

KIC 006422155

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})
006422155-01	OBS	0510.01	2.940304	131.681475	468.6	2.826	38.7	43.8	1.05	5527	2.77	590.05
006422155-02	OBS	0510.02	6.388992	137.142449	527.7	3.566	32.1	35.5	1.05	5527	2.91	209.65
006422155-03	OBS	0510.03	14.627146	136.233648	379.1	3.737	16.0	17.1	1.05	5527	2.44	69.48
006422155-04	OBS	0510.04	35.118505	152.124269	561.0	3.870	14.5	16.2	1.05	5527	2.78	21.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006422155-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006422155-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006422155-03	OBS	PC	0.93	0	0	0	0	NO_COMMENT
006422155-04	OBS	PC	1.00	0	0	0	0	NO_COMMENT

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

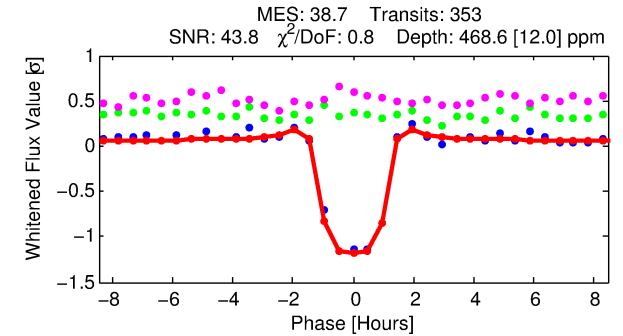
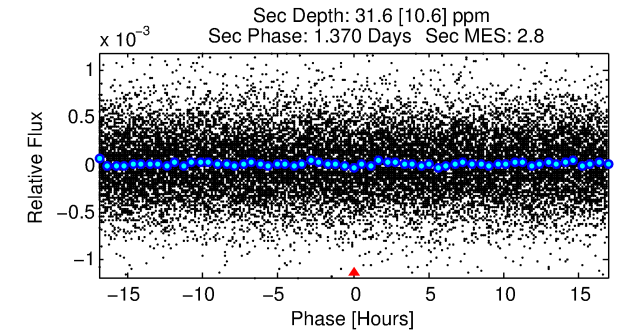
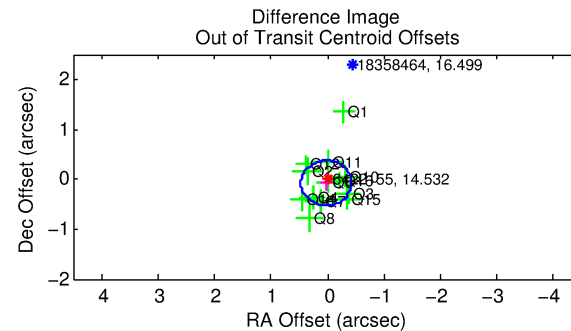
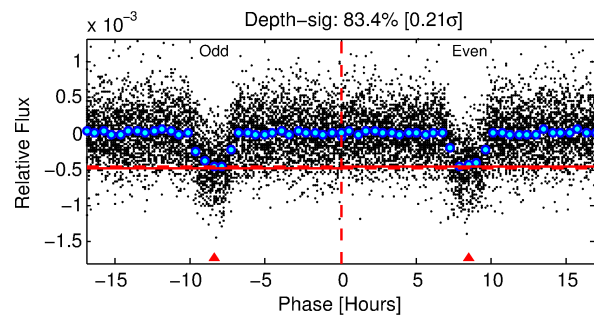
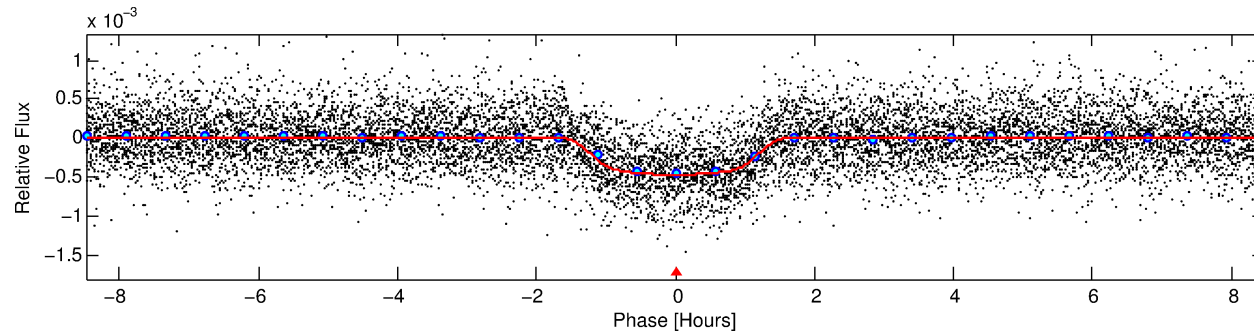
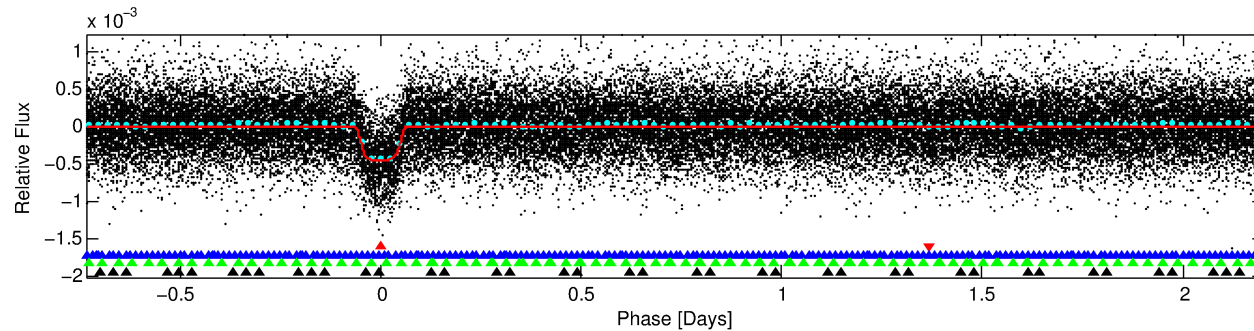
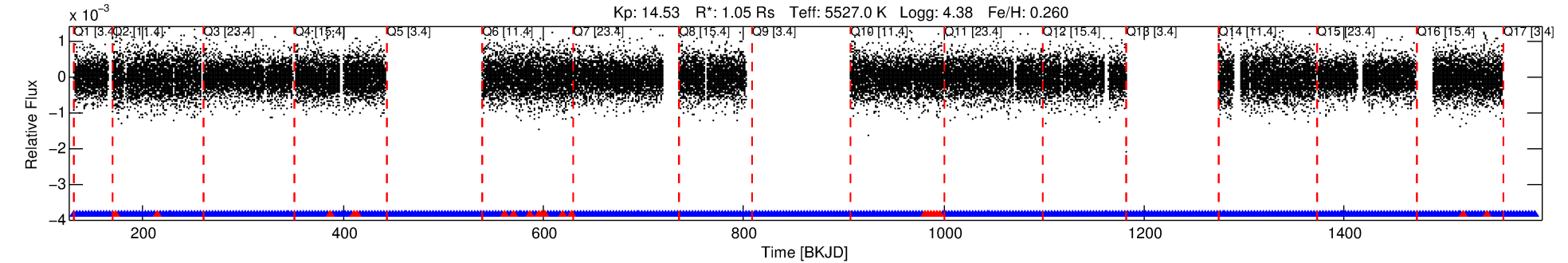
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006422155-01

No Significant Match Found

Kp: 14.53 R*: 1.05 Rs Teff: 5527.0 K Logg: 4.38 Fe/H: 0.260



DV Fit Results:

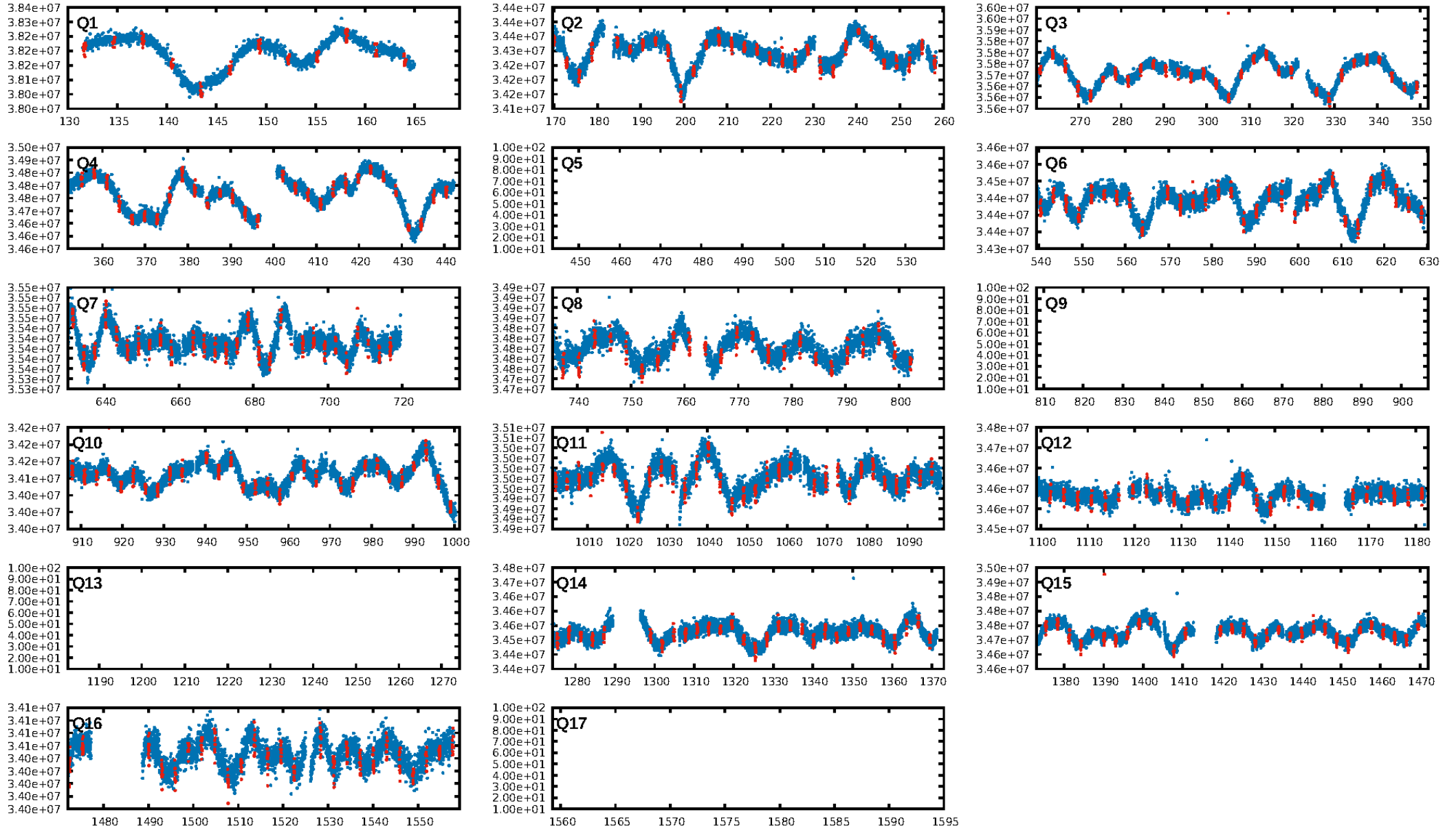
Period = 2.94030 [0.00000] d
Epoch = 131.6815 [0.0008] BKJD
Rp/R* = 0.0241 [0.0016]
a/R* = 3.89 [1.04]
b = 0.91 [0.06]
Seff = 590.05 [124.06]
Teq = 1257 [66] K
Rp = 2.77 [0.44] Re
a = 0.0397 [0.0051] AU
Ag = 3.58 [1.47] [1.76σ]
Teffp = 2672 [247] K [5.53σ]

DV Diagnostic Results:

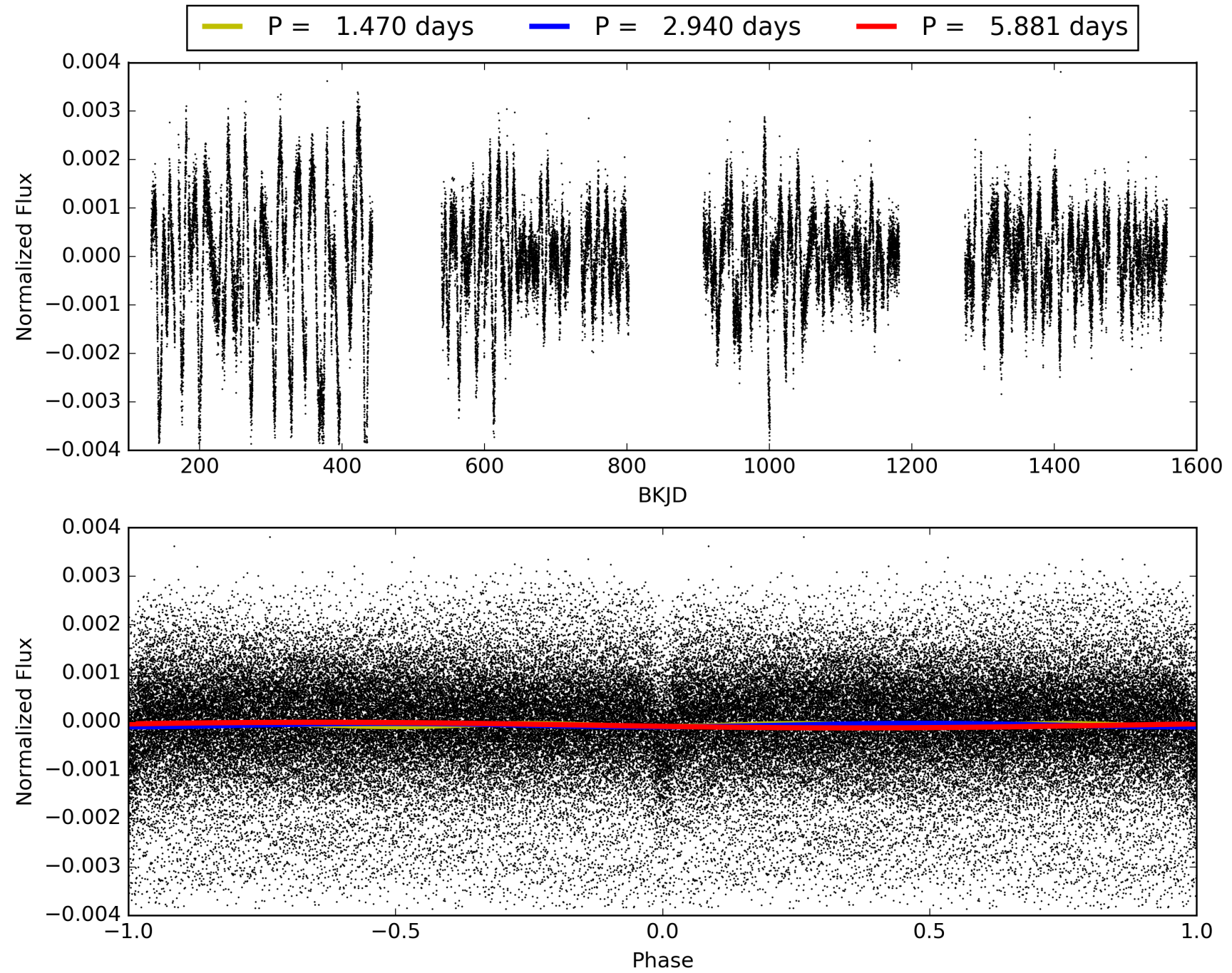
ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [18.19σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 0.94 [320/341]
GhostDiagnostic-chr: 3.449

Centroid-sig: 48.8%
Centroid-so: 0.401 arcsec [1.51σ]
OotOffset-rm: 0.081 arcsec [0.54σ]
KicOffset-rm: 0.077 arcsec [0.50σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

TCE 006422155-01, PDC Light Curves

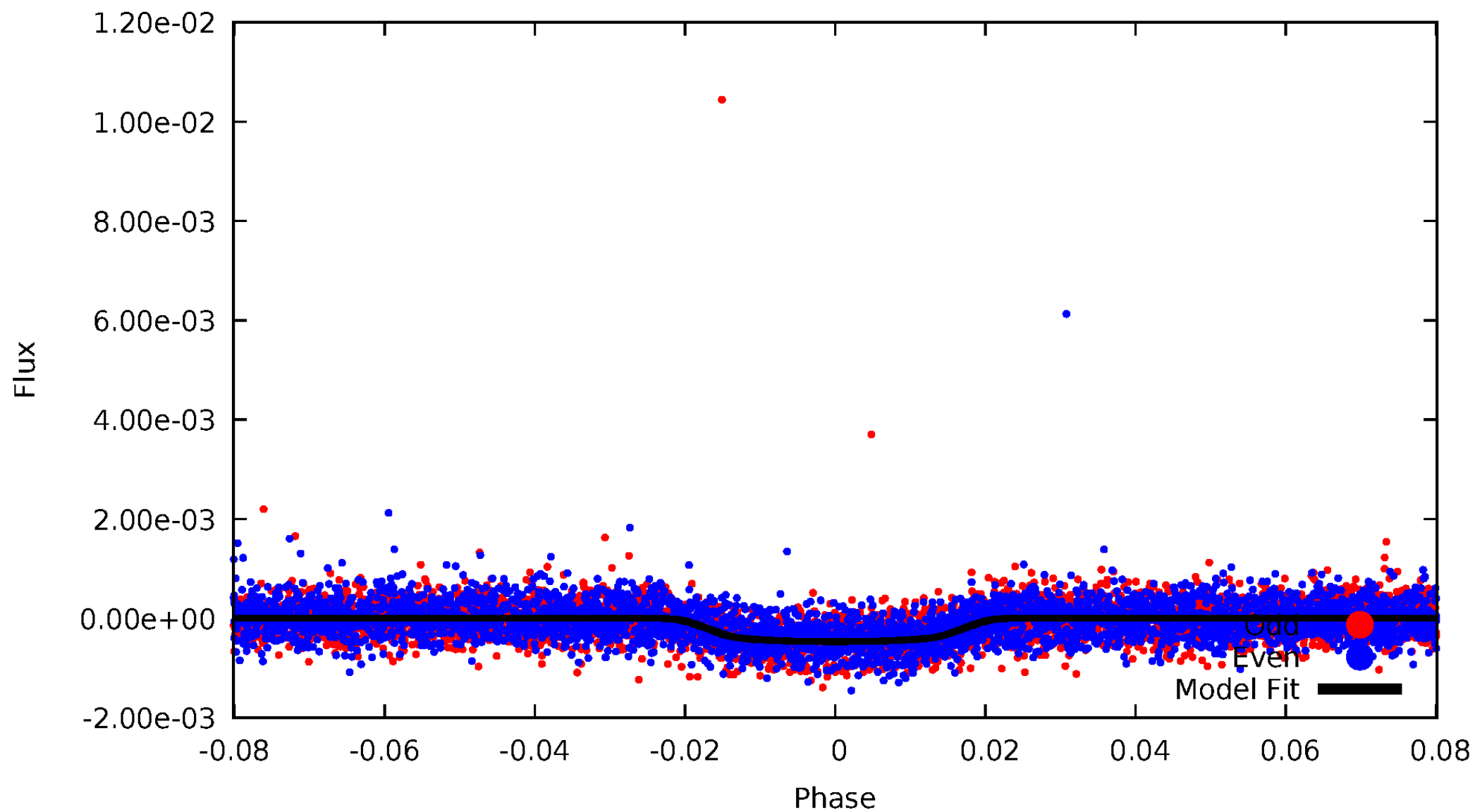


TCE 006422155-01



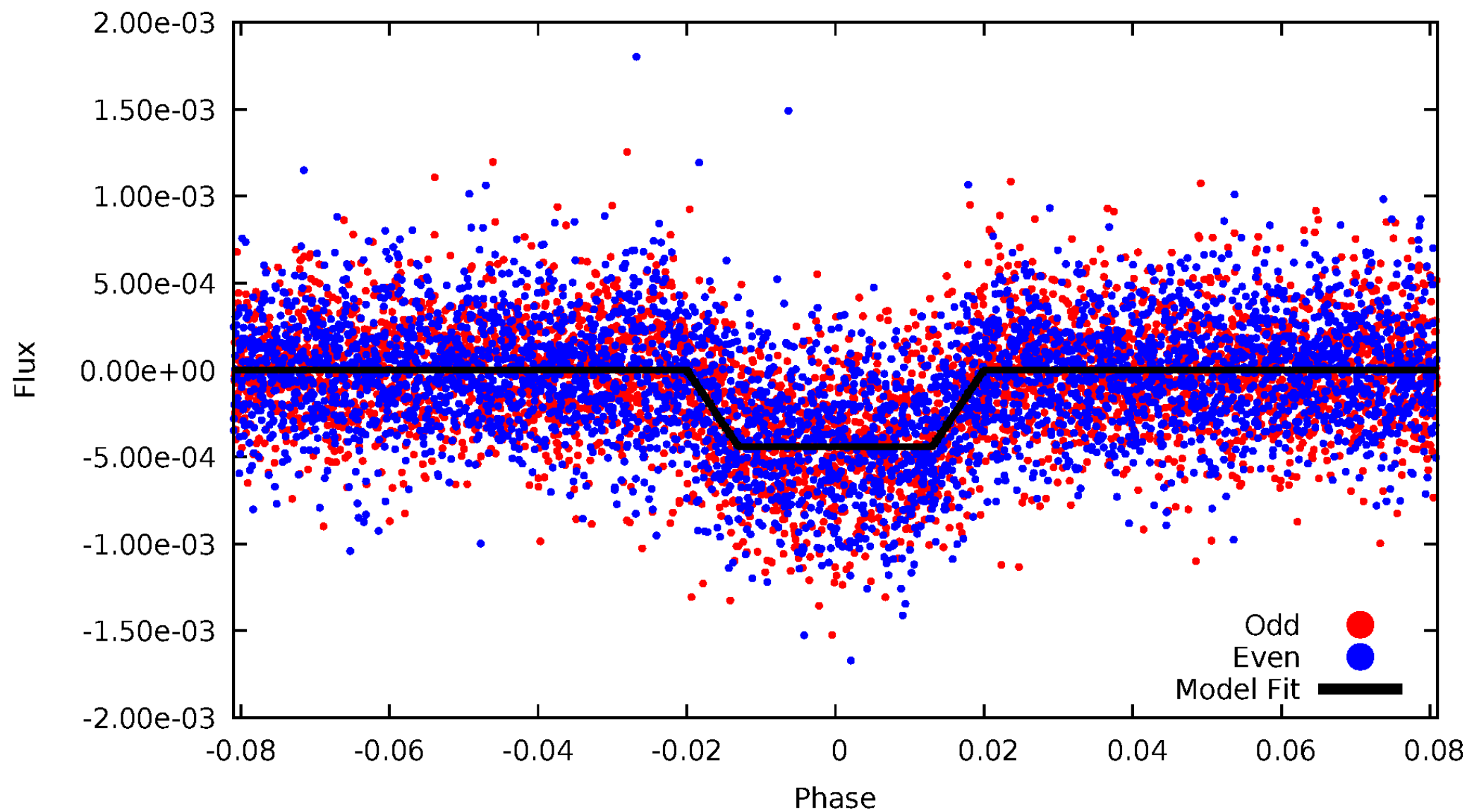
DV Odd/Even

TCE 006422155-01



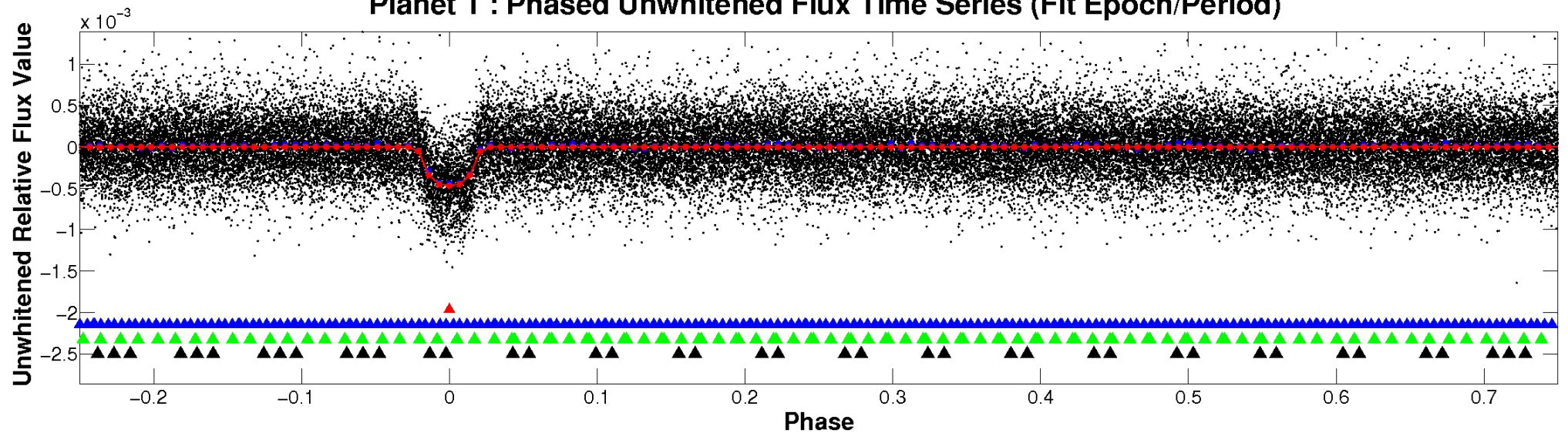
ALT Odd/Even

TCE 006422155-01

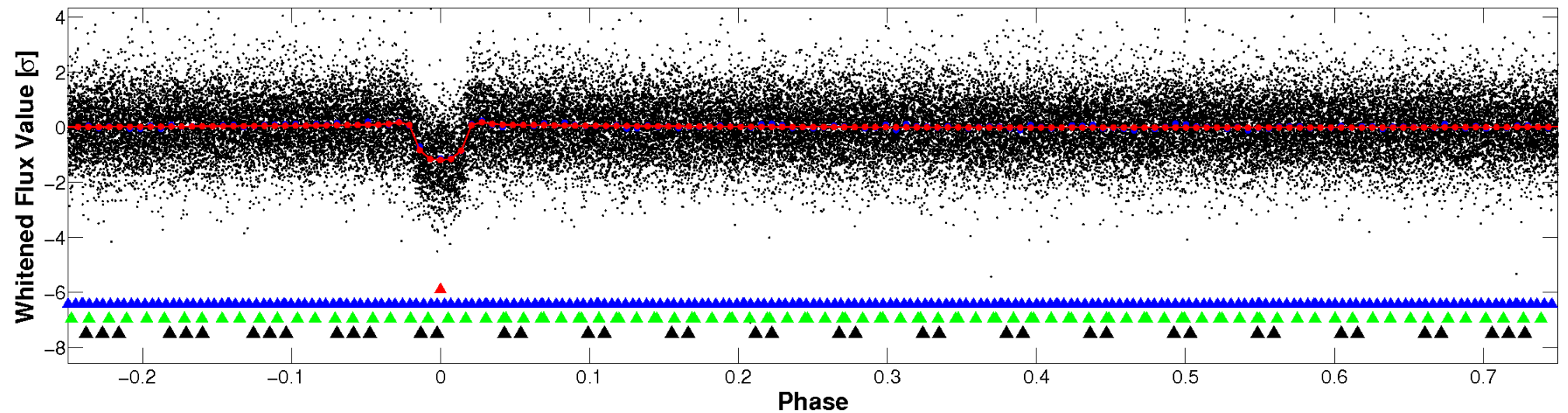


Non-Whitened Vs. Whitened Light Curve

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

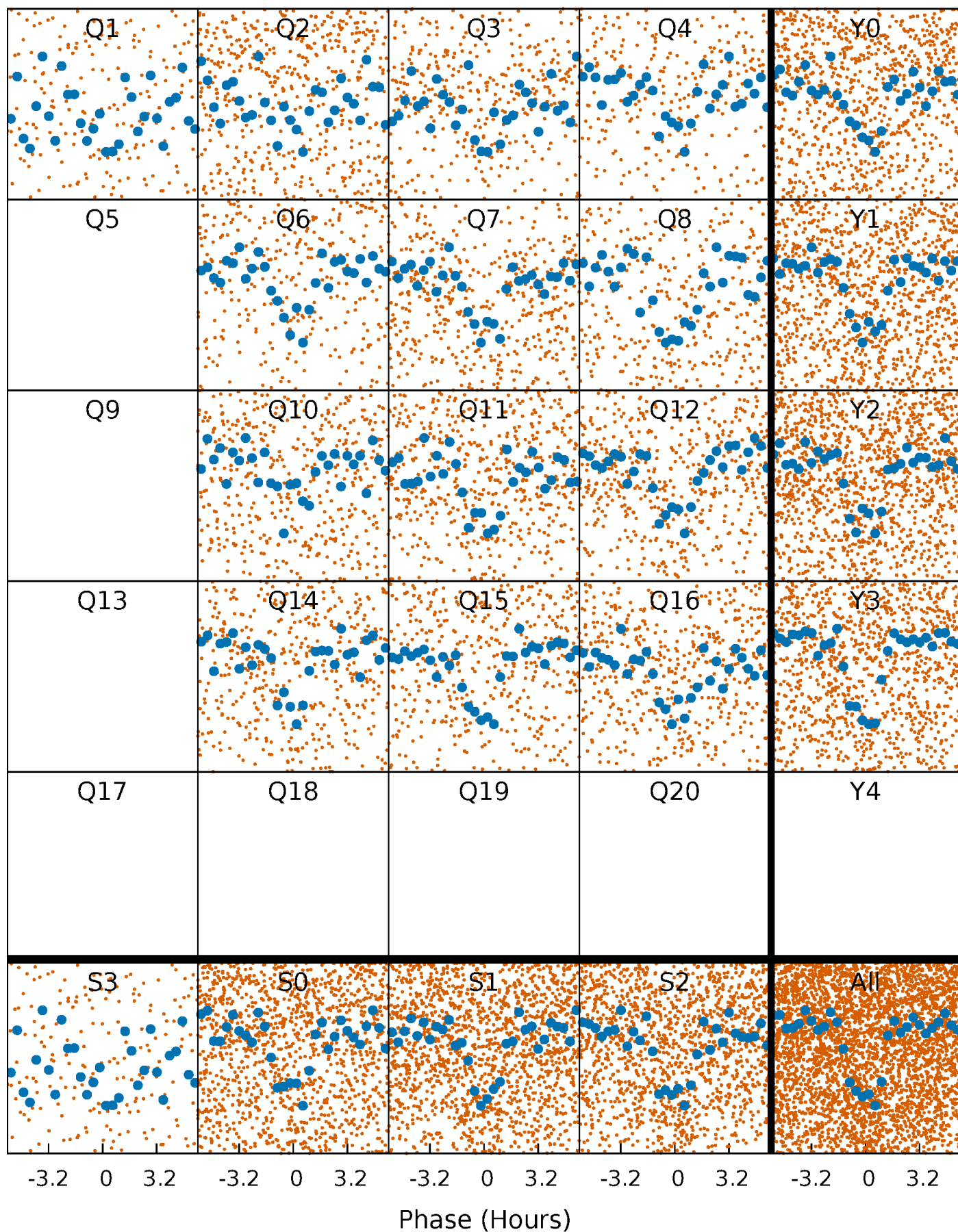


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



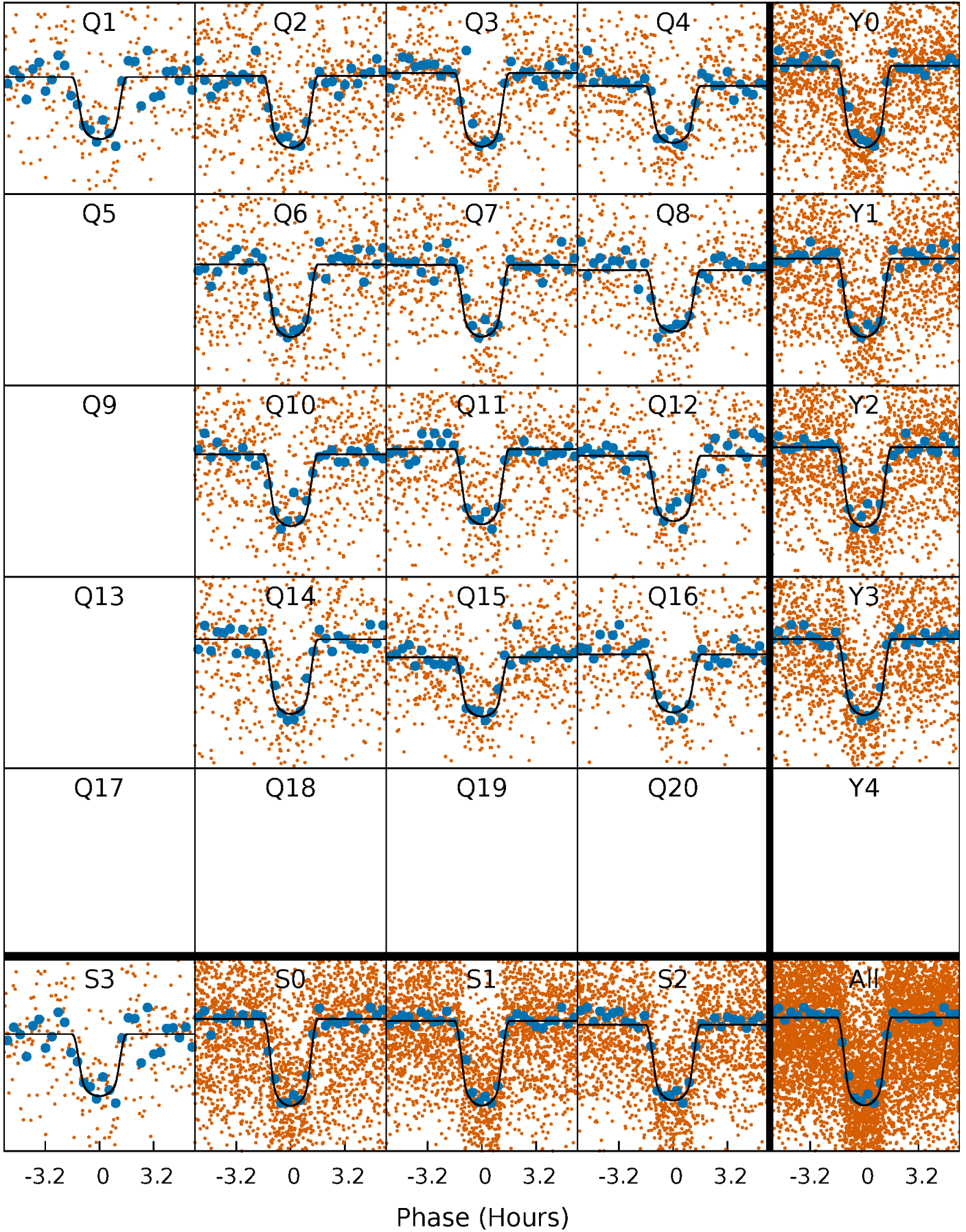
PDC Quarter-Phased Transit Curves

TCE 006422155-01 P= 2.940304 Days $T_0=131.681475$ (BKJD)



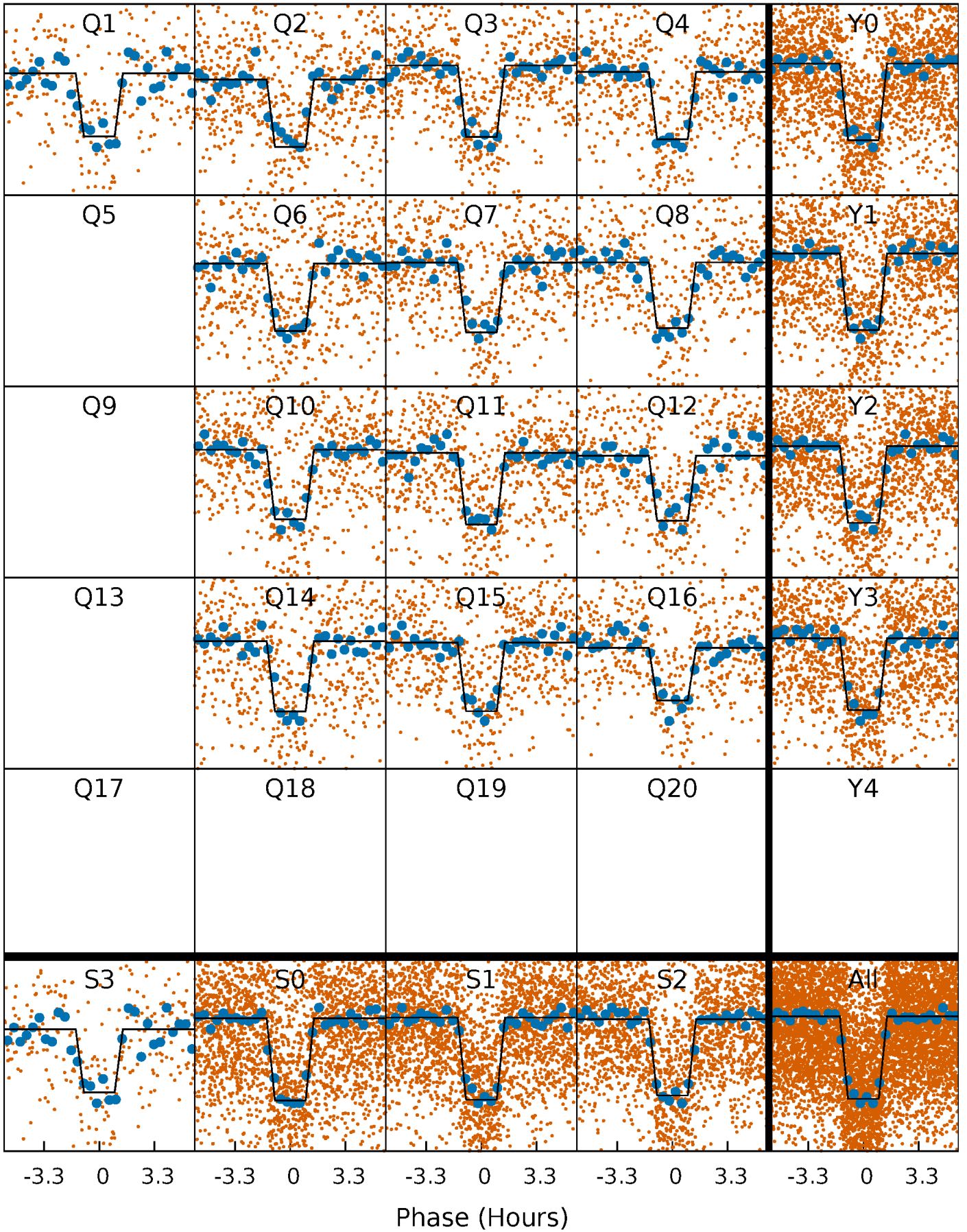
DV Quarter-Phased Transit Curves

TCE 006422155-01 P= 2.940304 Days $T_0=131.681475$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

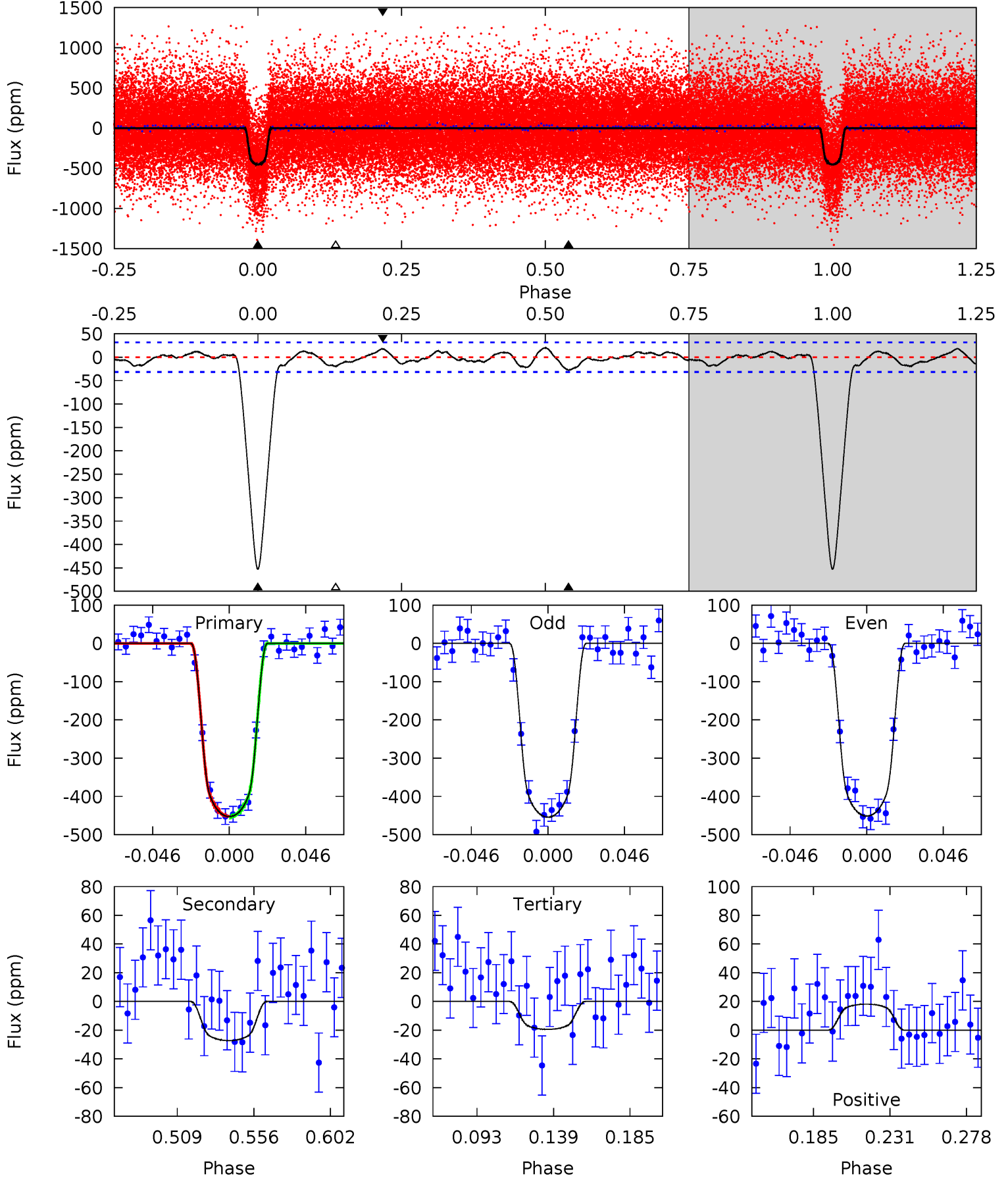
TCE 006422155-01 P= 2.940292 Days $T_0=131.683559$ (BKJD)



DV Model-Shift Uniqueness Test

006422155-01, P = 2.940304 Days, E = 128.741171 Days

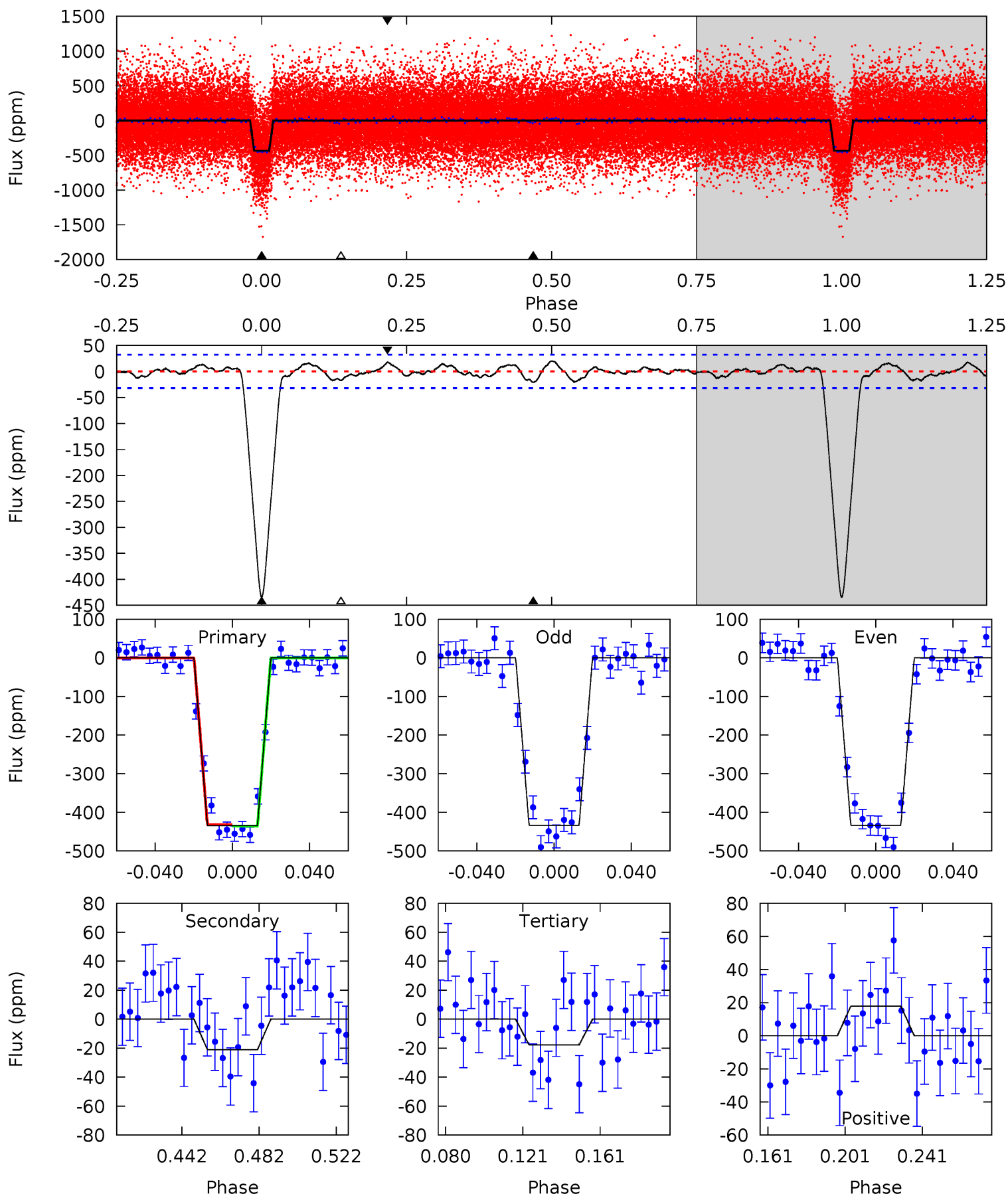
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
67.8	4.08	2.91	2.71	4.72	1.99	1.36	64.9	65.1	1.17	1.37	0.22	1.00	0.04	0.07



Alt Model-Shift Uniqueness Test

006422155-01, P = 2.940292 Days, E = 128.743267 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
64.1	3.10	2.63	2.64	4.75	2.05	1.12	61.5	61.5	0.48	0.46	0.01	1.02	0.04	0.31



Stellar Parameters For KIC 006422155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5527^{+111}_{-111}	$4.376^{+0.099}_{-0.110}$	$0.260^{+0.150}_{-0.150}$	$1.054^{+0.152}_{-0.110}$	$0.964^{+0.063}_{-0.047}$	$1.159^{+0.475}_{-0.369}$
	+2%/-2%	+2%/-3%	+58%/-58%	+14%/-10%	+7%/-5%	+41%/-32%
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 006422155-01 / KOI 0510.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-27 ± 7	$2.78^{+0.28}_{-0.26}$	1755^{+79}_{-66}	3124^{+138}_{-169}	$3.031^{+1.089}_{-0.885}$
Alt.	-21 ± 7	$2.41^{+0.27}_{-0.24}$	1755^{+76}_{-65}	3130^{+177}_{-222}	$3.124^{+1.367}_{-1.181}$

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 $A_{\text{obs}} \gg 1.0$

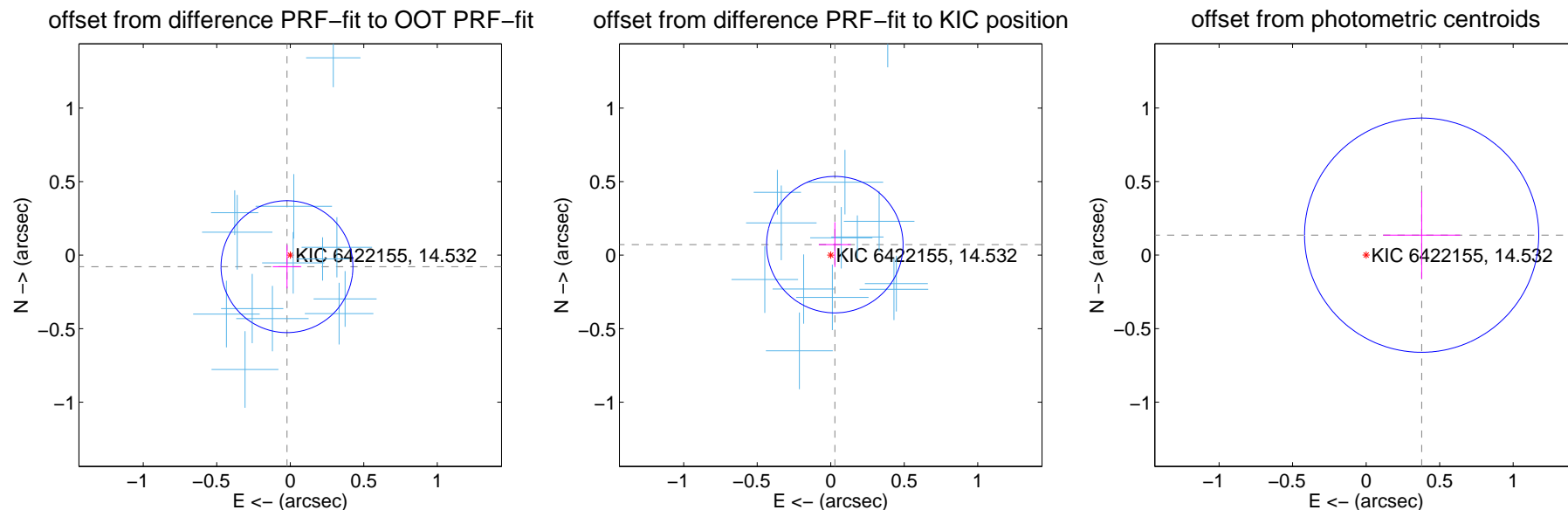
DV Centroid Data

Supplemental centroid analysis for 006422155-01. Kepler magnitude: 14.53. Transit SNR 43.78

There are 13 quarters with good PRF difference image offsets

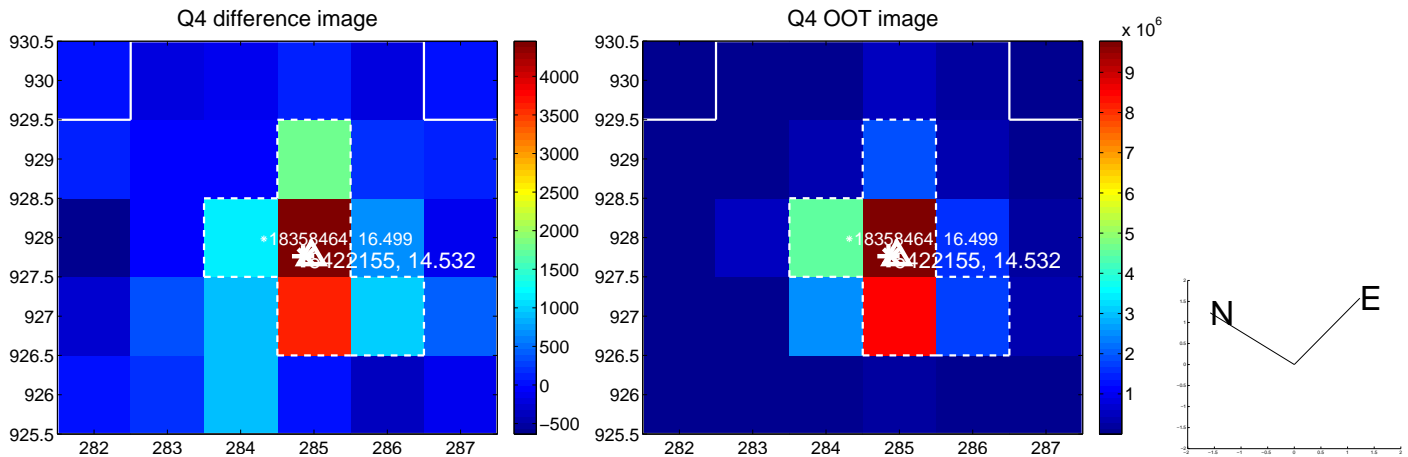
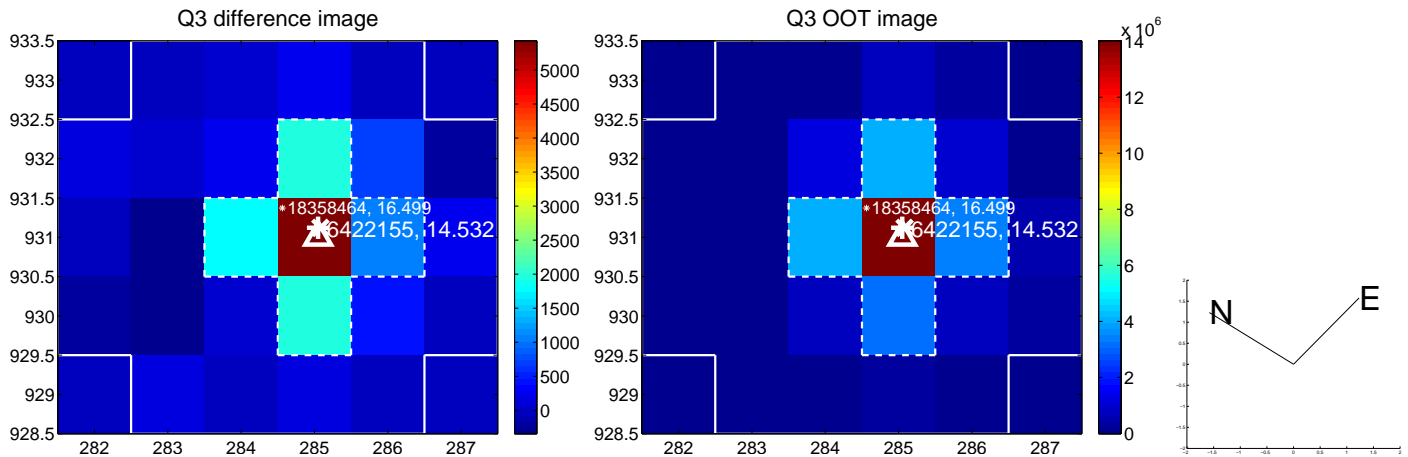
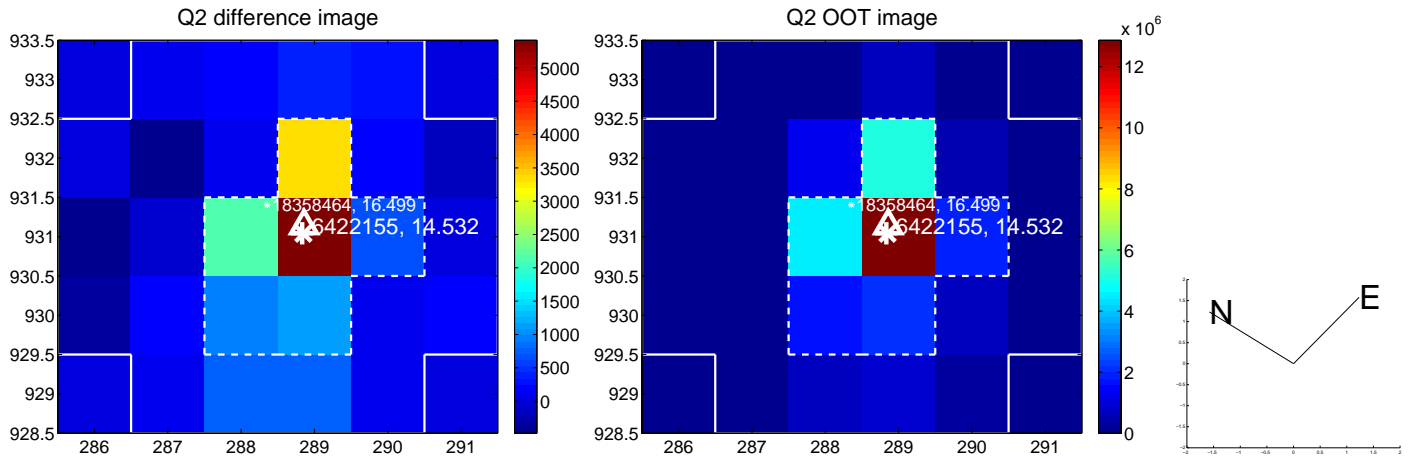
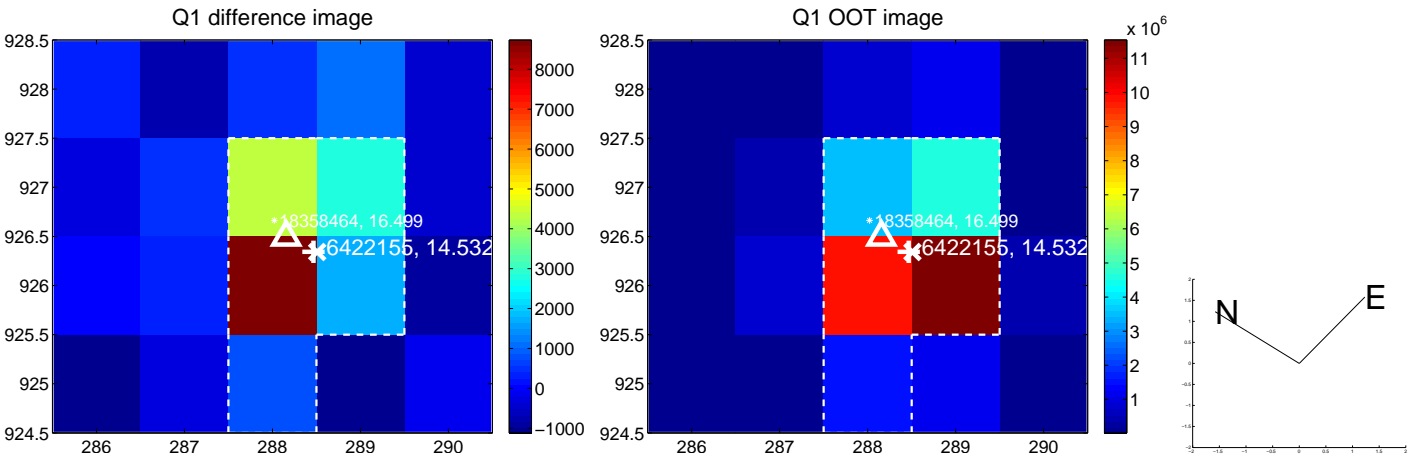
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.081 ± 0.149	0.54	0.022 ± 0.097	-0.078 ± 0.148
PRF-fit source offset from KIC position	0.077 ± 0.155	0.50	-0.028 ± 0.109	0.071 ± 0.152
photometric centroid source offset	0.40 ± 0.27	1.51	-0.38 ± 0.26	0.14 ± 0.30

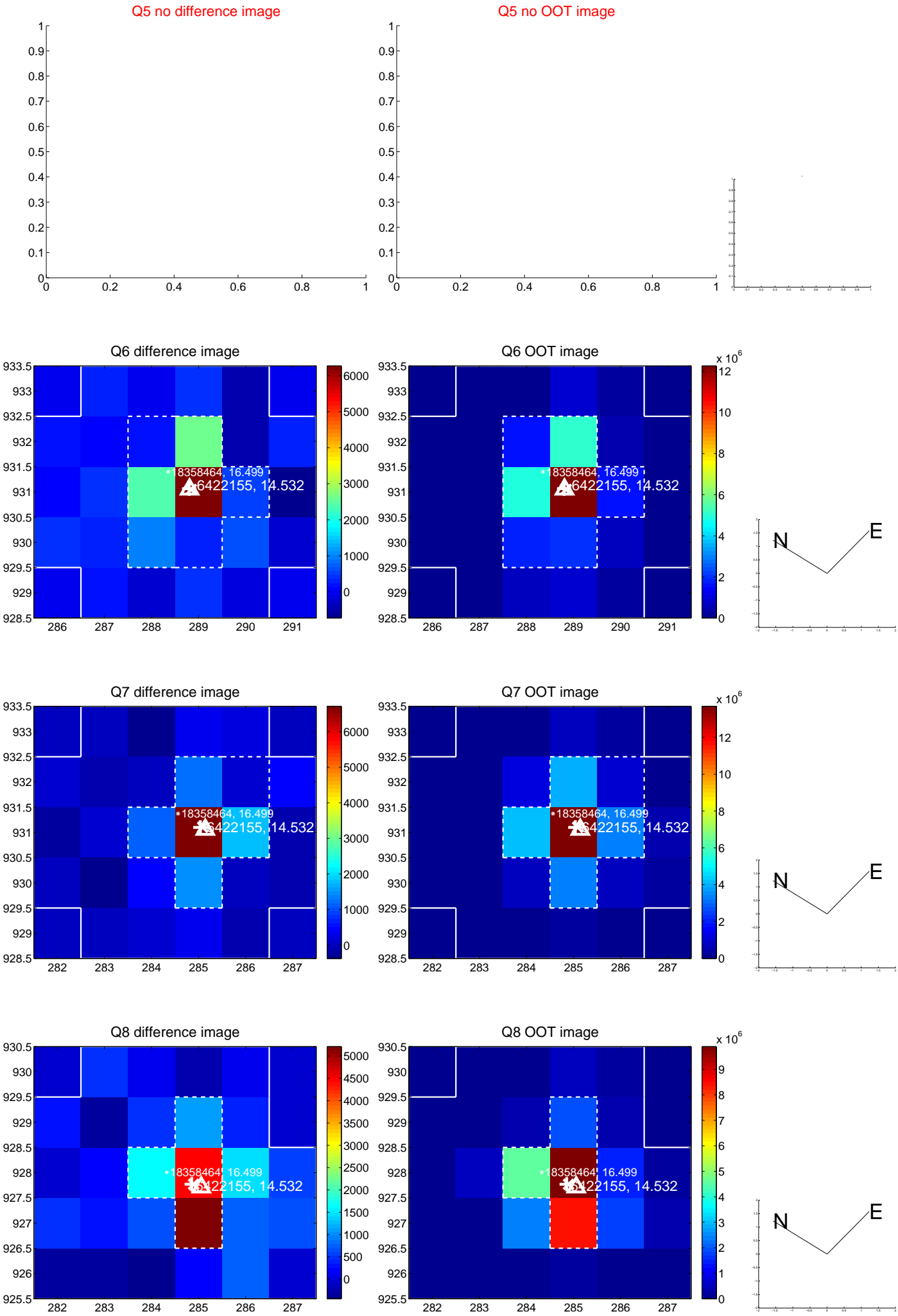


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

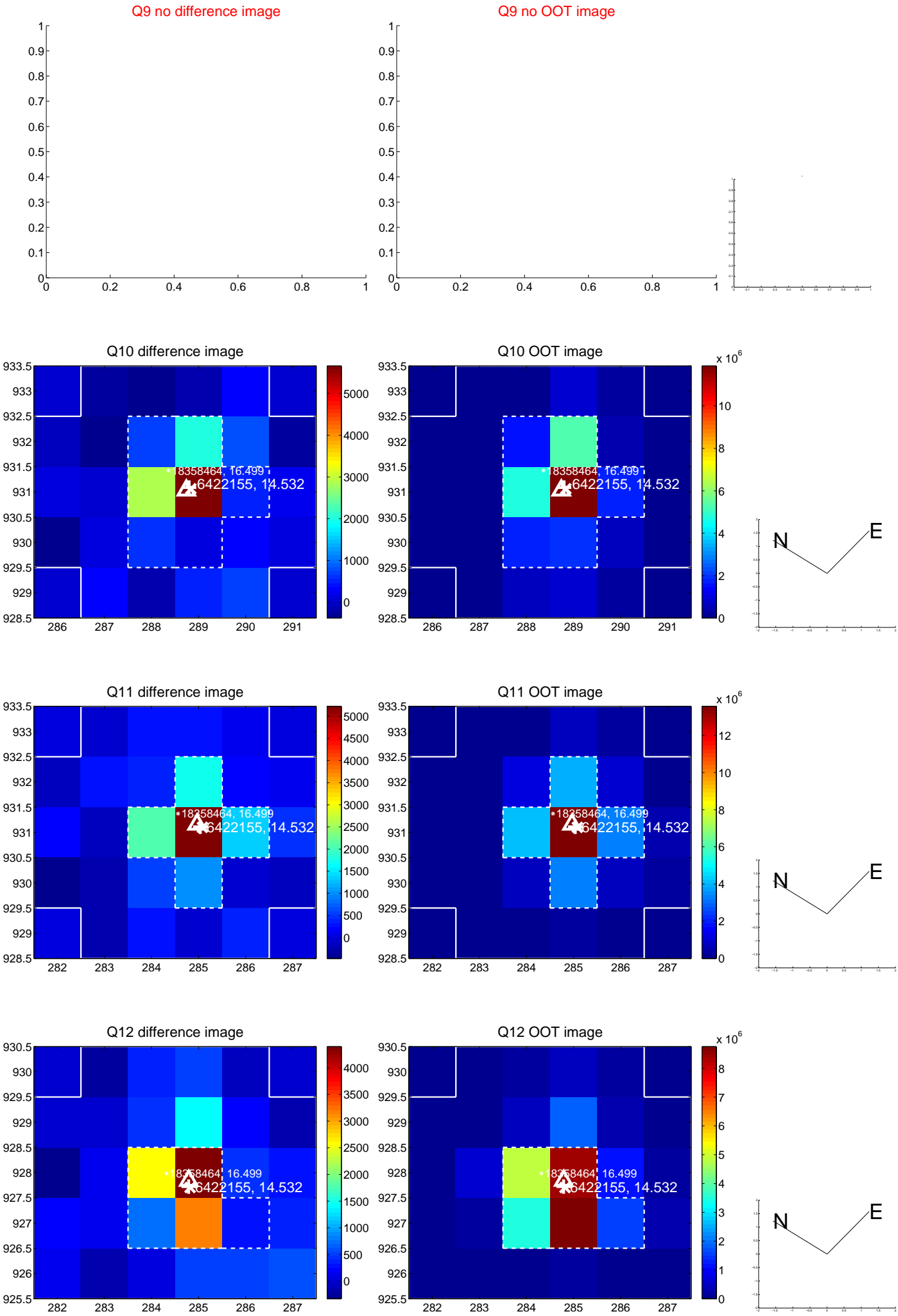
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



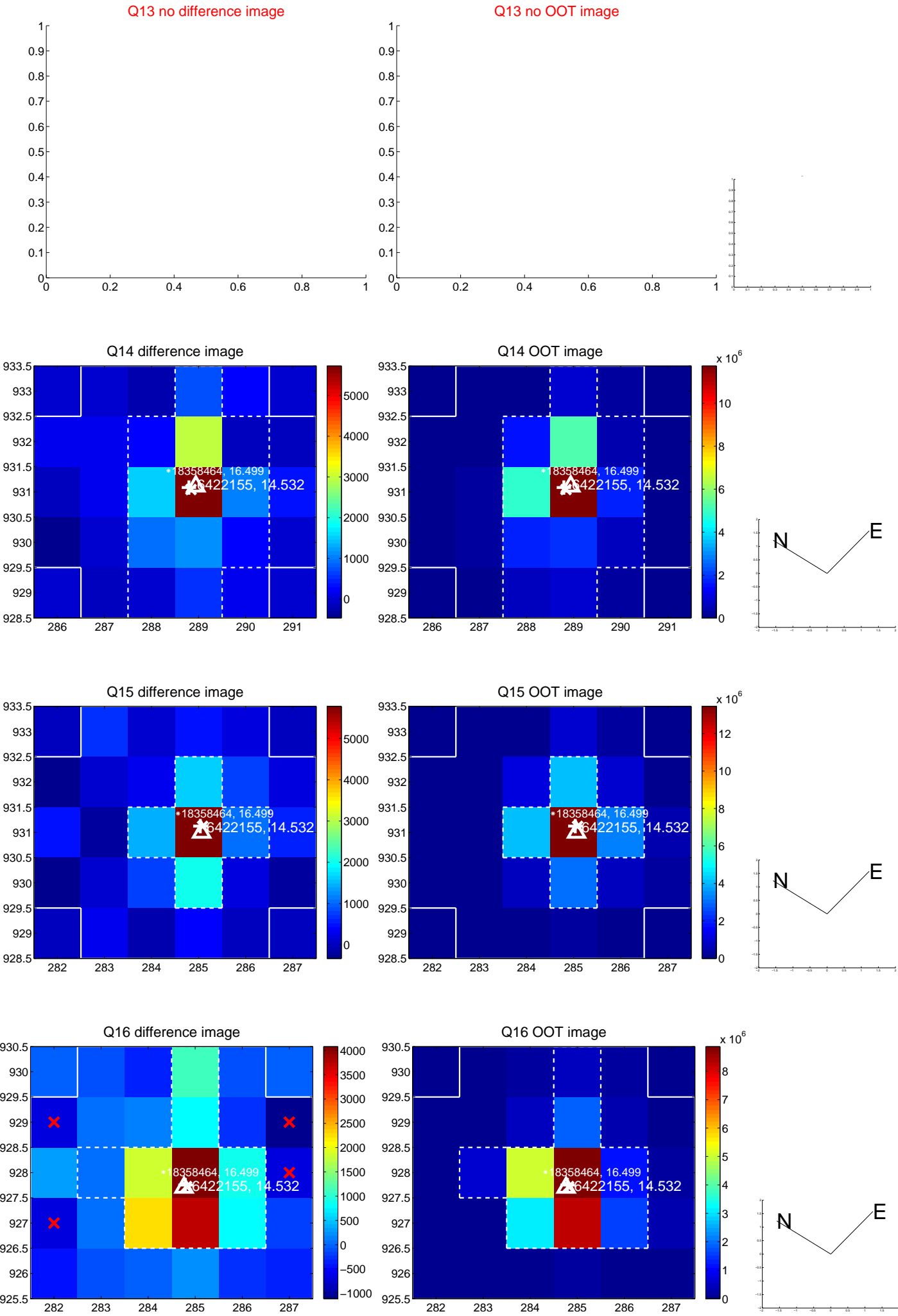
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



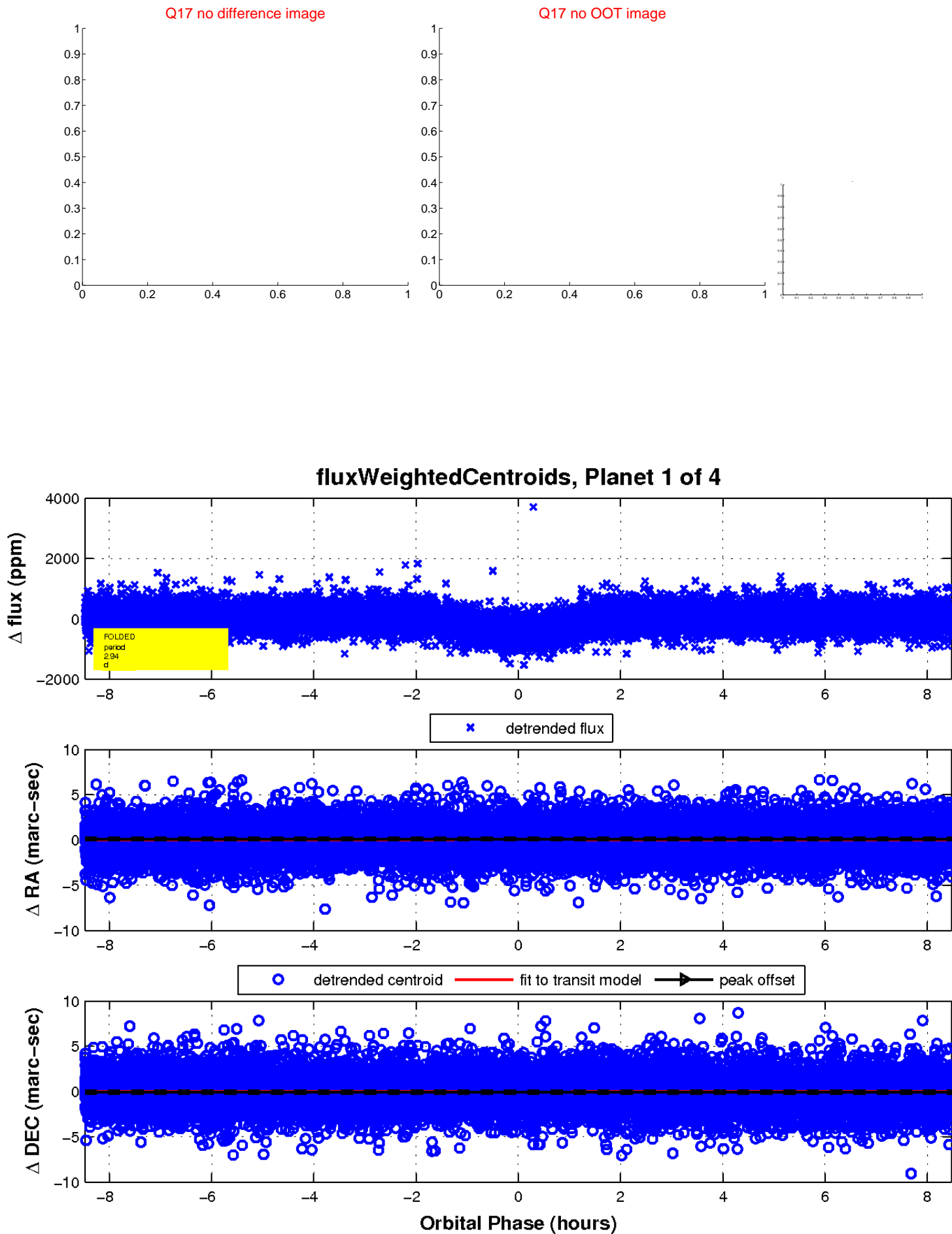
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

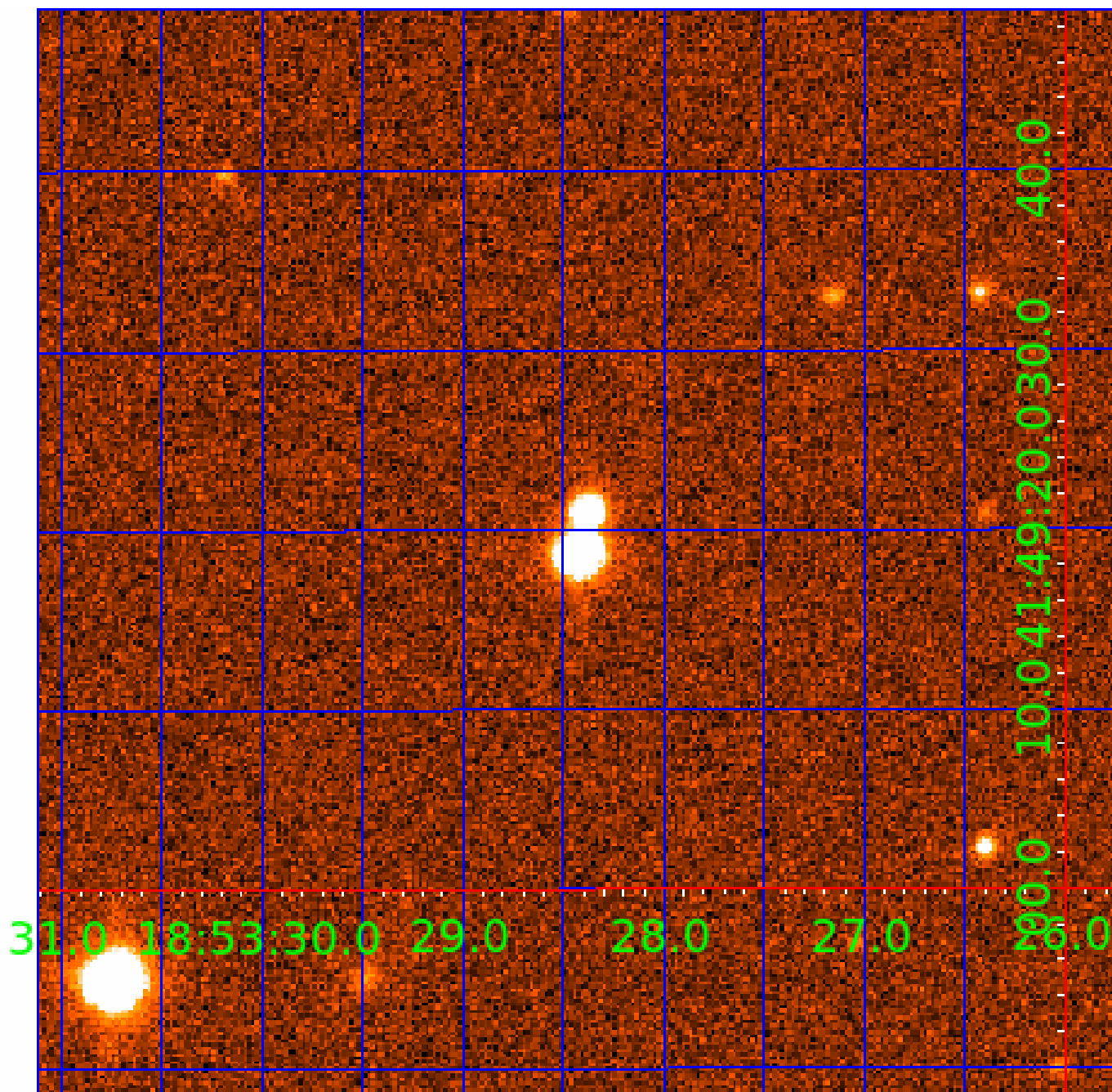


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006422155

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})
006422155-01	OBS	0510.01	2.940304	131.681475	468.6	2.826	38.7	43.8	1.05	5527	2.77	590.05
006422155-02	OBS	0510.02	6.388992	137.142449	527.7	3.566	32.1	35.5	1.05	5527	2.91	209.65
006422155-03	OBS	0510.03	14.627146	136.233648	379.1	3.737	16.0	17.1	1.05	5527	2.44	69.48
006422155-04	OBS	0510.04	35.118505	152.124269	561.0	3.870	14.5	16.2	1.05	5527	2.78	21.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006422155-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006422155-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006422155-03	OBS	PC	0.93	0	0	0	0	NO_COMMENT
006422155-04	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 for comment definitions.

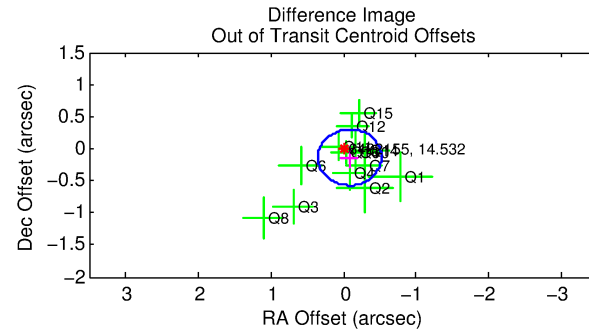
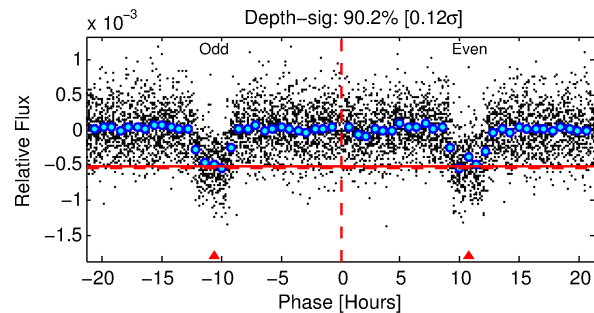
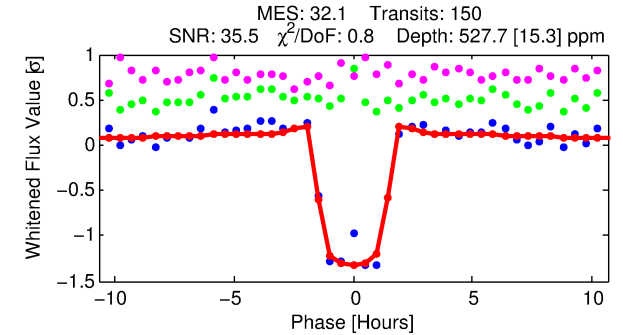
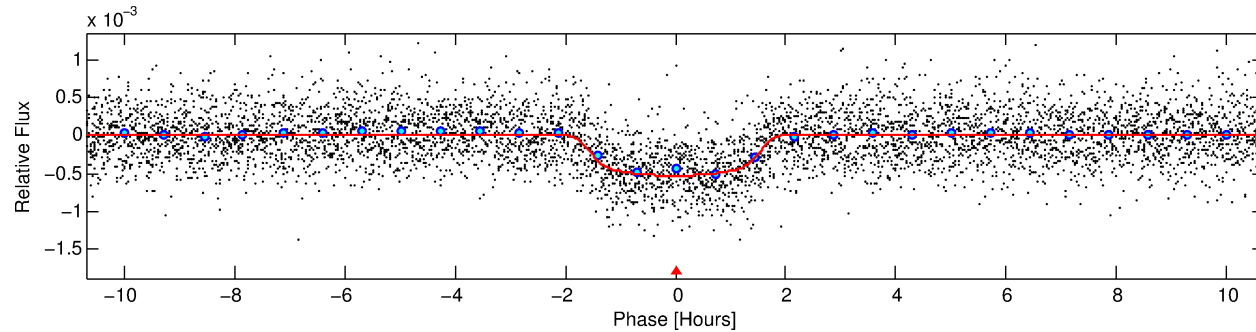
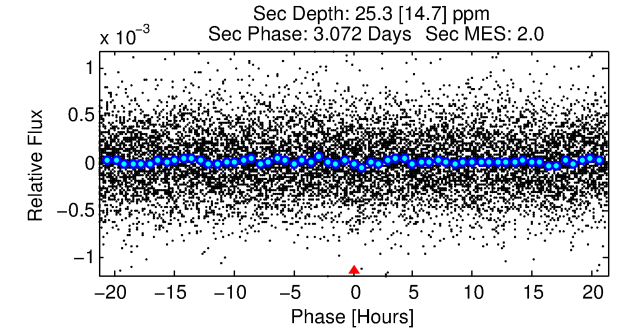
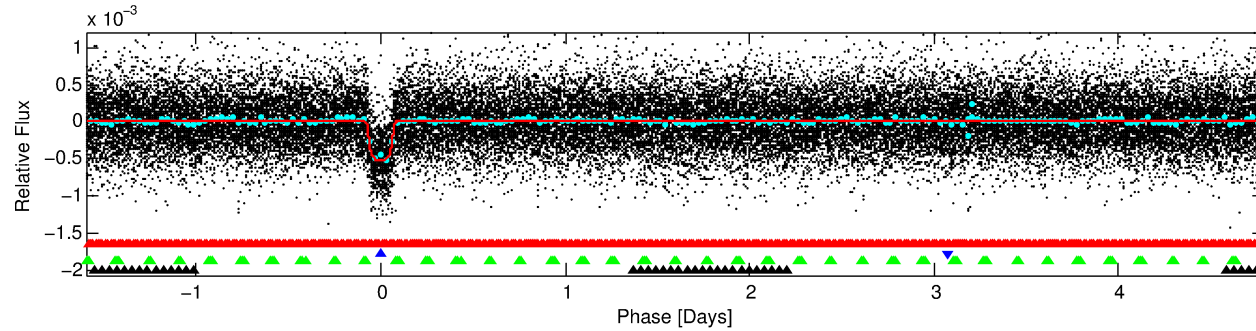
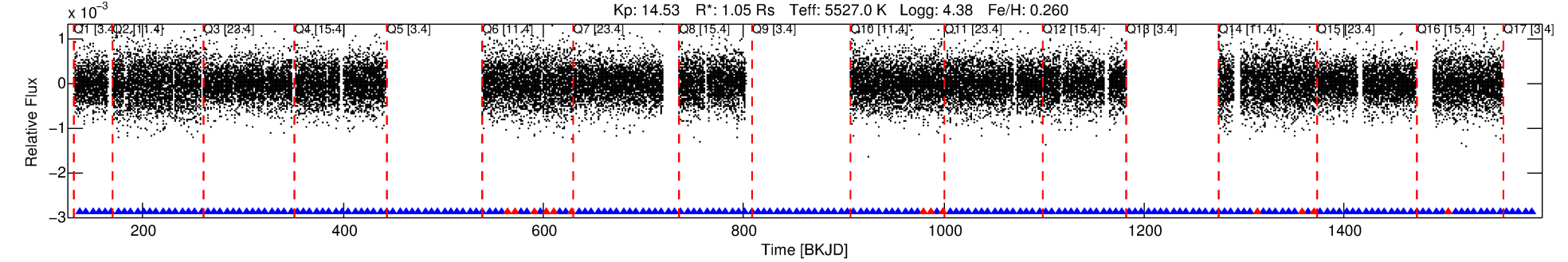
Ephemeris Match Information For 006422155-02

No Significant Match Found

DV One-Page Summary

KIC: 6422155 Candidate: 2 of 4 Period: 6.389 d
KOI: K00510.02 Name: Kepler-172c Corr: 0.962

Kp: 14.53 R*: 1.05 Rs Teff: 5527.0 K Logg: 4.38 Fe/H: 0.260



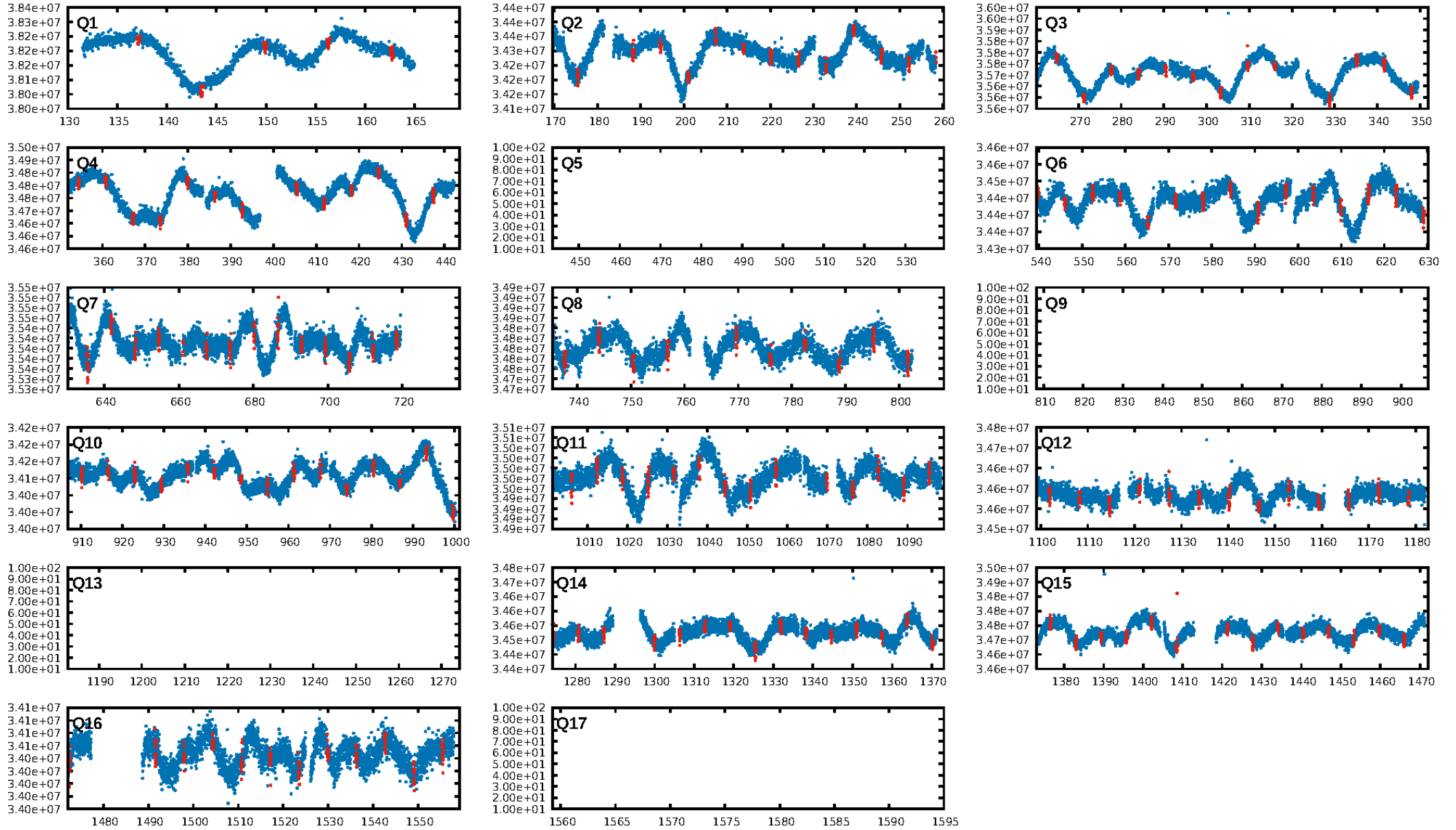
DV Fit Results:

Period = 6.38899 [0.00001] d
Epoch = 137.1424 [0.0016] BKJD
Rp/R* = 0.0253 [0.0018]
a/R* = 6.79 [1.99]
b = 0.90 [0.06]
Seff = 209.65 [44.08]
Teq = 970 [51] K
Rp = 2.91 [0.47] Re
a = 0.0666 [0.0085] AU
Ag = 7.26 [4.57] [1.37σ]
Teffp = 2463 [371] K [3.98σ]

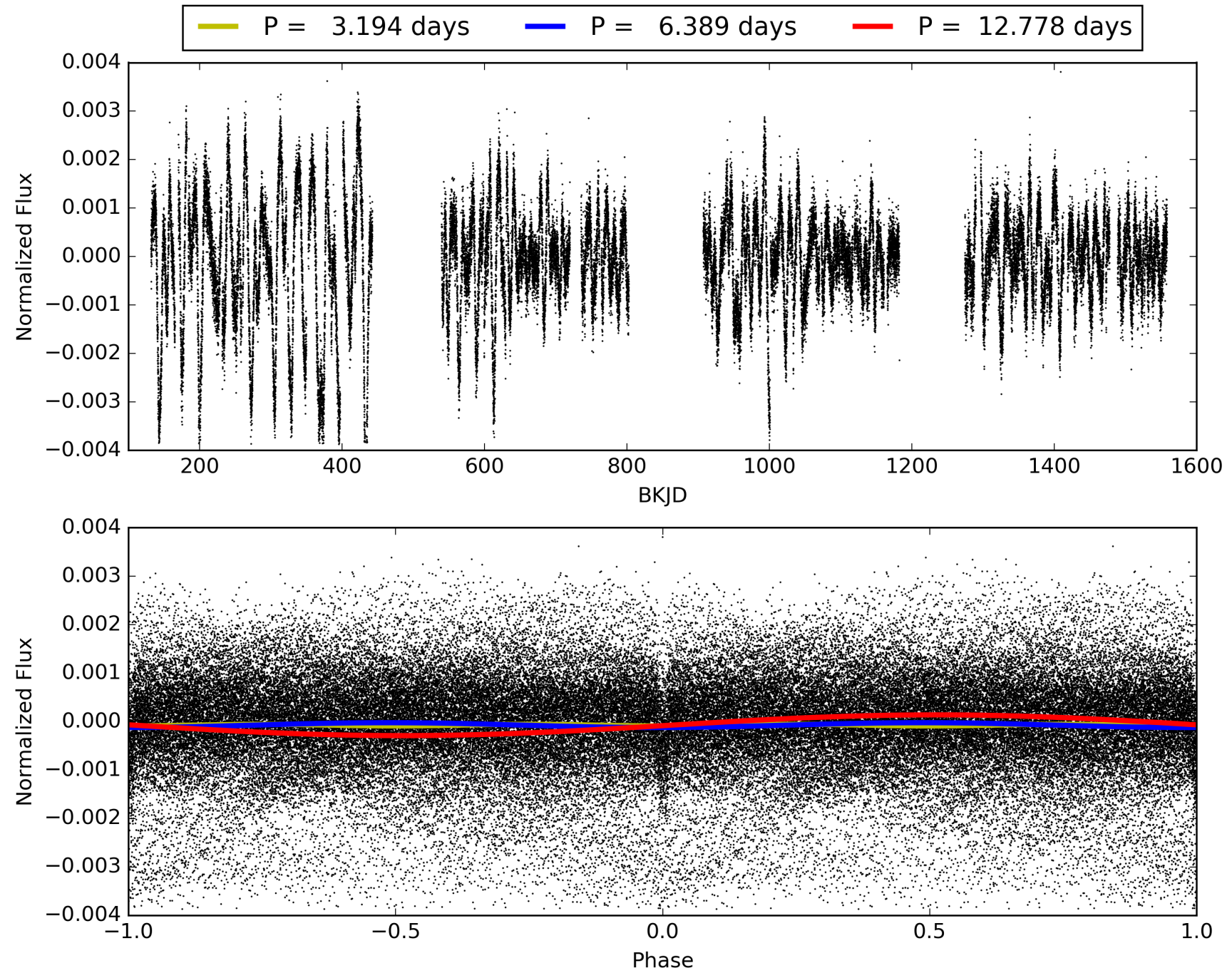
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [18.19σ]
LongPeriod-sig: 100.0% [38.28σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.17e-217
RollingBand-fgt: 0.91 [133/146]
GhostDiagnostic-chr: 4.381
Centroid-sig: 44.0%
Centroid-so: 0.137 arcsec [0.40σ]
OotOffset-rm: 0.161 arcsec [1.11σ]
KicOffset-rm: 0.144 arcsec [0.93σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

TCE 006422155-02, PDC Light Curves

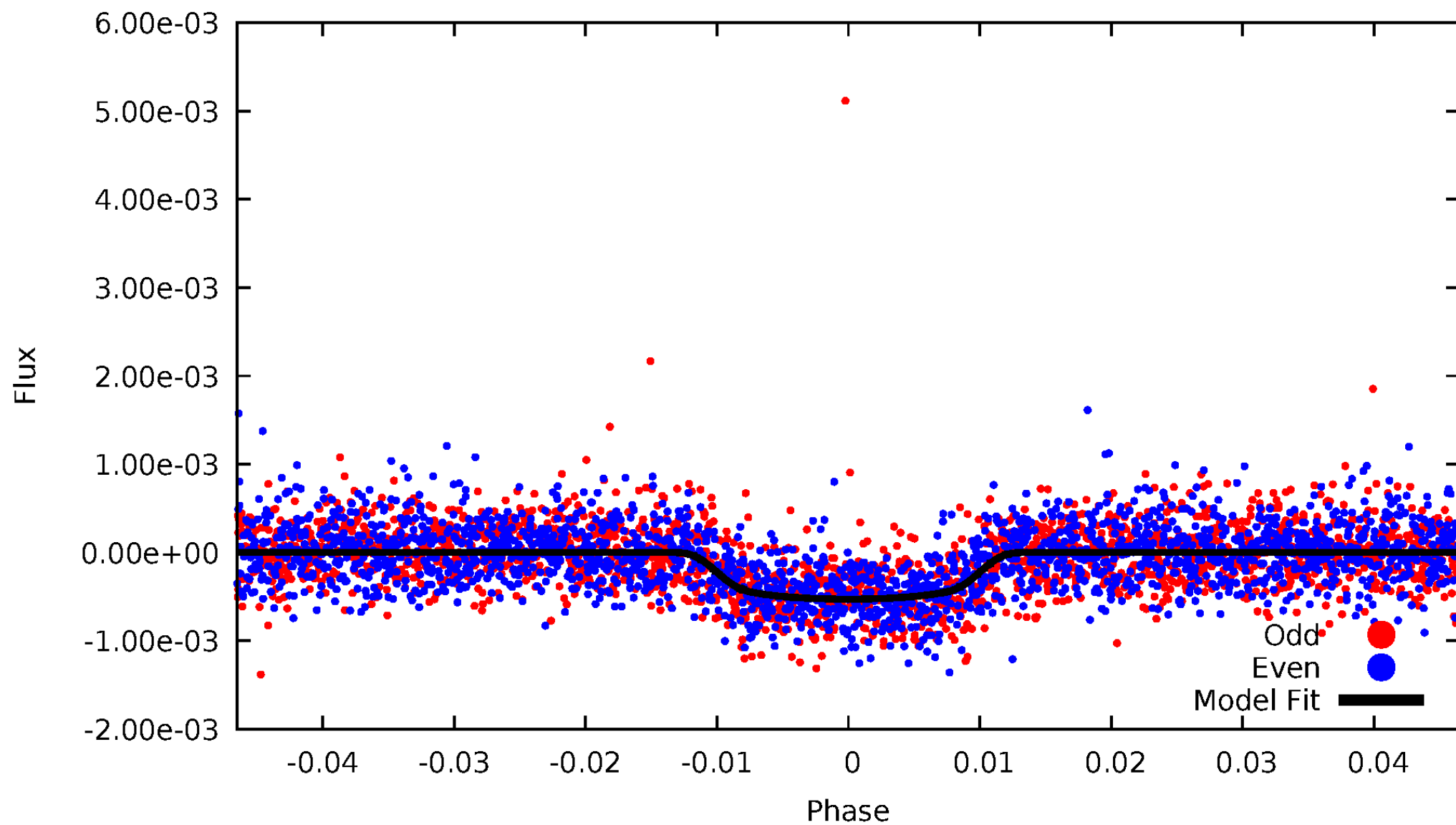


TCE 006422155-02



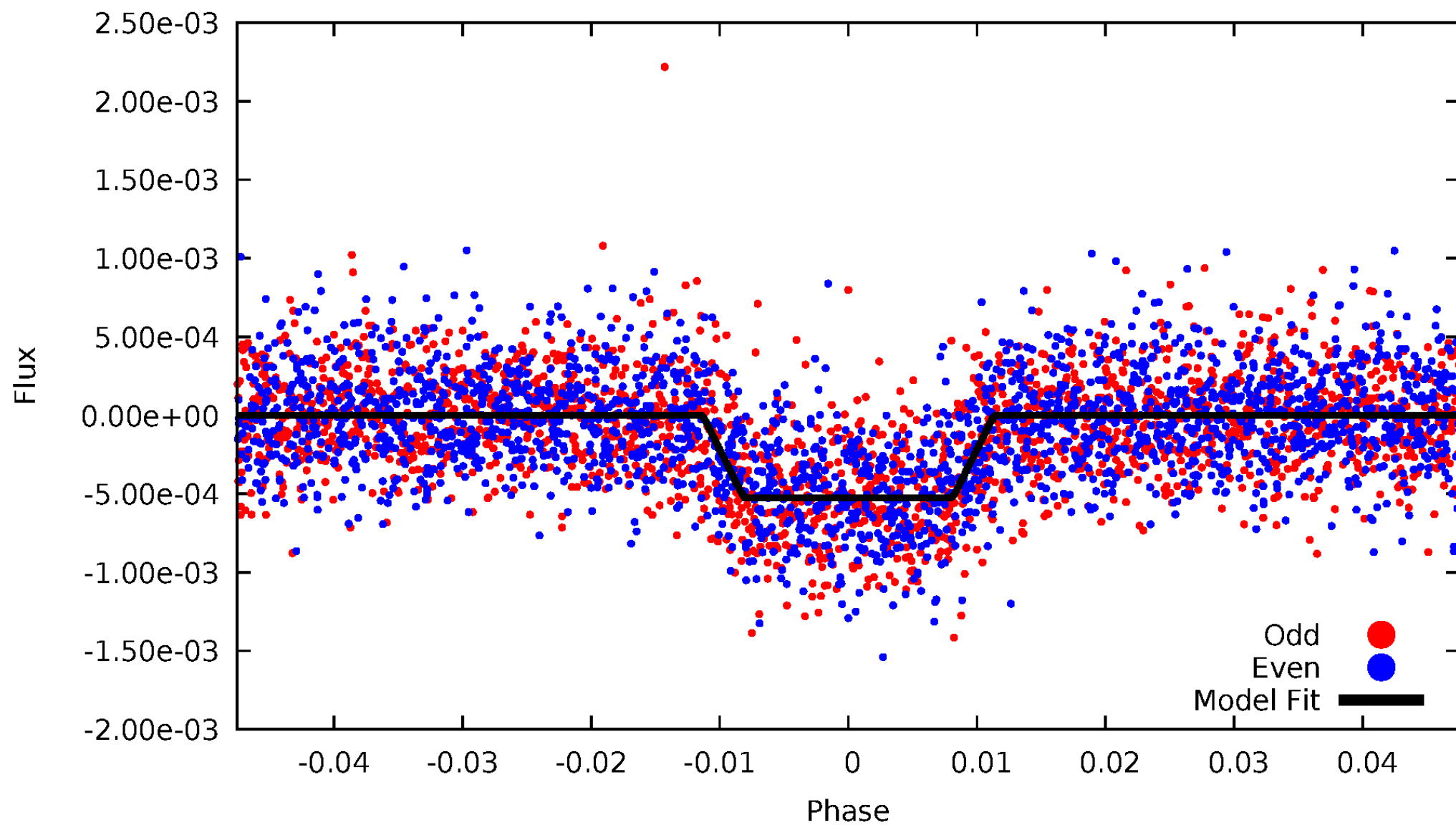
DV Odd/Even

TCE 006422155-02



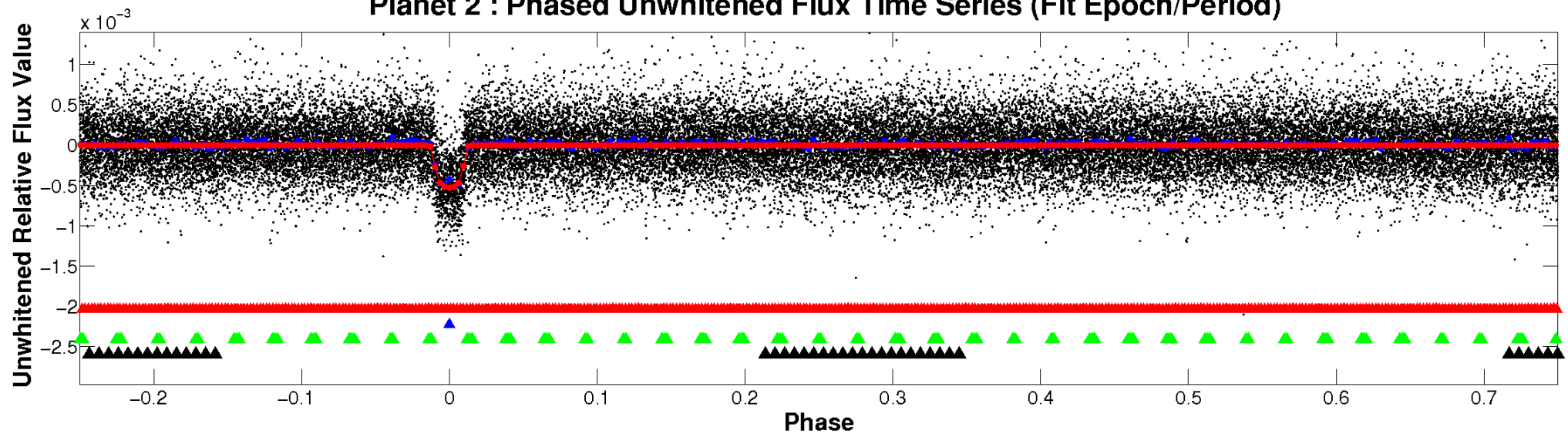
ALT Odd/Even

TCE 006422155-02

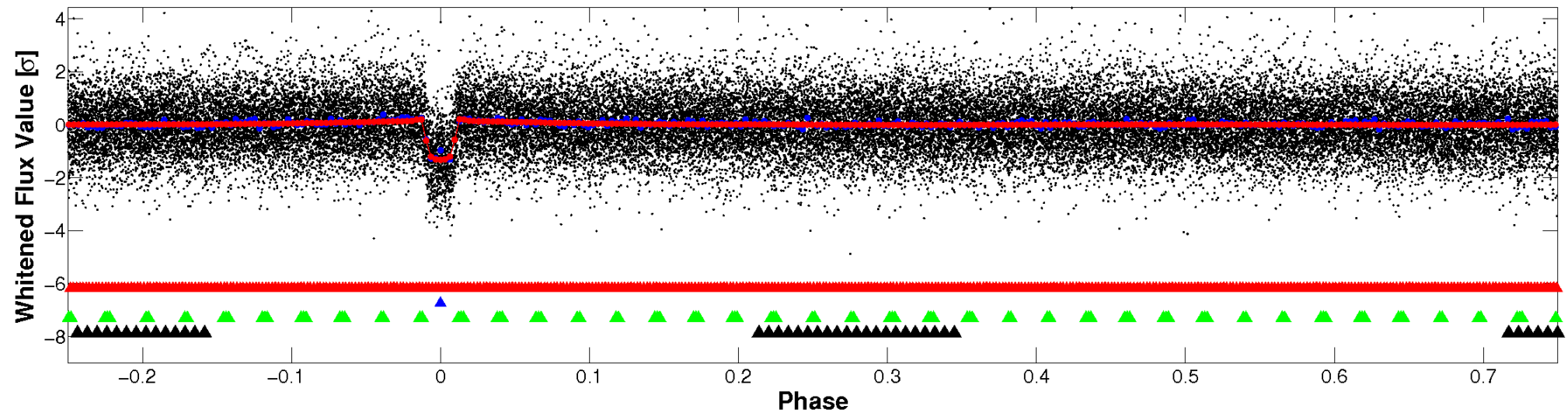


Non-Whitened Vs. Whitened Light Curve

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

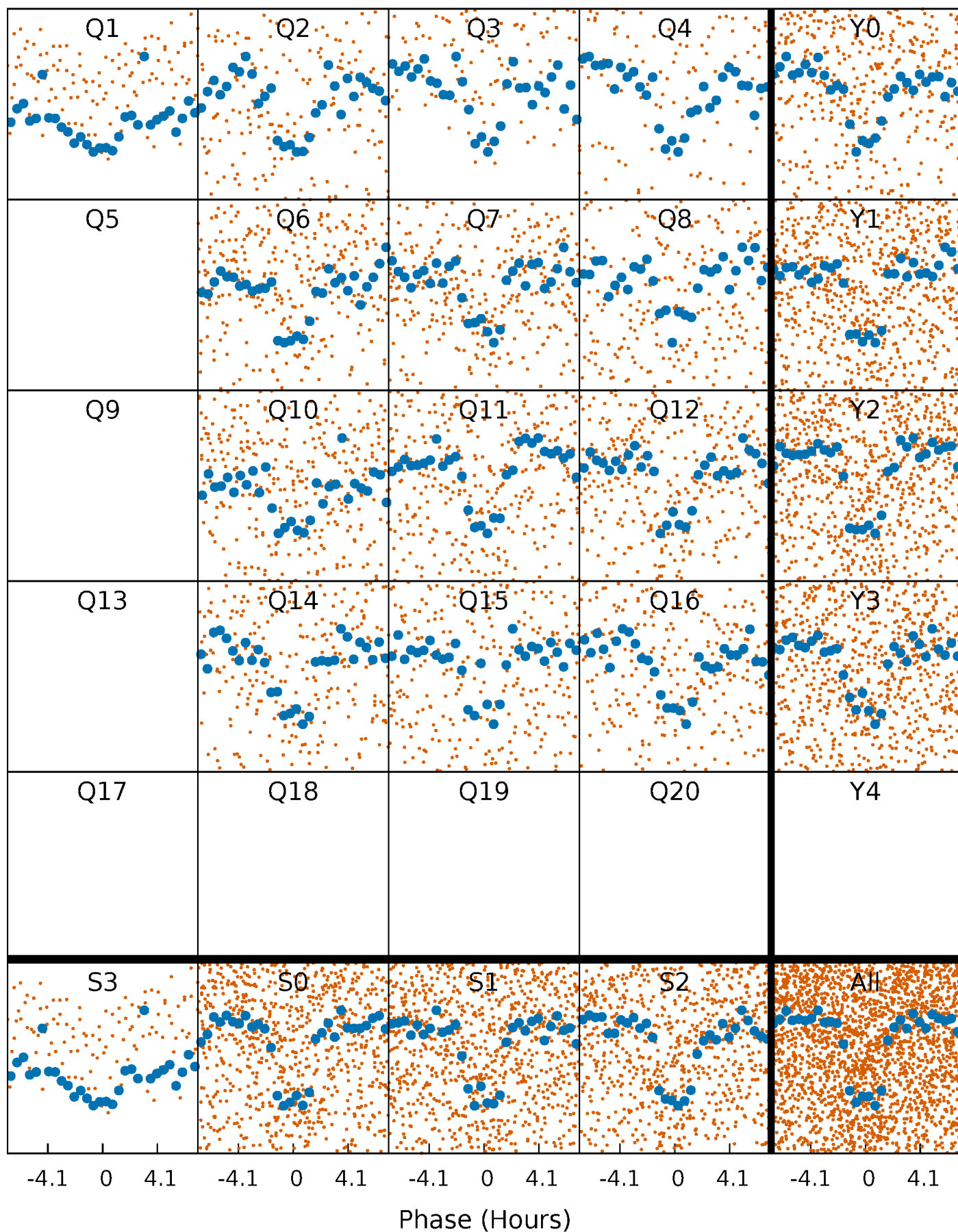


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



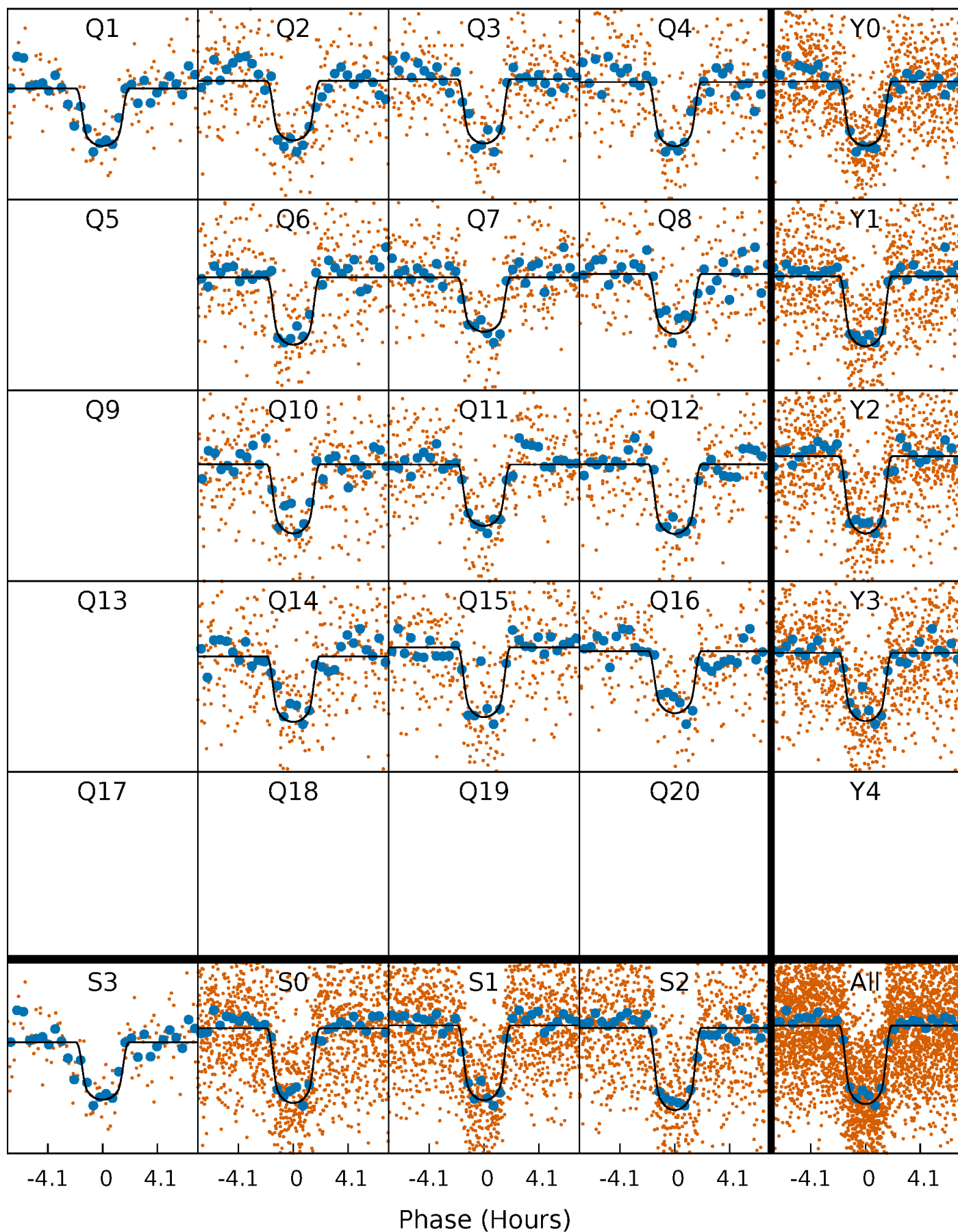
PDC Quarter-Phased Transit Curves

TCE 006422155-02 P= 6.388992 Days $T_0=137.142449$ (BKJD)



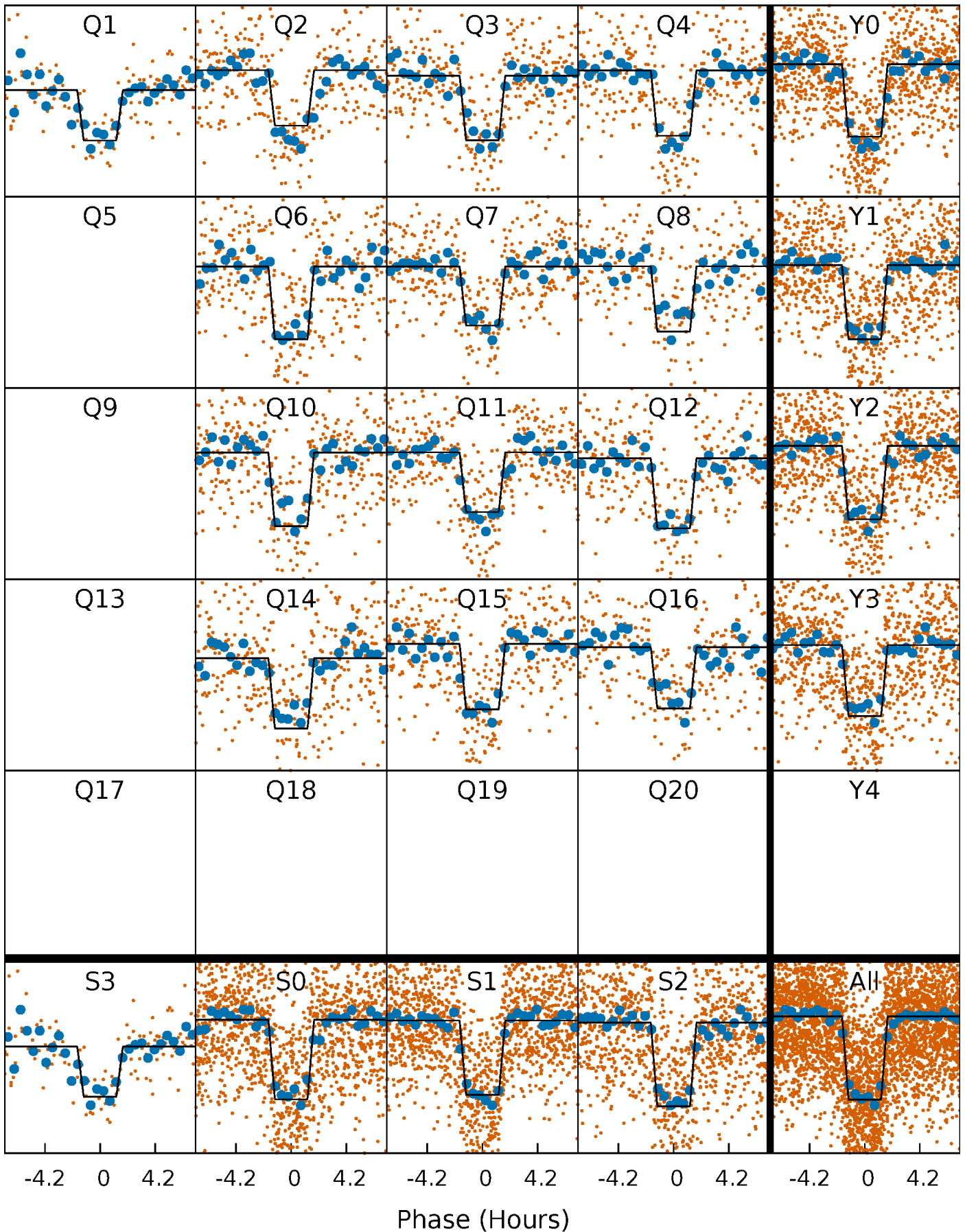
DV Quarter-Phased Transit Curves

TCE 006422155-02 P= 6.388992 Days $T_0=137.142449$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

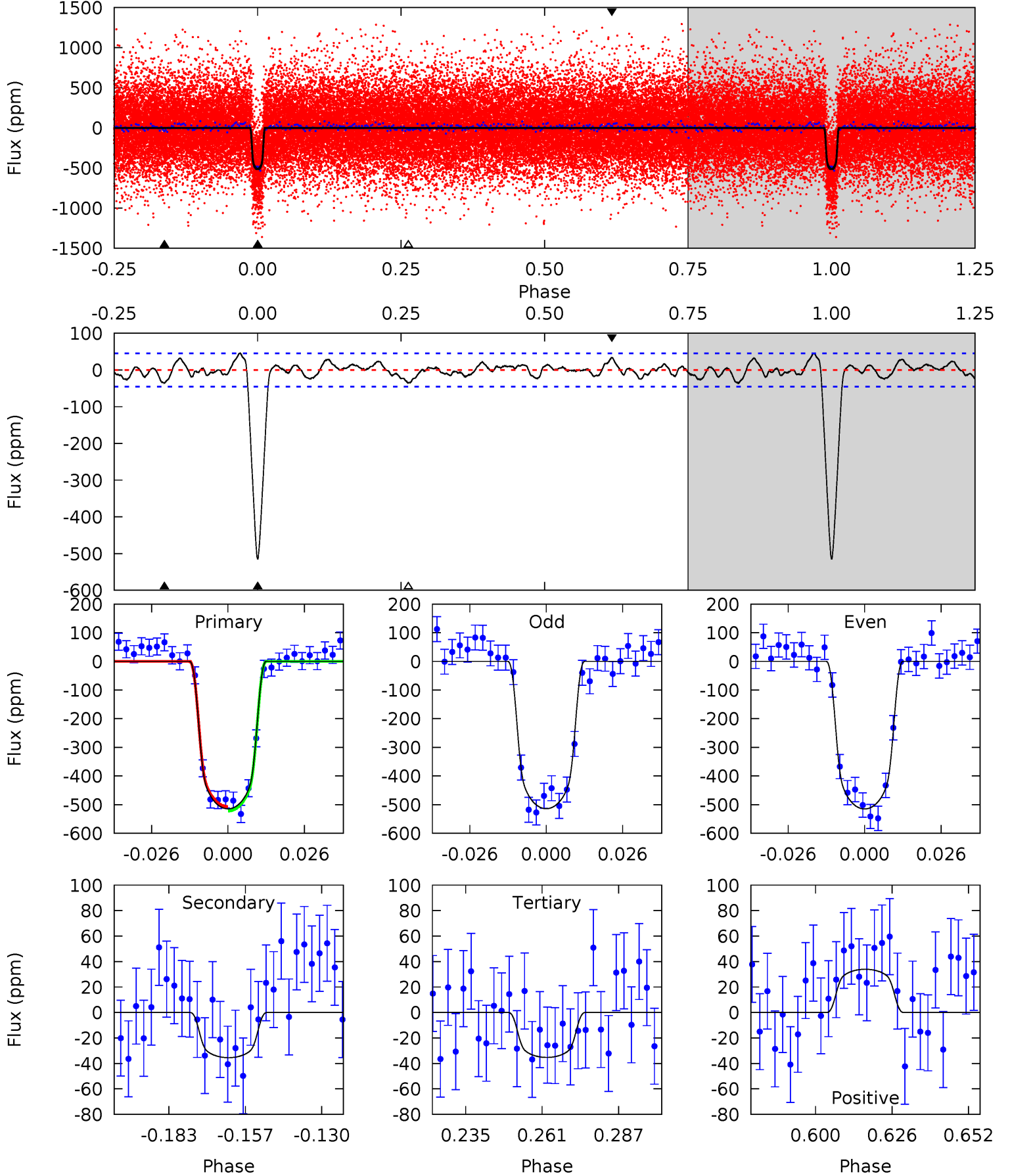
TCE 006422155-02 P= 6.389053 Days $T_0=137.135705$ (BKJD)



DV Model-Shift Uniqueness Test

006422155-02, P = 6.388992 Days, E = 130.753457 Days

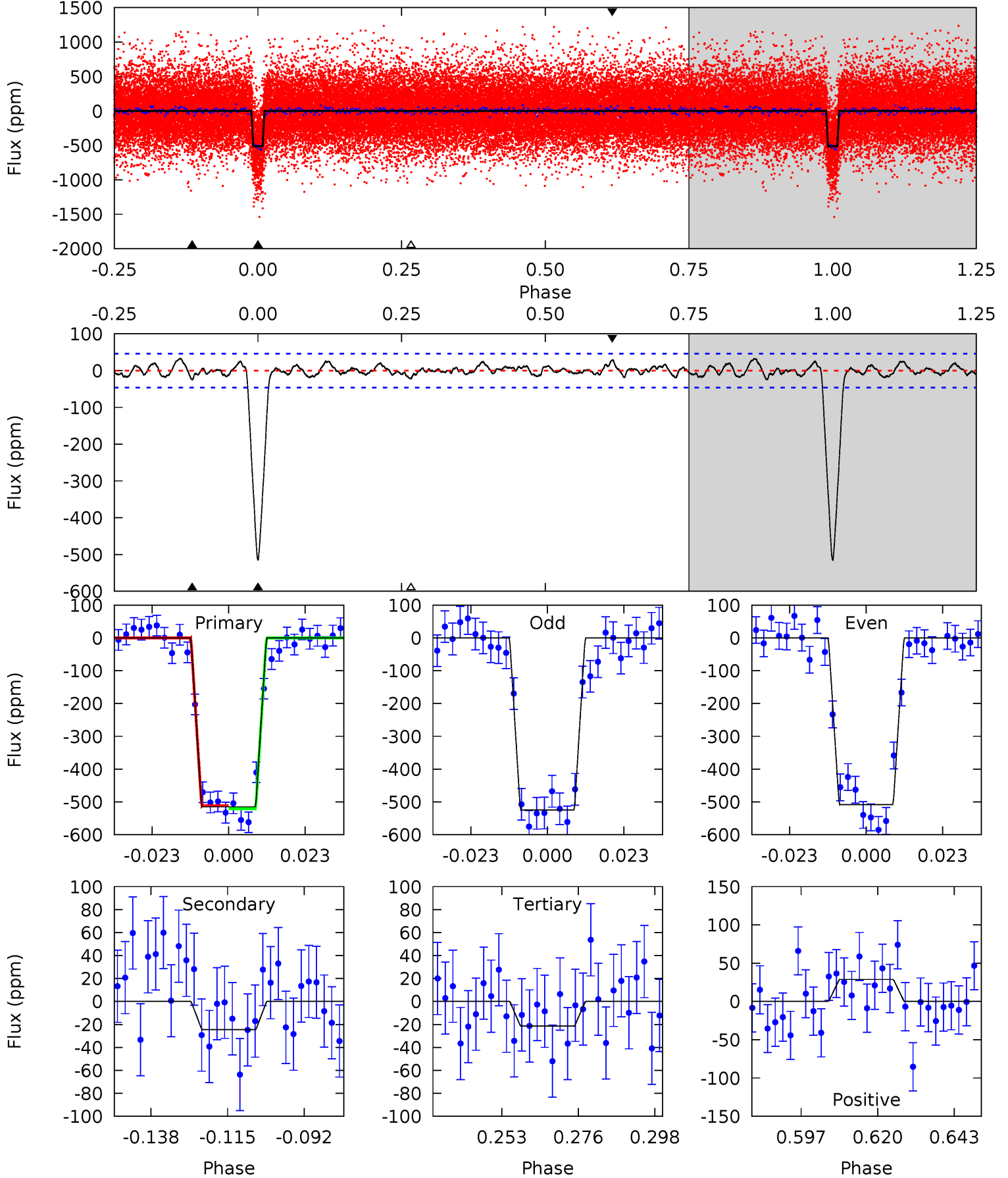
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
55.1	3.80	3.78	3.64	4.84	2.22	1.46	51.3	51.5	0.02	0.16	0.05	0.98	0.08	0.82



Alt Model-Shift Uniqueness Test

006422155-02, P = 6.389053 Days, E = 130.746652 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
54.3	2.58	2.26	3.03	4.86	2.27	1.06	52.1	51.3	0.31	-0.45	0.87	0.99	0.06	0.49



Stellar Parameters For KIC 006422155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5527^{+111}_{-111}	$4.376^{+0.099}_{-0.110}$	$0.260^{+0.150}_{-0.150}$	$1.054^{+0.152}_{-0.110}$	$0.964^{+0.063}_{-0.047}$	$1.159^{+0.475}_{-0.369}$
	+2%/-2%	+2%/-3%	+58%/-58%	+14%/-10%	+7%/-5%	+41%/-32%
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 006422155-02 / KOI 0510.02

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-35 ± 9	$2.92^{+0.33}_{-0.28}$	1358^{+60}_{-55}	3224^{+153}_{-149}	10^{+4}_{-3}
Alt.	-24 ± 9	$2.66^{+0.29}_{-0.27}$	1354^{+56}_{-48}	3138^{+190}_{-229}	$8.195^{+4.477}_{-3.171}$

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 $A_{obs} \gg 1.0$

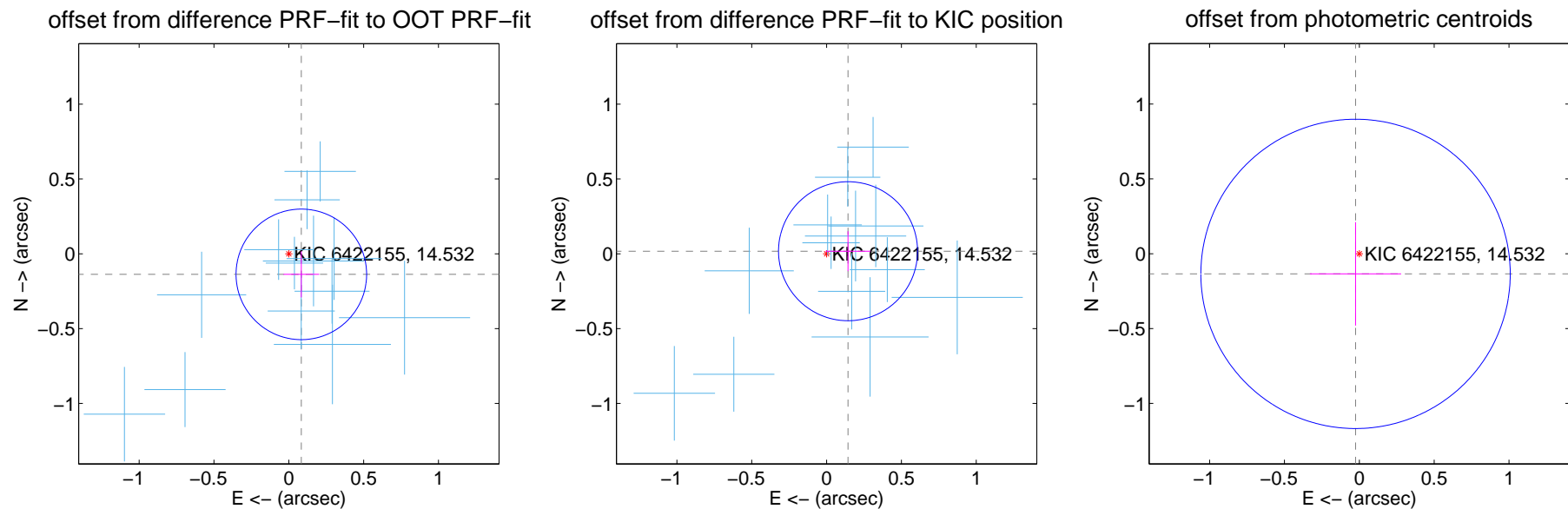
DV Centroid Data

Supplemental centroid analysis for 006422155-02. Kepler magnitude: 14.53. Transit SNR 35.52

There are 13 quarters with good PRF difference image offsets

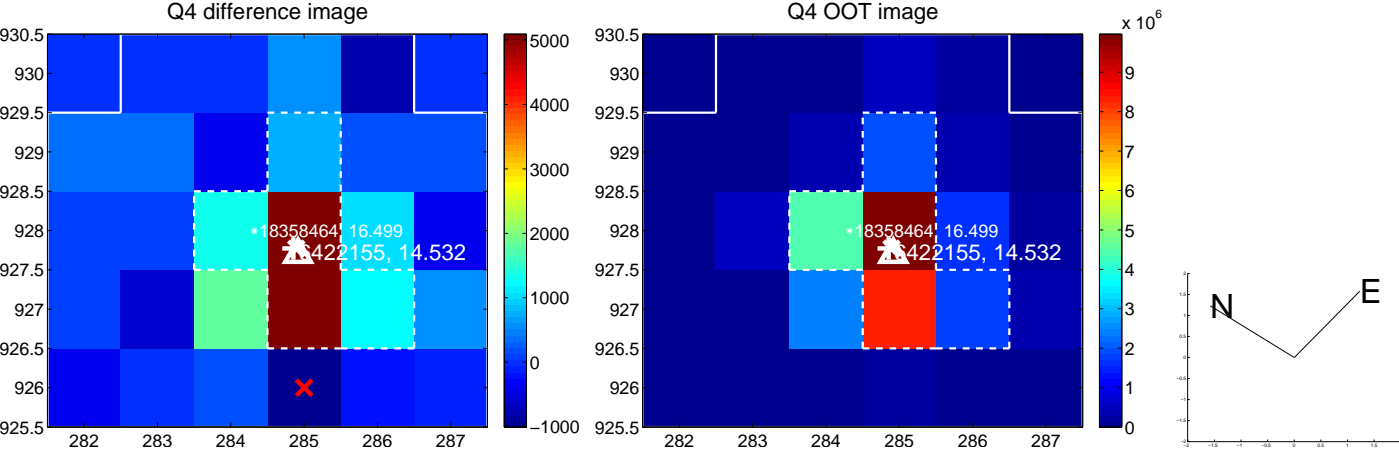
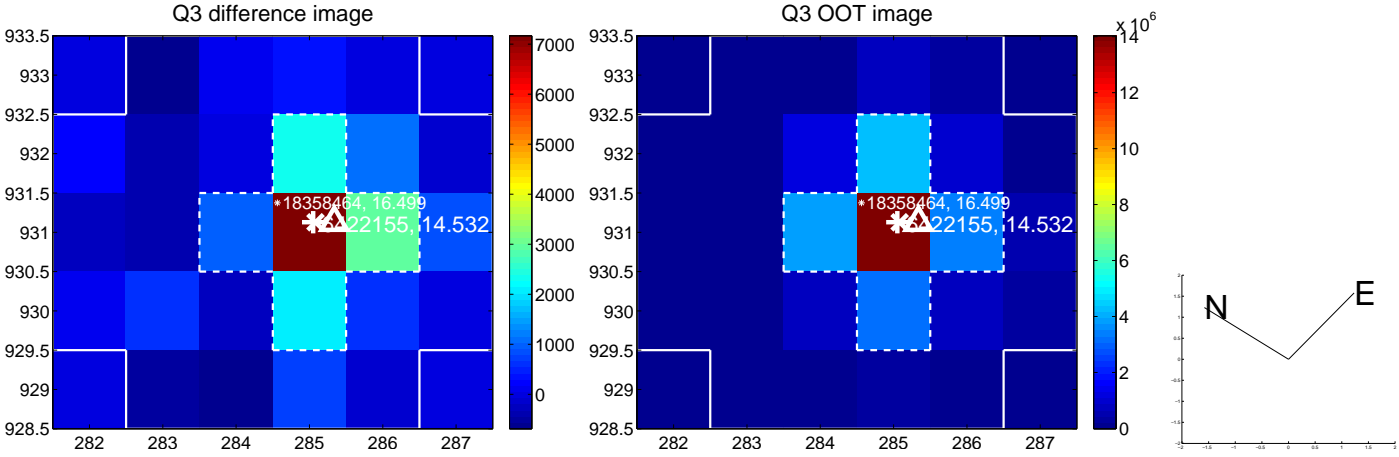
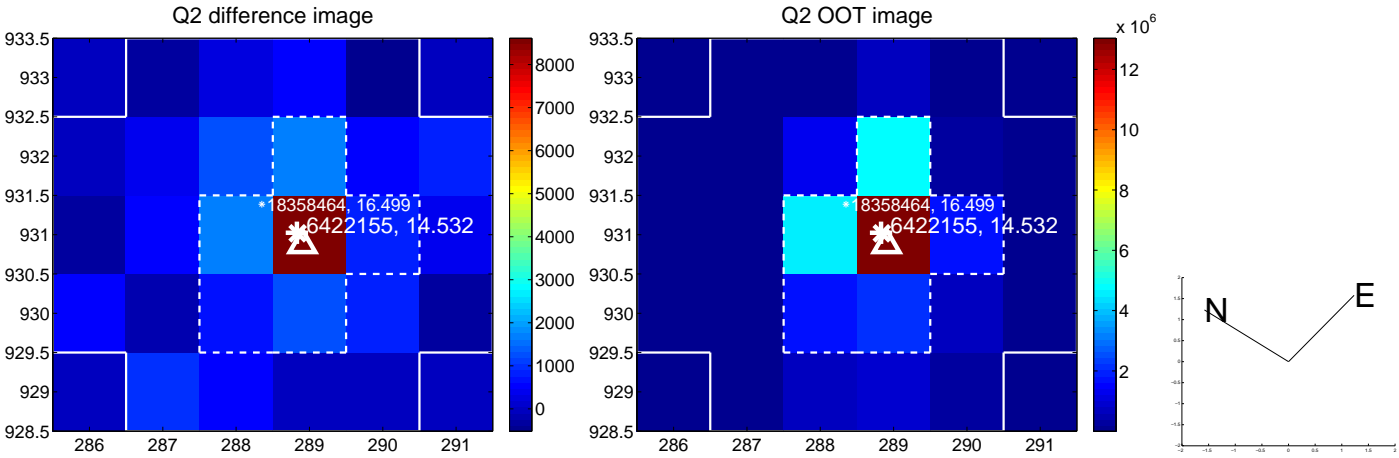
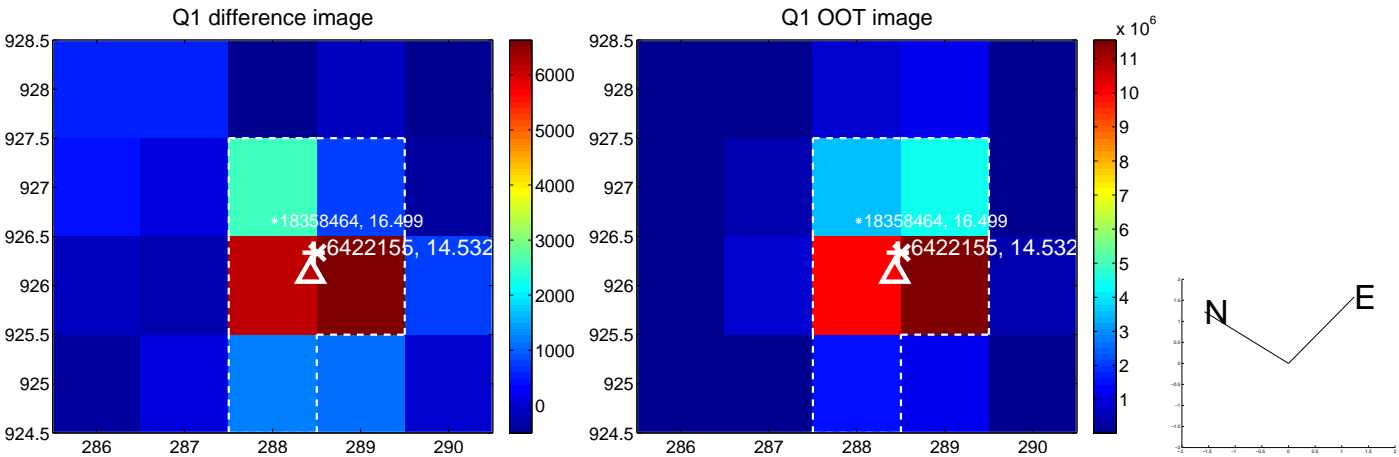
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.161 ± 0.145	1.11	-0.084 ± 0.119	-0.138 ± 0.154
PRF-fit source offset from KIC position	0.144 ± 0.155	0.93	-0.143 ± 0.150	0.017 ± 0.133
photometric centroid source offset	0.14 ± 0.34	0.40	0.03 ± 0.30	-0.13 ± 0.35

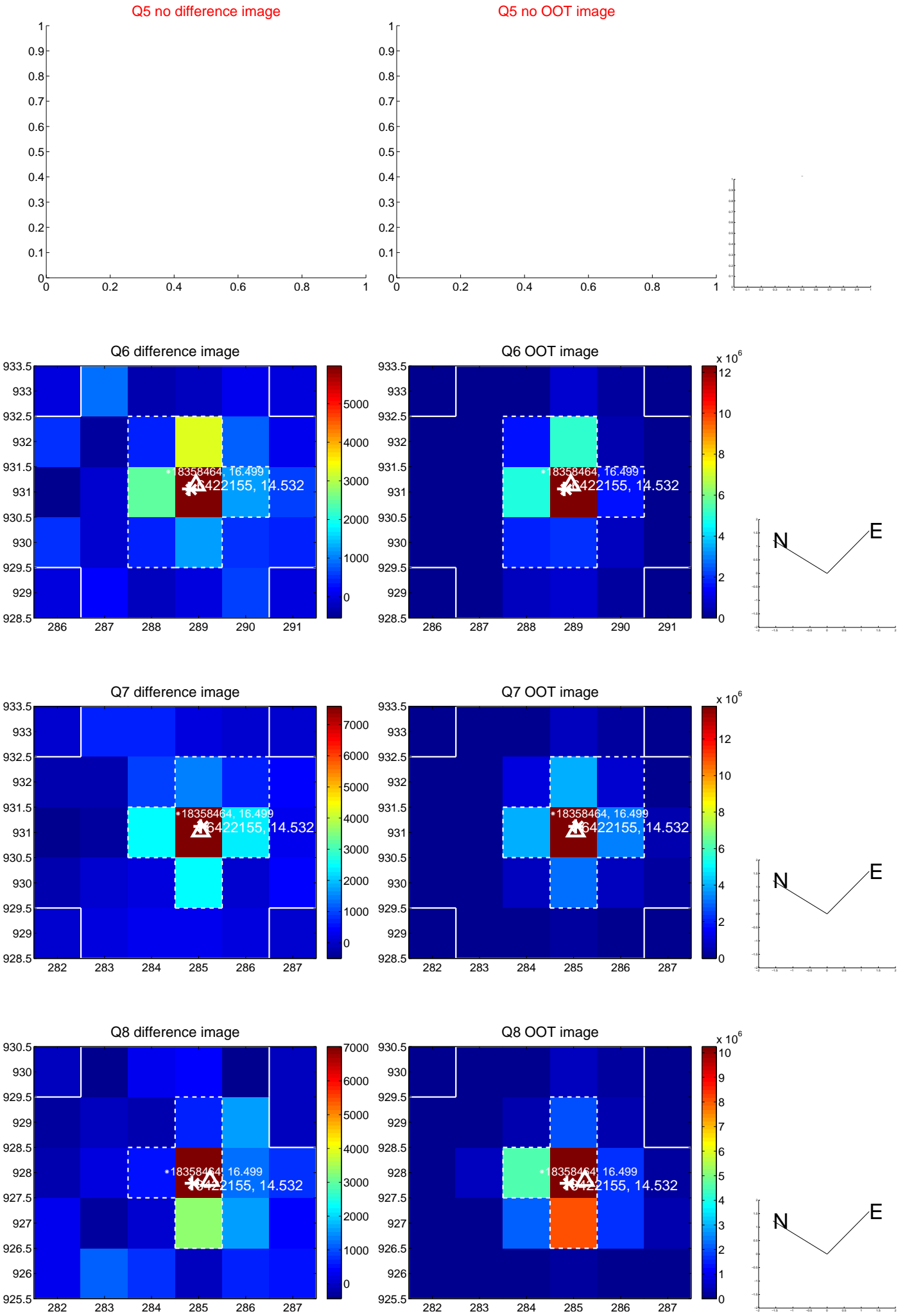


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

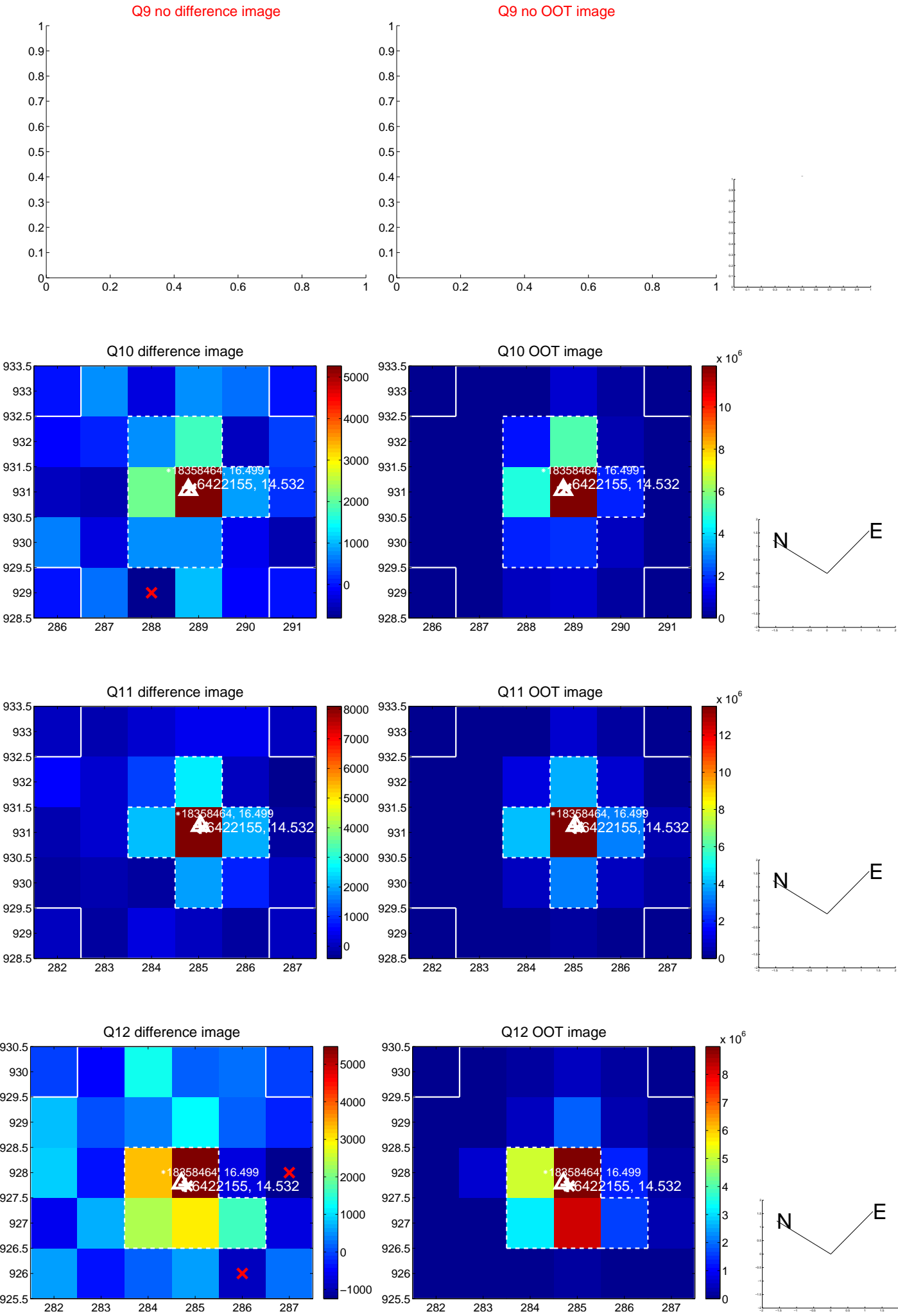
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



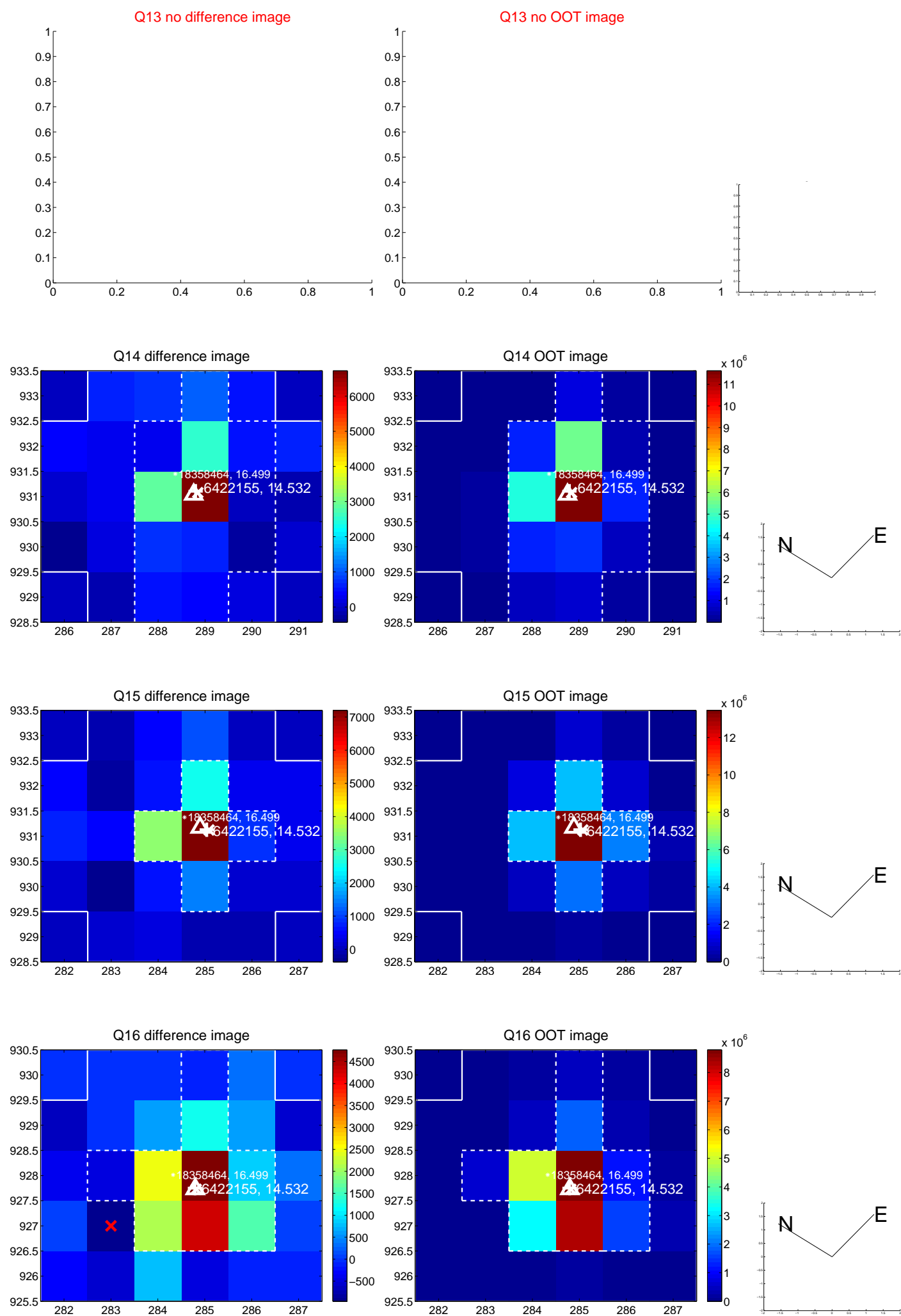
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



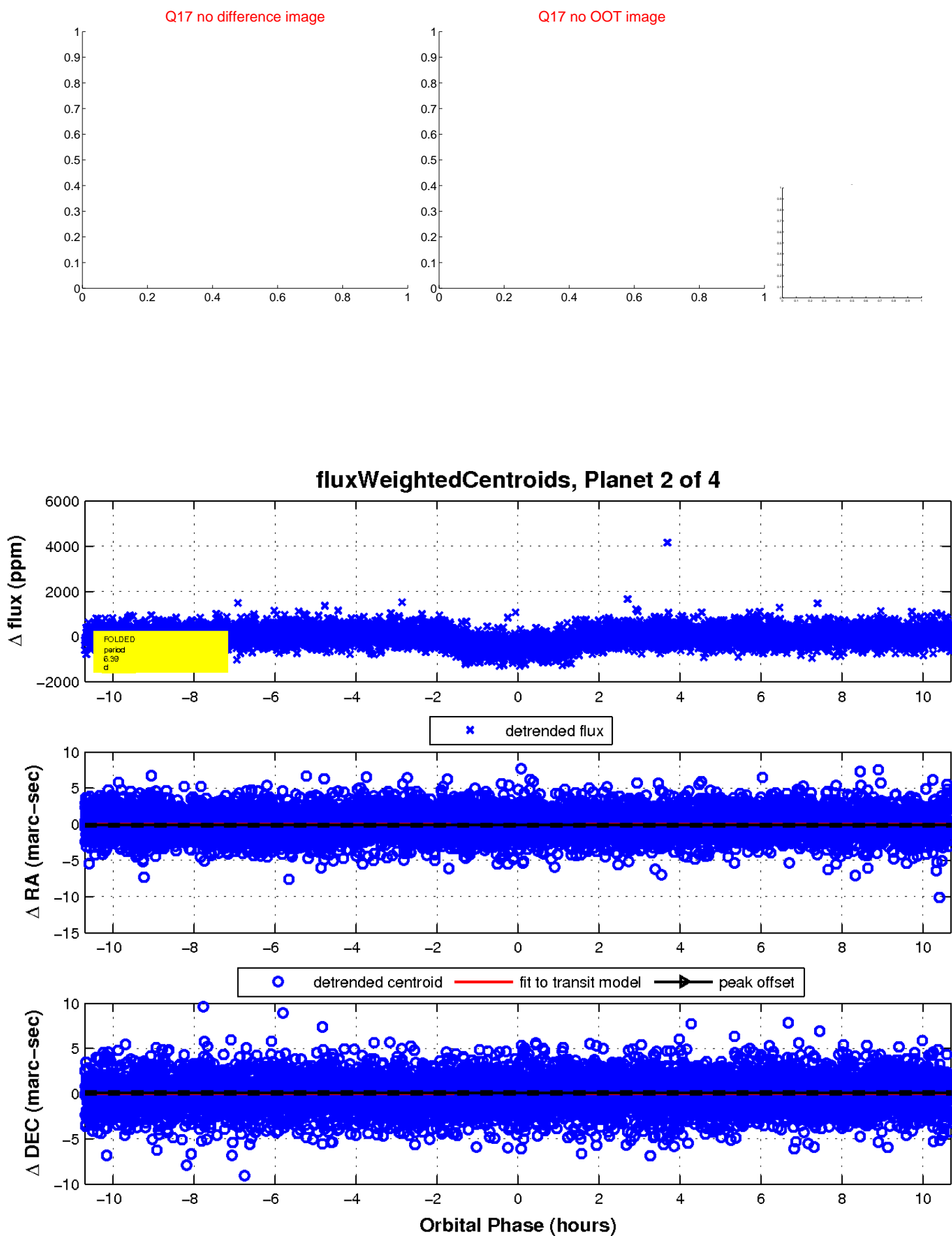
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

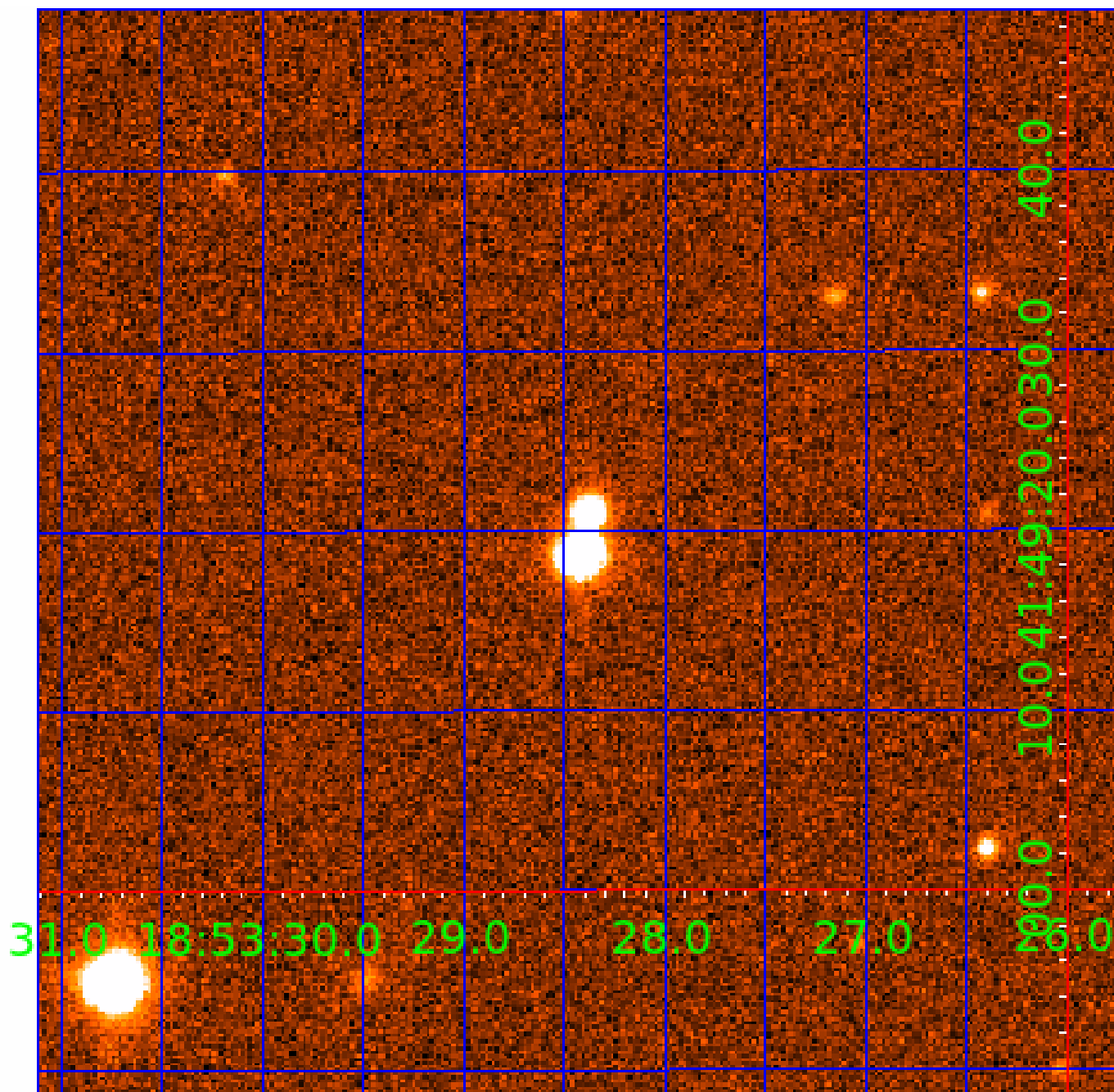


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006422155

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})
006422155-01	OBS	0510.01	2.940304	131.681475	468.6	2.826	38.7	43.8	1.05	5527	2.77	590.05
006422155-02	OBS	0510.02	6.388992	137.142449	527.7	3.566	32.1	35.5	1.05	5527	2.91	209.65
006422155-03	OBS	0510.03	14.627146	136.233648	379.1	3.737	16.0	17.1	1.05	5527	2.44	69.48
006422155-04	OBS	0510.04	35.118505	152.124269	561.0	3.870	14.5	16.2	1.05	5527	2.78	21.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006422155-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006422155-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006422155-03	OBS	PC	0.93	0	0	0	0	NO_COMMENT
006422155-04	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.

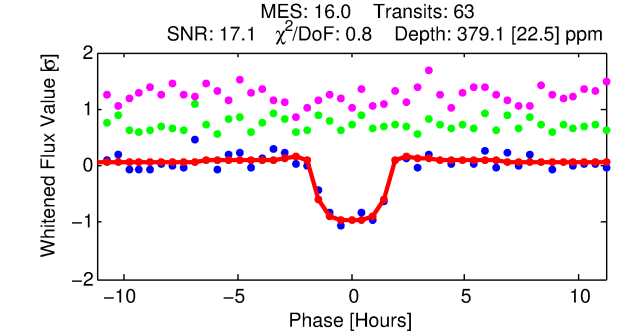
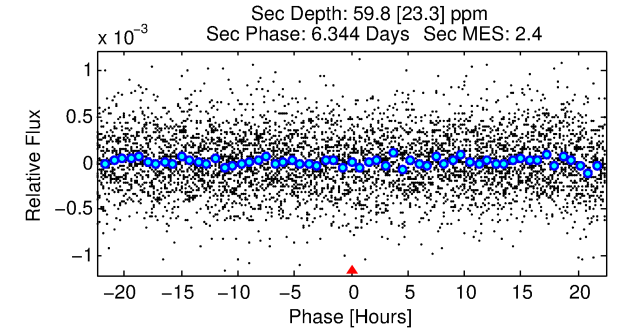
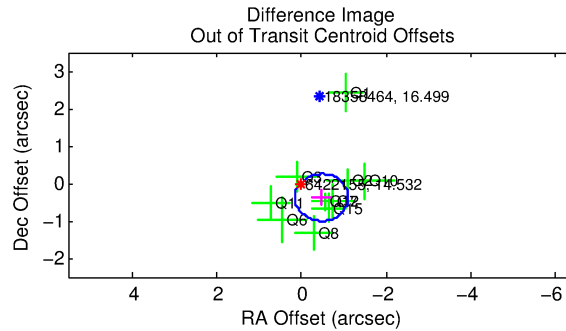
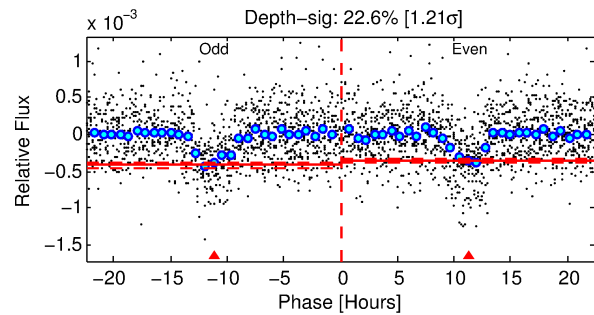
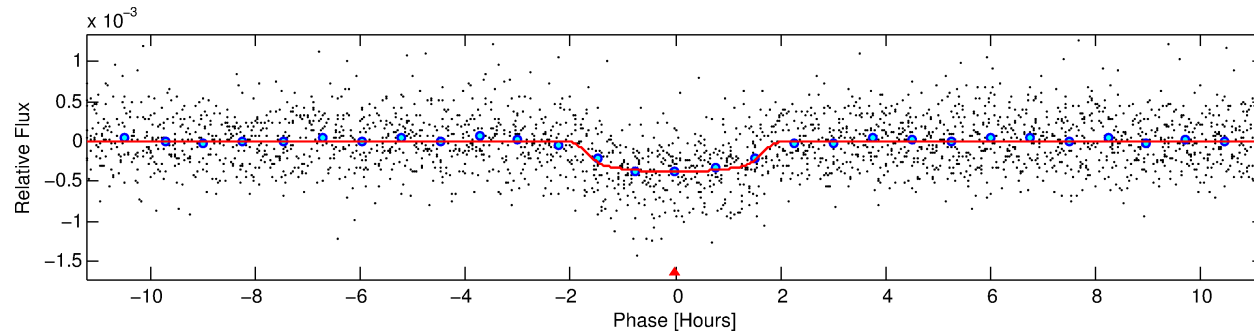
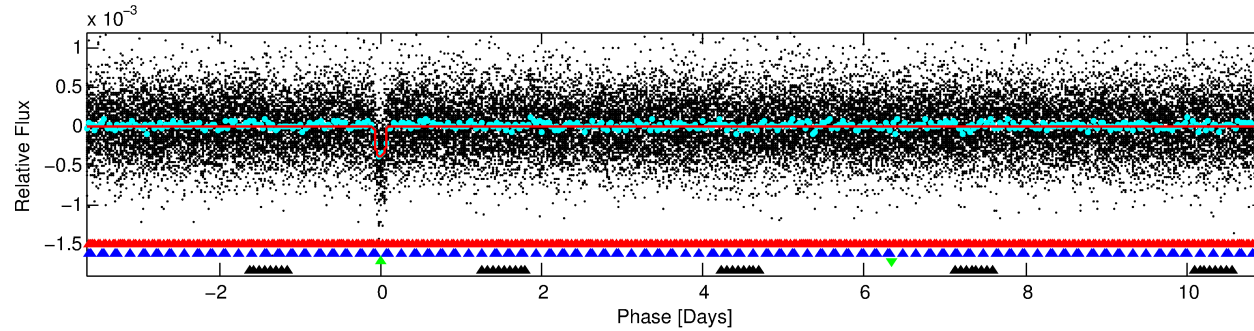
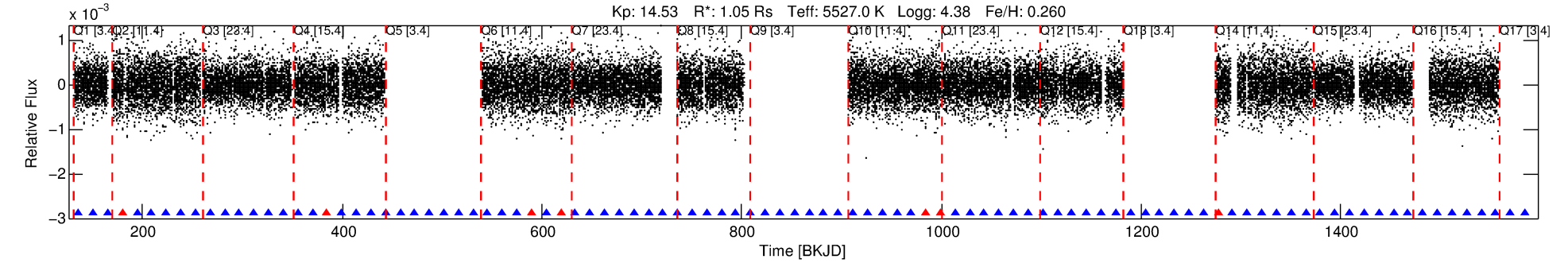
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006422155-03

No Significant Match Found

DV One-Page Summary

KIC: 6422155 Candidate: 3 of 4 Period: 14.627 d
KOI: K00510.03 Name: Kepler-172d Corr: 0.971



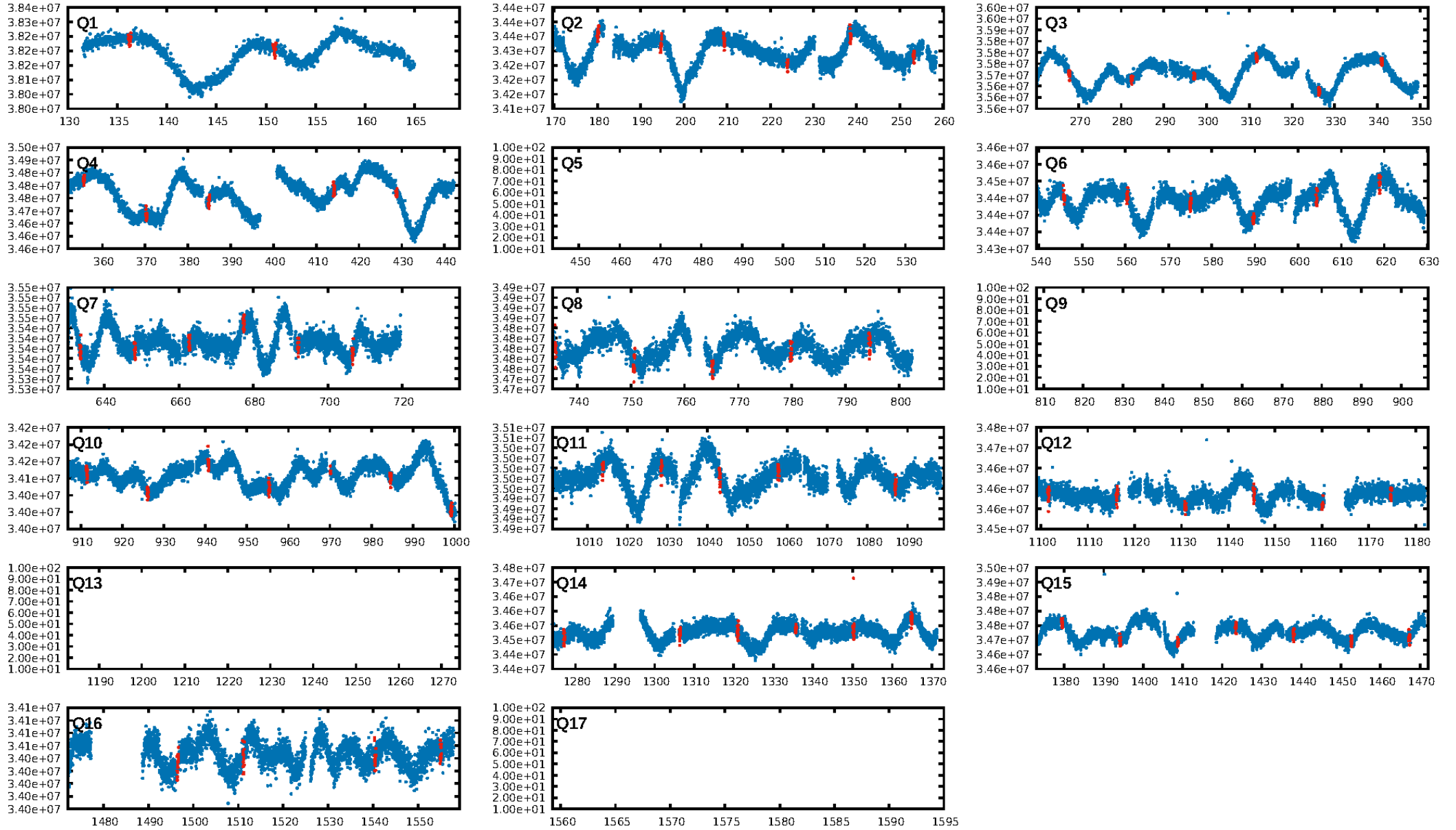
DV Fit Results:

Period = 14.62715 [0.00007] d
Epoch = 136.2336 [0.0040] BKJD
Rp/R* = 0.0213 [0.0040]
a/R* = 14.93 [11.62]
b = 0.89 [0.18]
Seff = 69.48 [14.61]
Teff = 736 [39] K
Rp = 2.45 [0.58] Re
a = 0.1156 [0.0148] AU
Ag = 73.57 [42.17] [1.72σ]
Teffp = 3334 [454] K [5.69σ]

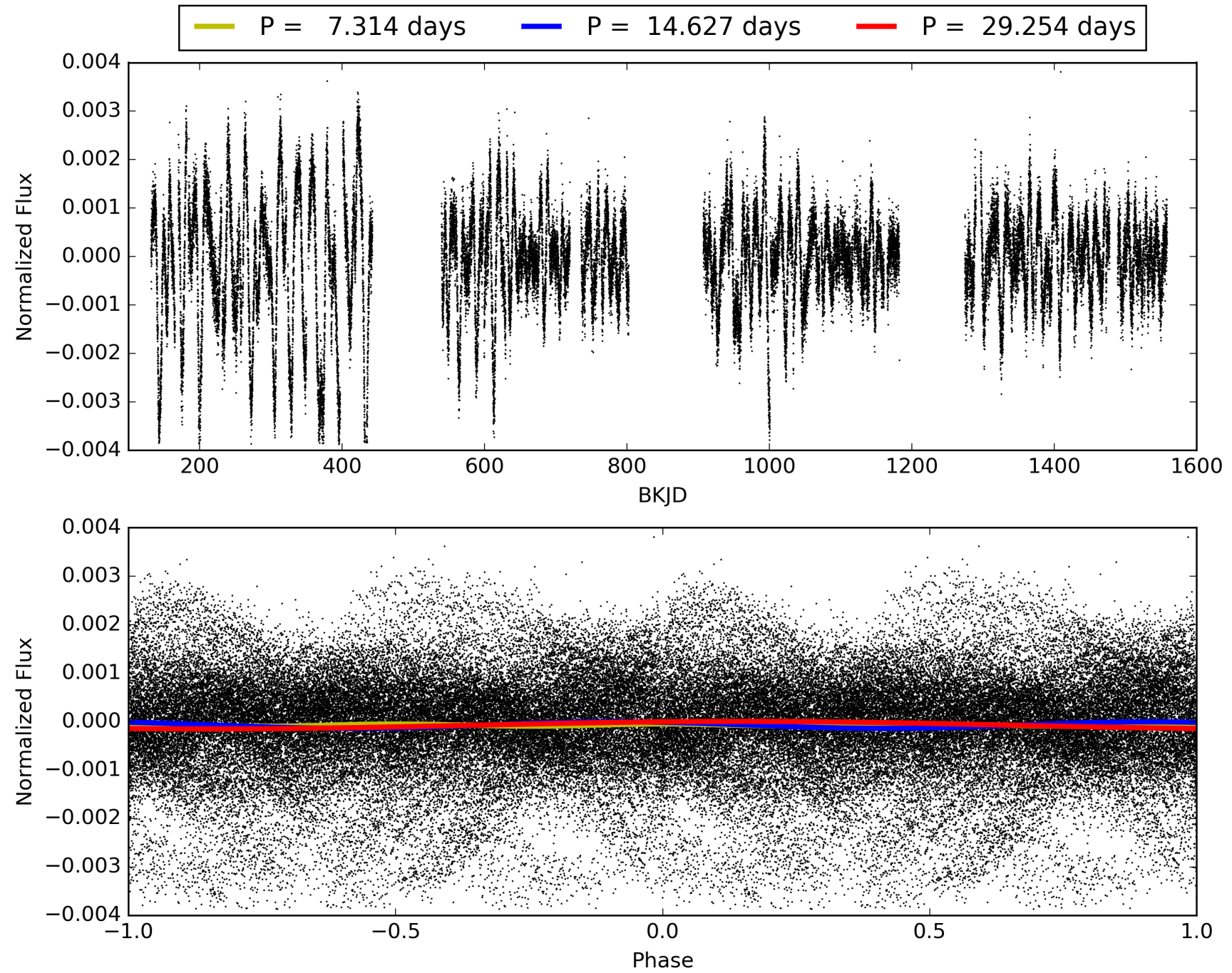
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [38.28σ]
LongPeriod-sig: 100.0% [91.41σ]
ModelChiSquare2-sig: 91.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.87e-56
RollingBand-fgt: 0.89 [54/61]
GhostDiagnostic-chr: 1.716
Centroid-sig: 2.4%
Centroid-so: 1.198 arcsec [1.78σ]
OotOffset-rm: 0.608 arcsec [2.90σ]
KicOffset-rm: 0.589 arcsec [2.80σ]
OotOffset-st: 3/4/2/1 [10]
KicOffset-st: 3/4/2/1 [10]
DiffImageQuality-fgm: 1.00 [10/10]
DiffImageOverlap-fno: 0.92 [12/13]

TCE 006422155-03, PDC Light Curves

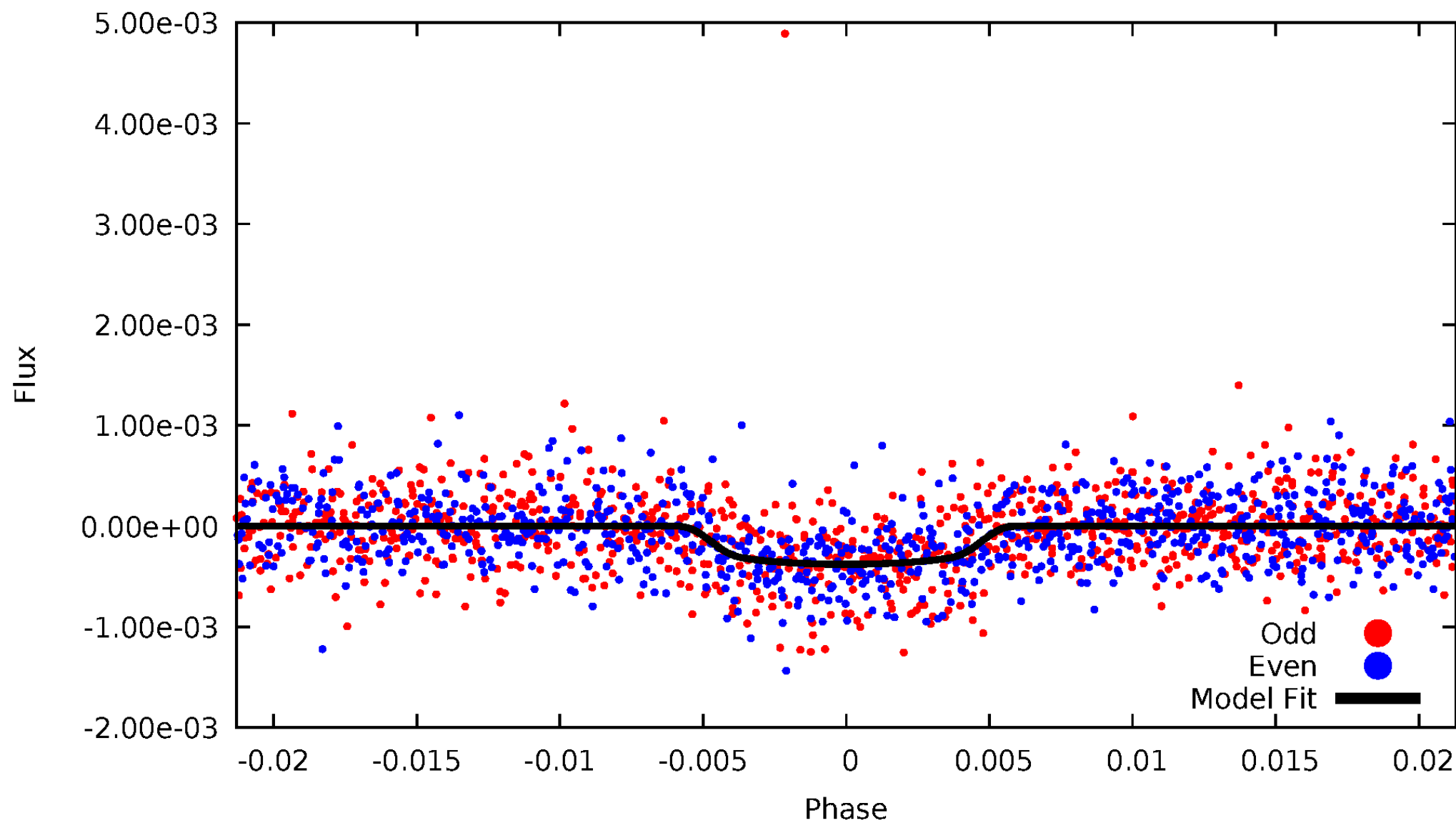


TCE 006422155-03



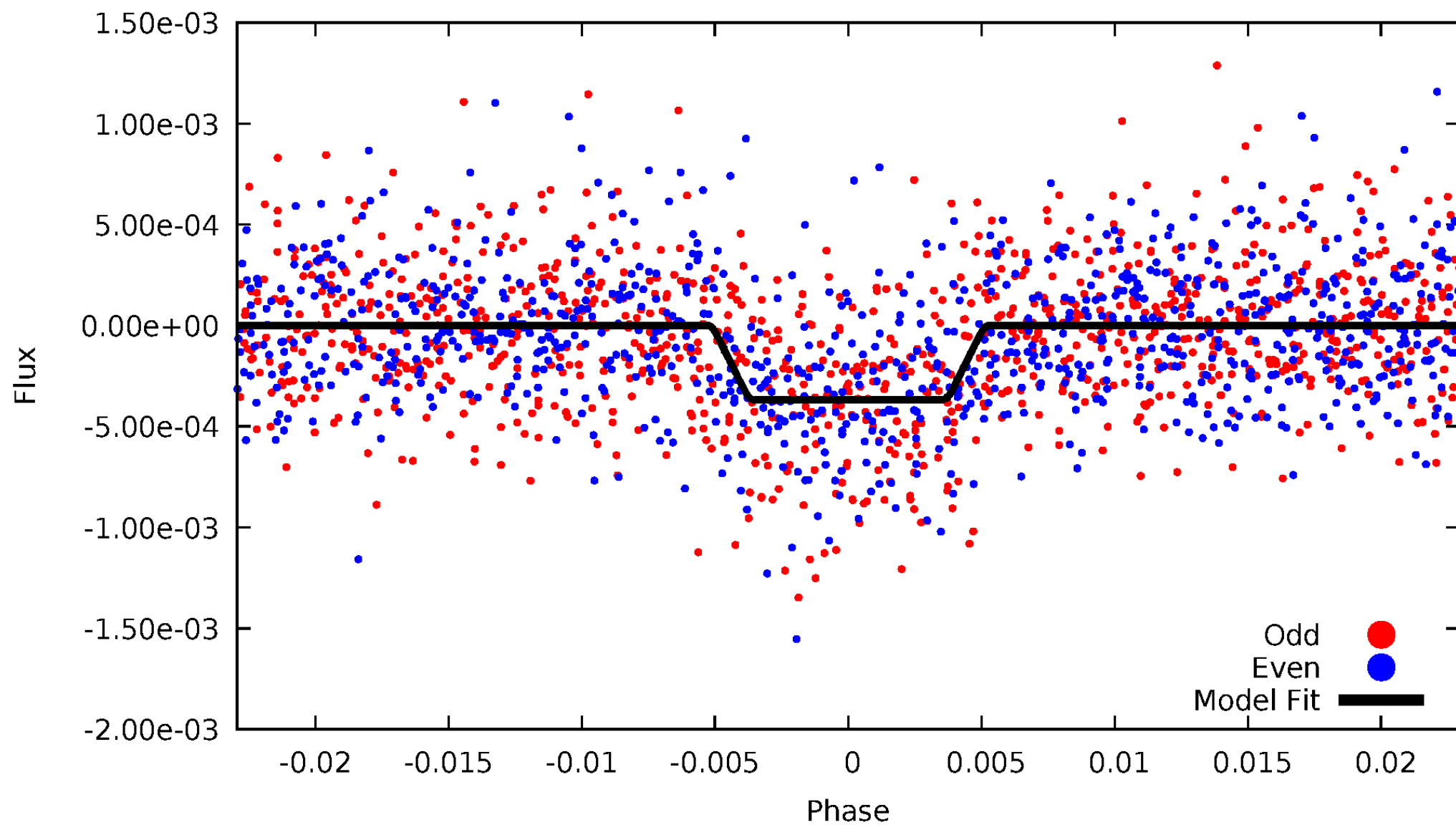
DV Odd/Even

TCE 006422155-03

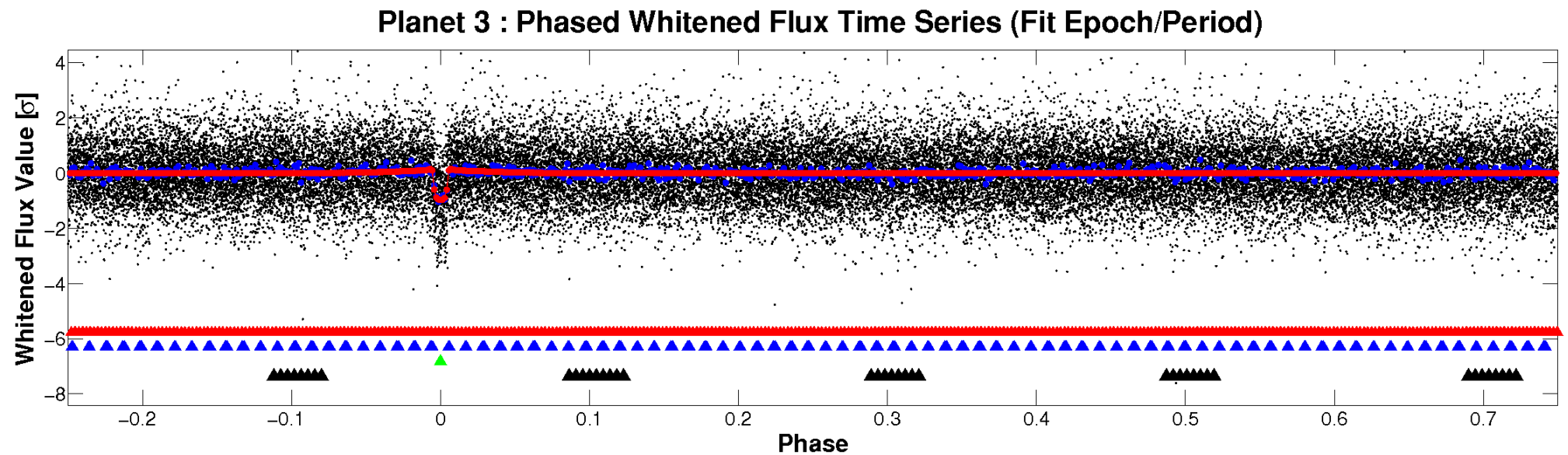
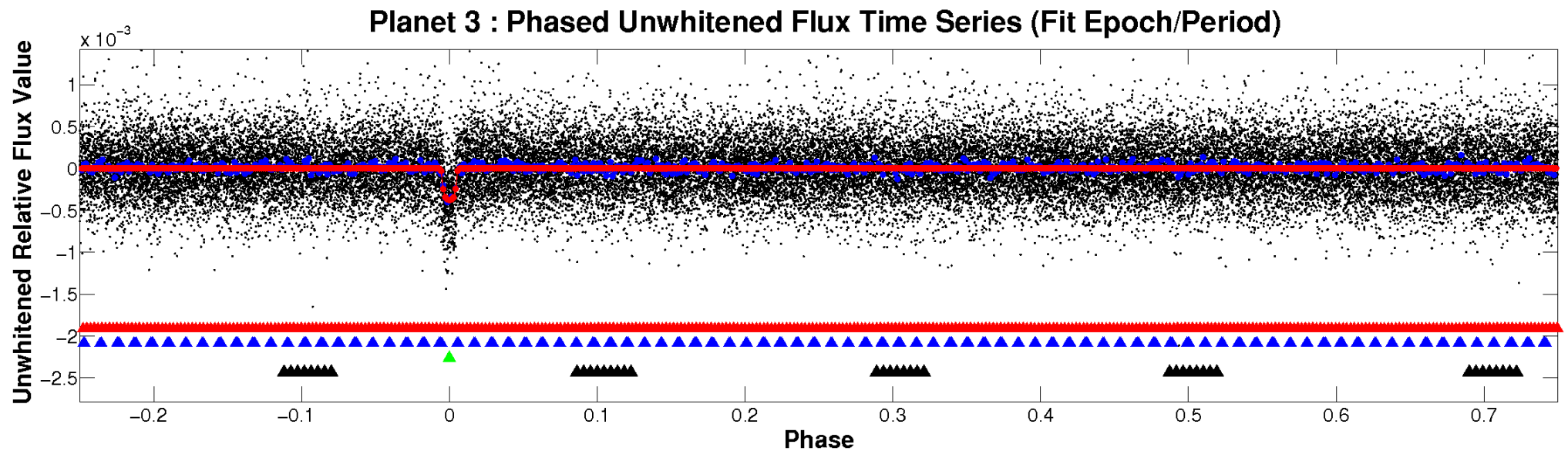


ALT Odd/Even

TCE 006422155-03

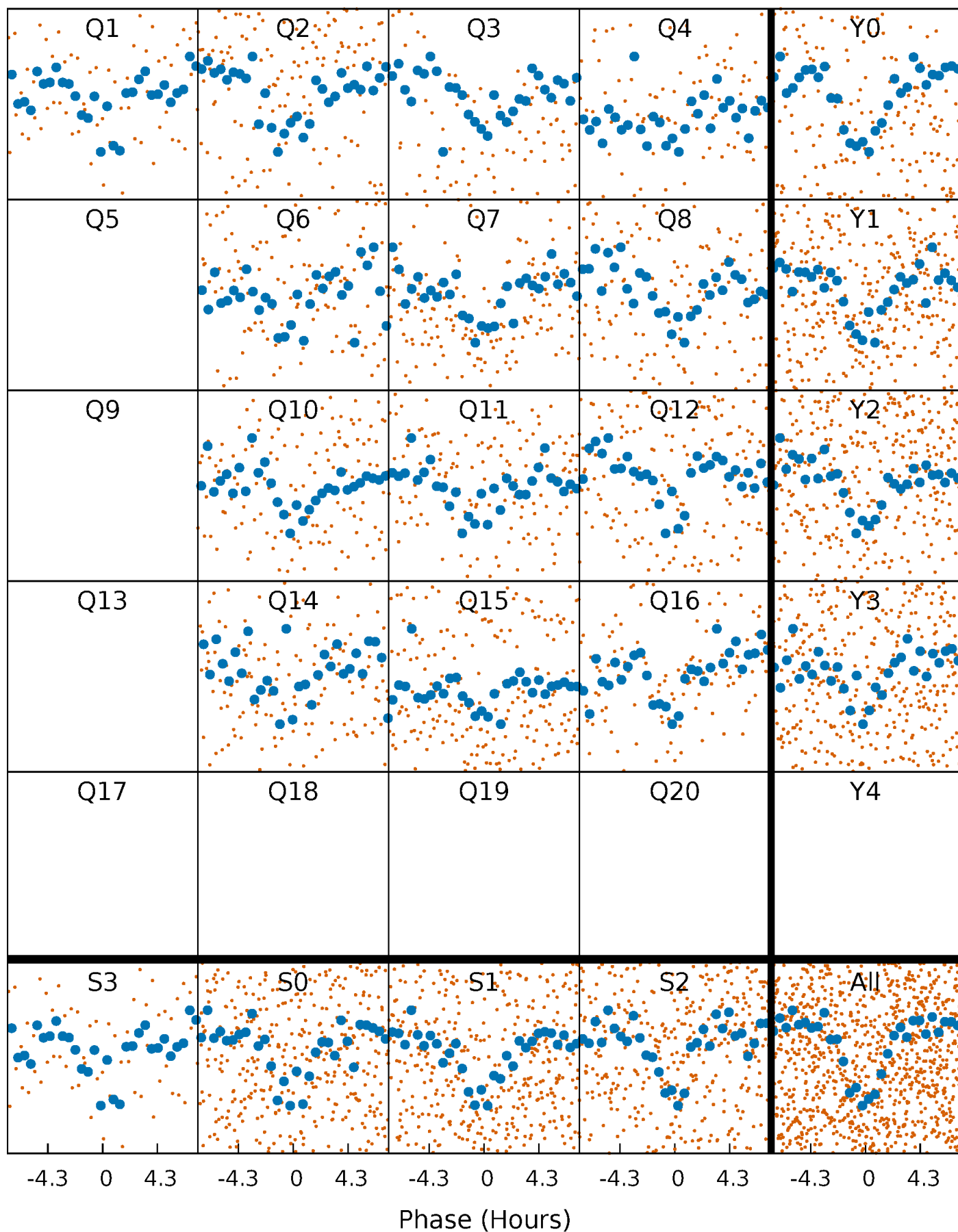


Non-Whitened Vs. Whitened Light Curve



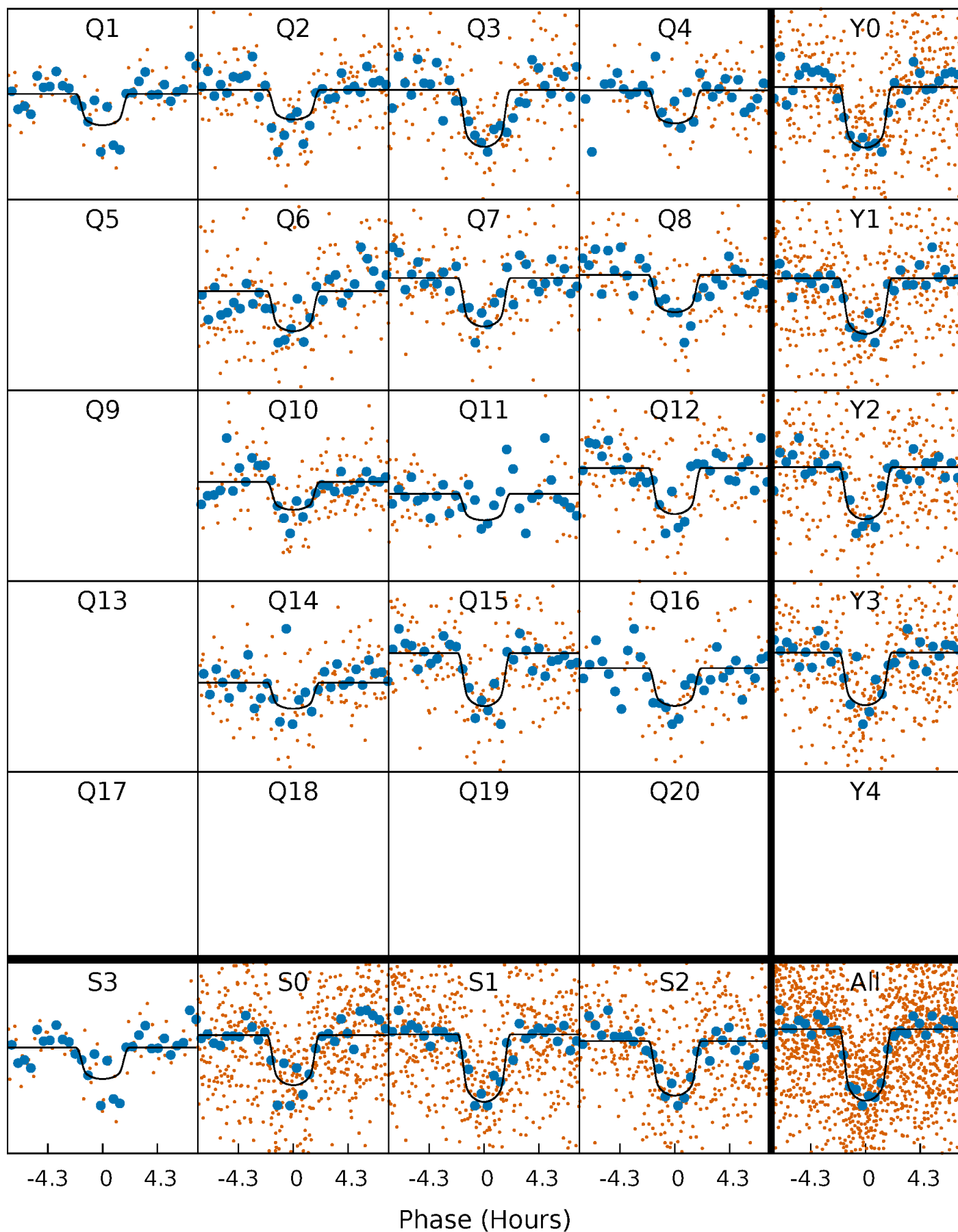
PDC Quarter-Phased Transit Curves

TCE 006422155-03 P= 14.627146 Days $T_0=136.233648$ (BKJD)



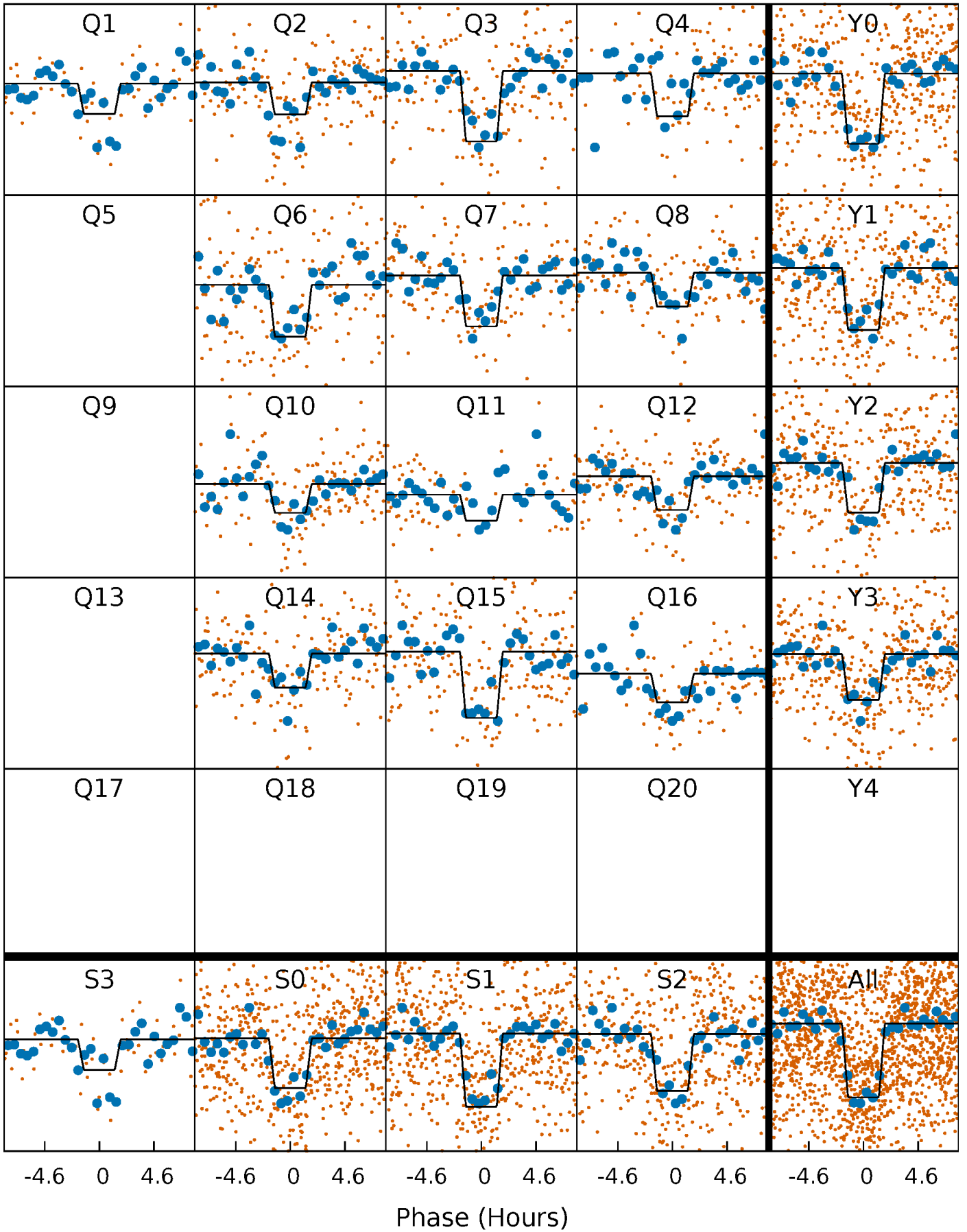
DV Quarter-Phased Transit Curves

TCE 006422155-03 P= 14.627146 Days $T_0=136.233648$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

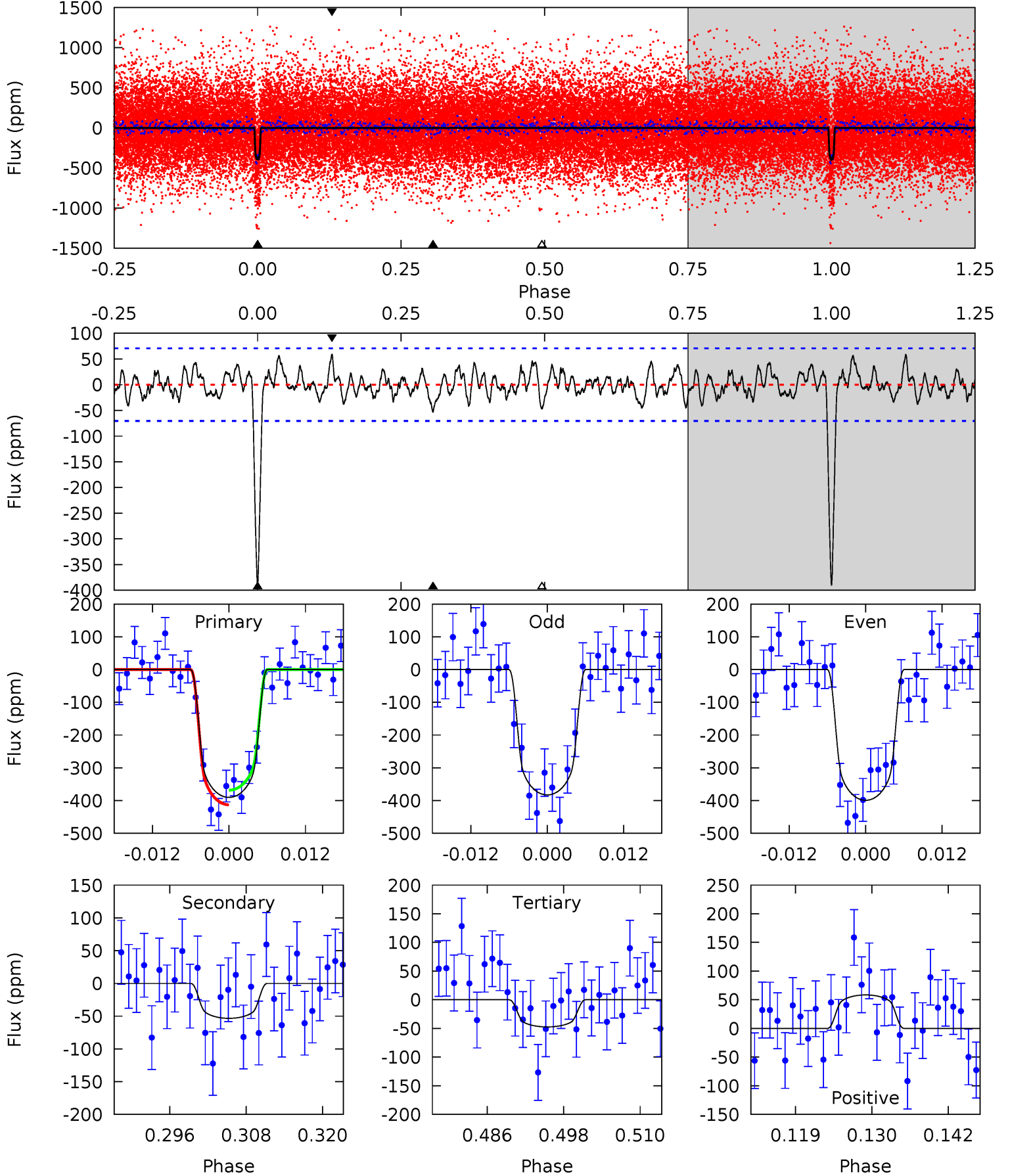
TCE 006422155-03 P= 14.627043 Days $T_0=136.238085$ (BKJD)



DV Model-Shift Uniqueness Test

006422155-03, P = 14.627146 Days, E = 121.606502 Days

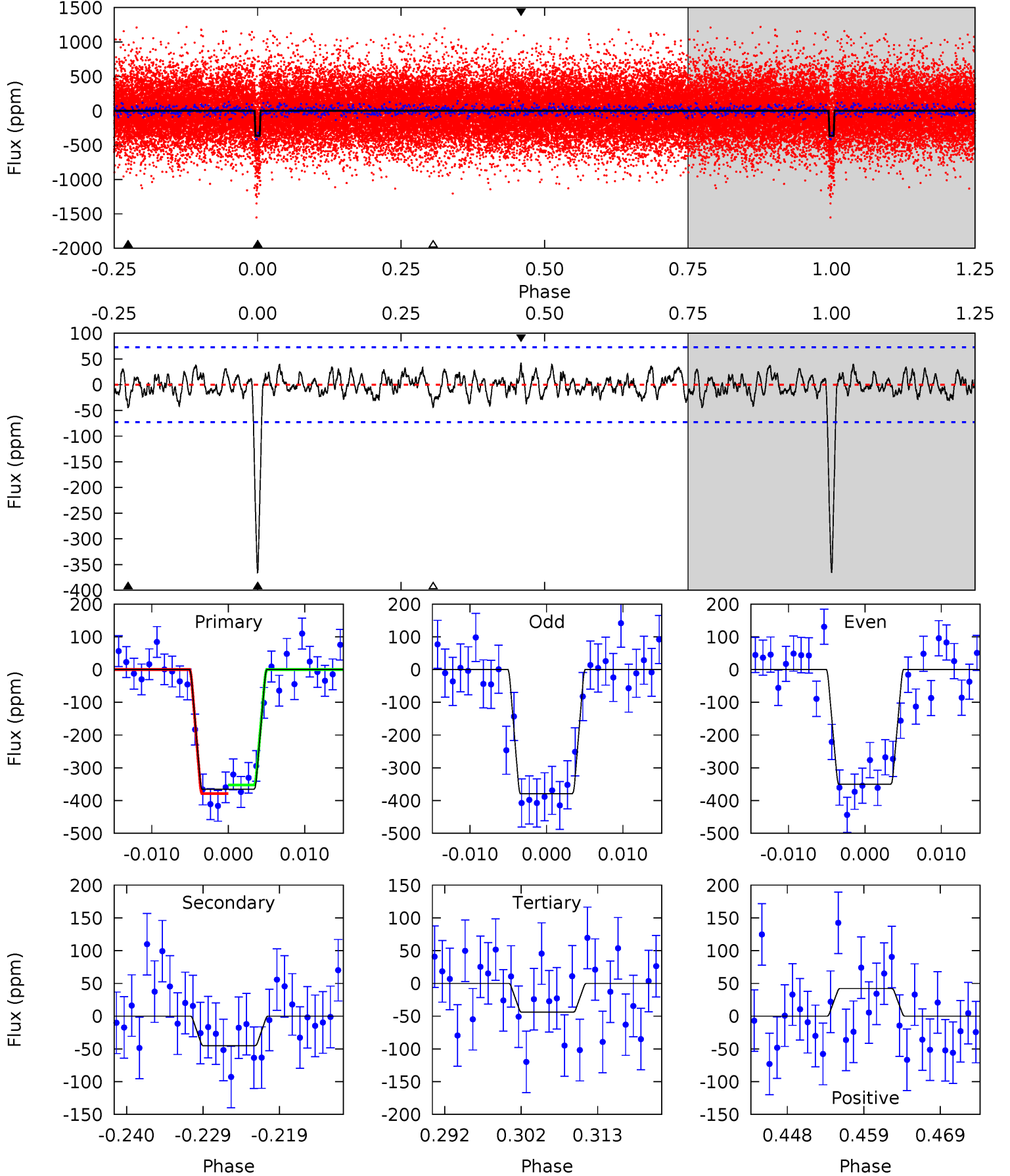
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.6	3.78	3.35	4.13	4.99	2.52	1.38	24.3	23.5	0.43	-0.35	0.58	1.00	0.13	1.58



Alt Model-Shift Uniqueness Test

006422155-03, P = 14.627043 Days, E = 121.611042 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.2	3.10	3.02	2.90	5.02	2.56	1.10	22.1	22.3	0.08	0.20	0.98	1.09	0.10	0.89



Stellar Parameters For KIC 006422155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5527^{+111}_{-111}	$4.376^{+0.099}_{-0.110}$	$0.260^{+0.150}_{-0.150}$	$1.054^{+0.152}_{-0.110}$	$0.964^{+0.063}_{-0.047}$	$1.159^{+0.475}_{-0.369}$
	+2%/-2%	+2%/-3%	+58%/-58%	+14%/-10%	+7%/-5%	+41%/-32%
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 006422155-03 / KOI 0510.03

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-53 ± 14	$2.45^{+0.54}_{-0.48}$	1027^{+47}_{-38}	3640^{+325}_{-259}	64^{+43}_{-25}
Alt.	-45 ± 15	$2.22^{+0.50}_{-0.48}$	1030^{+44}_{-40}	3665^{+363}_{-292}	66^{+48}_{-28}

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 $A_{obs} \gg 1.0$

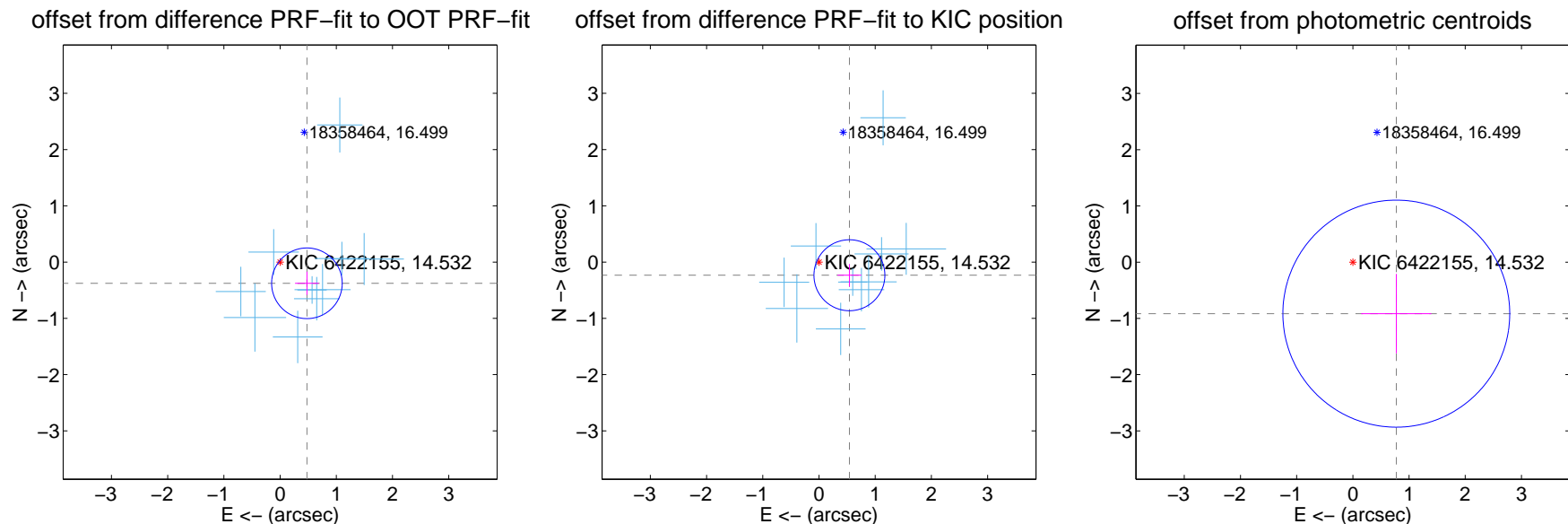
DV Centroid Data

Supplemental centroid analysis for 006422155-03. Kepler magnitude: 14.53. Transit SNR 17.14

There are 10 quarters with good PRF difference image offsets

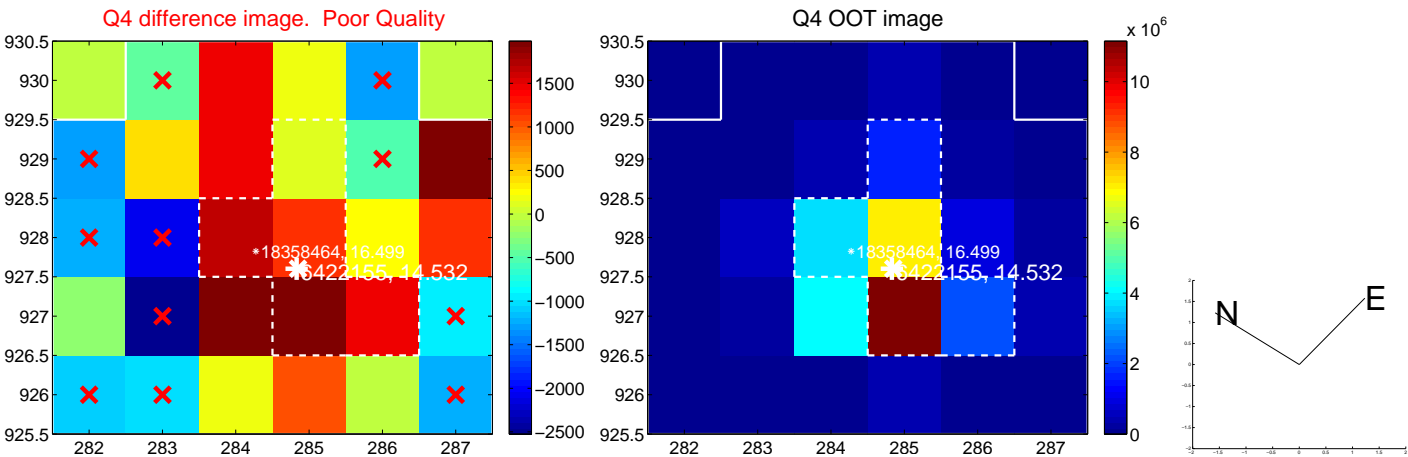
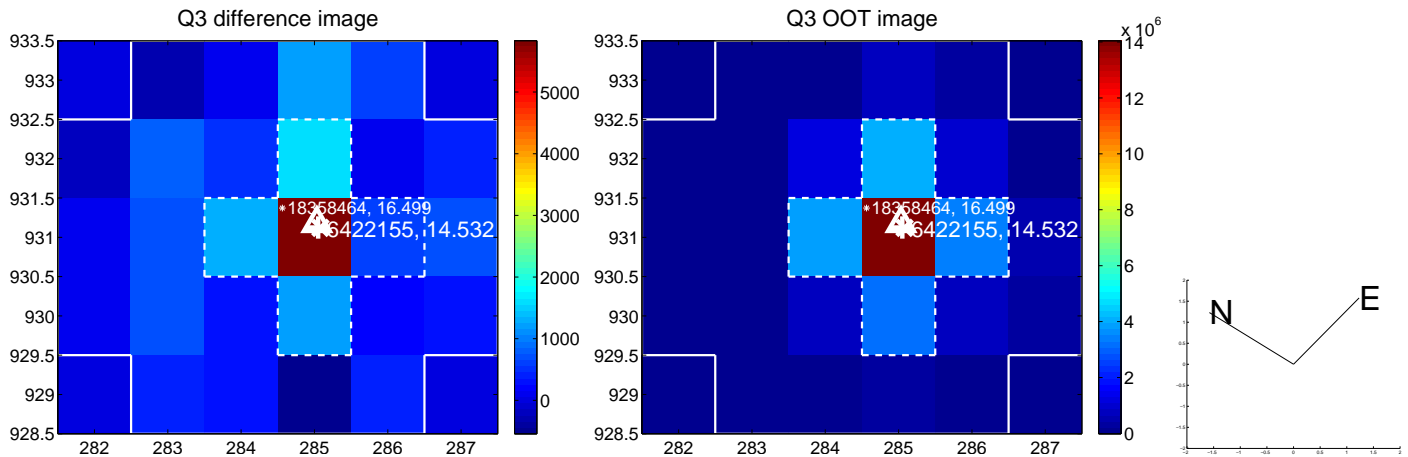
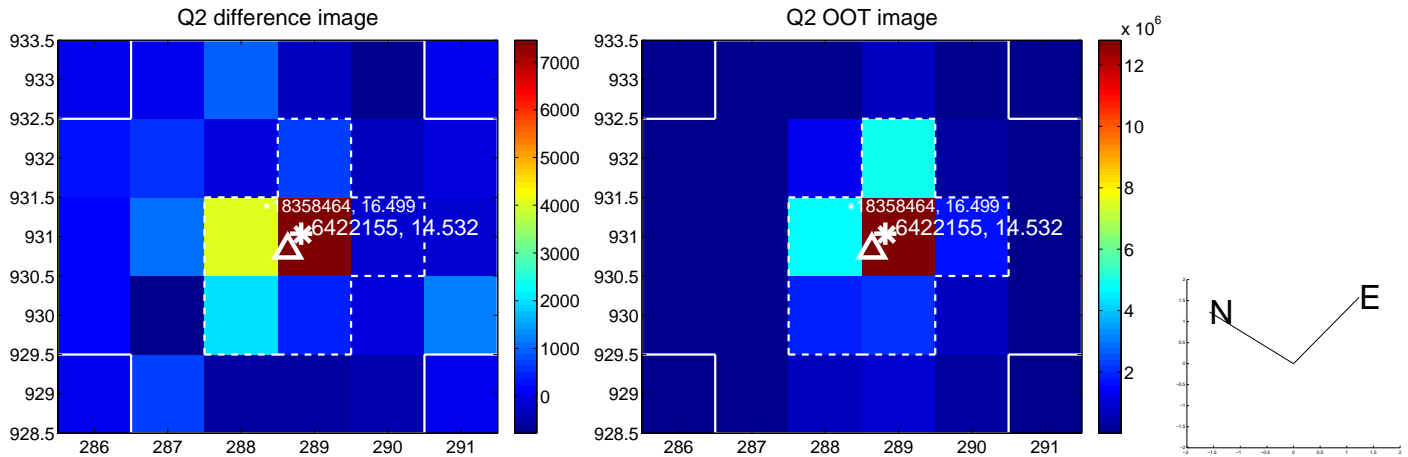
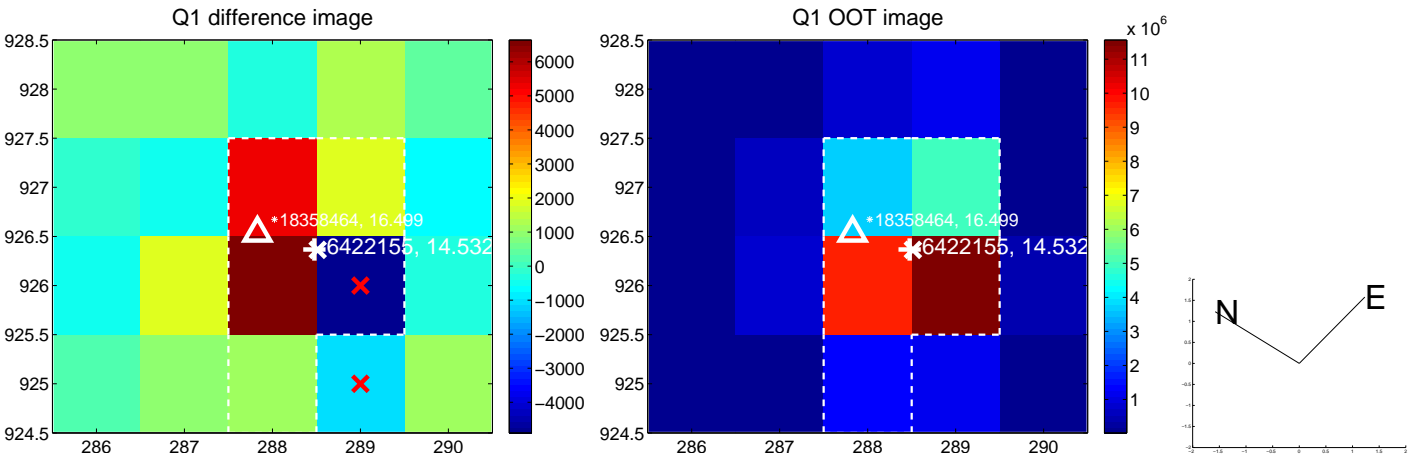
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.608 ± 0.209	2.90	-0.477 ± 0.212	-0.377 ± 0.206
PRF-fit source offset from KIC position	0.589 ± 0.210	2.80	-0.541 ± 0.212	-0.234 ± 0.200
photometric centroid source offset	1.20 ± 0.67	1.78	-0.77 ± 0.62	-0.92 ± 0.71

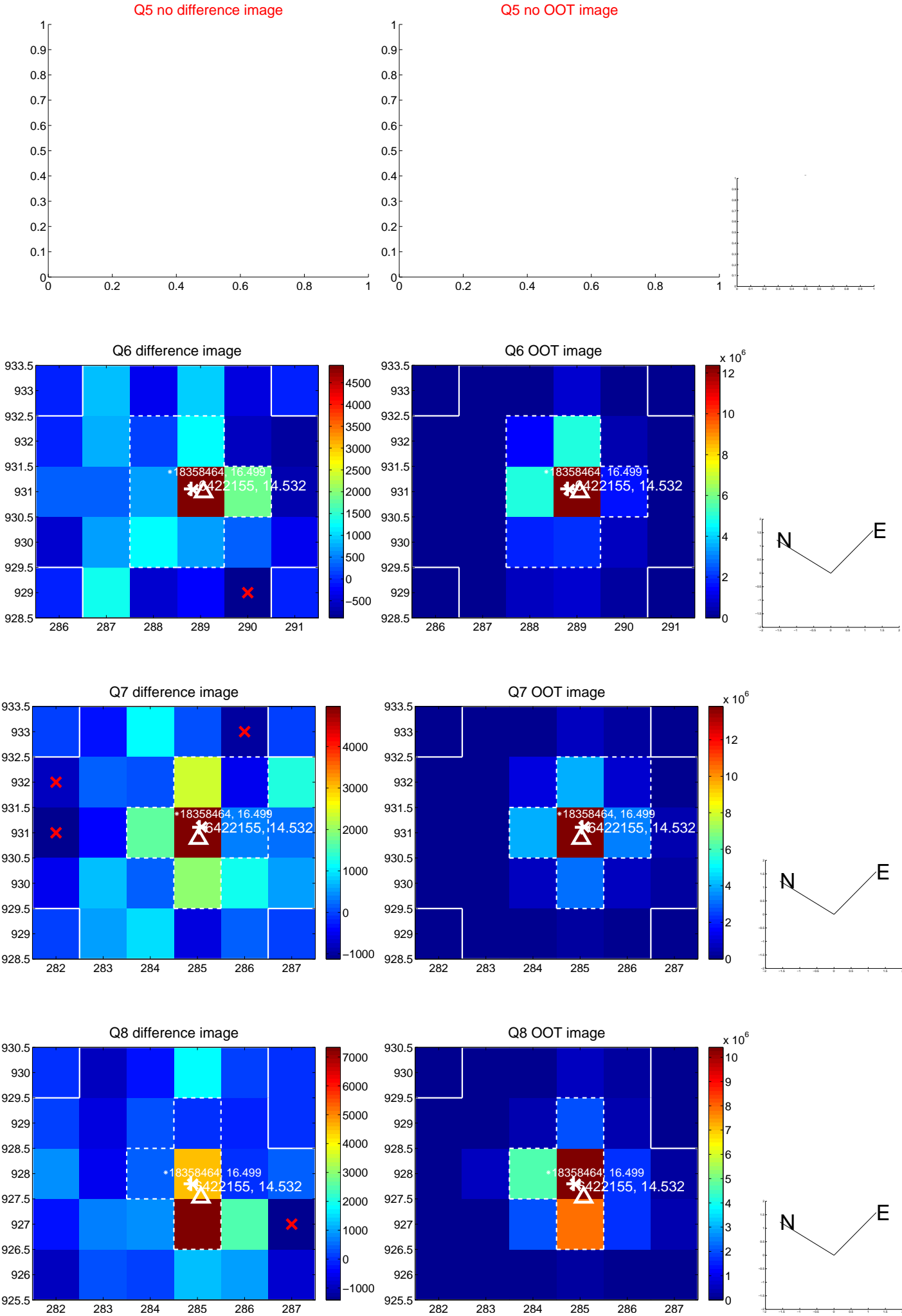


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

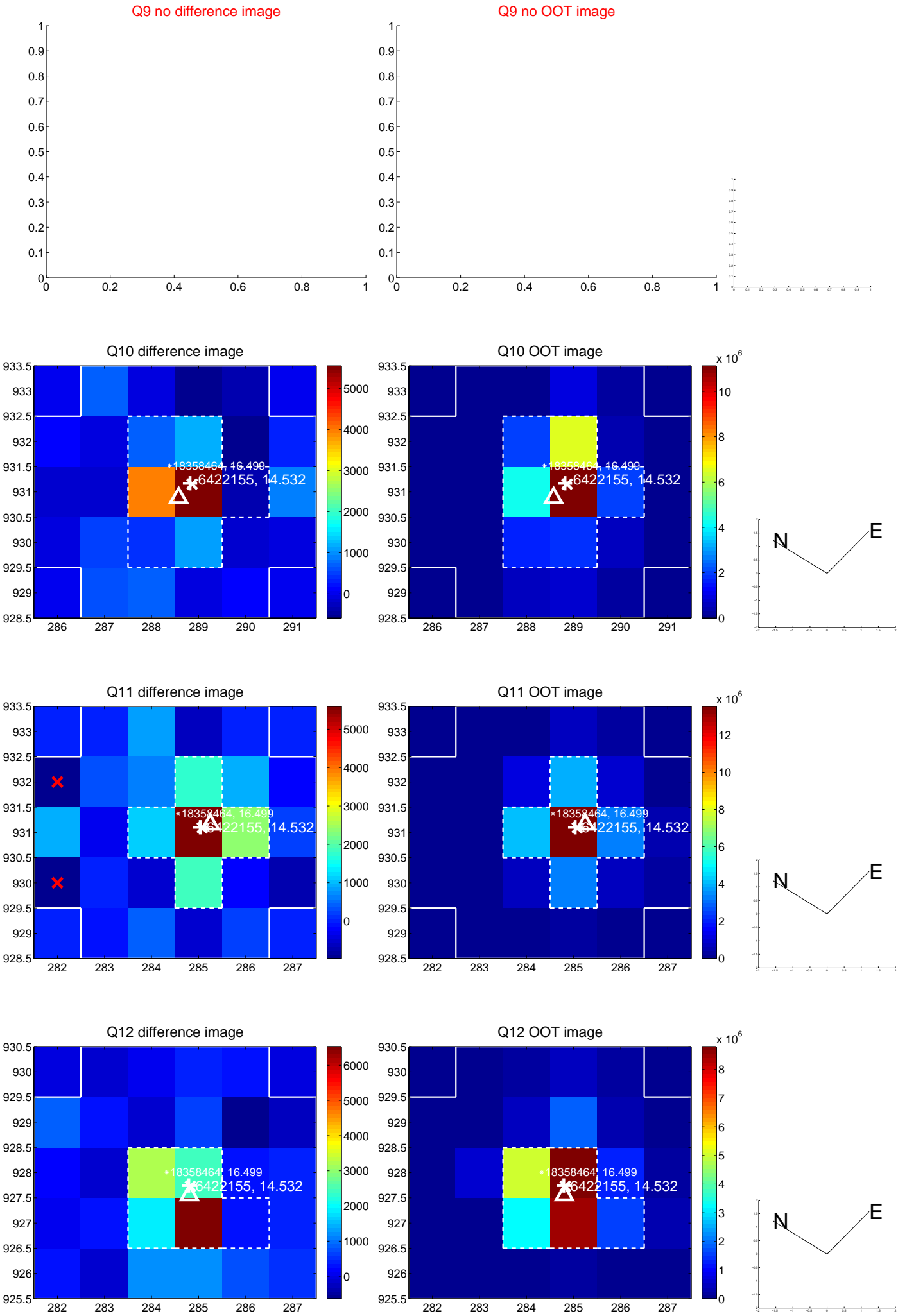
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



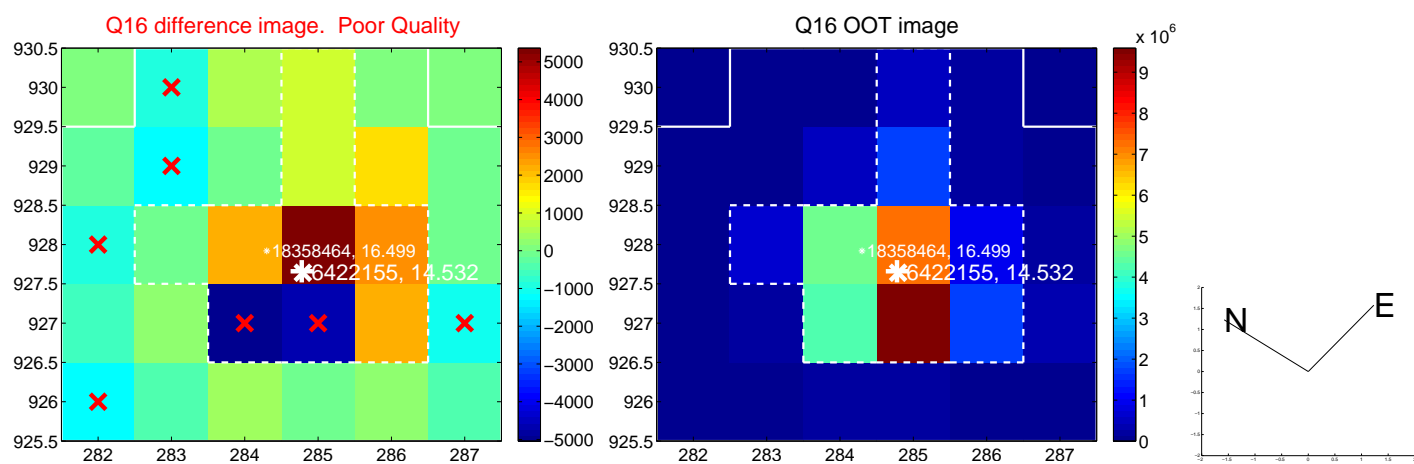
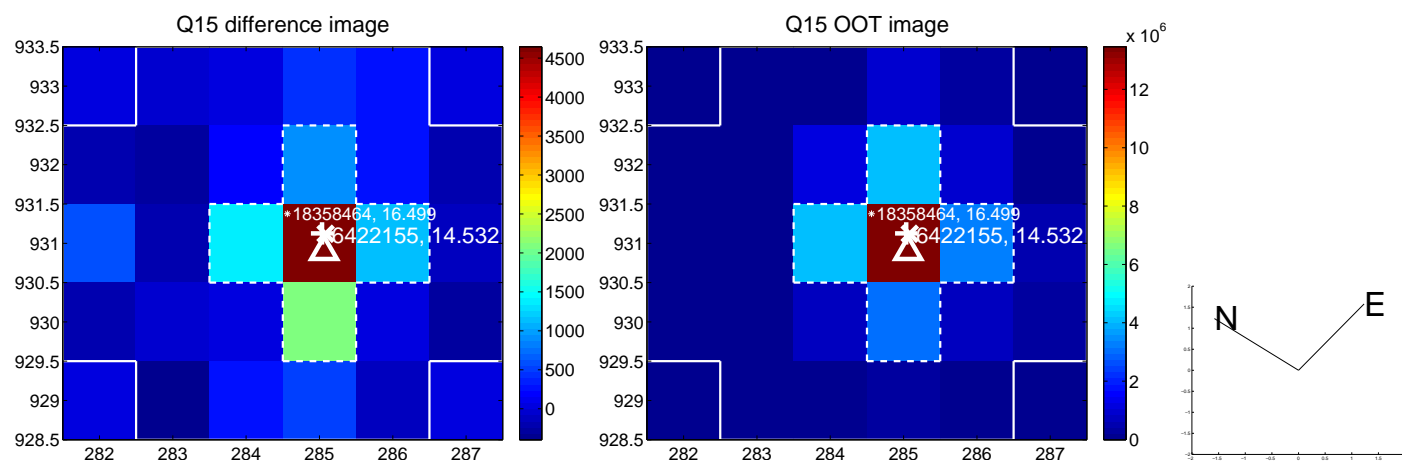
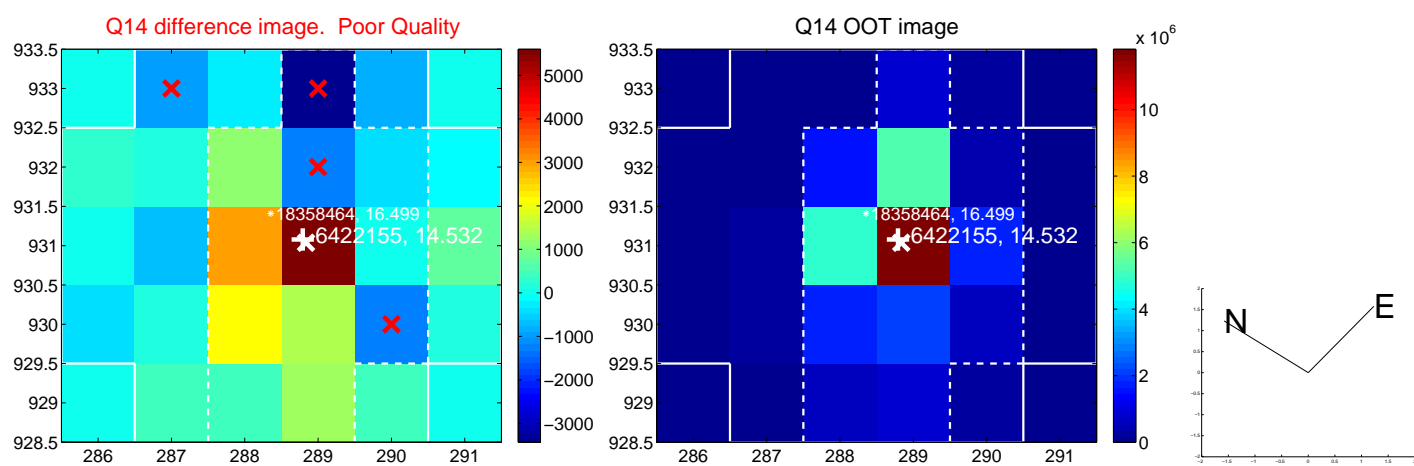
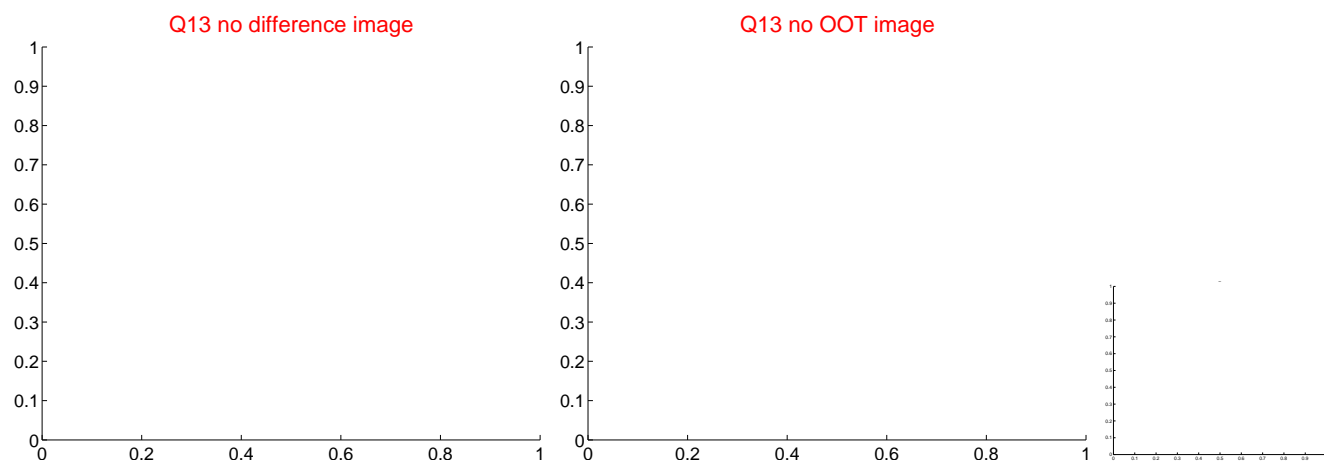
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



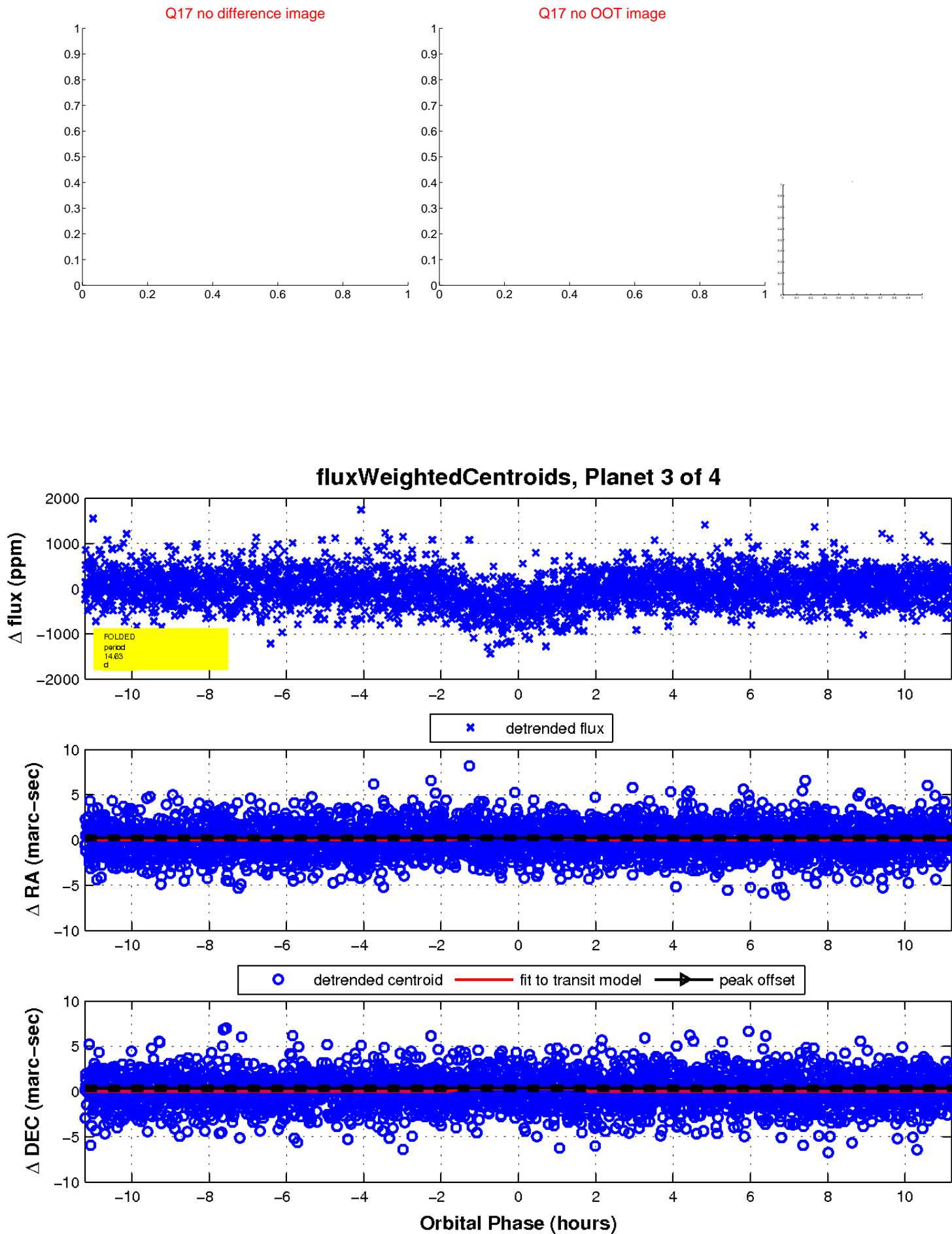
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

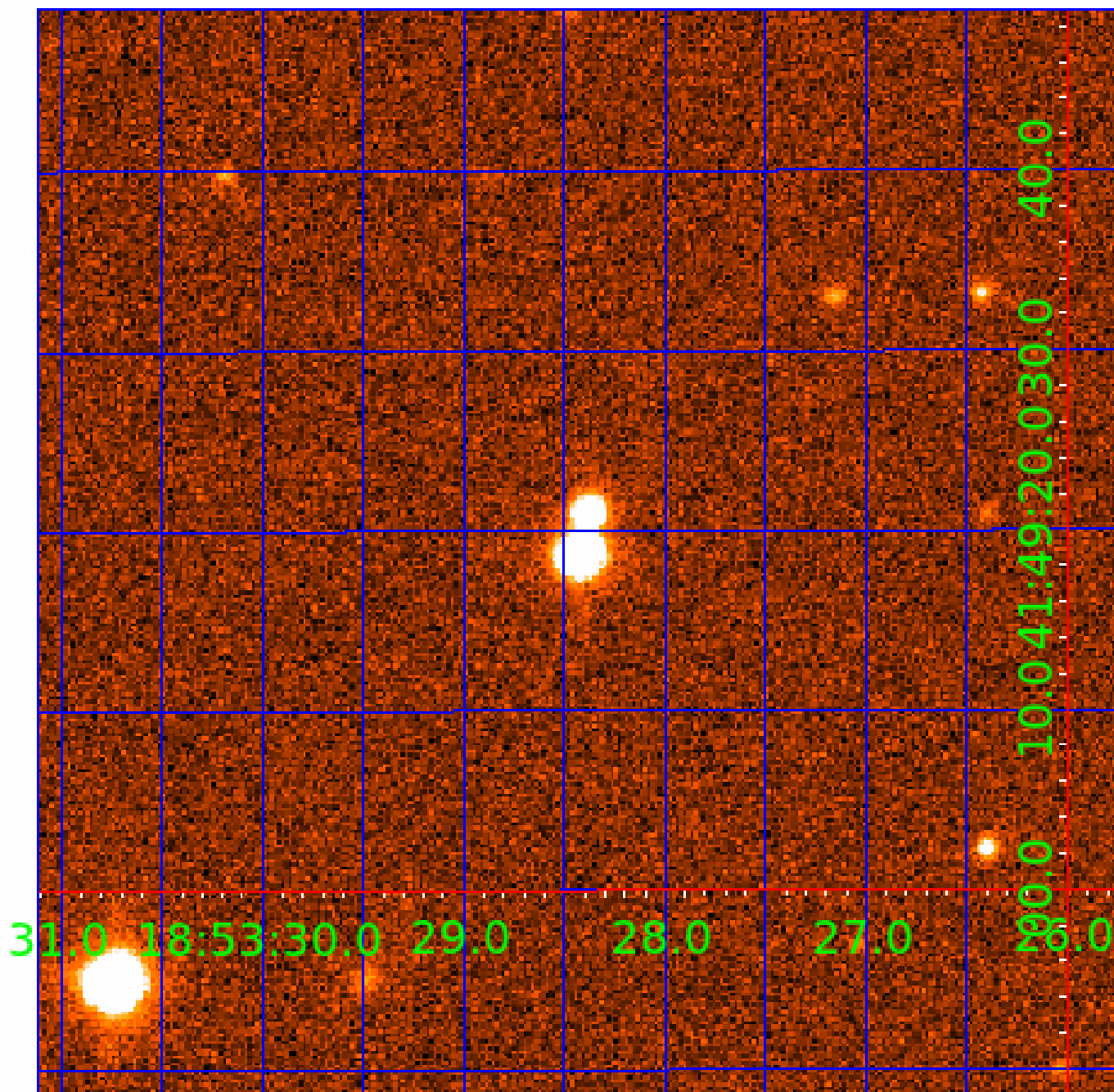


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006422155

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})
006422155-01	OBS	0510.01	2.940304	131.681475	468.6	2.826	38.7	43.8	1.05	5527	2.77	590.05
006422155-02	OBS	0510.02	6.388992	137.142449	527.7	3.566	32.1	35.5	1.05	5527	2.91	209.65
006422155-03	OBS	0510.03	14.627146	136.233648	379.1	3.737	16.0	17.1	1.05	5527	2.44	69.48
006422155-04	OBS	0510.04	35.118505	152.124269	561.0	3.870	14.5	16.2	1.05	5527	2.78	21.61

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006422155-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006422155-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
006422155-03	OBS	PC	0.93	0	0	0	0	NO_COMMENT
006422155-04	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.

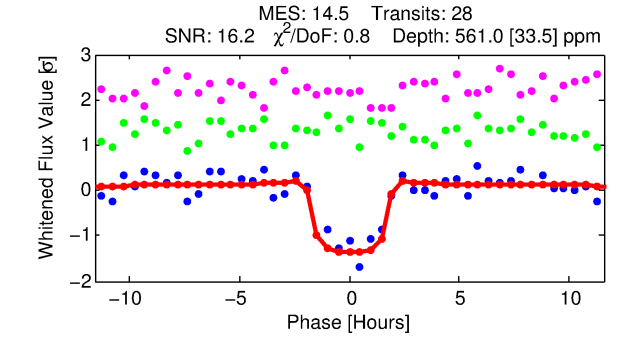
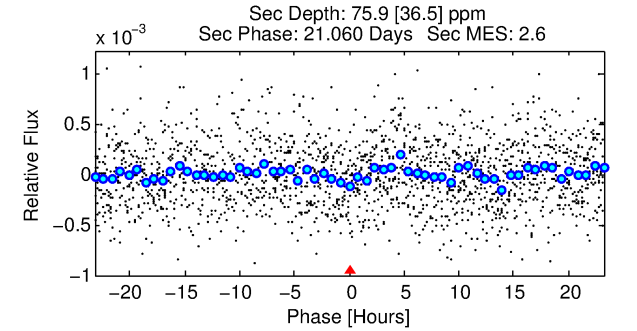
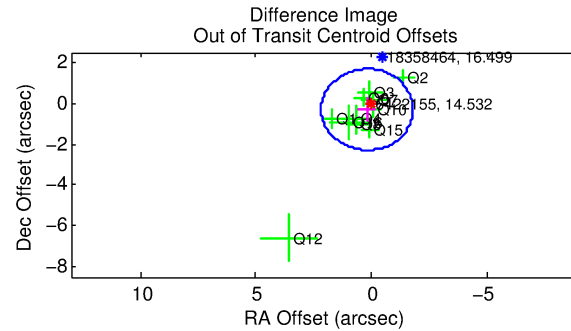
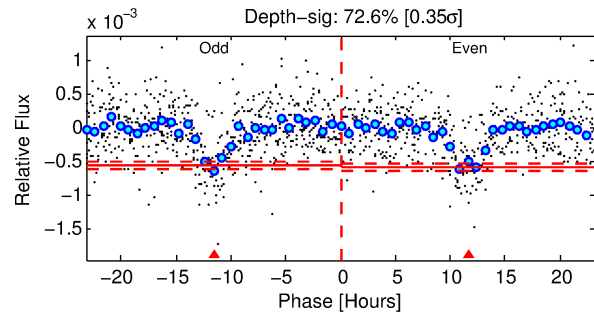
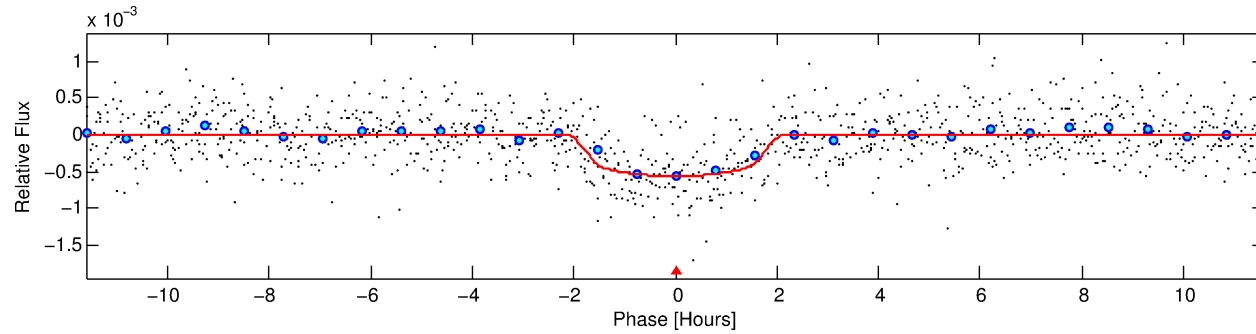
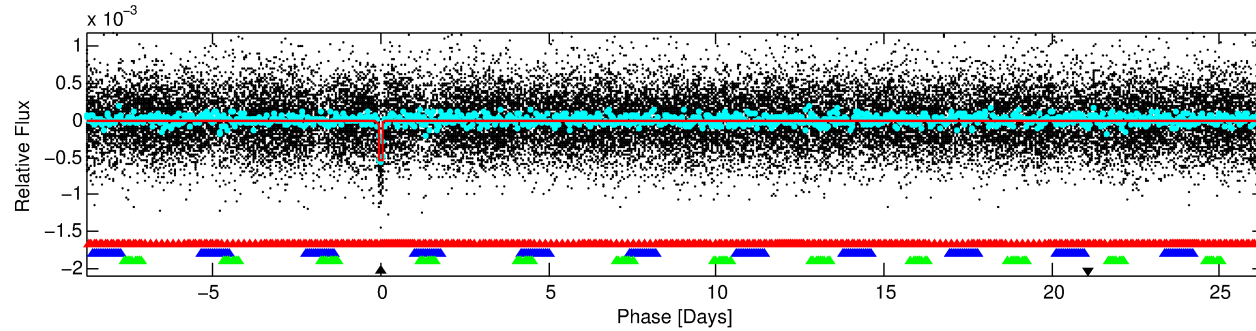
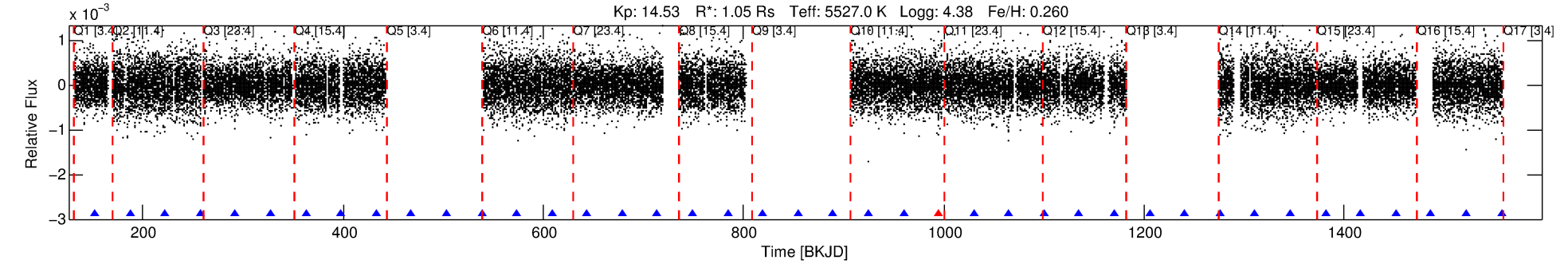
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 006422155-04

No Significant Match Found

DV One-Page Summary

KIC: 6422155 Candidate: 4 of 4 Period: 35.119 d
KOI: K00510.04 Name: Kepler-172e Corr: 0.963



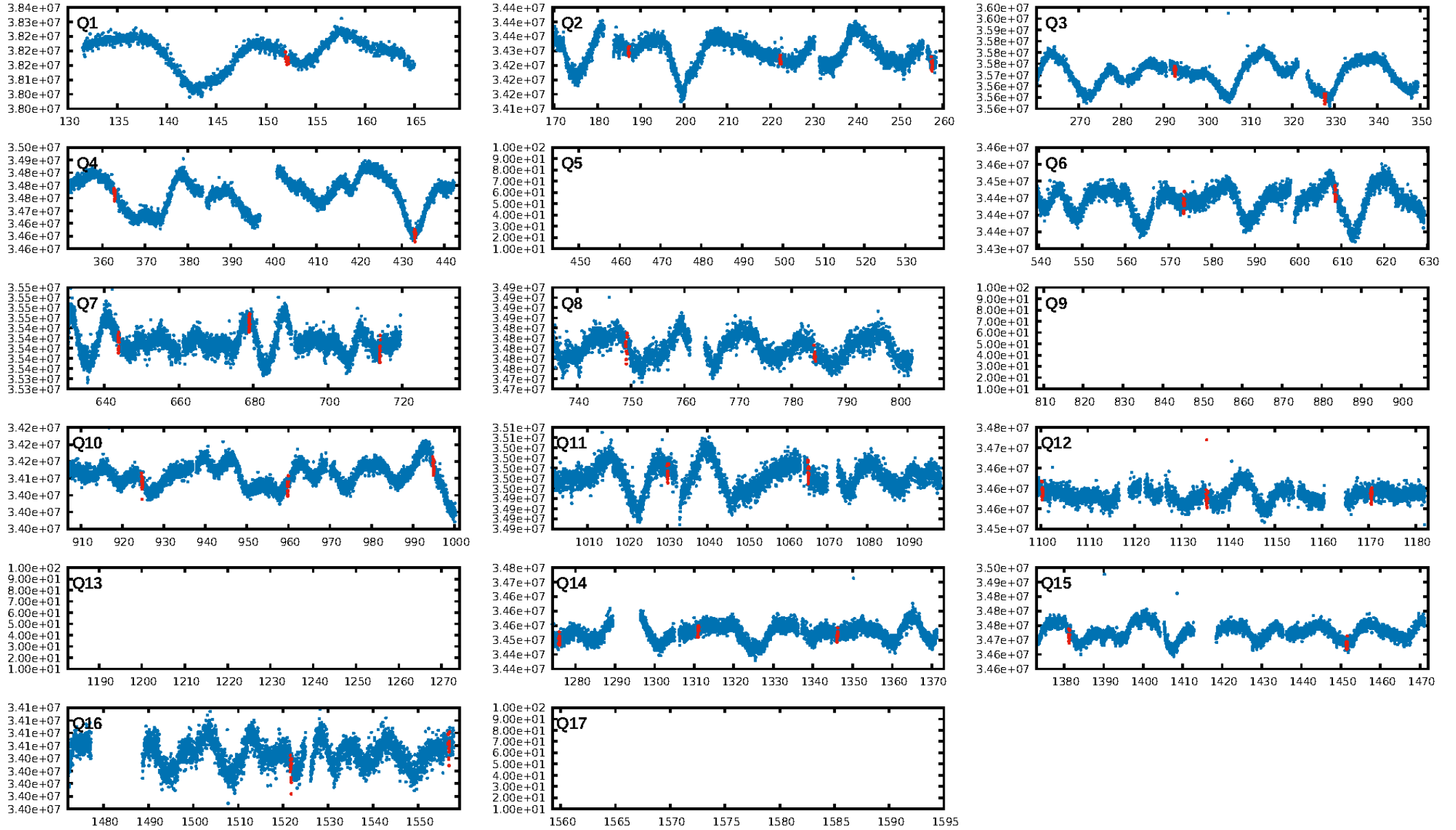
DV Fit Results:

Period = 35.11850 [0.00019] d
Epoch = 152.1243 [0.0043] BKJD
Rp/R* = 0.0242 [0.0100]
a/R* = 44.35 [73.68]
b = 0.80 [0.76]
Seff = 21.61 [4.54]
T_{eq} = 550 [29] K
Rp = 2.78 [1.22] Re
a = 0.2073 [0.0265] AU
Ag = 231.74 [225.90] [1.02 σ]
T_{eff} = 3317 [795] K [3.48 σ]

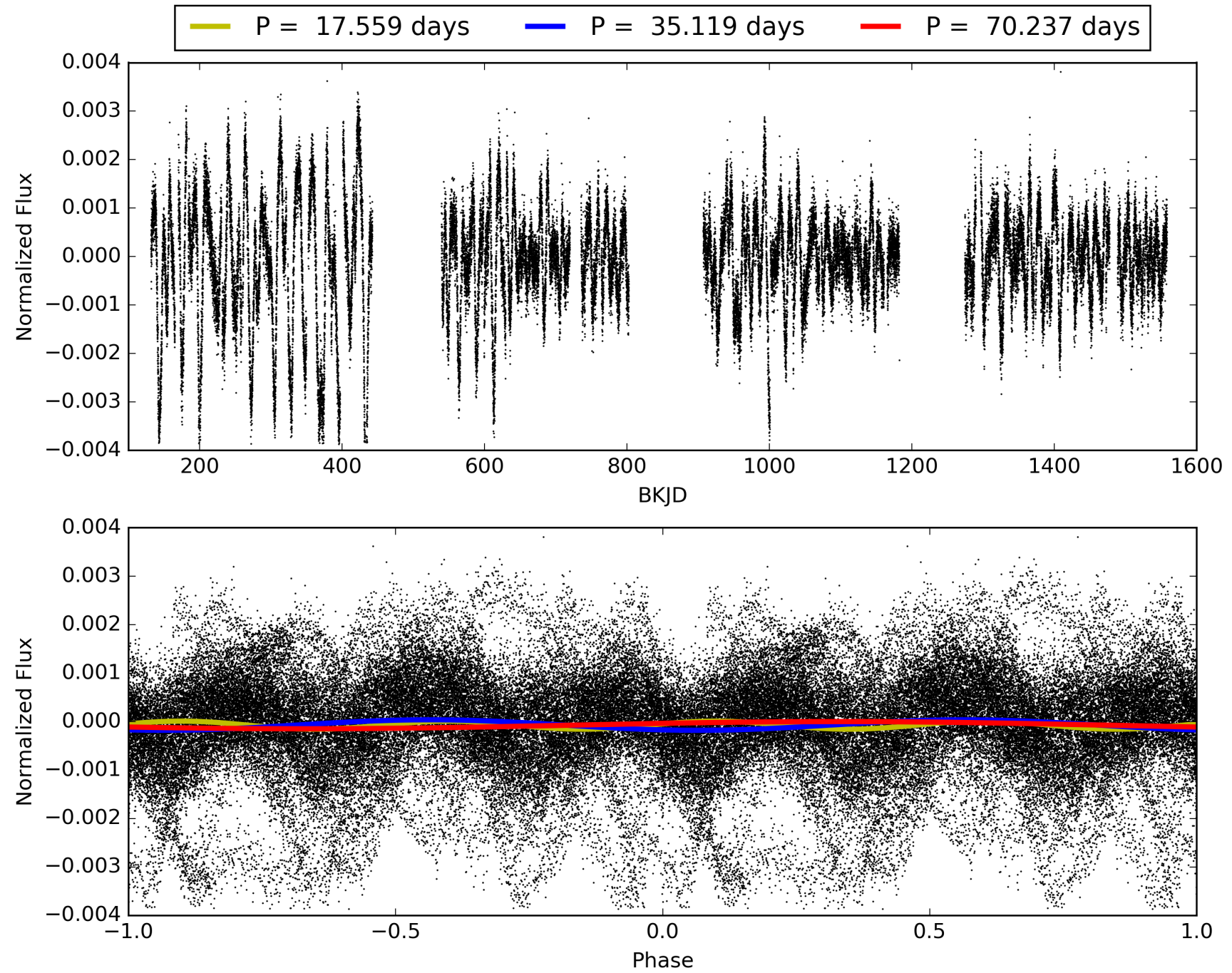
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [91.41 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 93.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.99e-45
RollingBand-fgt: 0.96 [26/27]
GhostDiagnostic-chr: 2.211
Centroid-sig: 0.0%
Centroid-so: 1.626 arcsec [2.43 σ]
OotOffset-rm: 0.363 arcsec [0.55 σ]
KicOffset-rm: 0.205 arcsec [0.33 σ]
OotOffset-st: 3/3/4/1 [11]
KicOffset-st: 3/3/4/1 [11]
DiffImageQuality-fgm: 0.82 [9/11]
DiffImageOverlap-fno: 0.75 [9/12]

TCE 006422155-04, PDC Light Curves

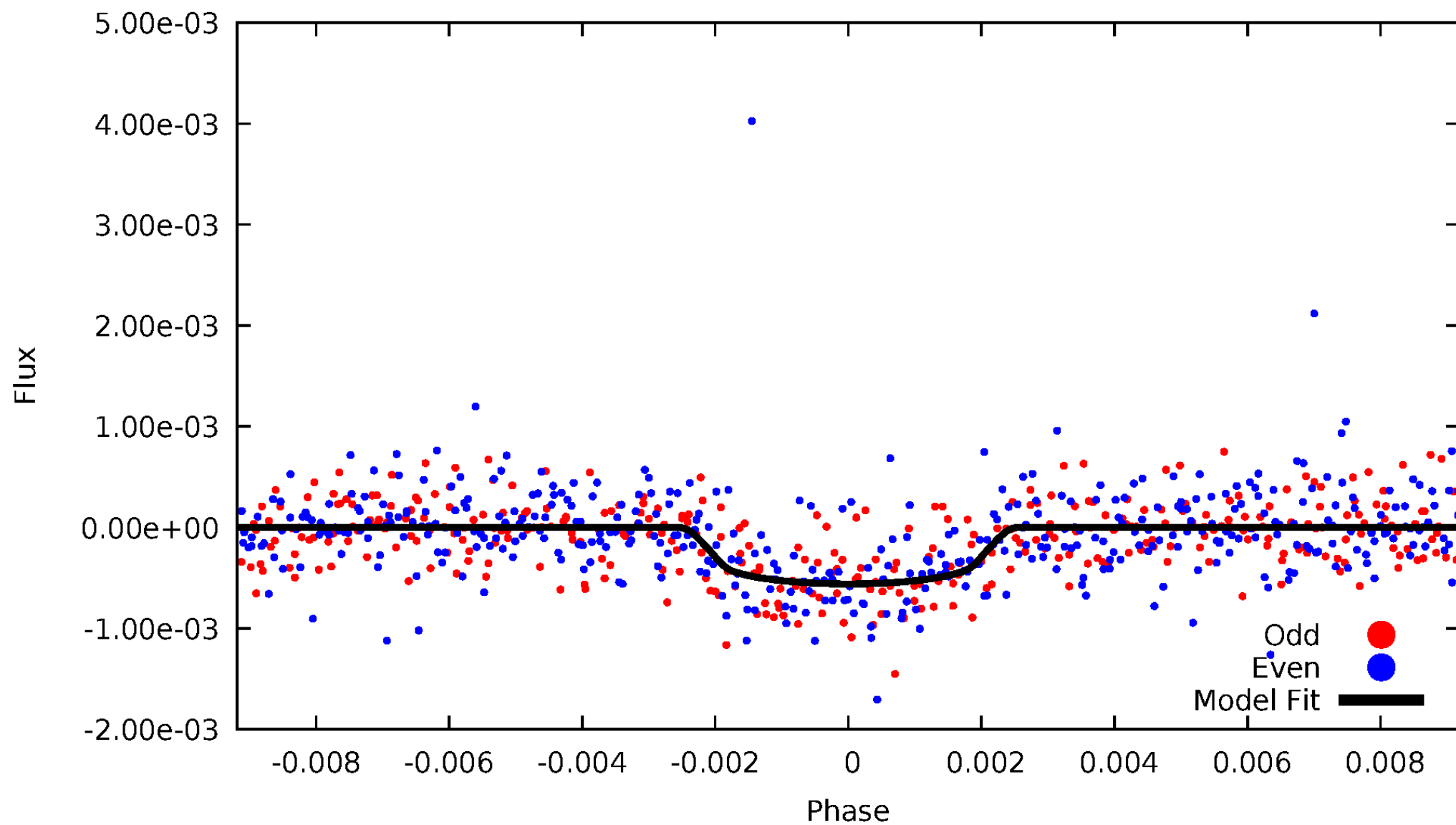


TCE 006422155-04



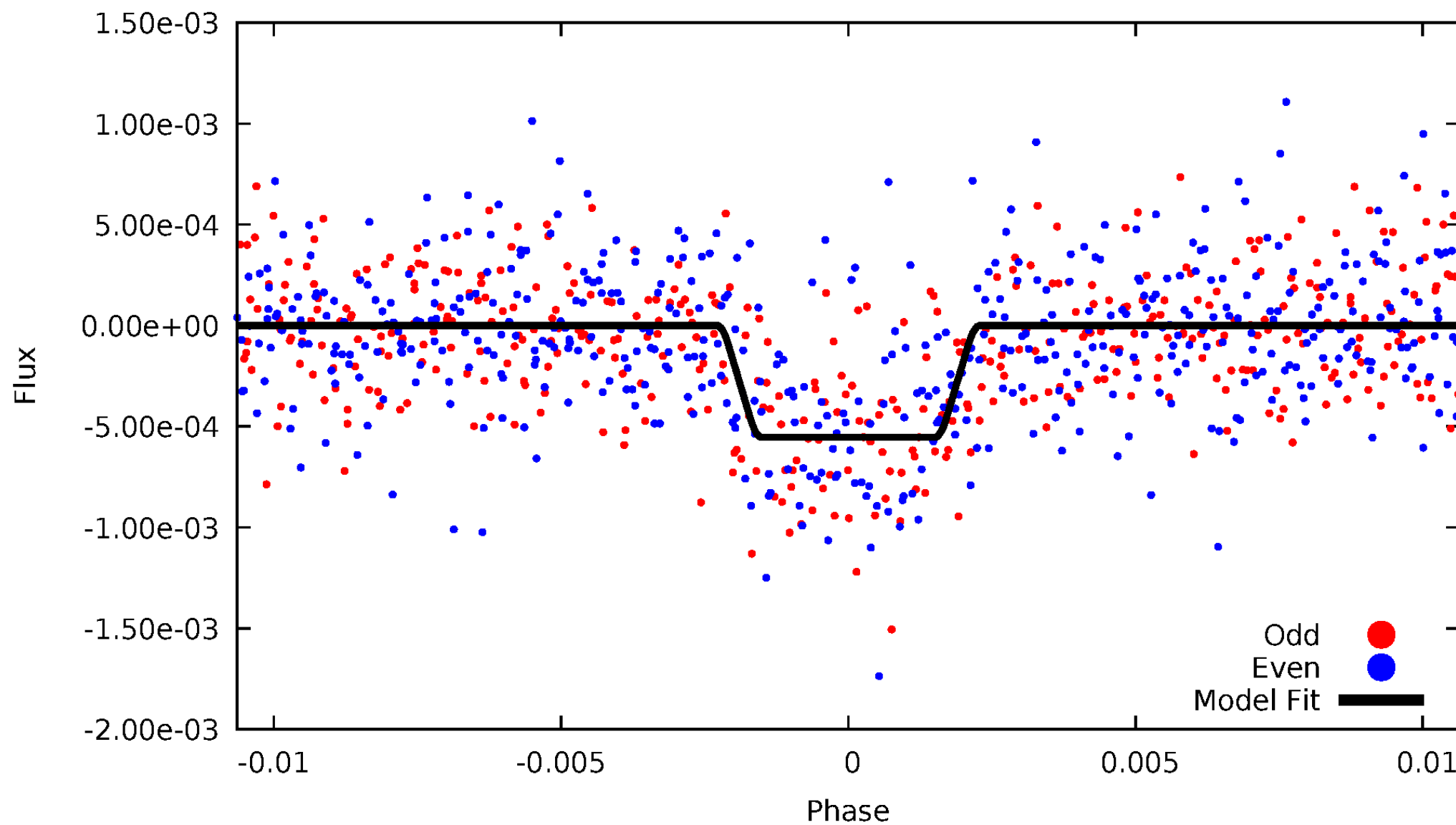
DV Odd/Even

TCE 006422155-04



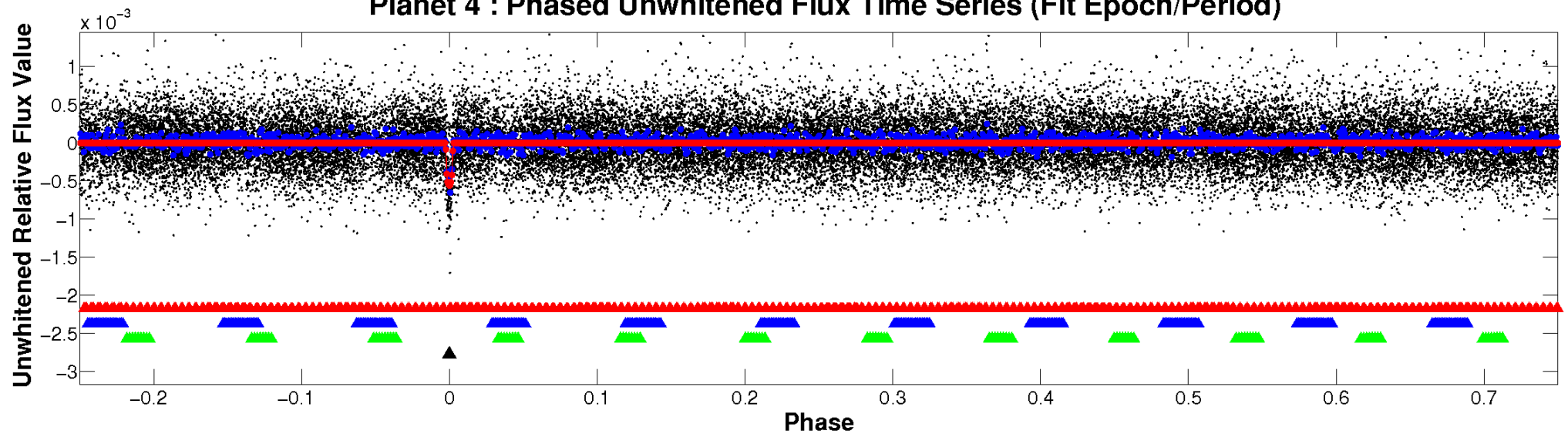
ALT Odd/Even

TCE 006422155-04

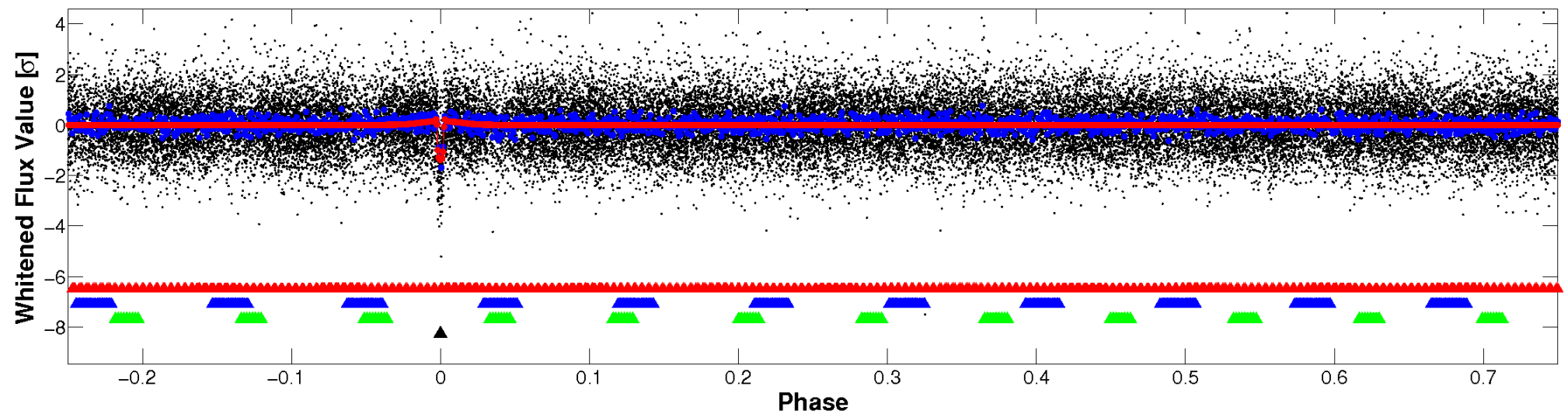


Non-Whitened Vs. Whitened Light Curve

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

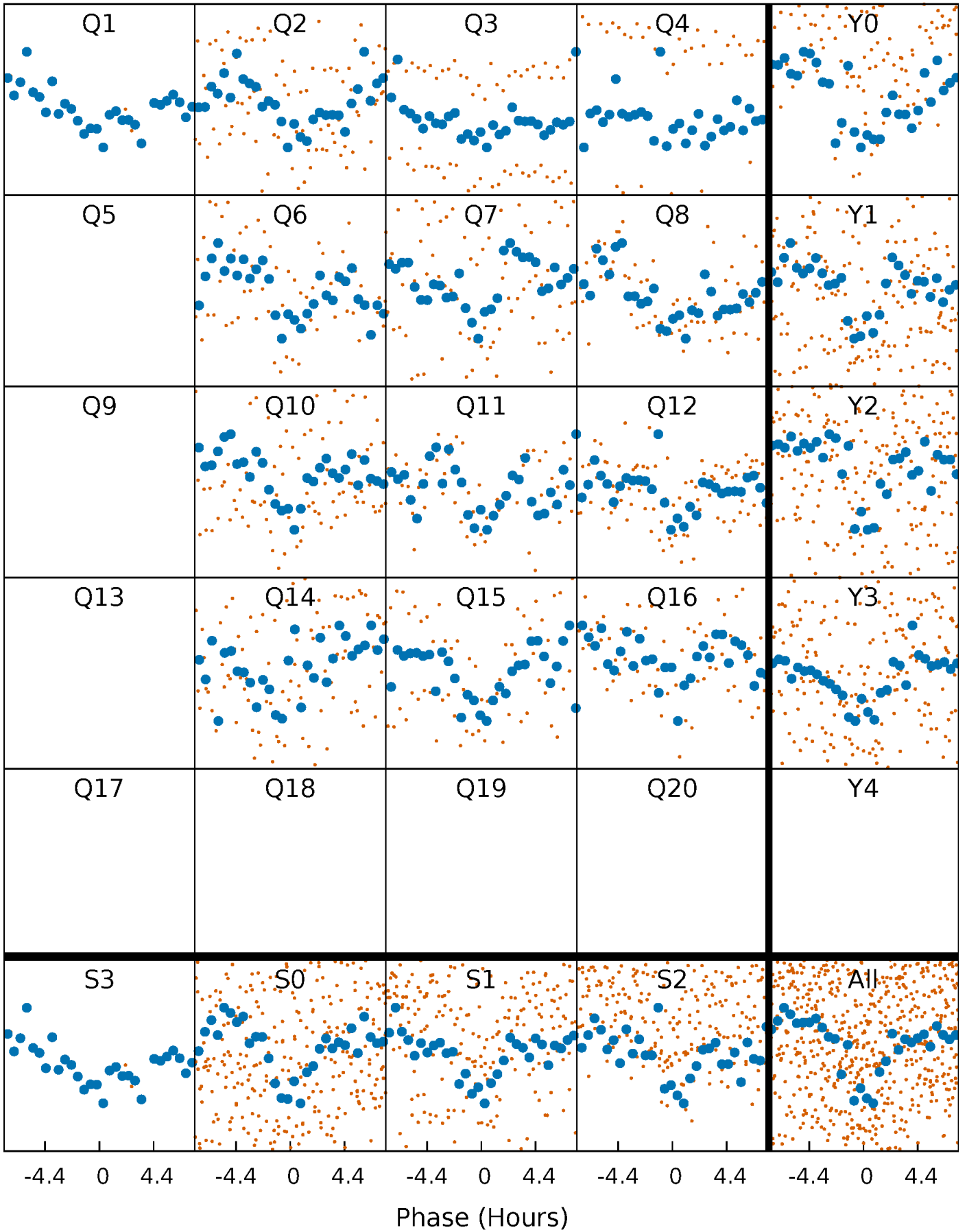


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



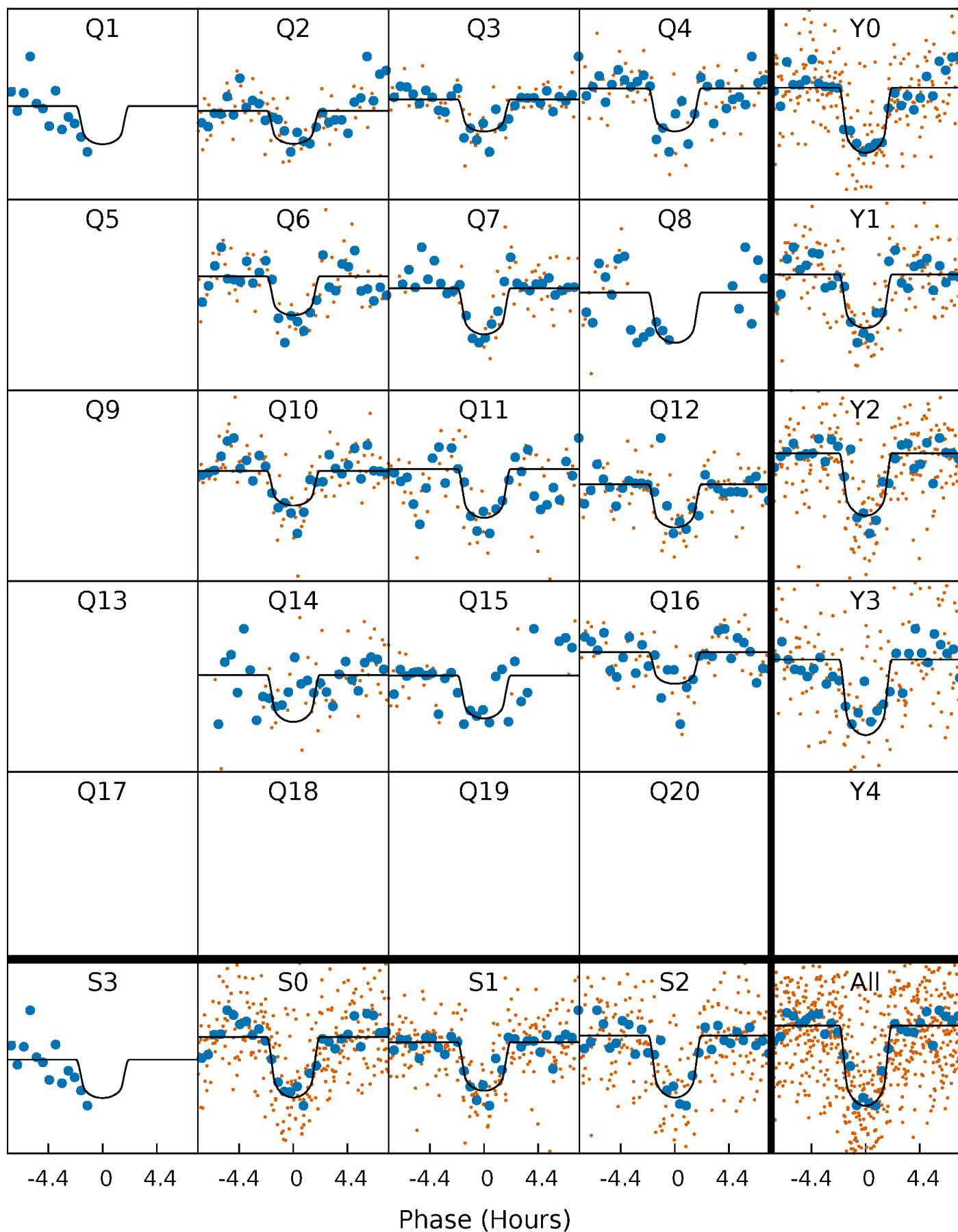
PDC Quarter-Phased Transit Curves

TCE 006422155-04 P= 35.118505 Days $T_0=152.124269$ (BKJD)



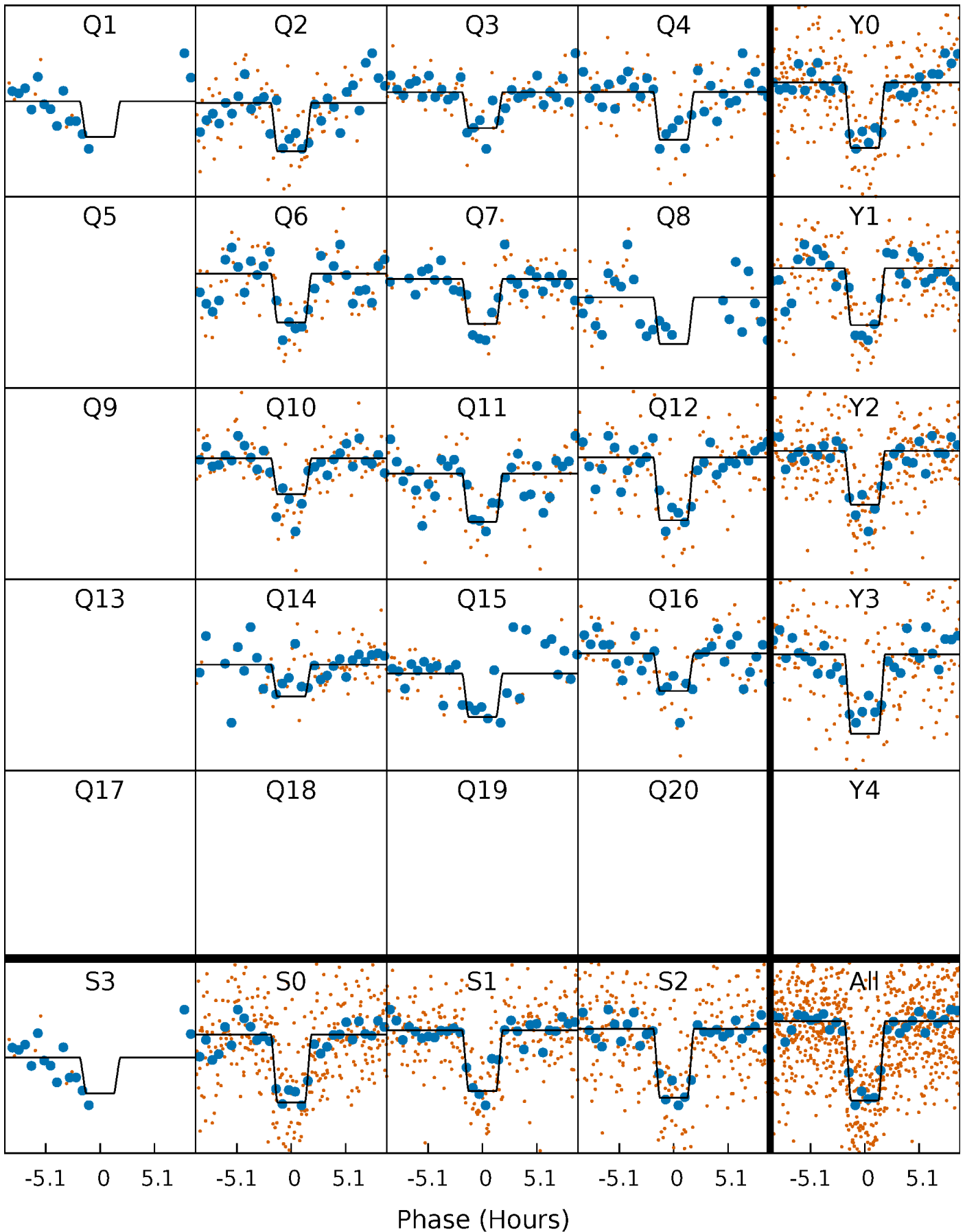
DV Quarter-Phased Transit Curves

TCE 006422155-04 P= 35.118505 Days $T_0=152.124269$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

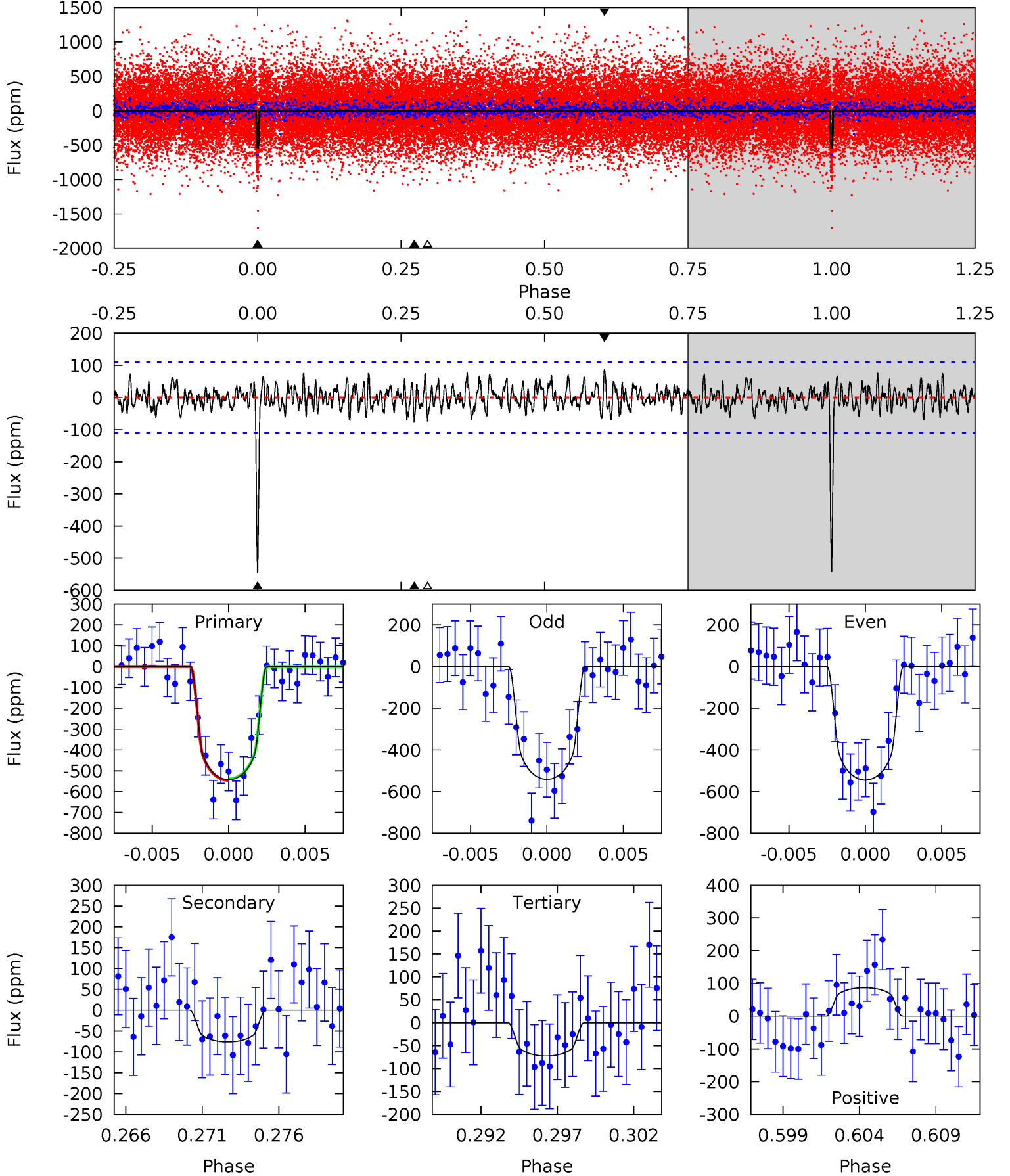
TCE 006422155-04 P= 35.118609 Days $T_0=152.118423$ (BKJD)



DV Model-Shift Uniqueness Test

006422155-04, P = 35.118505 Days, E = 117.005764 Days

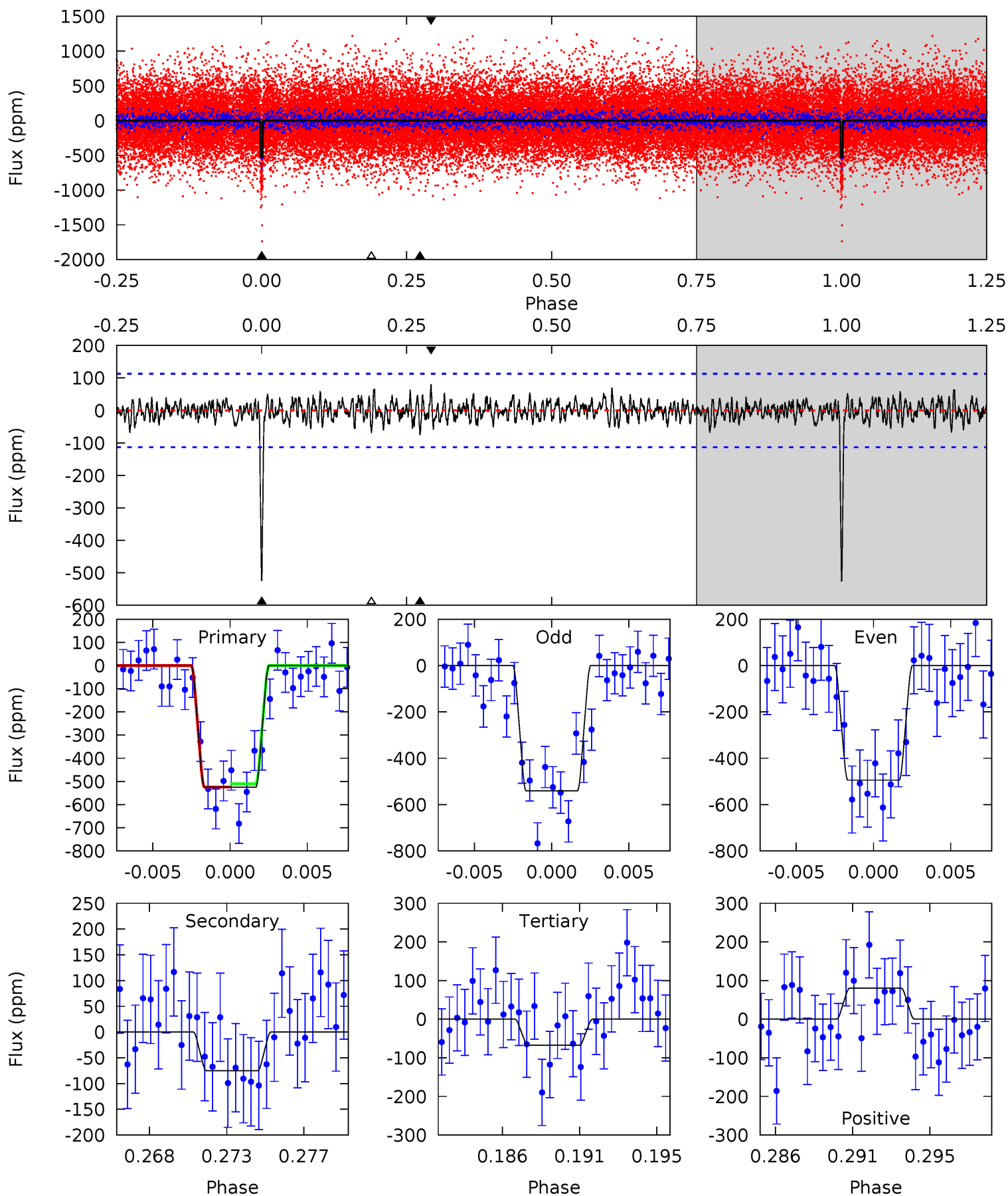
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.3	3.55	3.38	4.04	5.15	2.80	1.32	21.9	21.3	0.17	-0.49	0.07	0.93	0.14	0.17



Alt Model-Shift Uniqueness Test

006422155-04, P = 35.118609 Days, E = 116.999814 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.0	3.43	3.10	3.68	5.18	2.84	1.04	20.9	20.4	0.34	-0.25	1.05	0.98	0.13	0.33



Stellar Parameters For KIC 006422155

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5527^{+111}_{-111}	$4.376^{+0.099}_{-0.110}$	$0.260^{+0.150}_{-0.150}$	$1.054^{+0.152}_{-0.110}$	$0.964^{+0.063}_{-0.047}$	$1.159^{+0.475}_{-0.369}$
	+2%/-2%	+2%/-3%	+58%/-58%	+14%/-10%	+7%/-5%	+41%/-32%
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 006422155-04 / KOI 0510.04

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-76 ± 21	$2.79^{+1.21}_{-1.09}$	770^{+30}_{-30}	3696^{+788}_{-421}	230^{+417}_{-126}
Alt.	-75 ± 22	$2.77^{+1.10}_{-1.16}$	770^{+31}_{-31}	3707^{+836}_{-409}	232^{+485}_{-127}

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 $A_{obs} \gg 1.0$

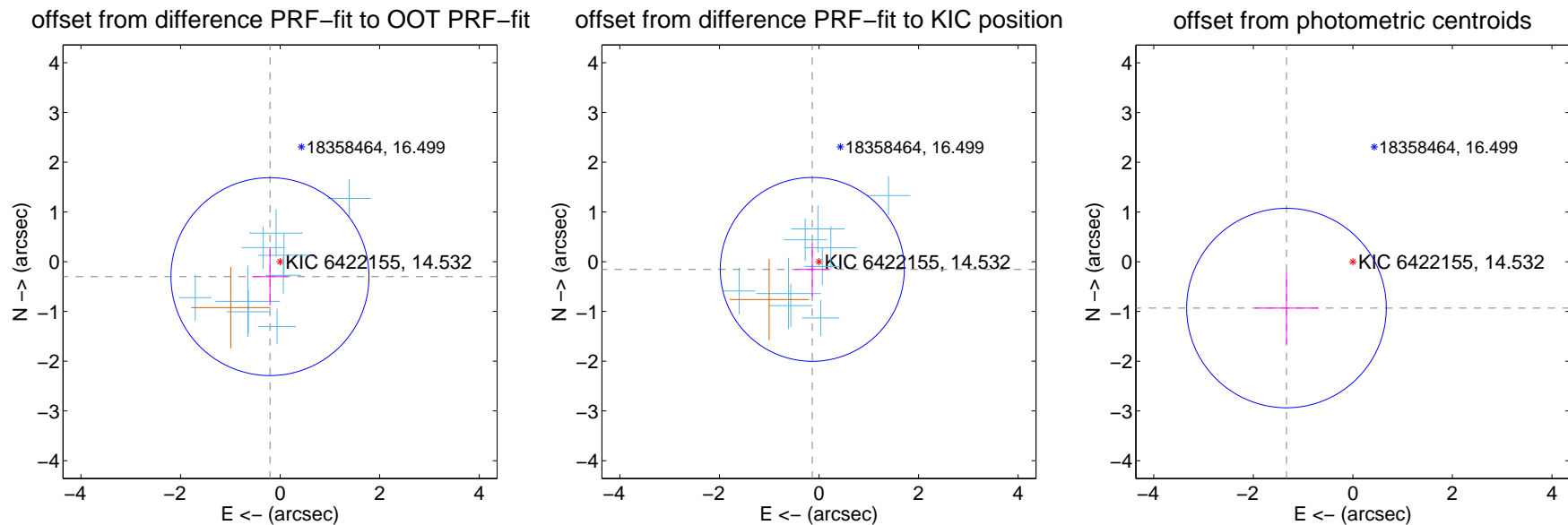
DV Centroid Data

Supplemental centroid analysis for 006422155-04. Kepler magnitude: 14.53. Transit SNR 16.20

There are 9 quarters with good PRF difference image offsets

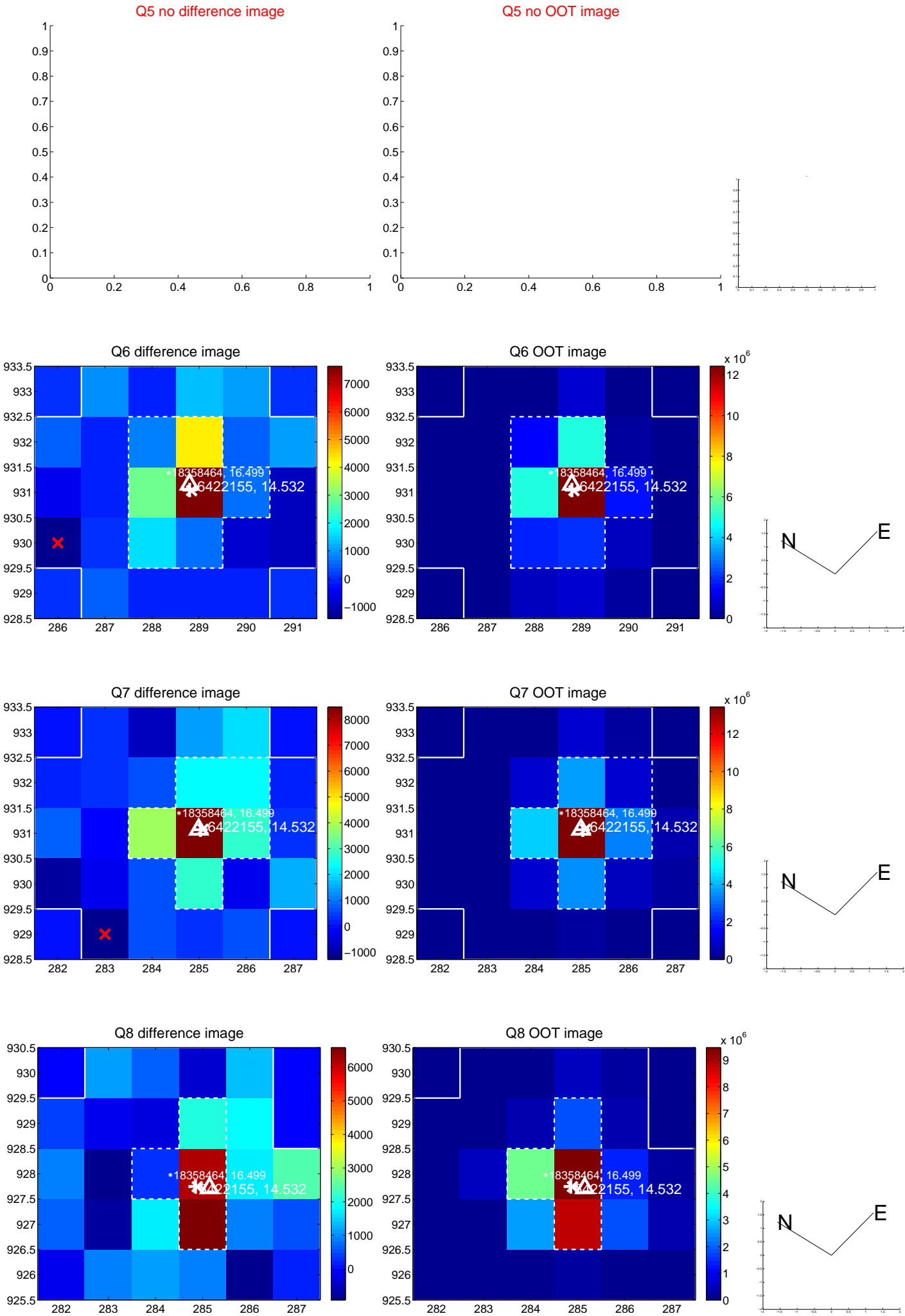
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.363 ± 0.663	0.55	0.204 ± 0.354	-0.300 ± 0.580
PRF-fit source offset from KIC position	0.205 ± 0.616	0.33	0.135 ± 0.350	-0.155 ± 0.545
photometric centroid source offset	1.63 ± 0.67	2.43	1.33 ± 0.64	-0.93 ± 0.73

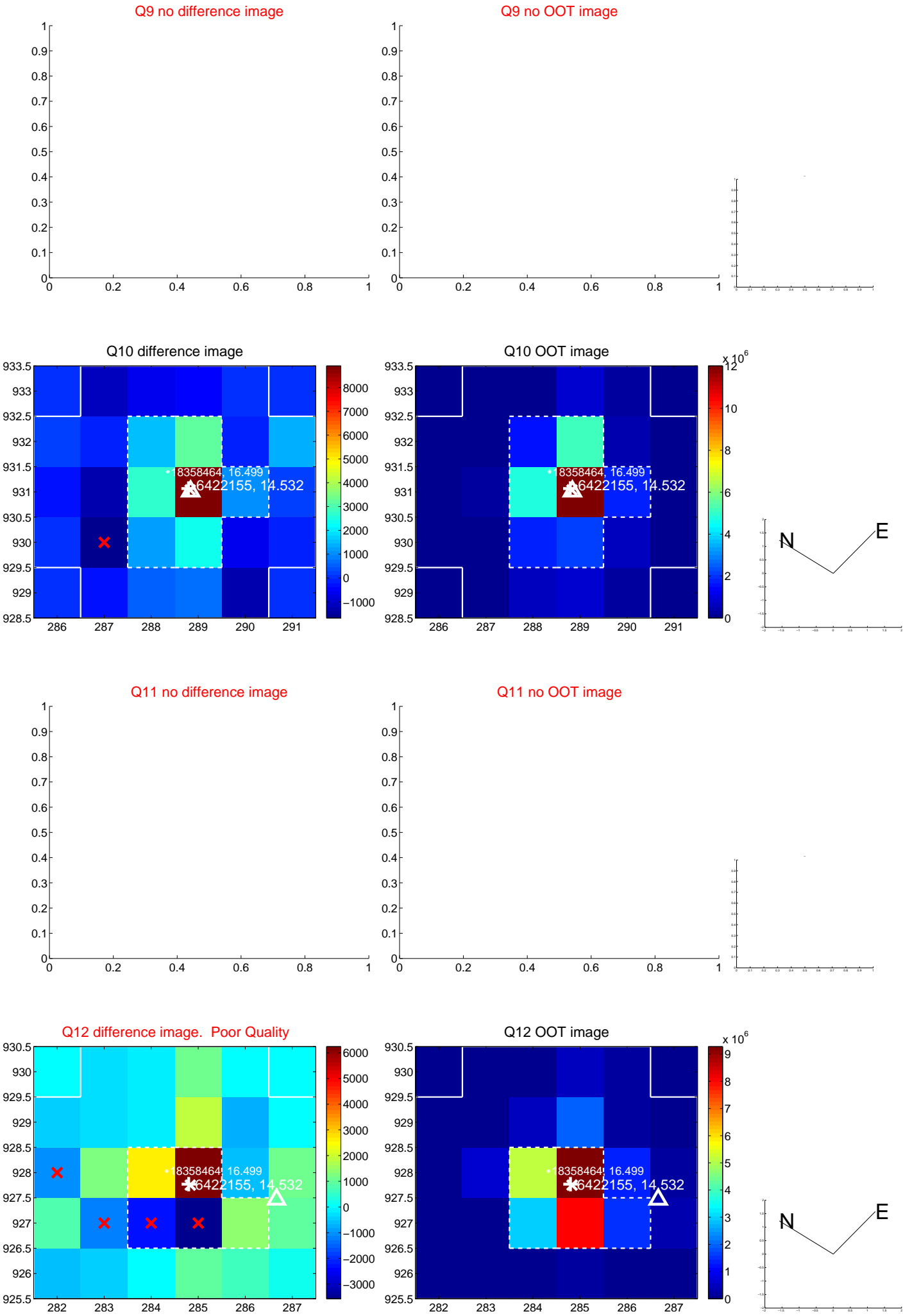


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

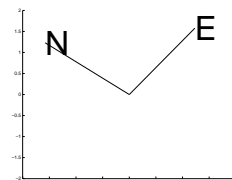
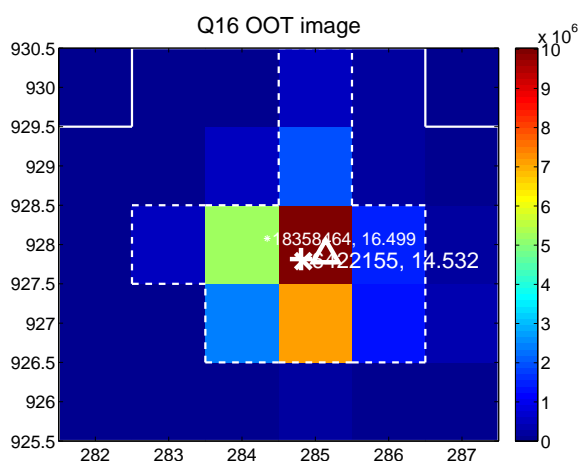
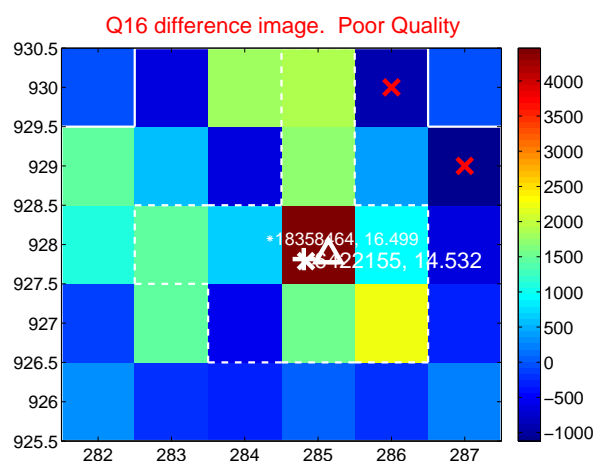
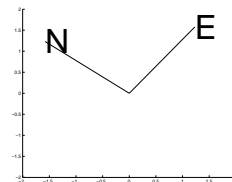
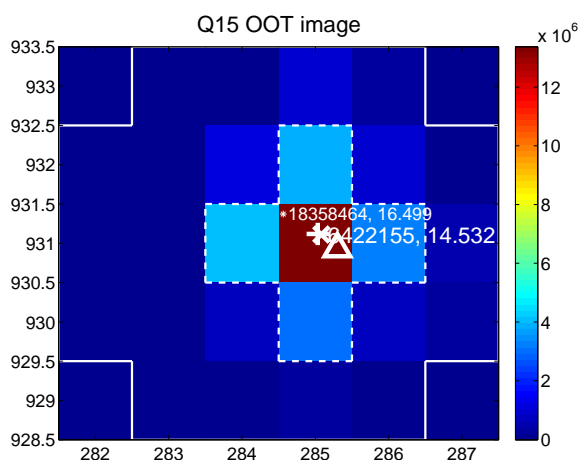
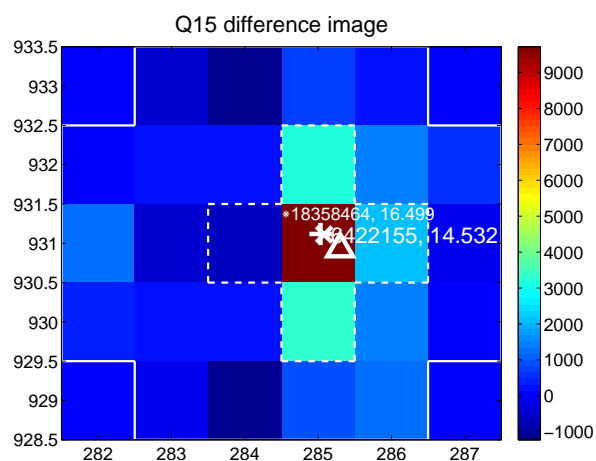
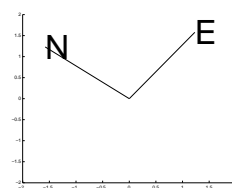
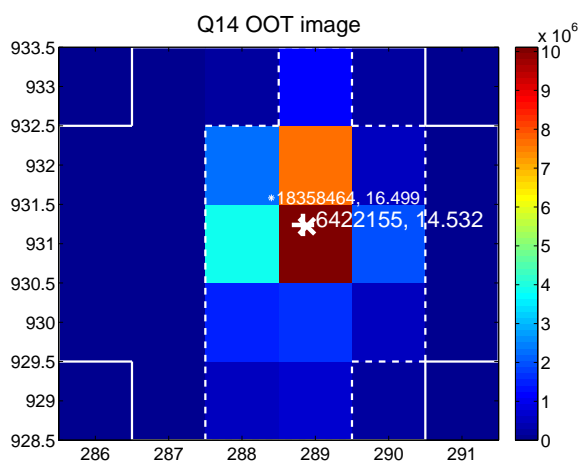
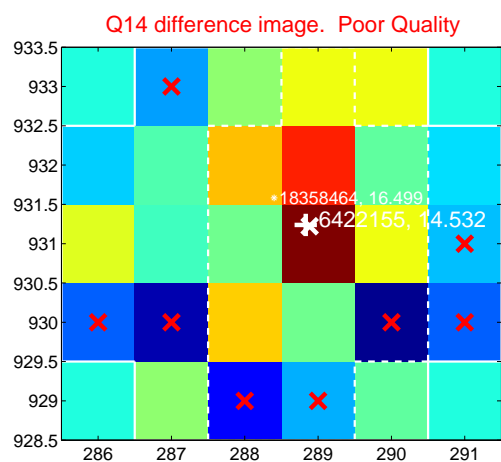
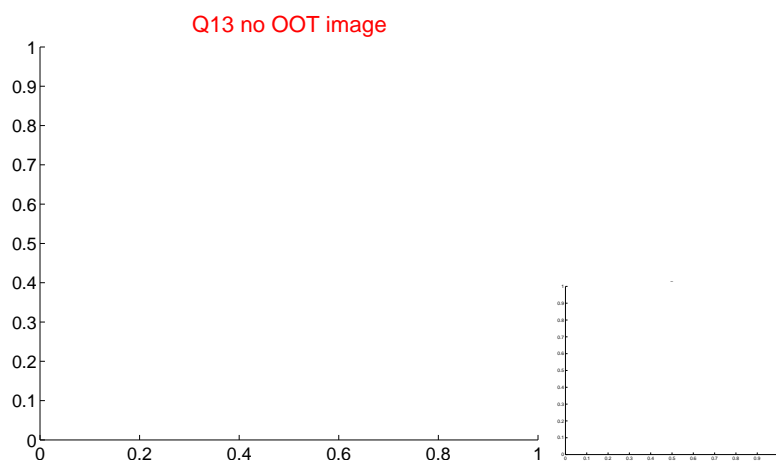
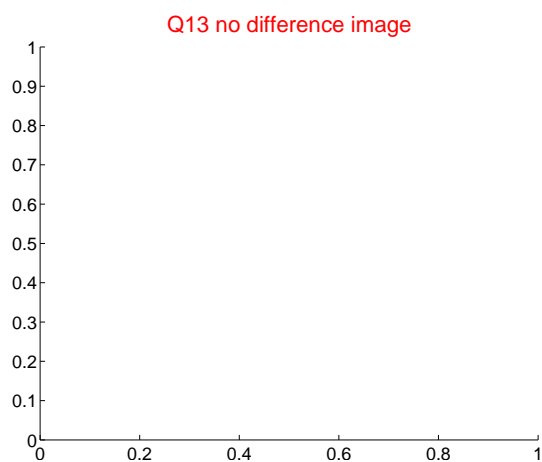
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



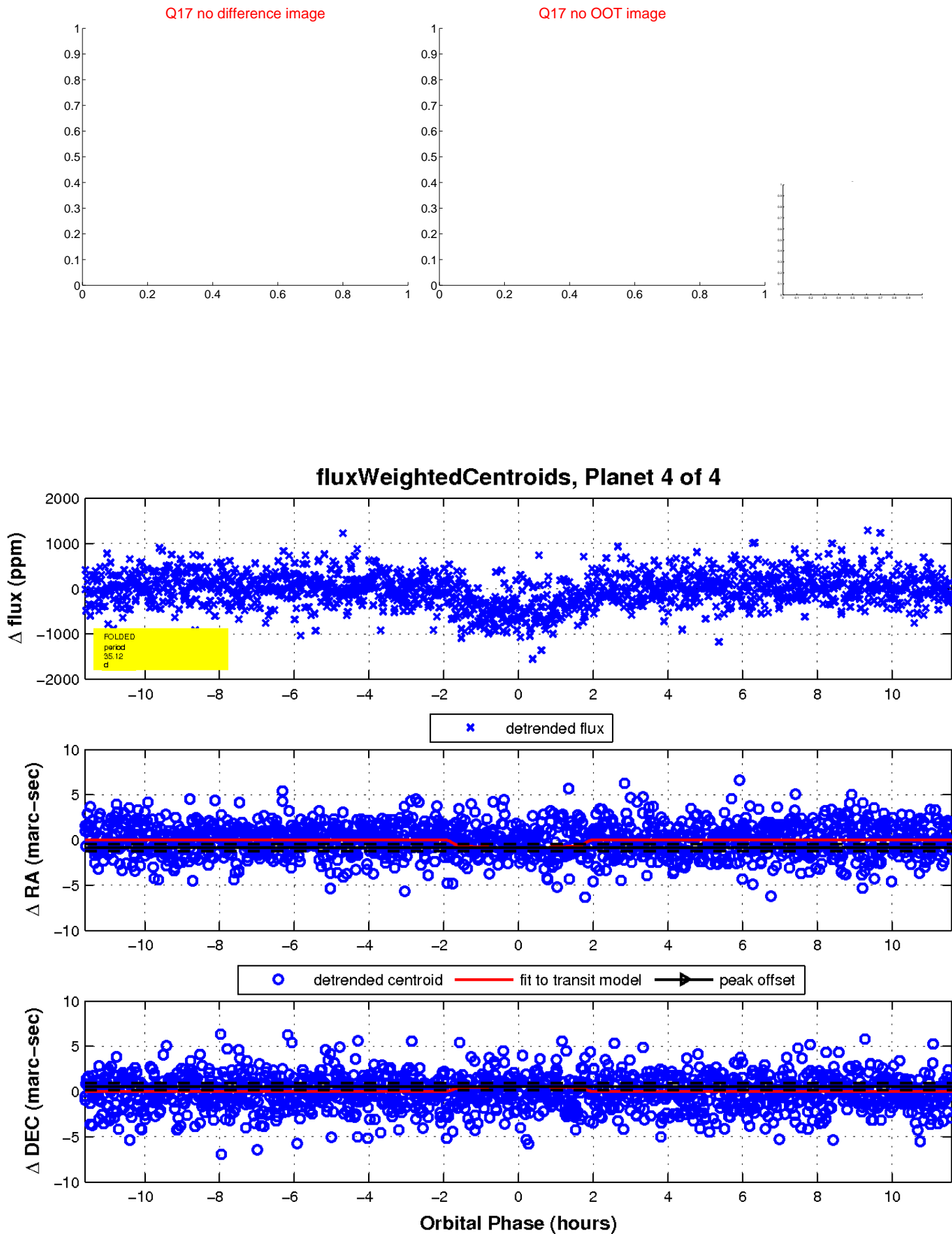
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

