

KIC 004141593

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})
004141593-01	OBS	7685.01	64.740010	149.984104	106.2	15.255	8.7	8.4	1.18	5999	1.44	16.99
004141593-02	OBS	7685.02	33.503129	158.662449	77.1	13.877	8.0	8.2	1.18	5999	1.33	40.89

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004141593-01	OBS	PC	0.65	0	0	0	0	NO_COMMENT
004141593-02	OBS	PC	0.79	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.

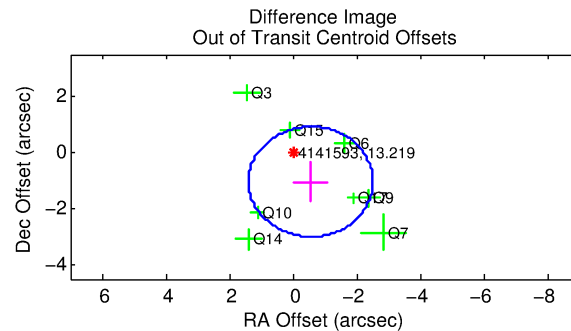
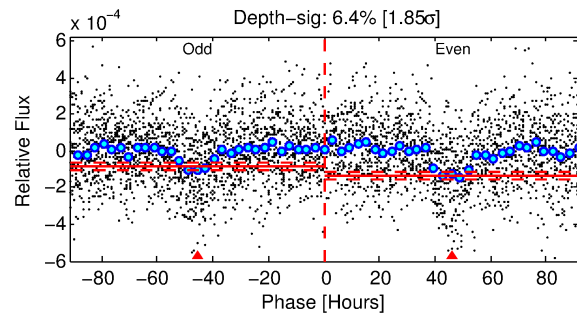
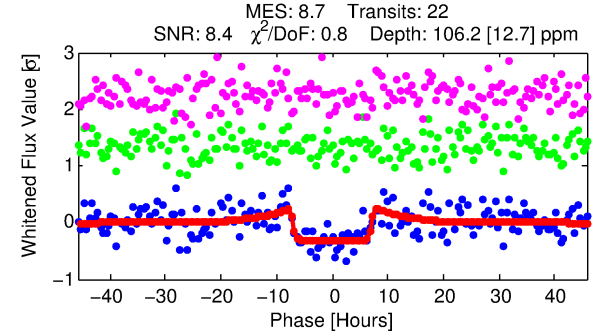
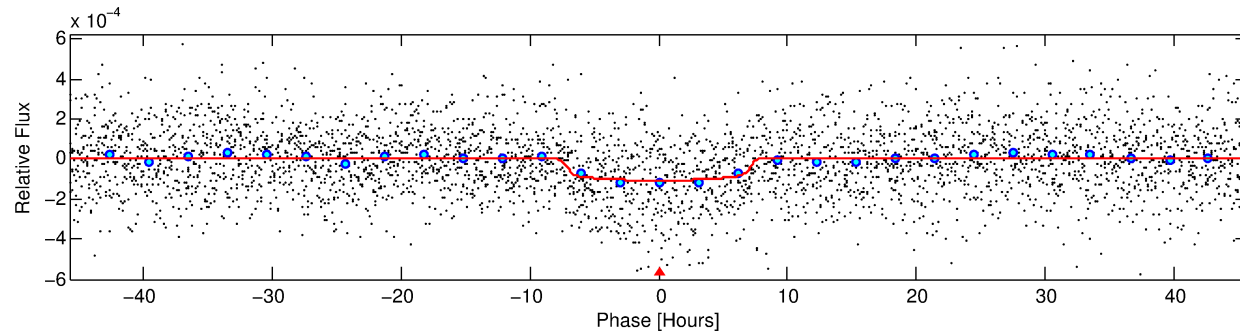
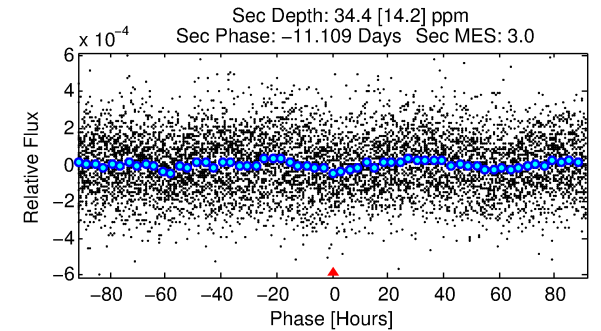
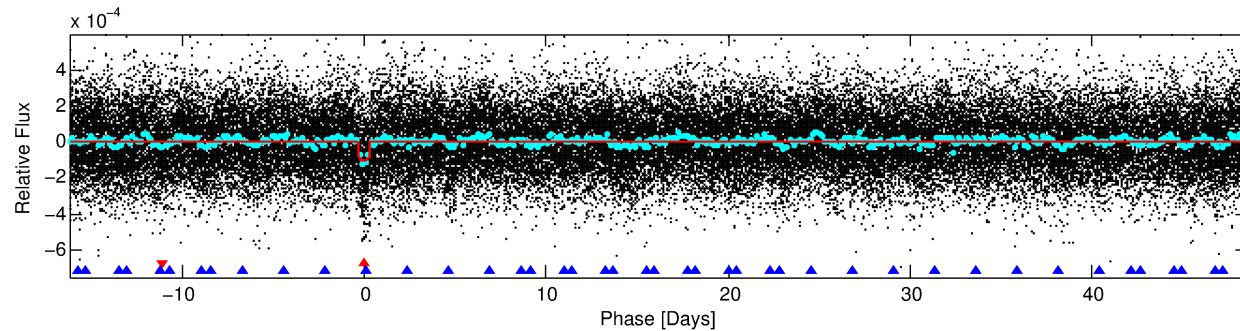
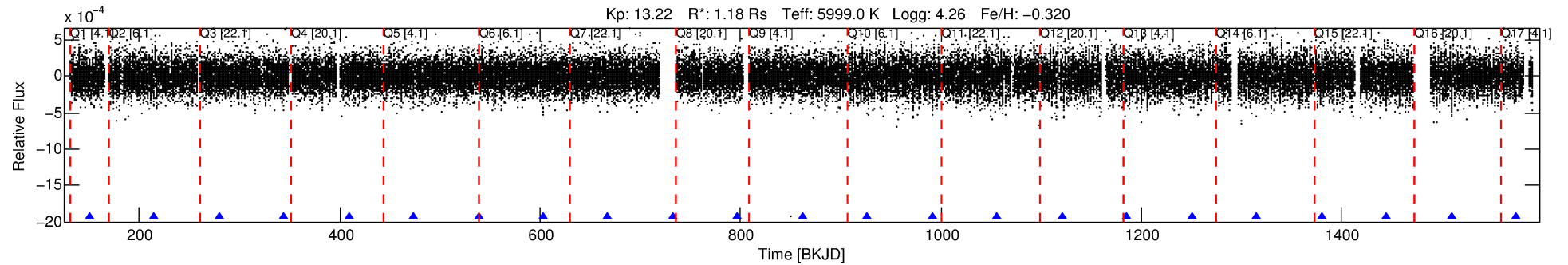
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004141593-01

No Significant Match Found

DV One-Page Summary

KIC: 4141593 Candidate: 1 of 2 Period: 64.740 d



DV Fit Results:

Period = 64.74001 [0.00124] d
Epoch = 149.9841 [0.0163] BKJD
Rp/R* = 0.0112 [0.0013]
a/R* = 14.55 [7.21]
b = 0.91 [0.10]
Seff = 16.99 [6.89]
Teq = 518 [53] K
Rp = 1.44 [0.44] Re
a = 0.3076 [0.0781] AU
Ag = 868.50 [531.09] [1.63σ]
Teffp = 4345 [530] K [7.18σ]

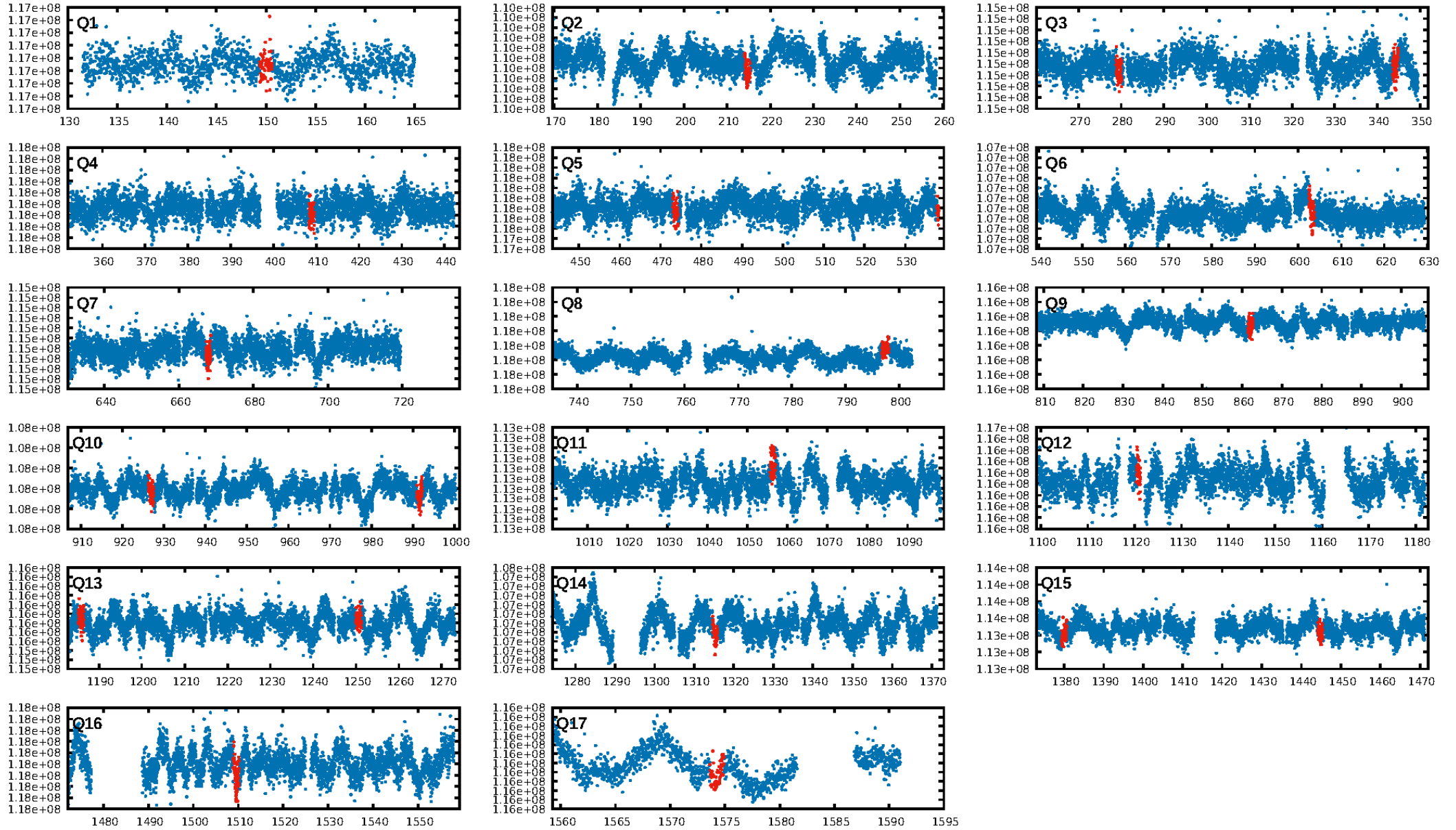
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [36.35σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 15.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.76e-17
RollingBand-fgt: 1.00 [20/20]
GhostDiagnostic-chr: 3.272
Centroid-sig: 25.1%
Centroid-so: 0.945 arcsec [1.18σ]
OotOffset-rm: 1.176 arcsec [1.80σ]
KicOffset-rm: 1.232 arcsec [1.88σ]
OotOffset-st: 3/3/0/2 [8]
KicOffset-st: 3/3/0/2 [8]
DiffImageQuality-fgm: 0.75 [6/8]
DiffImageOverlap-fno: 0.93 [14/15]

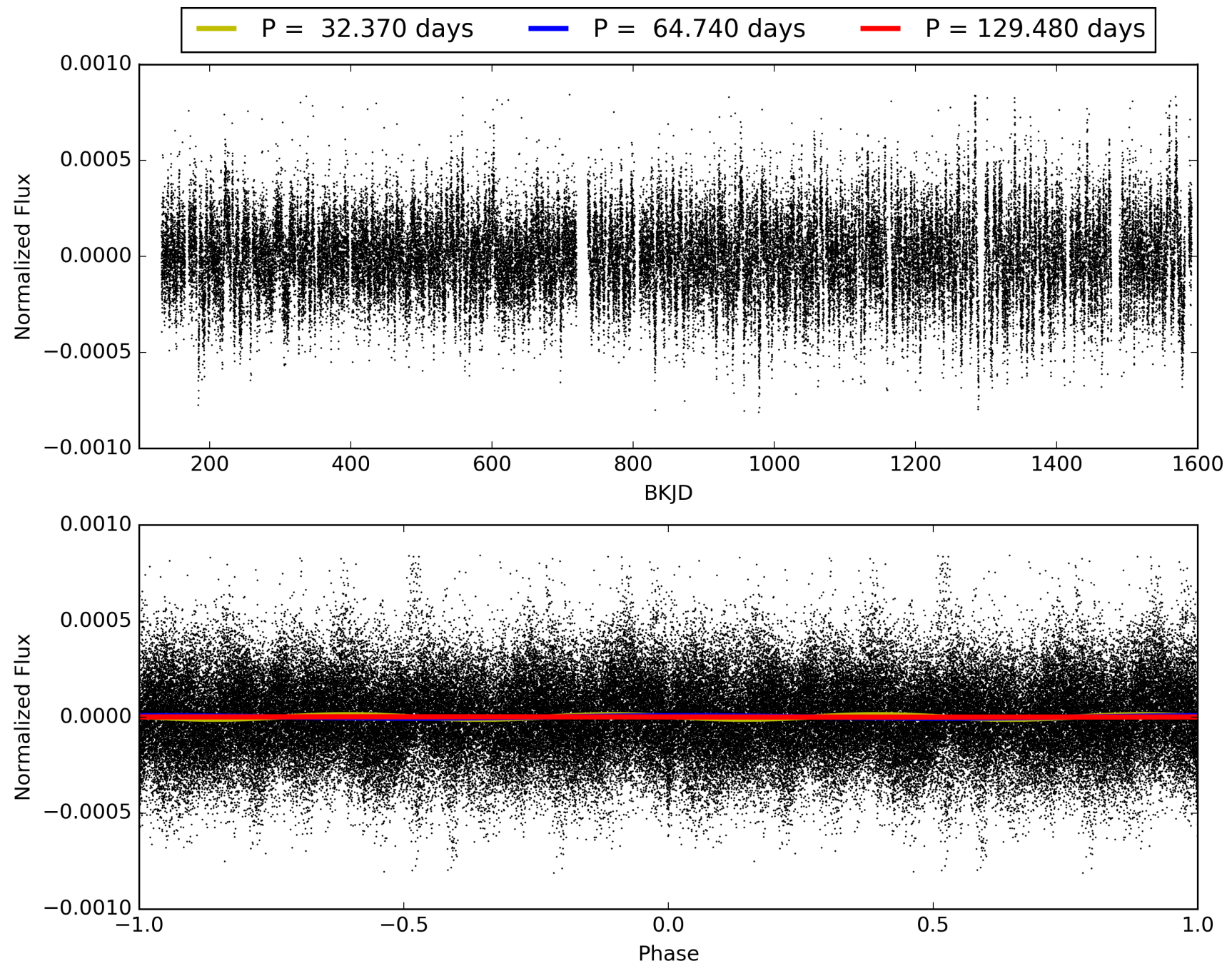
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:58:20 Z

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

TCE 004141593-01, PDC Light Curves

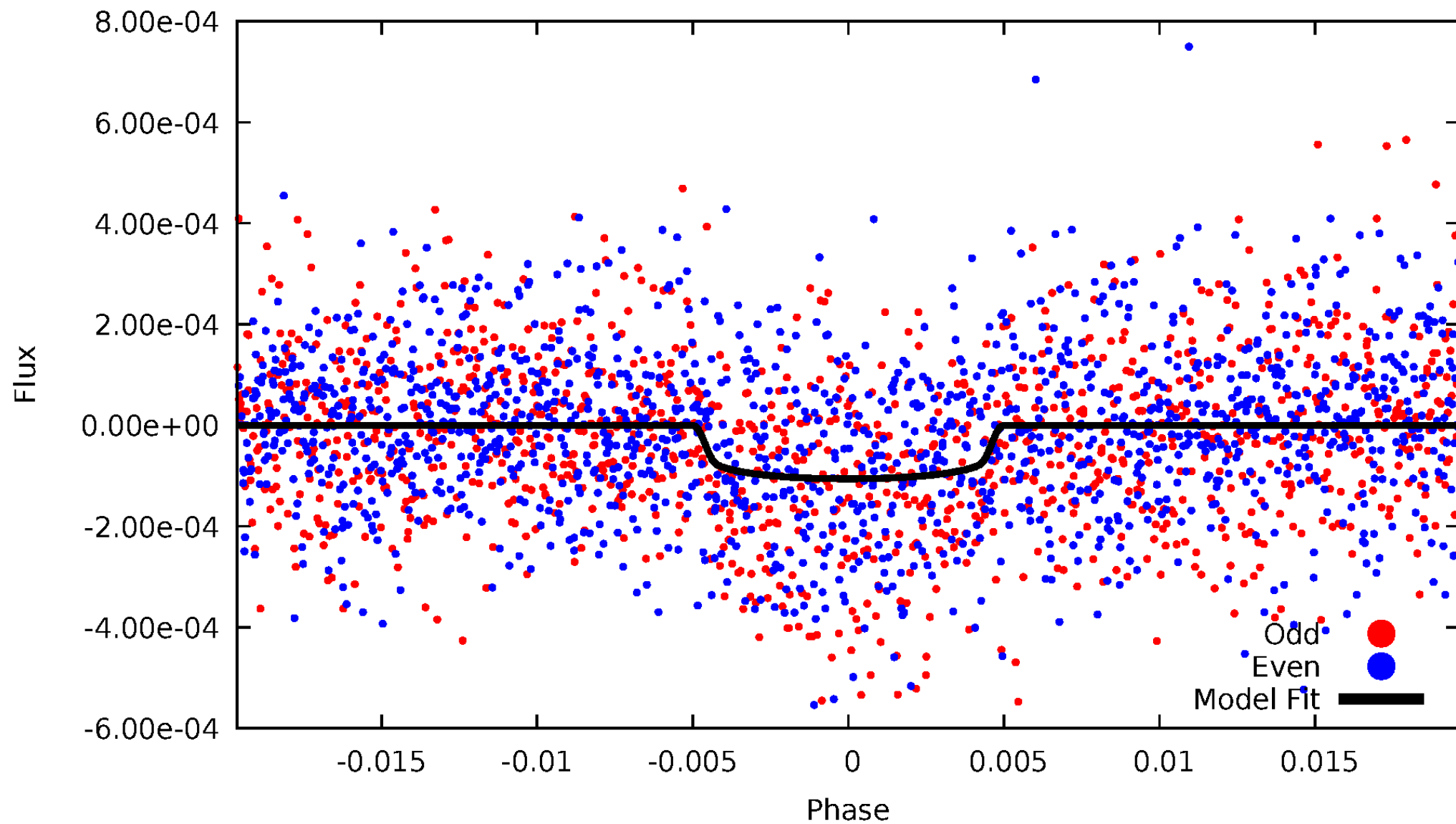


TCE 004141593-01



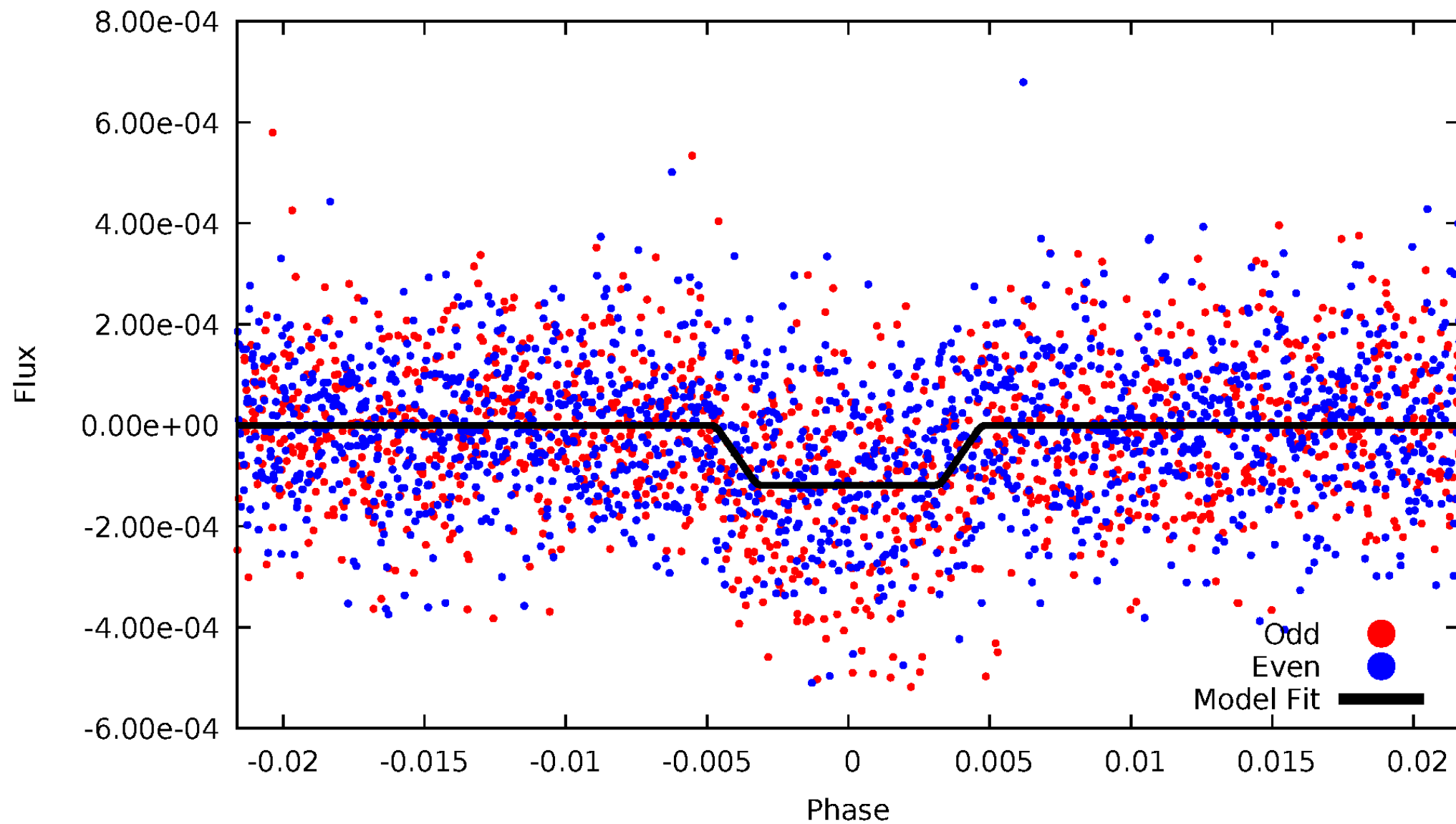
DV Odd/Even

TCE 004141593-01

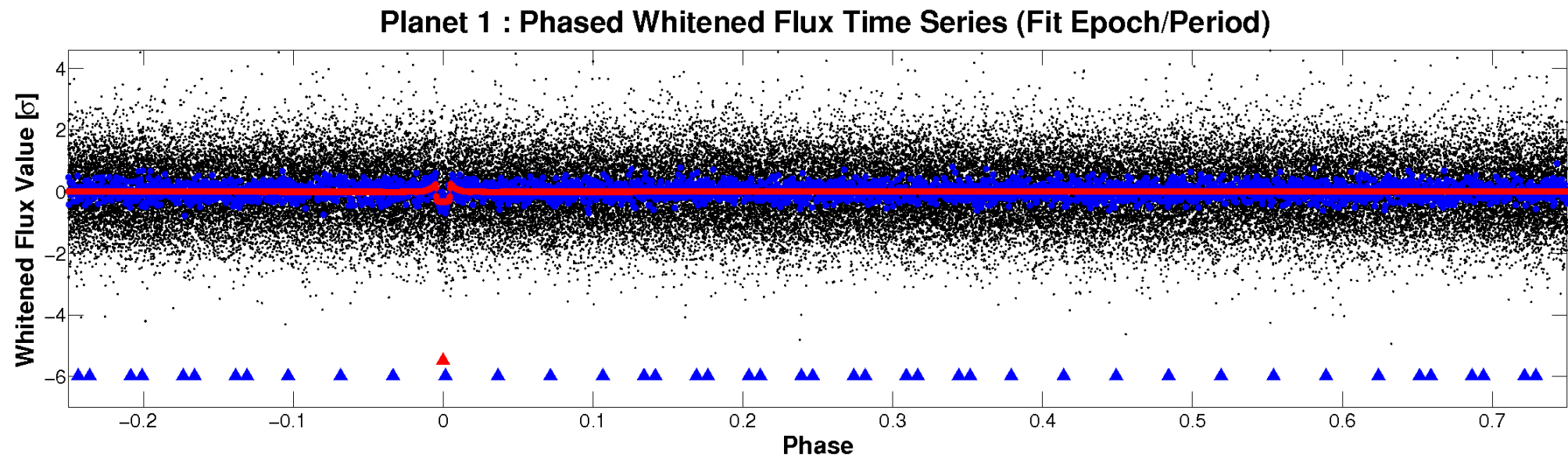
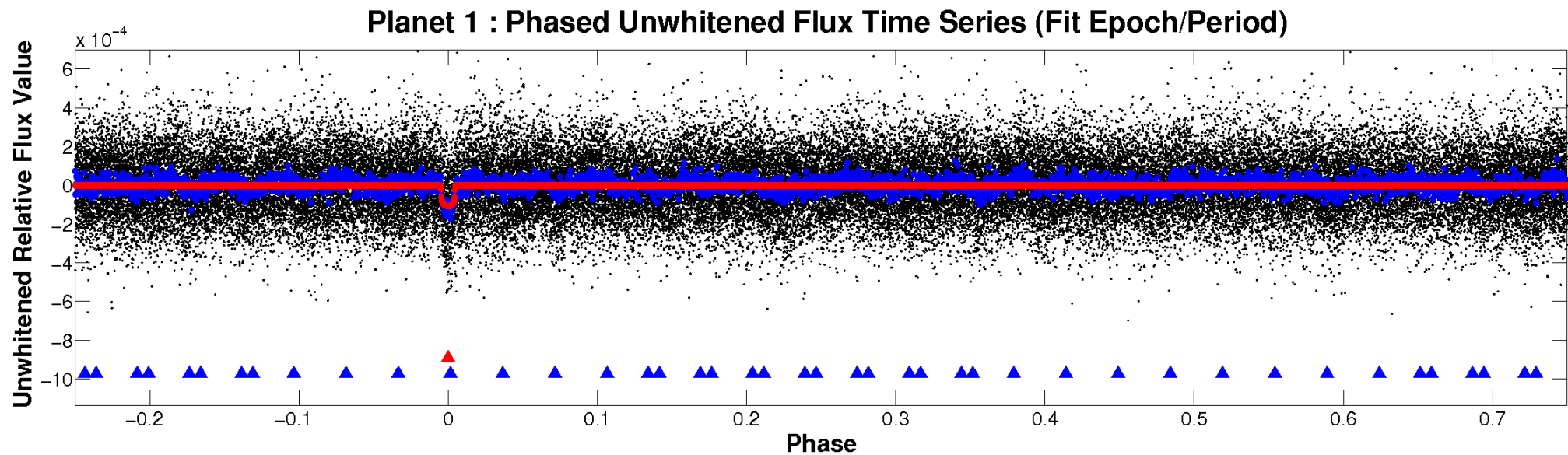


ALT Odd/Even

TCE 004141593-01

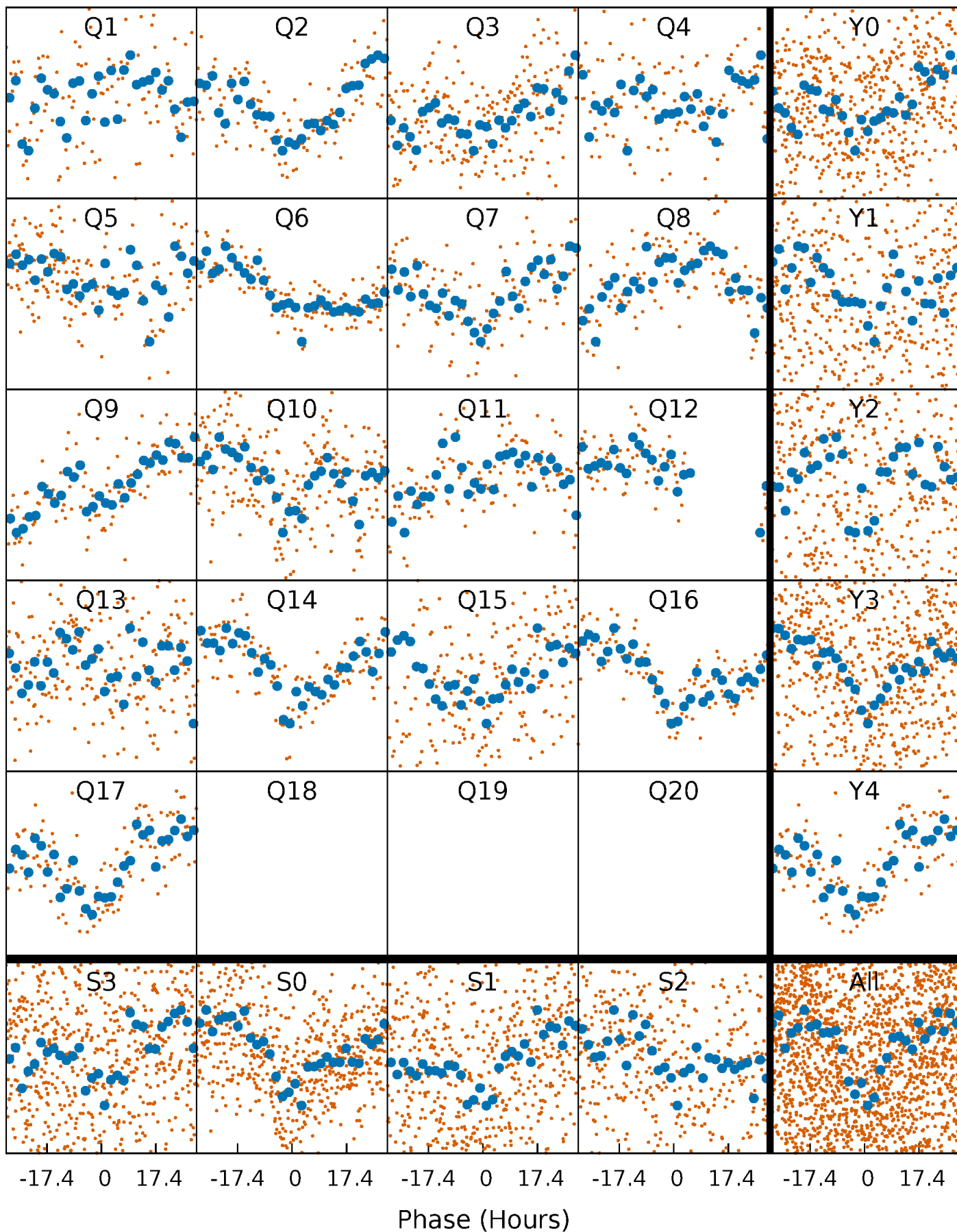


Non-Whitened Vs. Whitened Light Curve



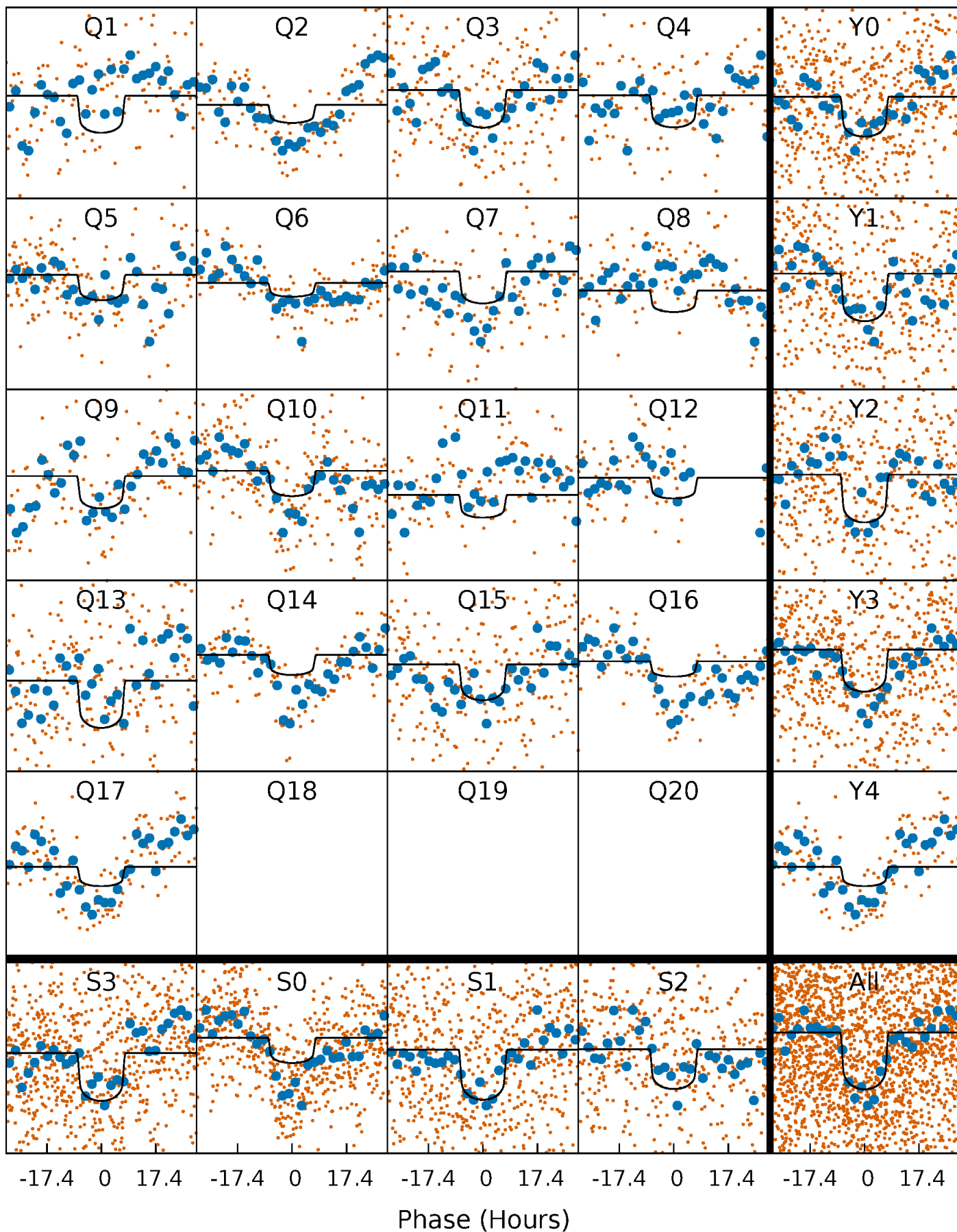
PDC Quarter-Phased Transit Curves

TCE 004141593-01 P= 64.740010 Days $T_0=149.984104$ (BKJD)



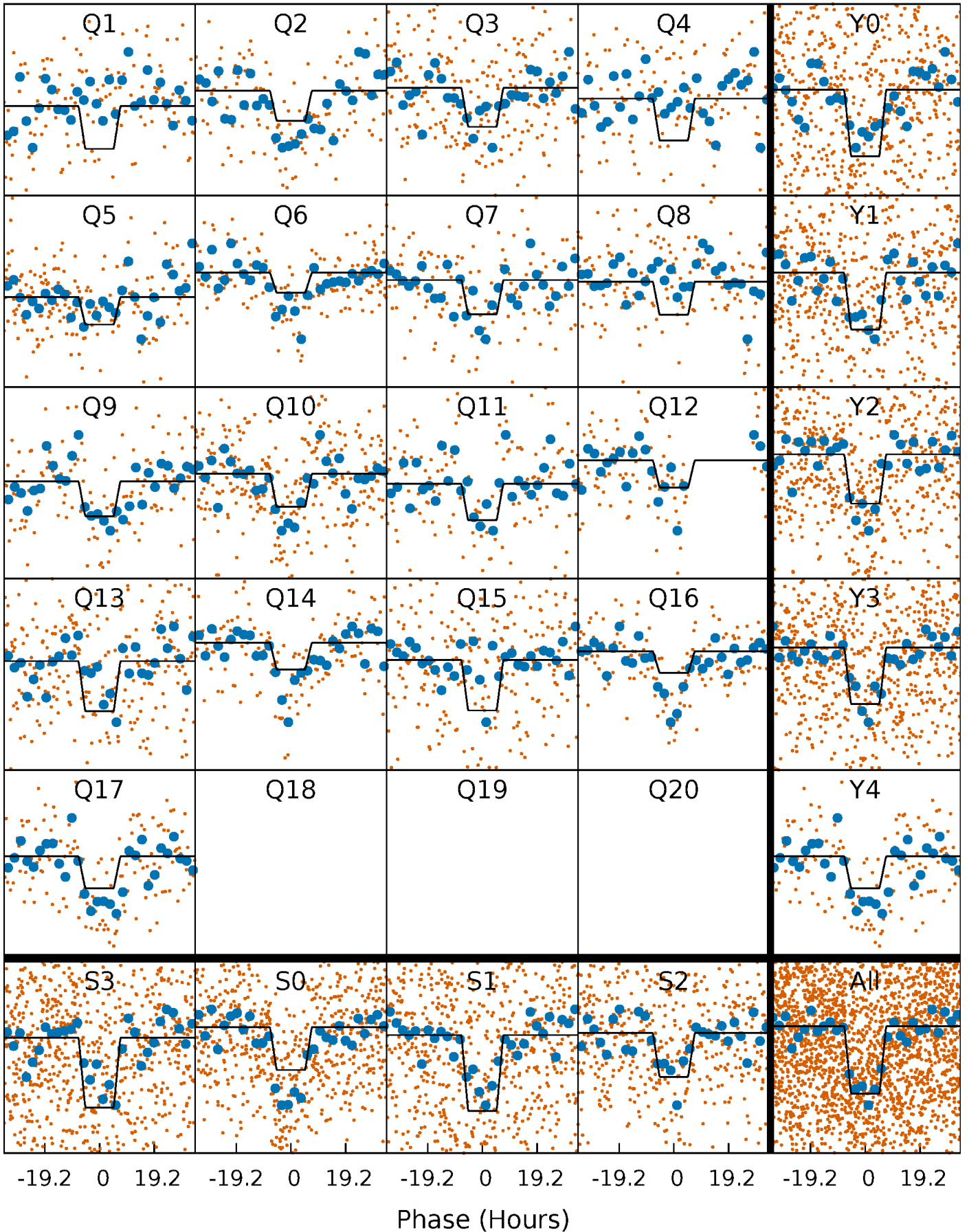
DV Quarter-Phased Transit Curves

TCE 004141593-01 P= 64.740010 Days $T_0=149.984104$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

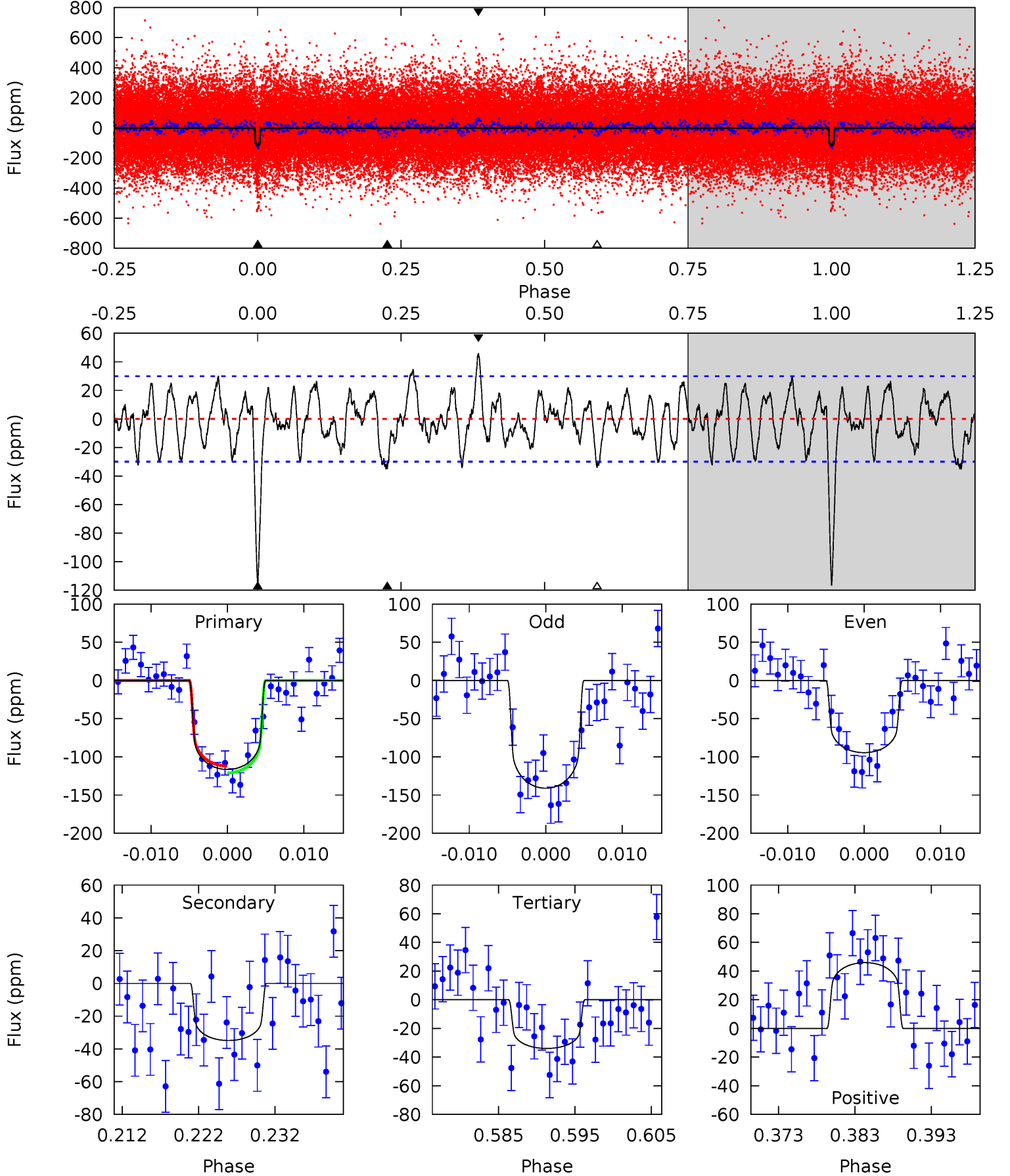
TCE 004141593-01 P= 64.741306 Days $T_0=149.973075$ (BKJD)



DV Model-Shift Uniqueness Test

004141593-01, P = 64.740010 Days, E = 85.244094 Days

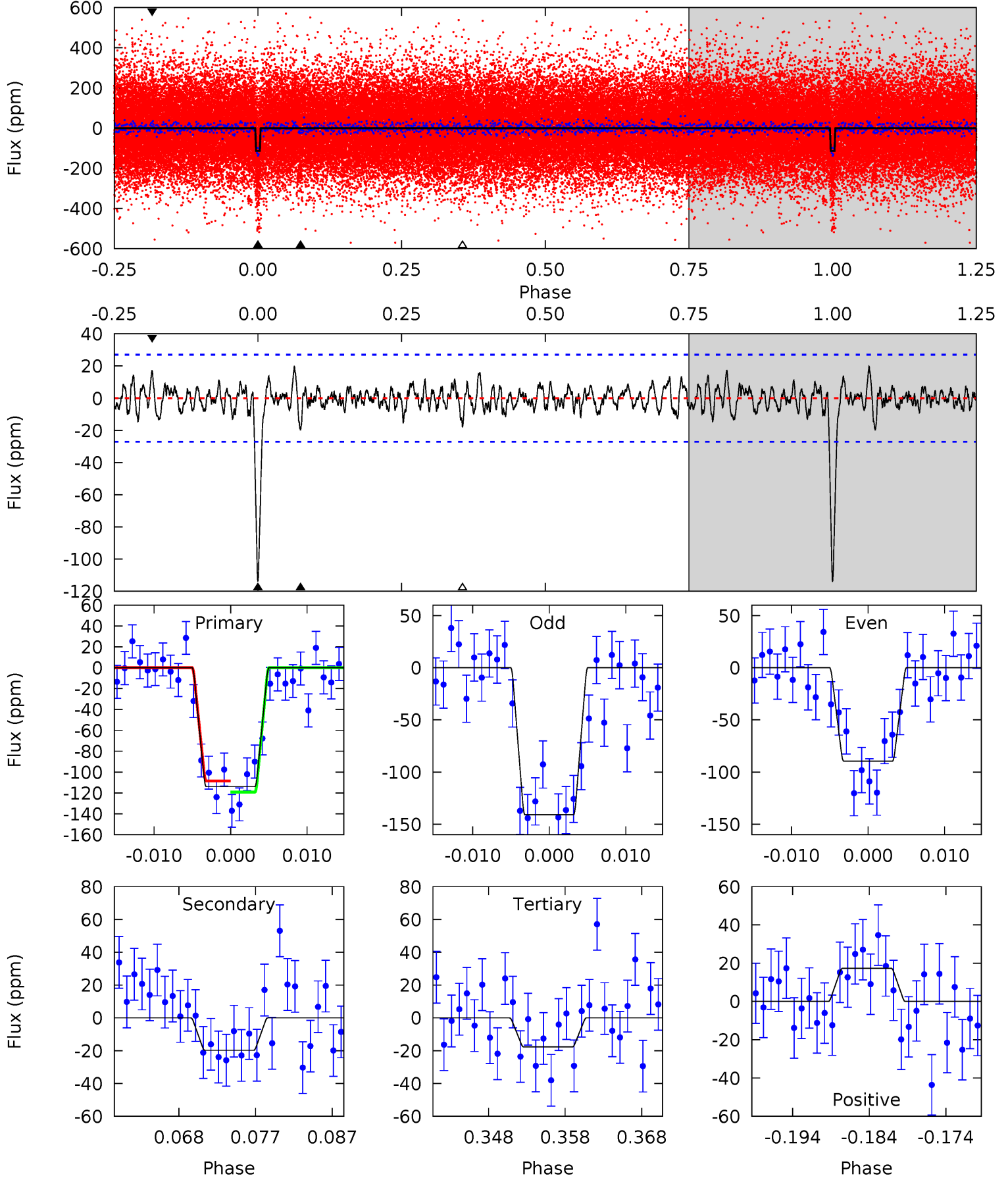
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.6	5.86	5.71	7.72	5.02	2.57	2.36	13.9	11.9	0.15	-1.85	3.91	1.06	0.28	0.75



Alt Model-Shift Uniqueness Test

004141593-01, P = 64.741306 Days, E = 85.231769 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.2	3.68	3.29	3.22	5.03	2.59	1.08	17.9	18.0	0.39	0.46	4.77	1.07	0.15	0.99



Stellar Parameters For KIC 004141593

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5999^{+163}_{-181}	$4.263^{+0.220}_{-0.180}$	$-0.320^{+0.300}_{-0.300}$	$1.177^{+0.335}_{-0.274}$	$0.926^{+0.132}_{-0.096}$	$0.799^{+0.949}_{-0.377}$
	+3%/-3%	+5%/-4%	+94%/-94%	+28%/-23%	+14%/-10%	+119%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004141593-01 / KOI 7685.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-35 ± 6	$1.42^{+0.27}_{-0.23}$	718^{+57}_{-52}	4538^{+290}_{-253}	903^{+444}_{-292}
Alt.	-20 ± 5	$1.38^{+0.27}_{-0.26}$	719^{+53}_{-56}	4114^{+292}_{-268}	545^{+307}_{-207}

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

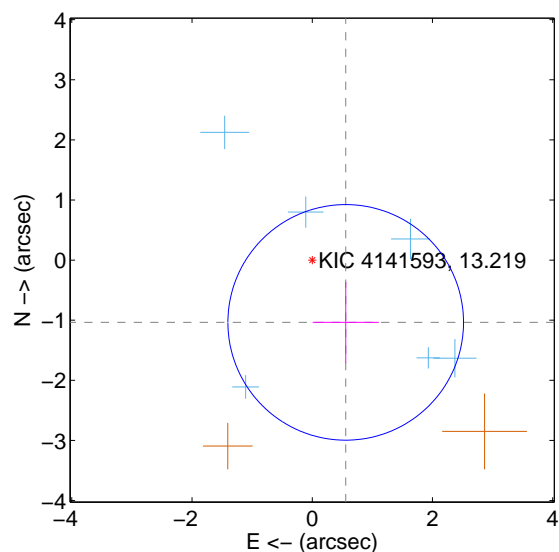
Supplemental centroid analysis for 004141593-01. Kepler magnitude: 13.22. Transit SNR 8.41

There are 6 quarters with good PRF difference image offsets

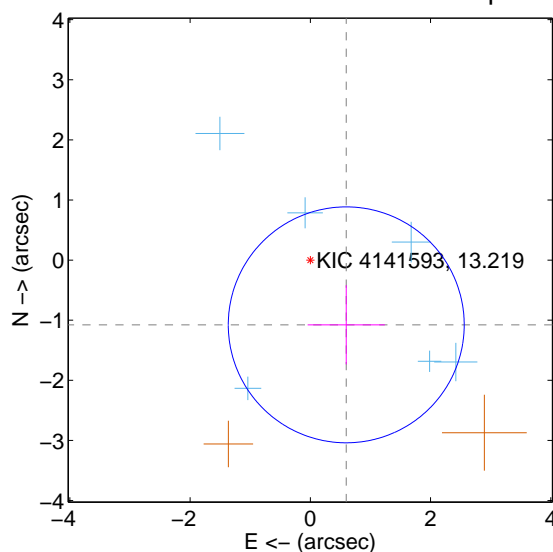
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.176 ± 0.653	1.80	-0.557 ± 0.551	-1.036 ± 0.672
PRF-fit source offset from KIC position	1.232 ± 0.654	1.88	-0.597 ± 0.641	-1.077 ± 0.658
photometric centroid source offset	0.94 ± 0.80	1.18	0.89 ± 0.78	0.31 ± 0.95

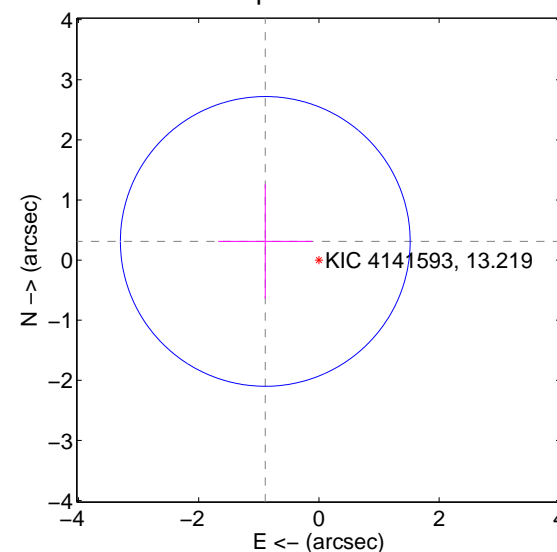
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

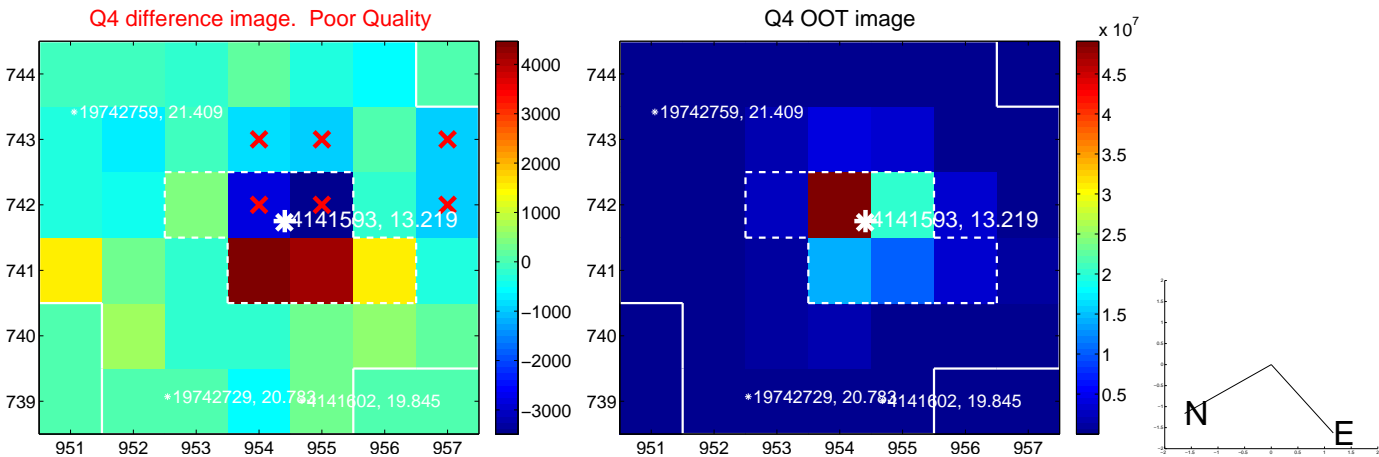
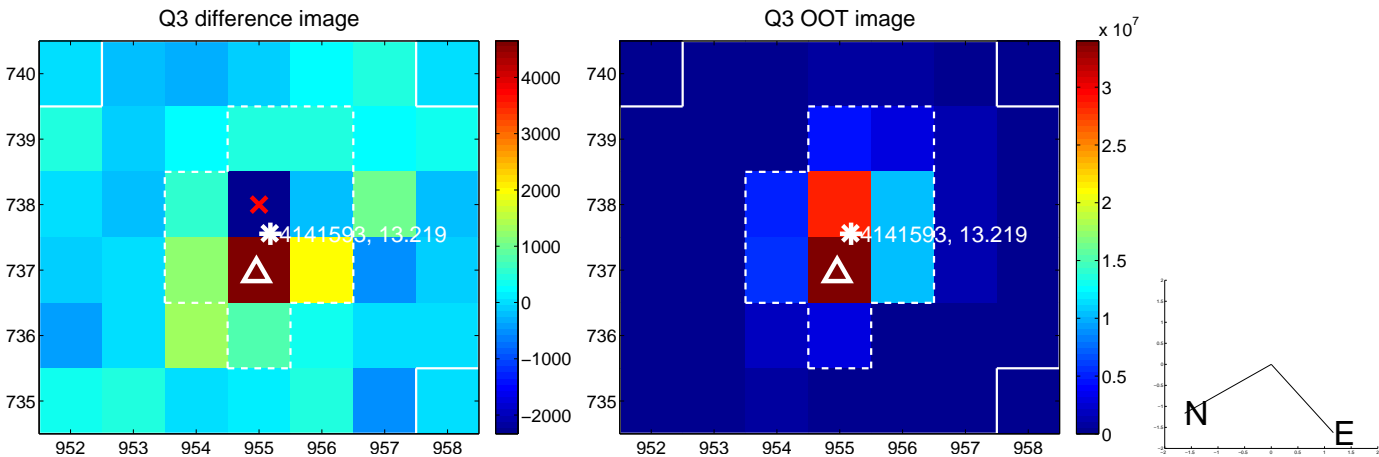
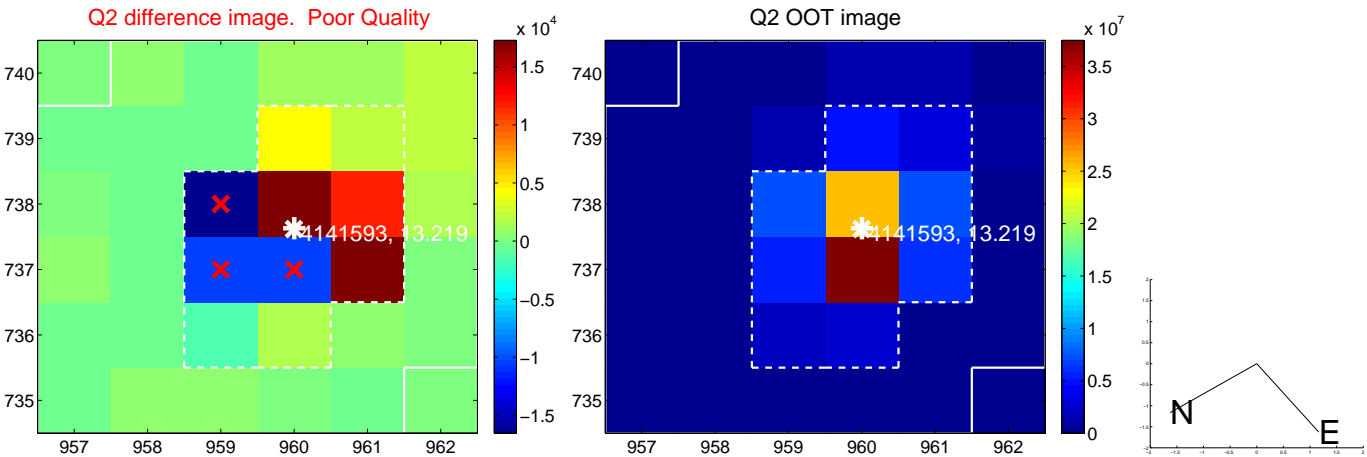
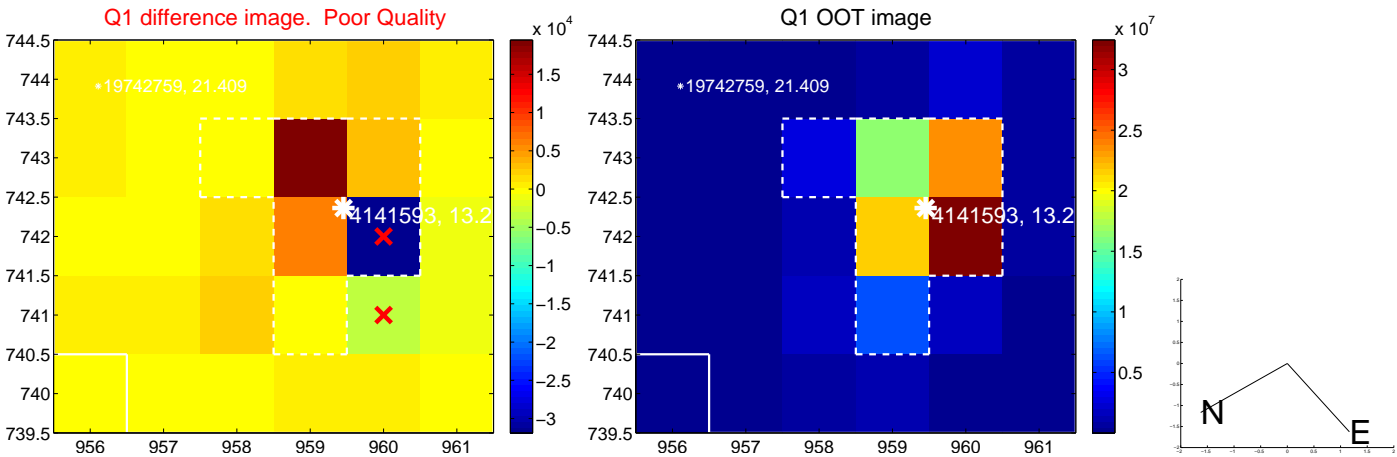


offset from photometric centroids

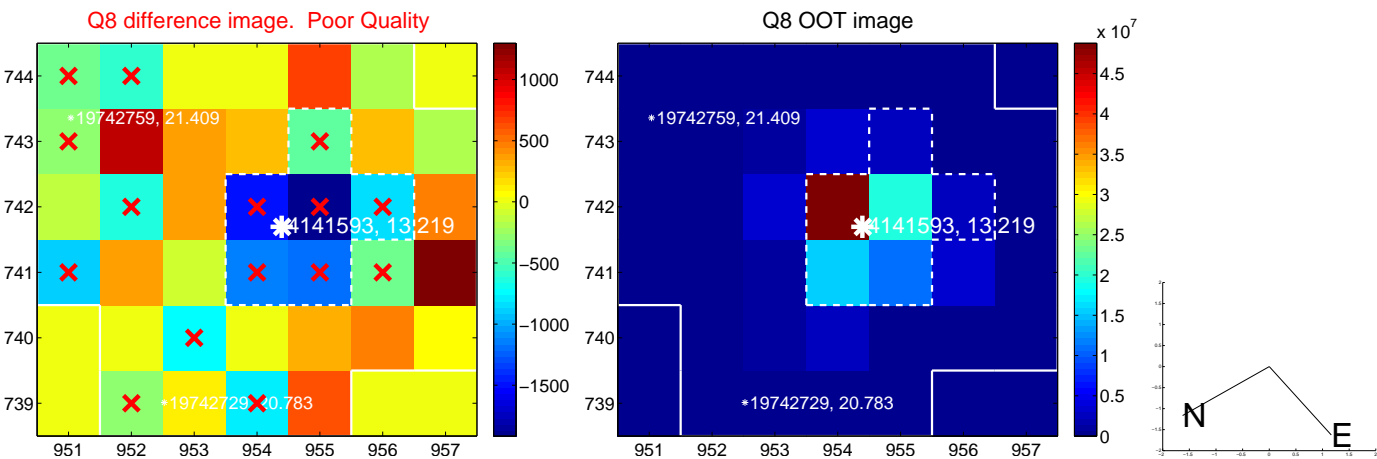
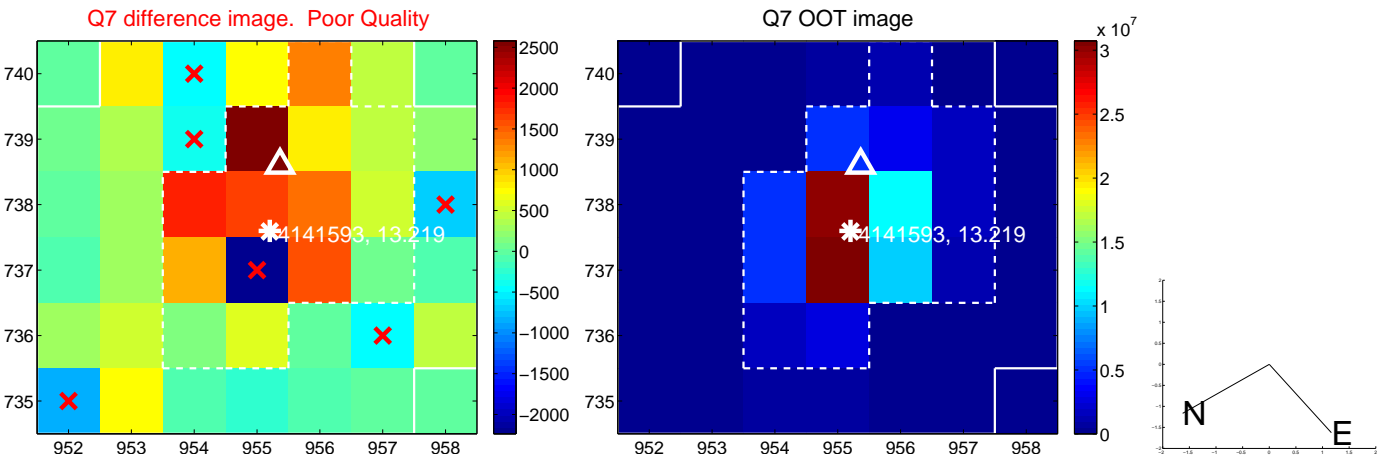
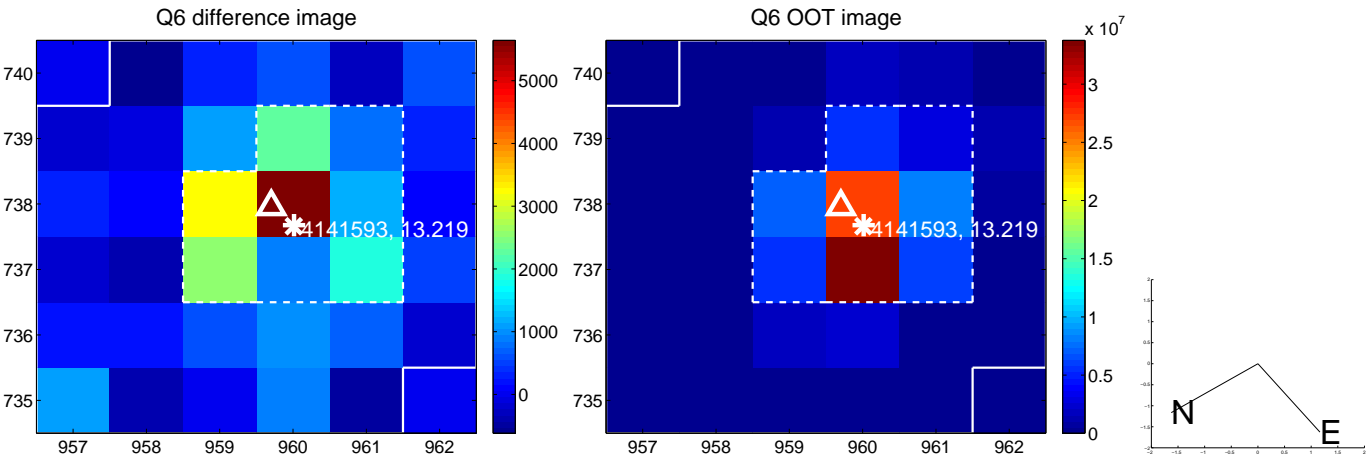
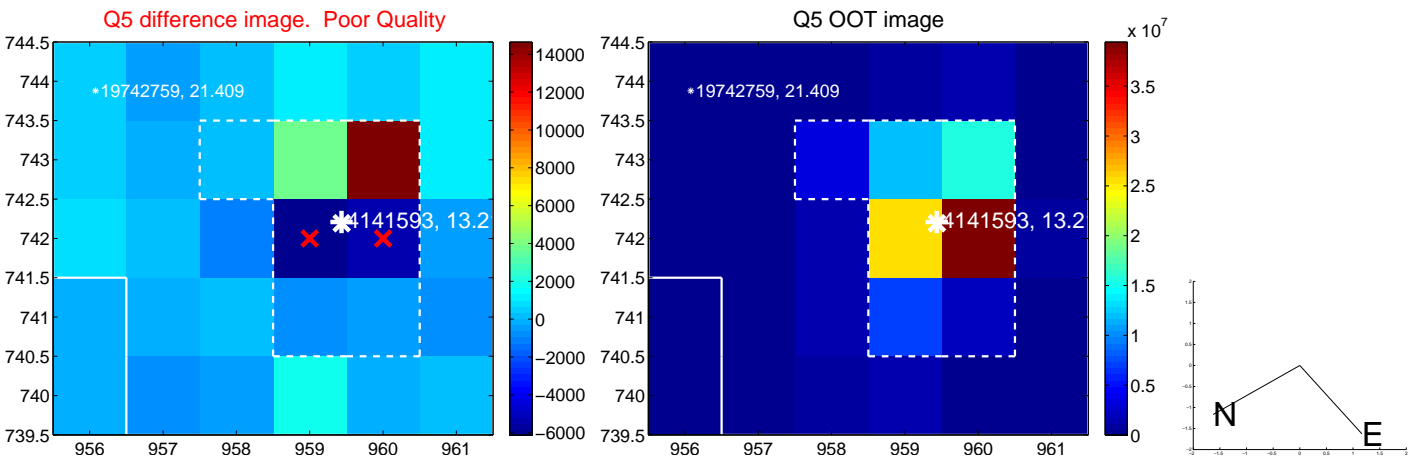


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

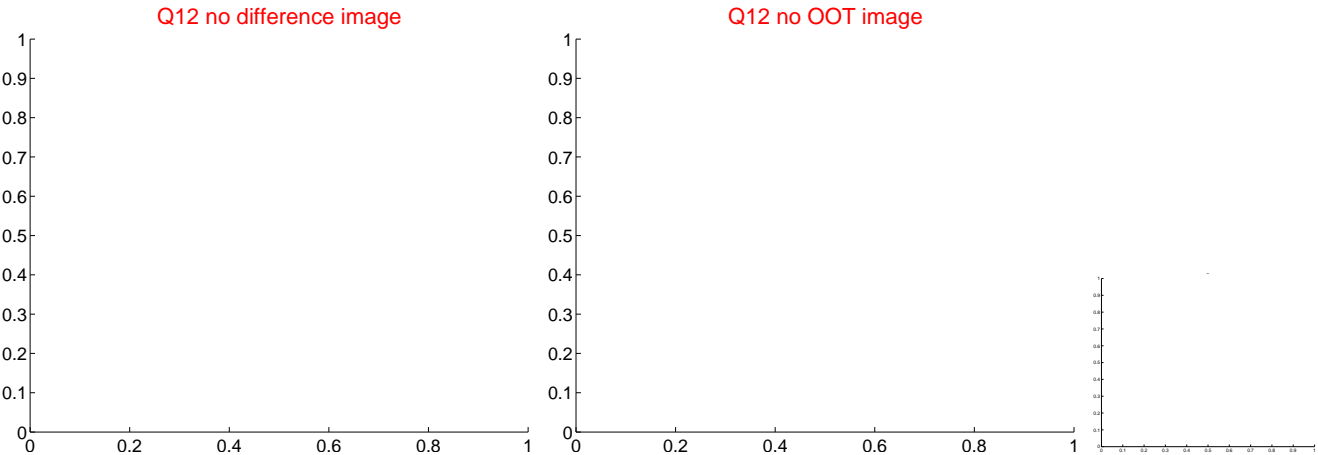
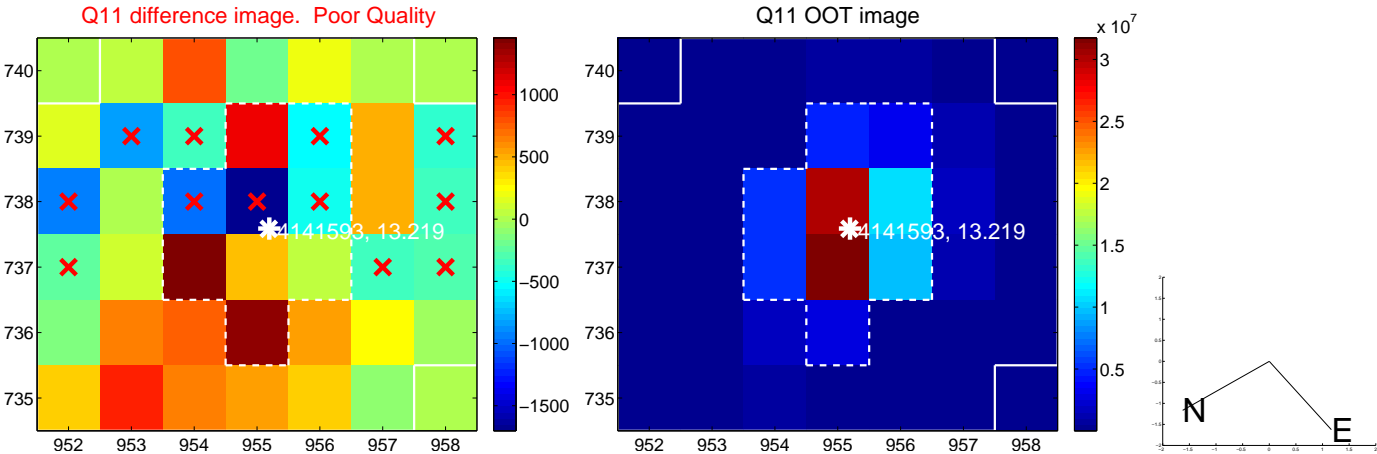
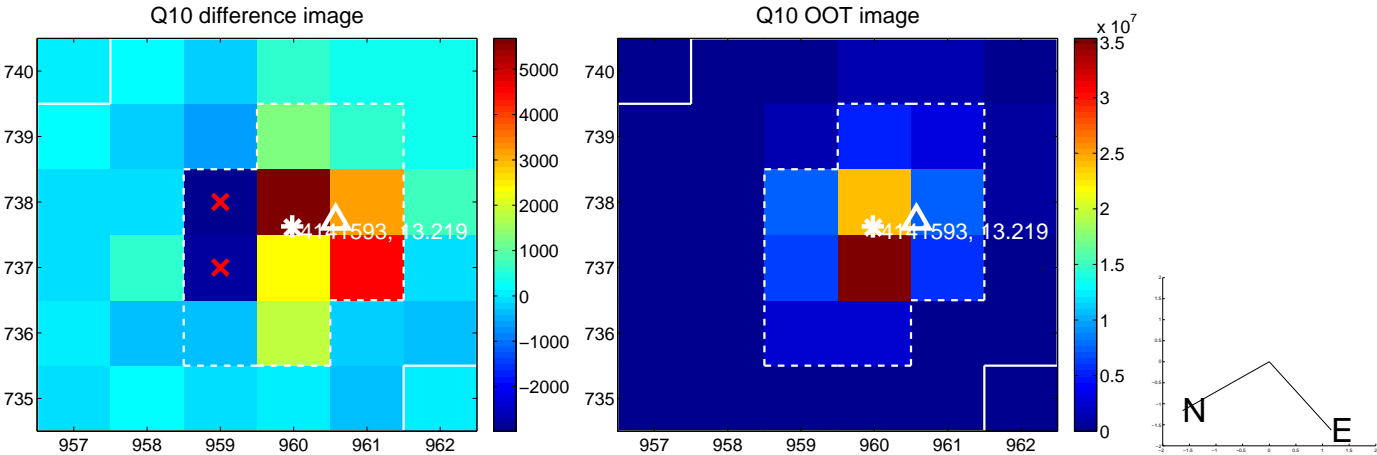
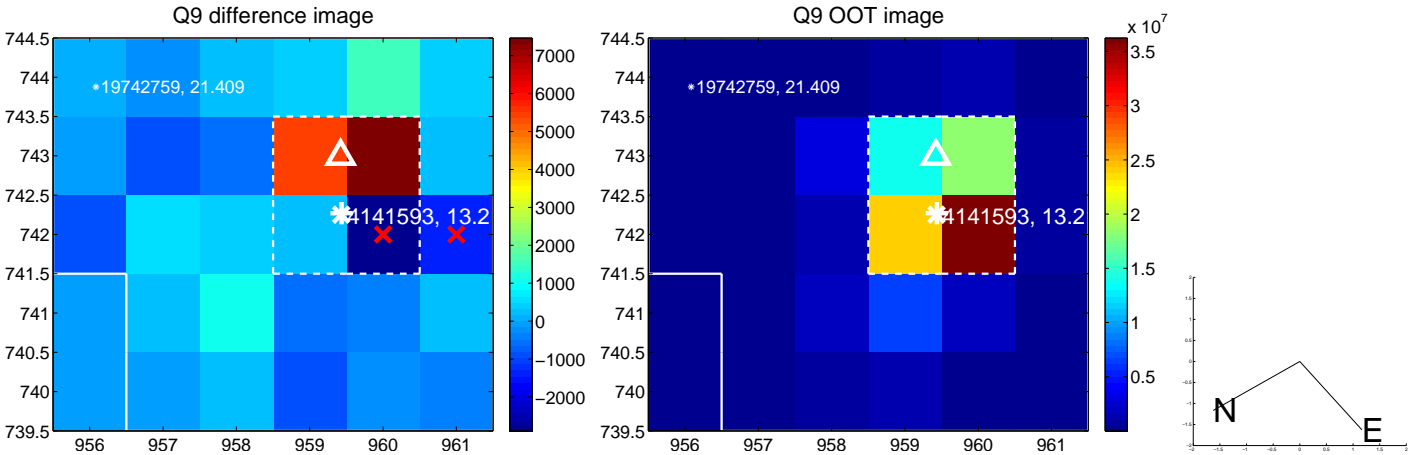
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



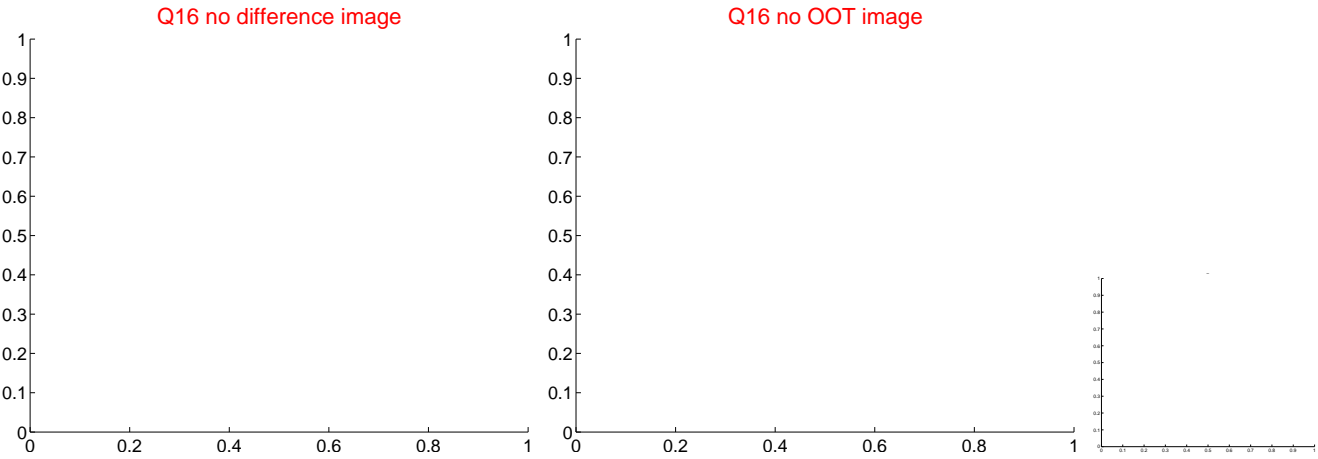
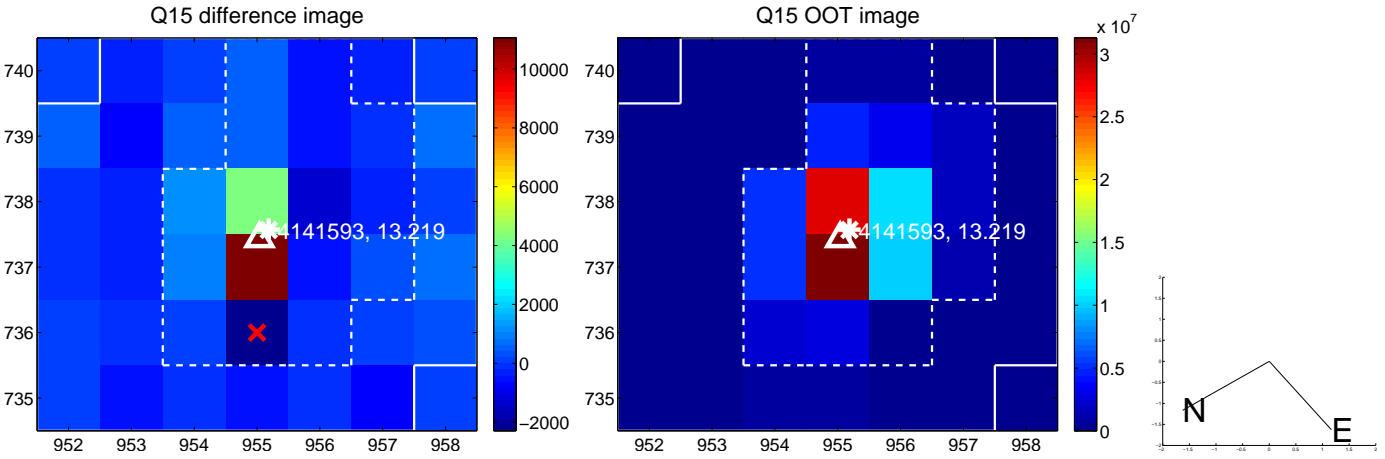
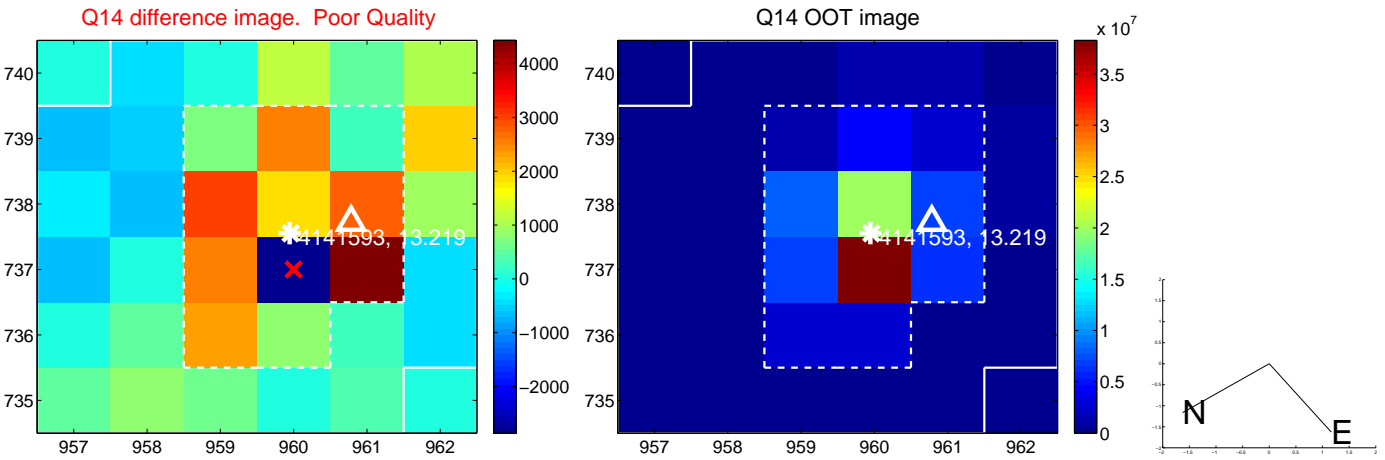
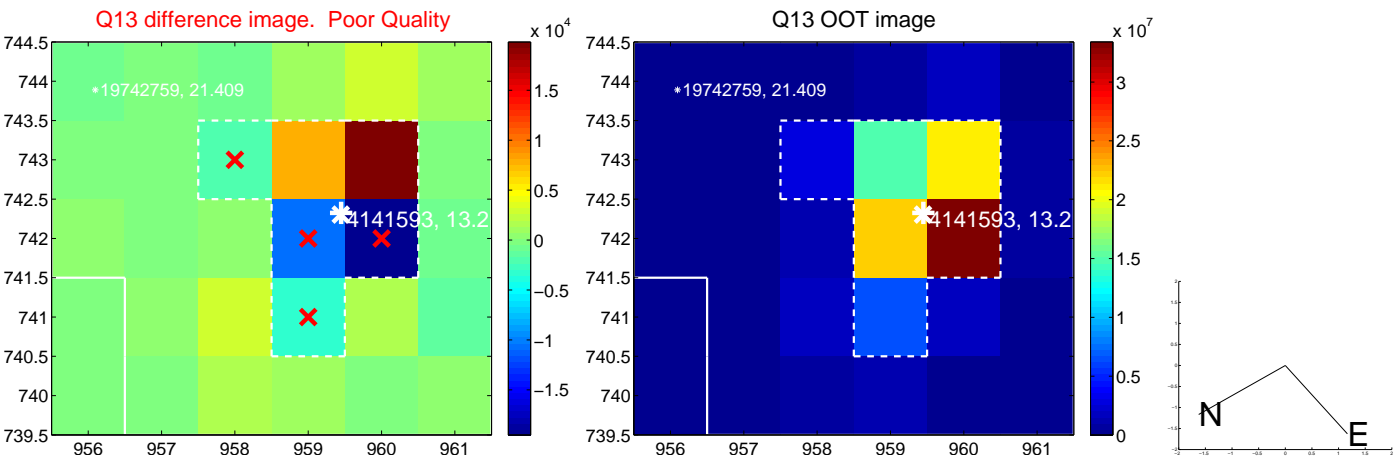
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



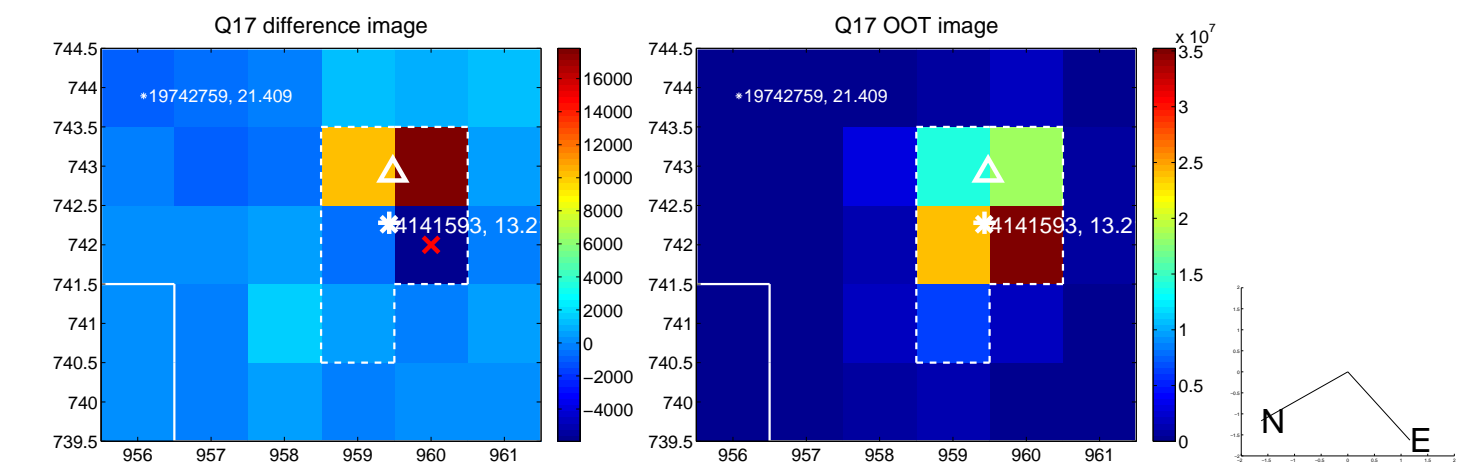
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



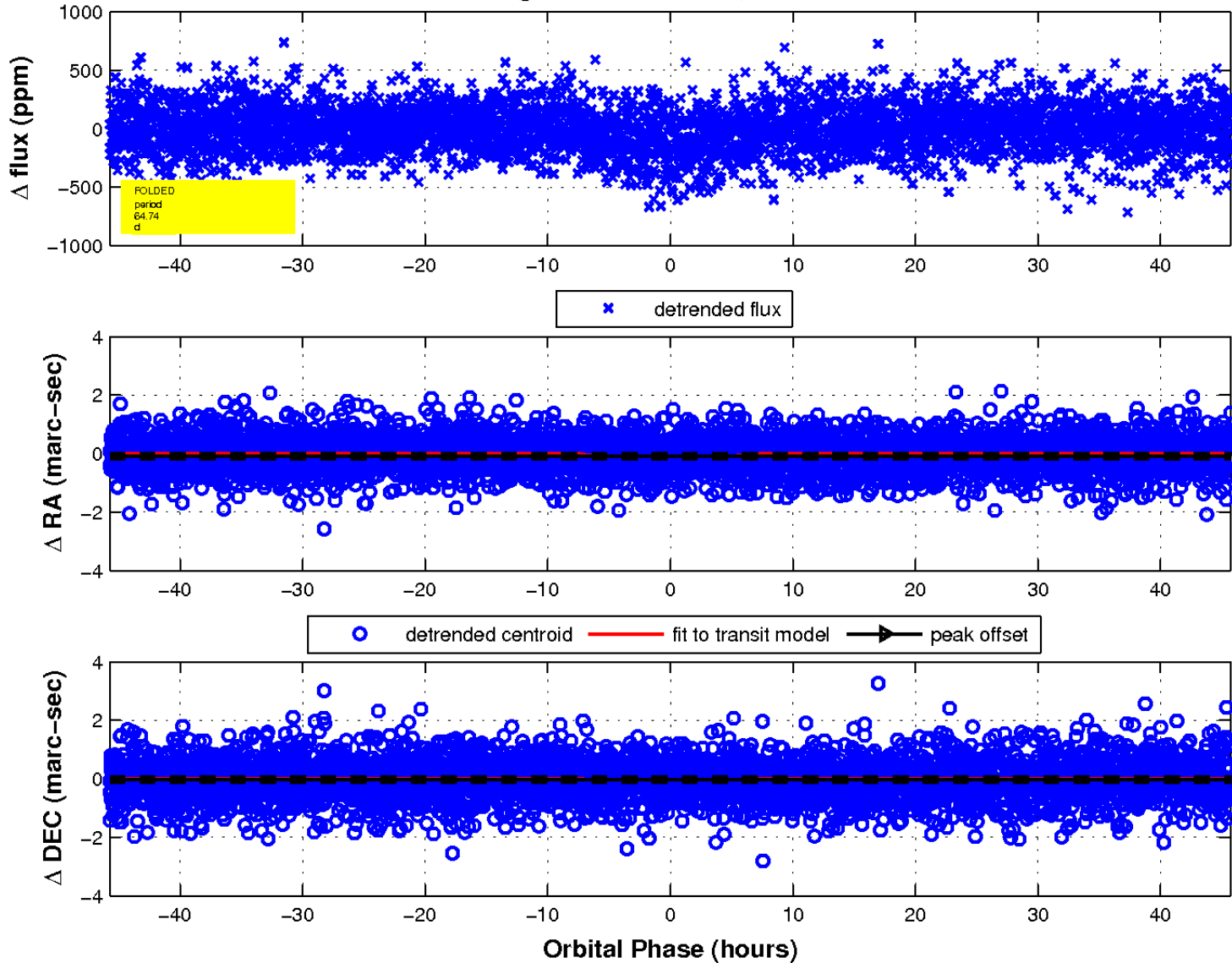
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

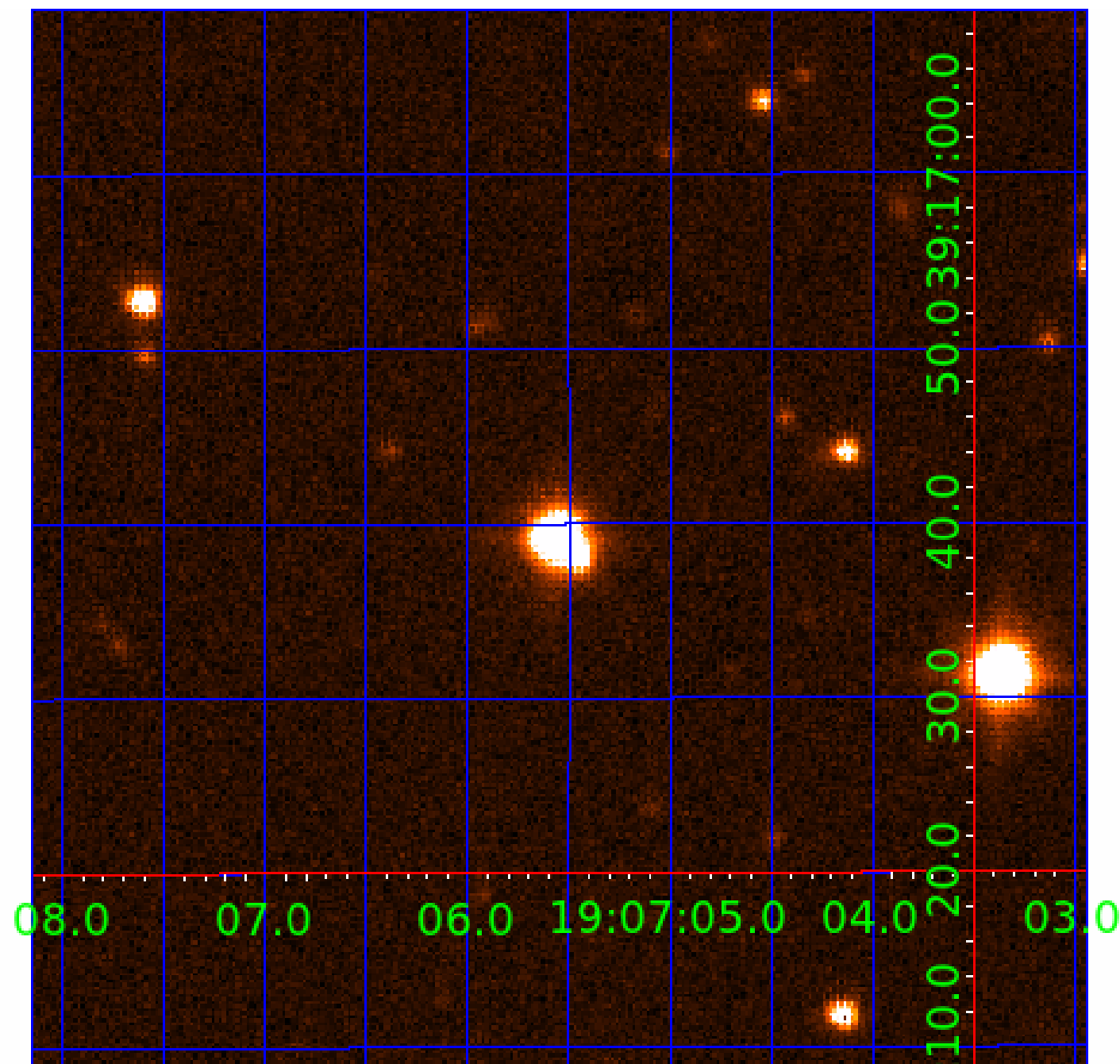


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 004141593

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})
004141593-01	OBS	7685.01	64.740010	149.984104	106.2	15.255	8.7	8.4	1.18	5999	1.44	16.99
004141593-02	OBS	7685.02	33.503129	158.662449	77.1	13.877	8.0	8.2	1.18	5999	1.33	40.89

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004141593-01	OBS	PC	0.65	0	0	0	0	NO_COMMENT
004141593-02	OBS	PC	0.79	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.

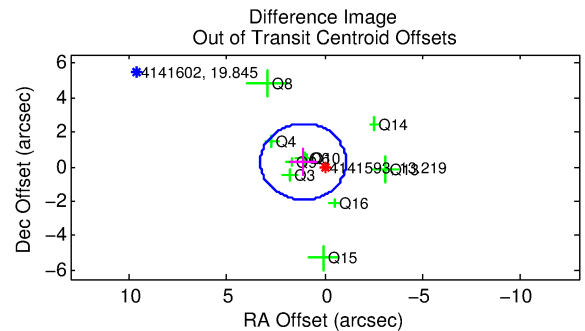
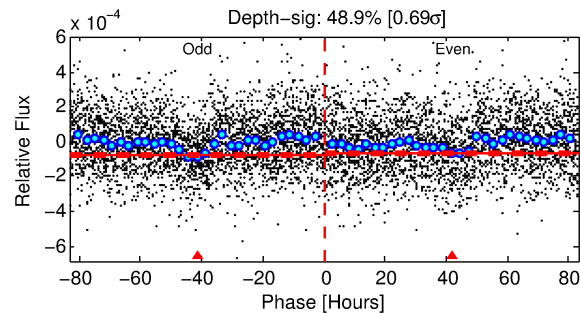
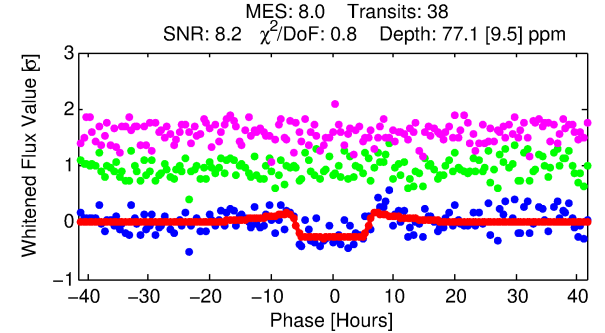
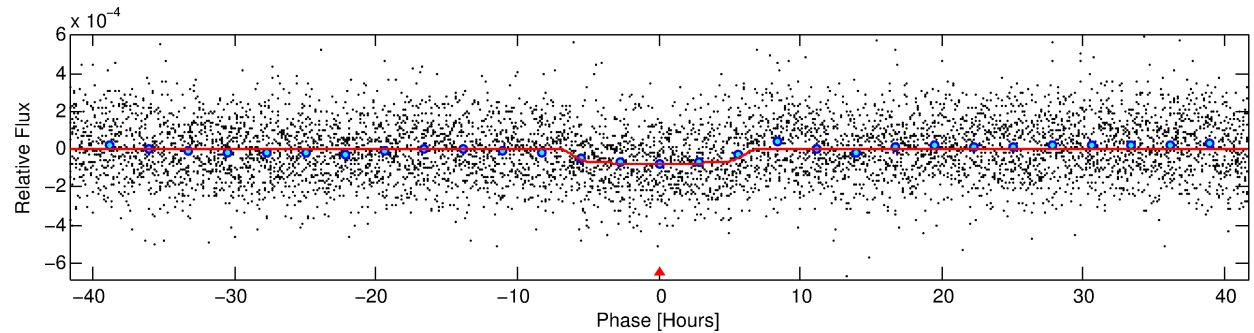
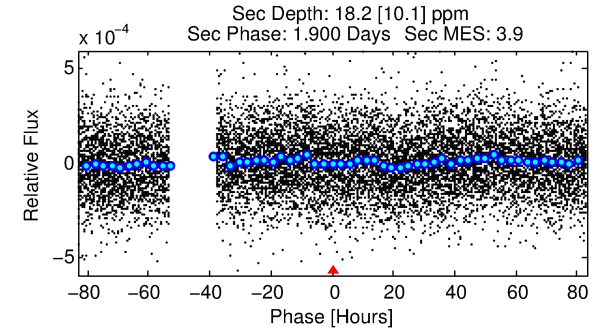
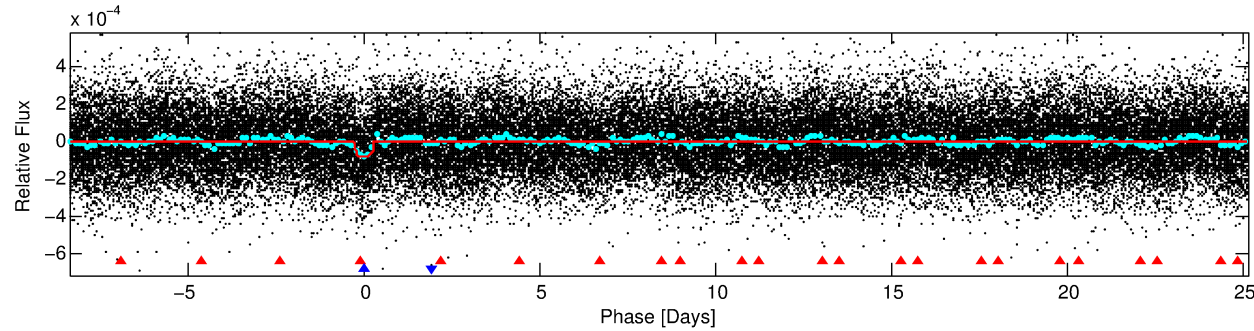
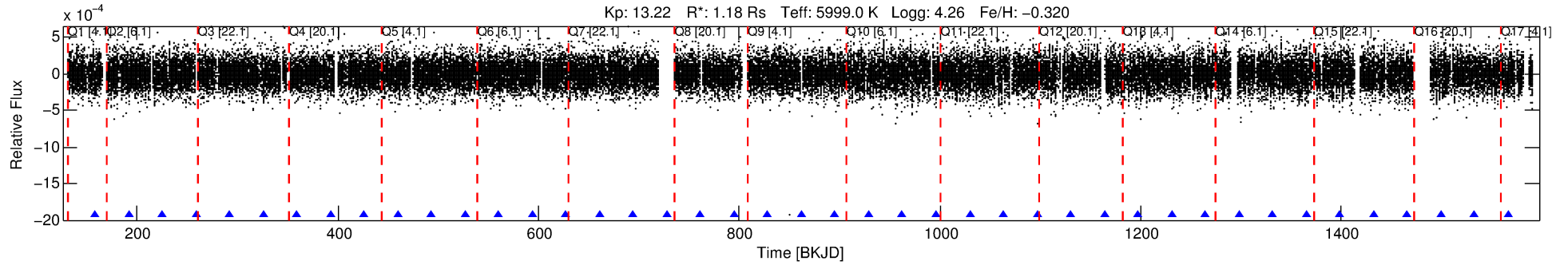
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004141593-02

No Significant Match Found

DV One-Page Summary

KIC: 4141593 Candidate: 2 of 2 Period: 33.503 d



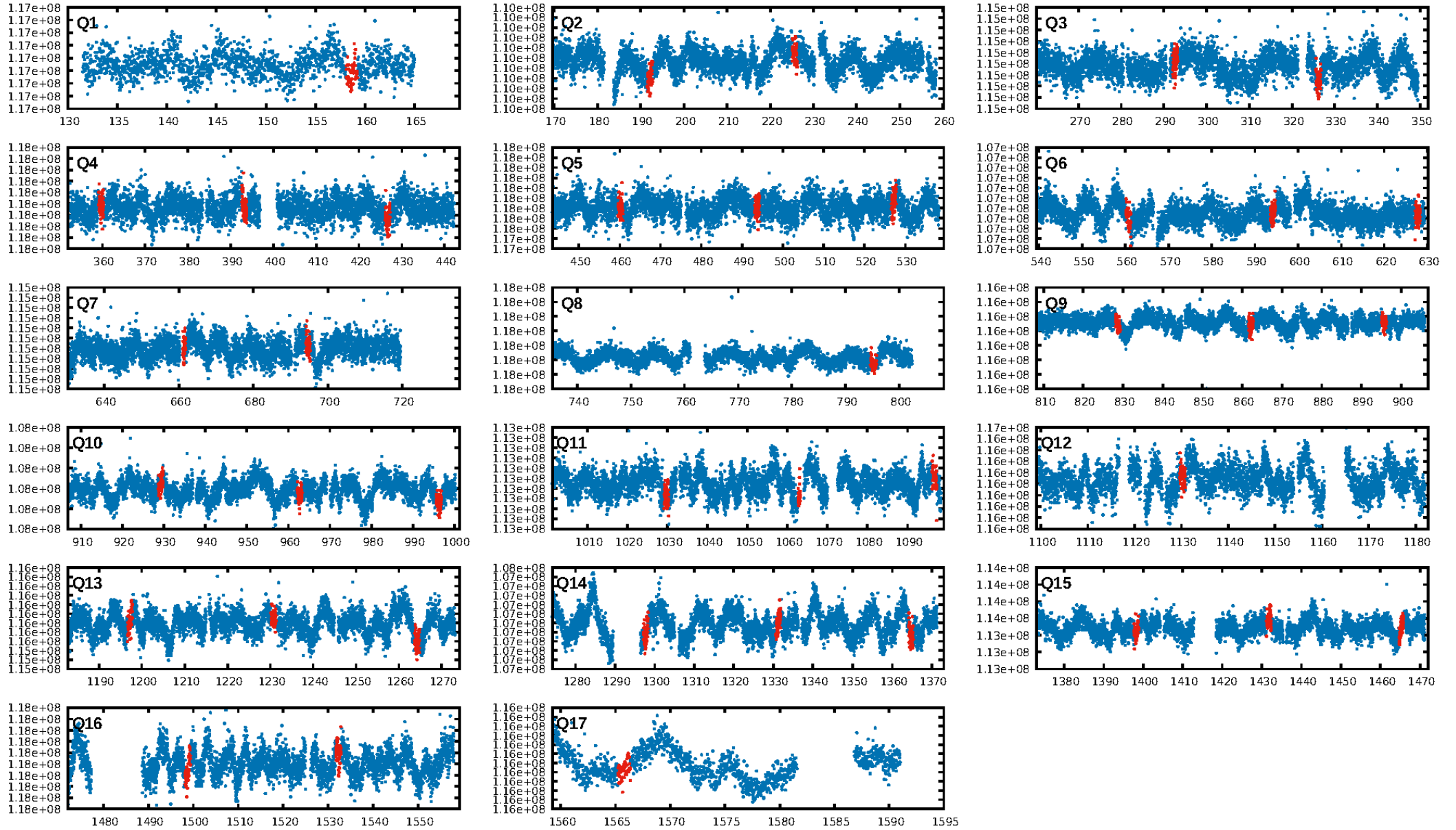
DV Fit Results:

Period = 33.50313 [0.00086] d
Epoch = 158.6624 [0.0209] BKJD
Rp/R* = 0.0103 [0.0009]
a/R* = 5.61 [1.68]
b = 0.96 [0.02]
Seff = 40.89 [16.59]
Teq = 645 [65] K
Rp = 1.33 [0.40] Re
a = 0.1983 [0.0504] AU
Ag = 222.93 [156.05] [1.42σ]
Teffp = 3852 [573] K [5.56σ]

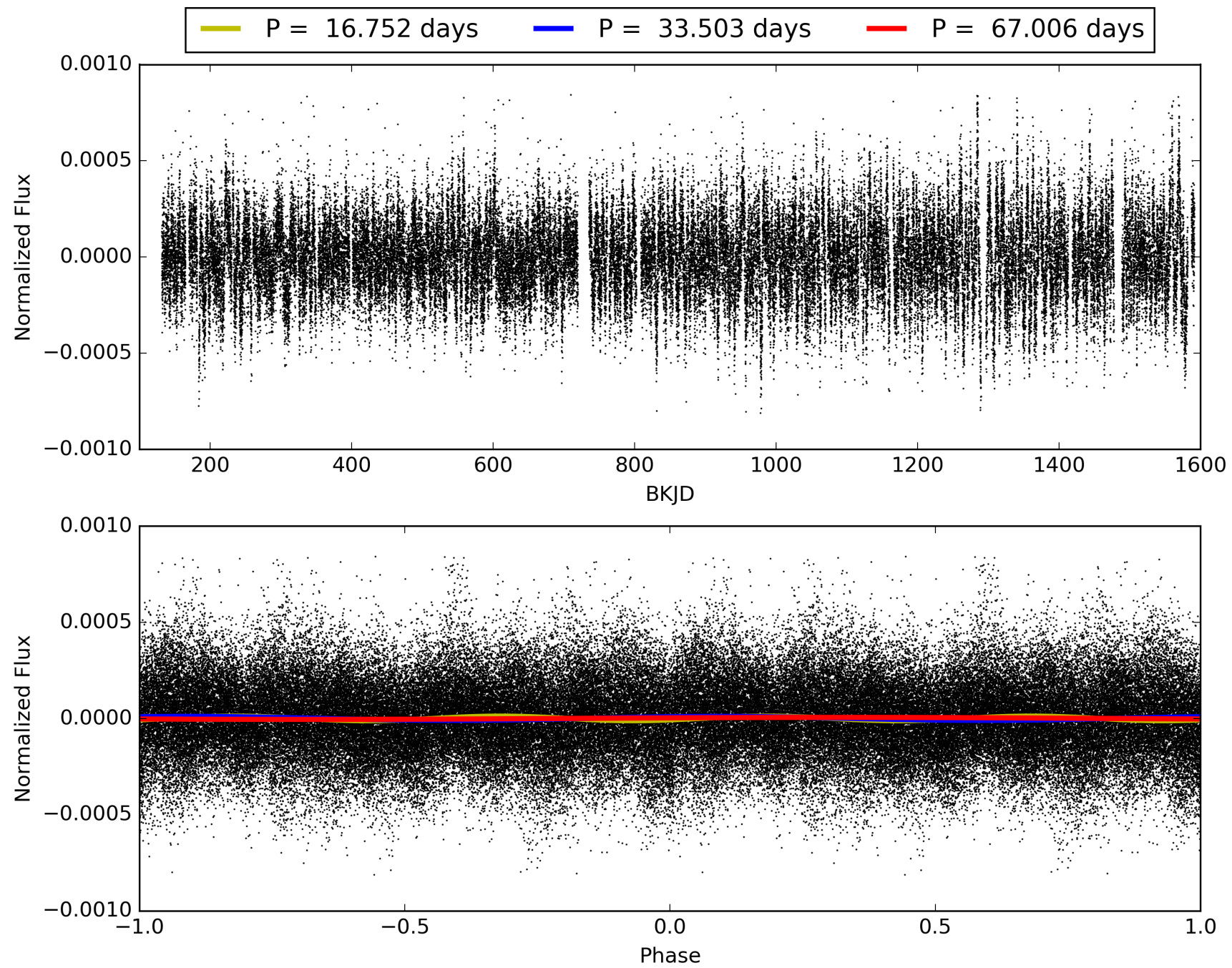
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [36.35σ]
ModelChiSquare2-sig: 72.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.01e-15
RollingBand-fgt: 1.00 [36/36]
GhostDiagnostic-chr: 0.6462
Centroid-sig: 7.8%
Centroid-so: 1.394 arcsec [1.55σ]
OotOffset-rm: 1.135 arcsec [1.55σ]
KicOffset-rm: 0.703 arcsec [0.96σ]
OotOffset-st: 3/2/3/2 [10]
KicOffset-st: 3/2/3/2 [10]
DiffImageQuality-fgm: 0.70 [7/10]
DiffImageOverlap-fno: 1.00 [15/15]

TCE 004141593-02, PDC Light Curves

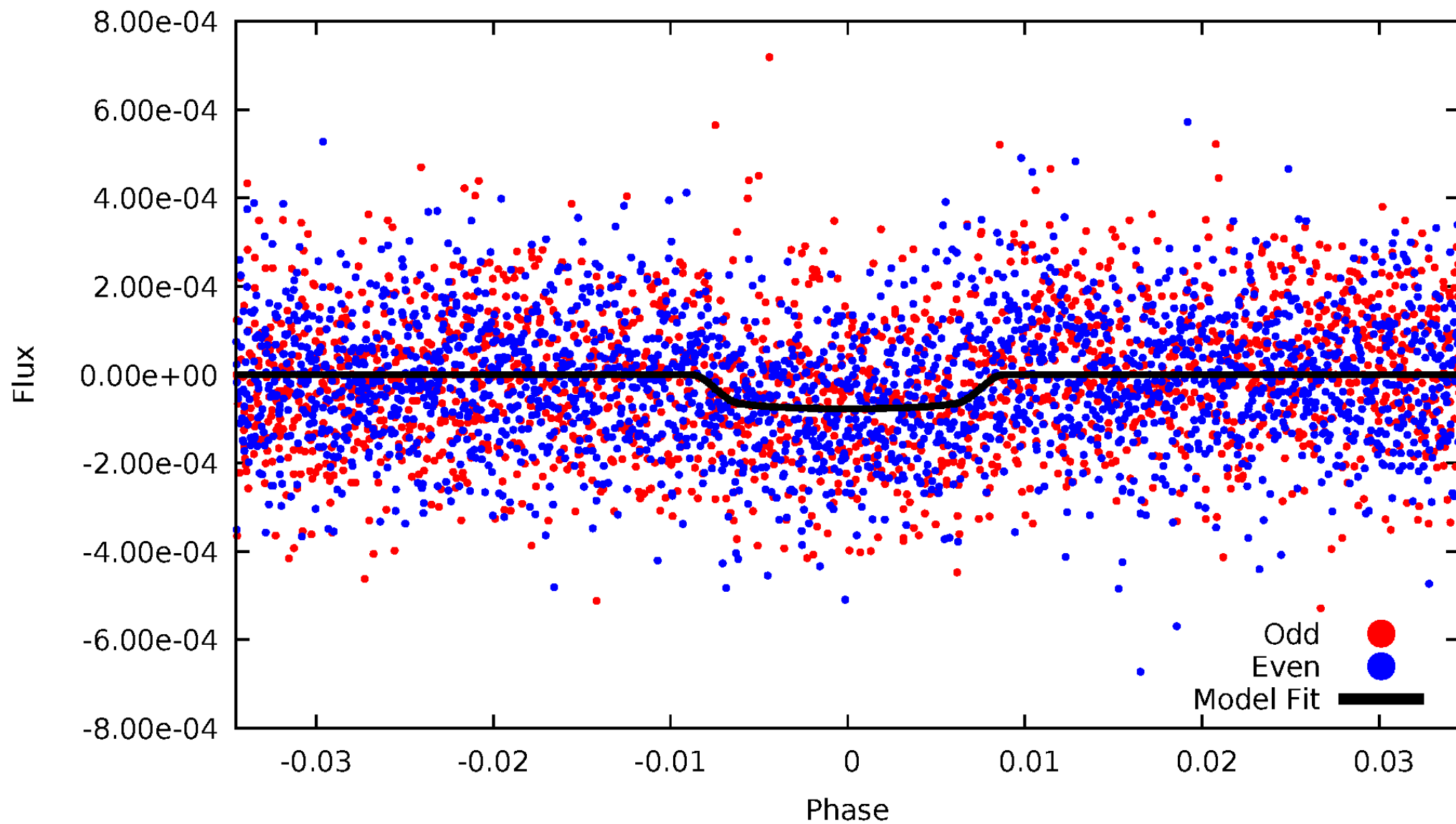


TCE 004141593-02



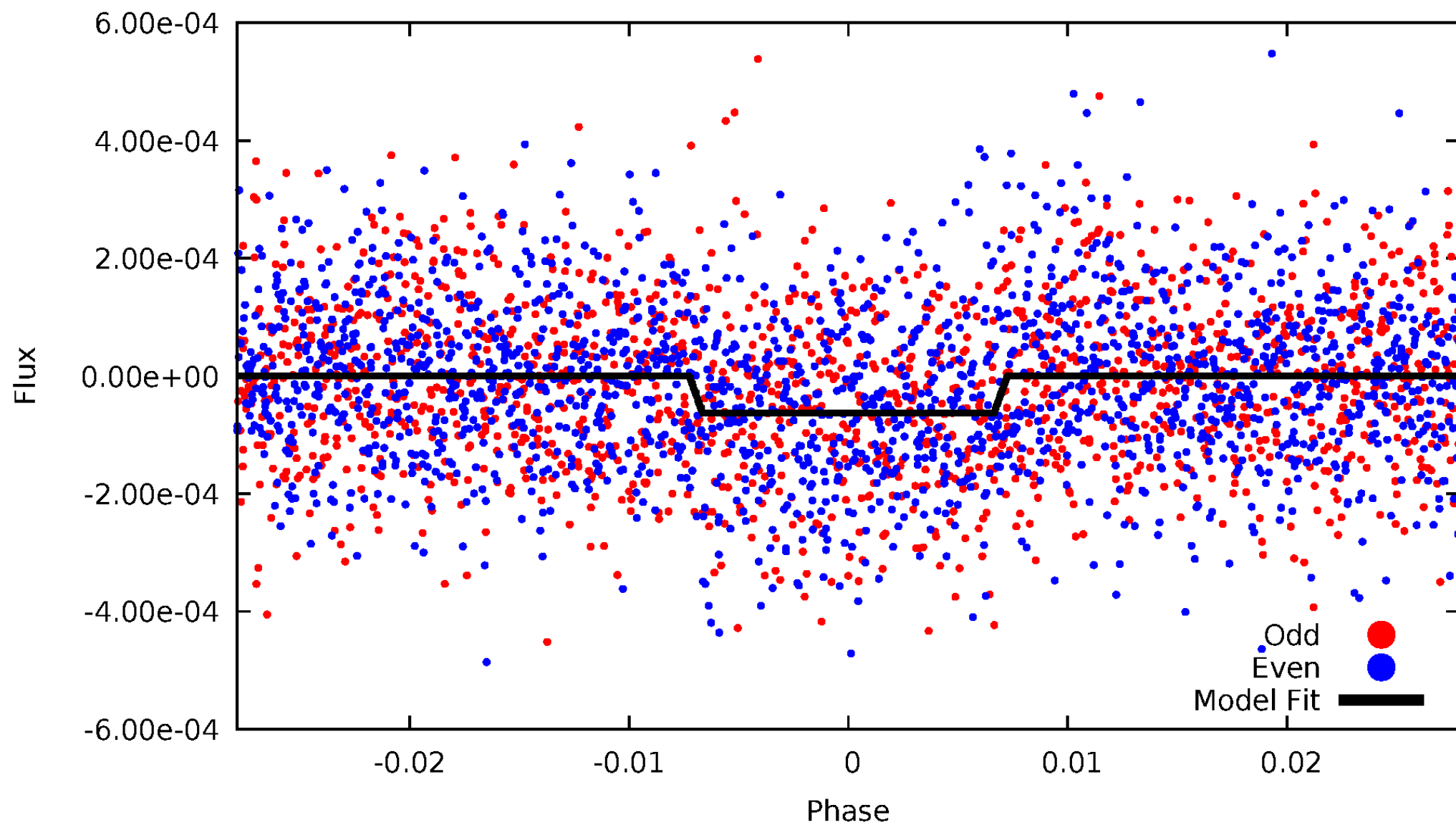
DV Odd/Even

TCE 004141593-02



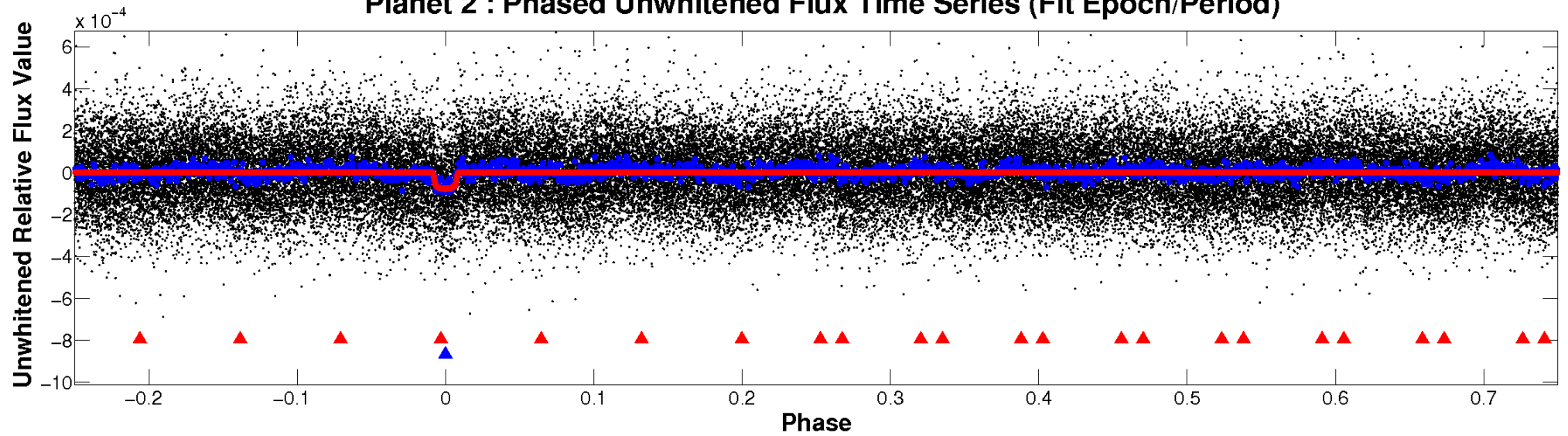
ALT Odd/Even

TCE 004141593-02

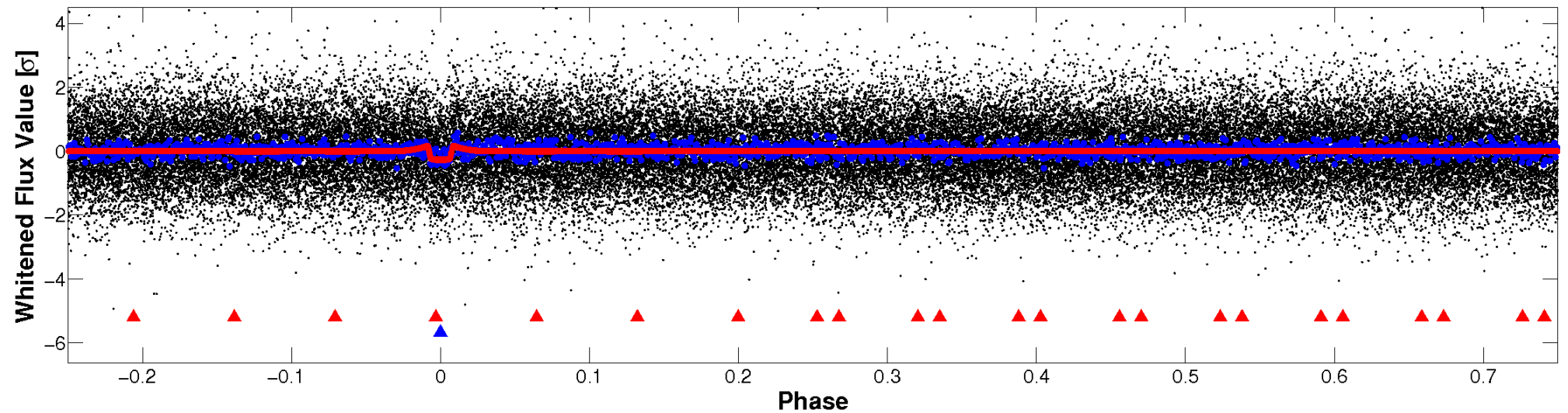


Non-Whitened Vs. Whitened Light Curve

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

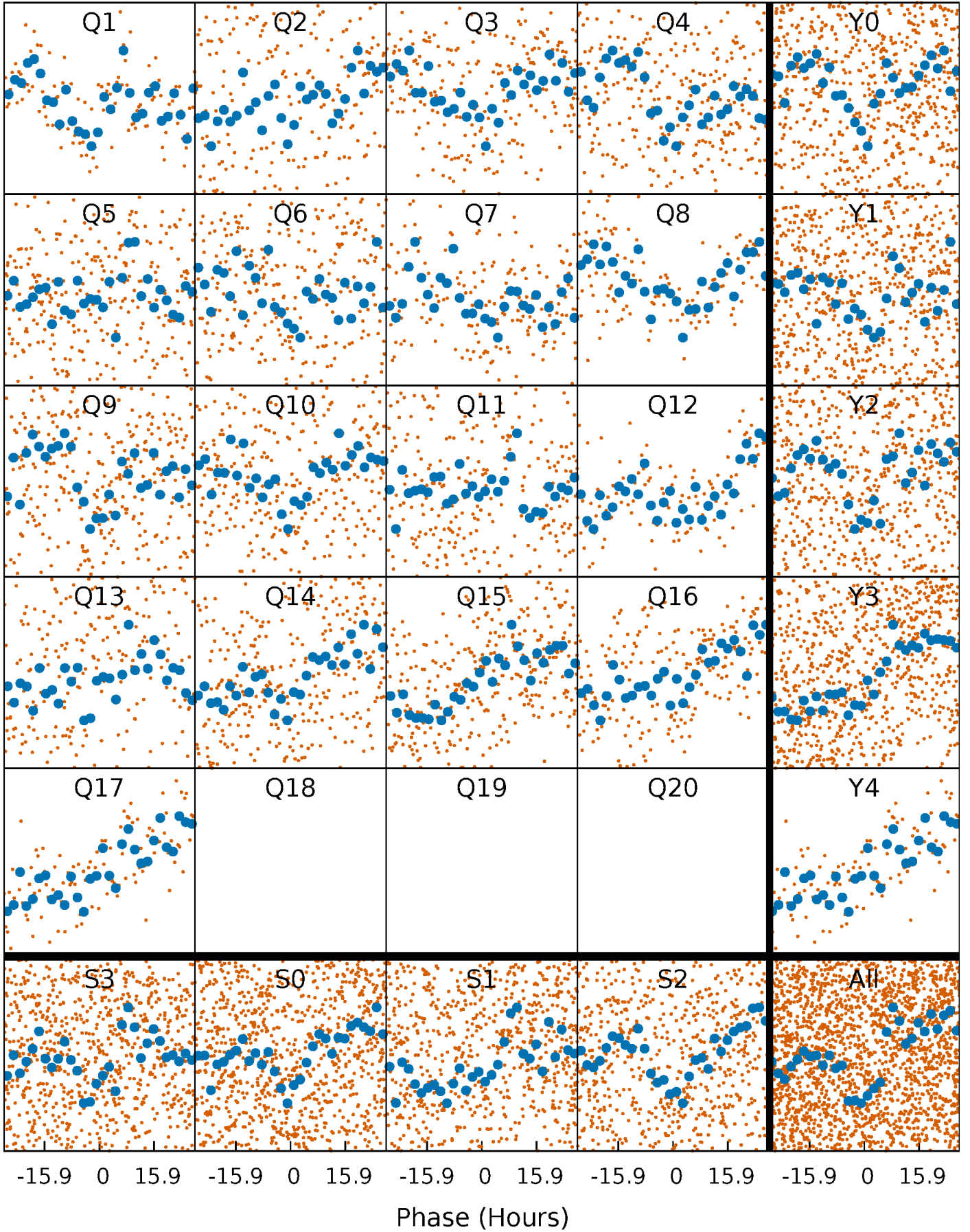


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



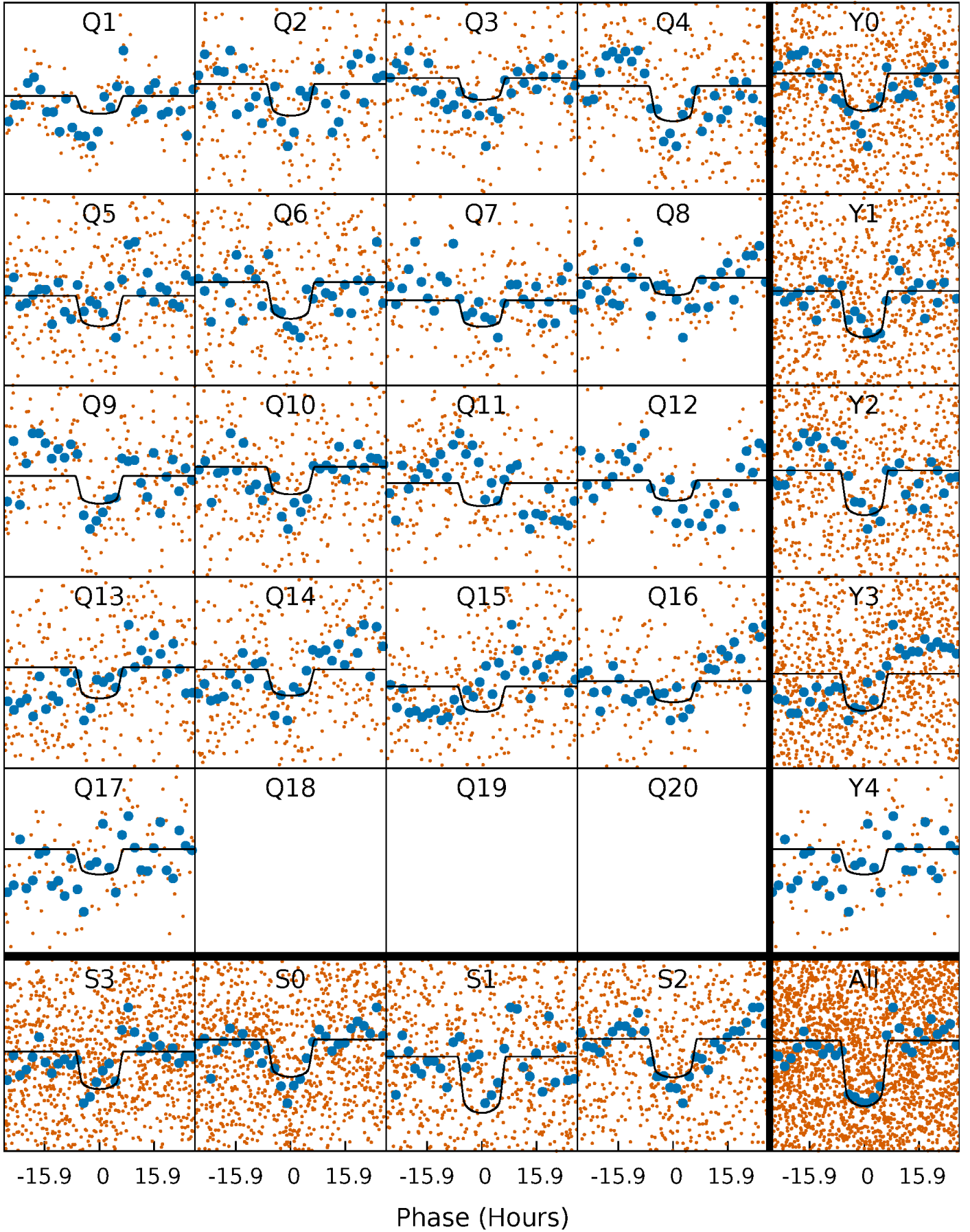
PDC Quarter-Phased Transit Curves

TCE 004141593-02 P= 33.503129 Days $T_0=158.662449$ (BKJD)



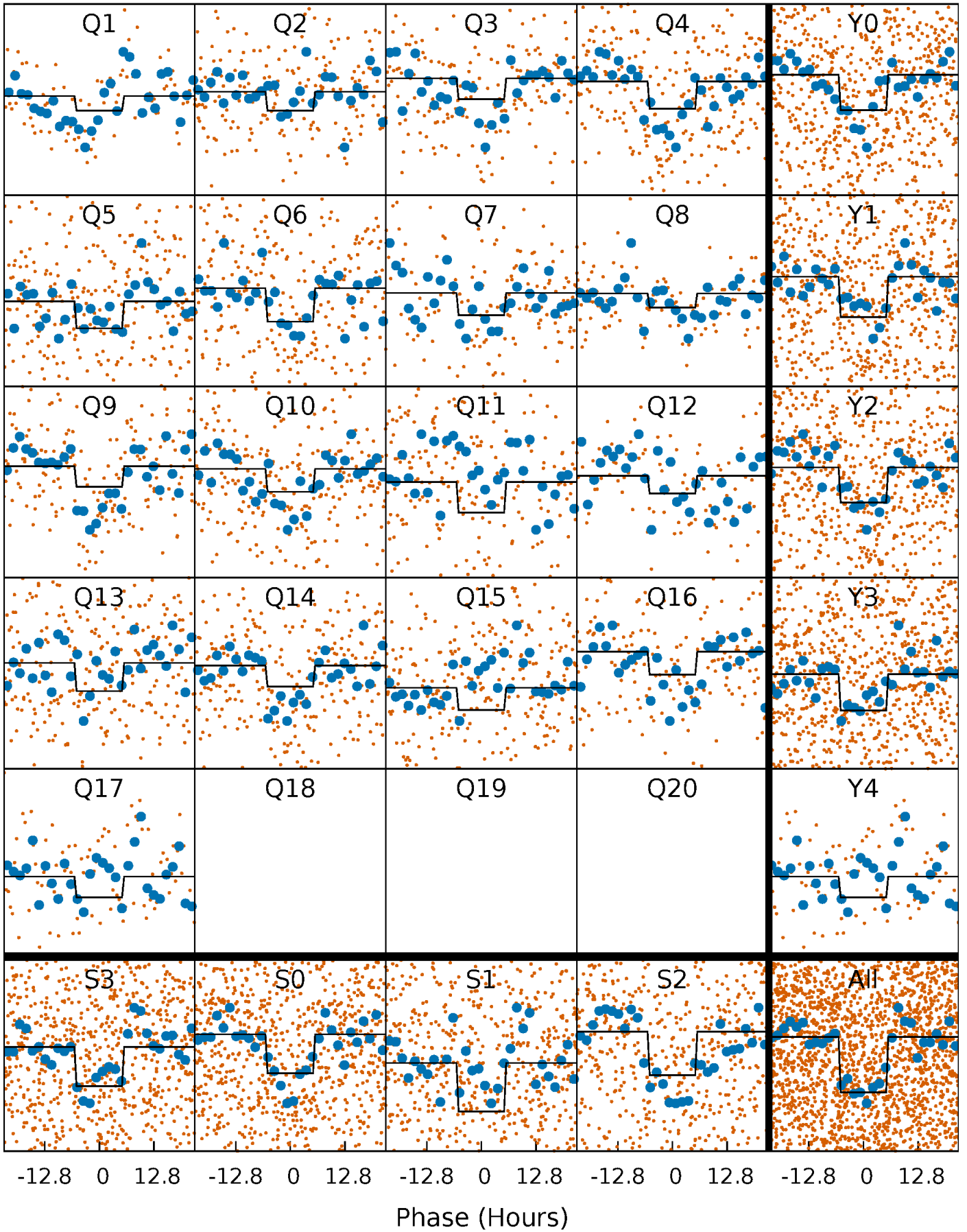
DV Quarter-Phased Transit Curves

TCE 004141593-02 P= 33.503129 Days $T_0=158.662449$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

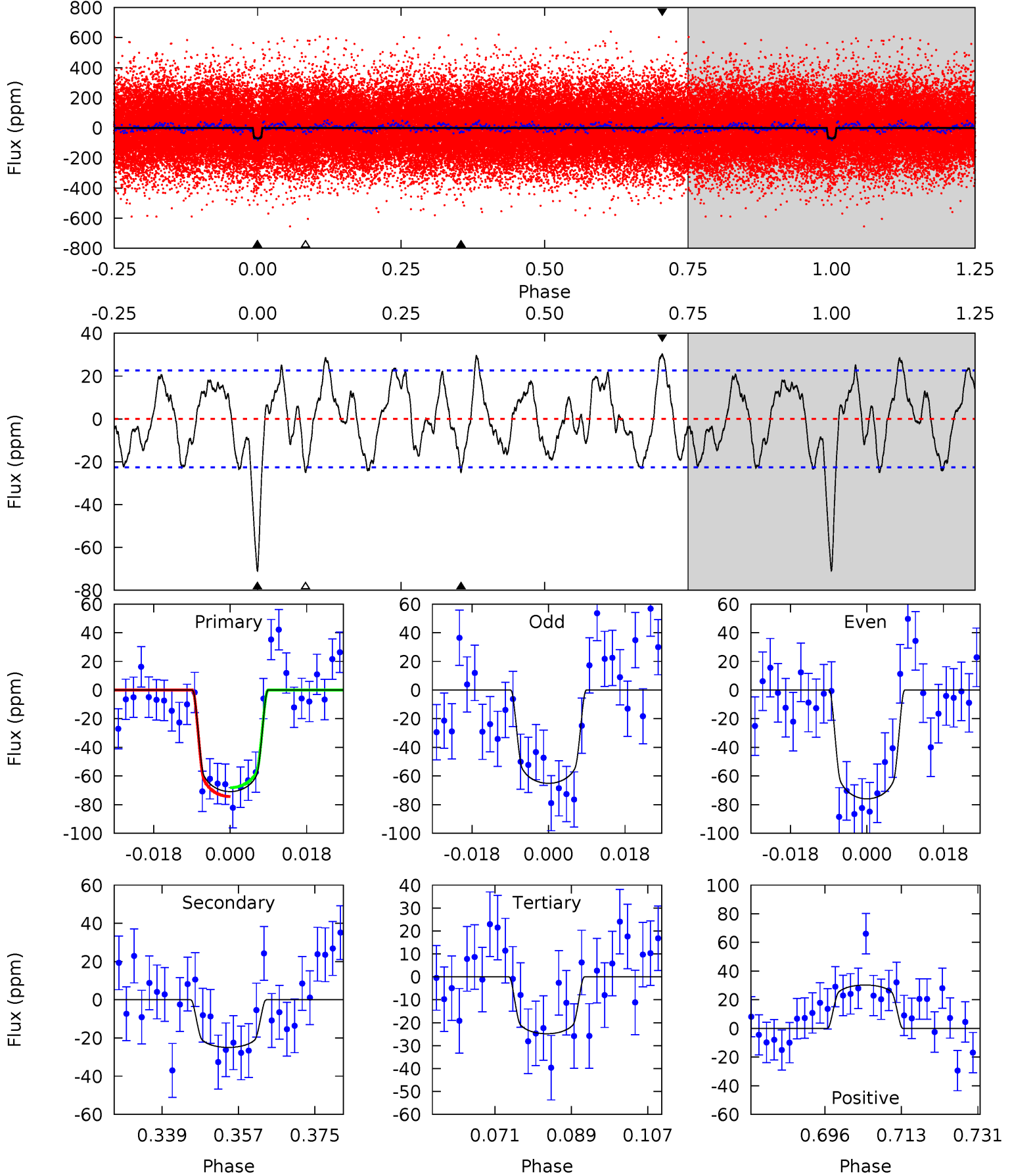
TCE 004141593-02 P= 33.502597 Days $T_0=158.666843$ (BKJD)



DV Model-Shift Uniqueness Test

004141593-02, P = 33.503129 Days, E = 125.159320 Days

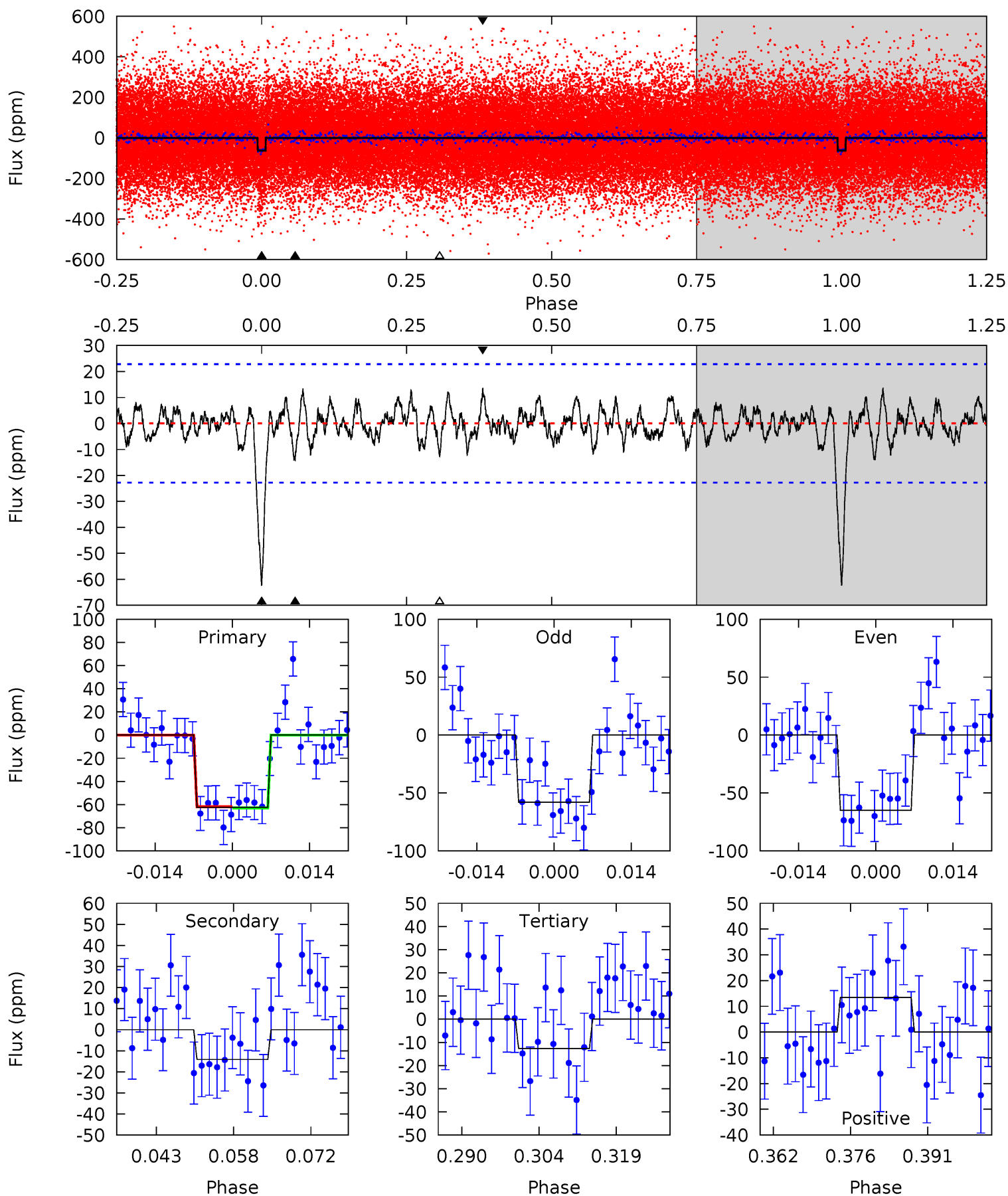
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.4	5.42	5.39	6.58	4.91	2.37	2.90	10.0	8.82	0.03	-1.16	1.17	0.81	0.30	0.67



Alt Model-Shift Uniqueness Test

004141593-02, P = 33.502597 Days, E = 125.164246 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	3.07	2.75	2.92	4.95	2.45	1.06	10.8	10.6	0.32	0.16	0.75	0.87	0.18	0.12



Stellar Parameters For KIC 004141593

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5999^{+163}_{-181}	$4.263^{+0.220}_{-0.180}$	$-0.320^{+0.300}_{-0.300}$	$1.177^{+0.335}_{-0.274}$	$0.926^{+0.132}_{-0.096}$	$0.799^{+0.949}_{-0.377}$
	+3%/-3%	+5%/-4%	+94%/-94%	+28%/-23%	+14%/-10%	+119%/-47%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004141593-02 / KOI 7685.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-25 ± 5	$1.33^{+0.22}_{-0.21}$	899^{+70}_{-65}	4383^{+225}_{-226}	307^{+150}_{-96}
Alt.	-14 ± 5	$1.01^{+0.18}_{-0.16}$	895^{+69}_{-62}	4348^{+324}_{-341}	303^{+165}_{-125}

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 $A_{obs} \gg 1.0$

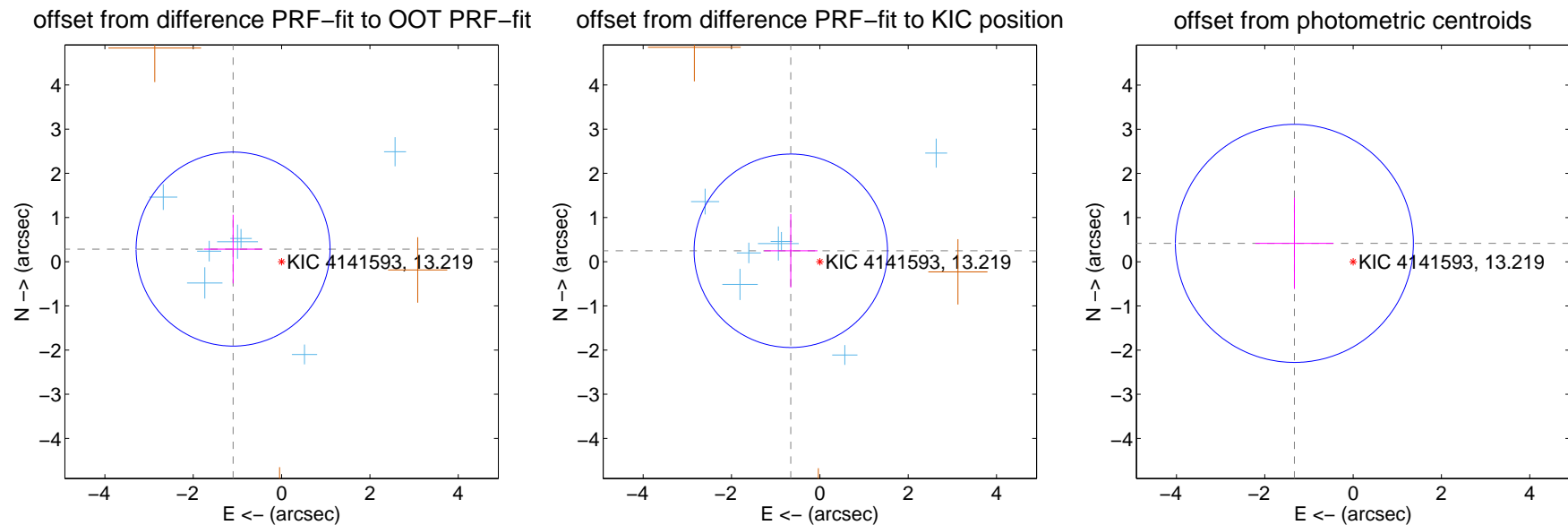
DV Centroid Data

Supplemental centroid analysis for 004141593-02. Kepler magnitude: 13.22. Transit SNR 8.19

There are 7 quarters with good PRF difference image offsets

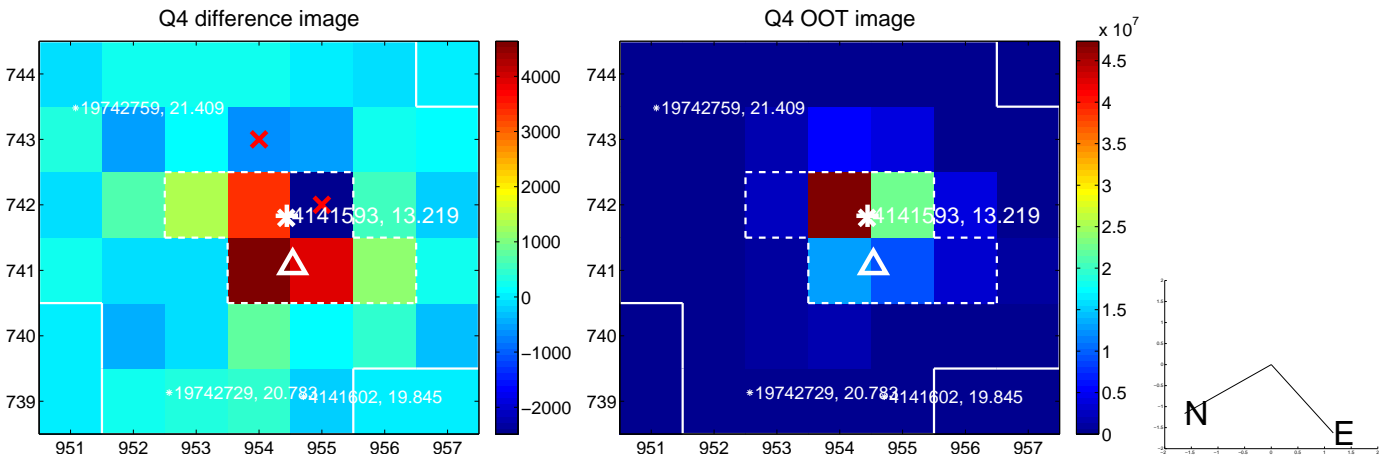
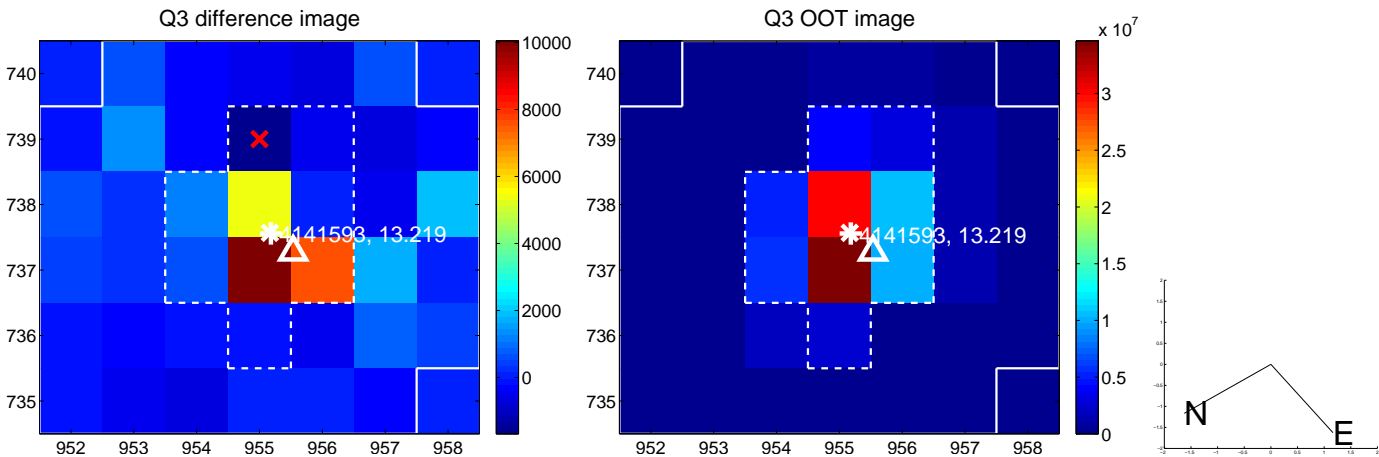
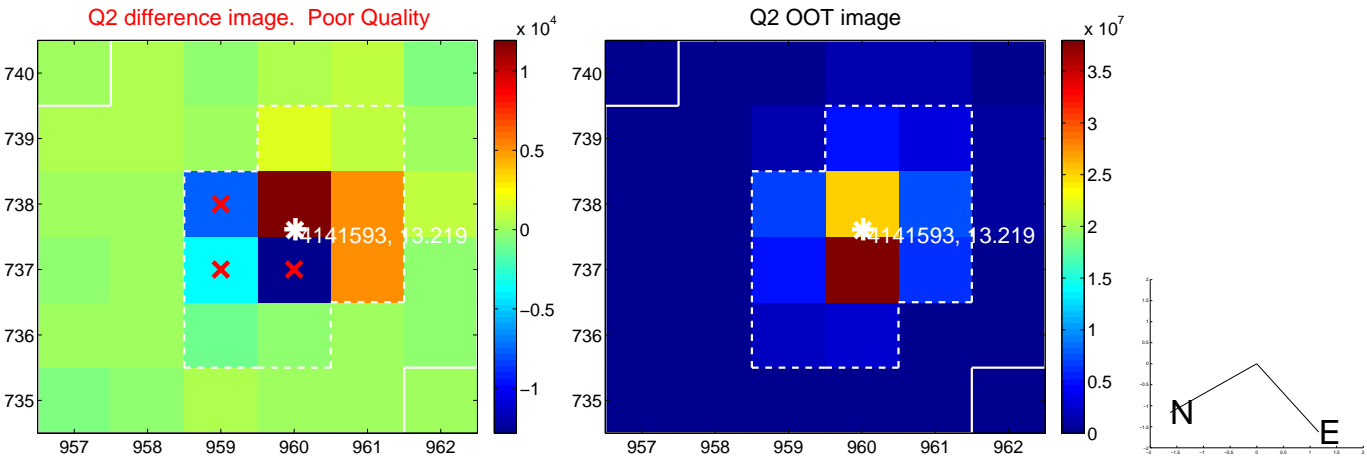
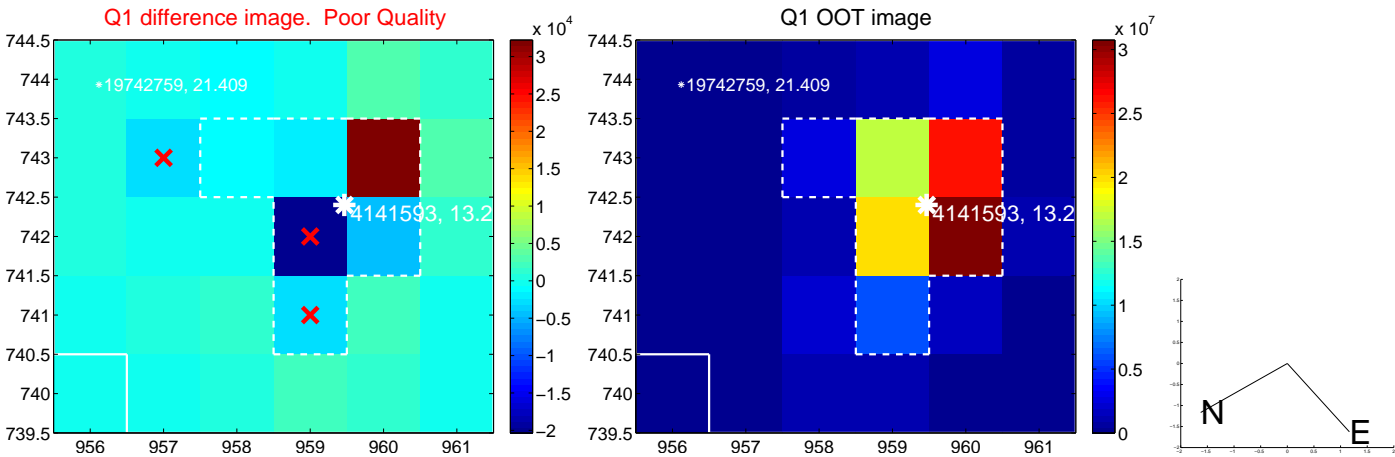
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.135 ± 0.732	1.55	1.098 ± 0.663	0.285 ± 0.776
PRF-fit source offset from KIC position	0.703 ± 0.730	0.96	0.658 ± 0.605	0.247 ± 0.831
photometric centroid source offset	1.39 ± 0.90	1.55	1.33 ± 0.88	0.42 ± 1.03

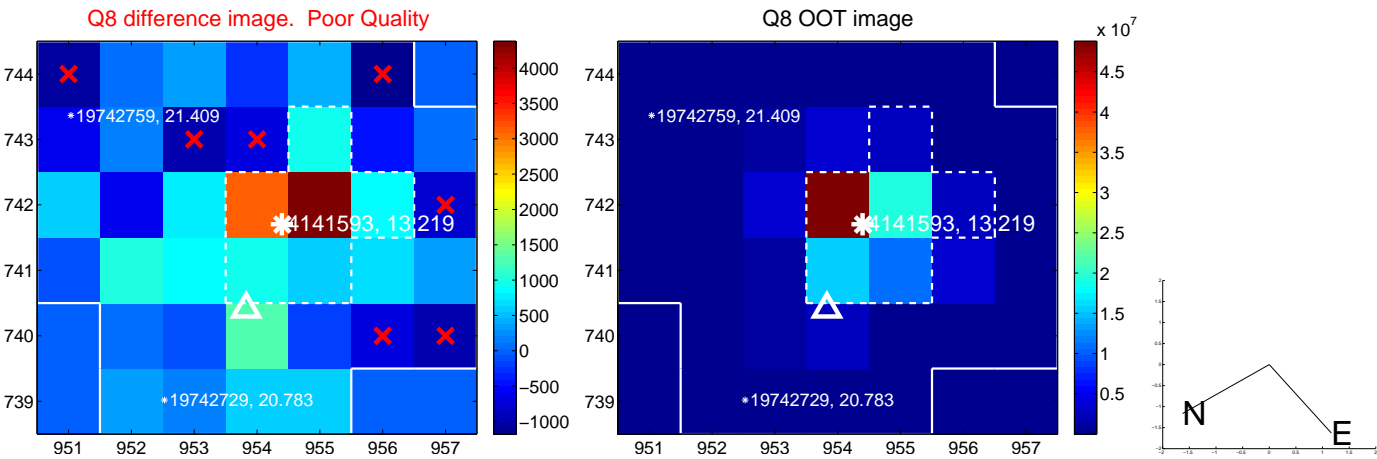
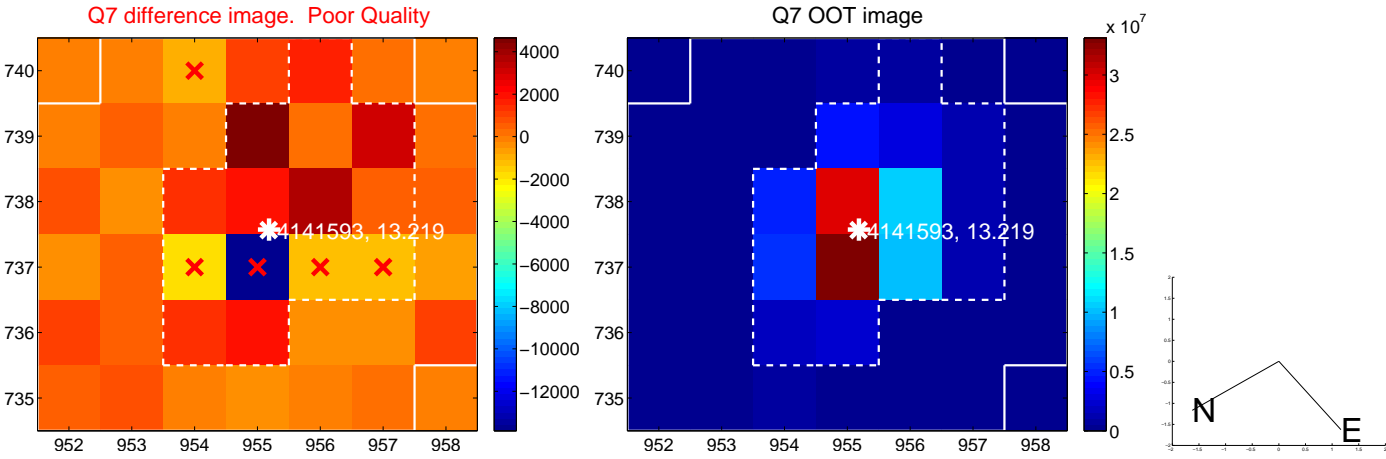
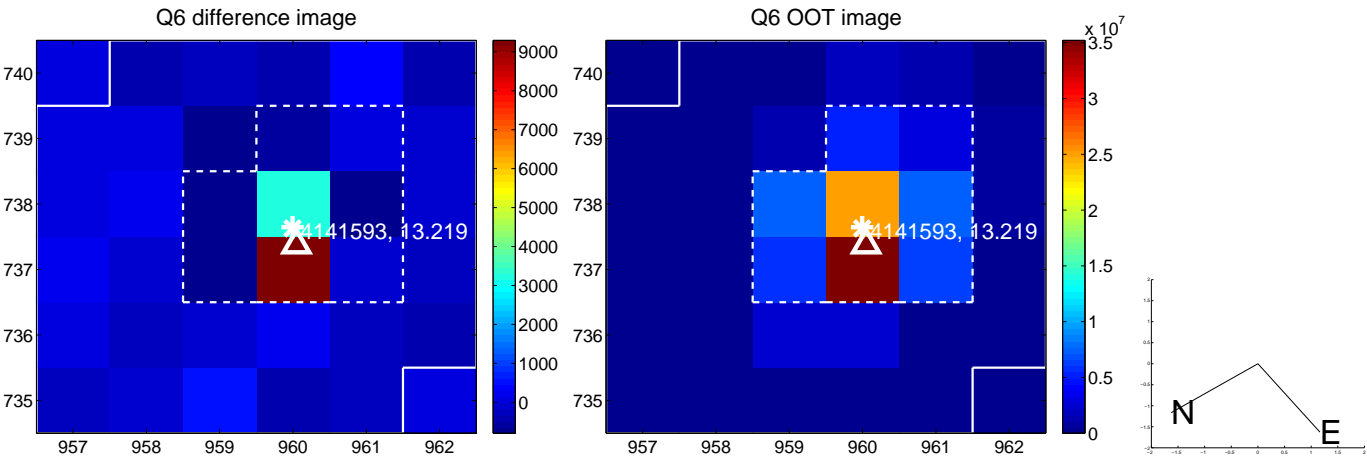
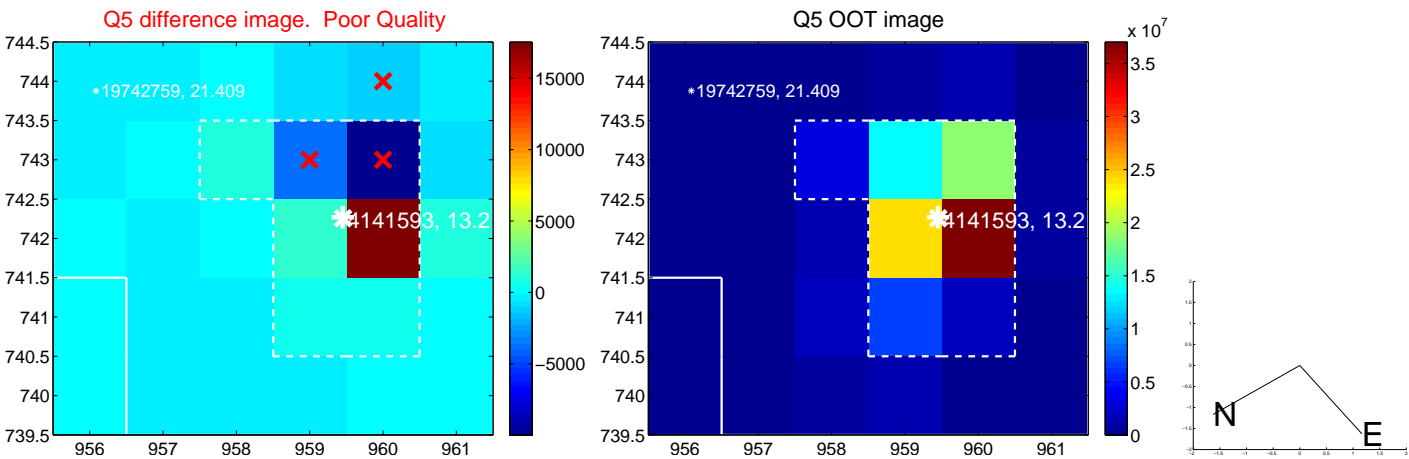


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

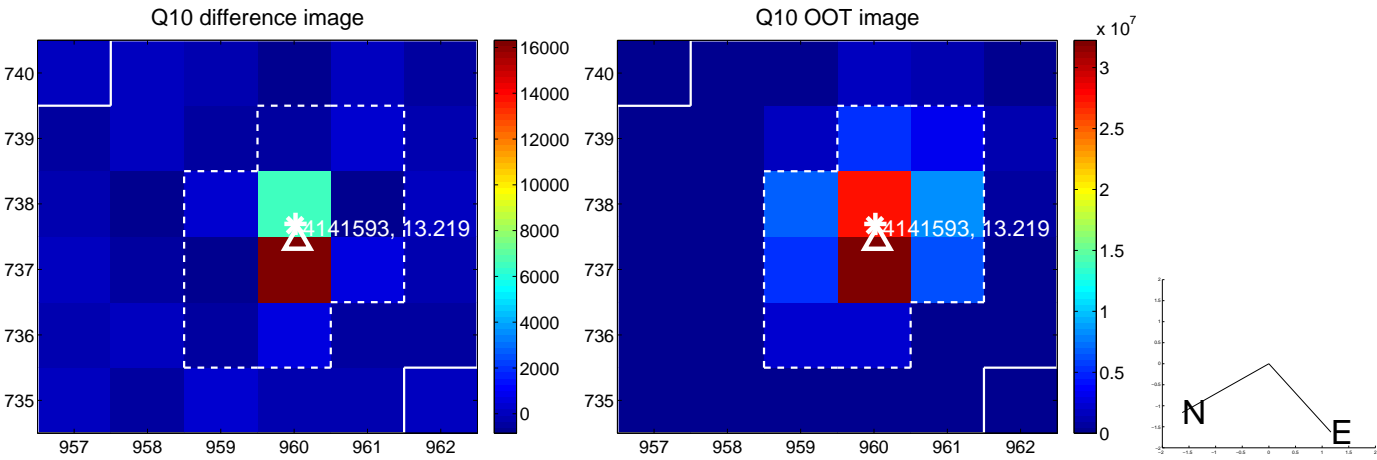
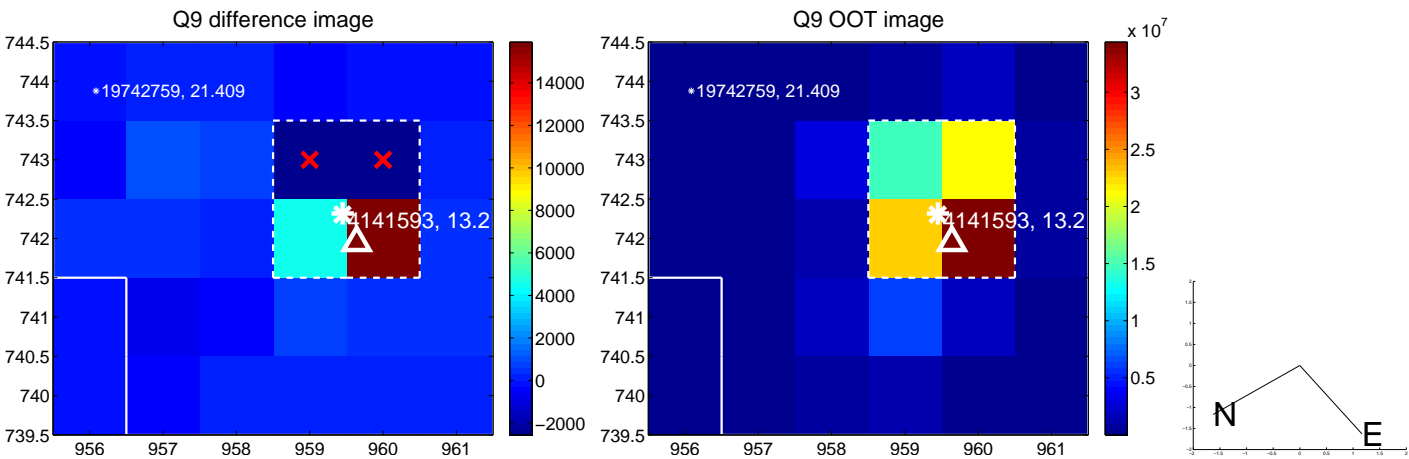
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



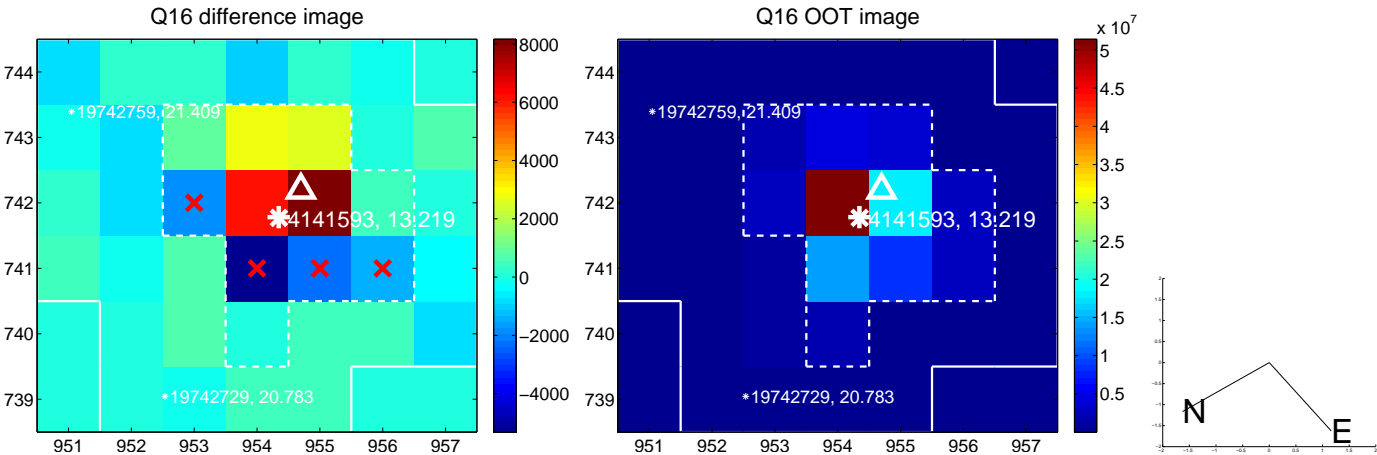
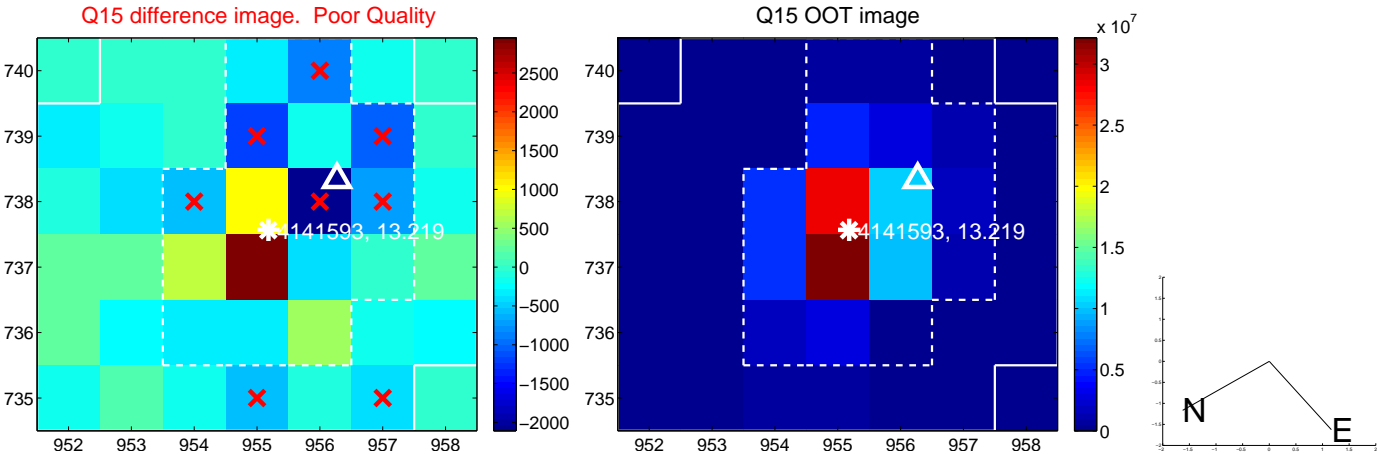
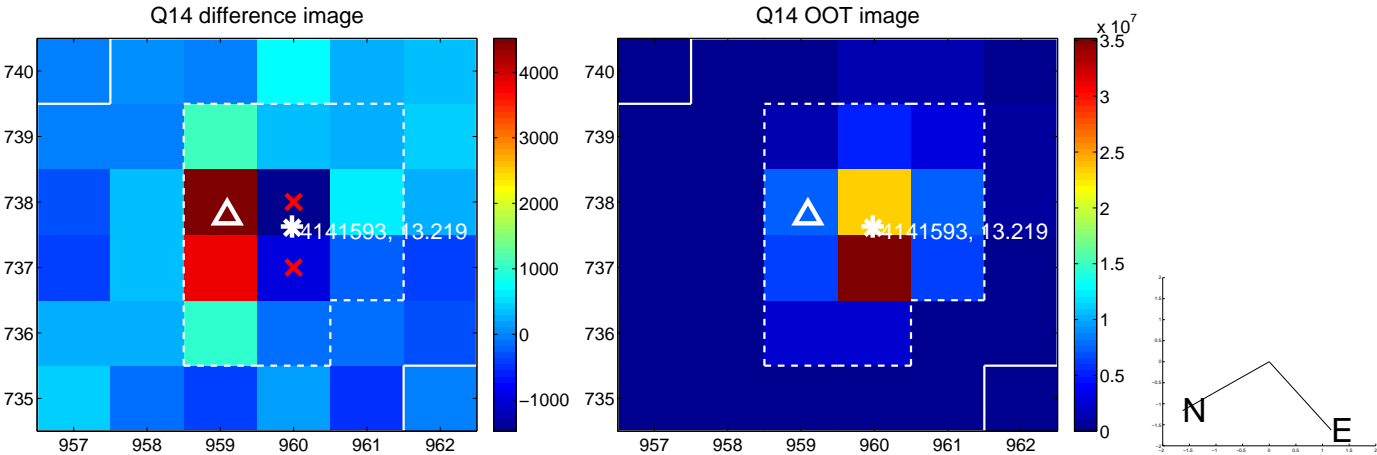
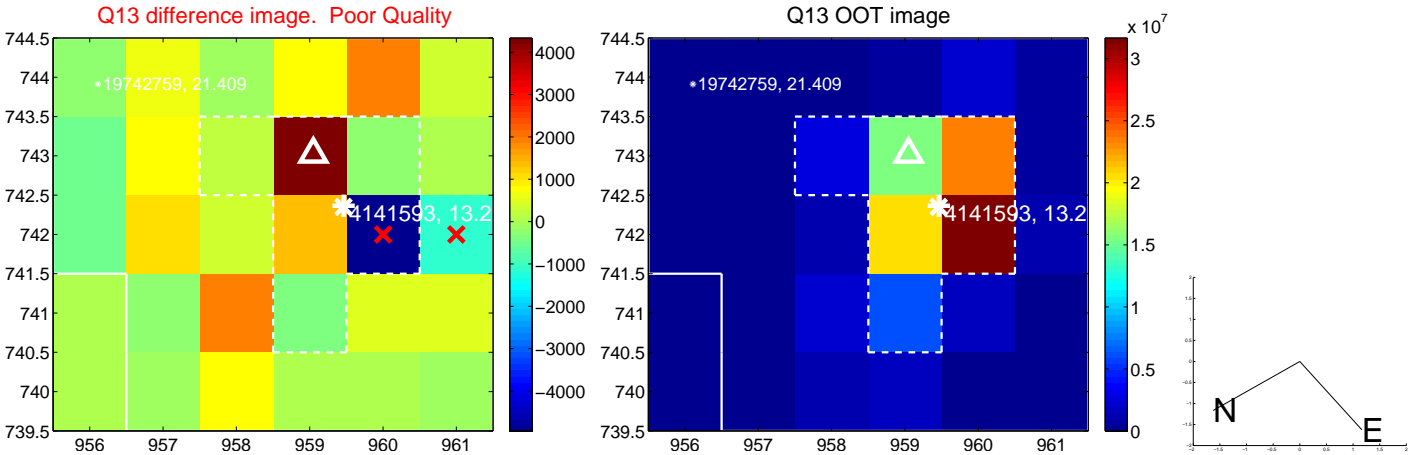
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



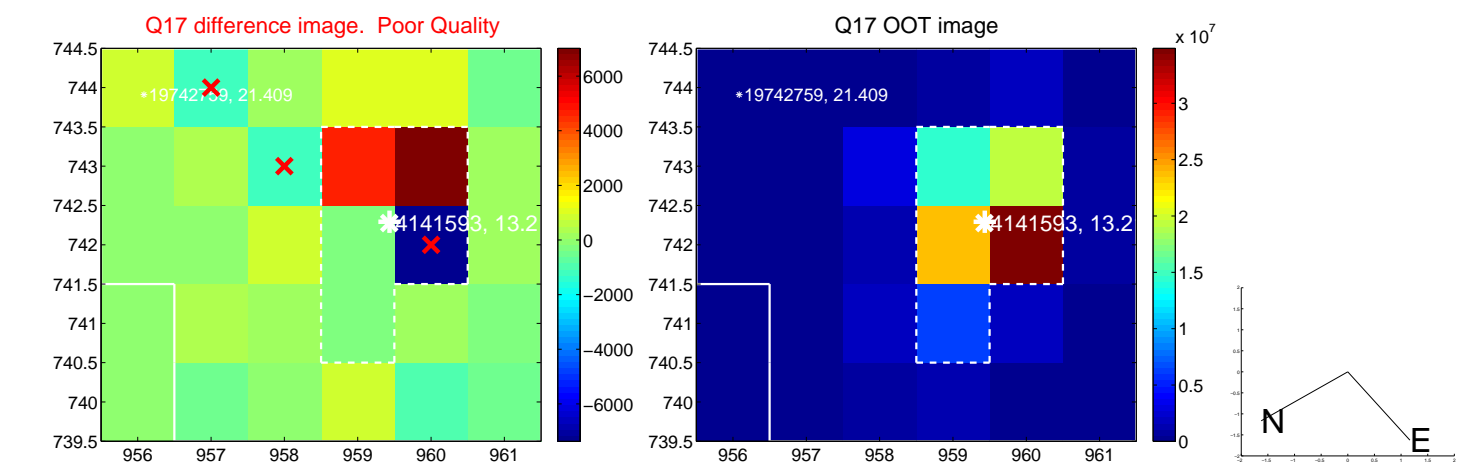
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



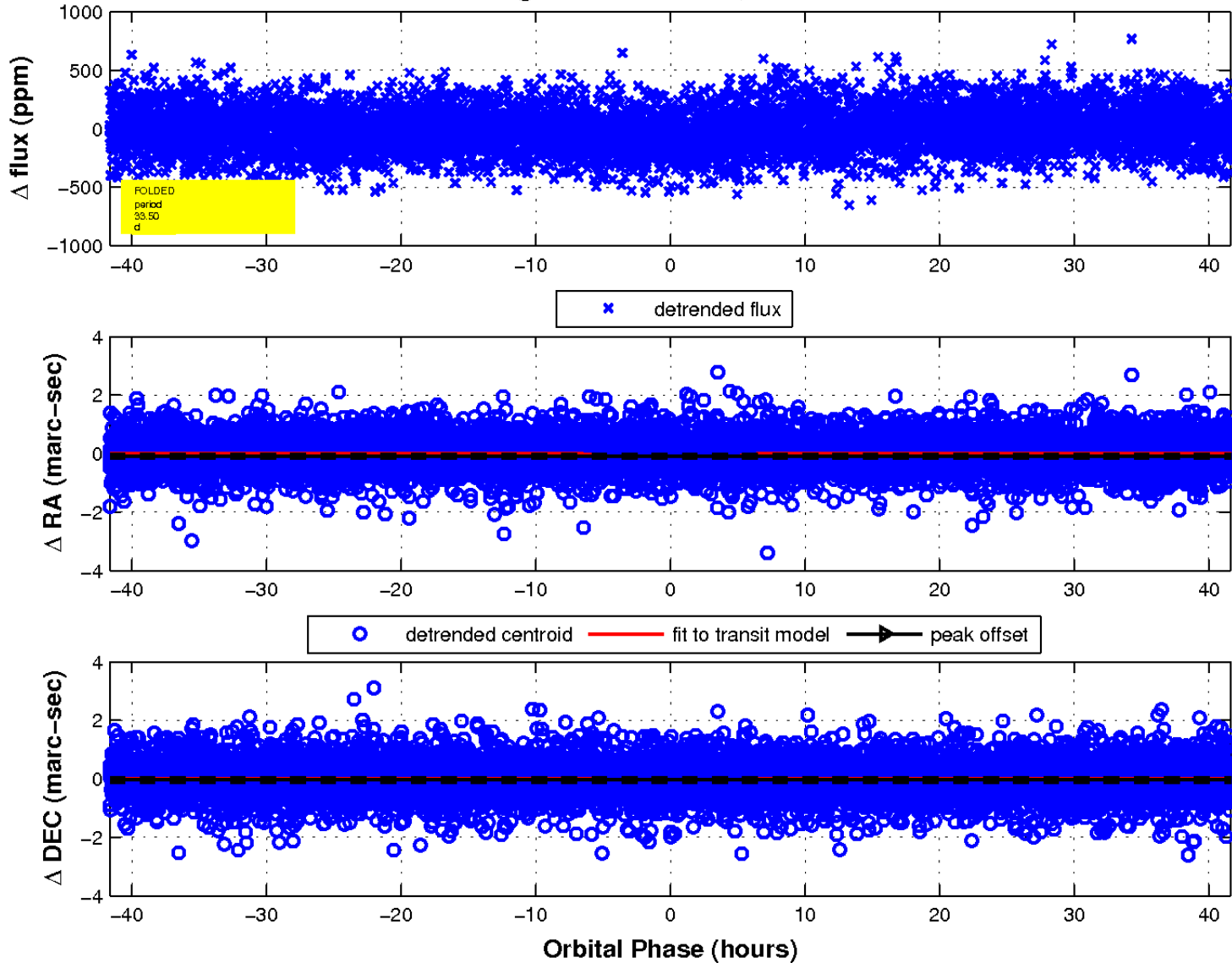
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

