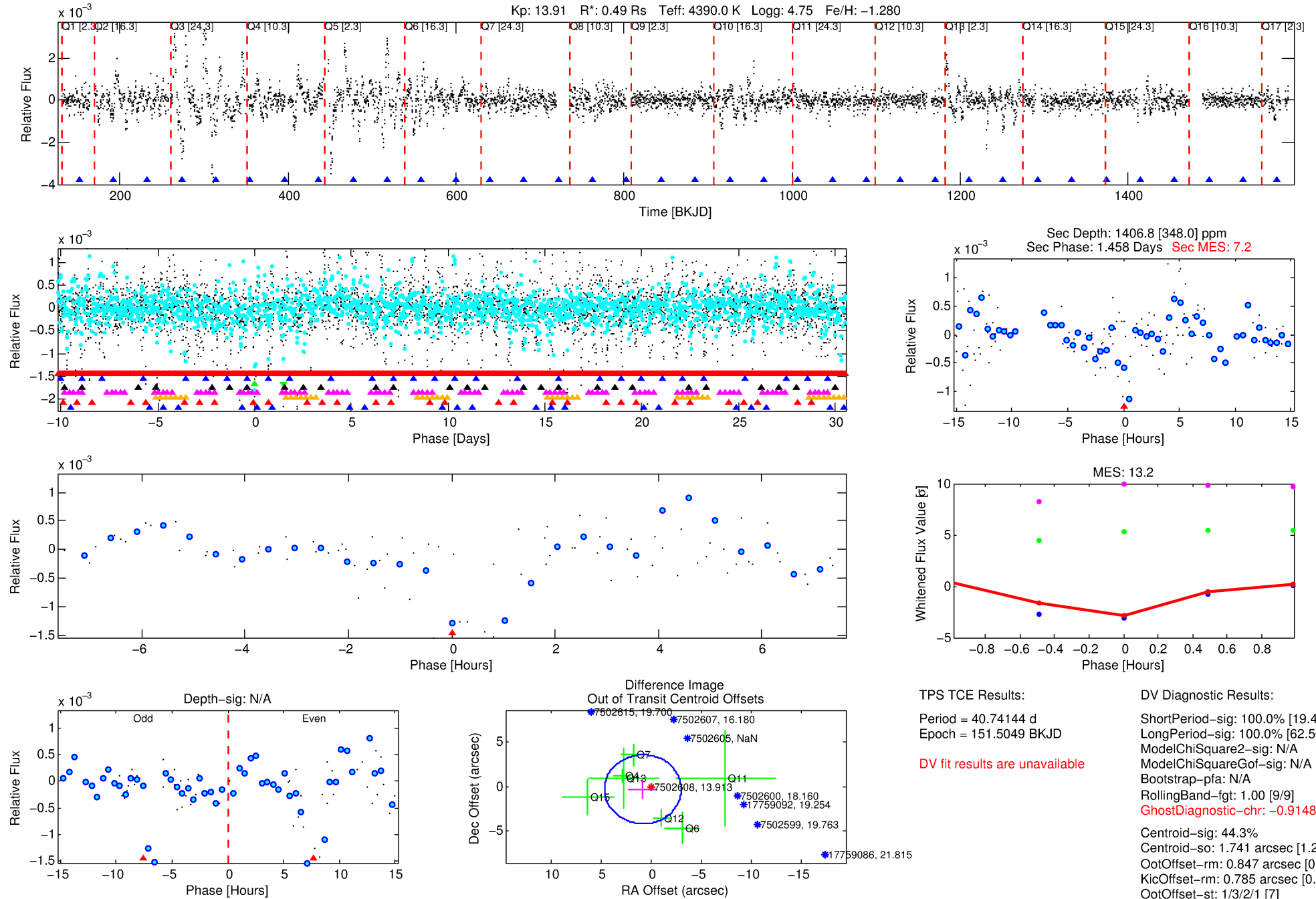
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007502608-03

No Significant Match Found

# DV One-Page Summary

KIC: 7502608 Candidate: 3 of 8 Period: 40.741 d



TPS TCE Results:

Period = 40.74144 d  
Epoch = 151.5049 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: 100.0% [19.49]  
LongPeriod-sig: 100.0% [62.50]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -0.9148

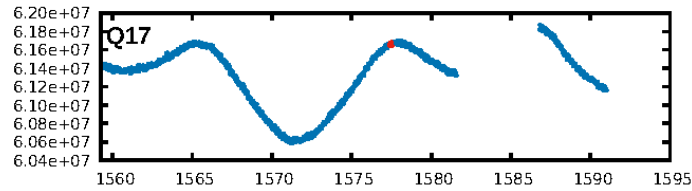
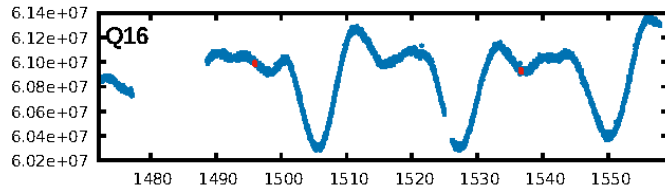
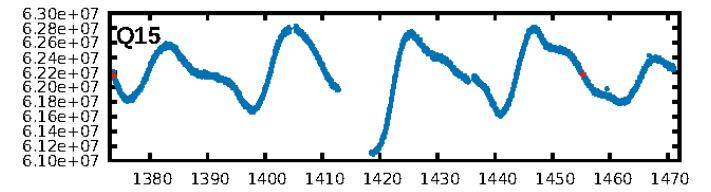
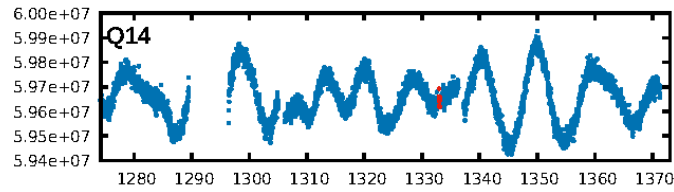
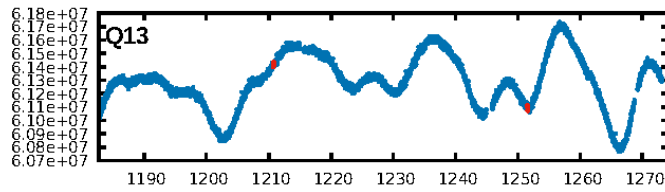
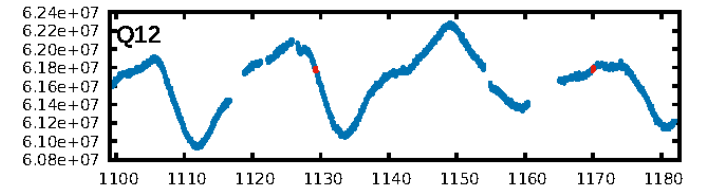
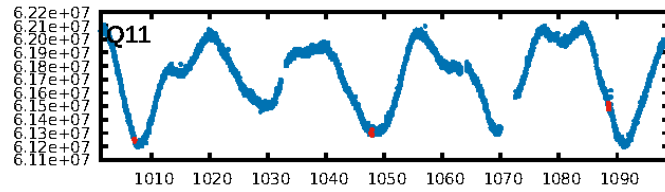
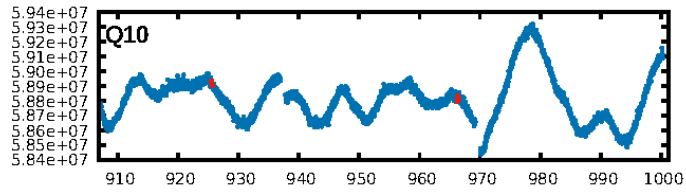
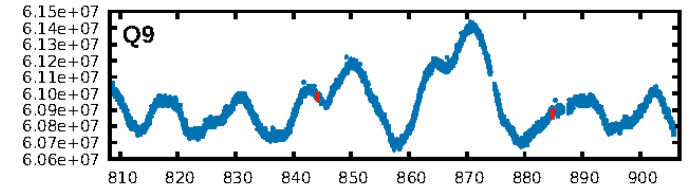
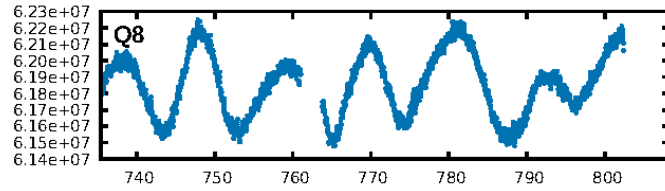
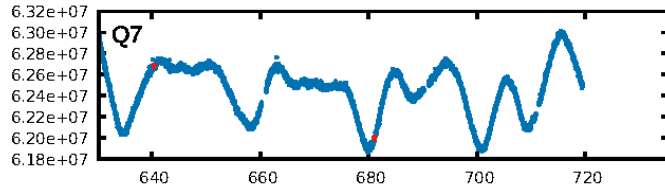
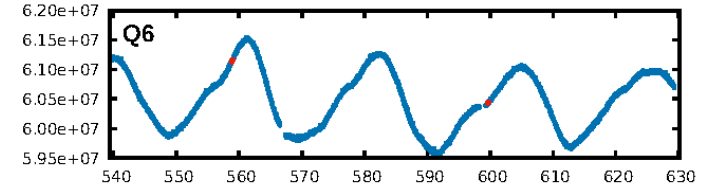
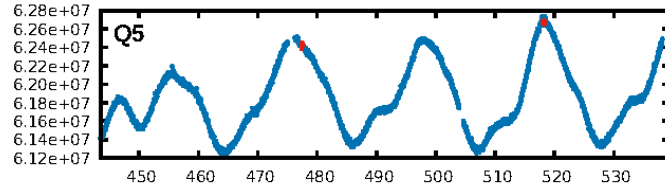
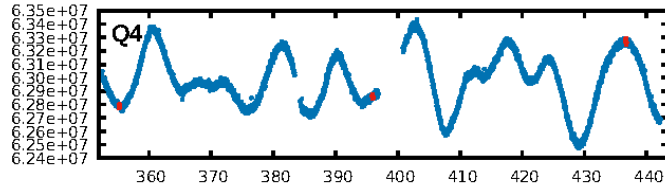
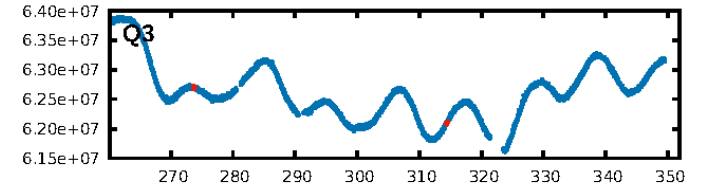
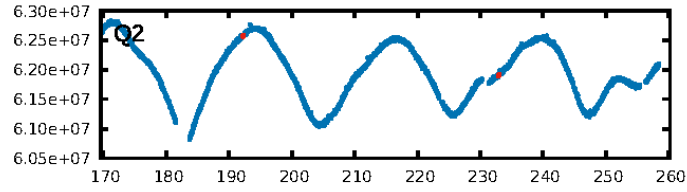
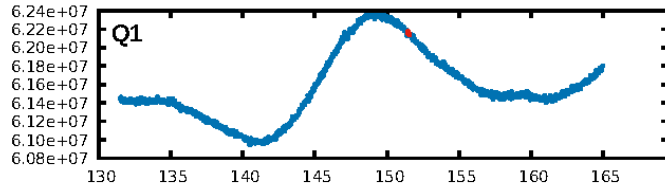
Centroid-sig: 44.3%  
Centroid-so: 1.741 arcsec [1.23]  
OotOffset-rm: 0.847 arcsec [0.66]  
KicOffset-rm: 0.785 arcsec [0.51]  
OotOffset-st: 1/3/2/1 [7]  
KicOffset-st: 1/3/2/1 [7]  
DiffImageQuality-fgm: 0.00 [0/7]  
DiffImageOverlap-fno: 0.00 [0/16]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:09:41 Z

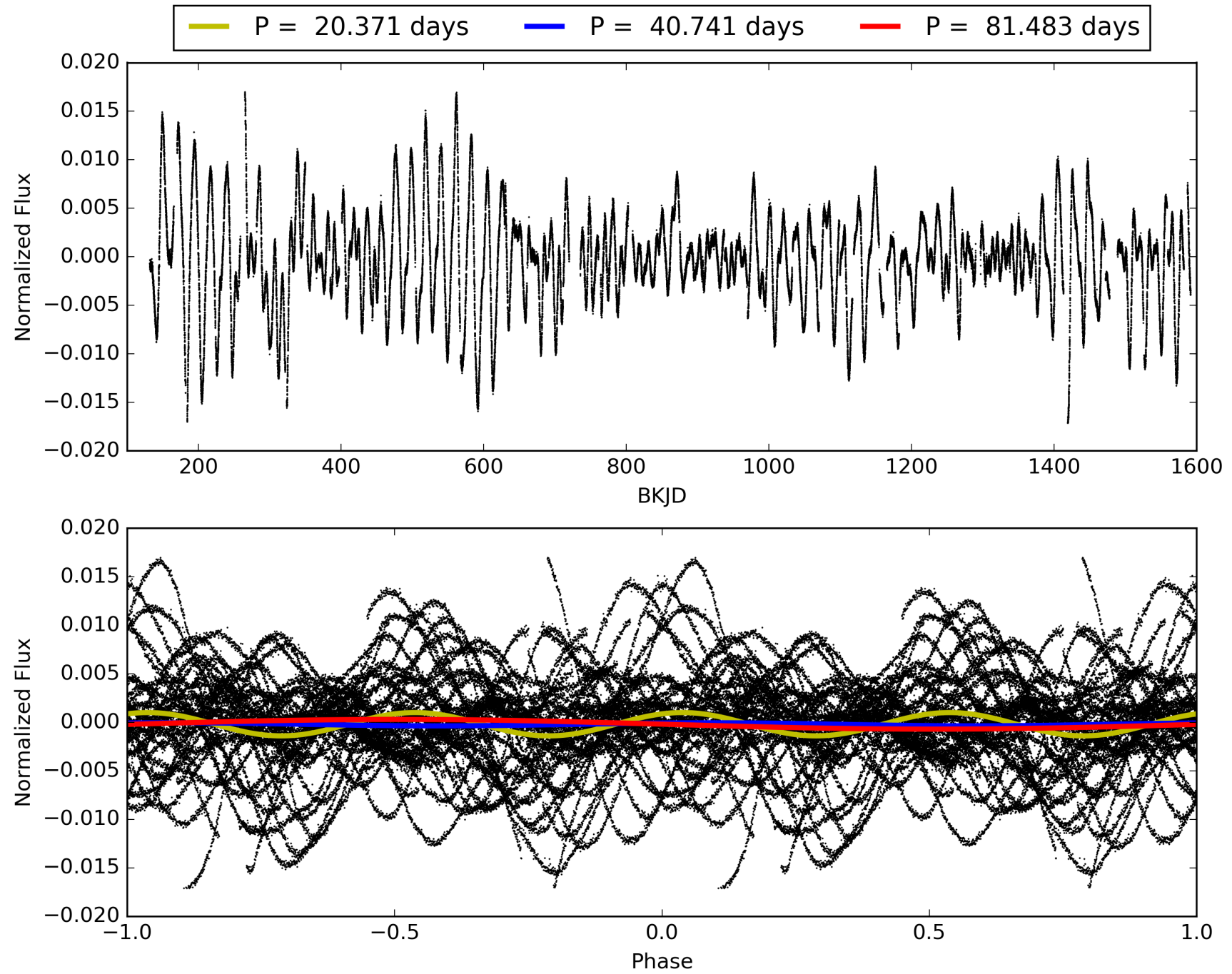
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 007502608-03, PDC Light Curves

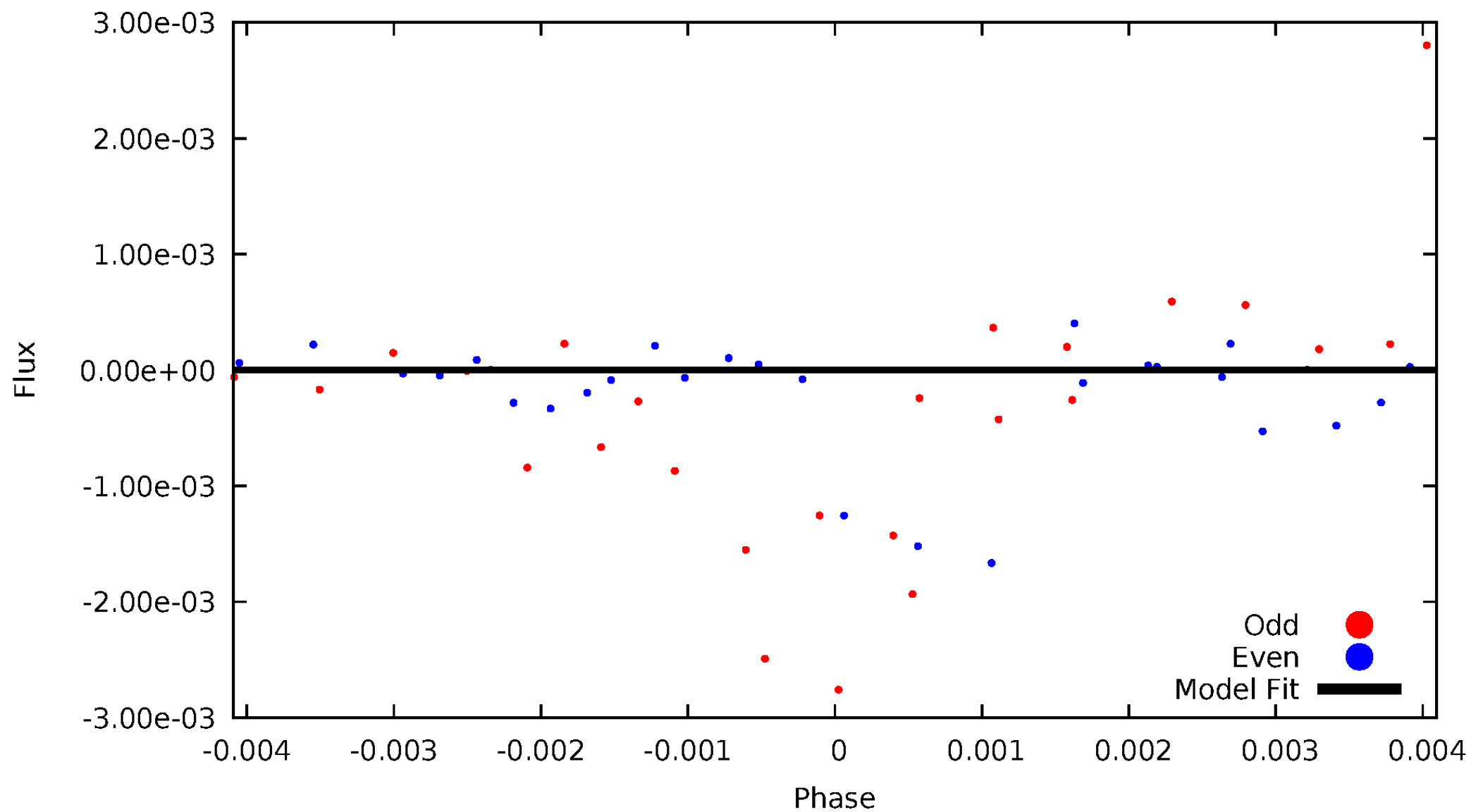


TCE 007502608-03



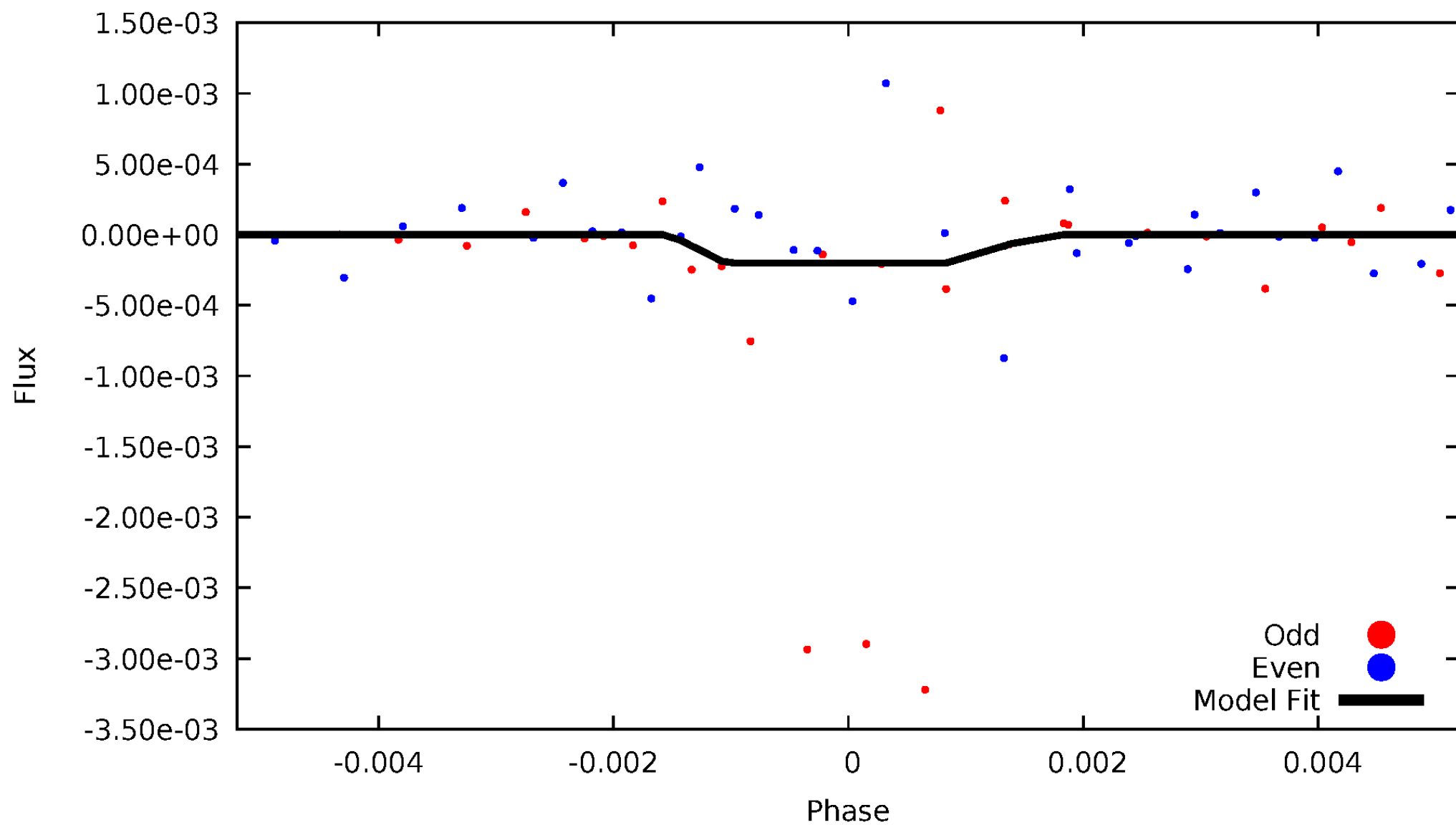
# DV Odd/Even

TCE 007502608-03



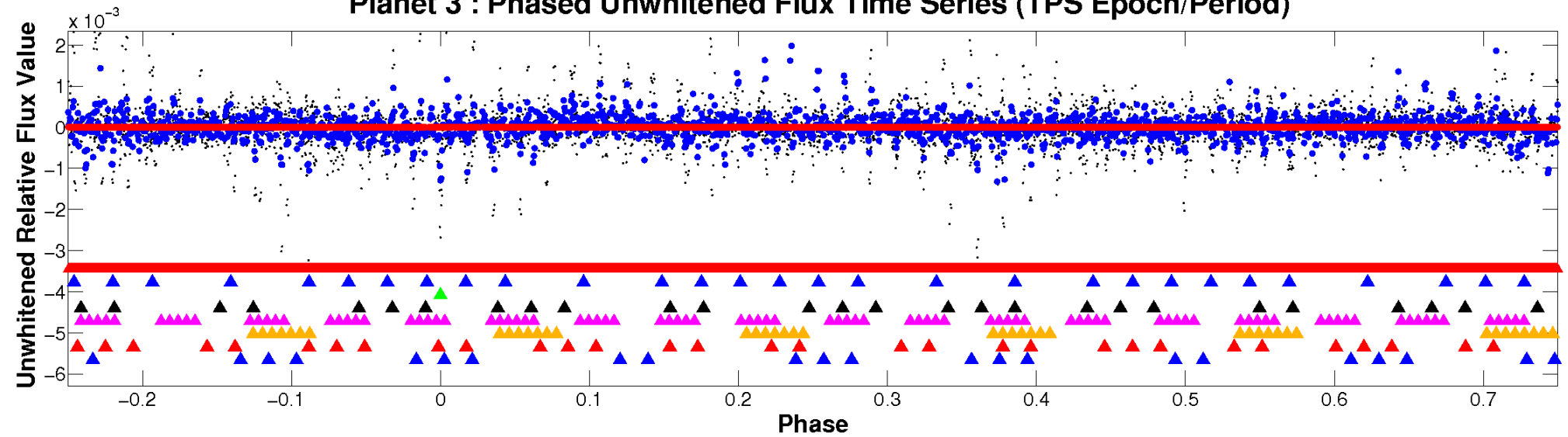
# ALT Odd/Even

TCE 007502608-03

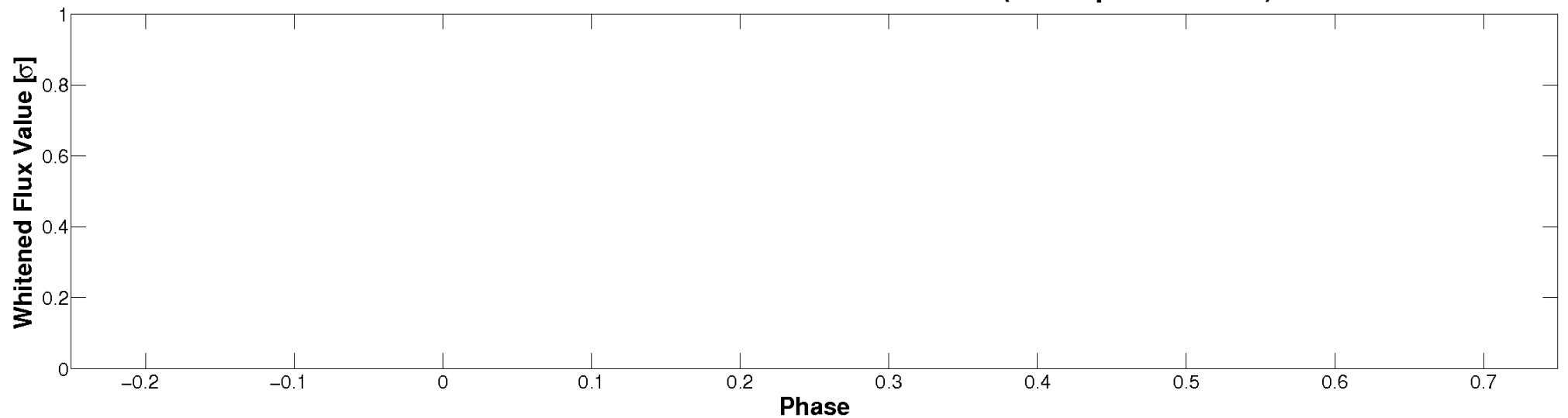


# Non-Whitened Vs. Whitened Light Curve

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

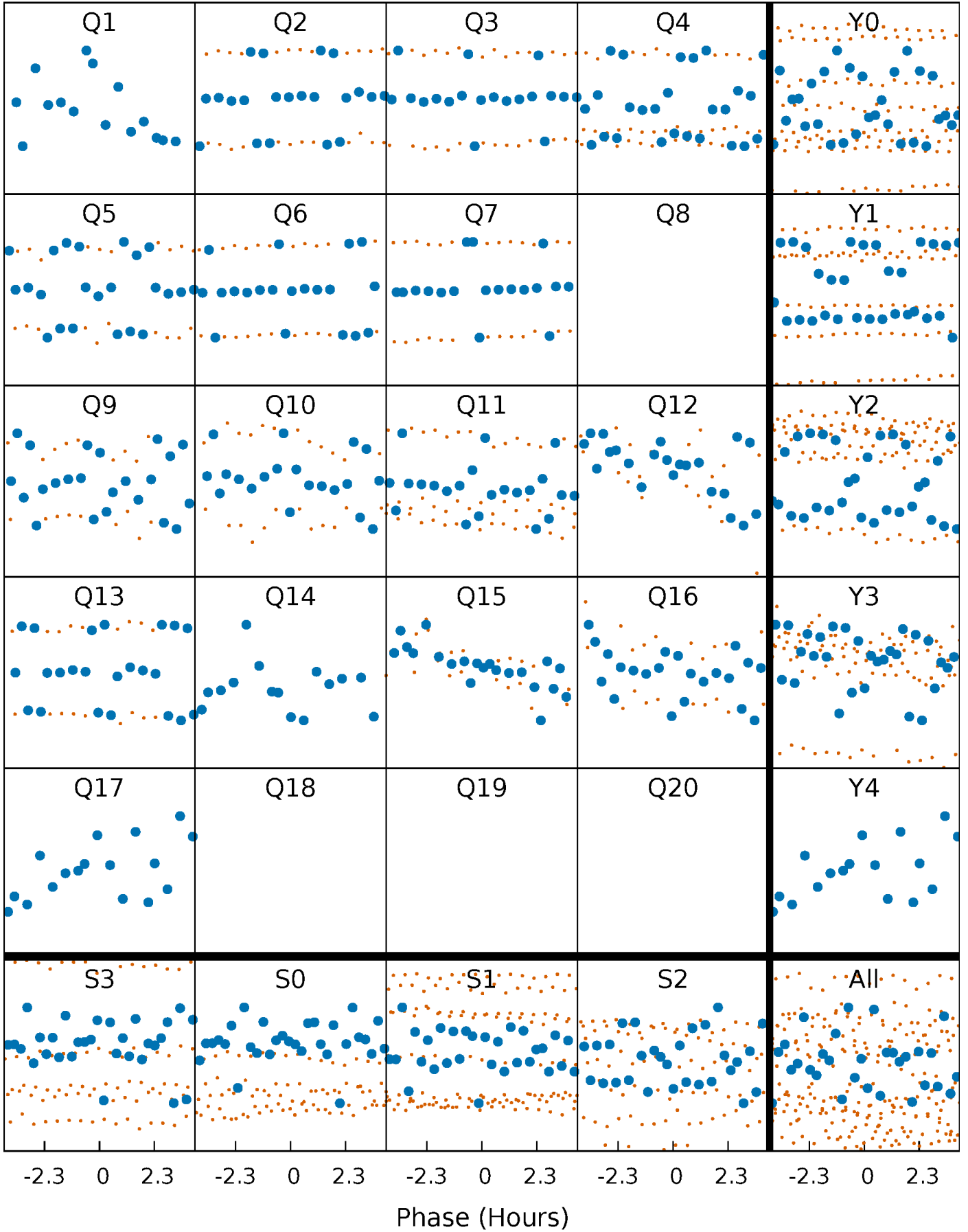


Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)



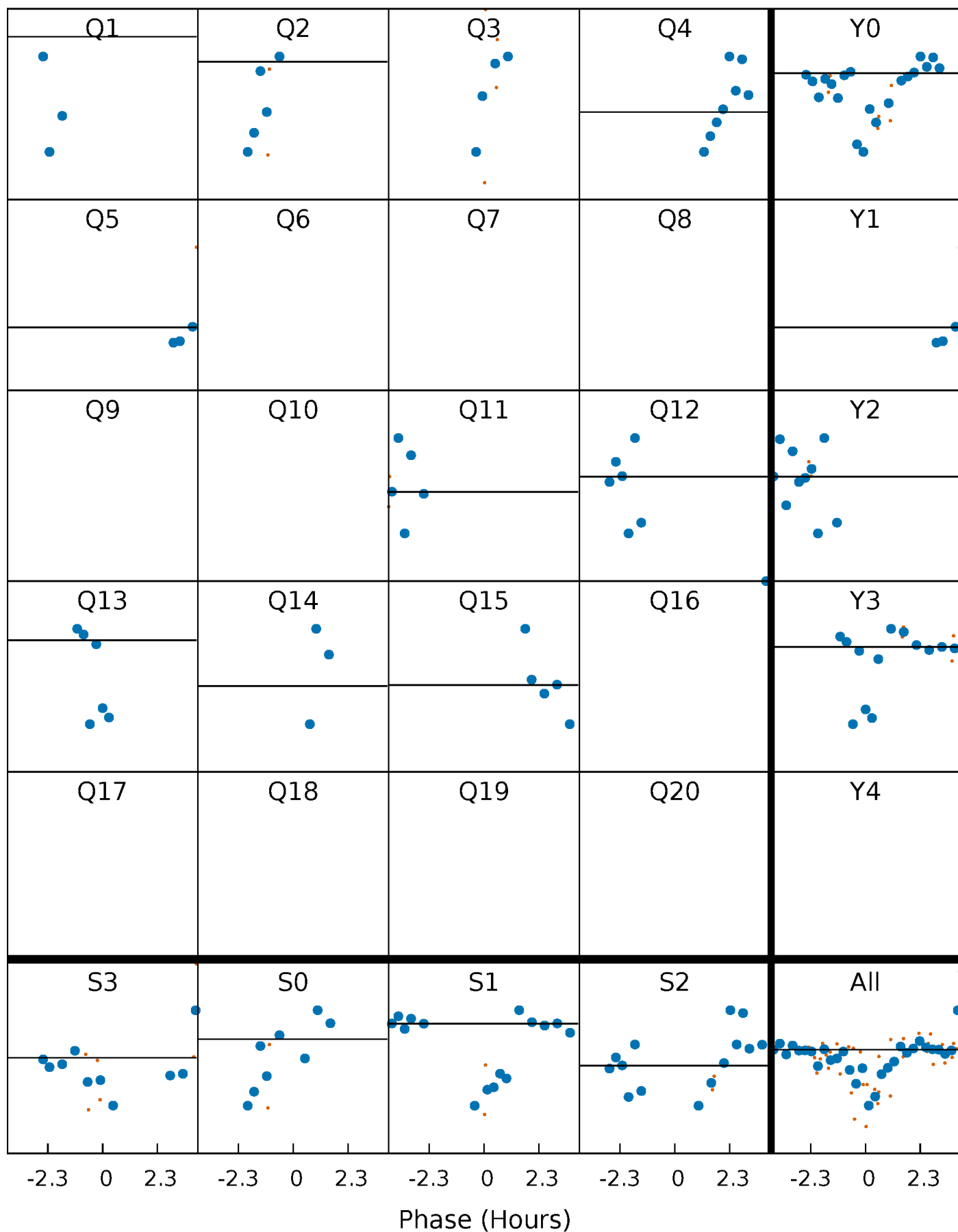
# PDC Quarter-Phased Transit Curves

TCE 007502608-03     $P = 40.741440$  Days     $T_0 = 151.504949$  (BKJD)



# DV Quarter-Phased Transit Curves

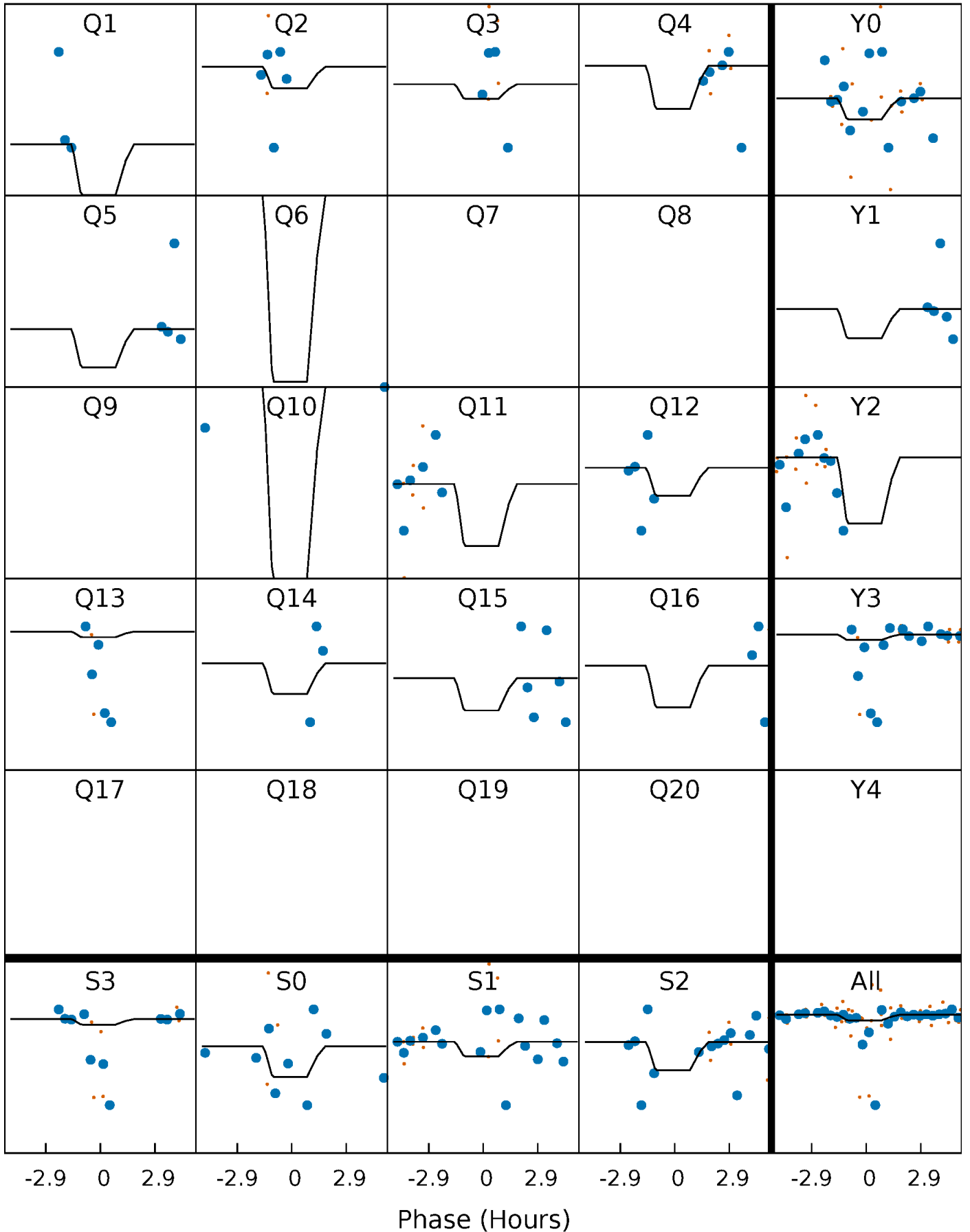
TCE 007502608-03 P= 40.741440 Days  $T_0=151.504949$  (BKJD)





# Alt. Detrend Quarter-Phased Transit Curves

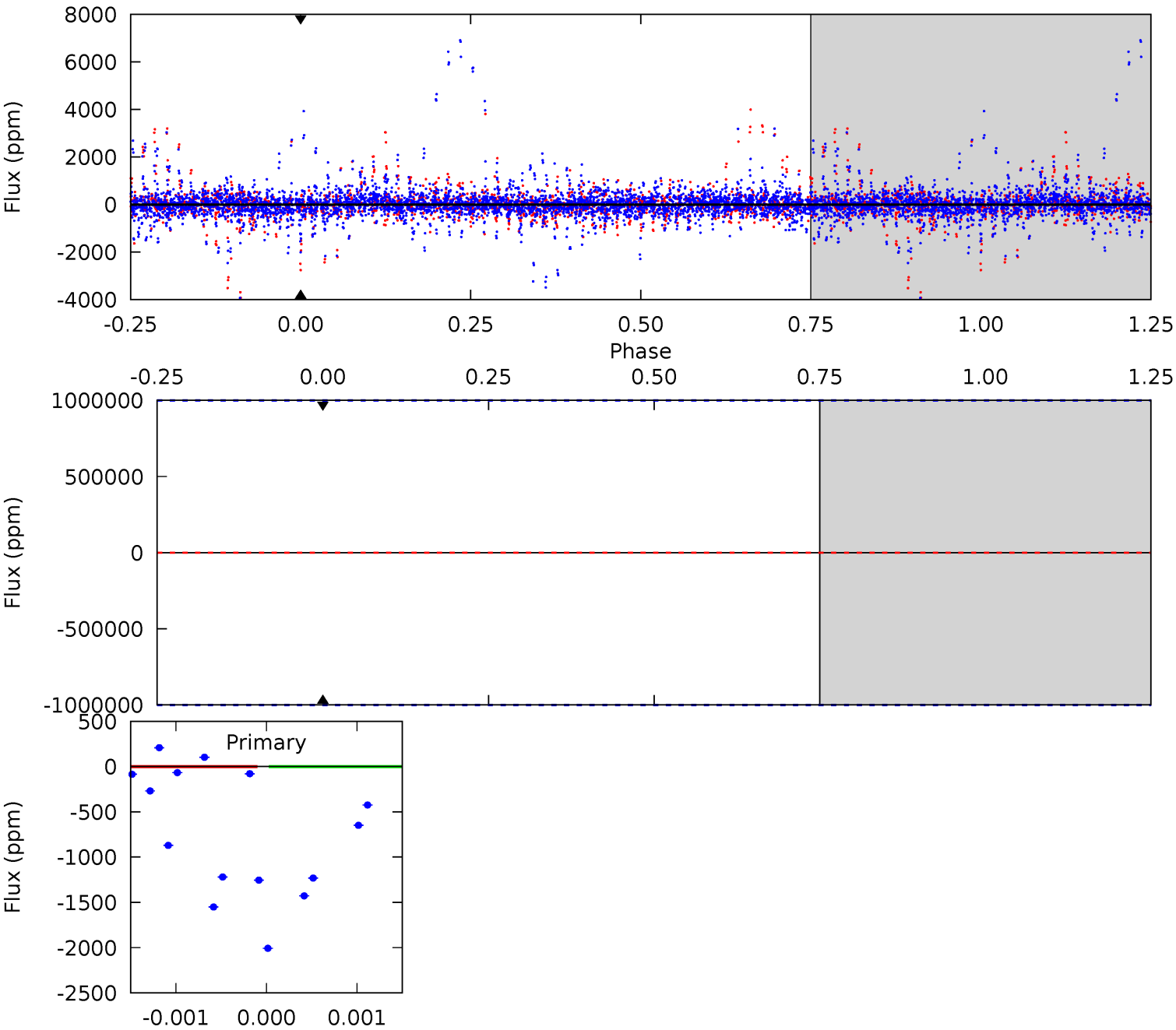
TCE 007502608-03 P= 40.741440 Days  $T_0=151.494468$  (BKJD)



# DV Model-Shift Uniqueness Test

007502608-03, P = 40.741440 Days, E = 110.763509 Days

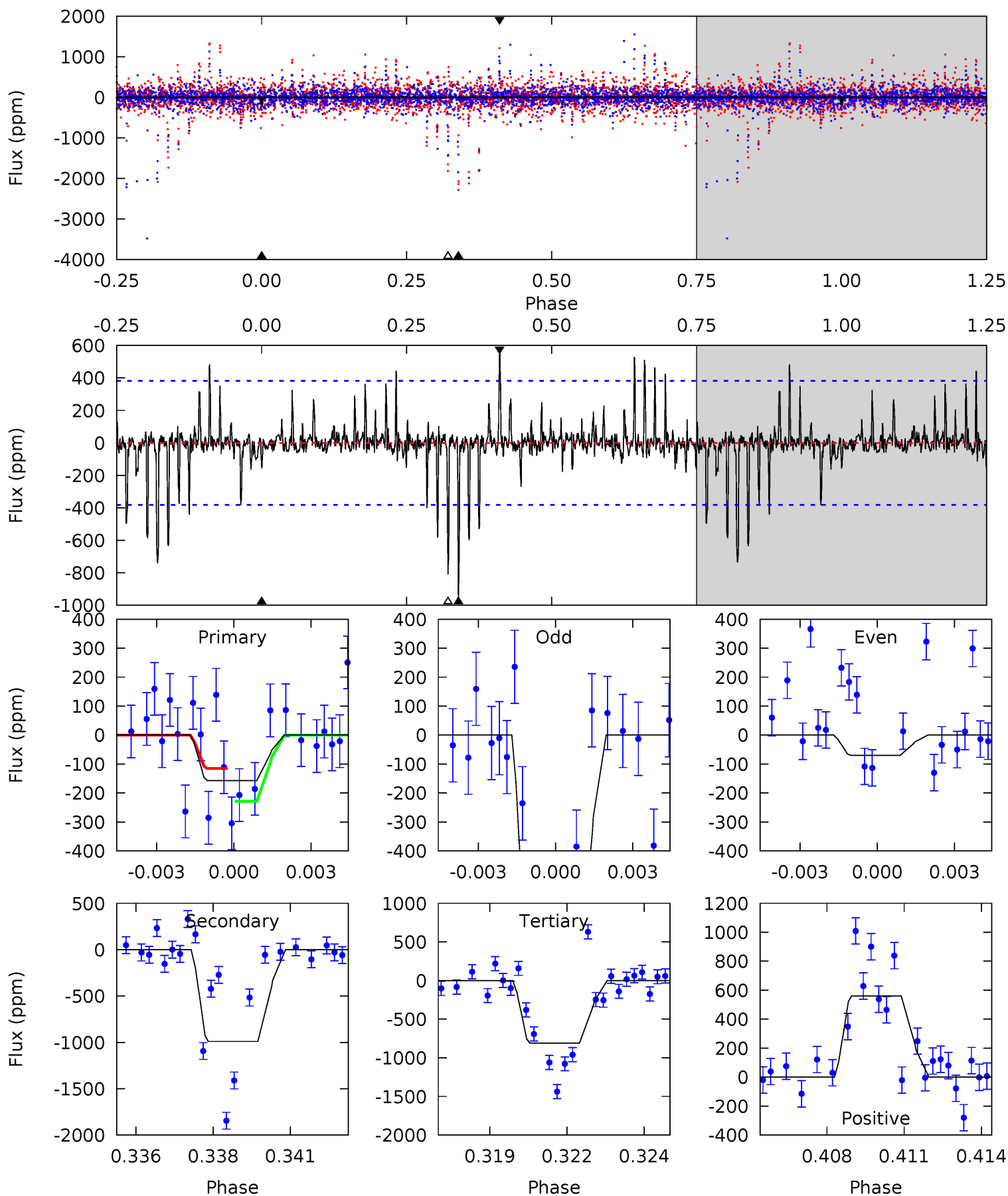
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



# Alt Model-Shift Uniqueness Test

007502608-03, P = 40.741440 Days, E = 110.753028 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
2.16	13.7	11.1	7.72	5.27	2.99	1.65	-8.99	-5.55	2.50	5.93	4.41	3.79	0.36	0.77



### Stellar Parameters For KIC 007502608

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4390^{+124}_{-140}$	$4.754^{+0.065}_{-0.030}$	$-1.280^{+0.300}_{-0.350}$	$0.490^{+0.033}_{-0.049}$	$0.496^{+0.036}_{-0.036}$	$5.955^{+1.727}_{-0.763}$
	+3%/-3%	+1%/-1%	+23%/-27%	+7%/-10%	+7%/-7%	+29%/-13%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007502608-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$0 \pm 1000000$	$4.39^{+4.30}_{-2.99}$	$439^{+15}_{-18}$	$3163^{+7955}_{-12659}$	$863^{+206354}_{-127981}$
Alt.	$-991 \pm 73$	$3.76^{+4.47}_{-2.75}$	$440^{+15}_{-17}$	$3327^{+2019}_{-657}$	$1322^{+16205}_{-1053}$

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

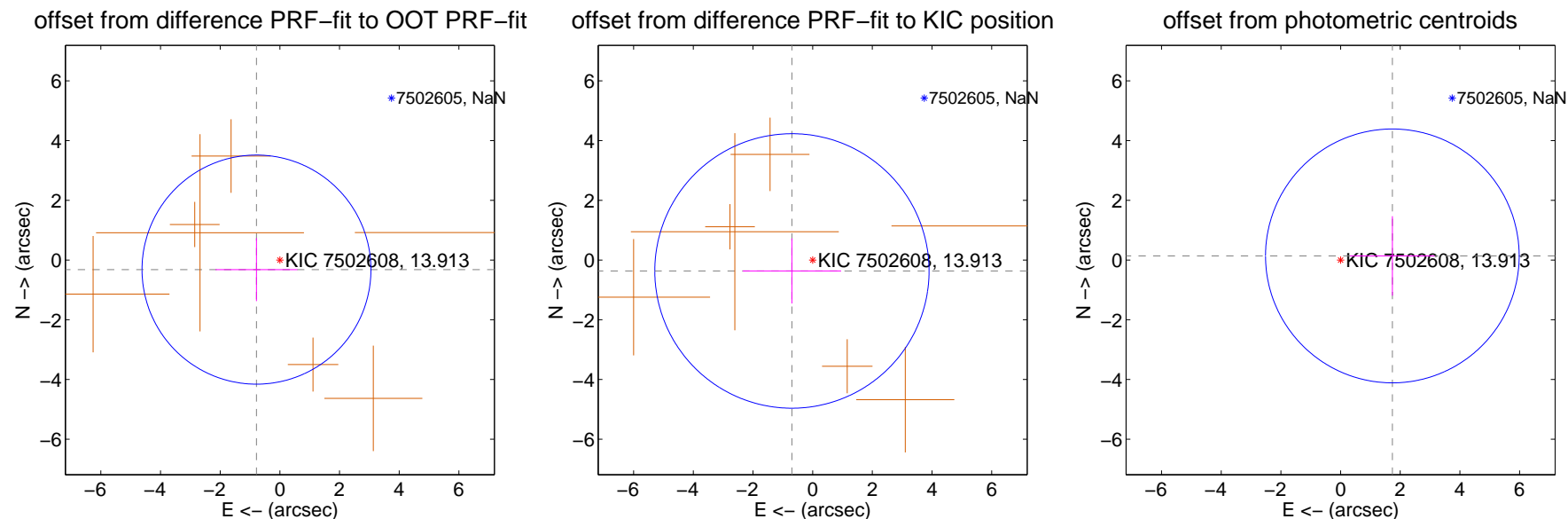
## DV Centroid Data

Supplemental centroid analysis for 007502608-03. Kepler magnitude: 13.91. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

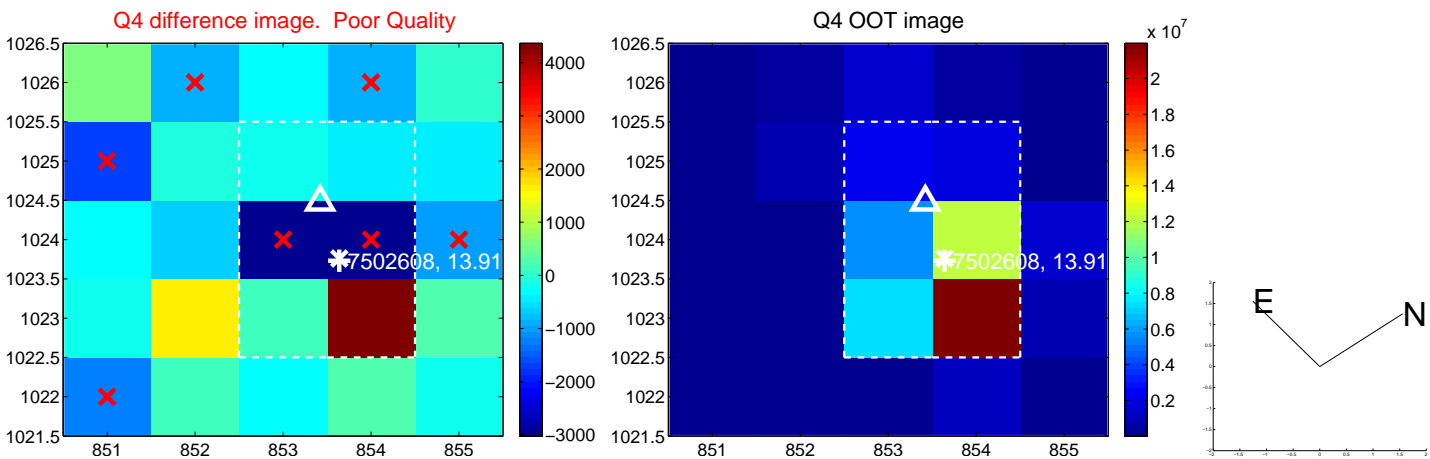
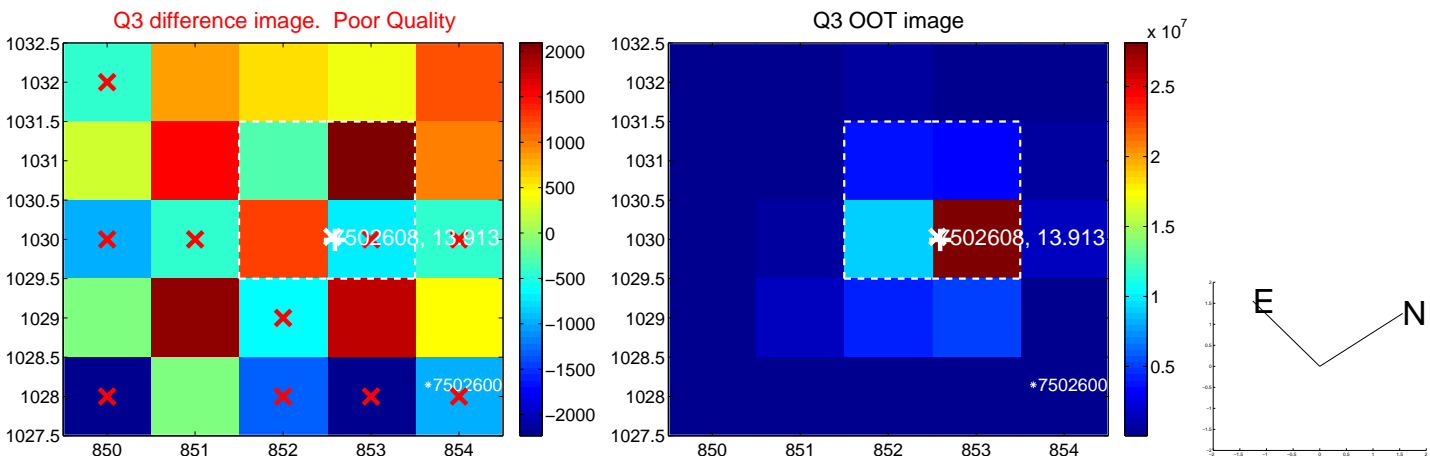
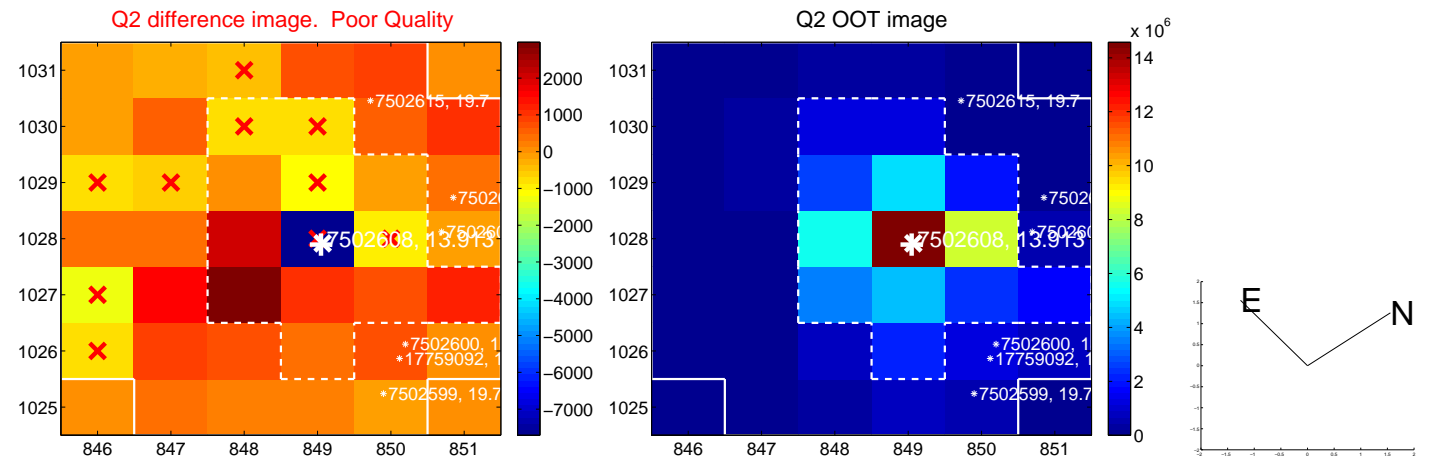
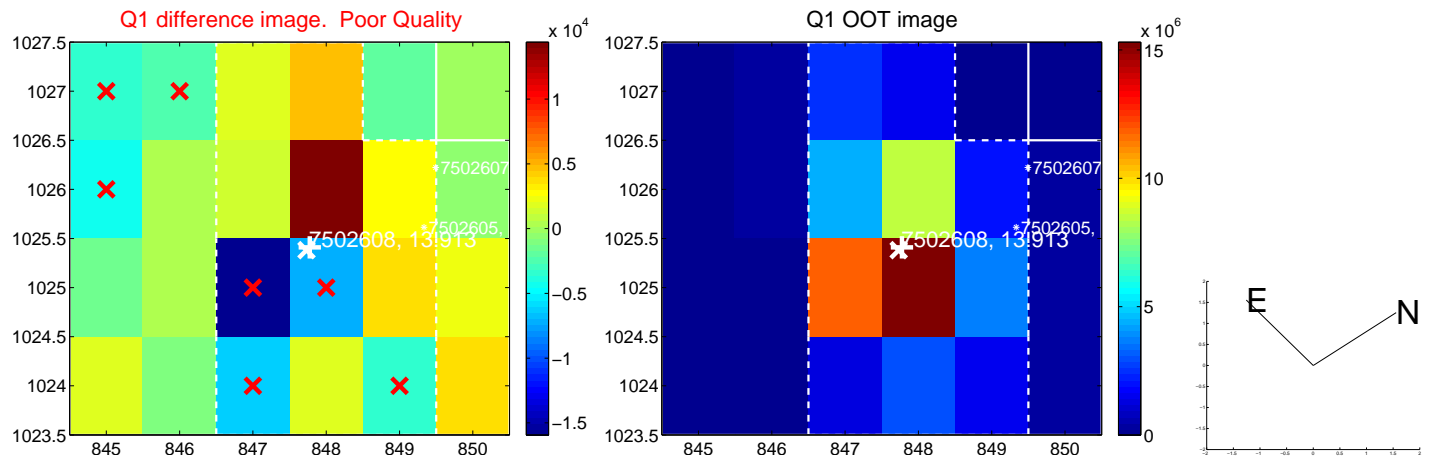
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.847 \pm 1.279$	0.66	$0.784 \pm 1.372$	$-0.321 \pm 1.055$
PRF-fit source offset from KIC position	$0.785 \pm 1.532$	0.51	$0.694 \pm 1.649$	$-0.366 \pm 1.089$
photometric centroid source offset	$1.74 \pm 1.42$	1.23	$-1.74 \pm 1.42$	$0.14 \pm 1.33$

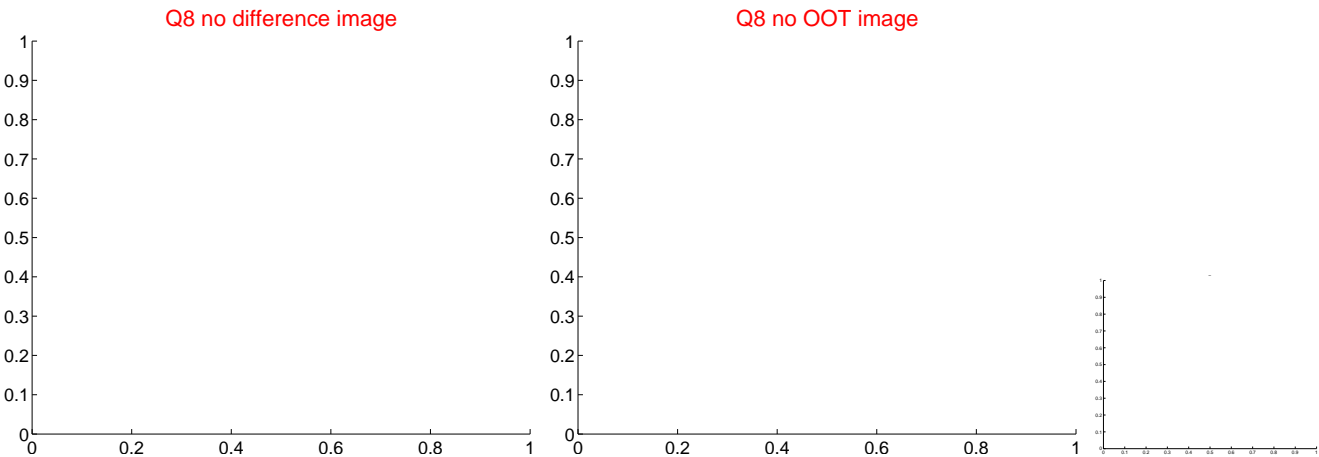
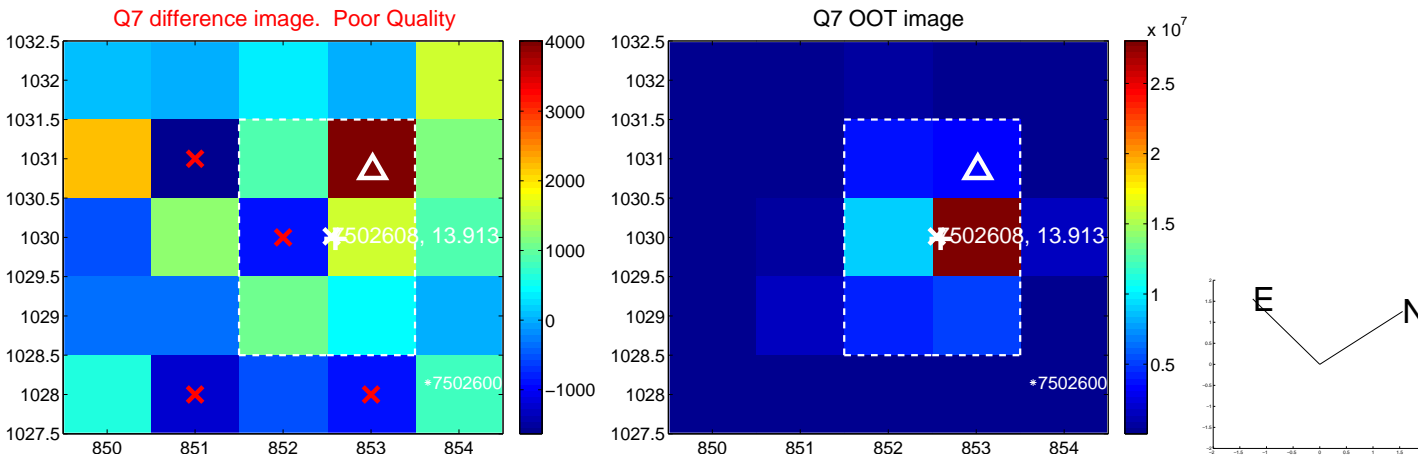
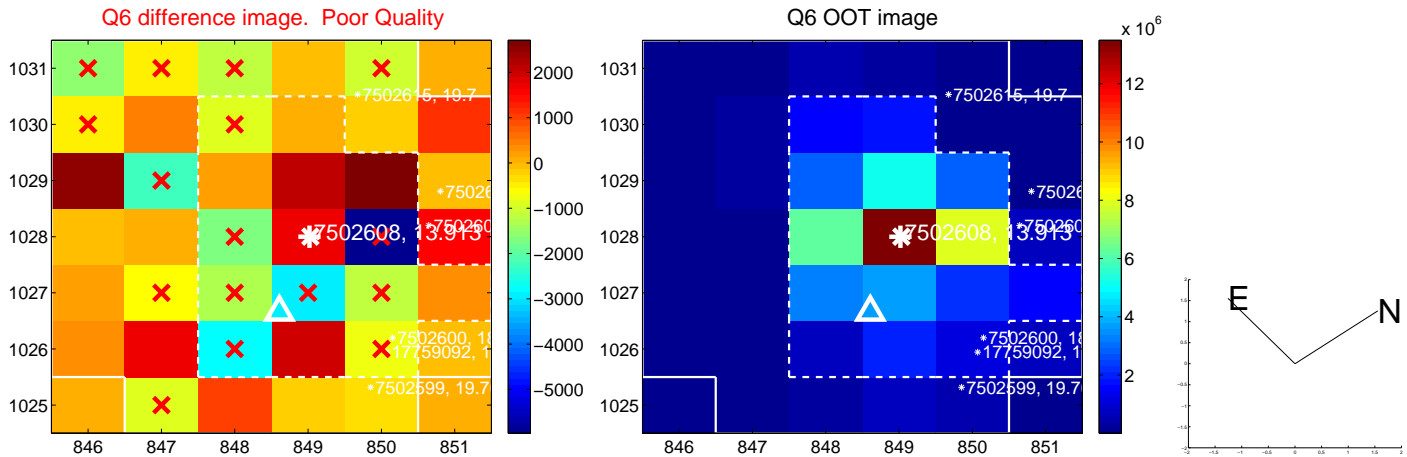
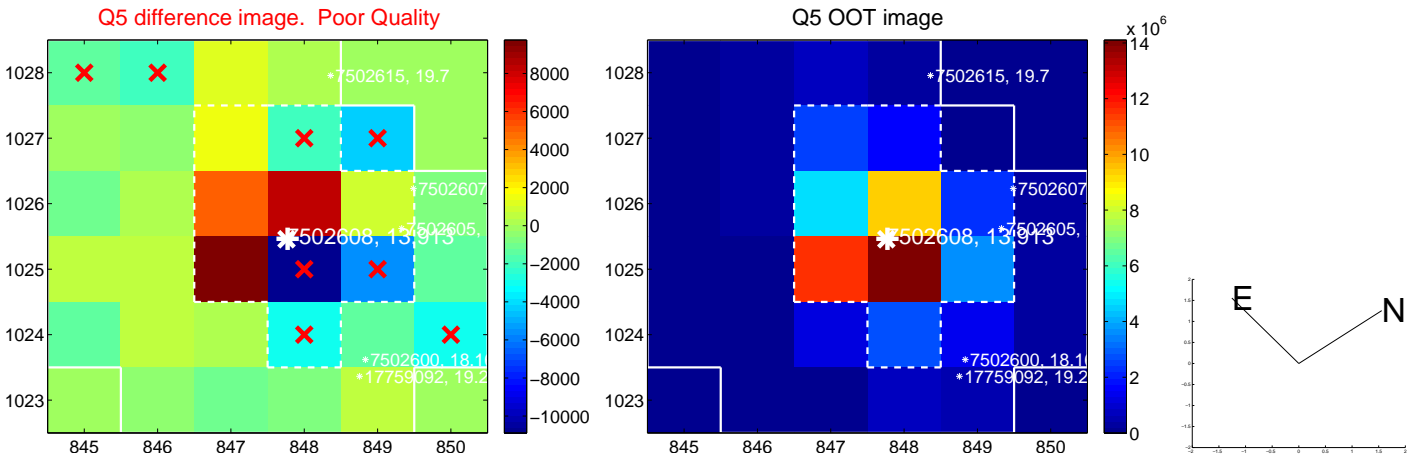


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

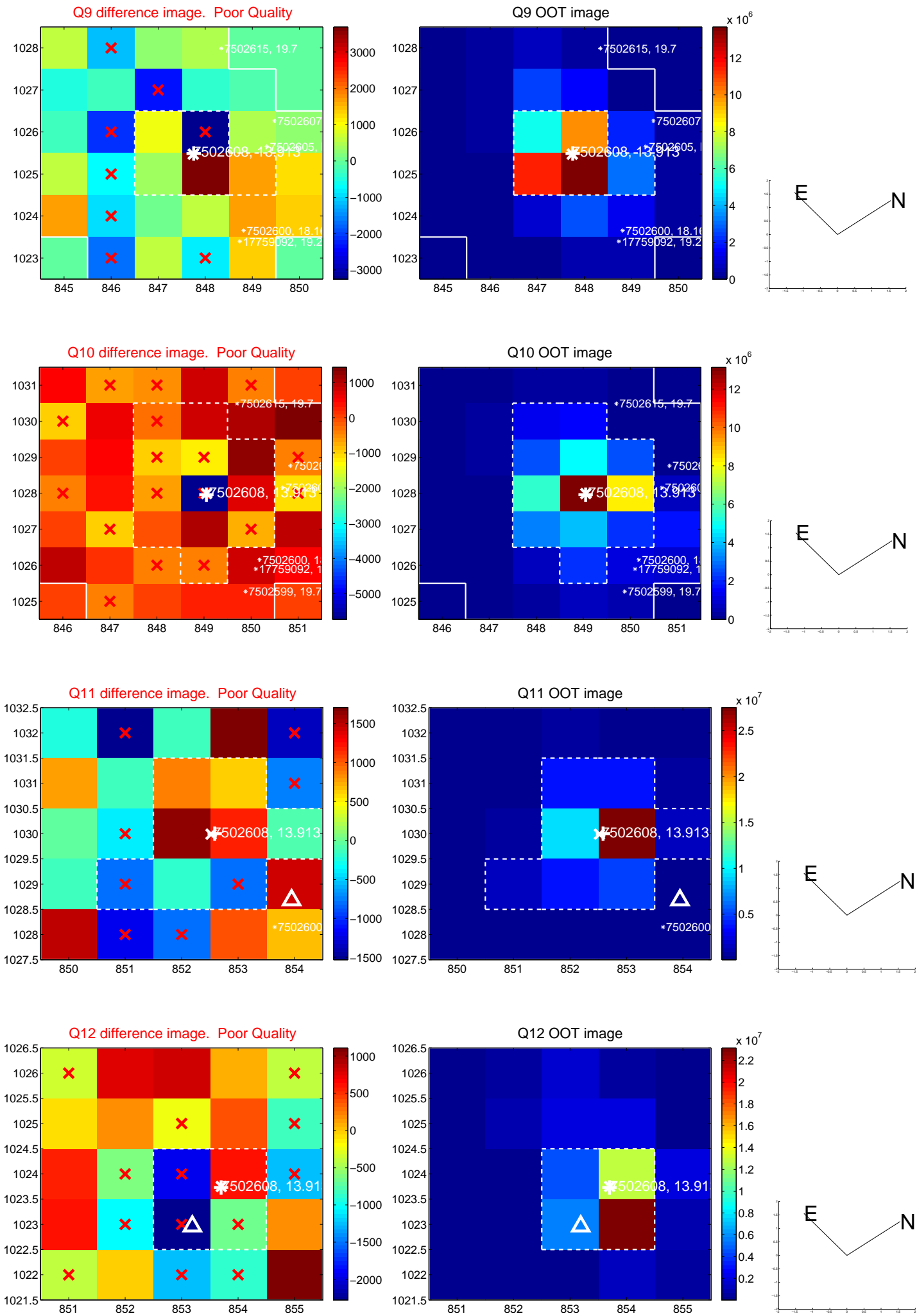


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

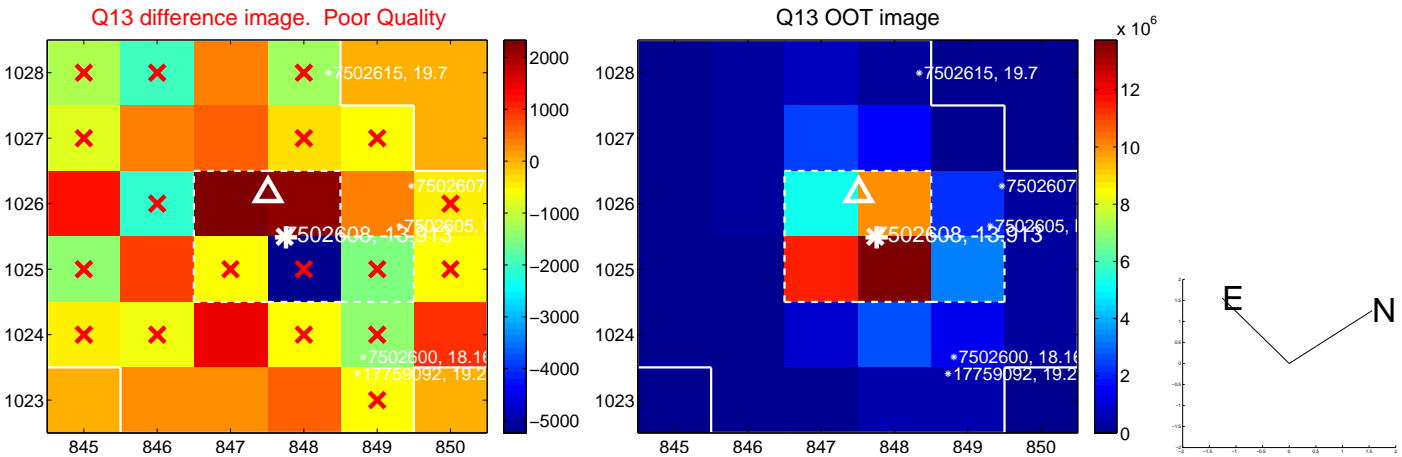




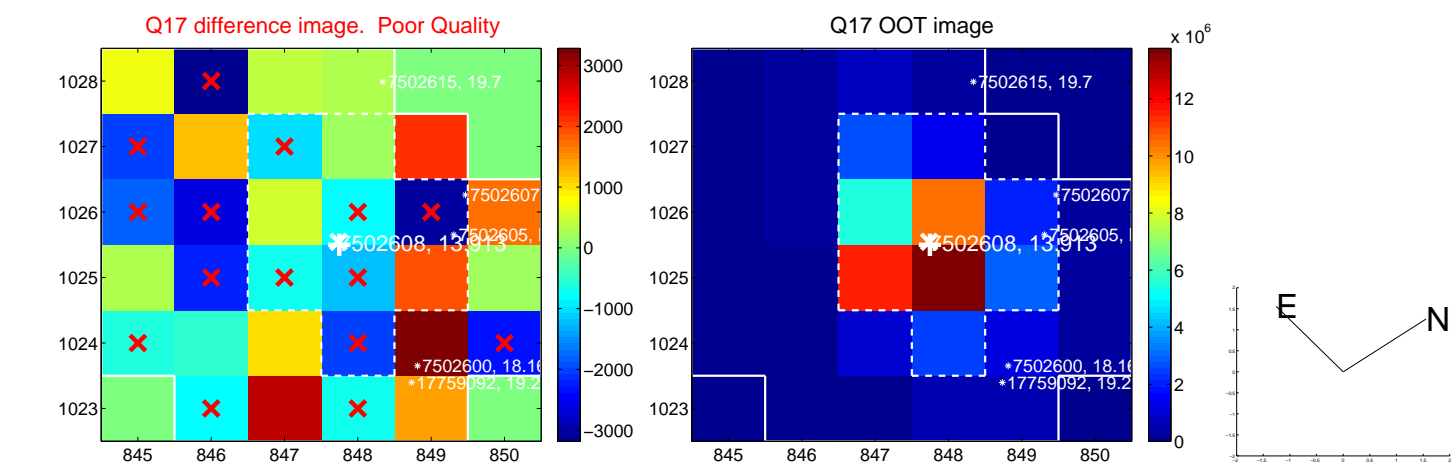
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



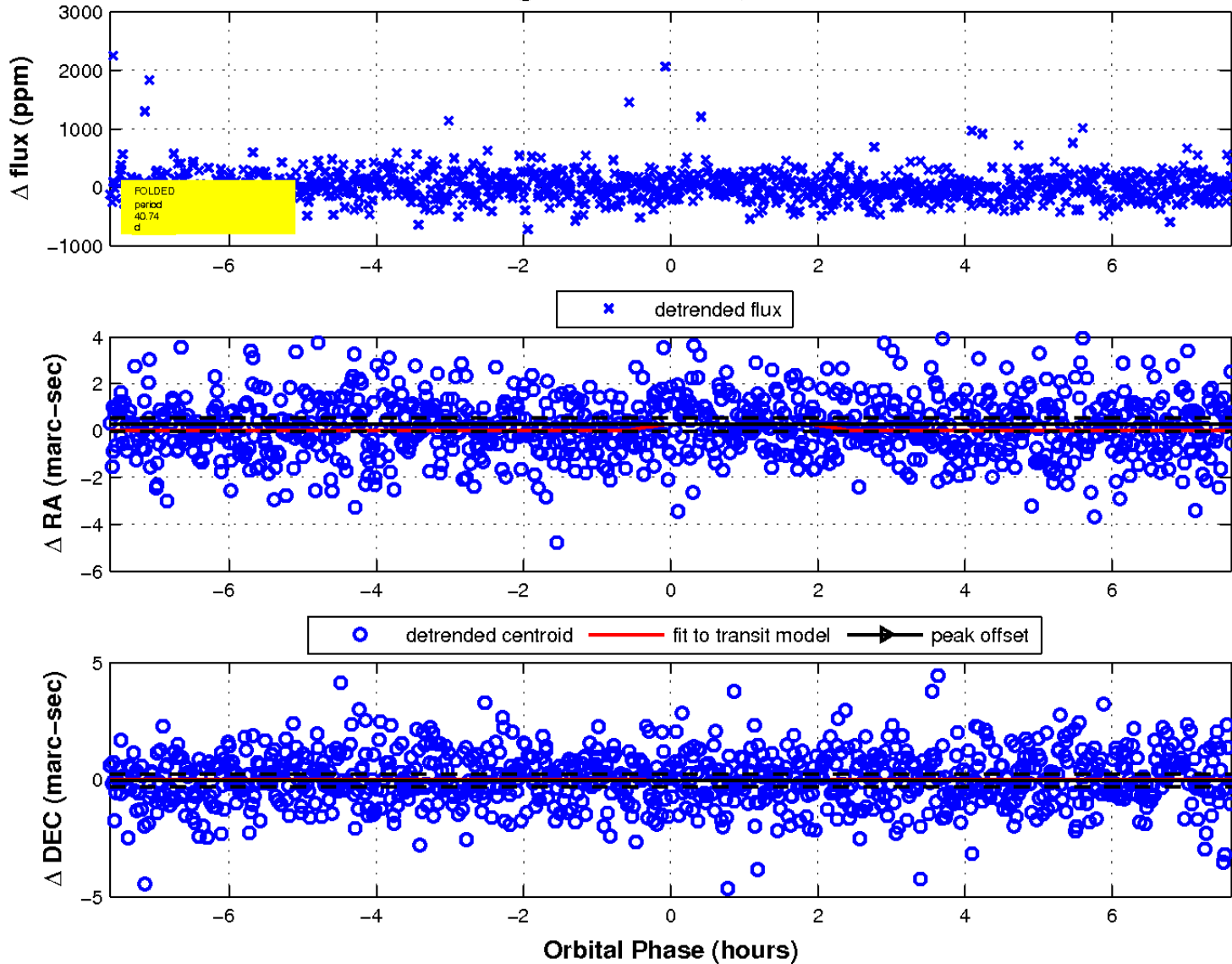
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

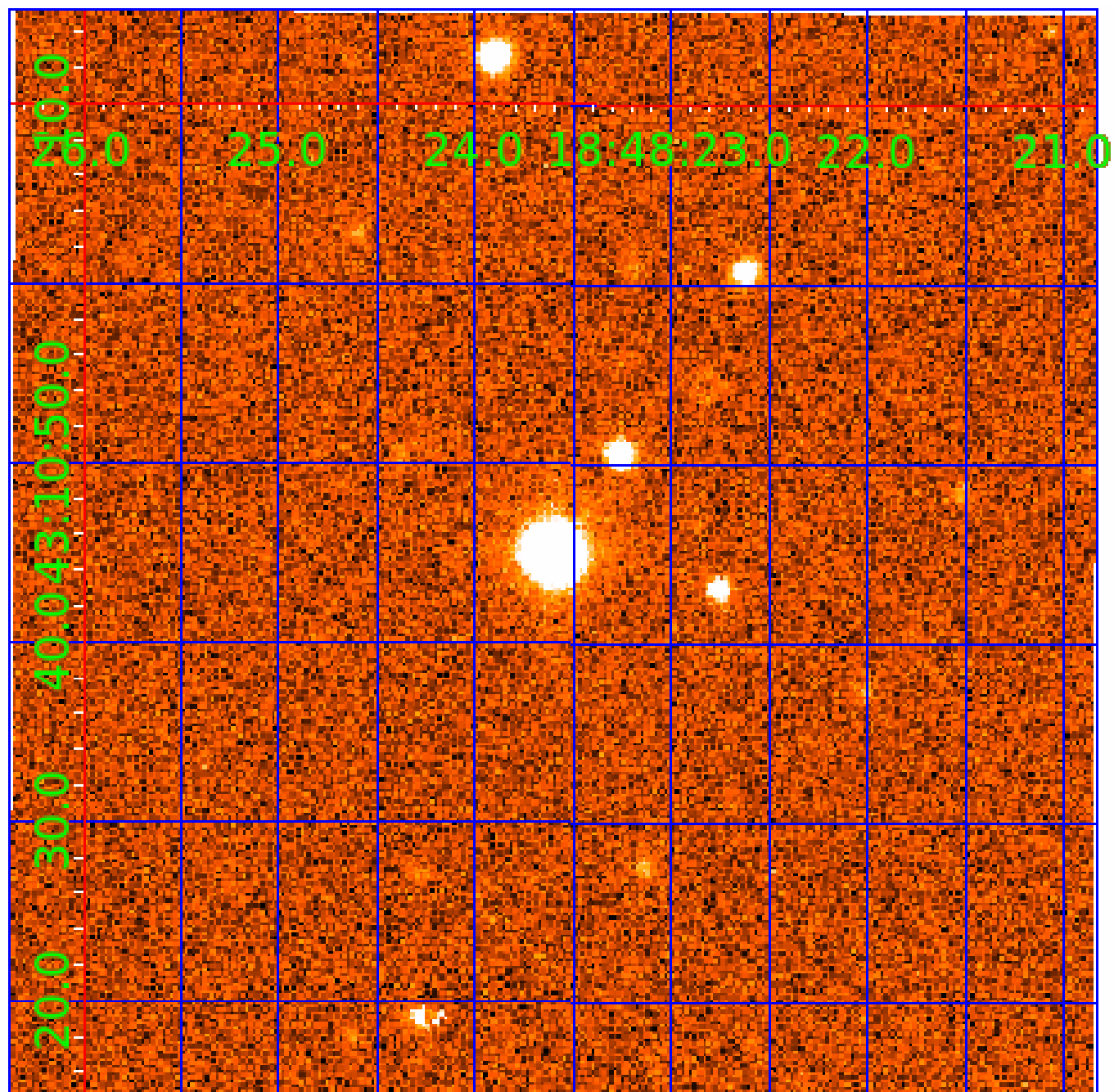


fluxWeightedCentroids, Planet 3 of 8



UKIRT Image

Declination



# KIC 007502608

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007502608-01	OBS	No	0.728064	132.116531	18.1	5.186	7.2	7.0	0.49	4390	0.22	507.37
007502608-02	OBS	No	50.391271	173.637283	1923.4	1.813	14.3	10.8	0.49	4390	2.22	1.78
007502608-03	OBS	No	40.741440	151.504948	1481.5	2.000	13.2	-1.0	0.49	4390	1.87	2.37
007502608-05	OBS	No	15.856753	137.039151	403.8	4.745	17.2	6.5	0.49	4390	1.17	8.34
007502608-06	OBS	No	33.994192	139.375761	278.7	8.062	11.2	4.0	0.49	4390	0.88	3.02
007502608-07	OBS	No	47.068117	169.666095	1915.9	1.379	10.8	10.9	0.49	4390	2.27	1.96

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007502608-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
007502608-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007502608-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007502608-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007502608-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
007502608-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS

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

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

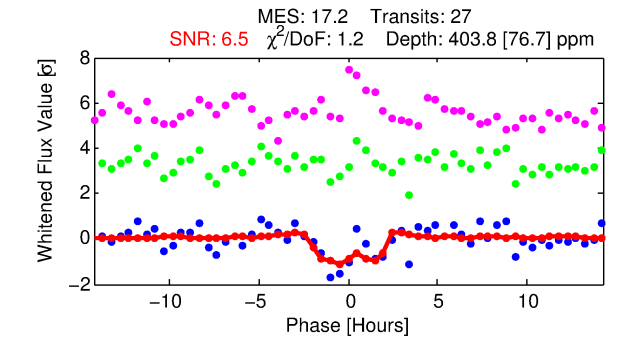
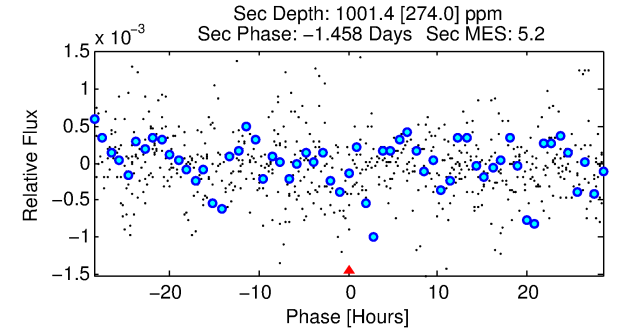
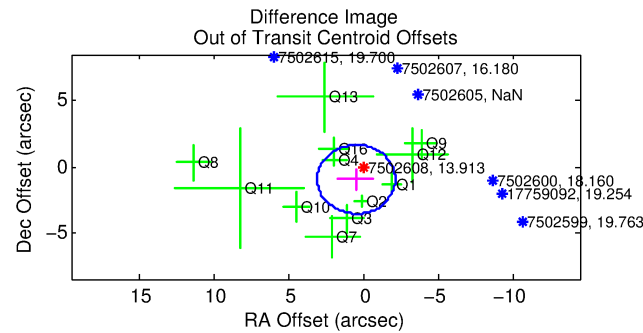
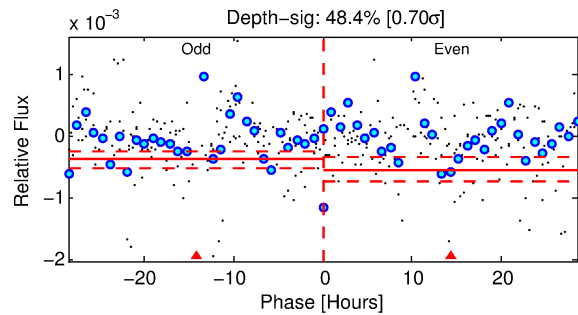
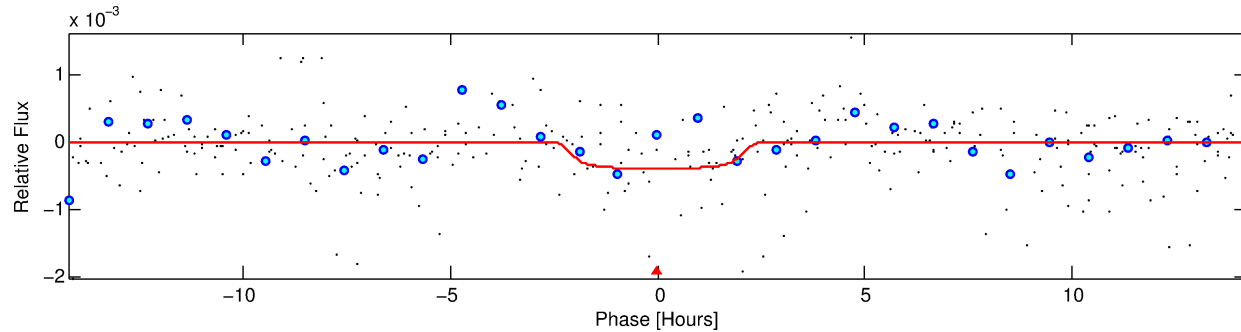
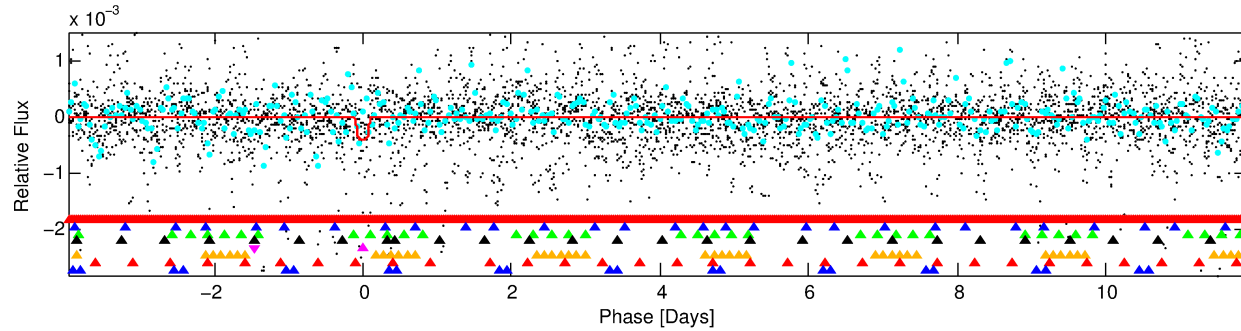
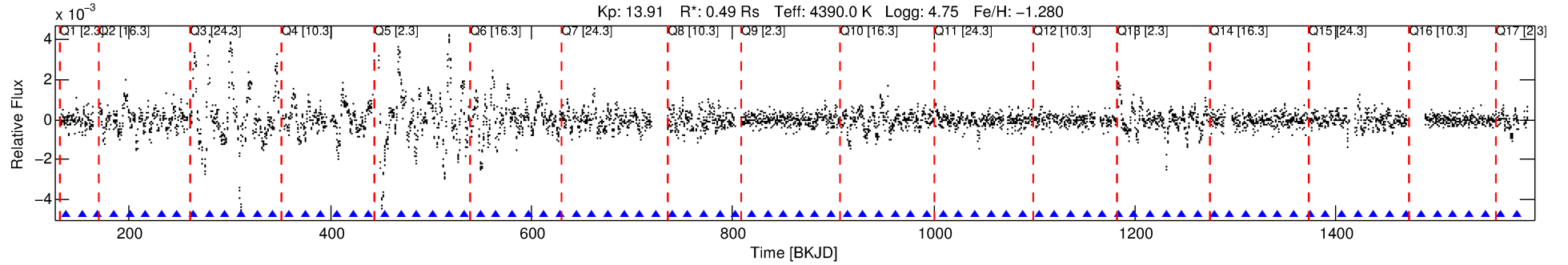
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007502608-05

No Significant Match Found

# DV One-Page Summary

KIC: 7502608 Candidate: 5 of 8 Period: 15.857 d



## DV Fit Results:

Period = 15.85675 [0.00035] d  
Epoch = 137.0392 [0.0187] BKJD  
Rp/R\* = 0.0219 [0.0073]  
a/R\* = 12.41 [18.16]  
b = 0.90 [0.31]  
Seff = 8.34 [1.46]  
Teq = 433 [19] K  
Rp = 1.17 [0.41] Re  
a = 0.0979 [0.0081] AU  
Ag = 3862.27 [2814.07] [1.37 $\sigma$ ]  
Teffp = 5282 [964] K [5.03 $\sigma$ ]

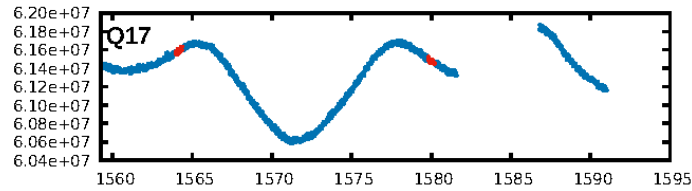
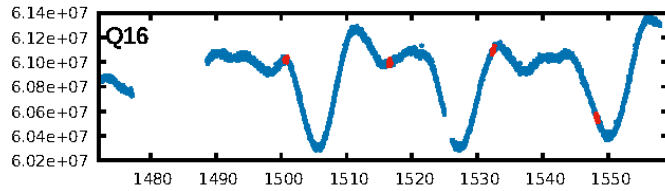
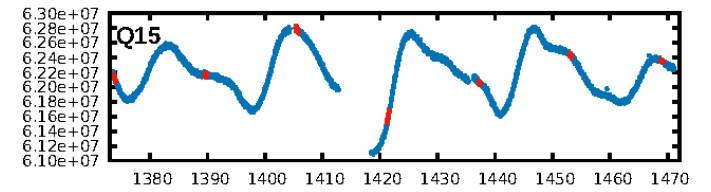
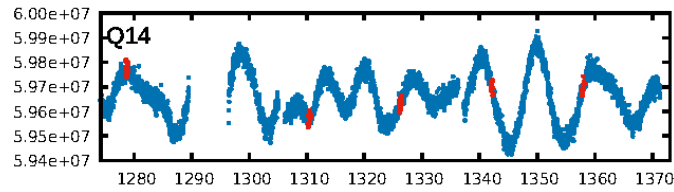
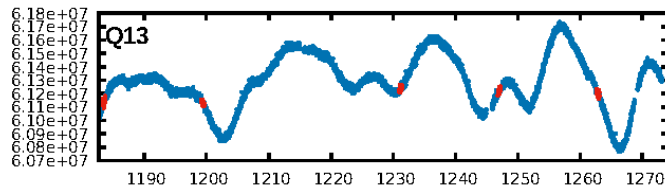
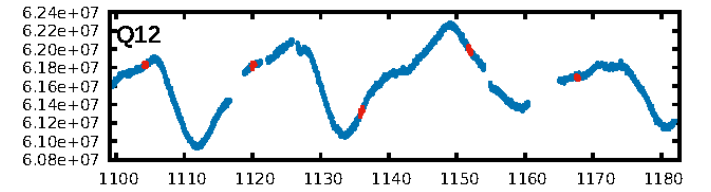
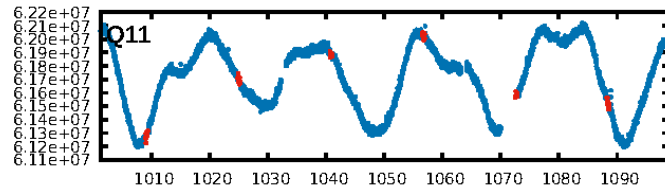
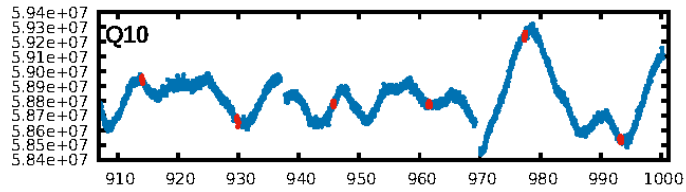
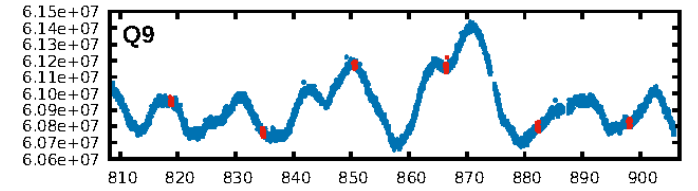
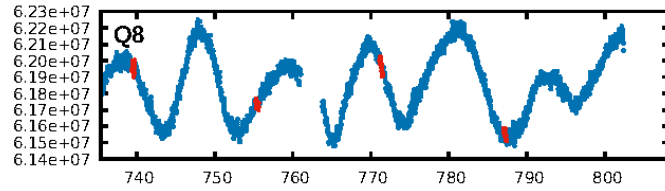
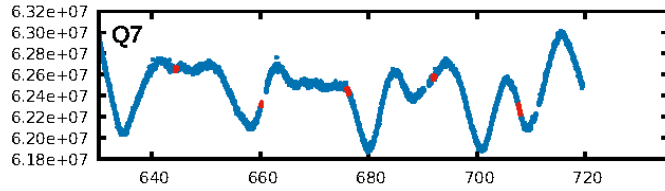
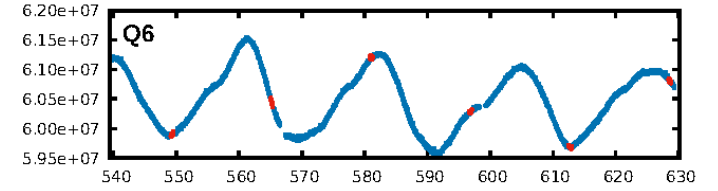
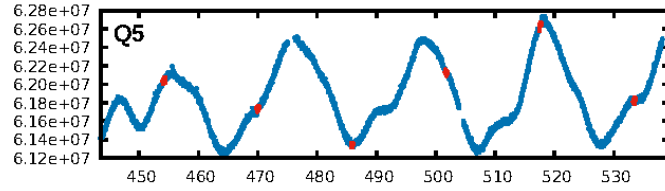
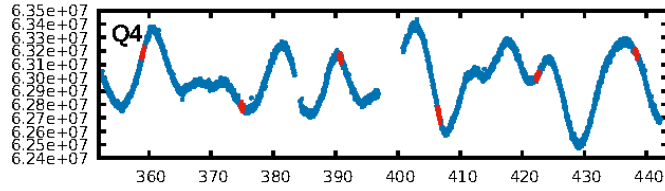
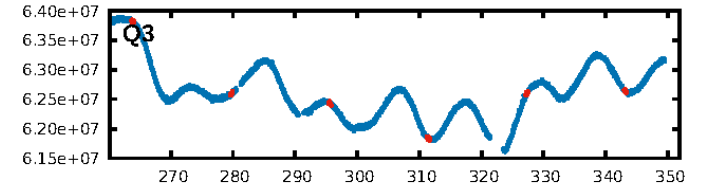
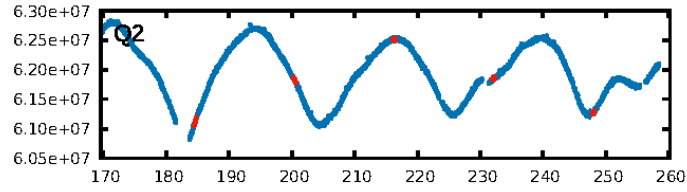
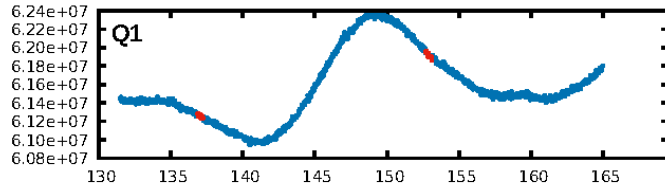
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [51.66 $\sigma$ ]  
LongPeriod-sig: 100.0% [46.53 $\sigma$ ]  
ModelChiSquare2-sig: 0.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: N/A  
RollingBand-fgt: 1.00 [26/26]  
**GhostDiagnostic-chr: 1.391**  
Centroid-sig: 8.9%  
Centroid-so: 0.597 arcsec [1.66 $\sigma$ ]  
OotOffset-rm: 1.065 arcsec [1.23 $\sigma$ ]  
KicOffset-rm: 1.066 arcsec [1.08 $\sigma$ ]  
OotOffset-st: 2/3/4/3 [12]  
KicOffset-st: 2/3/4/3 [12]  
DiffImageQuality-fgm: 0.08 [1/12]  
DiffImageOverlap-fno: 0.00 [0/17]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 08:09:48 Z

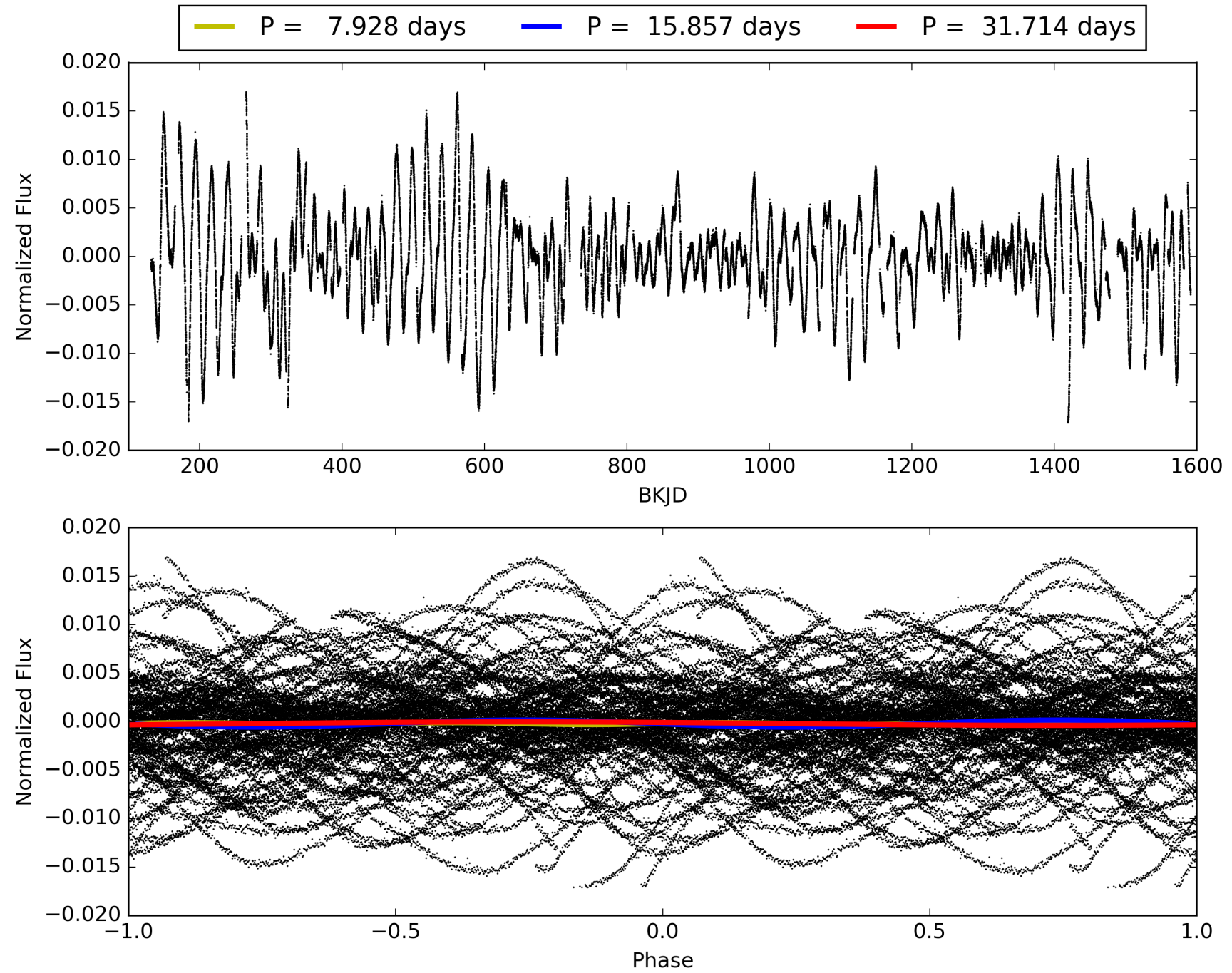
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 007502608-05, PDC Light Curves



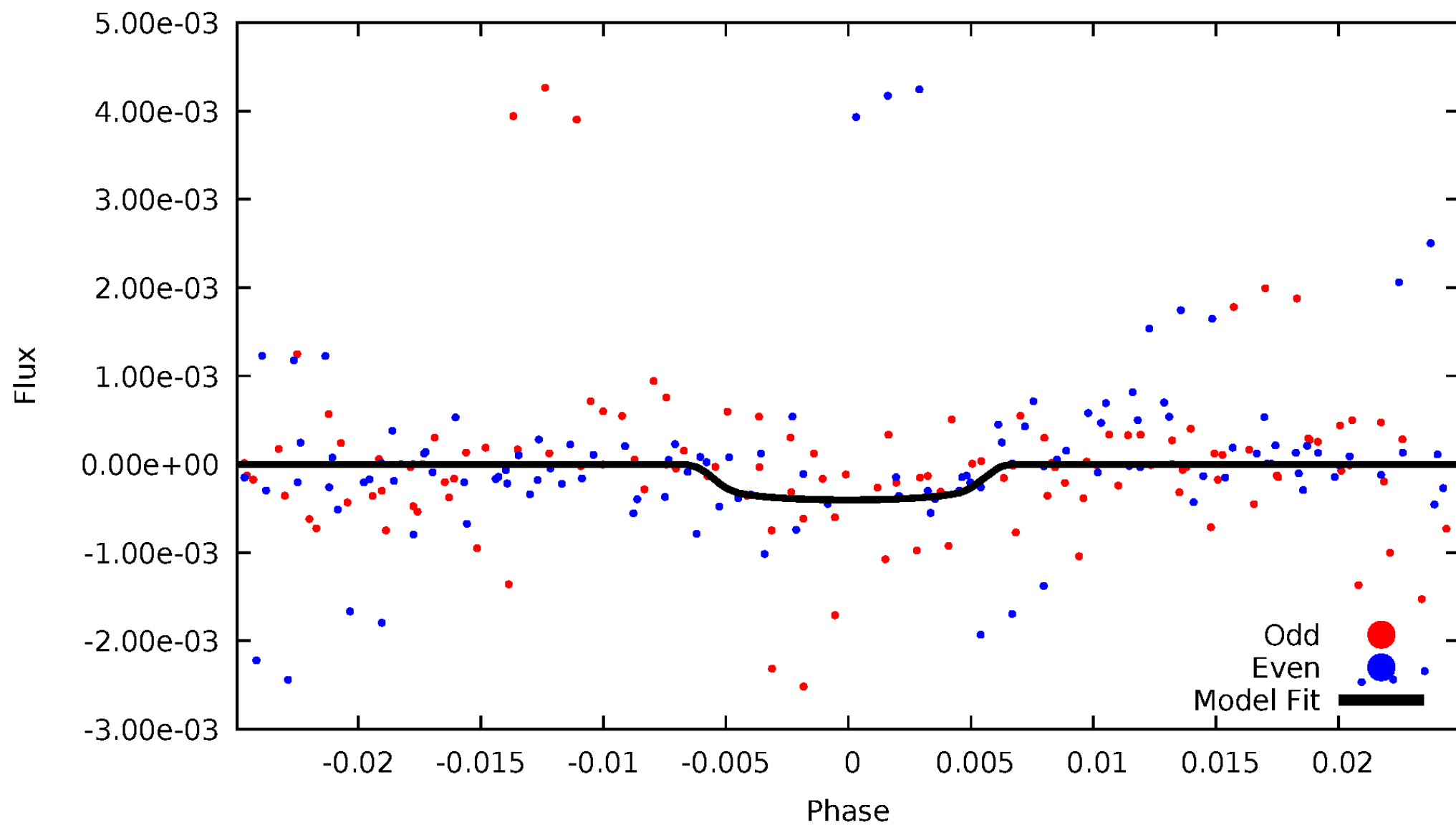


TCE 007502608-05



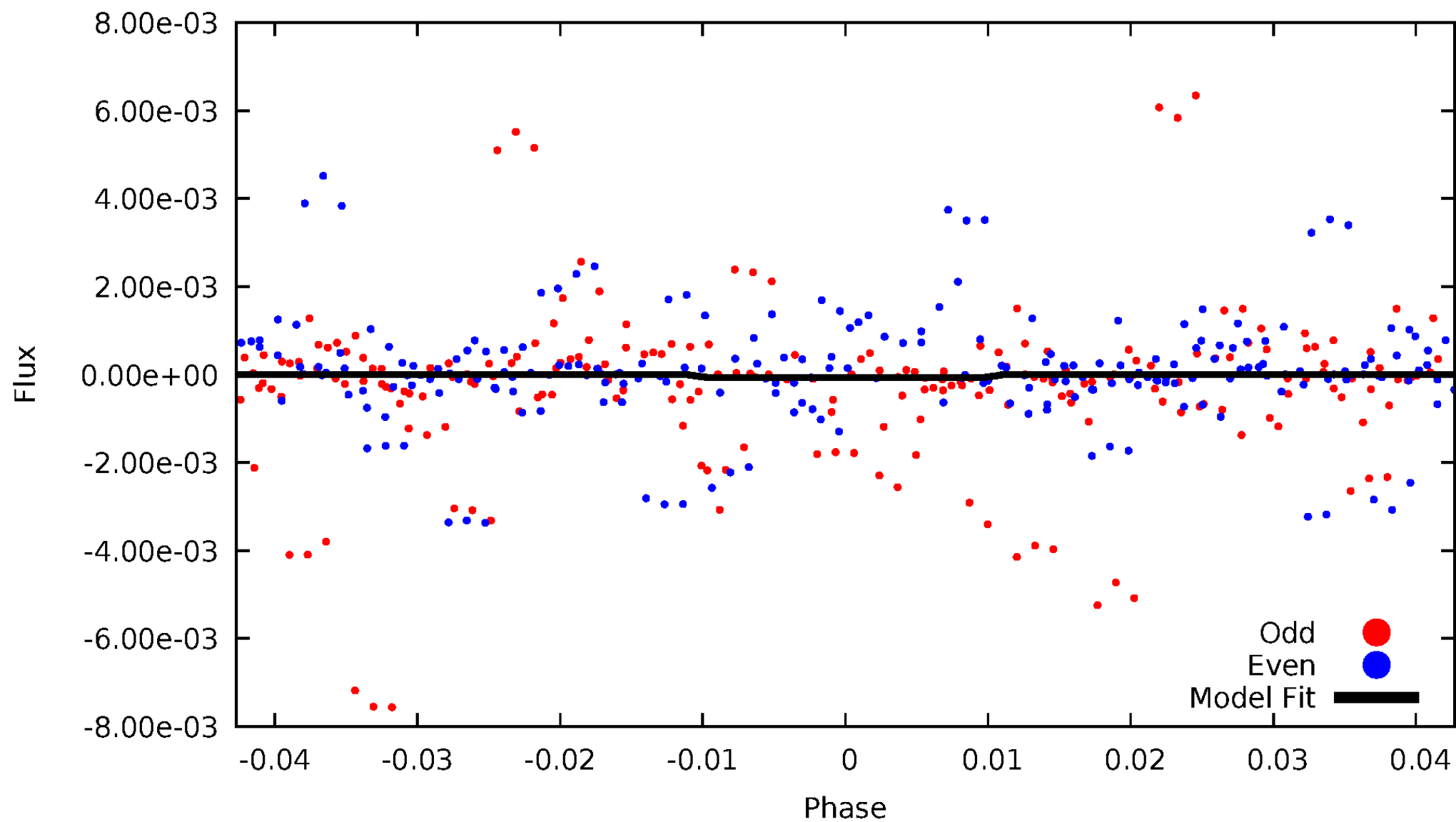
# DV Odd/Even

TCE 007502608-05



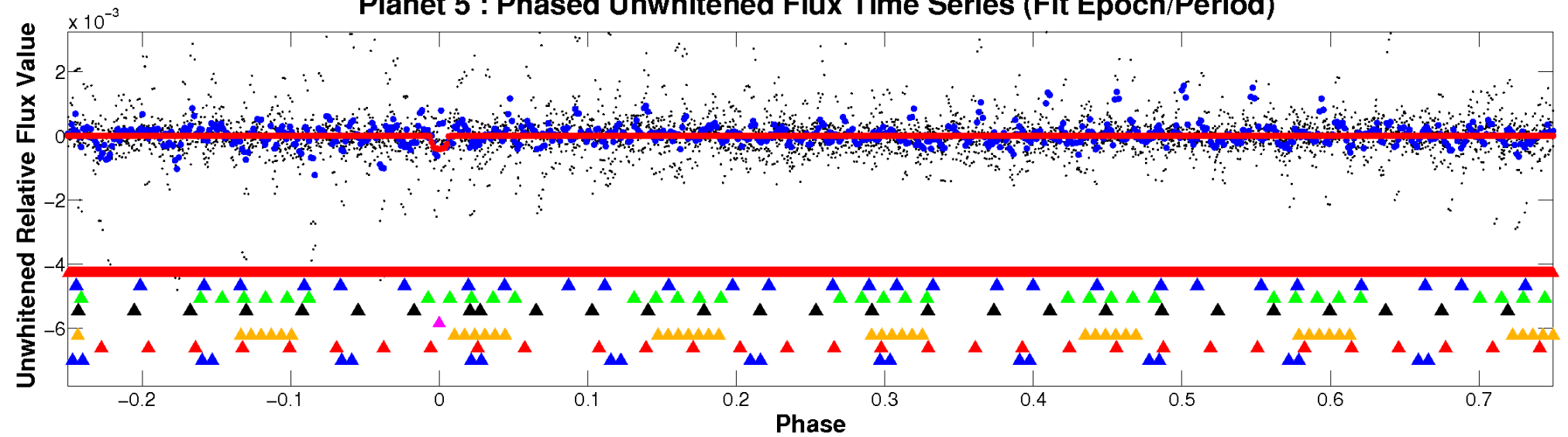
# ALT Odd/Even

TCE 007502608-05

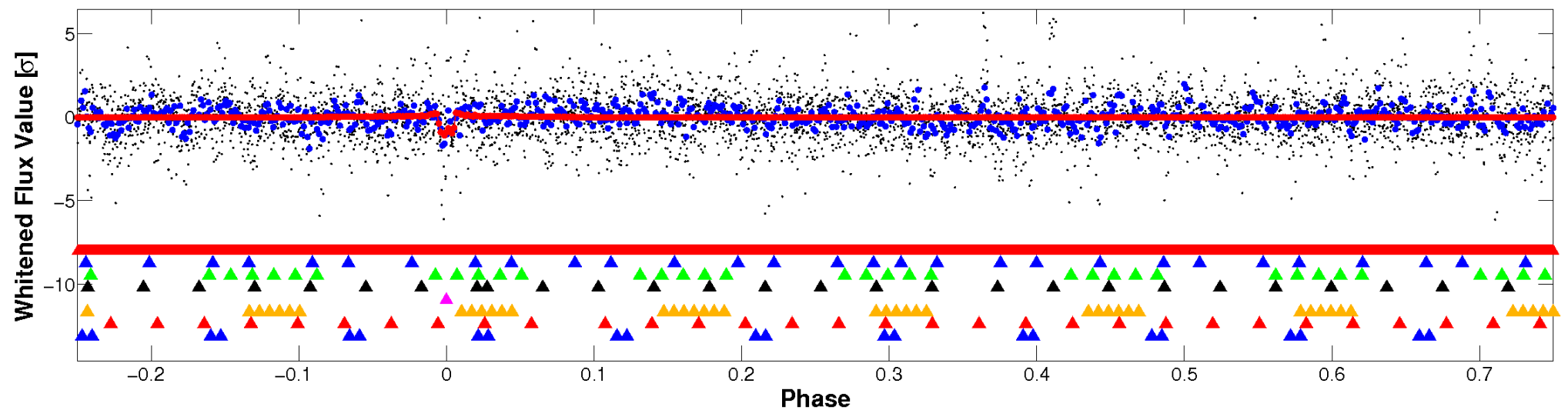


# Non-Whitened Vs. Whitened Light Curve

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

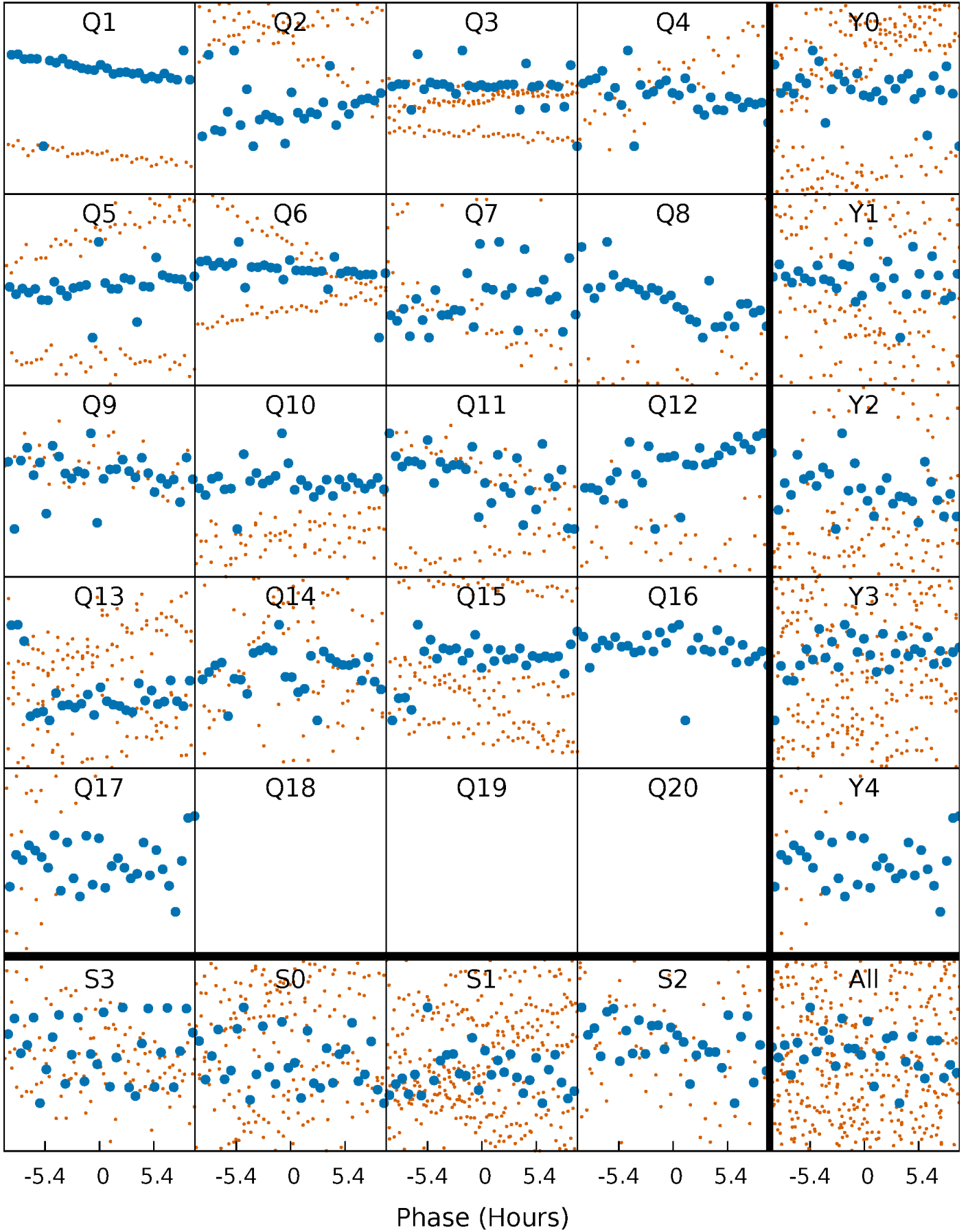


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



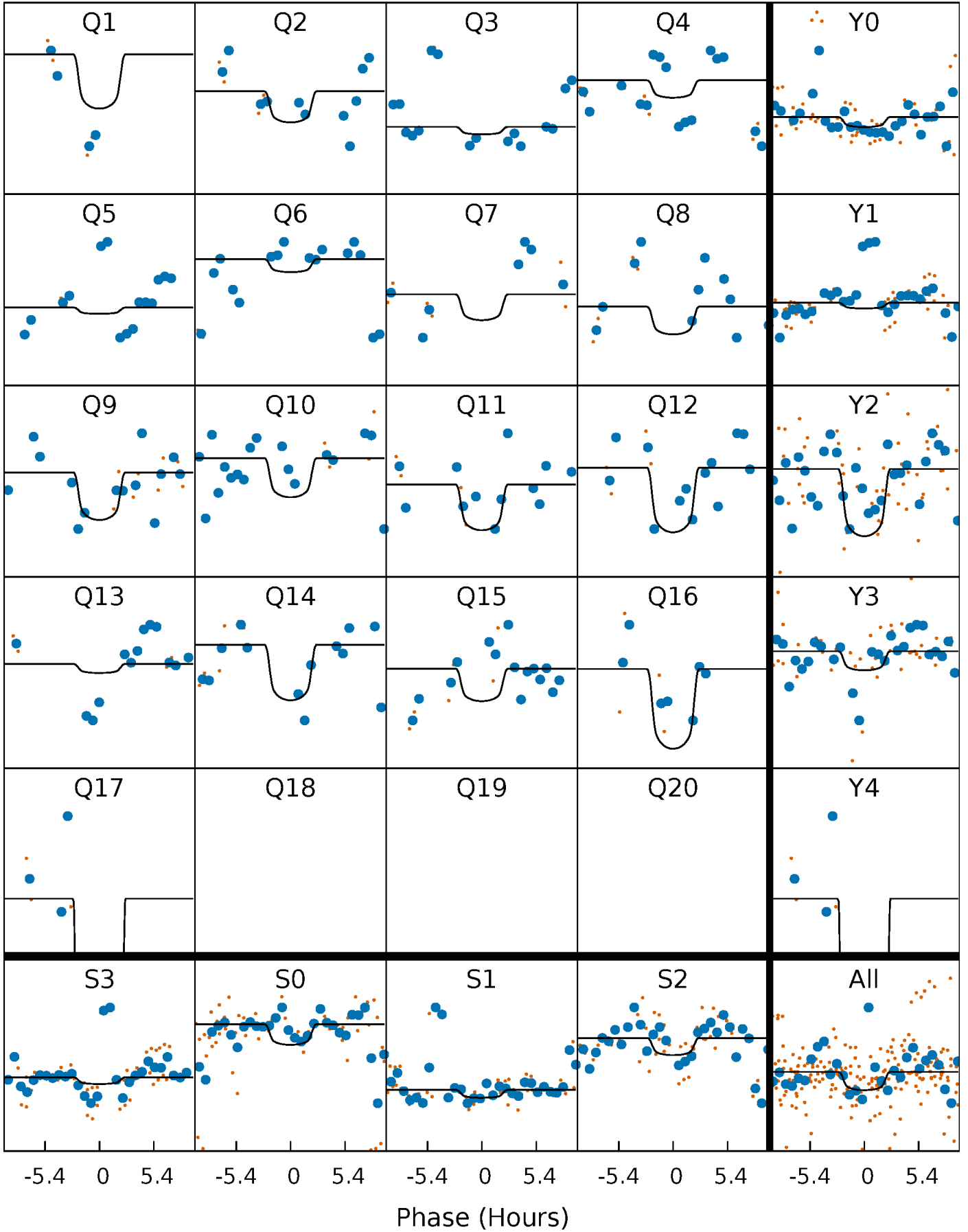
# PDC Quarter-Phased Transit Curves

TCE 007502608-05     $P = 15.856753$  Days     $T_0 = 137.039151$  (BKJD)



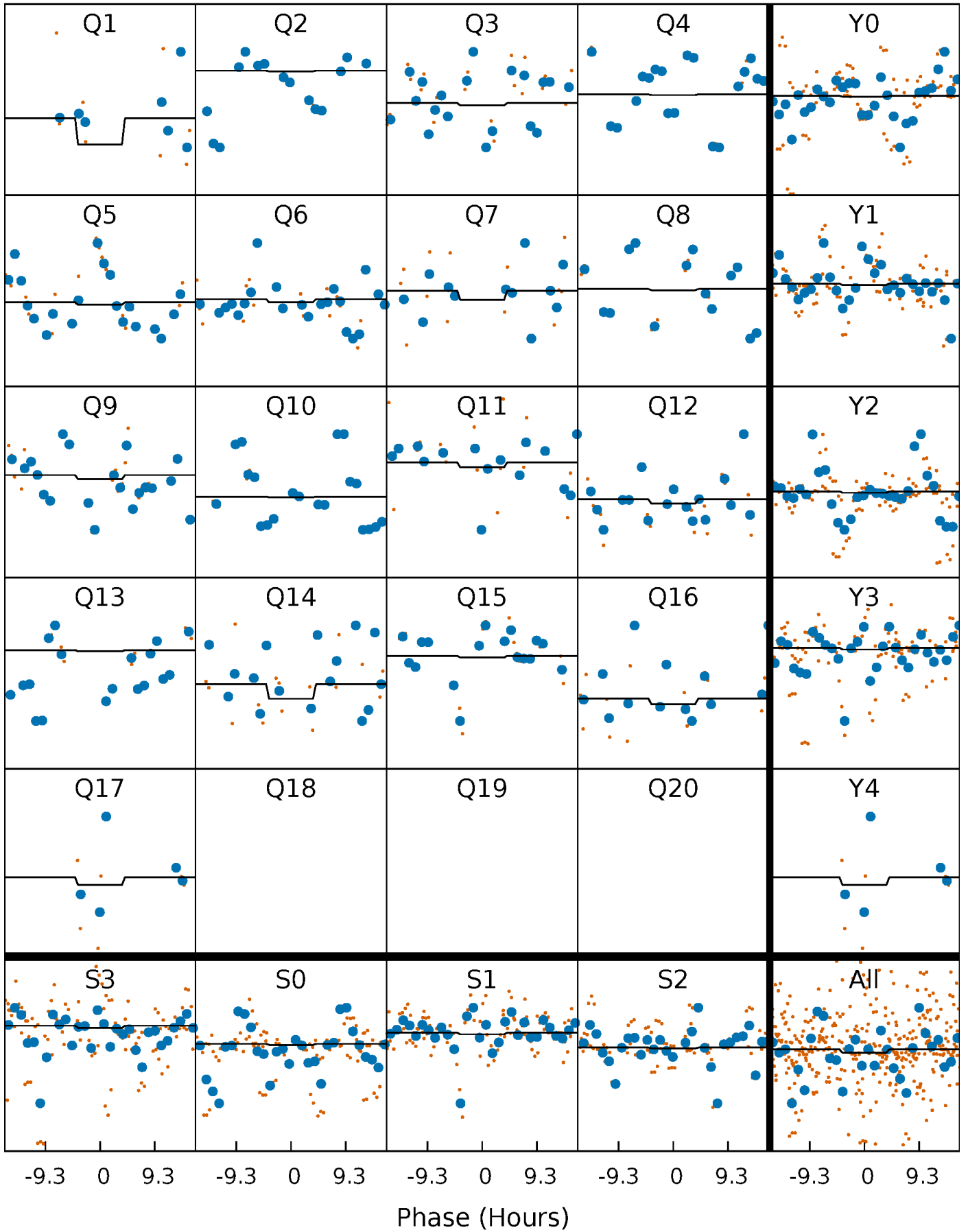
# DV Quarter-Phased Transit Curves

TCE 007502608-05     $P = 15.856753$  Days     $T_0 = 137.039151$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 007502608-05   P= 15.854118 Days    $T_0=137.133884$  (BKJD)

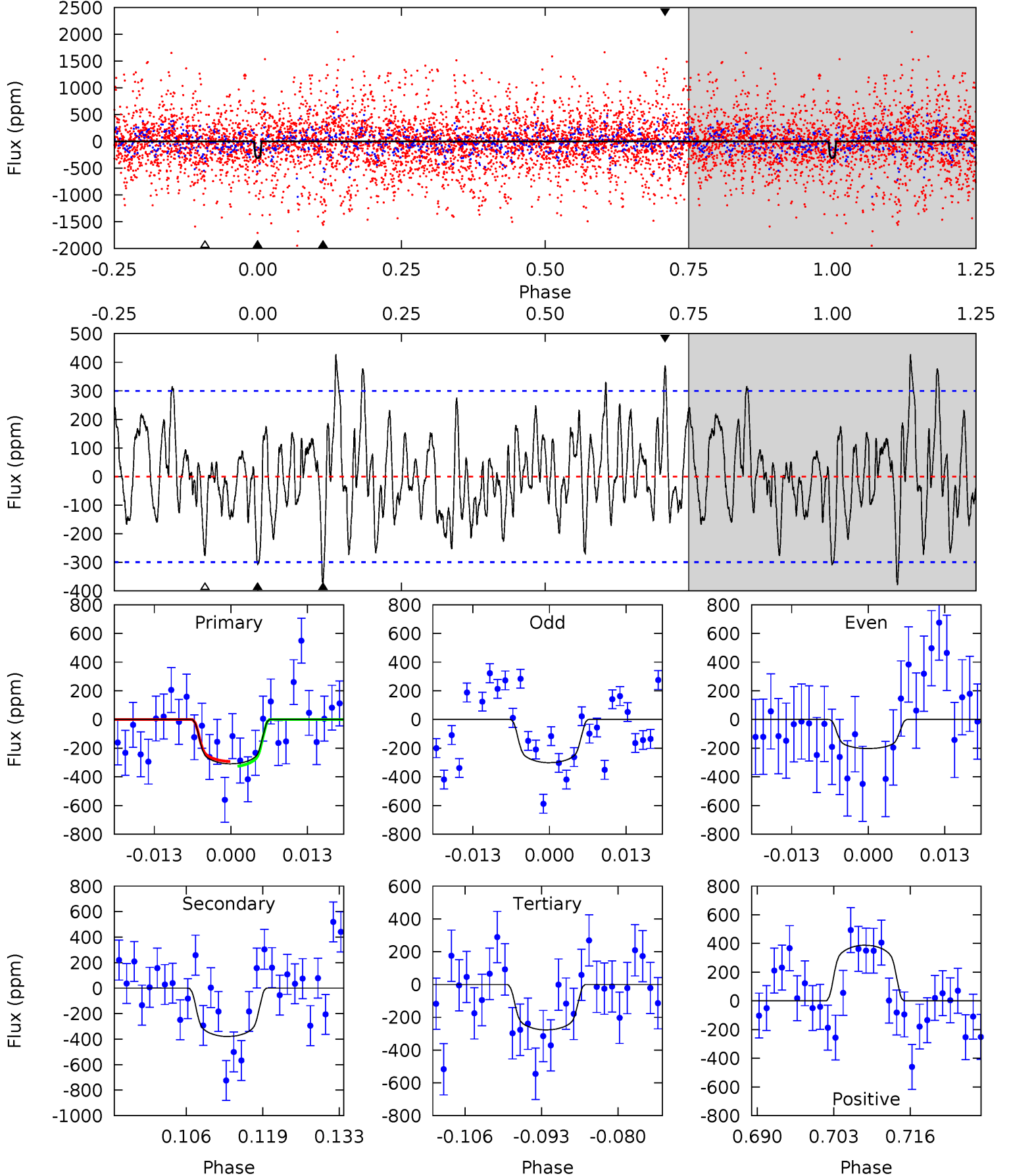




# DV Model-Shift Uniqueness Test

007502608-05, P = 15.856753 Days, E = 121.182398 Days

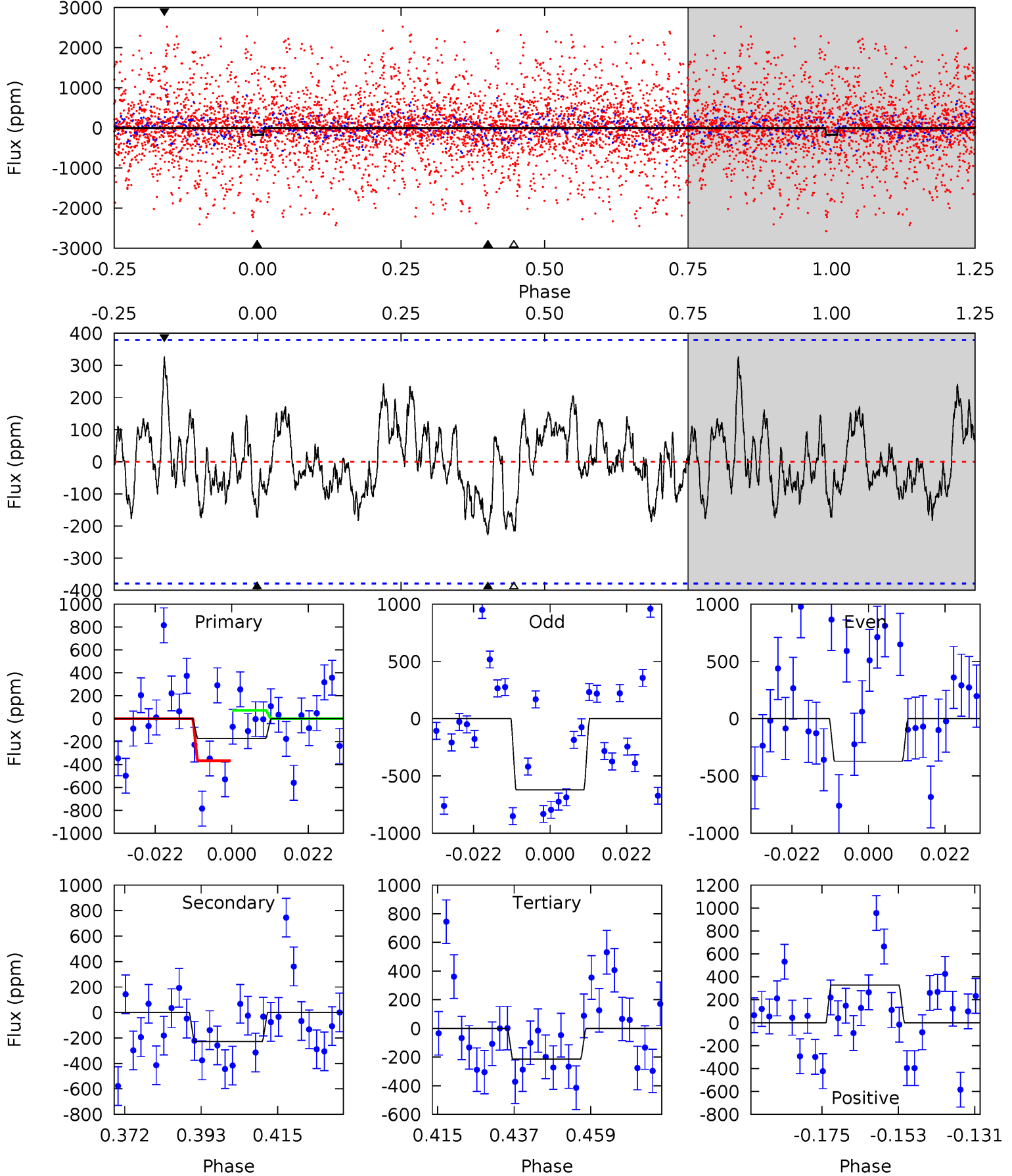
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.14	6.31	4.60	6.45	4.97	2.48	2.10	0.54	-1.31	1.70	-0.14	0.78	1.18	0.53	0.29



# Alt Model-Shift Uniqueness Test

007502608-05, P = 15.854118 Days, E = 121.279766 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
2.22	2.94	2.76	4.22	4.87	2.29	1.22	-0.54	-2.00	0.17	-1.29	1.45	2.78	0.59	1.95



### Stellar Parameters For KIC 007502608

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4390^{+124}_{-140}$	$4.754^{+0.065}_{-0.030}$	$-1.280^{+0.300}_{-0.350}$	$0.490^{+0.033}_{-0.049}$	$0.496^{+0.036}_{-0.036}$	$5.955^{+1.727}_{-0.763}$
	+3%/-3%	+1%/-1%	+23%/-27%	+7%/-10%	+7%/-7%	+29%/-13%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007502608-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-380 \pm 60$	$1.12^{+0.42}_{-0.38}$	$602^{+19}_{-23}$	$4260^{+736}_{-477}$	$1619^{+2058}_{-779}$
Alt.	$-228 \pm 78$	$0.48^{+0.34}_{-0.30}$	$600^{+21}_{-20}$	$5396^{+4155}_{-1156}$	$5146^{+34683}_{-3580}$

$T_{\text{max}}$  = 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

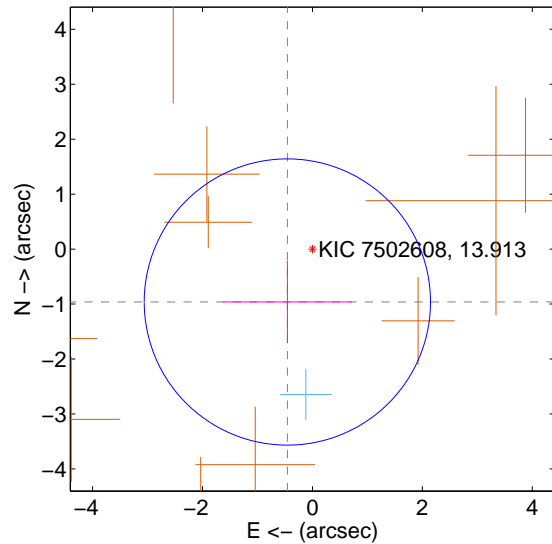
Supplemental centroid analysis for 007502608-05. Kepler magnitude: 13.91. Transit SNR 6.54

There are 1 quarters with good PRF difference image offsets

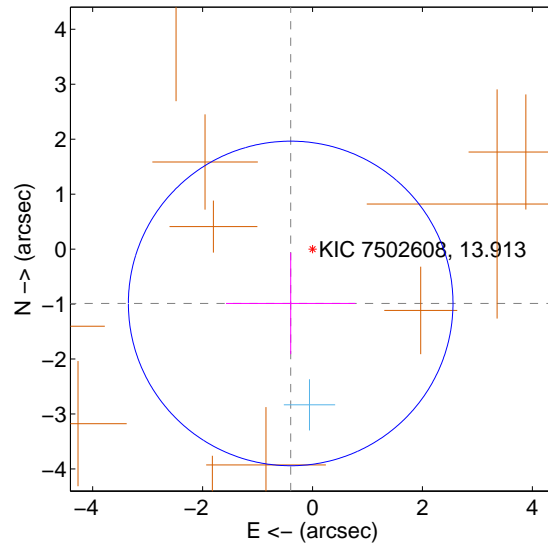
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$1.065 \pm 0.868$	1.23	$0.456 \pm 1.175$	$-0.963 \pm 0.750$
PRF-fit source offset from KIC position	$1.066 \pm 0.984$	1.08	$0.397 \pm 1.177$	$-0.989 \pm 0.922$
photometric centroid source offset	$0.60 \pm 0.36$	1.66	$-0.49 \pm 0.37$	$0.34 \pm 0.34$

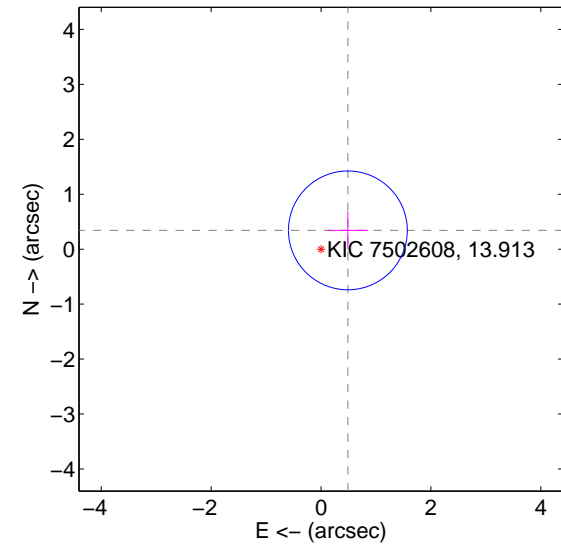
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

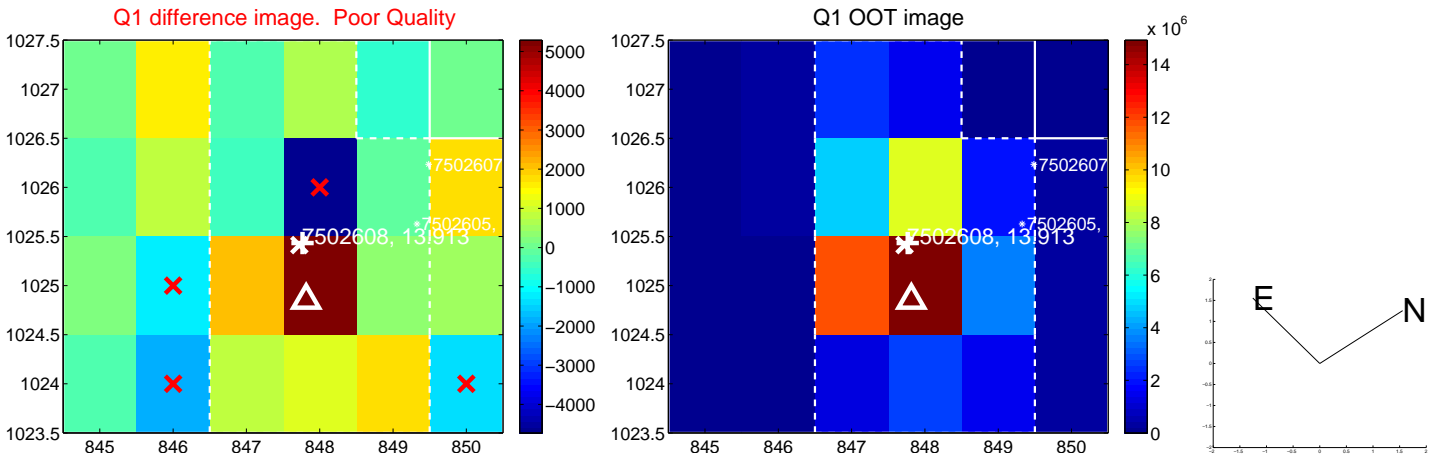


offset from photometric centroids

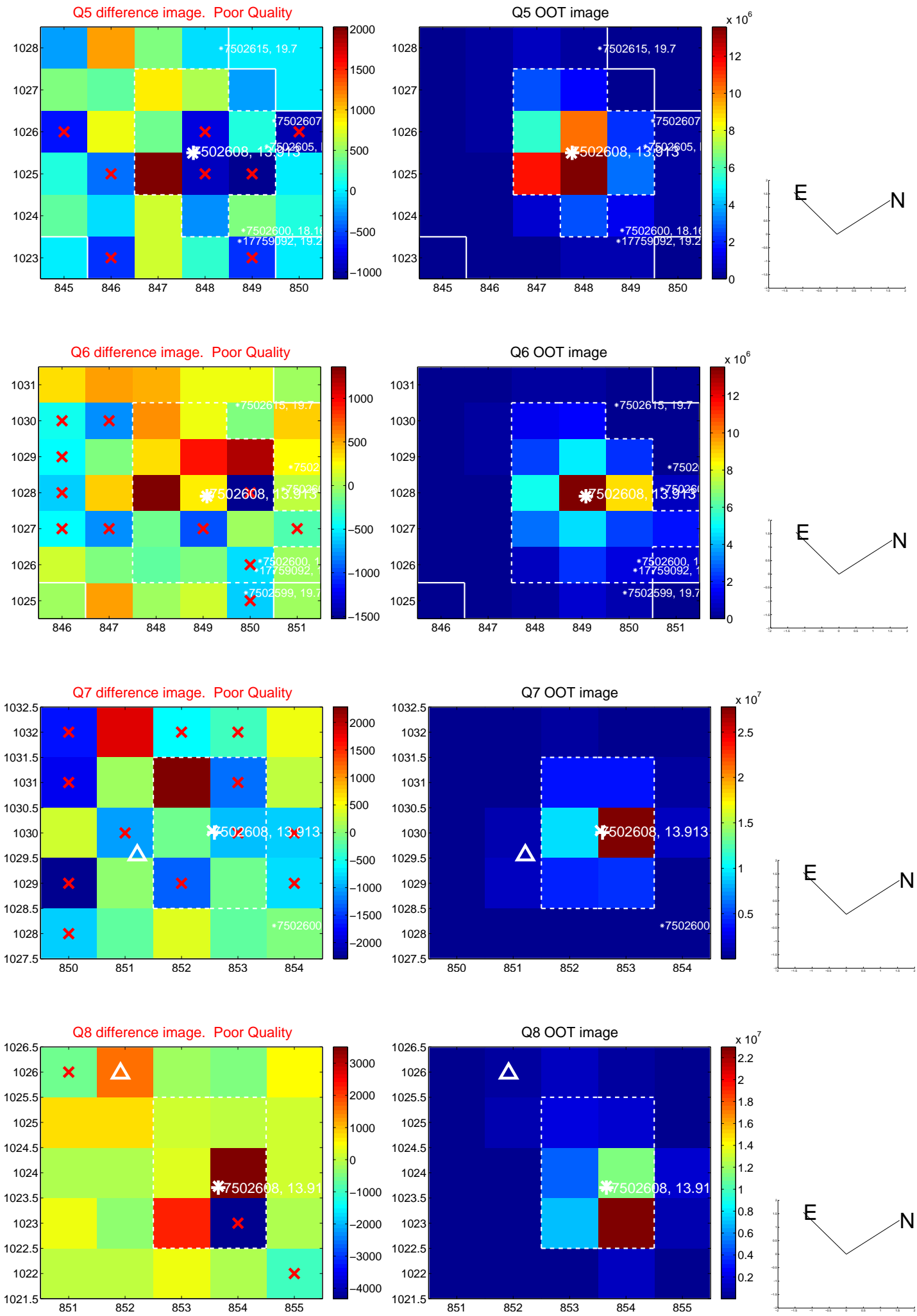


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

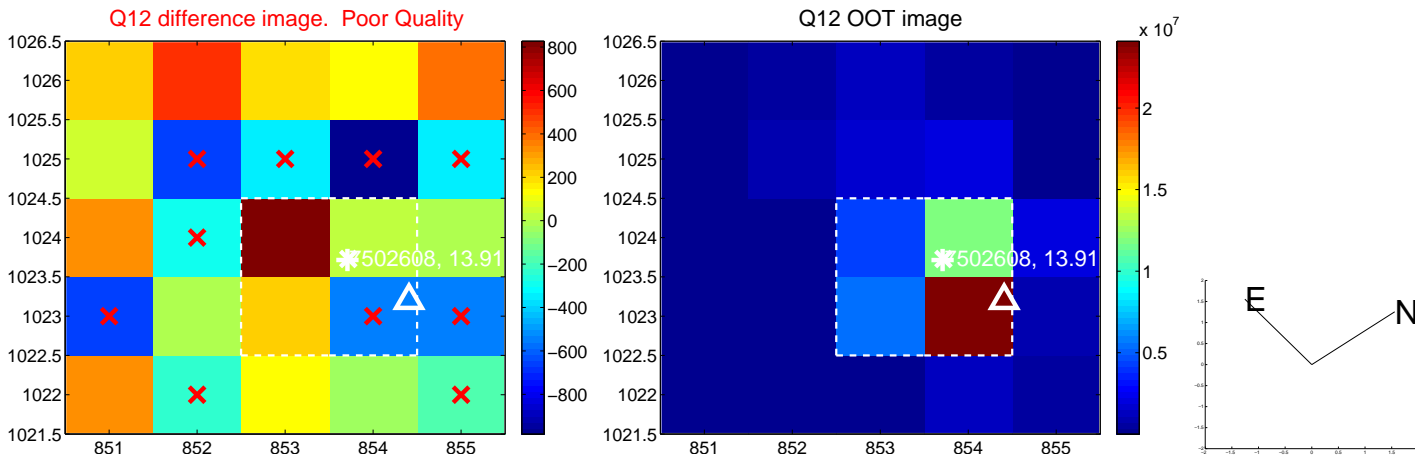
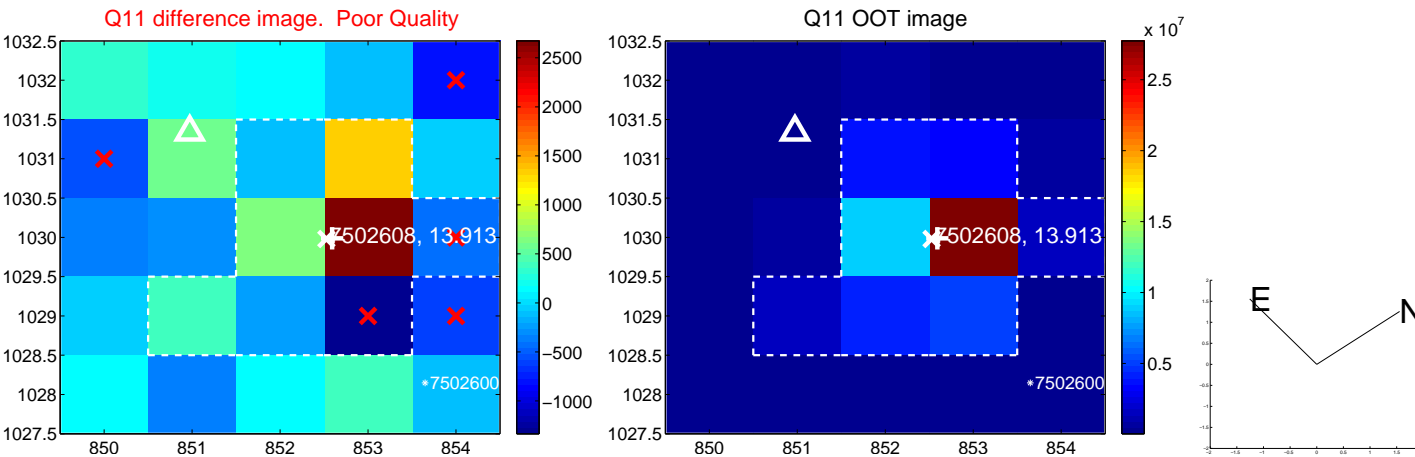
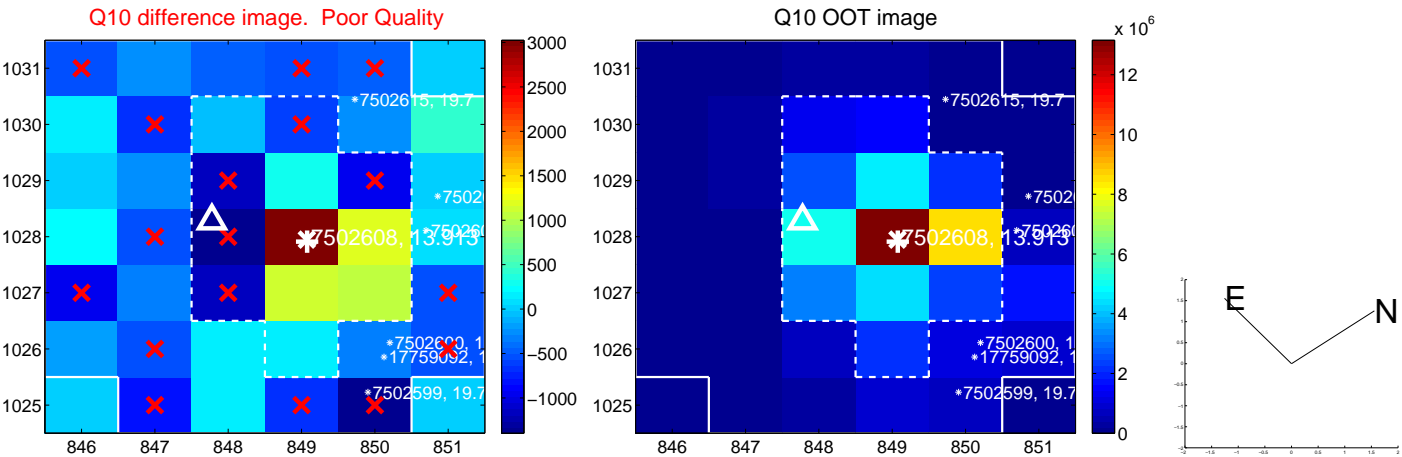
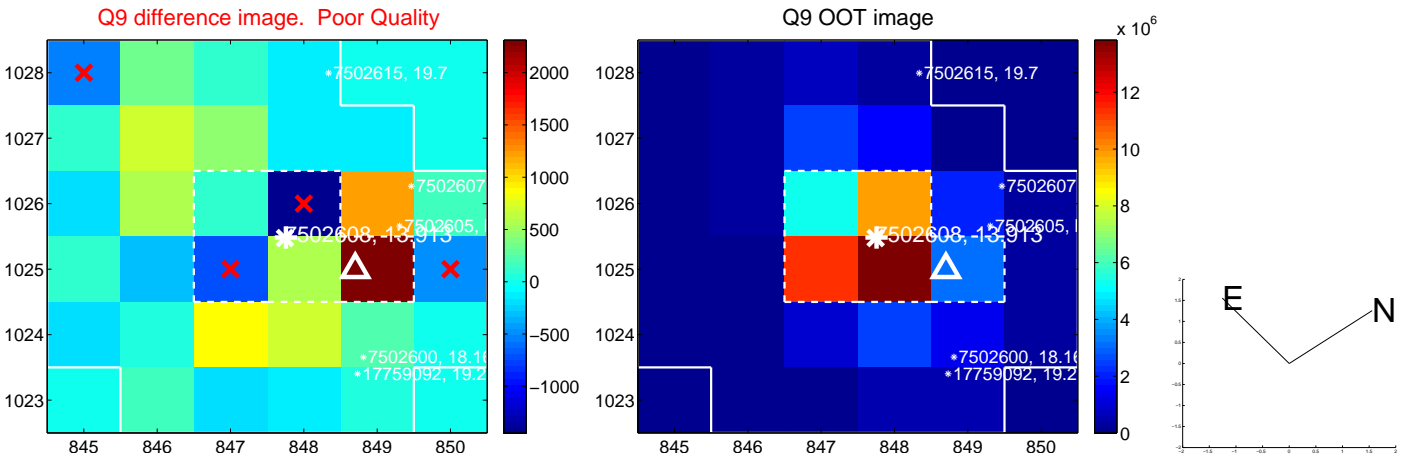
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



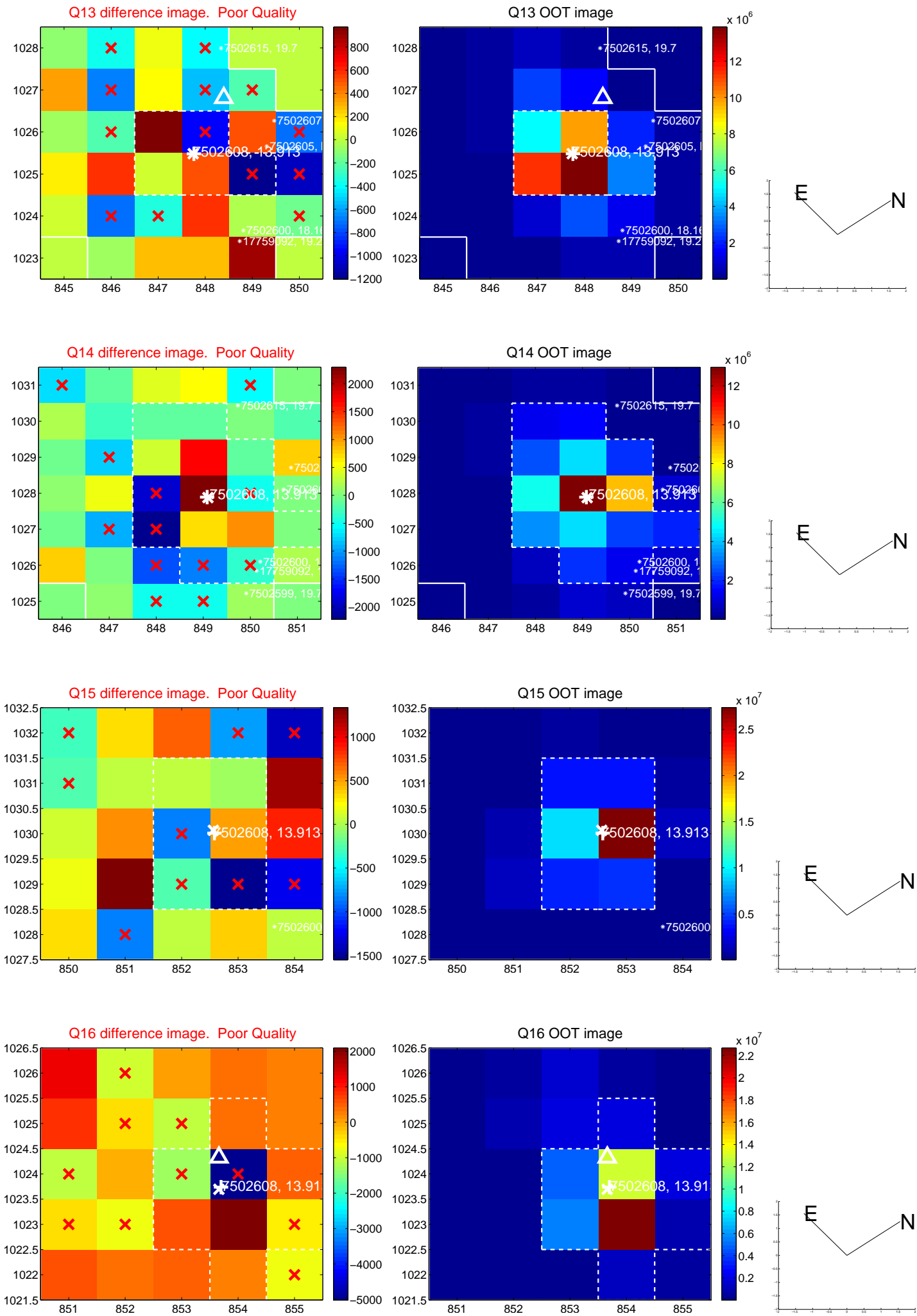
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

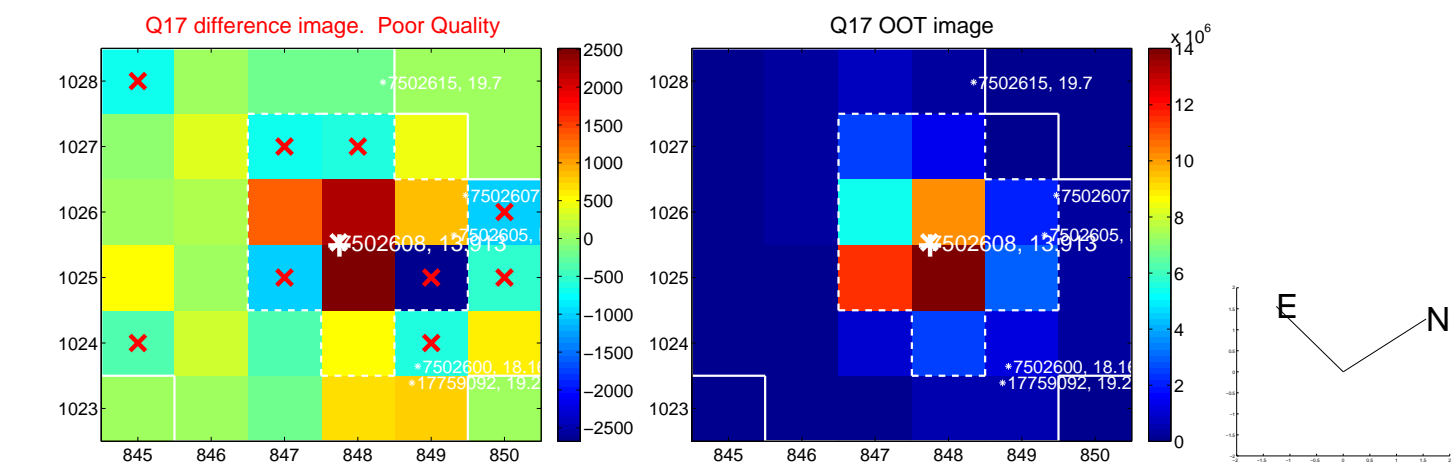


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

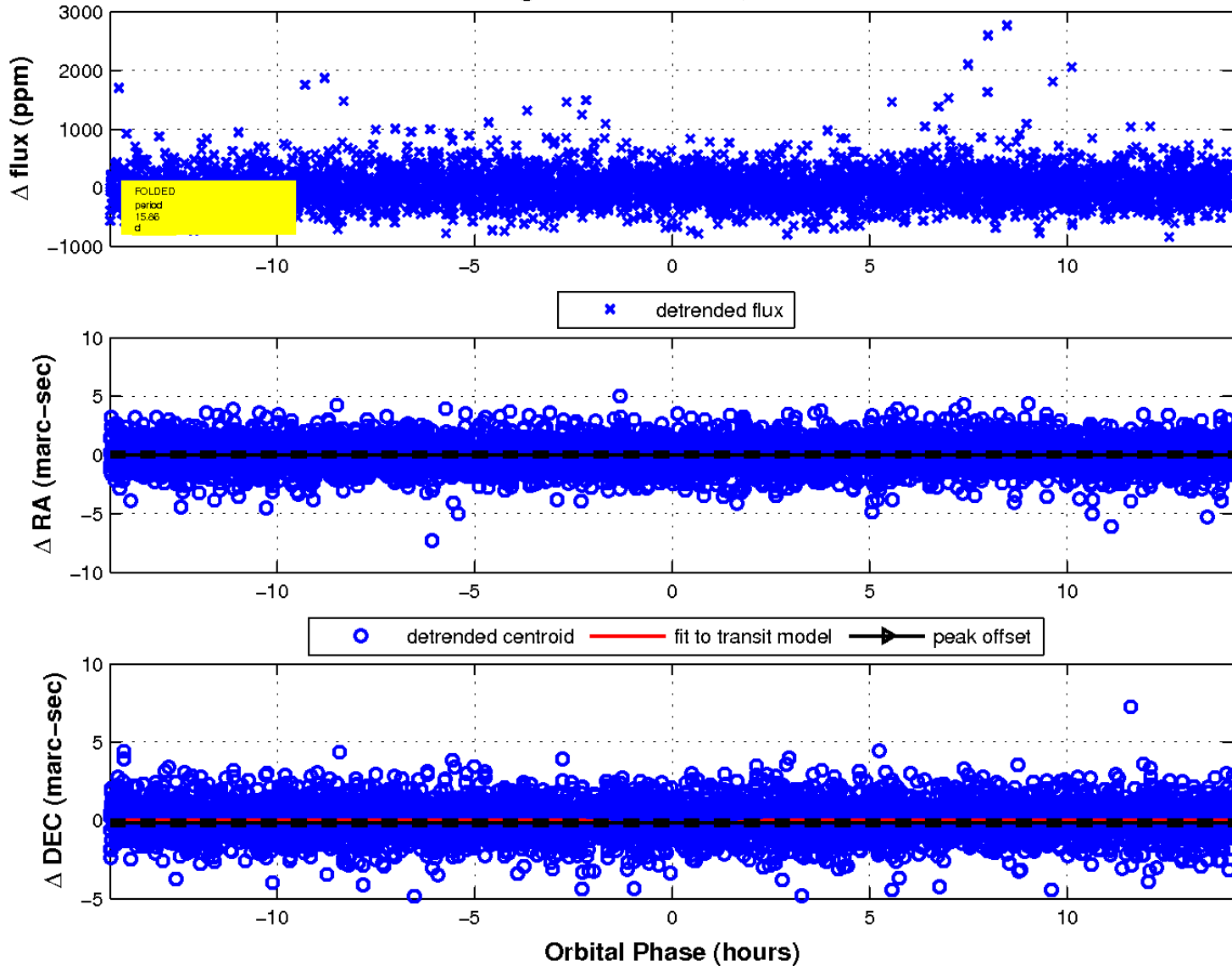




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

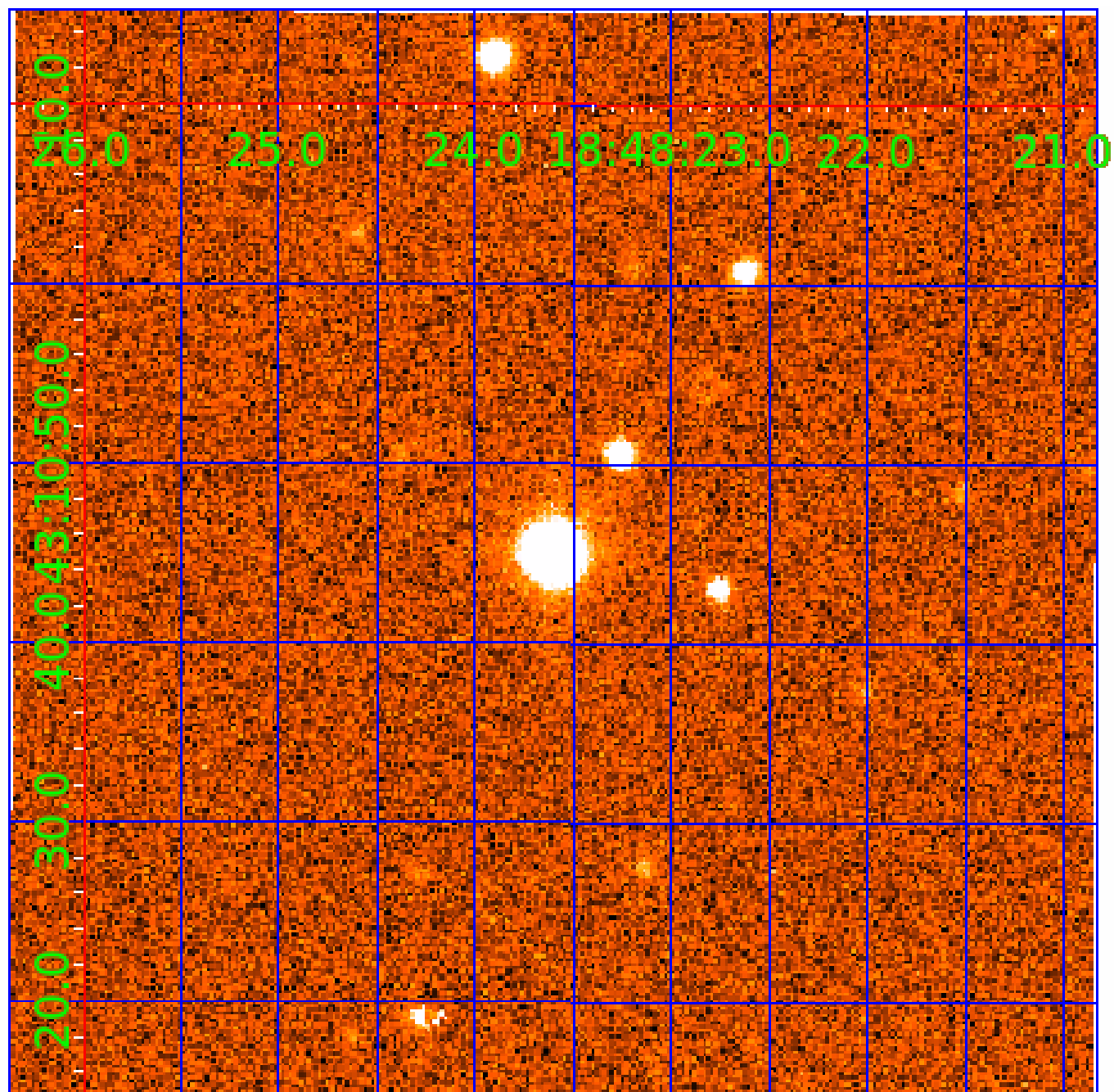


fluxWeightedCentroids, Planet 5 of 8



UKIRT Image

Declination



# KIC 007502608

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007502608-01	OBS	No	0.728064	132.116531	18.1	5.186	7.2	7.0	0.49	4390	0.22	507.37
007502608-02	OBS	No	50.391271	173.637283	1923.4	1.813	14.3	10.8	0.49	4390	2.22	1.78
007502608-03	OBS	No	40.741440	151.504948	1481.5	2.000	13.2	-1.0	0.49	4390	1.87	2.37
007502608-05	OBS	No	15.856753	137.039151	403.8	4.745	17.2	6.5	0.49	4390	1.17	8.34
007502608-06	OBS	No	33.994192	139.375761	278.7	8.062	11.2	4.0	0.49	4390	0.88	3.02
007502608-07	OBS	No	47.068117	169.666095	1915.9	1.379	10.8	10.9	0.49	4390	2.27	1.96

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007502608-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
007502608-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007502608-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007502608-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007502608-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
007502608-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS

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

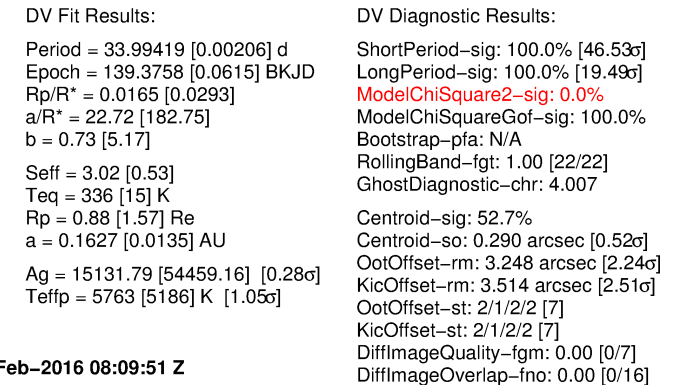
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 007502608-06

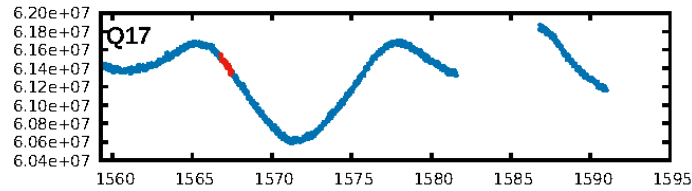
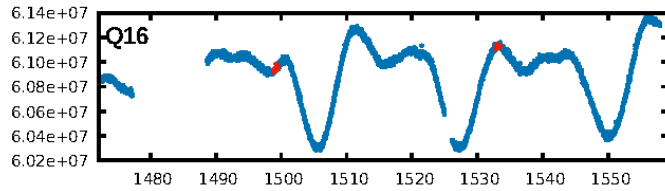
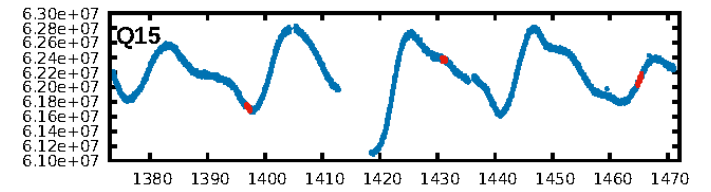
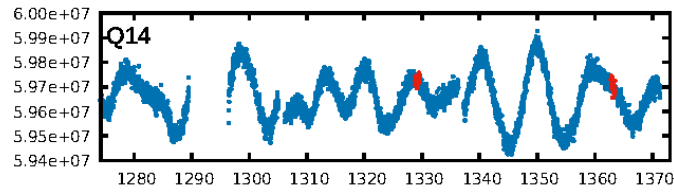
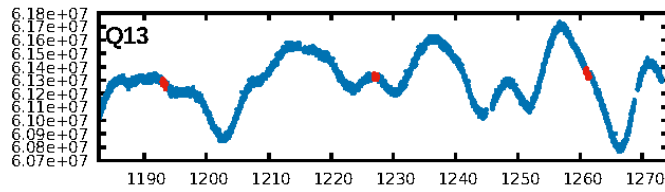
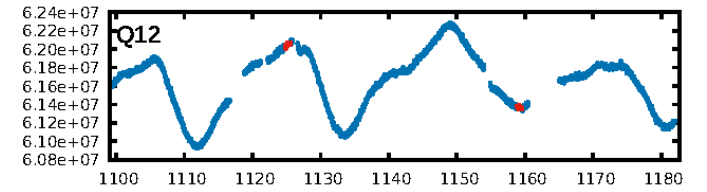
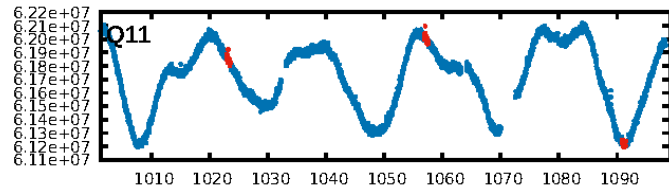
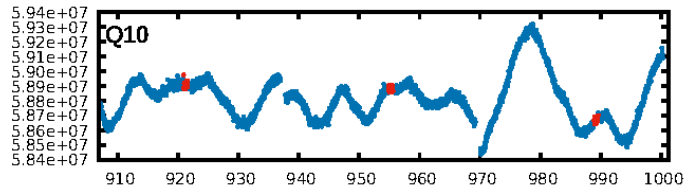
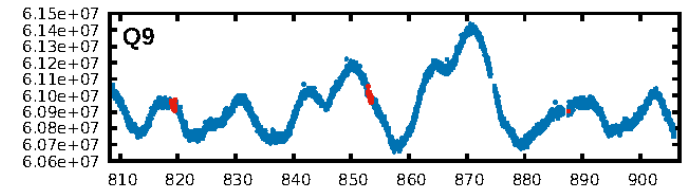
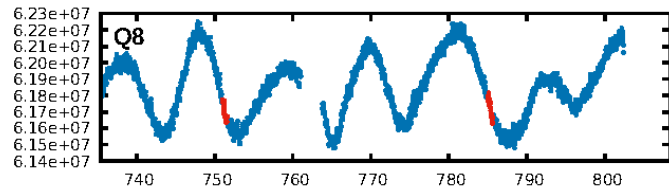
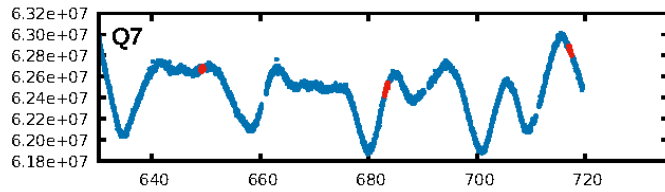
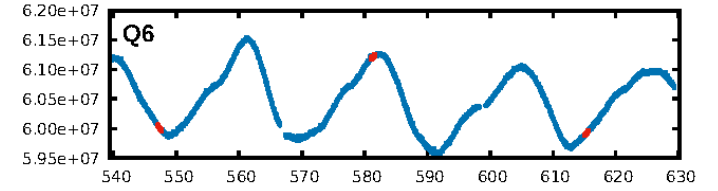
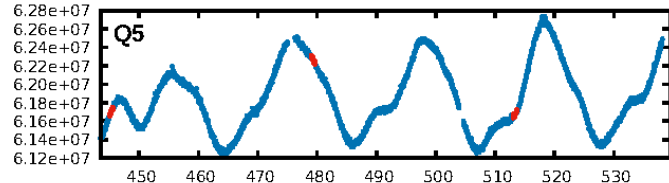
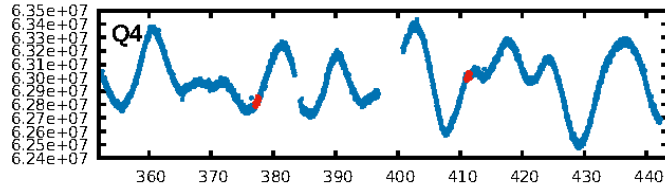
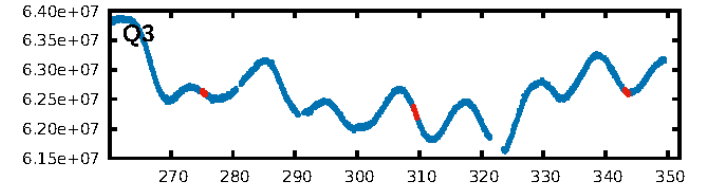
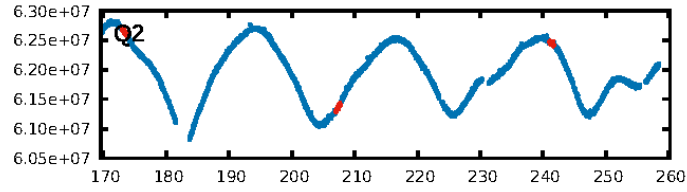
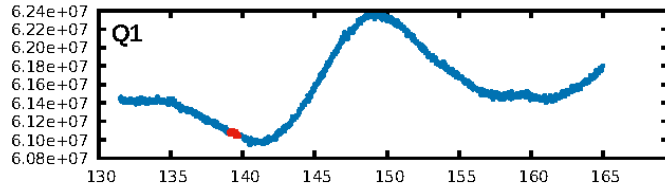
No Significant Match Found

KIC: 7502608    Candidate: 6 of 8    Period: 33.994 d

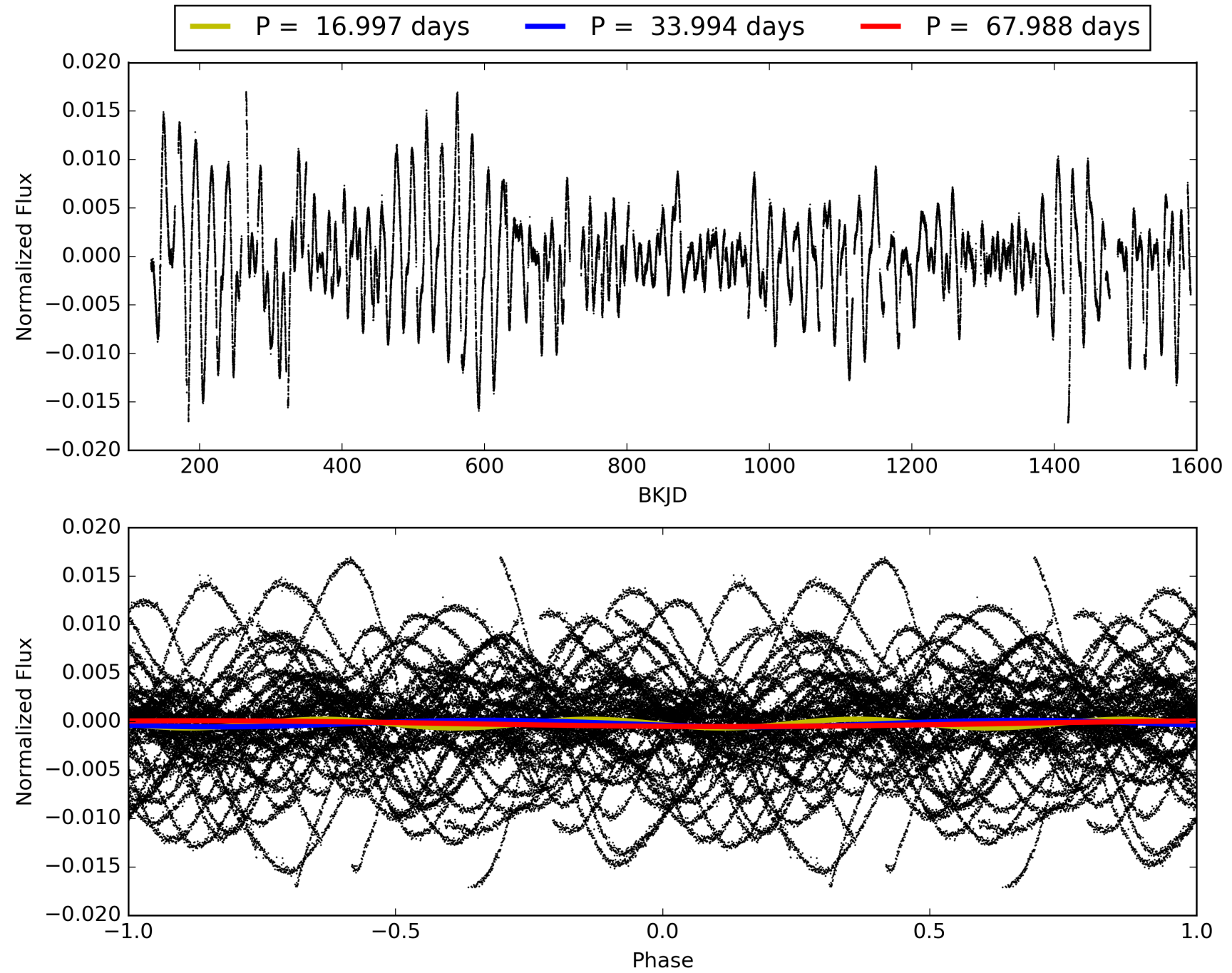
Software Revision: [svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958](https://murzim/repo/soc/tags/release/9.3.42@60958) -- Date Generated: 02-Feb-2016 08:09:51 Z

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

# TCE 007502608-06, PDC Light Curves

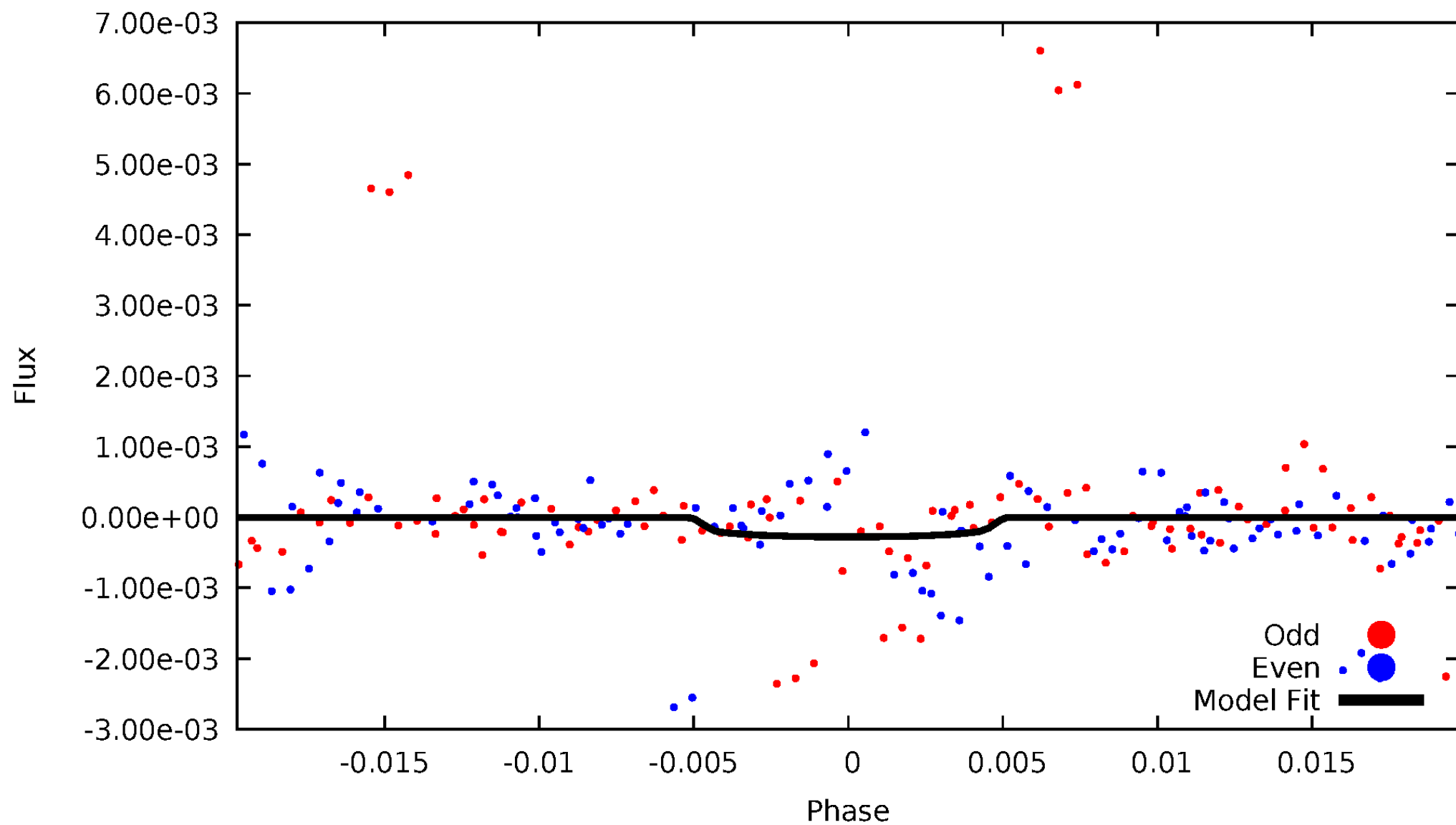


TCE 007502608-06



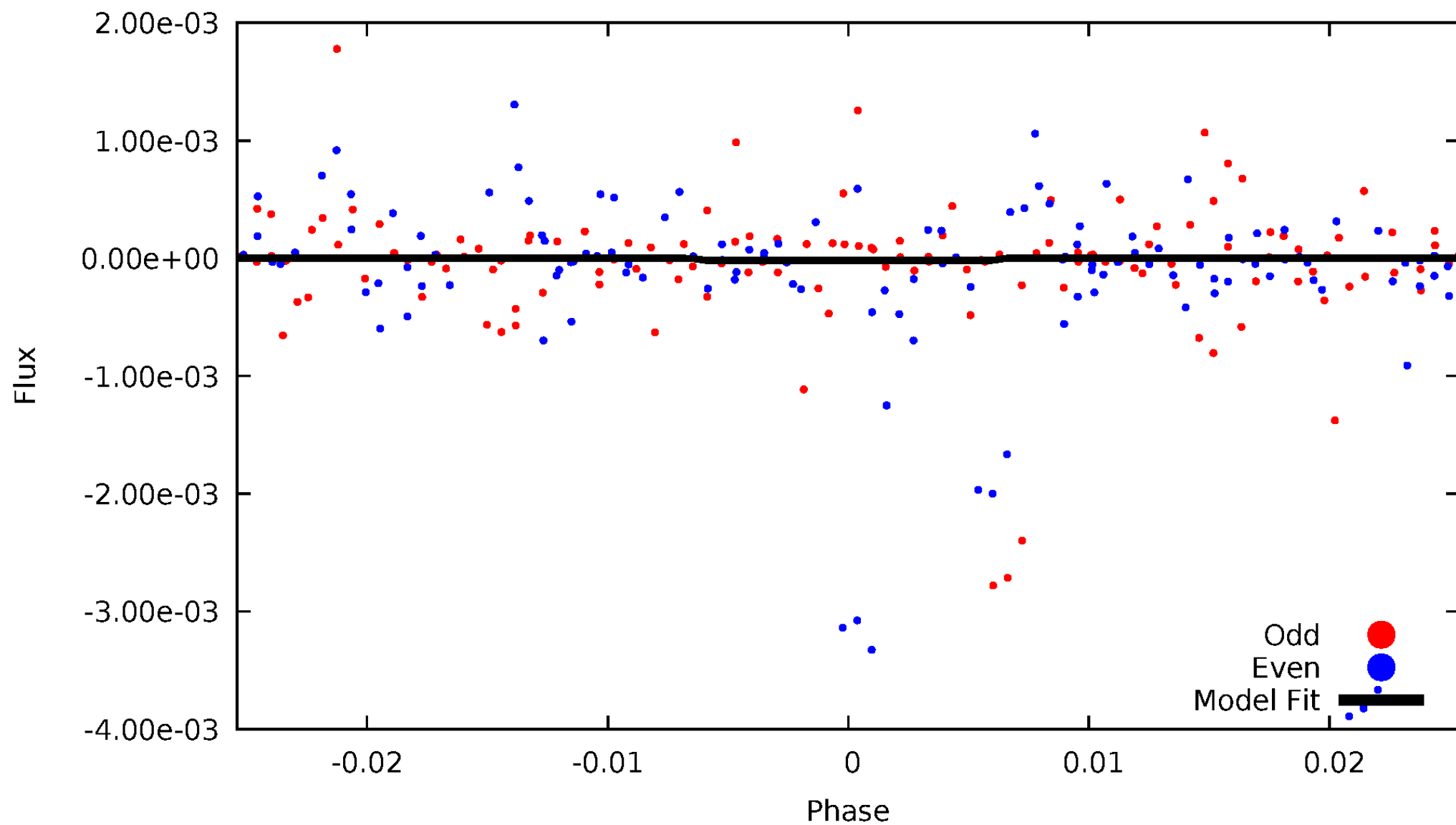
# DV Odd/Even

TCE 007502608-06



# ALT Odd/Even

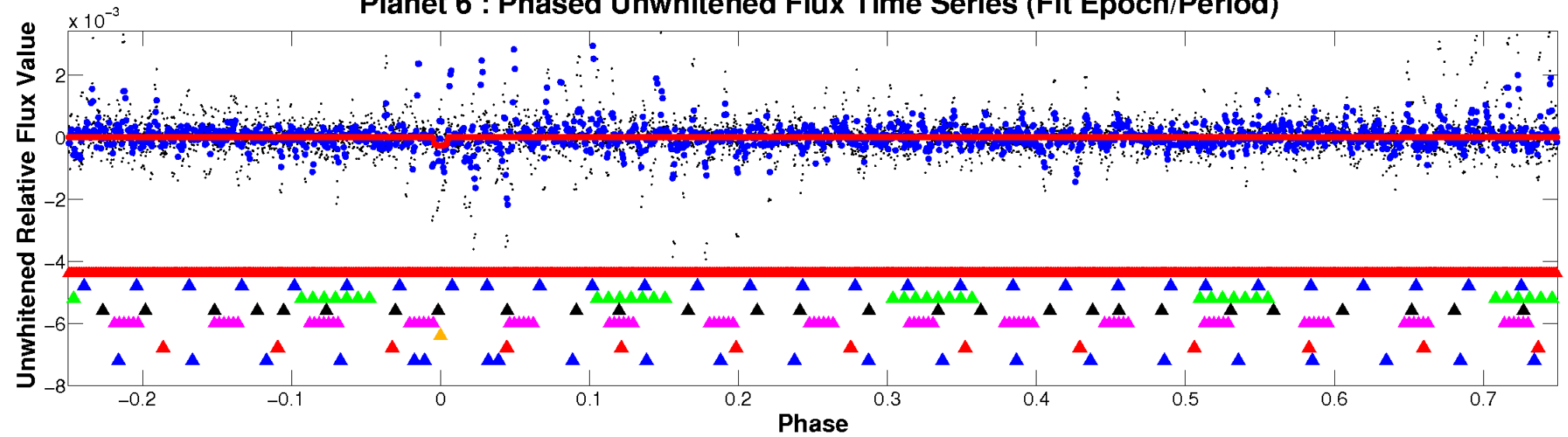
TCE 007502608-06



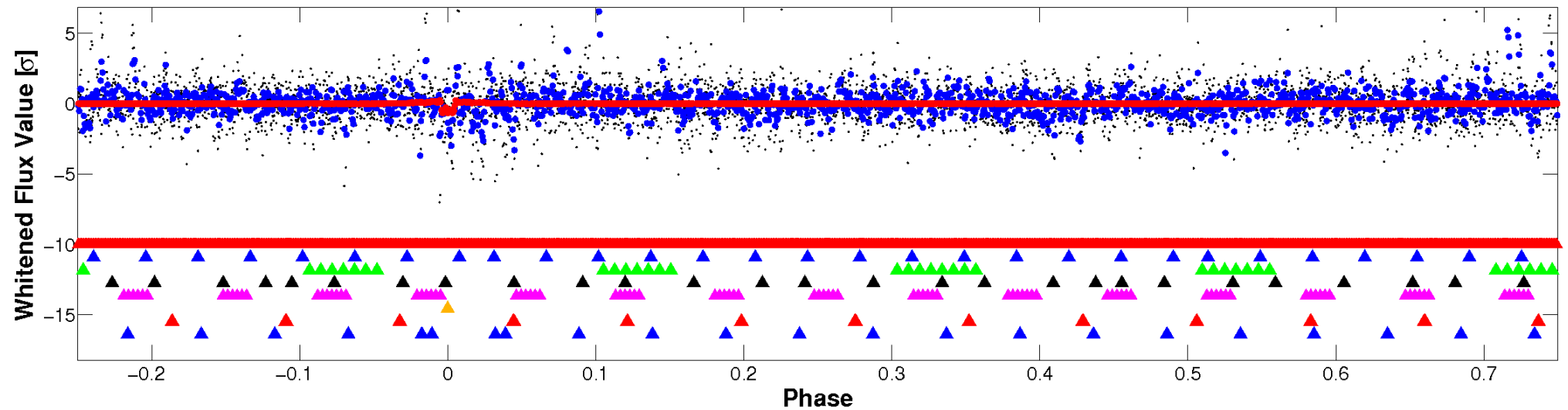


# Non-Whitened Vs. Whitened Light Curve

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

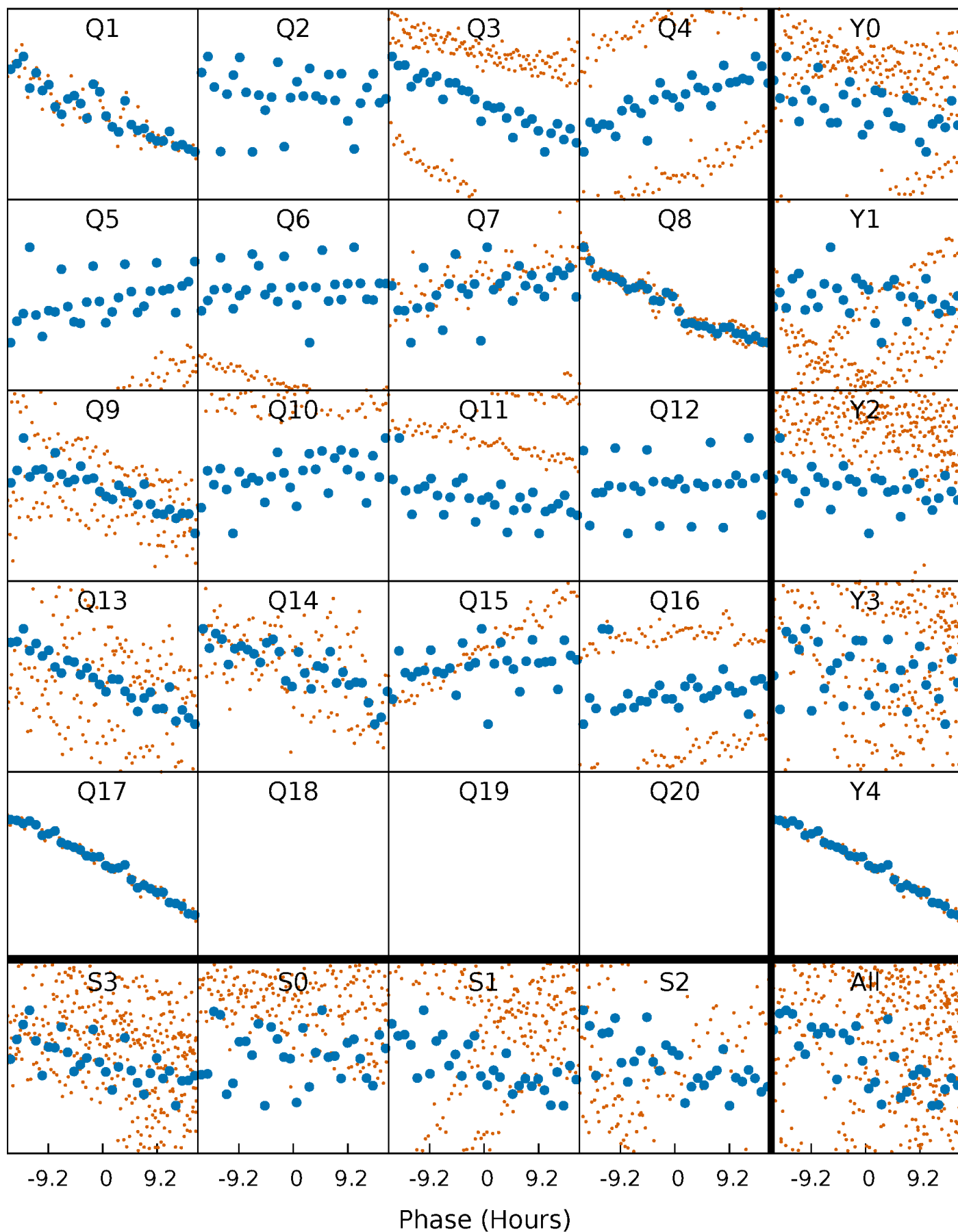


## Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



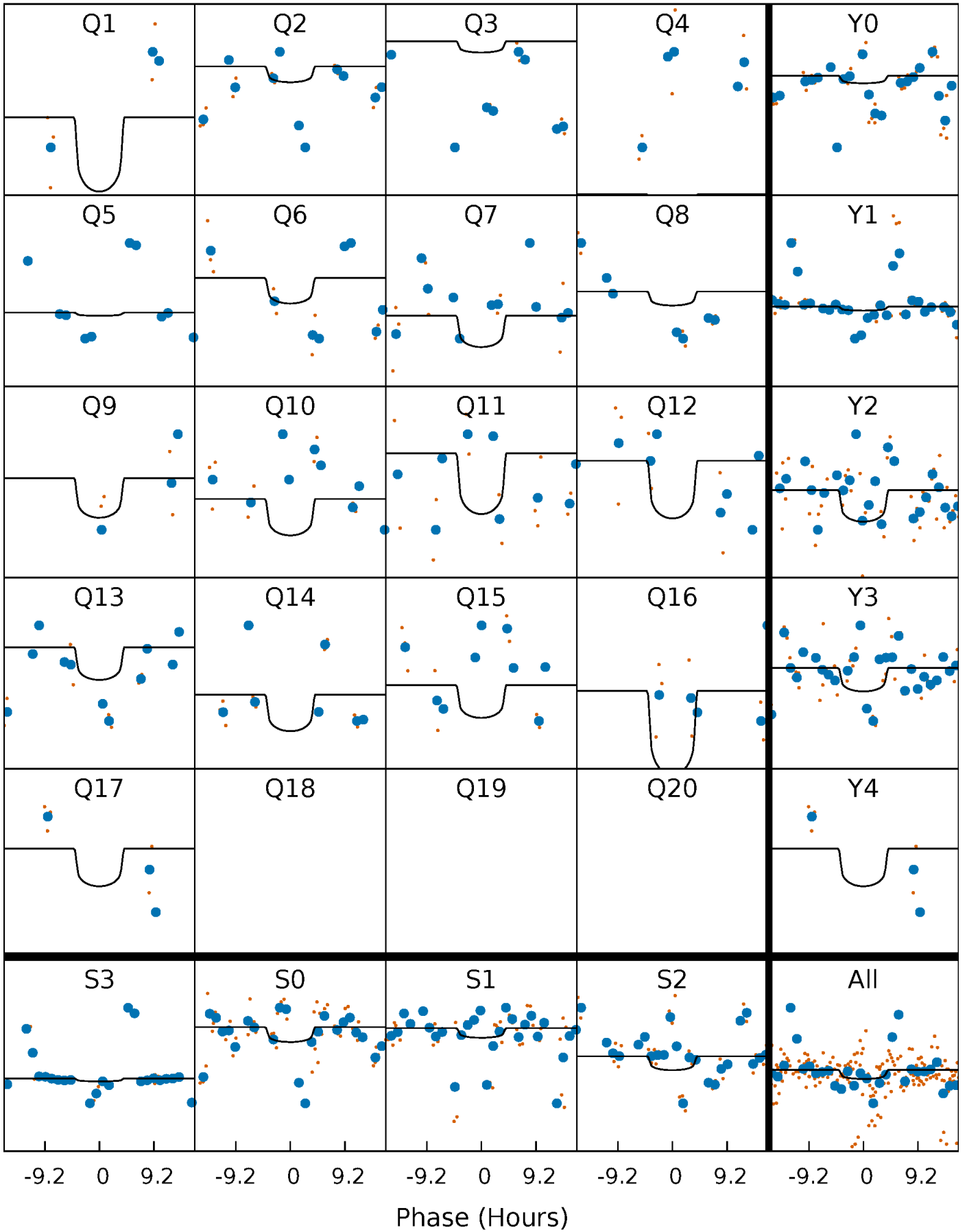
# PDC Quarter-Phased Transit Curves

TCE 007502608-06 P= 33.994192 Days  $T_0=139.375761$  (BKJD)



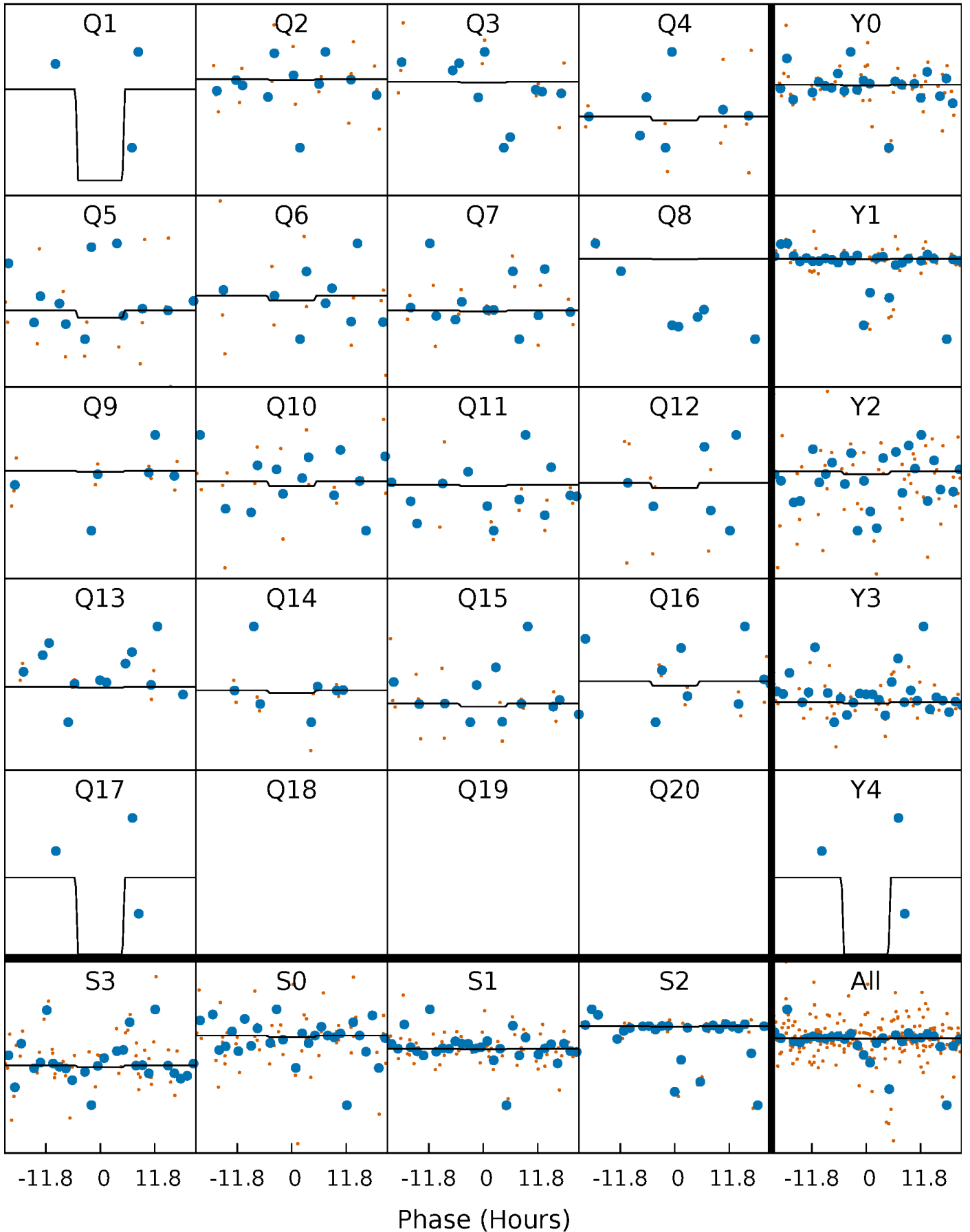
# DV Quarter-Phased Transit Curves

TCE 007502608-06 P= 33.994192 Days  $T_0=139.375761$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

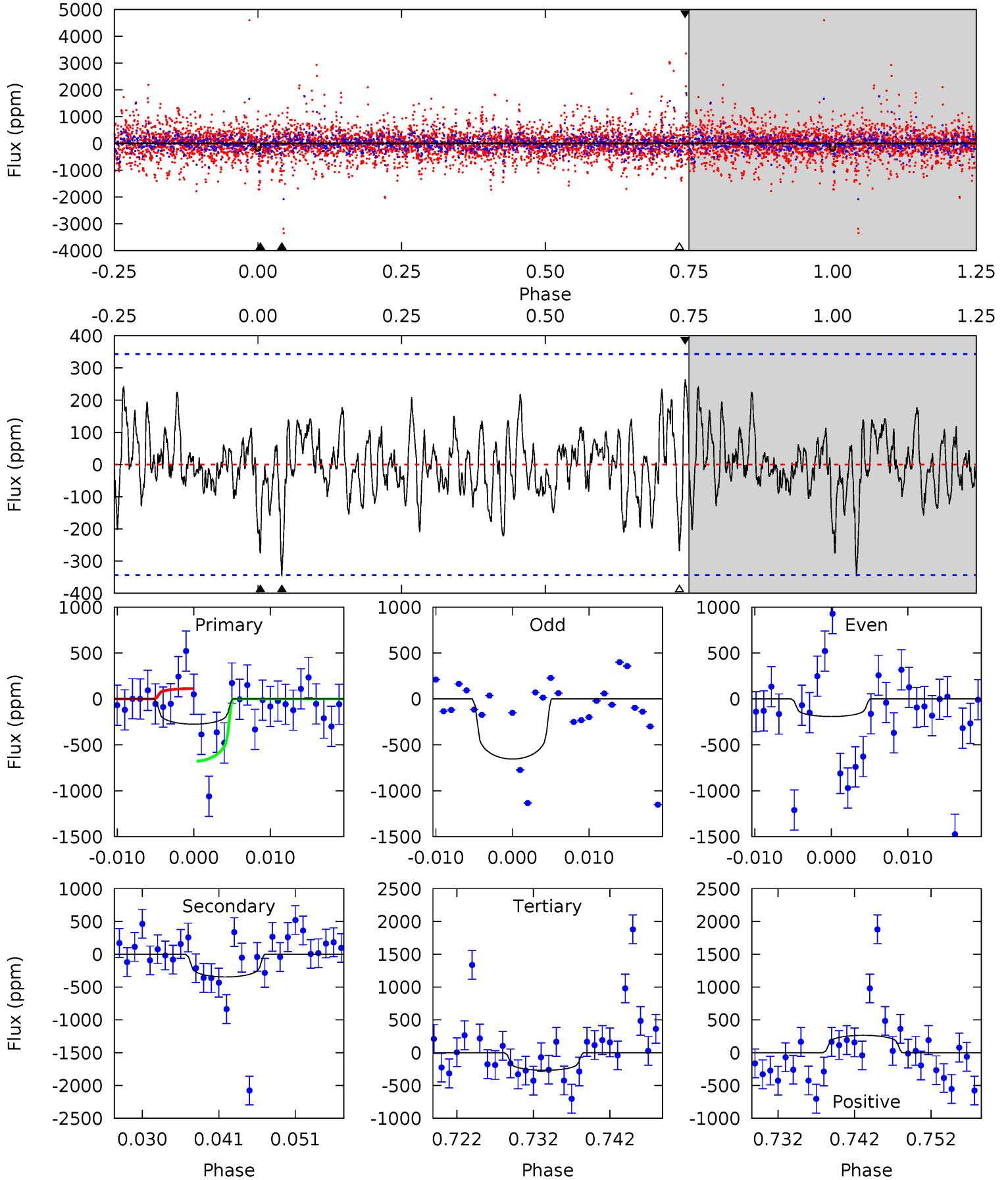
TCE 007502608-06 P= 33.993577 Days  $T_0=139.445240$  (BKJD)



# DV Model-Shift Uniqueness Test

007502608-06,  $P = 33.994192$  Days,  $E = 105.381569$  Days

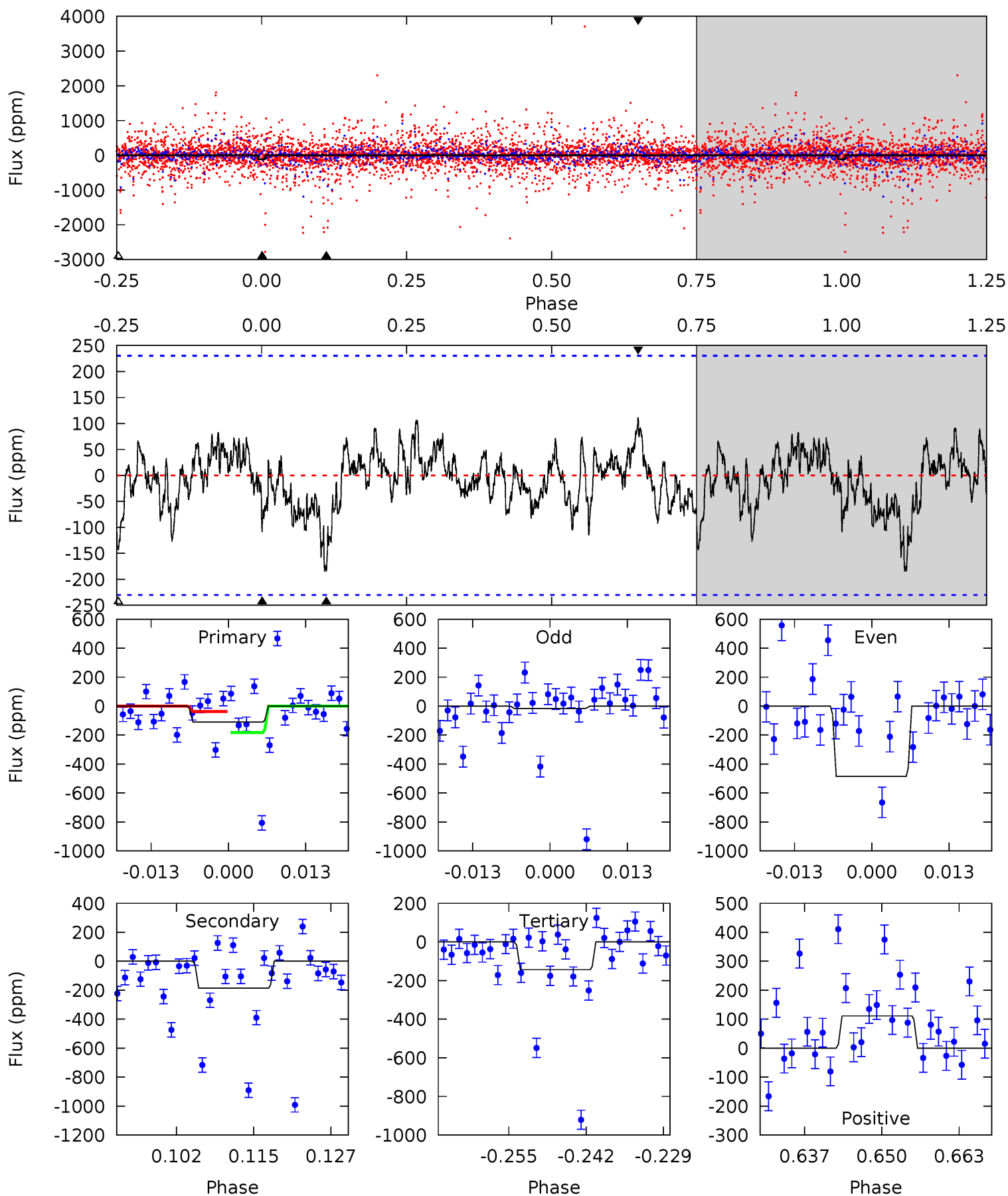
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.02	5.07	3.93	3.87	5.02	2.57	1.27	0.09	0.15	1.14	1.20	2.84	2.18	0.43	4.11



# Alt Model-Shift Uniqueness Test

007502608-06, P = 33.993577 Days, E = 105.451663 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
2.36	4.00	3.11	2.41	4.98	2.49	0.97	-0.75	-0.05	0.90	1.59	3.13	-159.9	0.38	1.62



### Stellar Parameters For KIC 007502608

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4390^{+124}_{-140}$	$4.754^{+0.065}_{-0.030}$	$-1.280^{+0.300}_{-0.350}$	$0.490^{+0.033}_{-0.049}$	$0.496^{+0.036}_{-0.036}$	$5.955^{+1.727}_{-0.763}$
	+3%/-3%	+1%/-1%	+23%/-27%	+7%/-10%	+7%/-7%	+29%/-13%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007502608-06 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-346 \pm 68$	$1.56^{+1.20}_{-1.08}$	$466^{+16}_{-17}$	$3747^{+2201}_{-675}$	$2120^{+20179}_{-1496}$
Alt.	$-185 \pm 46$	$1.14^{+1.17}_{-0.80}$	$466^{+16}_{-18}$	$3724^{+2398}_{-741}$	$2099^{+21876}_{-1603}$

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

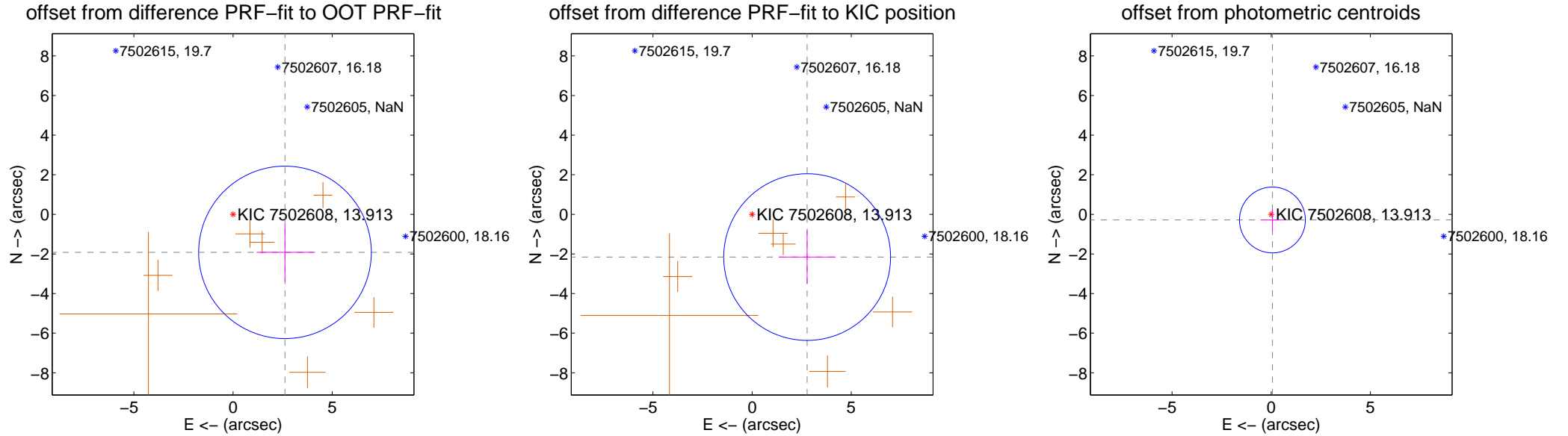
## DV Centroid Data

Supplemental centroid analysis for 007502608-06. Kepler magnitude: 13.91. Transit SNR 4.05

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

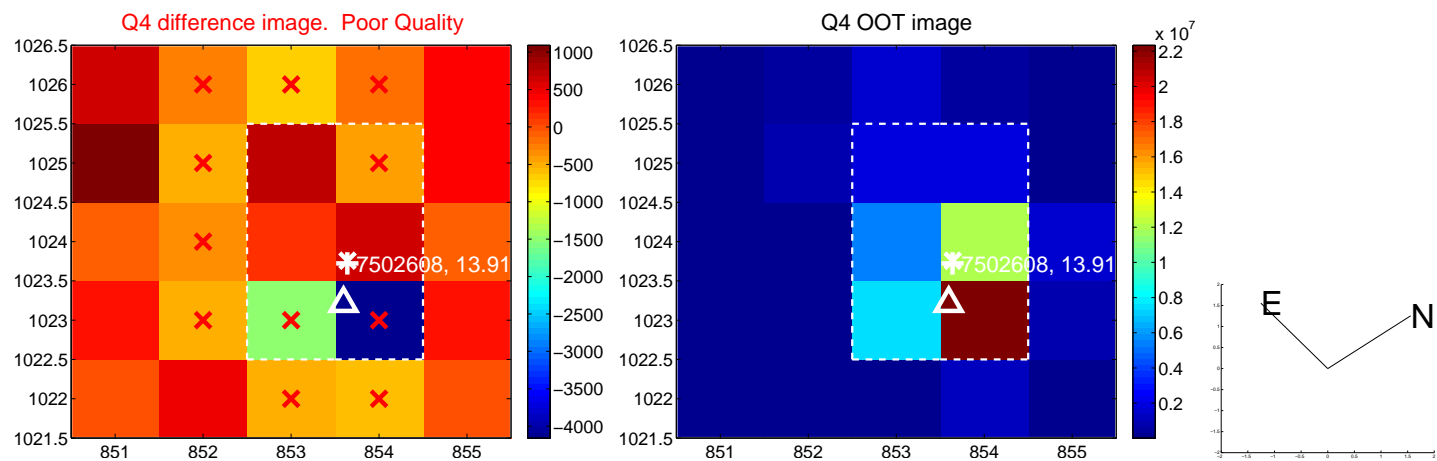
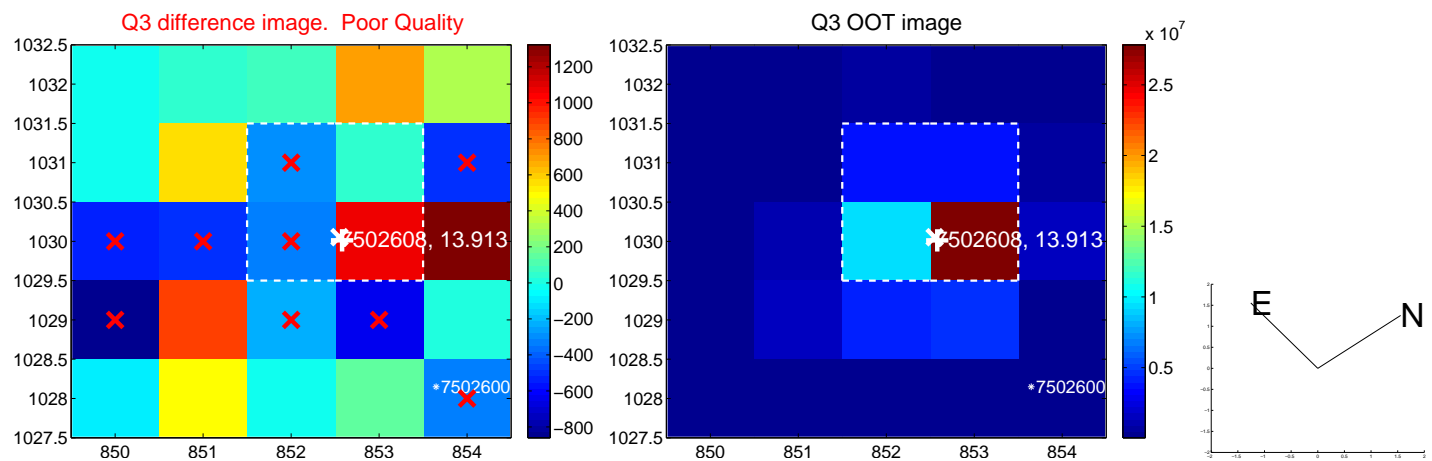
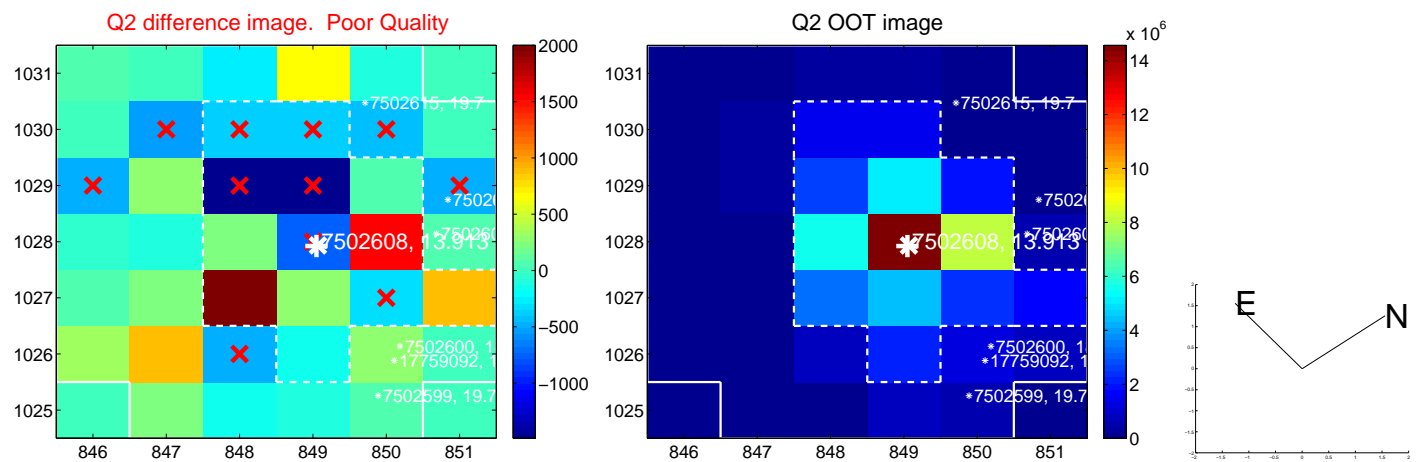
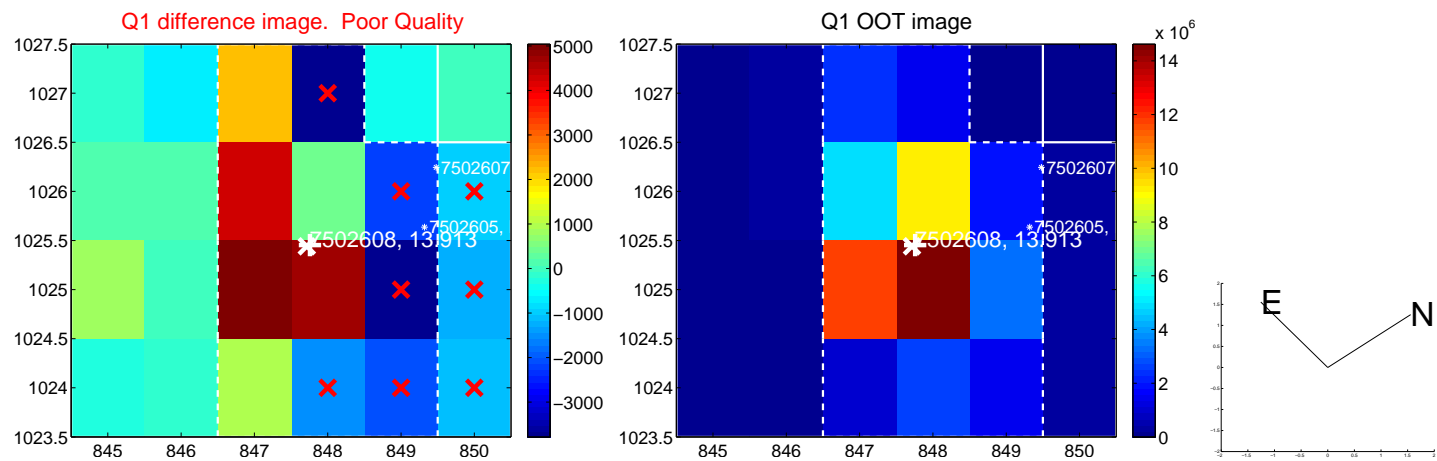
	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.248 \pm 1.451$	2.24	$-2.619 \pm 1.436$	$-1.920 \pm 1.480$
PRF-fit source offset from KIC position	$3.514 \pm 1.402$	2.51	$-2.775 \pm 1.435$	$-2.157 \pm 1.347$
photometric centroid source offset	$0.29 \pm 0.55$	0.52	$-0.06 \pm 0.60$	$-0.28 \pm 0.55$



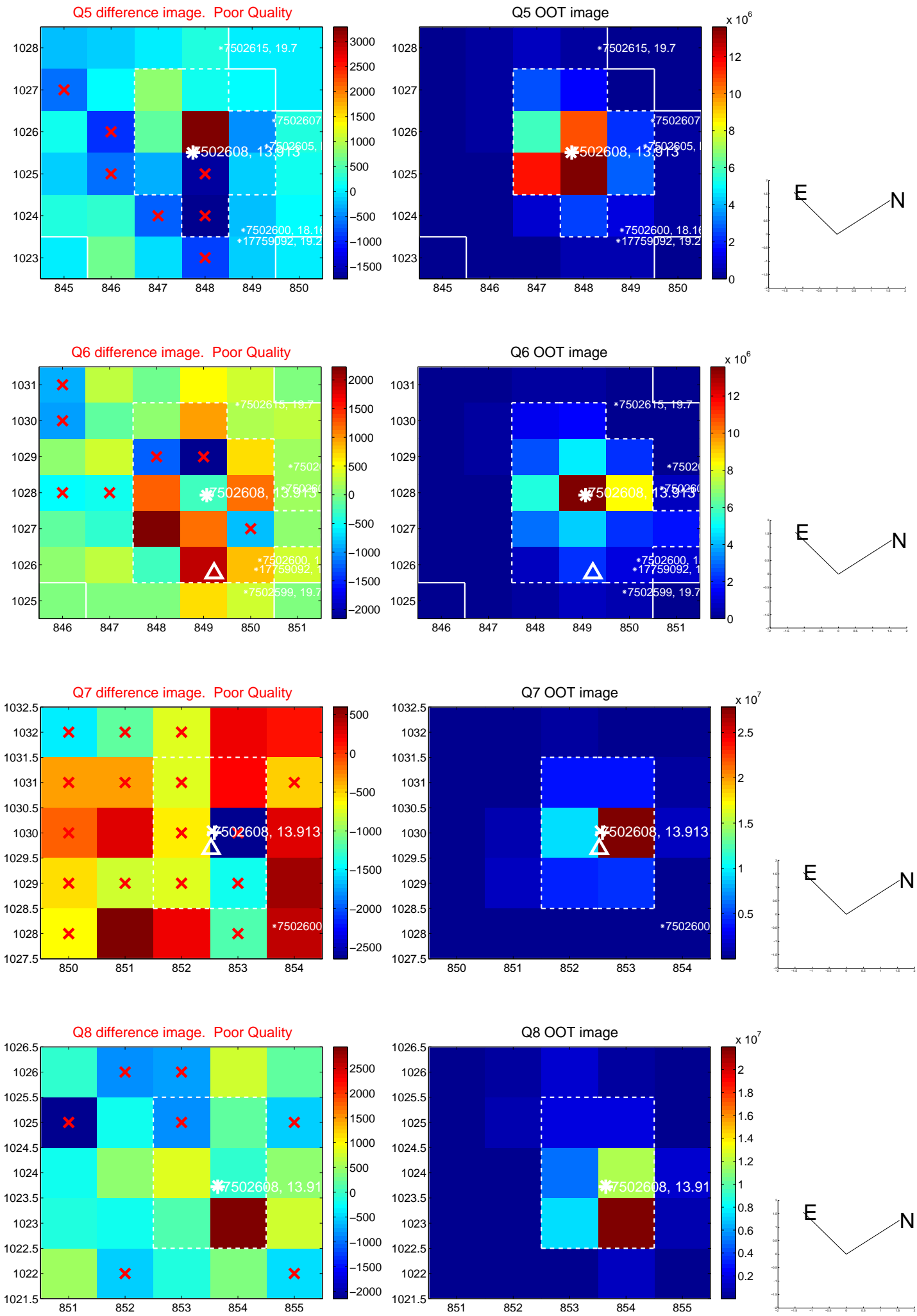
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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



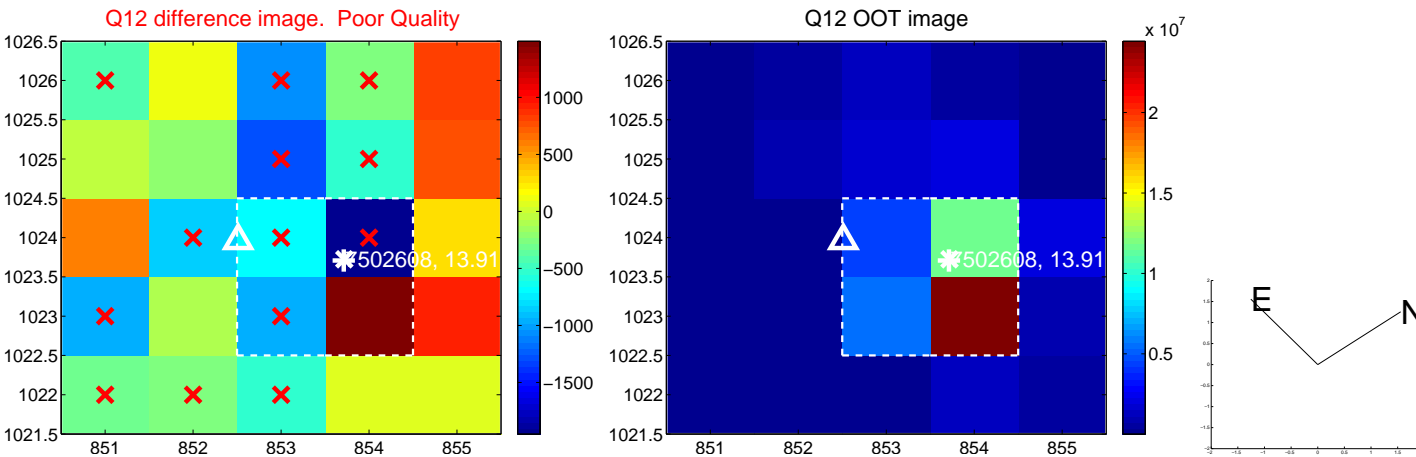
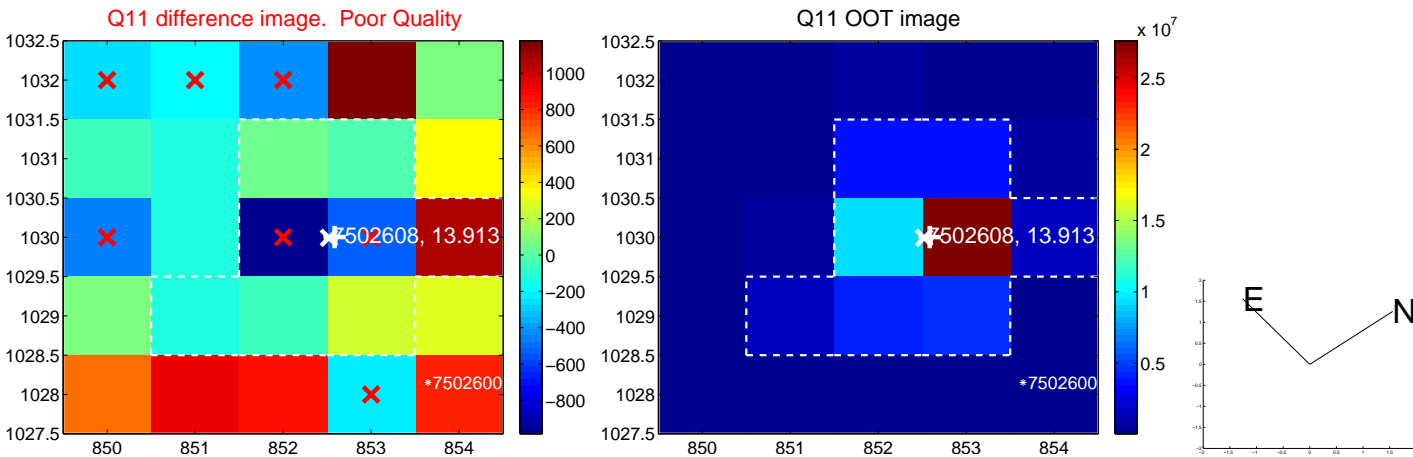
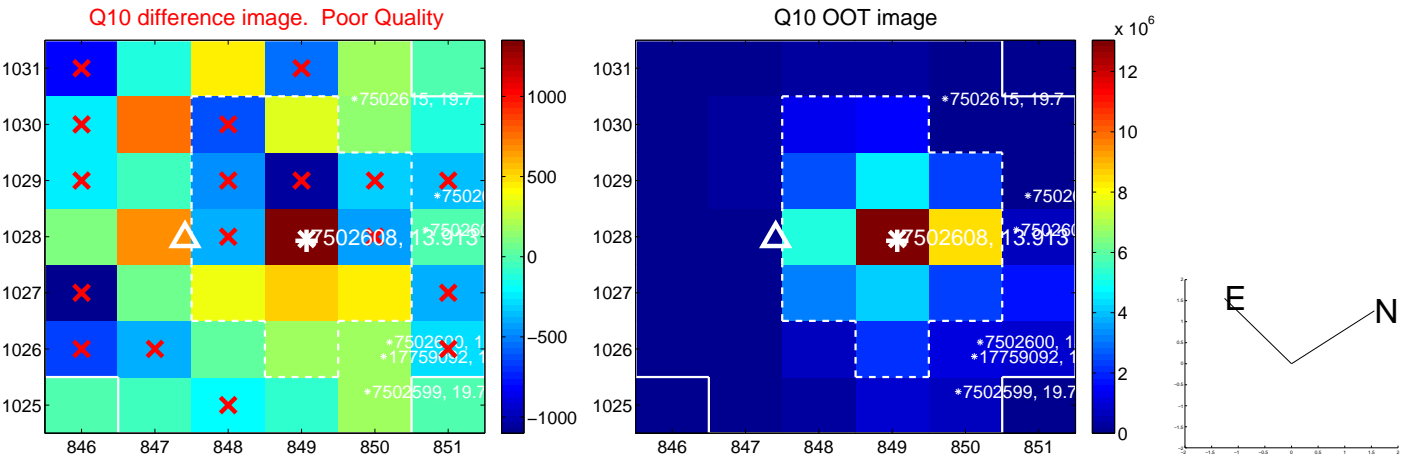
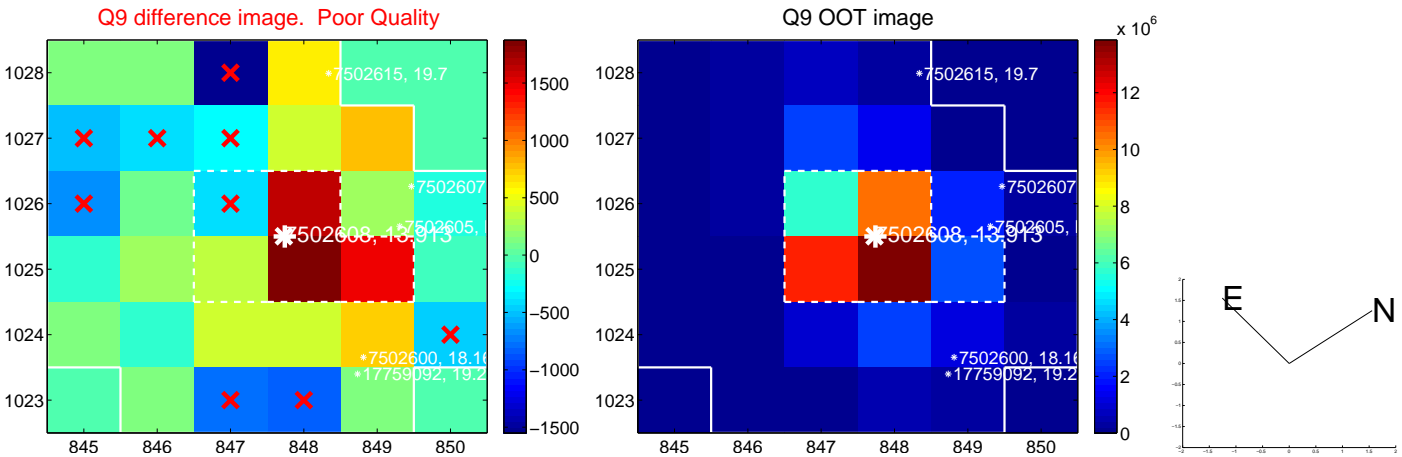
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



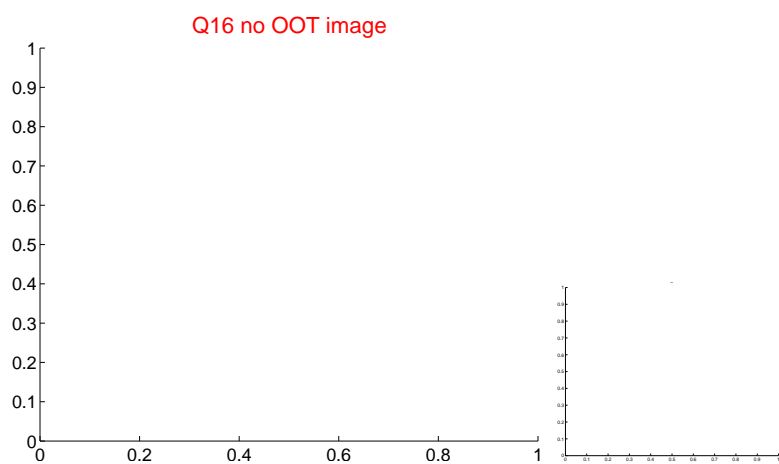
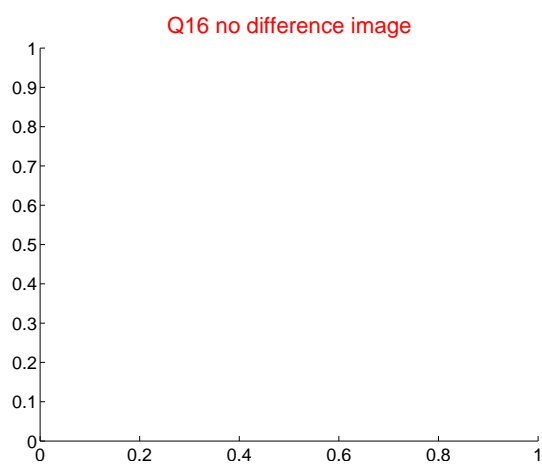
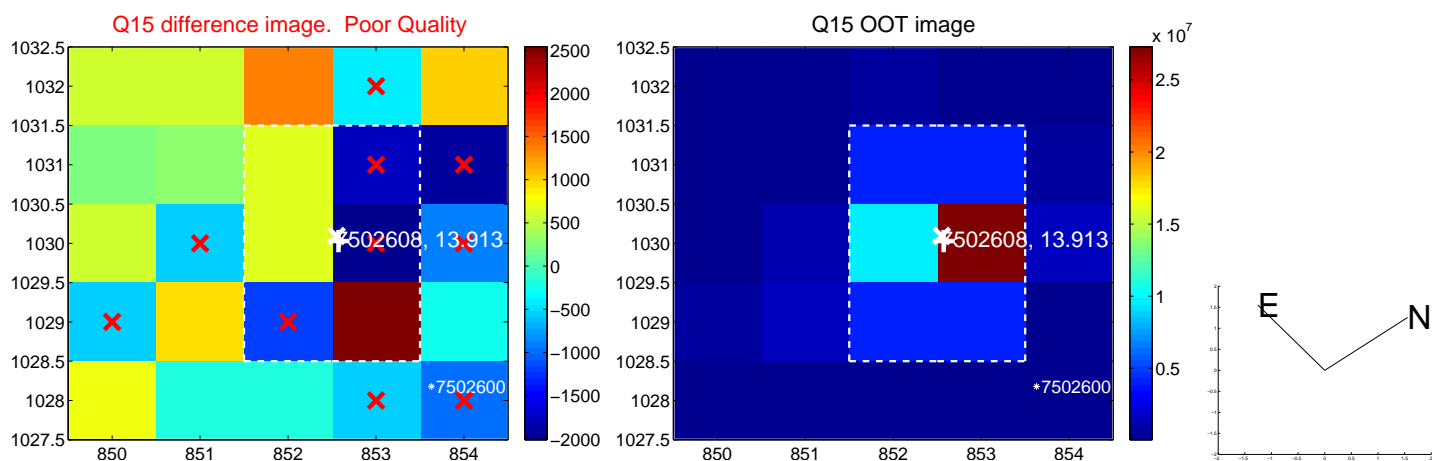
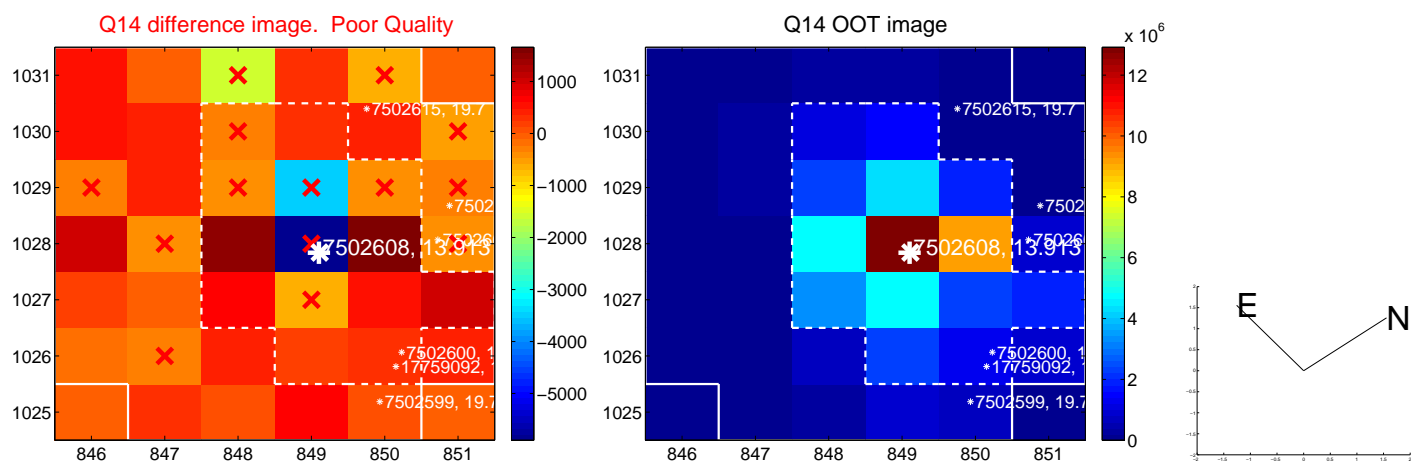
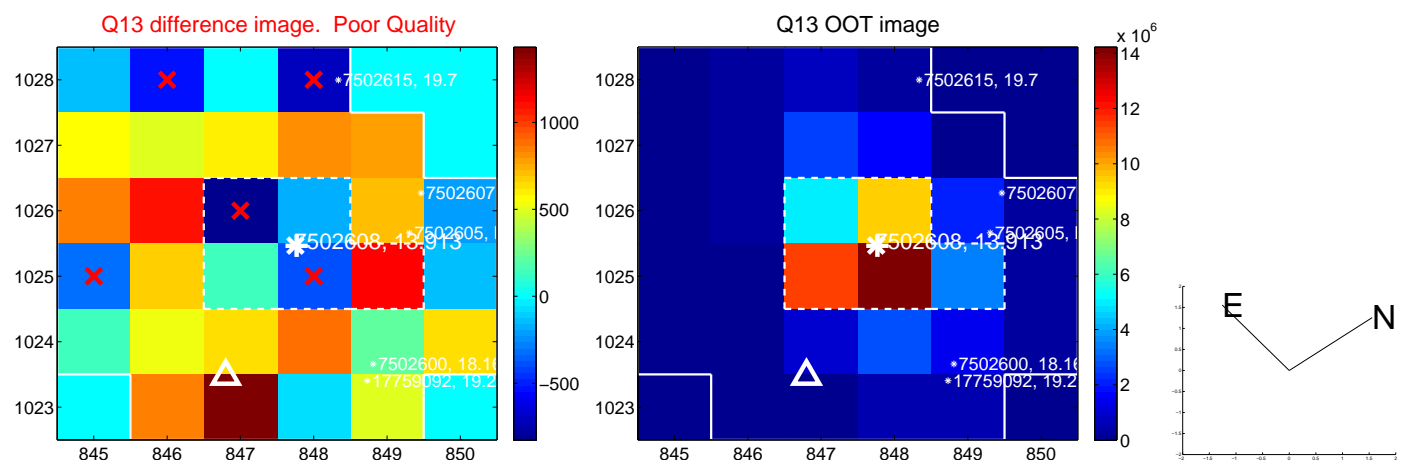
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



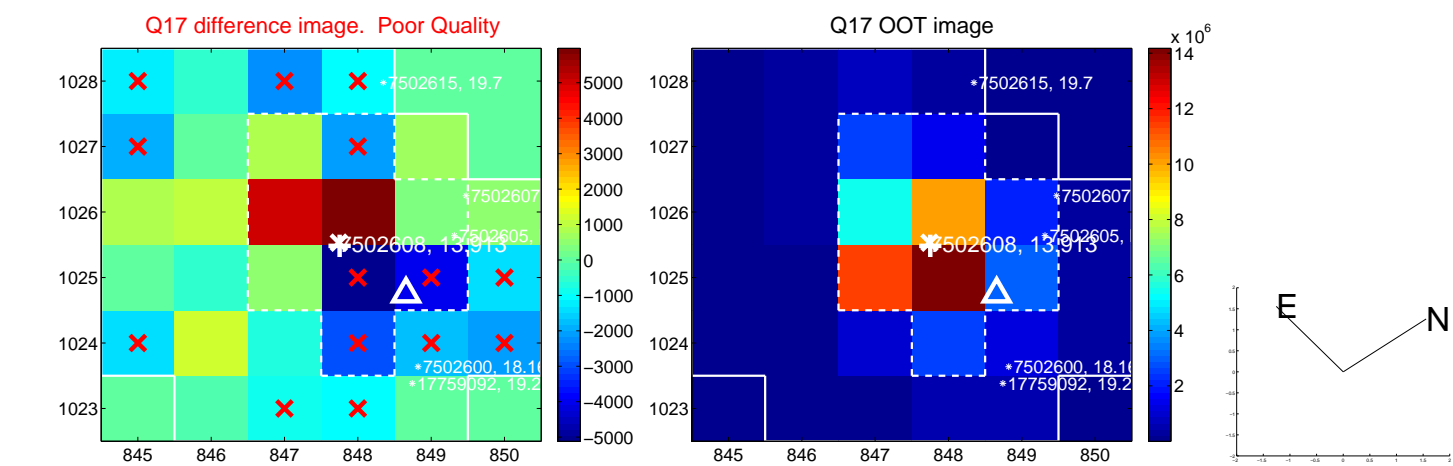
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



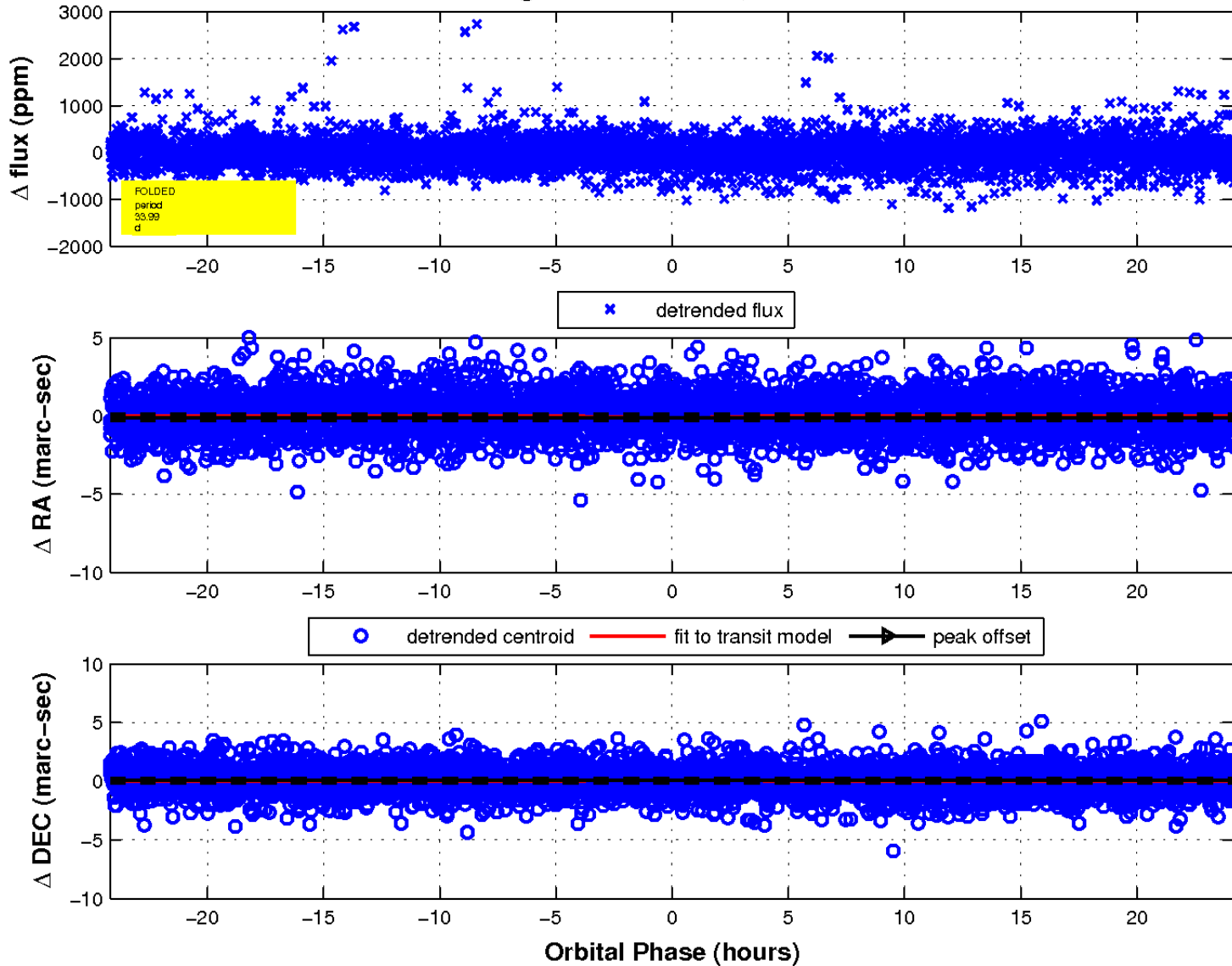
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

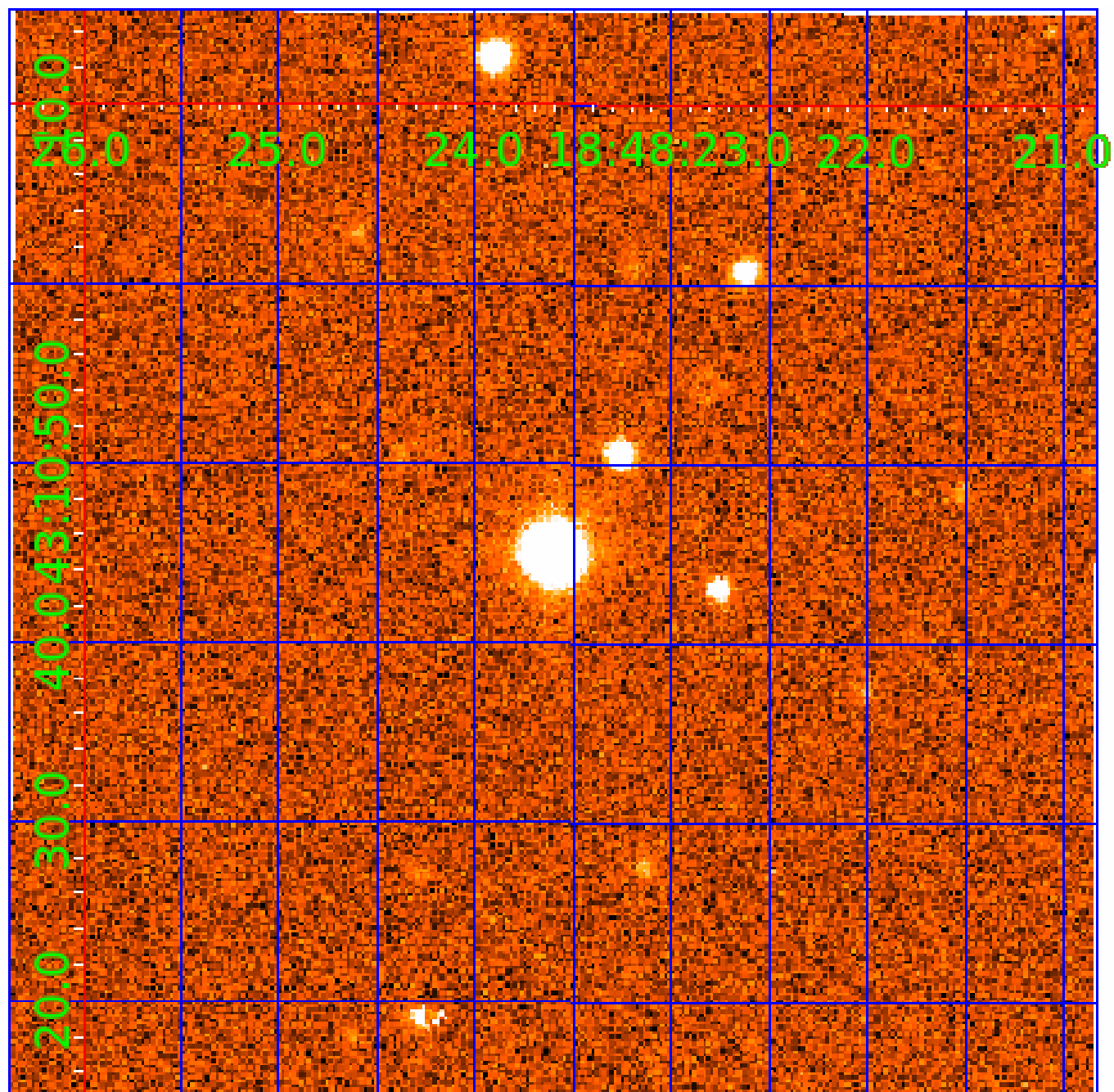


fluxWeightedCentroids, Planet 6 of 8



UKIRT Image

Declination



# KIC 007502608

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
007502608-01	OBS	No	0.728064	132.116531	18.1	5.186	7.2	7.0	0.49	4390	0.22	507.37
007502608-02	OBS	No	50.391271	173.637283	1923.4	1.813	14.3	10.8	0.49	4390	2.22	1.78
007502608-03	OBS	No	40.741440	151.504948	1481.5	2.000	13.2	-1.0	0.49	4390	1.87	2.37
007502608-05	OBS	No	15.856753	137.039151	403.8	4.745	17.2	6.5	0.49	4390	1.17	8.34
007502608-06	OBS	No	33.994192	139.375761	278.7	8.062	11.2	4.0	0.49	4390	0.88	3.02
007502608-07	OBS	No	47.068117	169.666095	1915.9	1.379	10.8	10.9	0.49	4390	2.27	1.96

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007502608-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
007502608-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007502608-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
007502608-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
007502608-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
007502608-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS

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

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

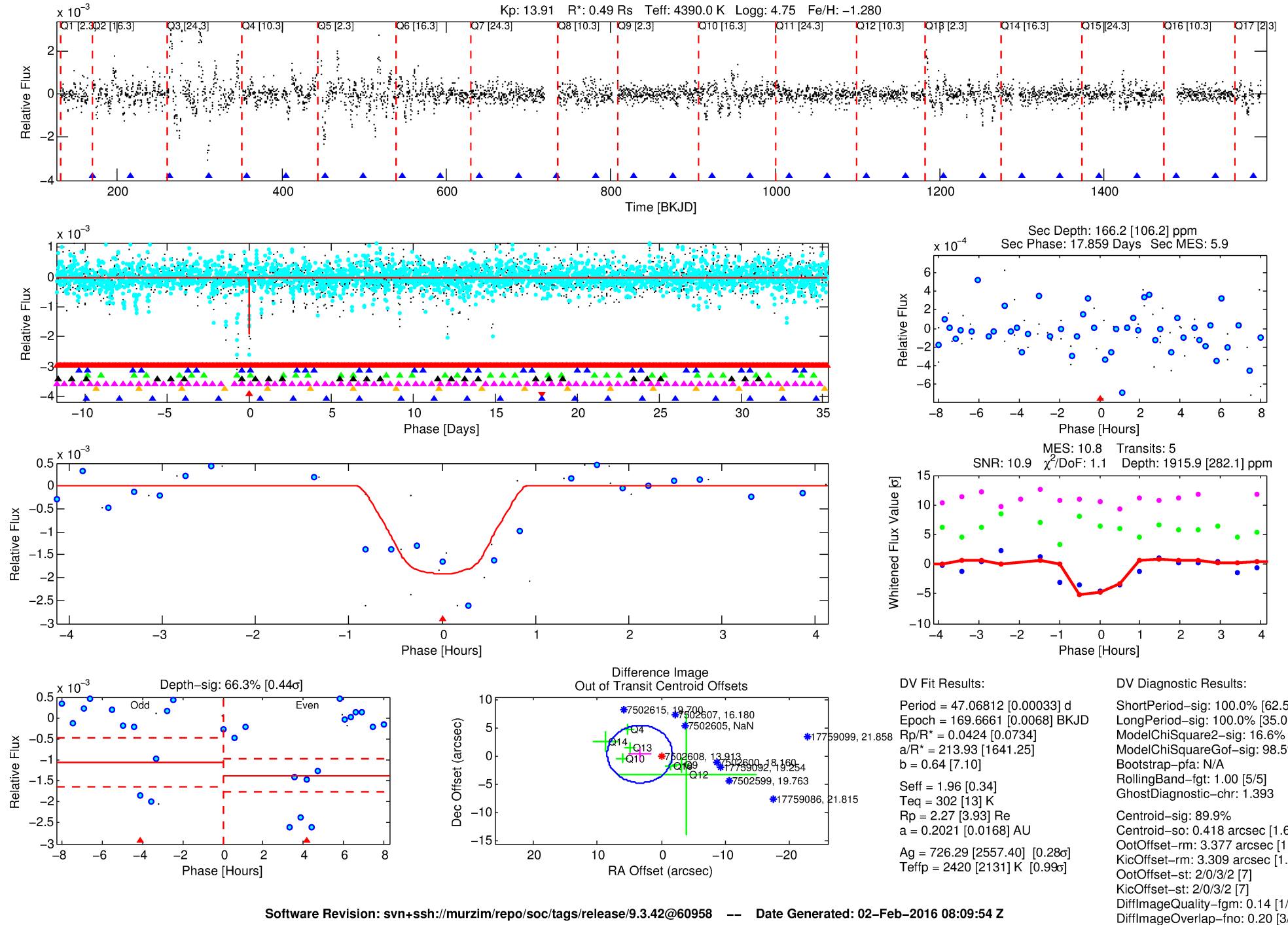
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 007502608-07

No Significant Match Found

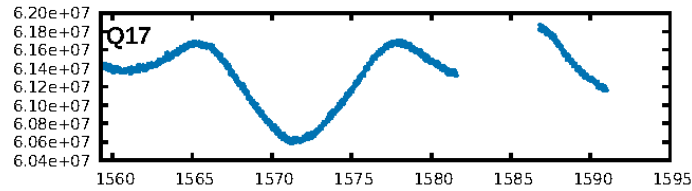
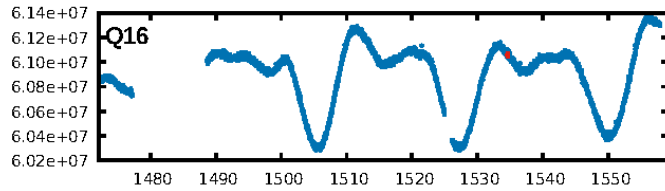
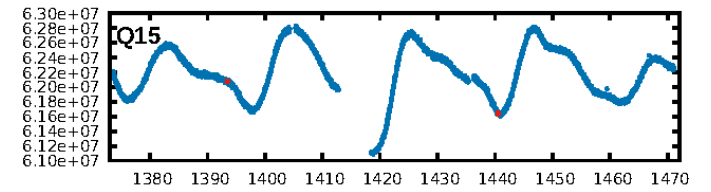
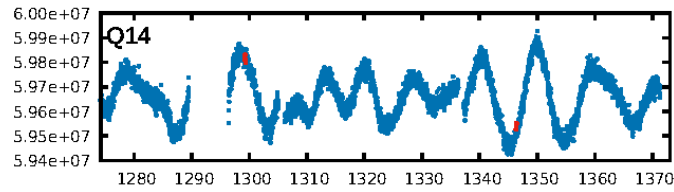
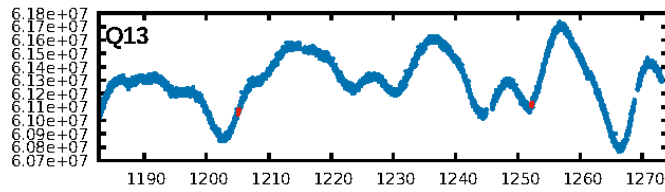
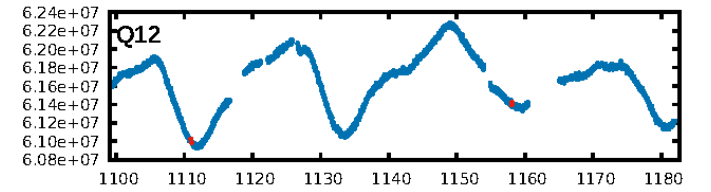
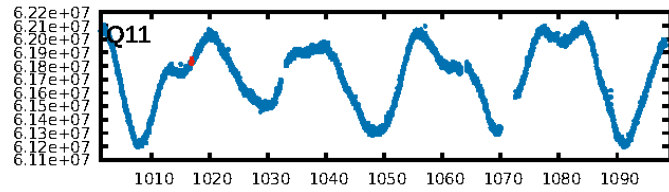
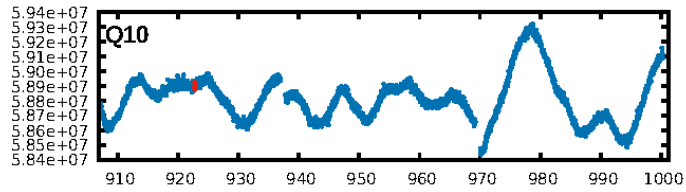
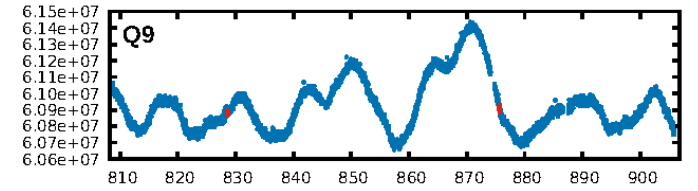
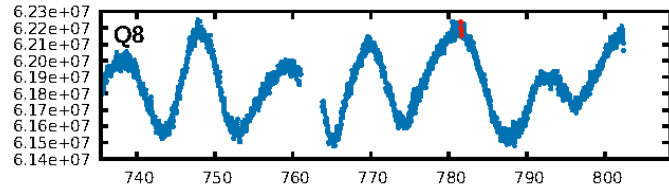
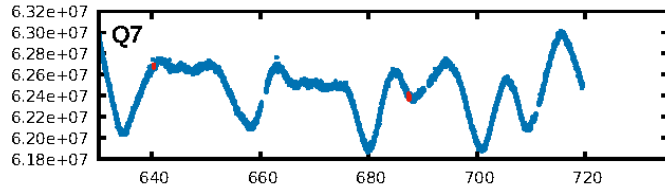
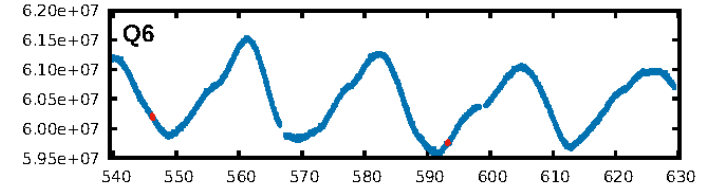
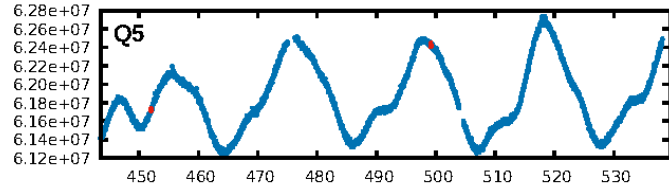
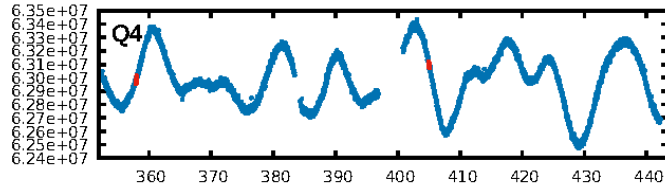
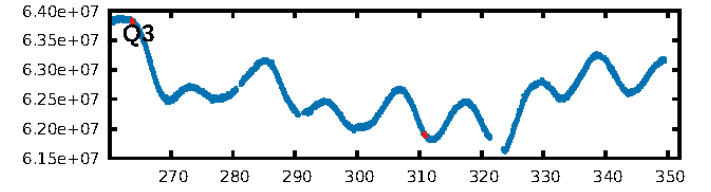
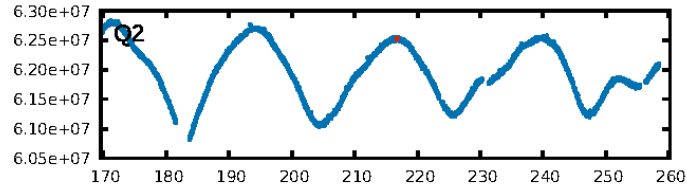
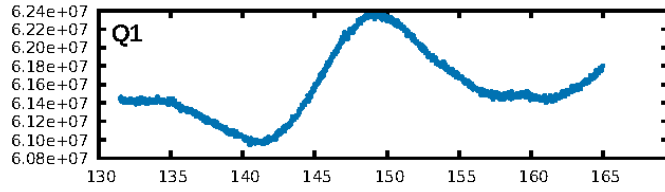
# DV One-Page Summary

KIC: 7502608 Candidate: 7 of 8 Period: 47.068 d

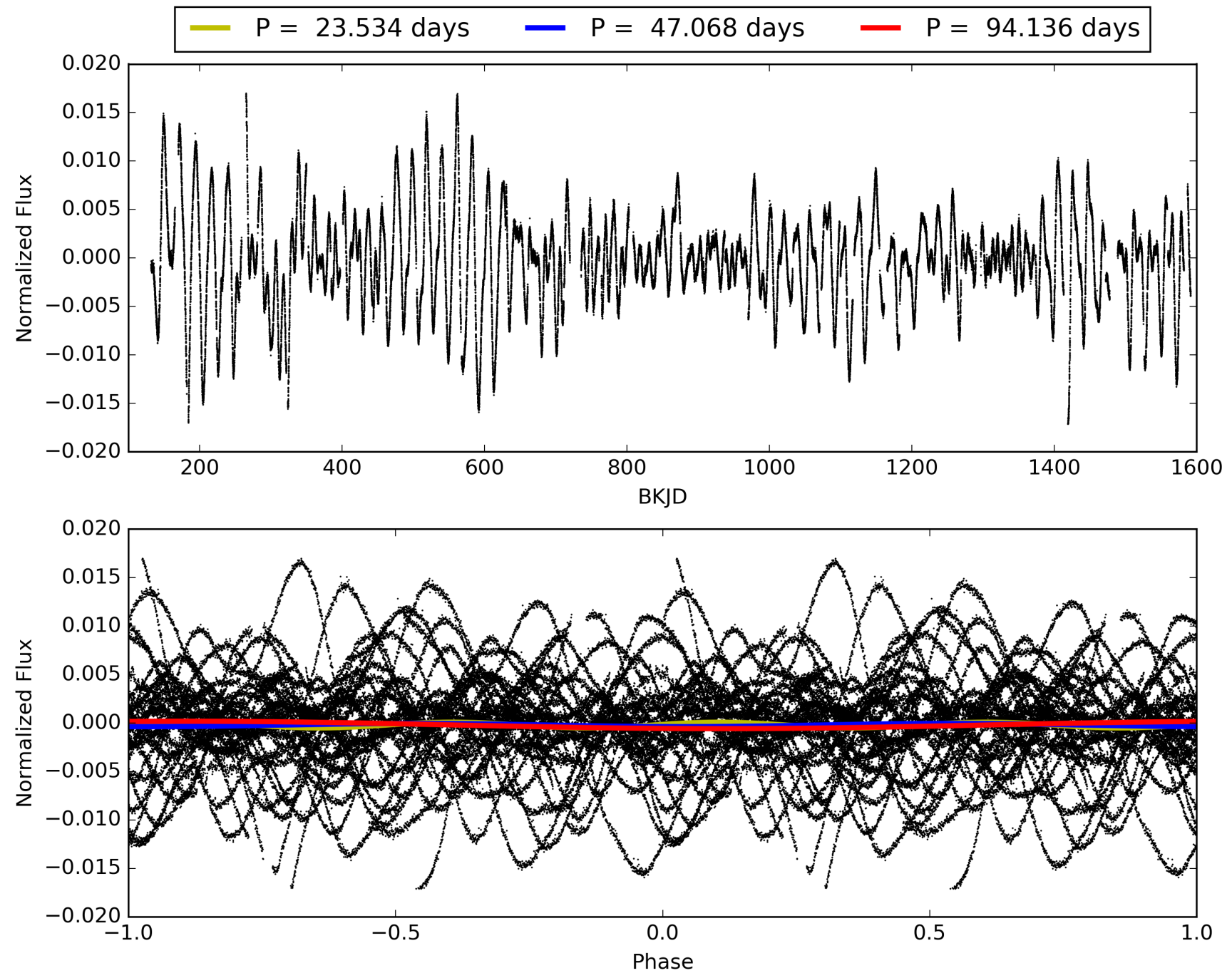




# TCE 007502608-07, PDC Light Curves

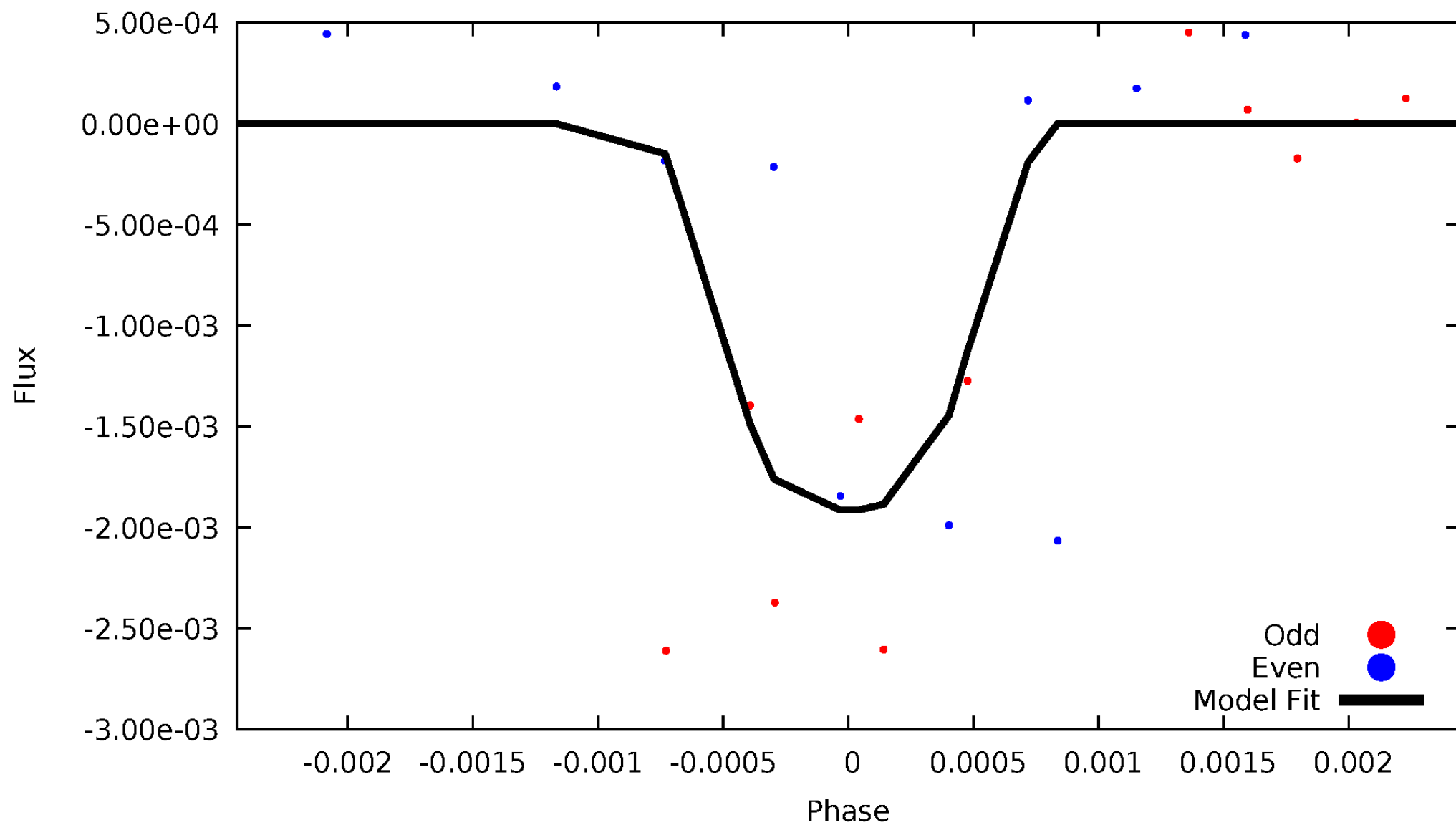


TCE 007502608-07



# DV Odd/Even

TCE 007502608-07



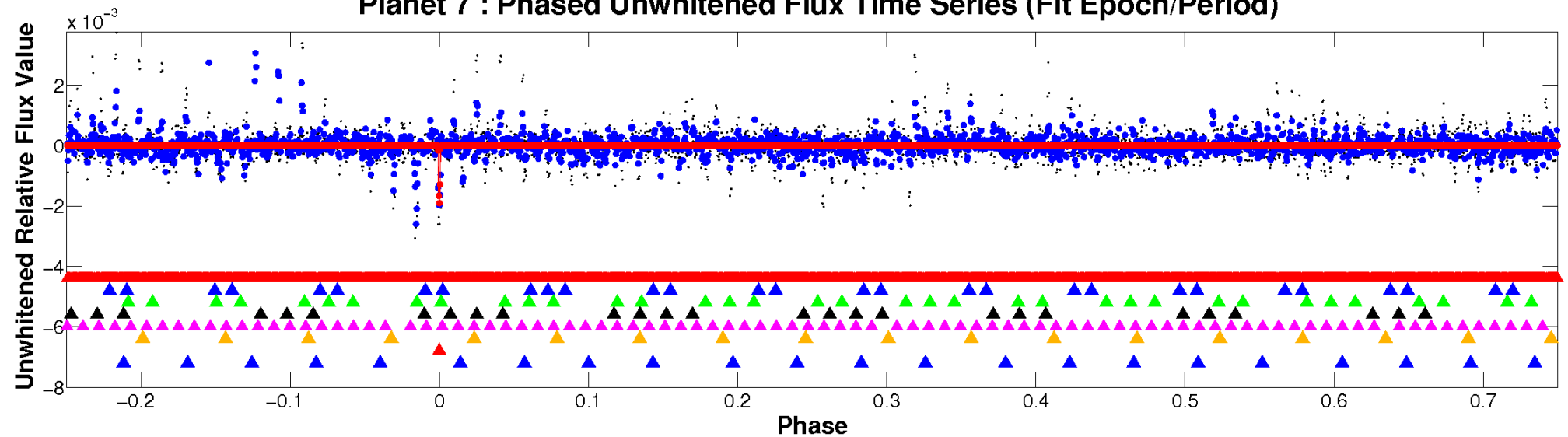


ALT Odd/Even

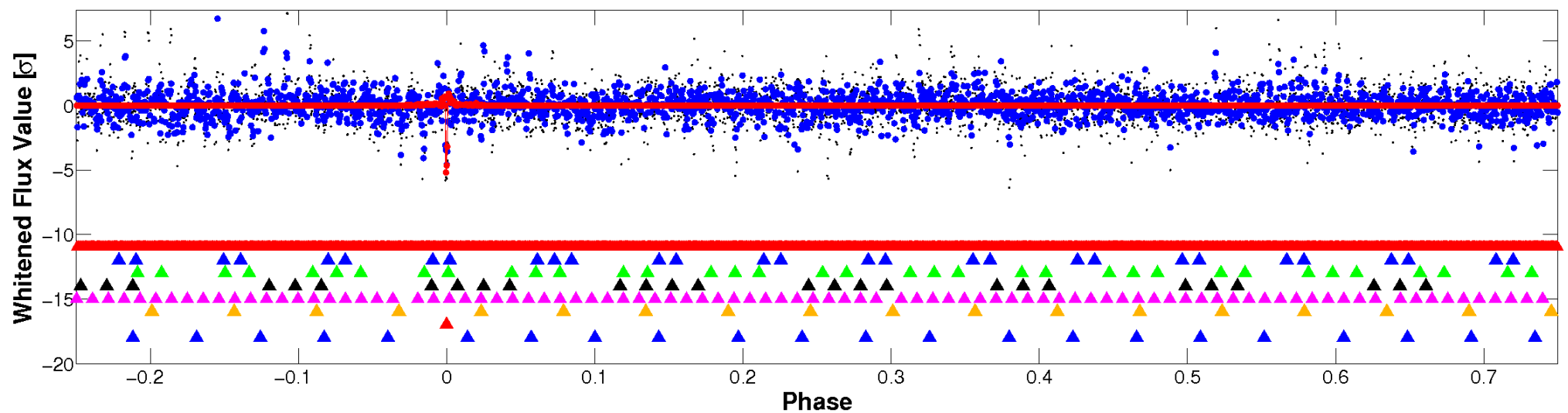
This plot does not exist for this TCE.

# Non-Whitened Vs. Whitened Light Curve

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

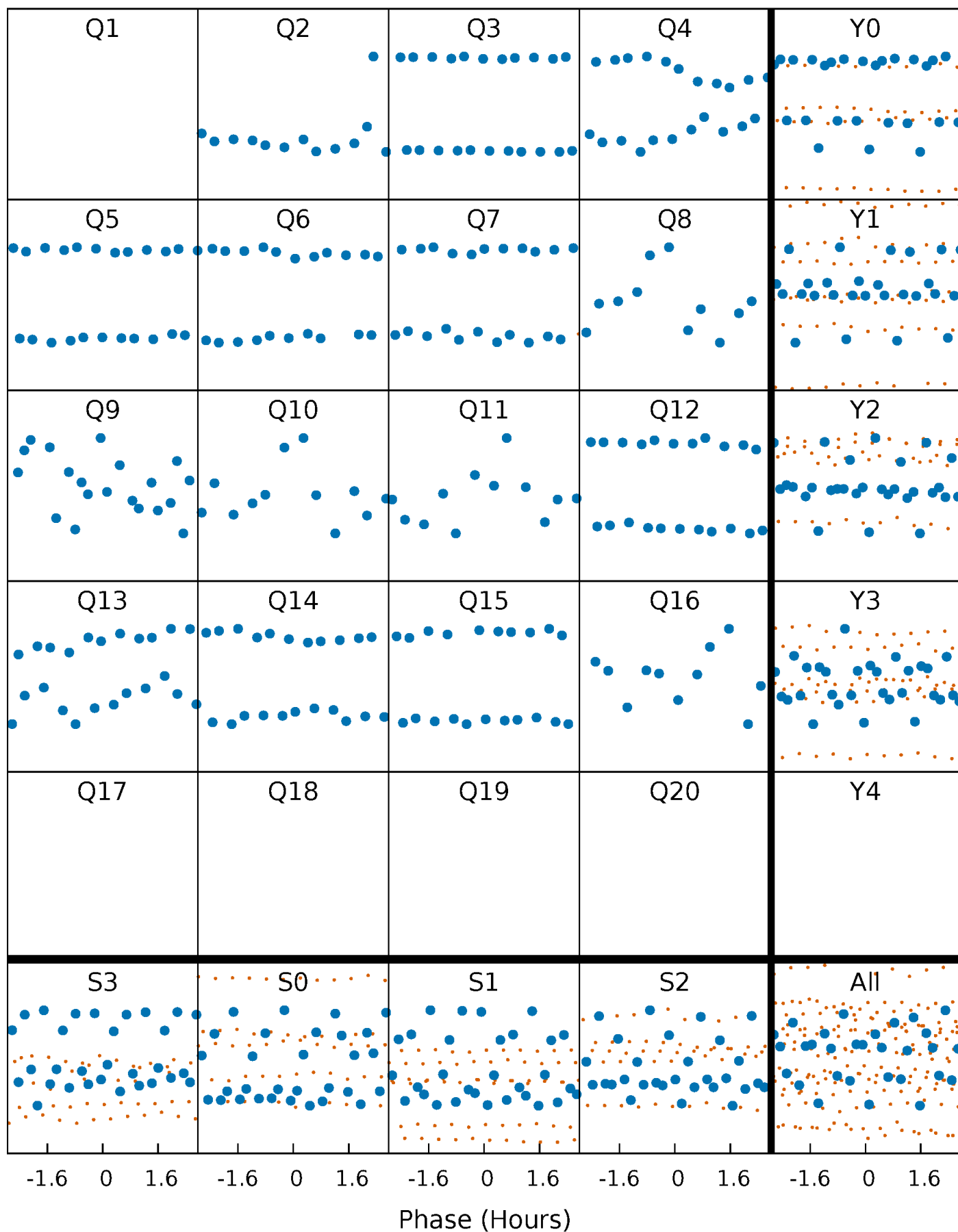


## Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



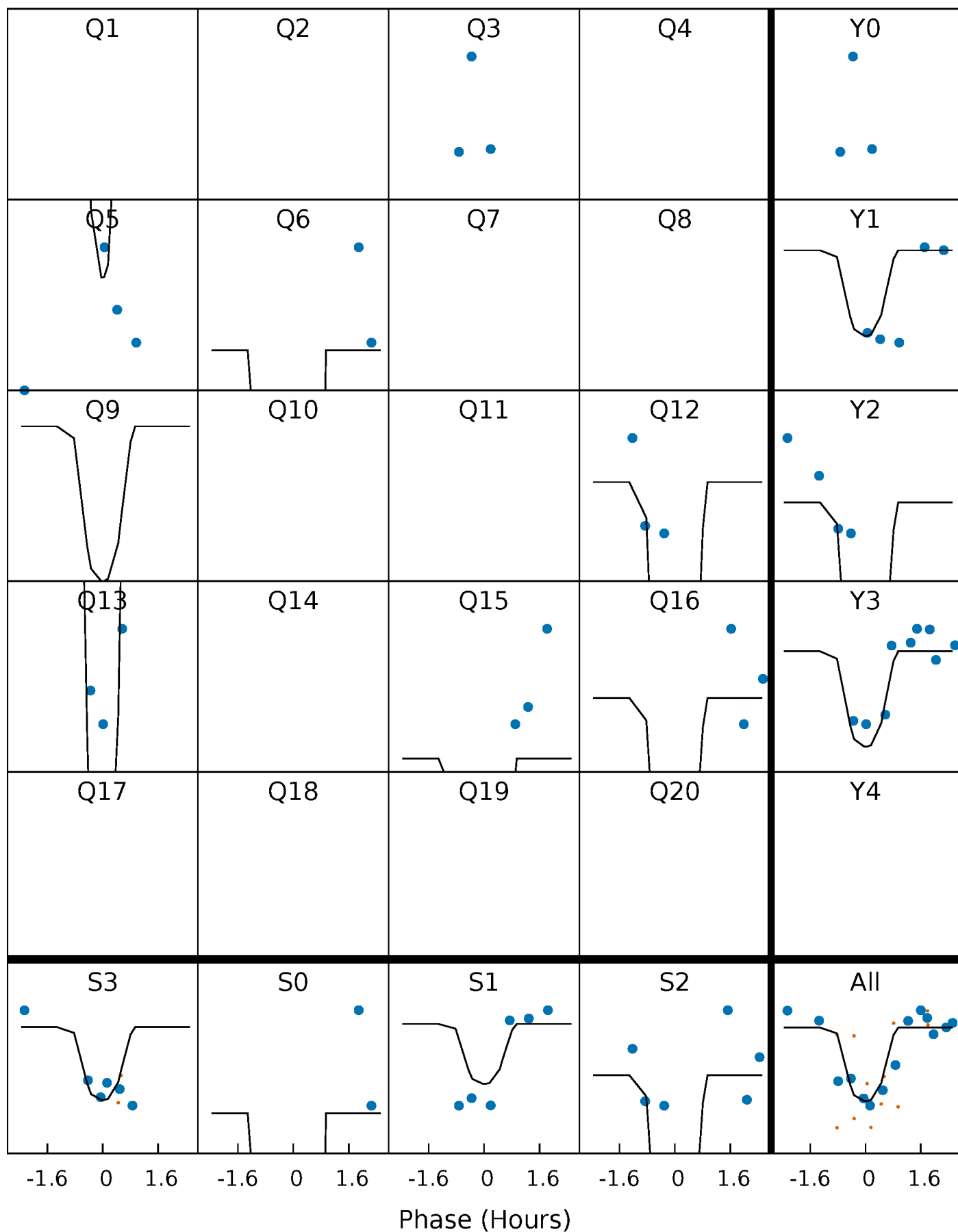
# PDC Quarter-Phased Transit Curves

TCE 007502608-07     $P = 47.068117$  Days     $T_0 = 169.666095$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 007502608-07 P= 47.068117 Days  $T_0=169.666095$  (BKJD)



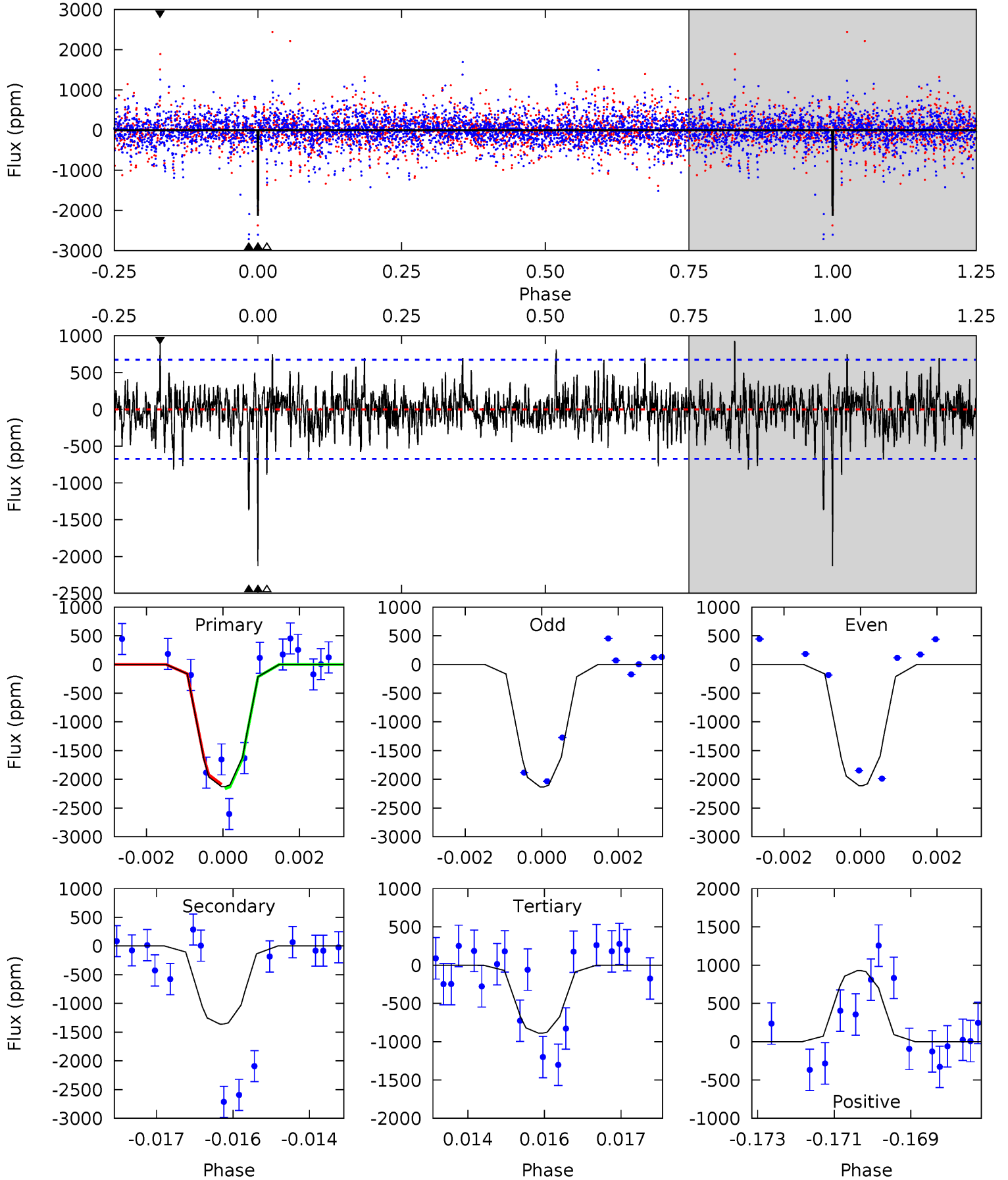


This plot does not exist for this TCE.

# DV Model-Shift Uniqueness Test

007502608-07, P = 47.068117 Days, E = 122.597978 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.9	10.8	7.07	7.39	5.37	3.16	1.63	9.86	9.54	3.74	3.42	0.07	0.89	0.30	0.30



## Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

### Stellar Parameters For KIC 007502608

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$4390^{+124}_{-140}$	$4.754^{+0.065}_{-0.030}$	$-1.280^{+0.300}_{-0.350}$	$0.490^{+0.033}_{-0.049}$	$0.496^{+0.036}_{-0.036}$	$5.955^{+1.727}_{-0.763}$
	+3%/-3%	+1%/-1%	+23%/-27%	+7%/-10%	+7%/-7%	+29%/-13%
Source	PHO1	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 007502608-07 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-1360 \pm 126$	$3.59^{+3.39}_{-2.47}$	$419^{+14}_{-16}$	$3545^{+2031}_{-638}$	$2389^{+22614}_{-1752}$
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  $A_{obs} \gg 1.0$

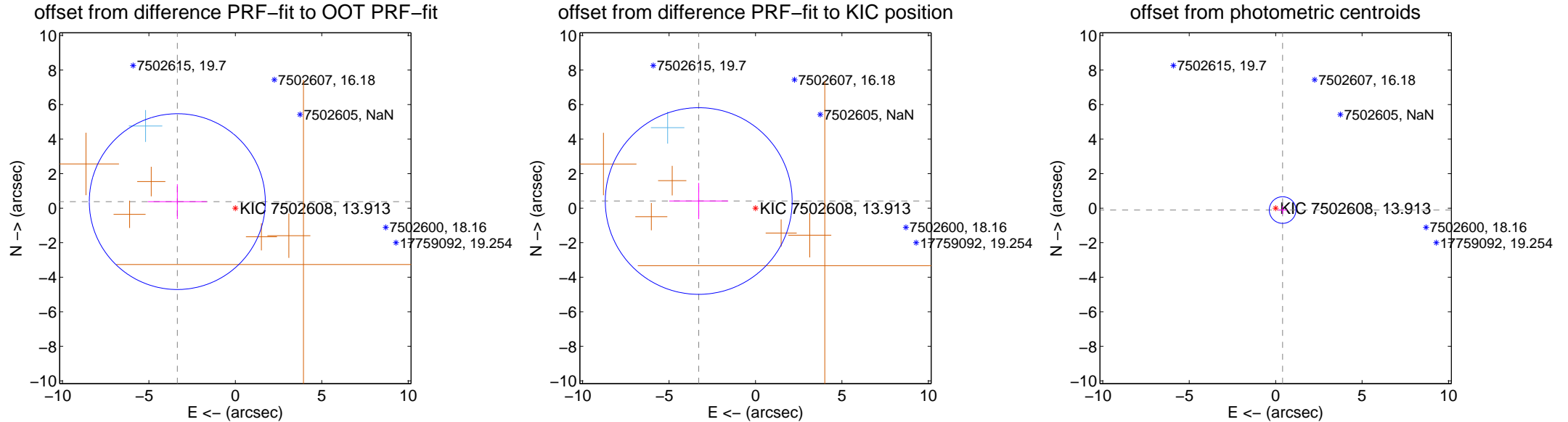
## DV Centroid Data

Supplemental centroid analysis for 007502608-07. Kepler magnitude: 13.91. Transit SNR 10.91

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$3.377 \pm 1.696$	1.99	$3.356 \pm 1.703$	$0.380 \pm 1.007$
PRF-fit source offset from KIC position	$3.309 \pm 1.801$	1.84	$3.283 \pm 1.705$	$0.414 \pm 1.046$
photometric centroid source offset	$0.42 \pm 0.26$	1.62	$-0.40 \pm 0.26$	$-0.11 \pm 0.23$



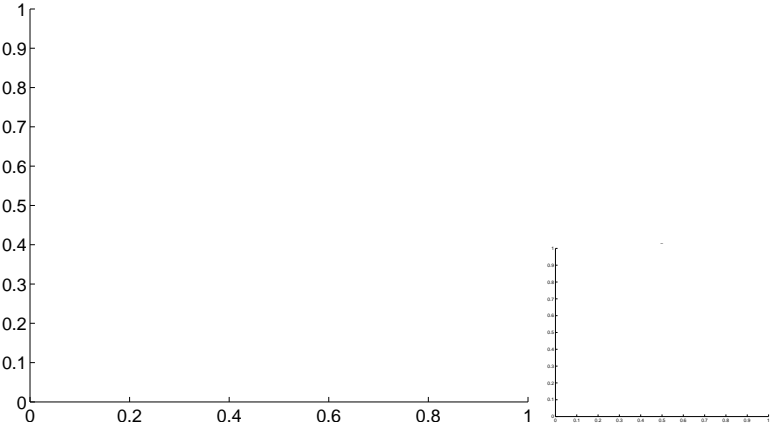
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

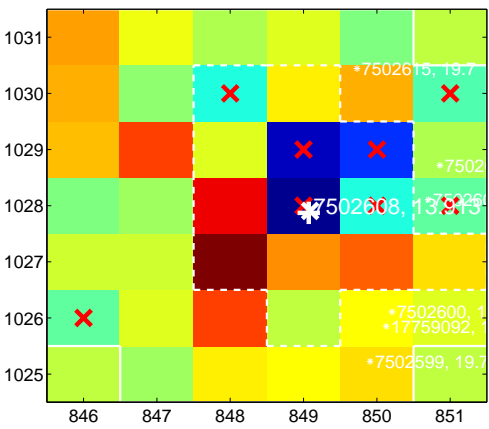
Q1 no difference image



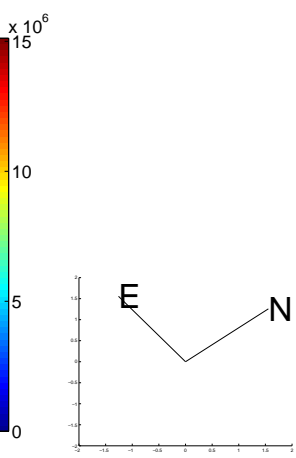
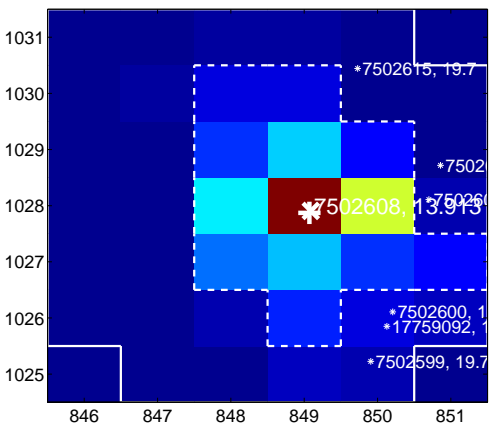
Q1 no OOT image



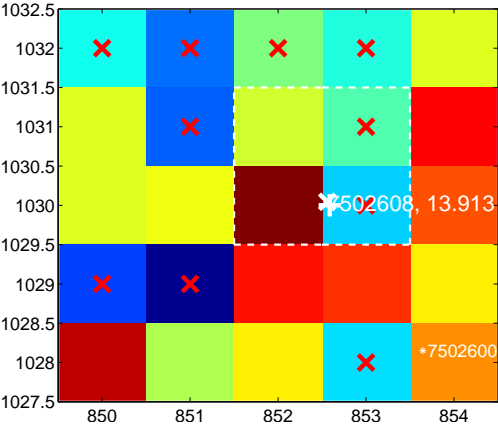
Q2 difference image. Poor Quality



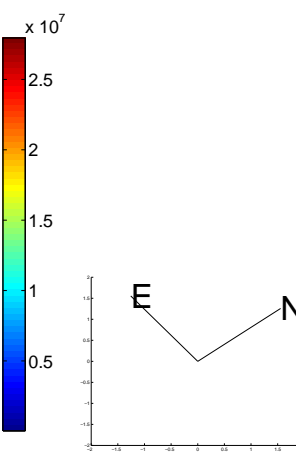
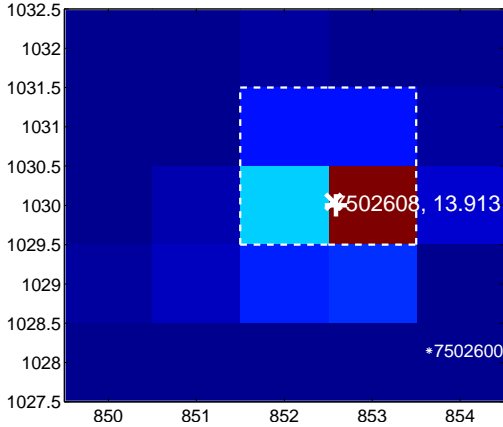
Q2 OOT image



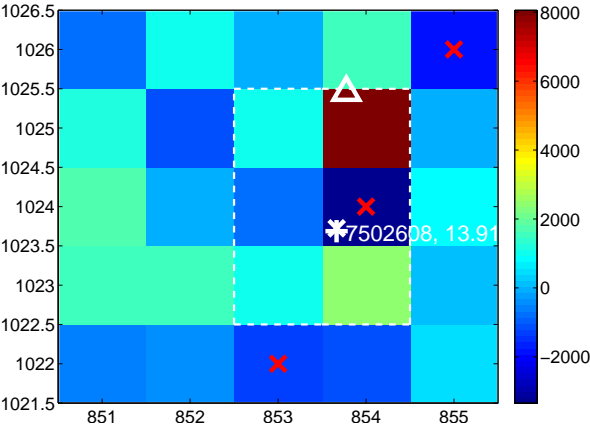
Q3 difference image. Poor Quality



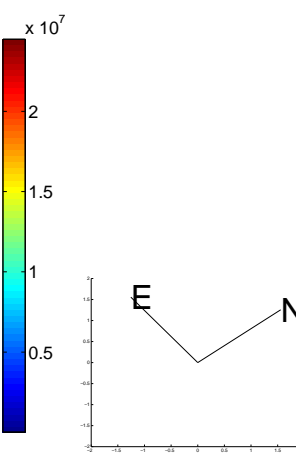
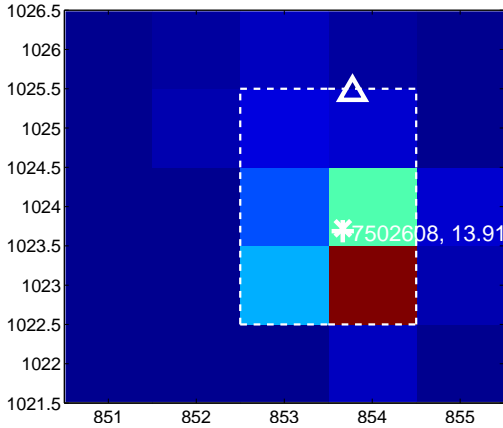
Q3 OOT image



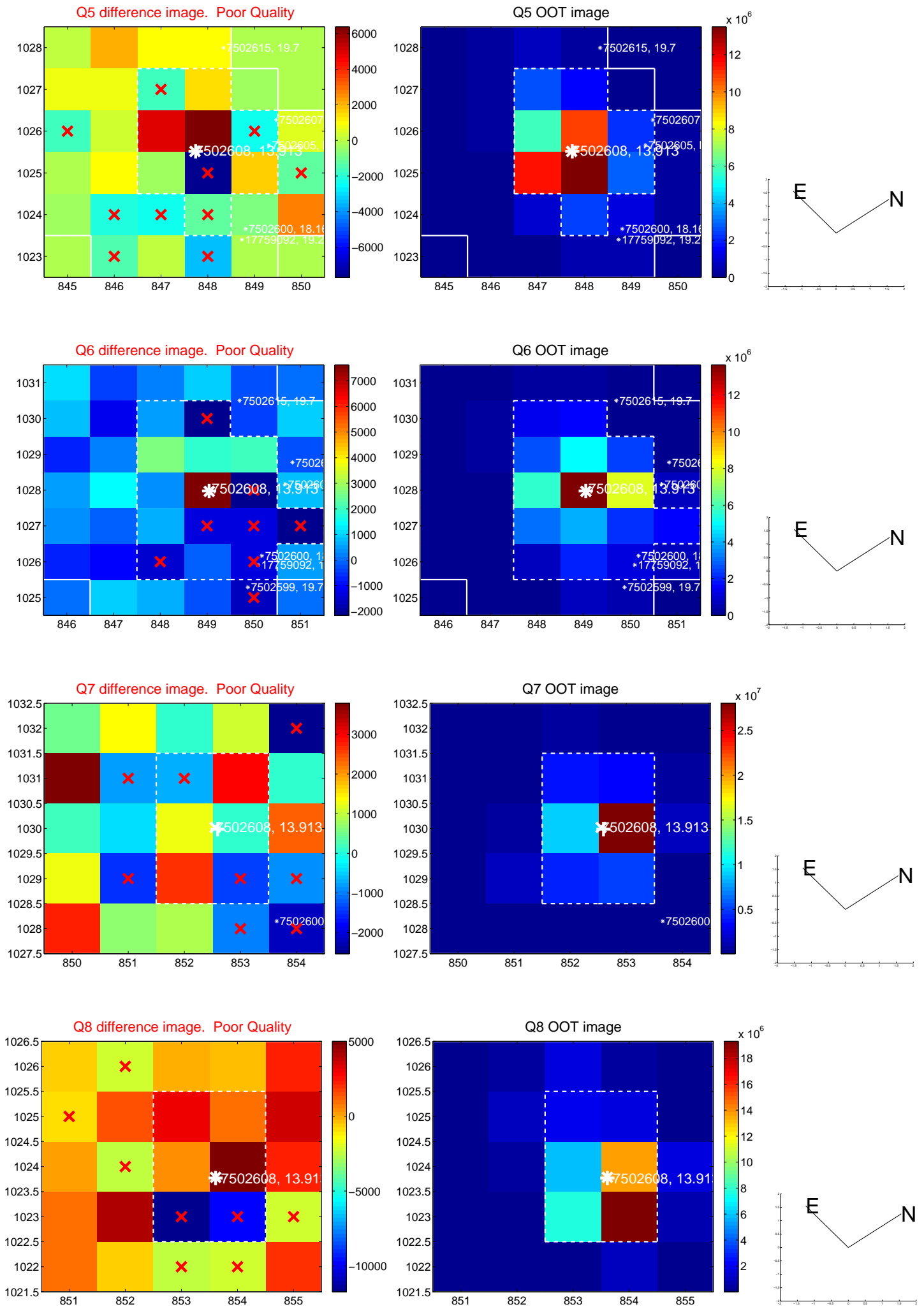
Q4 difference image



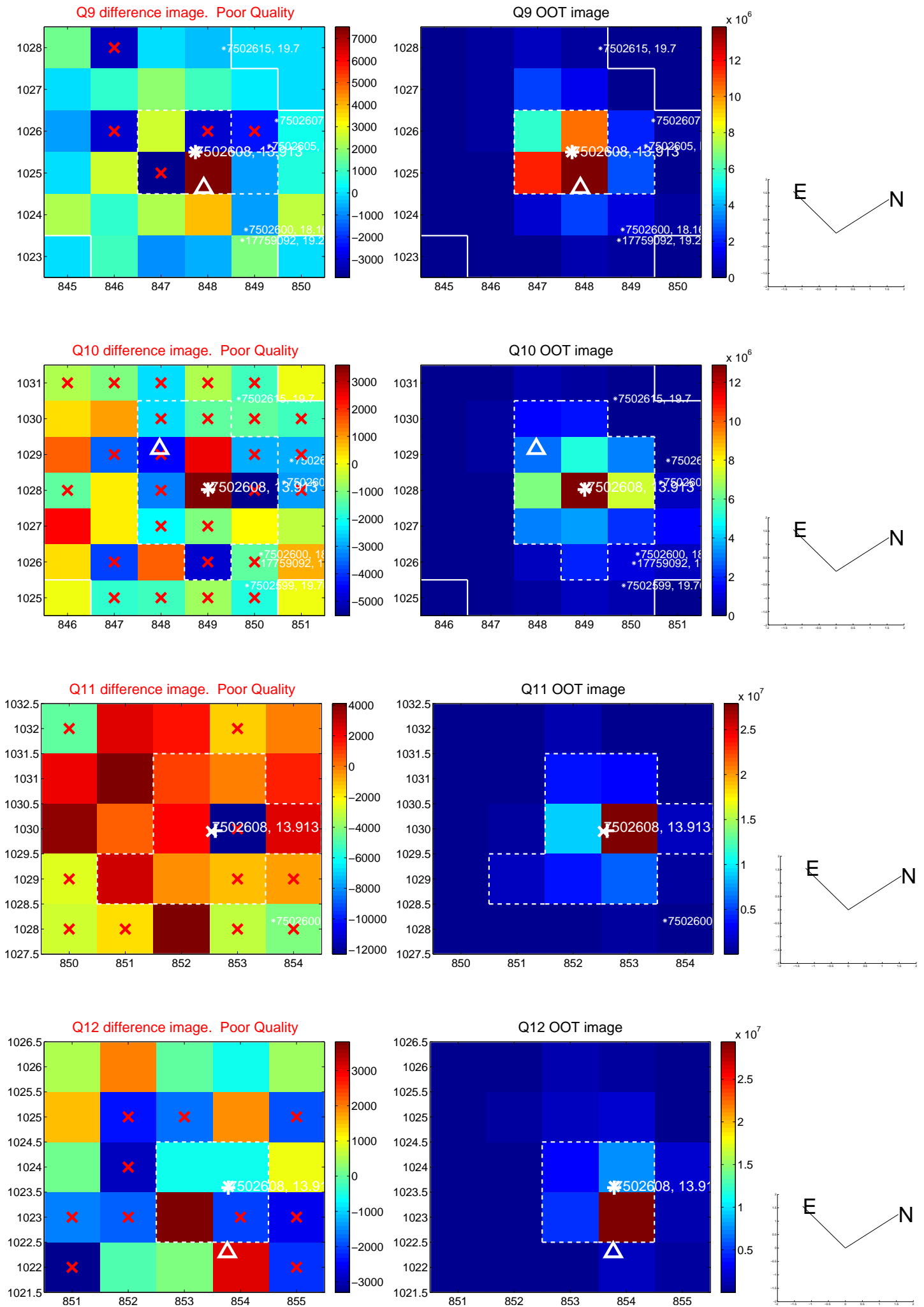
Q4 OOT image



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

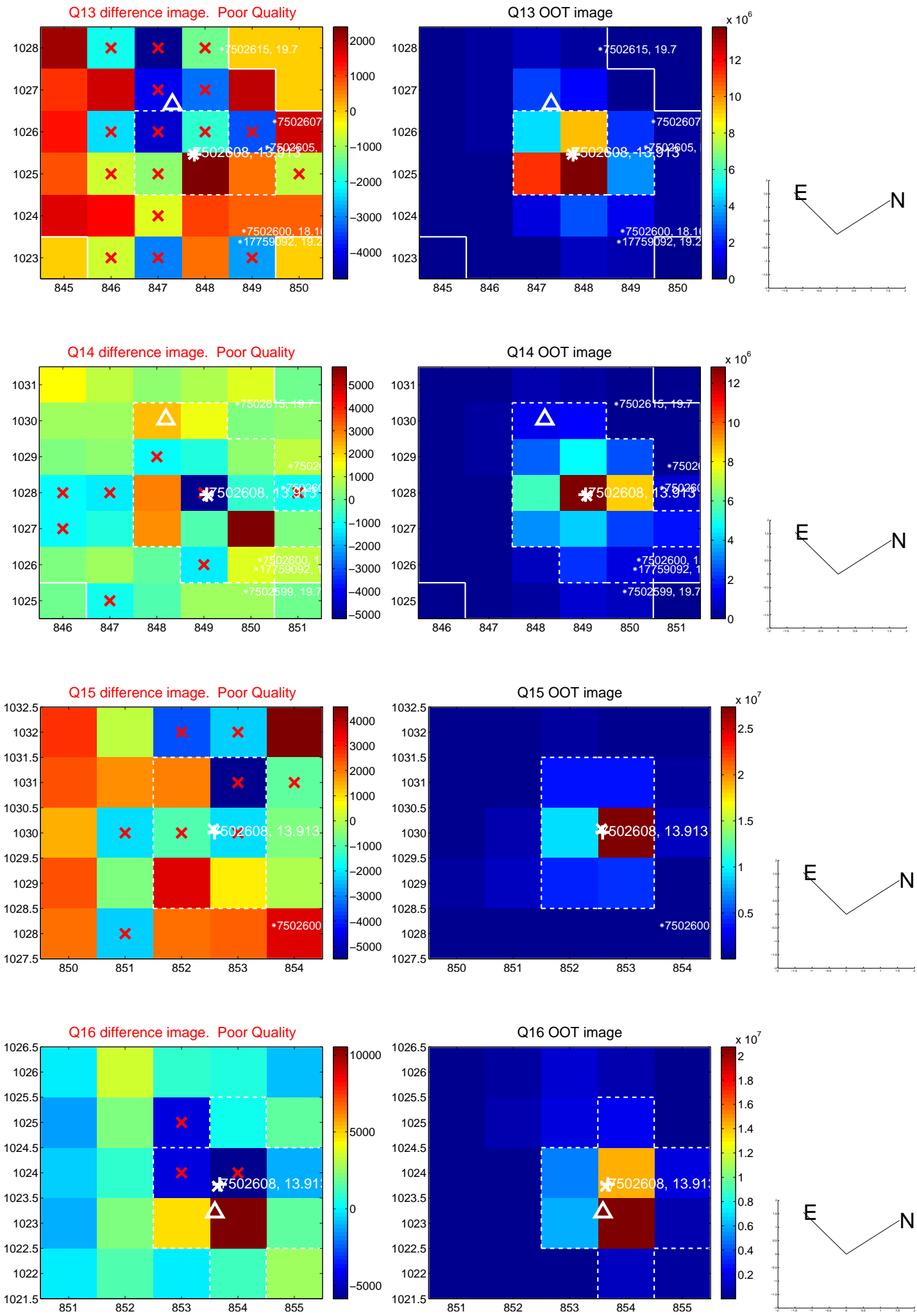


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

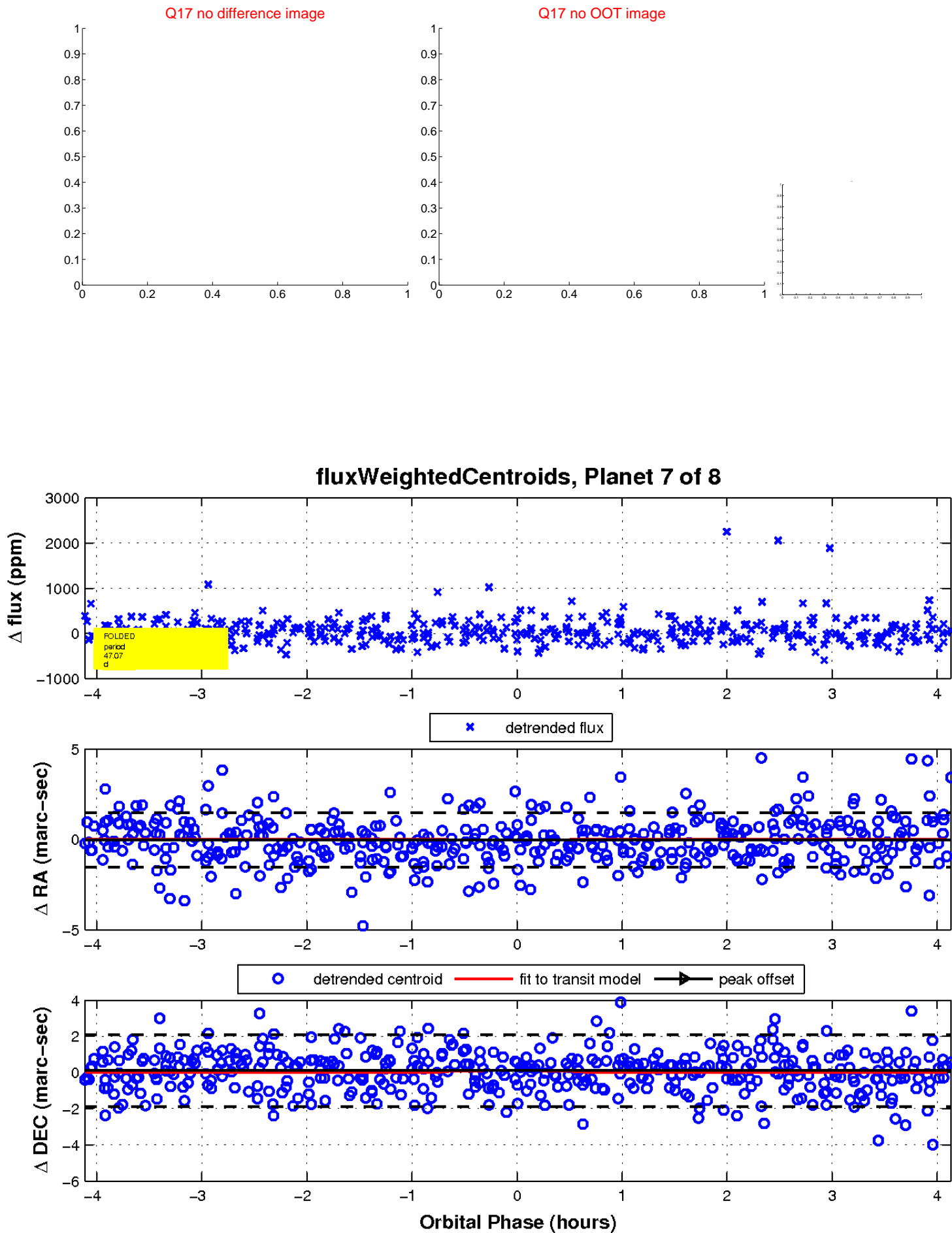




white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



UKIRT Image

Declination

