

# KIC 008491619

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008491619-01	OBS	No	0.689213	131.664865	48.5	2.659	8.0	8.9	0.81	4906	0.65	1734.13
008491619-02	OBS	No	338.372084	212.765963	524.7	8.937	9.3	6.6	0.81	4906	2.25	0.45
008491619-03	OBS	No	101.618905	151.020125	518.4	3.653	8.1	6.1	0.81	4906	1.86	2.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008491619-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_RESOLVED_OFFSET
008491619-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008491619-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—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.

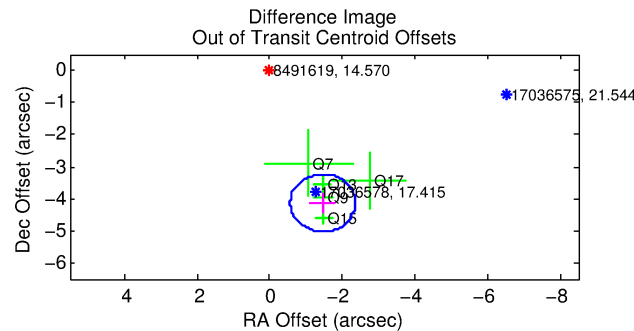
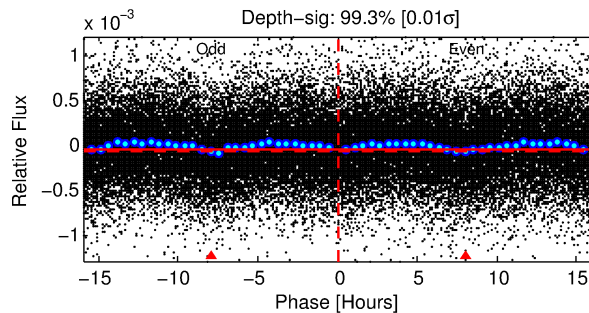
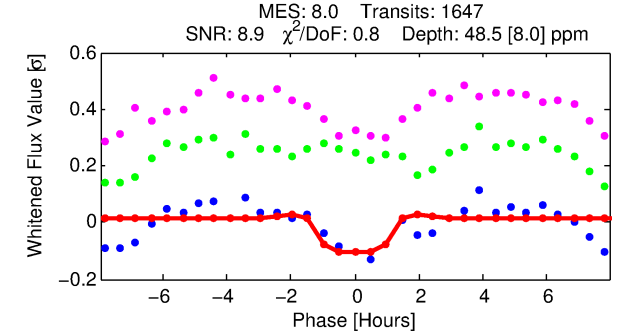
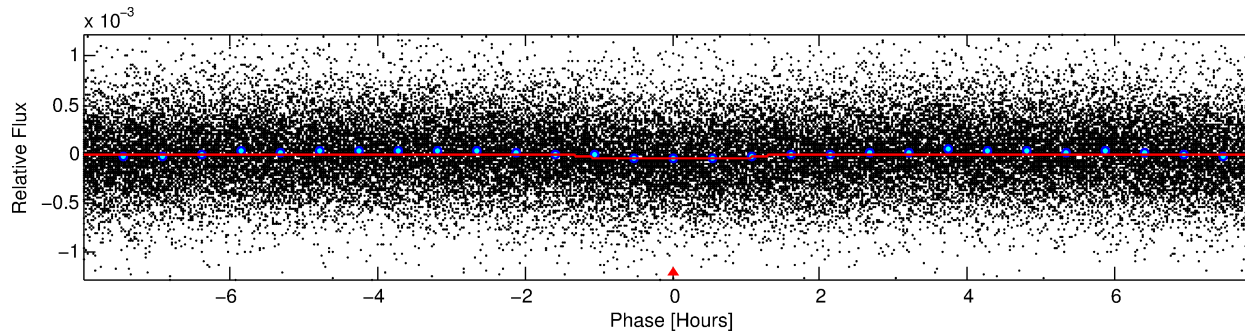
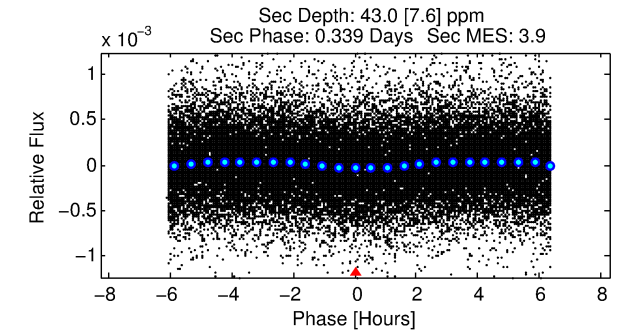
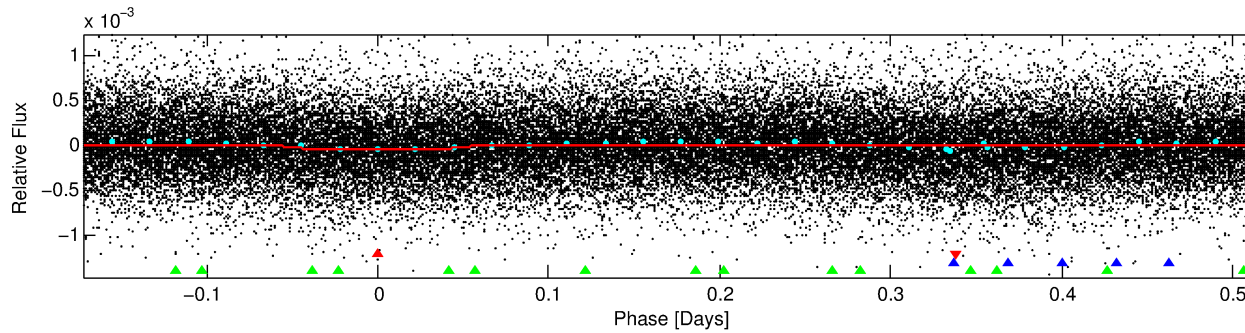
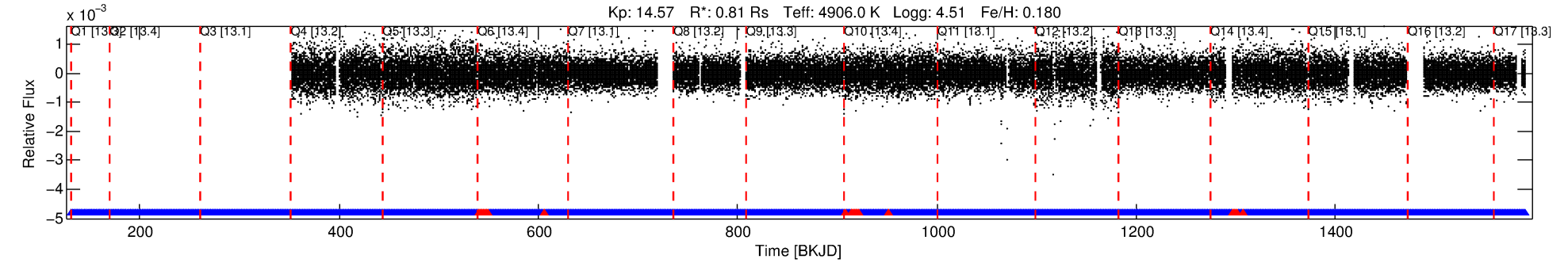
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008491619-01

No Significant Match Found

# DV One-Page Summary

KIC: 8491619 Candidate: 1 of 3 Period: 0.689 d



## DV Fit Results:

Period = 0.68921 [0.00001] d  
Epoch = 131.6649 [0.0031] BKJD  
Rp/R\* = 0.0073 [0.0049]  
a/R\* = 1.43 [1.79]  
b = 0.83 [0.92]  
Seff = 1734.13 [445.41]  
Teq = 1645 [106] K  
Rp = 0.65 [0.45] Re  
a = 0.0141 [0.0018] AU  
Ag = 11.02 [15.16] [0.66σ]  
Teffp = 4635 [1582] K [1.89σ]

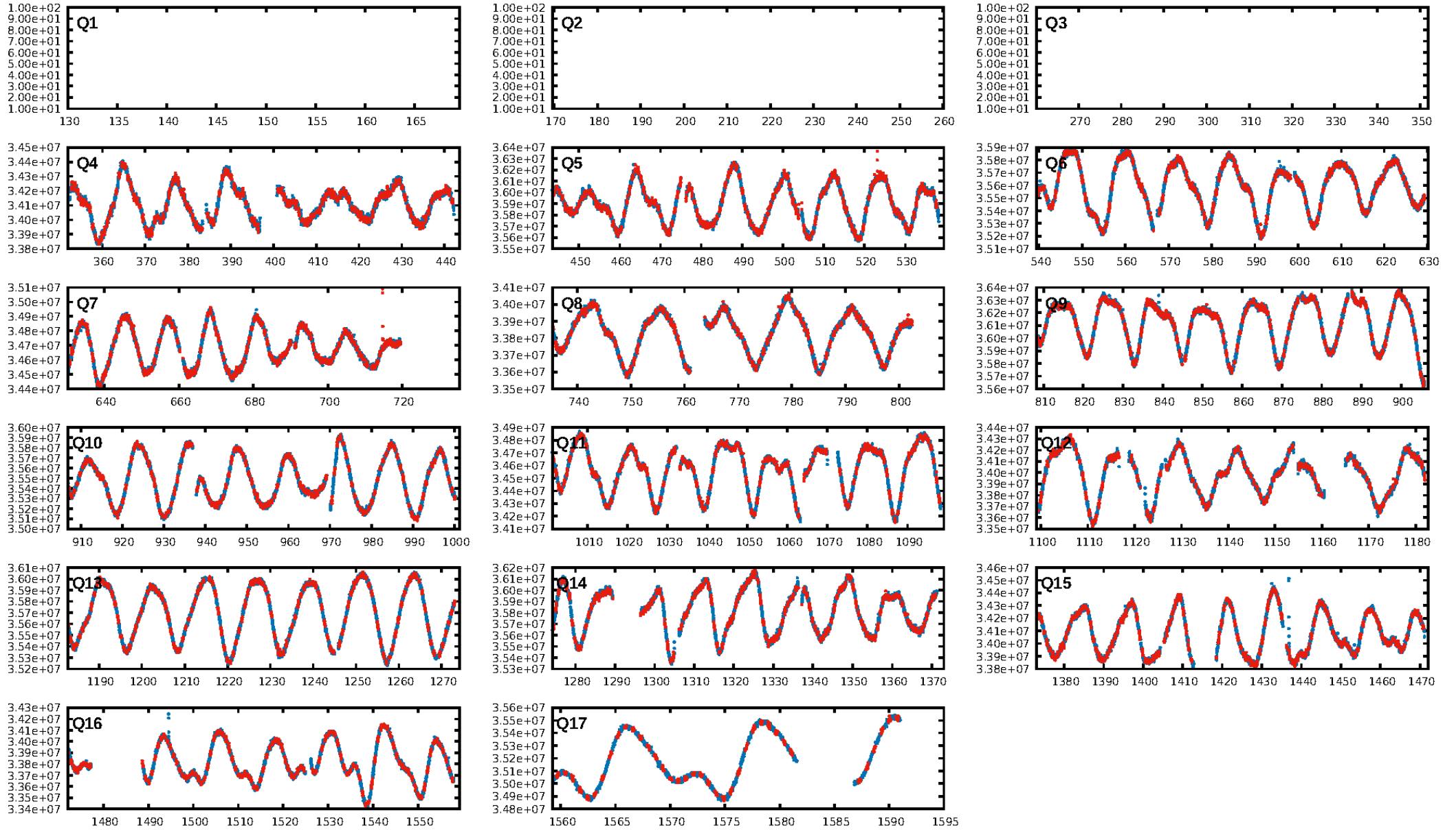
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [536.06σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.37e-13  
RollingBand-fgt: 0.98 [1576/1609]  
GhostDiagnostic-chr: 1.283  
Centroid-sig: 0.0%  
Centroid-so: 2.539 arcsec [2.07σ]  
OotOffset-rm: 4.382 arcsec [14.69σ]  
KicOffset-rm: 3.917 arcsec [3.20σ]  
OotOffset-st: 0/2/0/3 [5]  
KicOffset-st: 0/2/2/3 [7]  
DiffImageQuality-fgm: 0.57 [4/7]  
DiffImageOverlap-fno: 1.00 [14/14]

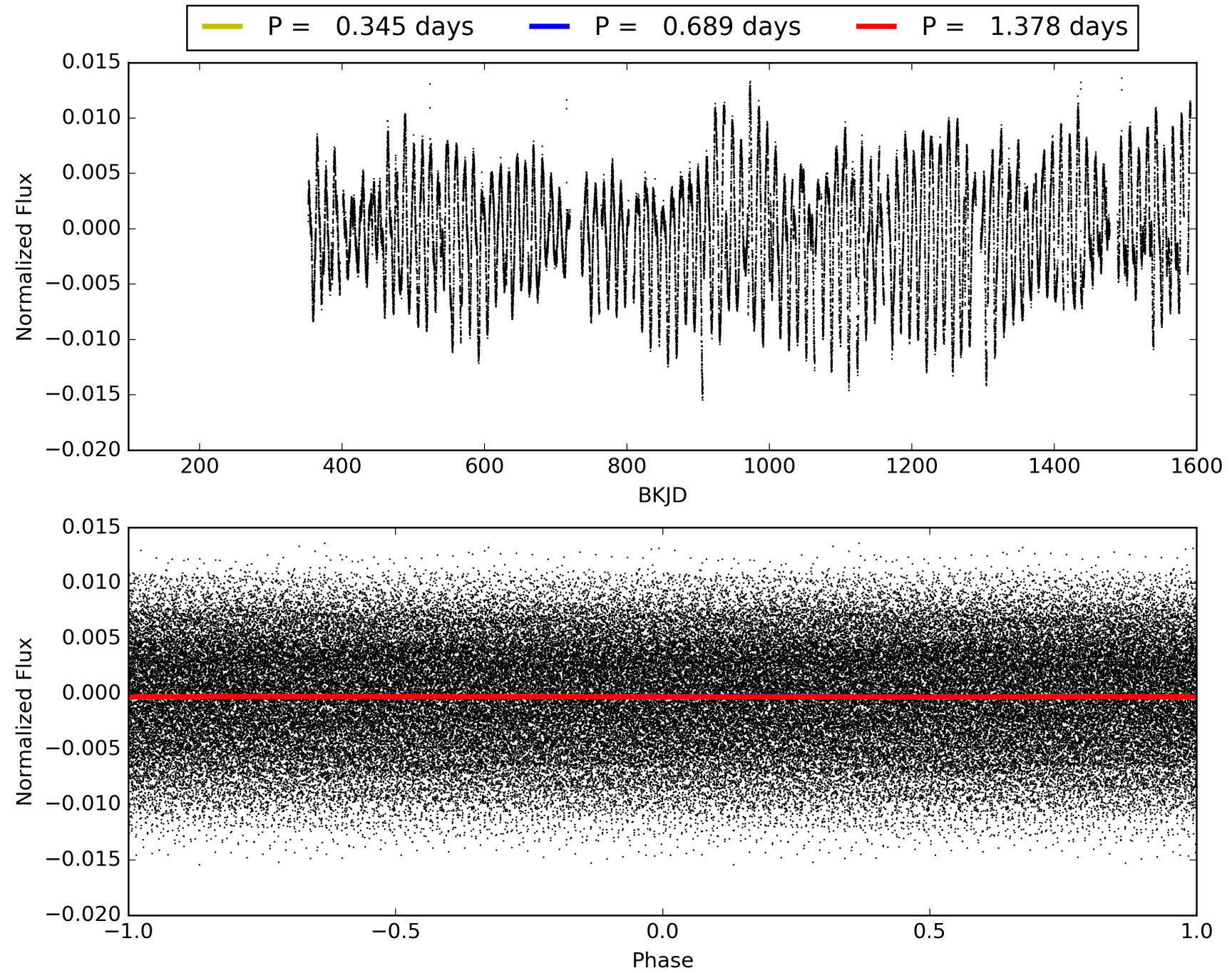
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:10:49 Z

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

# TCE 008491619-01, PDC Light Curves

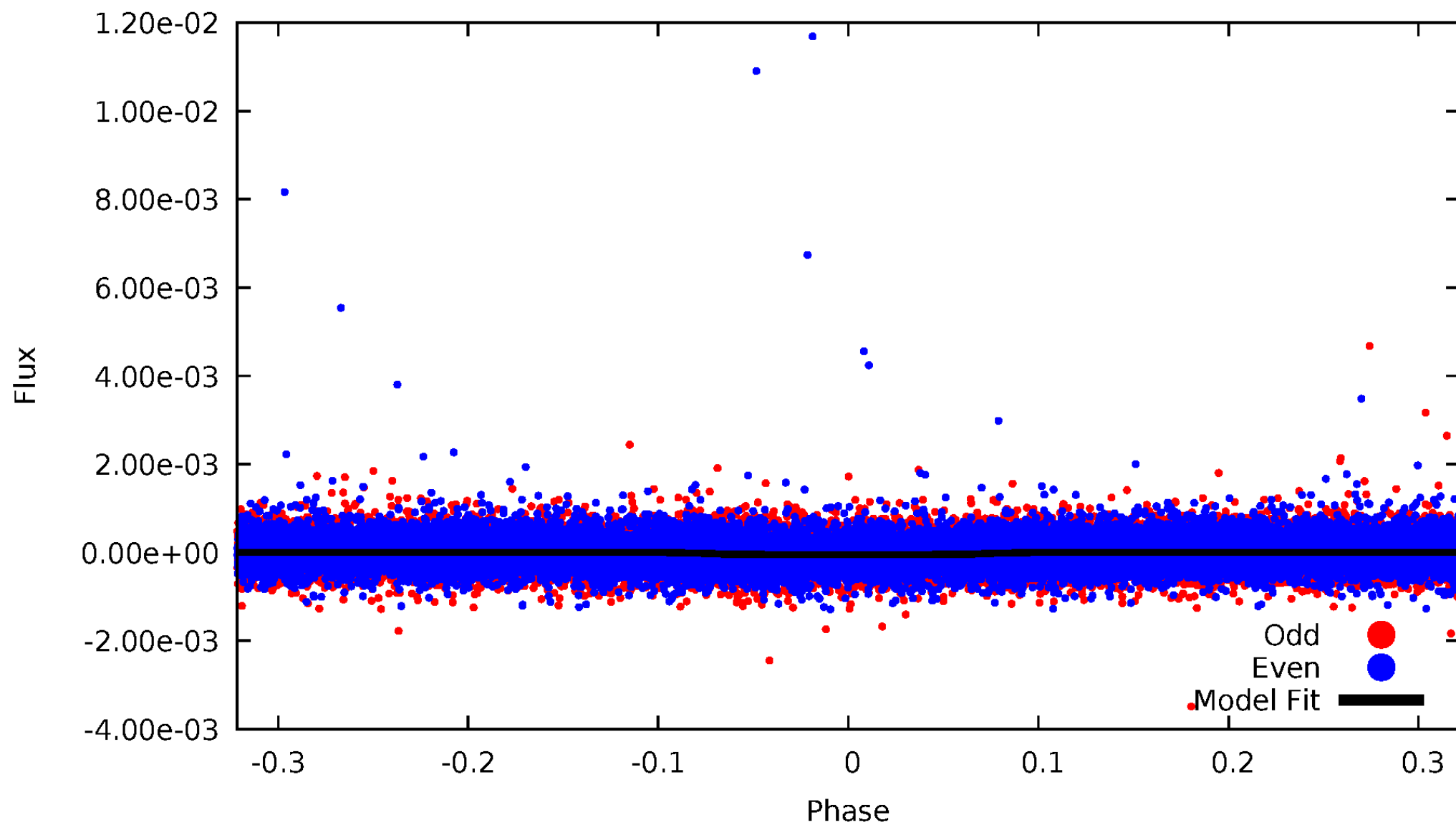


TCE 008491619-01



# DV Odd/Even

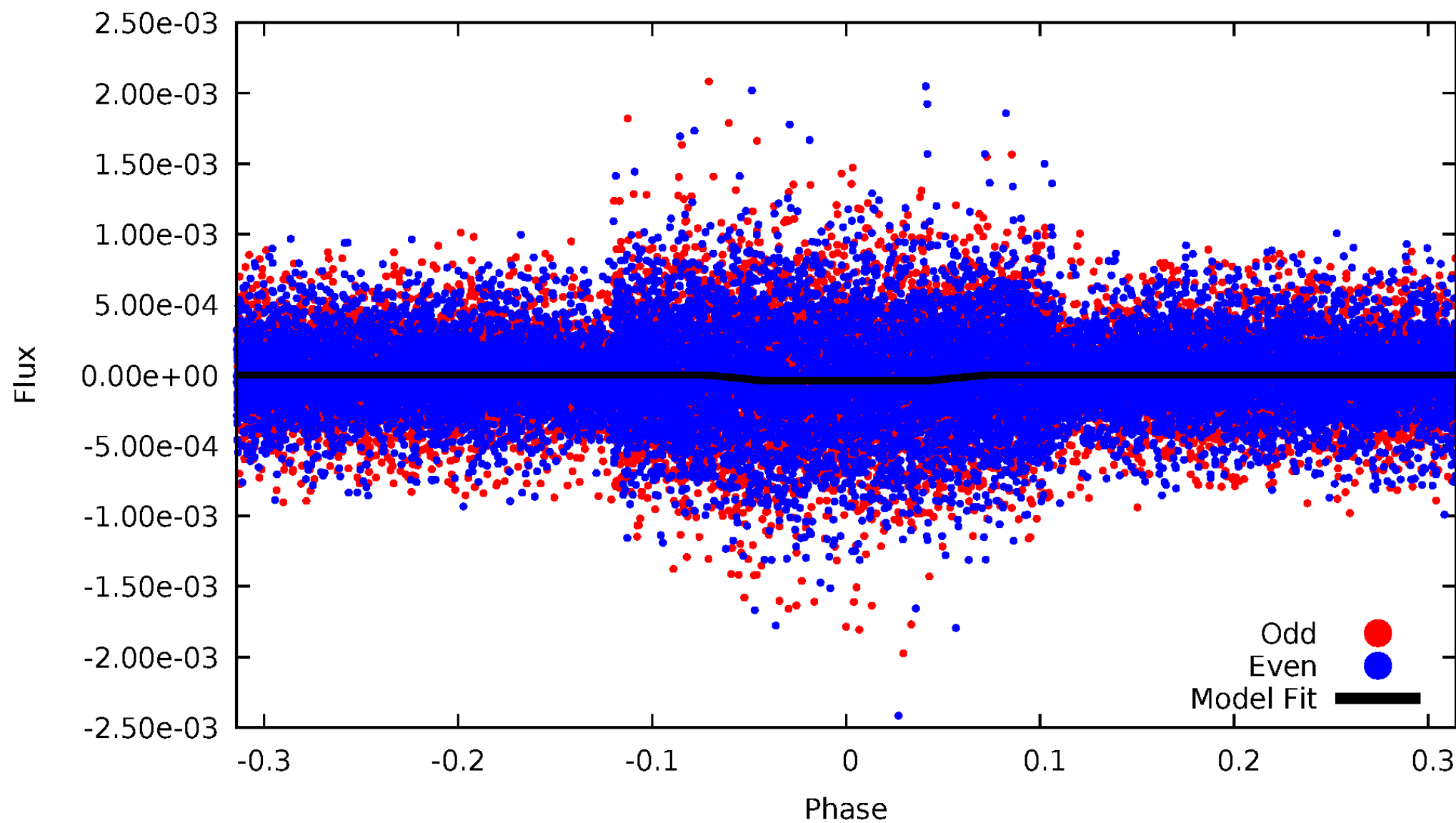
TCE 008491619-01





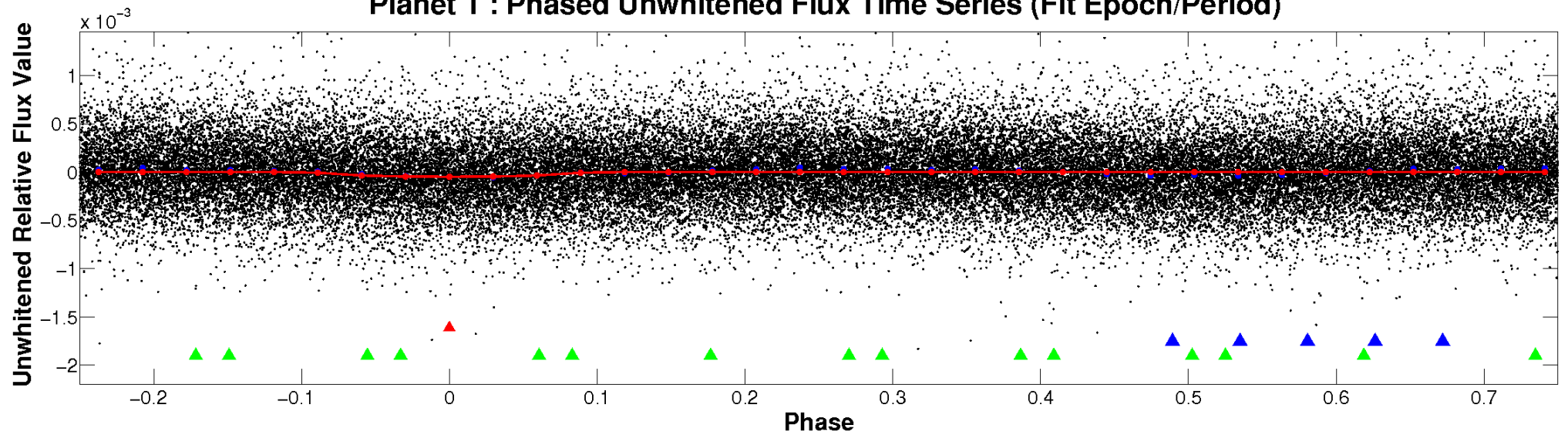
# ALT Odd/Even

TCE 008491619-01

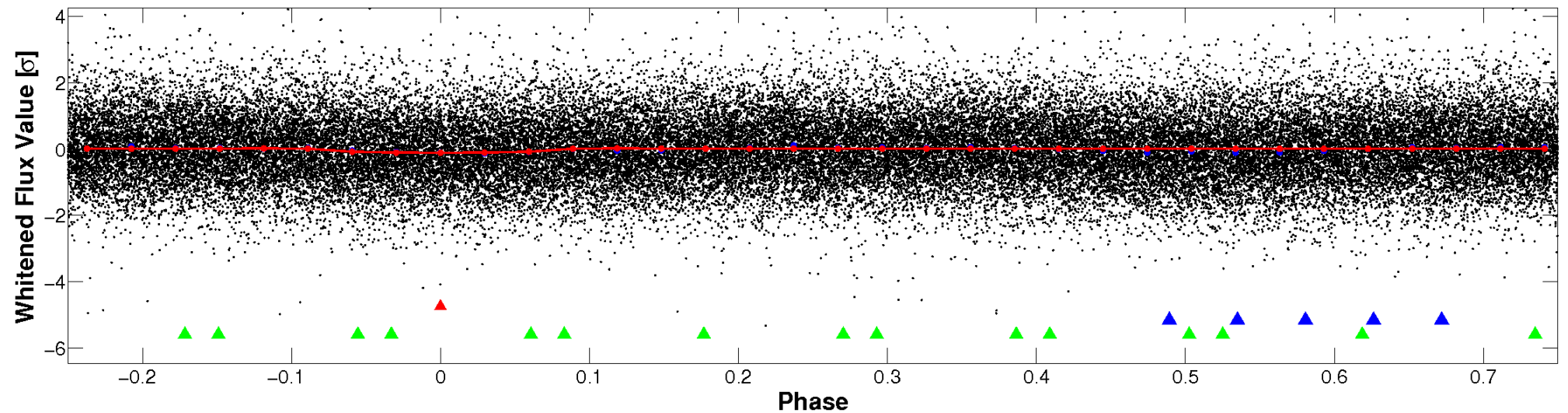


# Non-Whitened Vs. Whitened Light Curve

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

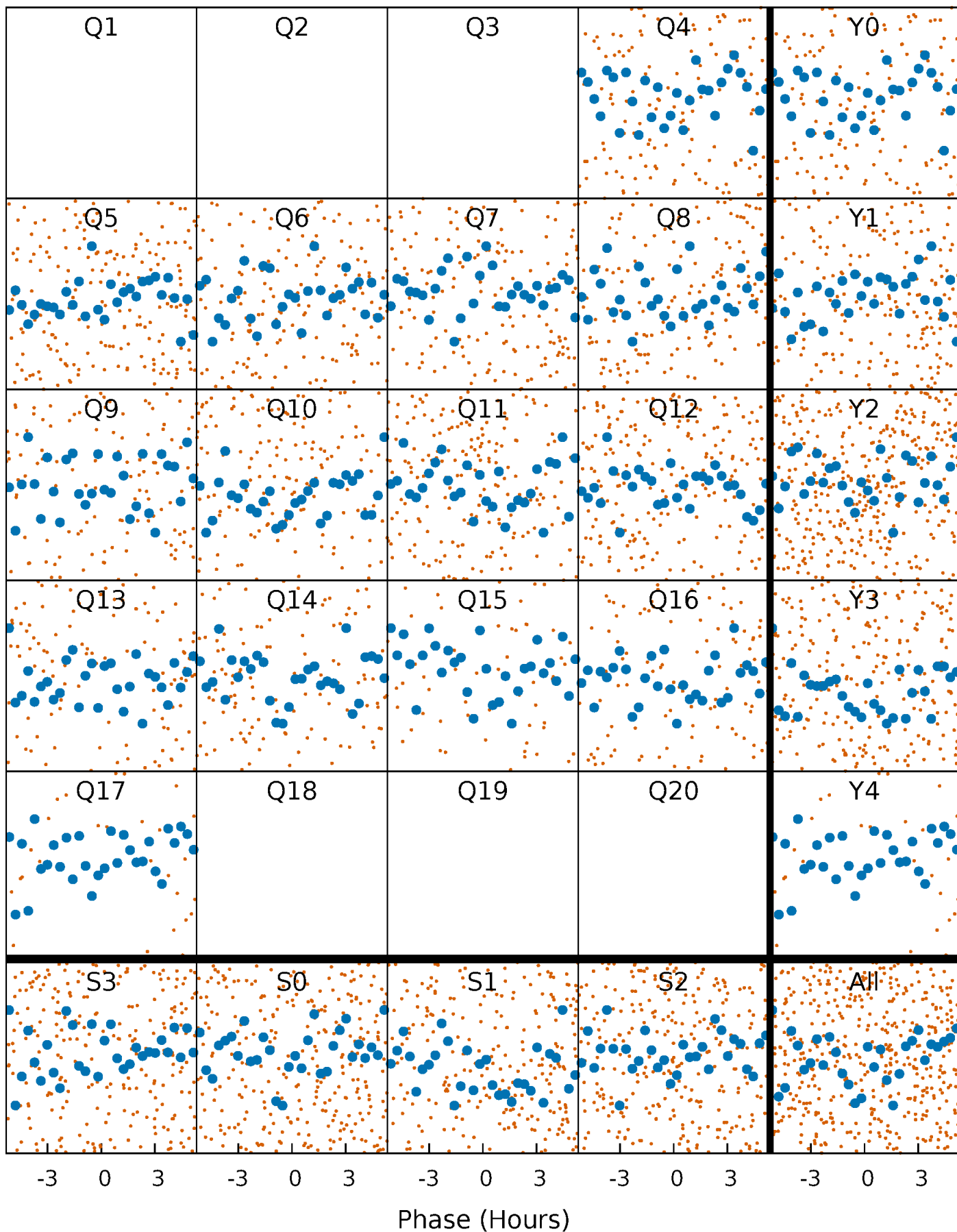


## Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

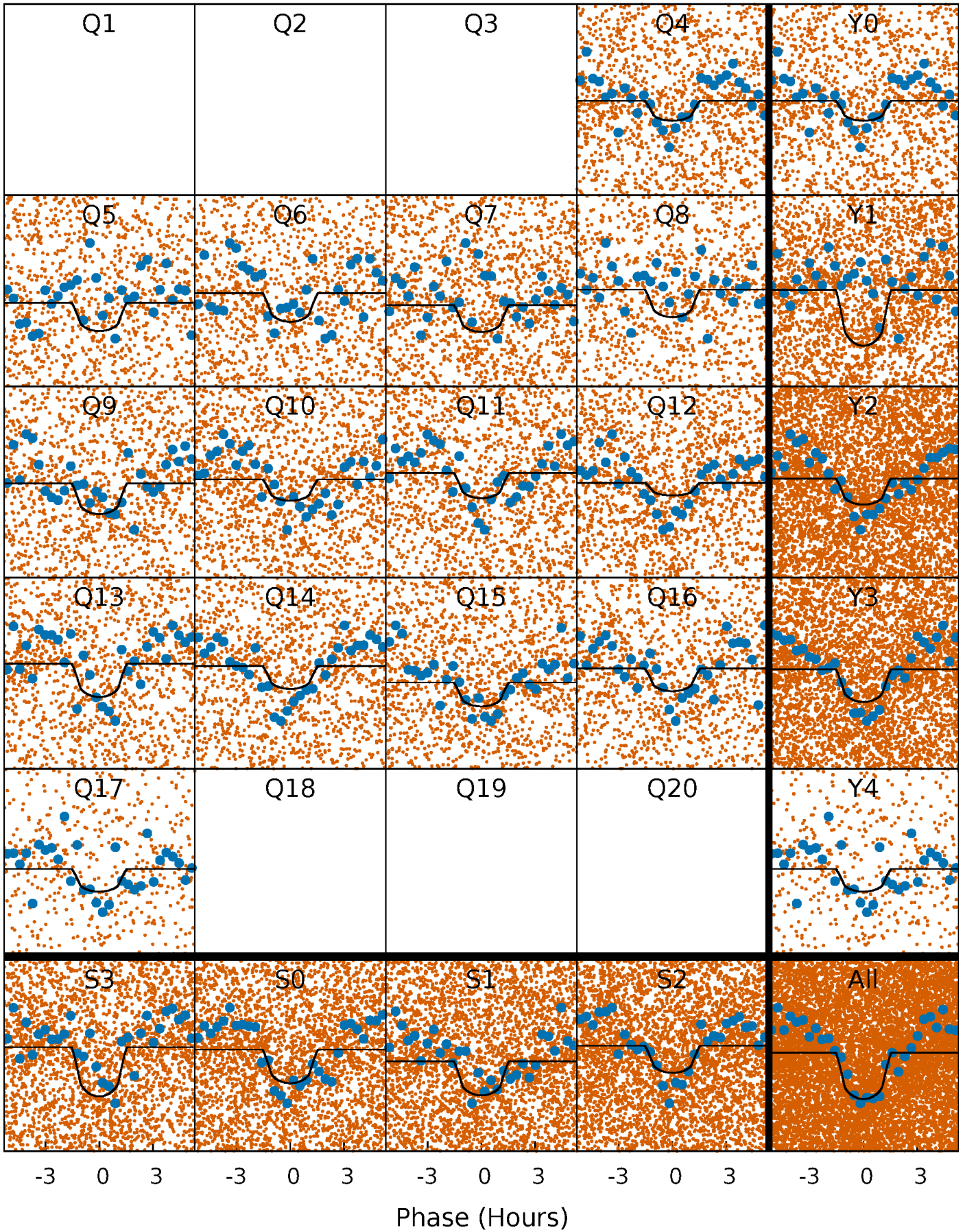
TCE 008491619-01   P= 0.689213 Days    $T_0=131.664865$  (BKJD)





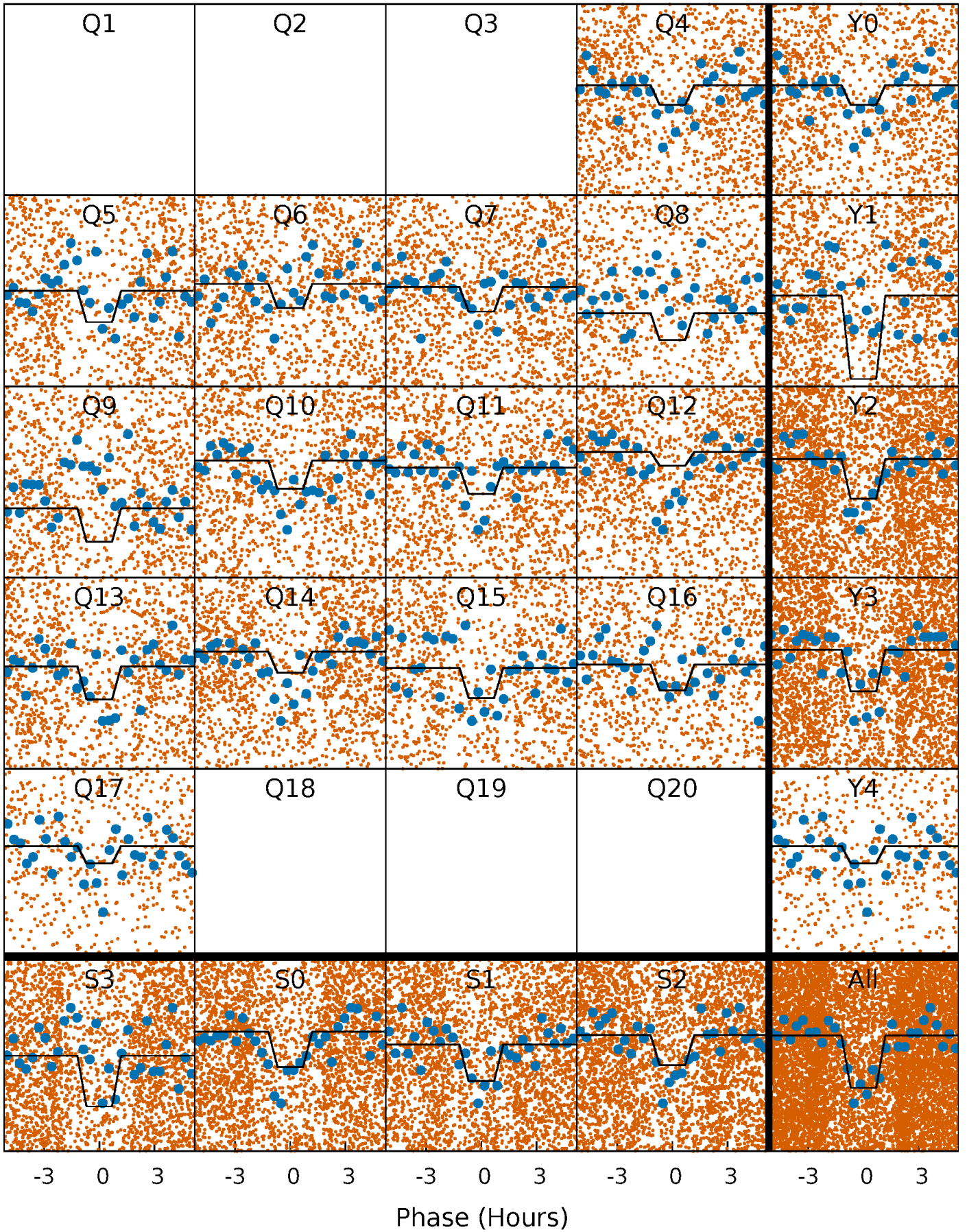
# DV Quarter-Phased Transit Curves

TCE 008491619-01 P= 0.689213 Days  $T_0=131.664865$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 008491619-01 P= 0.689218 Days  $T_0=131.660047$  (BKJD)

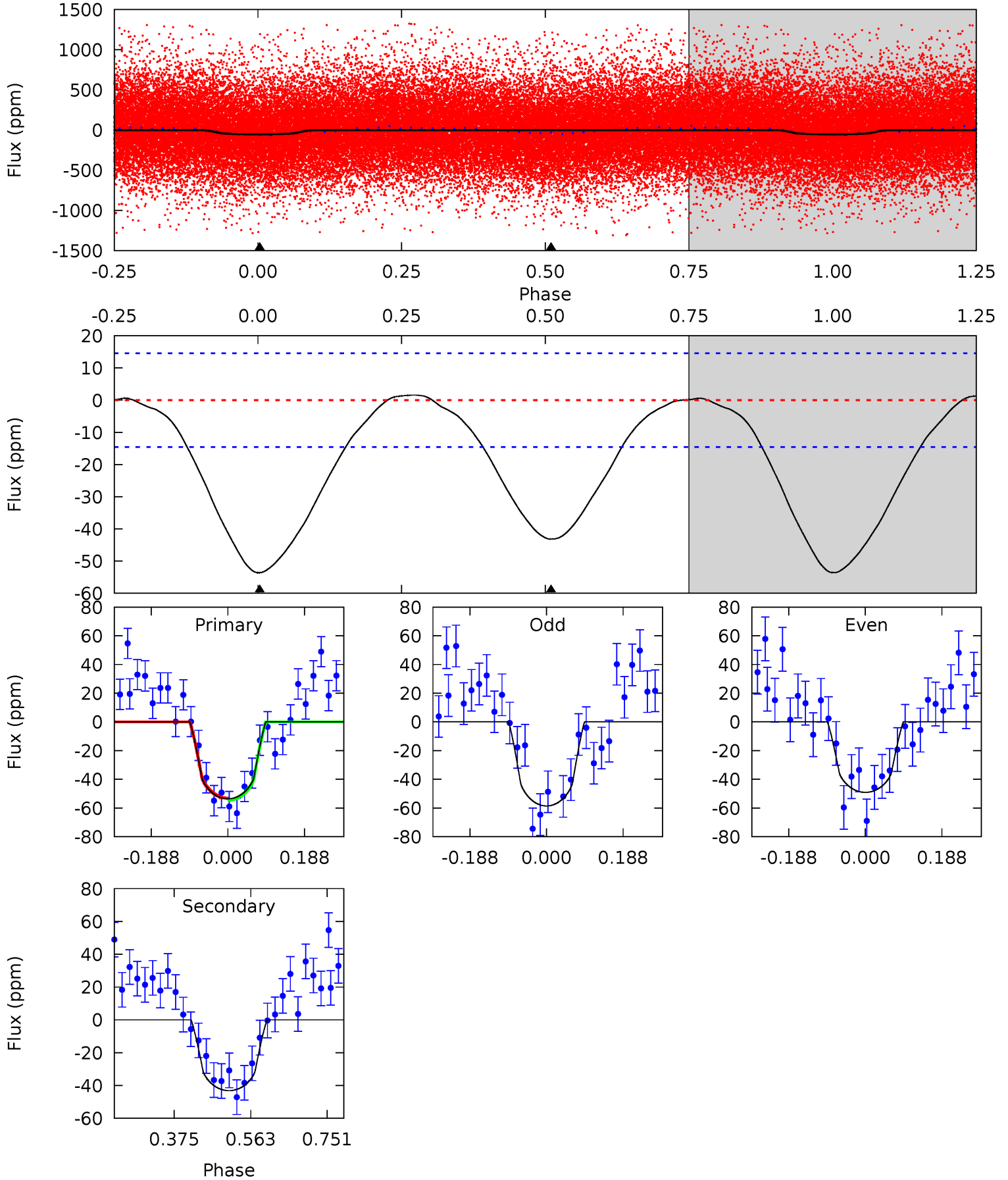




# DV Model-Shift Uniqueness Test

008491619-01, P = 0.689213 Days, E = 131.664865 Days

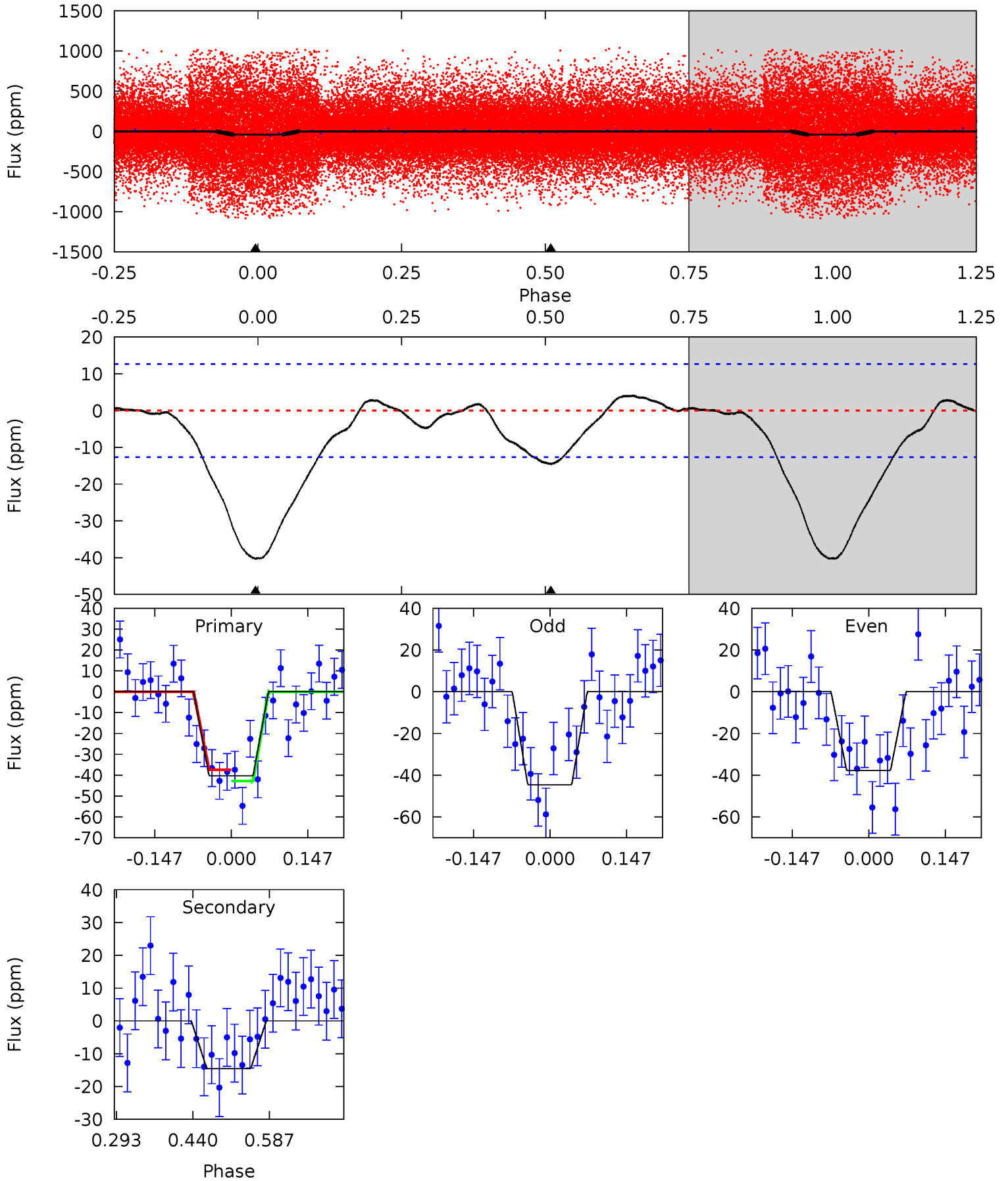
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.3	13.1	0	0	4.43	1.32	0.48	16.3	16.3	13.1	13.1	1.44	0.87	0.03	0.20



# Alt Model-Shift Uniqueness Test

008491619-01, P = 0.689218 Days, E = 131.660047 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
14.3	5.13	0	0	4.48	1.45	0.79	14.3	14.3	5.13	5.13	1.21	0.98	0.09	0.95



### Stellar Parameters For KIC 008491619

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4906^{+169}_{-169}$	$4.511^{+0.066}_{-0.132}$	$0.180^{+0.200}_{-0.300}$	$0.814^{+0.094}_{-0.085}$	$0.783^{+0.076}_{-0.055}$	$2.043^{+0.634}_{-0.657}$
	+3%/-3%	+1%/-3%	+111%/-167%	+12%/-10%	+10%/-7%	+31%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008491619-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	$A_{\text{obs}}$
DV	$-43 \pm 3$	$0.70^{+0.44}_{-0.38}$	$2324^{+105}_{-96}$	$4550^{+2076}_{-781}$	$9.473^{+37.857}_{-5.943}$
Alt.	$-15 \pm 3$	$0.62^{+0.42}_{-0.37}$	$2322^{+112}_{-104}$	$3869^{+1944}_{-689}$	$4.080^{+21.819}_{-2.636}$

$T_{\text{max}}$  = 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

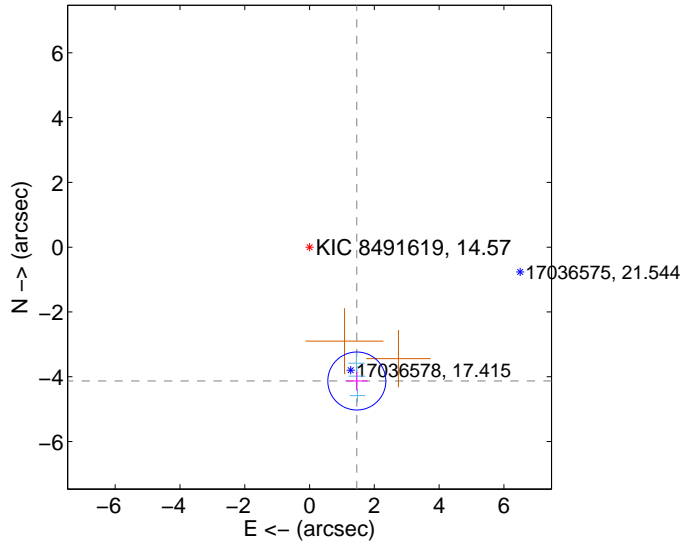
Supplemental centroid analysis for 008491619-01. Kepler magnitude: 14.57. Transit SNR 8.90

There are 4 quarters with good PRF difference image offsets

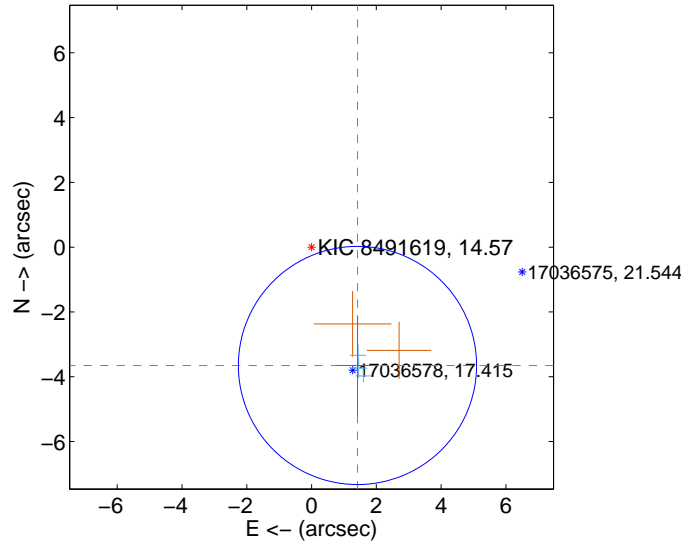
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$4.382 \pm 0.298$	14.69	$-1.460 \pm 0.331$	$-4.132 \pm 0.294$
PRF-fit source offset from KIC position	$3.917 \pm 1.225$	3.20	$-1.418 \pm 0.660$	$-3.652 \pm 1.548$
photometric centroid source offset	$2.54 \pm 1.23$	2.07	$-0.88 \pm 1.00$	$-2.38 \pm 1.26$

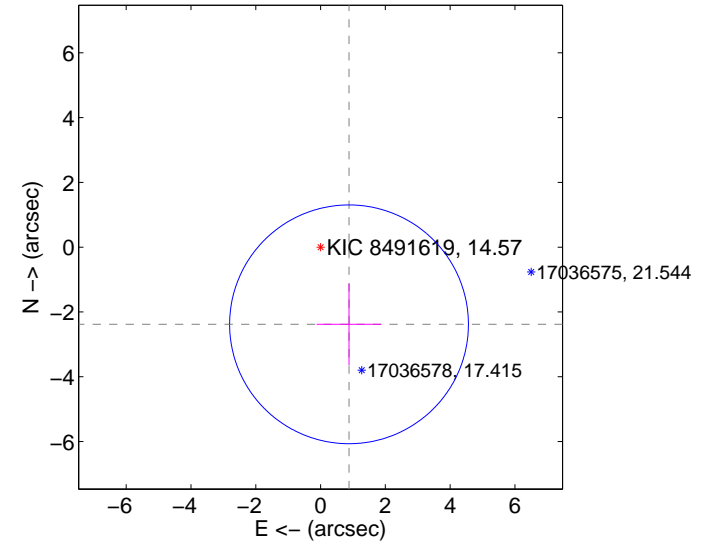
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

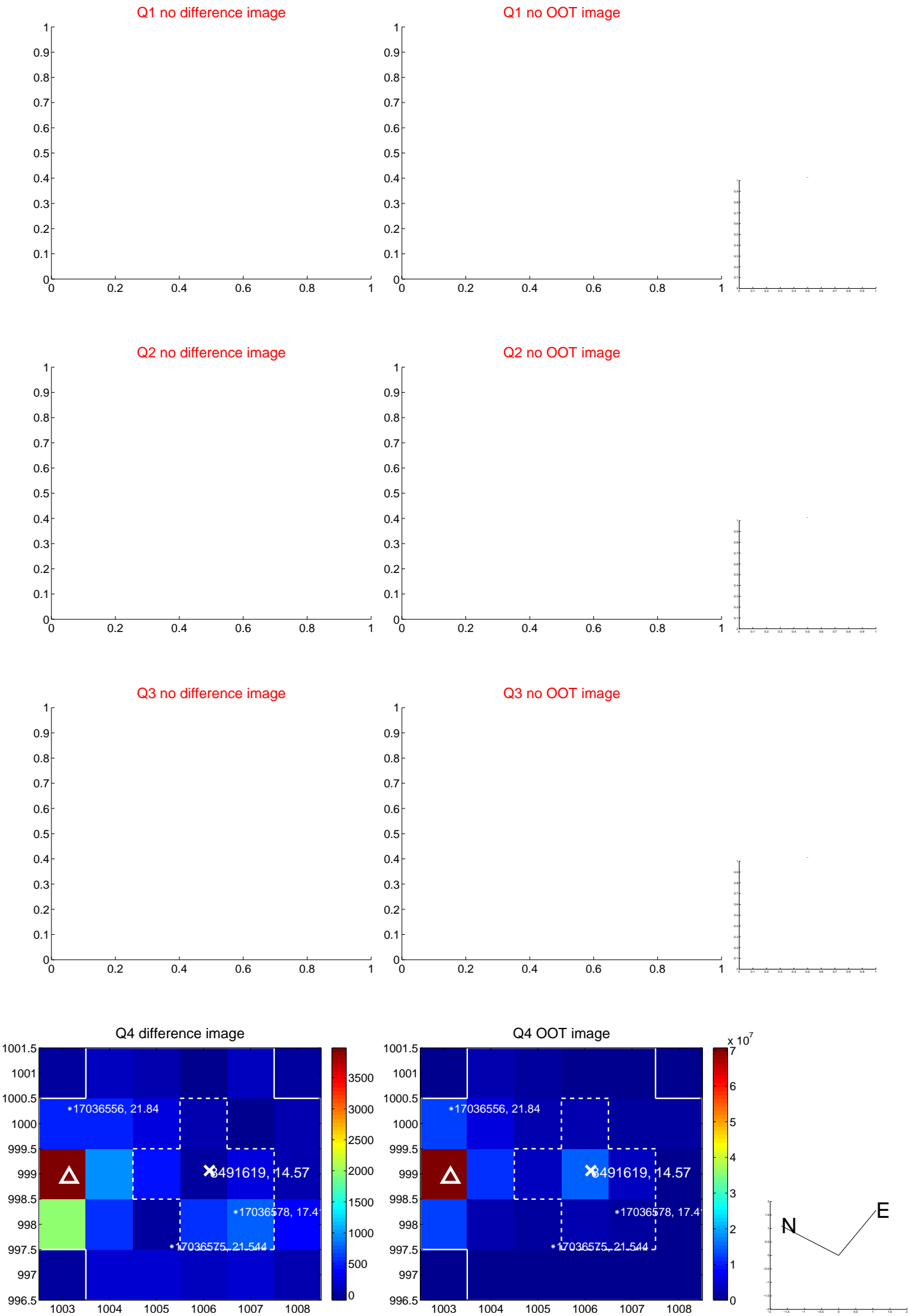


offset from photometric centroids

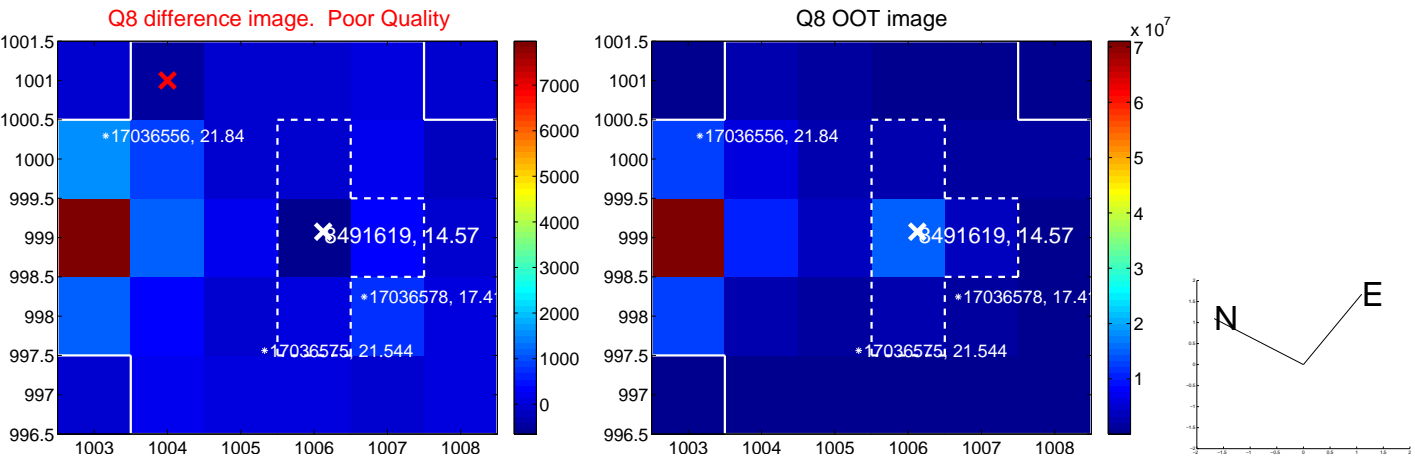
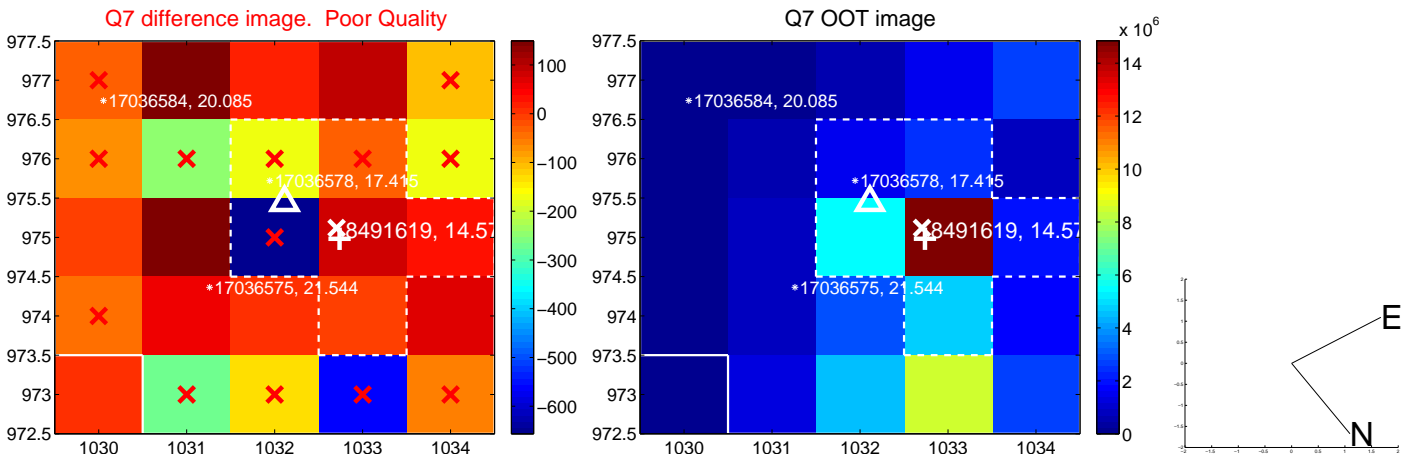
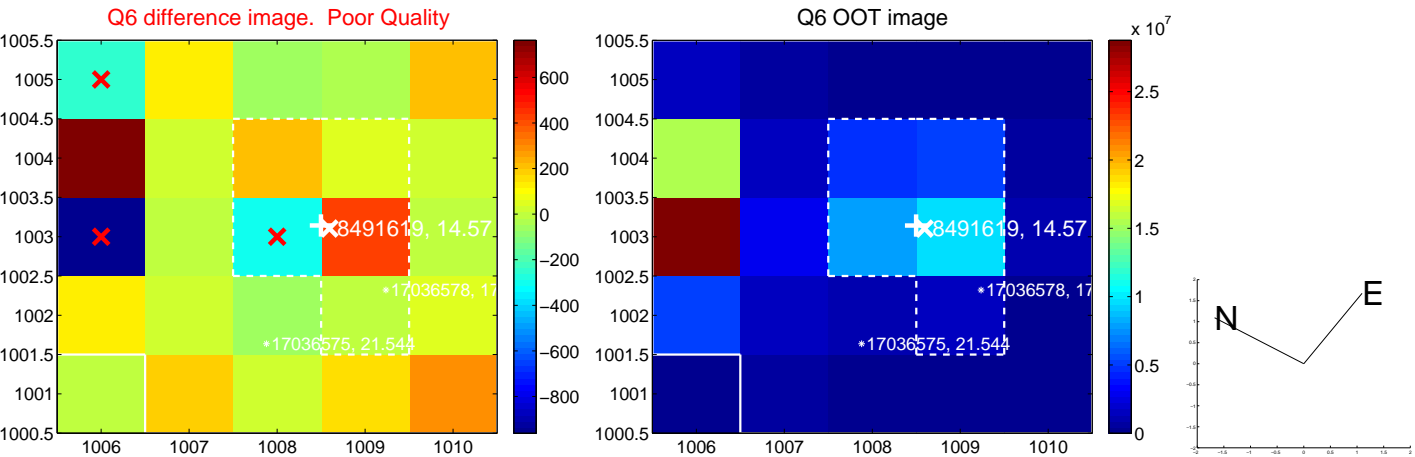
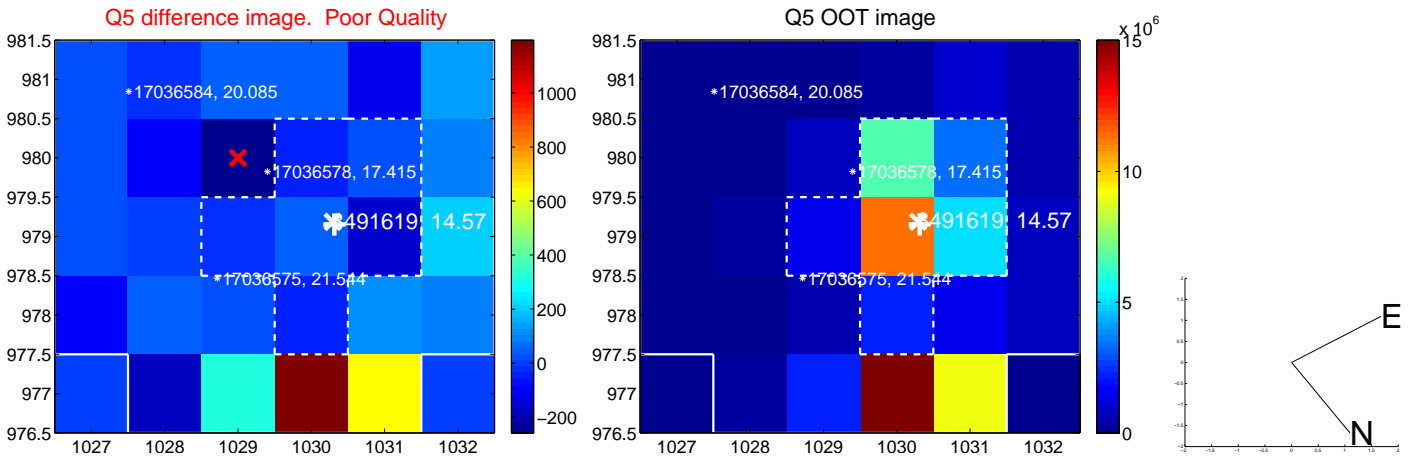


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

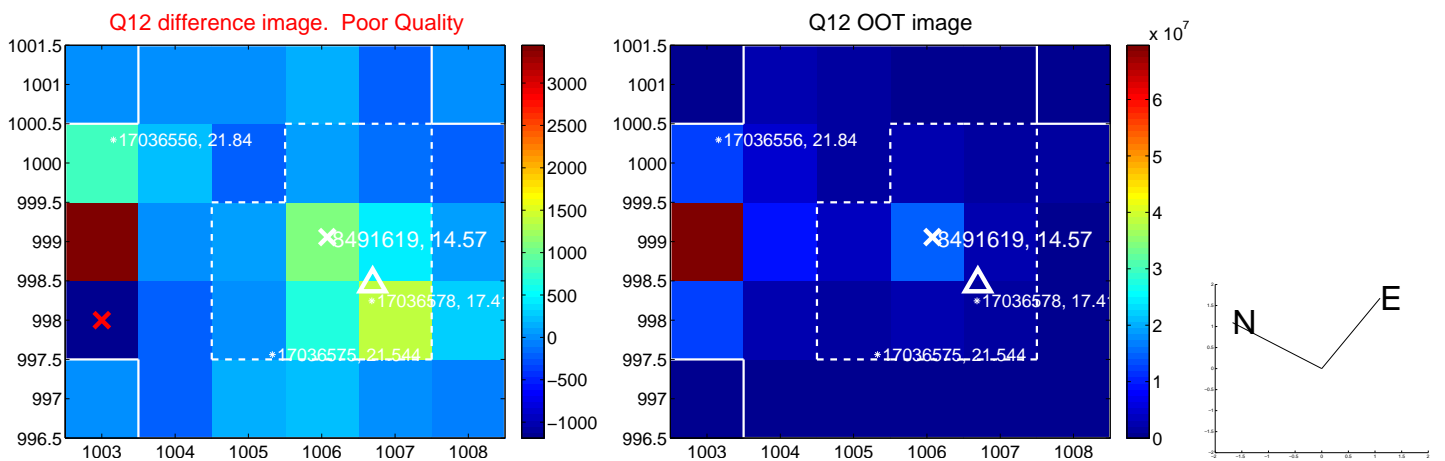
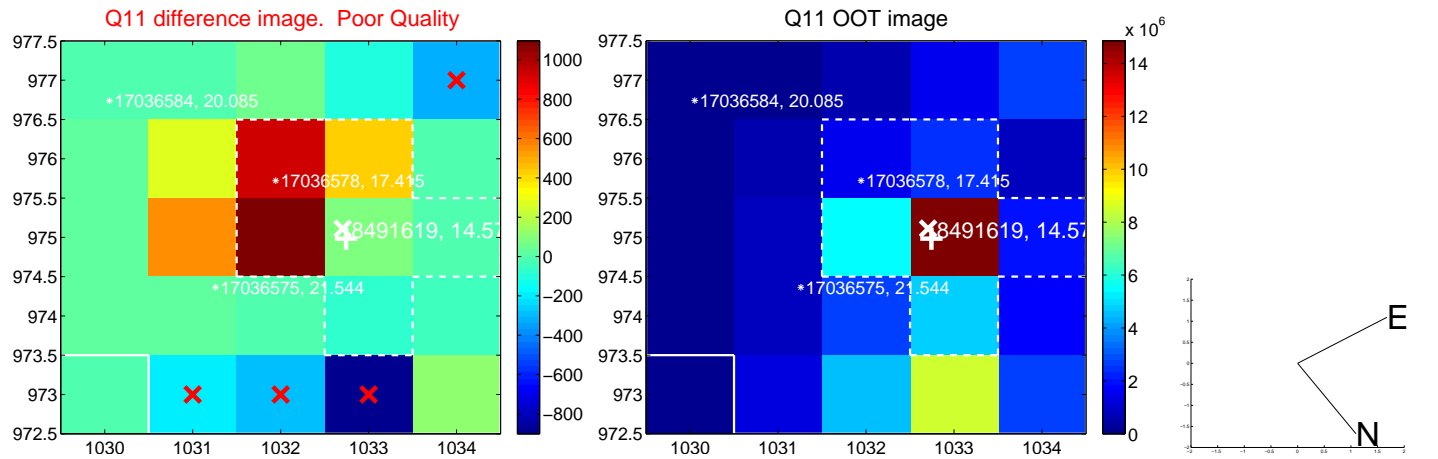
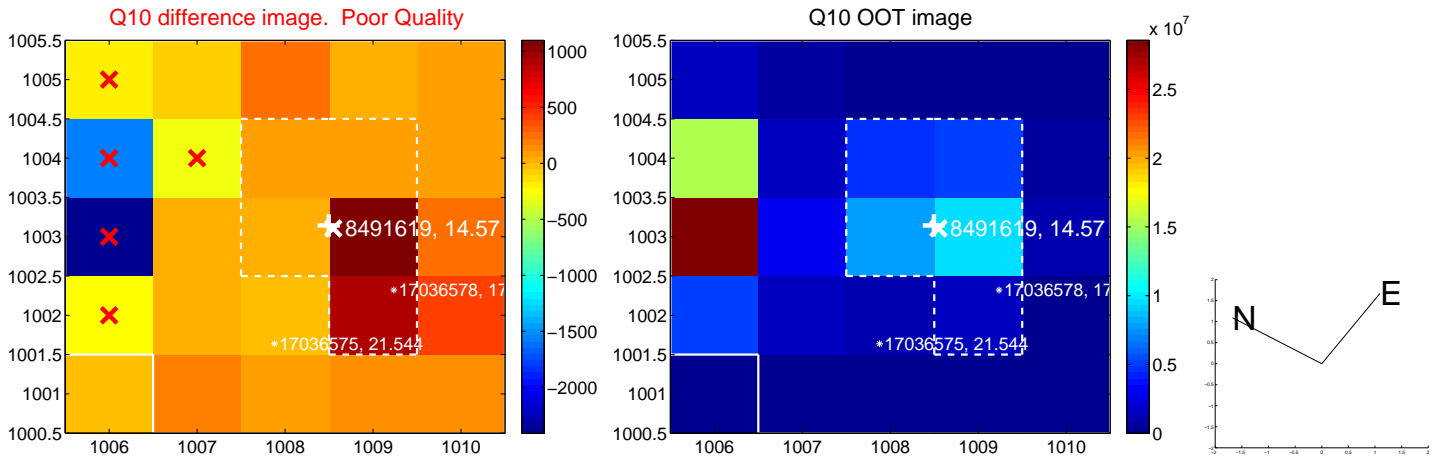
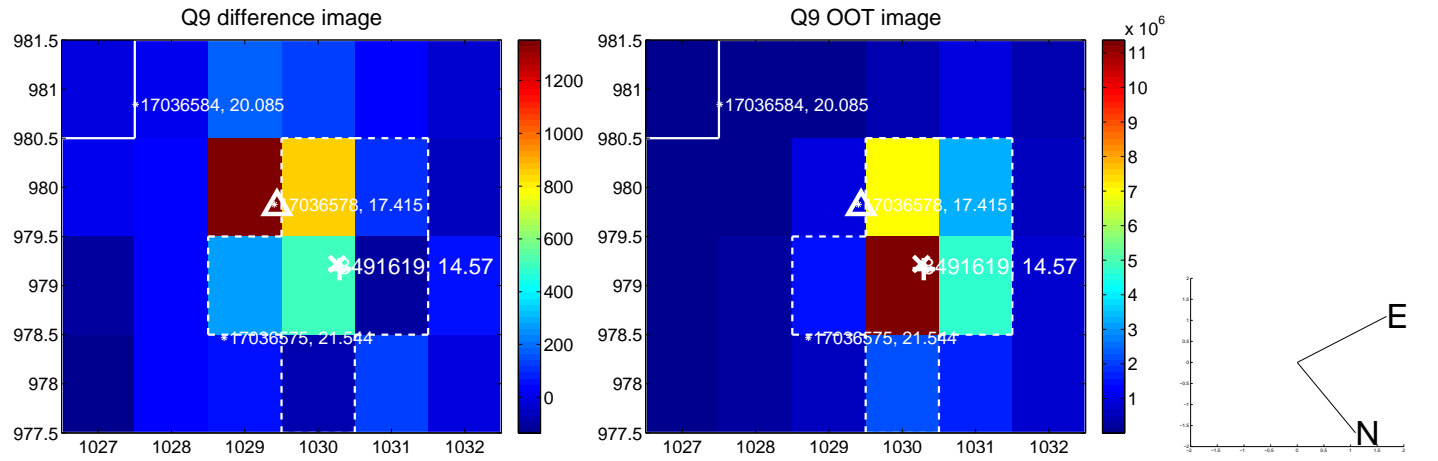
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



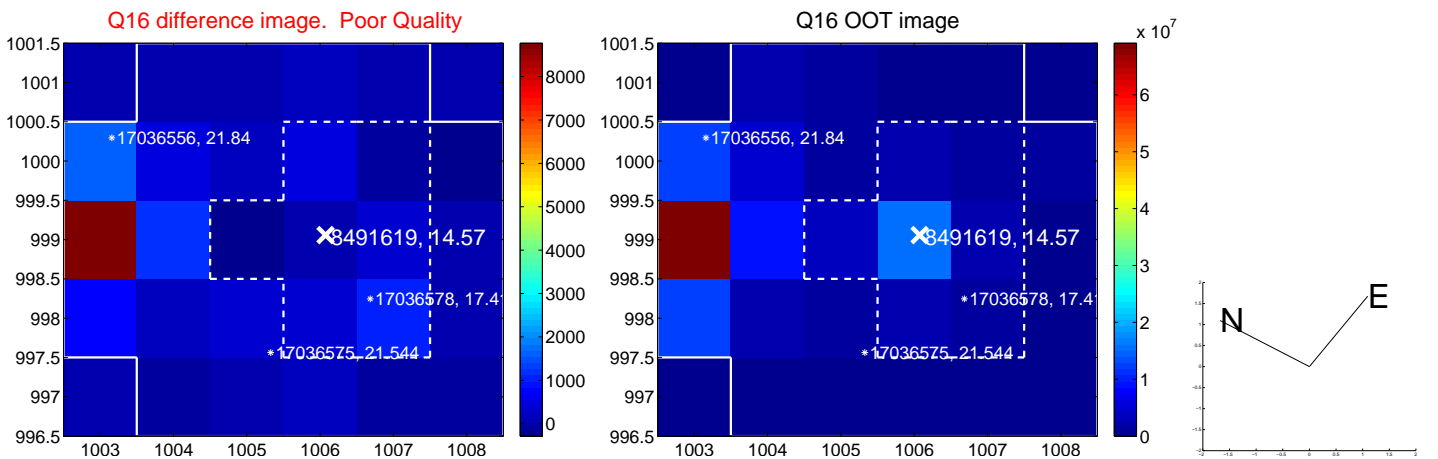
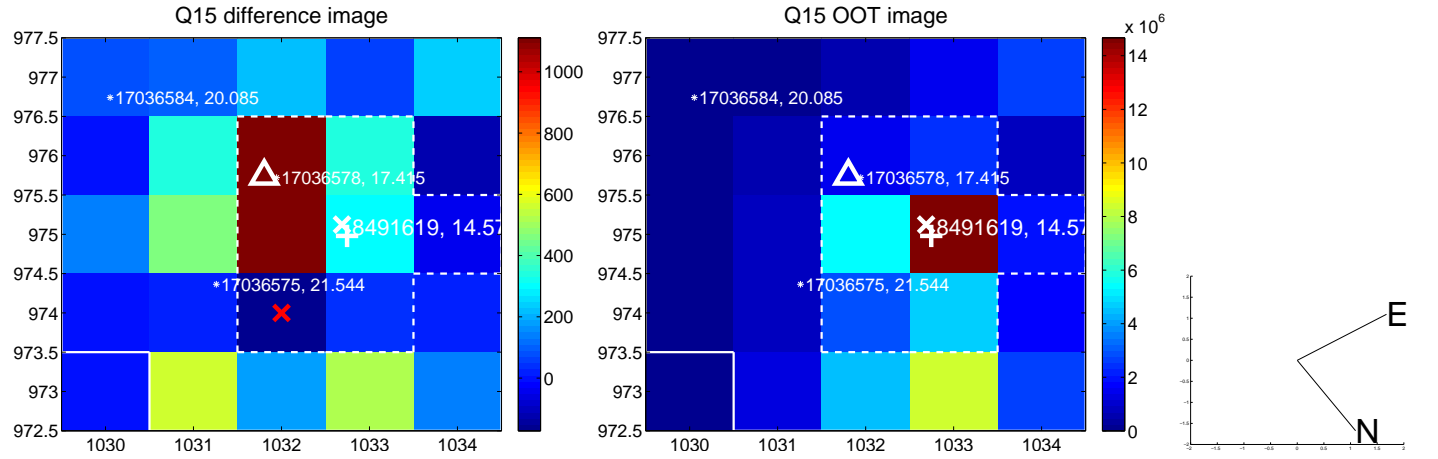
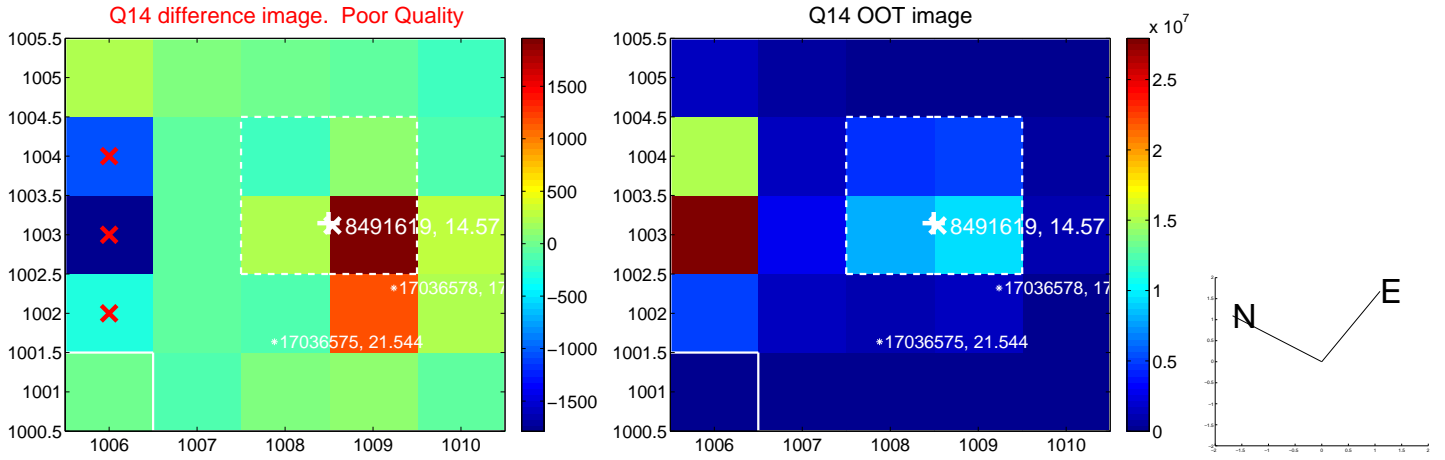
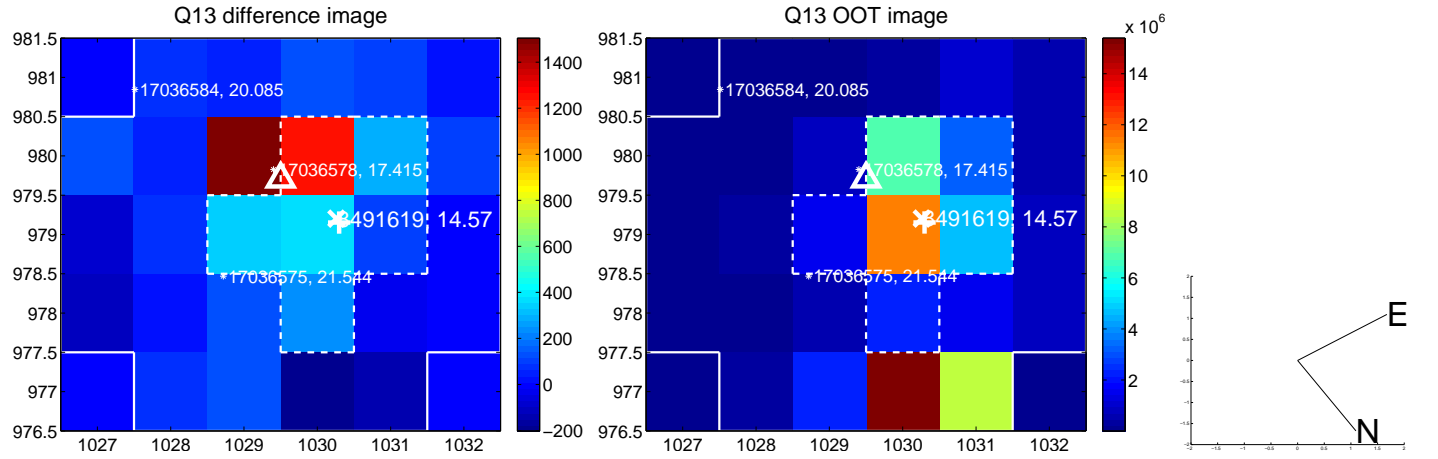
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

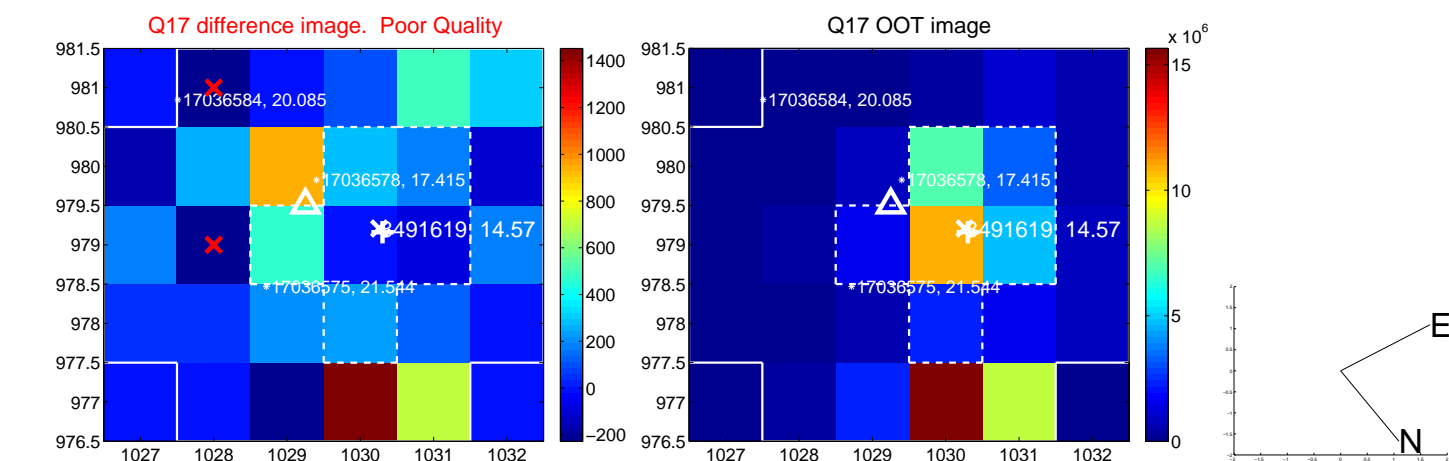


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

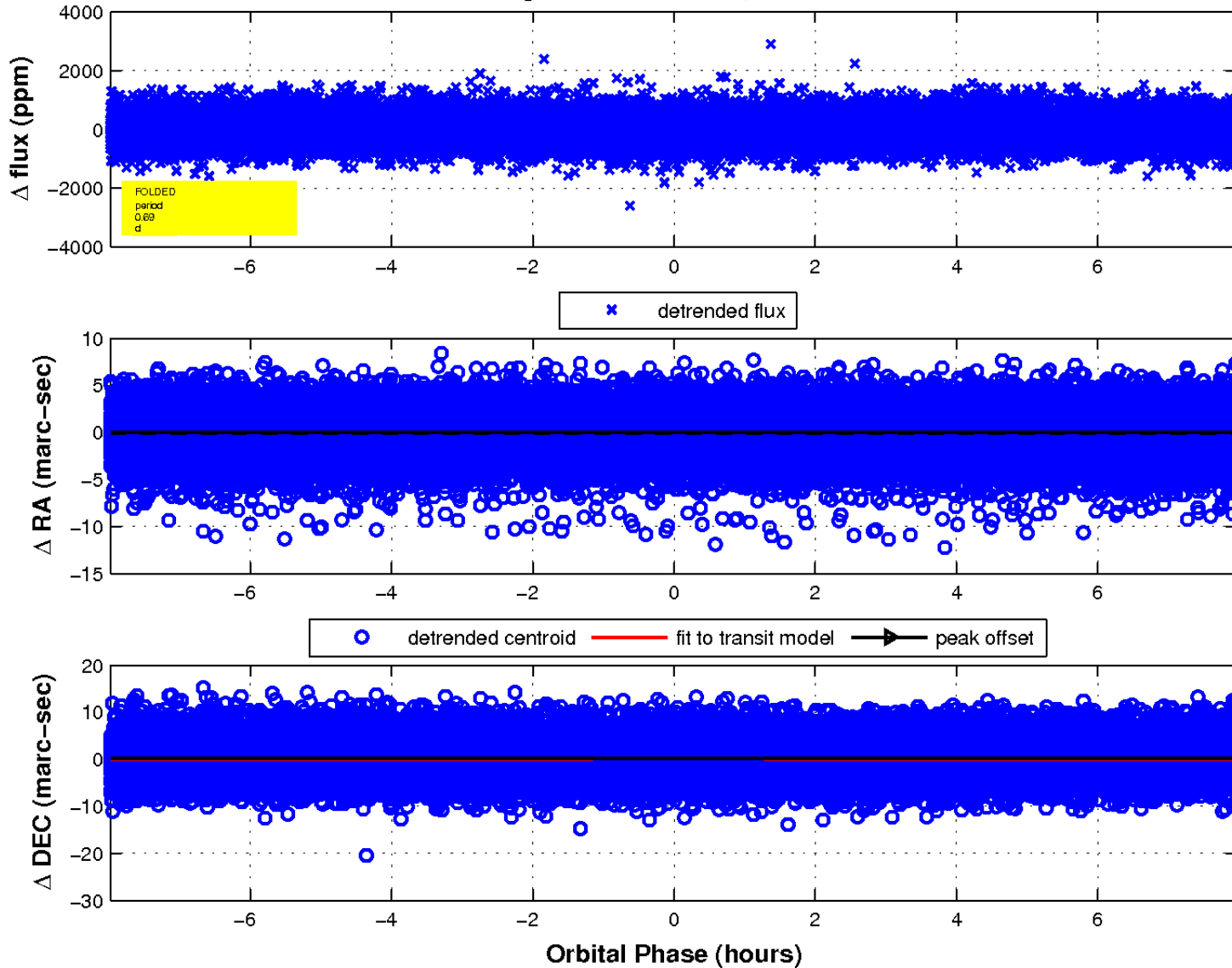




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

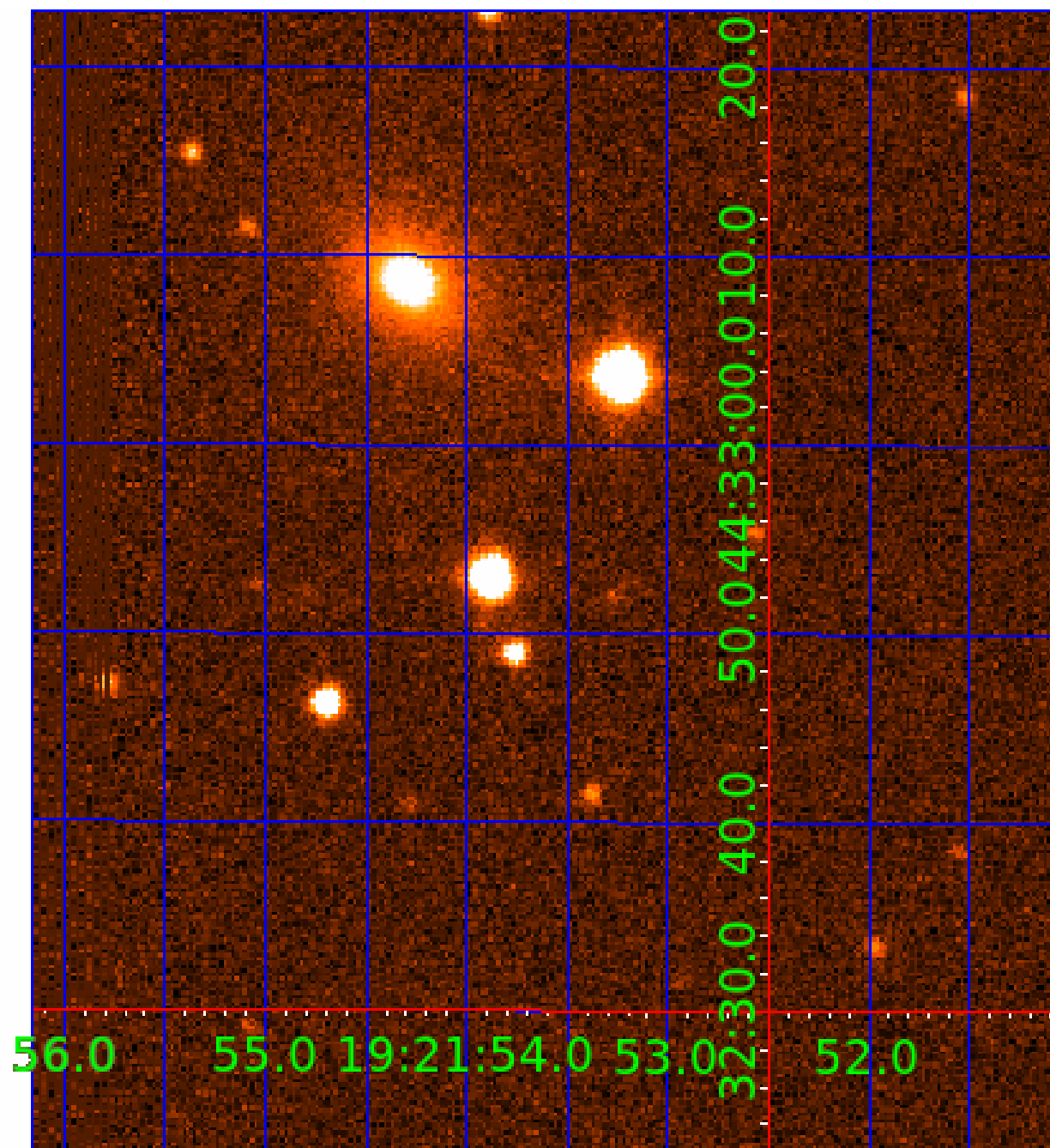


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



# KIC 008491619

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008491619-01	OBS	No	0.689213	131.664865	48.5	2.659	8.0	8.9	0.81	4906	0.65	1734.13
008491619-02	OBS	No	338.372084	212.765963	524.7	8.937	9.3	6.6	0.81	4906	2.25	0.45
008491619-03	OBS	No	101.618905	151.020125	518.4	3.653	8.1	6.1	0.81	4906	1.86	2.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008491619-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_RESOLVED_OFFSET
008491619-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT— INCONSISTENT_TRANS—CENT_FEW_DIFFS
008491619-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—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.

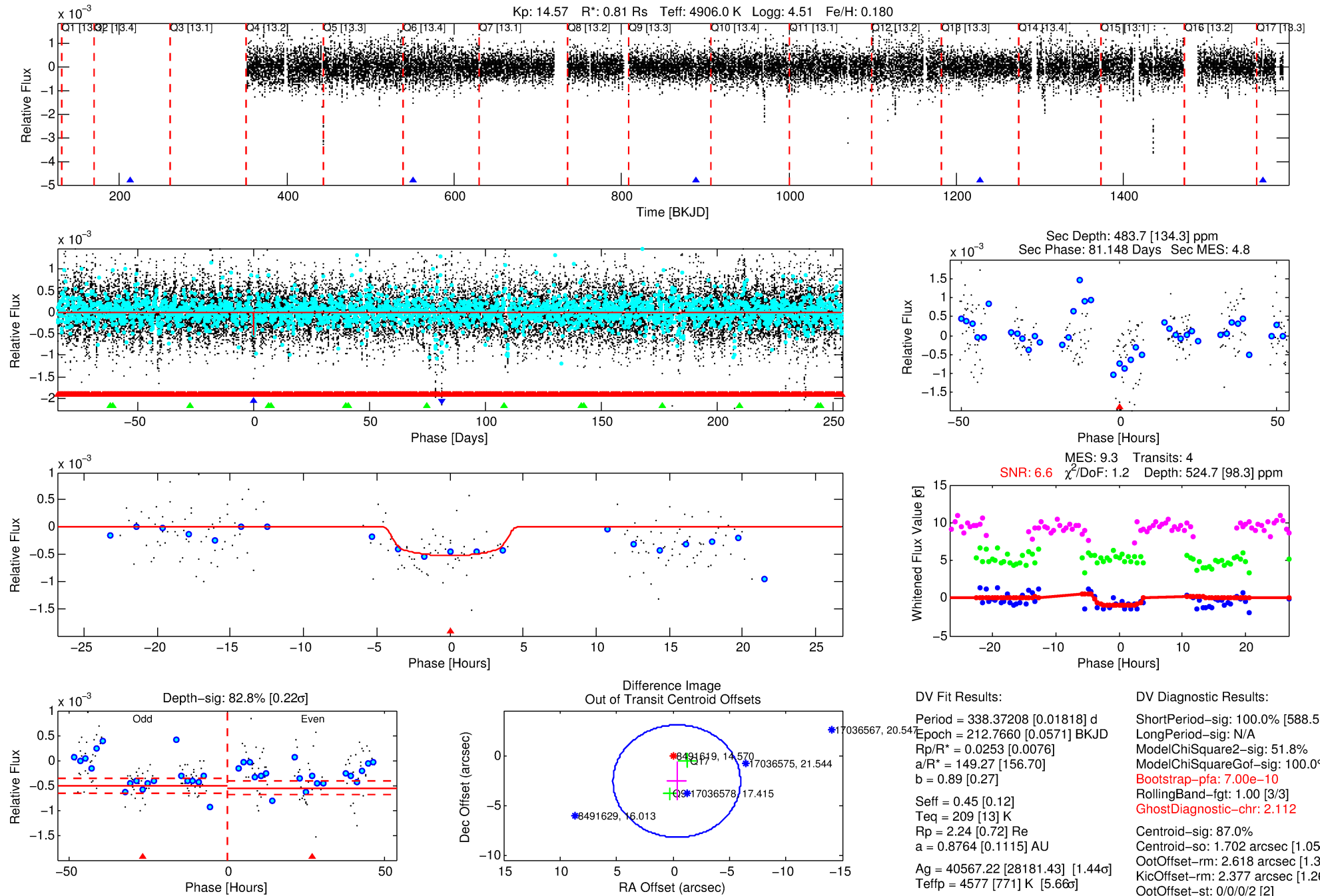
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 008491619-02

No Significant Match Found

# DV One-Page Summary

KIC: 8491619 Candidate: 2 of 3 Period: 338.372 d



## DV Fit Results:

Period = 338.37208 [0.01818] d  
Epoch = 212.7660 [0.0571] BKJD  
Rp/R\* = 0.0253 [0.0076]  
a/R\* = 149.27 [156.70]  
b = 0.89 [0.27]  
Seff = 0.45 [0.12]  
Teff = 209 [13] K  
Rp = 2.24 [0.72] Re  
a = 0.8764 [0.1115] AU  
Ag = 40567.22 [28181.43] [1.44 $\sigma$ ]  
Teffp = 4577 [771] K [5.66 $\sigma$ ]

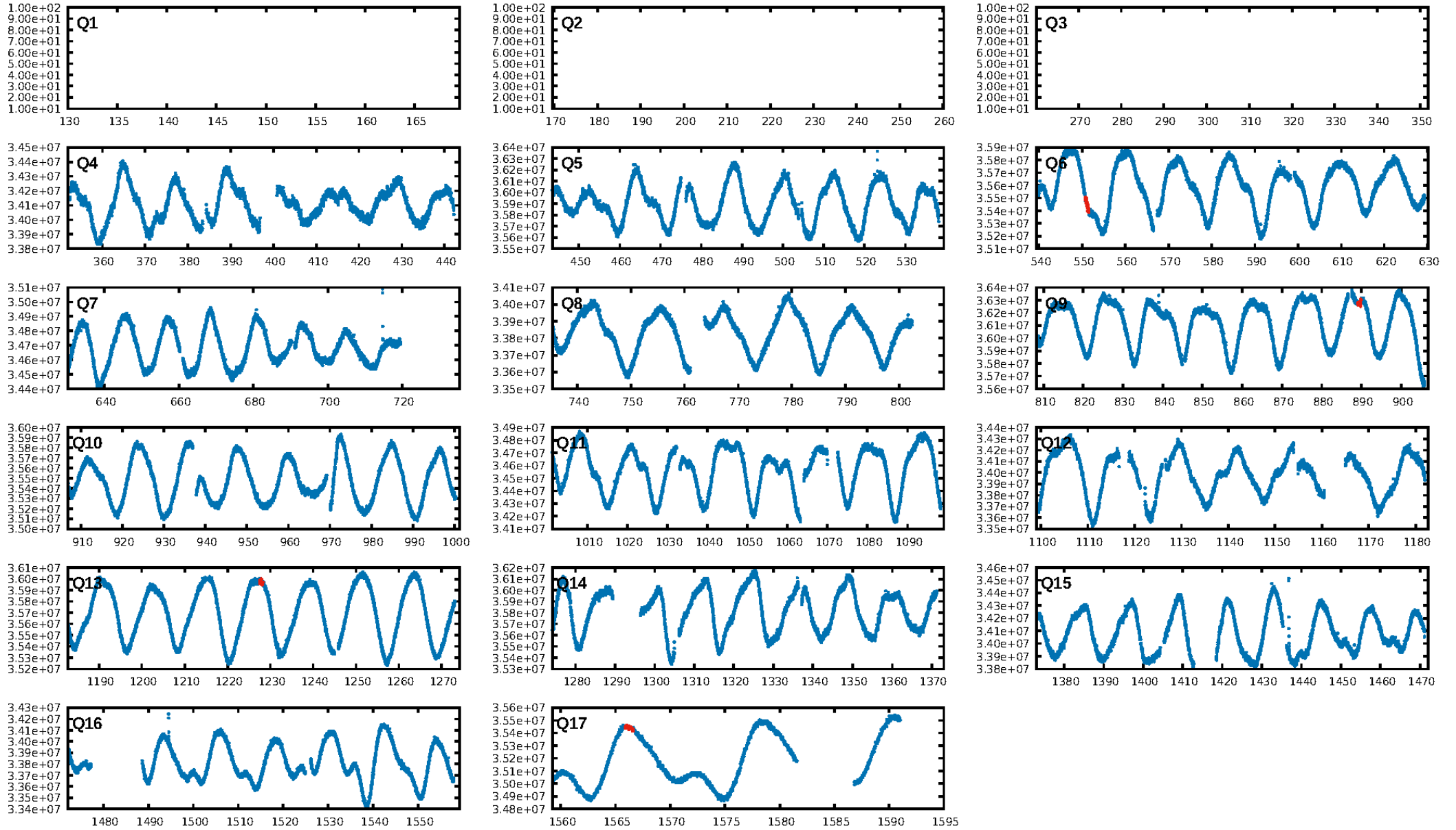
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [588.52 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 51.8%  
ModelChiSquareGof-sig: 100.0%  
**Bootstrap-pfa: 7.00e-10**  
RollingBand-fgt: 1.00 [3/3]  
**GhostDiagnostic-chr: 2.112**  
Centroid-sig: 87.0%  
Centroid-so: 1.702 arcsec [1.05 $\sigma$ ]  
OotOffset-rm: 2.618 arcsec [1.39 $\sigma$ ]  
OotOffset-st: 0/0/0/2 [2]  
KicOffset-rm: 2.377 arcsec [1.26 $\sigma$ ]  
KicOffset-st: 0/0/0/2 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 0.00 [0/4]

Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:10:59 Z

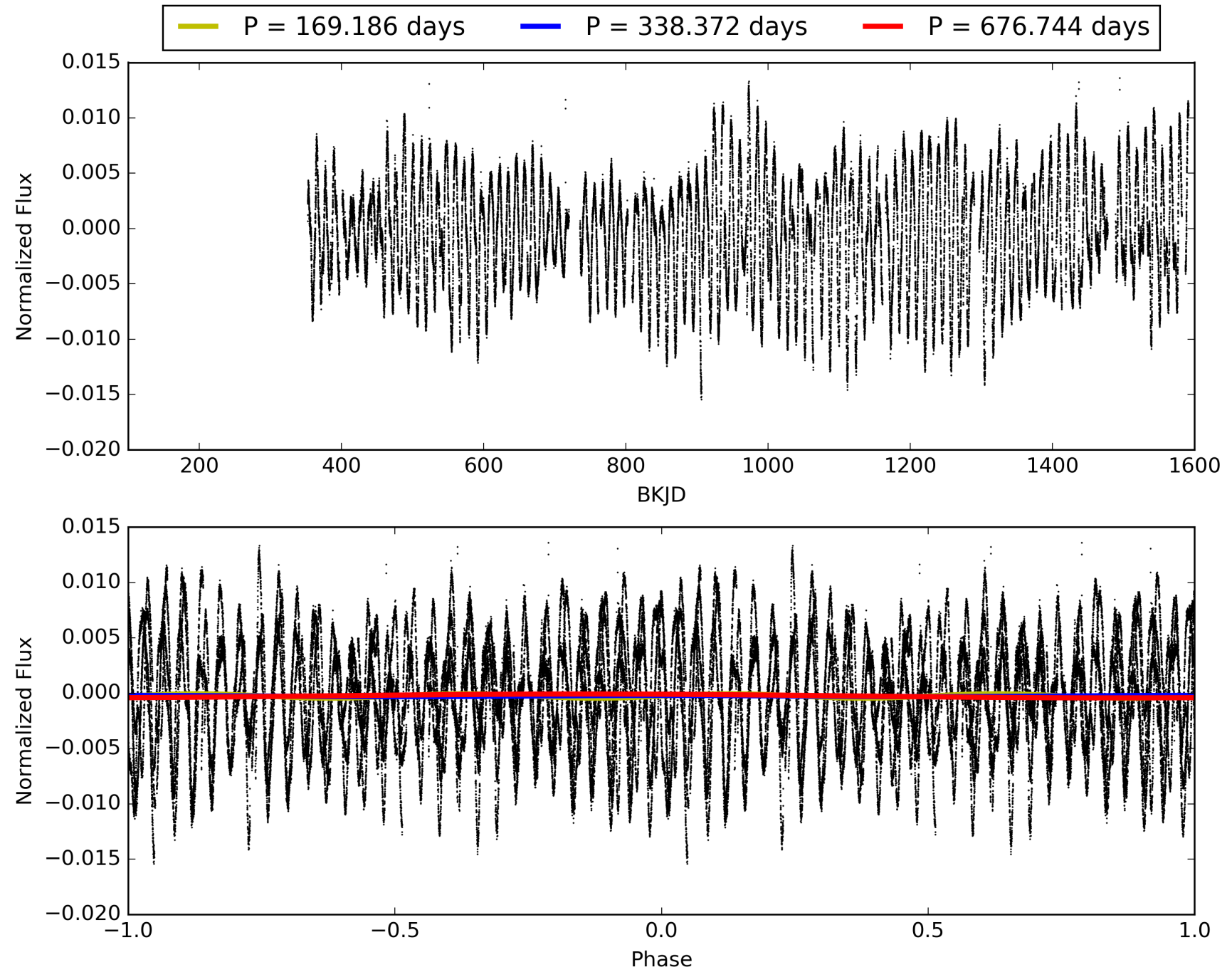
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

# TCE 008491619-02, PDC Light Curves



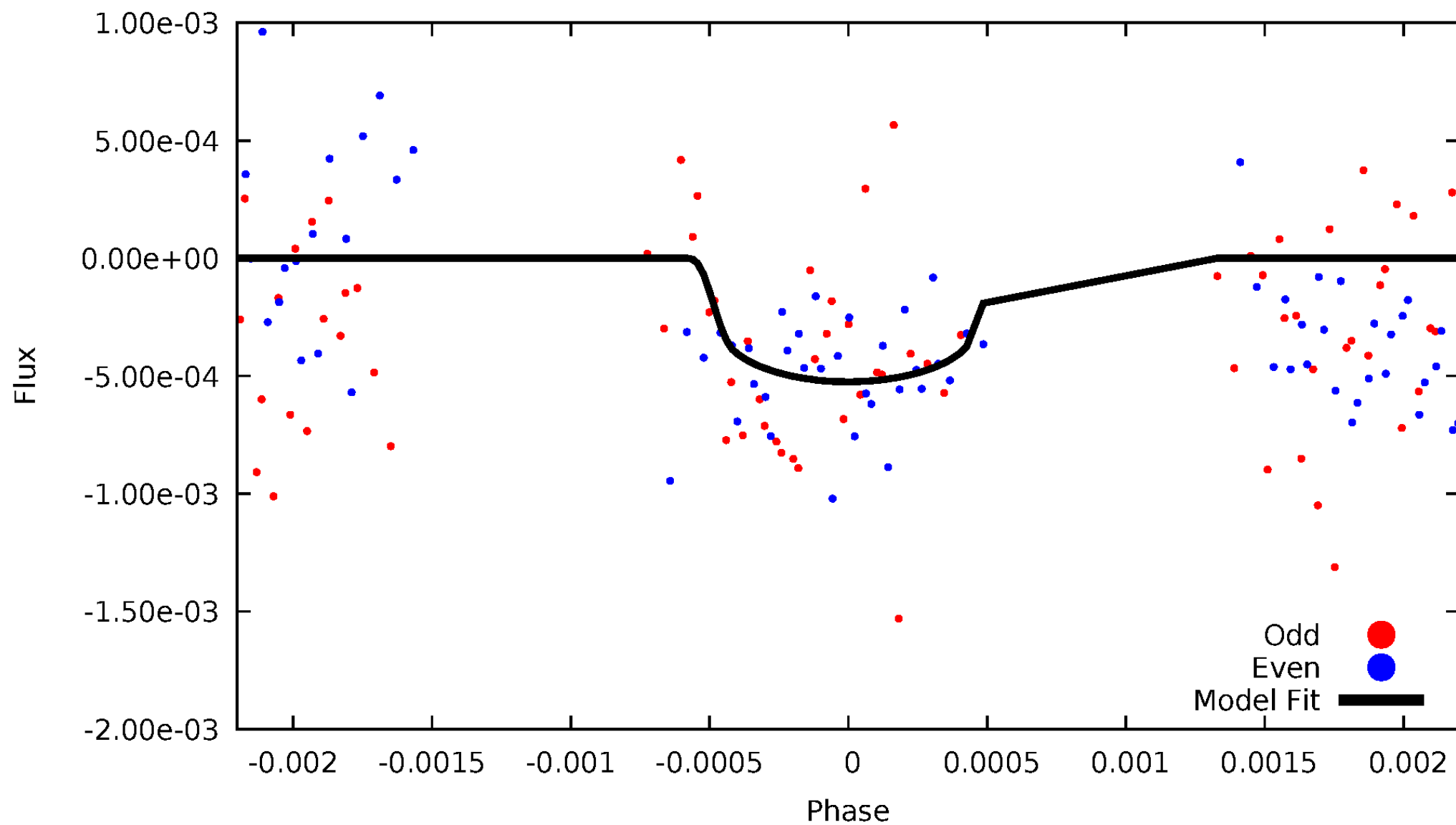


# TCE 008491619-02



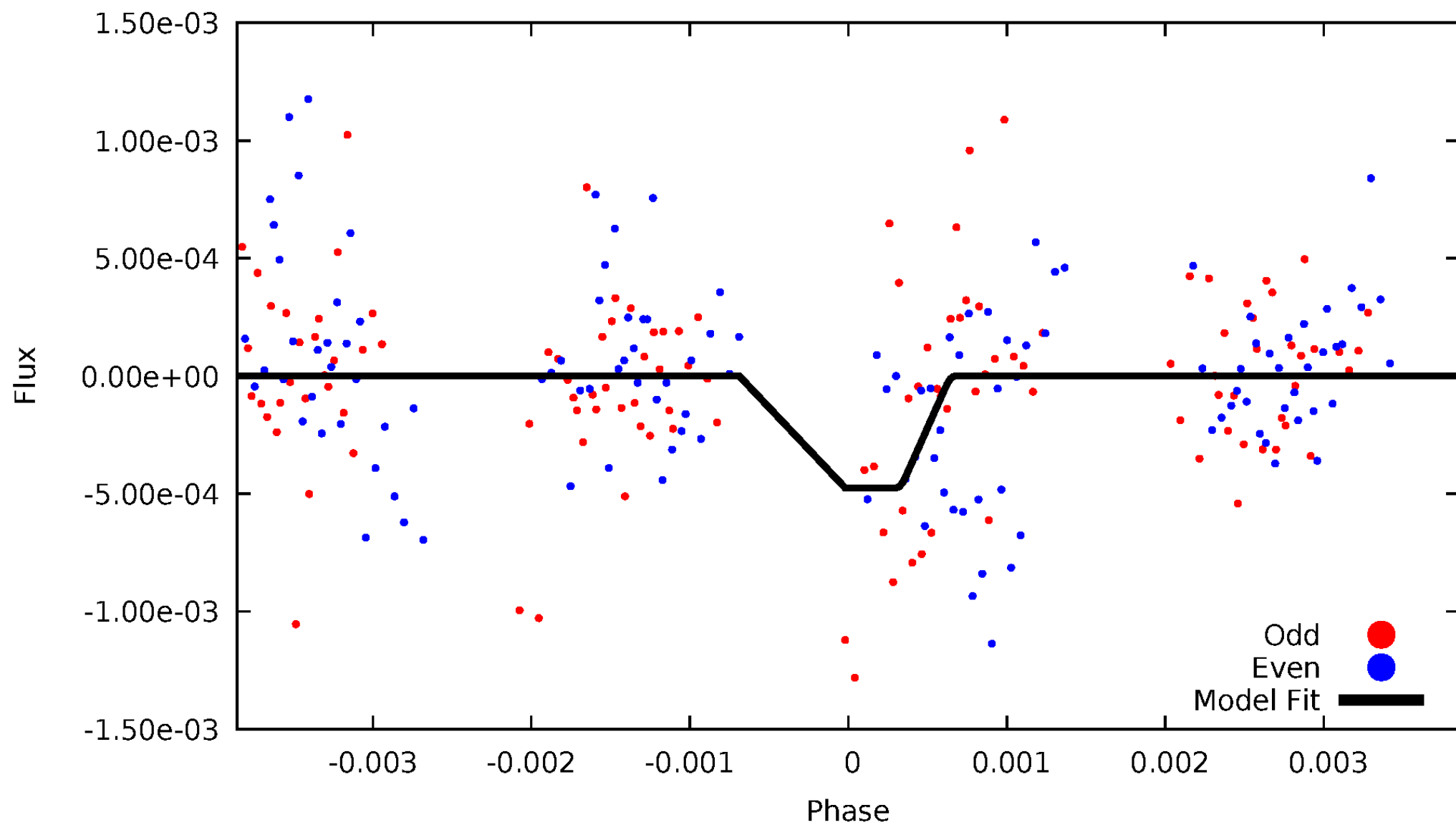
# DV Odd/Even

TCE 008491619-02



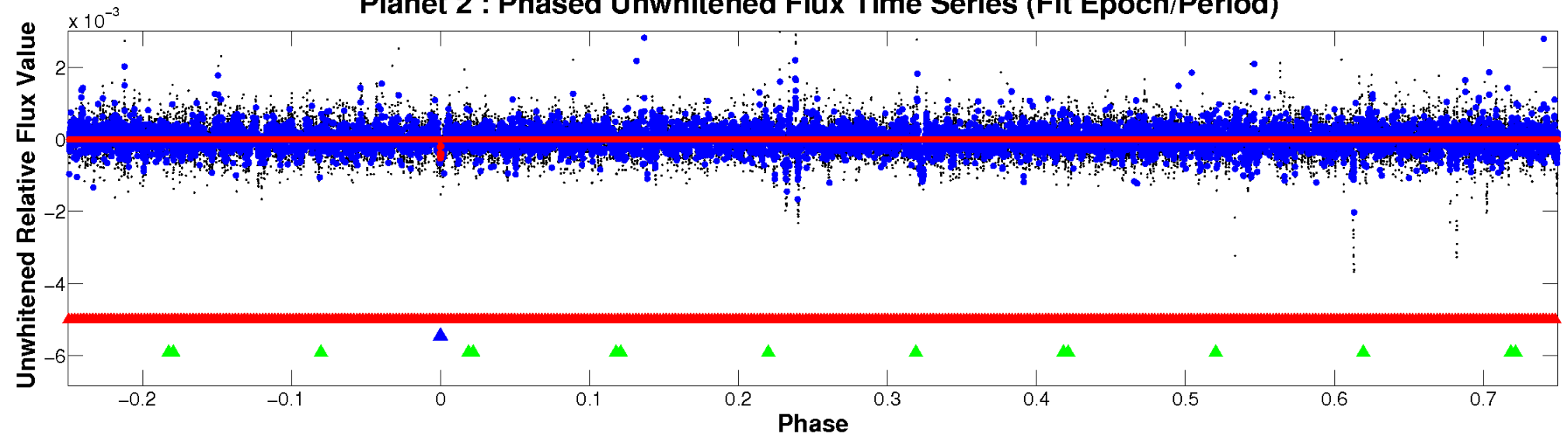
# ALT Odd/Even

TCE 008491619-02

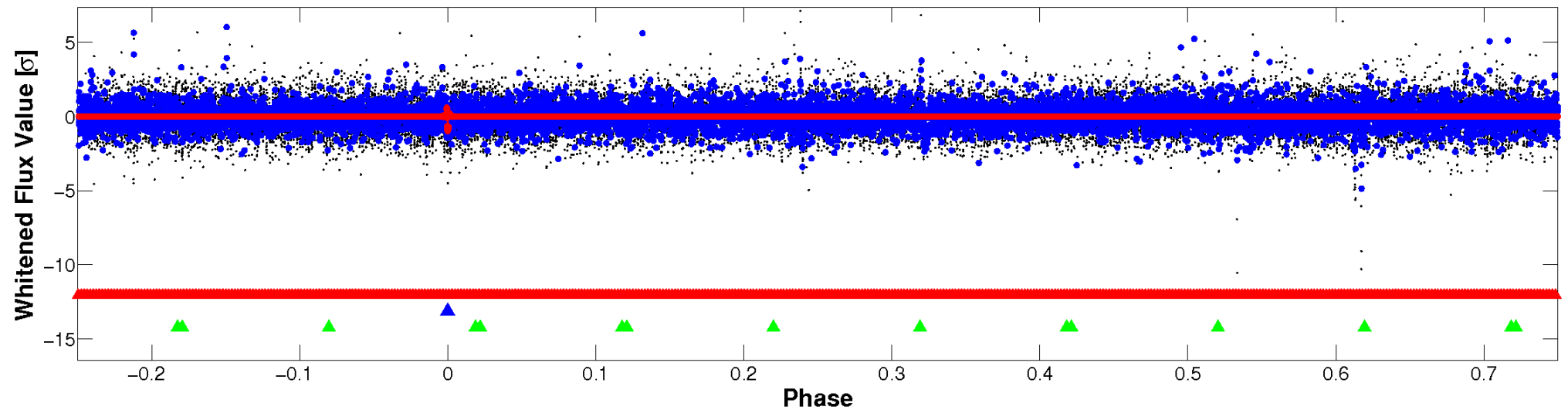


# Non-Whitened Vs. Whitened Light Curve

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

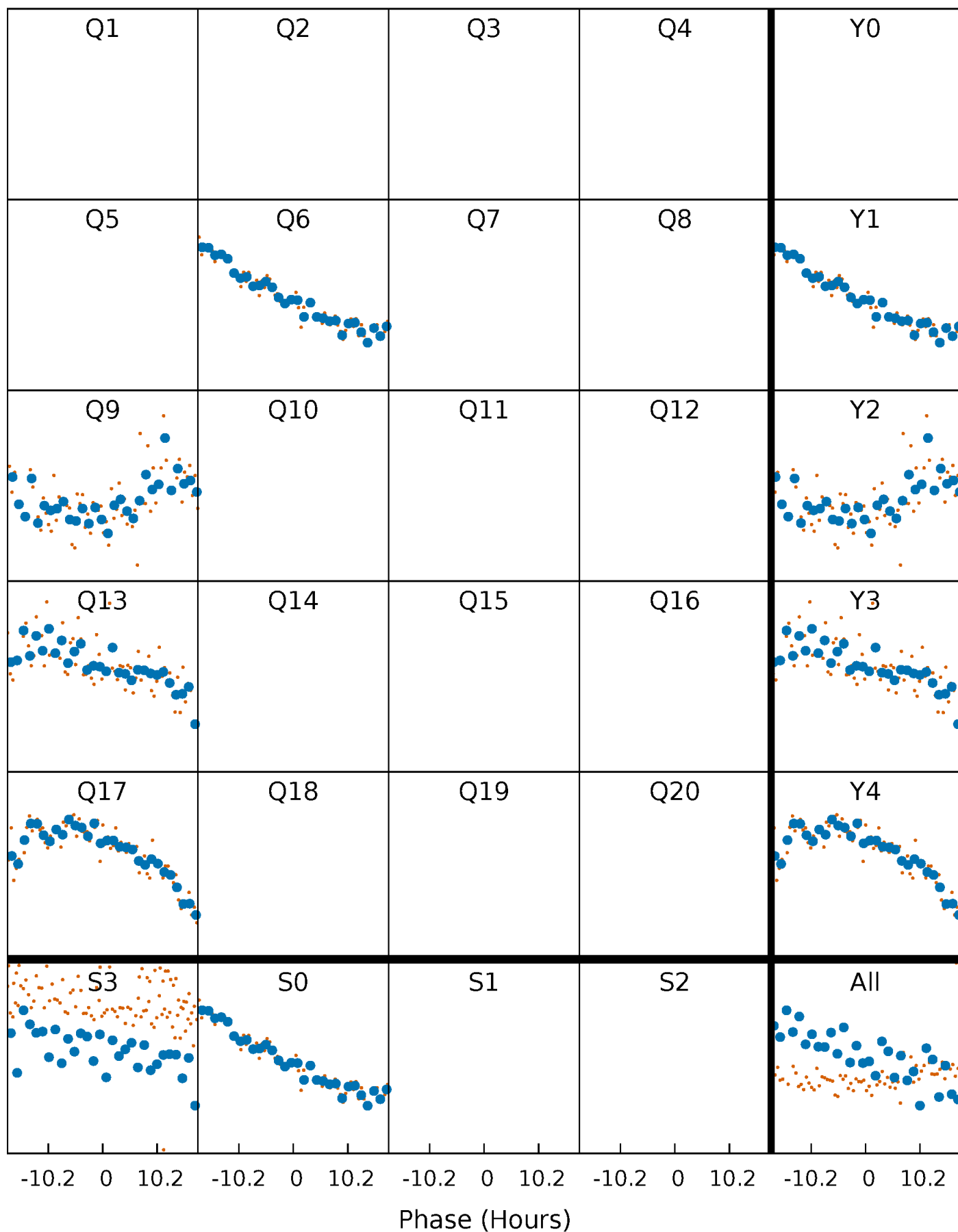


**Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

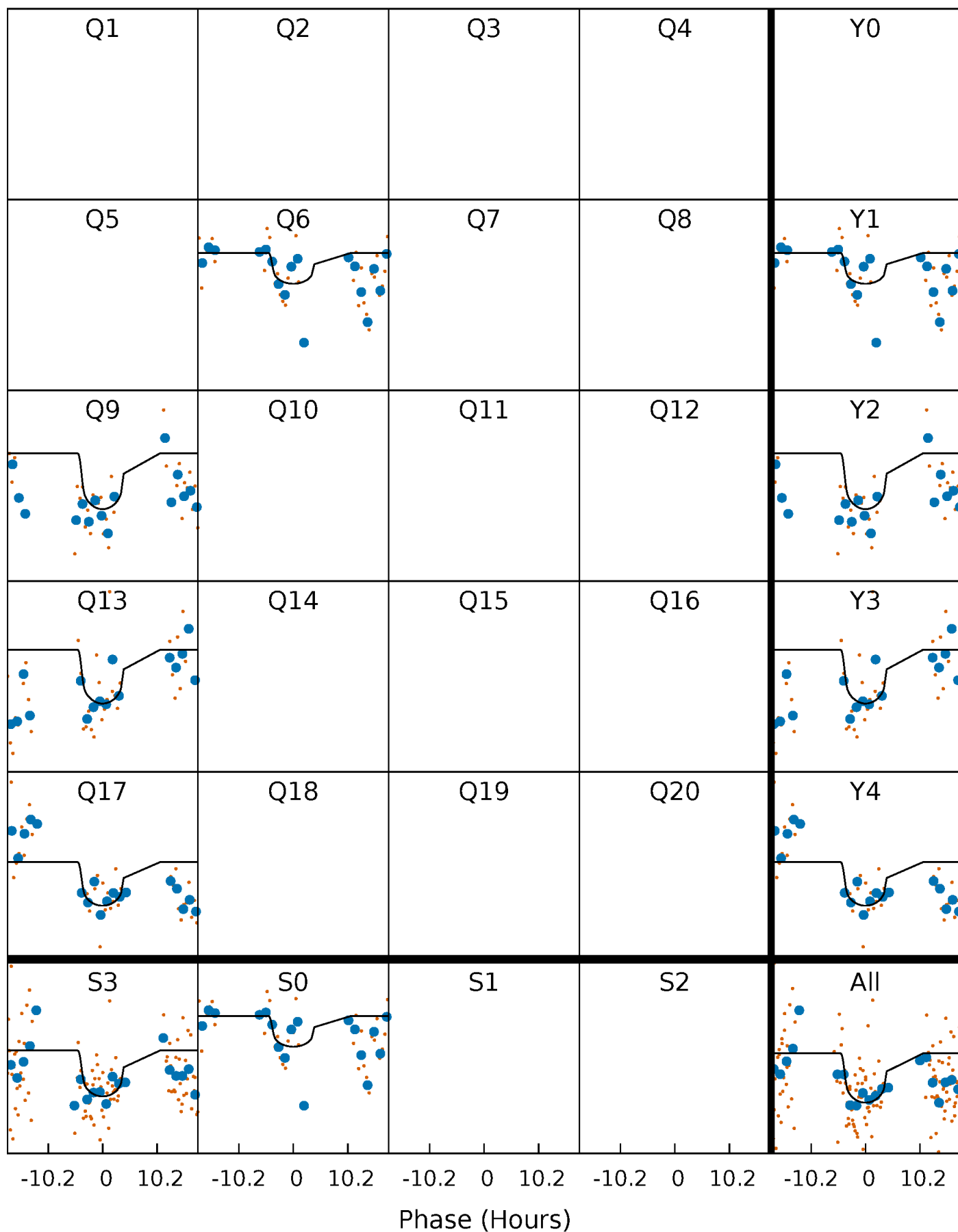
TCE 008491619-02     $P=338.372084$  Days     $T_0=212.765963$  (BKJD)





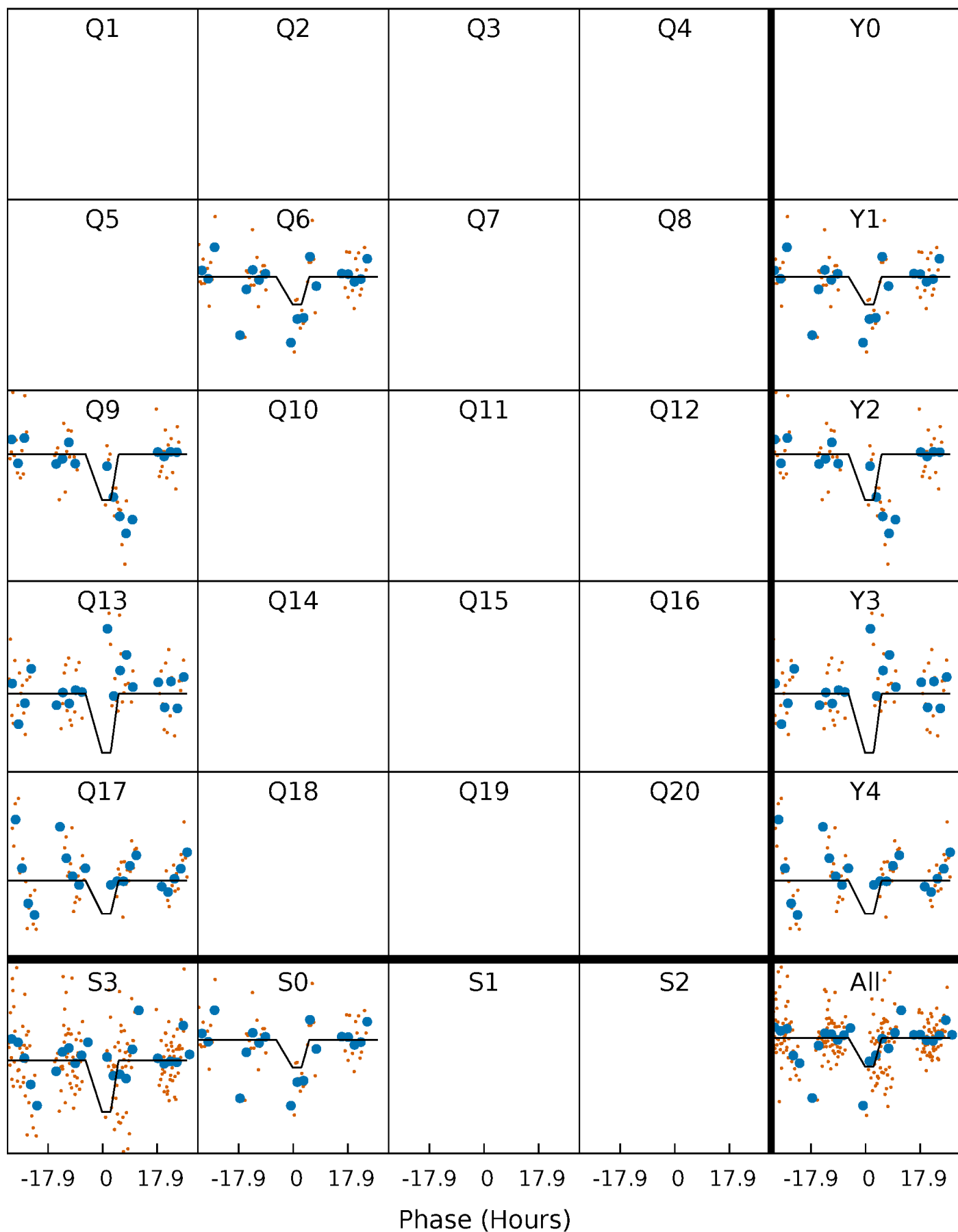
# DV Quarter-Phased Transit Curves

TCE 008491619-02     $P=338.372084$  Days     $T_0=212.765963$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

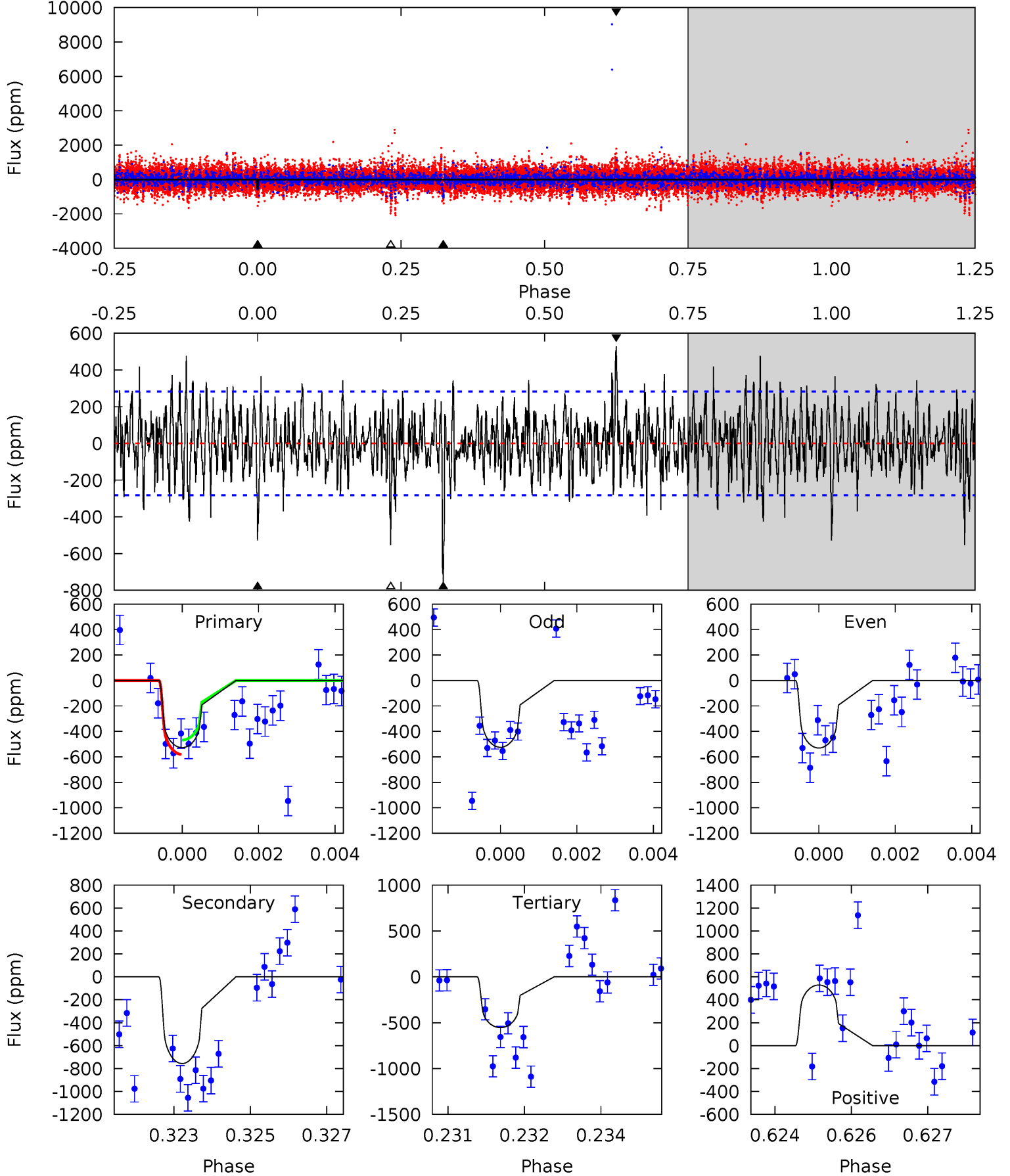
TCE 008491619-02 P=338.352509 Days  $T_0=212.547237$  (BKJD)



# DV Model-Shift Uniqueness Test

008491619-02, P = 338.372084 Days, E = 212.765963 Days

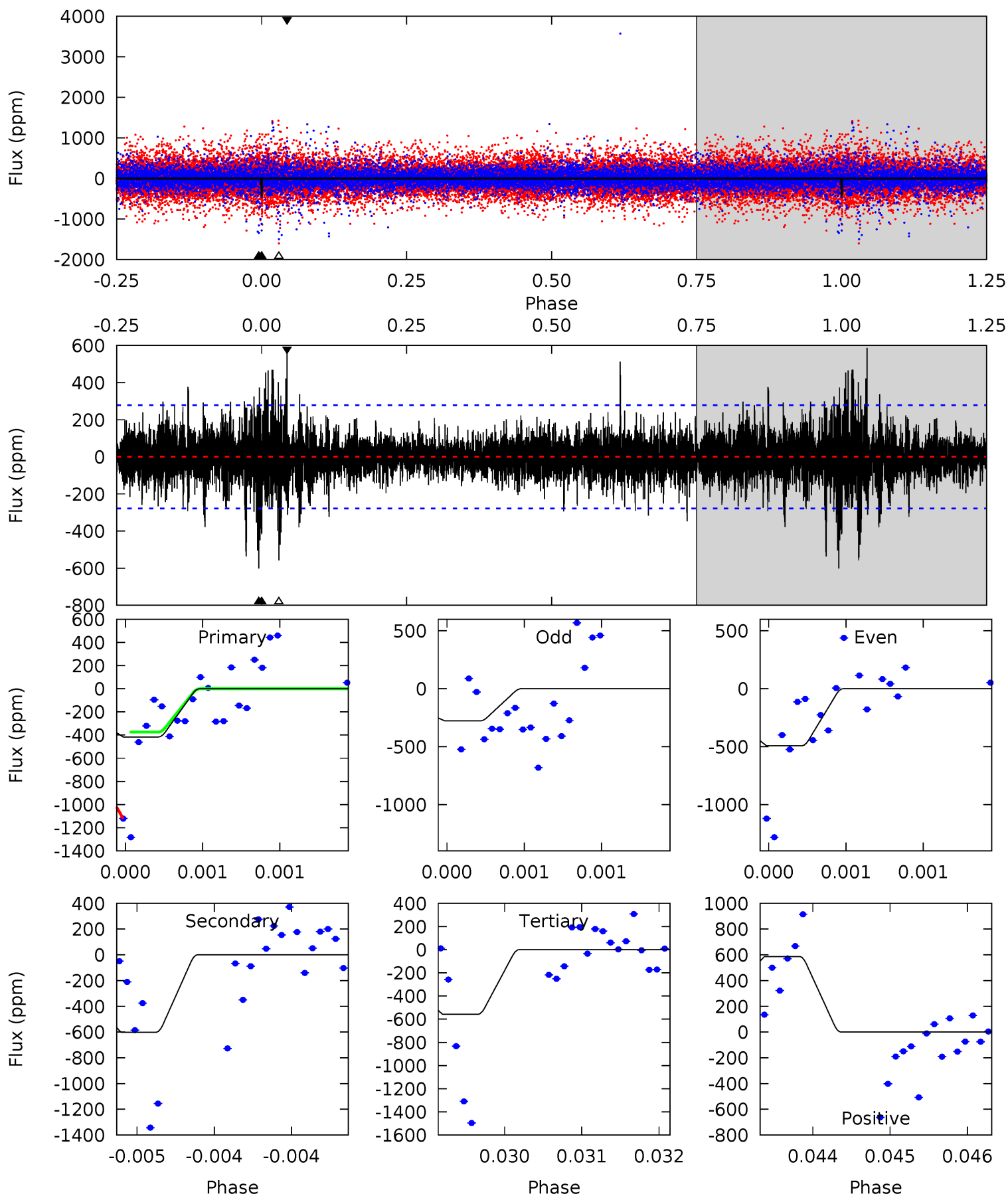
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.97	14.3	10.5	10.00	5.34	3.11	2.54	-0.51	-0.03	3.82	4.30	0.05	0.99	0.41	1.06



# Alt Model-Shift Uniqueness Test

008491619-02, P = 338.352509 Days, E = 212.547237 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
8.26	11.9	11.1	11.6	5.51	3.39	1.71	-2.81	-3.38	0.85	0.28	2.12	1.08	0.49	0.00



### Stellar Parameters For KIC 008491619

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4906^{+169}_{-169}$	$4.511^{+0.066}_{-0.132}$	$0.180^{+0.200}_{-0.300}$	$0.814^{+0.094}_{-0.085}$	$0.783^{+0.076}_{-0.055}$	$2.043^{+0.634}_{-0.657}$
	+3%/-3%	+1%/-3%	+111%/-167%	+12%/-10%	+10%/-7%	+31%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008491619-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-756 \pm 53$	$2.26^{+0.71}_{-0.70}$	$293^{+15}_{-13}$	$5095^{+1013}_{-547}$	$61133^{+68852}_{-24886}$
Alt.	$-601 \pm 50$	$1.97^{+0.76}_{-0.63}$	$294^{+15}_{-13}$	$5155^{+1029}_{-632}$	$65196^{+75896}_{-30976}$

$T_{max}$  = 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

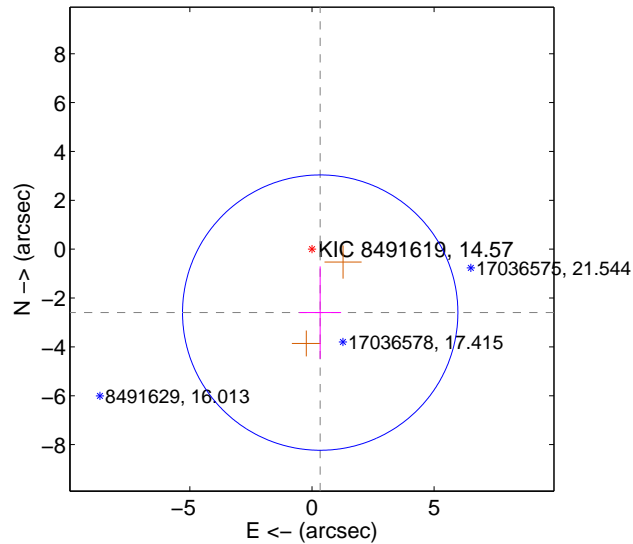
Supplemental centroid analysis for 008491619-02. Kepler magnitude: 14.57. Transit SNR 6.60

There are 0 quarters with good PRF difference image offsets

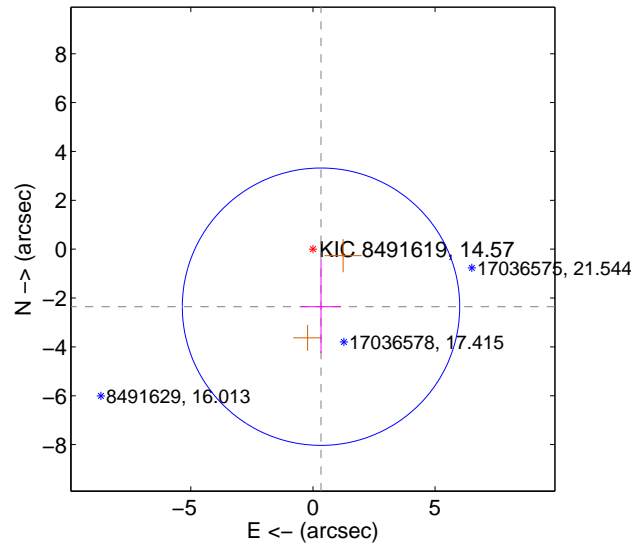
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$2.618 \pm 1.878$	1.39	$-0.337 \pm 0.855$	$-2.597 \pm 1.891$
PRF-fit source offset from KIC position	$2.377 \pm 1.892$	1.26	$-0.331 \pm 0.824$	$-2.354 \pm 1.907$
photometric centroid source offset	$1.70 \pm 1.63$	1.05	$-1.01 \pm 1.59$	$1.37 \pm 1.65$

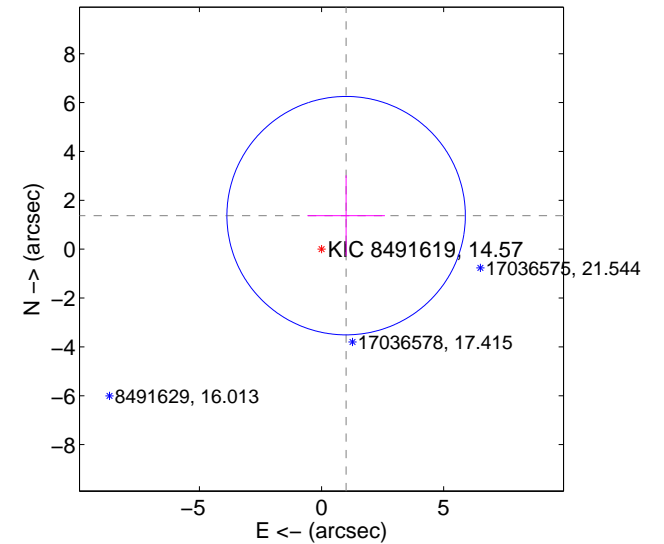
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



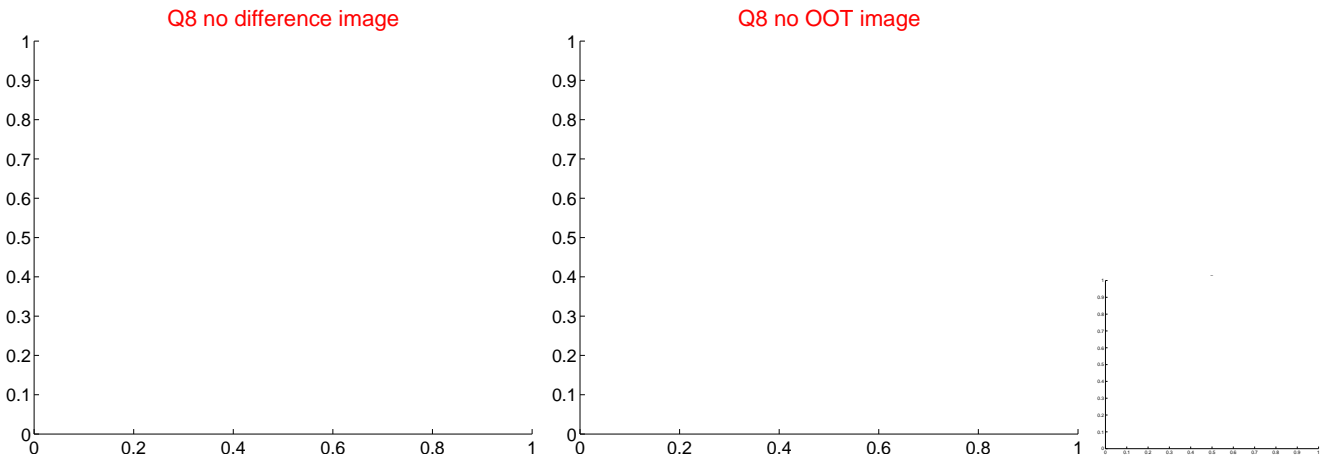
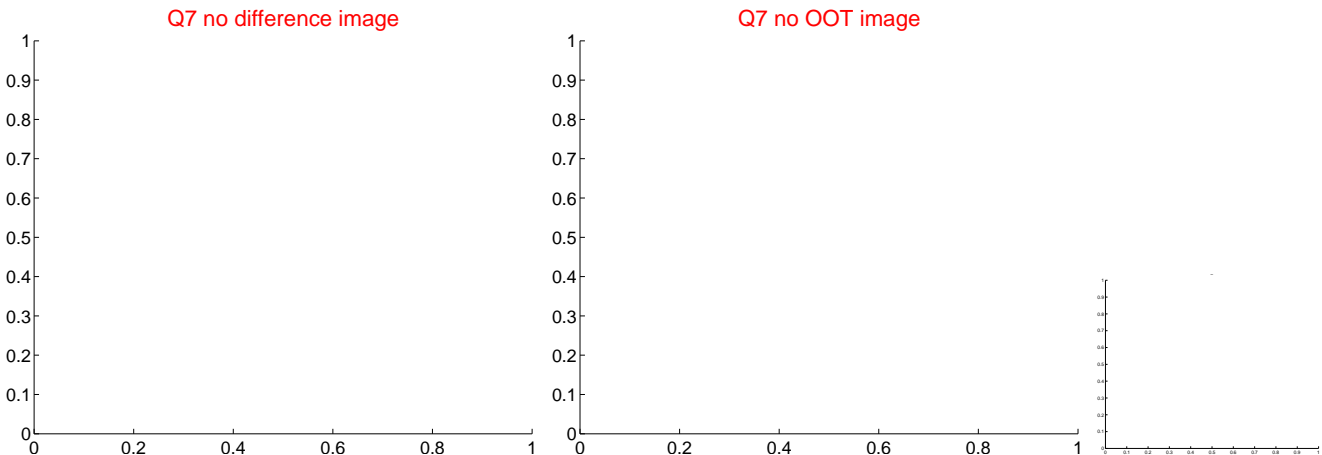
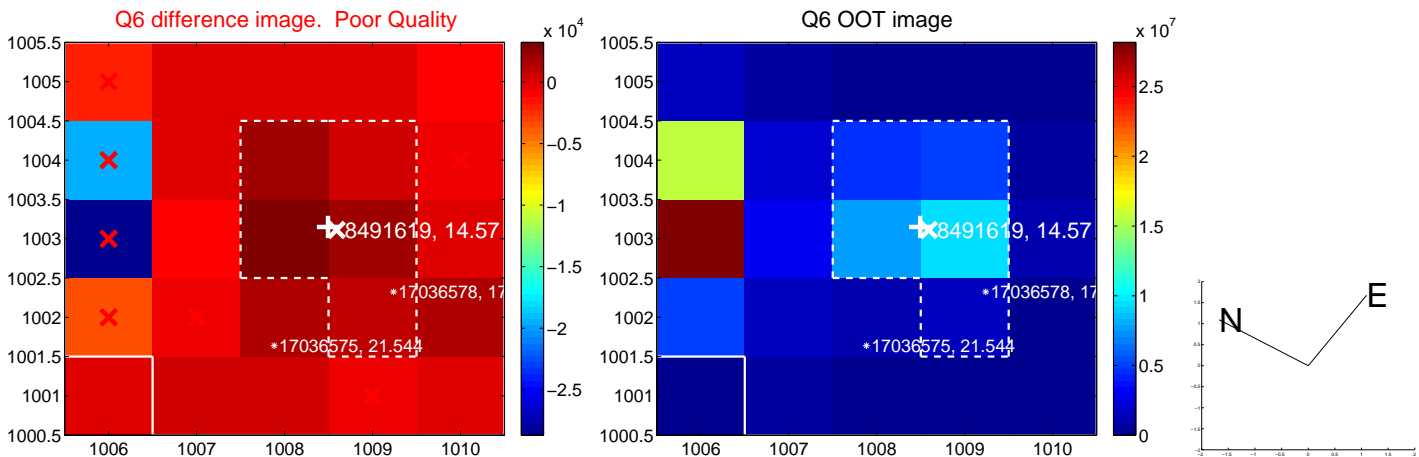
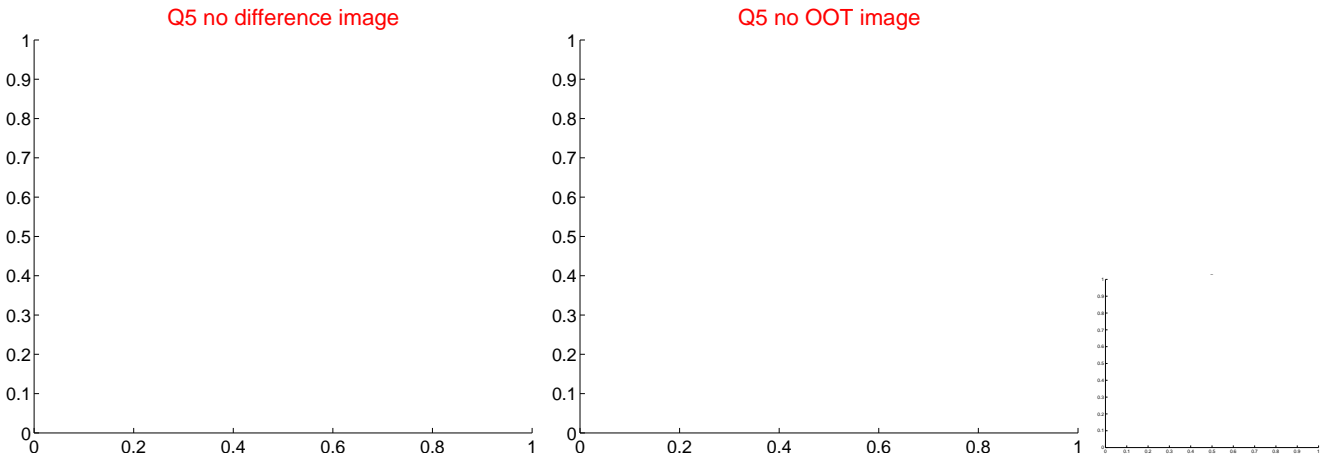
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

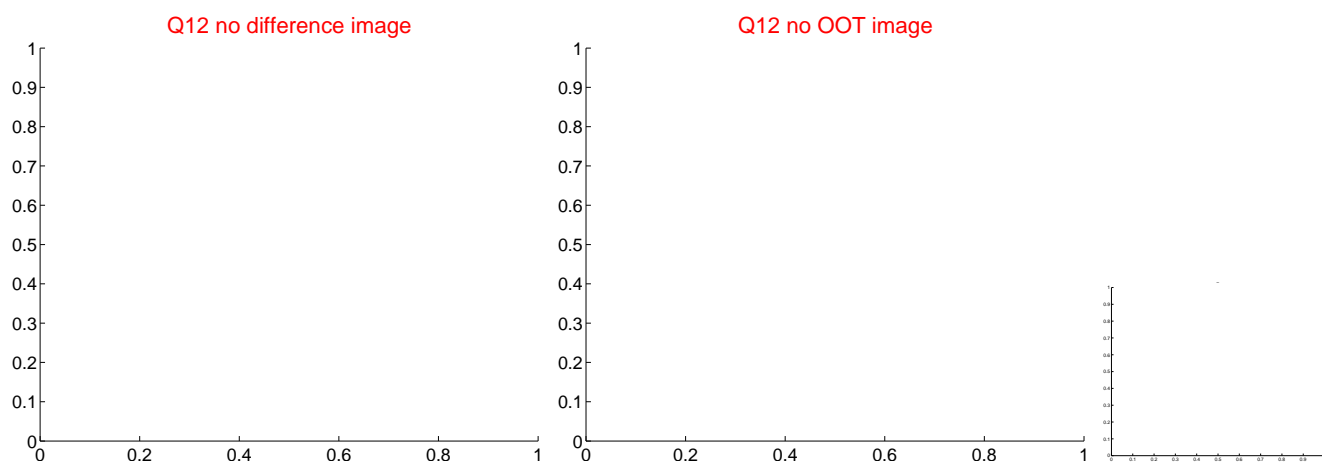
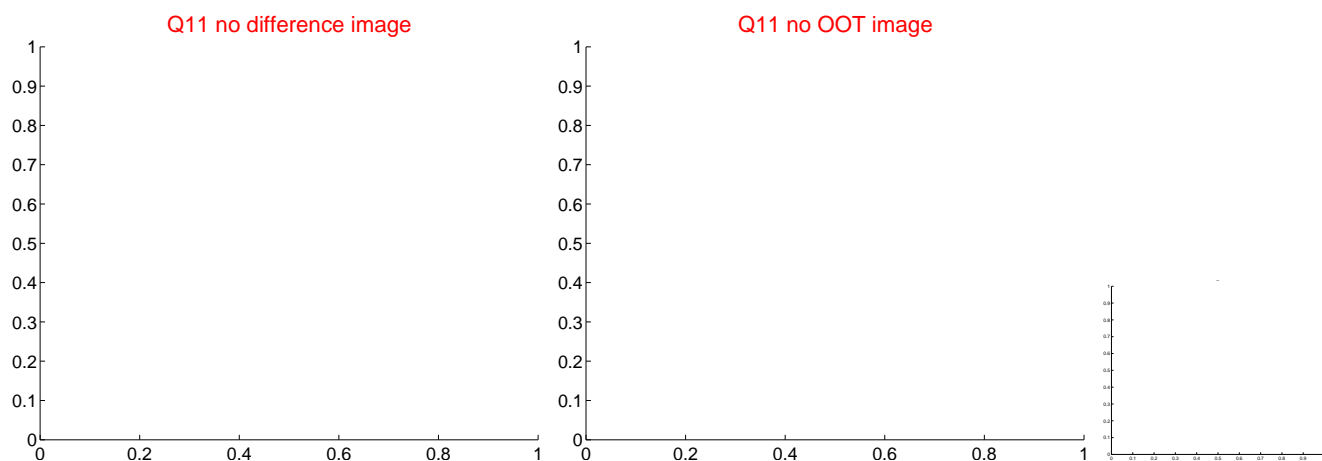
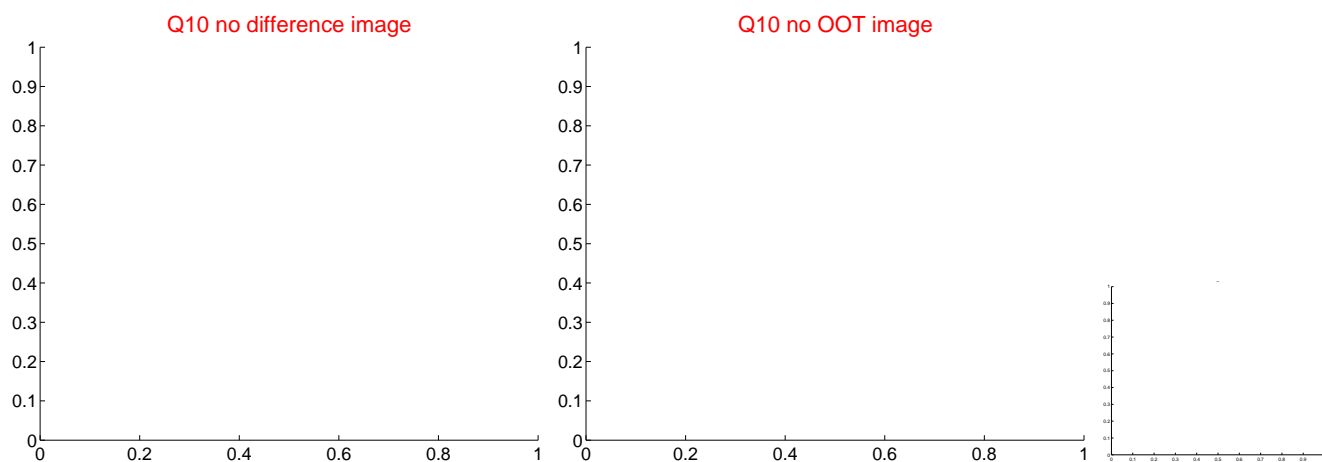
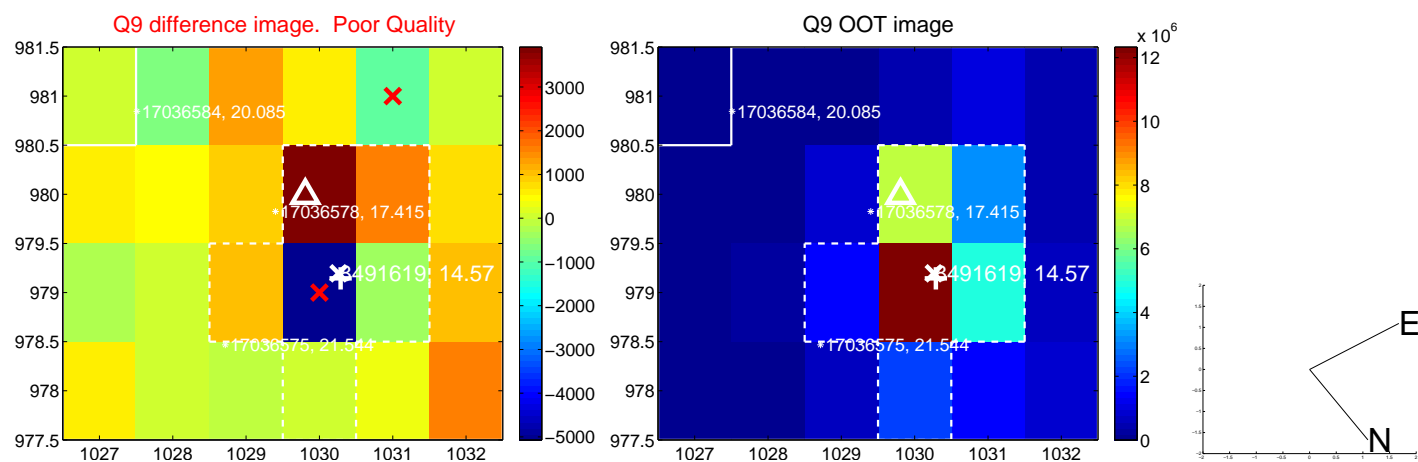




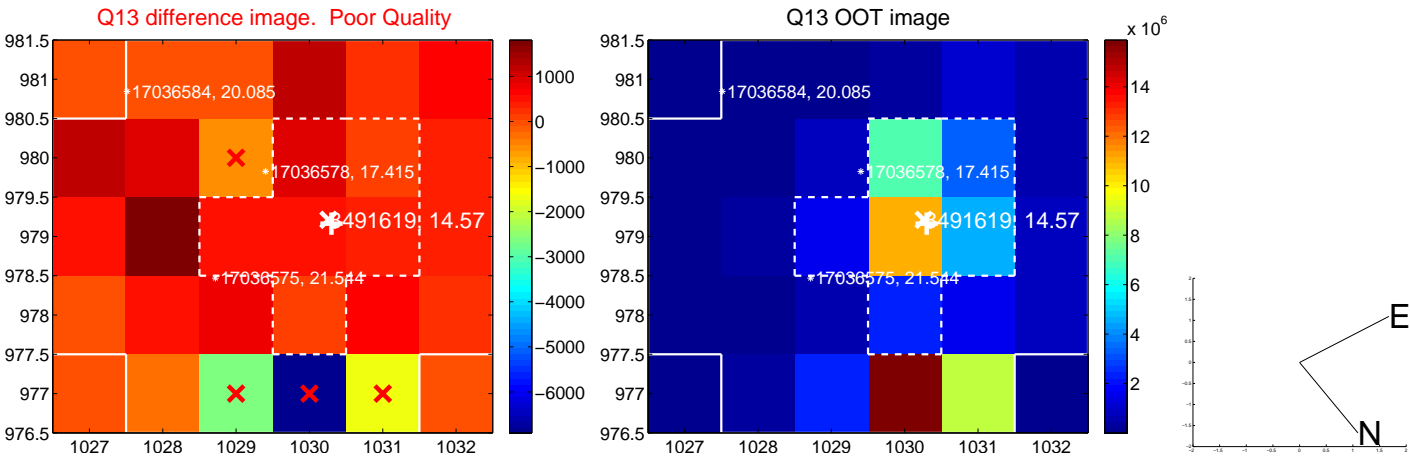
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



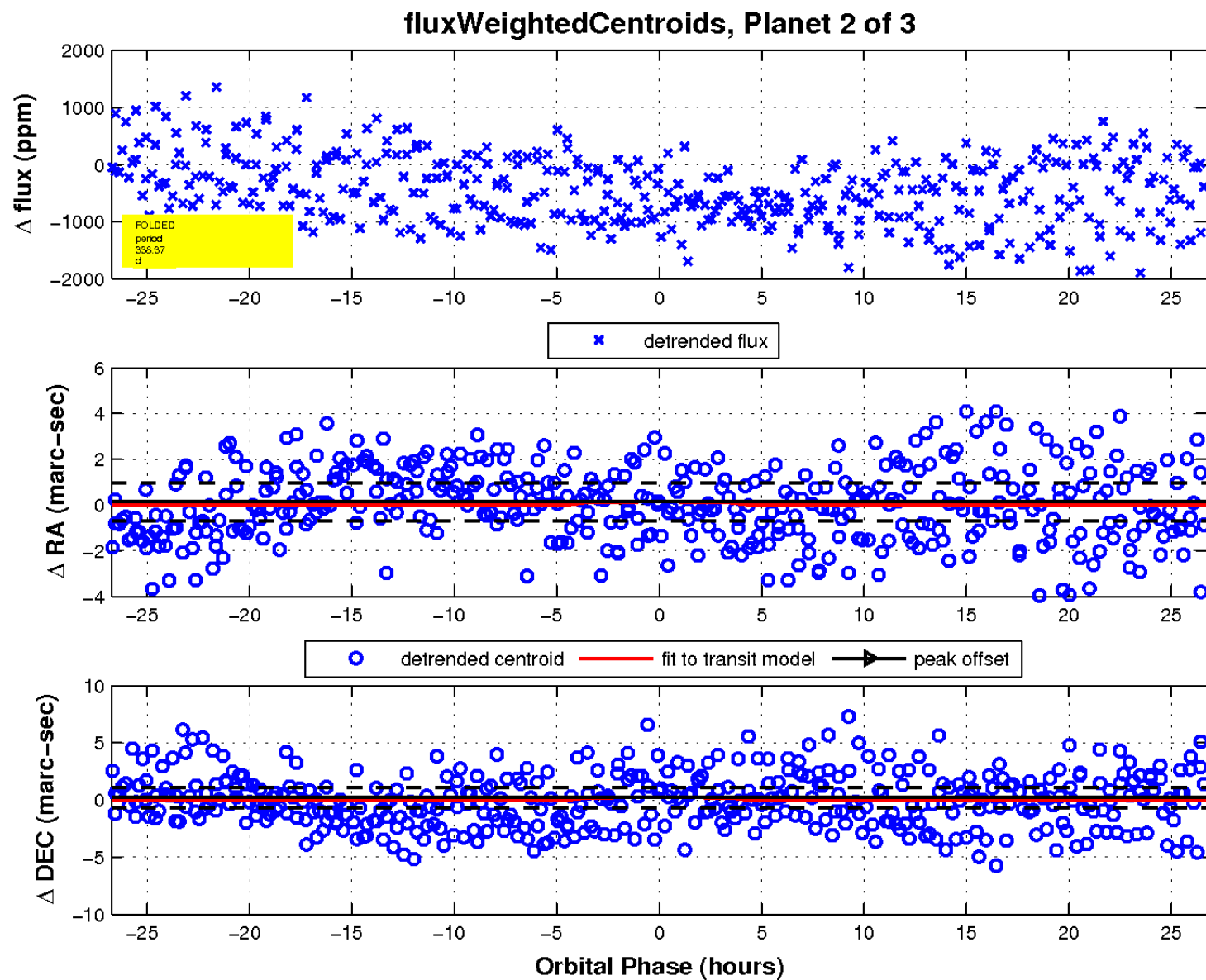
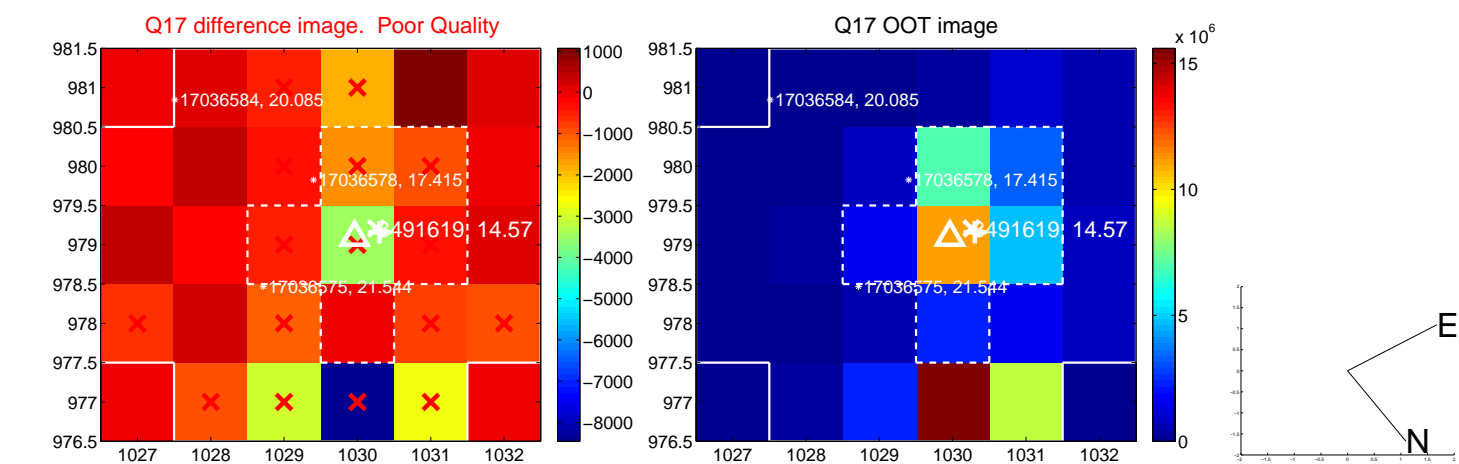
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value



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

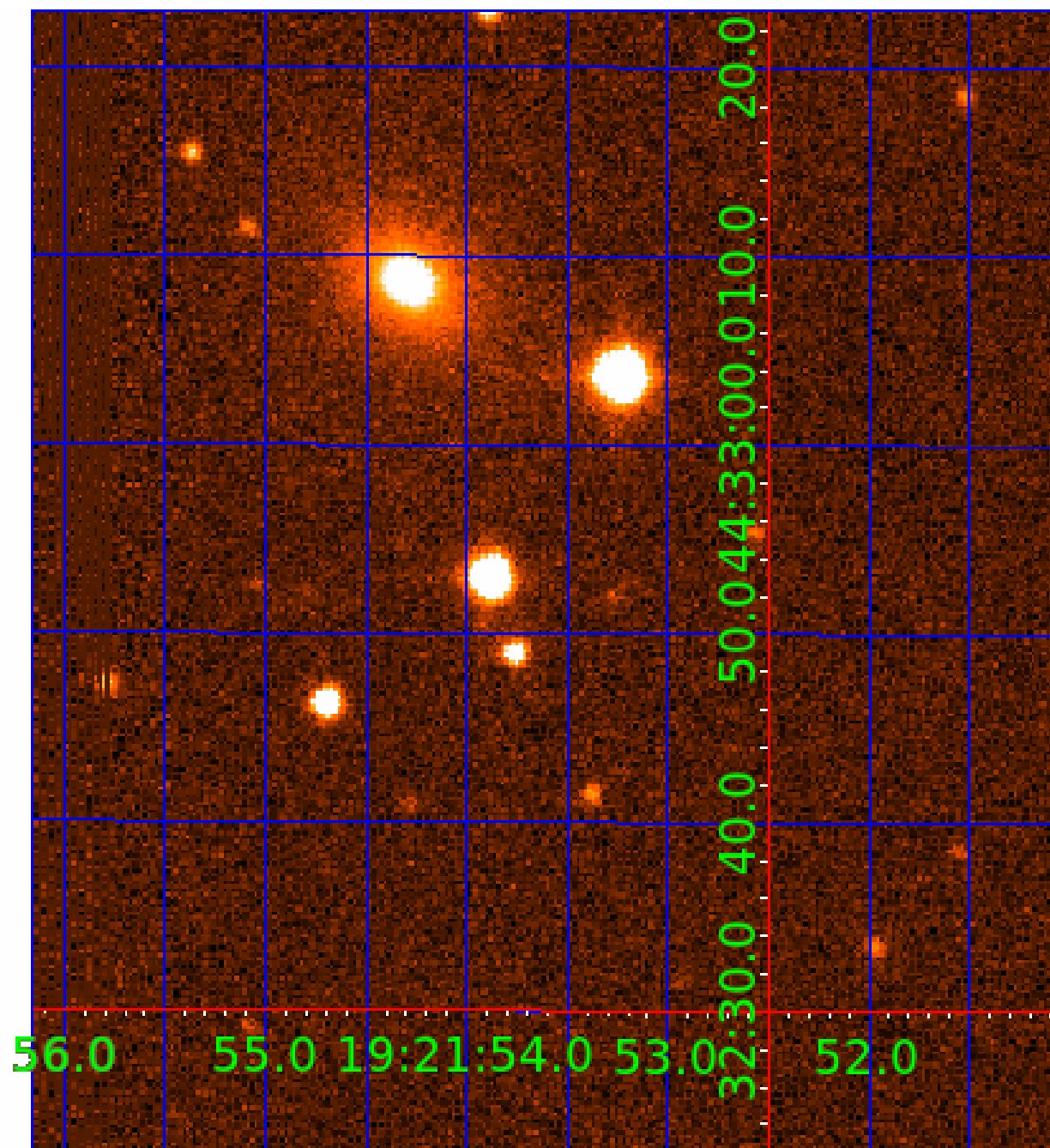


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\Delta$ : difference centroid. red  $\times$ : large negative pixel value.



UKIRT Image

Declination



# KIC 008491619

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
008491619-01	OBS	No	0.689213	131.664865	48.5	2.659	8.0	8.9	0.81	4906	0.65	1734.13
008491619-02	OBS	No	338.372084	212.765963	524.7	8.937	9.3	6.6	0.81	4906	2.25	0.45
008491619-03	OBS	No	101.618905	151.020125	518.4	3.653	8.1	6.1	0.81	4906	1.86	2.23

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008491619-01	OBS	FP	0.00	1	0	1	0	LPP_DV—CENT_RESOLVED_OFFSET
008491619-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
008491619-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—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.

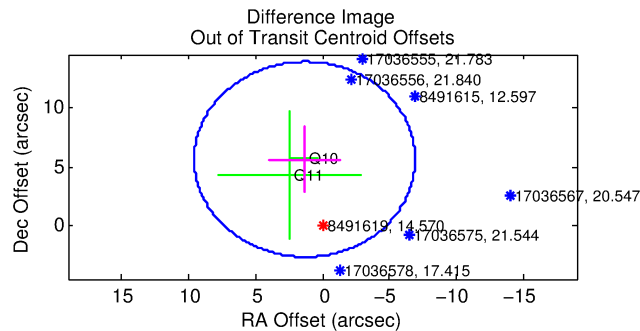
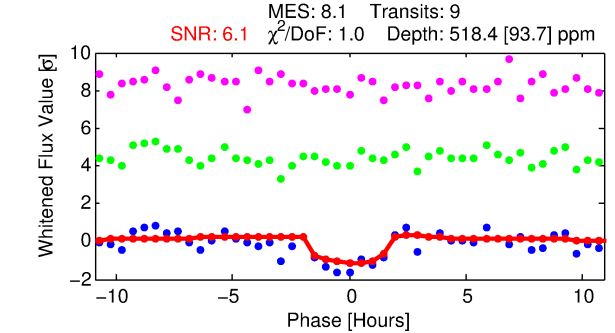
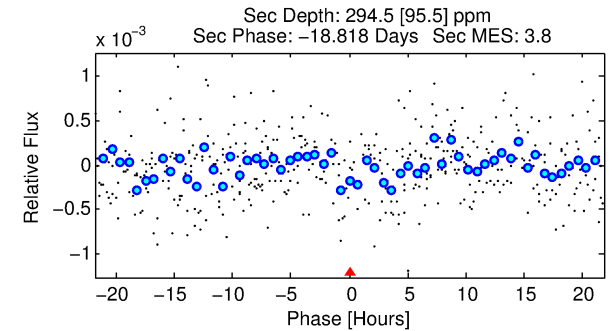
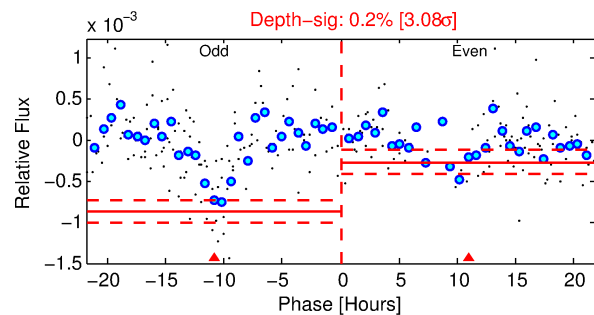
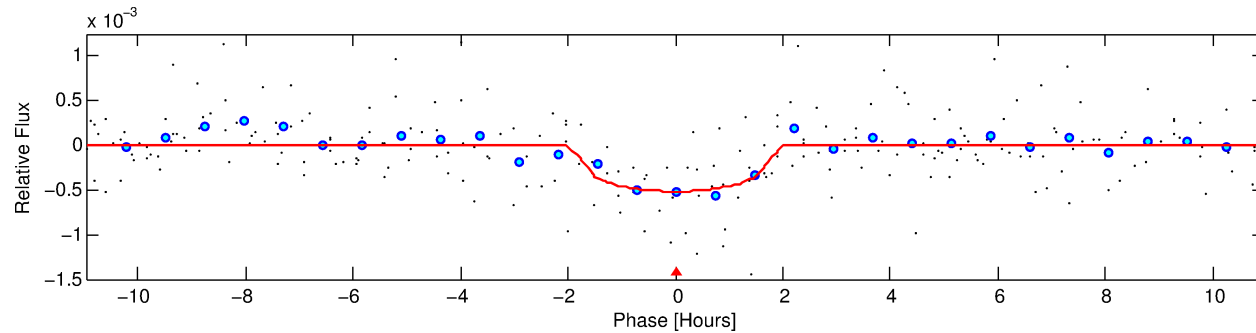
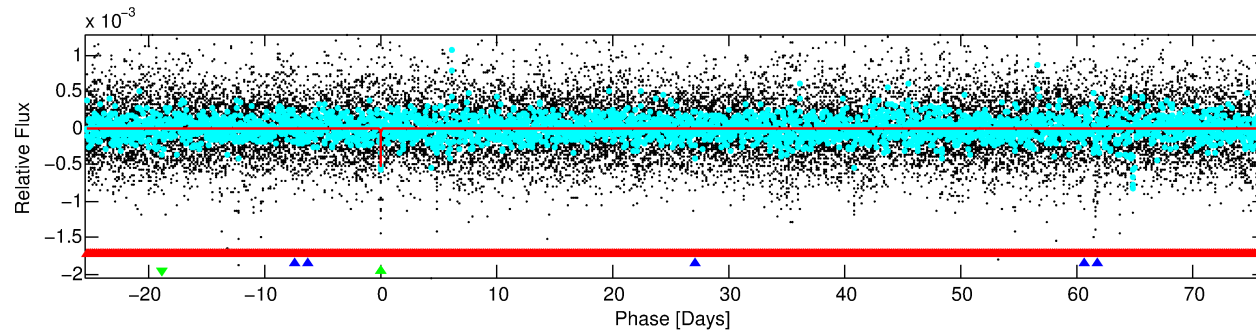
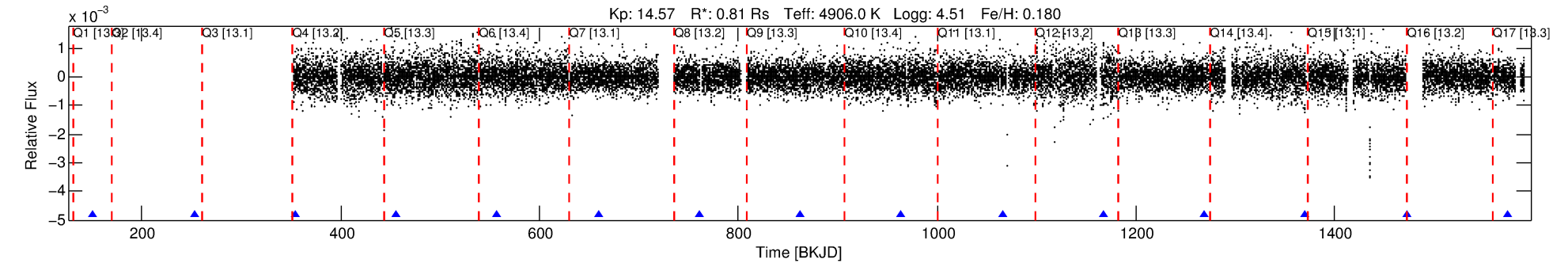
## Ephemeris Match Information For 008491619-03

No Significant Match Found



# DV One-Page Summary

KIC: 8491619 Candidate: 3 of 3 Period: 101.619 d



## DV Fit Results:

Period = 101.61890 [0.00141] d  
Epoch = 151.0201 [0.0115] BKJD  
Rp/R\* = 0.0209 [0.0413]  
a/R\* = 192.14 [1221.90]  
b = 0.47 [10.64]  
Seff = 2.23 [0.57]  
Teff = 311 [20] K  
Rp = 1.86 [3.68] Re  
a = 0.3930 [0.0500] AU  
Ag = 7267.29 [28897.63] [0.25σ]  
Teffp = 4446 [4416] K [0.94σ]

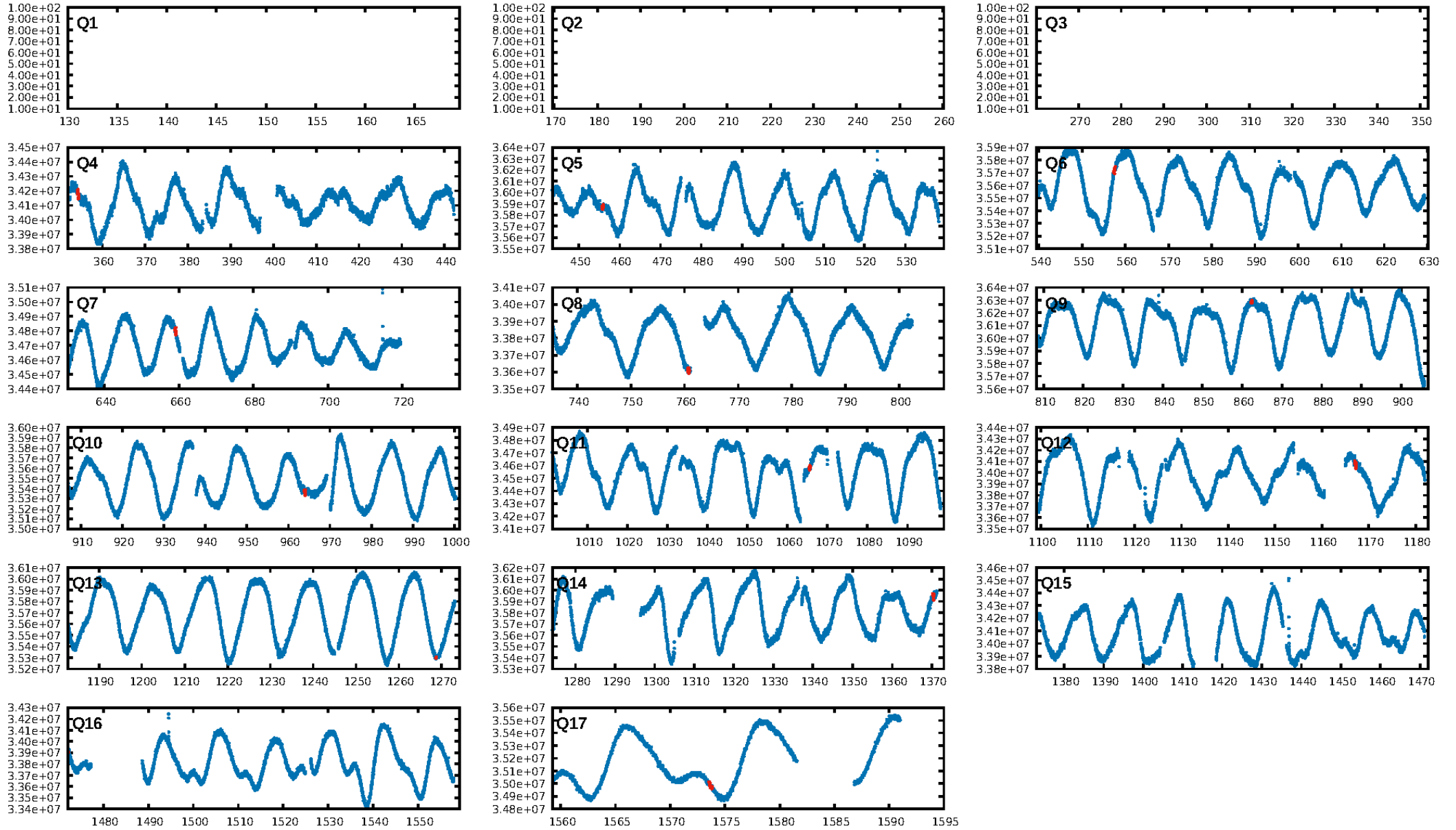
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [536.06σ]  
LongPeriod-sig: 100.0% [588.52σ]  
ModelChiSquare2-sig: 0.0%  
ModelChiSquareGof-sig: 99.9%  
Bootstrap-pfa: 1.08e-12  
RollingBand-fgt: 1.00 [8/8]  
GhostDiagnostic-chr: 7.971  
Centroid-sig: 52.7%  
Centroid-so: 1.893 arcsec [1.38σ]  
OotOffset-rm: 5.771 arcsec [2.10σ]  
KicOffset-rm: 6.027 arcsec [2.19σ]  
OotOffset-st: 1/1/0/0 [2]  
KicOffset-st: 1/1/0/0 [2]  
DiffImageQuality-fgm: 0.00 [0/2]  
DiffImageOverlap-fno: 0.00 [0/10]

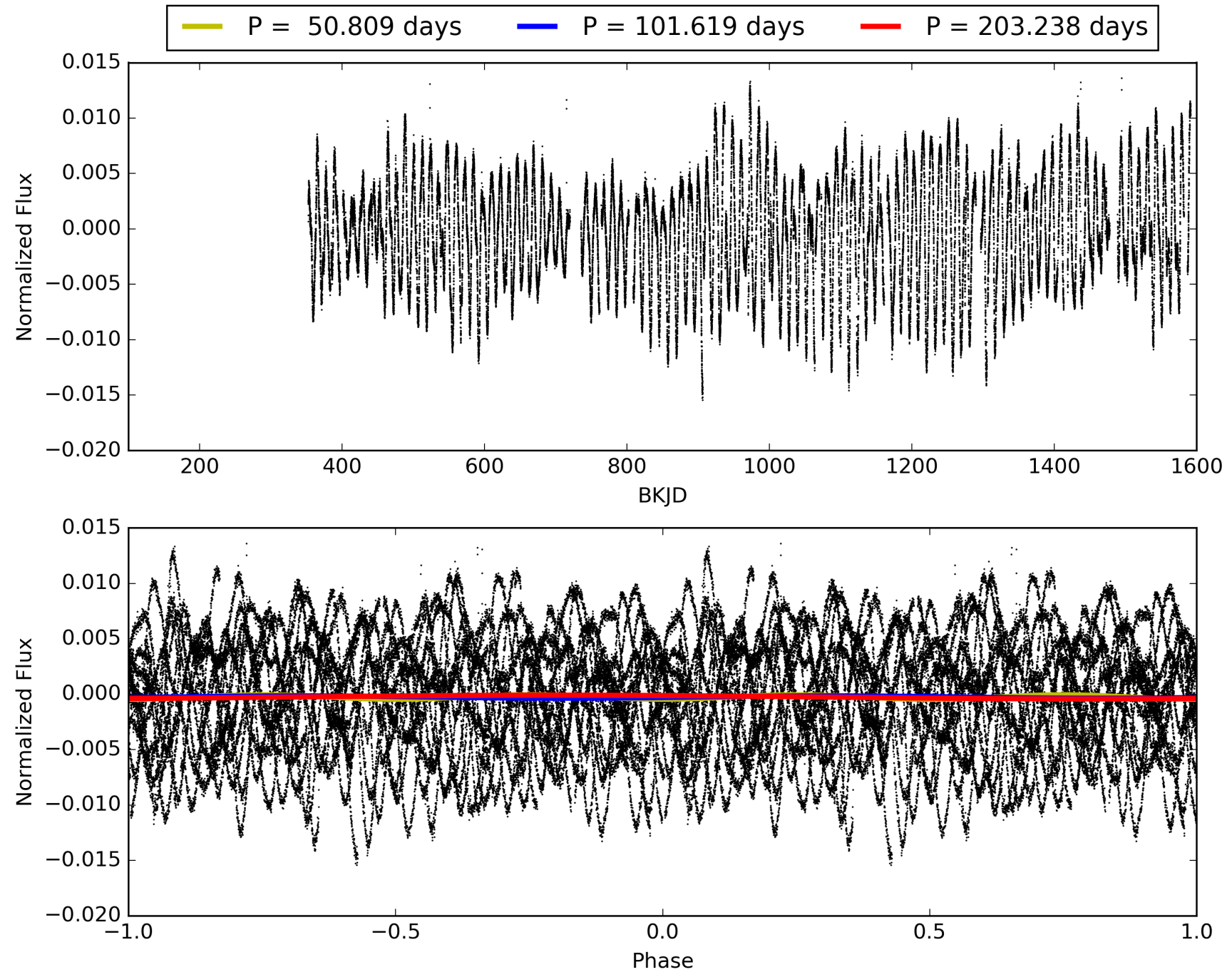
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 04:11:05 Z

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

# TCE 008491619-03, PDC Light Curves

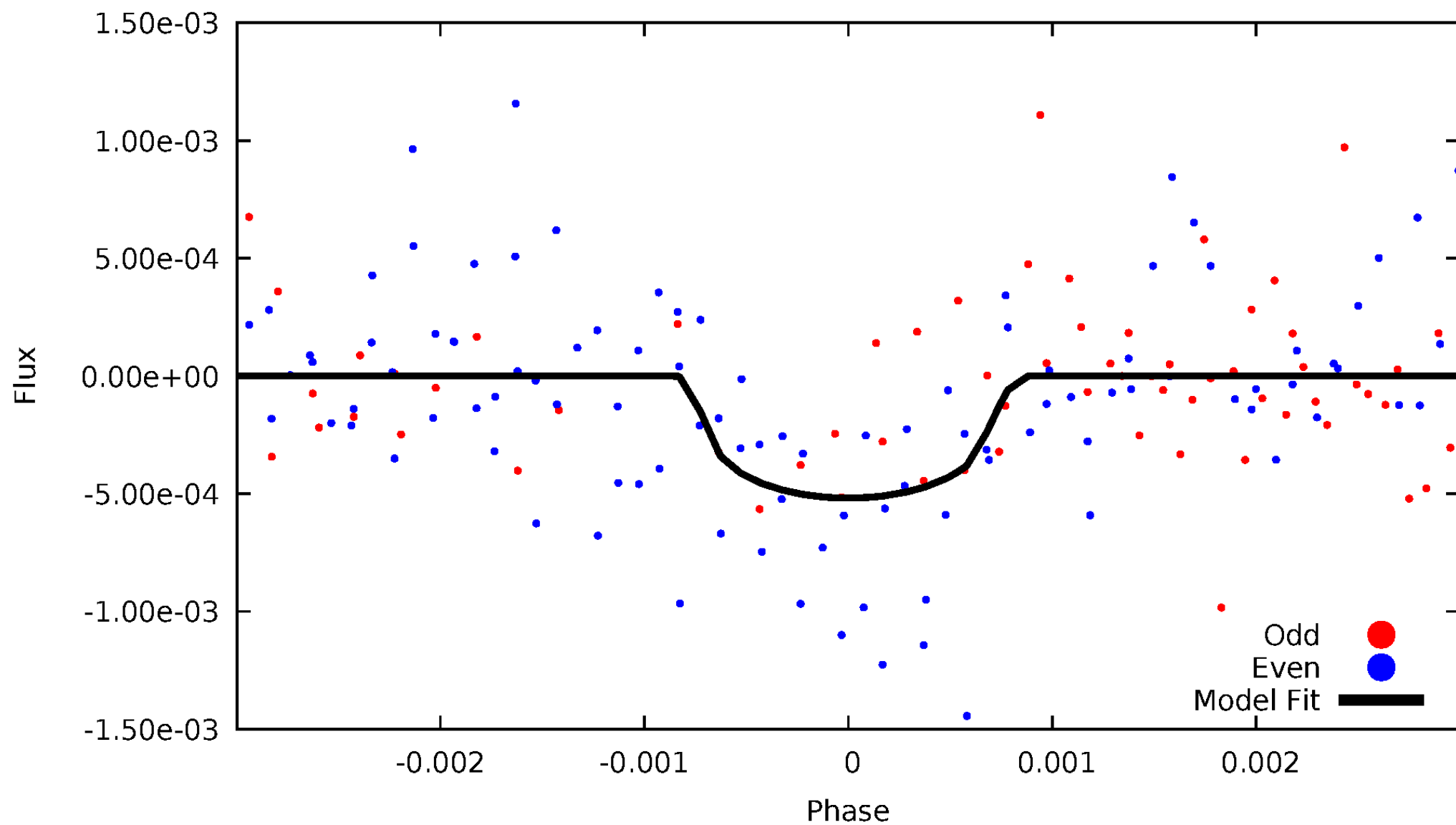


# TCE 008491619-03



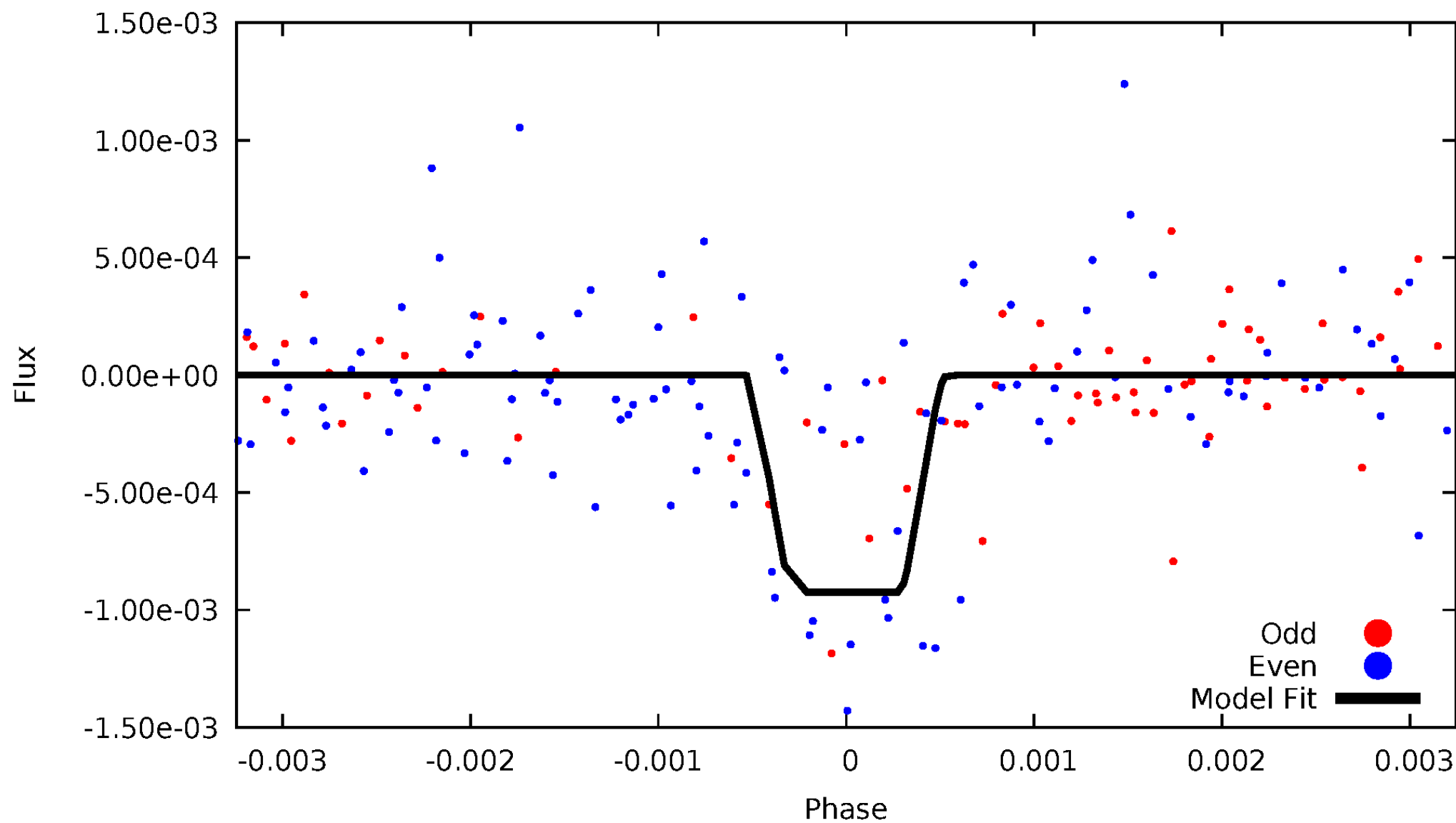
# DV Odd/Even

TCE 008491619-03



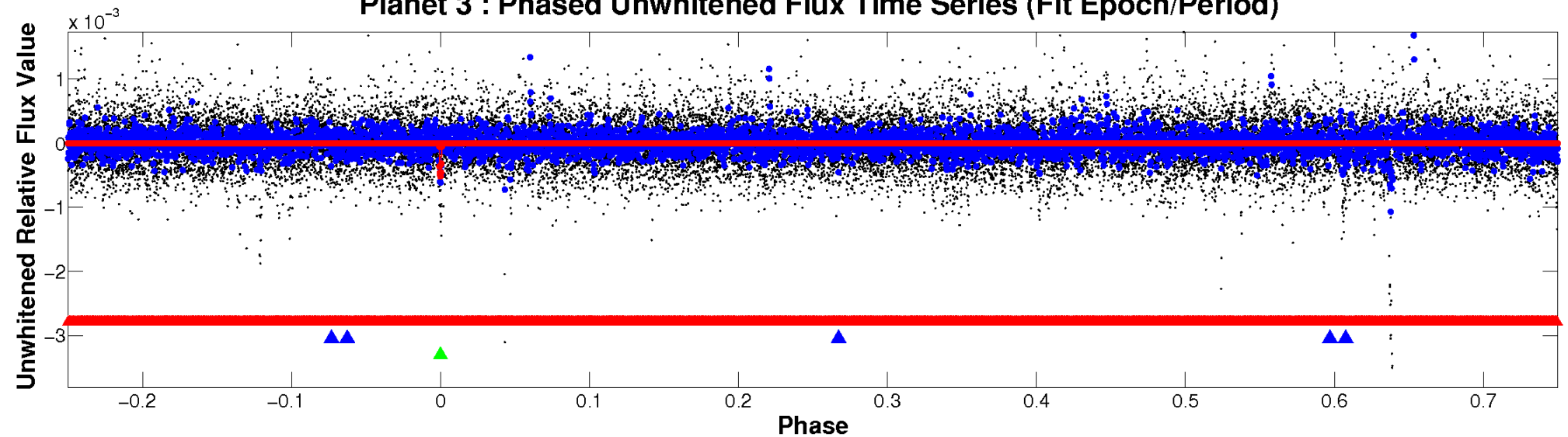
# ALT Odd/Even

TCE 008491619-03

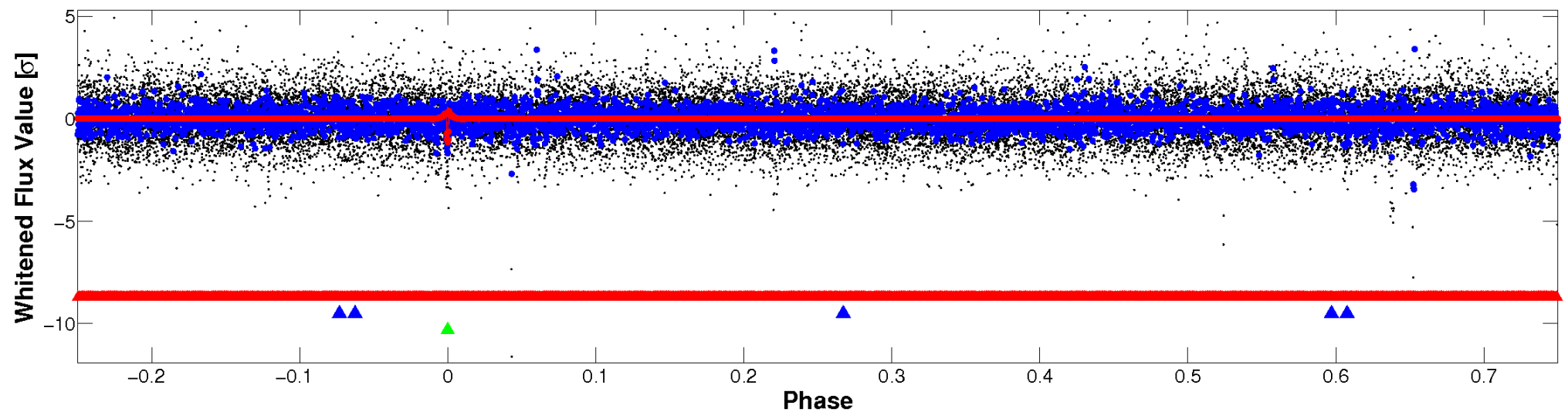


# Non-Whitened Vs. Whitened Light Curve

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



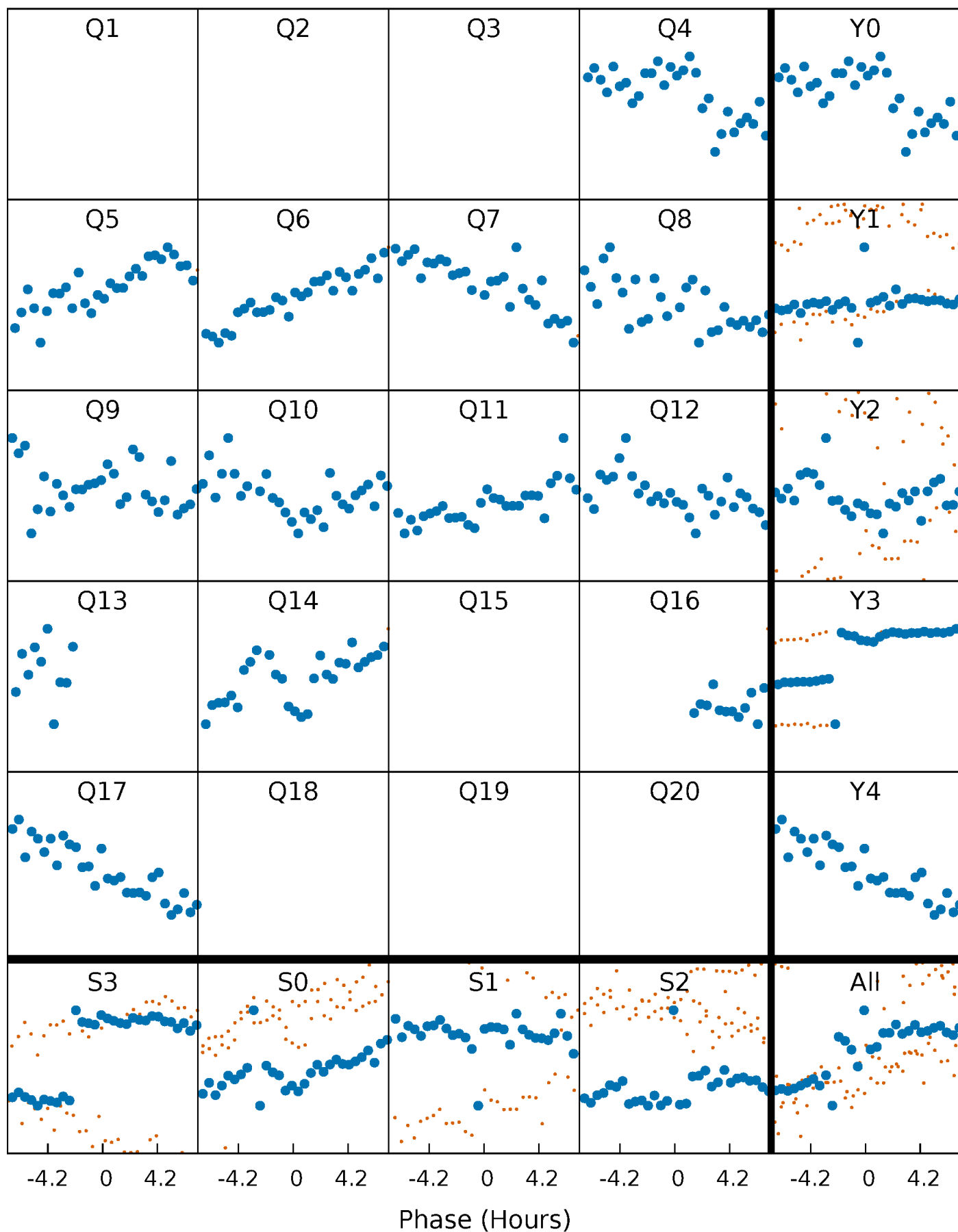
**Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)**





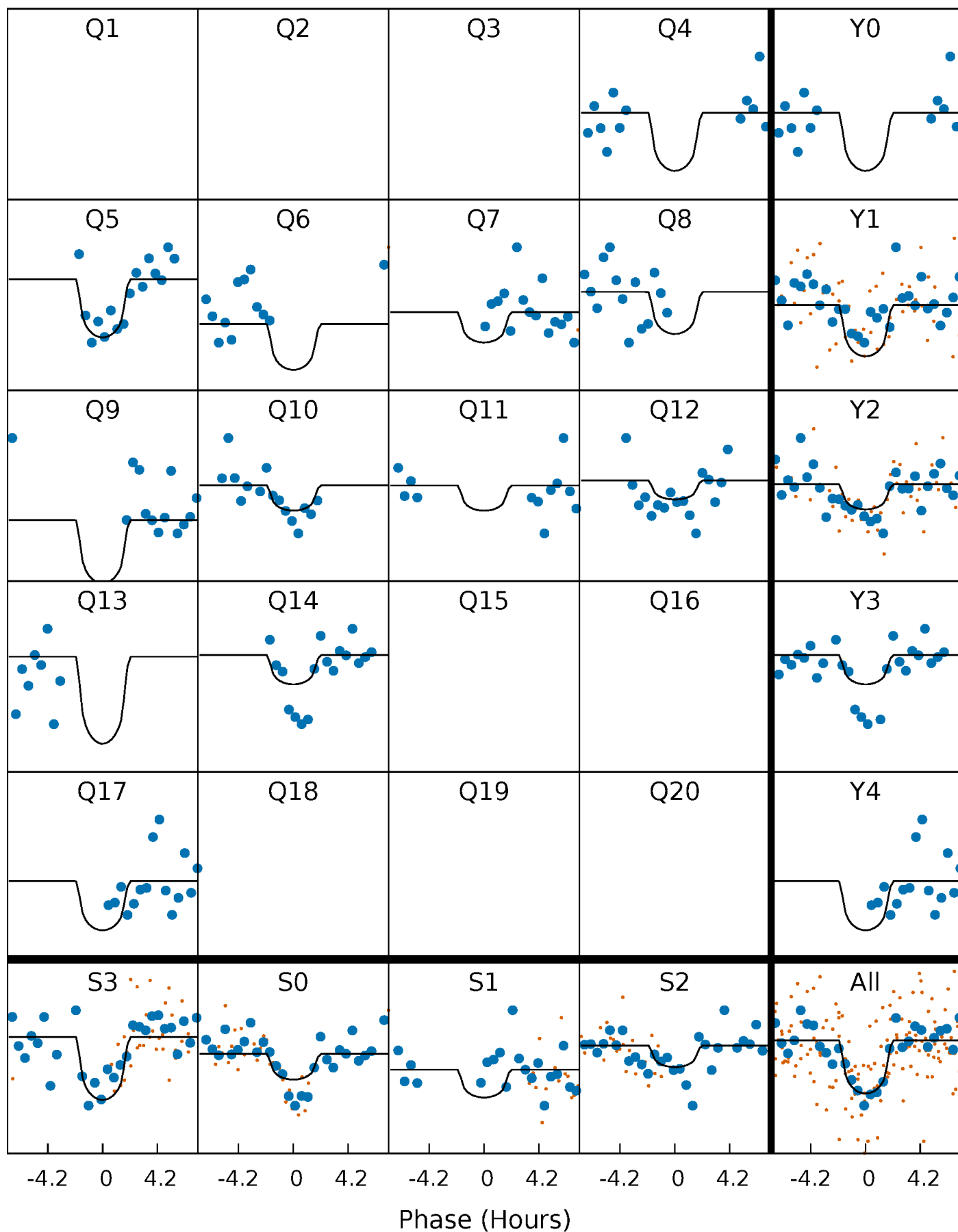
# PDC Quarter-Phased Transit Curves

TCE 008491619-03 P=101.618905 Days  $T_0=151.020125$  (BKJD)



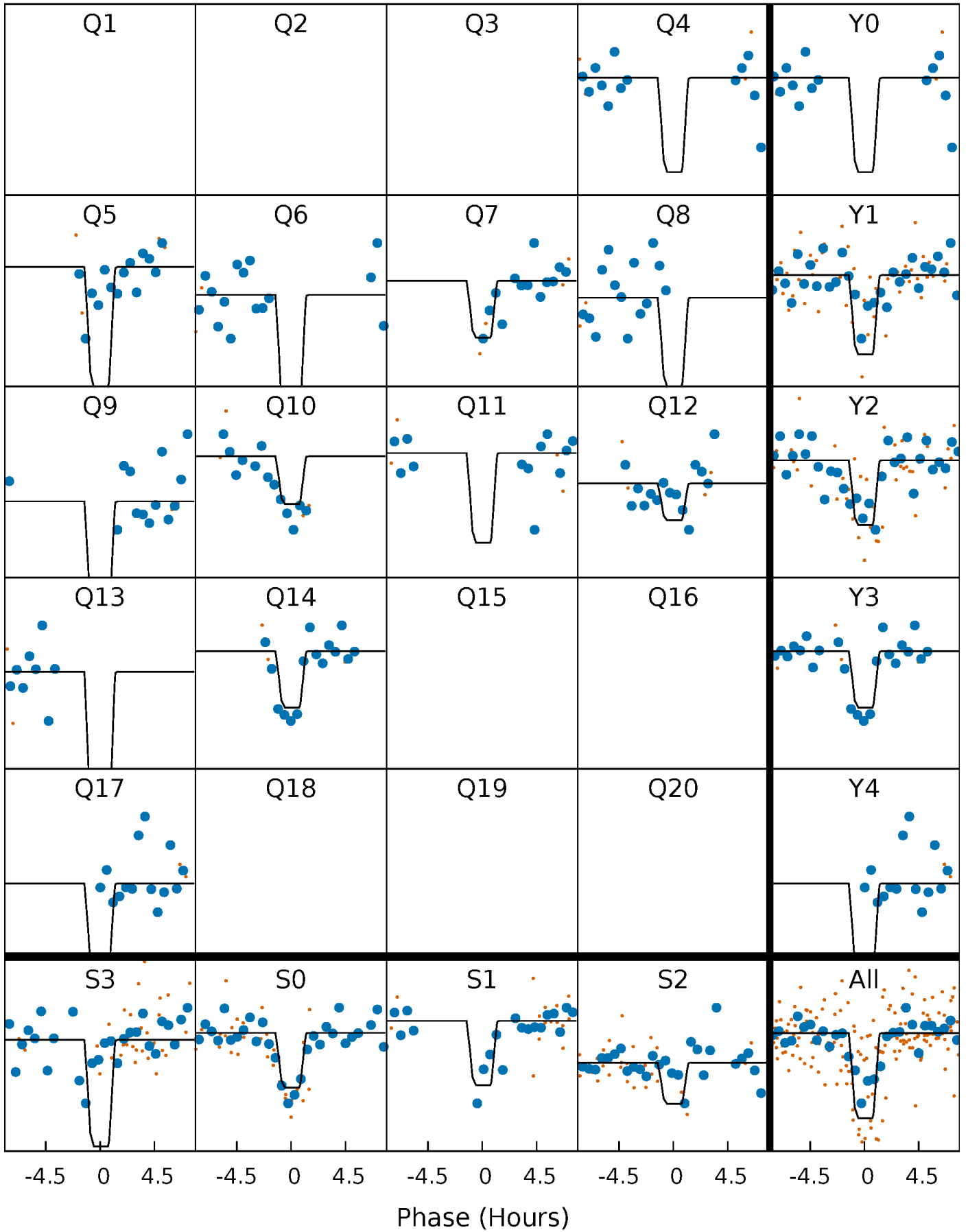
# DV Quarter-Phased Transit Curves

TCE 008491619-03 P=101.618905 Days  $T_0=151.020125$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

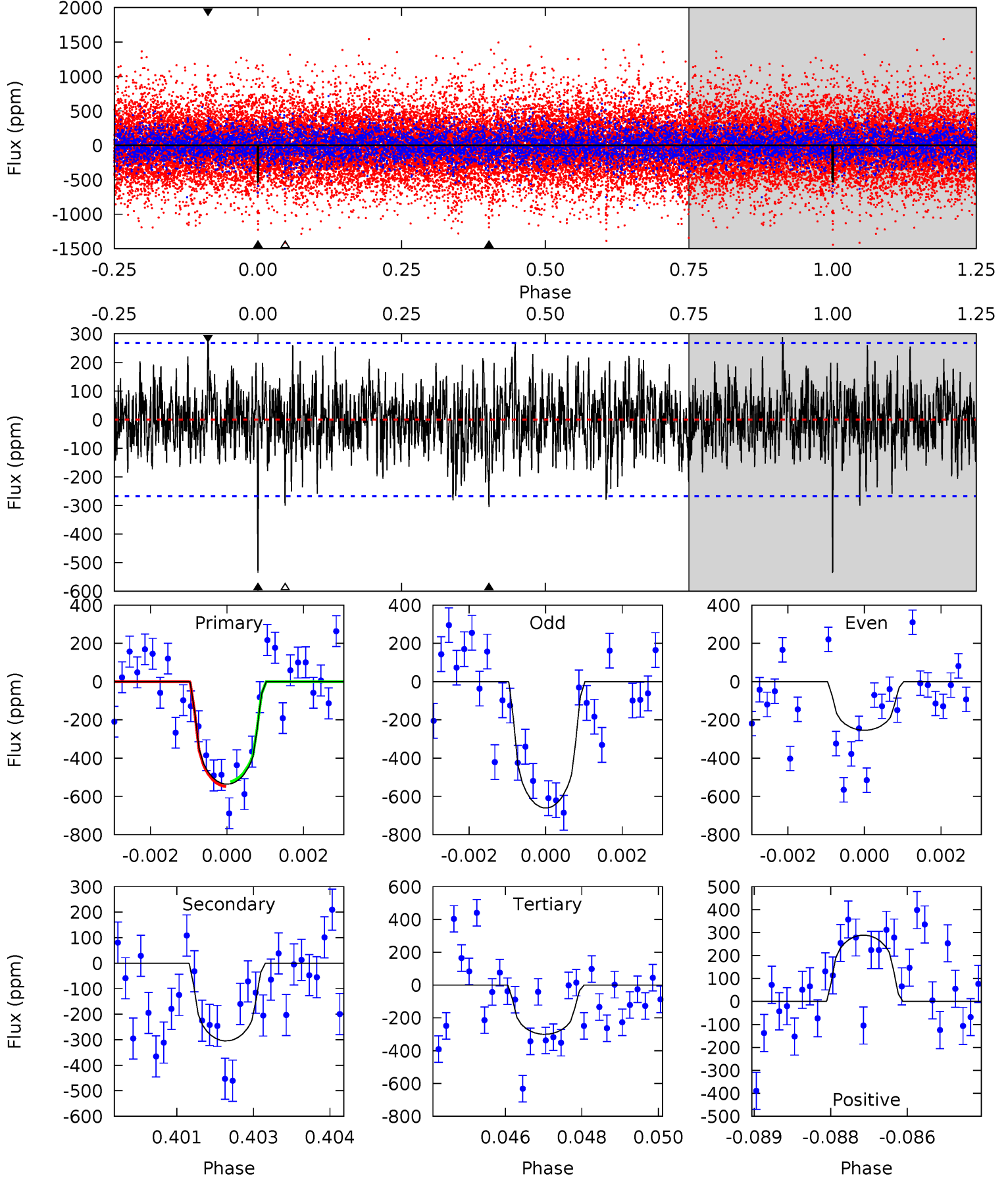
TCE 008491619-03 P=101.620815 Days  $T_0=151.011934$  (BKJD)



# DV Model-Shift Uniqueness Test

008491619-03, P = 101.618905 Days, E = 151.020125 Days

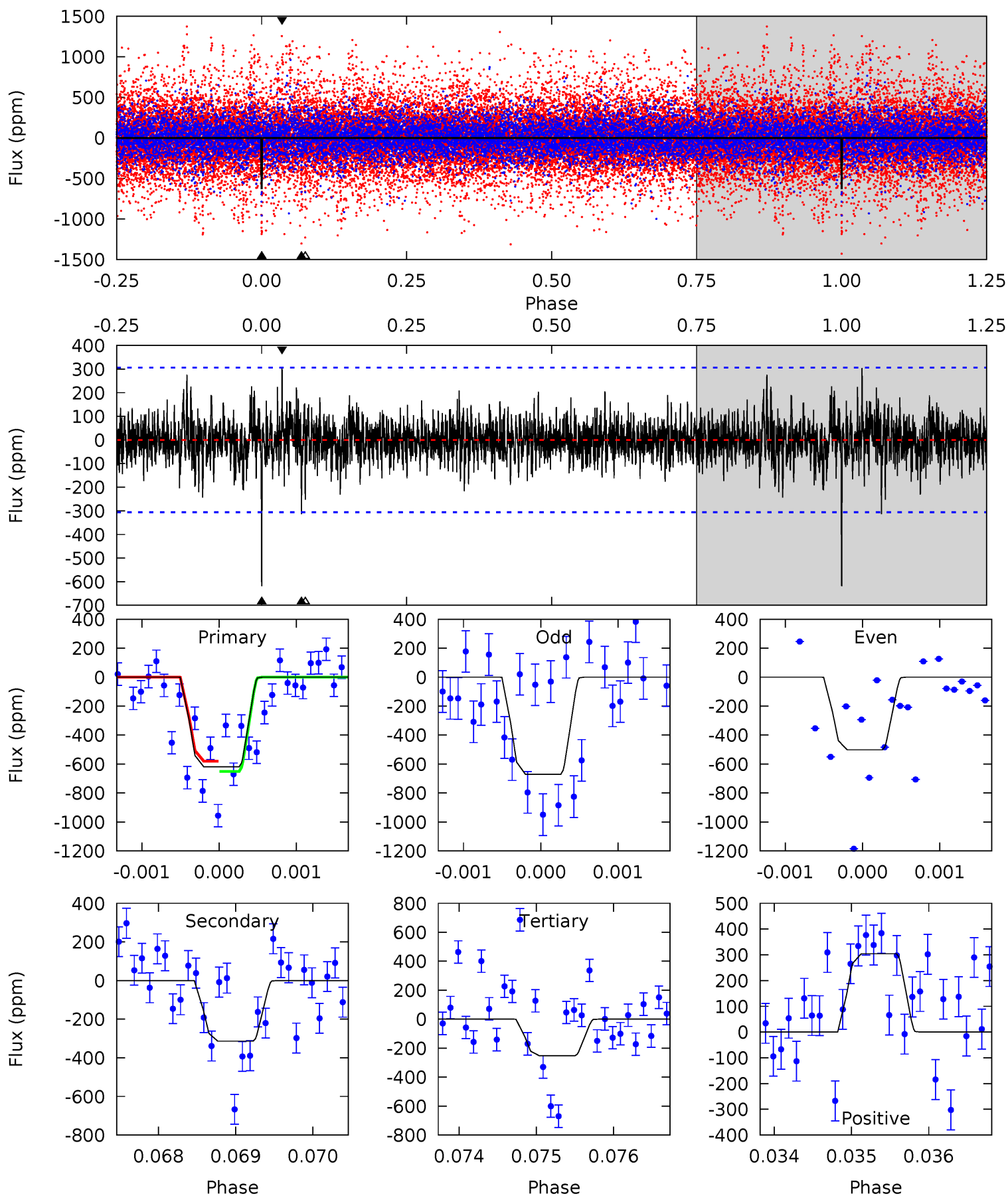
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	6.10	6.01	5.78	5.35	3.13	1.69	4.71	4.95	0.09	0.32	3.73	0.94	0.35	0.26



# Alt Model-Shift Uniqueness Test

008491619-03, P = 101.620815 Days, E = 151.011934 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	5.58	4.50	5.41	5.44	3.28	1.16	6.51	5.61	1.08	0.17	1.35	1.07	0.33	0.63



### Stellar Parameters For KIC 008491619

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	$4906^{+169}_{-169}$	$4.511^{+0.066}_{-0.132}$	$0.180^{+0.200}_{-0.300}$	$0.814^{+0.094}_{-0.085}$	$0.783^{+0.076}_{-0.055}$	$2.043^{+0.634}_{-0.657}$
	+3%/-3%	+1%/-3%	+111%/-167%	+12%/-10%	+10%/-7%	+31%/-32%
Source	KIC0	KIC0	KIC0	DSEP		

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

### Secondary Eclipse Parameters for KIC 008491619-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	$A_{obs}$
DV	$-305 \pm 50$	$3.23^{+3.14}_{-2.18}$	$440^{+22}_{-20}$	$3735^{+2200}_{-697}$	$2550^{+20536}_{-1930}$
Alt.	$-314 \pm 56$	$3.82^{+3.35}_{-2.41}$	$440^{+23}_{-21}$	$3563^{+1630}_{-622}$	$1838^{+11405}_{-1345}$

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



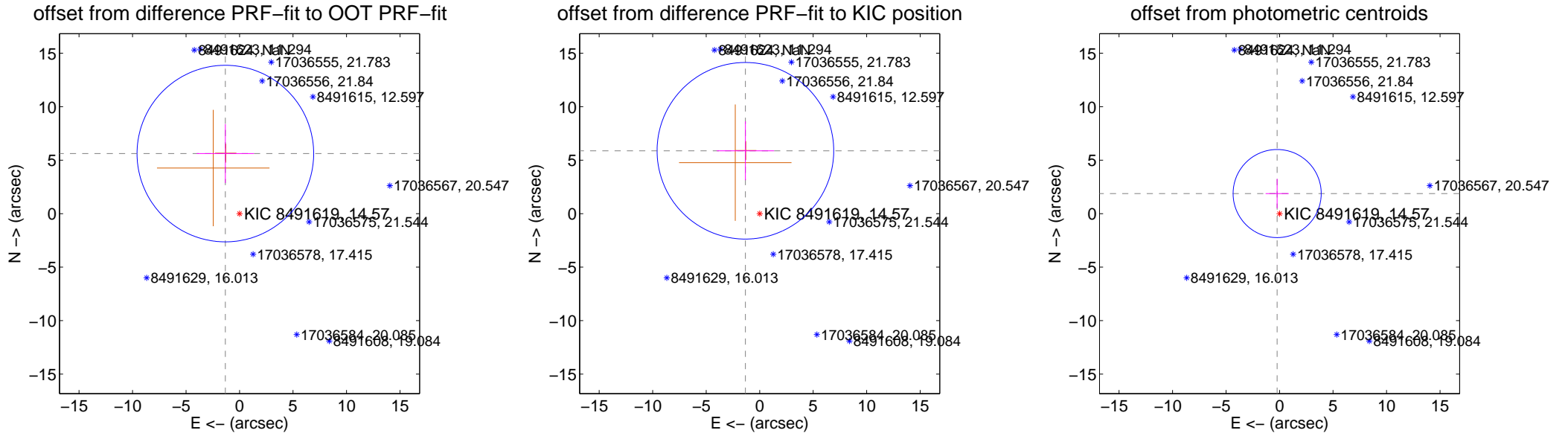
## DV Centroid Data

Supplemental centroid analysis for 008491619-03. Kepler magnitude: 14.57. Transit SNR 6.14

There are 0 quarters with good PRF difference image offsets

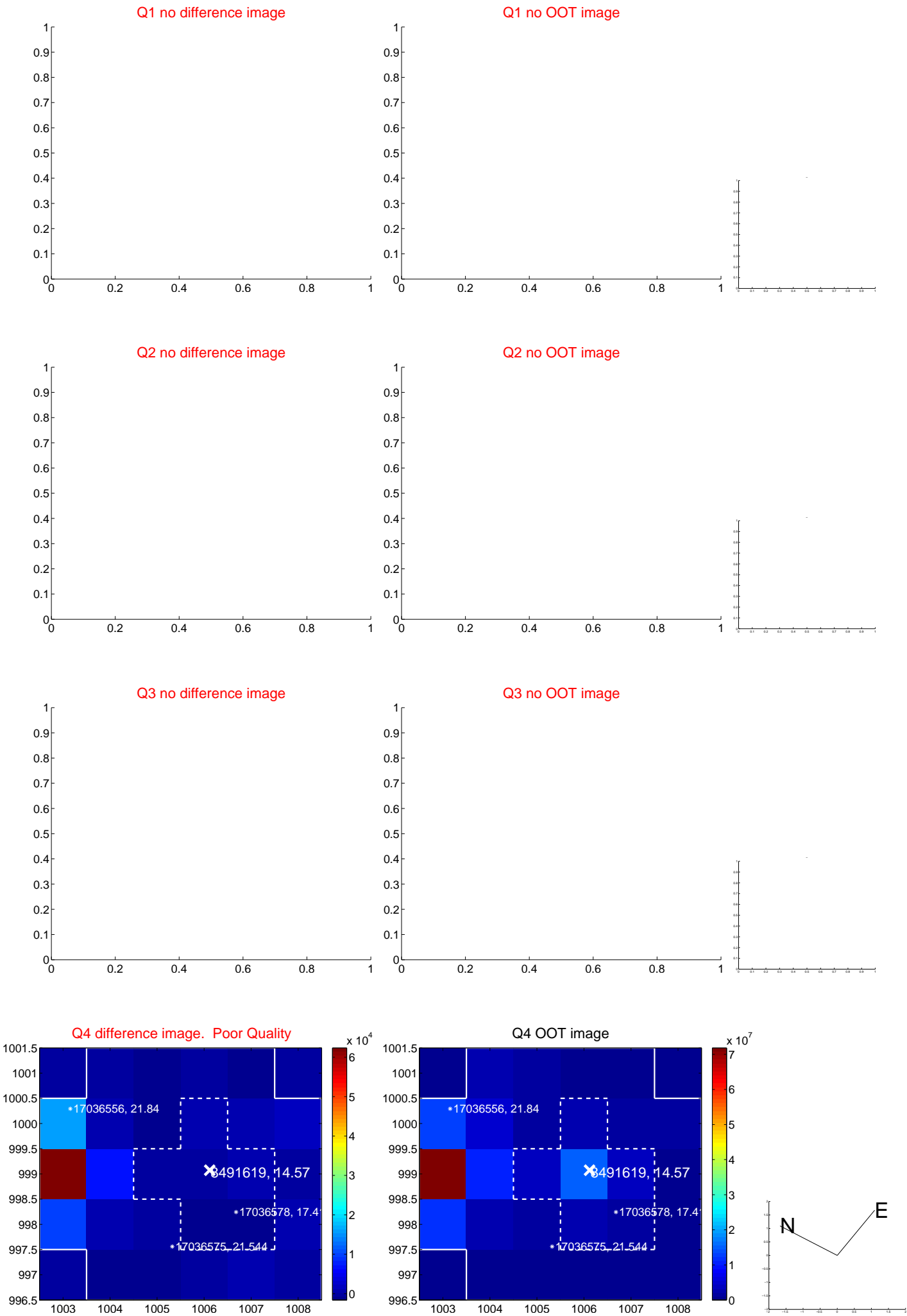
The direct PRF centroid is offset from the target star catalog position by about 0.53 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$5.771 \pm 2.751$	2.10	$1.325 \pm 2.675$	$5.616 \pm 2.755$
PRF-fit source offset from KIC position	$6.027 \pm 2.751$	2.19	$1.335 \pm 2.675$	$5.878 \pm 2.755$
photometric centroid source offset	$1.89 \pm 1.37$	1.38	$0.22 \pm 1.08$	$1.88 \pm 1.38$

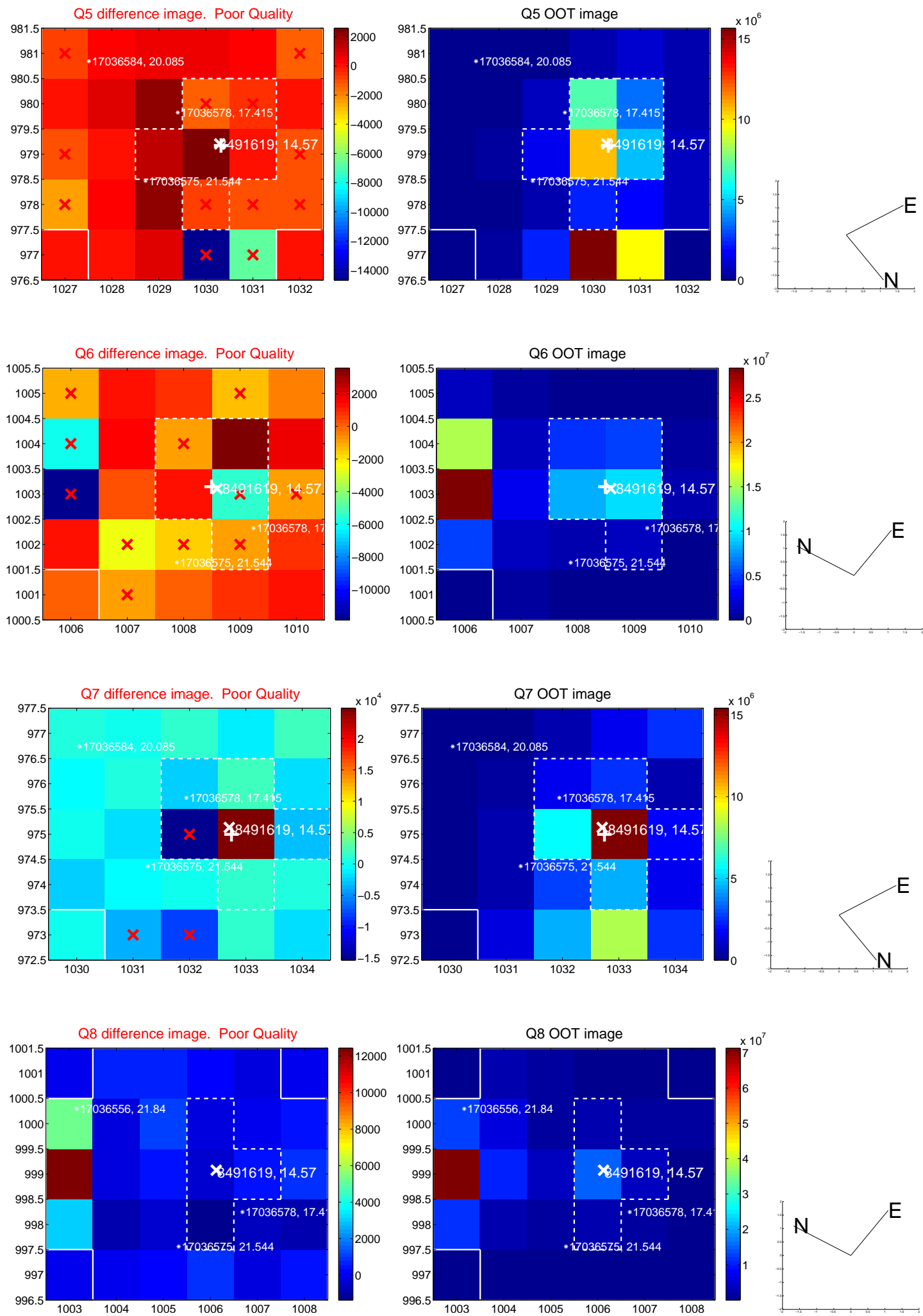


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

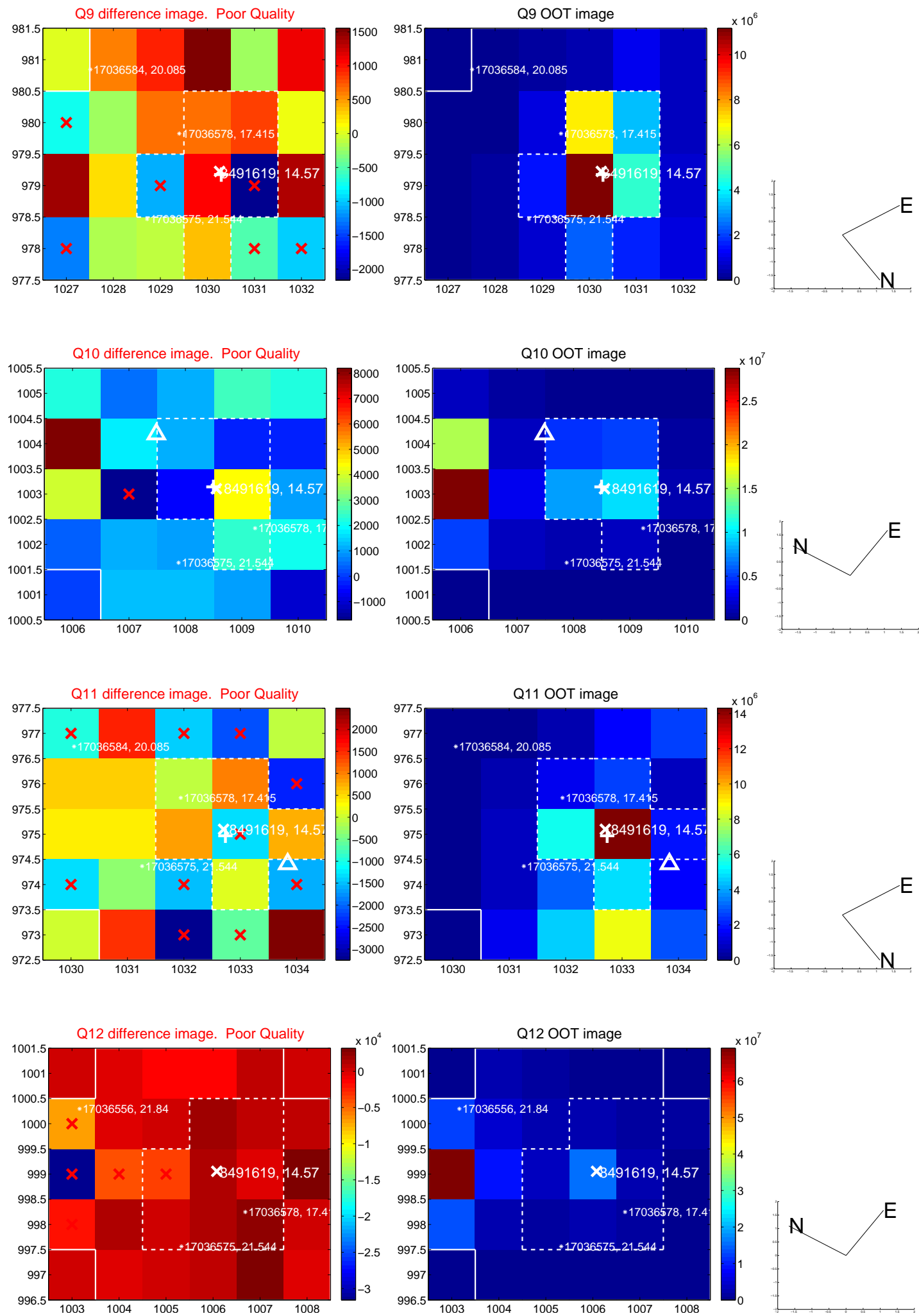
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



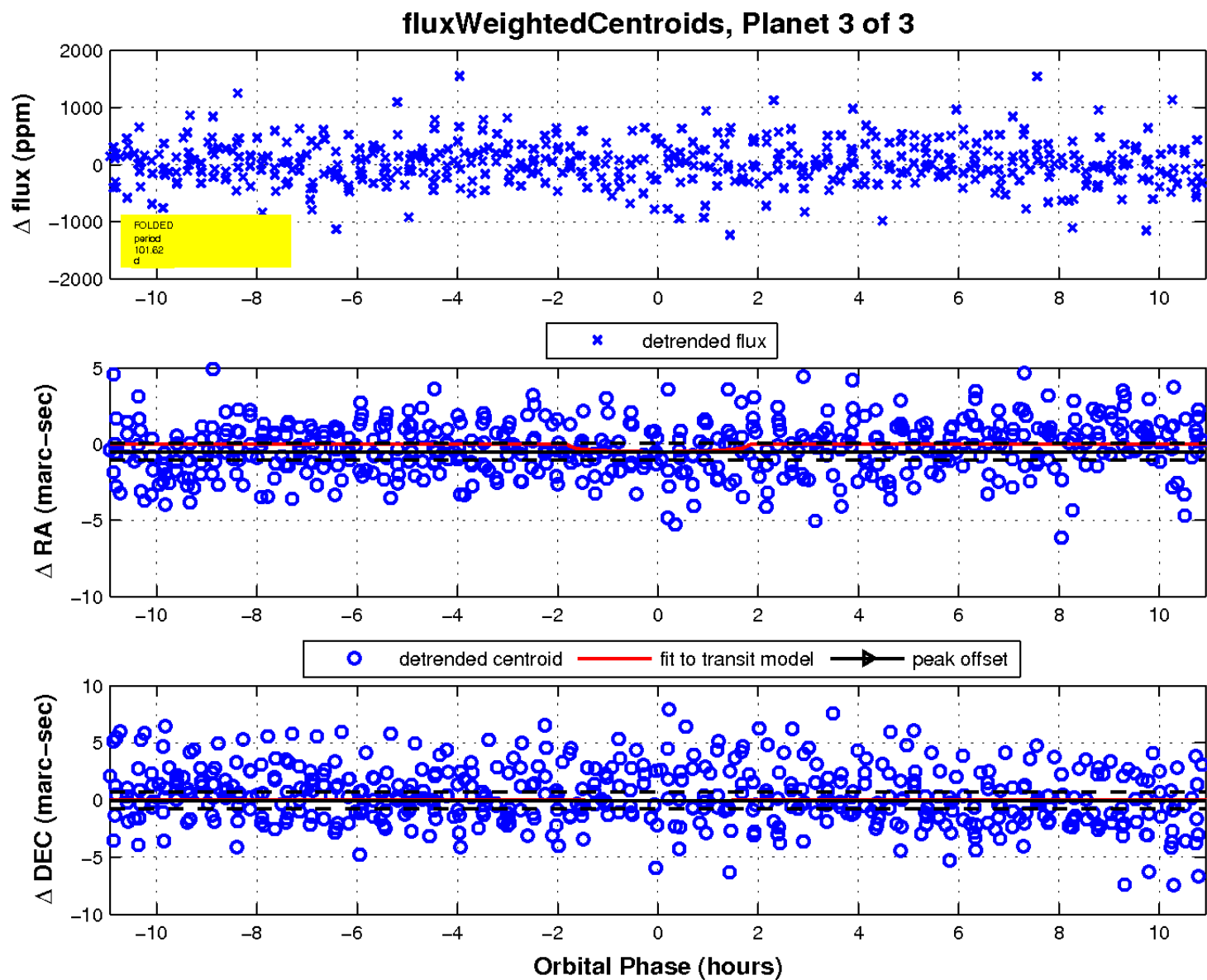
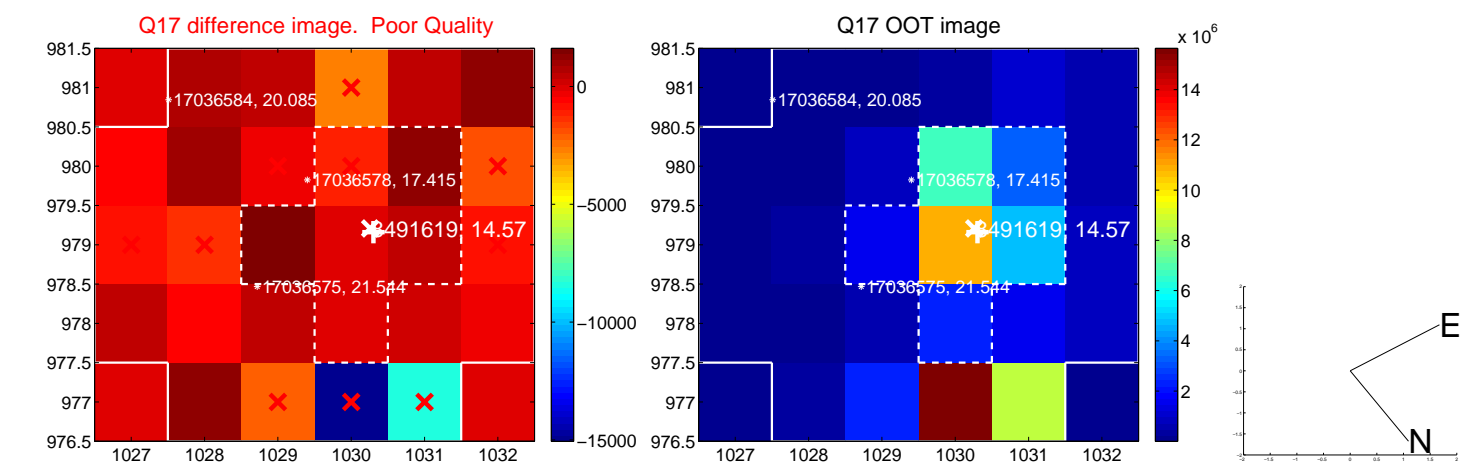
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

