

# KIC 004349612

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004349612-01	OBS	No	0.988592	132.071611	459.7	2.000	12.2	-1.0	2.27	6362	4.91	17529.65
004349612-02	OBS	No	0.988599	131.925122	19.0	6.016	9.6	7.4	2.27	6362	1.16	17529.47
004349612-03	OBS	No	65.049920	135.636323	220.8	2.120	8.9	7.9	2.27	6362	3.69	65.99
004349612-04	OBS	No	87.923506	178.404413	424.6	2.482	12.0	10.3	2.27	6362	5.46	44.16
004349612-05	OBS	No	118.747935	212.443912	205.4	4.860	8.3	7.4	2.27	6362	3.59	29.58

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004349612-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_NOFITS
004349612-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
004349612-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004349612-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT
004349612-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS

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

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

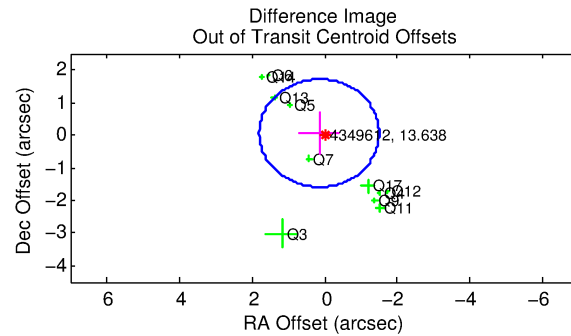
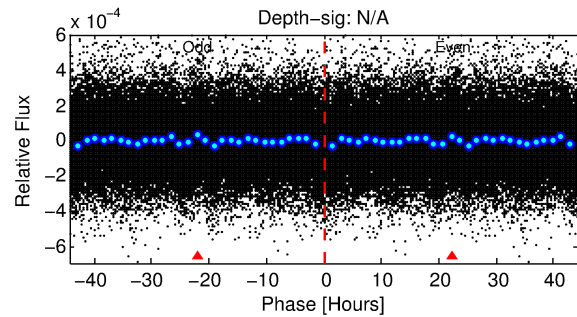
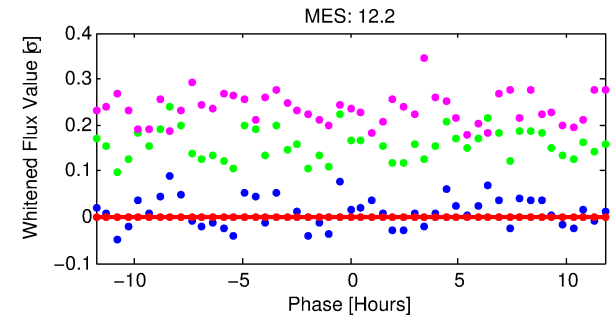
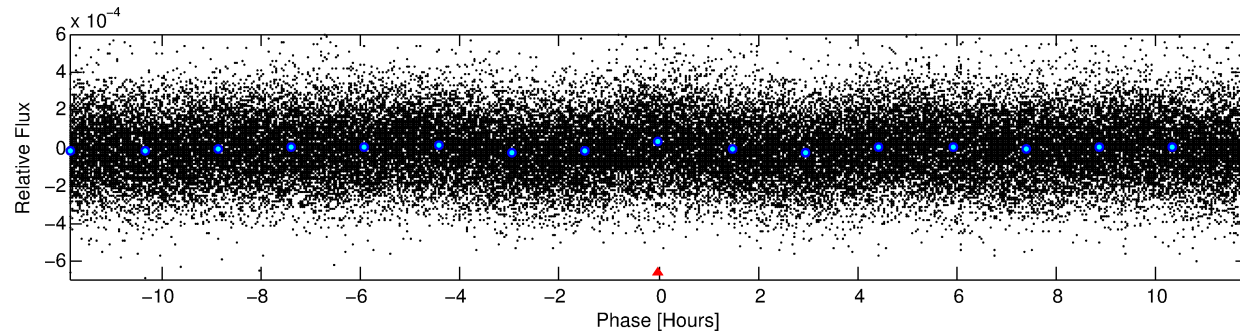
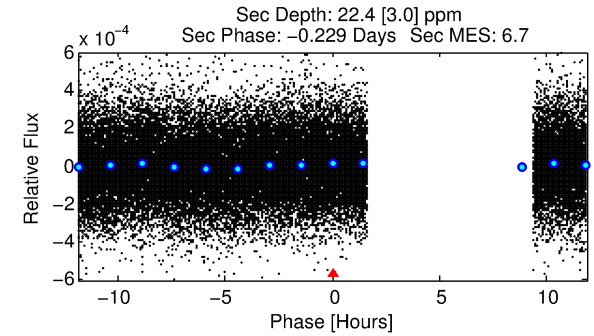
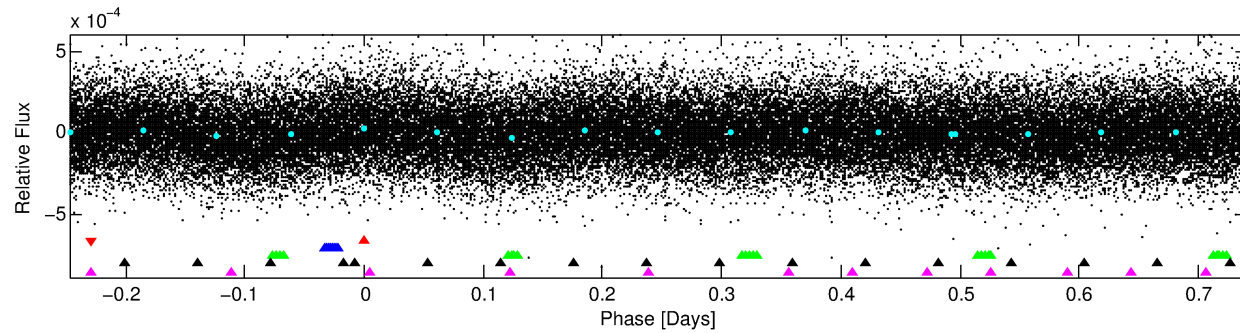
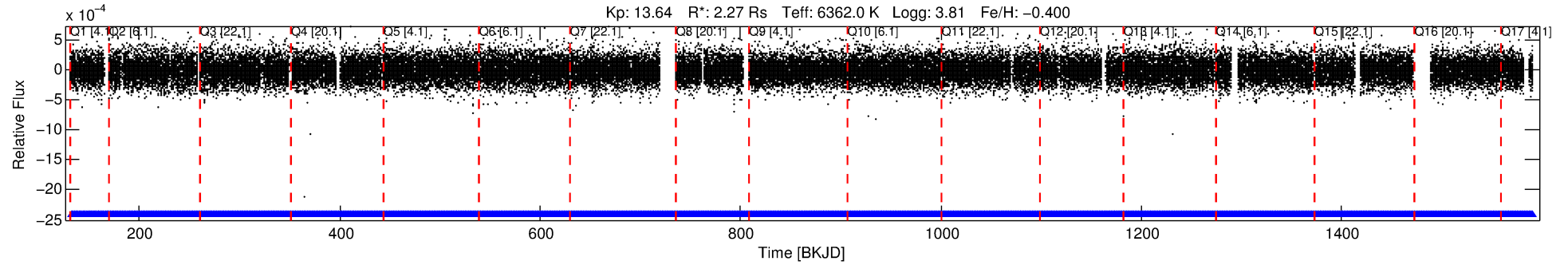
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004349612-01

No Significant Match Found

# DV One-Page Summary

KIC: 4349612 Candidate: 1 of 5 Period: 0.989 d



## TPS TCE Results:

Period = 0.98859 d  
Epoch = 132.0716 BKJD

DV fit results are unavailable

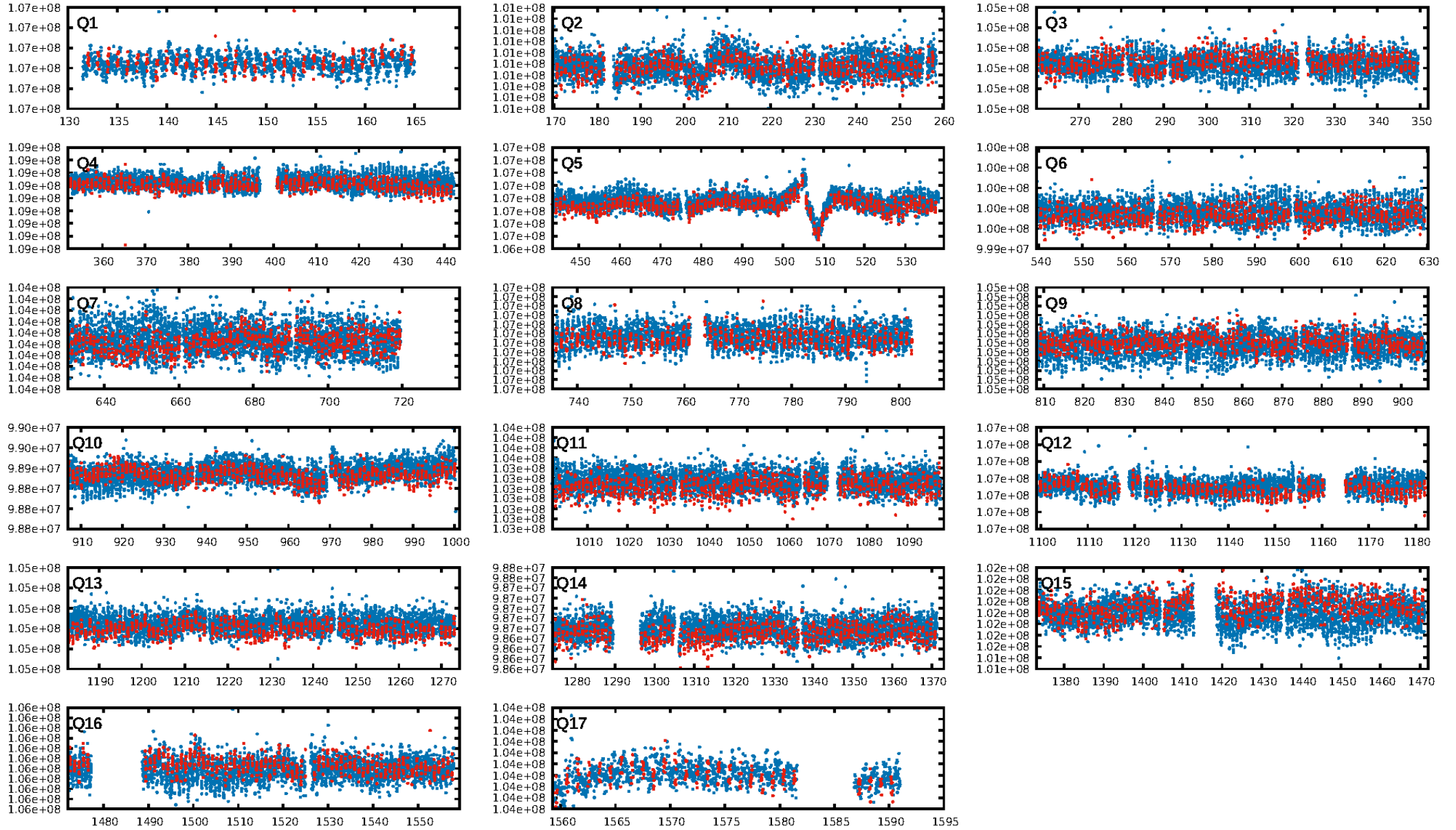
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 0.0% [0.00σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.10e-17  
RollingBand-fgt: 1.00 [1307/1307]  
GhostDiagnostic-chr: 0.5058  
Centroid-sig: 68.9%  
Centroid-so: 0.223 arcsec [0.47σ]  
OotOffset-rm: 0.163 arcsec [0.30σ]  
KicOffset-rm: 0.306 arcsec [0.53σ]  
OotOffset-st: 2/3/2/4 [11]  
KicOffset-st: 2/3/2/4 [11]  
DiffImageQuality-fgm: 0.82 [9/11]  
DiffImageOverlap-fno: 0.00 [0/17]

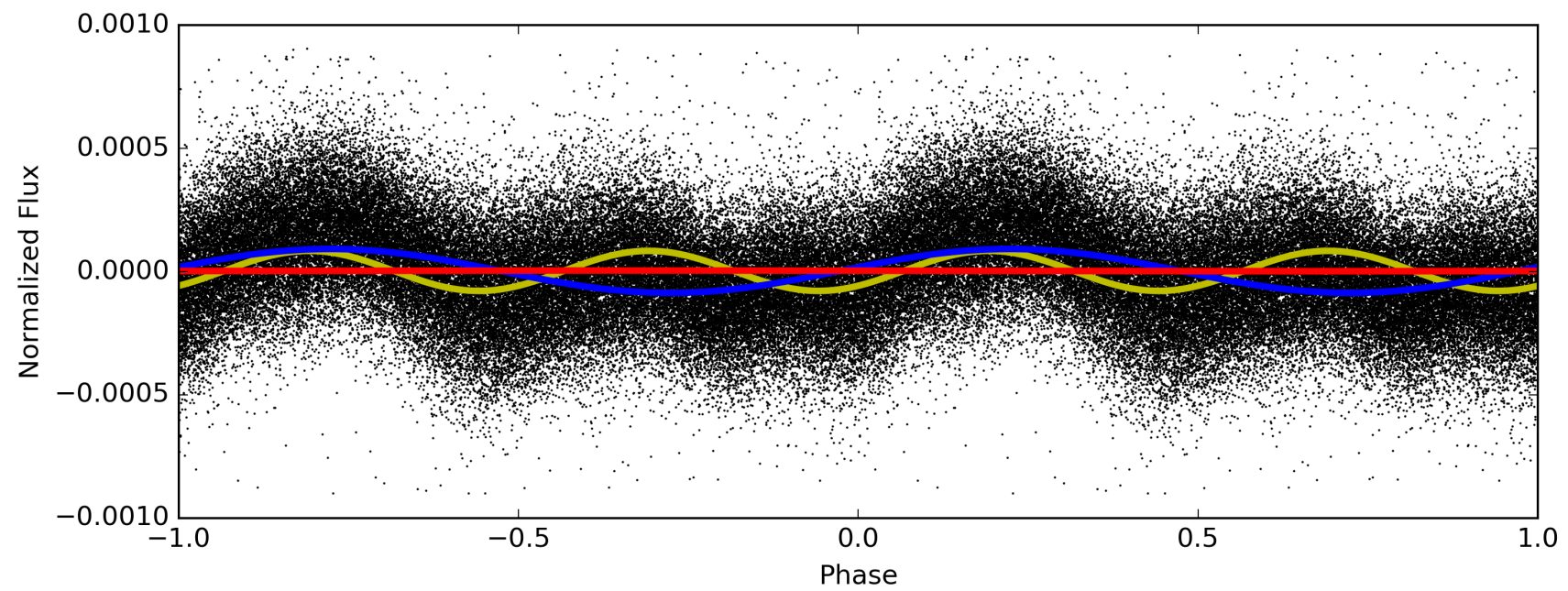
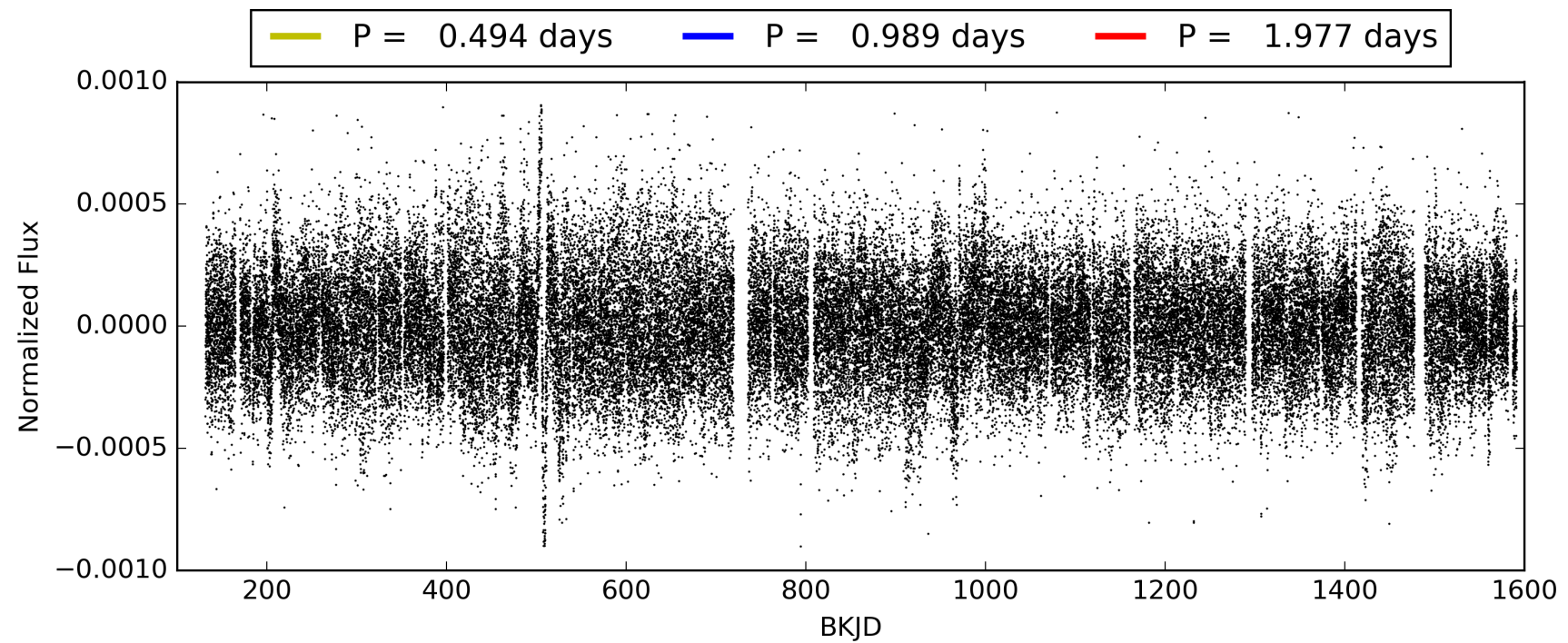
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 004349612-01, PDC Light Curves



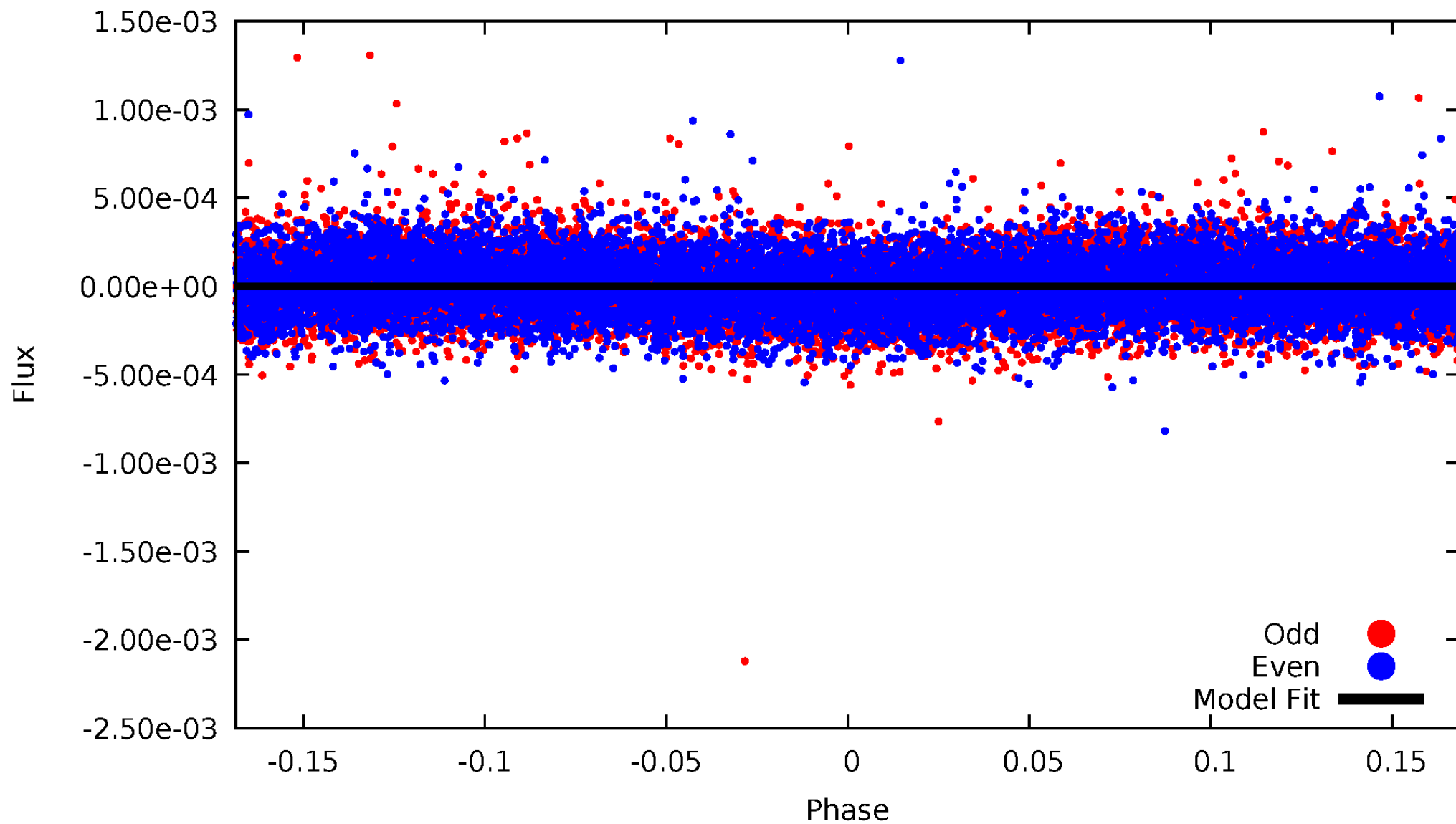
TCE 004349612-01





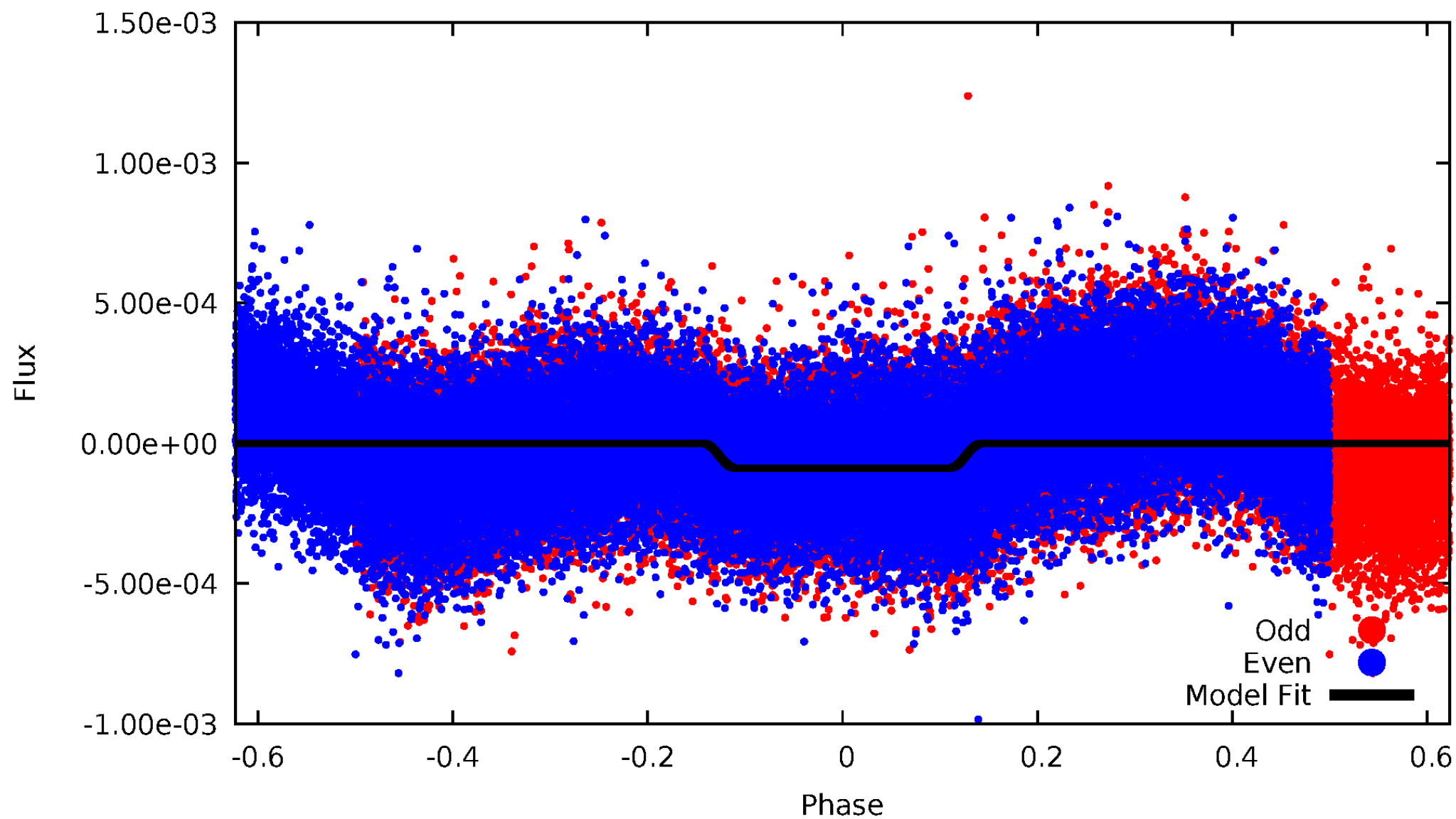
# DV Odd/Even

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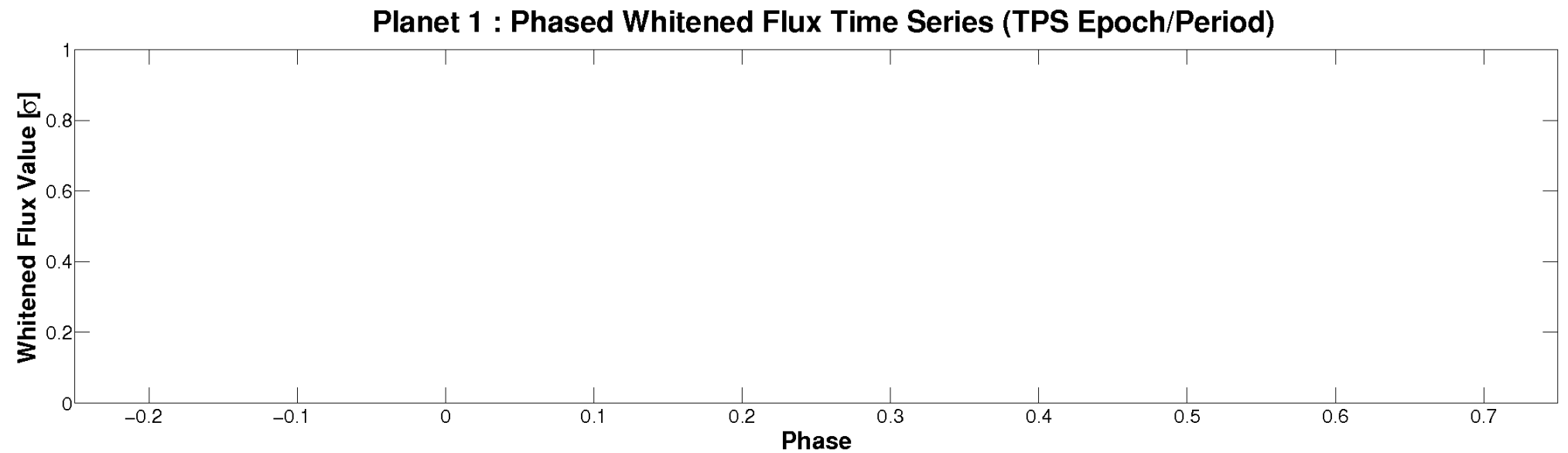
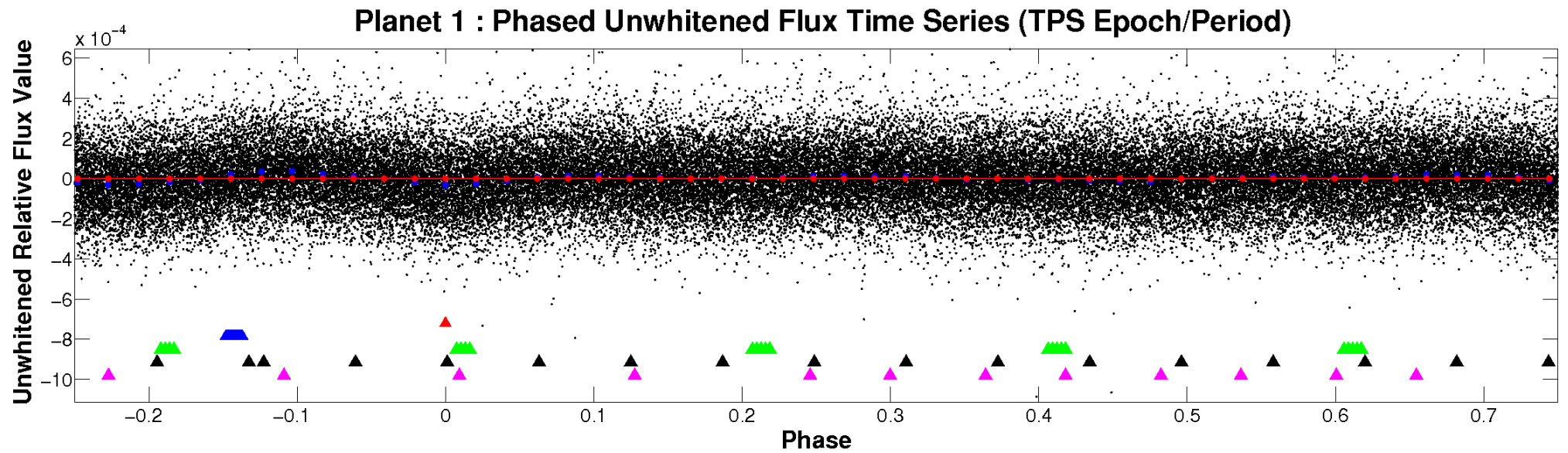


# ALT Odd/Even

TCE 004349612-01

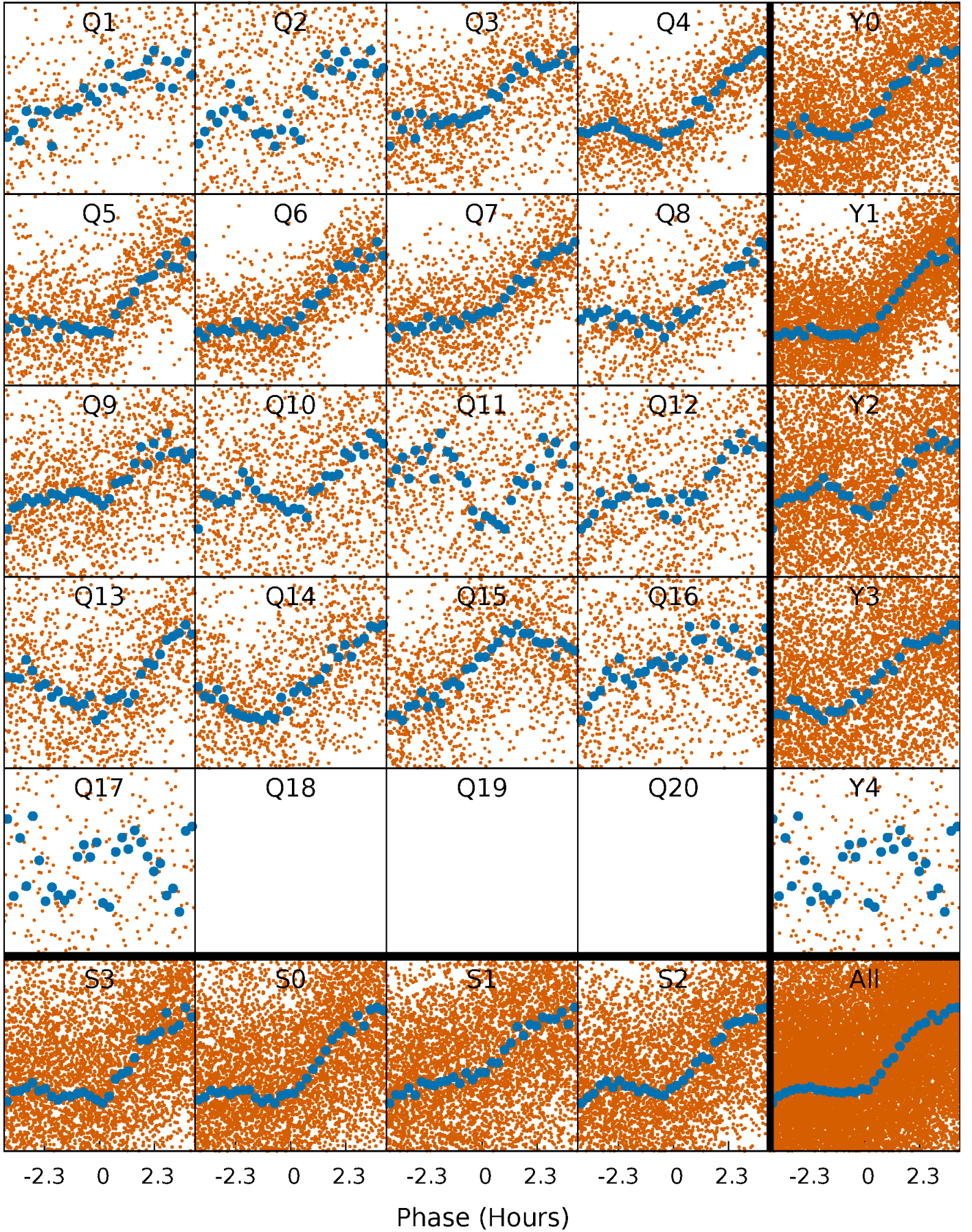


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

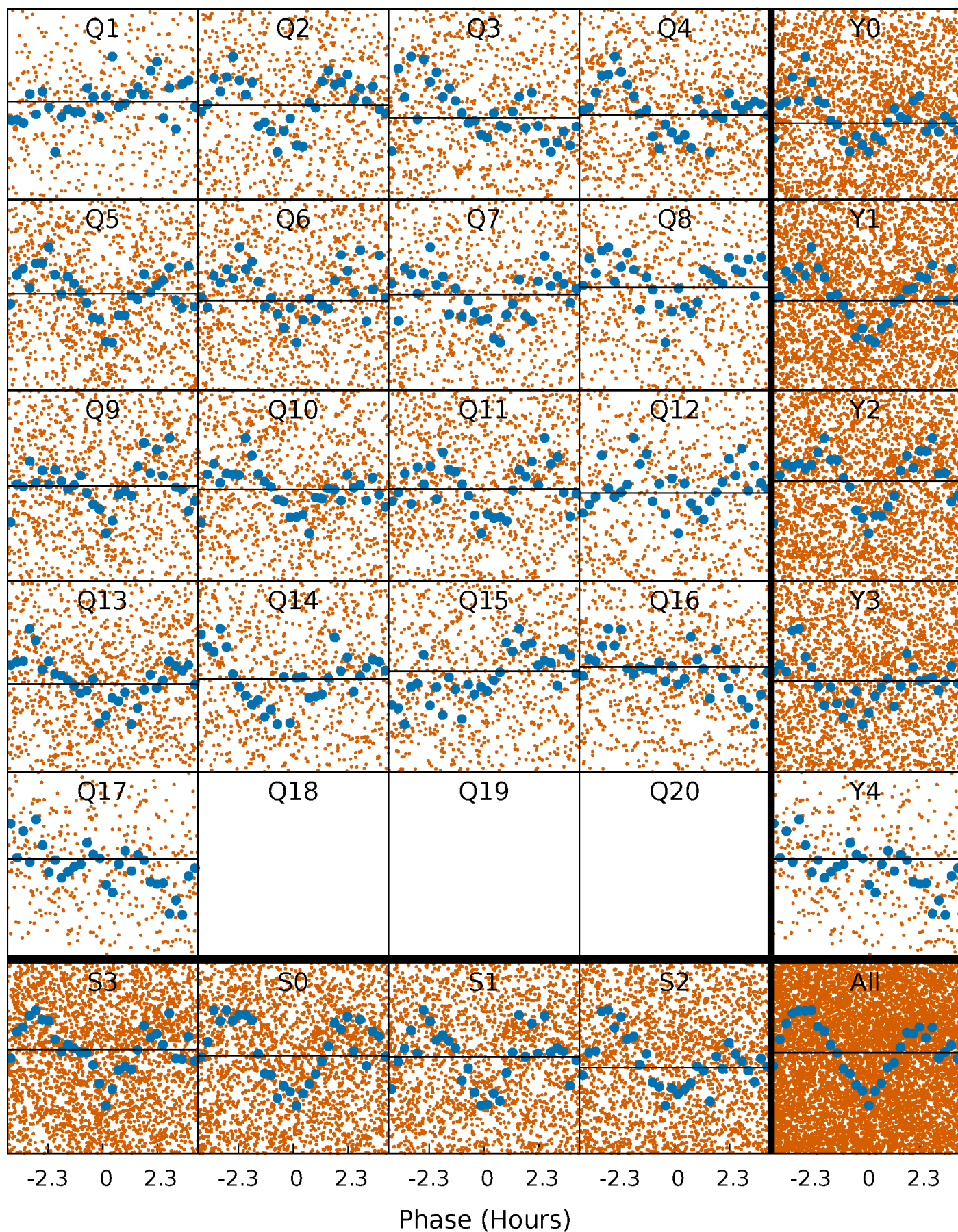
TCE 004349612-01   P= 0.988592 Days    $T_0=132.071610$  (BKJD)





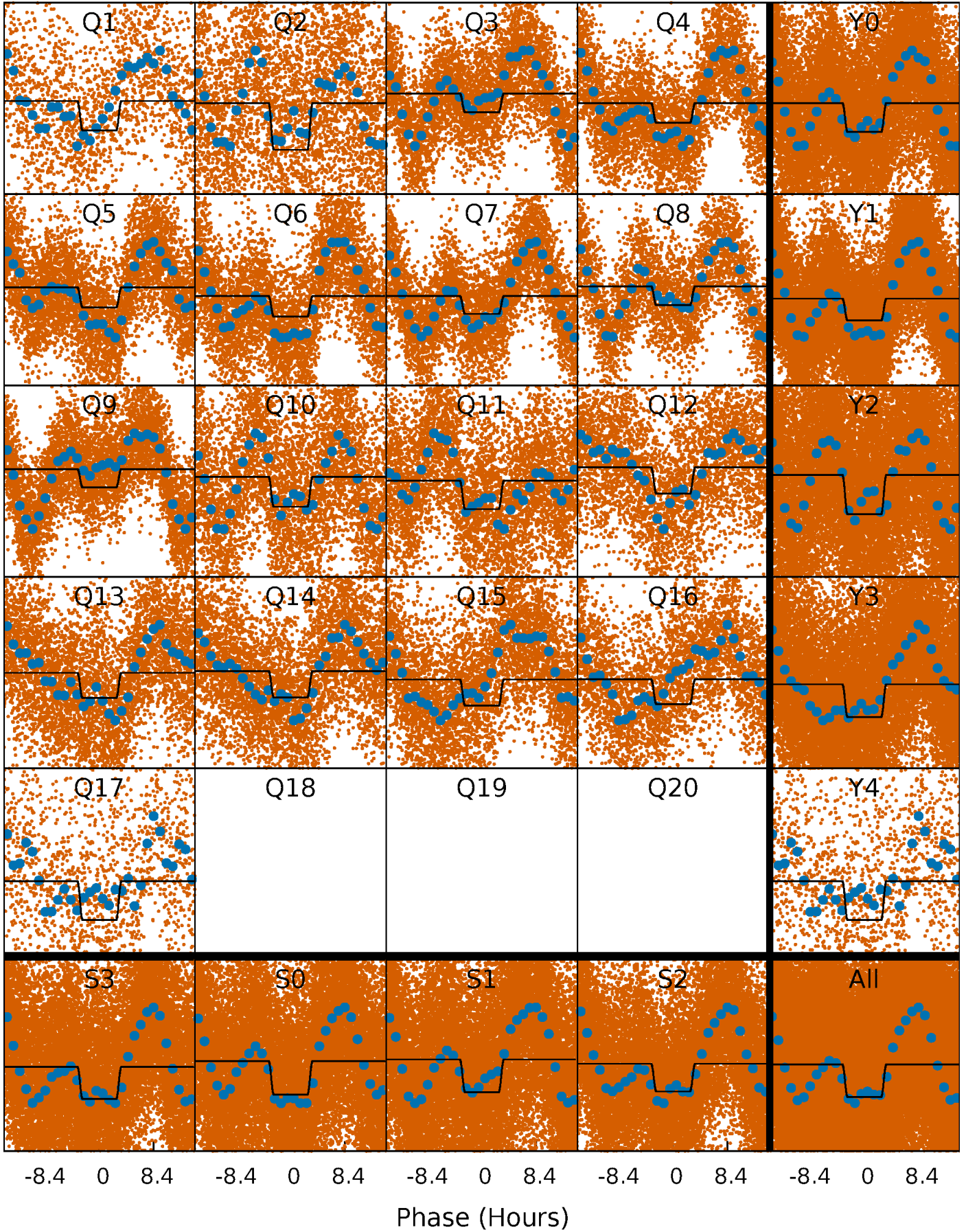
# DV Quarter-Phased Transit Curves

TCE 004349612-01 P= 0.988592 Days  $T_0=132.071610$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

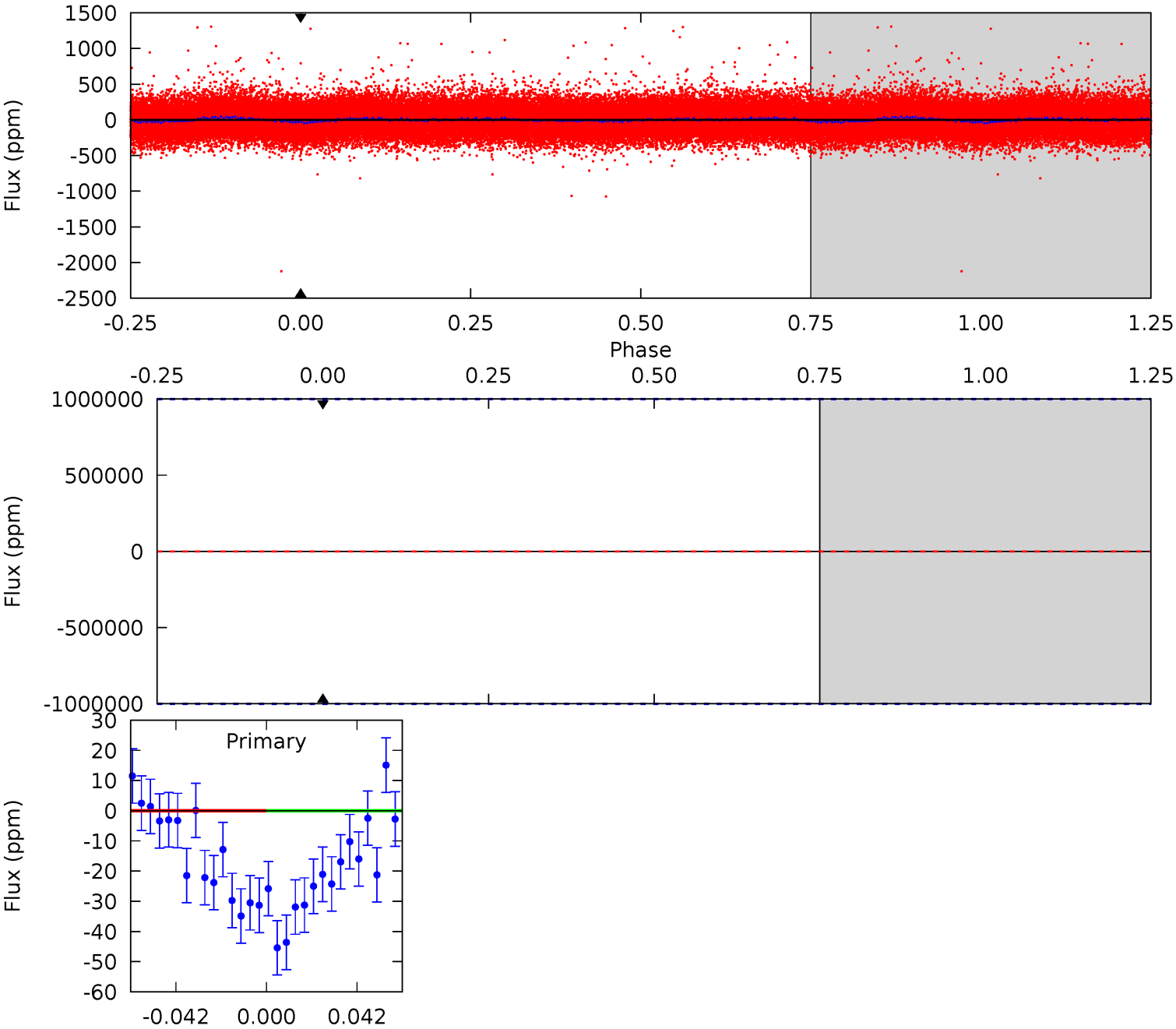
TCE 004349612-01 P= 0.988592 Days  $T_0=131.958615$  (BKJD)



DV Model-Shift Uniqueness Test

004349612-01, P = 0.988592 Days, E = 131.083018 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

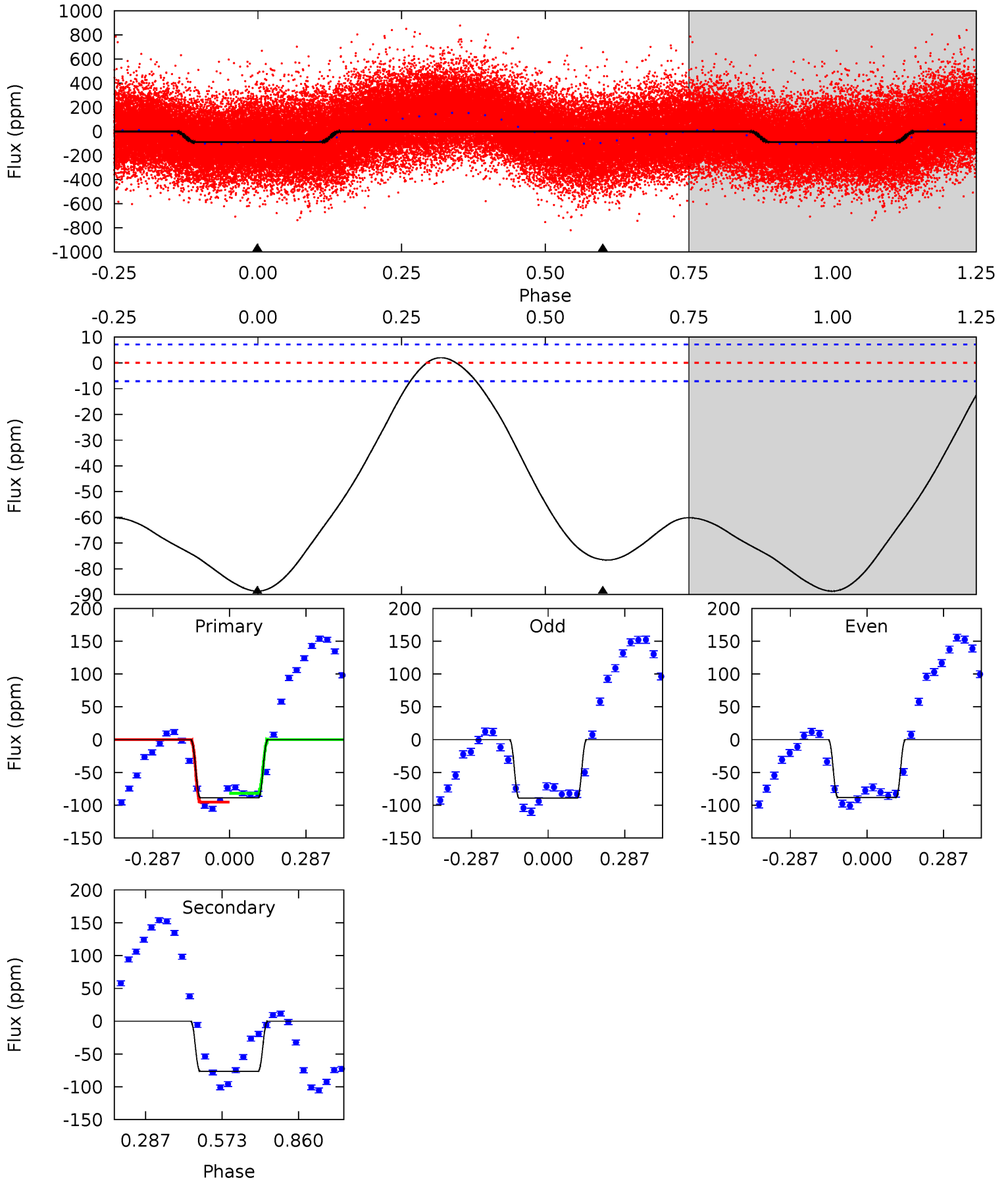




# Alt Model-Shift Uniqueness Test

004349612-01, P = 0.988592 Days, E = 130.970023 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
54.0	46.5	0	0	4.34	1.07	2.63	54.0	54.0	46.5	46.5	0.28	1.03	0.02	5.09





### Stellar Parameters For KIC 004349612

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6362^{+204}_{-227}$	$3.814^{+0.535}_{-0.126}$	$-0.400^{+0.300}_{-0.300}$	$2.274^{+0.483}_{-1.126}$	$1.229^{+0.182}_{-0.273}$	$0.147^{+0.821}_{-0.056}$
	+3%/-4%	+14%/-3%	+75%/-75%	+21%/-50%	+15%/-22%	+558%/-38%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 004349612-01 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$0 \pm 1000000$	$17.35^{+17.81}_{-12.47}$	$3991^{+309}_{-527}$	$-3776^{+27449}_{-17445}$	$-0.209^{+135.166}_{-102.714}$
Alt.	$-76 \pm 2$	$15.56^{+18.48}_{-11.34}$	$3985^{+306}_{-513}$	$-3375^{+7472}_{-369}$	$0.076^{+0.943}_{-0.060}$

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

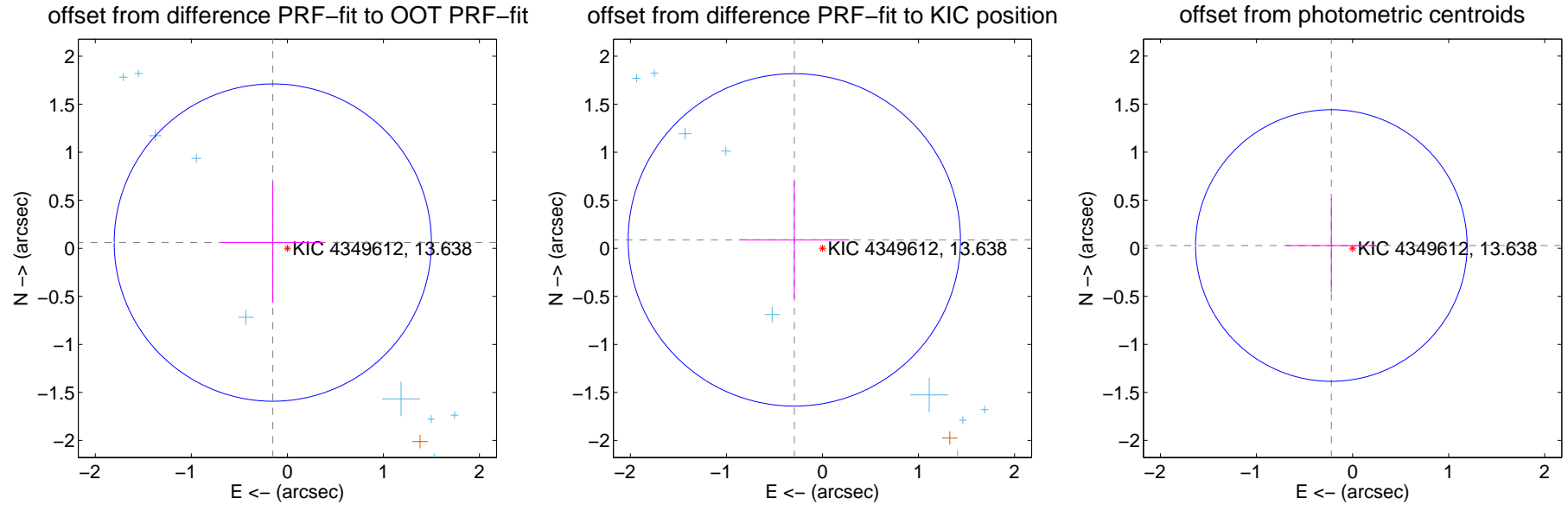
## DV Centroid Data

Supplemental centroid analysis for 004349612-01. Kepler magnitude: 13.64. Transit SNR -1.00

There are 9 quarters with good PRF difference image offsets

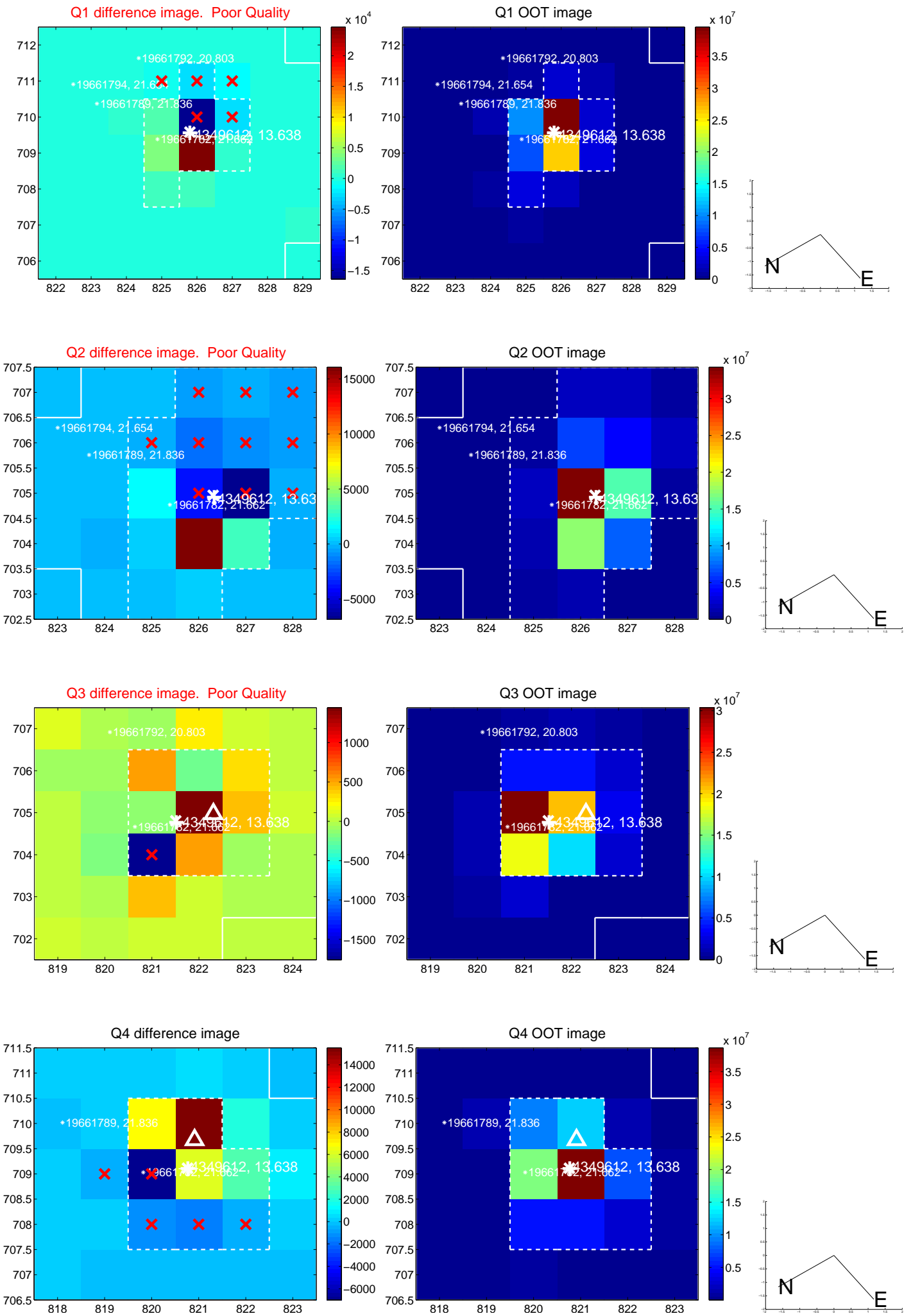
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.163 \pm 0.551$	0.30	$0.152 \pm 0.538$	$0.060 \pm 0.627$
PRF-fit source offset from KIC position	$0.306 \pm 0.577$	0.53	$0.293 \pm 0.574$	$0.088 \pm 0.611$
photometric centroid source offset	$0.22 \pm 0.47$	0.47	$0.22 \pm 0.47$	$0.03 \pm 0.49$

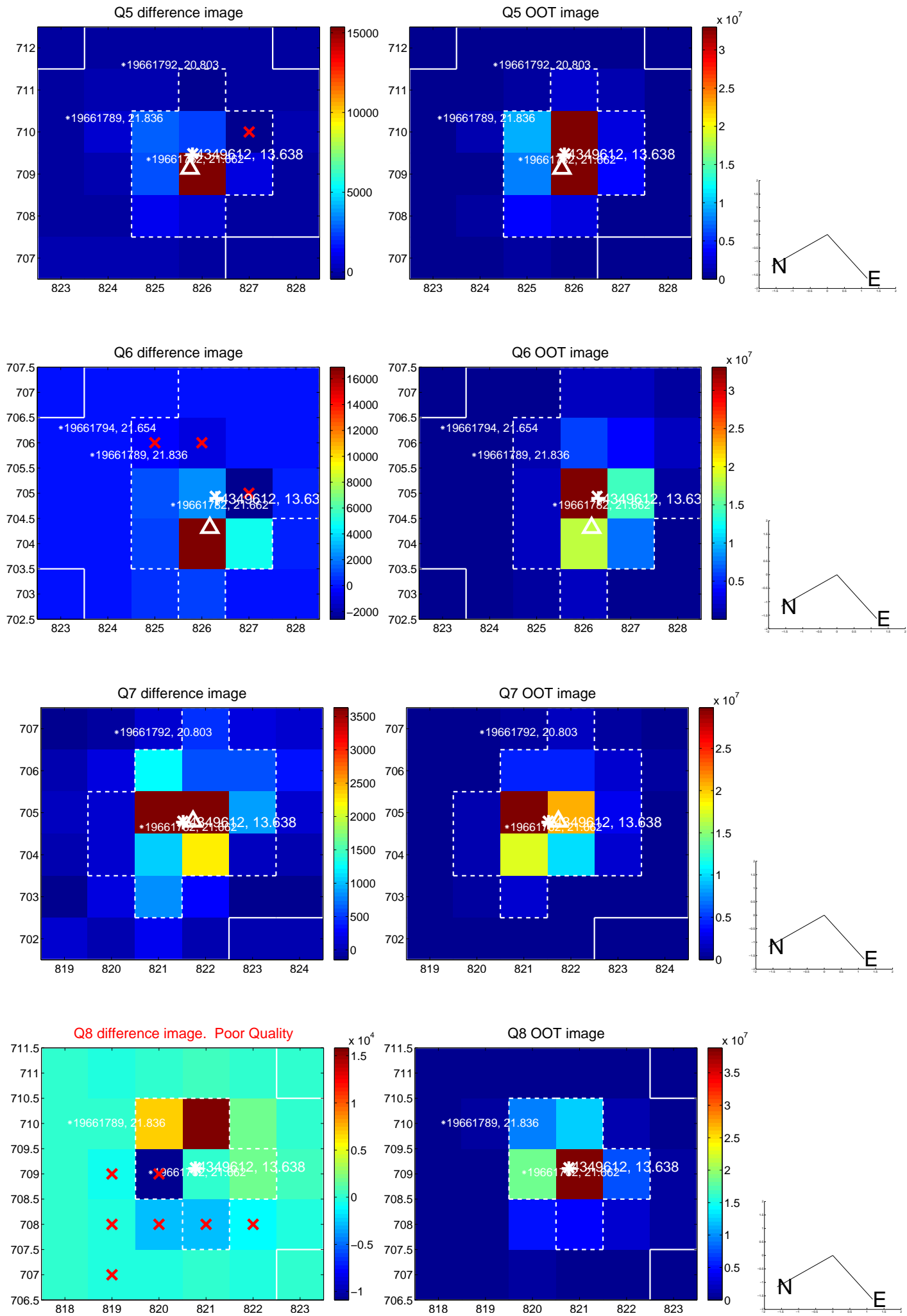


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

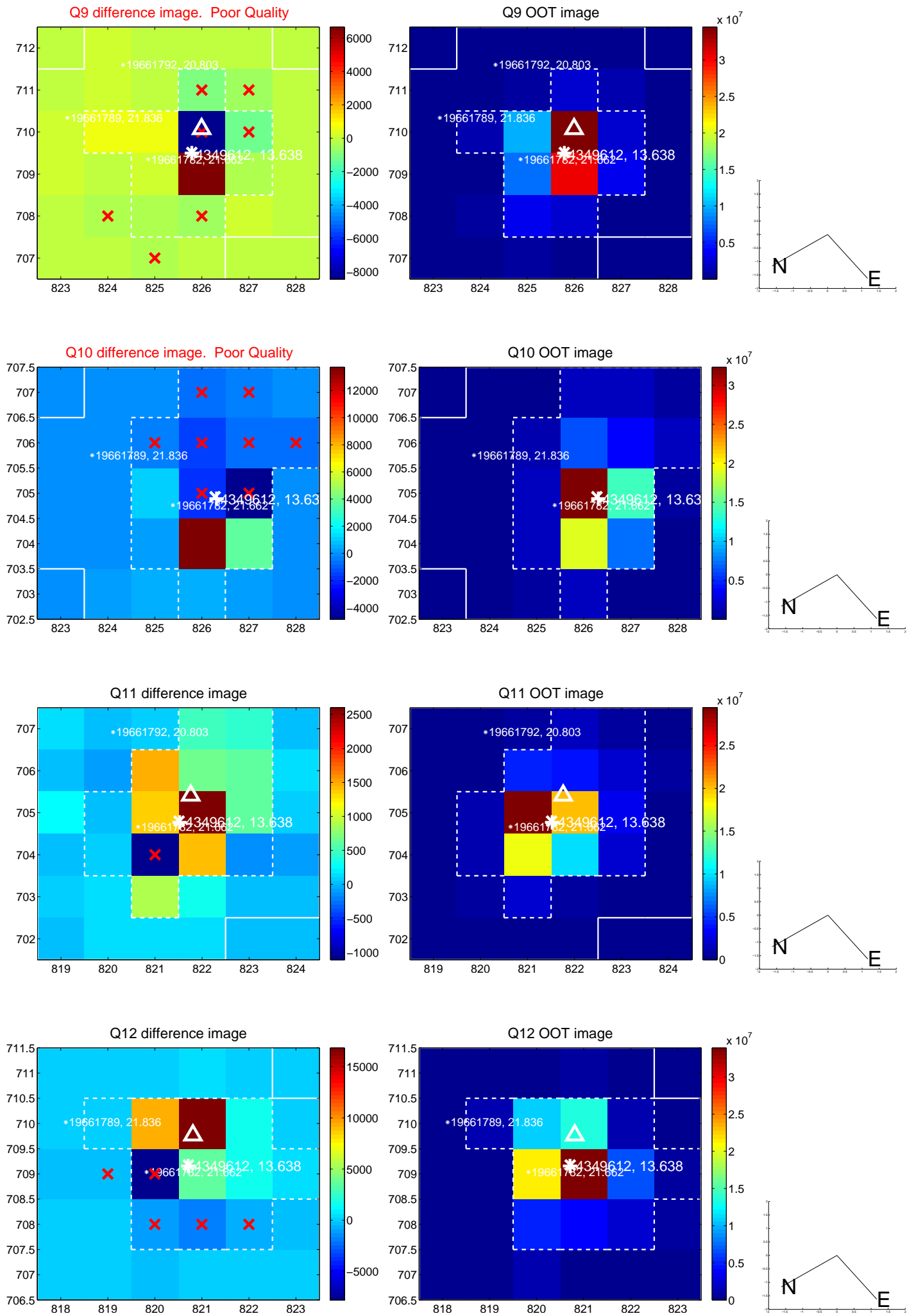


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

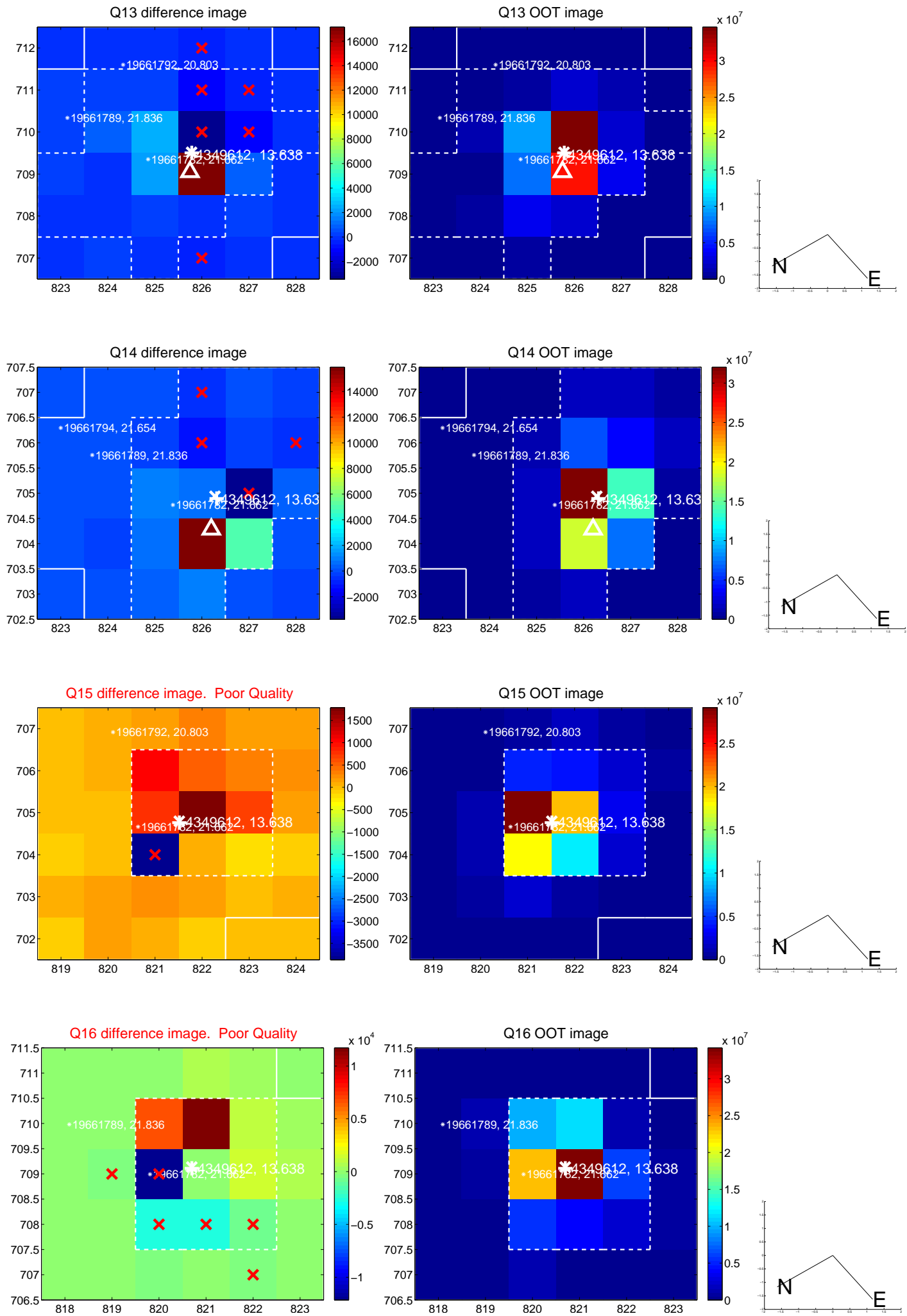




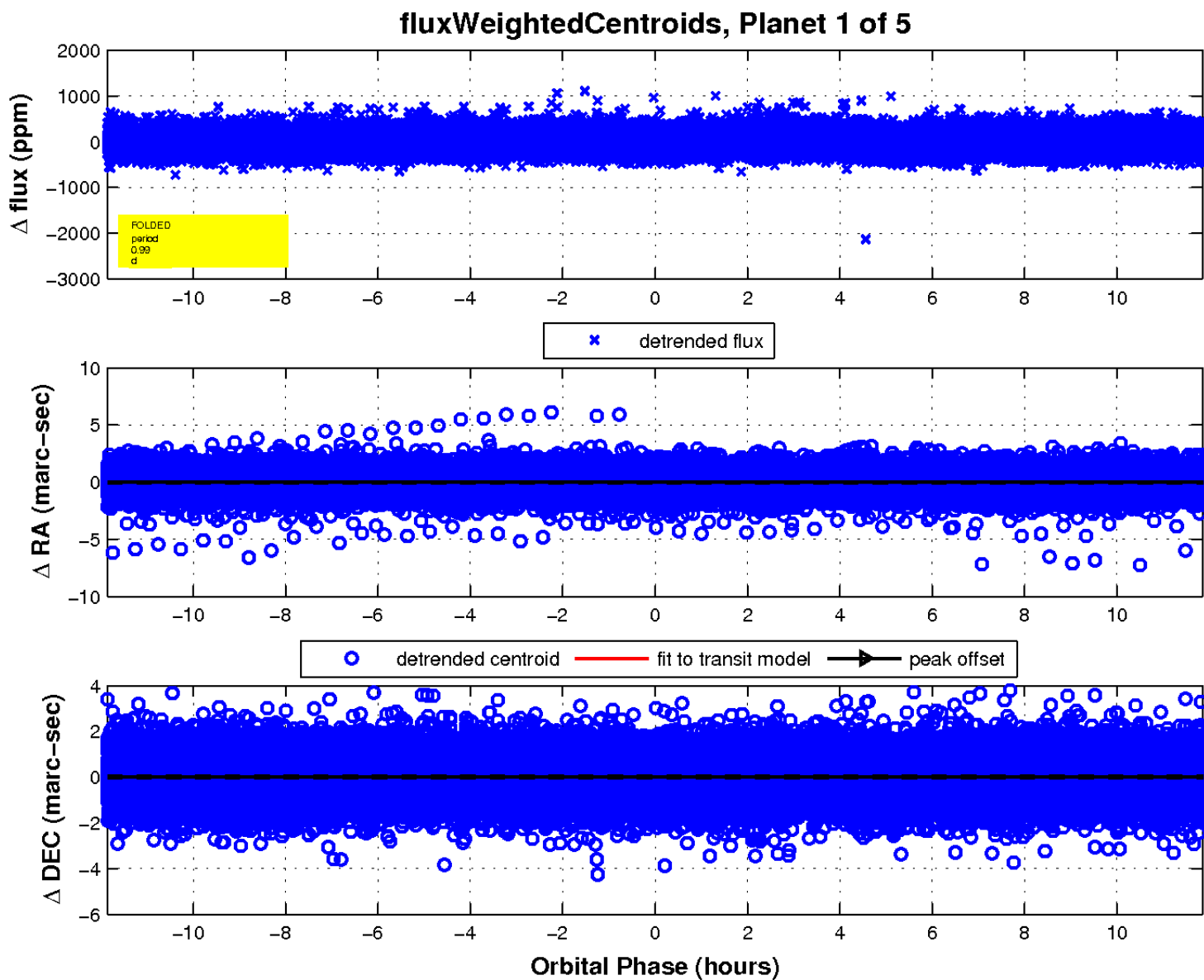
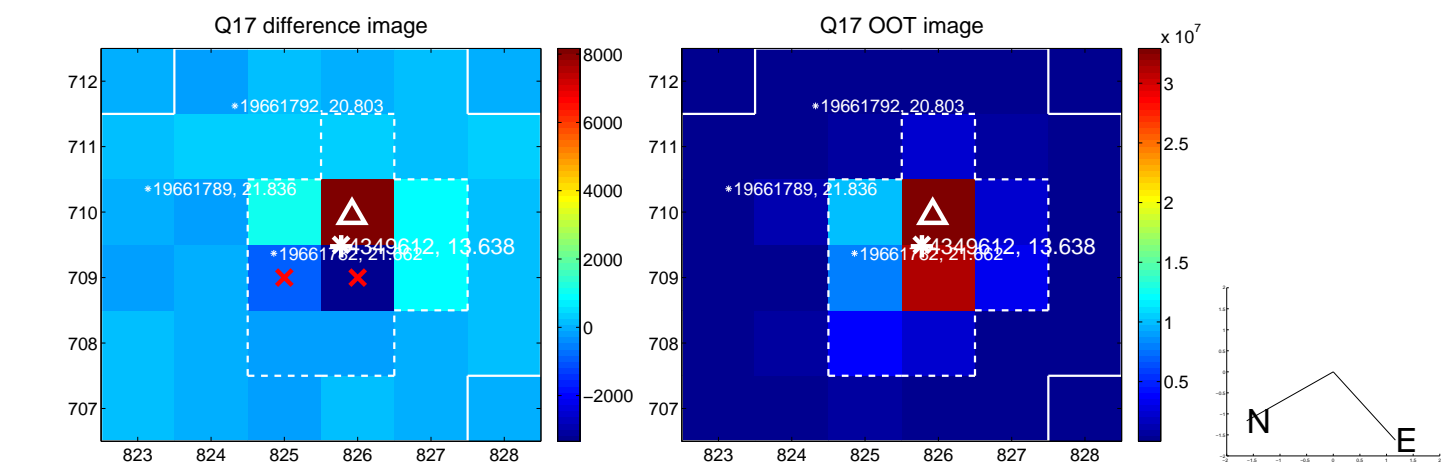
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

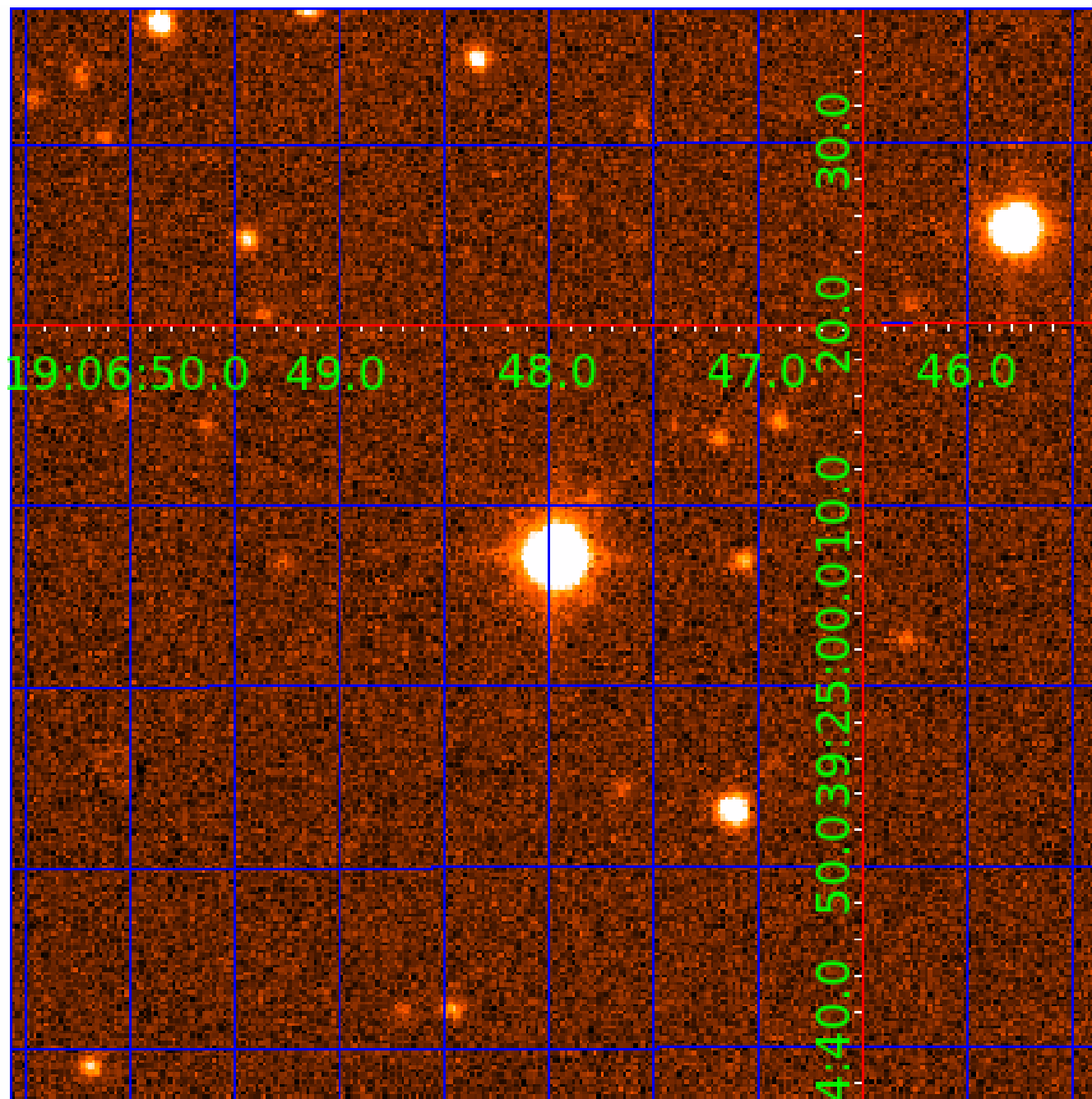


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination





# KIC 004349612

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004349612-01	OBS	No	0.988592	132.071611	459.7	2.000	12.2	-1.0	2.27	6362	4.91	17529.65
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004349612-03	OBS	No	65.049920	135.636323	220.8	2.120	8.9	7.9	2.27	6362	3.69	65.99
004349612-04	OBS	No	87.923506	178.404413	424.6	2.482	12.0	10.3	2.27	6362	5.46	44.16
004349612-05	OBS	No	118.747935	212.443912	205.4	4.860	8.3	7.4	2.27	6362	3.59	29.58

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004349612-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_NOFITS
004349612-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
004349612-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004349612-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT
004349612-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

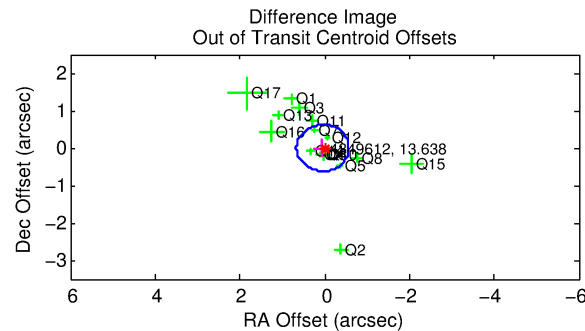
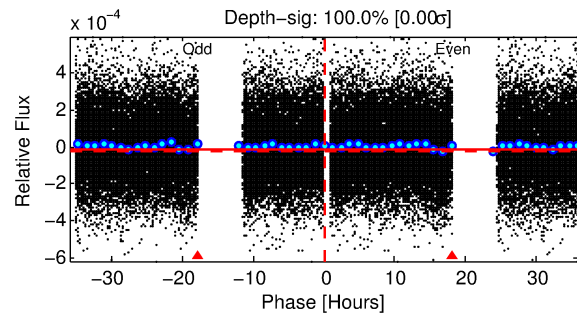
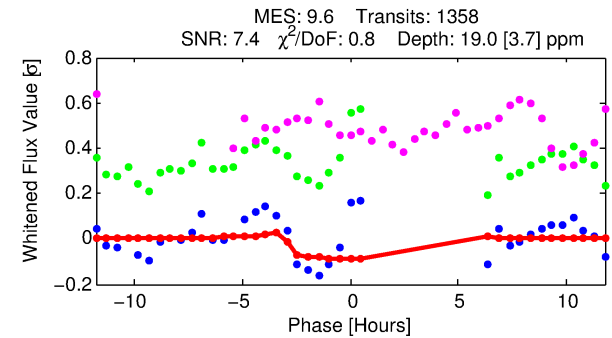
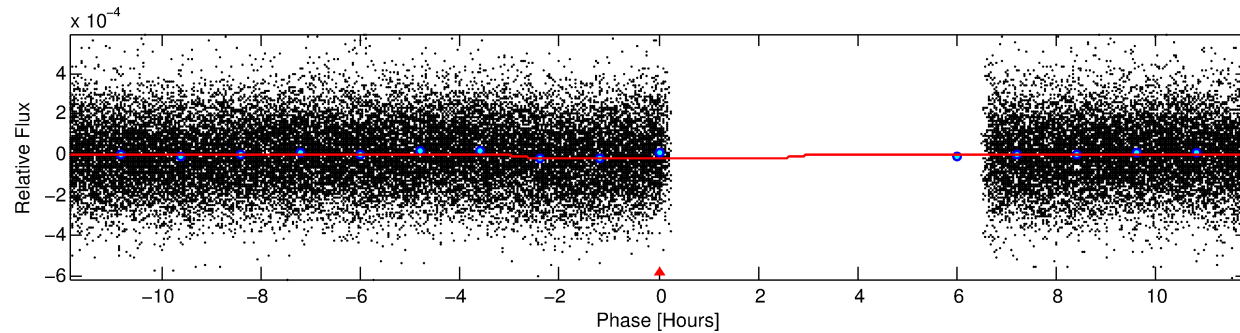
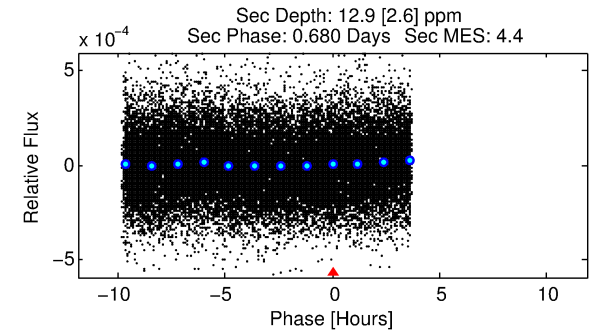
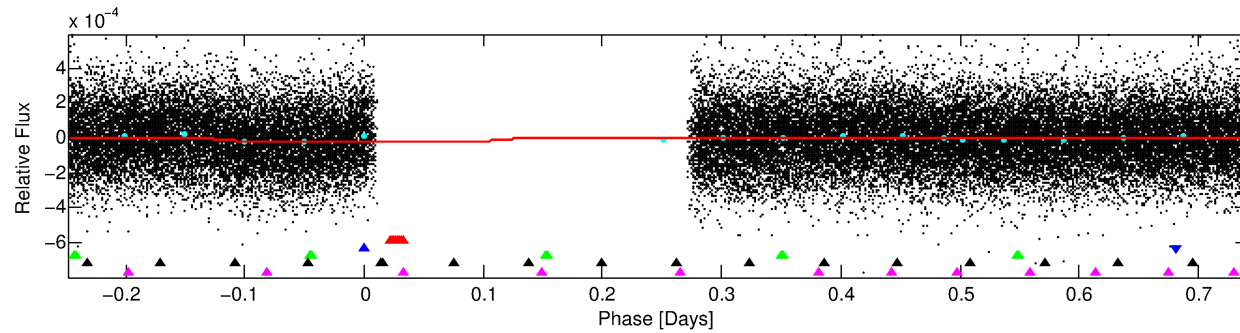
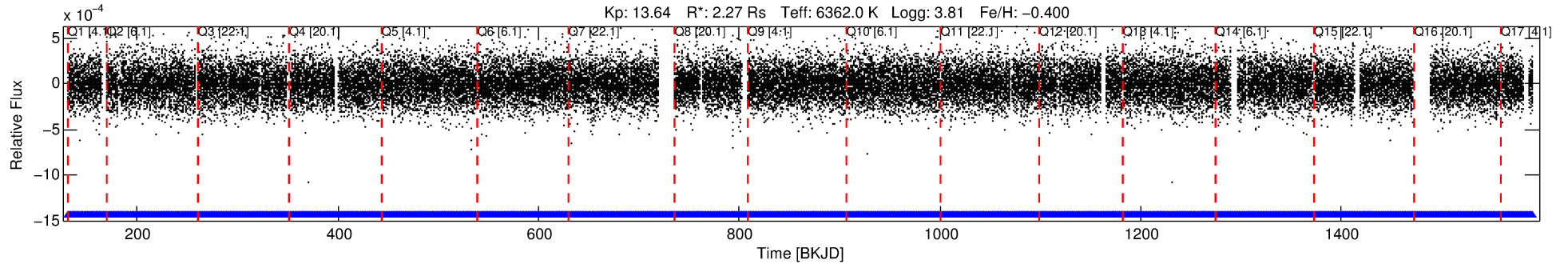
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004349612-02

No Significant Match Found

# DV One-Page Summary

KIC: 4349612 Candidate: 2 of 5 Period: 0.989 d



## DV Fit Results:

Period = 0.98860 [0.00003] d  
Epoch = 131.9251 [0.0274] BKJD  
Rp/R\* = 0.0047 [0.0031]  
a/R\* = 1.10 [0.68]  
b = 0.90 [0.83]  
Seff = 17529.47 [15716.05]  
Teff = 2934 [658] K  
Rp = 1.16 [0.97] Re  
a = 0.0208 [0.0110] AU  
Ag = 2.29 [3.72] [0.35σ]  
Teffp = 5583 [1907] K [1.31σ]

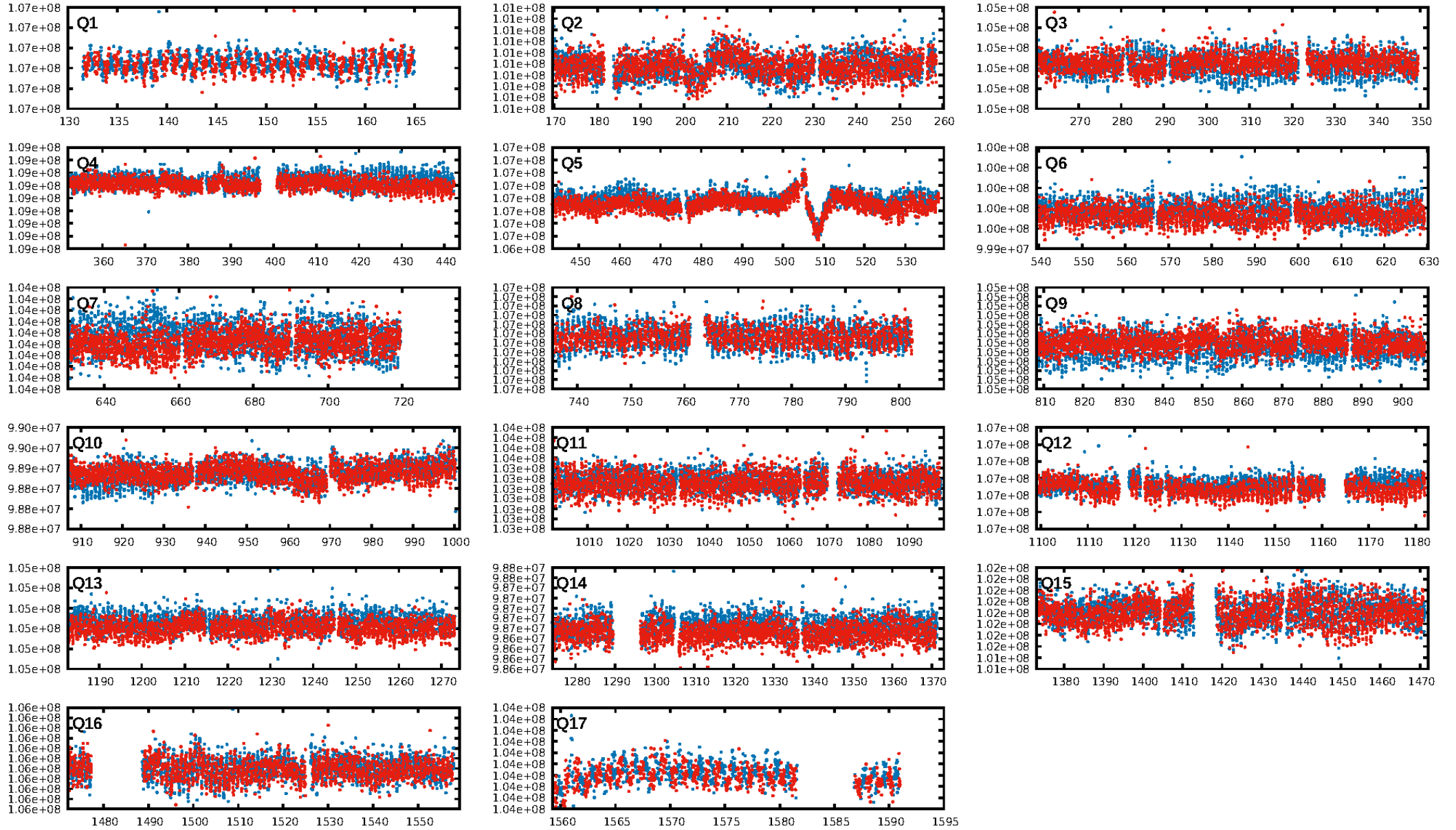
## DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]  
LongPeriod-sig: 100.0% [241.02σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.51e-11  
RollingBand-fgt: 1.00 [1296/1296]  
GhostDiagnostic-chr: 7.325  
Centroid-sig: 0.3%  
Centroid-so: 2.043 arcsec [0.85σ]  
OotOffset-rm: 0.050 arcsec [0.24σ]  
KicOffset-rm: 0.162 arcsec [0.73σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 1.00 [16/16]  
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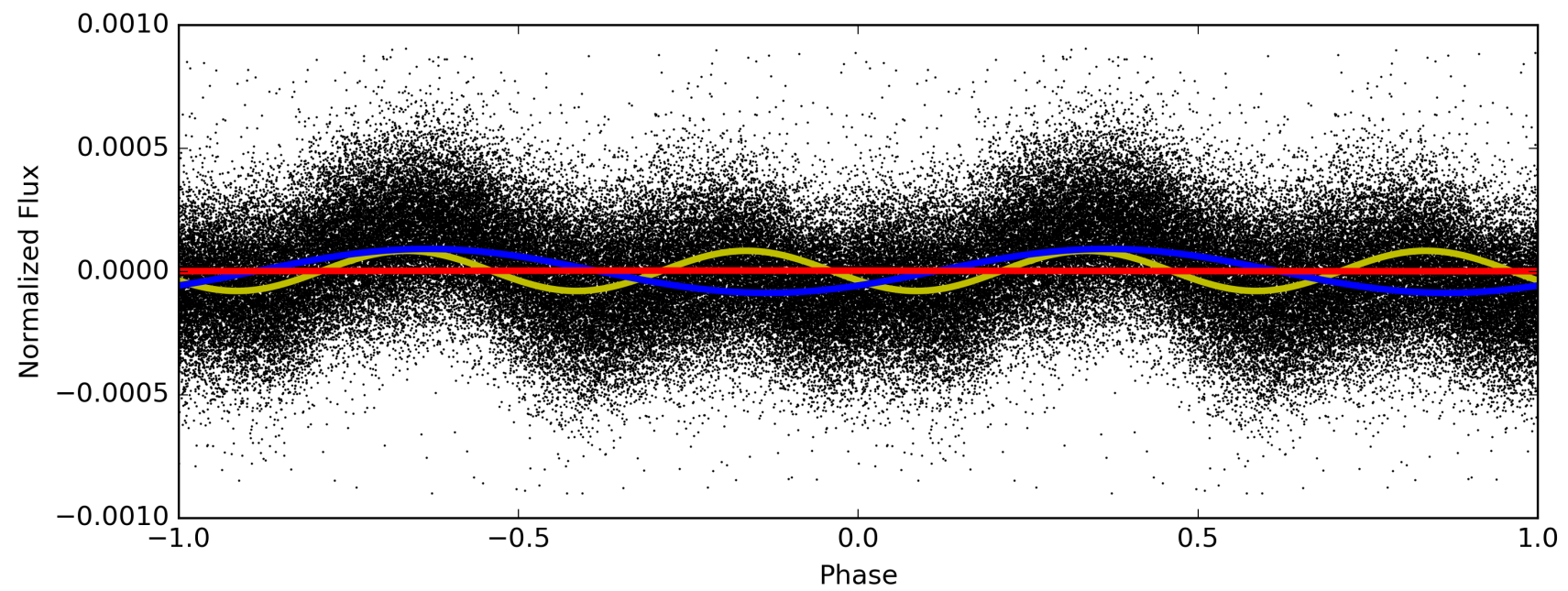
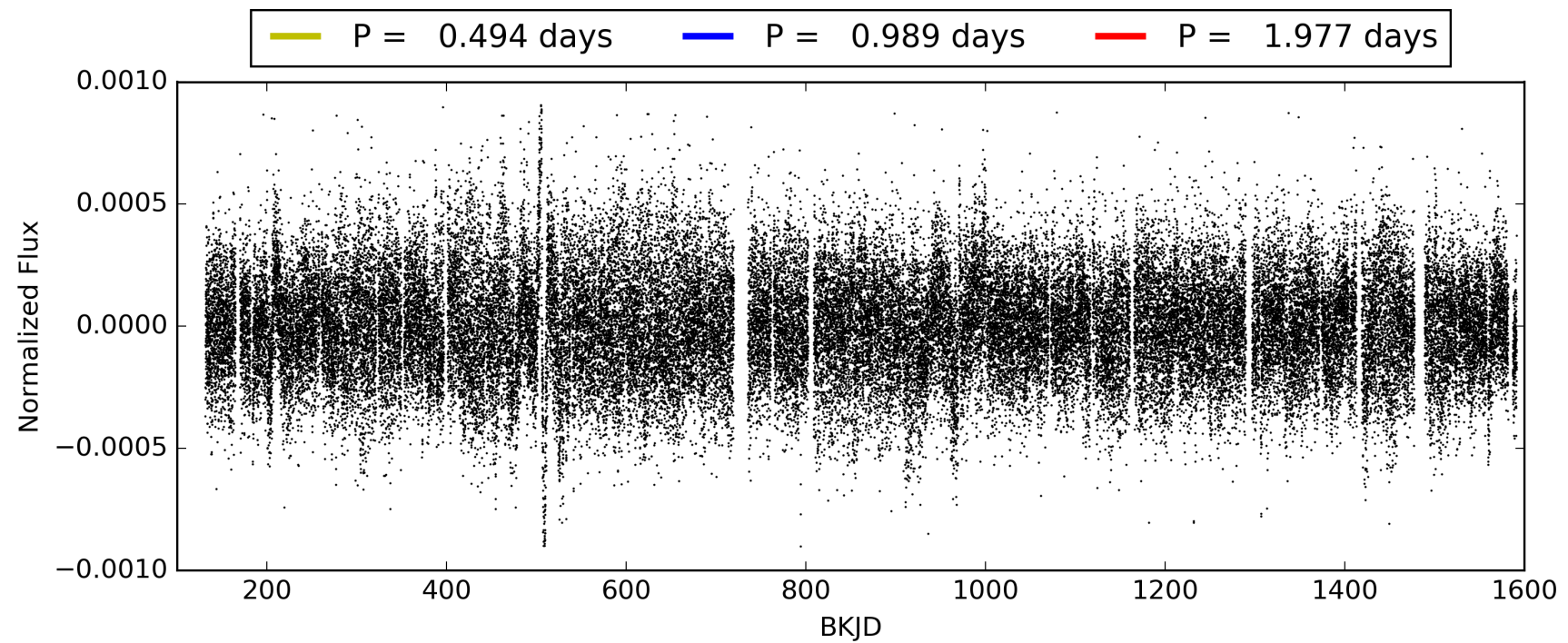
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 22:51:31 Z

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

# TCE 004349612-02, PDC Light Curves



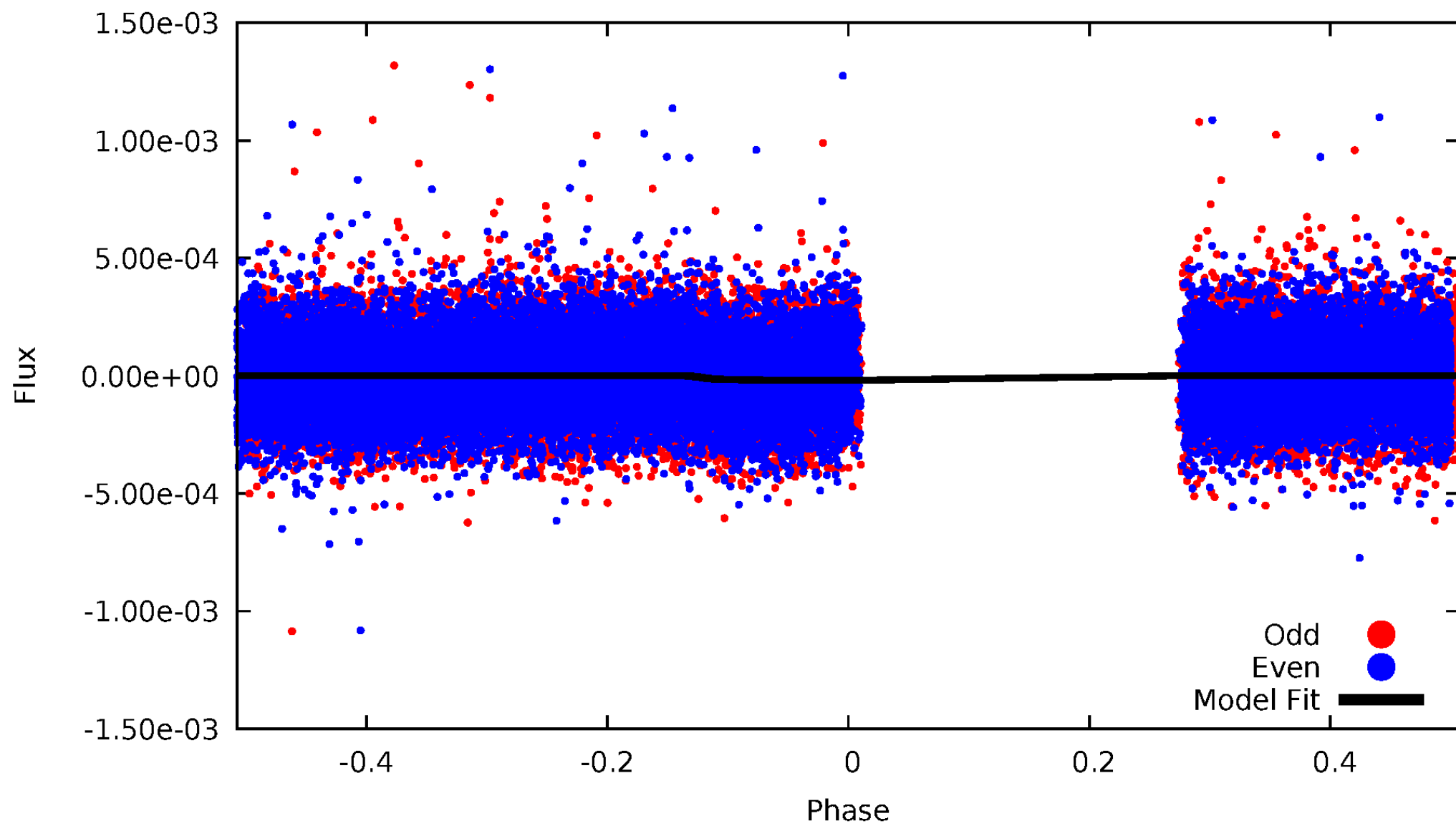
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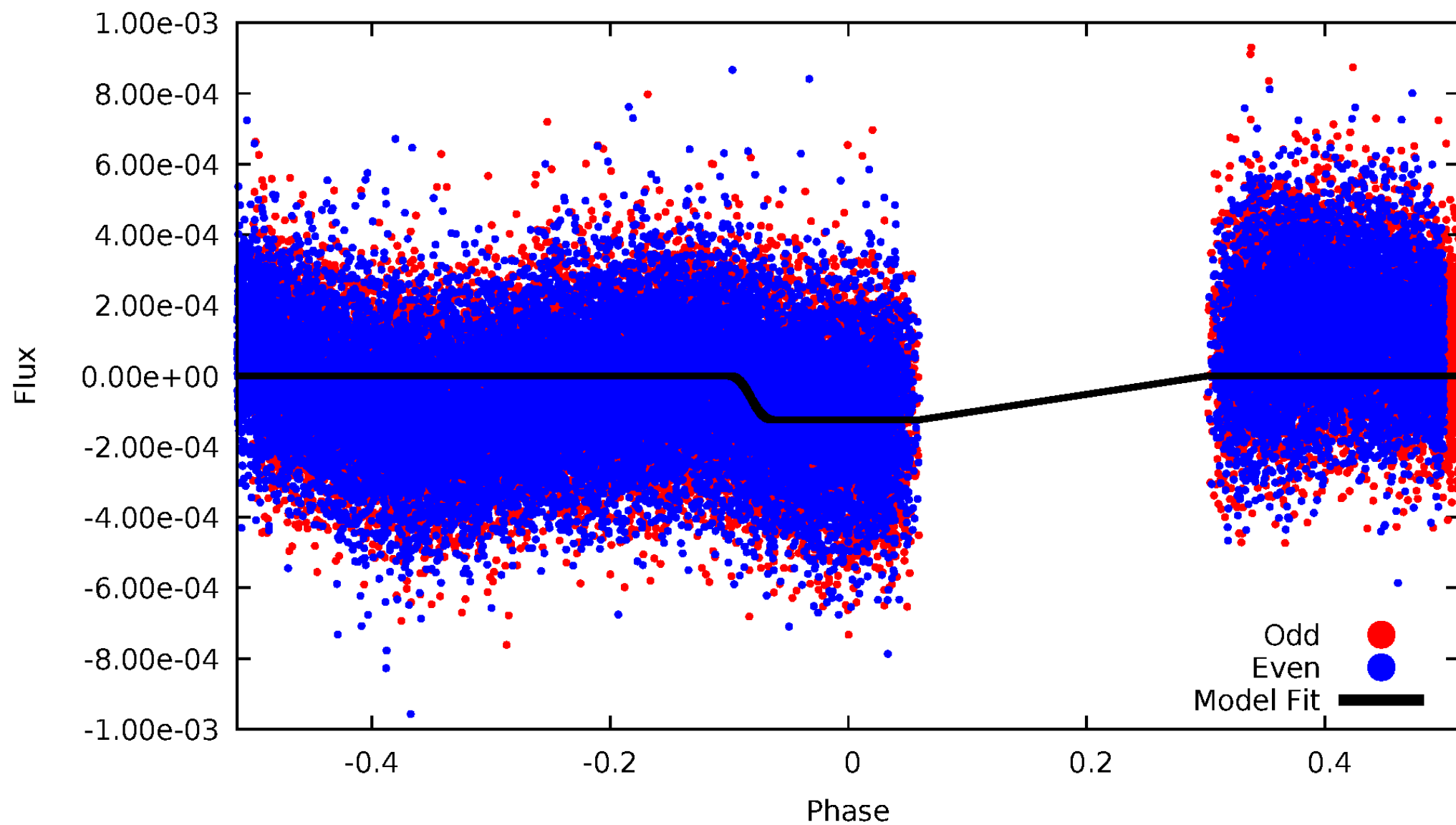
DV Odd/Even

TCE 004349612-02



# ALT Odd/Even

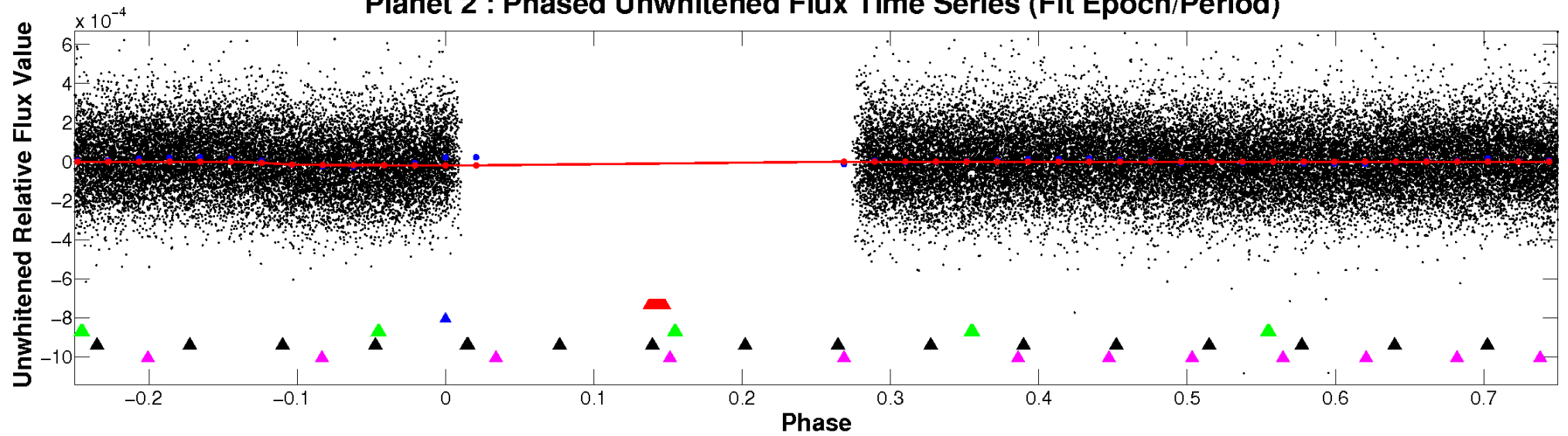
TCE 004349612-02



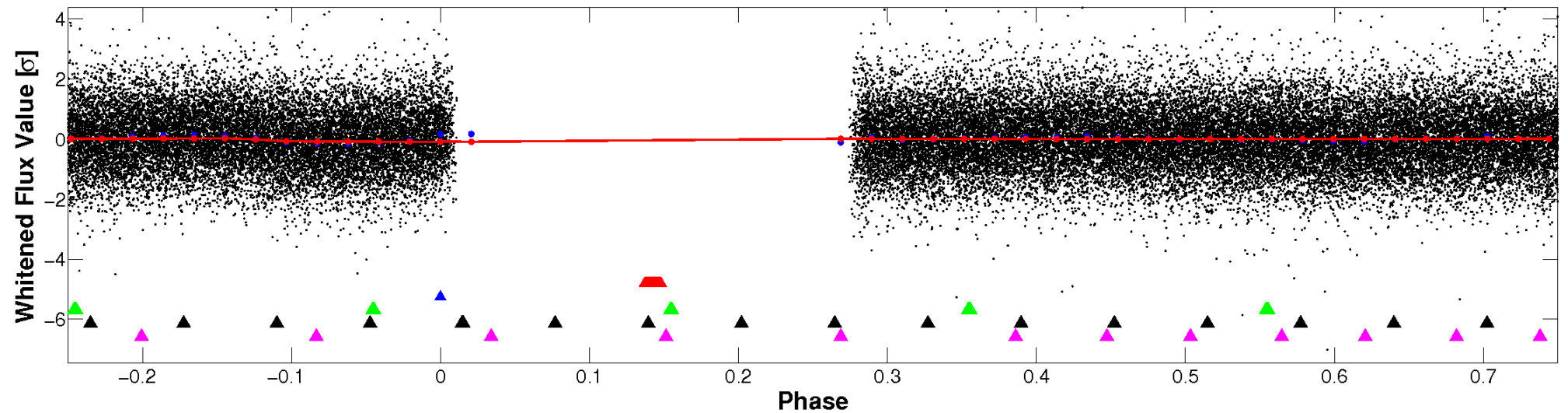


# Non-Whitened Vs. Whitened Light Curve

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

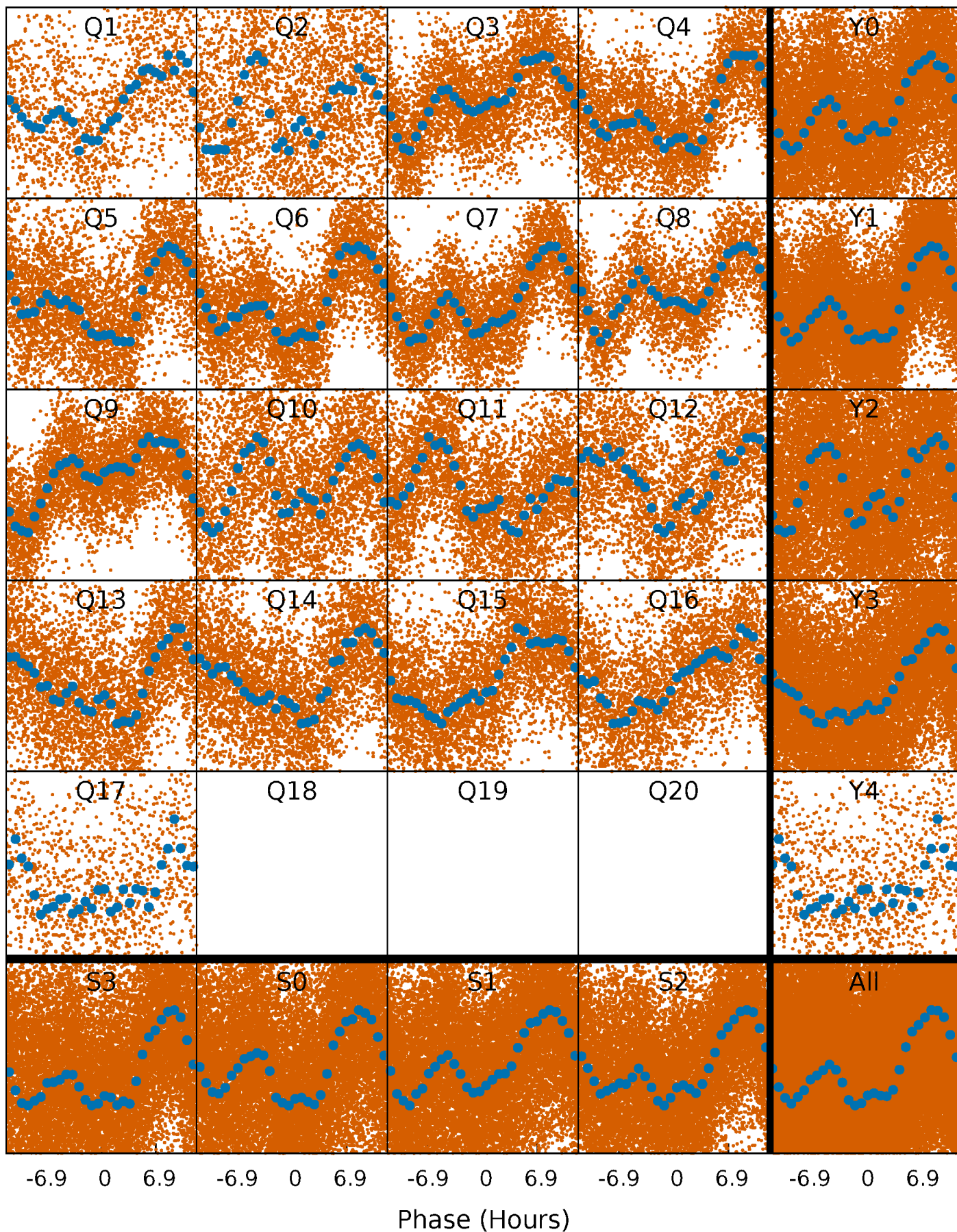


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

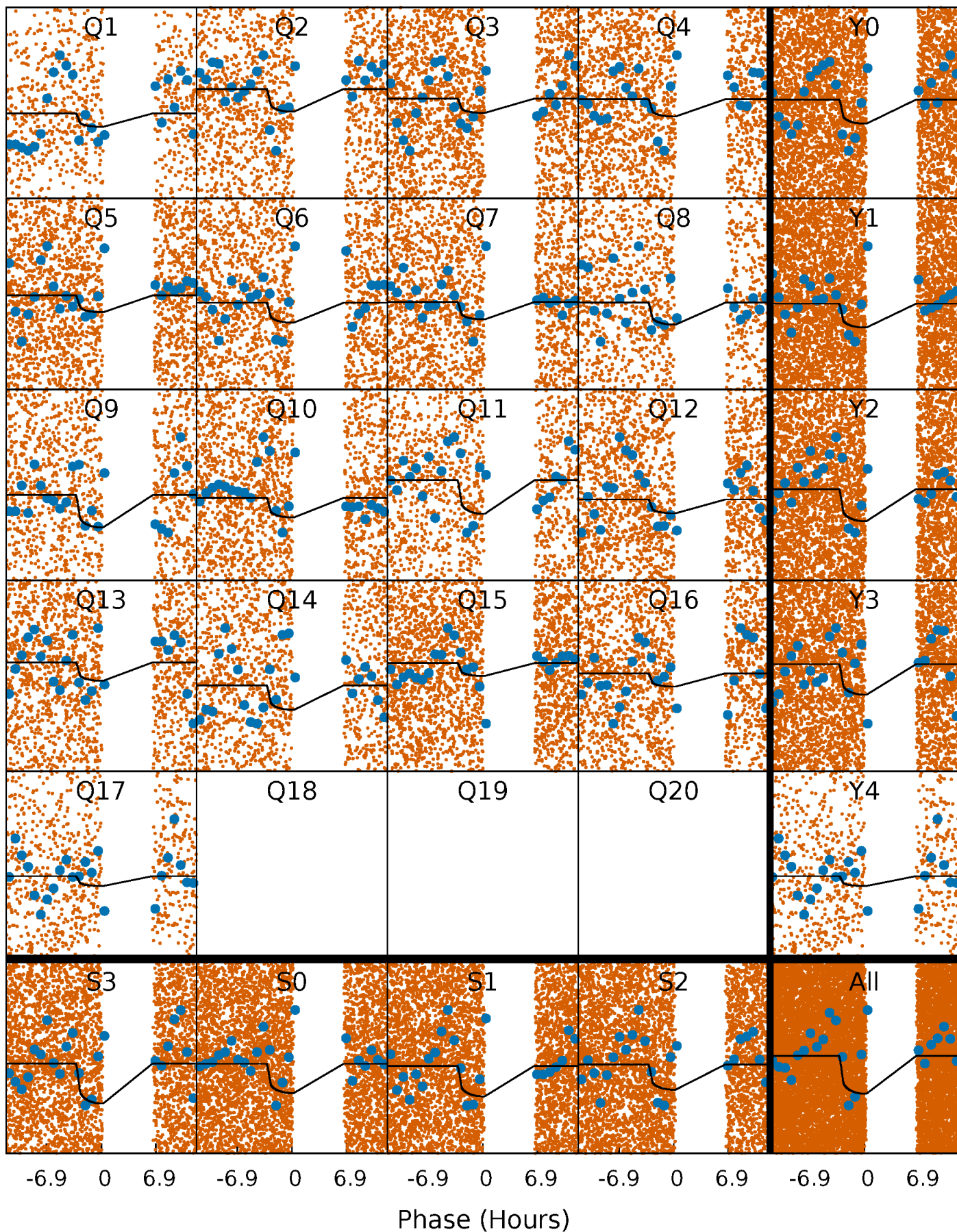
TCE 004349612-02   P= 0.988599 Days    $T_0=131.925122$  (BKJD)





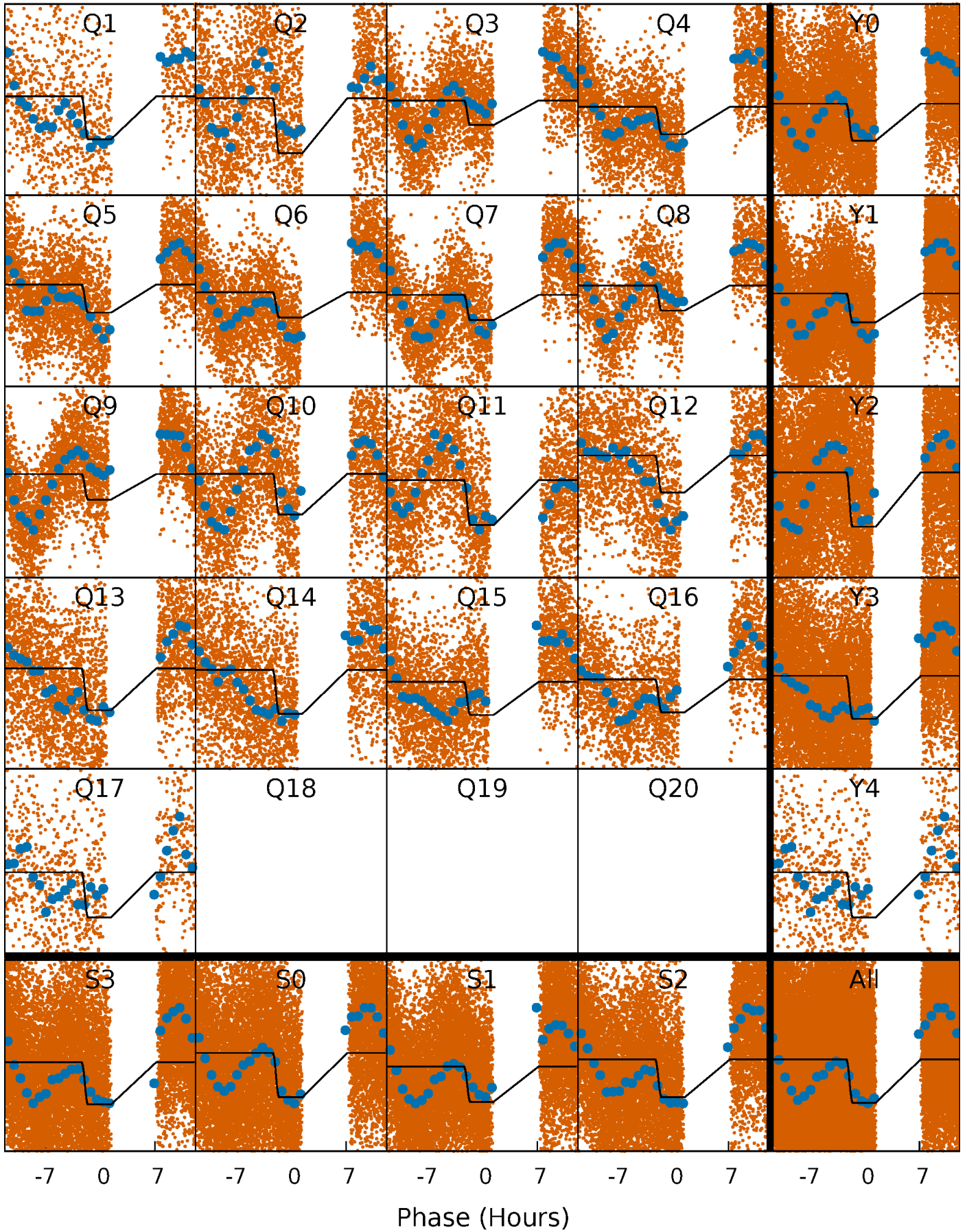
# DV Quarter-Phased Transit Curves

TCE 004349612-02 P= 0.988599 Days  $T_0=131.925122$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

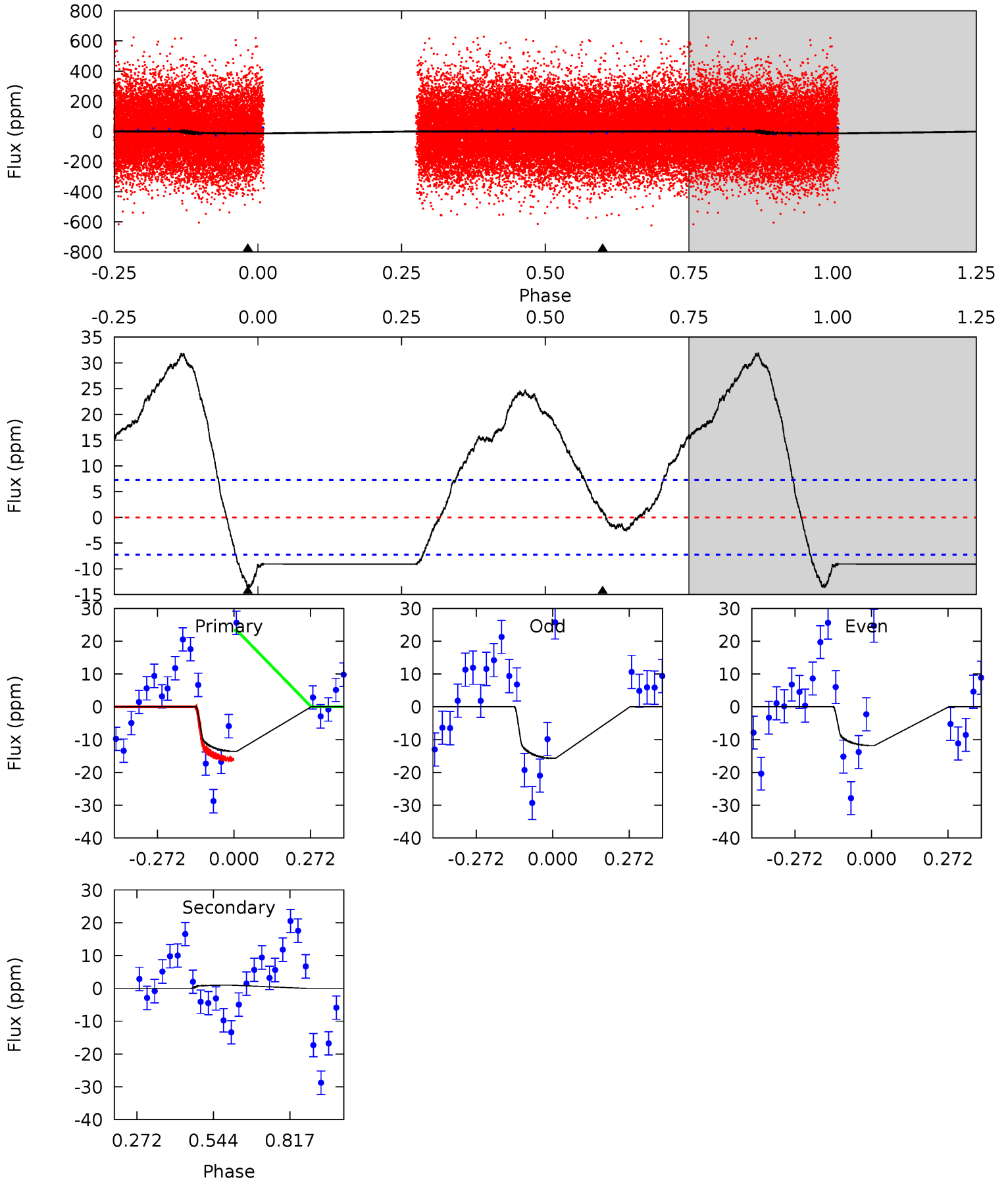
TCE 004349612-02   P= 0.988614 Days    $T_0=131.876383$  (BKJD)



# DV Model-Shift Uniqueness Test

004349612-02, P = 0.988599 Days, E = 130.936523 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.13	-0.58	0	0	4.35	1.10	3.25	8.13	8.13	-0.58	-0.58	1.17	0.90	0.70	0.87

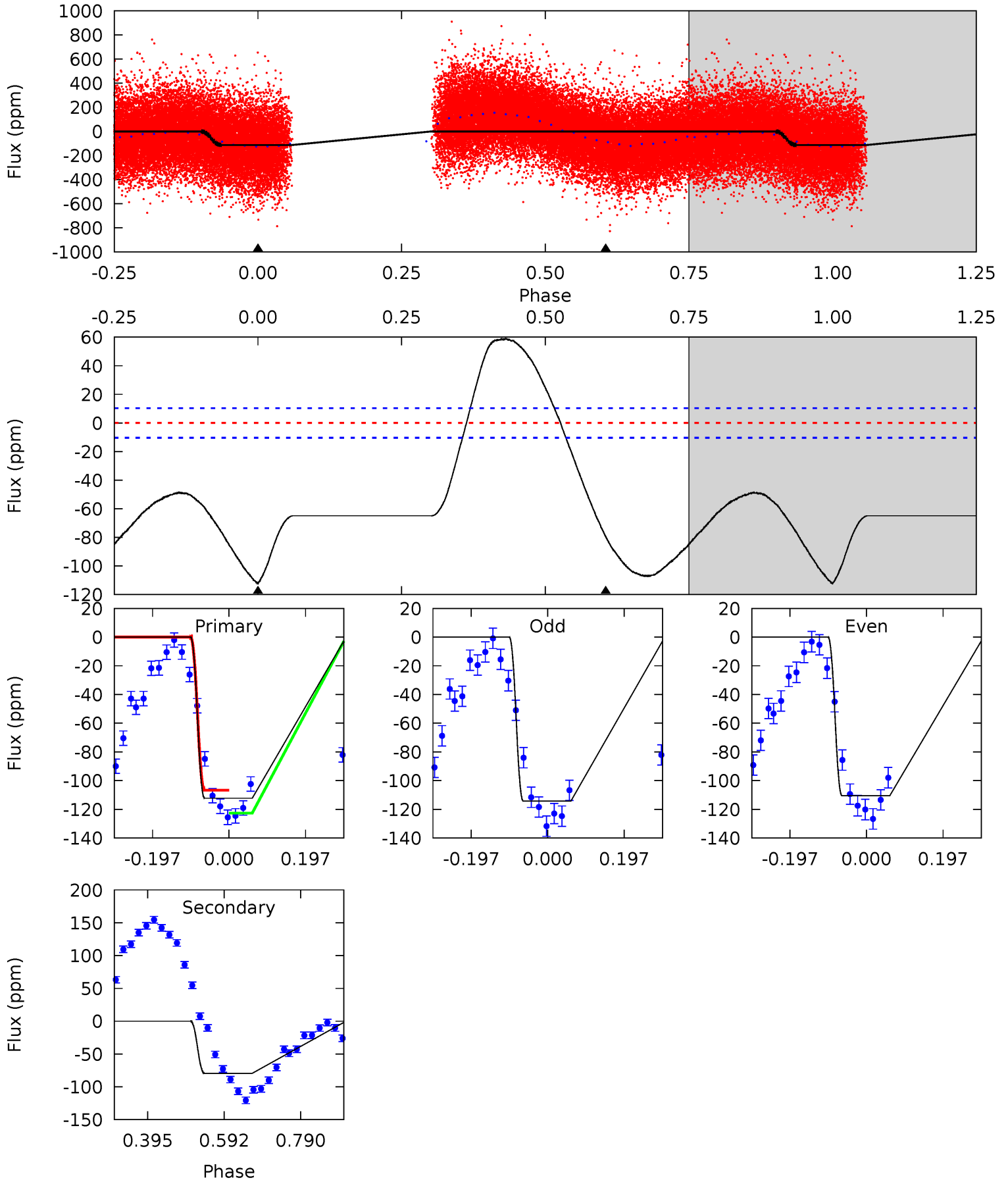




# Alt Model-Shift Uniqueness Test

004349612-02, P = 0.988614 Days, E = 130.887769 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
48.0	34.0	0	0	4.42	1.29	16.0	48.0	48.0	34.0	34.0	0.78	1.04	0.34	3.43



### Stellar Parameters For KIC 004349612

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$6362^{+204}_{-227}$	$3.814^{+0.535}_{-0.126}$	$-0.400^{+0.300}_{-0.300}$	$2.274^{+0.483}_{-1.126}$	$1.229^{+0.182}_{-0.273}$	$0.147^{+0.821}_{-0.056}$
	+3%/-4%	+14%/-3%	+75%/-75%	+21%/-50%	+15%/-22%	+558%/-38%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 004349612-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$1 \pm 2$	$1.07^{+0.69}_{-0.63}$	$3996^{+323}_{-549}$	$-3928^{+764}_{-862}$	$-0.140^{+0.304}_{-1.126}$
Alt.	$-79 \pm 2$	$2.44^{+1.06}_{-0.90}$	$3965^{+344}_{-504}$	$5588^{+1139}_{-716}$	$3.227^{+4.385}_{-1.602}$

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

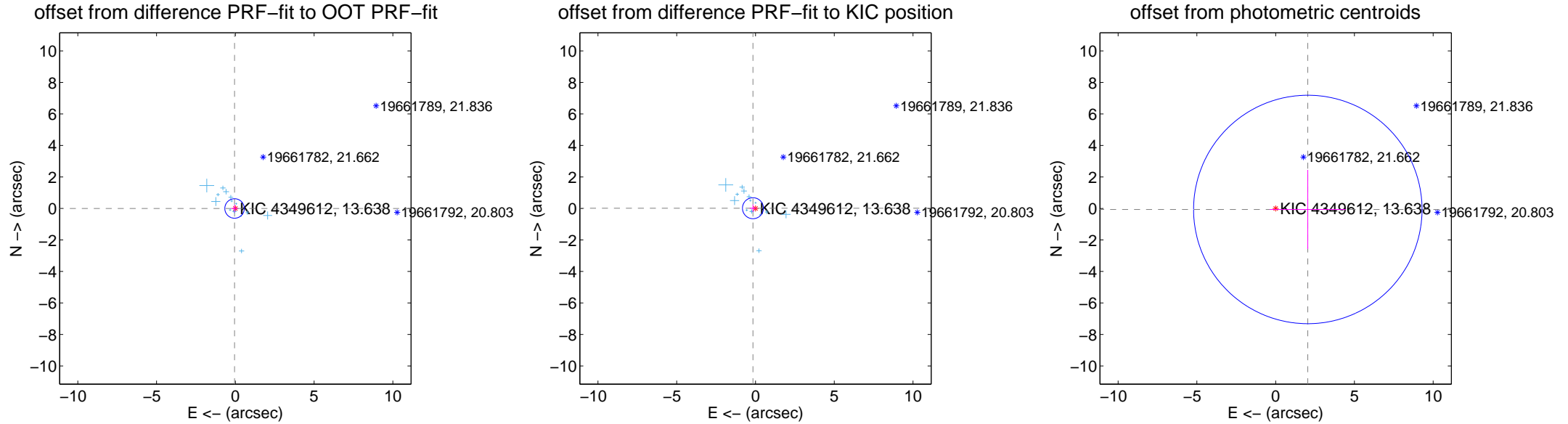
## DV Centroid Data

Supplemental centroid analysis for 004349612-02. Kepler magnitude: 13.64. Transit SNR 7.40

There are 16 quarters with good PRF difference image offsets

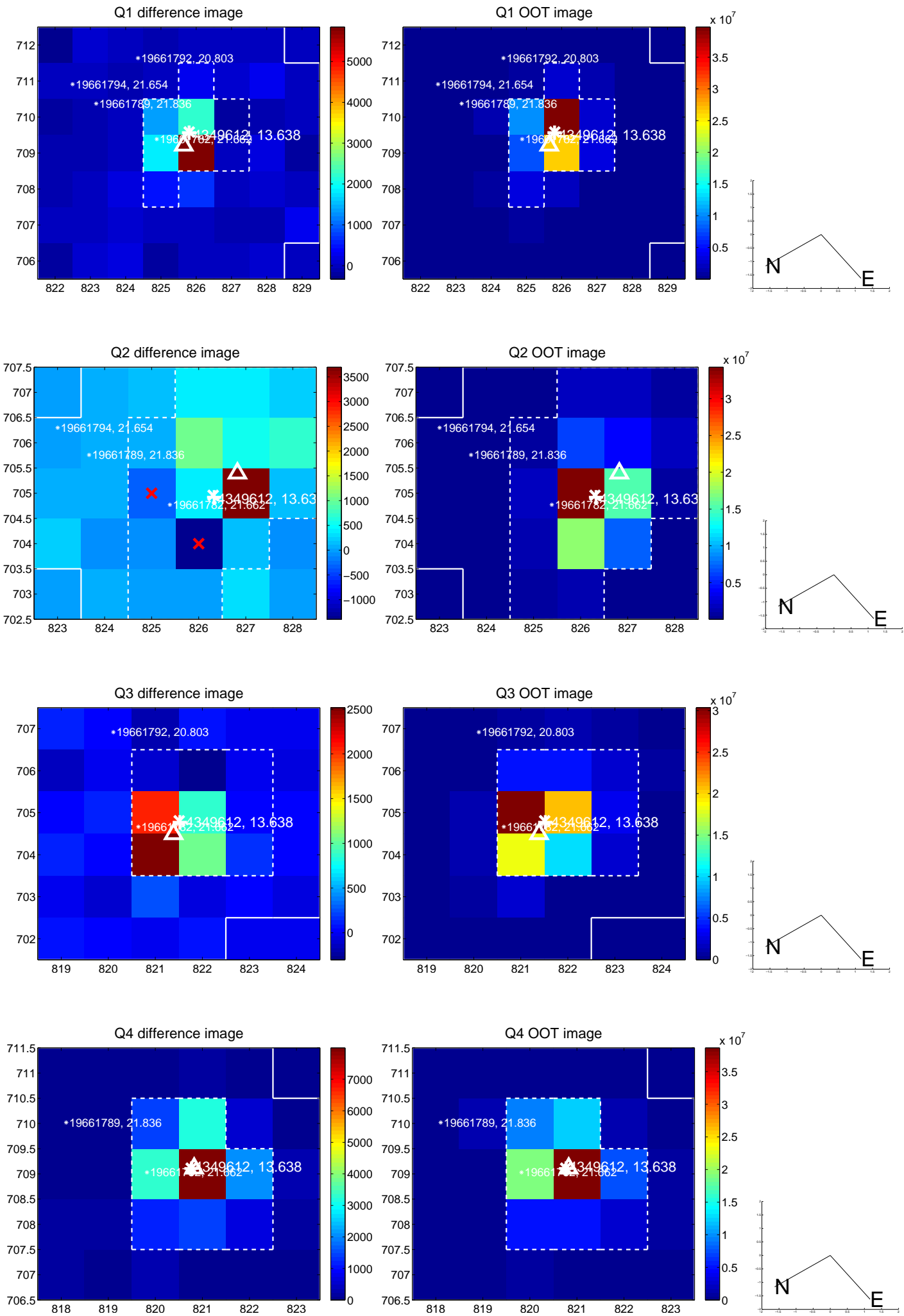
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.050 \pm 0.206$	0.24	$0.050 \pm 0.212$	$-0.002 \pm 0.244$
PRF-fit source offset from KIC position	$0.162 \pm 0.222$	0.73	$0.161 \pm 0.212$	$0.015 \pm 0.239$
photometric centroid source offset	$2.04 \pm 2.42$	0.85	$-2.04 \pm 2.42$	$-0.07 \pm 2.51$

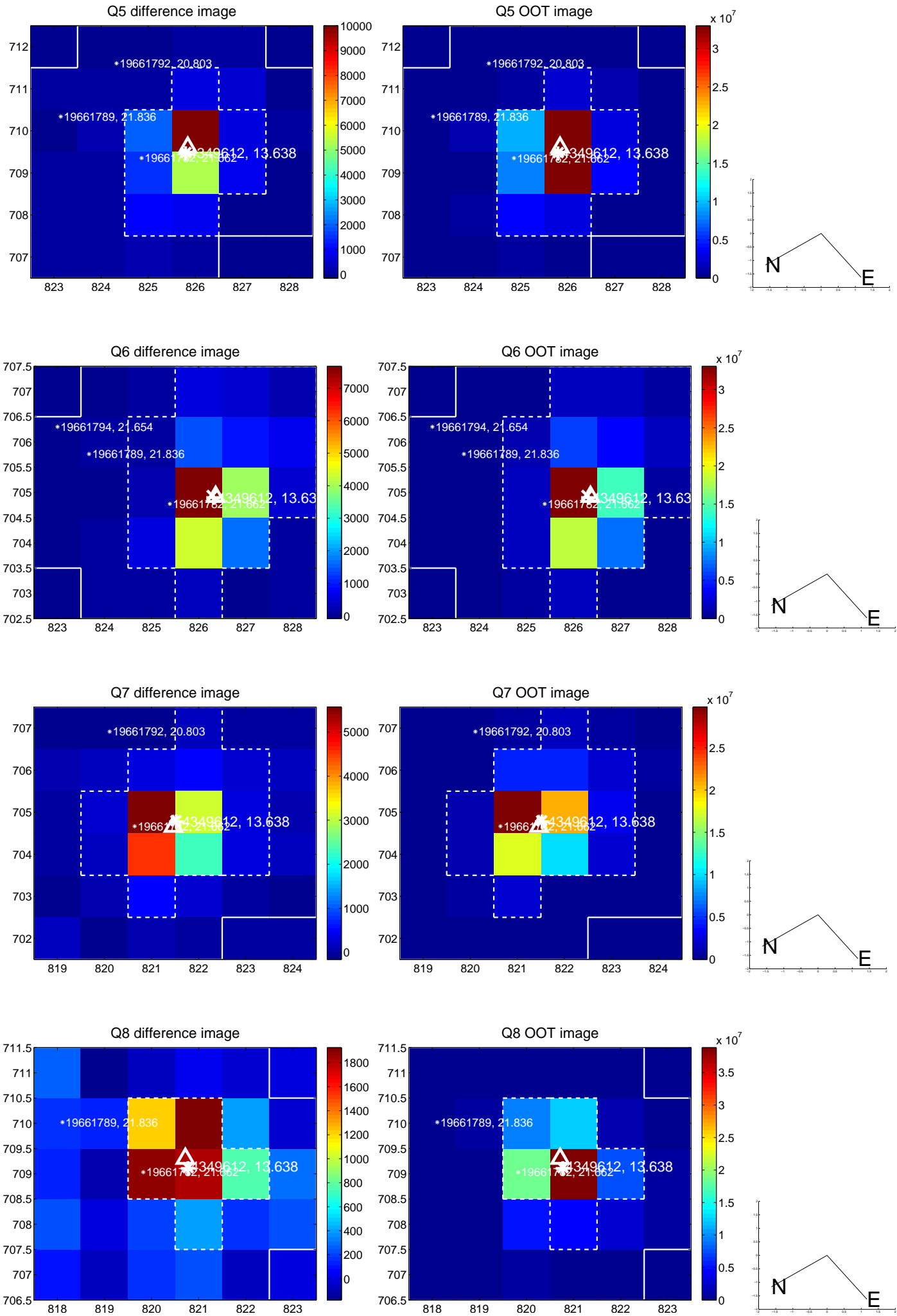


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

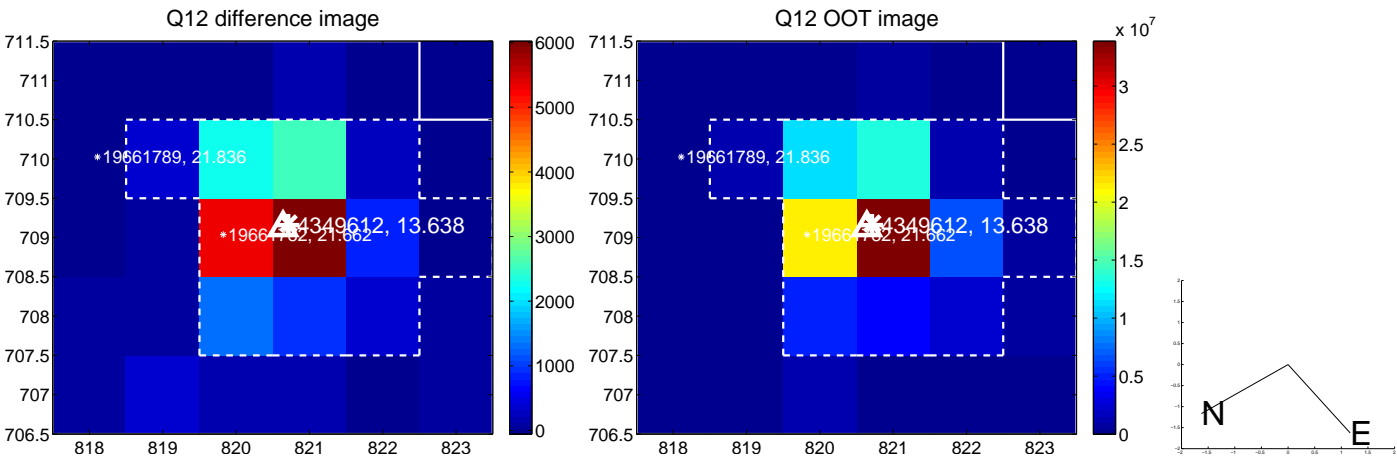
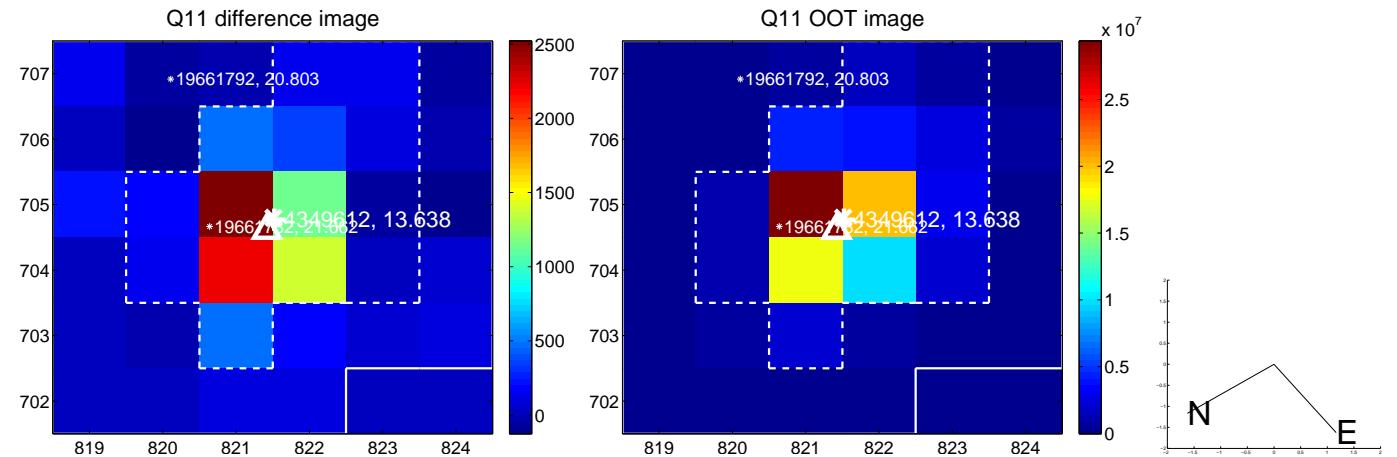
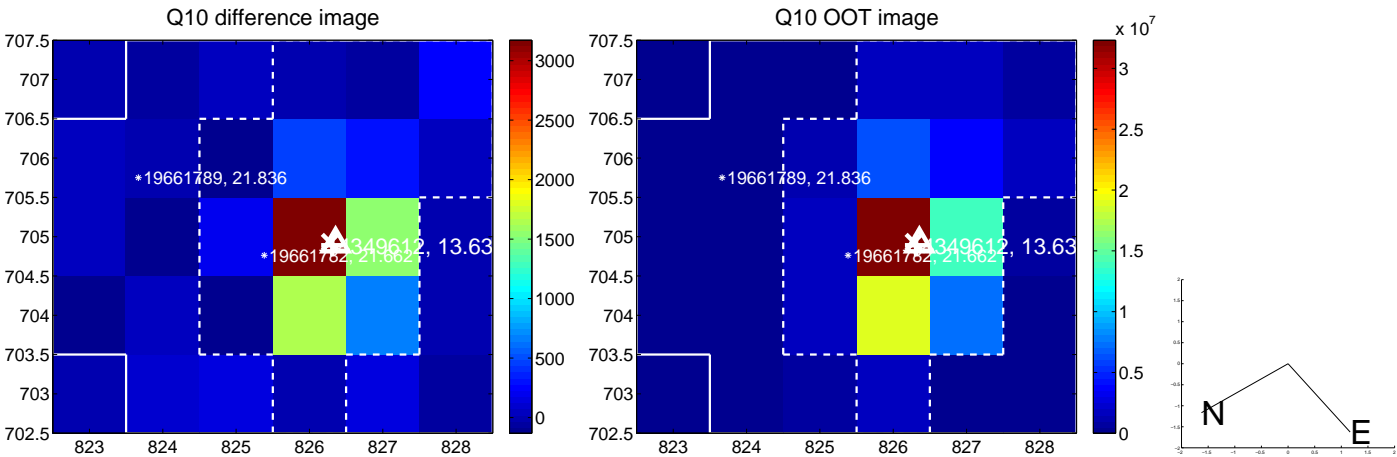
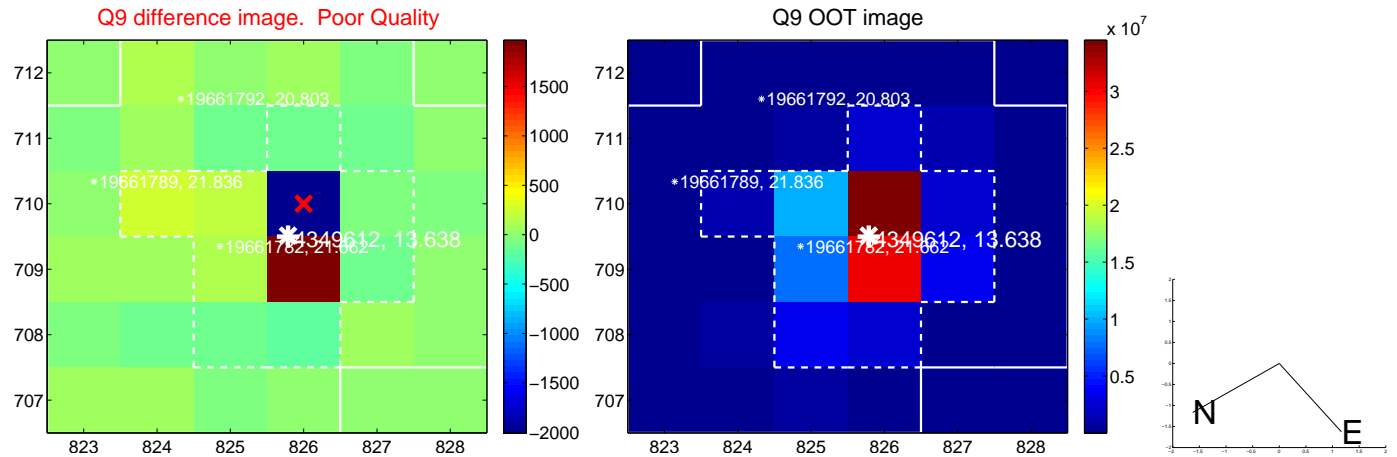


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

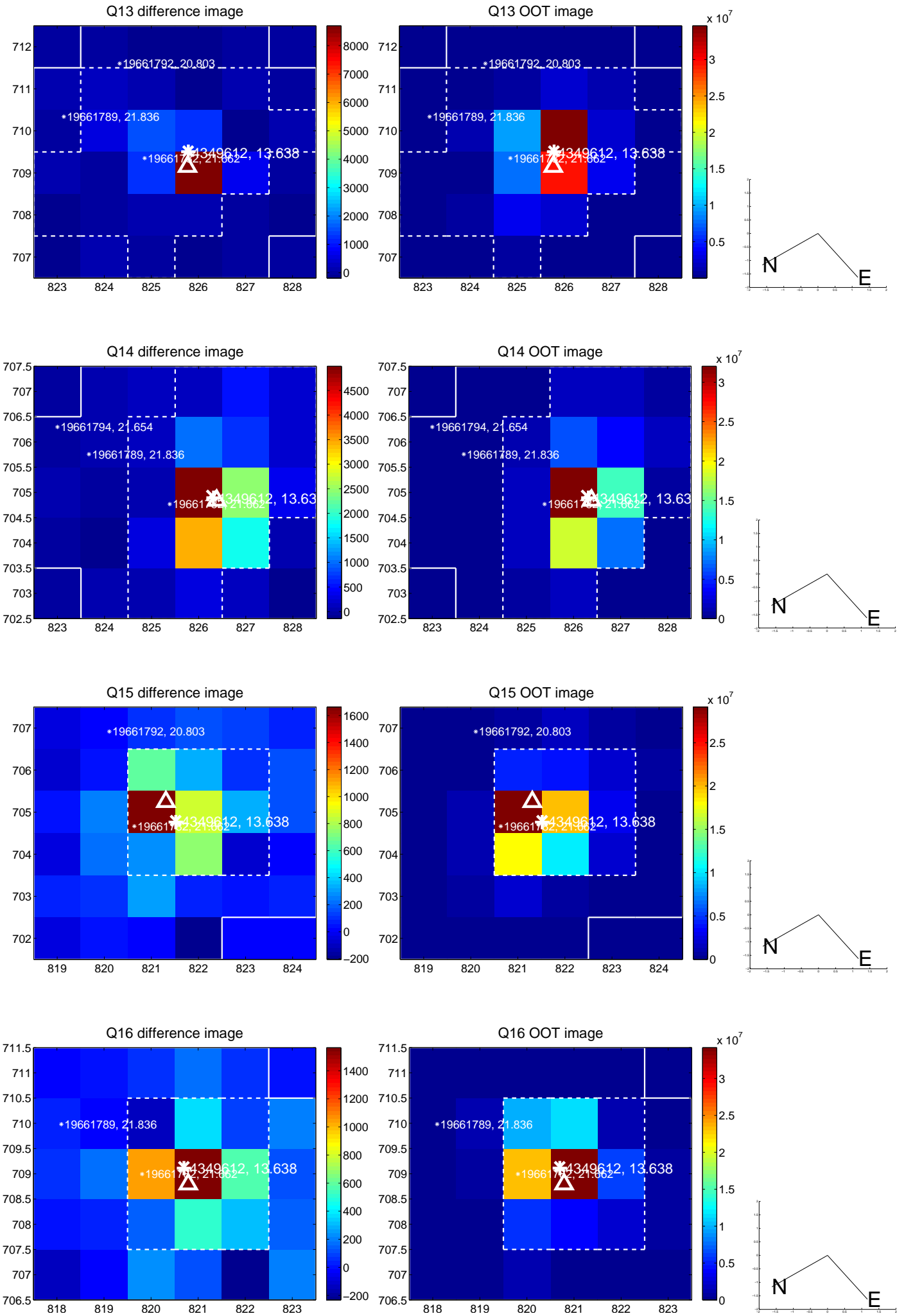




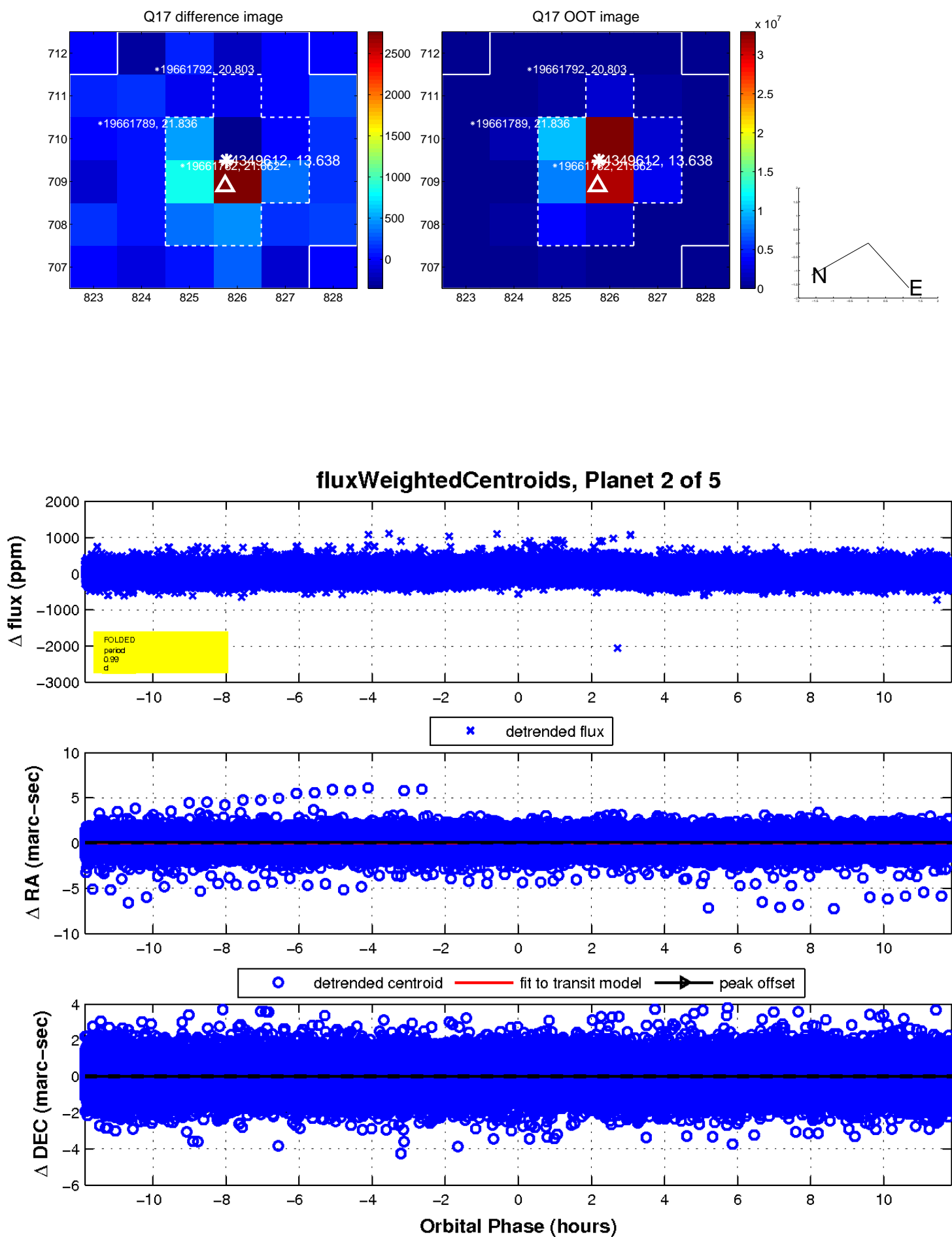
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

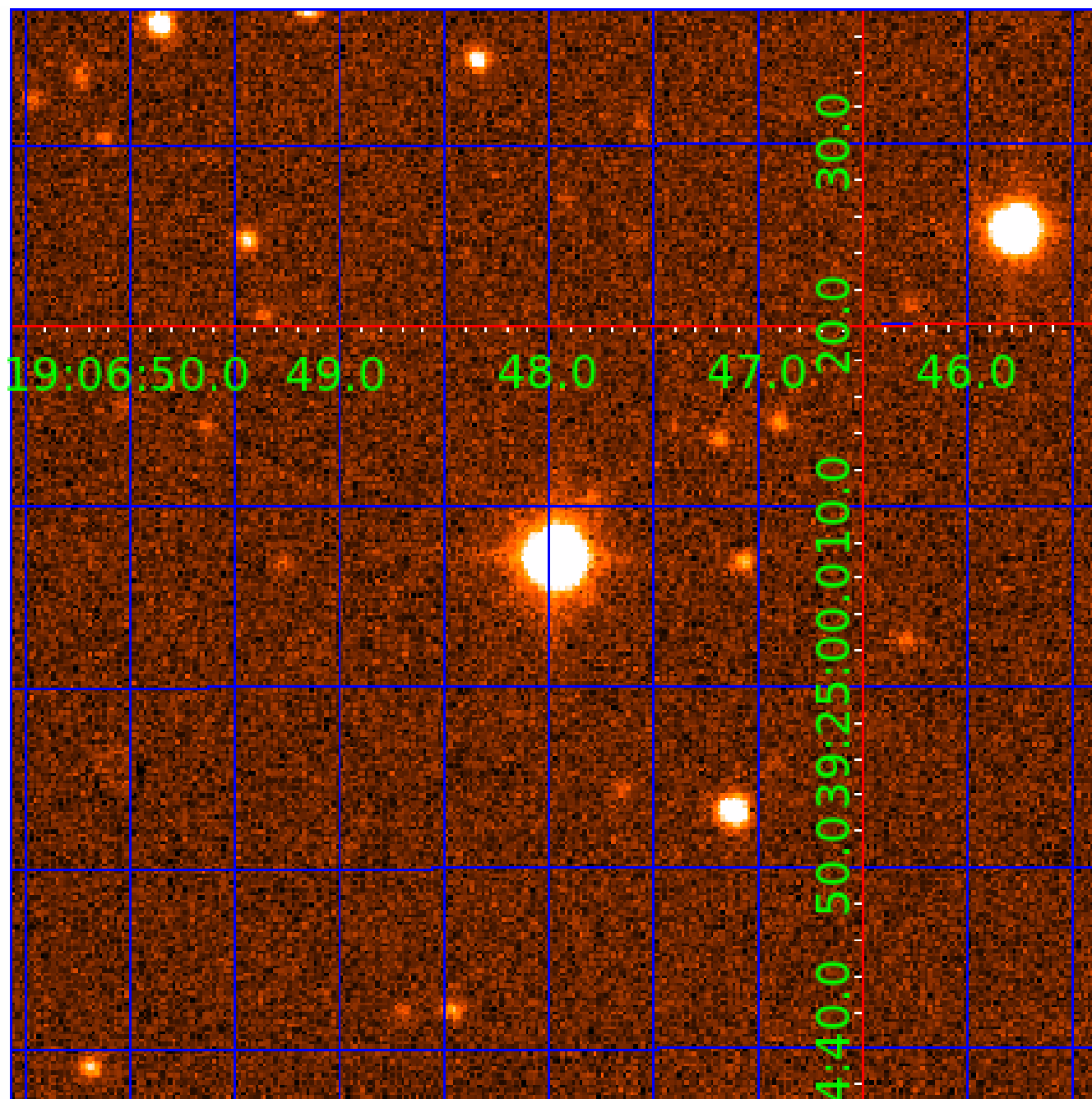


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 004349612

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004349612-01	OBS	No	0.988592	132.071611	459.7	2.000	12.2	-1.0	2.27	6362	4.91	17529.65
004349612-02	OBS	No	0.988599	131.925122	19.0	6.016	9.6	7.4	2.27	6362	1.16	17529.47
004349612-03	OBS	No	65.049920	135.636323	220.8	2.120	8.9	7.9	2.27	6362	3.69	65.99
004349612-04	OBS	No	87.923506	178.404413	424.6	2.482	12.0	10.3	2.27	6362	5.46	44.16
004349612-05	OBS	No	118.747935	212.443912	205.4	4.860	8.3	7.4	2.27	6362	3.59	29.58

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004349612-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_NOFITS
004349612-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
004349612-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004349612-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT
004349612-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

**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.

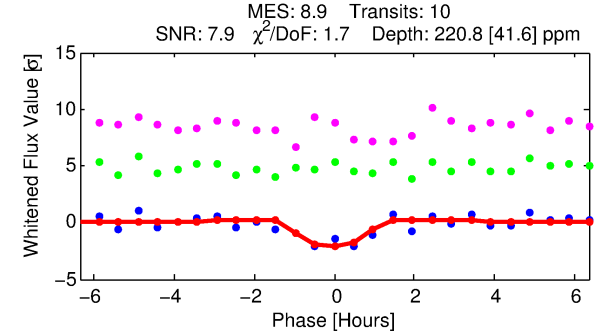
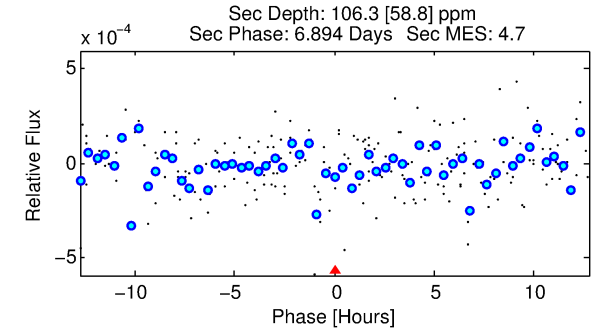
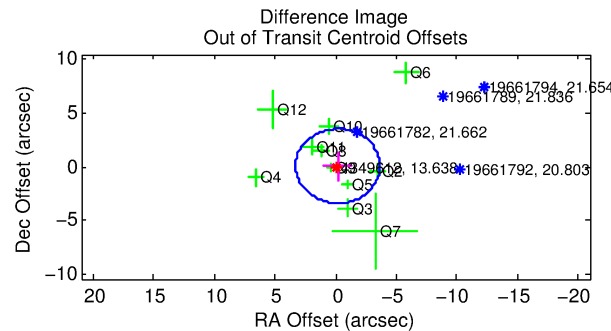
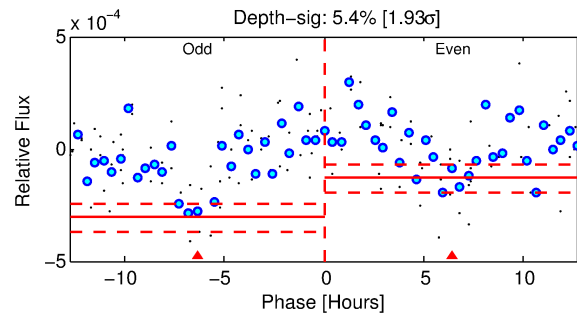
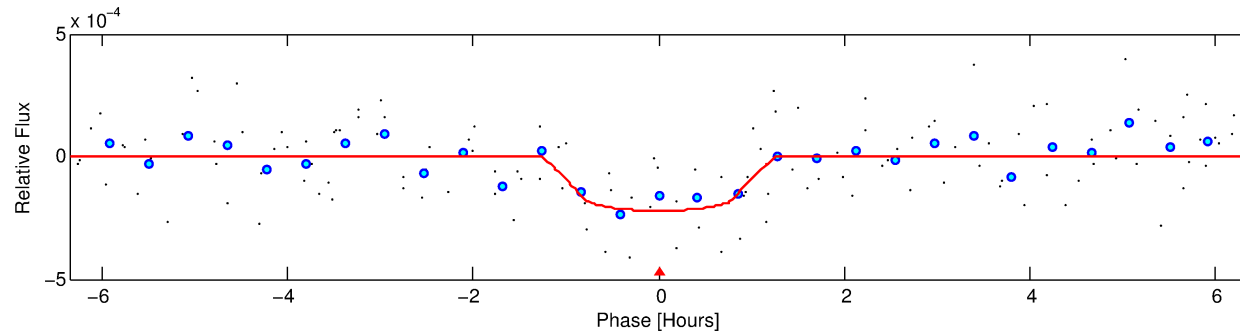
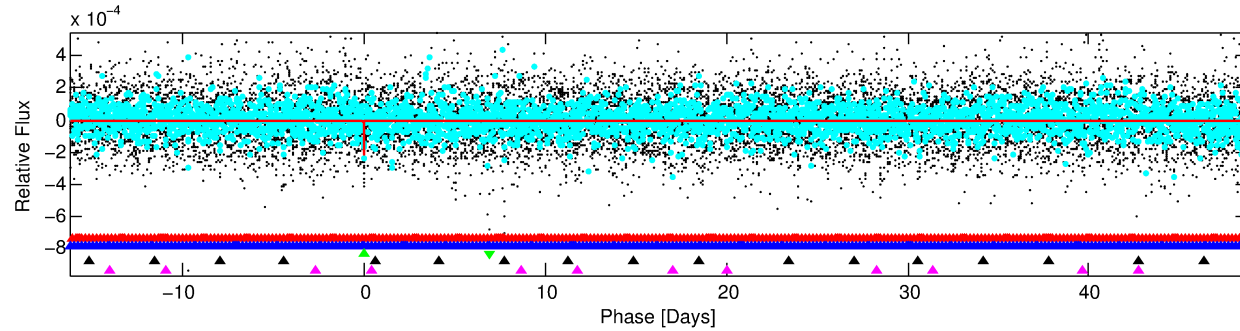
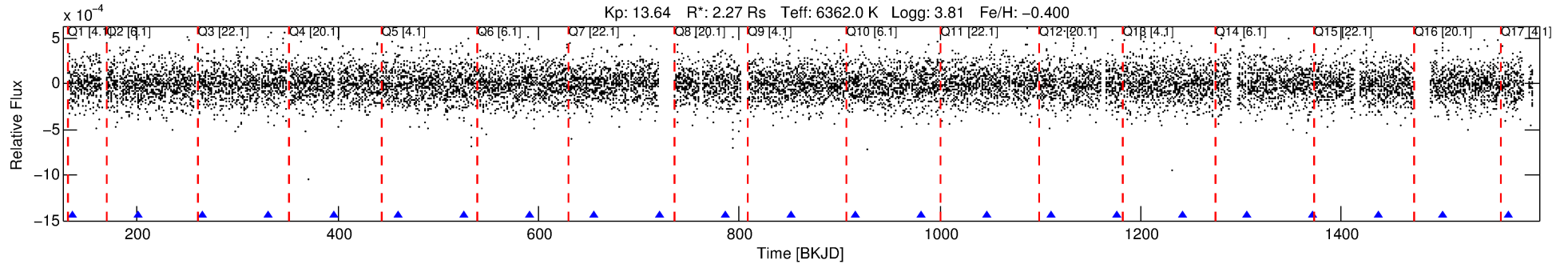
## Ephemeris Match Information For 004349612-03

No Significant Match Found



# DV One-Page Summary

KIC: 4349612 Candidate: 3 of 5 Period: 65.050 d



## DV Fit Results:

Period = 65.04992 [0.00062] d  
Epoch = 135.6363 [0.0087] BKJD  
Rp/R\* = 0.0149 [0.0168]  
a/R\* = 157.49 [984.82]  
b = 0.76 [3.49]  
Seff = 65.99 [59.16]  
Teq = 727 [163] K  
Rp = 3.69 [4.55] Re  
a = 0.3391 [0.1787] AU  
Ag = 494.88 [1233.84] [0.40 $\sigma$ ]  
Teffp = 5300 [3094] K [1.48 $\sigma$ ]

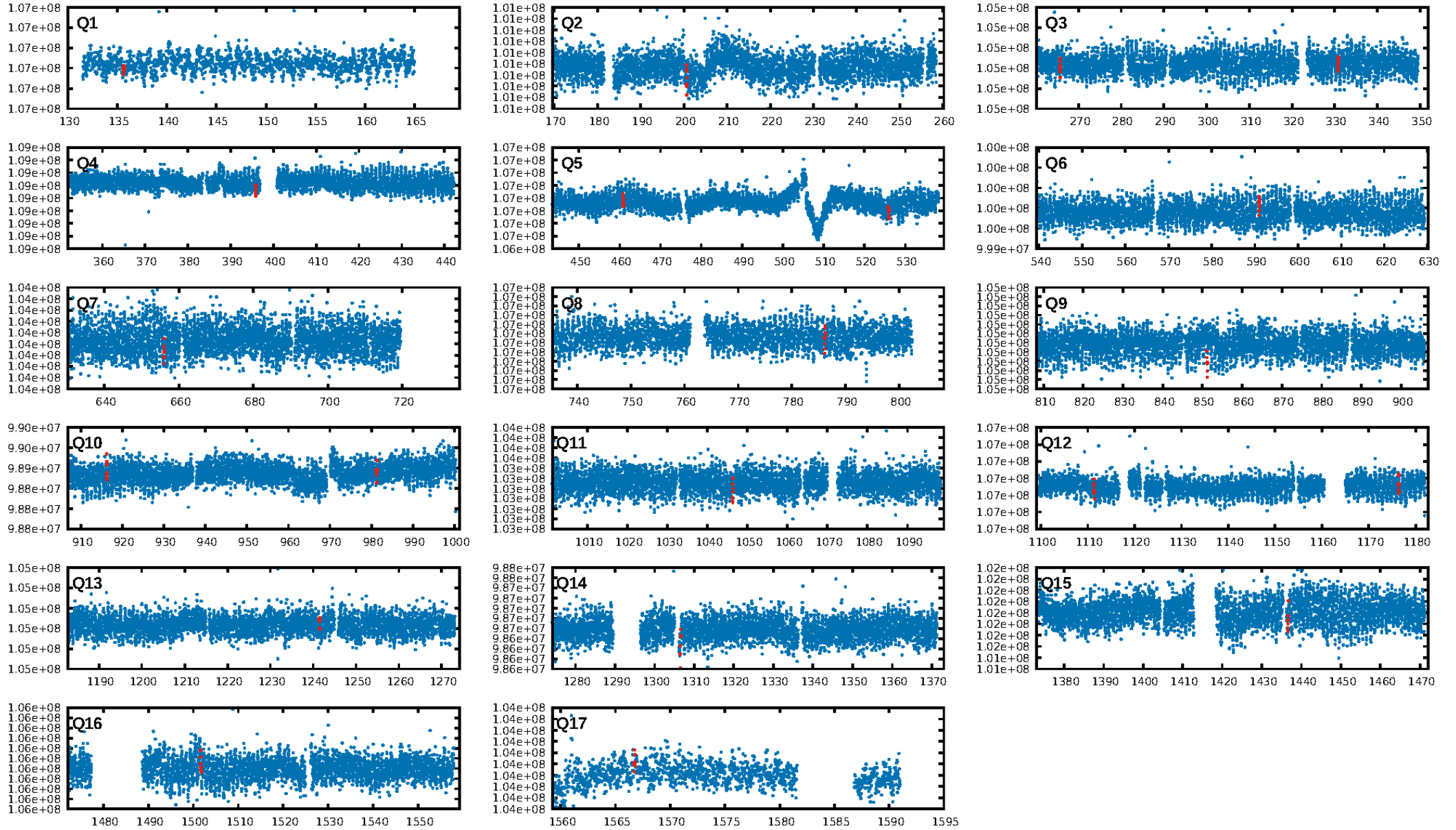
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [241.02 $\sigma$ ]  
LongPeriod-sig: 100.0% [168.19 $\sigma$ ]  
ModelChiSquare2-sig: 0.8%  
ModelChiSquareGof-sig: 89.0%  
**Bootstrap-pfa: 8.61e-10**  
RollingBand-fgt: 1.00 [9/9]  
GhostDiagnostic-chr: -6.53  
Centroid-sig: 61.7%  
Centroid-so: 0.760 arcsec [0.64 $\sigma$ ]  
OotOffset-rm: 0.173 arcsec [0.15 $\sigma$ ]  
KicOffset-rm: 0.132 arcsec [0.11 $\sigma$ ]  
OotOffset-st: 3/3/3/2 [11]  
KicOffset-st: 3/3/3/2 [11]  
DiffImageQuality-fgm: 0.27 [3/11]  
DiffImageOverlap-fno: 0.36 [5/14]

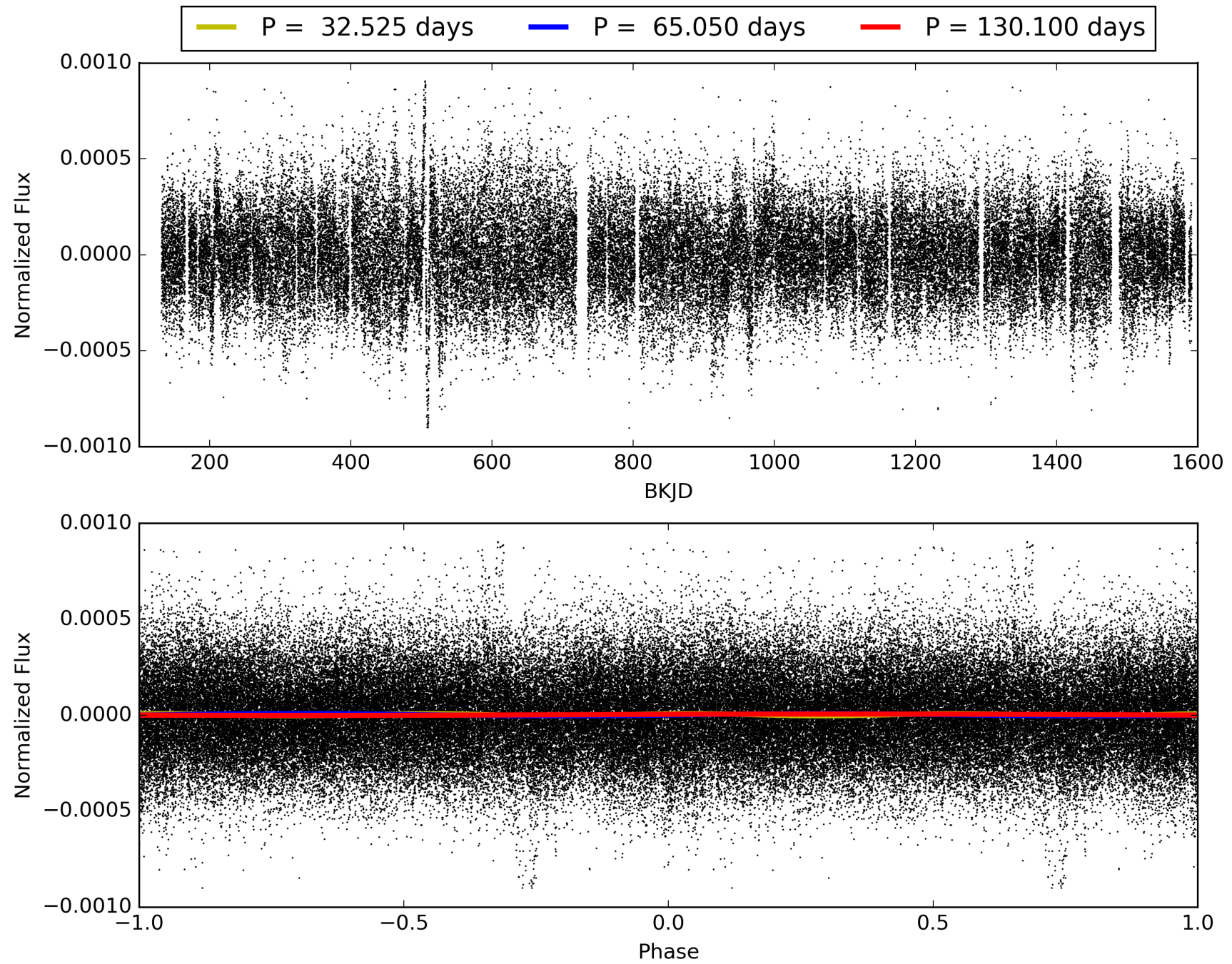
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 22:51:41 Z

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

# TCE 004349612-03, PDC Light Curves

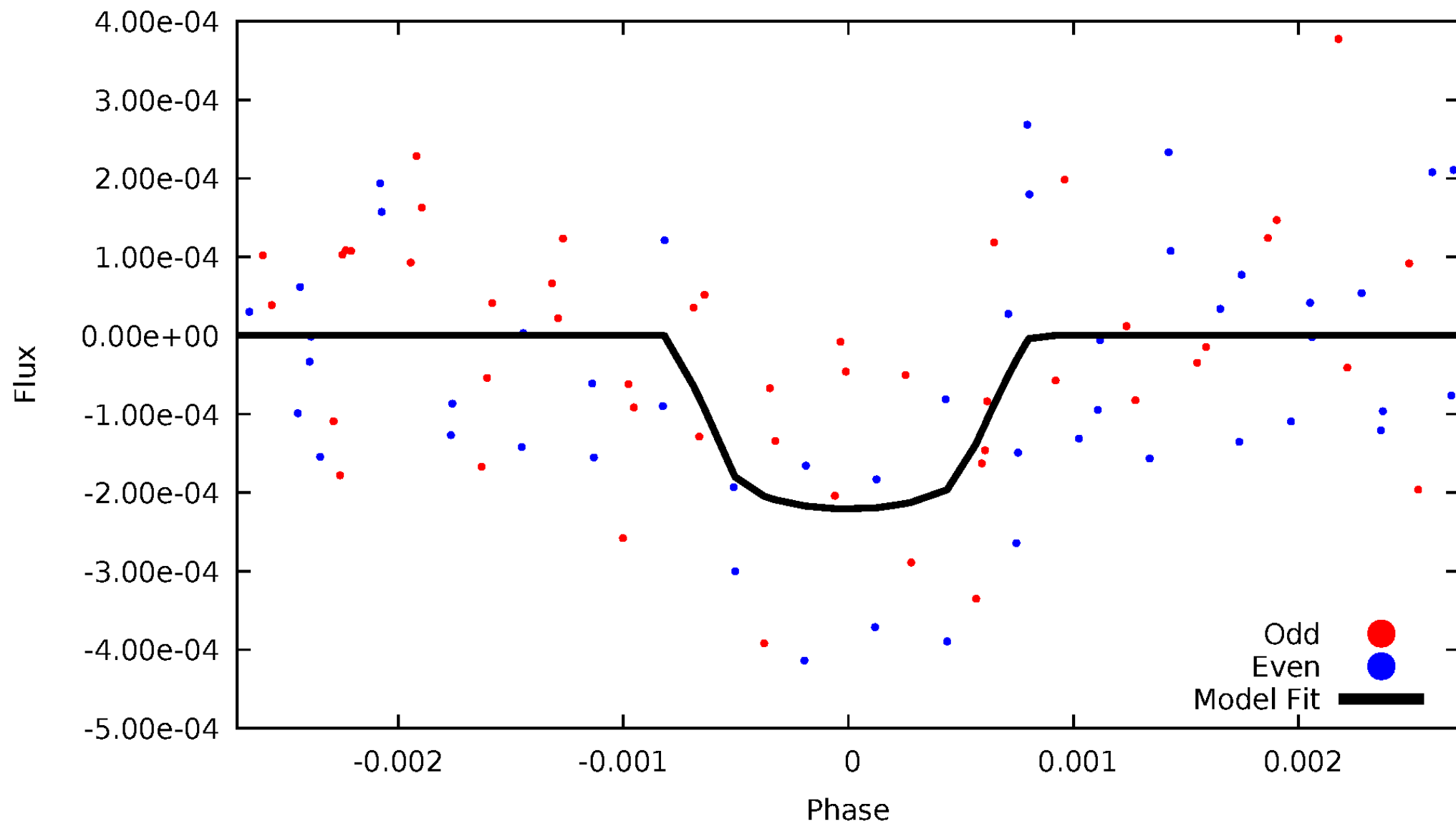


TCE 004349612-03



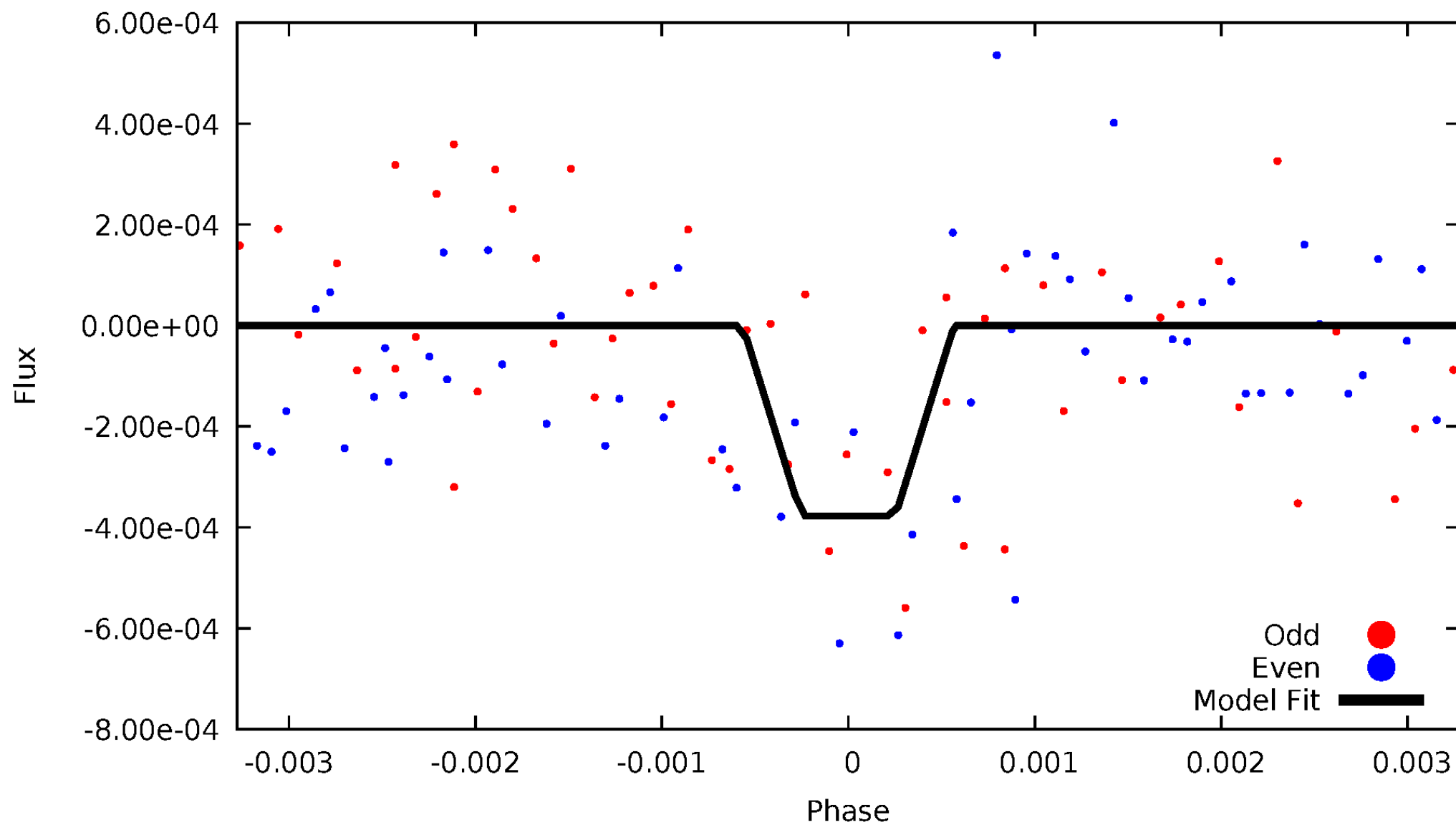
# DV Odd/Even

TCE 004349612-03



# ALT Odd/Even

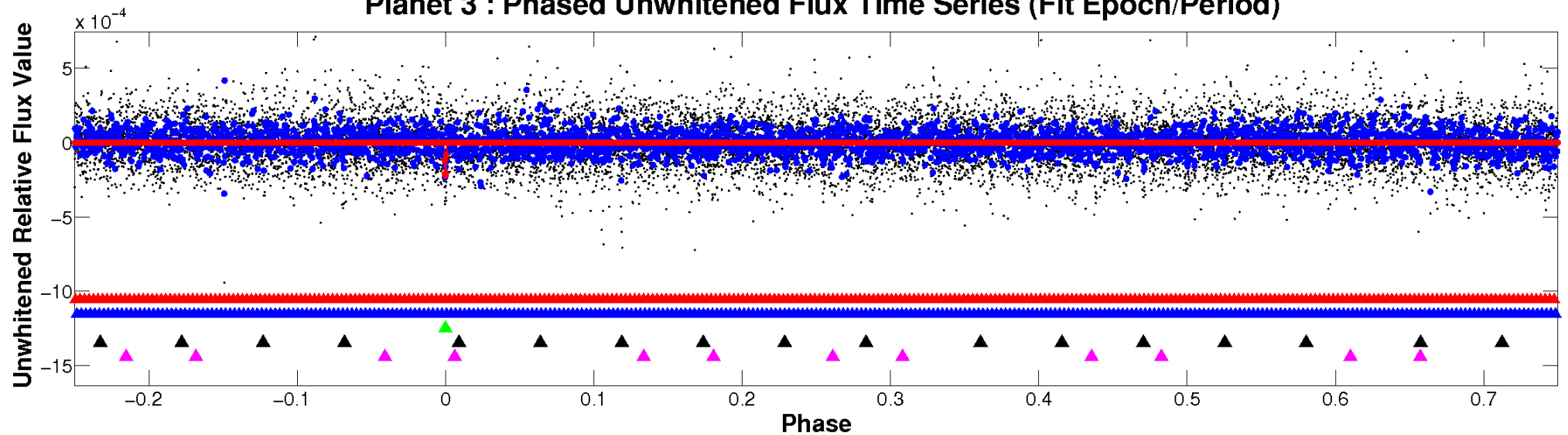
TCE 004349612-03



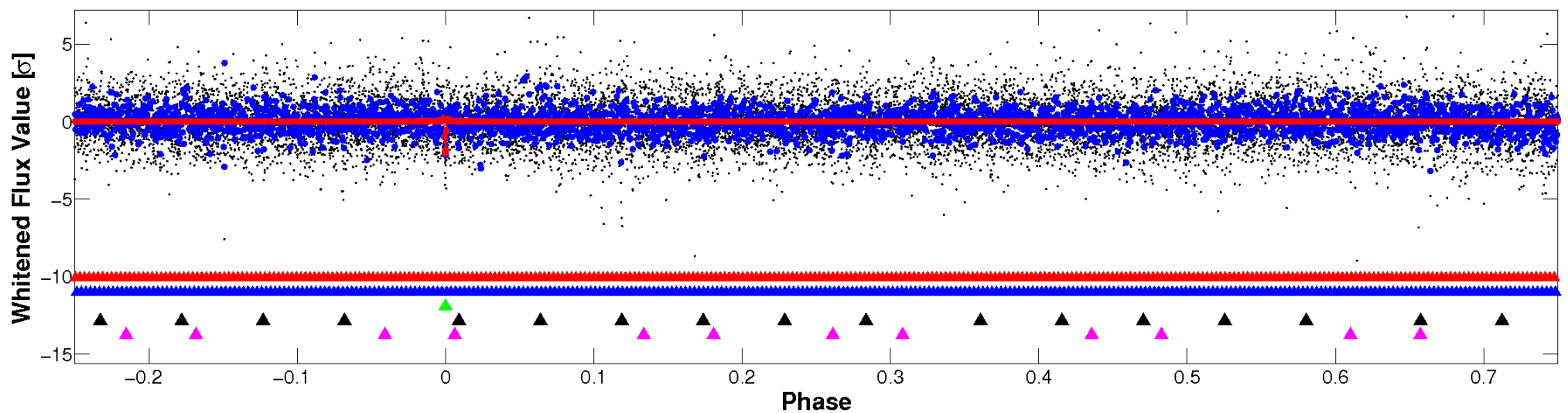


# Non-Whitened Vs. Whitened Light Curve

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

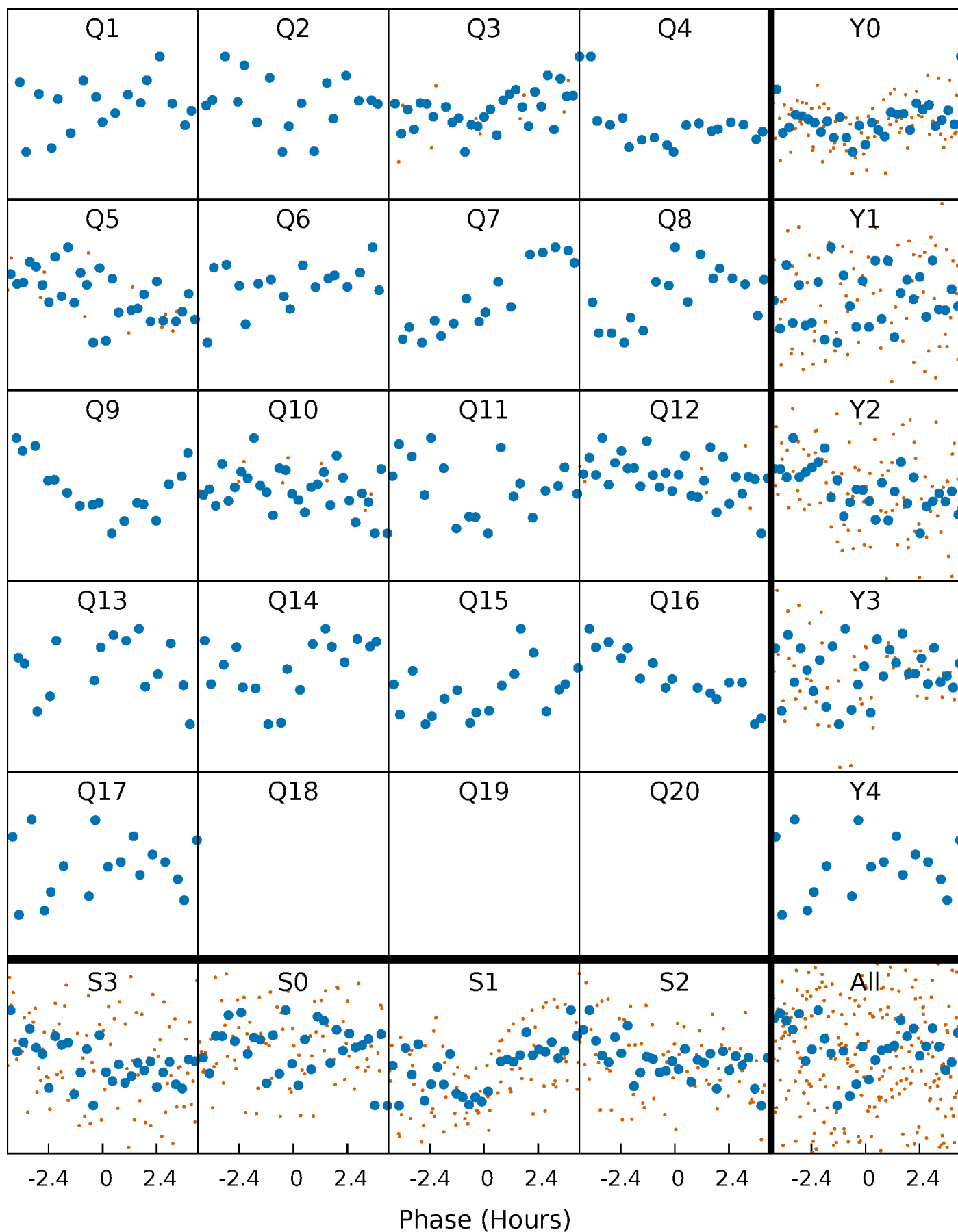


## Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



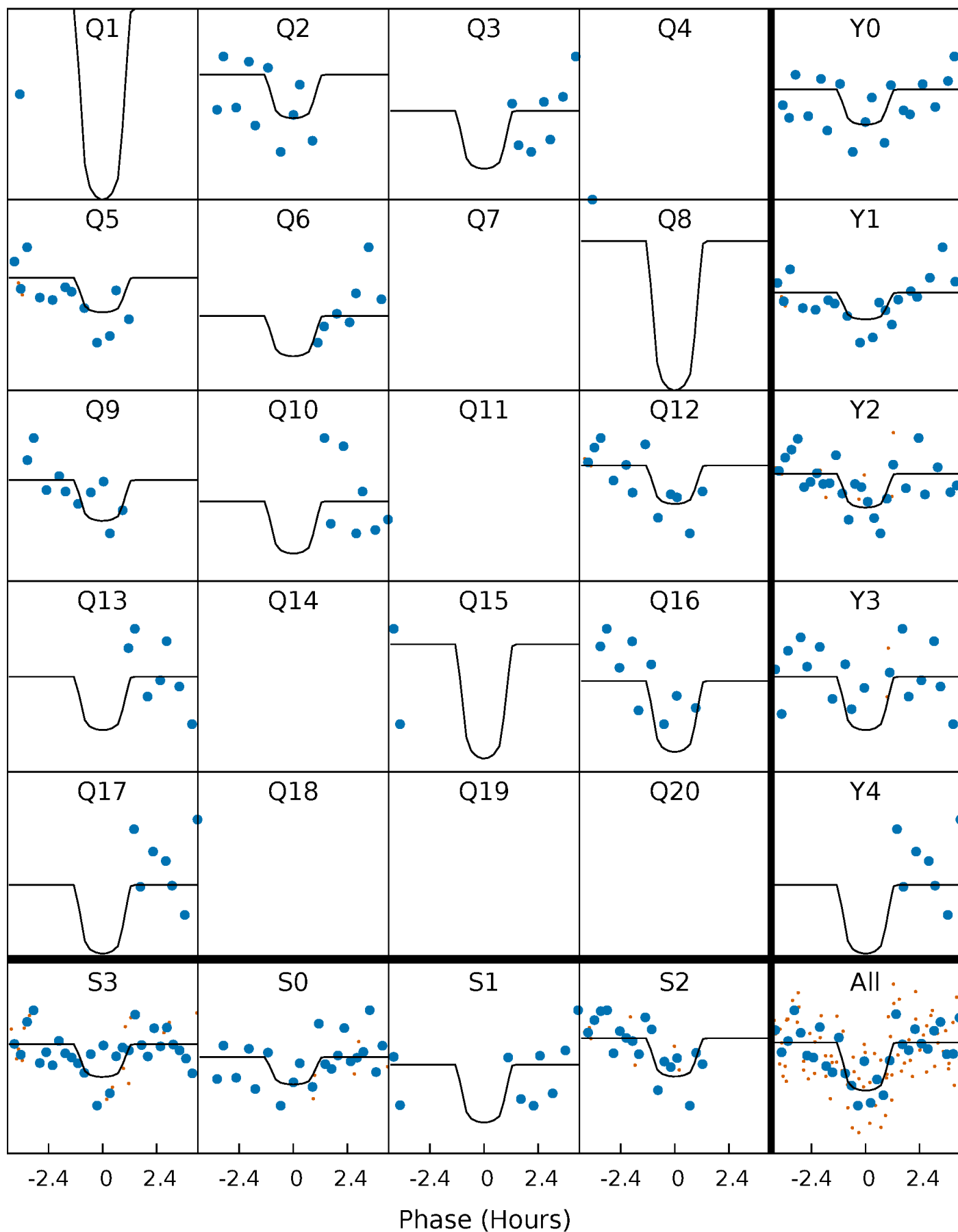
# PDC Quarter-Phased Transit Curves

TCE 004349612-03   P= 65.049920 Days    $T_0=135.636323$  (BKJD)



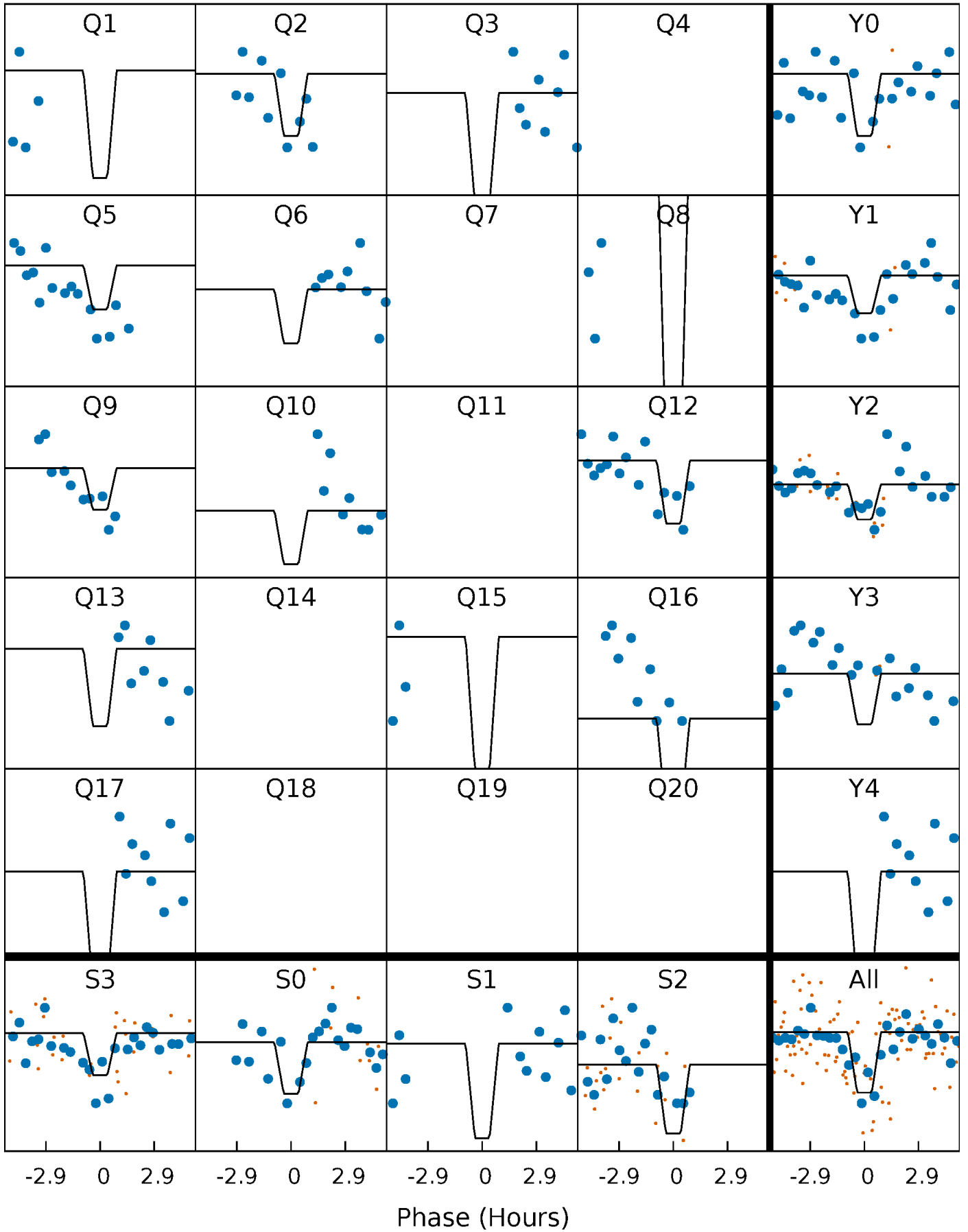
# DV Quarter-Phased Transit Curves

TCE 004349612-03     $P = 65.049920$  Days     $T_0 = 135.636323$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

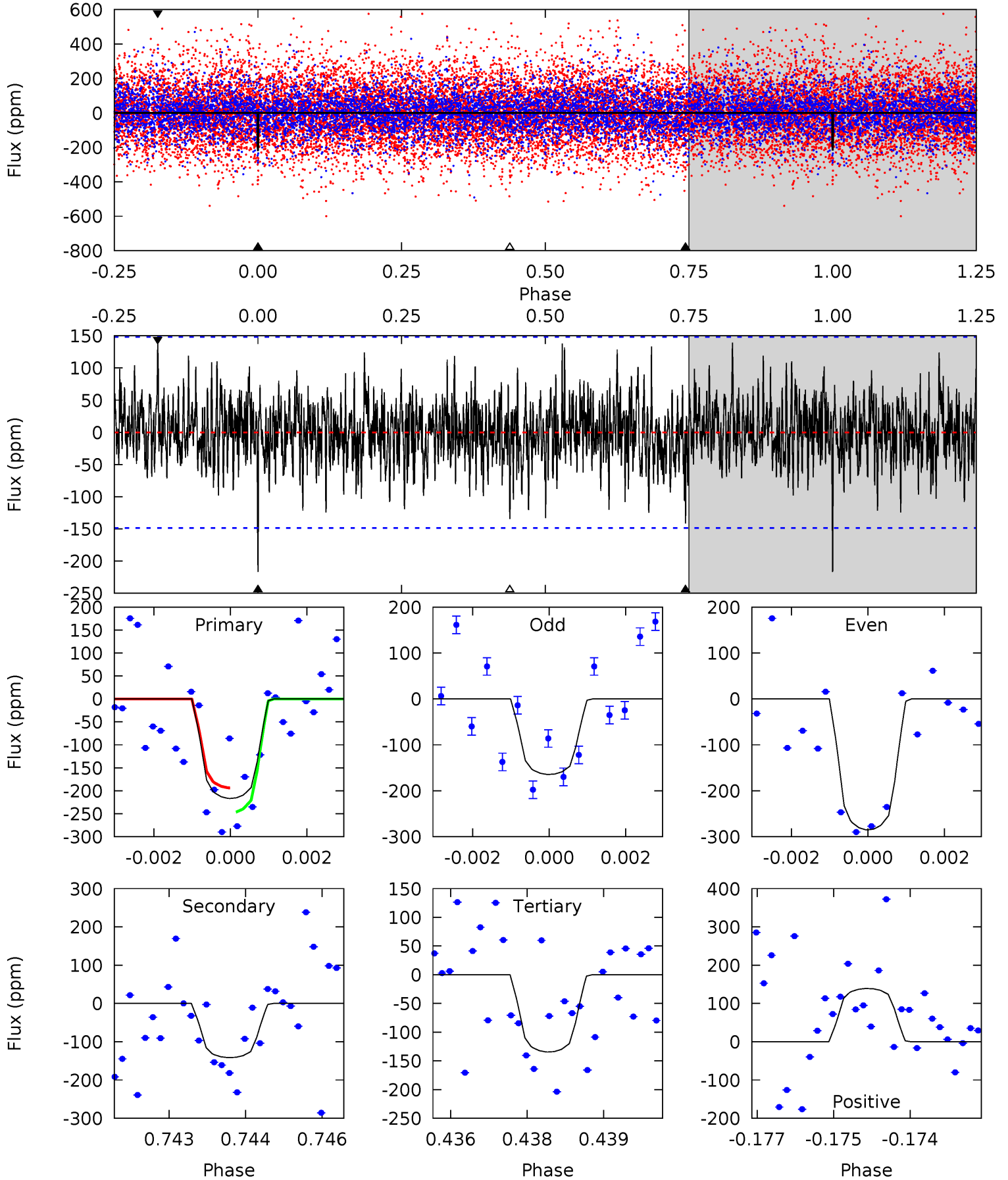
TCE 004349612-03 P= 65.051515 Days  $T_0=135.617112$  (BKJD)



# DV Model-Shift Uniqueness Test

004349612-03, P = 65.049920 Days, E = 70.586403 Days

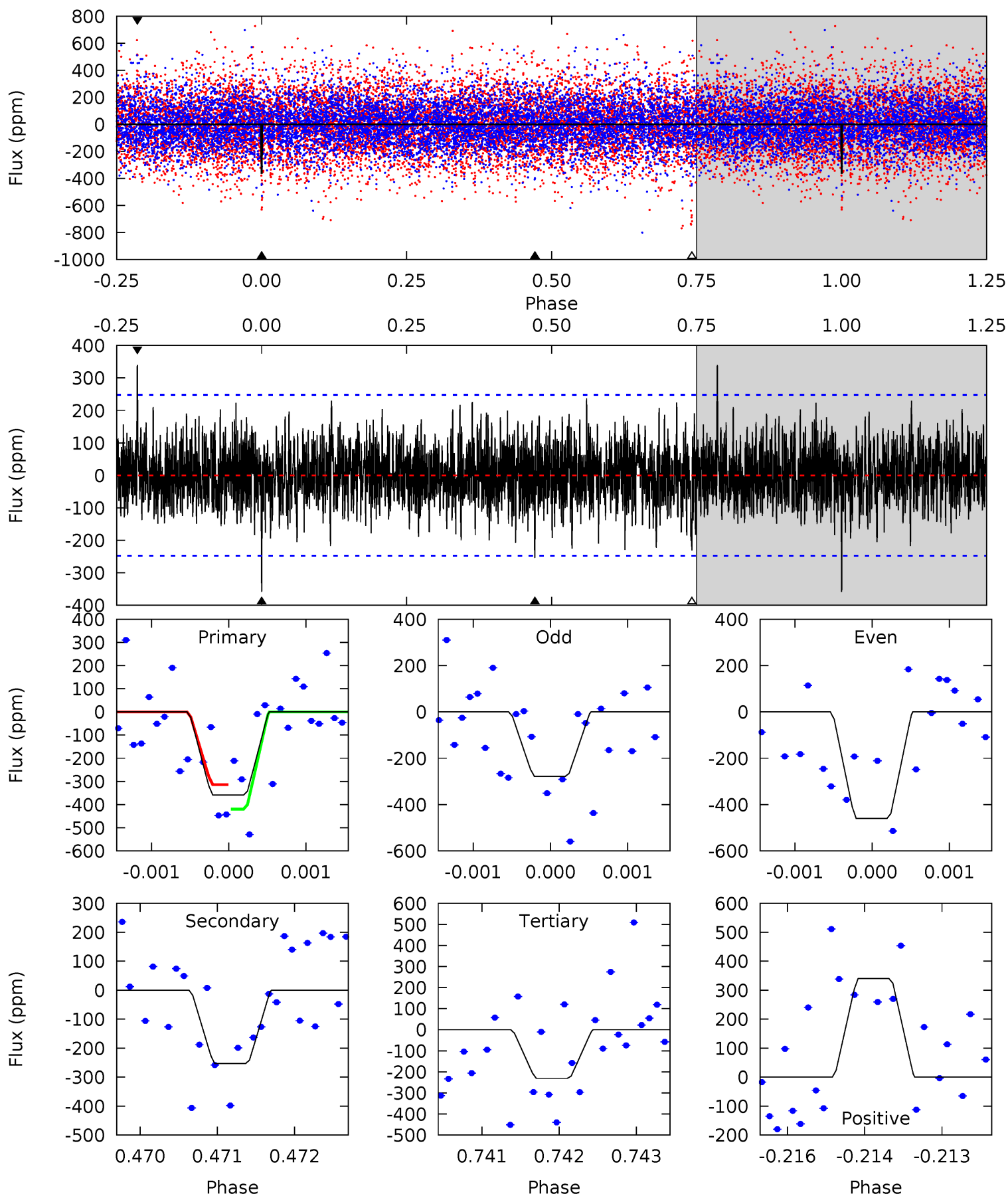
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.83	5.11	4.86	5.03	5.36	3.15	1.46	2.97	2.80	0.25	0.09	2.16	0.86	0.39	0.95



# Alt Model-Shift Uniqueness Test

004349612-03, P = 65.051515 Days, E = 70.565597 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
7.85	5.54	5.06	7.44	5.43	3.26	1.72	2.79	0.41	0.48	-1.90	1.91	0.96	0.49	1.16





### Stellar Parameters For KIC 004349612

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6362^{+204}_{-227}$	$3.814^{+0.535}_{-0.126}$	$-0.400^{+0.300}_{-0.300}$	$2.274^{+0.483}_{-1.126}$	$1.229^{+0.182}_{-0.273}$	$0.147^{+0.821}_{-0.056}$
	+3%/-4%	+14%/-3%	+75%/-75%	+21%/-50%	+15%/-22%	+558%/-38%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 004349612-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-142 \pm 28$	$4.07^{+4.19}_{-2.61}$	$992^{+80}_{-132}$	$5068^{+3537}_{-1038}$	$548^{+3403}_{-416}$
Alt.	$-253 \pm 46$	$4.90^{+4.11}_{-3.11}$	$980^{+86}_{-128}$	$5419^{+3495}_{-1097}$	$669^{+3798}_{-471}$

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

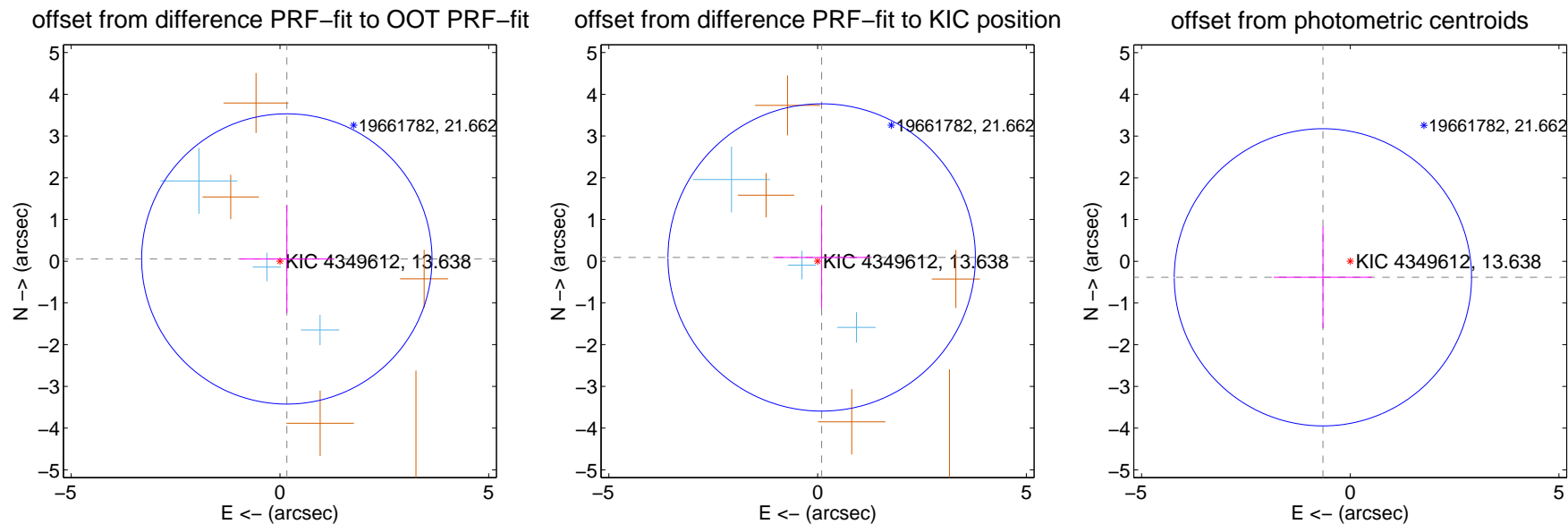
## DV Centroid Data

Supplemental centroid analysis for 004349612-03. Kepler magnitude: 13.64. Transit SNR 7.89

There are 3 quarters with good PRF difference image offsets

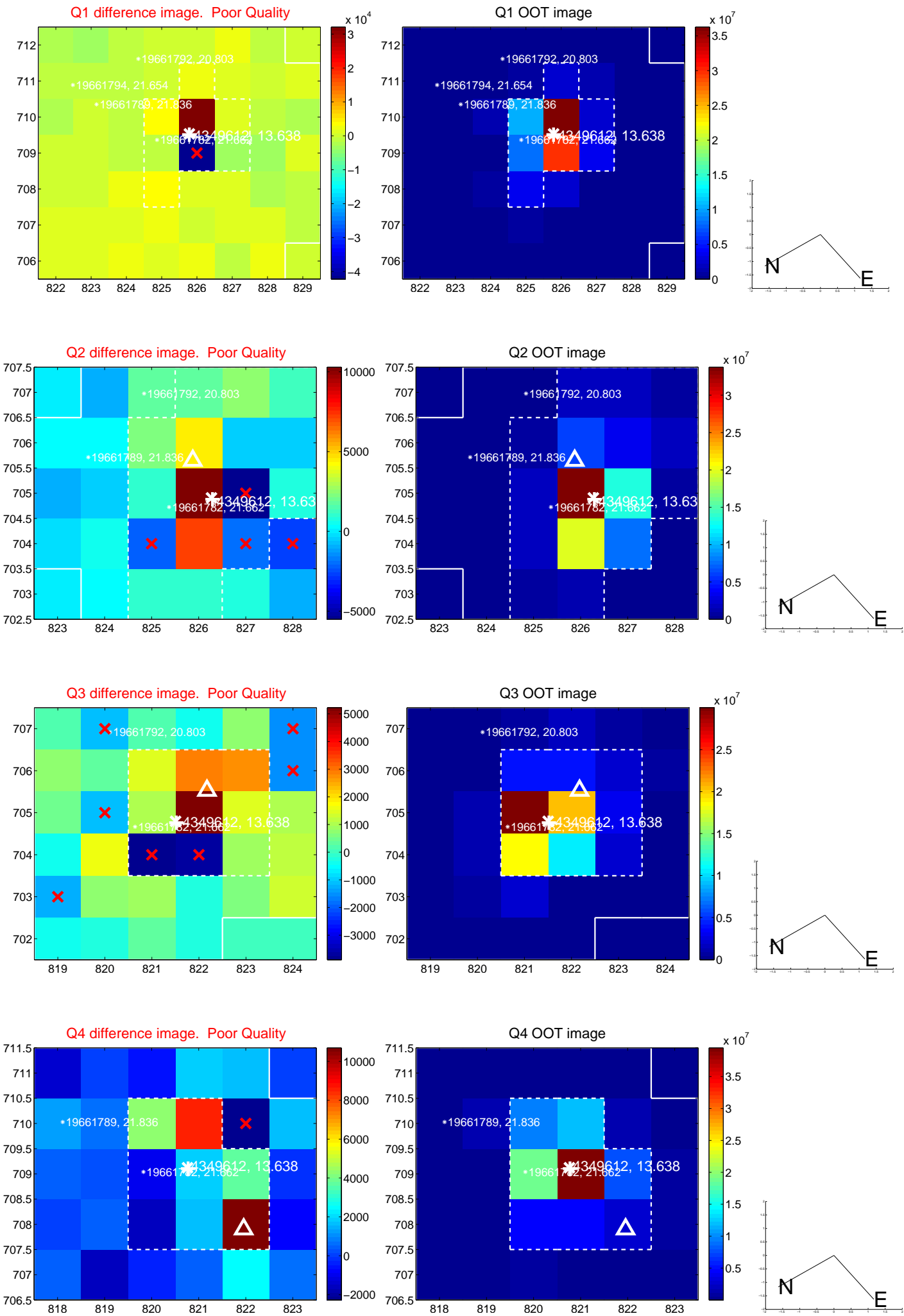
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.173 \pm 1.159$	0.15	$-0.165 \pm 1.127$	$0.054 \pm 1.286$
PRF-fit source offset from KIC position	$0.132 \pm 1.227$	0.11	$-0.098 \pm 1.161$	$0.090 \pm 1.219$
photometric centroid source offset	$0.76 \pm 1.19$	0.64	$0.66 \pm 1.18$	$-0.38 \pm 1.22$

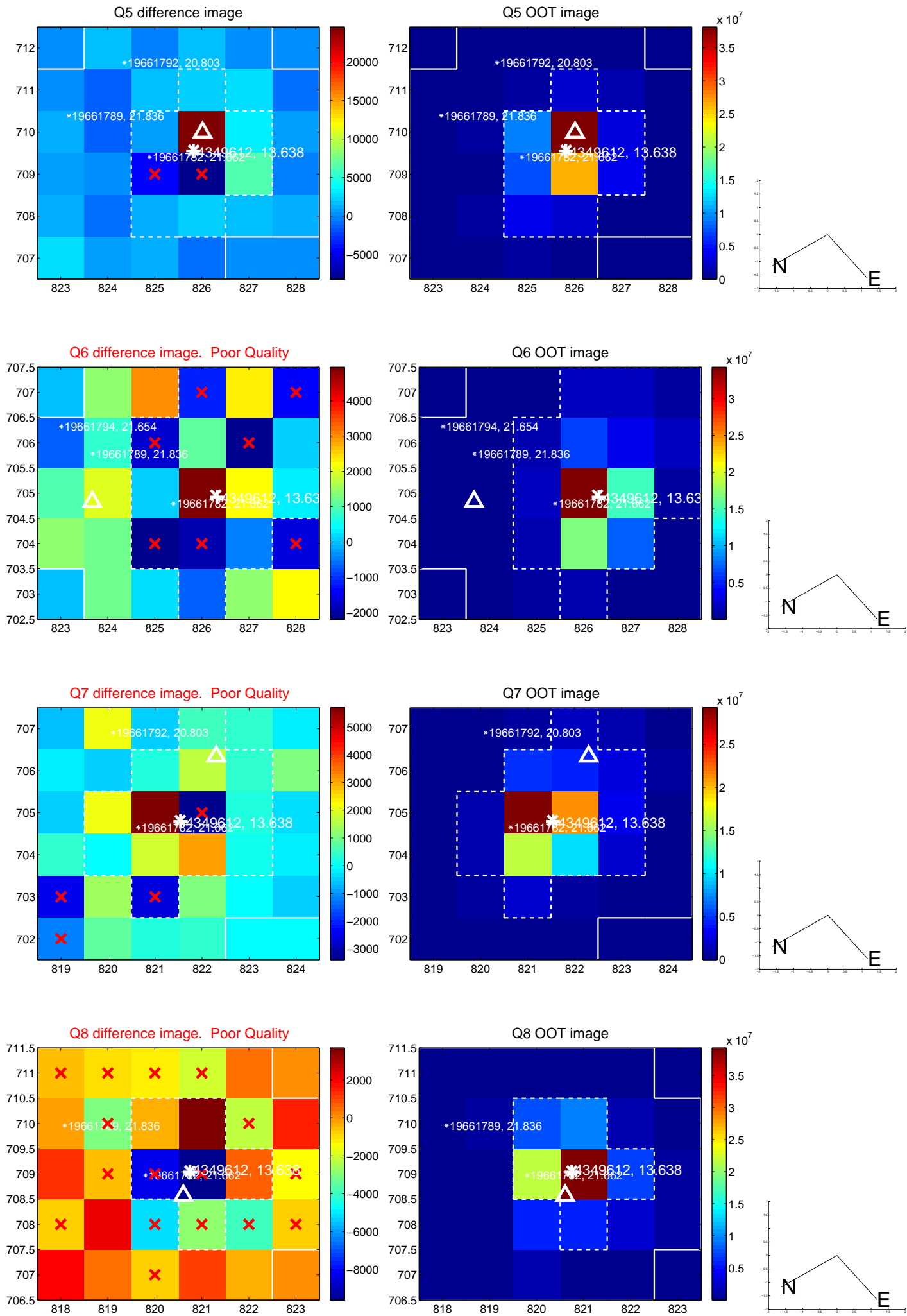


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

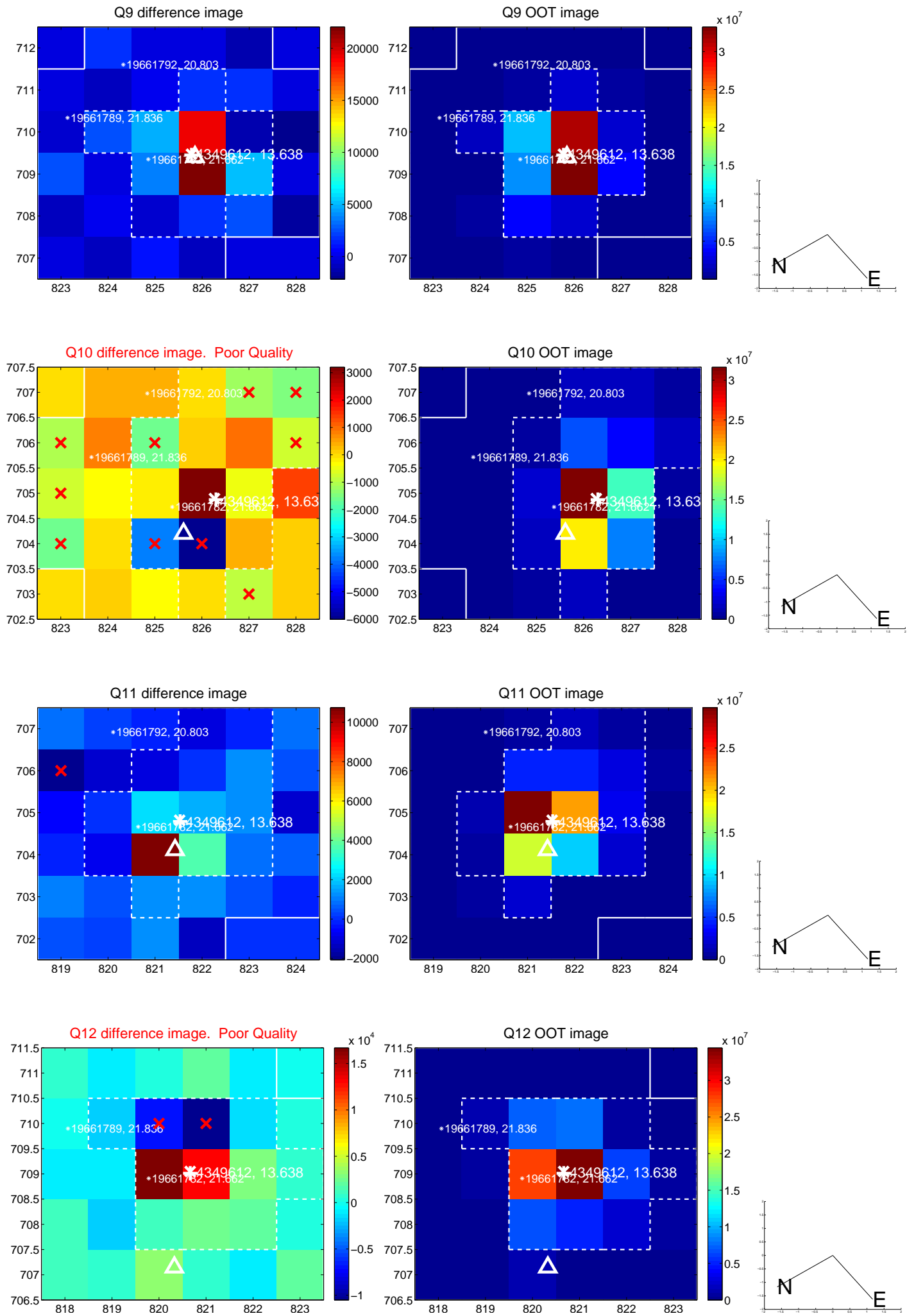
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



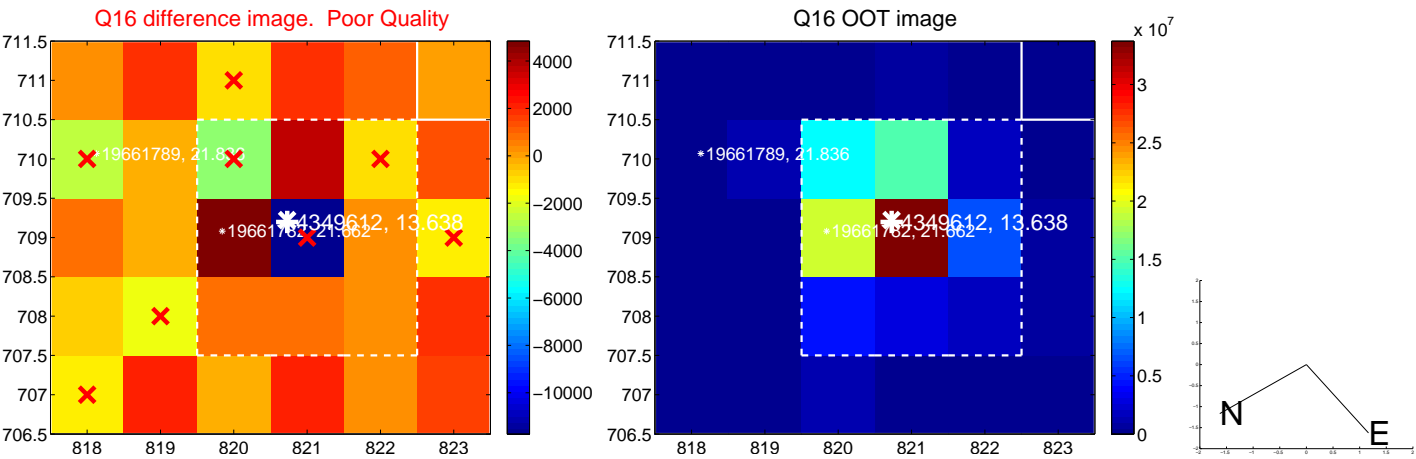
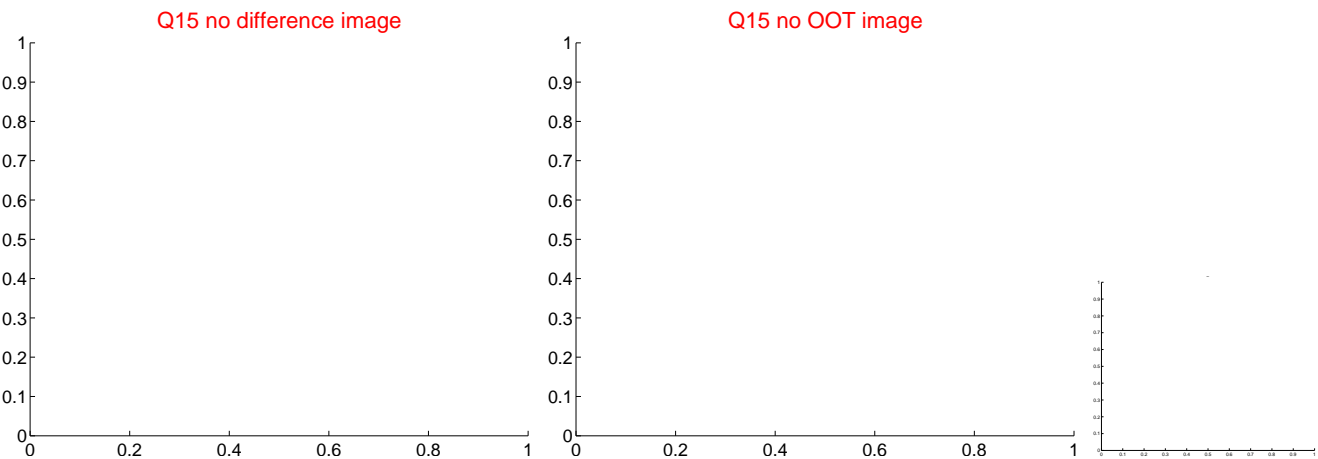
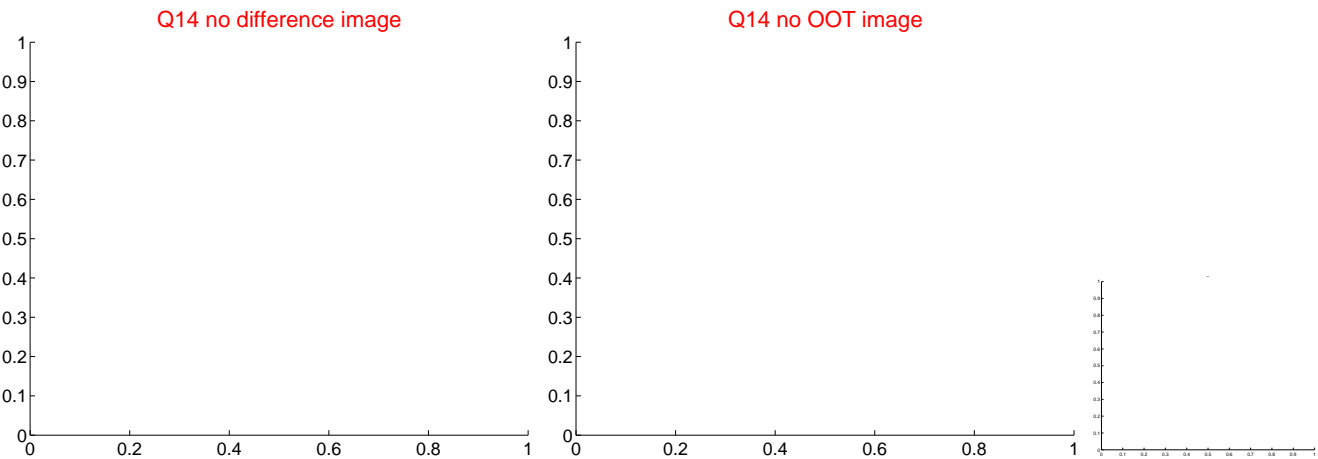
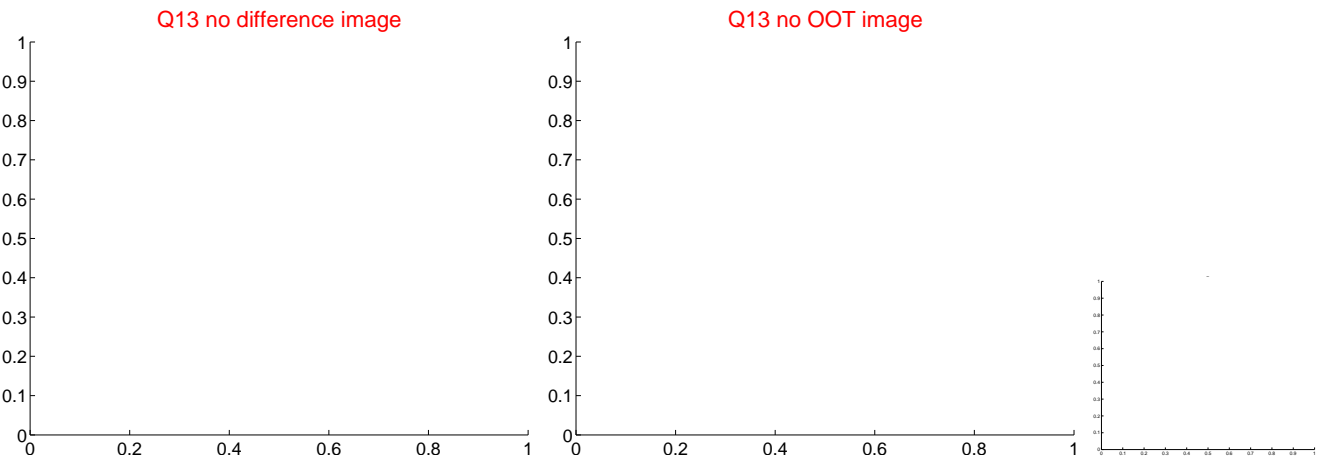
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

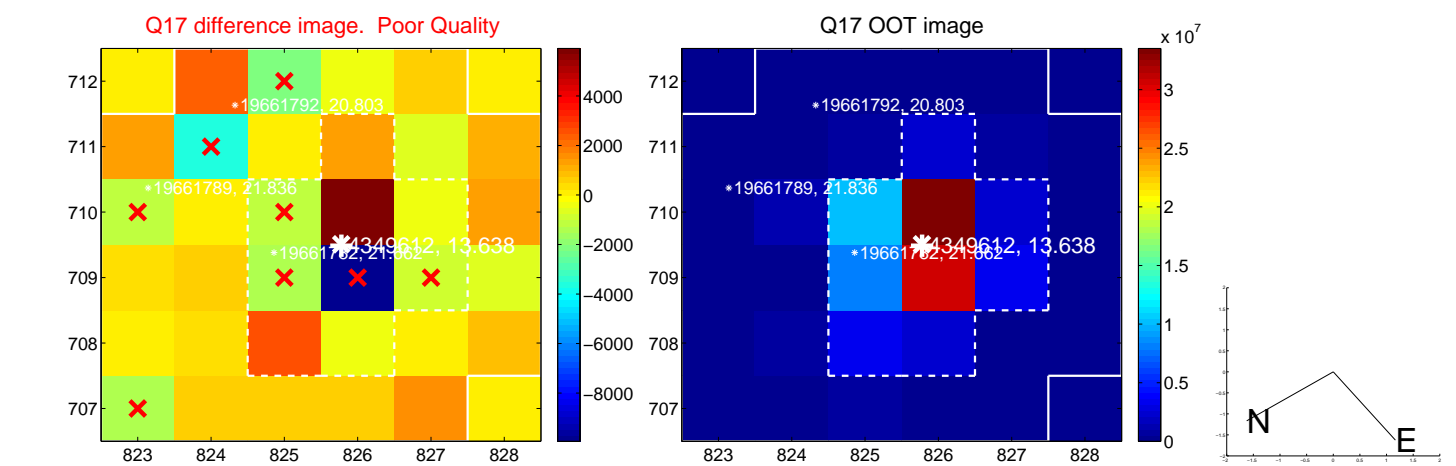


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

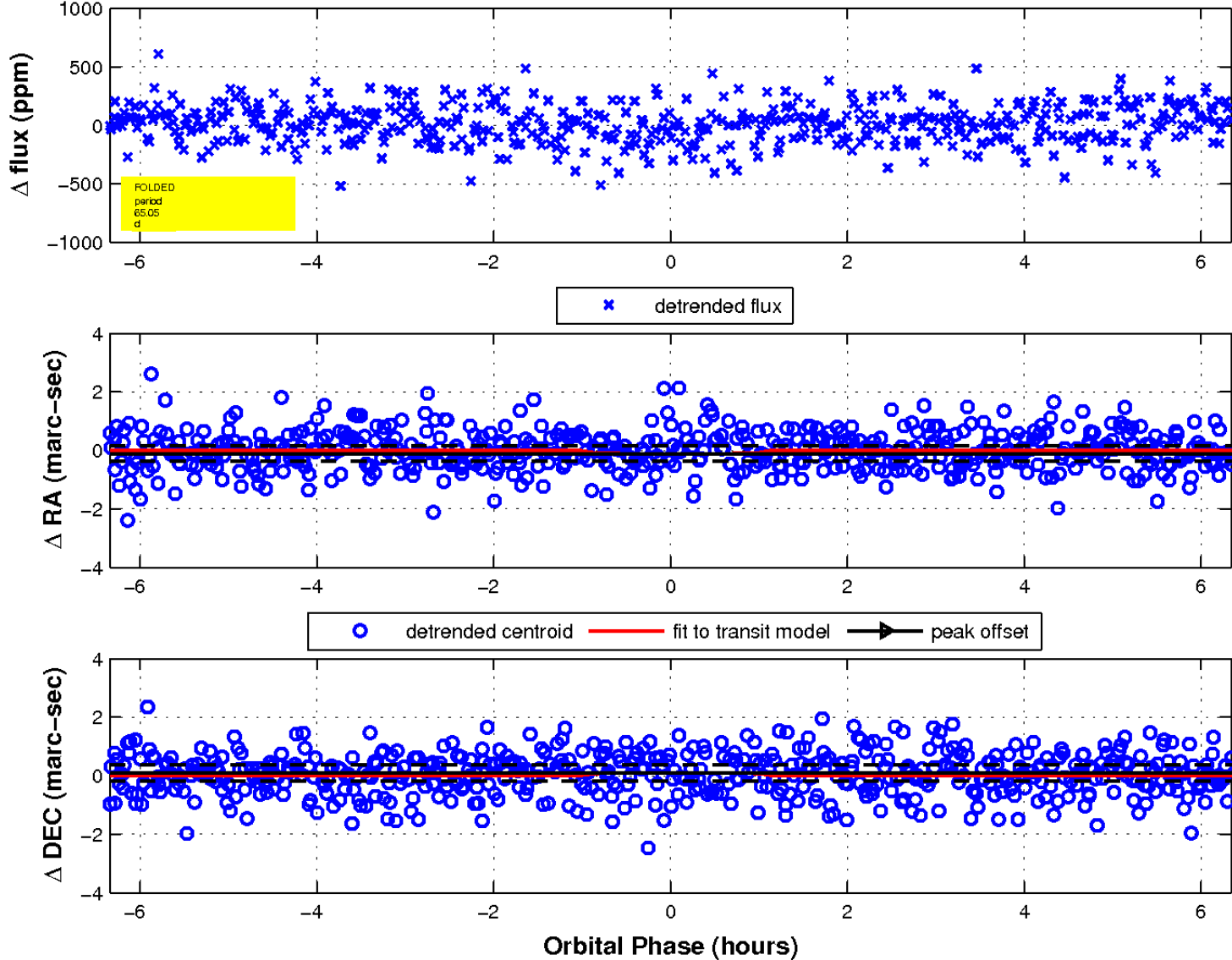




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

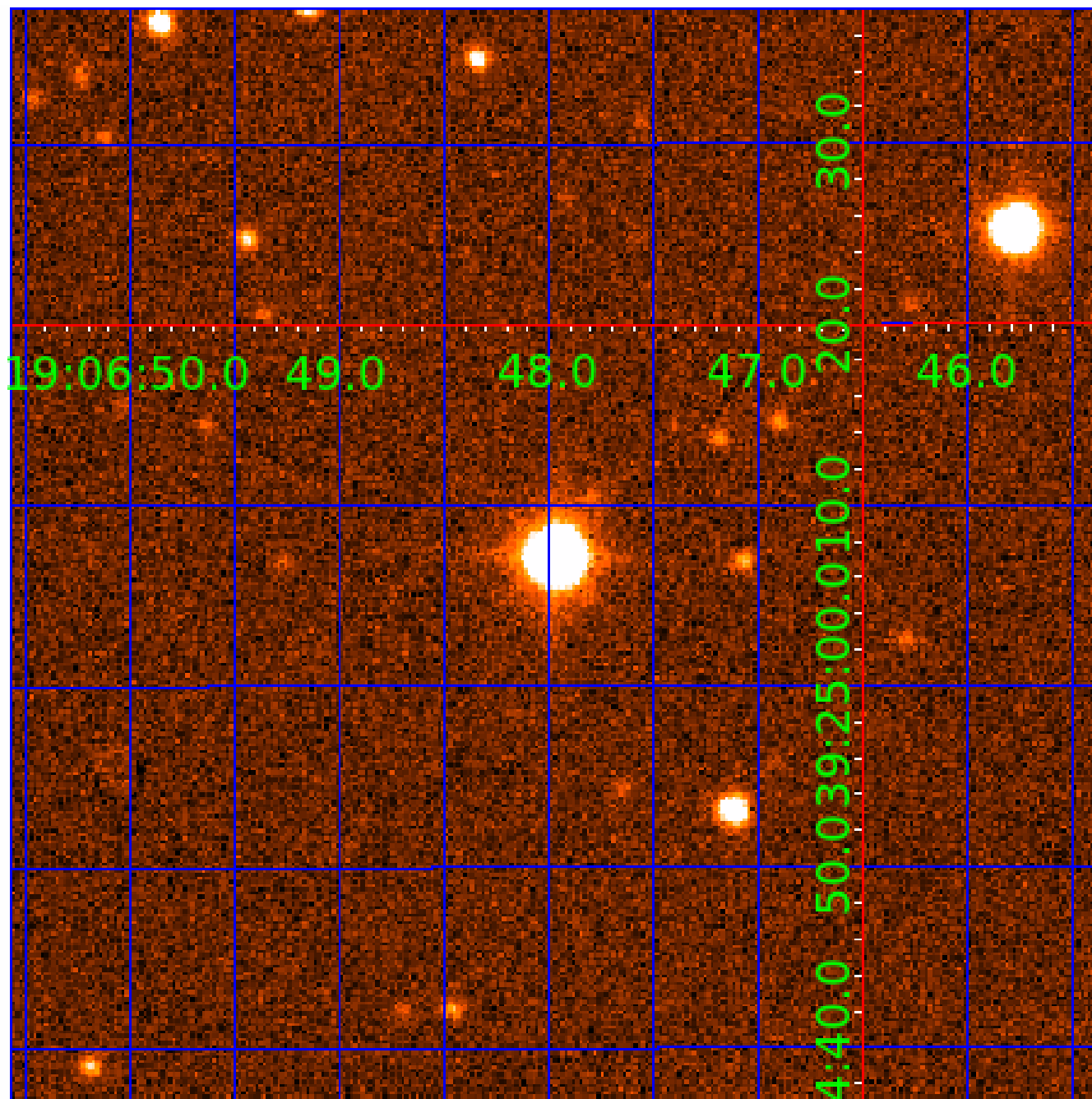


fluxWeightedCentroids, Planet 3 of 5



UKIRT Image

Declination



# KIC 004349612

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004349612-01	OBS	No	0.988592	132.071611	459.7	2.000	12.2	-1.0	2.27	6362	4.91	17529.65
004349612-02	OBS	No	0.988599	131.925122	19.0	6.016	9.6	7.4	2.27	6362	1.16	17529.47
004349612-03	OBS	No	65.049920	135.636323	220.8	2.120	8.9	7.9	2.27	6362	3.69	65.99
004349612-04	OBS	No	87.923506	178.404413	424.6	2.482	12.0	10.3	2.27	6362	5.46	44.16
004349612-05	OBS	No	118.747935	212.443912	205.4	4.860	8.3	7.4	2.27	6362	3.59	29.58

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004349612-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_NOFITS
004349612-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
004349612-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004349612-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT
004349612-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS

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

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

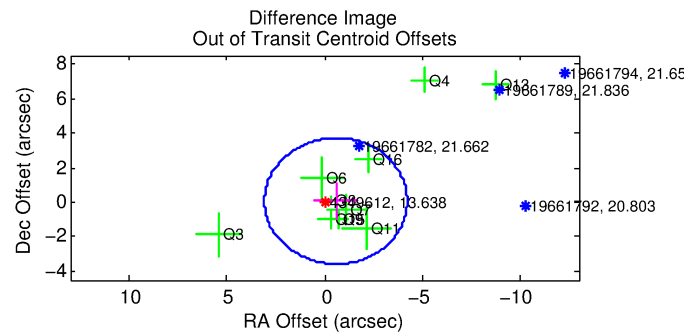
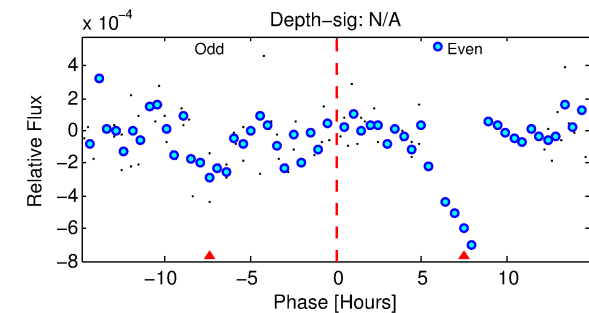
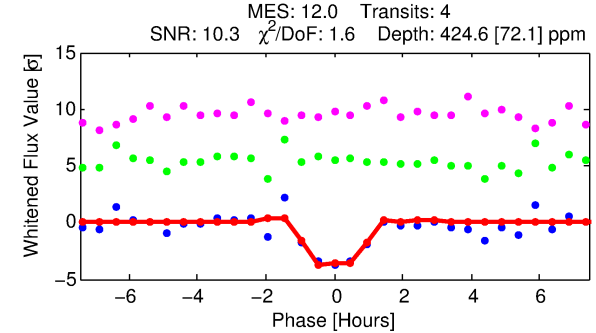
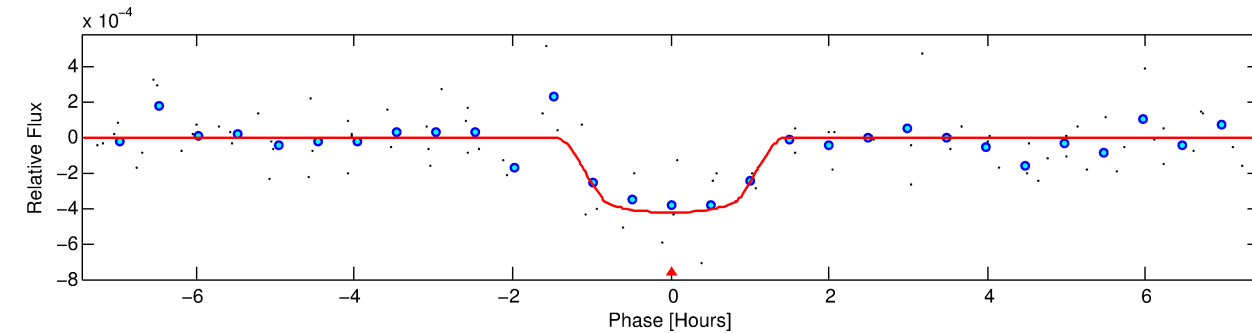
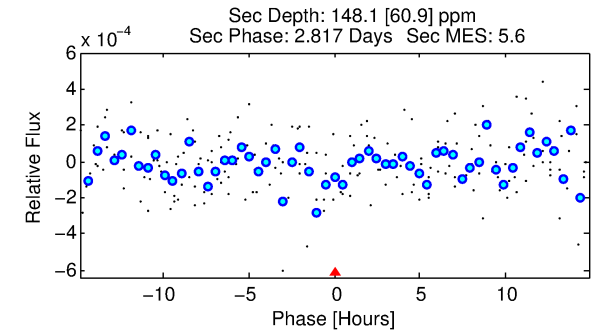
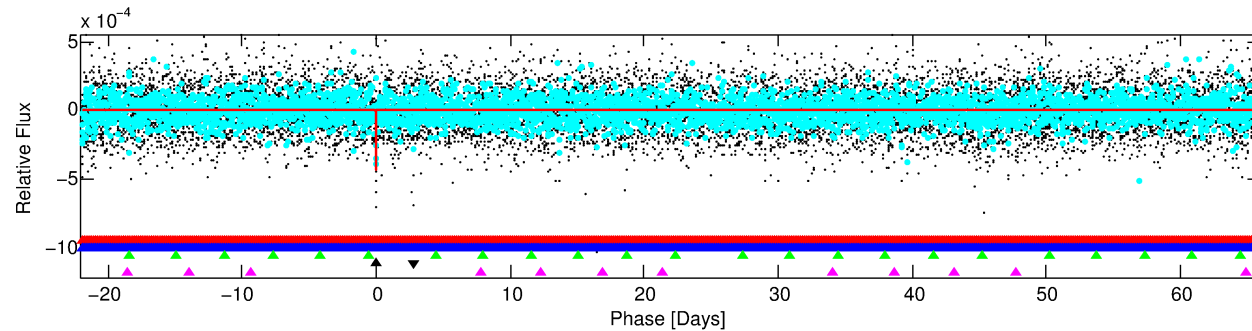
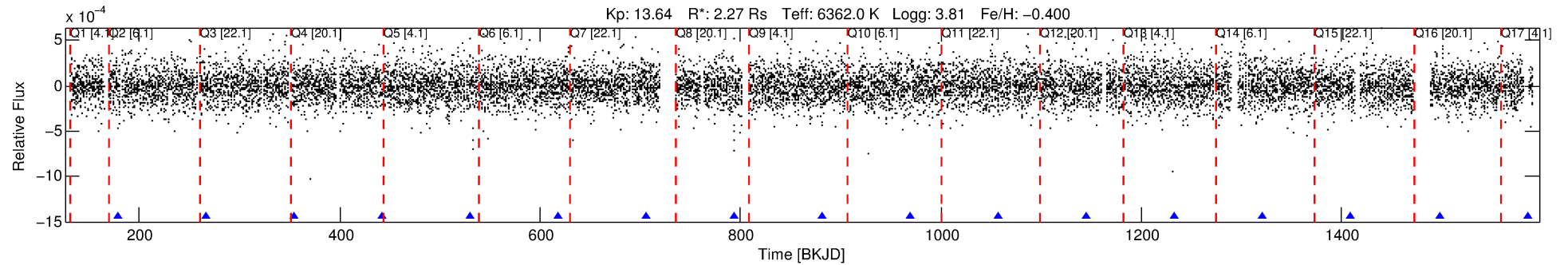
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004349612-04

No Significant Match Found

# DV One-Page Summary

KIC: 4349612 Candidate: 4 of 5 Period: 87.924 d



## DV Fit Results:

Period = 87.92351 [0.00517] d  
Epoch = 178.4044 [0.0417] BKJD  
Rp/R\* = 0.0220 [0.0296]  
a/R\* = 134.34 [1022.28]  
b = 0.89 [1.74]  
Seff = 44.16 [39.59]  
Teq = 657 [147] K  
Rp = 5.46 [7.83] Re  
a = 0.4146 [0.2184] AU  
Ag = 470.72 [1348.82] [0.35σ]  
Teffp = 4734 [3230] K [1.26σ]

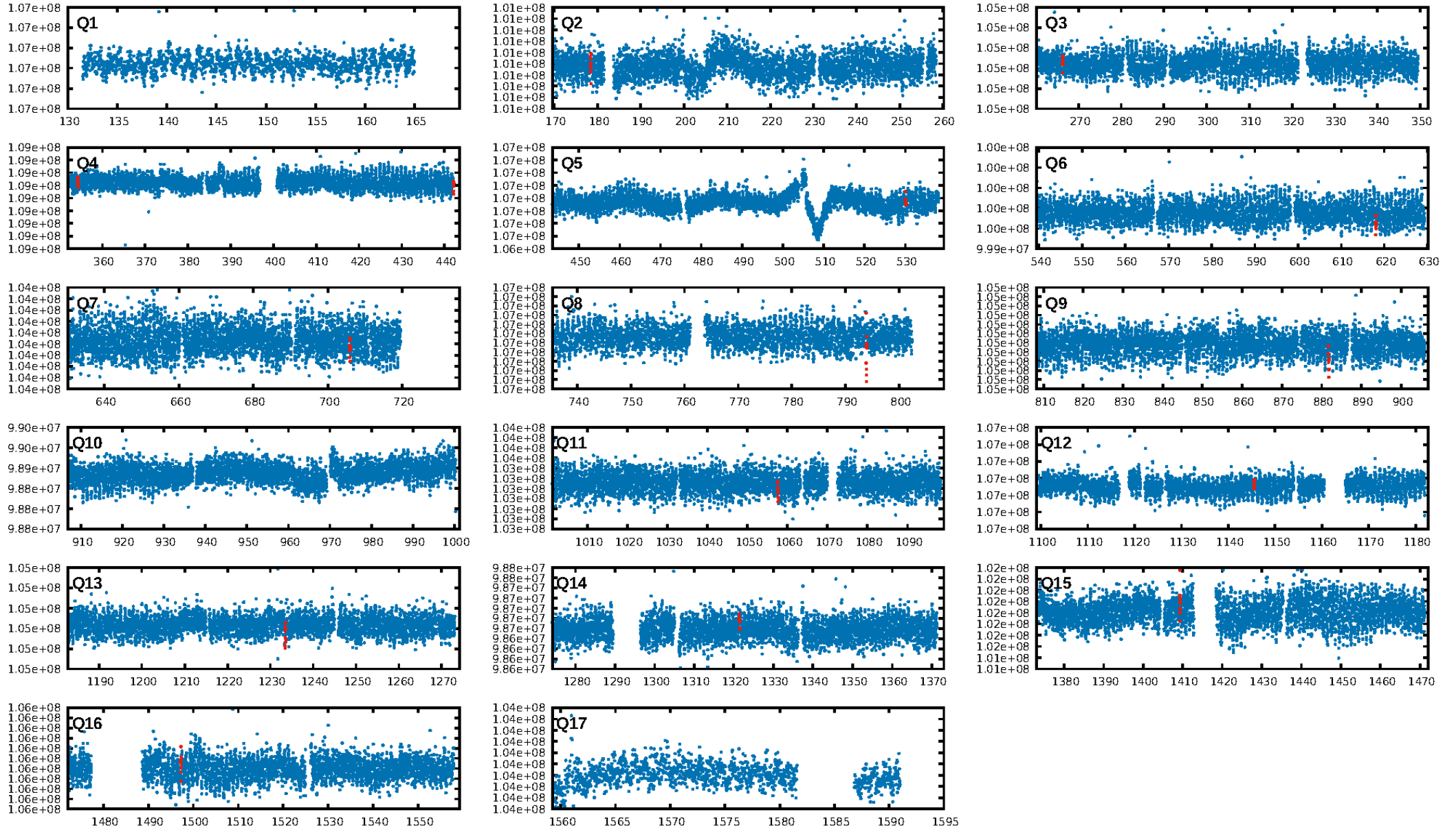
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [168.19σ]  
LongPeriod-sig: 100.0% [135.57σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 68.1%  
Bootstrap-pfa: 1.43e-16  
RollingBand-fgt: 1.00 [4/4]  
GhostDiagnostic-chr: 0.9209  
Centroid-sig: 5.4%  
Centroid-so: 1.103 arcsec [1.62σ]  
OotOffset-rm: 0.578 arcsec [0.48σ]  
KicOffset-rm: 0.511 arcsec [0.41σ]  
OotOffset-st: 1/4/3/2 [10]  
KicOffset-st: 1/4/3/2 [10]  
DiffImageQuality-fgm: 0.30 [3/10]  
DiffImageOverlap-fno: 0.14 [2/14]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 22:51:45 Z

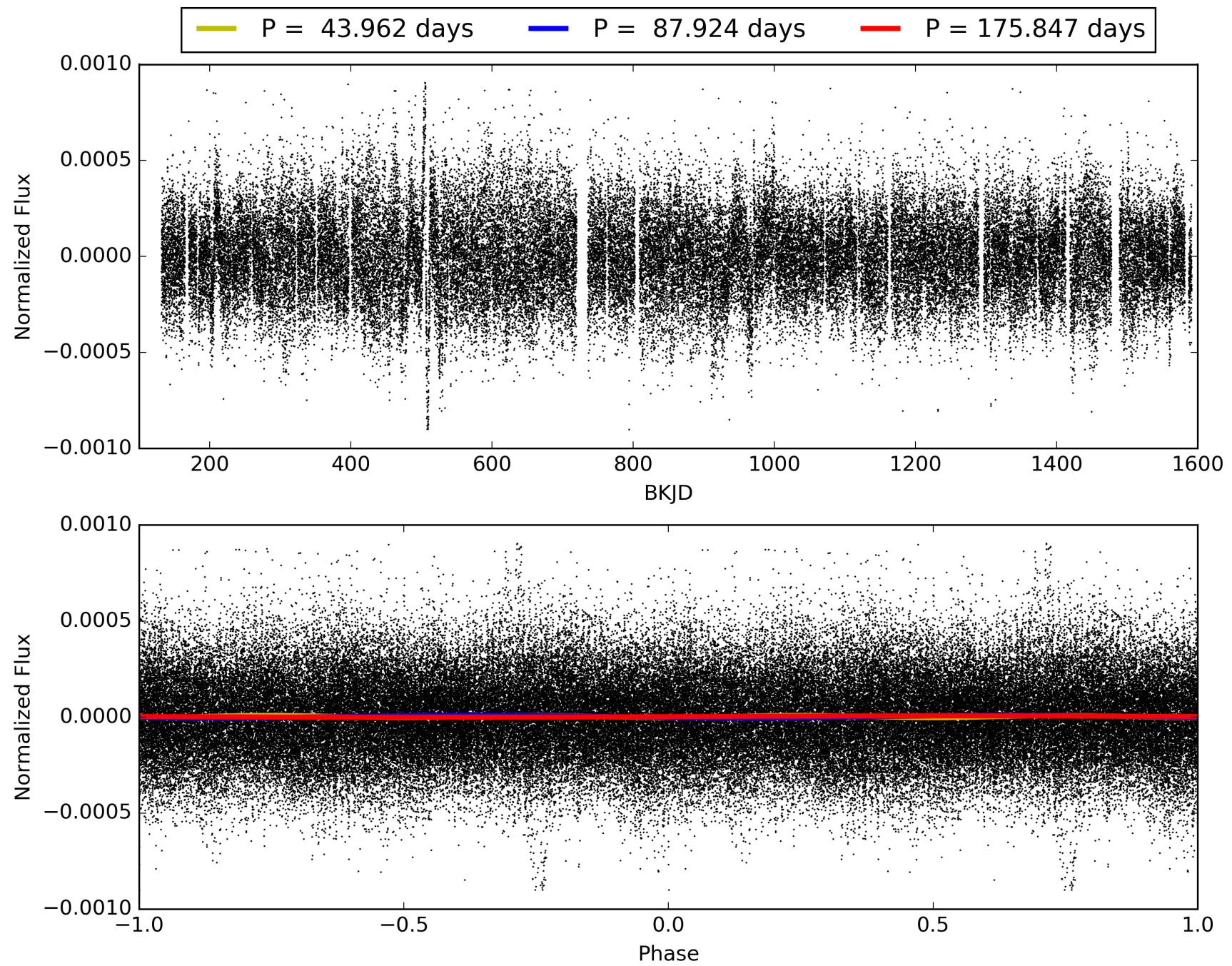
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 004349612-04, PDC Light Curves





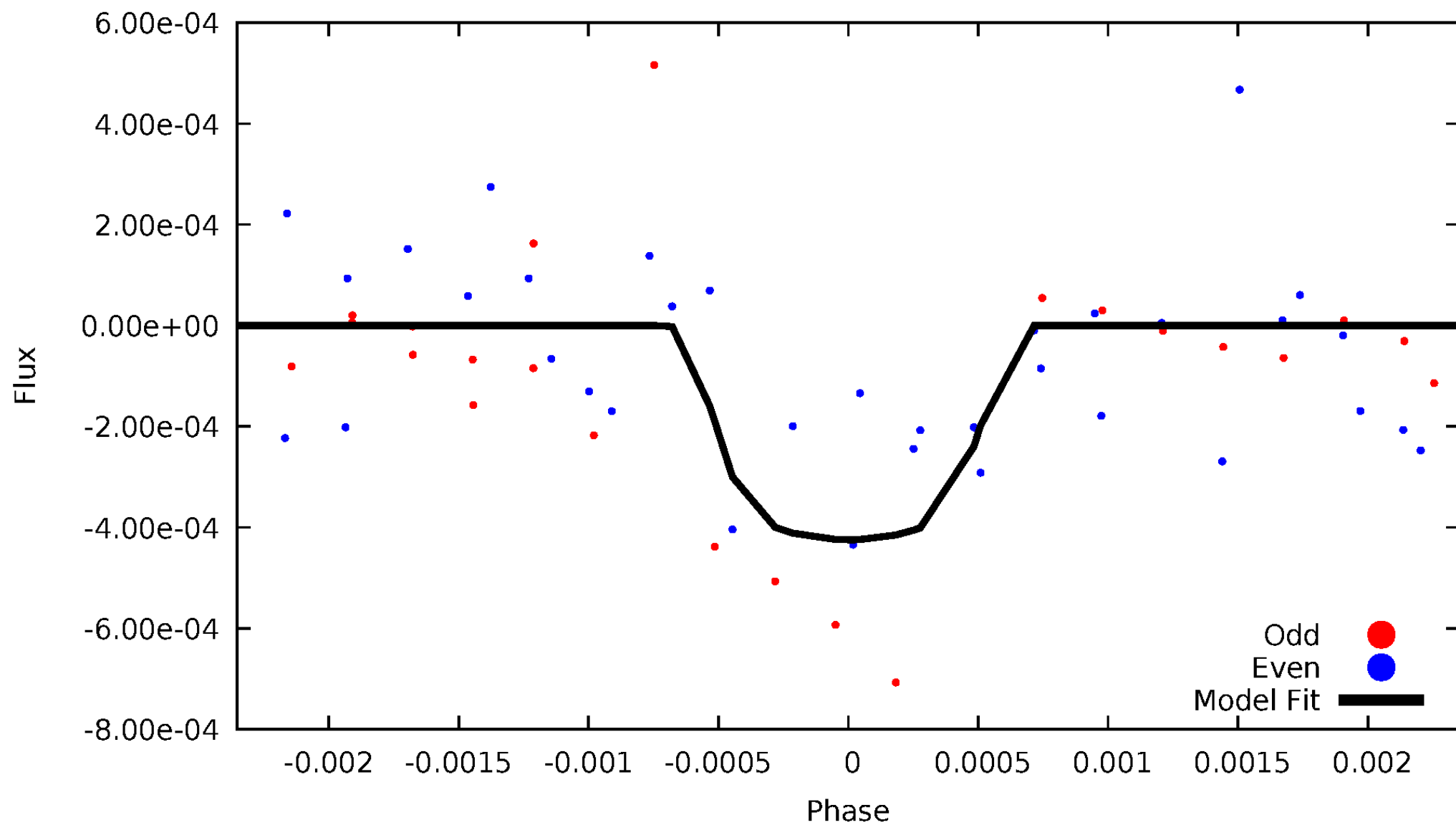
TCE 004349612-04





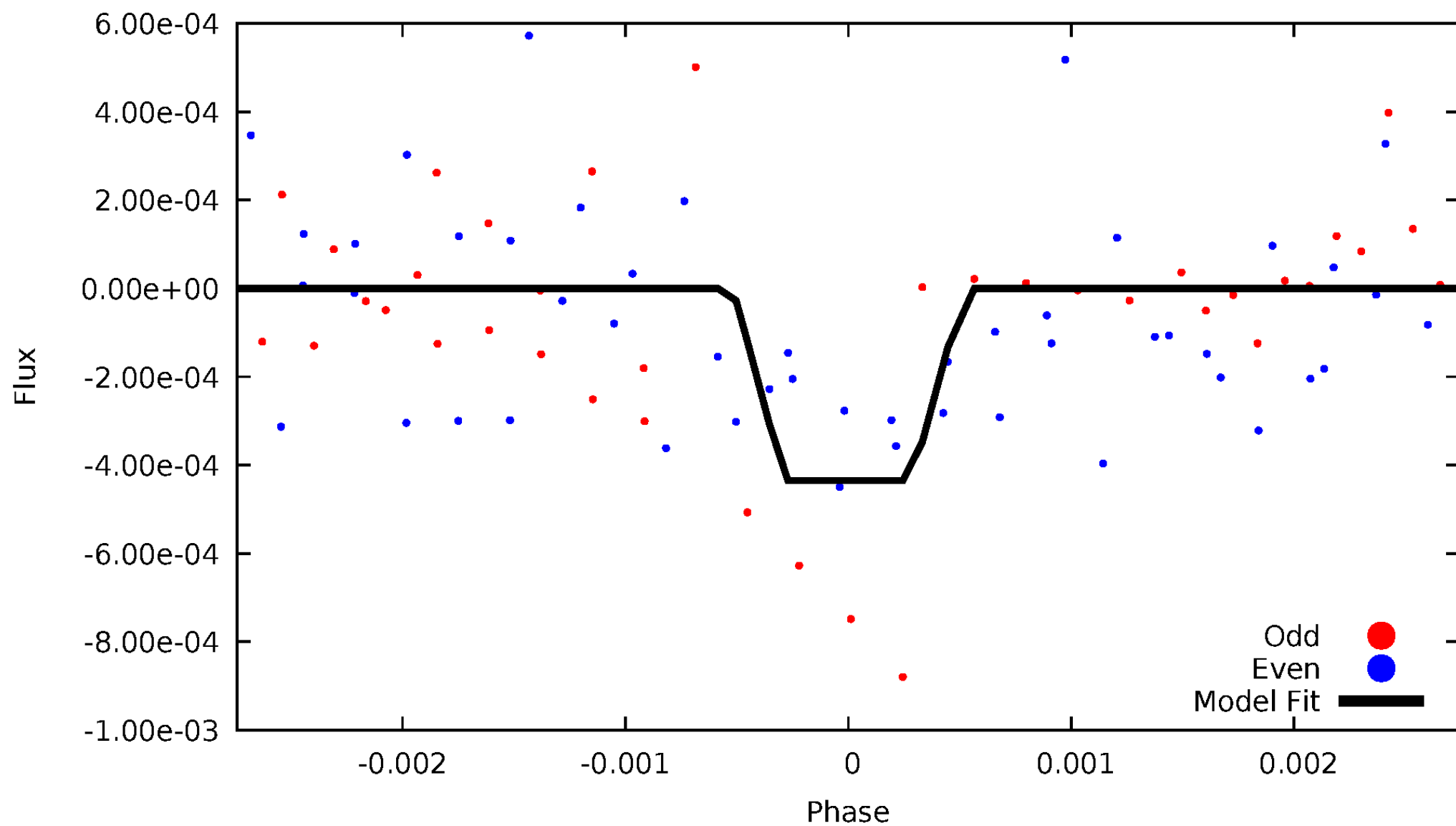
# DV Odd/Even

TCE 004349612-04



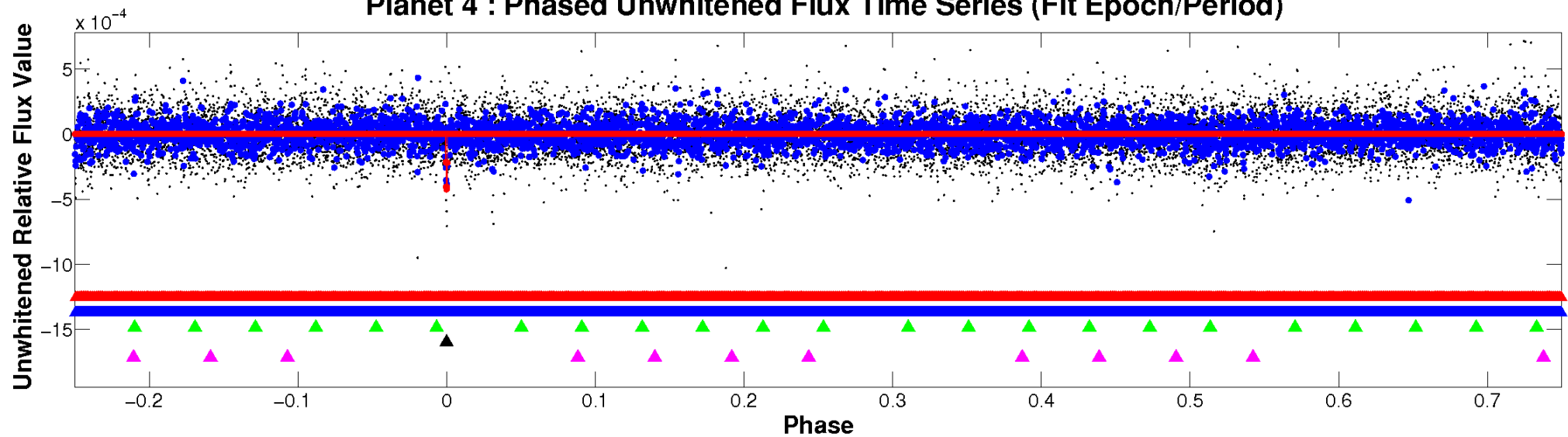
# ALT Odd/Even

TCE 004349612-04

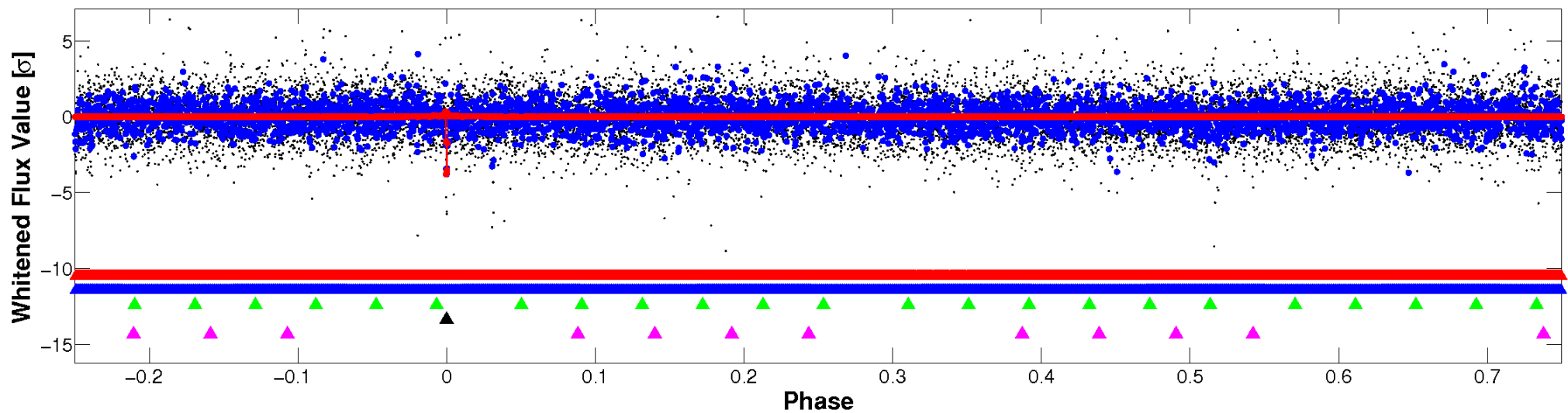


# Non-Whitened Vs. Whitened Light Curve

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

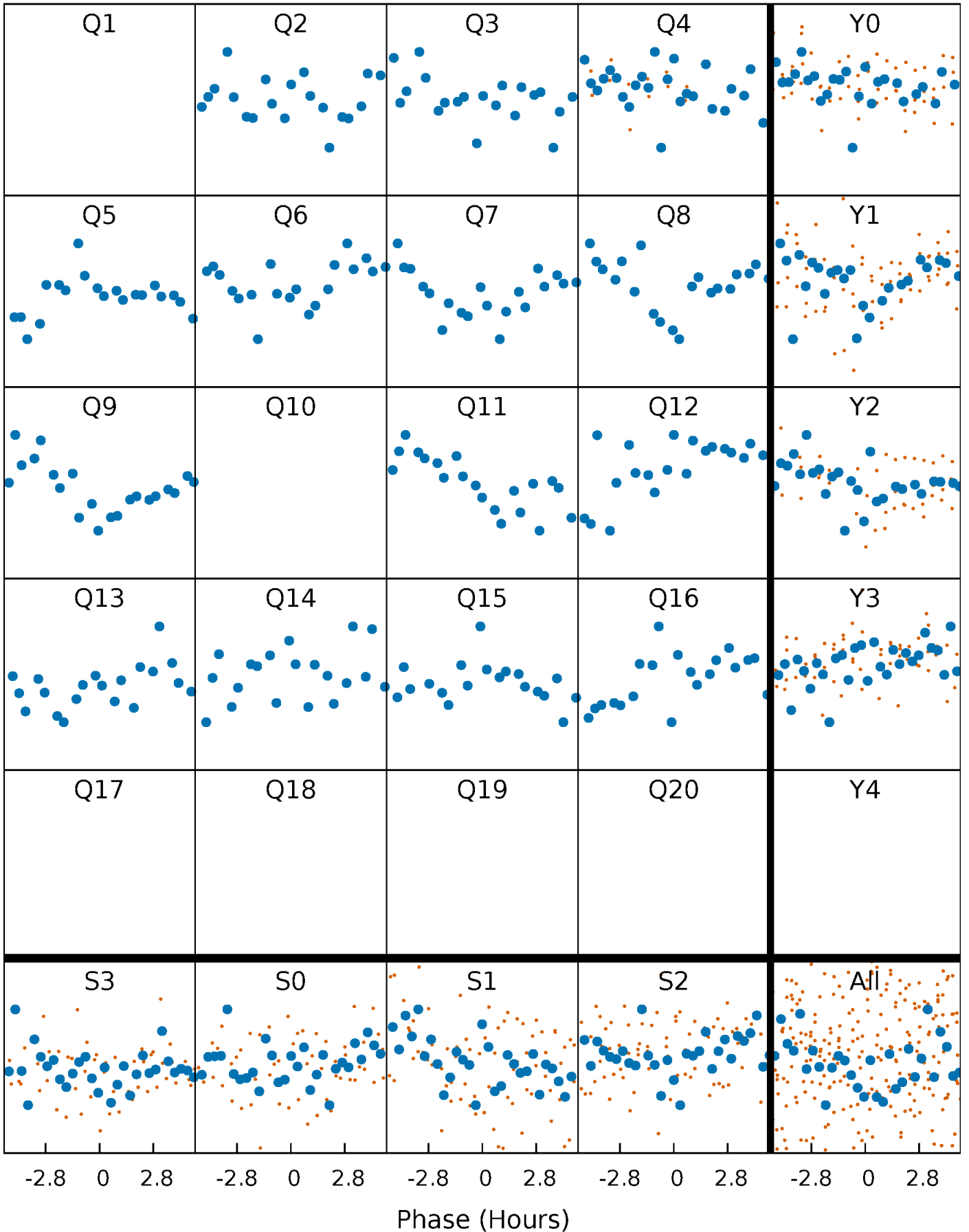


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



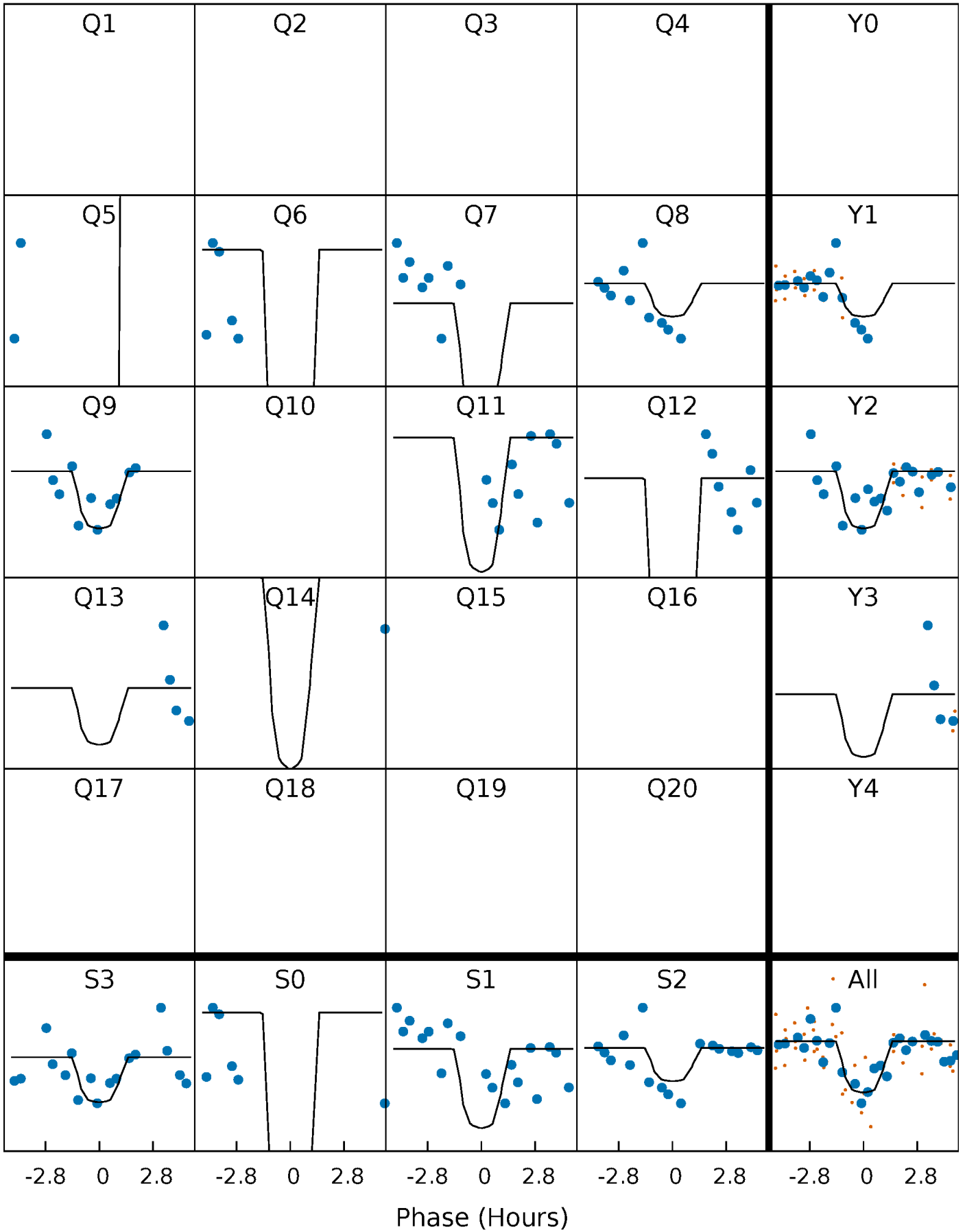
# PDC Quarter-Phased Transit Curves

TCE 004349612-04   P= 87.923506 Days    $T_0=178.404413$  (BKJD)



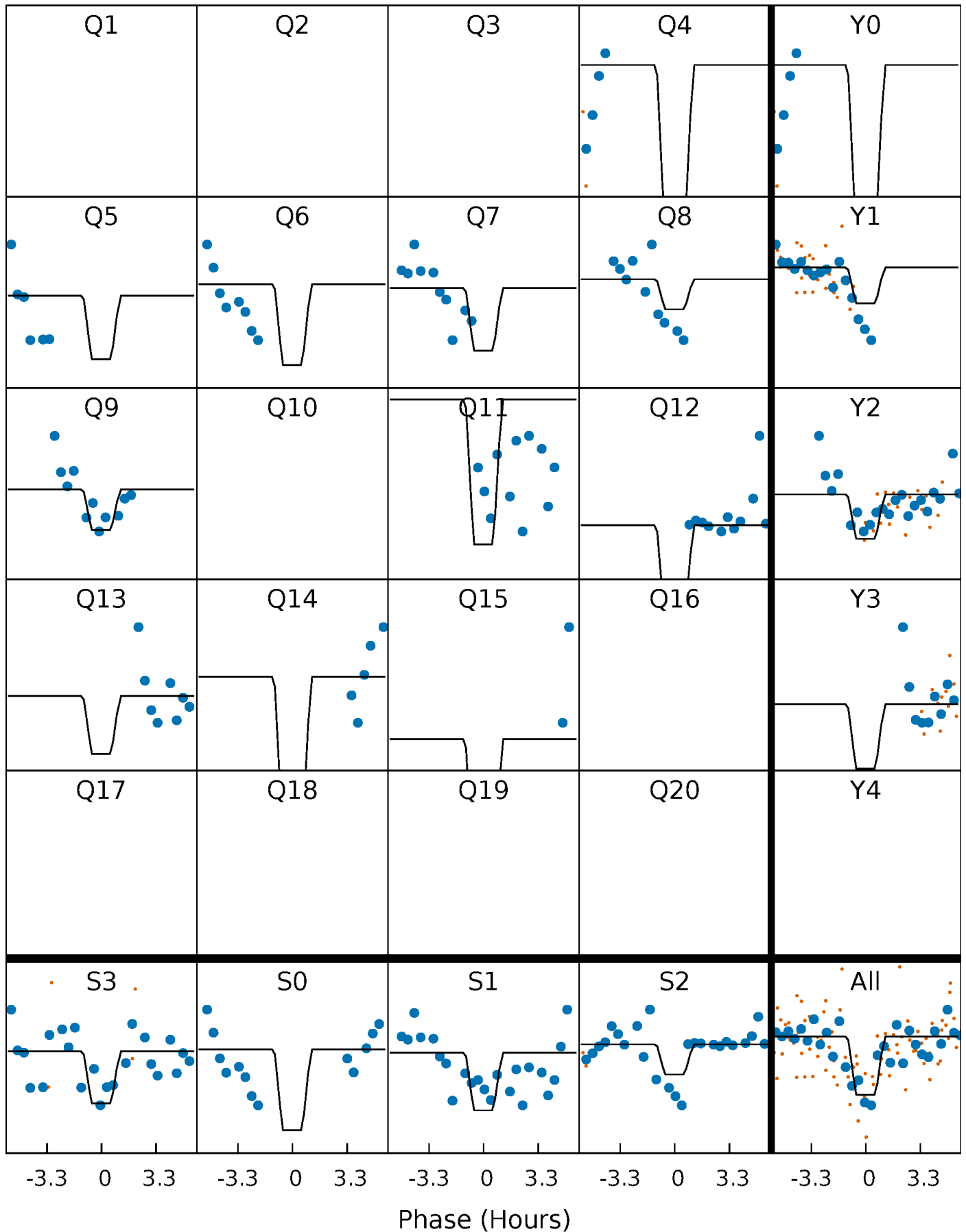
# DV Quarter-Phased Transit Curves

TCE 004349612-04     $P = 87.923506$  Days     $T_0 = 178.404413$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 004349612-04   P= 87.933943 Days    $T_0=178.325976$  (BKJD)

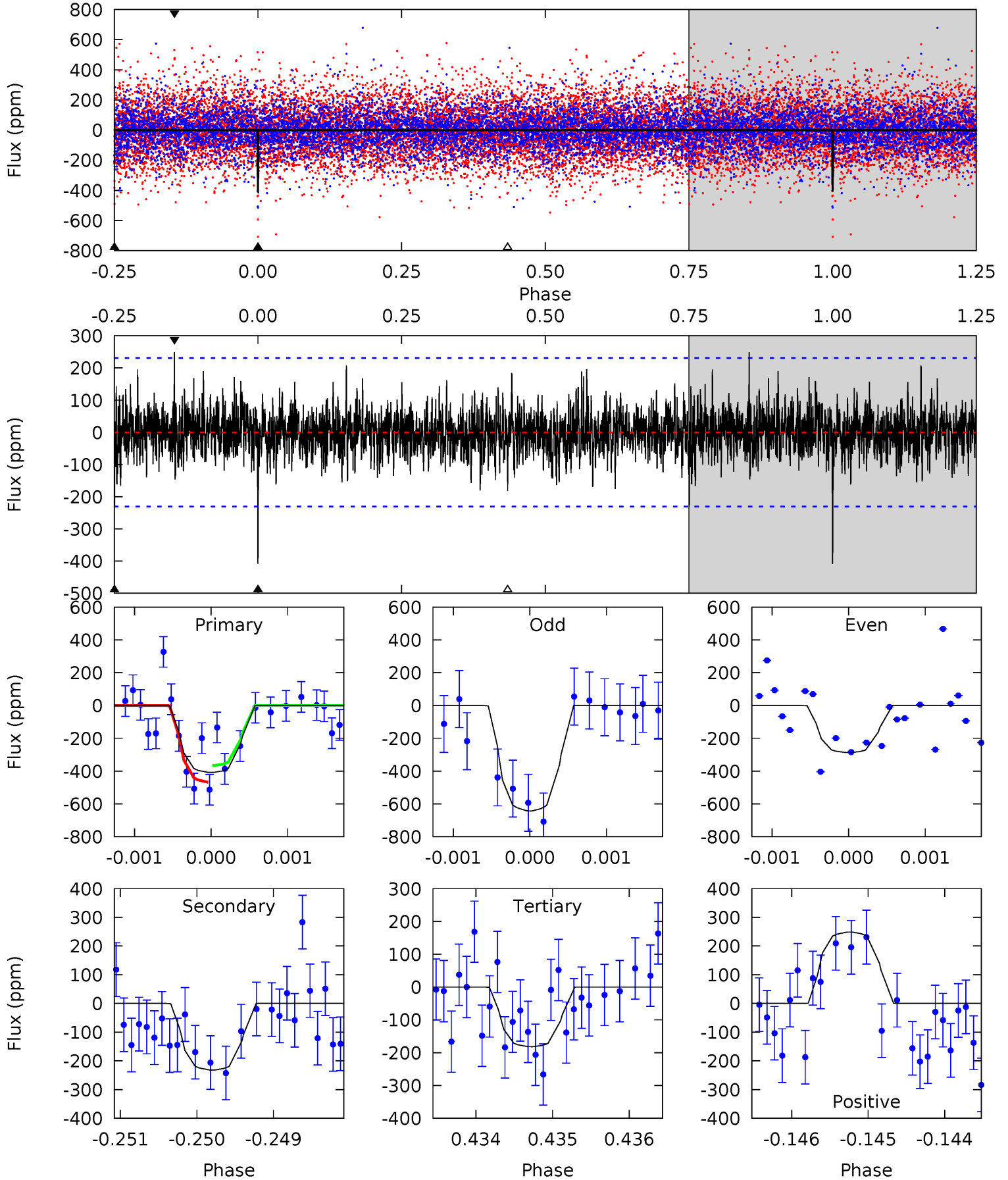




# DV Model-Shift Uniqueness Test

004349612-04, P = 87.923506 Days, E = 90.480907 Days

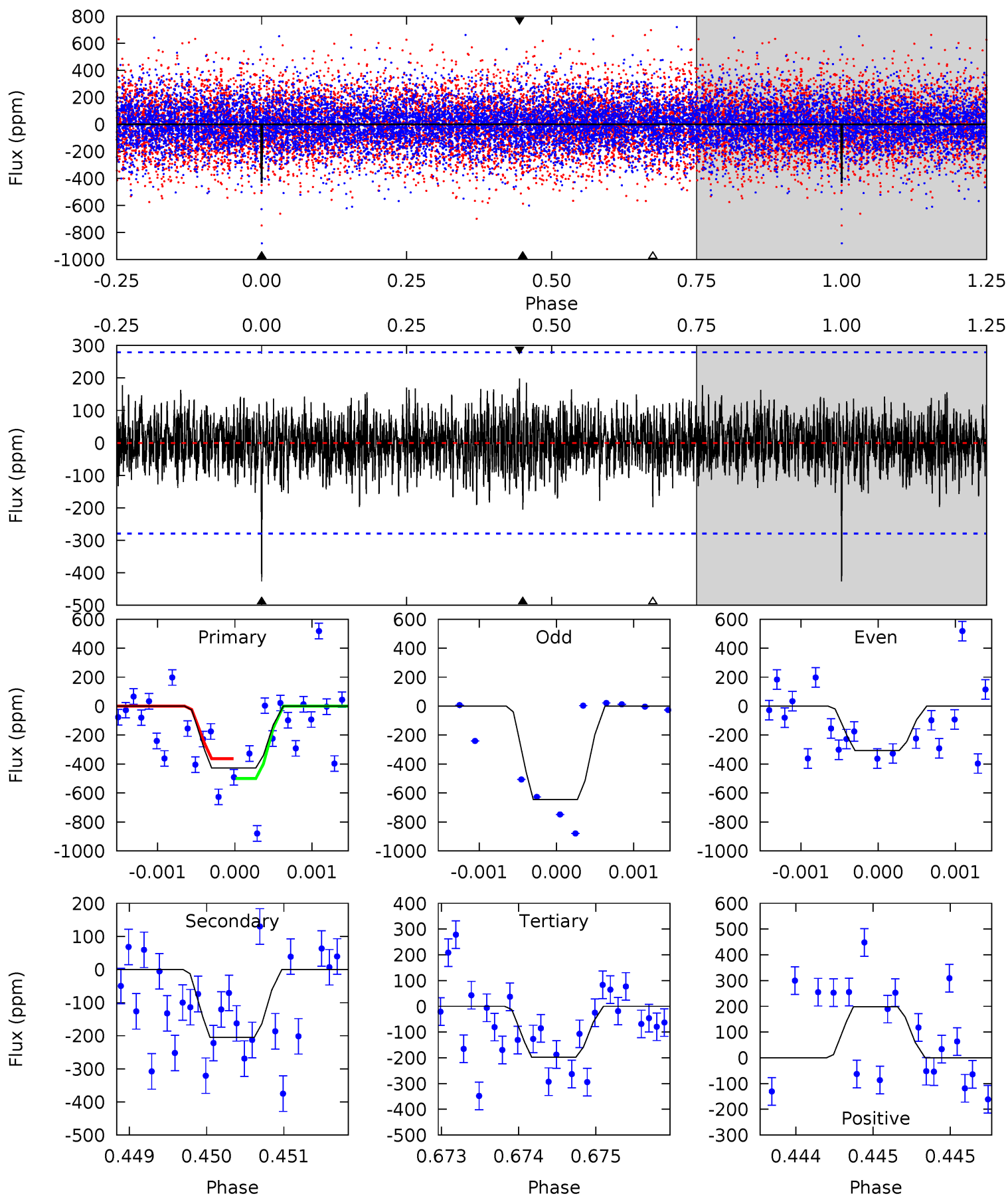
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.57	5.44	4.26	5.83	5.41	3.23	1.27	5.31	3.74	1.17	-0.40	3.92	1.17	0.38	1.18



# Alt Model-Shift Uniqueness Test

004349612-04, P = 87.933943 Days, E = 90.392033 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.36	4.02	3.88	3.89	5.47	3.32	1.15	4.49	4.48	0.15	0.14	3.16	1.43	0.32	1.35



### Stellar Parameters For KIC 004349612

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6362^{+204}_{-227}$	$3.814^{+0.535}_{-0.126}$	$-0.400^{+0.300}_{-0.300}$	$2.274^{+0.483}_{-1.126}$	$1.229^{+0.182}_{-0.273}$	$0.147^{+0.821}_{-0.056}$
	+3%/-4%	+14%/-3%	+75%/-75%	+21%/-50%	+15%/-22%	+558%/-38%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 004349612-04 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-232 \pm 43$	$6.53^{+6.93}_{-4.22}$	$891^{+77}_{-133}$	$4632^{+2979}_{-936}$	$514^{+3674}_{-390}$
Alt.	$-205 \pm 51$	$6.70^{+5.95}_{-4.39}$	$894^{+74}_{-121}$	$4500^{+2588}_{-863}$	$437^{+3058}_{-322}$

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

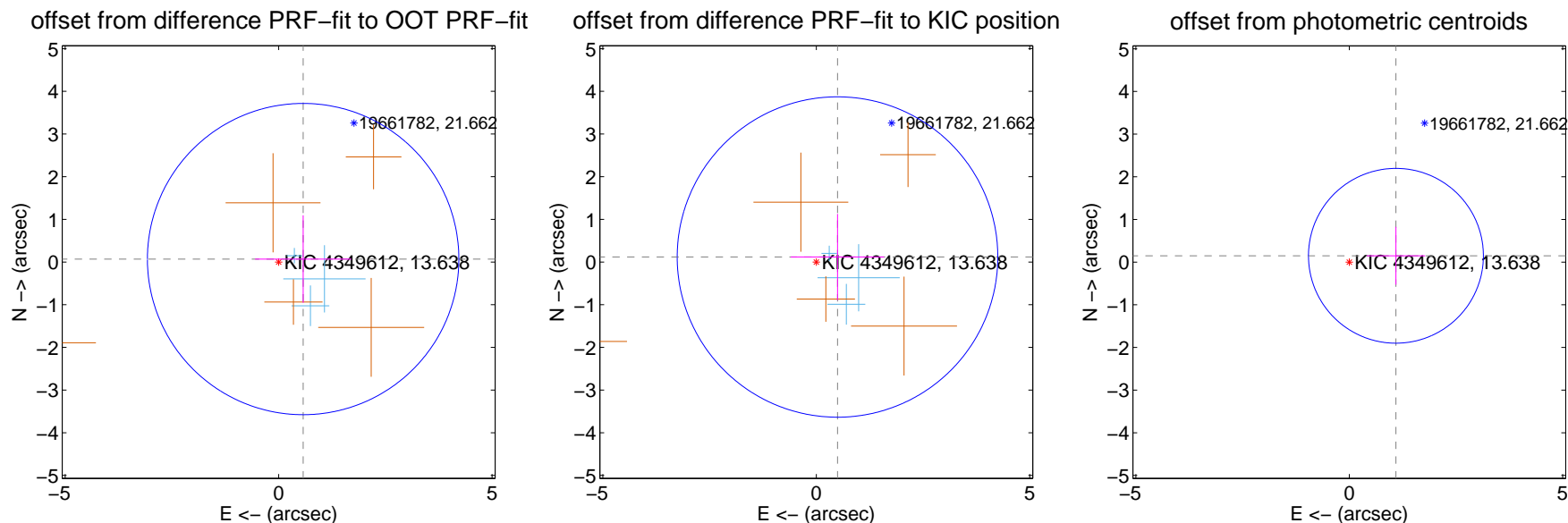
## DV Centroid Data

Supplemental centroid analysis for 004349612-04. Kepler magnitude: 13.64. Transit SNR 10.33

There are 3 quarters with good PRF difference image offsets

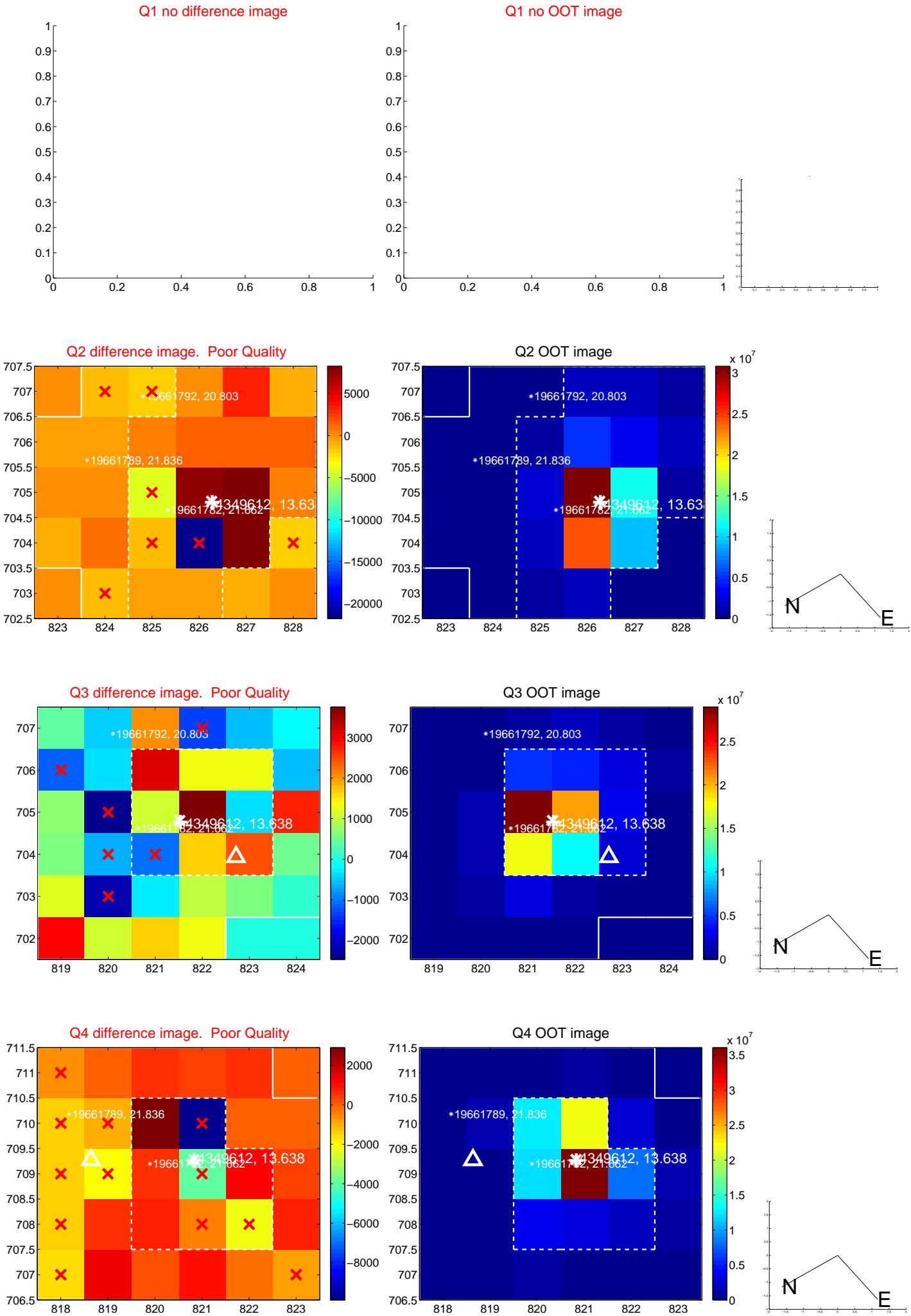
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.578 \pm 1.216$	0.48	$-0.574 \pm 1.124$	$0.069 \pm 1.026$
PRF-fit source offset from KIC position	$0.511 \pm 1.251$	0.41	$-0.497 \pm 1.093$	$0.118 \pm 1.010$
photometric centroid source offset	$1.10 \pm 0.68$	1.62	$-1.09 \pm 0.68$	$0.15 \pm 0.68$

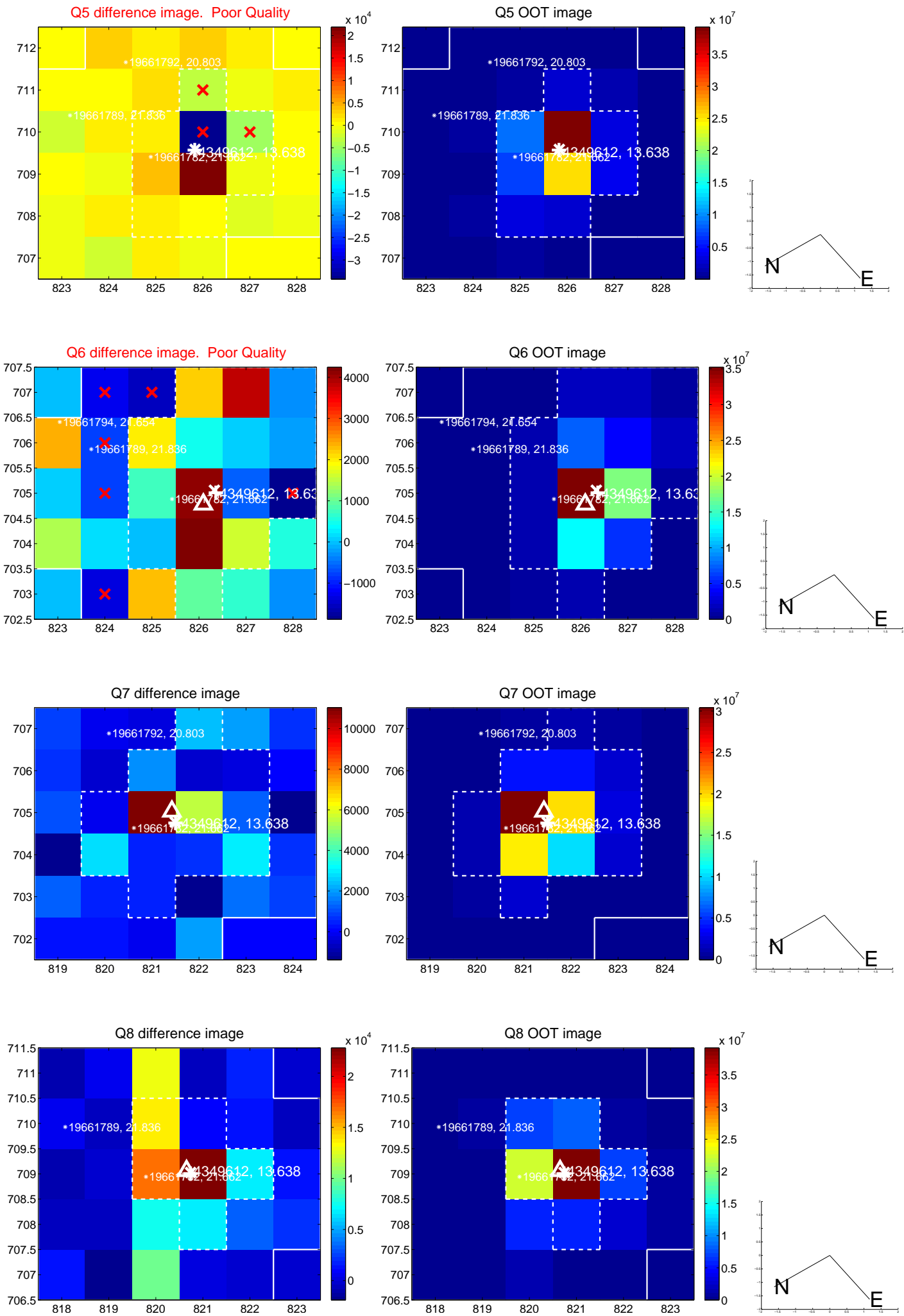


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

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

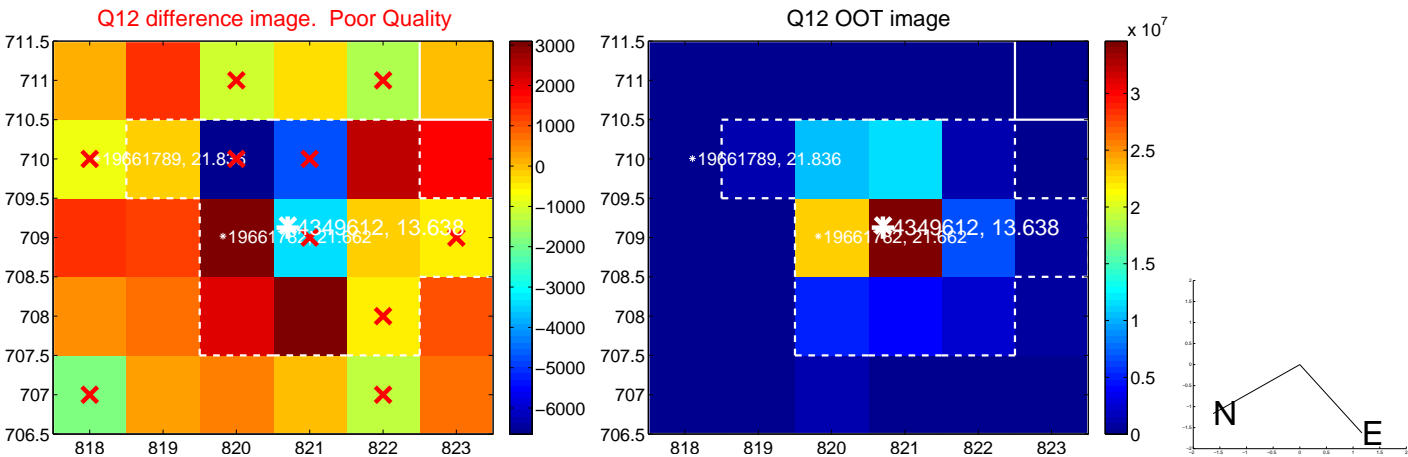
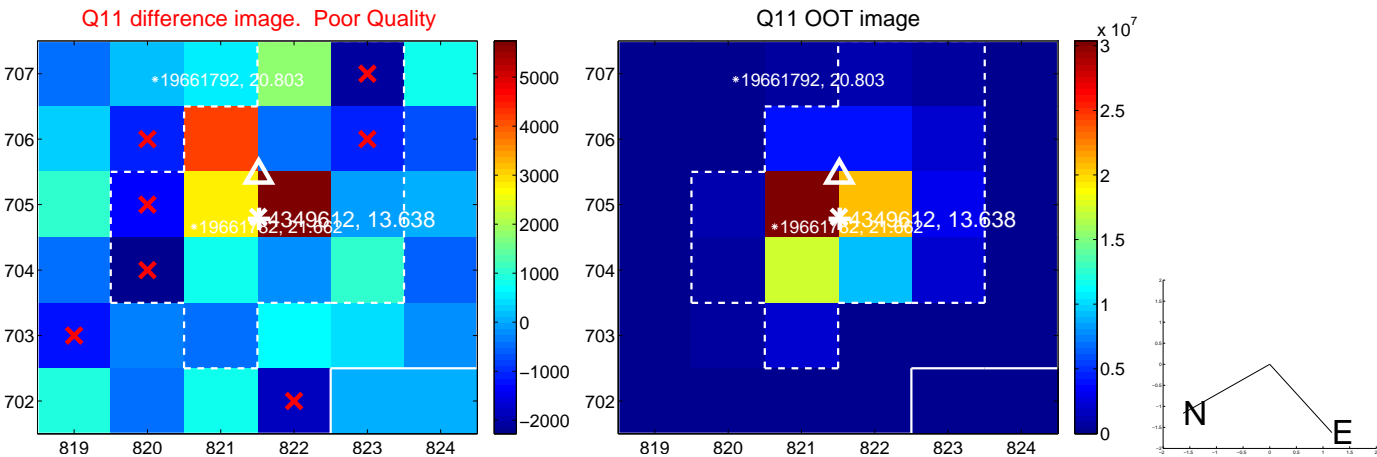
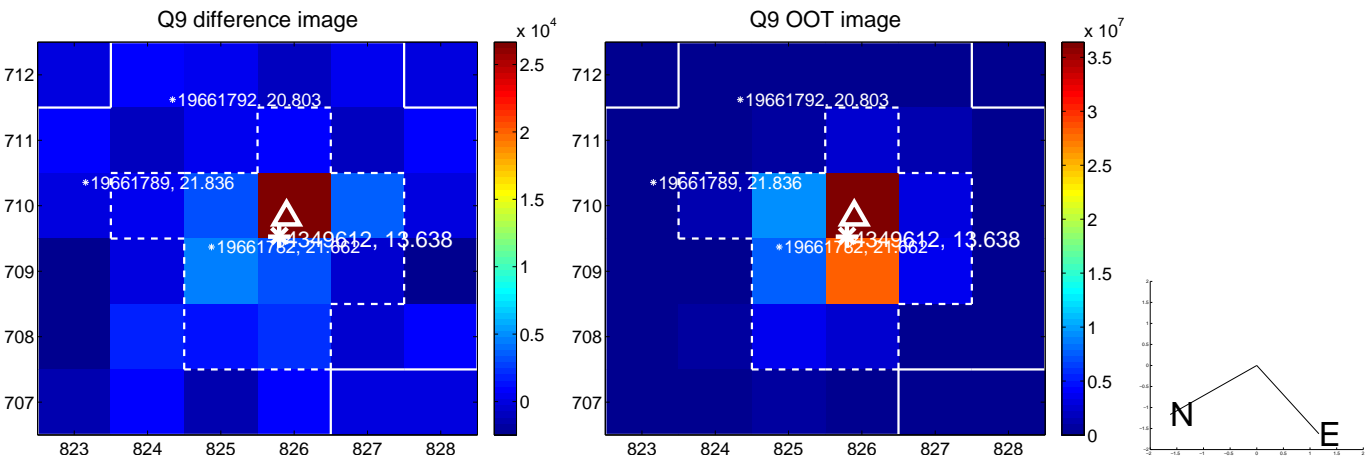


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

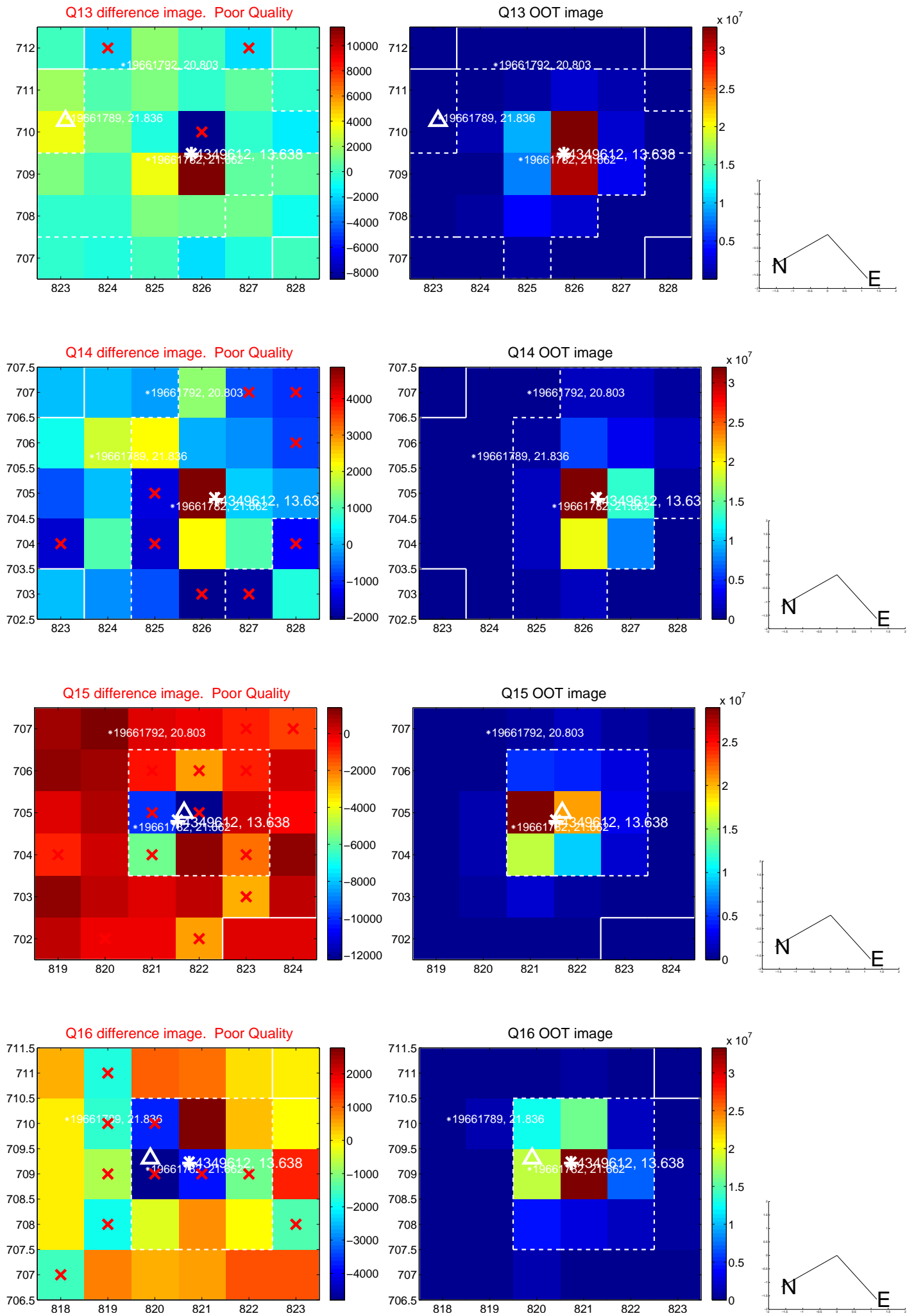




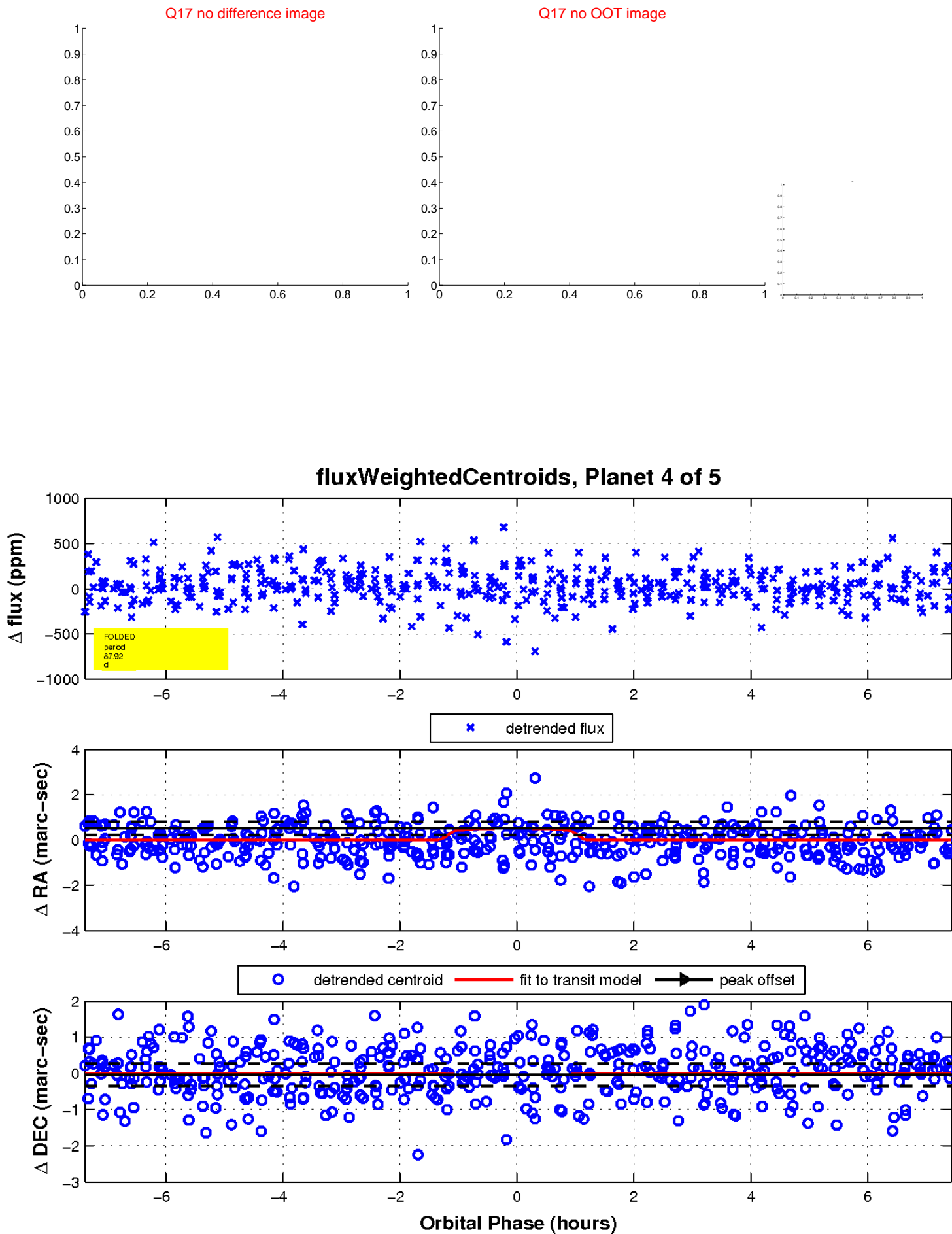
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

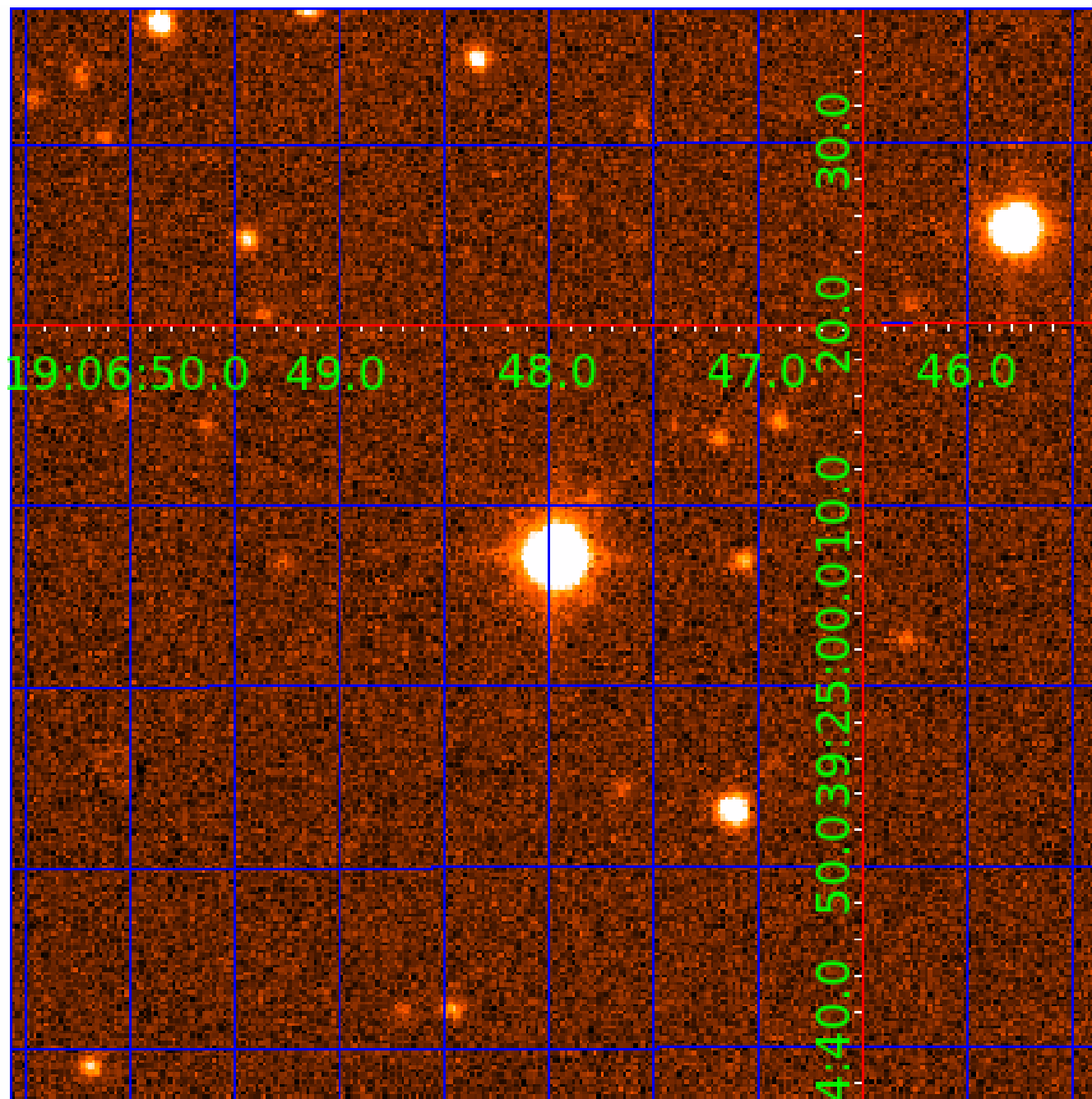


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 004349612

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
004349612-01	OBS	No	0.988592	132.071611	459.7	2.000	12.2	-1.0	2.27	6362	4.91	17529.65
004349612-02	OBS	No	0.988599	131.925122	19.0	6.016	9.6	7.4	2.27	6362	1.16	17529.47
004349612-03	OBS	No	65.049920	135.636323	220.8	2.120	8.9	7.9	2.27	6362	3.69	65.99
004349612-04	OBS	No	87.923506	178.404413	424.6	2.482	12.0	10.3	2.27	6362	5.46	44.16
004349612-05	OBS	No	118.747935	212.443912	205.4	4.860	8.3	7.4	2.27	6362	3.59	29.58

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004349612-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_NOFITS
004349612-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD
004349612-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004349612-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT
004349612-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS

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

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

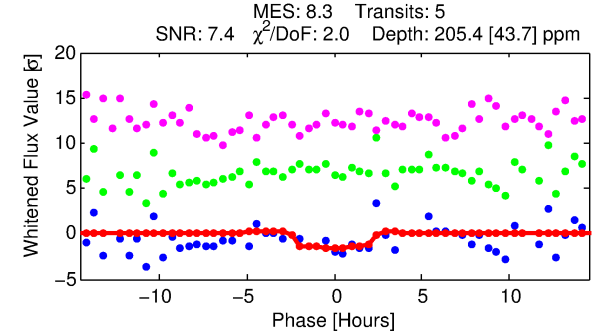
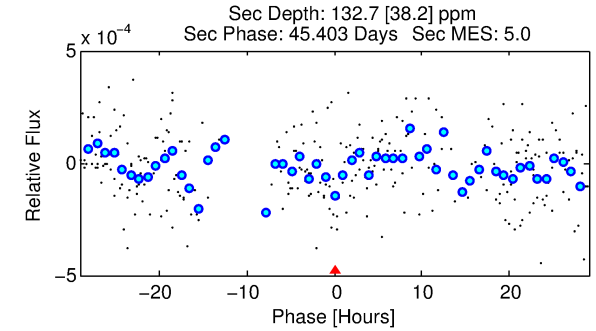
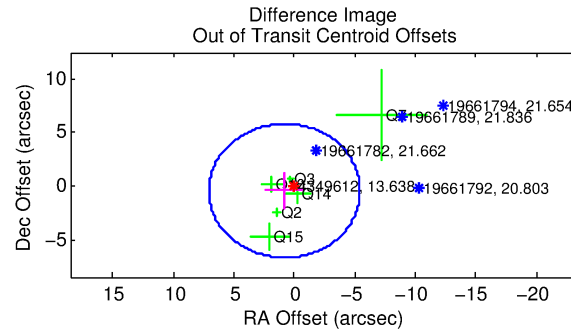
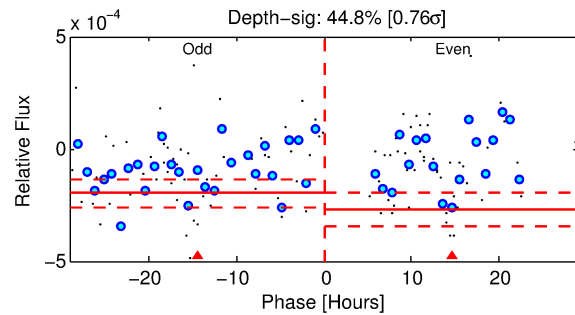
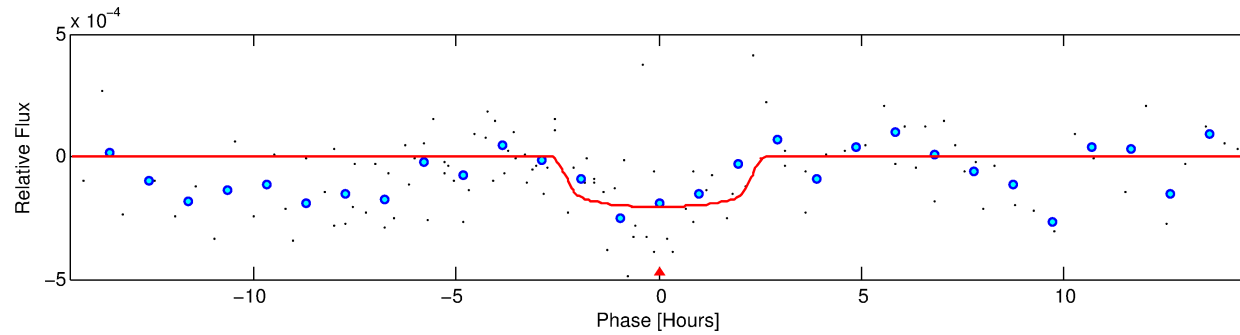
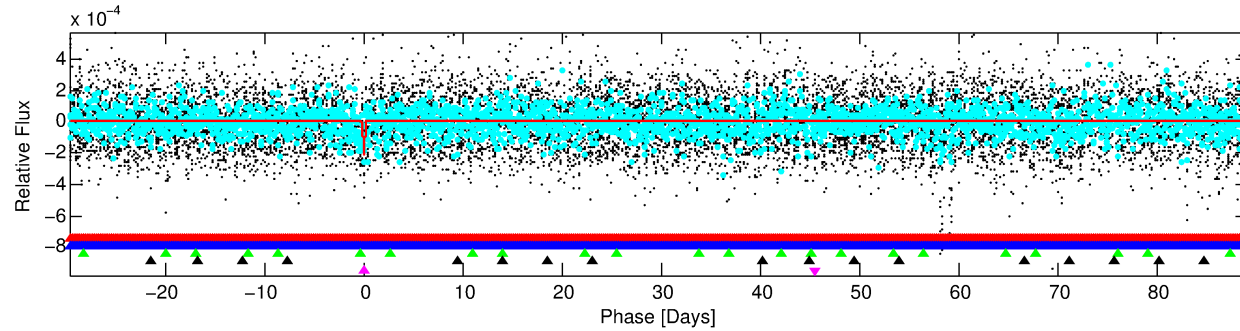
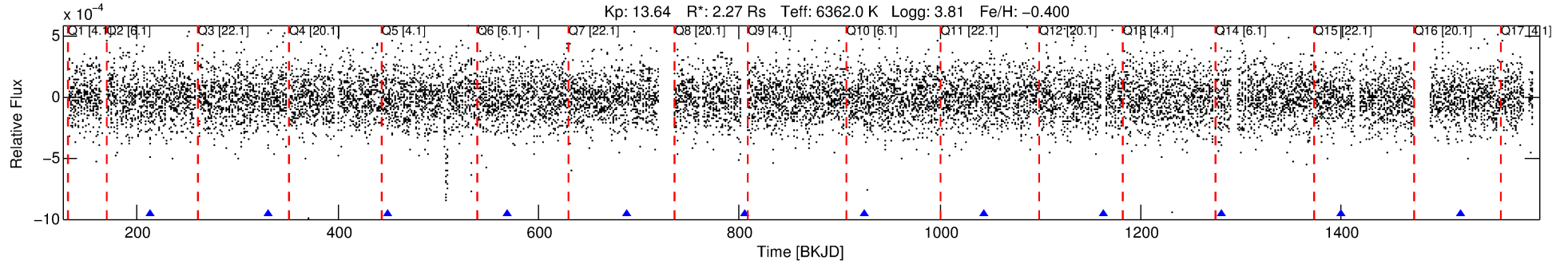
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 004349612-05

No Significant Match Found

# DV One-Page Summary

KIC: 4349612 Candidate: 5 of 5 Period: 118.748 d



## DV Fit Results:

Period = 118.74794 [0.00251] d  
Epoch = 212.4439 [0.0178] BKJD  
Rp/R\* = 0.0145 [0.0123]  
a/R\* = 117.79 [550.04]  
b = 0.79 [2.18]  
Seff = 29.58 [26.52]  
Teq = 595 [133] K  
Rp = 3.59 [3.53] Re  
a = 0.5066 [0.2669] AU  
Ag = 1451.47 [2813.46] [0.52 $\sigma$ ]  
Teffp = 5675 [2455] K [2.07 $\sigma$ ]

## DV Diagnostic Results:

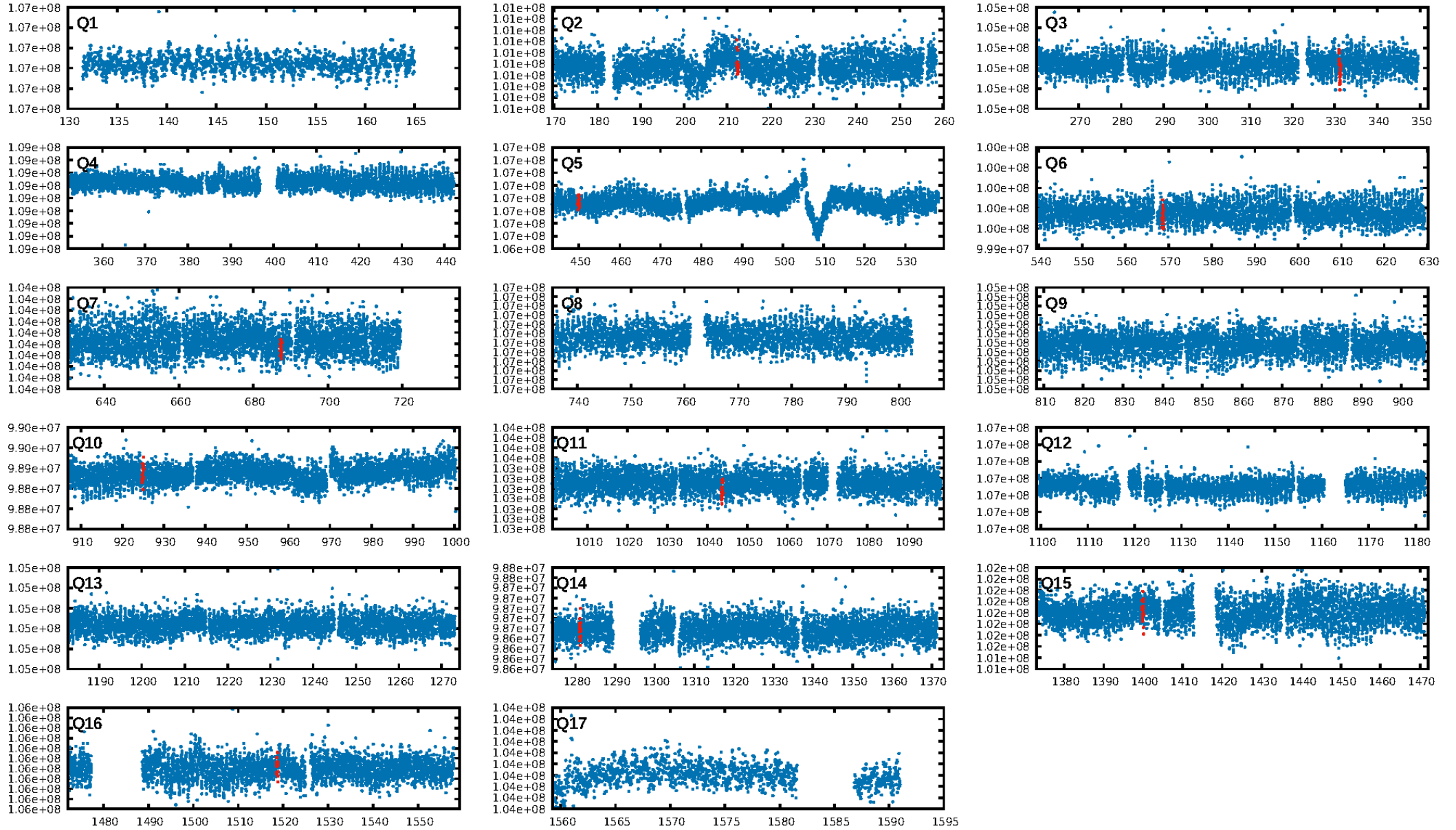
ShortPeriod-sig: 100.0% [135.57 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 3.4%  
ModelChiSquareGof-sig: 98.2%  
**Bootstrap-pfa: 1.05e-08**  
RollingBand-fgt: 1.00 [5/5]  
GhostDiagnostic-chr: -0.6514  
**Centroid-sig: 0.0%**  
Centroid-so: 3.114 arcsec [2.31 $\sigma$ ]  
OotOffset-rm: 0.933 arcsec [0.45 $\sigma$ ]  
KicOffset-rm: 1.056 arcsec [0.54 $\sigma$ ]  
OotOffset-st: 3/3/0/0 [6]  
KicOffset-st: 3/3/0/0 [6]  
DiffImageQuality-fgm: 0.50 [3/6]  
DiffImageOverlap-fno: 0.00 [0/9]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 22:51:49 Z

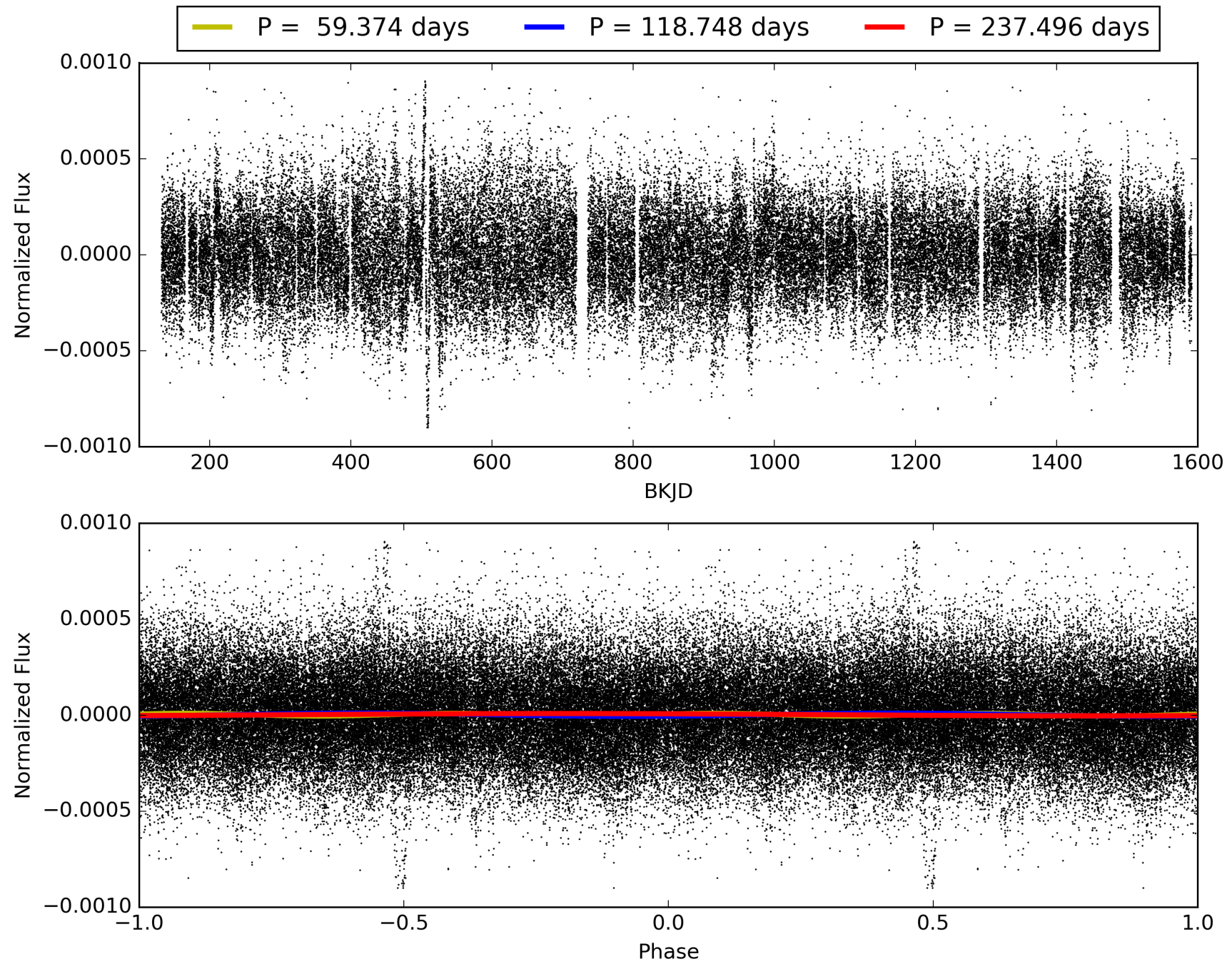
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center



# TCE 004349612-05, PDC Light Curves

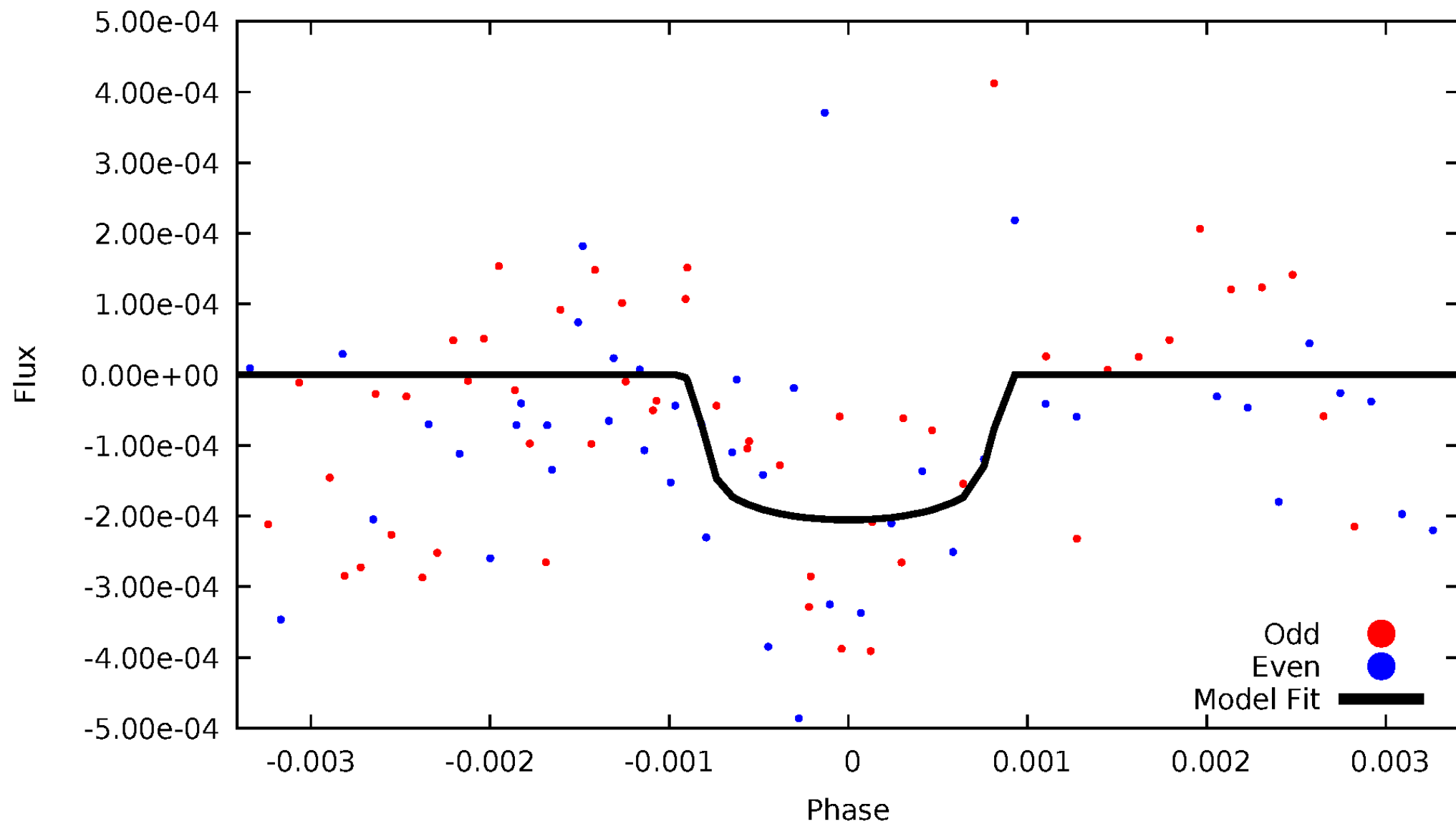


TCE 004349612-05



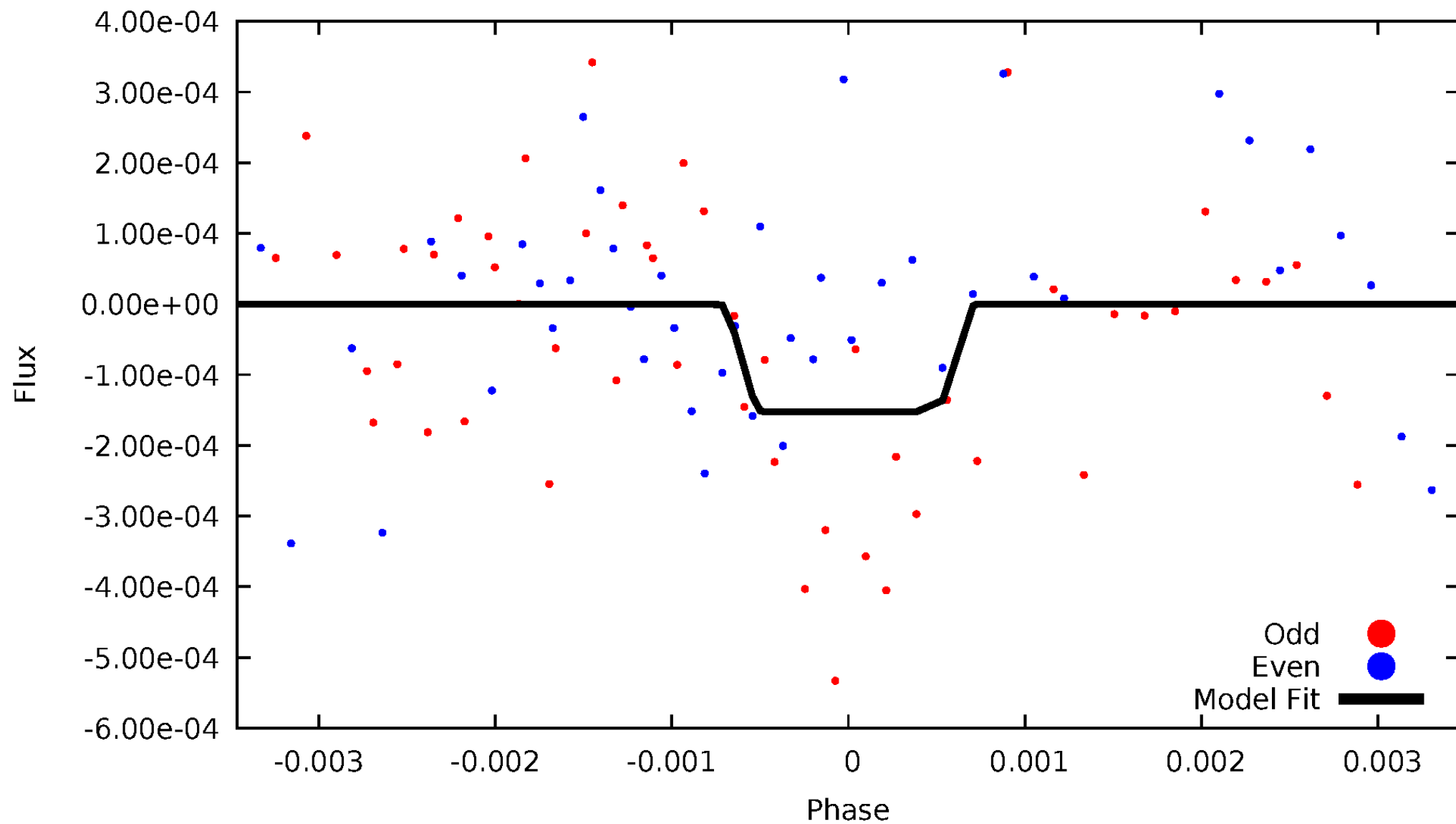
# DV Odd/Even

TCE 004349612-05



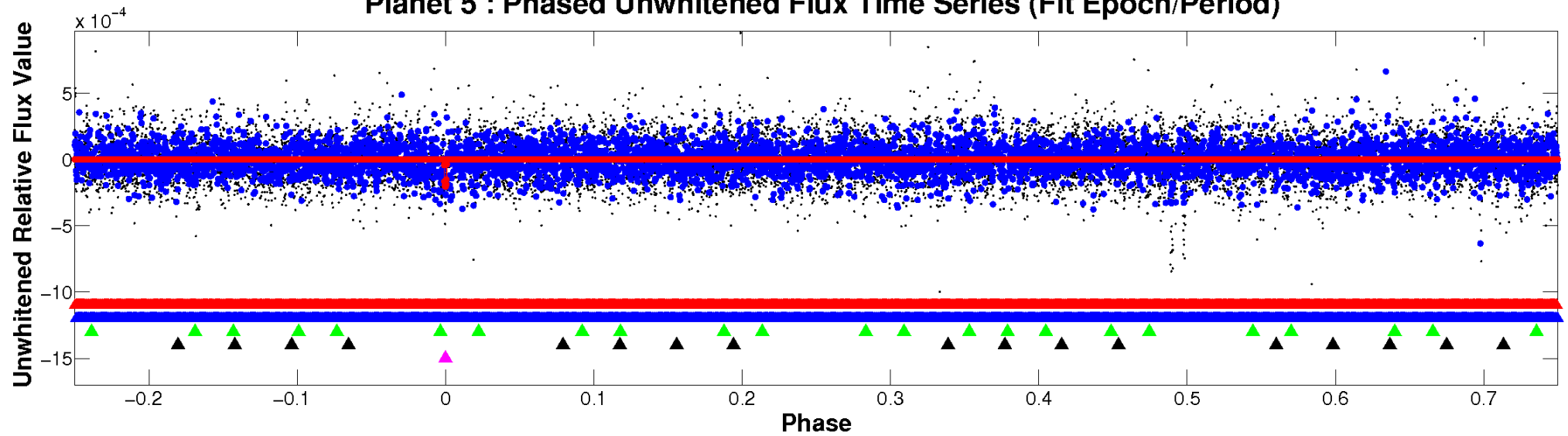
# ALT Odd/Even

TCE 004349612-05

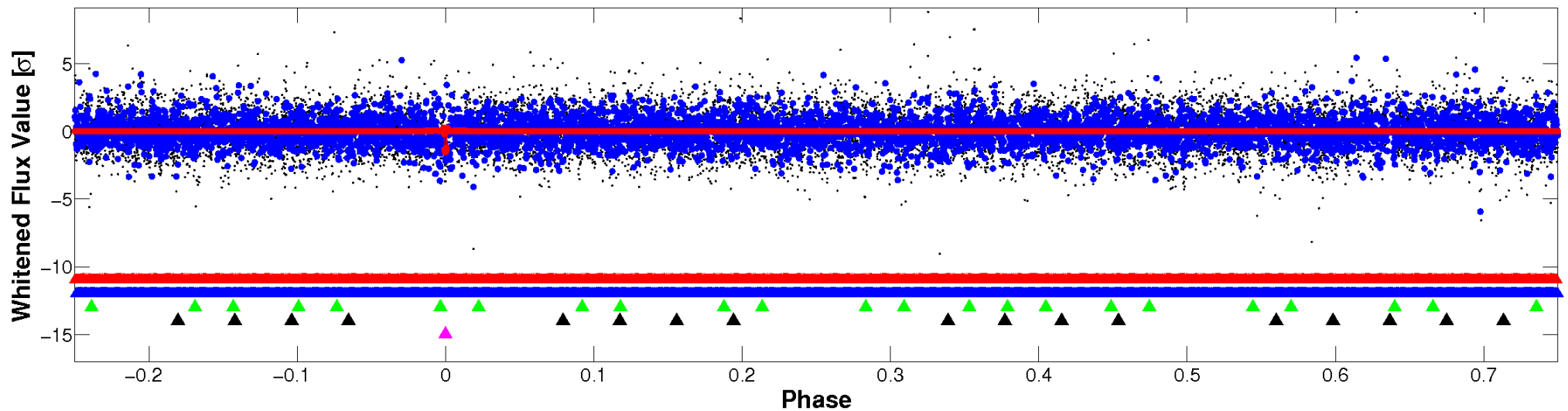


# Non-Whitened Vs. Whitened Light Curve

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

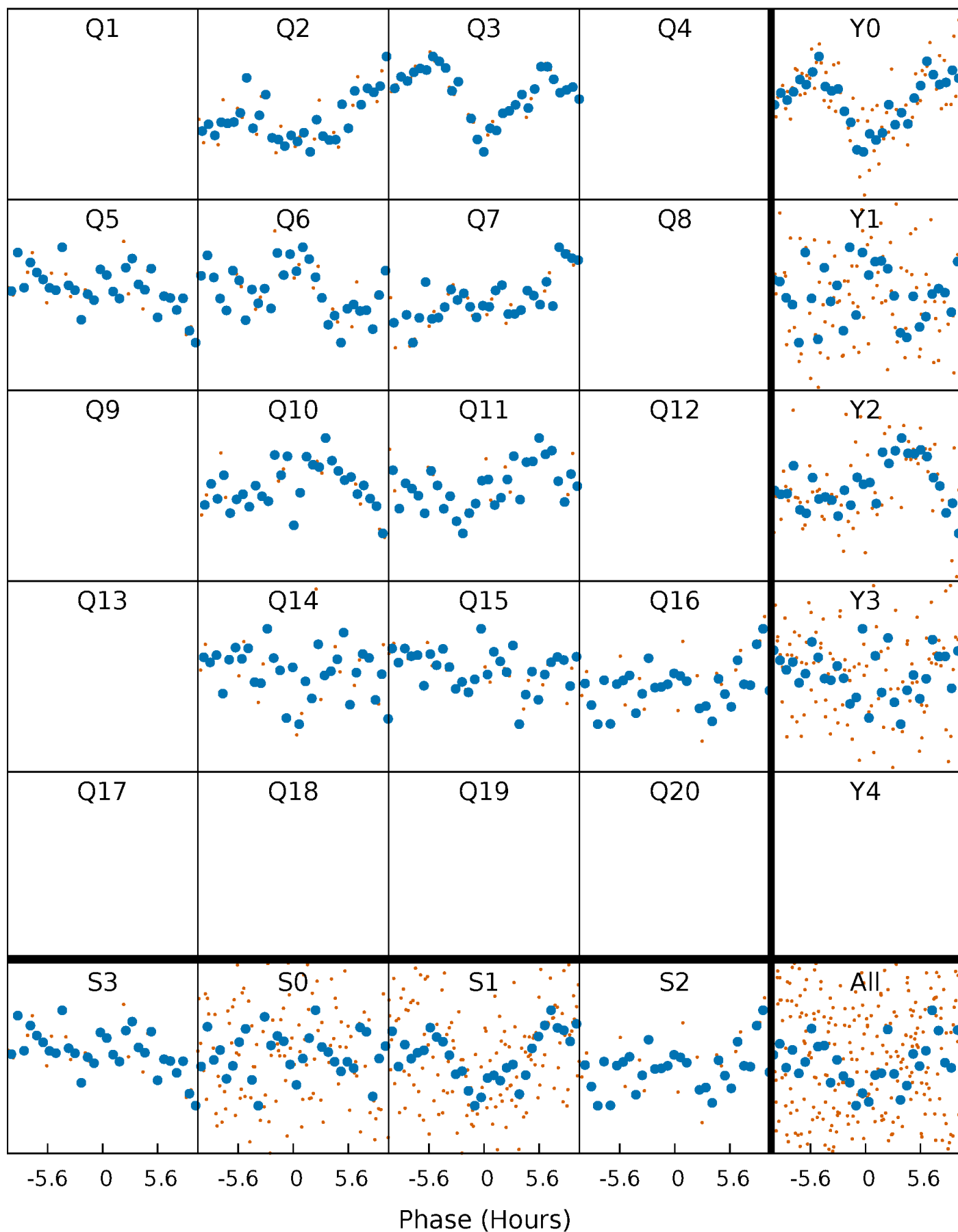


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

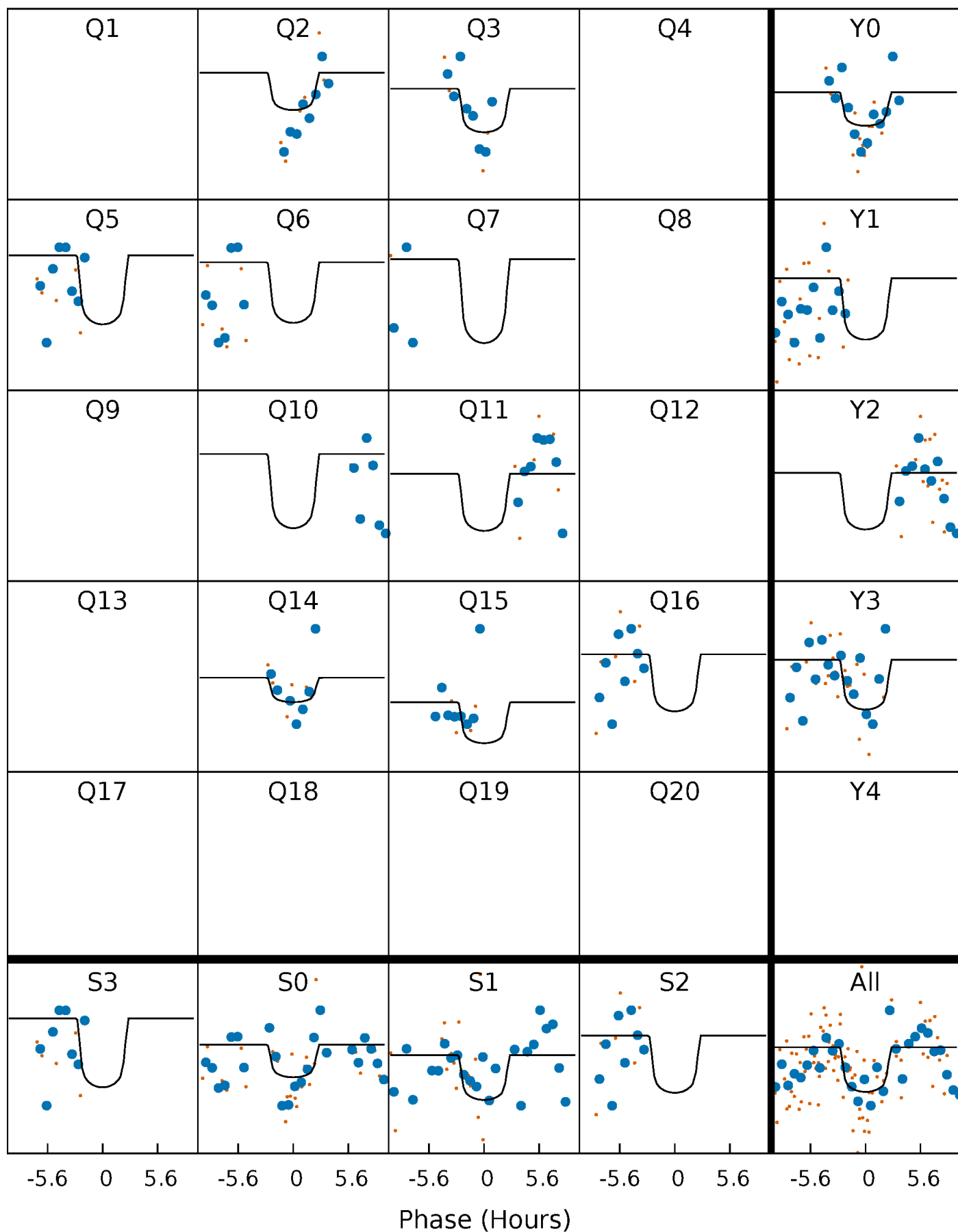
TCE 004349612-05     $P=118.747935$  Days     $T_0=212.443912$  (BKJD)





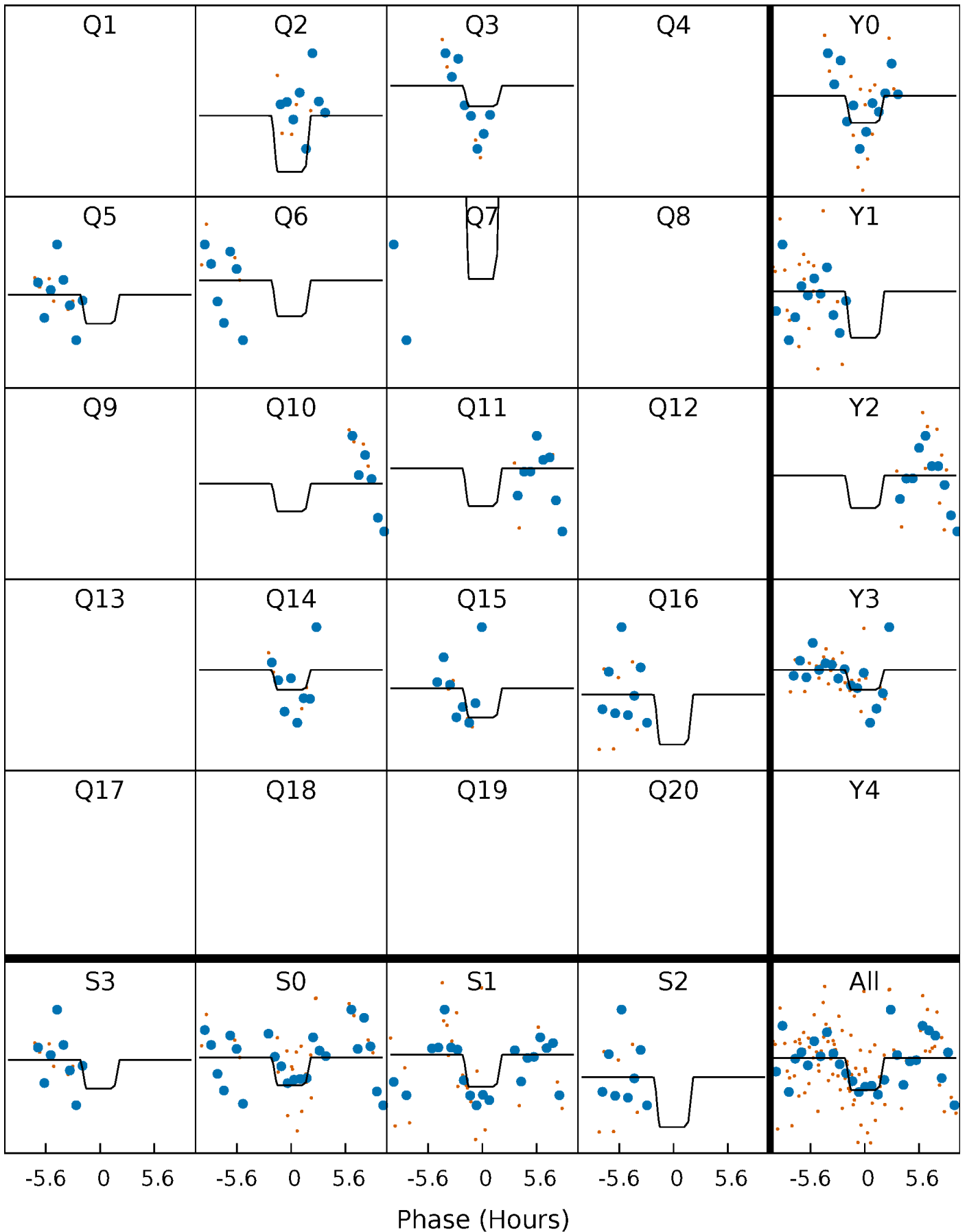
# DV Quarter-Phased Transit Curves

TCE 004349612-05     $P=118.747935$  Days     $T_0=212.443912$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

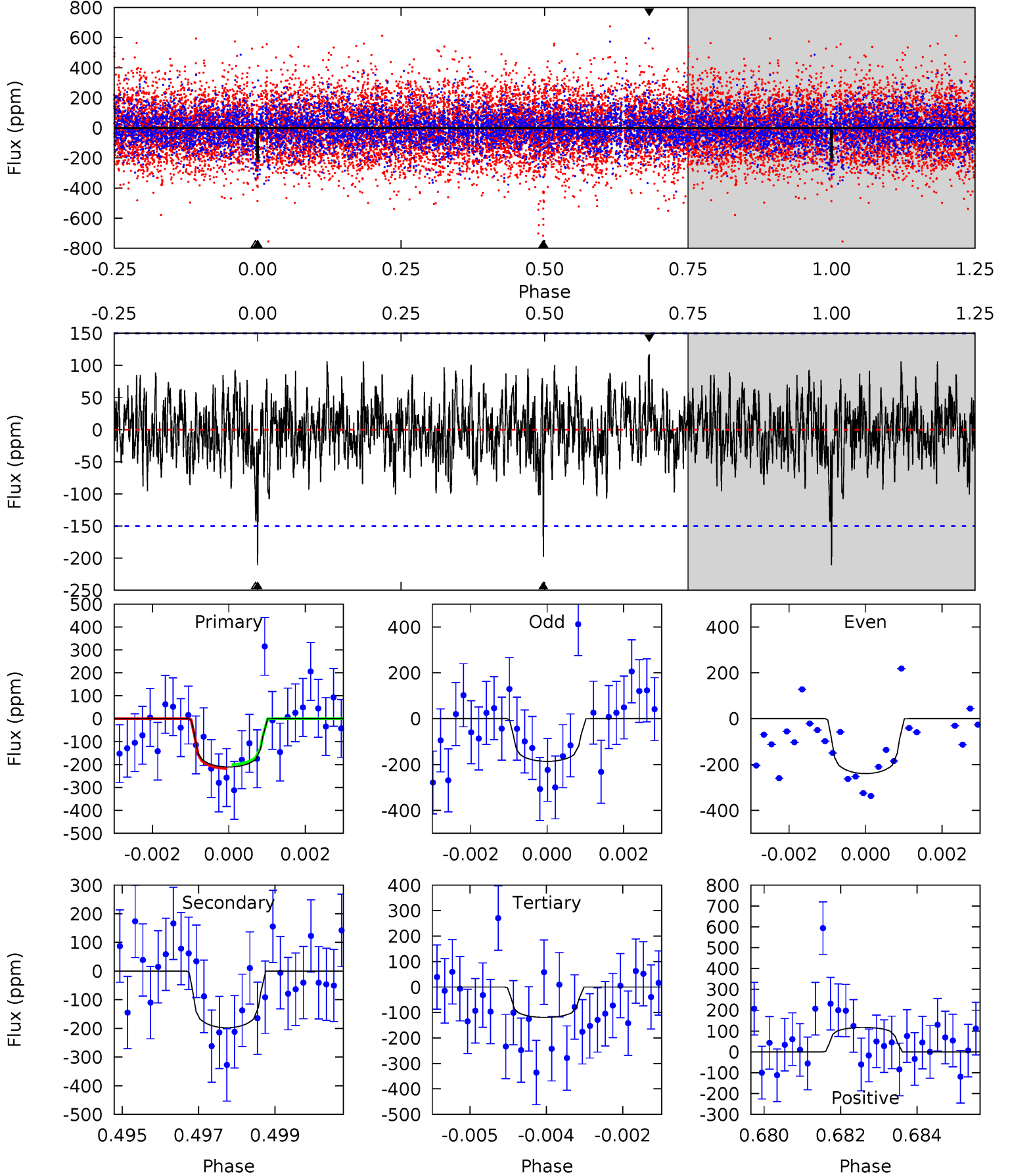
TCE 004349612-05 P=118.746077 Days  $T_0=212.449992$  (BKJD)



# DV Model-Shift Uniqueness Test

004349612-05, P = 118.747935 Days, E = 93.695977 Days

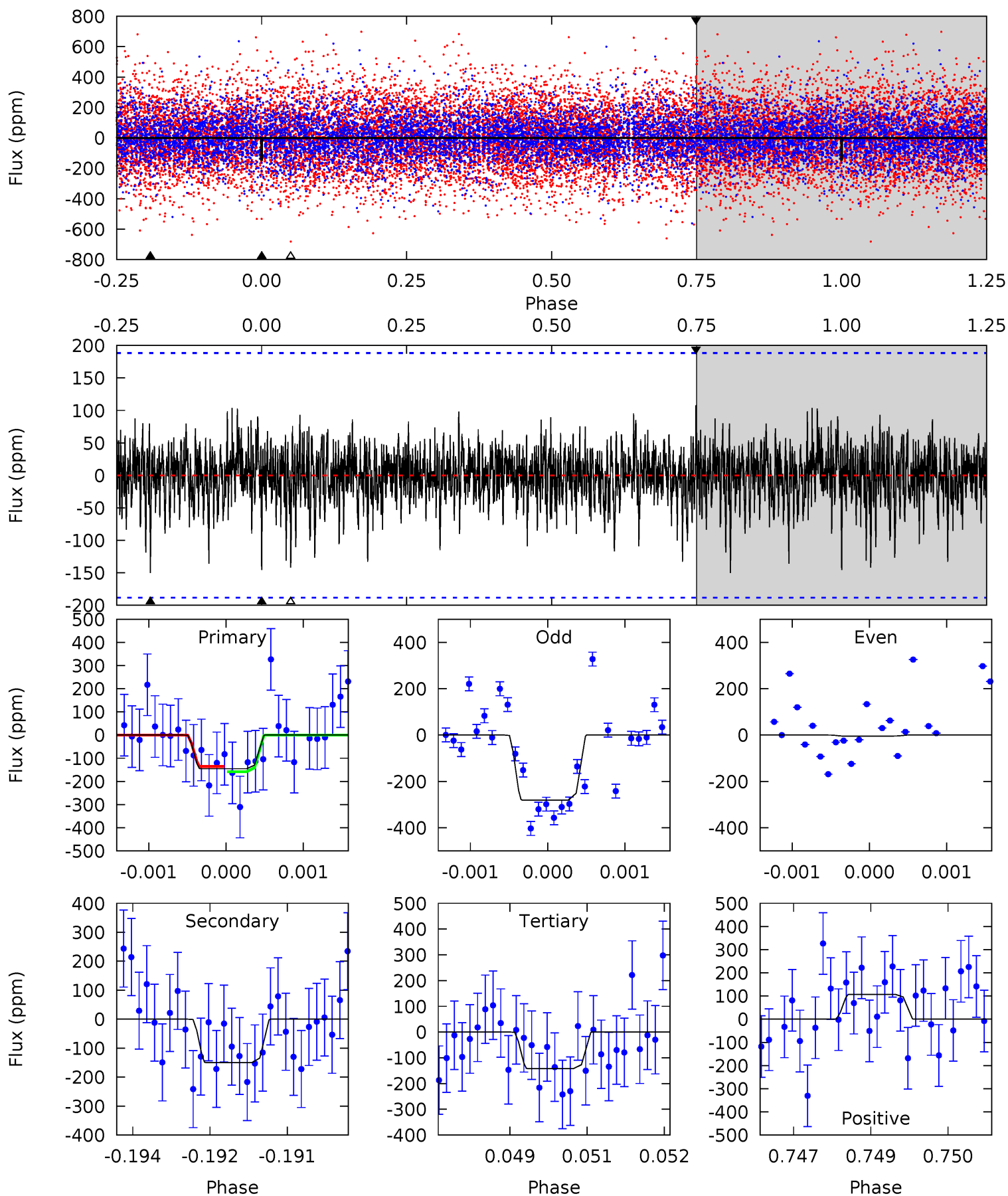
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.50	7.04	4.24	4.18	5.34	3.12	1.33	3.26	3.32	2.80	2.87	0.94	0.89	0.36	0.30



# Alt Model-Shift Uniqueness Test

004349612-05, P = 118.746077 Days, E = 93.703915 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
4.15	4.29	4.06	3.07	5.39	3.19	1.01	0.10	1.08	0.23	1.22	3.95	1.16	0.42	0.31



### Stellar Parameters For KIC 004349612

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6362^{+204}_{-227}$	$3.814^{+0.535}_{-0.126}$	$-0.400^{+0.300}_{-0.300}$	$2.274^{+0.483}_{-1.126}$	$1.229^{+0.182}_{-0.273}$	$0.147^{+0.821}_{-0.056}$
	+3%/-4%	+14%/-3%	+75%/-75%	+21%/-50%	+15%/-22%	+558%/-38%
Source	PHO54	PHO54	PHO54	DSEP		

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

### Secondary Eclipse Parameters for KIC 004349612-05 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-198 \pm 28$	$3.54^{+2.54}_{-2.11}$	$804^{+73}_{-114}$	$5911^{+3907}_{-1243}$	$2255^{+10883}_{-1545}$
Alt.	$-150 \pm 35$	$3.00^{+2.87}_{-1.85}$	$805^{+68}_{-113}$	$5795^{+4790}_{-1238}$	$2275^{+14322}_{-1687}$

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

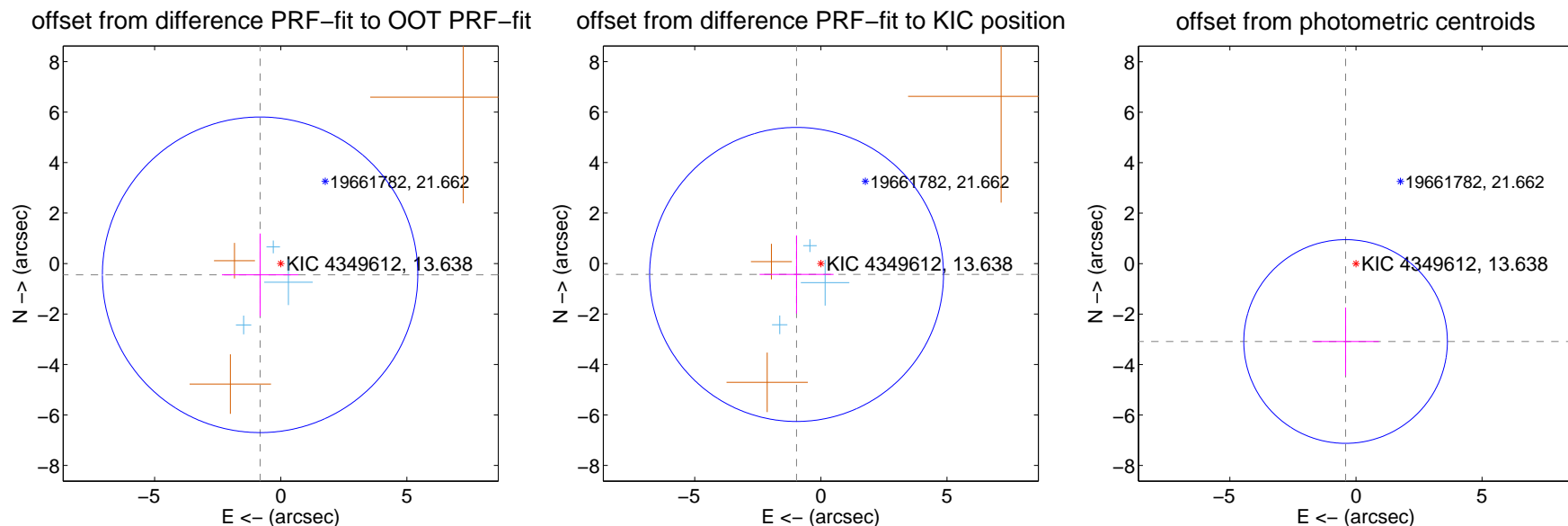
## DV Centroid Data

Supplemental centroid analysis for 004349612-05. Kepler magnitude: 13.64. Transit SNR 7.43

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.933 \pm 2.084$	0.45	$0.819 \pm 1.513$	$-0.446 \pm 1.635$
PRF-fit source offset from KIC position	$1.056 \pm 1.942$	0.54	$0.963 \pm 1.466$	$-0.432 \pm 1.548$
photometric centroid source offset	$3.11 \pm 1.35$	2.31	$0.41 \pm 1.32$	$-3.09 \pm 1.35$



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



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

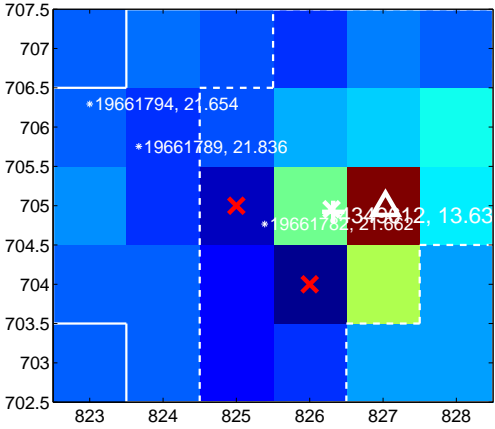
Q1 no difference image



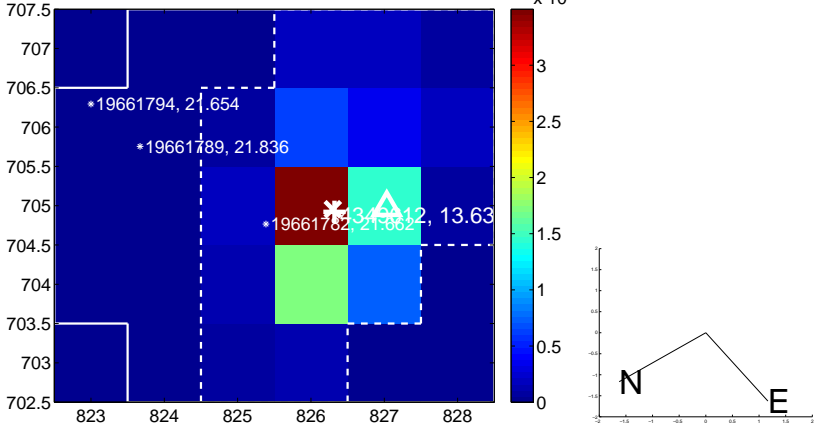
Q1 no OOT image



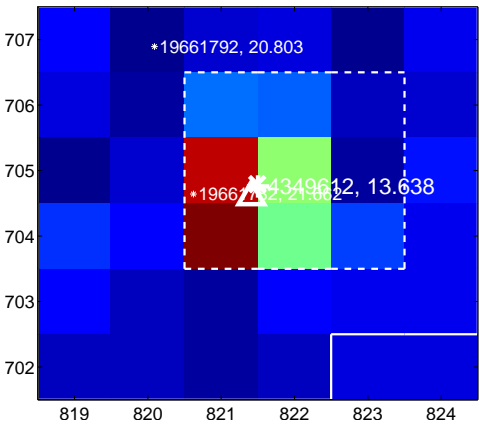
Q2 difference image



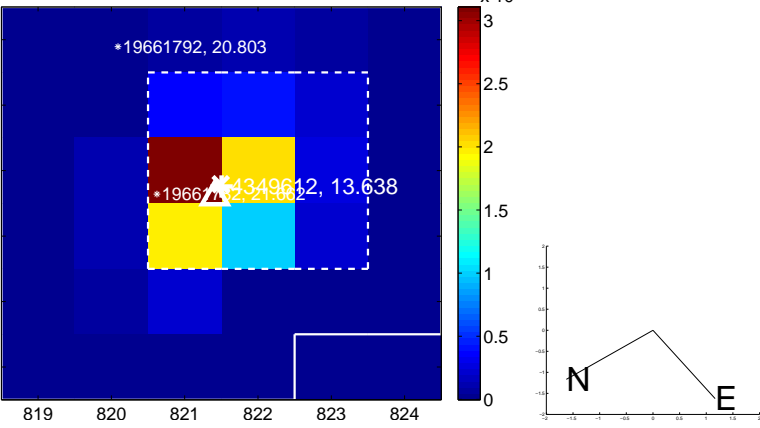
Q2 OOT image



Q3 difference image



Q3 OOT image



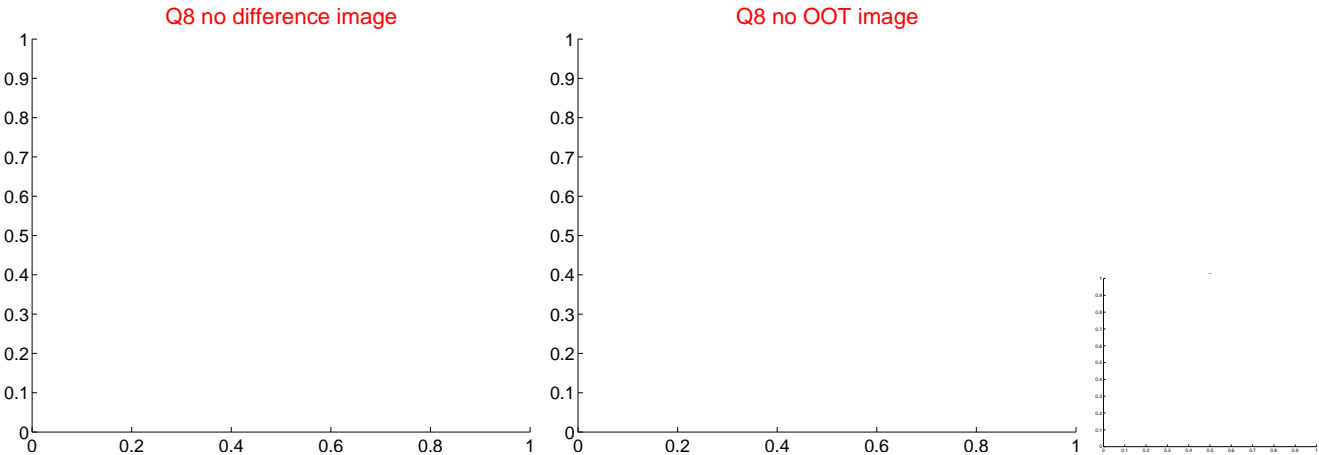
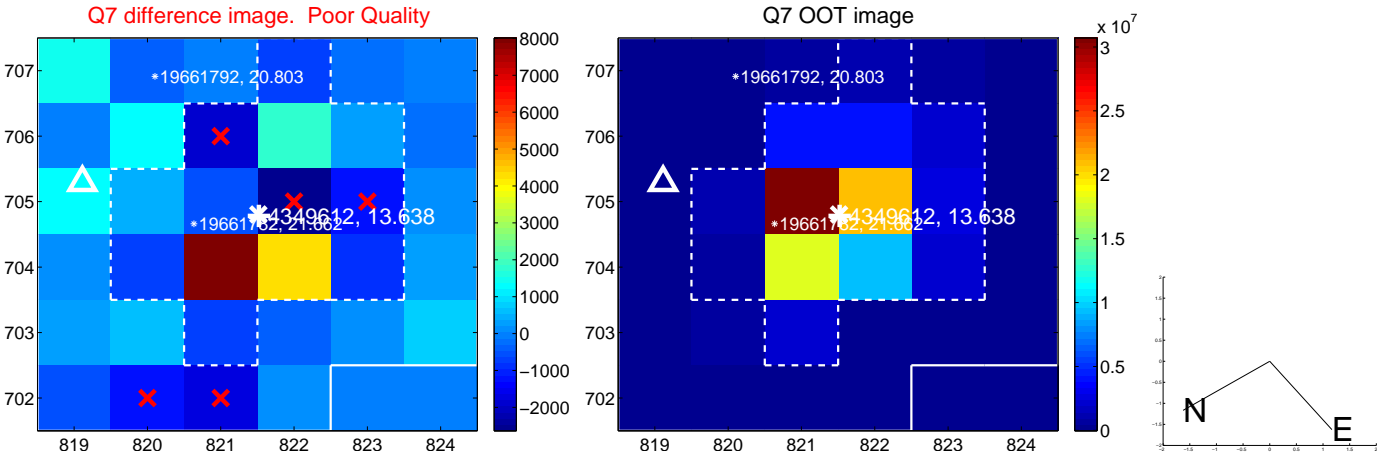
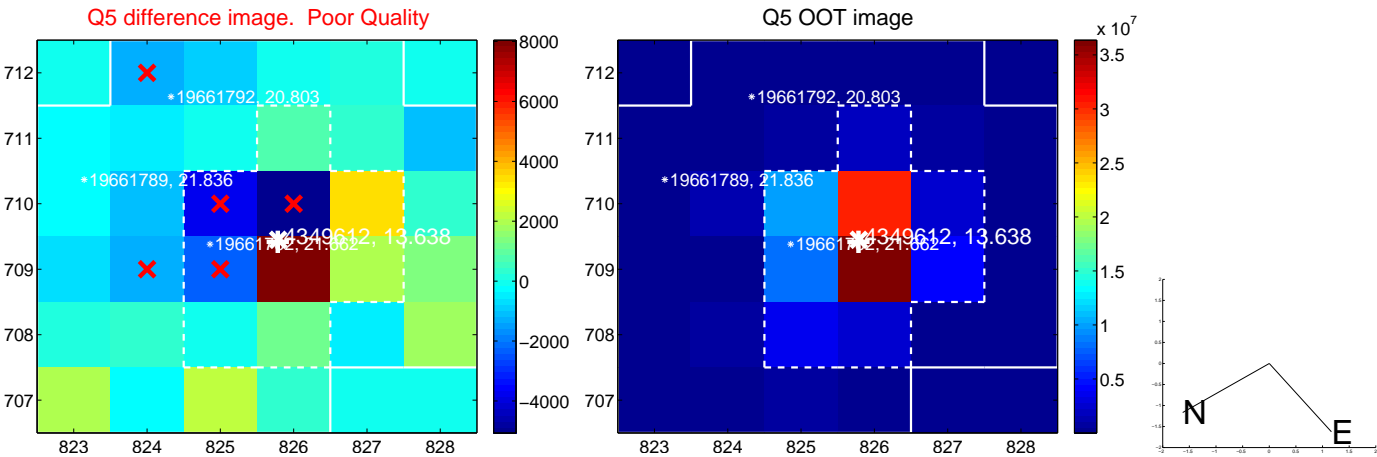
Q4 no difference image



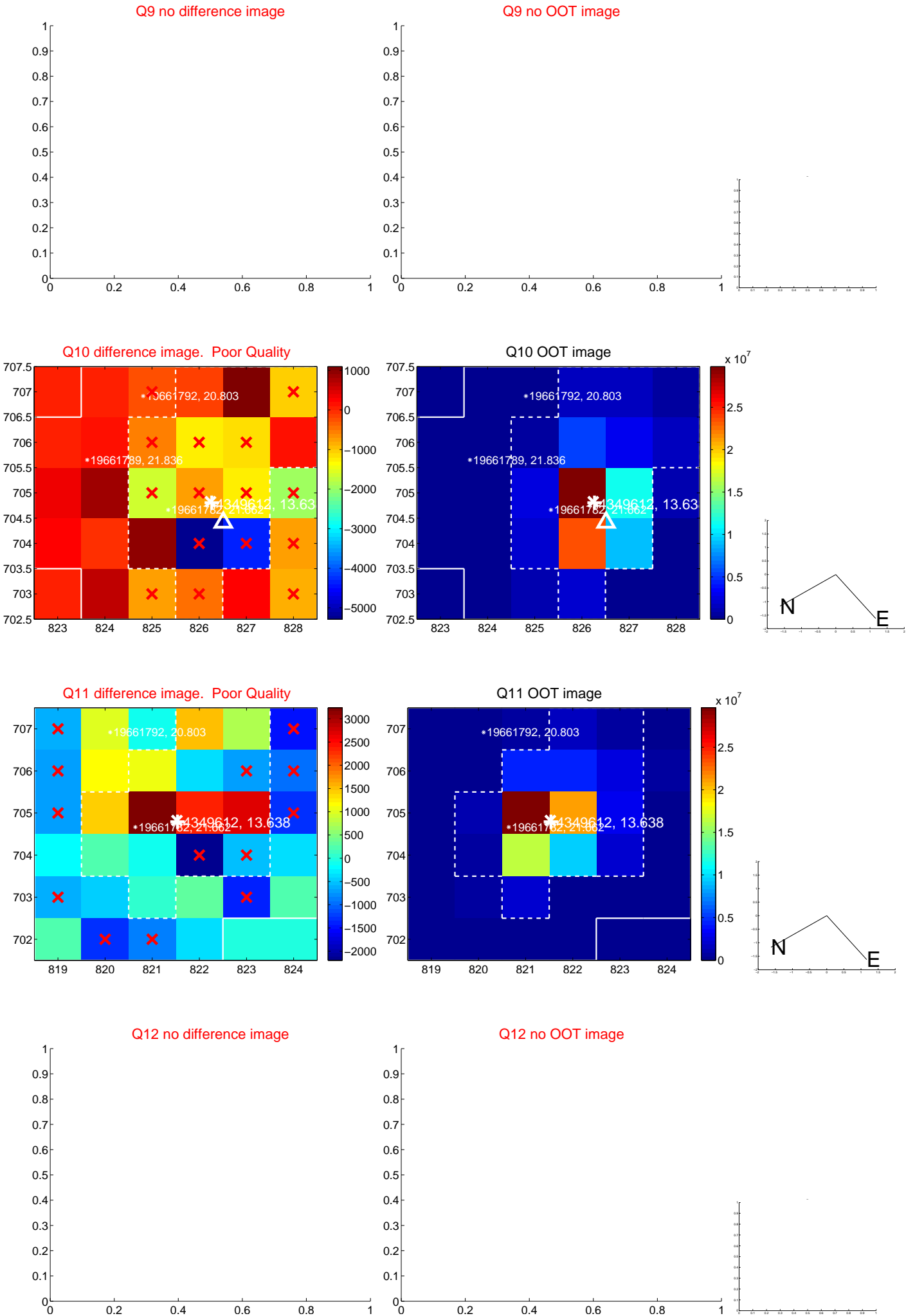
Q4 no OOT image



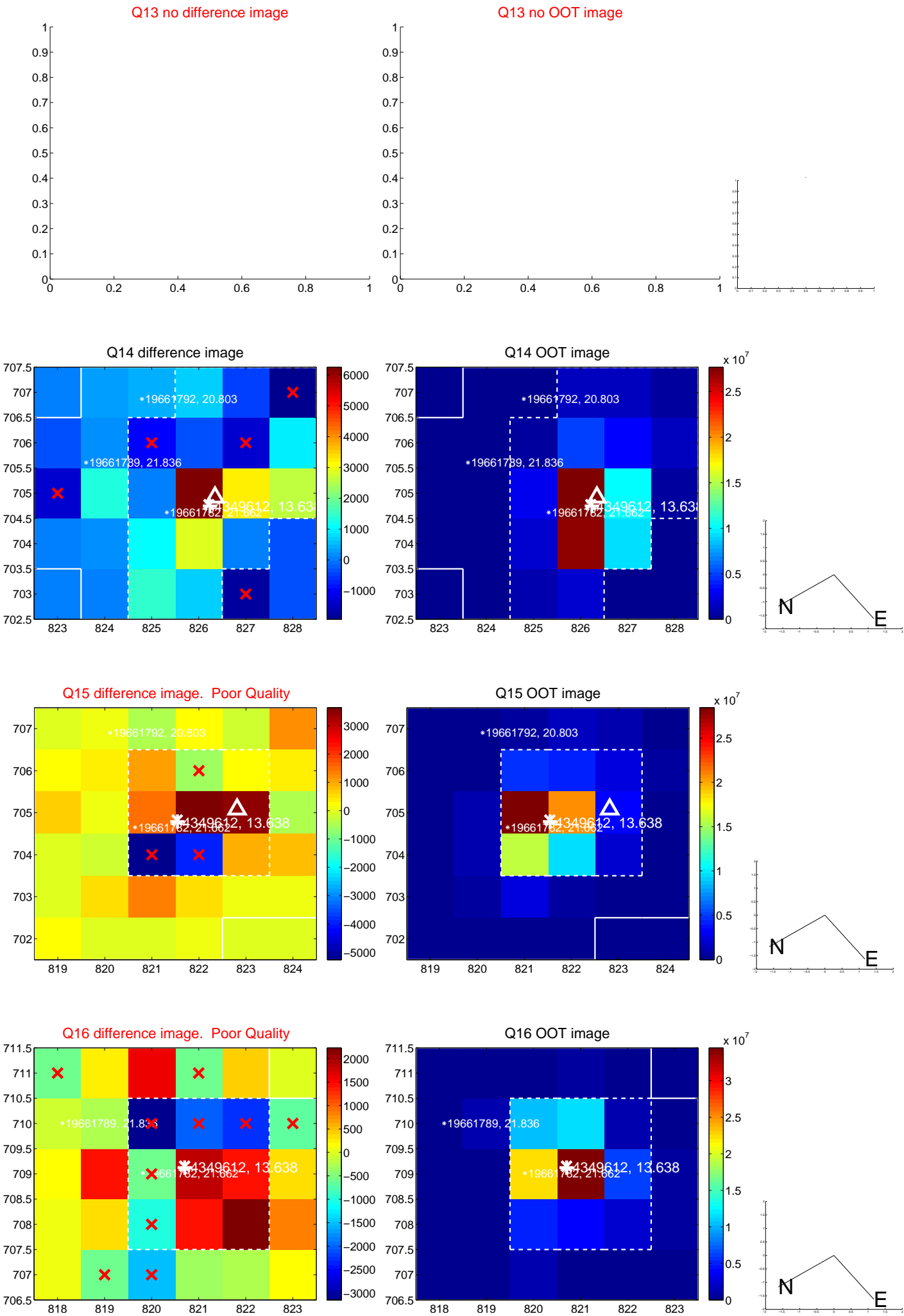
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



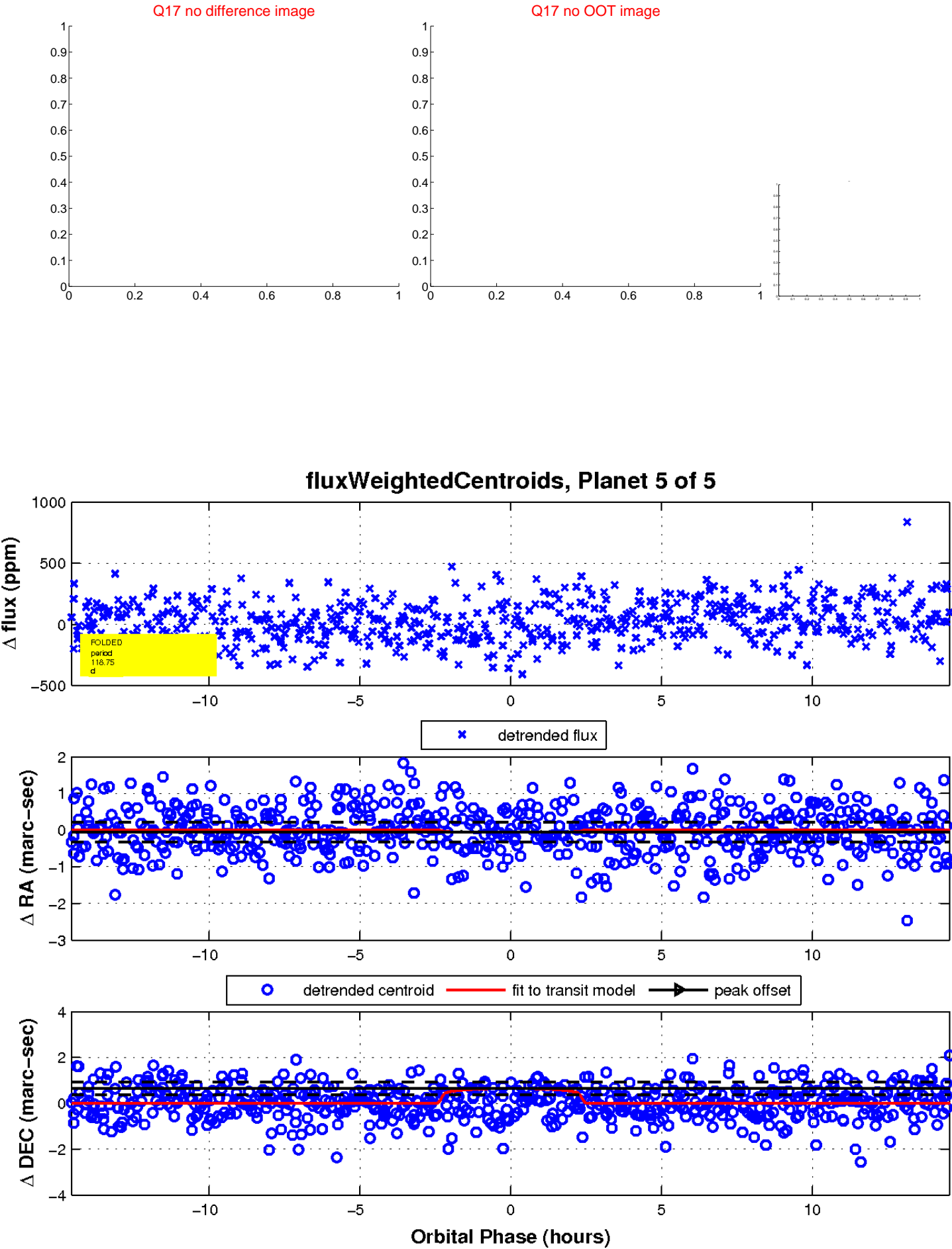
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



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



UKIRT Image

Declination

