

# KIC 010587105

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010587105-01	OBS	0339.01	1.980360	132.511953	256.0	2.496	52.9	61.3	1.19	6078	2.24	1807.45
010587105-02	OBS	0339.02	12.834465	138.326985	273.2	3.842	26.5	28.9	1.19	6078	2.47	149.59
010587105-03	OBS	0339.03	35.866226	135.906447	238.6	7.974	18.2	18.2	1.19	6078	2.37	38.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010587105-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010587105-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010587105-03	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.

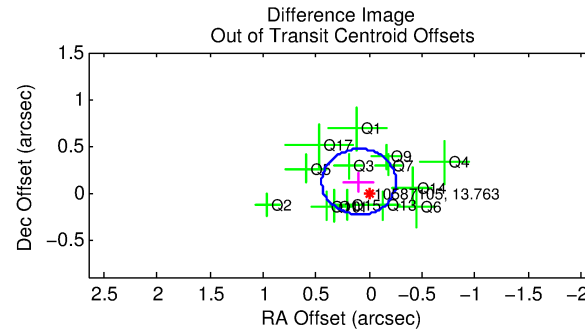
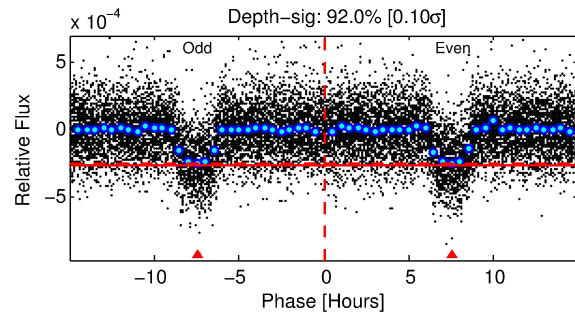
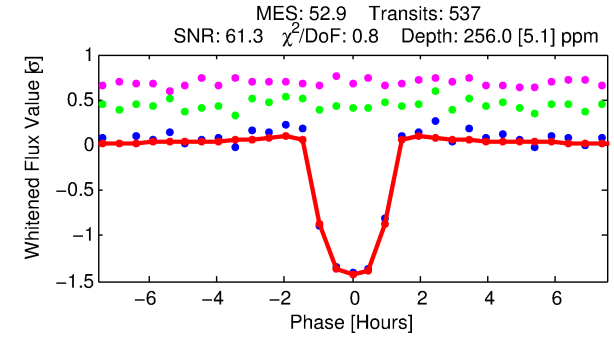
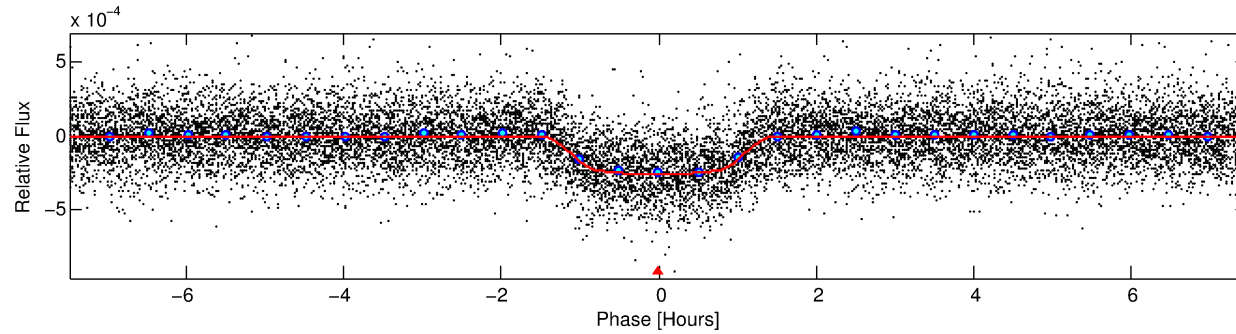
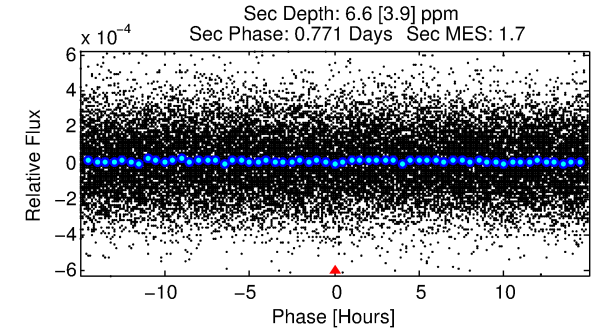
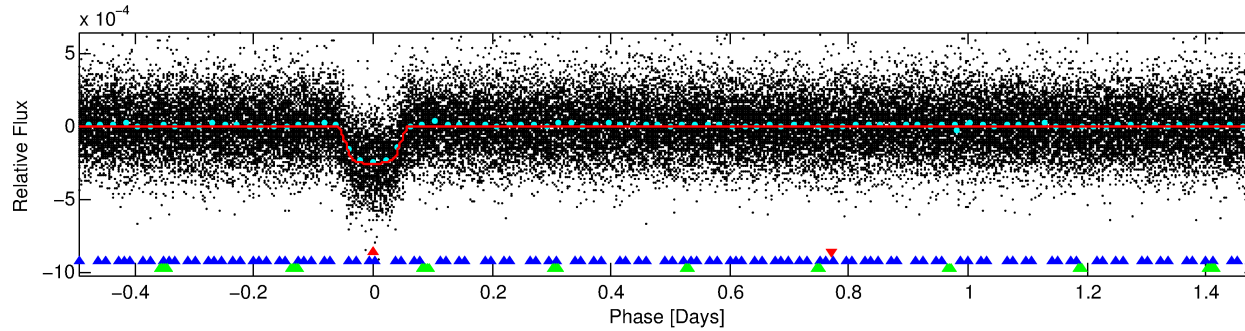
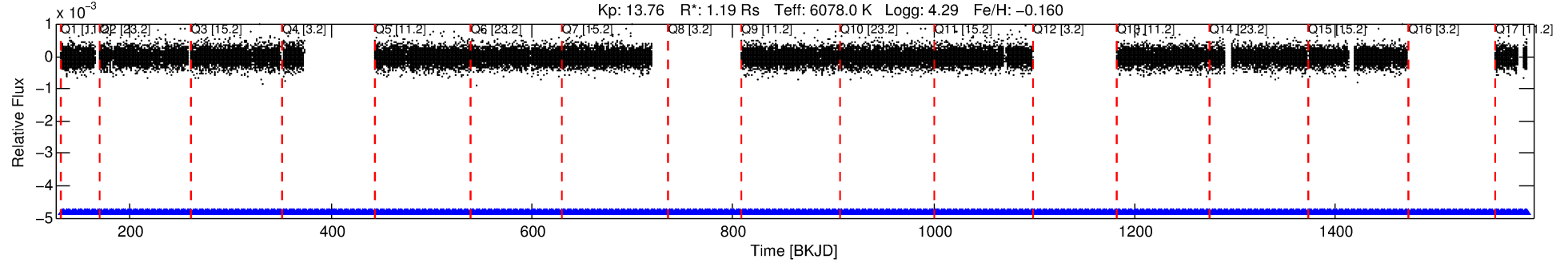
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

Ephemeris Match Information For 010587105-01

No Significant Match Found

# DV One-Page Summary

KIC: 10587105 Candidate: 1 of 3 Period: 1.980 d  
KOI: K00339.01 Corr: 0.987



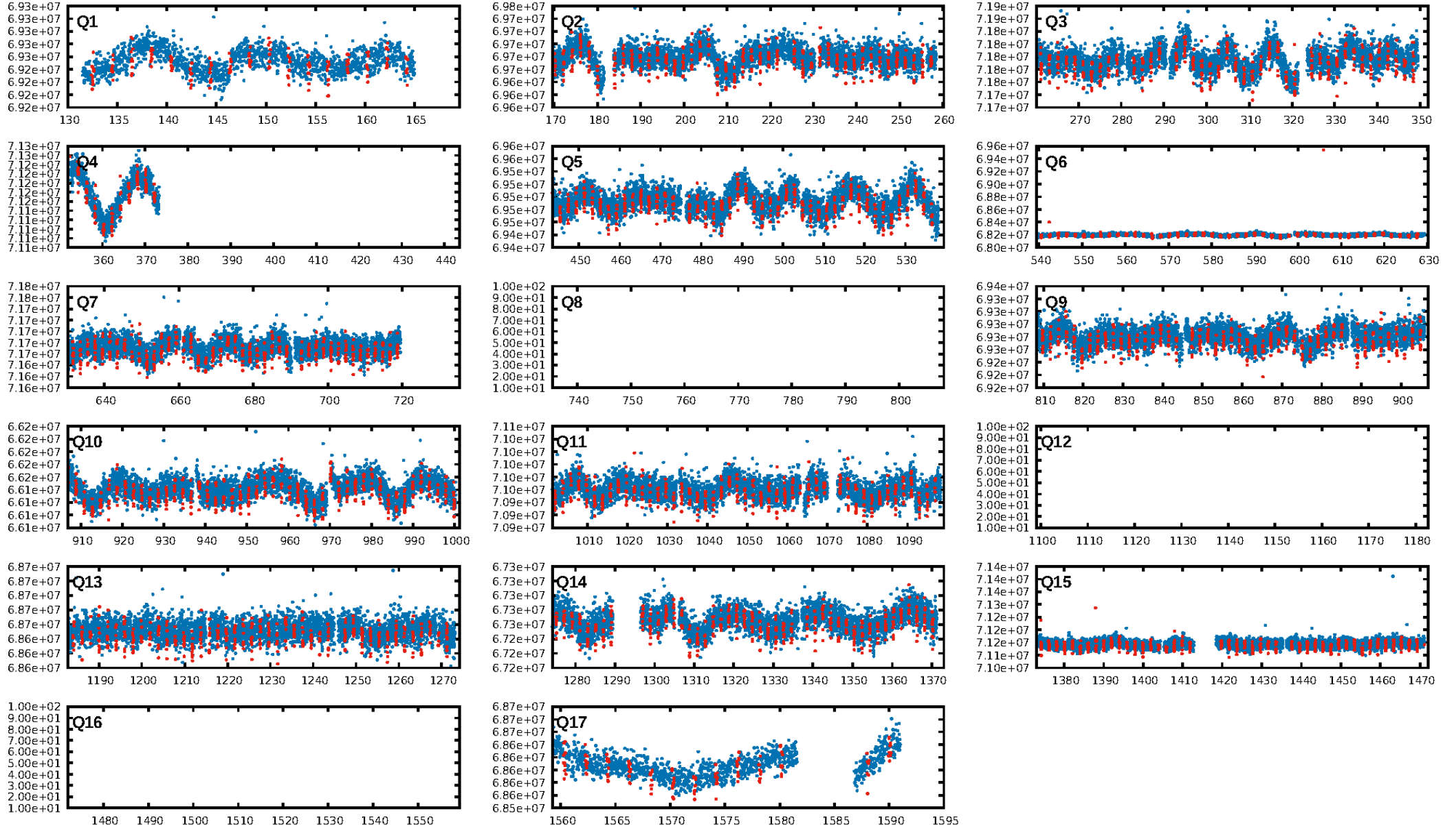
## DV Fit Results:

Period = 1.98036 [0.00000] d  
Epoch = 132.5120 [0.0006] BKJD  
Rp/R\* = 0.0173 [0.0014]  
a/R\* = 3.03 [1.16]  
b = 0.90 [0.09]  
Seff = 1807.45 [457.57]  
Teq = 1663 [105] K  
Rp = 2.24 [0.41] Re  
a = 0.0309 [0.0047] AU  
Ag = 0.69 [0.46] [-0.67σ]  
Teffp = 2344 [367] K [1.79σ]

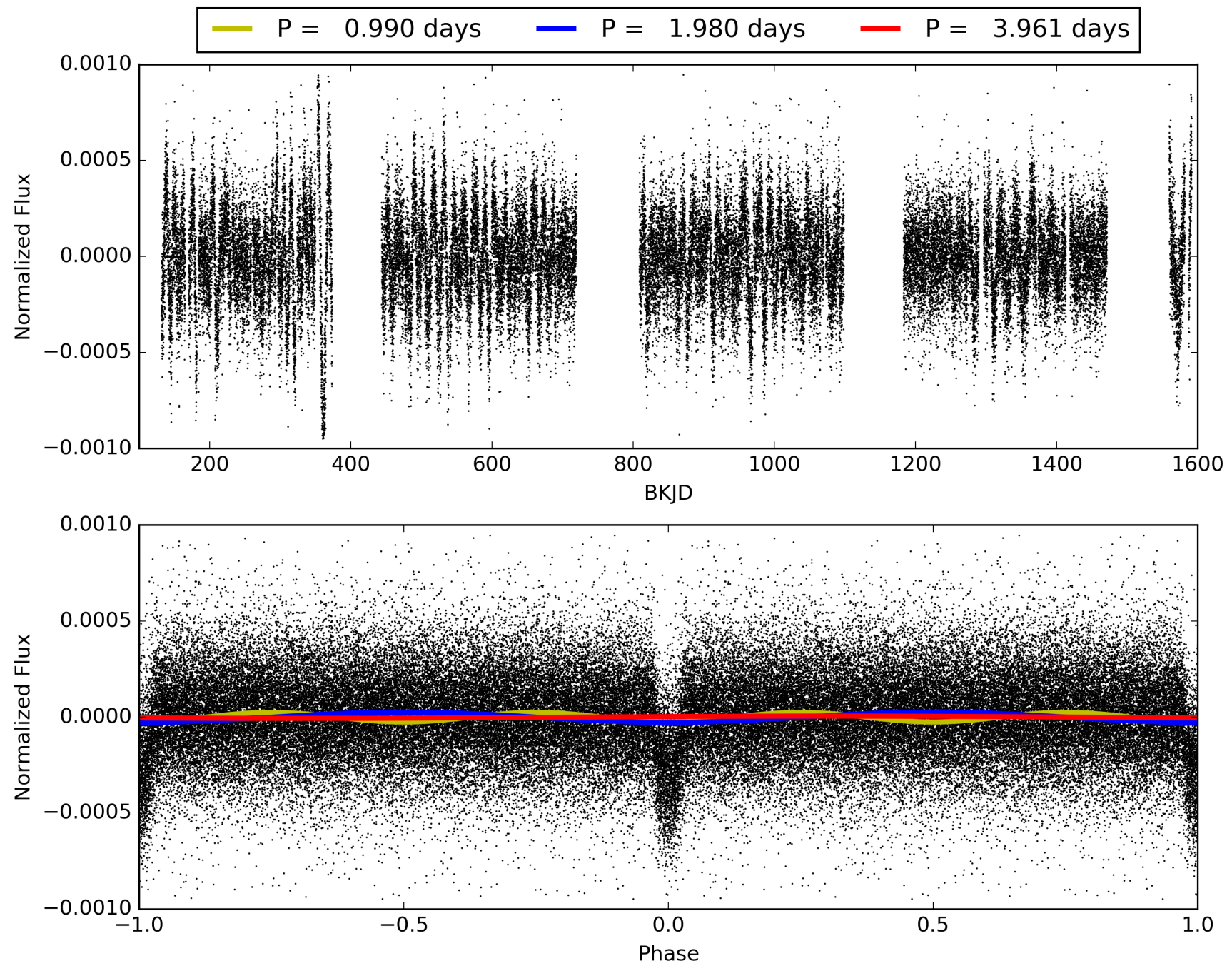
## DV Diagnostic Results:

ShortPeriod-sig: N/A  
LongPeriod-sig: 100.0% [56.85σ]  
ModelChiSquare2-sig: N/A  
ModelChiSquareGof-sig: N/A  
Bootstrap-pfa: 0.00e+00  
RollingBand-fgt: 1.00 [497/497]  
GhostDiagnostic-chr: 34.54  
Centroid-sig: 0.2%  
Centroid-so: 0.442 arcsec [2.08σ]  
OotOffset-rm: 0.152 arcsec [1.30σ]  
KicOffset-rm: 0.289 arcsec [2.15σ]  
OotOffset-st: 4/4/1/5 [14]  
KicOffset-st: 4/4/1/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 010587105-01, PDC Light Curves



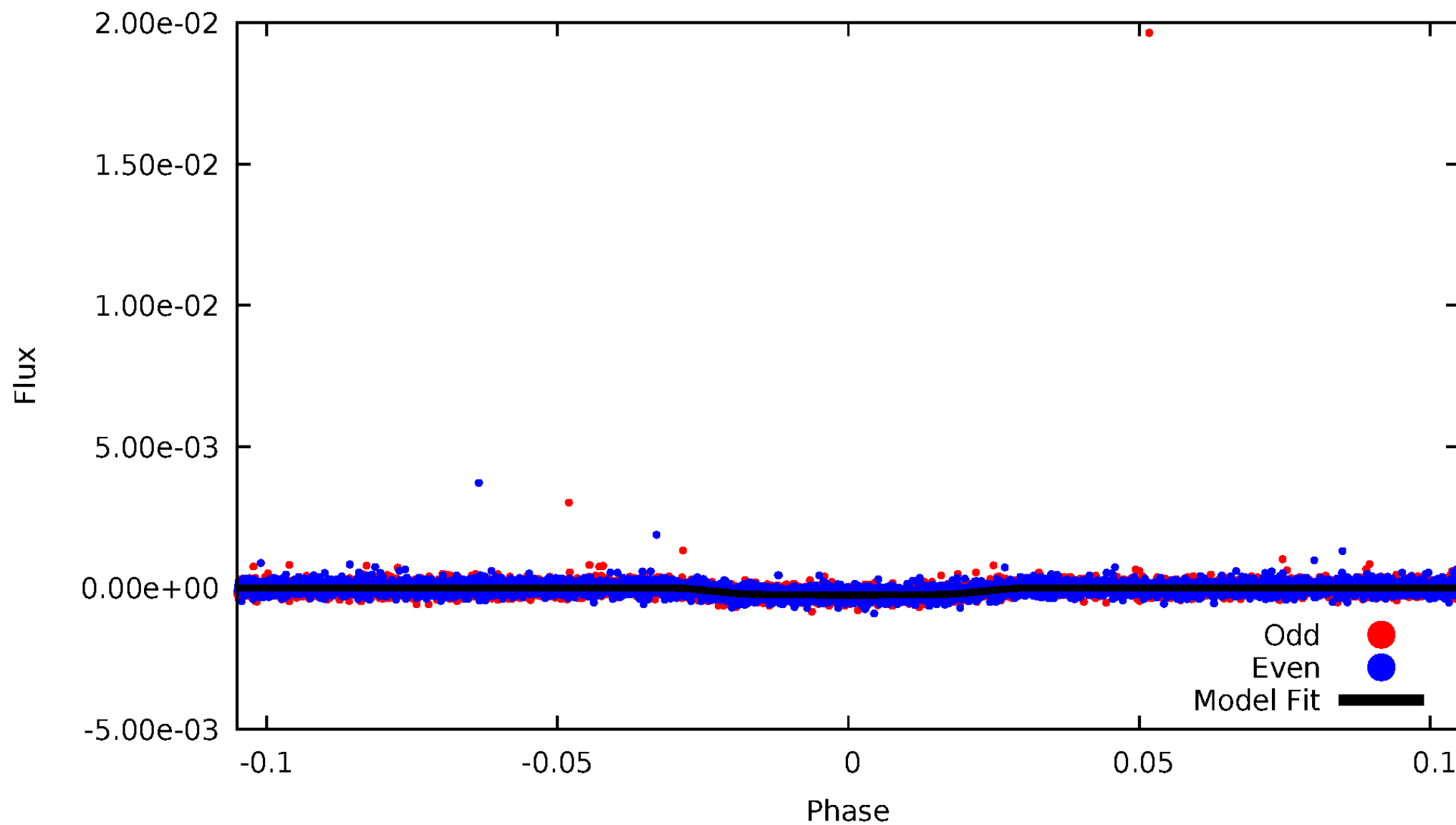
TCE 010587105-01





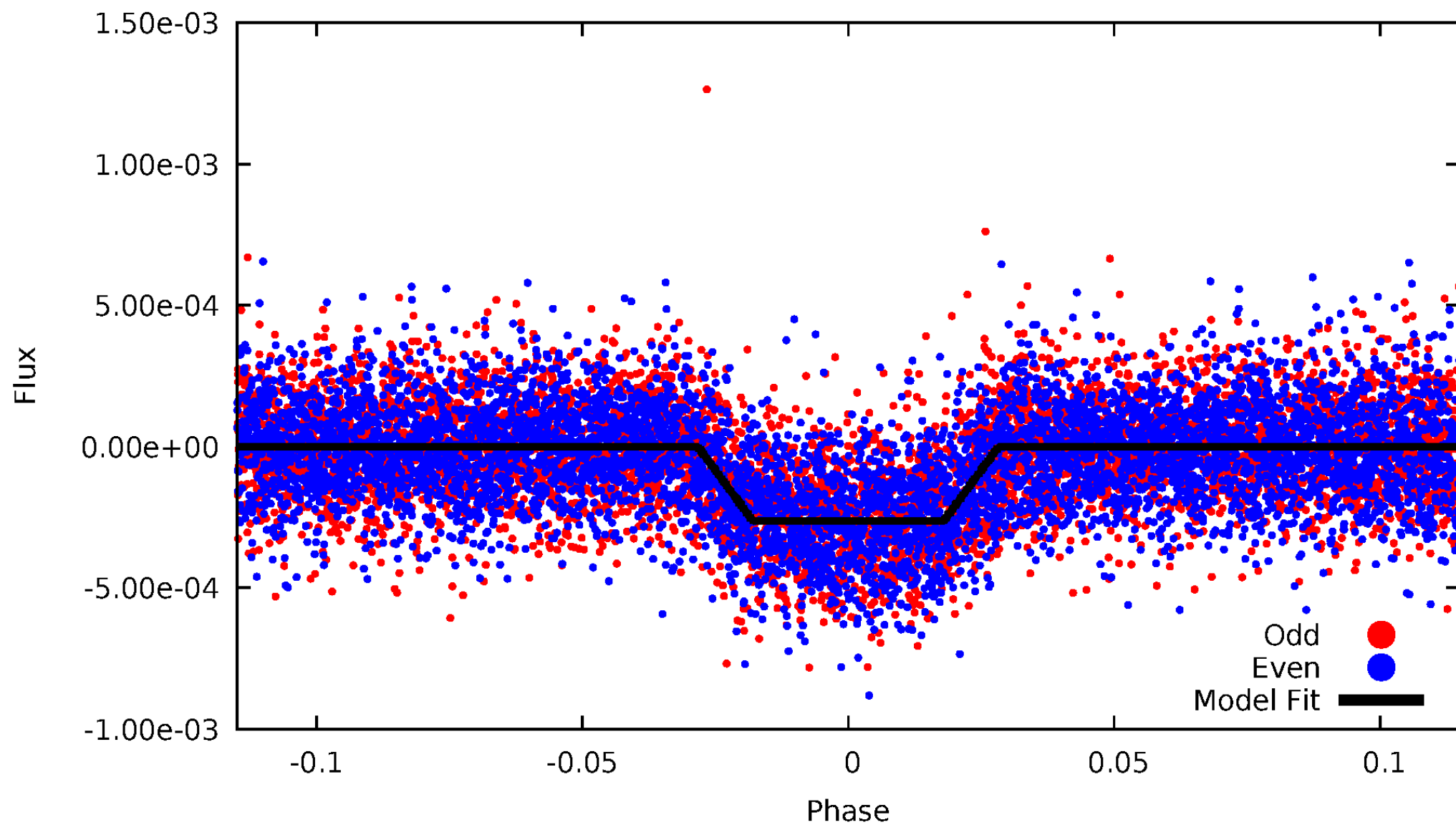
# DV Odd/Even

TCE 010587105-01

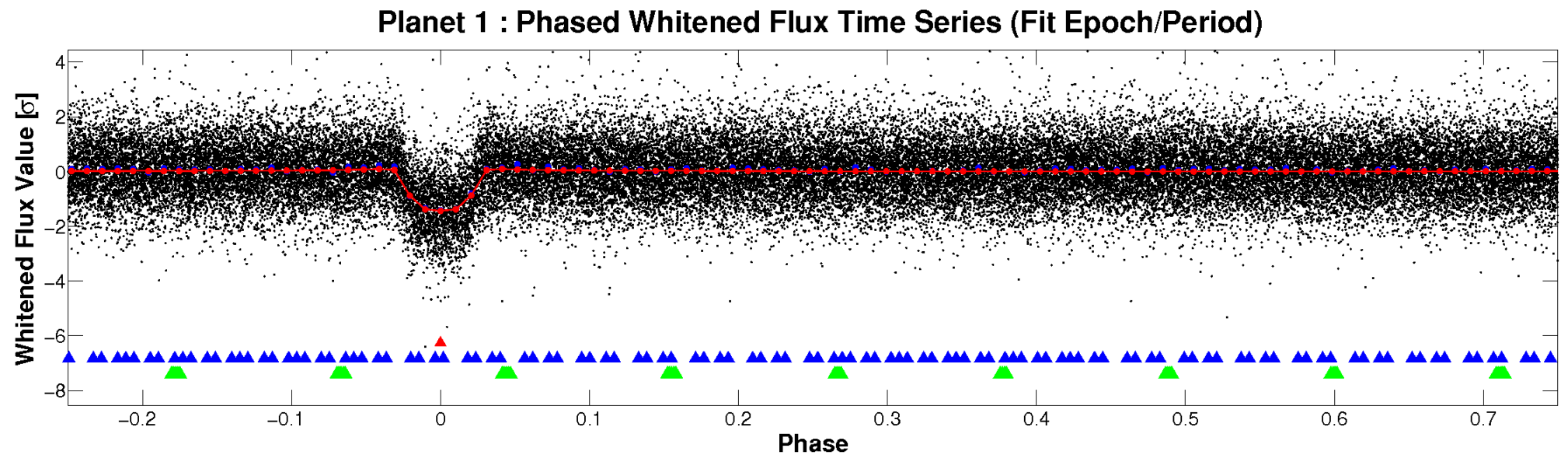
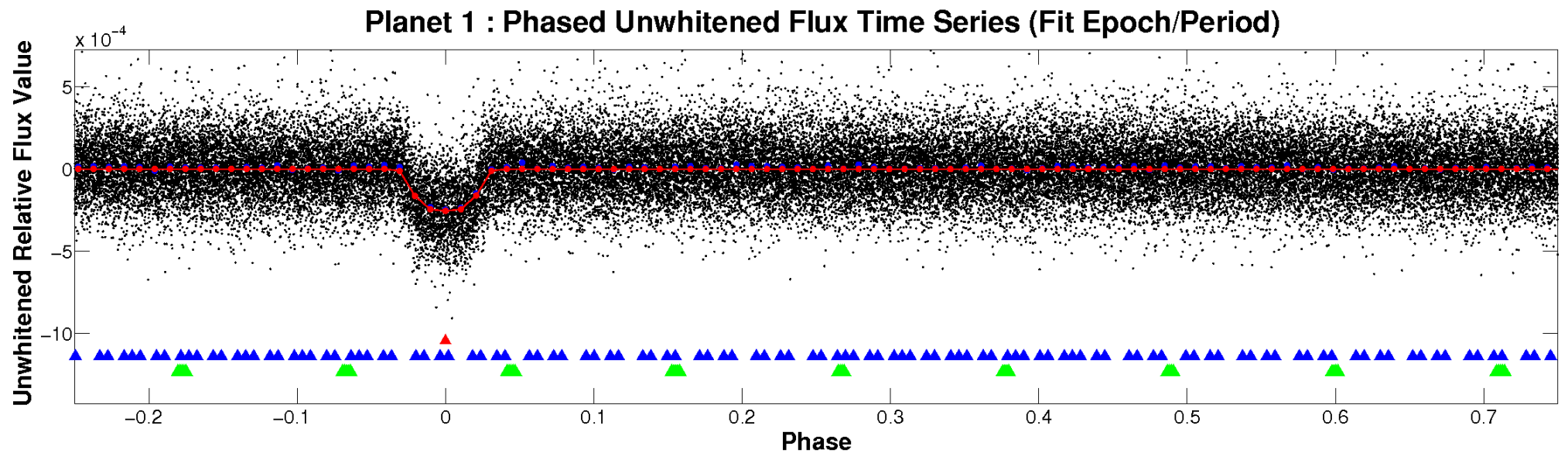


# ALT Odd/Even

TCE 010587105-01

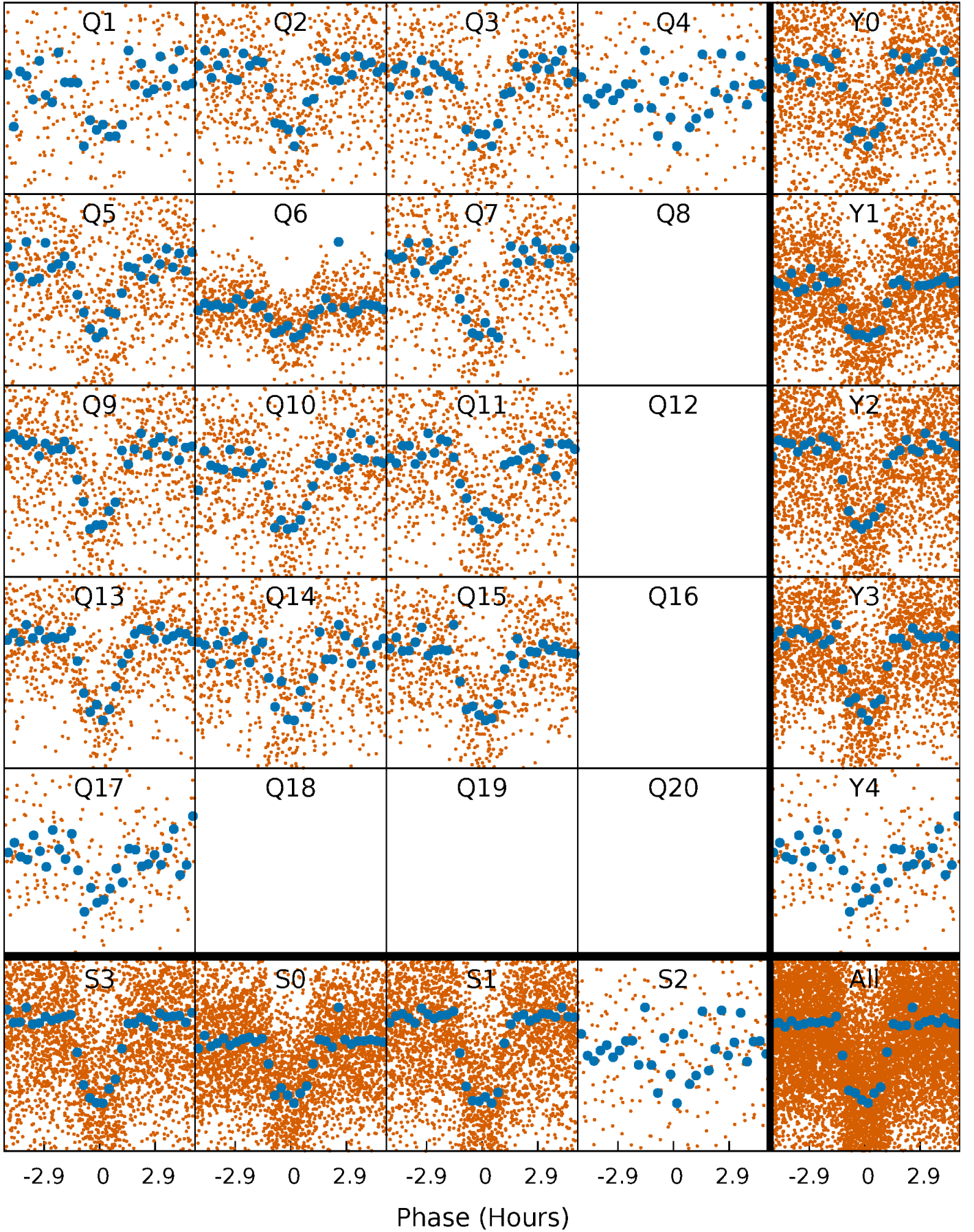


# Non-Whitened Vs. Whitened Light Curve



# PDC Quarter-Phased Transit Curves

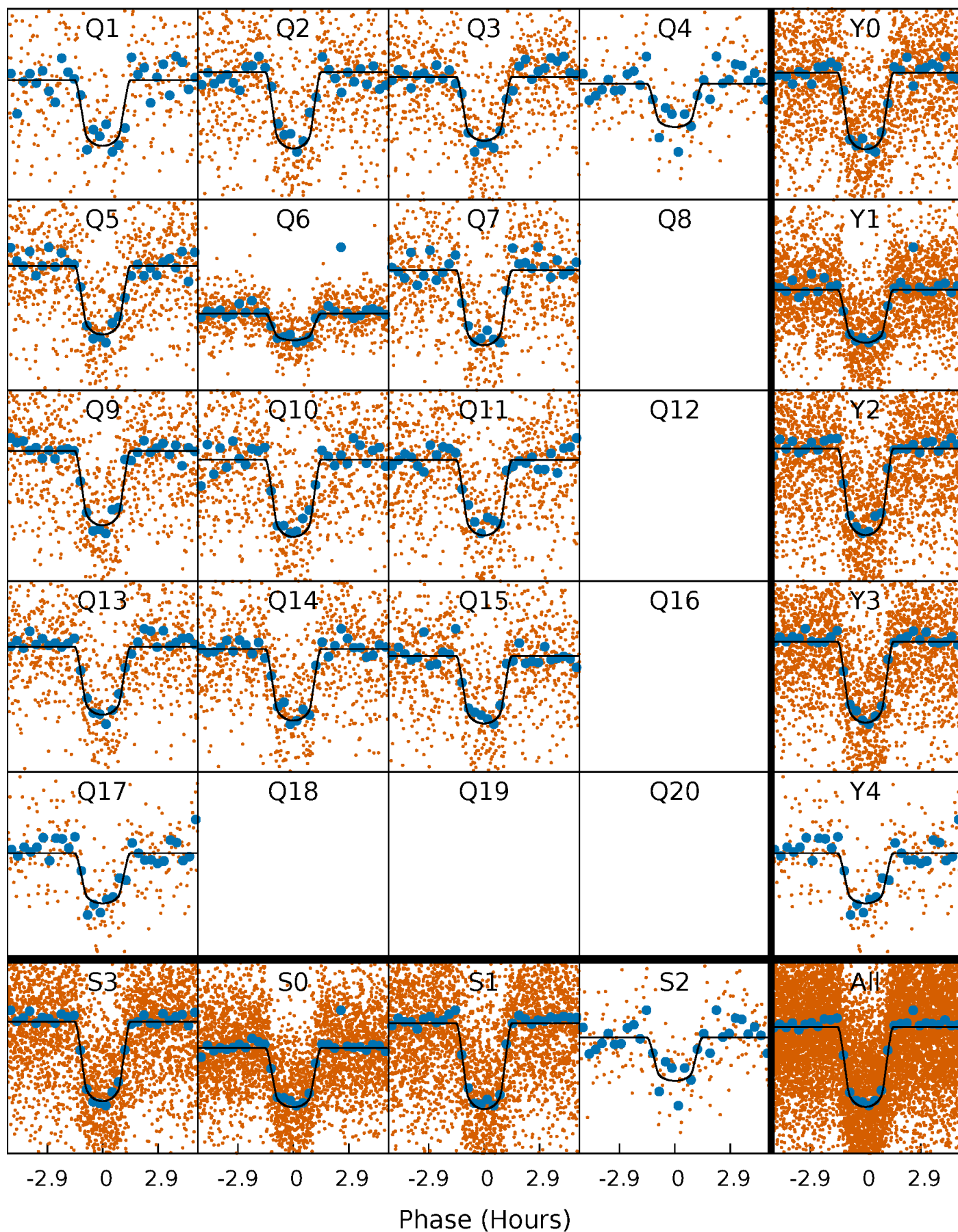
TCE 010587105-01 P= 1.980360 Days  $T_0=132.511953$  (BKJD)





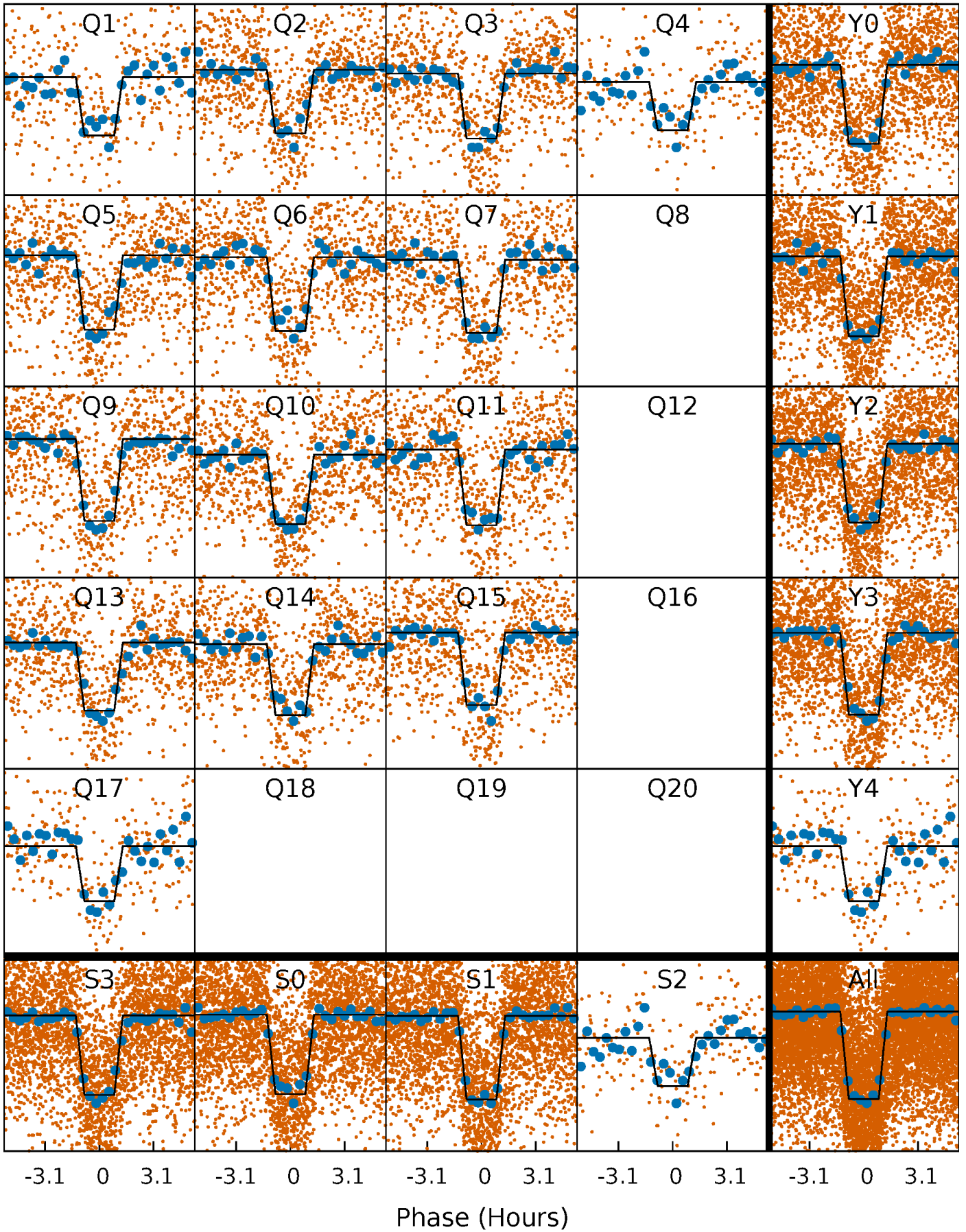
# DV Quarter-Phased Transit Curves

TCE 010587105-01 P= 1.980360 Days  $T_0=132.511953$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

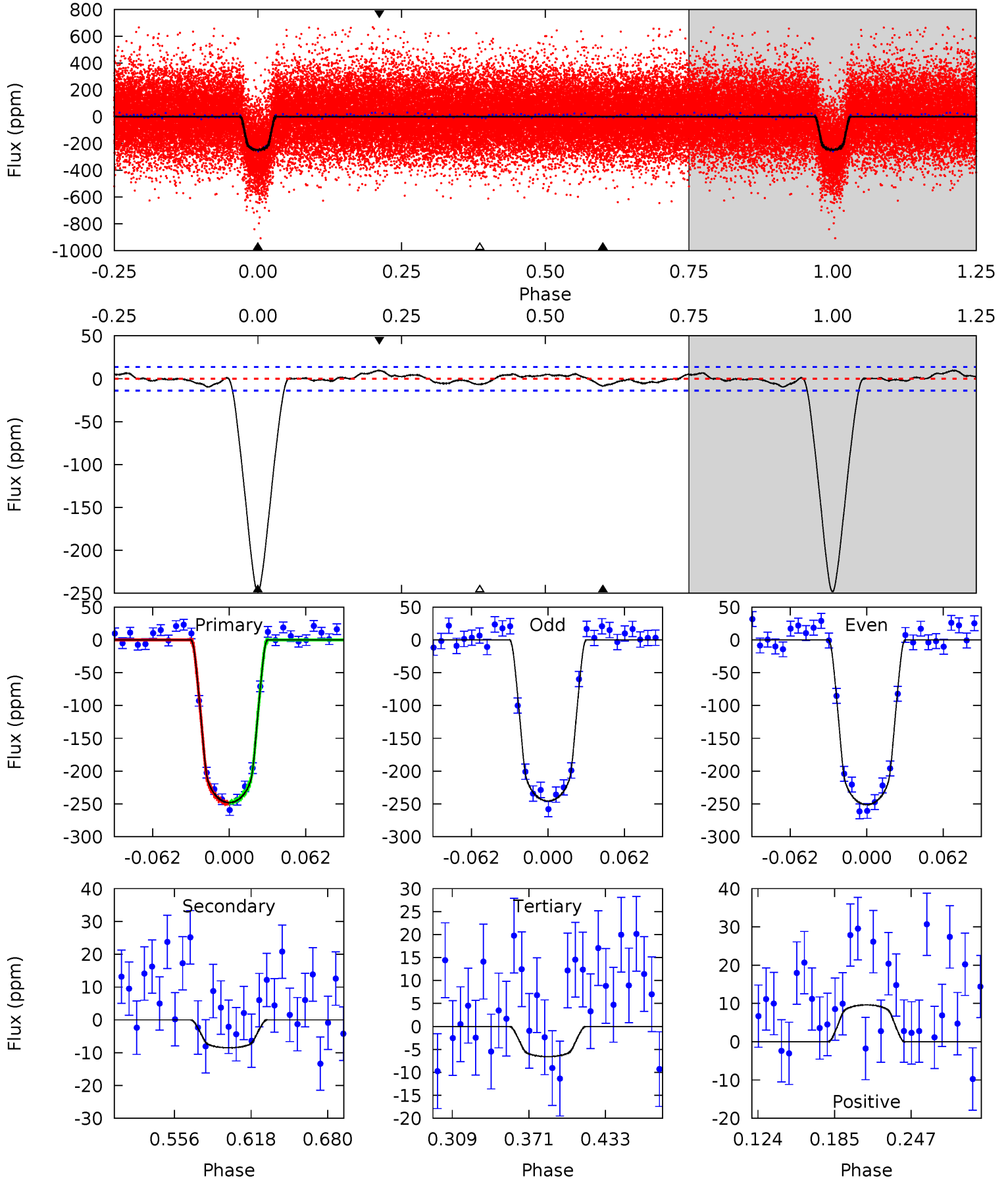
TCE 010587105-01 P= 1.980349 Days  $T_0=132.515279$  (BKJD)



# DV Model-Shift Uniqueness Test

010587105-01, P = 1.980360 Days, E = 130.531593 Days

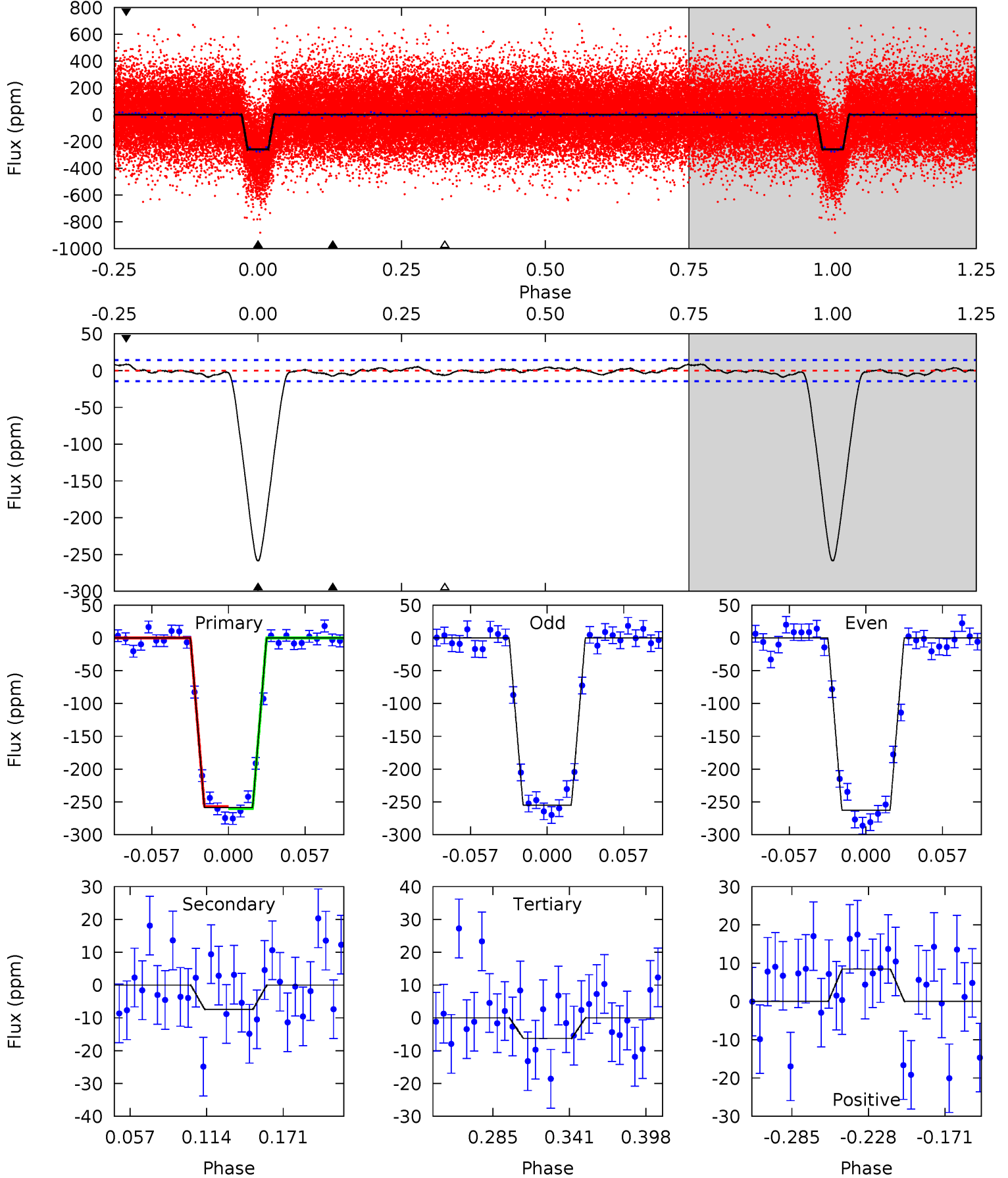
Pri	Sec	Ter	Pos	FA <sub>1</sub>	FA <sub>2</sub>	F <sub>Red</sub>	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
84.1	2.89	2.23	3.27	4.66	1.87	1.35	81.9	80.9	0.66	-0.38	0.94	1.01	0.04	0.28



# Alt Model-Shift Uniqueness Test

010587105-01, P = 1.980349 Days, E = 130.534930 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
84.8	2.42	2.05	2.78	4.68	1.90	1.08	82.7	82.0	0.37	-0.36	1.28	0.98	0.03	0.52





### Stellar Parameters For KIC 010587105

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6078^{+121}_{-133}$	$4.290^{+0.137}_{-0.112}$	$-0.160^{+0.150}_{-0.150}$	$1.189^{+0.197}_{-0.178}$	$1.005^{+0.091}_{-0.063}$	$0.842^{+0.515}_{-0.295}$
	+2%/-2%	+3%/-3%	+94%/-94%	+17%/-15%	+9%/-6%	+61%/-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 010587105-01 / KOI 0339.01

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{\text{max}}$ (K)	$T_{\text{obs}}$ (K)	$A_{\text{obs}}$
DV	$-9 \pm 3$	$2.24^{+0.28}_{-0.26}$	$2318^{+105}_{-108}$	$2951^{+208}_{-313}$	$0.887^{+0.418}_{-0.345}$
Alt.	$-7 \pm 3$	$2.09^{+0.28}_{-0.26}$	$2313^{+112}_{-112}$	$2936^{+252}_{-381}$	$0.896^{+0.475}_{-0.386}$

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

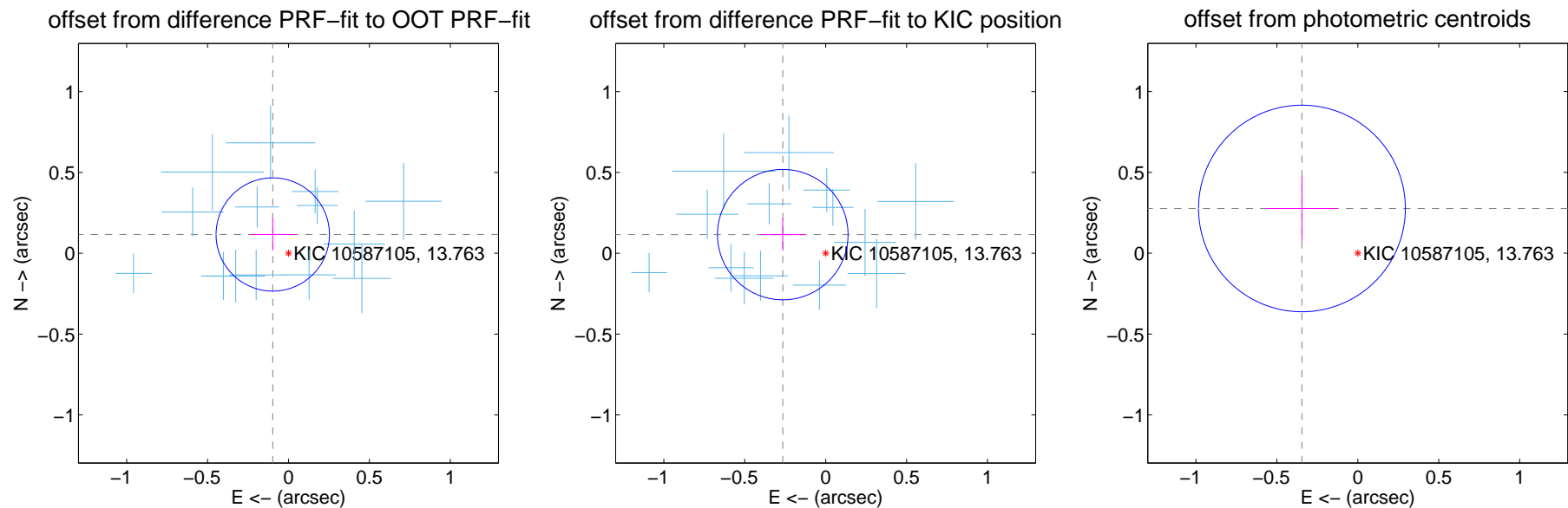
## DV Centroid Data

Supplemental centroid analysis for 010587105-01. Kepler magnitude: 13.76. Transit SNR 61.27

There are 14 quarters with good PRF difference image offsets

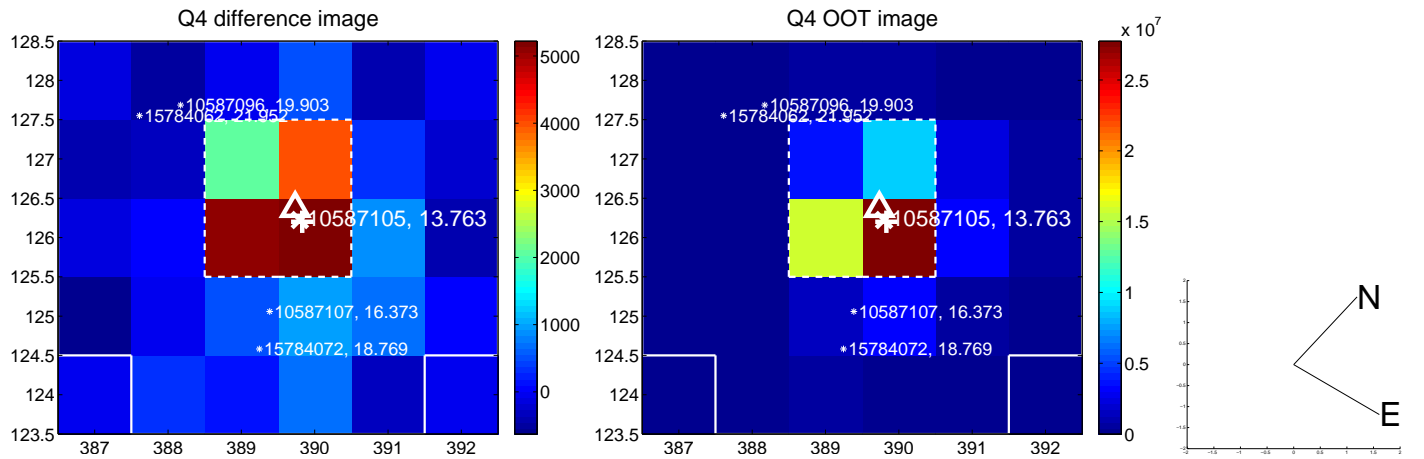
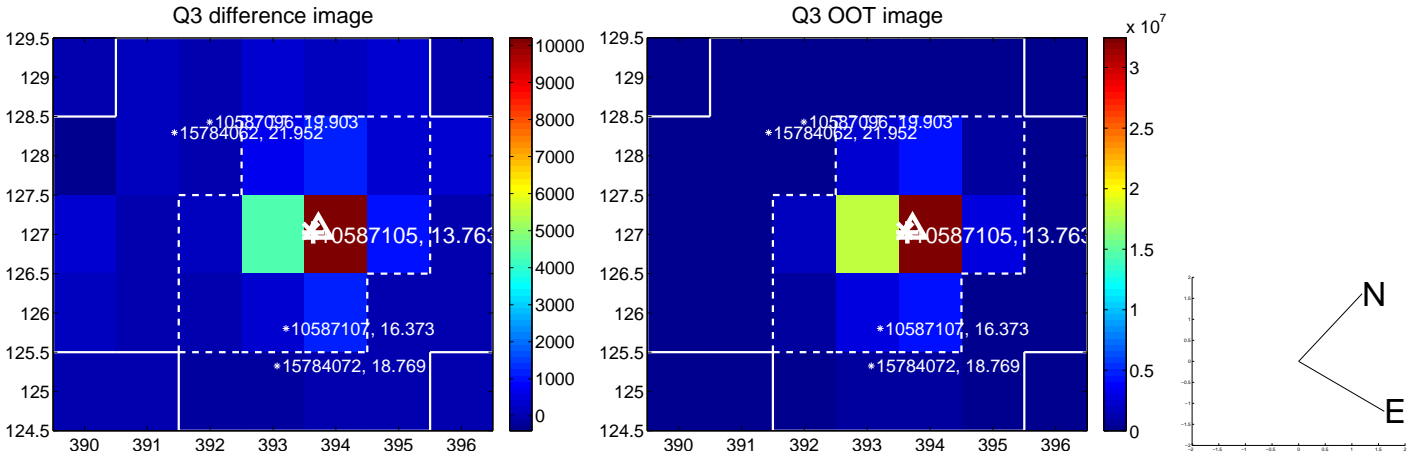
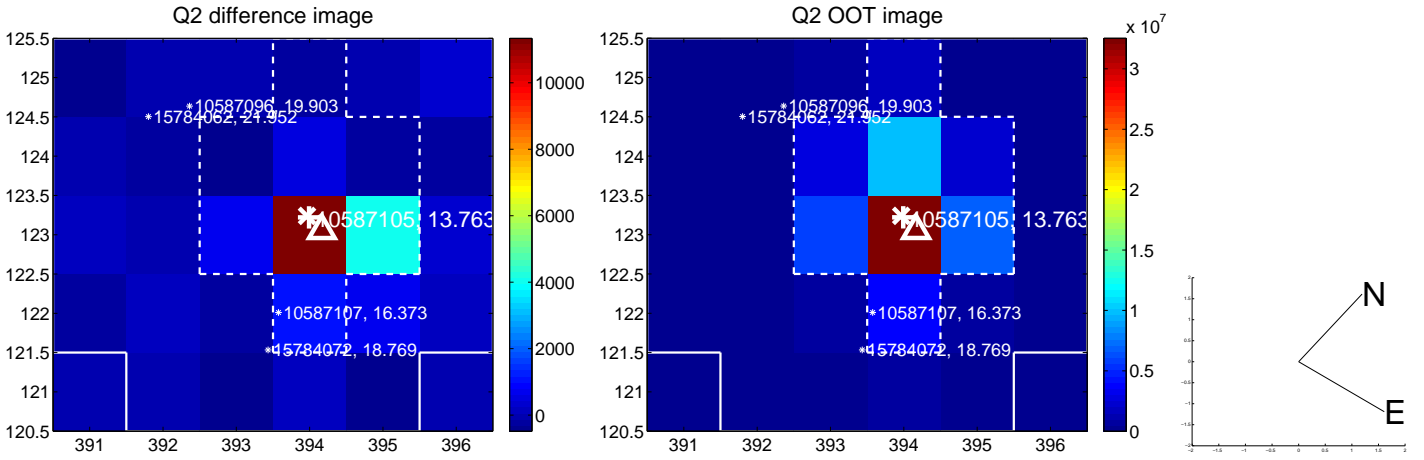
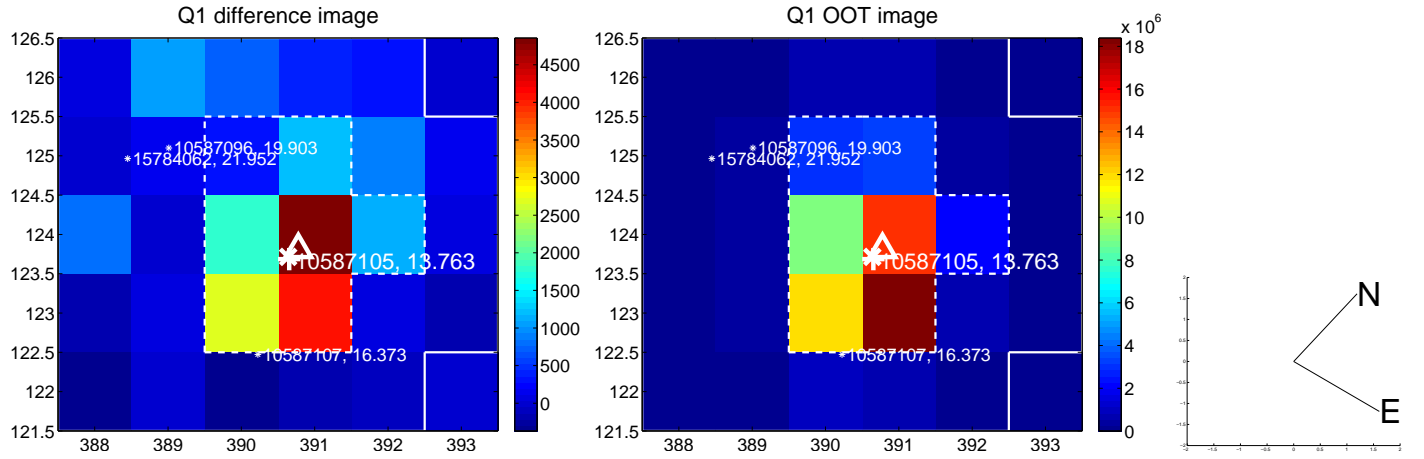
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.152 \pm 0.117$	1.30	$0.097 \pm 0.137$	$0.116 \pm 0.100$
PRF-fit source offset from KIC position	$0.289 \pm 0.134$	2.15	$0.265 \pm 0.140$	$0.115 \pm 0.099$
photometric centroid source offset	$0.44 \pm 0.21$	2.08	$0.35 \pm 0.22$	$0.28 \pm 0.20$

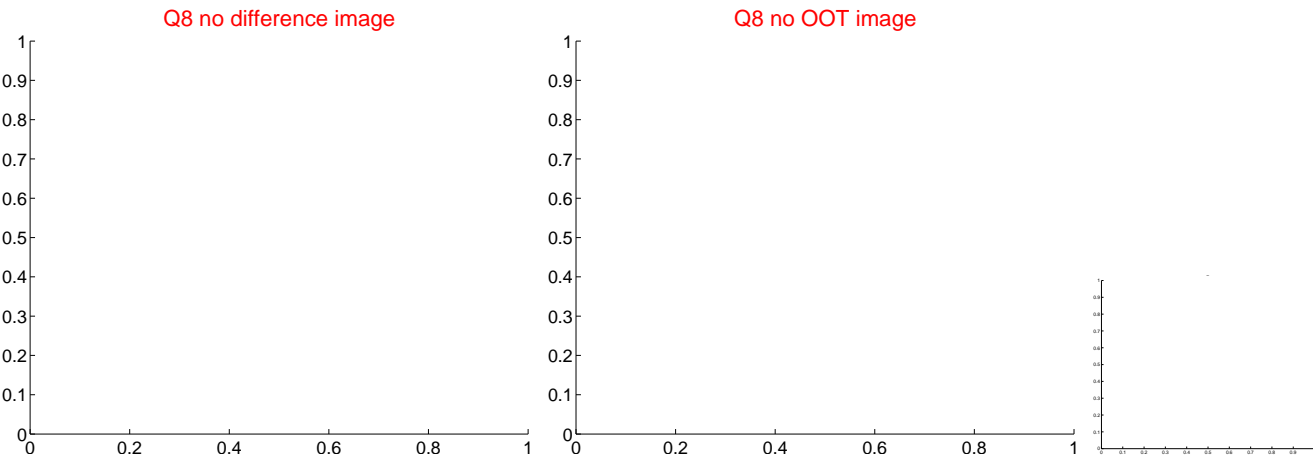
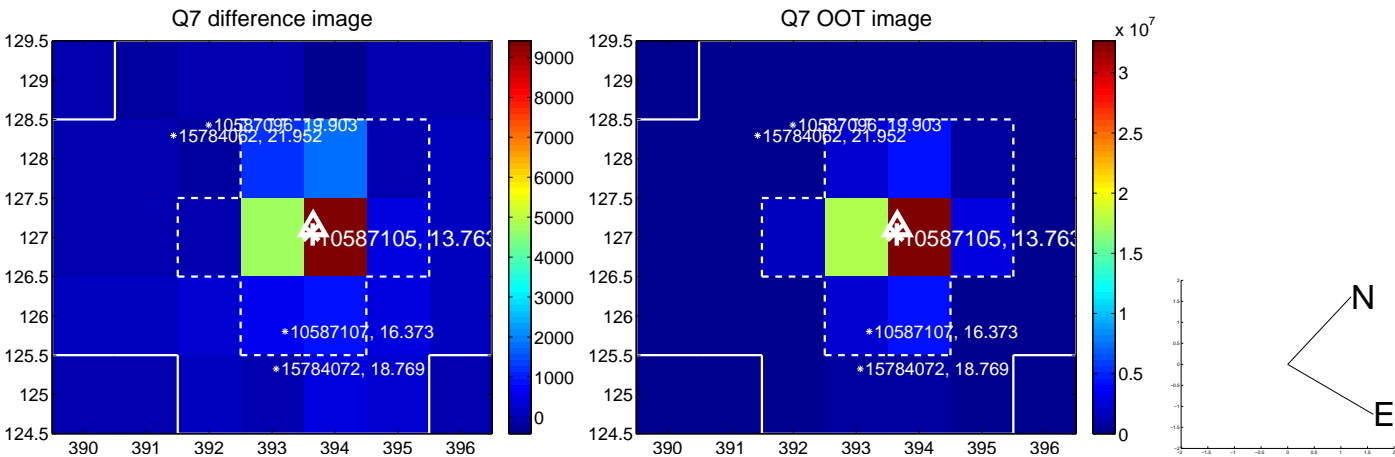
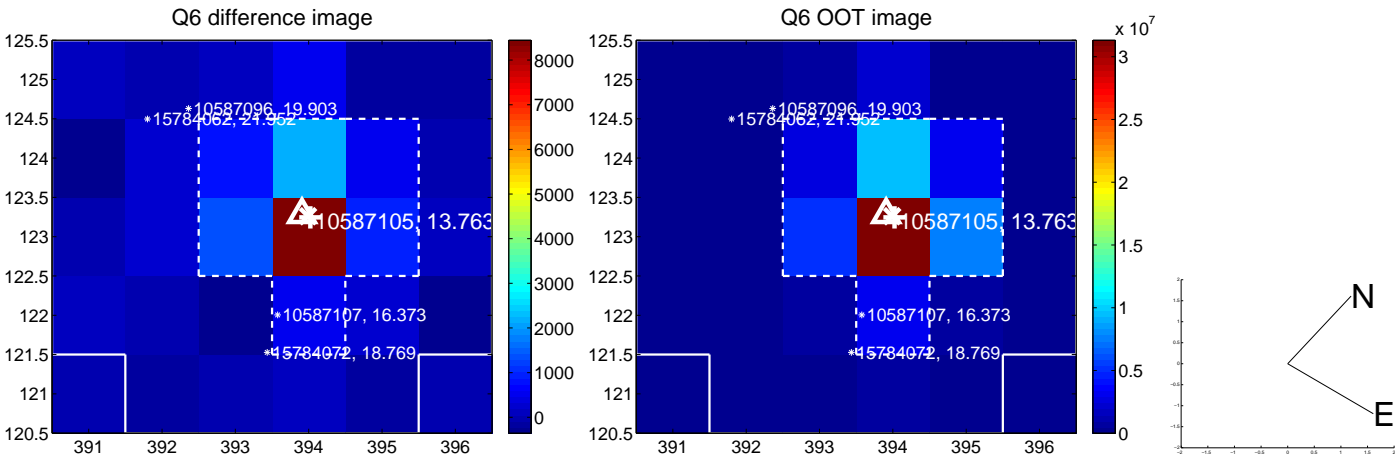
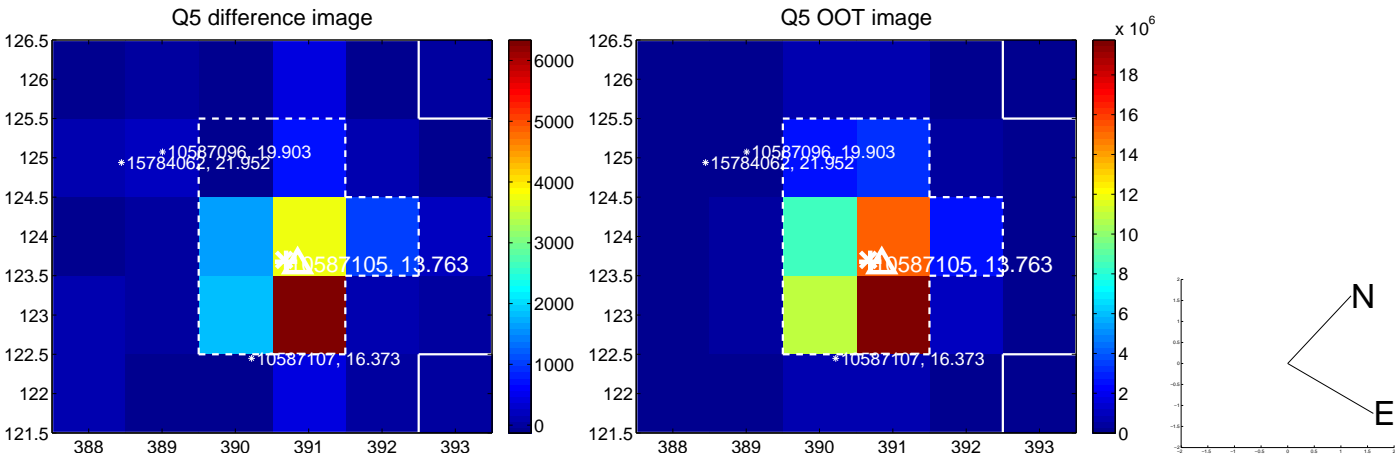


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: three-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

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

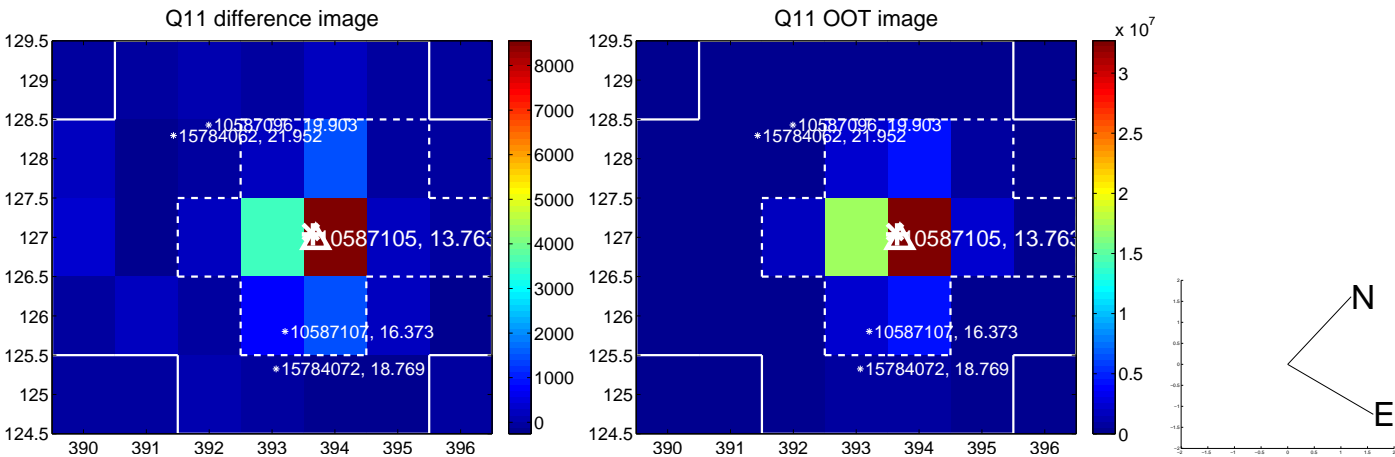
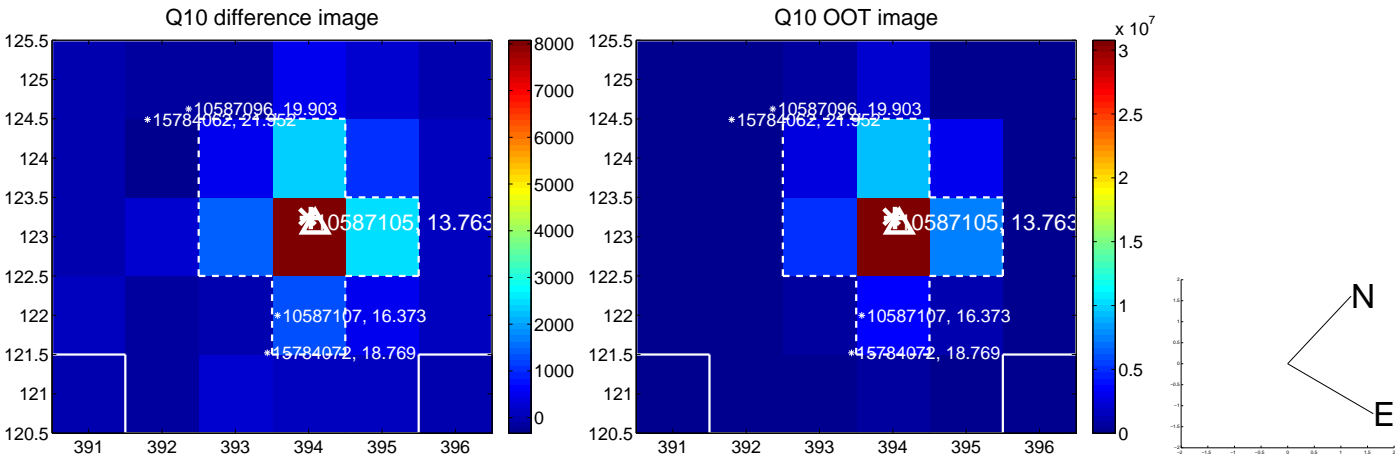
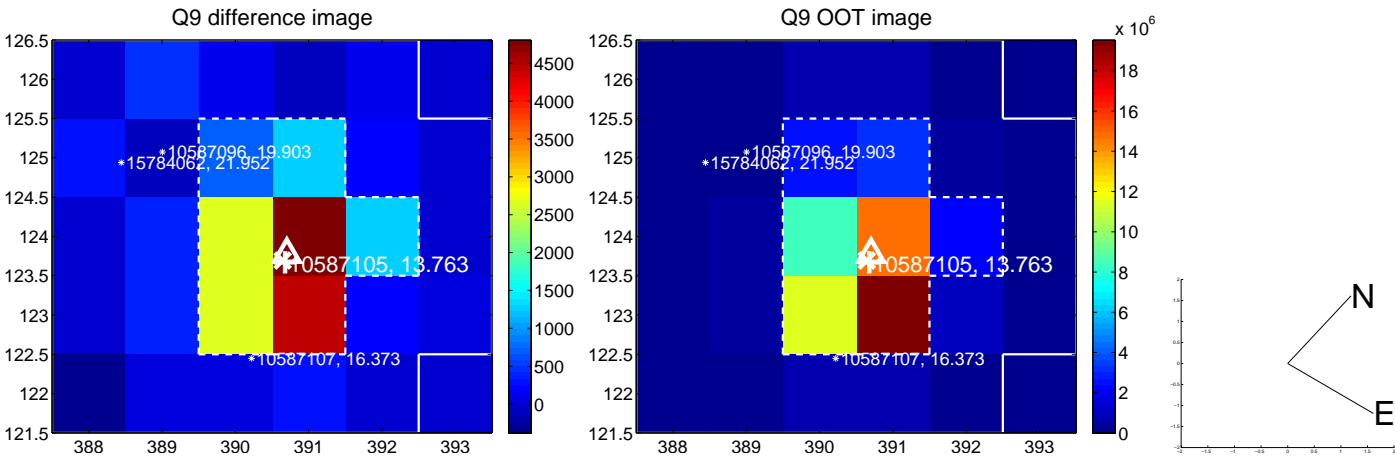


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

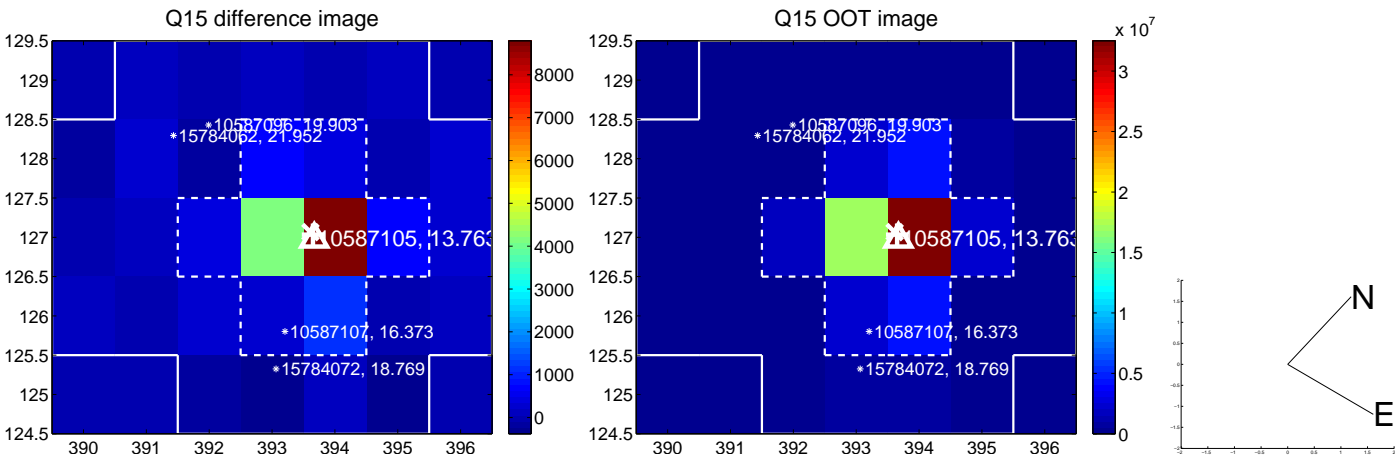
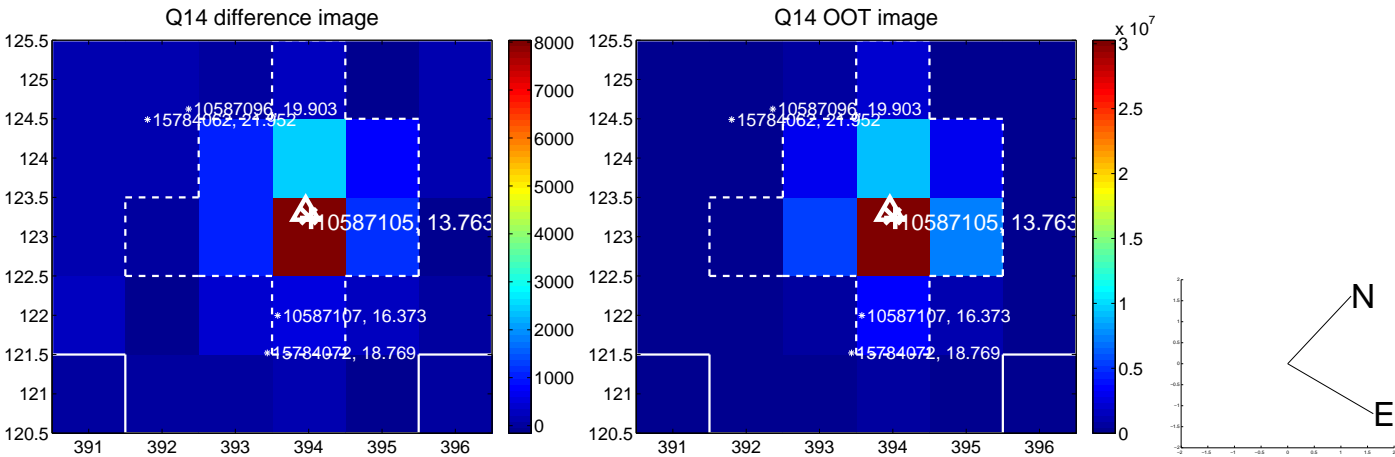
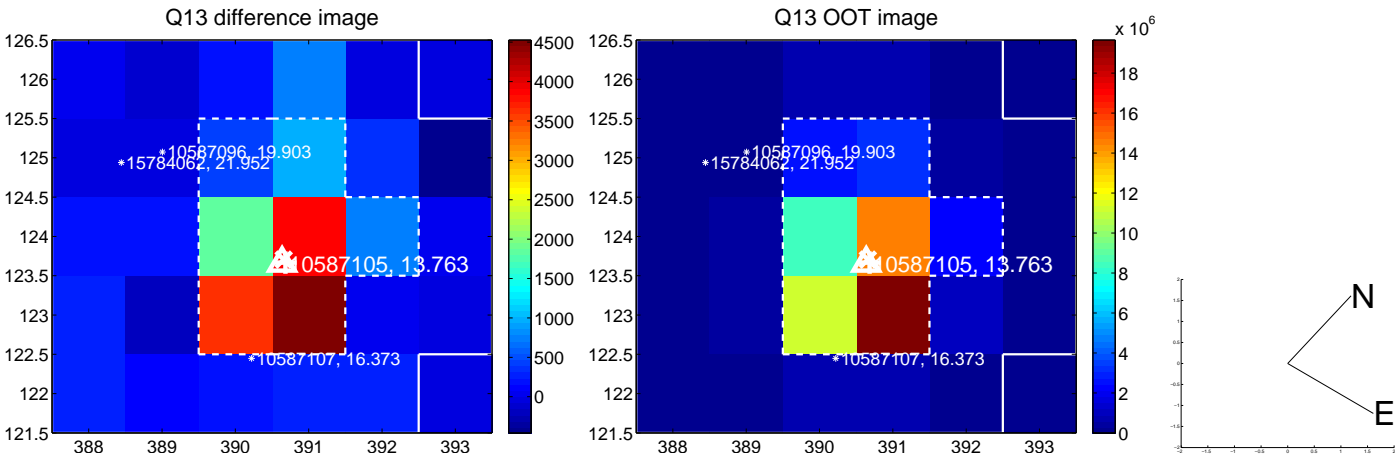




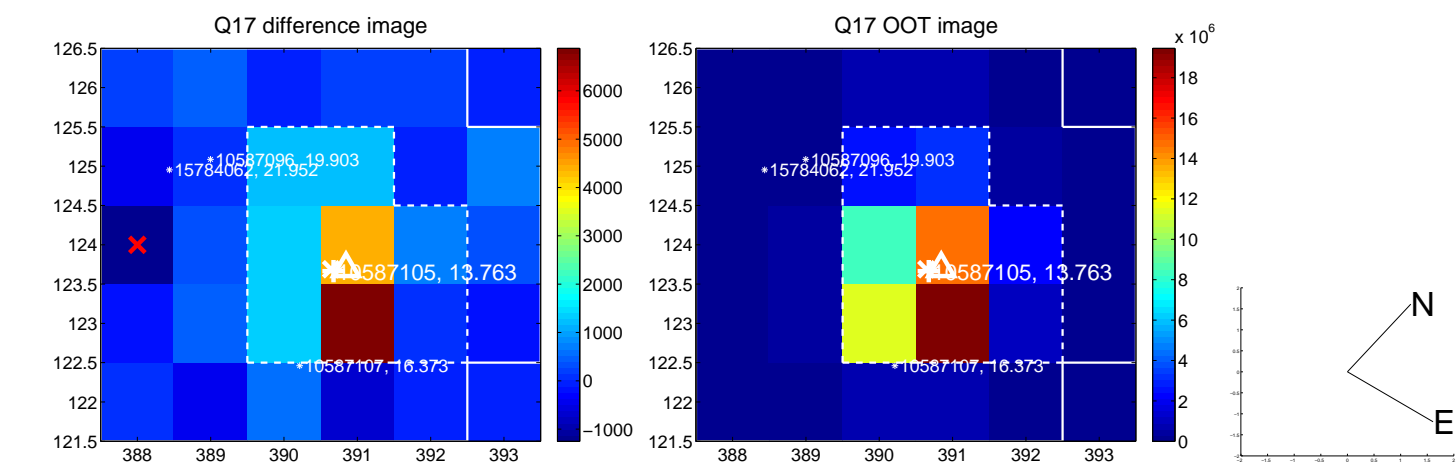
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



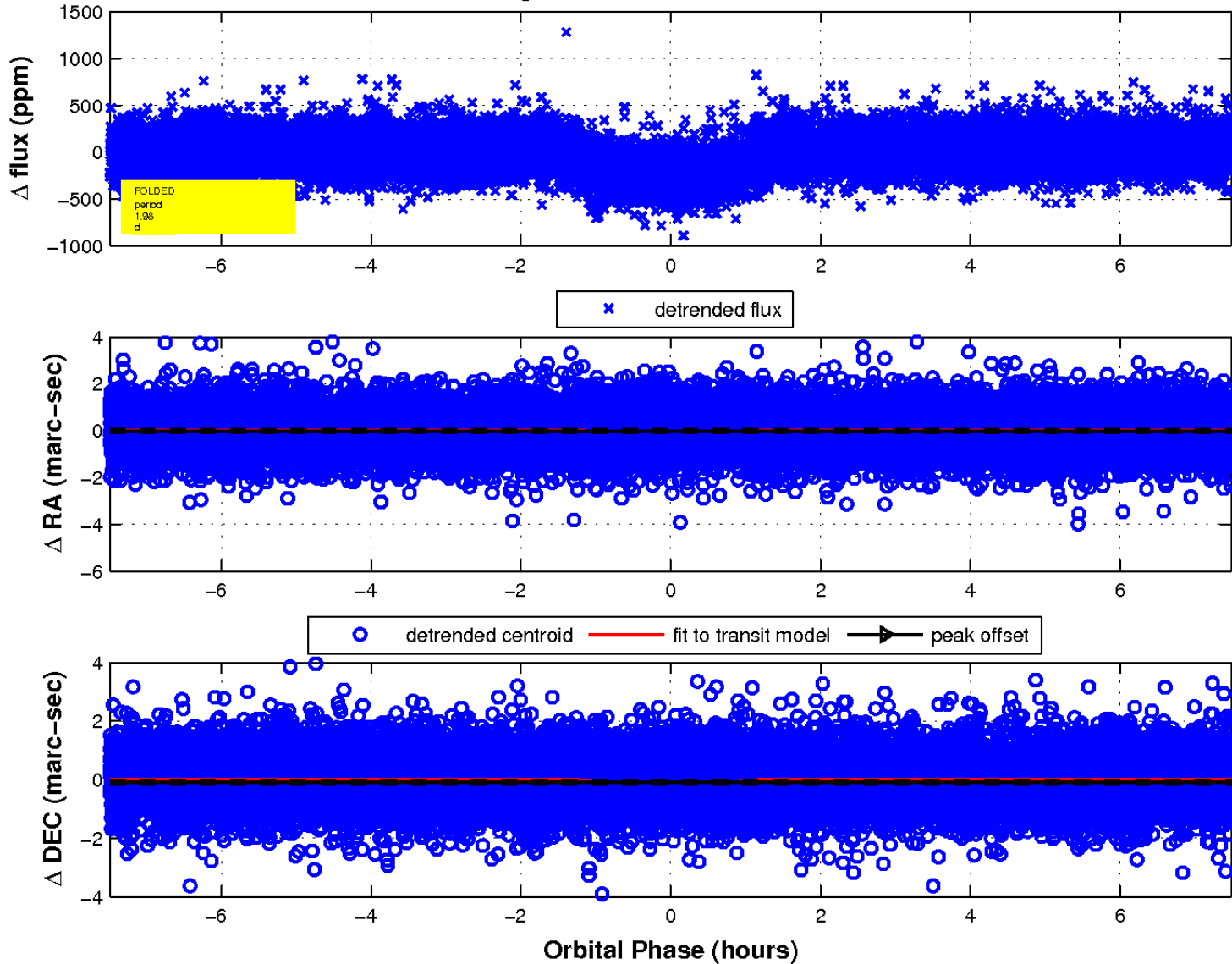
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

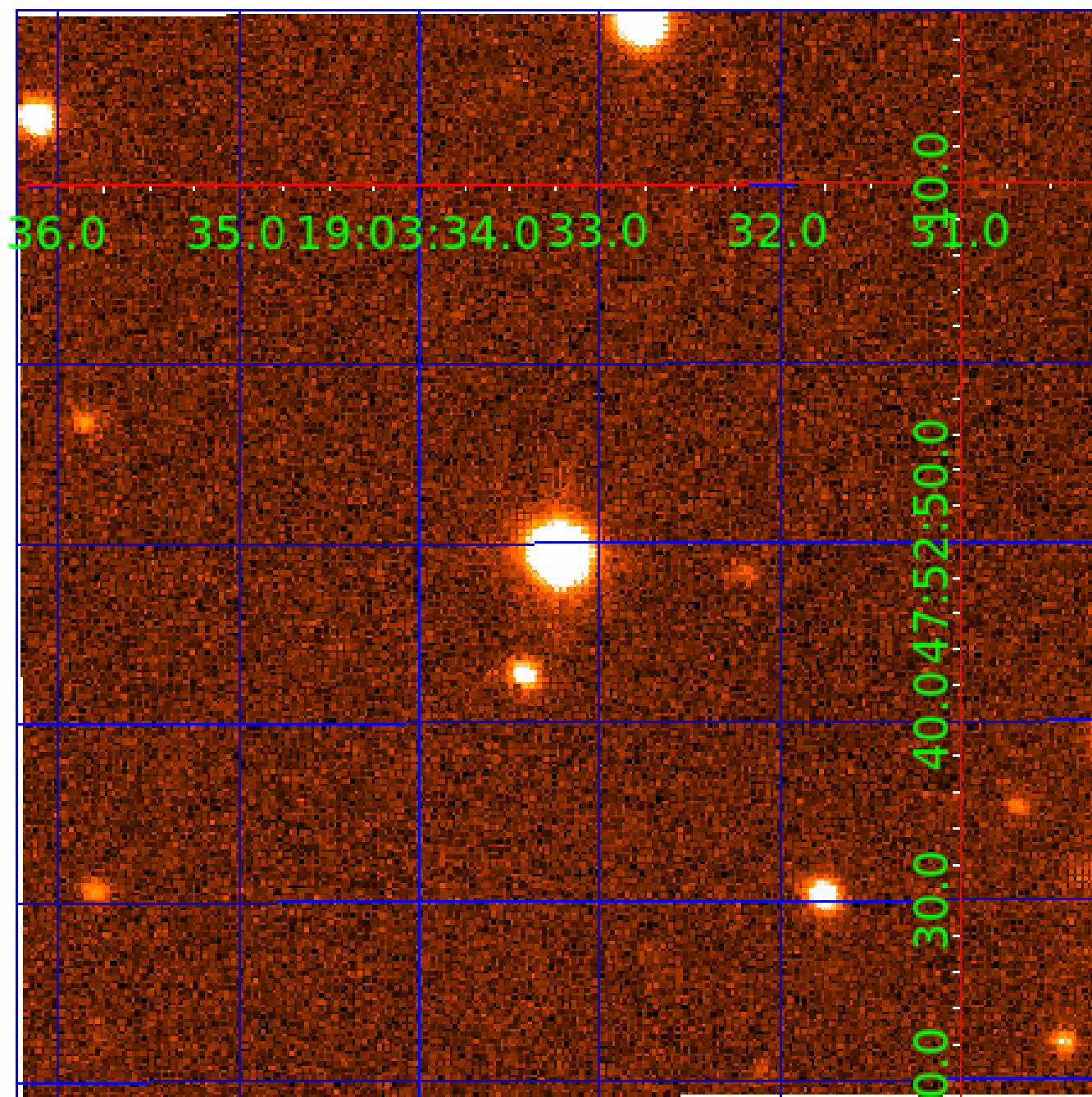


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination





# KIC 010587105

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010587105-01	OBS	0339.01	1.980360	132.511953	256.0	2.496	52.9	61.3	1.19	6078	2.24	1807.45
010587105-02	OBS	0339.02	12.834465	138.326985	273.2	3.842	26.5	28.9	1.19	6078	2.47	149.59
010587105-03	OBS	0339.03	35.866226	135.906447	238.6	7.974	18.2	18.2	1.19	6078	2.37	38.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010587105-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010587105-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010587105-03	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.

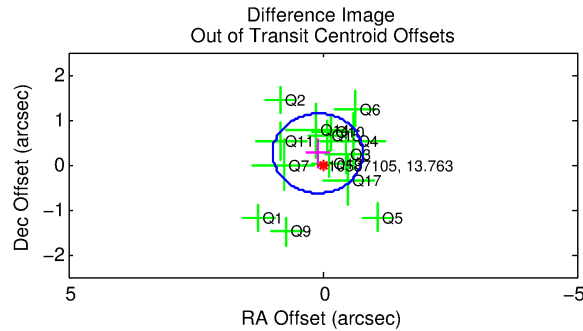
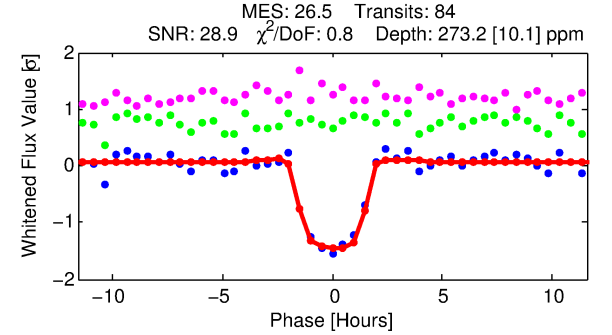
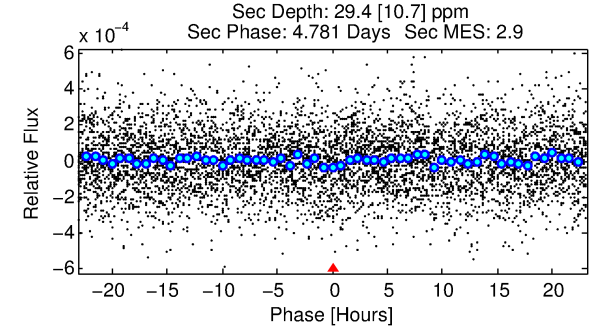
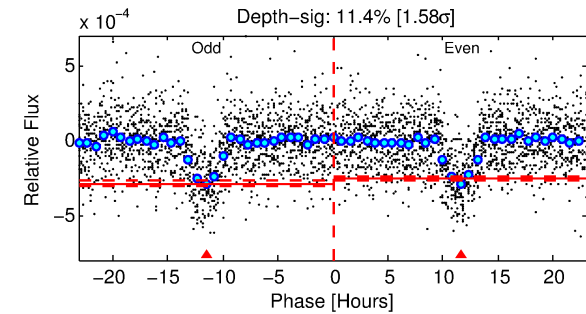
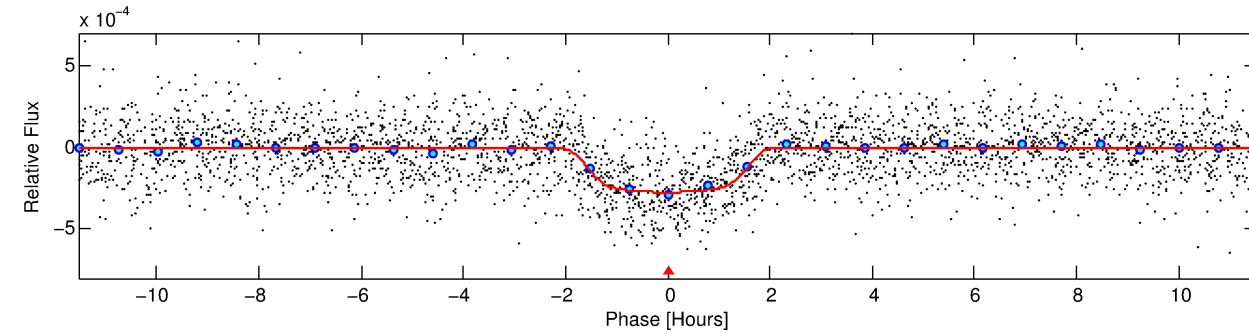
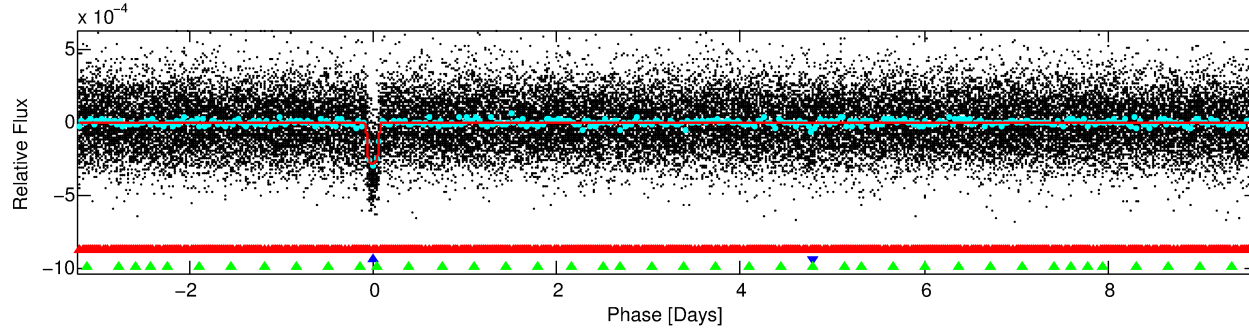
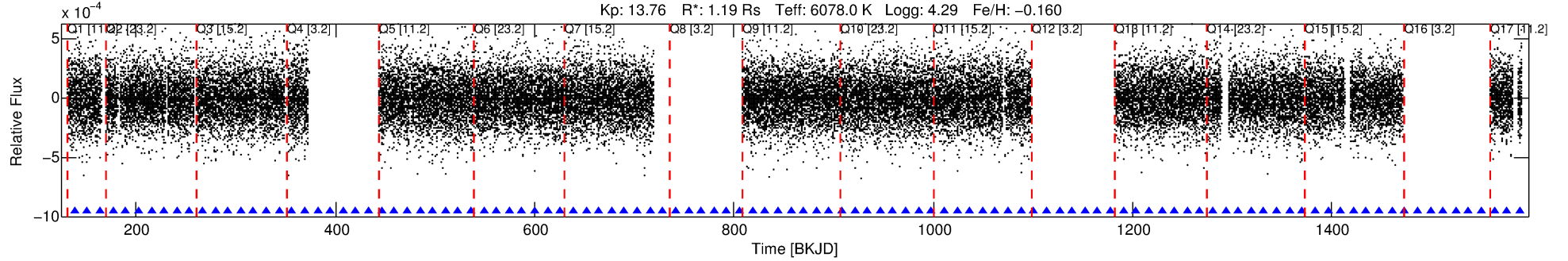
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010587105-02

No Significant Match Found

# DV One-Page Summary

KIC: 10587105 Candidate: 2 of 3 Period: 12.834 d  
KOI: K00339.02 Corr: 0.922



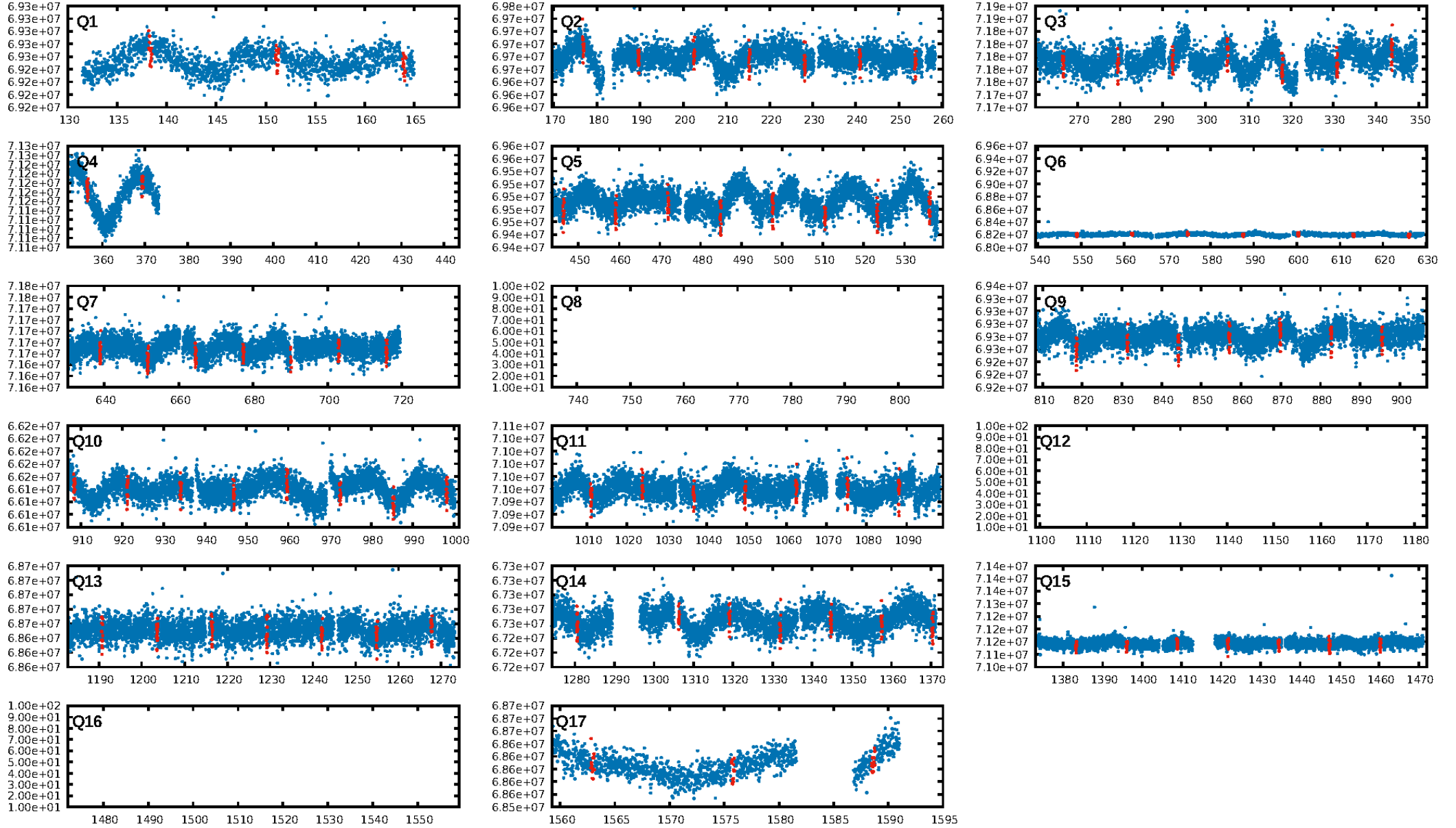
## DV Fit Results:

Period = 12.83447 [0.00004] d  
Epoch = 138.3270 [0.0026] BKJD  
Rp/R\* = 0.0191 [0.0007]  
a/R\* = 9.23 [1.52]  
b = 0.95 [0.02]  
Seff = 149.58 [37.87]  
Teq = 892 [56] K  
Rp = 2.47 [0.42] Re  
a = 0.1075 [0.0164] AU  
Ag = 30.56 [13.48] [2.19 $\sigma$ ]  
Teffp = 3242 [309] K [7.47 $\sigma$ ]

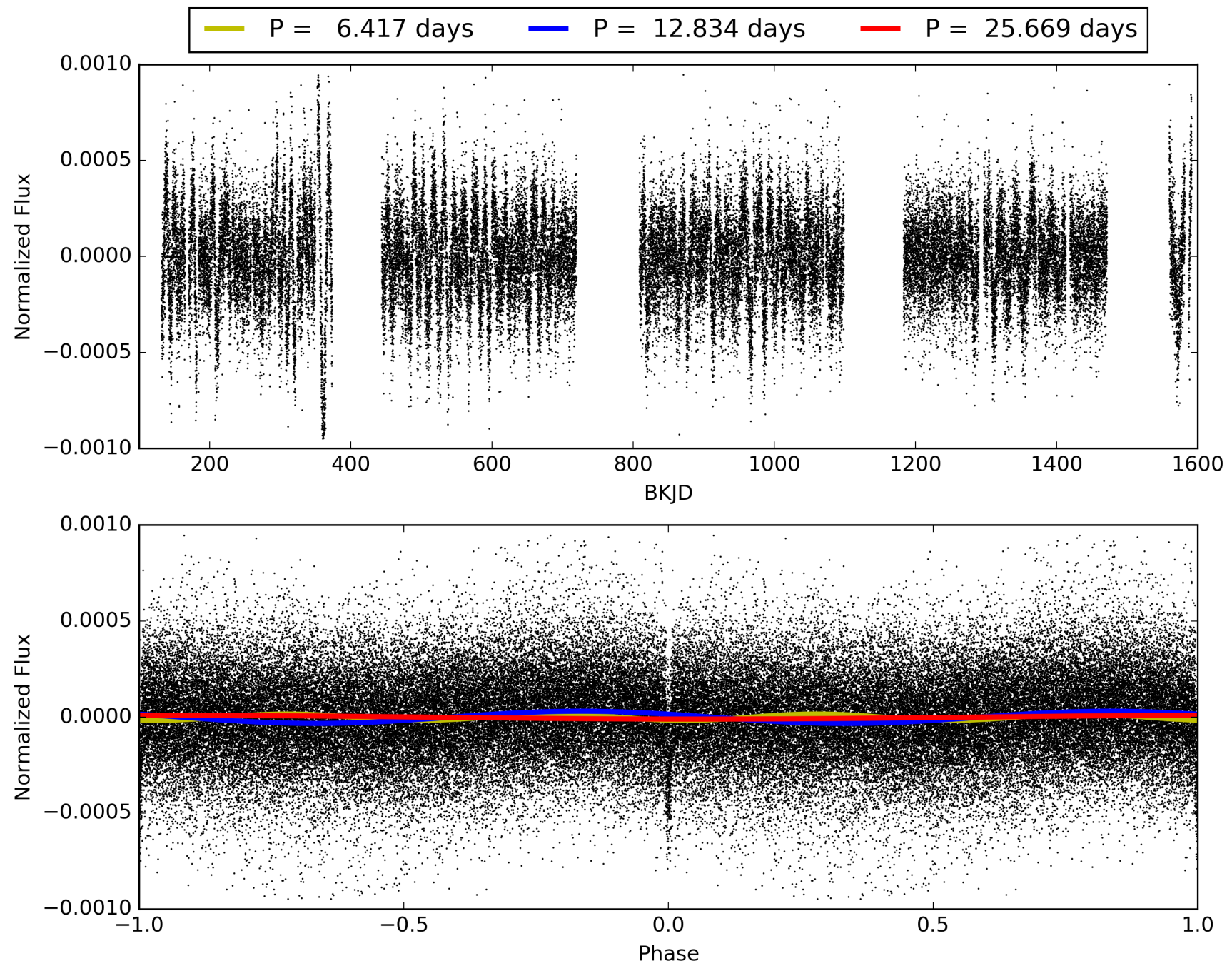
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [56.85 $\sigma$ ]  
LongPeriod-sig: 100.0% [62.45 $\sigma$ ]  
ModelChiSquare2-sig: 99.4%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 1.17e-149  
RollingBand-fgt: 1.00 [76/76]  
GhostDiagnostic-chr: 11.54  
Centroid-sig: 25.1%  
Centroid-so: 0.428 arcsec [1.01 $\sigma$ ]  
OotOffset-rm: 0.269 arcsec [0.91 $\sigma$ ]  
KicOffset-rm: 0.324 arcsec [1.22 $\sigma$ ]  
OotOffset-st: 4/4/1/5 [14]  
KicOffset-st: 4/4/1/5 [14]  
DiffImageQuality-fgm: 1.00 [14/14]  
DiffImageOverlap-fno: 1.00 [14/14]

# TCE 010587105-02, PDC Light Curves

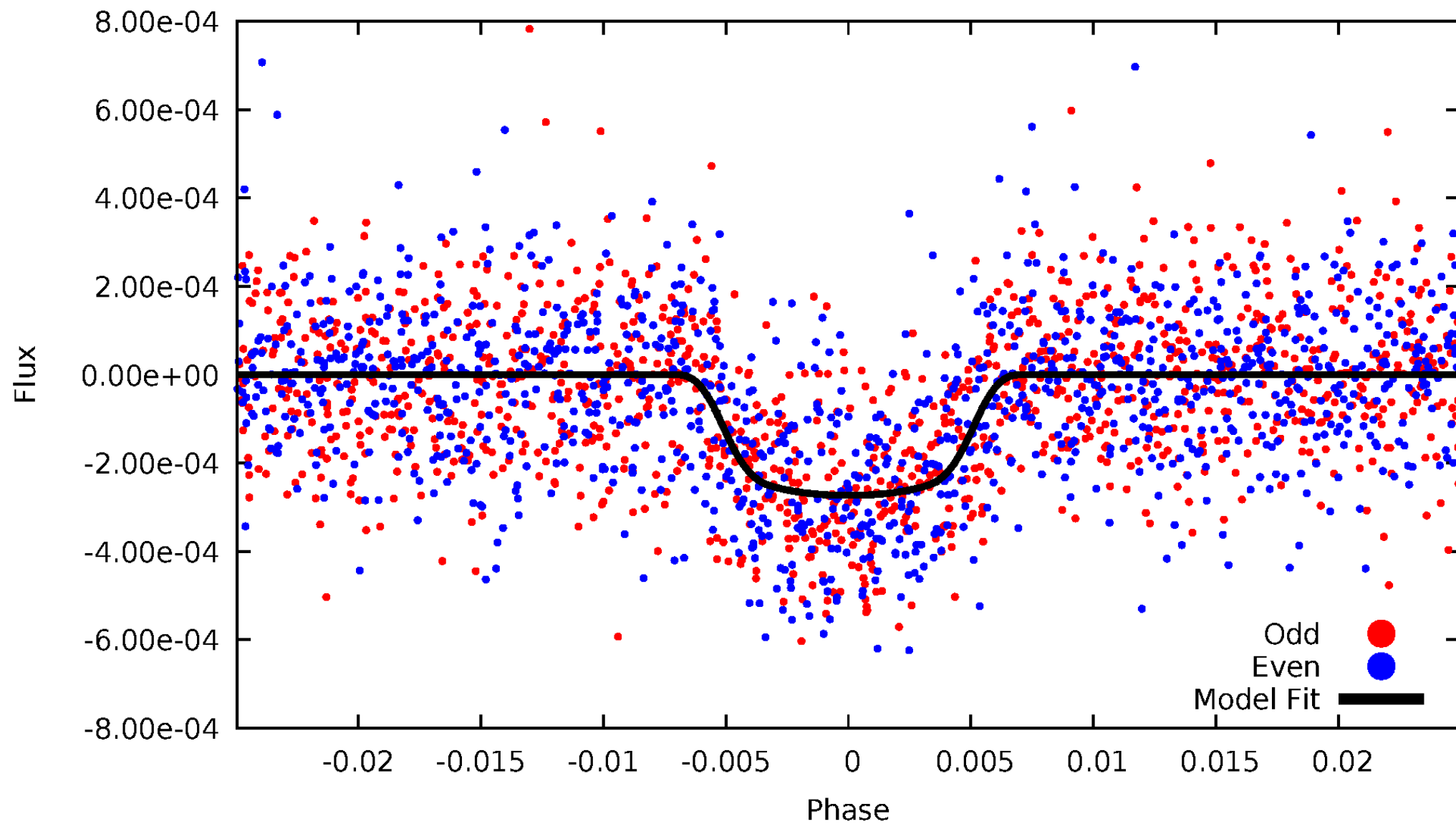


TCE 010587105-02



# DV Odd/Even

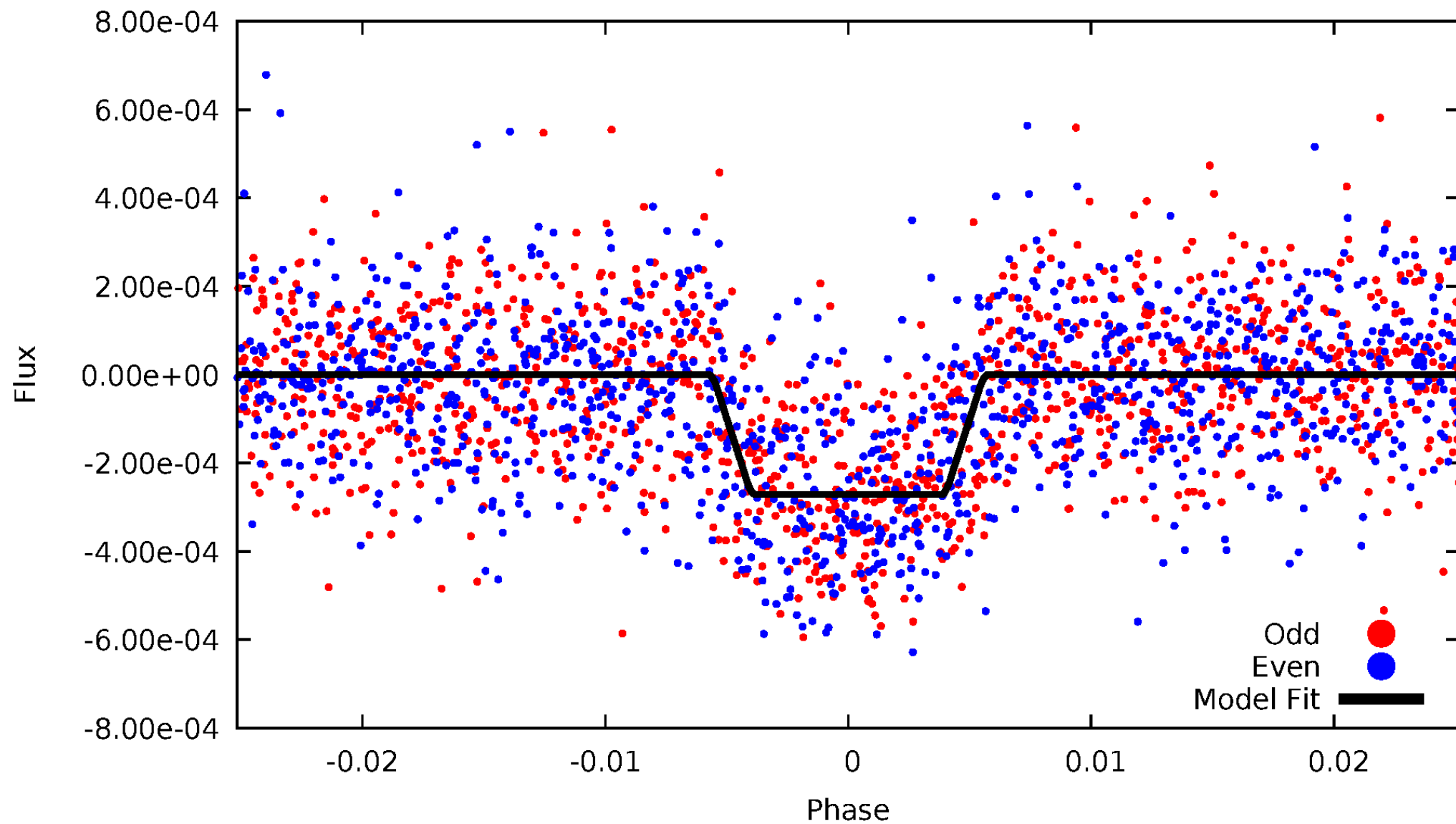
TCE 010587105-02





# ALT Odd/Even

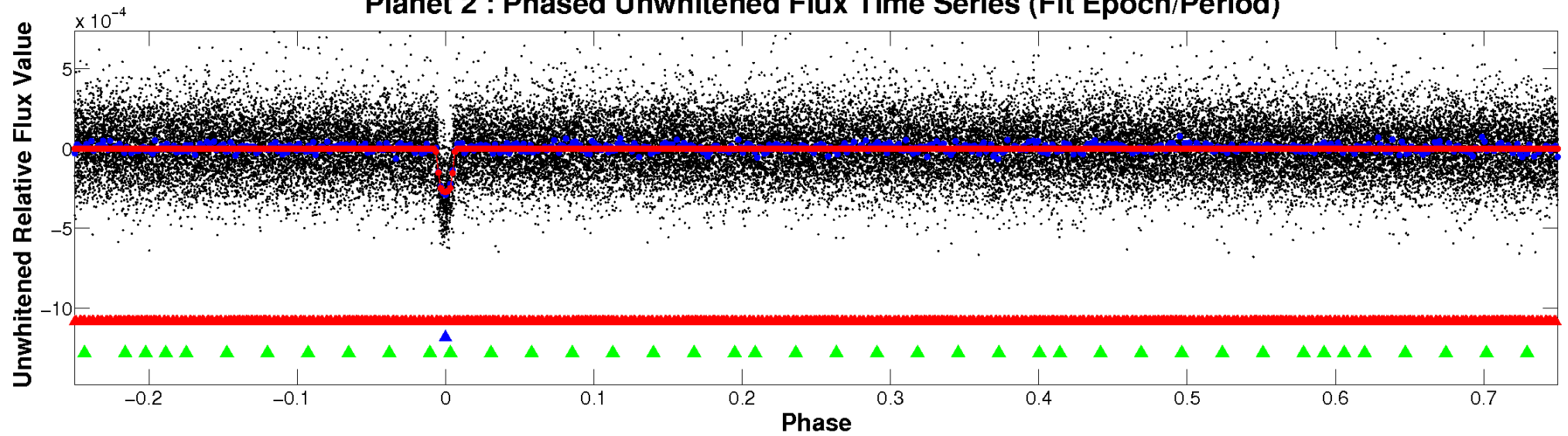
TCE 010587105-02



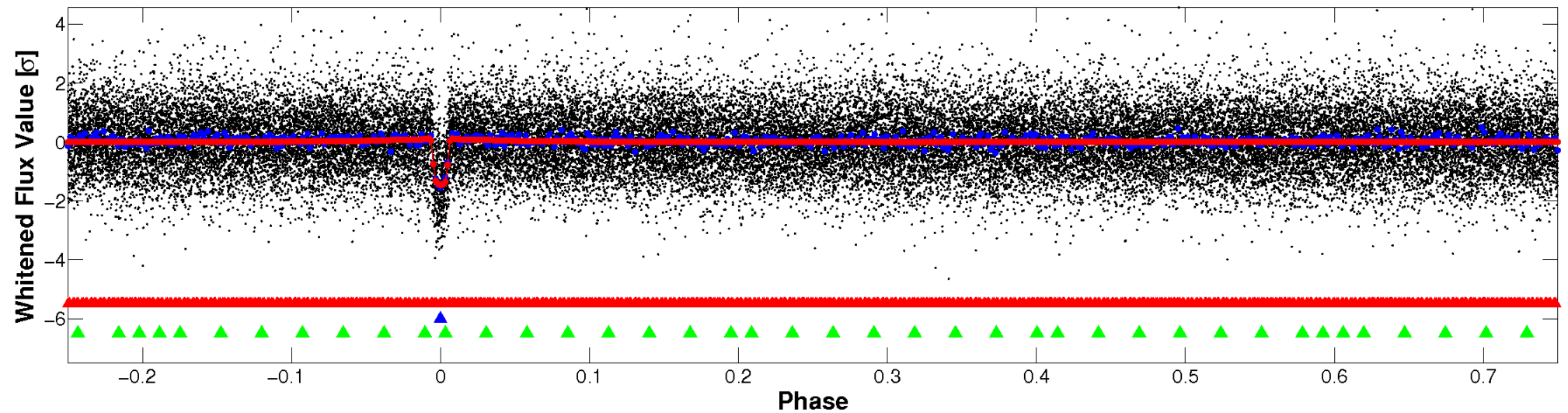


# Non-Whitened Vs. Whitened Light Curve

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

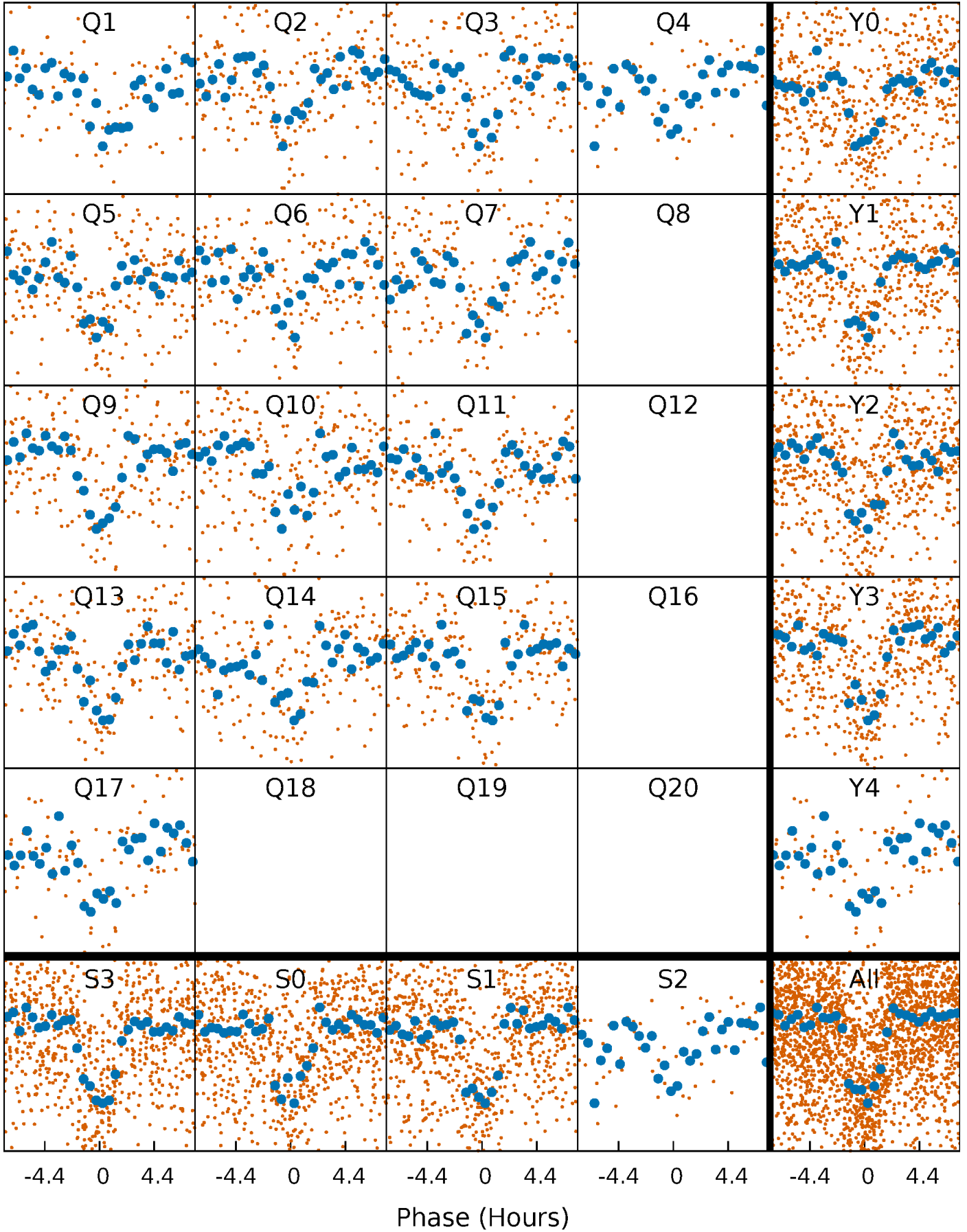


## Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



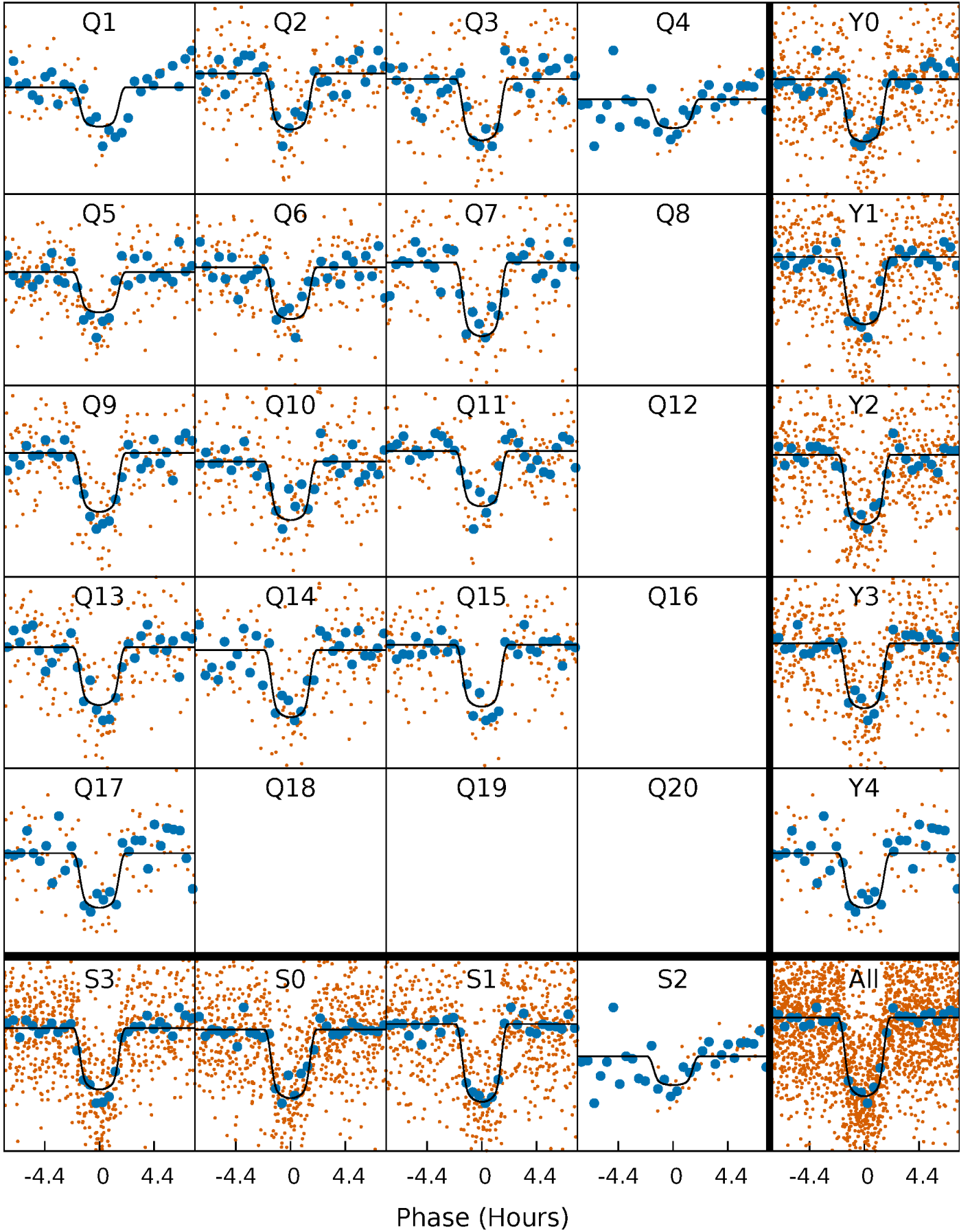
# PDC Quarter-Phased Transit Curves

TCE 010587105-02 P= 12.834465 Days  $T_0=138.326985$  (BKJD)



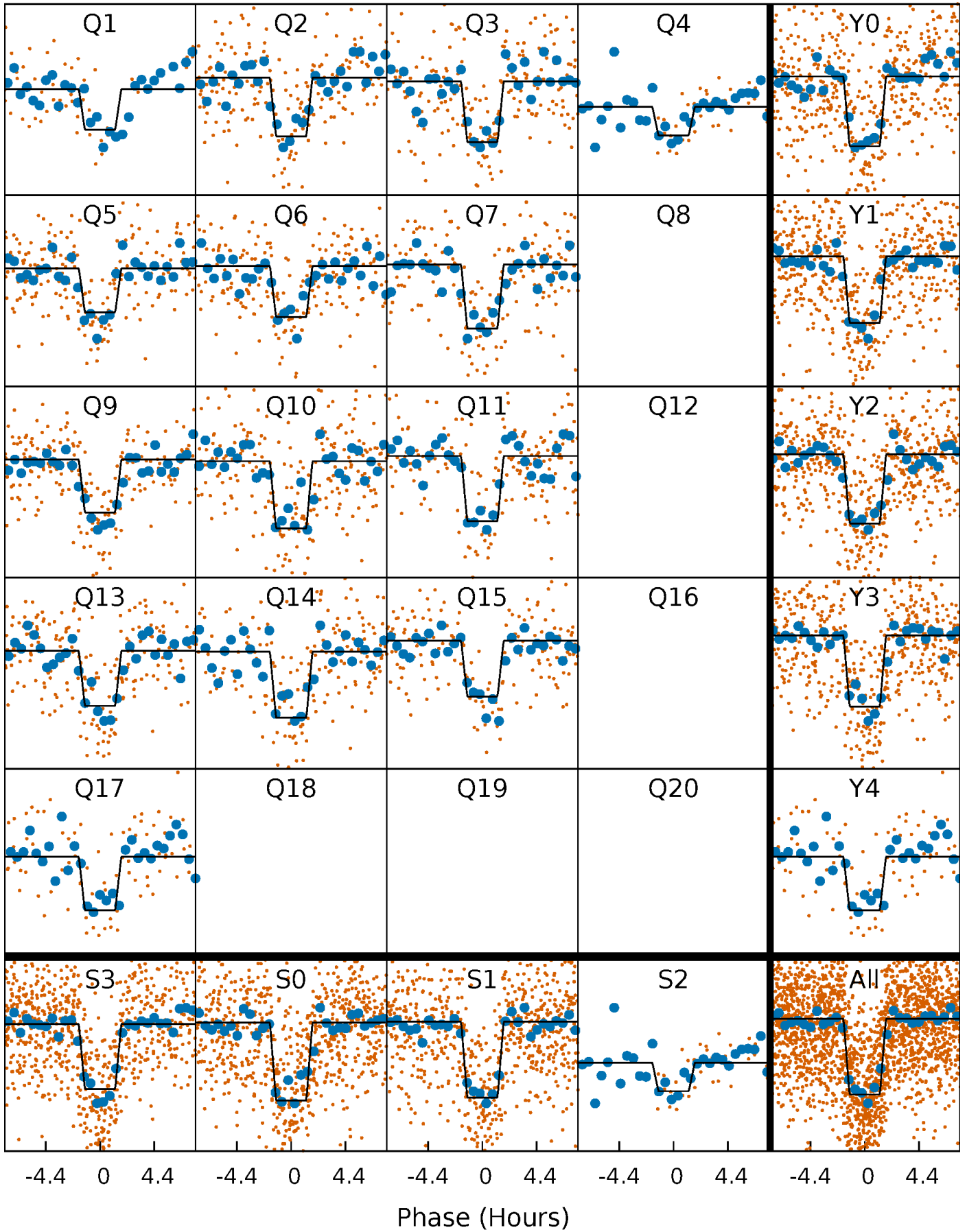
# DV Quarter-Phased Transit Curves

TCE 010587105-02 P= 12.834465 Days  $T_0=138.326985$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

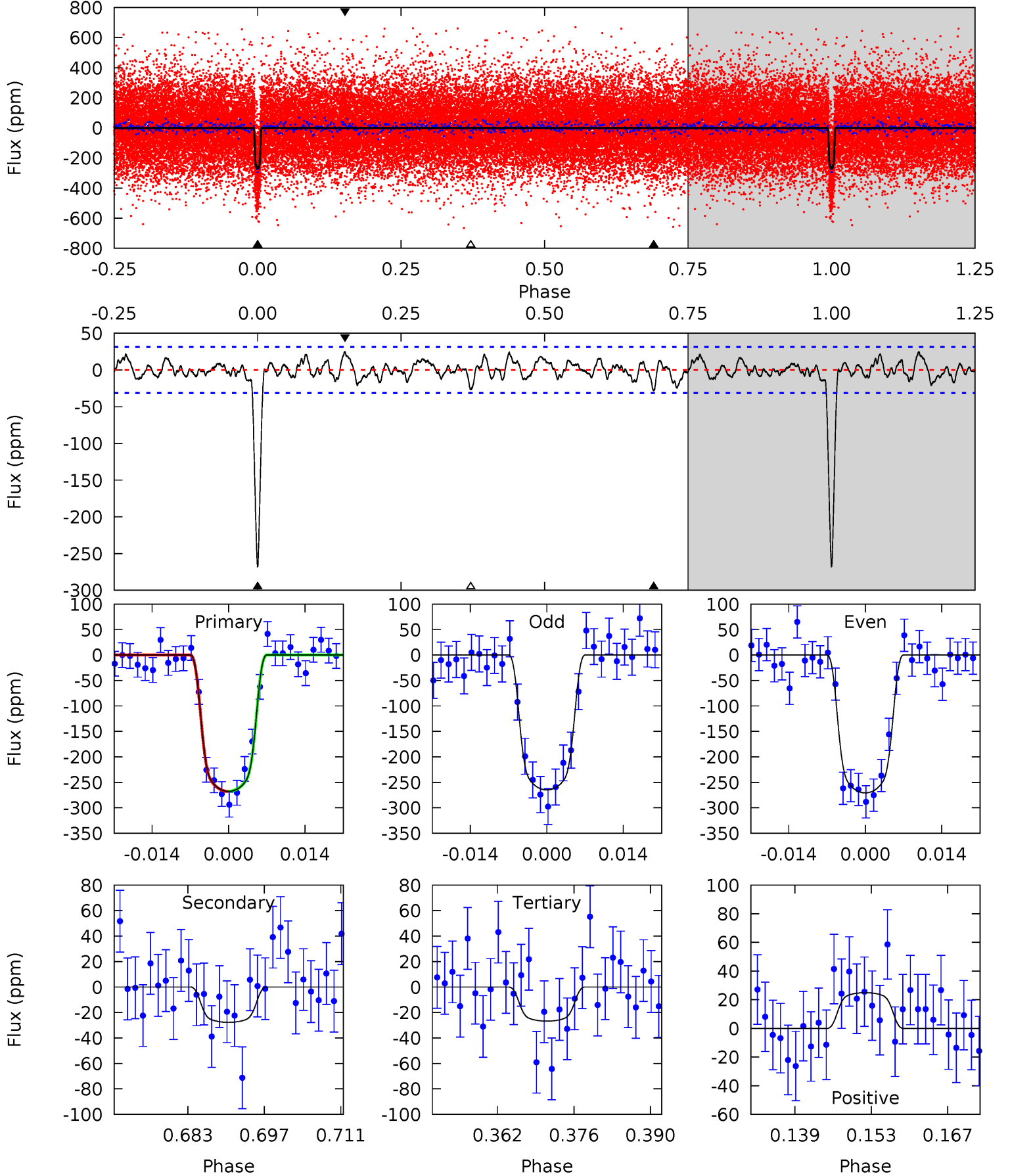
TCE 010587105-02     $P = 12.834398$  Days     $T_0 = 138.329704$  (BKJD)



# DV Model-Shift Uniqueness Test

010587105-02,  $P = 12.834465$  Days,  $E = 125.492520$  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
42.3	4.39	4.23	3.95	4.96	2.46	1.47	38.1	38.4	0.15	0.44	0.46	0.99	0.09	0.04

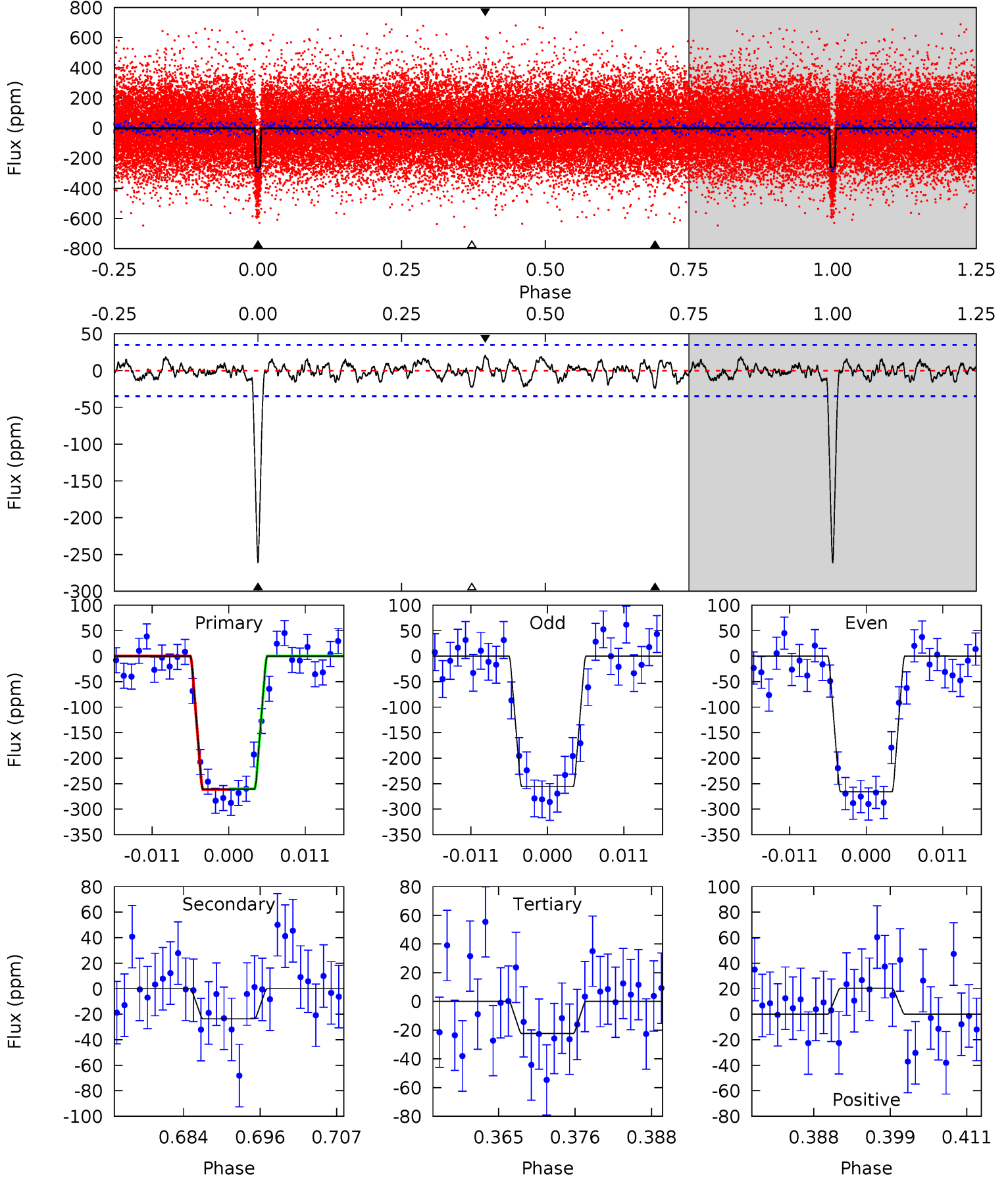




# Alt Model-Shift Uniqueness Test

010587105-02, P = 12.834398 Days, E = 125.495306 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
37.5	3.39	3.21	2.93	5.00	2.53	1.18	34.3	34.5	0.18	0.45	0.73	1.02	0.07	0.11



### Stellar Parameters For KIC 010587105

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6078^{+121}_{-133}$	$4.290^{+0.137}_{-0.112}$	$-0.160^{+0.150}_{-0.150}$	$1.189^{+0.197}_{-0.178}$	$1.005^{+0.091}_{-0.063}$	$0.842^{+0.515}_{-0.295}$
	+2%/-2%	+3%/-3%	+94%/-94%	+17%/-15%	+9%/-6%	+61%/-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 010587105-02 / KOI 0339.02

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-28 \pm 6$	$2.46^{+0.25}_{-0.24}$	$1241^{+60}_{-57}$	$3625^{+151}_{-160}$	$29^{+10}_{-8}$
Alt.	$-24 \pm 7$	$2.12^{+0.23}_{-0.20}$	$1240^{+63}_{-61}$	$3704^{+176}_{-214}$	$33^{+12}_{-10}$

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



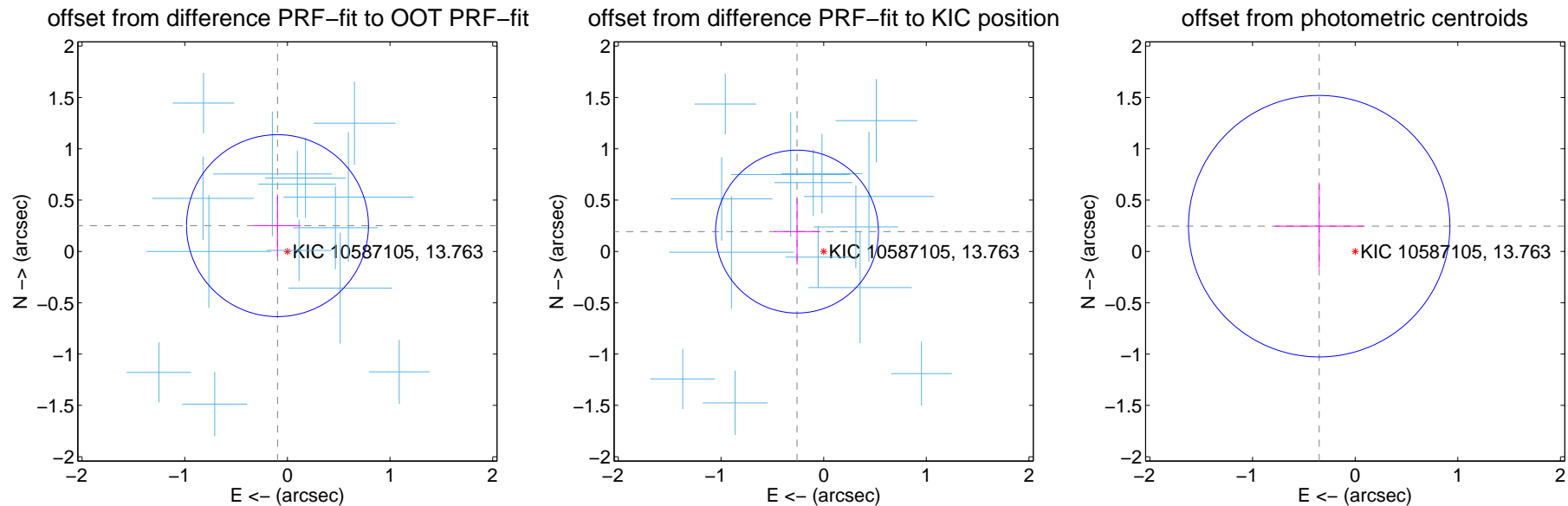
## DV Centroid Data

Supplemental centroid analysis for 010587105-02. Kepler magnitude: 13.76. Transit SNR 28.86

There are 14 quarters with good PRF difference image offsets

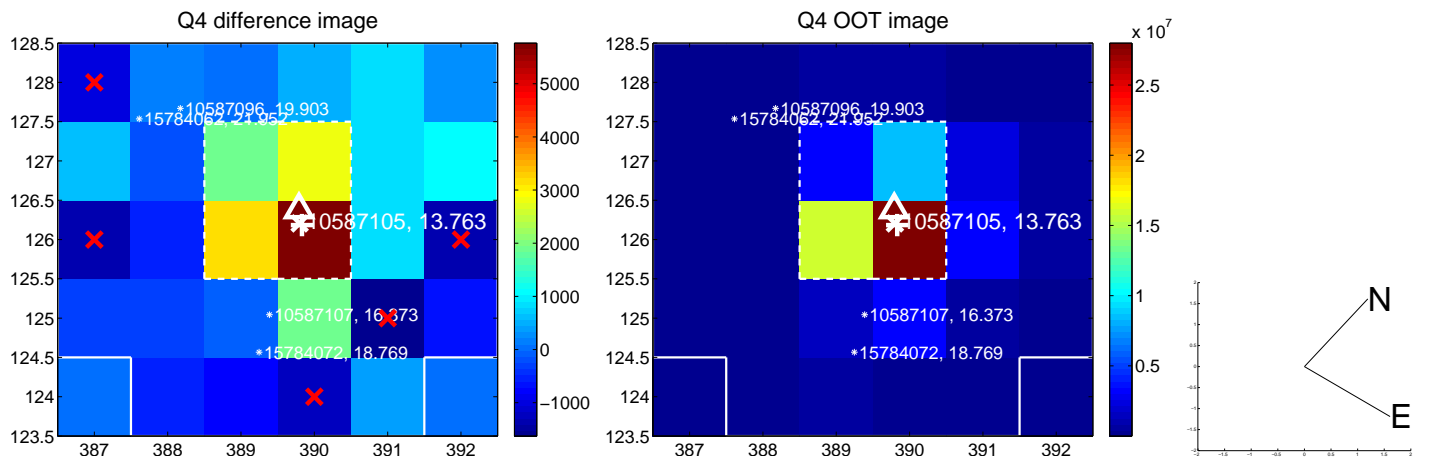
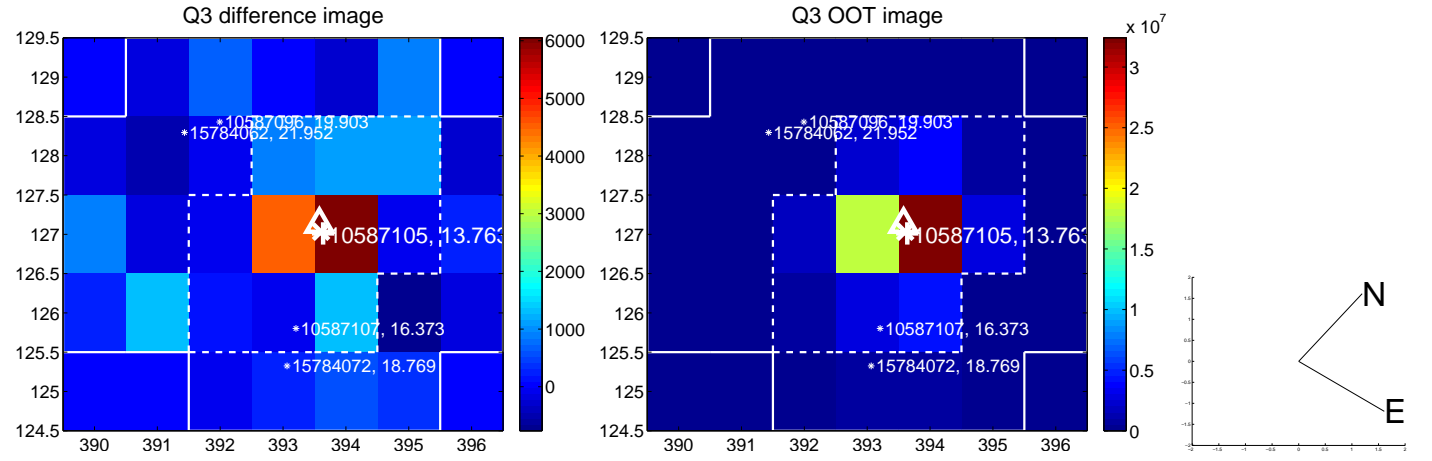
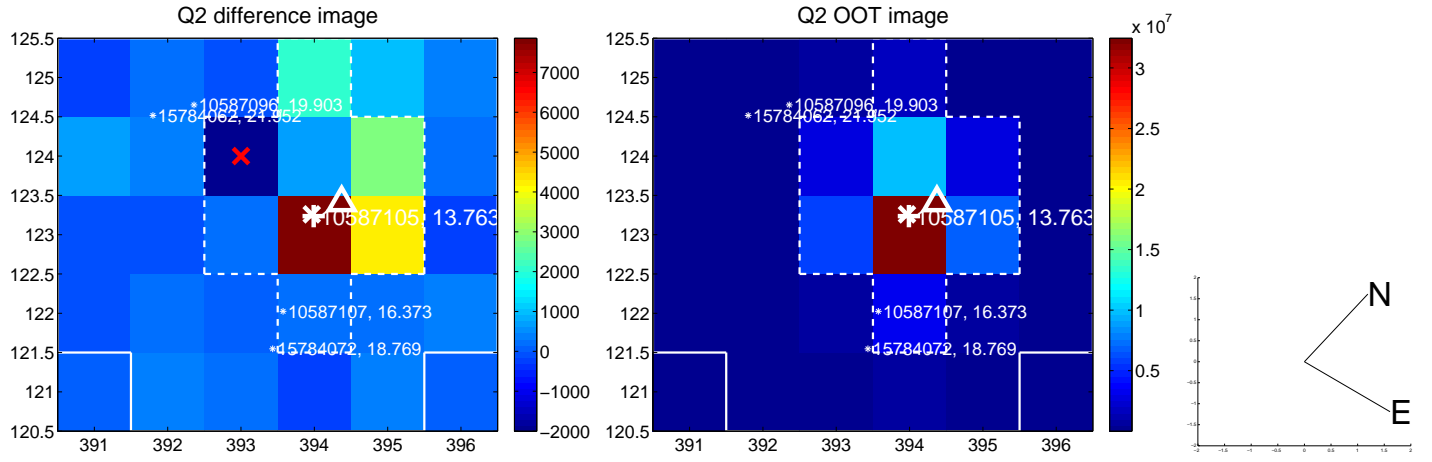
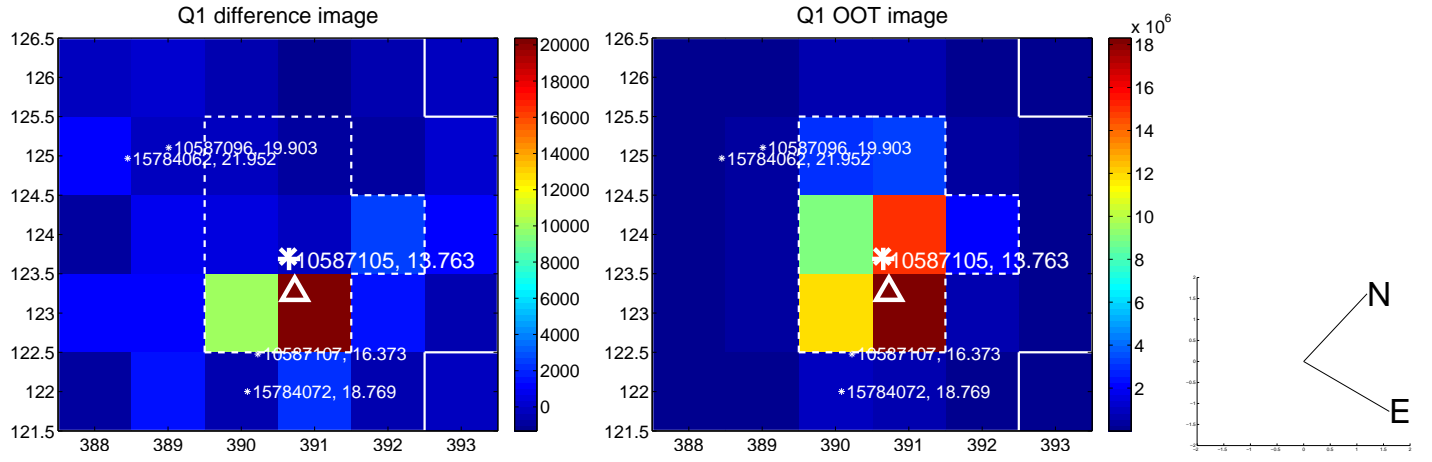
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.269 \pm 0.295$	0.91	$0.096 \pm 0.229$	$0.251 \pm 0.304$
PRF-fit source offset from KIC position	$0.324 \pm 0.264$	1.22	$0.260 \pm 0.226$	$0.193 \pm 0.322$
photometric centroid source offset	$0.43 \pm 0.42$	1.01	$0.35 \pm 0.43$	$0.25 \pm 0.41$

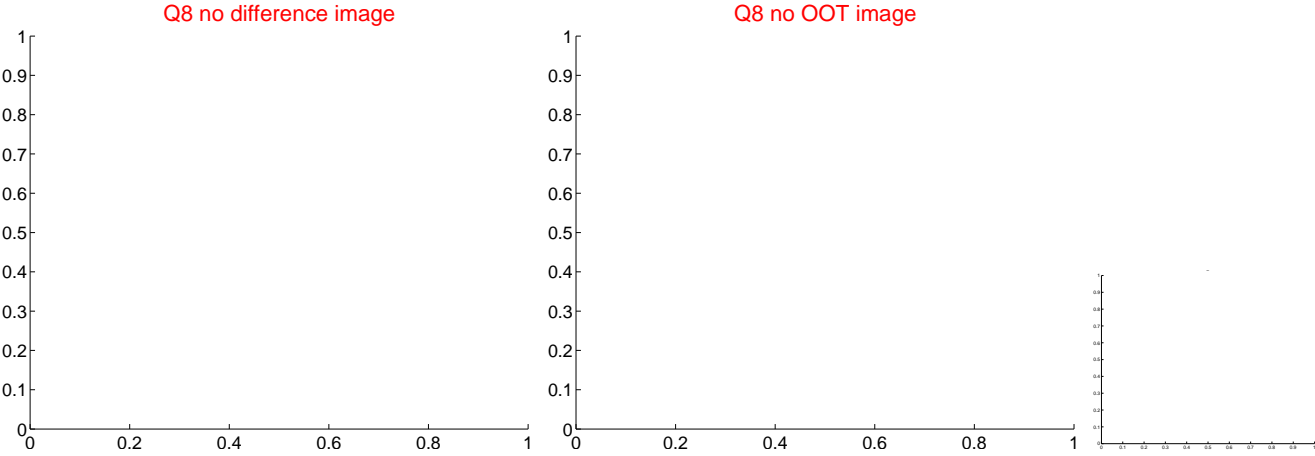
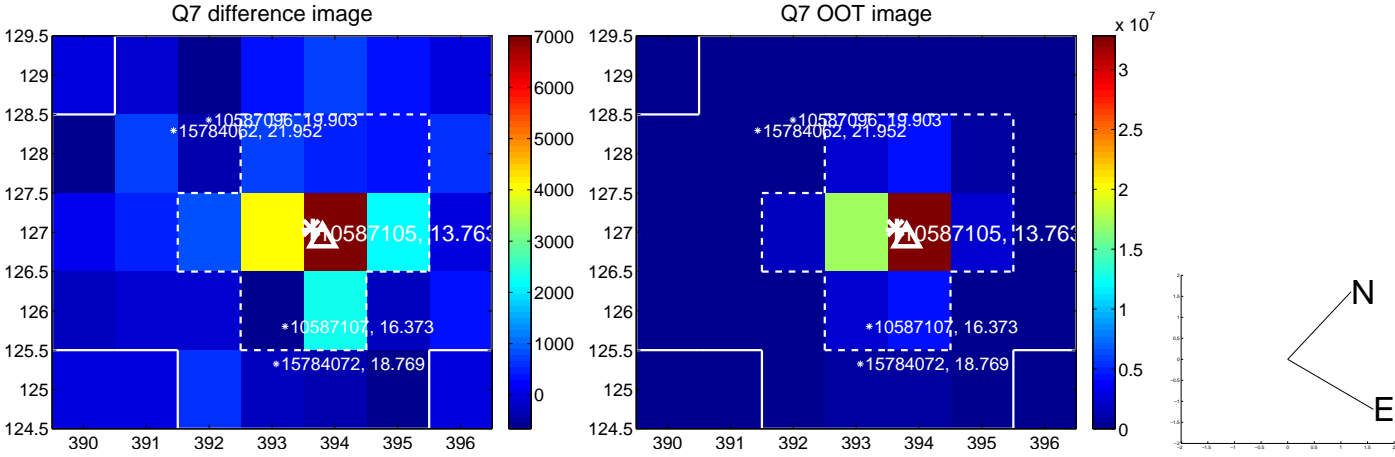
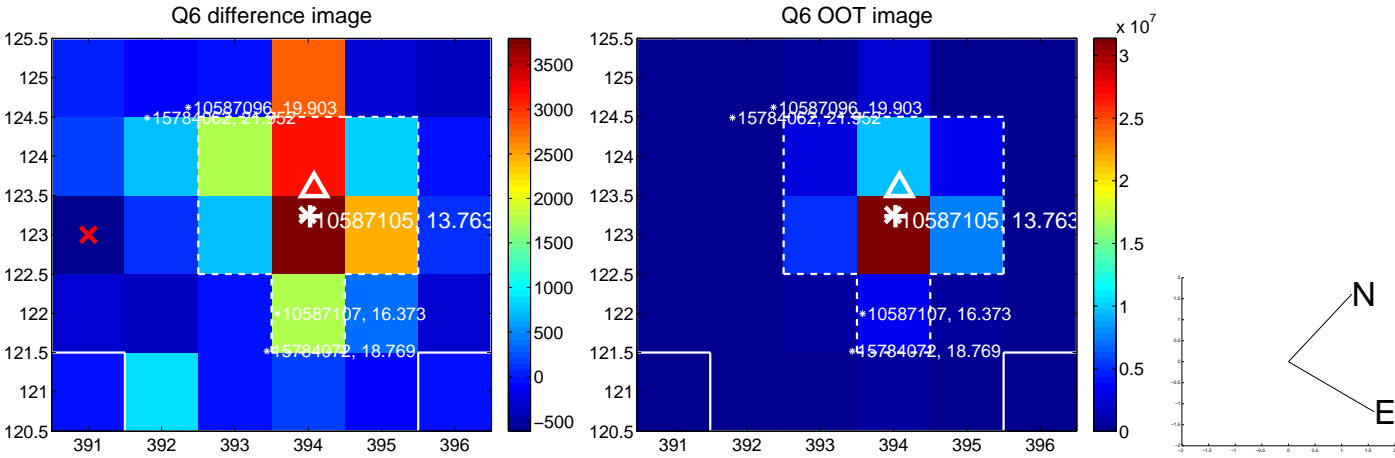
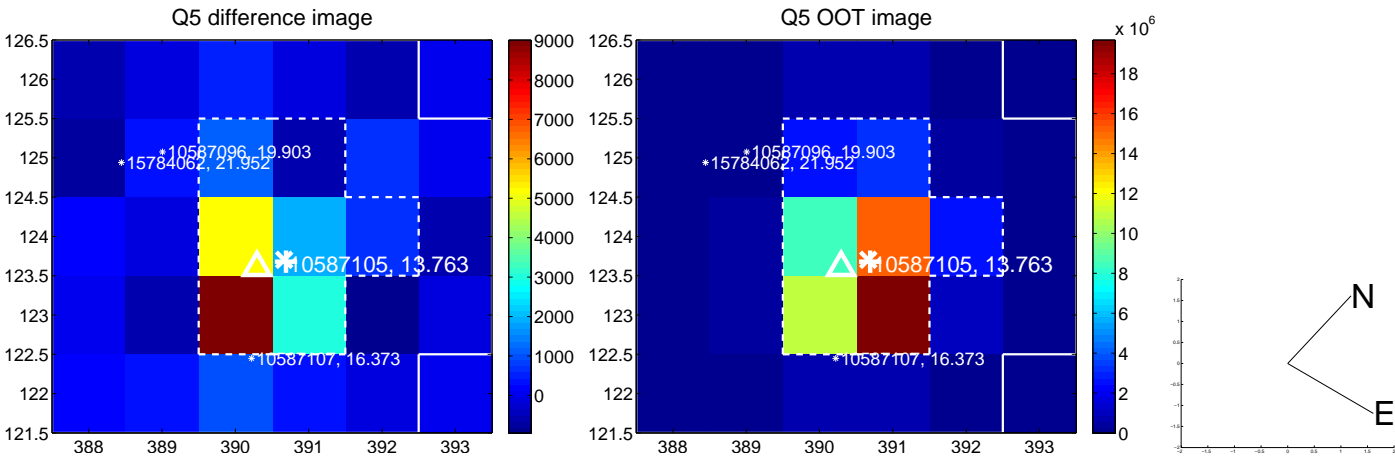


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

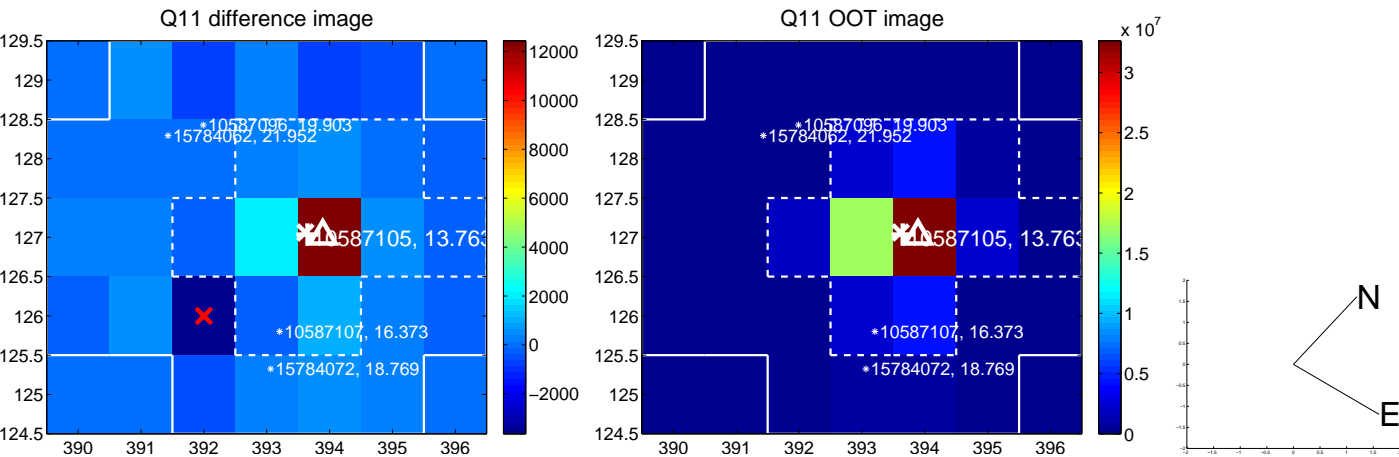
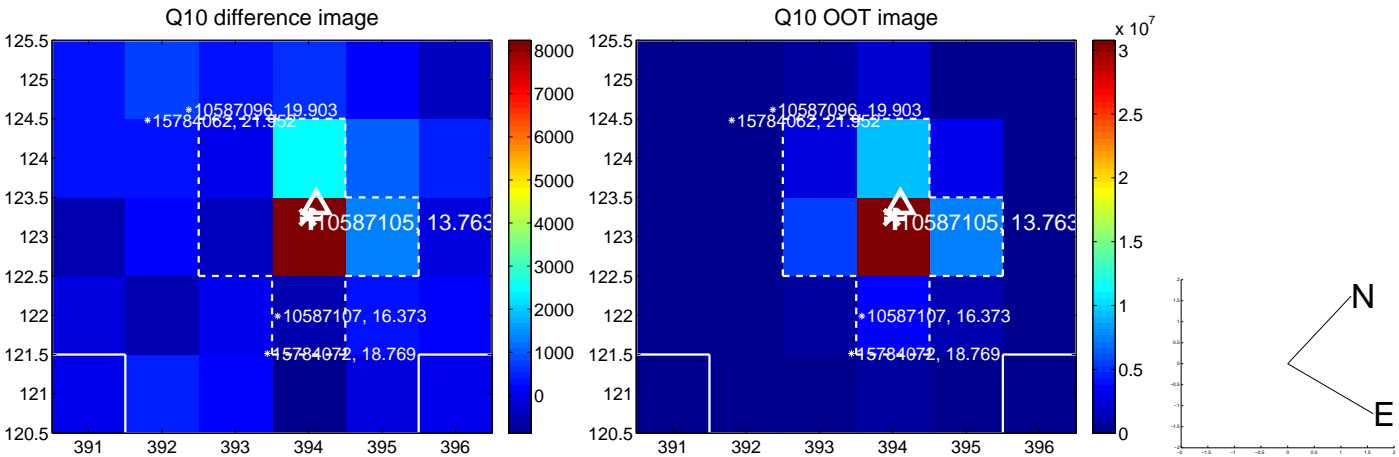
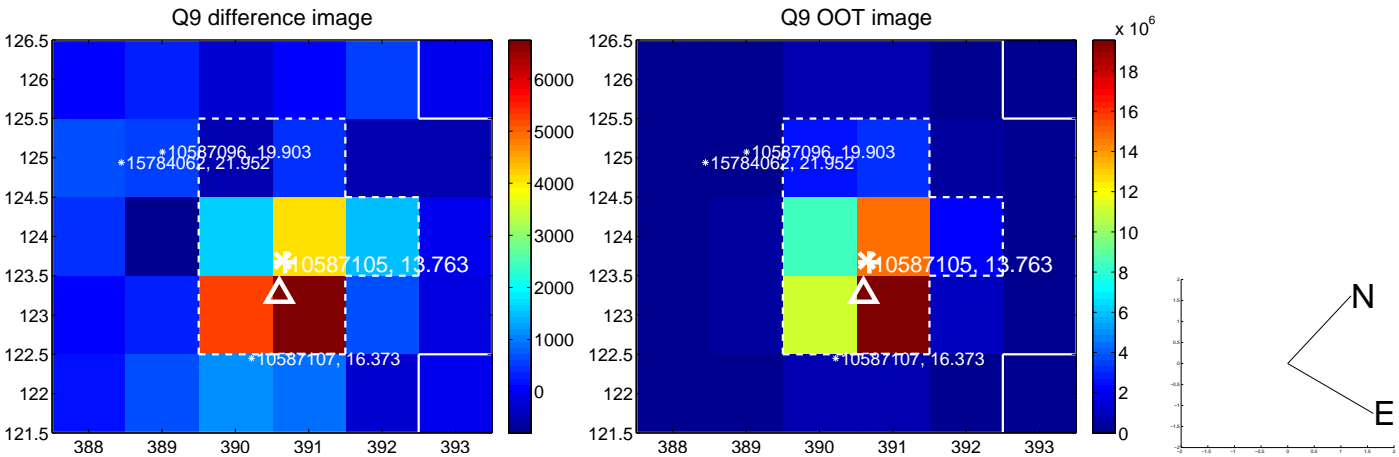
white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



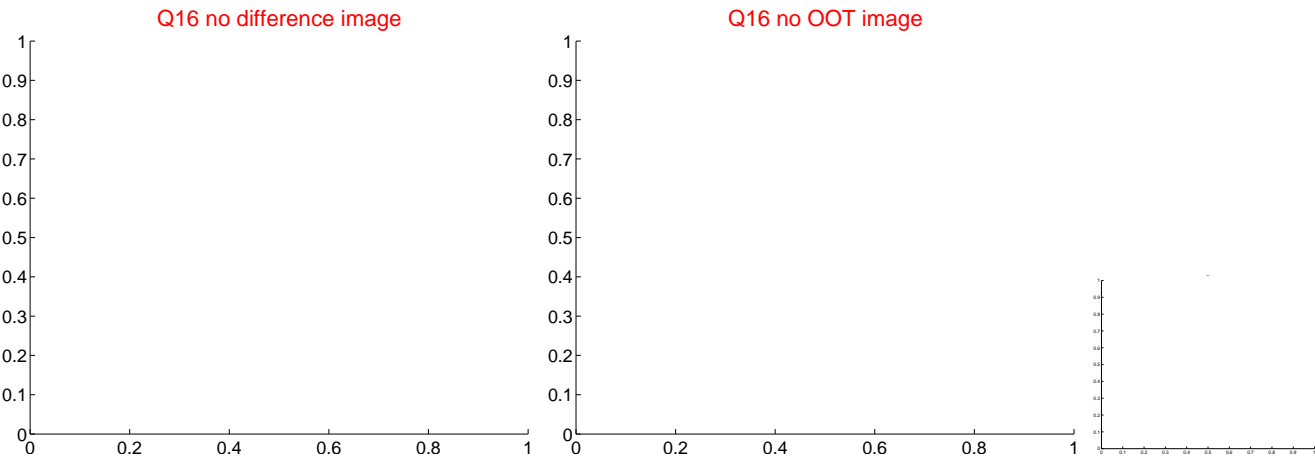
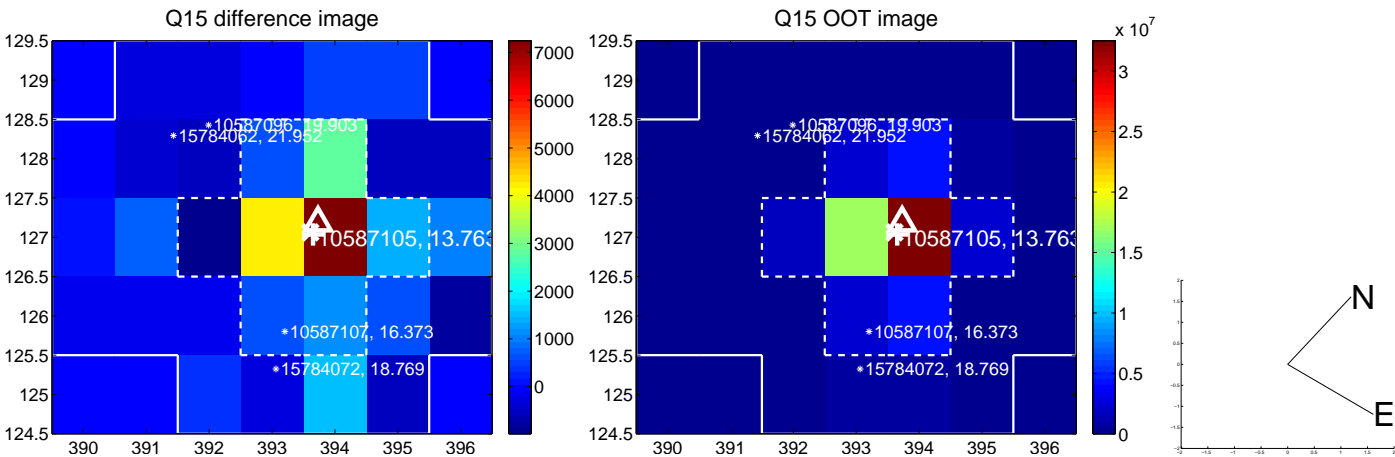
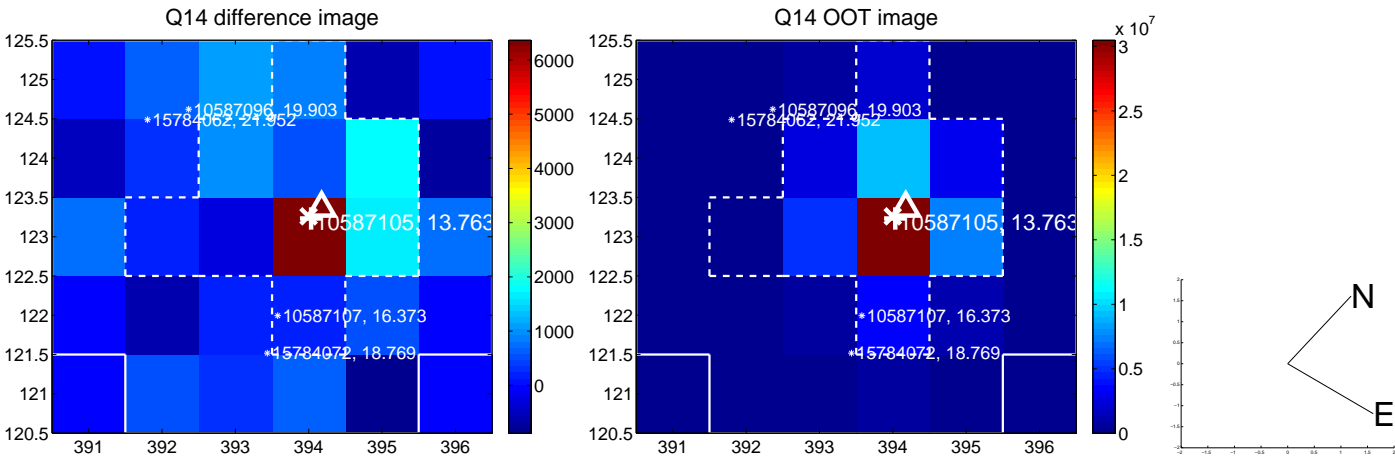
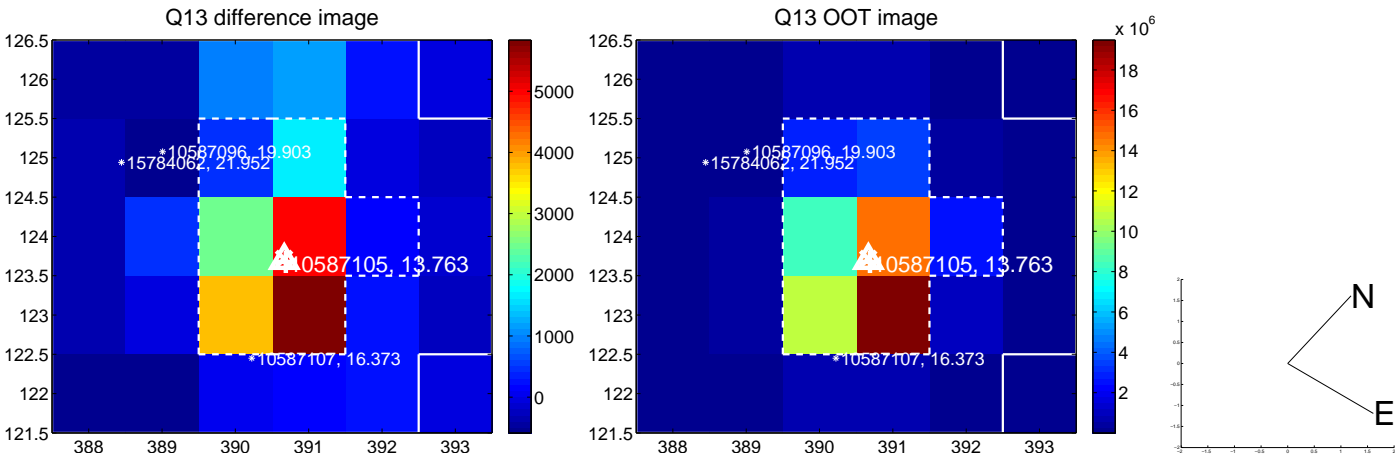
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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.

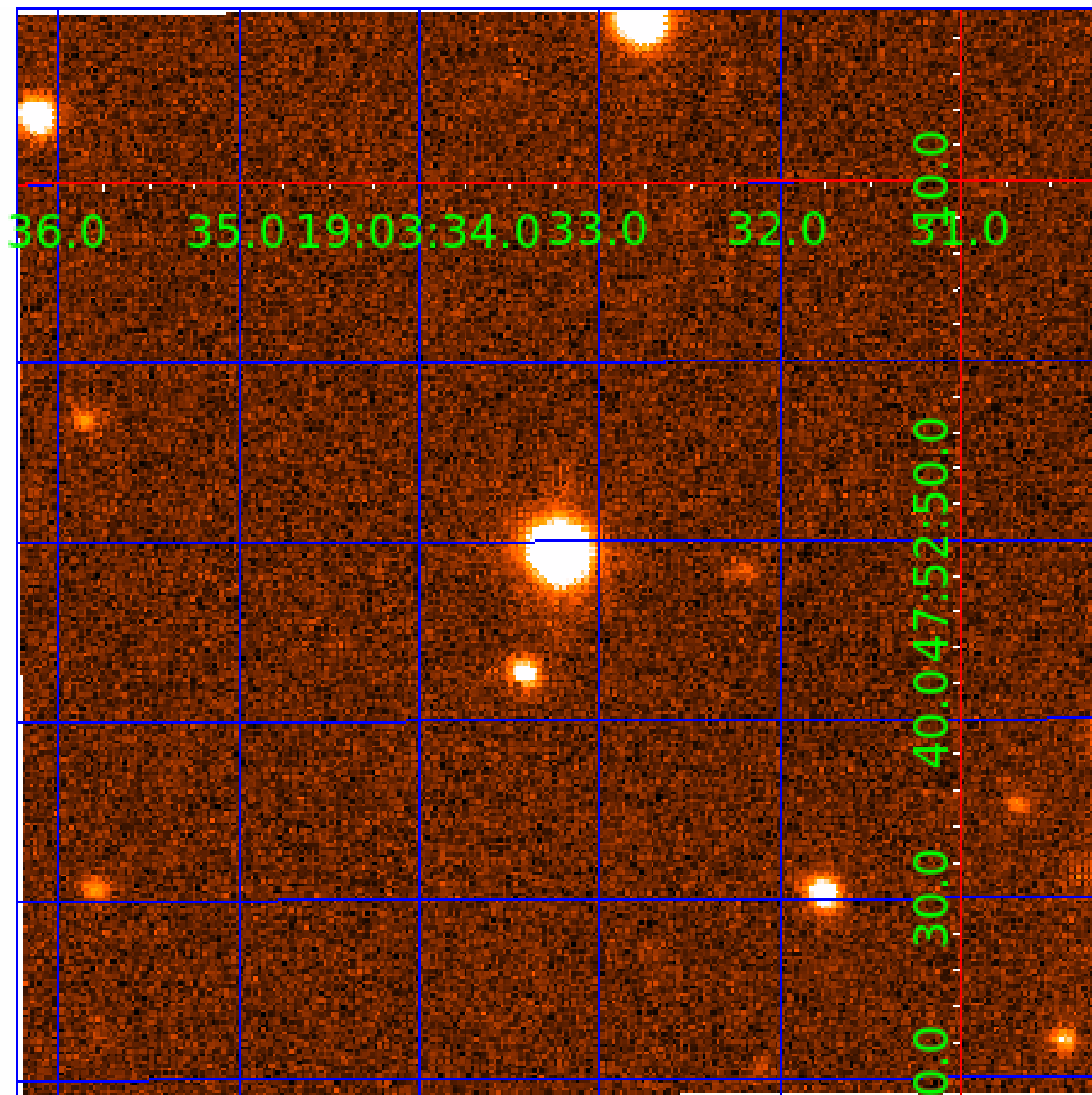






UKIRT Image

Declination



# KIC 010587105

## 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)	$R_p$ ( $R_{\oplus}$ )	$S_p$ ( $S_{\oplus}$ )
010587105-01	OBS	0339.01	1.980360	132.511953	256.0	2.496	52.9	61.3	1.19	6078	2.24	1807.45
010587105-02	OBS	0339.02	12.834465	138.326985	273.2	3.842	26.5	28.9	1.19	6078	2.47	149.59
010587105-03	OBS	0339.03	35.866226	135.906447	238.6	7.974	18.2	18.2	1.19	6078	2.37	38.00

## Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010587105-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010587105-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
010587105-03	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.

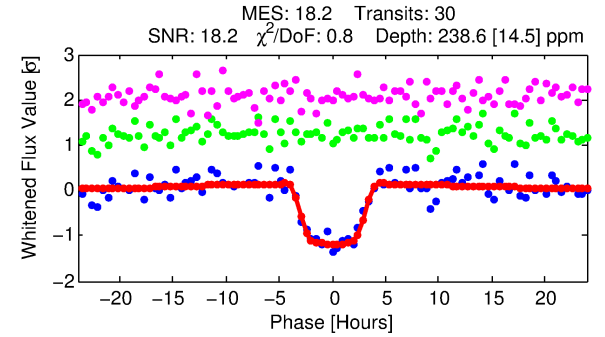
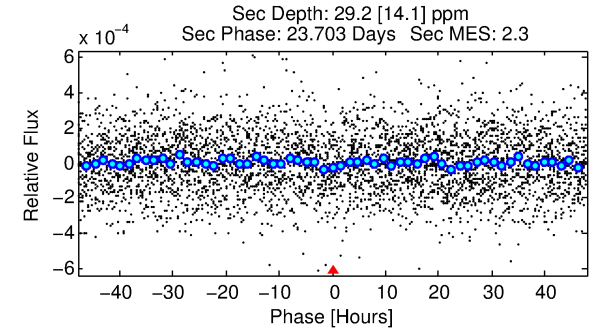
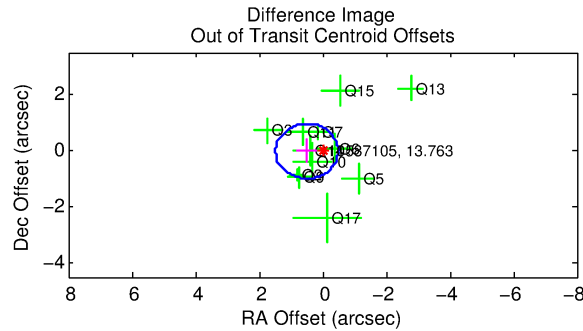
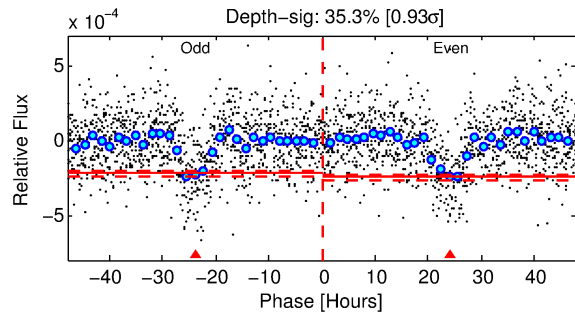
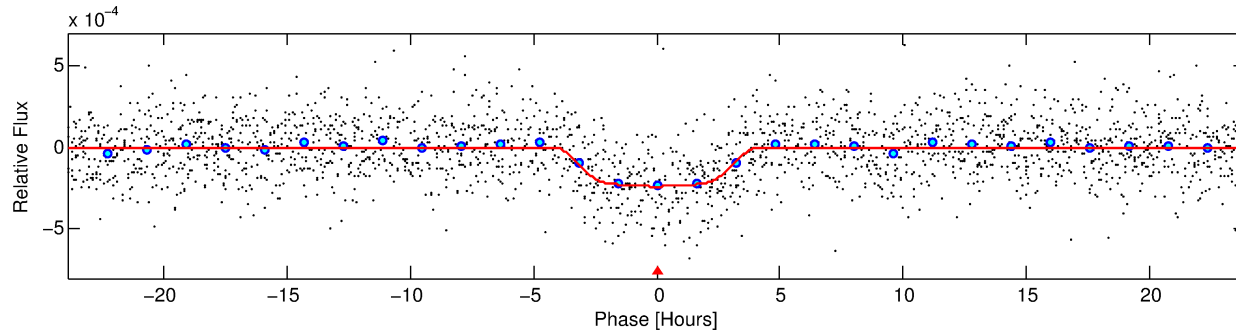
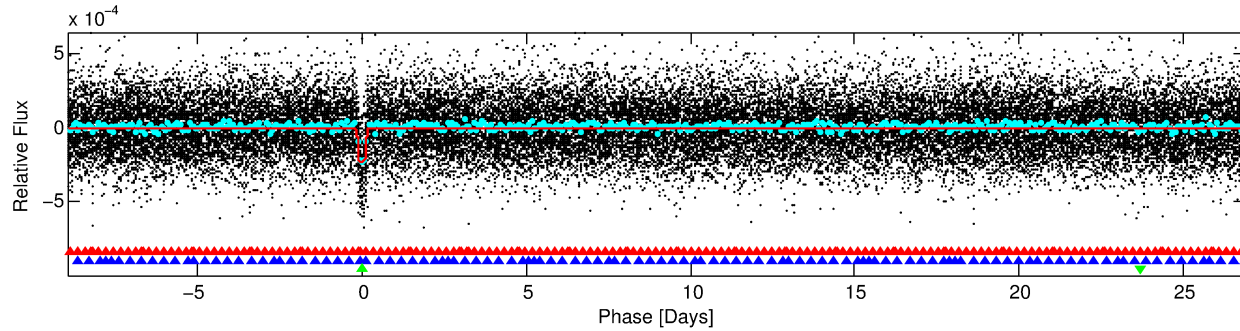
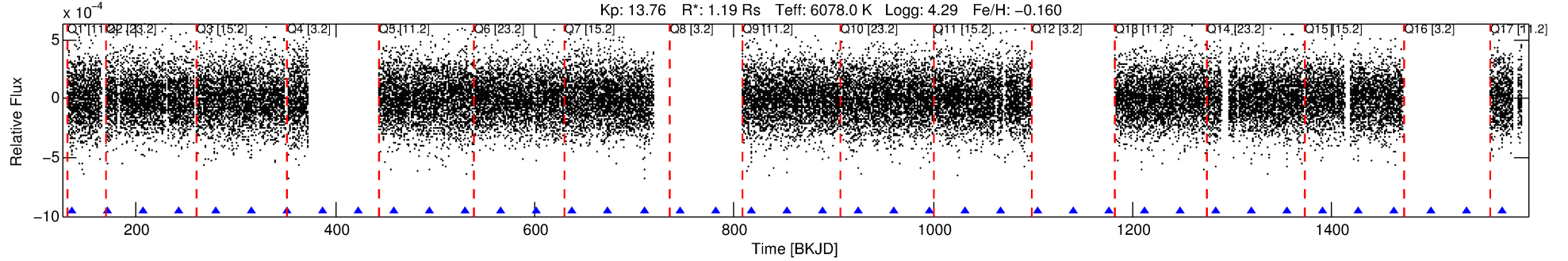
See [http://exoplanetarchive.ipac.caltech.edu/docs/API\\_kepcandidate\\_columns.html#proj\\_disp\\_col](http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col) for comment definitions.

## Ephemeris Match Information For 010587105-03

No Significant Match Found

# DV One-Page Summary

KIC: 10587105 Candidate: 3 of 3 Period: 35.866 d  
KOI: K00339.03 Corr: 0.952



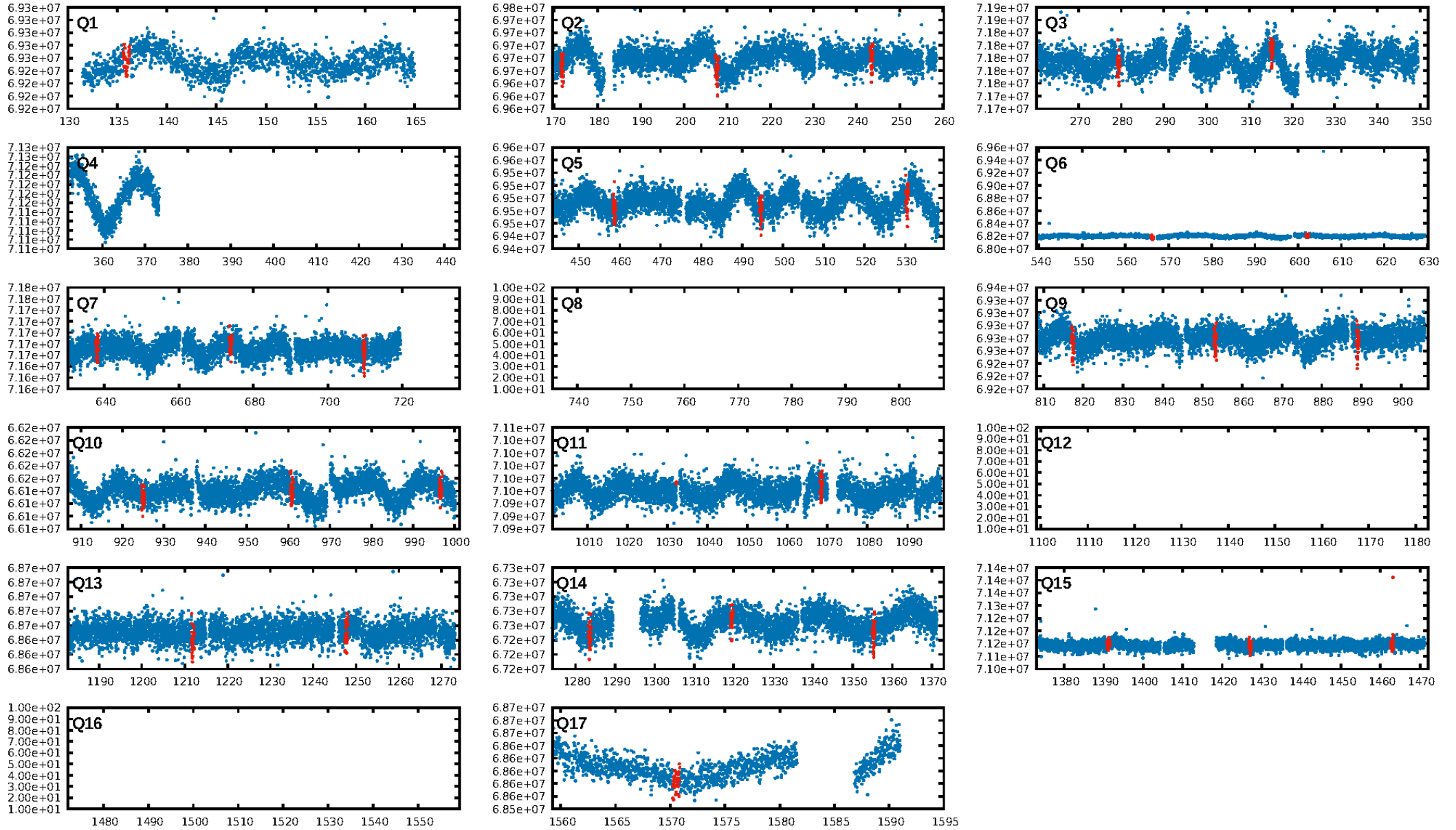
## DV Fit Results:

Period = 35.86623 [0.00036] d  
Epoch = 135.9064 [0.0087] BKJD  
Rp/R\* = 0.0183 [0.0008]  
a/R\* = 11.14 [1.66]  
b = 0.97 [0.01]  
Seff = 38.00 [9.62]  
Teq = 633 [40] K  
Rp = 2.37 [0.41] Re  
a = 0.2133 [0.0325] AU  
Ag = 130.13 [70.93] [1.82 $\sigma$ ]  
Teffp = 3306 [412] K [6.46 $\sigma$ ]

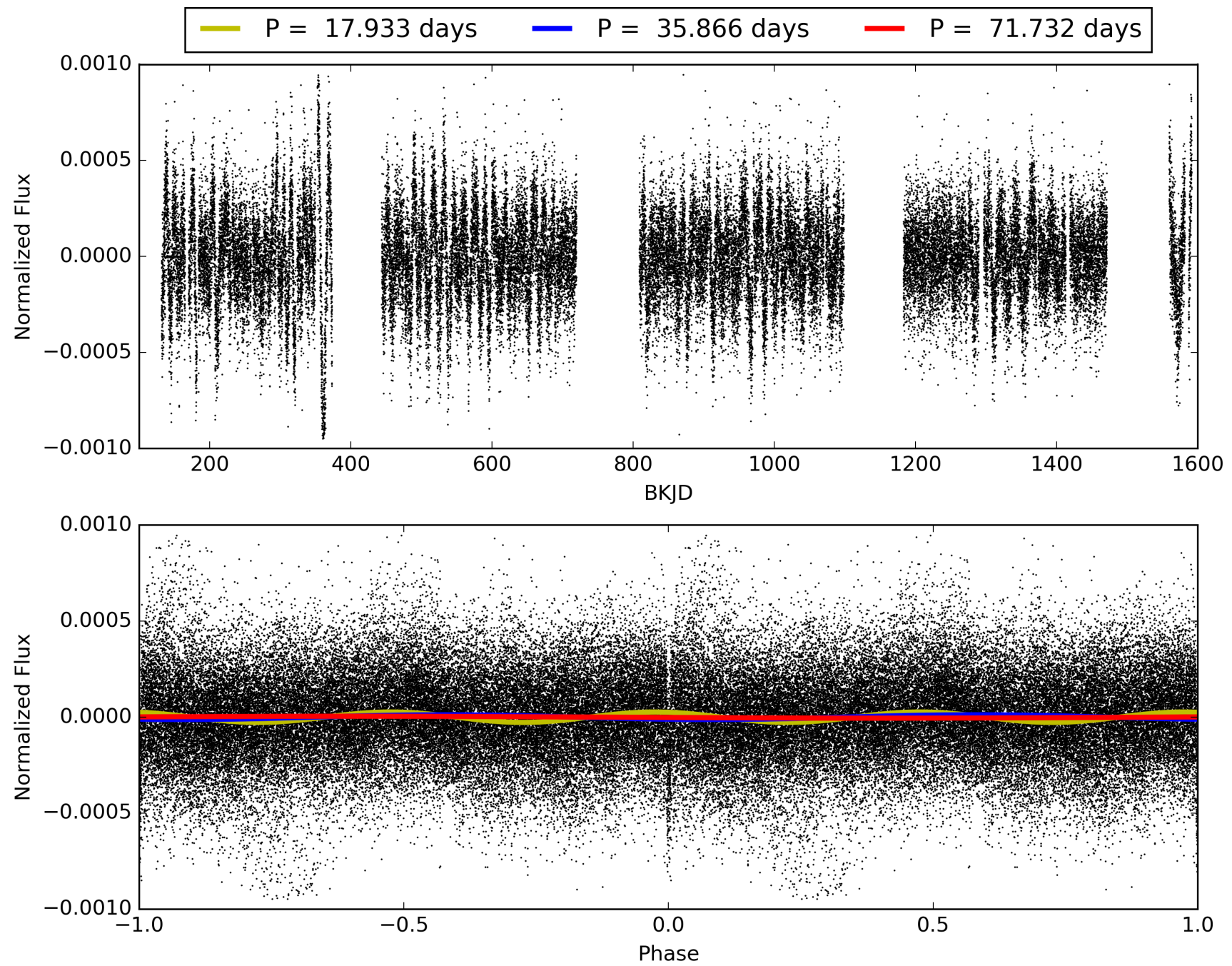
## DV Diagnostic Results:

ShortPeriod-sig: 100.0% [62.45 $\sigma$ ]  
LongPeriod-sig: N/A  
ModelChiSquare2-sig: 71.8%  
ModelChiSquareGof-sig: 100.0%  
Bootstrap-pfa: 2.73e-72  
RollingBand-fgt: 1.00 [28/28]  
GhostDiagnostic-chr: 3.494  
Centroid-sig: 2.2%  
Centroid-so: 1.110 arcsec [1.79 $\sigma$ ]  
OotOffset-rm: 0.500 arcsec [1.53 $\sigma$ ]  
KicOffset-rm: 0.647 arcsec [1.99 $\sigma$ ]  
OotOffset-st: 4/4/0/4 [12]  
KicOffset-st: 4/4/0/4 [12]  
DiffImageQuality-fgm: 1.00 [12/12]  
DiffImageOverlap-fno: 0.38 [5/13]

# TCE 010587105-03, PDC Light Curves

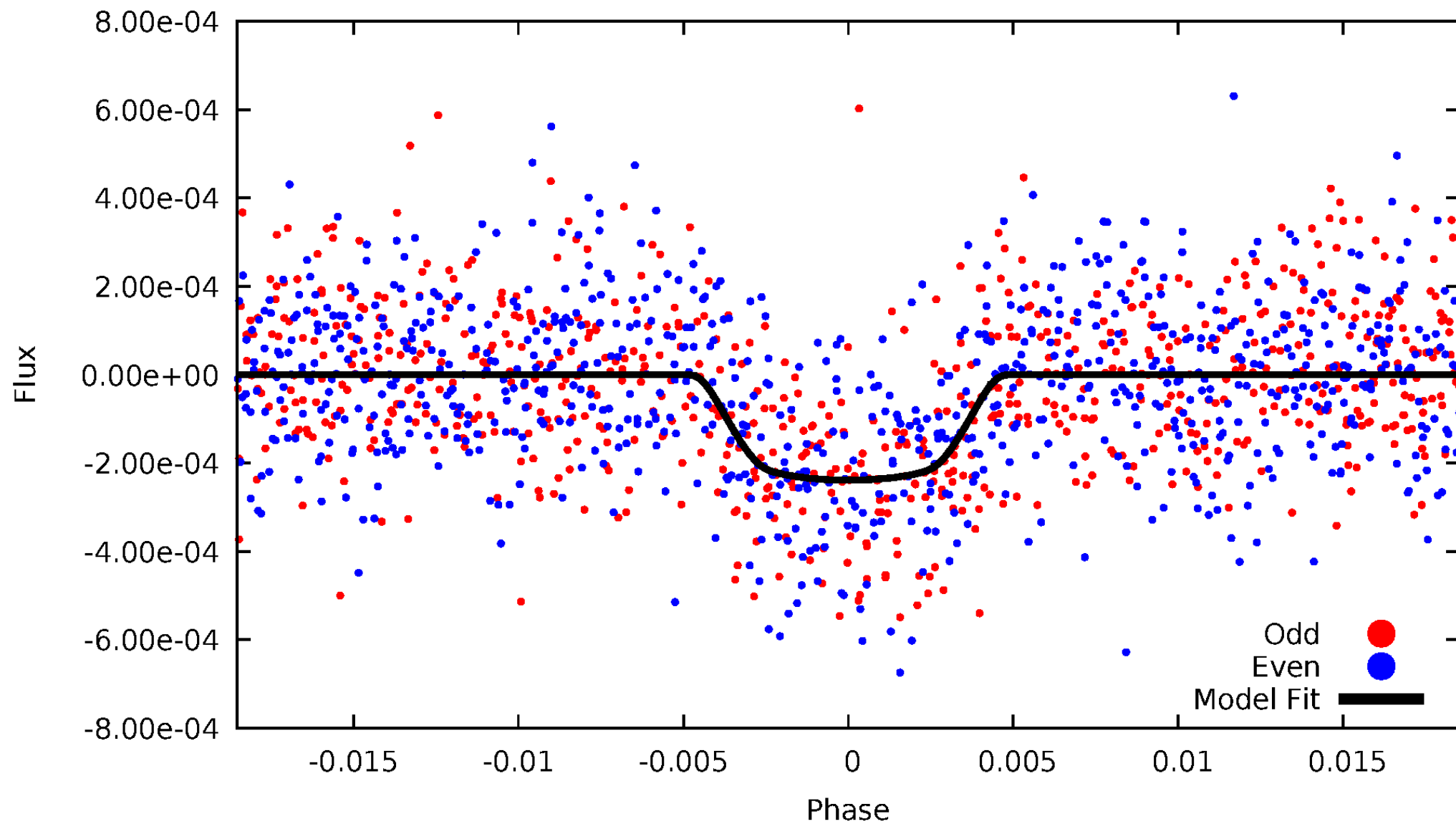


TCE 010587105-03



# DV Odd/Even

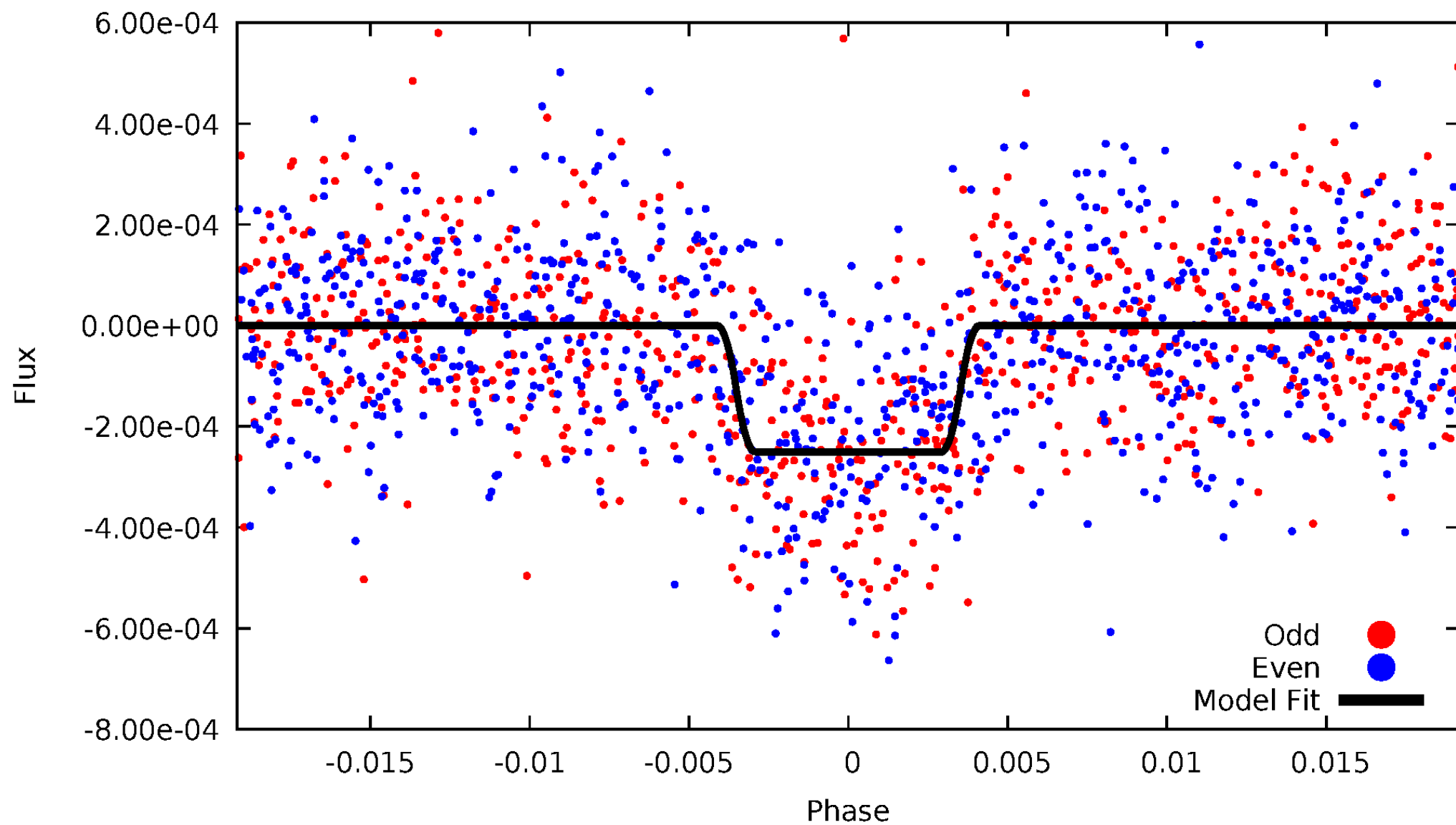
TCE 010587105-03



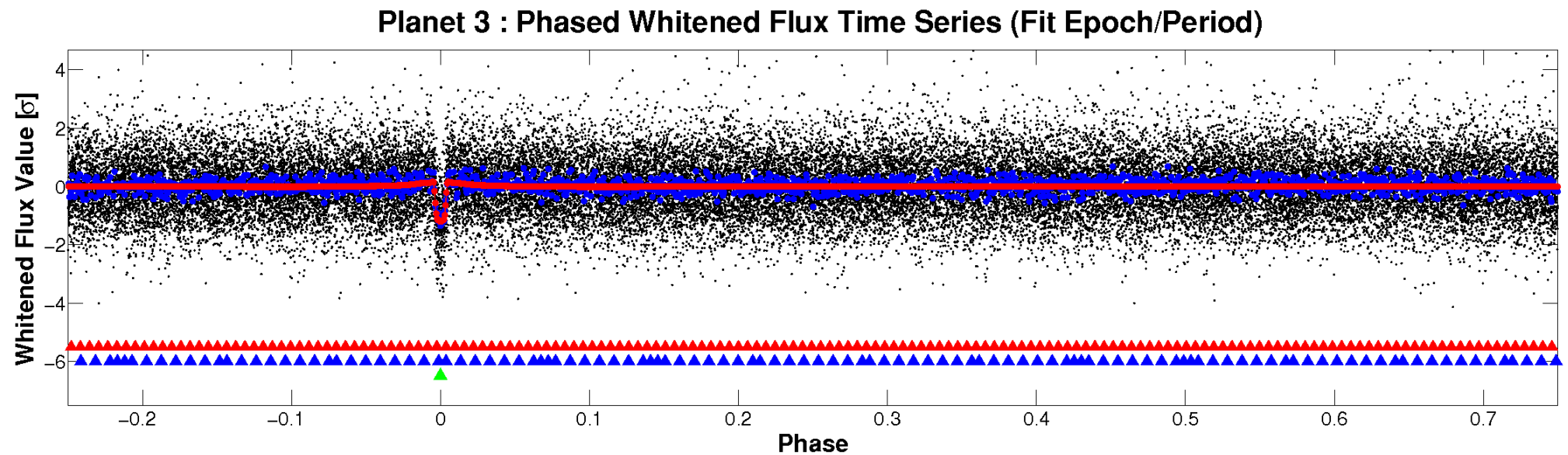
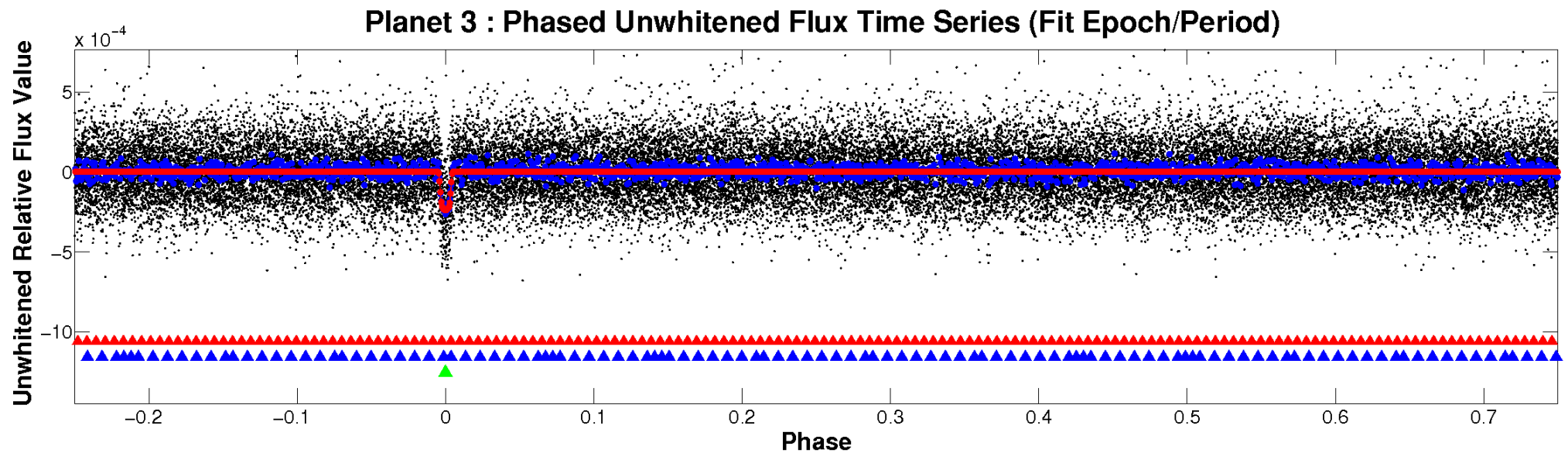


# ALT Odd/Even

TCE 010587105-03

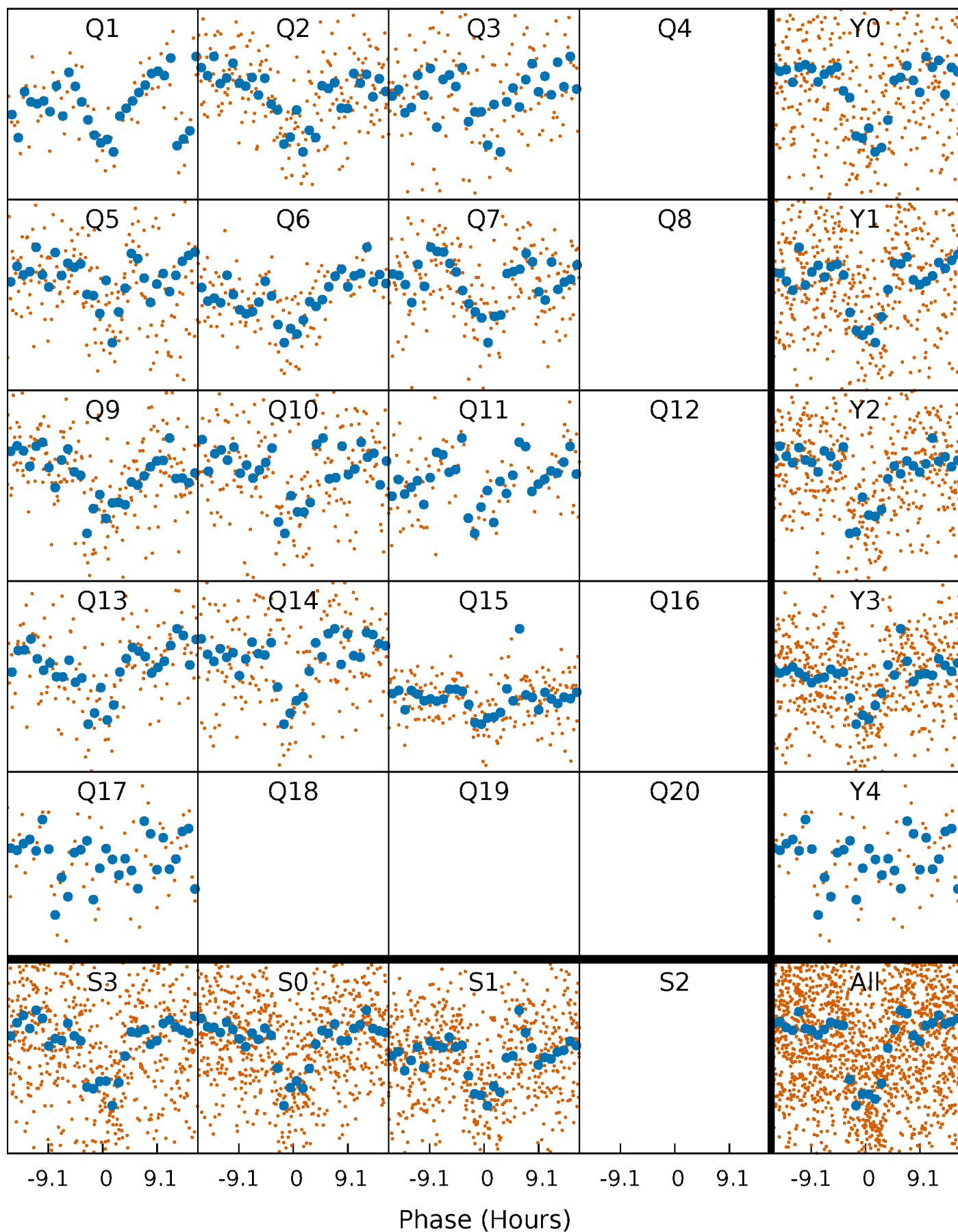


# Non-Whitened Vs. Whitened Light Curve



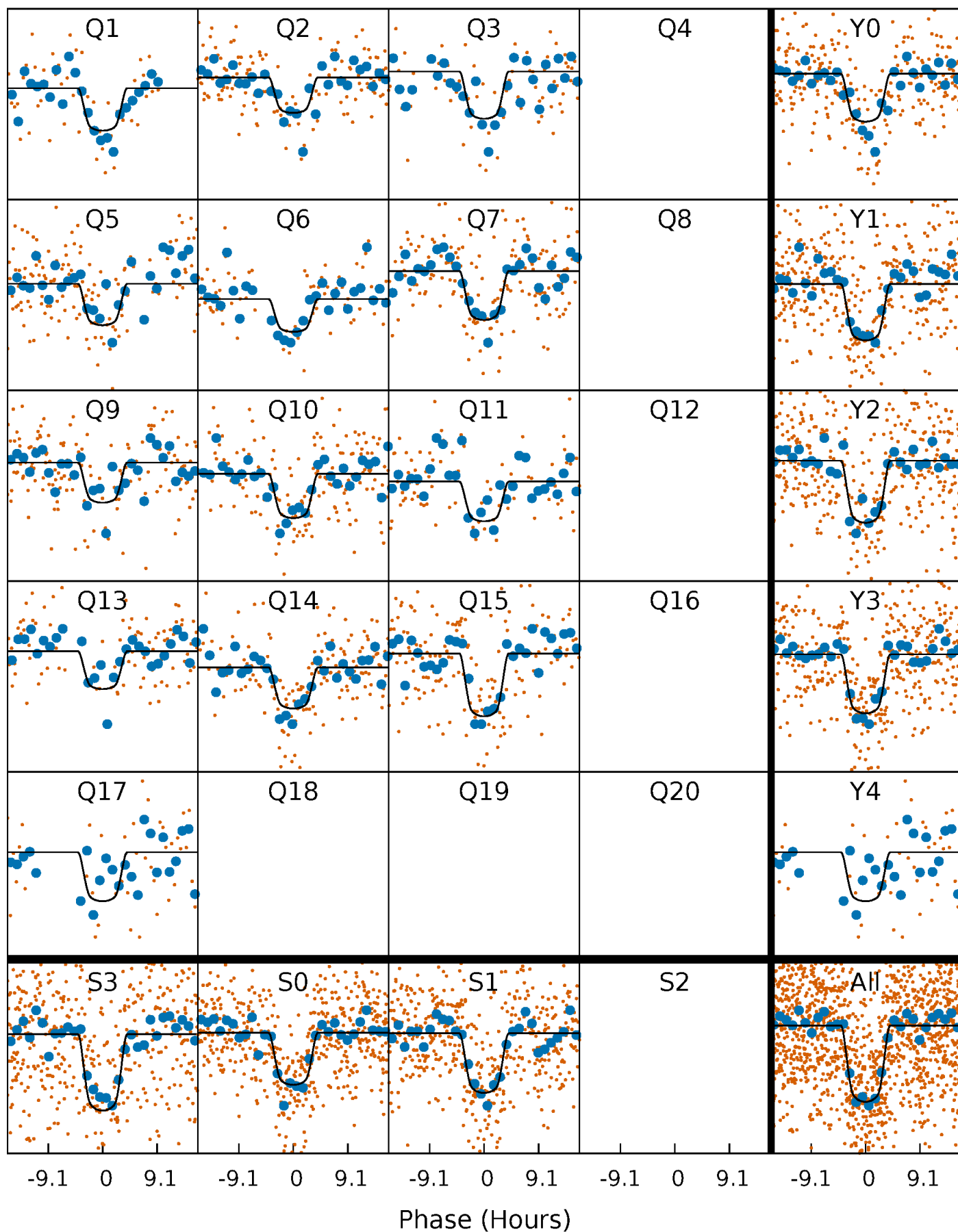
# PDC Quarter-Phased Transit Curves

TCE 010587105-03 P= 35.866226 Days  $T_0=135.906447$  (BKJD)



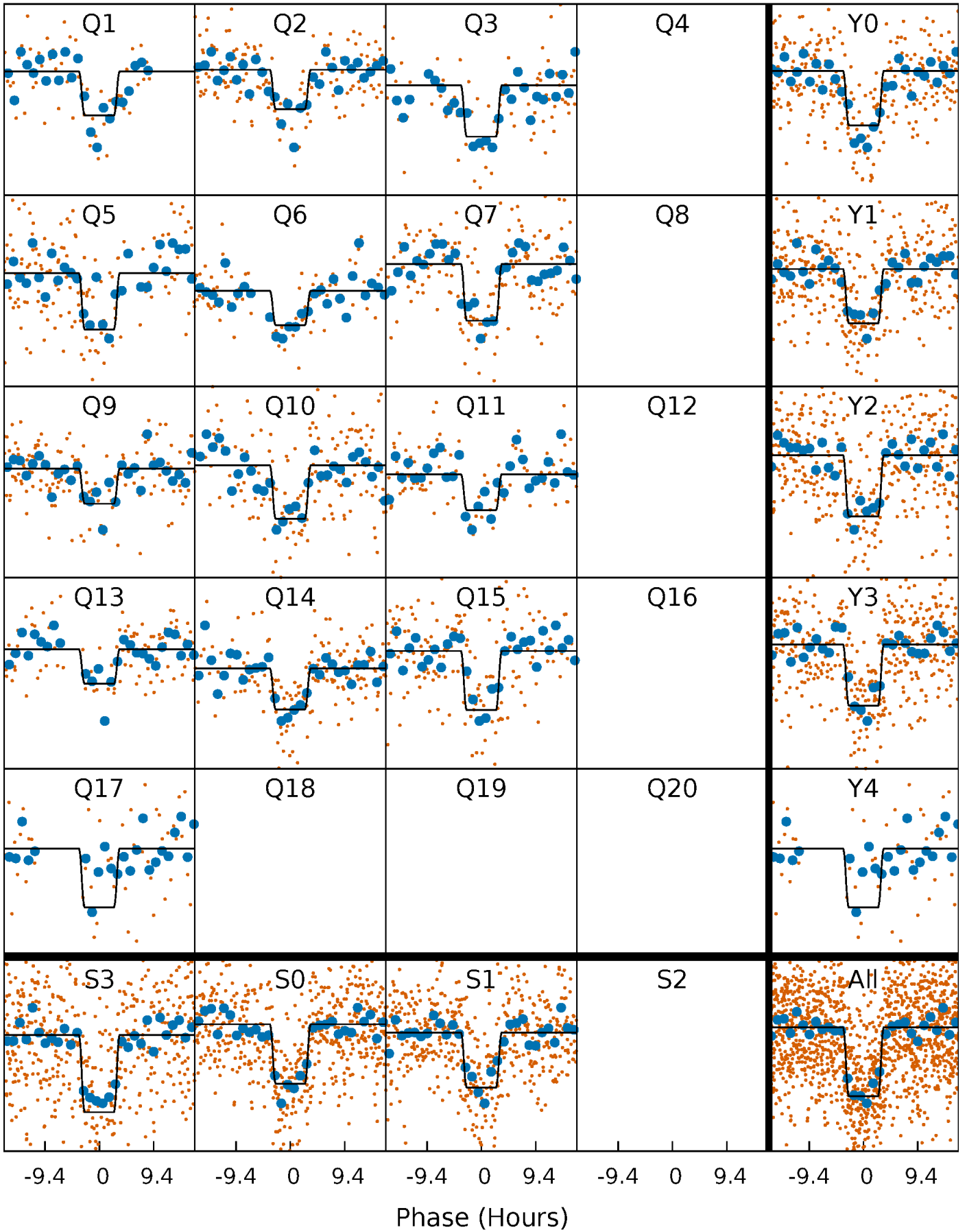
# DV Quarter-Phased Transit Curves

TCE 010587105-03   P= 35.866226 Days    $T_0=135.906447$  (BKJD)



# Alt. Detrend Quarter-Phased Transit Curves

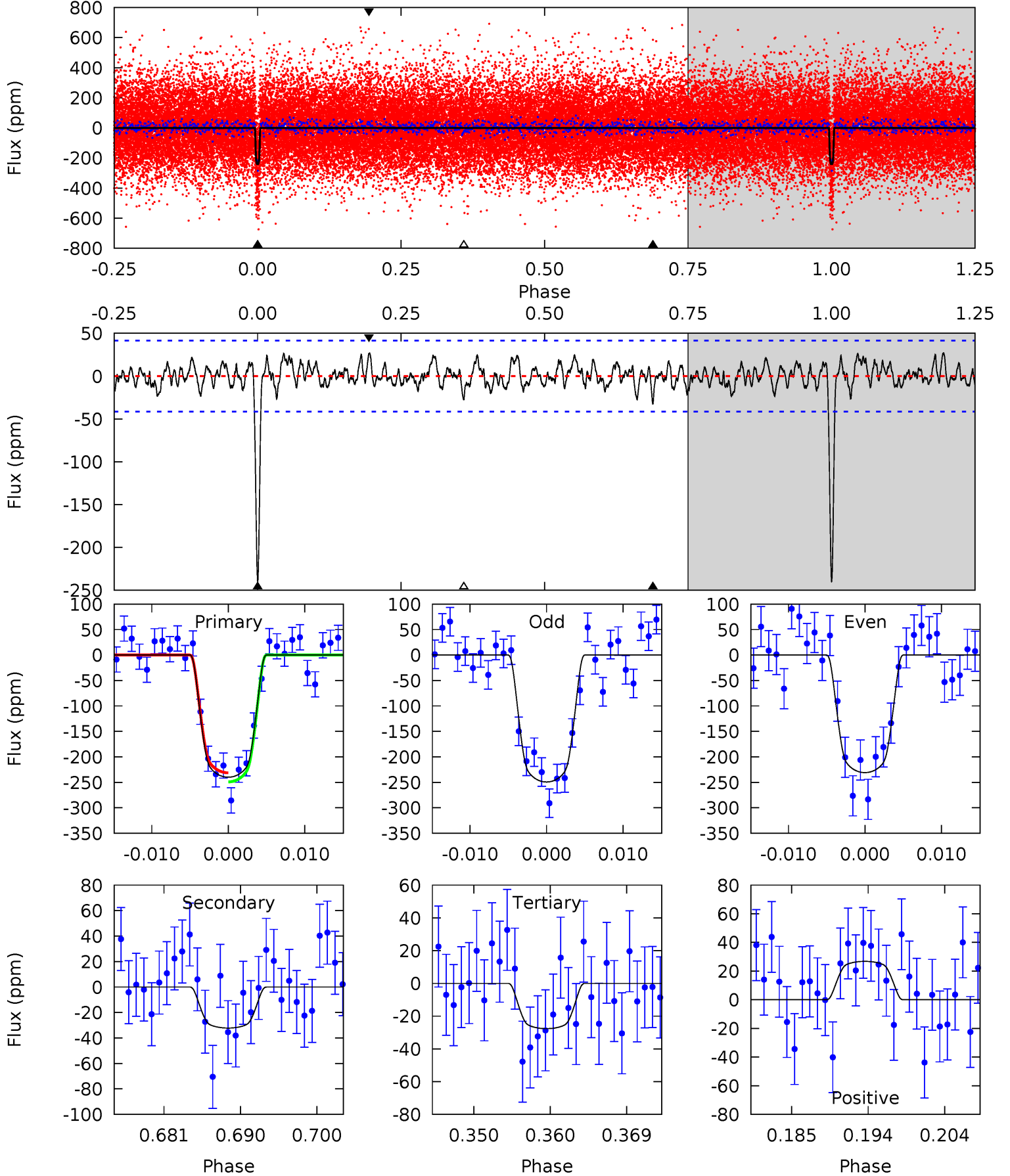
TCE 010587105-03   P= 35.865276 Days    $T_0=135.932364$  (BKJD)



# DV Model-Shift Uniqueness Test

010587105-03, P = 35.866226 Days, E = 100.040221 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
29.1	3.91	3.36	3.25	5.03	2.59	1.25	25.8	25.9	0.55	0.66	1.12	0.92	0.10	1.09

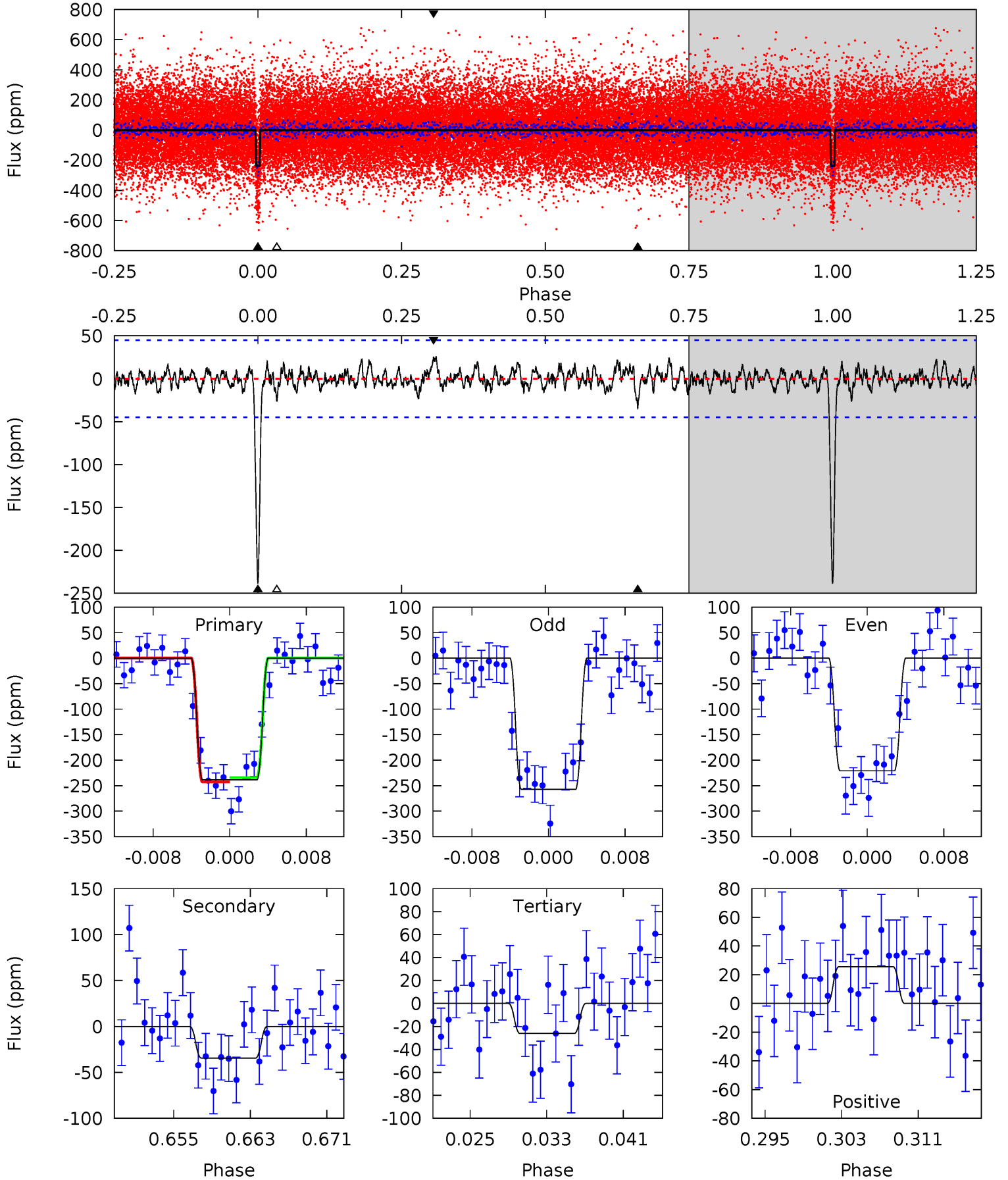




# Alt Model-Shift Uniqueness Test

010587105-03,  $P = 35.865276$  Days,  $E = 100.067088$  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
26.9	3.88	2.95	2.89	5.06	2.64	0.95	24.0	24.0	0.93	1.00	2.06	0.96	0.10	0.49



### Stellar Parameters For KIC 010587105

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R$ ( $R_{\odot}$ )	$M(M_{\odot})$	$p_{\star}$ ( $\text{g}\cdot\text{cm}^{-3}$ )
	$6078^{+121}_{-133}$	$4.290^{+0.137}_{-0.112}$	$-0.160^{+0.150}_{-0.150}$	$1.189^{+0.197}_{-0.178}$	$1.005^{+0.091}_{-0.063}$	$0.842^{+0.515}_{-0.295}$
	+2%/-2%	+3%/-3%	+94%/-94%	+17%/-15%	+9%/-6%	+61%/-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 010587105-03 / KOI 0339.03

Detrend	Depth (ppm)	$R_p$ ( $R_{\oplus}$ )	$T_{max}$ (K)	$T_{obs}$ (K)	$A_{obs}$
DV	$-32 \pm 8$	$2.35^{+0.25}_{-0.23}$	$879^{+42}_{-45}$	$3783^{+158}_{-187}$	$147^{+53}_{-42}$
Alt.	$-34 \pm 9$	$2.06^{+0.25}_{-0.22}$	$886^{+43}_{-44}$	$4001^{+216}_{-211}$	$199^{+78}_{-57}$

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

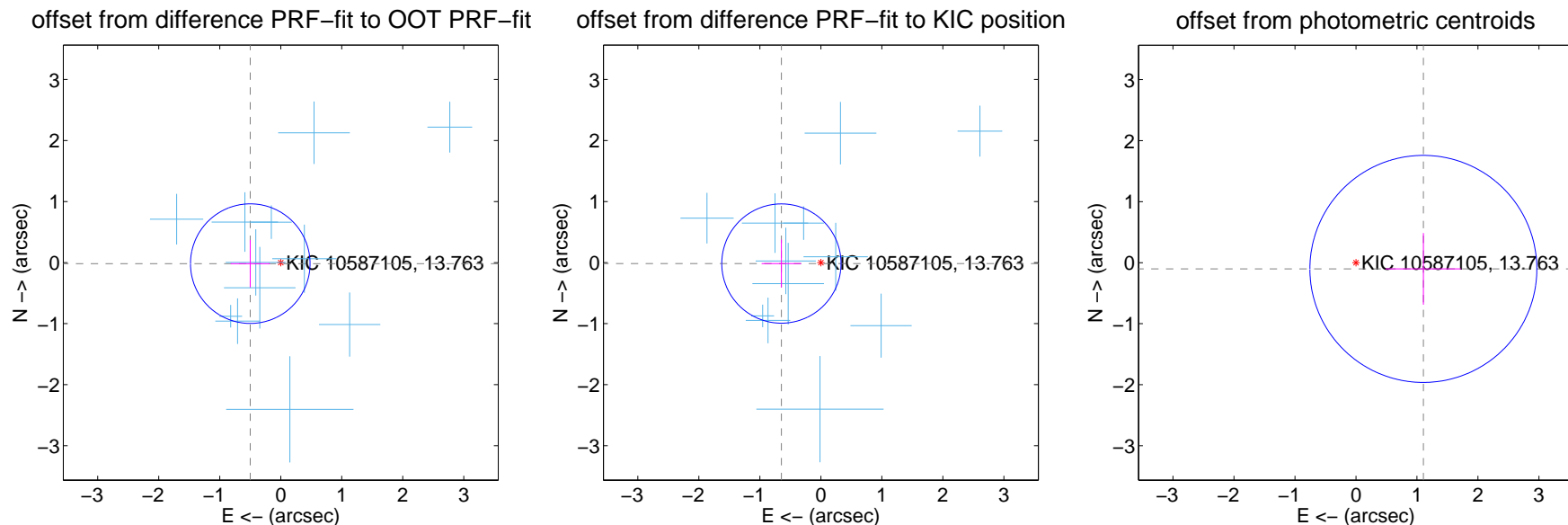
## DV Centroid Data

Supplemental centroid analysis for 010587105-03. Kepler magnitude: 13.76. Transit SNR 18.20

There are 12 quarters with good PRF difference image offsets

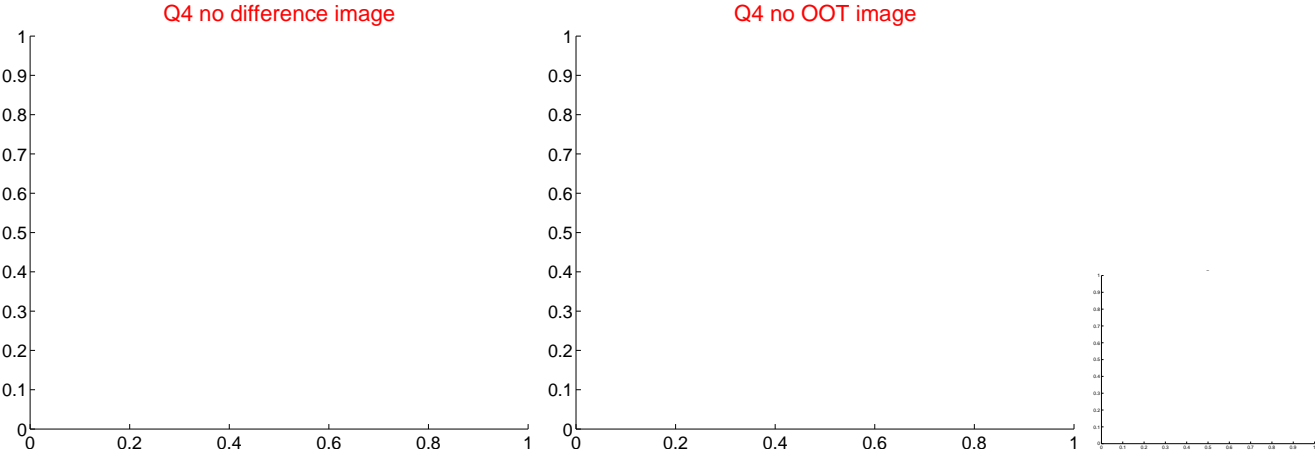
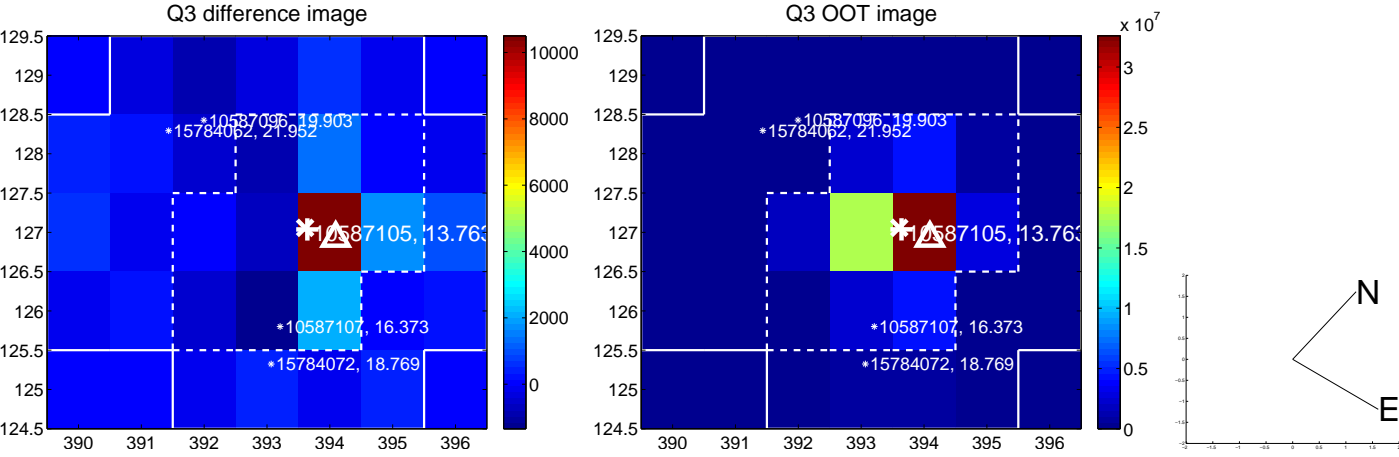
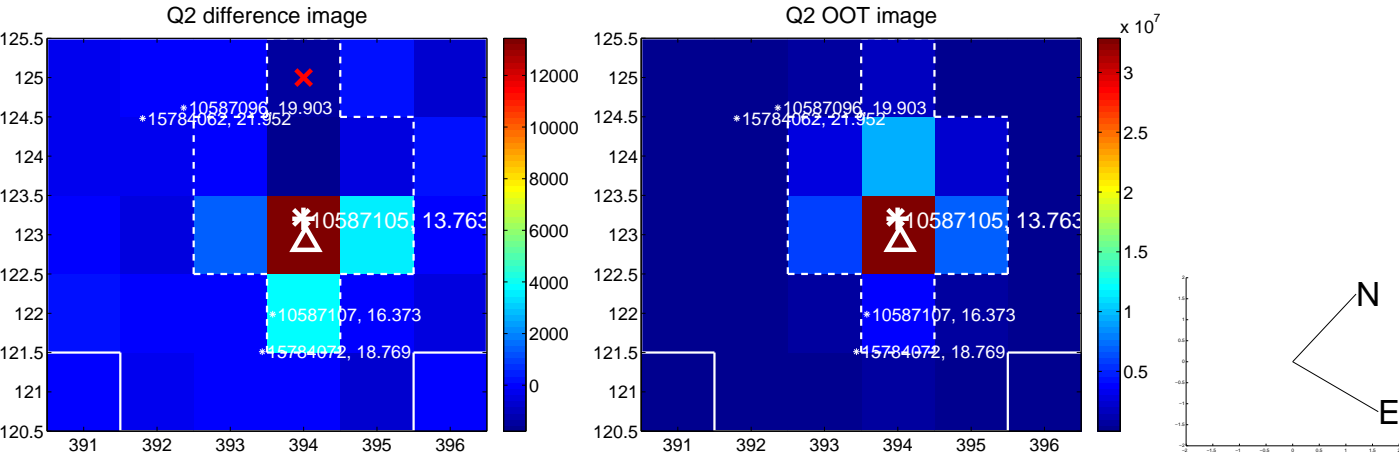
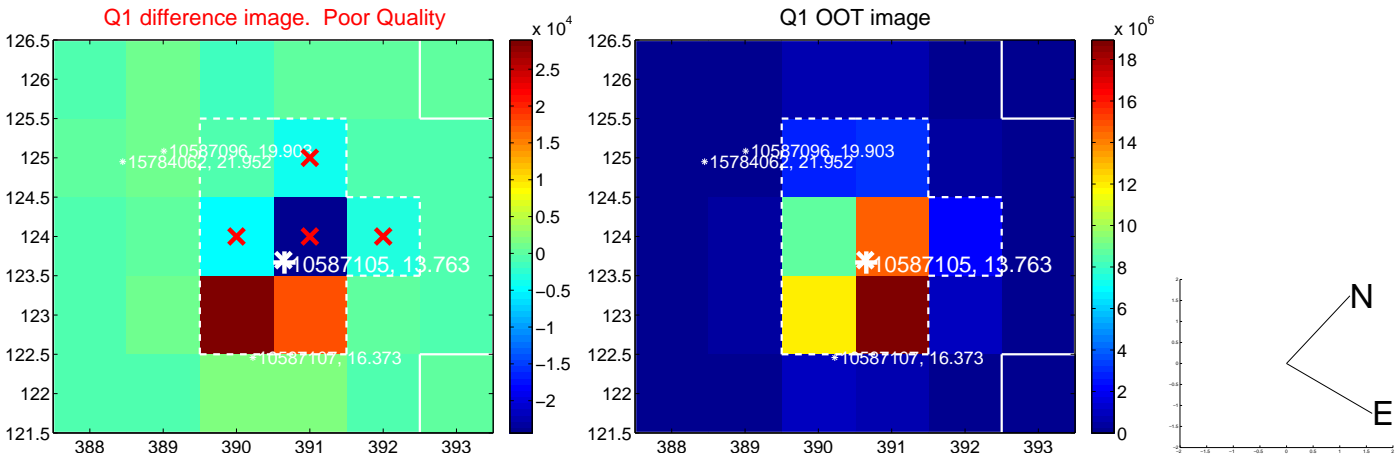
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / $\sigma$	$\Delta$ RA	$\Delta$ Dec
PRF-fit source offset from OOT	$0.500 \pm 0.327$	1.53	$0.499 \pm 0.321$	$-0.017 \pm 0.386$
PRF-fit source offset from KIC position	$0.647 \pm 0.326$	1.99	$0.647 \pm 0.323$	$-0.016 \pm 0.391$
photometric centroid source offset	$1.11 \pm 0.62$	1.79	$-1.10 \pm 0.62$	$-0.10 \pm 0.59$

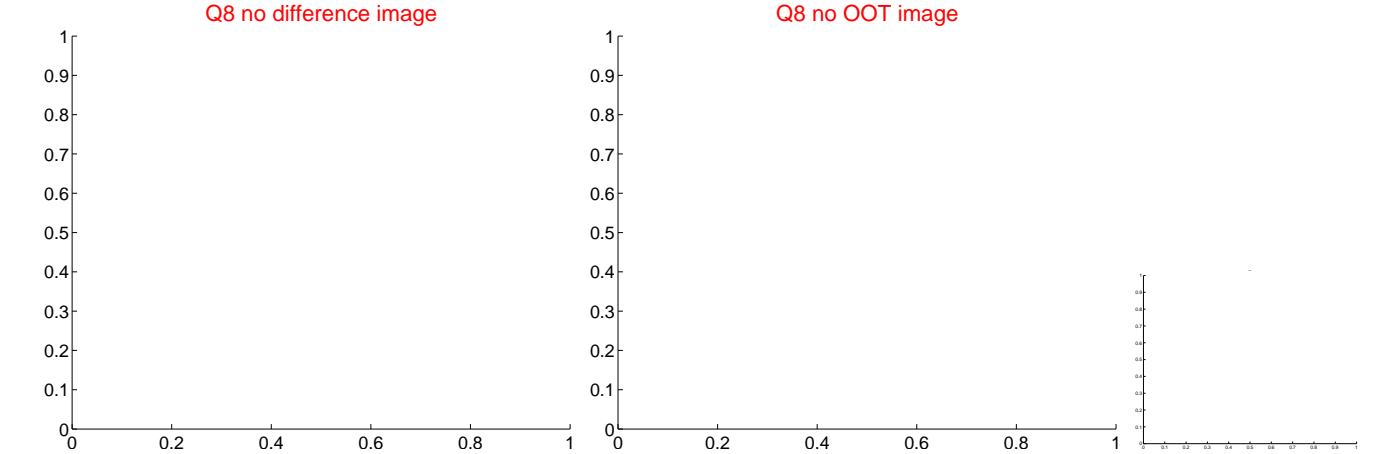
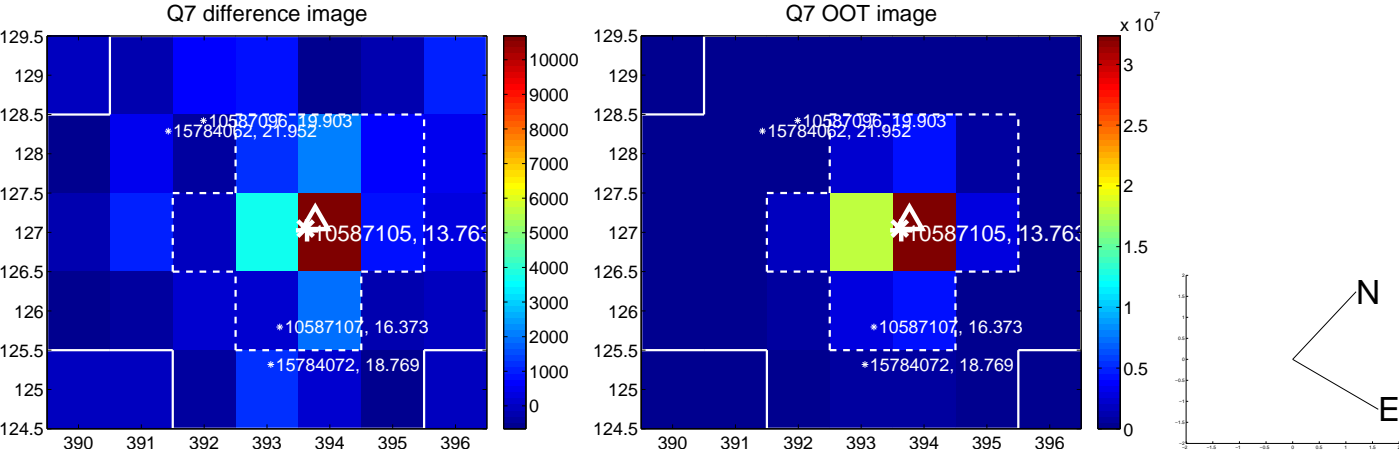
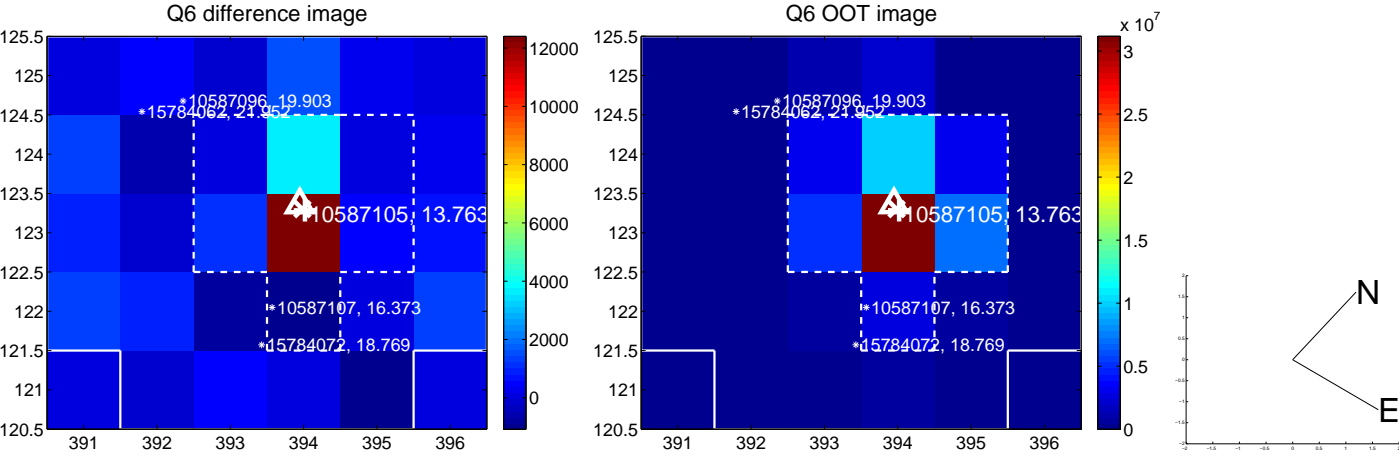
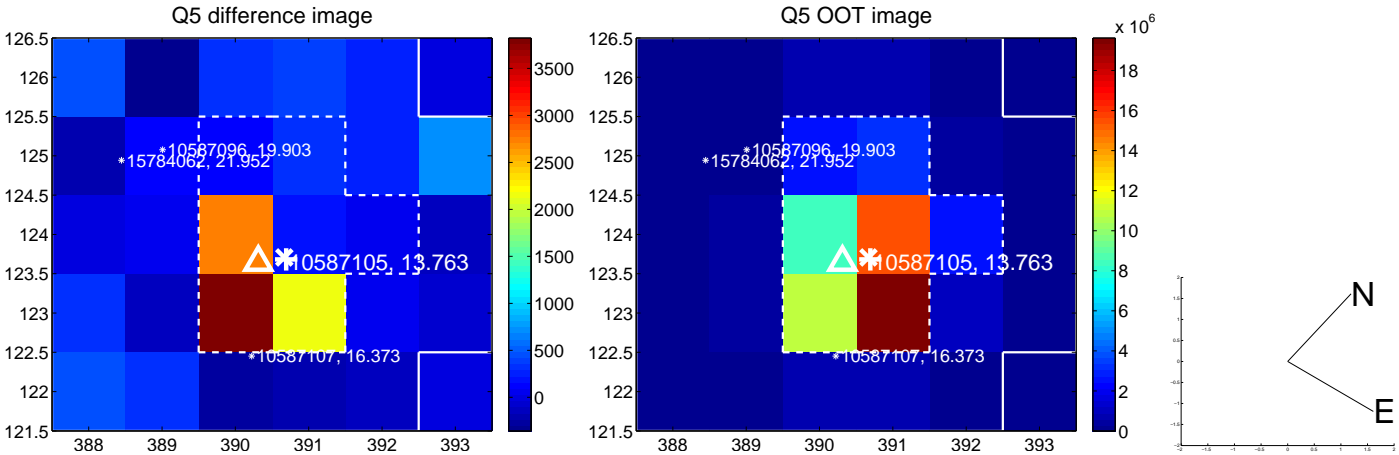


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- $\sigma$  uncertainty. Blue circle: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

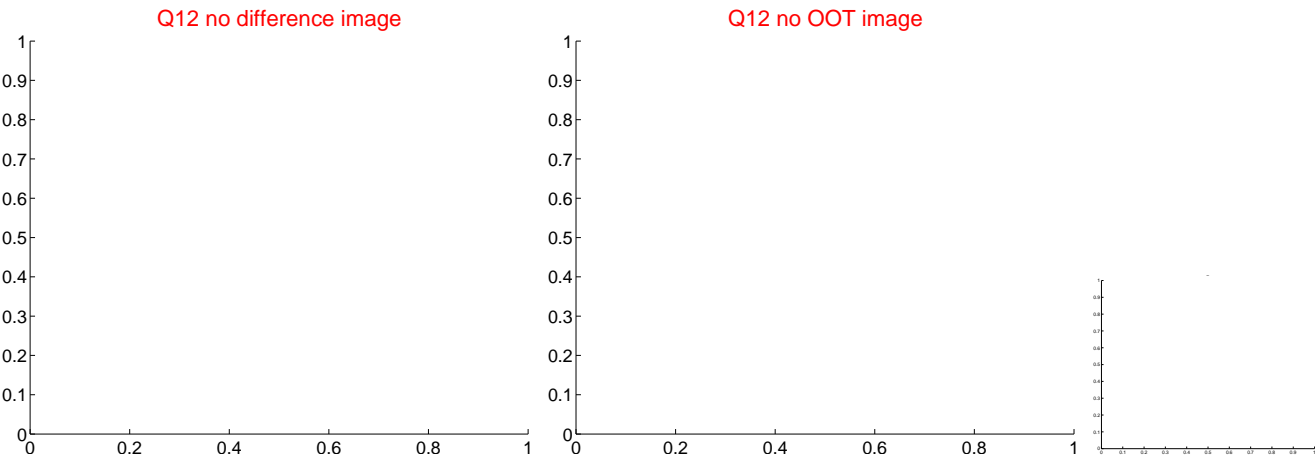
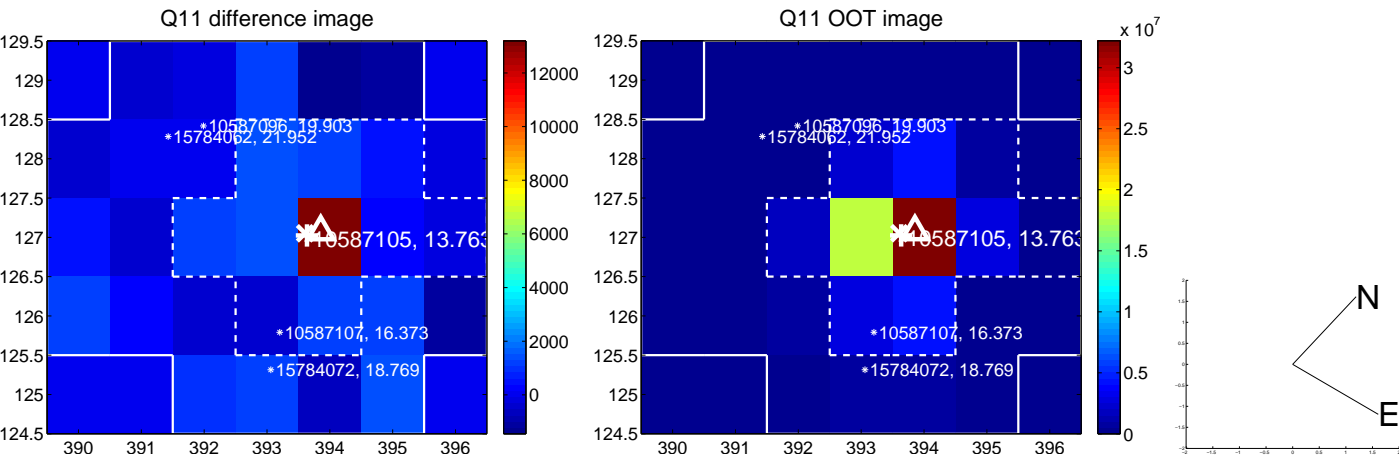
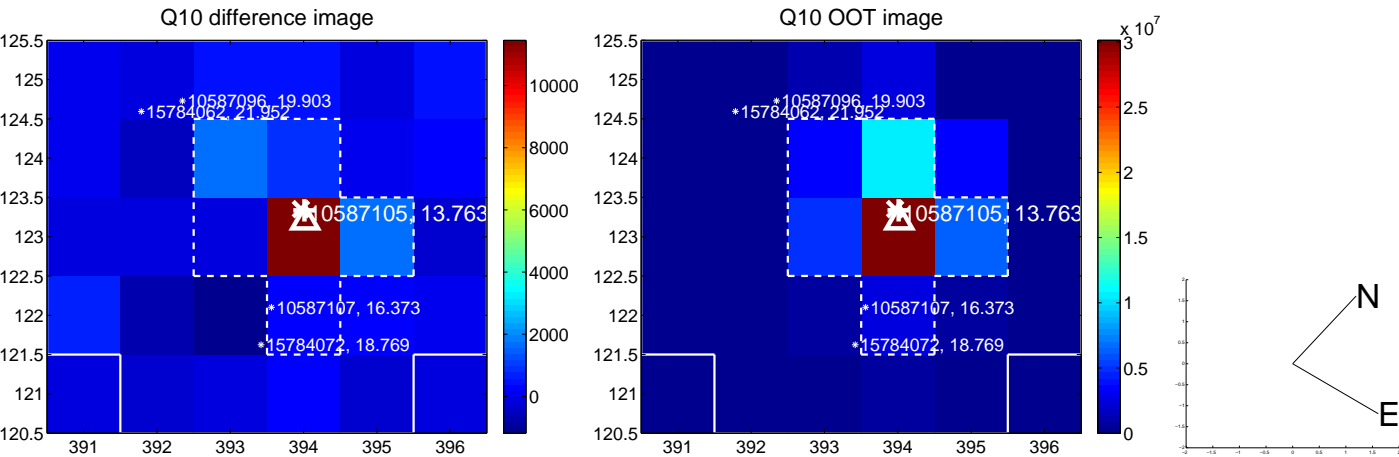
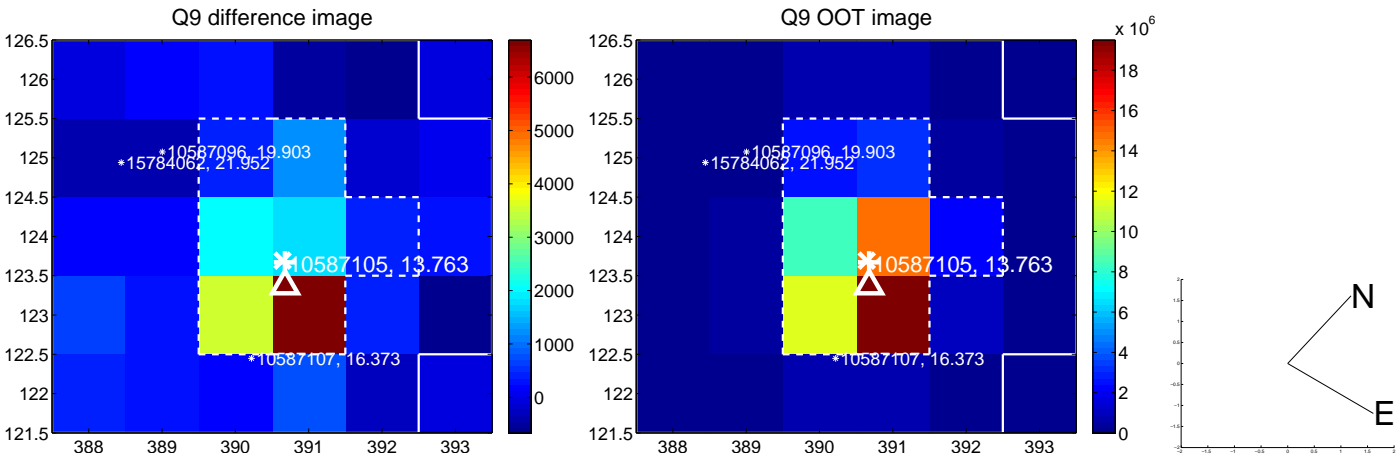
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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

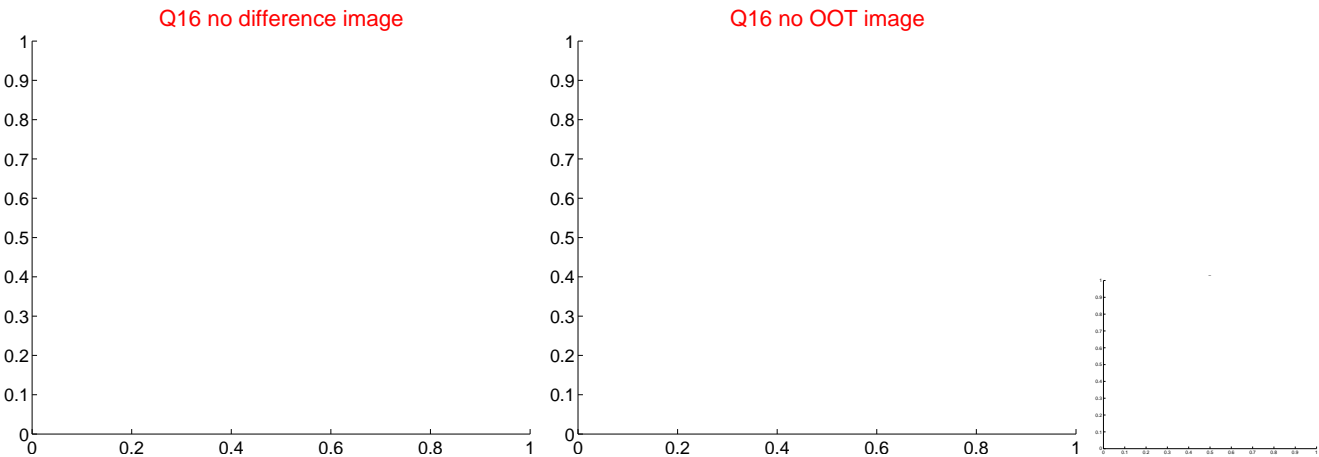
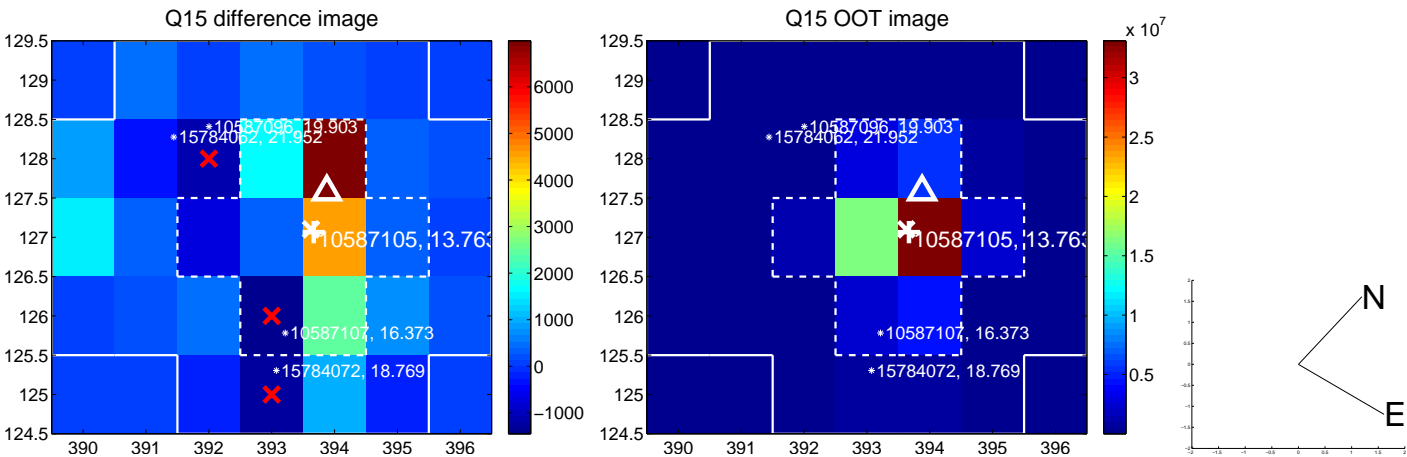
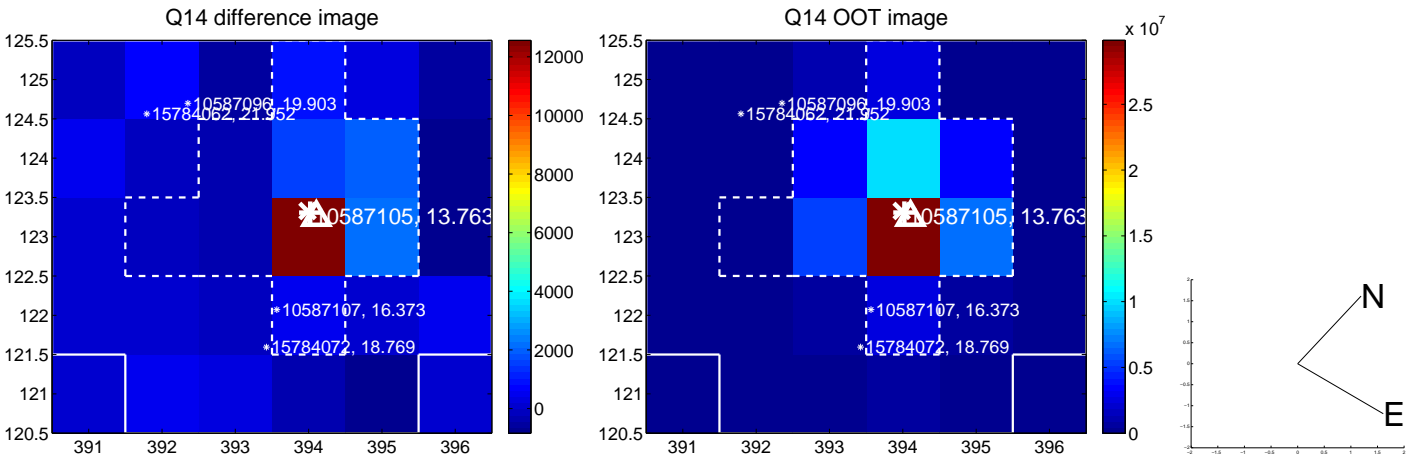
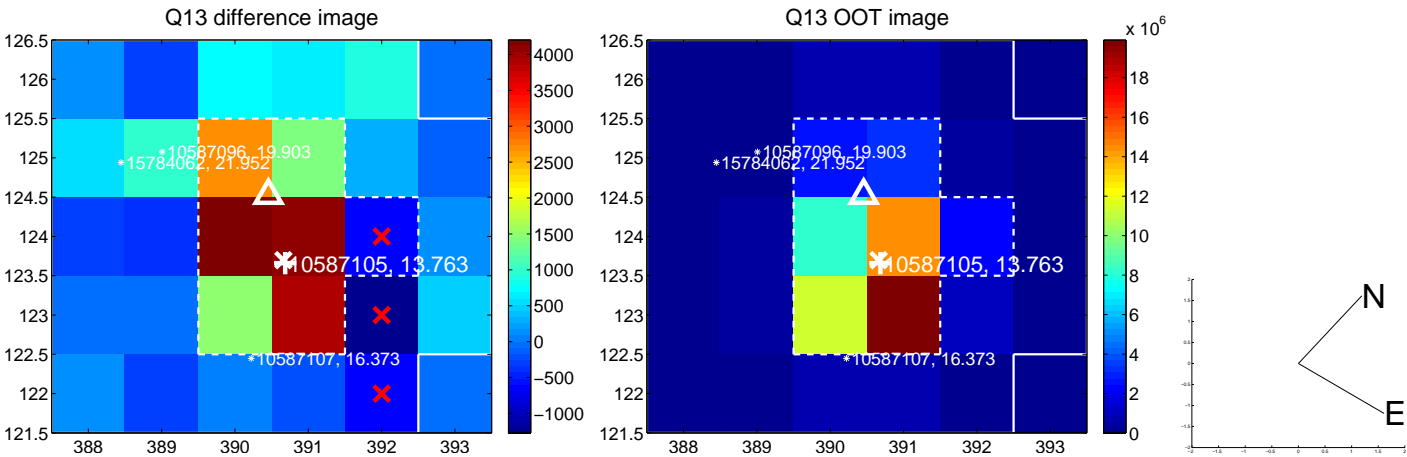


white  $\times$ : KIC target position;  $+$ : OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.

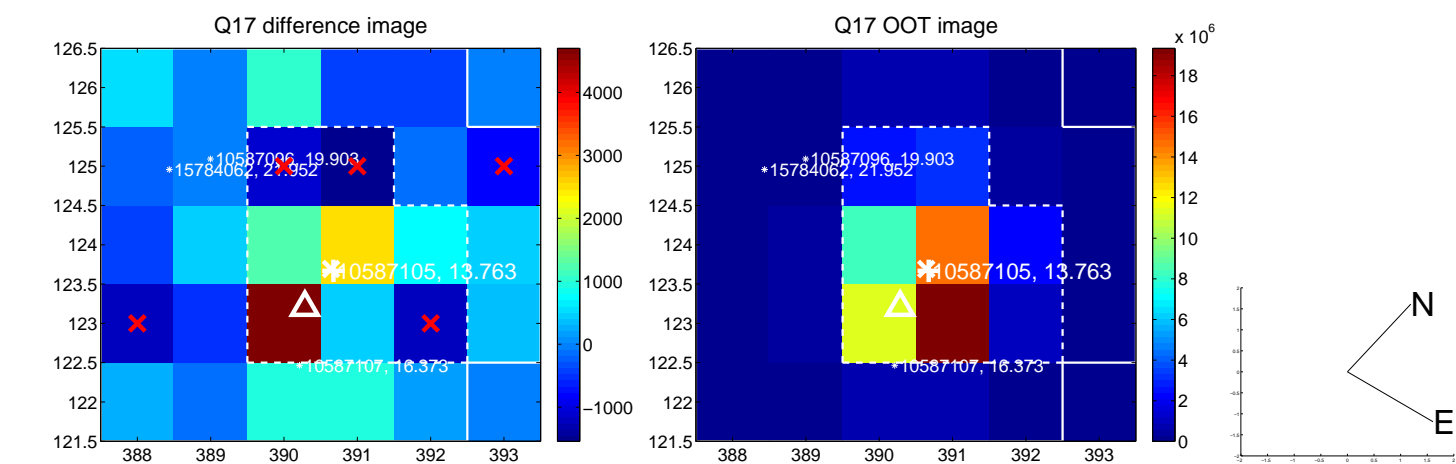




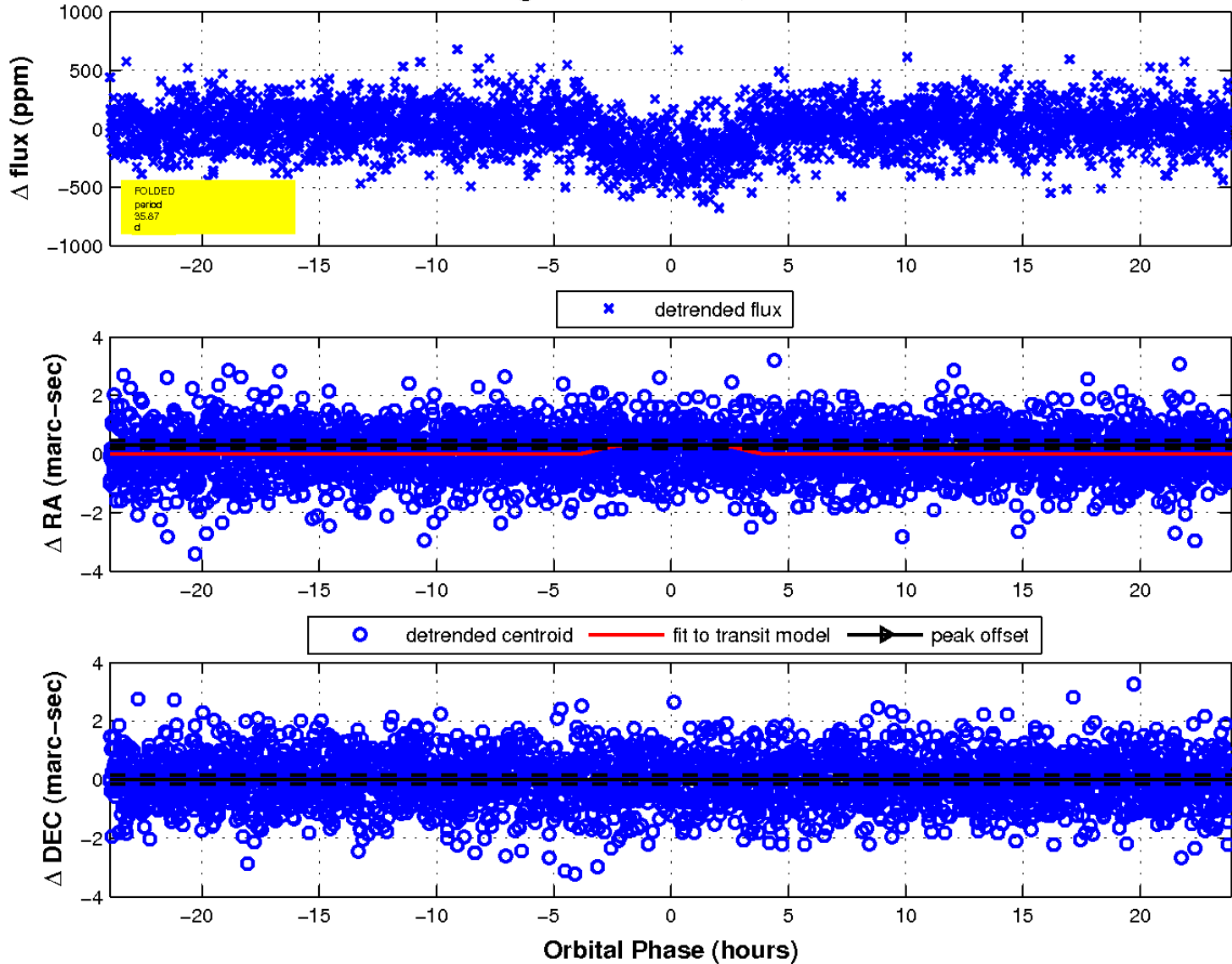
white  $\times$ : KIC target position; +: OOT centroid;  $\triangle$ : difference centroid. red  $\times$ : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

