

KIC 004381282

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})
004381282-01	OBS	2922.01	0.995167	132.152195	122.5	1.550	10.1	10.6	0.63	5271	0.83	988.17
004381282-02	OBS	No	0.995153	131.670926	94.1	1.940	9.1	9.2	0.63	5271	0.72	988.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004381282-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST
004381282-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST

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.

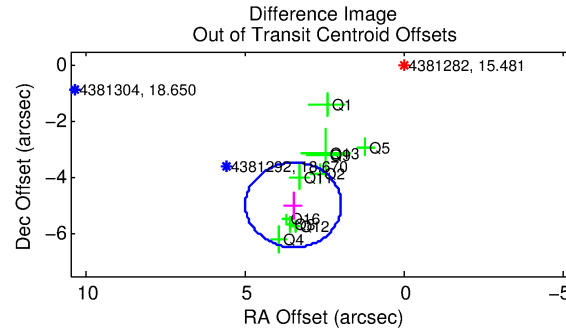
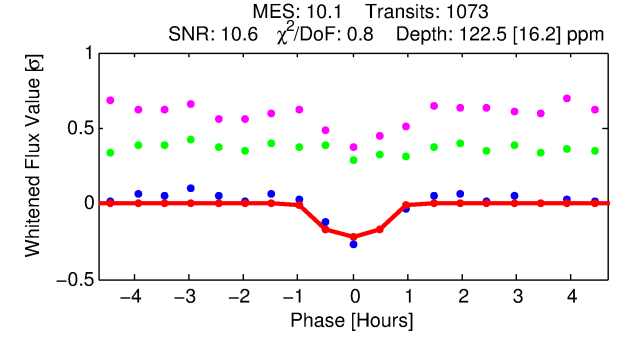
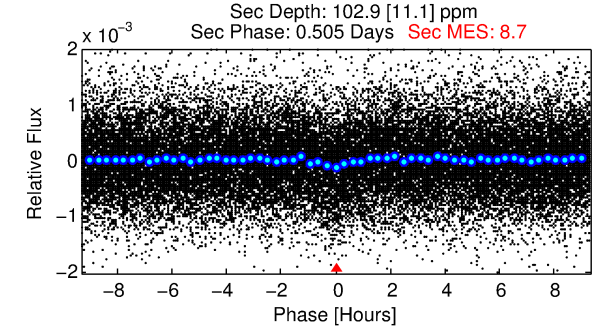
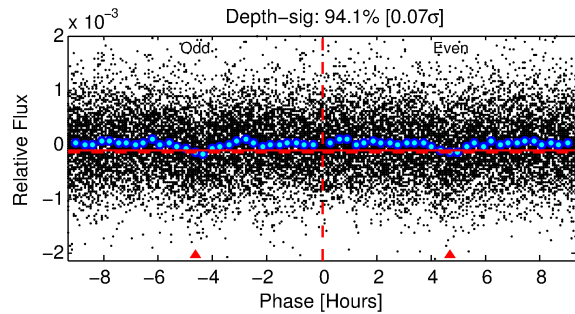
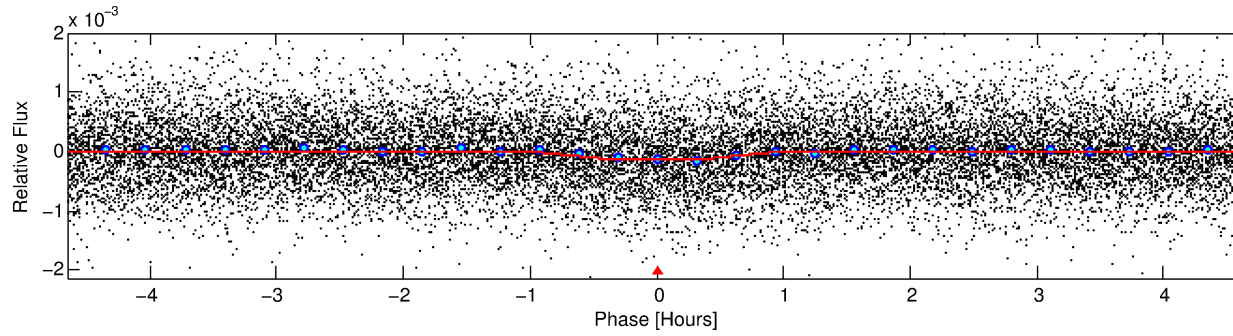
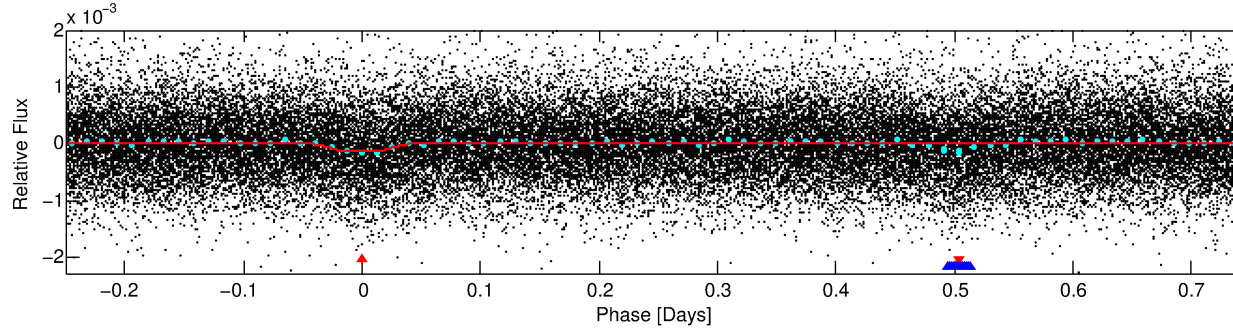
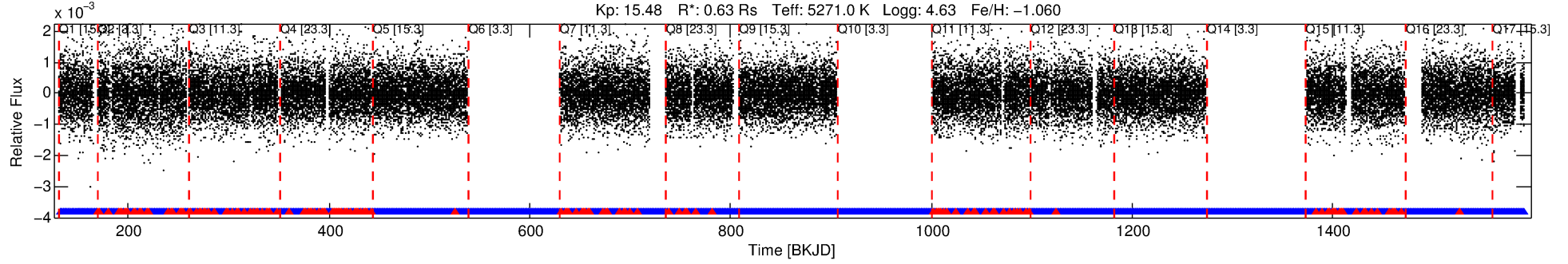
Ephemeris Match Information For 004381282-01

No Significant Match Found

DV One-Page Summary

KIC: 4381282 Candidate: 1 of 2 Period: 0.995 d
KOI: K02922 Corr: No Ephemeris Match

Kp: 15.48 R*: 0.63 Rs Teff: 5271.0 K Logg: 4.63 Fe/H: -1.060



DV Fit Results:

Period = 0.99517 [0.00001] d
Epoch = 132.1522 [0.0022] BKJD
Rp/R* = 0.0121 [0.0088]
a/R* = 2.45 [7.11]
b = 0.90 [0.75]
Seff = 988.17 [172.26]
Teq = 1430 [62] K
Rp = 0.83 [0.61] Re
a = 0.0167 [0.0012] AU
Ag = 22.80 [33.58] [0.65σ]
Teff = 4830 [1781] K [1.91σ]

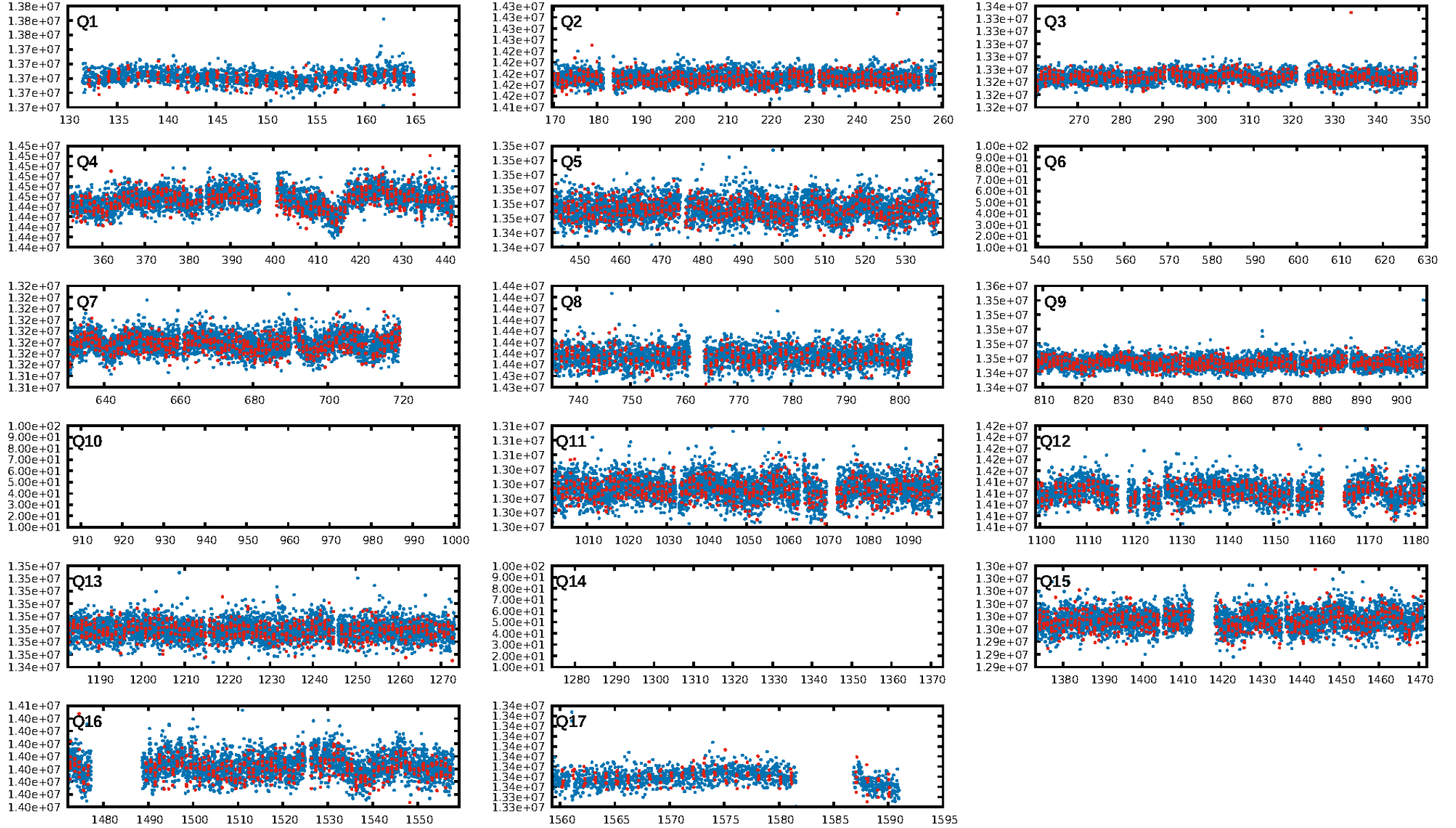
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 8.50e-26
RollingBand-fgt: 0.85 [856/1012]
GhostDiagnostic-chr: 0.04229
Centroid-sig: 0.0%
Centroid-so: 12.661 arcsec [8.46σ]
OotOffset-rm: 6.071 arcsec [12.07σ]
KicOffset-rm: 6.255 arcsec [12.01σ]
OotOffset-st: 1/1/4/4 [10]
KicOffset-st: 1/1/4/4 [10]
DiffImageQuality-fgm: 1.00 [10/10]
DiffImageOverlap-fno: 1.00 [14/14]

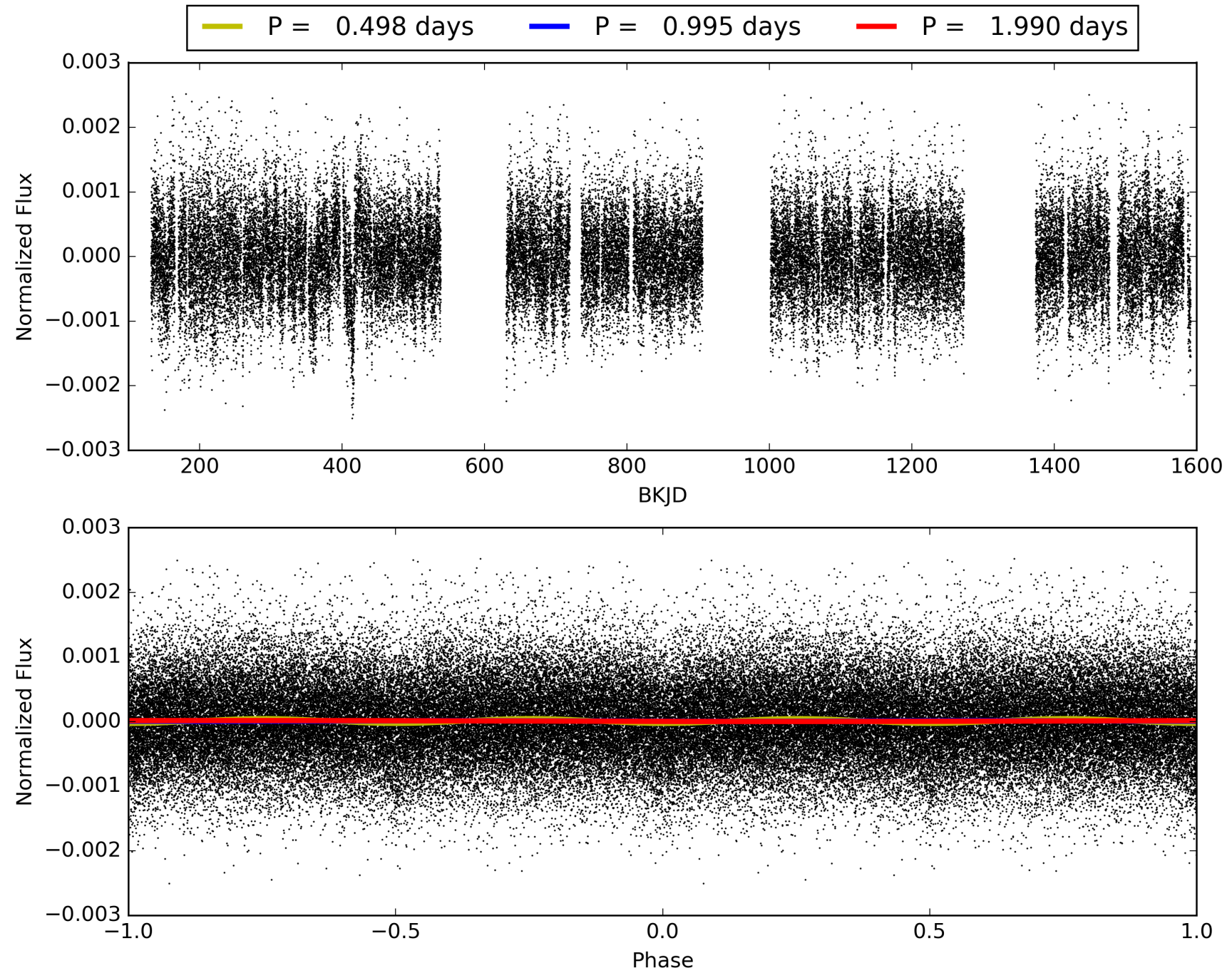
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 11:30:56 Z

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

TCE 004381282-01, PDC Light Curves

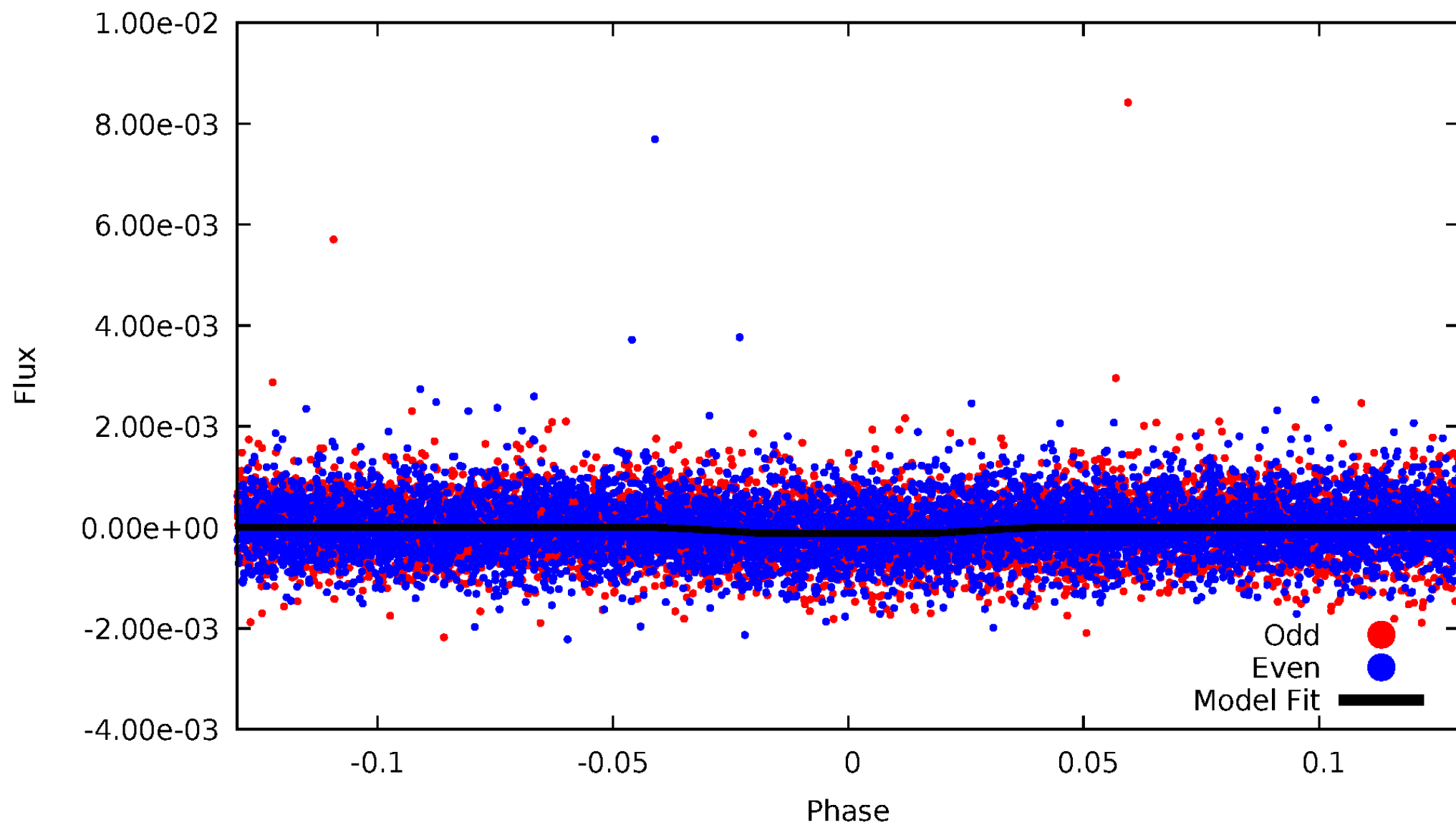


TCE 004381282-01



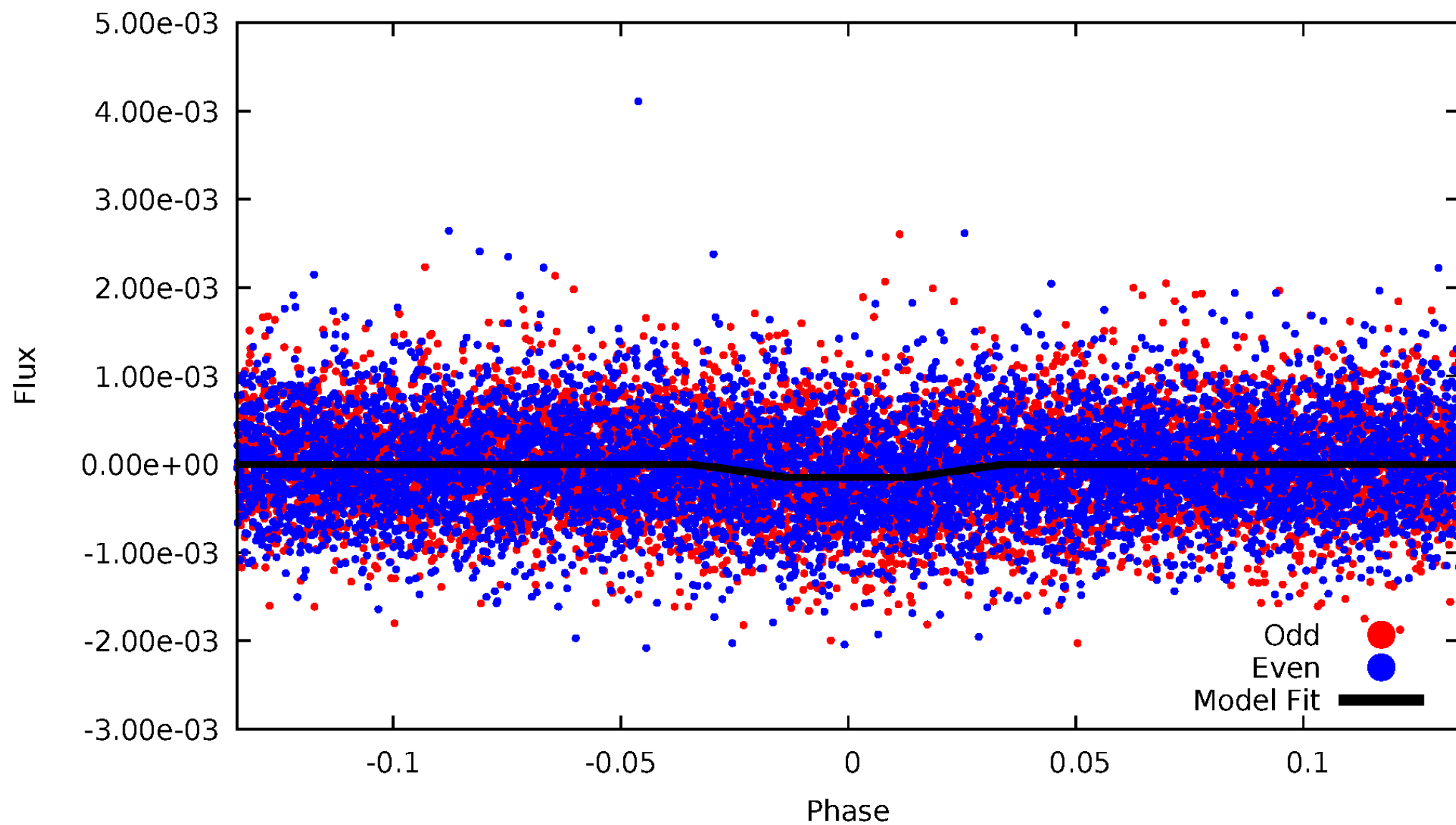
DV Odd/Even

TCE 004381282-01

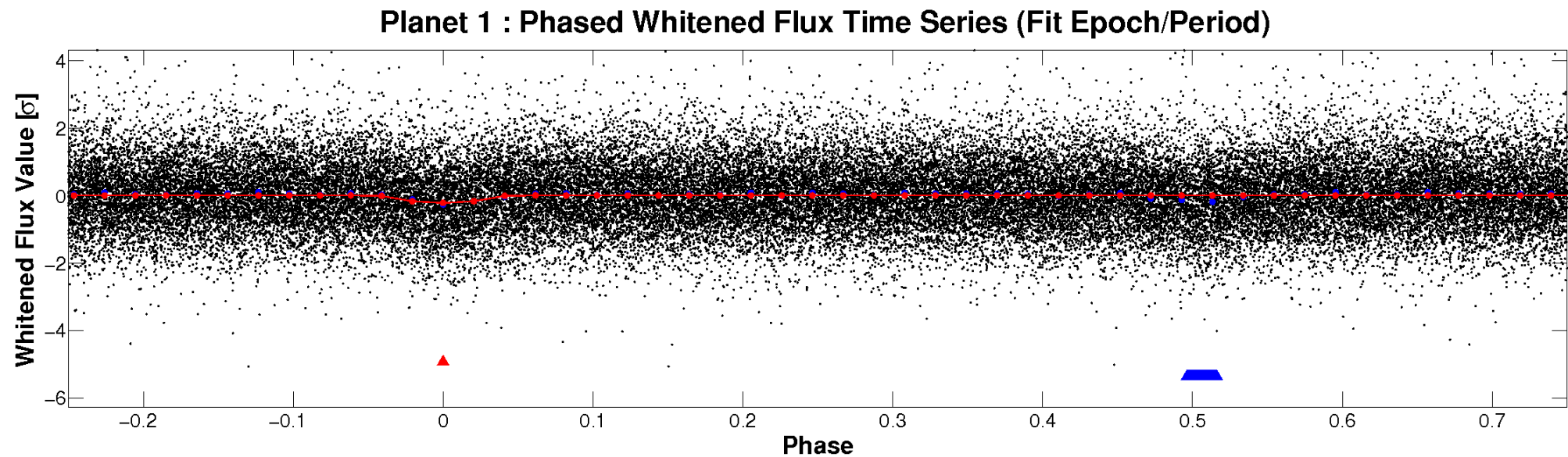
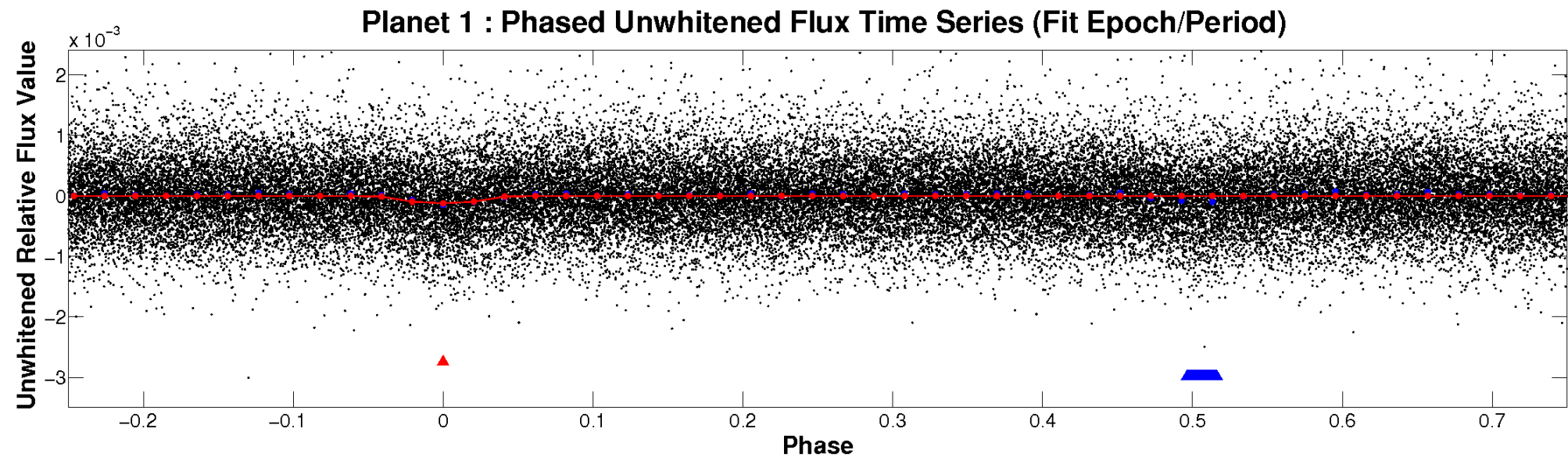


ALT Odd/Even

TCE 004381282-01

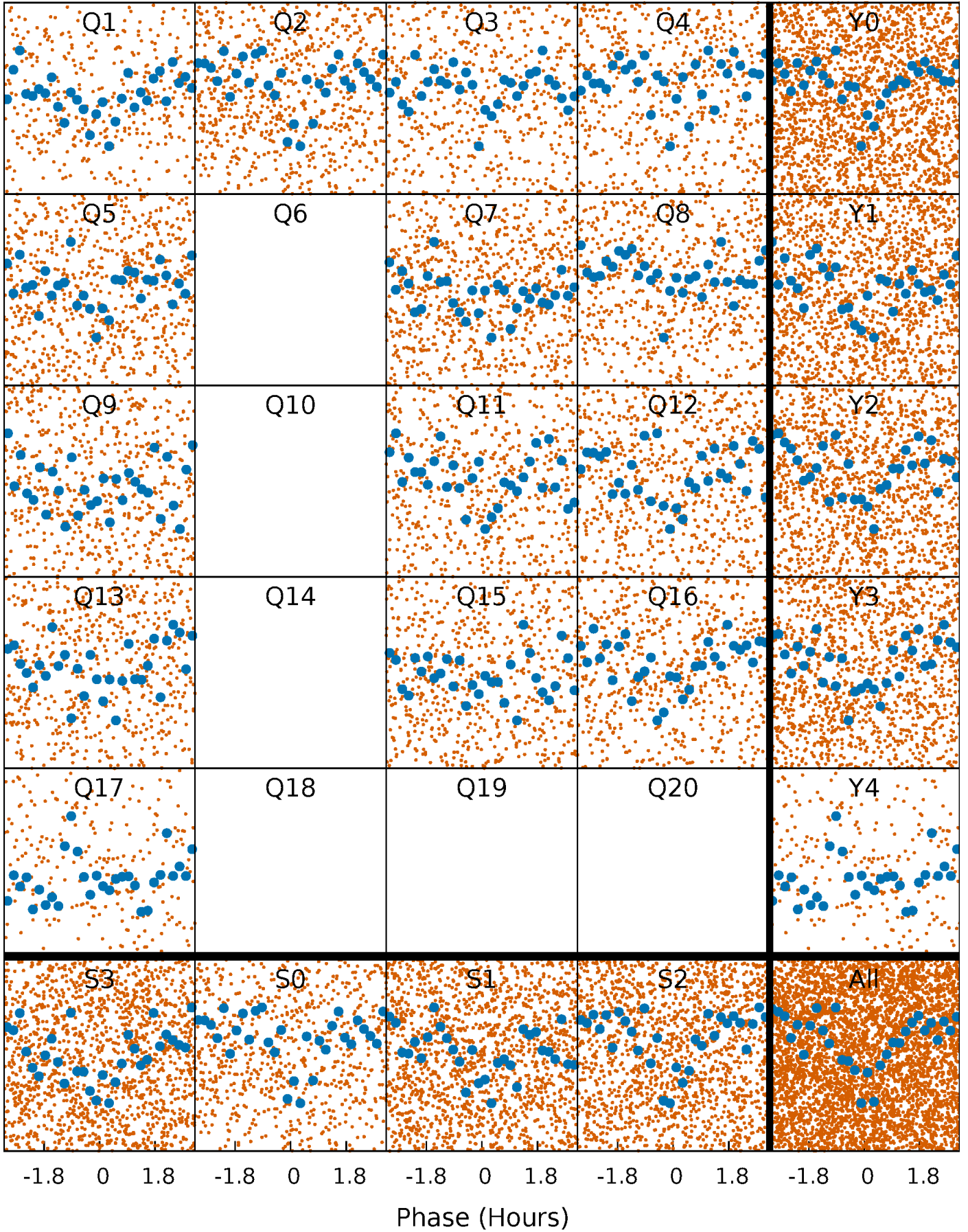


Non-Whitened Vs. Whitened Light Curve



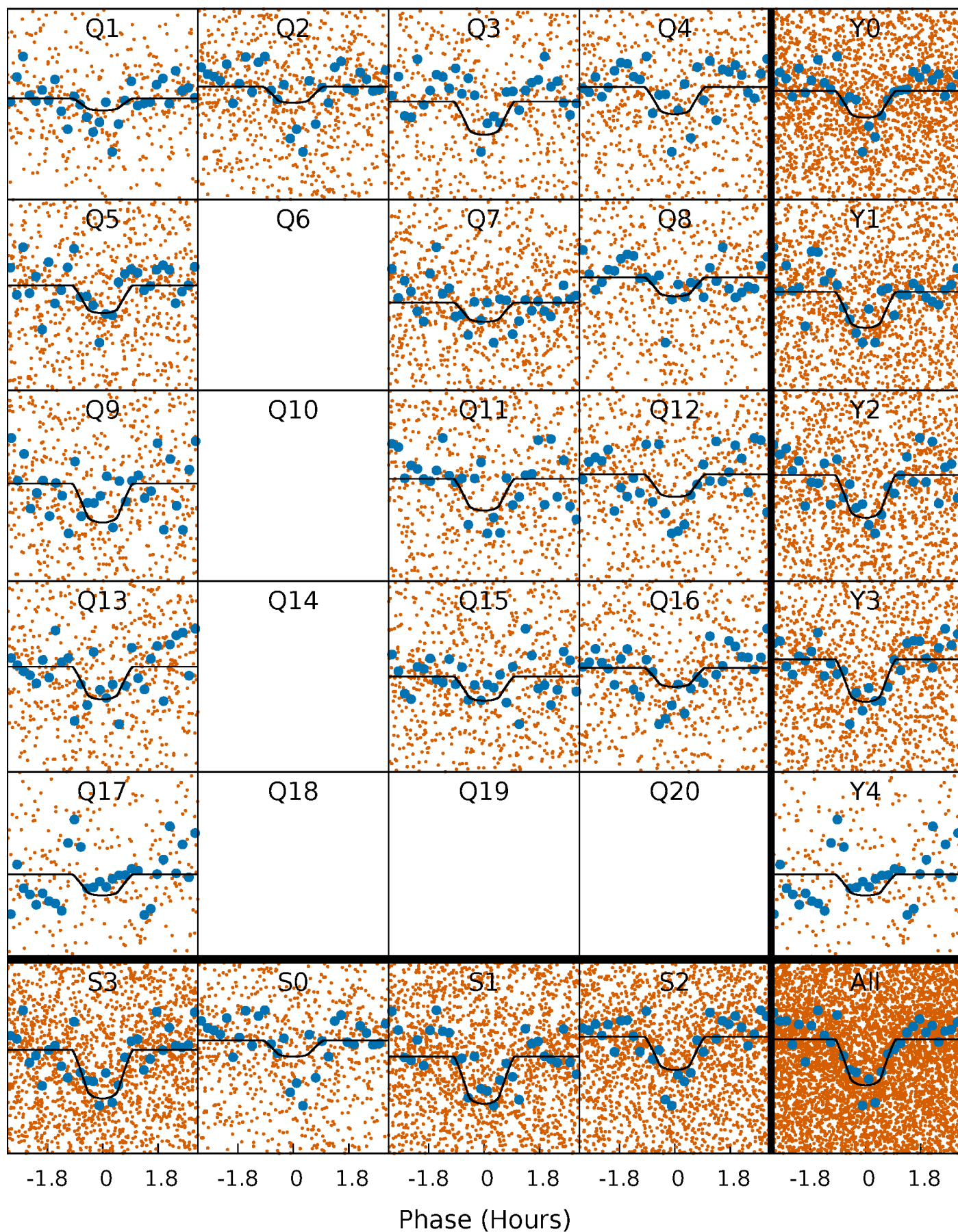
PDC Quarter-Phased Transit Curves

TCE 004381282-01 P= 0.995167 Days $T_0=132.152195$ (BKJD)



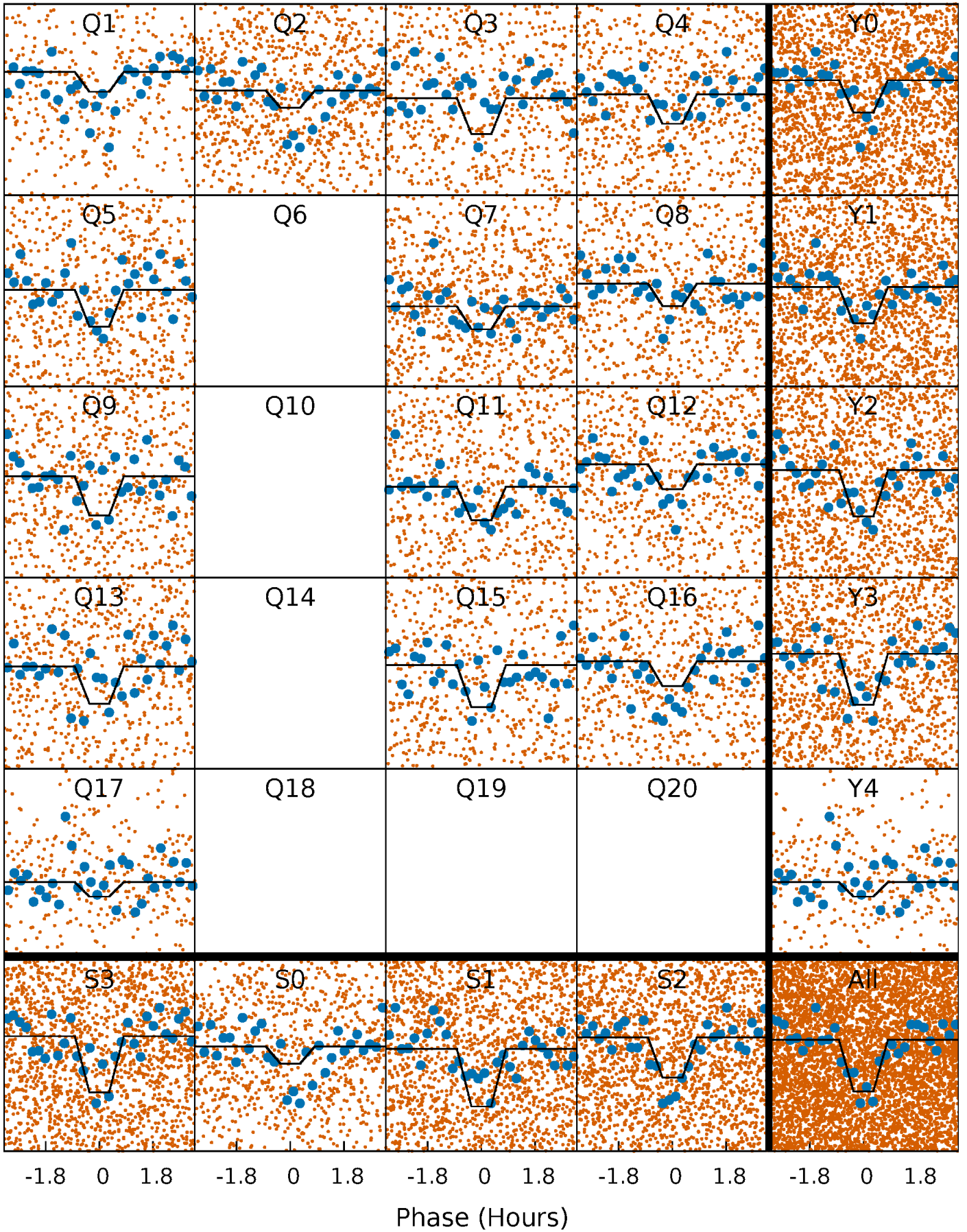
DV Quarter-Phased Transit Curves

TCE 004381282-01 P= 0.995167 Days $T_0=132.152195$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

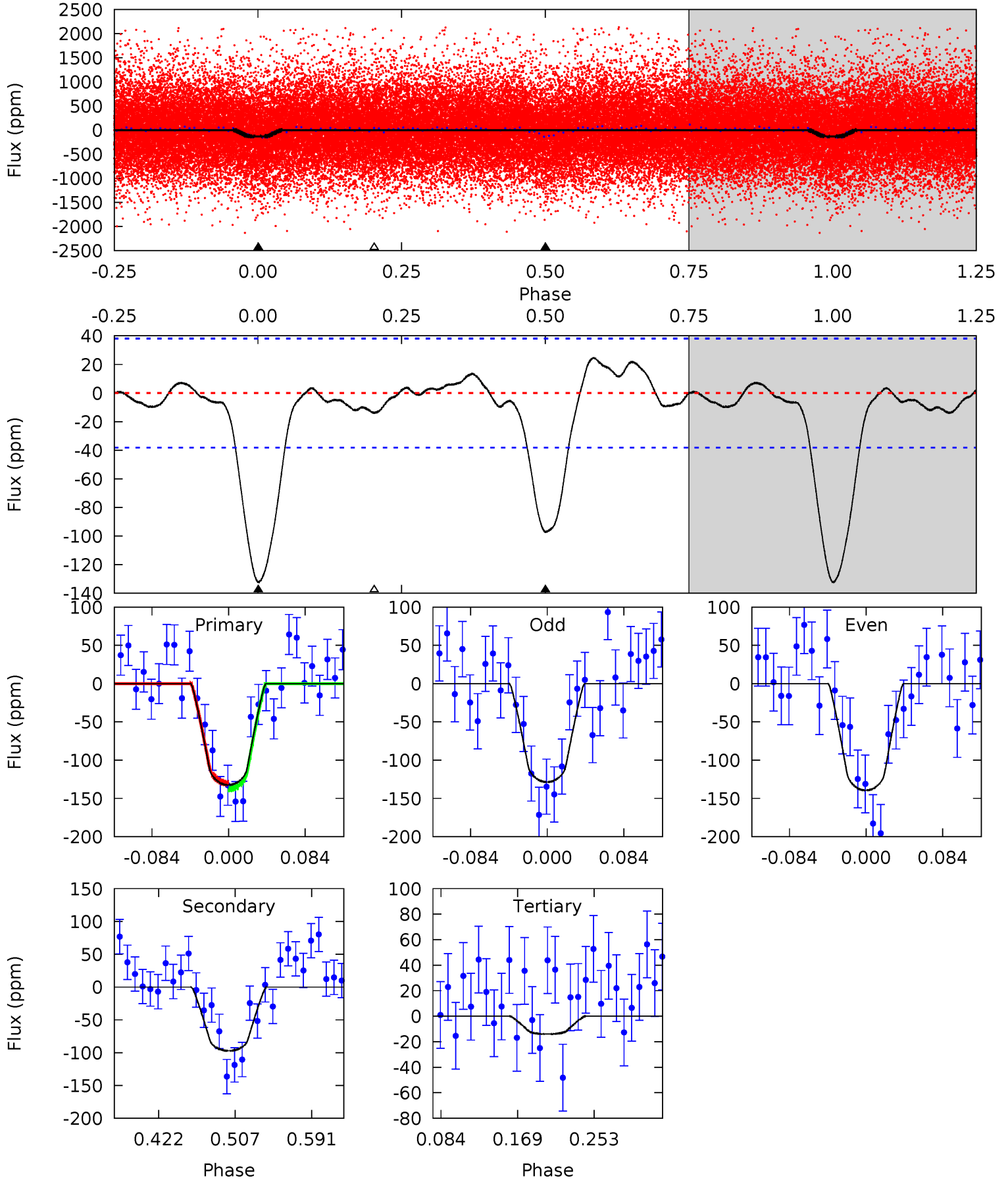
TCE 004381282-01 P= 0.995169 Days $T_0=132.152244$ (BKJD)



DV Model-Shift Uniqueness Test

004381282-01, P = 0.995167 Days, E = 131.157028 Days

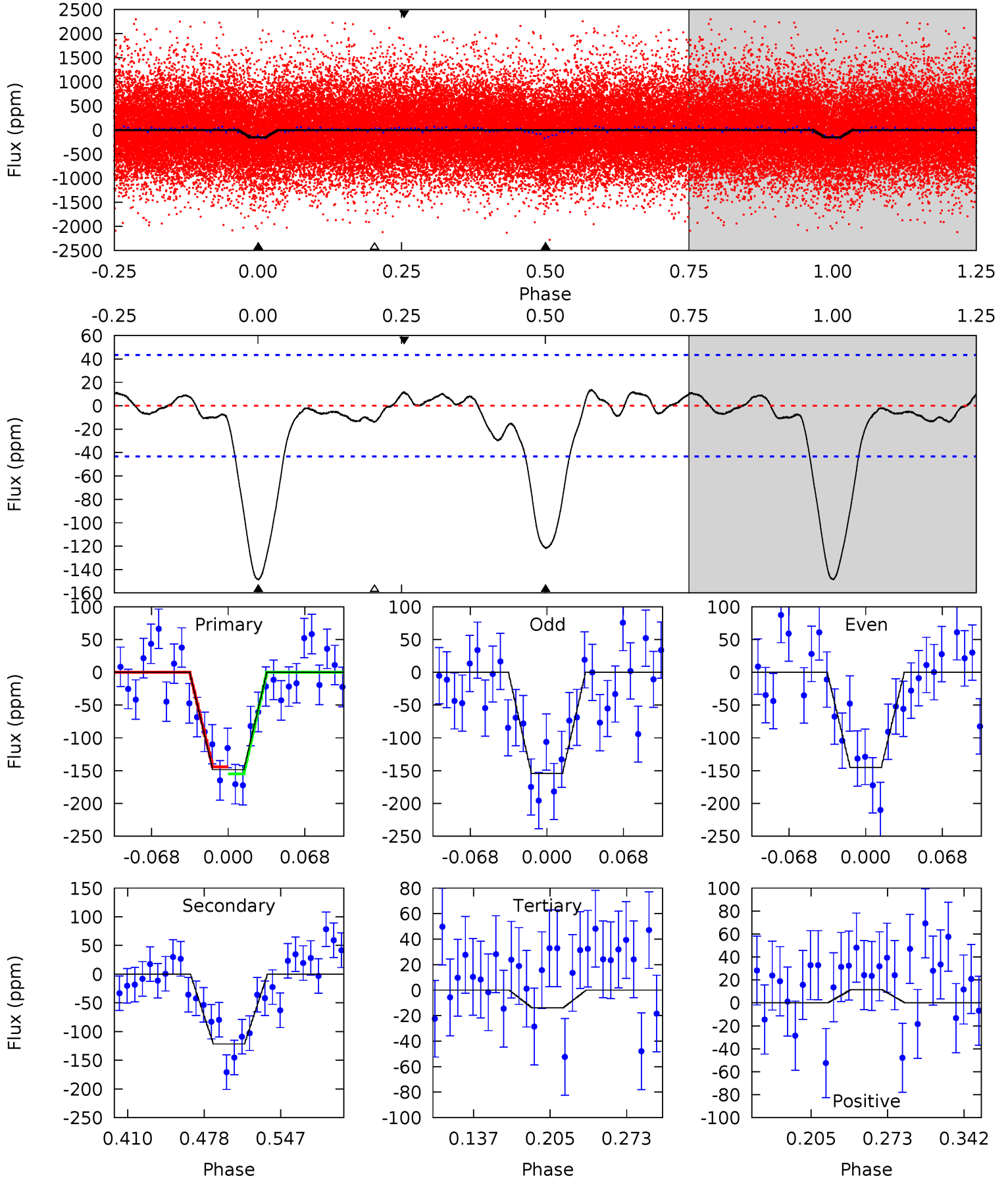
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.0	11.7	1.69	0	4.60	1.73	1.10	14.3	16.0	10.0	11.7	0.66	0.96	0.16	0.47



Alt Model-Shift Uniqueness Test

004381282-01, P = 0.995169 Days, E = 131.157075 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.9	13.0	1.49	1.23	4.64	1.82	0.95	14.4	14.7	11.5	11.8	0.49	0.94	0.08	0.56



Stellar Parameters For KIC 004381282

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5271^{+174}_{-158}	$4.634^{+0.066}_{-0.039}$	$-1.060^{+0.300}_{-0.300}$	$0.630^{+0.049}_{-0.044}$	$0.624^{+0.059}_{-0.023}$	$3.510^{+0.851}_{-0.572}$
	+3%/-3%	+1%/-1%	+28%/-28%	+8%/-7%	+9%/-4%	+24%/-16%
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 004381282-01 / KOI 2922.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-97 ± 8	$0.87^{+0.56}_{-0.51}$	1985^{+77}_{-71}	4746^{+2334}_{-847}	20^{+92}_{-13}
Alt.	-122 ± 9	$0.90^{+0.60}_{-0.50}$	1992^{+74}_{-73}	4865^{+2489}_{-863}	23^{+100}_{-15}

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

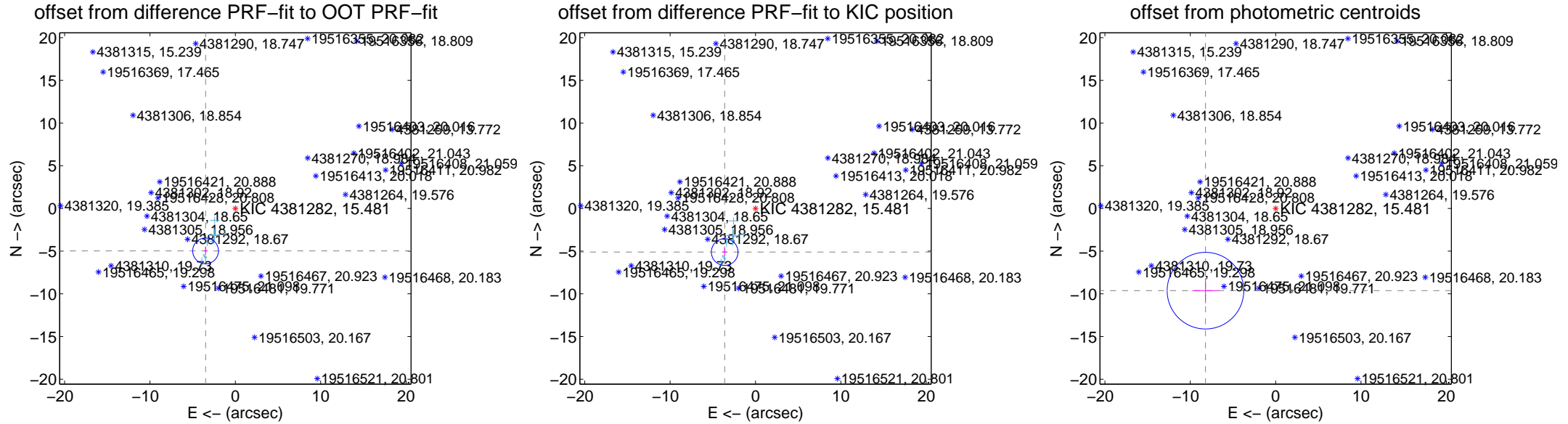
DV Centroid Data

Supplemental centroid analysis for 004381282-01. Kepler magnitude: 15.48. Transit SNR 10.56

There are 10 quarters with good PRF difference image offsets

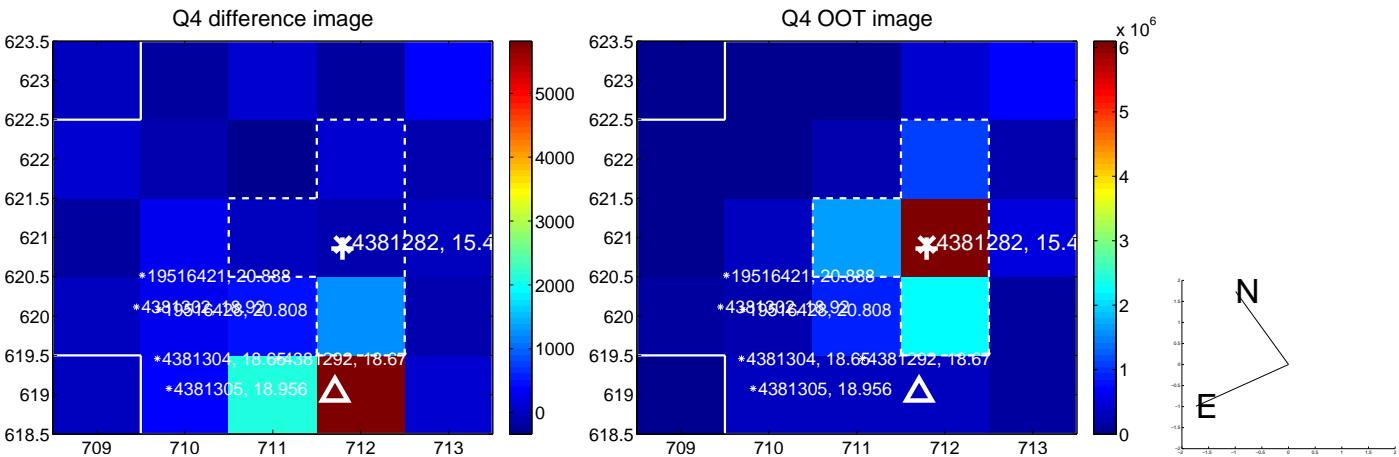
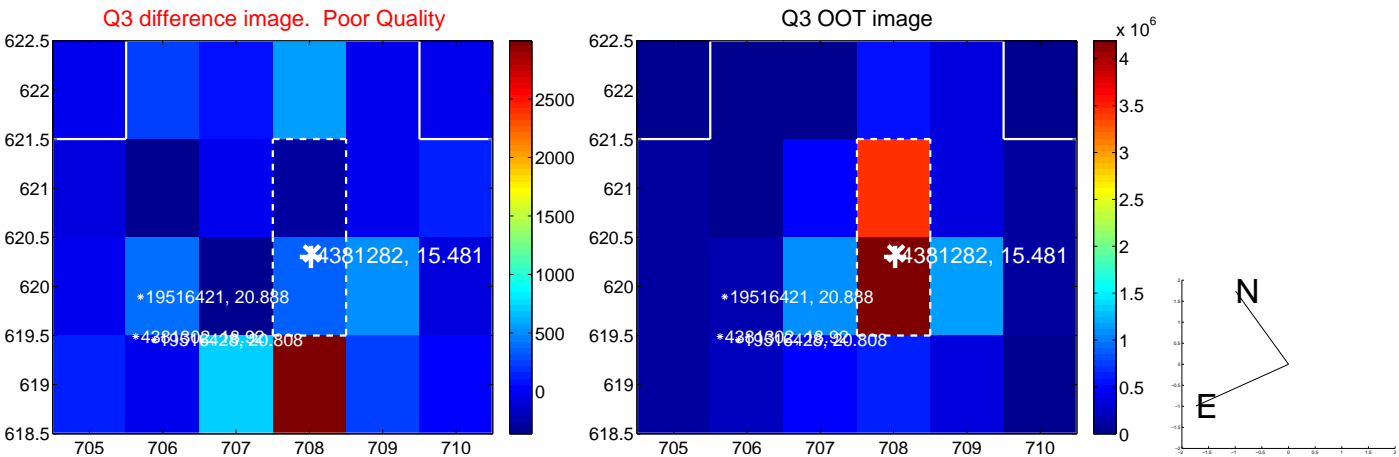
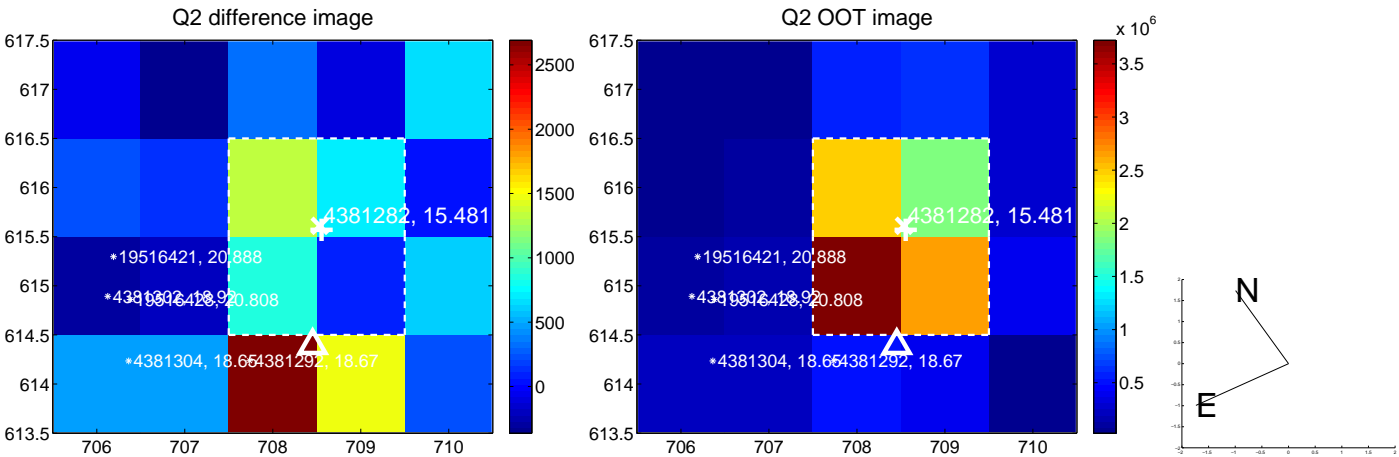
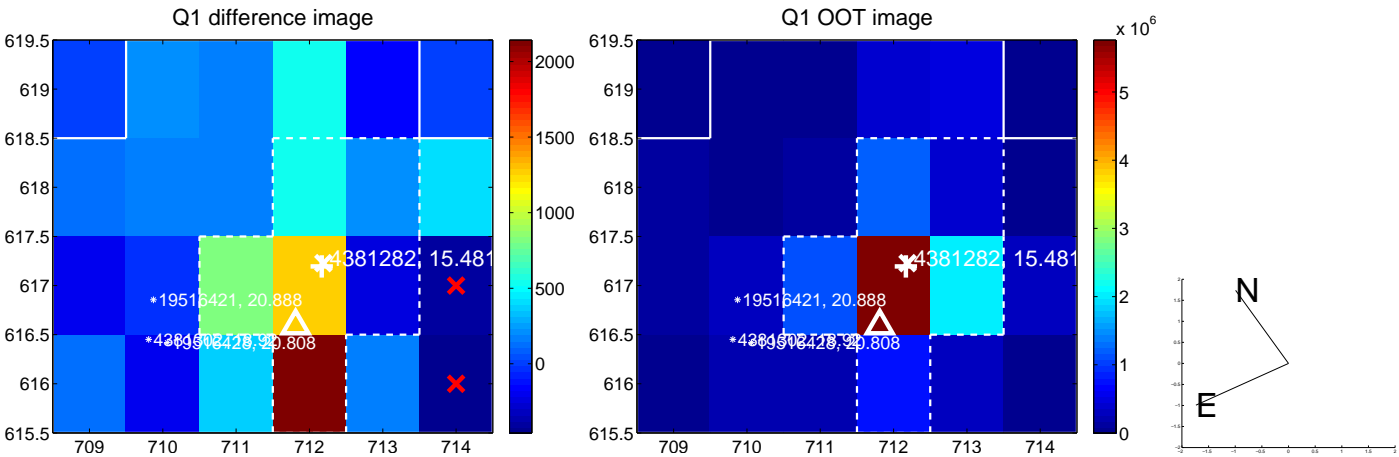
The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.071 ± 0.503	12.07	3.485 ± 0.255	-4.971 ± 0.469
PRF-fit source offset from KIC position	6.255 ± 0.521	12.01	3.607 ± 0.254	-5.110 ± 0.484
photometric centroid source offset	12.66 ± 1.50	8.46	8.22 ± 1.54	-9.63 ± 1.46

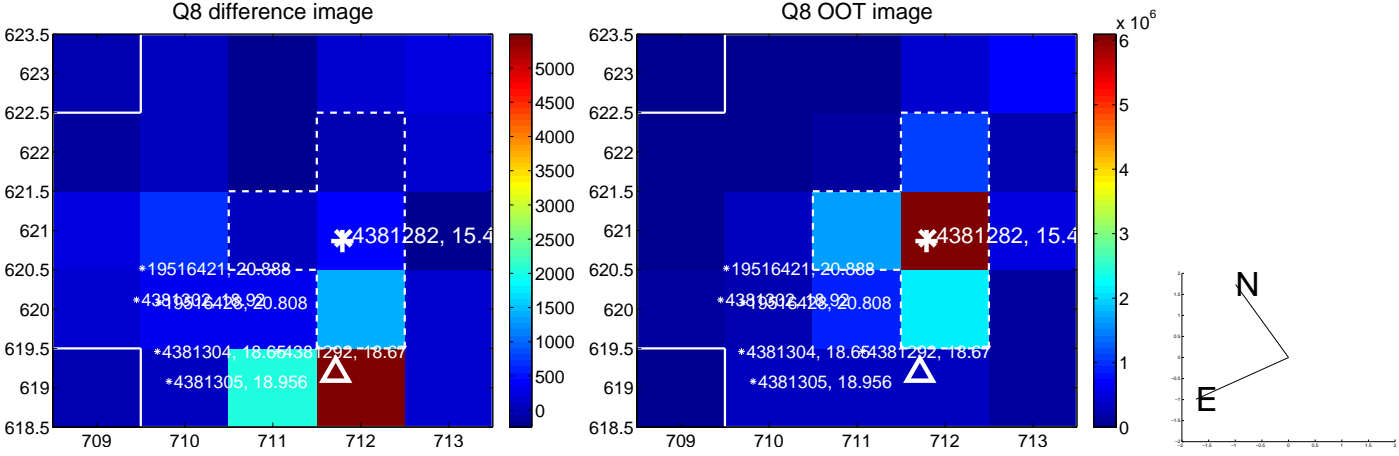
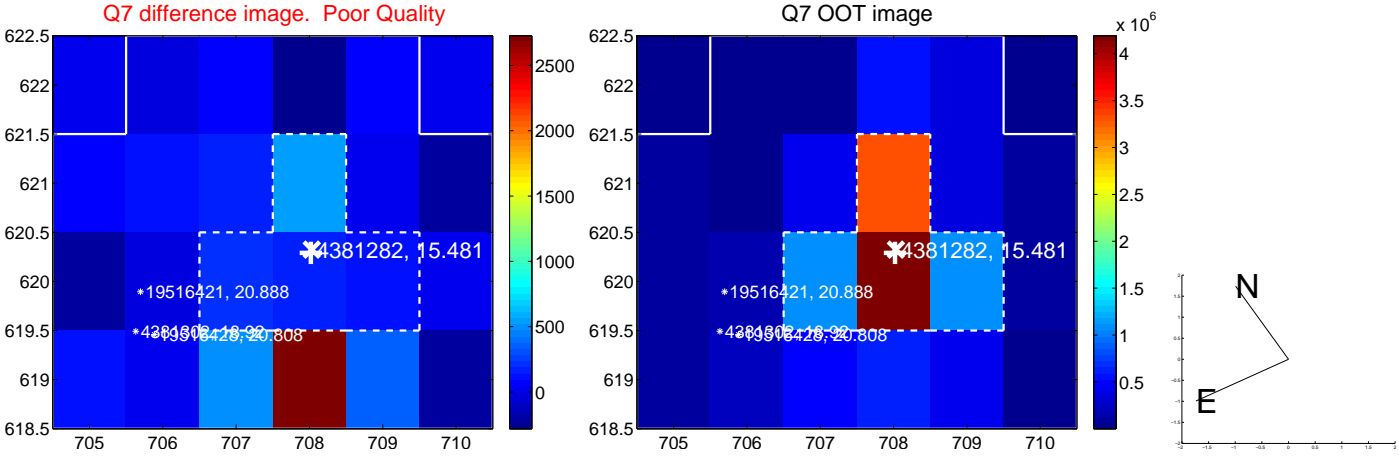
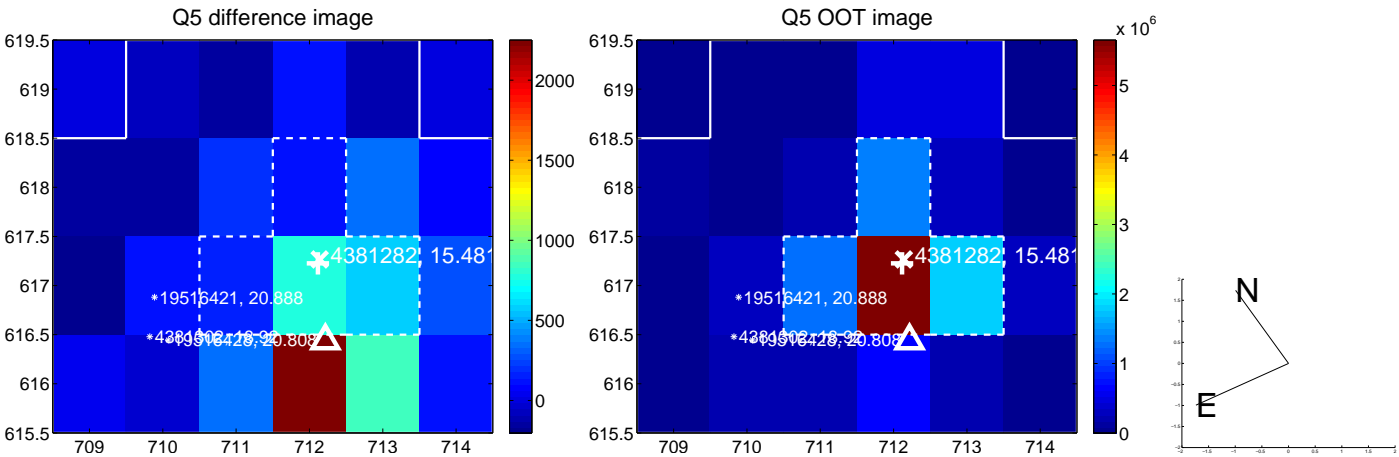


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

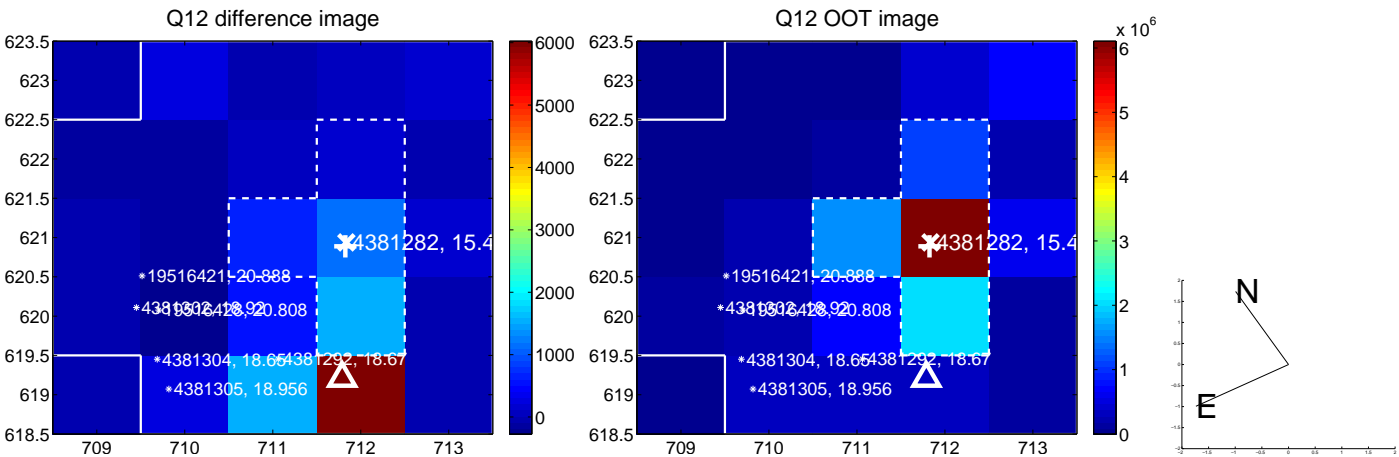
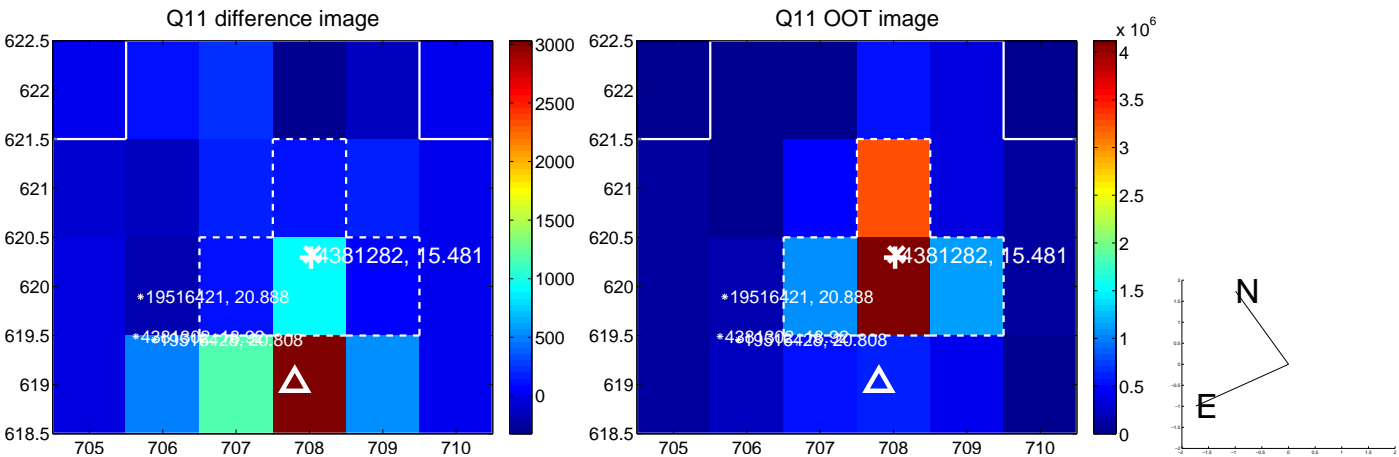
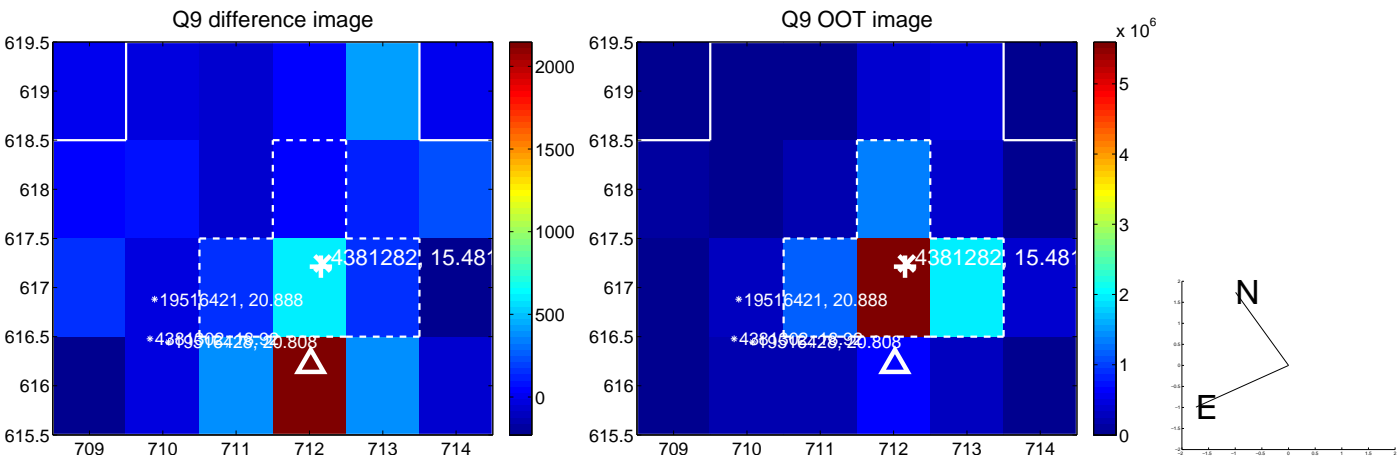
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



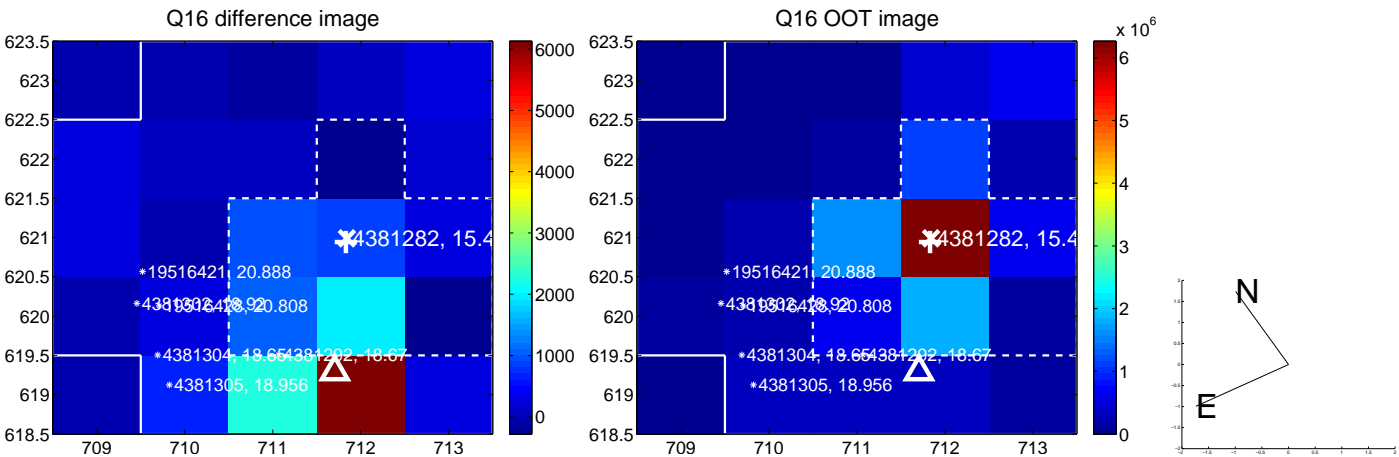
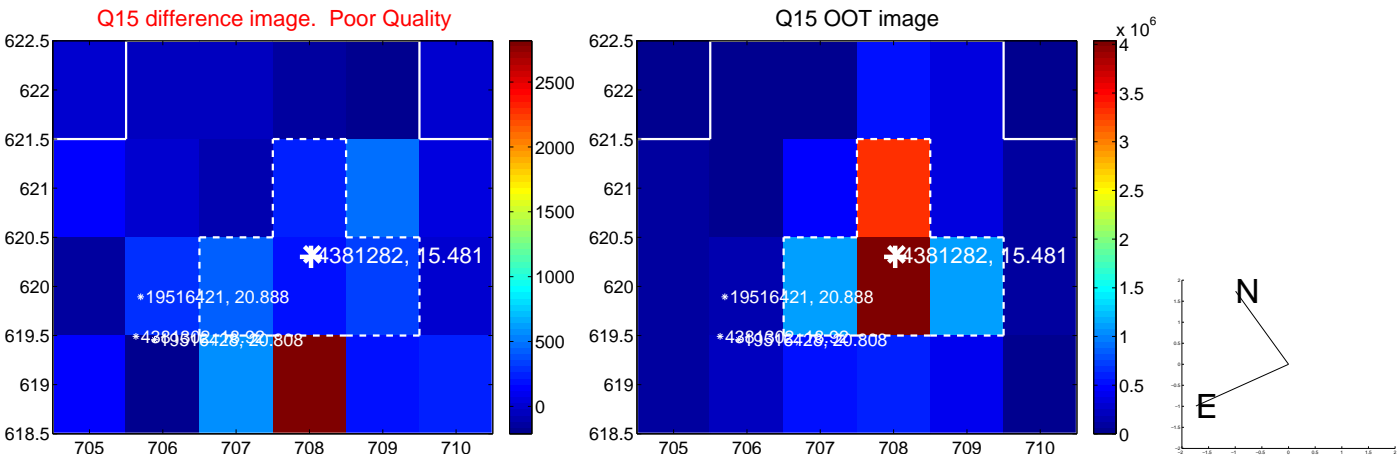
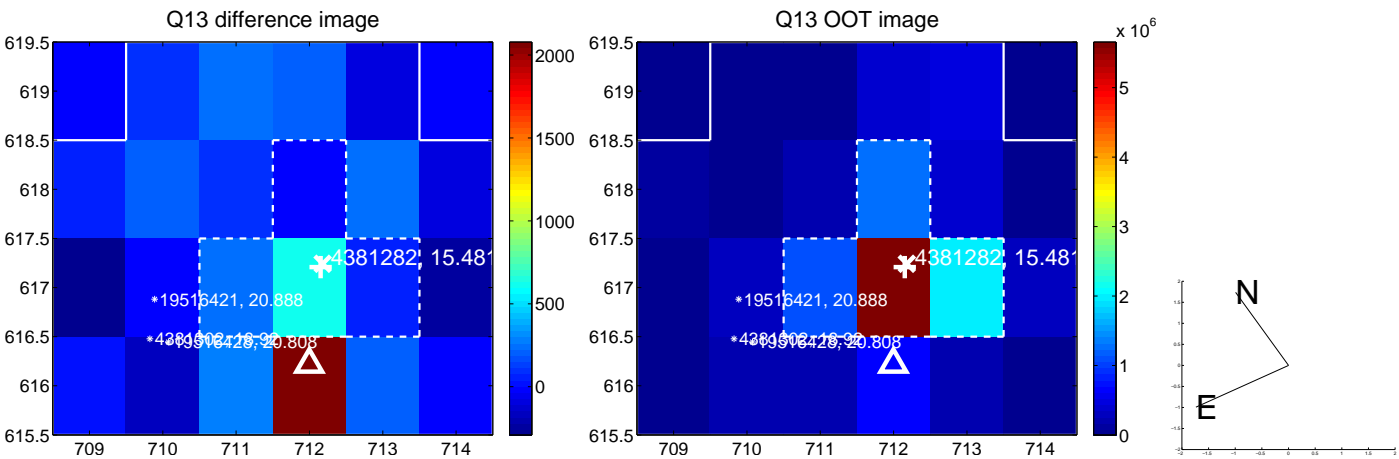
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



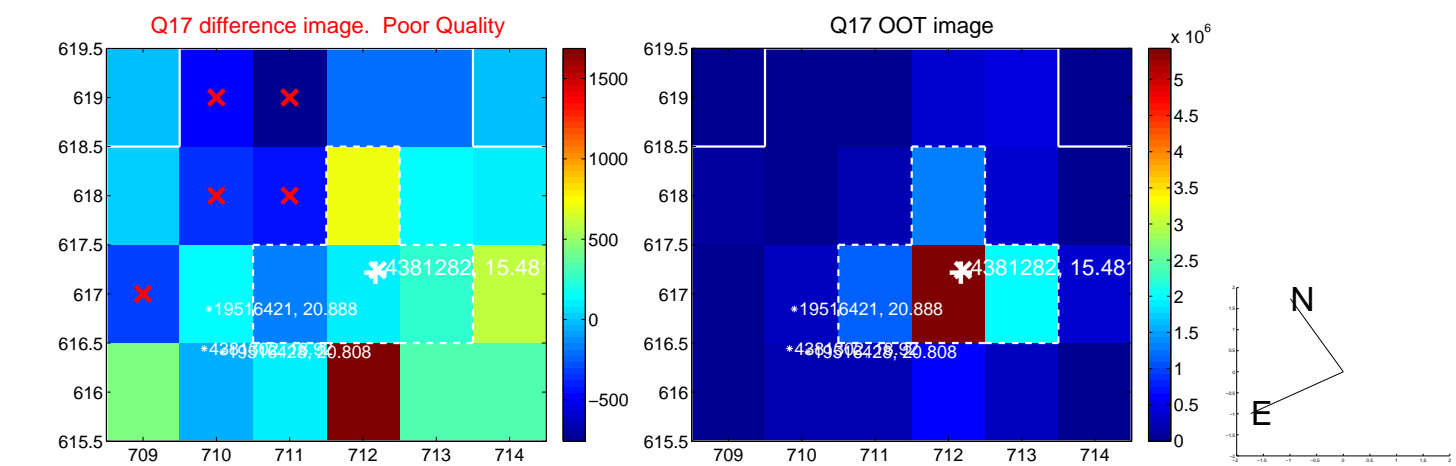
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



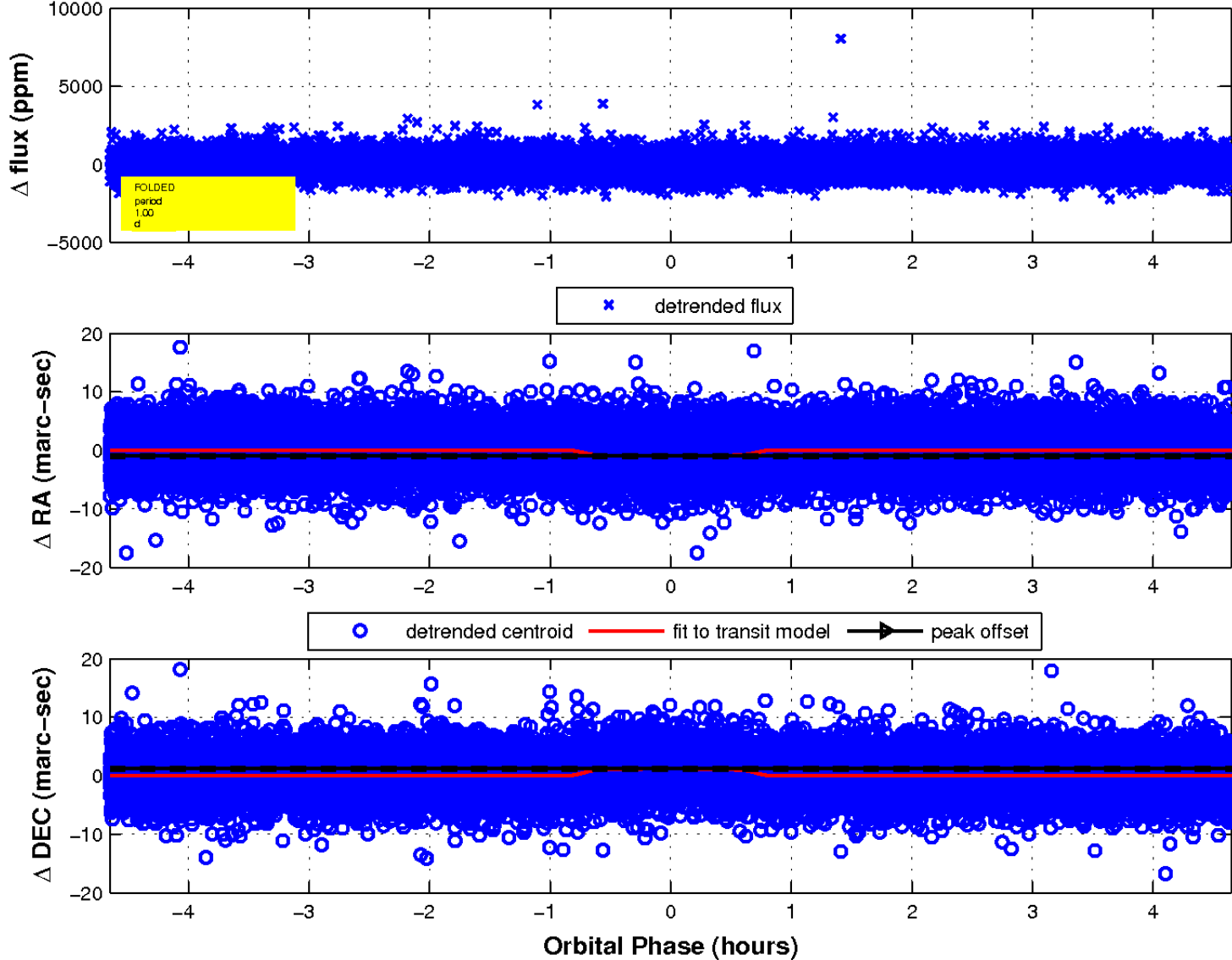
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



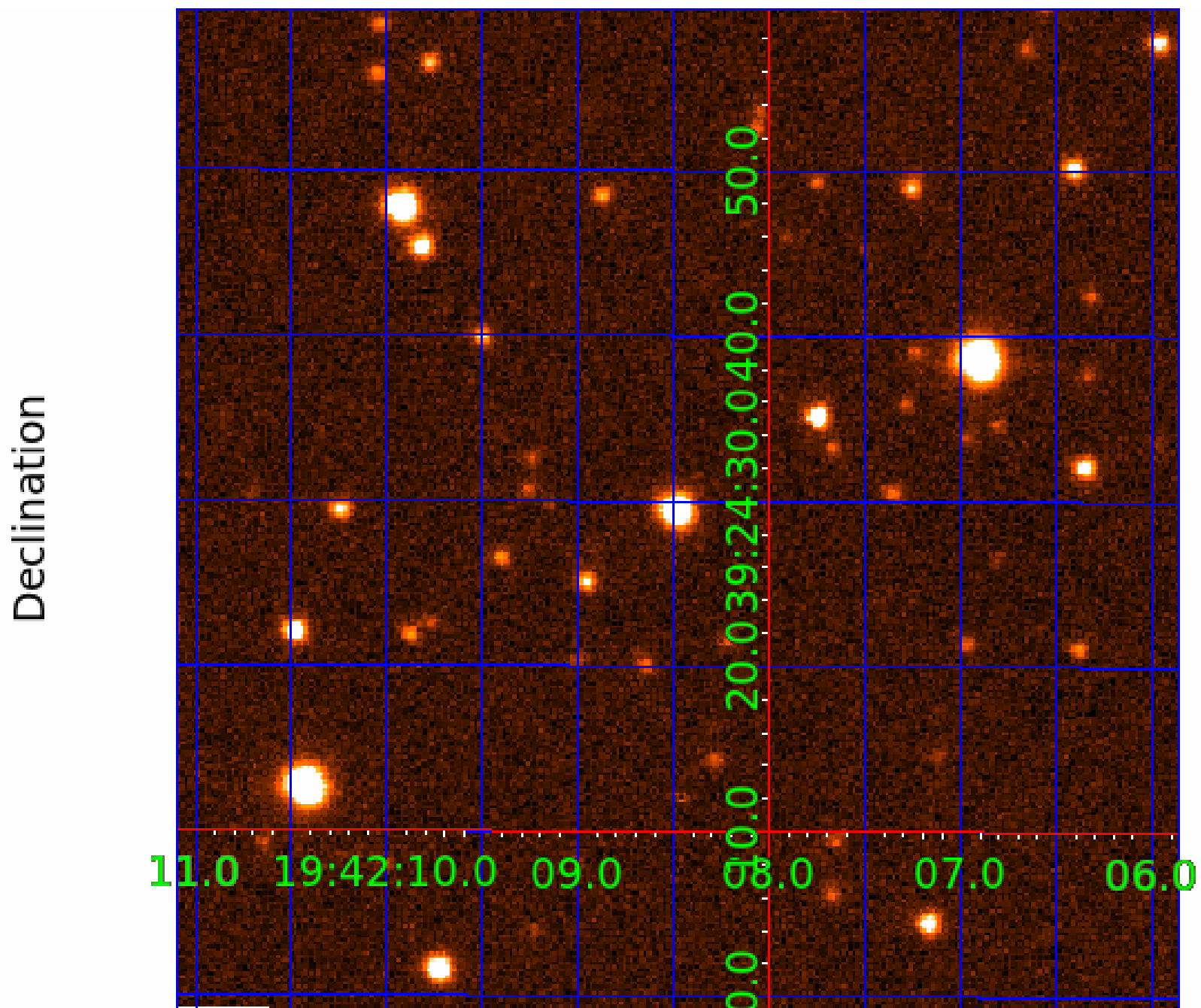
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 2



UKIRT Image



KIC 004381282

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})
004381282-01	OBS	2922.01	0.995167	132.152195	122.5	1.550	10.1	10.6	0.63	5271	0.83	988.17
004381282-02	OBS	No	0.995153	131.670926	94.1	1.940	9.1	9.2	0.63	5271	0.72	988.19

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004381282-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST
004381282-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET—HALO_GHOST

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.

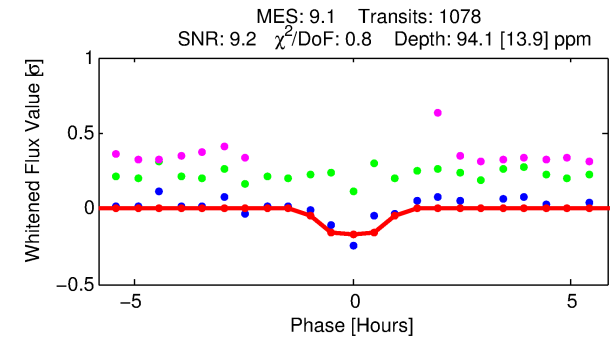
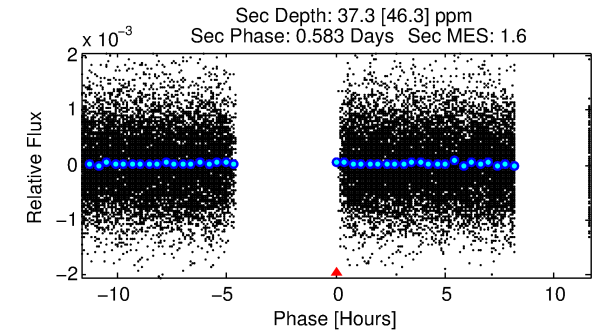
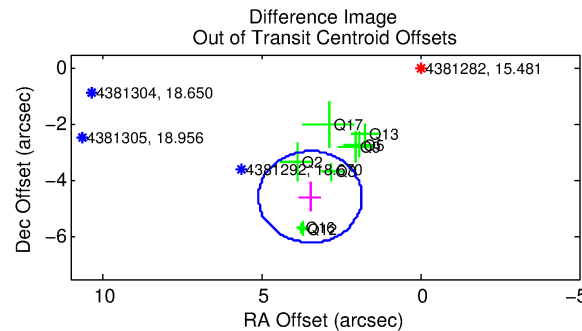
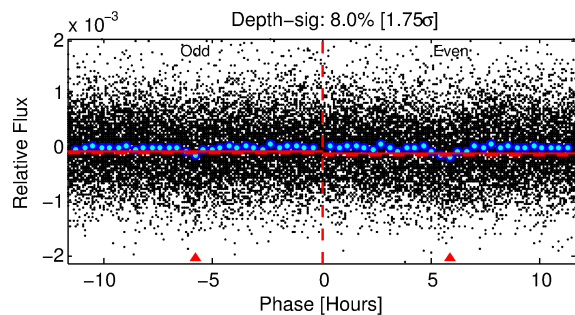
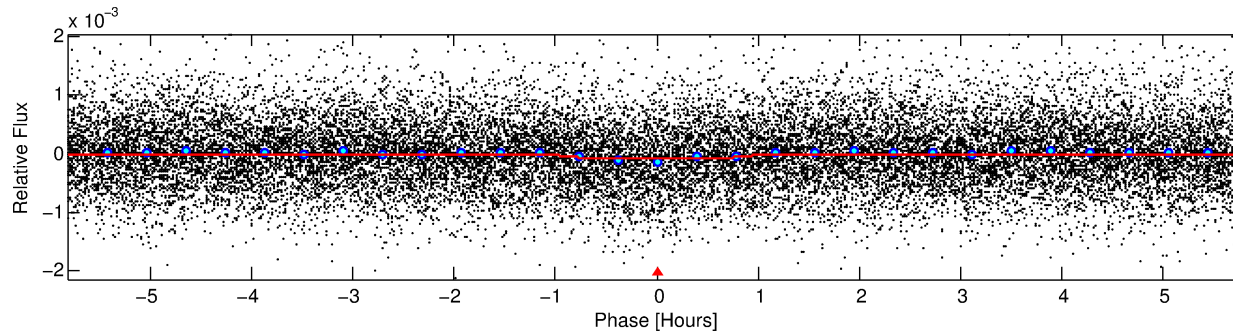
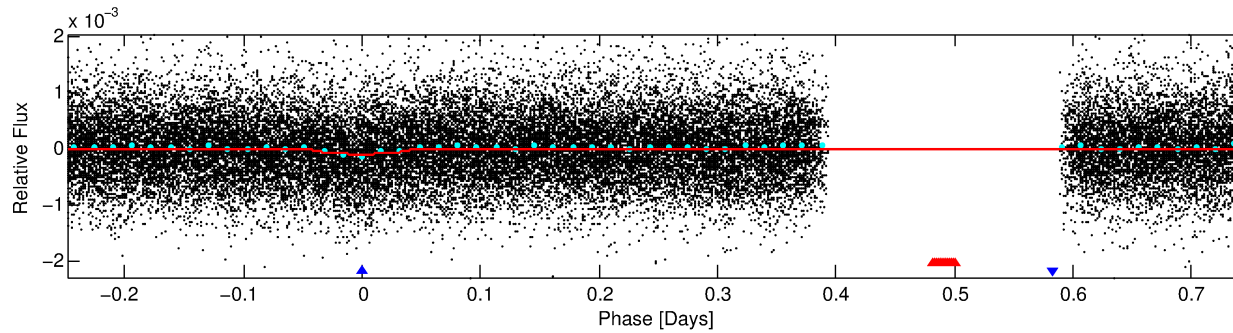
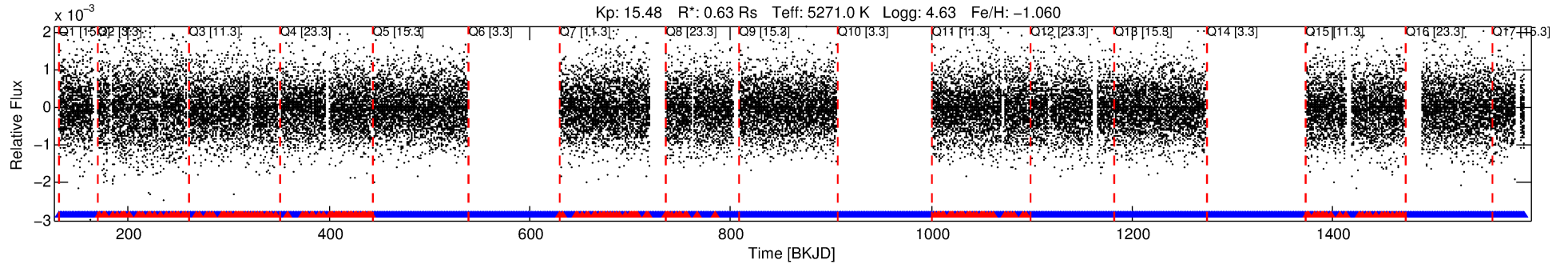
Ephemeris Match Information For 004381282-02

No Significant Match Found

DV One-Page Summary

KIC: 4381282 Candidate: 2 of 2 Period: 0.995 d
KOI: K02922 Corr: No Ephemeris Match

Kp: 15.48 R*: 0.63 Rs Teff: 5271.0 K Logg: 4.63 Fe/H: -1.060



DV Fit Results:

Period = 0.99515 [0.00001] d
Epoch = 131.6709 [0.0031] BKJD
Rp/R* = 0.0105 [0.0096]
a/R* = 2.08 [6.90]
b = 0.89 [1.00]
Seff = 988.19 [172.26]
Teq = 1430 [62] K
Rp = 0.72 [0.66] Re
a = 0.0167 [0.0012] AU
Ag = 10.96 [24.18] [0.41σ]
Teff = 4022 [2220] K [1.17σ]

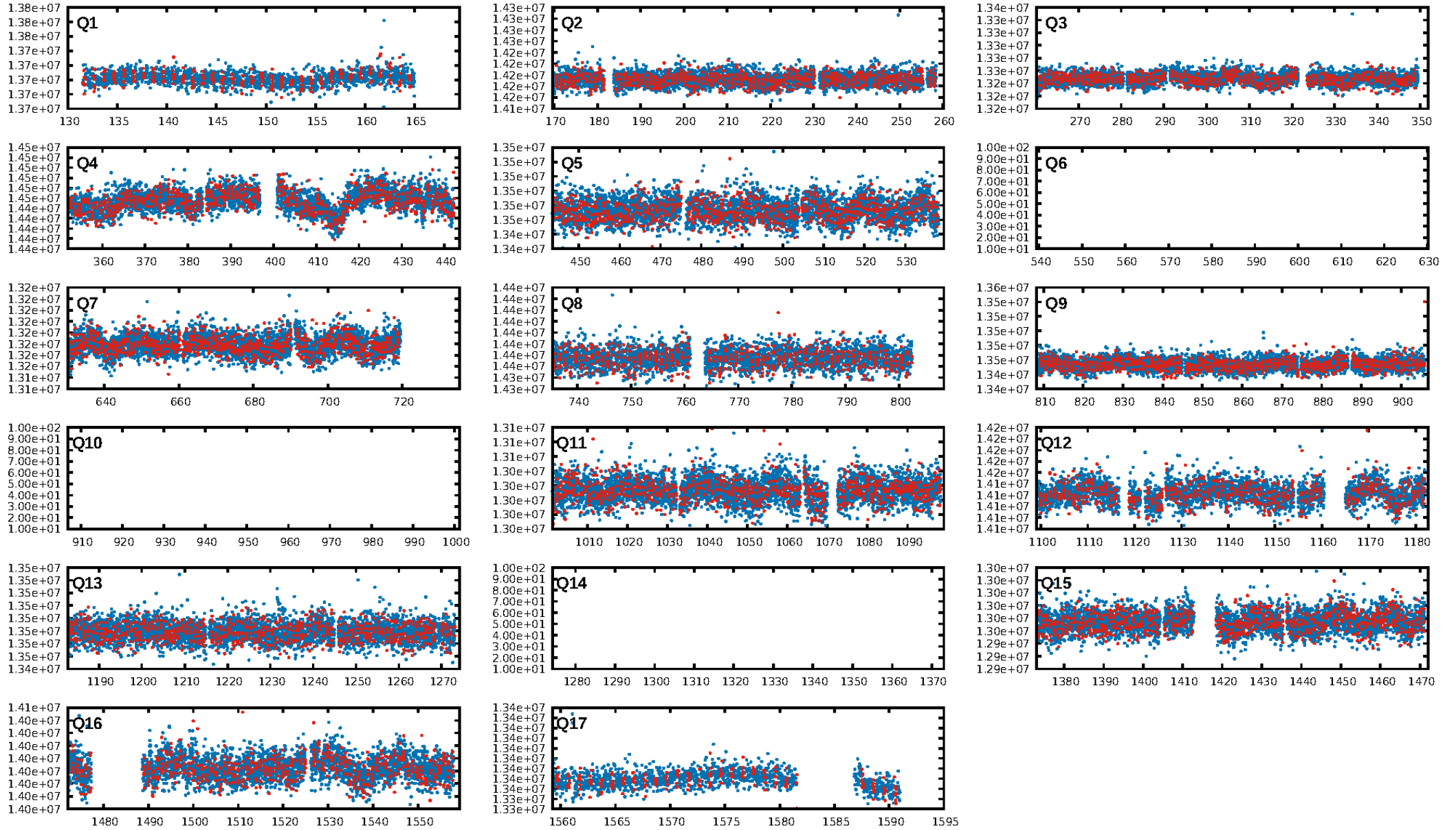
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 6.77e-22
RollingBand-fgt: 0.81 [828/1017]
GhostDiagnostic-chr: -0.1345
Centroid-sig: 0.0%
Centroid-so: 10.992 arcsec [6.40σ]
OotOffset-rm: 5.737 arcsec [10.56σ]
KicOffset-rm: 5.914 arcsec [11.69σ]
OotOffset-st: 1/1/2/4 [8]
KicOffset-st: 1/1/2/4 [8]
DiffImageQuality-fgm: 1.00 [8/8]
DiffImageOverlap-fno: 1.00 [14/14]

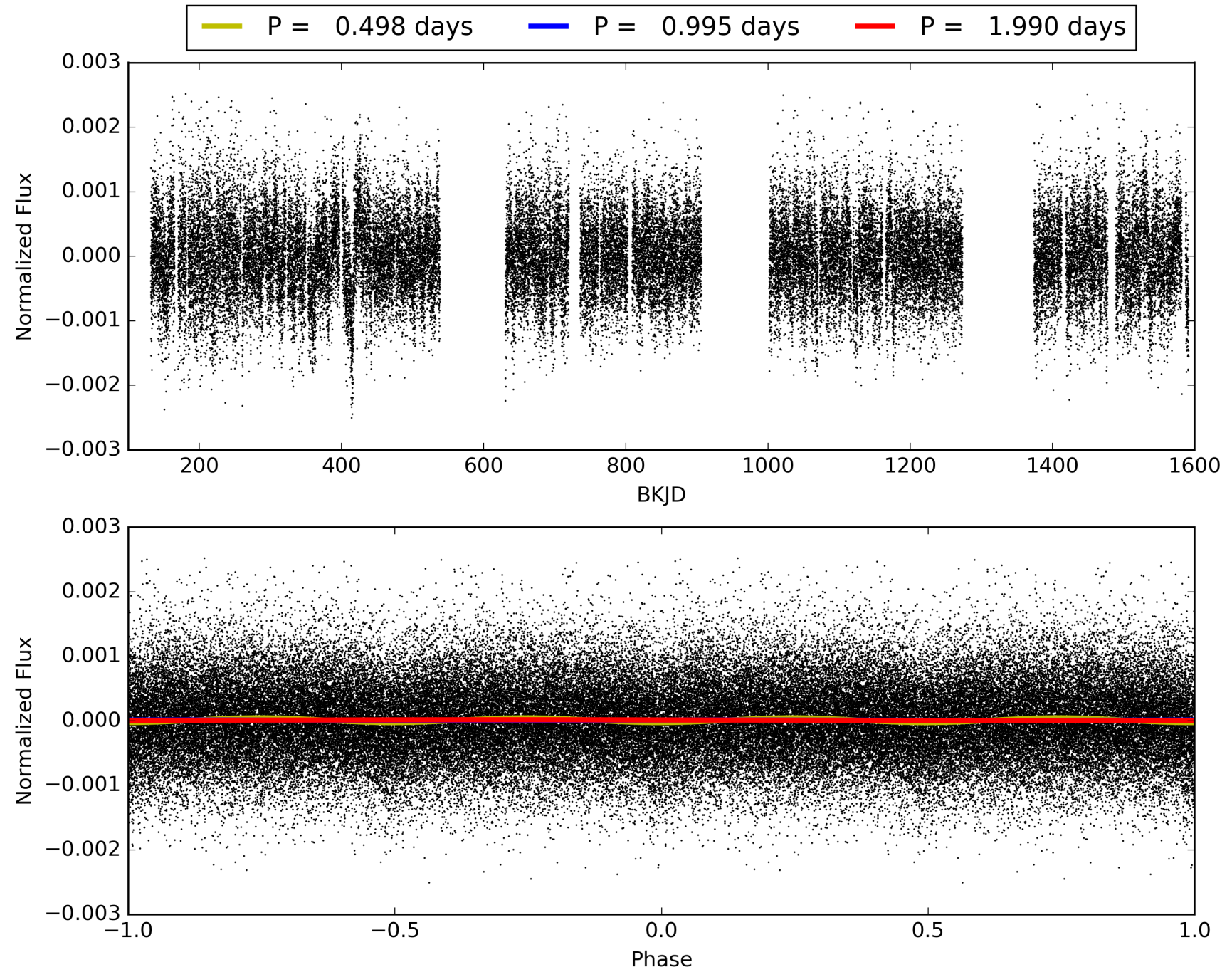
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 11:31:05 Z

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

TCE 004381282-02, PDC Light Curves

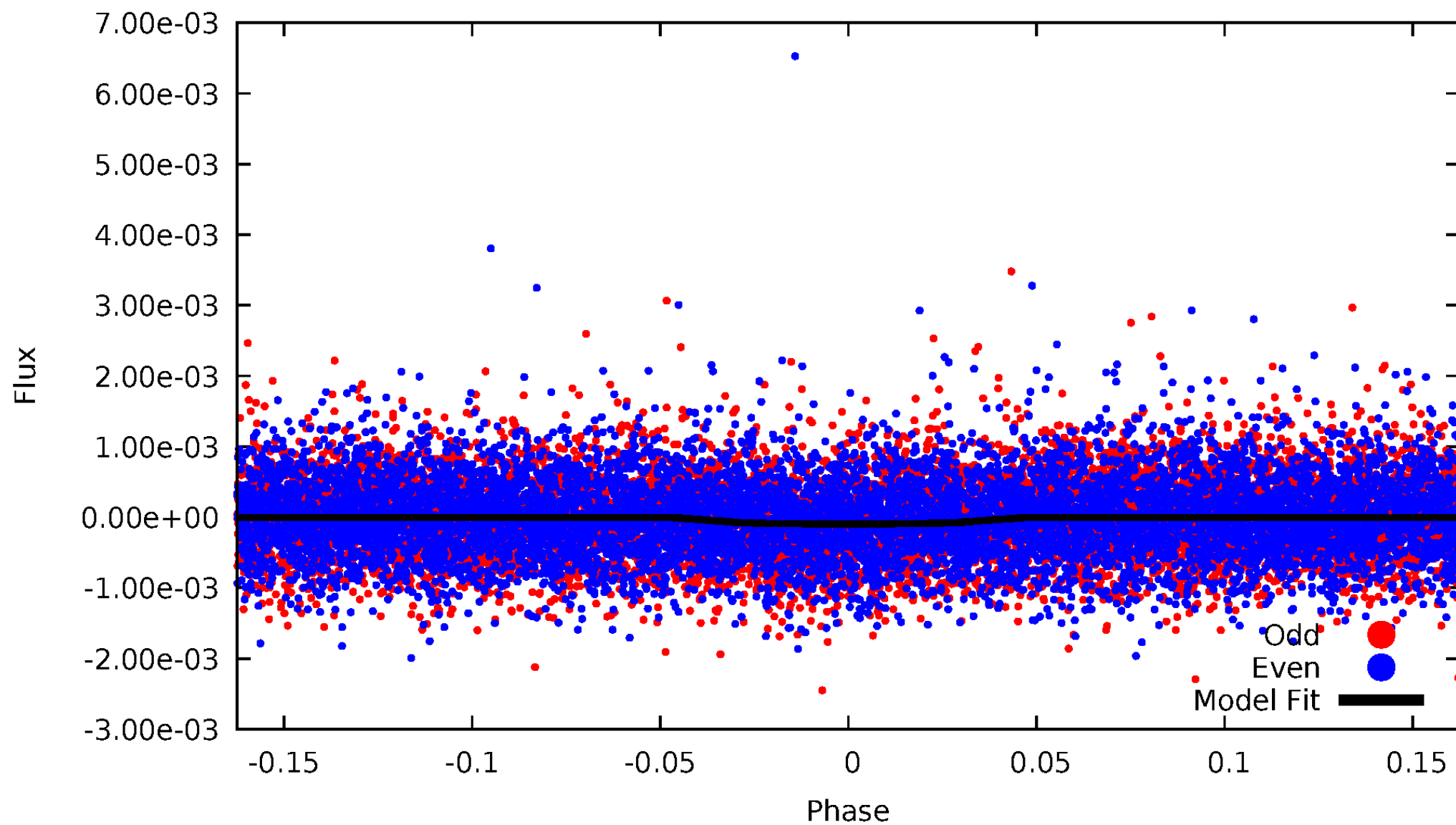


TCE 004381282-02



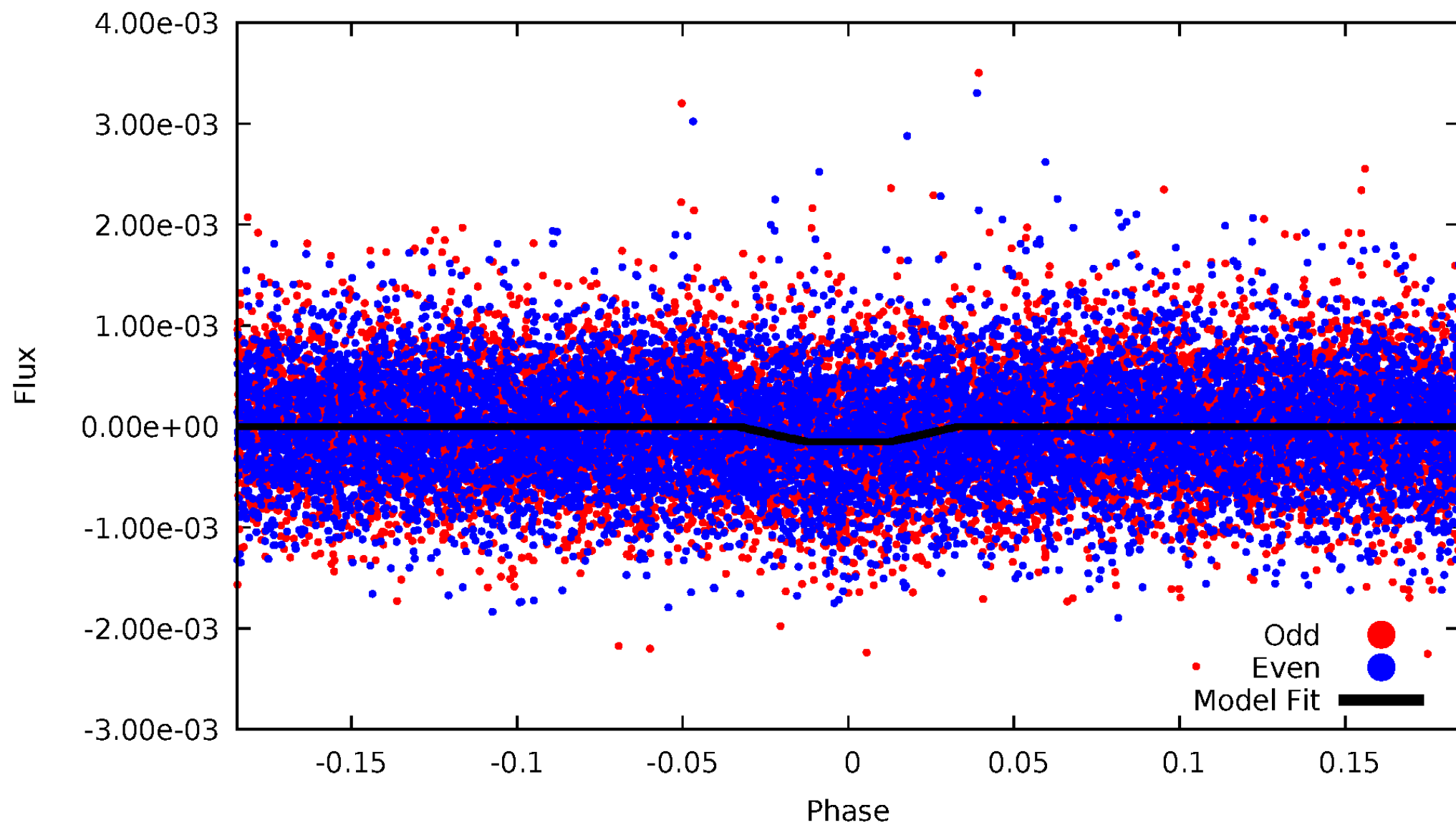
DV Odd/Even

TCE 004381282-02



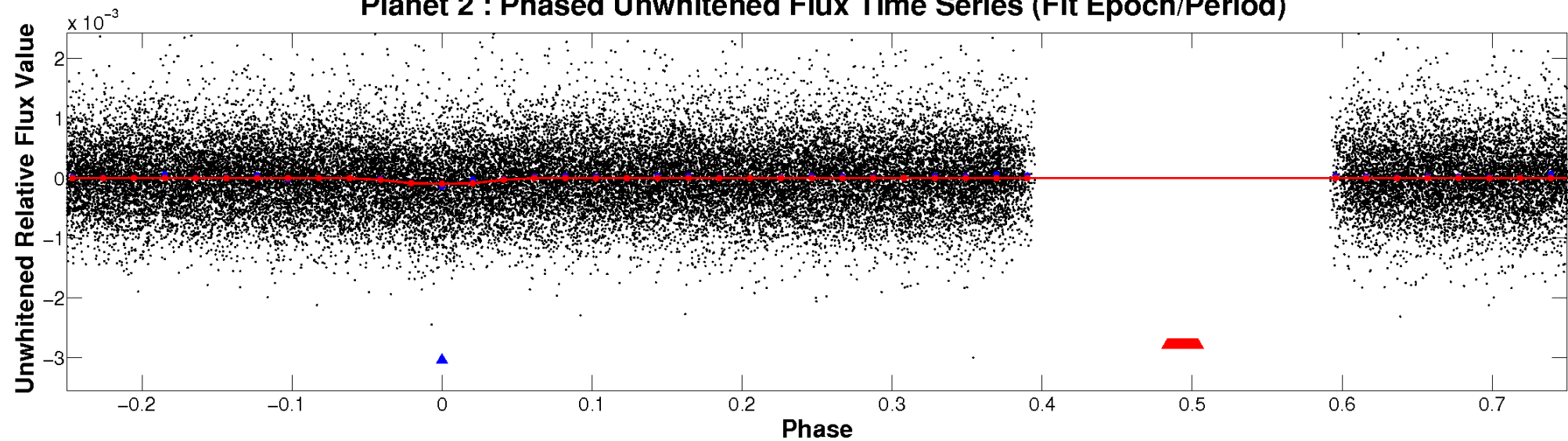
ALT Odd/Even

TCE 004381282-02

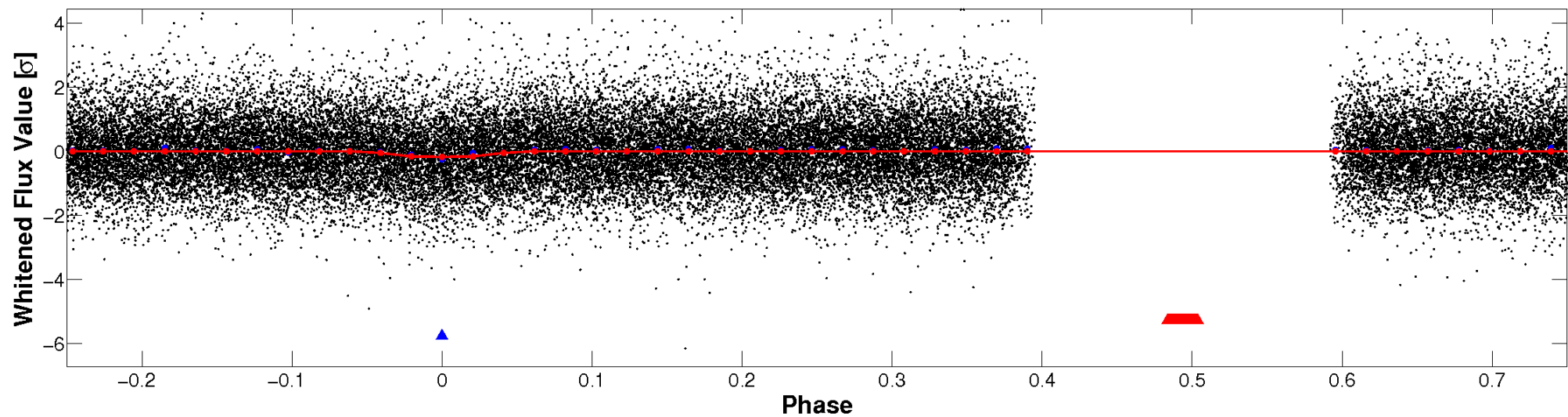


Non-Whitened Vs. Whitened Light Curve

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

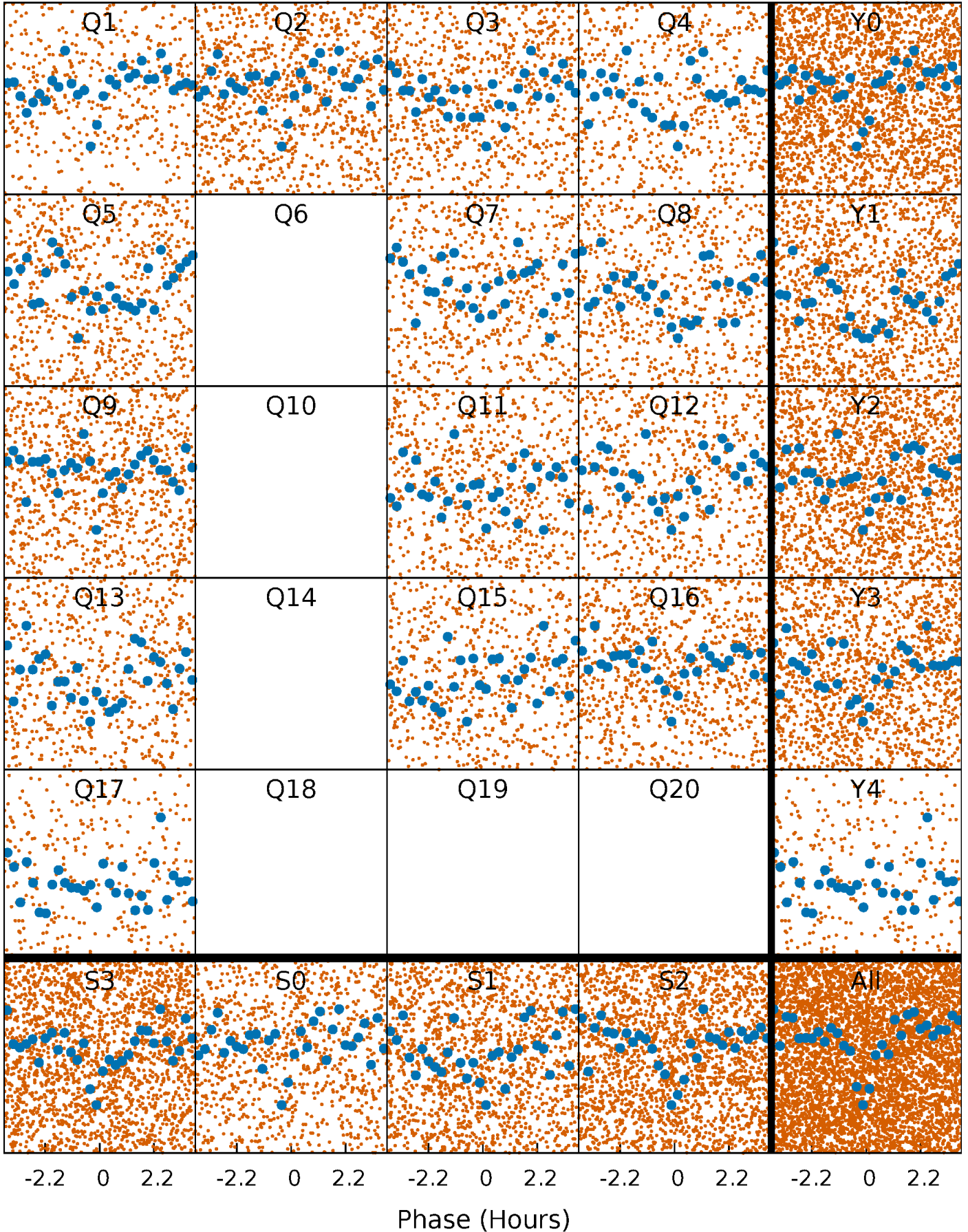


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



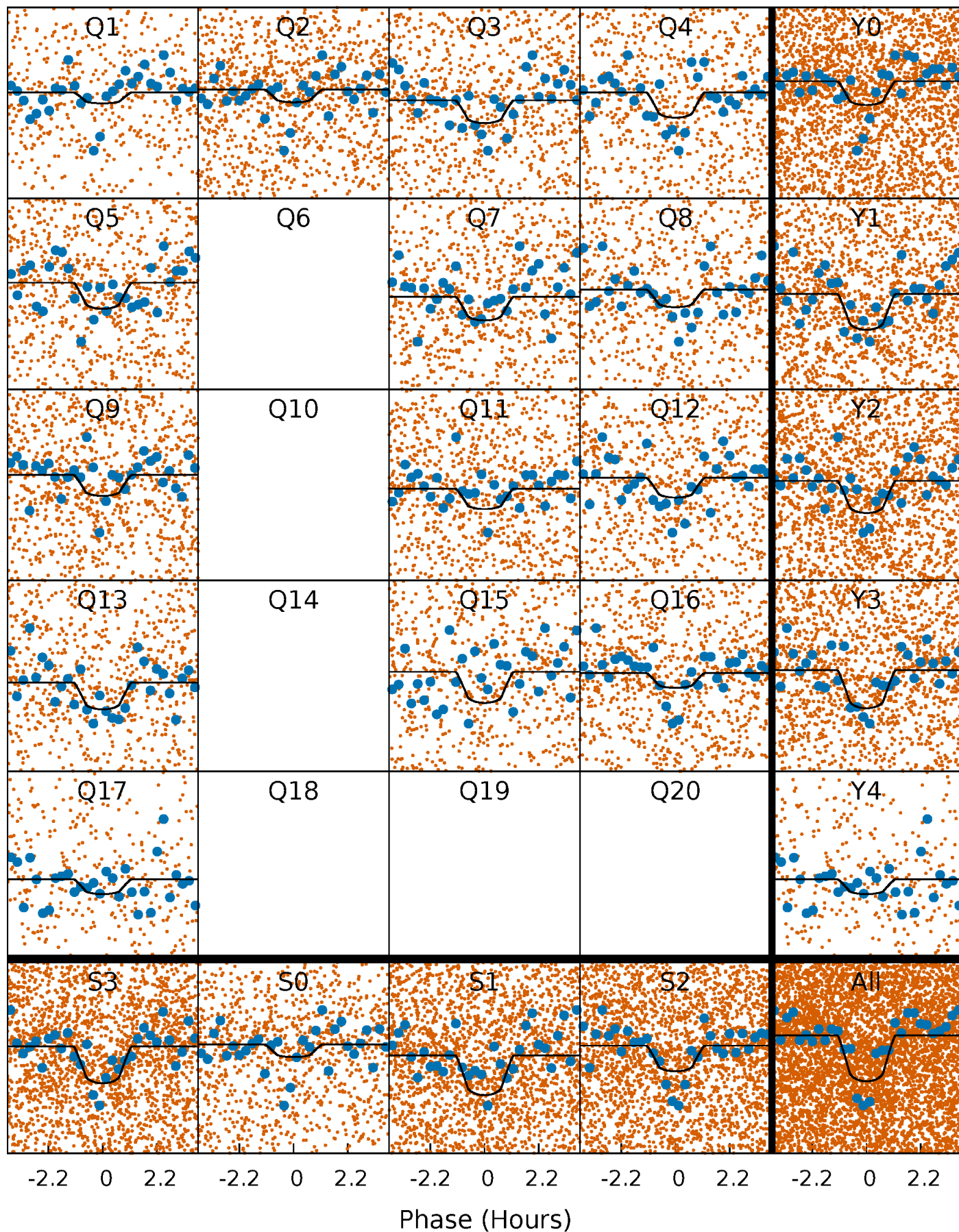
PDC Quarter-Phased Transit Curves

TCE 004381282-02 P= 0.995153 Days $T_0=131.670926$ (BKJD)



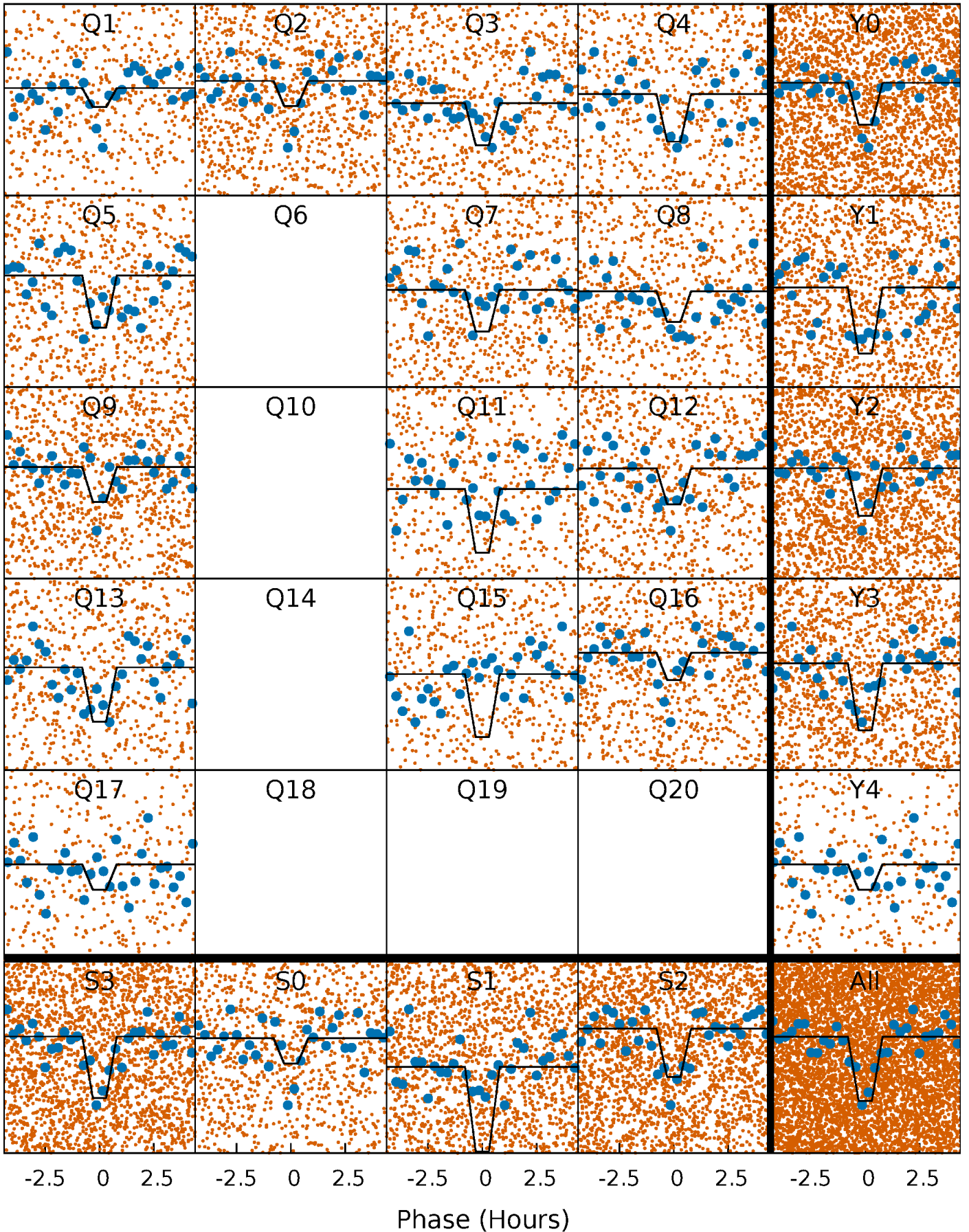
DV Quarter-Phased Transit Curves

TCE 004381282-02 P= 0.995153 Days $T_0=131.670926$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

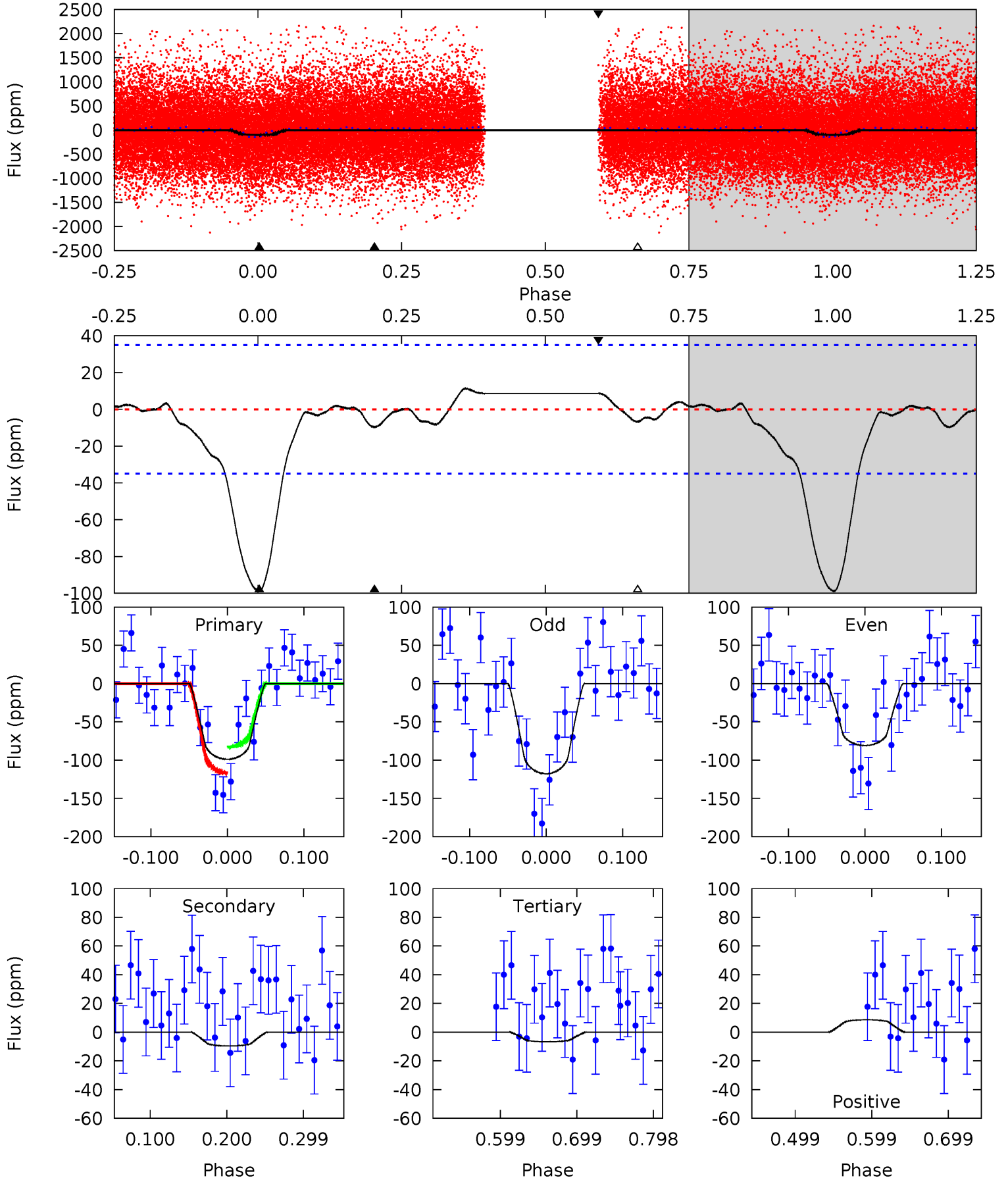
TCE 004381282-02 P= 0.995170 Days $T_0=131.656701$ (BKJD)



DV Model-Shift Uniqueness Test

004381282-02, P = 0.995153 Days, E = 130.675773 Days

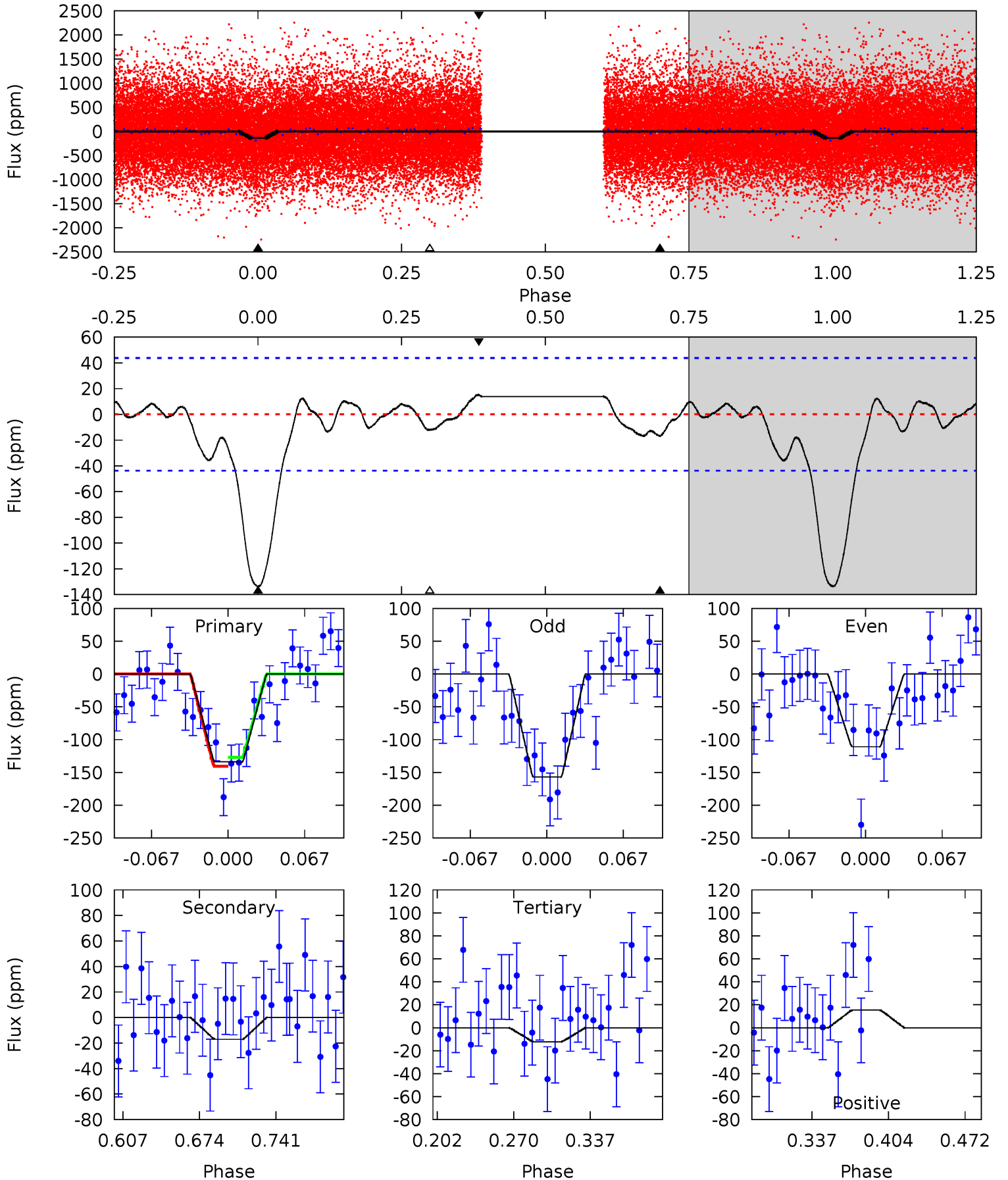
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	1.26	0.88	1.13	4.57	1.65	0.78	12.0	11.8	0.38	0.13	2.42	0.92	0.10	2.21



Alt Model-Shift Uniqueness Test

004381282-02, P = 0.995170 Days, E = 130.661531 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	1.82	1.30	1.63	4.65	1.83	1.13	12.9	12.6	0.51	0.18	2.45	1.17	0.10	0.72



Stellar Parameters For KIC 004381282

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5271^{+174}_{-158}	$4.634^{+0.066}_{-0.039}$	$-1.060^{+0.300}_{-0.300}$	$0.630^{+0.049}_{-0.044}$	$0.624^{+0.059}_{-0.023}$	$3.510^{+0.851}_{-0.572}$
	+3%/-3%	+1%/-1%	+28%/-28%	+8%/-7%	+9%/-4%	+24%/-16%
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 004381282-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-10 ± 8	$0.86^{+0.58}_{-0.55}$	1990^{+78}_{-68}	3030^{+1365}_{-4904}	$1.721^{+12.460}_{-1.441}$
Alt.	-17 ± 9	$0.92^{+0.61}_{-0.51}$	1990^{+74}_{-69}	3316^{+1110}_{-692}	$2.858^{+11.124}_{-2.093}$

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

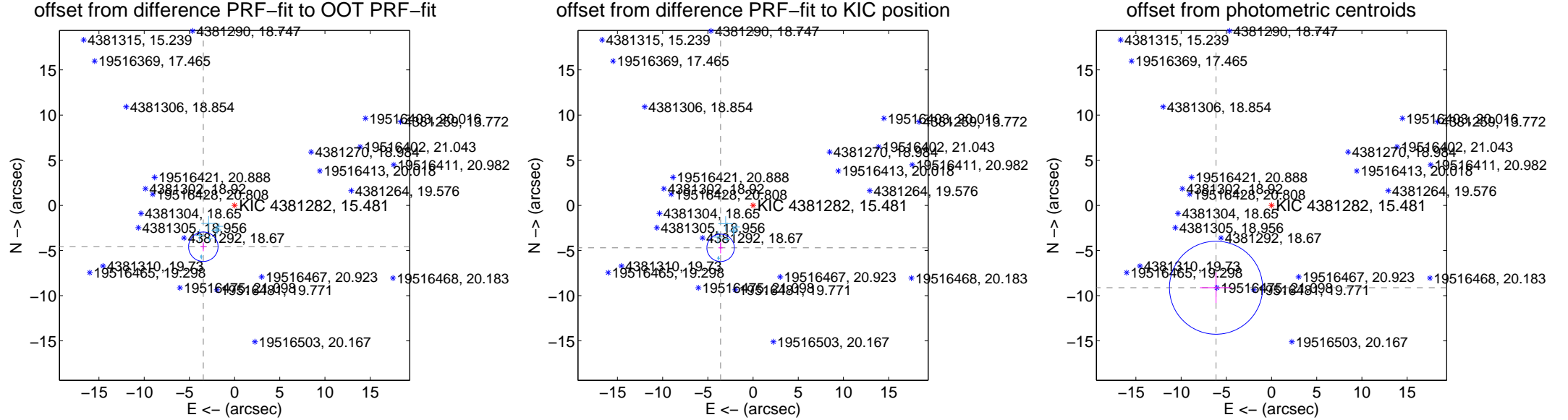
DV Centroid Data

Supplemental centroid analysis for 004381282-02. Kepler magnitude: 15.48. Transit SNR 9.19

There are 8 quarters with good PRF difference image offsets

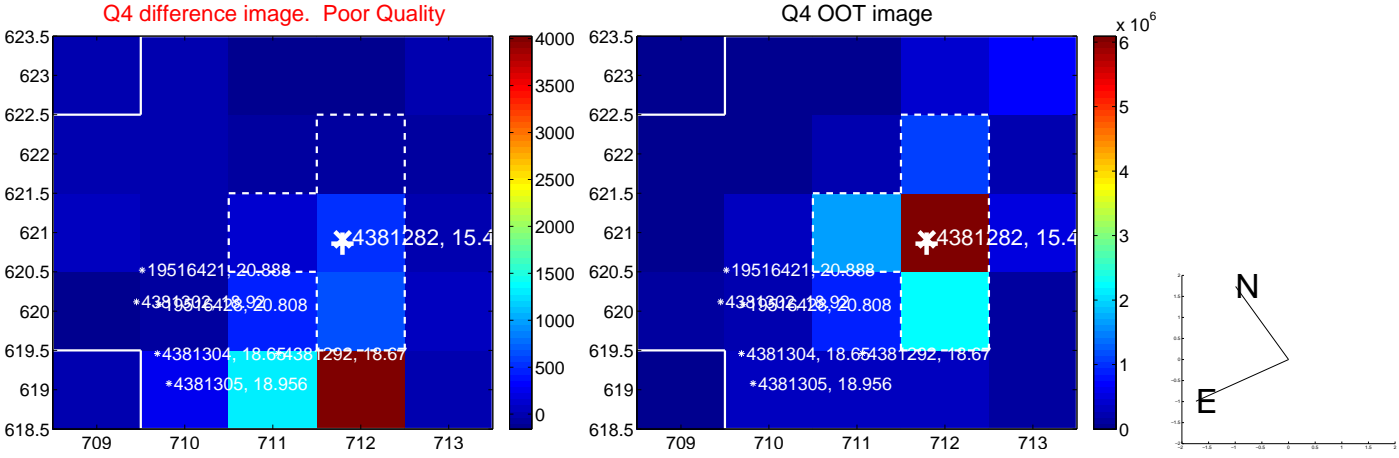
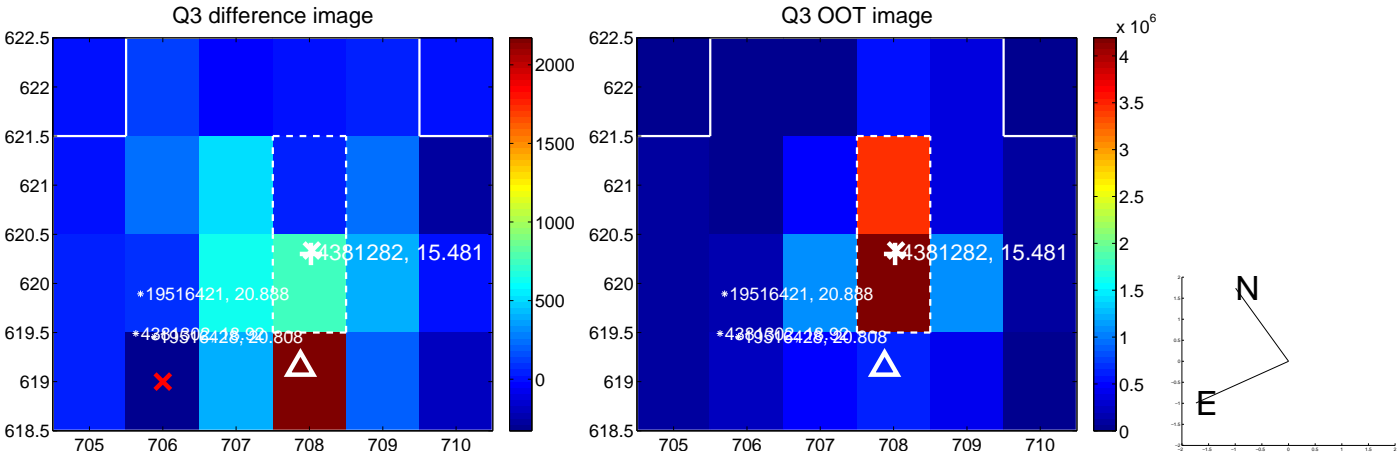
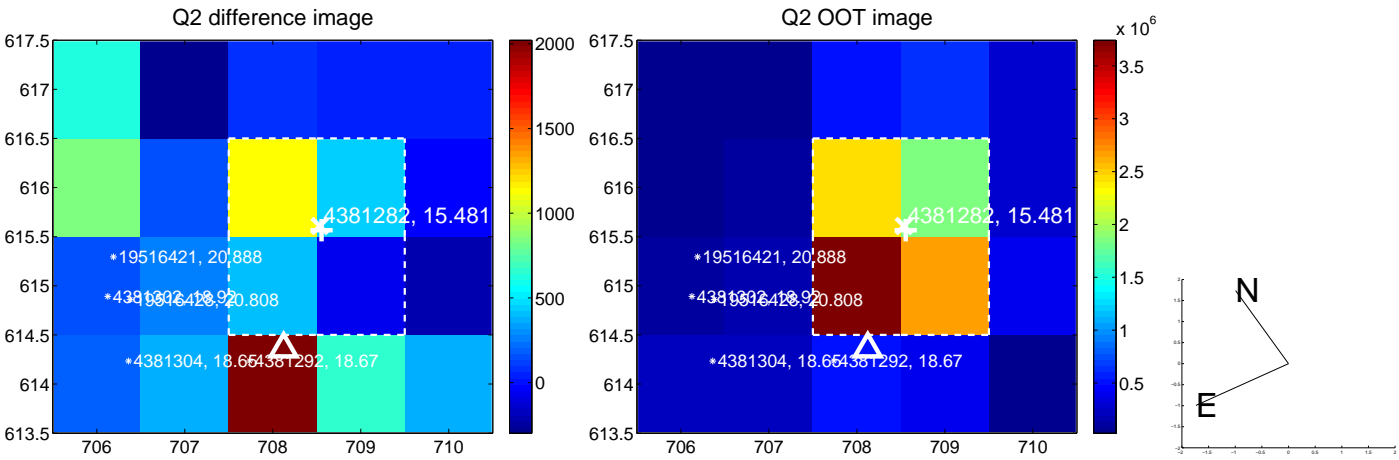
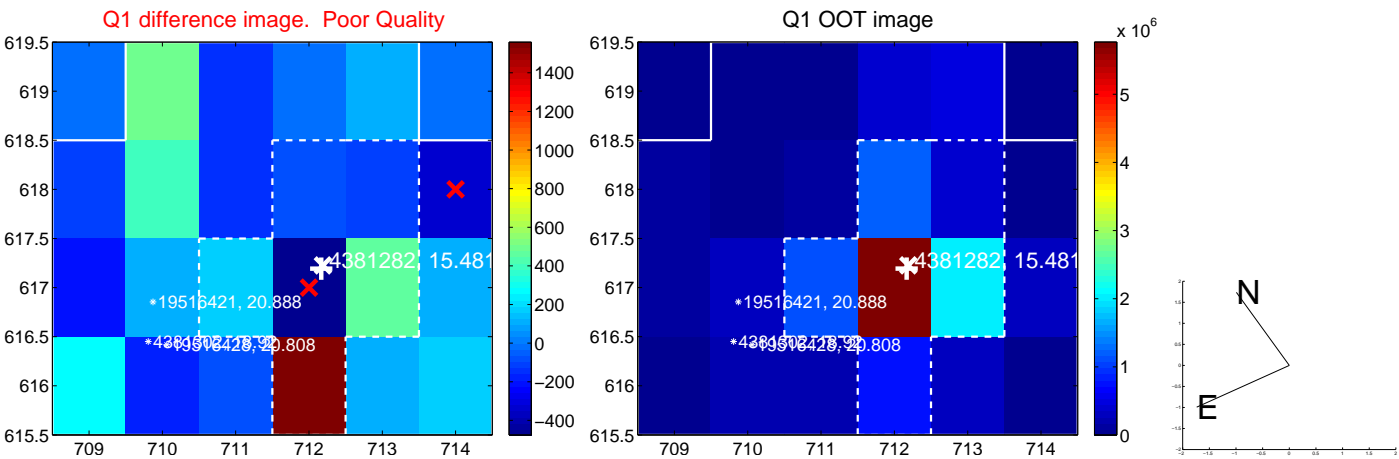
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.737 ± 0.543	10.56	3.458 ± 0.319	-4.578 ± 0.496
PRF-fit source offset from KIC position	5.914 ± 0.506	11.69	3.590 ± 0.243	-4.700 ± 0.609
photometric centroid source offset	10.99 ± 1.72	6.40	6.14 ± 1.78	-9.12 ± 1.69

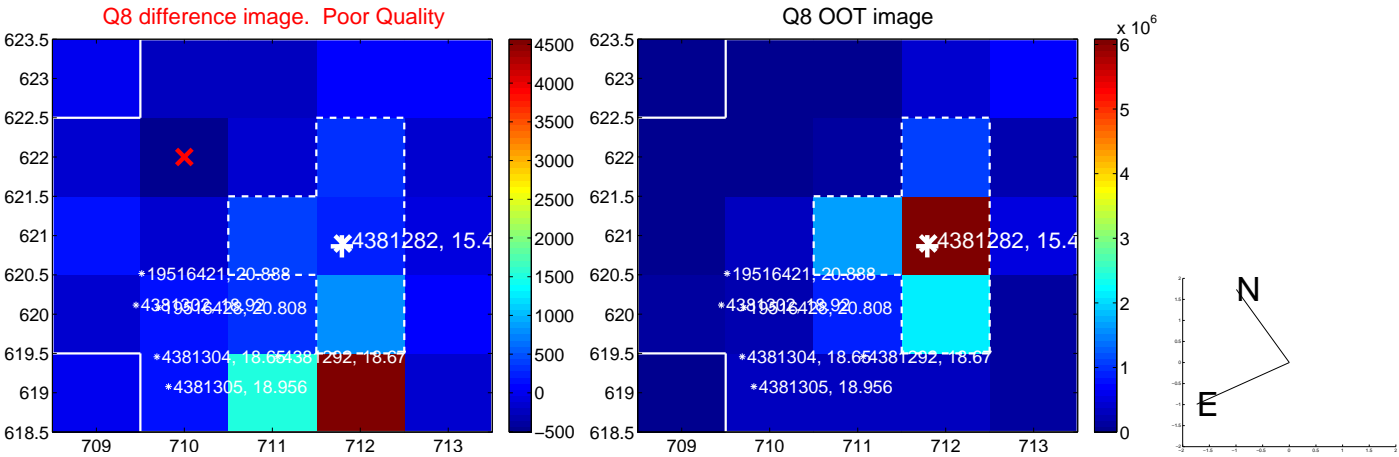
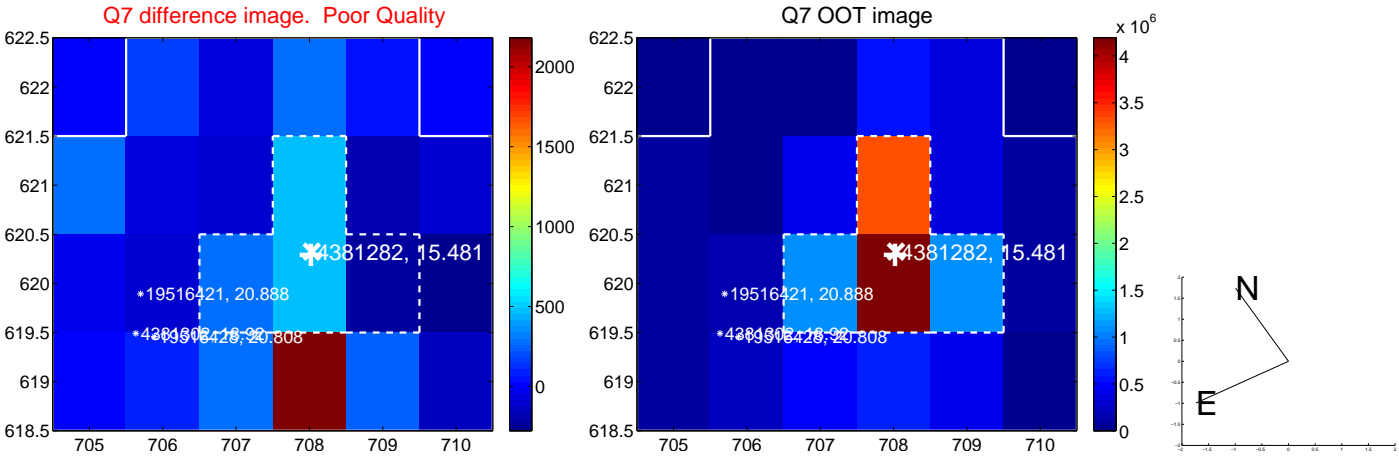
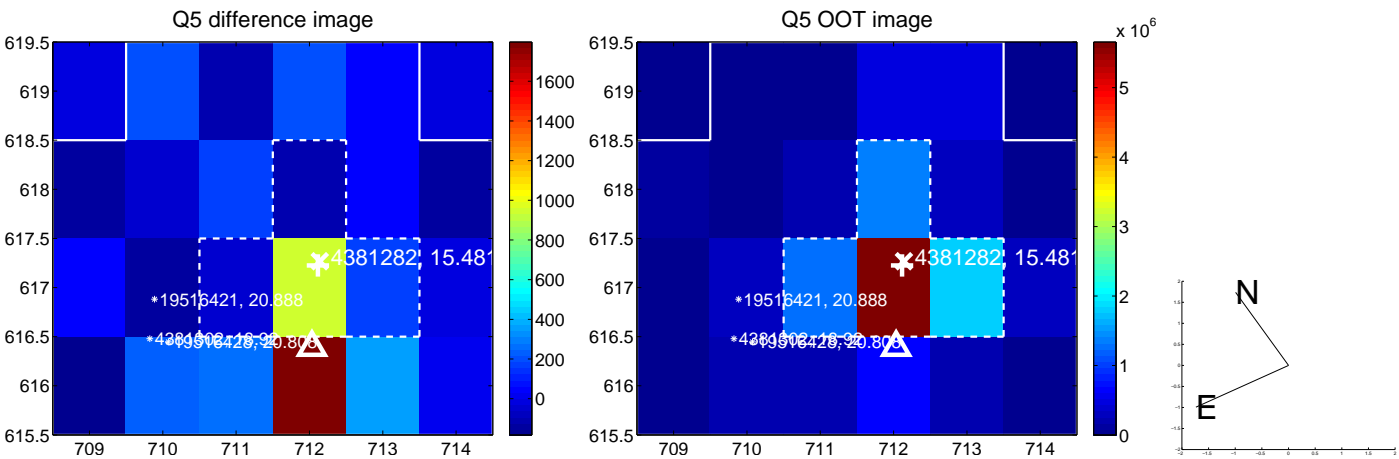


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

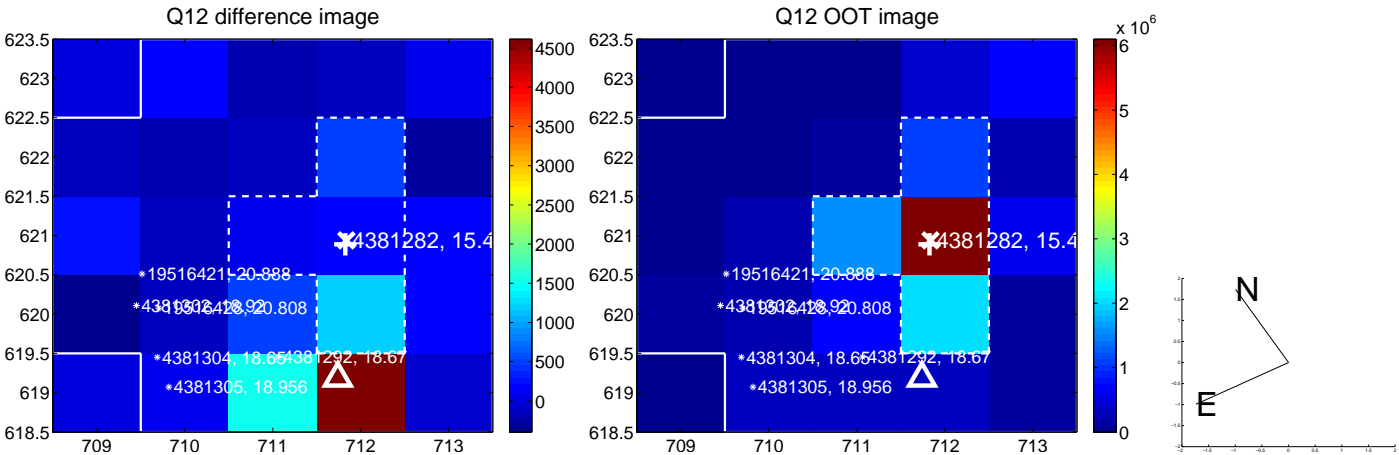
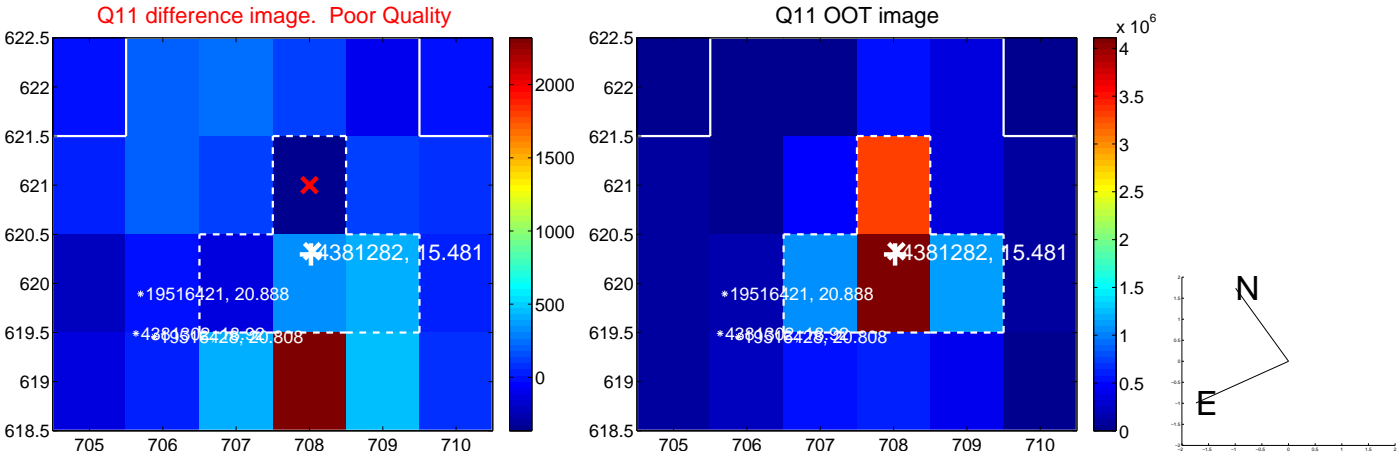
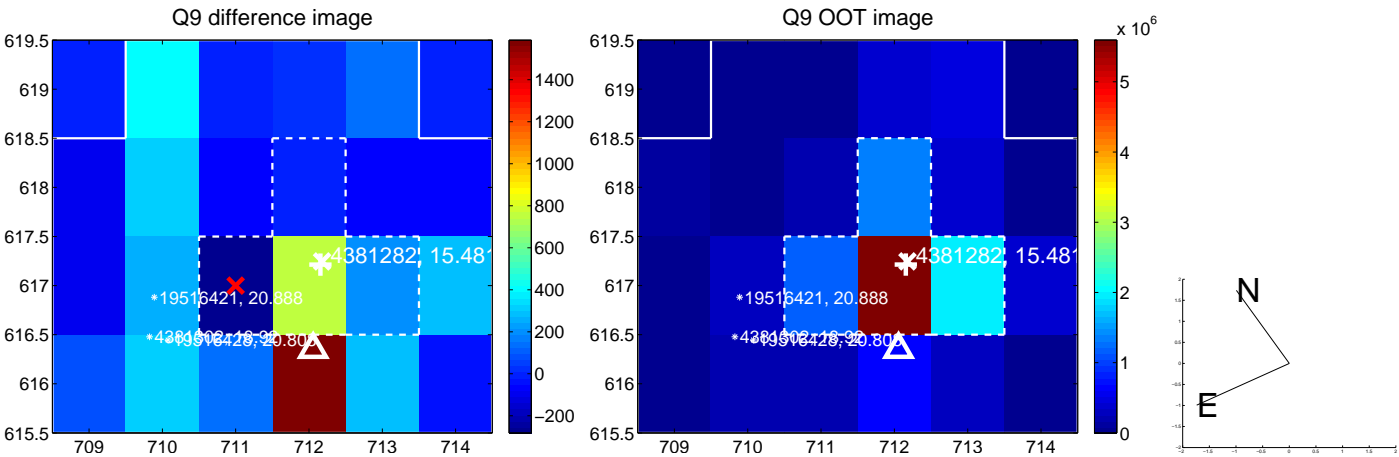
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



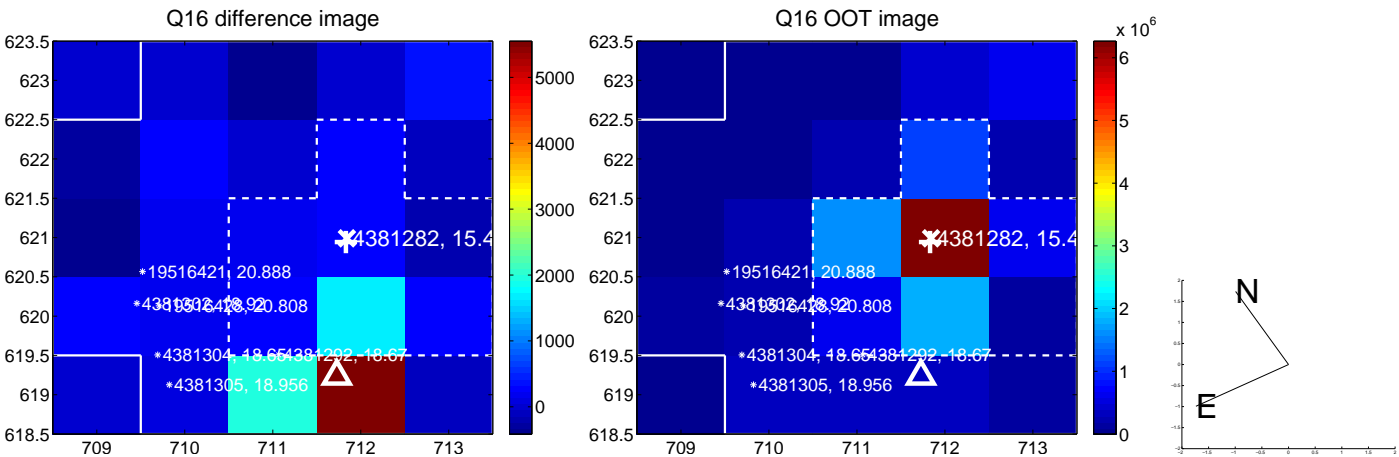
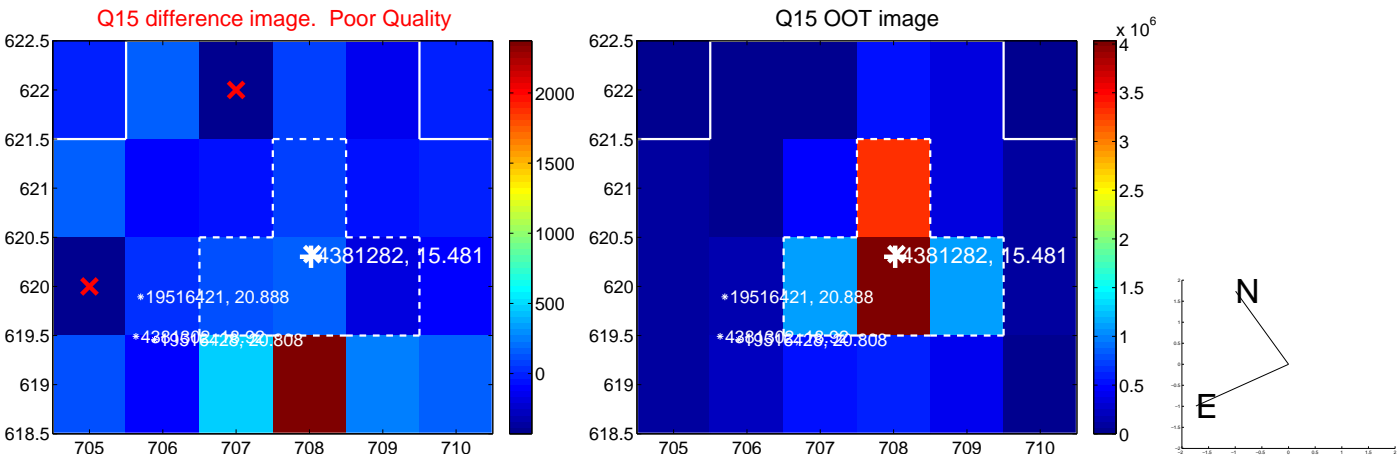
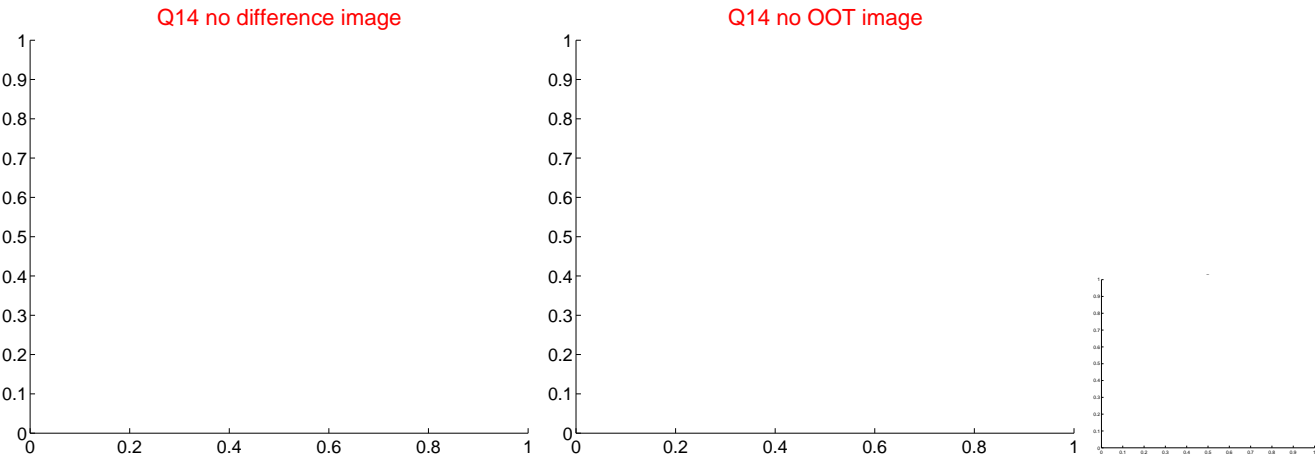
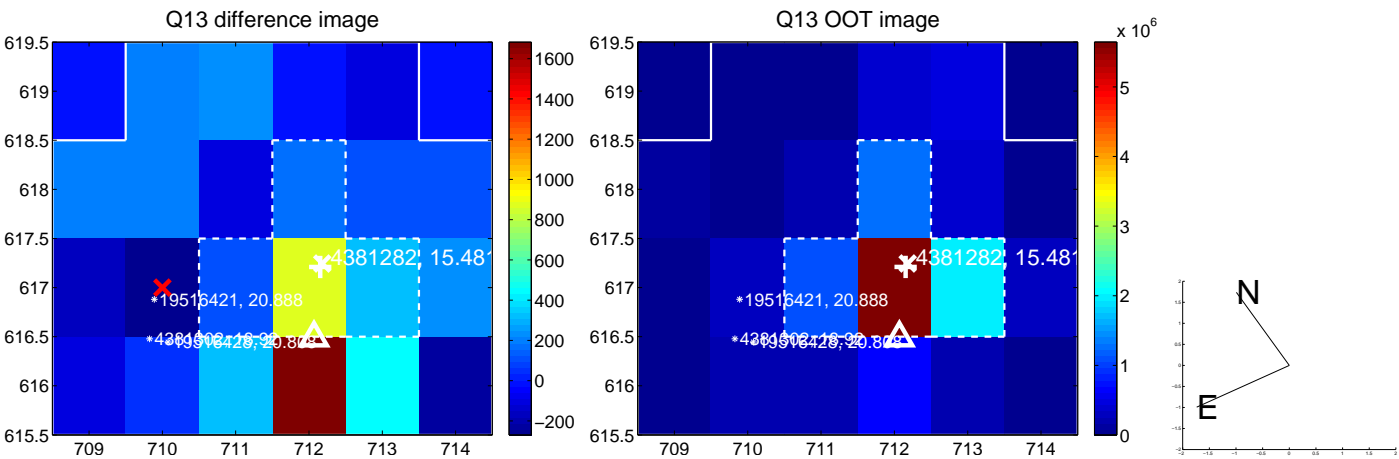
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



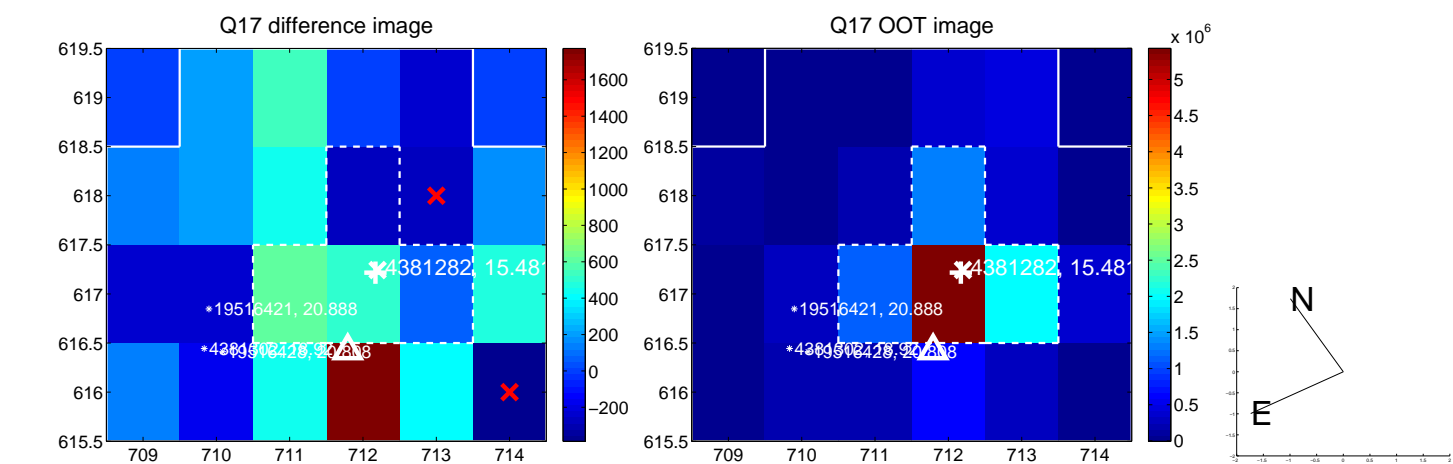
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



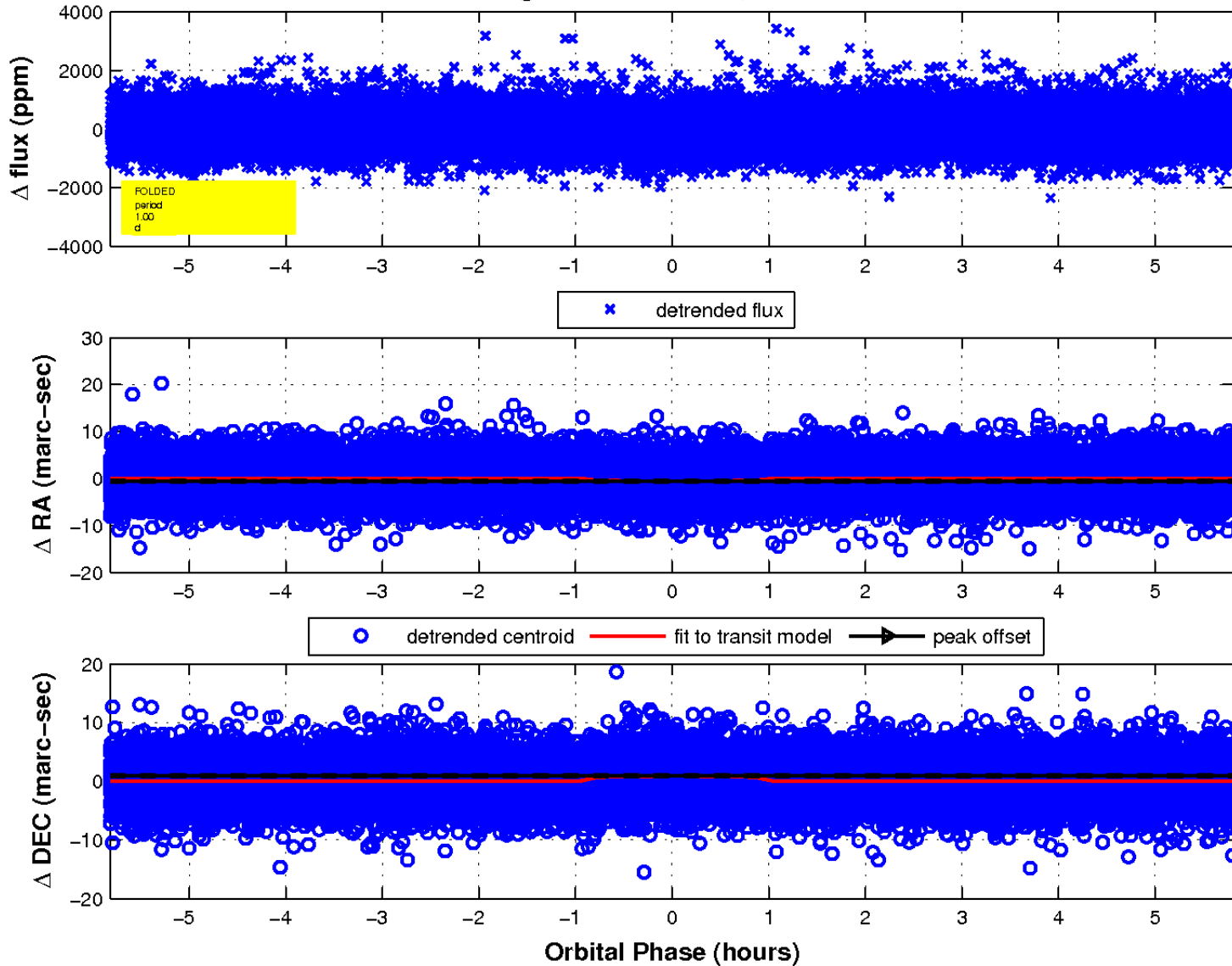
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

