

# KIC 005301750

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005301750-01	OBS	1589.01	8.725861	138.766993	445.7	4.600	27.9	31.3	1.13	6036	2.90	222.74
005301750-02	OBS	1589.02	12.882874	135.189430	502.7	6.226	25.3	27.5	1.13	6036	3.44	132.49
005301750-03	OBS	1589.03	27.434620	145.121918	480.9	5.238	19.3	20.6	1.13	6036	2.77	48.36
005301750-04	OBS	1589.04	4.224503	135.432824	153.7	3.168	13.4	13.7	1.13	6036	1.64	585.91
005301750-05	OBS	1589.05	44.551934	160.291368	360.0	5.907	13.4	12.7	1.13	6036	2.29	25.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005301750-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-05	OBS	PC	1.00	0	0	0	0	NO_COMMENT

**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.

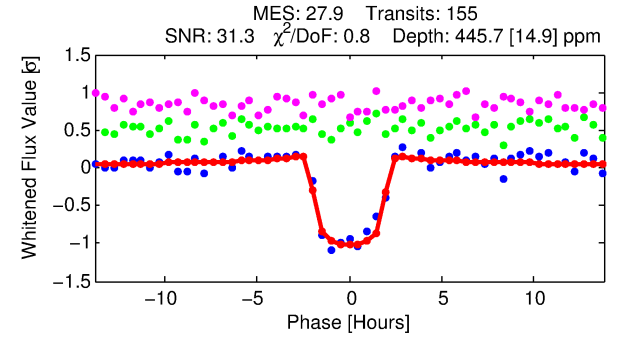
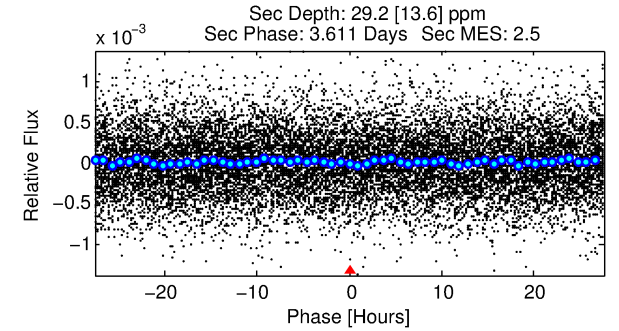
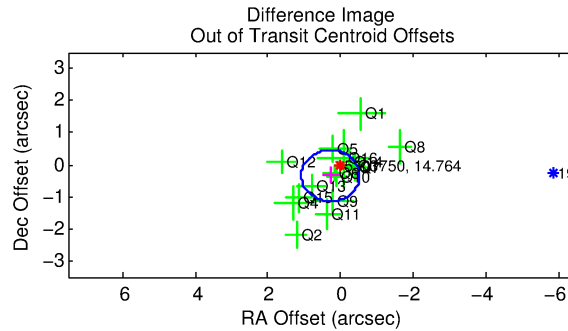
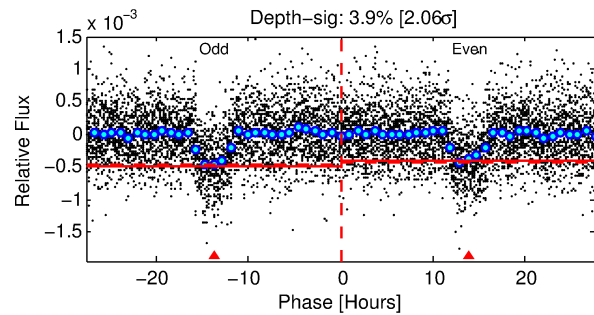
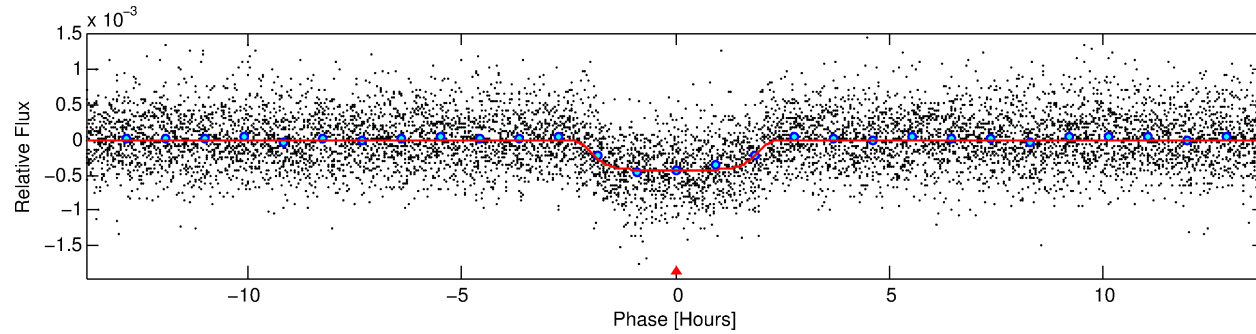
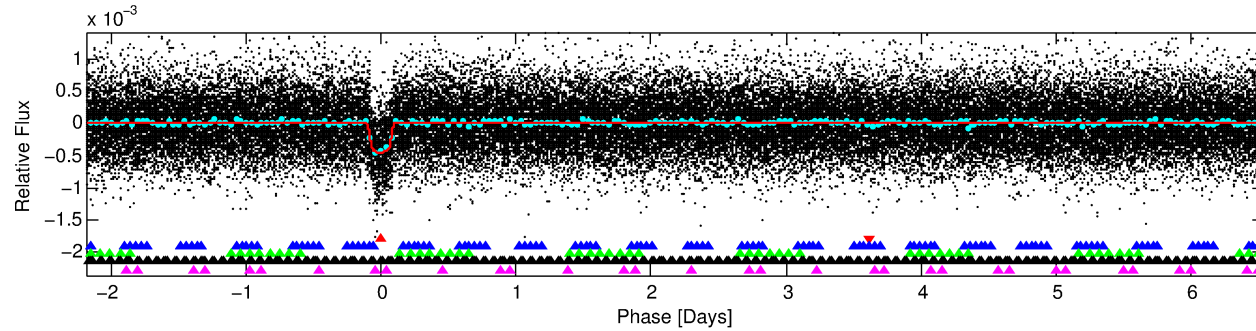
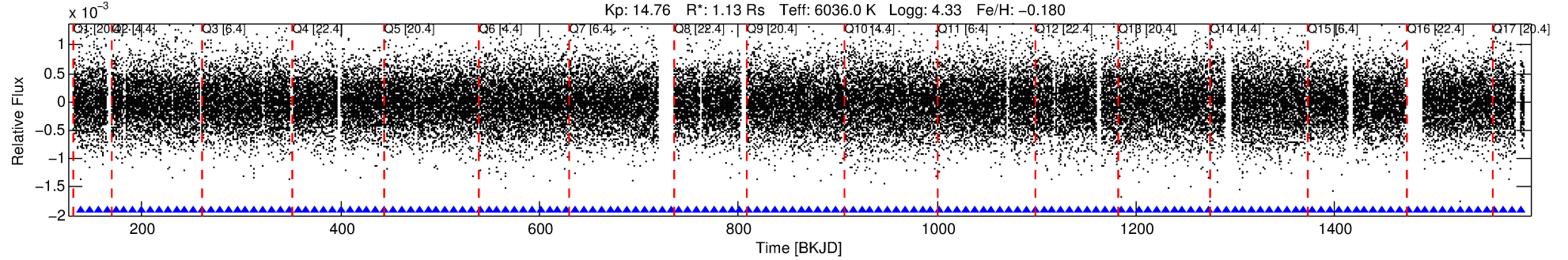
## Ephemeris Match Information For 005301750-01

No Significant Match Found

# DV One-Page Summary

KIC: 5301750 Candidate: 1 of 5 Period: 8.726 d  
KOI: K01589.01 Name: Kepler-84b Corr: 0.988

Kp: 14.76 R\*: 1.13 Rs Teff: 6036.0 K Logg: 4.33 Fe/H: -0.180



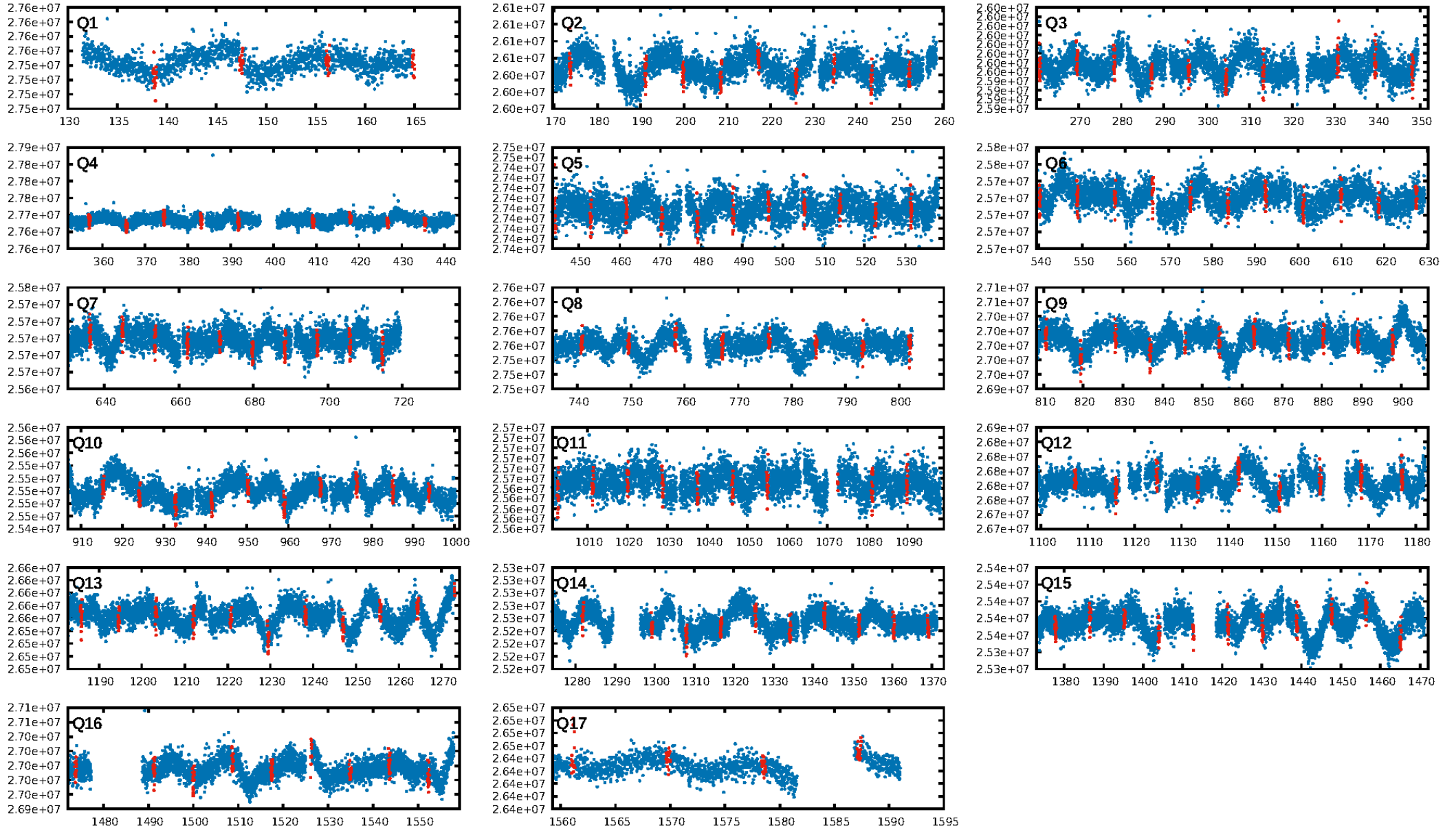
## DV Fit Results:

Period = 8.72586 [0.00003] d  
Epoch = 138.7670 [0.0027] BKJD  
Rp/R\* = 0.0235 [0.0009]  
a/R\* = 6.28 [1.09]  
b = 0.93 [0.03]  
Seff = 222.74 [50.96]  
Teff = 985 [56] K  
Rp = 2.90 [0.47] Re  
a = 0.0826 [0.0115] AU  
Ag = 13.00 [6.76] [1.78σ]  
Teffp = 2892 [349] K [5.39σ]

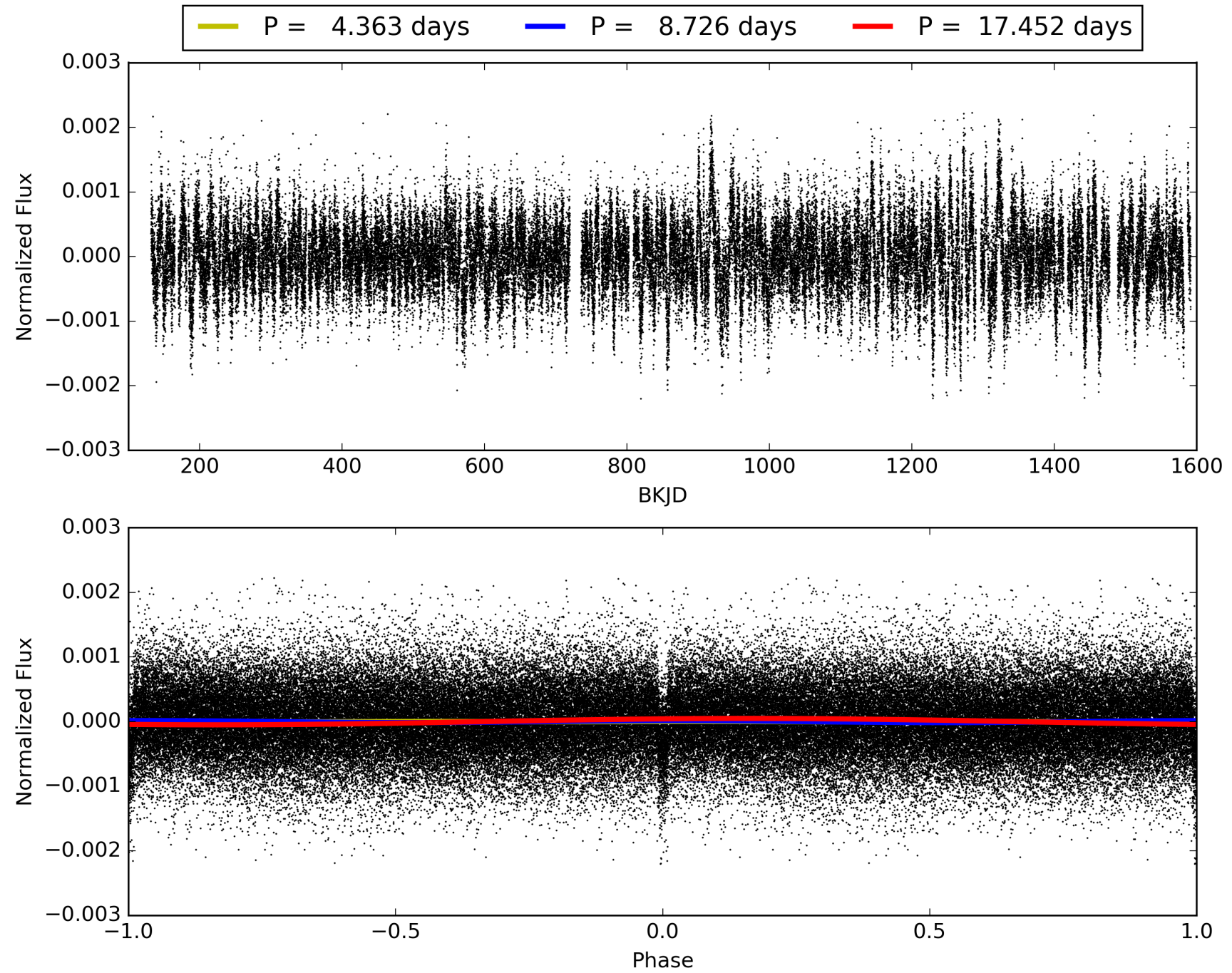
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [19.34σ]  
LongPeriod-sig: 100.0% [12.89σ]  
ModelChiSquare2-sig: 100.0%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.29e-157  
RollingBand-fgt: 1.00 [147/147]  
GhostDiagnostic-chr: 2.869  
Centroid-sig: 2.8%  
Centroid-so: 0.438 arcsec [1.23σ]  
OotOffset-rm: 0.445 arcsec [1.67σ]  
KicOffset-rm: 0.400 arcsec [1.48σ]  
OotOffset-st: 4/4/4/4 [16]  
KicOffset-st: 4/4/4/4 [16]  
DiffImageQuality-fgm: 1.00 [16/16]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 005301750-01, PDC Light Curves

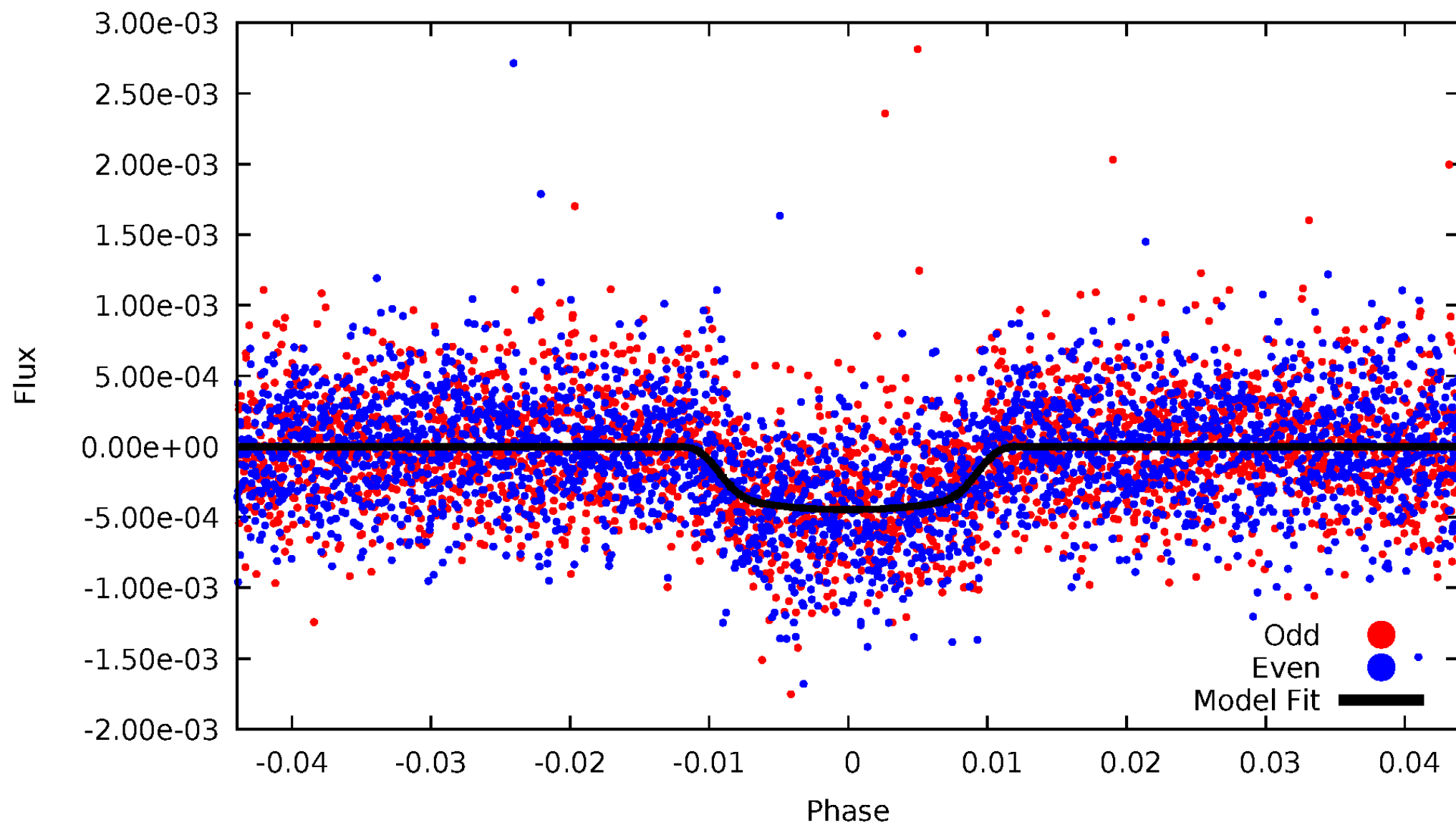


TCE 005301750-01



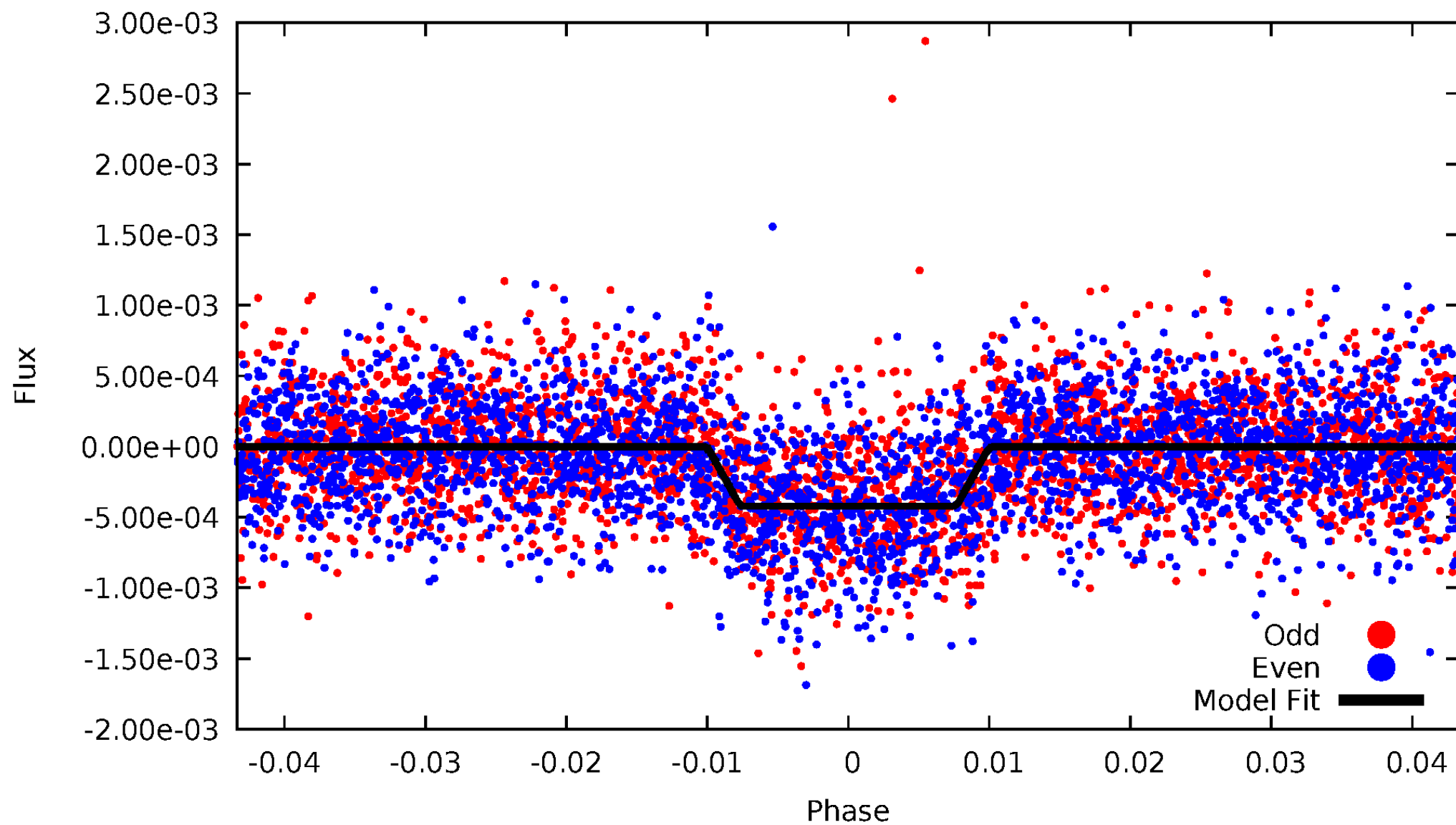
# DV Odd/Even

TCE 005301750-01



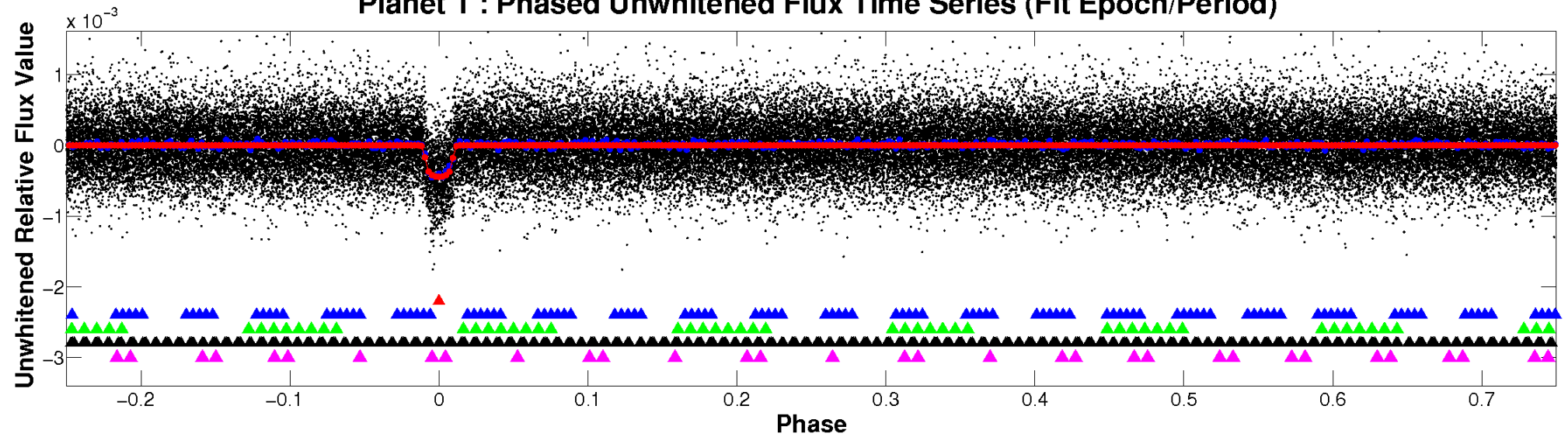
# ALT Odd/Even

TCE 005301750-01

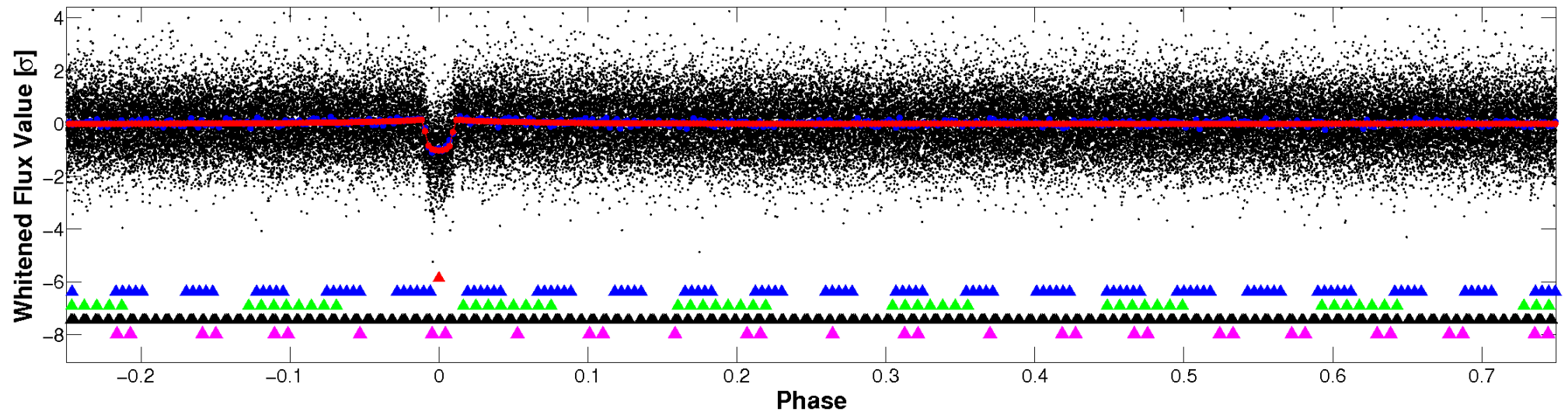


# Non-Whitened Vs. Whitened Light Curve

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

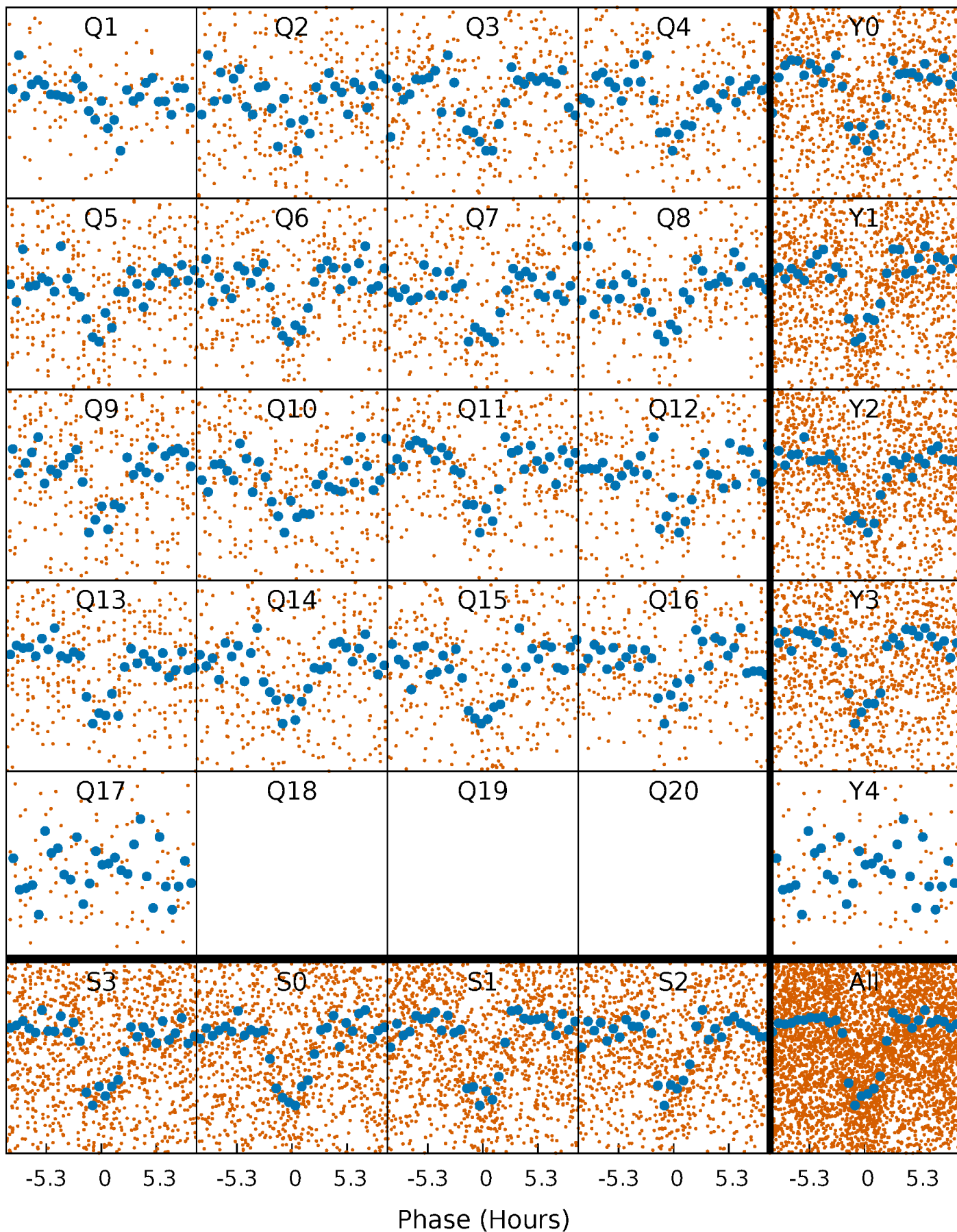


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



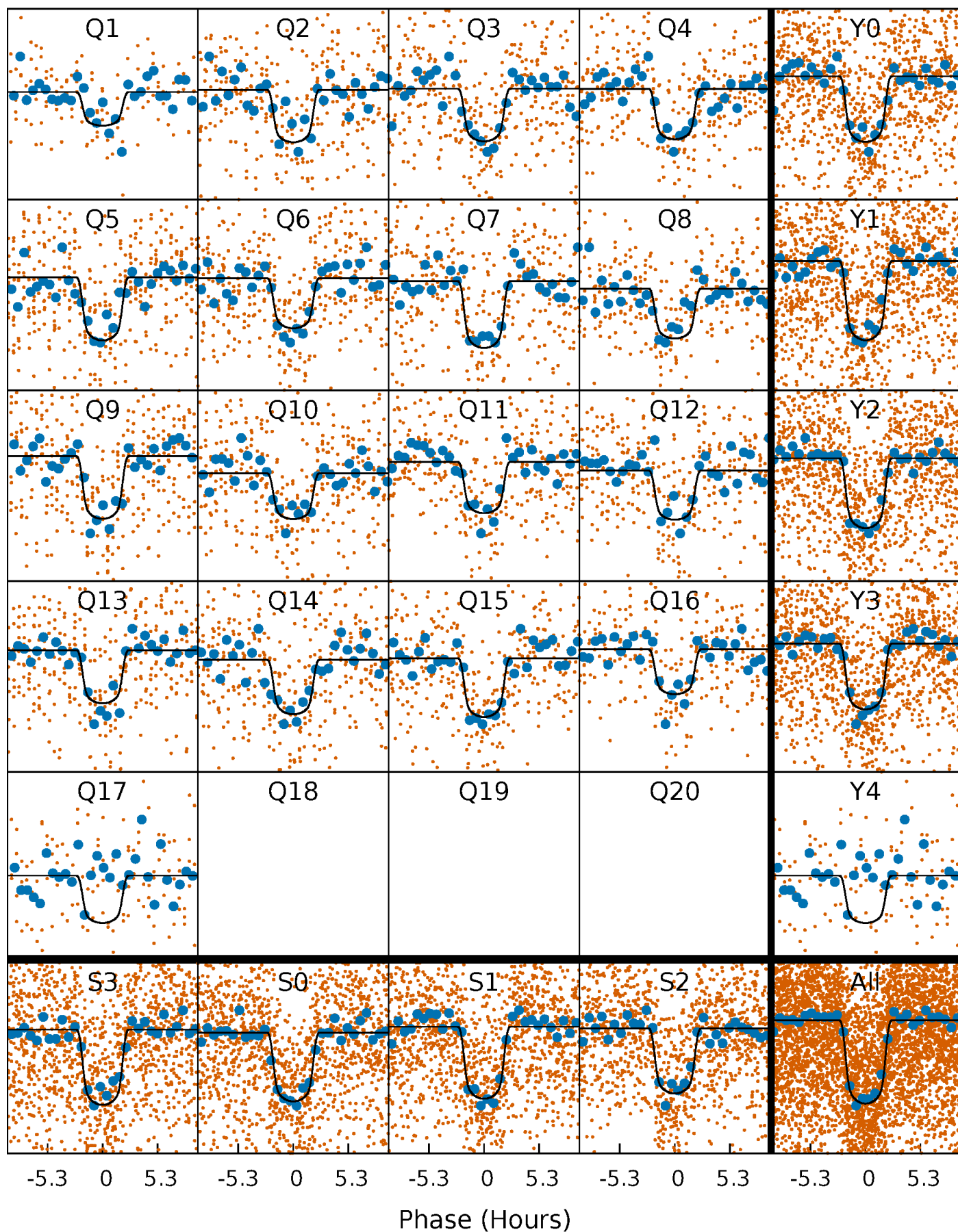
# PDC Quarter-Phased Transit Curves

TCE 005301750-01   P= 8.725861 Days    $T_0=138.766993$  (BKJD)



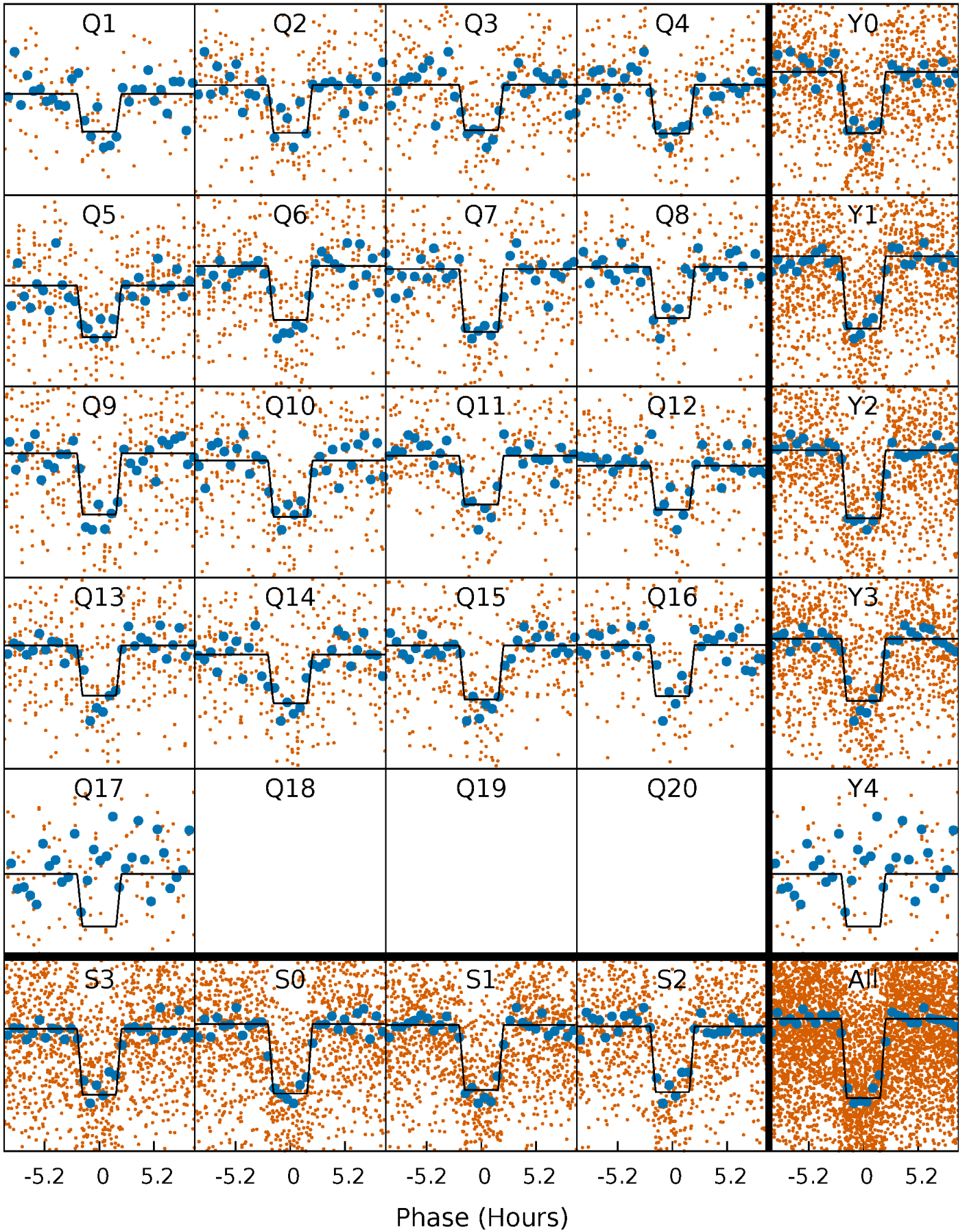
# DV Quarter-Phased Transit Curves

TCE 005301750-01   P= 8.725861 Days    $T_0=138.766993$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

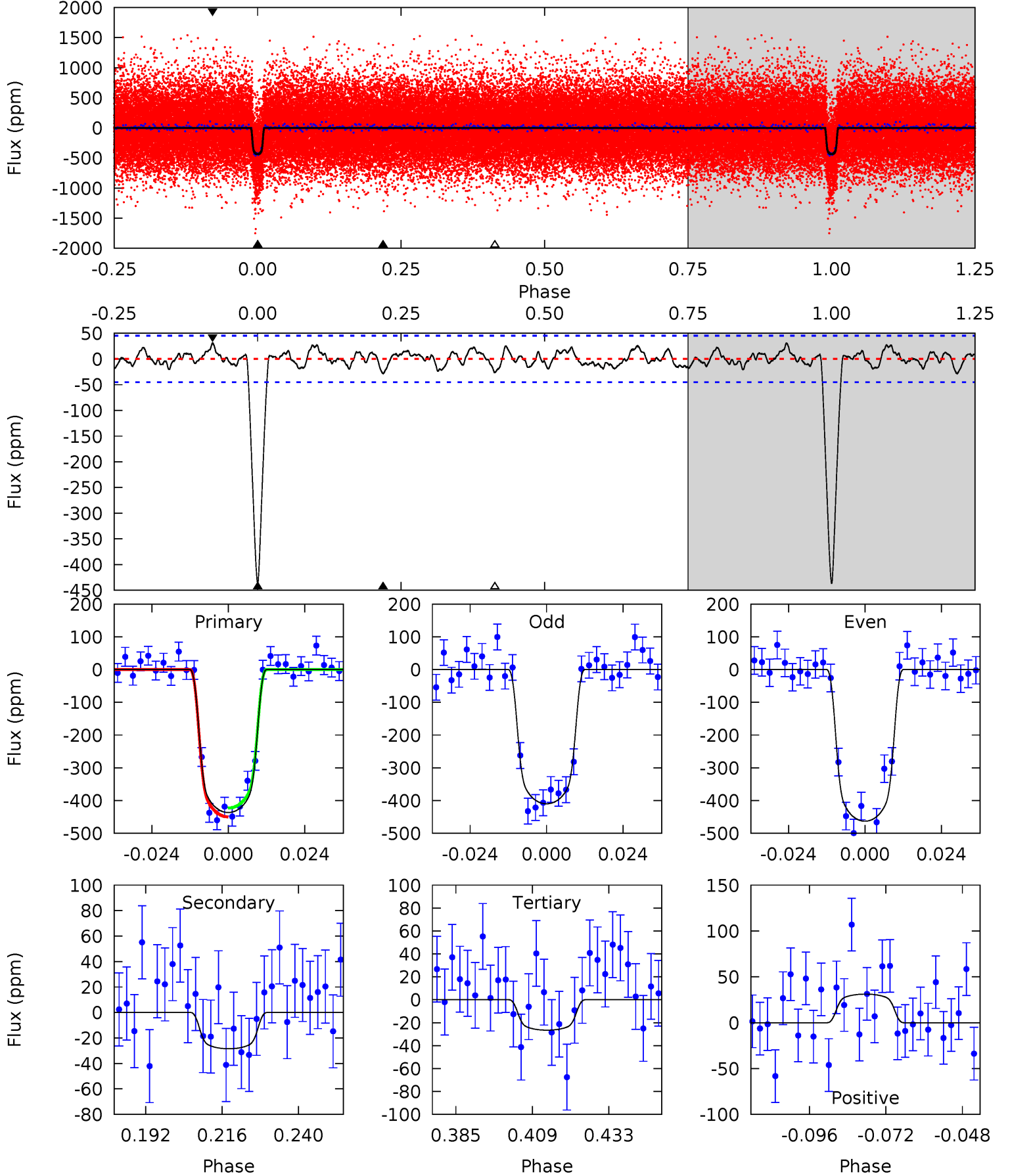
TCE 005301750-01 P= 8.725810 Days  $T_0=138.771117$  (BKJD)



# DV Model-Shift Uniqueness Test

005301750-01, P = 8.725861 Days, E = 130.041132 Days

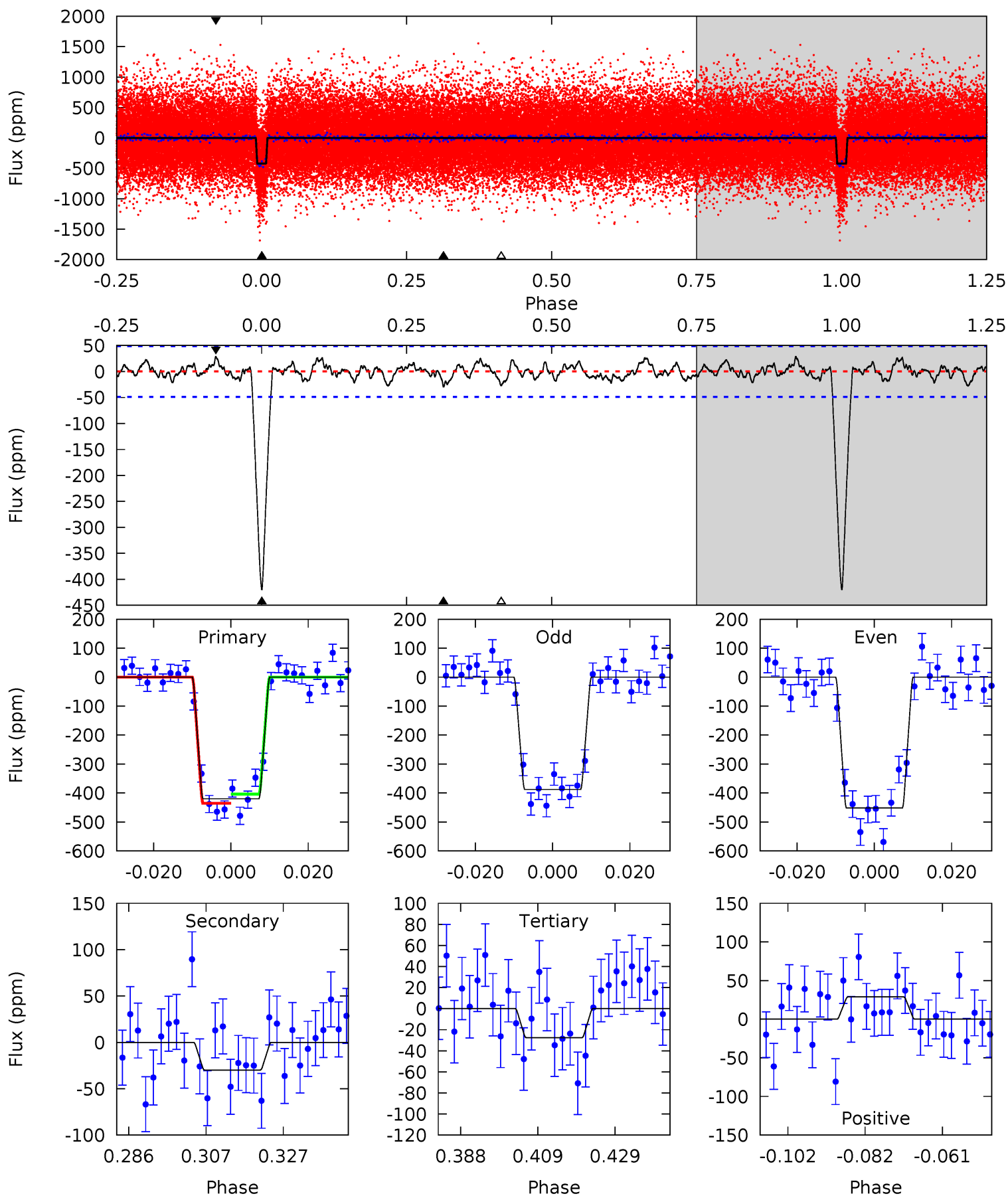
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.8	3.05	2.84	3.34	4.86	2.26	1.25	44.0	43.5	0.21	-0.28	2.86	0.97	0.07	1.45



# Alt Model-Shift Uniqueness Test

005301750-01, P = 8.725810 Days, E = 130.045307 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
41.9	2.99	2.76	2.88	4.89	2.32	1.09	39.2	39.0	0.23	0.10	3.20	0.97	0.06	1.60



### Stellar Parameters For KIC 005301750

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6036^{+120}_{-132}$	$4.326^{+0.120}_{-0.120}$	$-0.180^{+0.150}_{-0.150}$	$1.131^{+0.176}_{-0.158}$	$0.987^{+0.072}_{-0.064}$	$0.962^{+0.502}_{-0.332}$
	+2%/-2%	+3%/-3%	+83%/-83%	+16%/-14%	+7%/-6%	+52%/-35%
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 005301750-01 / KOI 1589.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-28 \pm 9$	$2.91^{+0.30}_{-0.26}$	$1376^{+65}_{-62}$	$3382^{+171}_{-205}$	$13^{+5}_{-5}$
Alt.	$-30 \pm 10$	$2.55^{+0.26}_{-0.24}$	$1378^{+66}_{-64}$	$3550^{+206}_{-219}$	$17^{+7}_{-6}$

$T_{\text{max}}$  = 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

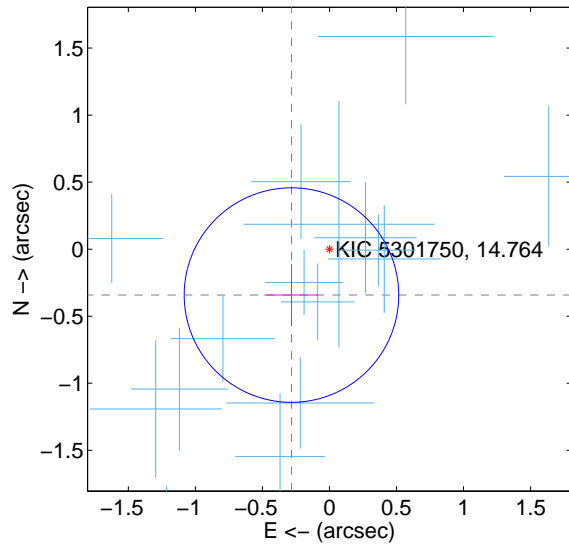
Supplemental centroid analysis for 005301750-01. Kepler magnitude: 14.76. Transit SNR 31.34

There are 16 quarters with good PRF difference image offsets

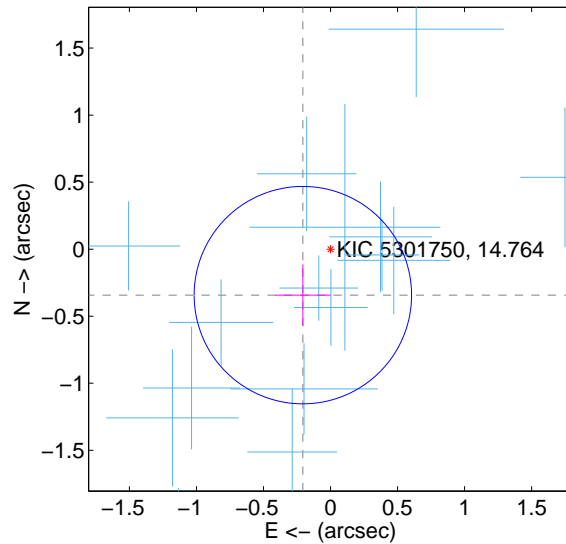
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.445 \pm 0.267$	1.67	$0.283 \pm 0.201$	$-0.342 \pm 0.230$
PRF-fit source offset from KIC position	$0.400 \pm 0.270$	1.48	$0.206 \pm 0.208$	$-0.343 \pm 0.229$
photometric centroid source offset	$0.44 \pm 0.36$	1.23	$0.21 \pm 0.35$	$0.39 \pm 0.36$

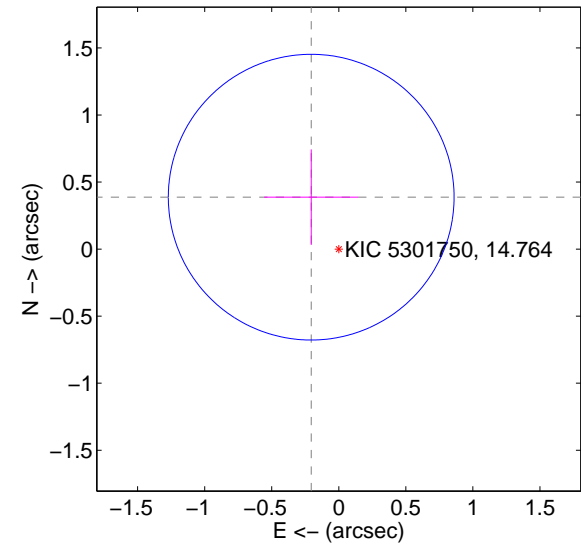
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

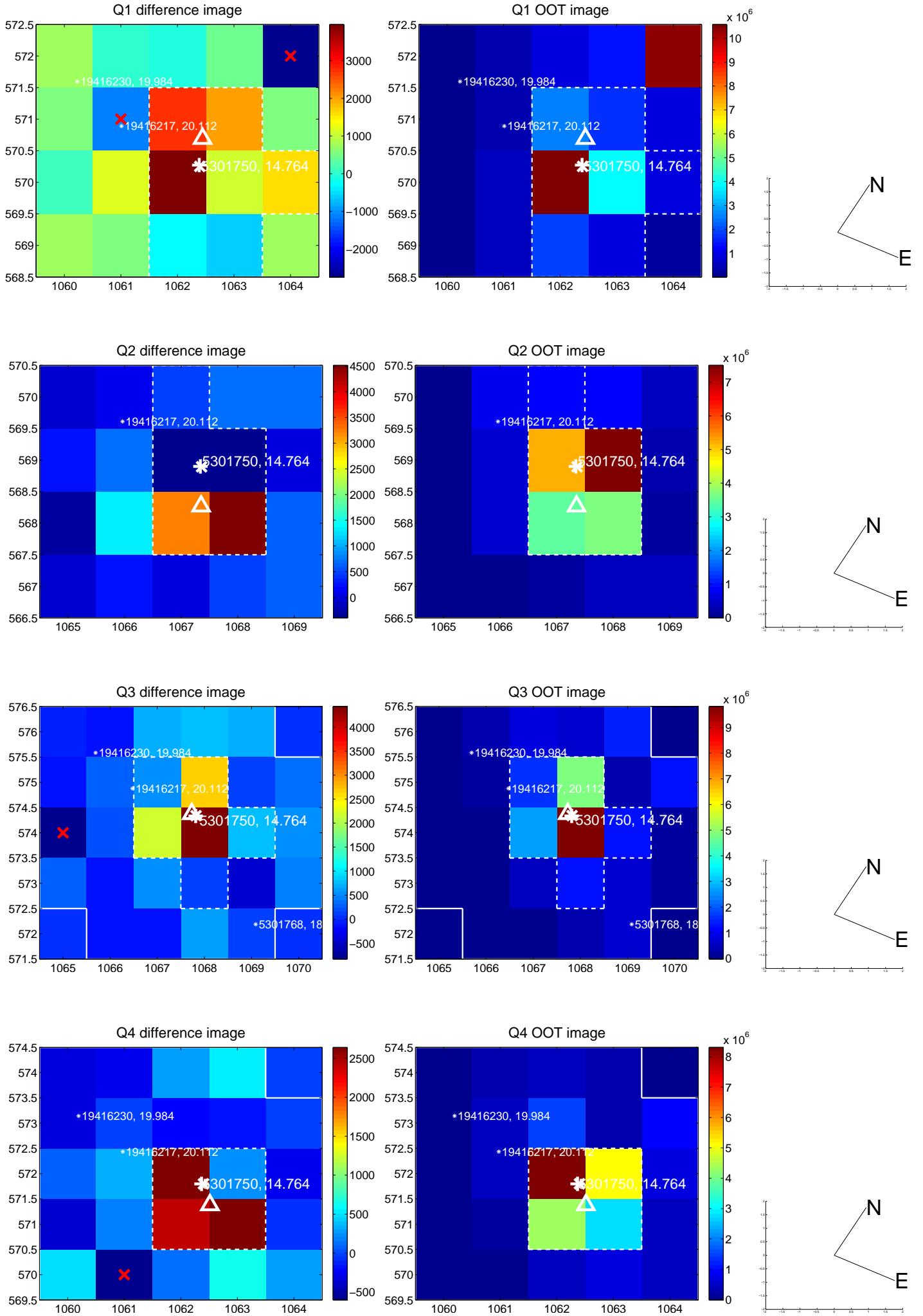


offset from photometric centroids

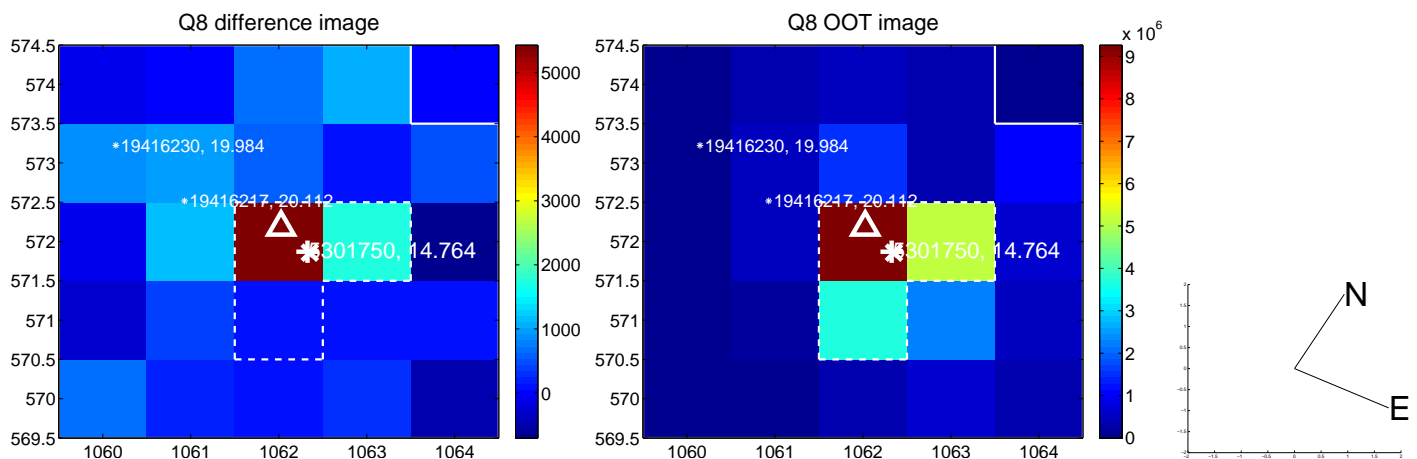
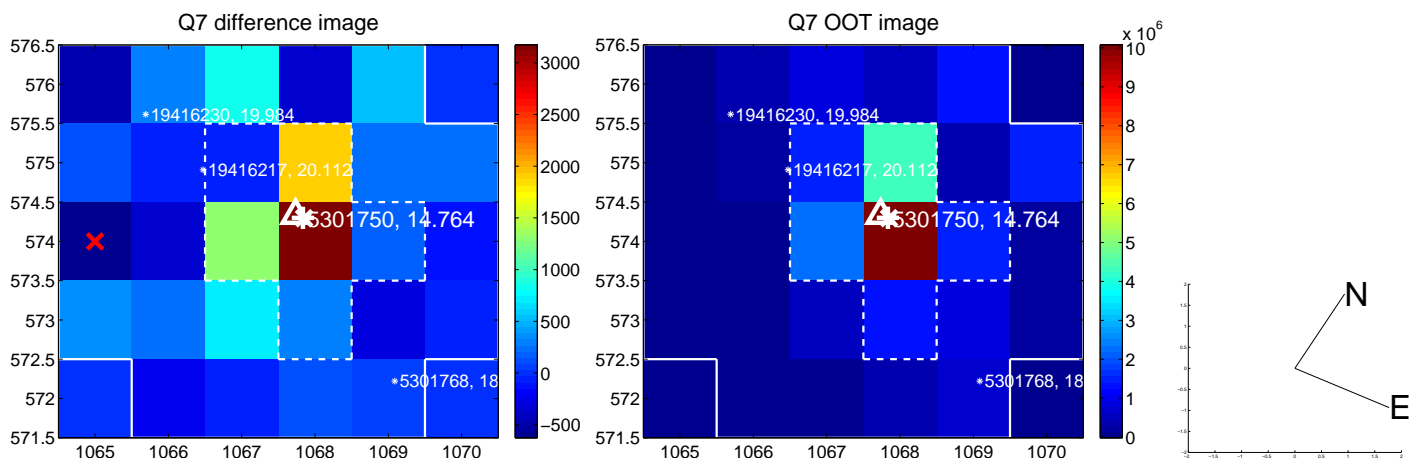
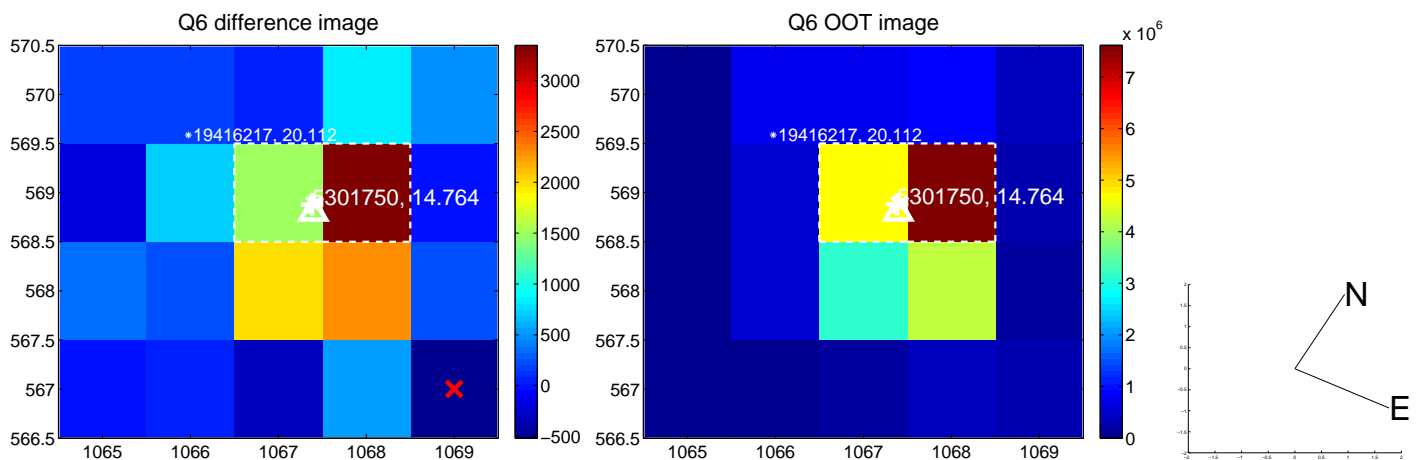
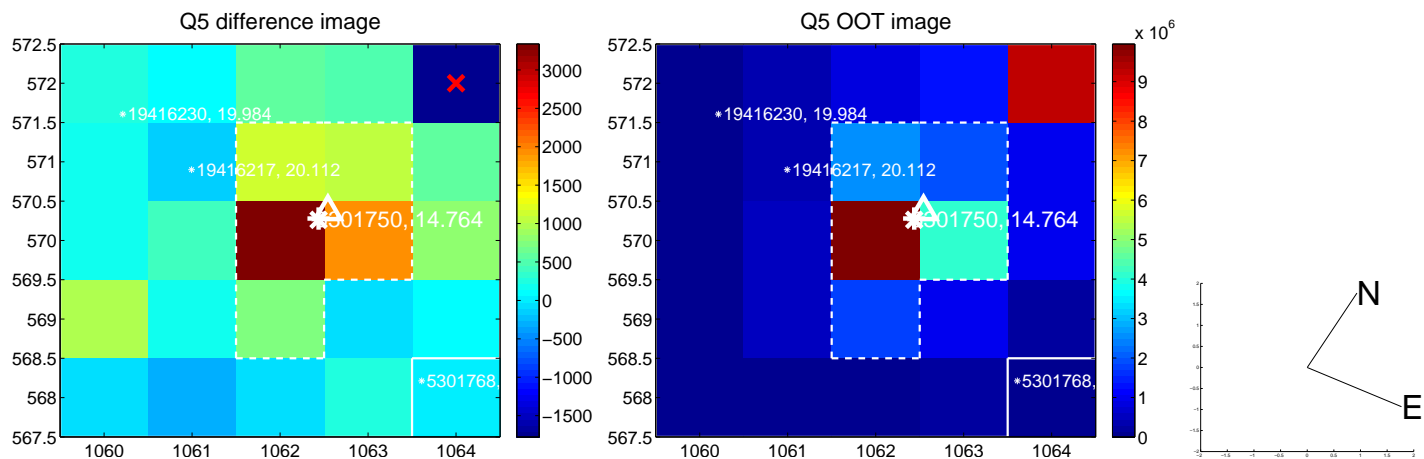


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

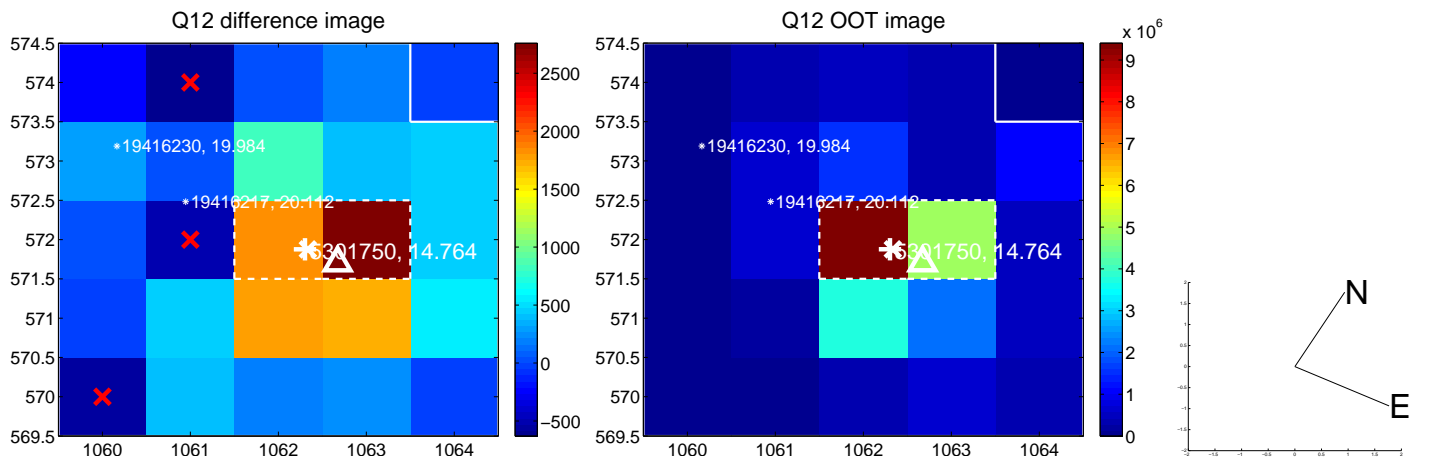
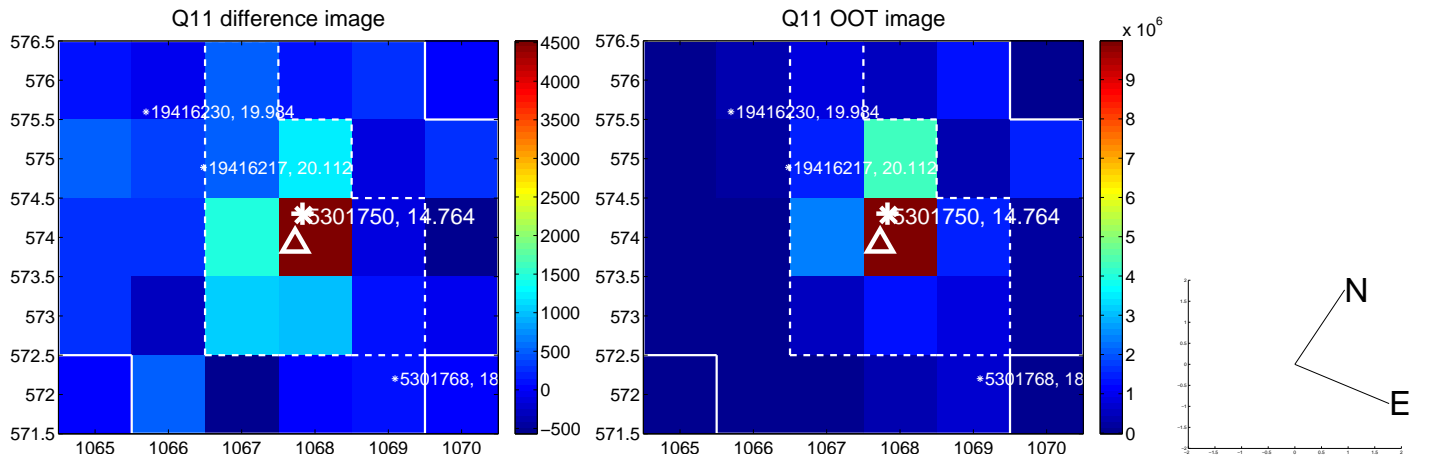
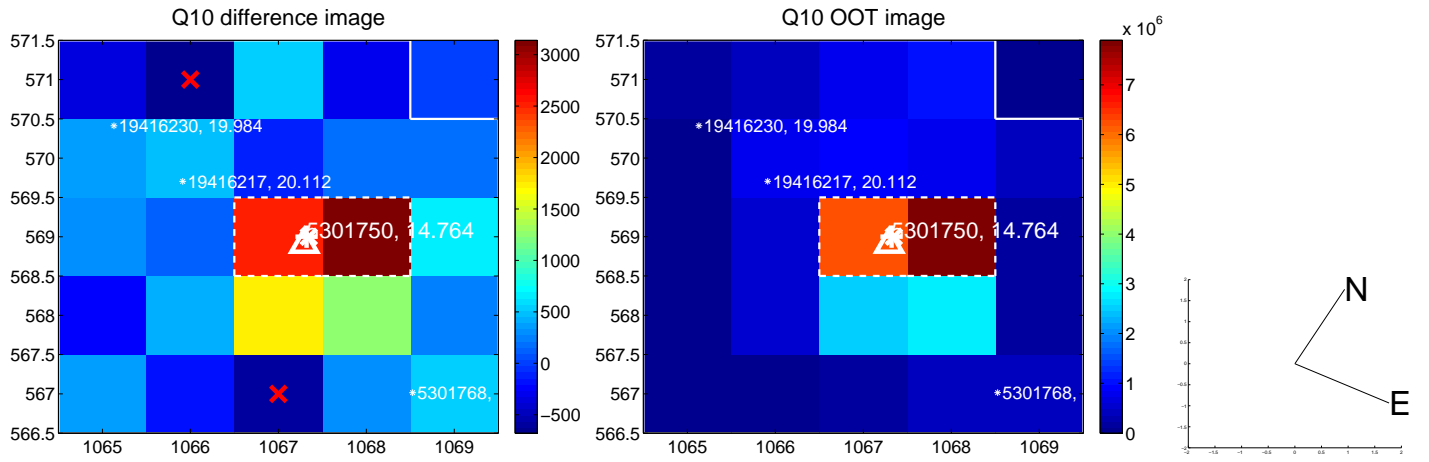
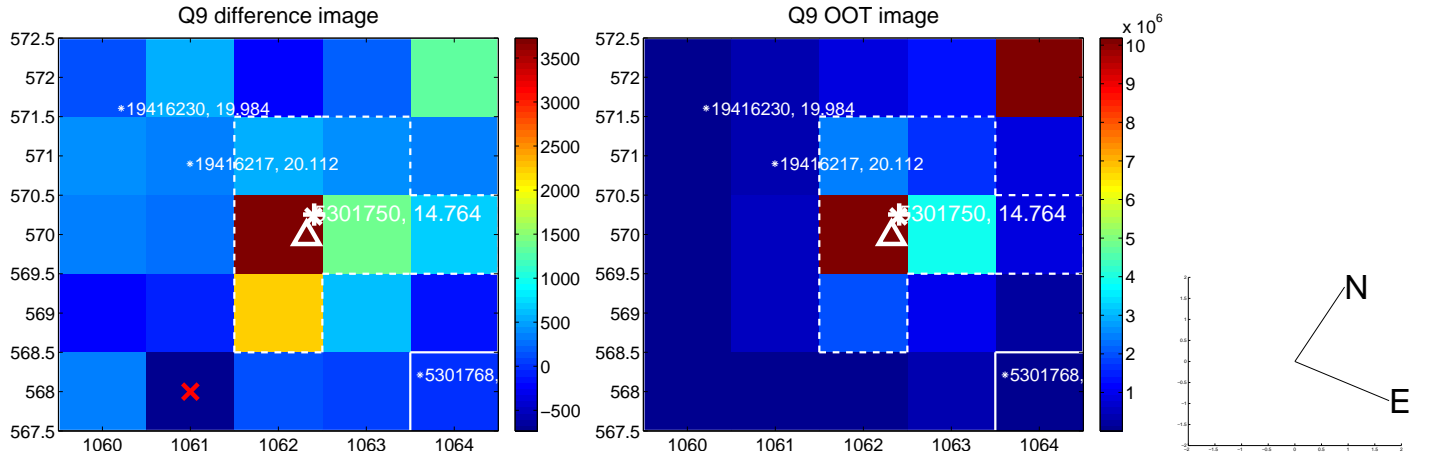
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



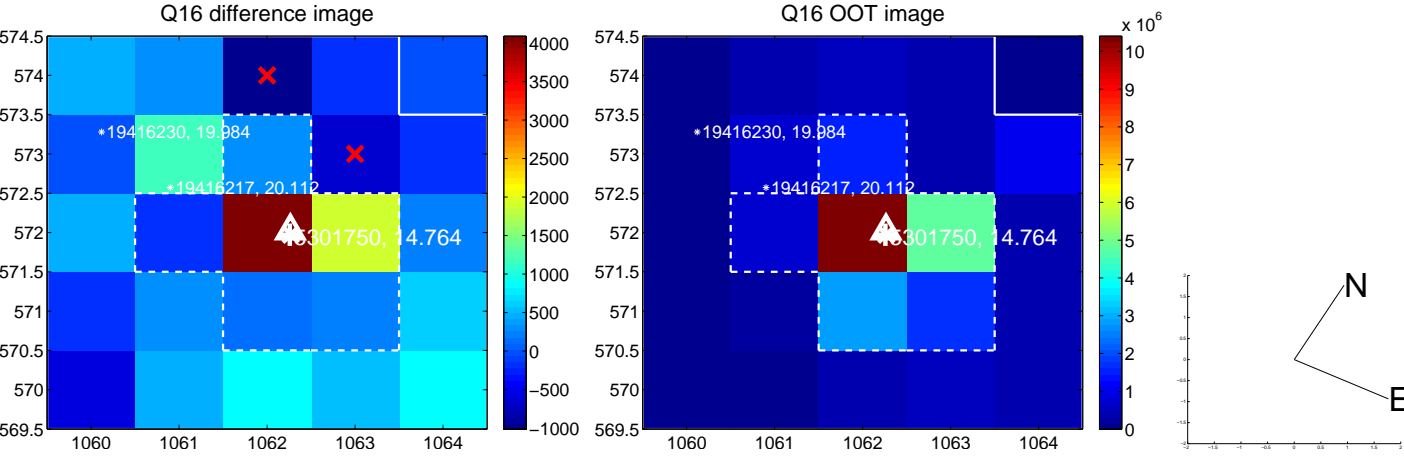
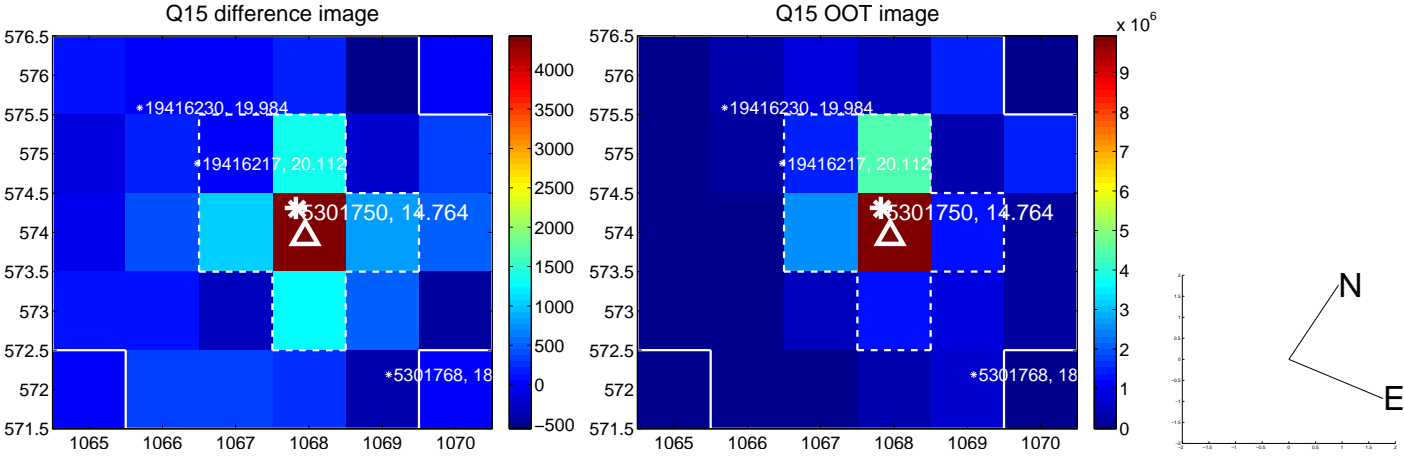
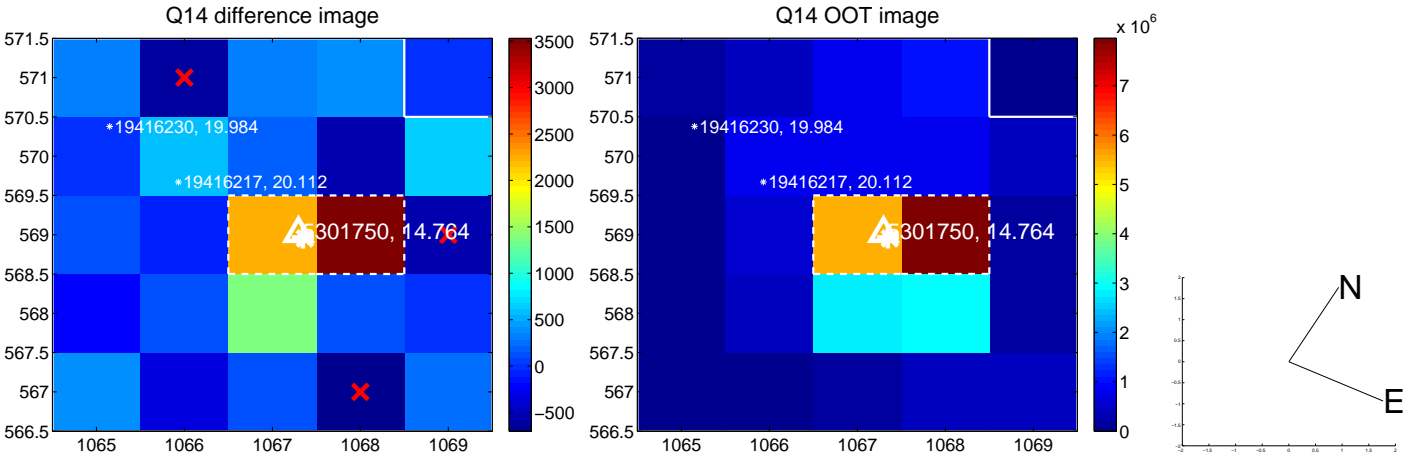
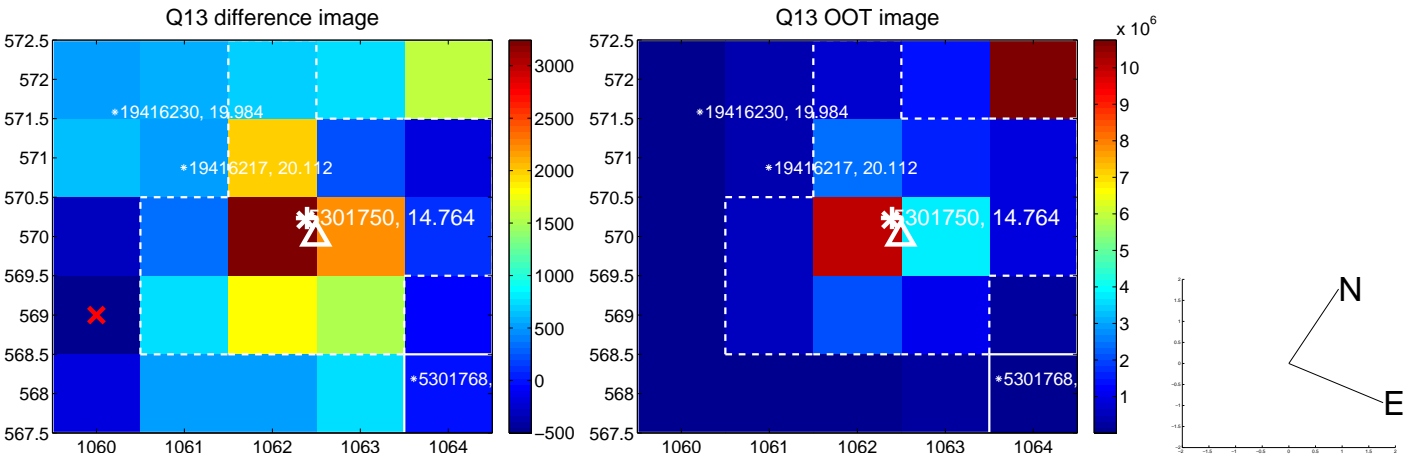
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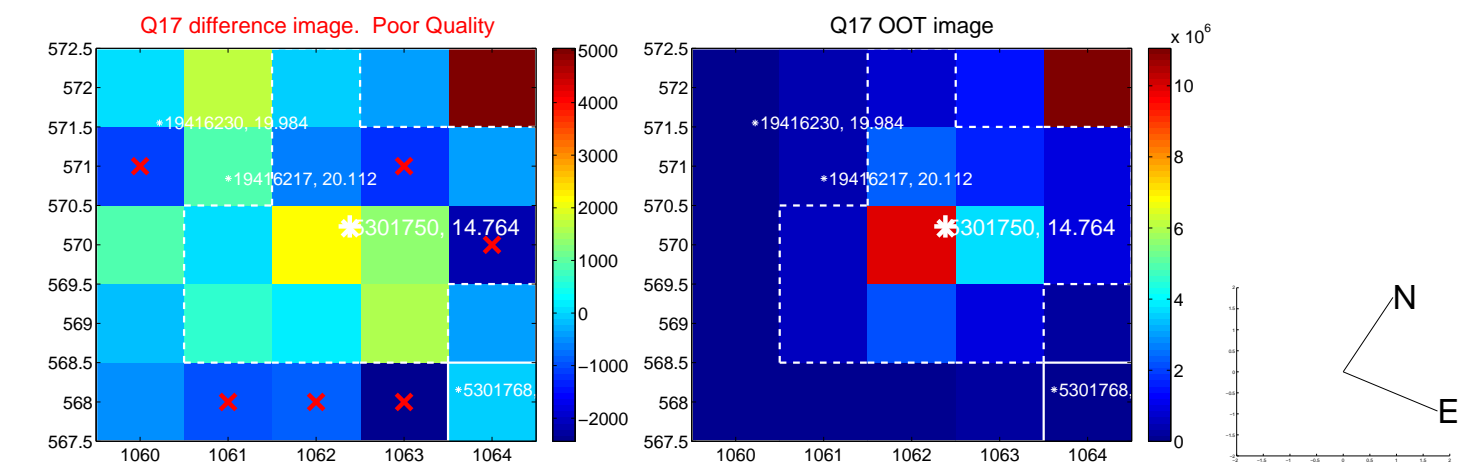
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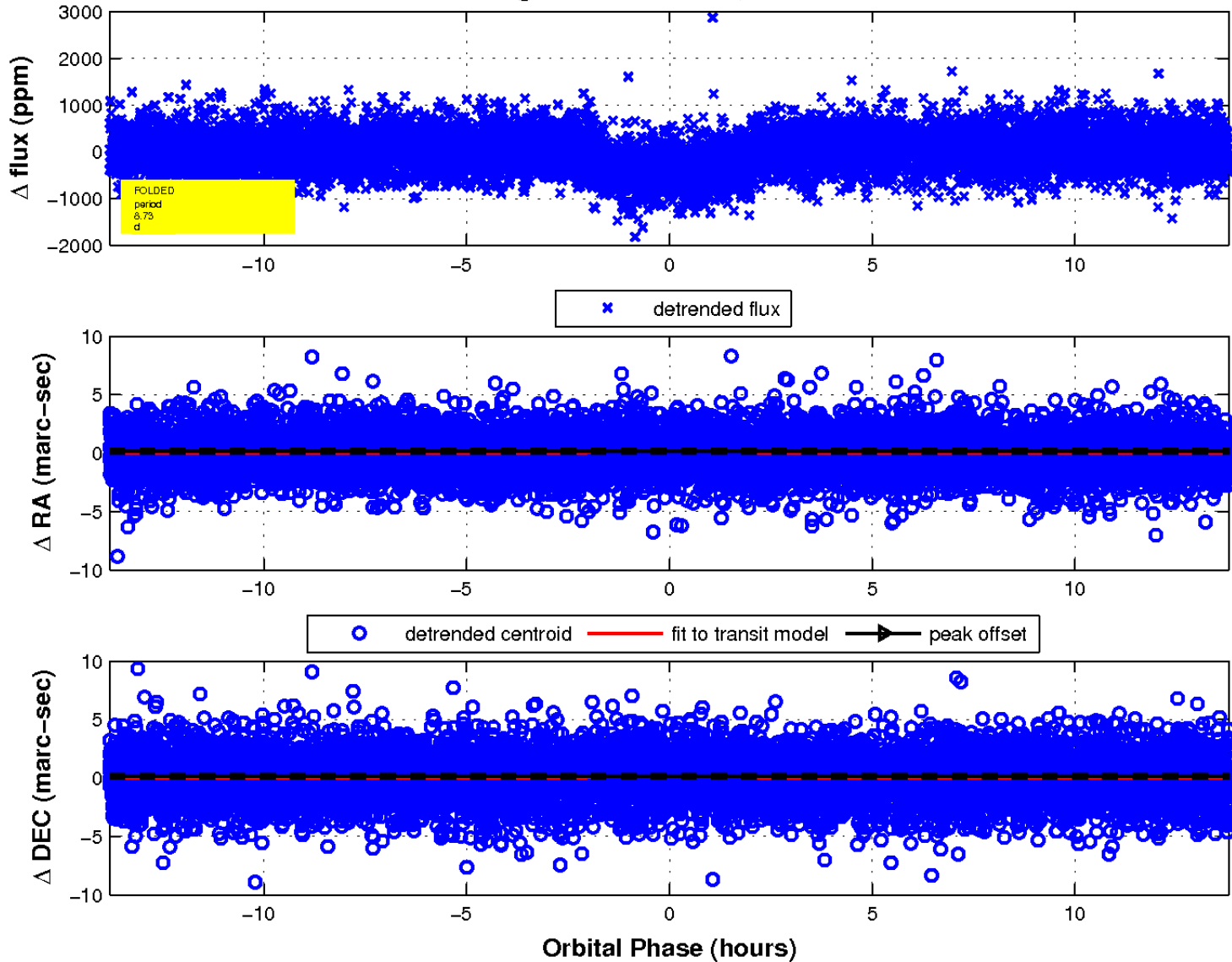
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

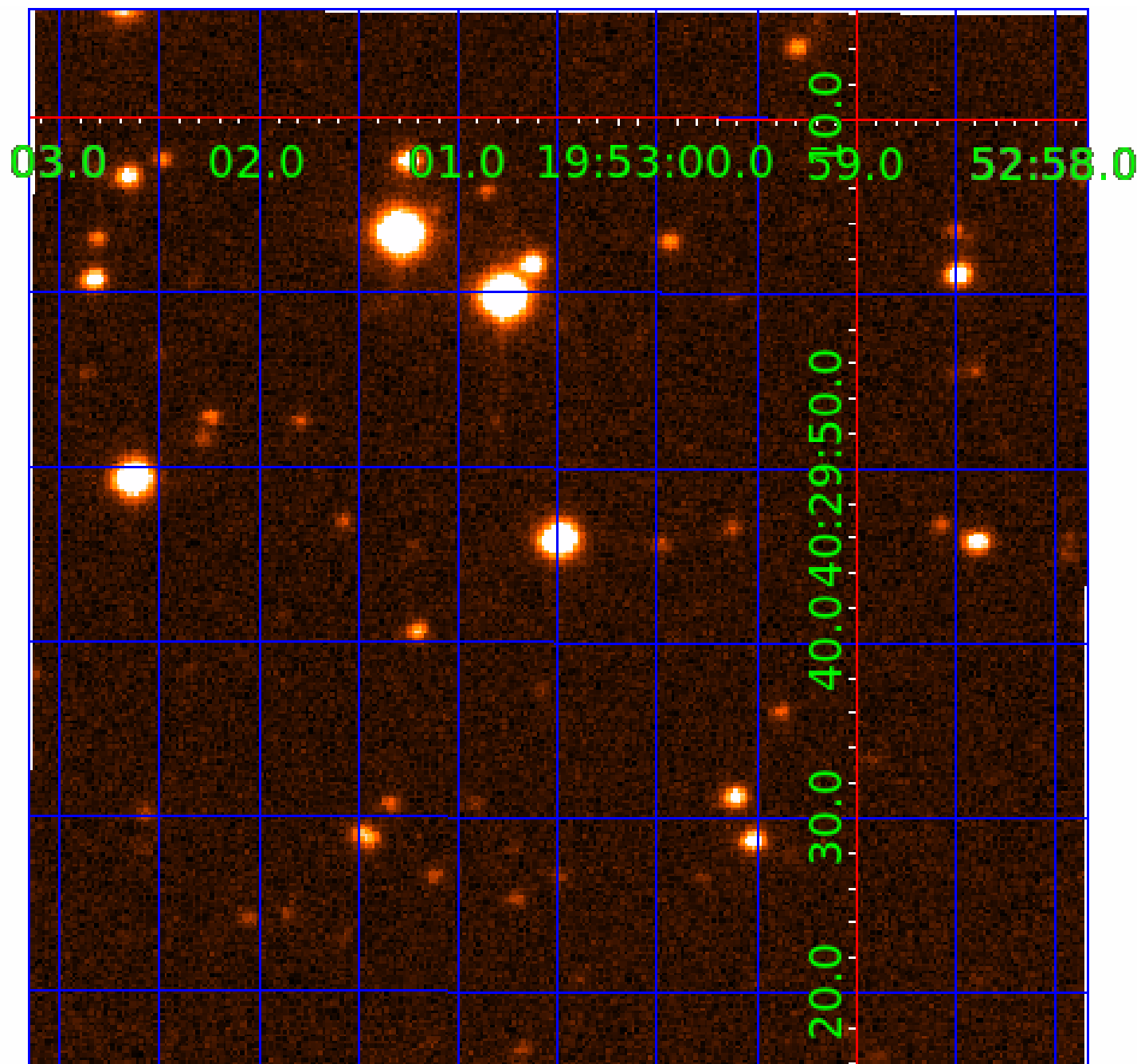


fluxWeightedCentroids, Planet 1 of 5



UKIRT Image

Declination



# KIC 005301750

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005301750-01	OBS	1589.01	8.725861	138.766993	445.7	4.600	27.9	31.3	1.13	6036	2.90	222.74
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005301750-04	OBS	1589.04	4.224503	135.432824	153.7	3.168	13.4	13.7	1.13	6036	1.64	585.91
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005301750-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-05	OBS	PC	1.00	0	0	0	0	NO_COMMENT

**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.

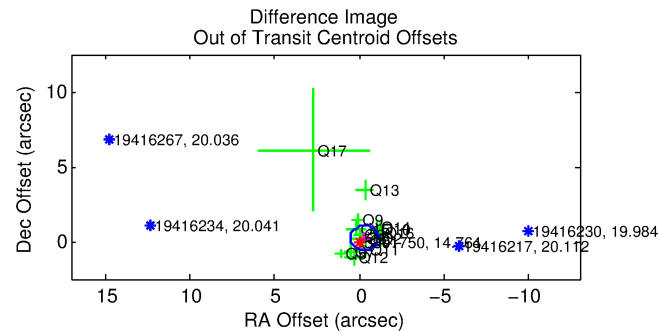
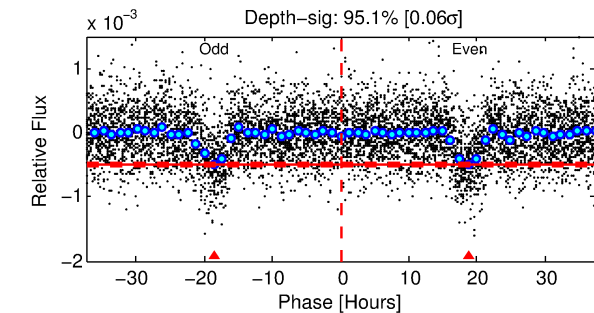
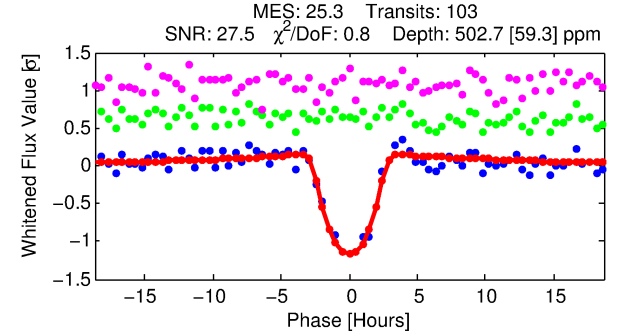
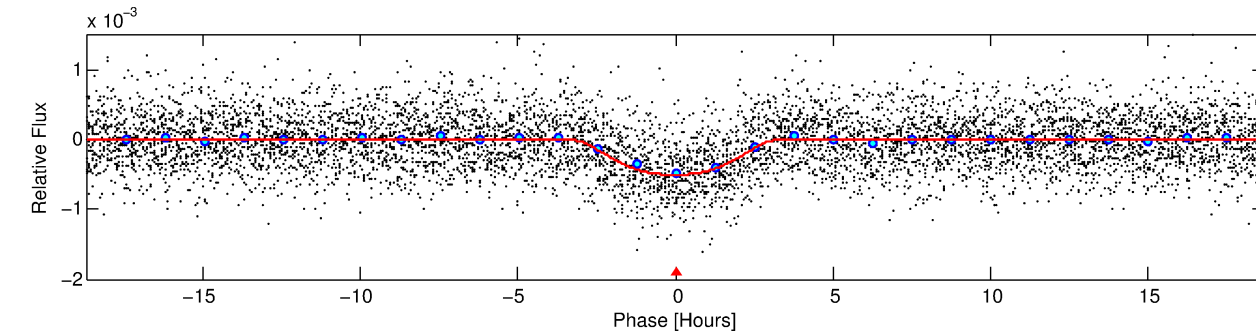
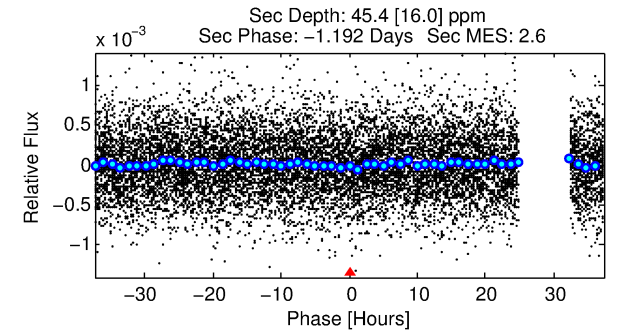
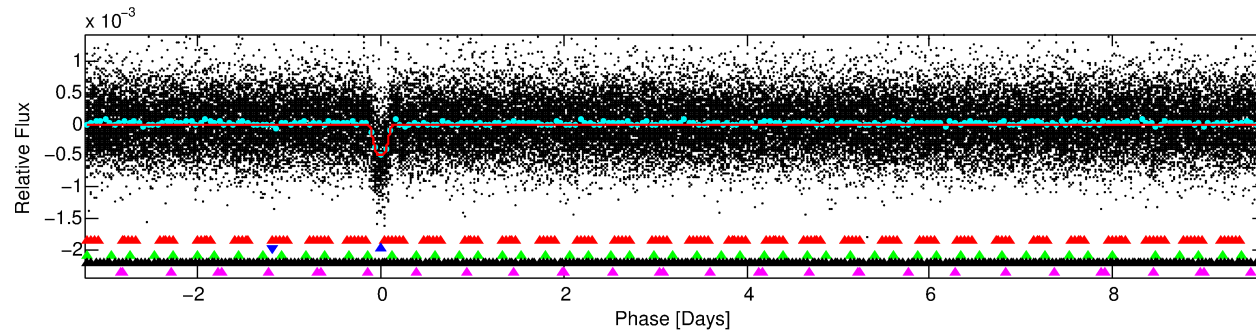
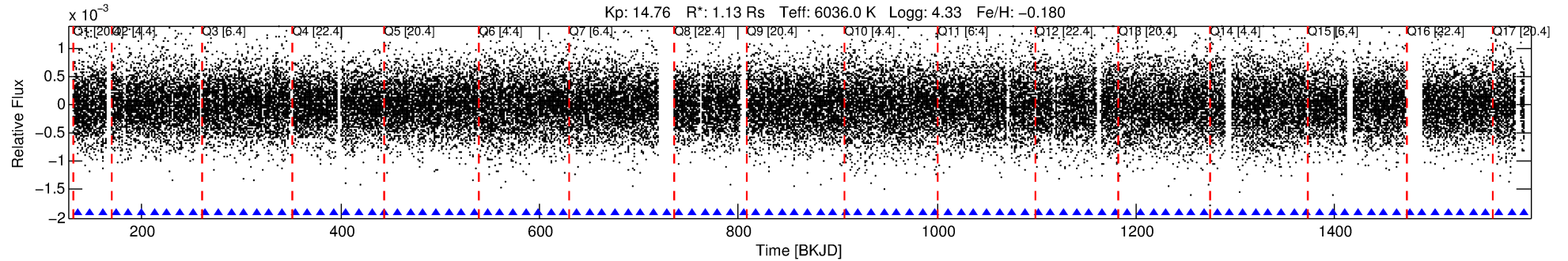
## Ephemeris Match Information For 005301750-02

No Significant Match Found

# DV One-Page Summary

KIC: 5301750 Candidate: 2 of 5 Period: 12.883 d  
KOI: K01589.02 Name: Kepler-84c Corr: 0.954

Kp: 14.76 R\*: 1.13 Rs Teff: 6036.0 K Logg: 4.33 Fe/H: -0.180



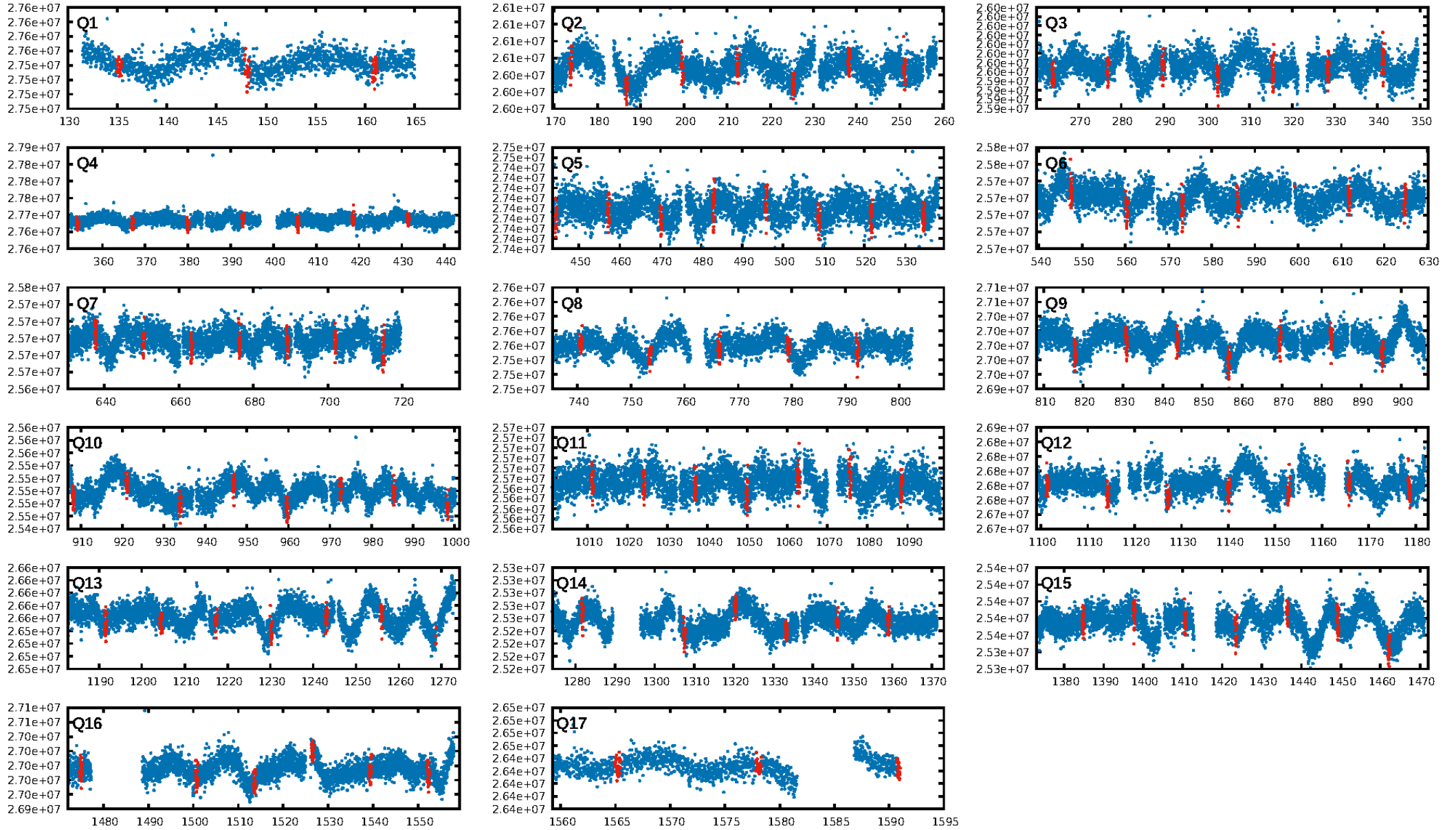
## DV Fit Results:

Period = 12.88287 [0.00008] d  
Epoch = 135.1894 [0.0046] BKJD  
Rp/R\* = 0.0279 [0.0034]  
a/R\* = 5.21 [0.52]  
b = 0.98 [0.01]  
Seff = 132.49 [30.31]  
Teff = 865 [49] K  
Rp = 3.44 [0.68] Re  
a = 0.1072 [0.0149] AU  
Ag = 24.23 [11.60] [2.00σ]  
Teffp = 2968 [325] K [6.39σ]

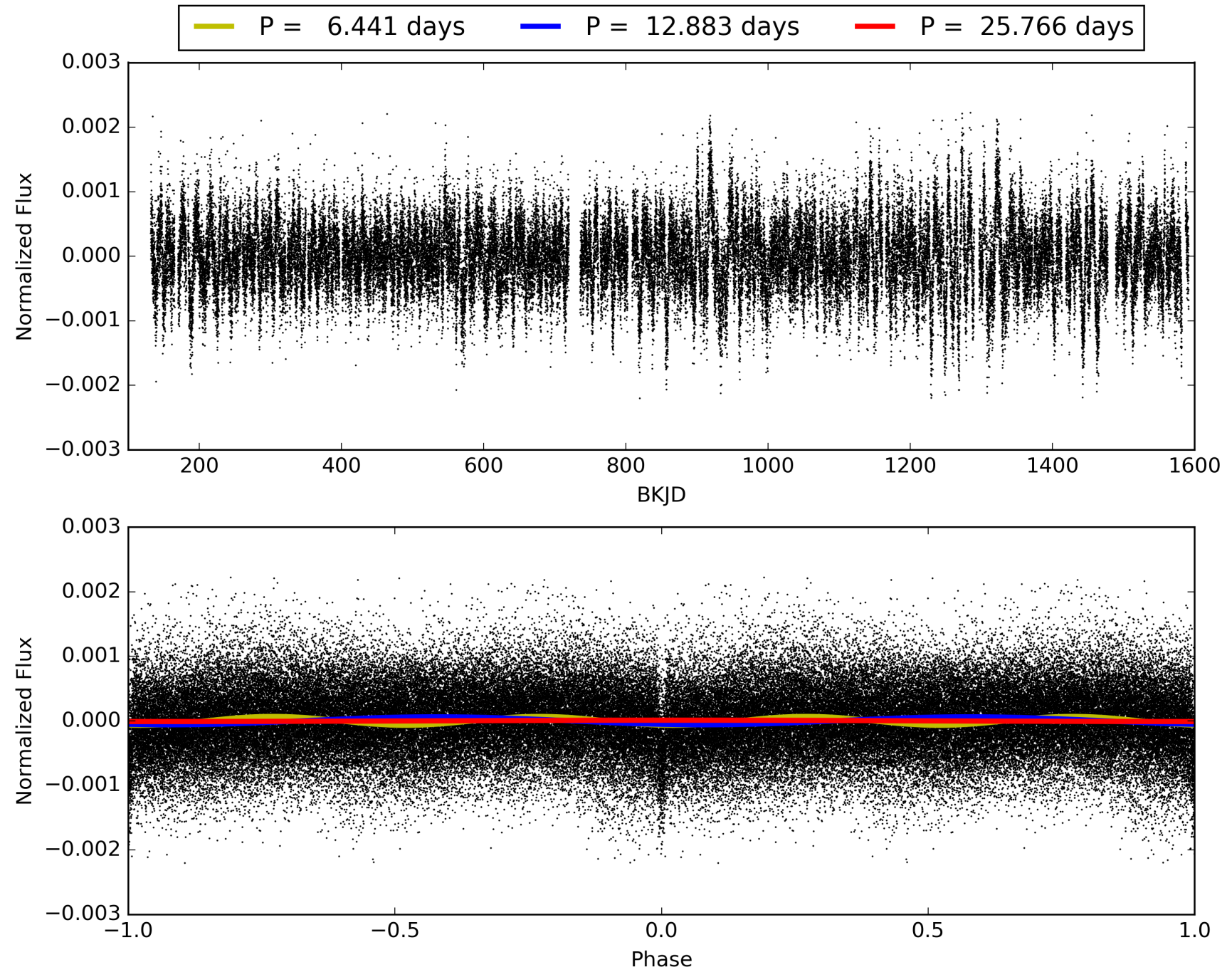
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.89σ]  
LongPeriod-sig: 100.0% [42.93σ]  
ModelChiSquare2-sig: 99.7%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.79e-123  
RollingBand-fgt: 1.00 [97/97]  
GhostDiagnostic-chr: 3.36  
Centroid-sig: 0.0%  
Centroid-so: 0.078 arcsec [0.20σ]  
OotOffset-rm: 0.376 arcsec [1.38σ]  
KicOffset-rm: 0.419 arcsec [1.58σ]  
OotOffset-st: 4/4/3/4 [15]  
KicOffset-st: 4/4/3/4 [15]  
DiffImageQuality-fgm: 0.93 [14/15]  
DiffImageOverlap-fno: 0.88 [15/17]

# TCE 005301750-02, PDC Light Curves

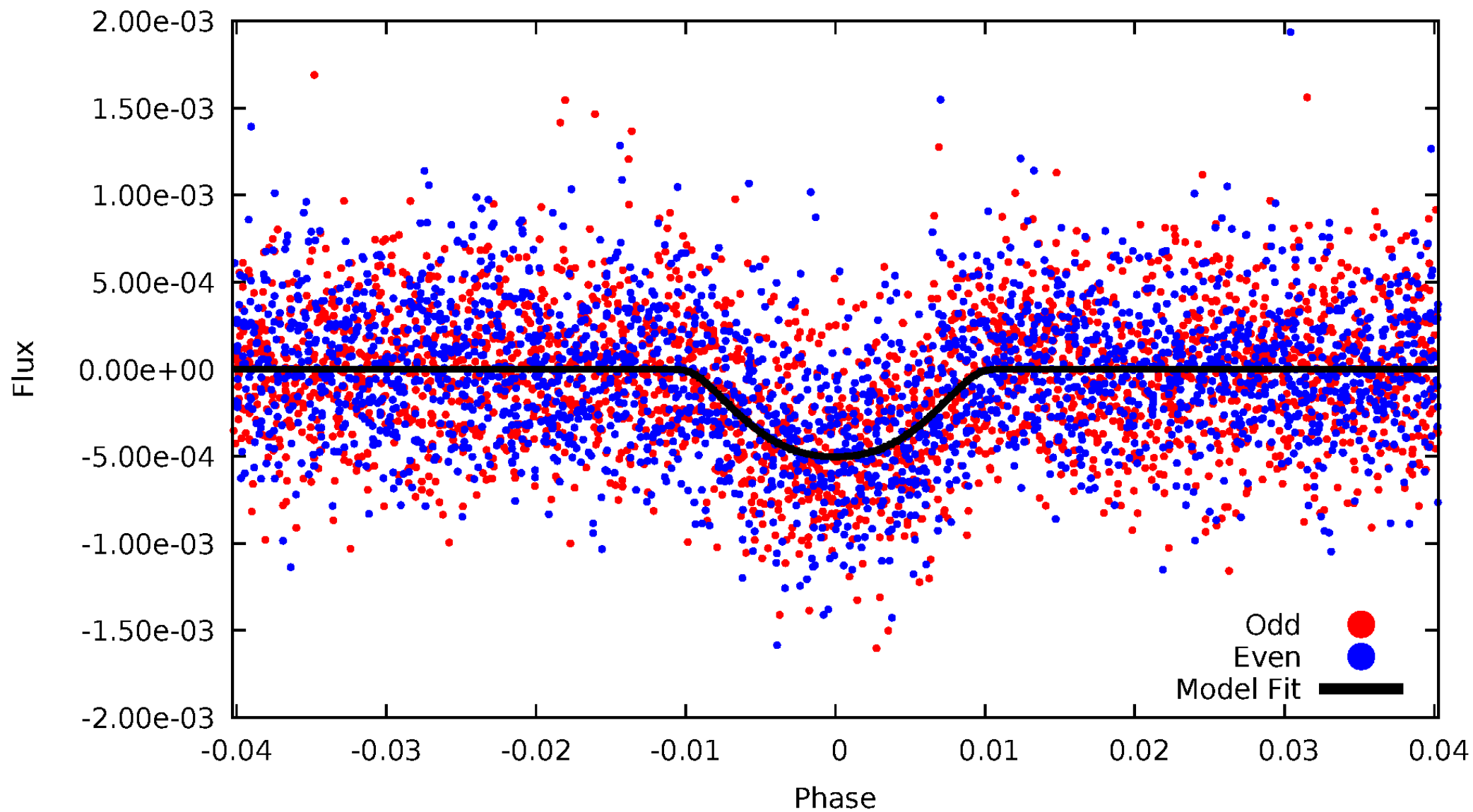


# TCE 005301750-02



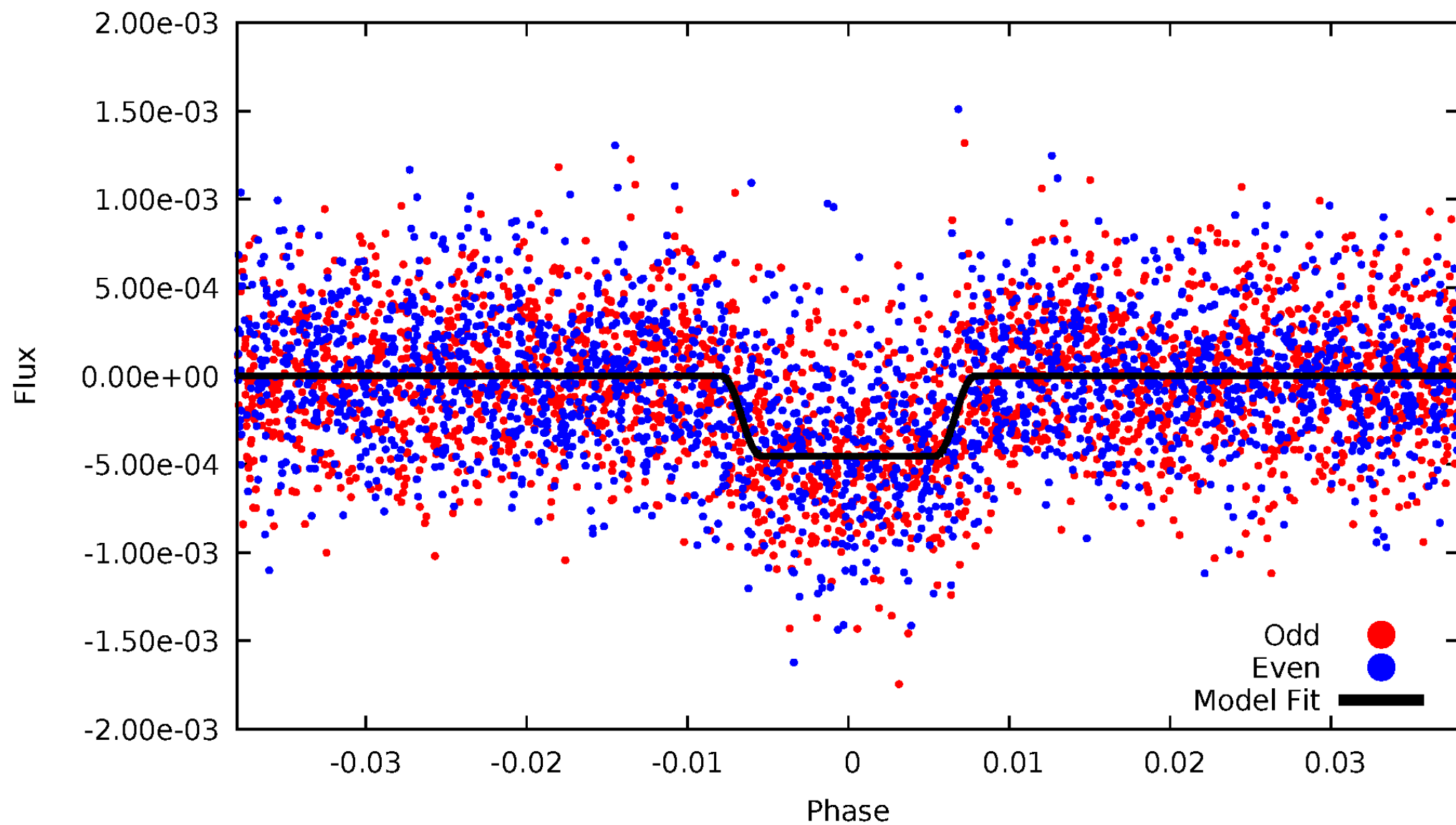
# DV Odd/Even

TCE 005301750-02



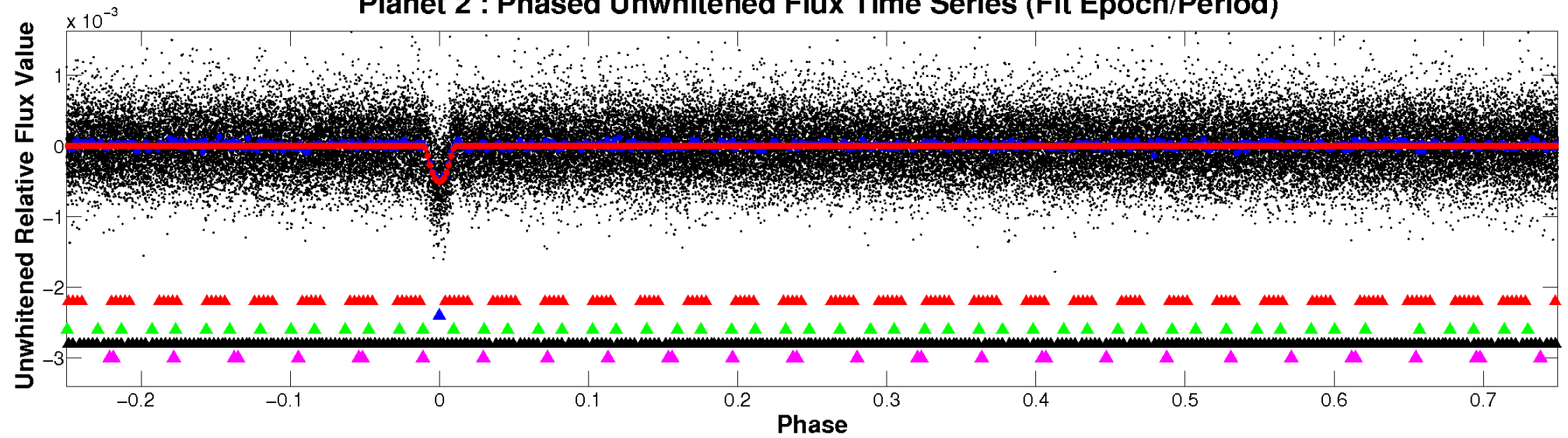
# ALT Odd/Even

TCE 005301750-02

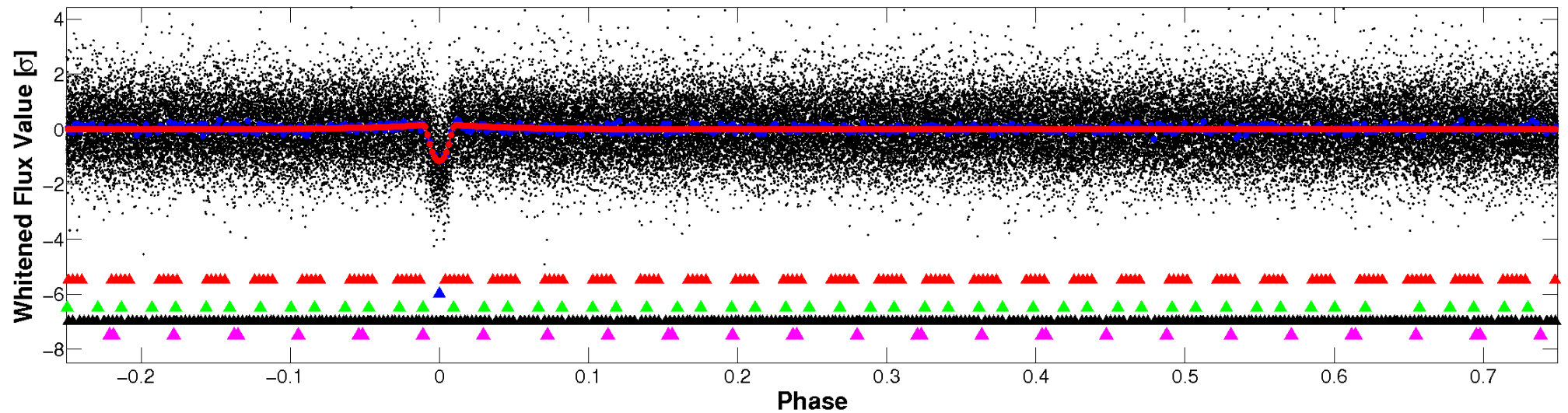


# Non-Whitened Vs. Whitened Light Curve

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

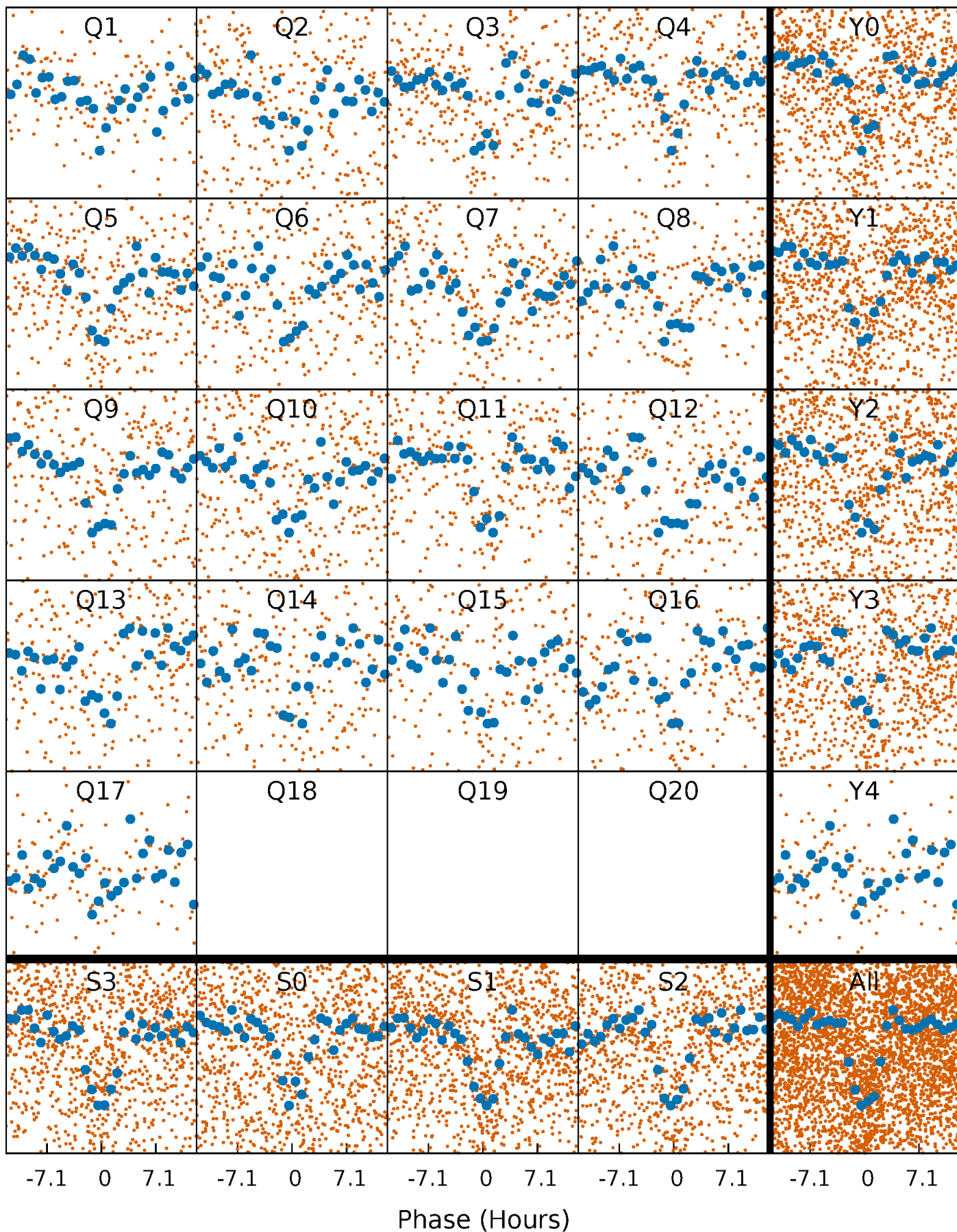


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



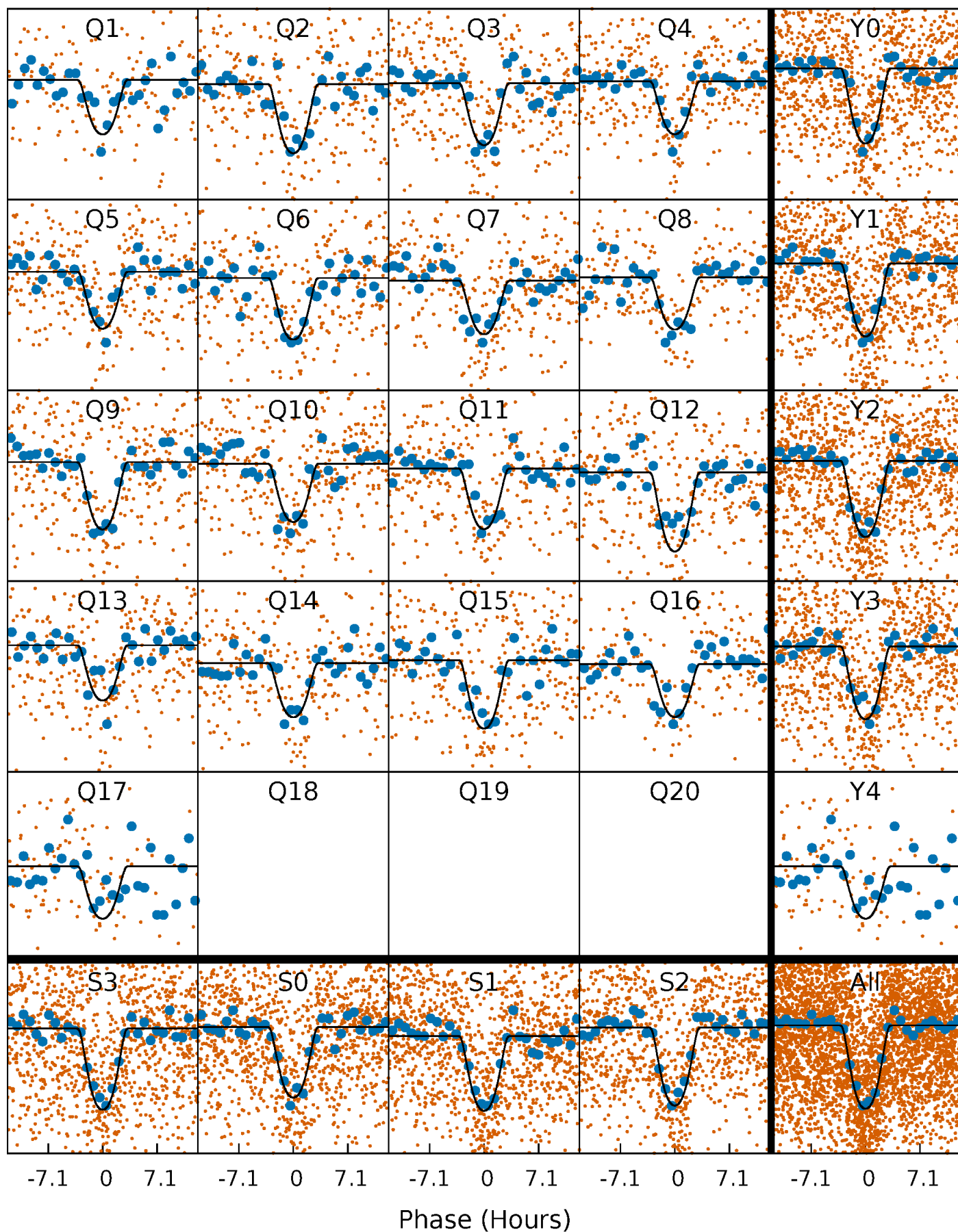
# PDC Quarter-Phased Transit Curves

TCE 005301750-02 P= 12.882874 Days  $T_0=135.189430$  (BKJD)



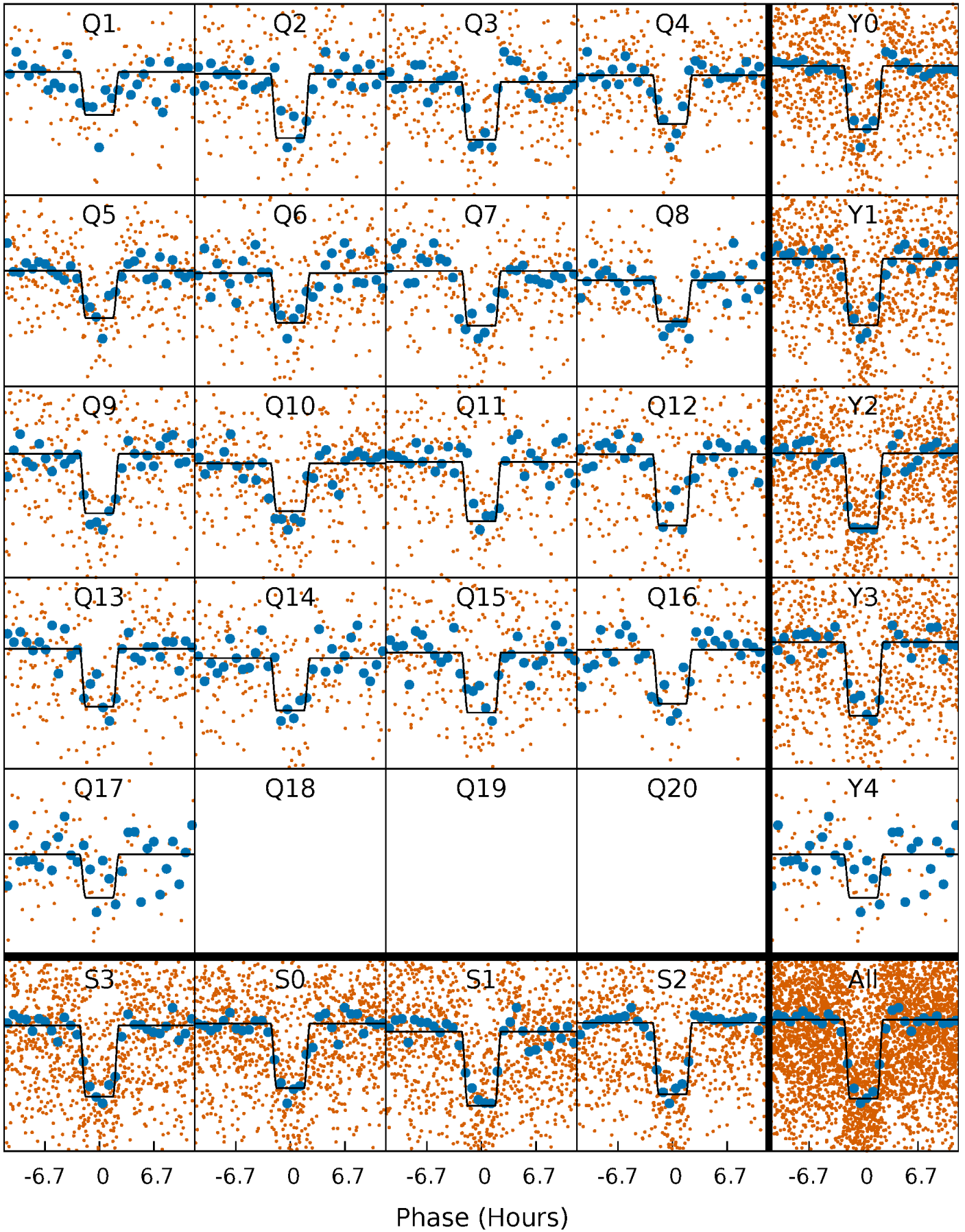
# DV Quarter-Phased Transit Curves

TCE 005301750-02     $P = 12.882874$  Days     $T_0 = 135.189430$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

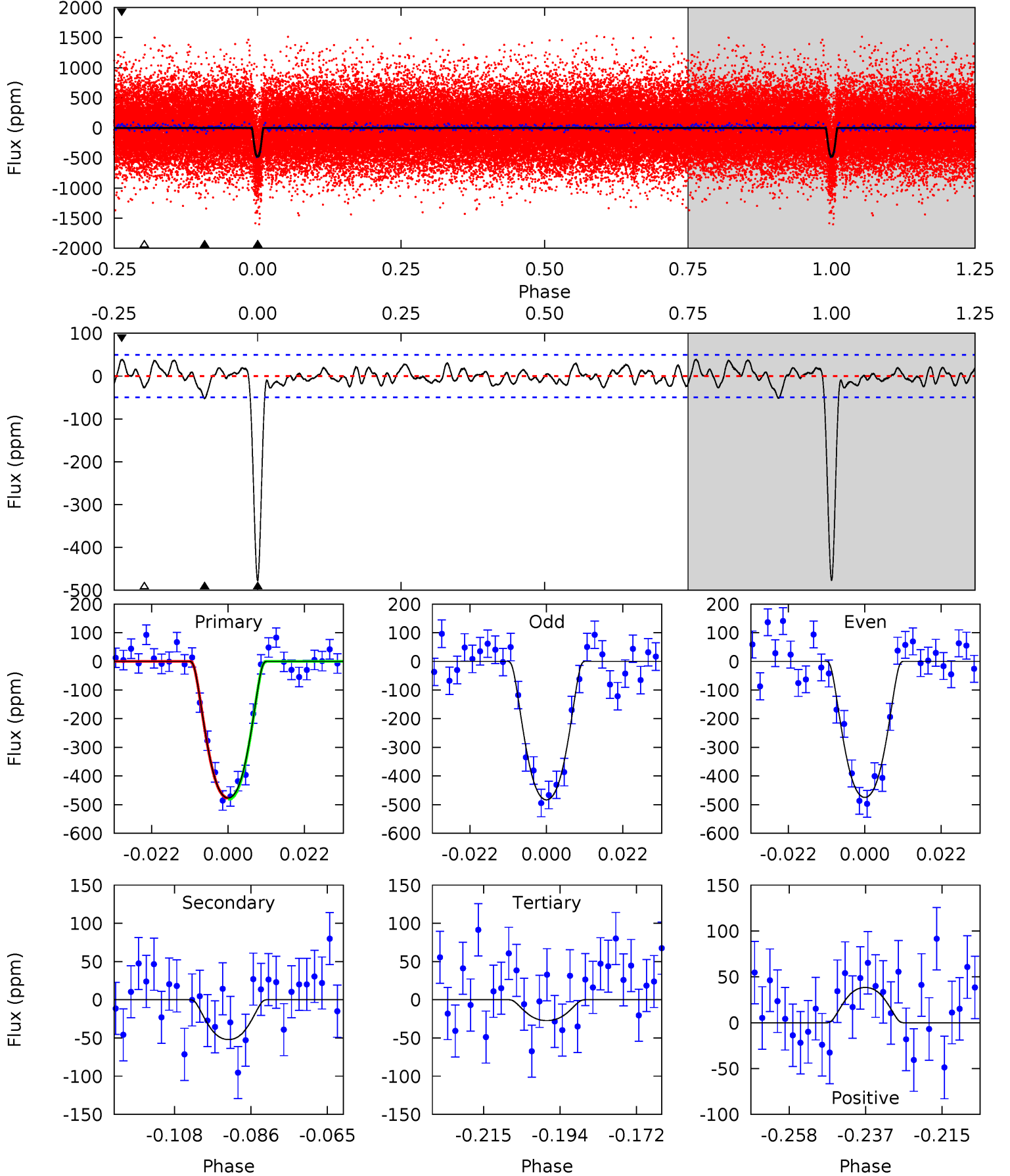
TCE 005301750-02   P= 12.882755 Days    $T_0=135.194519$  (BKJD)



# DV Model-Shift Uniqueness Test

005301750-02, P = 12.882874 Days, E = 122.306556 Days

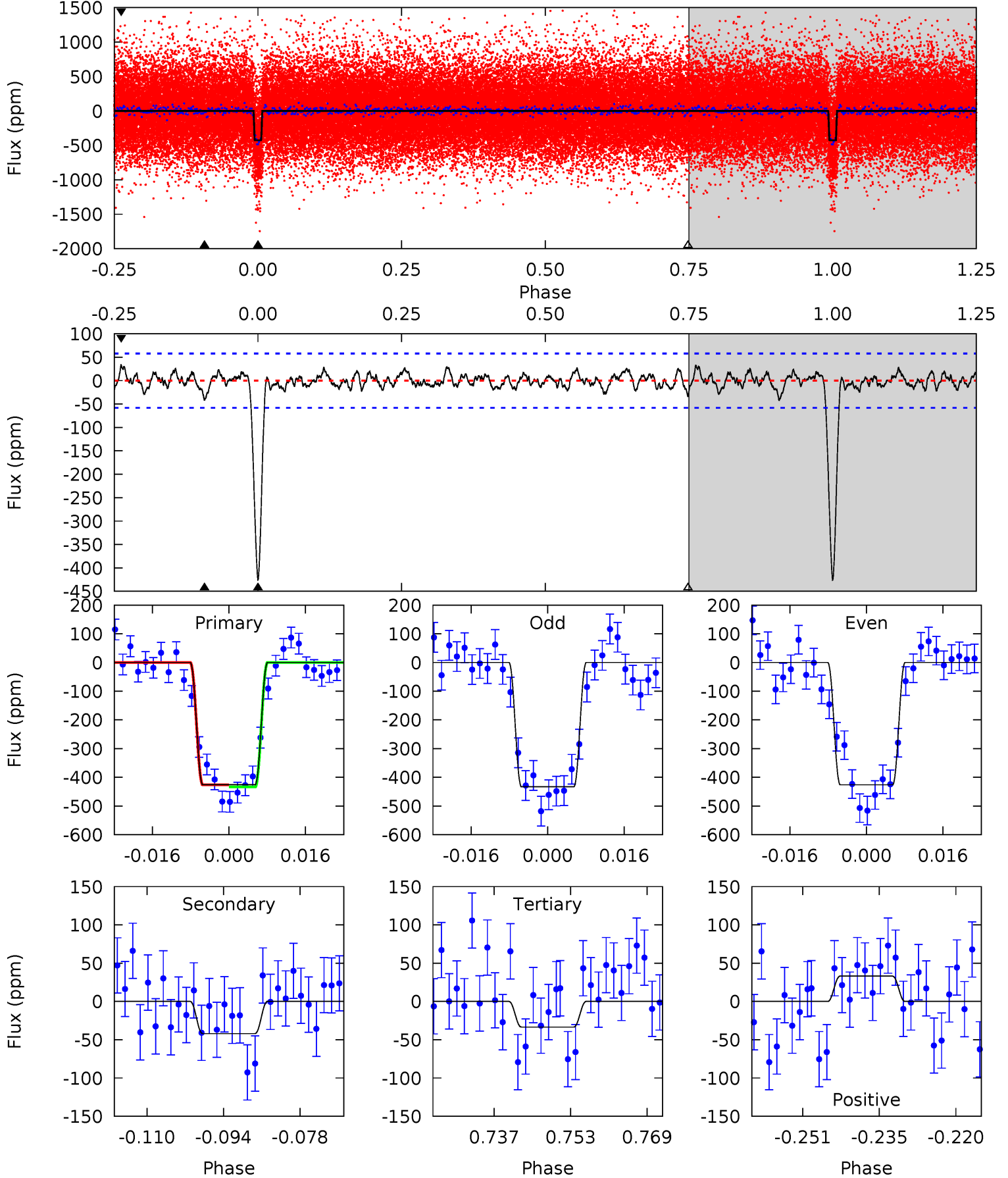
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.7	5.10	2.67	3.76	4.88	2.30	1.37	44.1	43.0	2.43	1.34	0.41	0.99	0.07	0.19



# Alt Model-Shift Uniqueness Test

005301750-02, P = 12.882755 Days, E = 122.311764 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
36.3	3.58	2.85	2.82	4.94	2.42	1.01	33.4	33.5	0.73	0.76	0.29	1.00	0.07	0.33



### Stellar Parameters For KIC 005301750

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6036^{+120}_{-132}$	$4.326^{+0.120}_{-0.120}$	$-0.180^{+0.150}_{-0.150}$	$1.131^{+0.176}_{-0.158}$	$0.987^{+0.072}_{-0.064}$	$0.962^{+0.502}_{-0.332}$
	+2%/-2%	+3%/-3%	+83%/-83%	+16%/-14%	+7%/-6%	+52%/-35%
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 005301750-02 / KOI 1589.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-52 \pm 10$	$3.43^{+0.55}_{-0.44}$	$1206^{+61}_{-52}$	$3524^{+190}_{-177}$	$28^{+11}_{-8}$
Alt.	$-42 \pm 12$	$2.63^{+0.47}_{-0.48}$	$1211^{+55}_{-54}$	$3737^{+298}_{-248}$	$38^{+24}_{-14}$

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

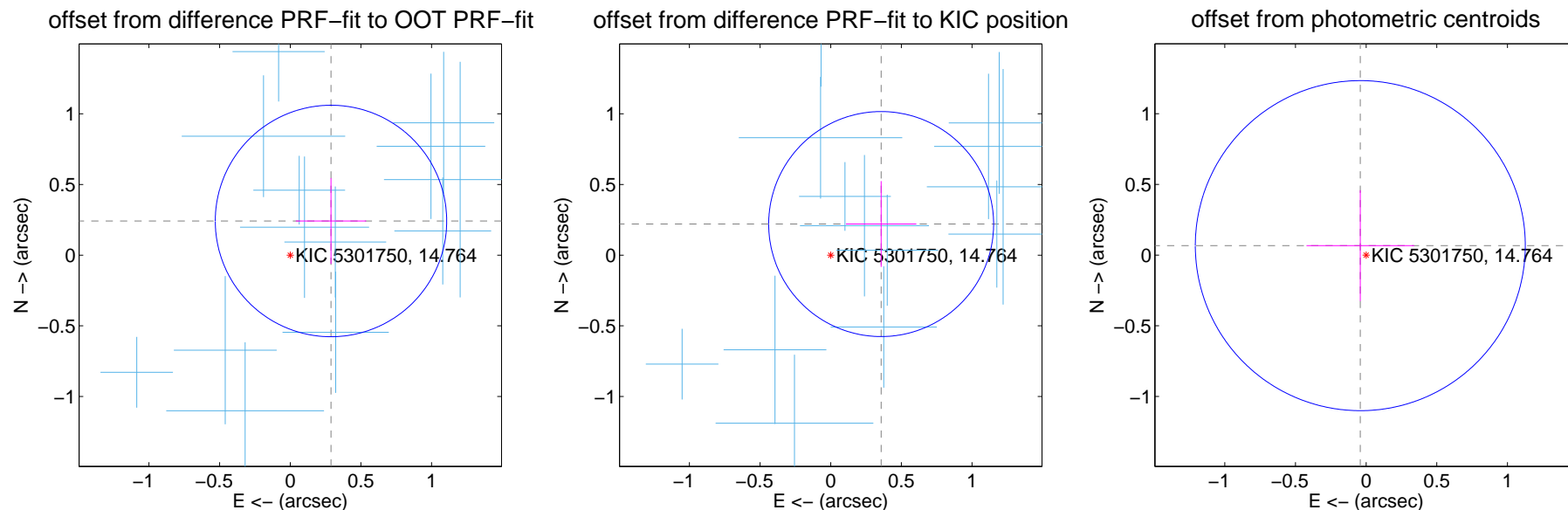
## DV Centroid Data

Supplemental centroid analysis for 005301750-02. Kepler magnitude: 14.76. Transit SNR 27.49

There are 14 quarters with good PRF difference image offsets

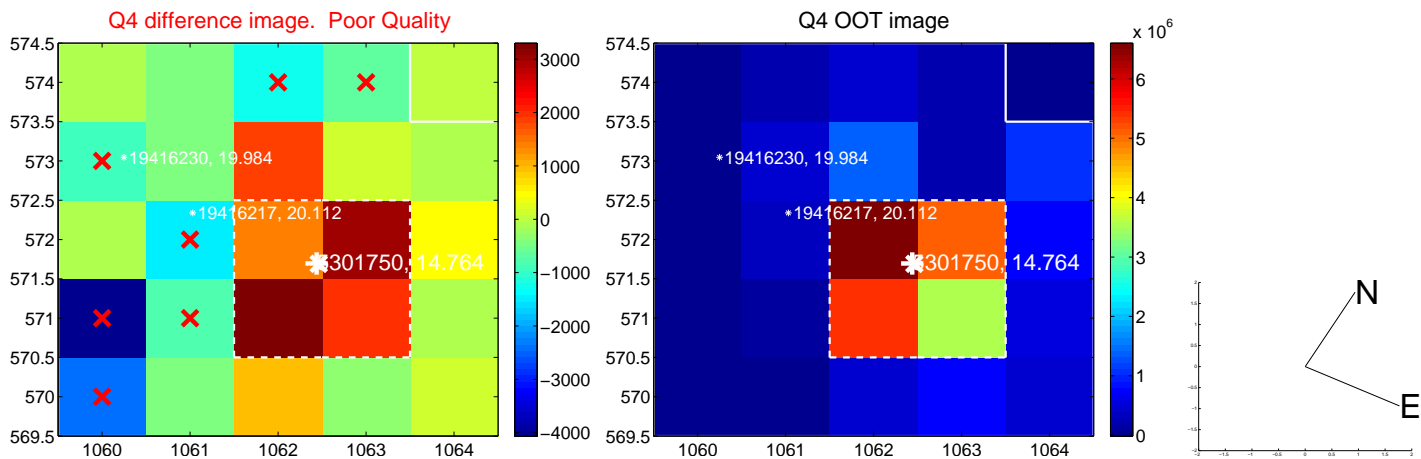
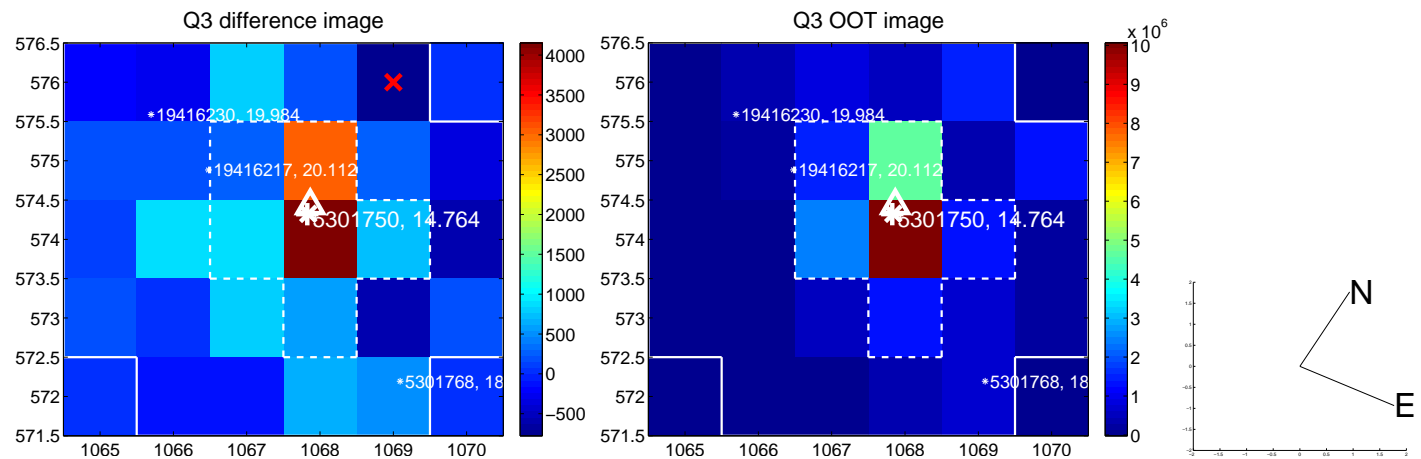
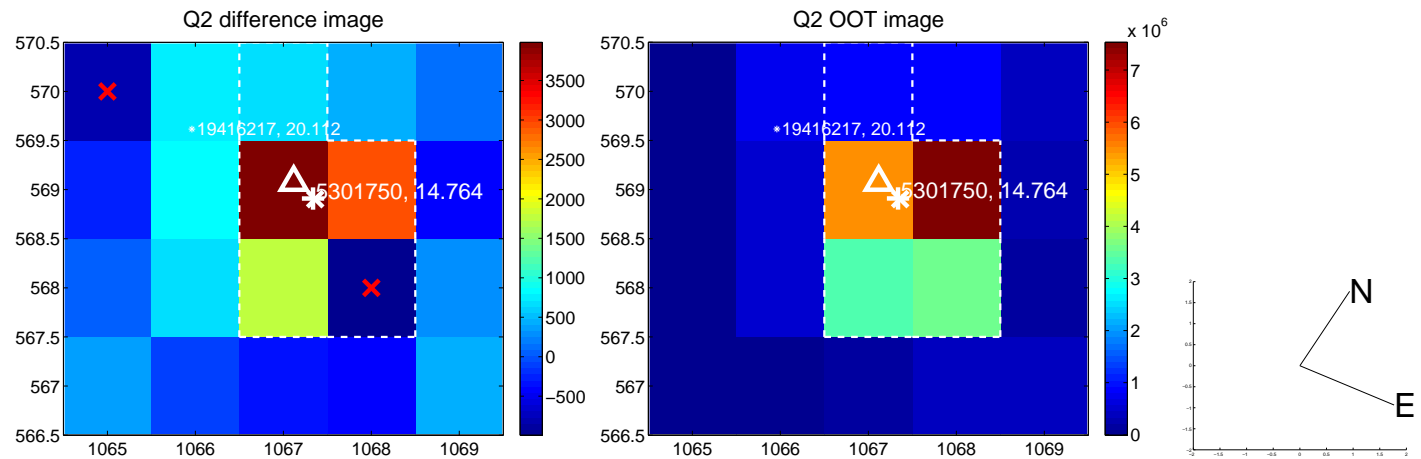
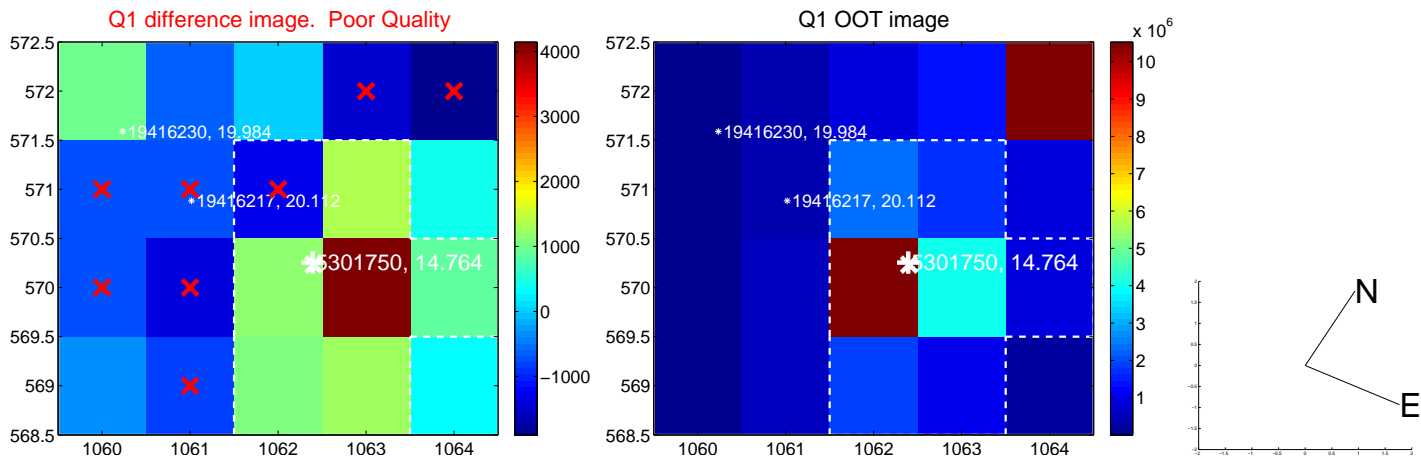
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.376 \pm 0.273$	1.38	$-0.288 \pm 0.249$	$0.242 \pm 0.303$
PRF-fit source offset from KIC position	$0.419 \pm 0.265$	1.58	$-0.357 \pm 0.249$	$0.220 \pm 0.303$
photometric centroid source offset	$0.08 \pm 0.39$	0.20	$0.04 \pm 0.38$	$0.07 \pm 0.39$

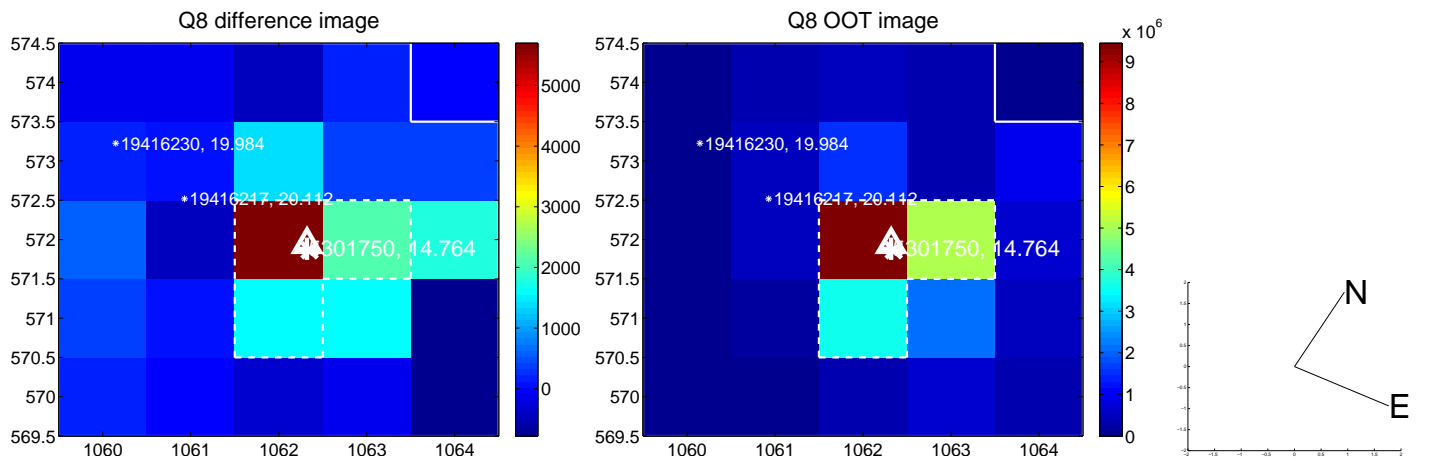
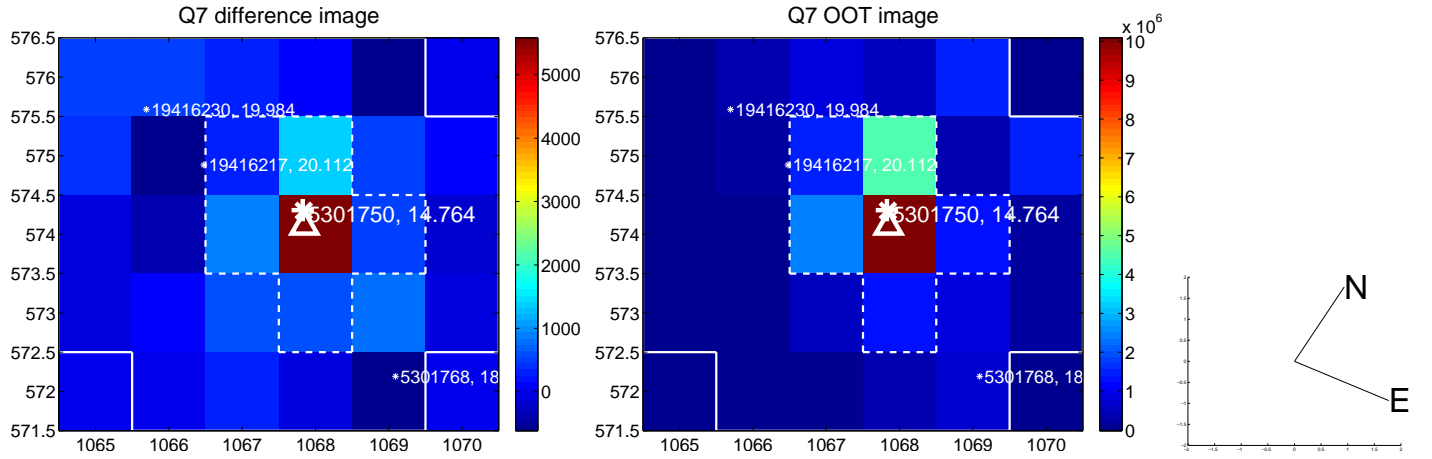
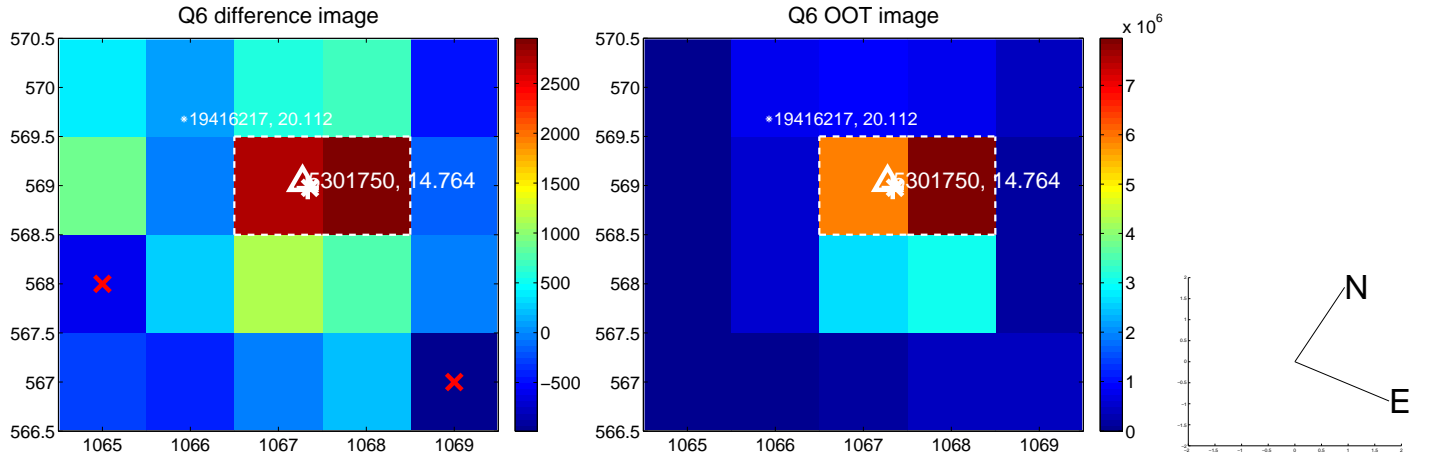
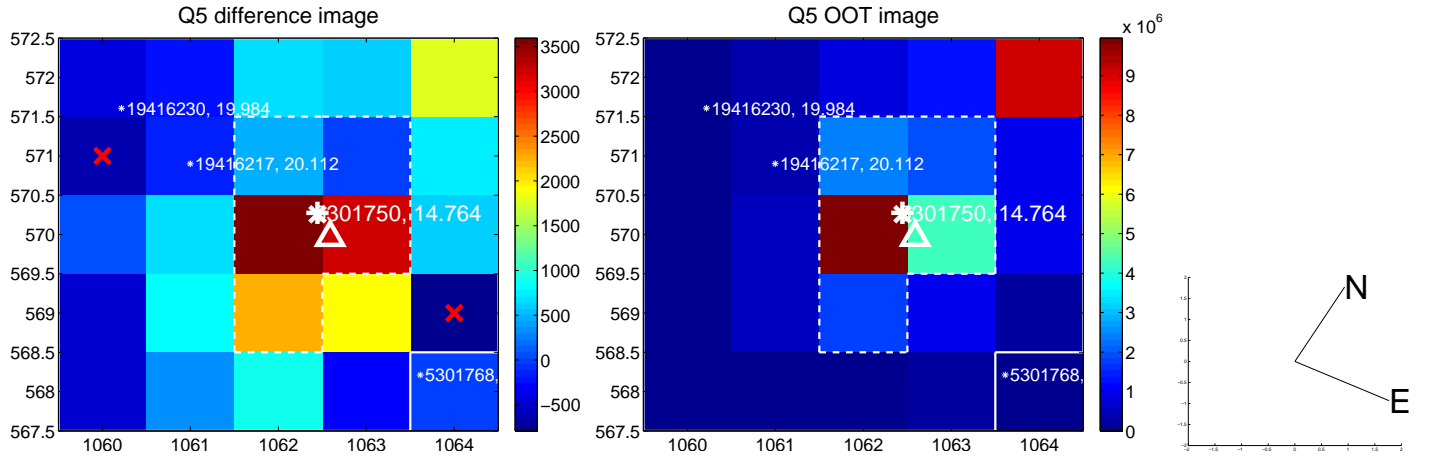


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

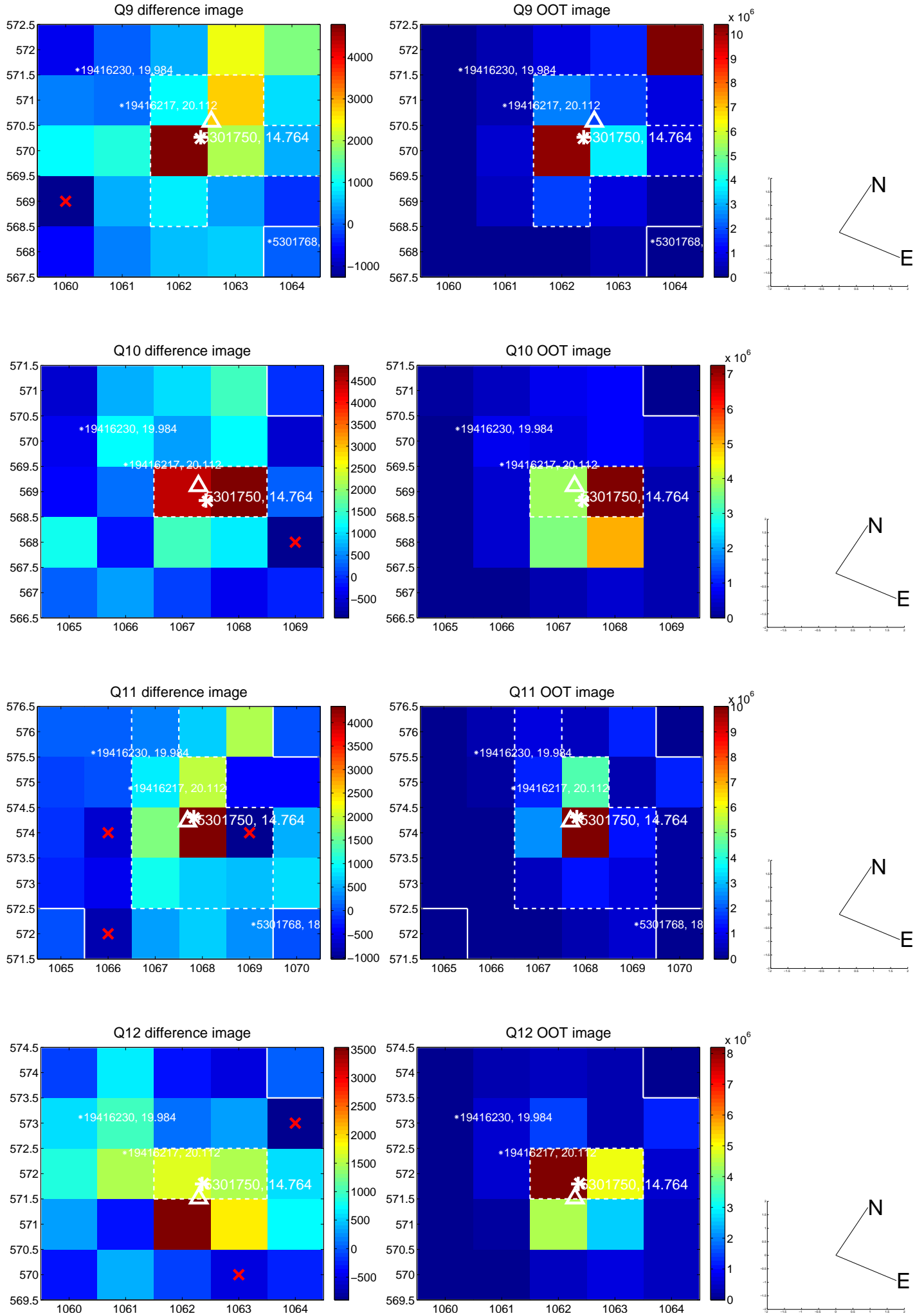
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



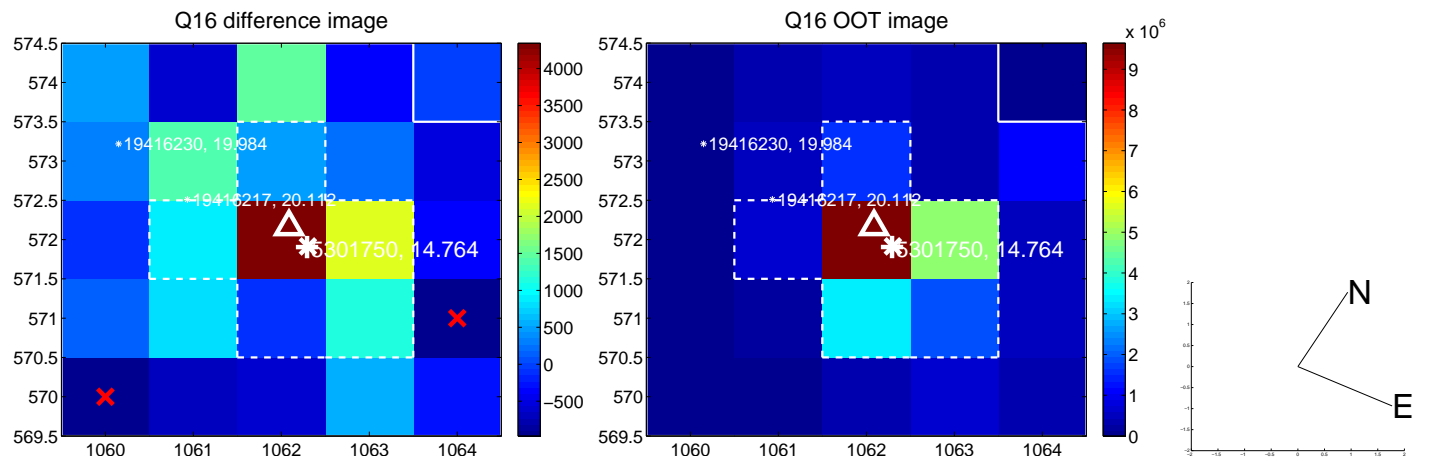
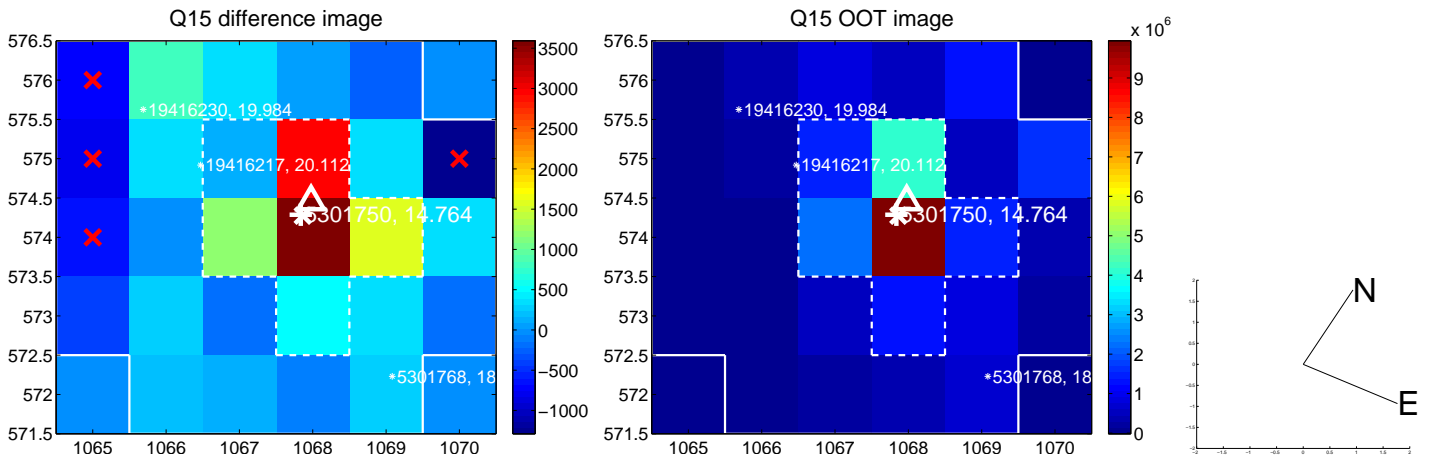
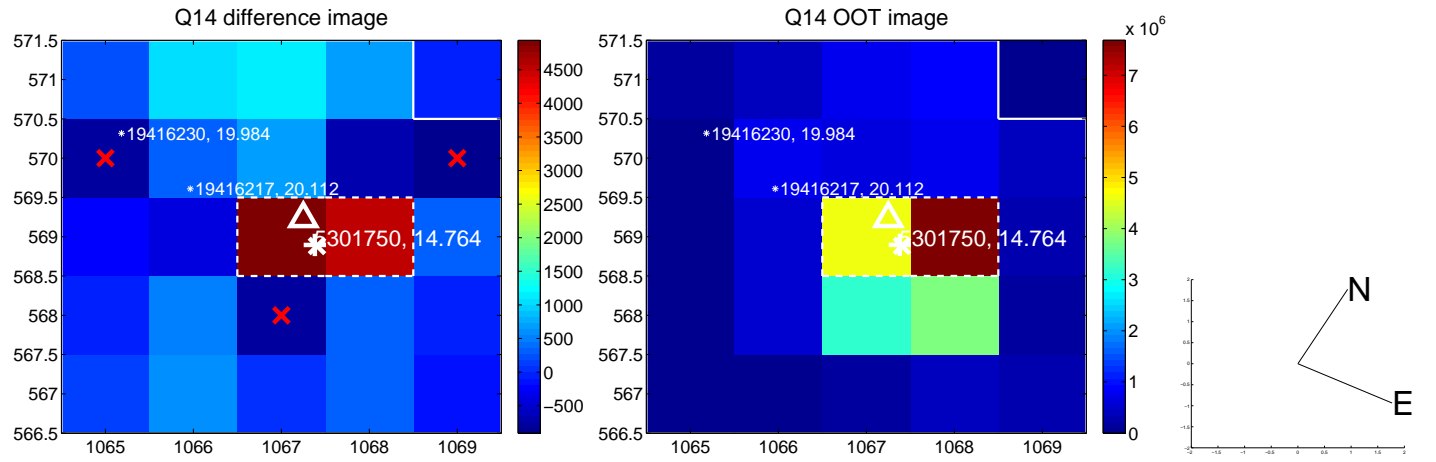
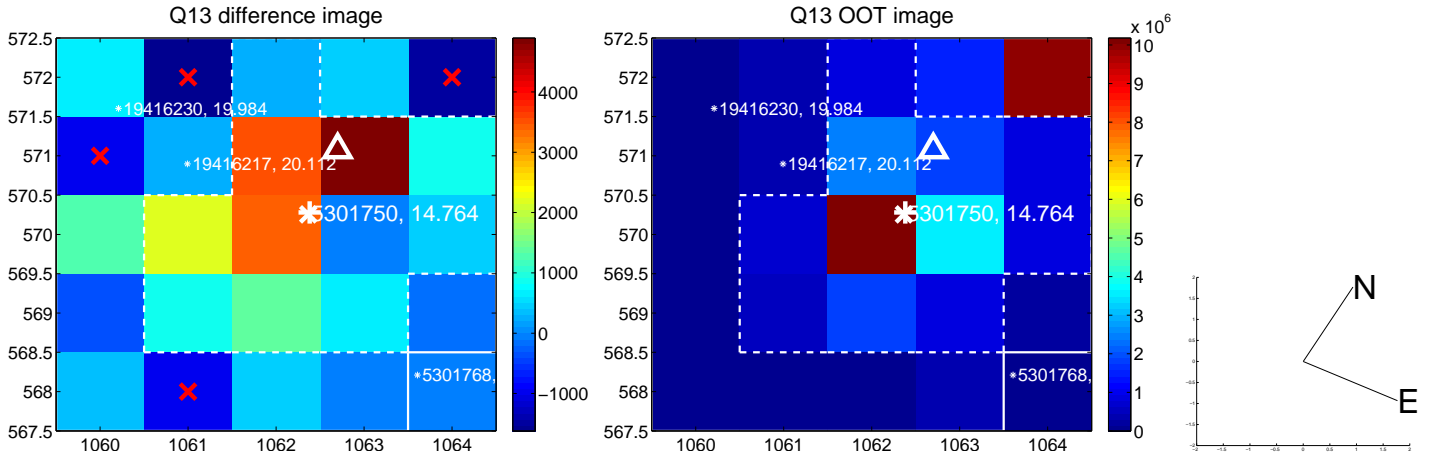
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



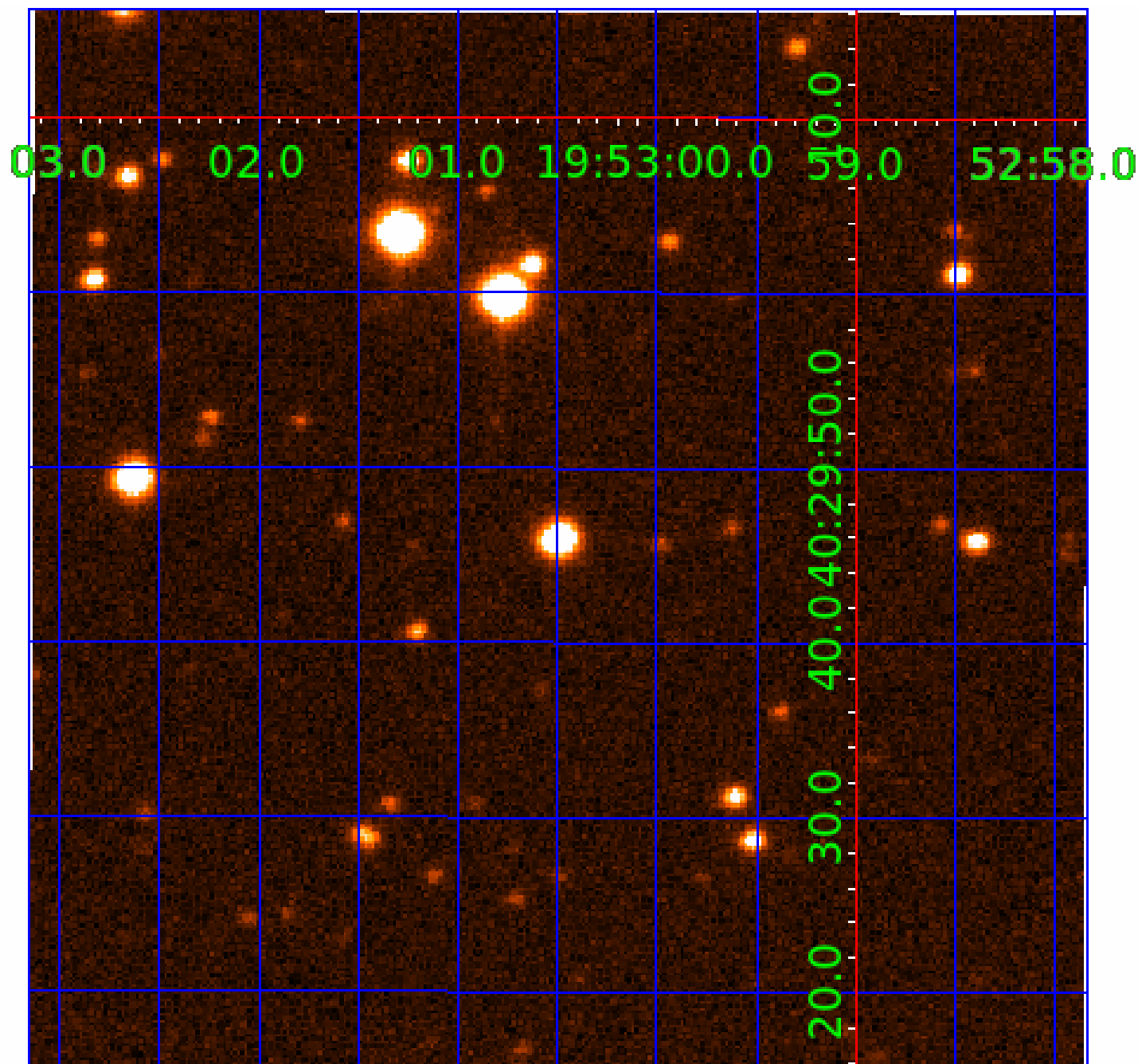
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 005301750

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005301750-01	OBS	1589.01	8.725861	138.766993	445.7	4.600	27.9	31.3	1.13	6036	2.90	222.74
005301750-02	OBS	1589.02	12.882874	135.189430	502.7	6.226	25.3	27.5	1.13	6036	3.44	132.49
005301750-03	OBS	1589.03	27.434620	145.121918	480.9	5.238	19.3	20.6	1.13	6036	2.77	48.36
005301750-04	OBS	1589.04	4.224503	135.432824	153.7	3.168	13.4	13.7	1.13	6036	1.64	585.91
005301750-05	OBS	1589.05	44.551934	160.291368	360.0	5.907	13.4	12.7	1.13	6036	2.29	25.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005301750-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-05	OBS	PC	1.00	0	0	0	0	NO_COMMENT

**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.

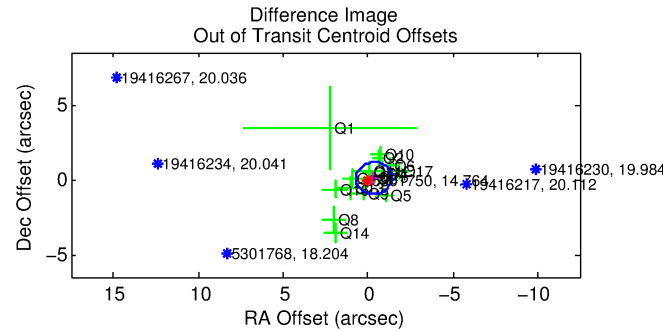
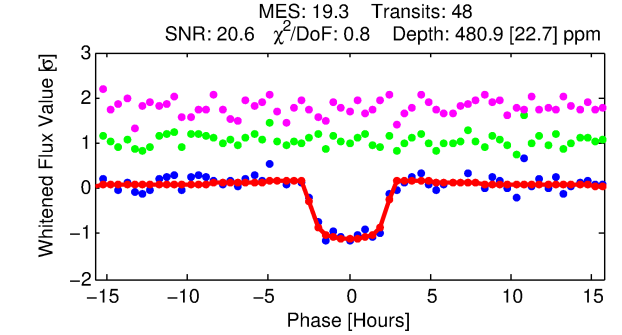
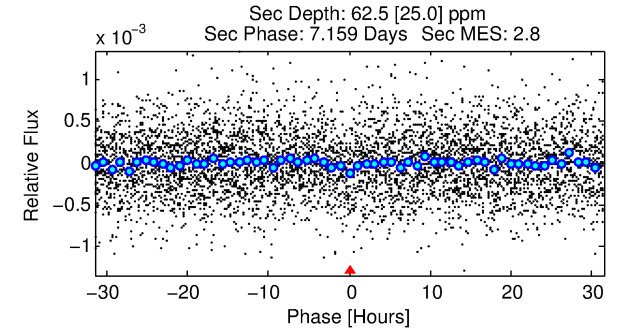
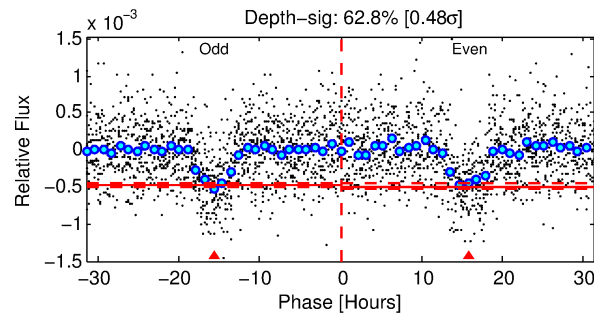
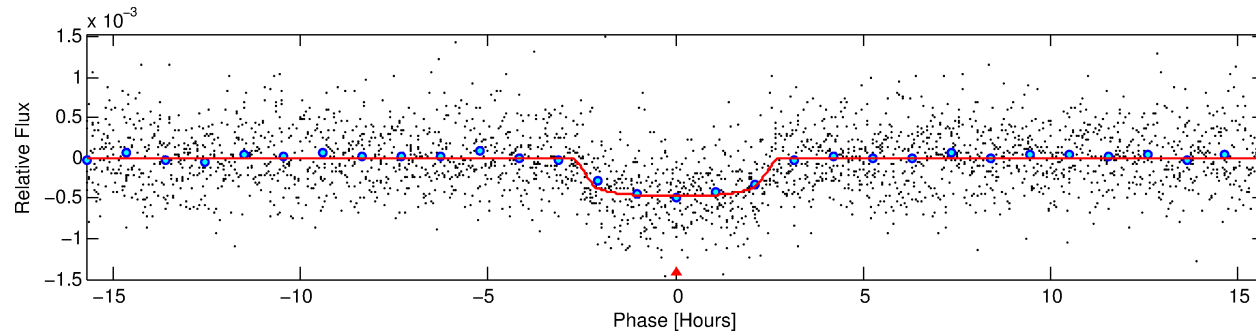
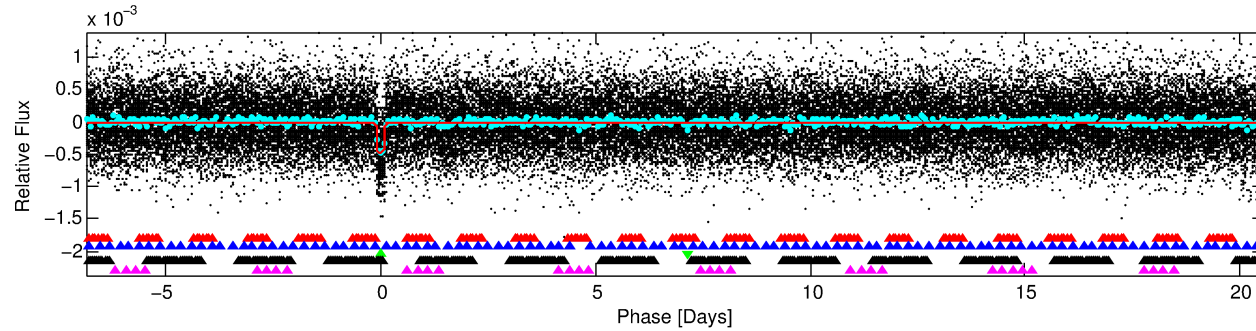
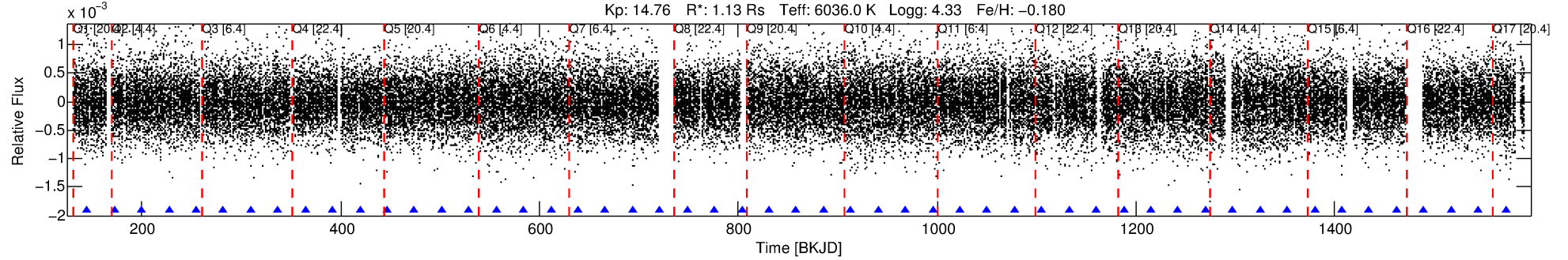
## Ephemeris Match Information For 005301750-03

No Significant Match Found

# DV One-Page Summary

KIC: 5301750 Candidate: 3 of 5 Period: 27.435 d  
KOI: K01589.03 Name: Kepler-84e Corr: 0.988

Kp: 14.76 R\*: 1.13 Rs Teff: 6036.0 K Logg: 4.33 Fe/H: -0.180



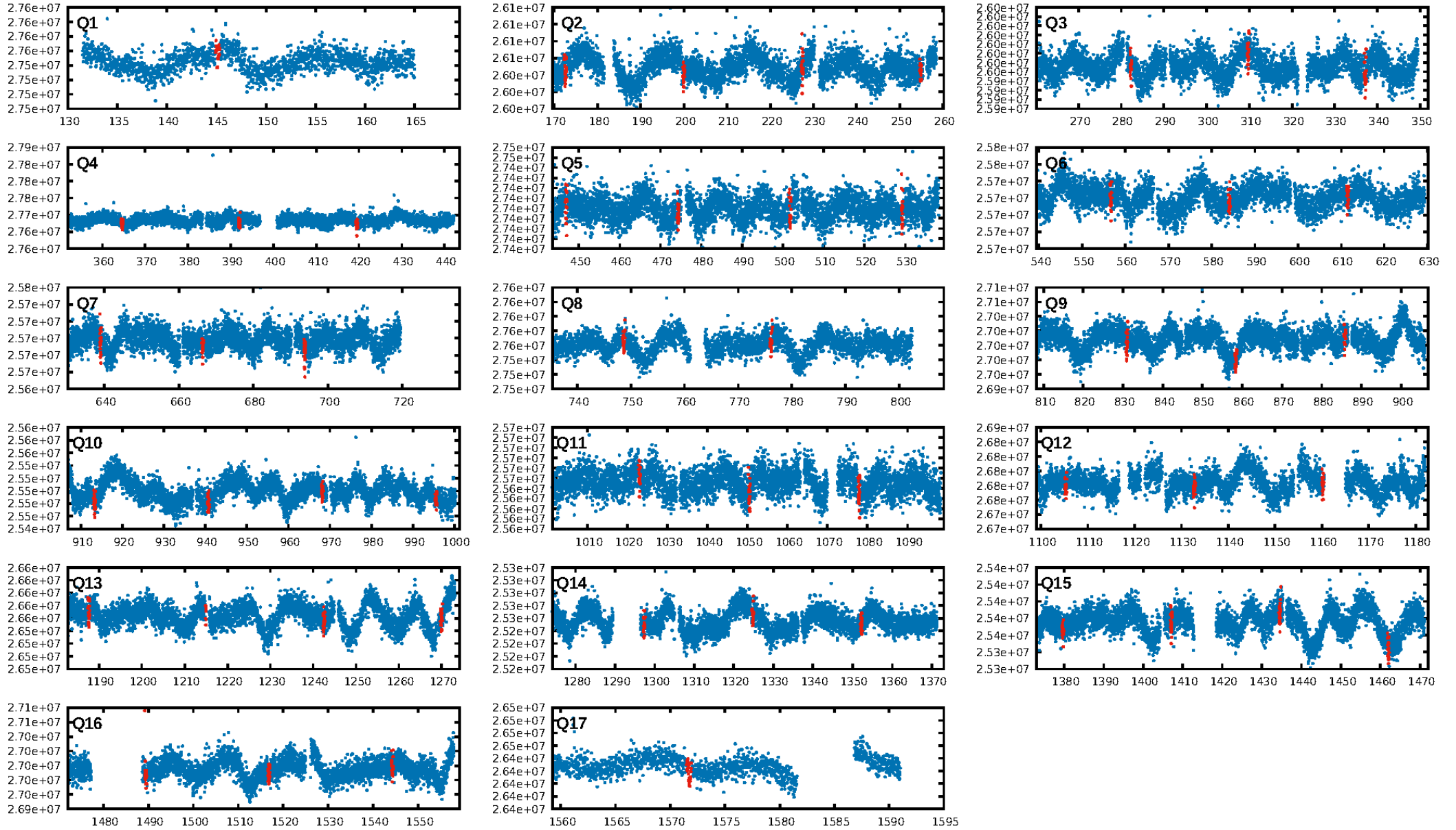
## DV Fit Results:

Period = 27.43462 [0.00015] d  
Epoch = 145.1219 [0.0044] BKJD  
Rp/R\* = 0.0224 [0.0041]  
a/R\* = 24.69 [22.03]  
b = 0.82 [0.37]  
Seff = 48.36 [11.06]  
Teff = 672 [38] K  
Rp = 2.77 [0.66] Re  
a = 0.1774 [0.0246] AU  
Ag = 141.53 [82.12] [1.71σ]  
Teffp = 3586 [491] K [5.92σ]

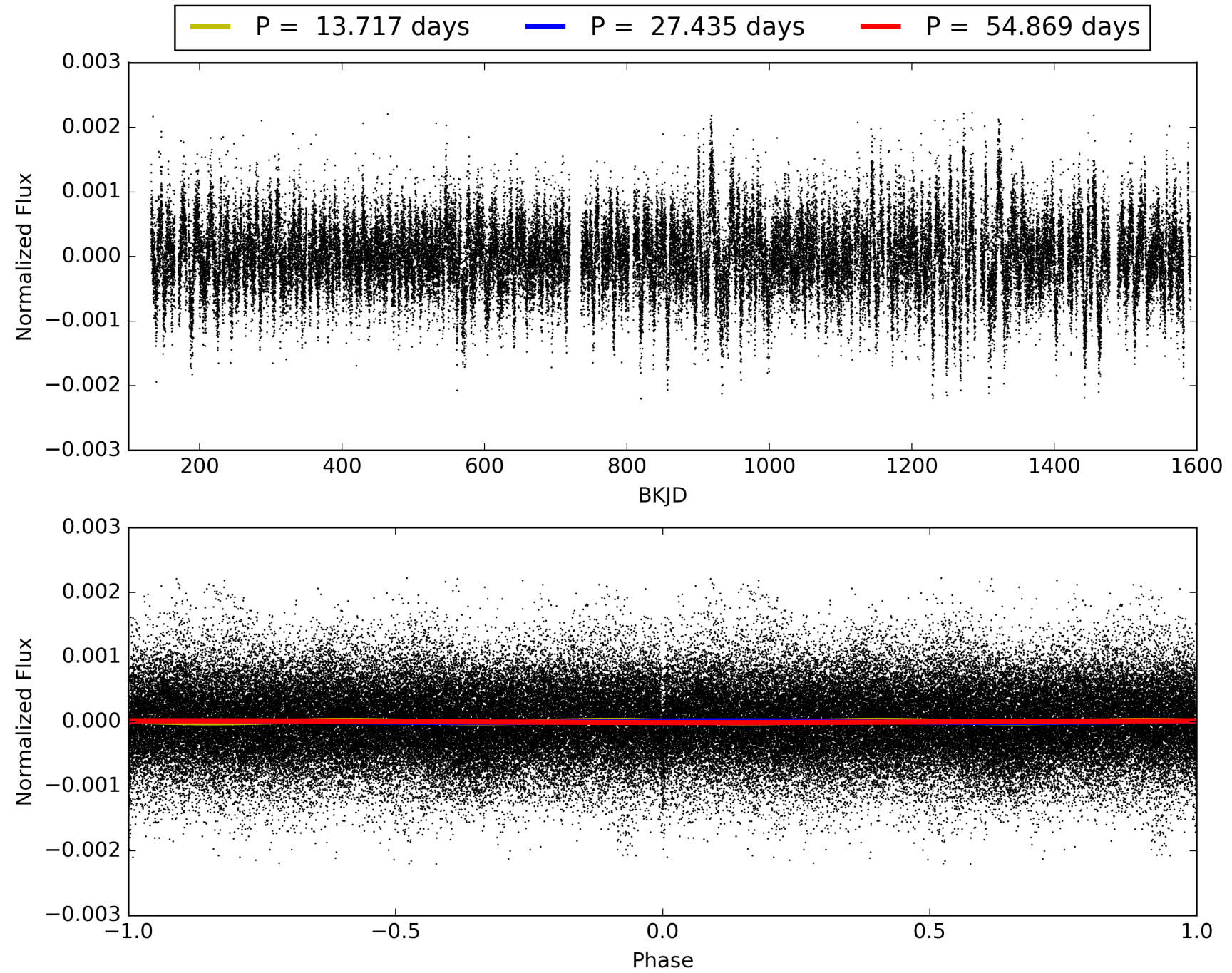
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [42.93σ]  
LongPeriod-sig: 100.0% [52.04σ]  
ModelChiSquare2-sig: 99.6%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 3.04e-66  
RollingBand-fgt: 1.00 [46/46]  
GhostDiagnostic-chr: 2.77  
Centroid-sig: 76.0%  
Centroid-so: 1.205 arcsec [2.31σ]  
OotOffset-rm: 0.350 arcsec [0.98σ]  
KicOffset-rm: 0.383 arcsec [1.10σ]  
OotOffset-st: 4/4/4/5 [17]  
KicOffset-st: 4/4/4/5 [17]  
DiffImageQuality-fgm: 0.71 [12/17]  
DiffImageOverlap-fno: 0.94 [16/17]

# TCE 005301750-03, PDC Light Curves

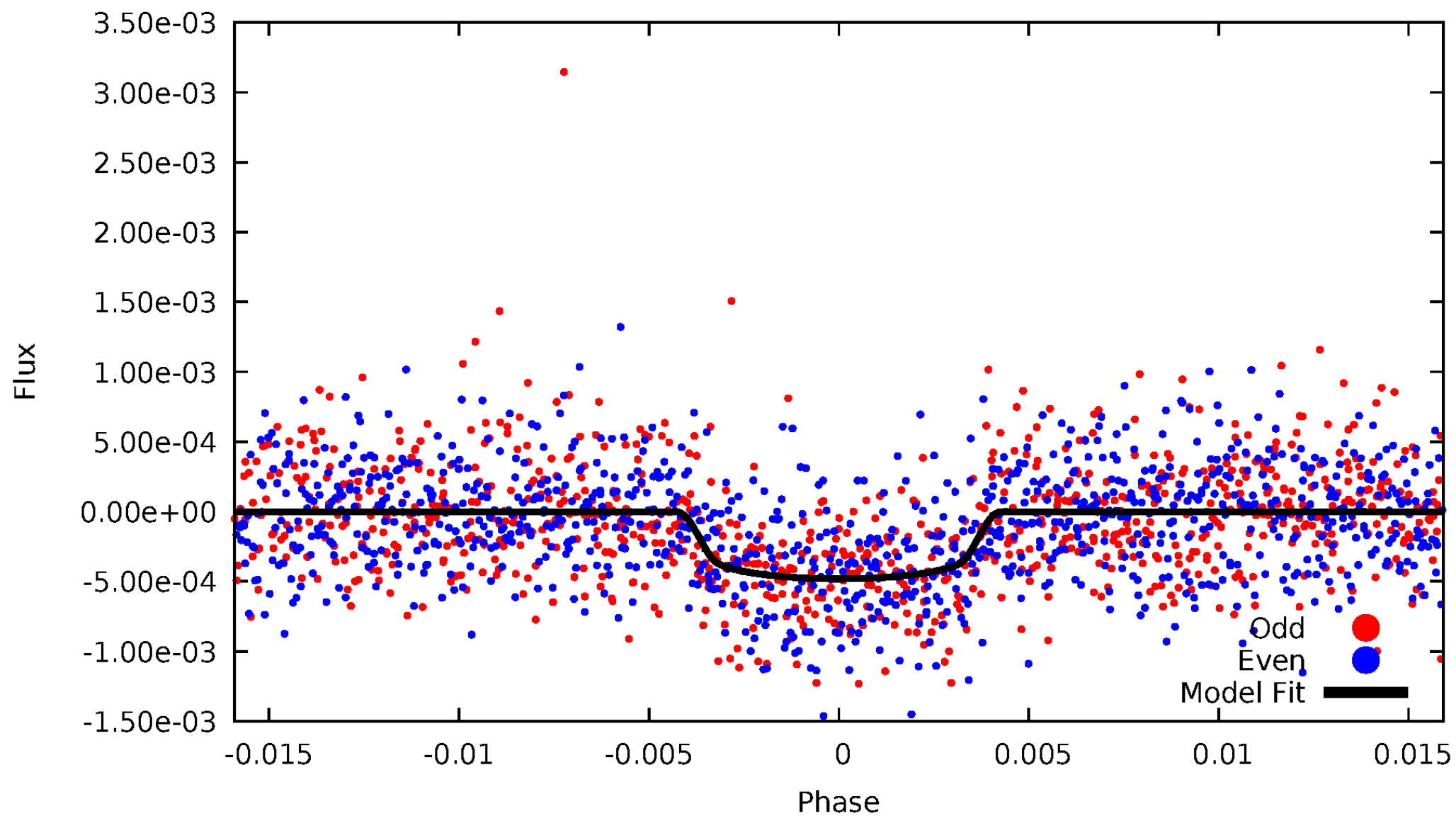


# TCE 005301750-03



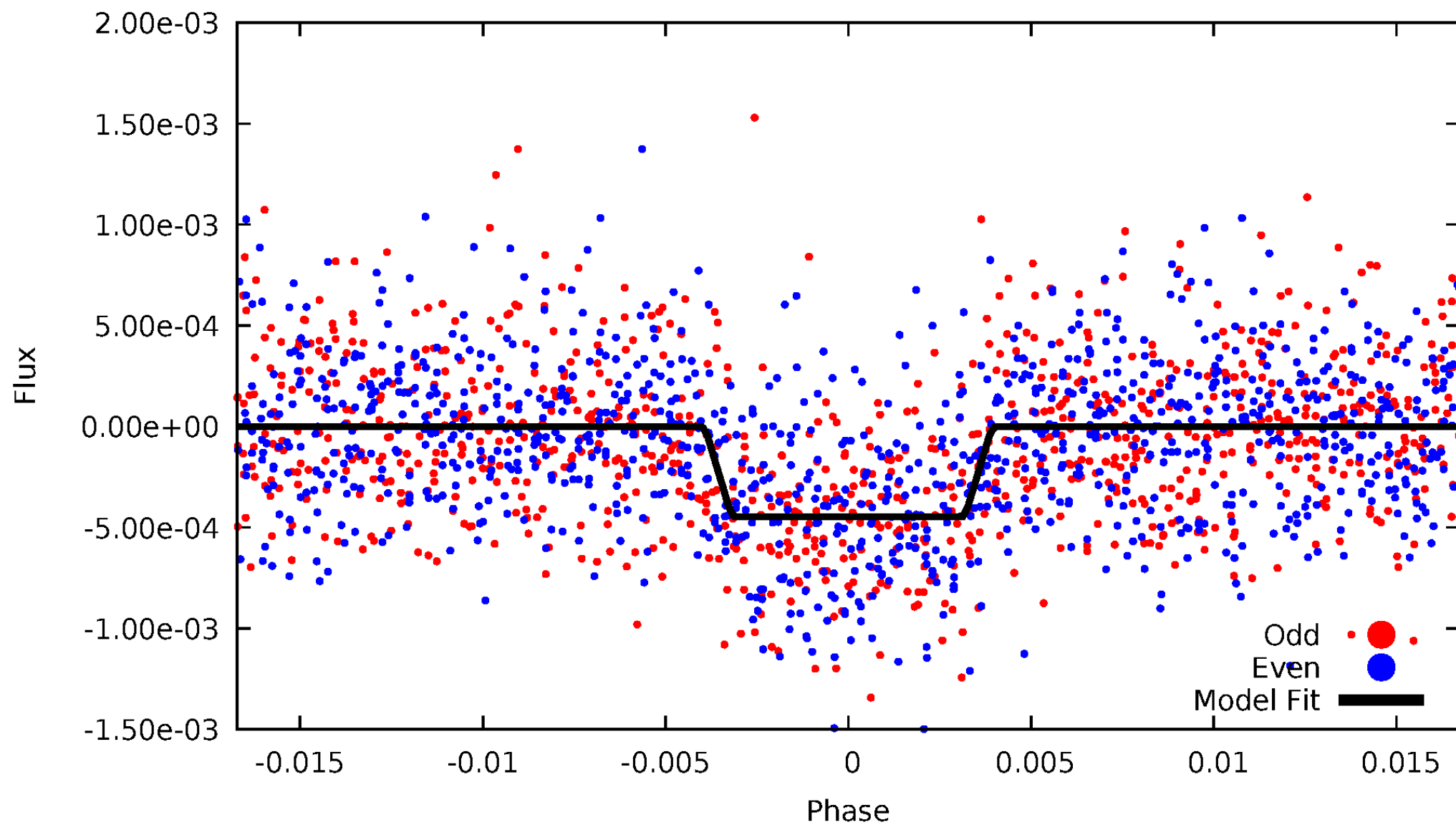
# DV Odd/Even

TCE 005301750-03



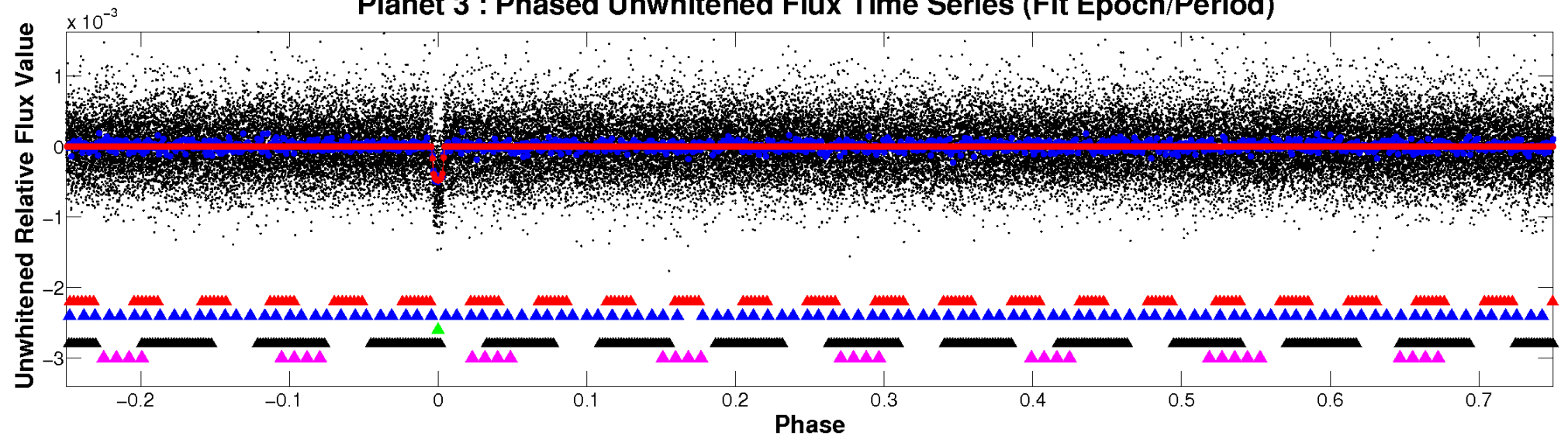
# ALT Odd/Even

TCE 005301750-03

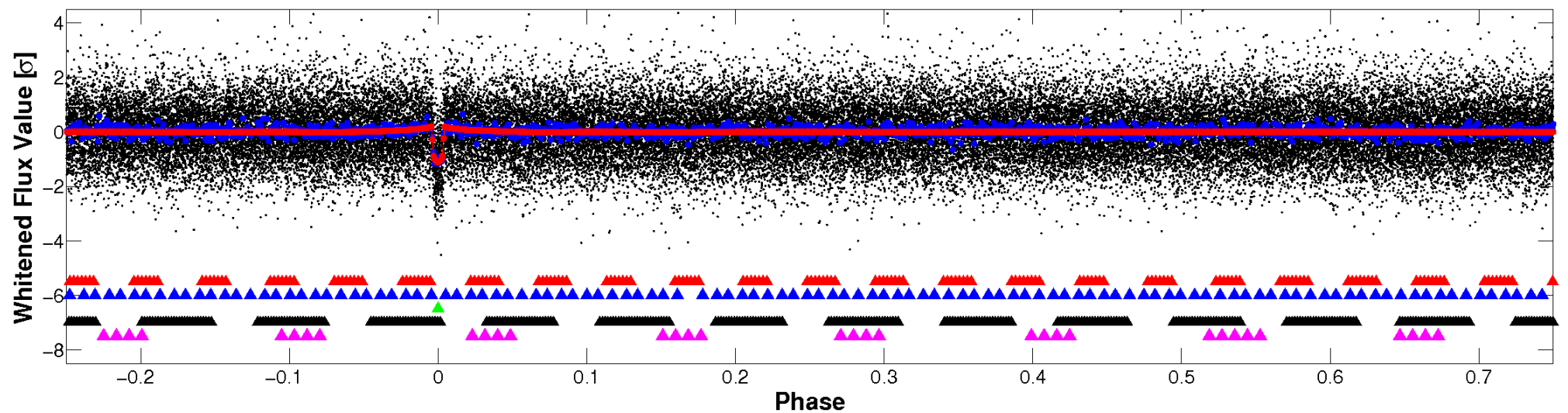


# Non-Whitened Vs. Whitened Light Curve

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

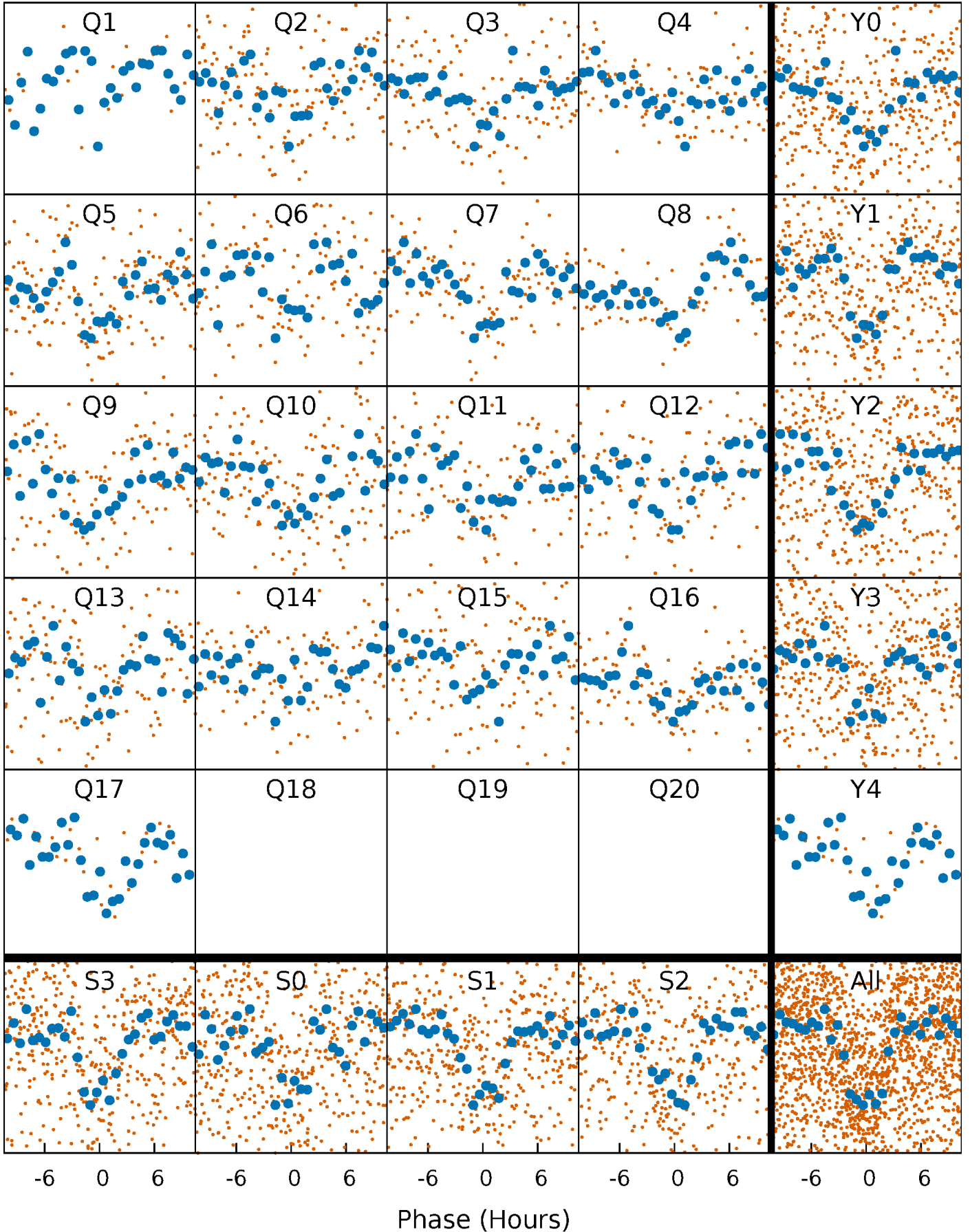


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



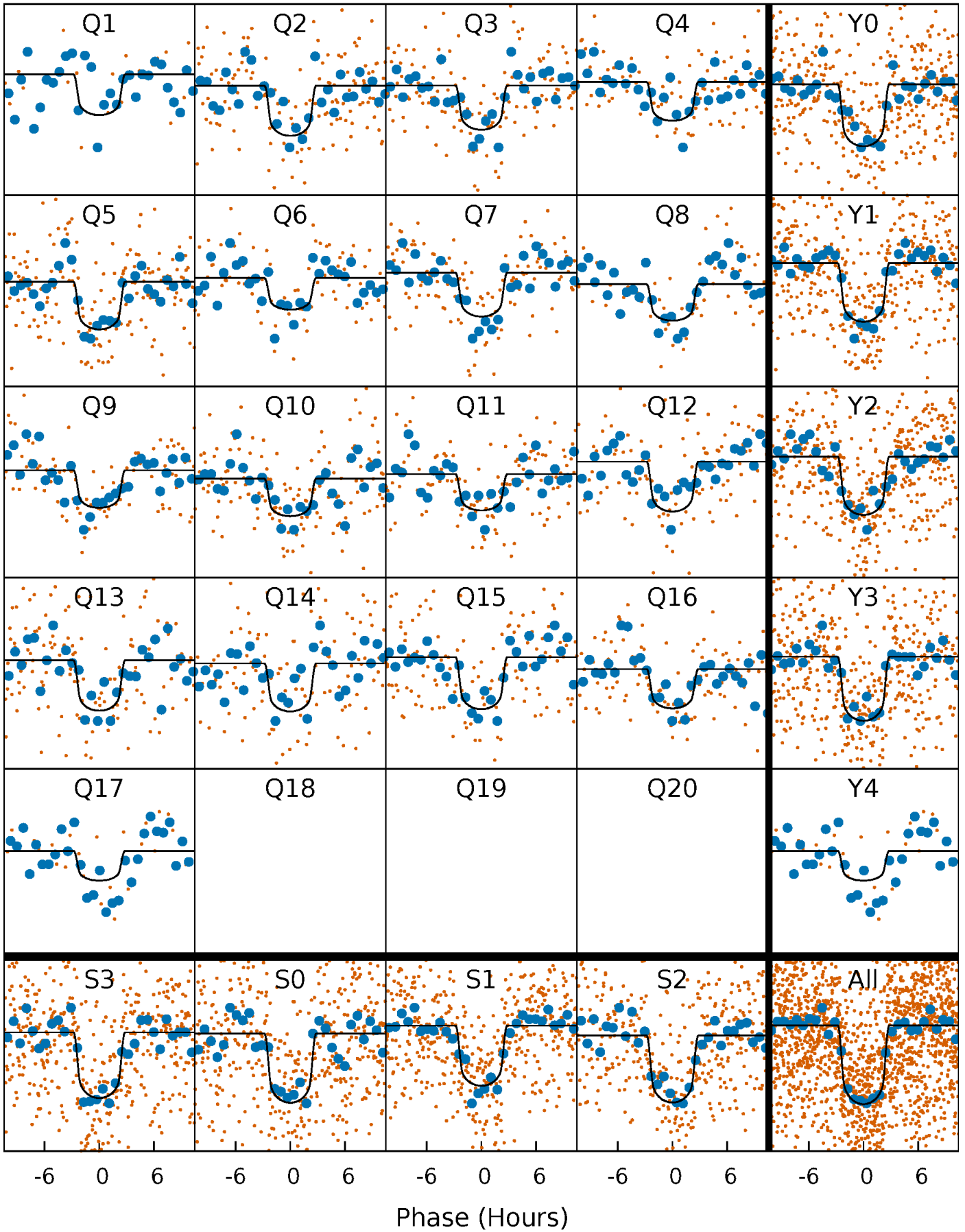
# PDC Quarter-Phased Transit Curves

TCE 005301750-03   P= 27.434620 Days    $T_0=145.121918$  (BKJD)



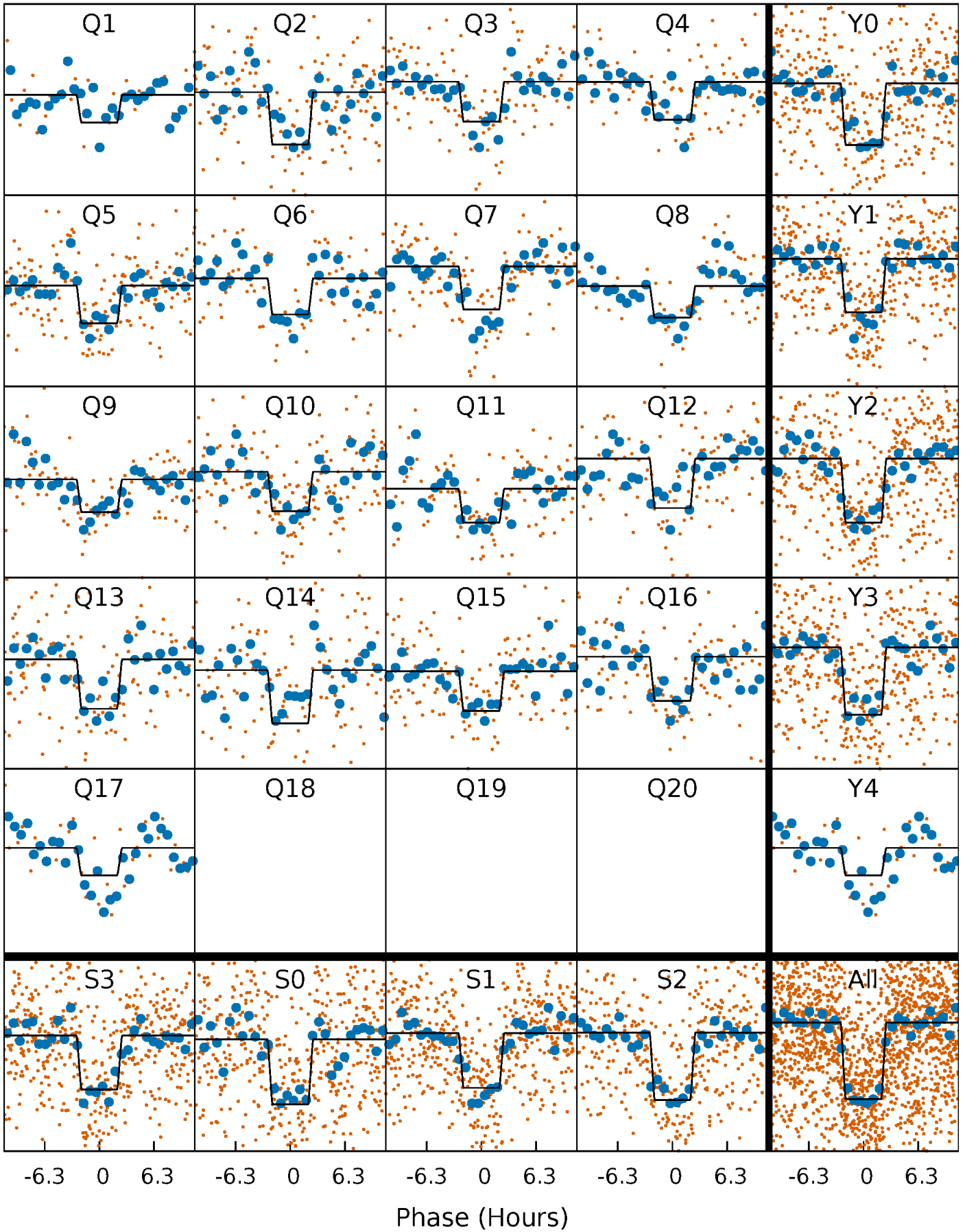
# DV Quarter-Phased Transit Curves

TCE 005301750-03   P= 27.434620 Days    $T_0=145.121918$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

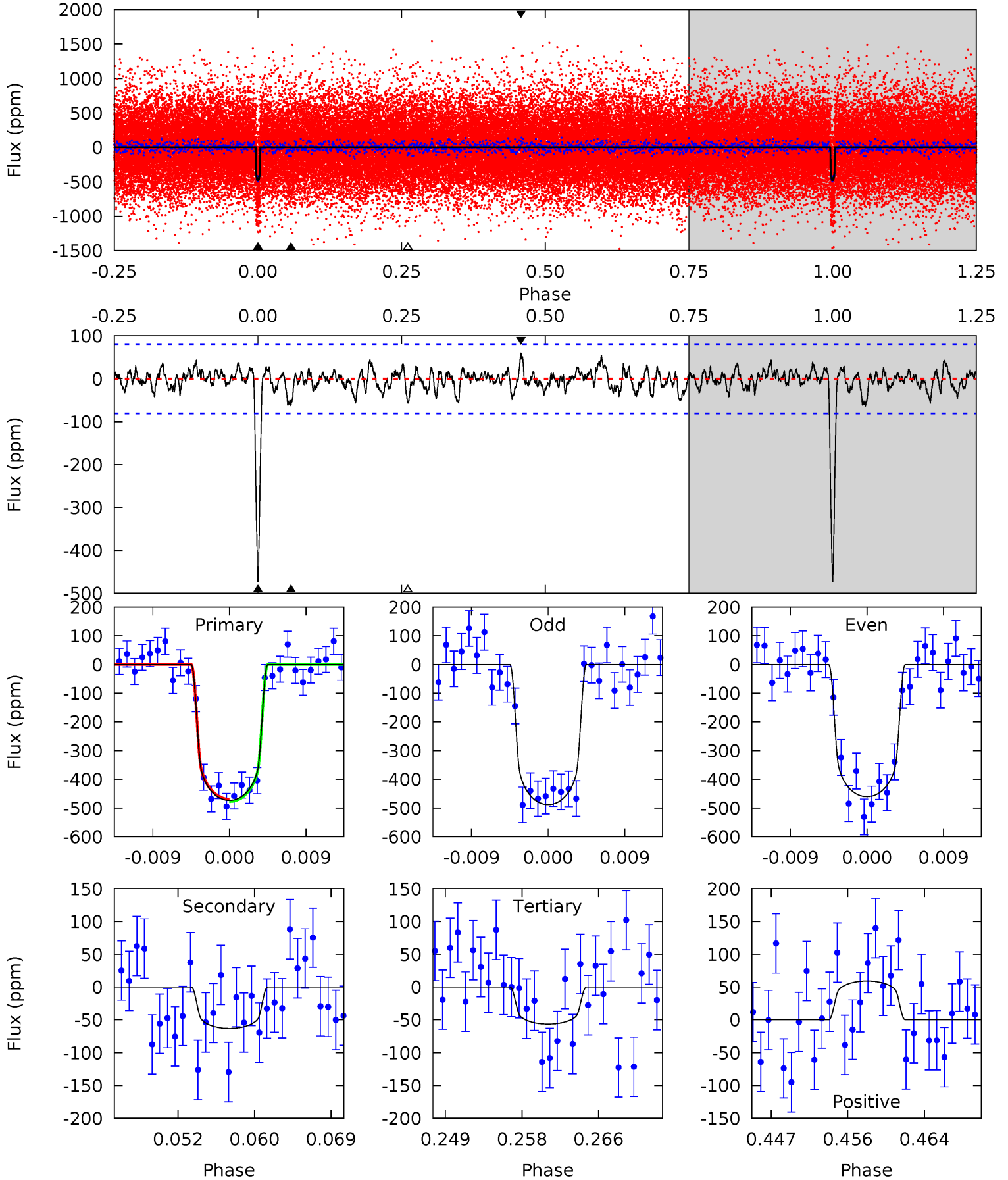
TCE 005301750-03 P= 27.435001 Days  $T_0=145.113733$  (BKJD)



# DV Model-Shift Uniqueness Test

005301750-03, P = 27.434620 Days, E = 117.687298 Days

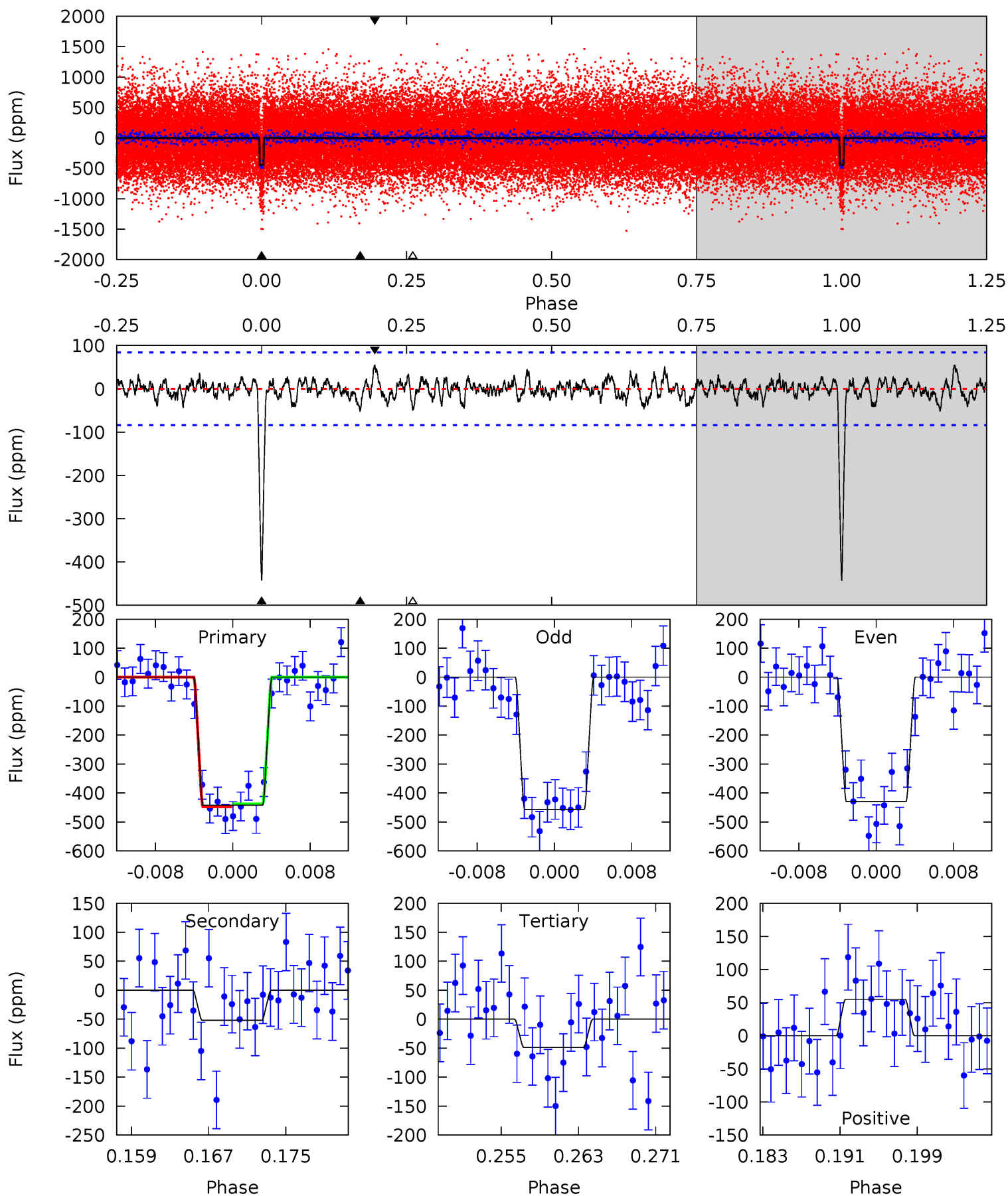
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.6	3.95	3.53	3.70	5.06	2.63	1.18	26.1	25.9	0.42	0.25	0.87	0.99	0.11	0.25



# Alt Model-Shift Uniqueness Test

005301750-03, P = 27.435001 Days, E = 117.678732 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
26.7	3.13	2.95	3.32	5.07	2.65	1.01	23.8	23.4	0.19	-0.18	0.81	0.96	0.11	0.31



### Stellar Parameters For KIC 005301750

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6036^{+120}_{-132}$	$4.326^{+0.120}_{-0.120}$	$-0.180^{+0.150}_{-0.150}$	$1.131^{+0.176}_{-0.158}$	$0.987^{+0.072}_{-0.064}$	$0.962^{+0.502}_{-0.332}$
	+2%/-2%	+3%/-3%	+83%/-83%	+16%/-14%	+7%/-6%	+52%/-35%
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 005301750-03 / KOI 1589.03

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-63 \pm 16$	$2.77^{+0.59}_{-0.55}$	$940^{+44}_{-40}$	$3935^{+346}_{-315}$	$140^{+93}_{-54}$
Alt.	$-52 \pm 17$	$2.59^{+0.63}_{-0.52}$	$939^{+48}_{-42}$	$3871^{+381}_{-323}$	$127^{+95}_{-53}$

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

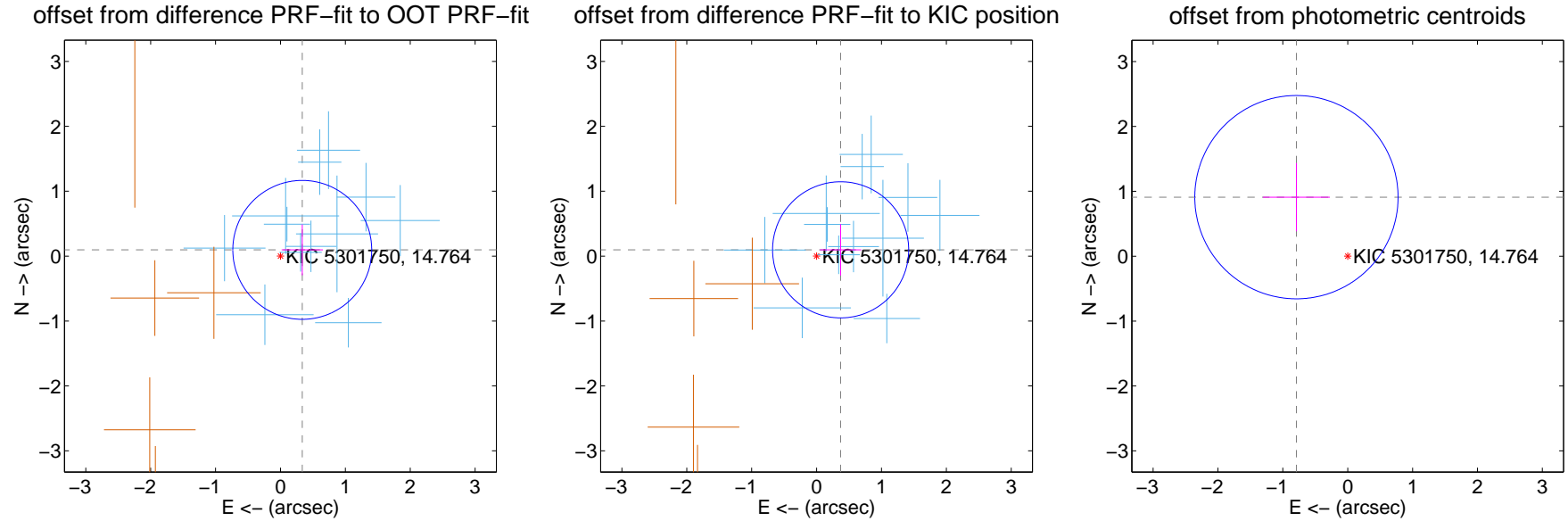
## DV Centroid Data

Supplemental centroid analysis for 005301750-03. Kepler magnitude: 14.76. Transit SNR 20.63

There are 12 quarters with good PRF difference image offsets

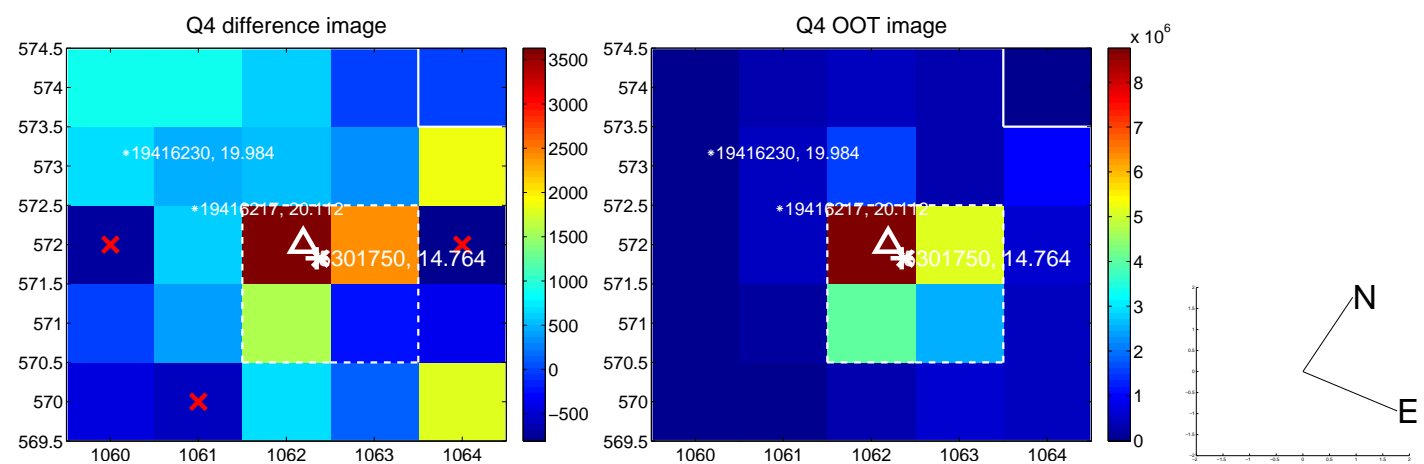
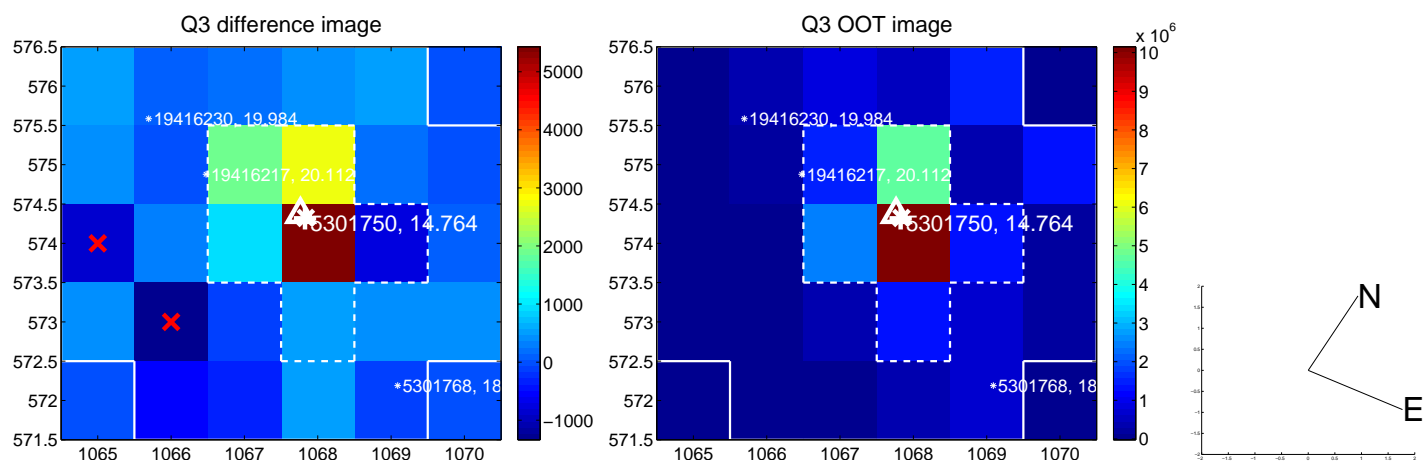
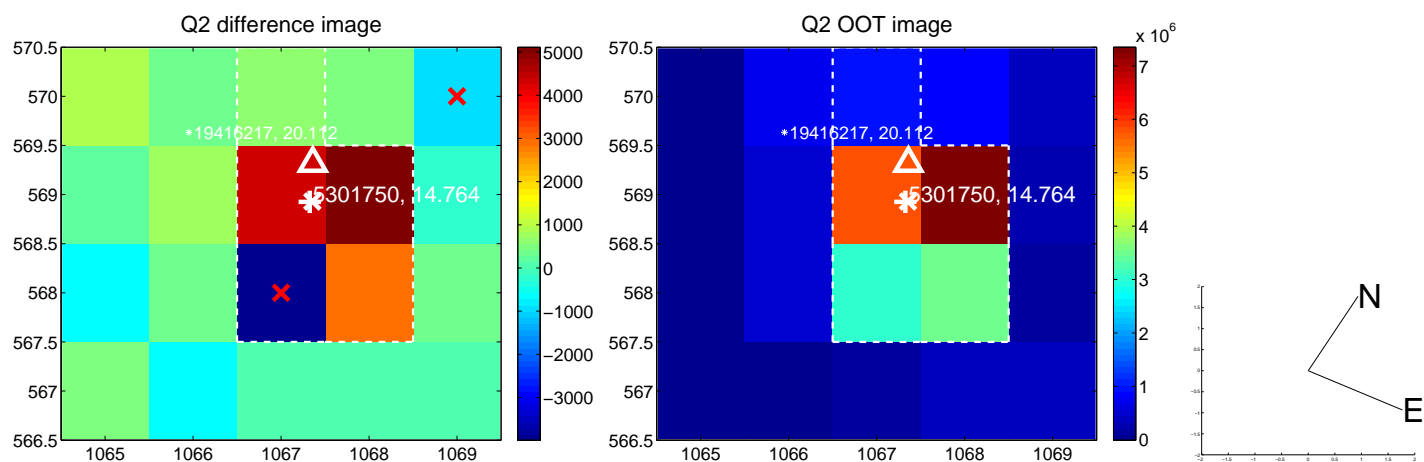
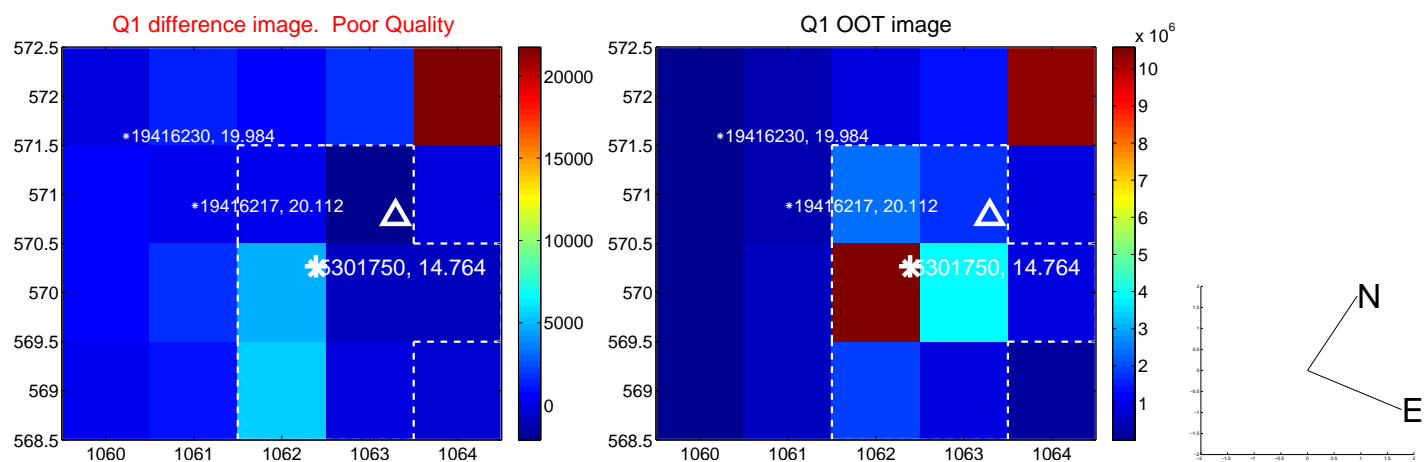
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.350 \pm 0.357$	0.98	$-0.336 \pm 0.318$	$0.096 \pm 0.392$
PRF-fit source offset from KIC position	$0.383 \pm 0.350$	1.10	$-0.371 \pm 0.318$	$0.097 \pm 0.396$
photometric centroid source offset	$1.21 \pm 0.52$	2.31	$0.79 \pm 0.52$	$0.91 \pm 0.53$

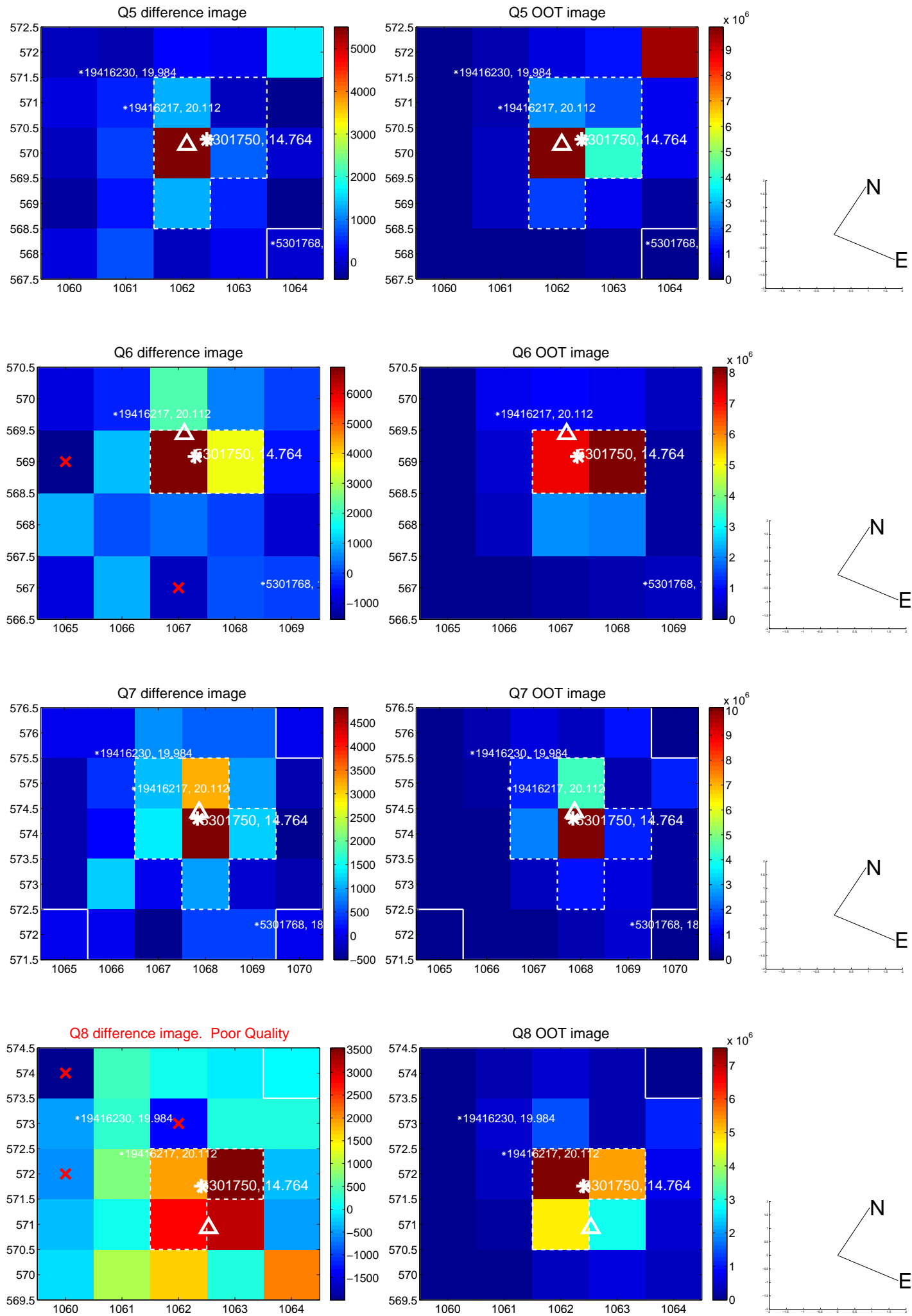


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

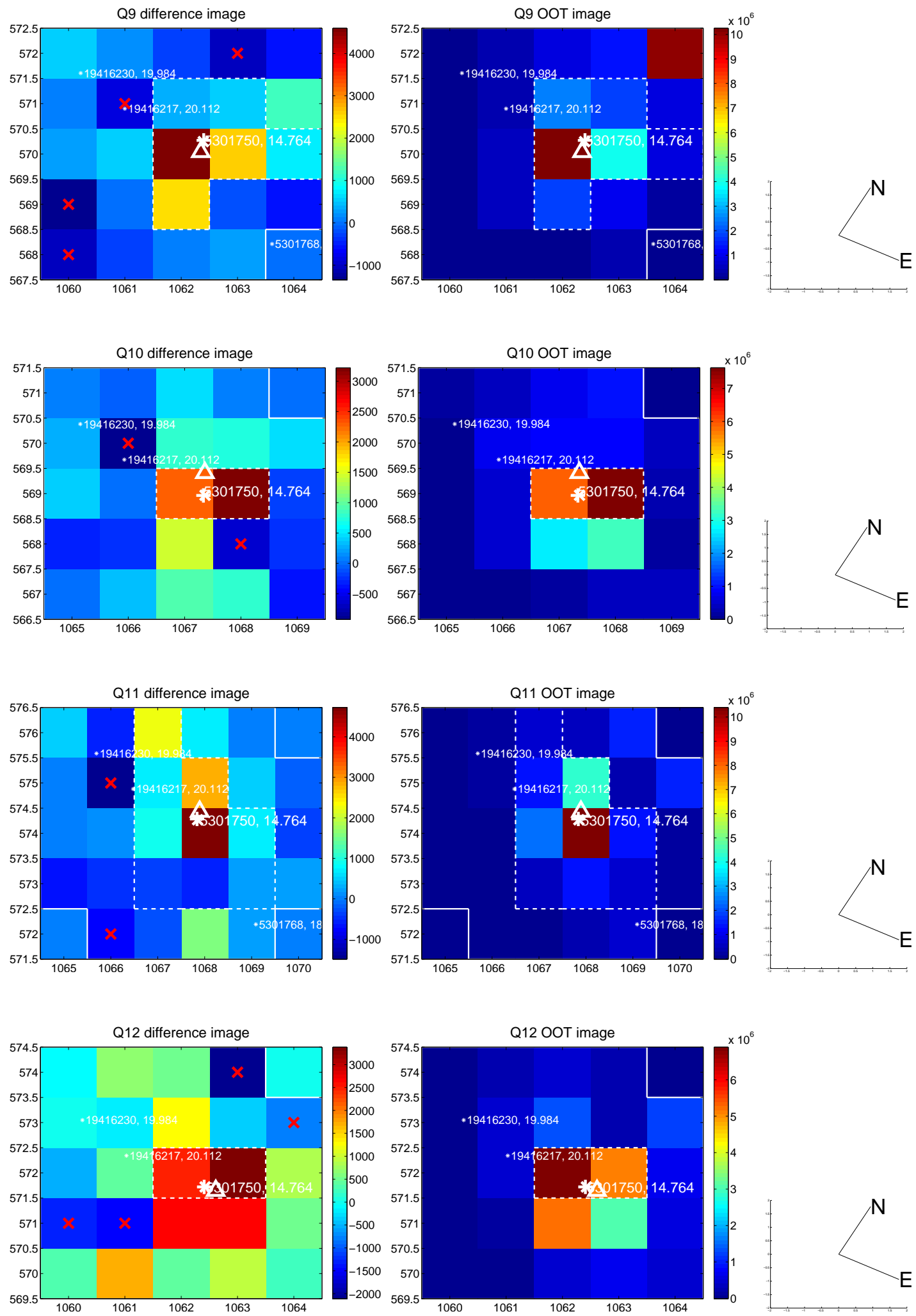
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



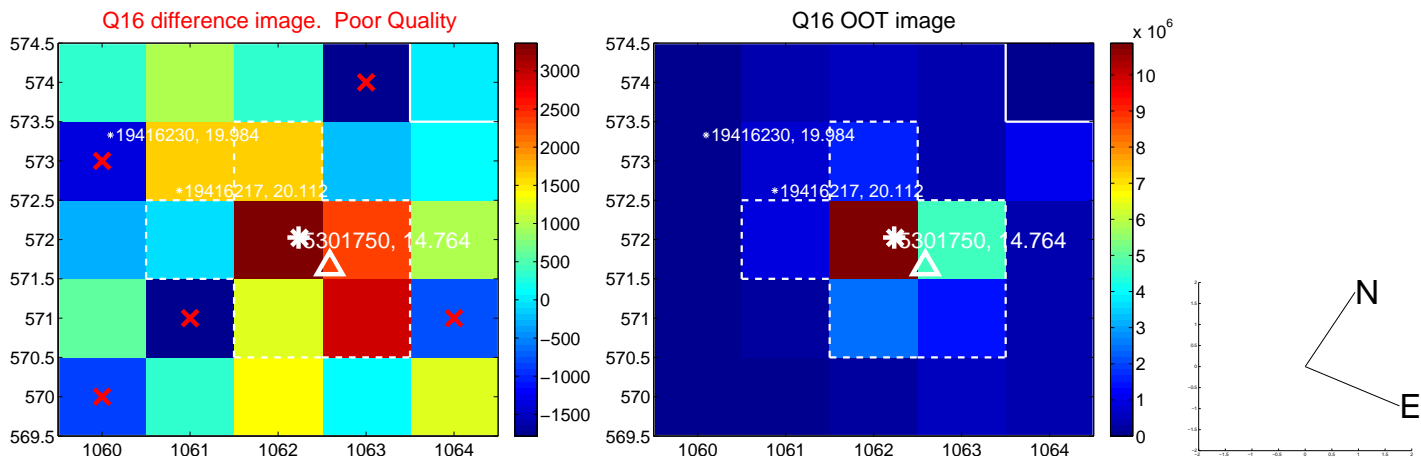
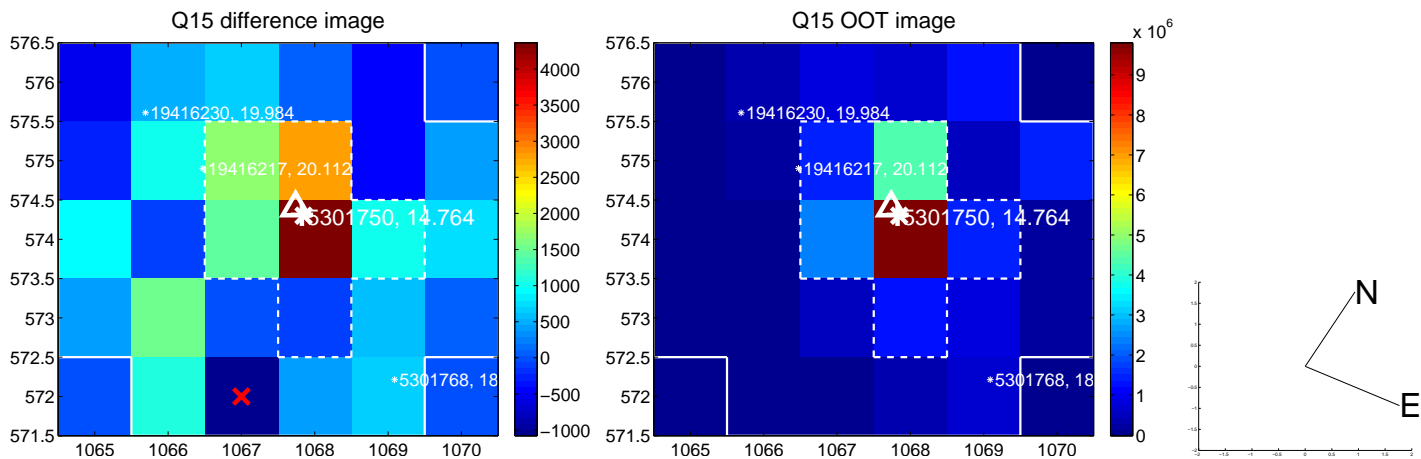
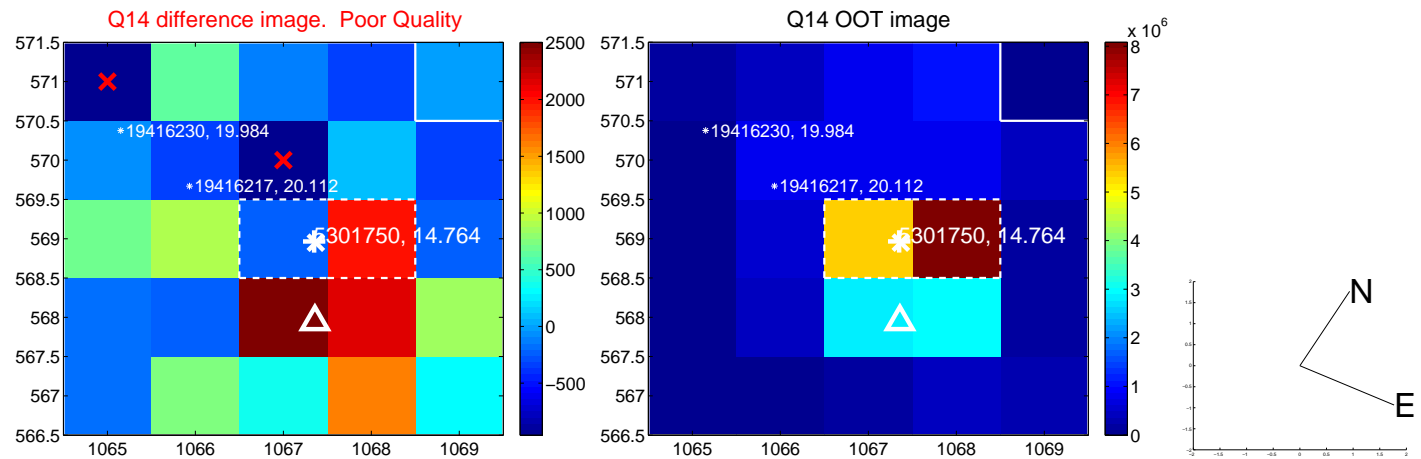
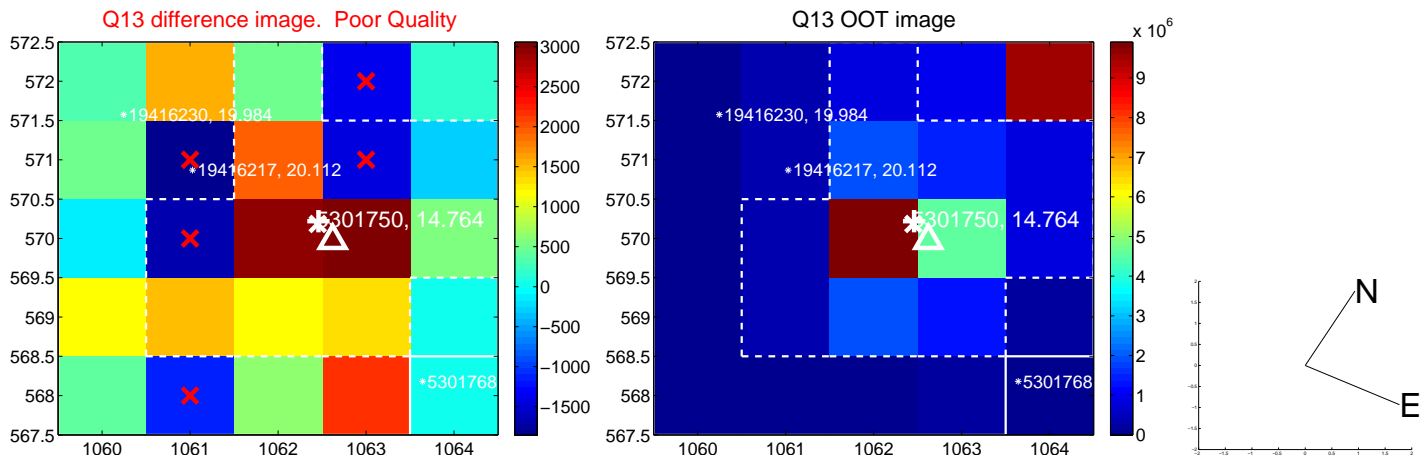
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



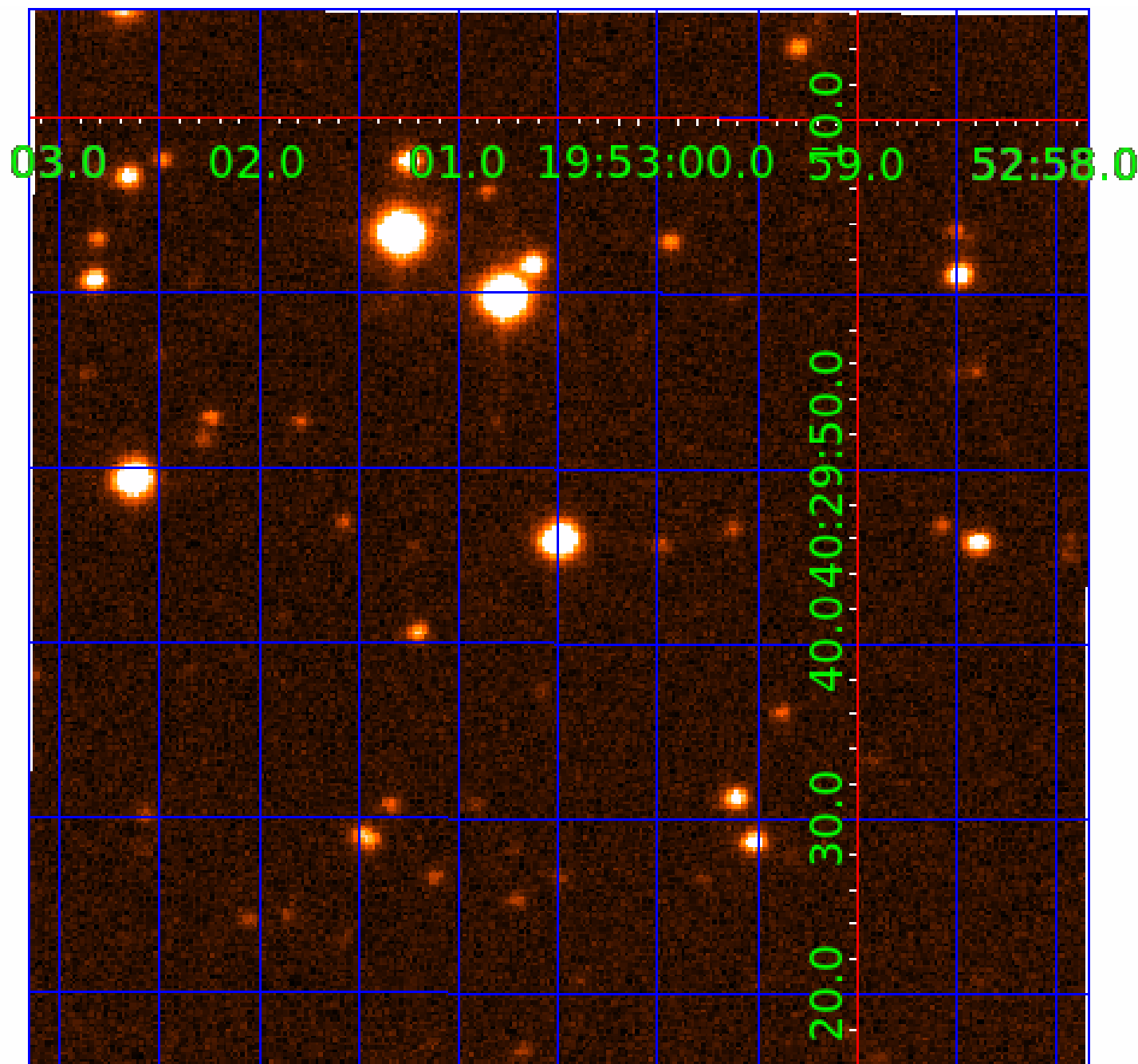
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.





UKIRT Image

Declination



# KIC 005301750

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005301750-01	OBS	1589.01	8.725861	138.766993	445.7	4.600	27.9	31.3	1.13	6036	2.90	222.74
005301750-02	OBS	1589.02	12.882874	135.189430	502.7	6.226	25.3	27.5	1.13	6036	3.44	132.49
005301750-03	OBS	1589.03	27.434620	145.121918	480.9	5.238	19.3	20.6	1.13	6036	2.77	48.36
005301750-04	OBS	1589.04	4.224503	135.432824	153.7	3.168	13.4	13.7	1.13	6036	1.64	585.91
005301750-05	OBS	1589.05	44.551934	160.291368	360.0	5.907	13.4	12.7	1.13	6036	2.29	25.33

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005301750-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-05	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

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

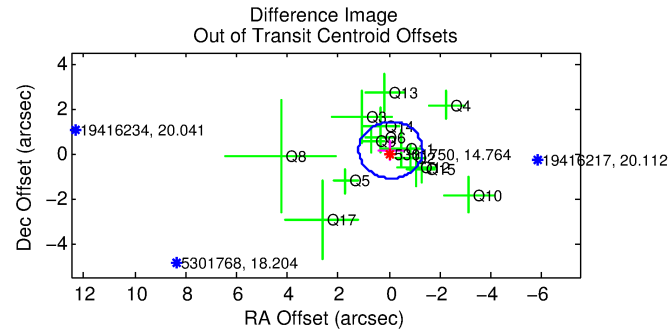
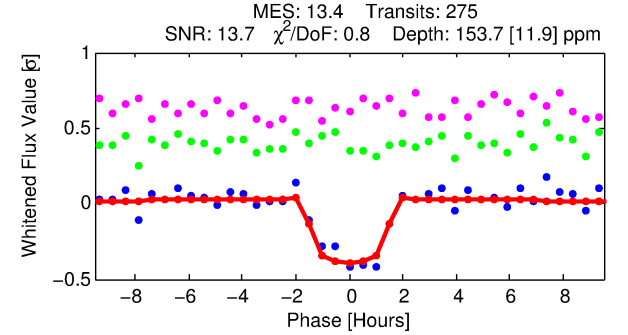
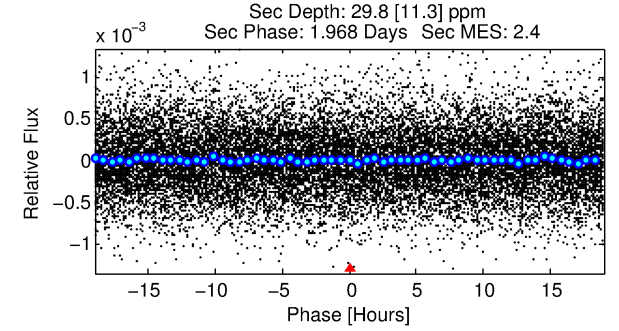
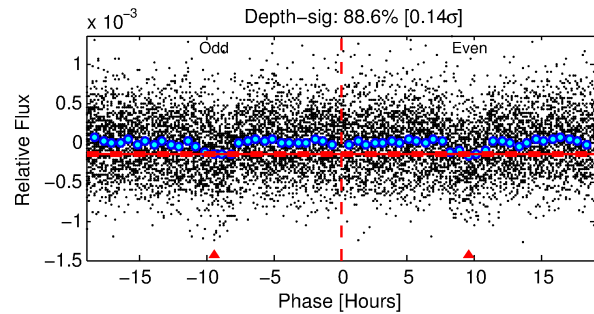
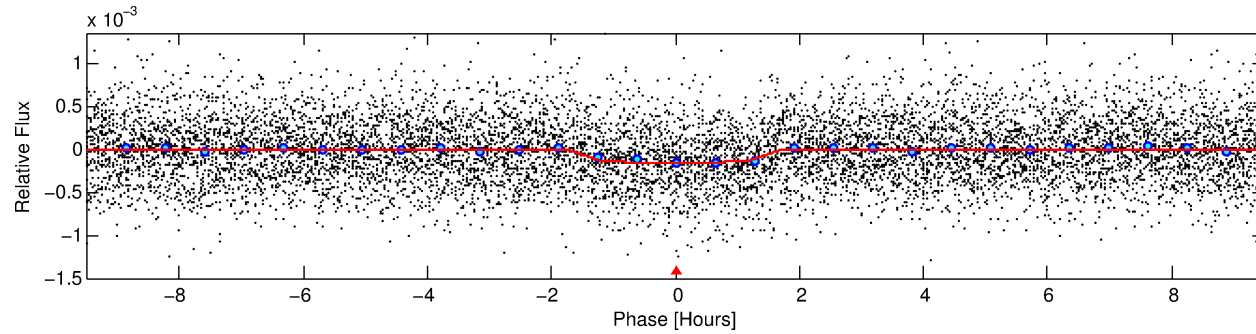
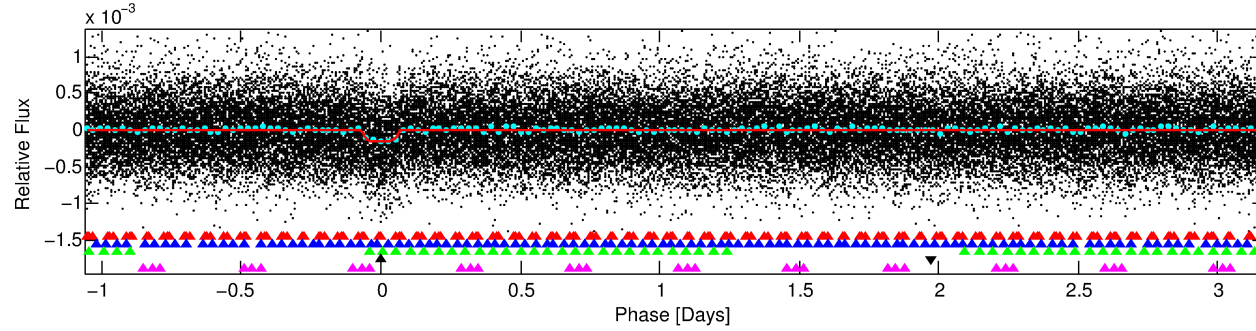
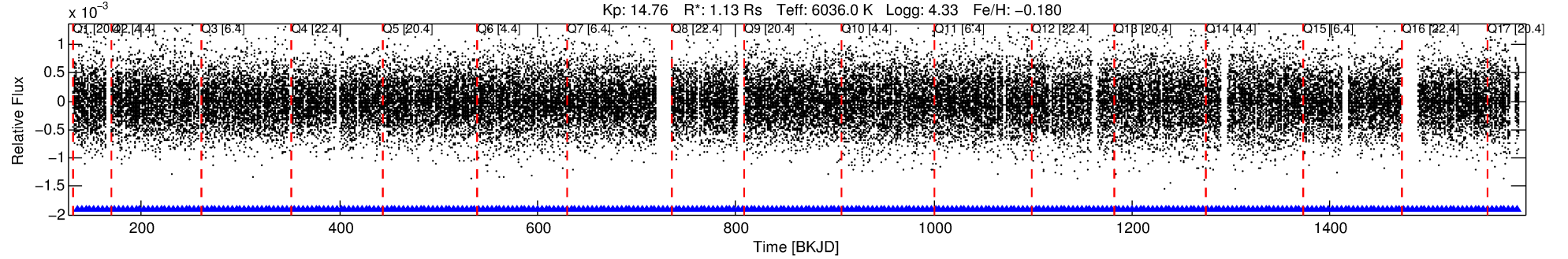
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 005301750-04

No Significant Match Found

# DV One-Page Summary

KIC: 5301750 Candidate: 4 of 5 Period: 4.225 d  
KOI: K01589.04 Name: Kepler-84d Corr: 0.977



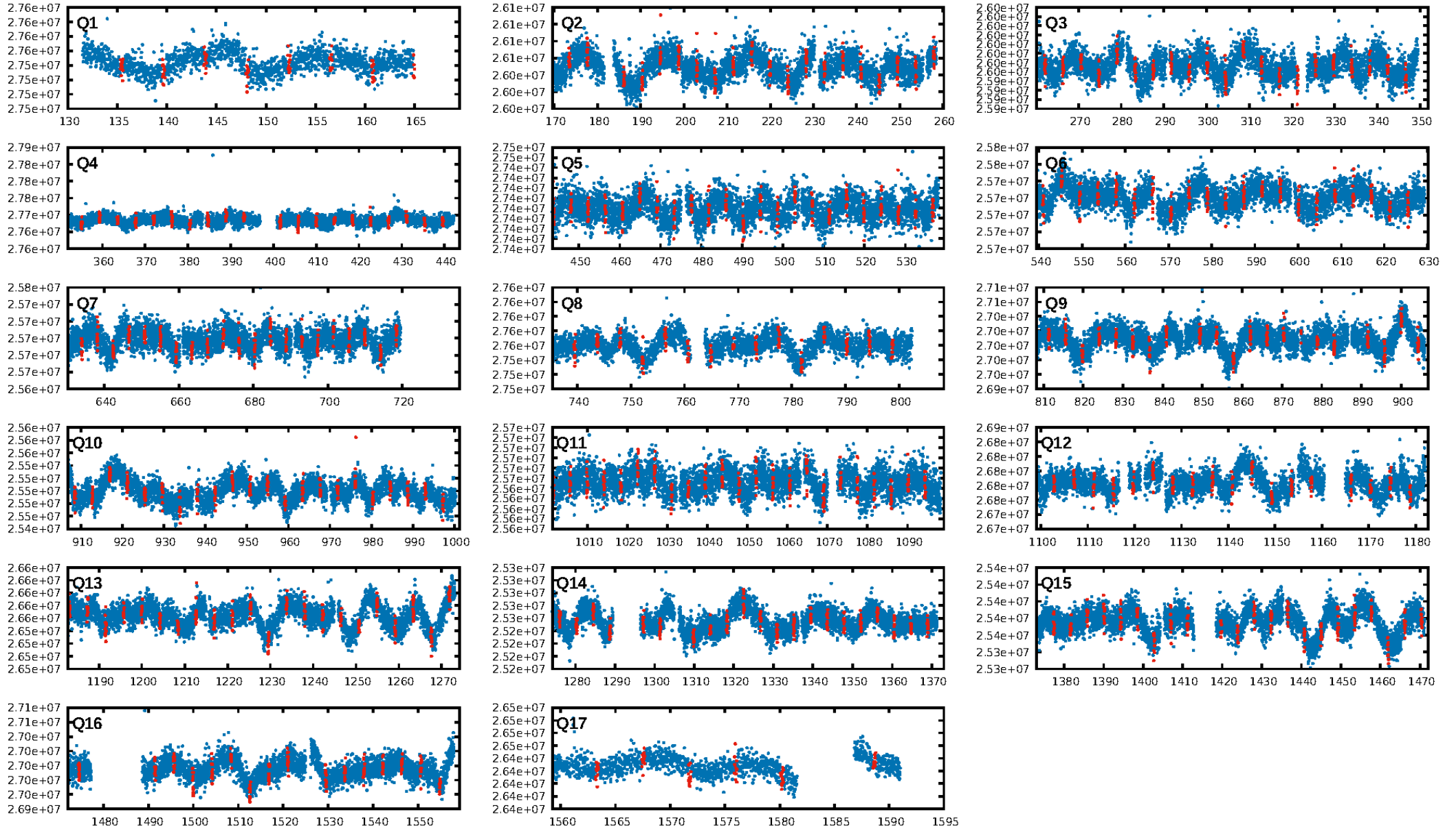
## DV Fit Results:

Period = 4.22450 [0.00002] d  
Epoch = 135.4328 [0.0036] BKJD  
Rp/R\* = 0.0133 [0.0056]  
a/R\* = 5.04 [10.65]  
b = 0.89 [0.53]  
Seff = 585.91 [134.05]  
Teff = 1255 [72] K  
Rp = 1.64 [0.74] Re  
a = 0.0510 [0.0071] AU  
Ag = 15.86 [15.10] [0.98 $\sigma$ ]  
Teffp = 3871 [902] K [2.89 $\sigma$ ]

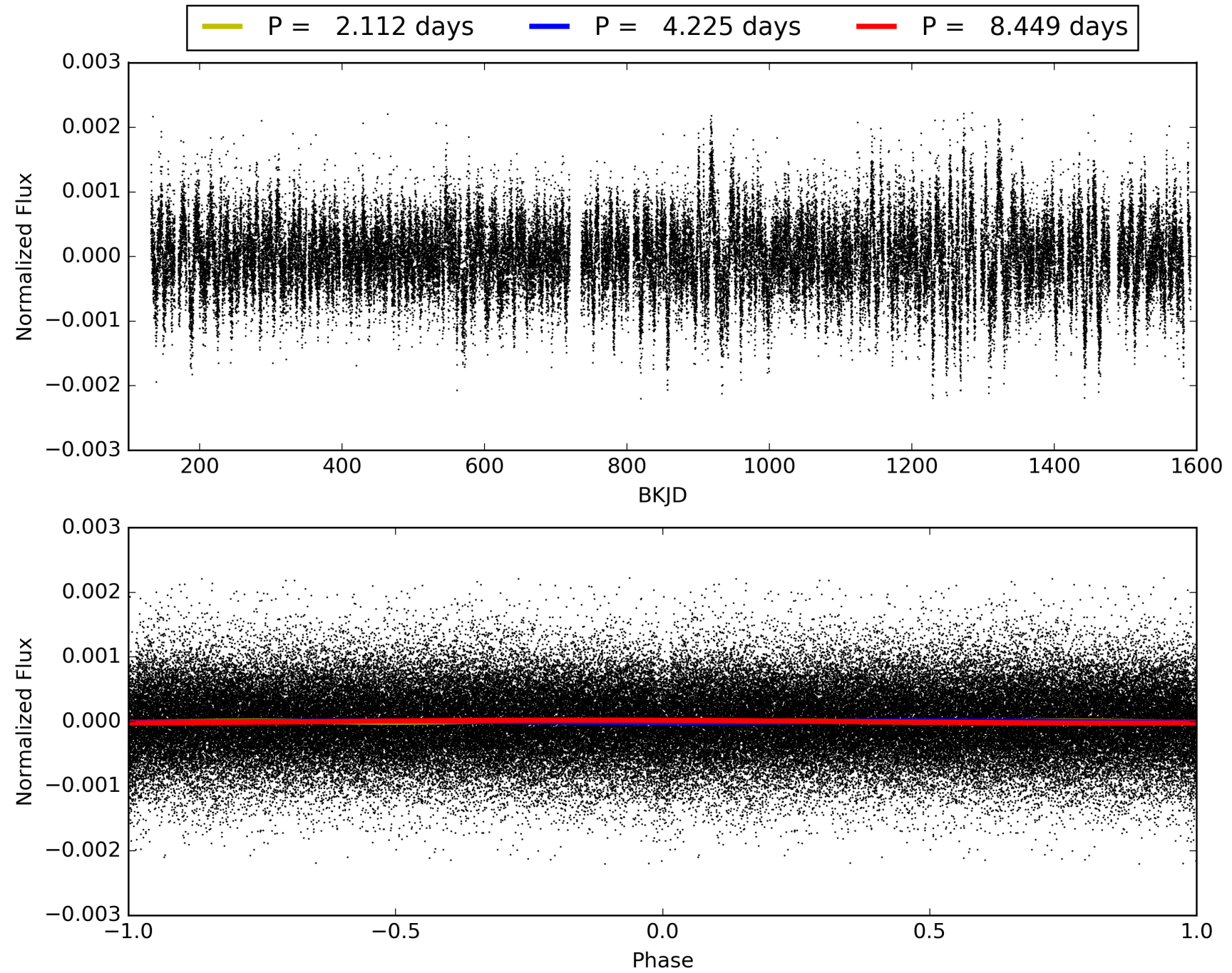
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [19.34 $\sigma$ ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 1.45e-39  
RollingBand-fgt: 1.00 [266/266]  
GhostDiagnostic-chr: 5.971  
Centroid-sig: 31.1%  
Centroid-so: 0.767 arcsec [0.96 $\sigma$ ]  
OotOffset-rm: 0.163 arcsec [0.39 $\sigma$ ]  
KicOffset-rm: 0.198 arcsec [0.44 $\sigma$ ]  
OotOffset-st: 4/3/3/4 [14]  
KicOffset-st: 4/3/3/4 [14]  
DiffImageQuality-fgm: 0.57 [8/14]  
DiffImageOverlap-fno: 1.00 [17/17]

# TCE 005301750-04, PDC Light Curves

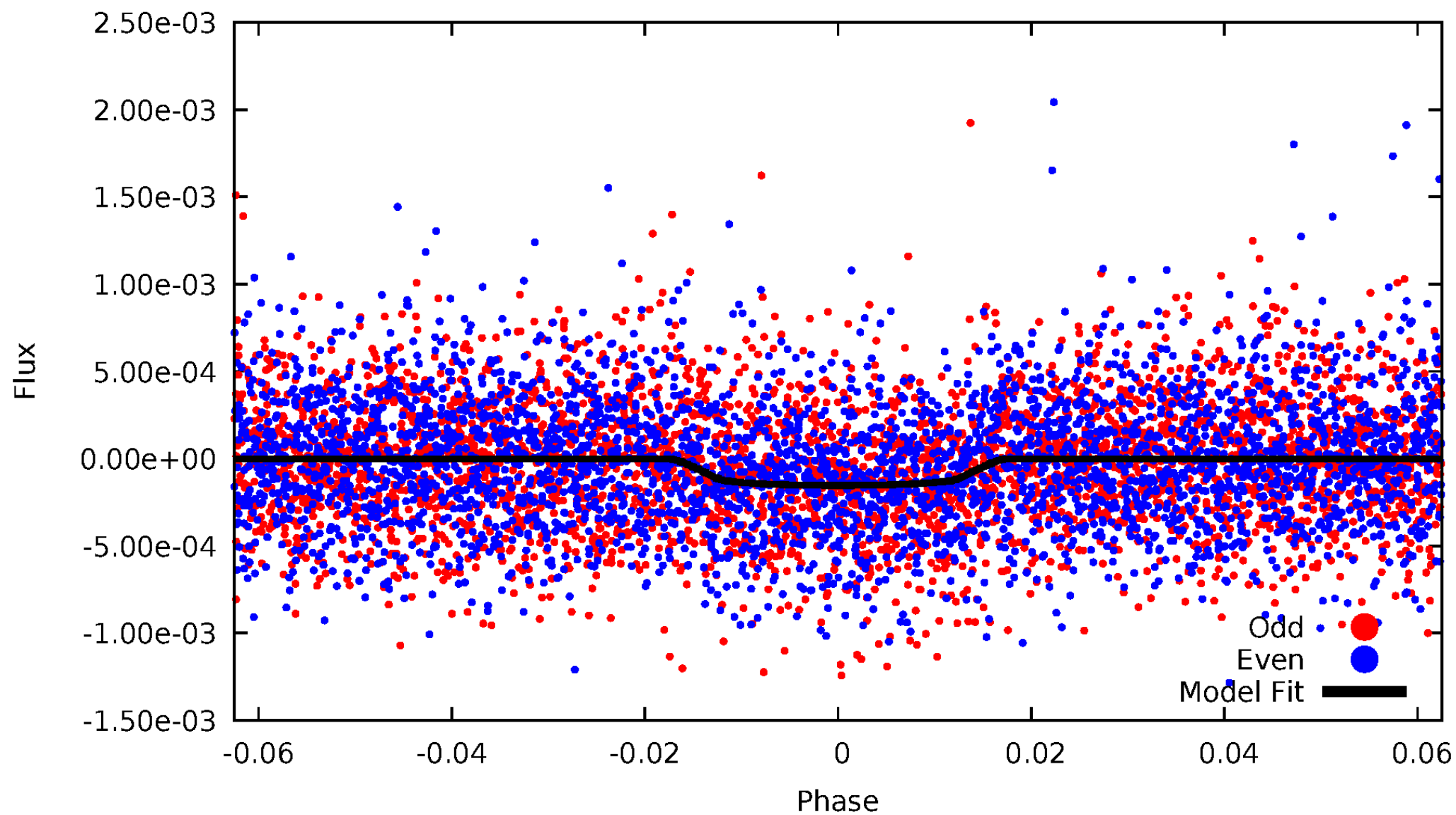


TCE 005301750-04



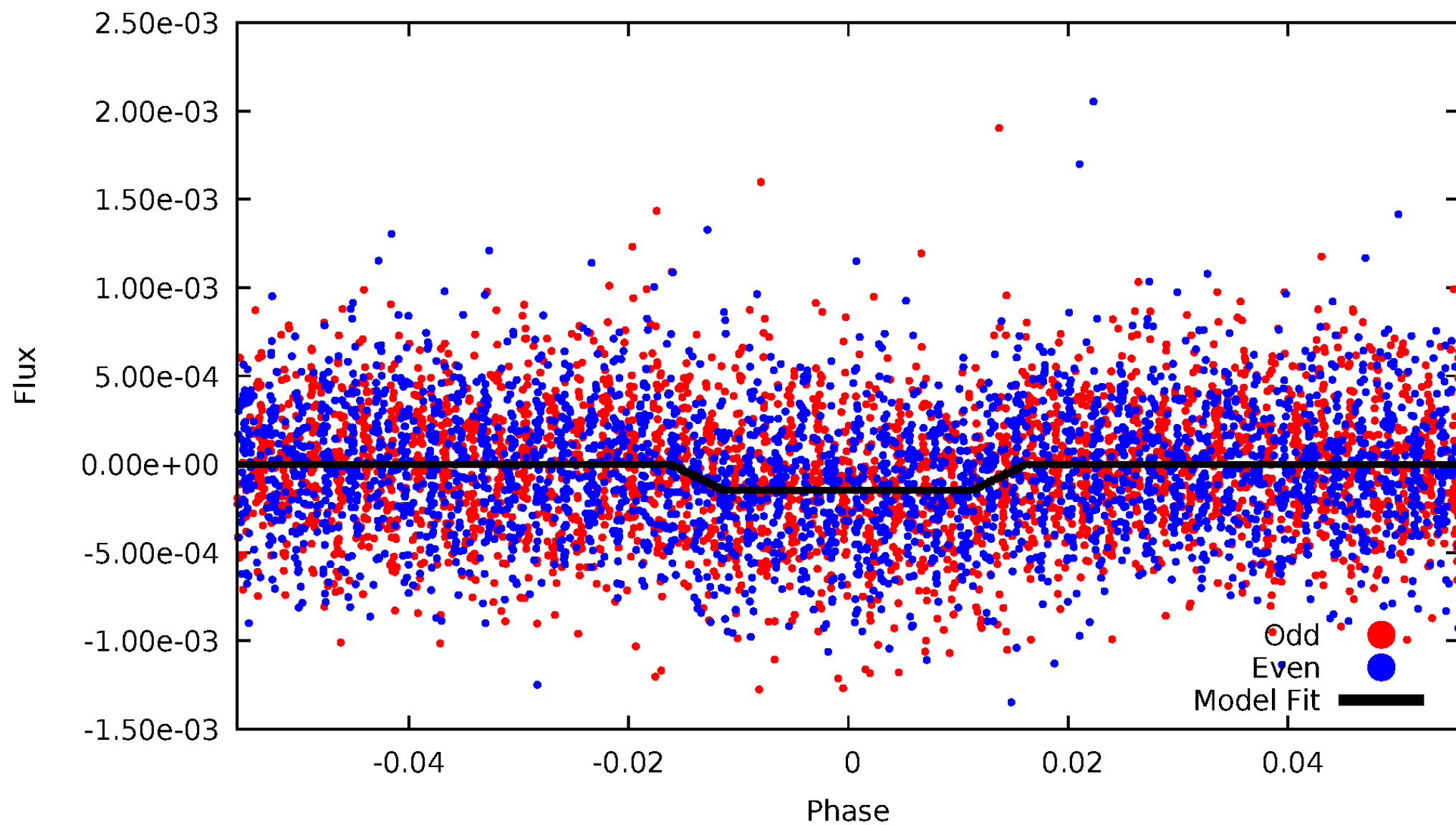
# DV Odd/Even

TCE 005301750-04



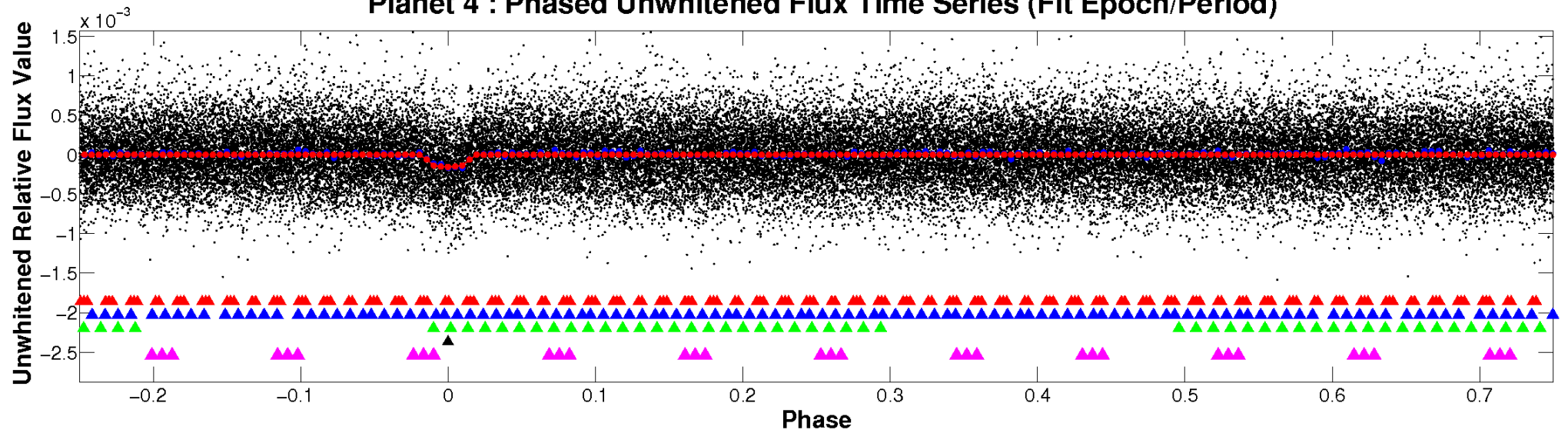
# ALT Odd/Even

TCE 005301750-04

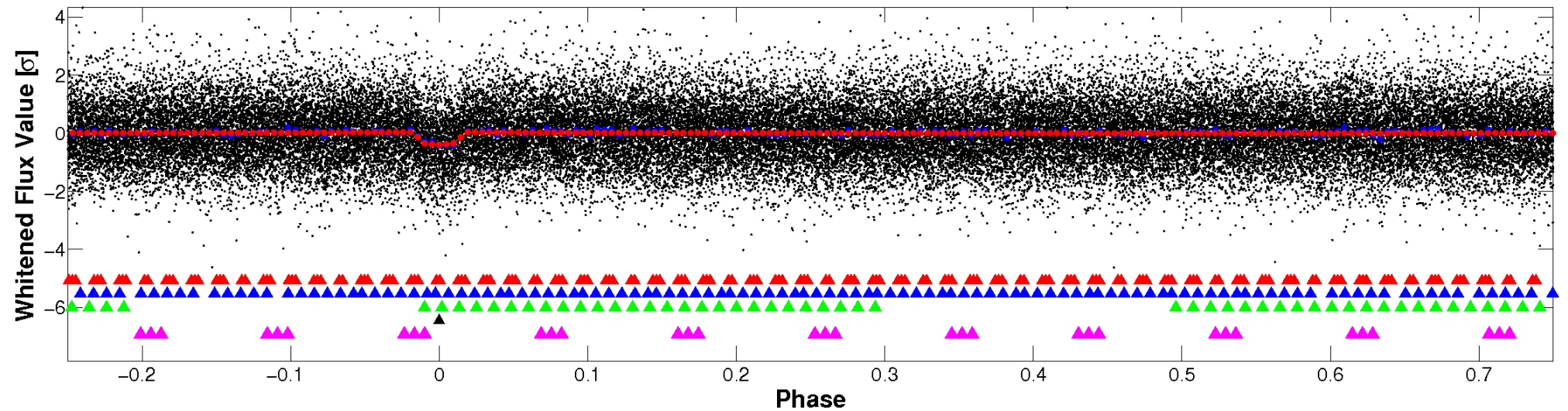


# Non-Whitened Vs. Whitened Light Curve

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

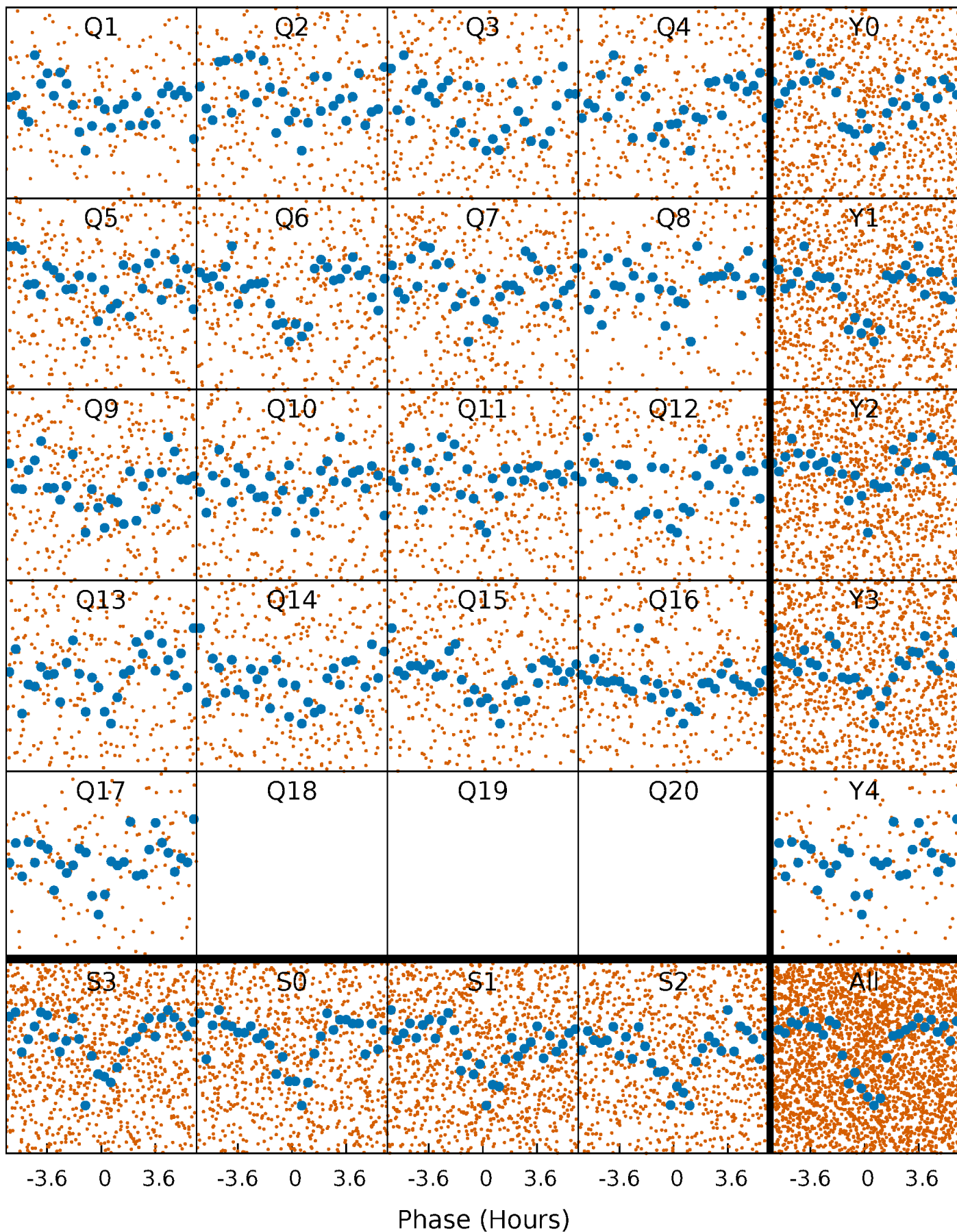


## Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



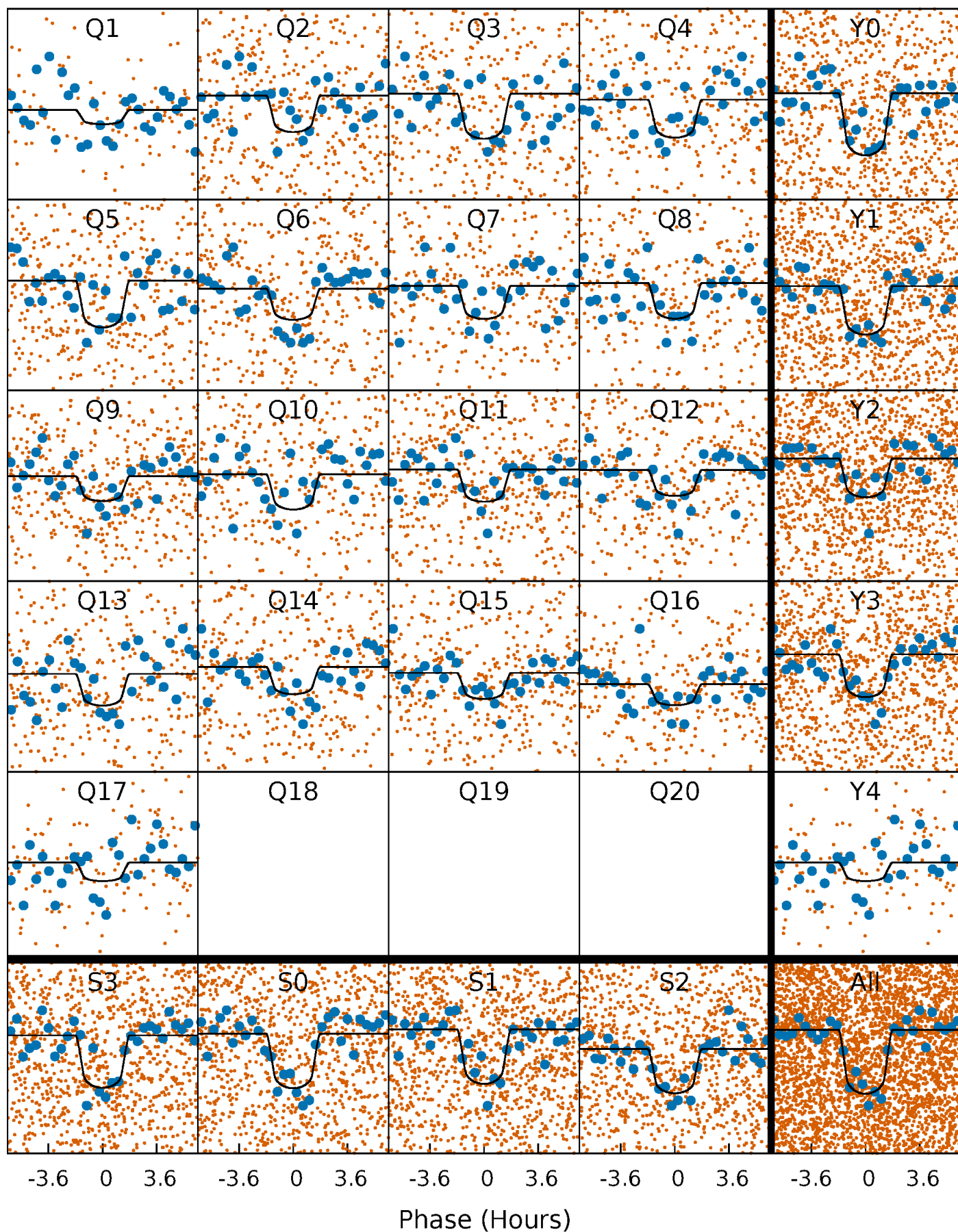
# PDC Quarter-Phased Transit Curves

TCE 005301750-04 P= 4.224503 Days  $T_0=135.432824$  (BKJD)



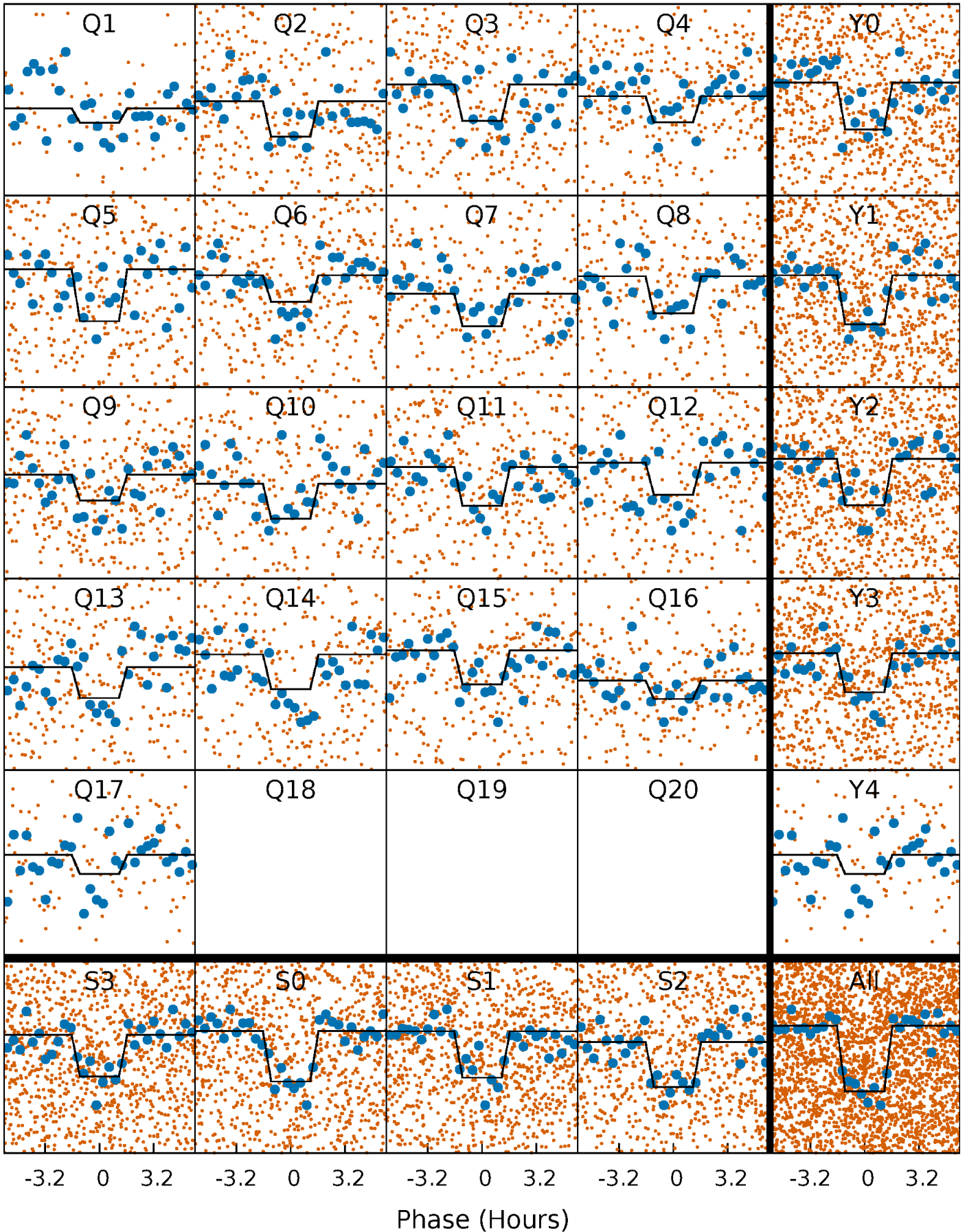
# DV Quarter-Phased Transit Curves

TCE 005301750-04   P= 4.224503 Days    $T_0=135.432824$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

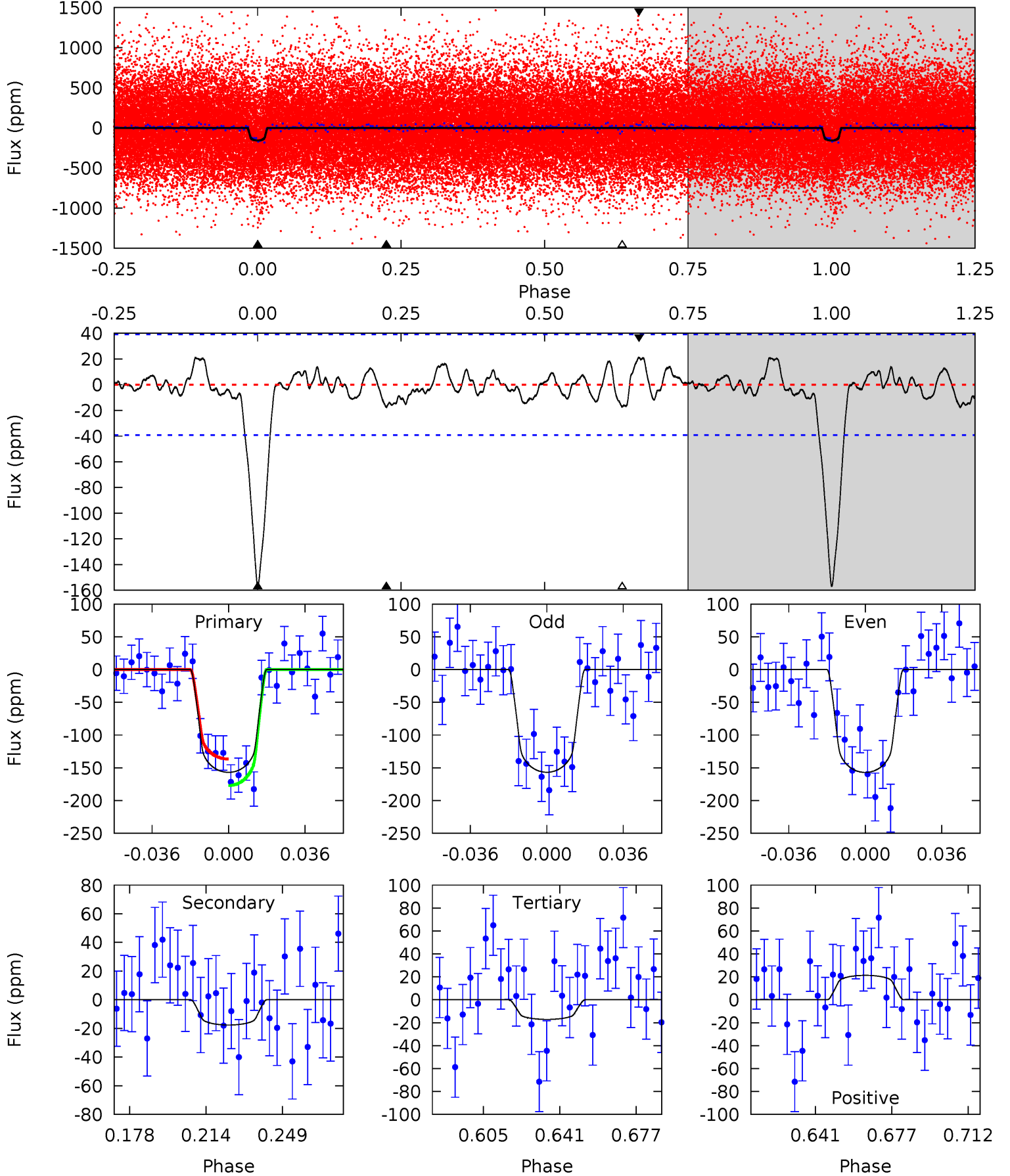
TCE 005301750-04     $P = 4.224523$  Days     $T_0 = 135.432593$  (BKJD)



# DV Model-Shift Uniqueness Test

005301750-04, P = 4.224503 Days, E = 131.208321 Days

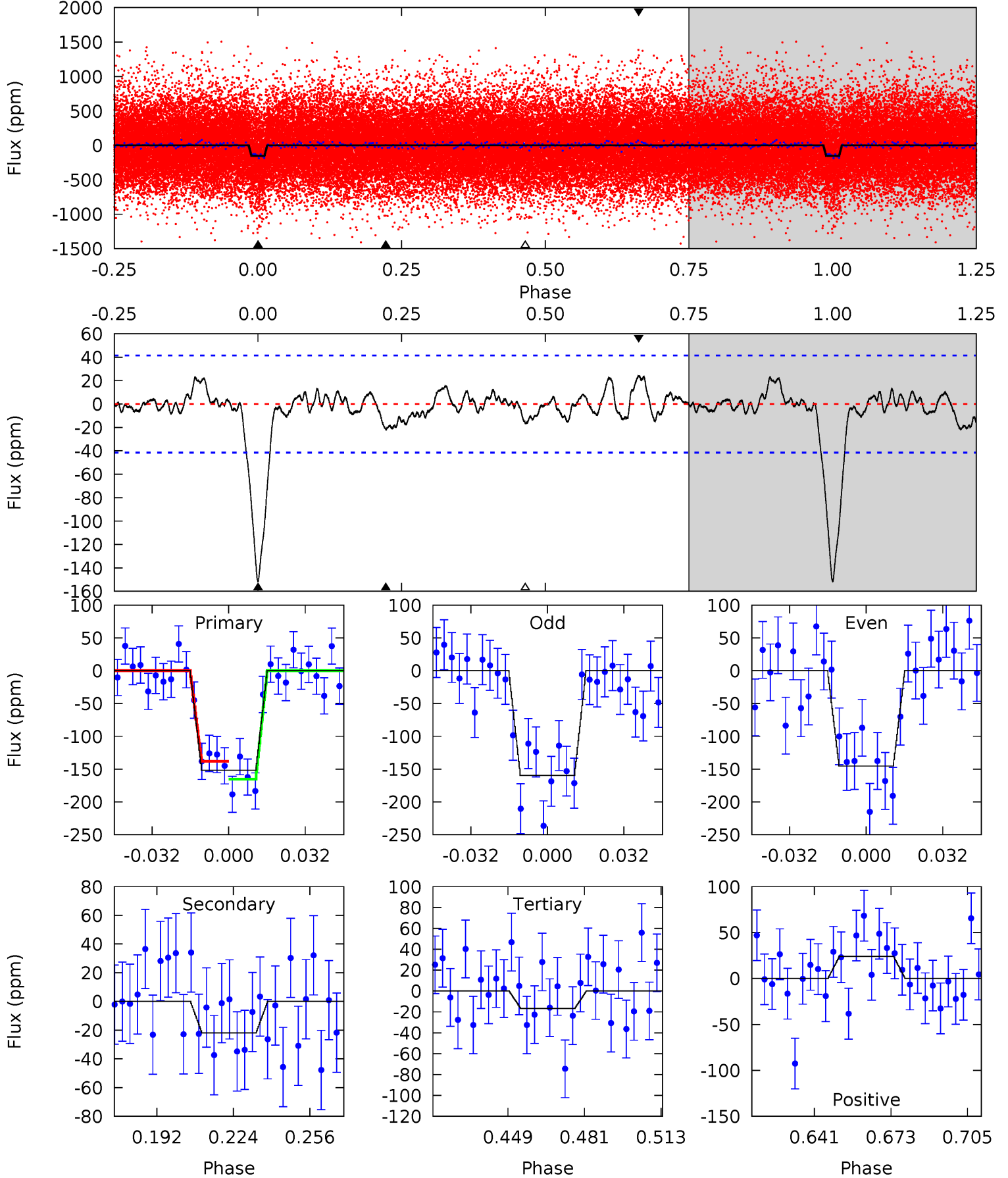
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.1	2.14	2.09	2.59	4.78	2.10	1.00	17.0	16.5	0.06	-0.45	0.02	0.99	0.12	2.48



# Alt Model-Shift Uniqueness Test

005301750-04, P = 4.224523 Days, E = 131.208070 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
17.5	2.52	1.92	2.78	4.80	2.14	0.97	15.6	14.7	0.60	-0.26	0.82	0.96	0.14	1.57



### Stellar Parameters For KIC 005301750

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6036^{+120}_{-132}$	$4.326^{+0.120}_{-0.120}$	$-0.180^{+0.150}_{-0.150}$	$1.131^{+0.176}_{-0.158}$	$0.987^{+0.072}_{-0.064}$	$0.962^{+0.502}_{-0.332}$
	+2%/-2%	+3%/-3%	+83%/-83%	+16%/-14%	+7%/-6%	+52%/-35%
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 005301750-04 / KOI 1589.04

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-18 \pm 8$	$1.63^{+0.73}_{-0.73}$	$1754^{+87}_{-76}$	$3768^{+954}_{-562}$	$9.047^{+20.597}_{-5.421}$
Alt.	$-22 \pm 9$	$1.52^{+0.73}_{-0.68}$	$1754^{+82}_{-78}$	$3989^{+1054}_{-547}$	$13^{+31}_{-7}$

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

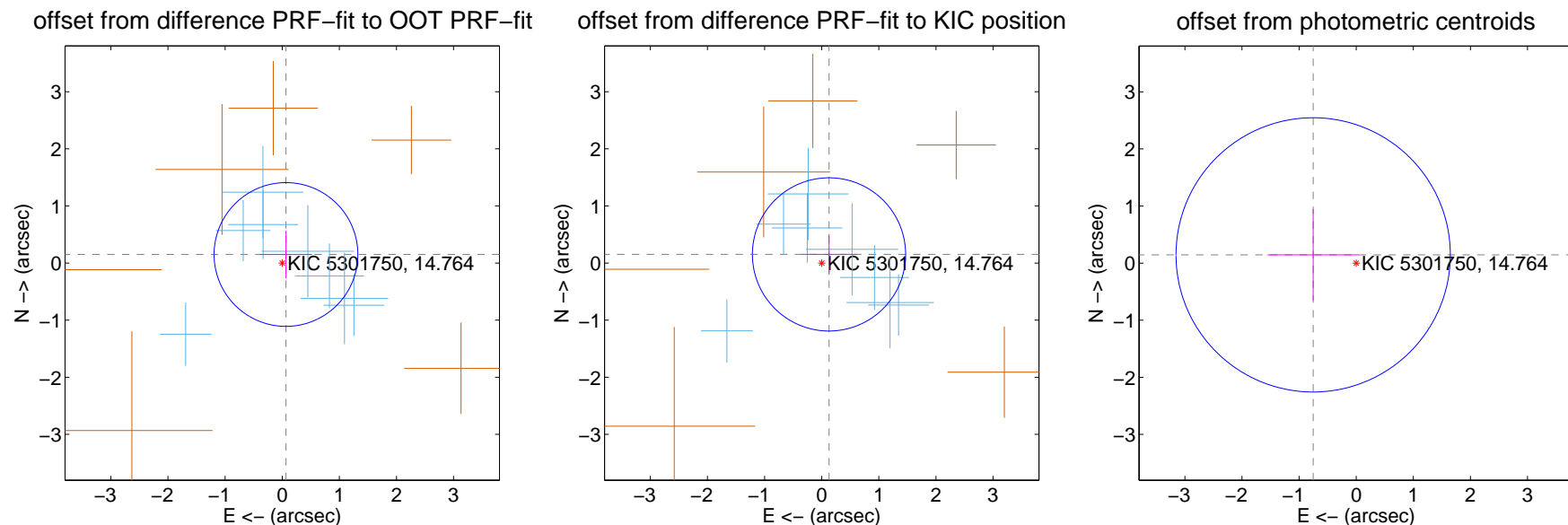
## DV Centroid Data

Supplemental centroid analysis for 005301750-04. Kepler magnitude: 14.76. Transit SNR 13.66

There are 8 quarters with good PRF difference image offsets

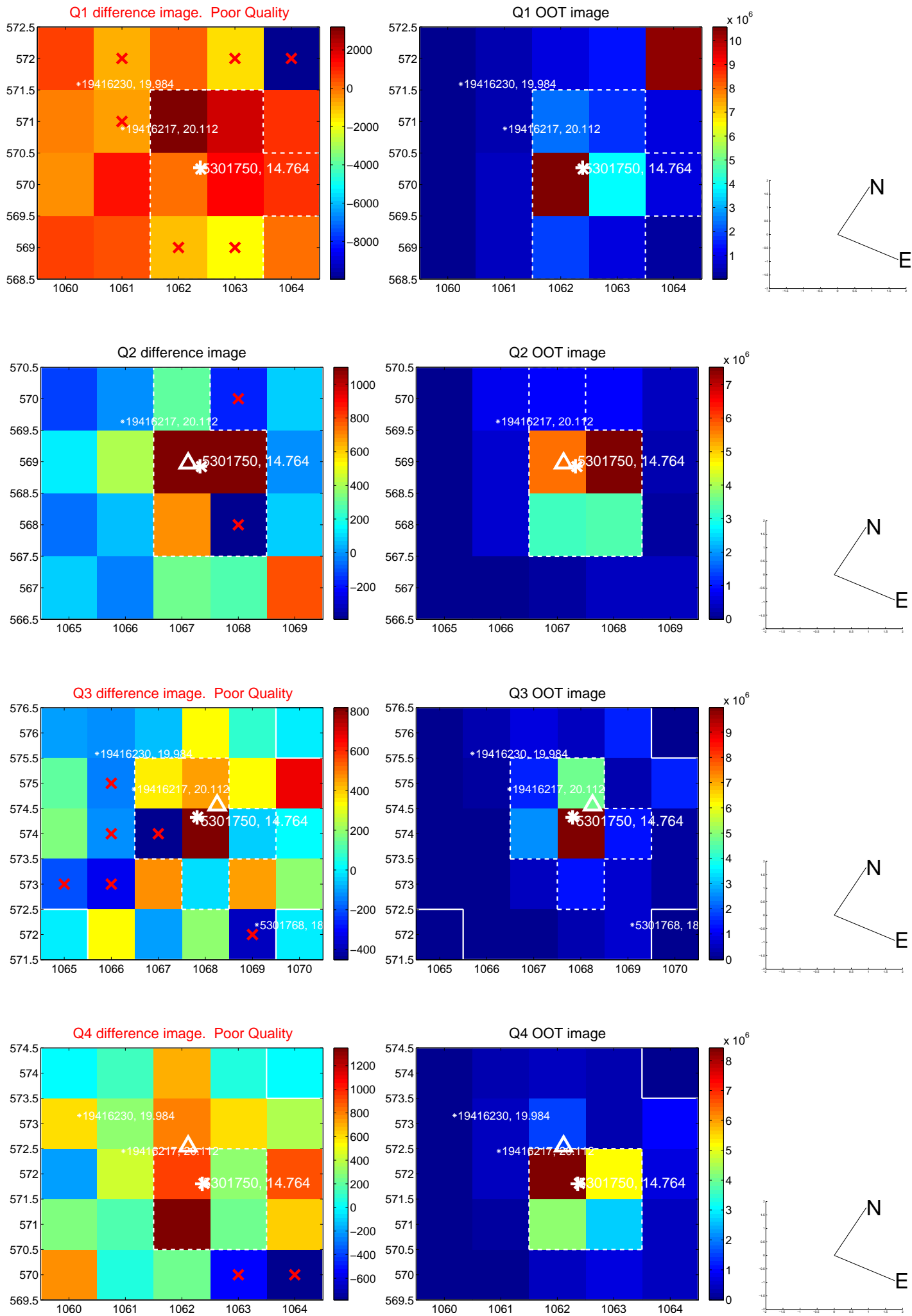
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.163 \pm 0.420$	0.39	$-0.066 \pm 0.457$	$0.150 \pm 0.417$
PRF-fit source offset from KIC position	$0.198 \pm 0.447$	0.44	$-0.128 \pm 0.487$	$0.151 \pm 0.353$
photometric centroid source offset	$0.77 \pm 0.80$	0.96	$0.75 \pm 0.80$	$0.14 \pm 0.80$

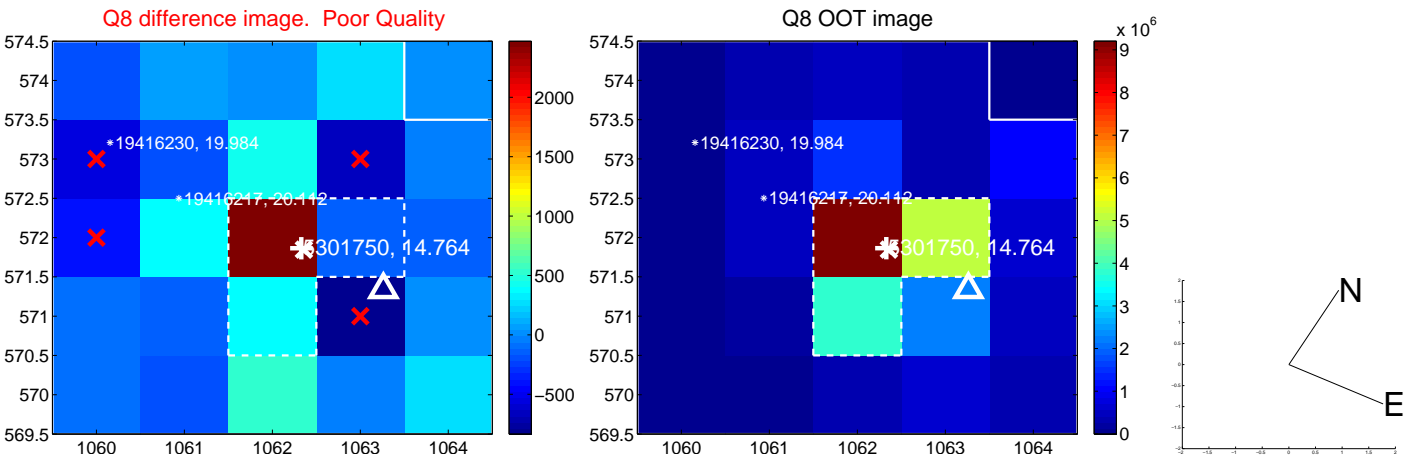
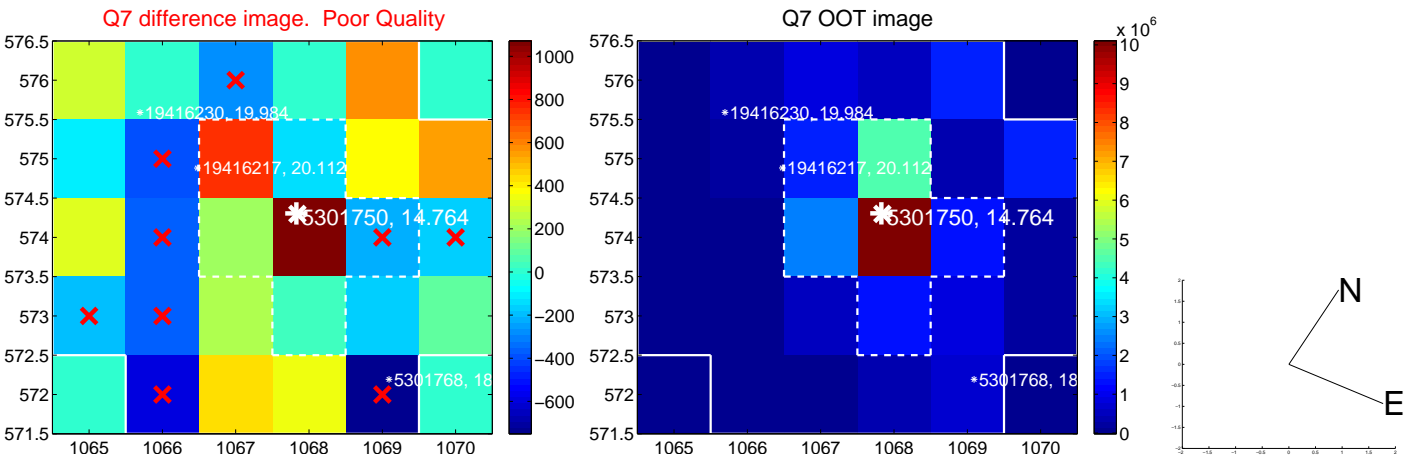
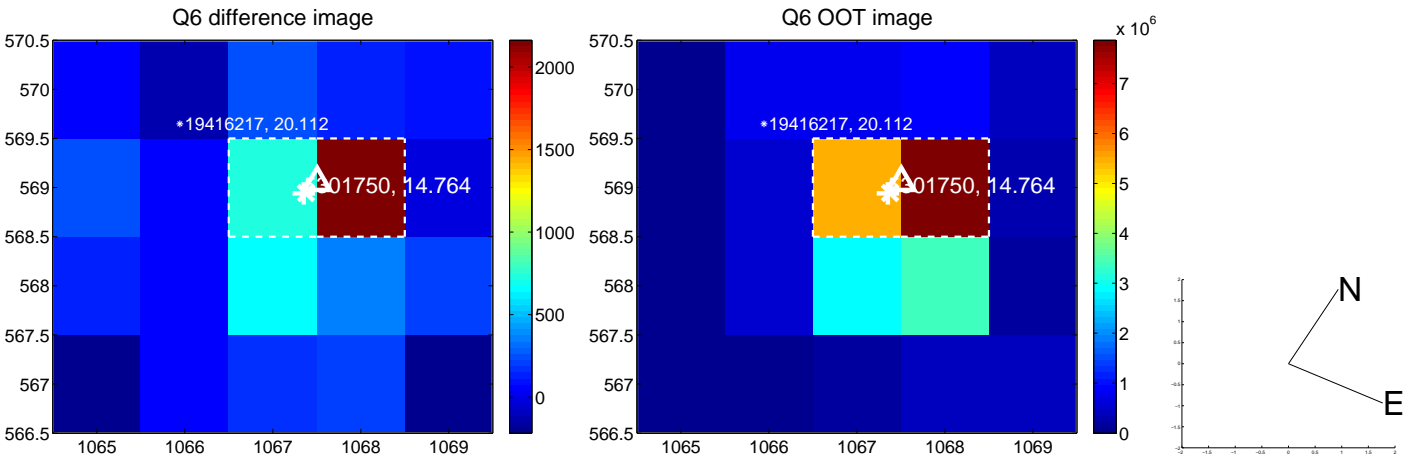
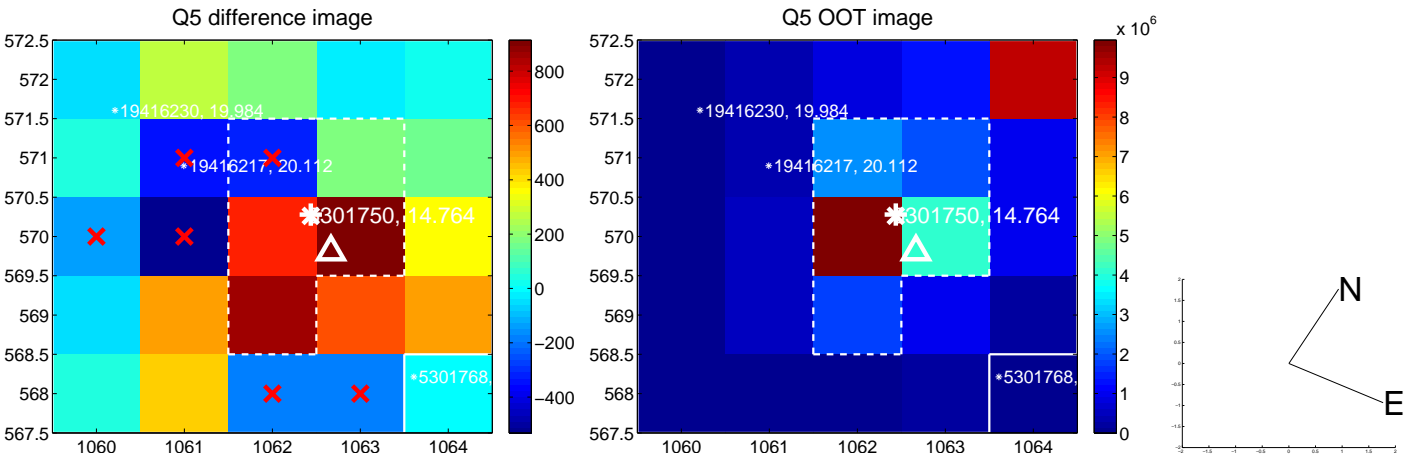


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

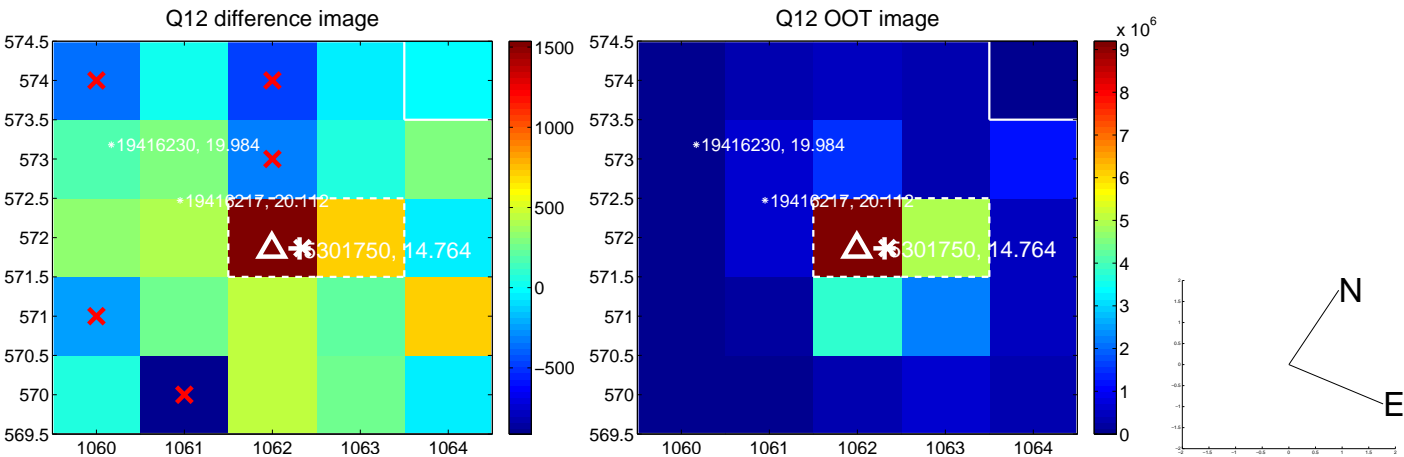
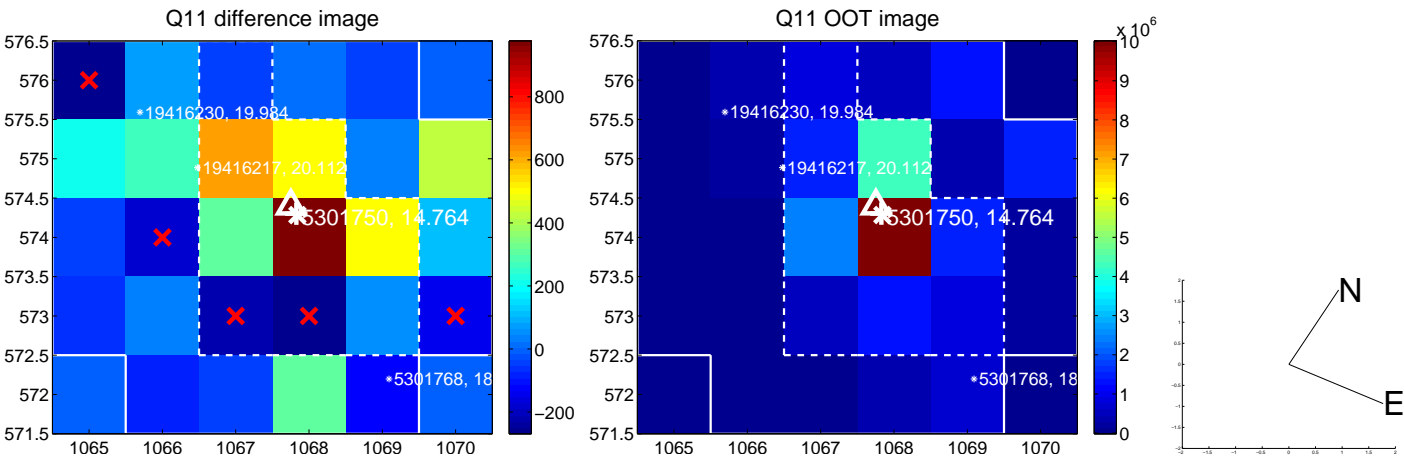
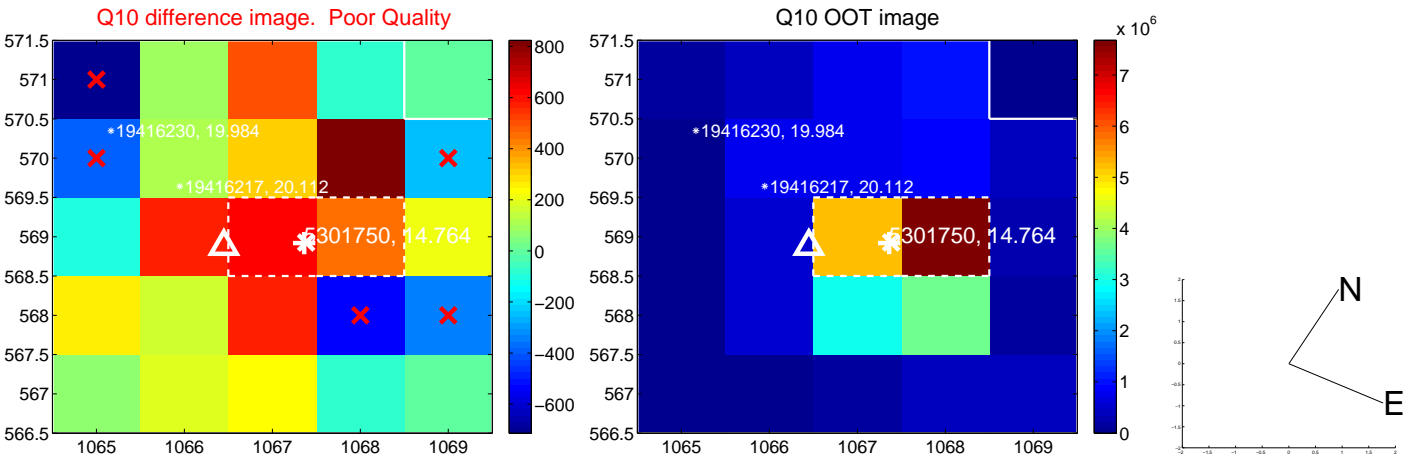
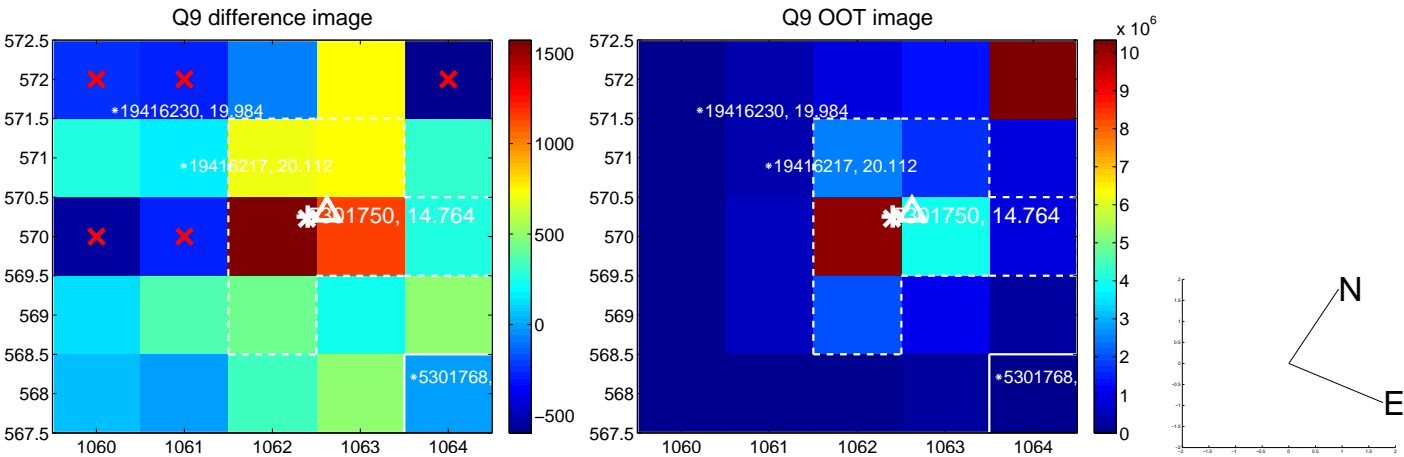
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



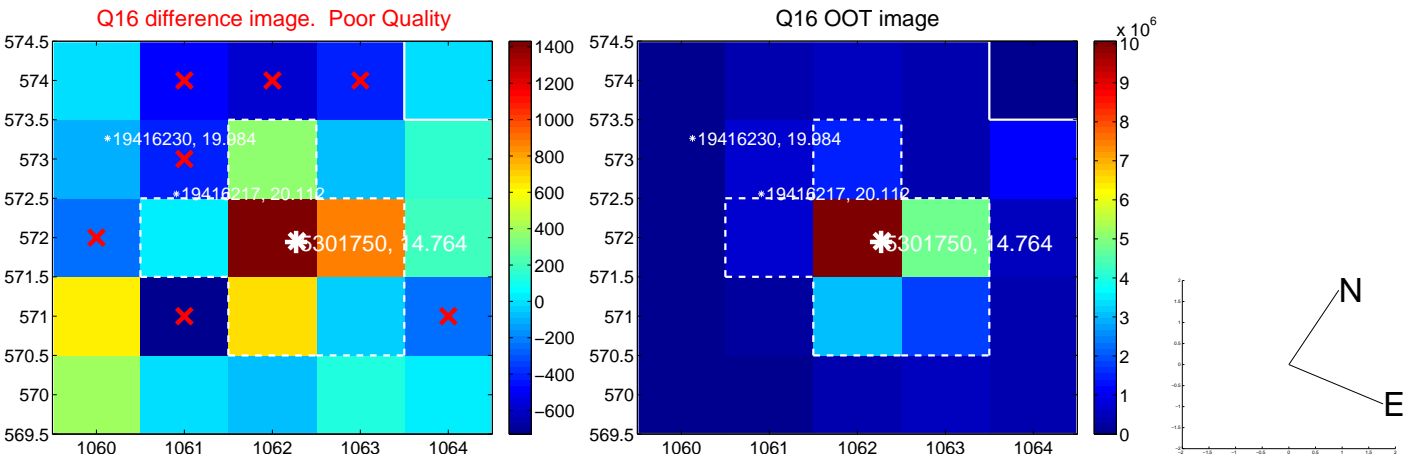
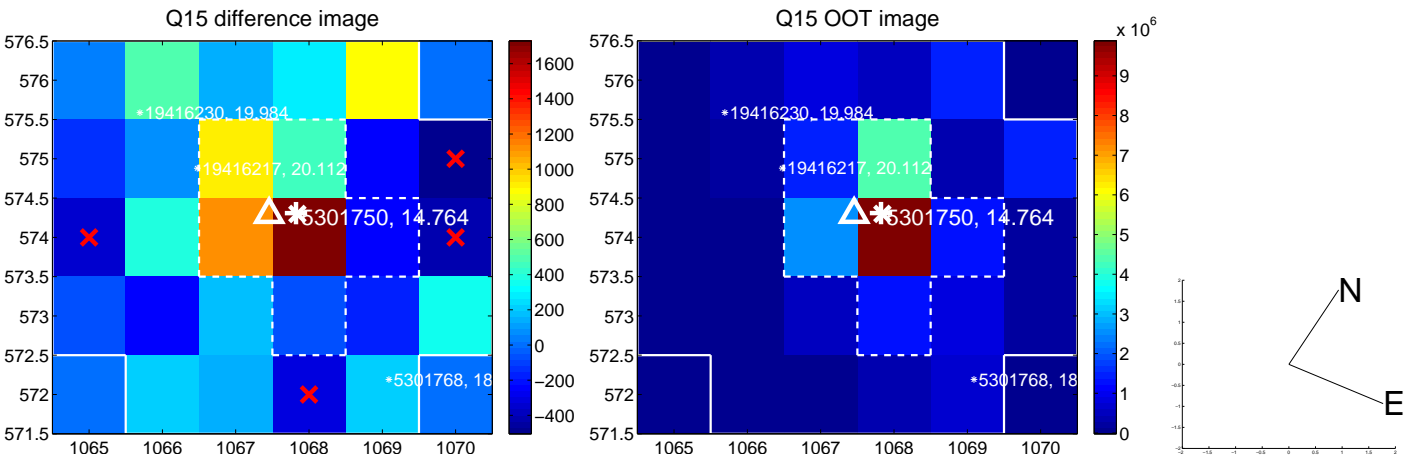
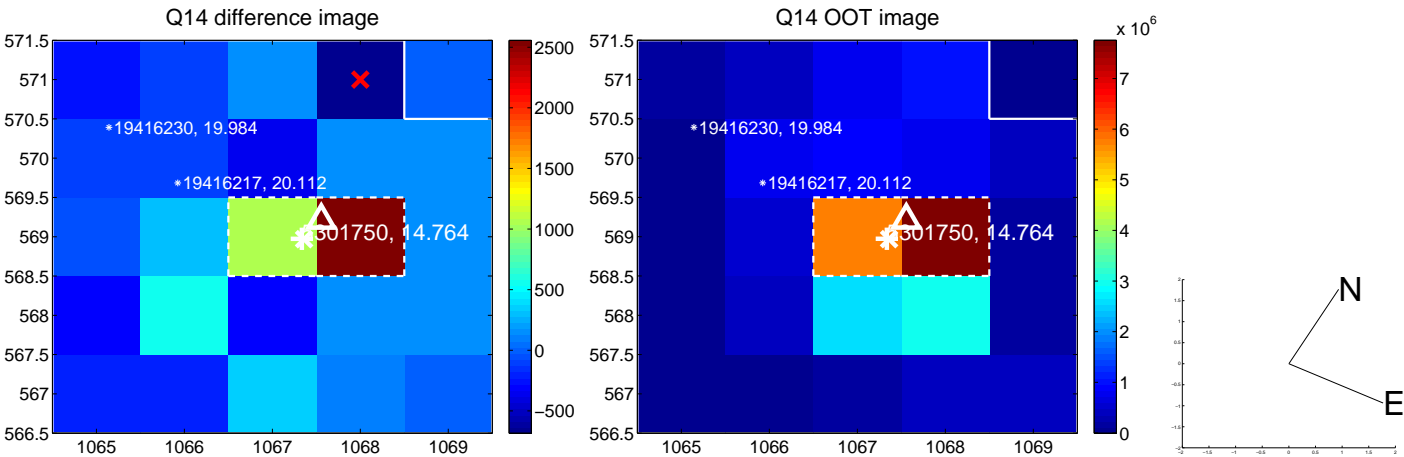
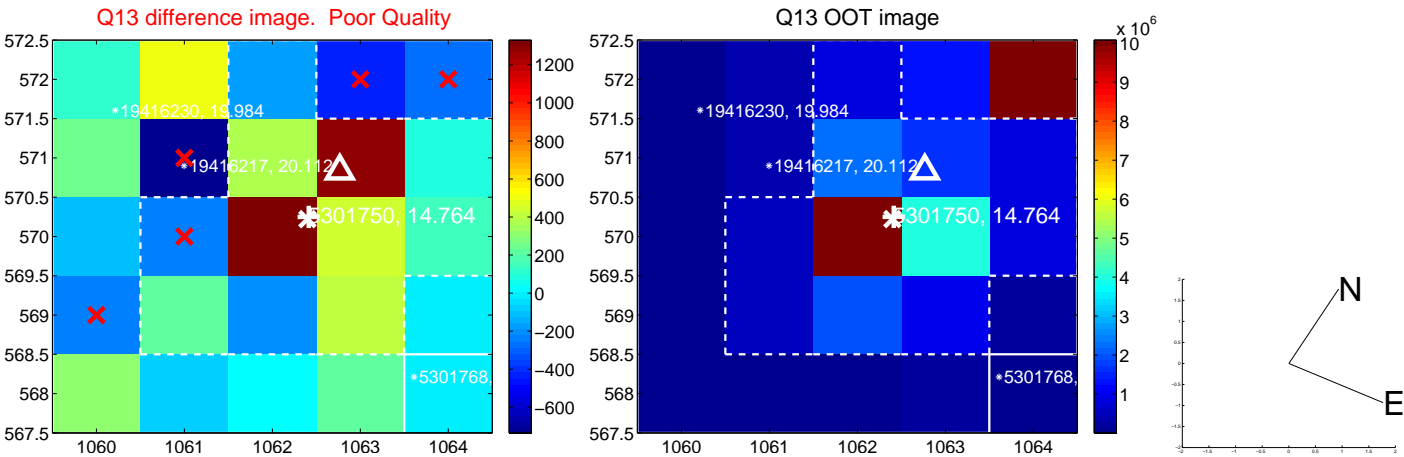
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



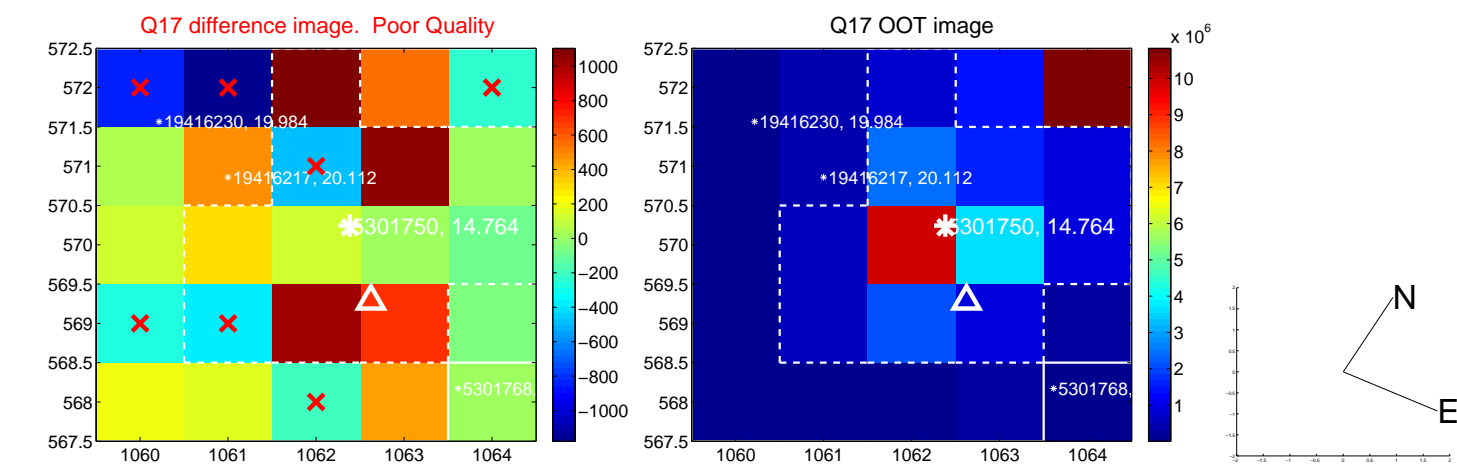
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



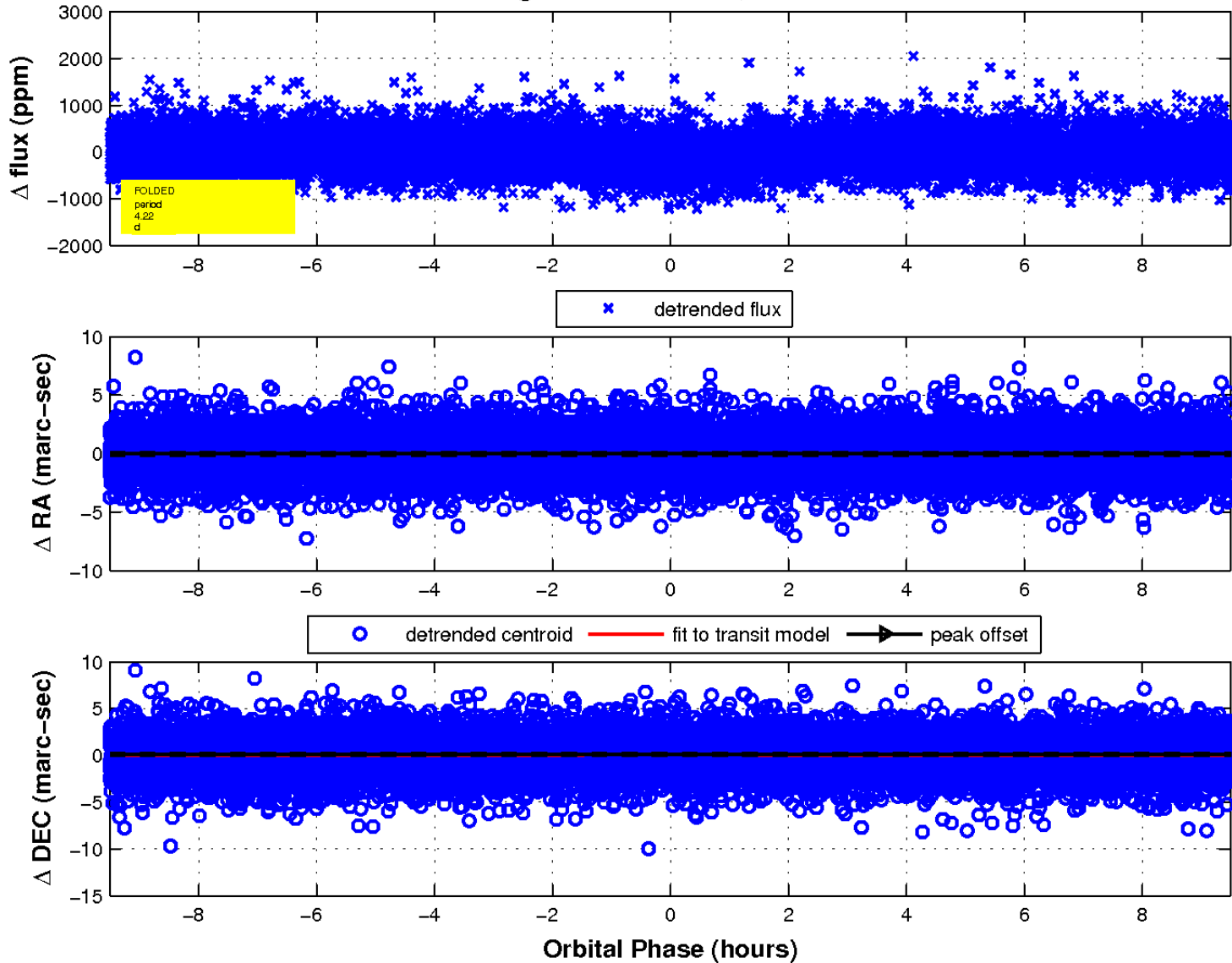
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

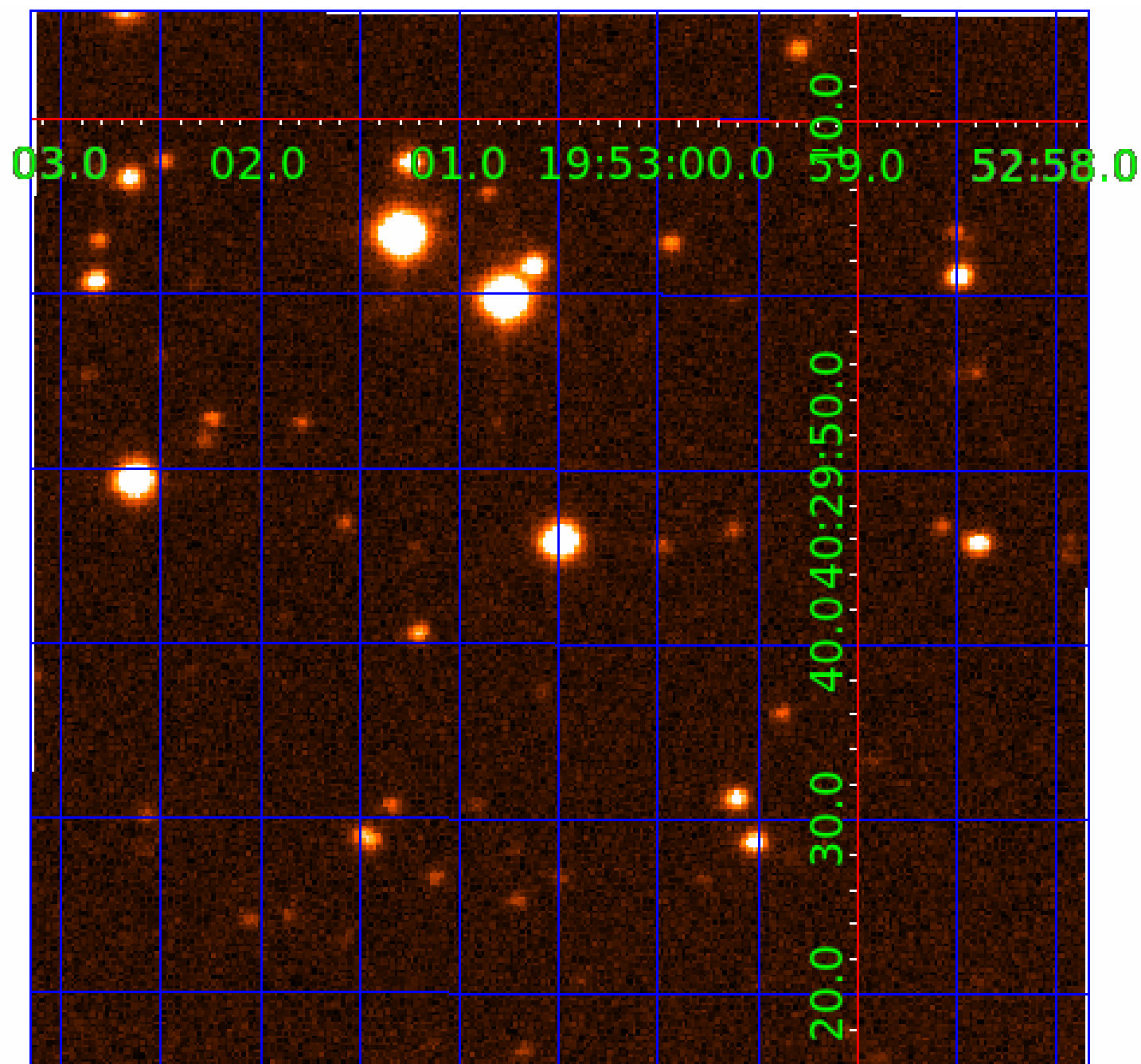


fluxWeightedCentroids, Planet 4 of 5



UKIRT Image

Declination



# KIC 005301750

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
005301750-01	OBS	1589.01	8.725861	138.766993	445.7	4.600	27.9	31.3	1.13	6036	2.90	222.74
005301750-02	OBS	1589.02	12.882874	135.189430	502.7	6.226	25.3	27.5	1.13	6036	3.44	132.49
005301750-03	OBS	1589.03	27.434620	145.121918	480.9	5.238	19.3	20.6	1.13	6036	2.77	48.36
005301750-04	OBS	1589.04	4.224503	135.432824	153.7	3.168	13.4	13.7	1.13	6036	1.64	585.91
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## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005301750-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-03	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT
005301750-05	OBS	PC	1.00	0	0	0	0	NO_COMMENT

**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.

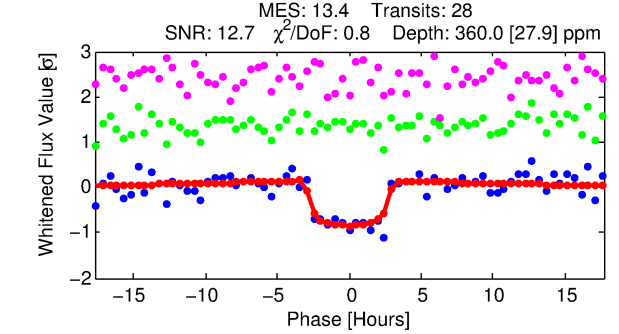
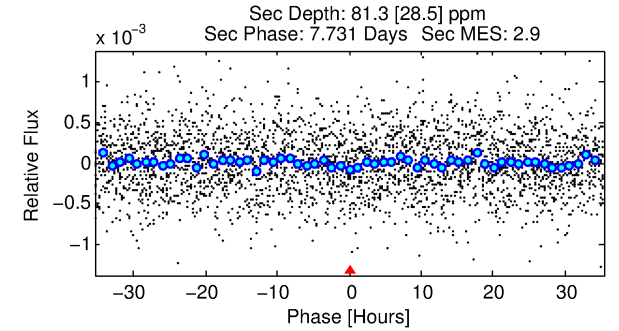
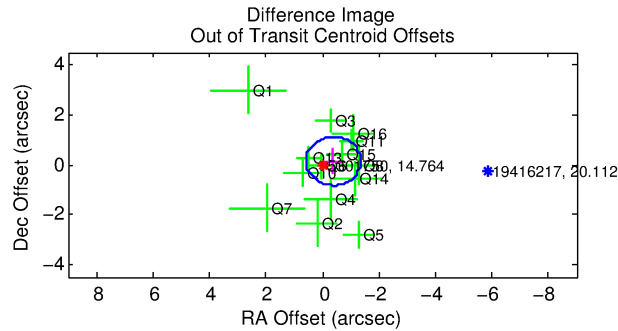
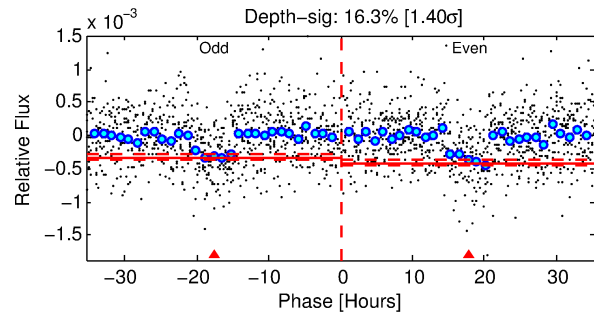
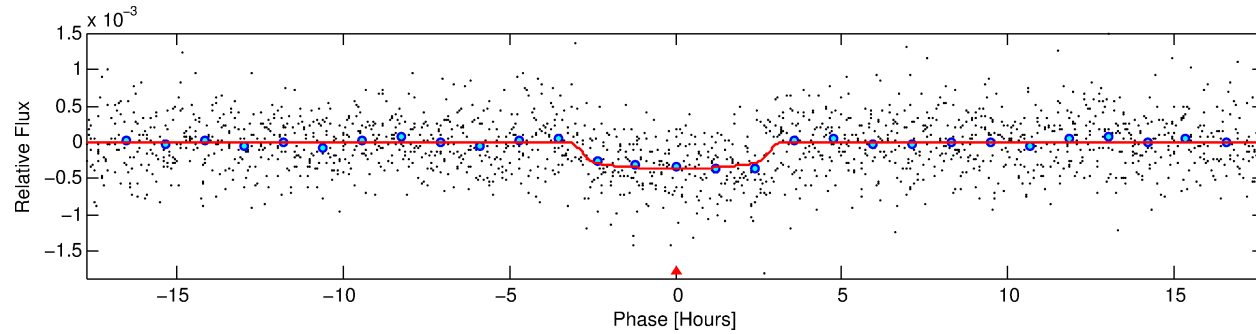
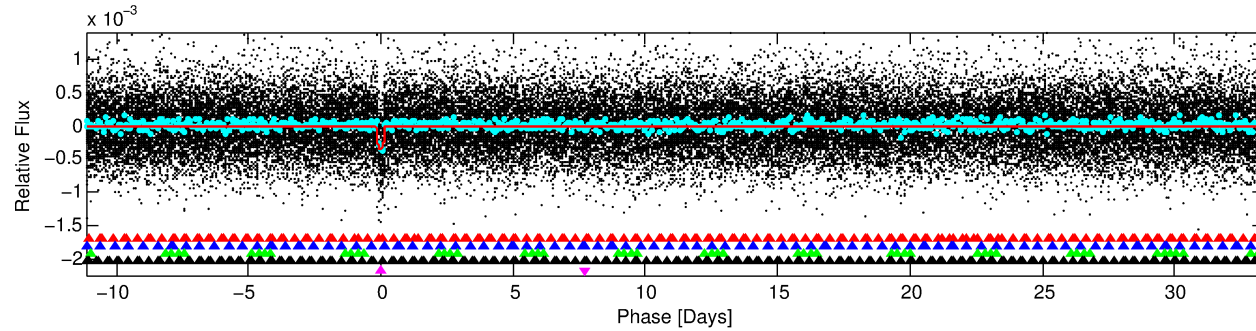
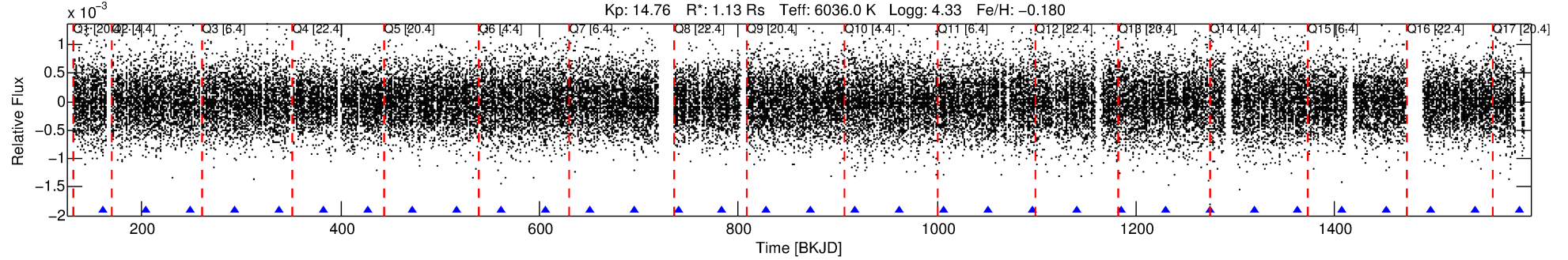
## Ephemeris Match Information For 005301750-05

No Significant Match Found

# DV One-Page Summary

KIC: 5301750 Candidate: 5 of 5 Period: 44.552 d  
KOI: K01589.05 Name: Kepler-84f Corr: 0.988

Kp: 14.76 R\*: 1.13 Rs Teff: 6036.0 K Logg: 4.33 Fe/H: -0.180



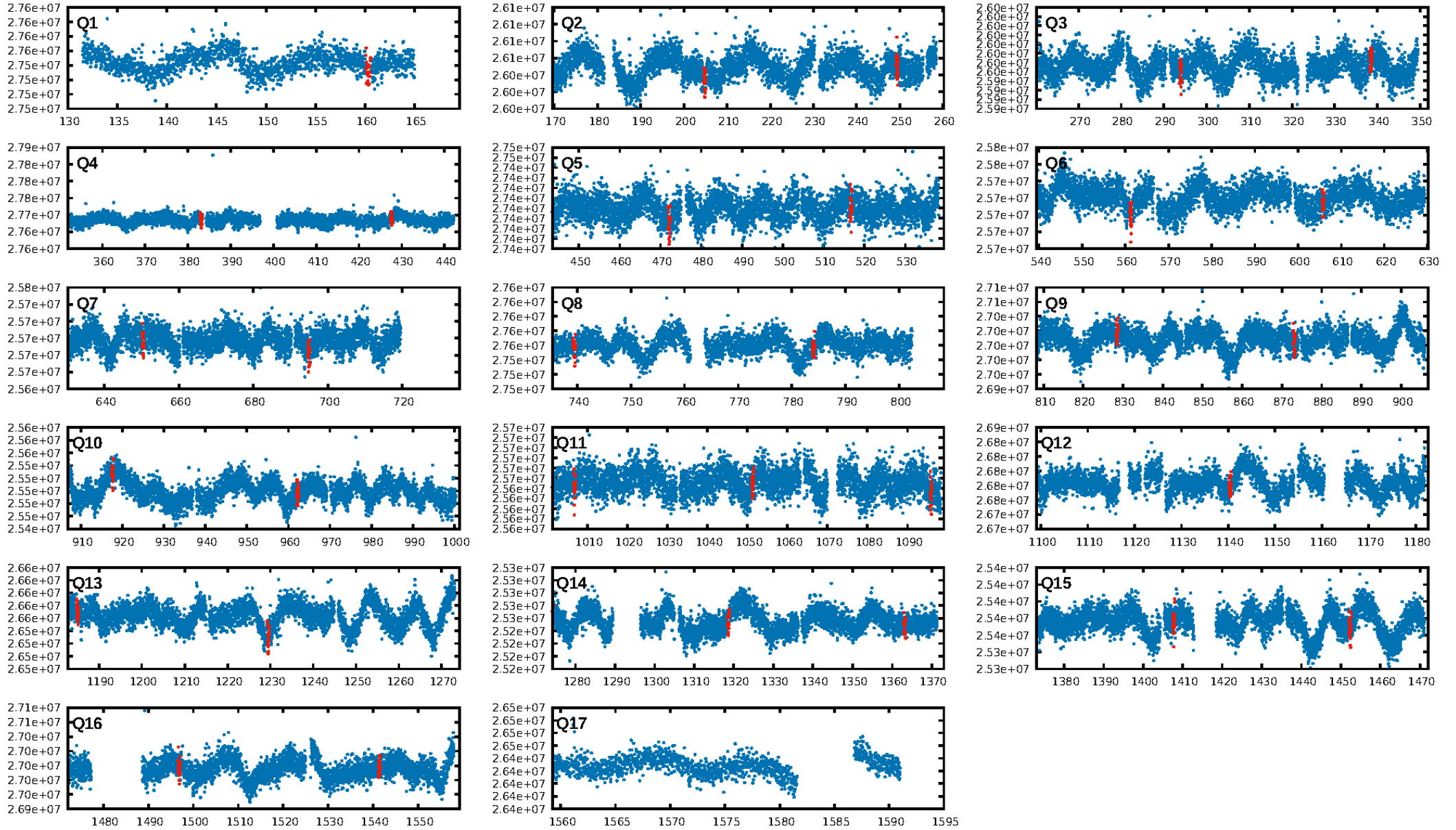
## DV Fit Results:

Period = 44.55193 [0.00043] d  
Epoch = 160.2914 [0.0080] BKJD  
Rp/R\* = 0.0186 [0.0116]  
a/R\* = 42.50 [129.63]  
b = 0.70 [2.22]  
Seff = 25.33 [5.80]  
Teff = 572 [33] K  
Rp = 2.30 [1.47] Re  
a = 0.2450 [0.0340] AU  
Ag = 510.00 [669.04] [0.76σ]  
Teffp = 4203 [1364] K [2.66σ]

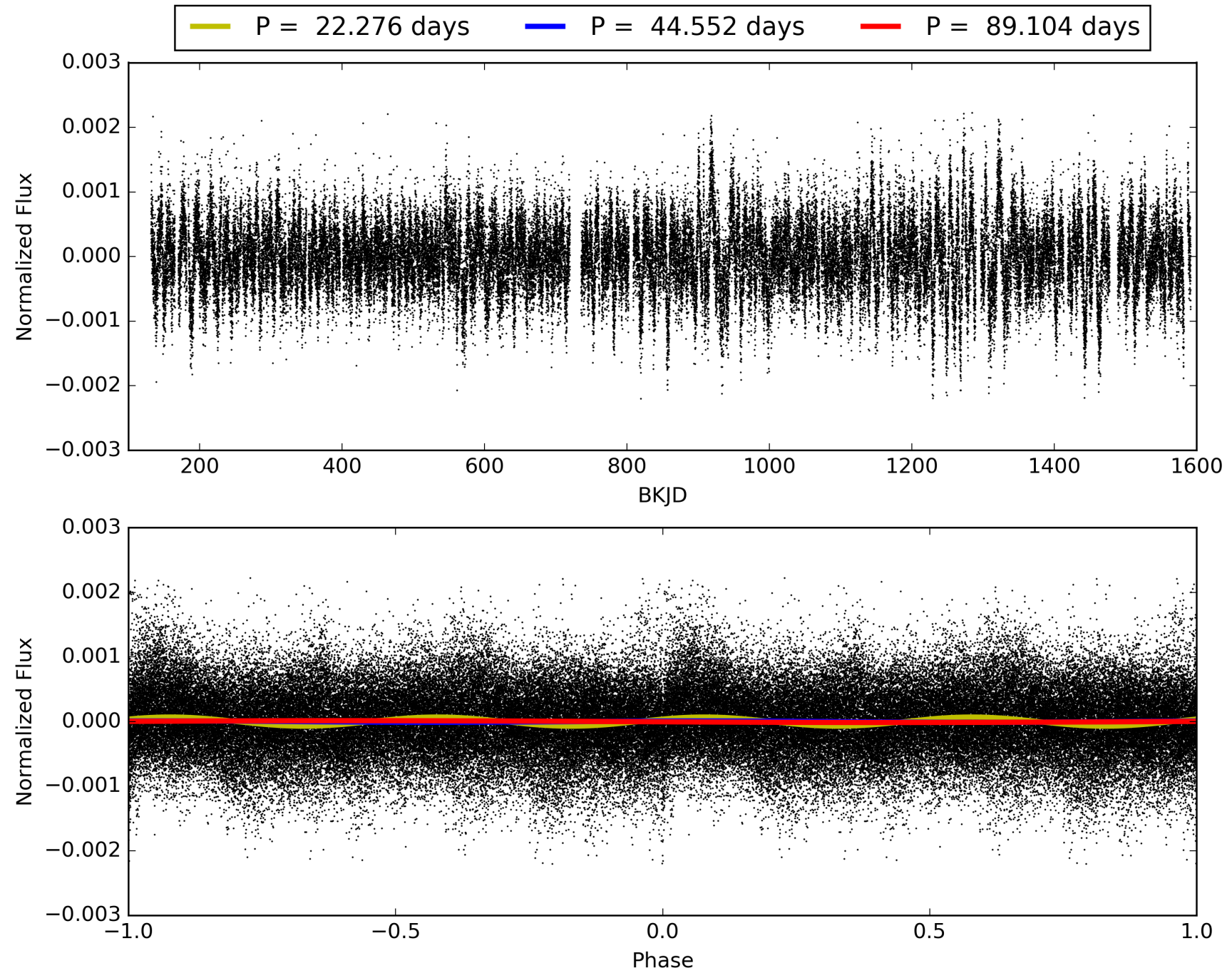
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [52.04σ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 88.3%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.12e-39  
RollingBand-fgt: 1.00 [27/27]  
**GhostDiagnostic-chr: 0.9183**  
Centroid-sig: 29.9%  
Centroid-so: 0.783 arcsec [0.91σ]  
OotOffset-rm: 0.408 arcsec [1.26σ]  
KicOffset-rm: 0.477 arcsec [1.63σ]  
OotOffset-st: 4/4/3/3 [14]  
KicOffset-st: 4/4/3/3 [14]  
DiffImageQuality-fgm: 0.64 [9/14]  
DiffImageOverlap-fno: 0.75 [12/16]

# TCE 005301750-05, PDC Light Curves

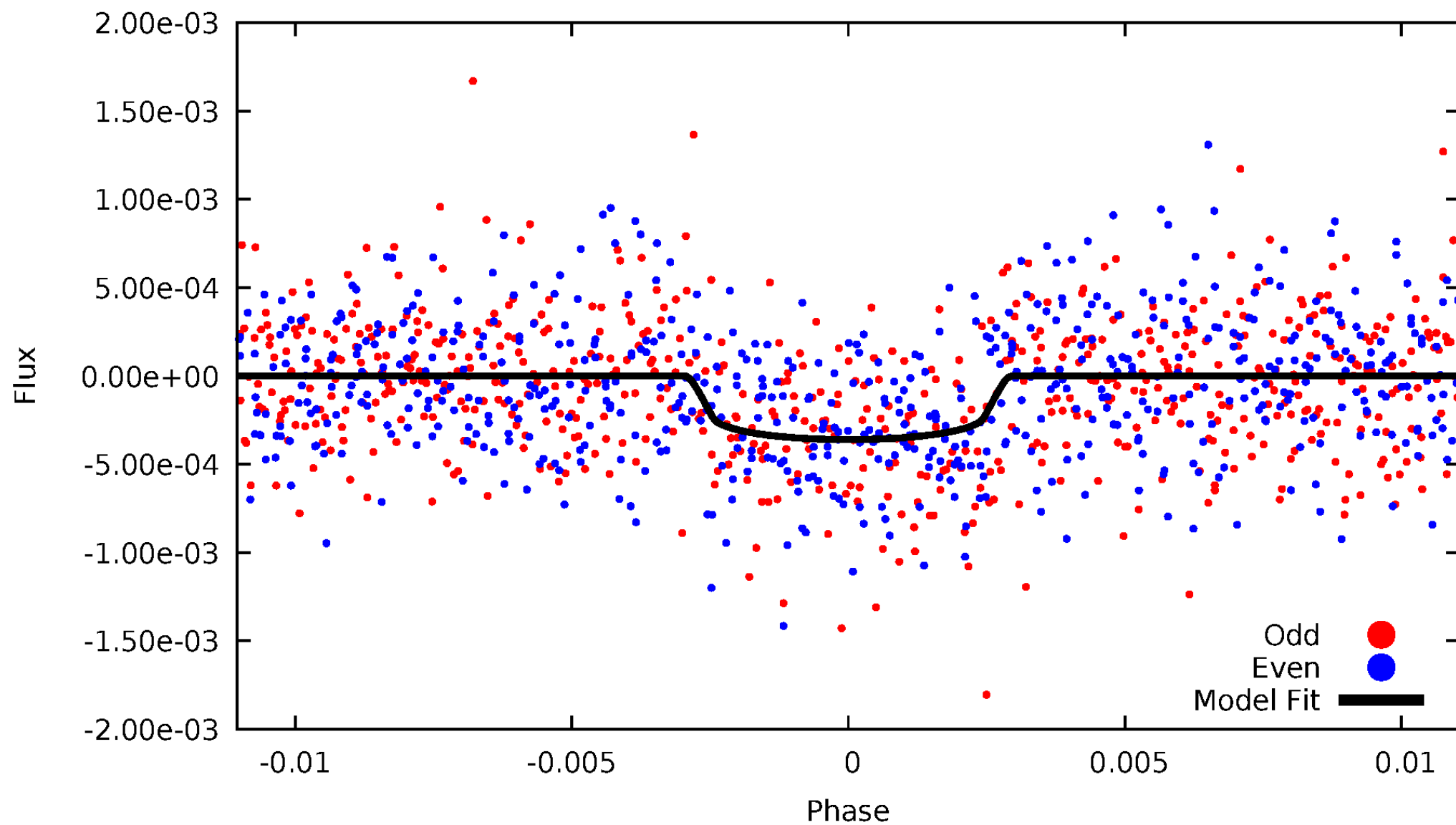


TCE 005301750-05



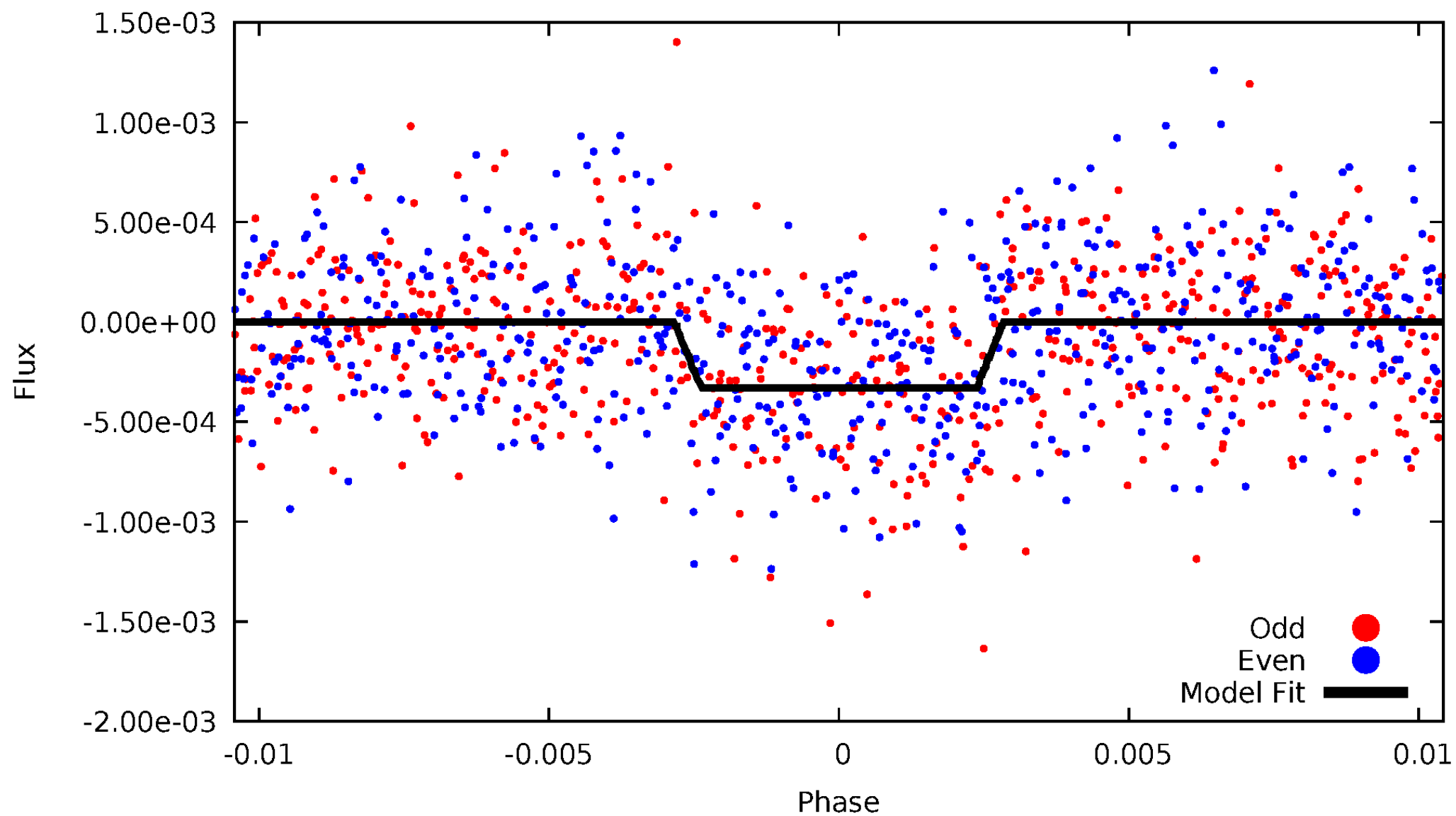
# DV Odd/Even

TCE 005301750-05



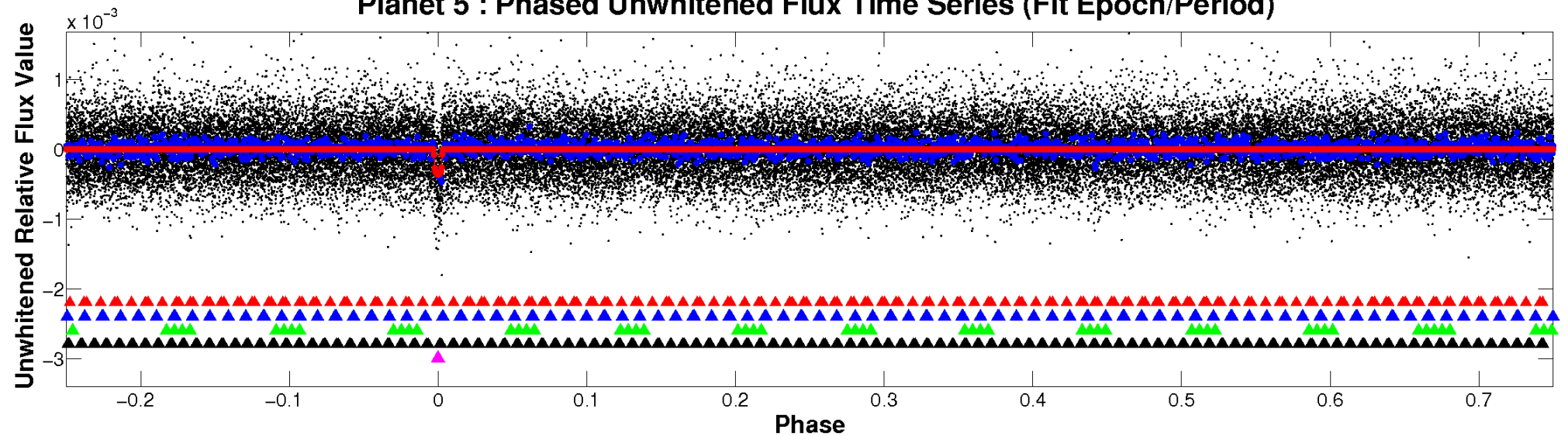
# ALT Odd/Even

TCE 005301750-05

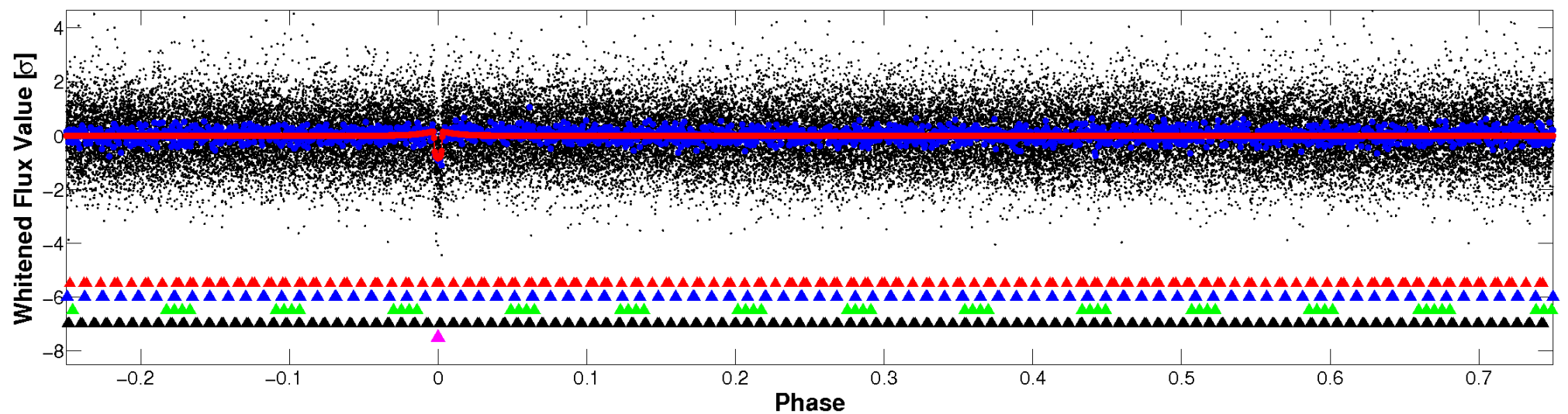


# Non-Whitened Vs. Whitened Light Curve

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

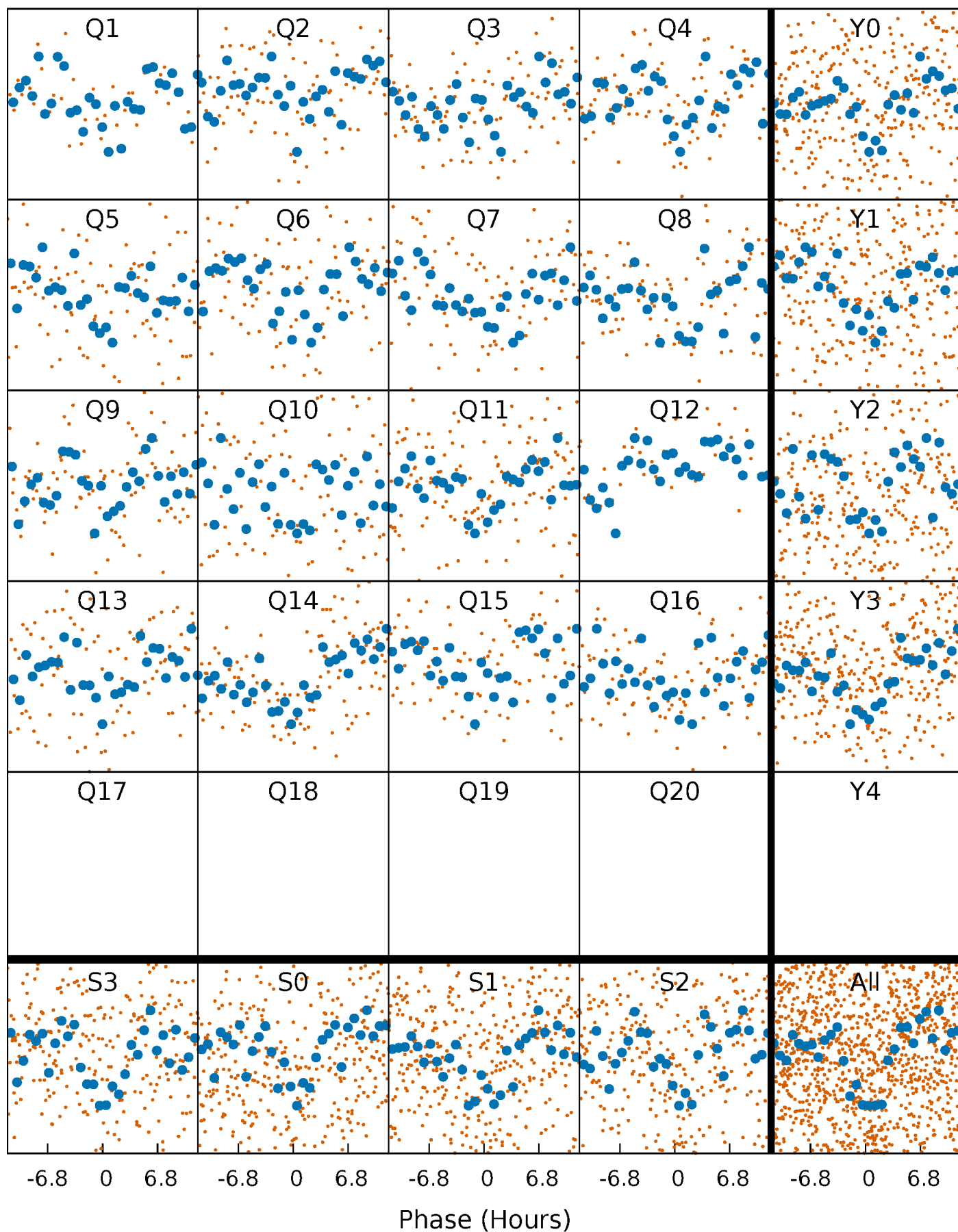


## Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



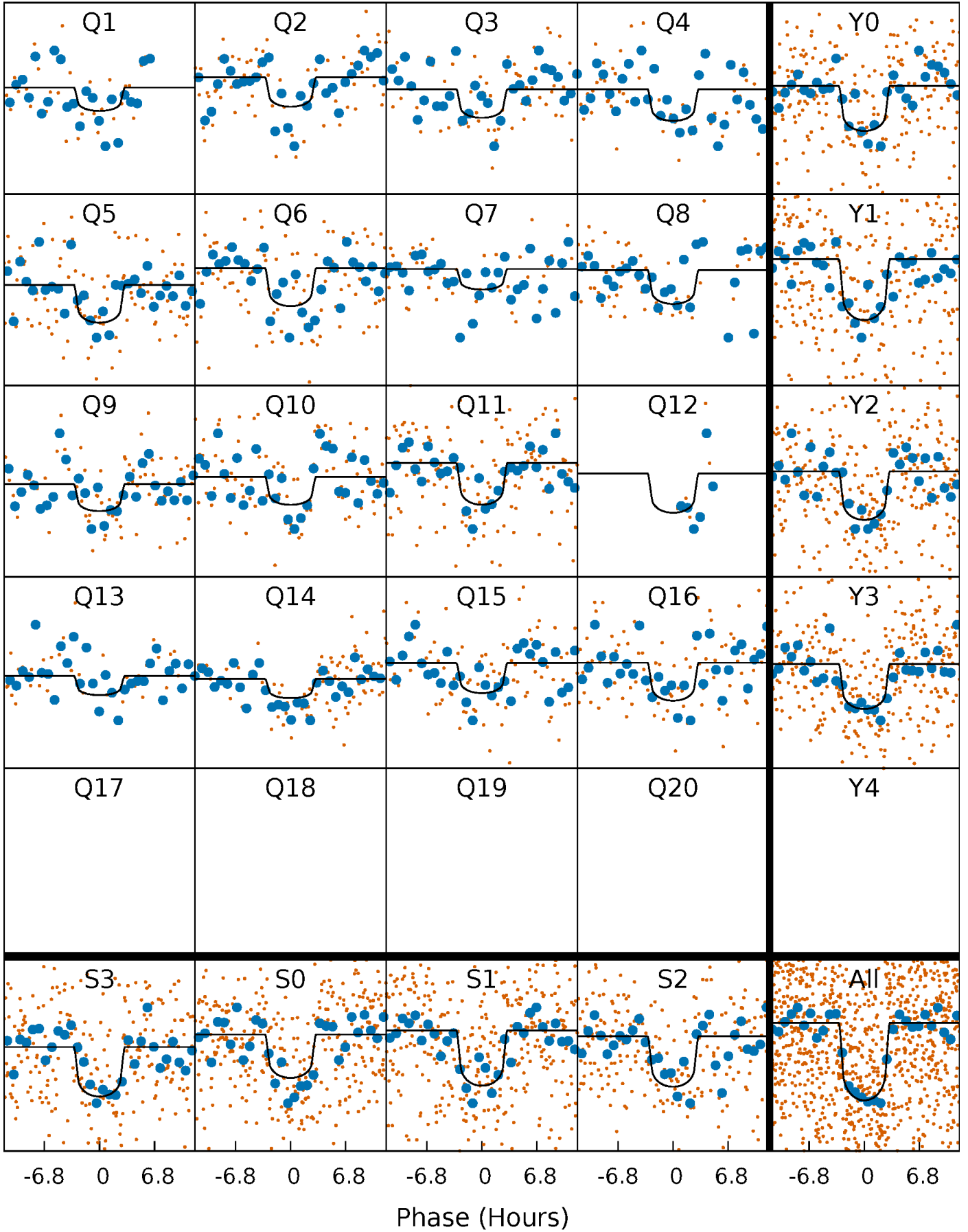
# PDC Quarter-Phased Transit Curves

TCE 005301750-05     $P = 44.551934$  Days     $T_0 = 160.291368$  (BKJD)



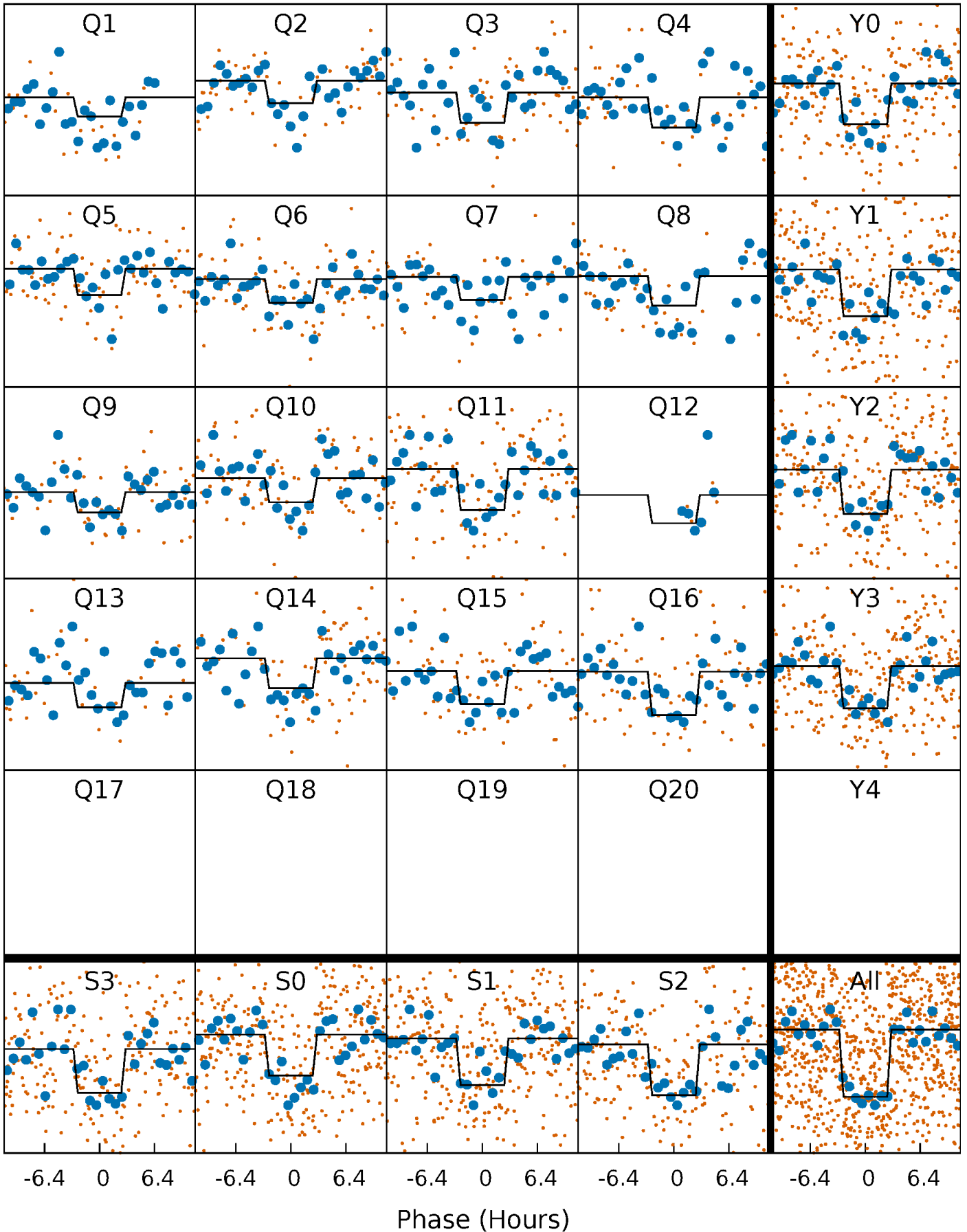
# DV Quarter-Phased Transit Curves

TCE 005301750-05   P= 44.551934 Days    $T_0=160.291368$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

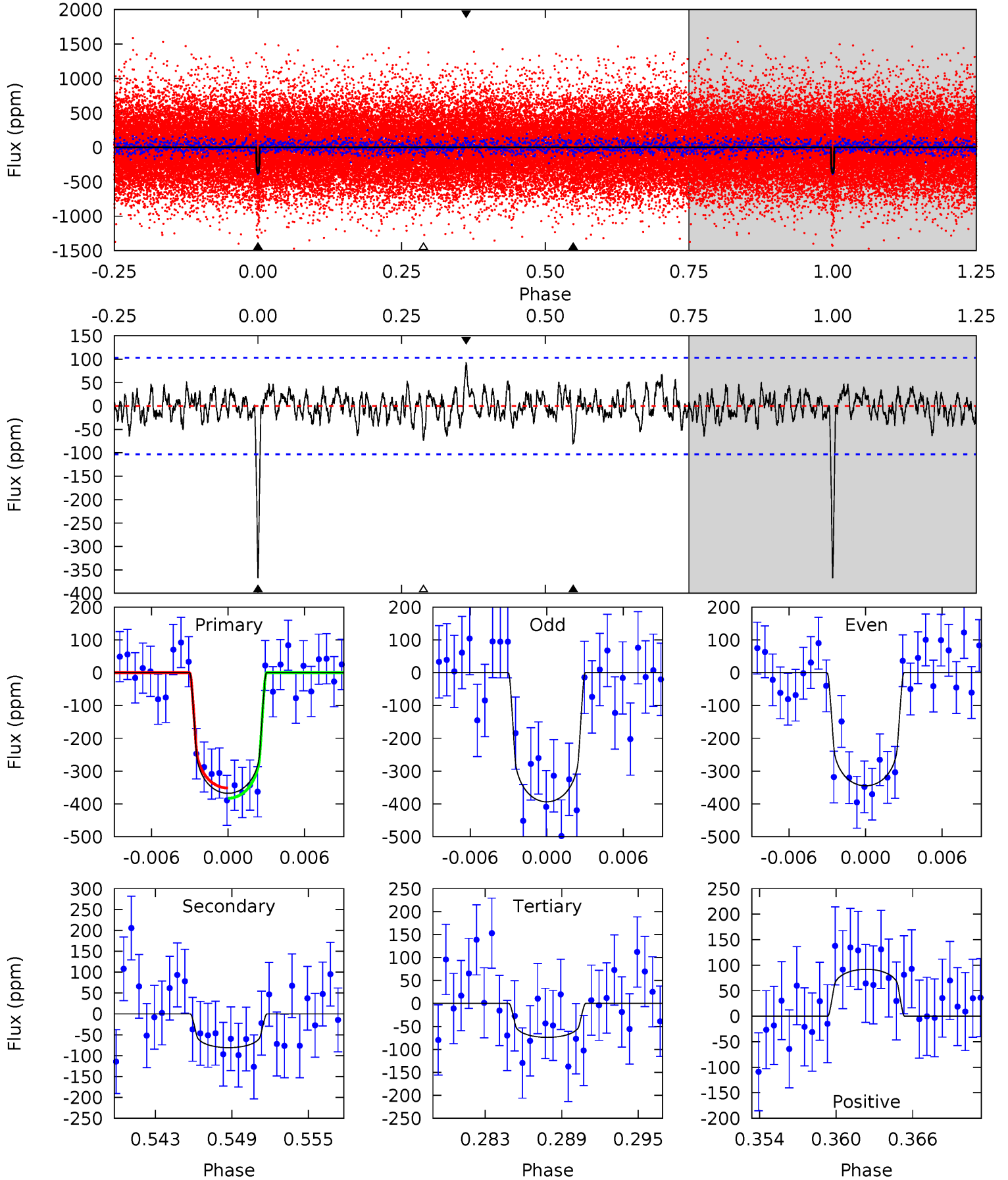
TCE 005301750-05     $P = 44.551853$  Days     $T_0 = 160.293365$  (BKJD)



# DV Model-Shift Uniqueness Test

005301750-05, P = 44.551934 Days, E = 115.739434 Days

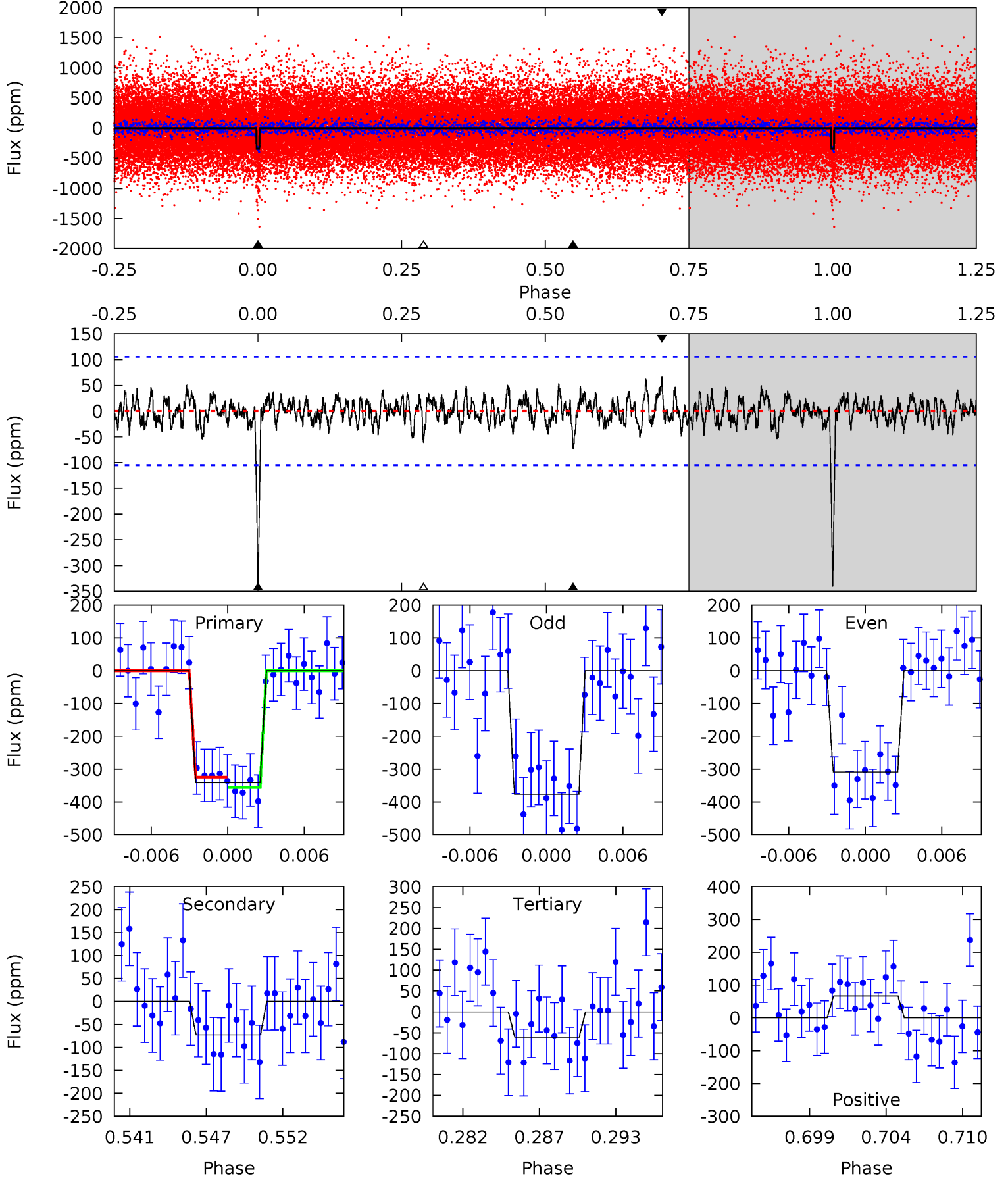
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.3	4.02	3.67	4.57	5.13	2.75	1.17	14.6	13.7	0.35	-0.55	1.21	1.07	0.20	0.78



# Alt Model-Shift Uniqueness Test

005301750-05,  $P = 44.551853$  Days,  $E = 115.741512$  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
16.7	3.56	2.96	3.25	5.14	2.77	1.00	13.7	13.4	0.59	0.30	1.66	1.03	0.16	0.76



### Stellar Parameters For KIC 005301750

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6036^{+120}_{-132}$	$4.326^{+0.120}_{-0.120}$	$-0.180^{+0.150}_{-0.150}$	$1.131^{+0.176}_{-0.158}$	$0.987^{+0.072}_{-0.064}$	$0.962^{+0.502}_{-0.332}$
	+2%/-2%	+3%/-3%	+83%/-83%	+16%/-14%	+7%/-6%	+52%/-35%
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 005301750-05 / KOI 1589.05

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-81 \pm 20$	$2.27^{+1.43}_{-1.14}$	$798^{+39}_{-33}$	$4390^{+1620}_{-674}$	$492^{+1571}_{-307}$
Alt.	$-73 \pm 20$	$2.34^{+1.36}_{-1.27}$	$799^{+38}_{-35}$	$4259^{+1741}_{-644}$	$423^{+1739}_{-264}$

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

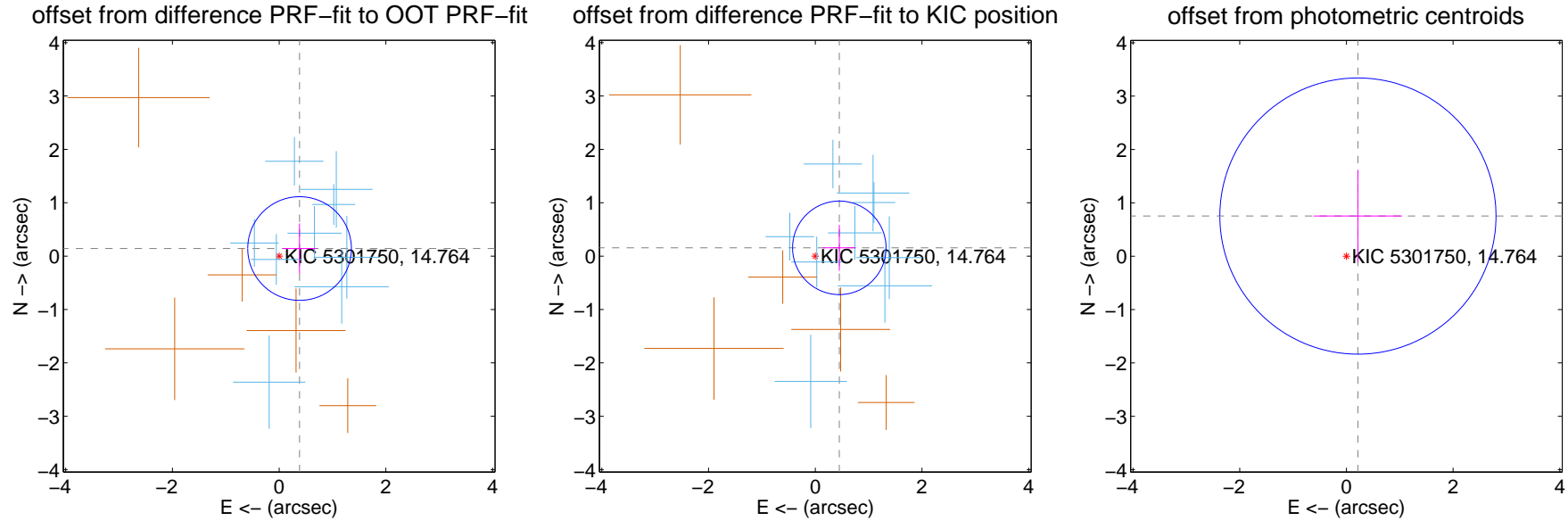
## DV Centroid Data

Supplemental centroid analysis for 005301750-05. Kepler magnitude: 14.76. Transit SNR 12.66

There are 9 quarters with good PRF difference image offsets

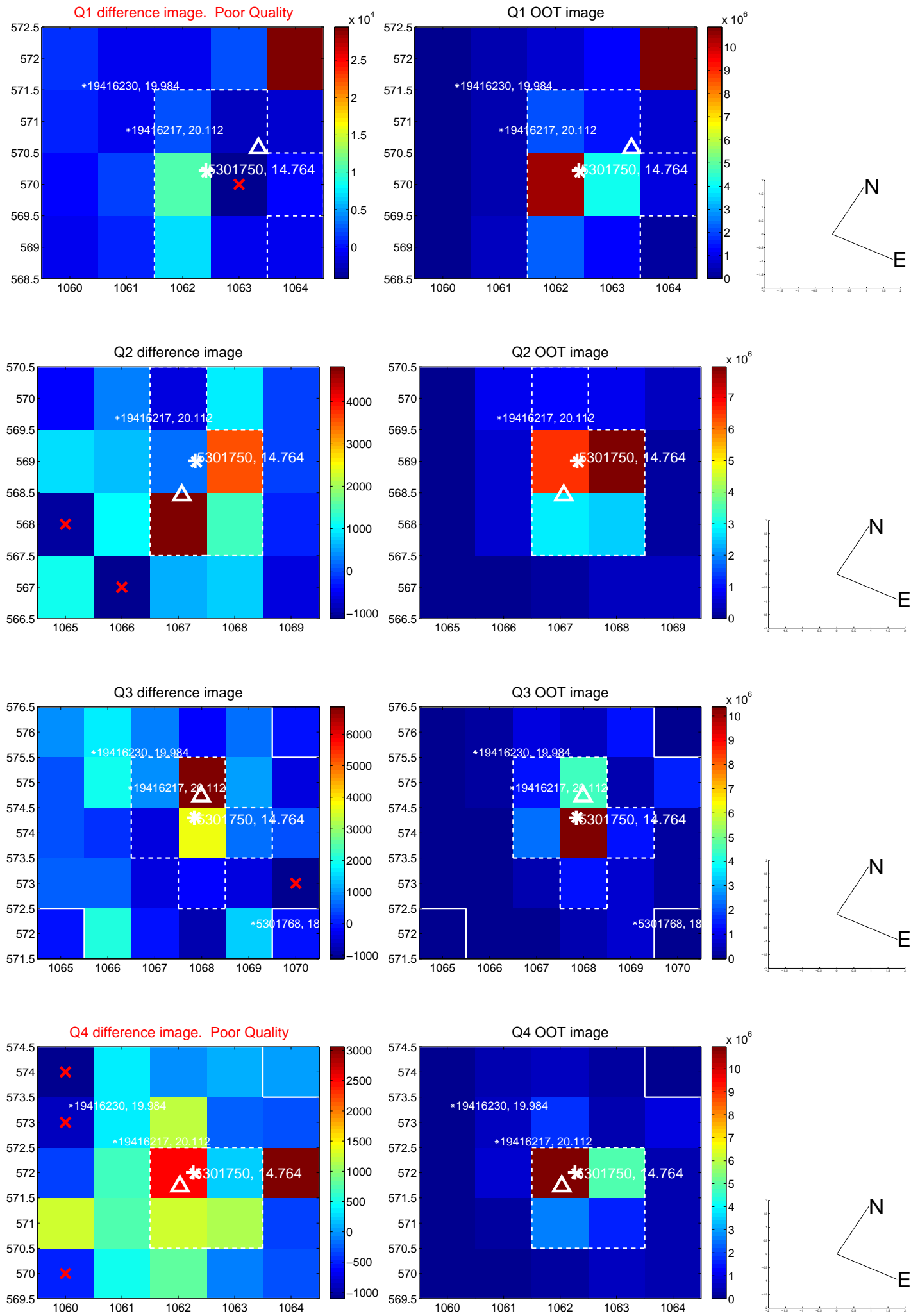
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.408 \pm 0.324$	1.26	$-0.383 \pm 0.317$	$0.142 \pm 0.471$
PRF-fit source offset from KIC position	$0.477 \pm 0.292$	1.63	$-0.451 \pm 0.310$	$0.155 \pm 0.429$
photometric centroid source offset	$0.78 \pm 0.86$	0.91	$-0.22 \pm 0.83$	$0.75 \pm 0.87$

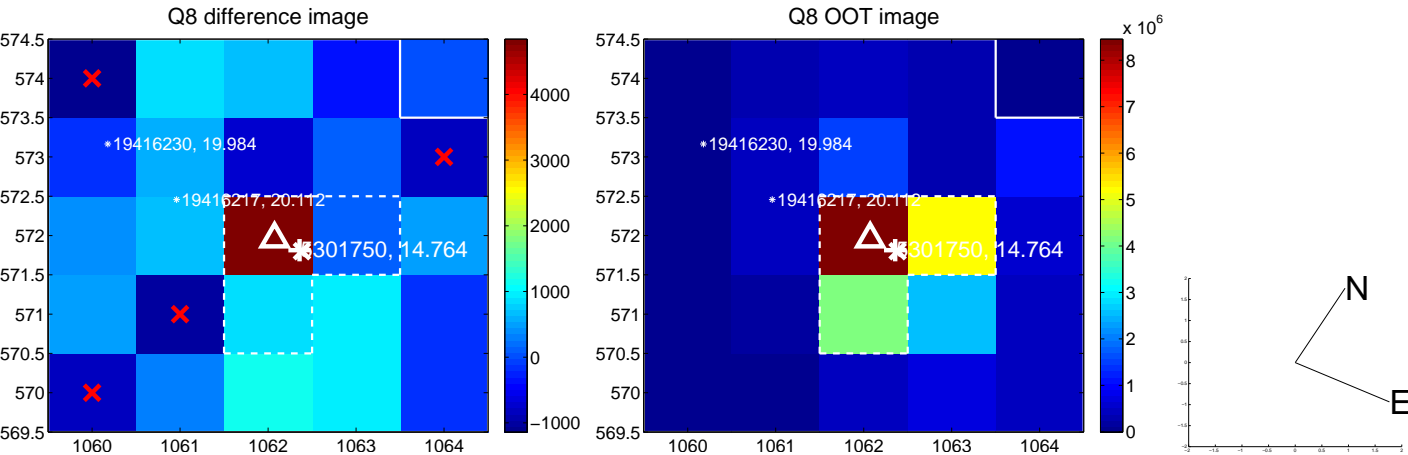
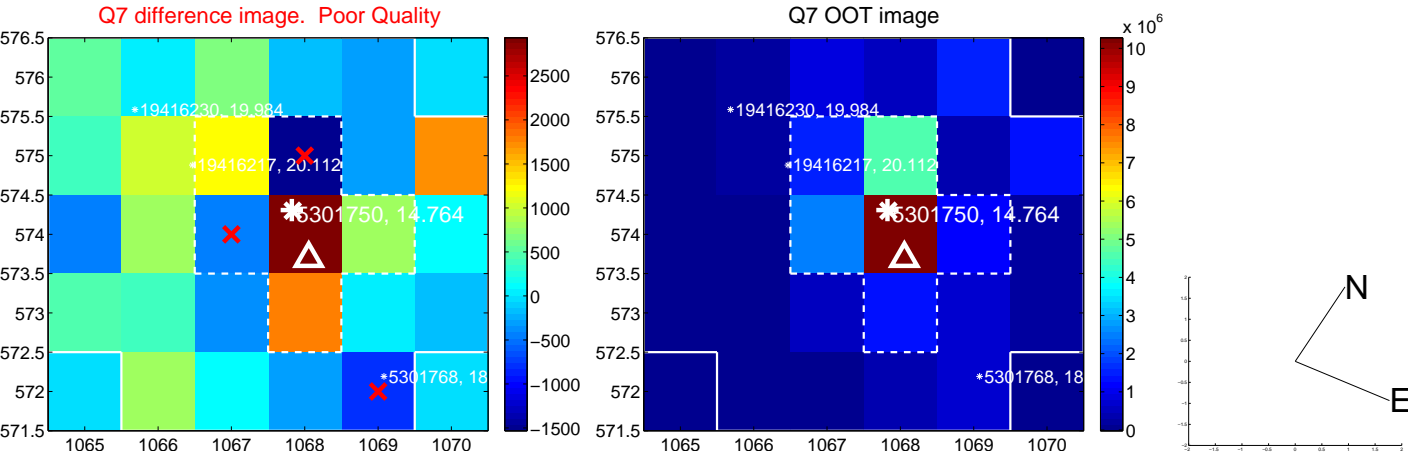
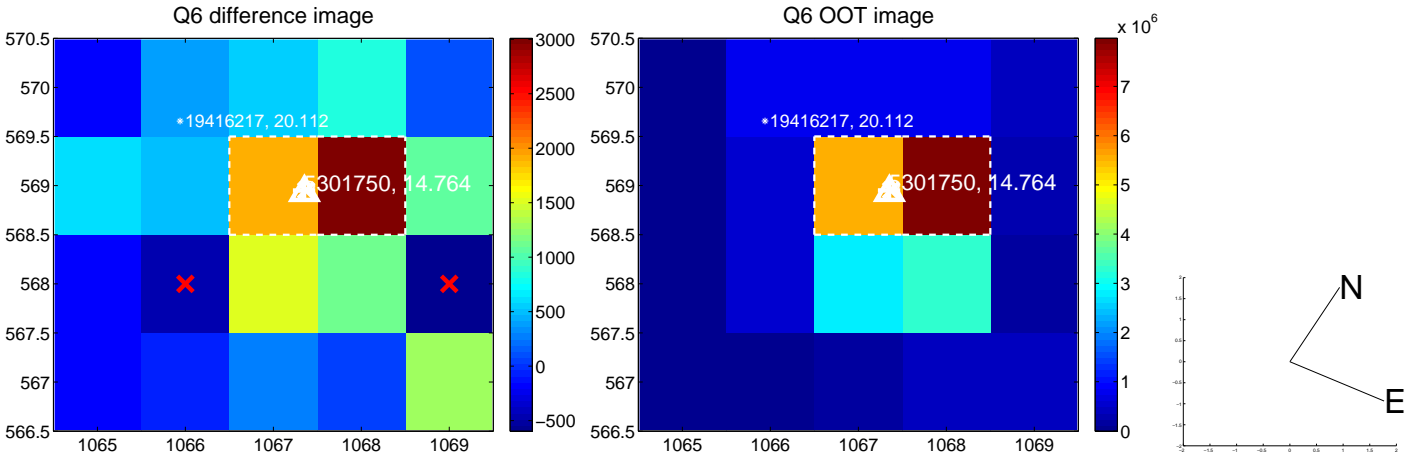
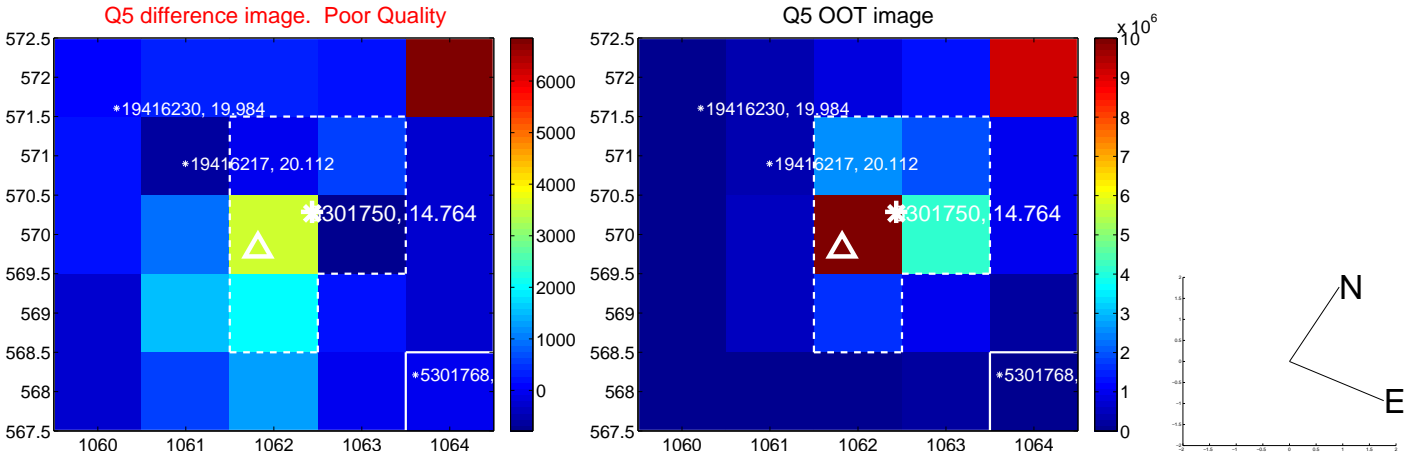


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

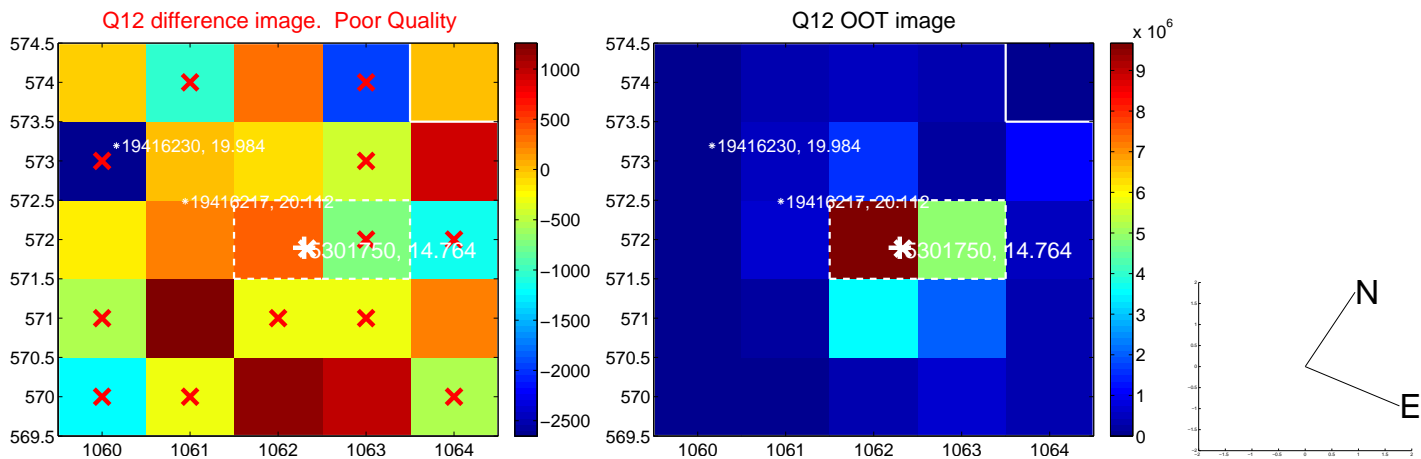
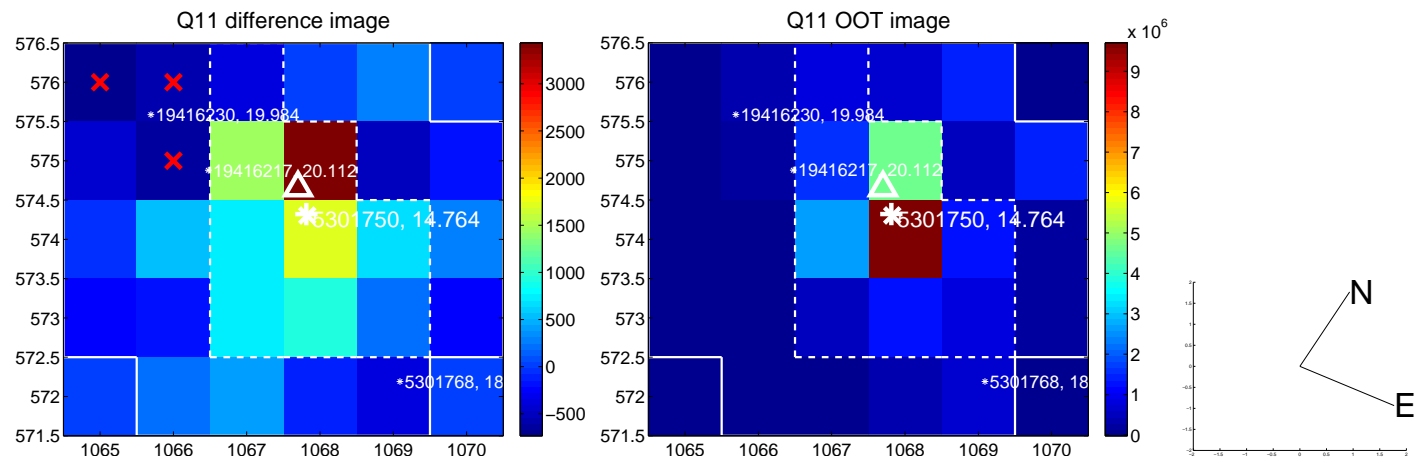
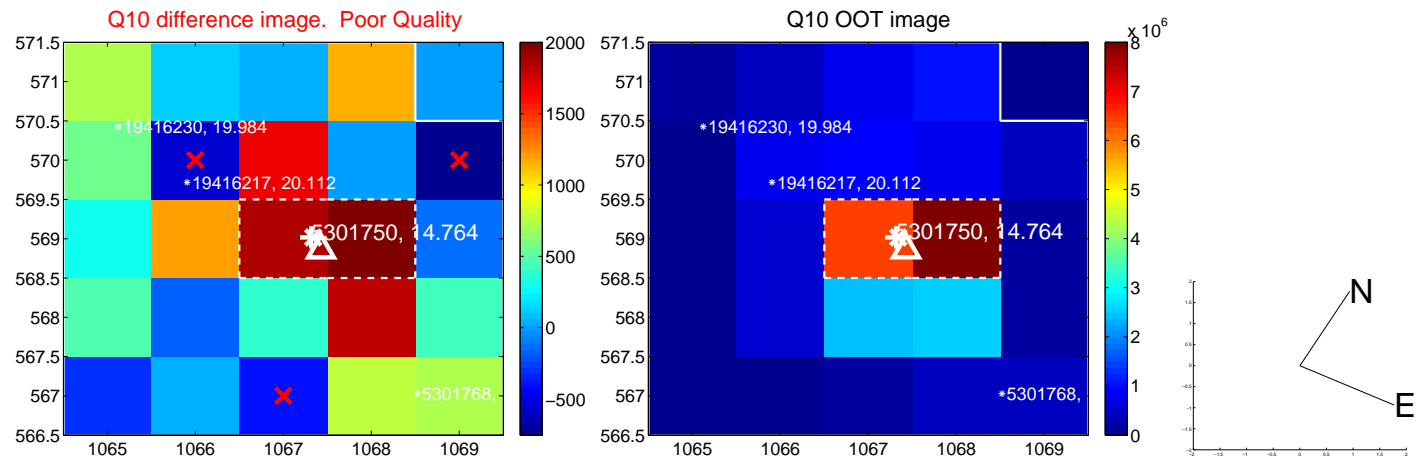
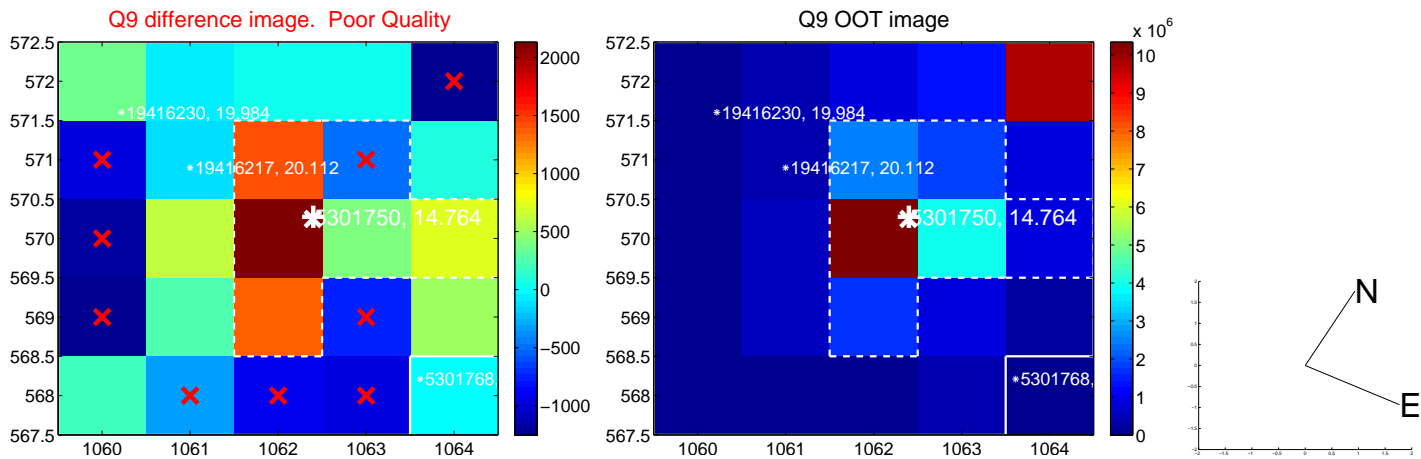
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



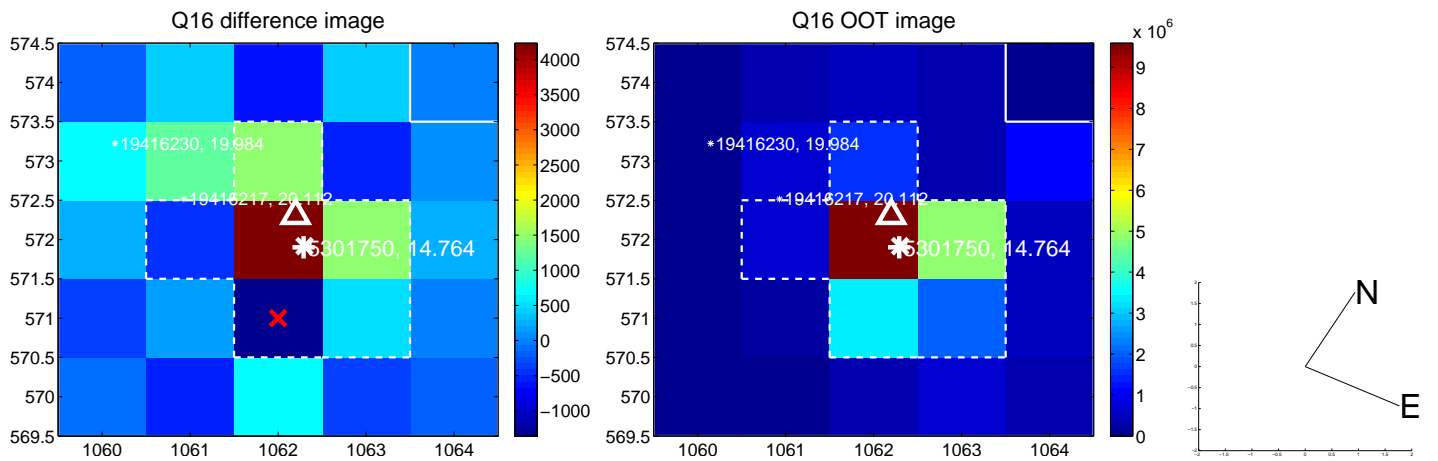
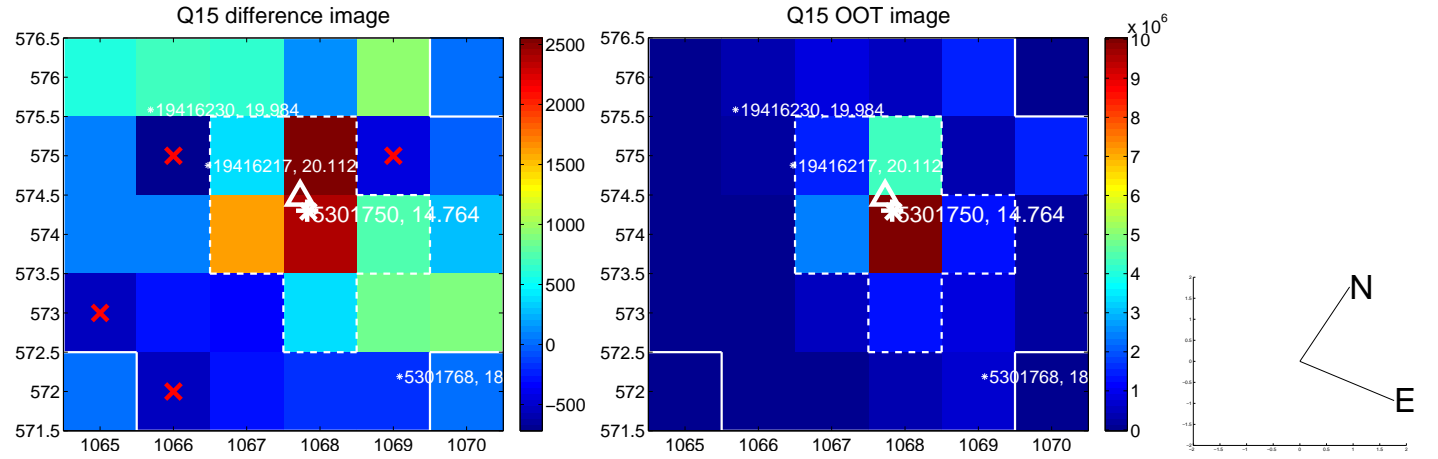
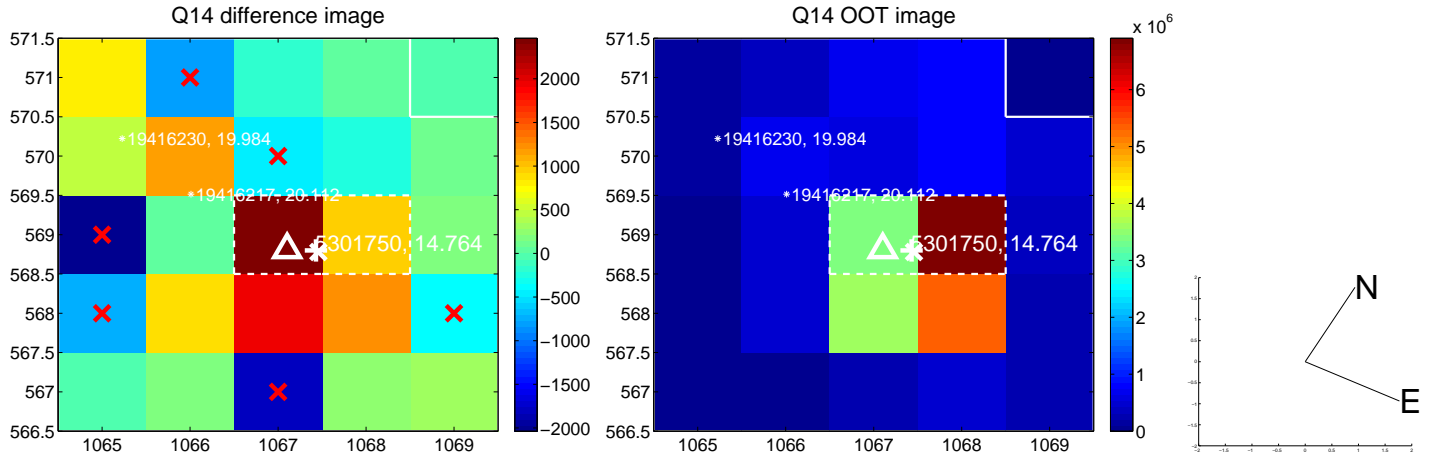
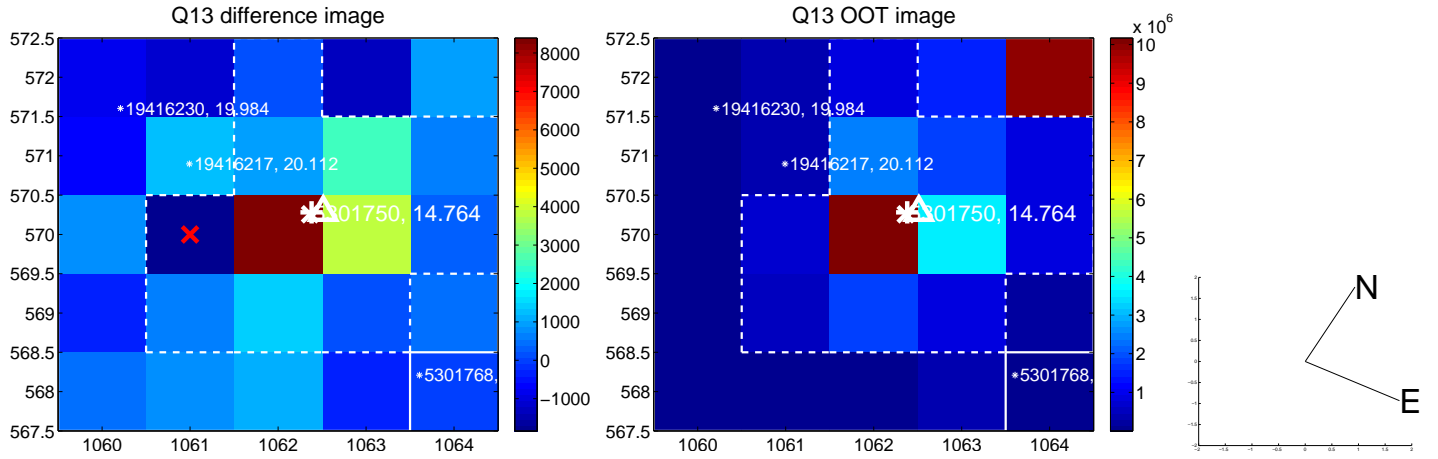
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



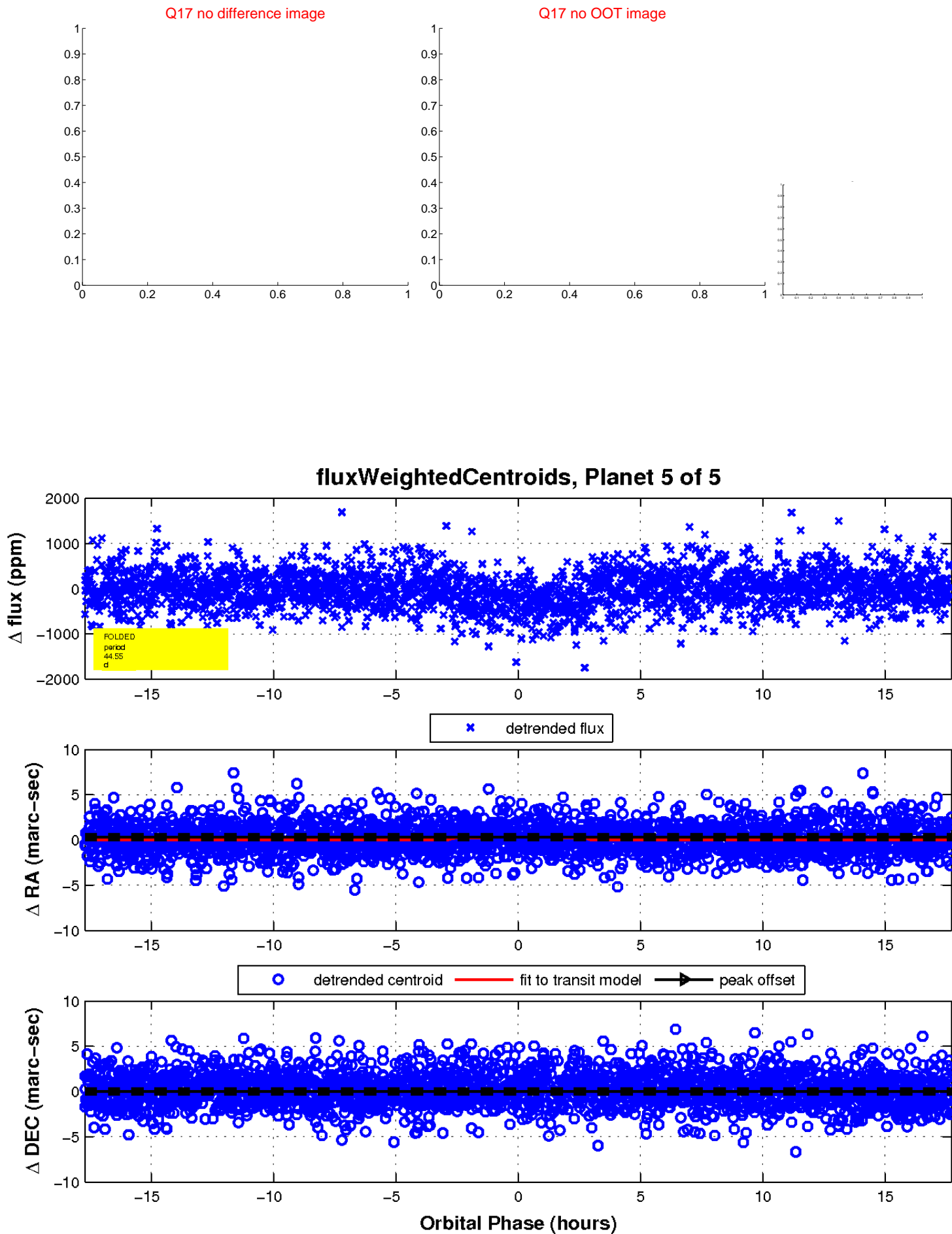
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

