

KIC 010586004

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})
010586004-01	OBS	0275.01	15.791956	145.235807	198.2	7.430	48.0	50.1	1.70	5758	2.63	162.32
010586004-02	OBS	0275.02	82.200914	208.784116	217.9	11.046	23.1	26.2	1.70	5758	2.94	17.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010586004-01	OBS	PC	0.95	0	0	0	0	NO_COMMENT
010586004-02	OBS	PC	0.80	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 for comment definitions.

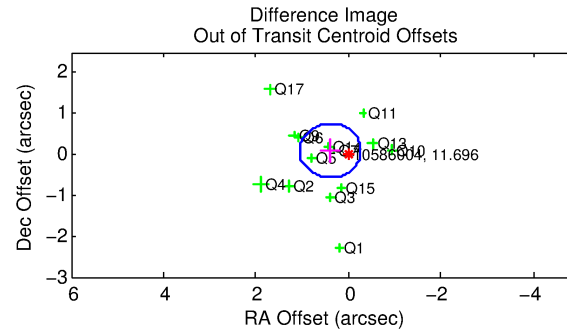
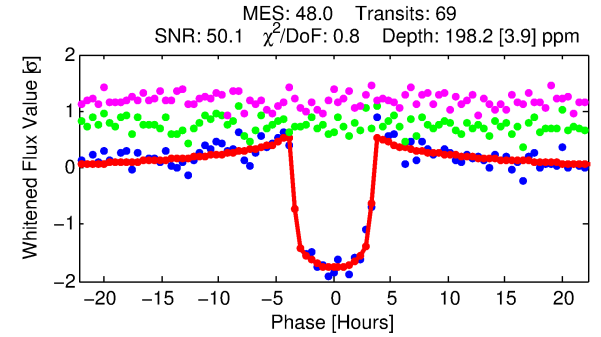
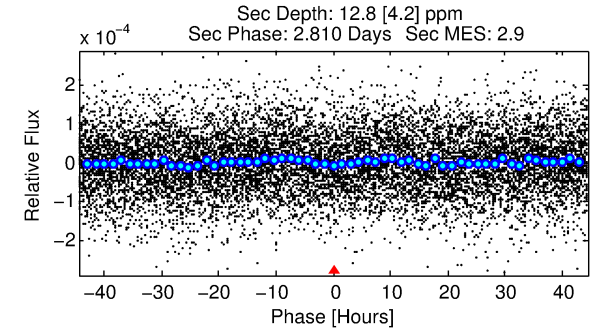
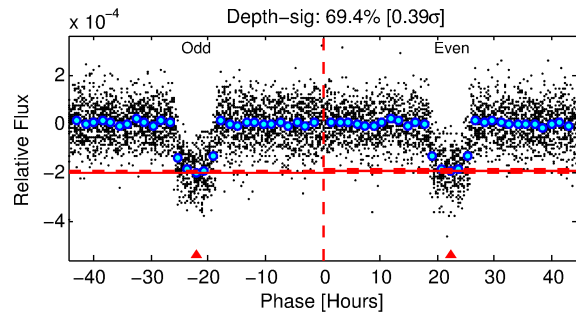
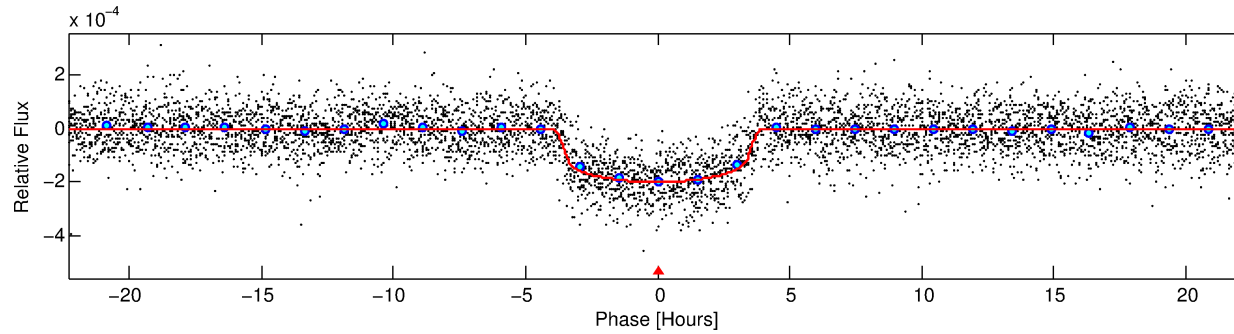
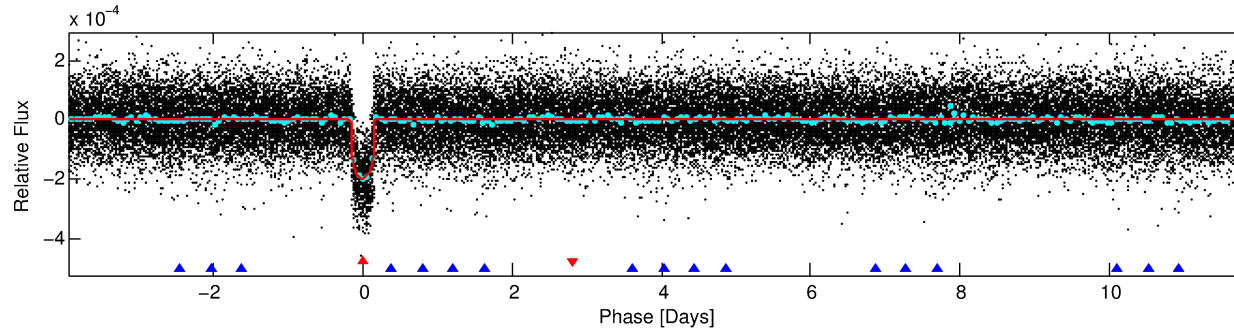
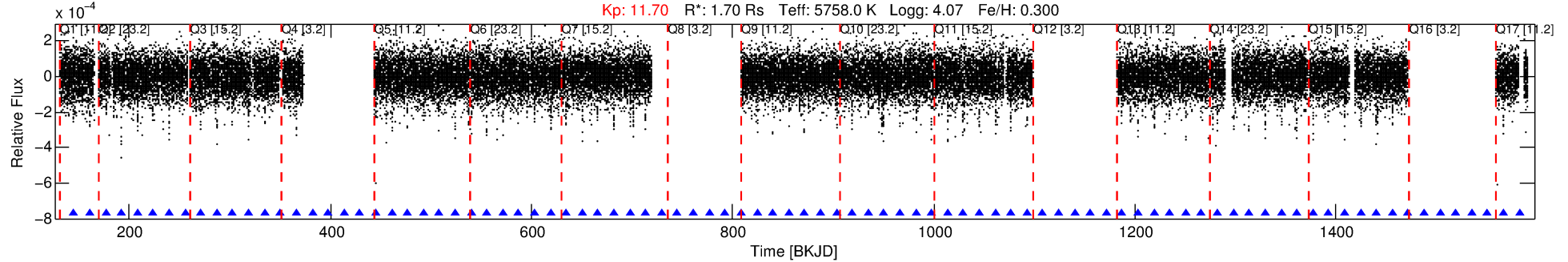
Ephemeris Match Information For 010586004-01

No Significant Match Found

DV One-Page Summary

KIC: 10586004 Candidate: 1 of 2 Period: 15.792 d
KOI: K00275.01 Name: Kepler-129b Corr: 0.990

Kp: 11.70 R*: 1.70 Rs Teff: 5758.0 K Logg: 4.07 Fe/H: 0.300



DV Fit Results:

Period = 15.79196 [0.00004] d
Epoch = 145.2358 [0.0021] BKJD
Rp/R* = 0.0142 [0.0014]
a/R* = 10.68 [4.59]
b = 0.77 [0.23]
Seff = 162.32 [14.11]
Teq = 910 [20] K
Rp = 2.63 [0.32] Re
a = 0.1327 [0.0070] AU
Ag = 17.87 [6.94] [2.43σ]
Teffp = 2893 [279] K [7.09σ]

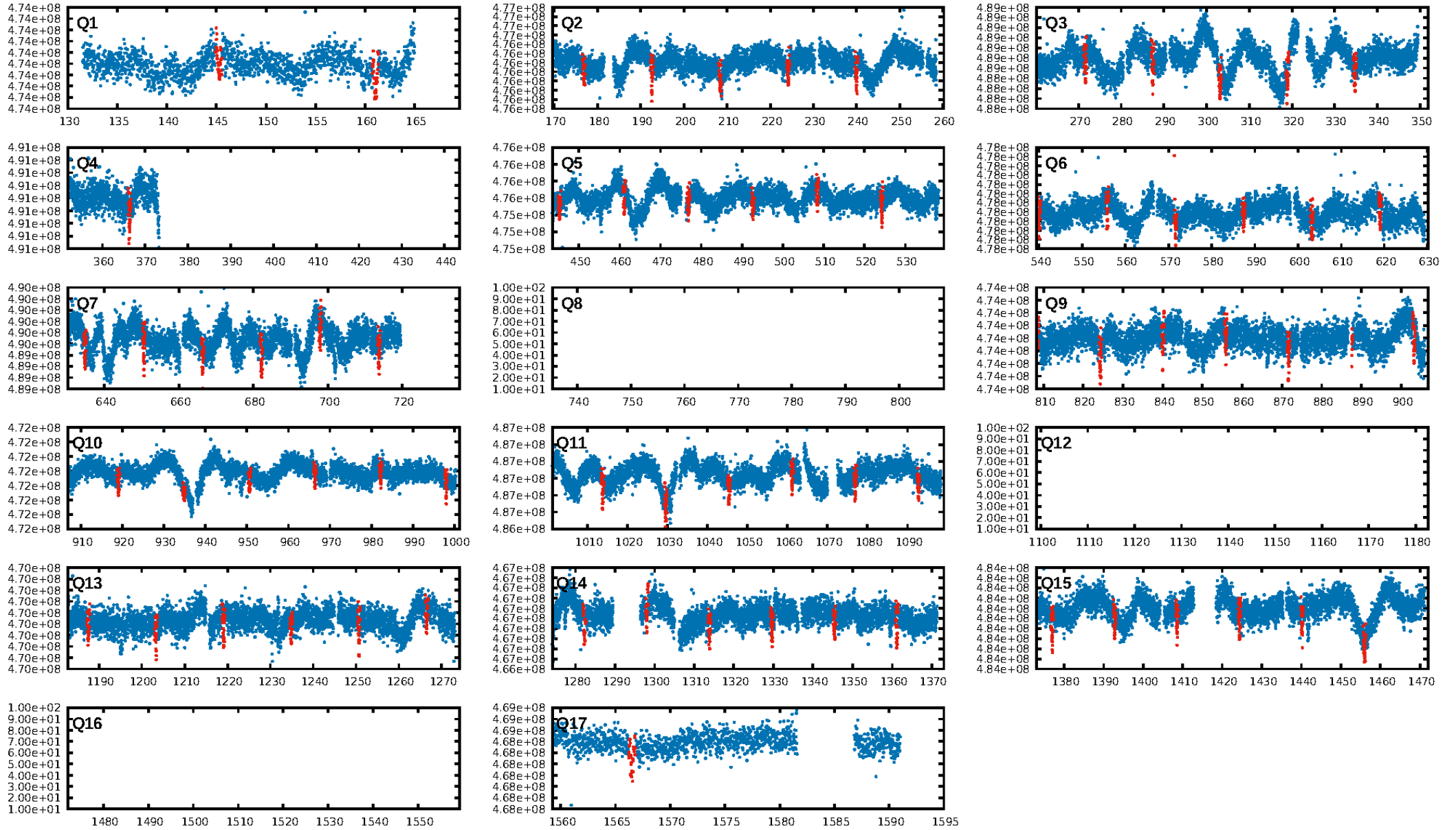
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [119.73σ]
ModelChiSquare2-sig: 88.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [65/65]
GhostDiagnostic-chr: 6.213
Centroid-sig: 89.3%
Centroid-so: 0.033 arcsec [0.19σ]
OotOffset-rm: 0.409 arcsec [1.86σ]
KicOffset-rm: 0.430 arcsec [1.83σ]
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]

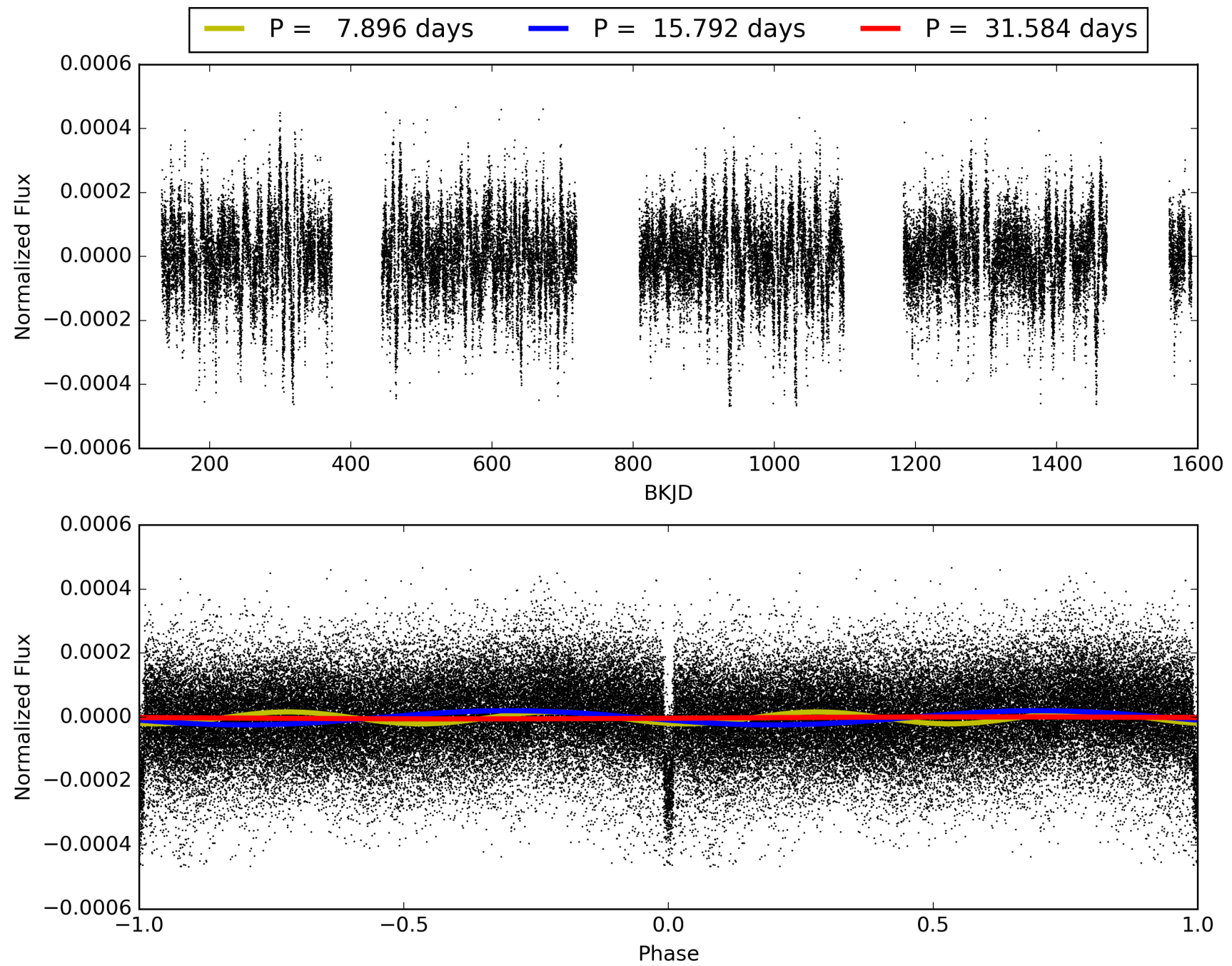
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 02:24:10 Z

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

TCE 010586004-01, PDC Light Curves

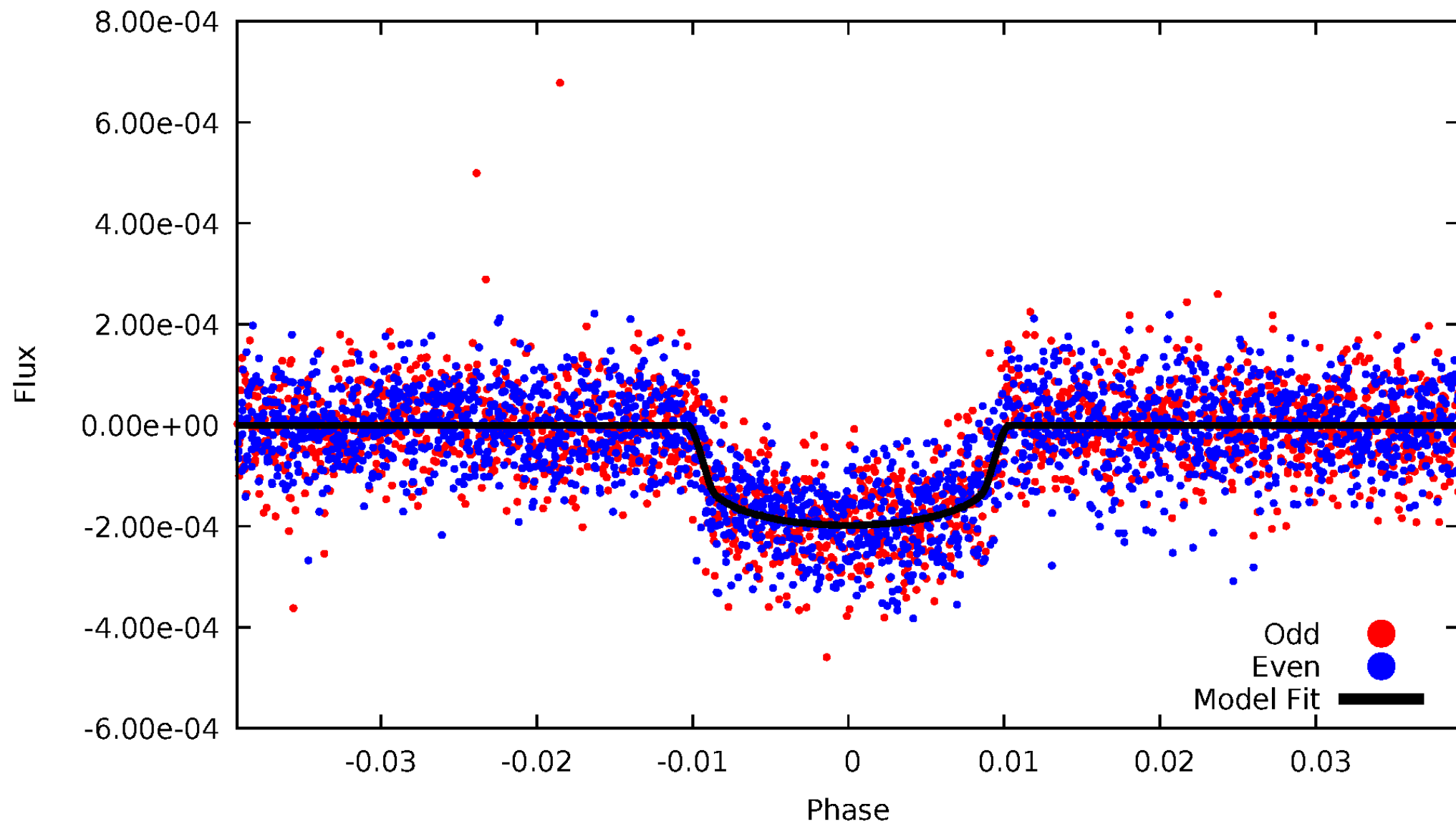


TCE 010586004-01



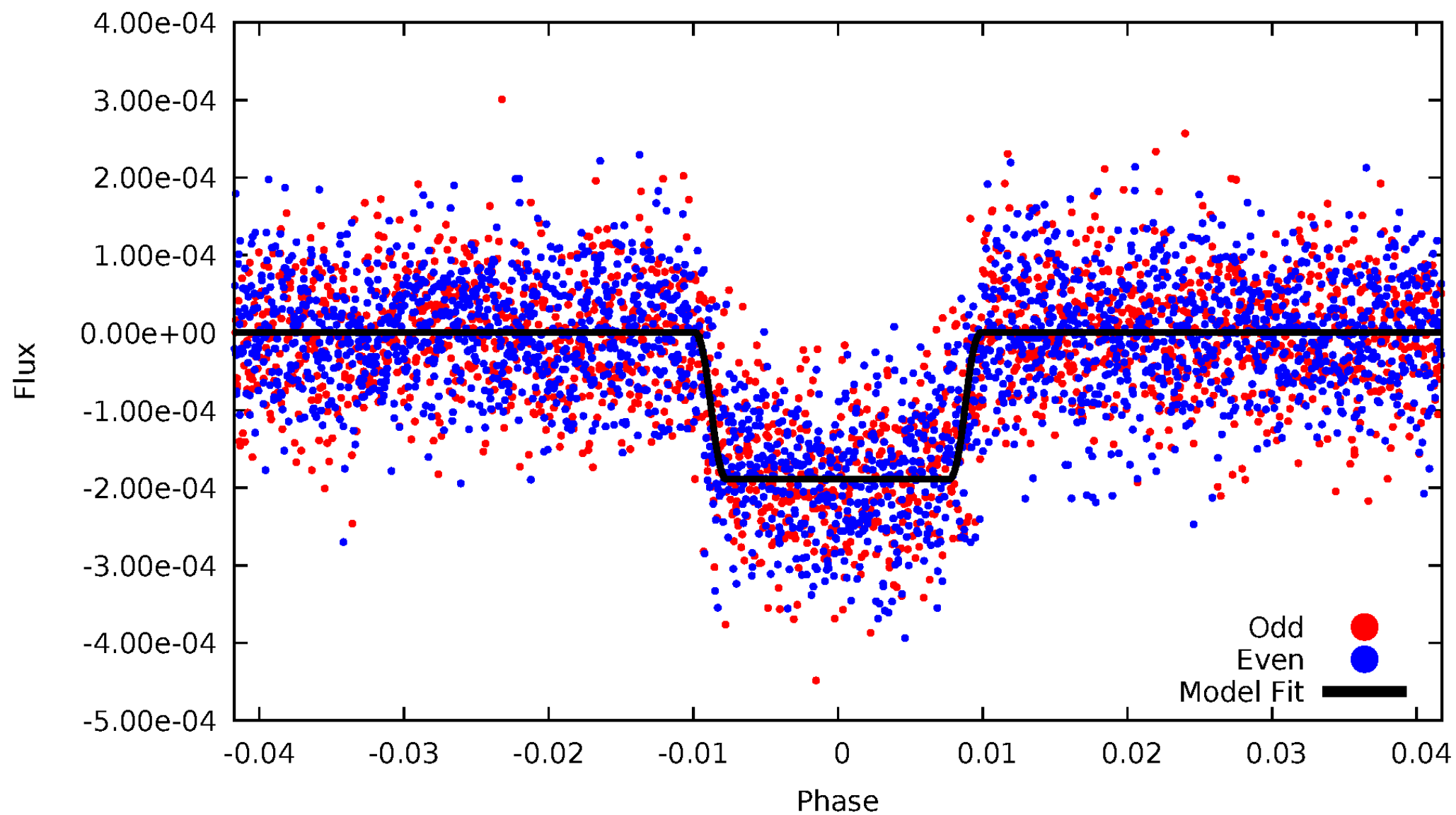
DV Odd/Even

TCE 010586004-01



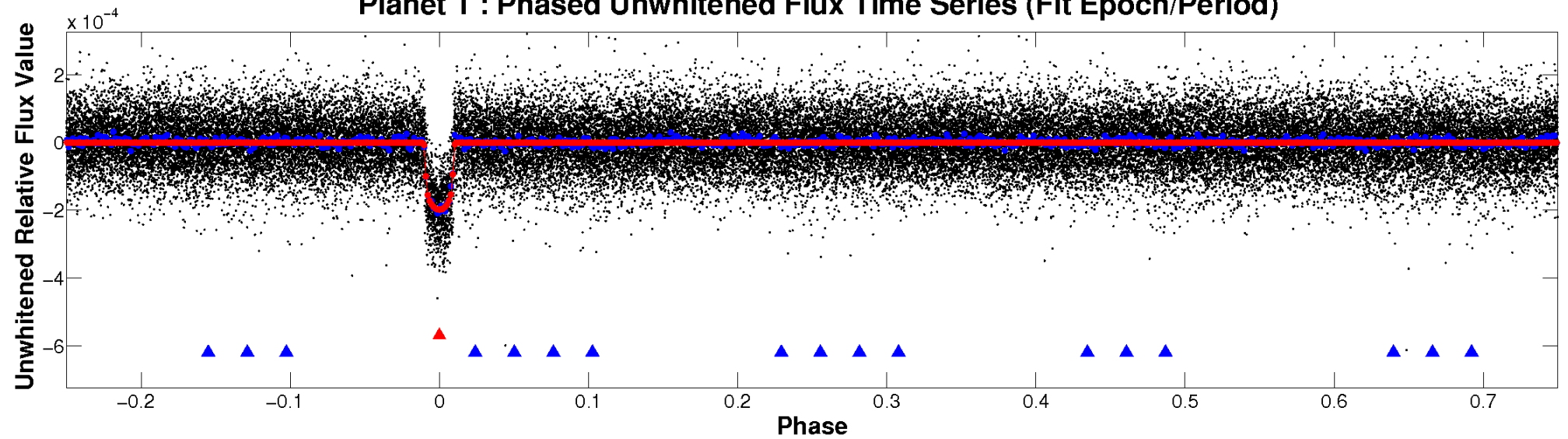
ALT Odd/Even

TCE 010586004-01

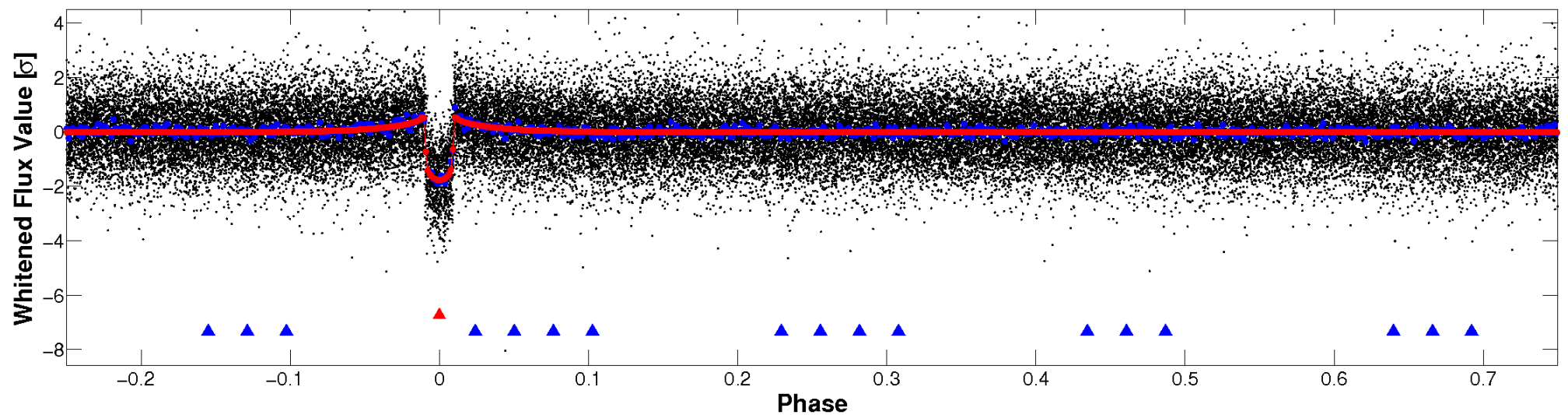


Non-Whitened Vs. Whitened Light Curve

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

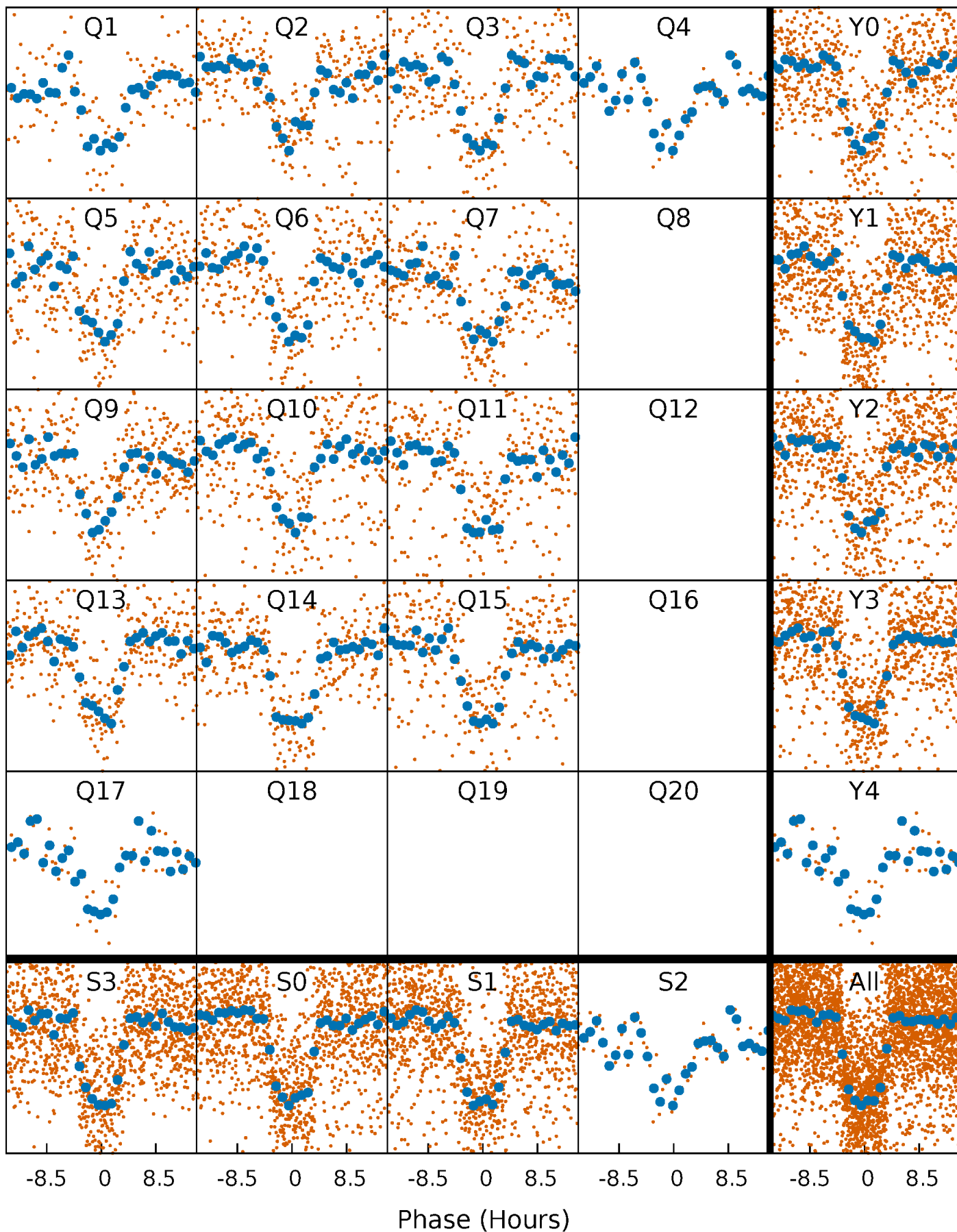


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



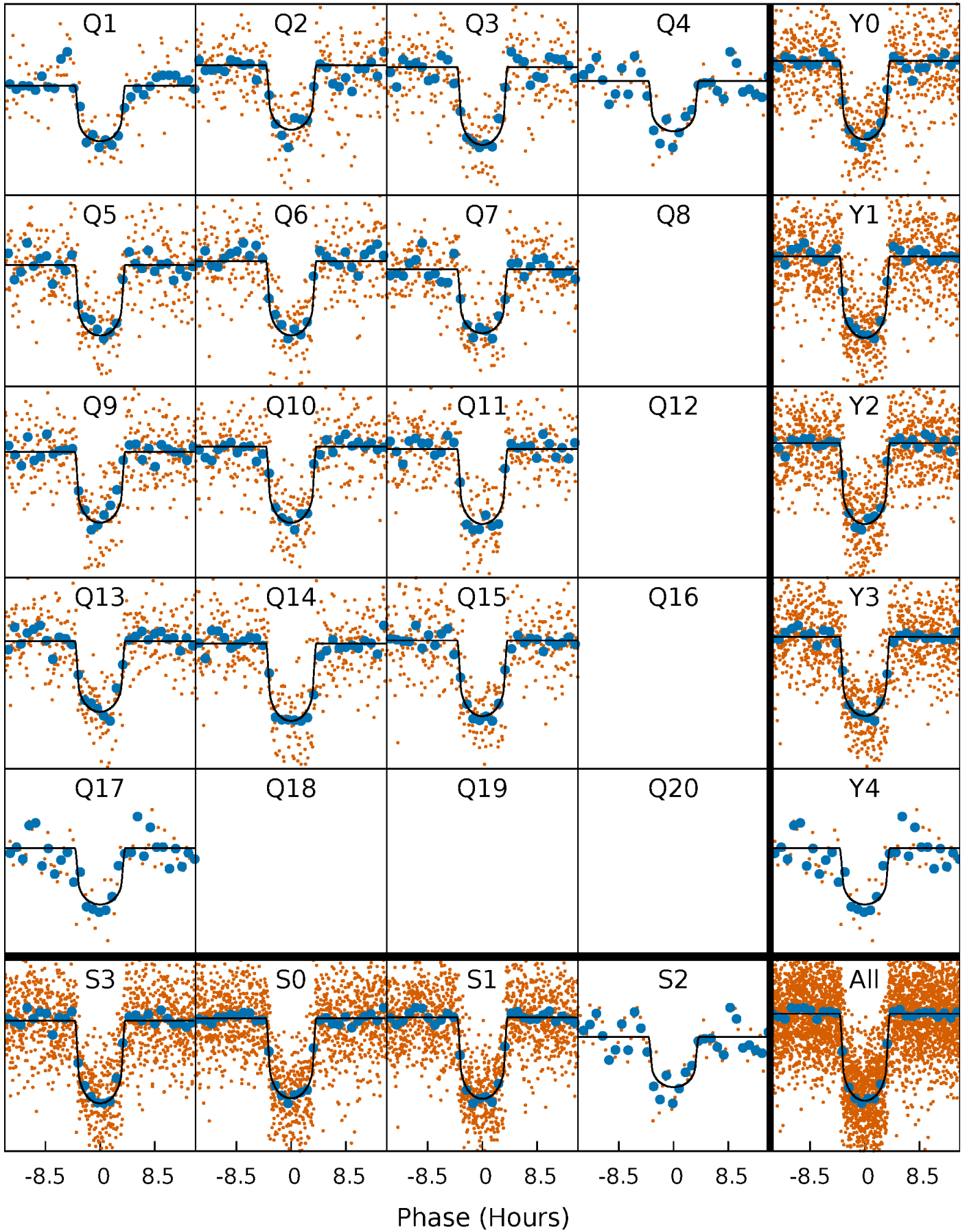
PDC Quarter-Phased Transit Curves

TCE 010586004-01 P= 15.791956 Days $T_0=145.235807$ (BKJD)



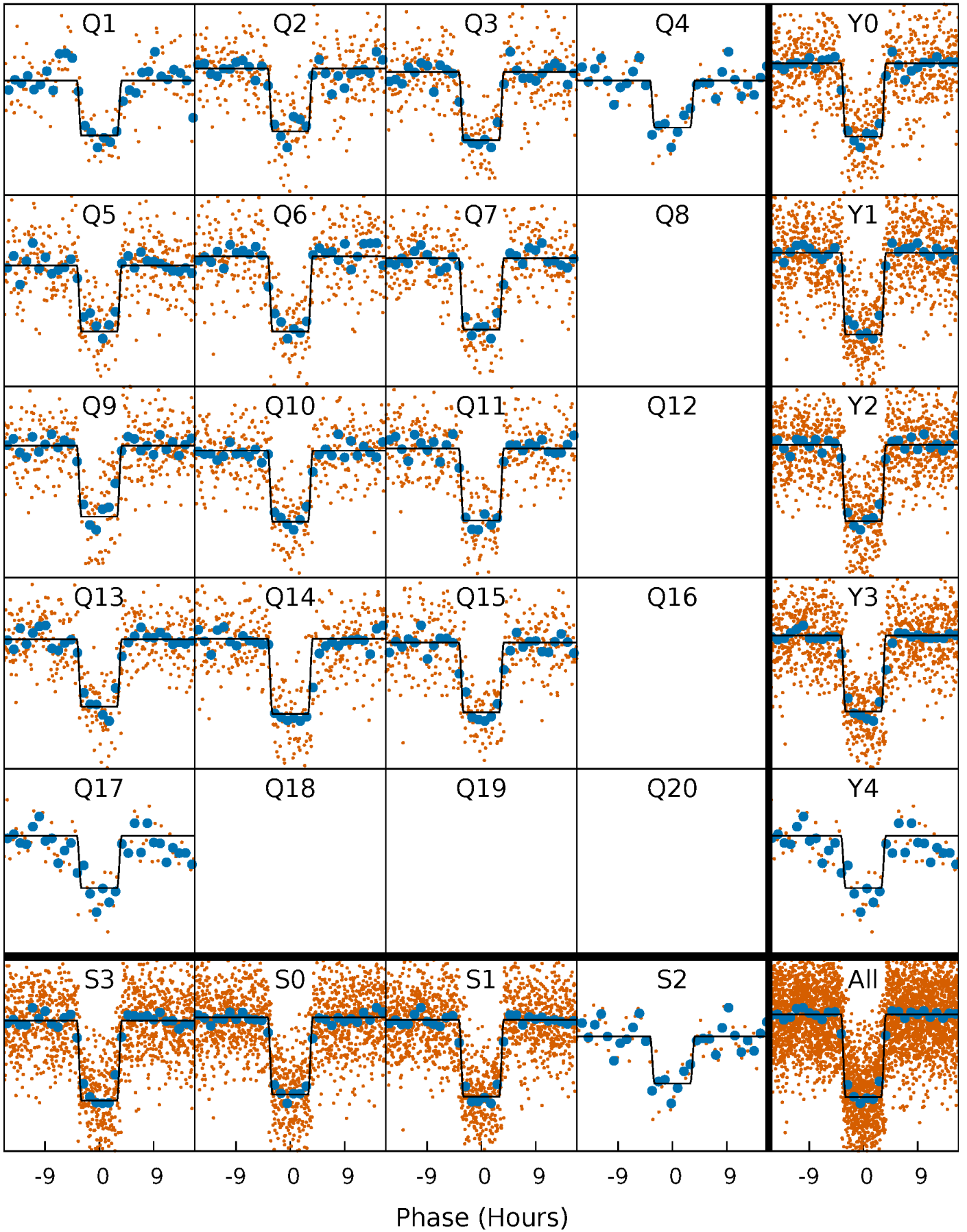
DV Quarter-Phased Transit Curves

TCE 010586004-01 P= 15.791956 Days $T_0=145.235807$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

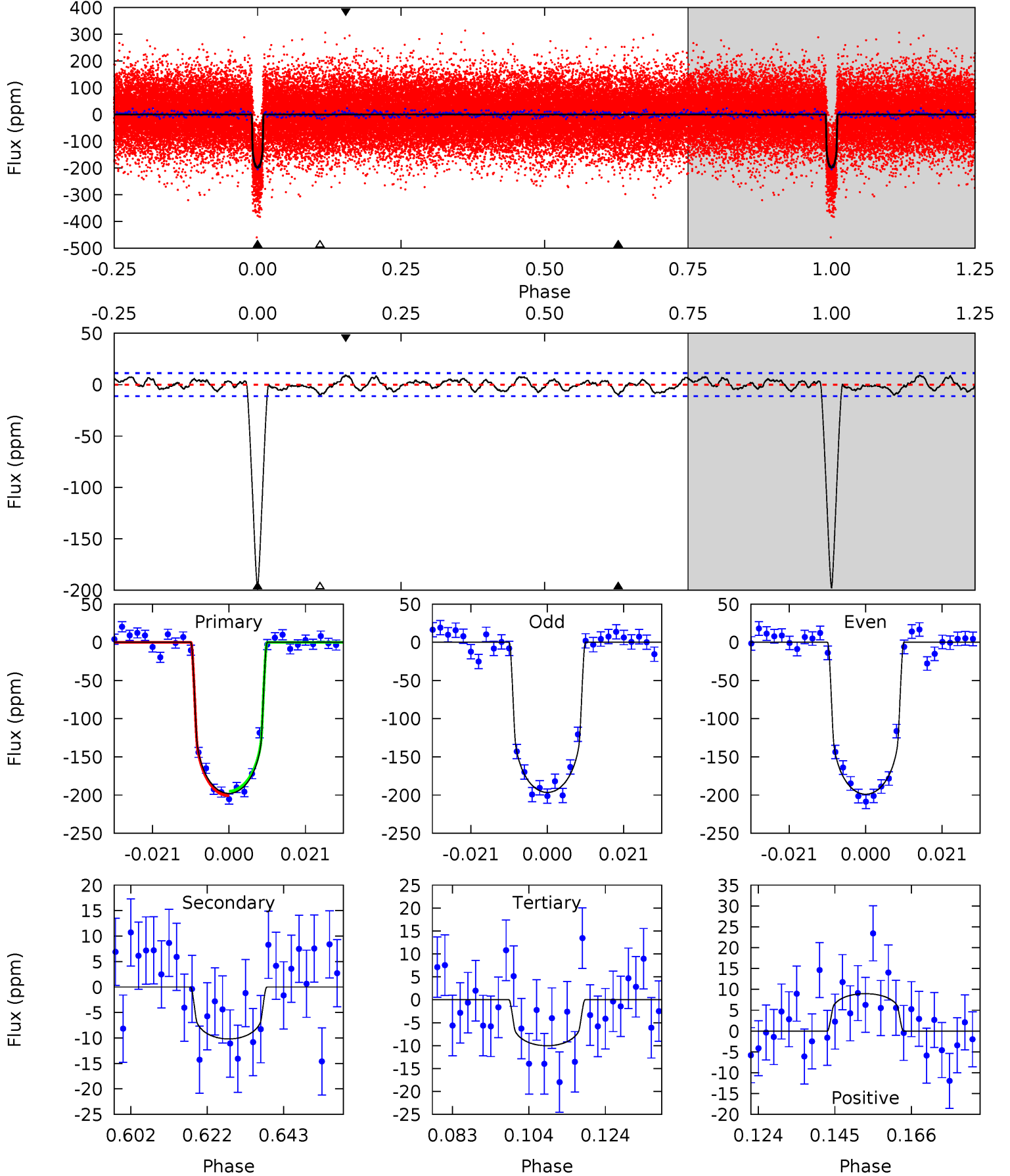
TCE 010586004-01 P= 15.791836 Days $T_0=145.238289$ (BKJD)



DV Model-Shift Uniqueness Test

010586004-01, P = 15.791956 Days, E = 129.443851 Days

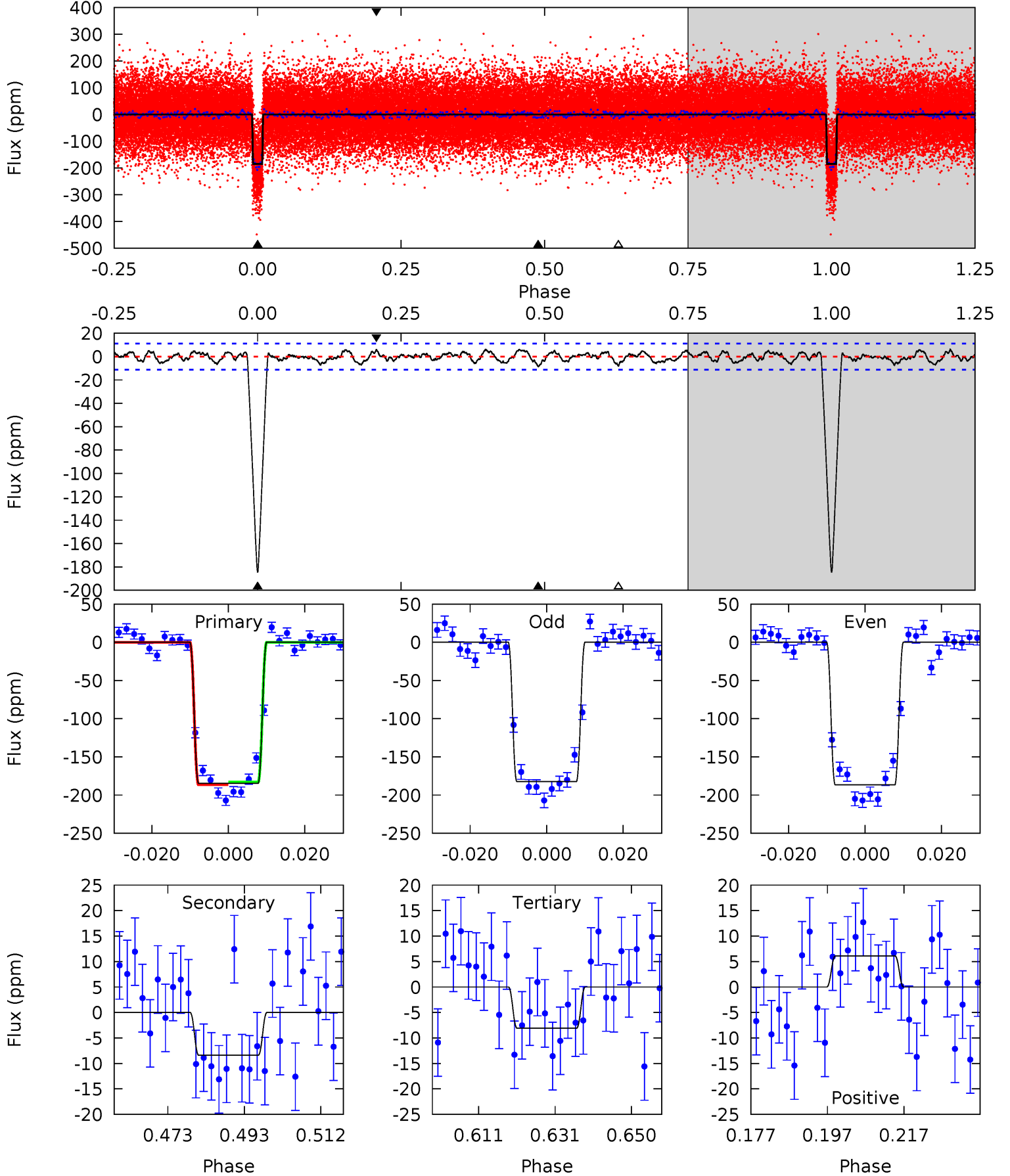
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
86.7	4.46	4.39	3.93	4.88	2.31	1.76	82.3	82.7	0.07	0.54	0.52	1.01	0.04	1.28



Alt Model-Shift Uniqueness Test

010586004-01, $P = 15.791836$ Days, $E = 129.446453$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
80.9	3.68	3.54	2.67	4.89	2.33	1.31	77.4	78.3	0.14	1.01	0.98	0.97	0.03	0.77



Stellar Parameters For KIC 010586004

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5758^{+77}_{-68}	$4.072^{+0.033}_{-0.027}$	$0.300^{+0.100}_{-0.100}$	$1.704^{+0.083}_{-0.118}$	$1.251^{+0.053}_{-0.141}$	$0.356^{+0.053}_{-0.034}$
	+1%/-1%	+1%/-1%	+33%/-33%	+5%/-7%	+4%/-11%	+15%/-10%
Source	SPE72	AST69	SPE72	DSEP		

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

Secondary Eclipse Parameters for KIC 010586004-01 / KOI 0275.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-10 ± 2	$2.63^{+0.29}_{-0.28}$	1270^{+22}_{-22}	3274^{+165}_{-149}	14^{+5}_{-4}
Alt.	-8 ± 2	$2.55^{+0.30}_{-0.28}$	1271^{+21}_{-23}	3217^{+162}_{-197}	12^{+5}_{-4}

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

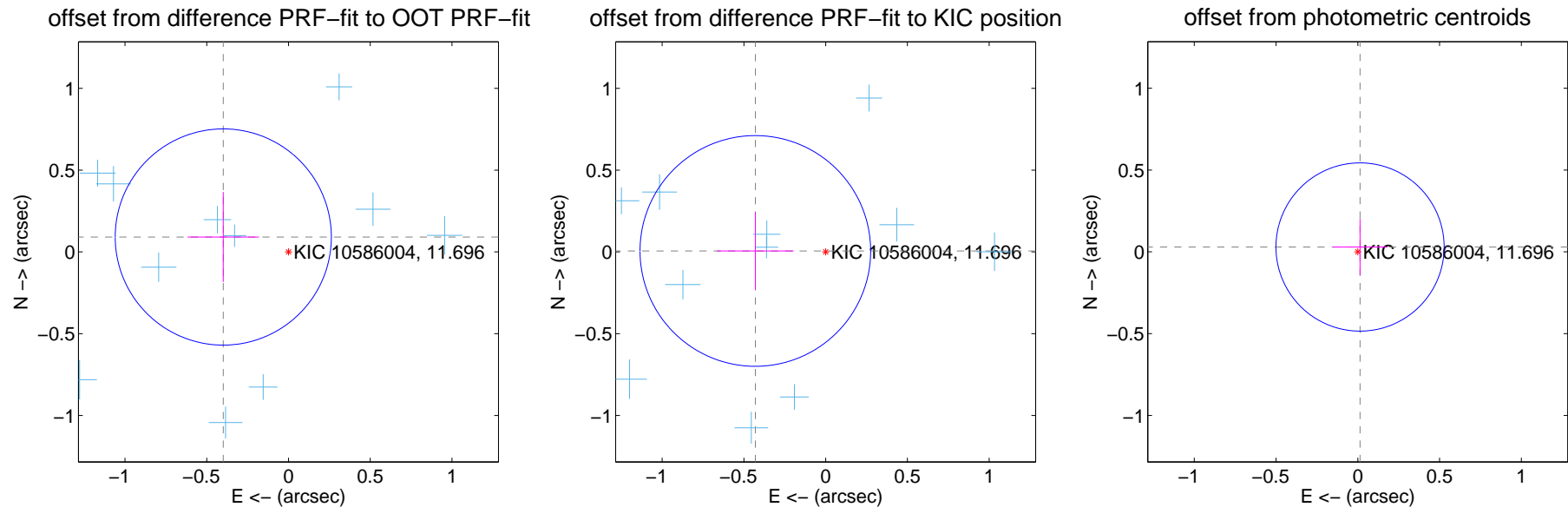
DV Centroid Data

Supplemental centroid analysis for 010586004-01. **Kepler magnitude: 11.70.** Transit SNR 50.10

There are 14 quarters with good PRF difference image offsets

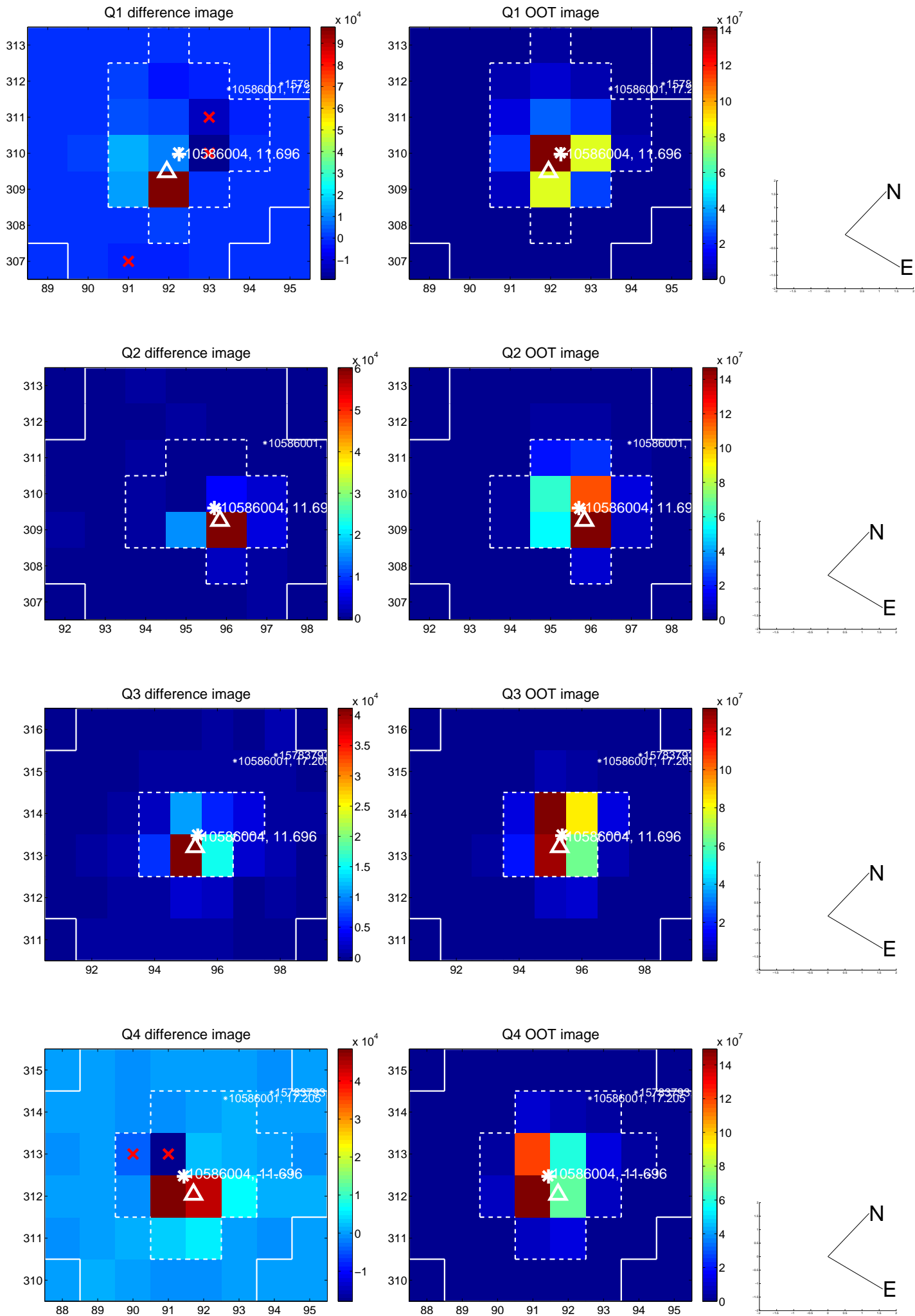
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.409 ± 0.220	1.86	0.399 ± 0.218	0.091 ± 0.275
PRF-fit source offset from KIC position	0.430 ± 0.235	1.83	0.430 ± 0.235	0.006 ± 0.239
photometric centroid source offset	0.03 ± 0.17	0.19	-0.01 ± 0.17	0.03 ± 0.17

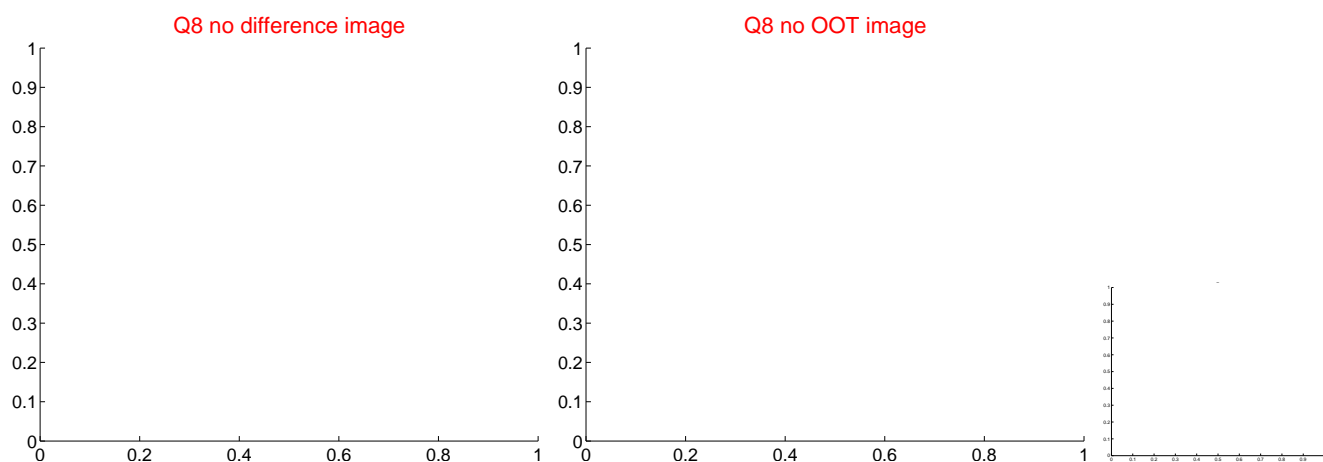
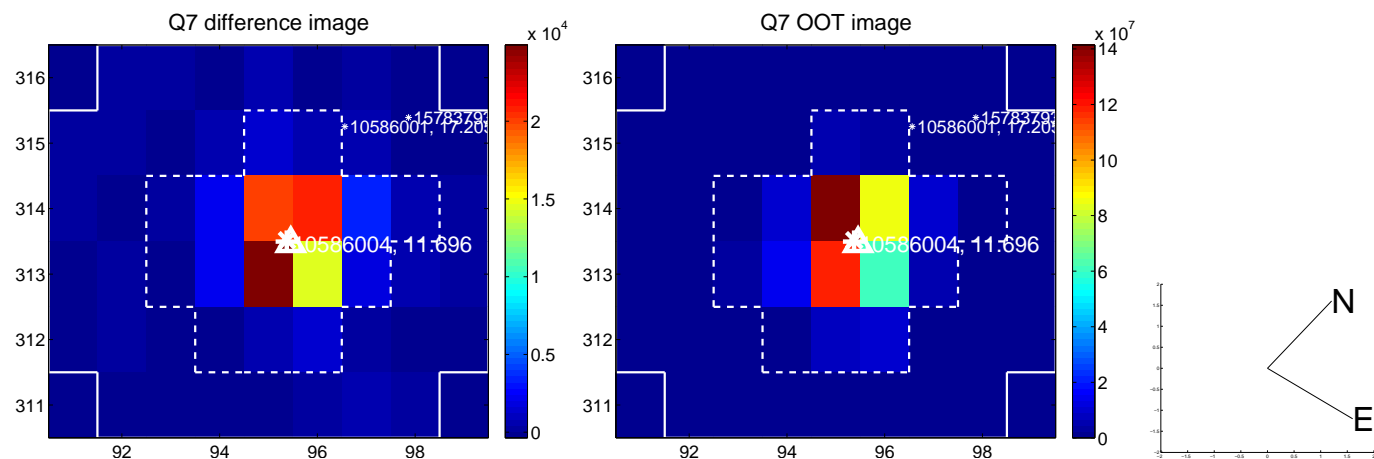
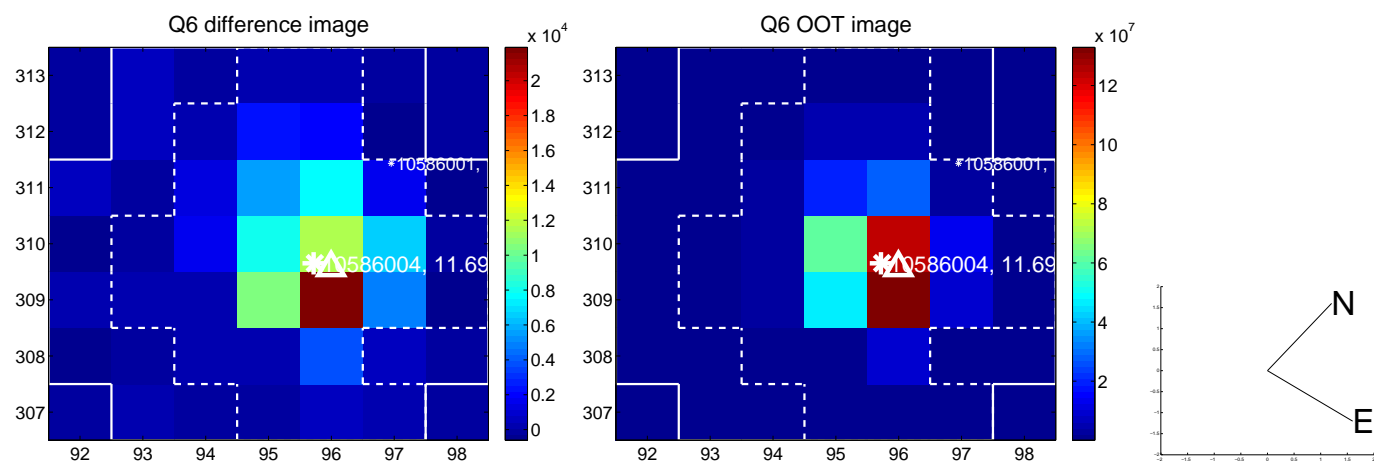
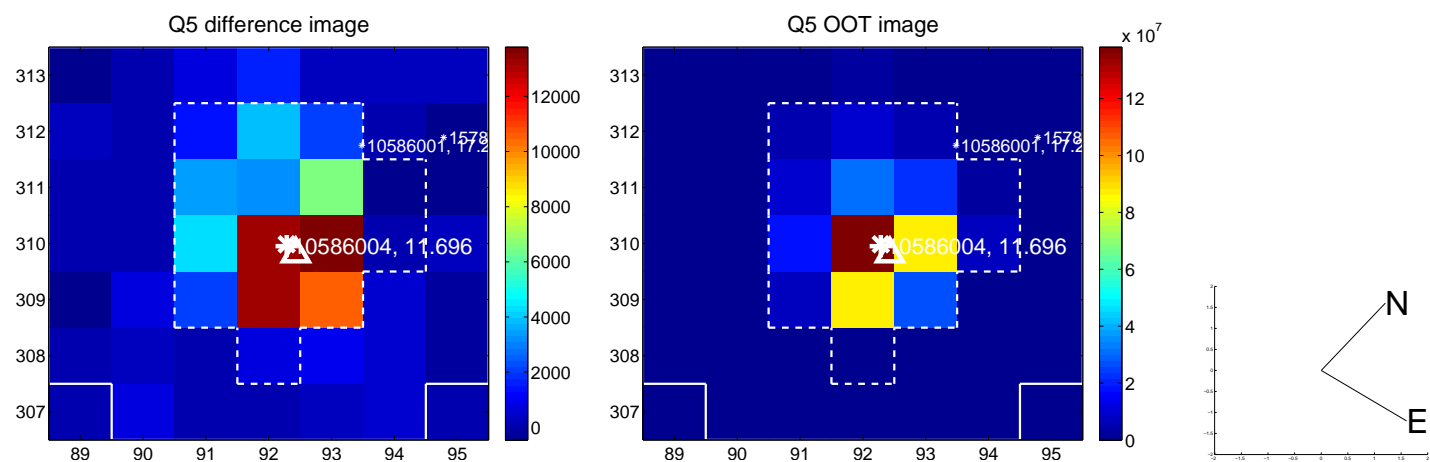


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

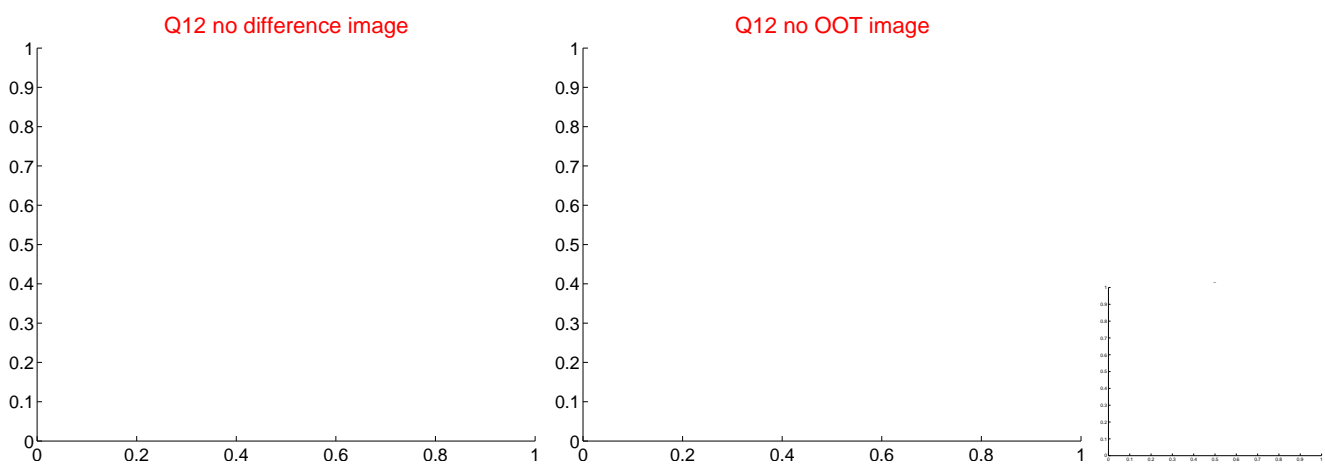
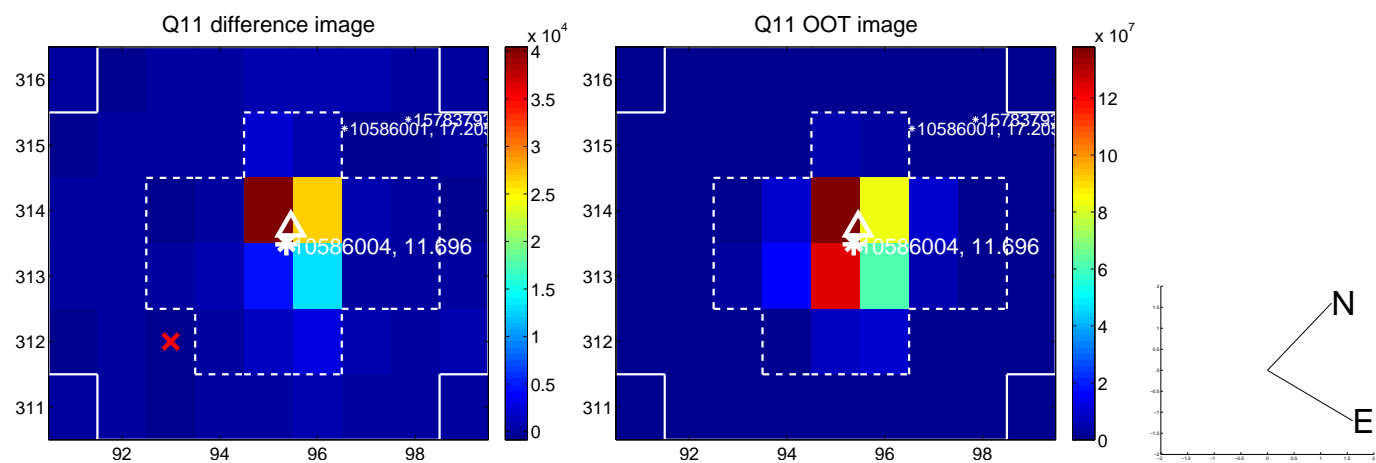
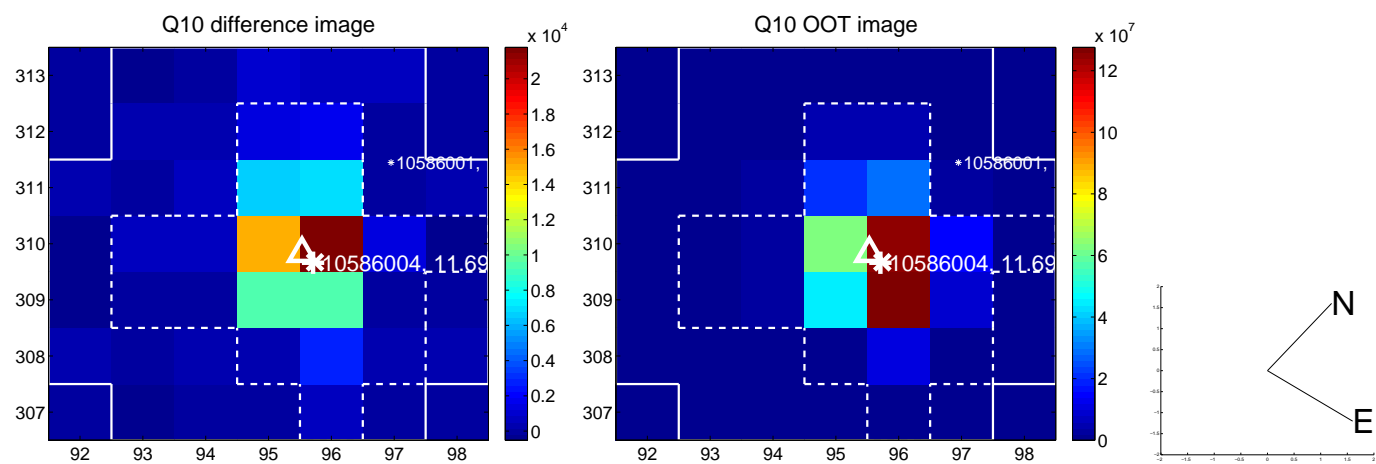
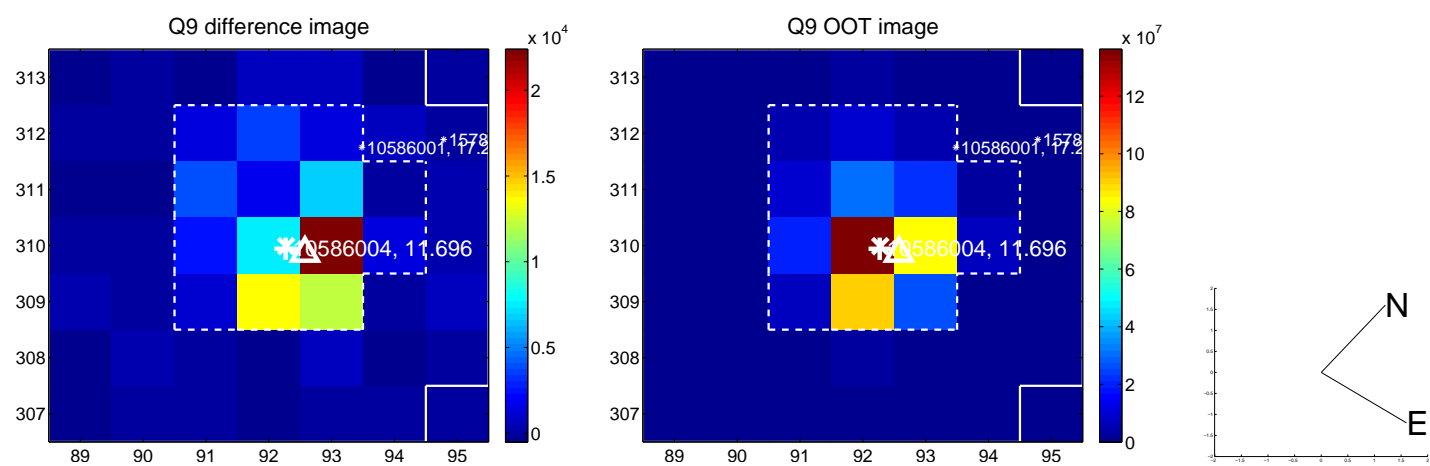
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



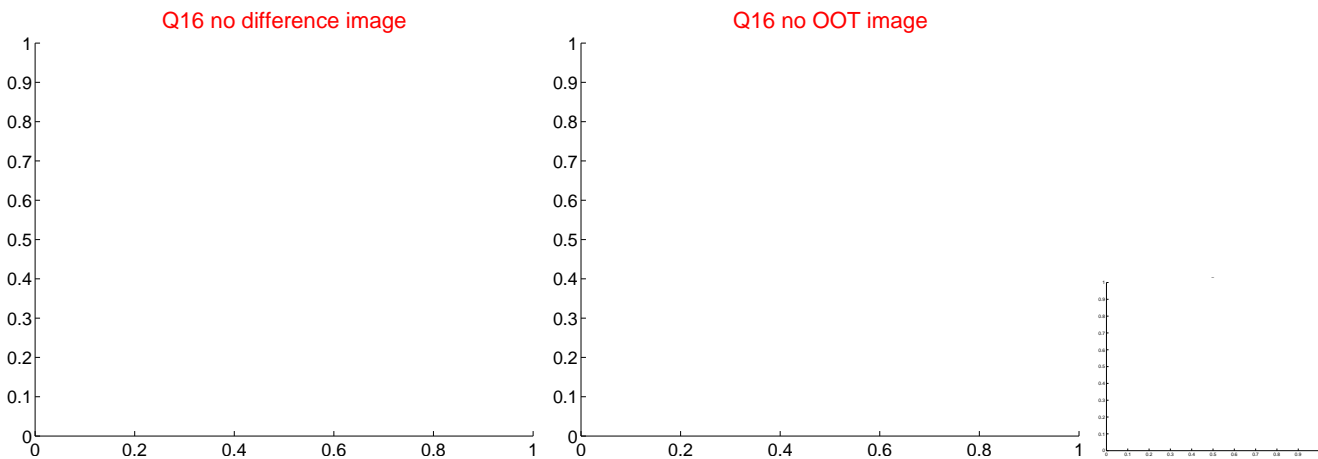
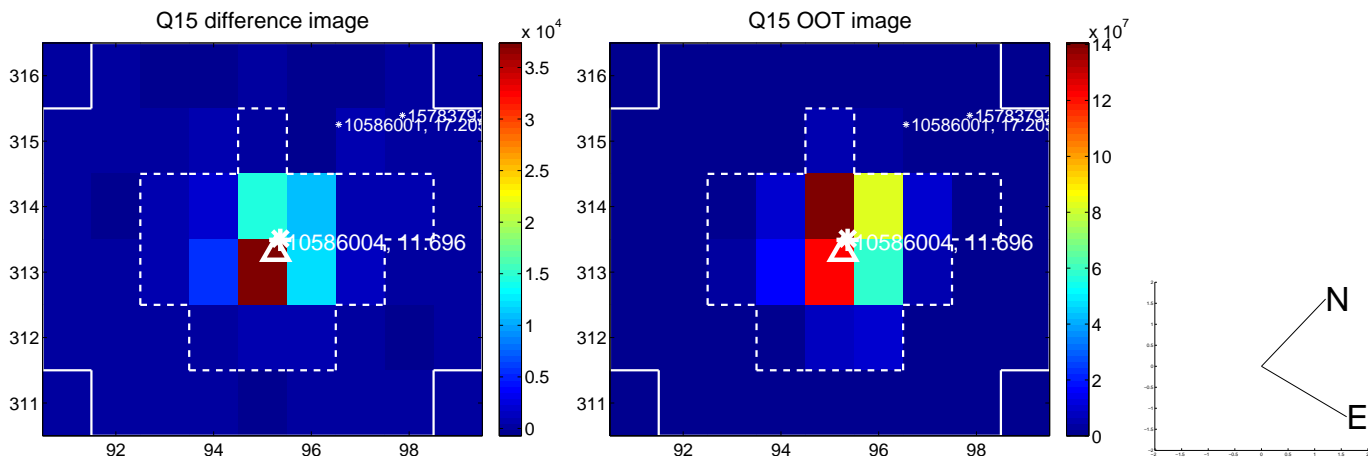
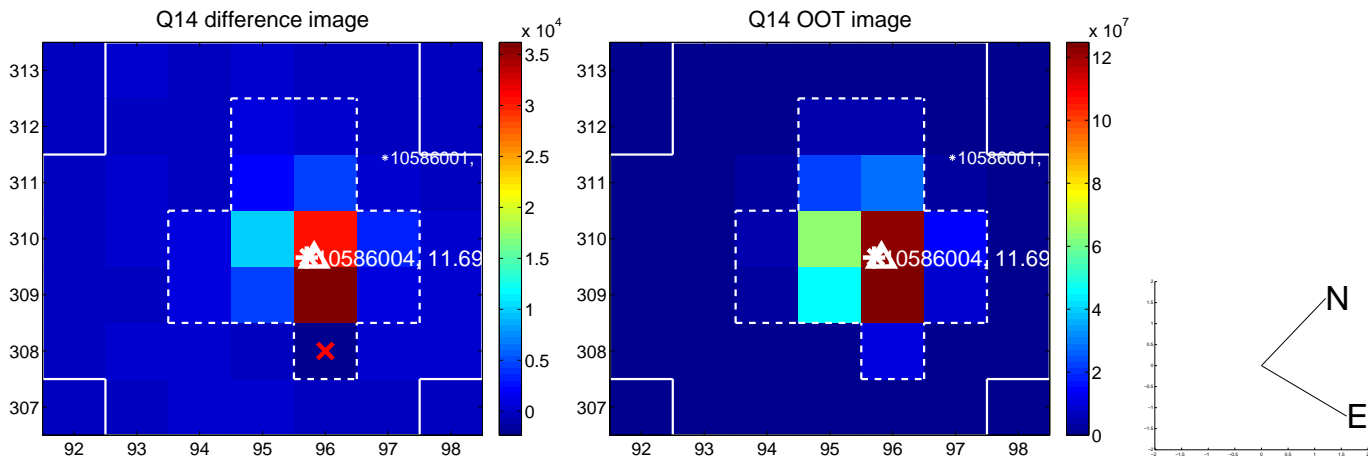
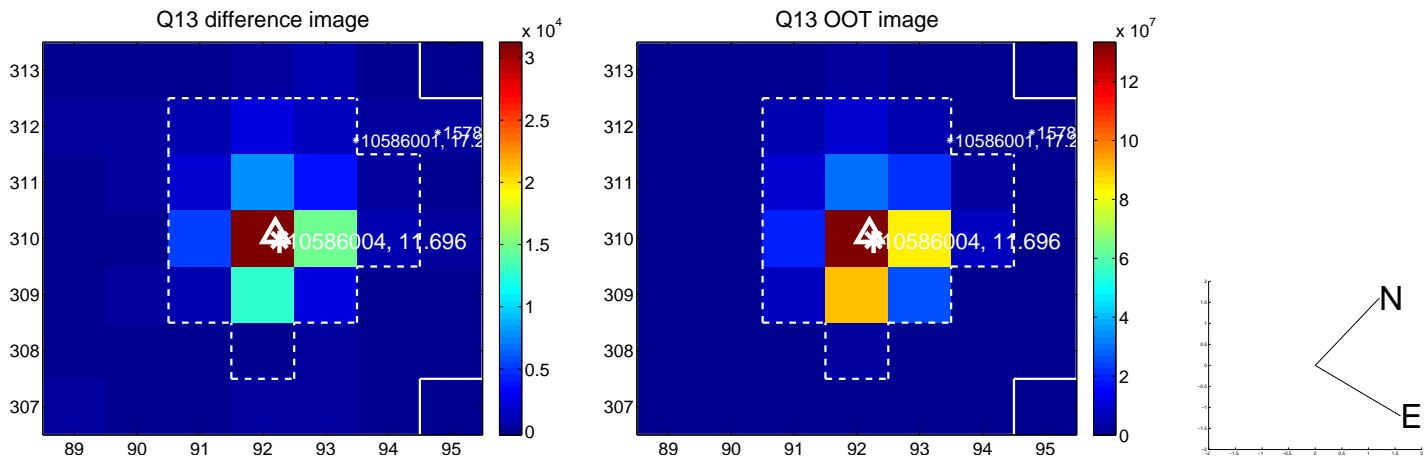
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



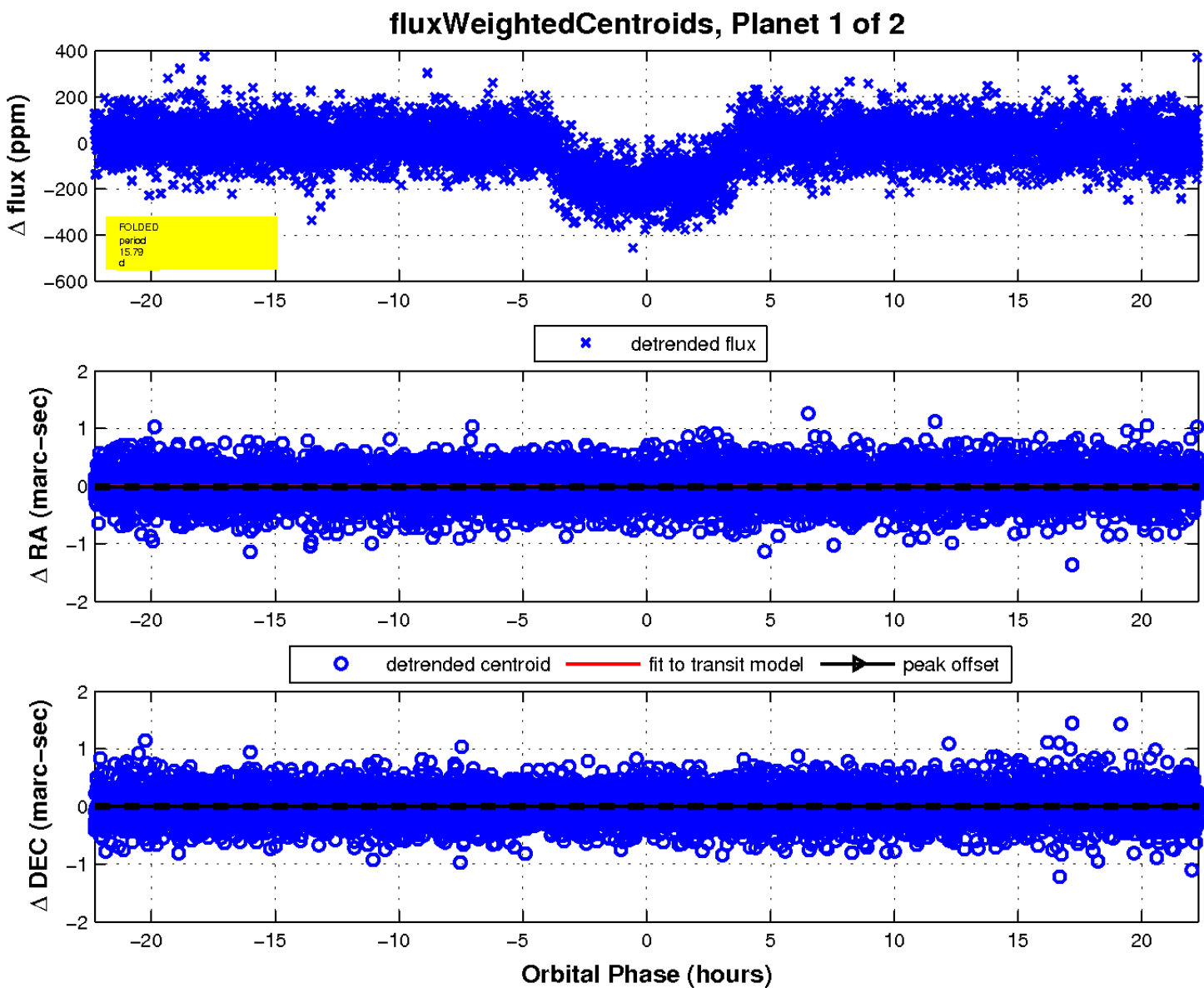
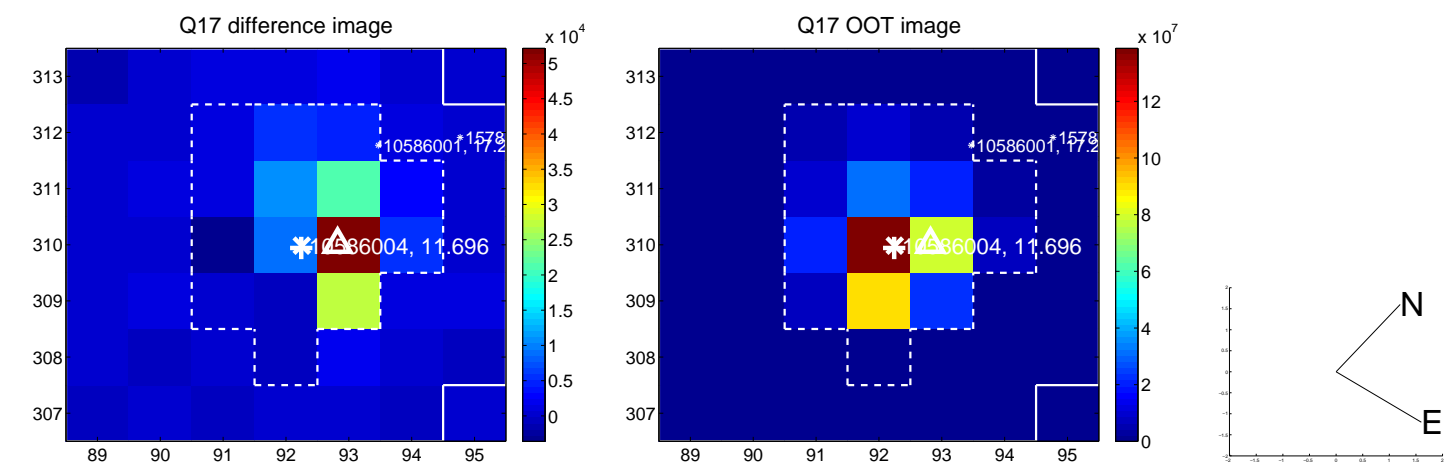
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

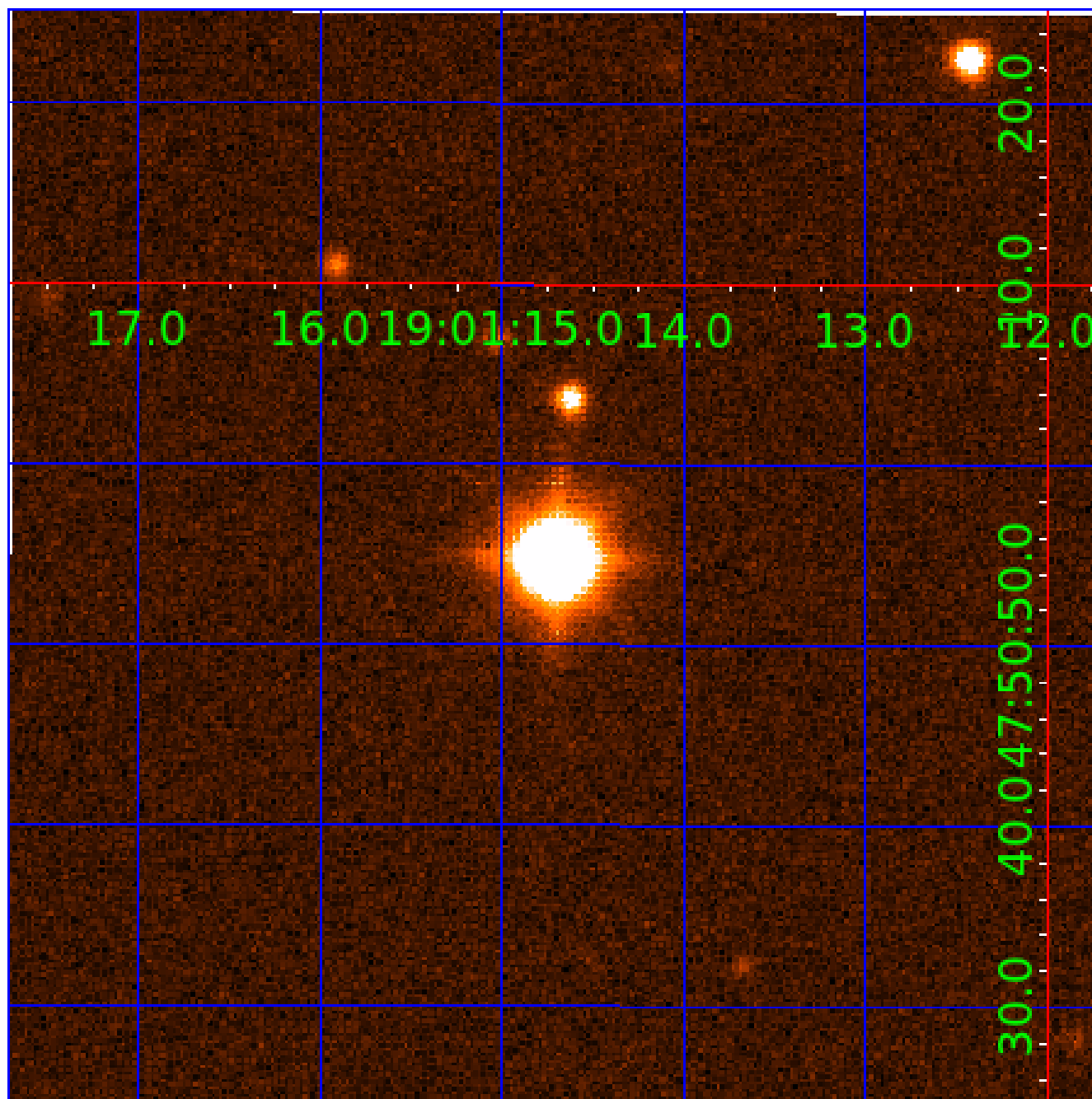


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010586004

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})
010586004-01	OBS	0275.01	15.791956	145.235807	198.2	7.430	48.0	50.1	1.70	5758	2.63	162.32
010586004-02	OBS	0275.02	82.200914	208.784116	217.9	11.046	23.1	26.2	1.70	5758	2.94	17.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010586004-01	OBS	PC	0.95	0	0	0	0	NO_COMMENT
010586004-02	OBS	PC	0.80	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 for comment definitions.

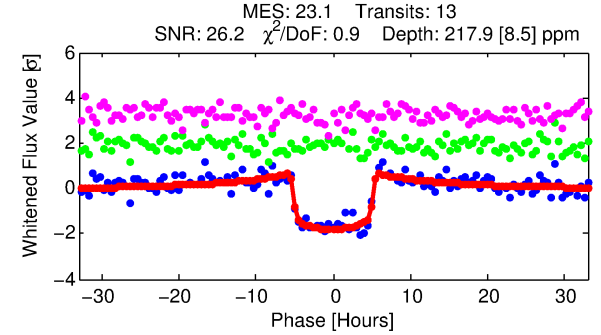
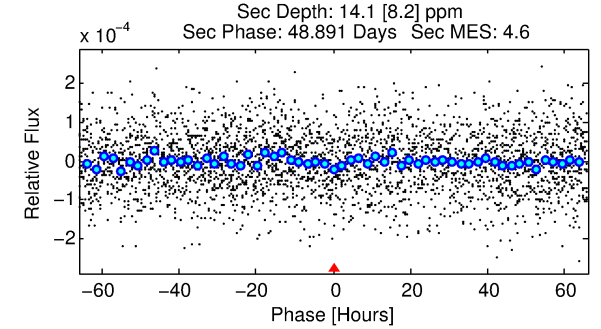
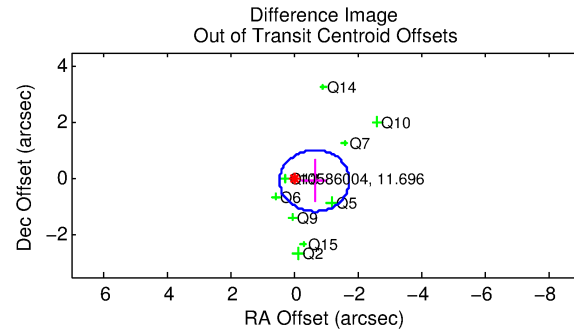
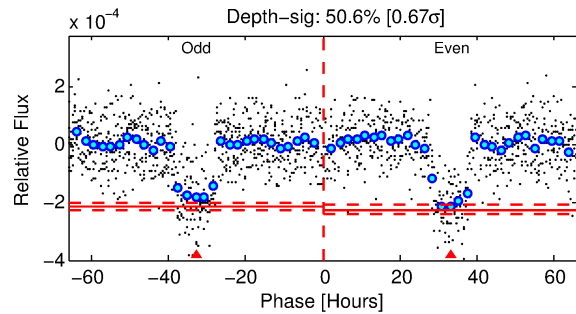
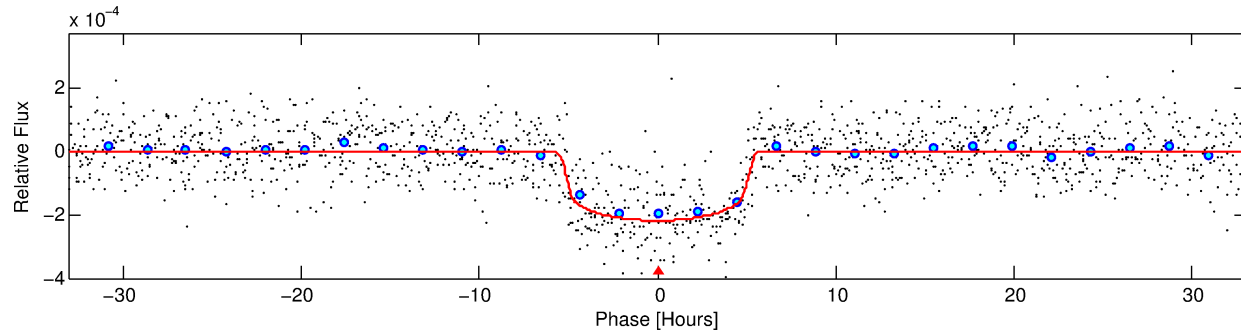
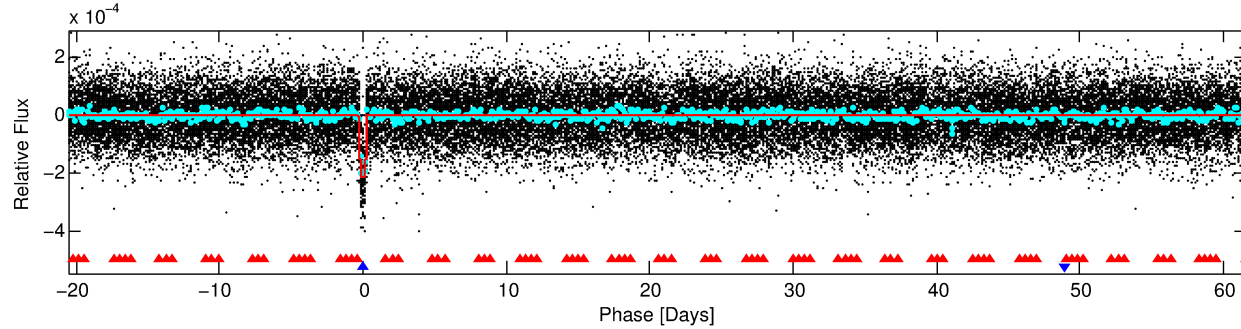
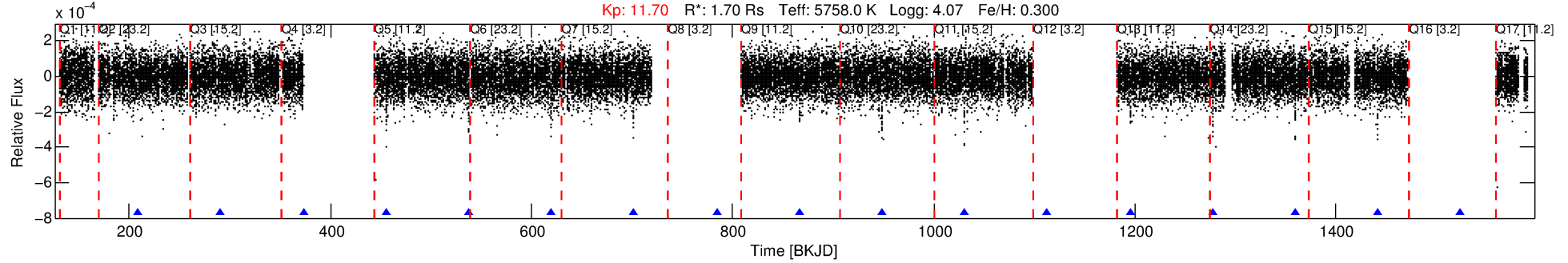
Ephemeris Match Information For 010586004-02

No Significant Match Found

DV One-Page Summary

KIC: 10586004 Candidate: 2 of 2 Period: 82.201 d
KOI: K00275.02 Name: Kepler-129c Corr: 0.978

Kp: 11.70 R*: 1.70 Rs Teff: 5758.0 K Logg: 4.07 Fe/H: 0.300



DV Fit Results:

Period = 82.20091 [0.00064] d
Epoch = 208.7841 [0.0061] BKJD
Rp/R* = 0.0158 [0.0009]
a/R* = 29.11 [7.18]
b = 0.88 [0.07]
Seff = 17.99 [1.56]
Teq = 525 [11] K
Rp = 2.94 [0.27] Re
a = 0.3987 [0.0210] AU
Ag = 142.41 [85.68] [1.65σ]
Teffp = 2805 [421] K [5.42σ]

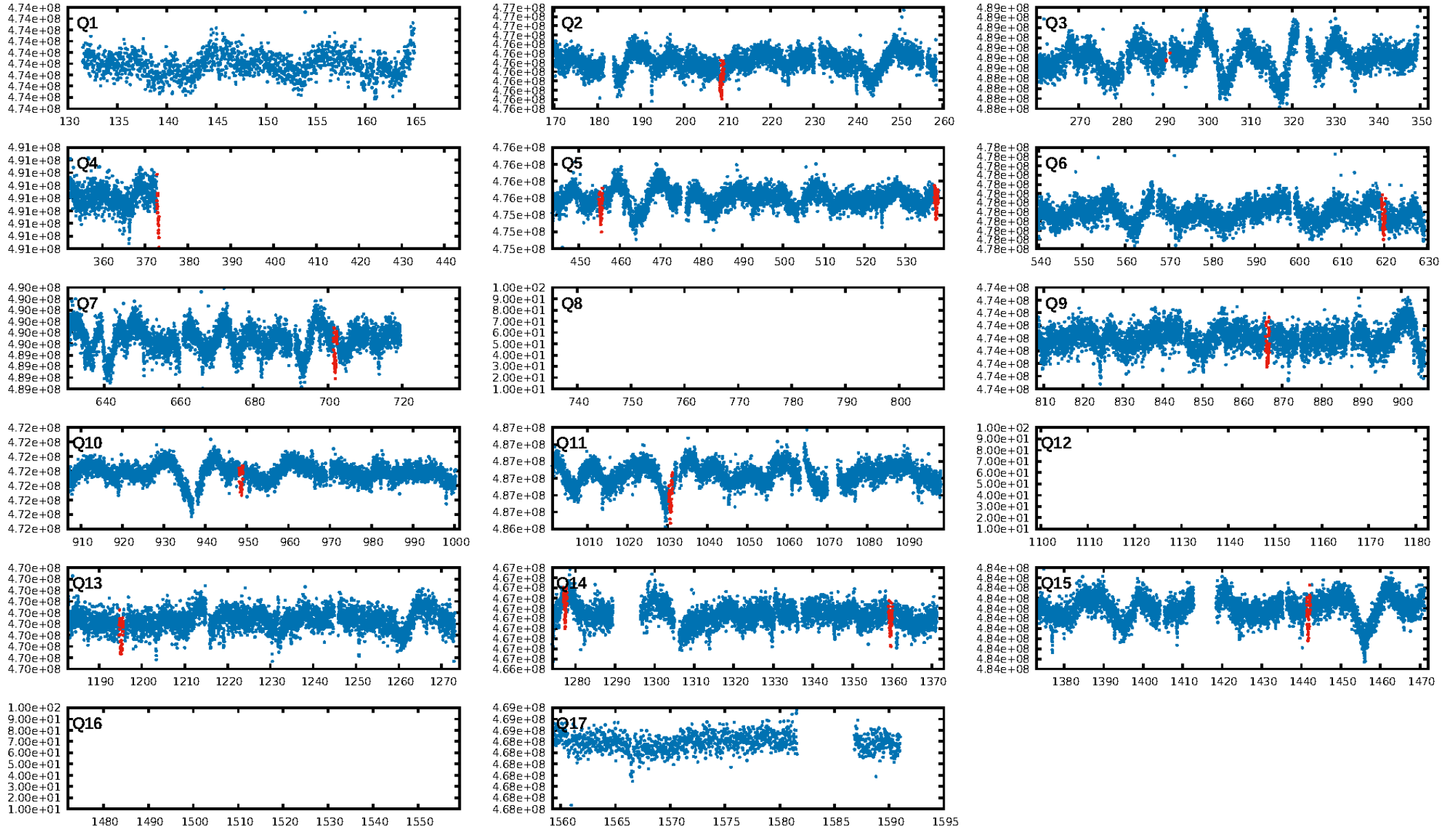
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [119.73σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.44e-87
RollingBand-fgt: 1.00 [12/12]
GhostDiagnostic-chr: 3.6
Centroid-sig: 82.1%
Centroid-so: 0.110 arcsec [0.32σ]
OotOffset-rm: 0.655 arcsec [1.79σ]
OotOffset-st: 4/2/0/3 [9]
KicOffset-rm: 0.665 arcsec [1.69σ]
KicOffset-st: 4/2/0/3 [9]
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DiffImageOverlap-fno: 0.78 [7/9]

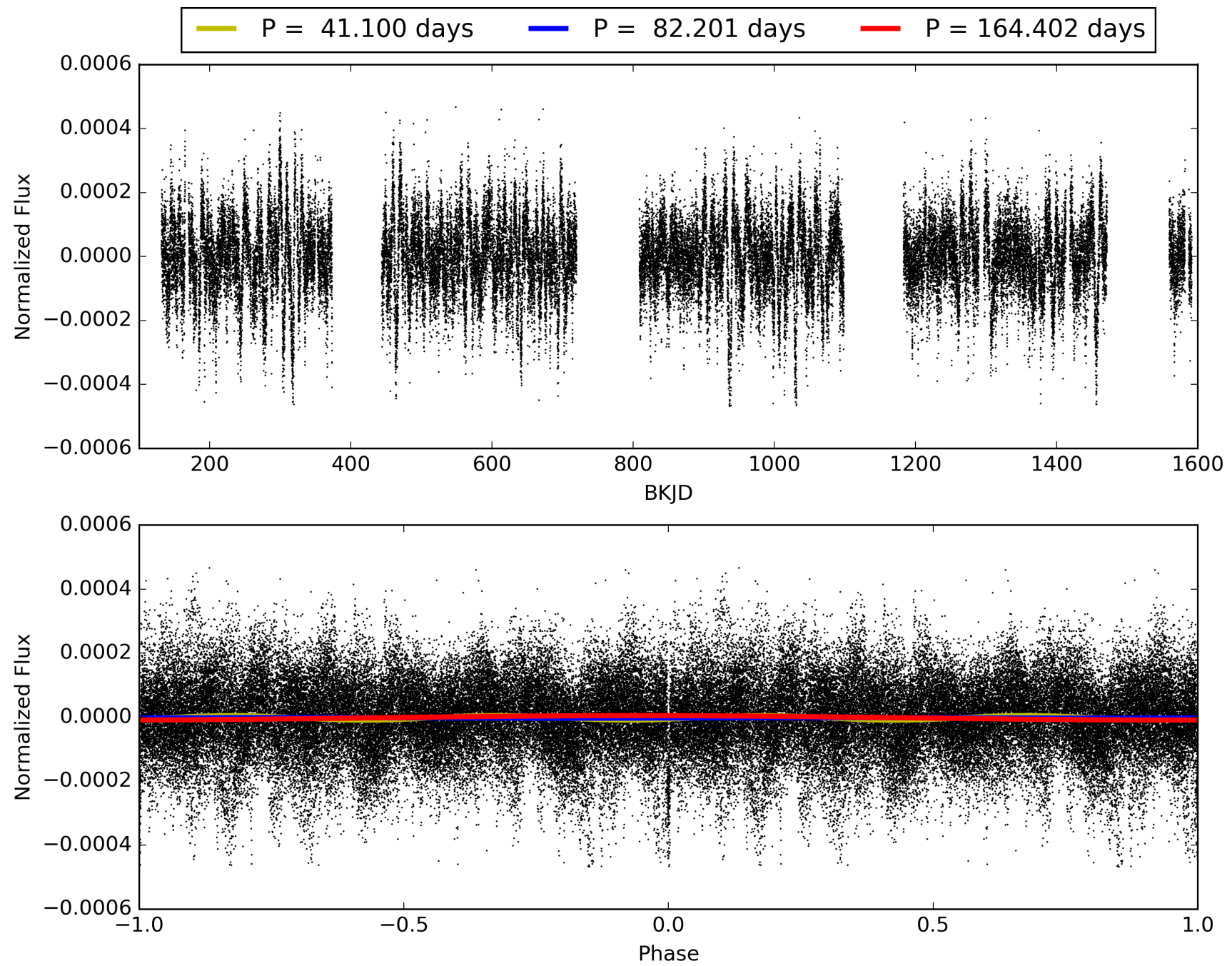
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010586004-02, PDC Light Curves

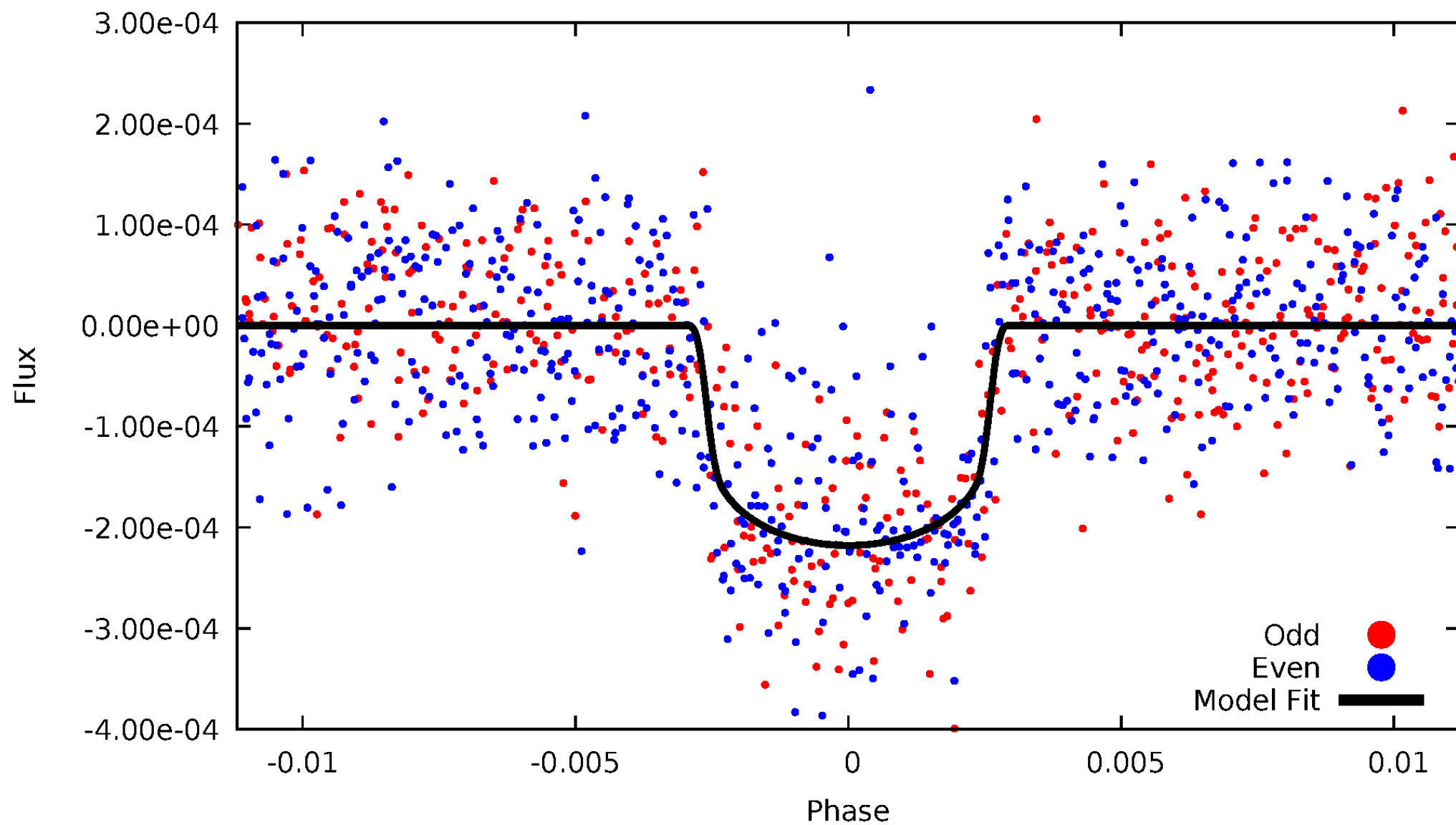


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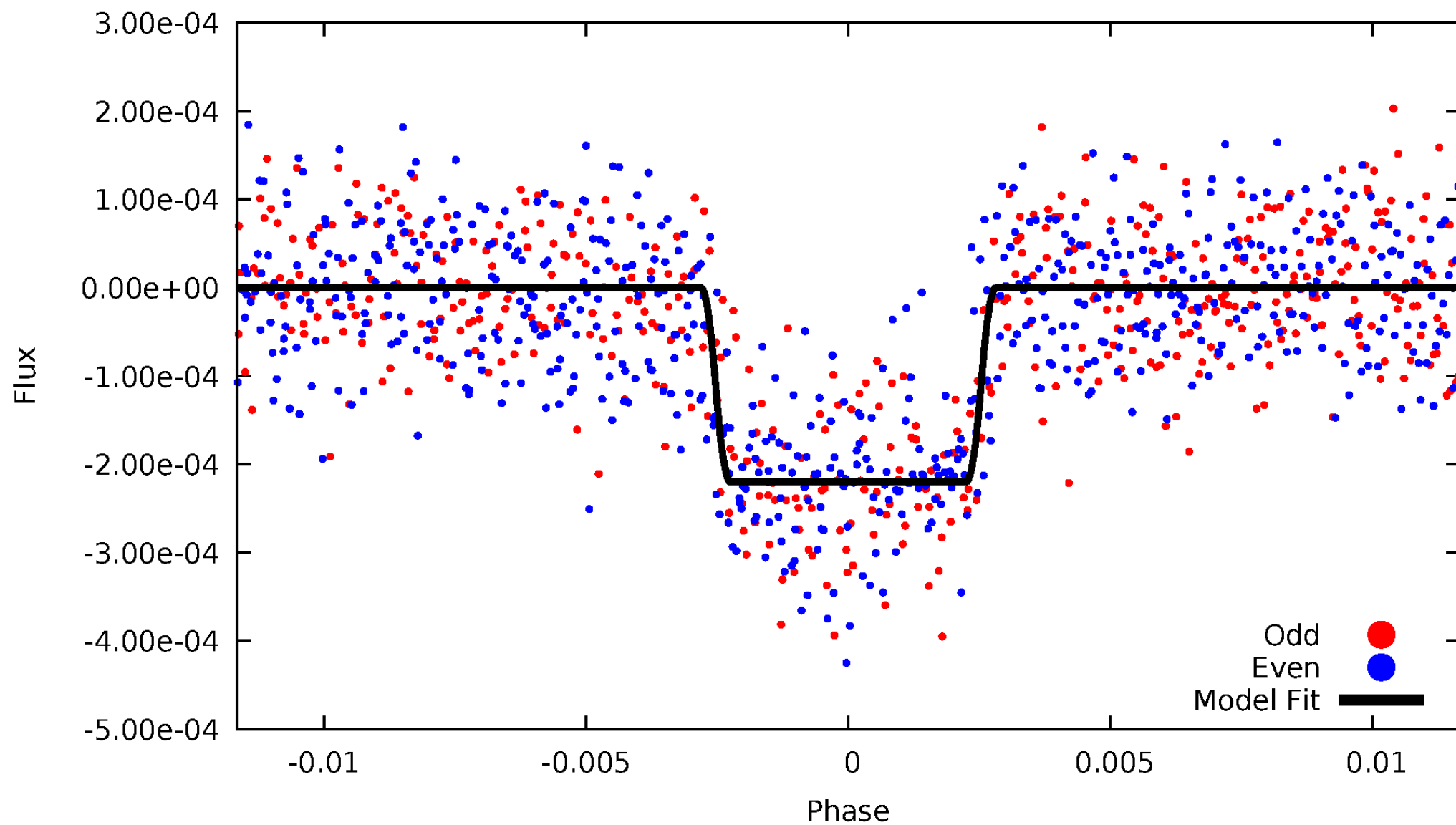
DV Odd/Even

TCE 010586004-02



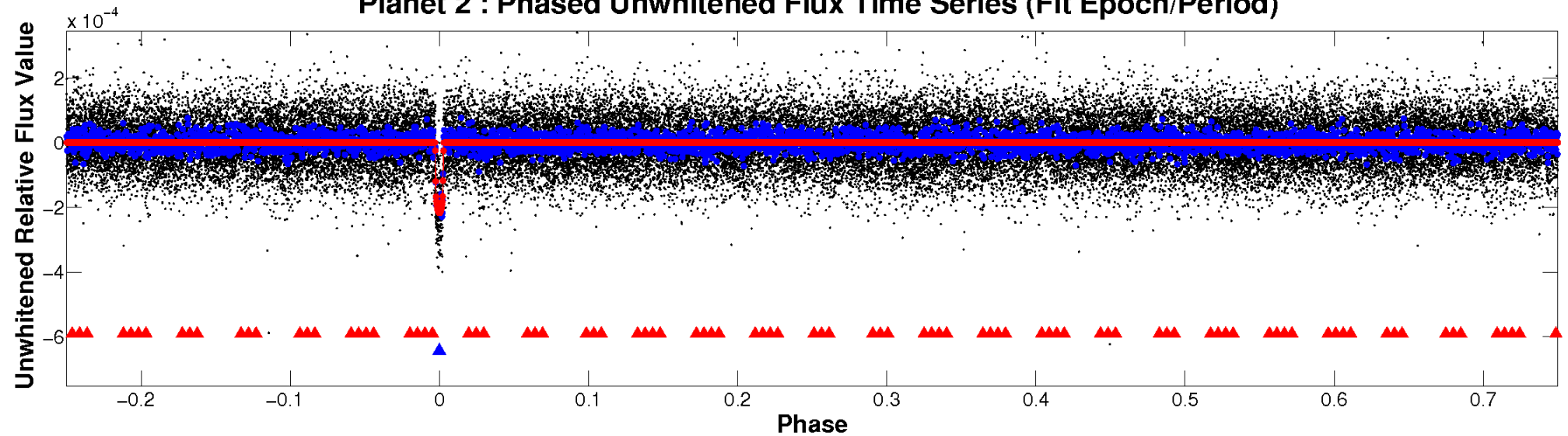
ALT Odd/Even

TCE 010586004-02

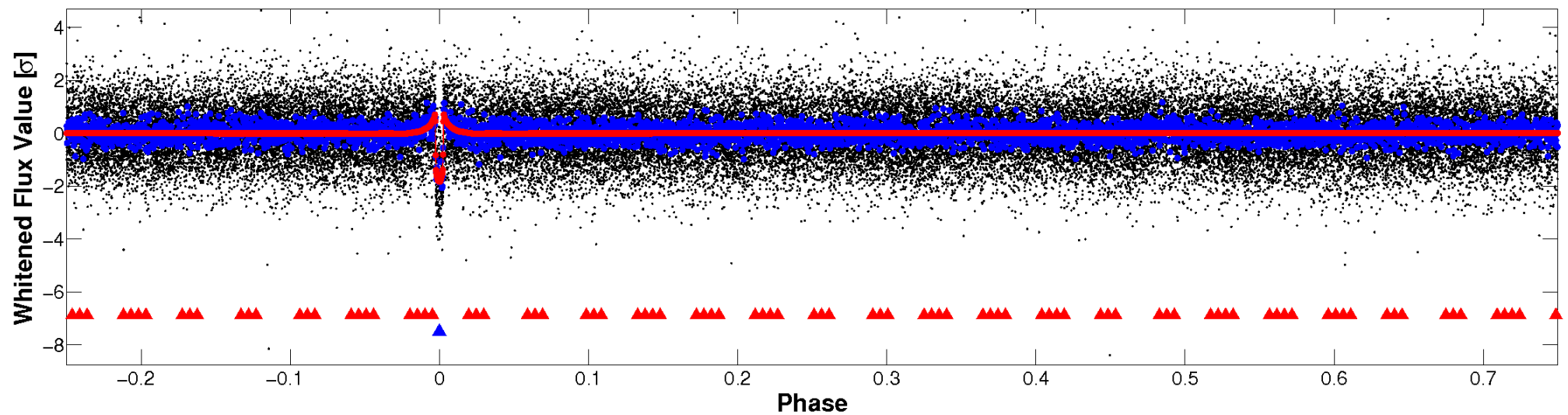


Non-Whitened Vs. Whitened Light Curve

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

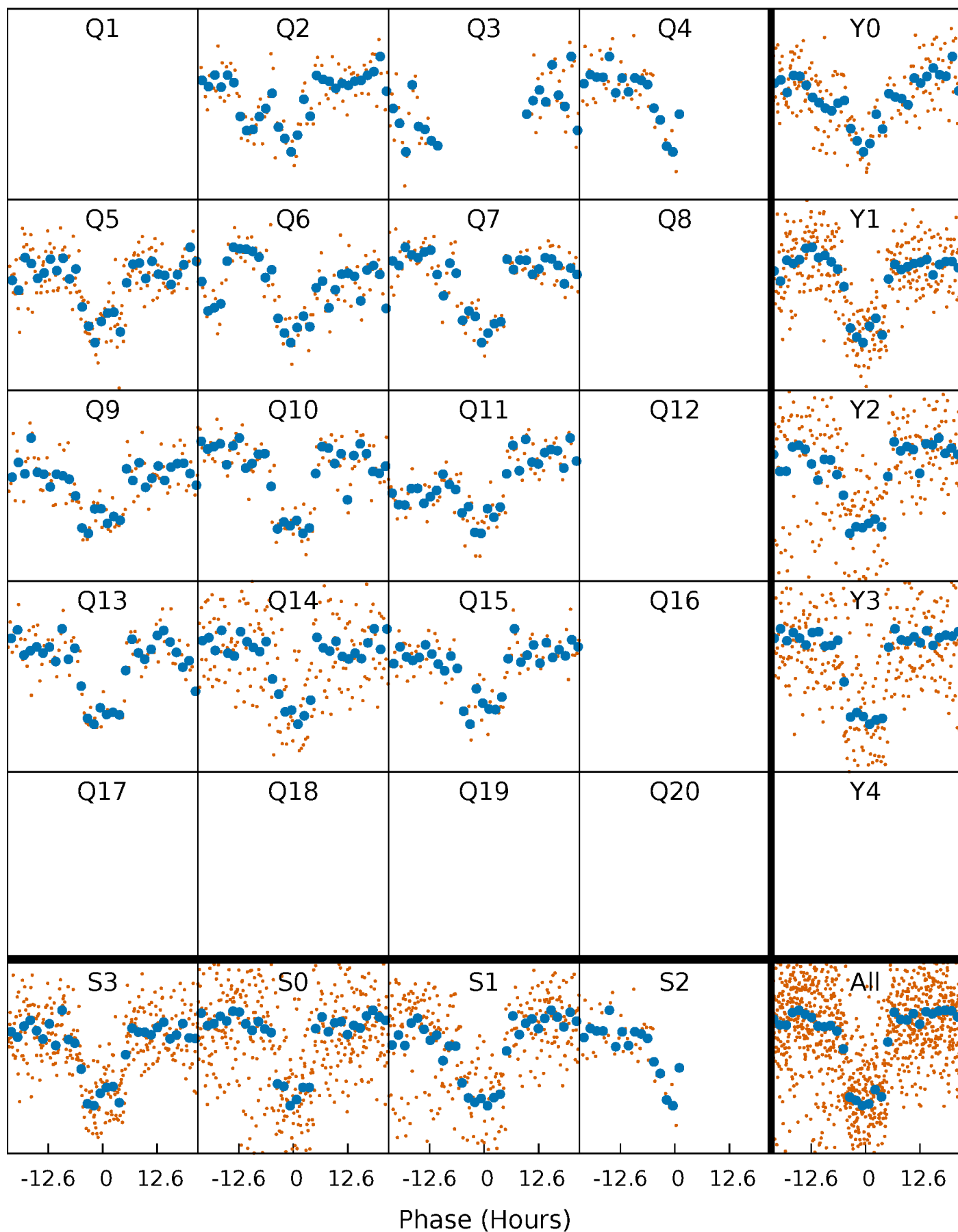


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



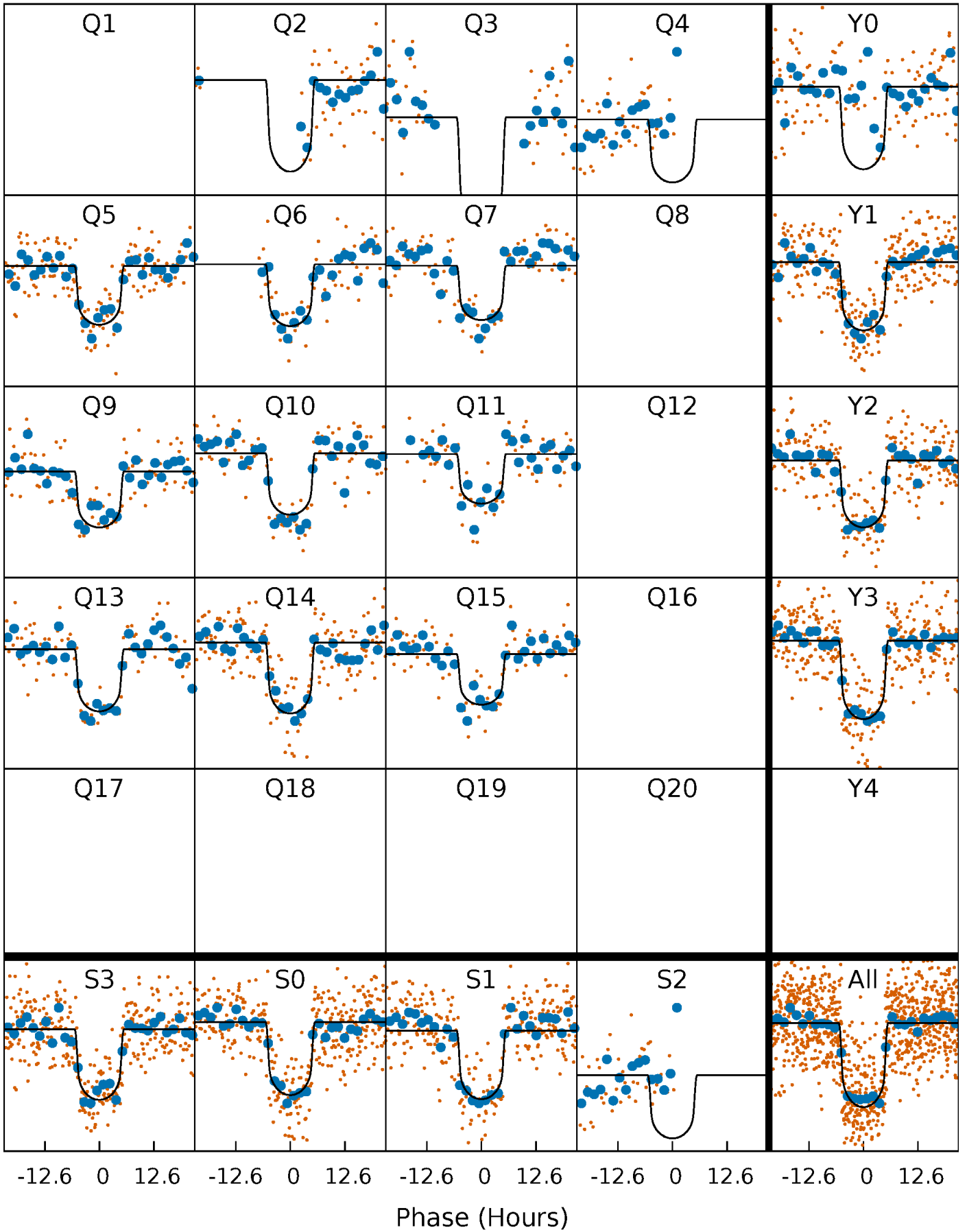
PDC Quarter-Phased Transit Curves

TCE 010586004-02 P= 82.200914 Days $T_0=208.784116$ (BKJD)



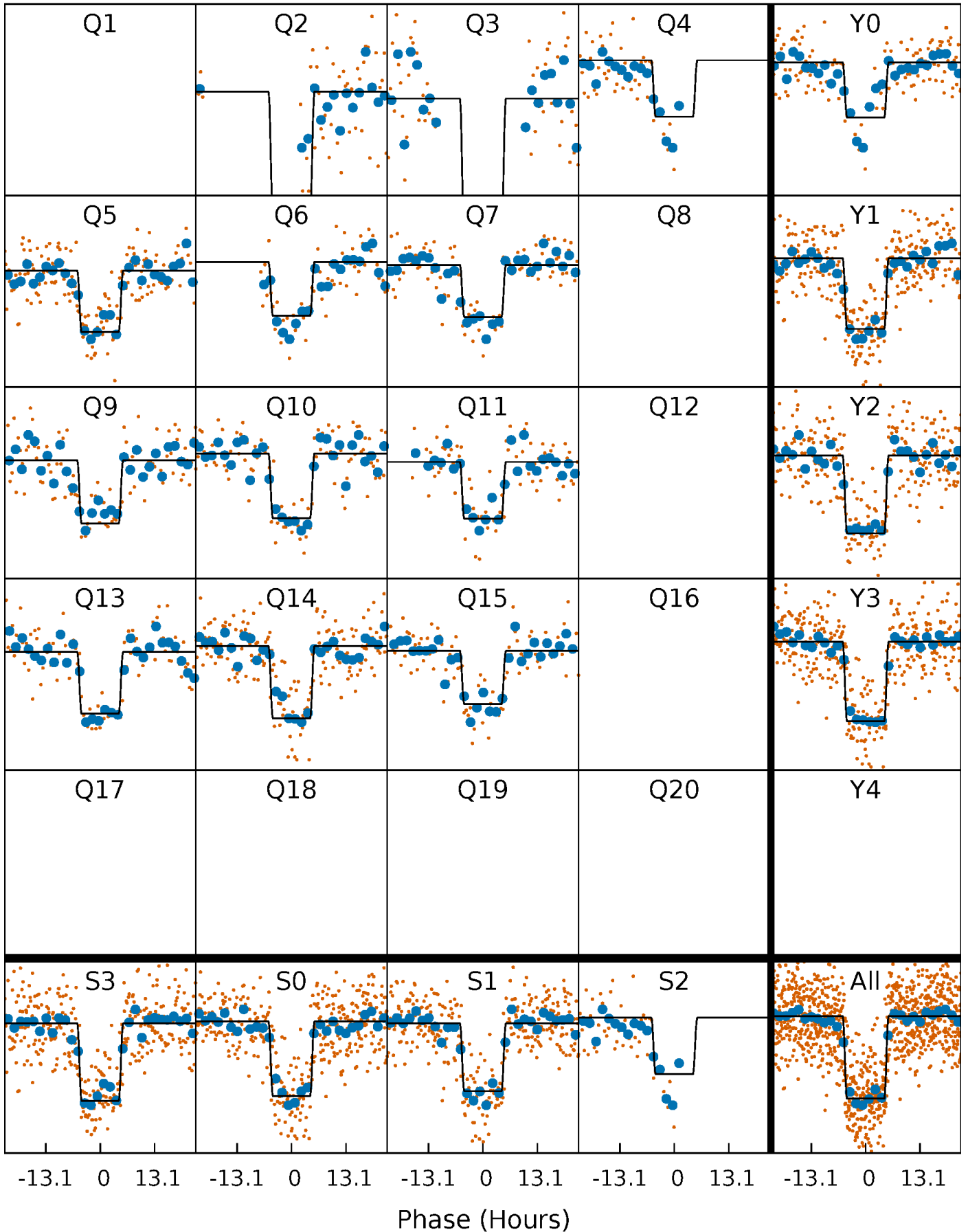
DV Quarter-Phased Transit Curves

TCE 010586004-02 P= 82.200914 Days $T_0=208.784116$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

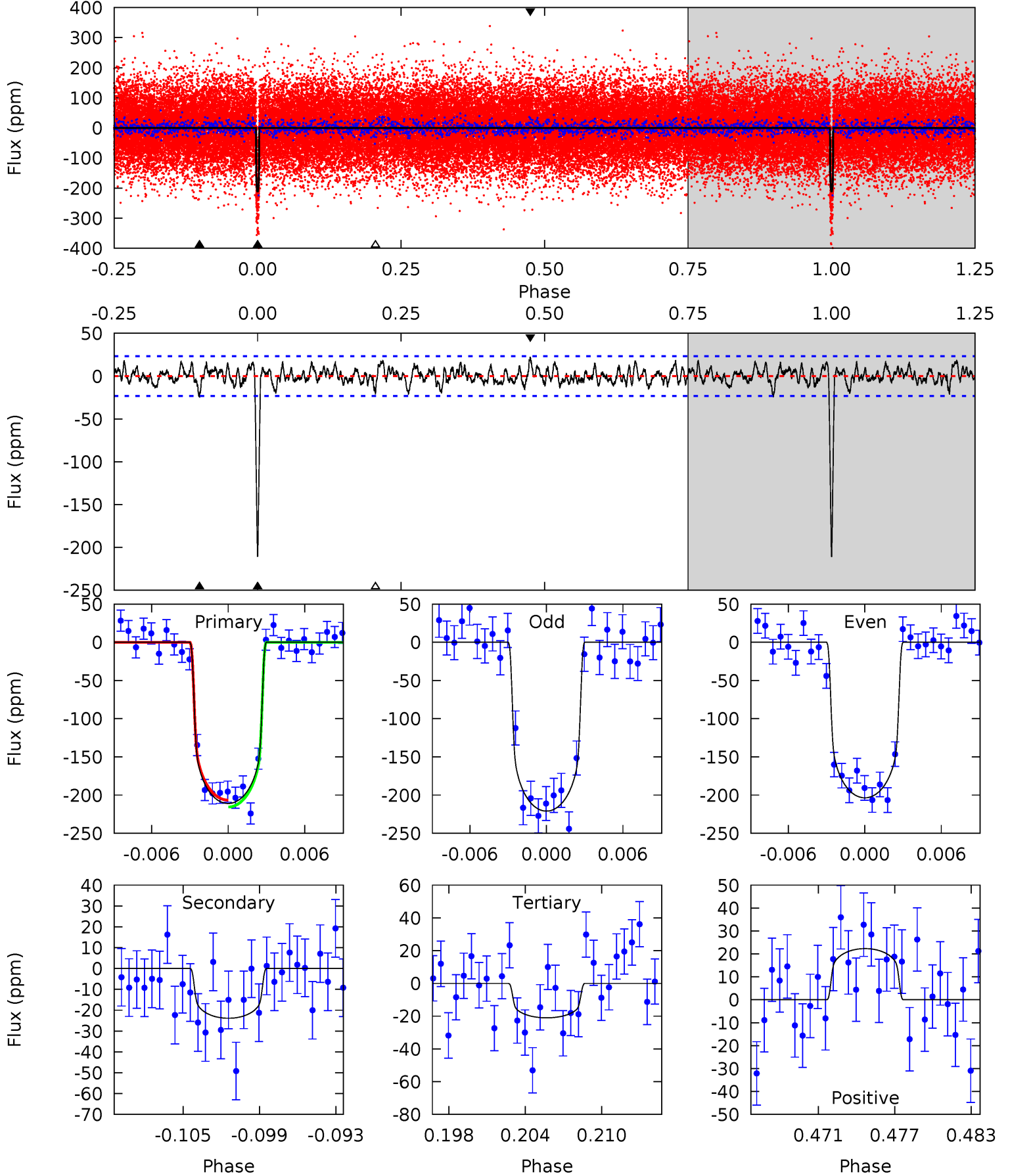
TCE 010586004-02 P= 82.198195 Days $T_0=208.804826$ (BKJD)



DV Model-Shift Uniqueness Test

010586004-02, P = 82.200914 Days, E = 126.583202 Days

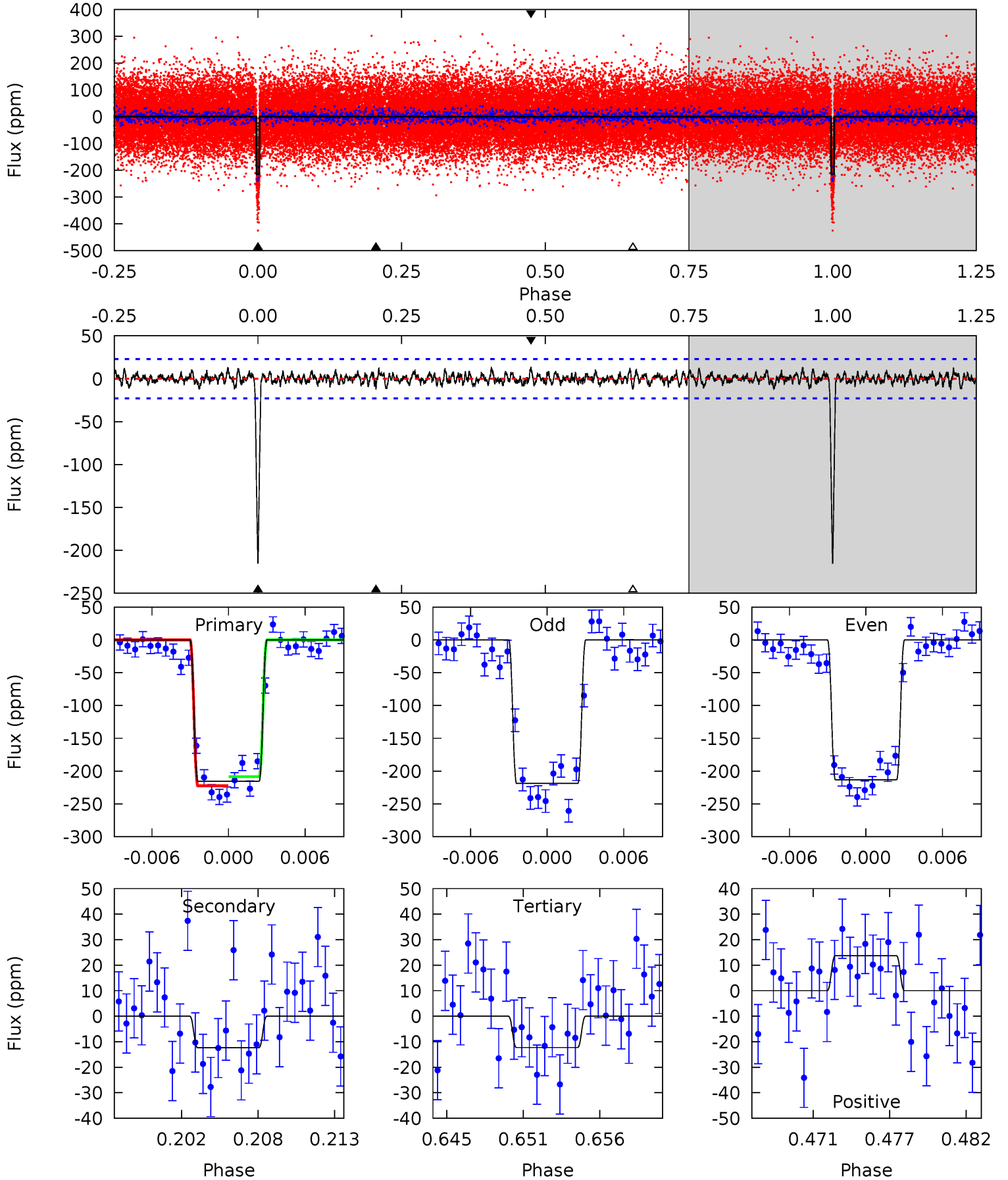
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
46.5	5.26	4.63	4.91	5.13	2.76	1.58	41.8	41.6	0.63	0.35	1.89	0.91	0.10	1.00



Alt Model-Shift Uniqueness Test

010586004-02, P = 82.198195 Days, E = 126.606631 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
48.5	2.78	2.76	3.08	5.14	2.77	0.96	45.7	45.4	0.02	-0.30	0.62	1.03	0.06	1.56



Stellar Parameters For KIC 010586004

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5758^{+77}_{-68}	$4.072^{+0.033}_{-0.027}$	$0.300^{+0.100}_{-0.100}$	$1.704^{+0.083}_{-0.118}$	$1.251^{+0.053}_{-0.141}$	$0.356^{+0.053}_{-0.034}$
	+1%/-1%	+1%/-1%	+33%/-33%	+5%/-7%	+4%/-11%	+15%/-10%
Source	SPE72	AST69	SPE72	DSEP		

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

Secondary Eclipse Parameters for KIC 010586004-02 / KOI 0275.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-24 ± 5	$2.93^{+0.18}_{-0.20}$	734^{+13}_{-14}	3627^{+138}_{-135}	240^{+59}_{-50}
Alt.	-12 ± 4	$2.75^{+0.20}_{-0.21}$	733^{+13}_{-13}	3336^{+192}_{-217}	141^{+59}_{-51}

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

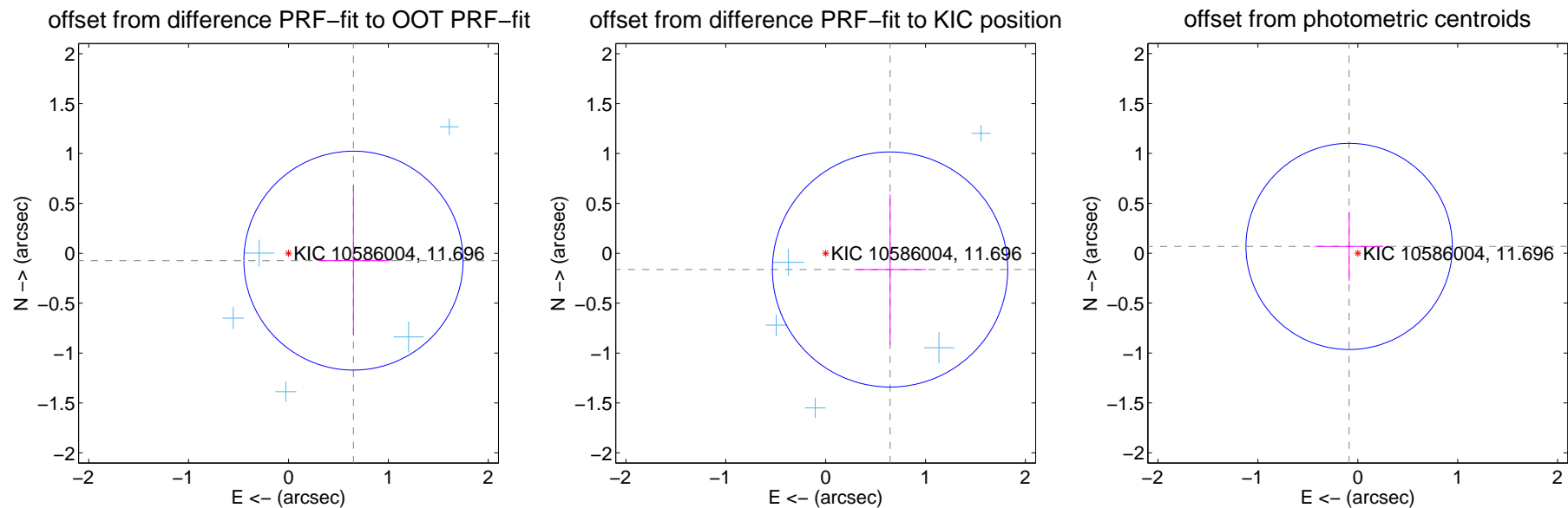
DV Centroid Data

Supplemental centroid analysis for 010586004-02. **Kepler magnitude: 11.70.** Transit SNR 26.18

There are 8 quarters with good PRF difference image offsets

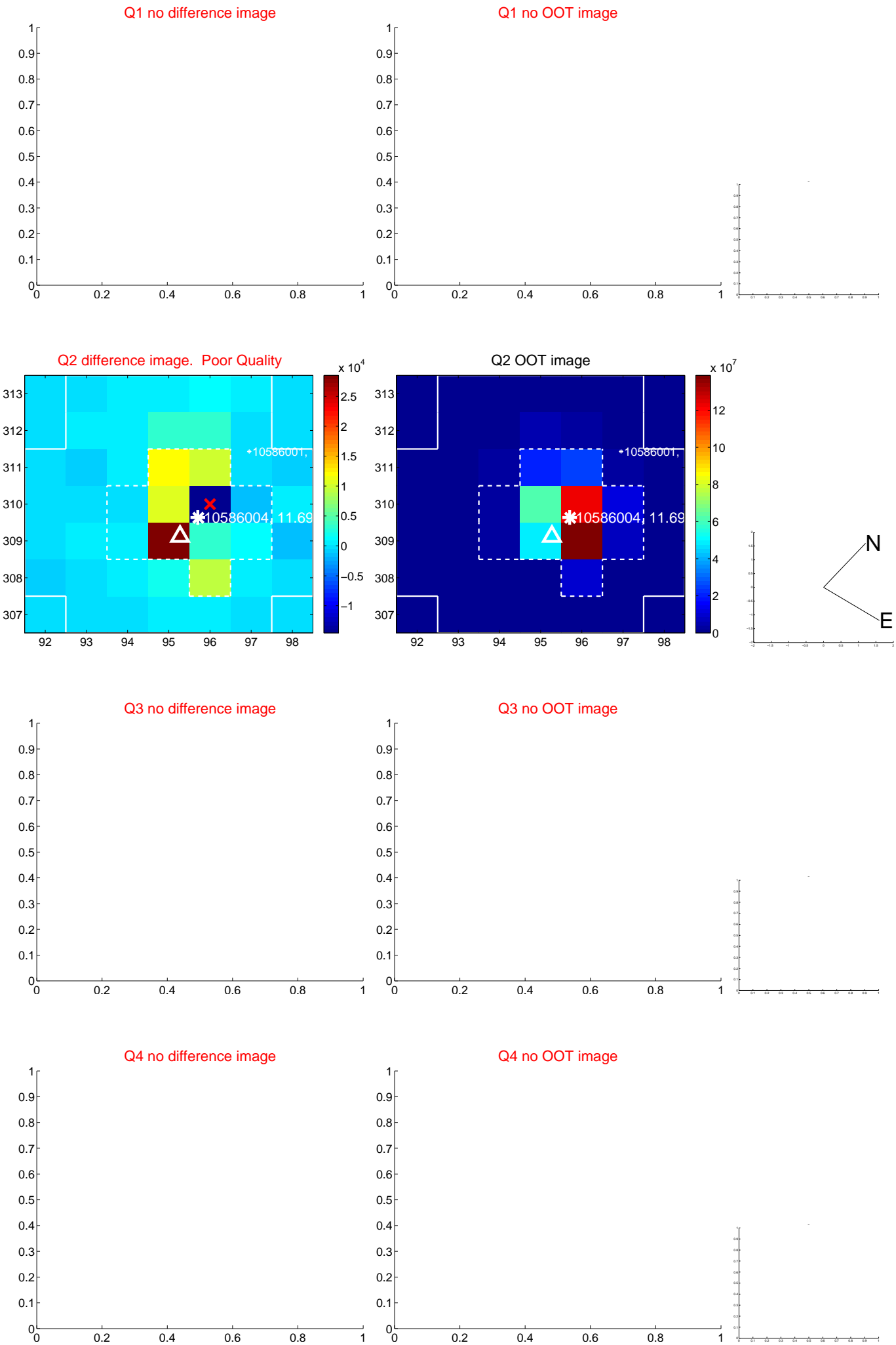
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.655 ± 0.366	1.79	-0.651 ± 0.358	-0.074 ± 0.750
PRF-fit source offset from KIC position	0.665 ± 0.393	1.69	-0.645 ± 0.358	-0.162 ± 0.752
photometric centroid source offset	0.11 ± 0.34	0.32	0.09 ± 0.34	0.07 ± 0.35

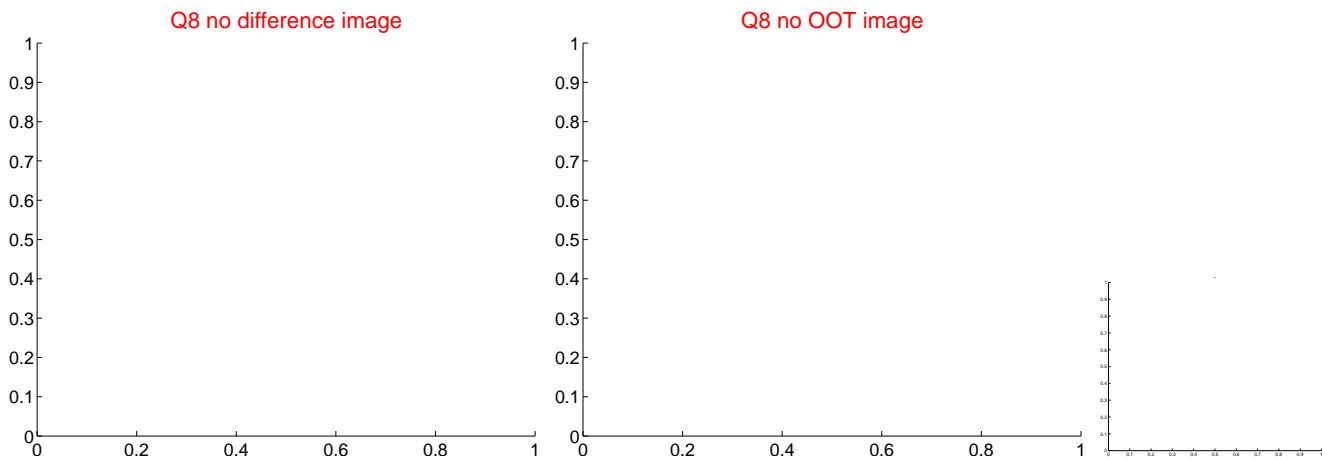
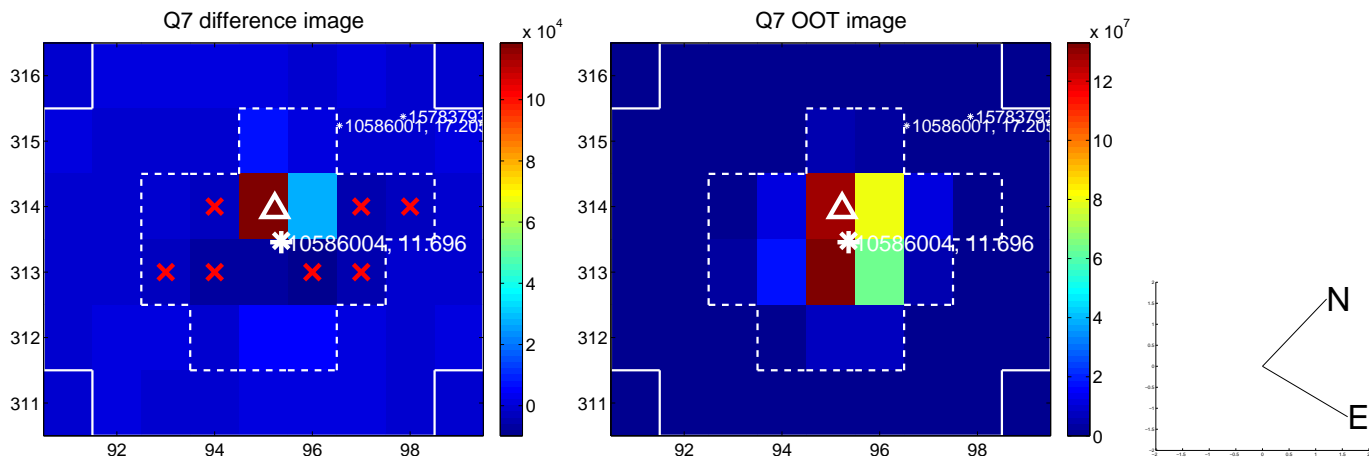
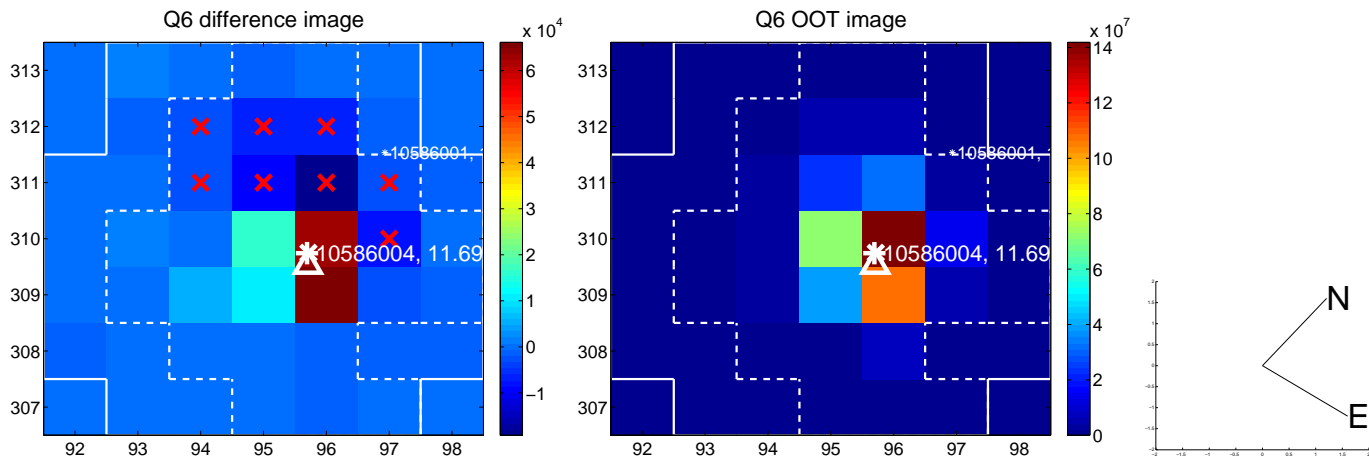
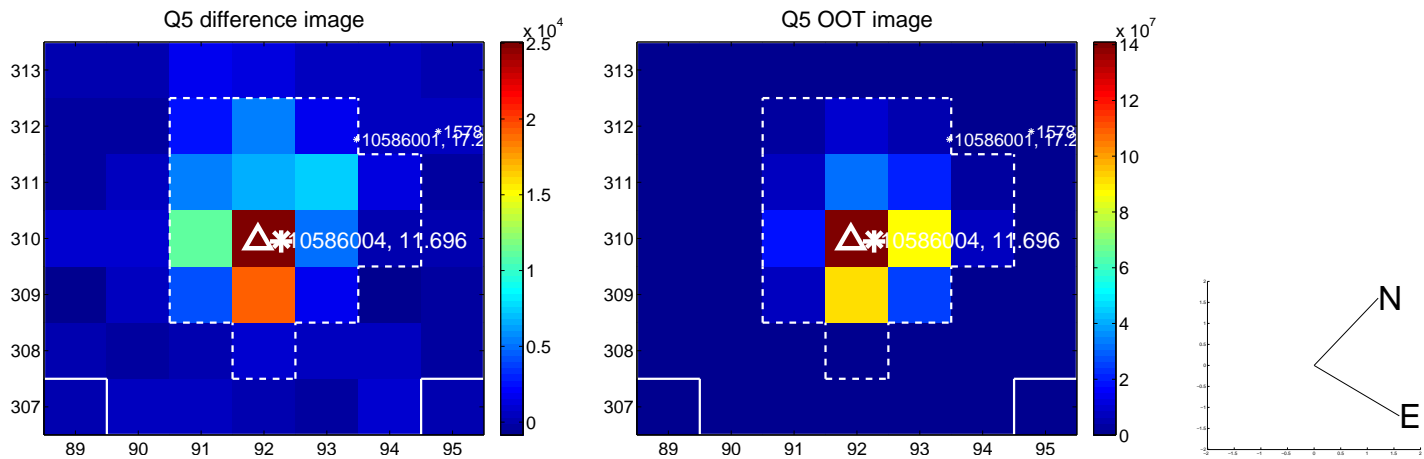


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

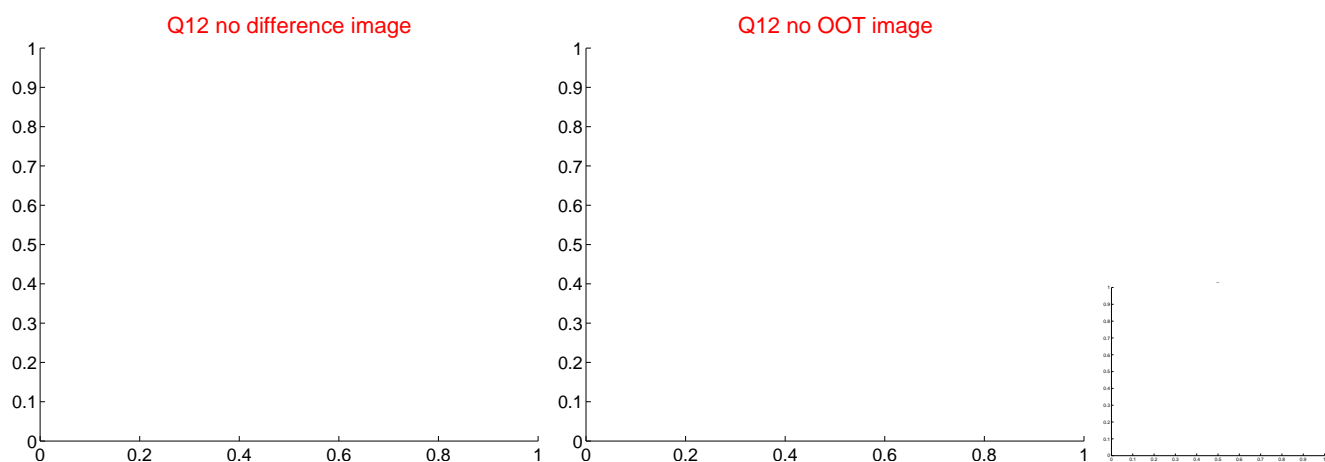
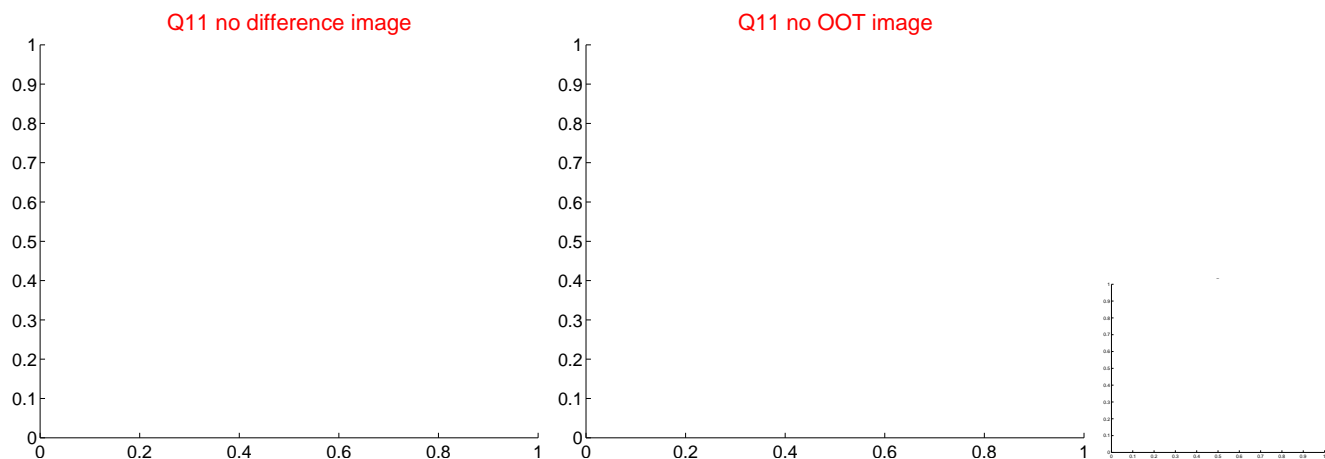
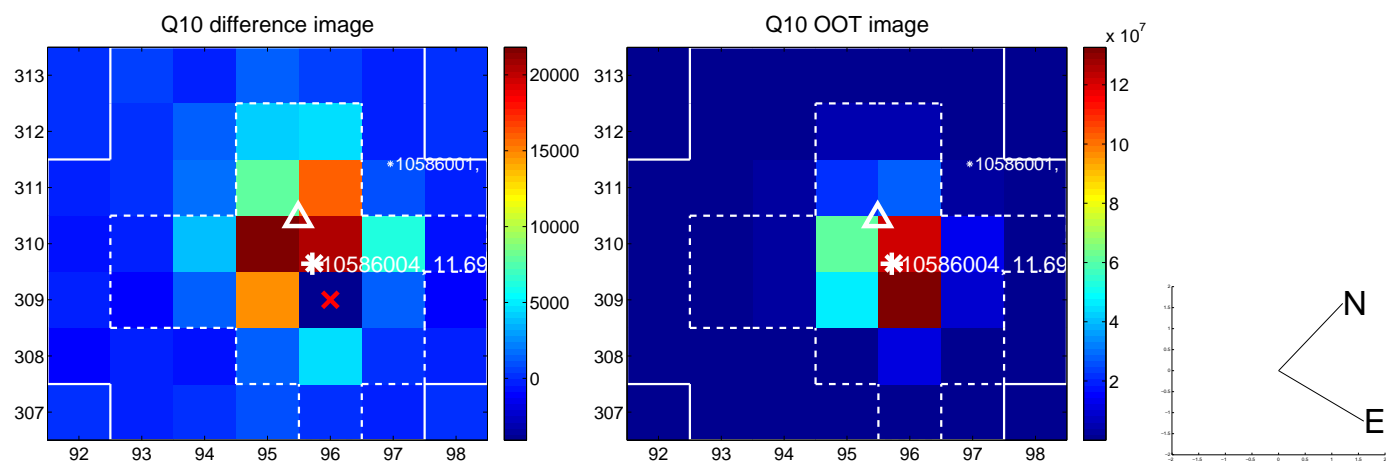
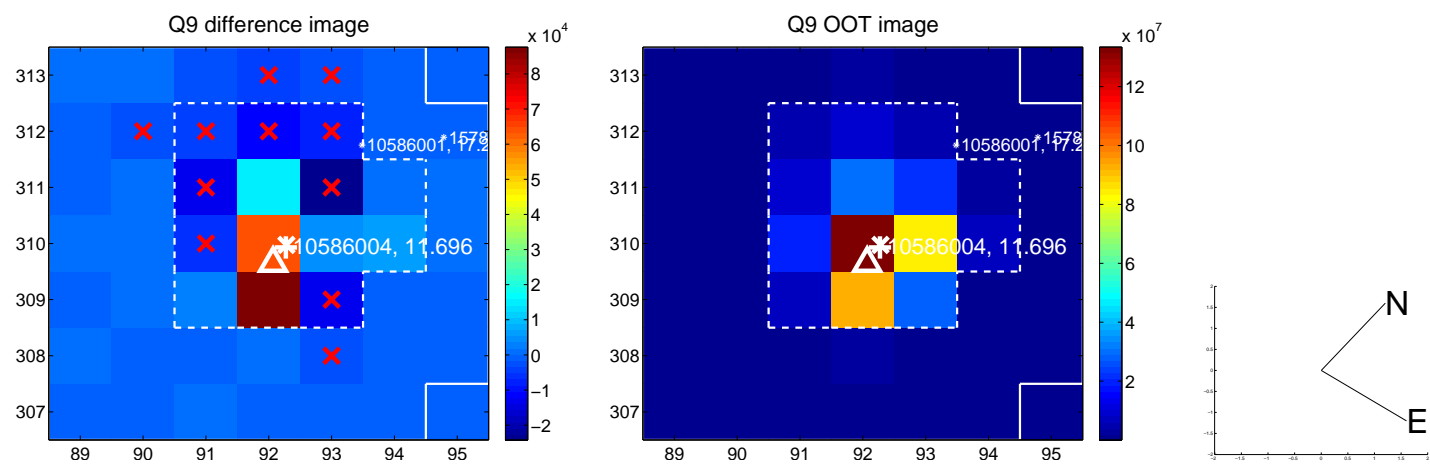
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



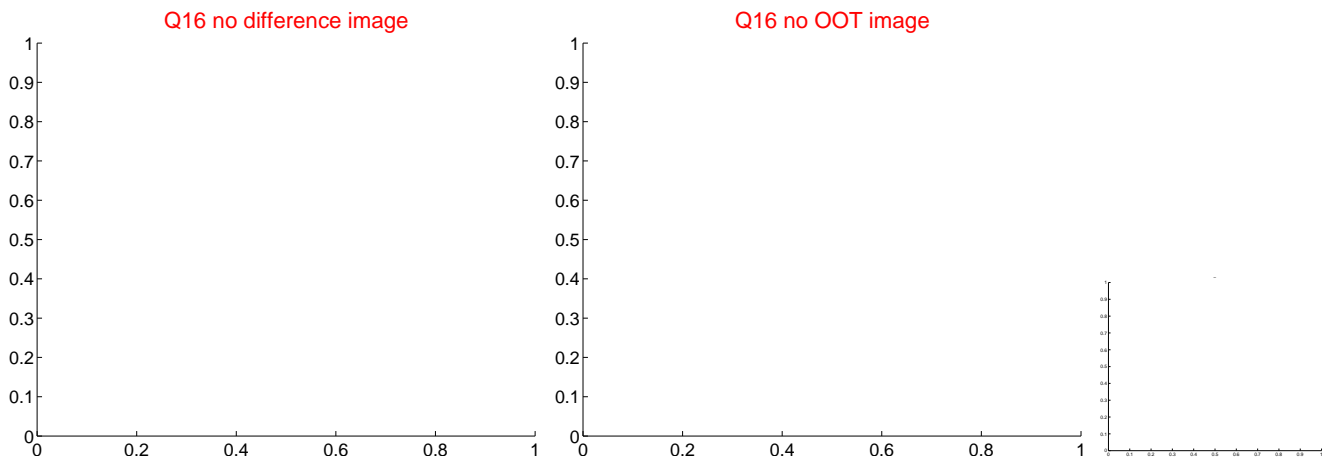
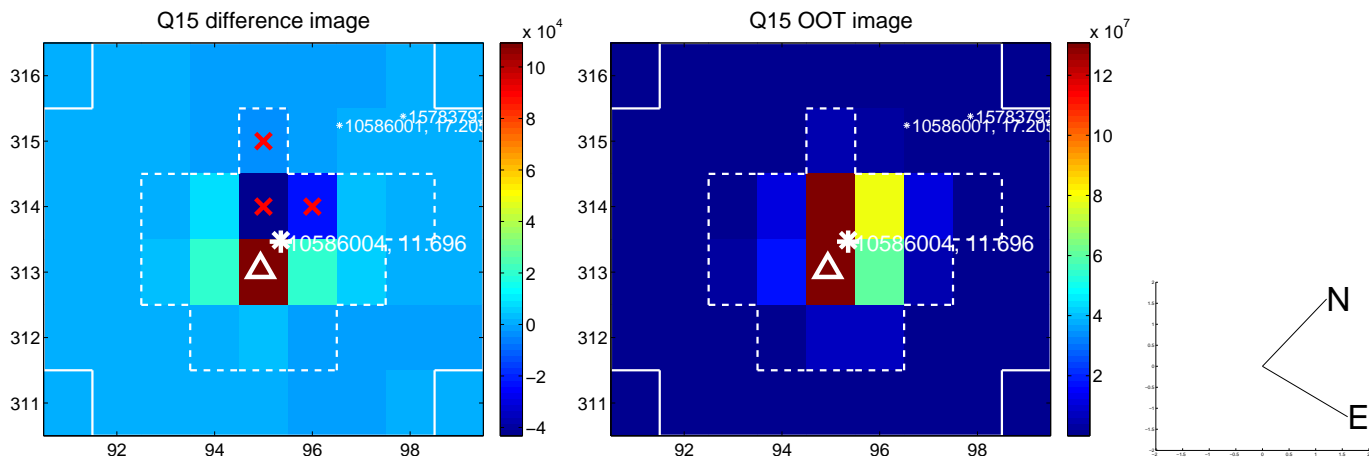
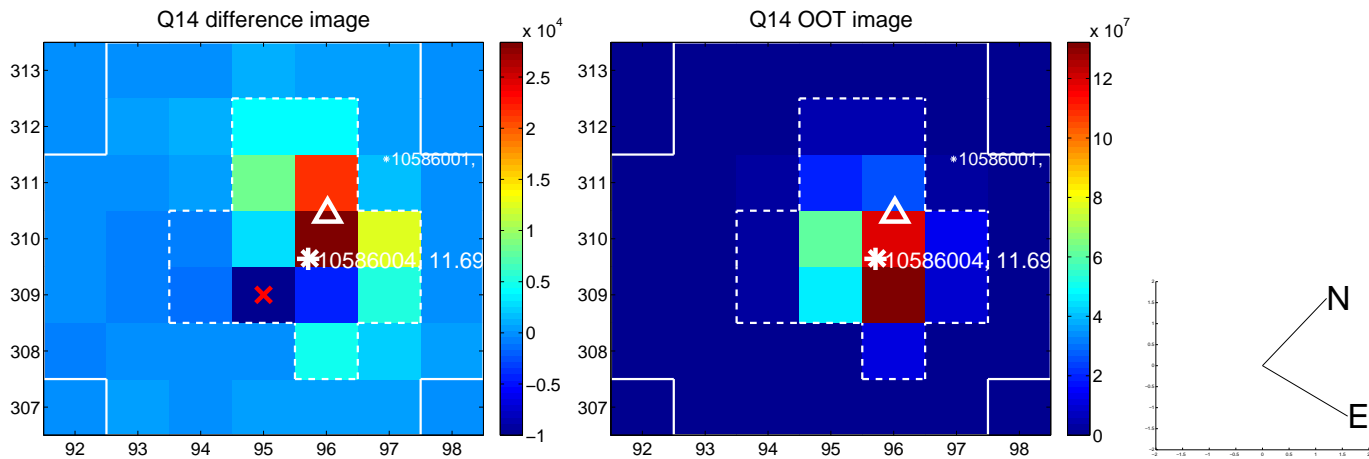
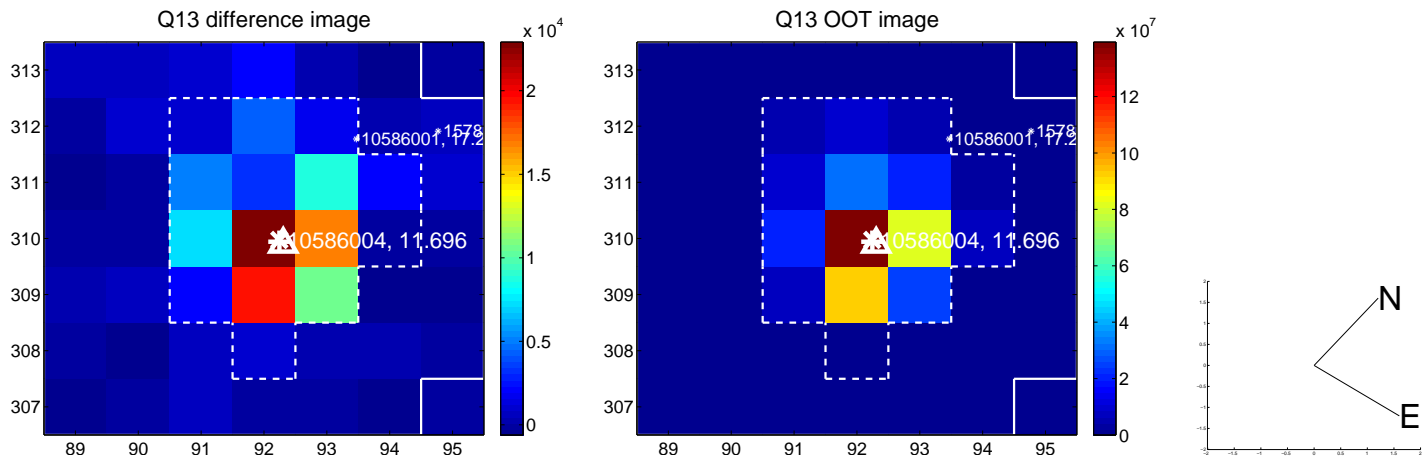
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



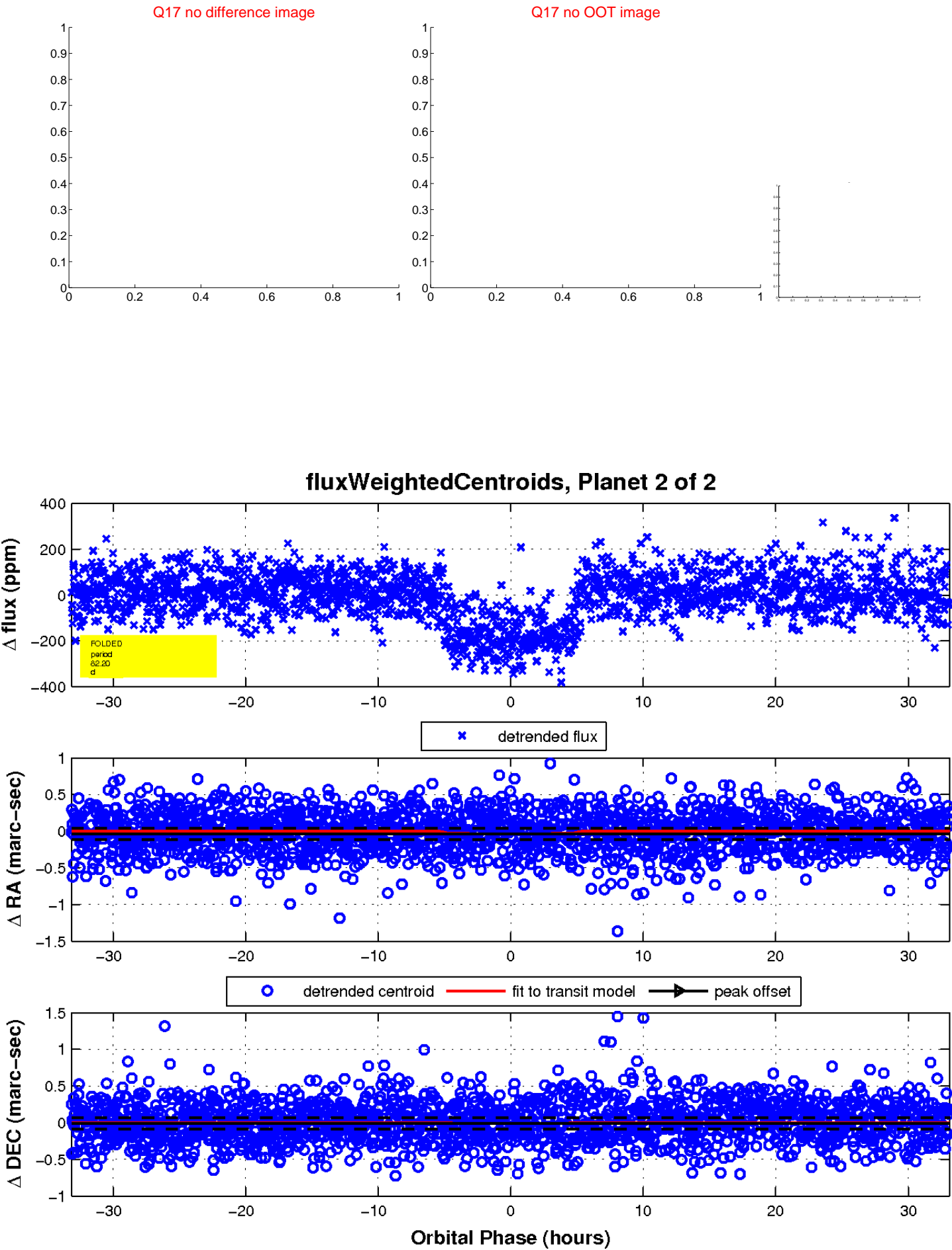
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

