

KIC 004474462

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})
004474462-01	OBS	4452.01	12.857549	141.856754	98.5	4.925	10.9	11.8	1.16	5860	1.31	129.29
004474462-02	OBS	No	1.624576	132.477183	19.0	13.729	9.2	10.3	1.16	5860	0.50	2039.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004474462-01	OBS	PC	0.89	0	0	0	0	NO_COMMENT
004474462-02	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_DIFFS

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

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

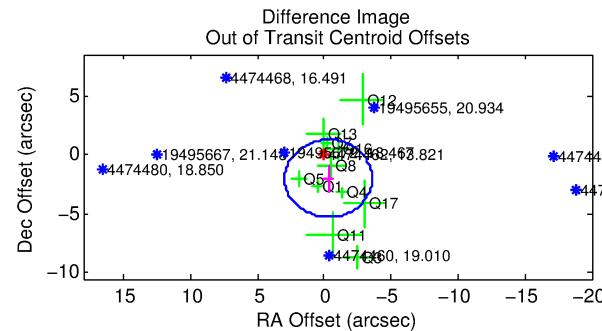
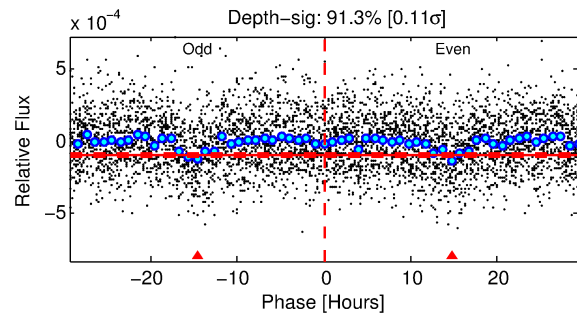
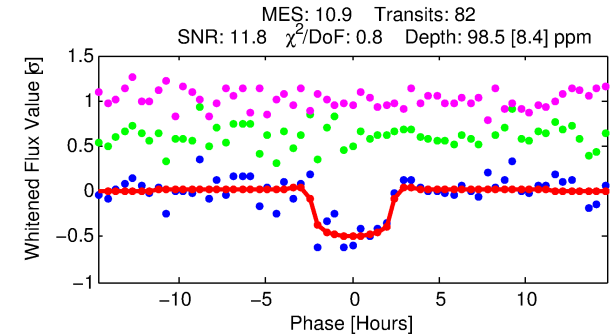
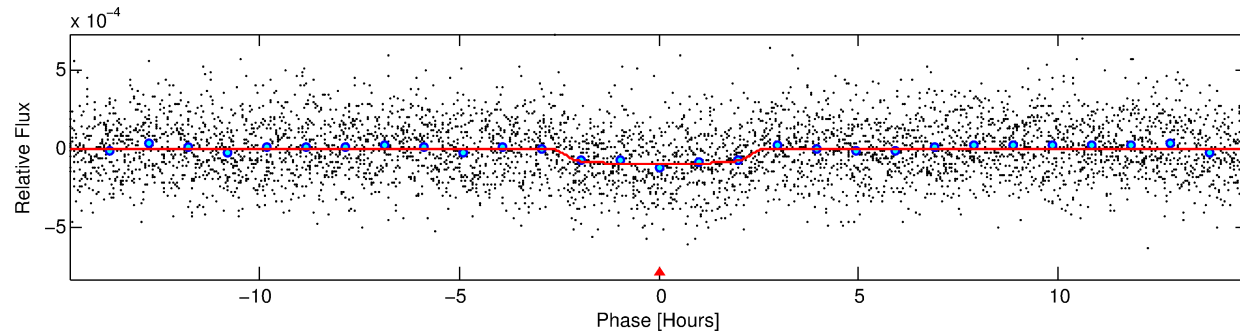
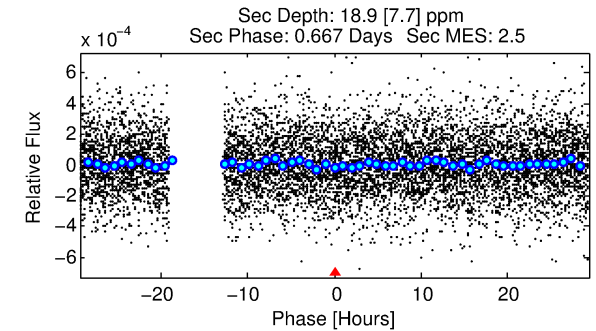
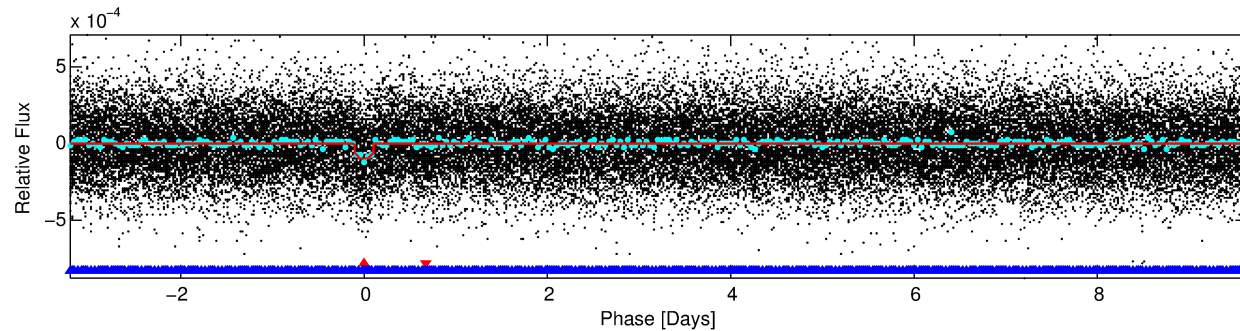
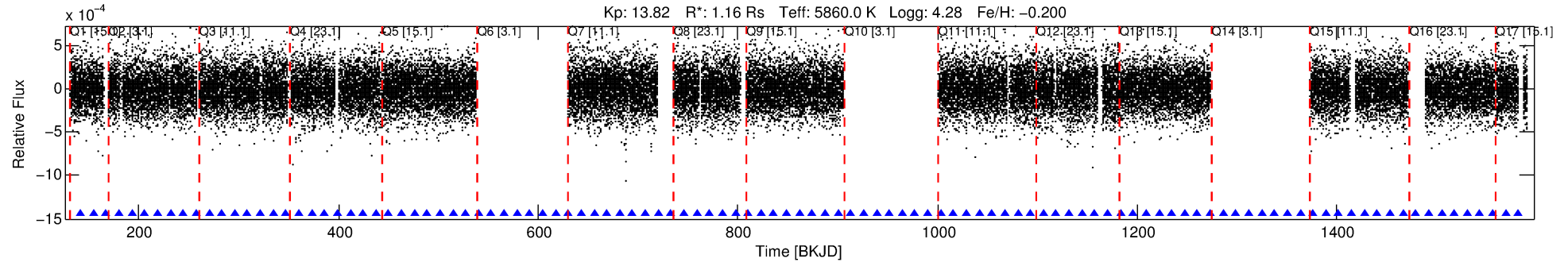
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004474462-01

No Significant Match Found

DV One-Page Summary

KIC: 4474462 Candidate: 1 of 2 Period: 12.858 d
KOI: K04452.01 Corr: 0.983



DV Fit Results:

Period = 12.85755 [0.00012] d
Epoch = 141.8568 [0.0076] BKJD
Rp/R* = 0.0104 [0.0048]
a/R* = 10.81 [24.20]
b = 0.85 [0.73]
Seff = 129.29 [35.97]
Teff = 860 [60] K
Rp = 1.31 [0.64] Re
a = 0.1045 [0.0175] AU
Ag = 66.32 [69.34] [0.94σ]
Teffp = 3794 [959] K [3.05σ]

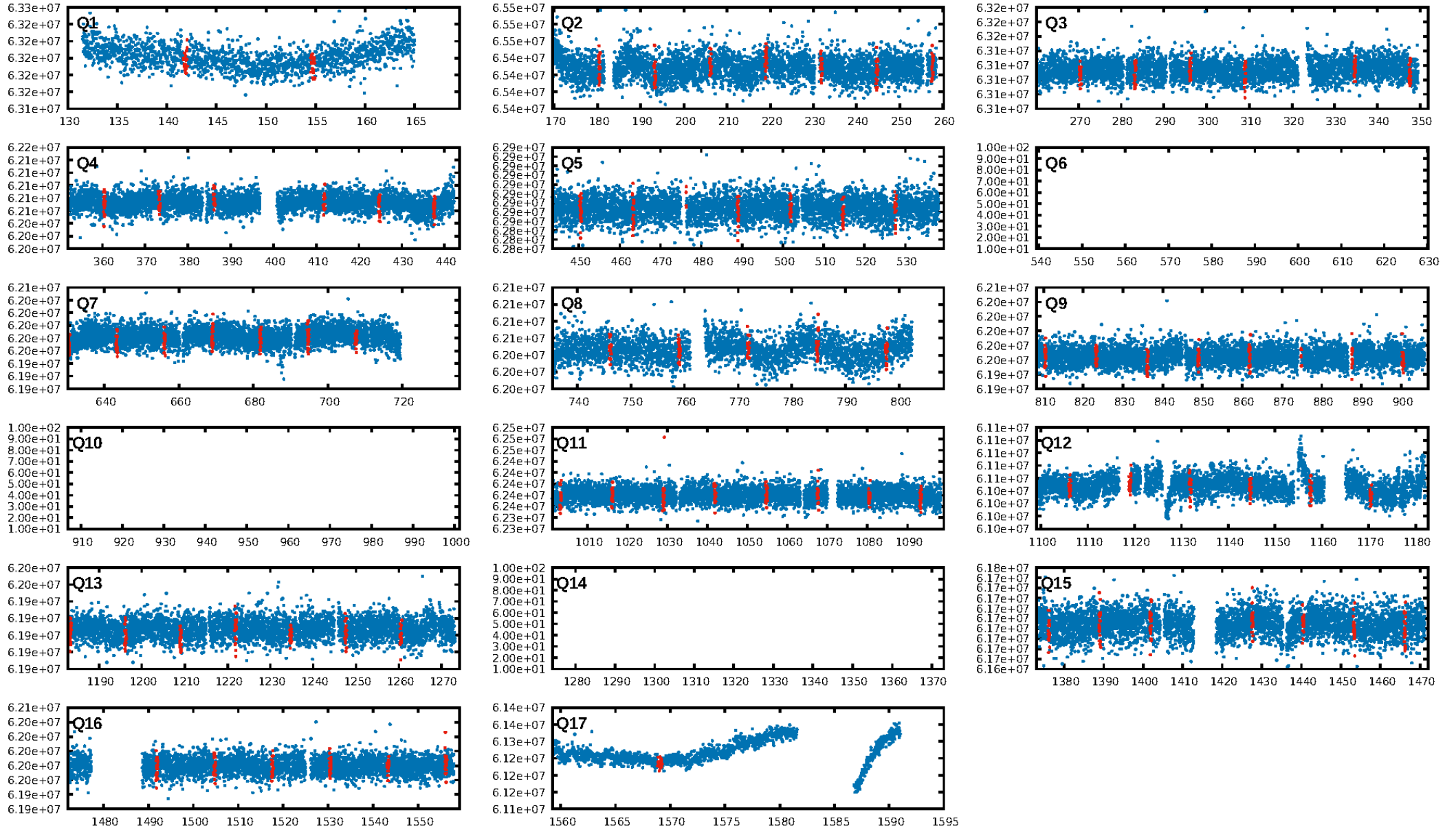
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [18.48σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 98.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [79/79]
GhostDiagnostic-chr: 3.771
Centroid-sig: 22.1%
Centroid-so: 1.059 arcsec [1.09σ]
OotOffset-rm: 2.019 arcsec [1.85σ]
KicOffset-rm: 2.061 arcsec [1.88σ]
OotOffset-st: 0/3/4/4 [11]
KicOffset-st: 0/3/4/4 [11]
DiffImageQuality-fgm: 0.36 [4/11]
DiffImageOverlap-fno: 0.57 [8/14]

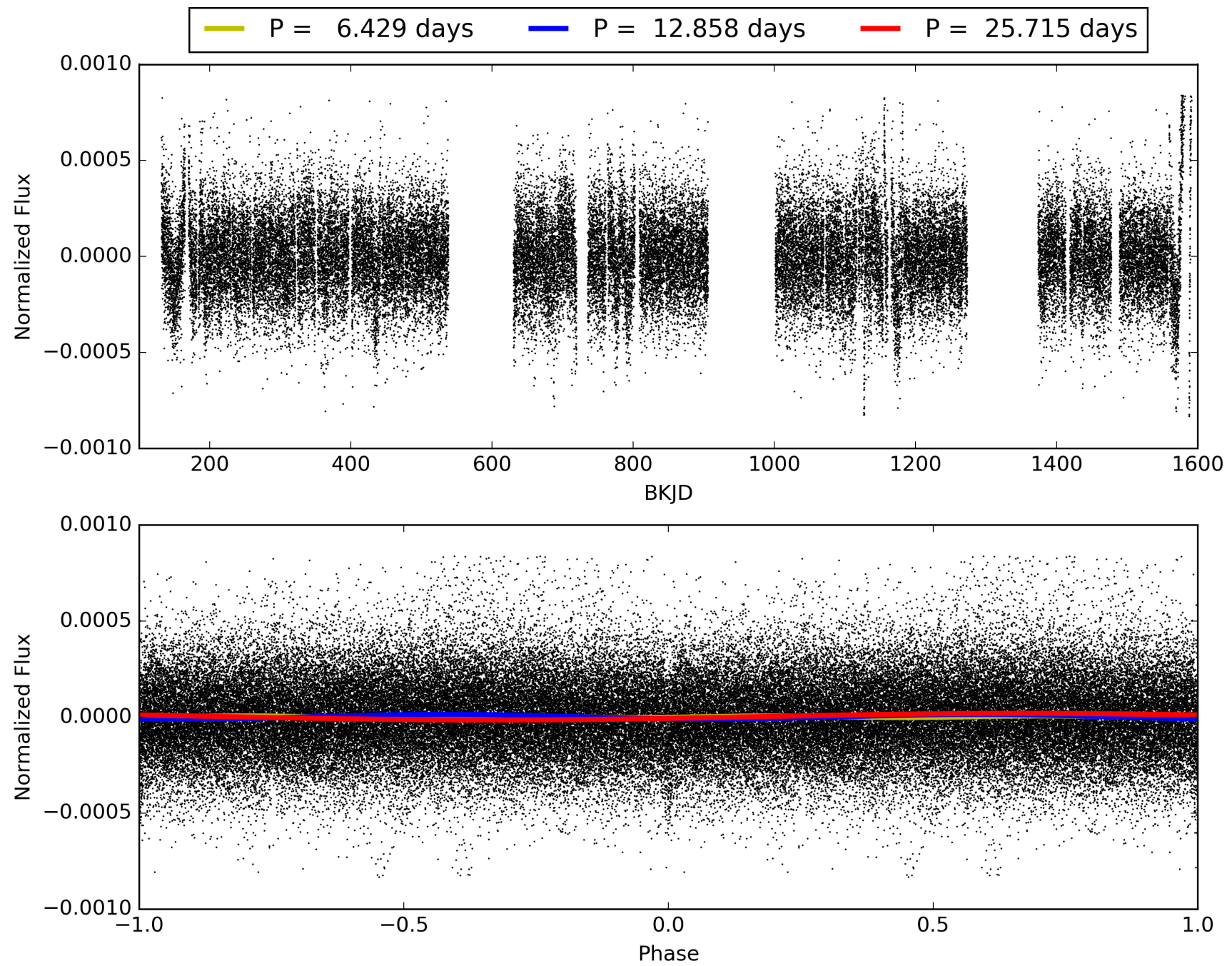
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 08:49:23 Z

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

TCE 004474462-01, PDC Light Curves

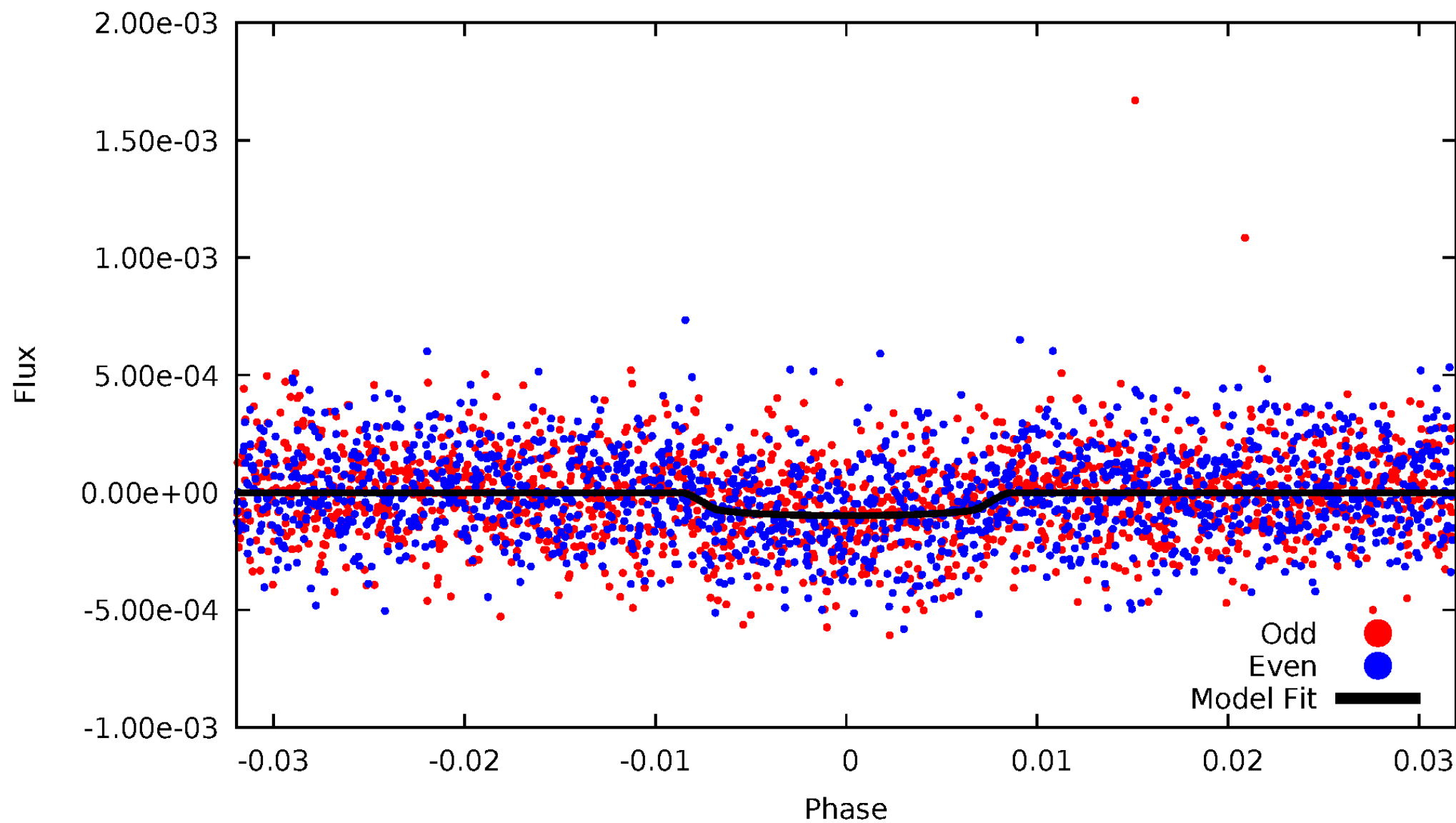


TCE 004474462-01



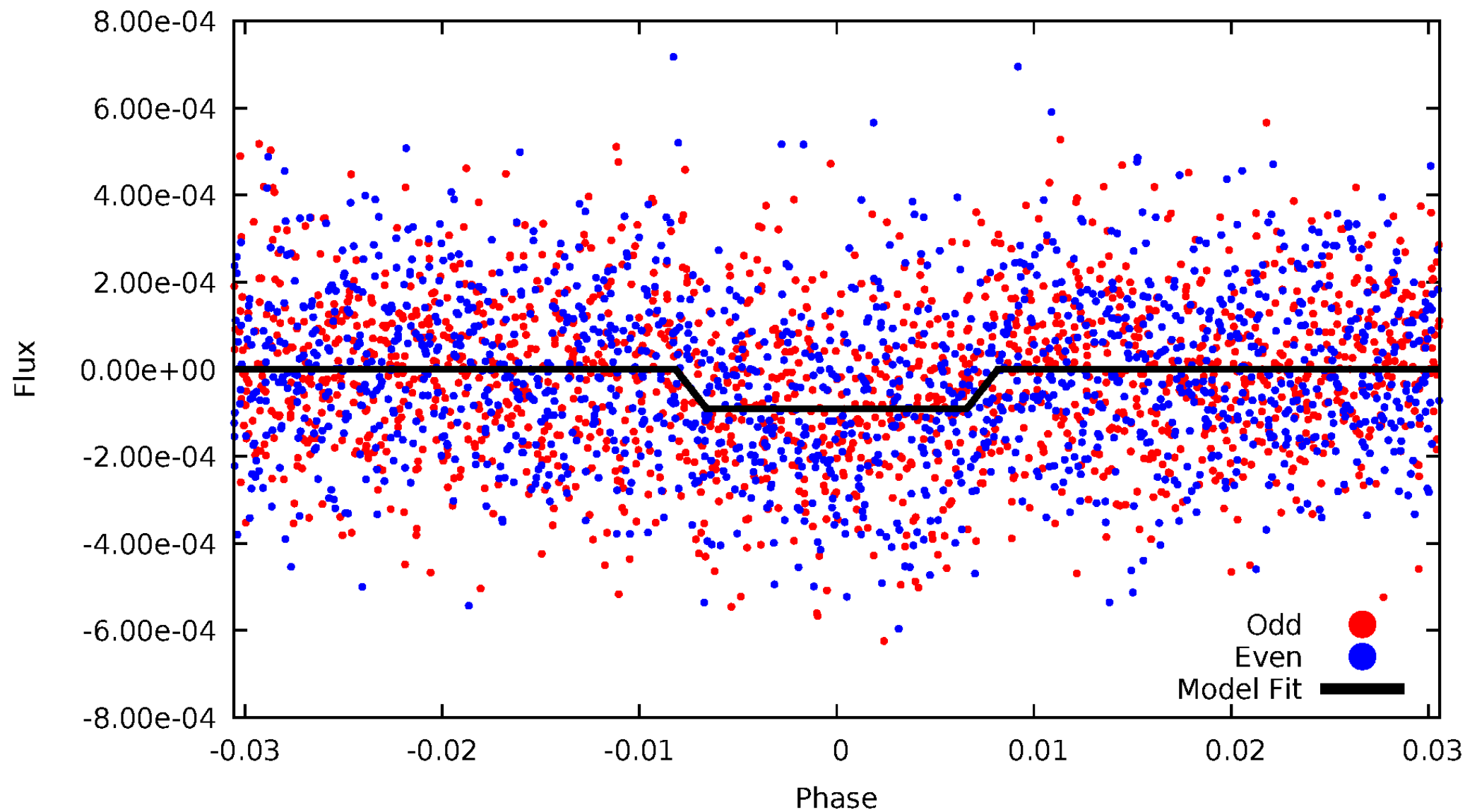
DV Odd/Even

TCE 004474462-01

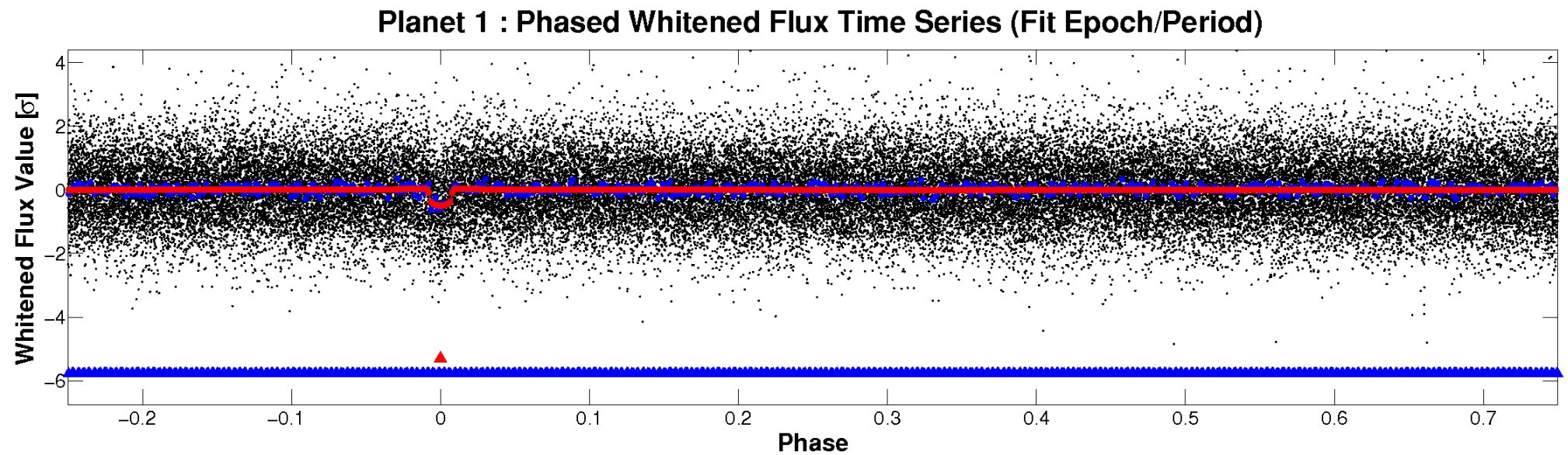
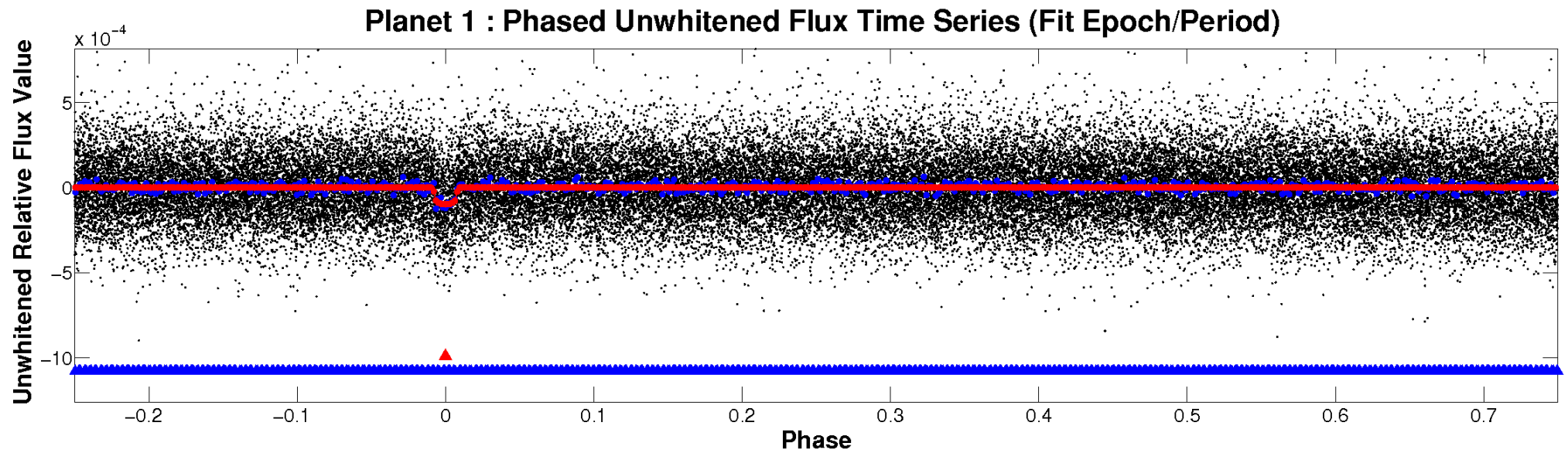


ALT Odd/Even

TCE 004474462-01

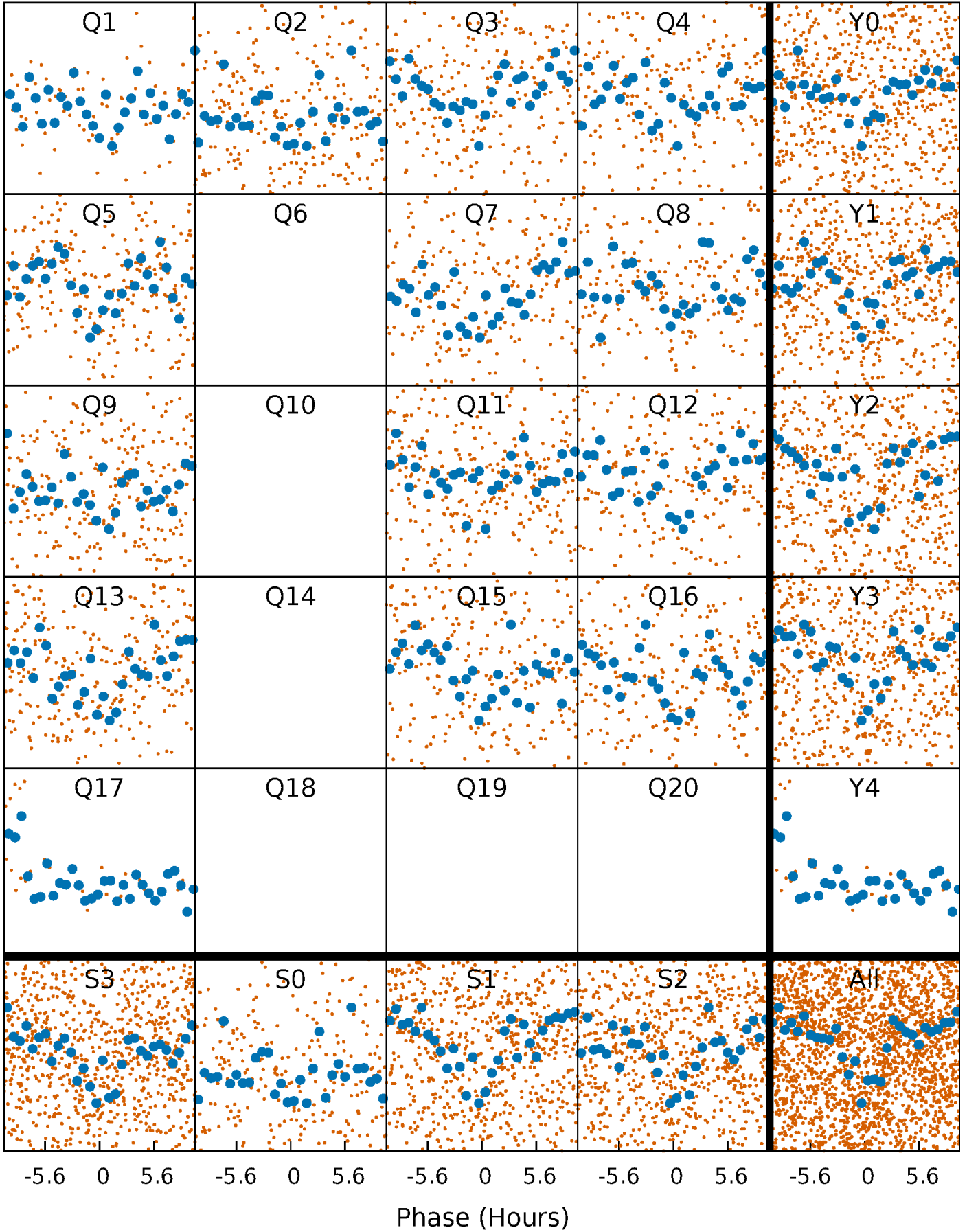


Non-Whitened Vs. Whitened Light Curve



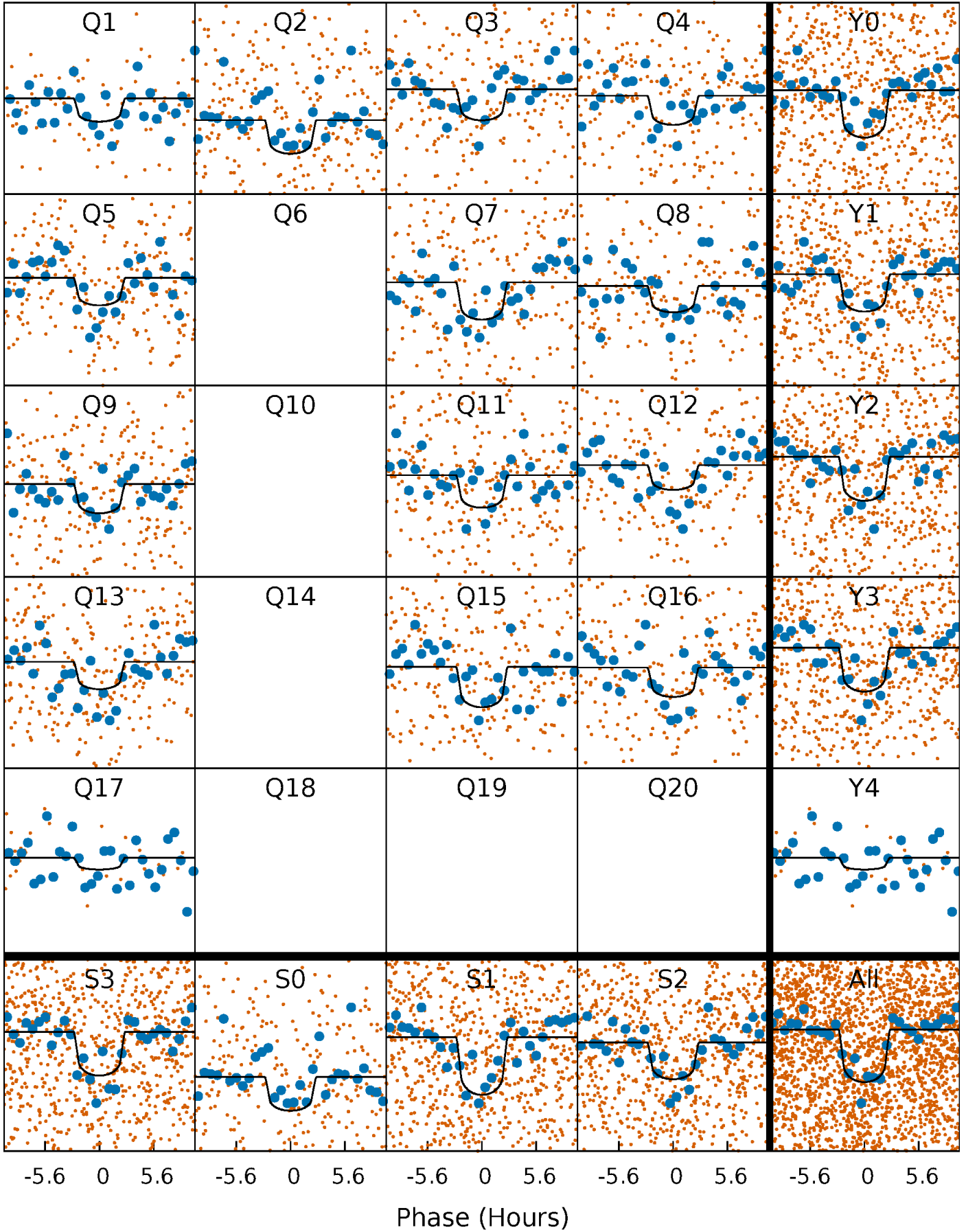
PDC Quarter-Phased Transit Curves

TCE 004474462-01 P= 12.857549 Days $T_0=141.856754$ (BKJD)



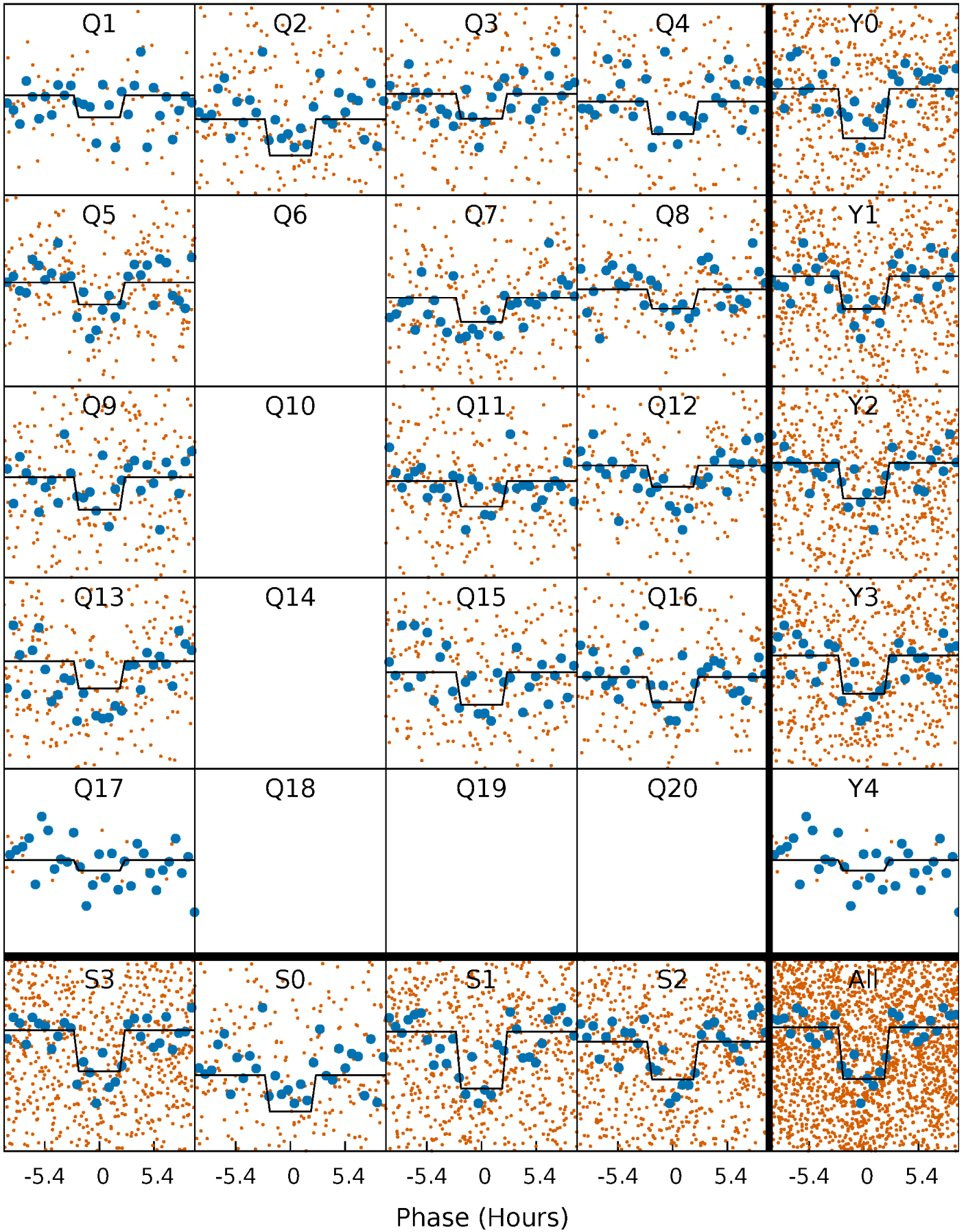
DV Quarter-Phased Transit Curves

TCE 004474462-01 P= 12.857549 Days $T_0=141.856754$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

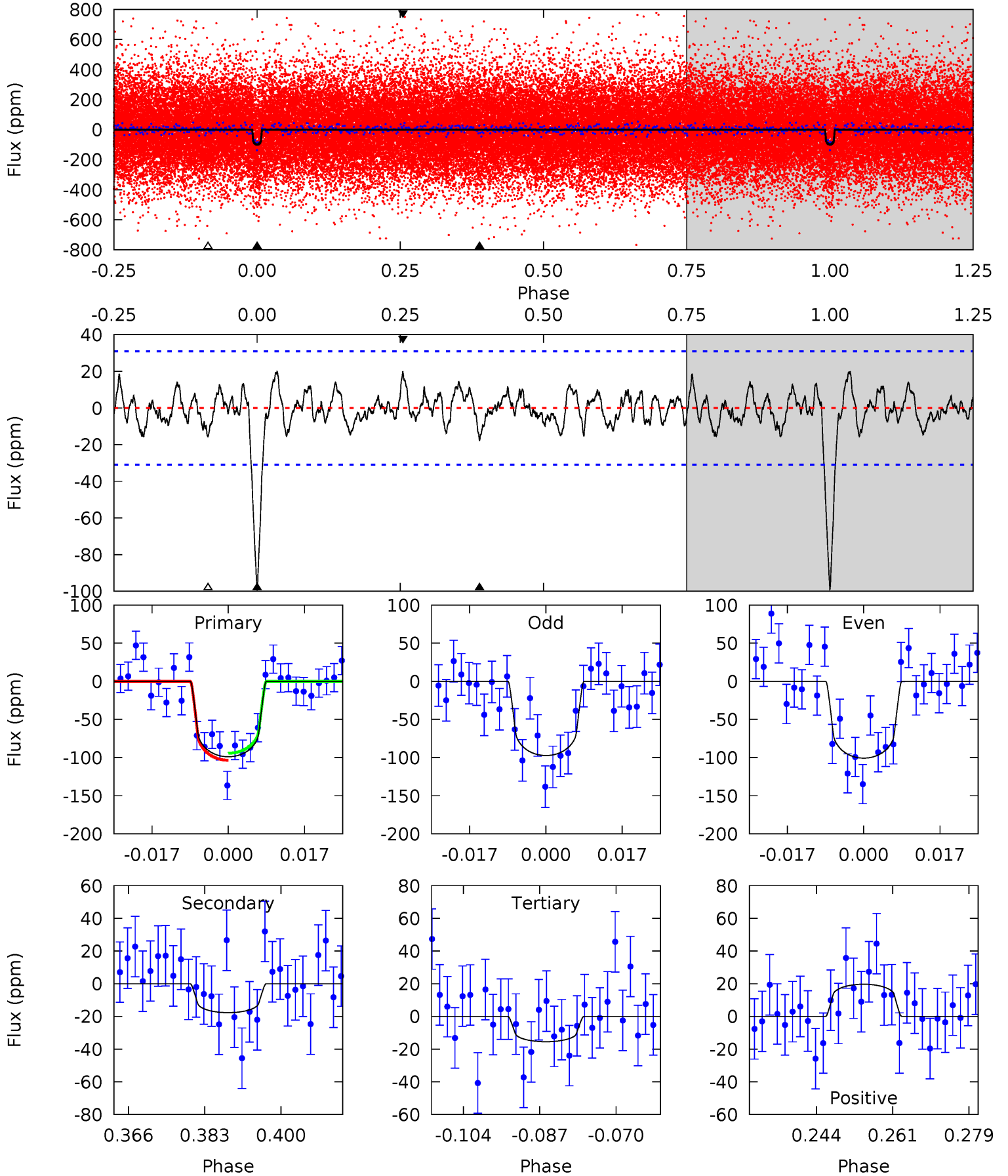
TCE 004474462-01 P= 12.857536 Days $T_0=141.856369$ (BKJD)



DV Model-Shift Uniqueness Test

004474462-01, P = 12.857549 Days, E = 128.999205 Days

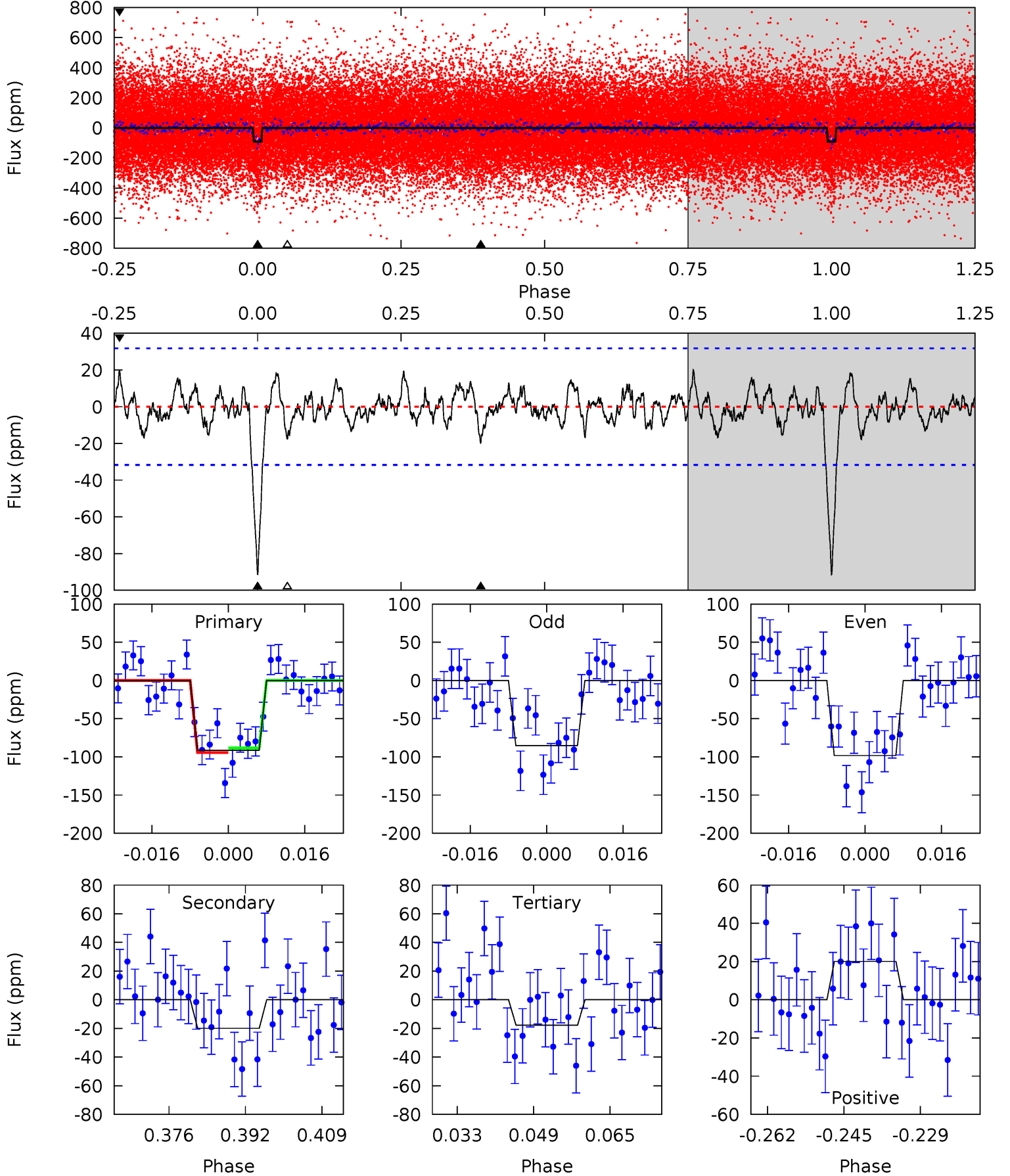
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.7	2.82	2.46	3.13	4.92	2.38	1.13	13.3	12.6	0.36	-0.31	0.27	0.96	0.17	0.73



Alt Model-Shift Uniqueness Test

004474462-01, $P = 12.857536$ Days, $E = 128.998833$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	3.09	2.74	3.11	4.93	2.40	1.06	11.4	11.1	0.34	-0.02	1.00	1.03	0.18	0.48



Stellar Parameters For KIC 004474462

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5860^{+79}_{-79}	$4.276^{+0.162}_{-0.108}$	$-0.200^{+0.150}_{-0.150}$	$1.156^{+0.178}_{-0.195}$	$0.922^{+0.073}_{-0.053}$	$0.840^{+0.617}_{-0.258}$
	+1%/-1%	+4%/-3%	+75%/-75%	+15%/-17%	+8%/-6%	+73%/-31%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004474462-01 / KOI 4452.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-18 ± 6	$1.30^{+0.61}_{-0.61}$	1199^{+53}_{-59}	4000^{+1114}_{-546}	60^{+151}_{-34}
Alt.	-20 ± 6	$1.23^{+0.58}_{-0.57}$	1194^{+55}_{-60}	4183^{+1233}_{-578}	78^{+201}_{-45}

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

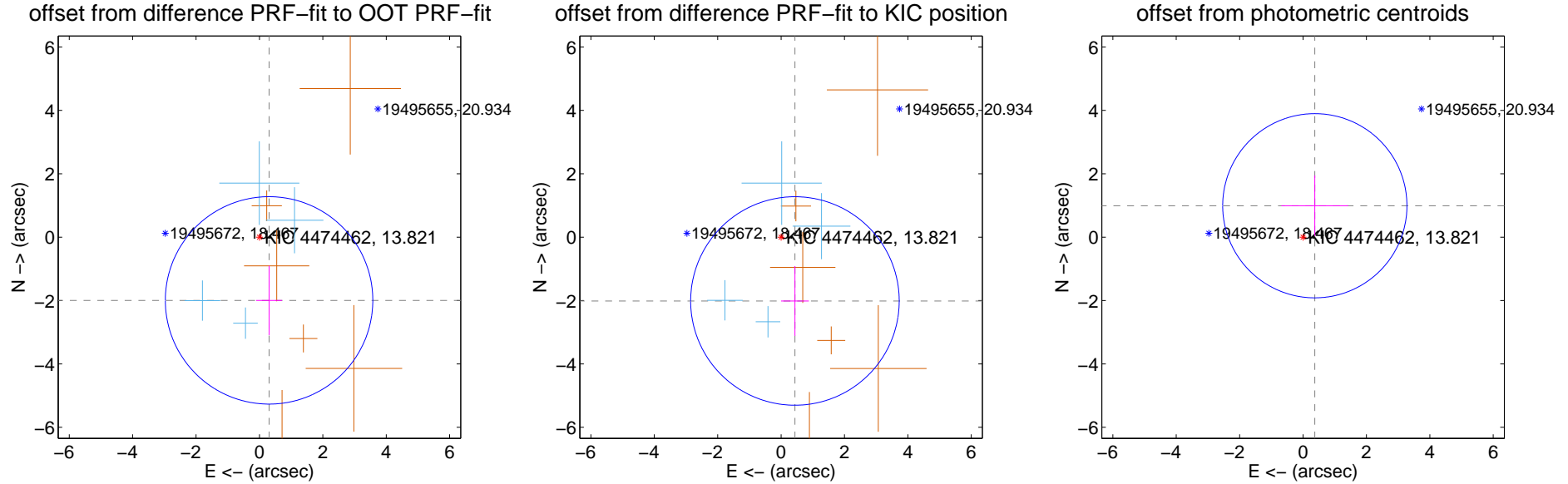
DV Centroid Data

Supplemental centroid analysis for 004474462-01. Kepler magnitude: 13.82. Transit SNR 11.81

There are 4 quarters with good PRF difference image offsets

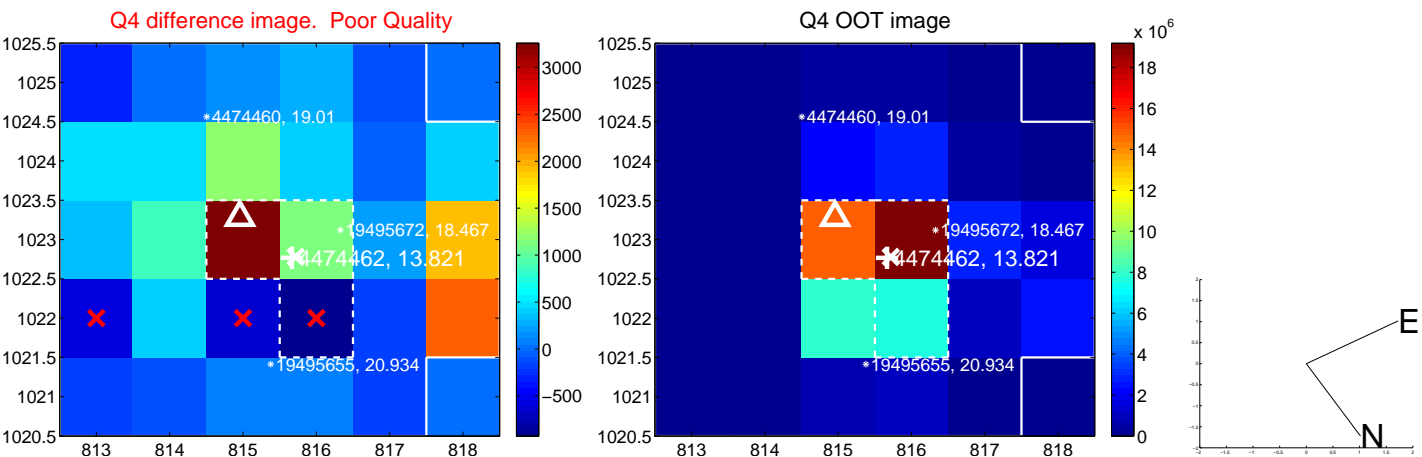
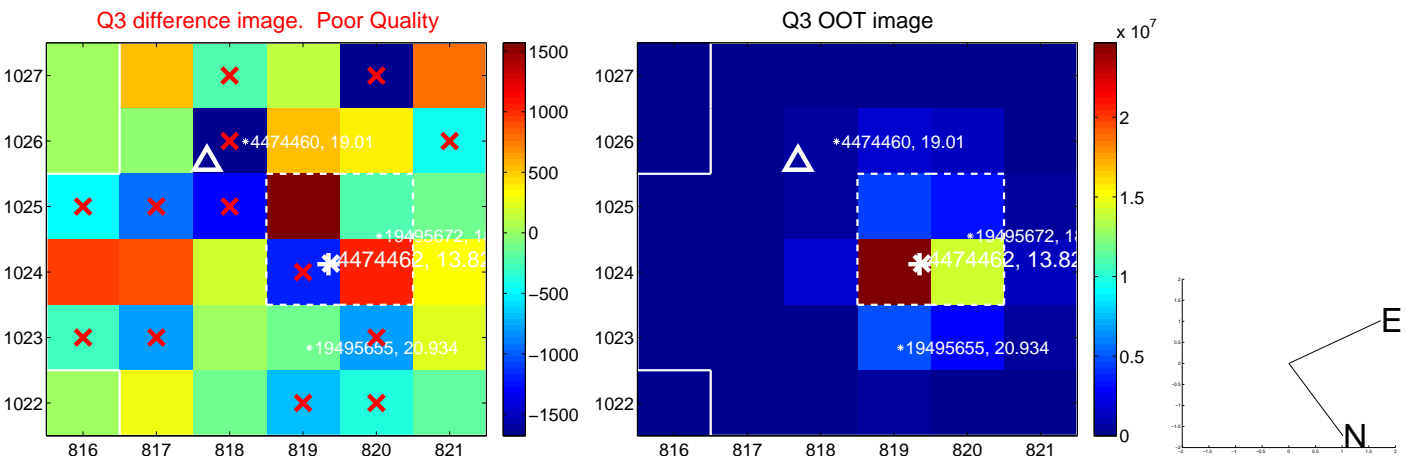
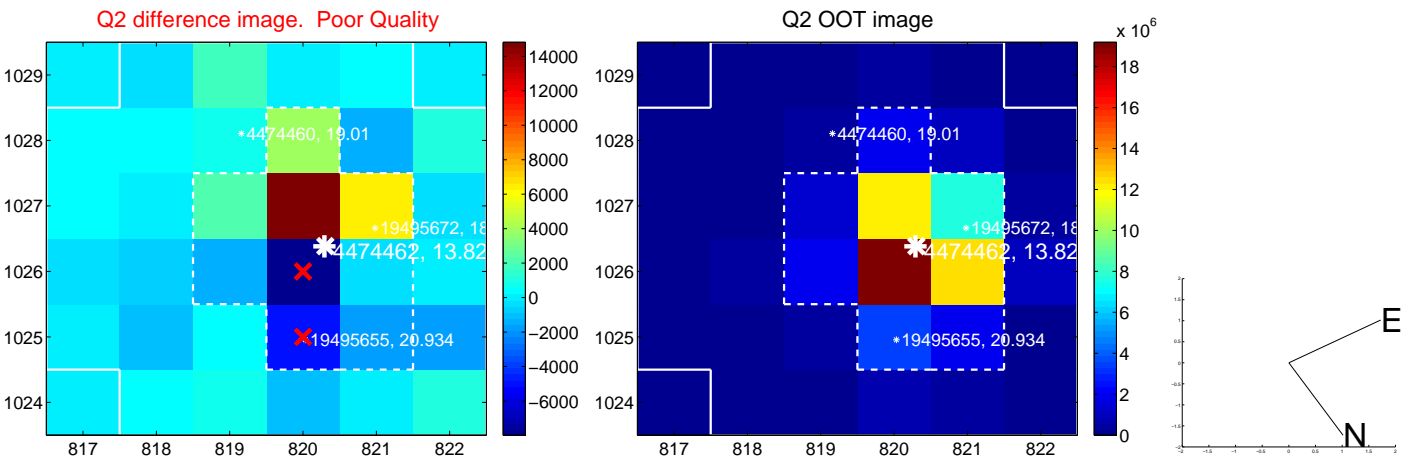
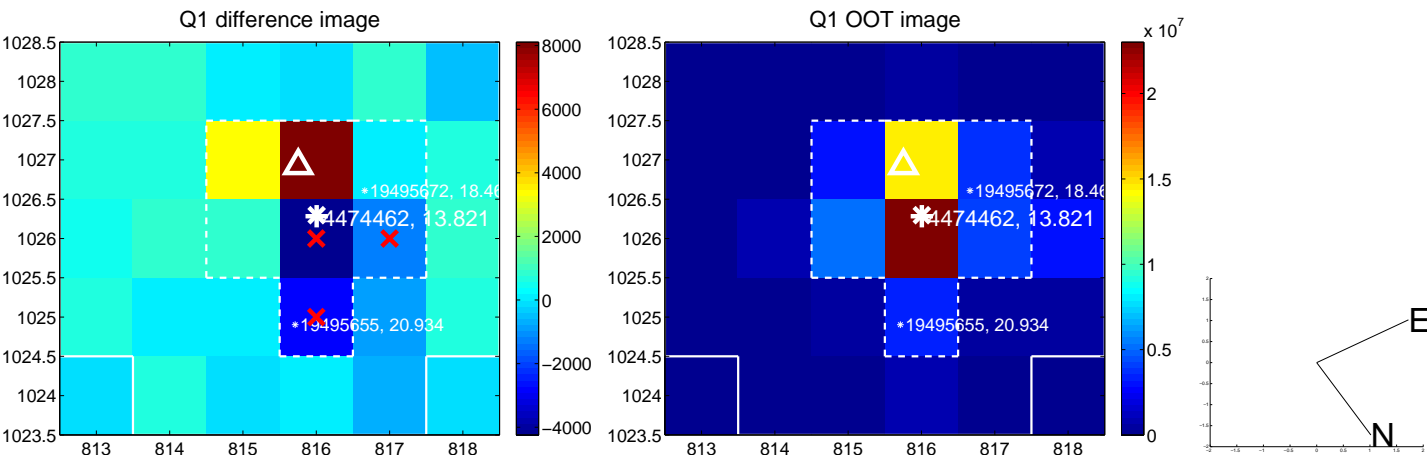
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.019 ± 1.091	1.85	-0.304 ± 0.409	-1.996 ± 1.094
PRF-fit source offset from KIC position	2.061 ± 1.097	1.88	-0.437 ± 0.440	-2.014 ± 1.102
photometric centroid source offset	1.06 ± 0.97	1.09	-0.37 ± 1.05	0.99 ± 0.96

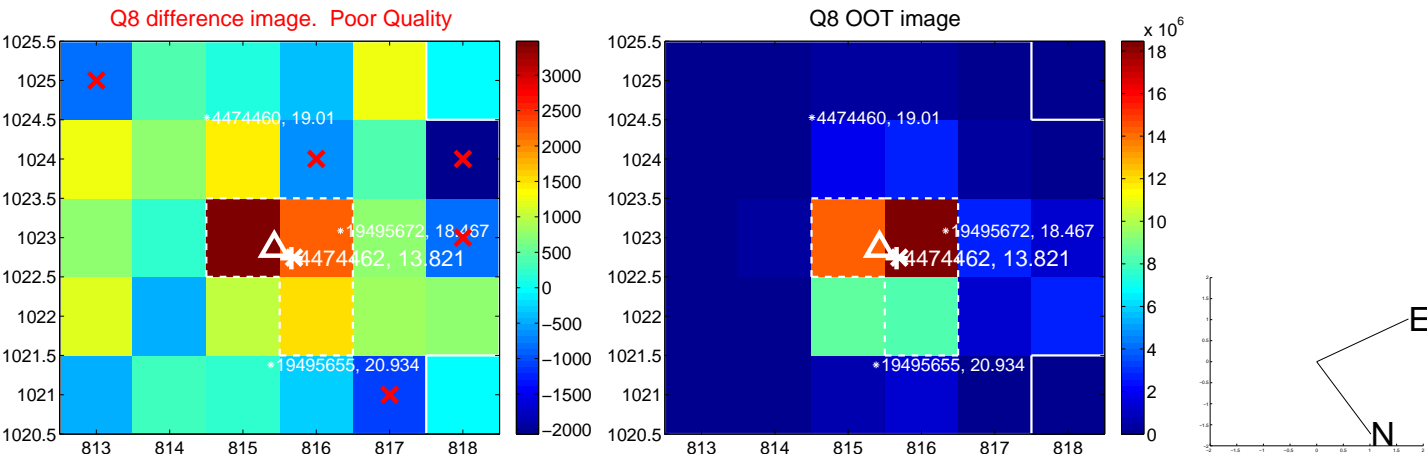
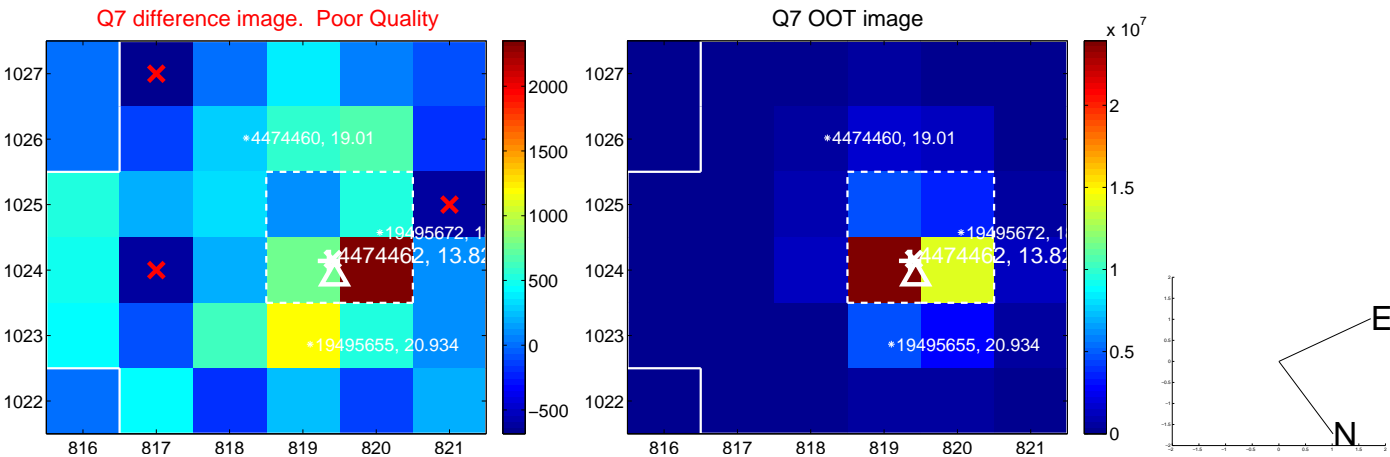
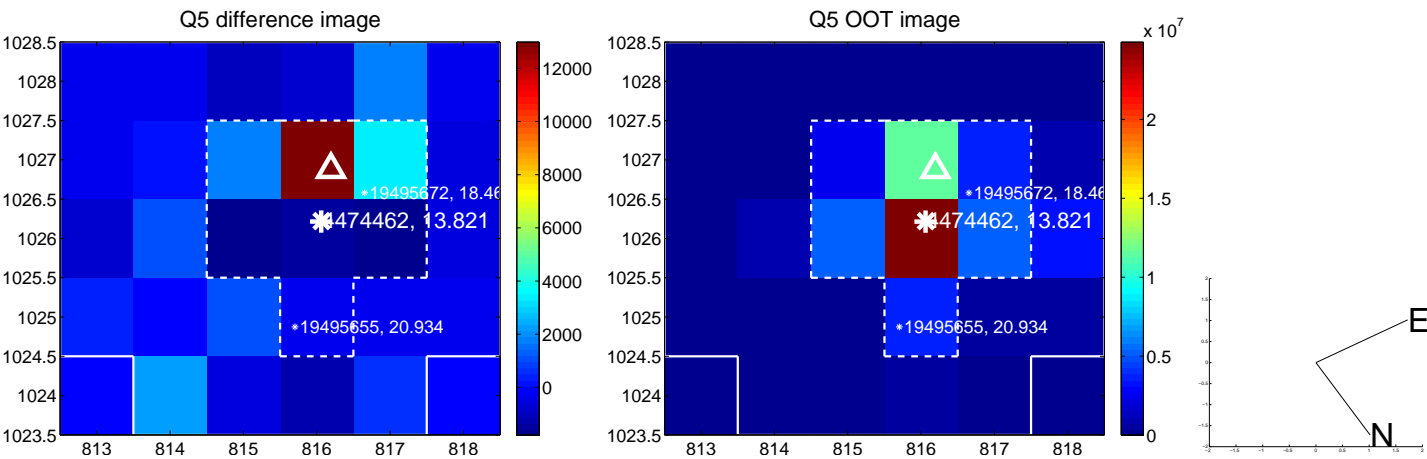


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

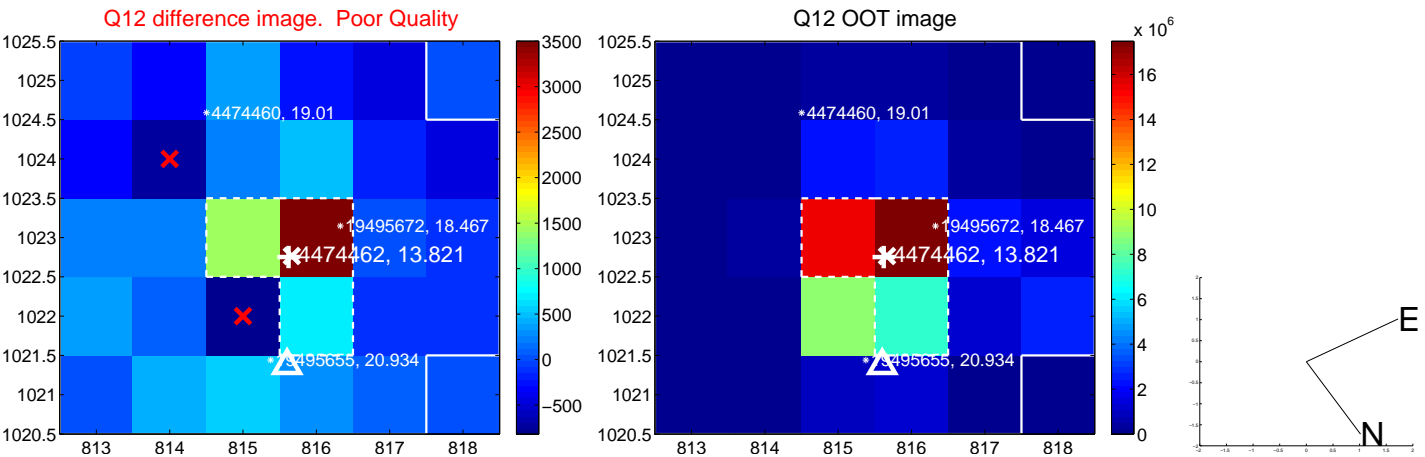
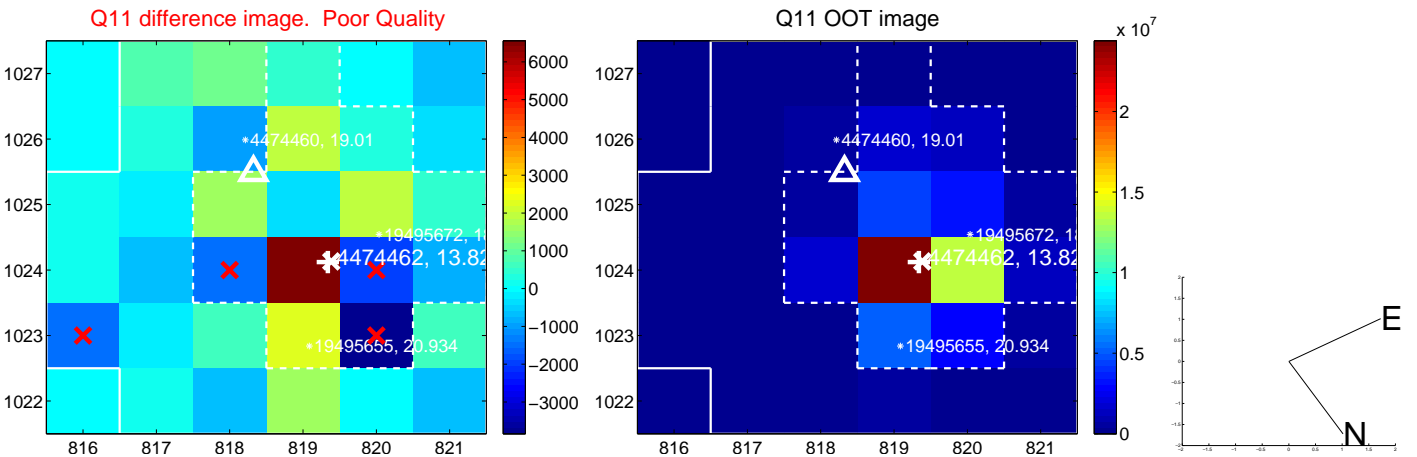
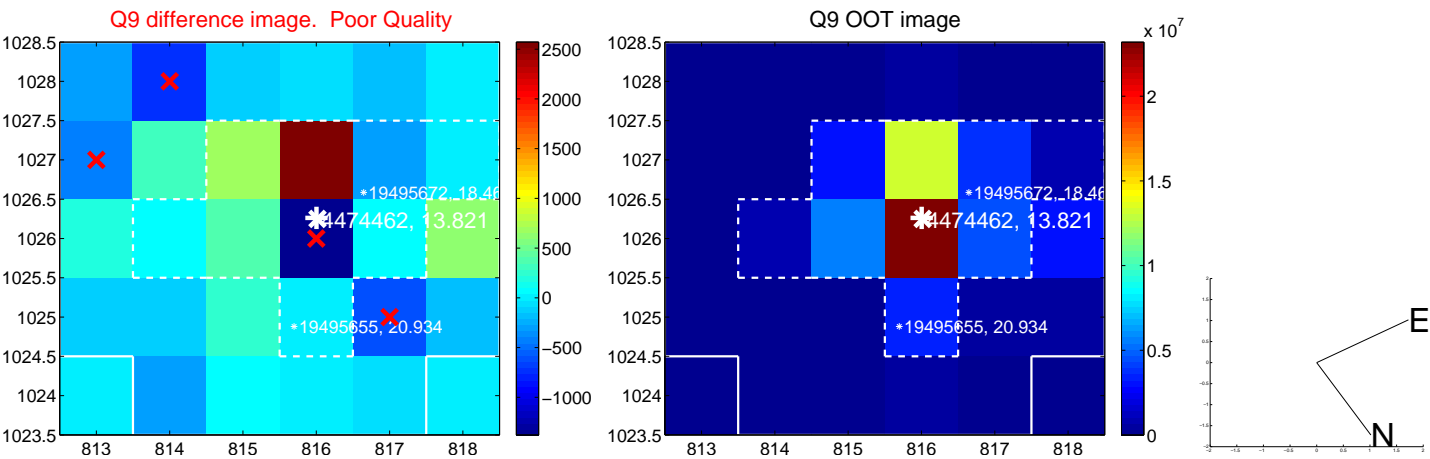
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



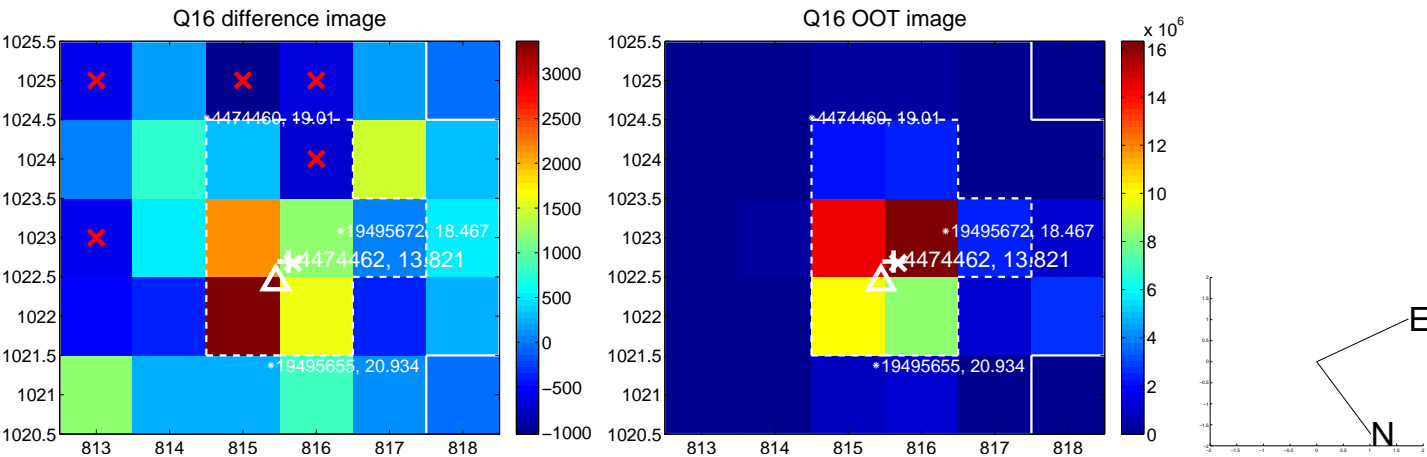
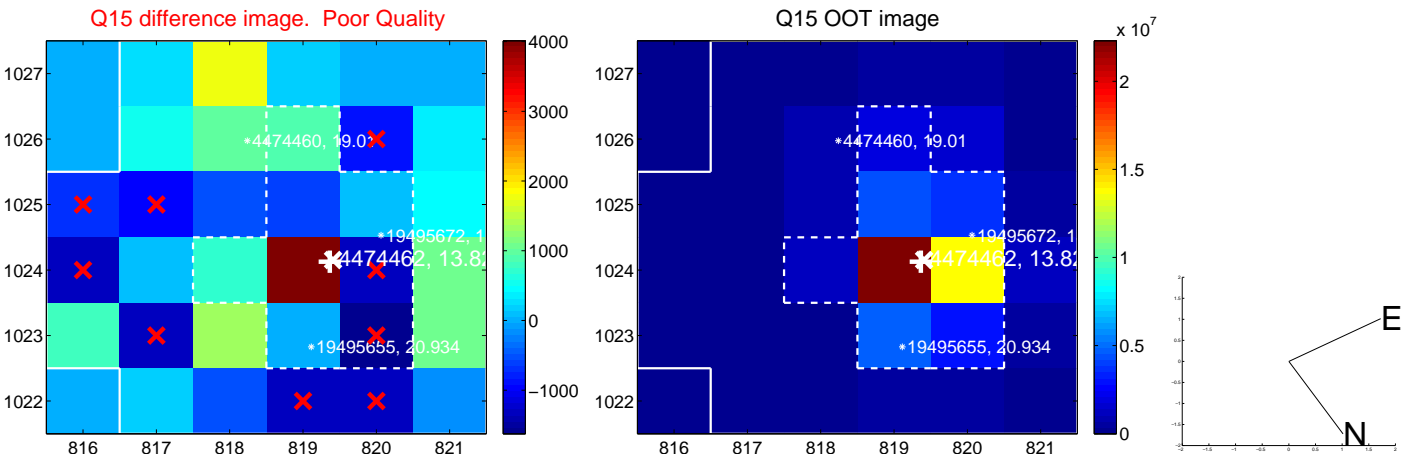
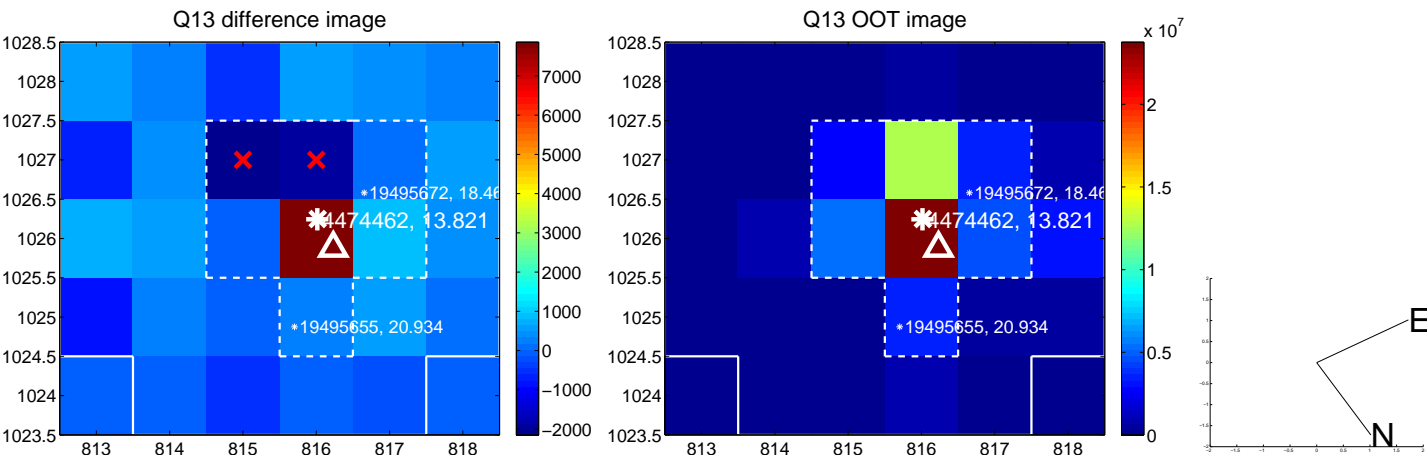
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



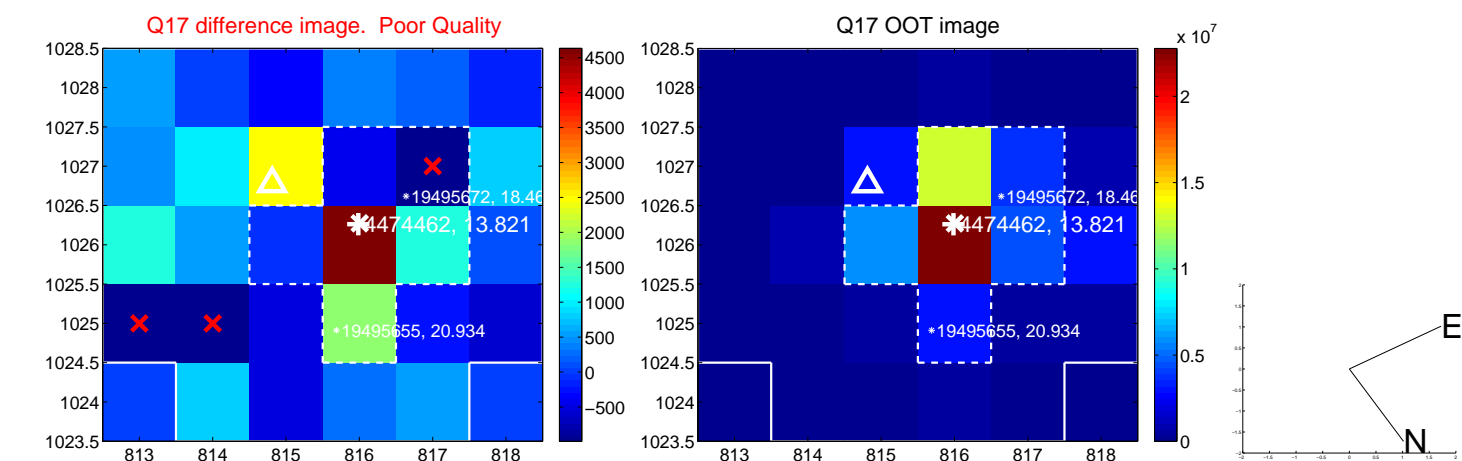
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



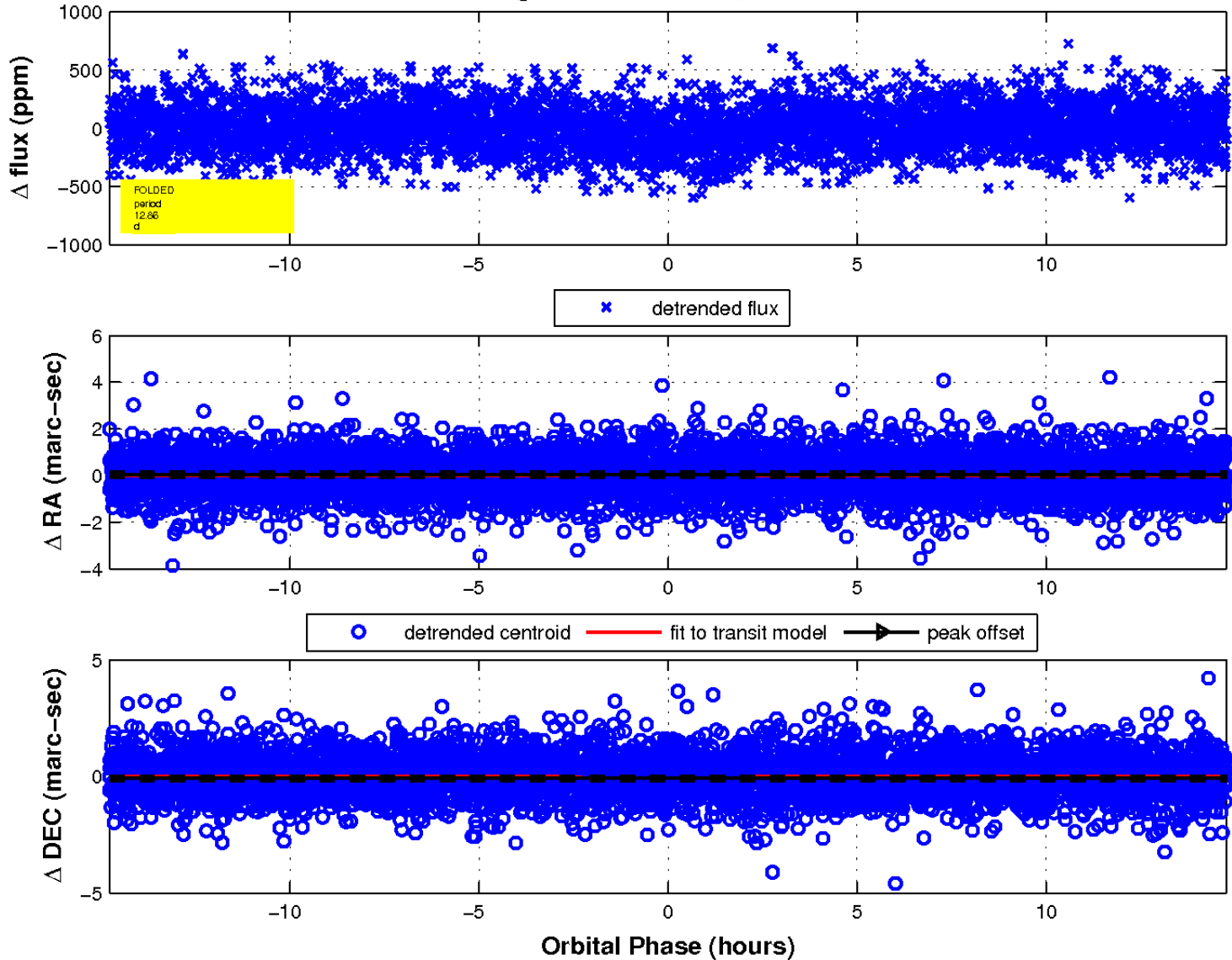
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

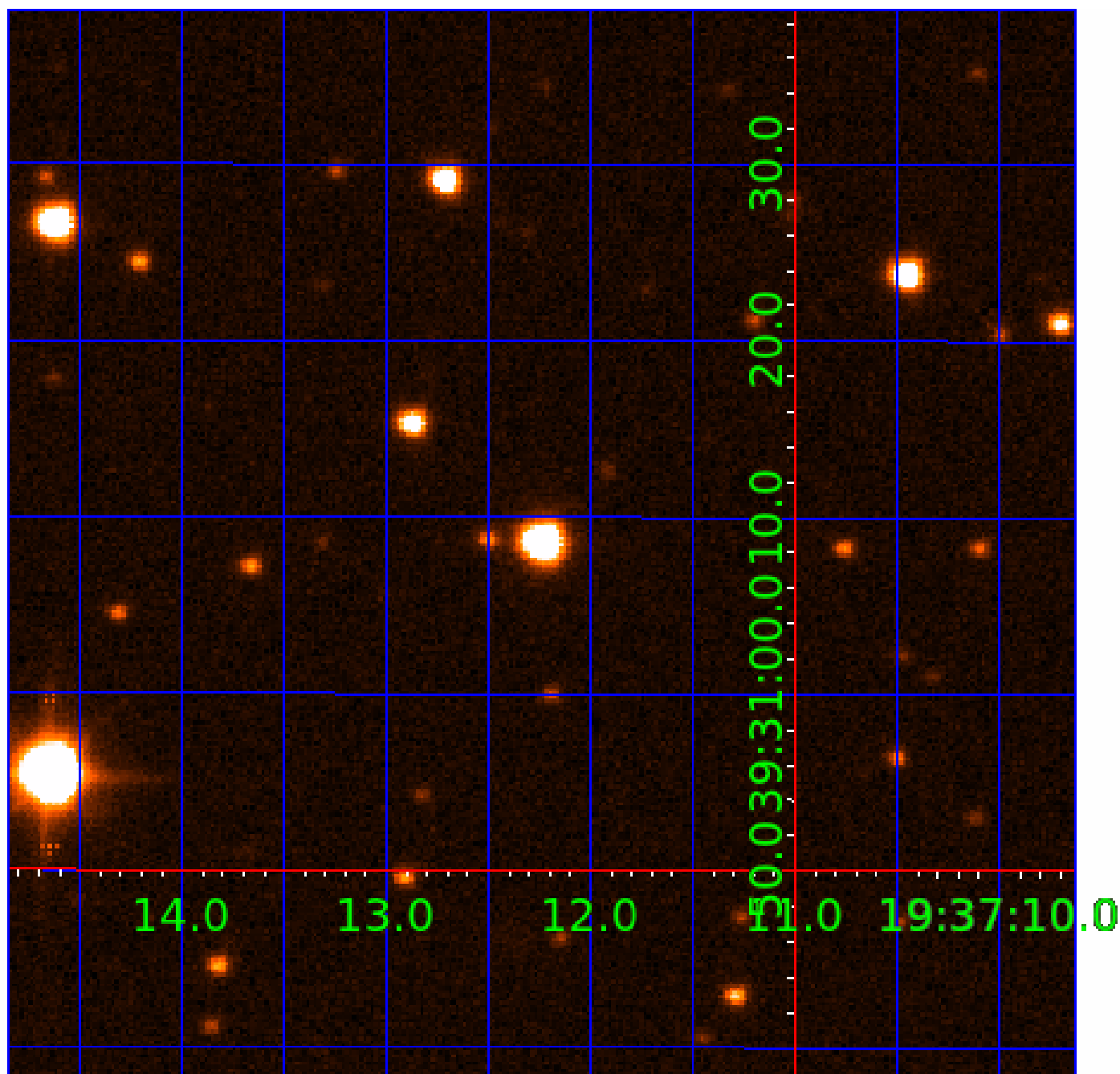


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 004474462

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})
004474462-01	OBS	4452.01	12.857549	141.856754	98.5	4.925	10.9	11.8	1.16	5860	1.31	129.29
004474462-02	OBS	No	1.624576	132.477183	19.0	13.729	9.2	10.3	1.16	5860	0.50	2039.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004474462-01	OBS	PC	0.89	0	0	0	0	NO_COMMENT
004474462-02	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_FEW_DIFFS

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

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

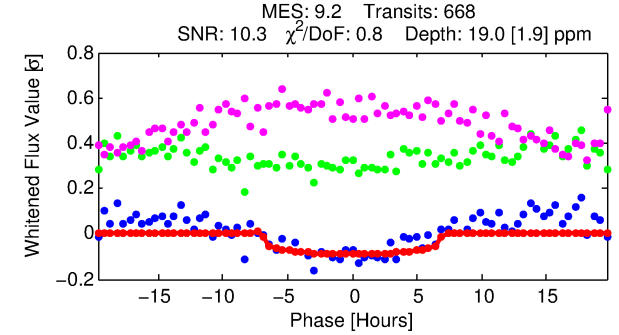
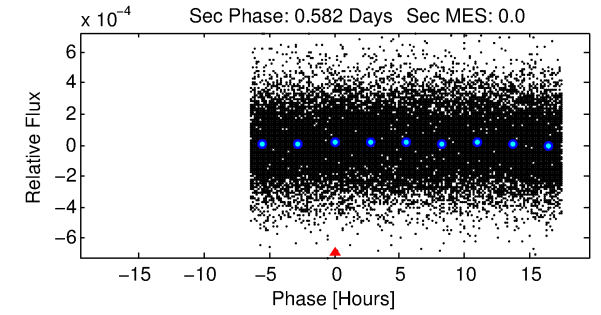
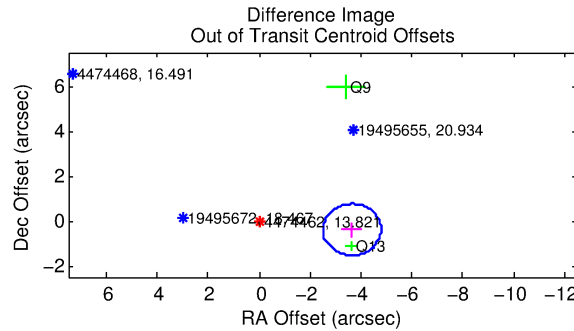
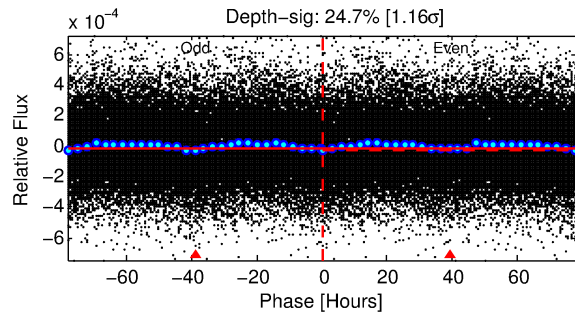
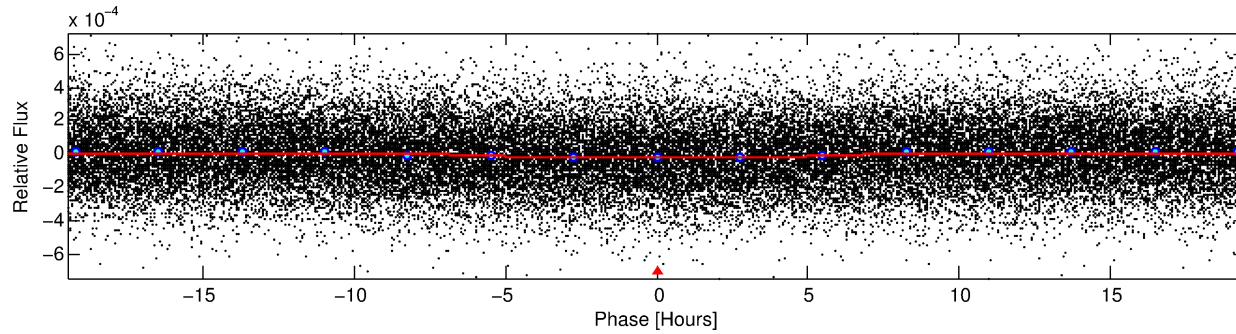
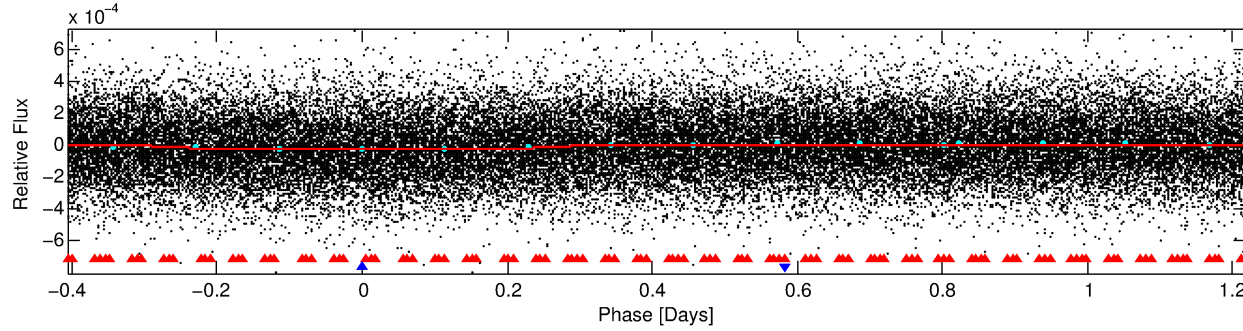
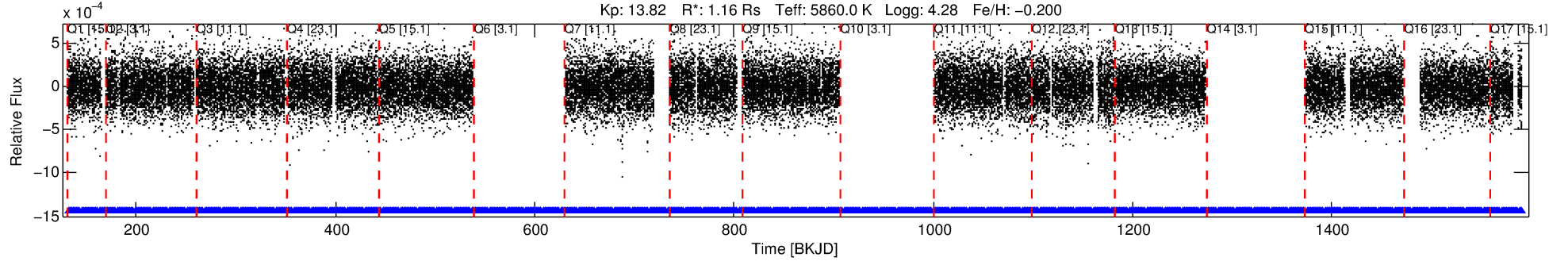
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004474462-02

No Significant Match Found

DV One-Page Summary

KIC: 4474462 Candidate: 2 of 2 Period: 1.625 d
KOI: K04452 Corr: No Ephemeris Match



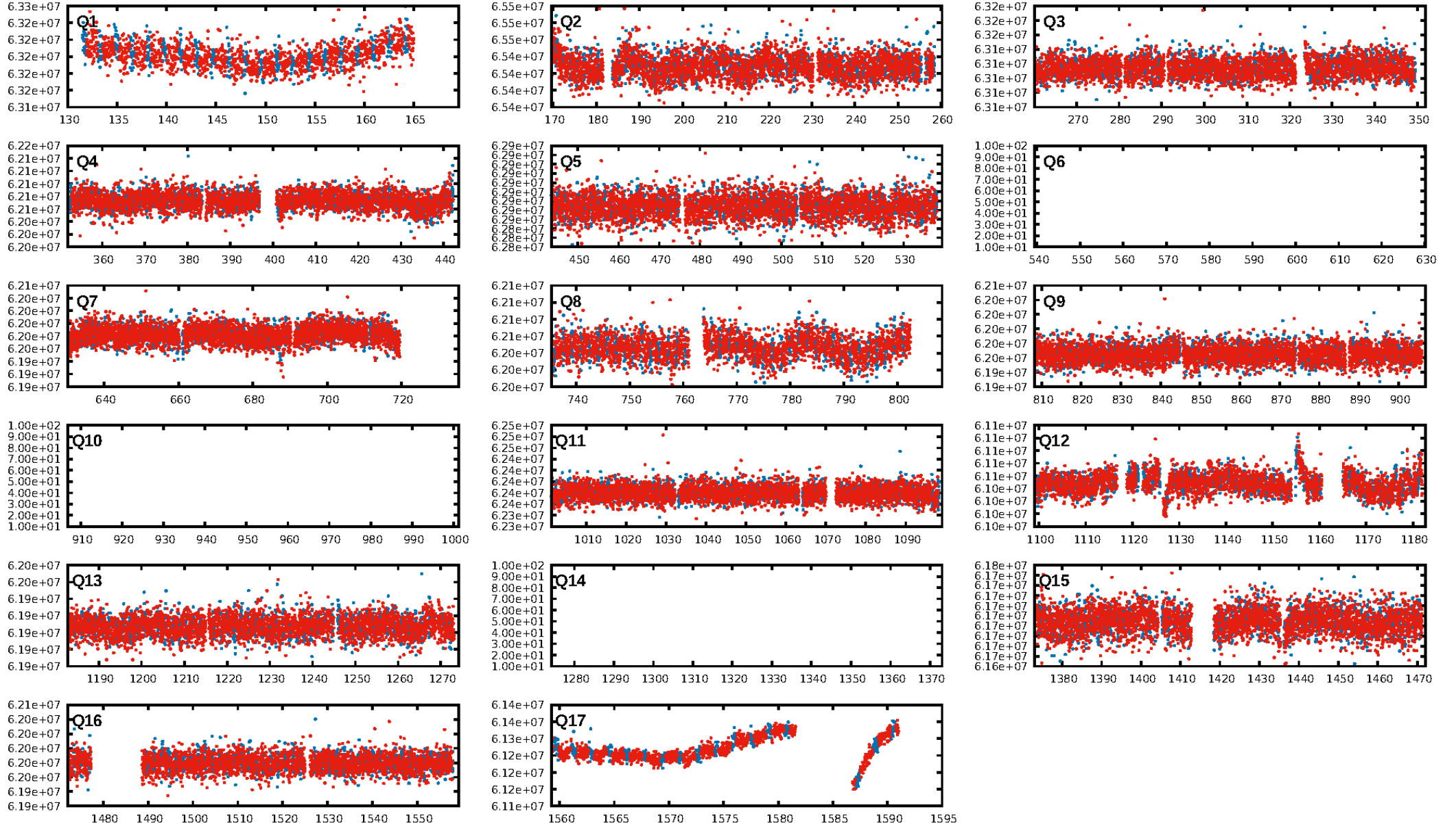
DV Fit Results:

Period = 1.62458 [0.00004] d
Epoch = 132.4772 [0.0121] BKJD
Rp/R* = 0.0040 [0.0049]
a/R* = 1.12 [1.34]
b = 0.01 [790.58]
Seff = 2039.25 [567.32]
Teq = 1714 [119] K
Rp = 0.50 [0.63] Re
a = 0.0263 [0.0044] AU
Ag = N/A
Teffp = N/A

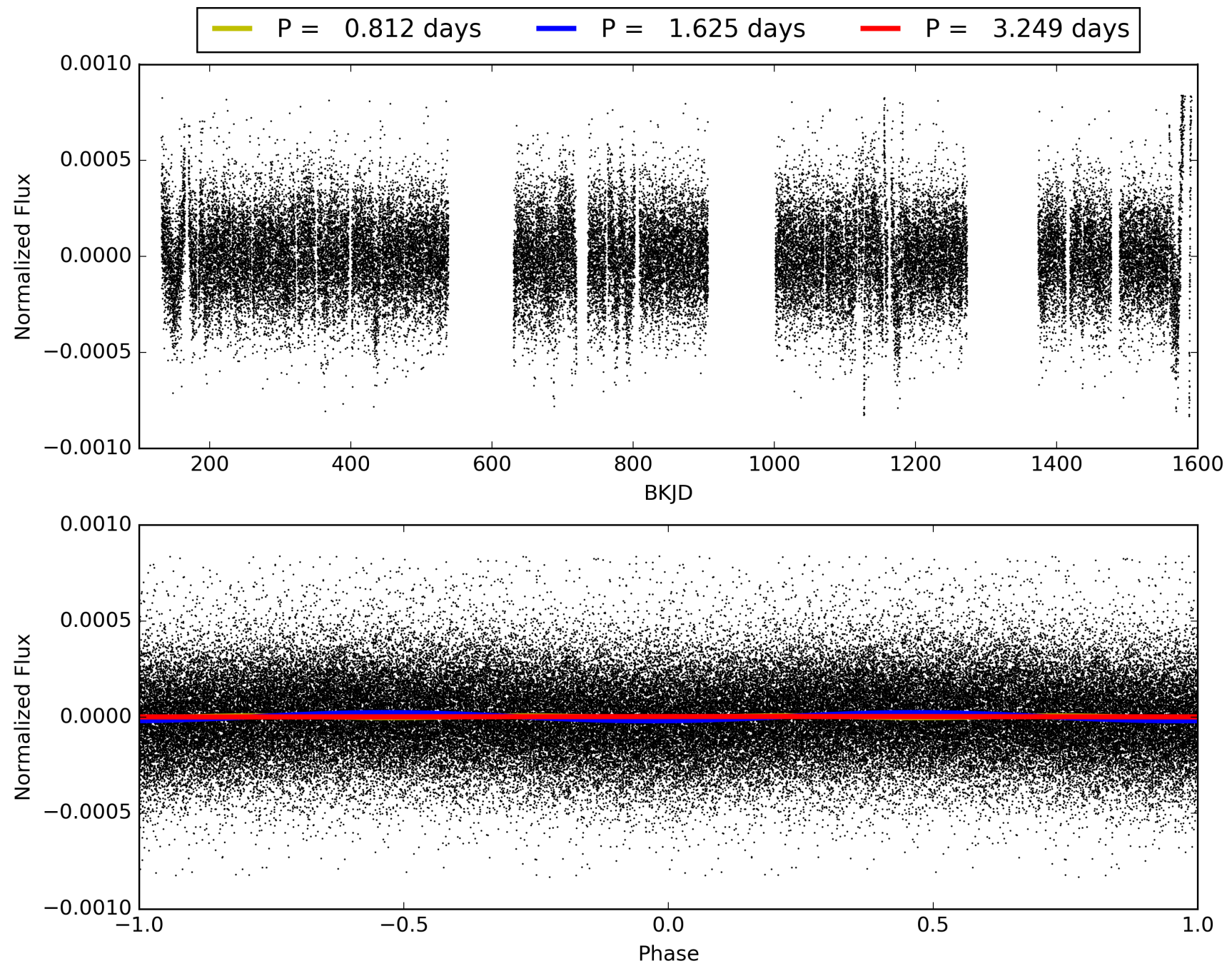
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [18.48 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [631/631]
GhostDiagnostic-chr: 3.604
Centroid-sig: 0.0%
Centroid-so: 5.207 arcsec [4.47 σ]
OotOffset-rm: 3.671 arcsec [9.64 σ]
KicOffset-rm: 3.696 arcsec [7.35 σ]
OotOffset-st: 0/0/0/2 [2]
KicOffset-st: 0/0/0/2 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004474462-02, PDC Light Curves

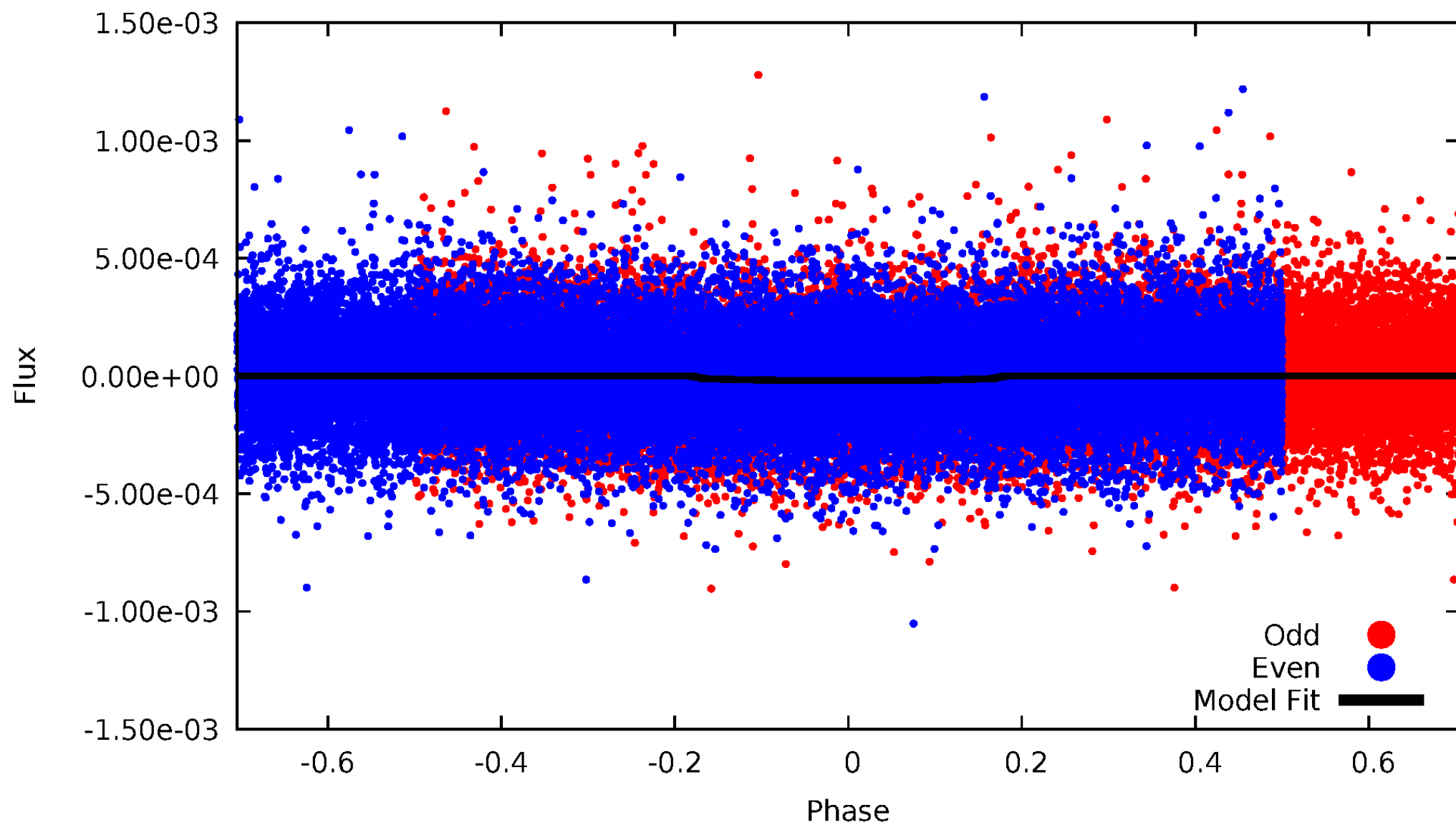


TCE 004474462-02



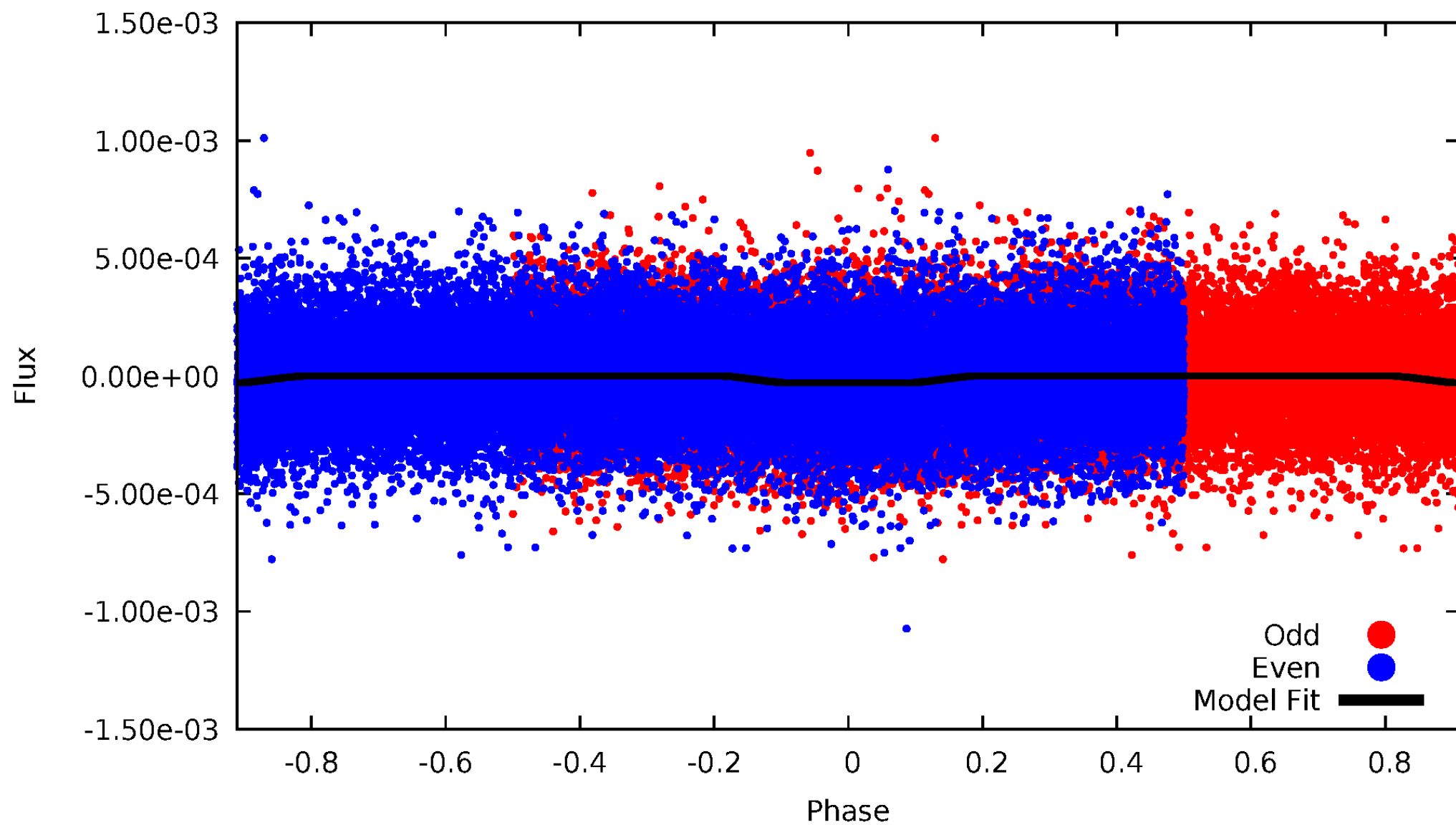
DV Odd/Even

TCE 004474462-02



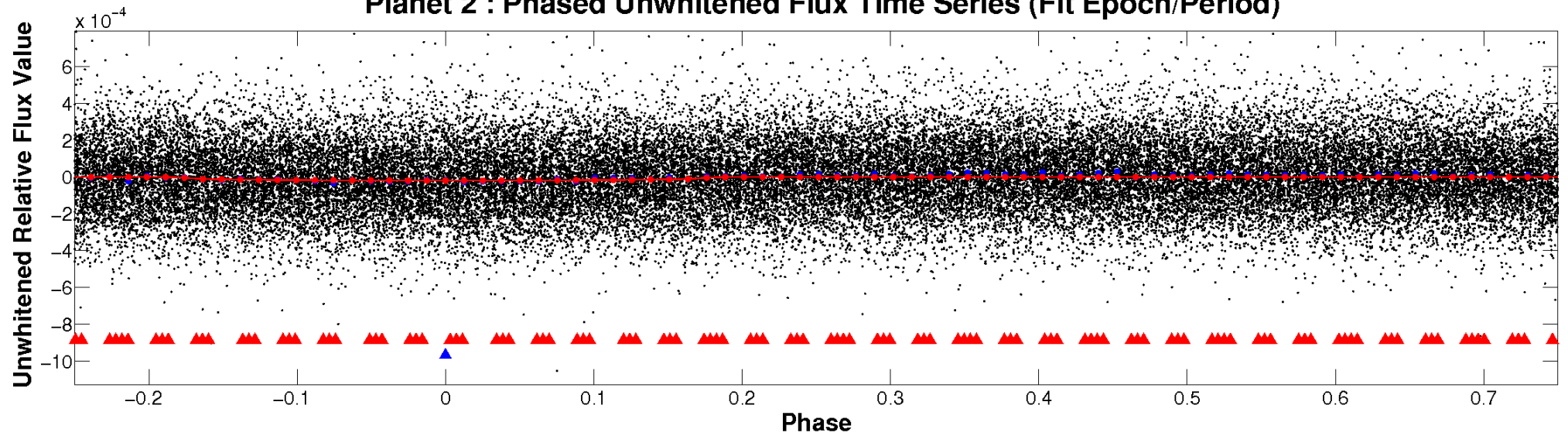
ALT Odd/Even

TCE 004474462-02

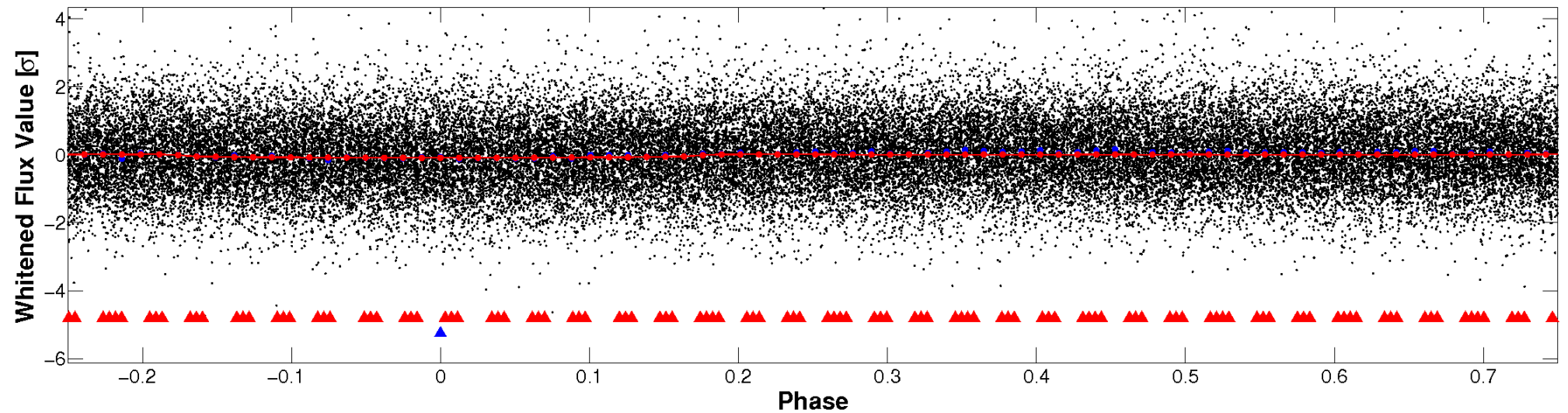


Non-Whitened Vs. Whitened Light Curve

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

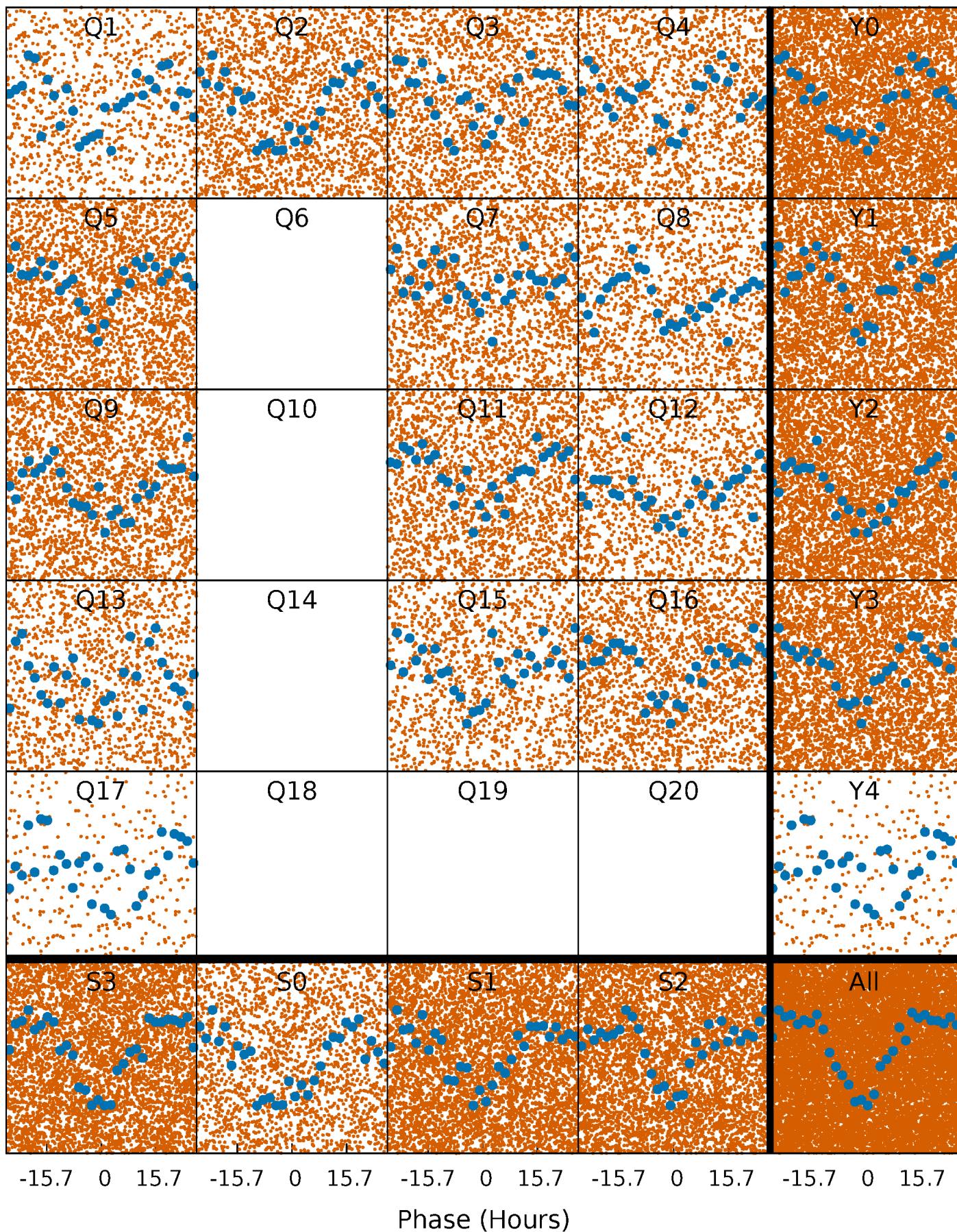


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



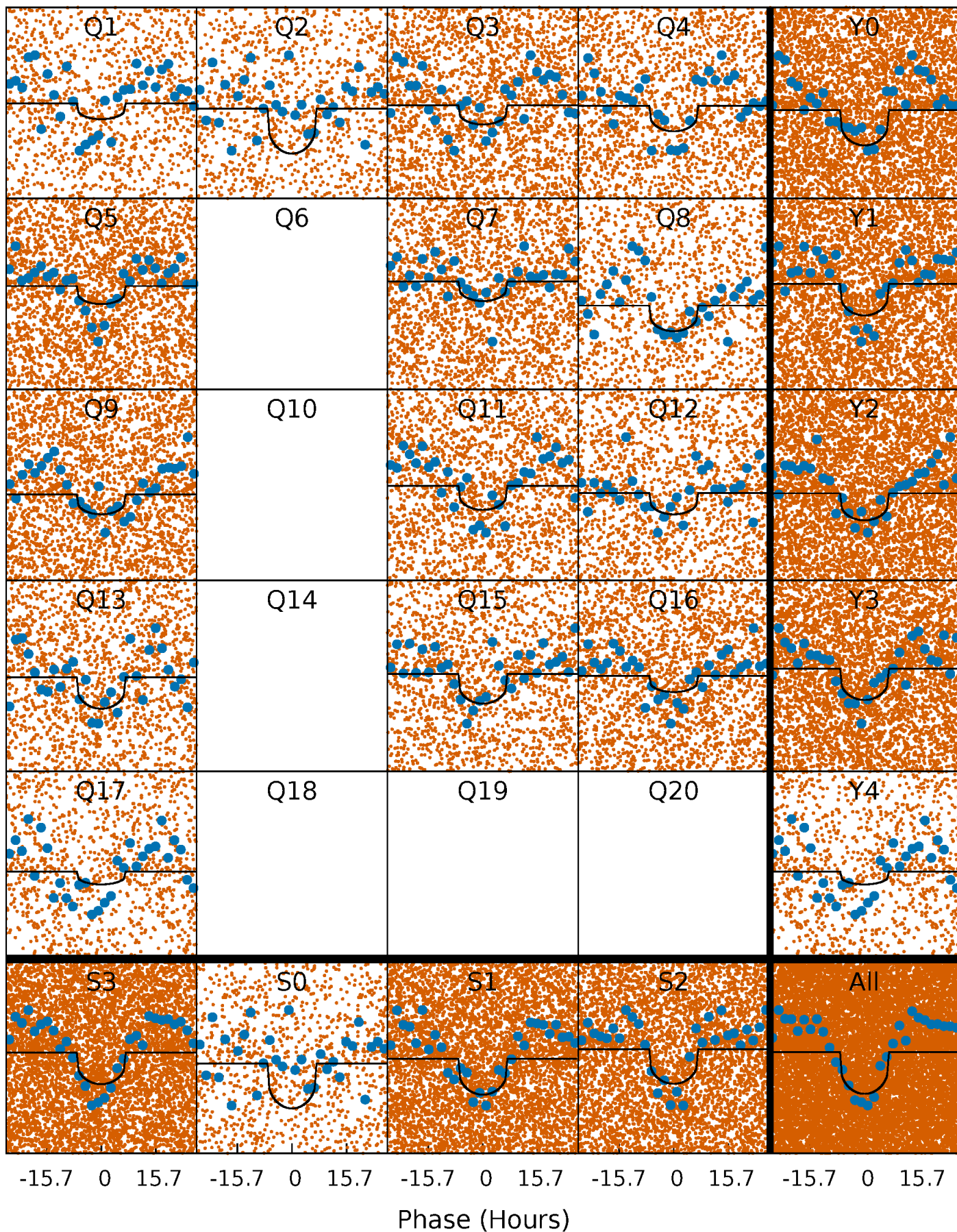
PDC Quarter-Phased Transit Curves

TCE 004474462-02 P= 1.624576 Days $T_0=132.477183$ (BKJD)



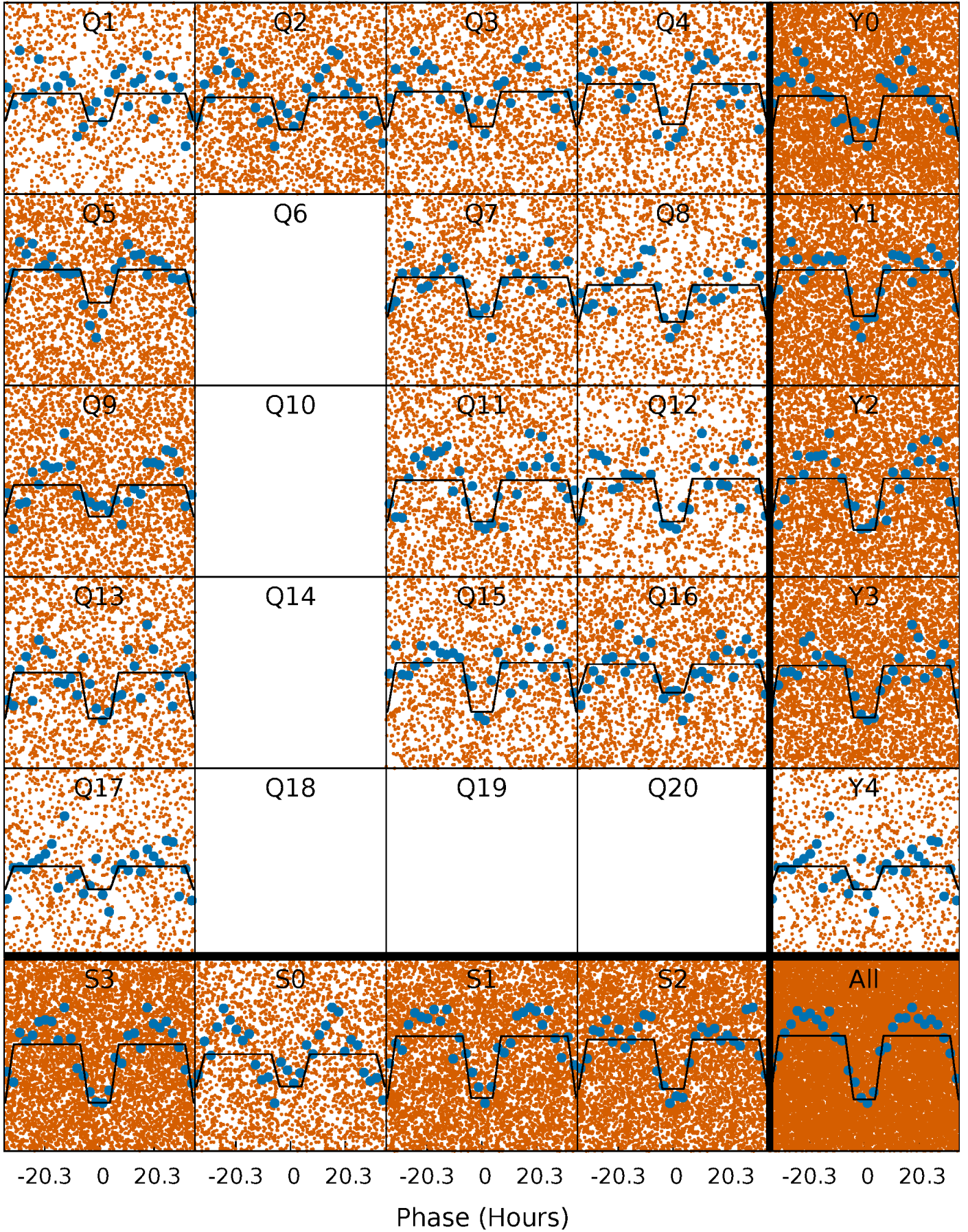
DV Quarter-Phased Transit Curves

TCE 004474462-02 P= 1.624576 Days $T_0=132.477183$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

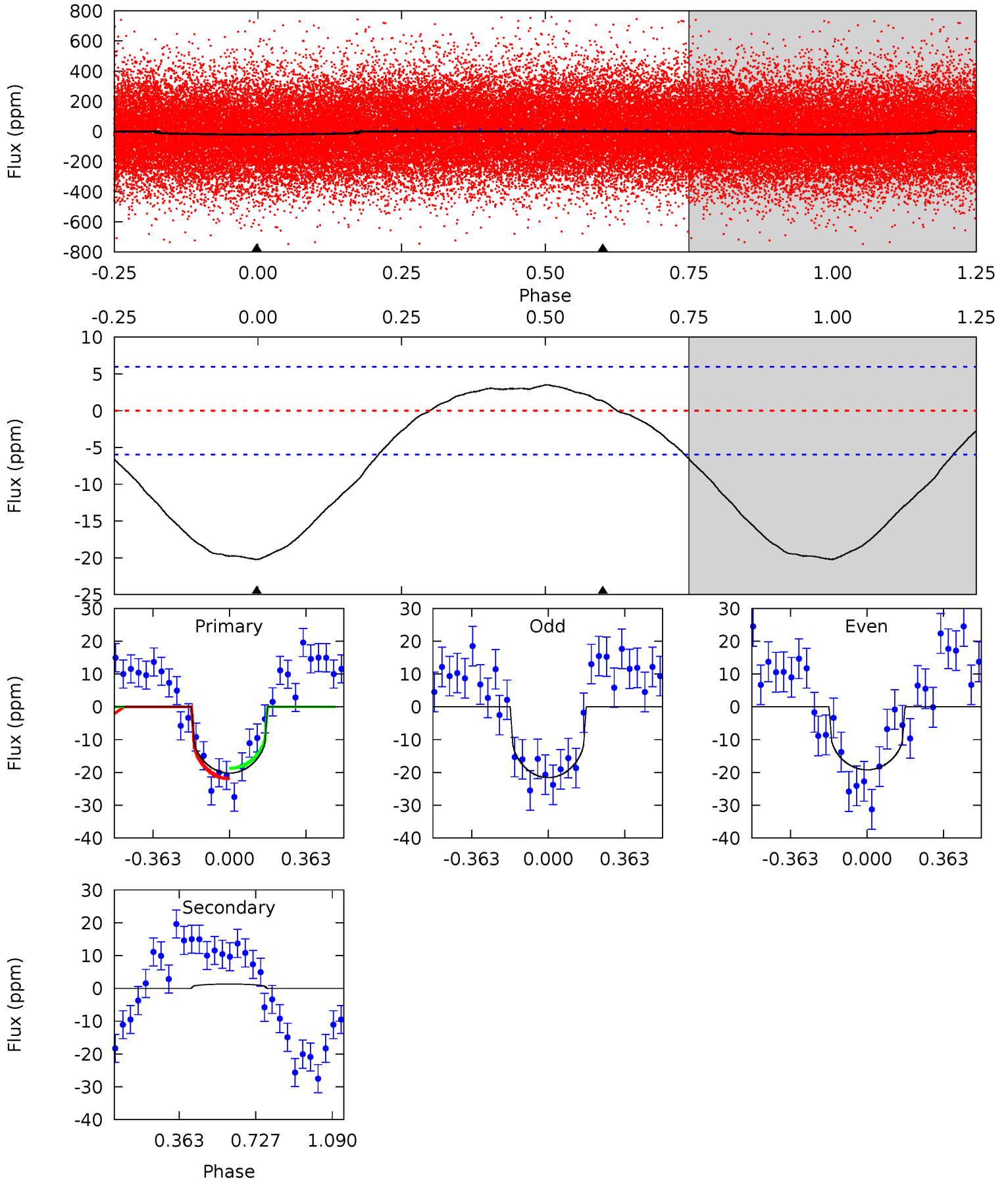
TCE 004474462-02 P= 1.624305 Days $T_0=132.551190$ (BKJD)



DV Model-Shift Uniqueness Test

004474462-02, P = 1.624576 Days, E = 130.852607 Days

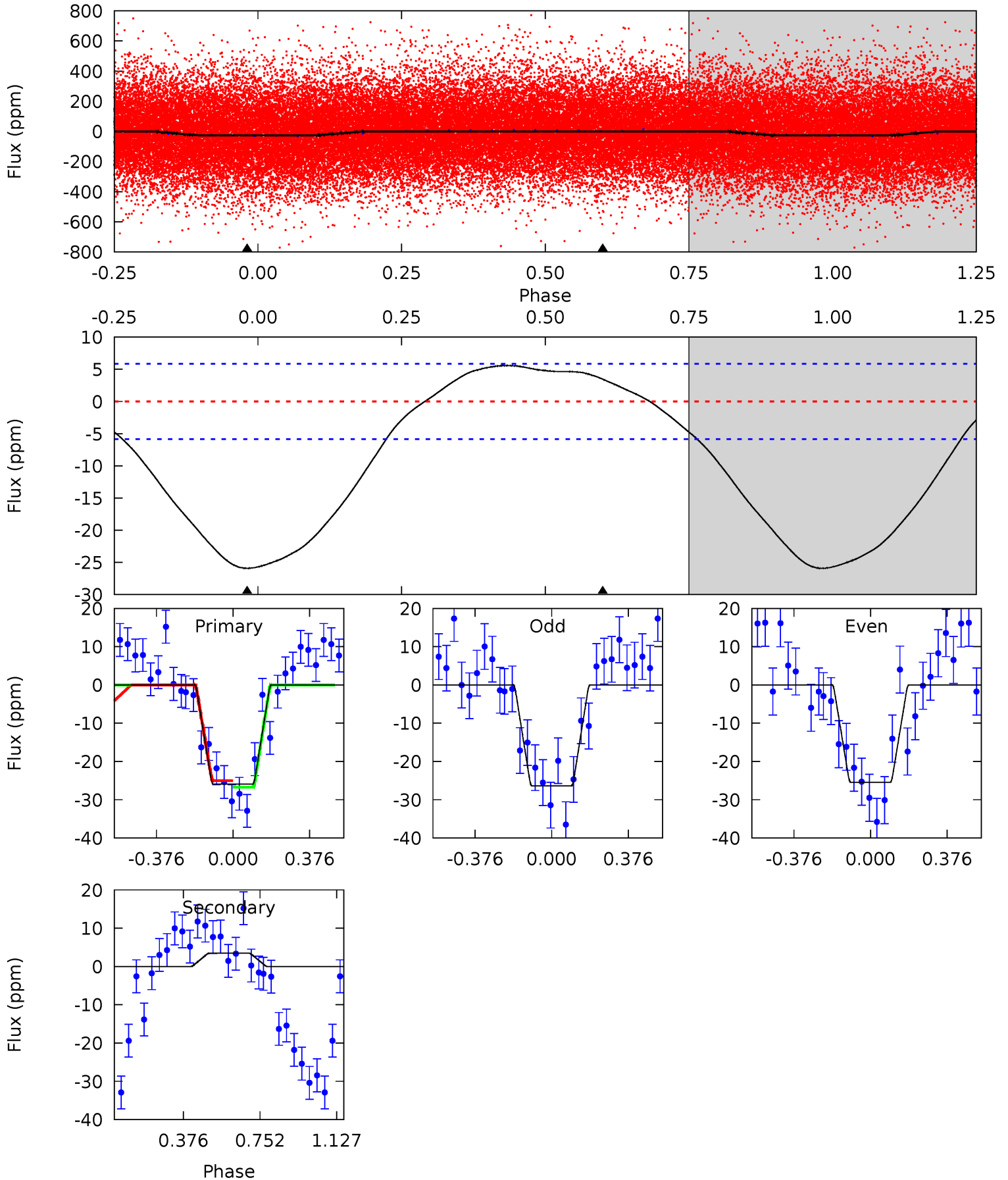
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	-0.94	0	0	4.29	0.91	1.03	14.5	14.5	-0.94	-0.94	0.85	0.97	0.15	1.15



Alt Model-Shift Uniqueness Test

004474462-02, P = 1.624305 Days, E = 130.926885 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.9	-2.53	0	0	4.28	0.89	1.46	18.9	18.9	-2.53	-2.53	0.34	1.09	0.18	0.63



Stellar Parameters For KIC 004474462

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5860^{+79}_{-79}	$4.276^{+0.162}_{-0.108}$	$-0.200^{+0.150}_{-0.150}$	$1.156^{+0.178}_{-0.195}$	$0.922^{+0.073}_{-0.053}$	$0.840^{+0.617}_{-0.258}$
	+1%/-1%	+4%/-3%	+75%/-75%	+15%/-17%	+8%/-6%	+73%/-31%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 004474462-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	1 ± 1	$0.69^{+0.51}_{-0.45}$	2386^{+107}_{-117}	-3298^{+606}_{-1312}	$-0.788^{+0.806}_{-8.098}$
Alt.	3 ± 1	$0.74^{+0.57}_{-0.47}$	2387^{+114}_{-120}	-3715^{+542}_{-1584}	$-2.183^{+1.547}_{-13.619}$

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

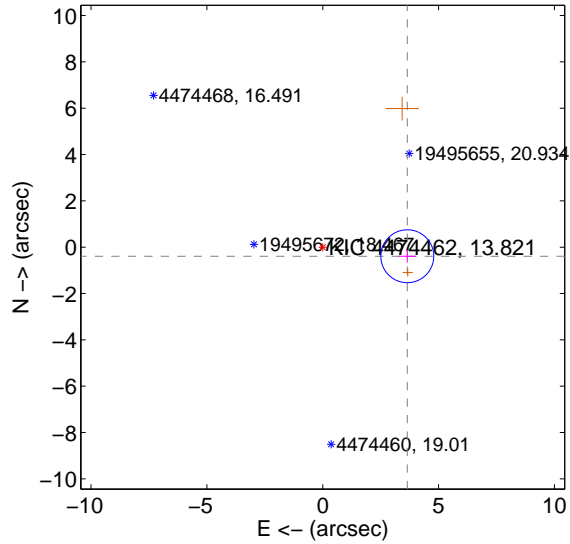
Supplemental centroid analysis for 004474462-02. Kepler magnitude: 13.82. Transit SNR 10.34

There are 0 quarters with good PRF difference image offsets

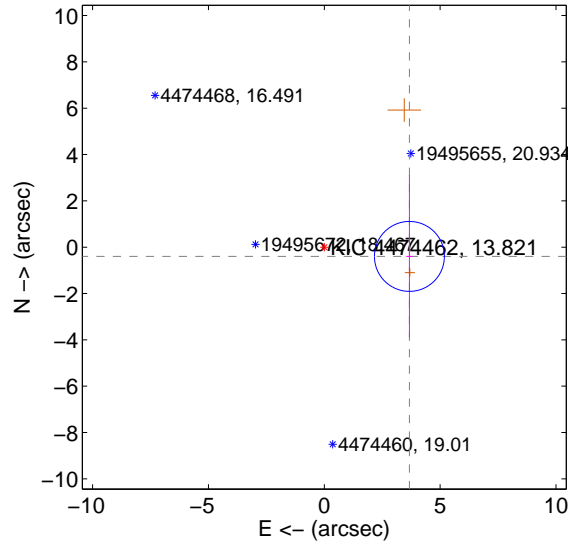
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.671 ± 0.381	9.64	-3.650 ± 0.382	-0.391 ± 0.276
PRF-fit source offset from KIC position	3.696 ± 0.503	7.35	-3.675 ± 0.138	-0.399 ± 3.510
photometric centroid source offset	5.21 ± 1.17	4.47	5.20 ± 1.17	-0.28 ± 1.03

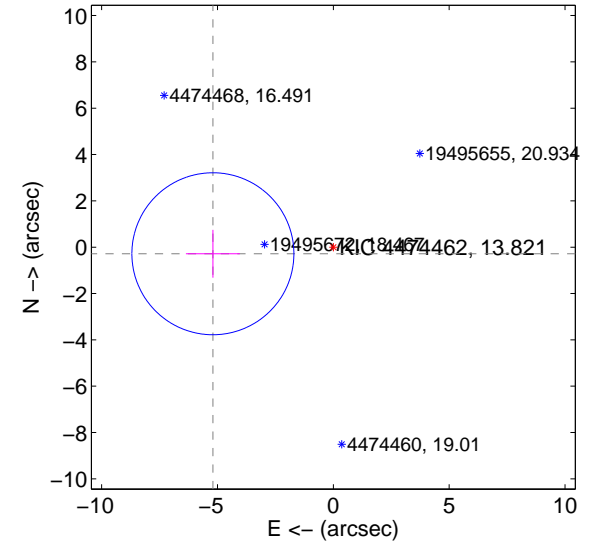
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

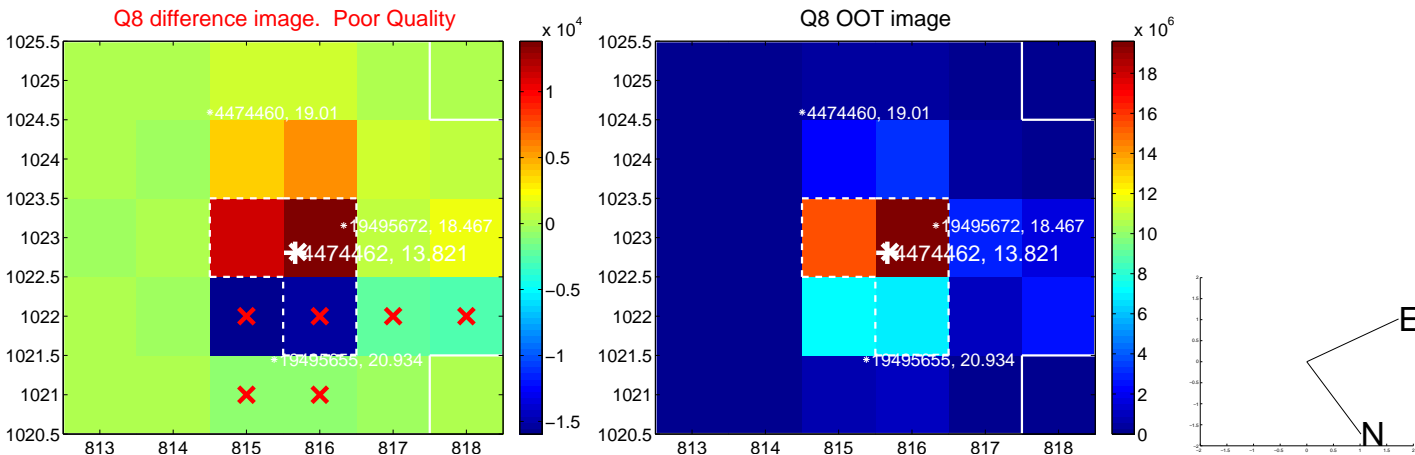
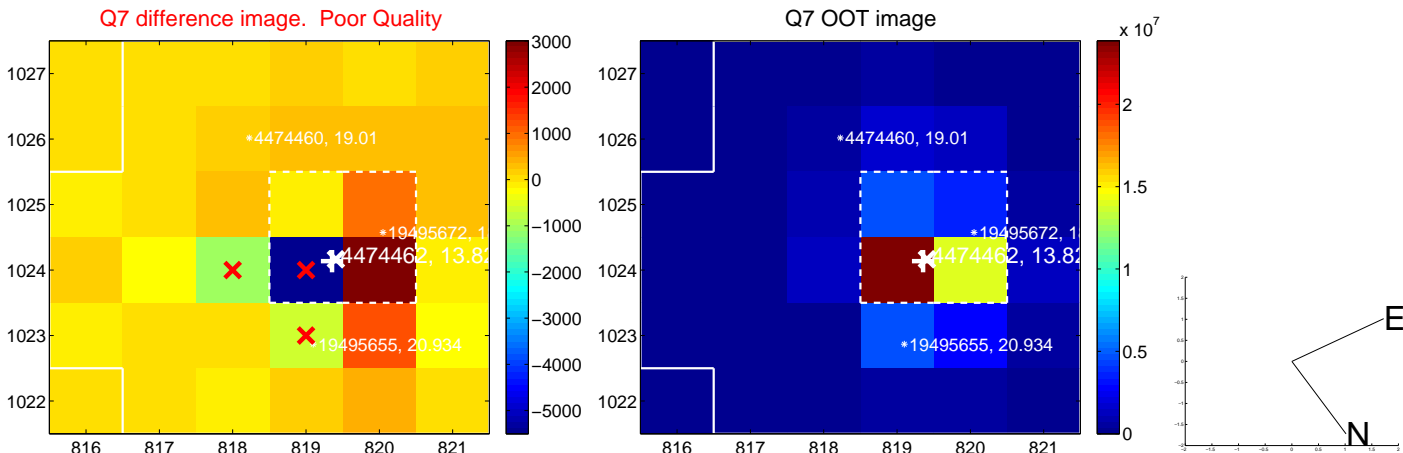
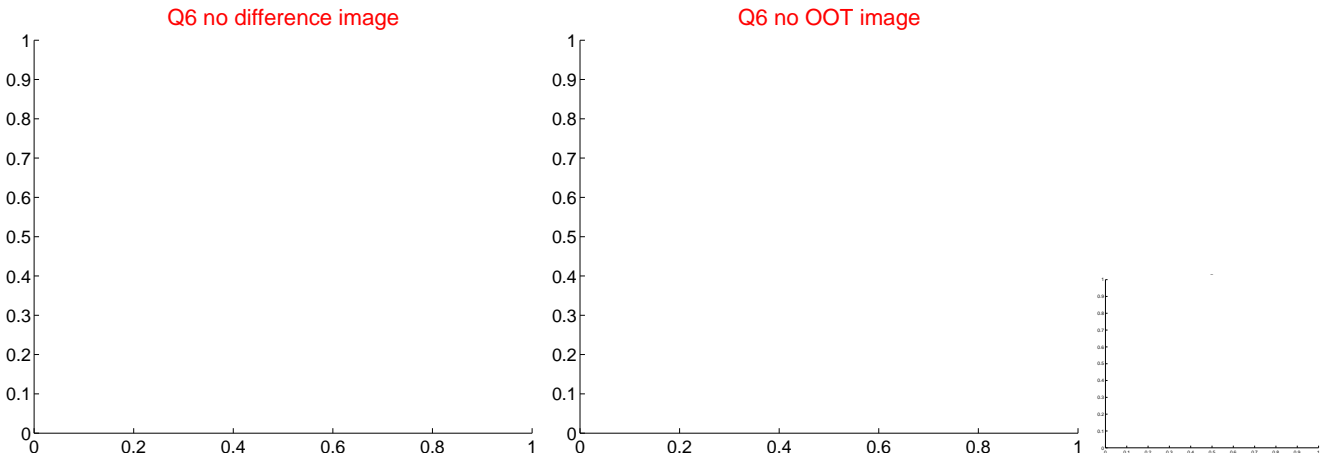
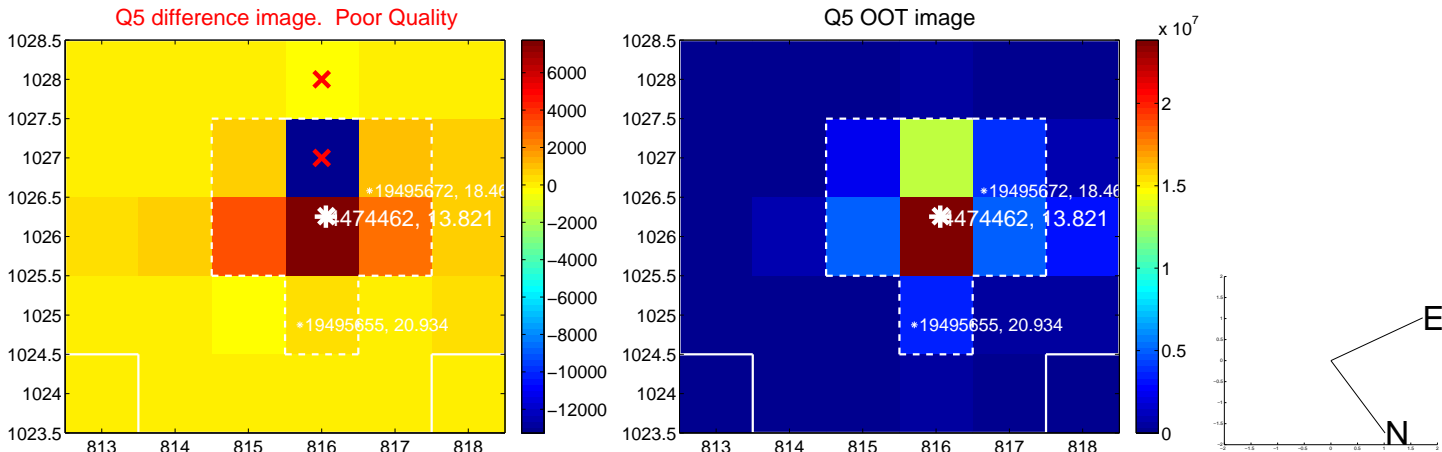


offset from photometric centroids

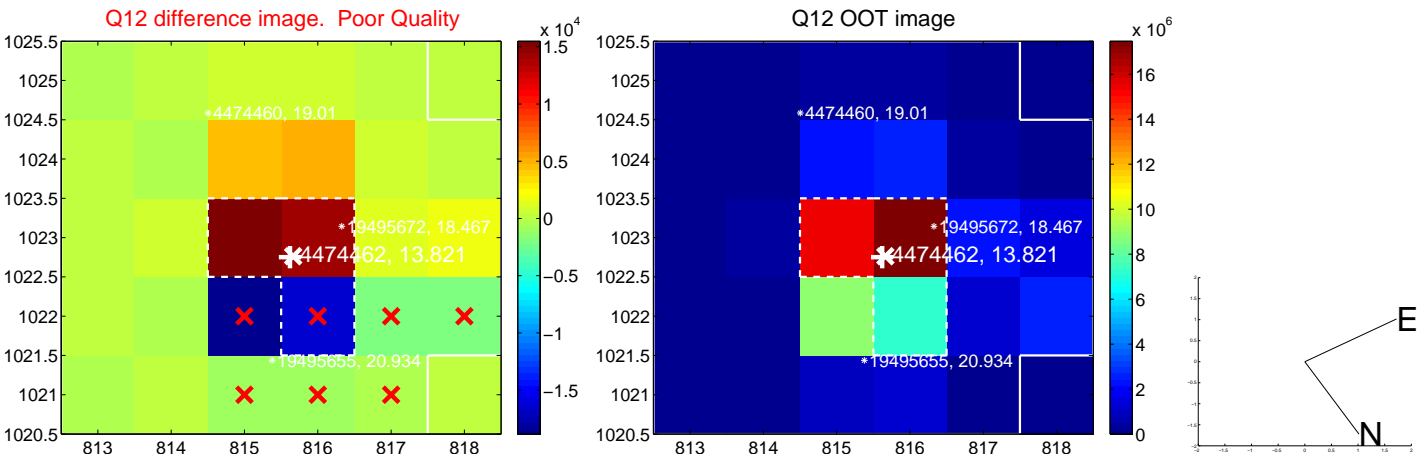
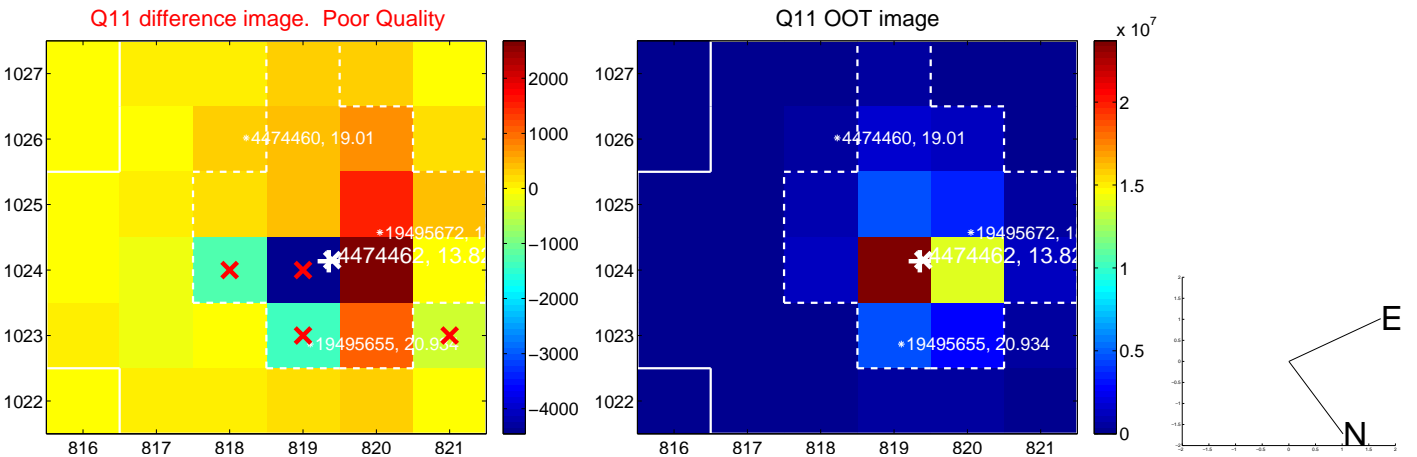
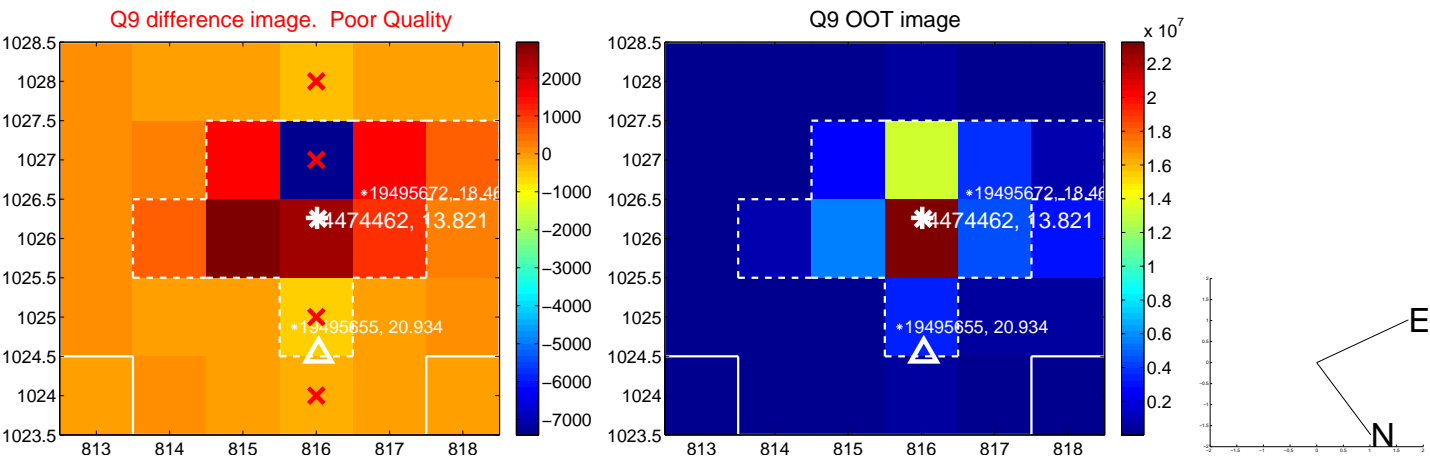


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

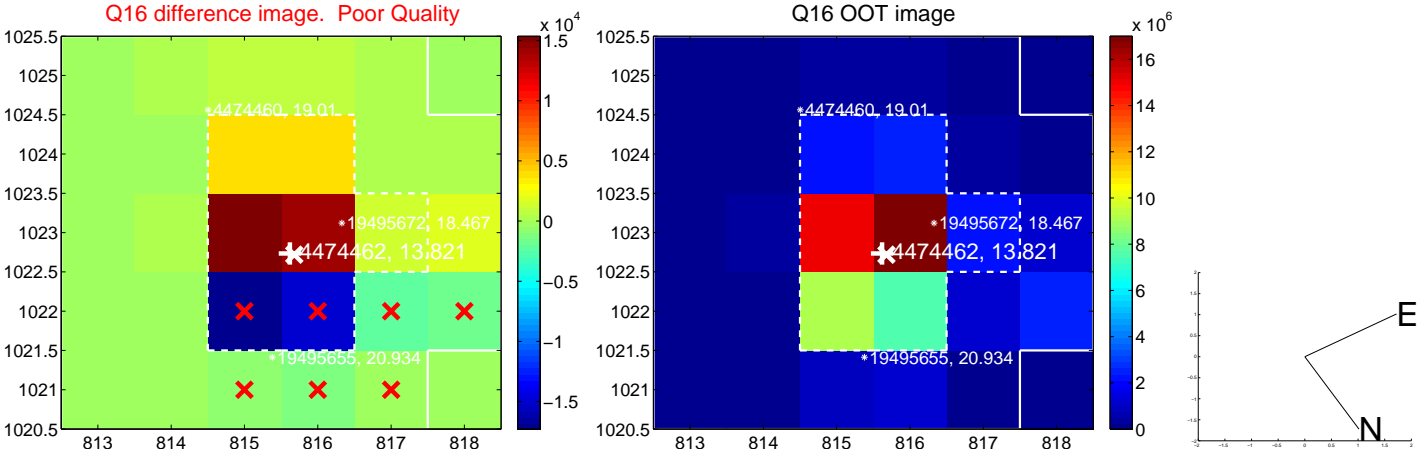
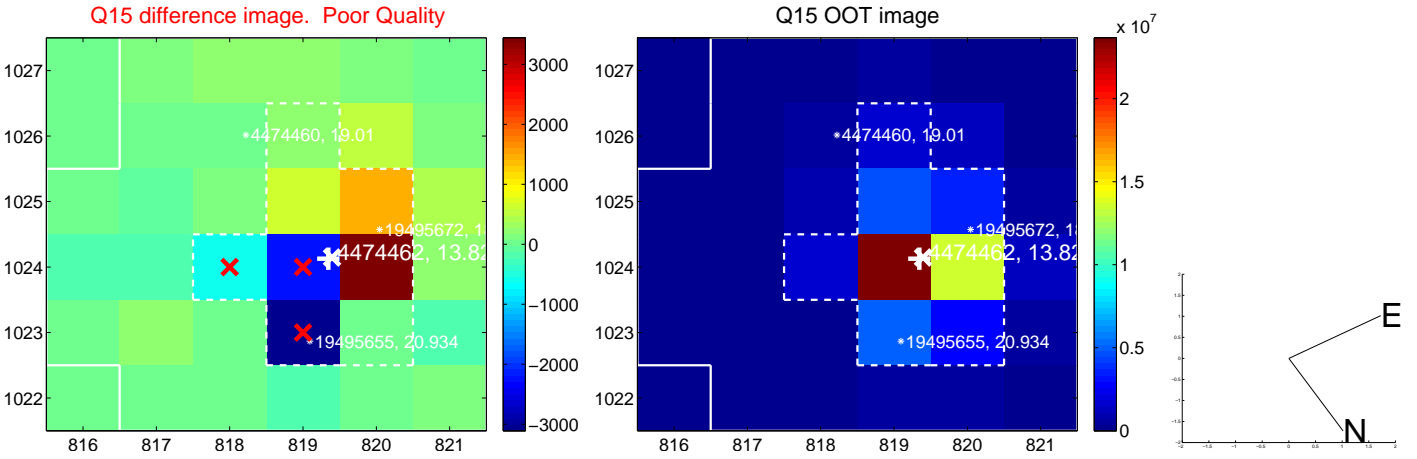
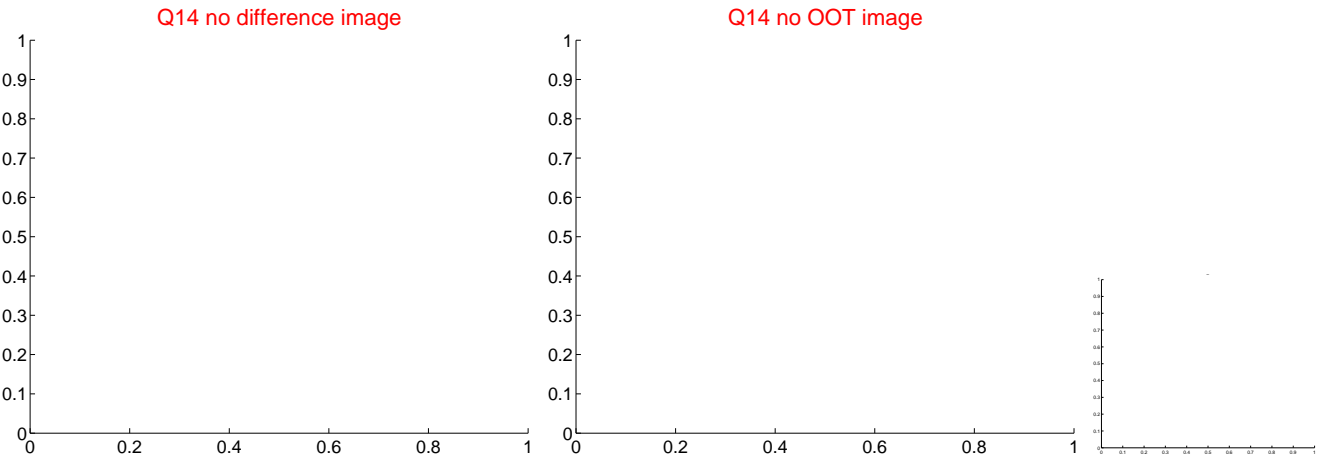
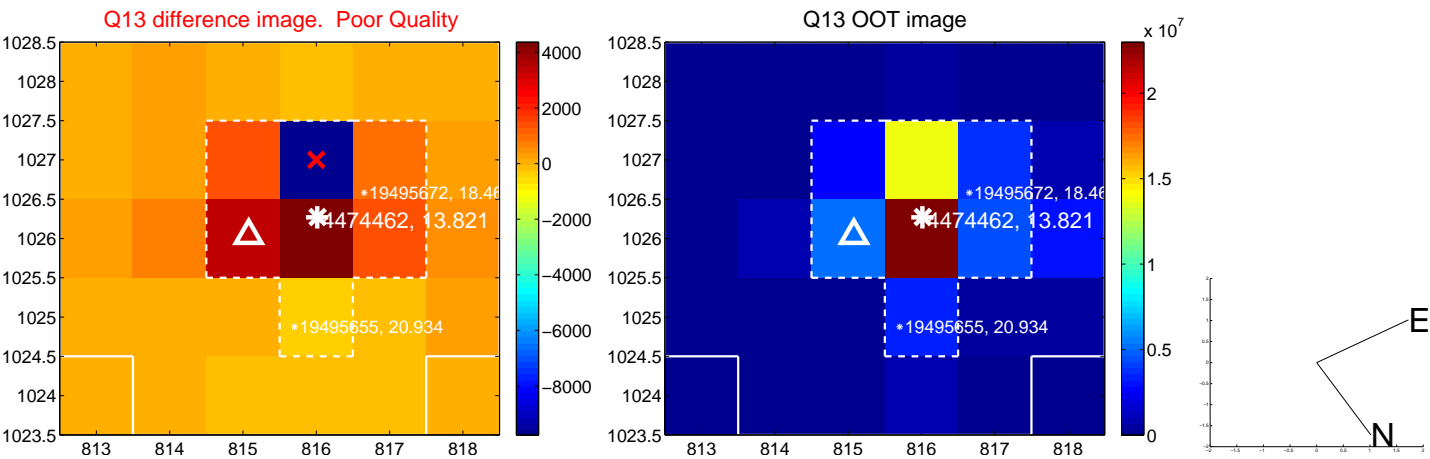
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



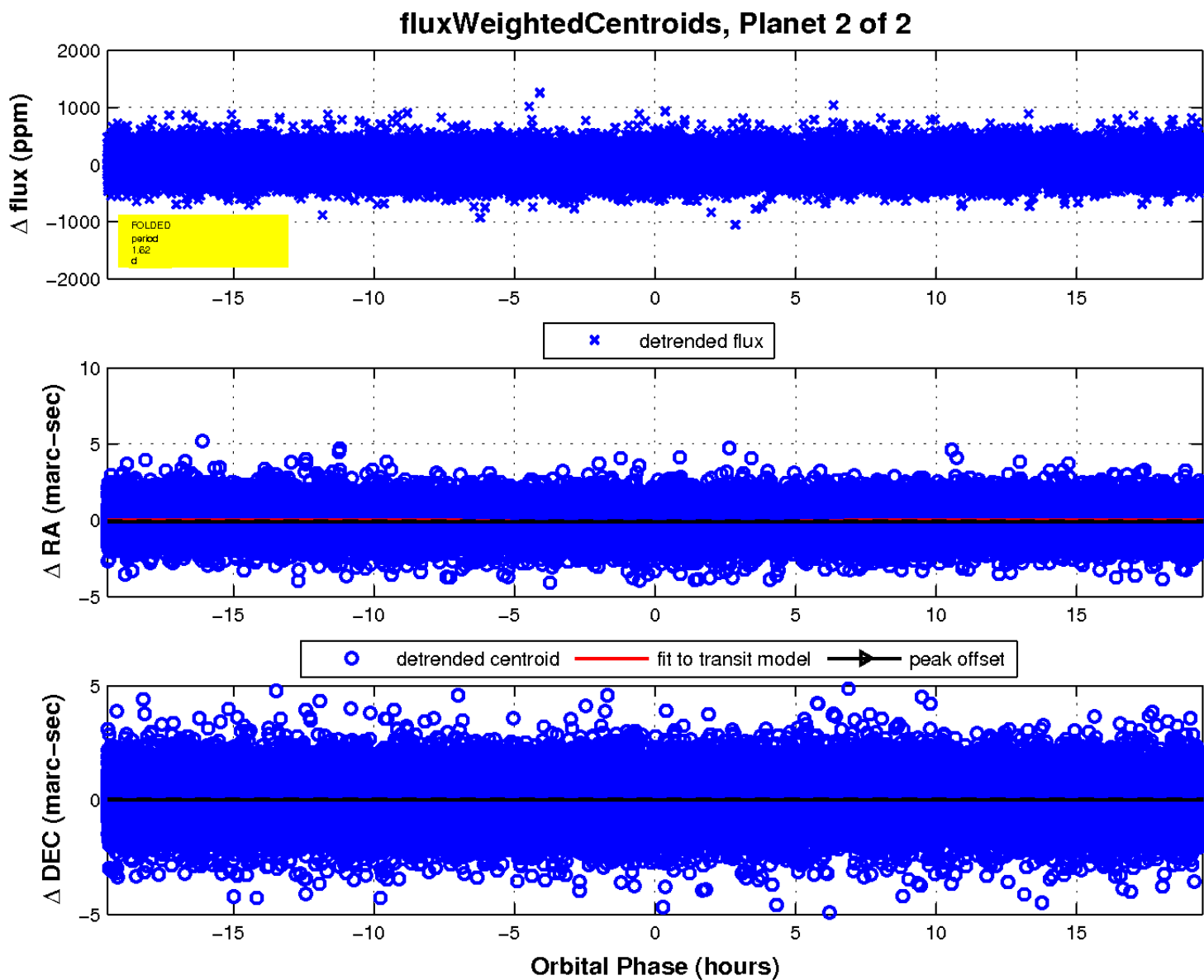
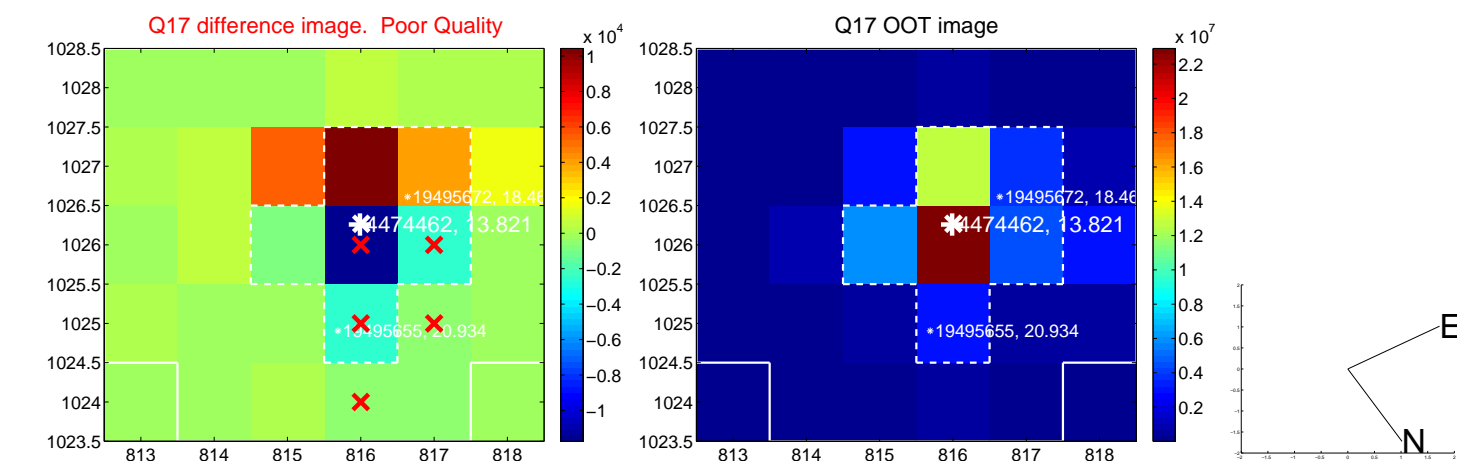
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

