

KIC 010816107

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})
010816107-01	OBS	7377.01	2.161579	131.803917	49131.4	3.977	2719.2	1922.1	1.22	5888	29.37	1739.43
010816107-02	OBS	No	2.161590	132.882027	2920.3	3.000	239.1	-1.0	1.22	5888	6.59	1739.42

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010816107-01	OBS	FP	0.01	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
010816107-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS

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 010816107-01

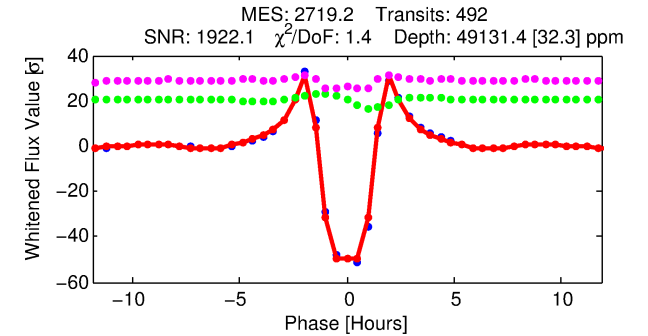
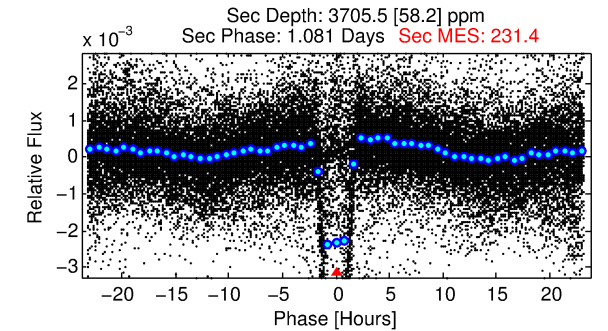
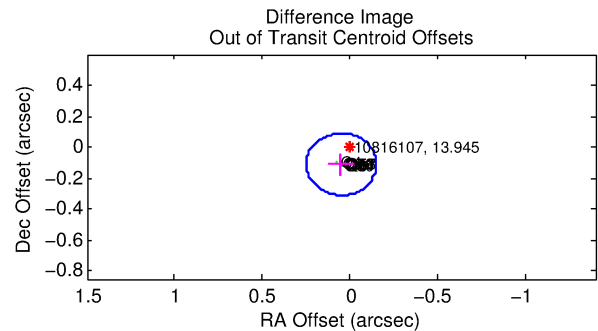
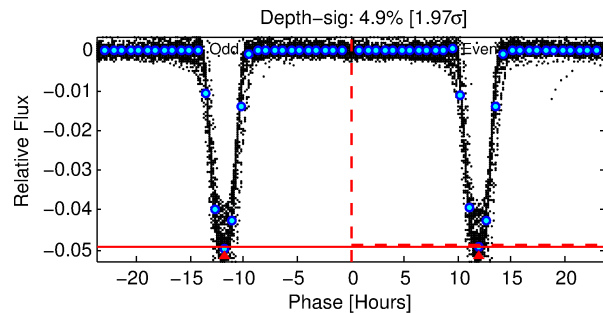
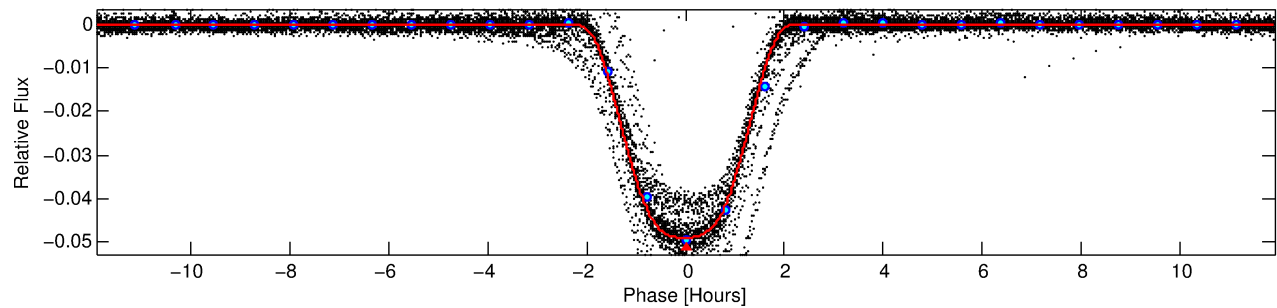
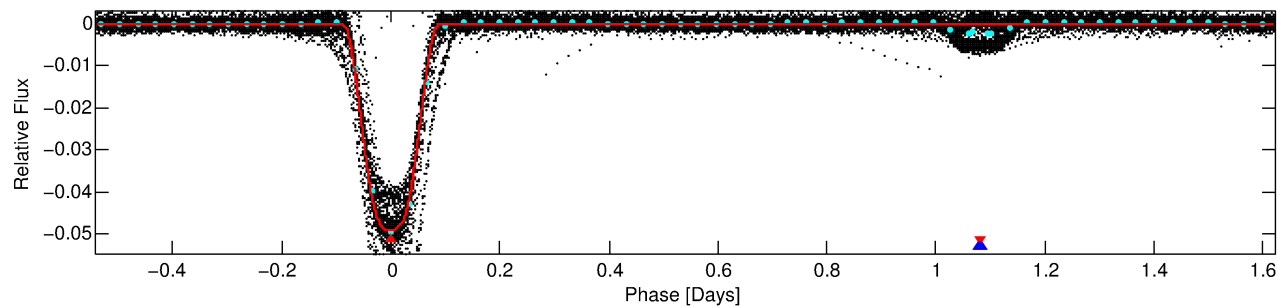
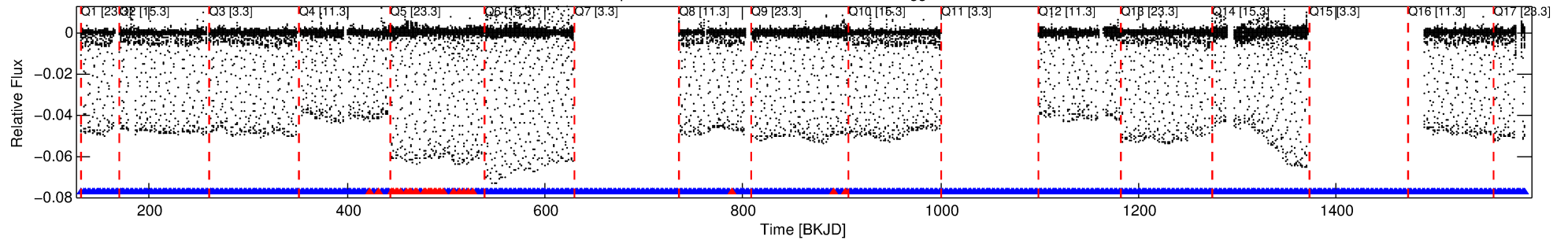
No Significant Match Found

DV One-Page Summary

KIC: 10816107 Candidate: 1 of 2 Period: 2.162 d

KOI: K07377.01 Corr: 0.994

Kp: 13.94 R*: 1.22 Rs Teff: 5888.0 K Logg: 4.17 Fe/H: -0.620



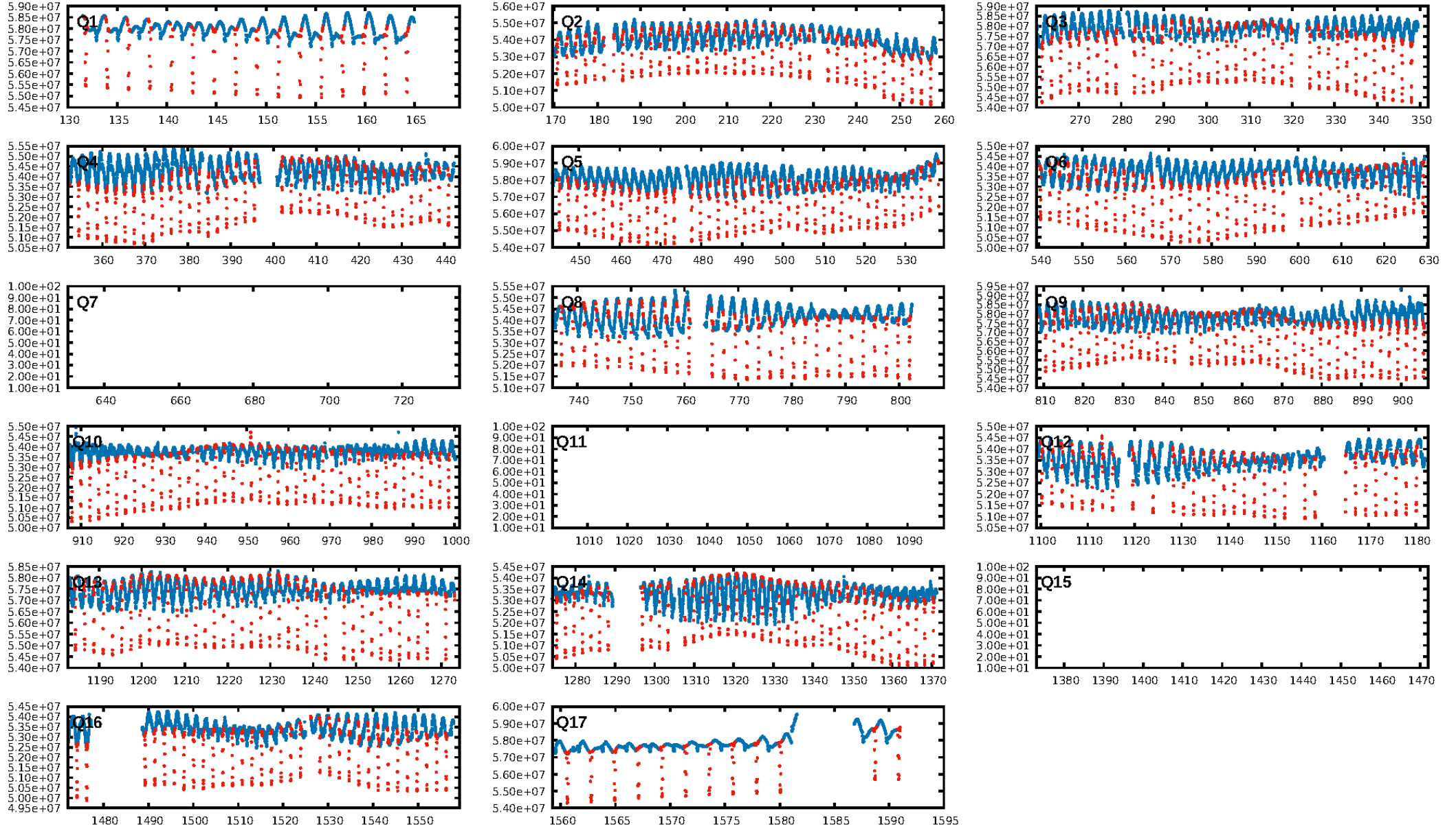
DV Fit Results:

Period = 2.16158 [0.00000] d
Epoch = 131.8039 [0.0000] BKJD
Rp/R* = 0.2208 [0.0001]
a/R* = 4.20 [0.00]
b = 0.72 [0.00]
Seff = 1739.43 [1063.15]
Teff = 1647 [252] K
Rp = 29.37 [9.54] Re
a = 0.0303 [0.0107] AU
Ag = 2.17 [1.30] [0.90σ]
Teffp = 3092 [94] K [5.38σ]

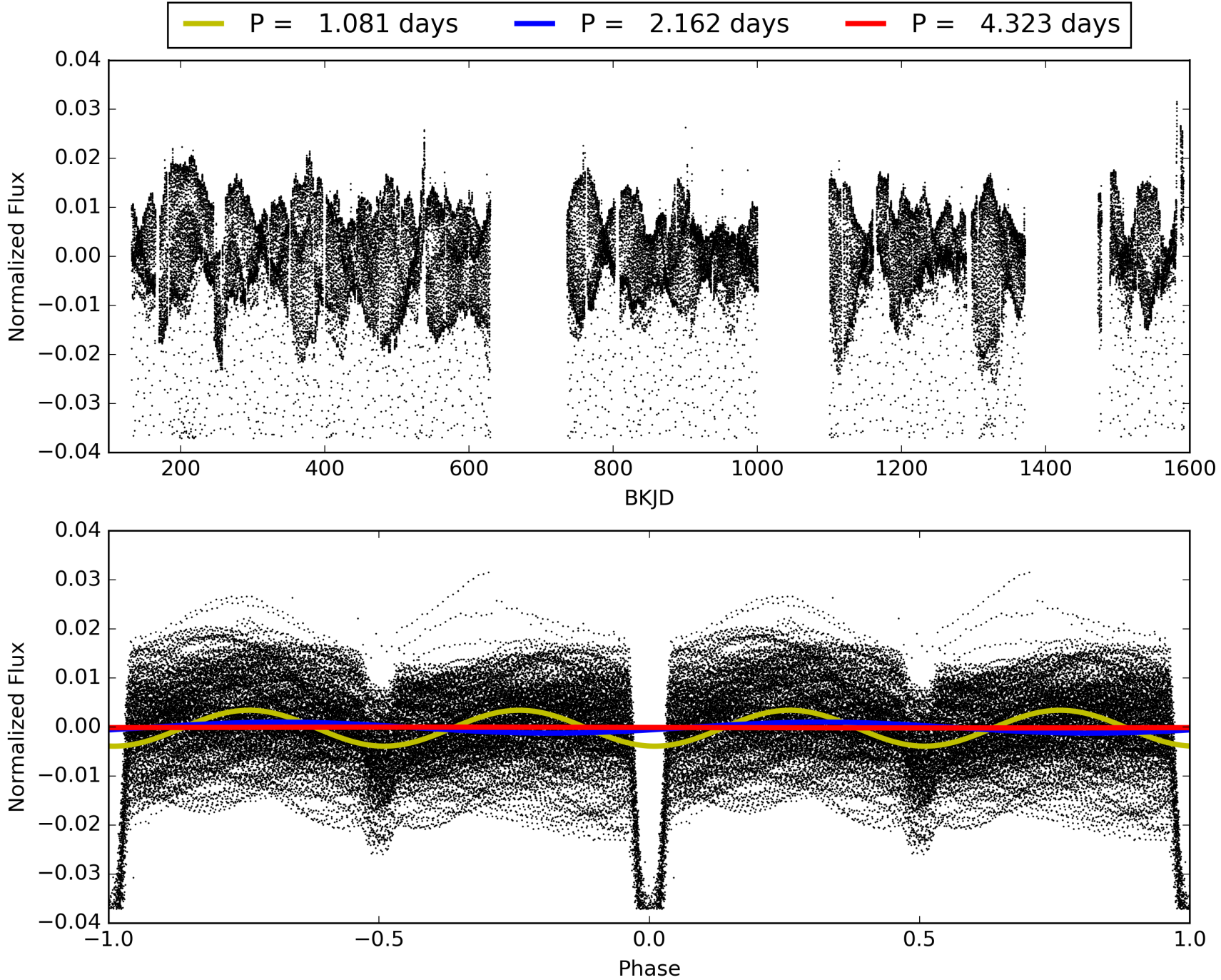
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.94 [434/464]
GhostDiagnostic-chr: 1.287
Centroid-sig: 0.0%
Centroid-so: 0.309 arcsec [168.66σ]
OotOffset-rm: 0.121 arcsec [1.81σ]
KicOffset-rm: 0.360 arcsec [5.35σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

TCE 010816107-01, PDC Light Curves

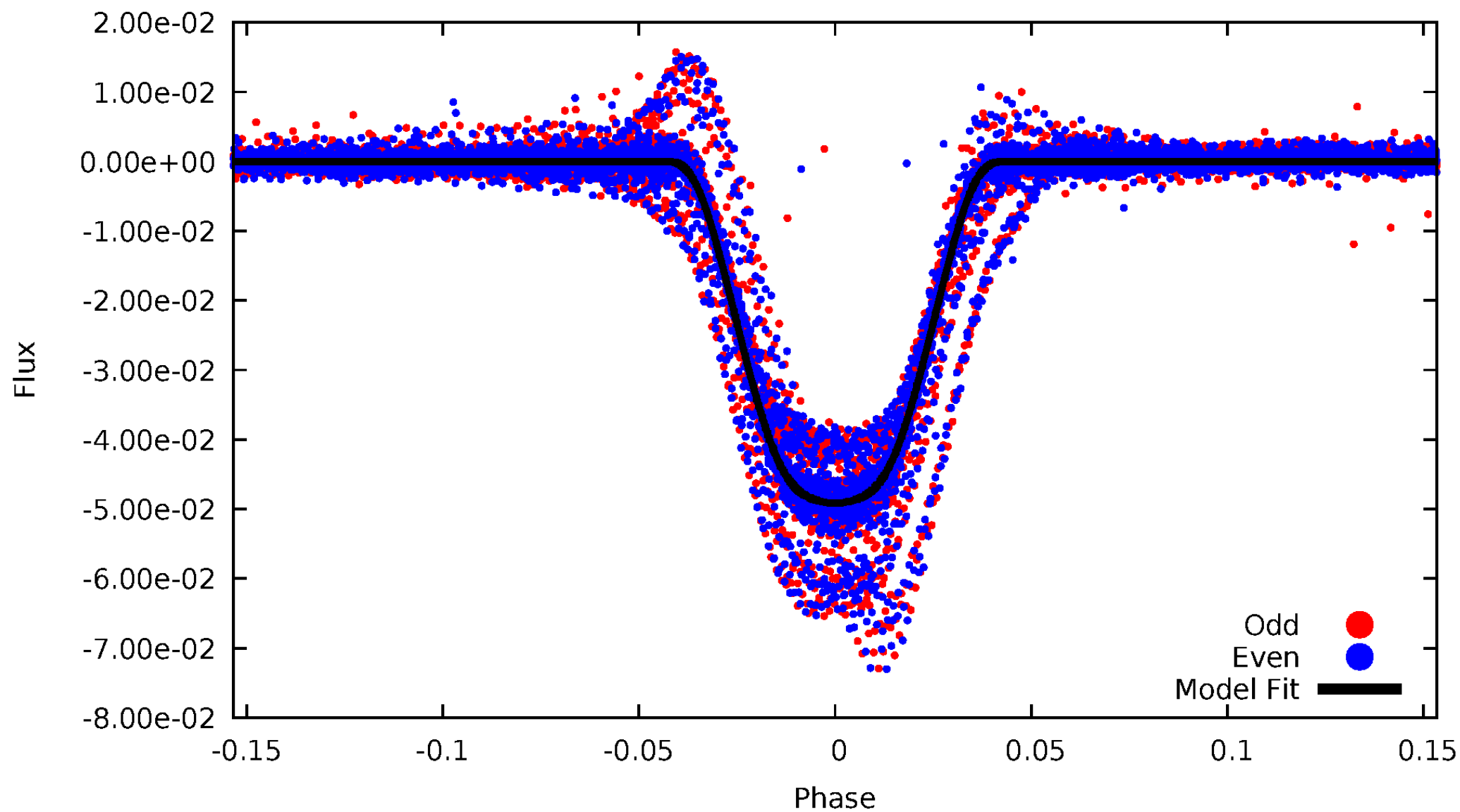


TCE 010816107-01



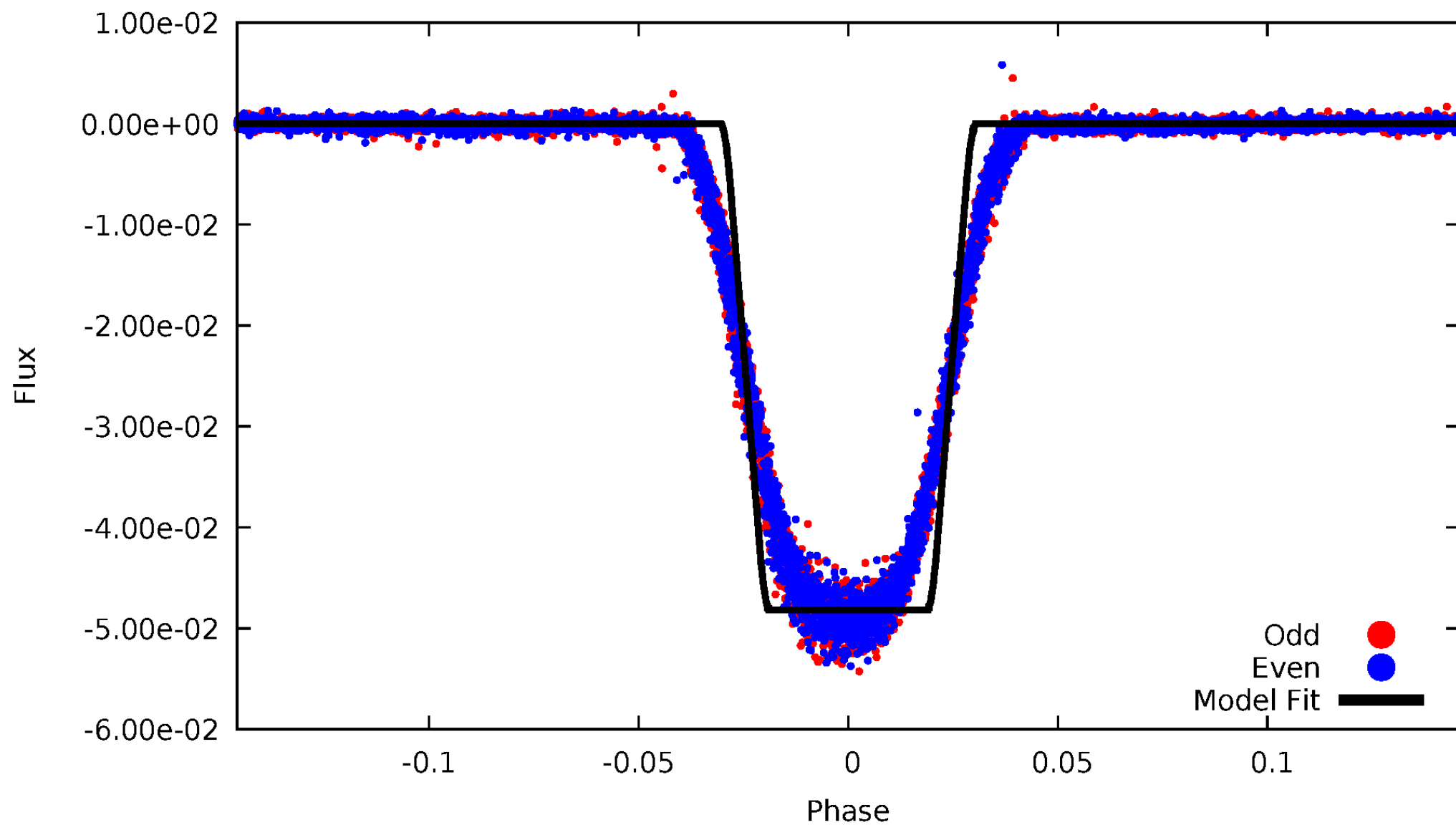
DV Odd/Even

TCE 010816107-01



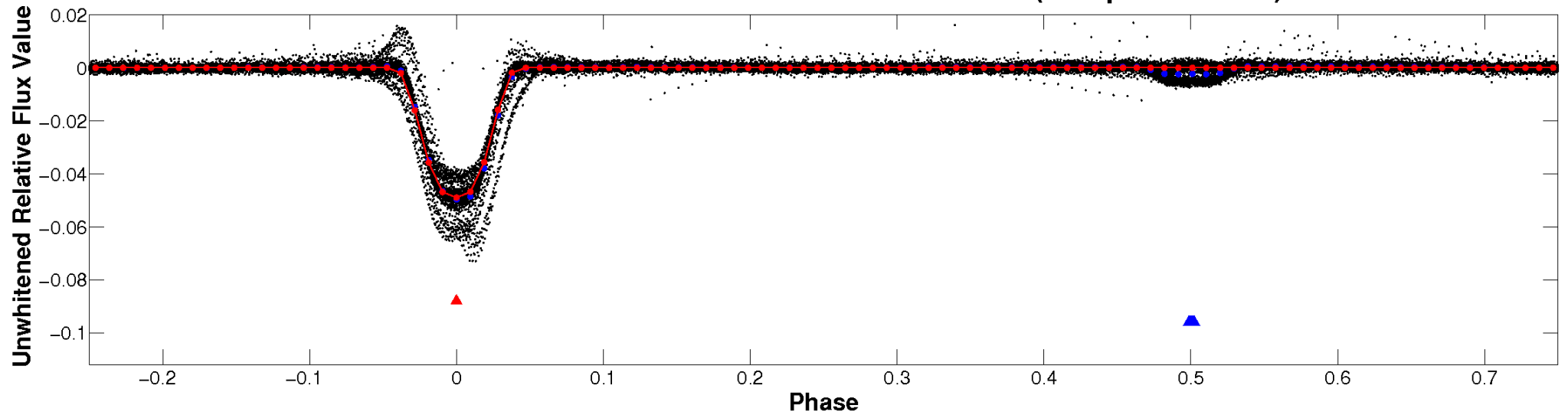
ALT Odd/Even

TCE 010816107-01

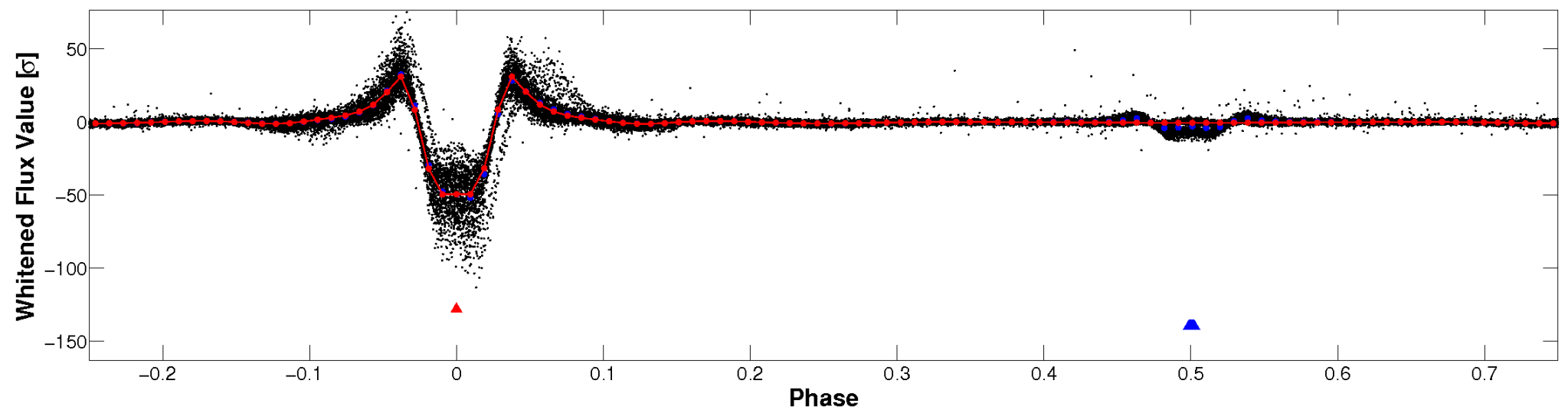


Non-Whitened Vs. Whitened Light Curve

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

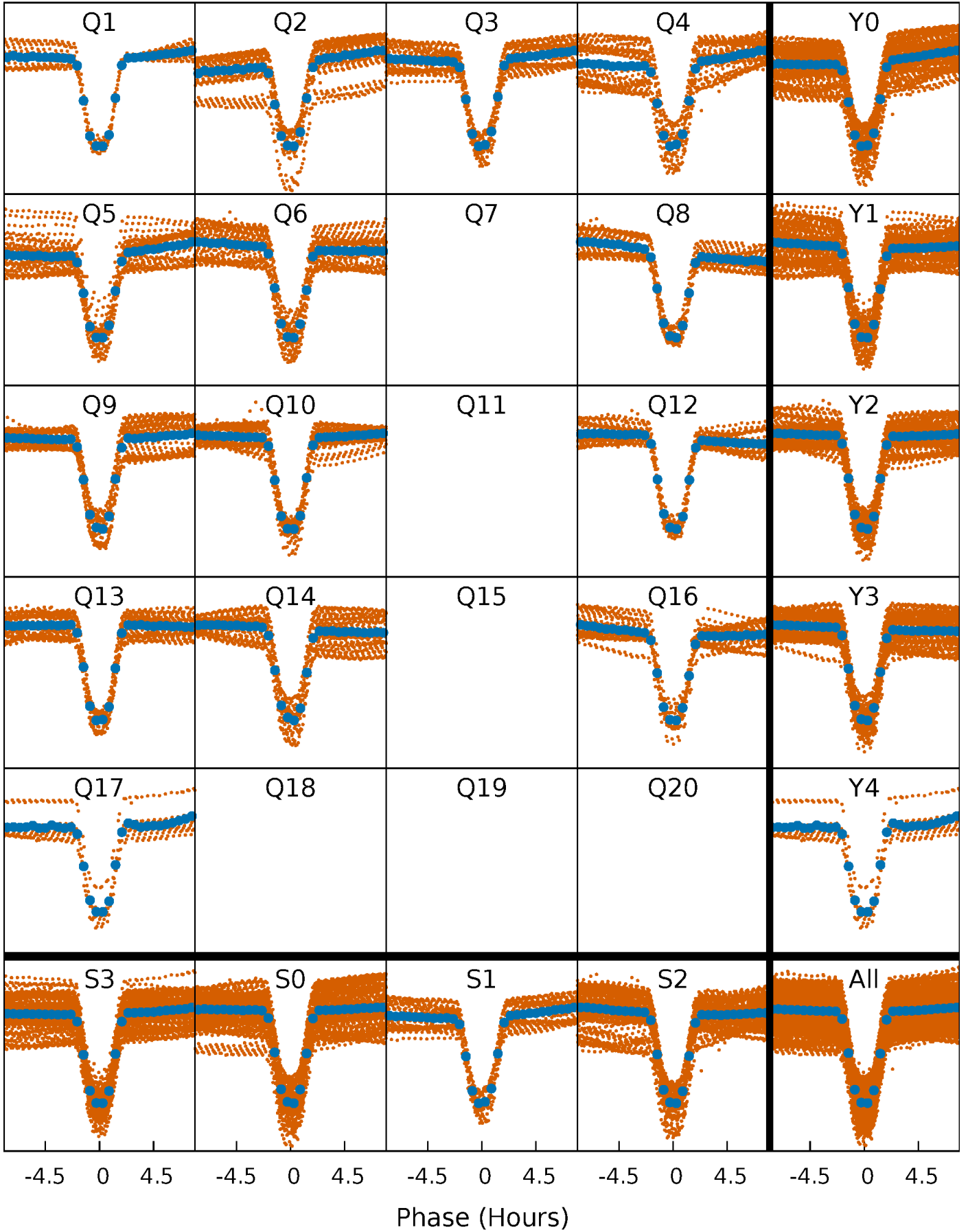


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



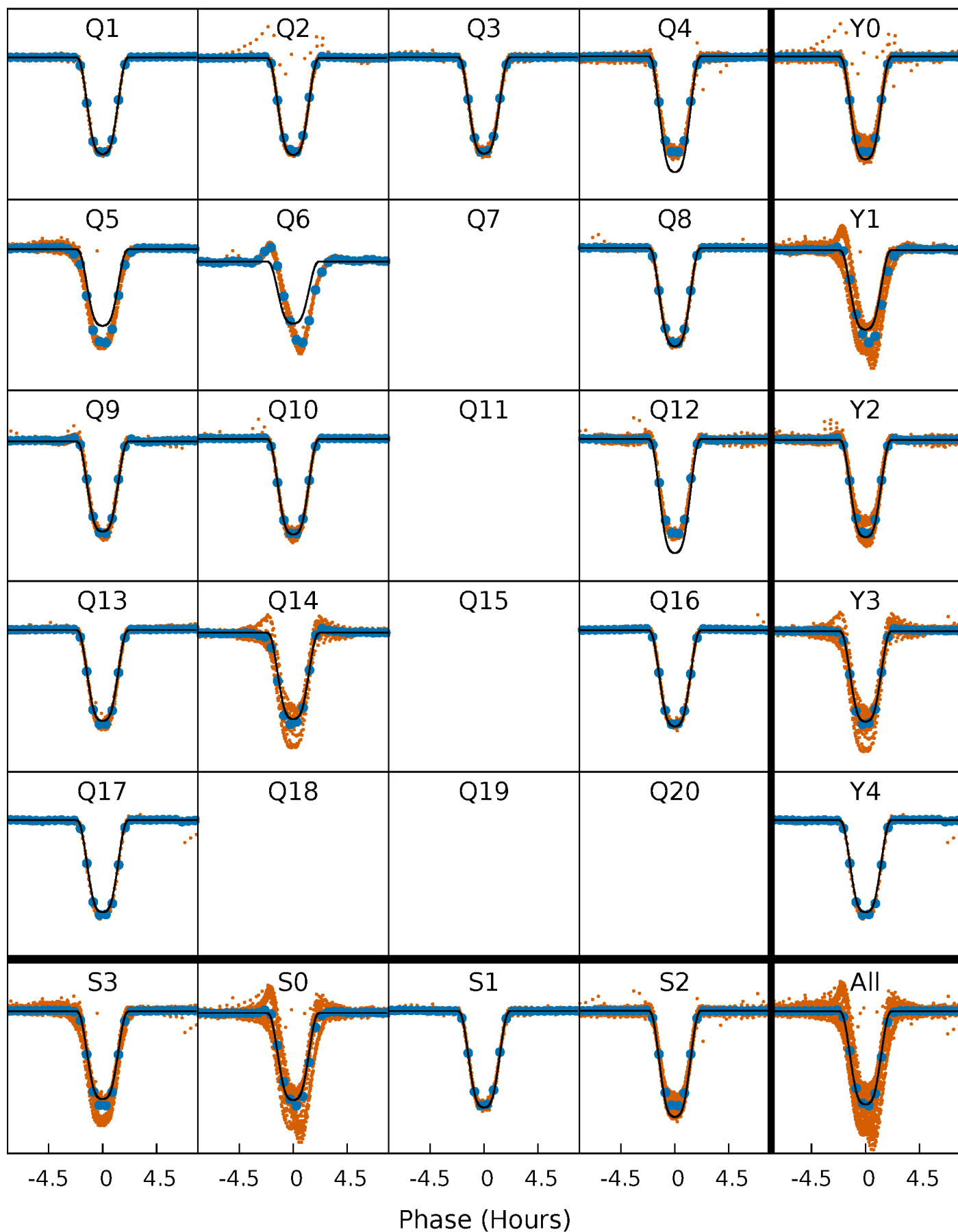
PDC Quarter-Phased Transit Curves

TCE 010816107-01 P= 2.161579 Days $T_0=131.803917$ (BKJD)



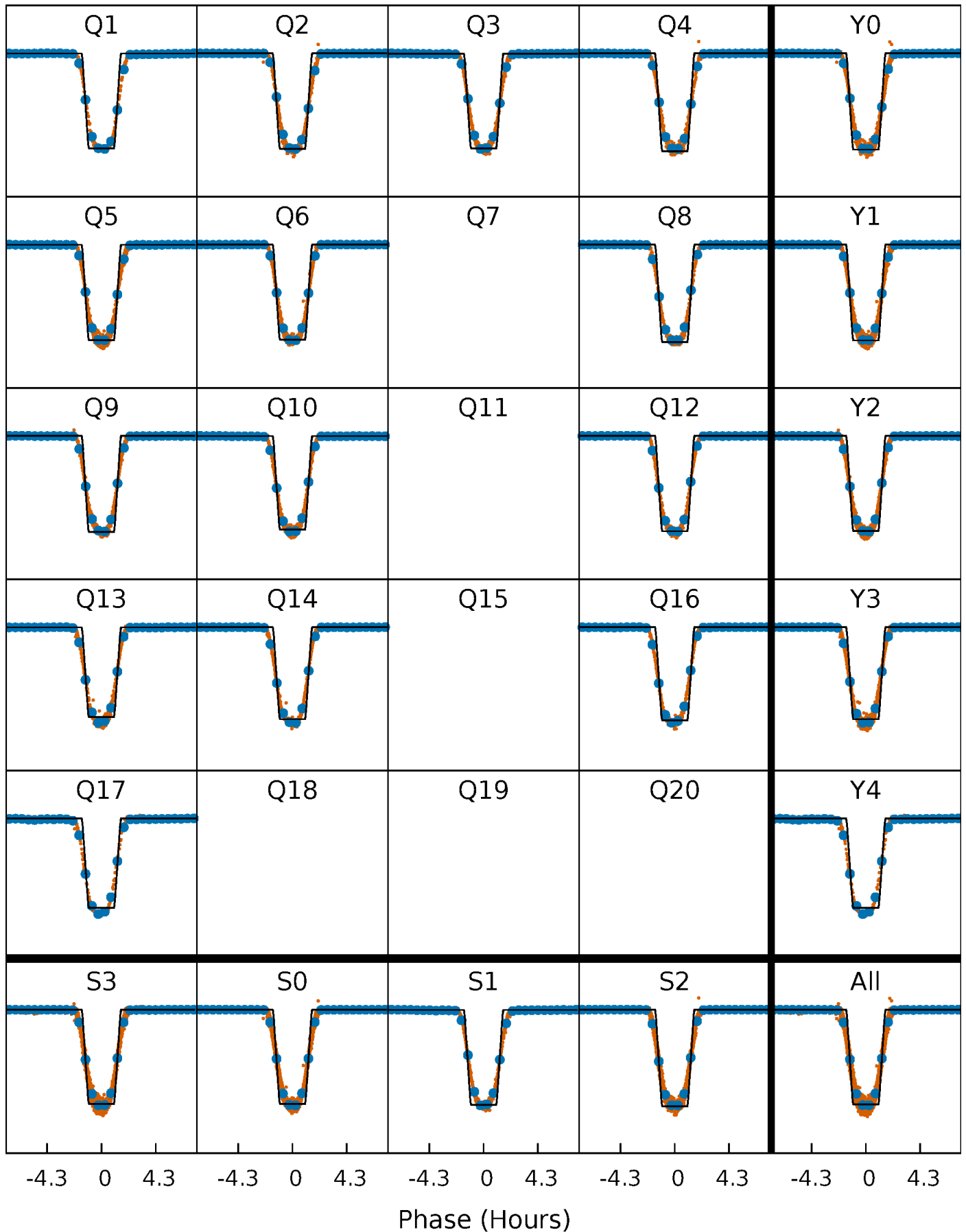
DV Quarter-Phased Transit Curves

TCE 010816107-01 P= 2.161579 Days $T_0=131.803917$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

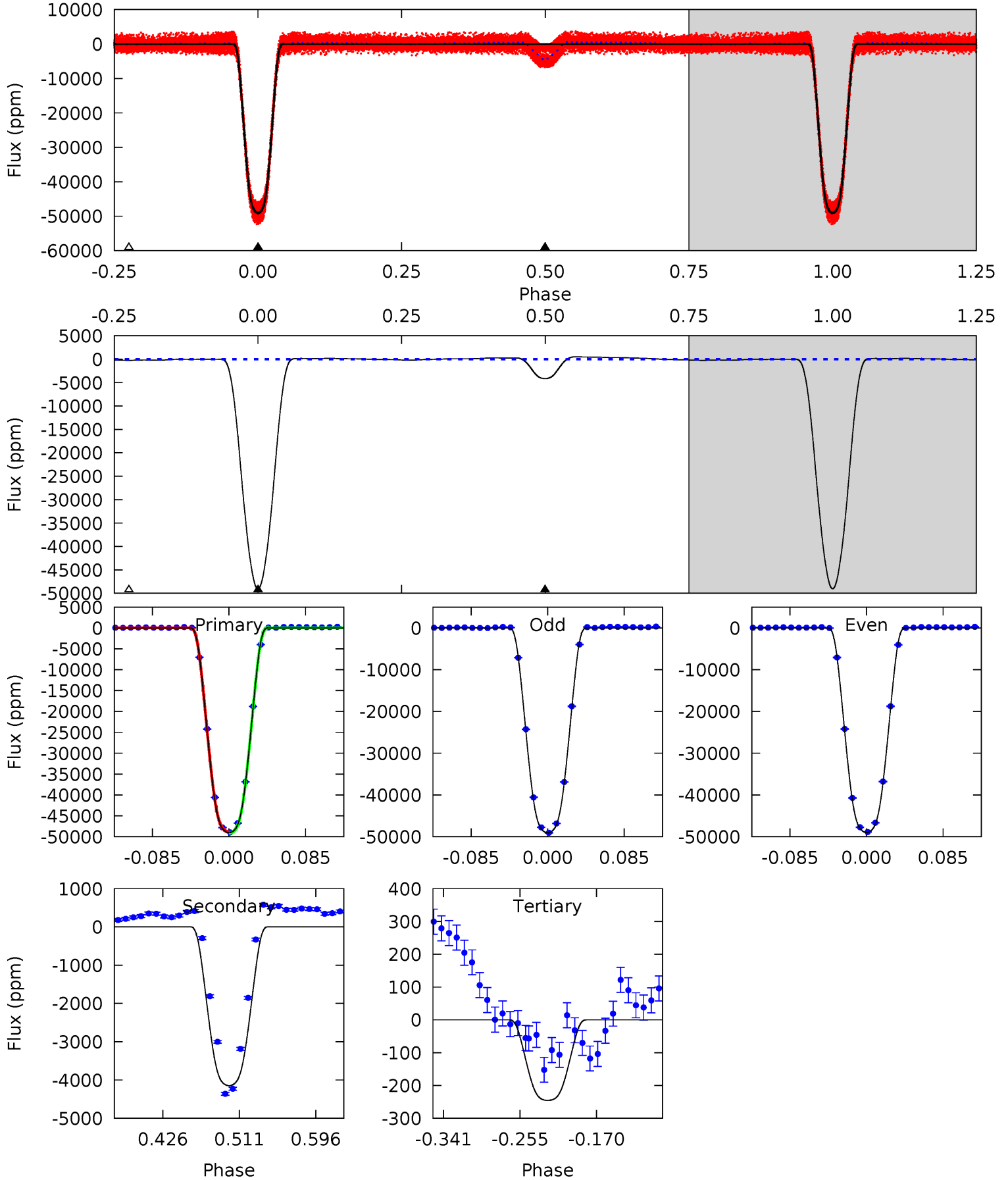
TCE 010816107-01 P= 2.161590 Days $T_0=131.800828$ (BKJD)



DV Model-Shift Uniqueness Test

010816107-01, P = 2.161579 Days, E = 129.642338 Days

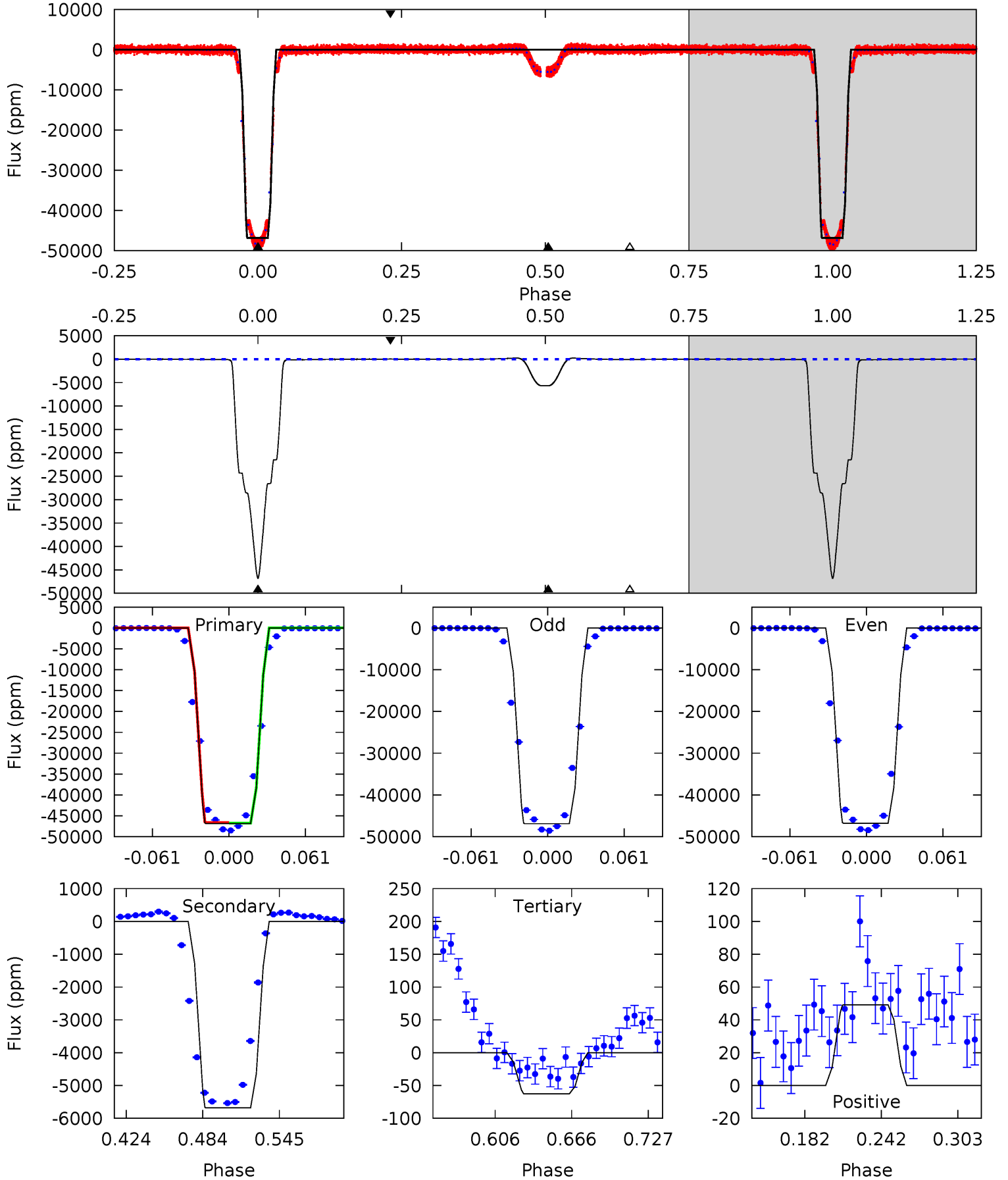
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3243	274.4	16.2	0	4.60	1.72	11.5	3226	3243	258.1	274.4	2.70	1.01	0.01	10.2



Alt Model-Shift Uniqueness Test

010816107-01, P = 2.161590 Days, E = 129.639238 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5189	629.6	6.96	5.44	4.67	1.88	5.89	5182	5184	622.7	624.2	7.09	1.00	0.01	8.12



Stellar Parameters For KIC 010816107

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5888^{+177}_{-159}	$4.167^{+0.364}_{-0.196}$	$-0.620^{+0.300}_{-0.250}$	$1.219^{+0.396}_{-0.396}$	$0.796^{+0.110}_{-0.047}$	$0.619^{+1.597}_{-0.338}$
	+3%/-3%	+9%/-5%	+48%/-40%	+32%/-32%	+14%/-6%	+258%/-55%
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 010816107-01 / KOI 7377.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-4149 ± 15	$29.07^{+5.04}_{-5.39}$	2273^{+211}_{-225}	3554^{+72}_{-80}	$2.523^{+1.268}_{-0.676}$
Alt.	-5682 ± 9	$28.94^{+5.17}_{-4.98}$	2279^{+193}_{-221}	3771^{+84}_{-75}	$3.525^{+1.625}_{-0.972}$

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

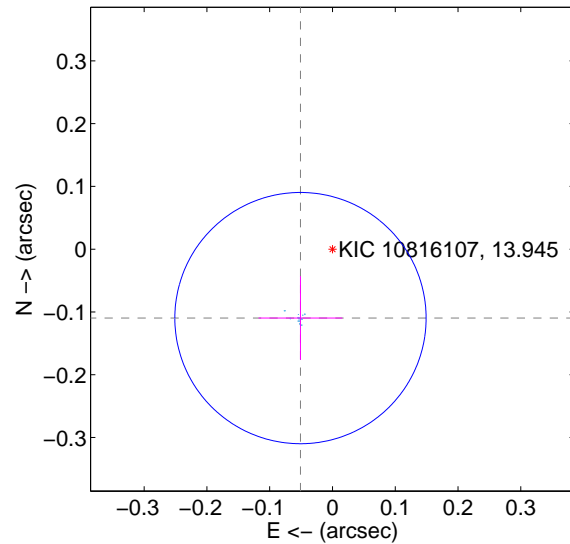
Supplemental centroid analysis for 010816107-01. Kepler magnitude: 13.95. Transit SNR 1922.11

There are 14 quarters with good PRF difference image offsets

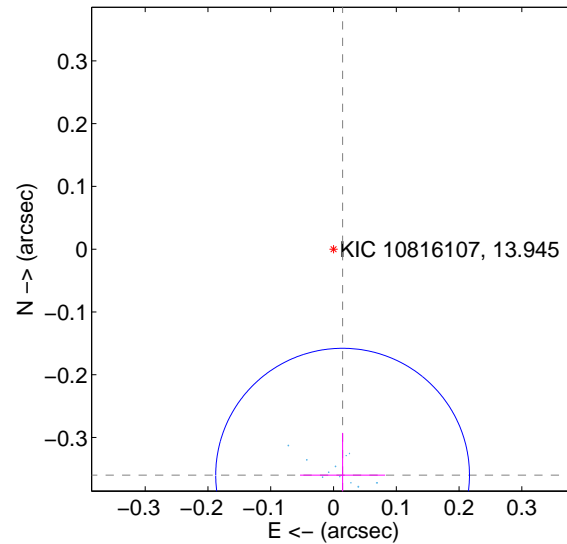
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.121 ± 0.067	1.81	0.051 ± 0.067	-0.110 ± 0.067
PRF-fit source offset from KIC position	0.360 ± 0.067	5.35	-0.014 ± 0.068	-0.360 ± 0.067
photometric centroid source offset	0.31 ± 0.00	168.66	0.12 ± 0.00	-0.29 ± 0.00

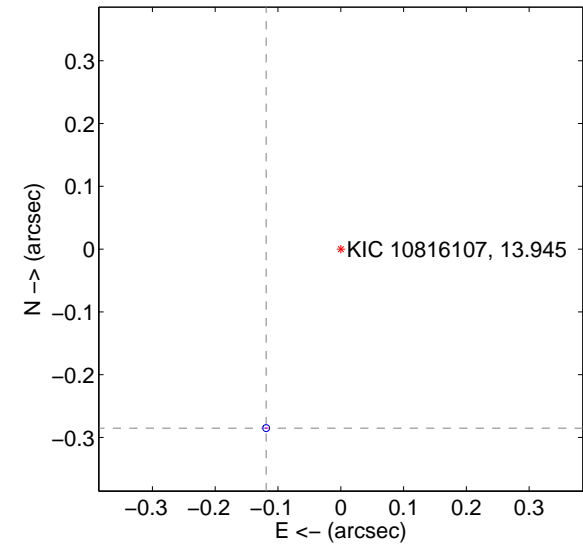
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

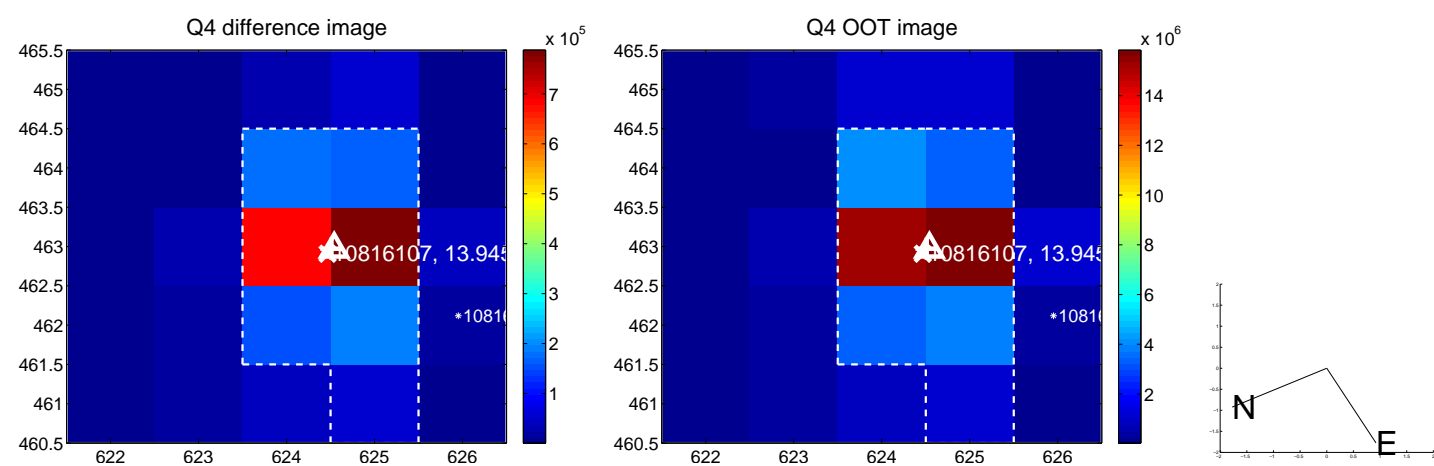
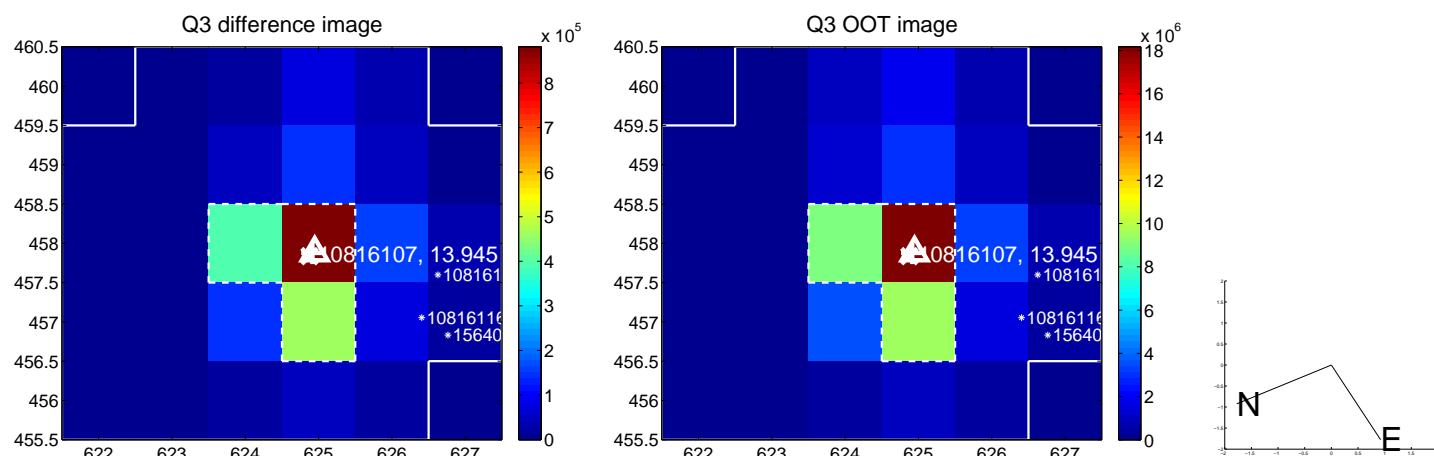
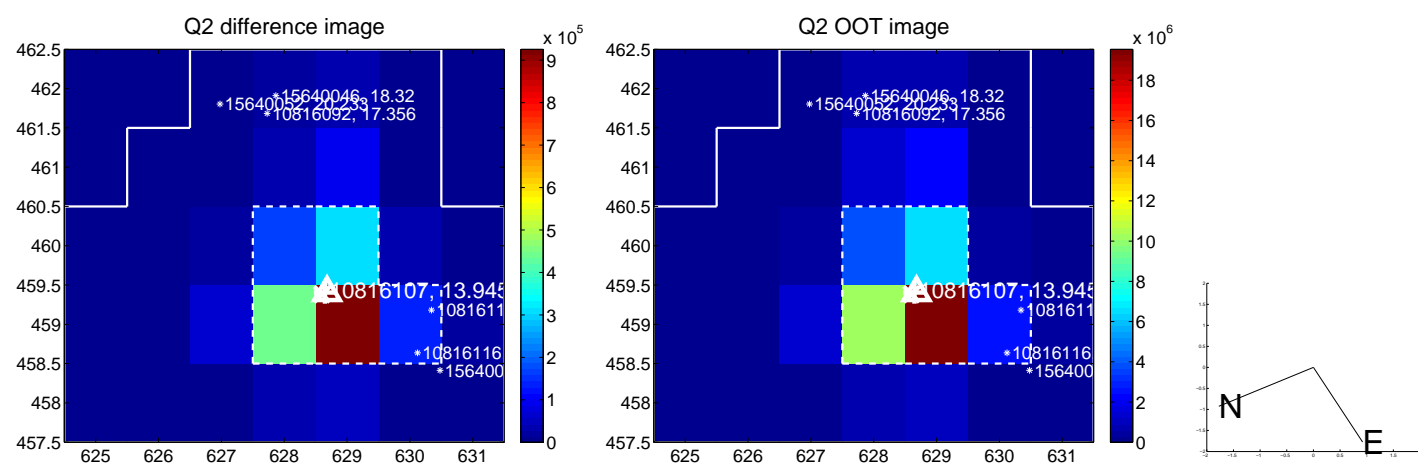
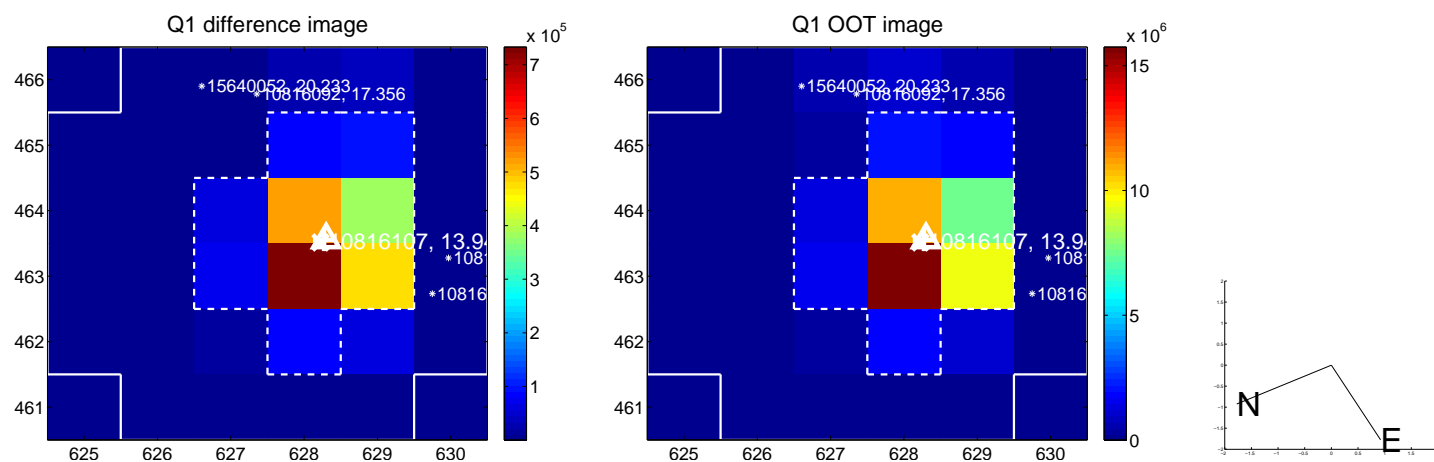


offset from photometric centroids

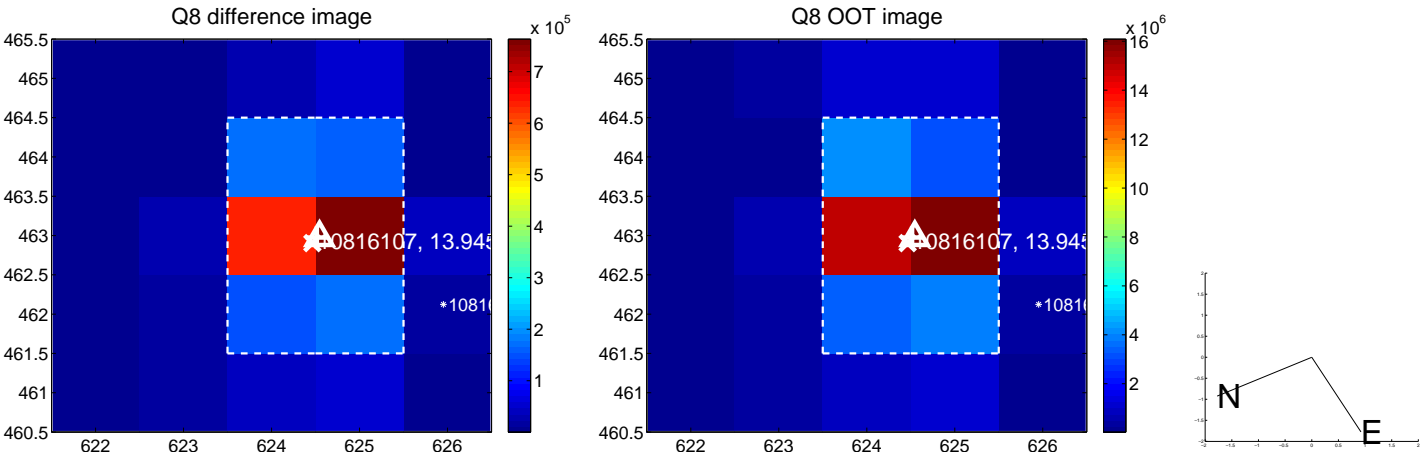
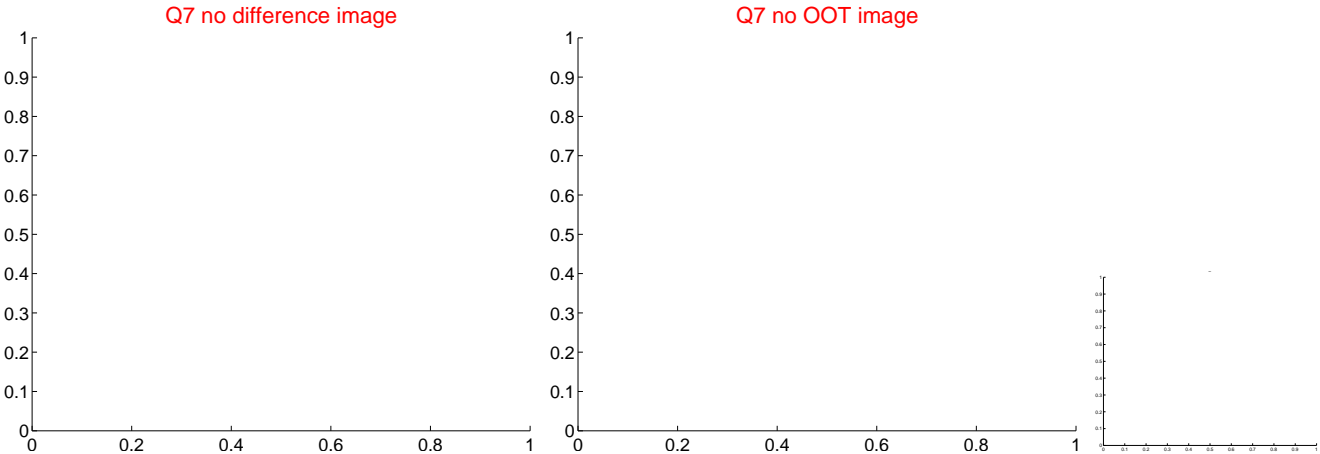
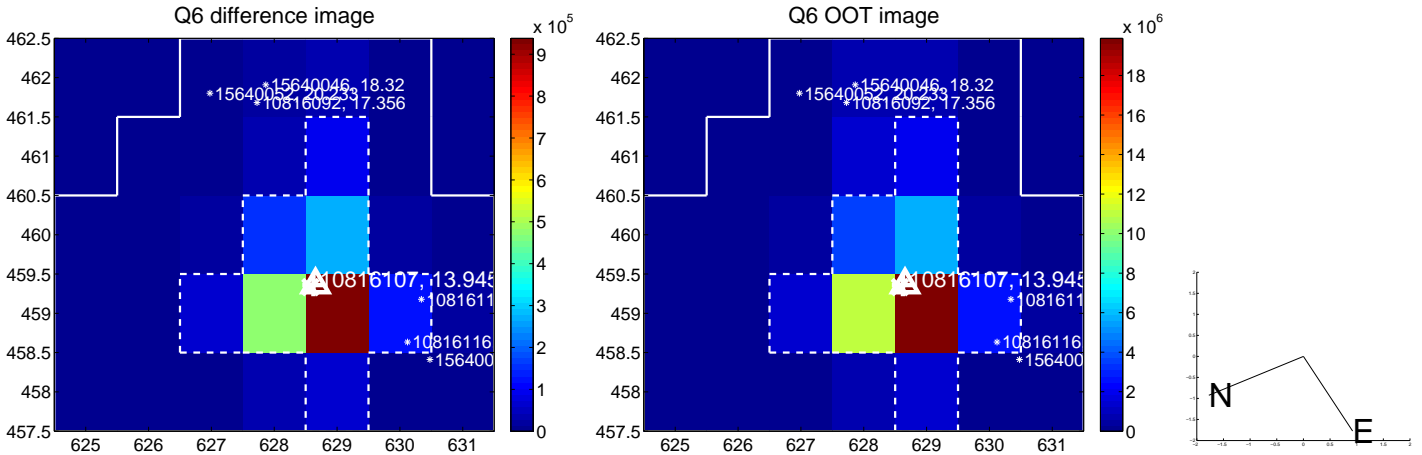
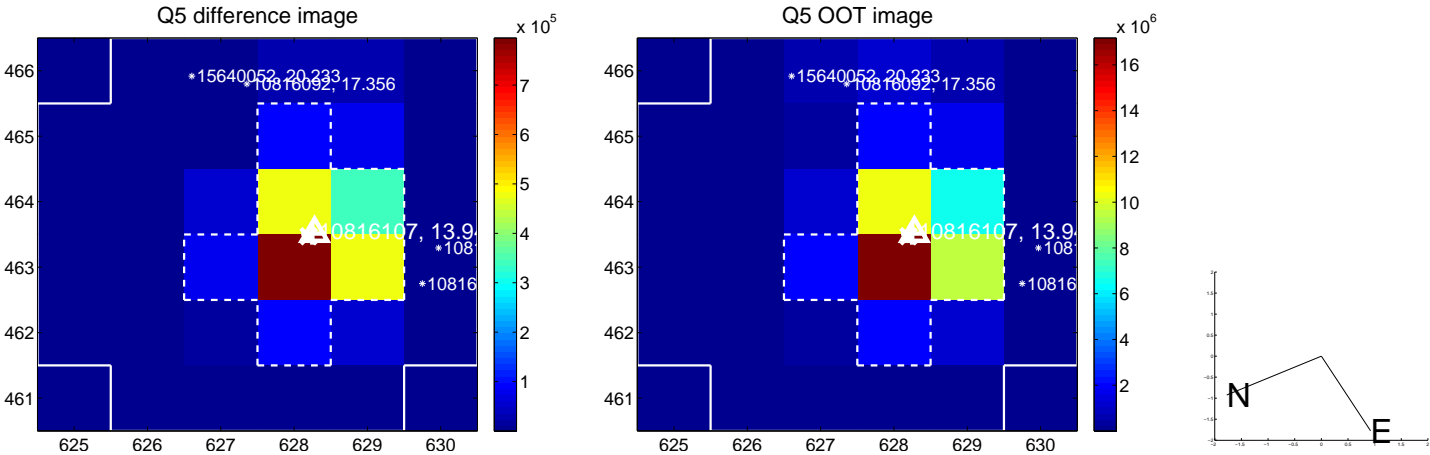


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

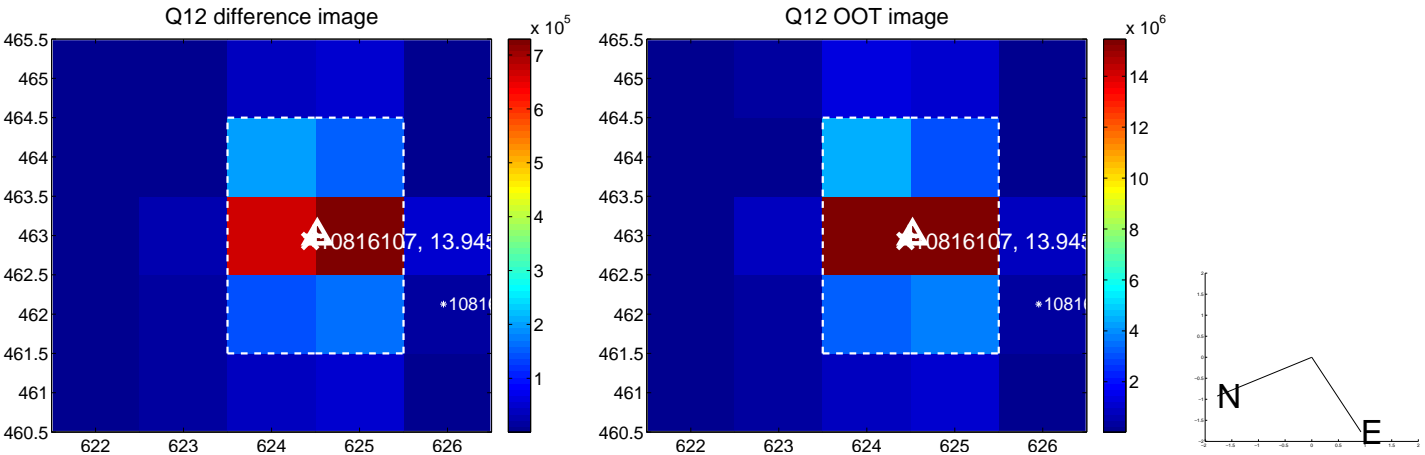
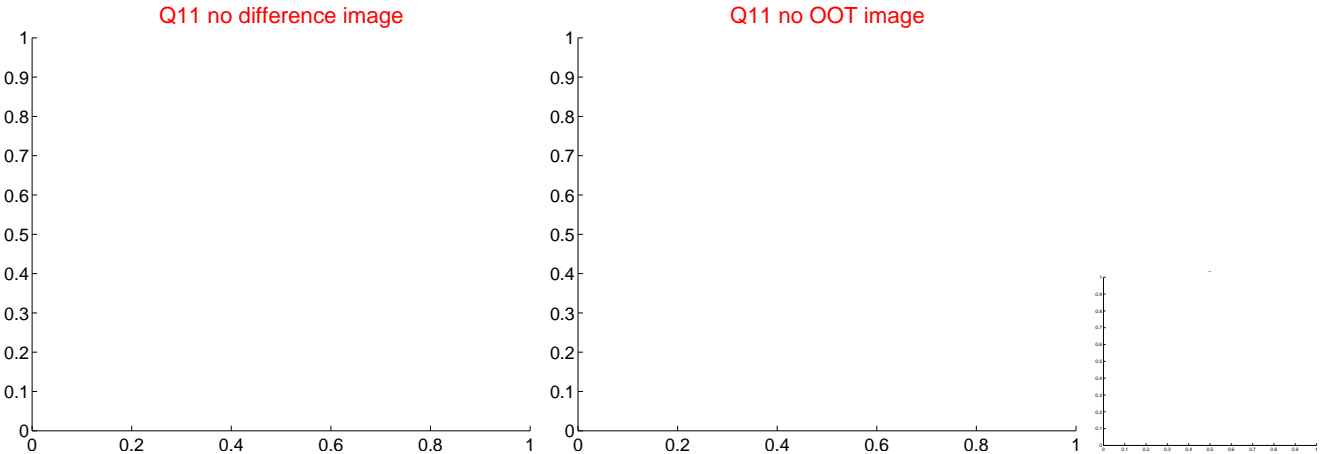
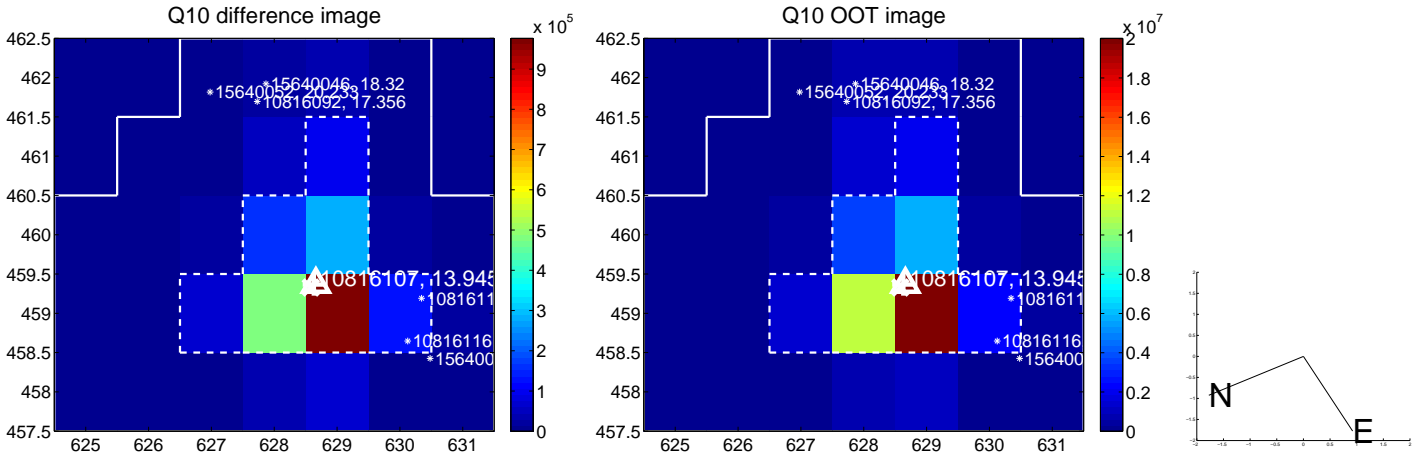
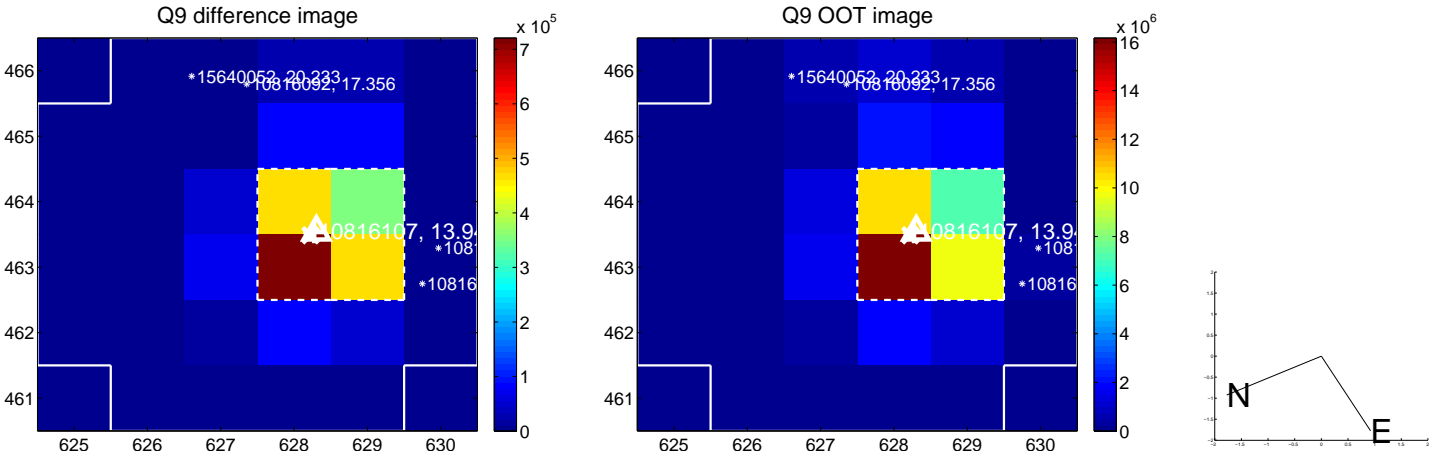
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



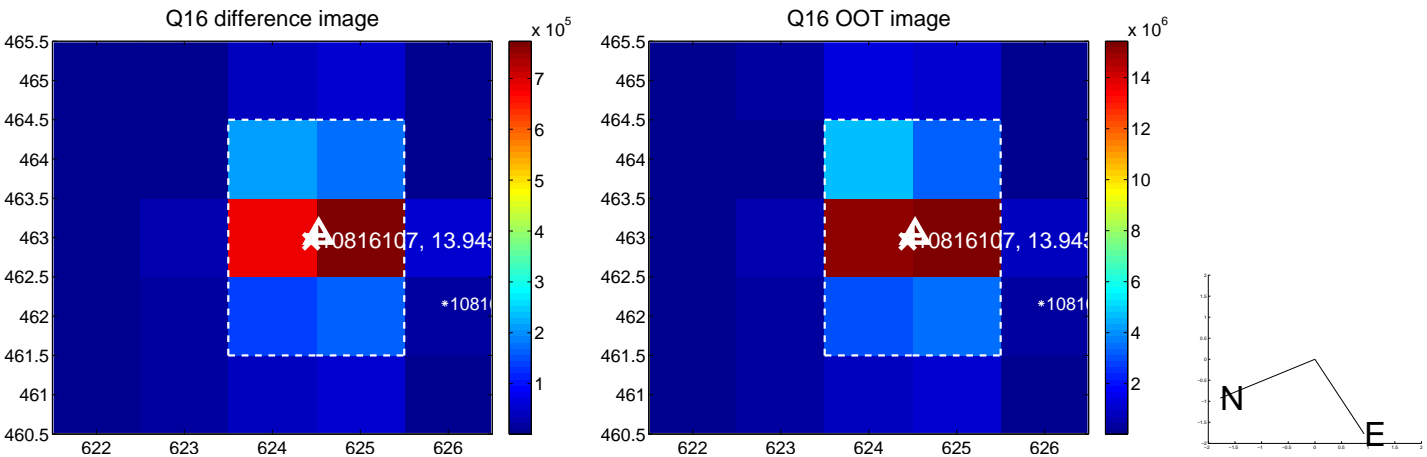
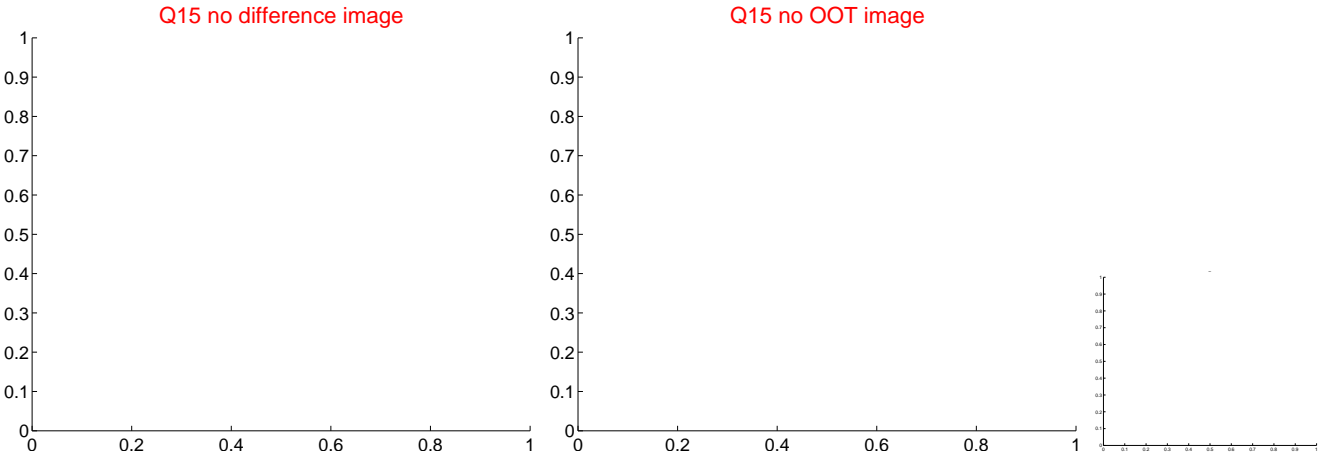
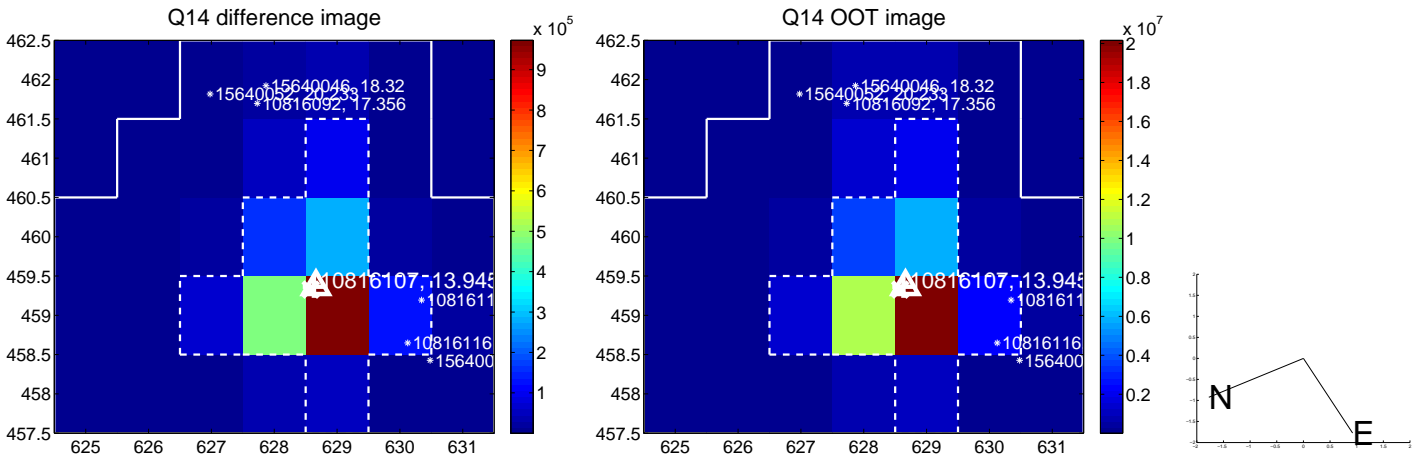
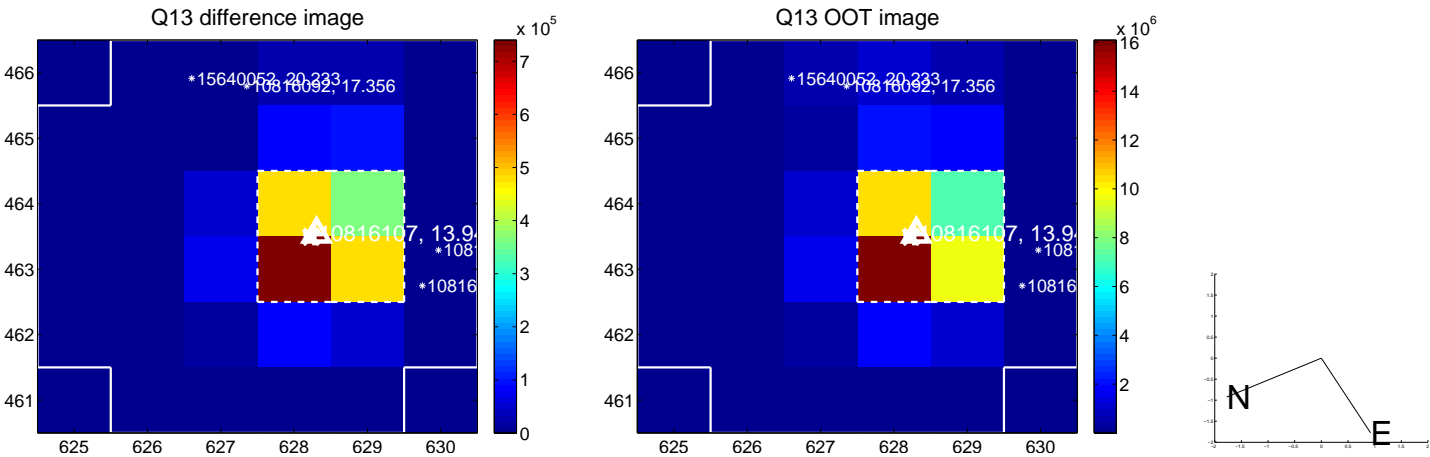
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



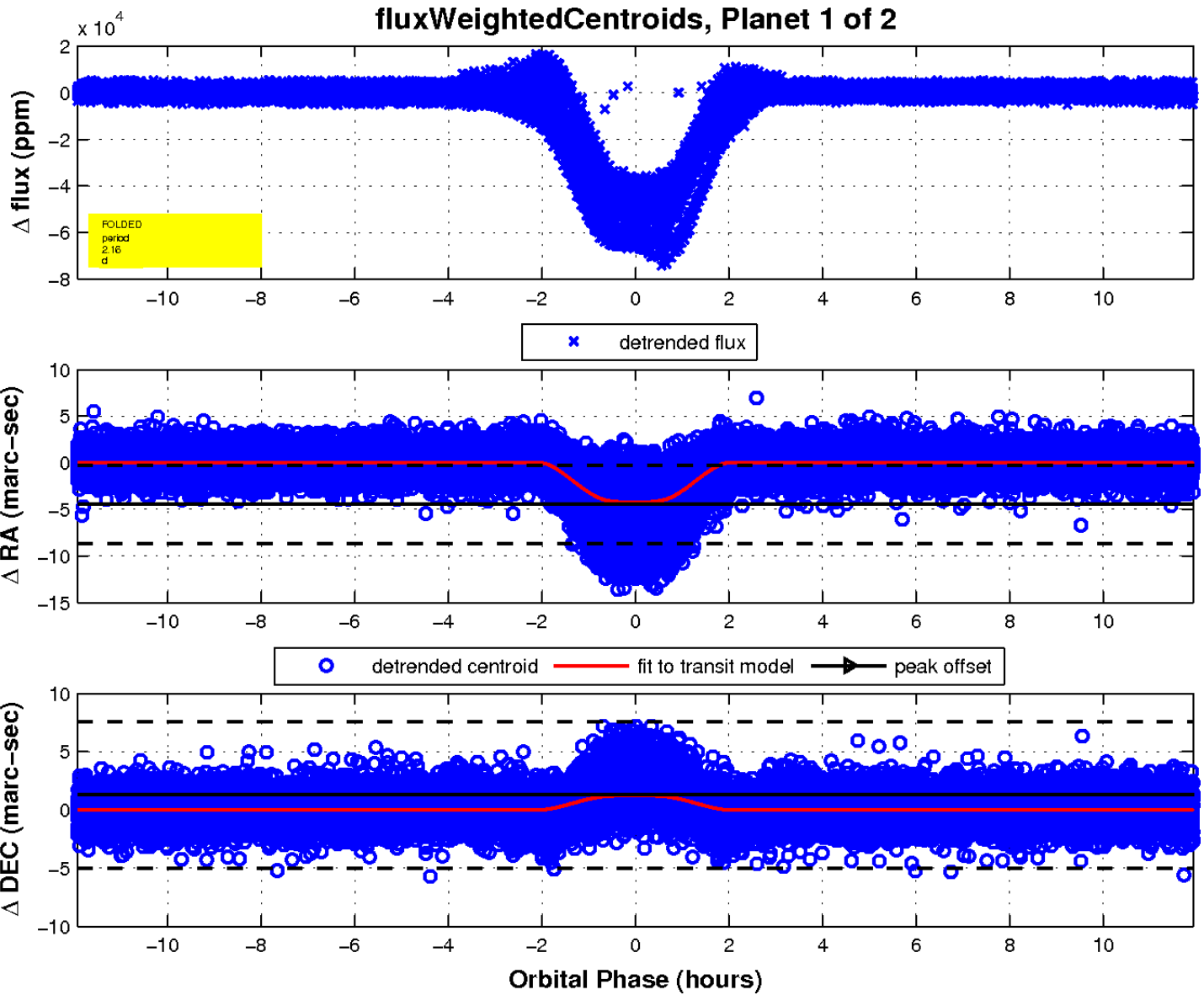
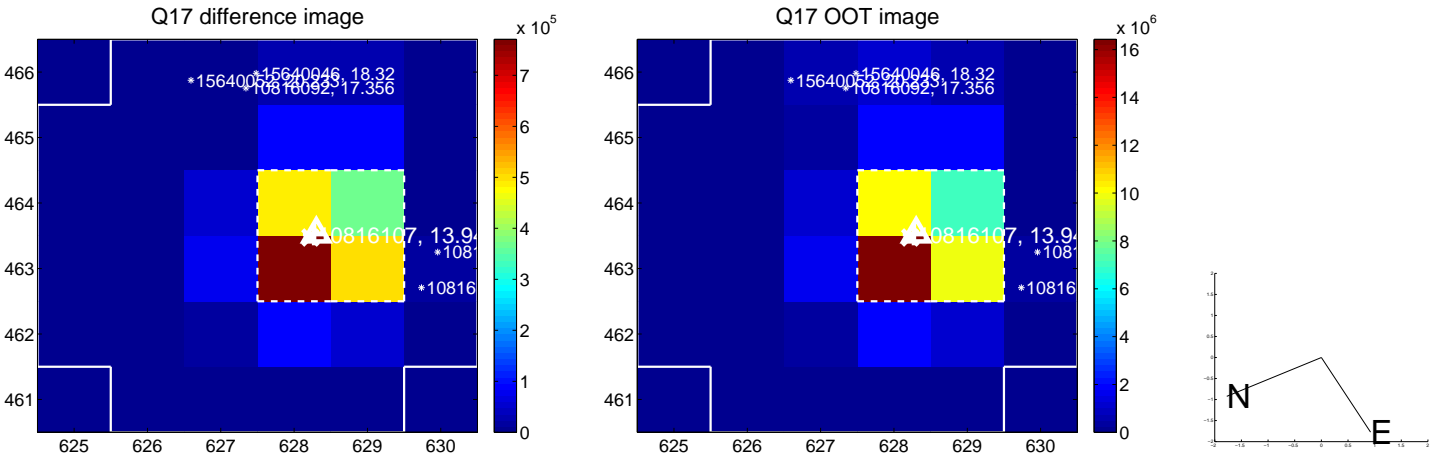
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

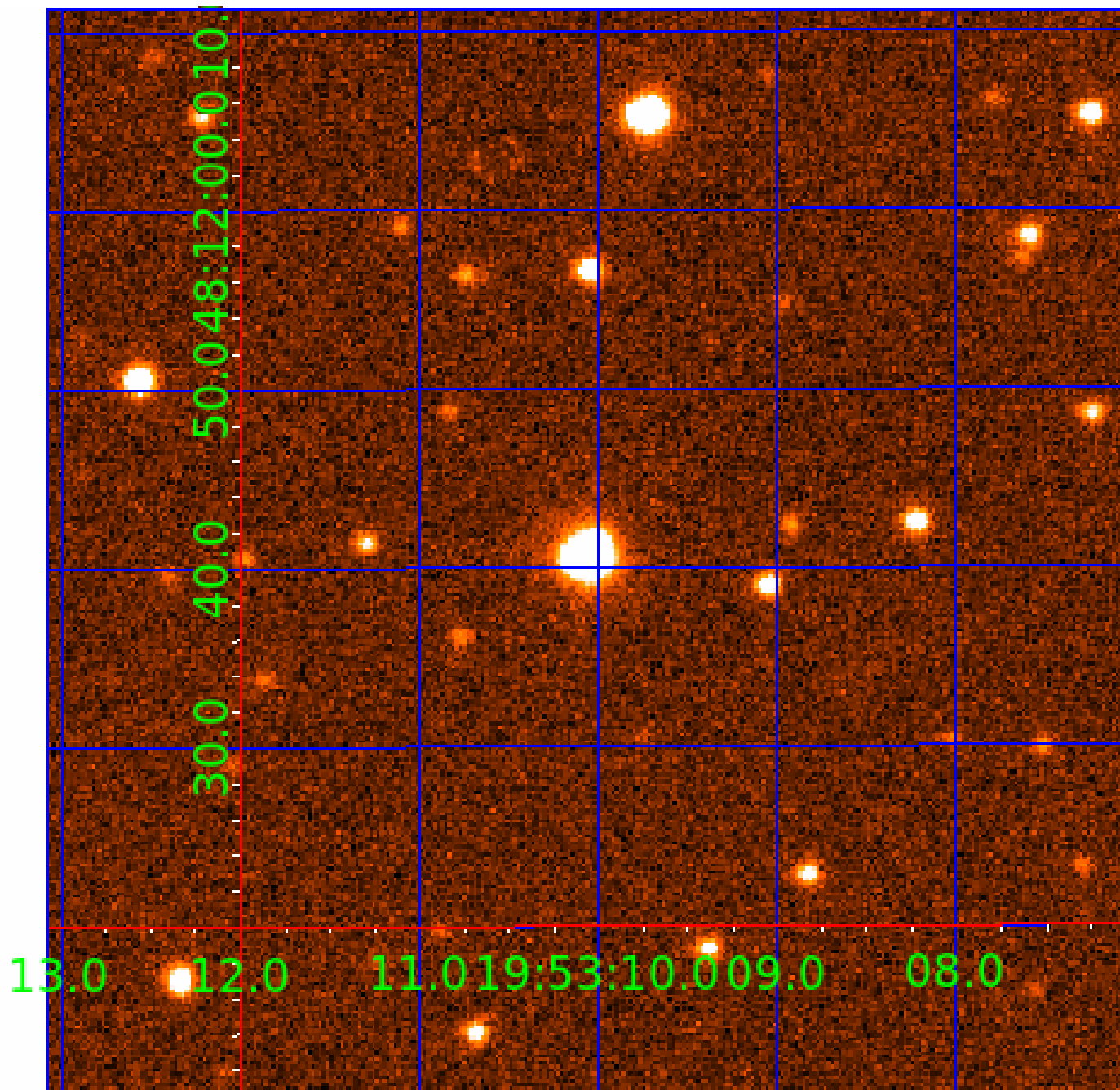


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010816107

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010816107-01	OBS	FP	0.01	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
010816107-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_NOFITS

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 010816107-02

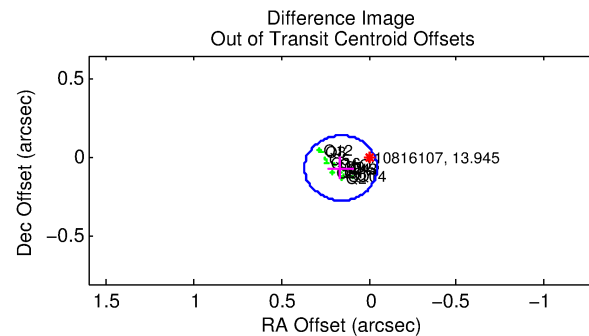
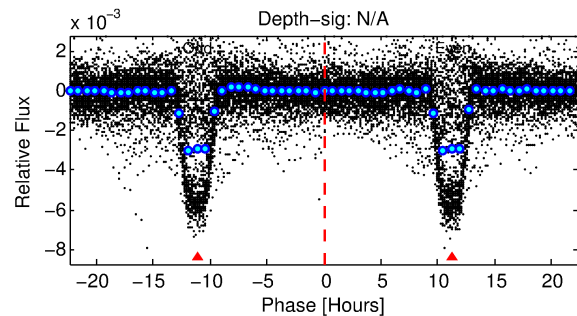
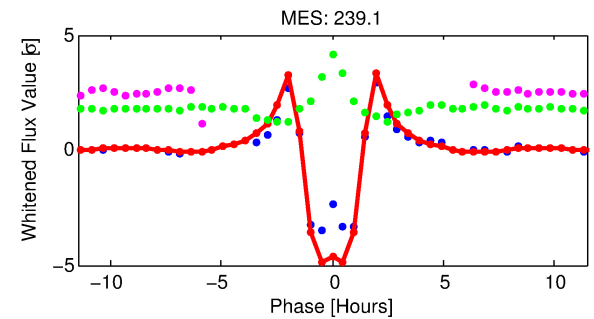
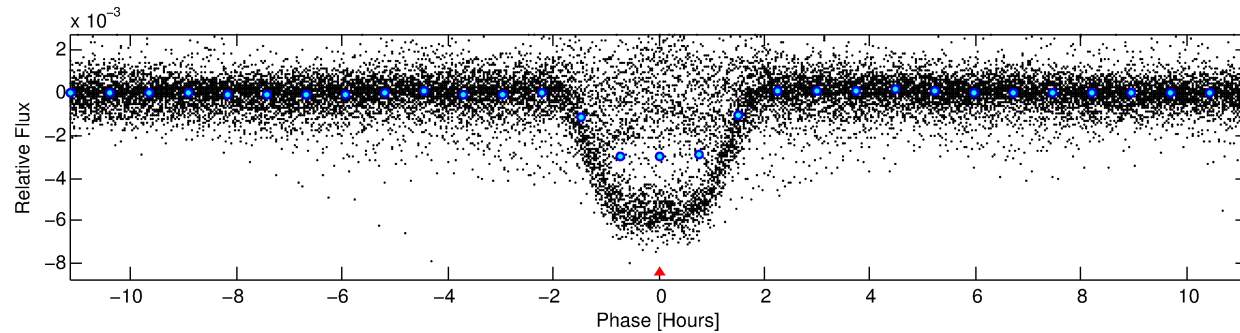
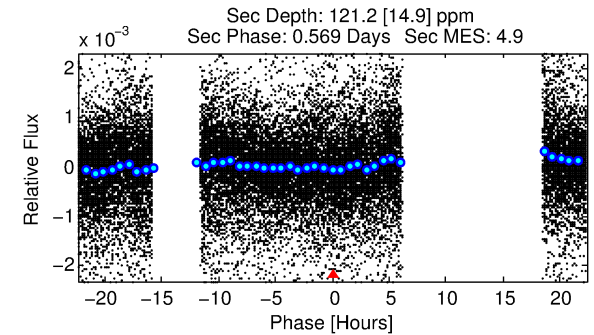
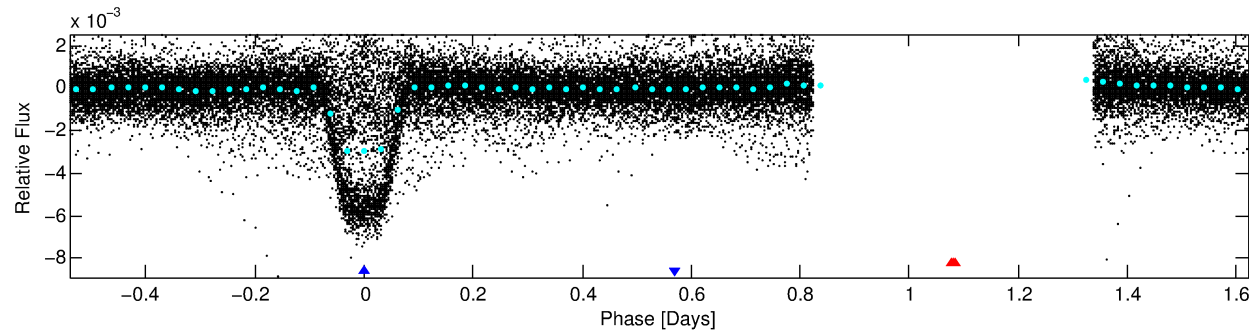
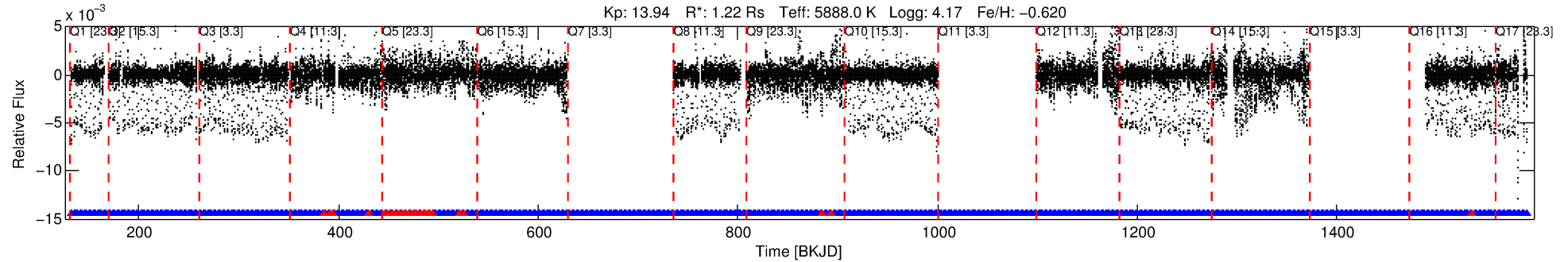
No Significant Match Found

DV One-Page Summary

KIC: 10816107 Candidate: 2 of 2 Period: 2.162 d

KOI: K07377 Corr: No Ephemeris Match

Kp: 13.94 R*: 1.22 Rs Teff: 5888.0 K Logg: 4.17 Fe/H: -0.620



TPS TCE Results:

Period = 2.16159 d
Epoch = 132.8820 BKJD

DV fit results are unavailable

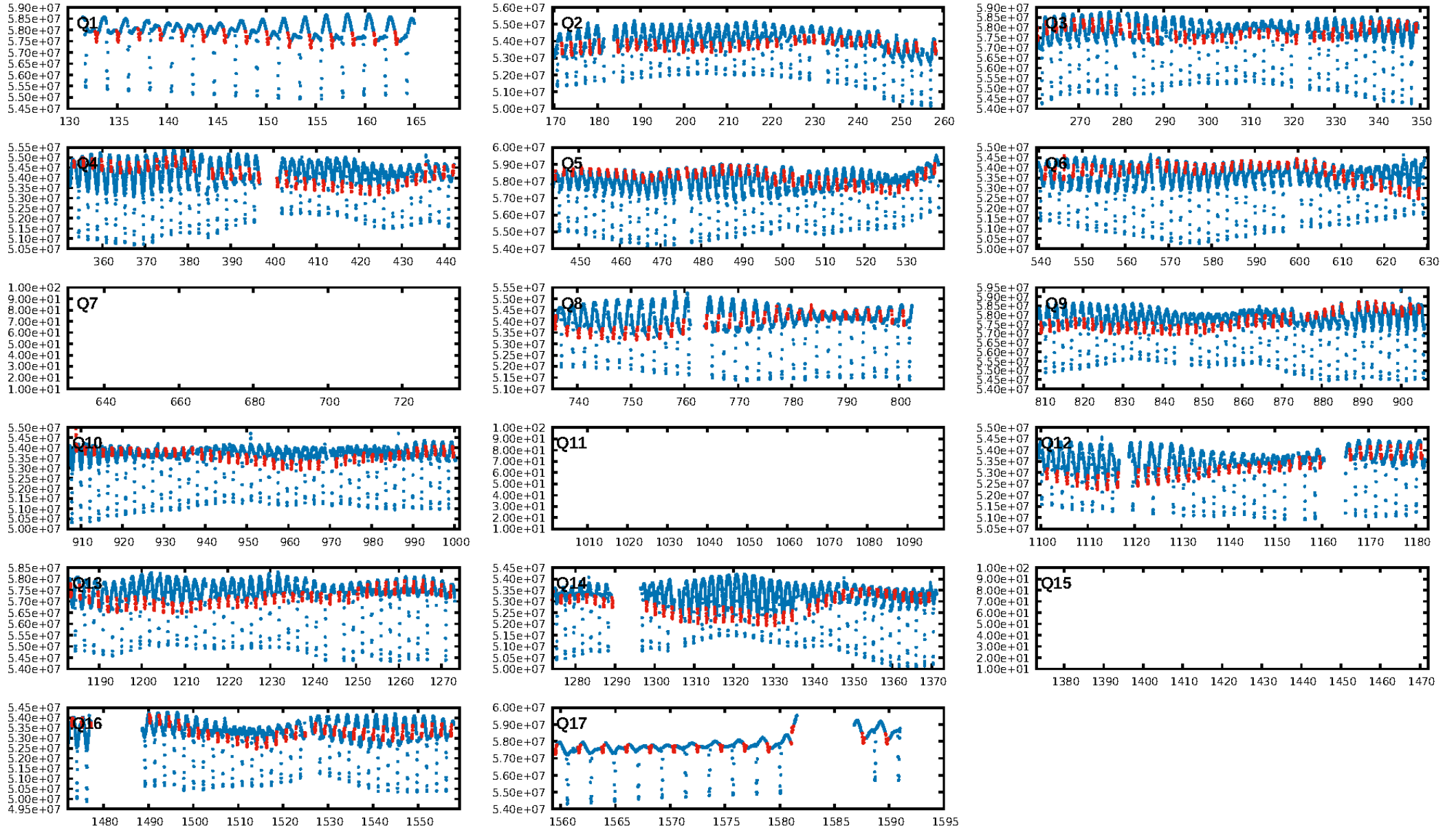
DV Diagnostic Results:

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: 0.94 [442/468]
GhostDiagnostic-chr: 1.682
Centroid-sig: 12.2%
Centroid-so: 0.255 arcsec [19.87 σ]
OotOffset-rm: 0.173 arcsec [2.51 σ]
KicOffset-rm: 0.325 arcsec [4.78 σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [14/14]

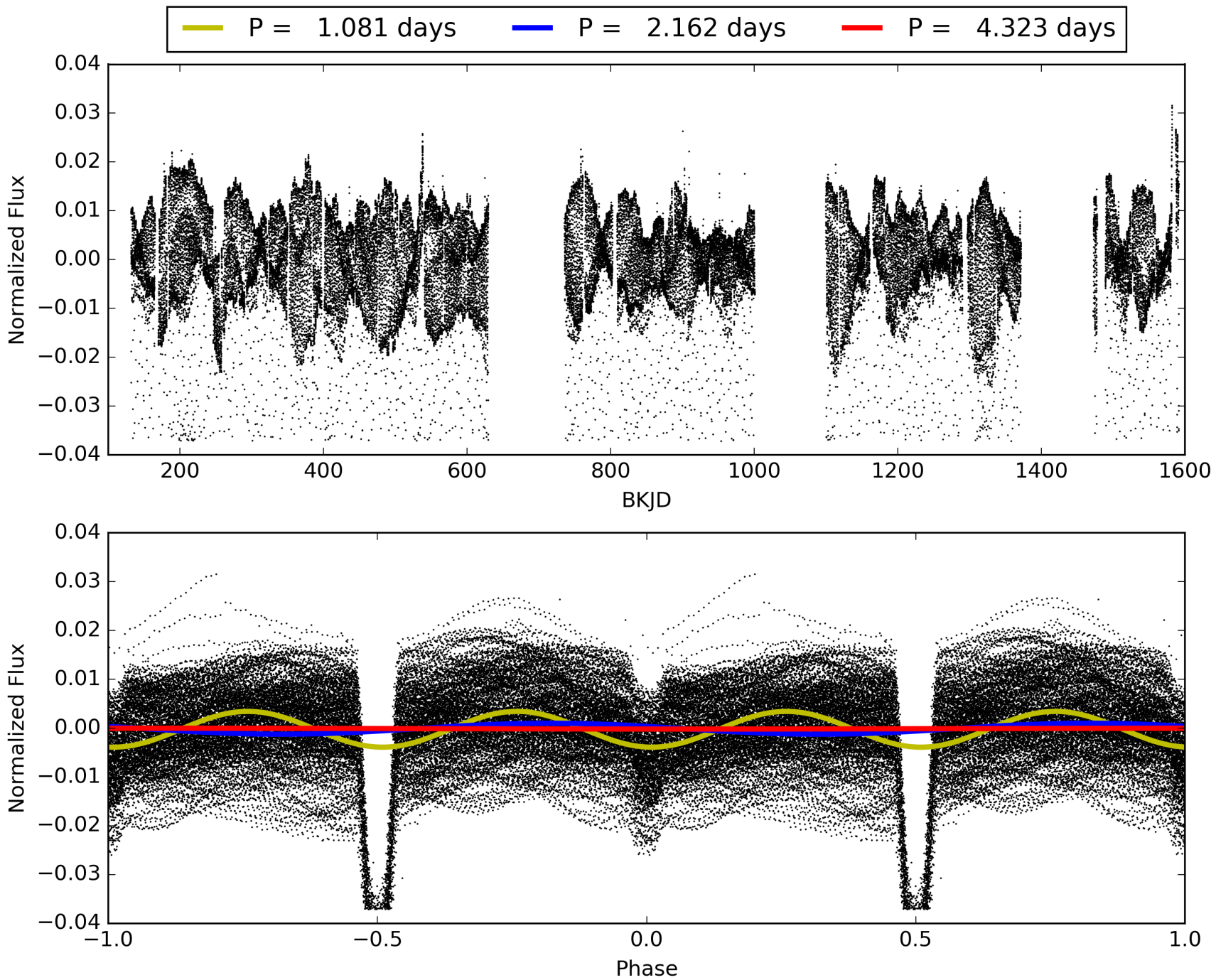
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 11:32:21 Z

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

TCE 010816107-02, PDC Light Curves

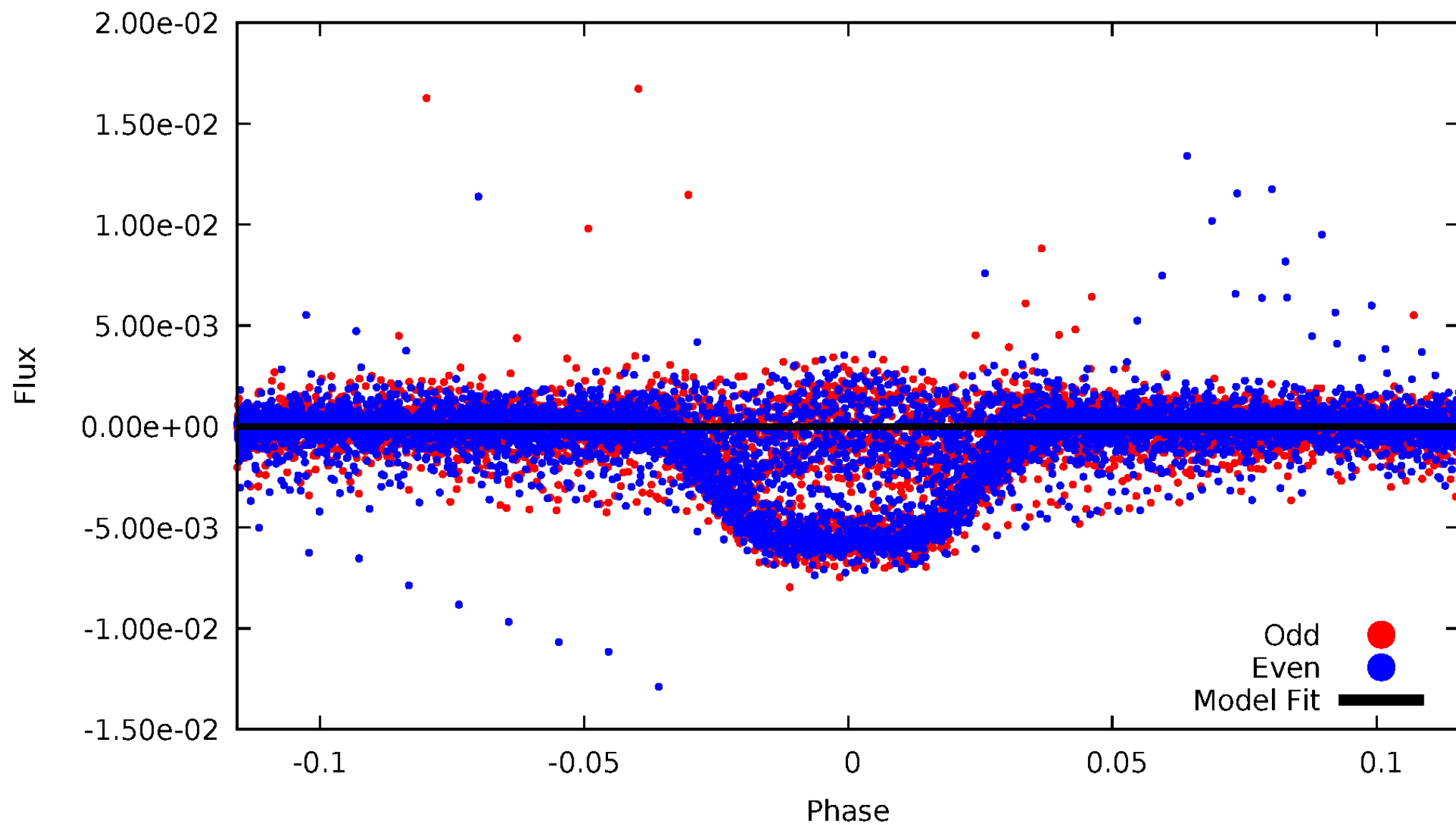


TCE 010816107-02



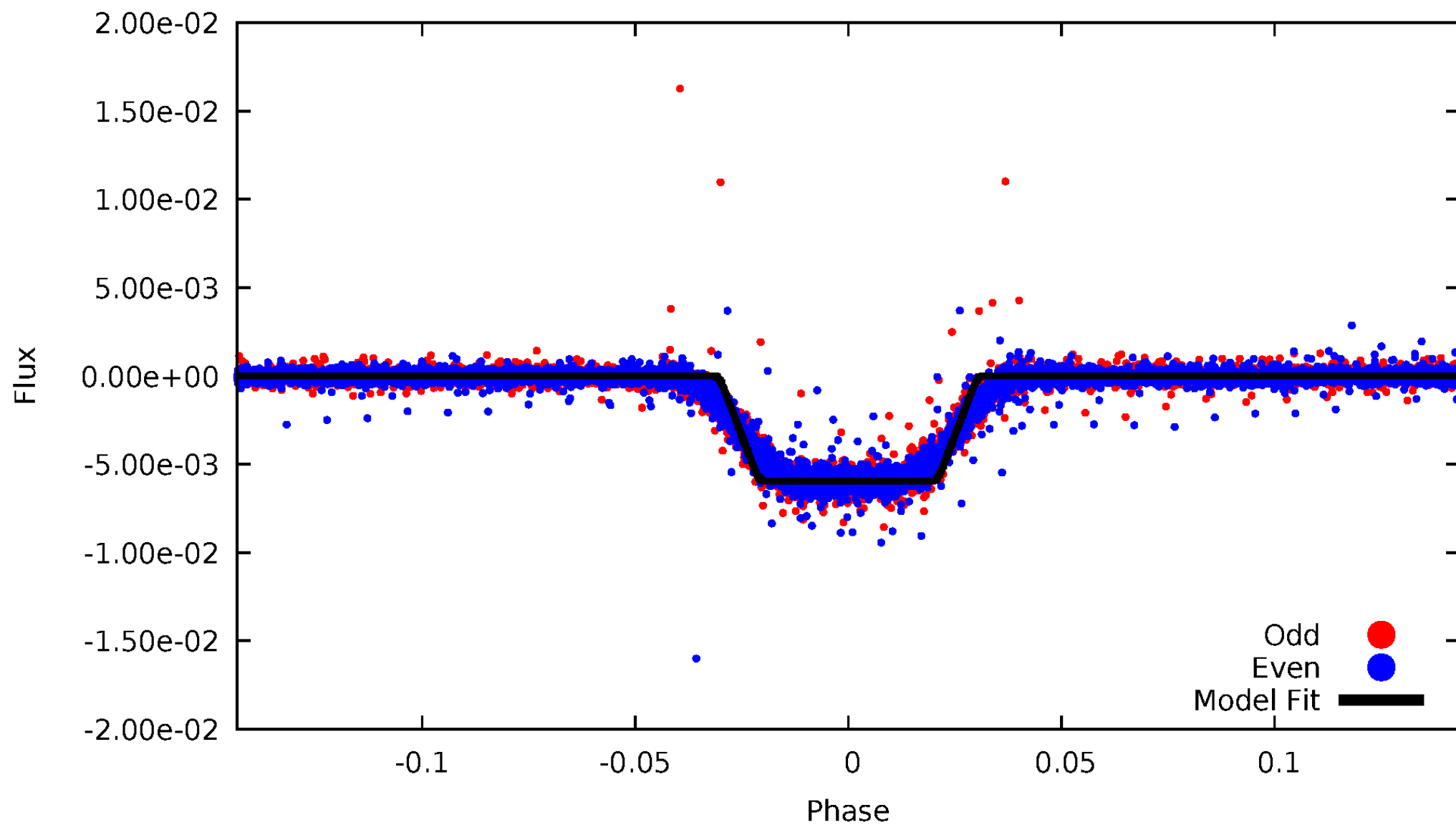
DV Odd/Even

TCE 010816107-02



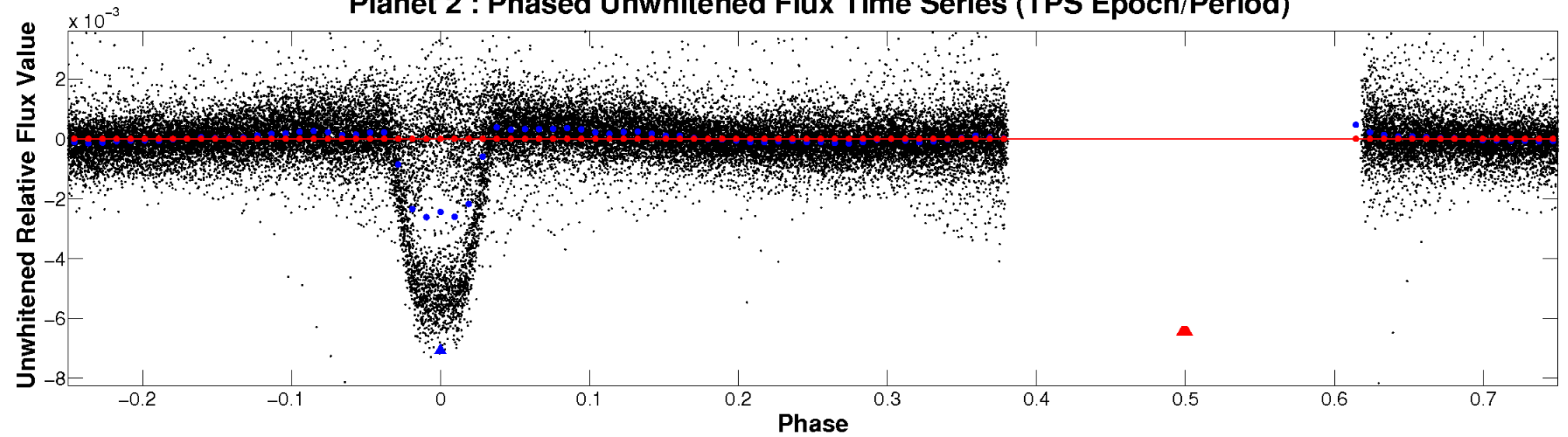
ALT Odd/Even

TCE 010816107-02

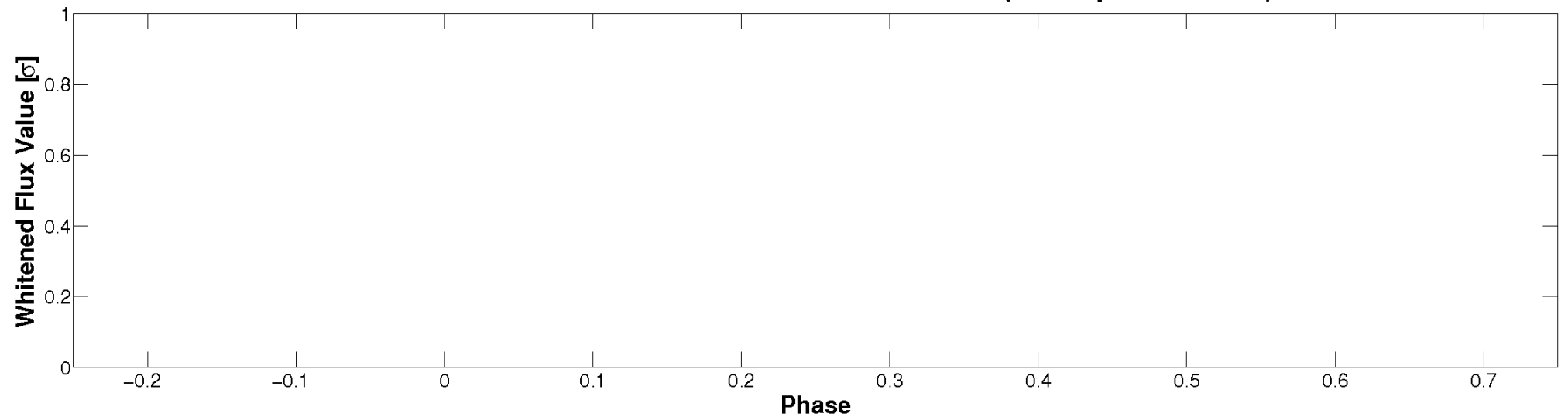


Non-Whitened Vs. Whitened Light Curve

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

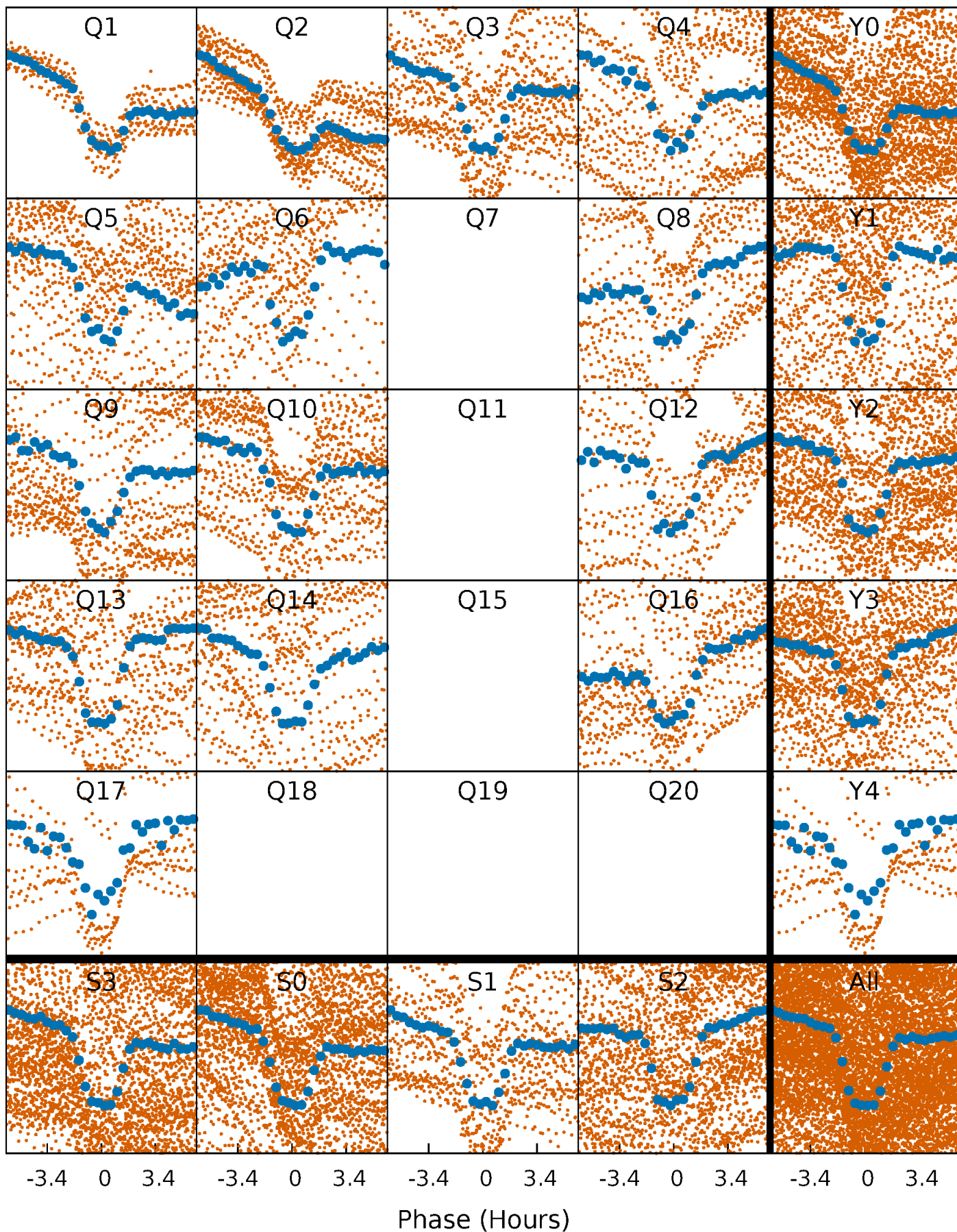


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



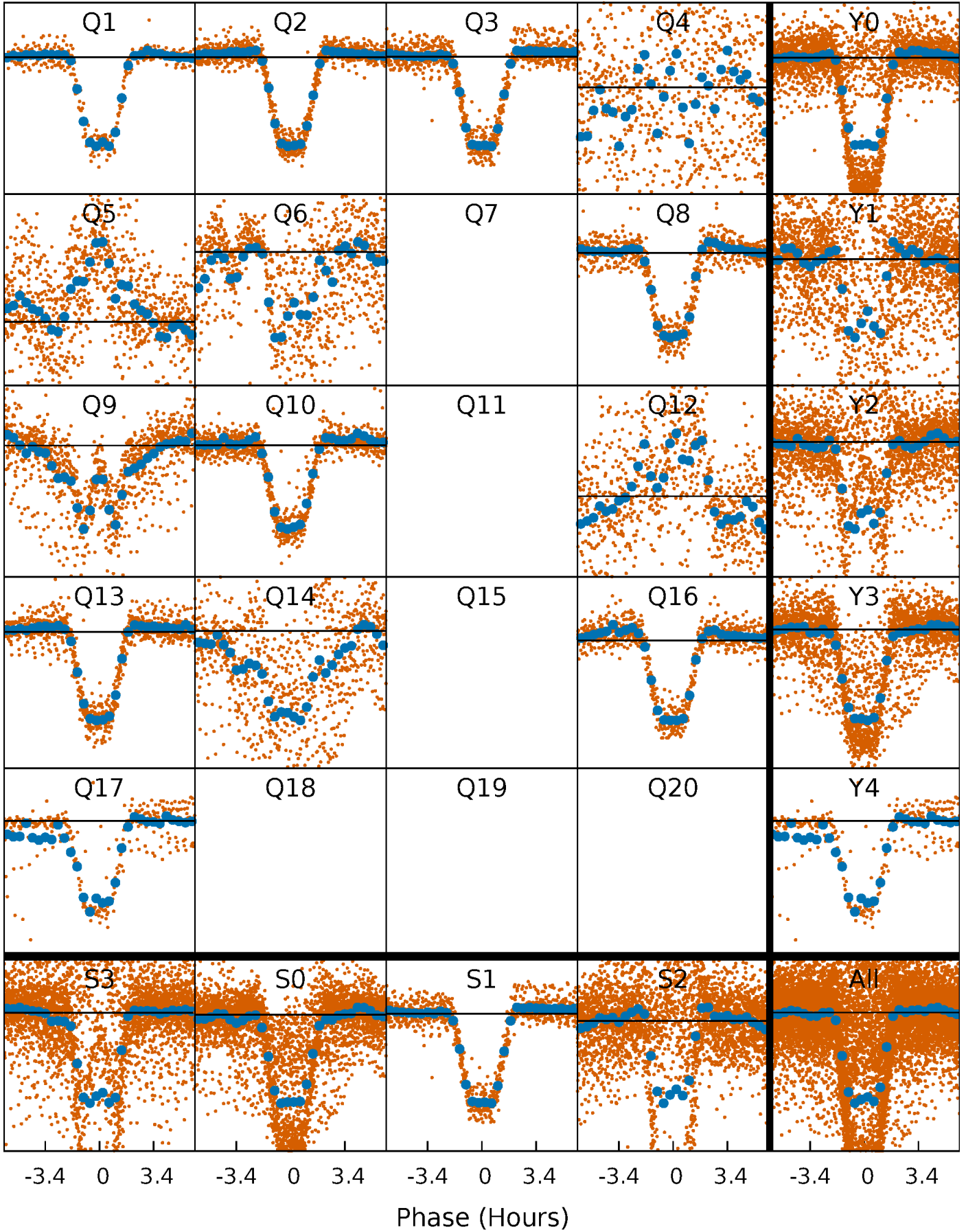
PDC Quarter-Phased Transit Curves

TCE 010816107-02 P= 2.161590 Days $T_0=132.882027$ (BKJD)



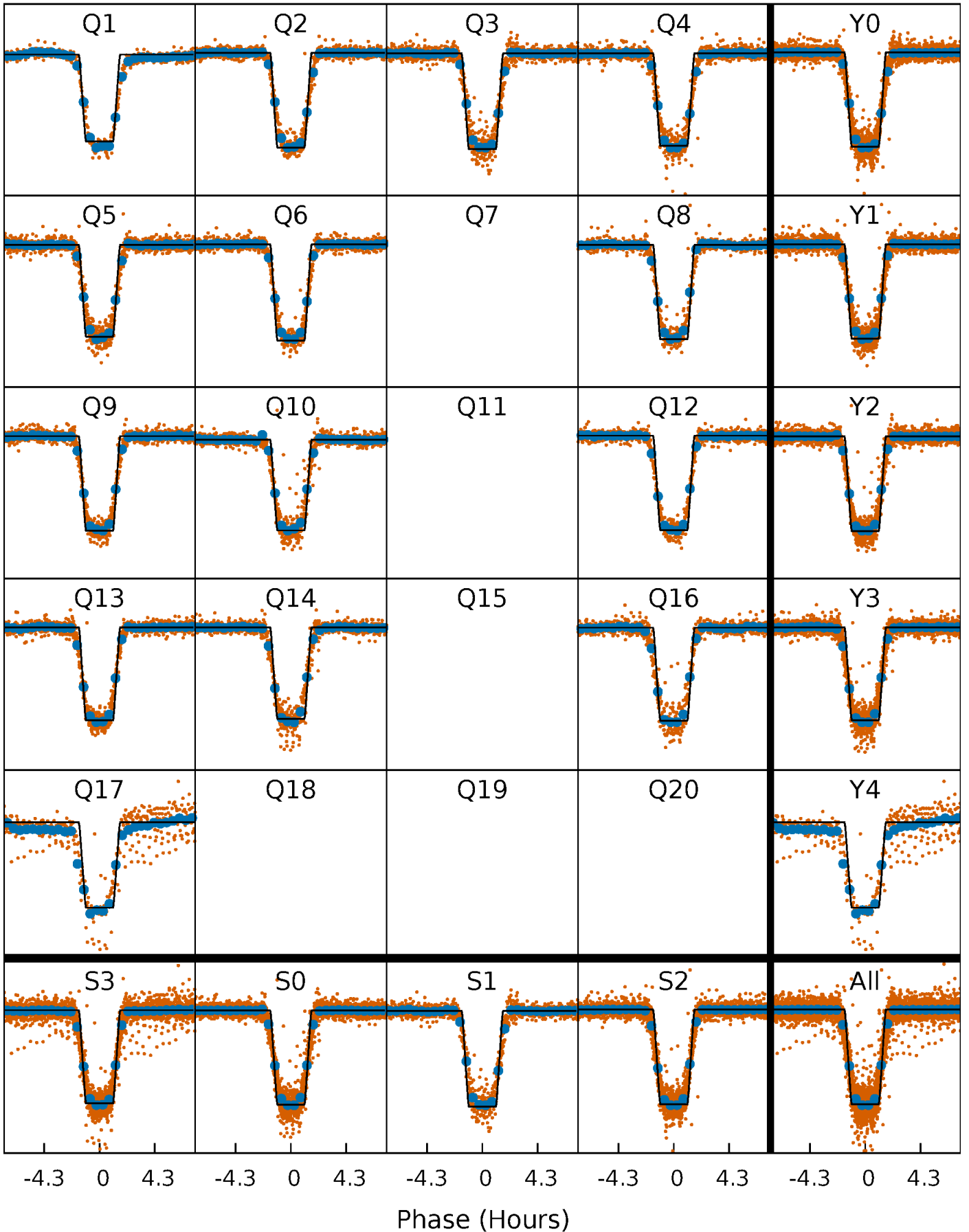
DV Quarter-Phased Transit Curves

TCE 010816107-02 P= 2.161590 Days $T_0=132.882027$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

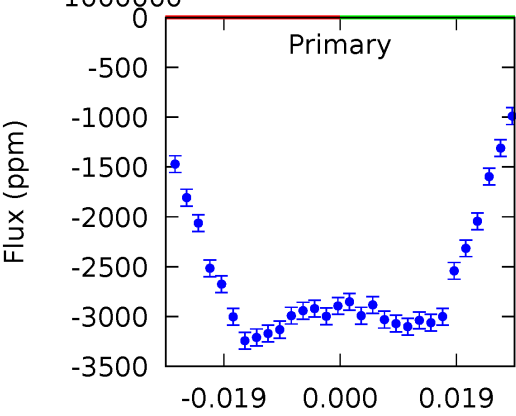
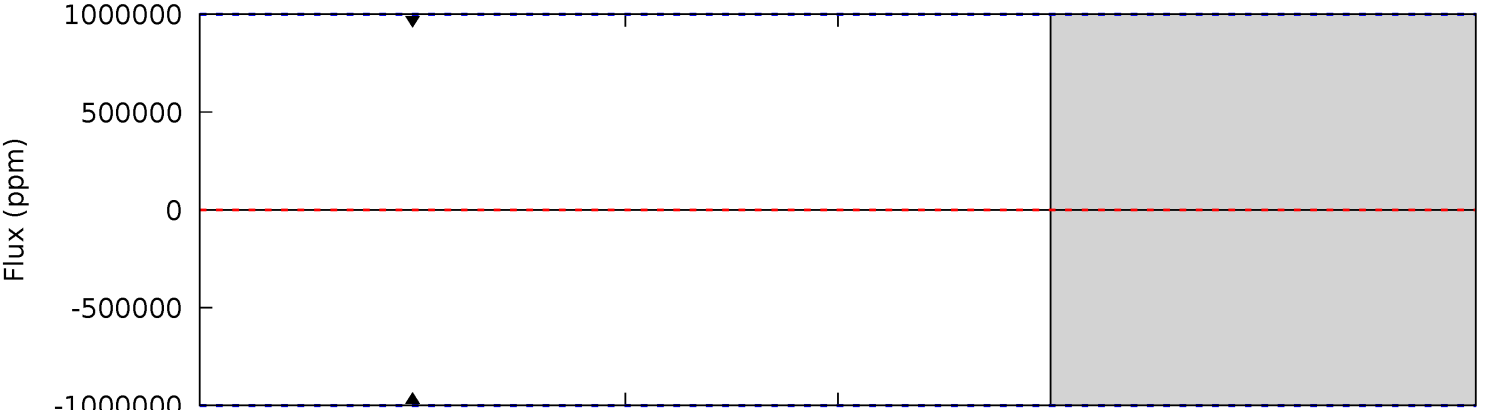
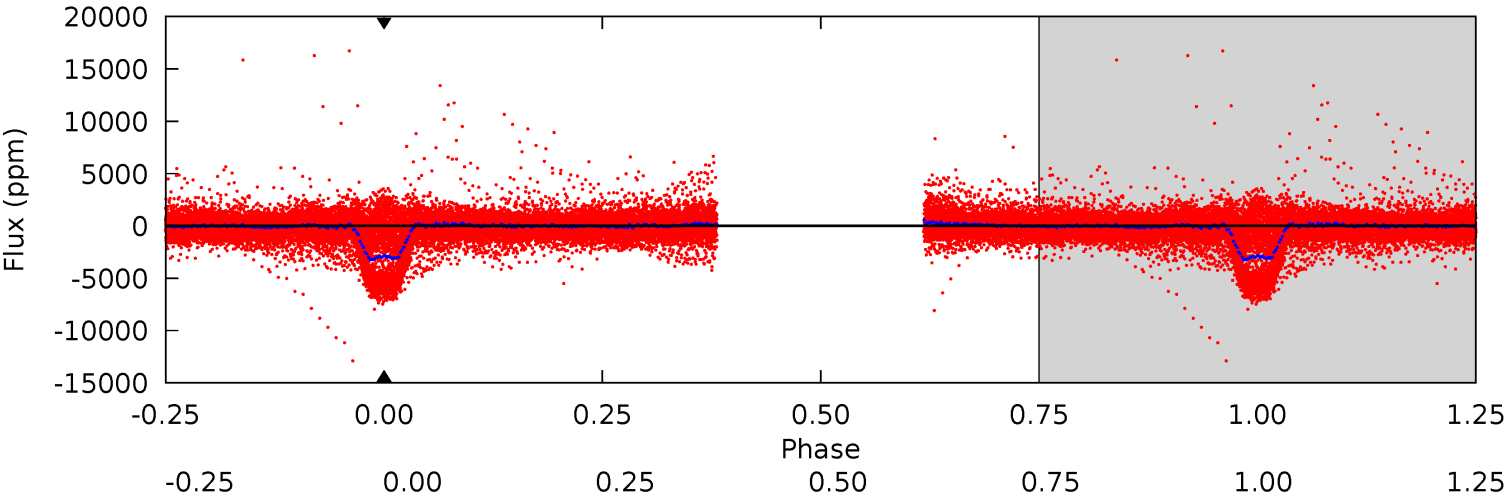
TCE 010816107-02 P= 2.161590 Days $T_0=132.881469$ (BKJD)



DV Model-Shift Uniqueness Test

010816107-02, P = 2.161590 Days, E = 130.720437 Days

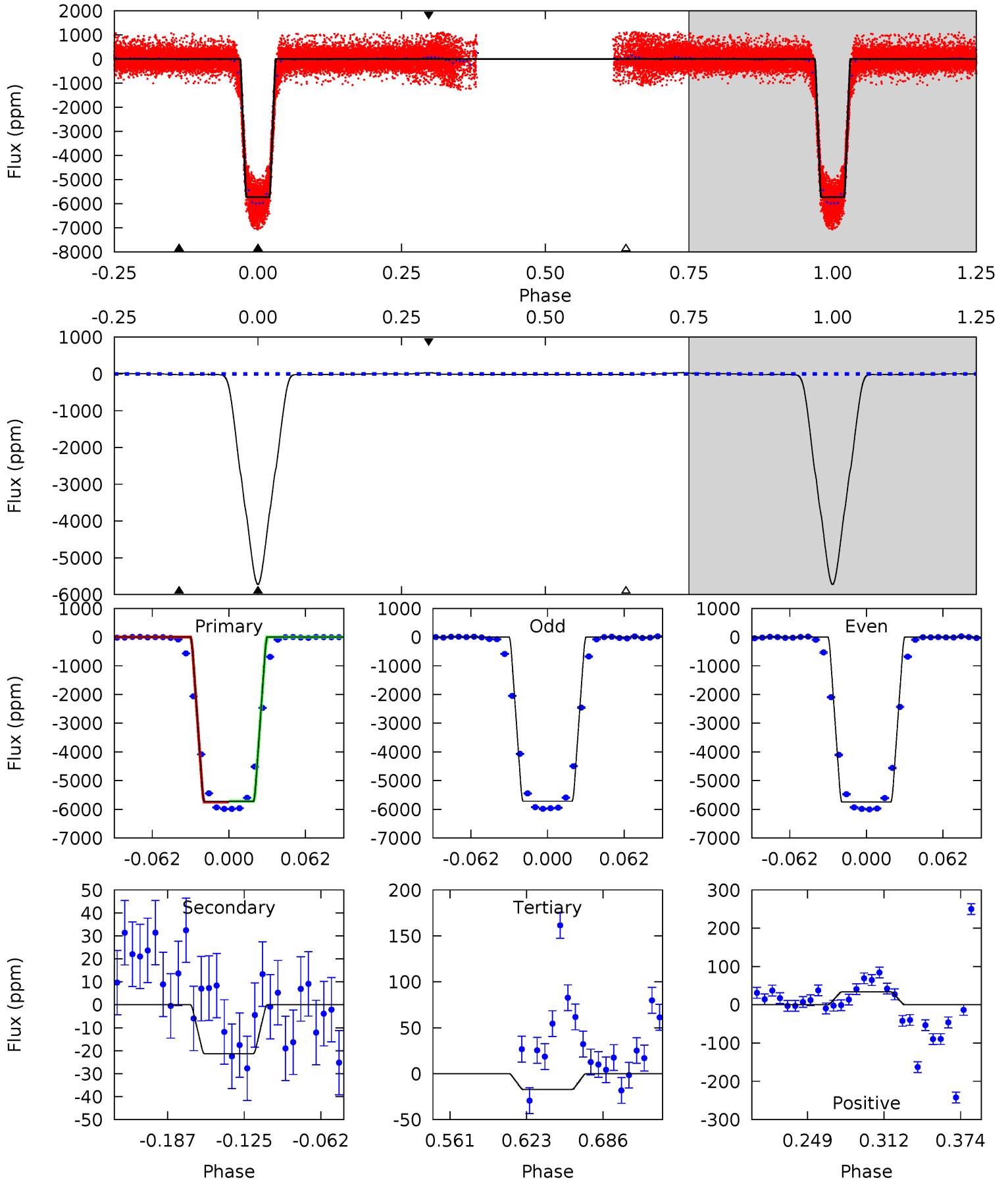
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

010816107-02, P = 2.161590 Days, E = 130.719879 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1052	3.92	3.15	6.17	4.66	1.86	2.77	1049	1046	0.77	-2.25	2.60	1.00	0.01	2.56



Stellar Parameters For KIC 010816107

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5888^{+177}_{-159}	$4.167^{+0.364}_{-0.196}$	$-0.620^{+0.300}_{-0.250}$	$1.219^{+0.396}_{-0.396}$	$0.796^{+0.110}_{-0.047}$	$0.619^{+1.597}_{-0.338}$
	+3%/-3%	+9%/-5%	+48%/-40%	+32%/-32%	+14%/-6%	+258%/-55%
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 010816107-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$11.23^{+11.56}_{-7.85}$	2273^{+208}_{-230}	-4490^{+22296}_{-11977}	$-6.599^{+732.311}_{-631.534}$
Alt.	-21 ± 5	$13.62^{+11.88}_{-8.61}$	2273^{+206}_{-228}	-2541^{+4928}_{-182}	$0.057^{+0.382}_{-0.041}$

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

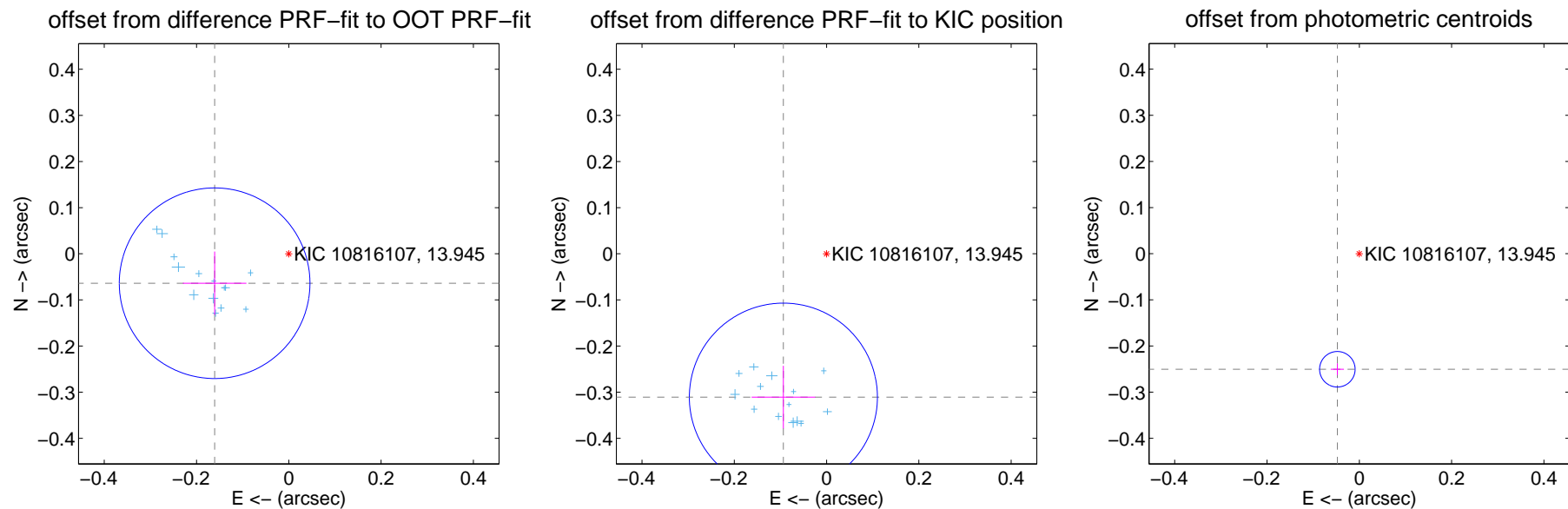
DV Centroid Data

Supplemental centroid analysis for 010816107-02. Kepler magnitude: 13.95. Transit SNR -1.00

There are 14 quarters with good PRF difference image offsets

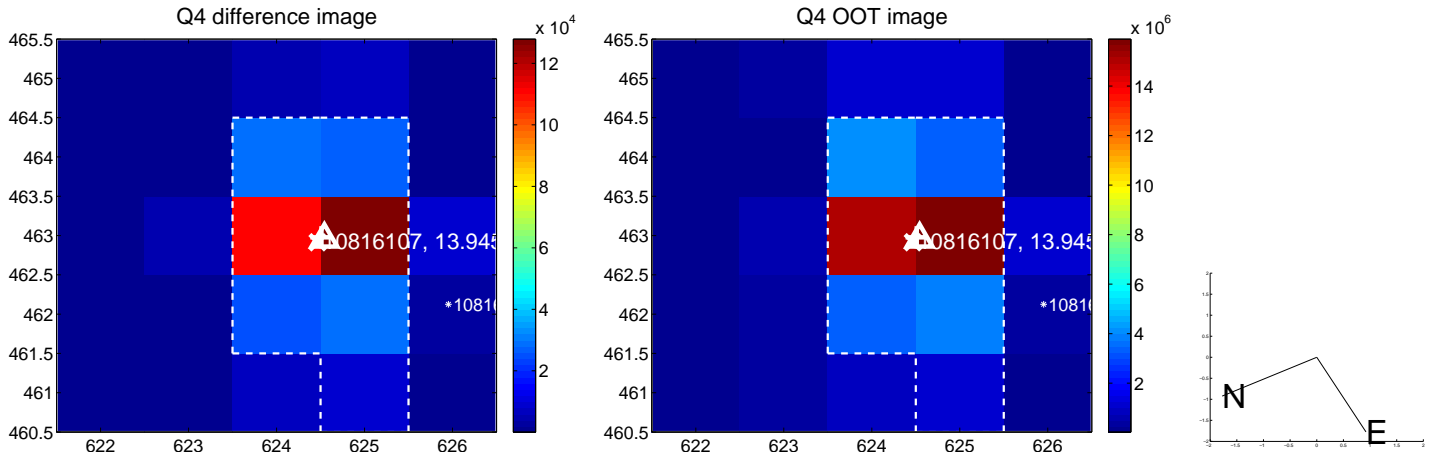
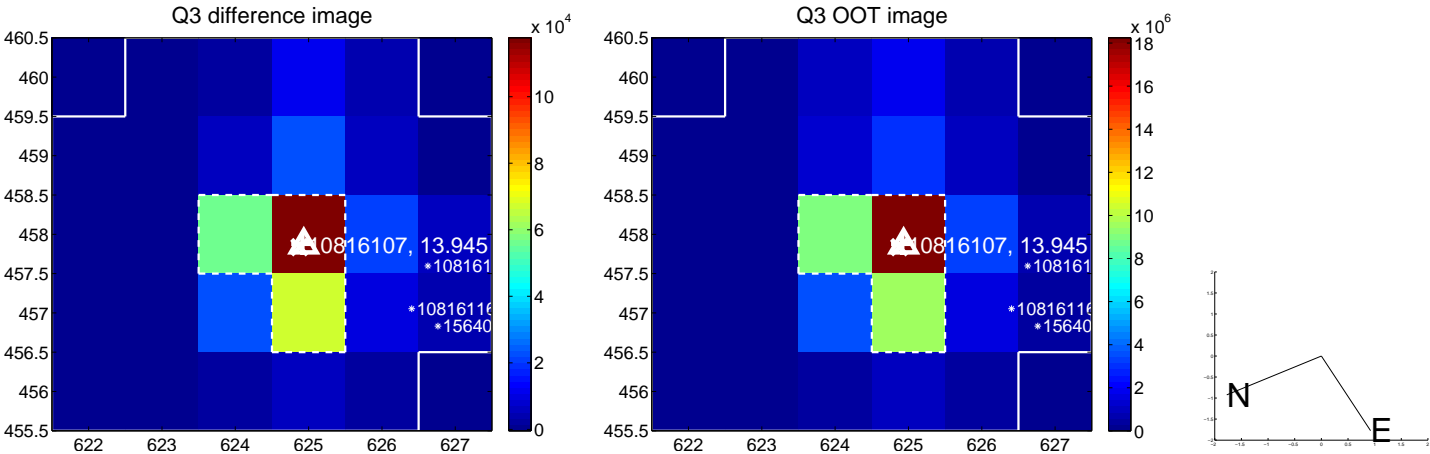
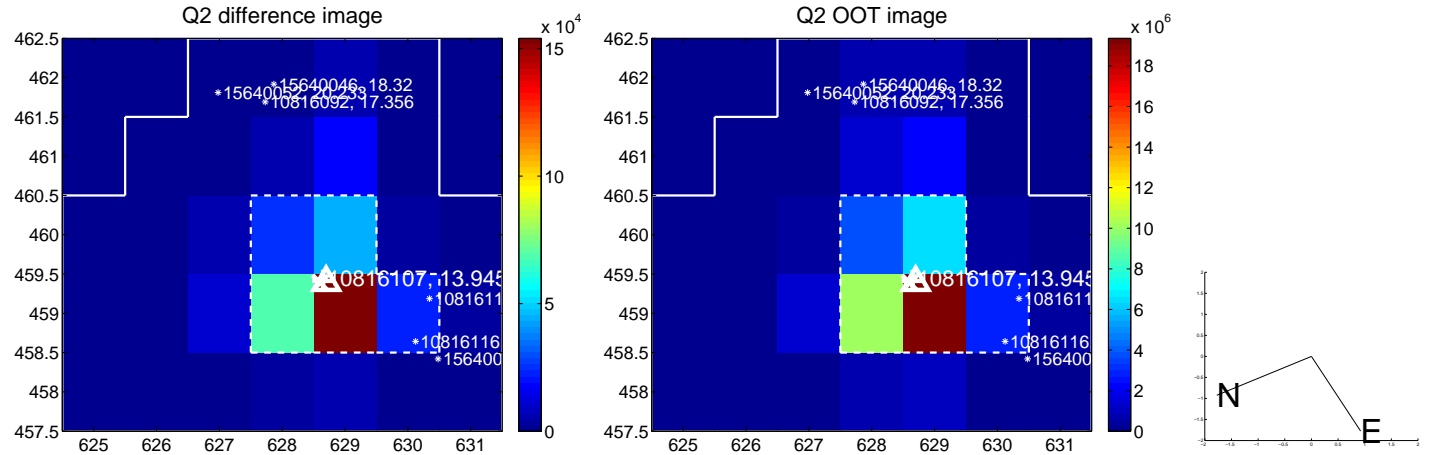
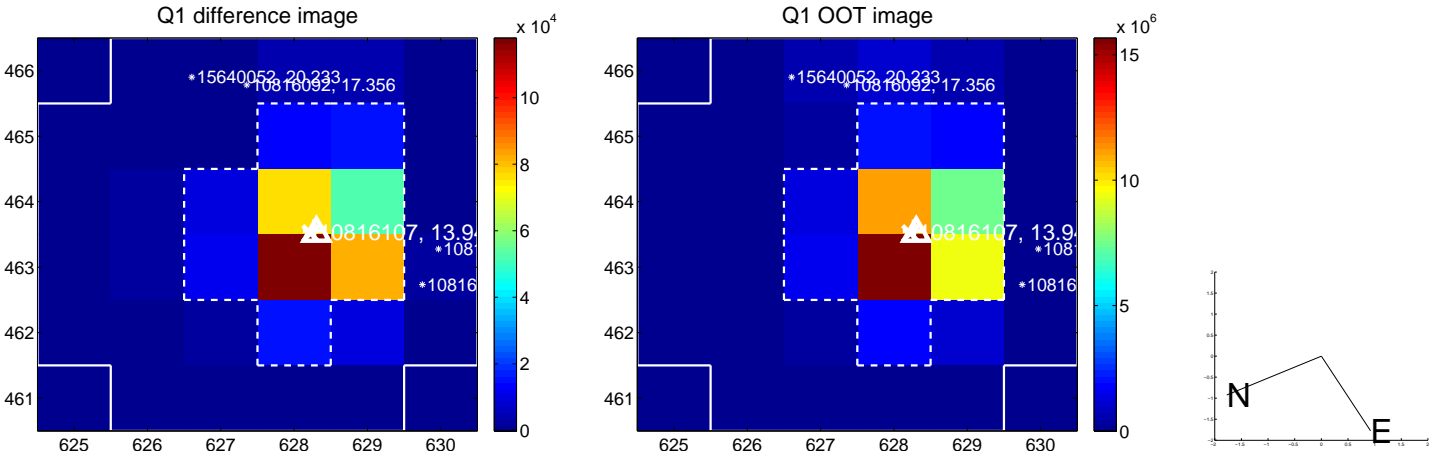
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.173 ± 0.069	2.51	0.161 ± 0.069	-0.064 ± 0.069
PRF-fit source offset from KIC position	0.325 ± 0.068	4.78	0.094 ± 0.069	-0.311 ± 0.068
photometric centroid source offset	0.25 ± 0.01	19.87	0.05 ± 0.01	-0.25 ± 0.01

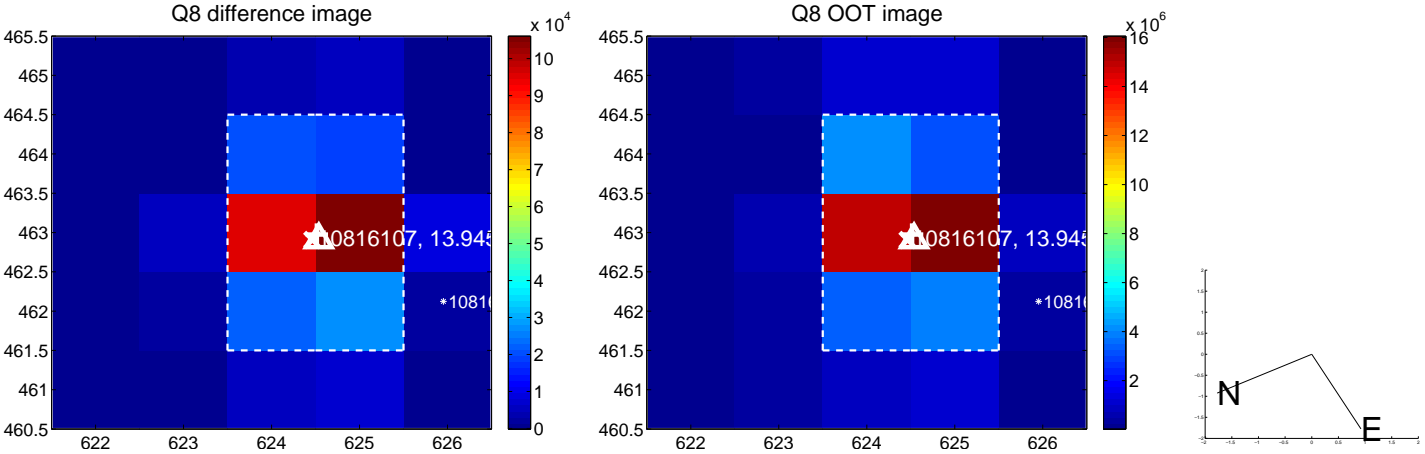
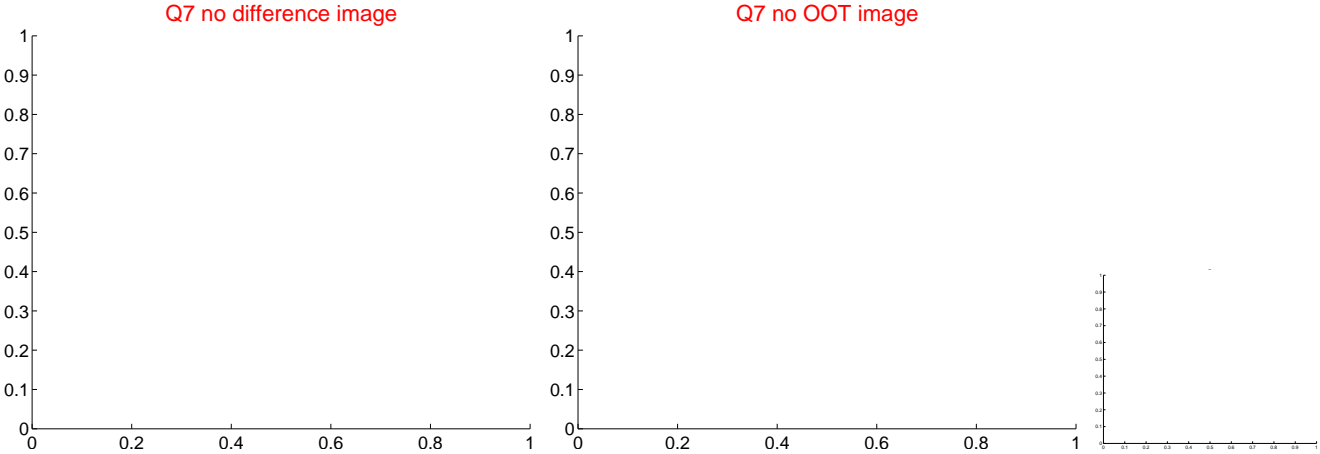
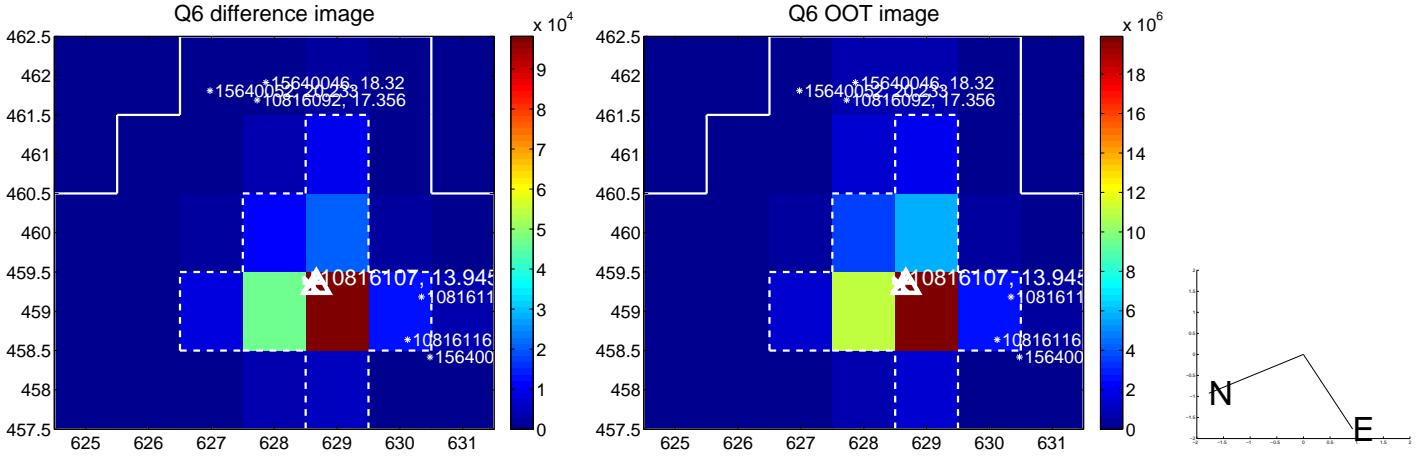
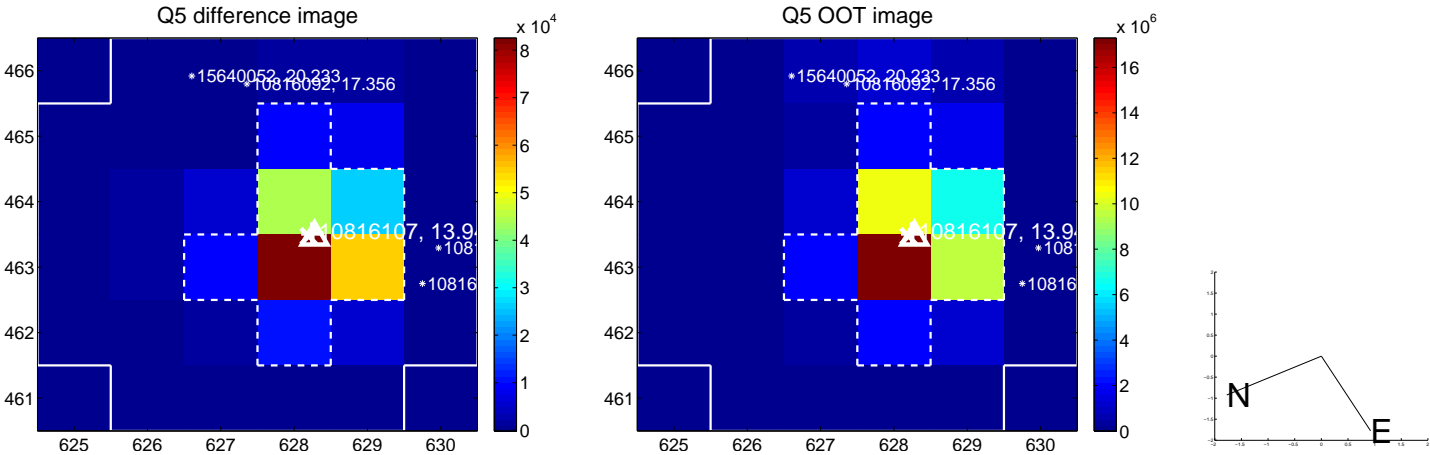


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

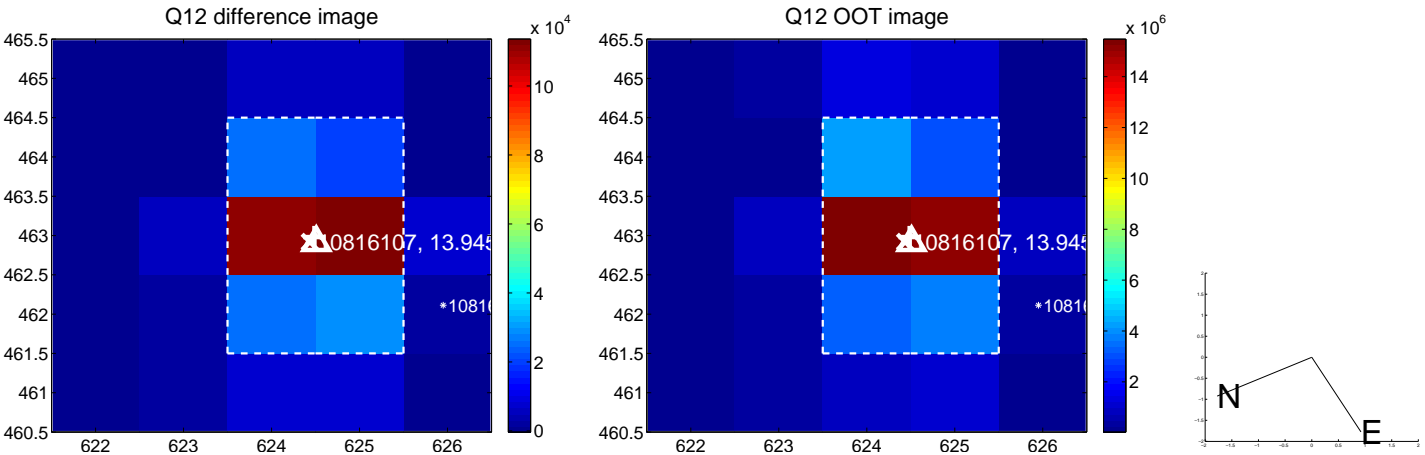
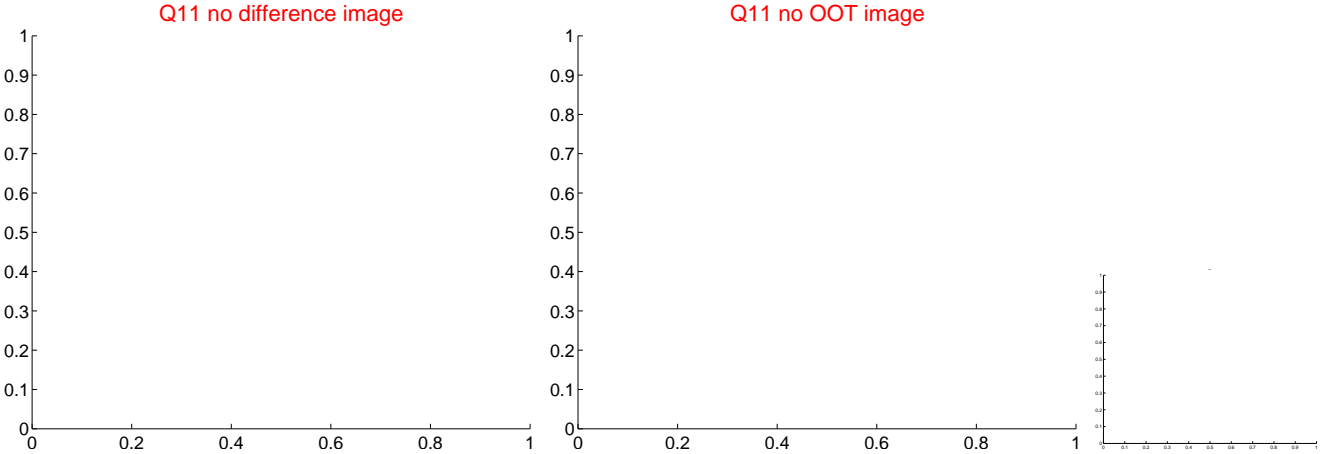
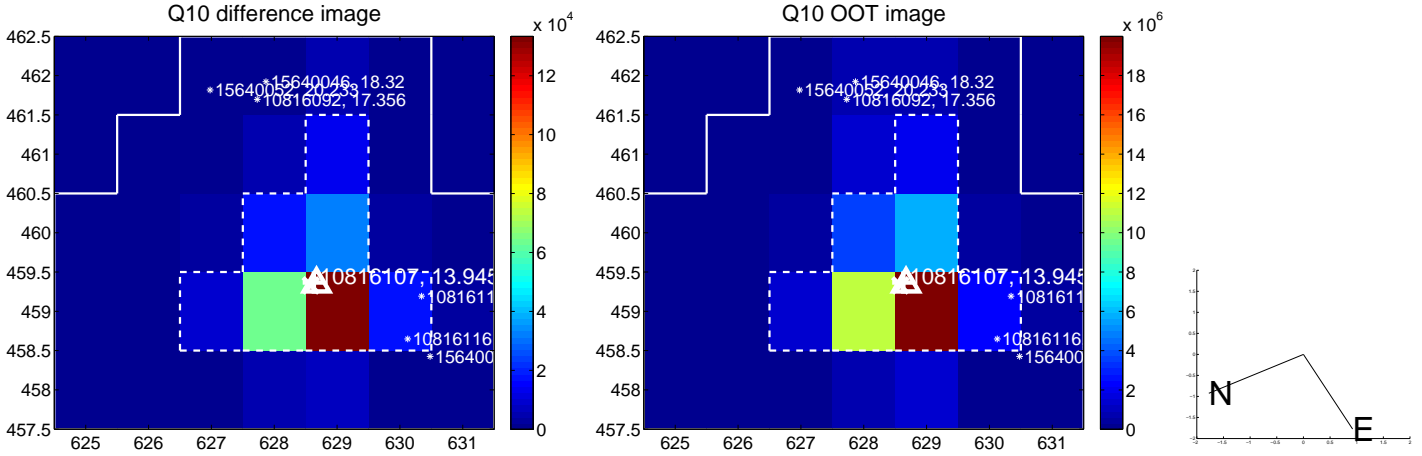
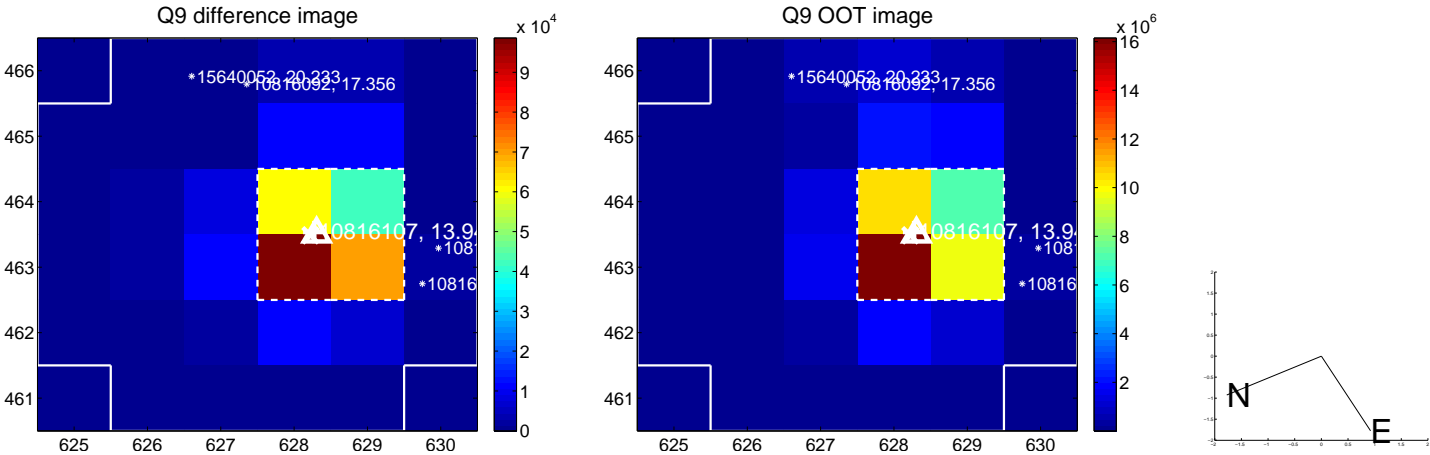
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



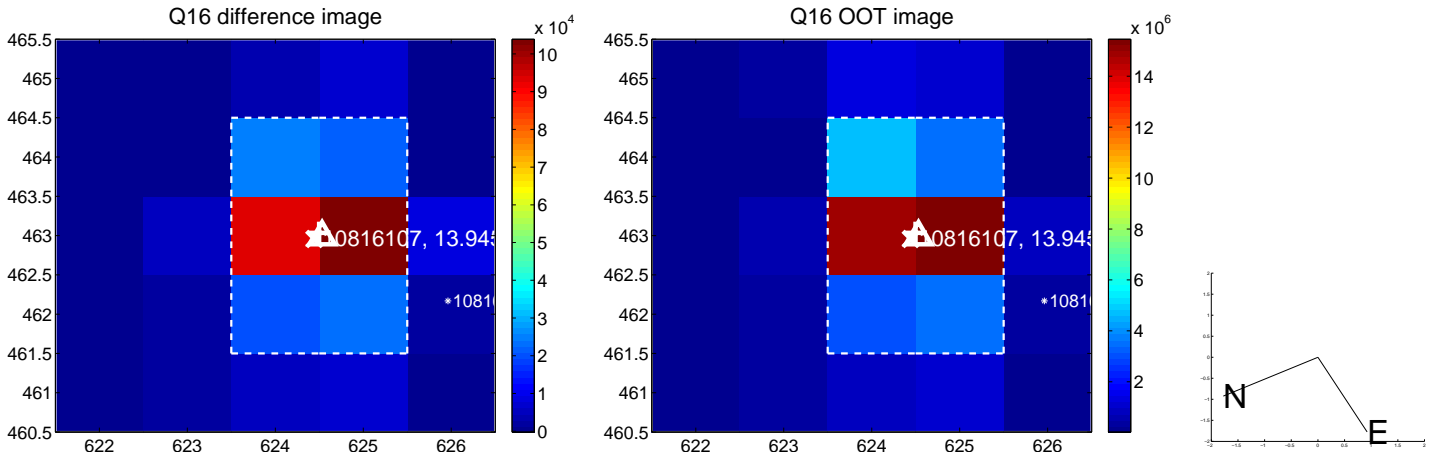
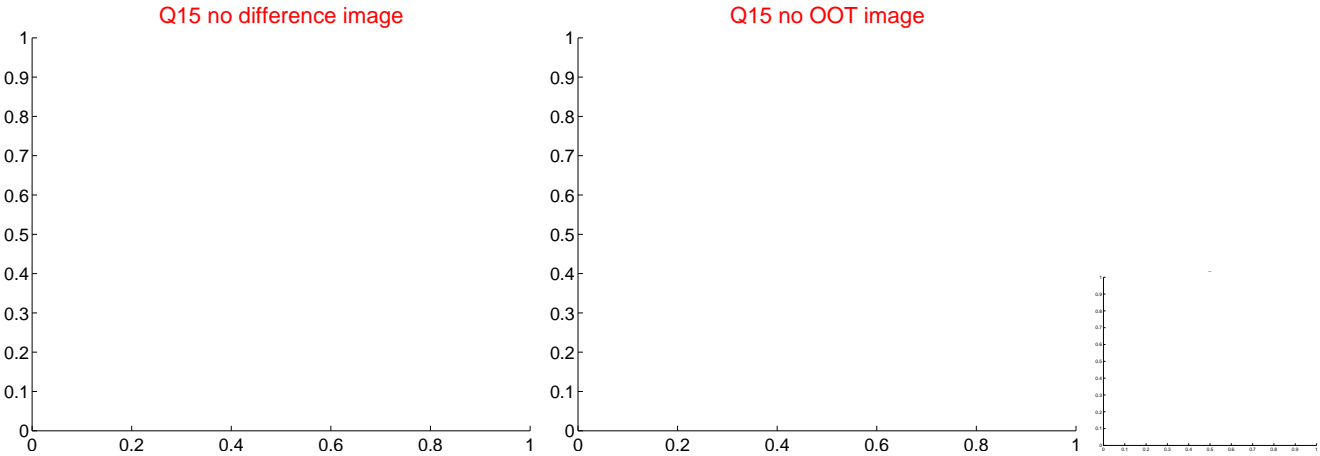
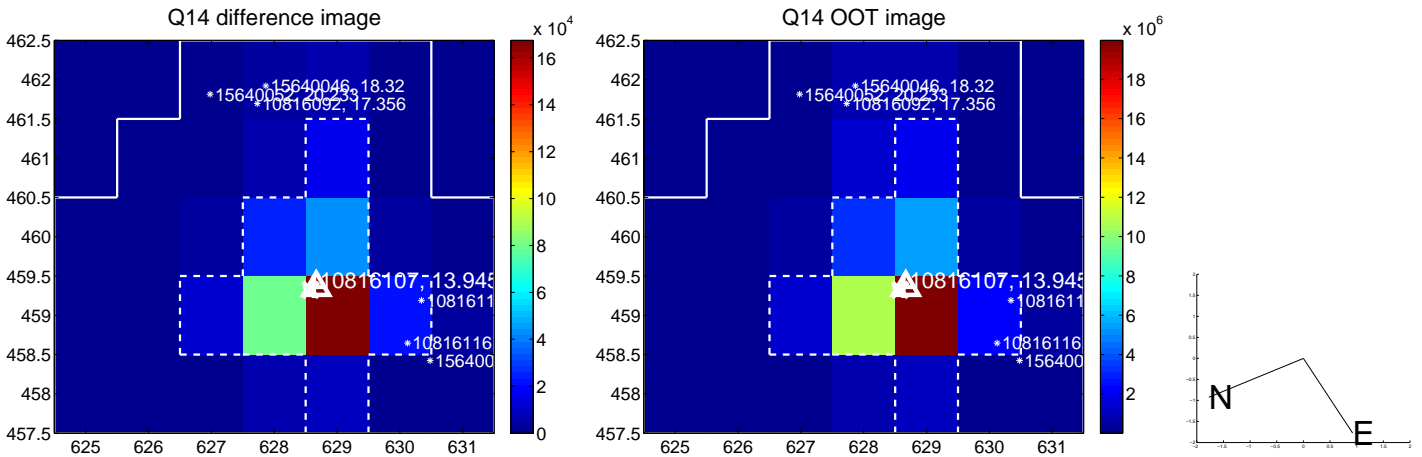
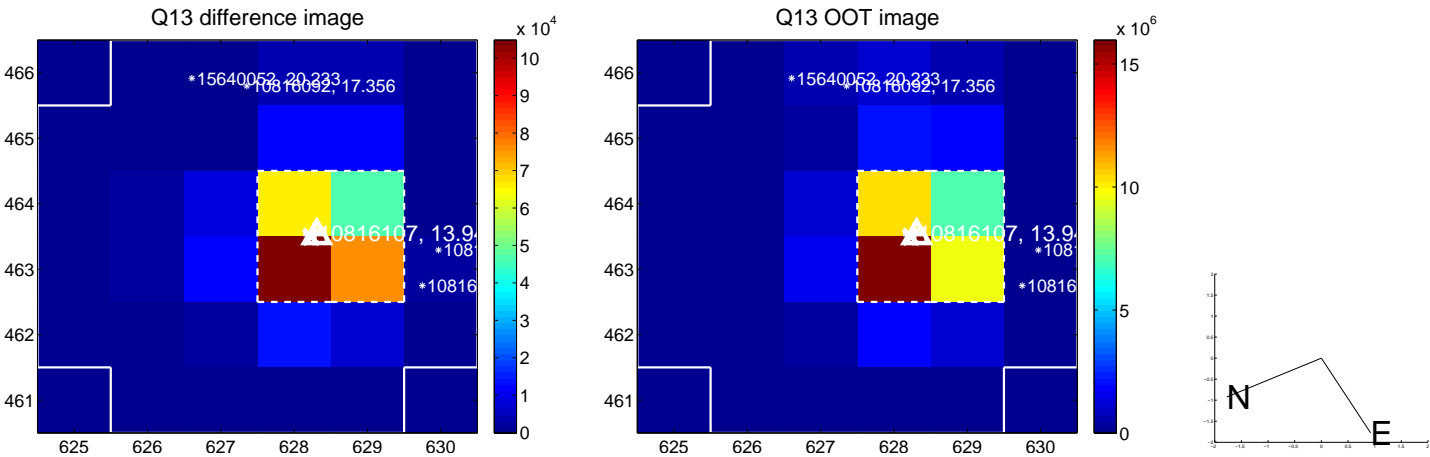
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



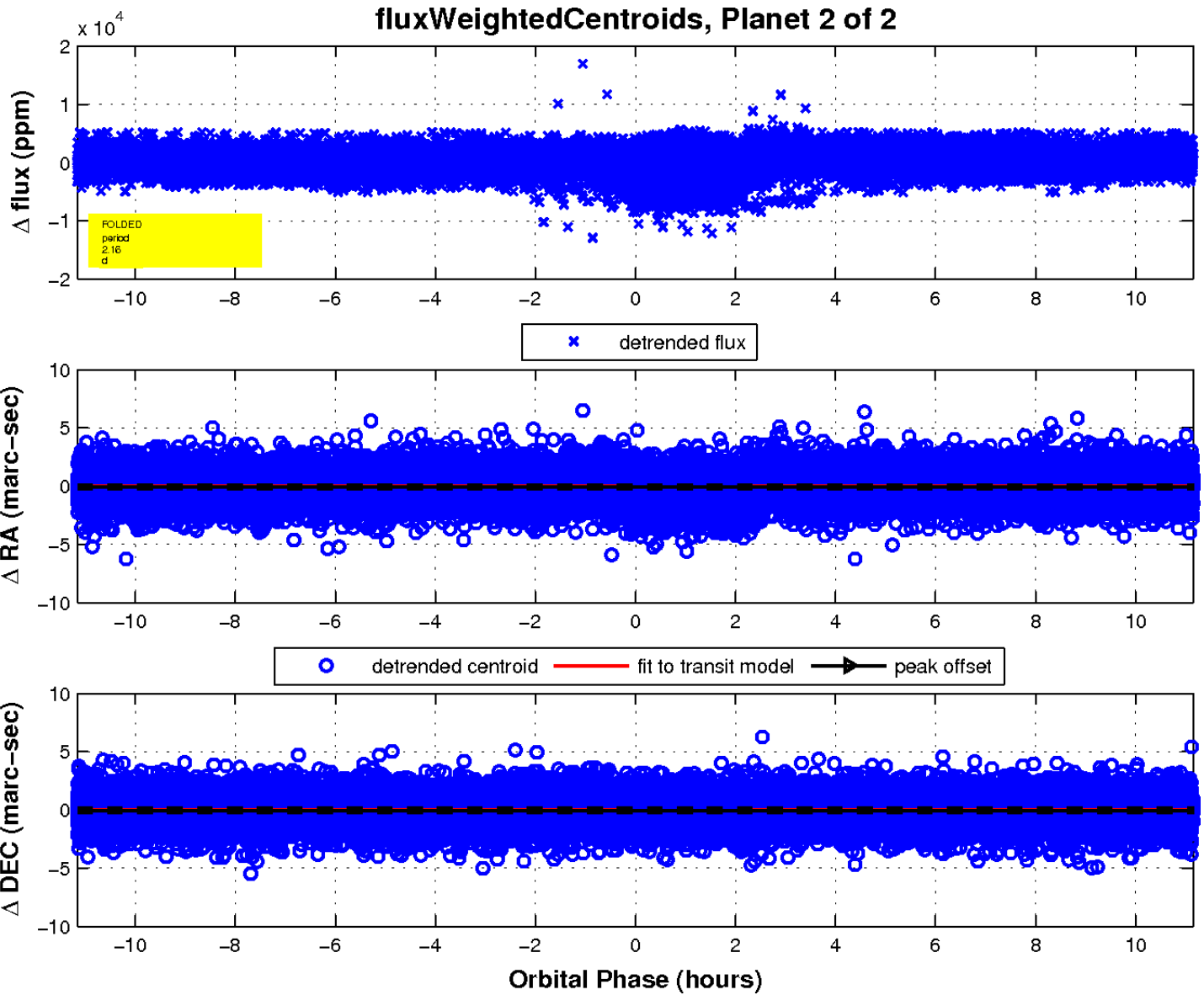
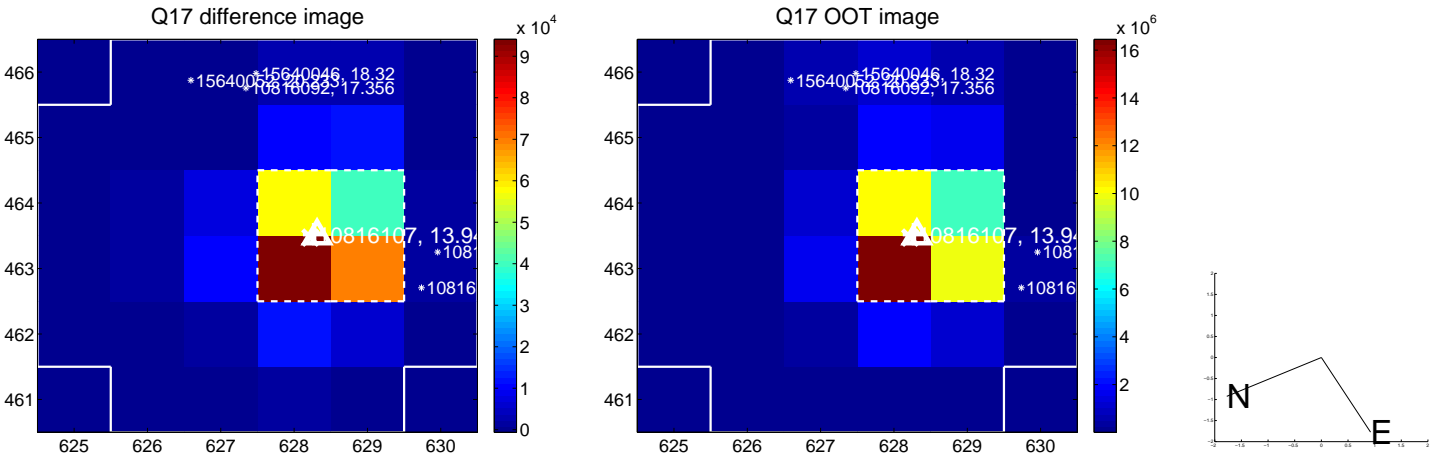
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

