

# KIC 005299459

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005299459-01	OBS	1576.01	10.415735	132.630597	818.0	2.942	57.2	62.0	0.99	5511	3.33	95.74
005299459-02	OBS	1576.02	13.084260	132.630490	682.8	3.620	43.5	47.0	0.99	5511	3.29	70.64
005299459-03	OBS	No	406.161366	372.905232	513.3	9.107	7.7	7.4	0.99	5511	2.45	0.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005299459-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005299459-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005299459-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—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.

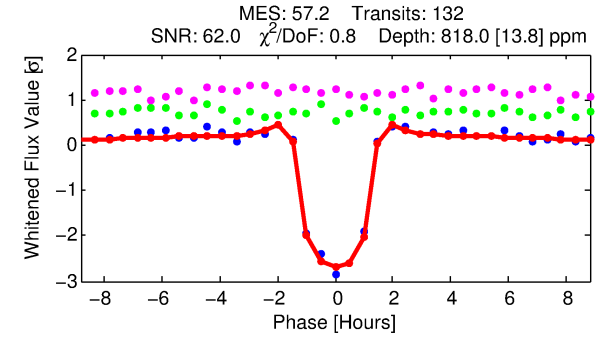
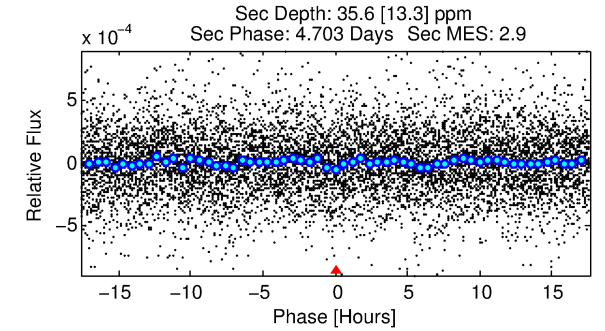
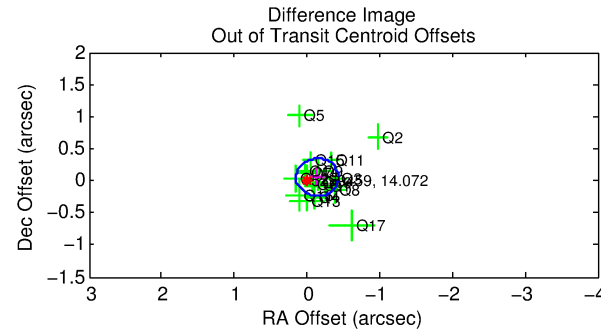
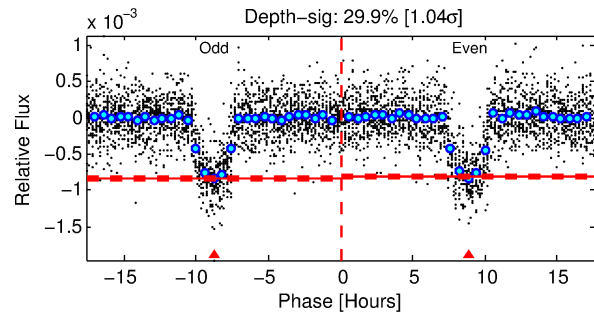
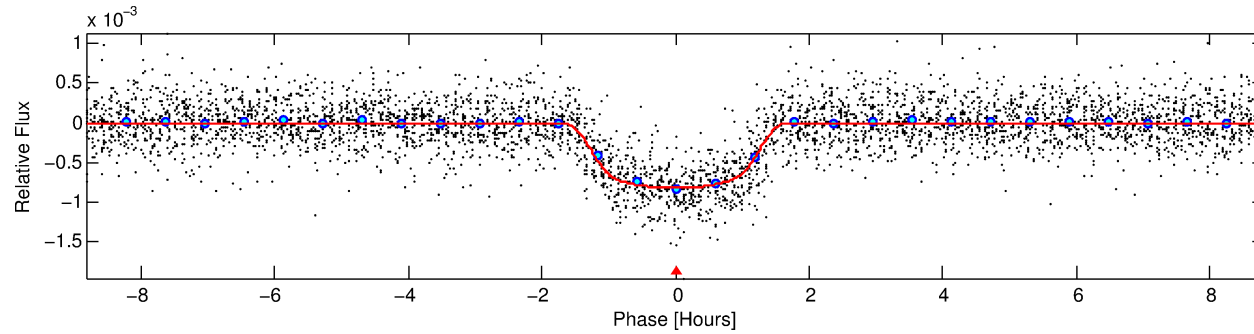
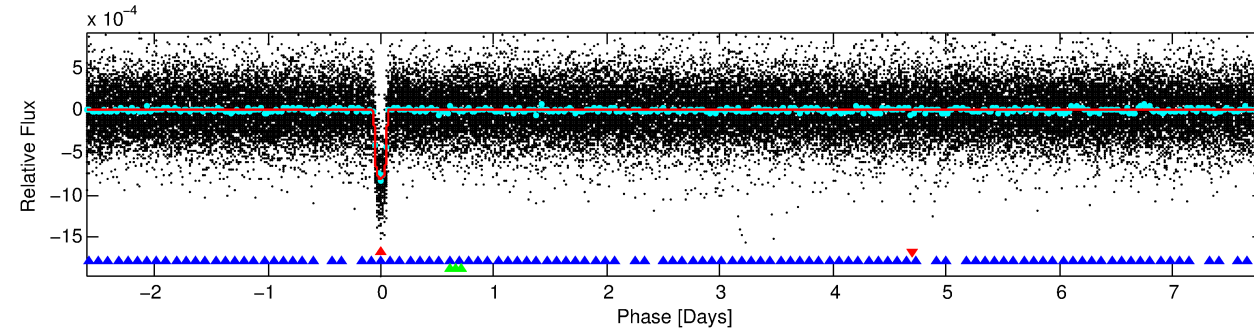
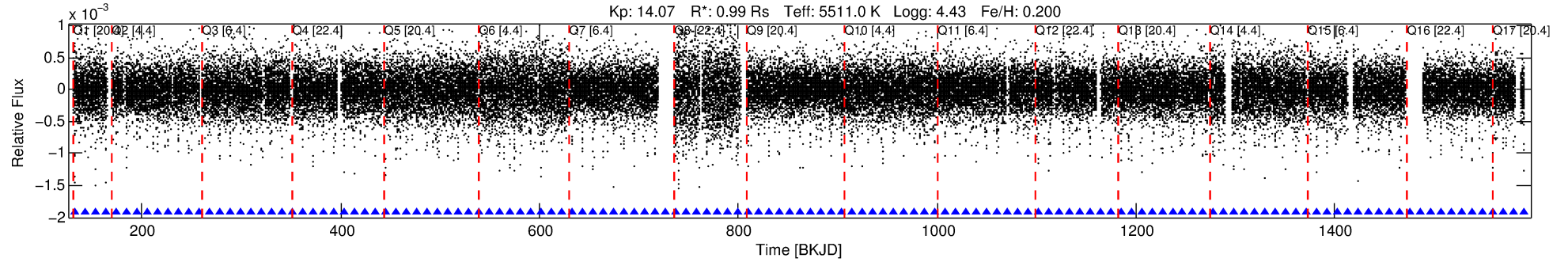
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 005299459-01

No Significant Match Found

# DV One-Page Summary

KIC: 5299459 Candidate: 1 of 3 Period: 10.416 d  
KOI: K01576.01 Name: Kepler-307b Corr: 0.972



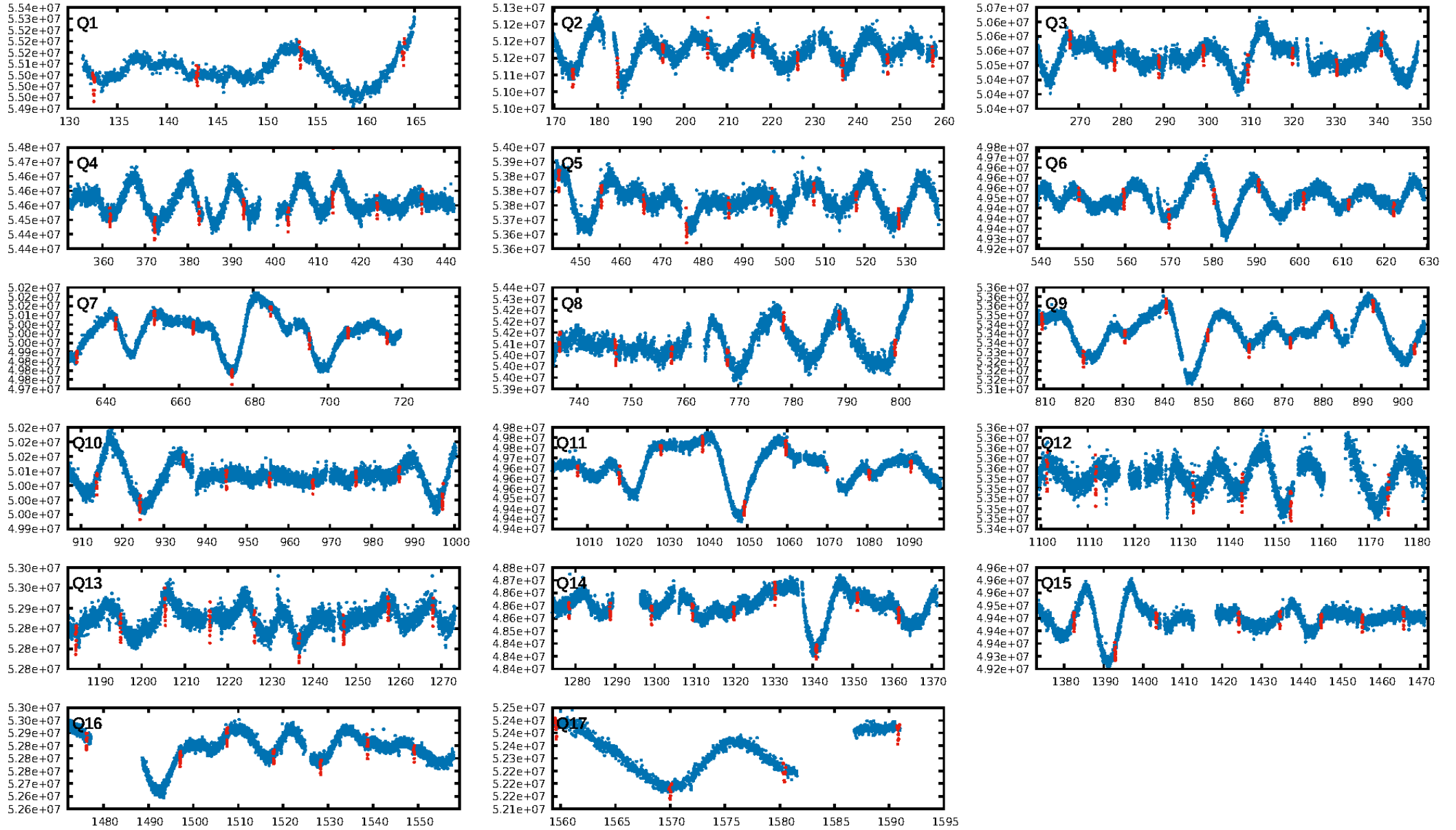
## DV Fit Results:

Period = 10.41573 [0.00001] d  
Epoch = 132.6306 [0.0009] BKJD  
Rp/R\* = 0.0309 [0.0015]  
a/R\* = 14.52 [2.90]  
b = 0.88 [0.05]  
Seff = 95.74 [18.40]  
Teff = 798 [38] K  
Rp = 3.33 [0.46] Re  
a = 0.0917 [0.0106] AU  
Ag = 14.84 [6.30] [2.20 $\sigma$ ]  
Teffp = 2420 [239] K [6.71 $\sigma$ ]

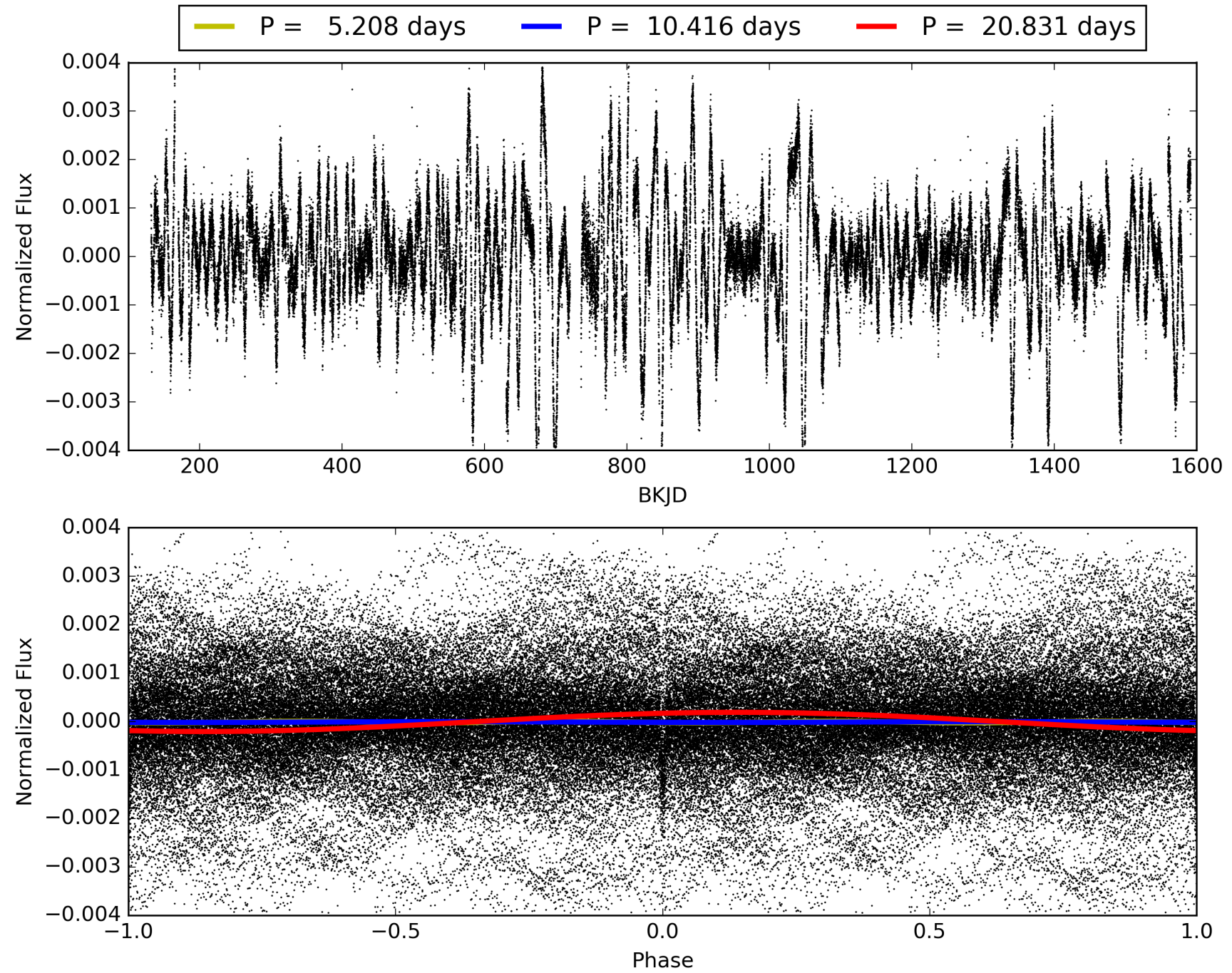
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [13.73 $\sigma$ ]  
ModelChiSquare2-sig: 99.5%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [124/124]  
GhostDiagnostic-chr: 4.008  
Centroid-sig: 13.7%  
Centroid-so: 0.309 arcsec [1.72 $\sigma$ ]  
OotOffset-rm: 0.148 arcsec [1.53 $\sigma$ ]  
KicOffset-rm: 0.262 arcsec [2.62 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 005299459-01, PDC Light Curves

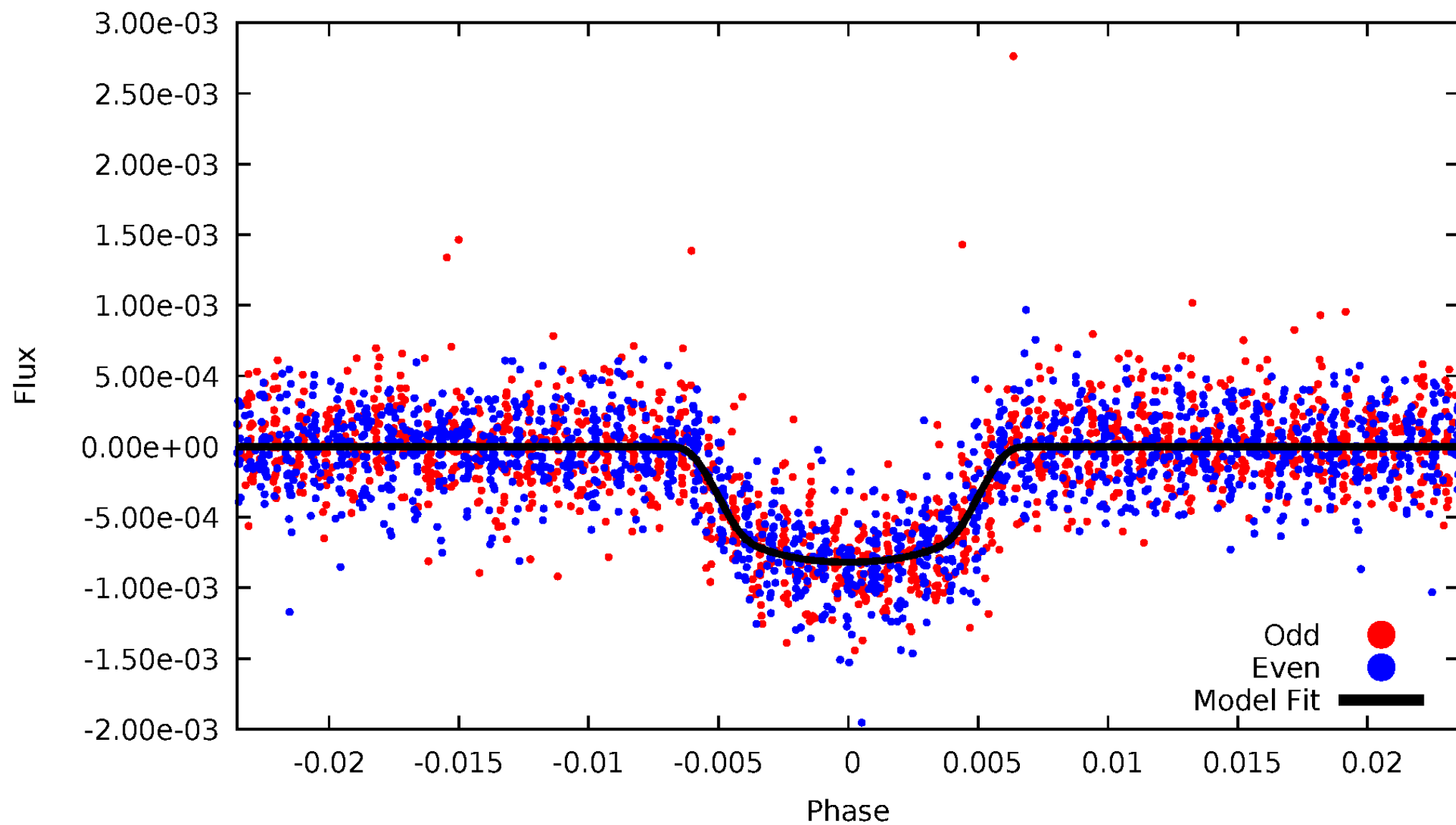


TCE 005299459-01



# DV Odd/Even

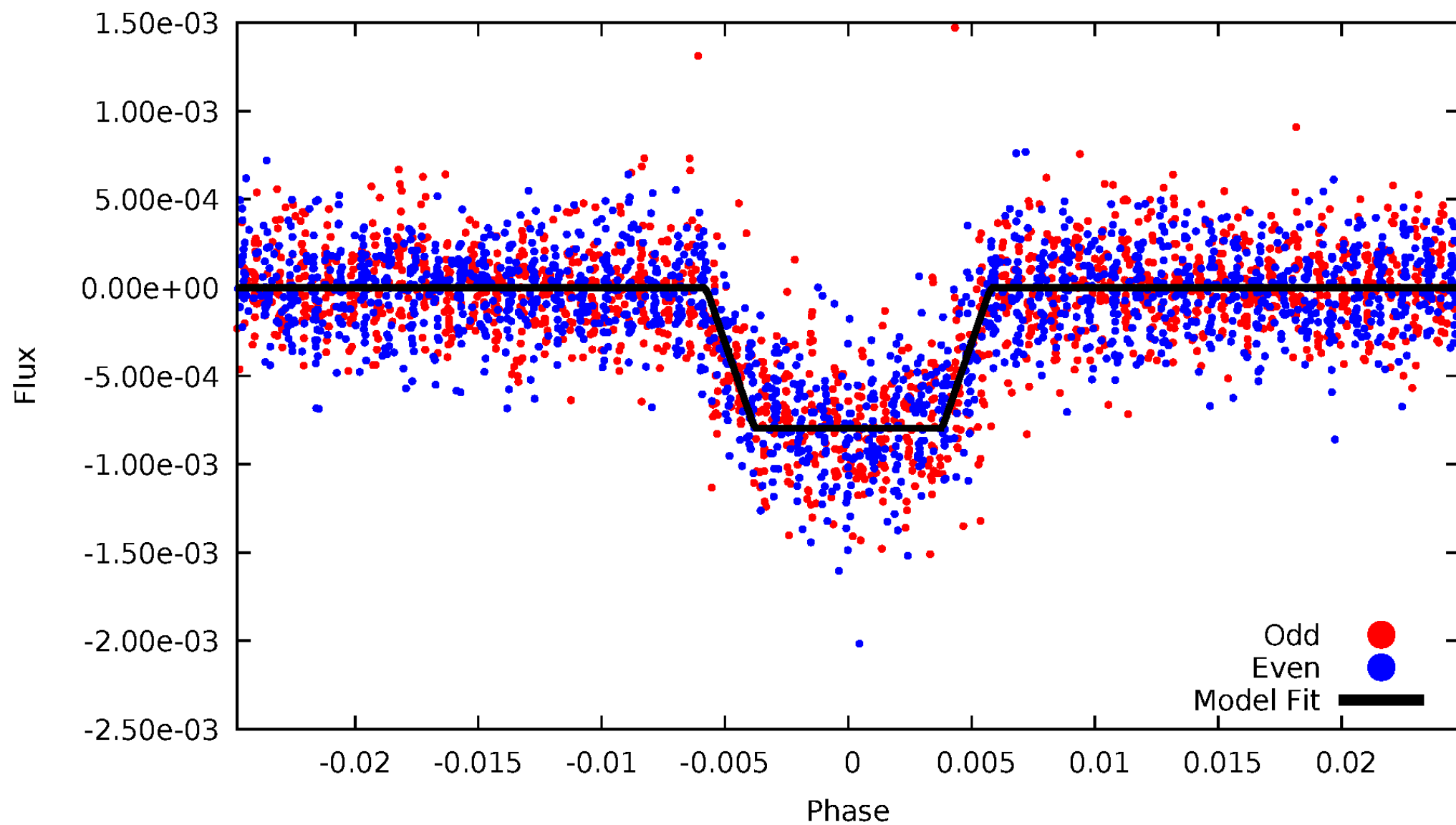
TCE 005299459-01





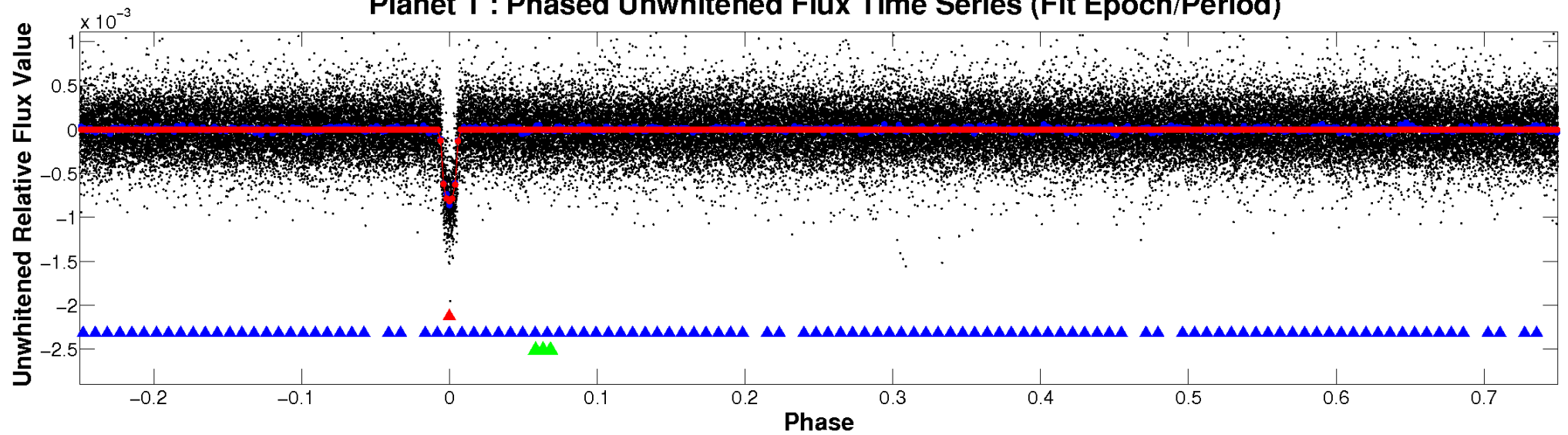
# ALT Odd/Even

TCE 005299459-01

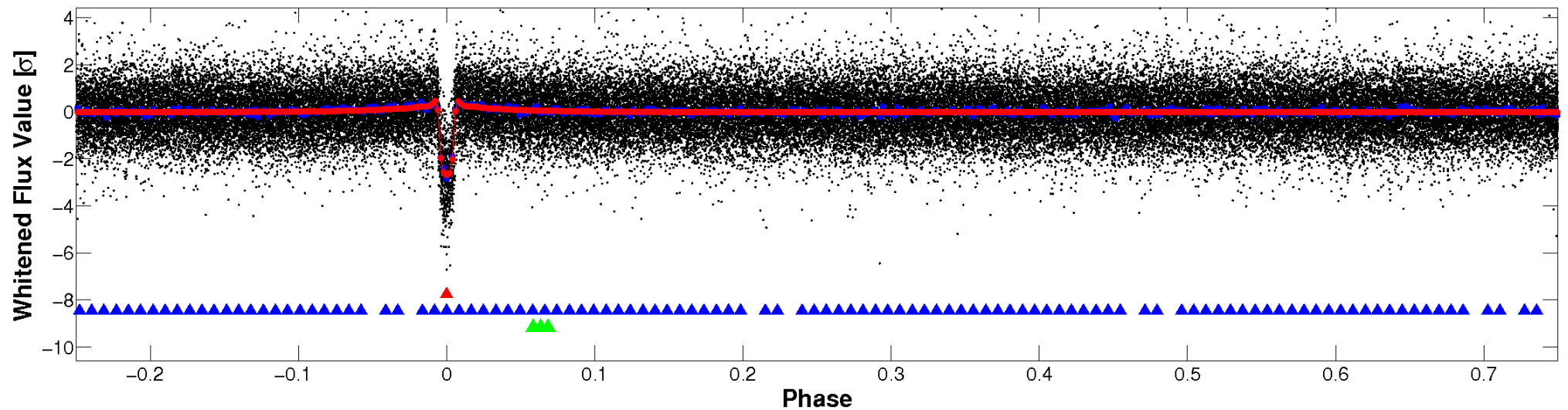


# Non-Whitened Vs. Whitened Light Curve

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

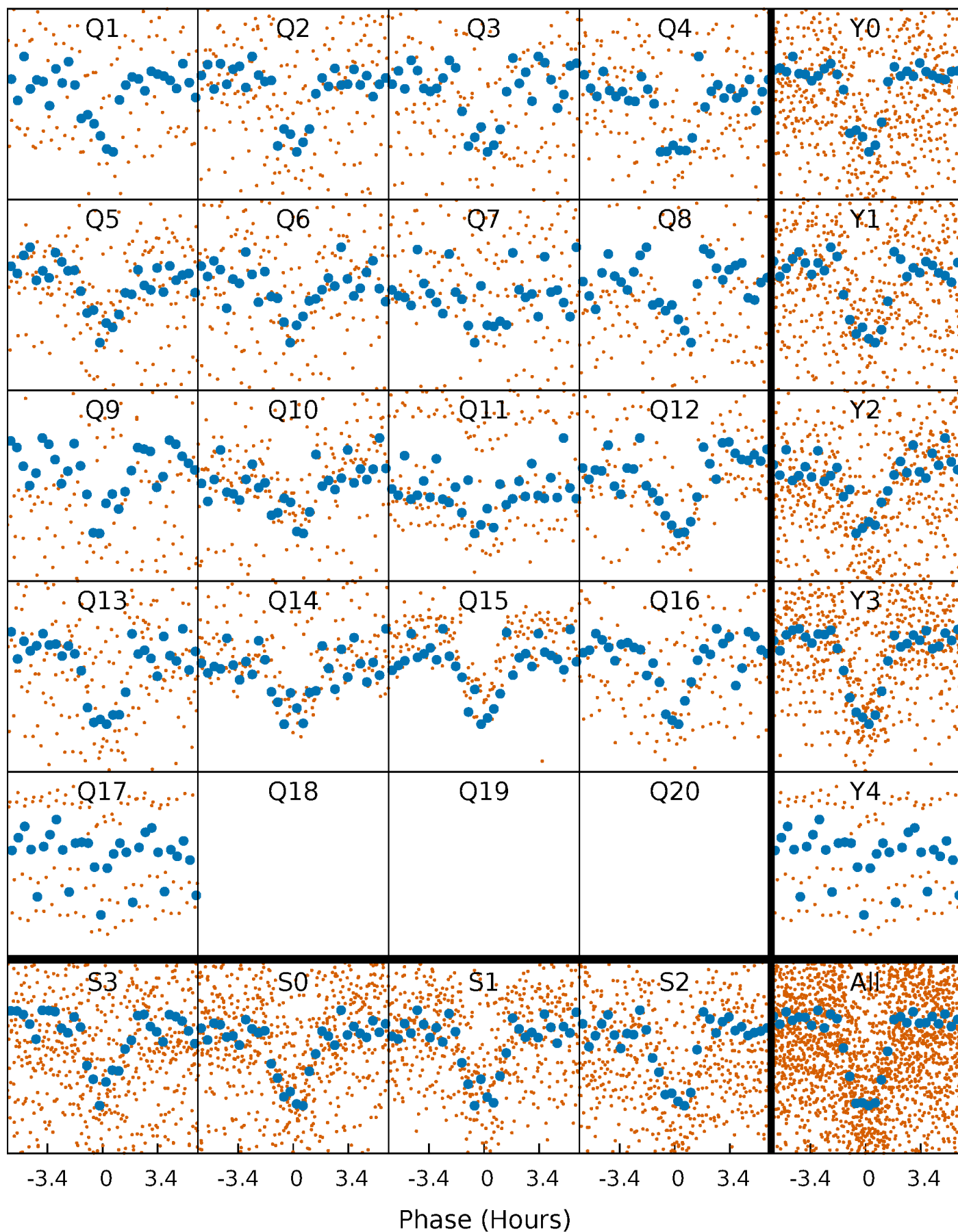


**Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)**



# PDC Quarter-Phased Transit Curves

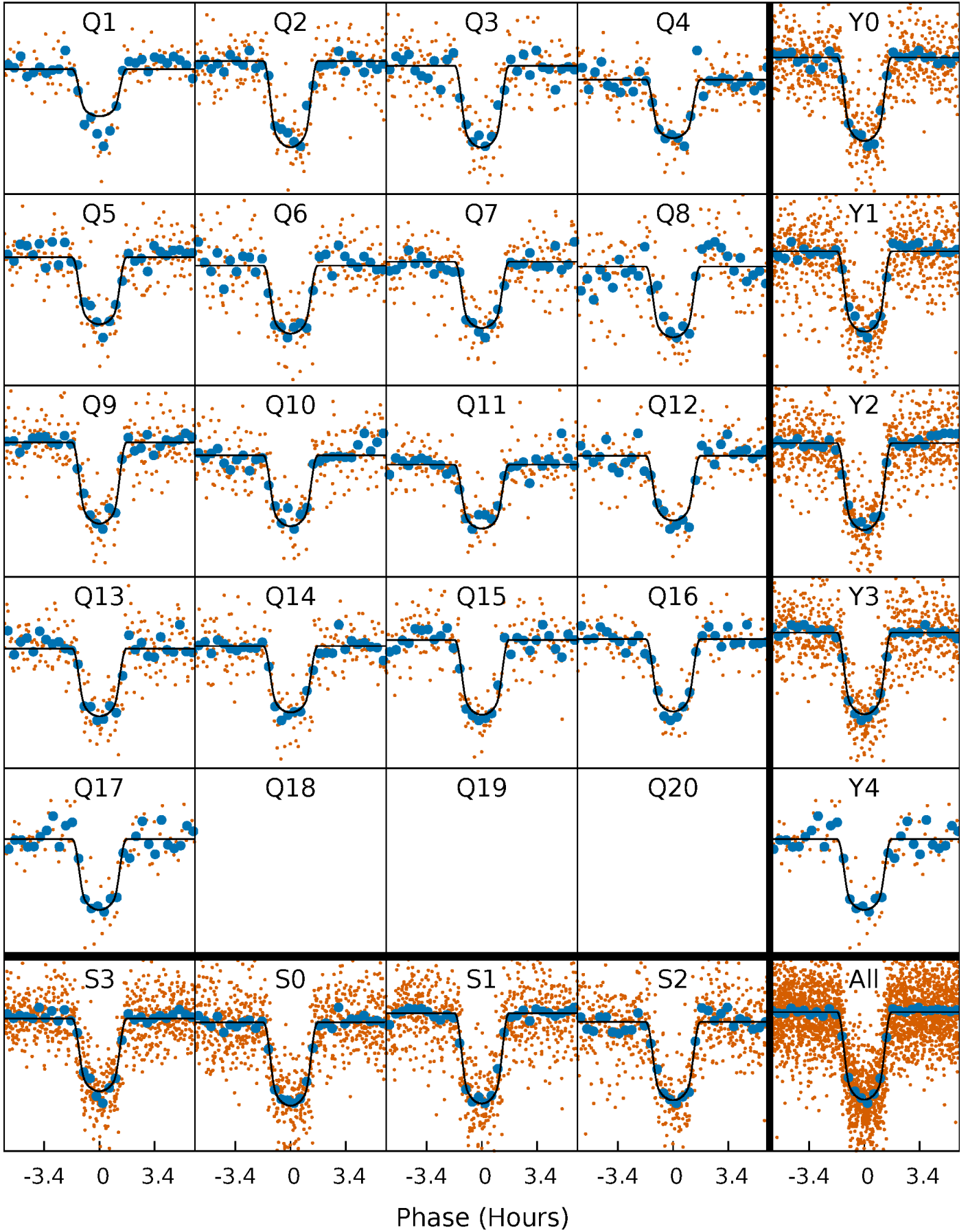
TCE 005299459-01 P= 10.415735 Days  $T_0=132.630597$  (BKJD)





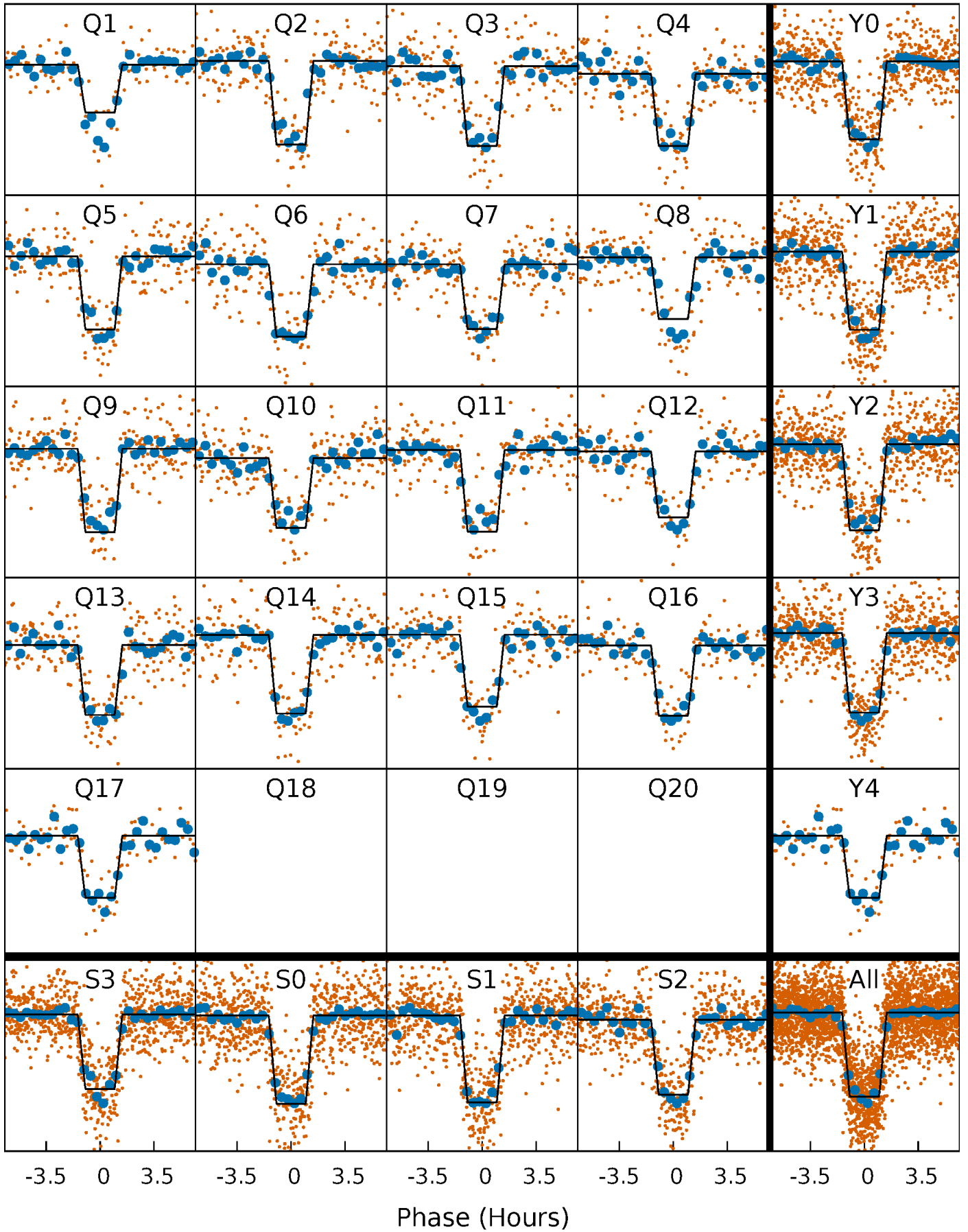
# DV Quarter-Phased Transit Curves

TCE 005299459-01 P= 10.415735 Days  $T_0=132.630597$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

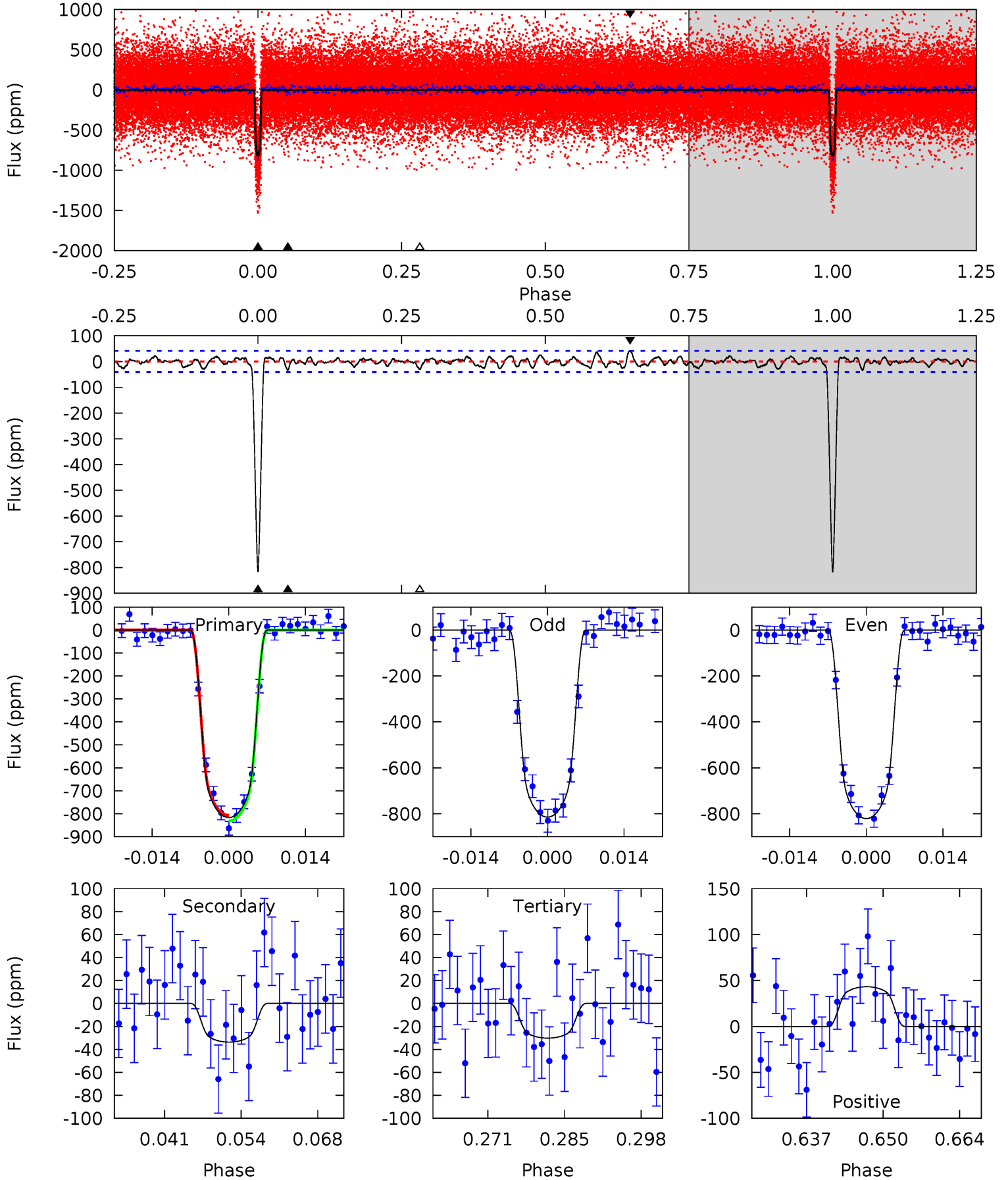
TCE 005299459-01 P= 10.415731 Days  $T_0=132.631297$  (BKJD)



# DV Model-Shift Uniqueness Test

005299459-01, P = 10.415735 Days, E = 122.214862 Days

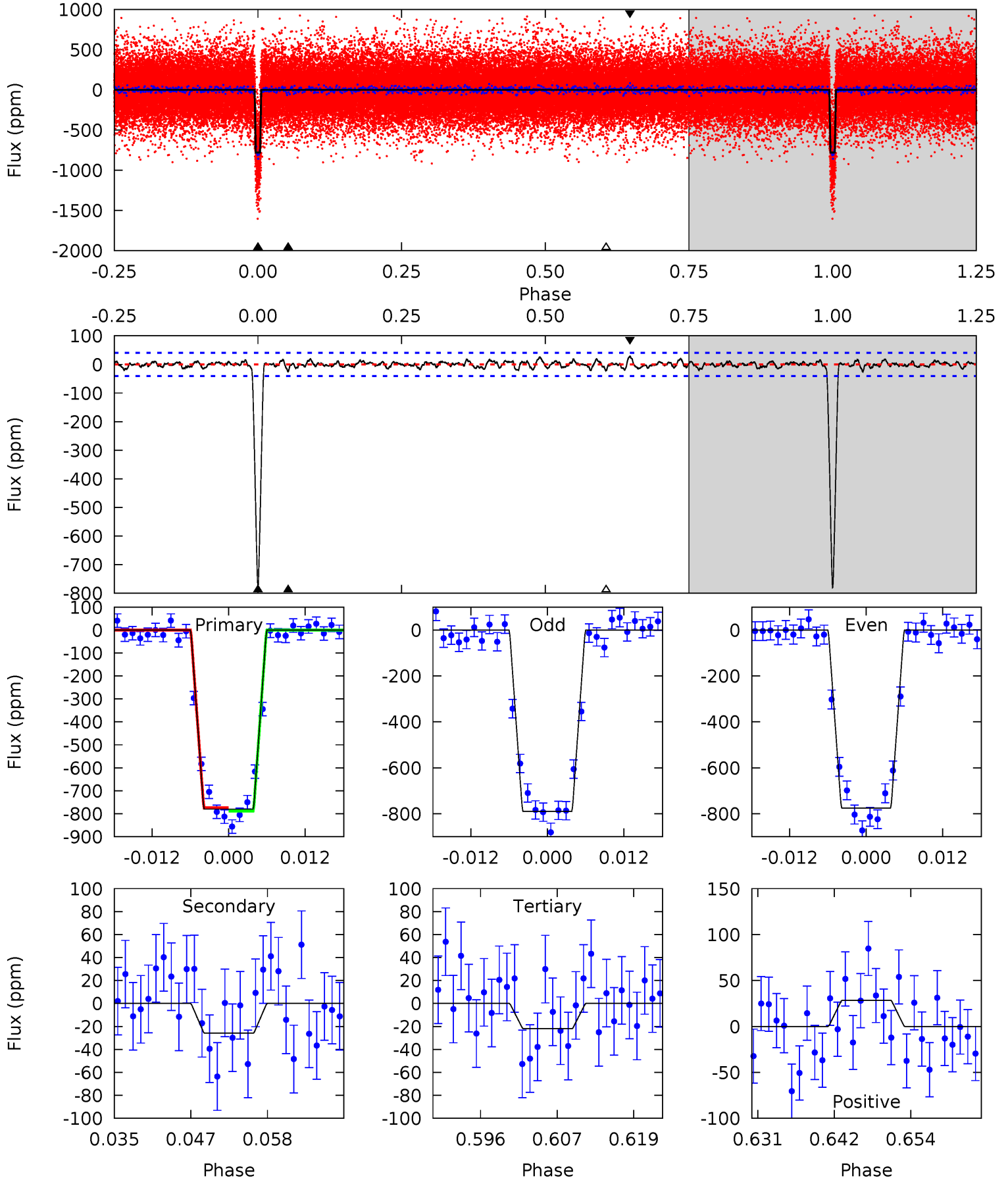
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
97.9	4.03	3.62	5.18	4.97	2.47	1.45	94.2	92.7	0.42	-1.14	0.37	1.00	0.05	1.48



# Alt Model-Shift Uniqueness Test

005299459-01, P = 10.415731 Days, E = 122.215566 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
96.1	3.19	2.71	3.49	5.00	2.52	1.02	93.4	92.6	0.48	-0.30	0.89	1.00	0.04	0.92



### Stellar Parameters For KIC 005299459

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5511^{+110}_{-1}$	$4.426^{+0.081}_{-0.099}$	$0.200^{+0.150}_{-0.150}$	$0.987^{+0.128}_{-0.085}$	$0.947^{+0.059}_{-0.053}$	$1.386^{+0.469}_{-0.416}$
	+2%/-0%	+2%/-2%	+75%/-75%	+13%/-9%	+6%/-6%	+34%/-30%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 005299459-01 / KOI 1576.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-34 \pm 8$	$3.34^{+0.28}_{-0.25}$	$1109^{+43}_{-47}$	$3004^{+132}_{-129}$	$14^{+5}_{-4}$
Alt.	$-26 \pm 8$	$3.04^{+0.30}_{-0.22}$	$1112^{+45}_{-42}$	$2983^{+140}_{-159}$	$13^{+5}_{-4}$

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



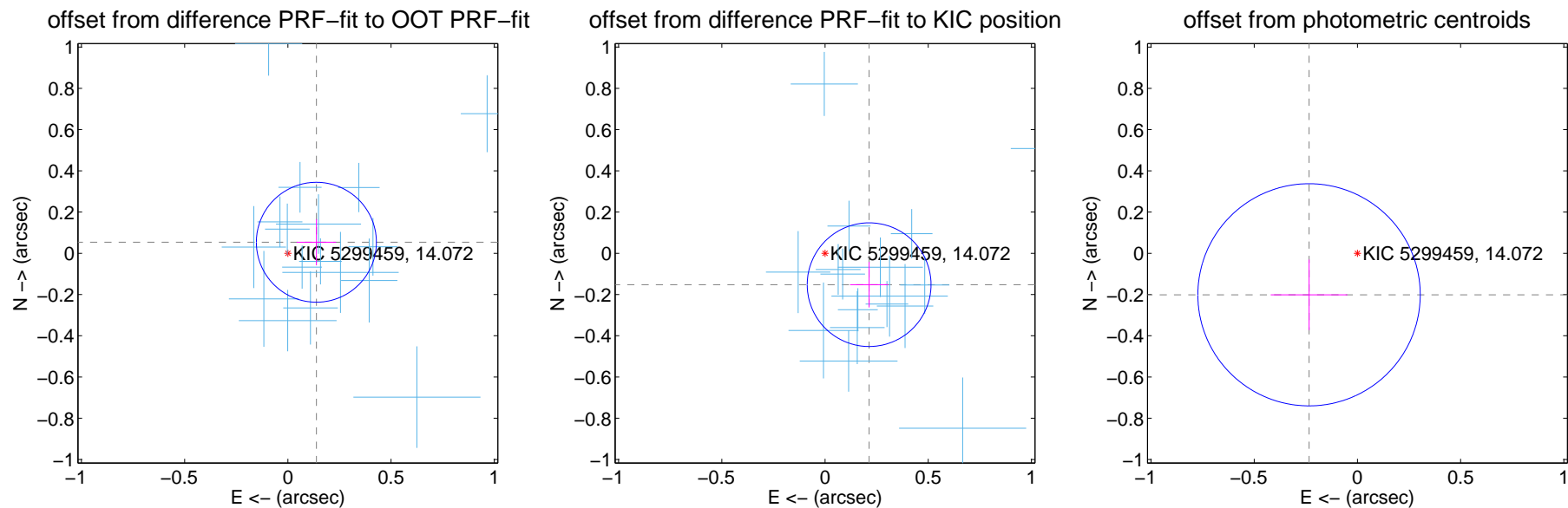
## DV Centroid Data

Supplemental centroid analysis for 005299459-01. Kepler magnitude: 14.07. Transit SNR 61.96

There are 17 quarters with good PRF difference image offsets

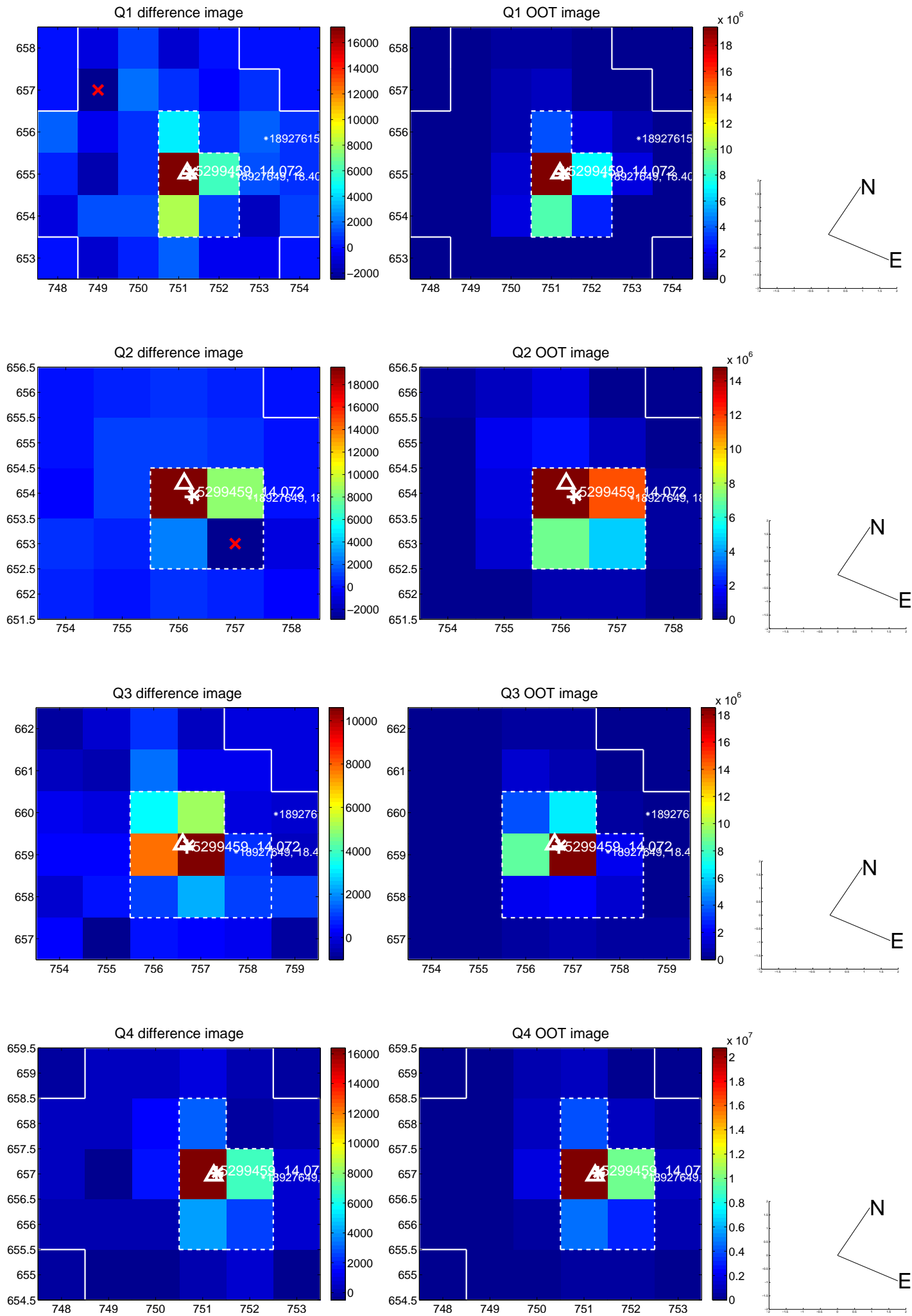
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.148 \pm 0.097$	1.53	$-0.138 \pm 0.096$	$0.053 \pm 0.112$
PRF-fit source offset from KIC position	$0.262 \pm 0.100$	2.62	$-0.214 \pm 0.092$	$-0.152 \pm 0.110$
photometric centroid source offset	$0.31 \pm 0.18$	1.72	$0.23 \pm 0.19$	$-0.20 \pm 0.17$

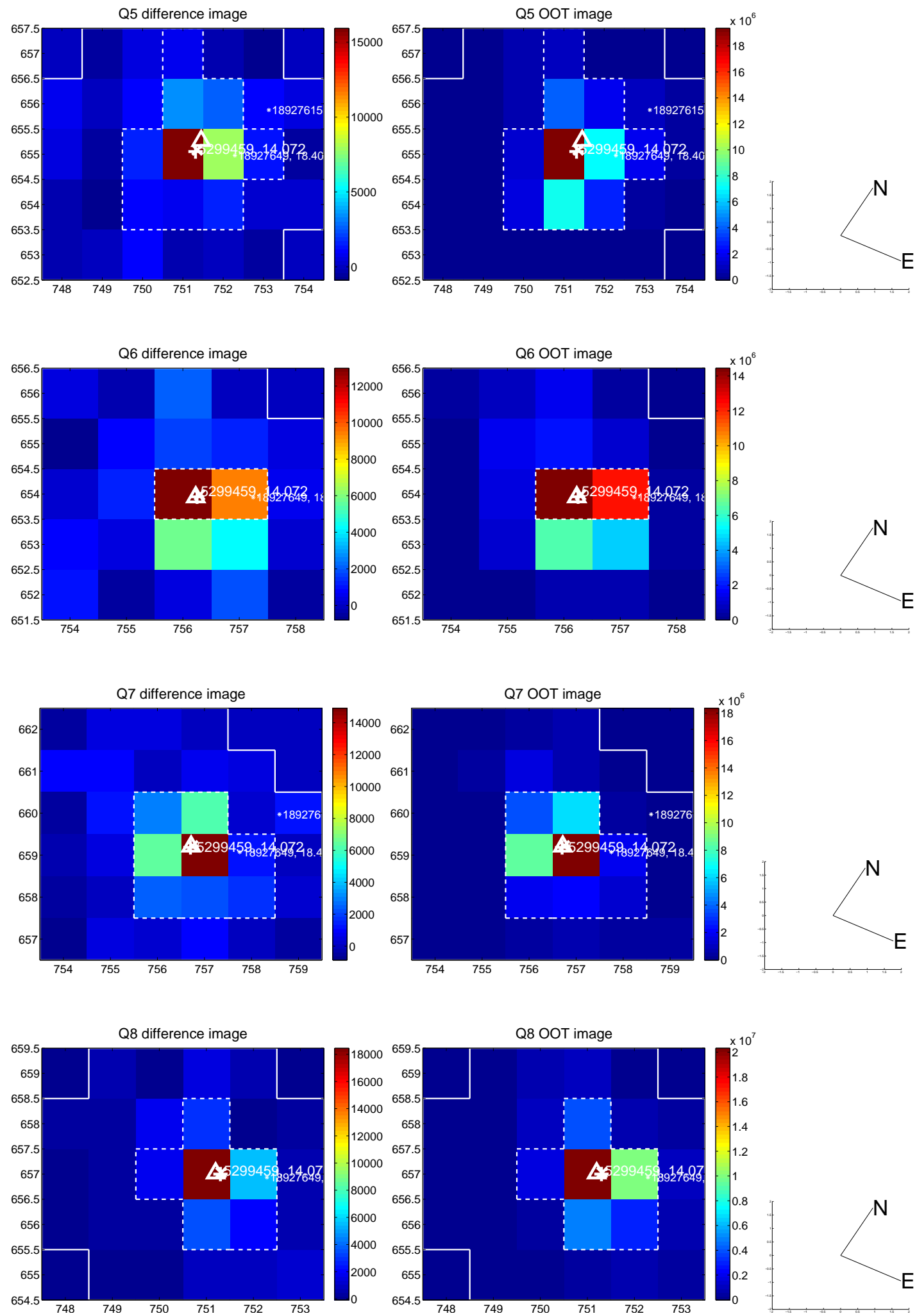


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

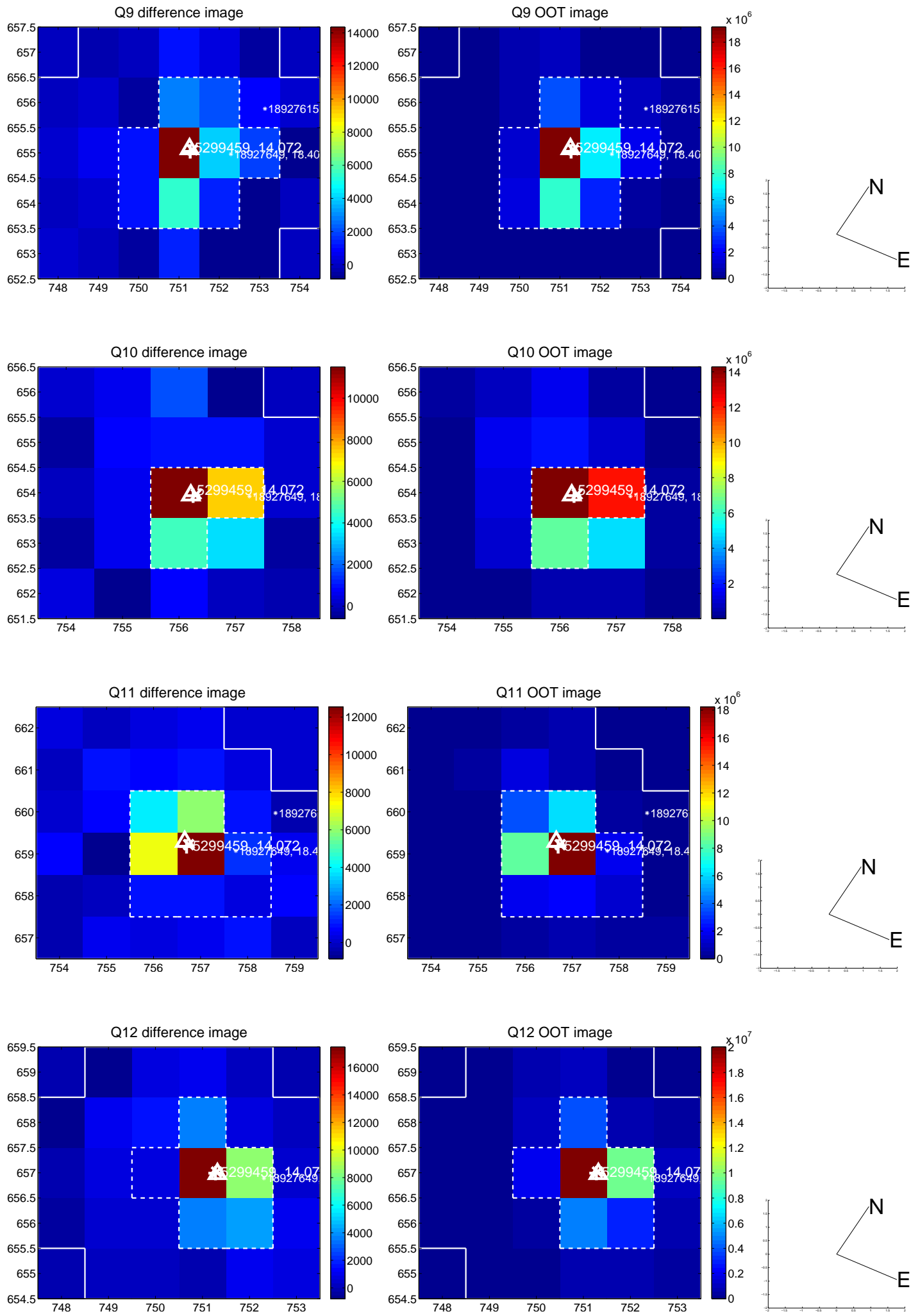
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



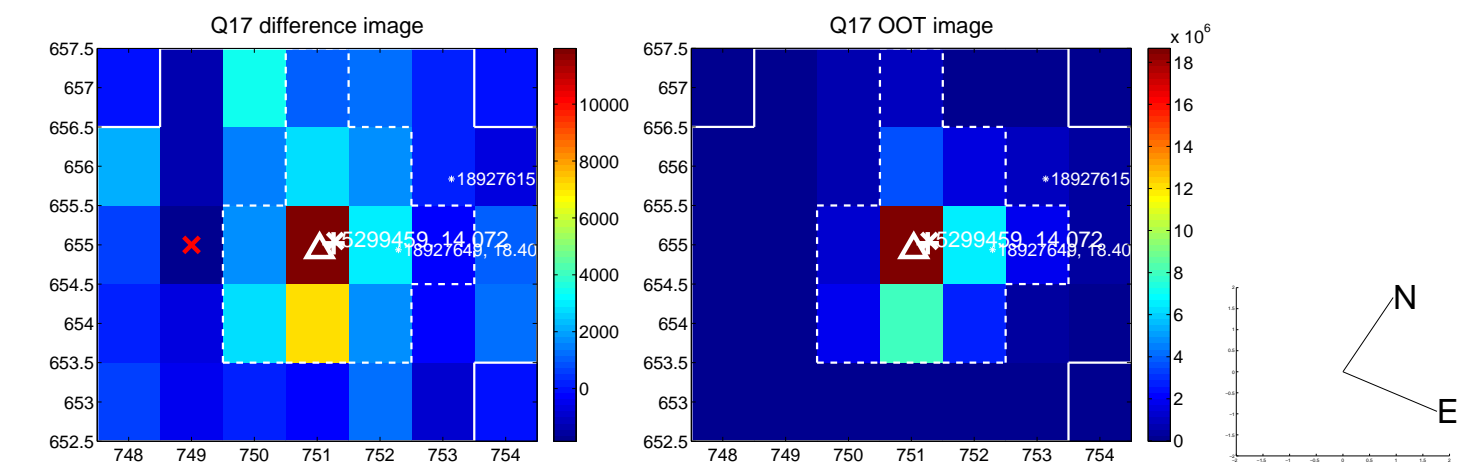
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



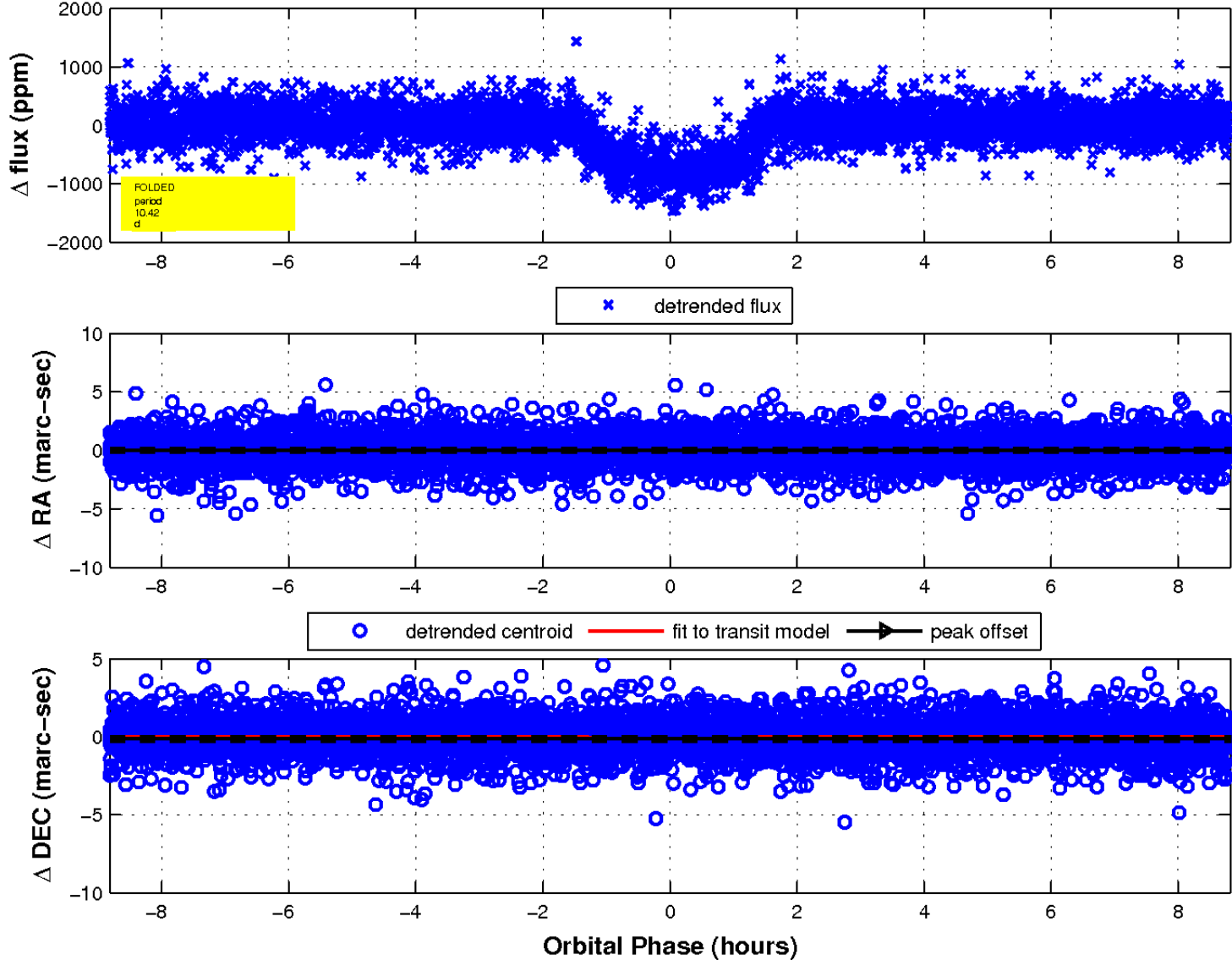




white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

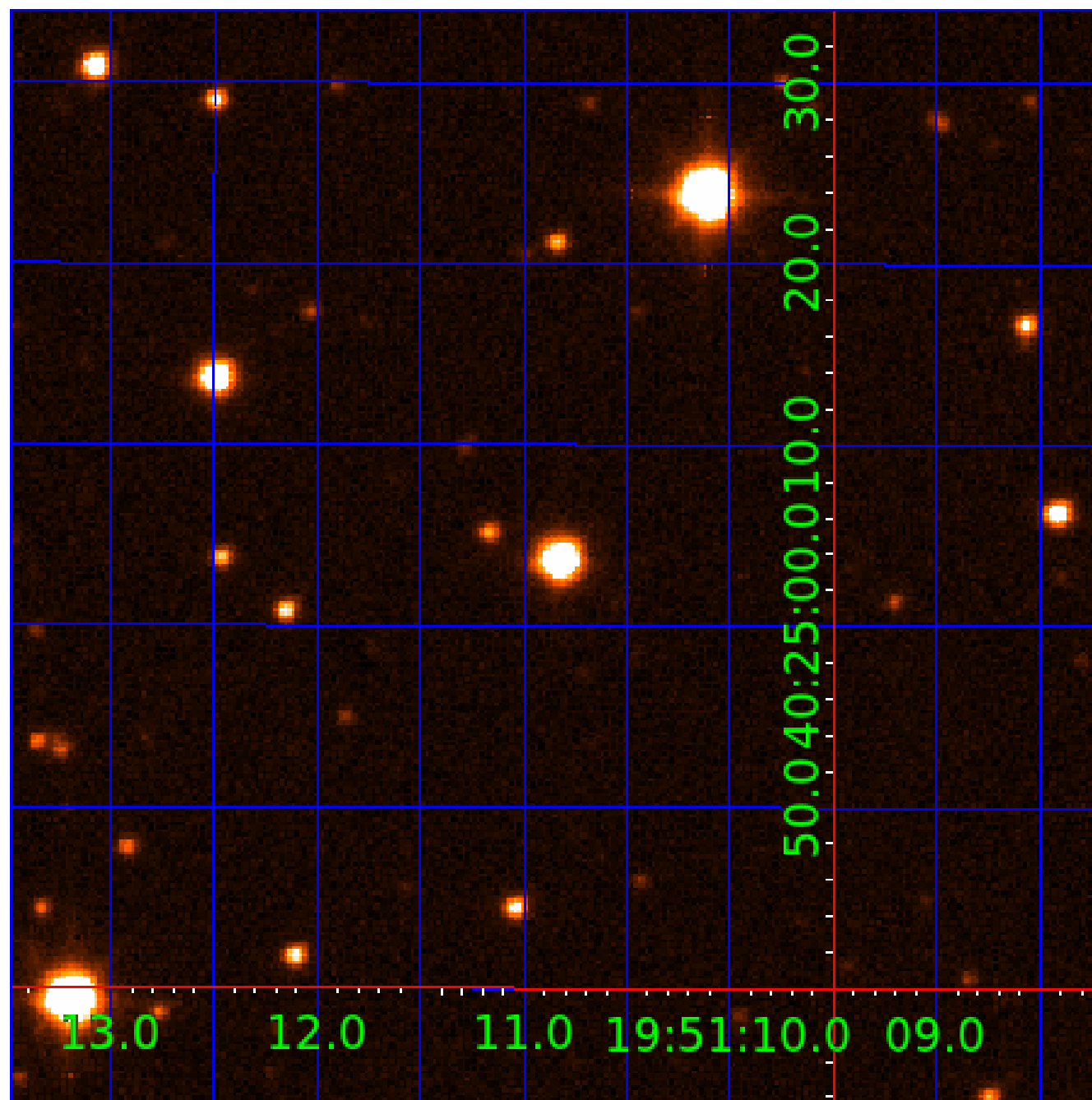


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



# KIC 005299459

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005299459-01	OBS	1576.01	10.415735	132.630597	818.0	2.942	57.2	62.0	0.99	5511	3.33	95.74
005299459-02	OBS	1576.02	13.084260	132.630490	682.8	3.620	43.5	47.0	0.99	5511	3.29	70.64
005299459-03	OBS	No	406.161366	372.905232	513.3	9.107	7.7	7.4	0.99	5511	2.45	0.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005299459-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005299459-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005299459-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—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.

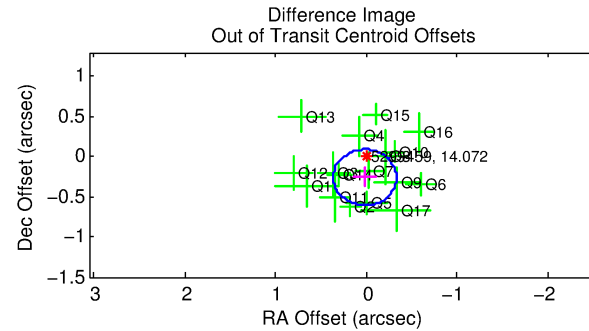
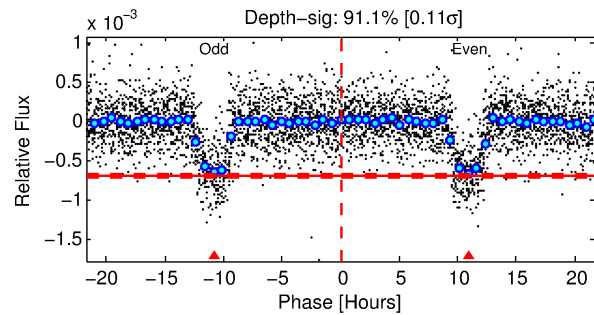
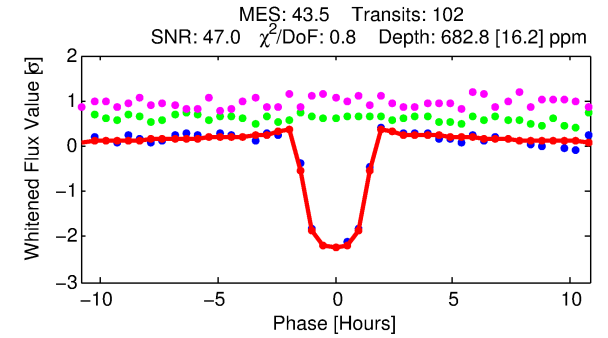
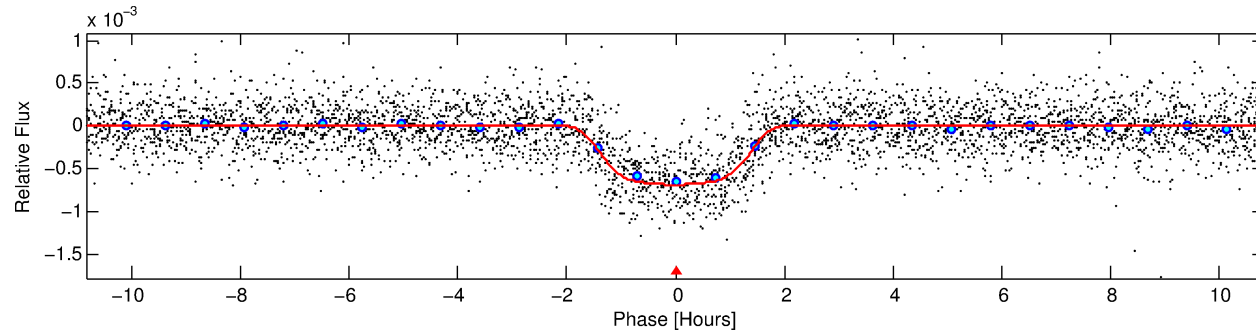
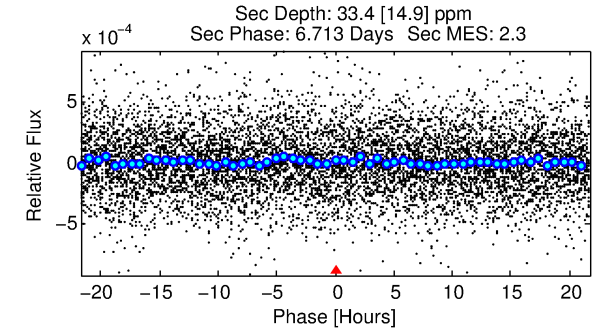
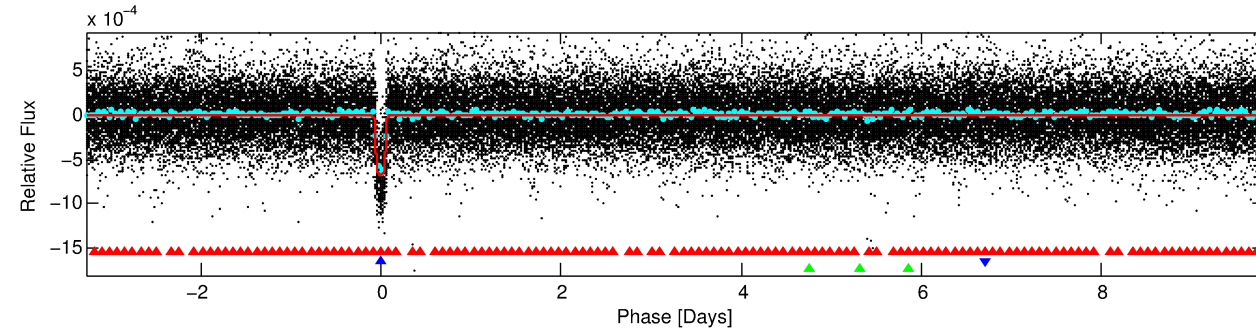
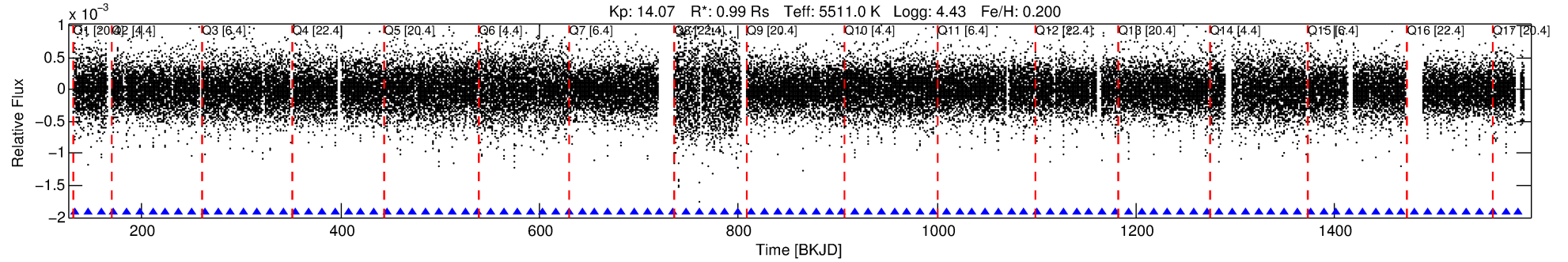
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005299459-02

No Significant Match Found

# DV One-Page Summary

KIC: 5299459 Candidate: 2 of 3 Period: 13.084 d  
KOI: K01576.02 Name: Kepler-307c Corr: 0.931



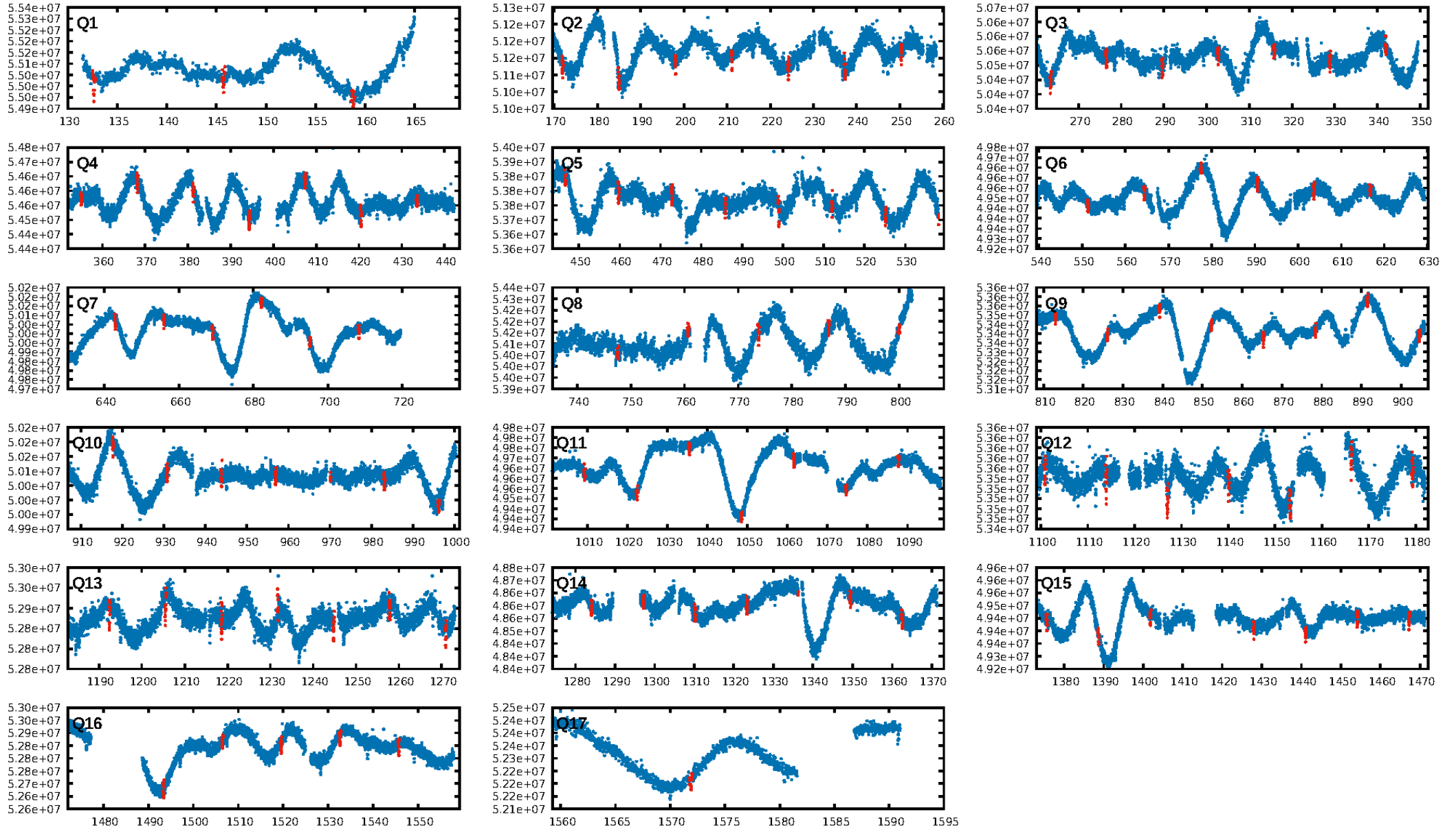
## DV Fit Results:

Period = 13.08426 [0.00003] d  
Epoch = 132.6305 [0.0016] BKJD  
Rp/R\* = 0.0306 [0.0007]  
a/R\* = 11.49 [0.85]  
b = 0.94 [0.01]  
Seff = 70.64 [13.58]  
Teff = 739 [36] K  
Rp = 3.29 [0.43] Re  
a = 0.1068 [0.0123] AU  
Ag = 19.28 [9.31] [1.96 $\sigma$ ]  
Teffp = 2395 [274] K [6.00 $\sigma$ ]

## DV Diagnostic Results:

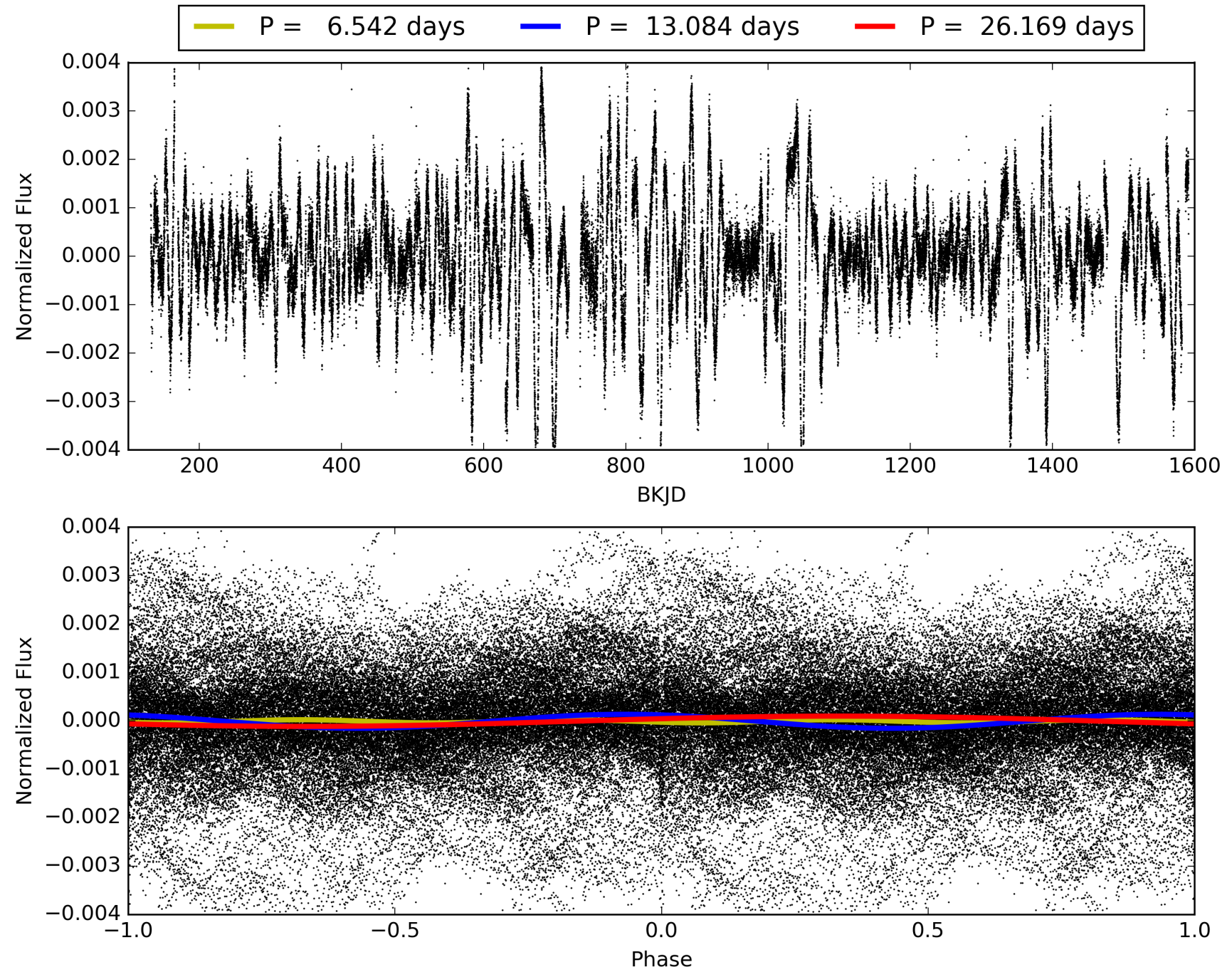
ShortPeriod-sig: 100.0% [13.73 $\sigma$ ]  
LongPeriod-sig: 100.0% [962.66 $\sigma$ ]  
ModelChiSquare2-sig: 95.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [99/99]  
GhostDiagnostic-chr: 3.305  
Centroid-sig: 40.9%  
Centroid-so: 0.449 arcsec [2.00 $\sigma$ ]  
OotOffset-rm: 0.260 arcsec [2.24 $\sigma$ ]  
KicOffset-rm: 0.452 arcsec [3.98 $\sigma$ ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 1.00 [17/17]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 005299459-02, PDC Light Curves



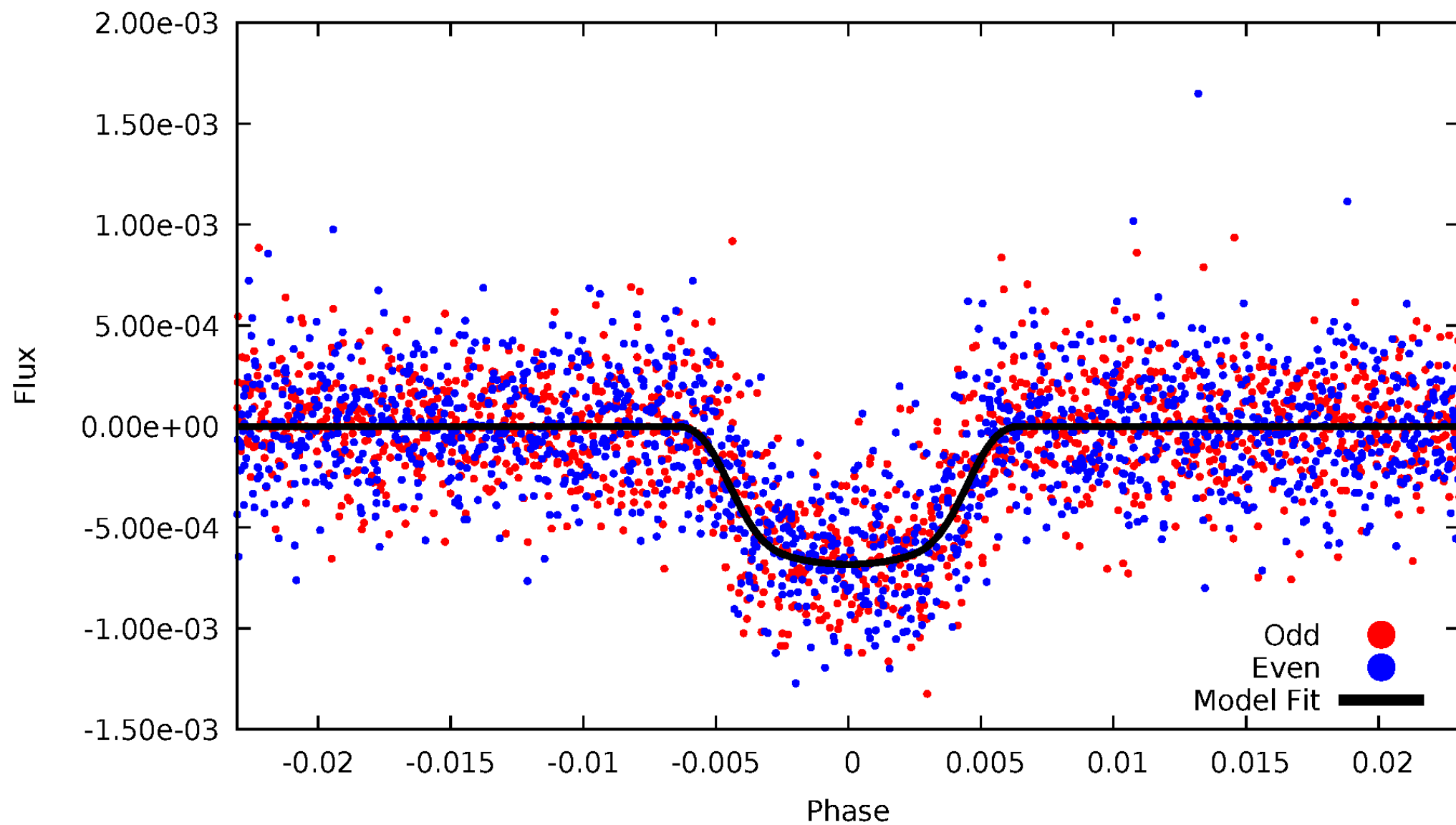


# TCE 005299459-02



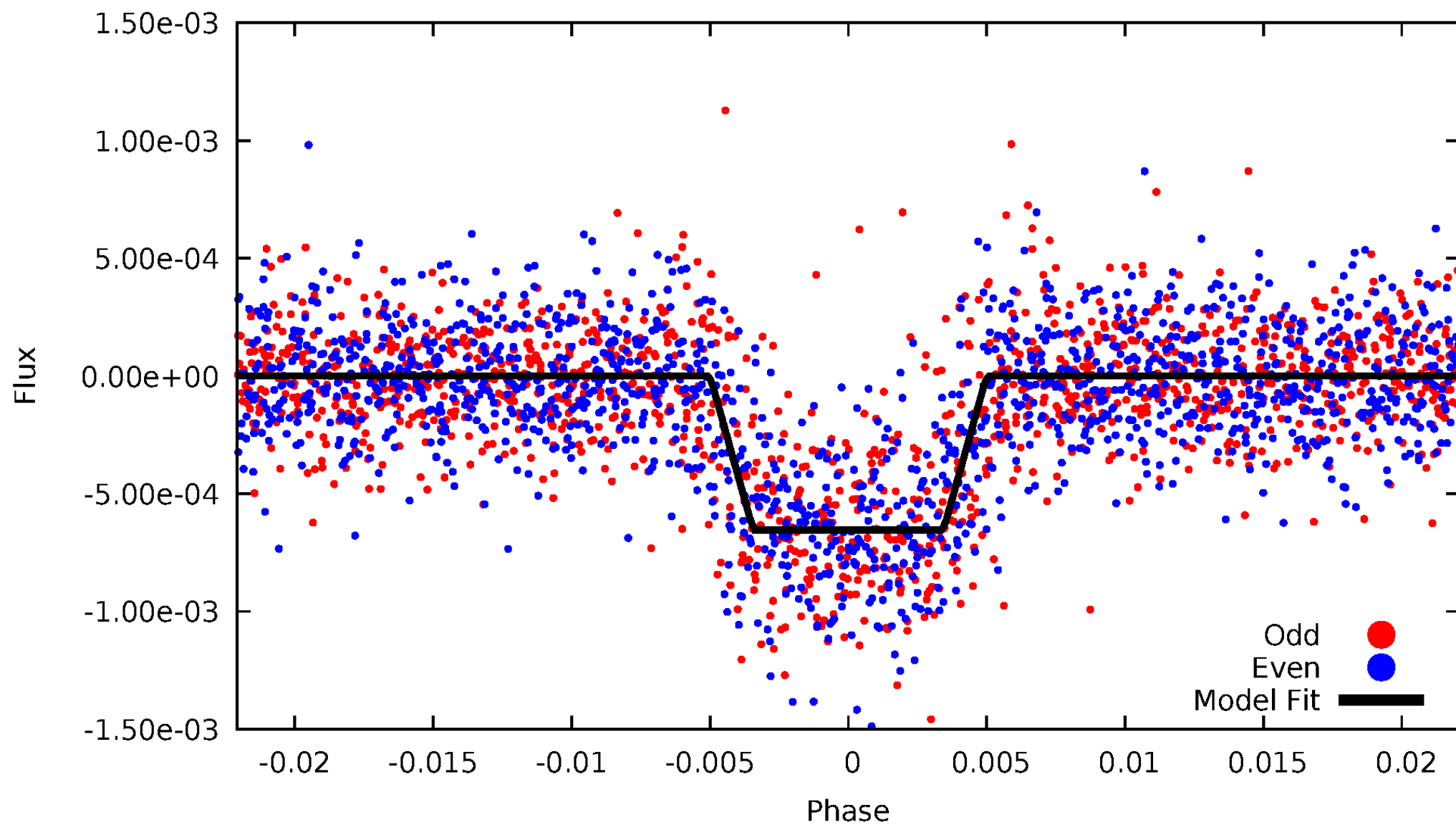
# DV Odd/Even

TCE 005299459-02



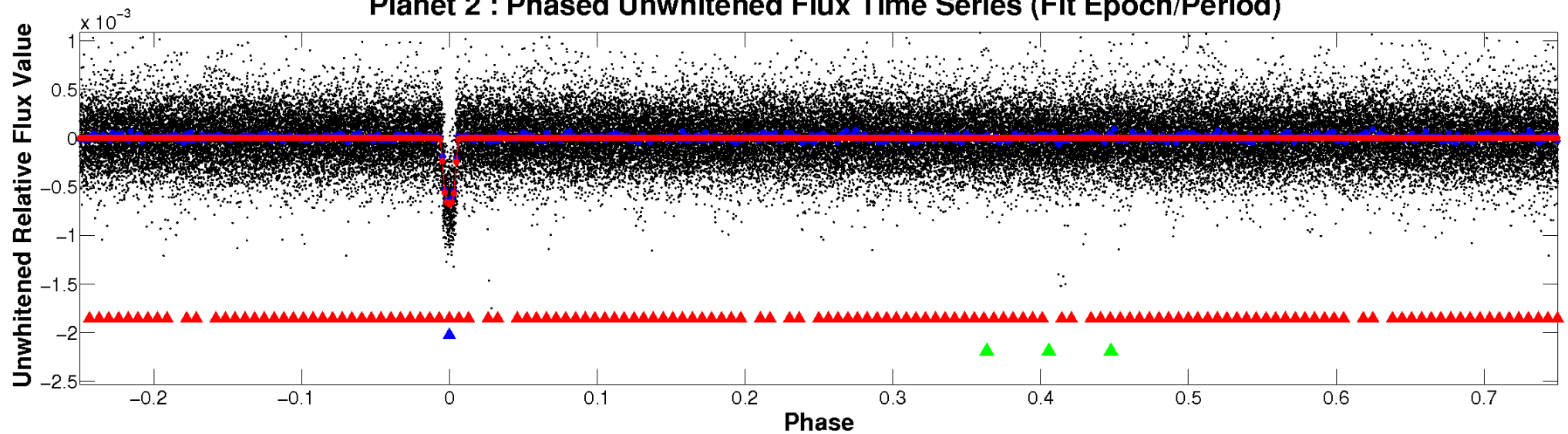
# ALT Odd/Even

TCE 005299459-02

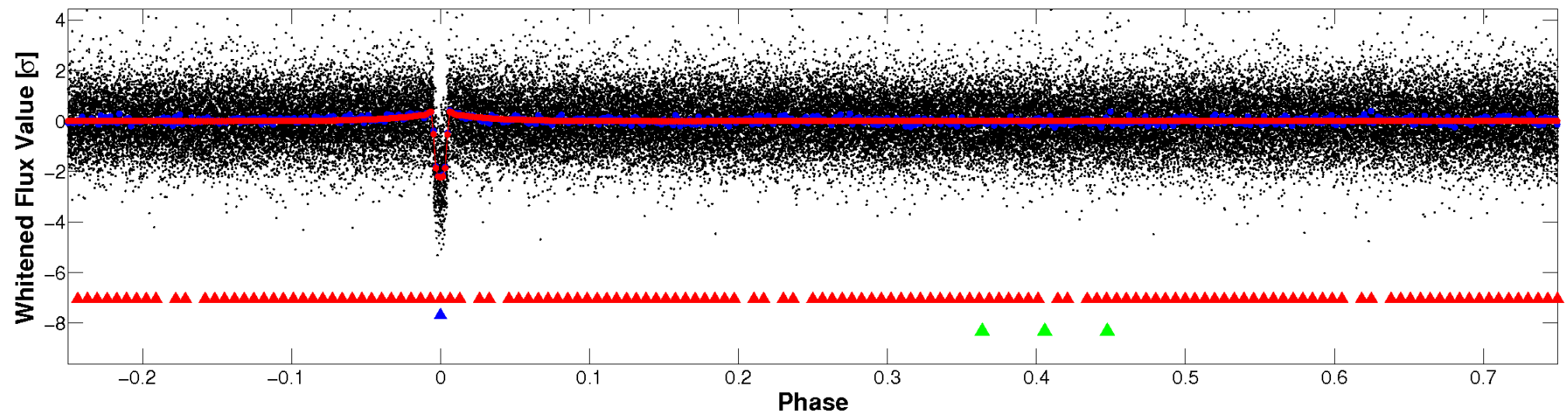


# Non-Whitened Vs. Whitened Light Curve

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

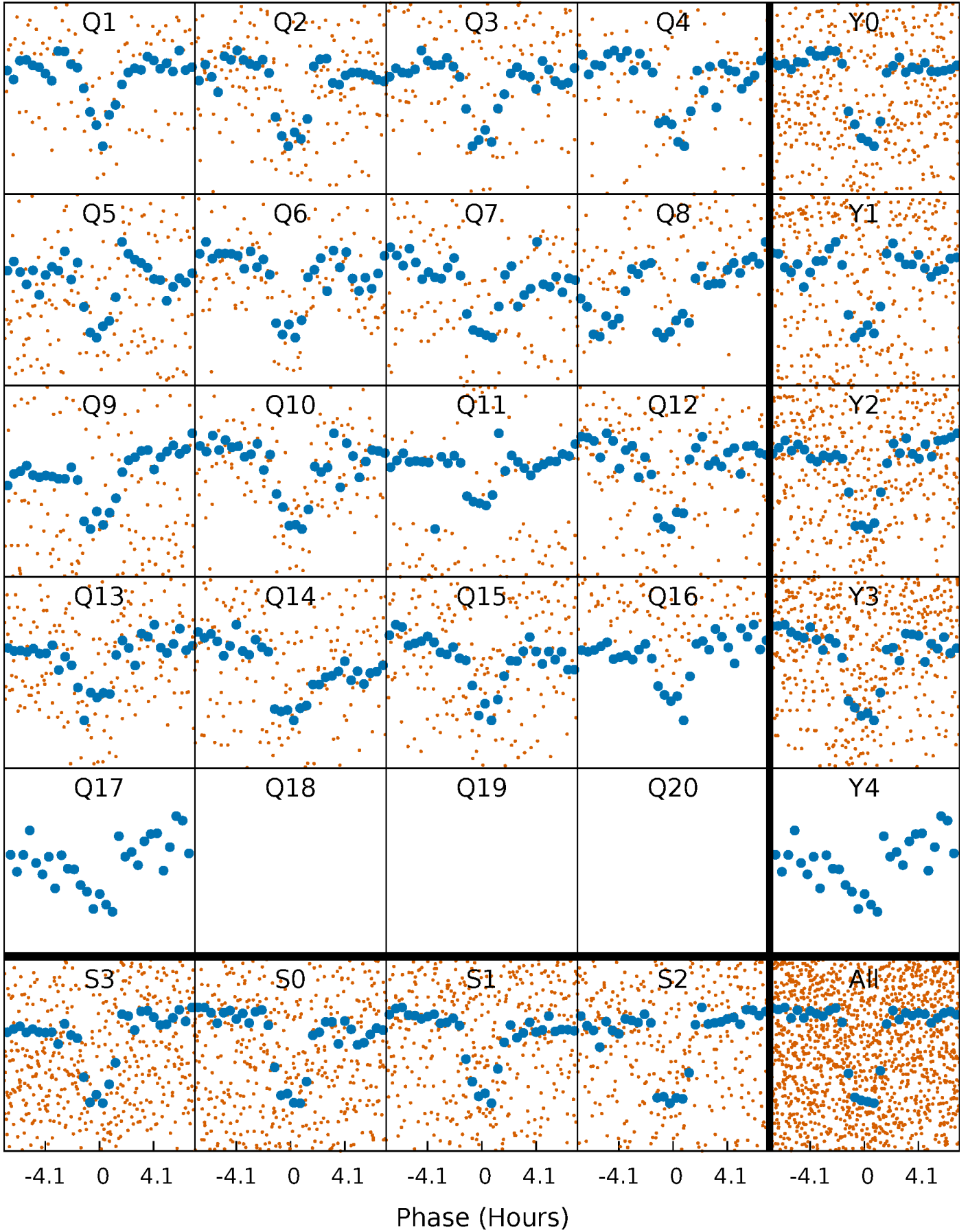


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



# PDC Quarter-Phased Transit Curves

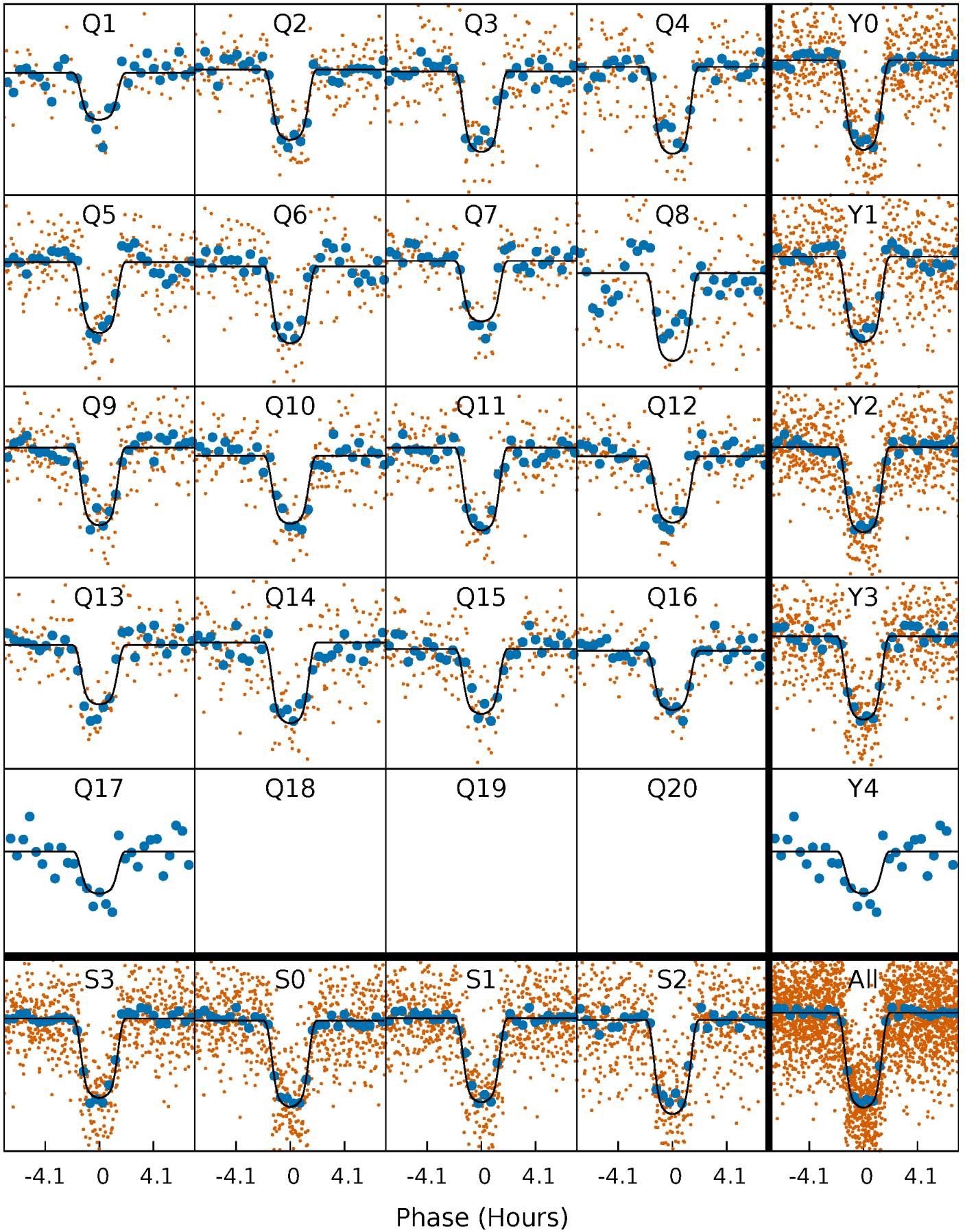
TCE 005299459-02 P= 13.084260 Days  $T_0=132.630490$  (BKJD)





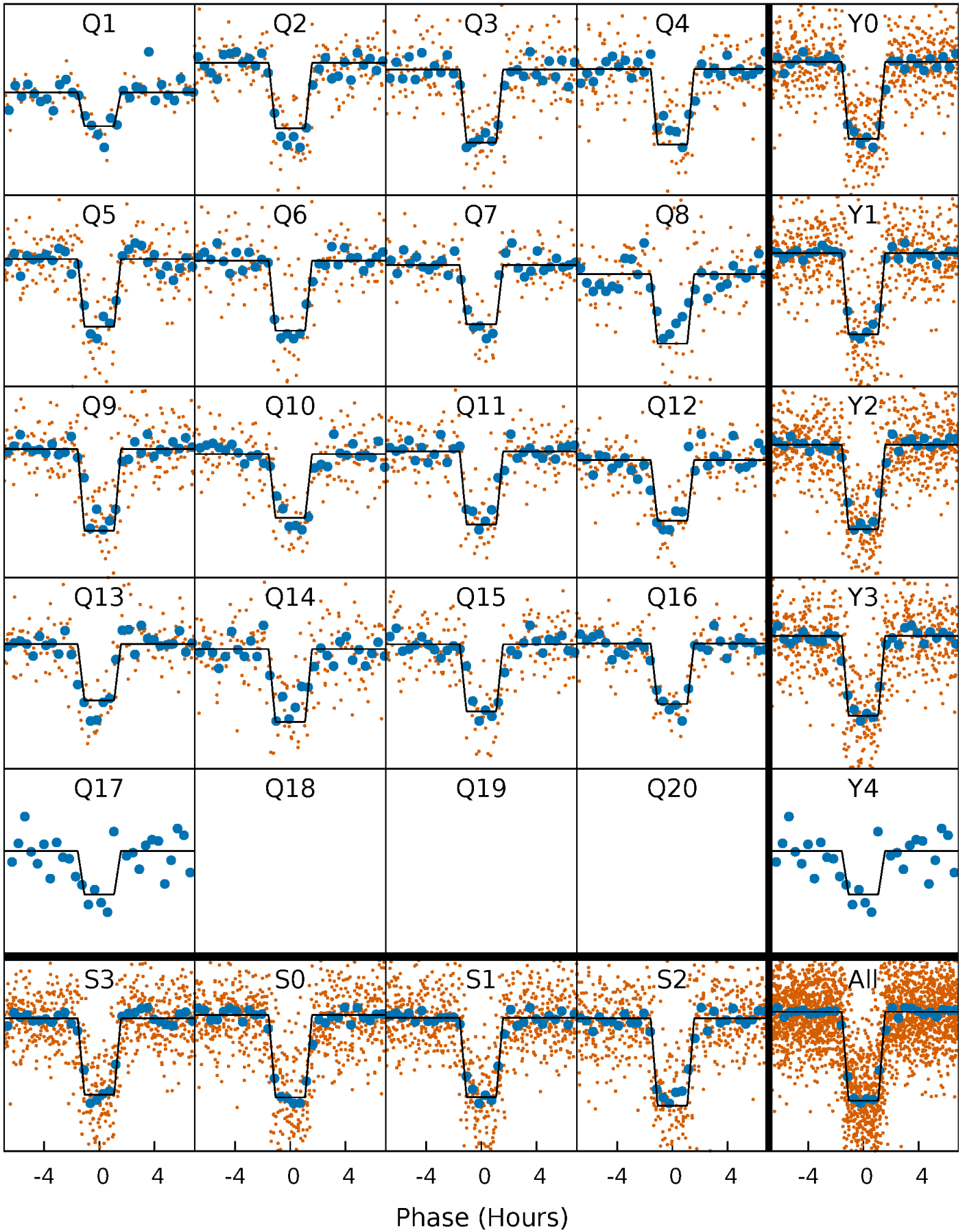
# DV Quarter-Phased Transit Curves

TCE 005299459-02 P= 13.084260 Days  $T_0=132.630490$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

TCE 005299459-02 P= 13.084324 Days  $T_0=132.627164$  (BKJD)

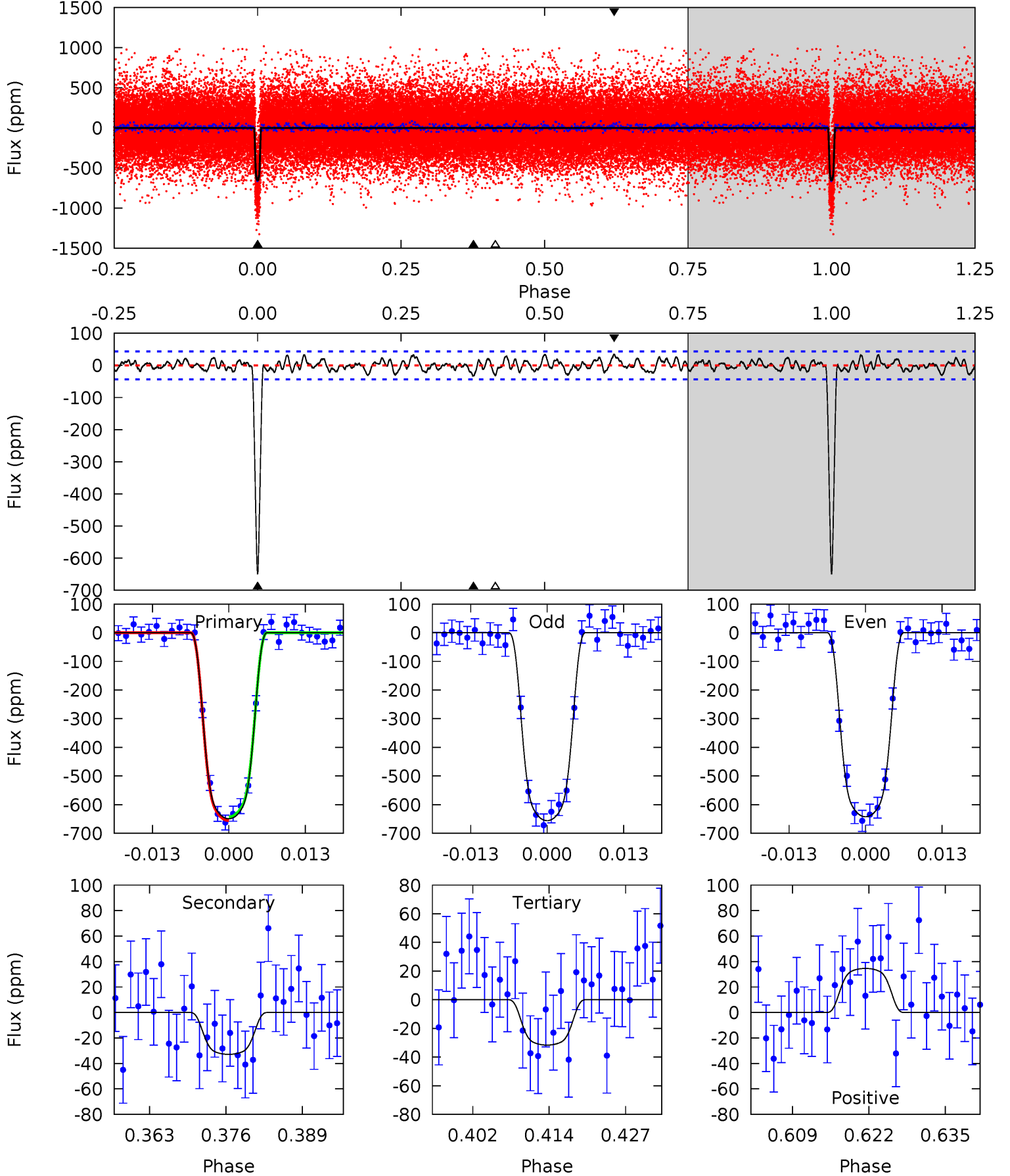




# DV Model-Shift Uniqueness Test

005299459-02, P = 13.084260 Days, E = 119.546230 Days

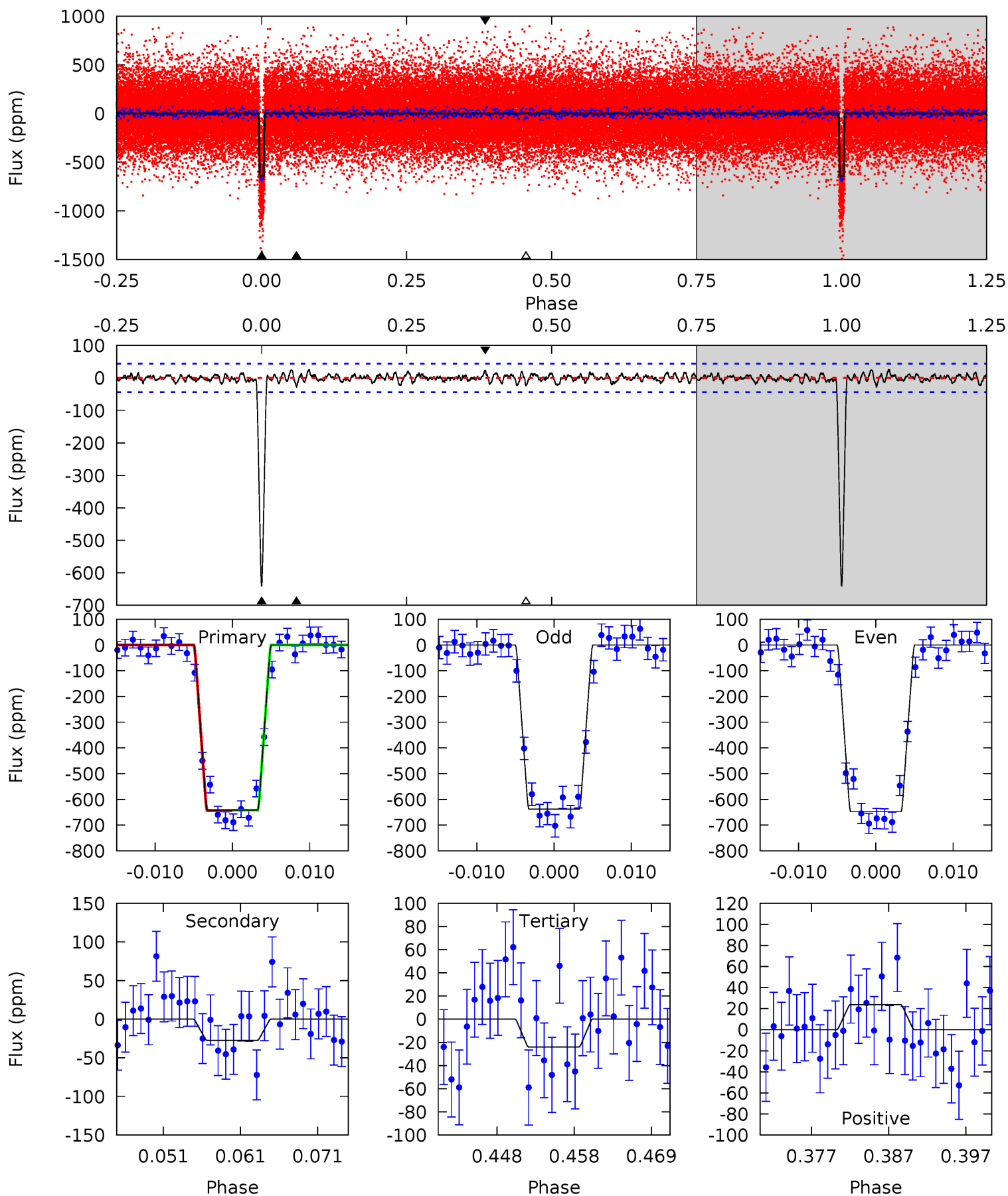
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
74.3	3.76	3.62	3.96	4.98	2.49	1.52	70.7	70.4	0.14	-0.20	0.78	1.00	0.05	0.72



# Alt Model-Shift Uniqueness Test

005299459-02, P = 13.084324 Days, E = 119.542840 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
73.4	3.15	2.75	2.73	5.02	2.57	0.97	70.6	70.7	0.39	0.42	0.56	0.97	0.04	0.12



### Stellar Parameters For KIC 005299459

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M$ ( $M_{\odot}$ )	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5511^{+110}_{-1}$	$4.426^{+0.081}_{-0.099}$	$0.200^{+0.150}_{-0.150}$	$0.987^{+0.128}_{-0.085}$	$0.947^{+0.059}_{-0.053}$	$1.386^{+0.469}_{-0.416}$
	+2%/-0%	+2%/-2%	+75%/-75%	+13%/-9%	+6%/-6%	+34%/-30%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 005299459-02 / KOI 1576.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-33 \pm 9$	$3.30^{+0.25}_{-0.20}$	$1029^{+44}_{-43}$	$3017^{+126}_{-147}$	$19^{+6}_{-6}$
Alt.	$-27 \pm 9$	$2.76^{+0.21}_{-0.16}$	$1032^{+42}_{-45}$	$3099^{+142}_{-176}$	$22^{+8}_{-7}$

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

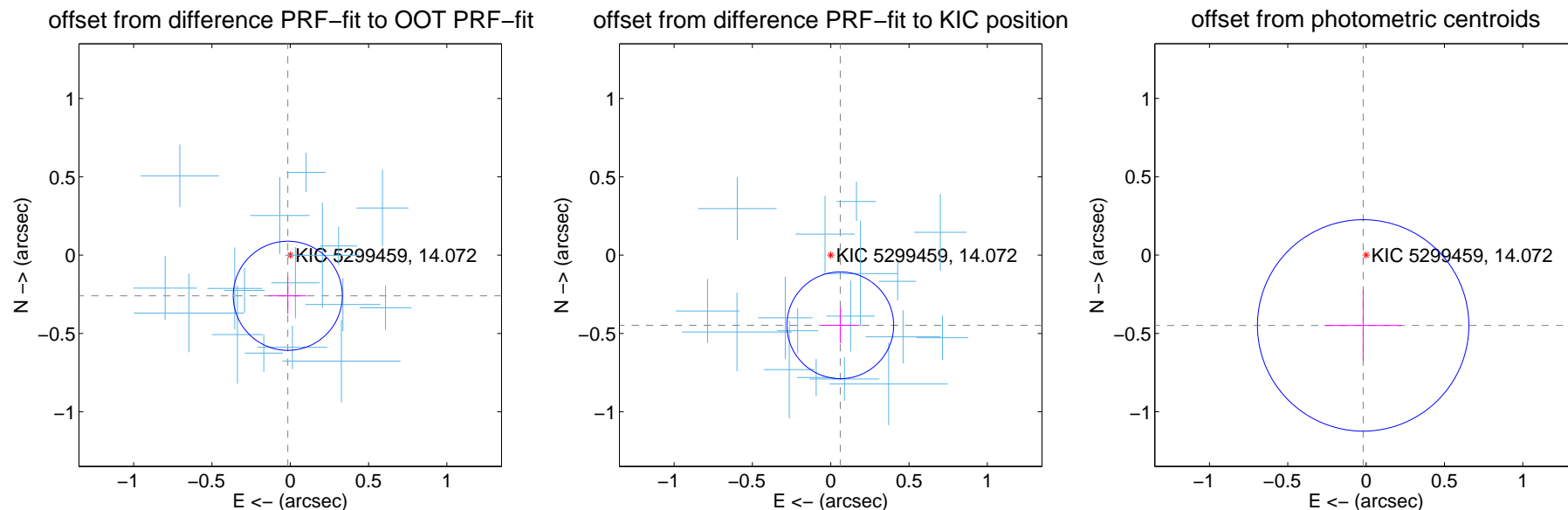
## DV Centroid Data

Supplemental centroid analysis for 005299459-02. Kepler magnitude: 14.07. Transit SNR 47.03

There are 17 quarters with good PRF difference image offsets

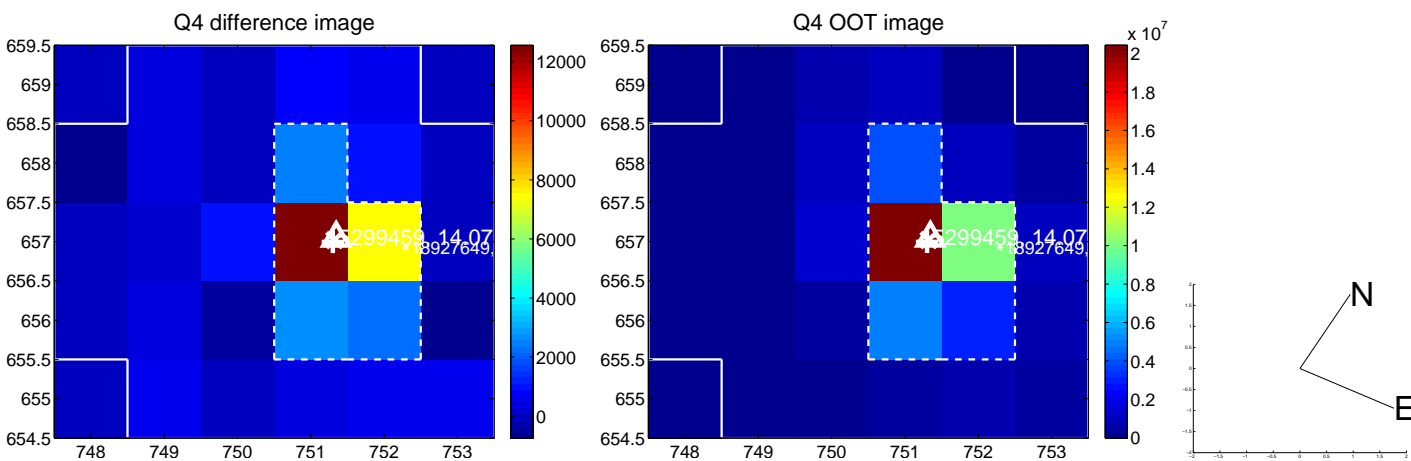
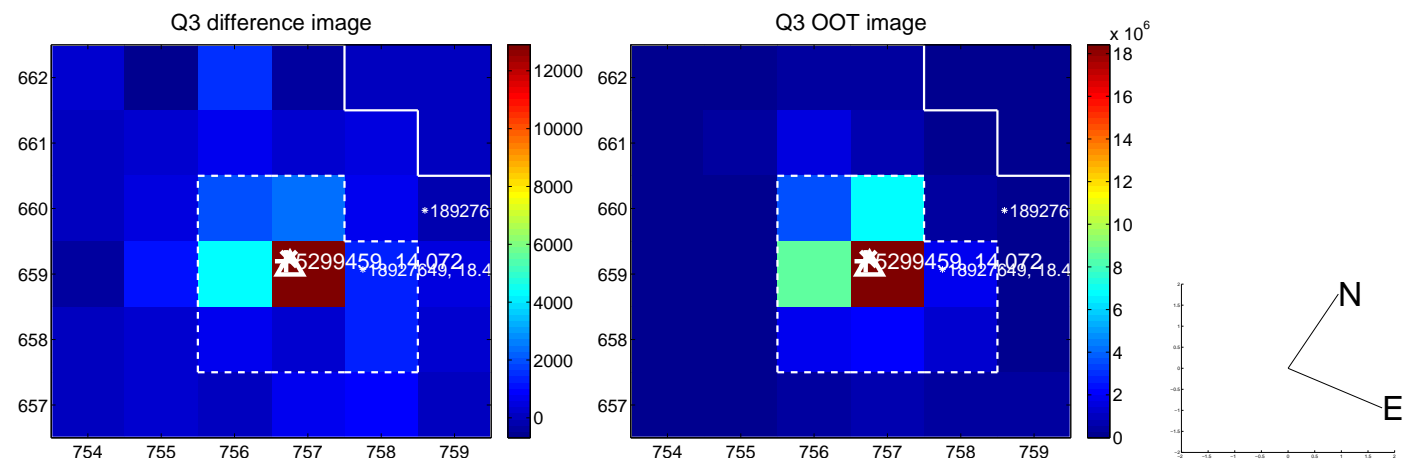
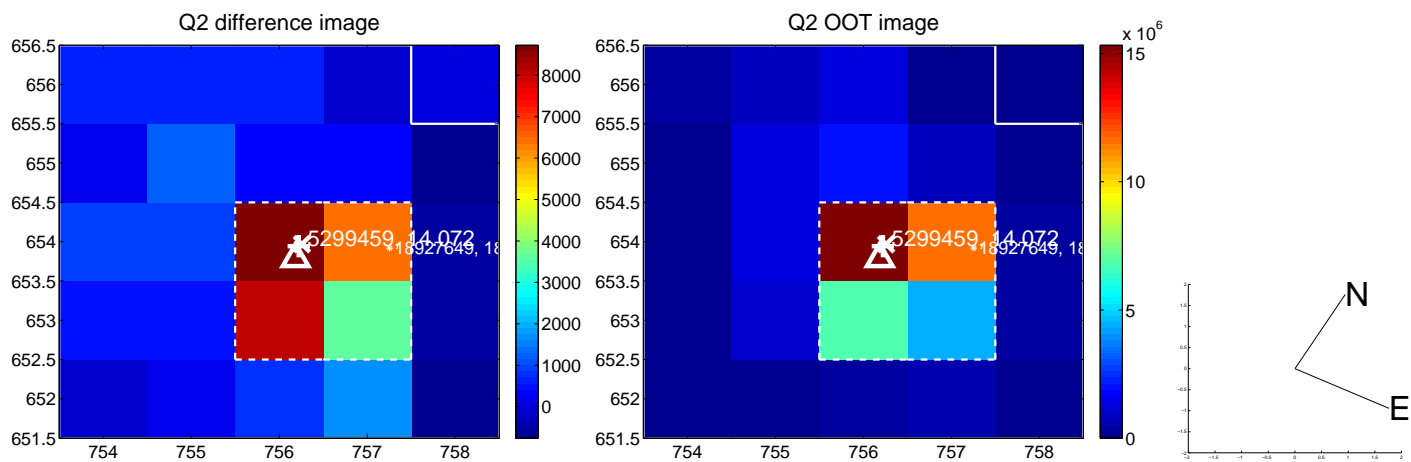
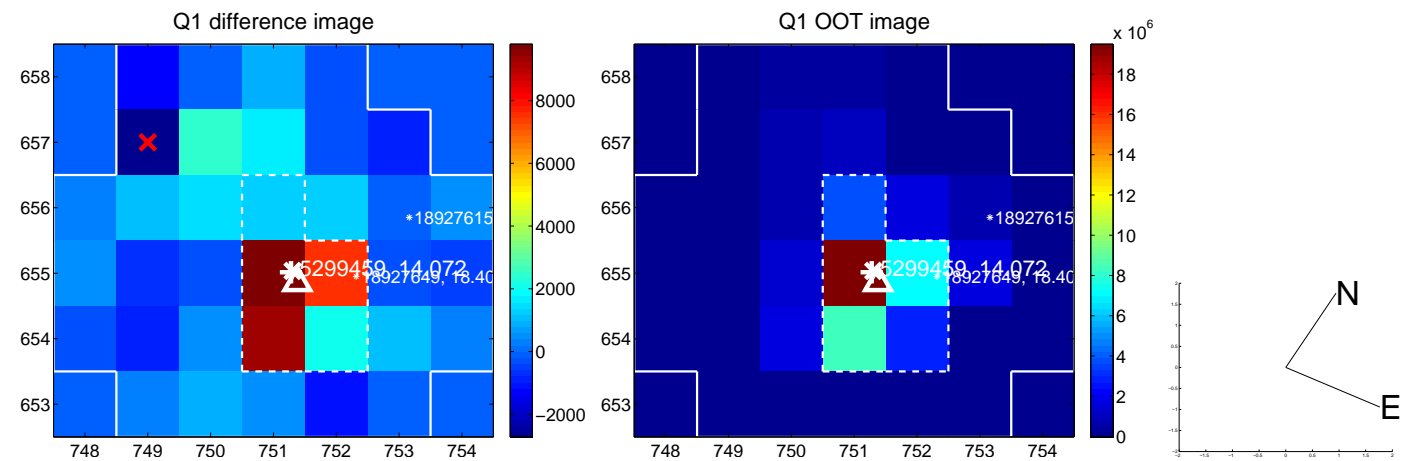
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.260 \pm 0.116$	2.24	$0.016 \pm 0.120$	$-0.259 \pm 0.116$
PRF-fit source offset from KIC position	<b><math>0.452 \pm 0.114</math></b>	<b>3.98</b>	$-0.061 \pm 0.123$	$-0.448 \pm 0.113$
photometric centroid source offset	$0.45 \pm 0.22$	2.00	$0.02 \pm 0.25$	$-0.45 \pm 0.22$

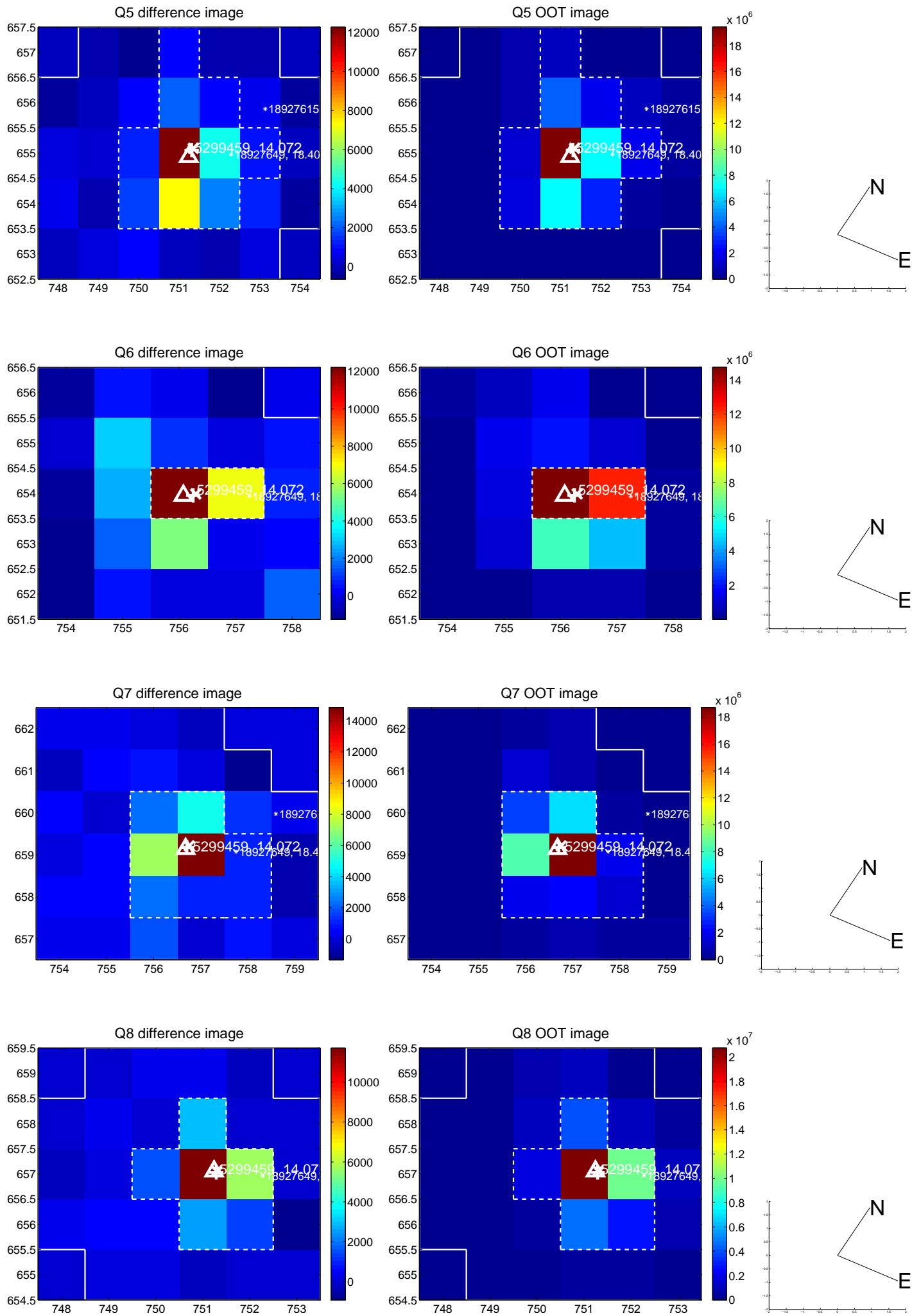


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

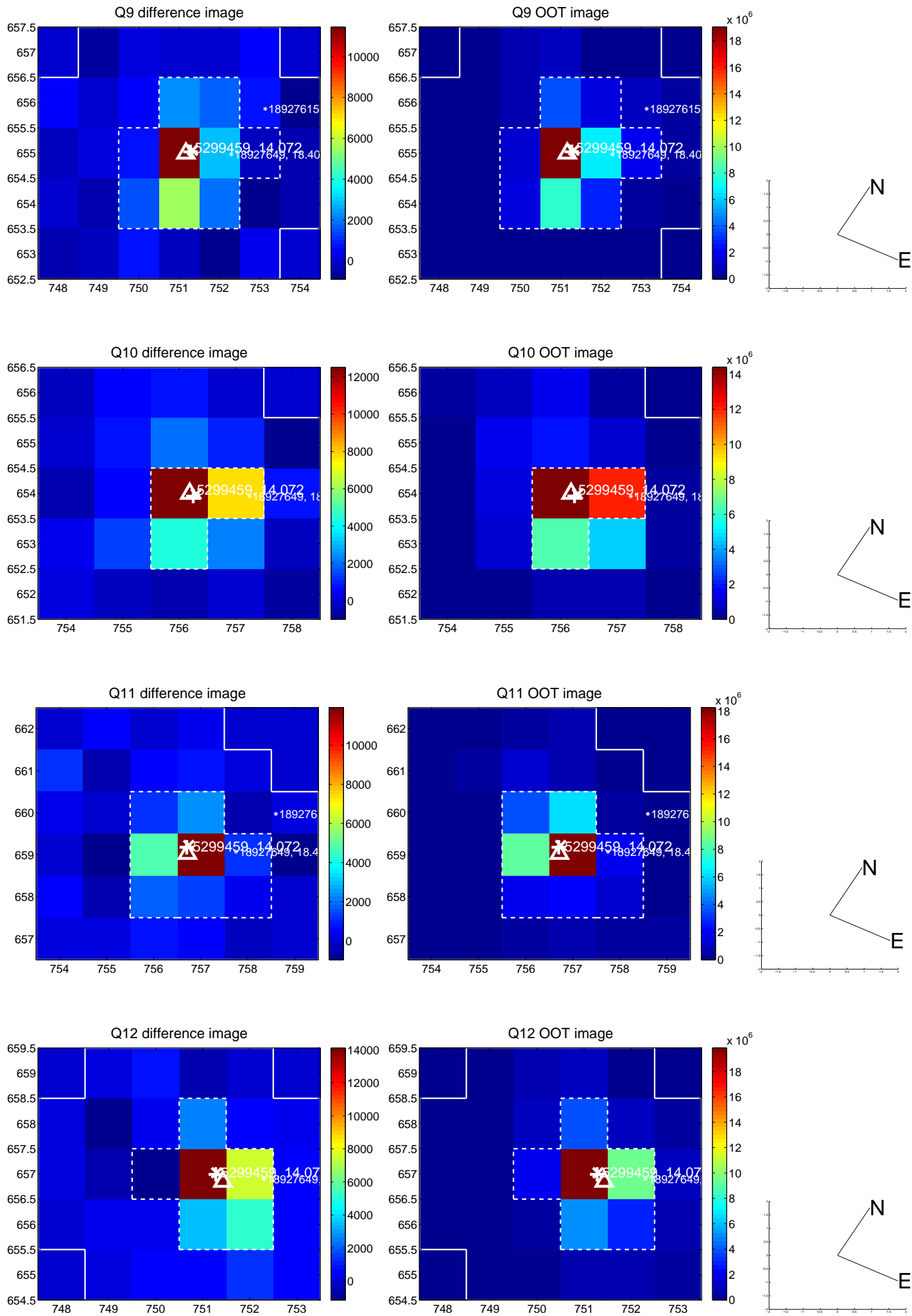
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

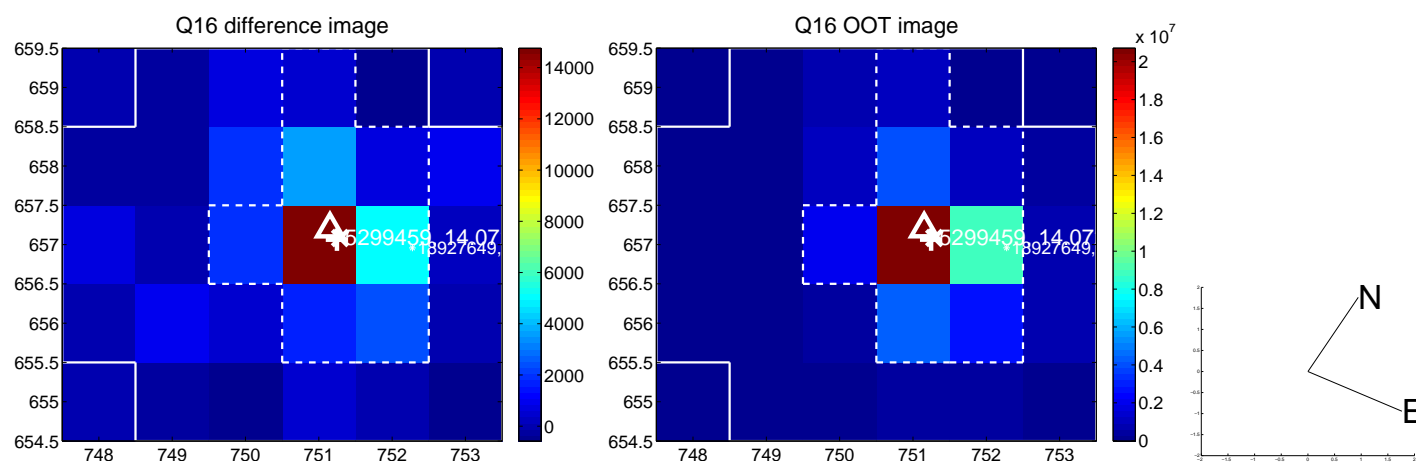
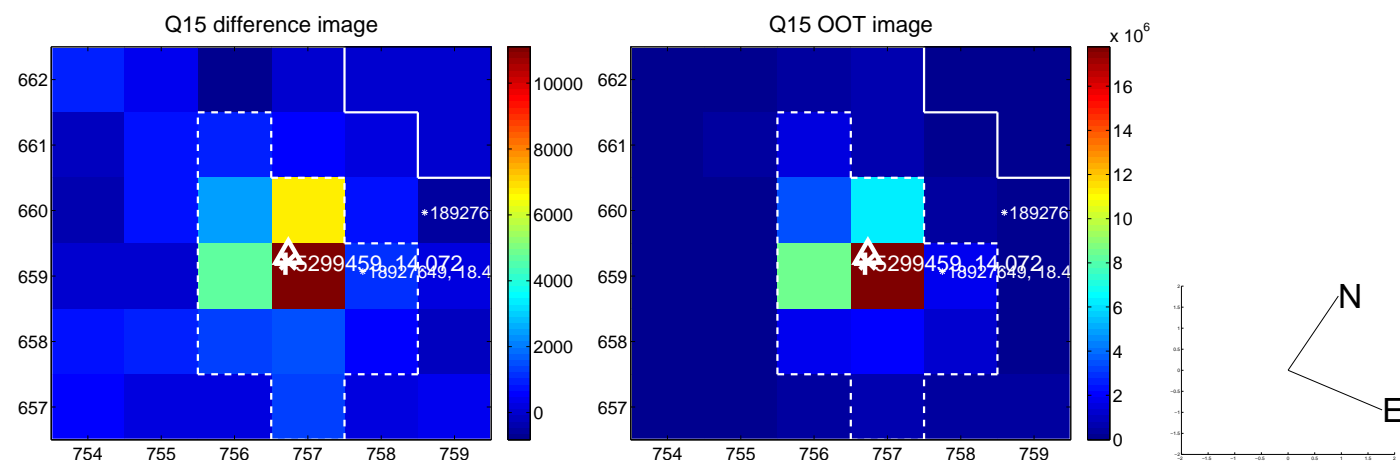
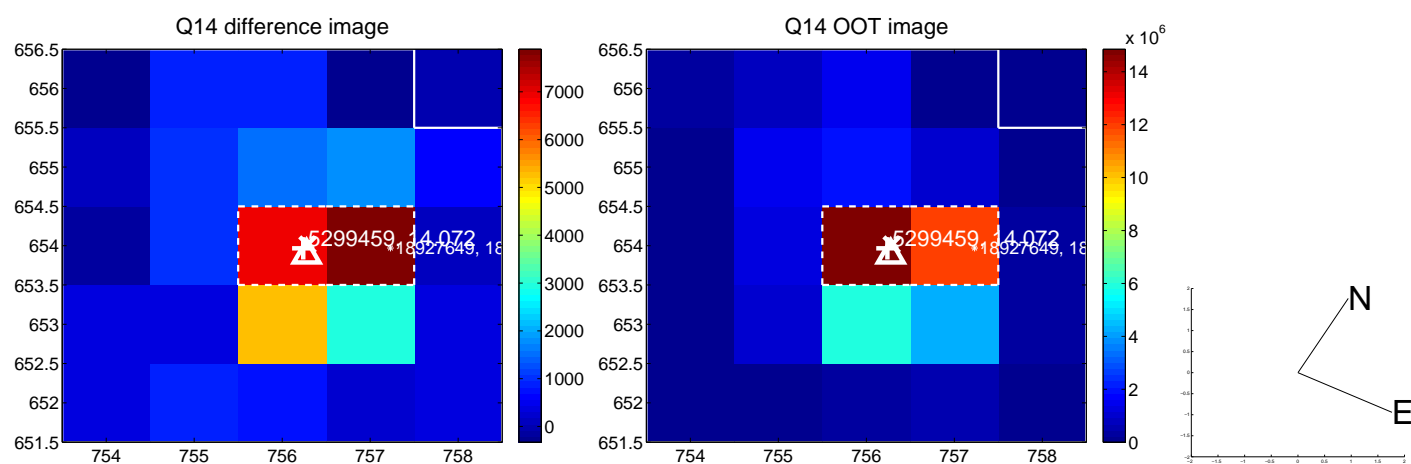
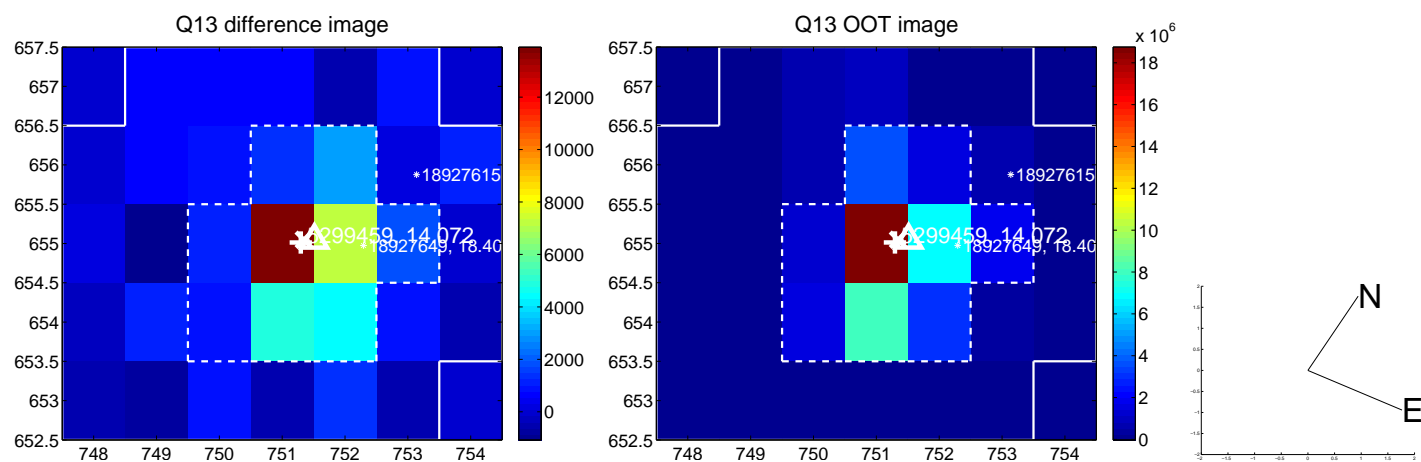


white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

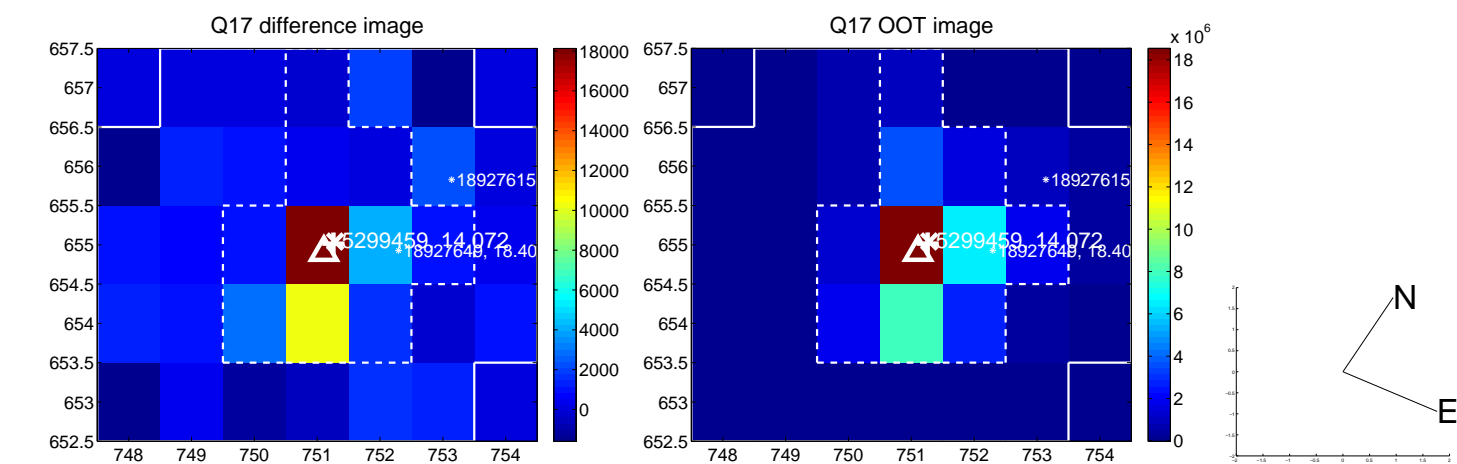




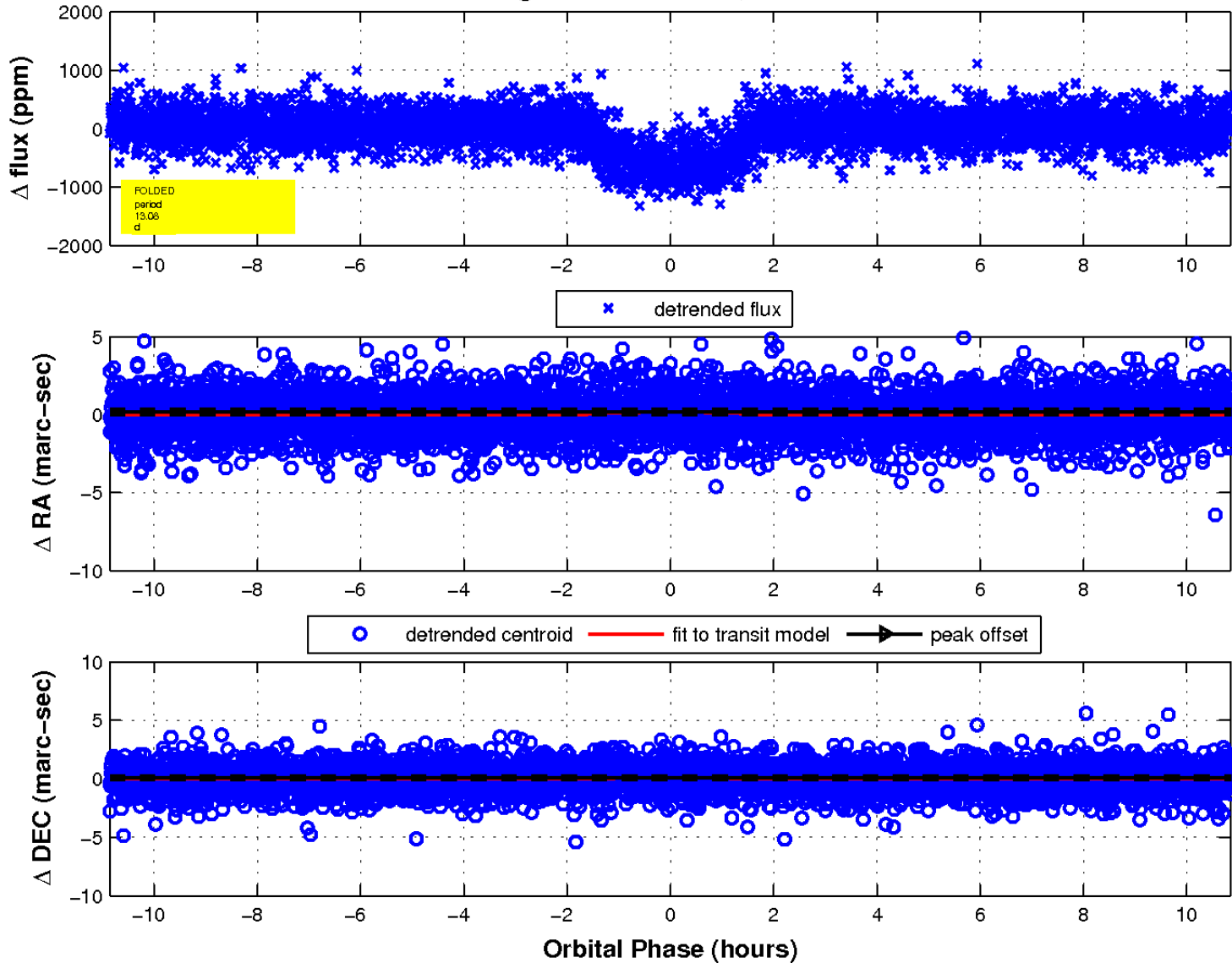
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

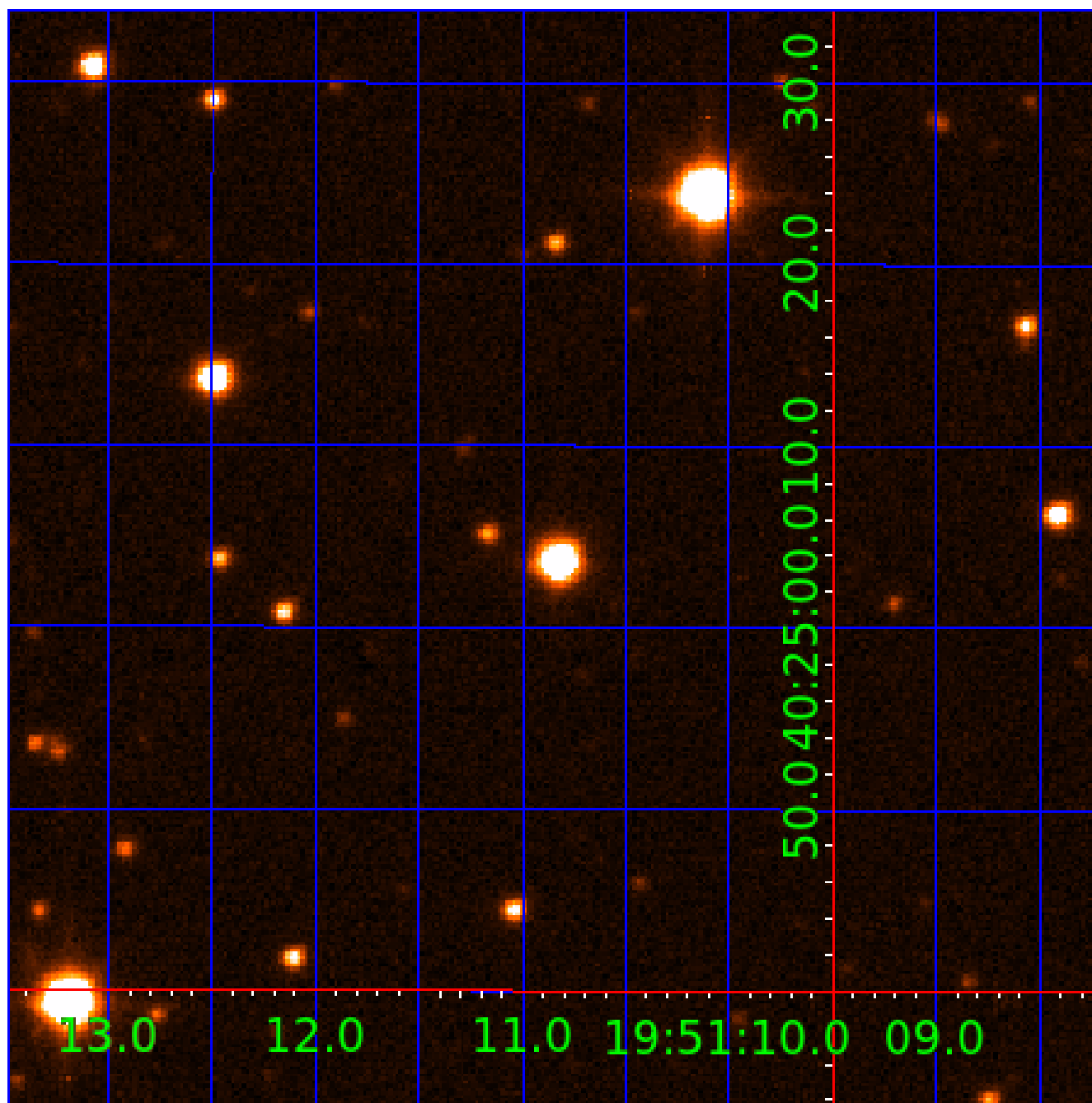


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



# KIC 005299459

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005299459-01	OBS	1576.01	10.415735	132.630597	818.0	2.942	57.2	62.0	0.99	5511	3.33	95.74
005299459-02	OBS	1576.02	13.084260	132.630490	682.8	3.620	43.5	47.0	0.99	5511	3.29	70.64
005299459-03	OBS	No	406.161366	372.905232	513.3	9.107	7.7	7.4	0.99	5511	2.45	0.72

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005299459-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005299459-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005299459-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—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.

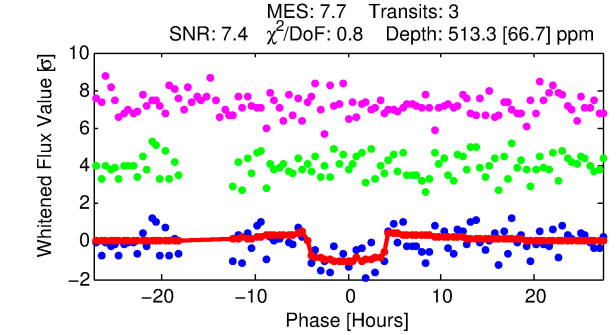
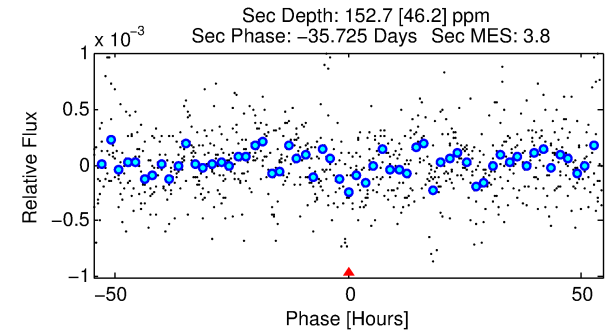
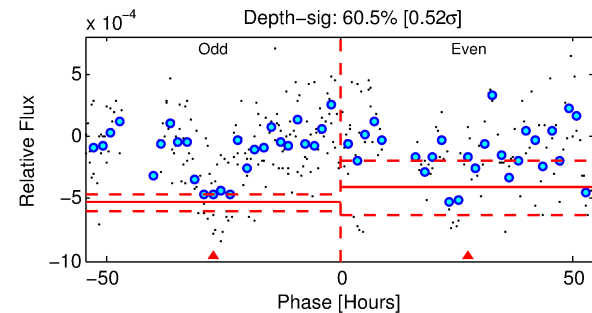
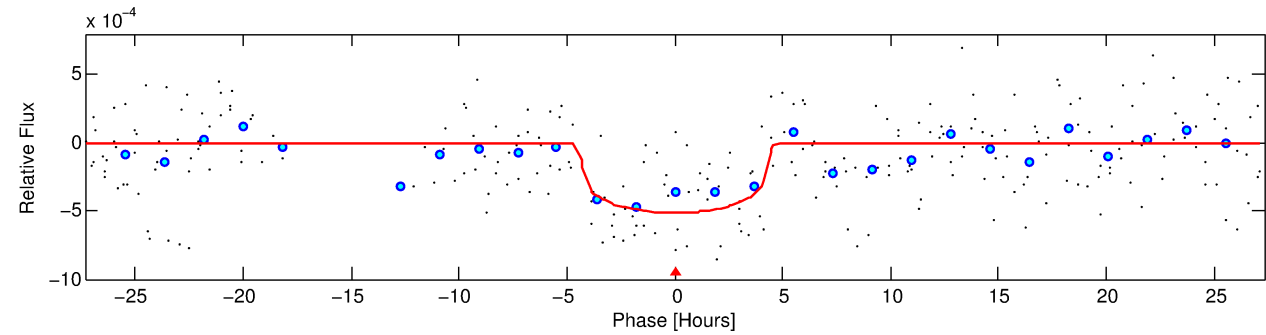
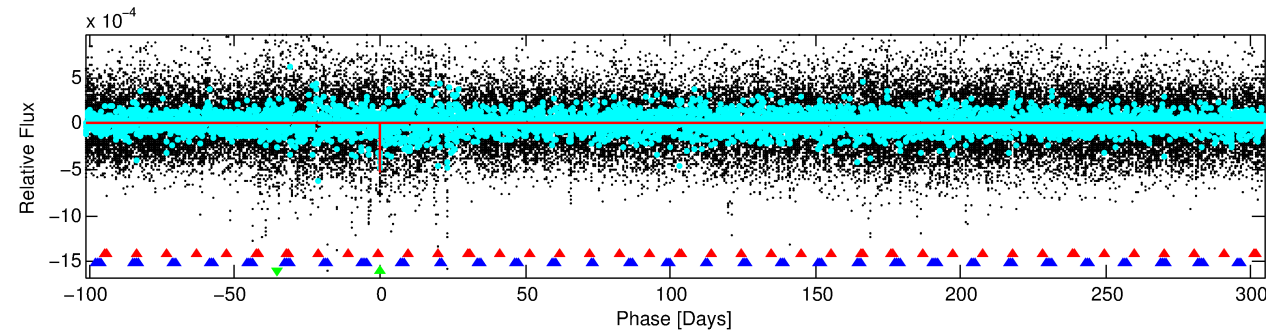
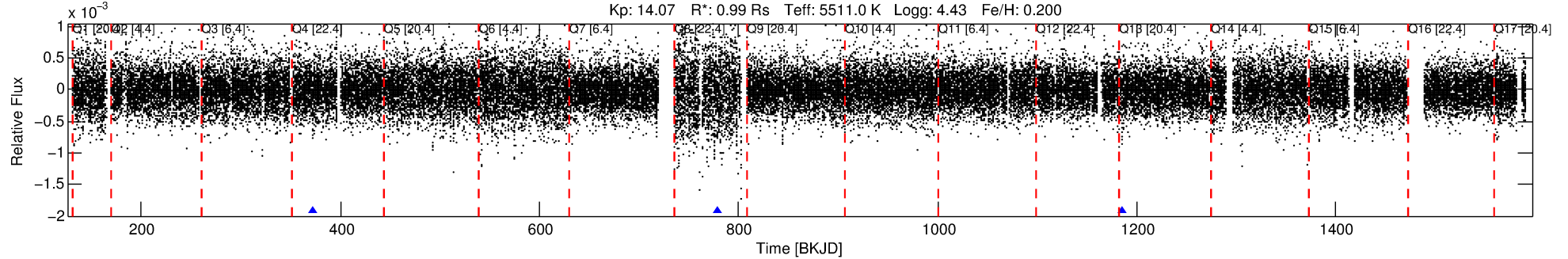
## Ephemeris Match Information For 005299459-03

No Significant Match Found

# DV One-Page Summary

KIC: 5299459 Candidate: 3 of 3 Period: 406.161 d  
KOI: K01576 Name: Kepler-307 Corr: No Ephemeris Match

Kp: 14.07 R\*: 0.99 Rs Teff: 5511.0 K Logg: 4.43 Fe/H: 0.200



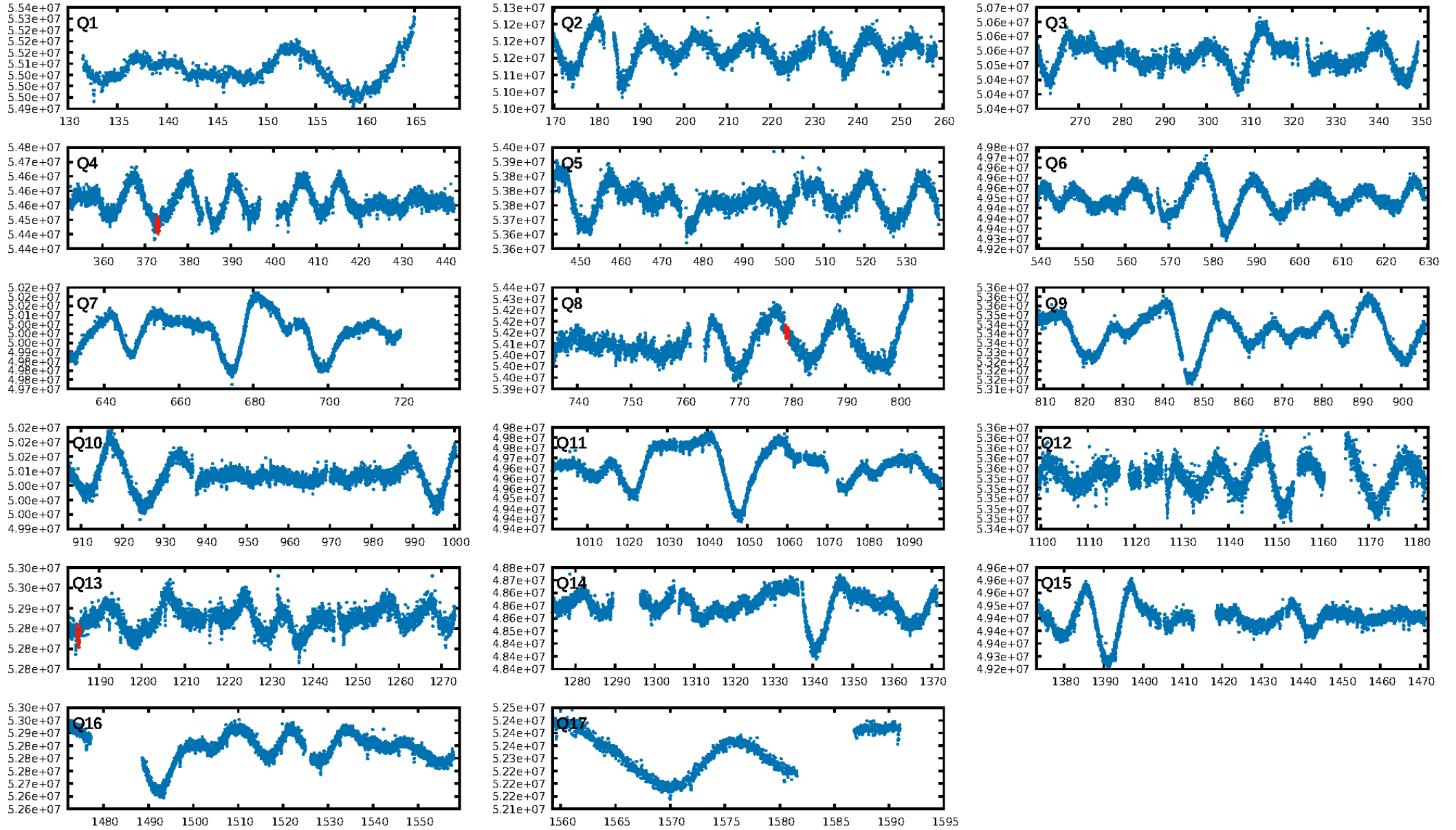
## DV Fit Results:

Period = 406.16137 [0.01100] d  
Epoch = 372.9052 [0.0122] BKJD  
Rp/R\* = 0.0228 [0.0088]  
a/R\* = 229.57 [347.43]  
b = 0.77 [0.81]  
Seff = 0.72 [0.14]  
Teq = 235 [11] K  
Rp = 2.45 [0.99] Re  
a = 1.0545 [0.1214] AU  
Ag = 15531.70 [13114.54] [1.18σ]  
Teffp = 4060 [842] K [4.54σ]

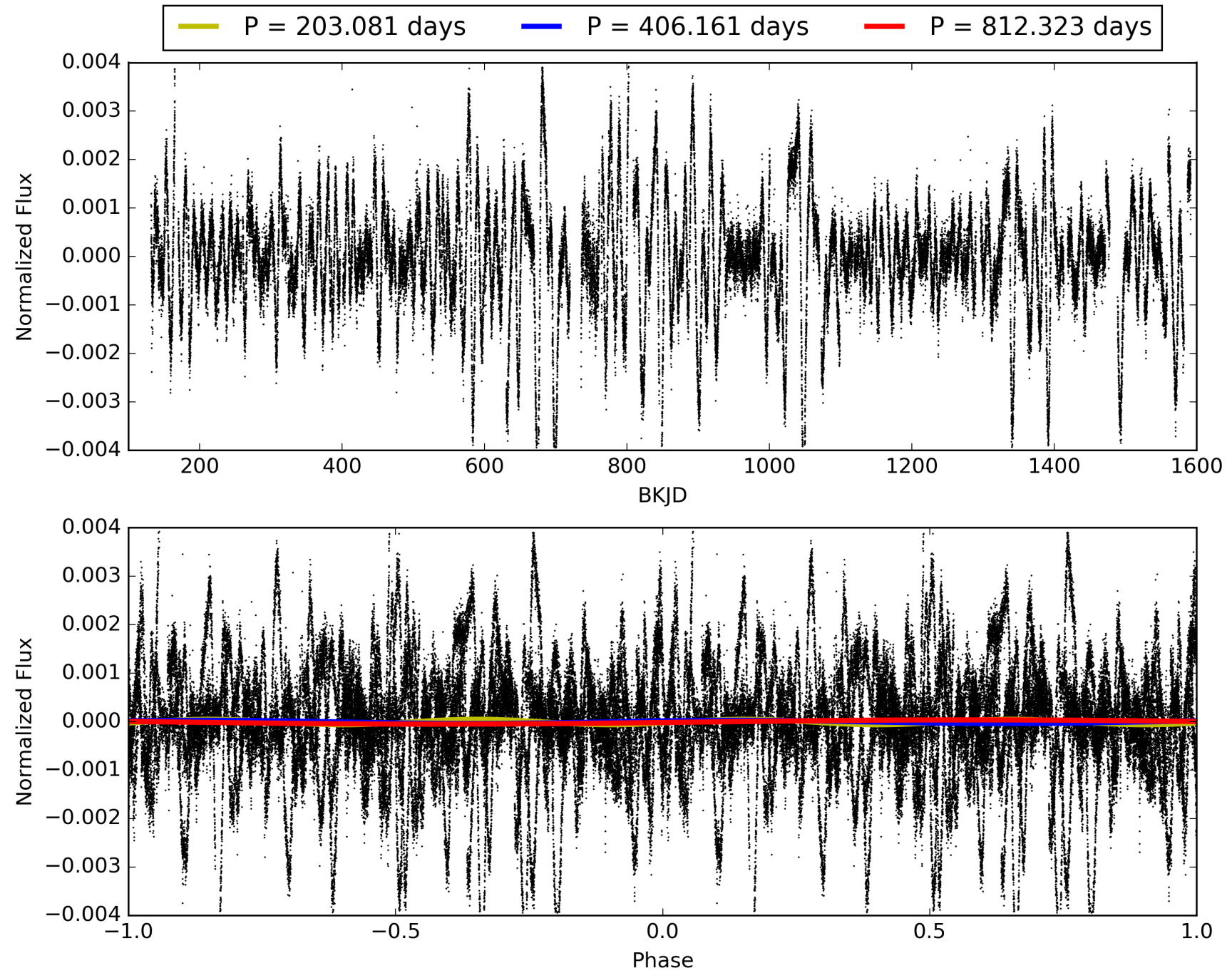
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [962.66σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 46.0%  
ModelChiSquareGof-sig: 99.7%  
**Bootstrap-pfa: 8.96e-11**  
RollingBand-fgt: 1.00 [3/3]  
GhostDiagnostic-chr: -1.231  
Centroid-sig: 7.1%  
Centroid-so: 1.382 arcsec [1.09σ]  
OotOffset-rm: N/A  
KicOffset-rm: N/A  
OotOffset-st: 0/0/0/0 [0]  
KicOffset-st: 0/0/0/0 [0]  
DiffImageQuality-fgm: N/A  
DiffImageOverlap-fno: 0.00 [0/1]

# TCE 005299459-03, PDC Light Curves



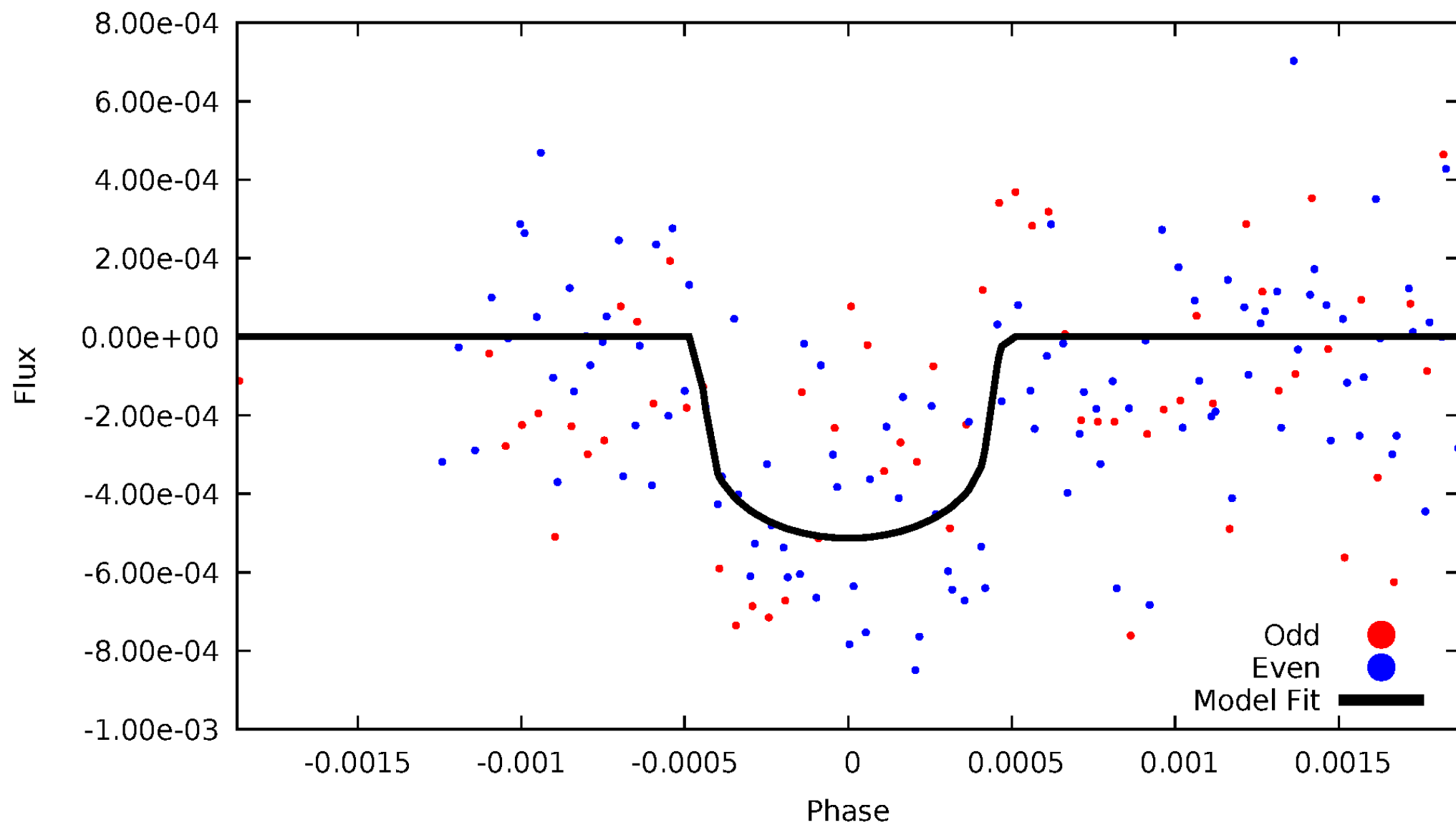
TCE 005299459-03





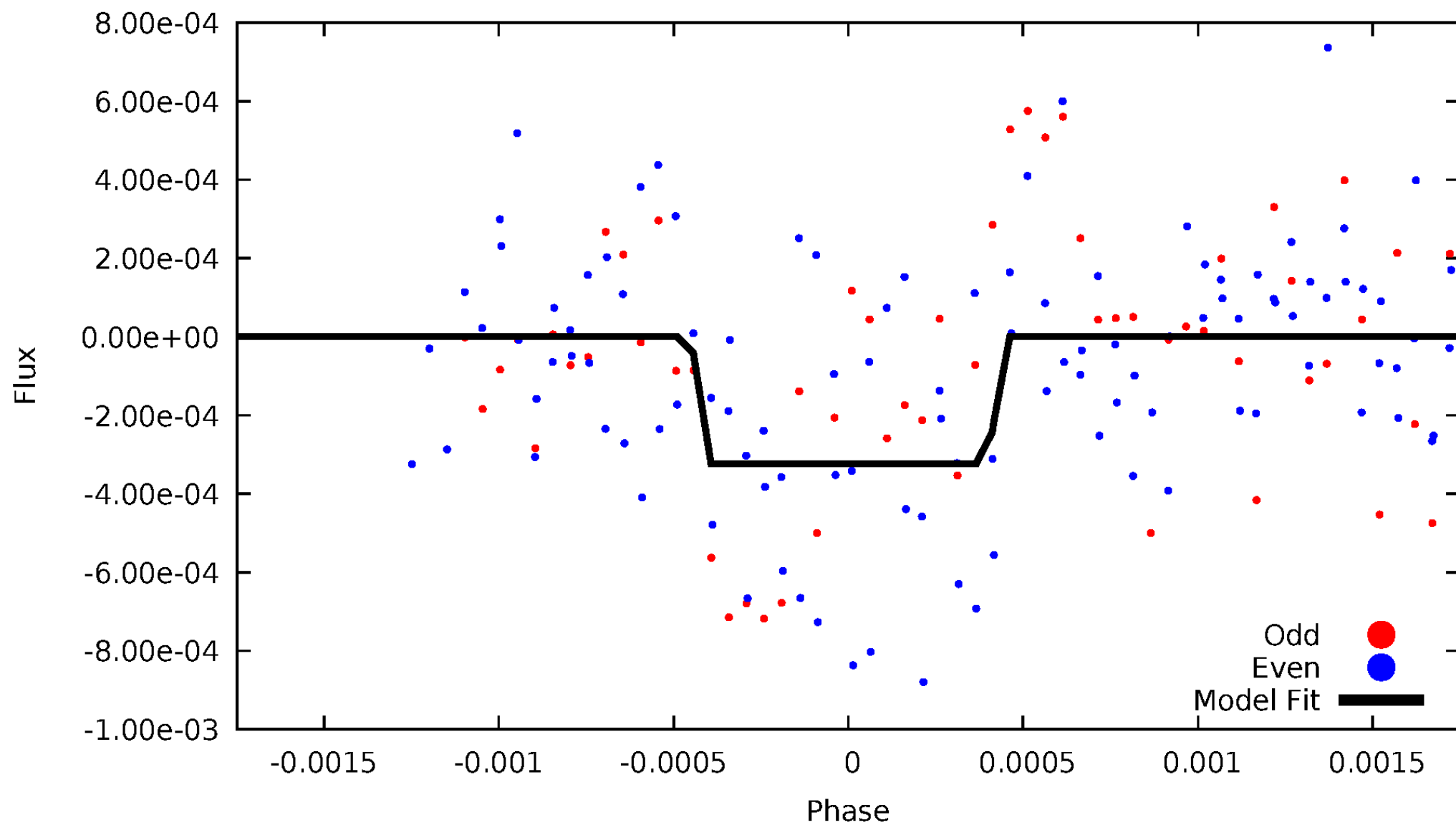
# DV Odd/Even

TCE 005299459-03



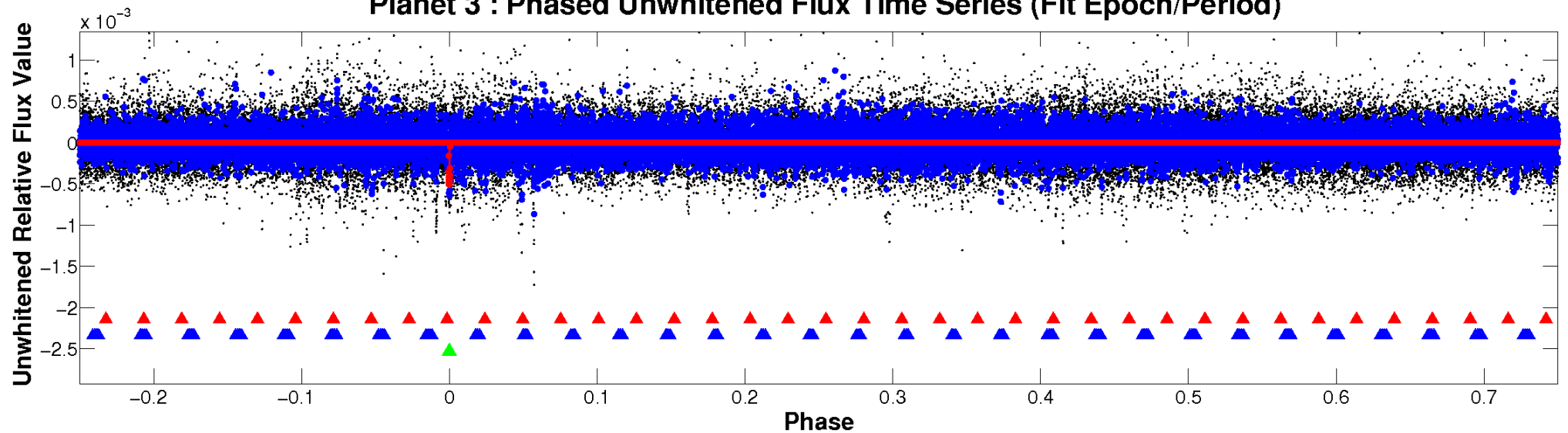
# ALT Odd/Even

TCE 005299459-03

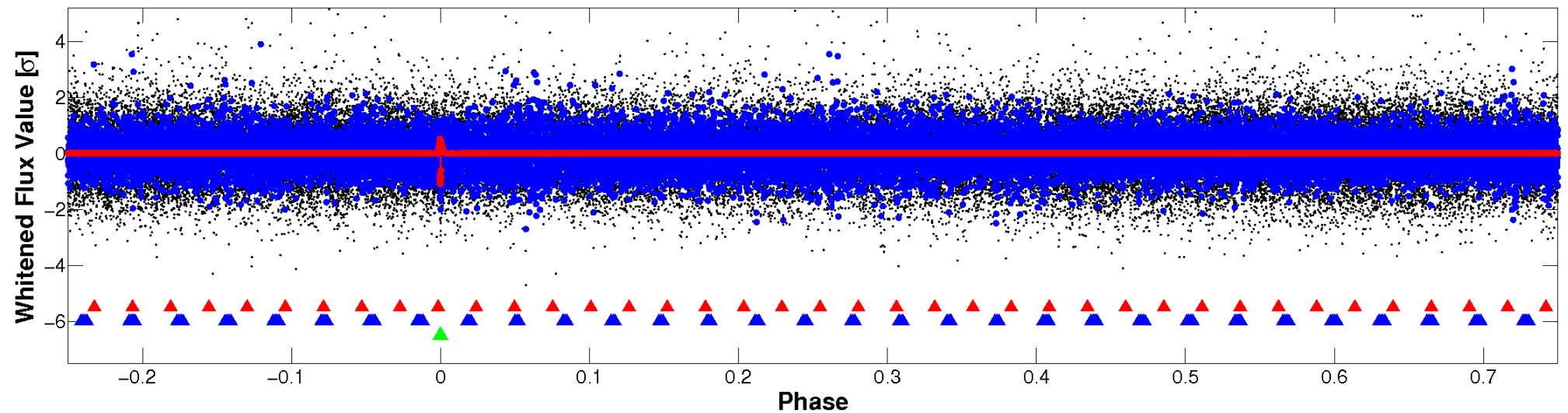


# Non-Whitened Vs. Whitened Light Curve

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

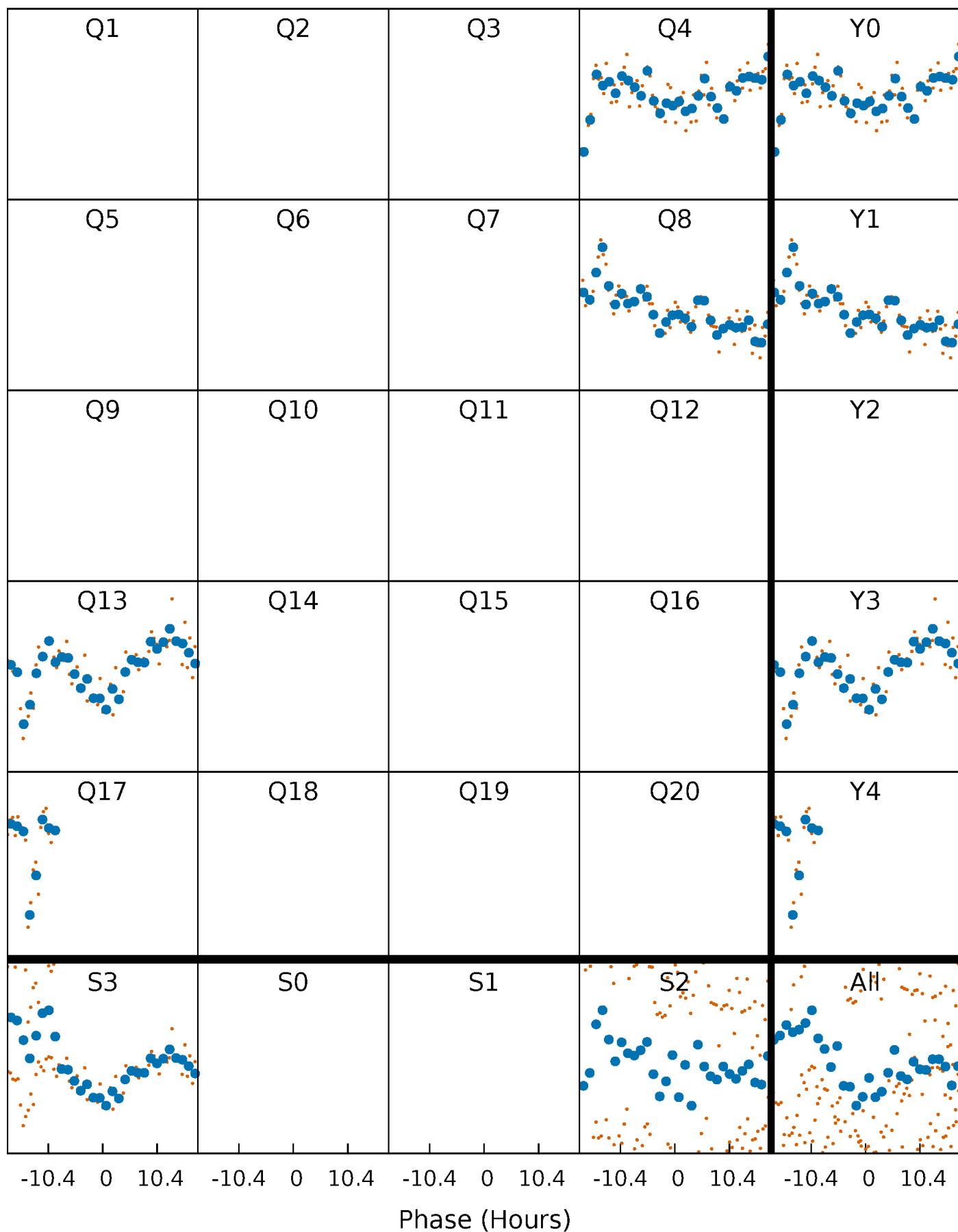


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



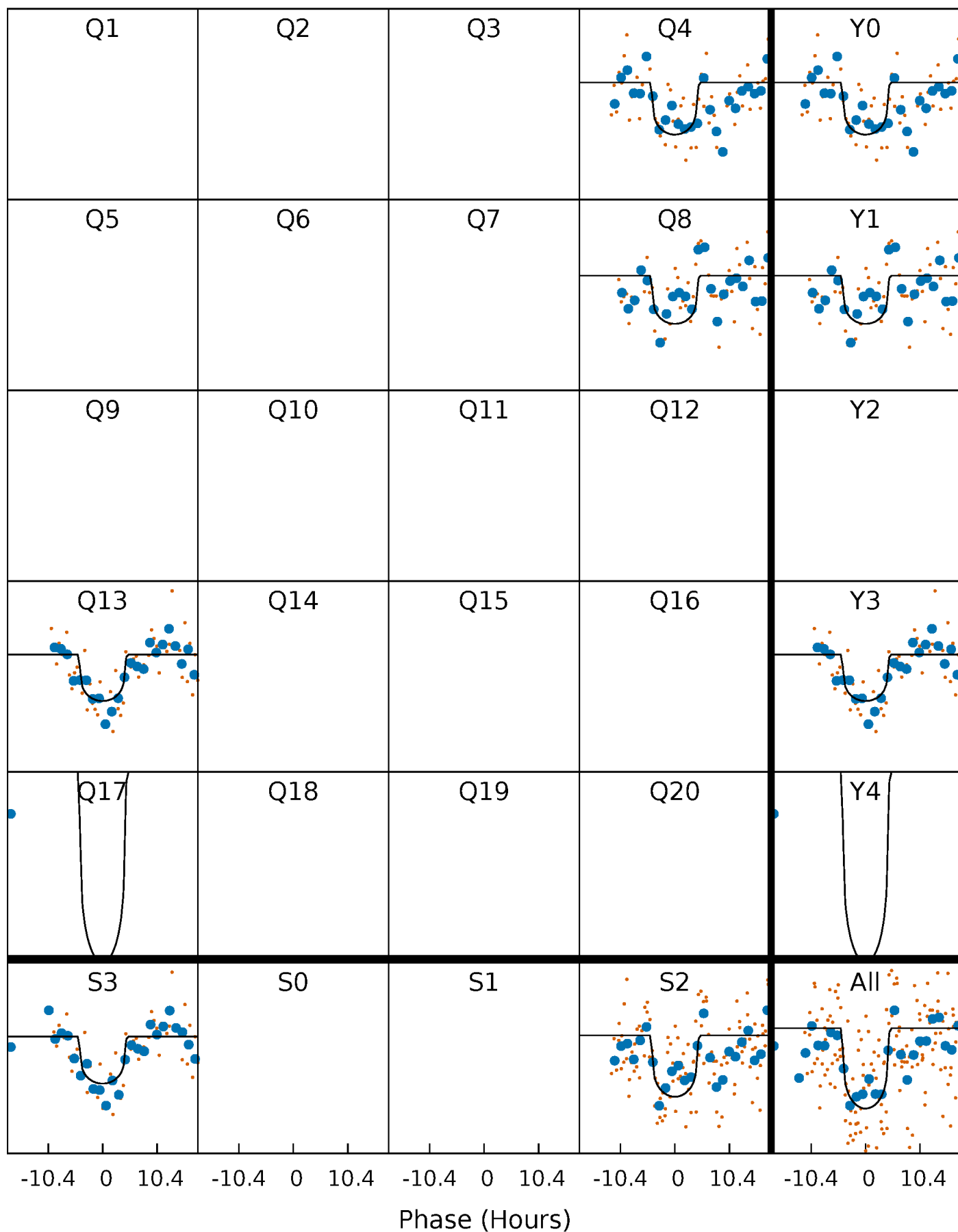
# PDC Quarter-Phased Transit Curves

TCE 005299459-03     $P=406.161366$  Days     $T_0=372.905233$  (BKJD)



# DV Quarter-Phased Transit Curves

TCE 005299459-03     $P=406.161366$  Days     $T_0=372.905233$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

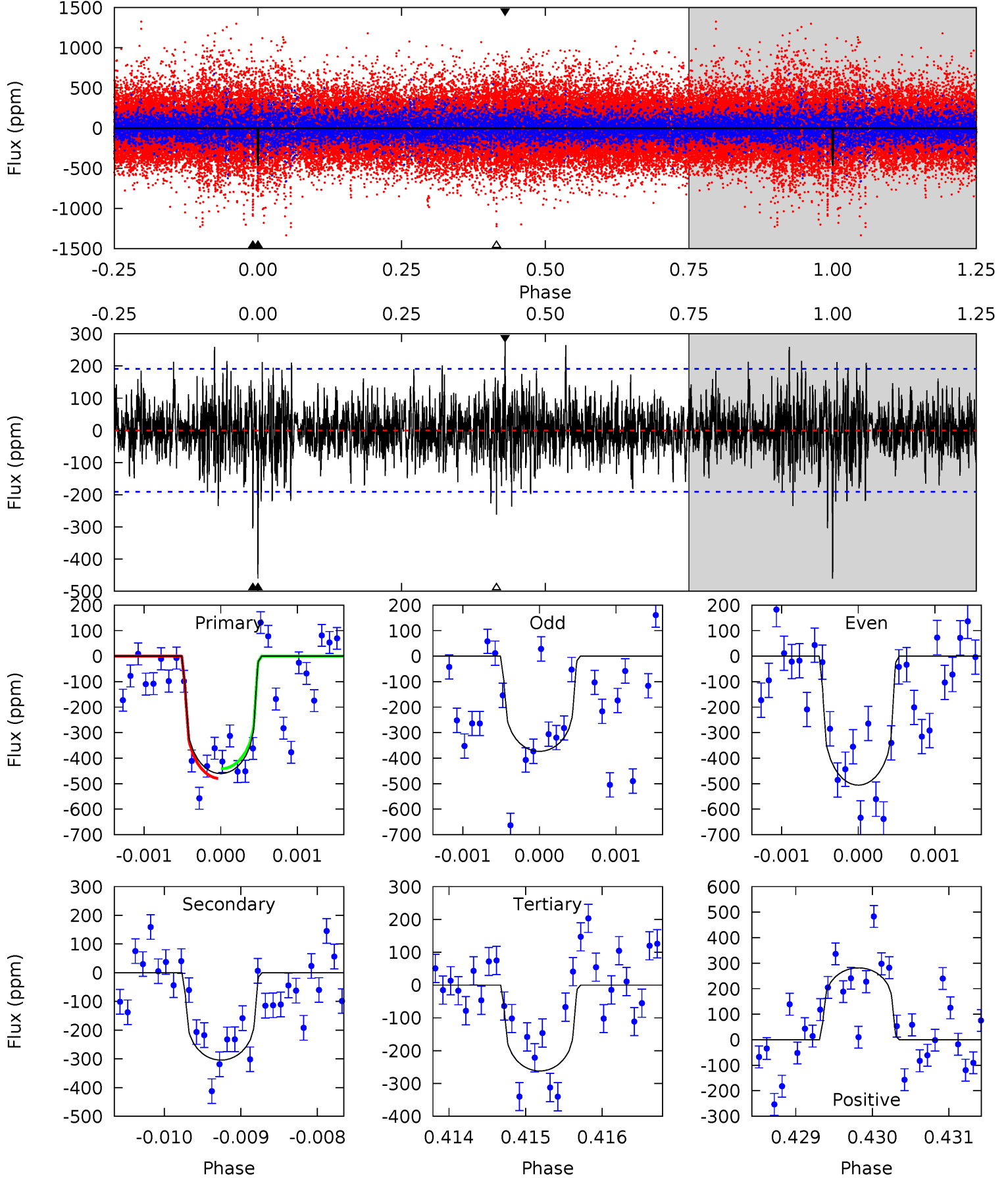
TCE 005299459-03 P=406.157872 Days  $T_0=372.907939$  (BKJD)



# DV Model-Shift Uniqueness Test

005299459-03, P = 406.161366 Days, E = 372.905233 Days

Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	8.70	7.49	8.05	5.46	3.30	1.77	5.68	5.11	1.21	0.65	1.75	1.05	0.38	0.54

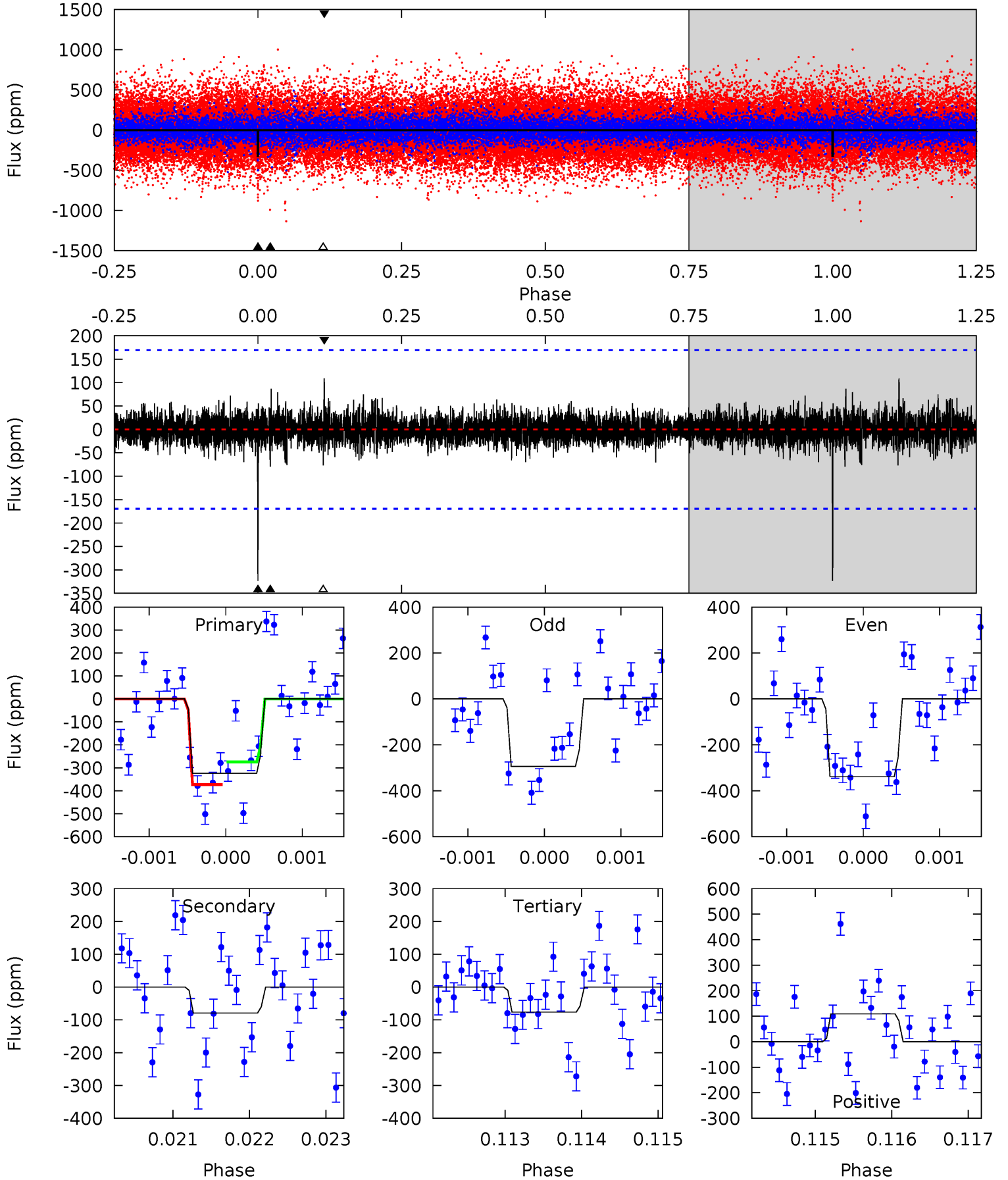




# Alt Model-Shift Uniqueness Test

005299459-03, P = 406.157872 Days, E = 372.907939 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
10.4	2.56	2.47	3.52	5.47	3.32	0.59	7.96	6.91	0.09	-0.96	0.69	1.12	0.25	1.59



### Stellar Parameters For KIC 005299459

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$5511^{+110}_{-1}$	$4.426^{+0.081}_{-0.099}$	$0.200^{+0.150}_{-0.150}$	$0.987^{+0.128}_{-0.085}$	$0.947^{+0.059}_{-0.053}$	$1.386^{+0.469}_{-0.416}$
	+2%/-0%	+2%/-2%	+75%/-75%	+13%/-9%	+6%/-6%	+34%/-30%
Source	SPE58	SPE58	SPE58	DSEP		

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

### Secondary Eclipse Parameters for KIC 005299459-03 / KOI

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-304 \pm 35$	$2.51^{+0.90}_{-1.00}$	$328^{+14}_{-14}$	$4846^{+1197}_{-548}$	$29810^{+49340}_{-13815}$
Alt.	$-79 \pm 31$	$1.96^{+0.96}_{-0.94}$	$328^{+14}_{-14}$	$4104^{+1176}_{-675}$	$12071^{+31010}_{-7675}$

$T_{max}$  = 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

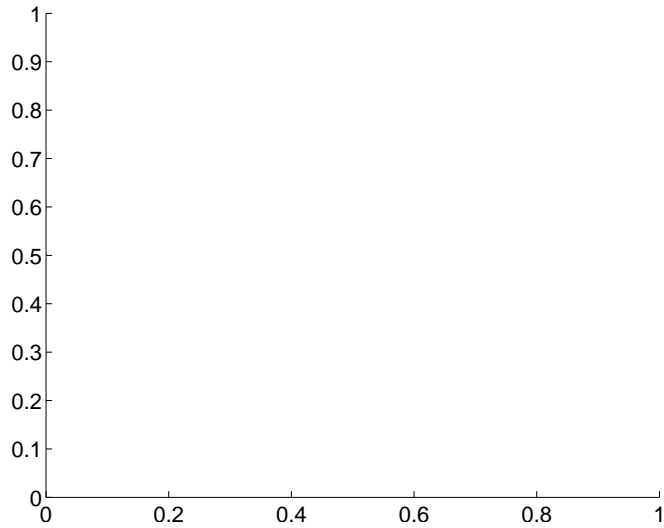
Supplemental centroid analysis for 005299459-03. Kepler magnitude: 14.07. Transit SNR 7.41

There are 0 quarters with good PRF difference image offsets

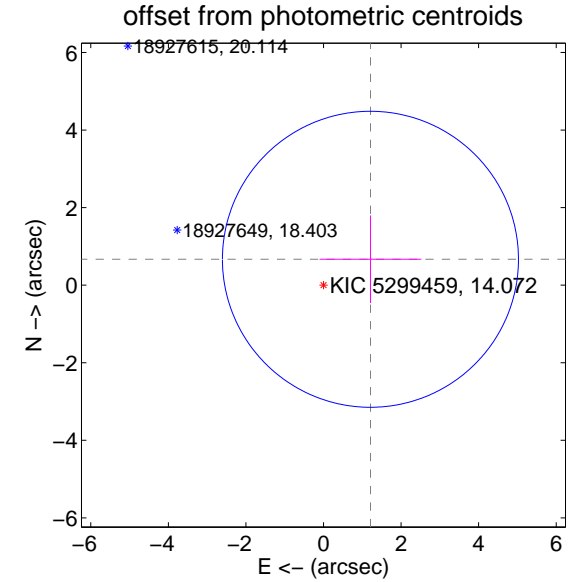
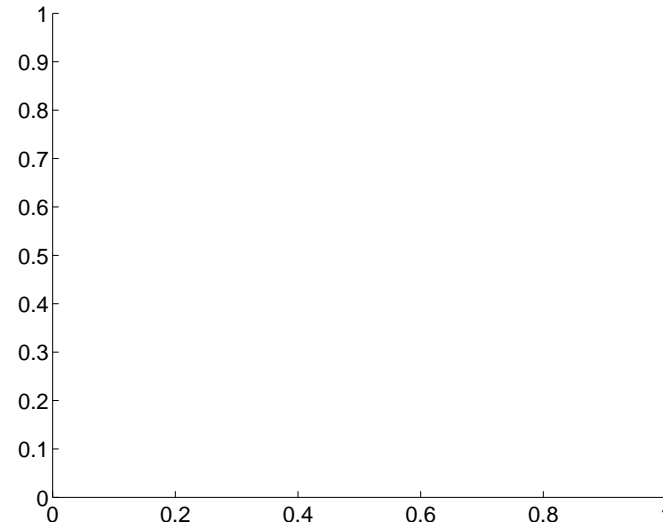
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	$1.38 \pm 1.27$	1.09	$-1.21 \pm 1.31$	$0.67 \pm 1.13$

There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC

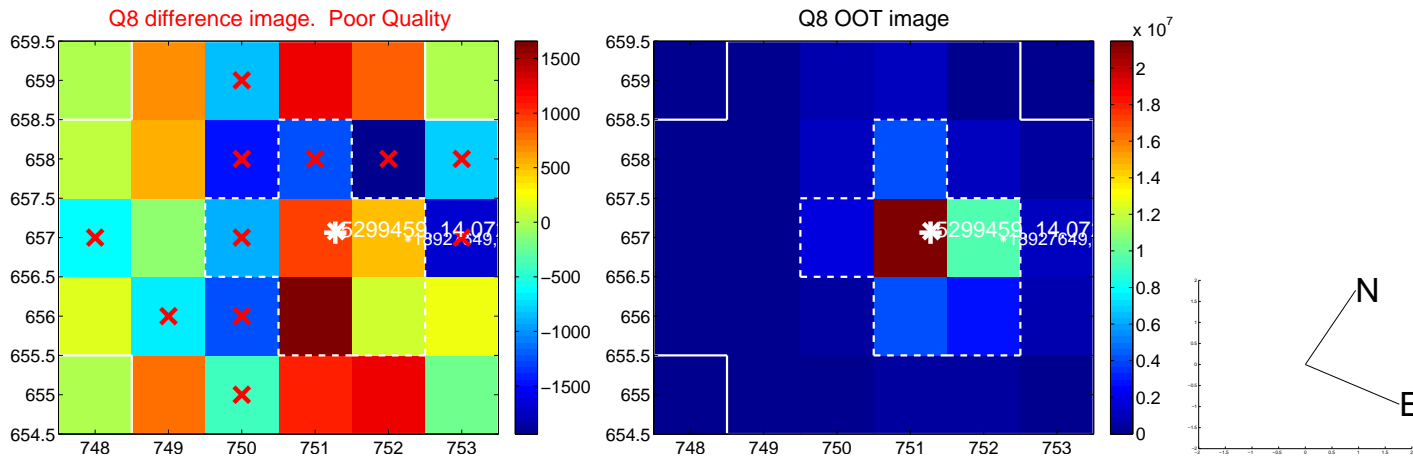
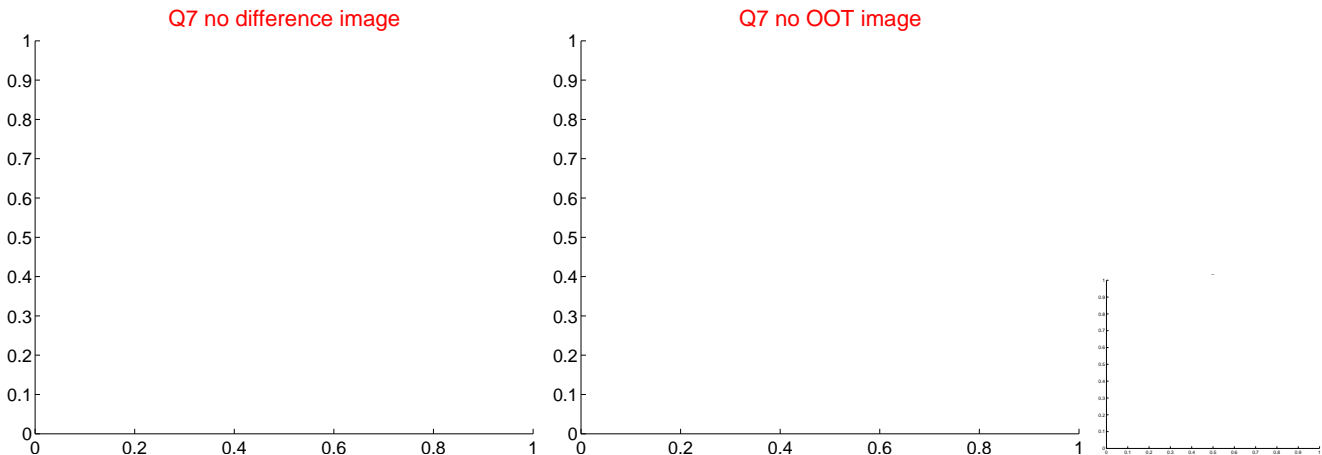
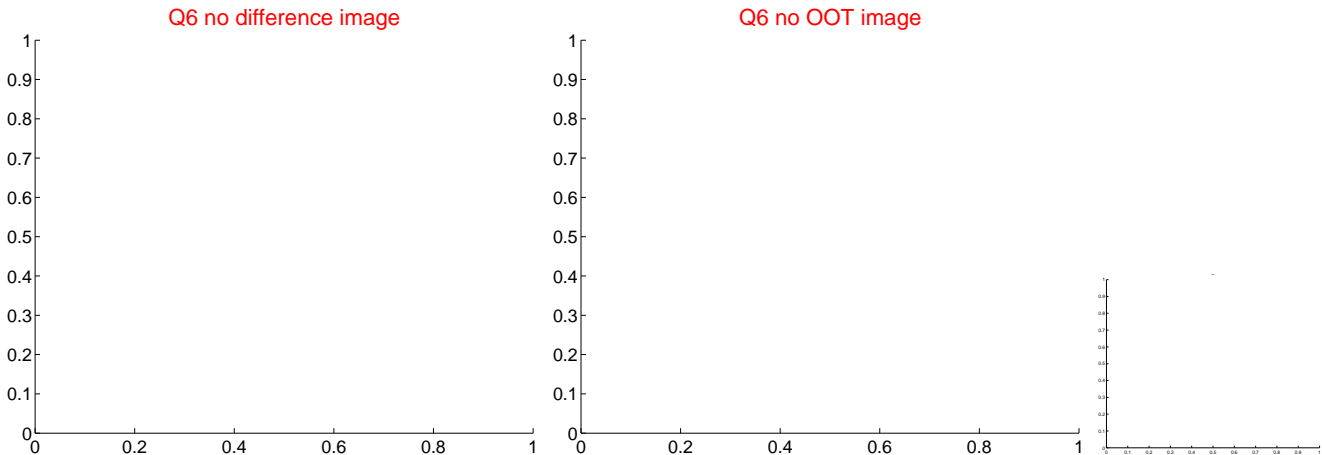
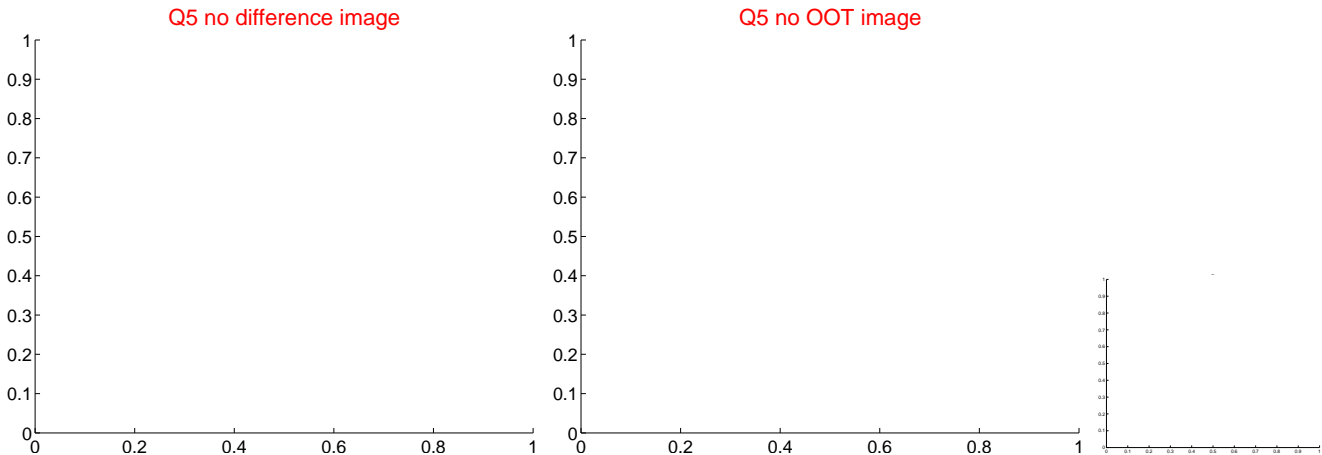


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

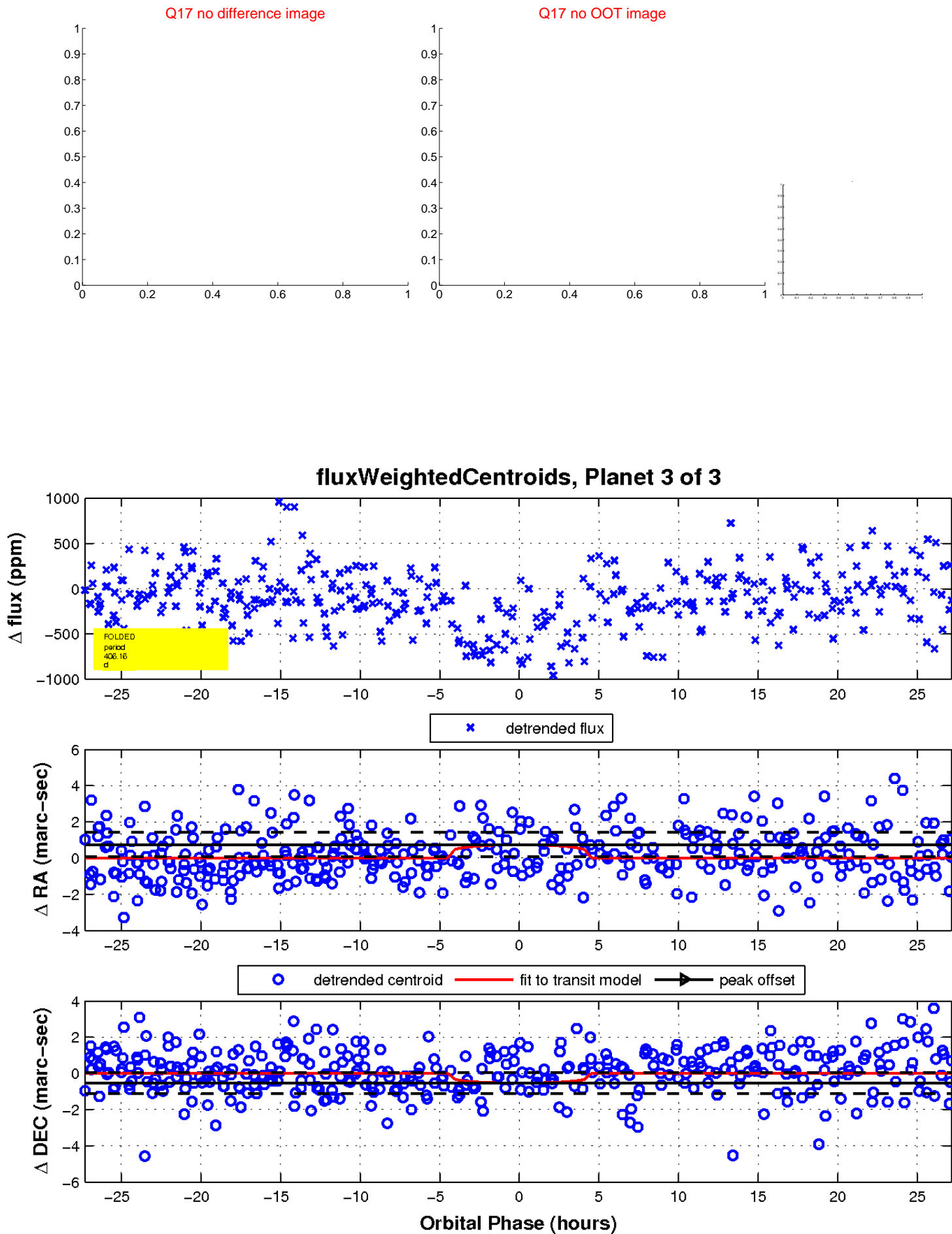


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





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



UKIRT Image

Declination

