

KIC 004481426

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})
004481426-01	OBS	No	1.897143	132.298828	28.0	6.596	9.1	8.5	3.18	9046	1.94	36604.85
004481426-02	OBS	No	1.897450	133.106510	13.0	13.104	7.7	5.3	3.18	9046	1.23	36596.96

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004481426-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
004481426-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD

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

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

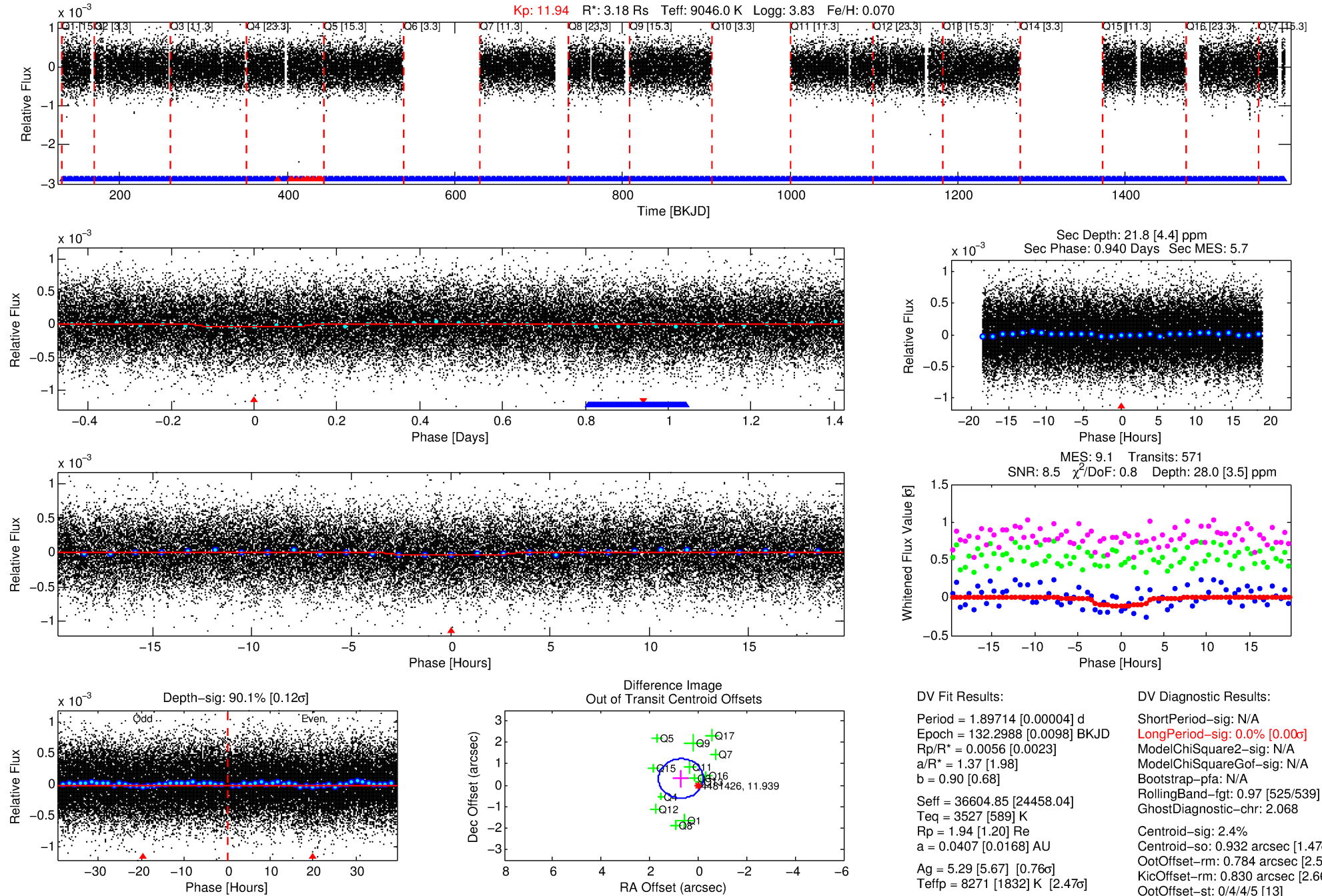
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004481426-01

No Significant Match Found

DV One-Page Summary

KIC: 4481426 Candidate: 1 of 2 Period: 1.897 d



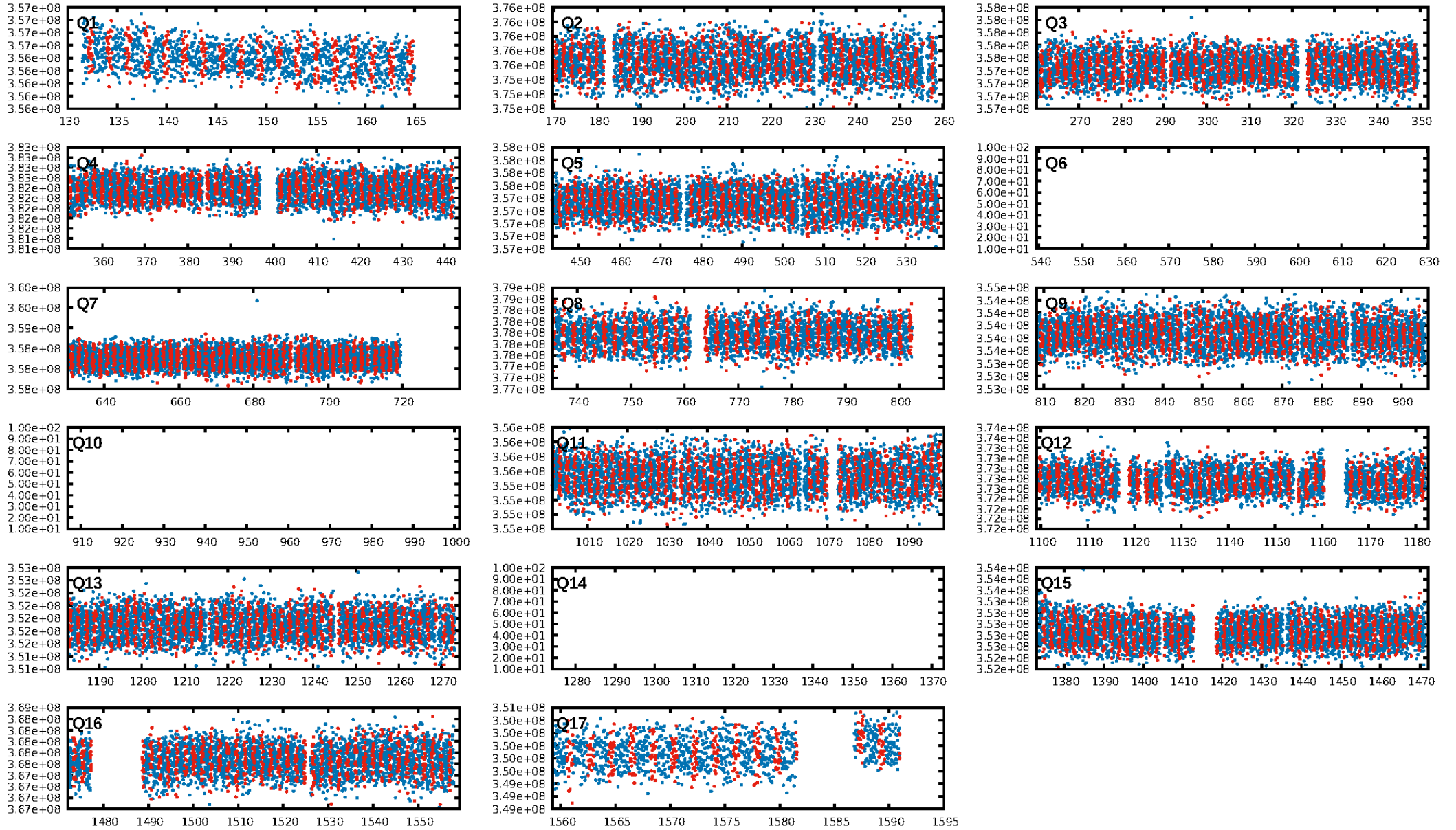
DV Fit Results:

Period = 1.89714 [0.00004] d
Epoch = 132.2988 [0.0098] BKJD
Rp/R* = 0.0056 [0.0023]
a/R* = 1.37 [1.98]
b = 0.90 [0.68]
Seff = 36604.85 [24458.04]
Teff = 3527 [589] K
Rp = 1.94 [1.20] Re
a = 0.0407 [0.0168] AU
Ag = 5.29 [5.67] [0.76σ]
Teffp = 8271 [1832] K [2.47σ]

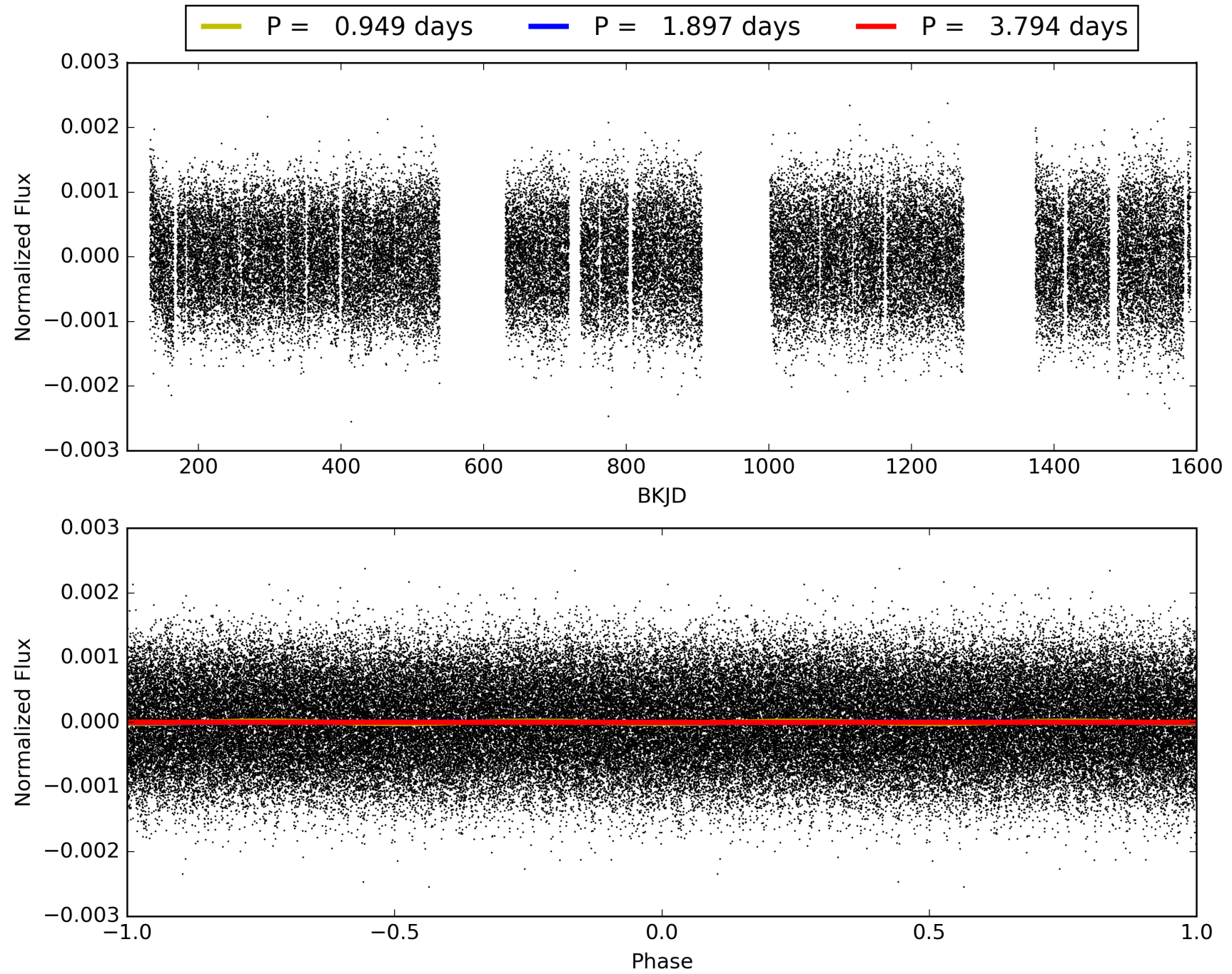
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.97 [525/539]
GhostDiagnostic-chr: 2.068
Centroid-sig: 2.4%
Centroid-so: 0.932 arcsec [1.47σ]
OotOffset-rm: 0.784 arcsec [2.55σ]
KicOffset-rm: 0.830 arcsec [2.66σ]
OotOffset-st: 0/4/4/5 [13]
KicOffset-st: 0/4/4/5 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 004481426-01, PDC Light Curves

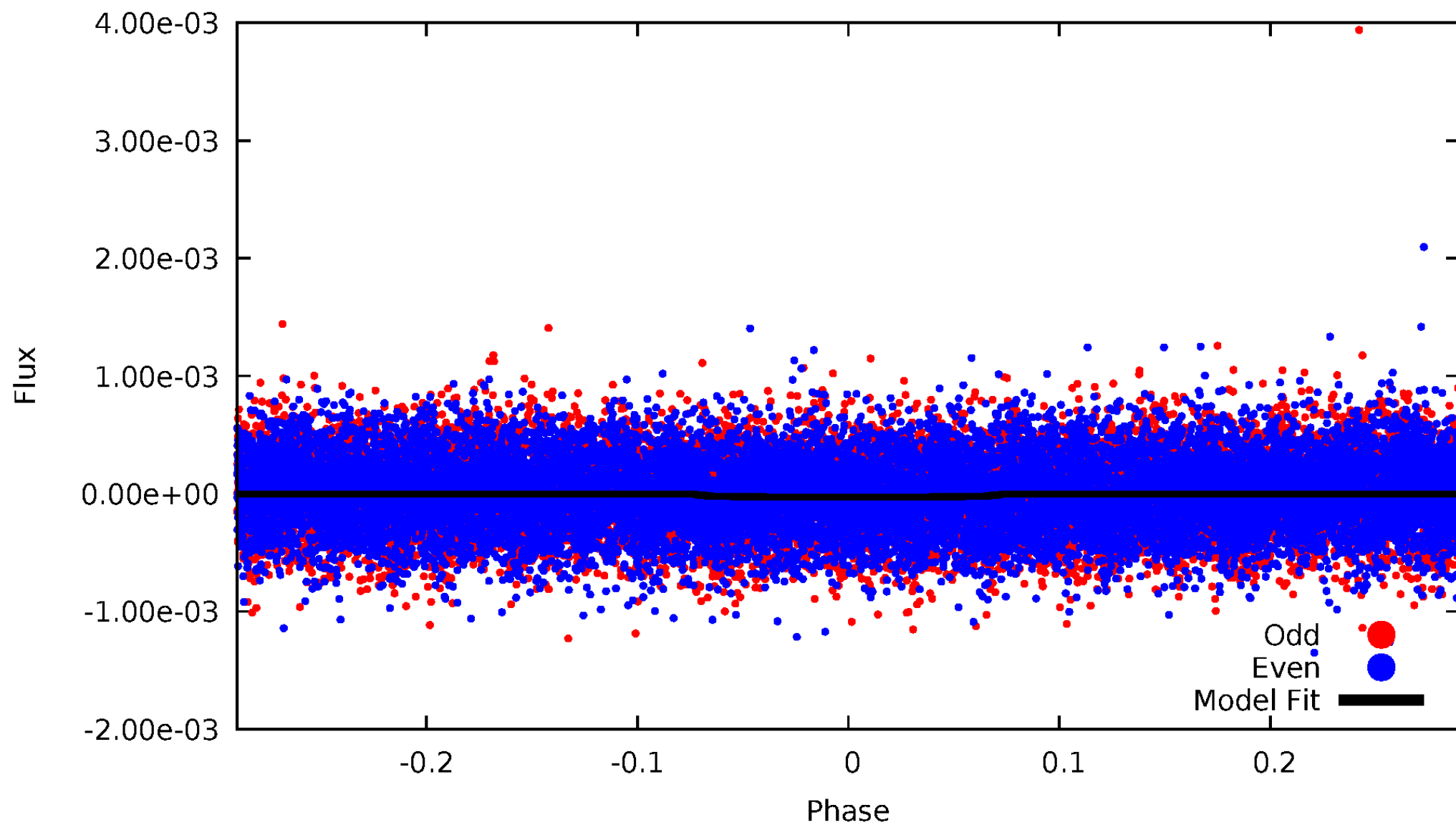


TCE 004481426-01



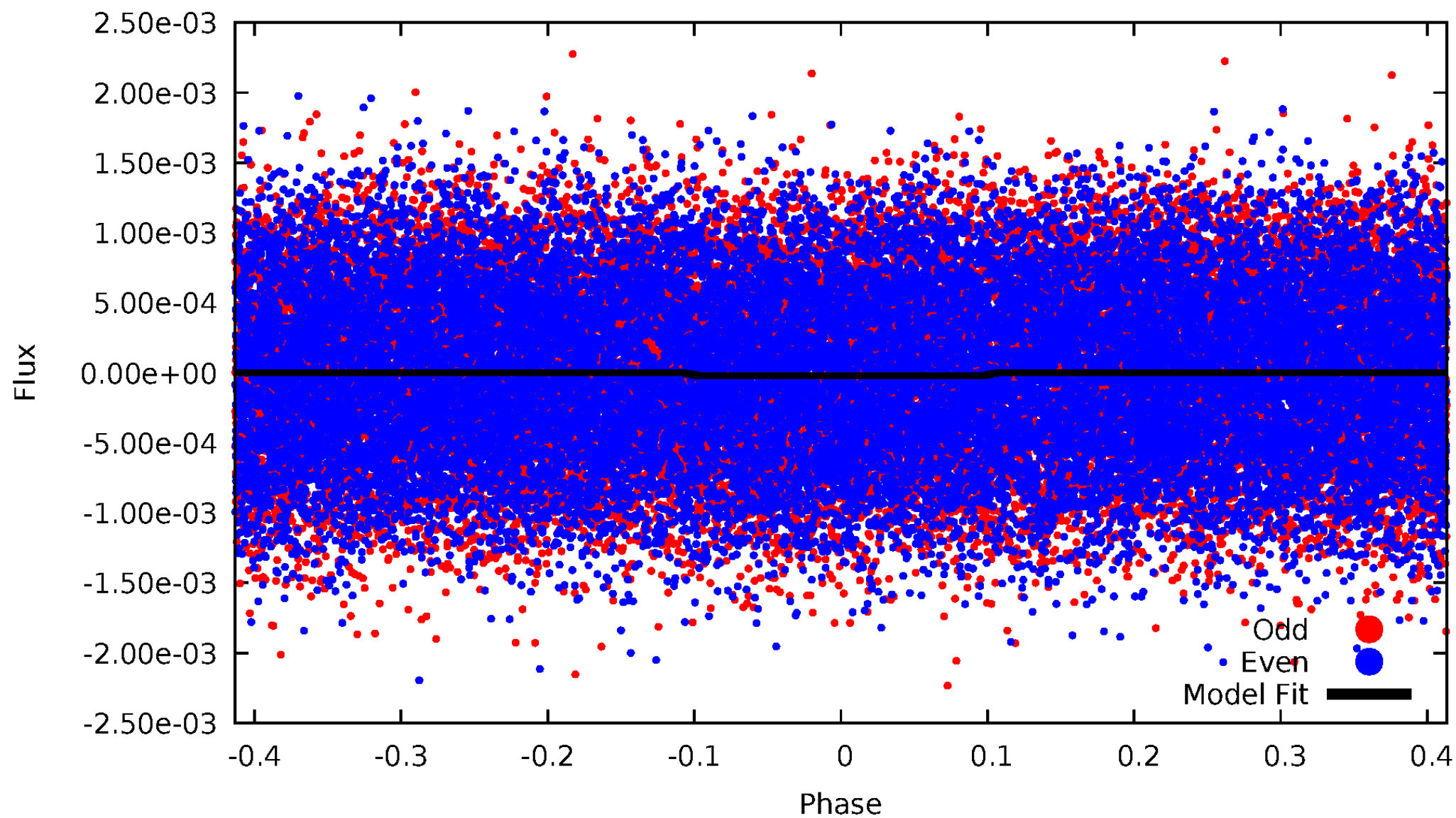
DV Odd/Even

TCE 004481426-01

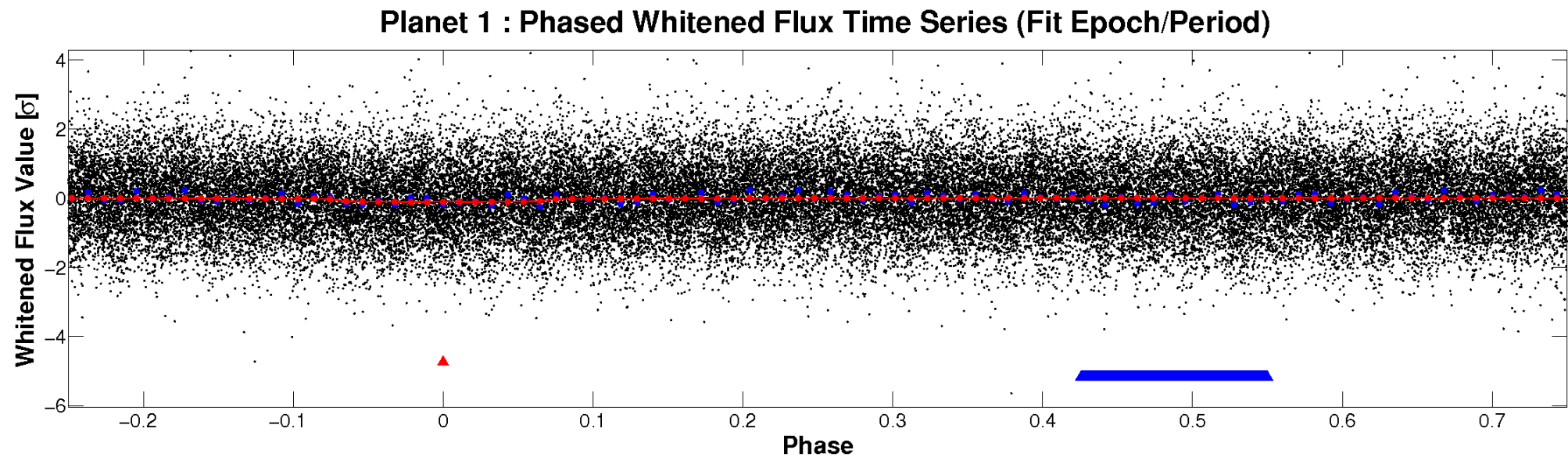
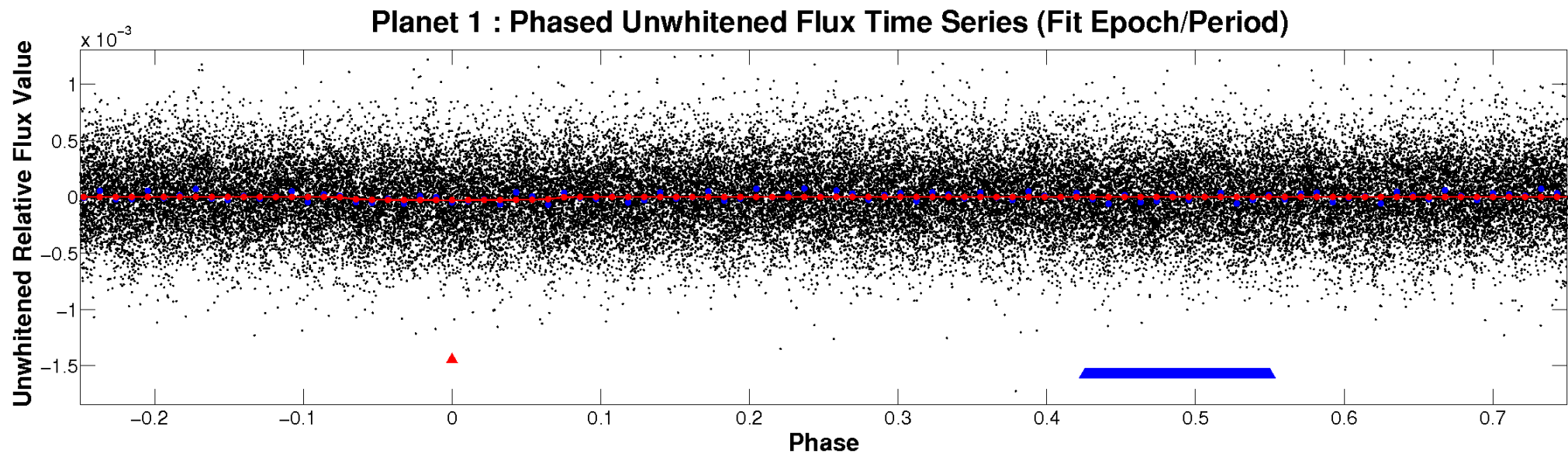


ALT Odd/Even

TCE 004481426-01

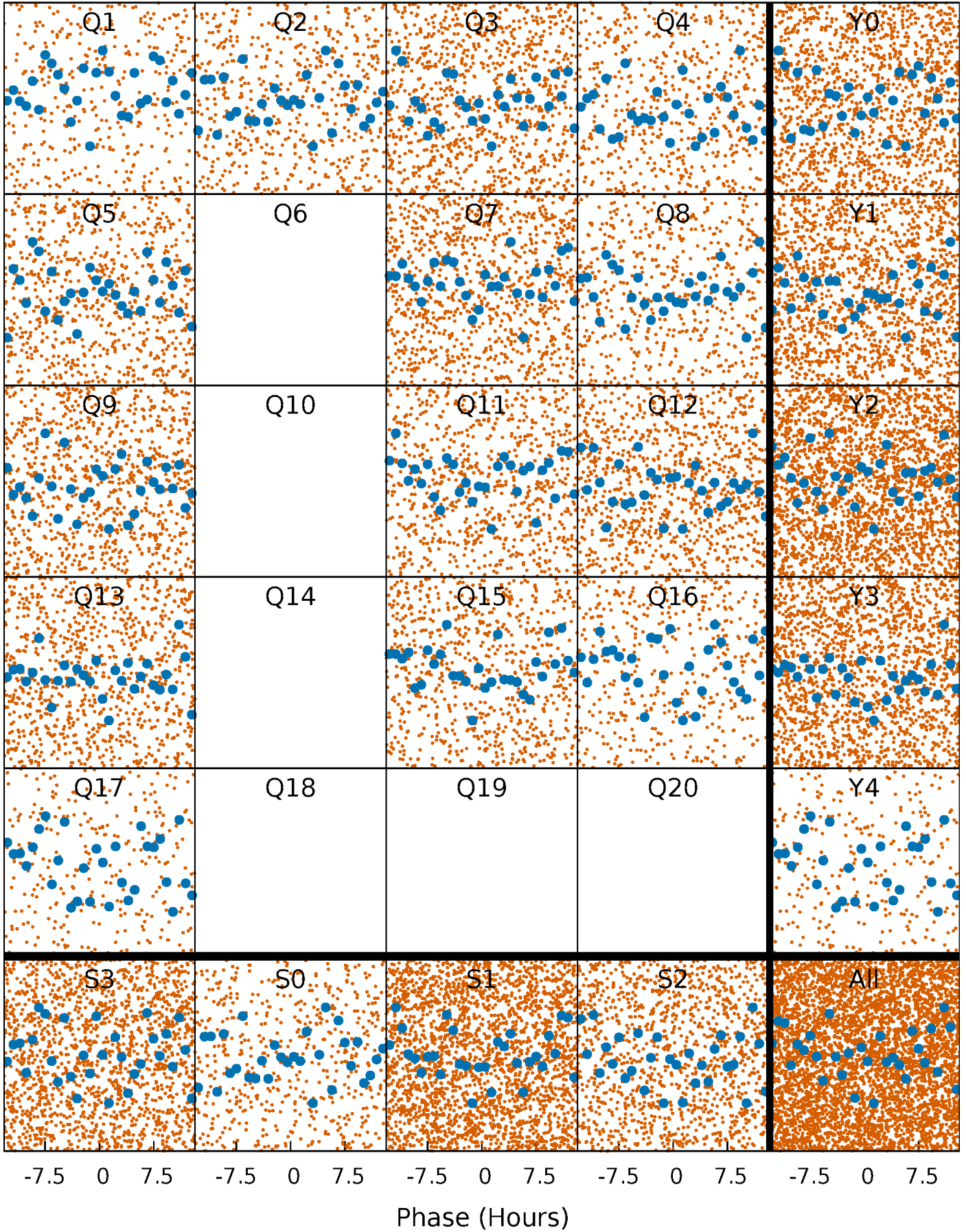


Non-Whitened Vs. Whitened Light Curve



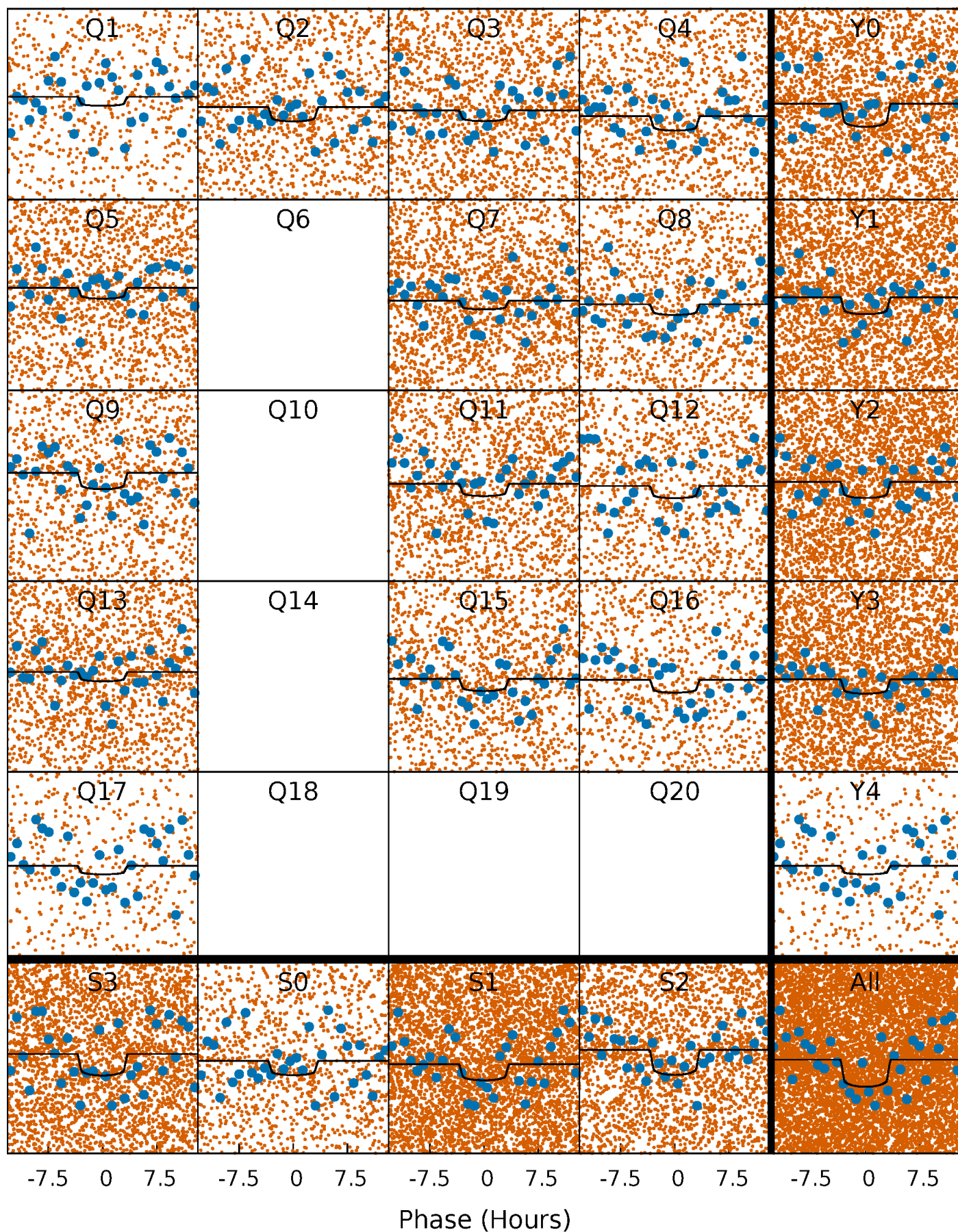
PDC Quarter-Phased Transit Curves

TCE 004481426-01 P= 1.897143 Days $T_0=132.298828$ (BKJD)



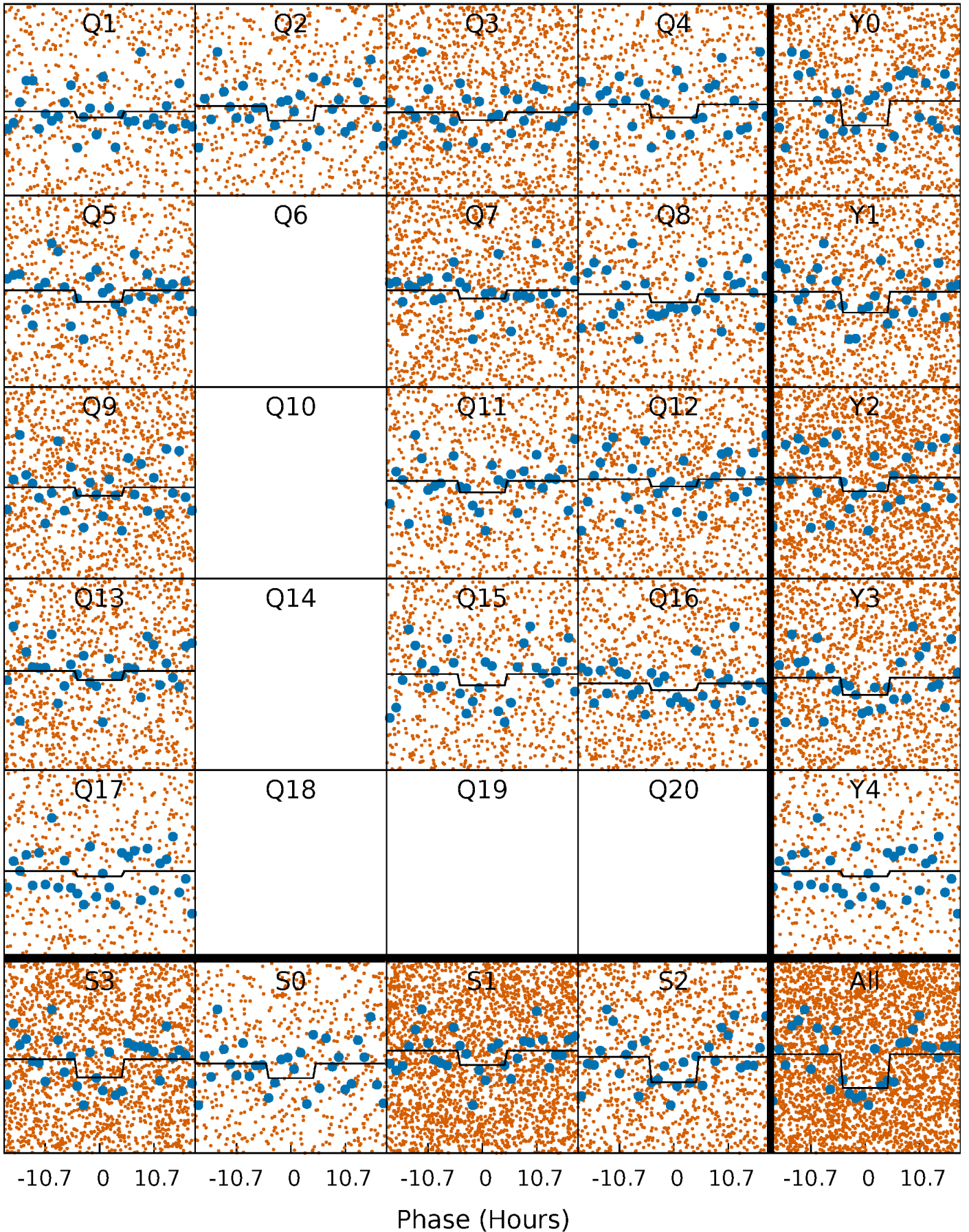
DV Quarter-Phased Transit Curves

TCE 004481426-01 P= 1.897143 Days $T_0=132.298828$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

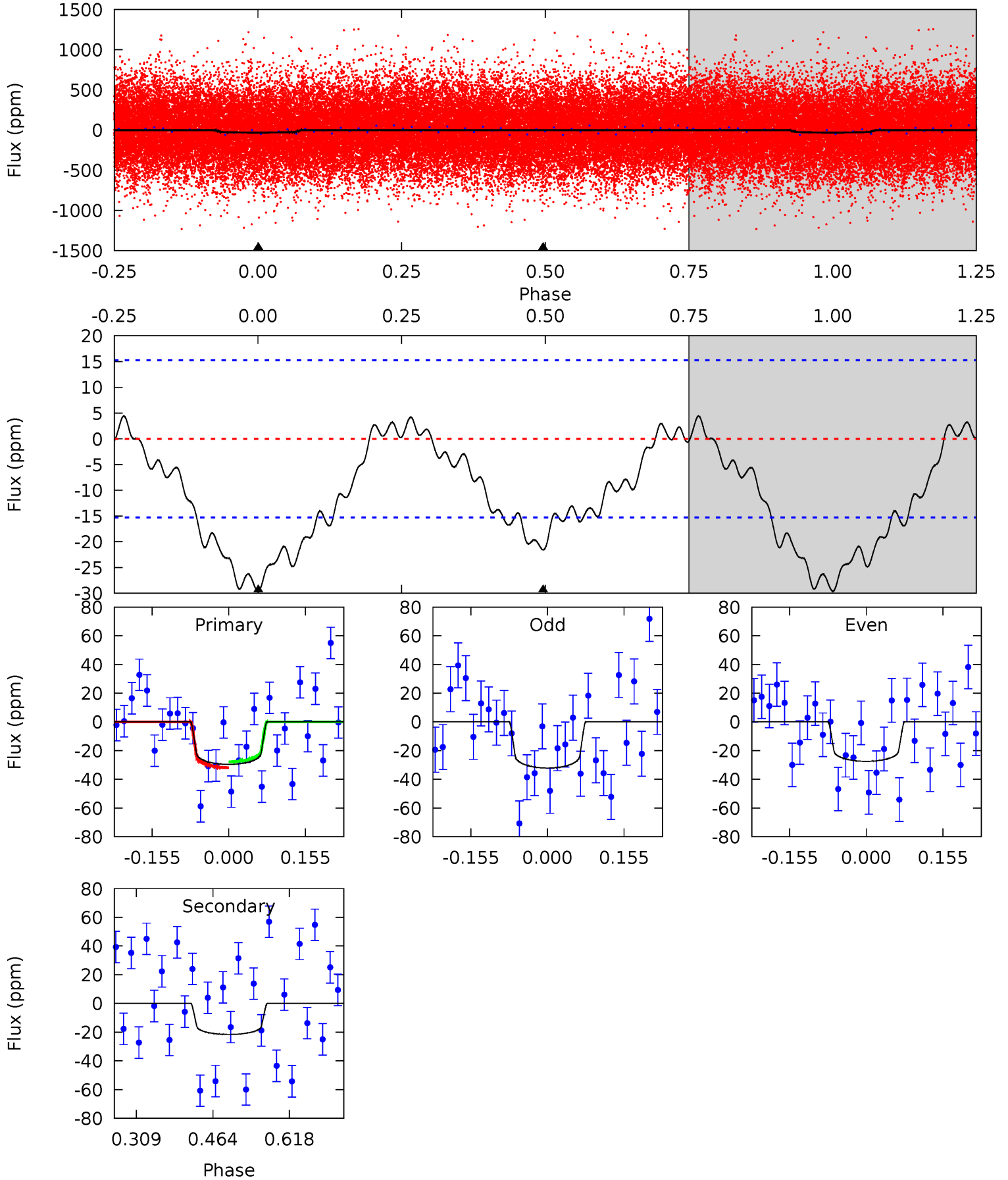
TCE 004481426-01 P= 1.897232 Days $T_0=132.290461$ (BKJD)



DV Model-Shift Uniqueness Test

004481426-01, P = 1.897143 Days, E = 130.401685 Days

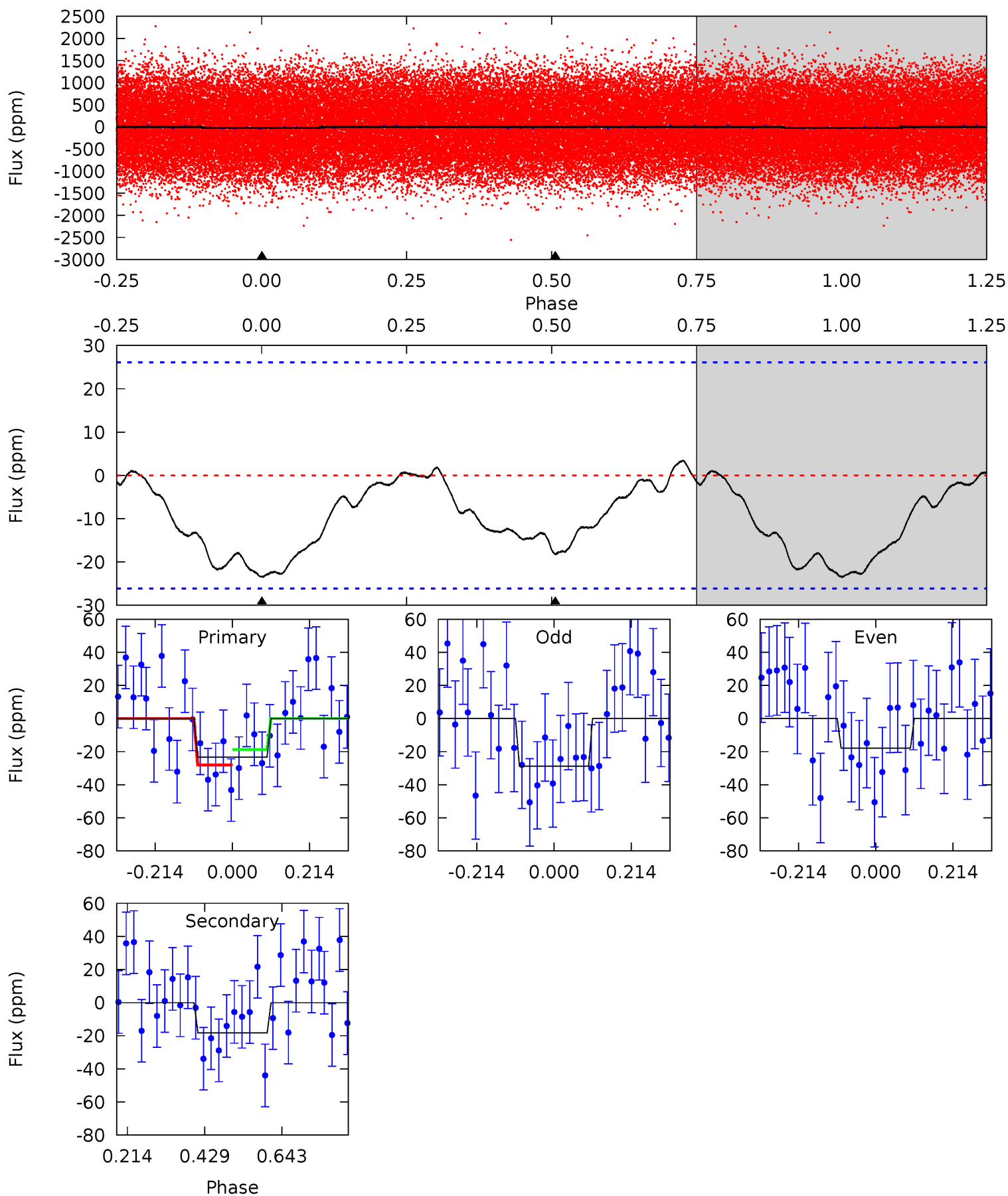
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.69	6.33	0	0	4.47	1.42	1.08	8.69	8.69	6.33	6.33	0.69	1.00	0.13	0.61



Alt Model-Shift Uniqueness Test

004481426-01, P = 1.897232 Days, E = 130.393229 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.95	3.07	0	0	4.40	1.24	0.23	3.95	3.95	3.07	3.07	0.91	0.97	0.13	0.78



Stellar Parameters For KIC 004481426

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	9046^{+251}_{-466}	$3.831^{+0.364}_{-0.156}$	$0.070^{+0.200}_{-0.650}$	$3.180^{+0.964}_{-1.445}$	$2.498^{+0.299}_{-0.897}$	$0.109^{+0.349}_{-0.049}$
	+3%/-5%	+10%/-4%	+286%/-929%	+30%/-45%	+12%/-36%	+319%/-45%
Source	KIC0	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 004481426-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-22 ± 3	$1.85^{+0.90}_{-0.84}$	4825^{+416}_{-563}	7646^{+3837}_{-1425}	$5.516^{+11.874}_{-2.975}$
Alt.	-18 ± 6	$1.53^{+0.91}_{-0.74}$	4815^{+447}_{-531}	8044^{+5367}_{-1838}	$6.390^{+18.808}_{-3.864}$

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

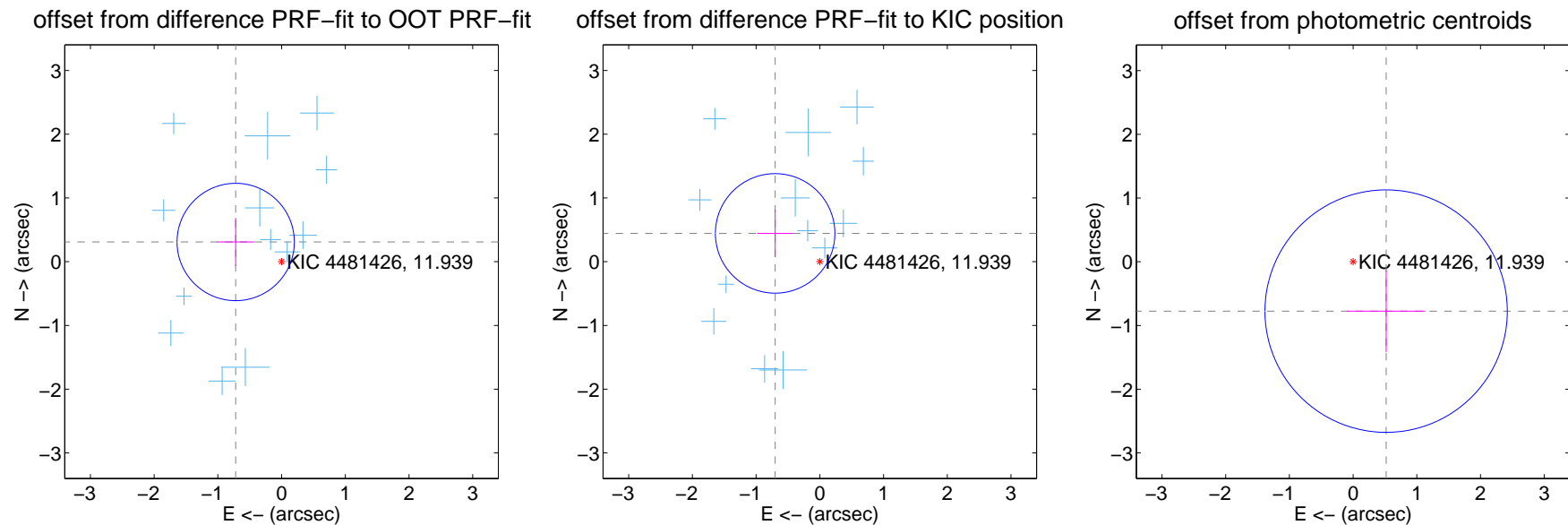
DV Centroid Data

Supplemental centroid analysis for 004481426-01. **Kepler magnitude: 11.94.** Transit SNR 8.46

There are 13 quarters with good PRF difference image offsets

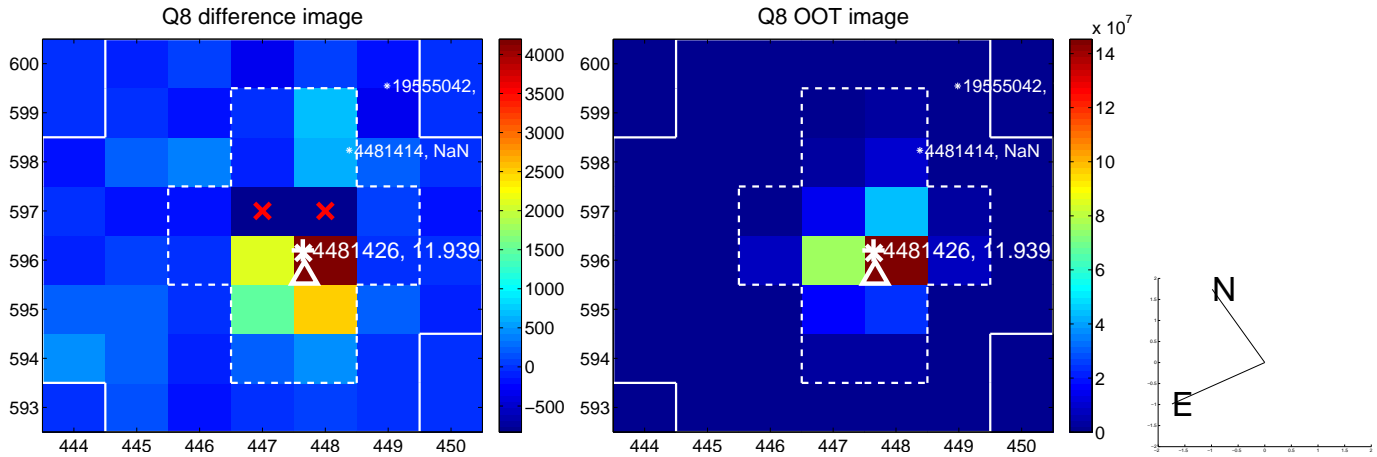
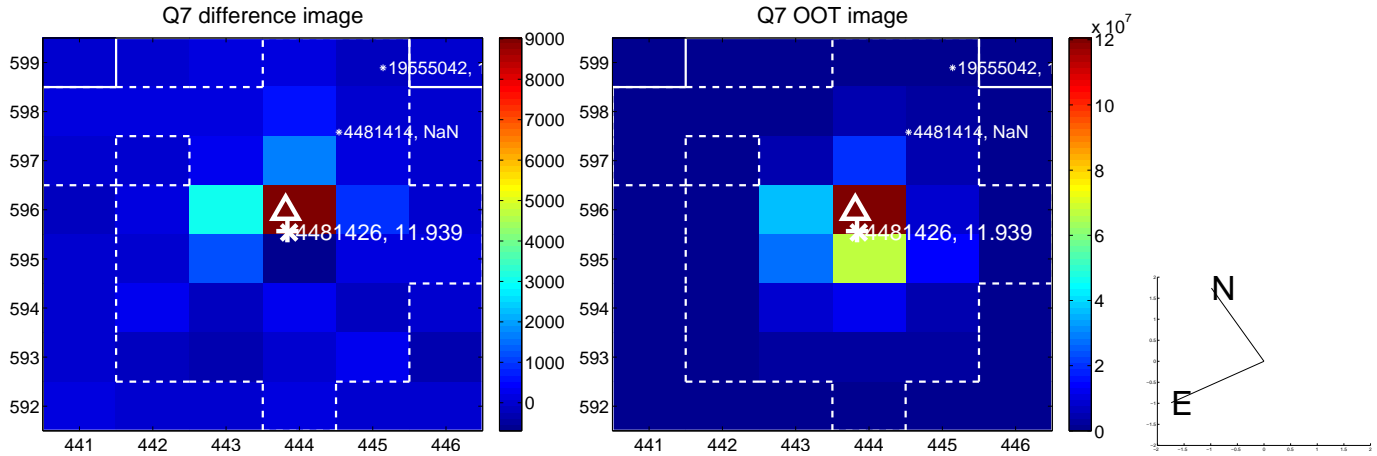
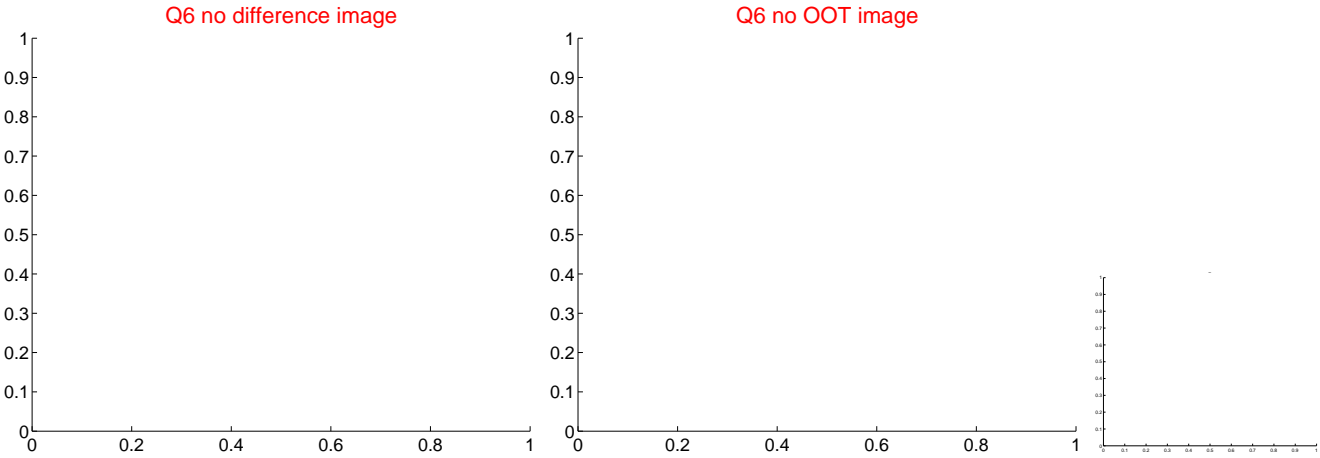
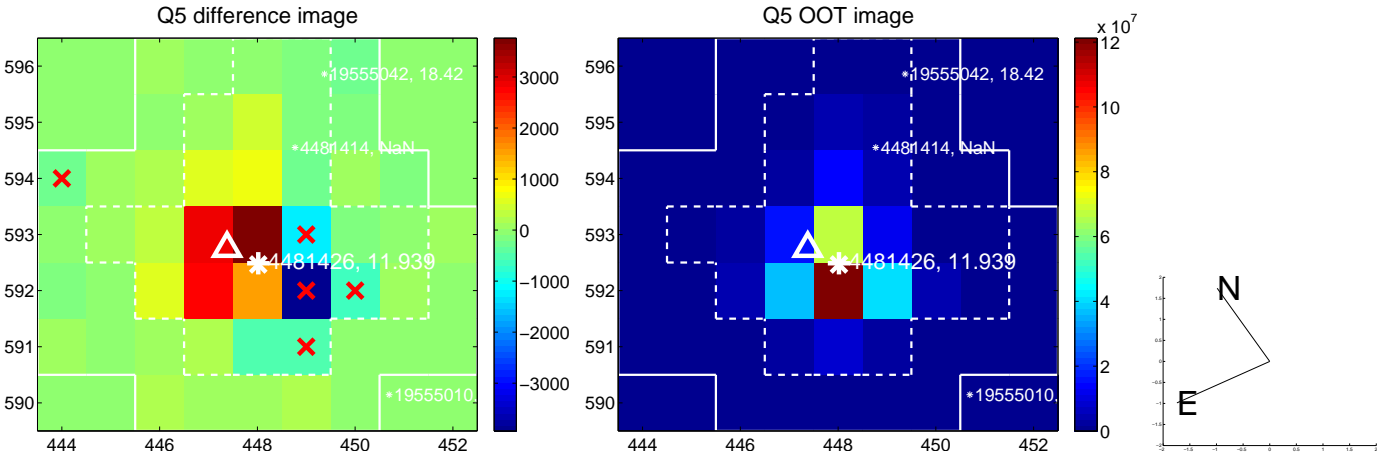
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.784 ± 0.307	2.55	0.720 ± 0.292	0.309 ± 0.378
PRF-fit source offset from KIC position	0.830 ± 0.313	2.66	0.702 ± 0.285	0.444 ± 0.373
photometric centroid source offset	0.93 ± 0.63	1.47	-0.52 ± 0.61	-0.77 ± 0.64

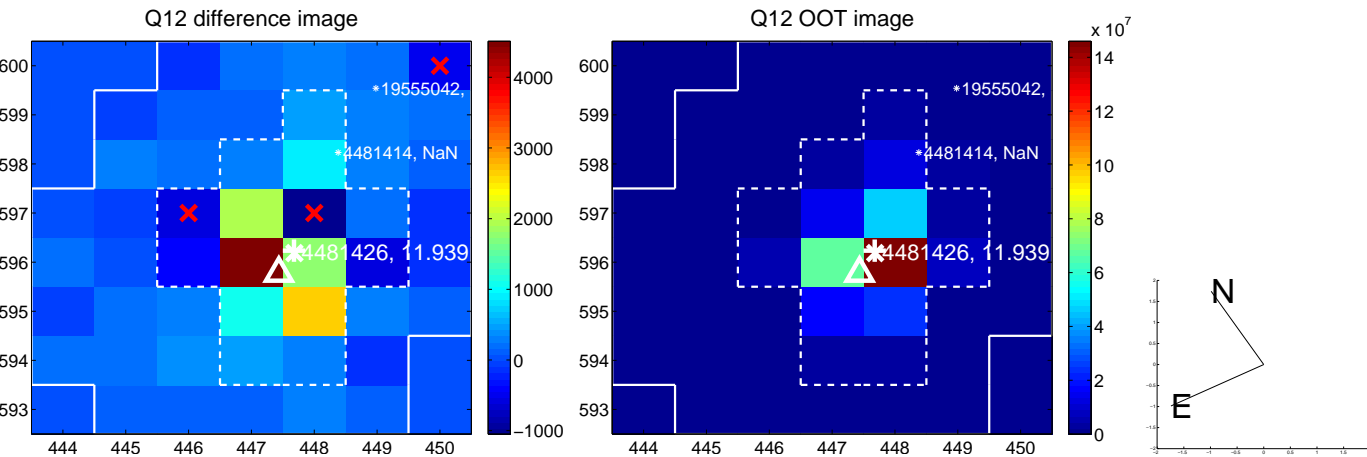
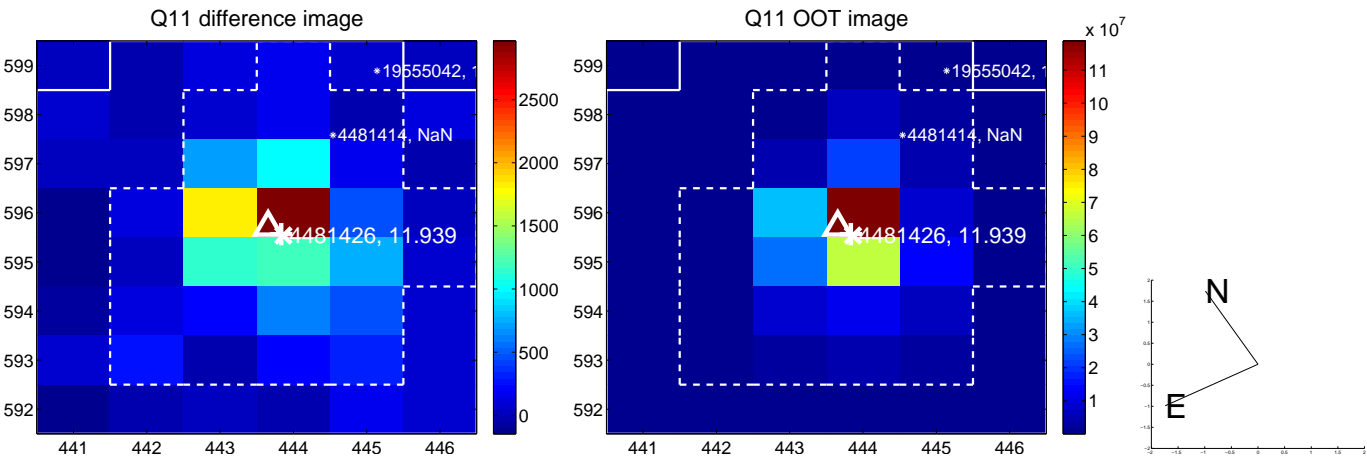
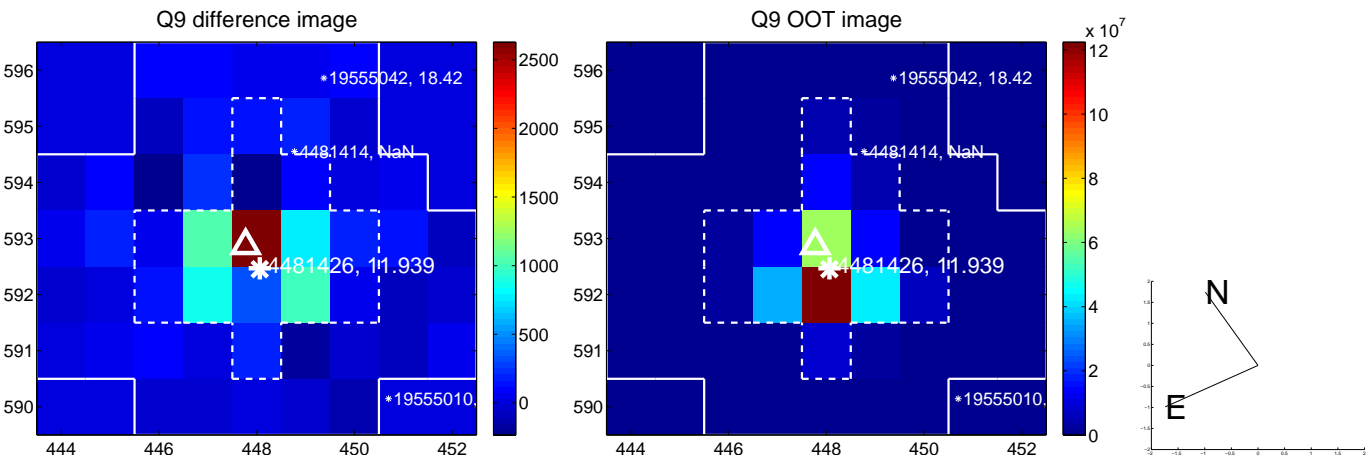


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

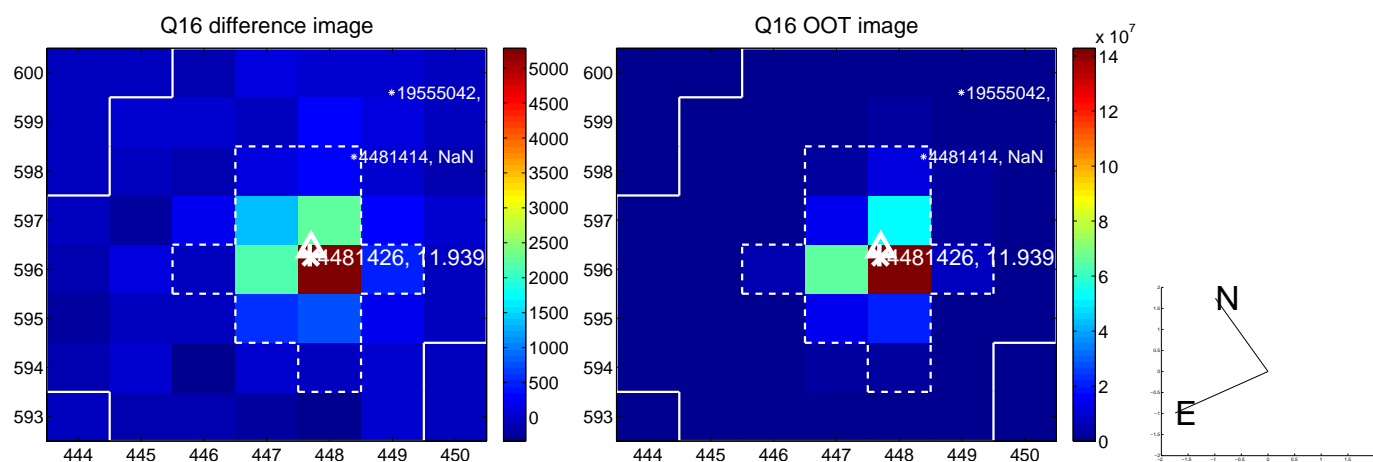
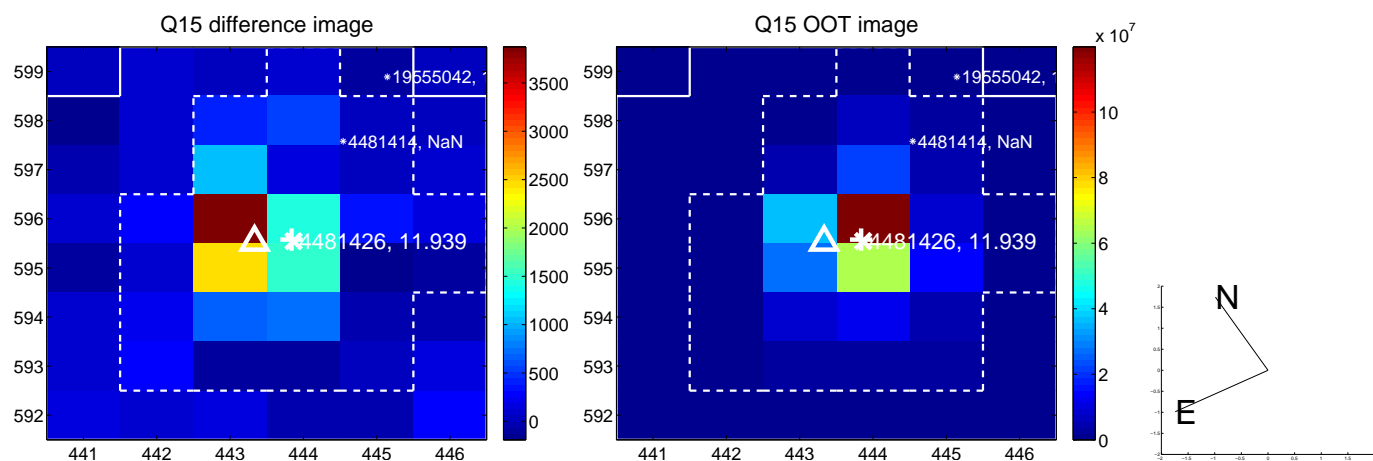
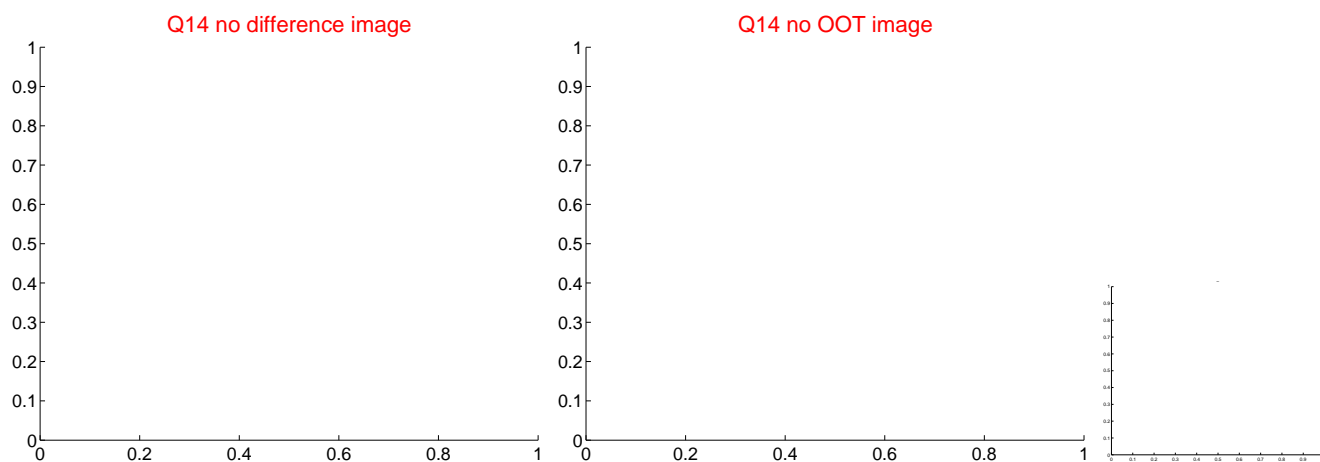
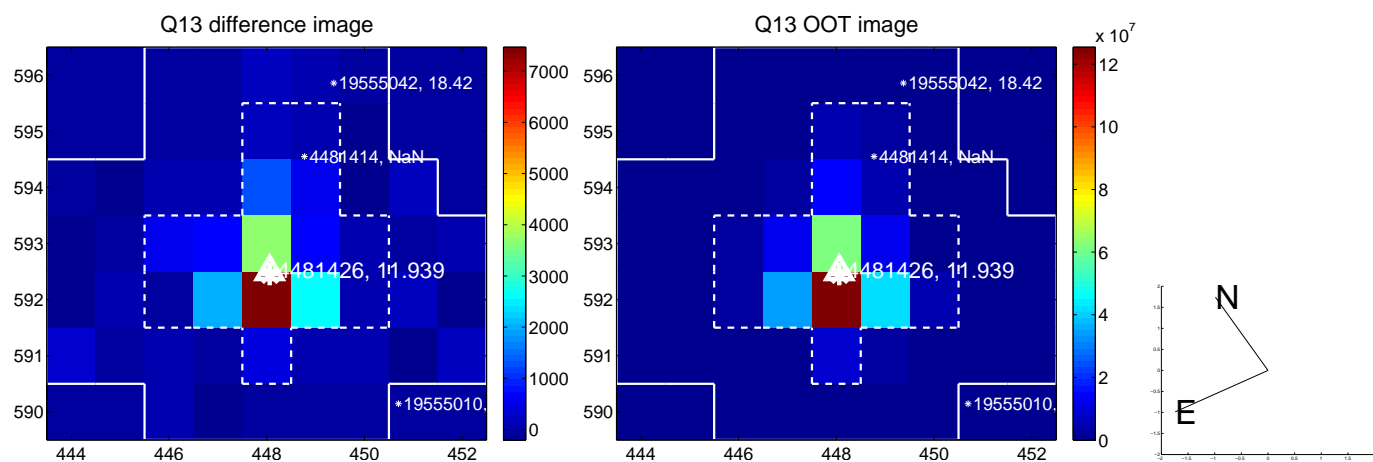
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



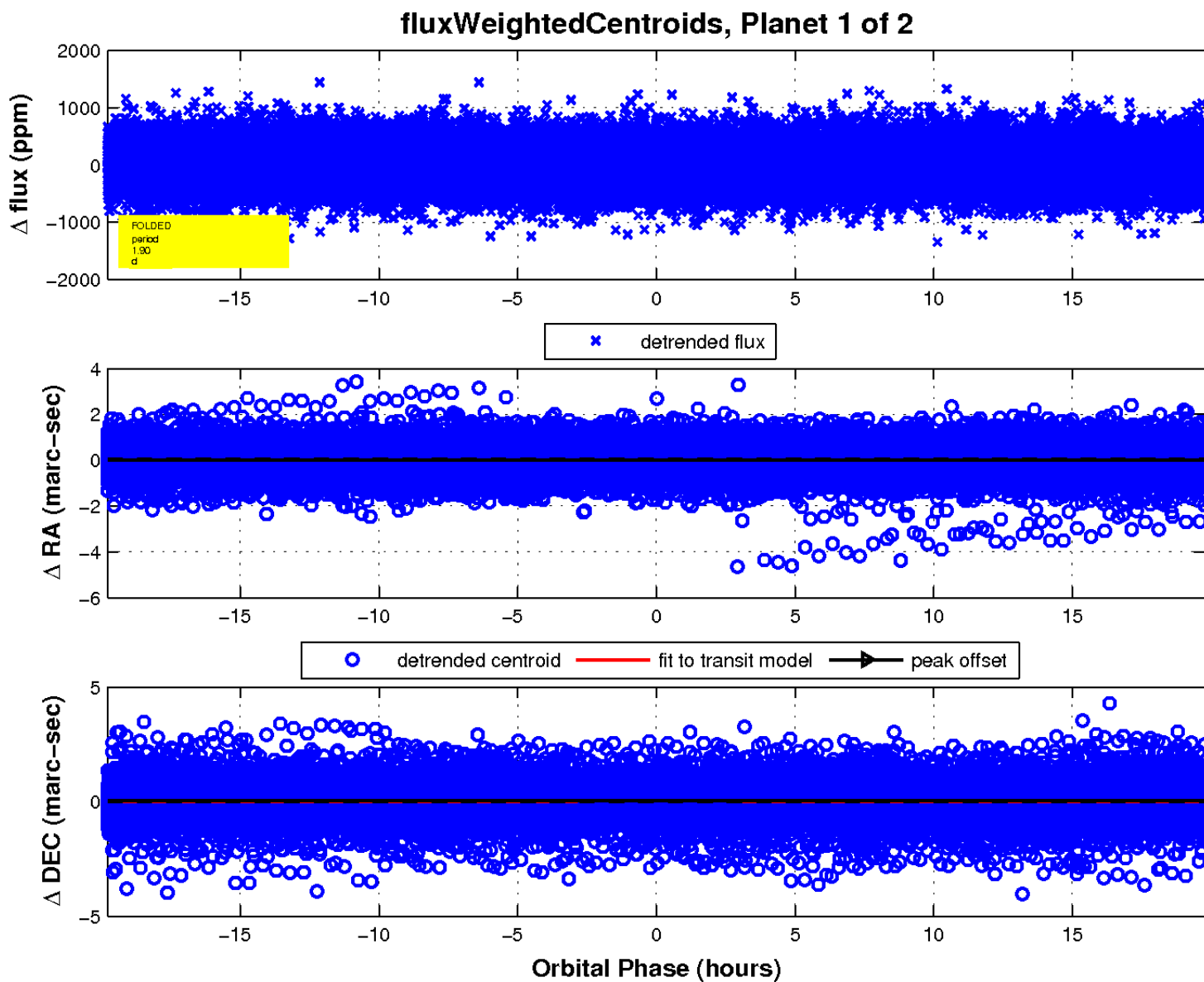
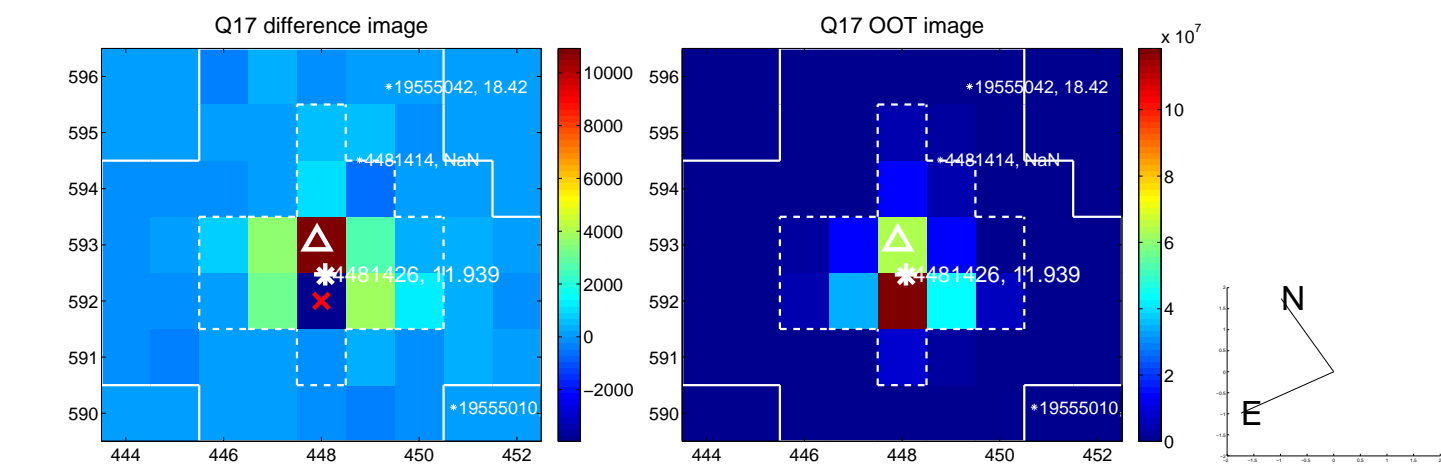
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

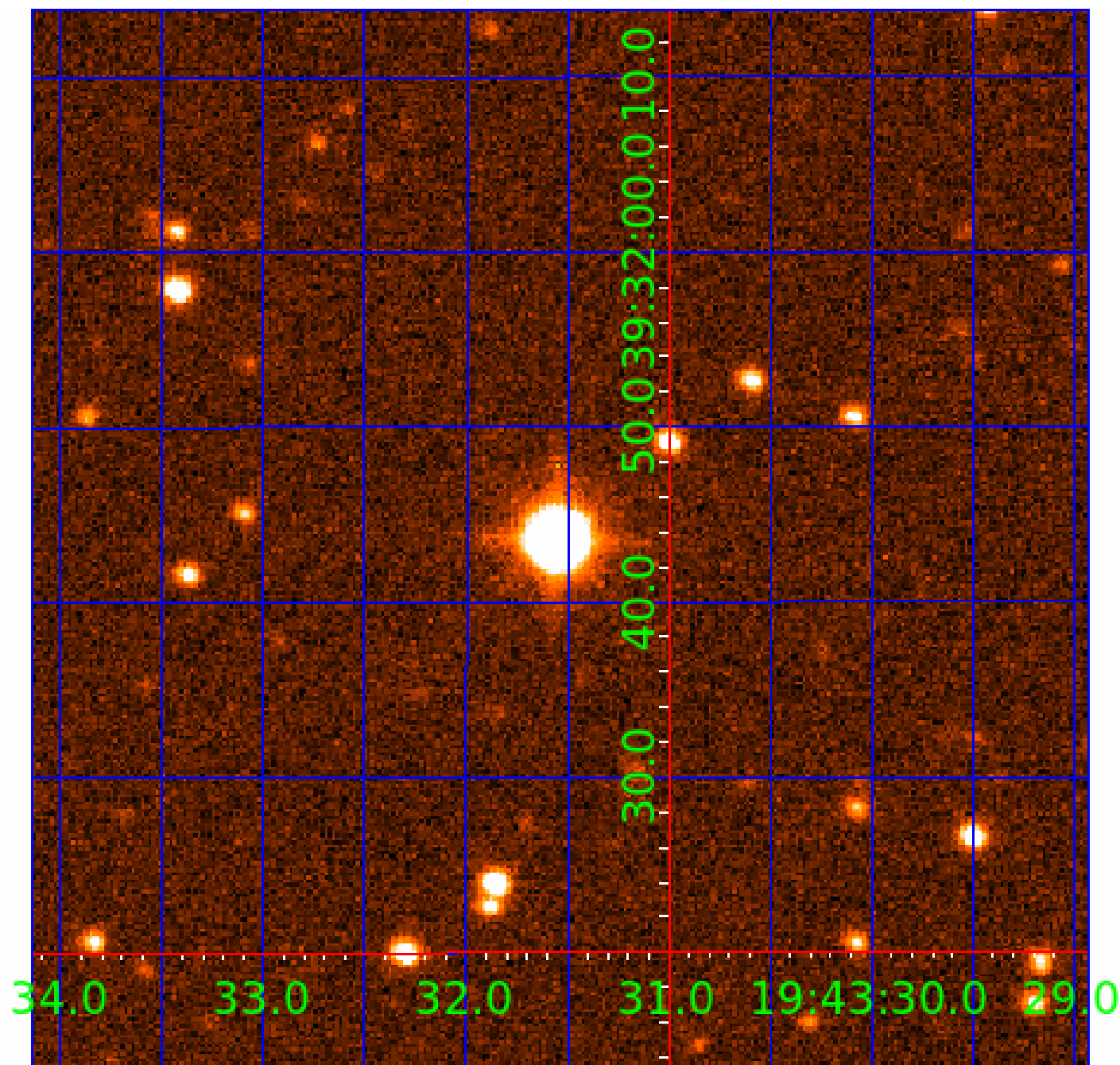


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004481426

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})
004481426-01	OBS	No	1.897143	132.298828	28.0	6.596	9.1	8.5	3.18	9046	1.94	36604.85
004481426-02	OBS	No	1.897450	133.106510	13.0	13.104	7.7	5.3	3.18	9046	1.23	36596.96

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004481426-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
004481426-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—SAME_NTL_PERIOD

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

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

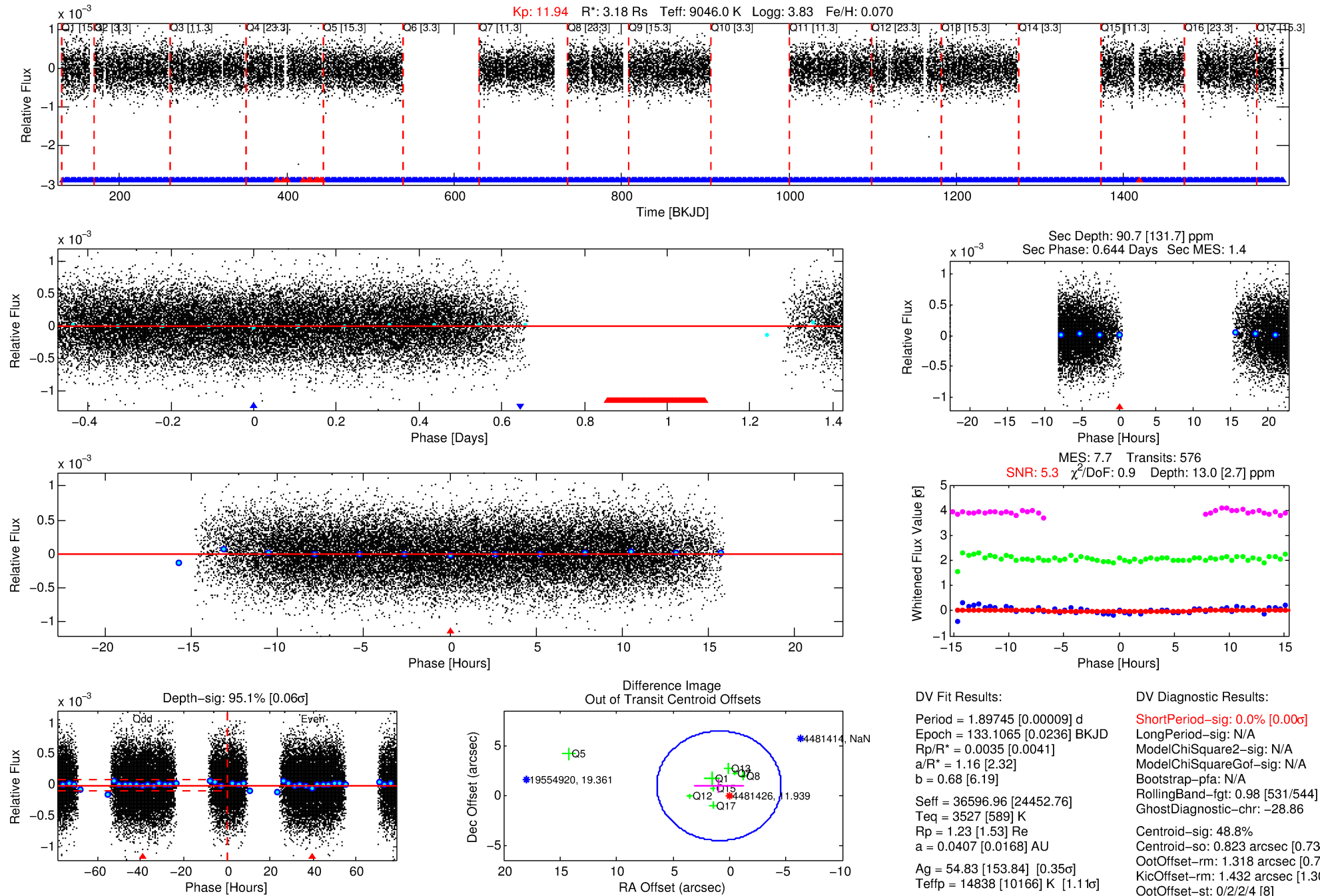
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004481426-02

No Significant Match Found

DV One-Page Summary

KIC: 4481426 Candidate: 2 of 2 Period: 1.897 d



DV Fit Results:

Period = 1.89745 [0.00009] d
Epoch = 133.1065 [0.0236] BKJD
Rp/R* = 0.0035 [0.0041]
a/R* = 1.16 [2.32]
b = 0.68 [6.19]
Seff = 36596.96 [24452.76]
Teq = 3527 [589] K
Rp = 1.23 [1.53] Re
a = 0.0407 [0.0168] AU
Ag = 54.83 [153.84] [0.35 σ]
Teffp = 14838 [10166] K [1.1 σ]

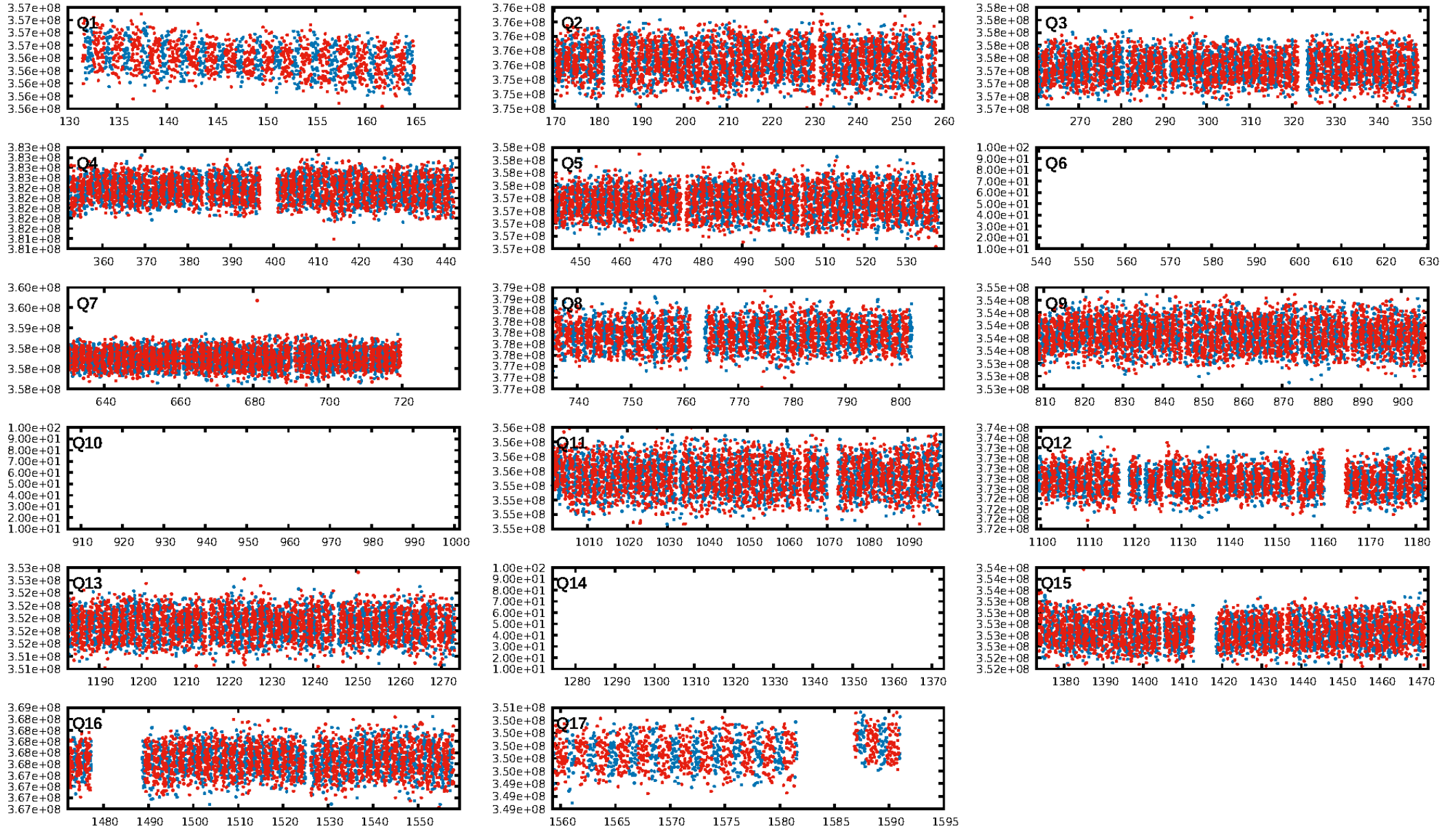
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.98 [531/544]
GhostDiagnostic-chr: -28.86
Centroid-sig: 48.8%
Centroid-so: 0.823 arcsec [0.73 σ]
OotOffset-rm: 1.318 arcsec [0.72 σ]
KicOffset-rm: 1.432 arcsec [1.30 σ]
OotOffset-st: 0/2/2/4 [8]
KicOffset-st: 0/2/2/4 [8]
DiffImageQuality-fgm: 0.62 [5/8]
DiffImageOverlap-fno: 0.00 [0/14]

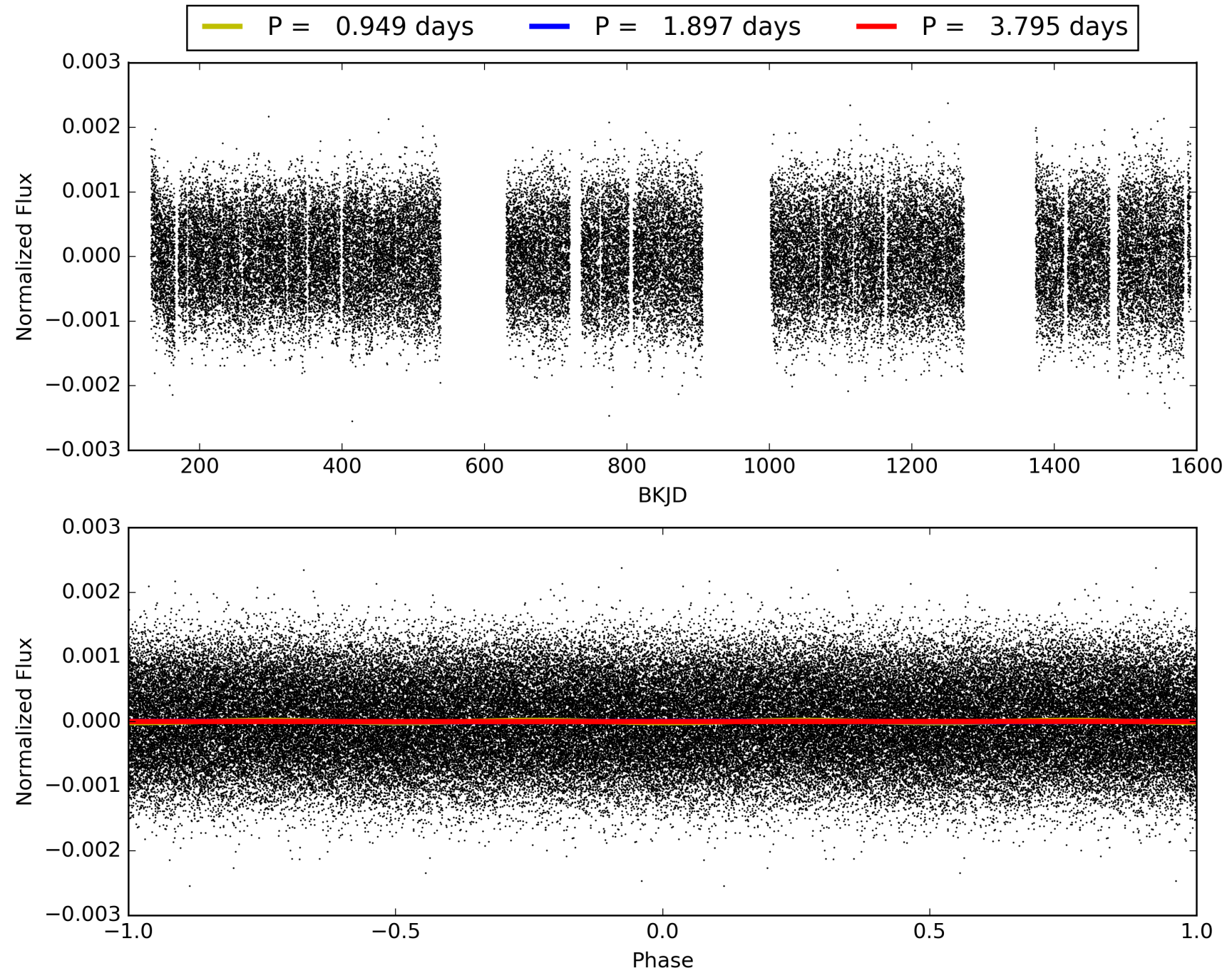
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 01:20:53 Z

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

TCE 004481426-02, PDC Light Curves

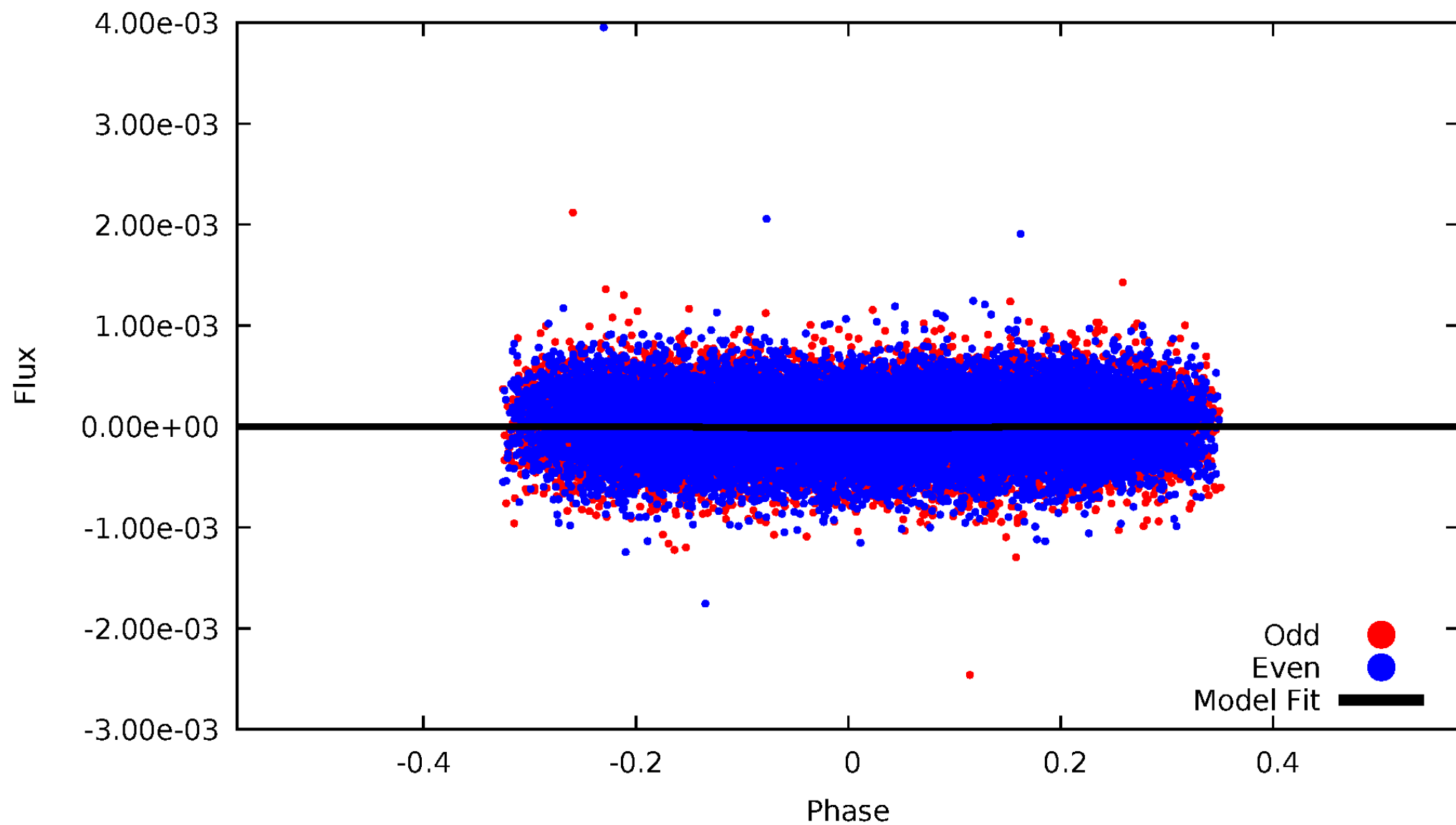


TCE 004481426-02



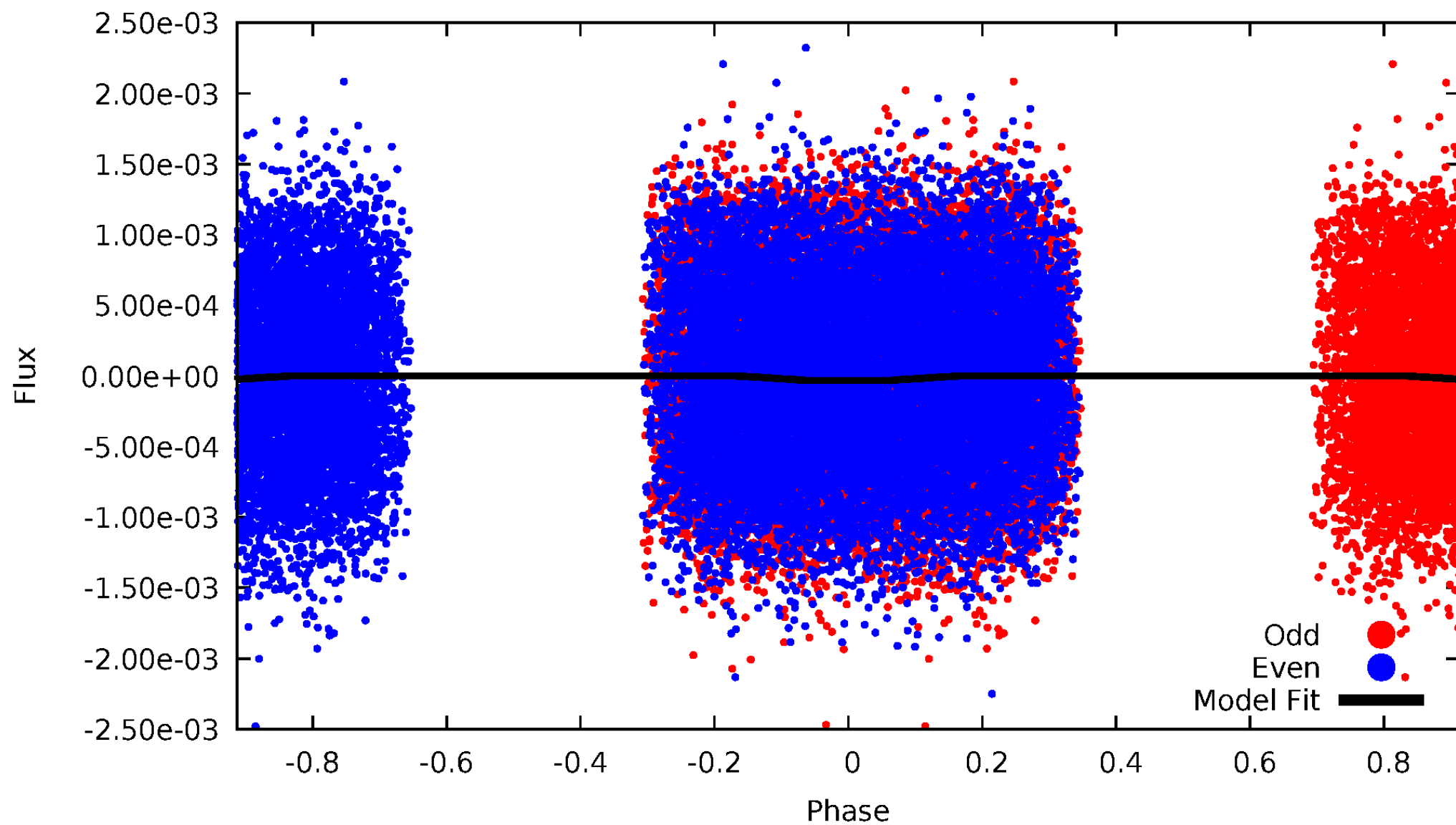
DV Odd/Even

TCE 004481426-02



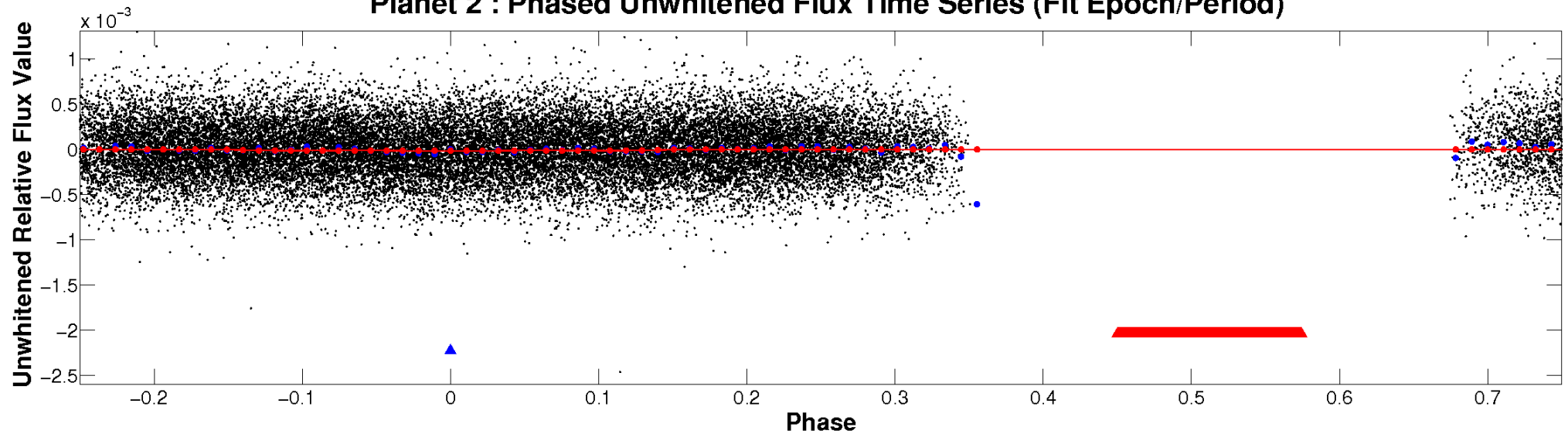
ALT Odd/Even

TCE 004481426-02

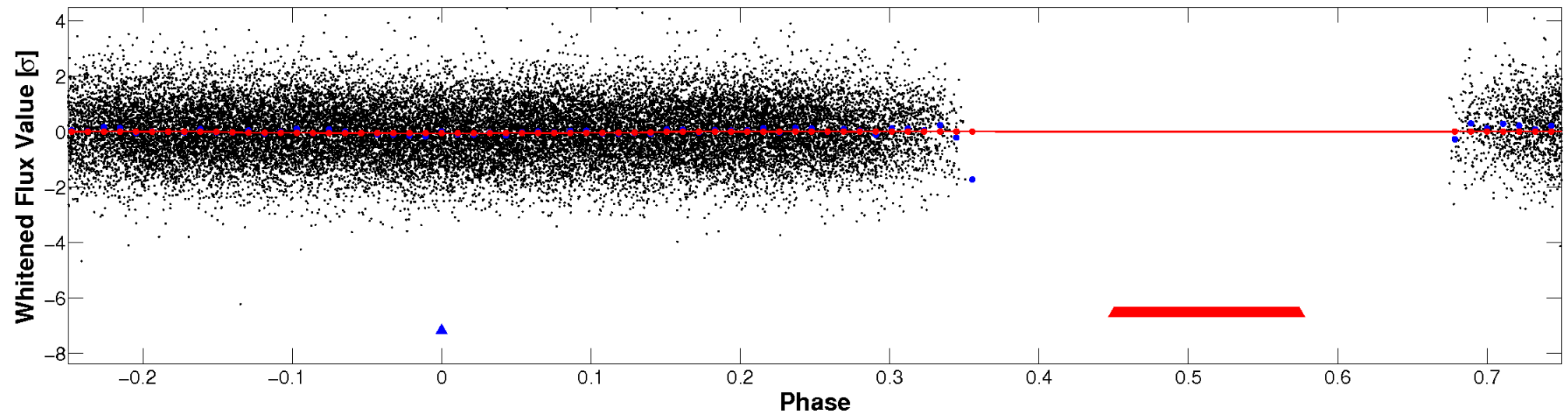


Non-Whitened Vs. Whitened Light Curve

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

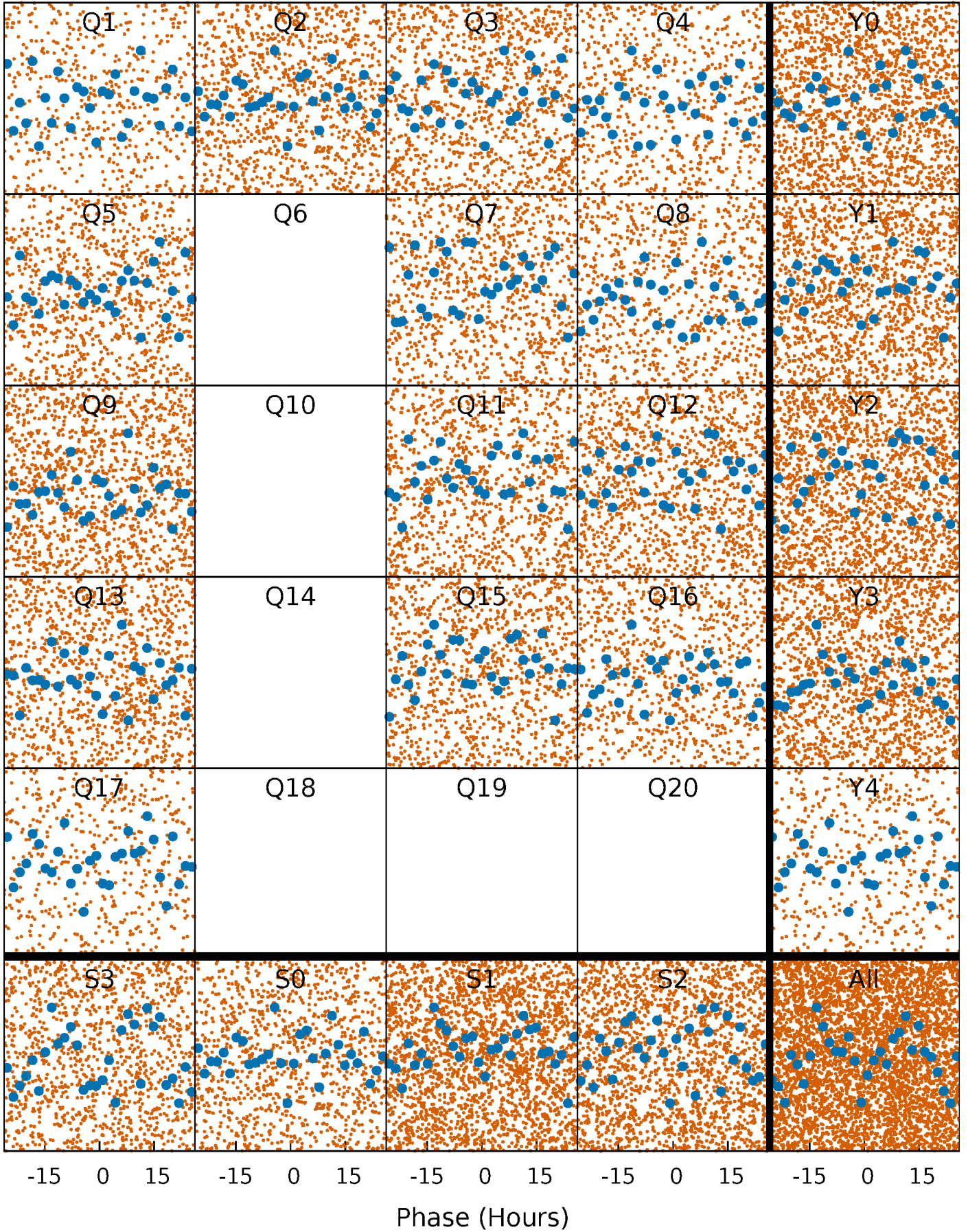


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



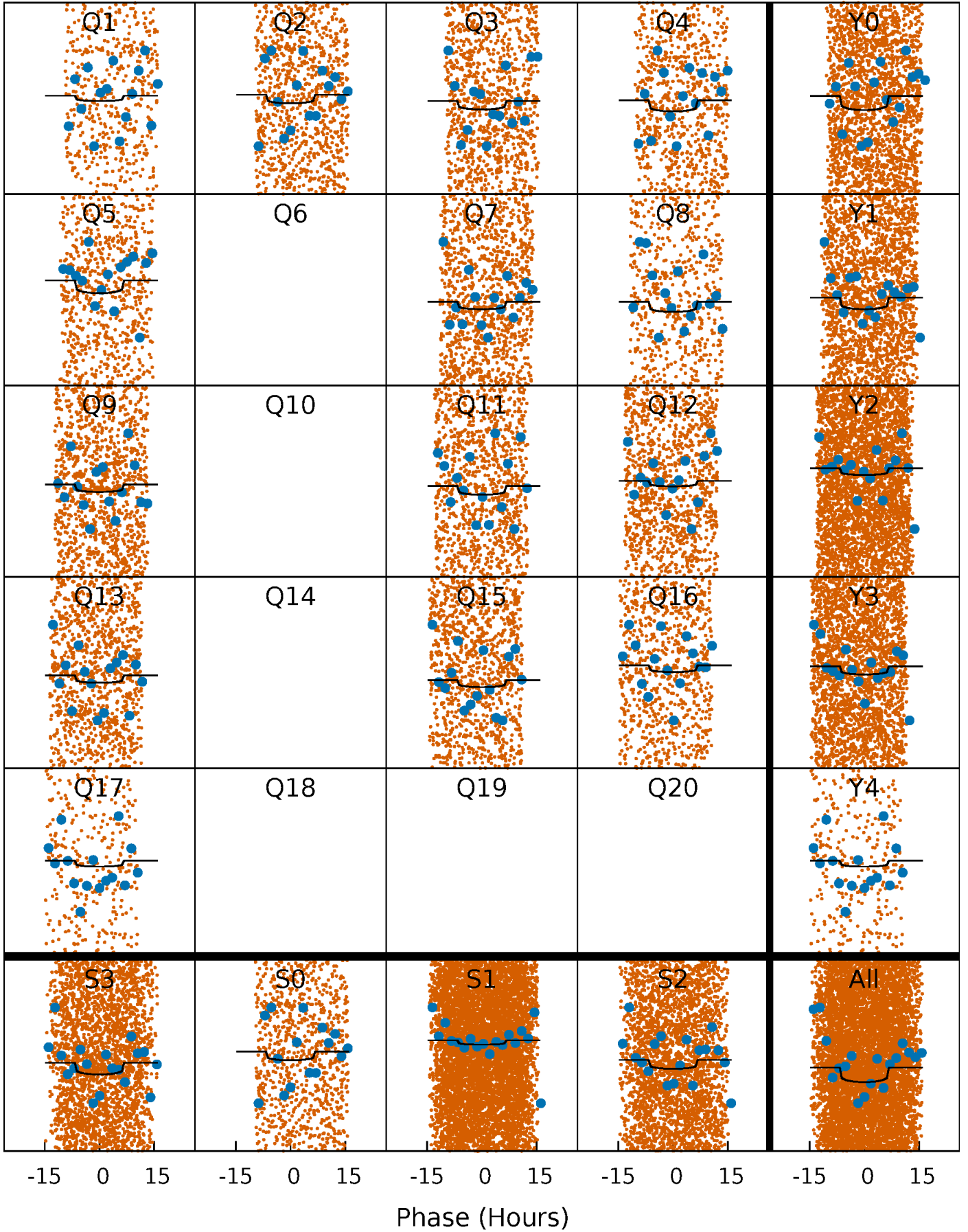
PDC Quarter-Phased Transit Curves

TCE 004481426-02 P= 1.897450 Days $T_0=133.106510$ (BKJD)



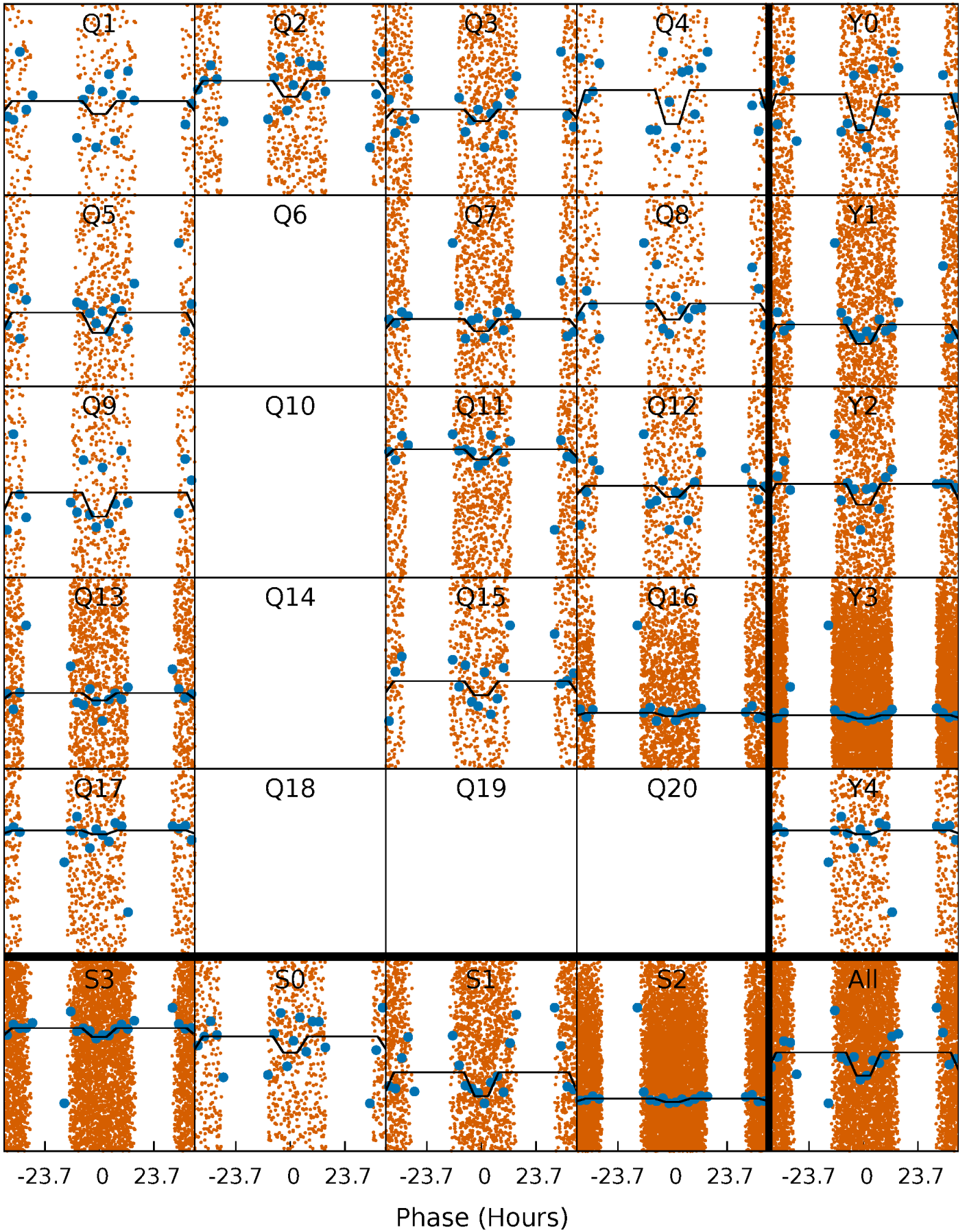
DV Quarter-Phased Transit Curves

TCE 004481426-02 $P = 1.897450$ Days $T_0 = 133.106510$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

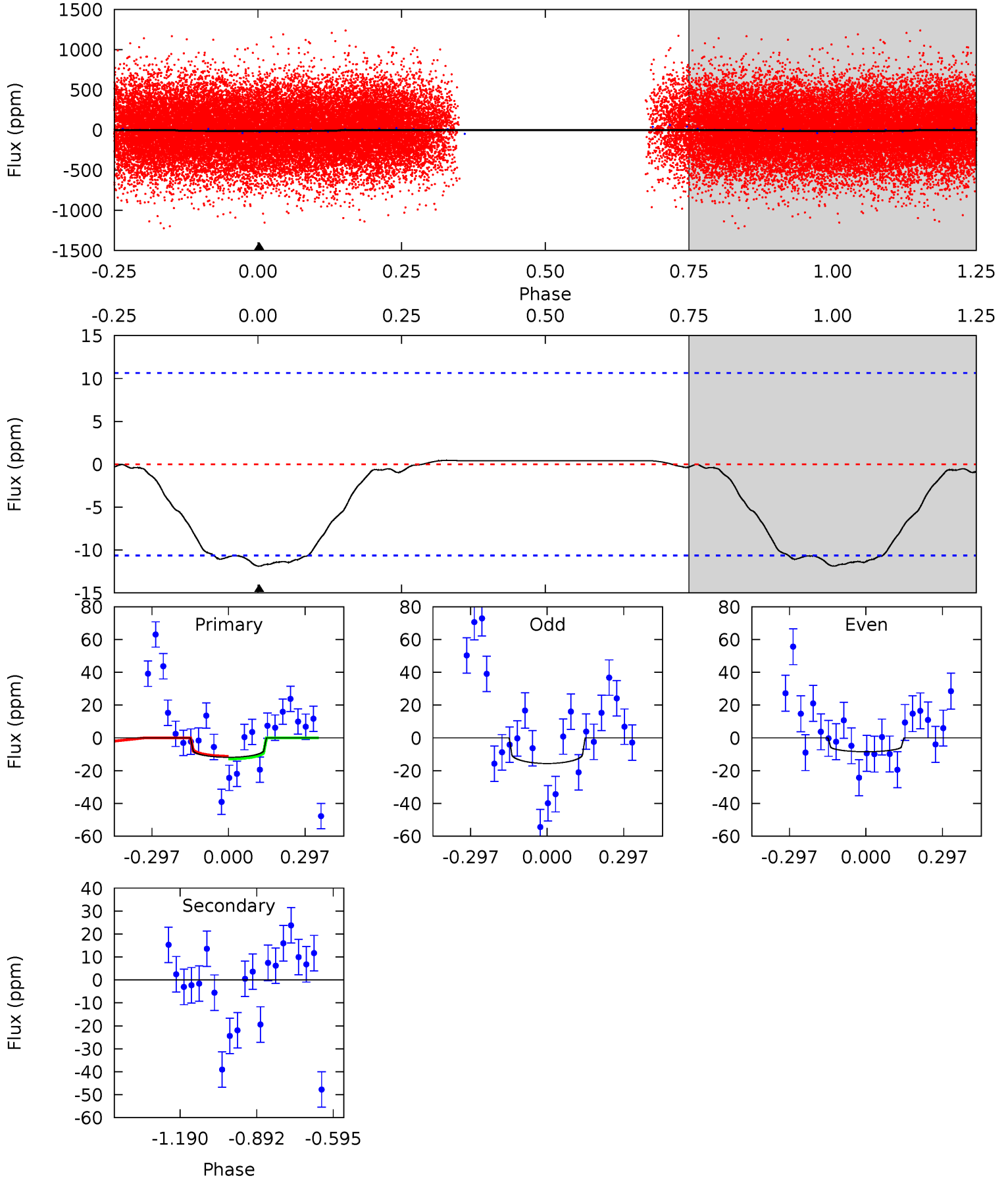
TCE 004481426-02 P= 1.897394 Days $T_0=133.113917$ (BKJD)



DV Model-Shift Uniqueness Test

004481426-02, P = 1.897450 Days, E = 131.209060 Days

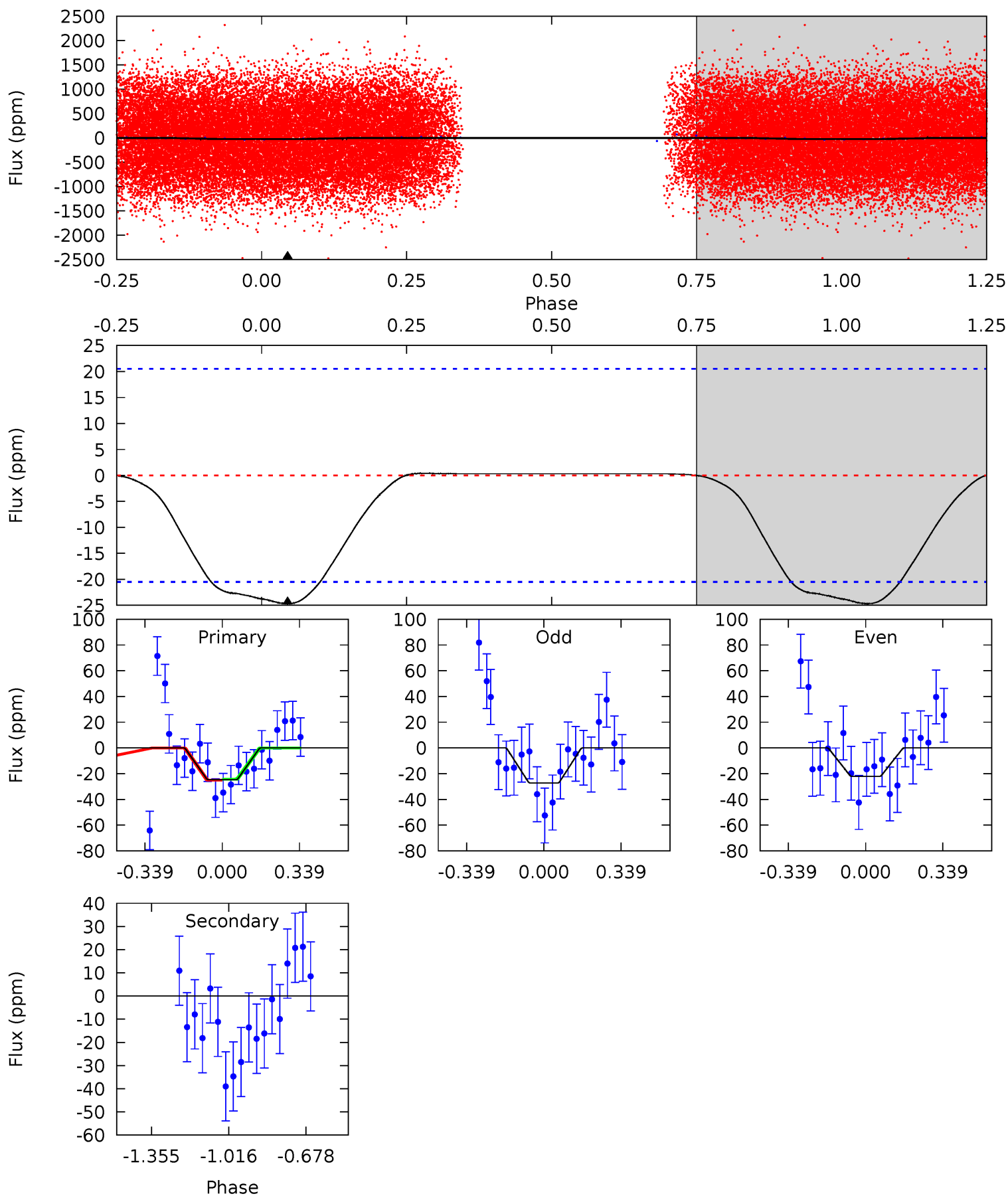
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.83	0	0	0	4.33	1.04	0.10	4.83	4.83	0	0	1.48	0.97	0.04	0.33



Alt Model-Shift Uniqueness Test

004481426-02, P = 1.897394 Days, E = 131.216523 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.18	0	0	0	4.30	0.96	0.11	5.18	5.18	0	0	0.53	1.63	0.02	0.09



Stellar Parameters For KIC 004481426

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	ρ_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	9046^{+251}_{-466}	$3.831^{+0.364}_{-0.156}$	$0.070^{+0.200}_{-0.650}$	$3.180^{+0.964}_{-1.445}$	$2.498^{+0.299}_{-0.897}$	$0.109^{+0.349}_{-0.049}$
	+3%/-5%	+10%/-4%	+286%/-929%	+30%/-45%	+12%/-36%	+319%/-45%
Source	KIC0	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 004481426-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 2	$1.41^{+1.20}_{-0.92}$	4833^{+431}_{-562}	-4136^{+9659}_{-1848}	$-0.026^{+1.840}_{-1.742}$
Alt.	0 ± 5	$1.86^{+1.42}_{-1.07}$	4799^{+423}_{-549}	-4054^{+9407}_{-1789}	$-0.032^{+1.611}_{-1.603}$

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

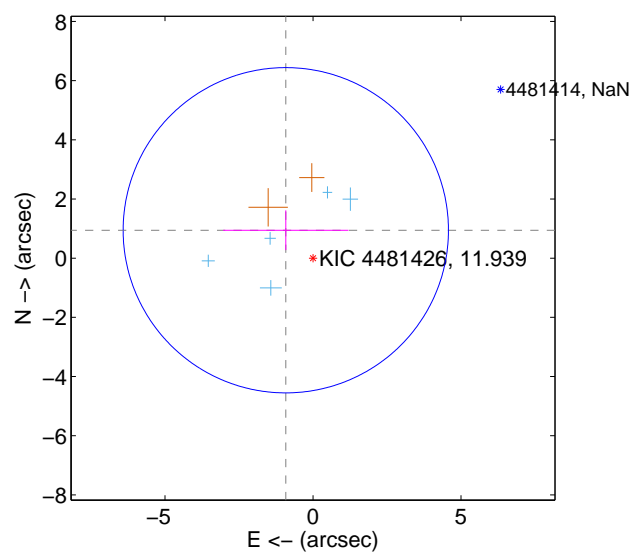
Supplemental centroid analysis for 004481426-02. **Kepler magnitude: 11.94.** Transit SNR 5.30

There are 5 quarters with good PRF difference image offsets

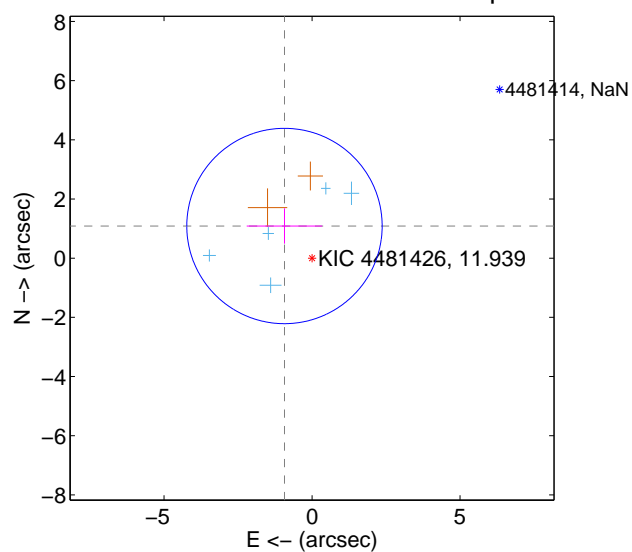
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.318 ± 1.832	0.72	0.919 ± 2.117	0.944 ± 0.670
PRF-fit source offset from KIC position	1.432 ± 1.100	1.30	0.931 ± 1.275	1.087 ± 0.599
photometric centroid source offset	0.82 ± 1.13	0.73	0.15 ± 1.05	0.81 ± 1.13

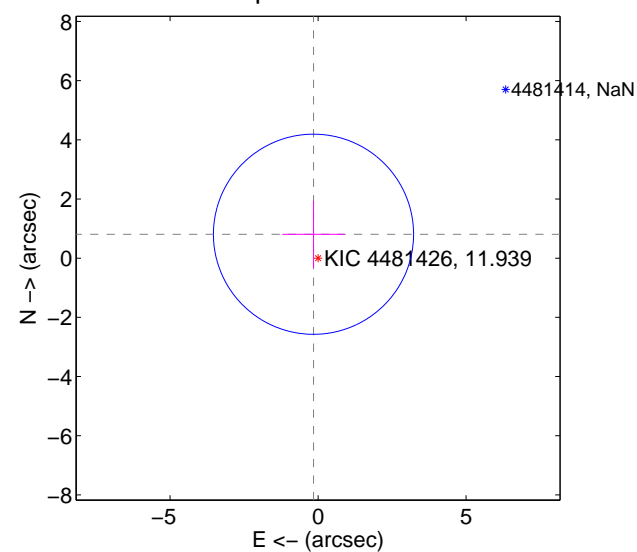
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

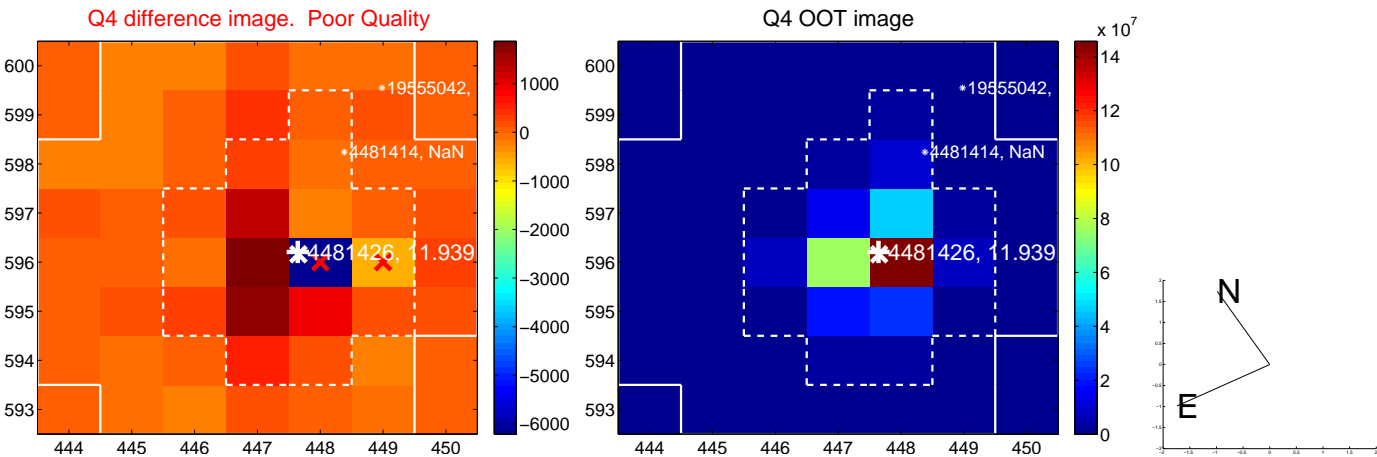
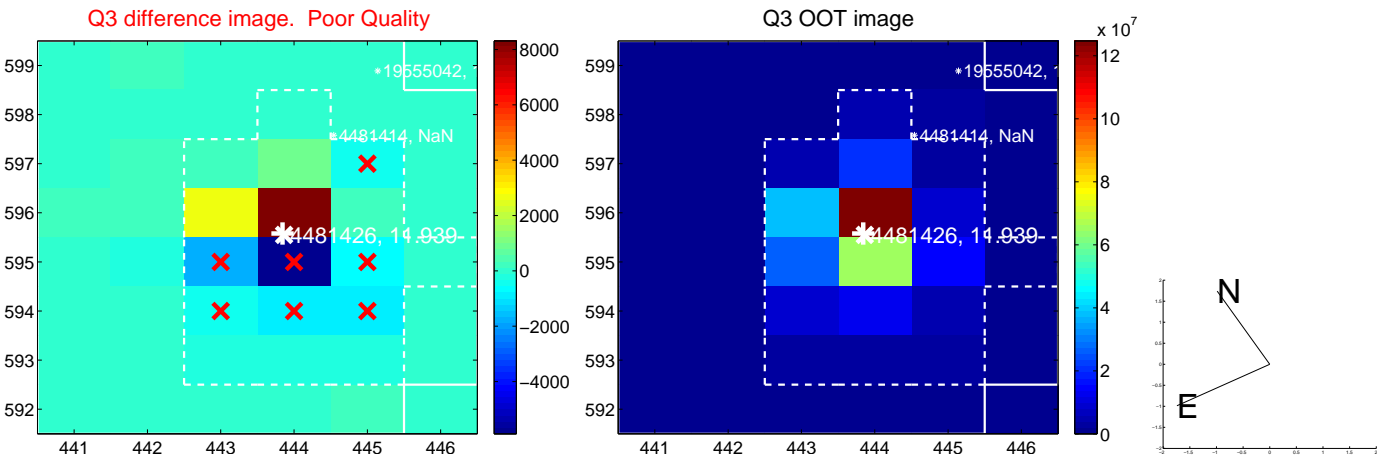
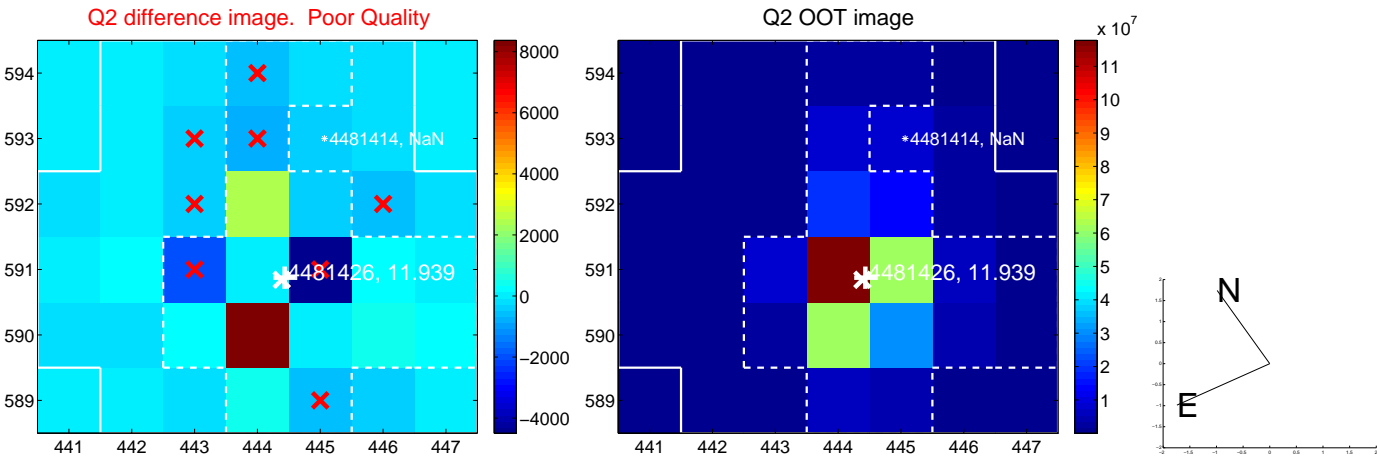
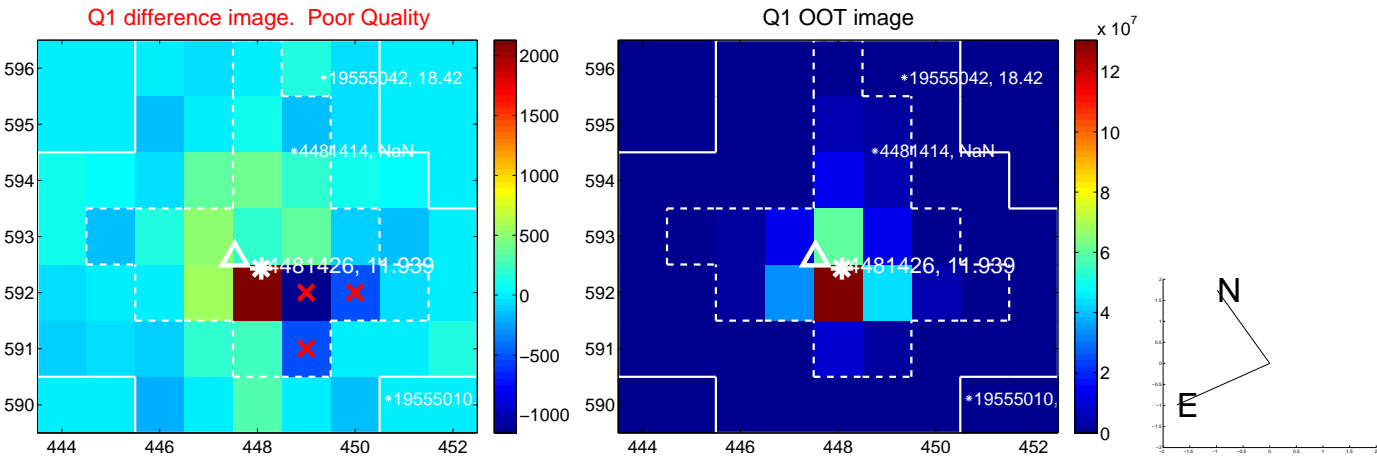


offset from photometric centroids

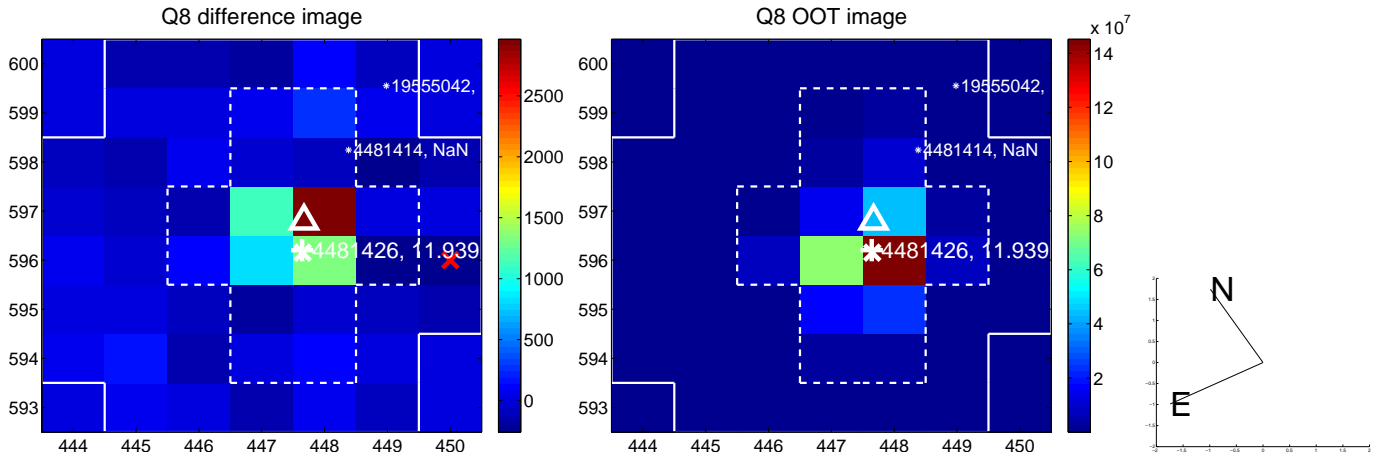
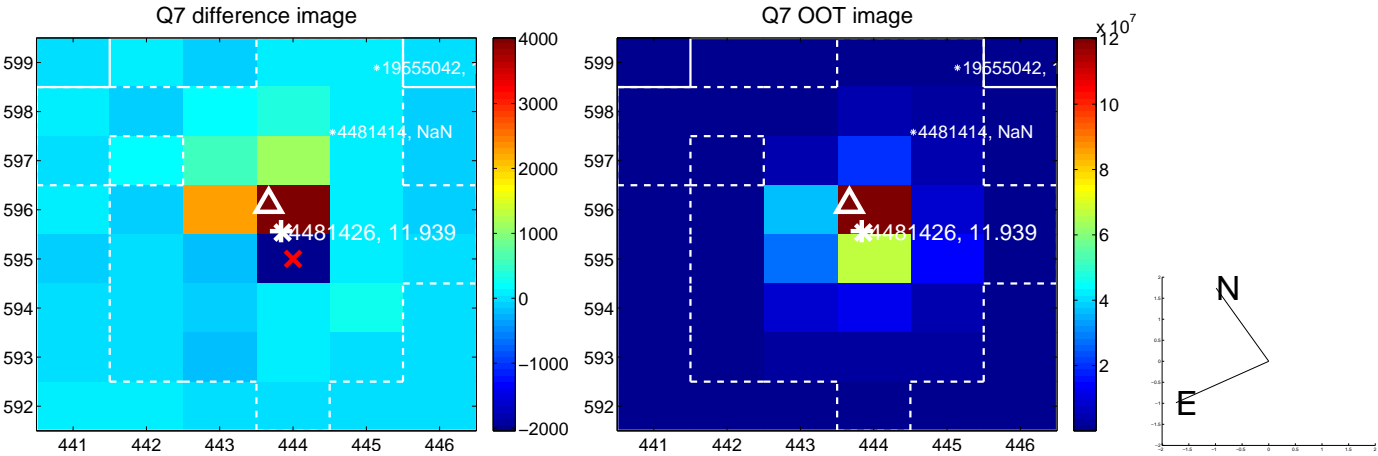
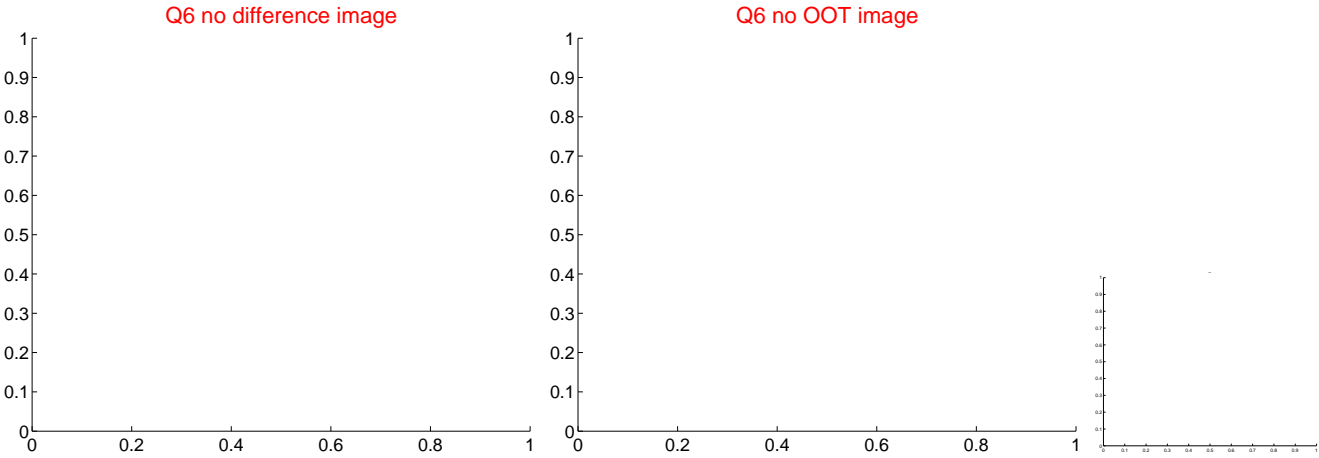
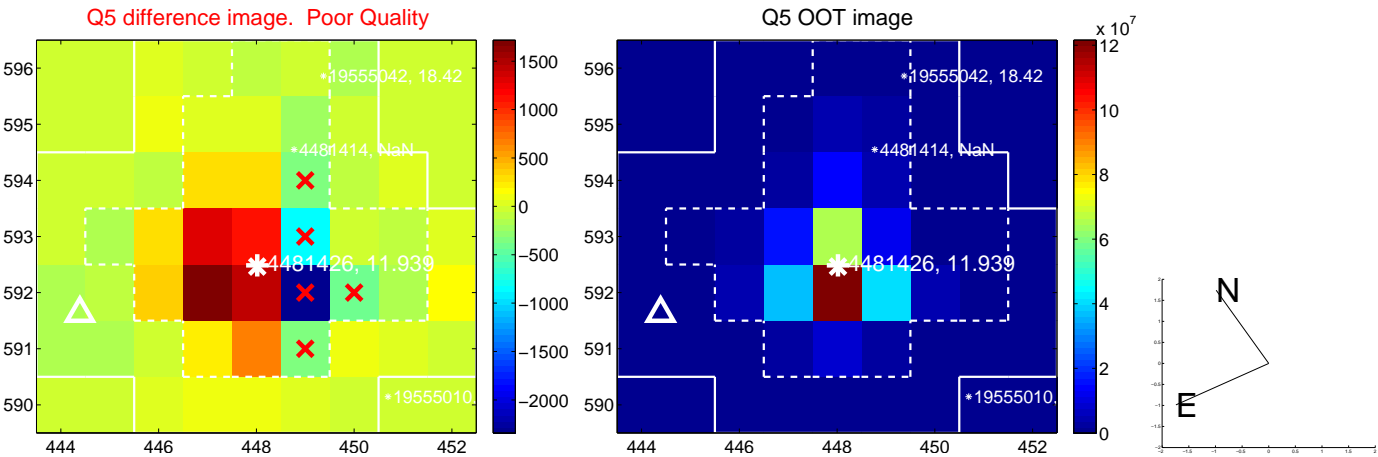


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

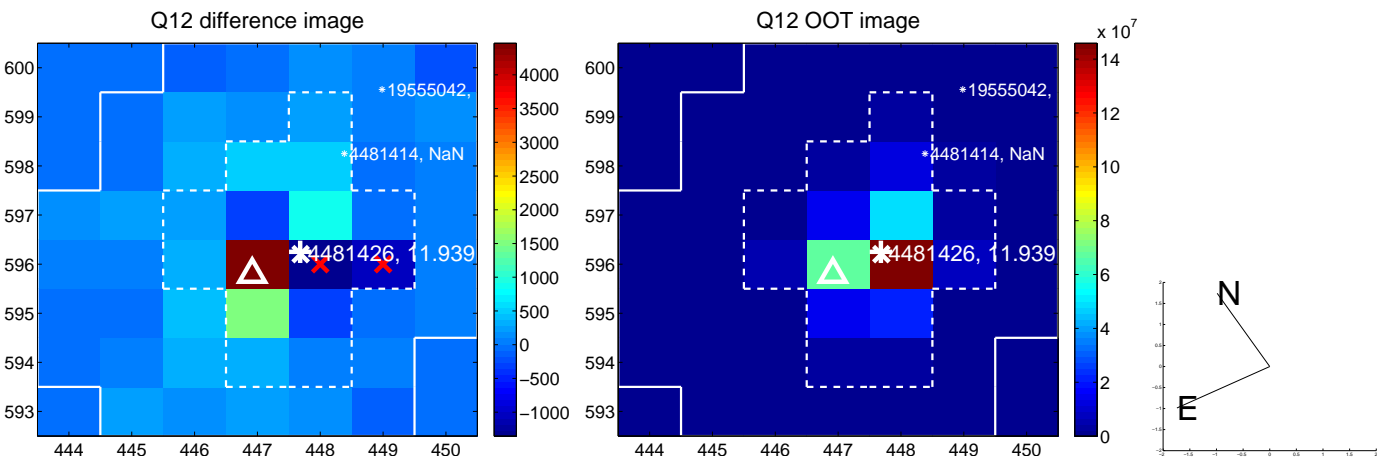
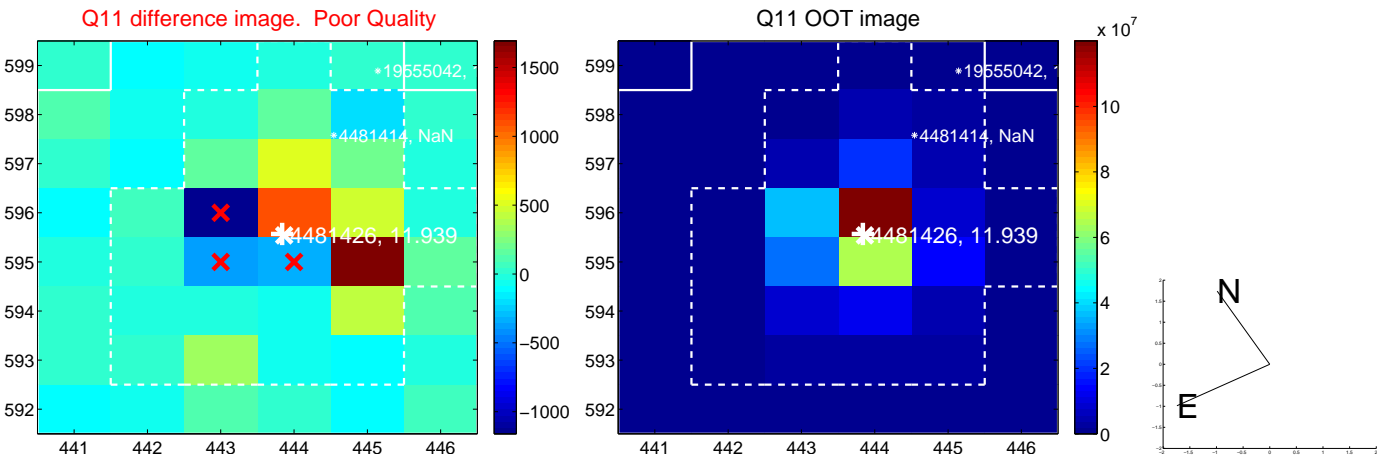
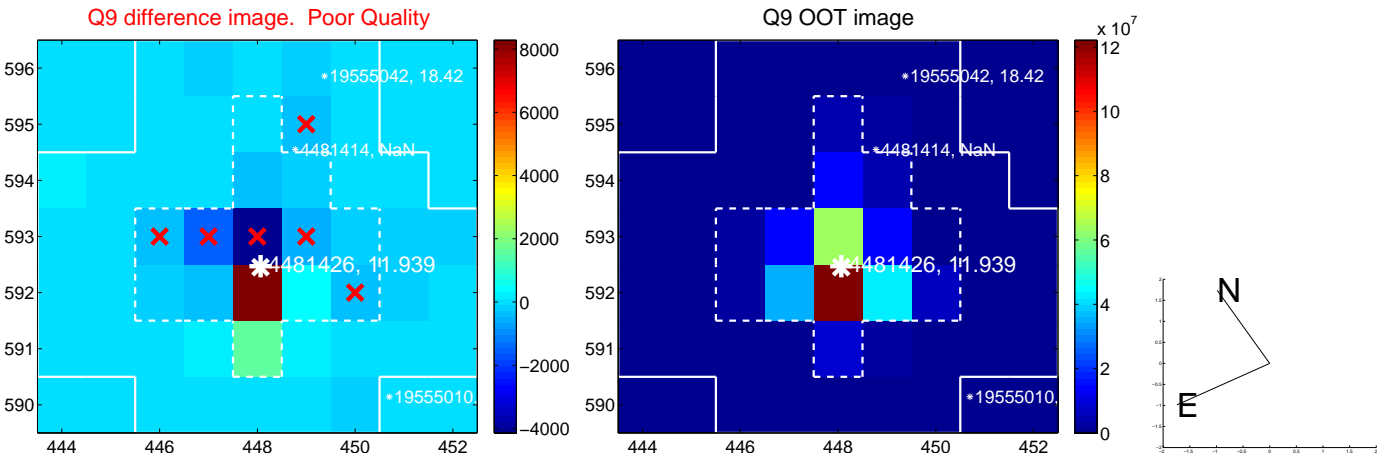
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



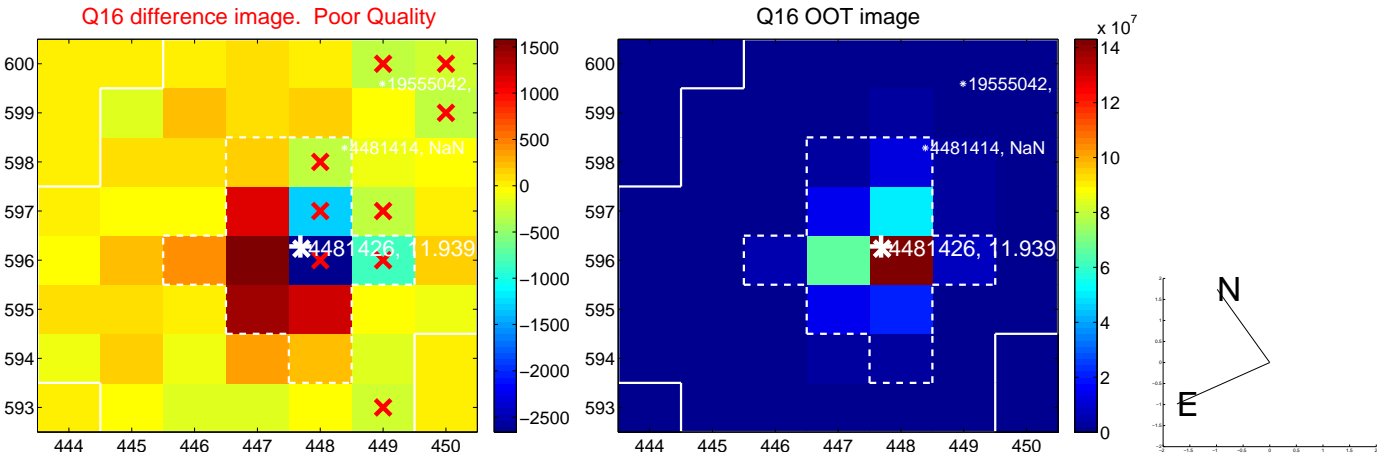
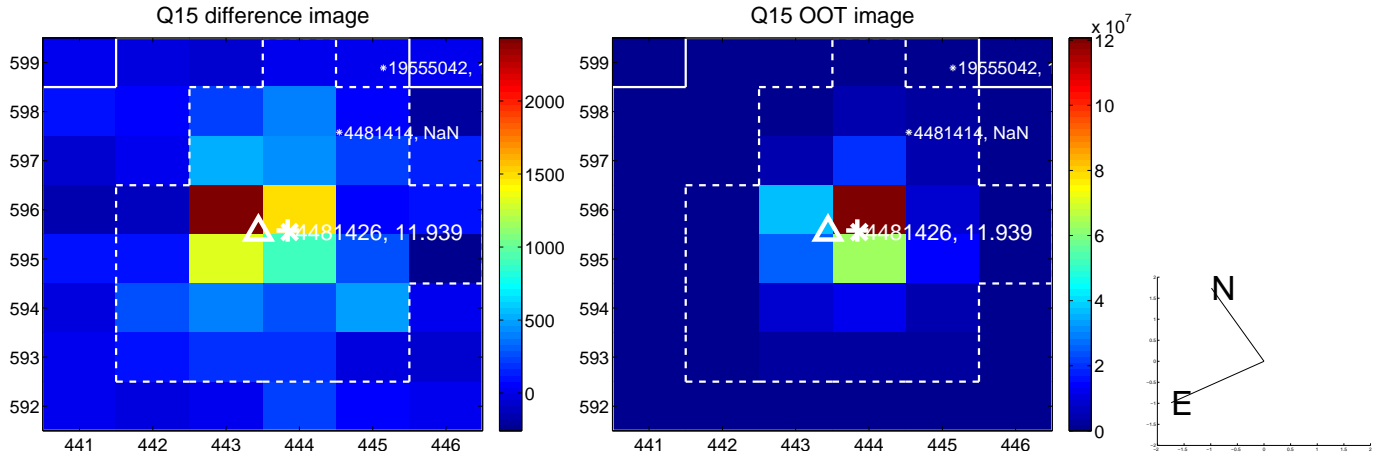
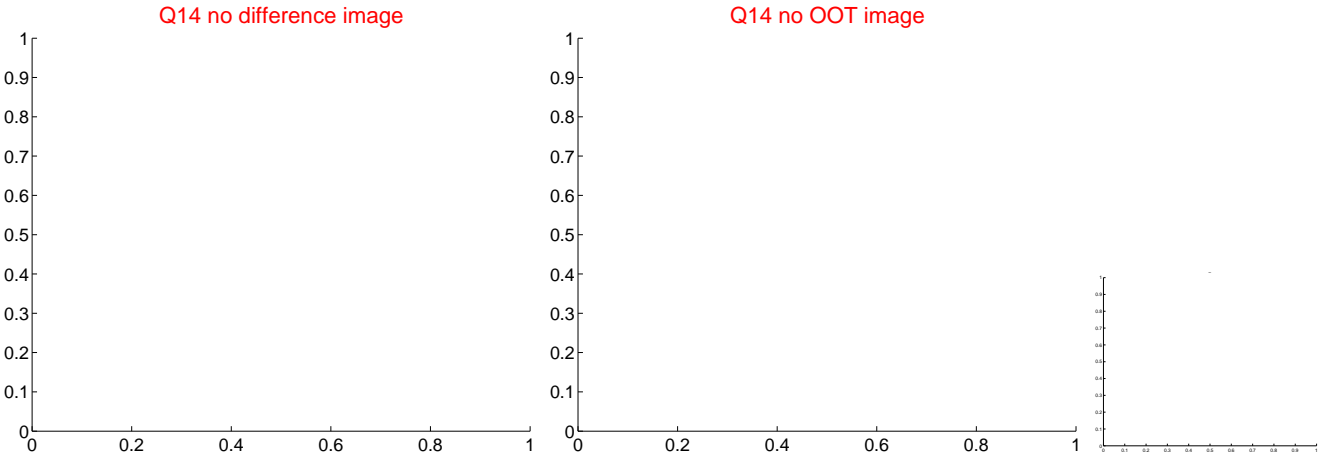
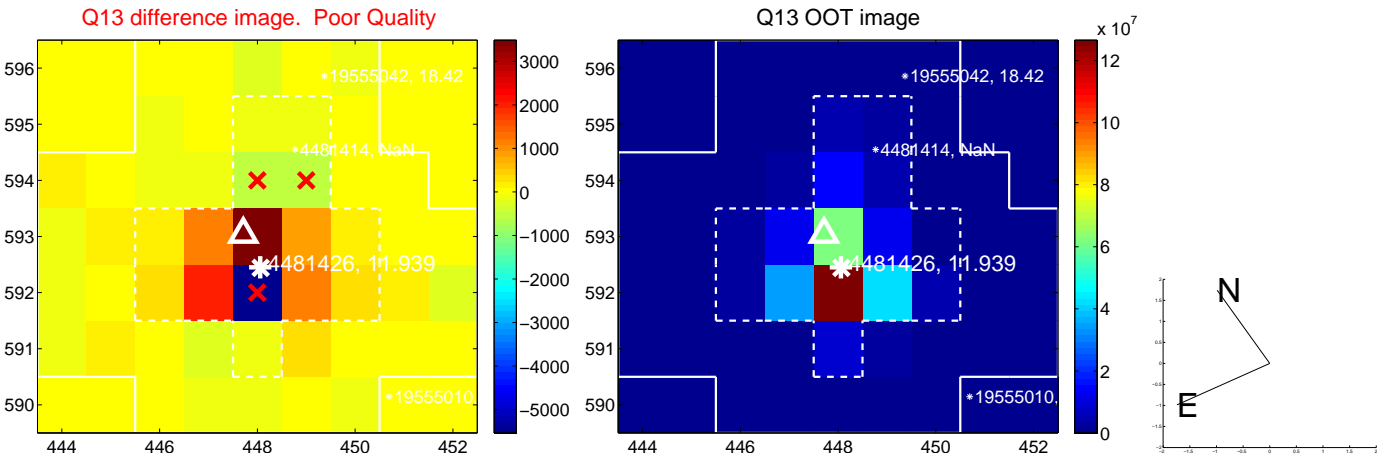
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



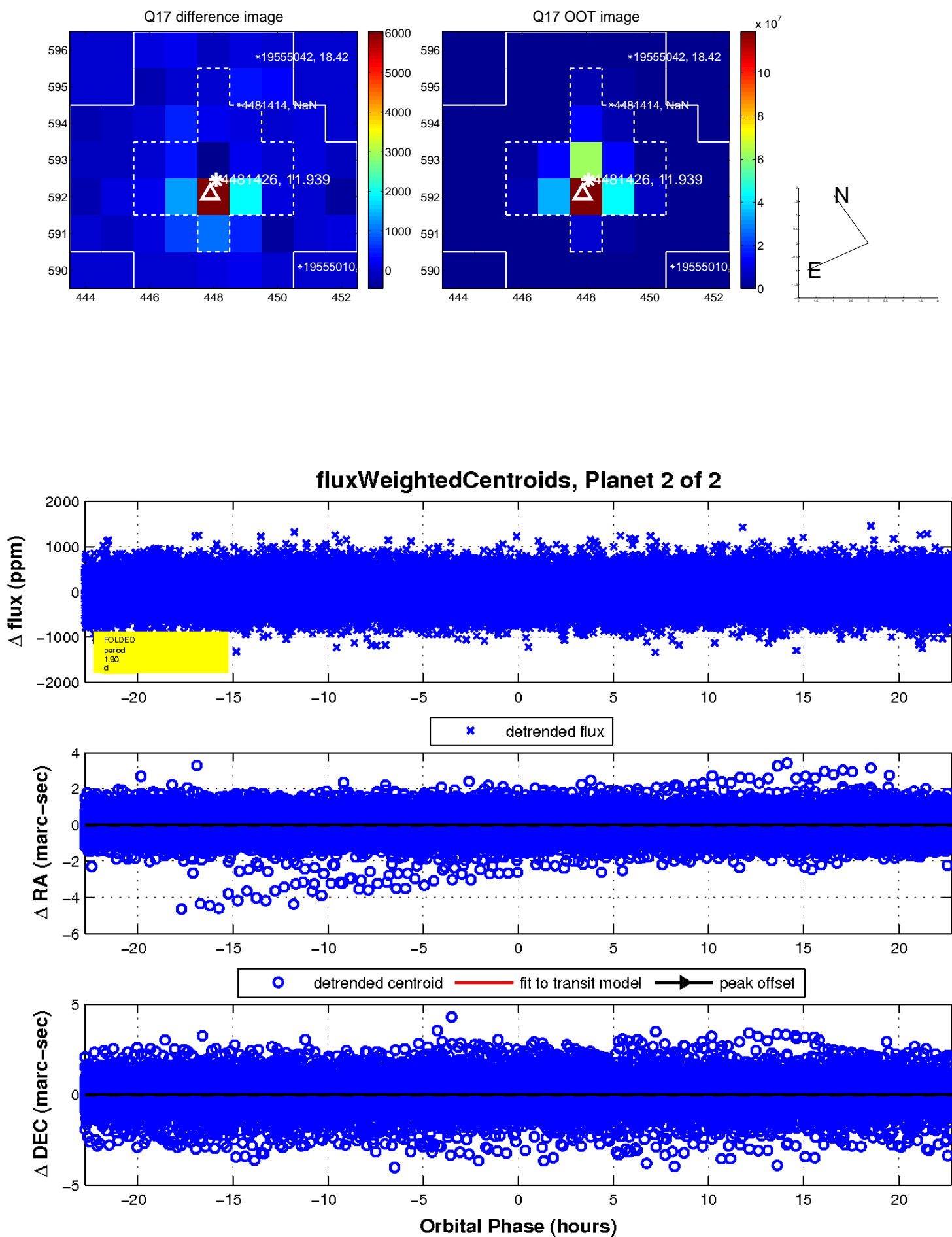
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

