

KIC 008823868

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})
008823868-01	OBS	No	23.876136	155.008707	5216.6	9.729	1762.4	1310.8	2.53	9974	18.75	1138.09
008823868-02	OBS	0081.01	23.876136	143.069948	1631.3	9.448	537.8	534.7	2.53	9974	10.78	1138.09
008823868-03	OBS	No	2.766345	133.491080	7.5	11.970	8.5	7.8	2.53	9974	0.74	20149.00
008823868-04	OBS	No	112.864378	151.414628	45.8	15.416	8.0	6.4	2.53	9974	1.90	143.46
008823868-05	OBS	No	234.607080	248.550170	92.5	6.775	7.5	7.8	2.53	9974	2.73	54.08
008823868-06	OBS	No	298.344256	185.313944	98.4	4.843	7.3	7.3	2.53	9974	2.87	39.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008823868-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
008823868-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—CENT_SATURATED
008823868-03	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
008823868-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008823868-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008823868-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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.

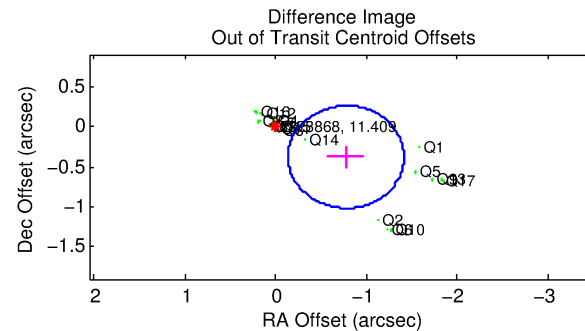
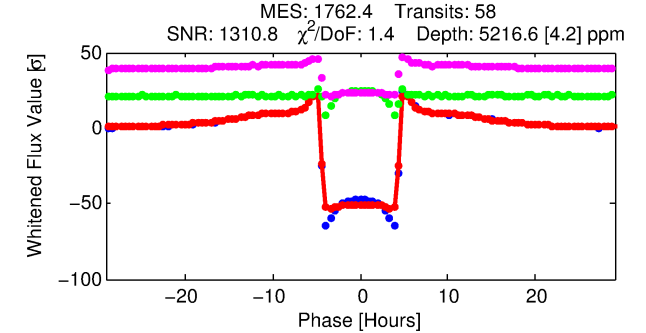
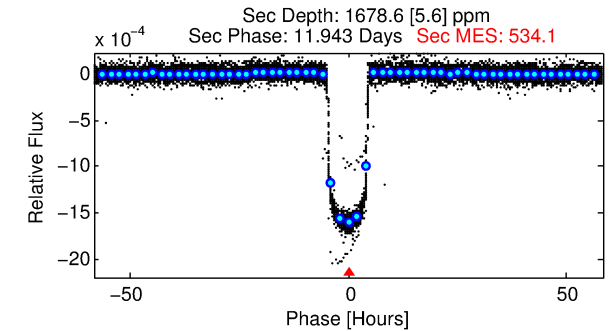
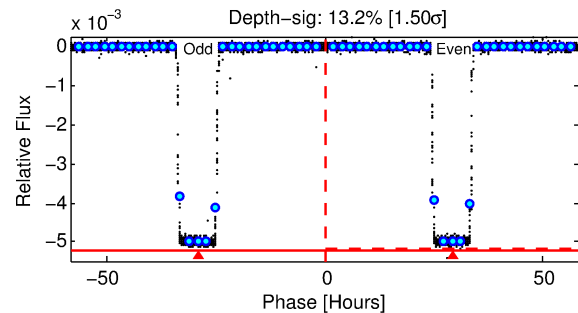
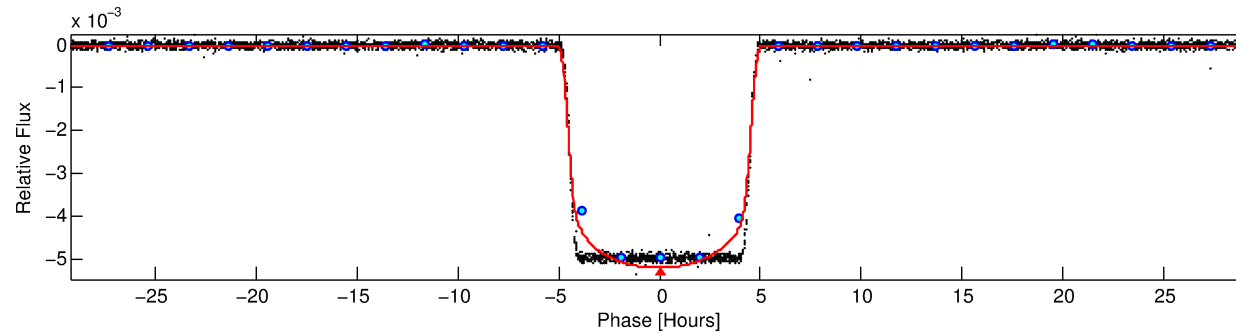
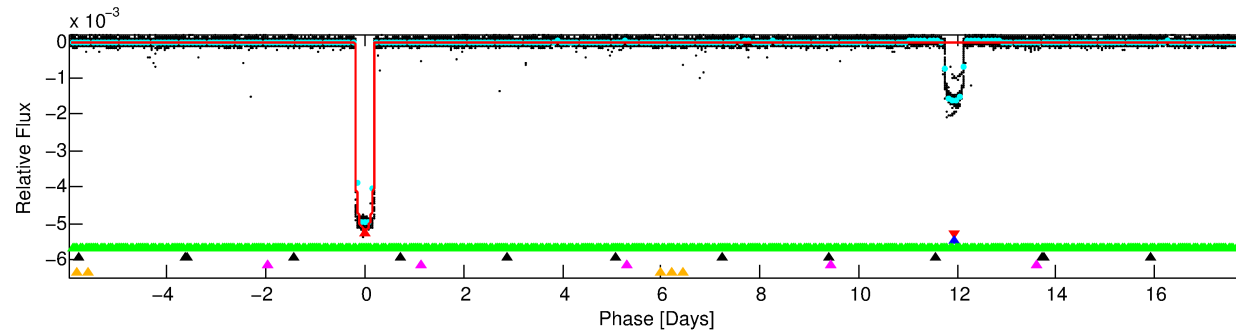
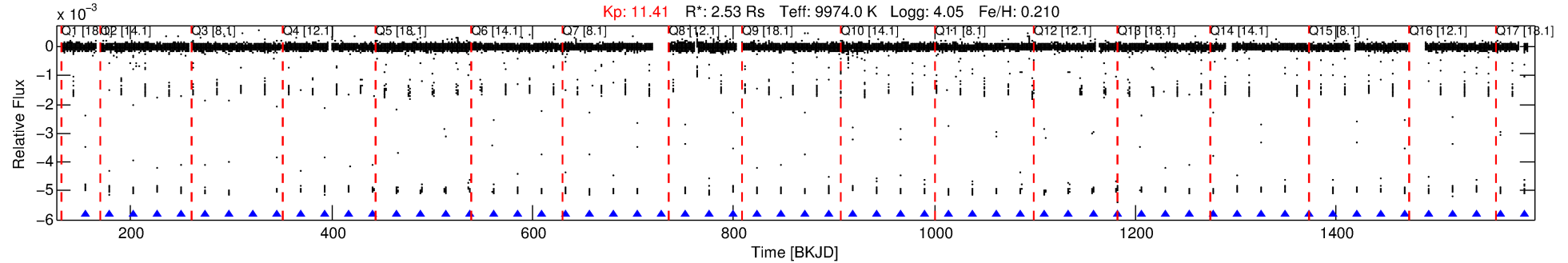
Ephemeris Match Information For 008823868-01

No Significant Match Found

DV One-Page Summary

KIC: 8823868 Candidate: 1 of 6 Period: 23.876 d
KOI: K00081 Corr: No Ephemeris Match

Kp: 11.41 R*: 2.53 Rs Teff: 9974.0 K Logg: 4.05 Fe/H: 0.210



DV Fit Results:

Period = 23.87614 [0.00000] d
Epoch = 155.0087 [0.0001] BKJD
Rp/R* = 0.0679 [0.0001]
a/R* = 20.03 [0.11]
b = 0.00 [17.86]
Seff = 1138.09 [508.78]
Teq = 1481 [166] K
Rp = 18.76 [7.15] Re
a = 0.2236 [0.0676] AU
Ag = 131.23 [54.50] [2.39σ]
Teffp = 7750 [321] K [17.36σ]

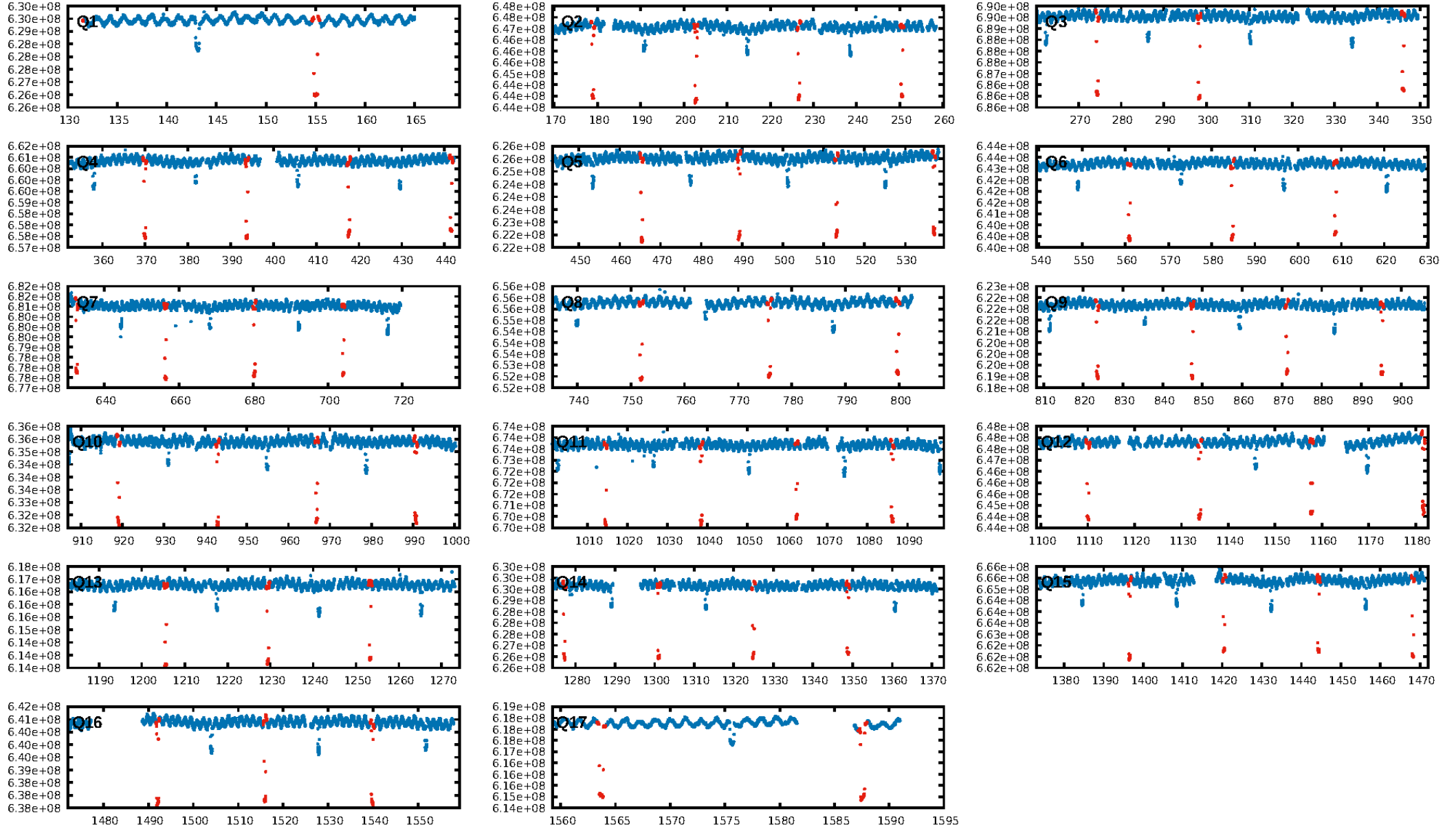
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [32.85σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [55/55]
GhostDiagnostic-chr: 10.87
Centroid-sig: 0.0%
Centroid-so: 0.040 arcsec [6.19σ]
OotOffset-rm: 0.864 arcsec [4.06σ]
KicOffset-rm: 0.959 arcsec [3.72σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 0.71 [12/17]

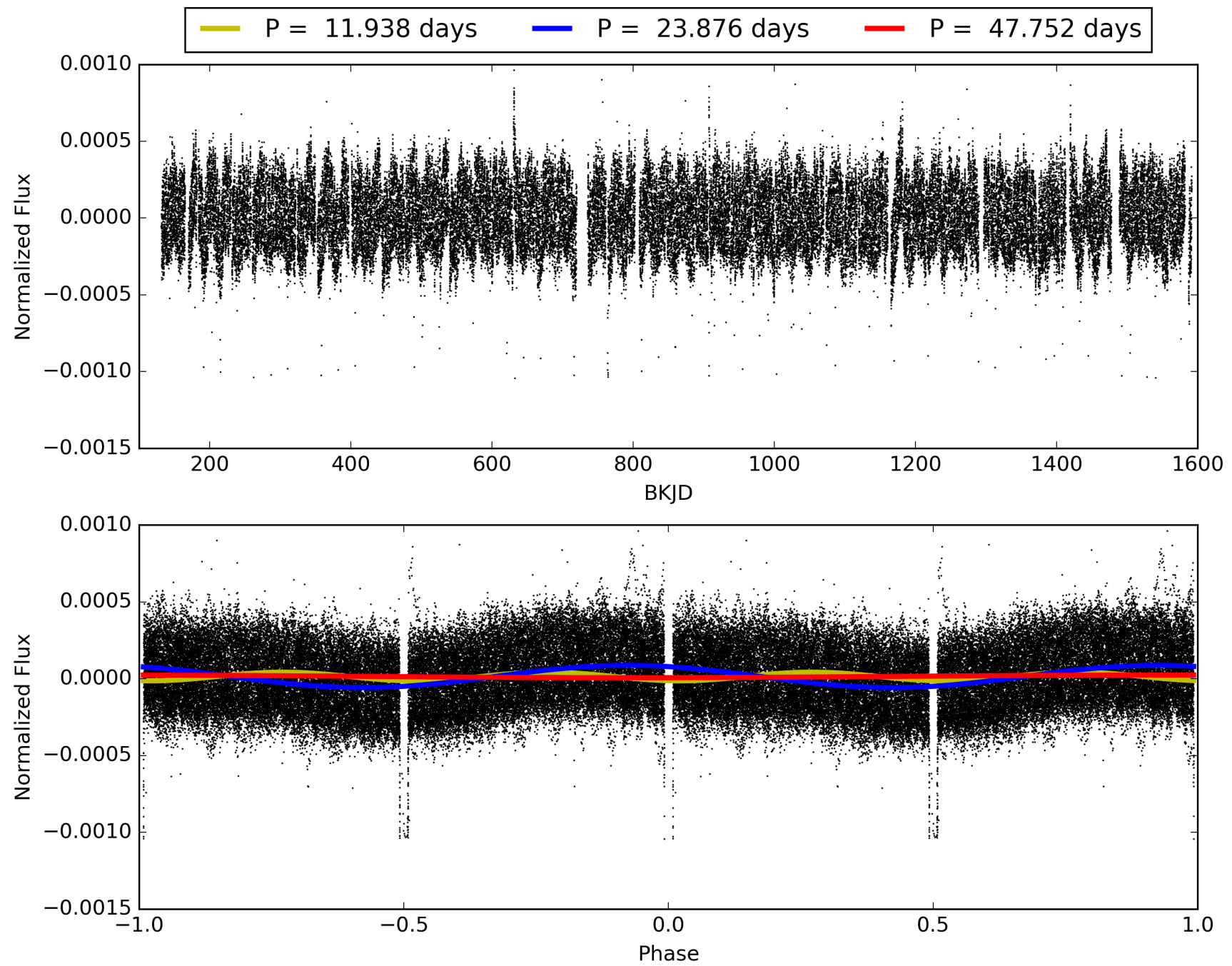
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 20:09:10 Z

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

TCE 008823868-01, PDC Light Curves

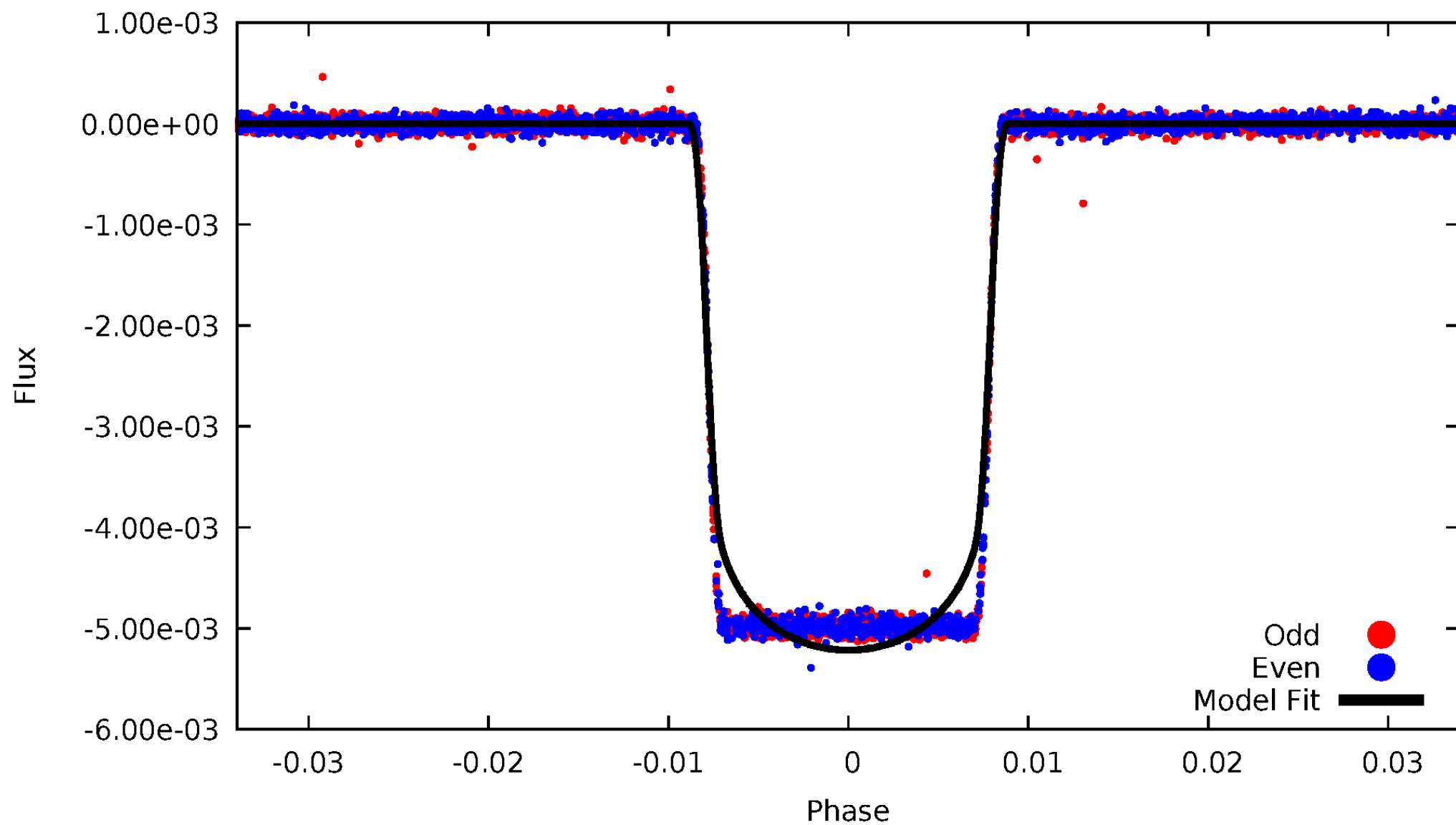


TCE 008823868-01



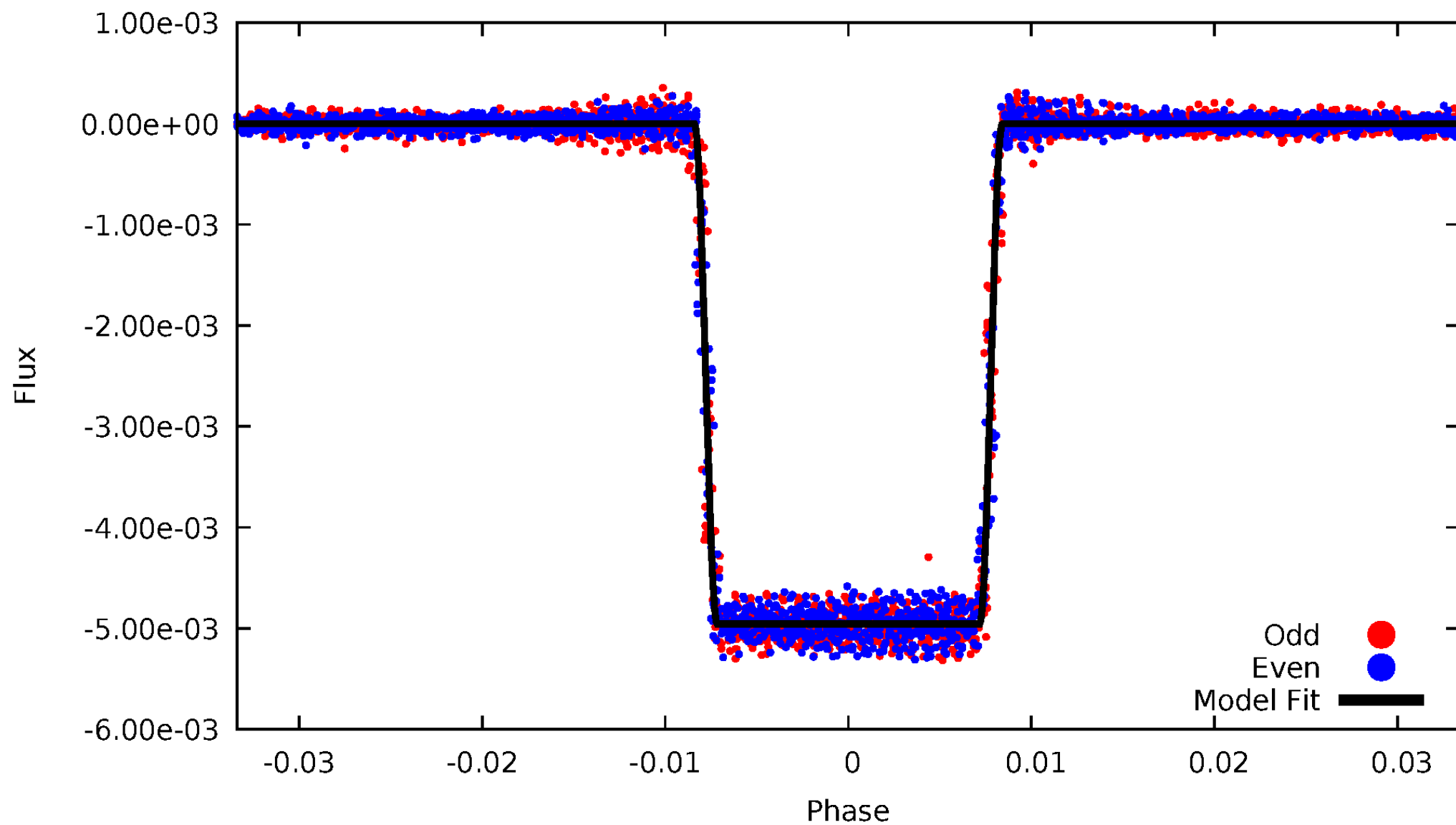
DV Odd/Even

TCE 008823868-01

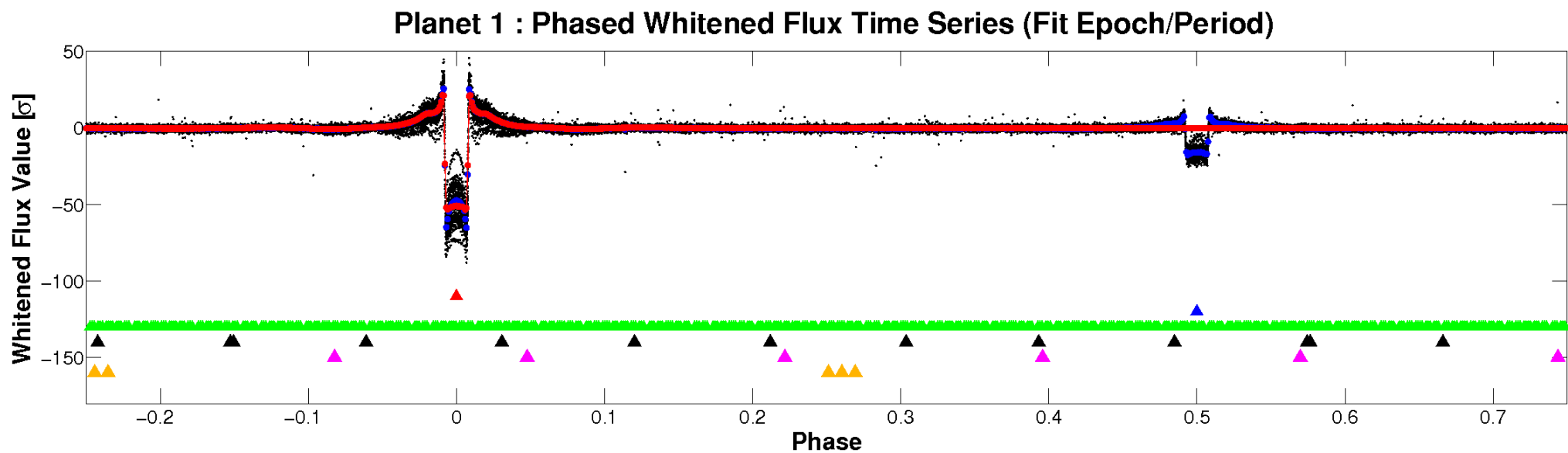
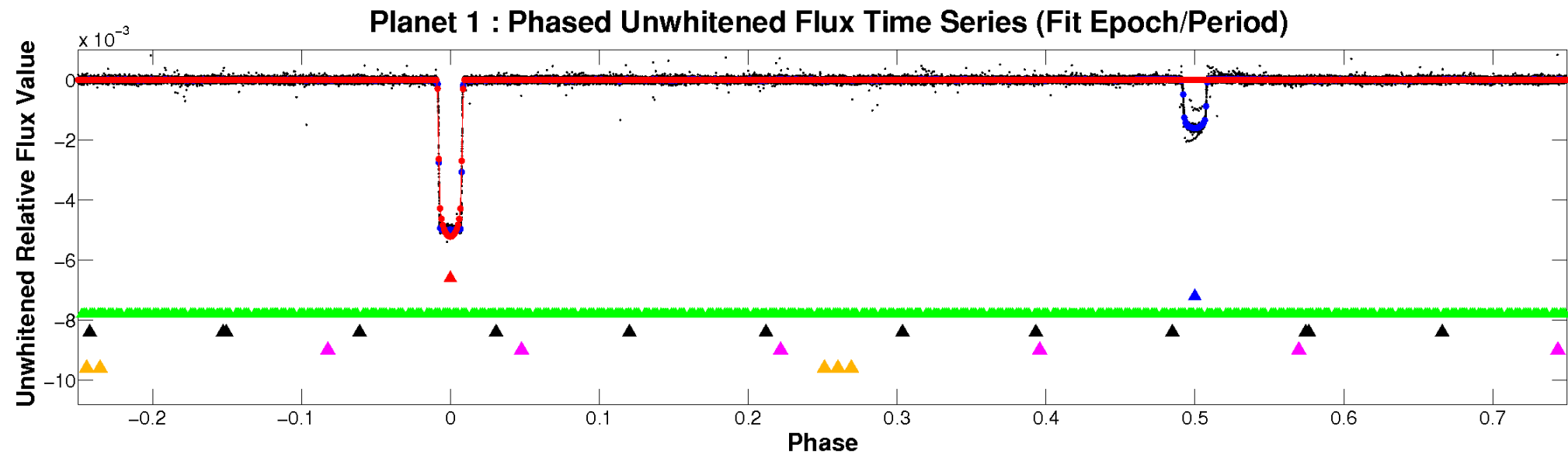


ALT Odd/Even

TCE 008823868-01

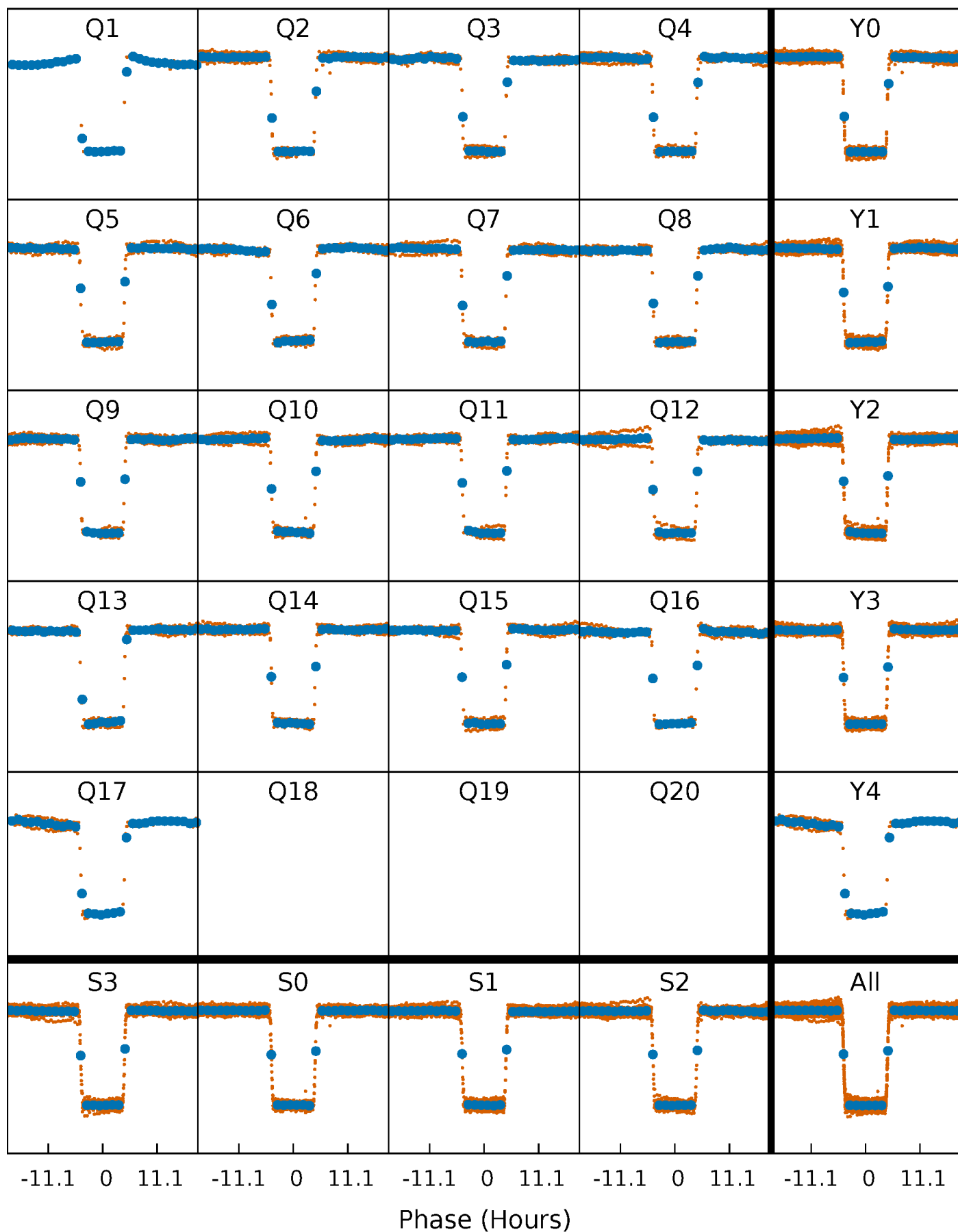


Non-Whitened Vs. Whitened Light Curve



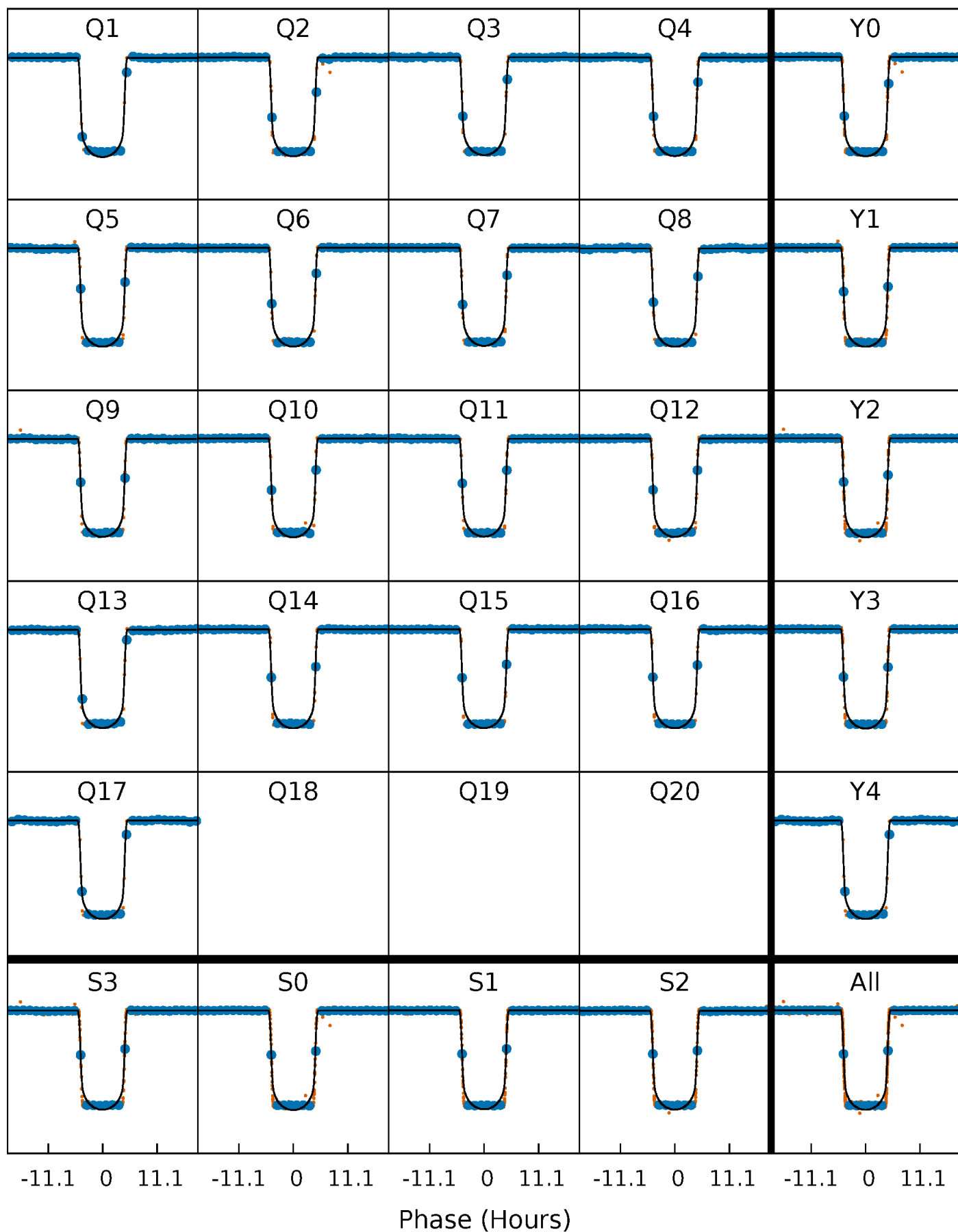
PDC Quarter-Phased Transit Curves

TCE 008823868-01 P= 23.876136 Days $T_0=155.008707$ (BKJD)



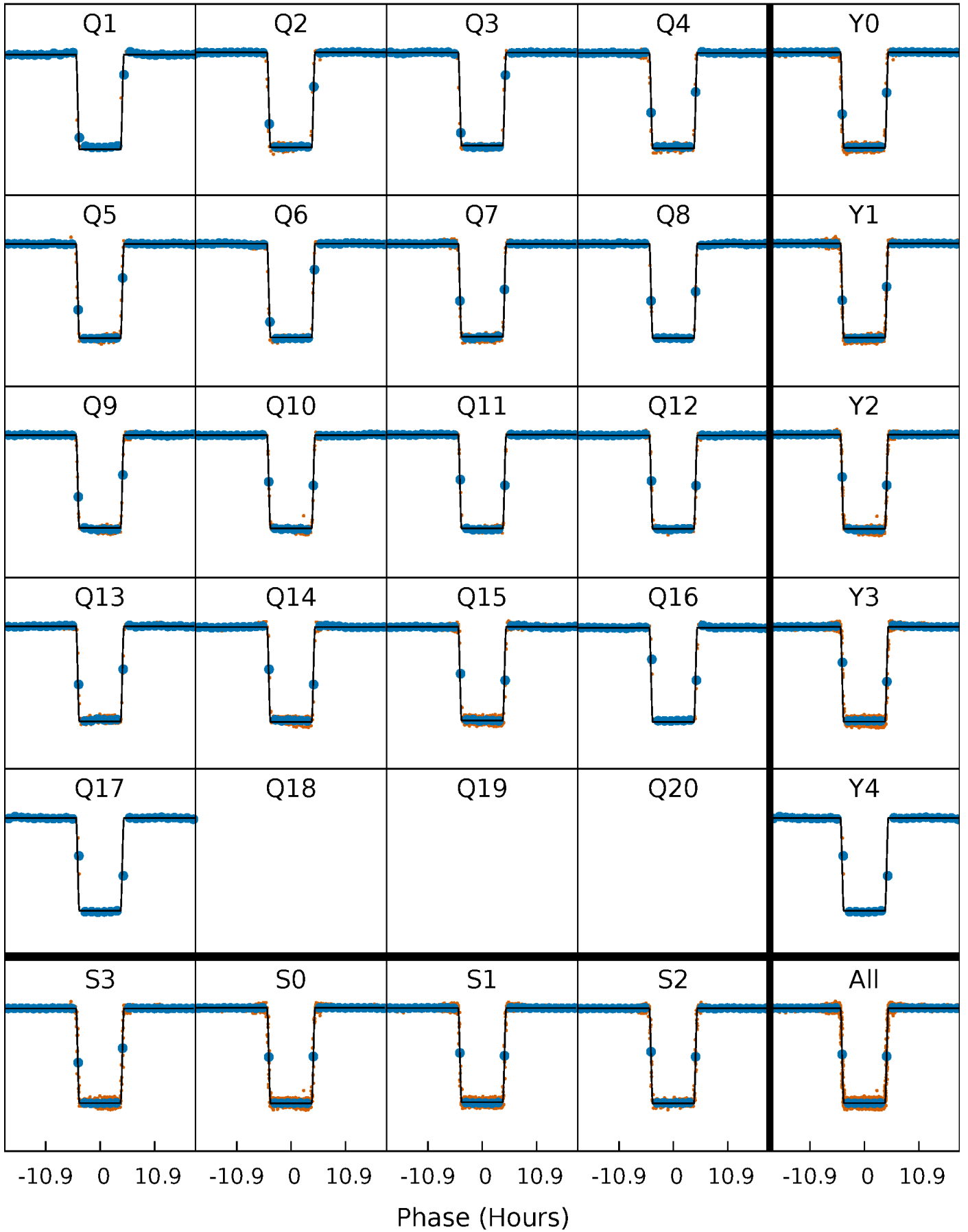
DV Quarter-Phased Transit Curves

TCE 008823868-01 P= 23.876136 Days $T_0=155.008707$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

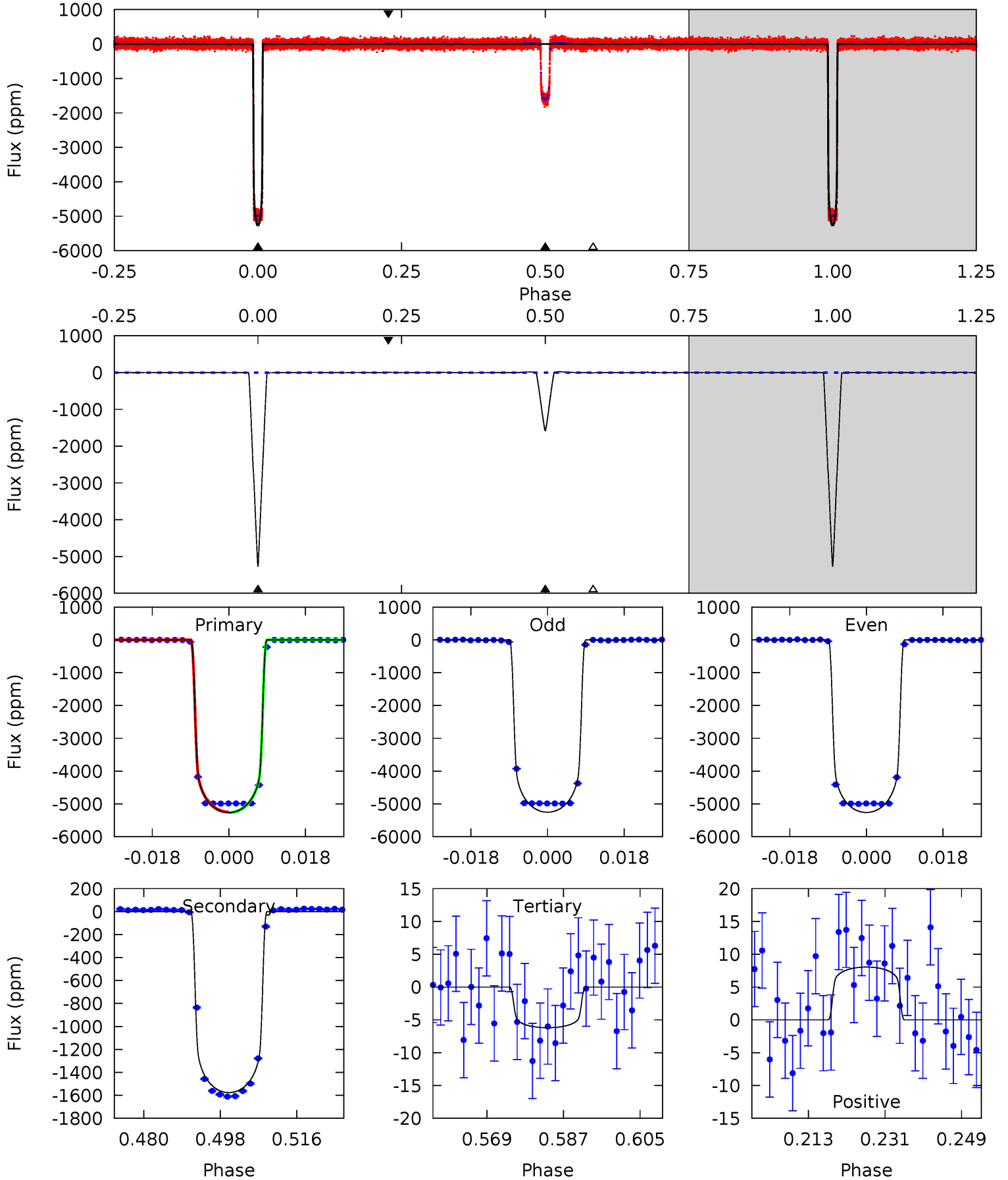
TCE 008823868-01 P= 23.875822 Days $T_0=155.018530$ (BKJD)



DV Model-Shift Uniqueness Test

008823868-01, P = 23.876136 Days, E = 131.132571 Days

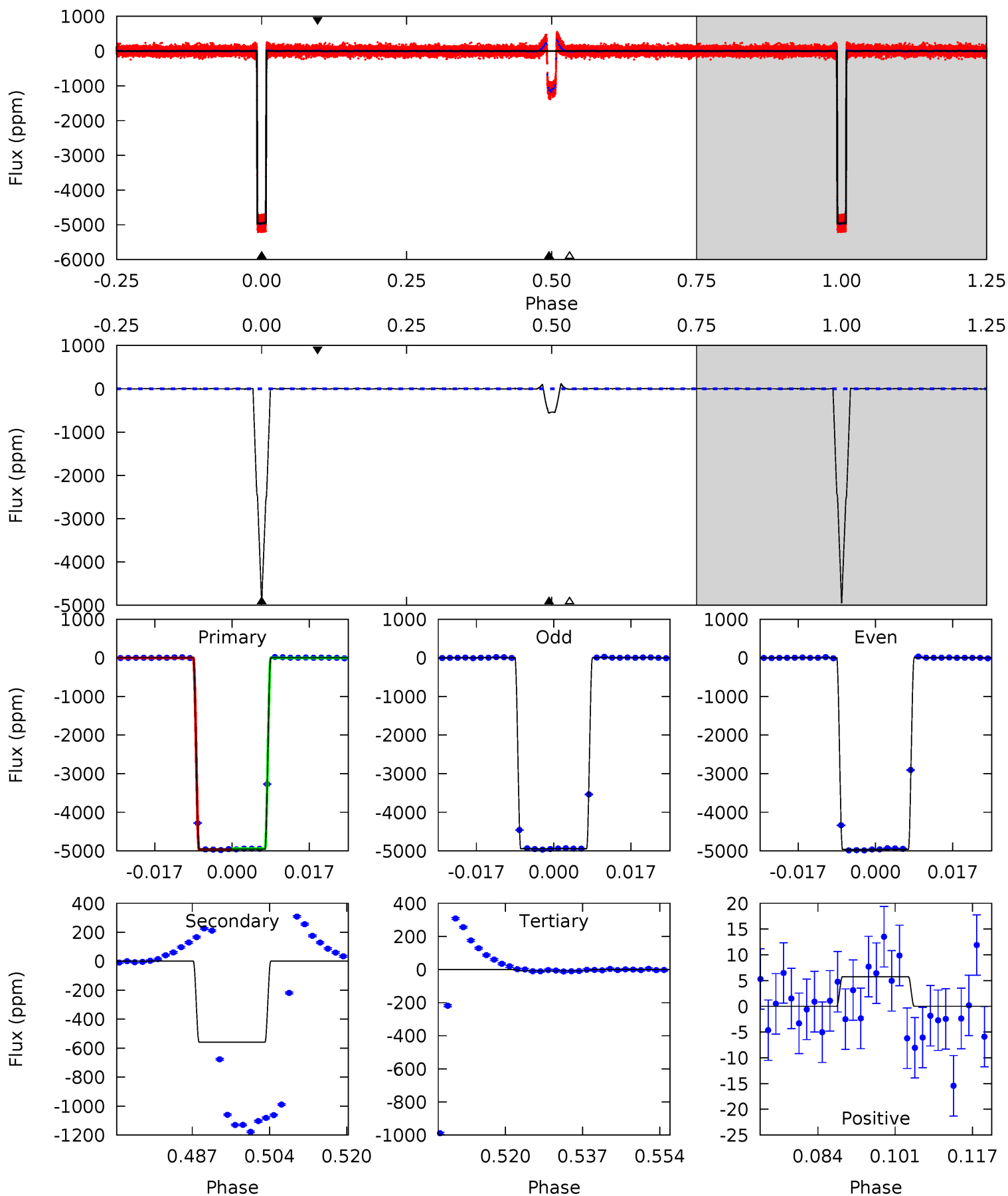
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3293	986.3	3.88	5.04	4.91	2.37	2.98	3289	3288	982.4	981.2	2.51	1.00	0.00	4.99



Alt Model-Shift Uniqueness Test

008823868-01, P = 23.875822 Days, E = 131.142708 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2543	286.8	4.34	2.95	4.93	2.39	4.14	2538	2540	282.4	283.8	3.95	1.00	0.02	5.76



Stellar Parameters For KIC 008823868

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	9974^{+275}_{-413}	$4.048^{+0.115}_{-0.214}$	$0.210^{+0.050}_{-0.400}$	$2.533^{+0.965}_{-0.414}$	$2.615^{+0.371}_{-0.278}$	$0.227^{+0.120}_{-0.122}$
	+3%/-4%	+3%/-5%	+24%/-190%	+38%/-16%	+14%/-11%	+53%/-54%
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 008823868-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1576 ± 2	$18.79^{+3.65}_{-1.59}$	2082^{+161}_{-130}	7082^{+143}_{-223}	120^{+24}_{-32}
Alt.	-559 ± 2	$19.31^{+3.97}_{-1.54}$	2074^{+174}_{-121}	5356^{+80}_{-134}	40^{+8}_{-11}

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 $A_{obs} \gg 1.0$

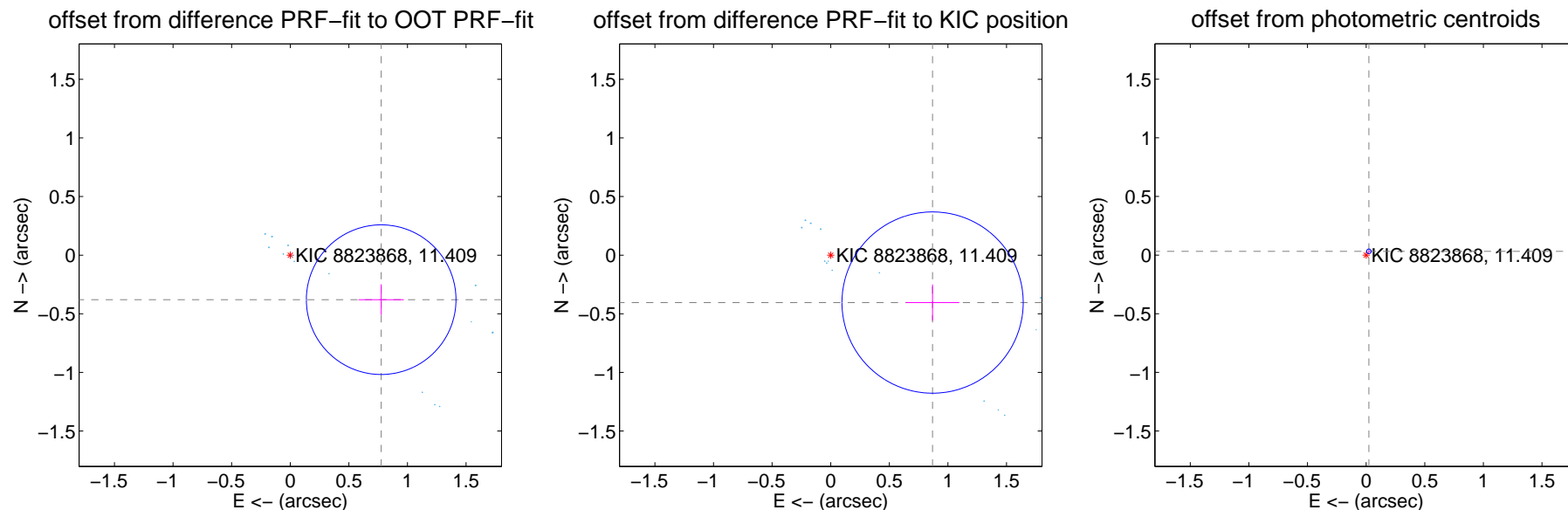
DV Centroid Data

Supplemental centroid analysis for 008823868-01. **Kepler magnitude: 11.41.** Transit SNR 1310.81

There are 17 quarters with good PRF difference image offsets

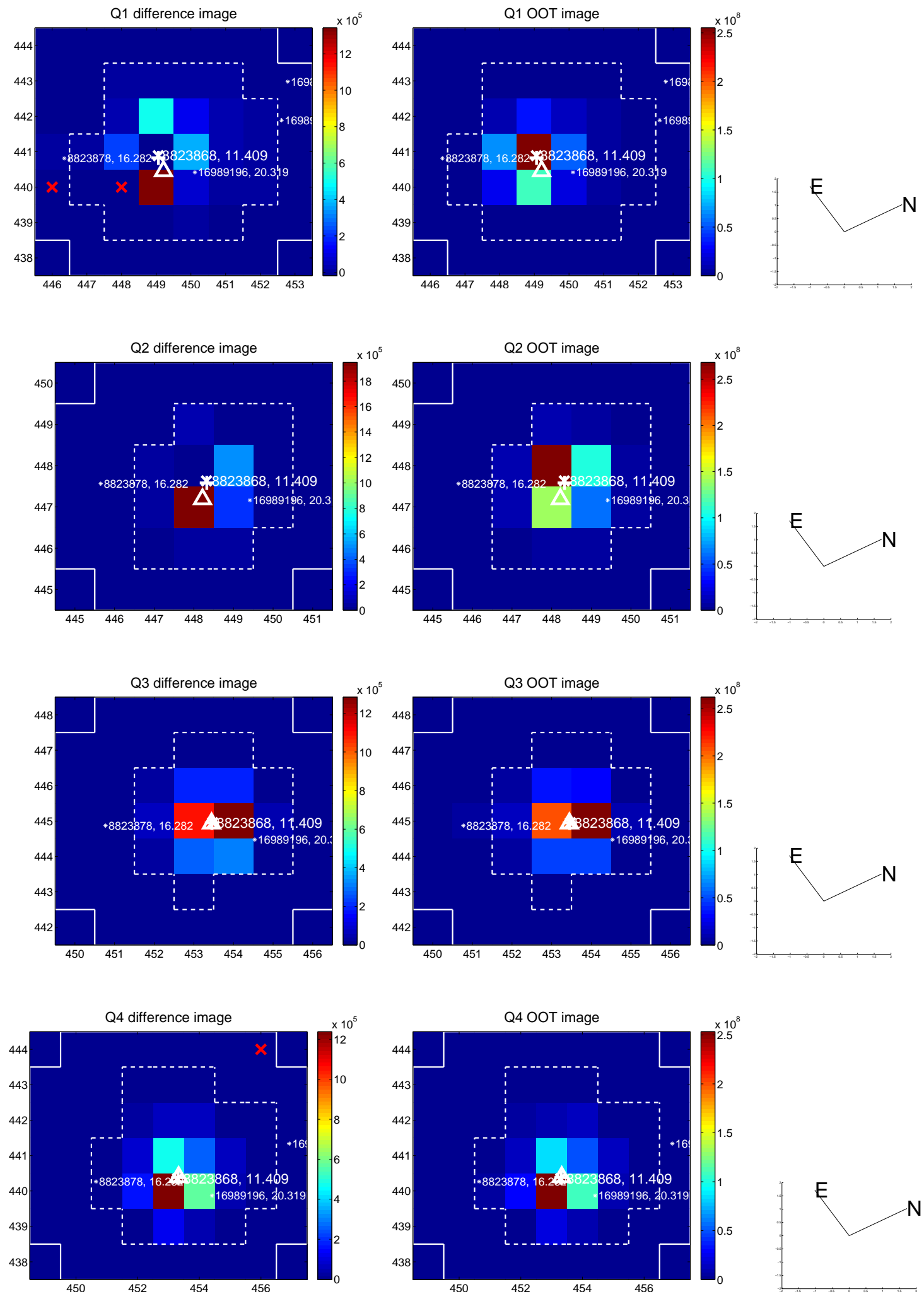
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.864 ± 0.213	4.06	-0.776 ± 0.193	-0.380 ± 0.131
PRF-fit source offset from KIC position	0.959 ± 0.258	3.72	-0.869 ± 0.228	-0.404 ± 0.154
photometric centroid source offset	0.04 ± 0.01	6.19	-0.02 ± 0.01	0.03 ± 0.01

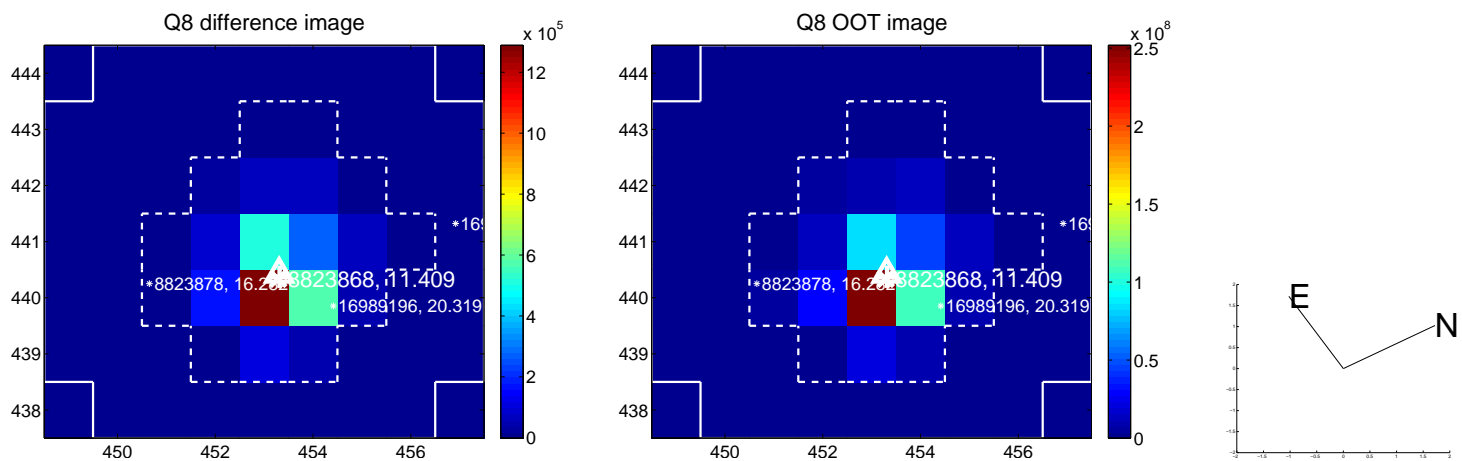
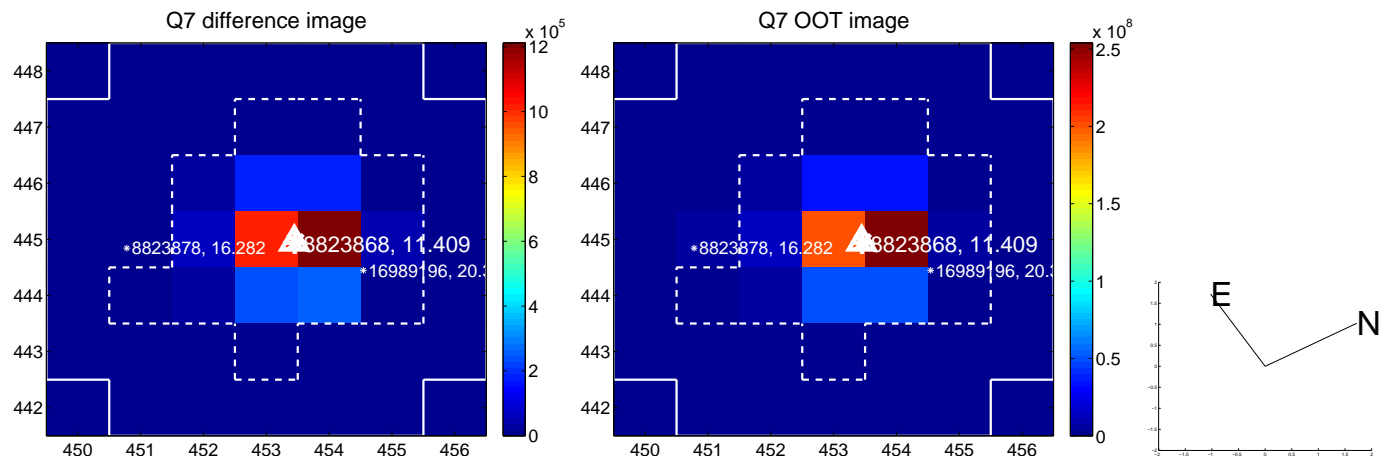
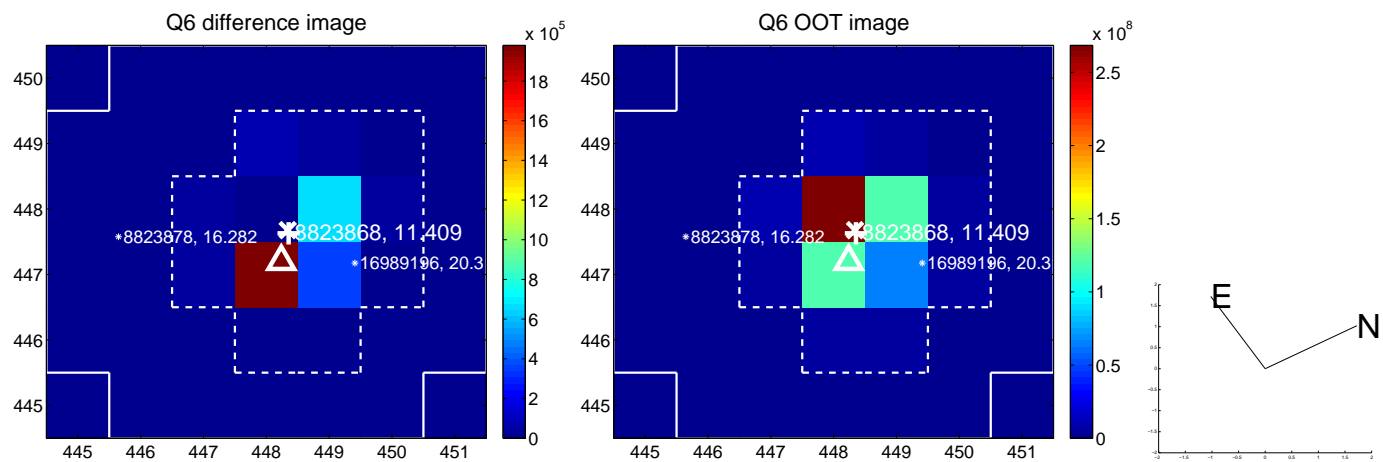
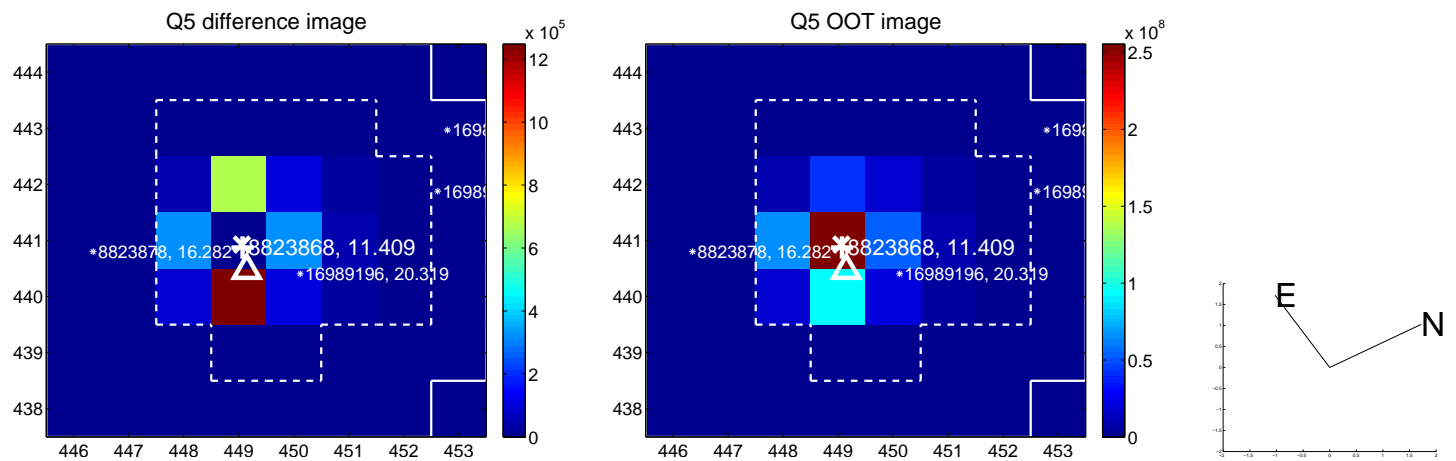


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

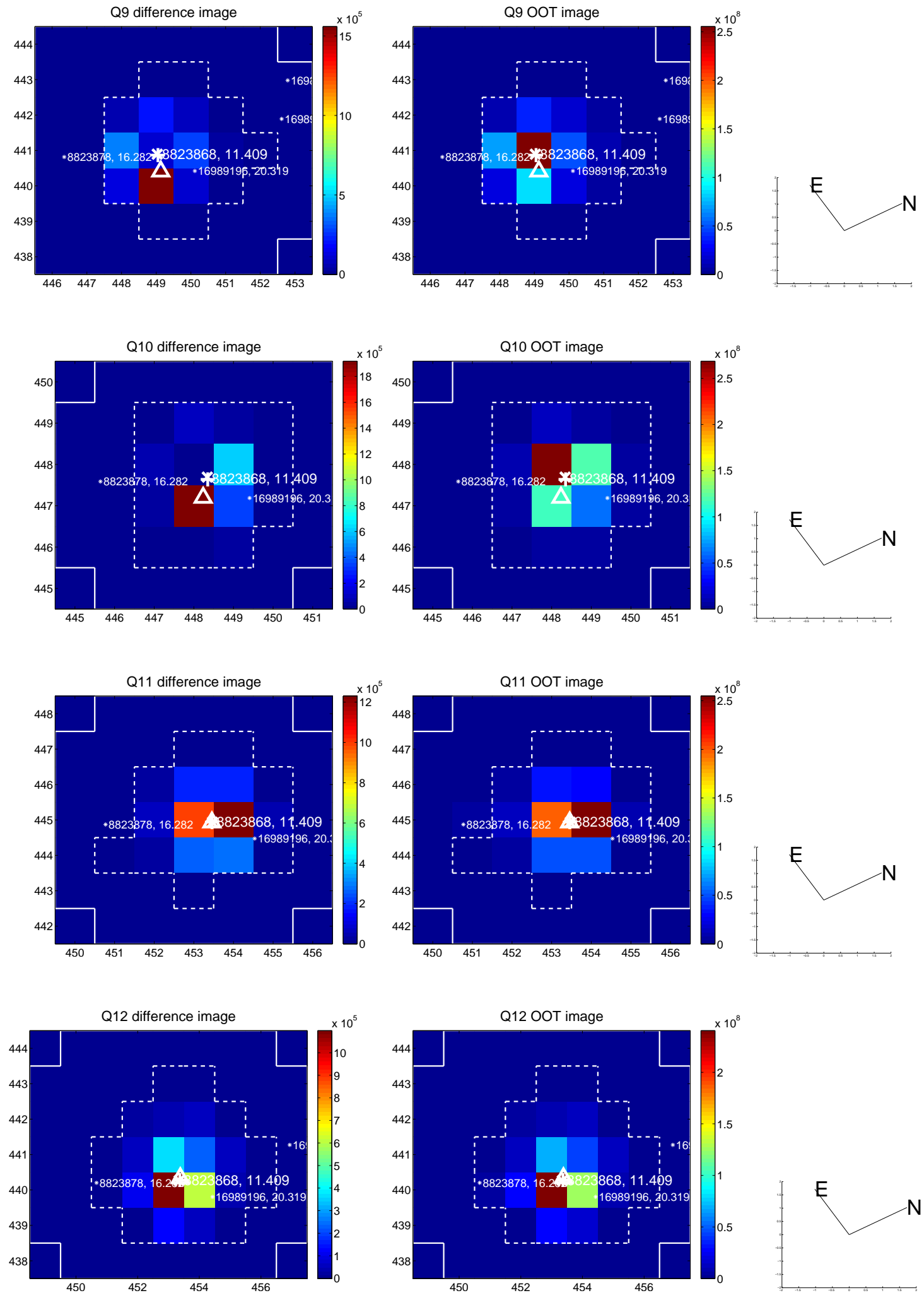
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



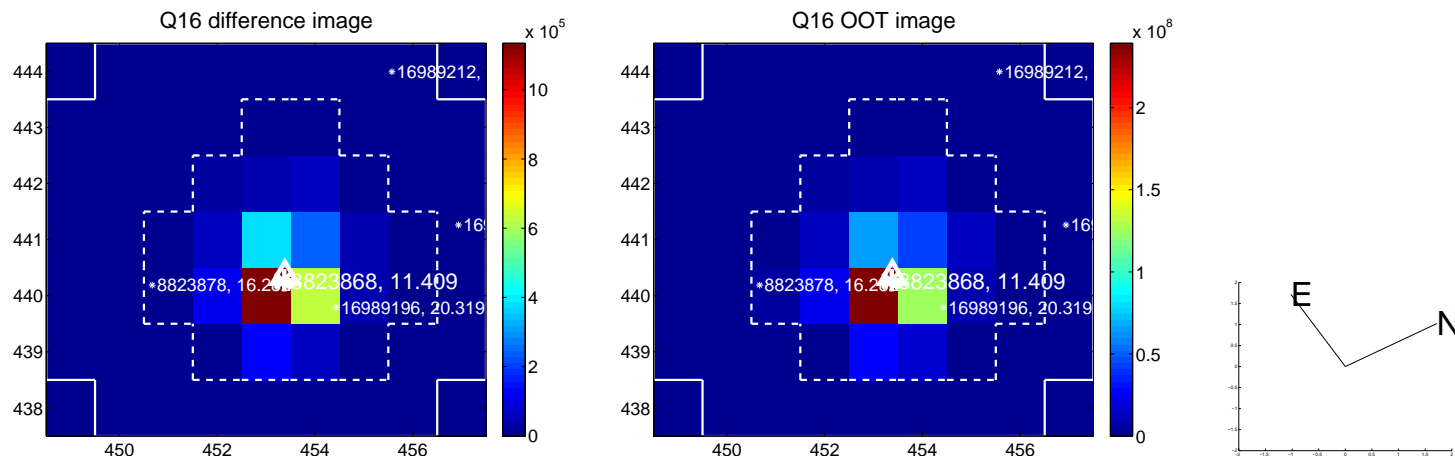
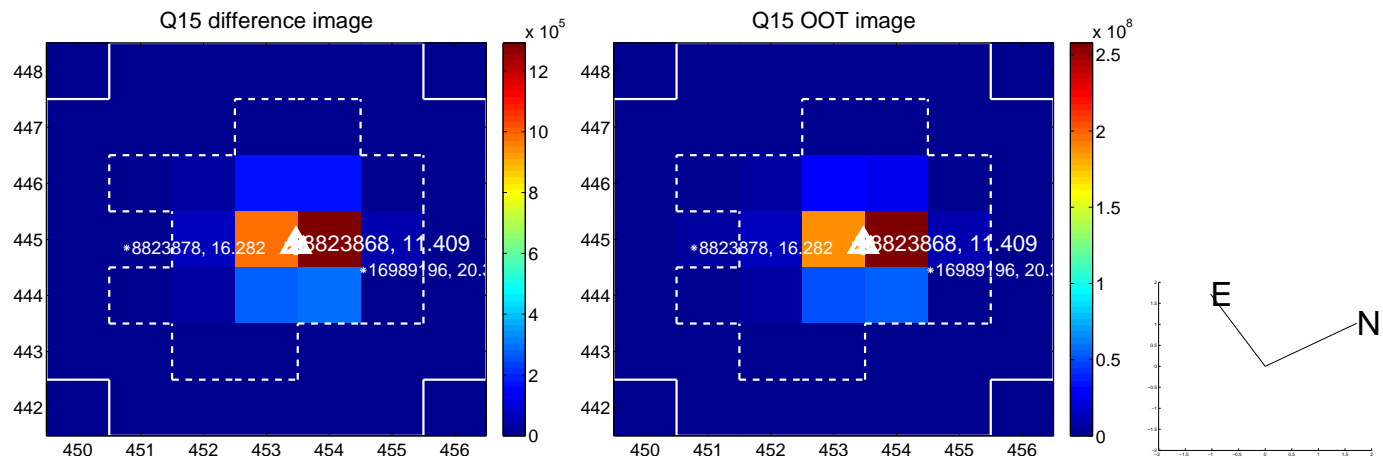
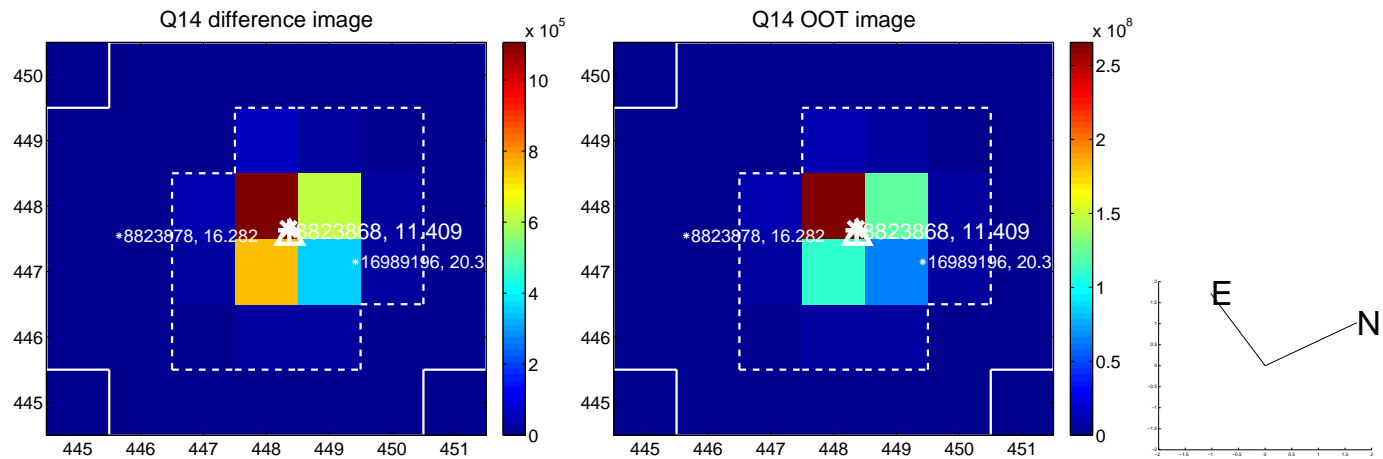
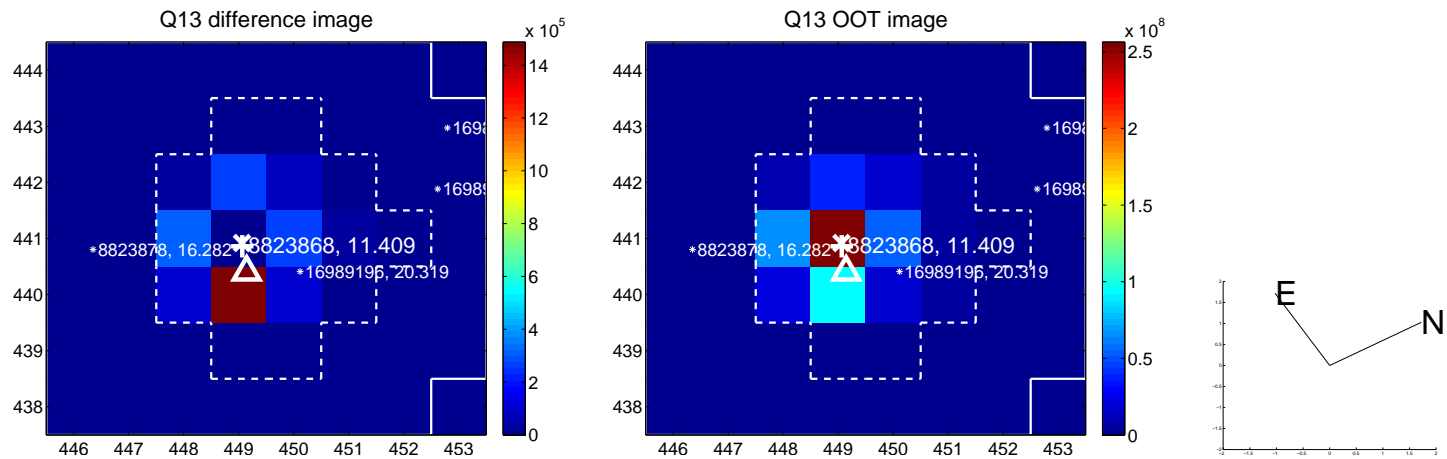
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



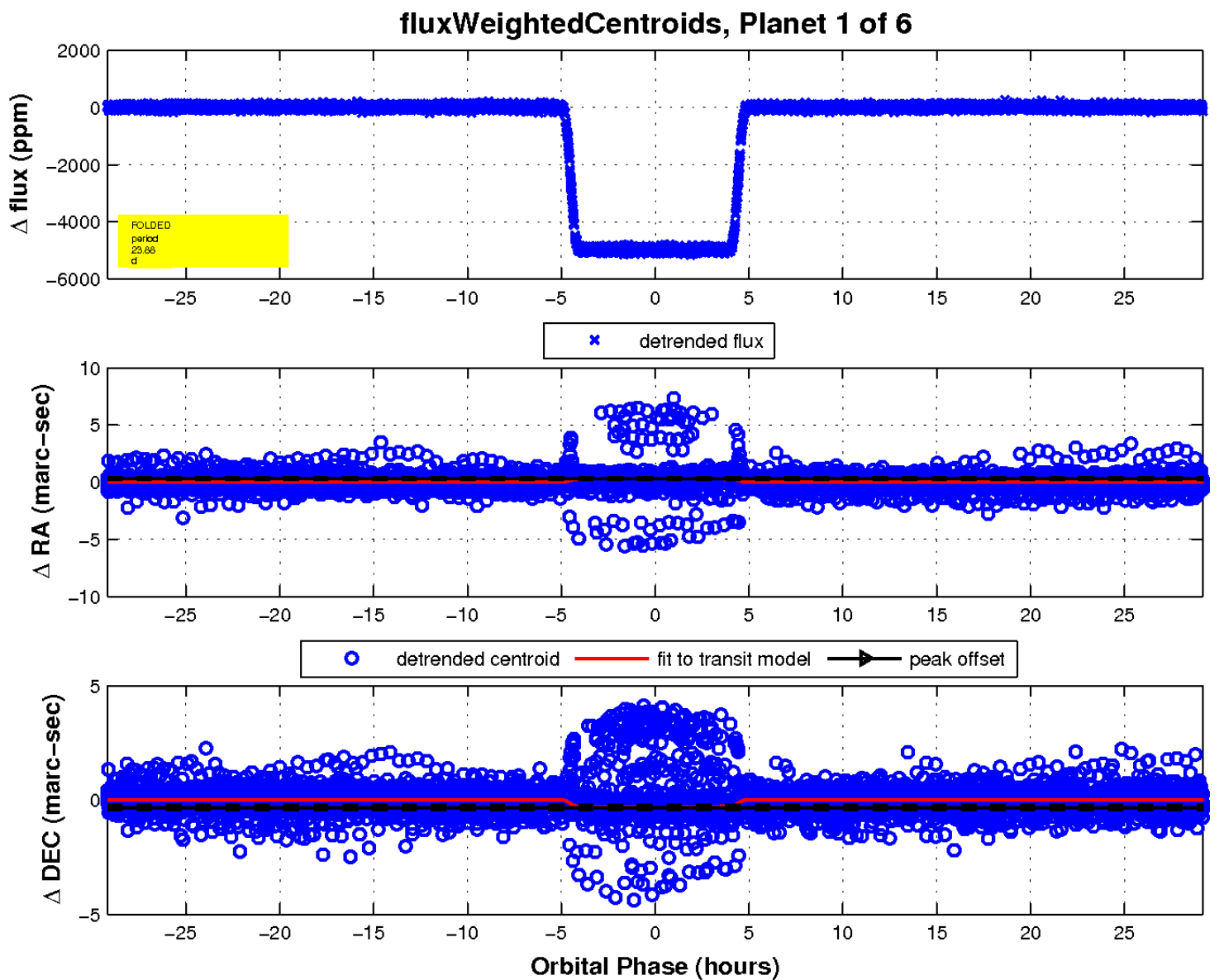
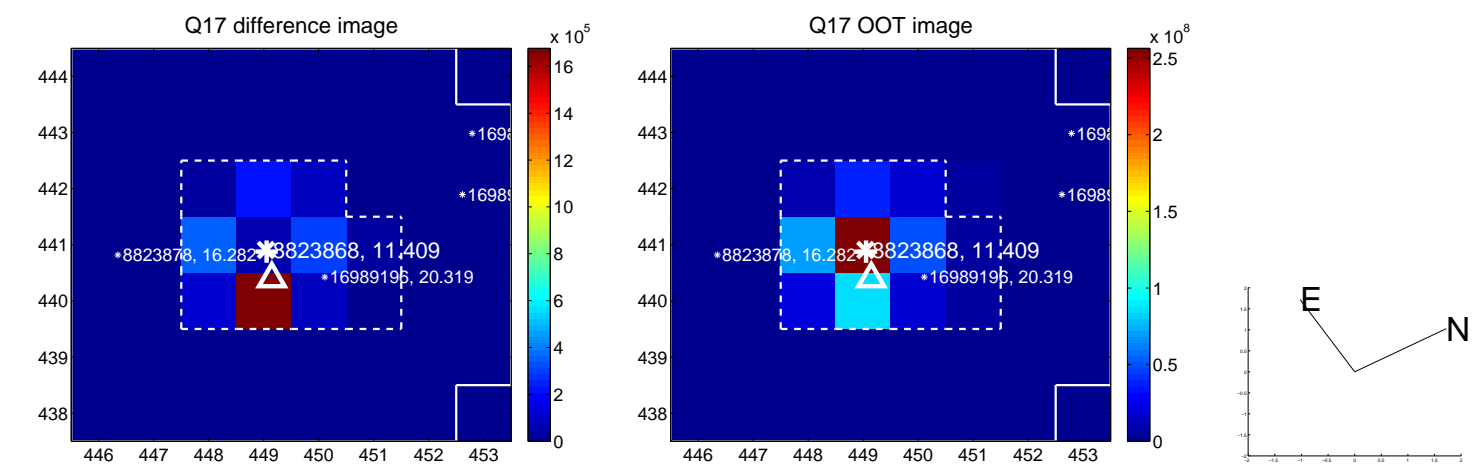
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

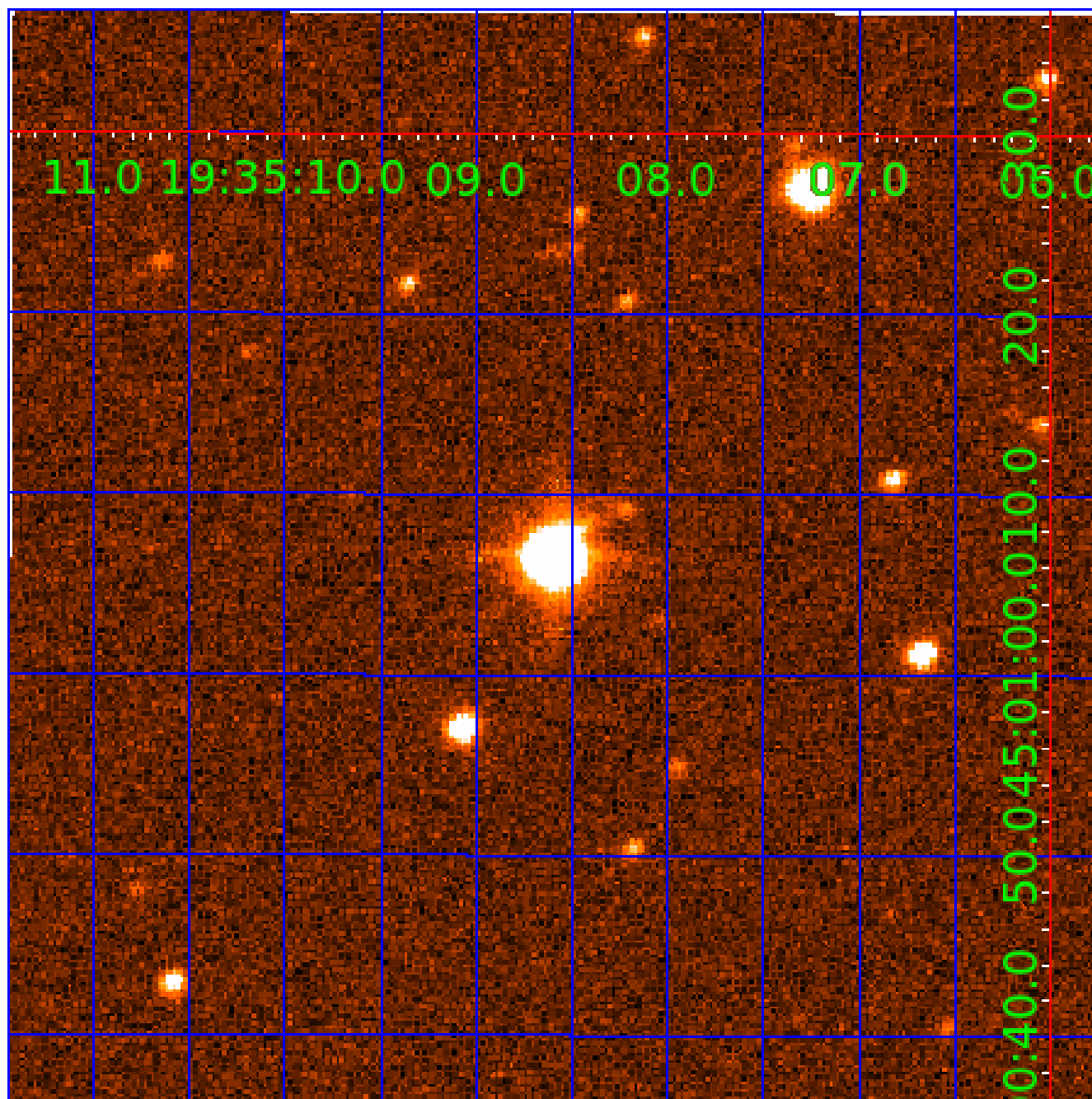


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008823868

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})
008823868-01	OBS	No	23.876136	155.008707	5216.6	9.729	1762.4	1310.8	2.53	9974	18.75	1138.09
008823868-02	OBS	0081.01	23.876136	143.069948	1631.3	9.448	537.8	534.7	2.53	9974	10.78	1138.09
008823868-03	OBS	No	2.766345	133.491080	7.5	11.970	8.5	7.8	2.53	9974	0.74	20149.00
008823868-04	OBS	No	112.864378	151.414628	45.8	15.416	8.0	6.4	2.53	9974	1.90	143.46
008823868-05	OBS	No	234.607080	248.550170	92.5	6.775	7.5	7.8	2.53	9974	2.73	54.08
008823868-06	OBS	No	298.344256	185.313944	98.4	4.843	7.3	7.3	2.53	9974	2.87	39.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008823868-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
008823868-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—CENT_SATURATED
008823868-03	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
008823868-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008823868-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008823868-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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.

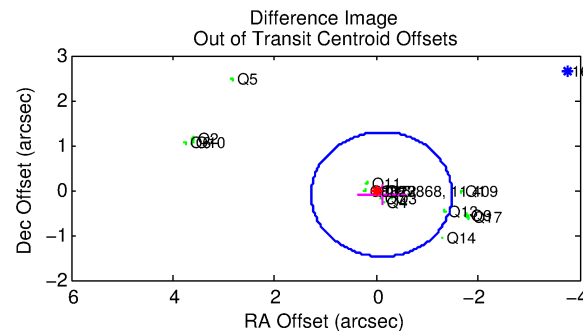
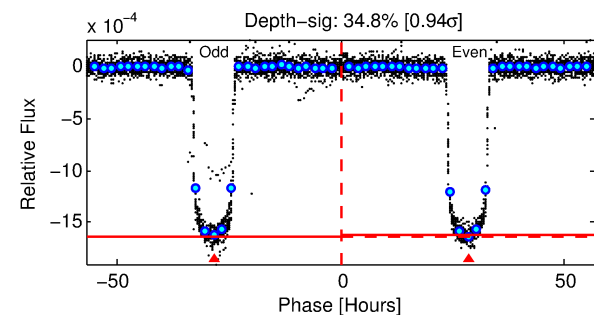
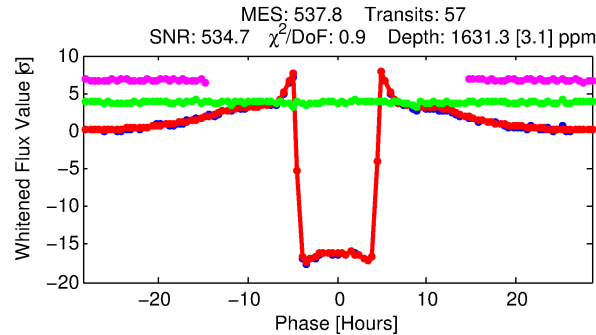
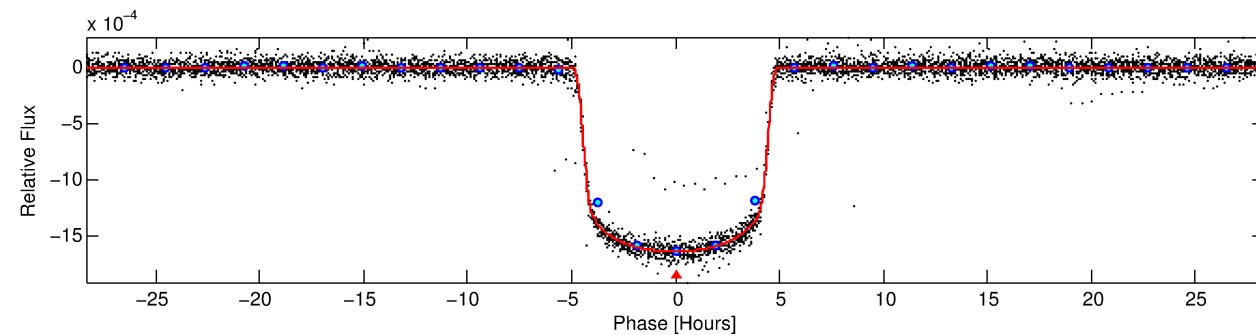
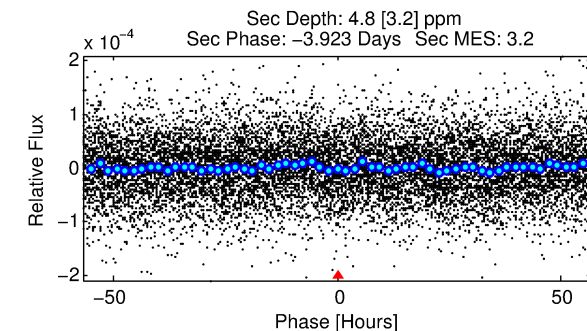
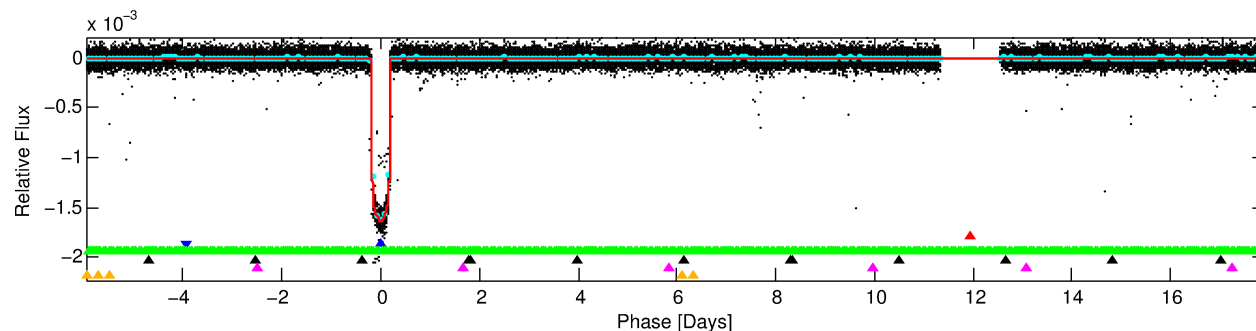
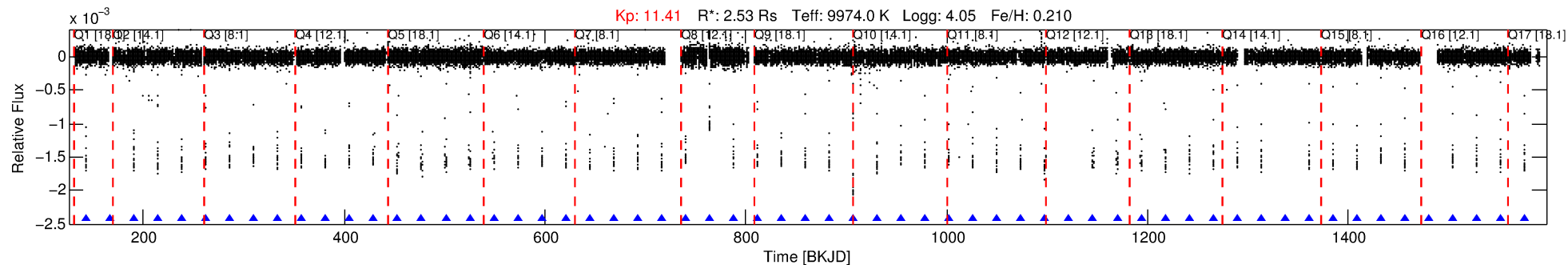
Ephemeris Match Information For 008823868-02

No Significant Match Found

DV One-Page Summary

KIC: 8823868 Candidate: 2 of 6 Period: 23.876 d

KOI: K00081.01 Corr: 0.989



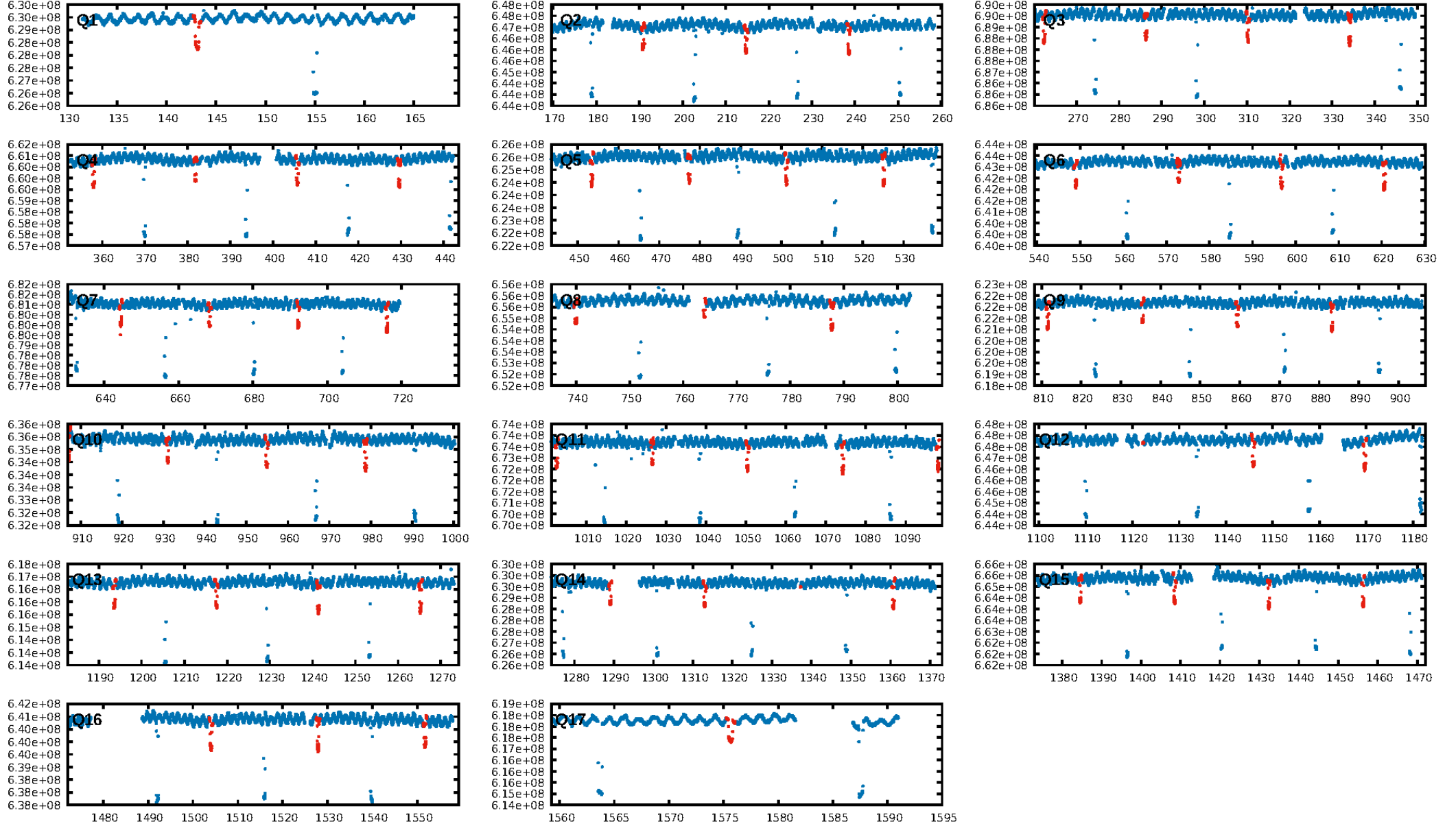
DV Fit Results:

Period = 23.87614 [0.00001] d
Epoch = 143.0699 [0.0002] BKJD
 $R_p/R^* = 0.0390$ [0.0001]
 $a/R^* = 16.87$ [0.29]
 $b = 0.56$ [0.02]
 $S_{\text{eff}} = 1138.09$ [508.78]
 $T_{\text{eq}} = 1481$ [166] K
 $R_p = 10.78$ [4.11] R_{e}
 $a = 0.2236$ [0.0676] AU
 $A_g = 1.13$ [0.89] [0.15 σ]
 $T_{\text{eff}} = 2361$ [408] K [2.00 σ]

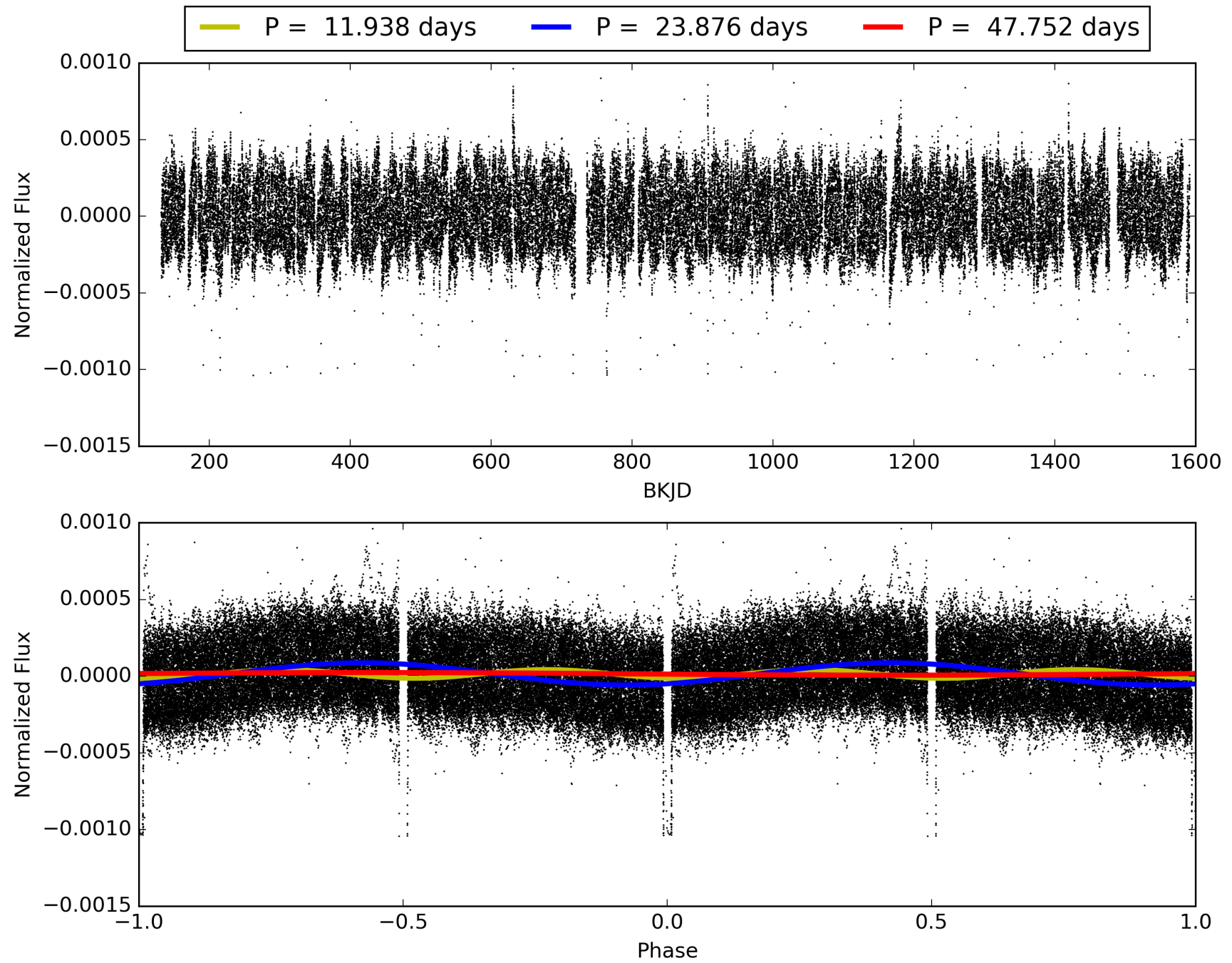
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: 100.0% [118.12 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [55/55]
GhostDiagnostic-chr: 15.85
Centroid-sig: 0.0%
Centroid-so: 0.077 arcsec [3.65 σ]
OotOffset-rm: 0.141 arcsec [0.30 σ]
KicOffset-rm: 0.175 arcsec [0.38 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.76 [13/17]
DiffImageOverlap-fno: 0.82 [14/17]

TCE 008823868-02, PDC Light Curves

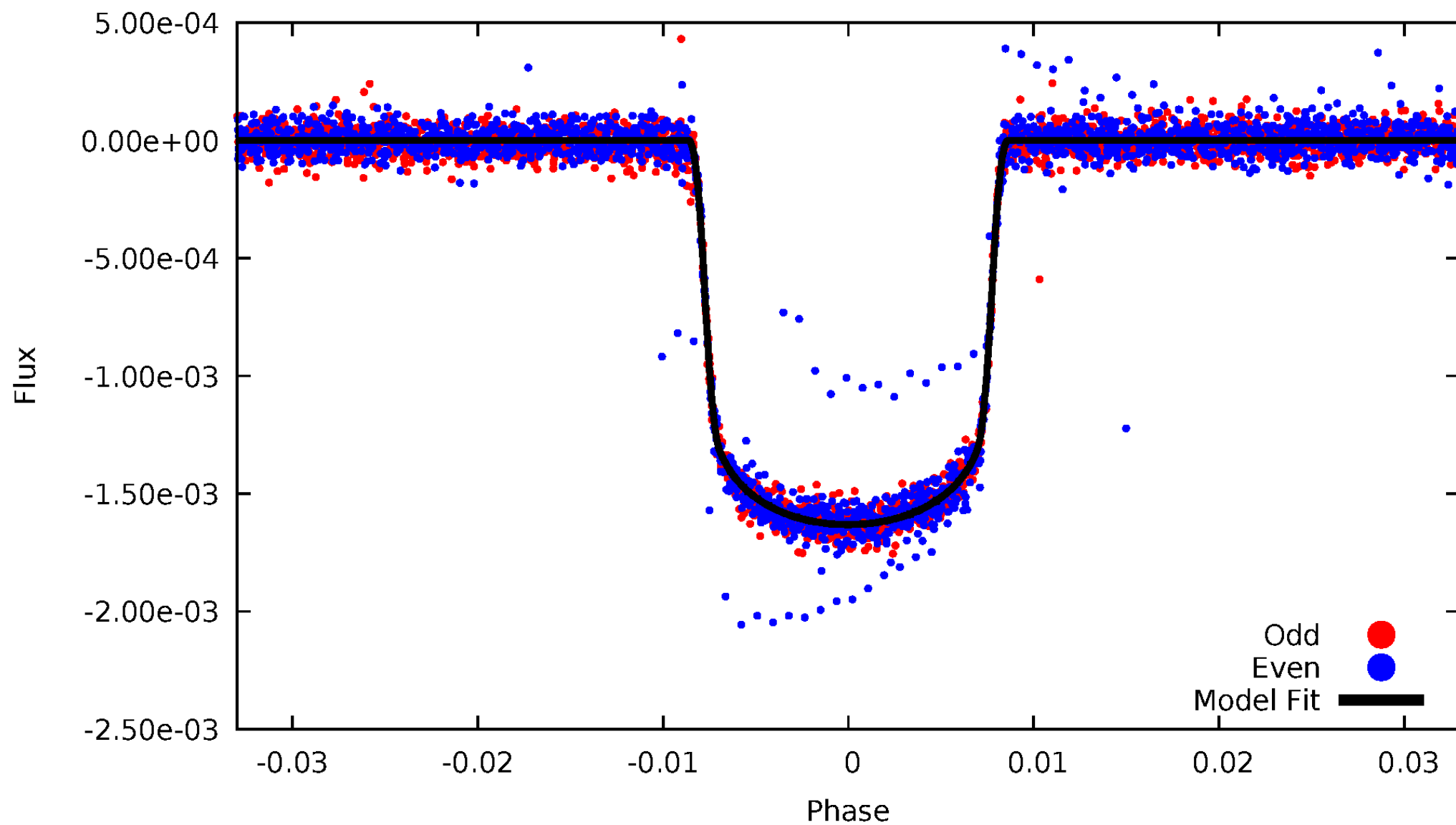


TCE 008823868-02



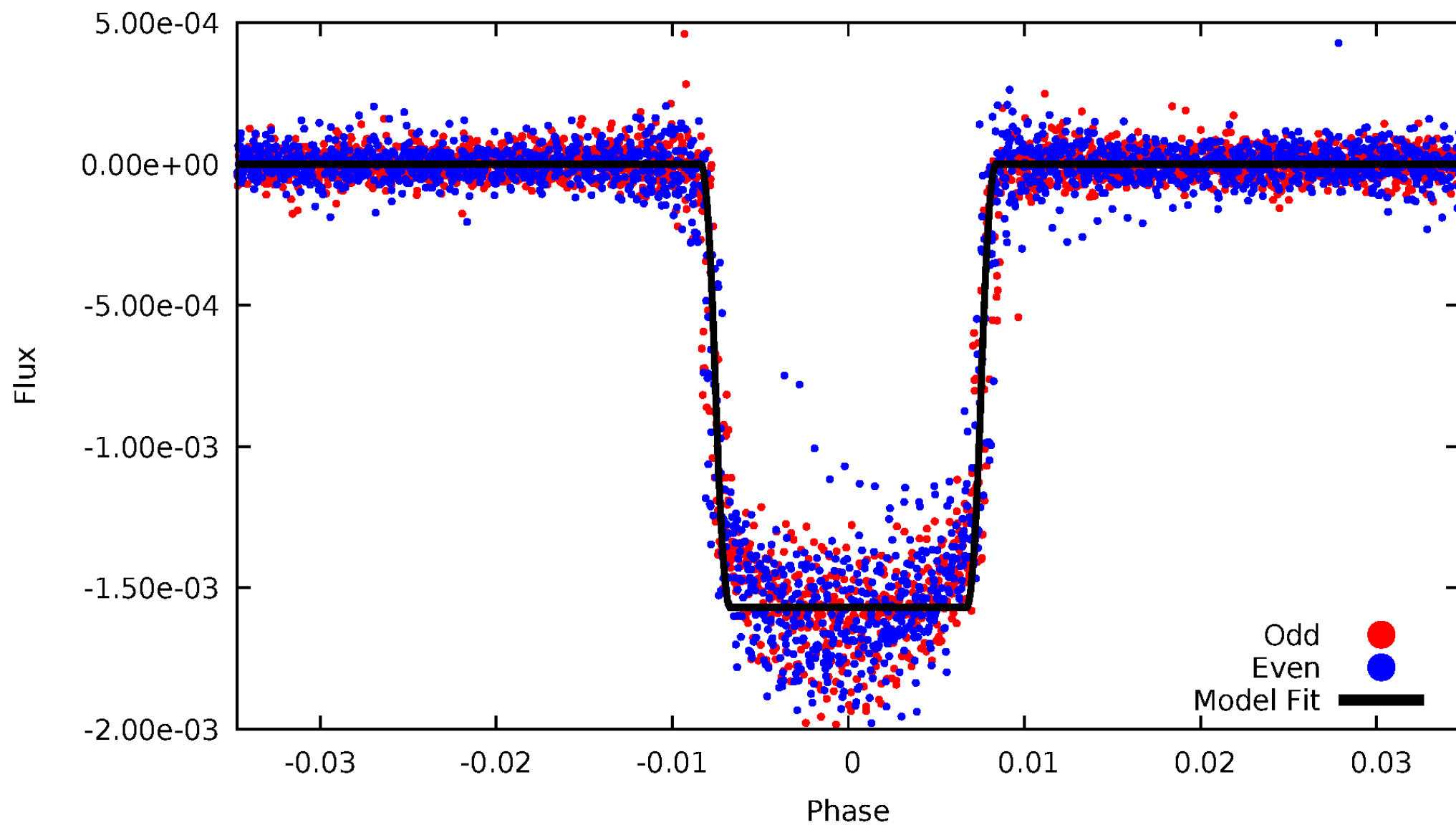
DV Odd/Even

TCE 008823868-02



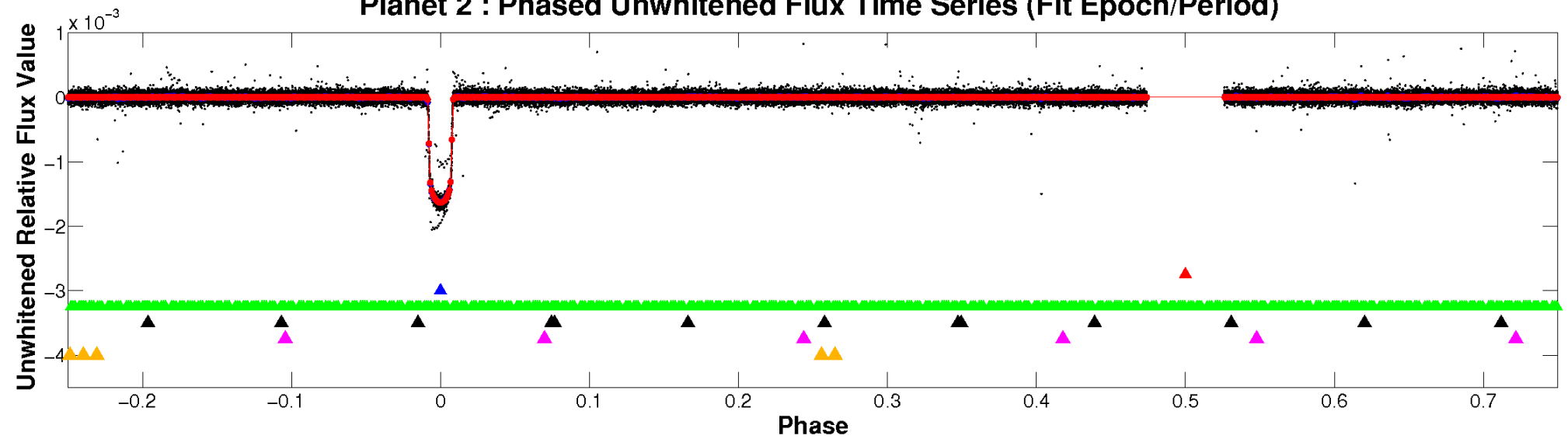
ALT Odd/Even

TCE 008823868-02

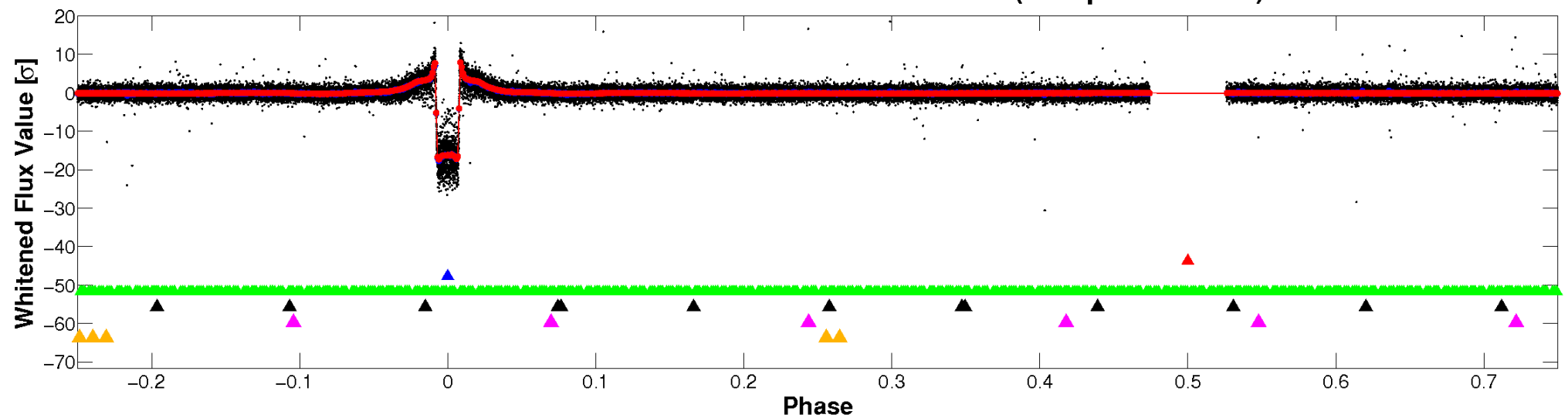


Non-Whitened Vs. Whitened Light Curve

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

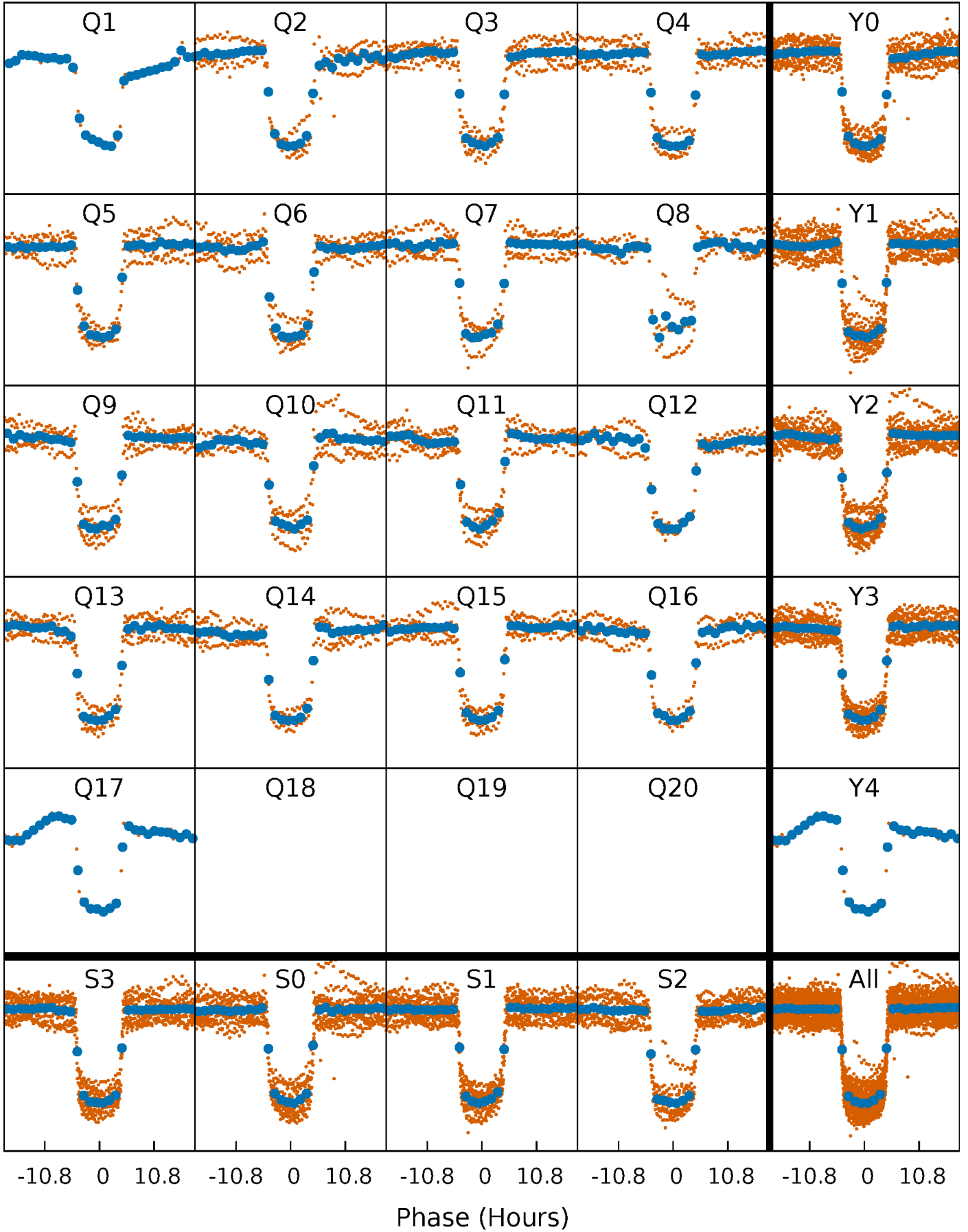


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



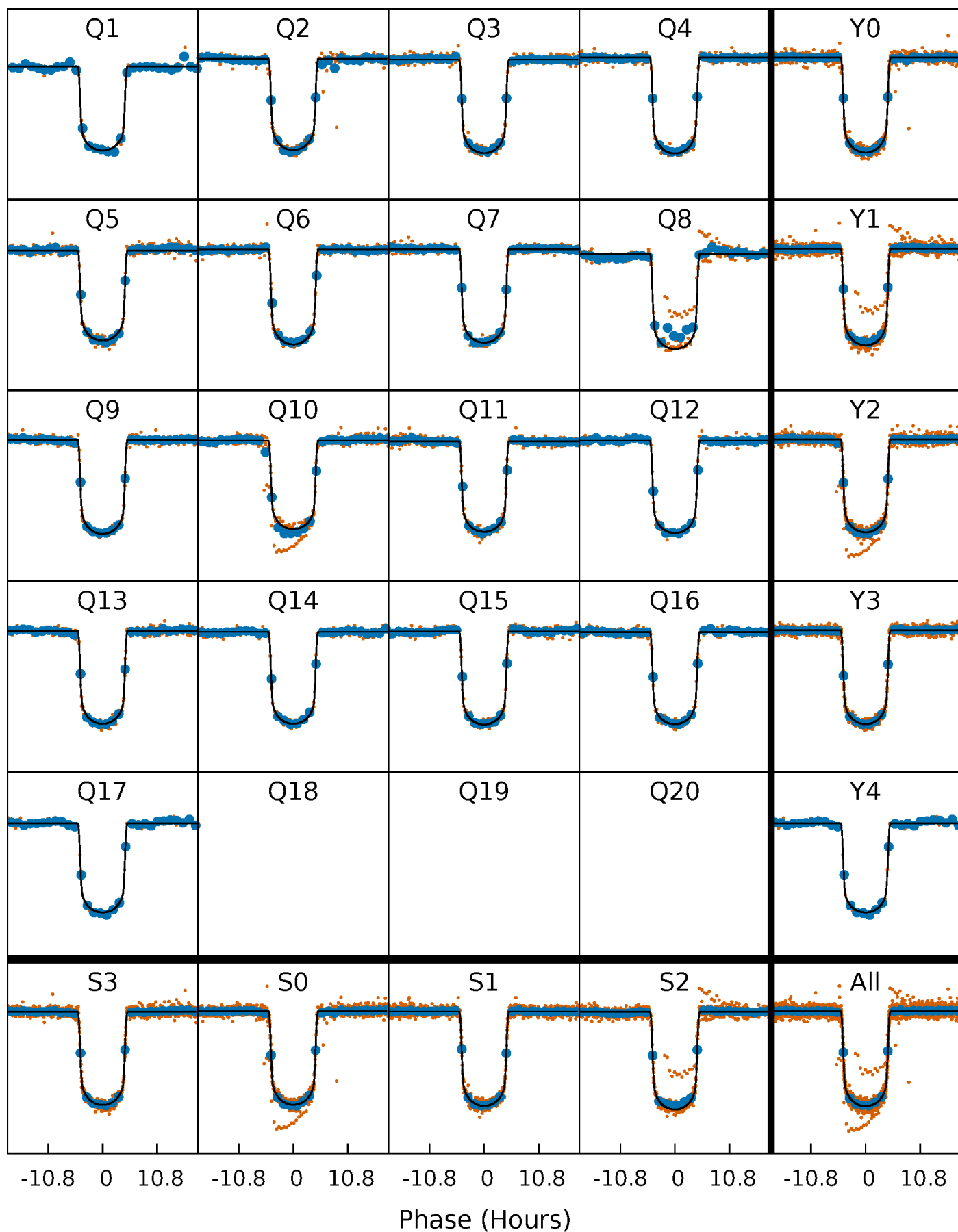
PDC Quarter-Phased Transit Curves

TCE 008823868-02 P= 23.876136 Days $T_0=143.069948$ (BKJD)



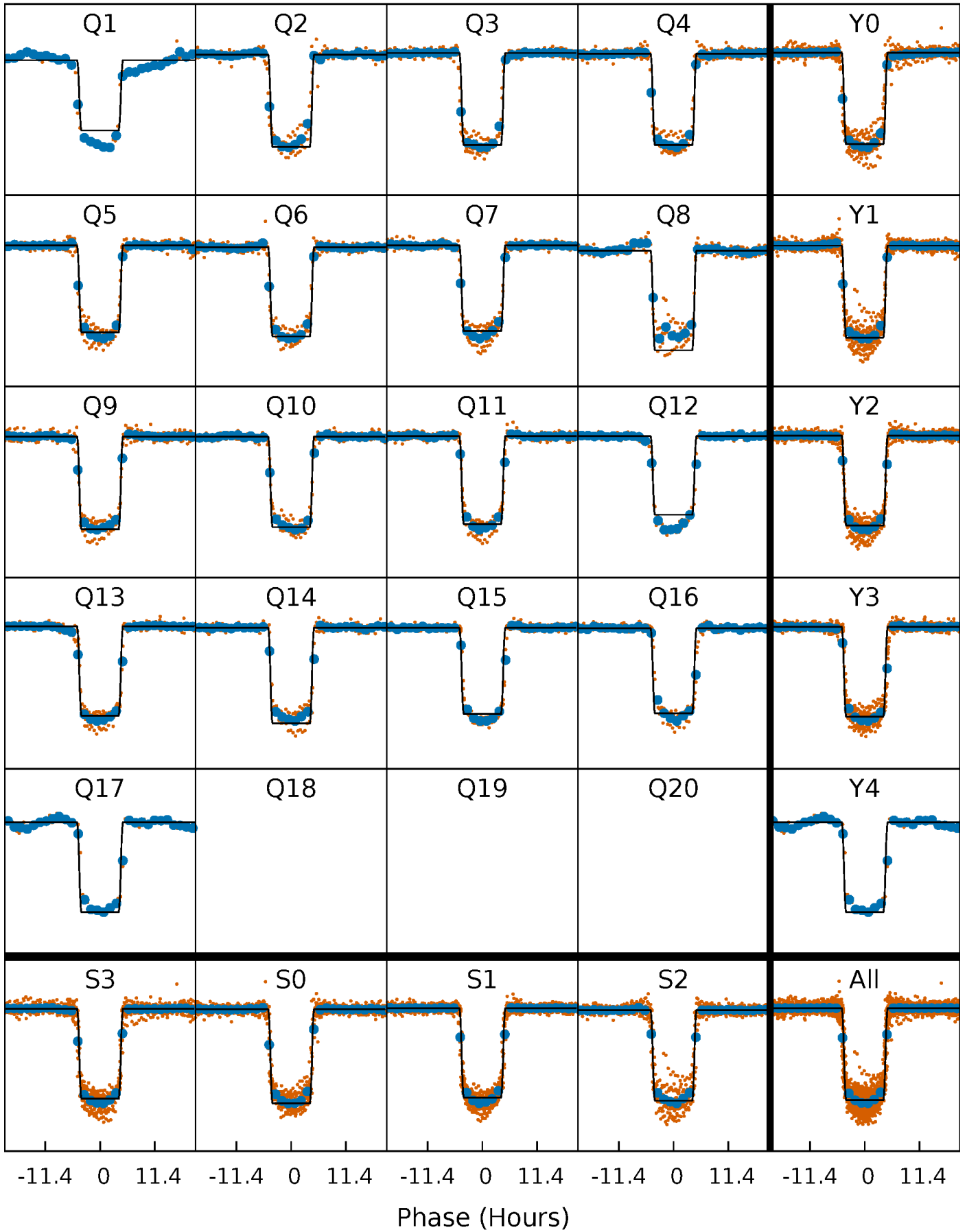
DV Quarter-Phased Transit Curves

TCE 008823868-02 P= 23.876136 Days $T_0=143.069948$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

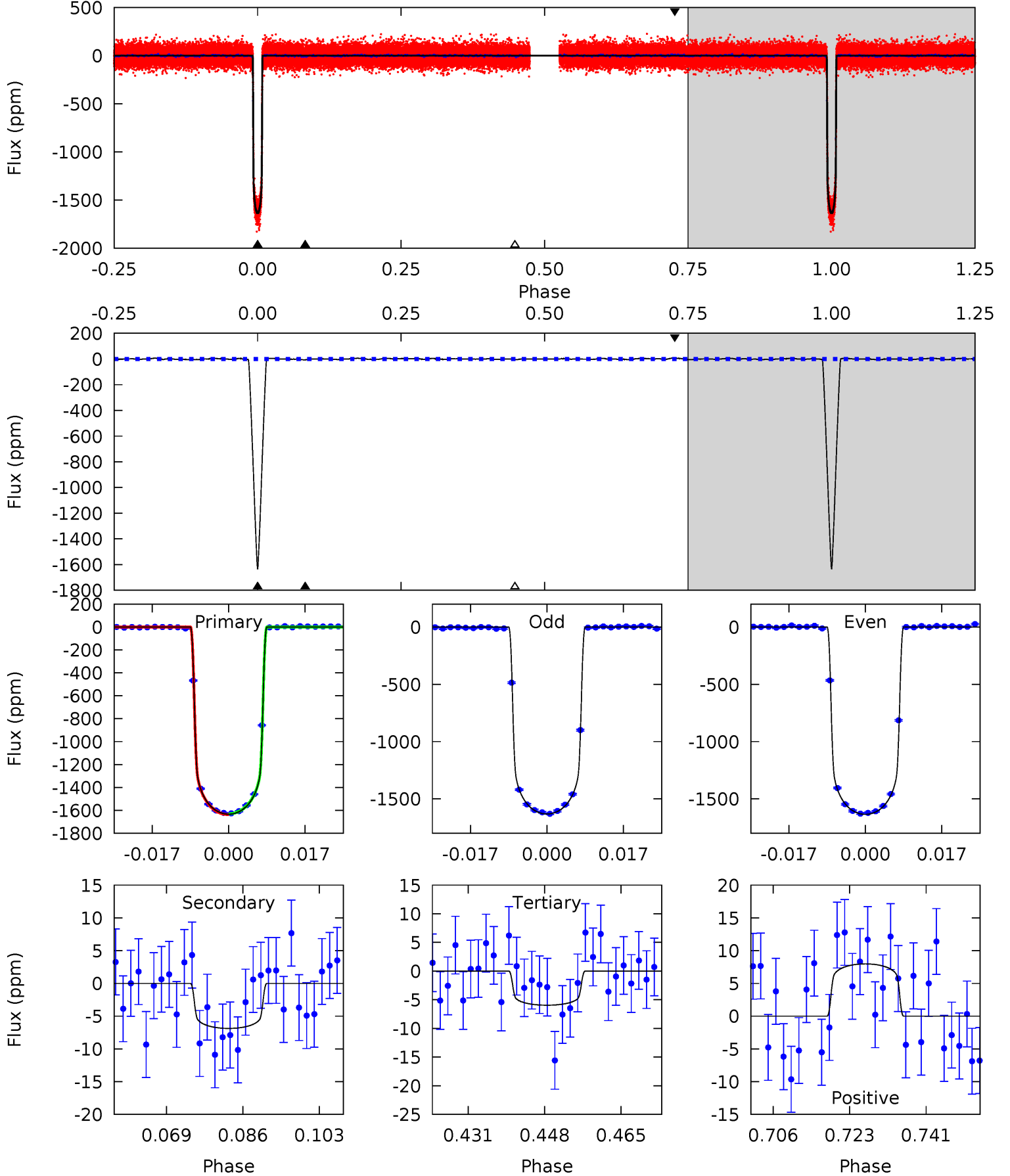
TCE 008823868-02 P= 23.875567 Days $T_0=143.087615$ (BKJD)



DV Model-Shift Uniqueness Test

008823868-02, P = 23.876136 Days, E = 119.193812 Days

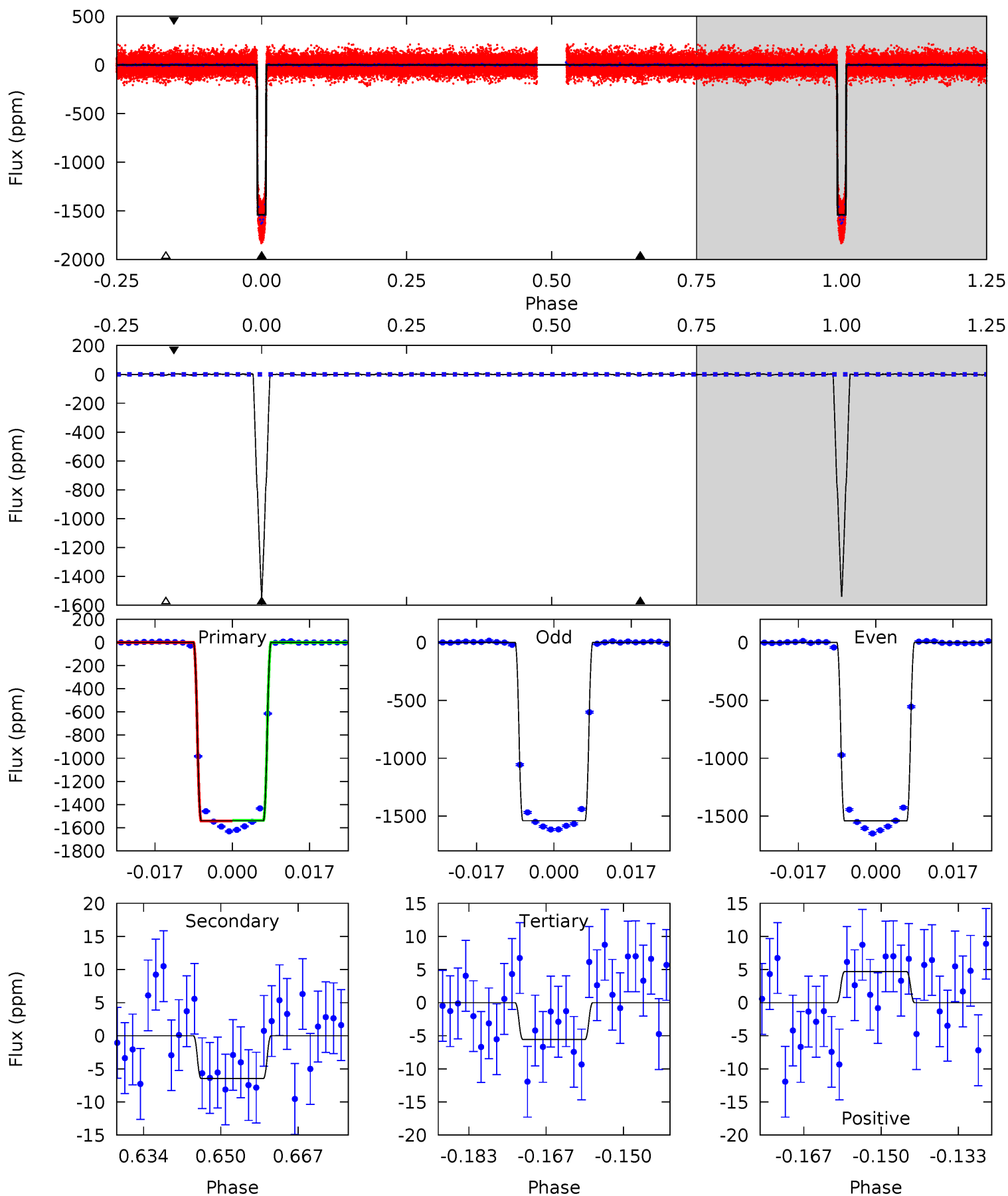
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1013	4.26	3.69	4.95	4.92	2.38	1.61	1010	1008	0.57	-0.68	1.06	1.00	0.00	2.21



Alt Model-Shift Uniqueness Test

008823868-02, P = 23.875567 Days, E = 119.212048 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
872.2	3.66	3.15	2.65	4.93	2.39	1.03	869.0	869.5	0.51	1.01	0.61	1.00	0.00	1.67



Stellar Parameters For KIC 008823868

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9974^{+275}_{-413}	$4.048^{+0.115}_{-0.214}$	$0.210^{+0.050}_{-0.400}$	$2.533^{+0.965}_{-0.414}$	$2.615^{+0.371}_{-0.278}$	$0.227^{+0.120}_{-0.122}$
	+3%/-4%	+3%/-5%	+24%/-190%	+38%/-16%	+14%/-11%	+53%/-54%
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 008823868-02 / KOI 0081.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-7 ± 2	$10.77^{+2.31}_{-0.89}$	2081^{+175}_{-131}	2937^{+124}_{-141}	$1.535^{+0.564}_{-0.524}$
Alt.	-6 ± 2	$10.89^{+2.27}_{-0.93}$	2076^{+190}_{-131}	2888^{+123}_{-167}	$1.375^{+0.555}_{-0.478}$

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 $A_{obs} \gg 1.0$

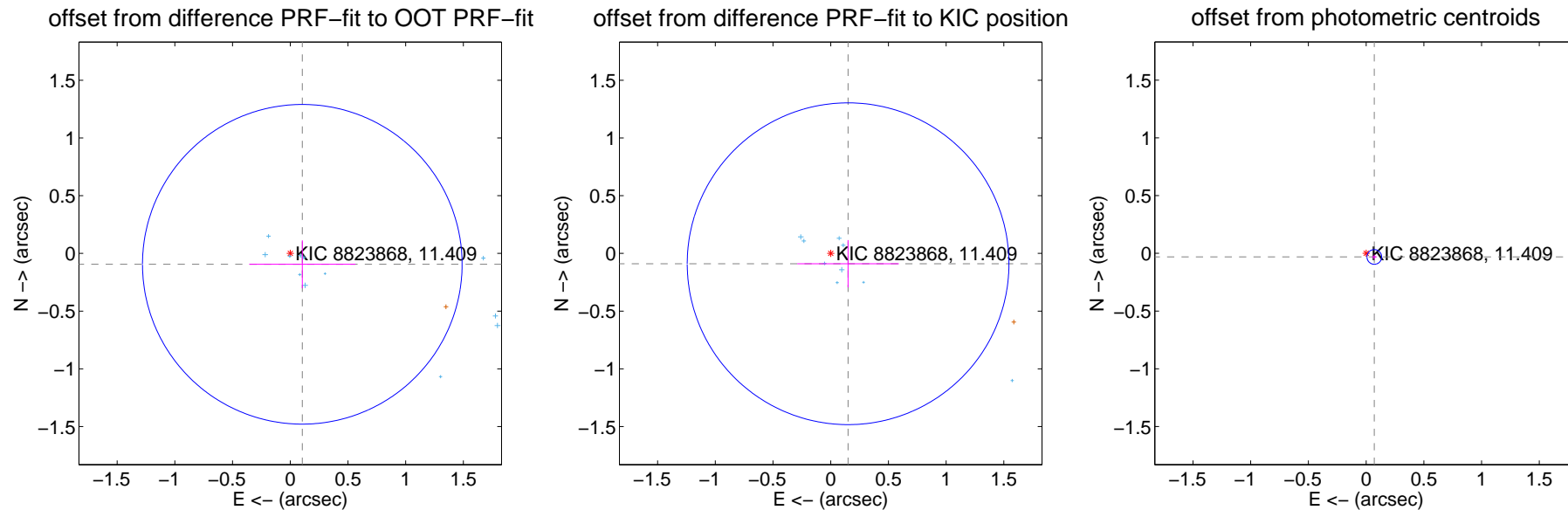
DV Centroid Data

Supplemental centroid analysis for 008823868-02. **Kepler magnitude: 11.41.** Transit SNR 534.72

There are 13 quarters with good PRF difference image offsets

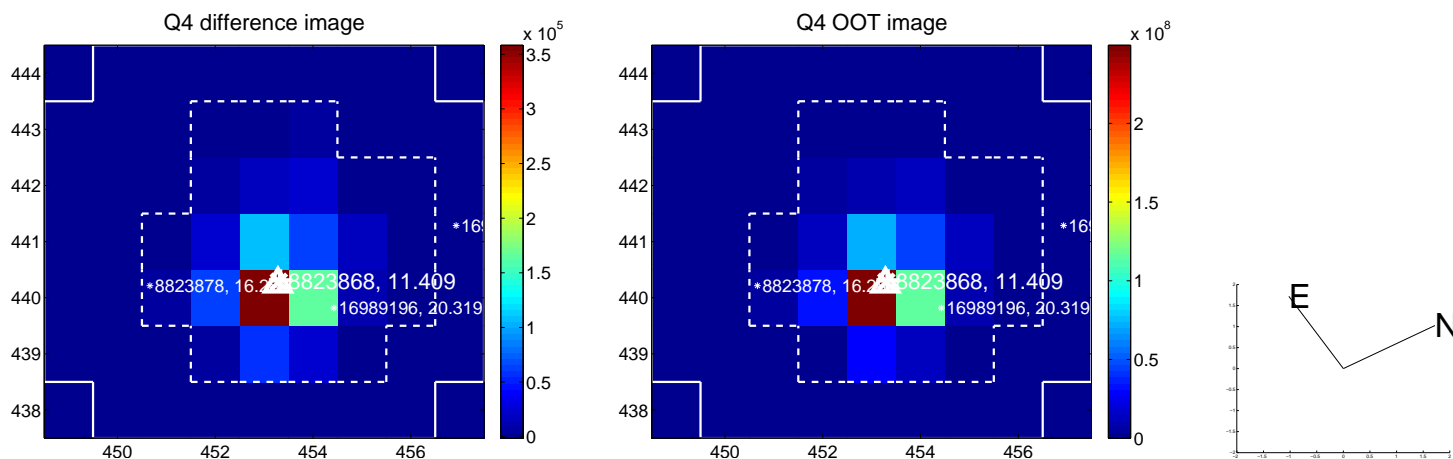
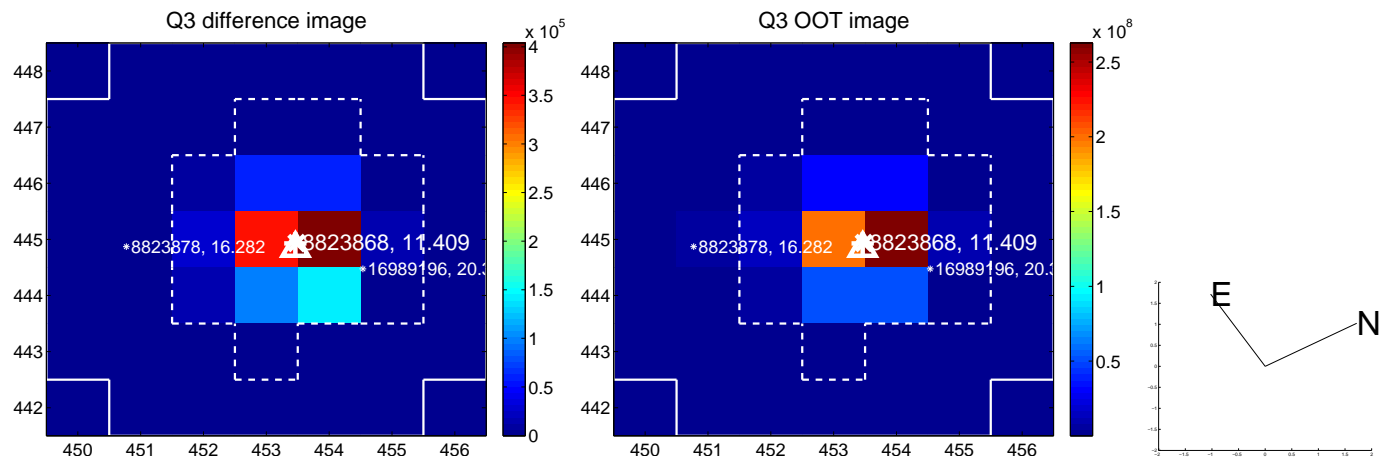
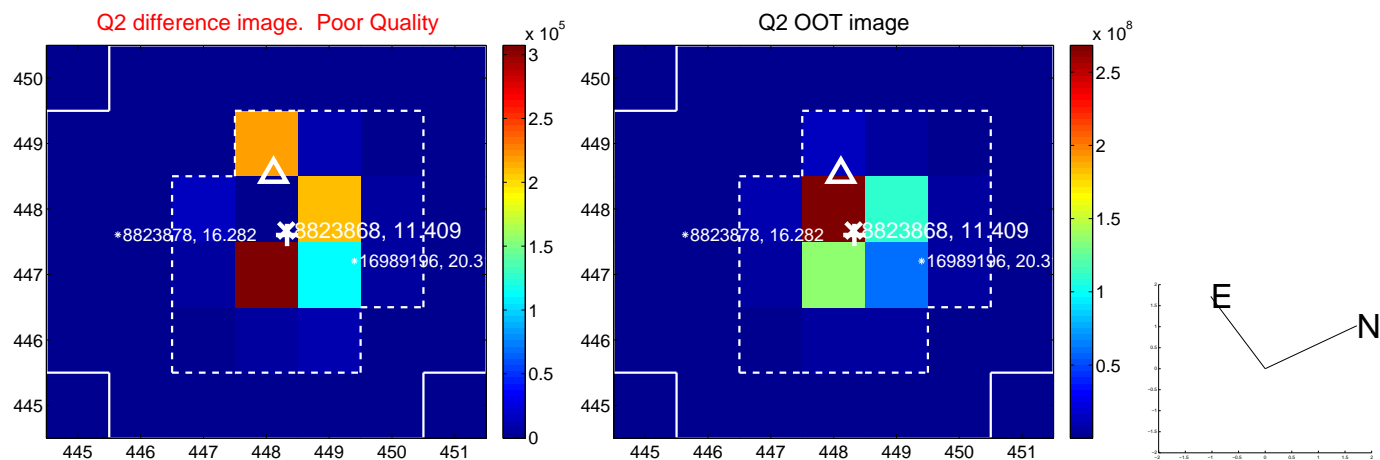
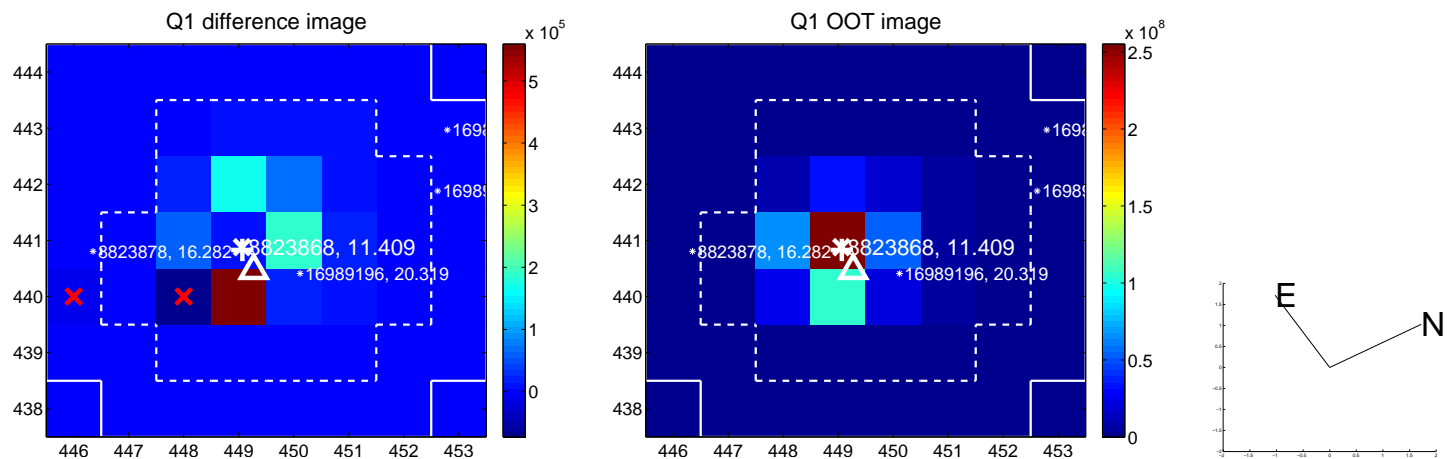
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.141 ± 0.462	0.30	-0.104 ± 0.460	-0.094 ± 0.208
PRF-fit source offset from KIC position	0.175 ± 0.465	0.38	-0.151 ± 0.440	-0.089 ± 0.205
photometric centroid source offset	0.08 ± 0.02	3.65	-0.07 ± 0.02	-0.03 ± 0.02

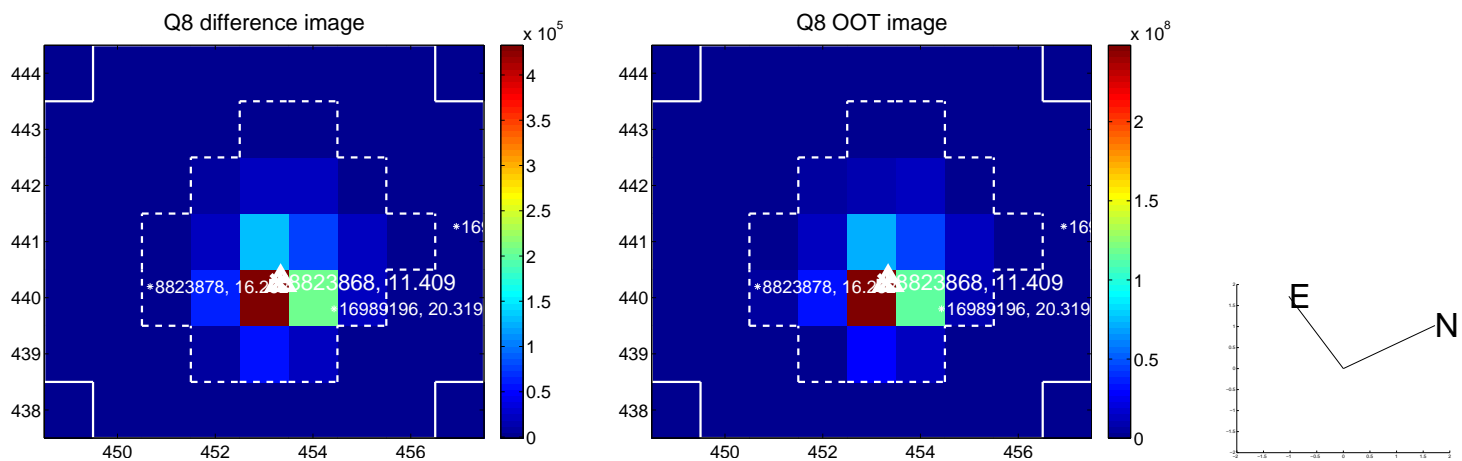
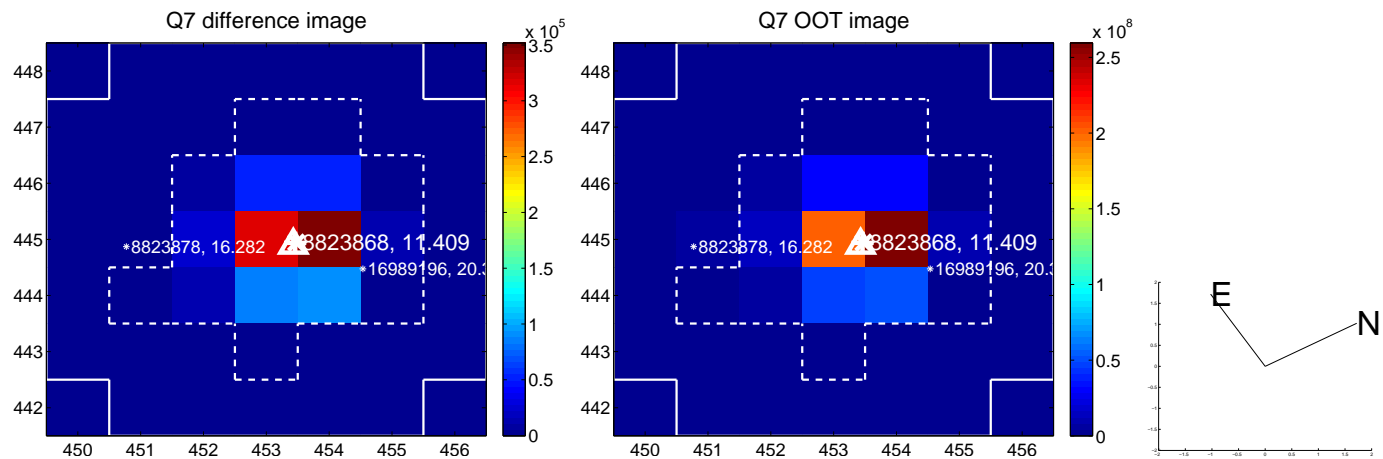
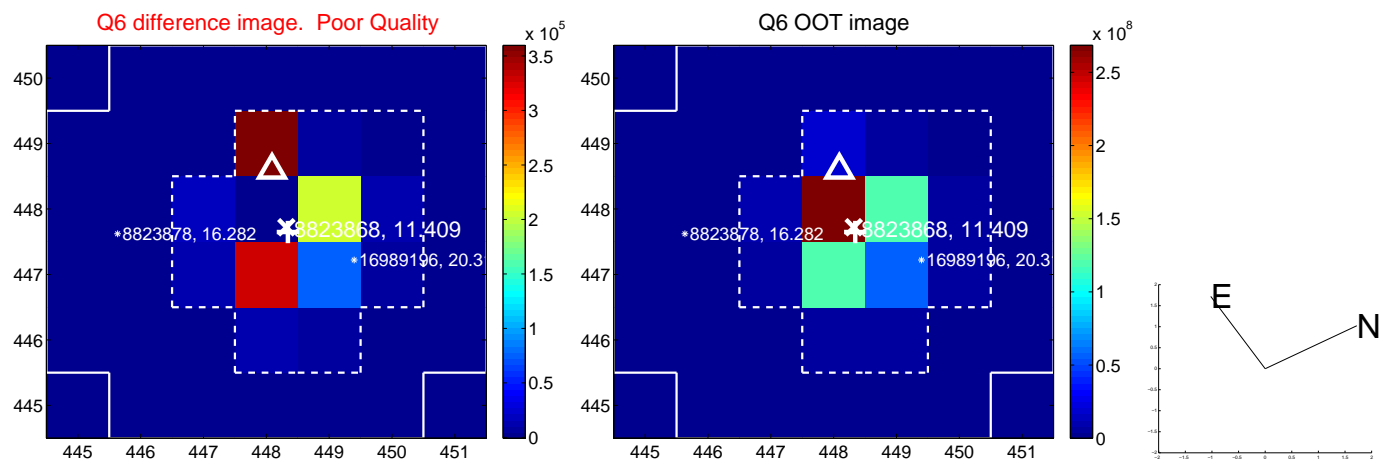
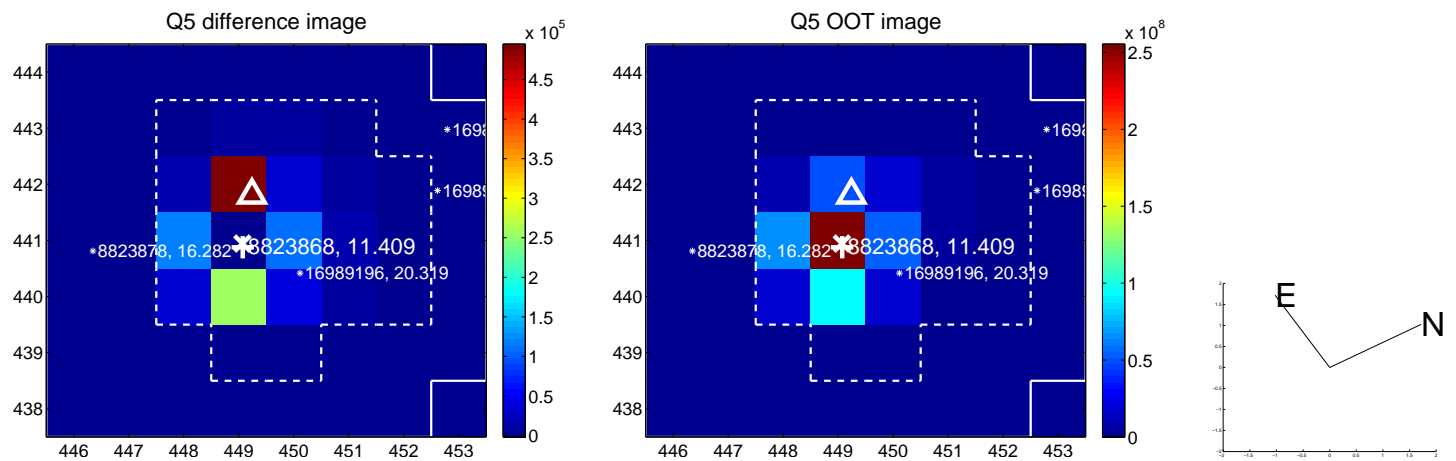


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

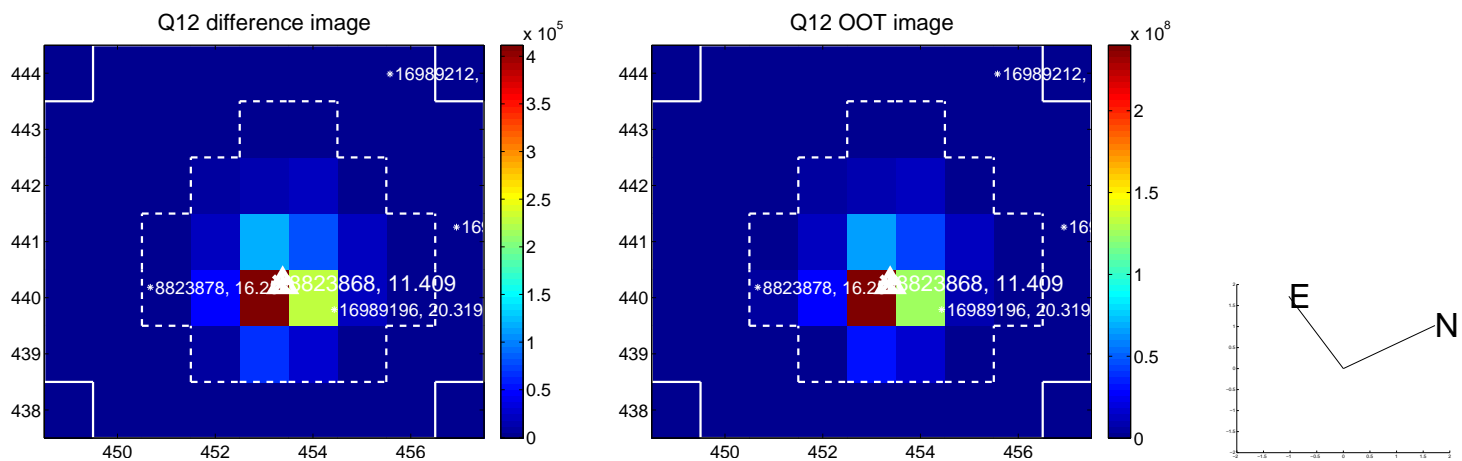
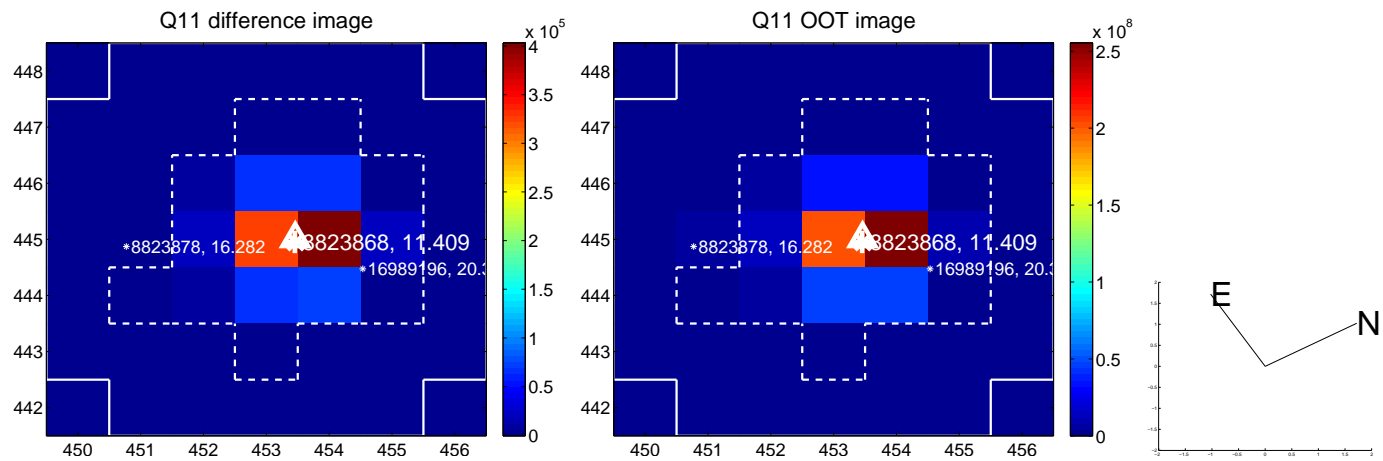
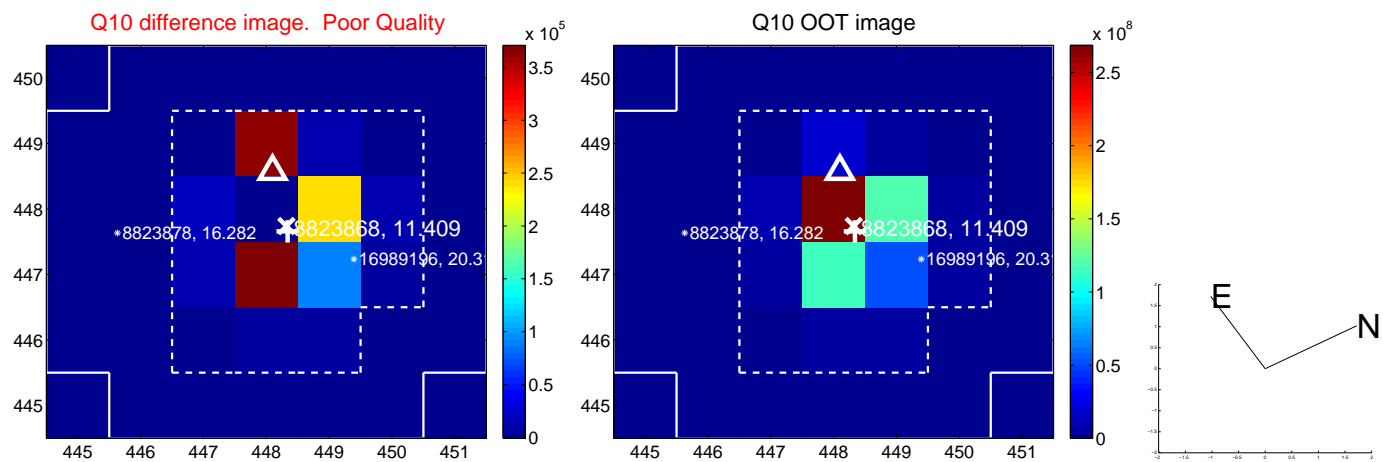
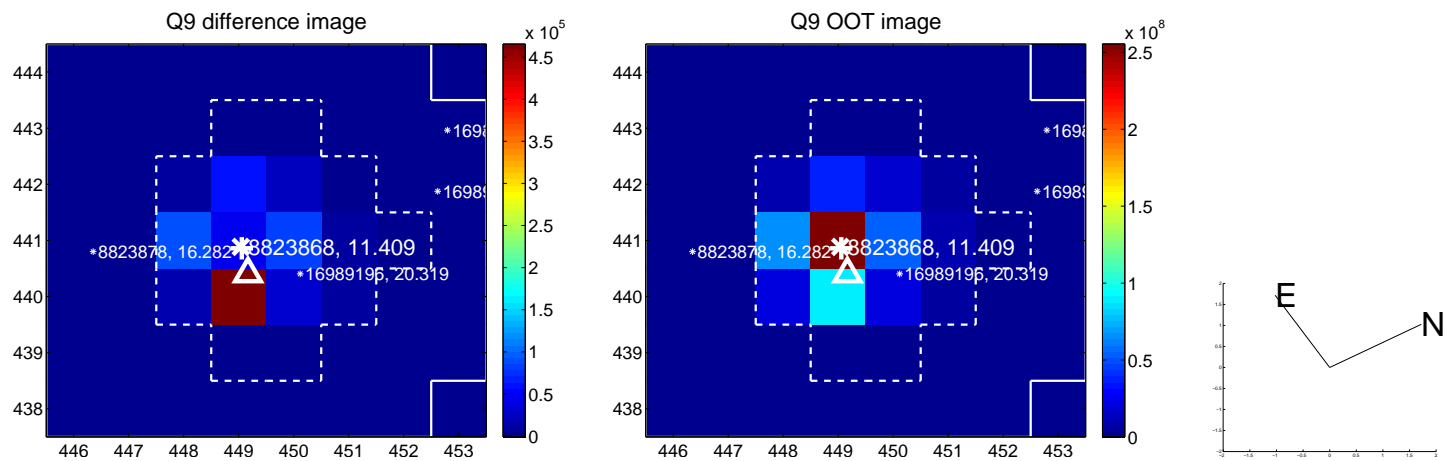
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



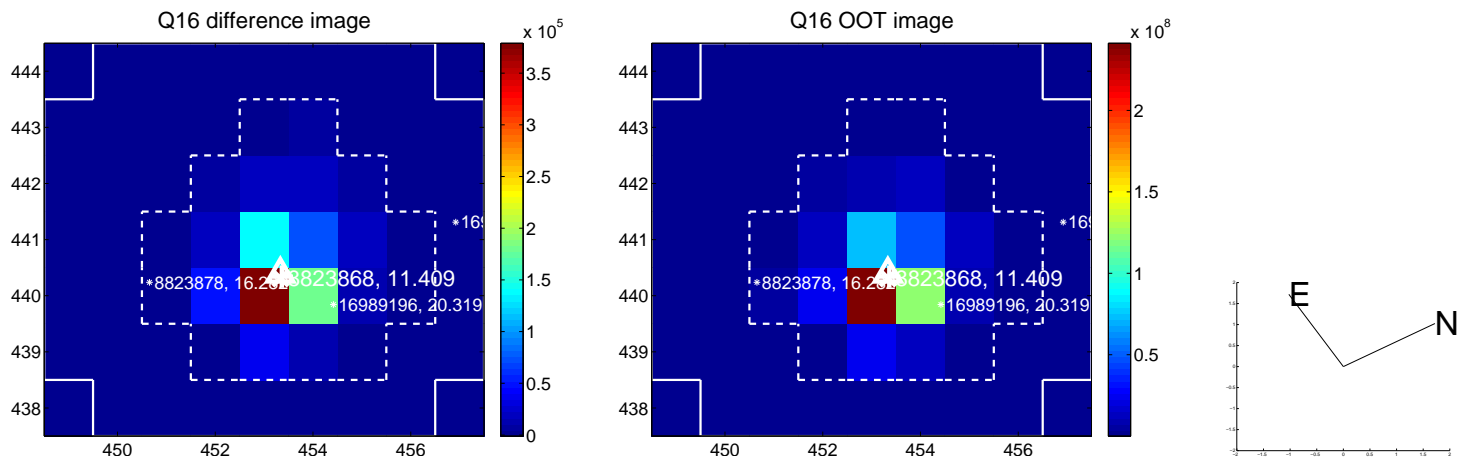
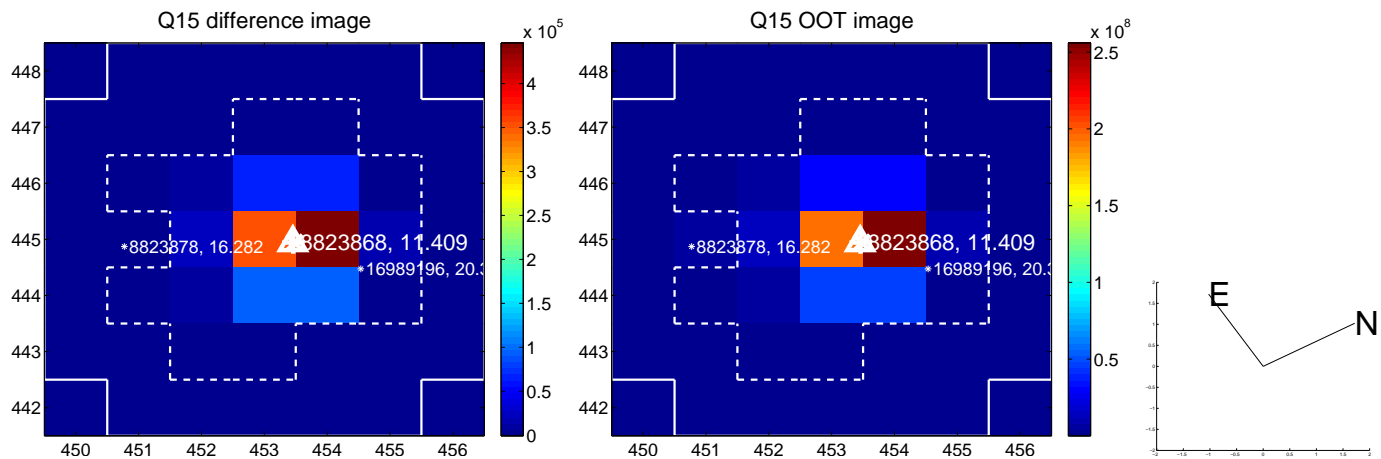
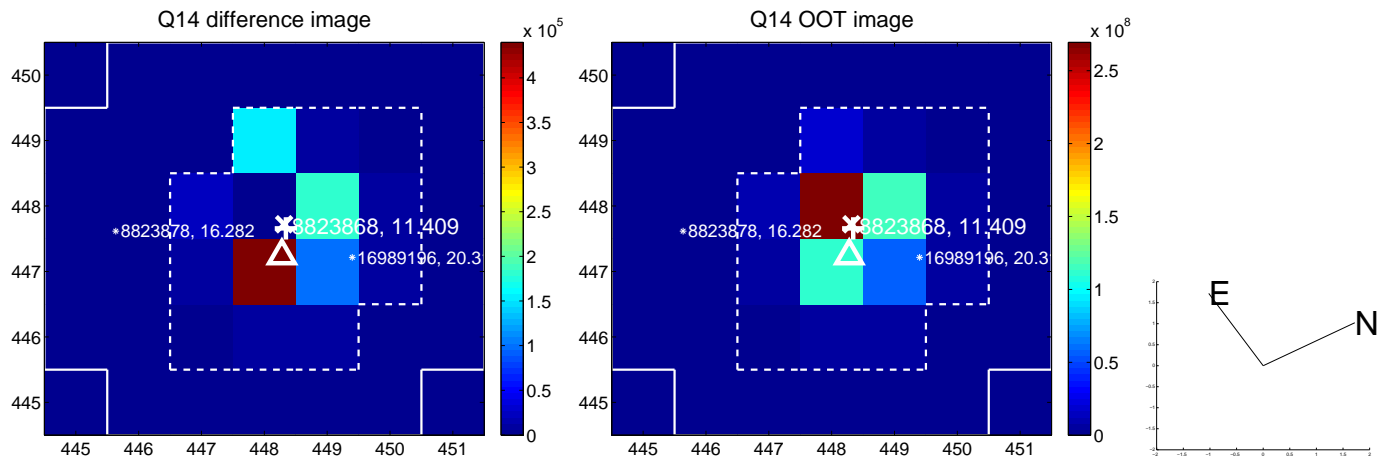
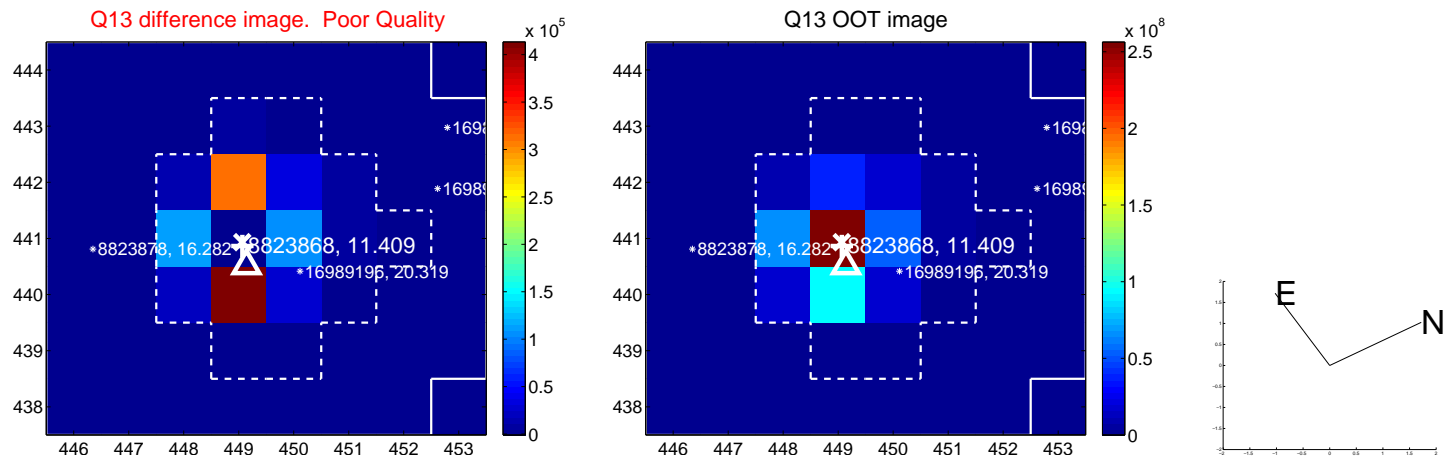
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



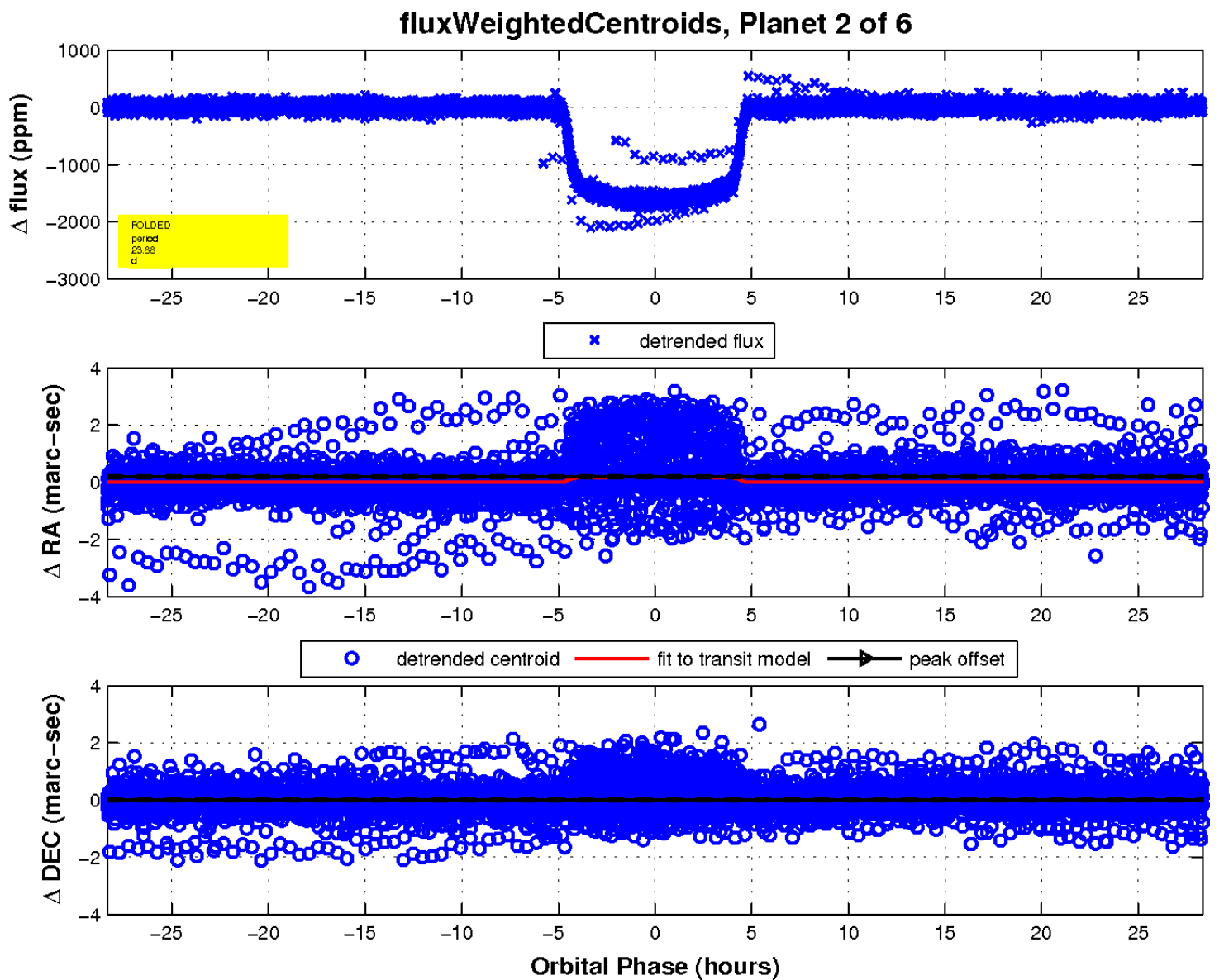
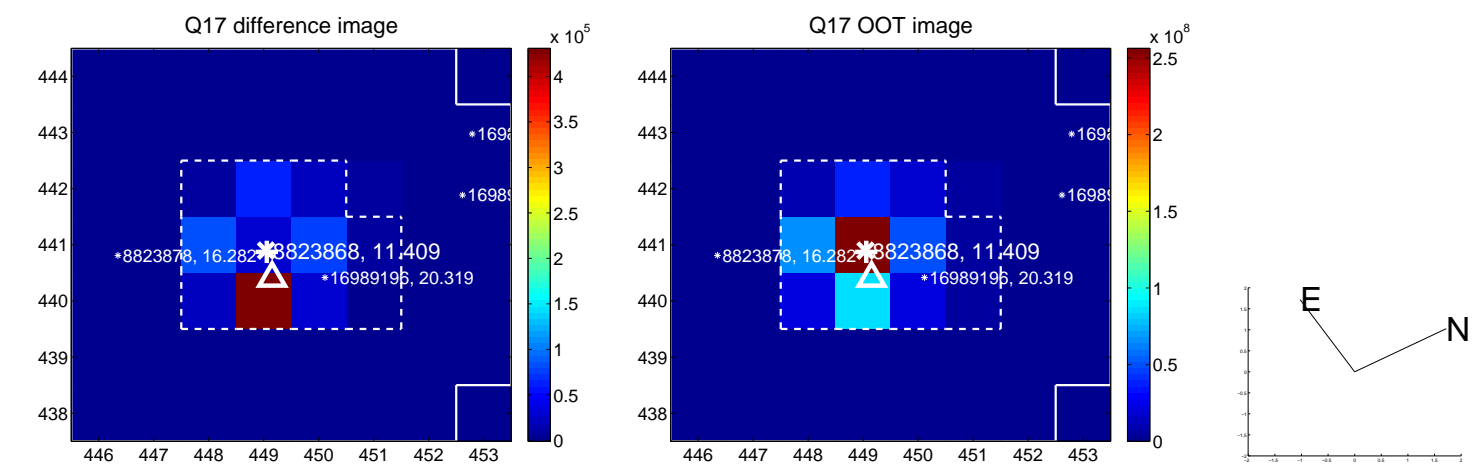
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

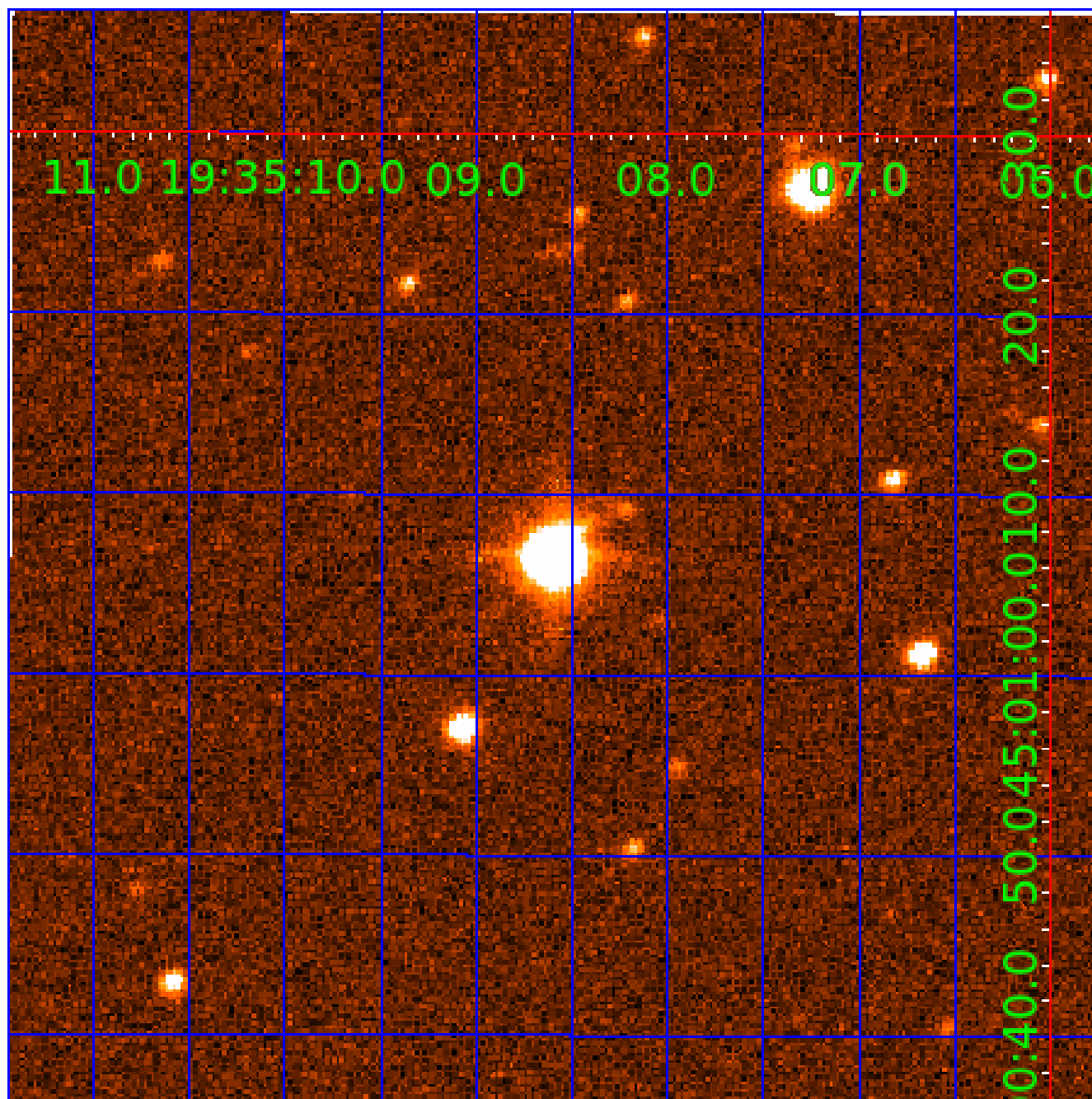


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008823868

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})
008823868-01	OBS	No	23.876136	155.008707	5216.6	9.729	1762.4	1310.8	2.53	9974	18.75	1138.09
008823868-02	OBS	0081.01	23.876136	143.069948	1631.3	9.448	537.8	534.7	2.53	9974	10.78	1138.09
008823868-03	OBS	No	2.766345	133.491080	7.5	11.970	8.5	7.8	2.53	9974	0.74	20149.00
008823868-04	OBS	No	112.864378	151.414628	45.8	15.416	8.0	6.4	2.53	9974	1.90	143.46
008823868-05	OBS	No	234.607080	248.550170	92.5	6.775	7.5	7.8	2.53	9974	2.73	54.08
008823868-06	OBS	No	298.344256	185.313944	98.4	4.843	7.3	7.3	2.53	9974	2.87	39.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008823868-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
008823868-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—CENT_SATURATED
008823868-03	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
008823868-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008823868-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008823868-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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.

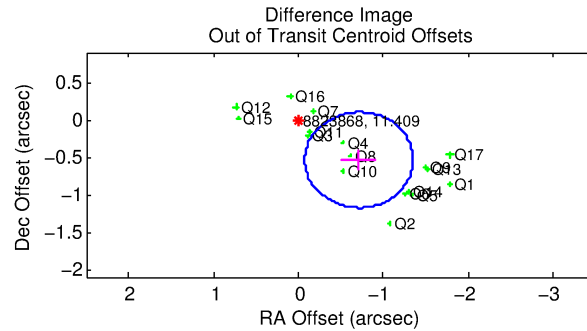
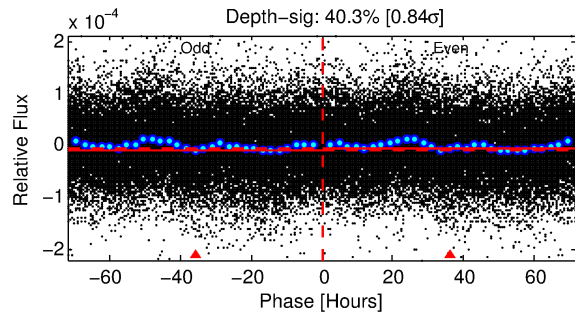
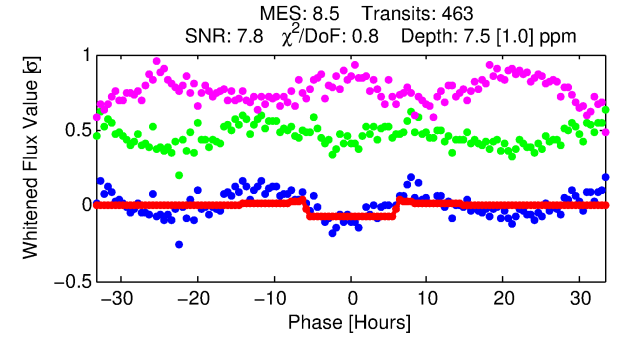
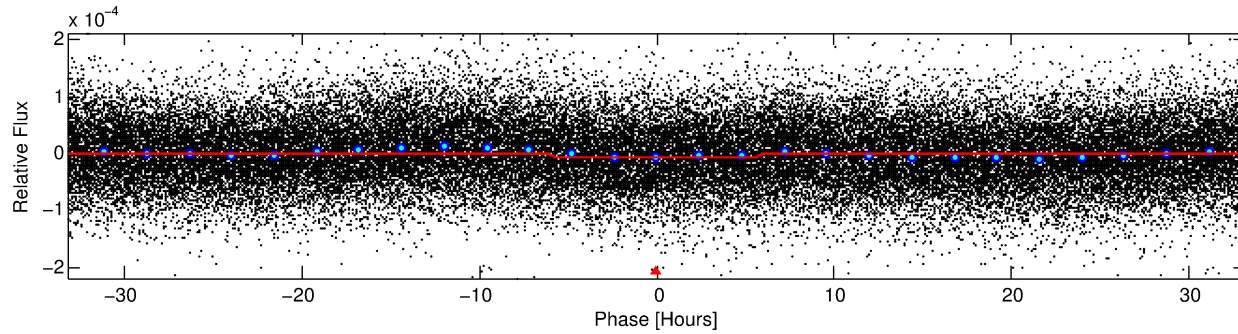
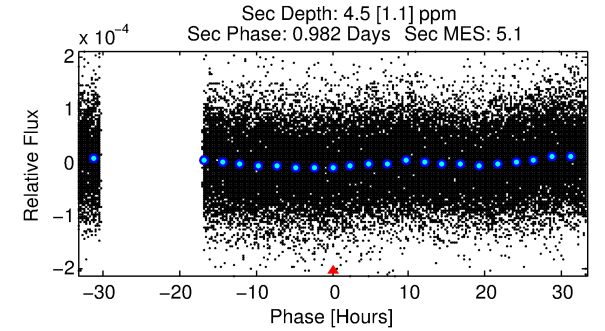
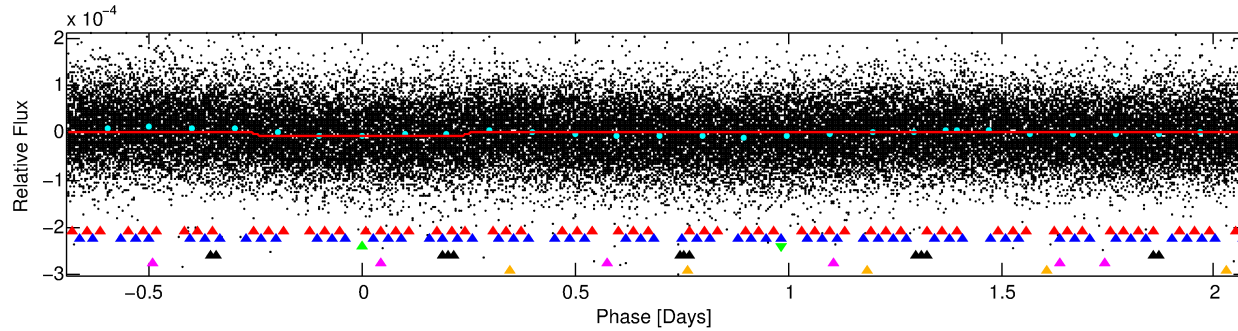
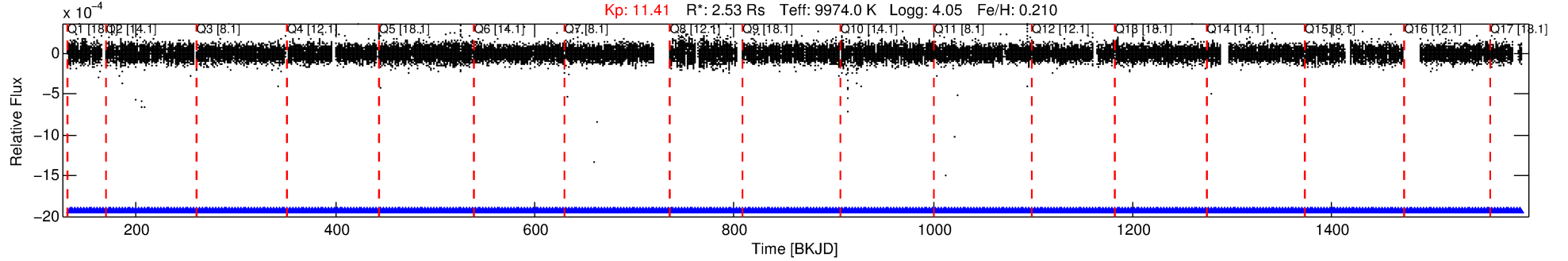
Ephemeris Match Information For 008823868-03

No Significant Match Found

DV One-Page Summary

KIC: 8823868 Candidate: 3 of 6 Period: 2.766 d

KOI: K00081 Corr: No Ephemeris Match



DV Fit Results:

Period = 2.76634 [0.00004] d
Epoch = 133.4911 [0.0077] BKJD
Rp/R* = 0.0027 [0.0004]
a/R* = 1.59 [0.87]
b = 0.62 [0.90]
Seff = 20149.00 [9007.60]
Teq = 3038 [340] K
Rp = 0.74 [0.30] Re
a = 0.0531 [0.0161] AU
Ag = 12.83 [7.10] [1.67σ]
Teffp = 8889 [893] K [6.12σ]

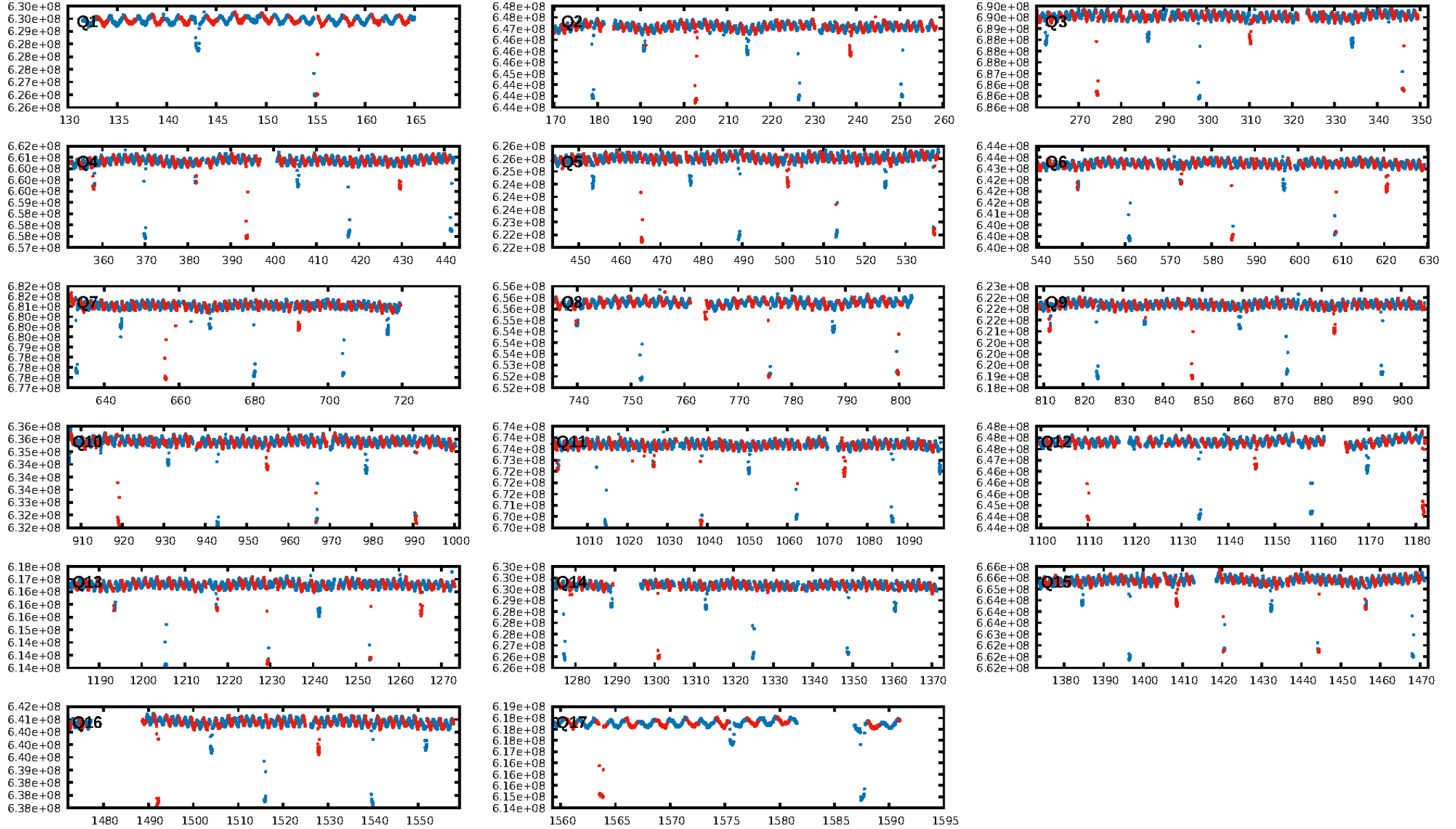
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [32.85σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.30e-11
RollingBand-fgt: 1.00 [443/443]
GhostDiagnostic-chr: 0.2299
Centroid-sig: 0.0%
Centroid-so: 4.078 arcsec [2.86σ]
OotOffset-rm: 0.895 arcsec [4.20σ]
KicOffset-rm: 0.981 arcsec [3.90σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

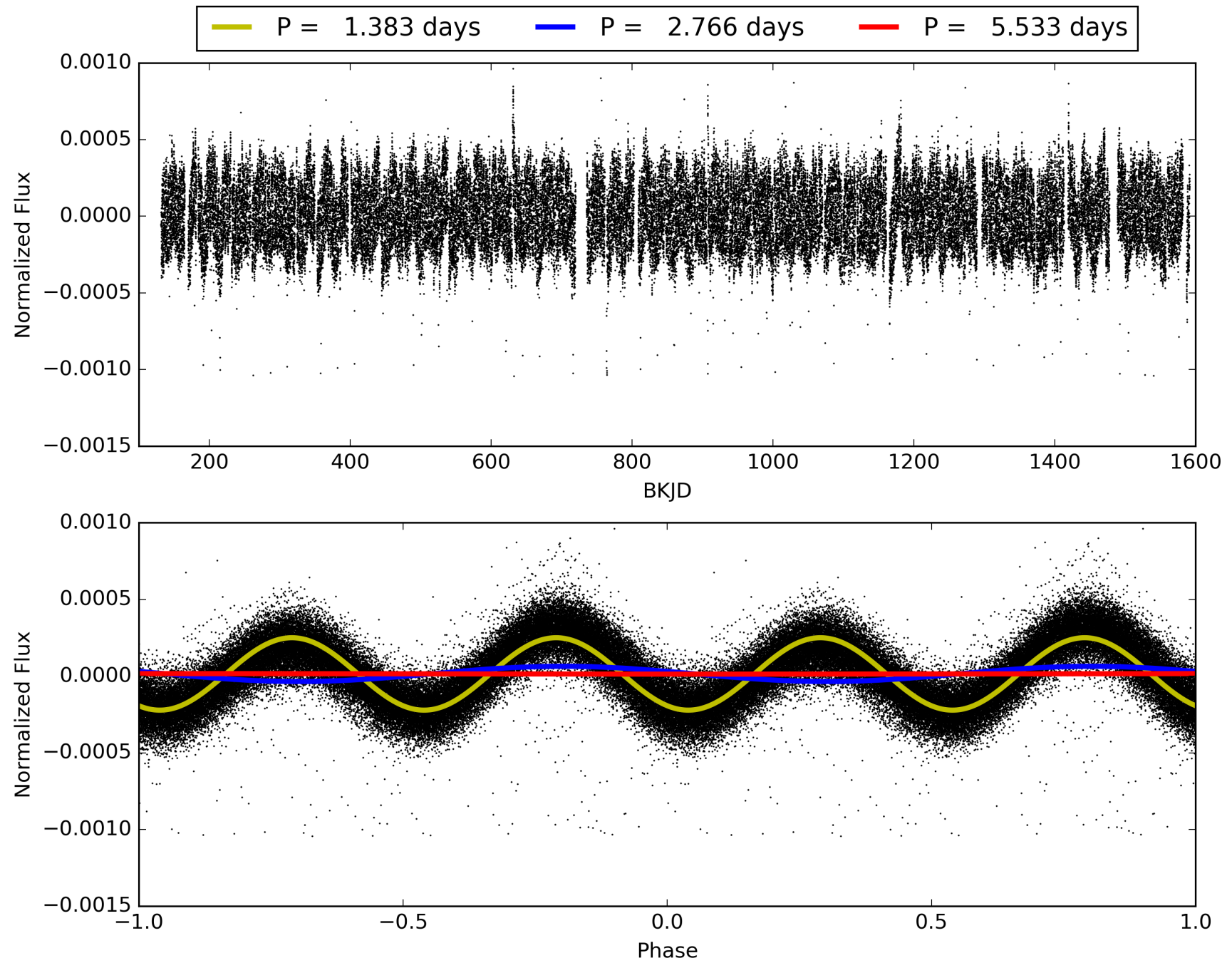
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 20:09:26 Z

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

TCE 008823868-03, PDC Light Curves

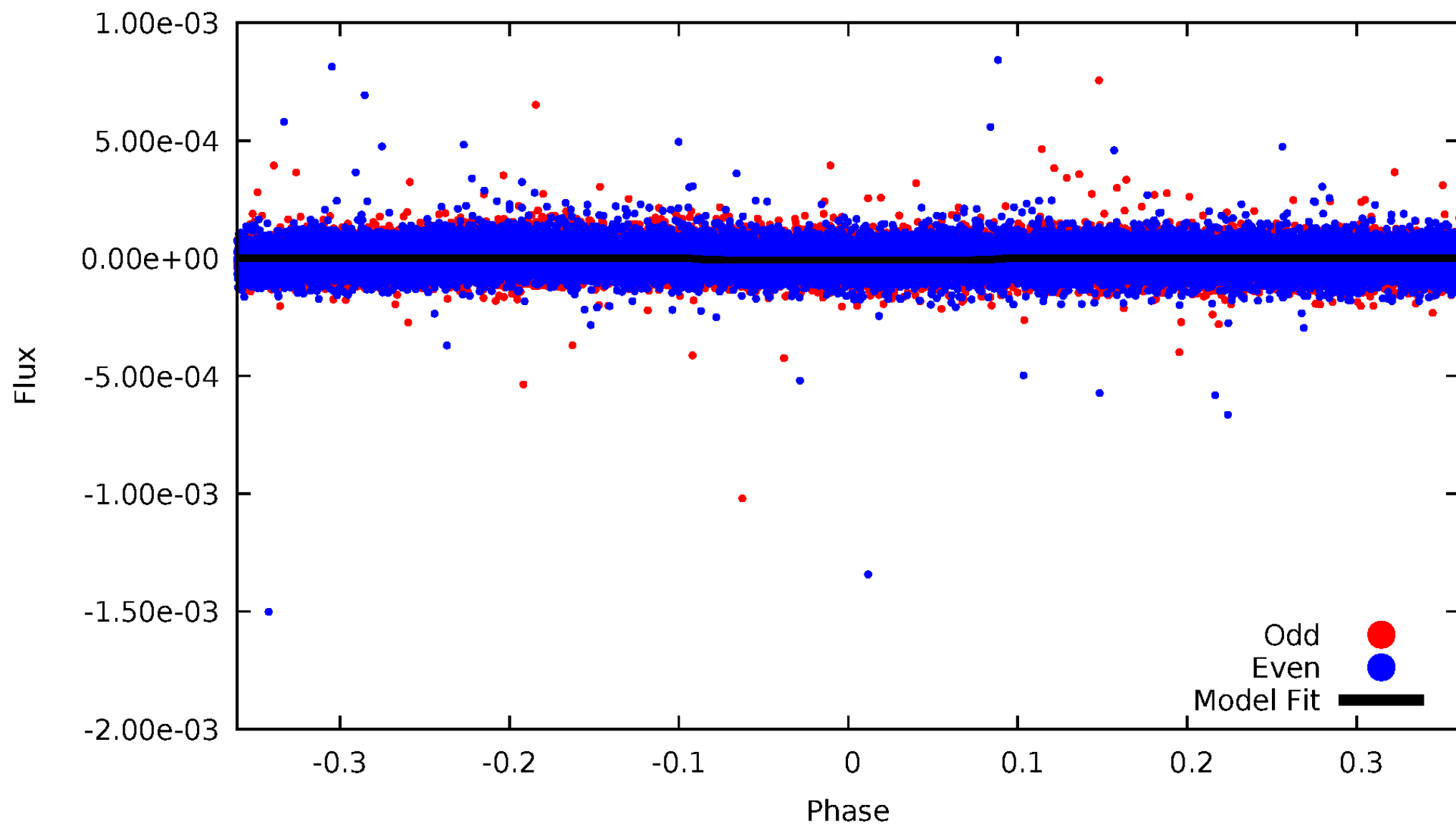


TCE 008823868-03



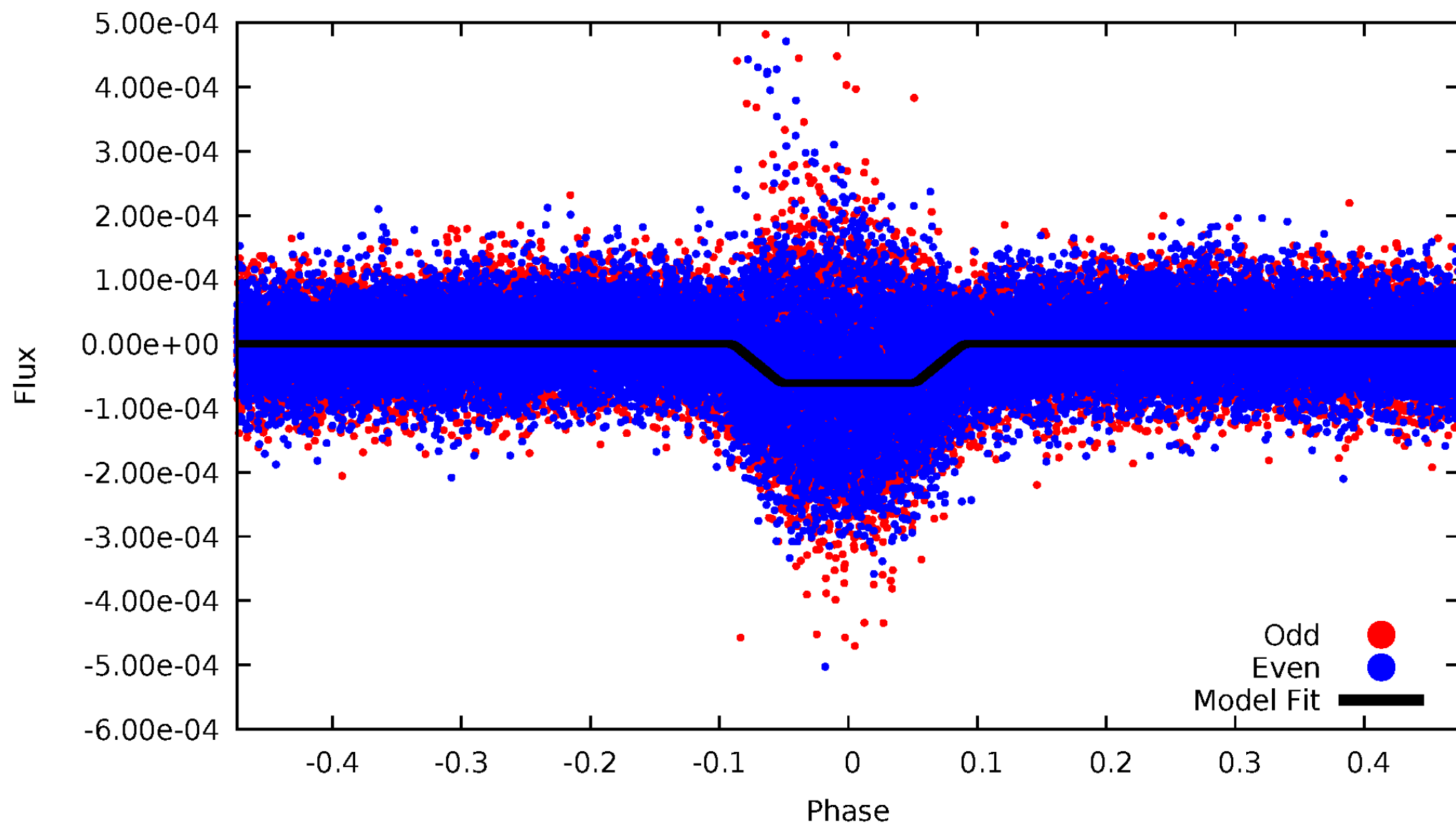
DV Odd/Even

TCE 008823868-03

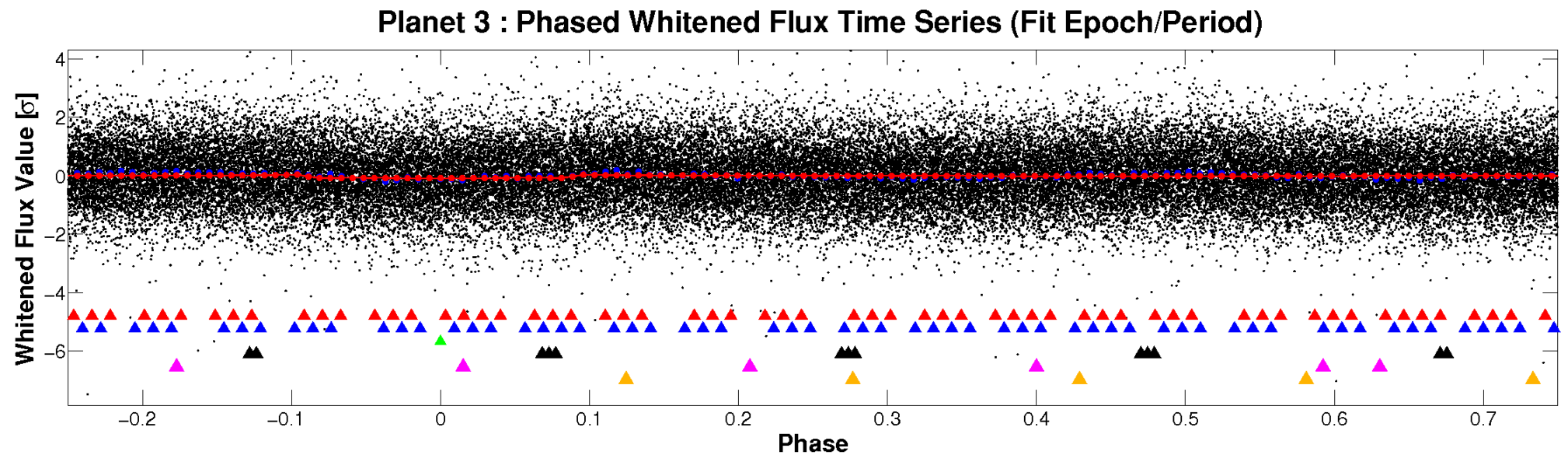
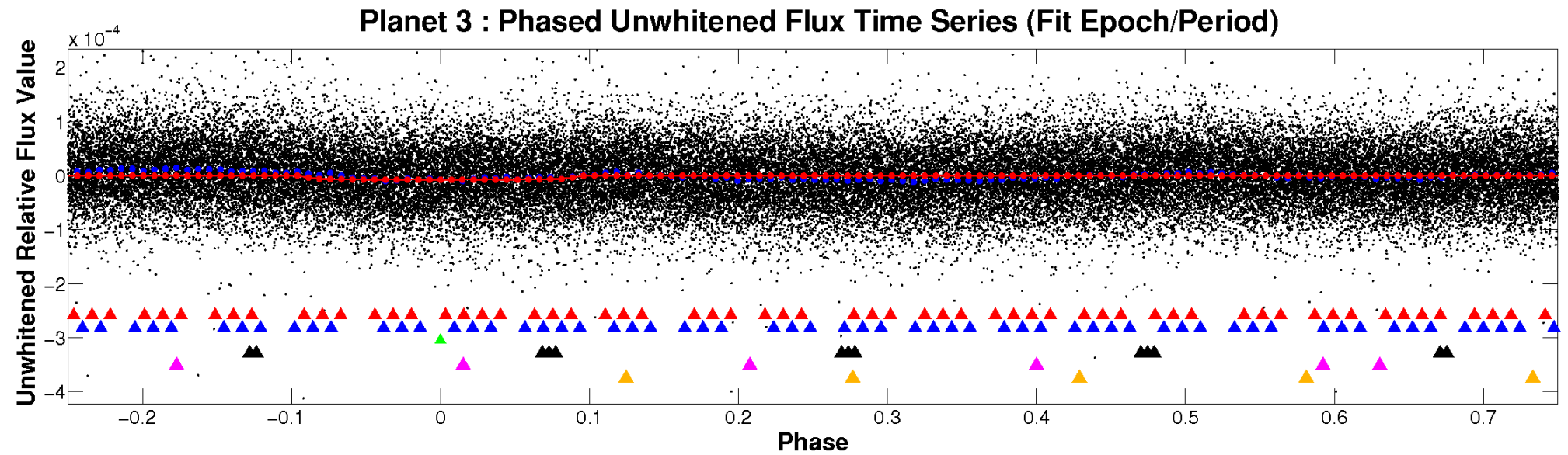


ALT Odd/Even

TCE 008823868-03

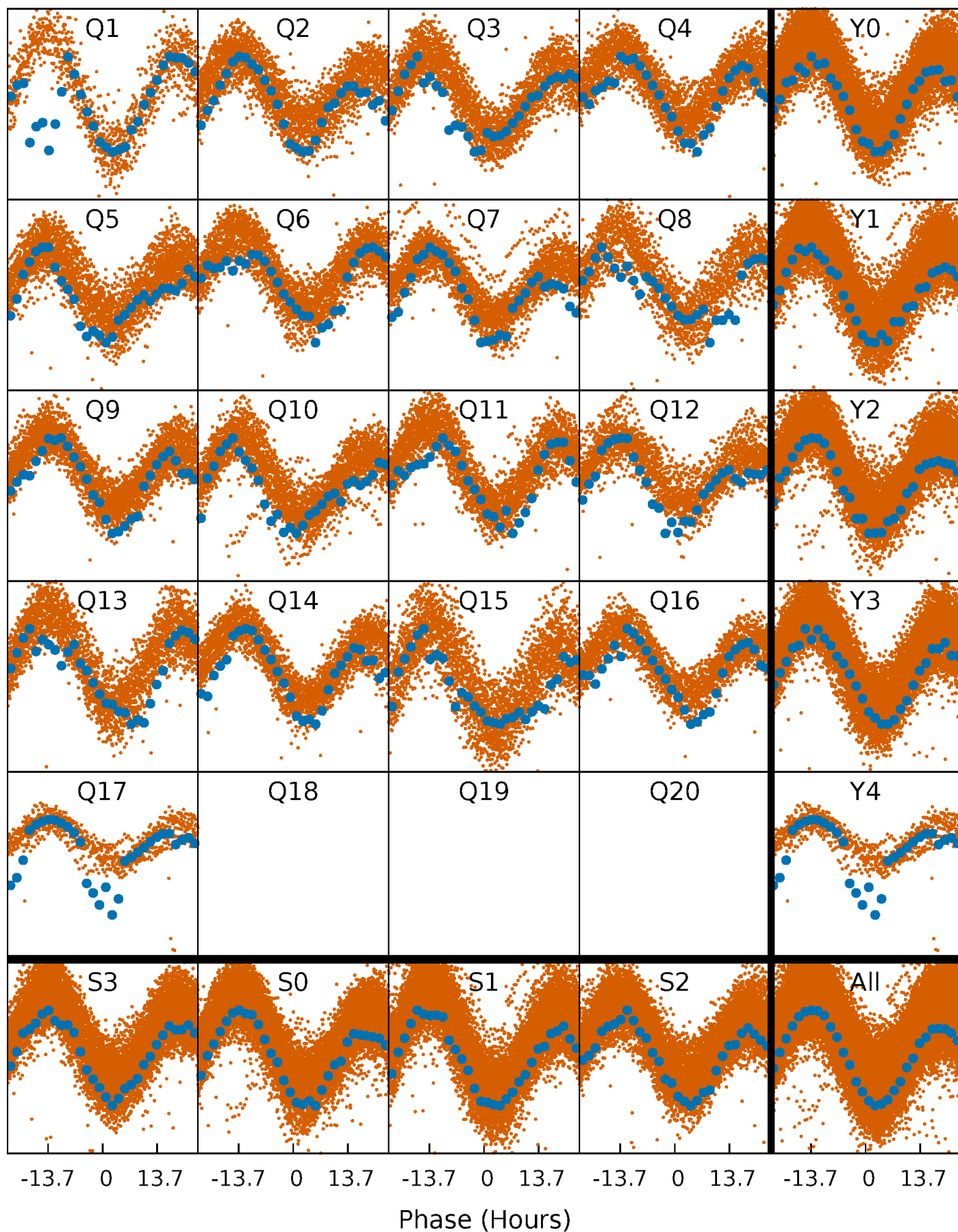


Non-Whitened Vs. Whitened Light Curve



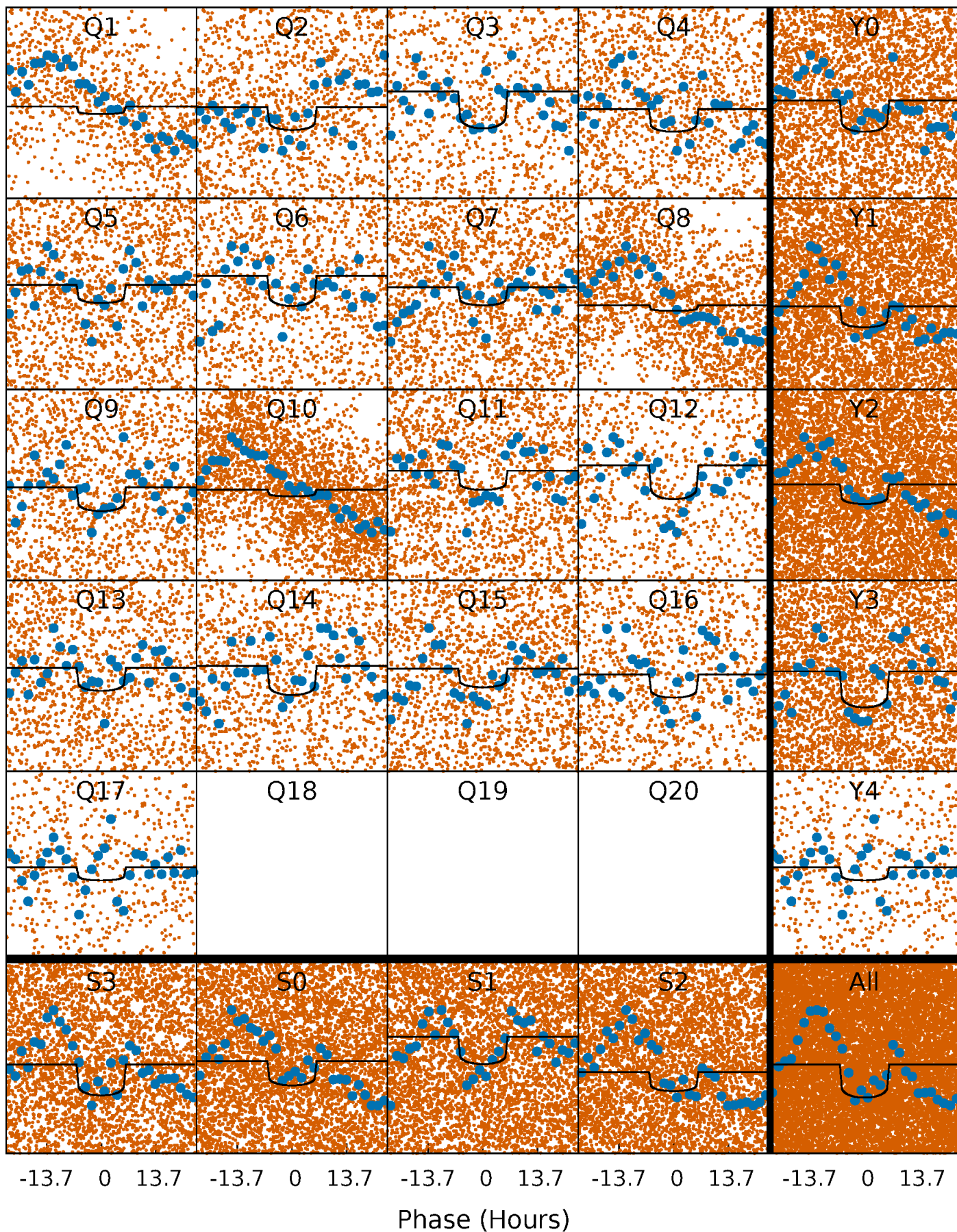
PDC Quarter-Phased Transit Curves

TCE 008823868-03 P= 2.766345 Days $T_0=133.491080$ (BKJD)



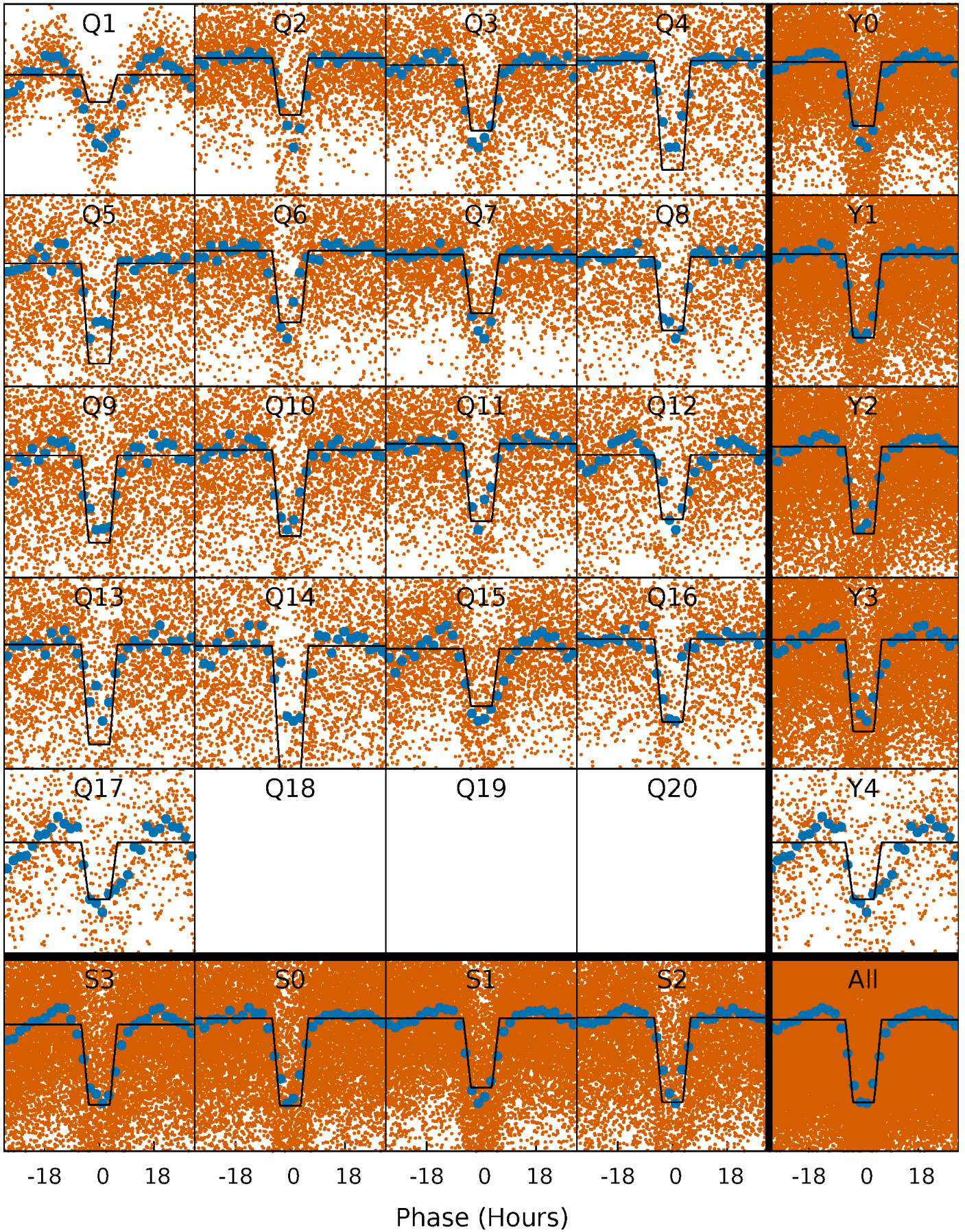
DV Quarter-Phased Transit Curves

TCE 008823868-03 P= 2.766345 Days $T_0=133.491080$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

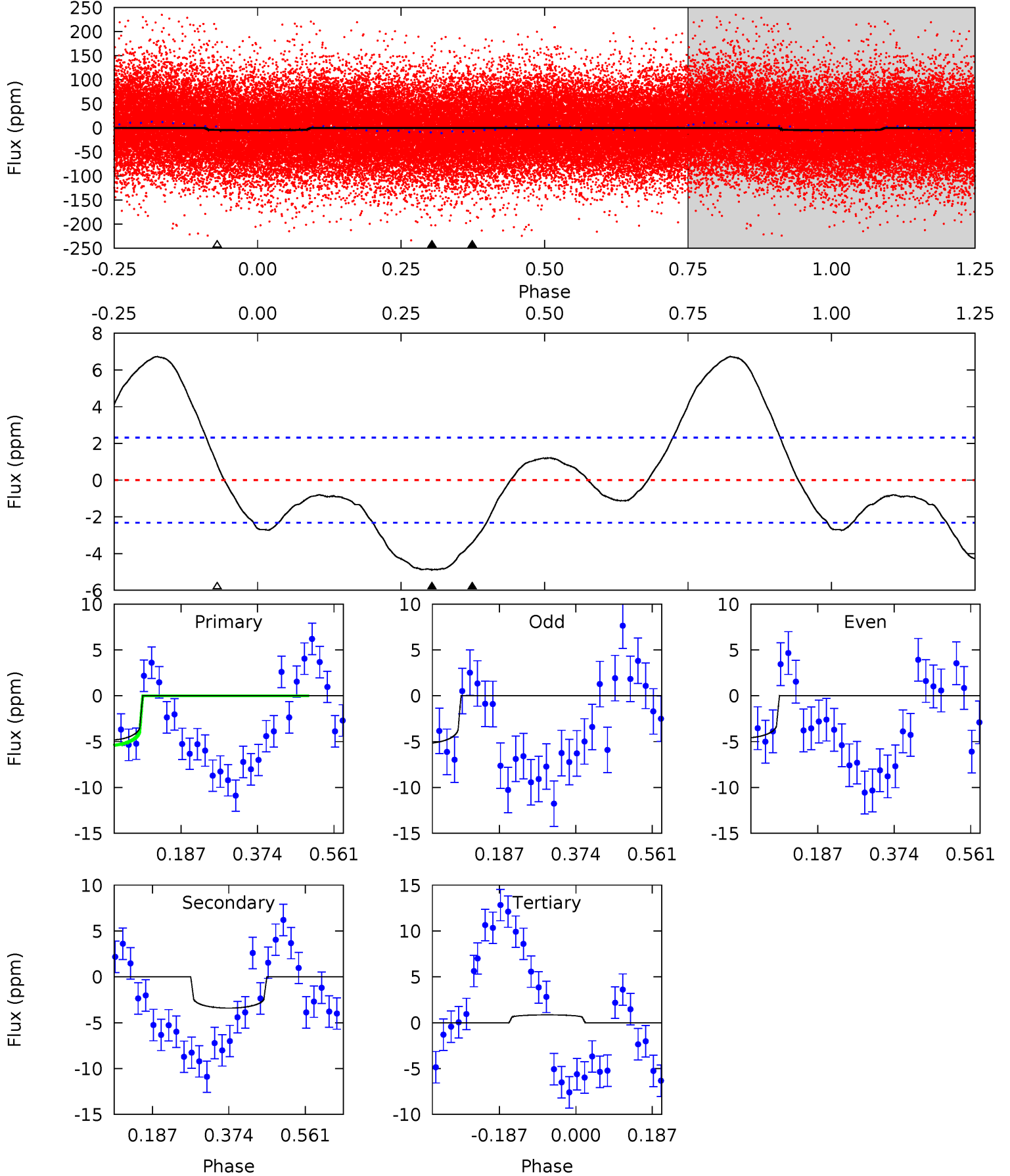
TCE 008823868-03 P= 2.766172 Days $T_0=133.517463$ (BKJD)



DV Model-Shift Uniqueness Test

008823868-03, P = 2.766345 Days, E = 130.724735 Days

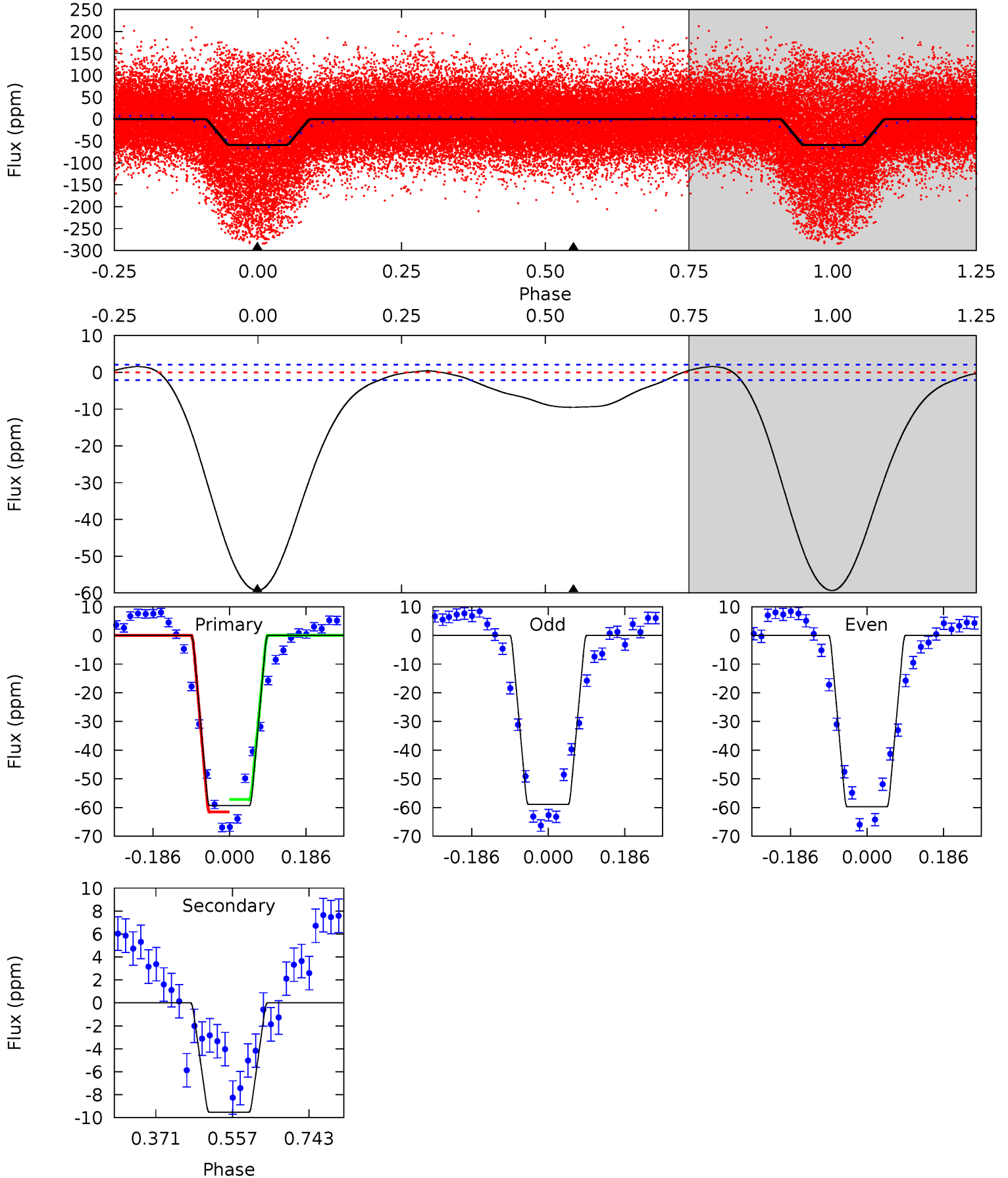
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.33	6.52	-1.63	0	4.43	1.32	5.80	11.0	9.33	8.14	6.52	0.55	0.70	0.58	1.07



Alt Model-Shift Uniqueness Test

008823868-03, P = 2.766172 Days, E = 130.751291 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
124.7	20.0	0	0	4.43	1.32	2.75	124.7	124.7	20.0	20.0	0.87	1.15	0.03	4.63



Stellar Parameters For KIC 008823868

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	9974^{+275}_{-413}	$4.048^{+0.115}_{-0.214}$	$0.210^{+0.050}_{-0.400}$	$2.533^{+0.965}_{-0.414}$	$2.615^{+0.371}_{-0.278}$	$0.227^{+0.120}_{-0.122}$
	+3%/-4%	+3%/-5%	+24%/-190%	+38%/-16%	+14%/-11%	+53%/-54%
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 008823868-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3 ± 1	$0.76^{+0.18}_{-0.13}$	4280^{+433}_{-281}	7691^{+961}_{-742}	$8.883^{+5.159}_{-2.923}$
Alt.	-10 ± 0	$2.21^{+0.43}_{-0.25}$	4282^{+367}_{-276}	5607^{+206}_{-195}	$3.040^{+0.720}_{-0.844}$

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

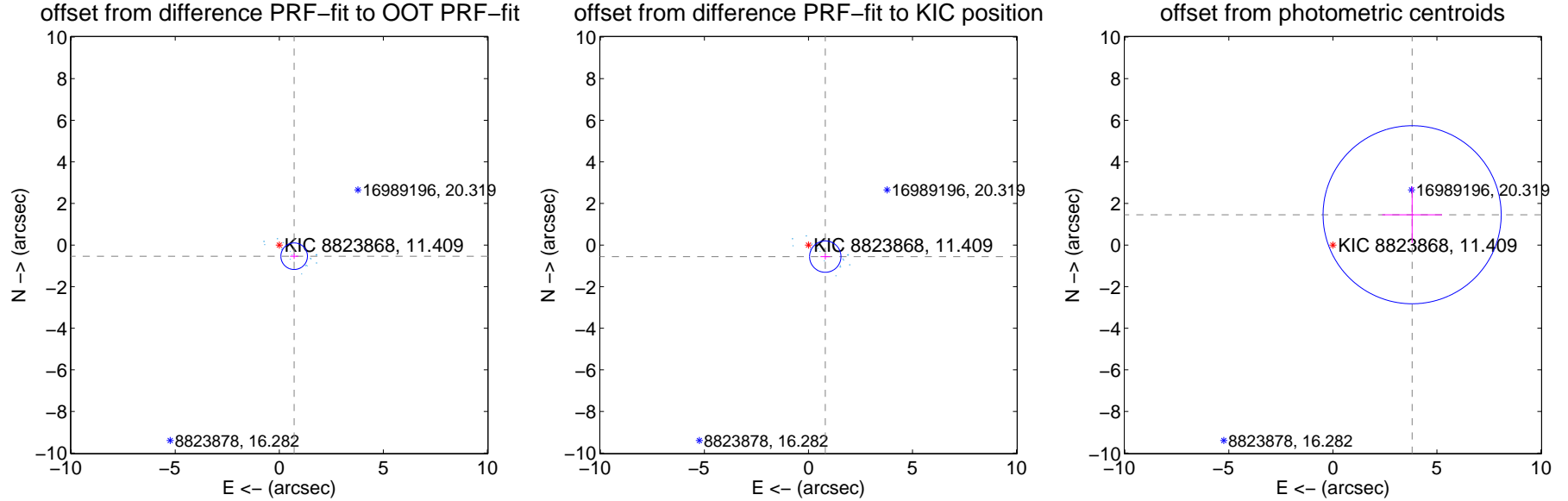
DV Centroid Data

Supplemental centroid analysis for 008823868-03. **Kepler magnitude: 11.41.** Transit SNR 7.77

There are 17 quarters with good PRF difference image offsets

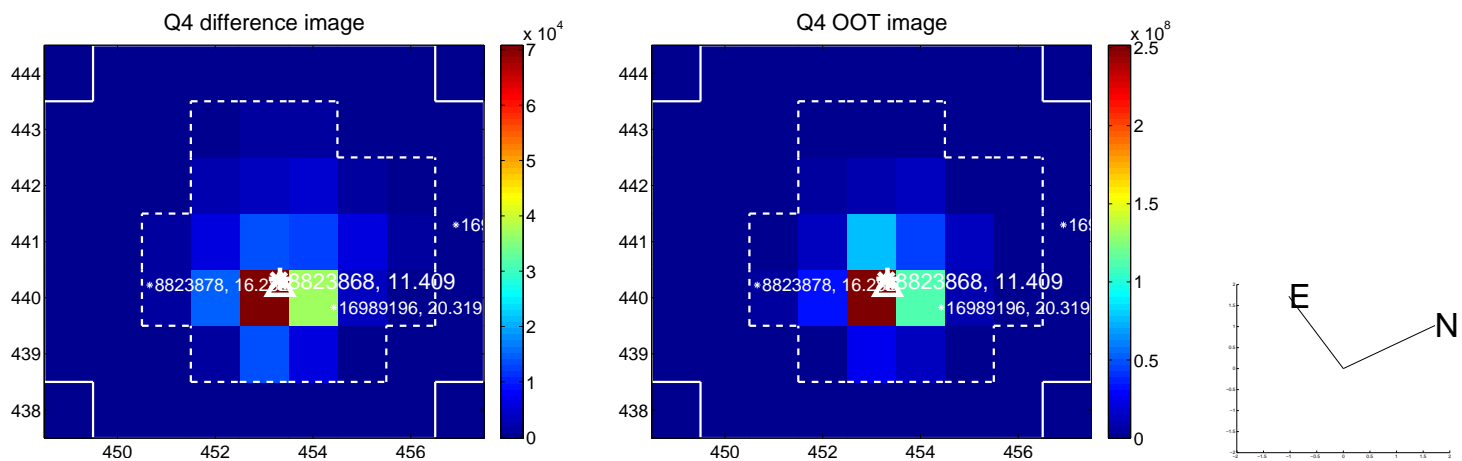
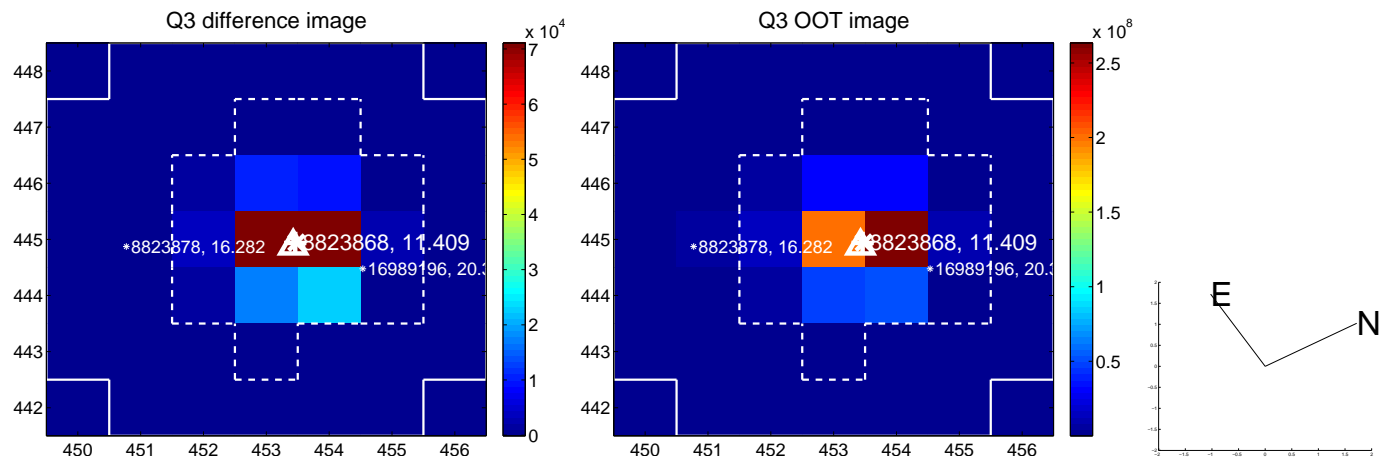
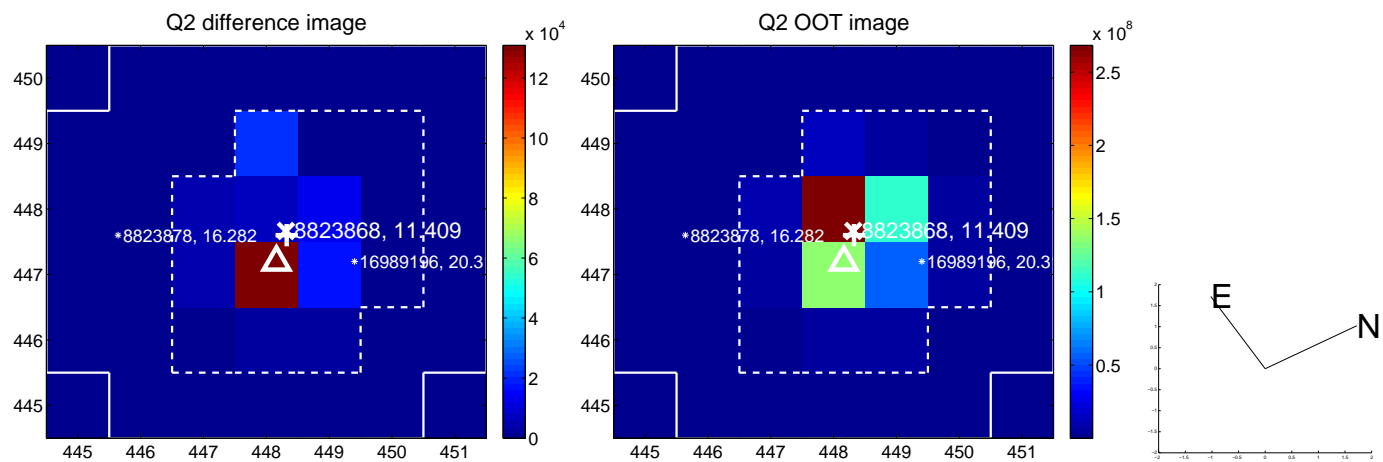
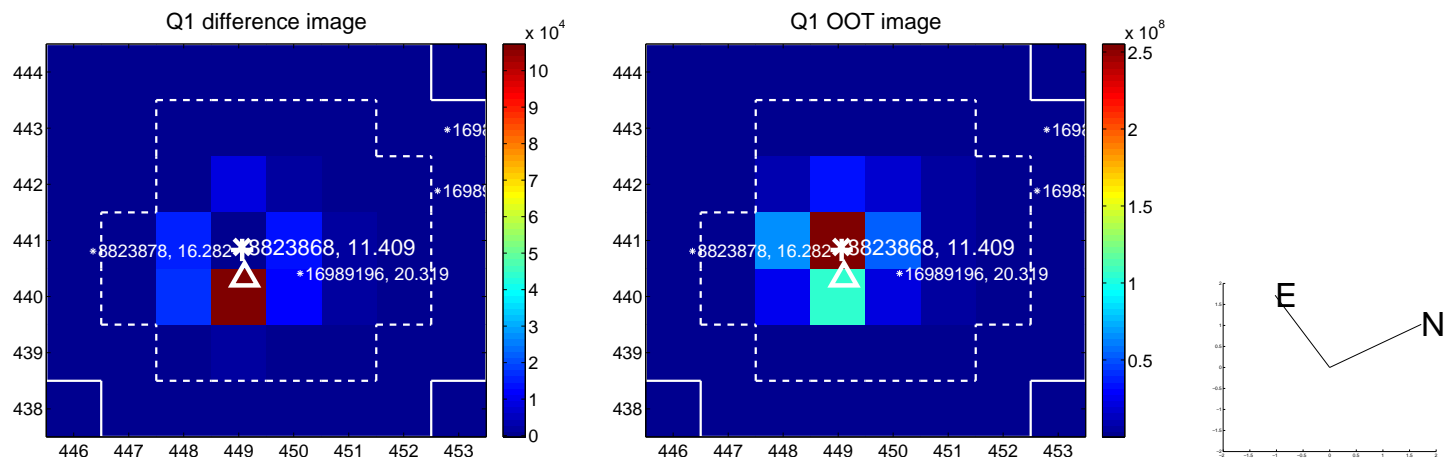
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.895 ± 0.213	4.20	-0.715 ± 0.196	-0.537 ± 0.128
PRF-fit source offset from KIC position	0.981 ± 0.251	3.90	-0.809 ± 0.232	-0.556 ± 0.139
photometric centroid source offset	4.08 ± 1.43	2.86	-3.81 ± 1.44	1.46 ± 1.35

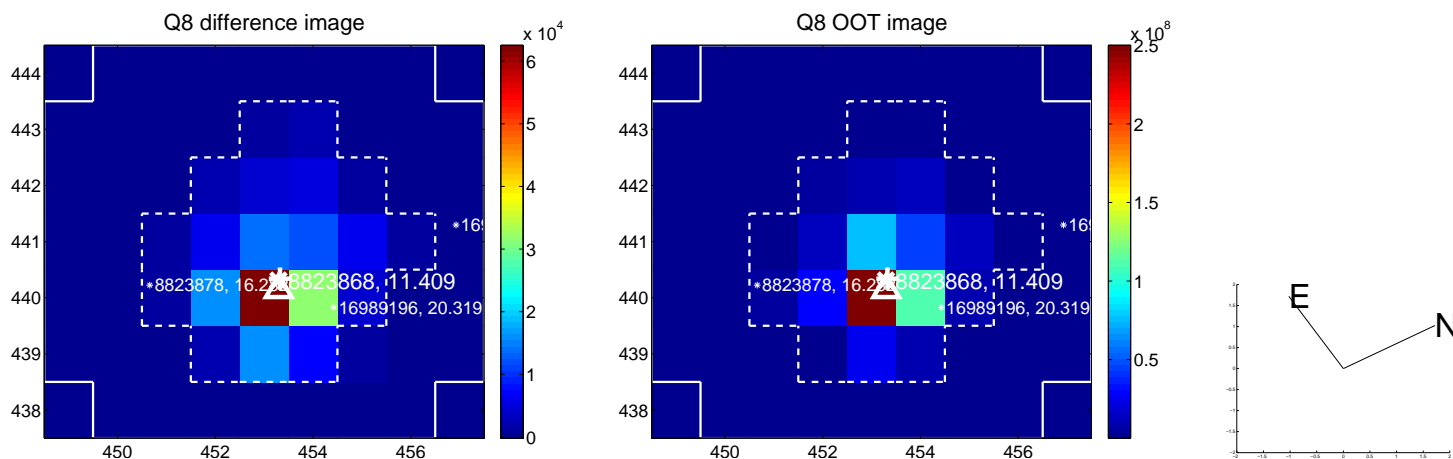
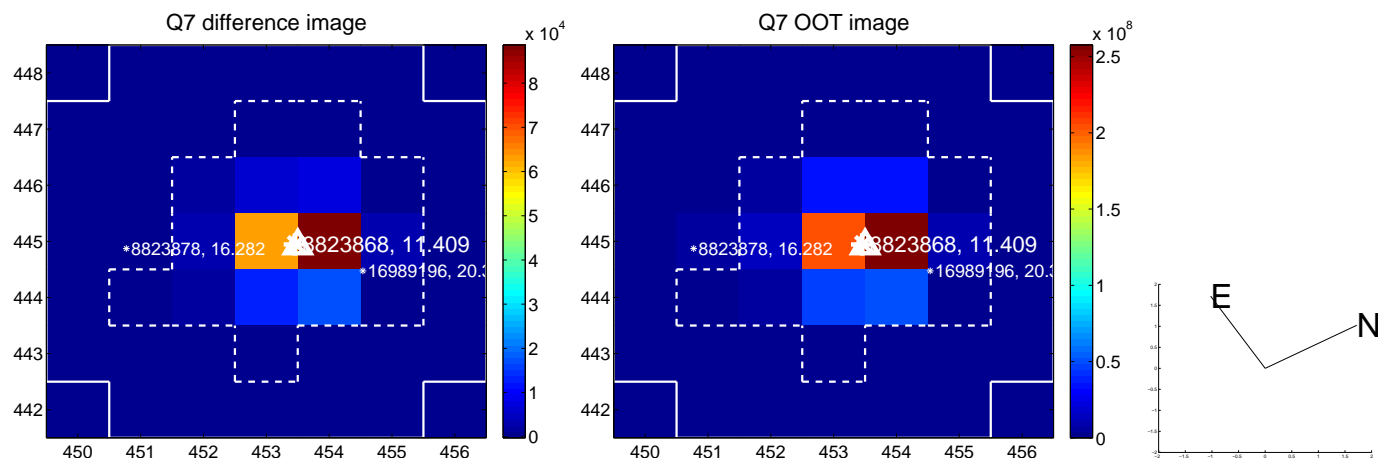
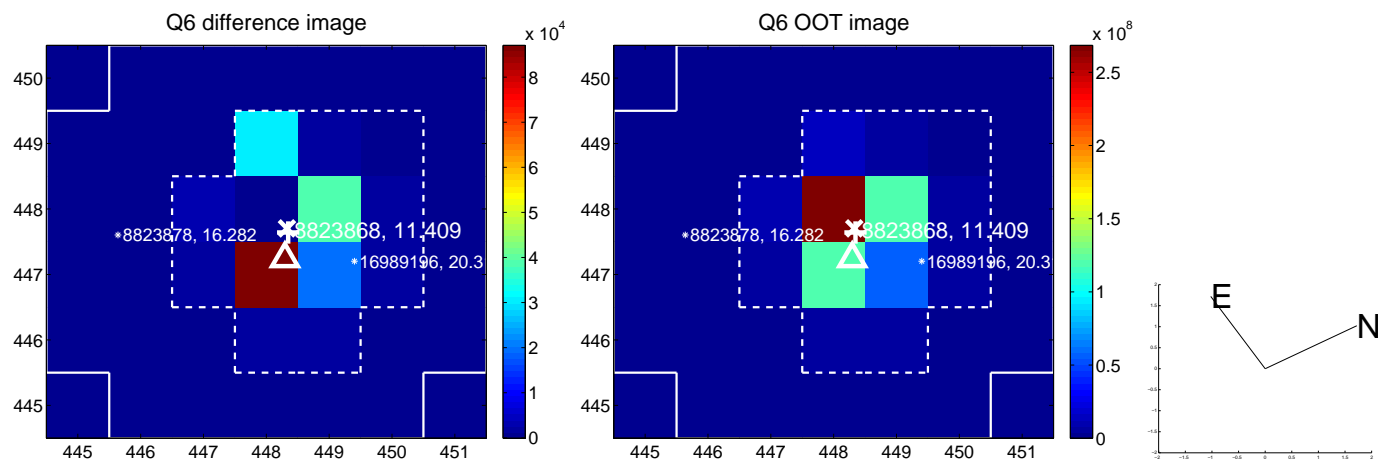
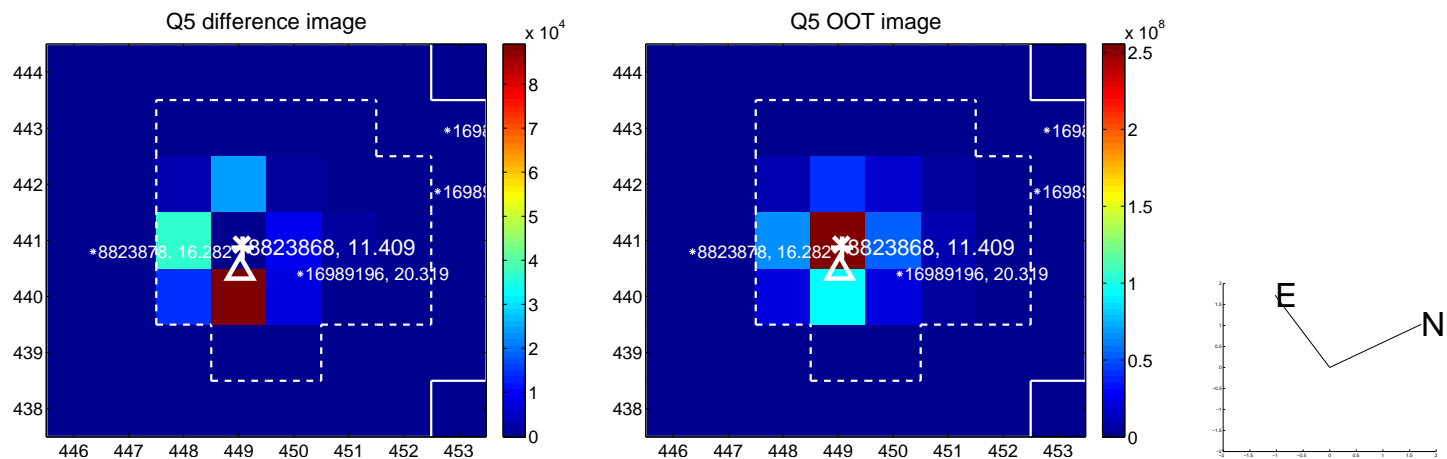


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

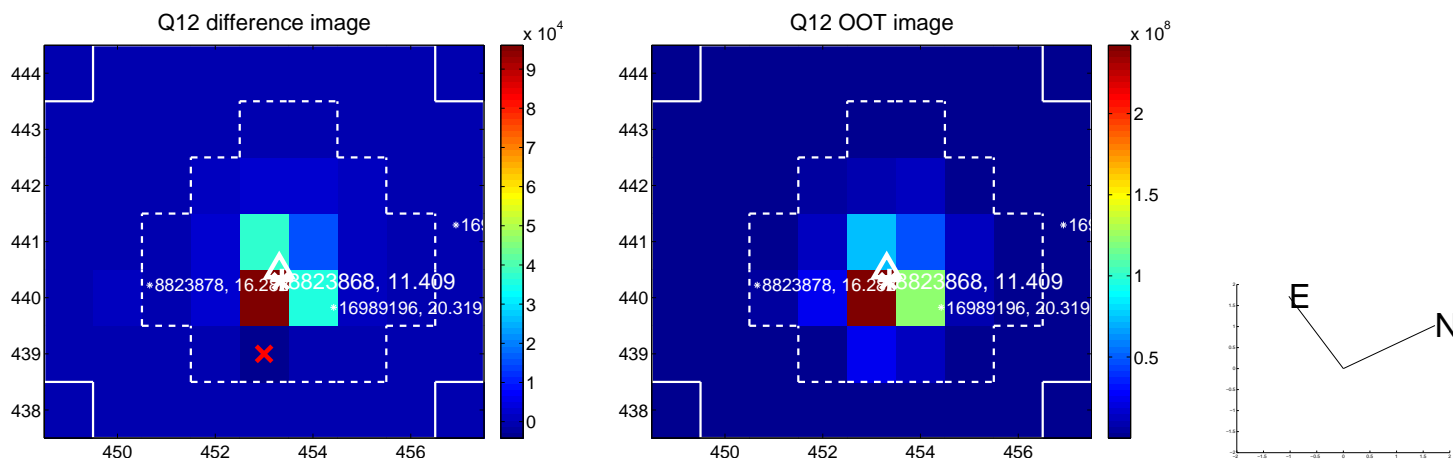
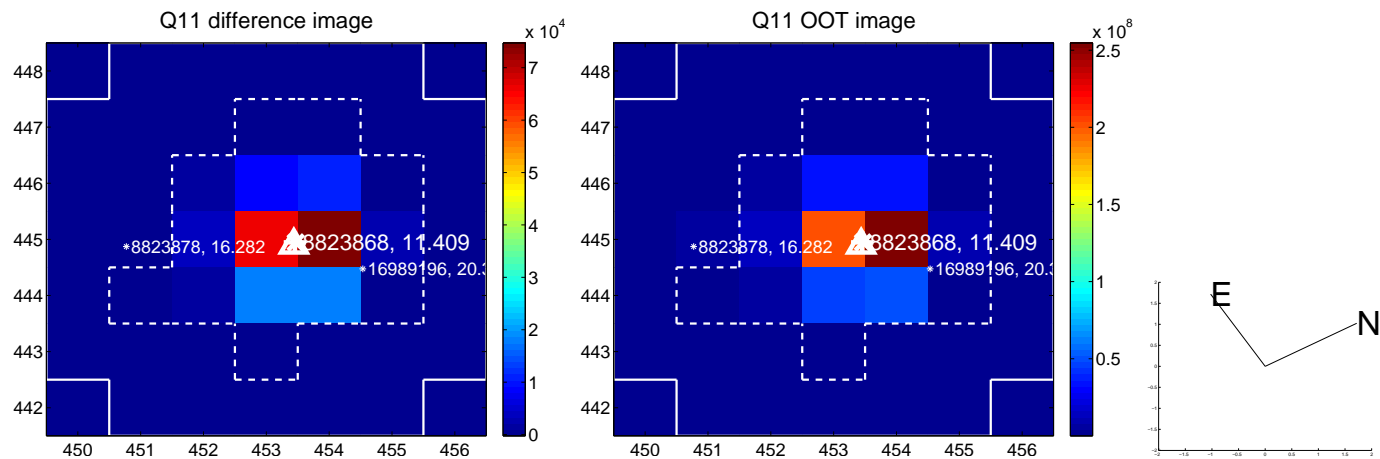
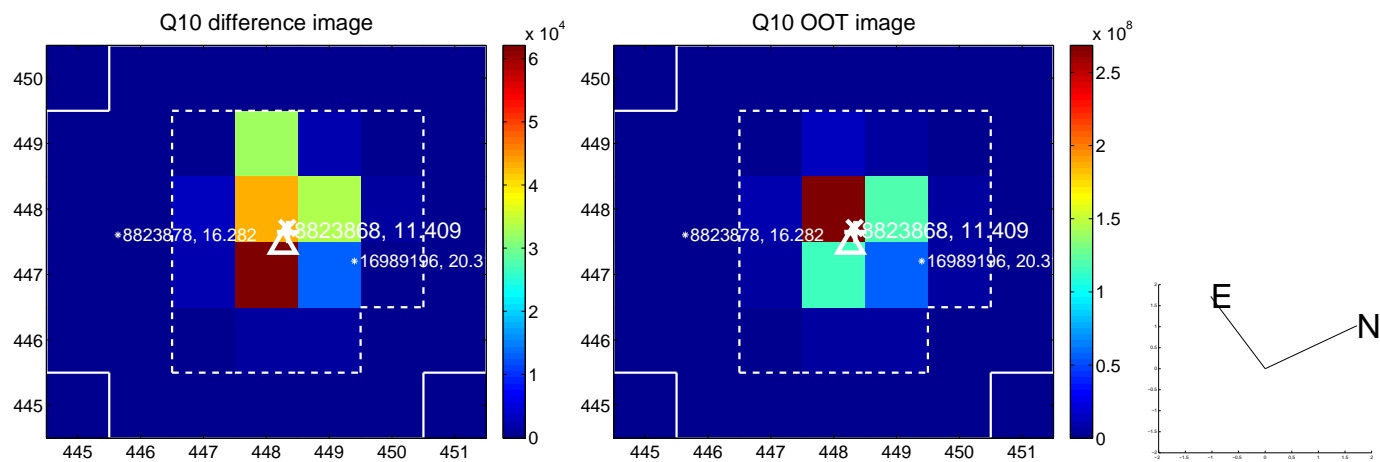
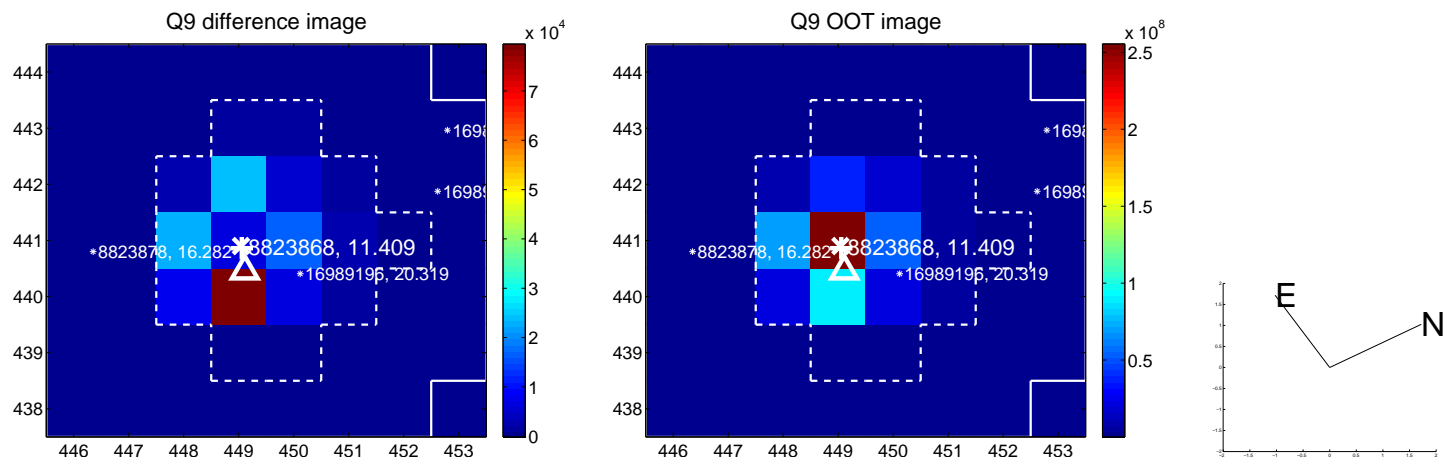
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



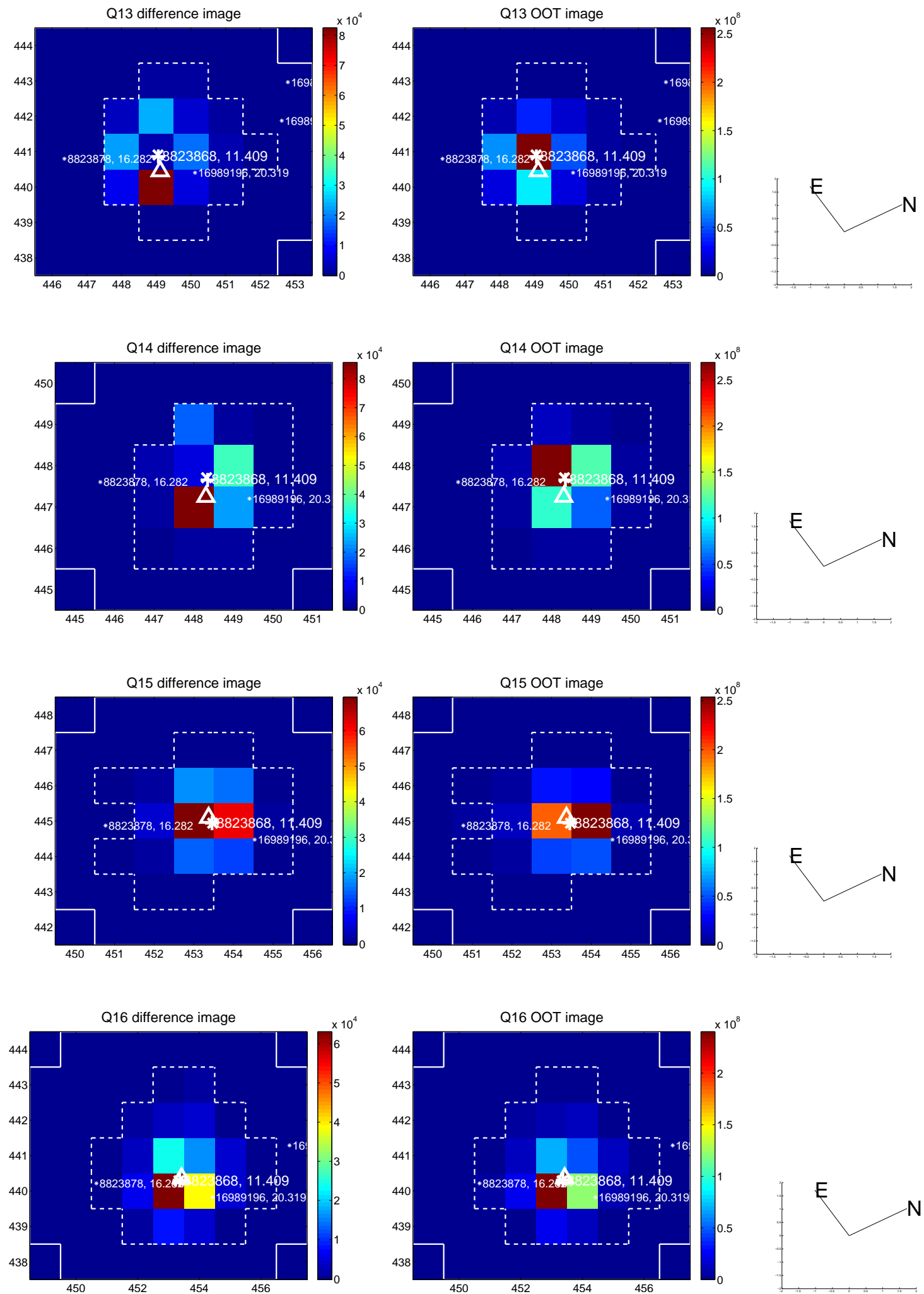
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



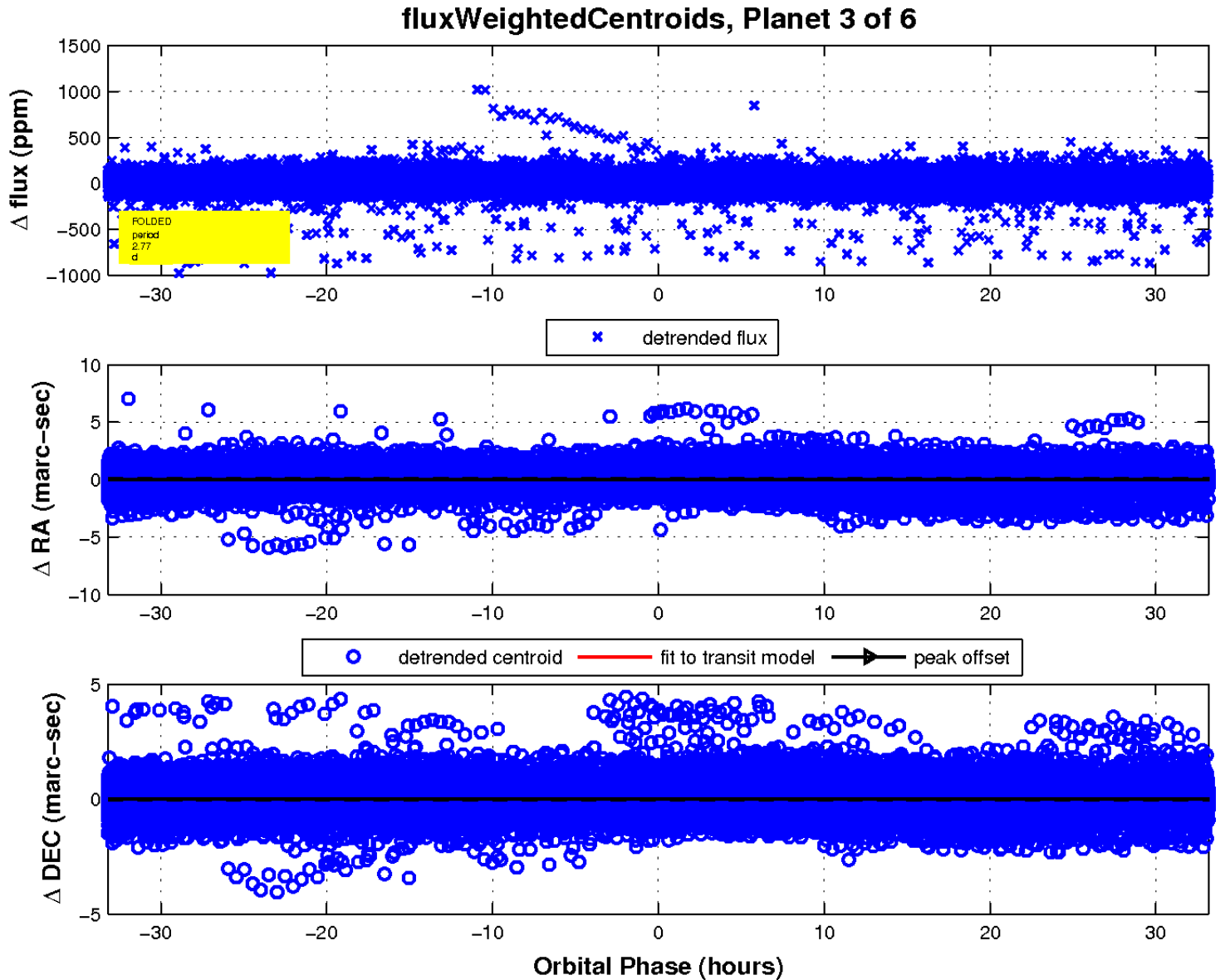
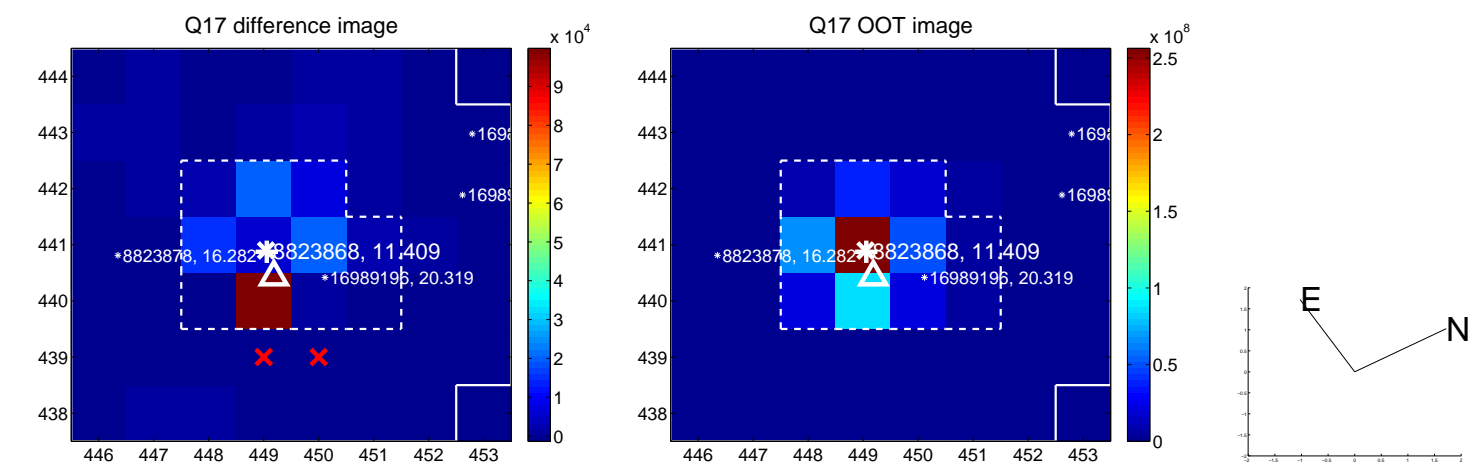
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

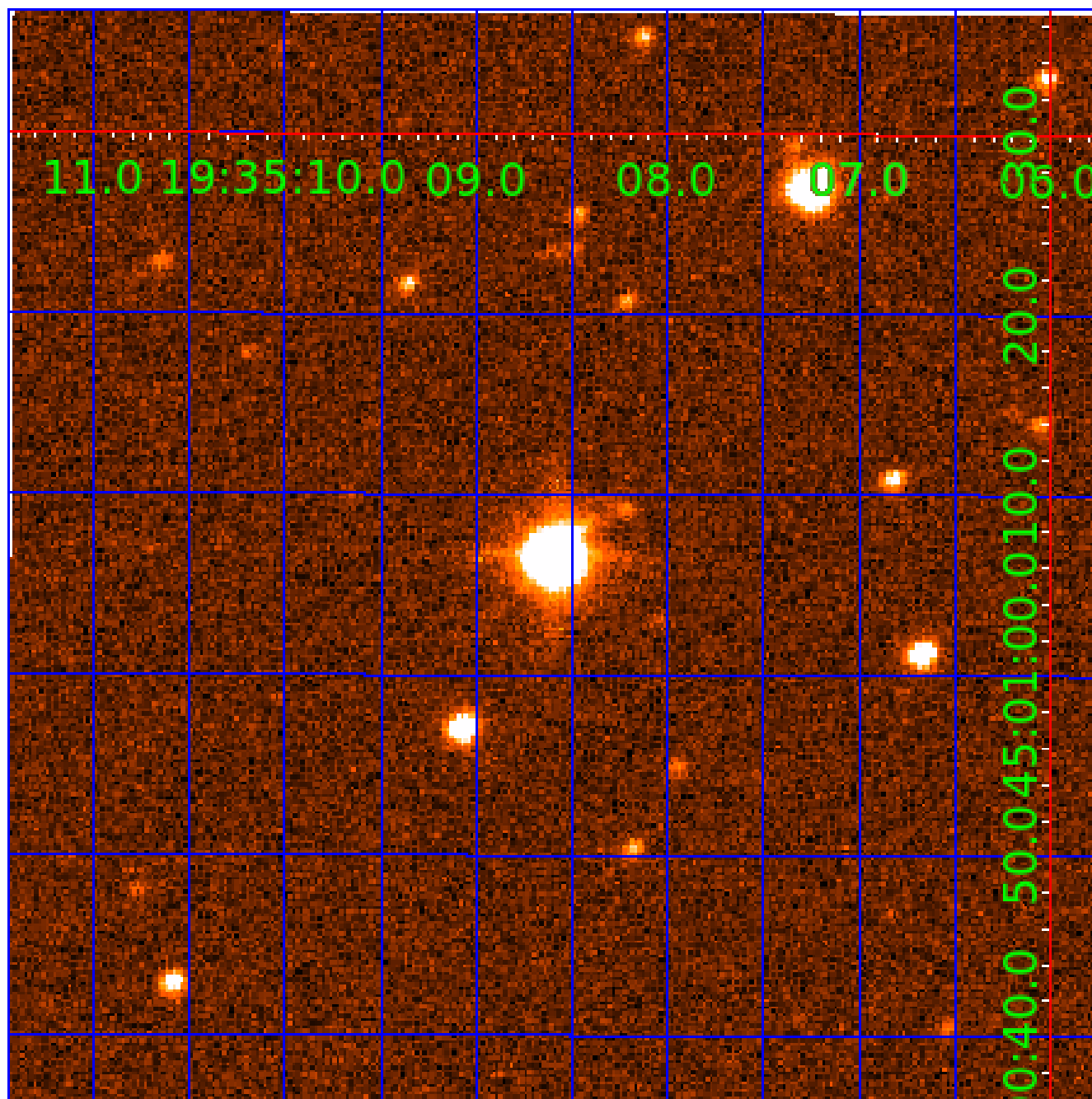


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008823868

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})
008823868-01	OBS	No	23.876136	155.008707	5216.6	9.729	1762.4	1310.8	2.53	9974	18.75	1138.09
008823868-02	OBS	0081.01	23.876136	143.069948	1631.3	9.448	537.8	534.7	2.53	9974	10.78	1138.09
008823868-03	OBS	No	2.766345	133.491080	7.5	11.970	8.5	7.8	2.53	9974	0.74	20149.00
008823868-04	OBS	No	112.864378	151.414628	45.8	15.416	8.0	6.4	2.53	9974	1.90	143.46
008823868-05	OBS	No	234.607080	248.550170	92.5	6.775	7.5	7.8	2.53	9974	2.73	54.08
008823868-06	OBS	No	298.344256	185.313944	98.4	4.843	7.3	7.3	2.53	9974	2.87	39.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008823868-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
008823868-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—CENT_SATURATED
008823868-03	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
008823868-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008823868-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008823868-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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.

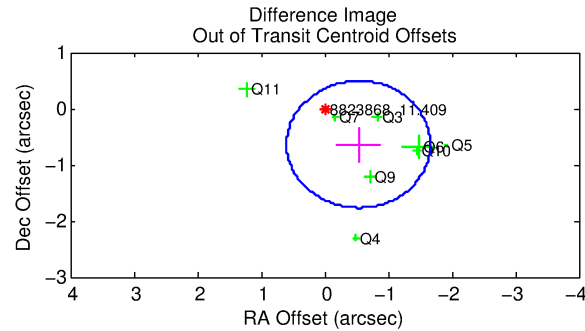
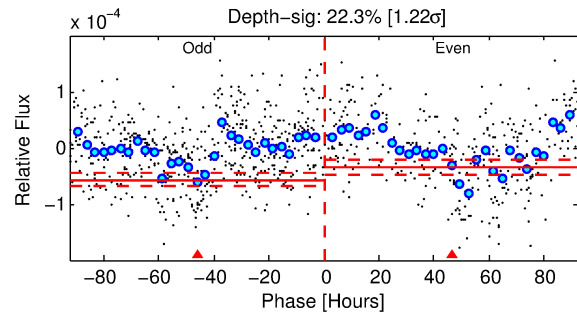
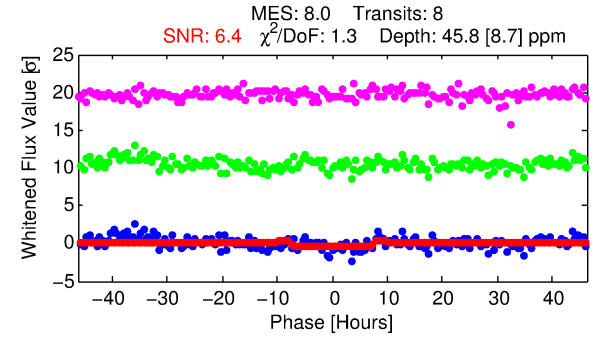
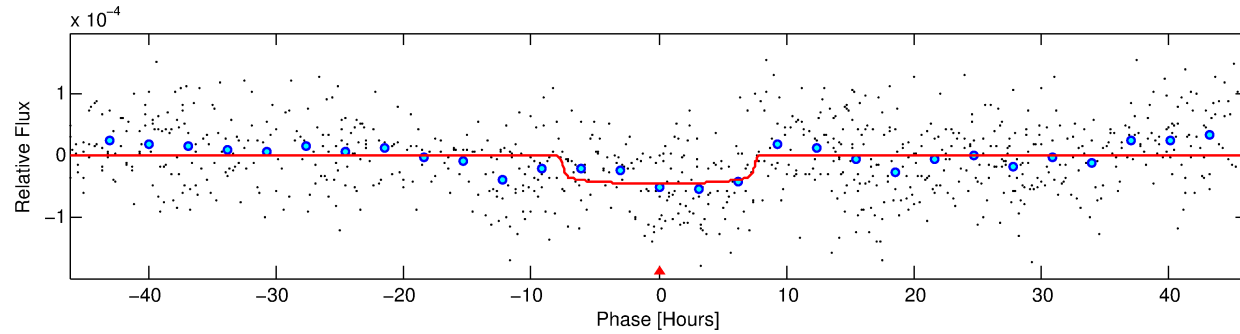
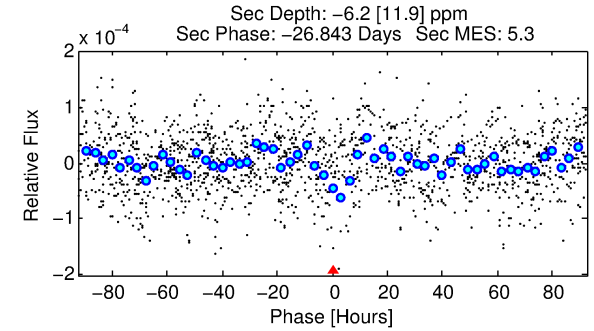
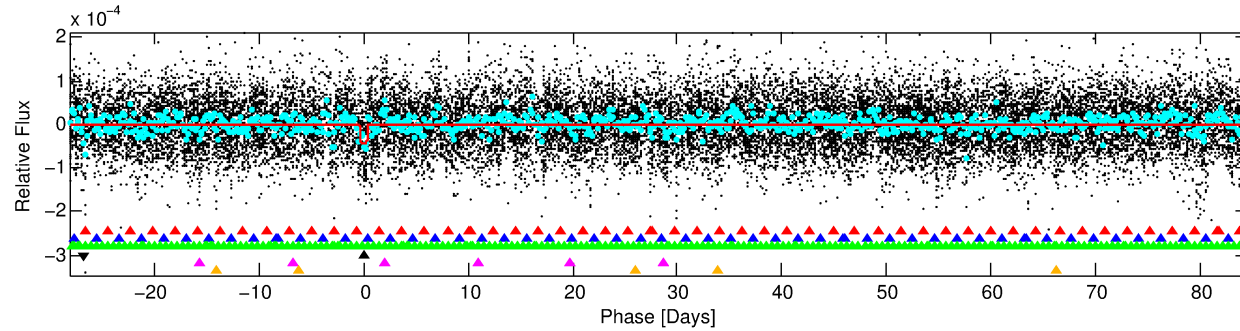
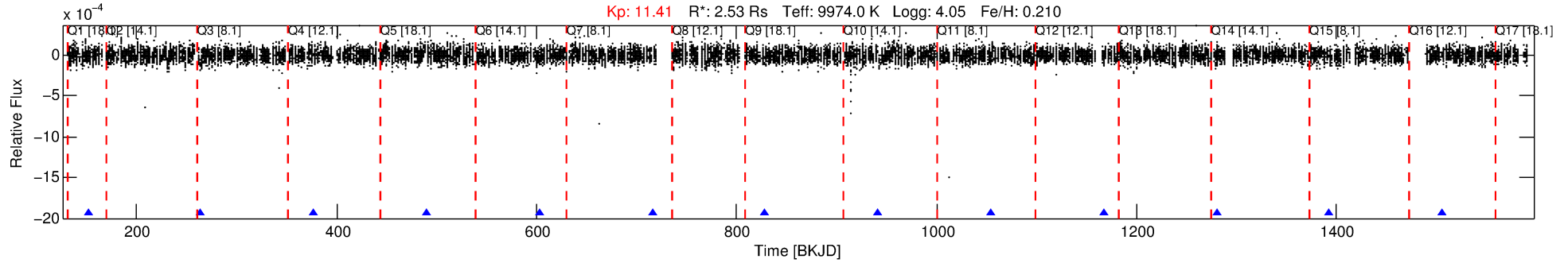
Ephemeris Match Information For 008823868-04

No Significant Match Found

DV One-Page Summary

KIC: 8823868 Candidate: 4 of 6 Period: 112.864 d

KOI: K00081 Corr: No Ephemeris Match



DV Fit Results:

Period = 112.86438 [0.00280] d
Epoch = 151.4146 [0.0201] BKJD
Rp/R* = 0.0069 [0.0012]
a/R* = 31.97 [34.84]
b = 0.83 [0.41]
Seff = 143.46 [64.13]
Teff = 882 [99] K
Rp = 1.90 [0.80] Re
a = 0.6297 [0.1905] AU
Ag = N/A
Teffp = N/A

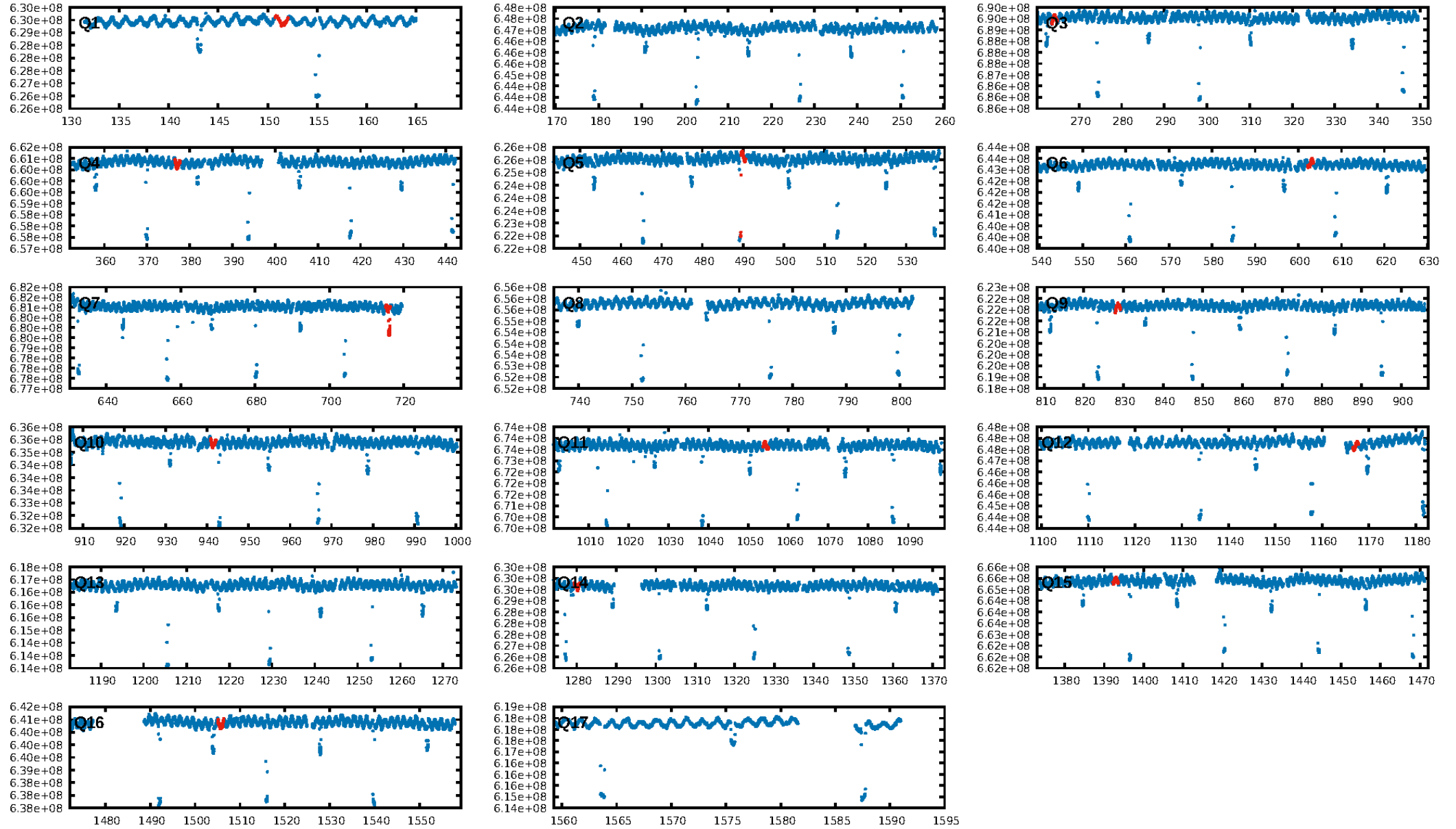
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [118.12σ]
LongPeriod-sig: 100.0% [173.52σ]
ModelChiSquare2-sig: 1.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.73e-09
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 1.286
Centroid-sig: 68.7%
Centroid-so: 0.647 arcsec [0.51σ]
OotOffset-rm: 0.830 arcsec [2.21σ]
KicOffset-rm: 0.851 arcsec [2.55σ]
OotOffset-st: 2/3/1/2 [8]
KicOffset-st: 2/3/1/2 [8]
DiffImageQuality-fgm: 0.25 [2/8]
DiffImageOverlap-fno: 0.00 [0/9]

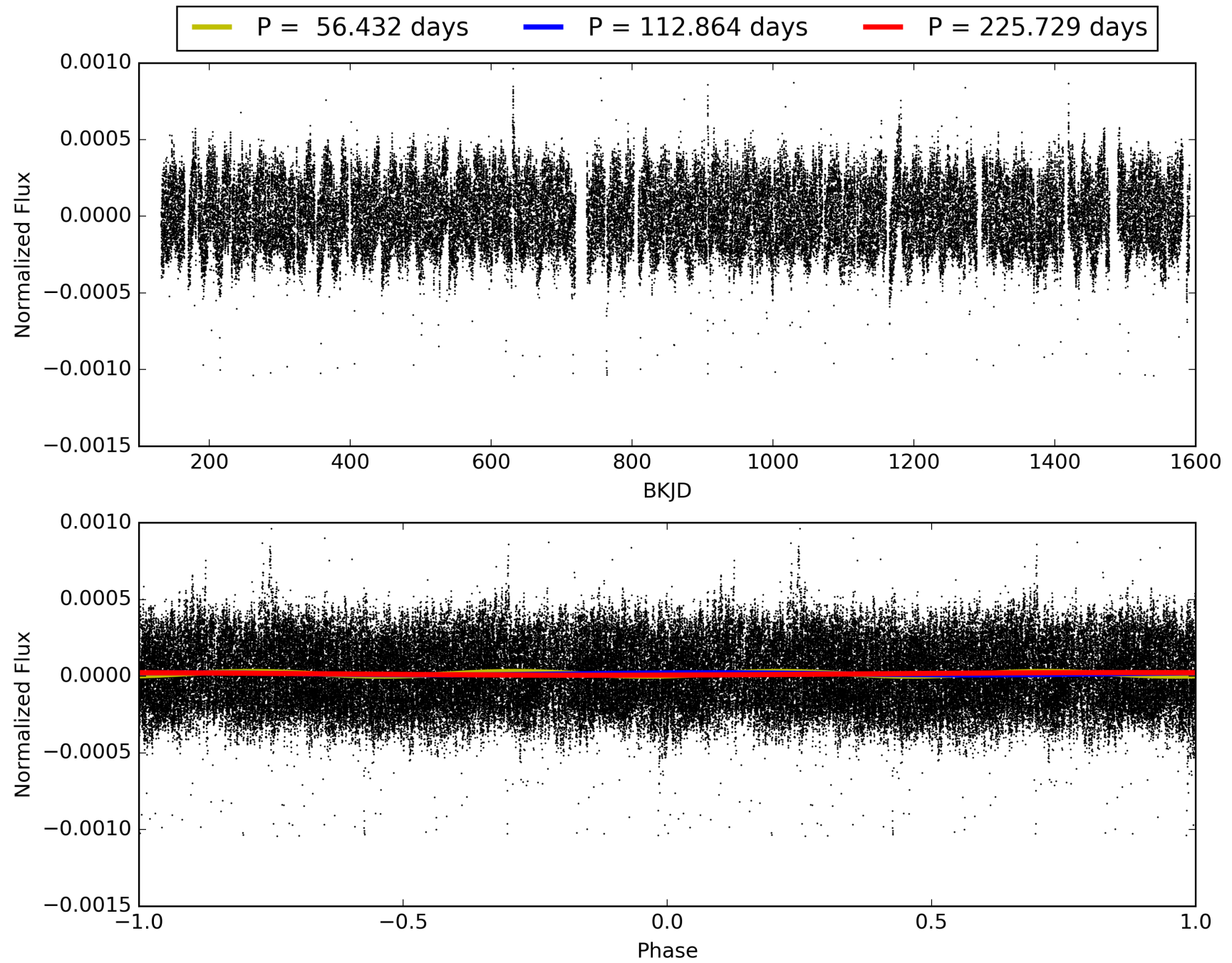
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 20:09:36 Z

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

TCE 008823868-04, PDC Light Curves

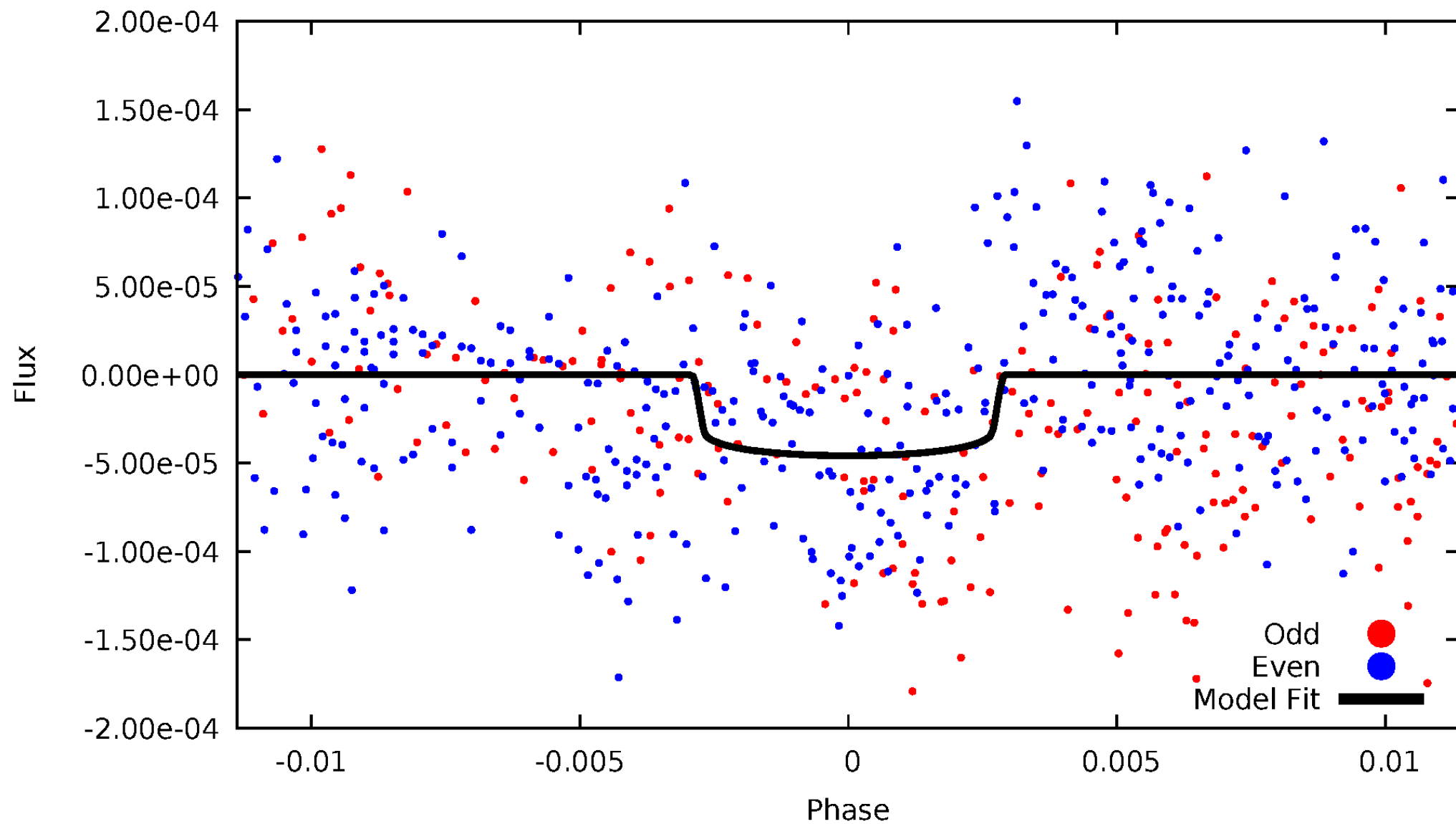


TCE 008823868-04



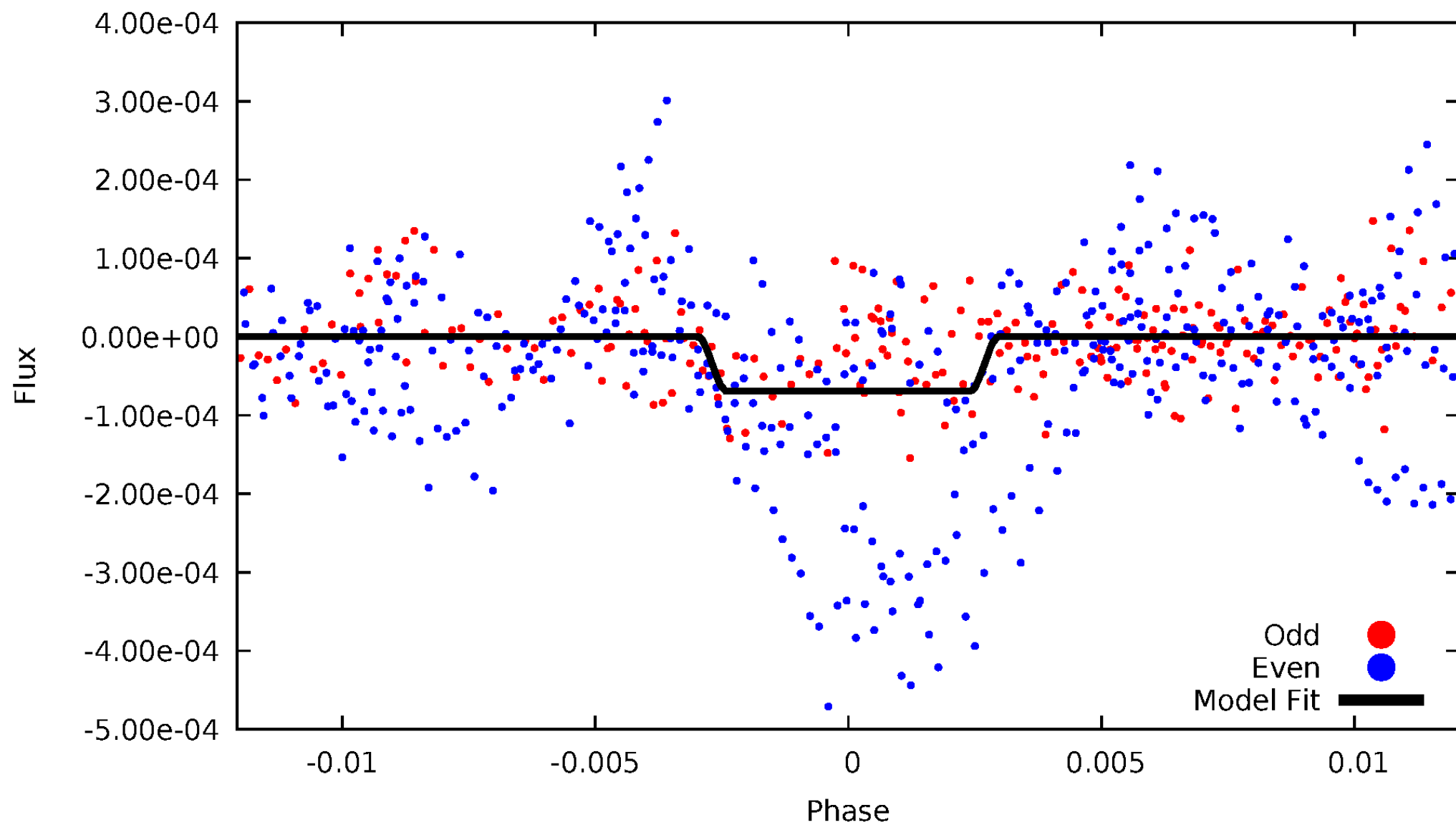
DV Odd/Even

TCE 008823868-04



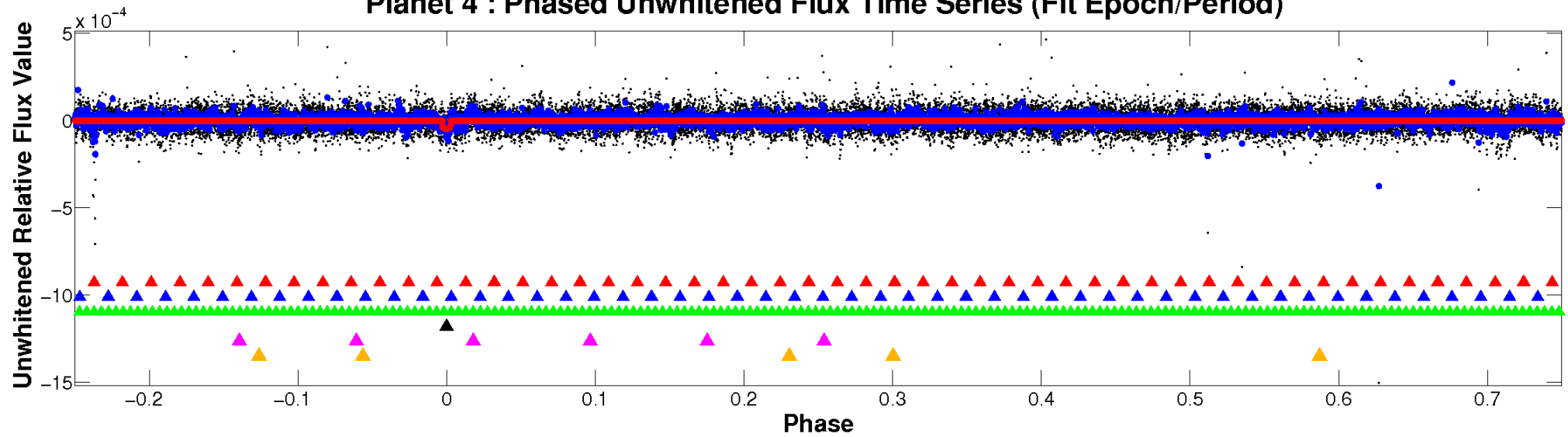
ALT Odd/Even

TCE 008823868-04

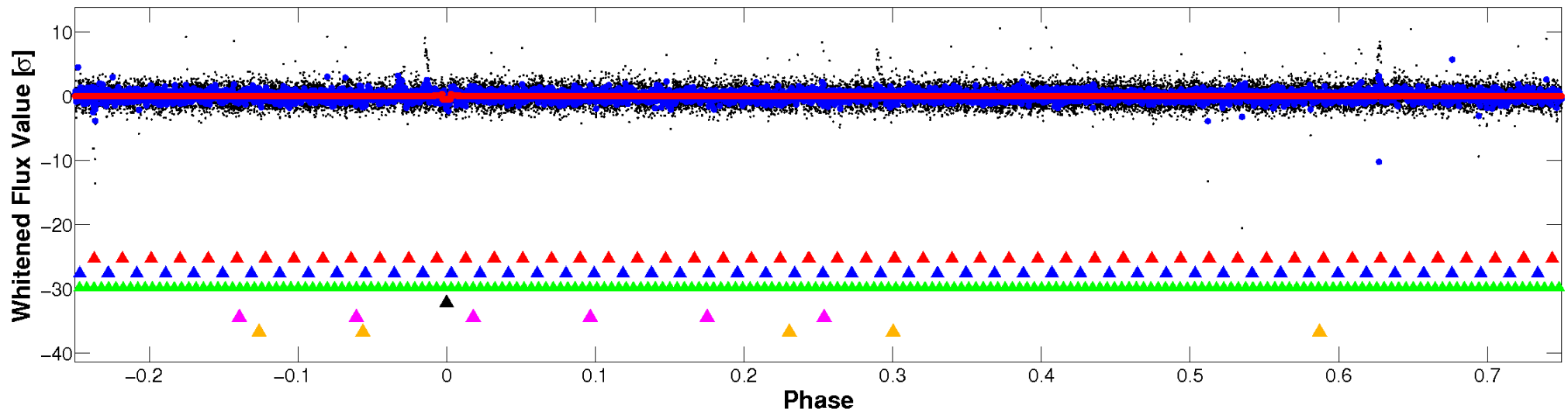


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

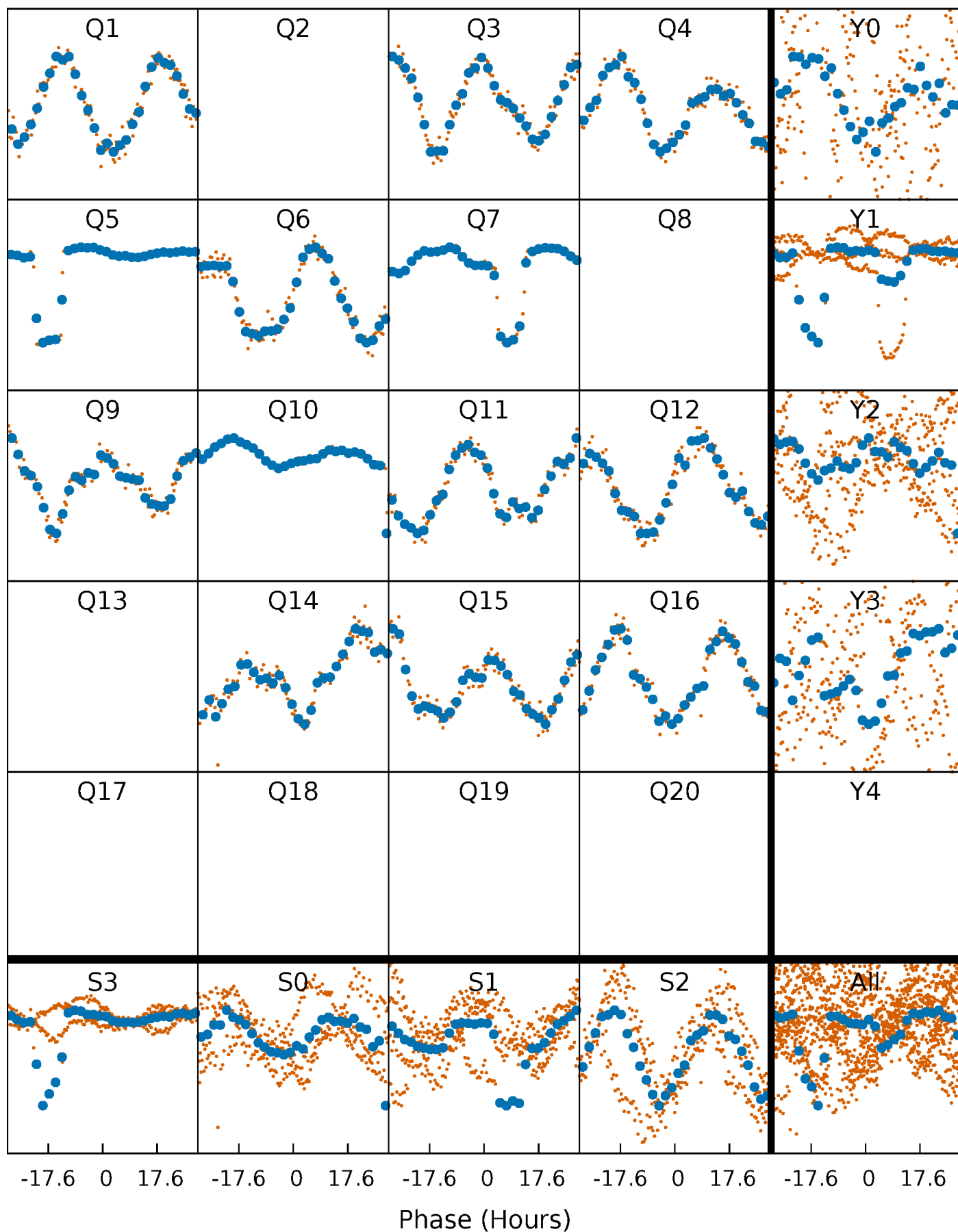


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



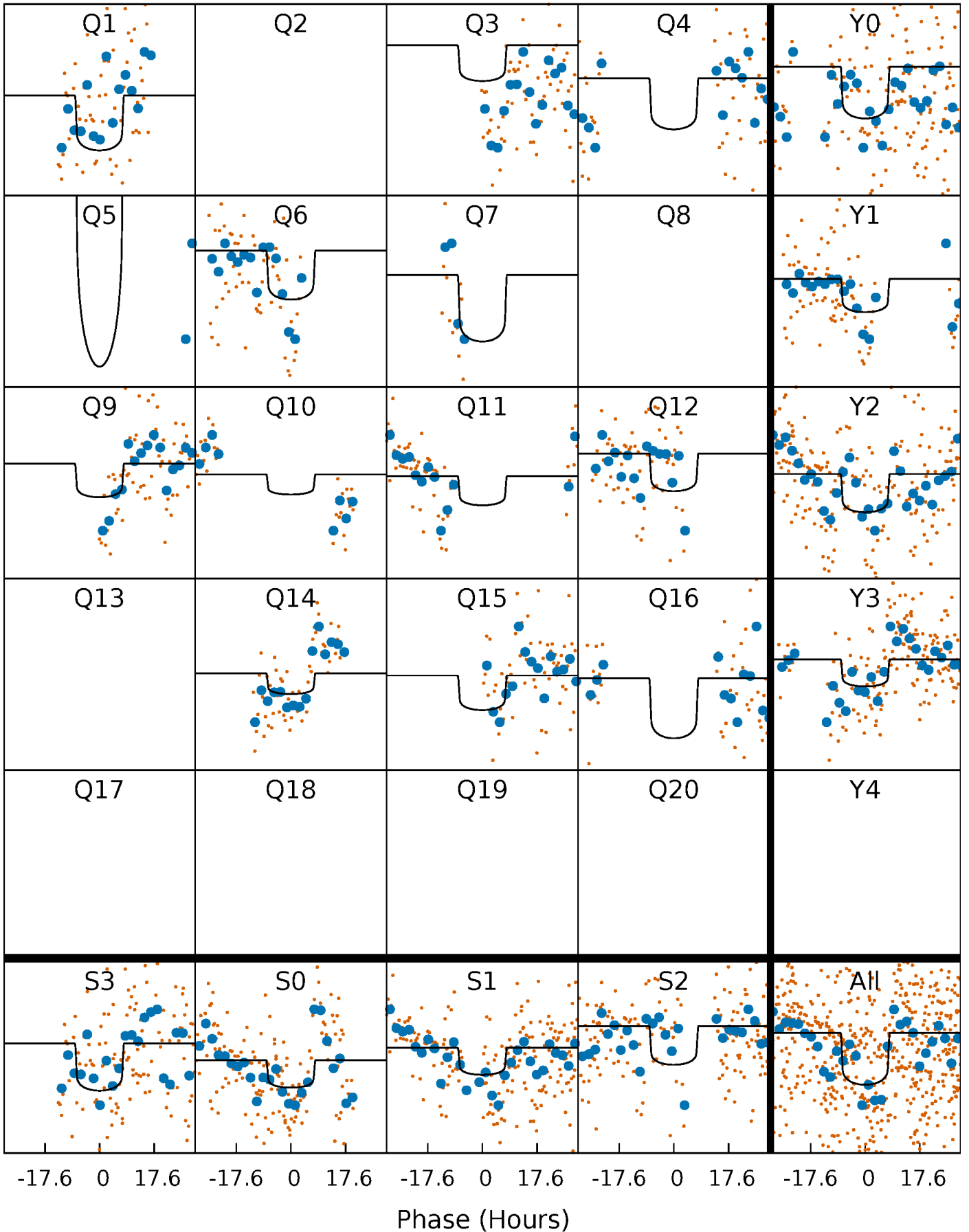
PDC Quarter-Phased Transit Curves

TCE 008823868-04 $P=112.864378$ Days $T_0=151.414628$ (BKJD)



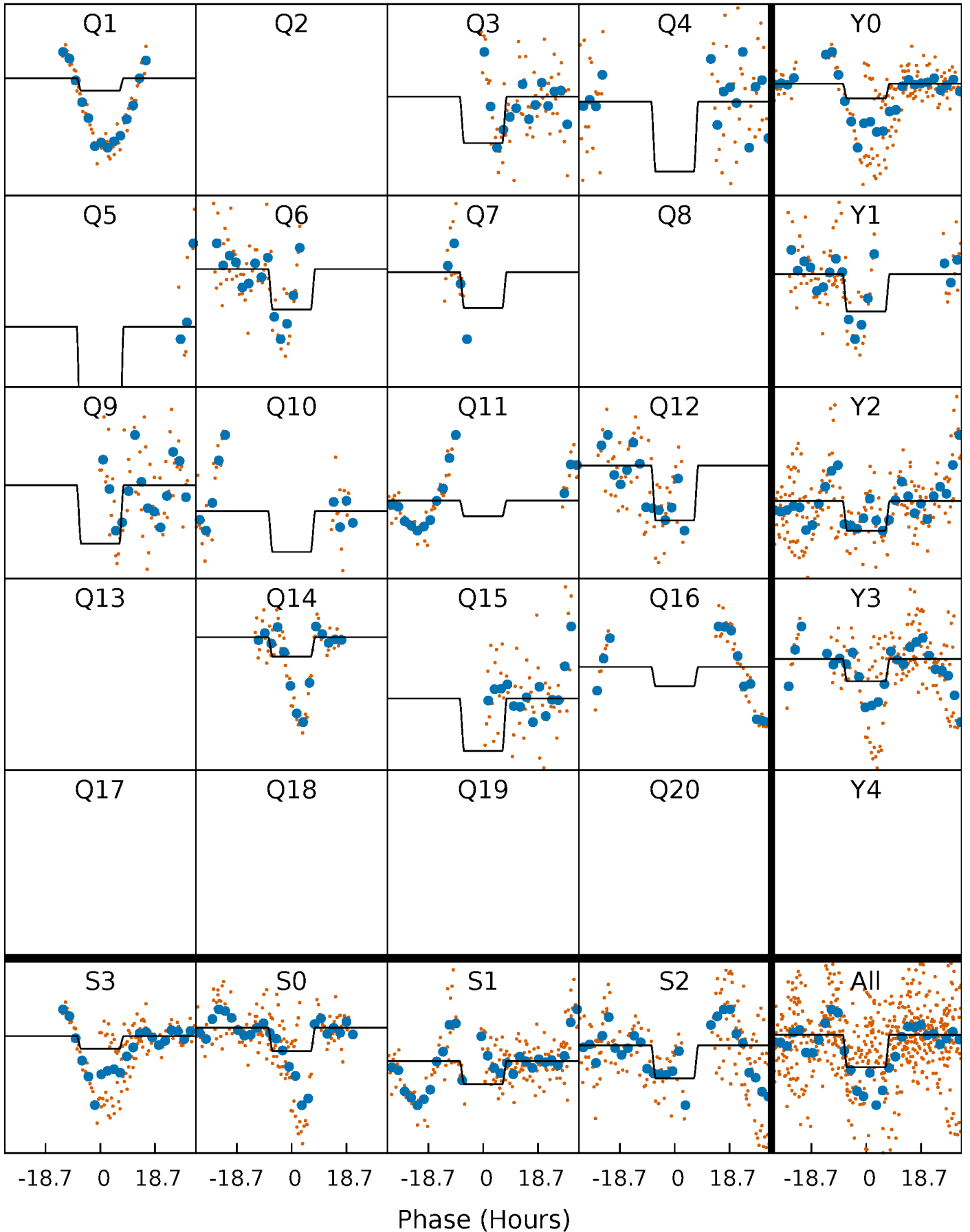
DV Quarter-Phased Transit Curves

TCE 008823868-04 P=112.864378 Days $T_0=151.414628$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

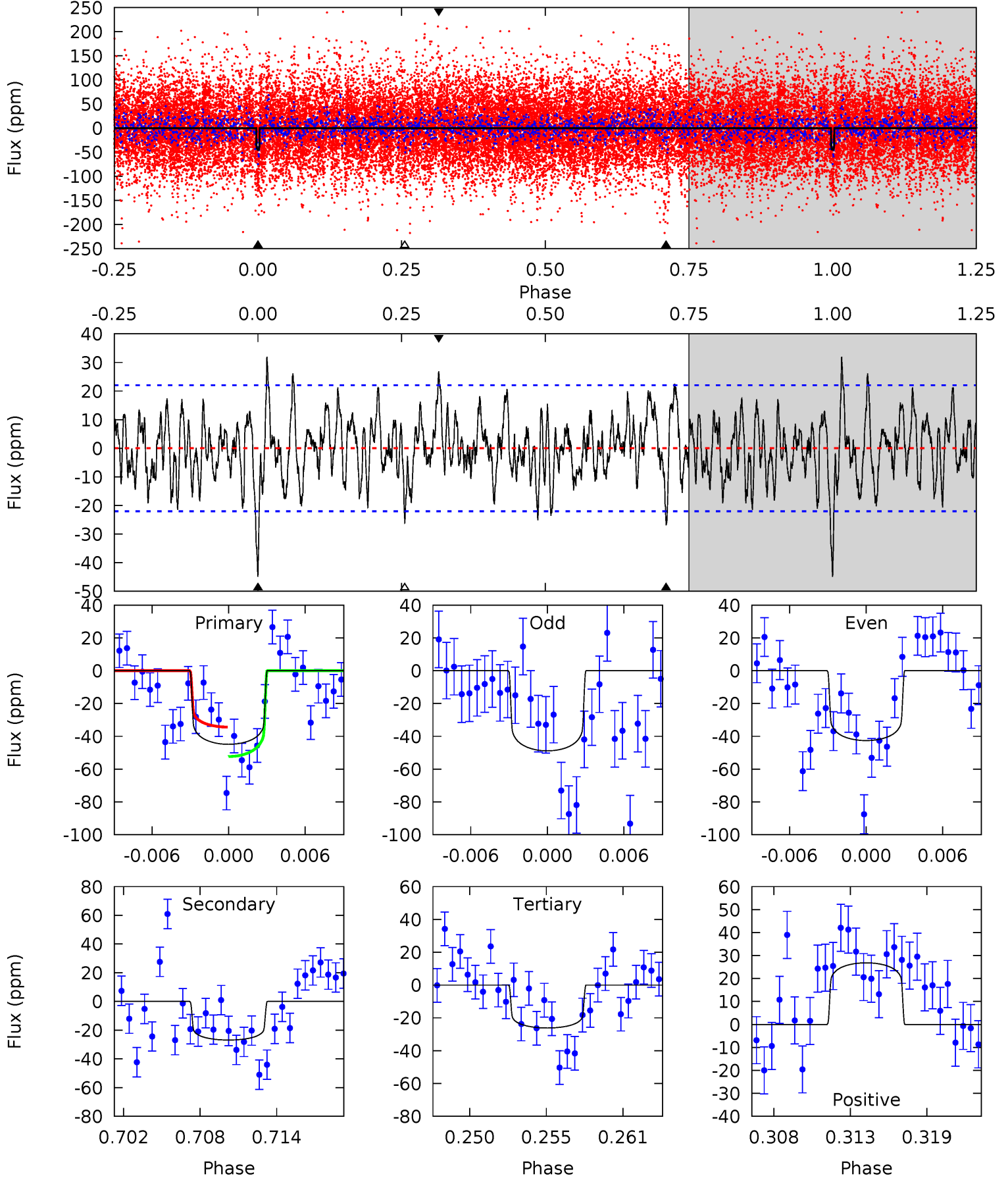
TCE 008823868-04 P=112.861363 Days $T_0=151.439350$ (BKJD)



DV Model-Shift Uniqueness Test

008823868-04, P = 112.864378 Days, E = 38.550250 Days

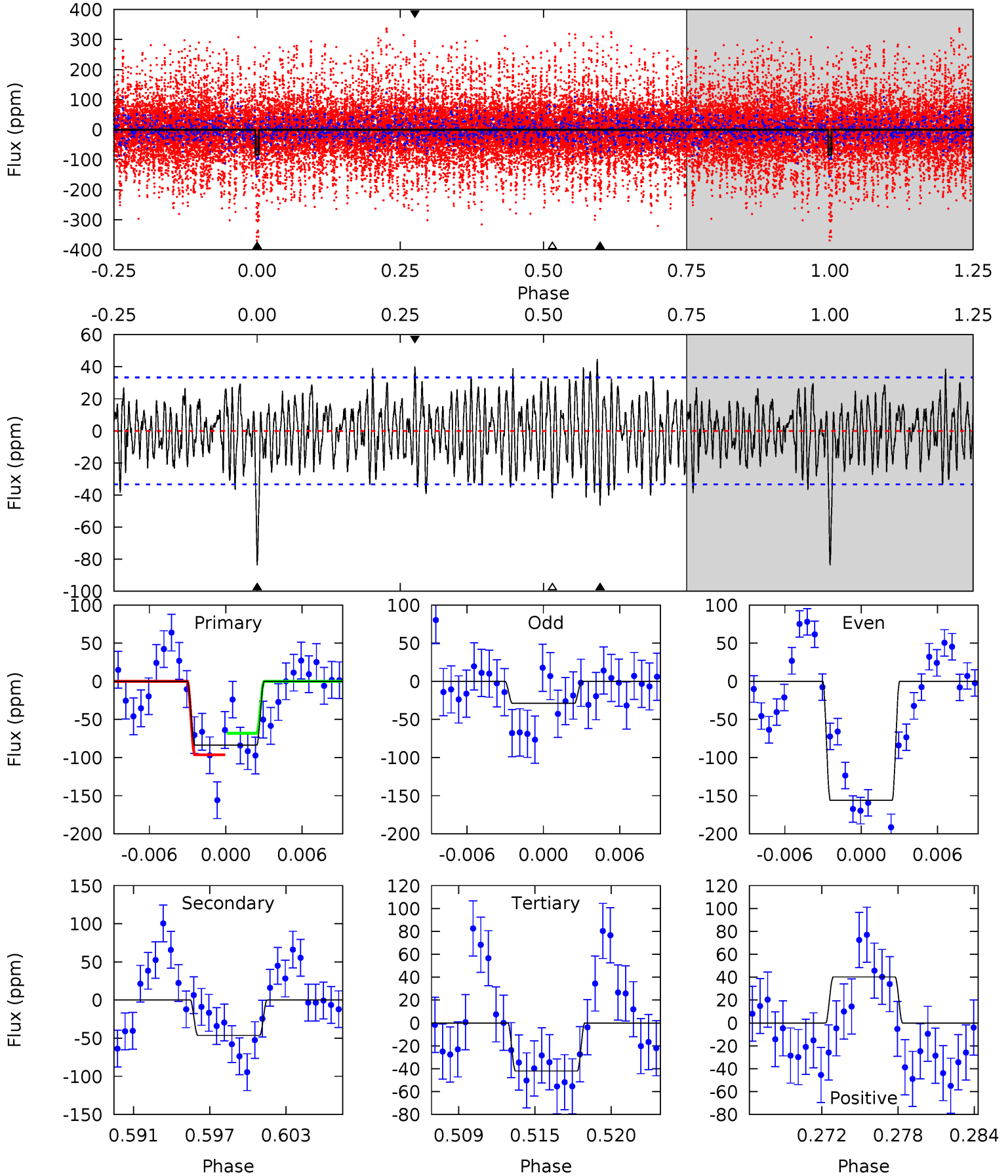
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.4	6.25	6.08	6.24	5.13	2.76	2.13	4.35	4.20	0.17	0.02	0.70	1.11	0.42	2.06



Alt Model-Shift Uniqueness Test

008823868-04, P = 112.861363 Days, E = 38.577987 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	7.13	6.45	6.17	5.13	2.75	2.44	6.40	6.69	0.68	0.96	10.2	1.41	0.35	0



Stellar Parameters For KIC 008823868

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	9974^{+275}_{-413}	$4.048^{+0.115}_{-0.214}$	$0.210^{+0.050}_{-0.400}$	$2.533^{+0.965}_{-0.414}$	$2.615^{+0.371}_{-0.278}$	$0.227^{+0.120}_{-0.122}$
	+3%/-4%	+3%/-5%	+24%/-190%	+38%/-16%	+14%/-11%	+53%/-54%
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 008823868-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-27 ± 4	$1.95^{+0.51}_{-0.41}$	1243^{+114}_{-77}	8262^{+1227}_{-978}	1519^{+966}_{-569}
Alt.	-46 ± 7	$2.41^{+0.47}_{-0.48}$	1245^{+108}_{-79}	8614^{+1190}_{-866}	1750^{+916}_{-570}

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 $A_{obs} \gg 1.0$

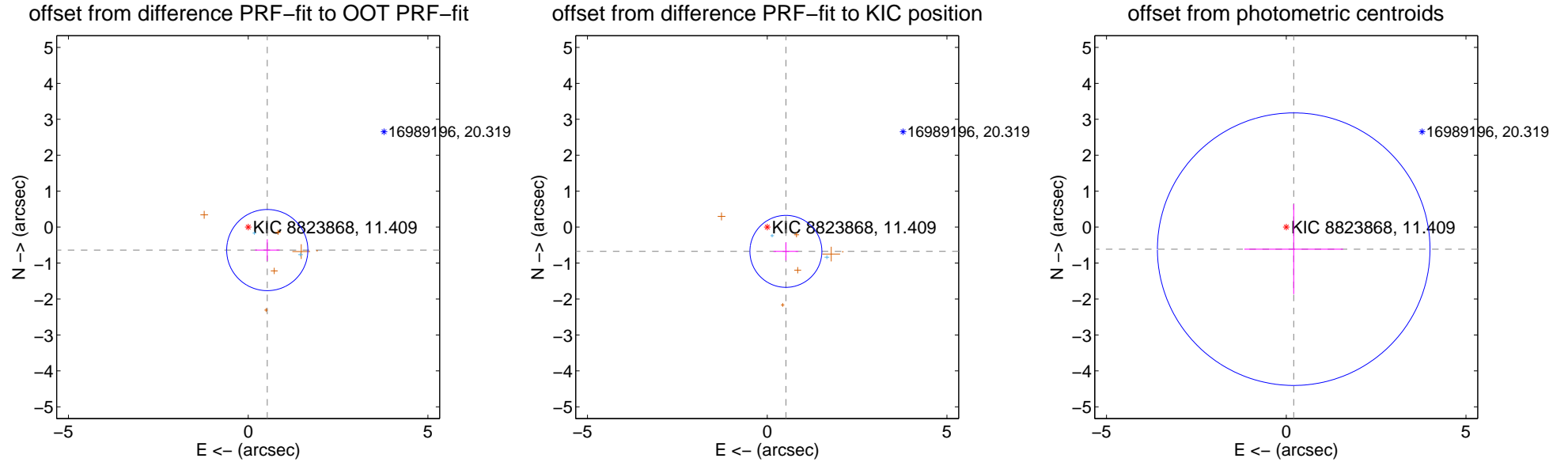
DV Centroid Data

Supplemental centroid analysis for 008823868-04. **Kepler magnitude: 11.41.** Transit SNR 6.42

There are 2 quarters with good PRF difference image offsets

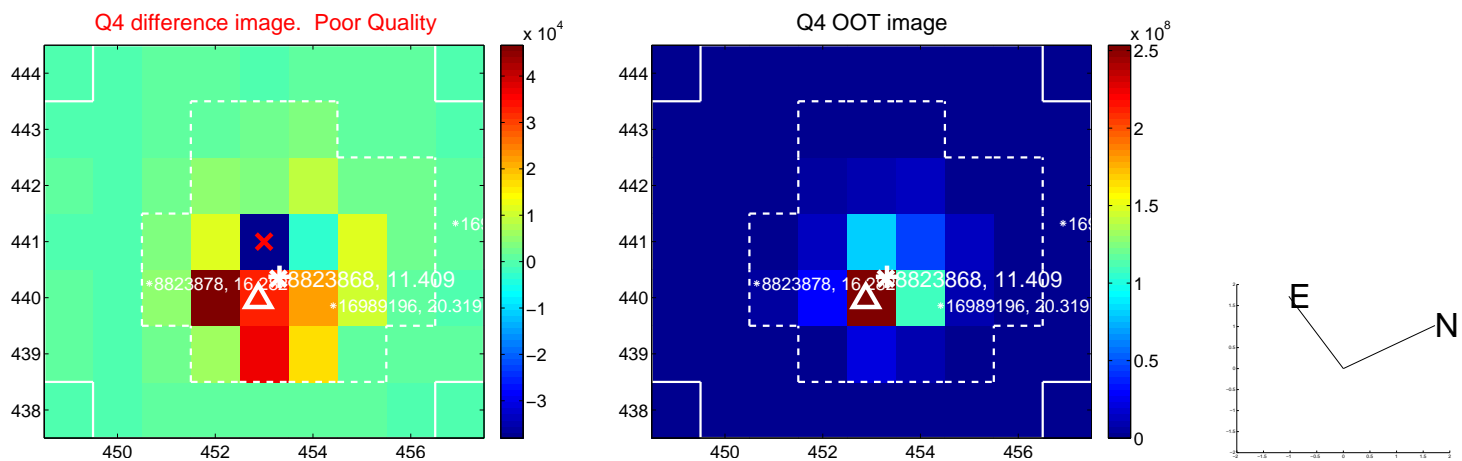
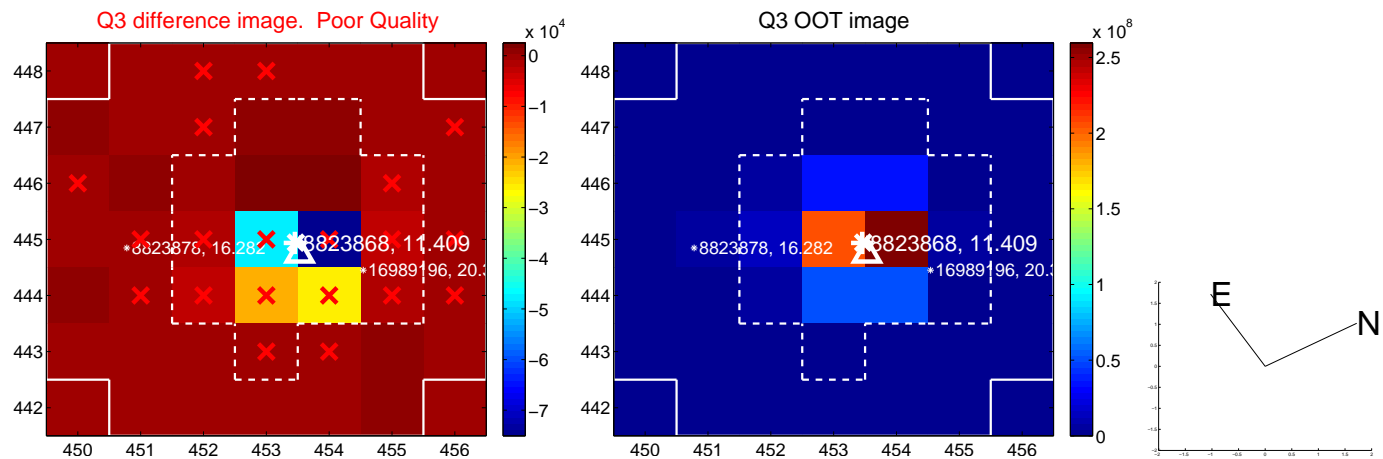
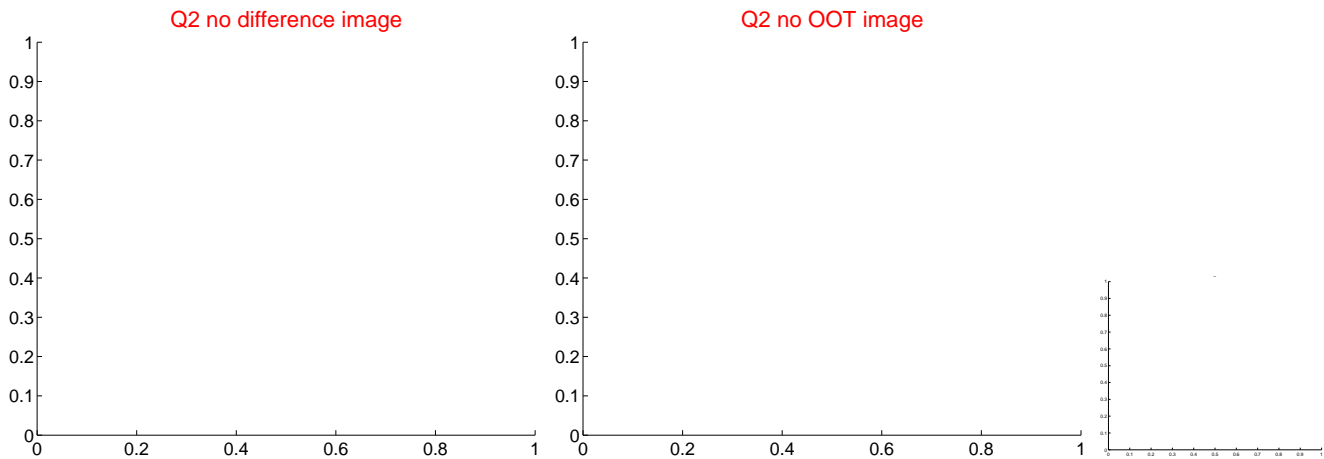
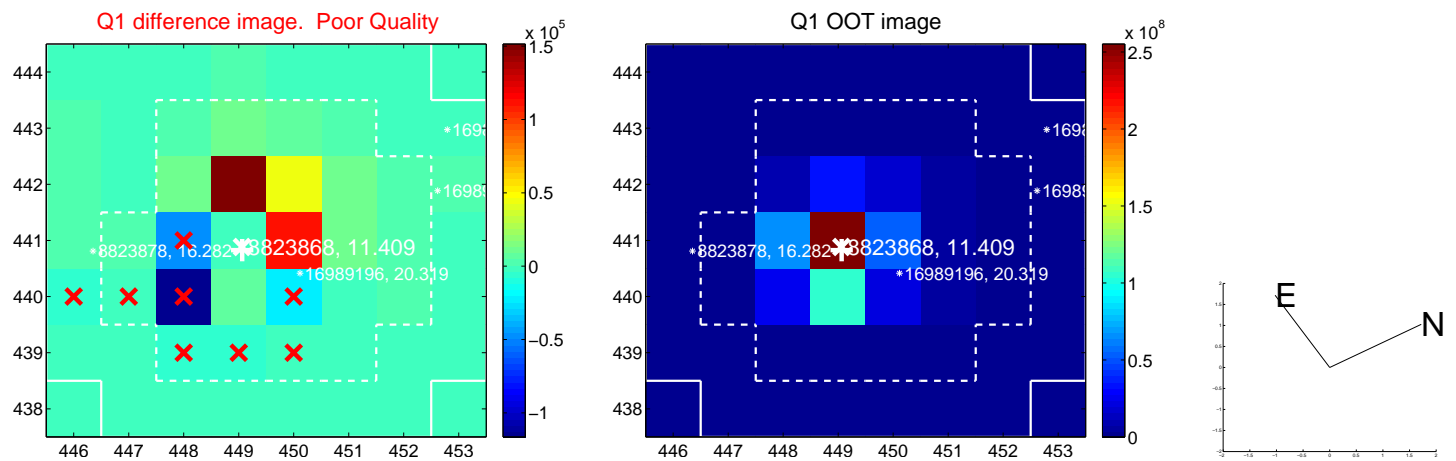
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.830 ± 0.376	2.21	-0.531 ± 0.339	-0.638 ± 0.303
PRF-fit source offset from KIC position	0.851 ± 0.334	2.55	-0.520 ± 0.344	-0.674 ± 0.251
photometric centroid source offset	0.65 ± 1.26	0.51	-0.21 ± 1.37	-0.61 ± 1.25

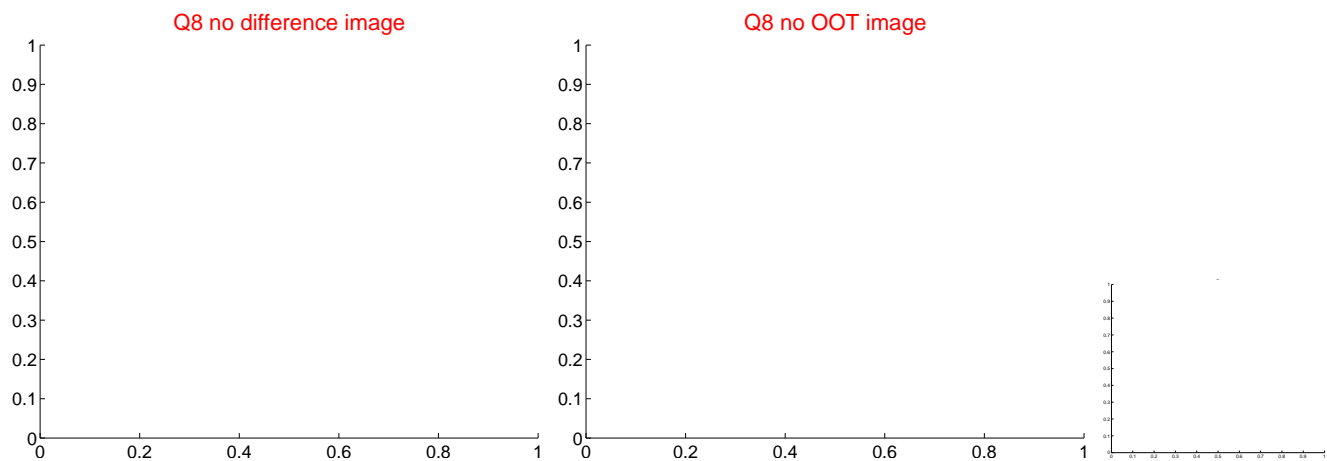
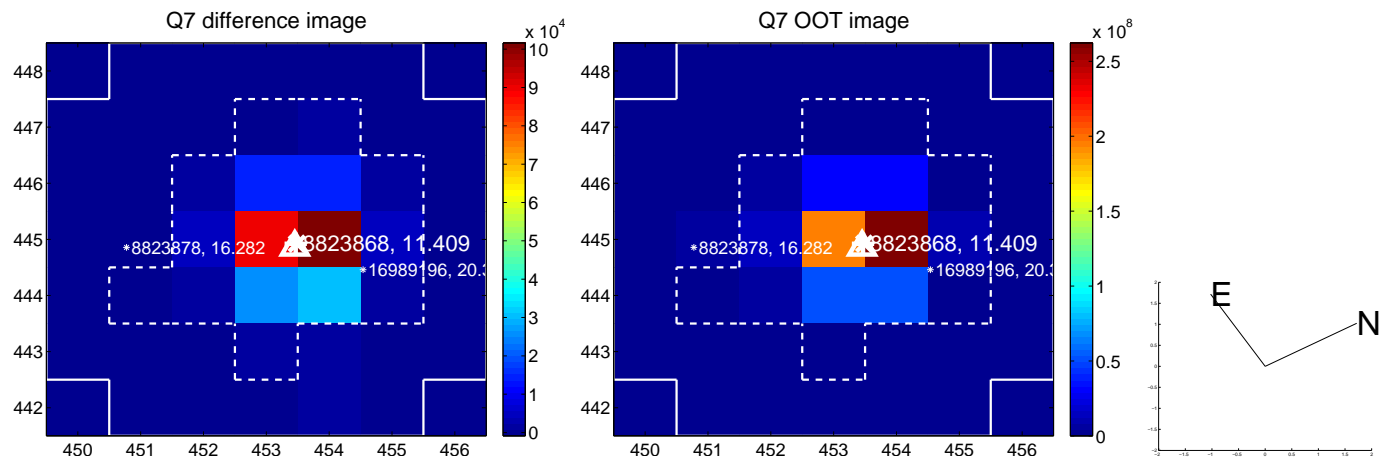
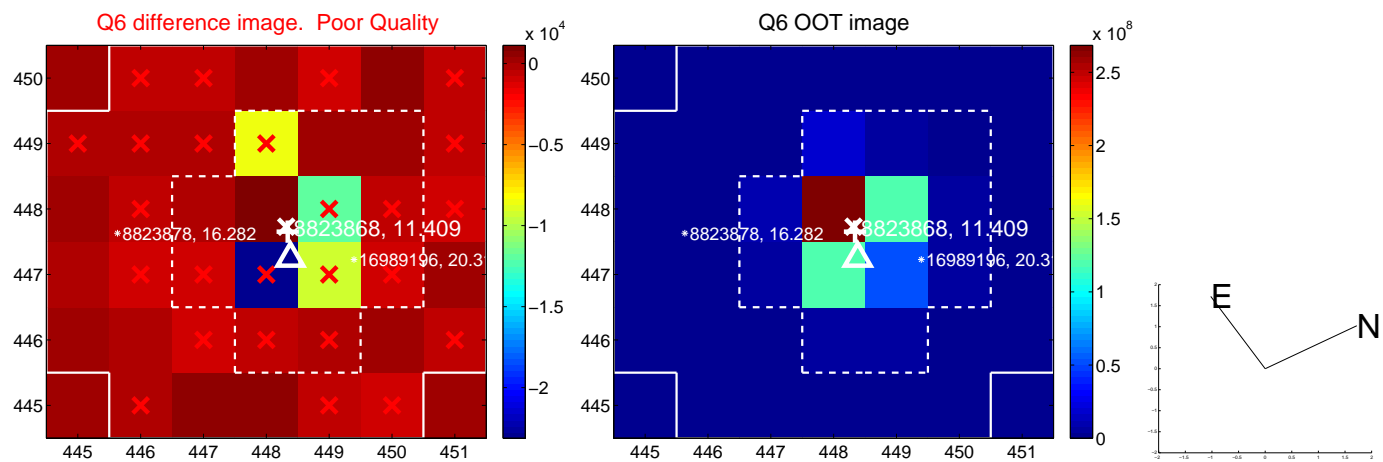
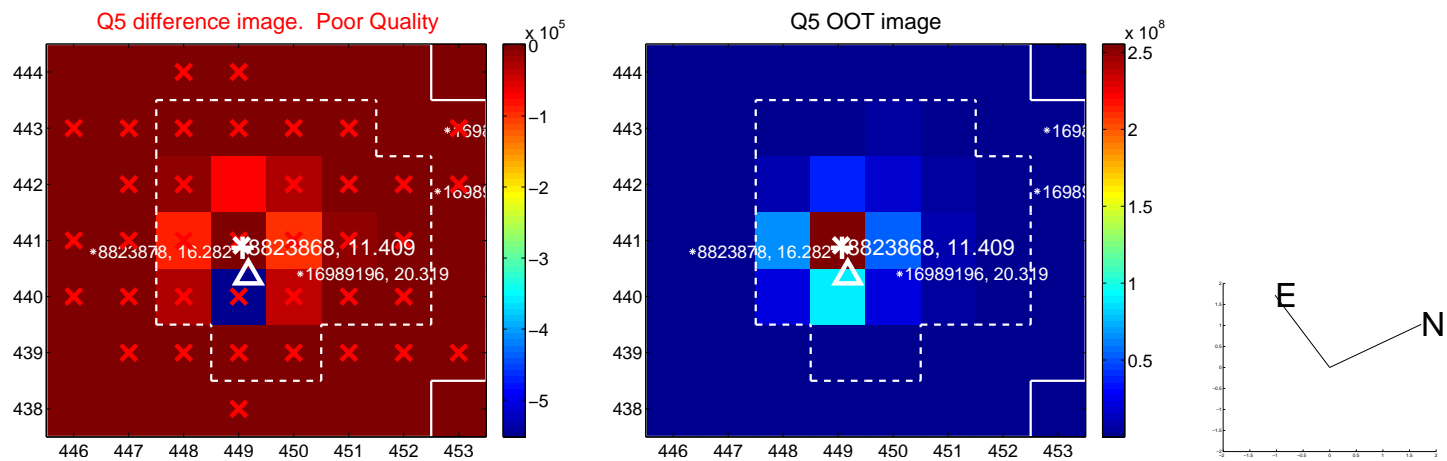


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

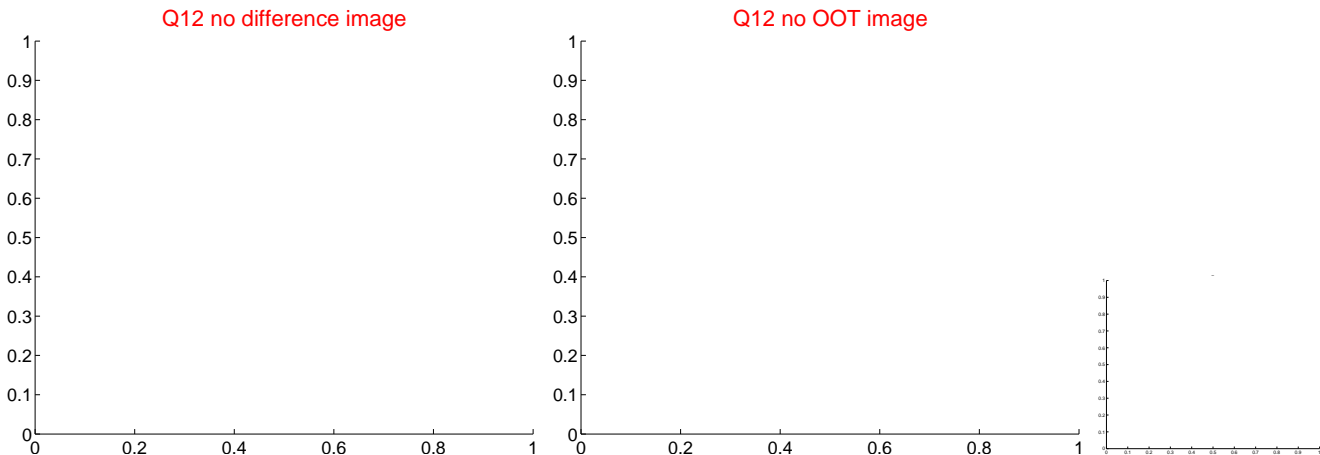
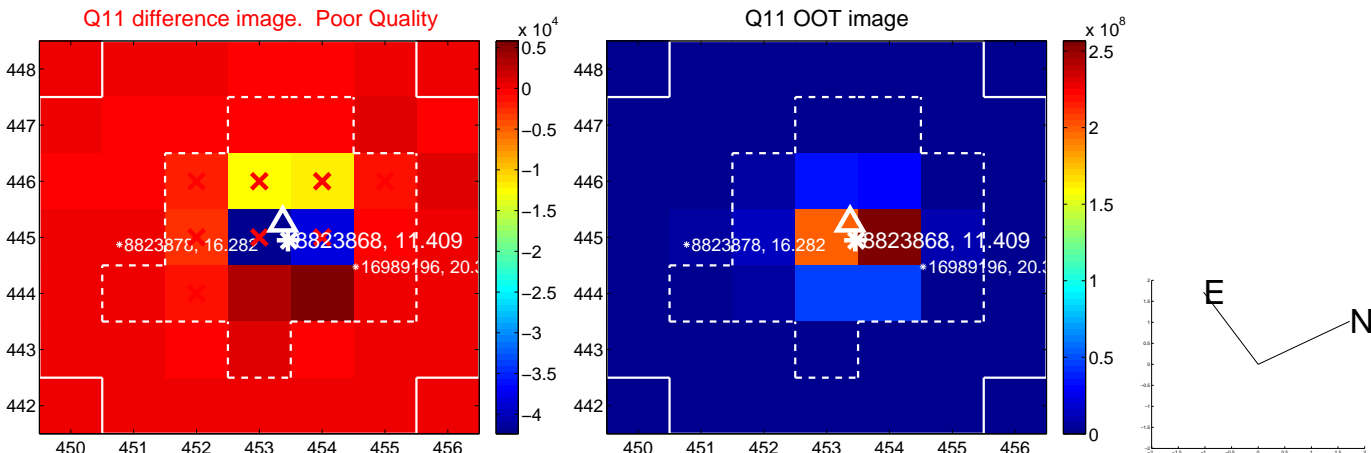
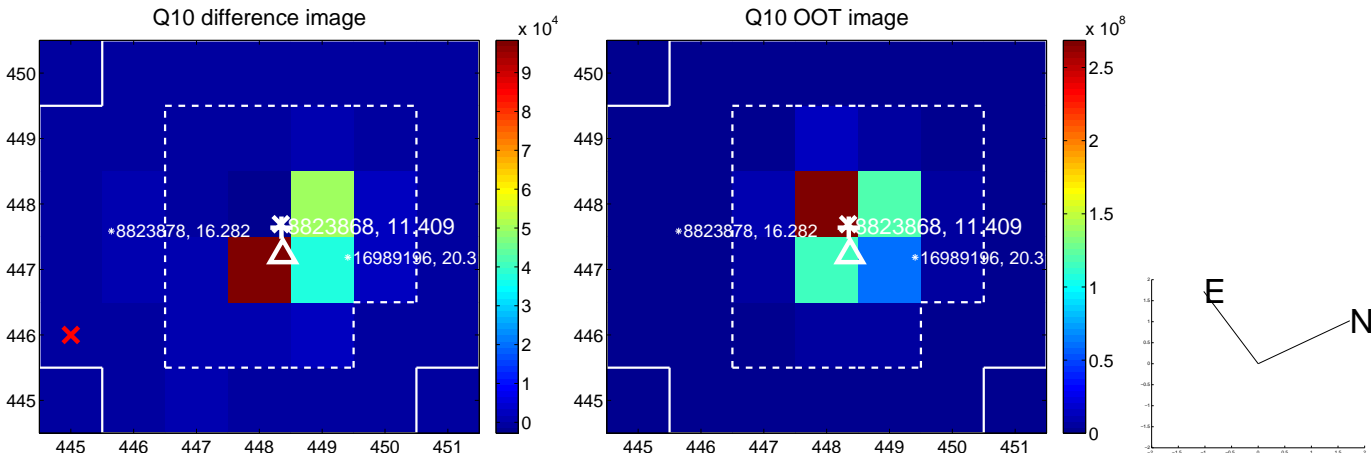
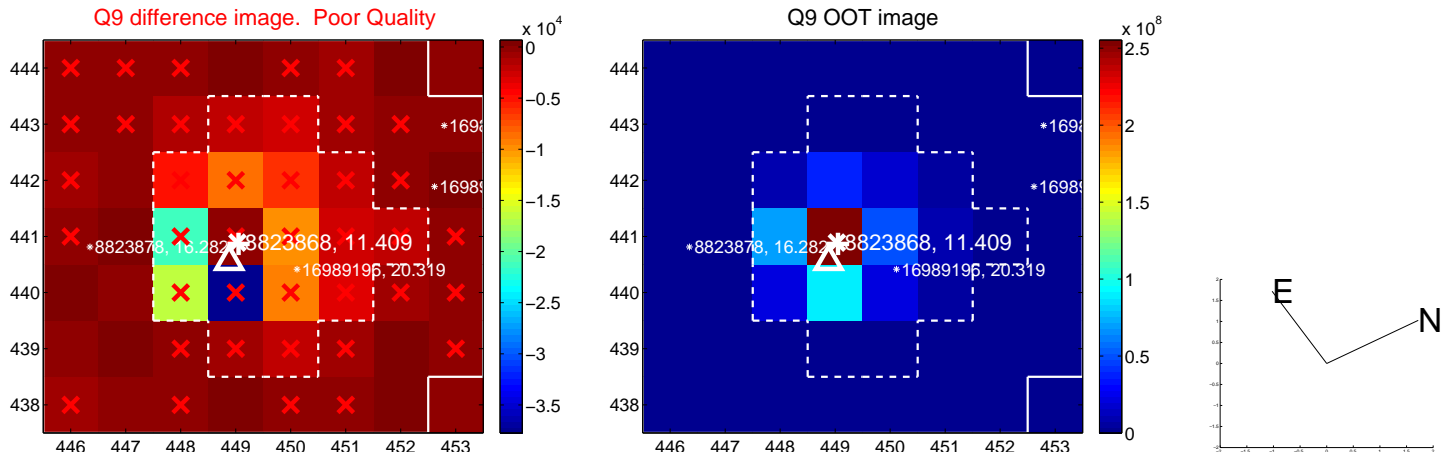
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



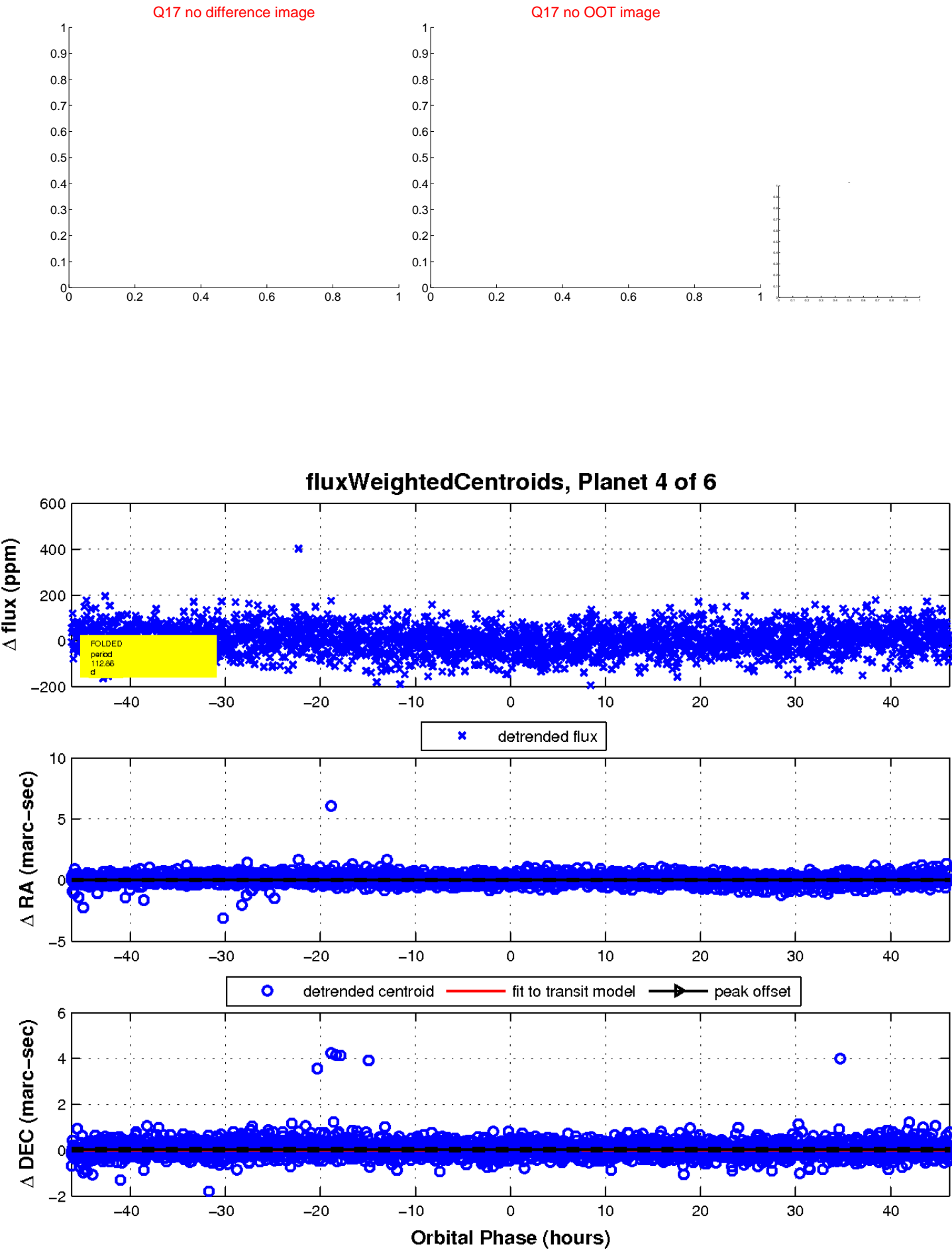
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

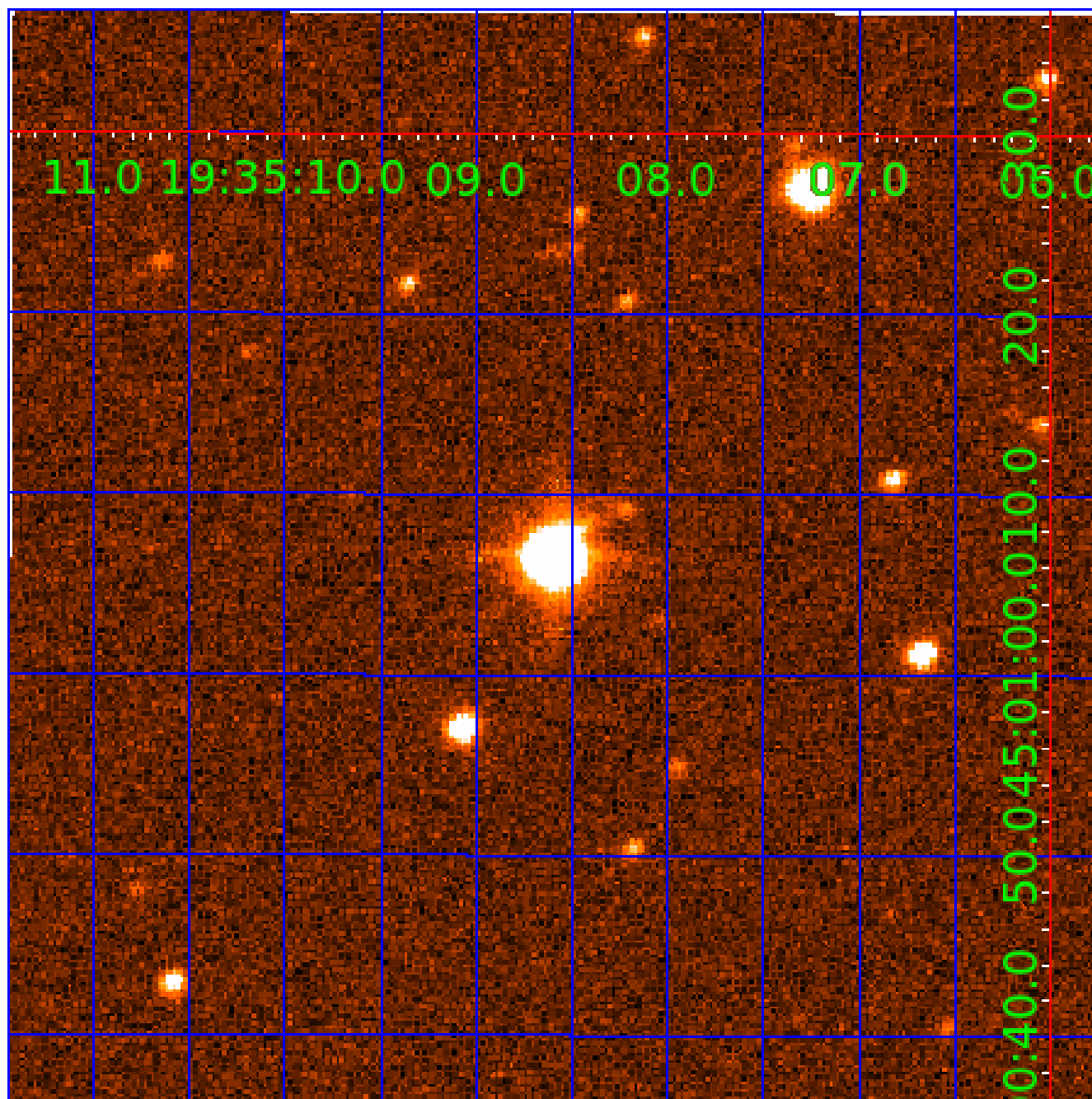


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008823868

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})
008823868-01	OBS	No	23.876136	155.008707	5216.6	9.729	1762.4	1310.8	2.53	9974	18.75	1138.09
008823868-02	OBS	0081.01	23.876136	143.069948	1631.3	9.448	537.8	534.7	2.53	9974	10.78	1138.09
008823868-03	OBS	No	2.766345	133.491080	7.5	11.970	8.5	7.8	2.53	9974	0.74	20149.00
008823868-04	OBS	No	112.864378	151.414628	45.8	15.416	8.0	6.4	2.53	9974	1.90	143.46
008823868-05	OBS	No	234.607080	248.550170	92.5	6.775	7.5	7.8	2.53	9974	2.73	54.08
008823868-06	OBS	No	298.344256	185.313944	98.4	4.843	7.3	7.3	2.53	9974	2.87	39.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008823868-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
008823868-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—CENT_SATURATED
008823868-03	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
008823868-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008823868-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008823868-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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.

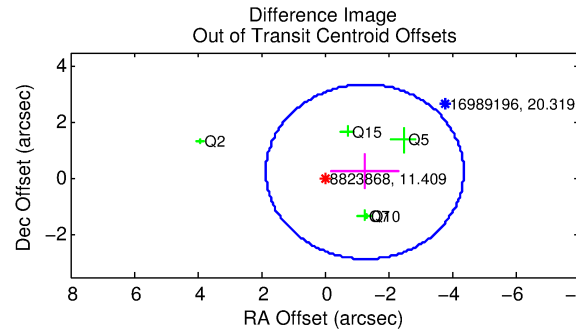
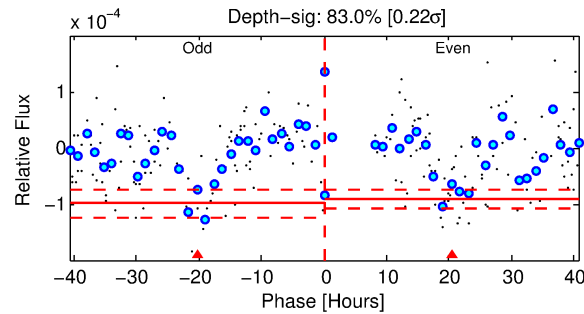
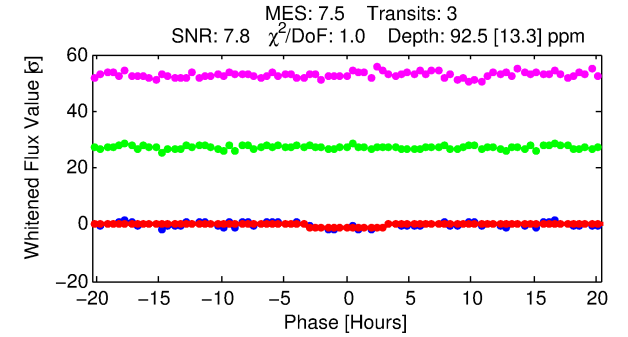
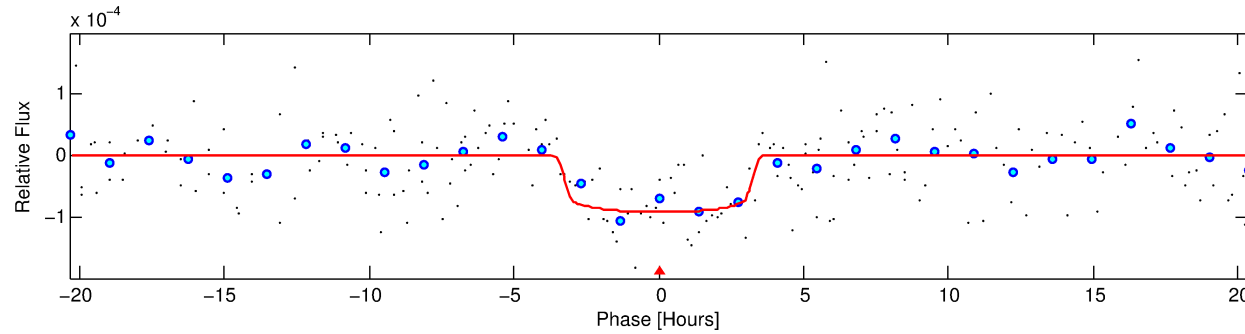
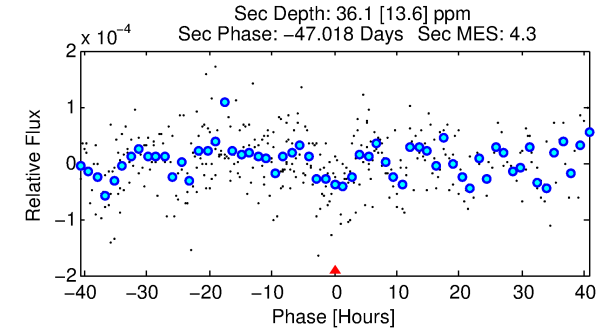
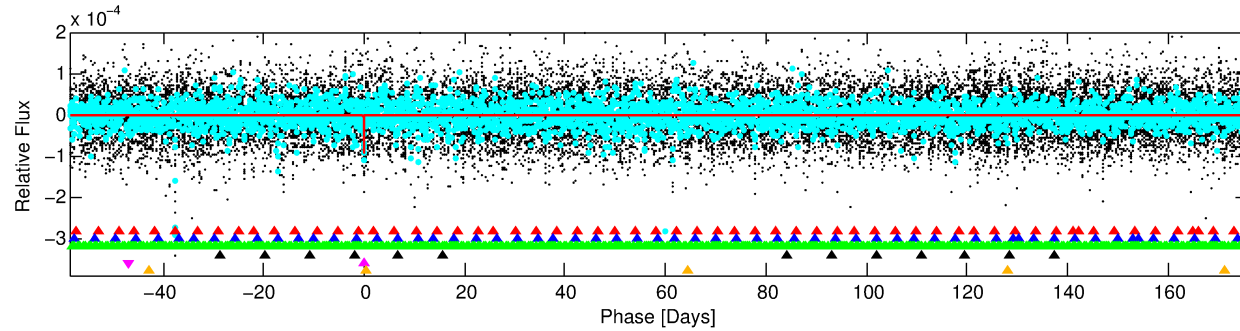
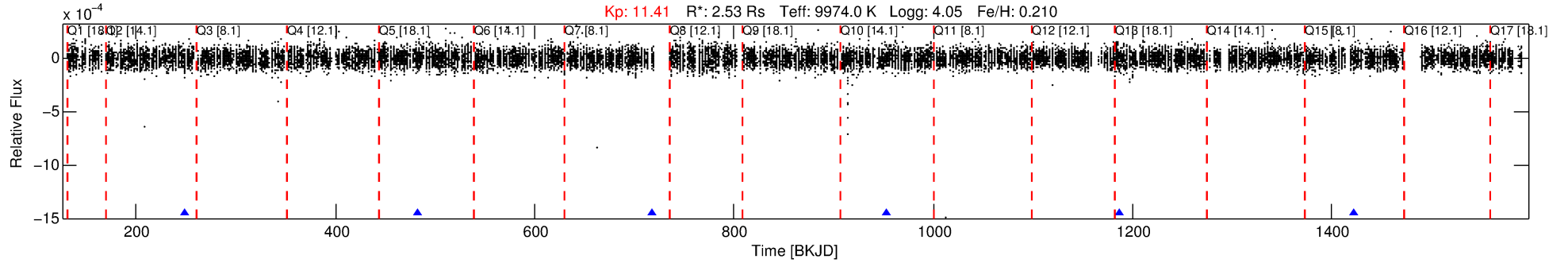
Ephemeris Match Information For 008823868-05

No Significant Match Found

DV One-Page Summary

KIC: 8823868 Candidate: 5 of 6 Period: 234.607 d

KOI: K00081 Corr: No Ephemeris Match



DV Fit Results:

Period = 234.60708 [0.00318] d
Epoch = 248.5502 [0.0093] BKJD
Rp/R* = 0.0099 [0.0025]
a/R* = 144.62 [268.18]
b = 0.85 [0.61]
Seff = 54.08 [24.17]
Teq = 691 [77] K
Rp = 2.73 [1.25] Re
a = 1.0257 [0.3102] AU
Ag = 2814.12 [2125.57] [1.32σ]
Teffp = 7787 [1270] K [5.58σ]

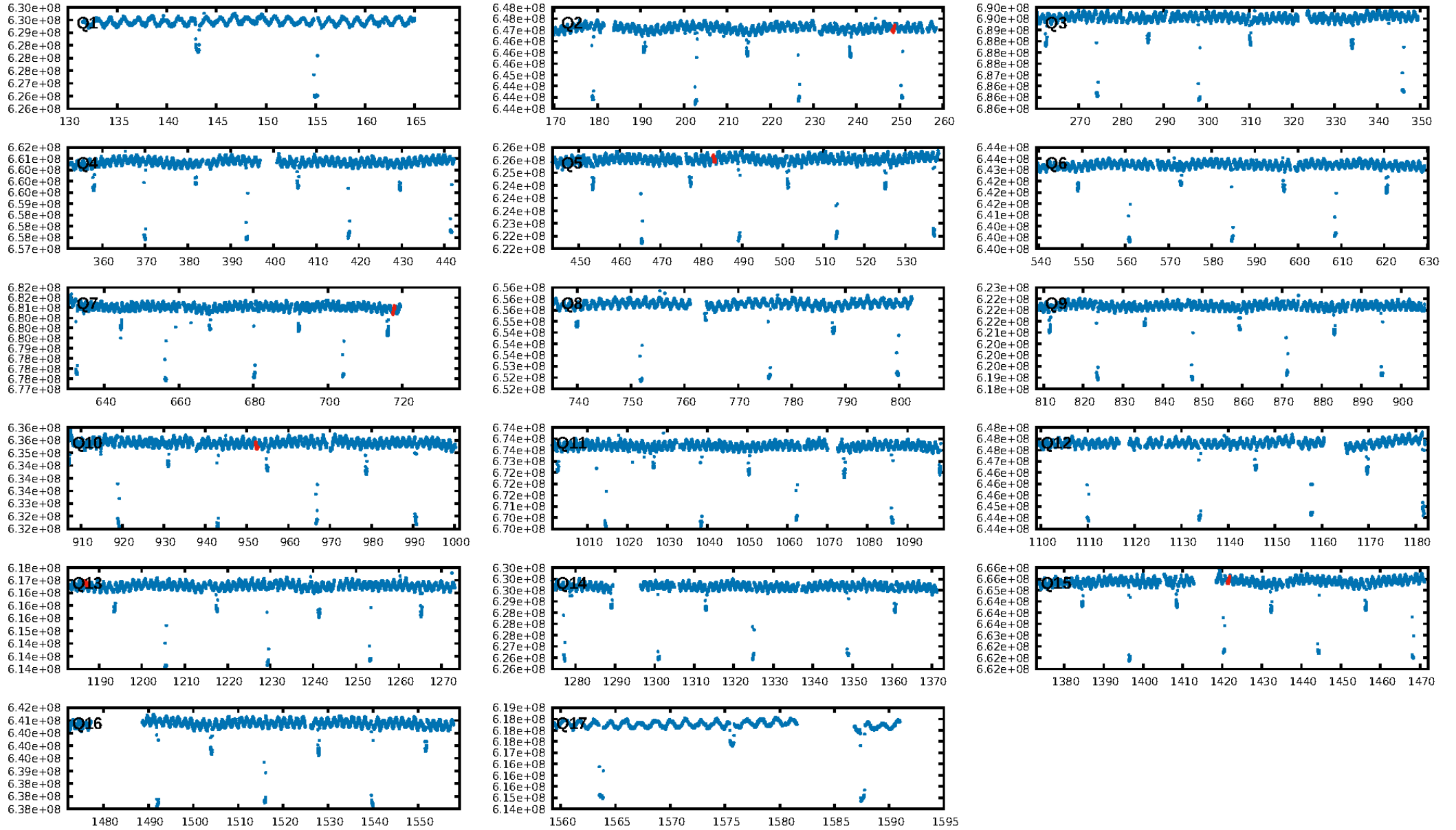
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [173.52σ]
LongPeriod-sig: 100.0% [183.69σ]
ModelChiSquare2-sig: 84.9%
ModelChiSquareGof-sig: 99.5%
Bootstrap-pfa: 2.48e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -13.12
Centroid-sig: 64.3%
Centroid-so: 0.747 arcsec [0.62σ]
OotOffset-rm: 1.289 arcsec [1.24σ]
KicOffset-rm: 1.440 arcsec [1.63σ]
OotOffset-st: 2/2/0/1 [5]
KicOffset-st: 2/2/0/1 [5]
DiffImageQuality-fgm: 0.60 [3/5]
DiffImageOverlap-fno: 0.40 [2/5]

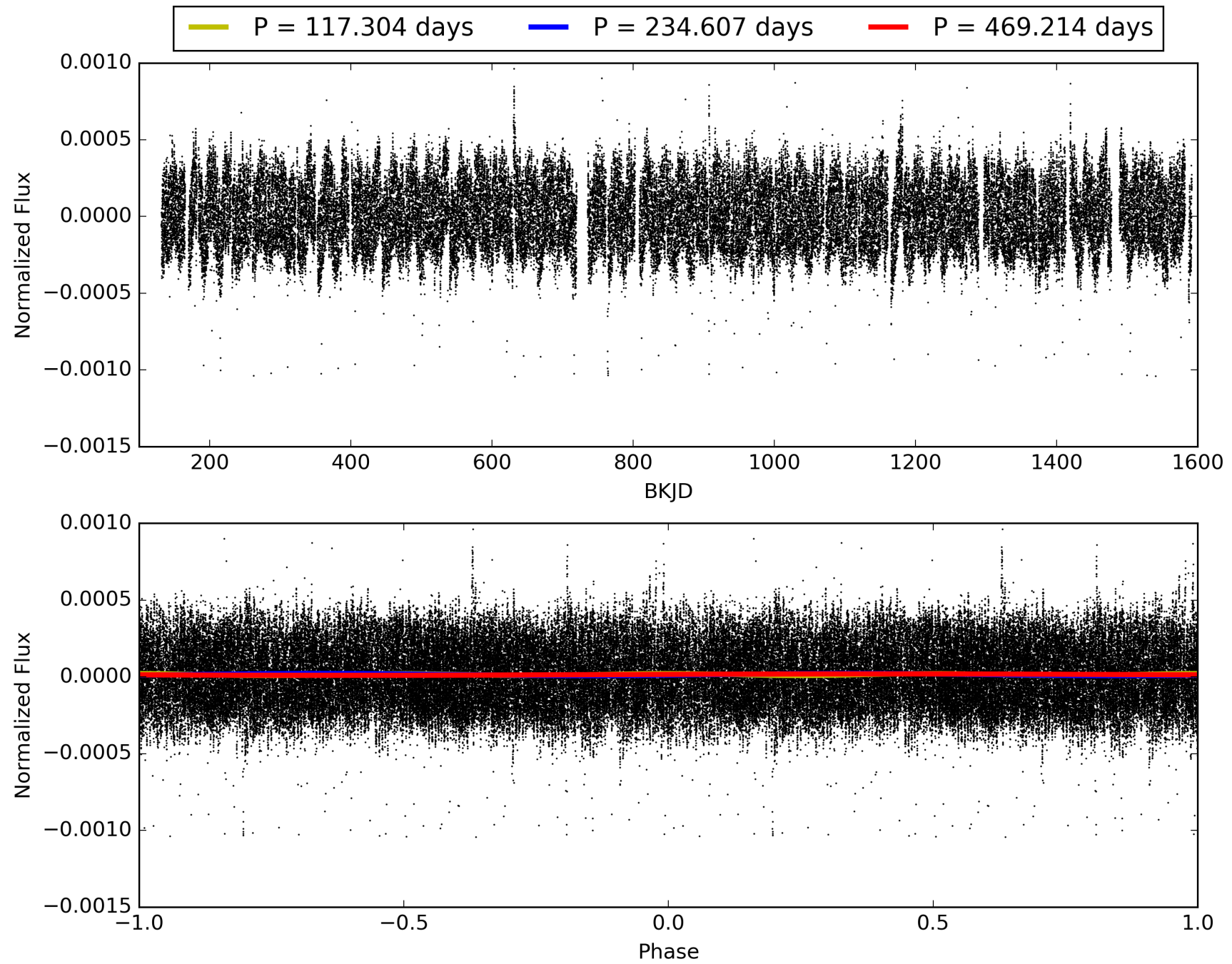
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 20:09:41 Z

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

TCE 008823868-05, PDC Light Curves

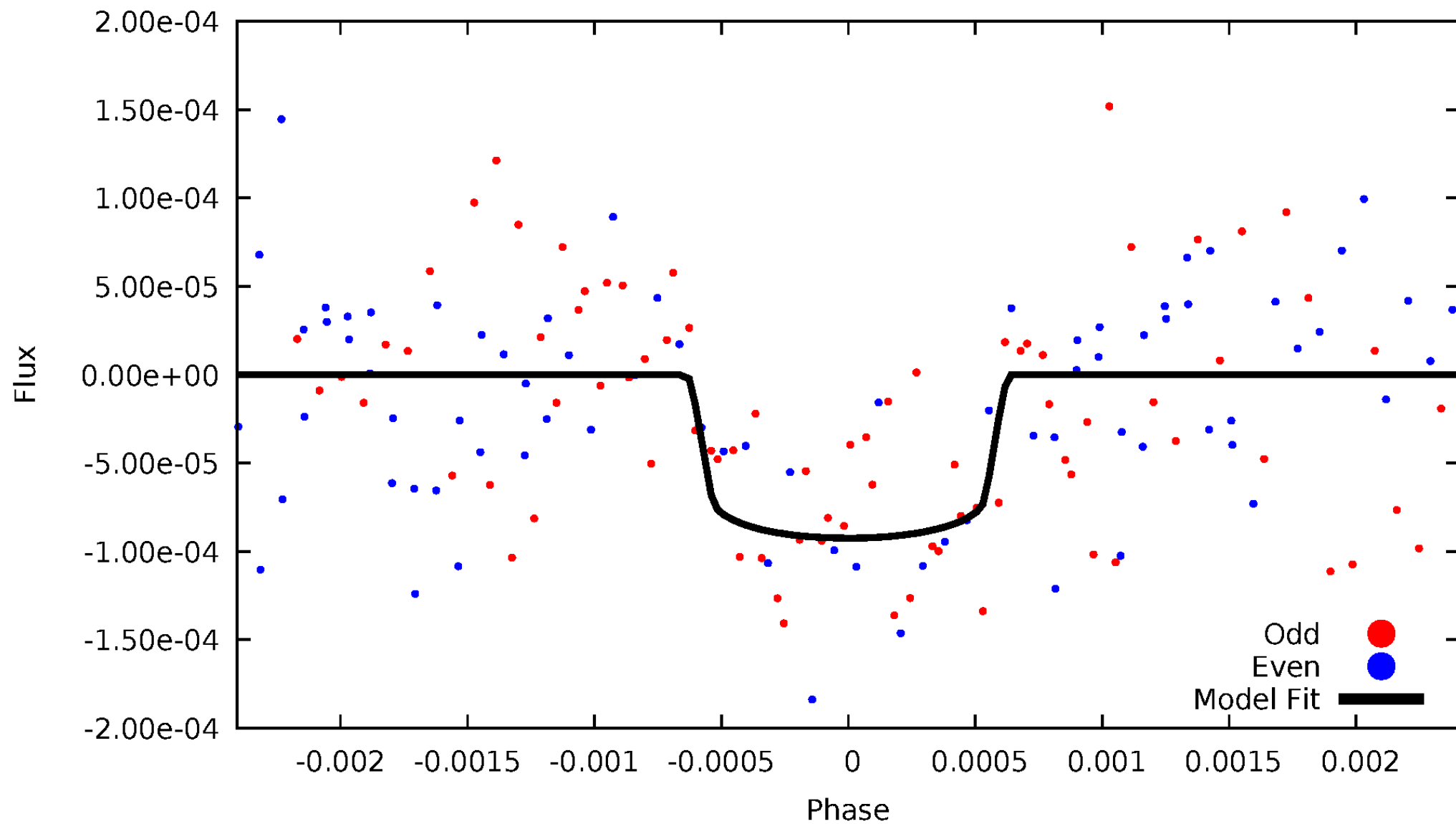


TCE 008823868-05



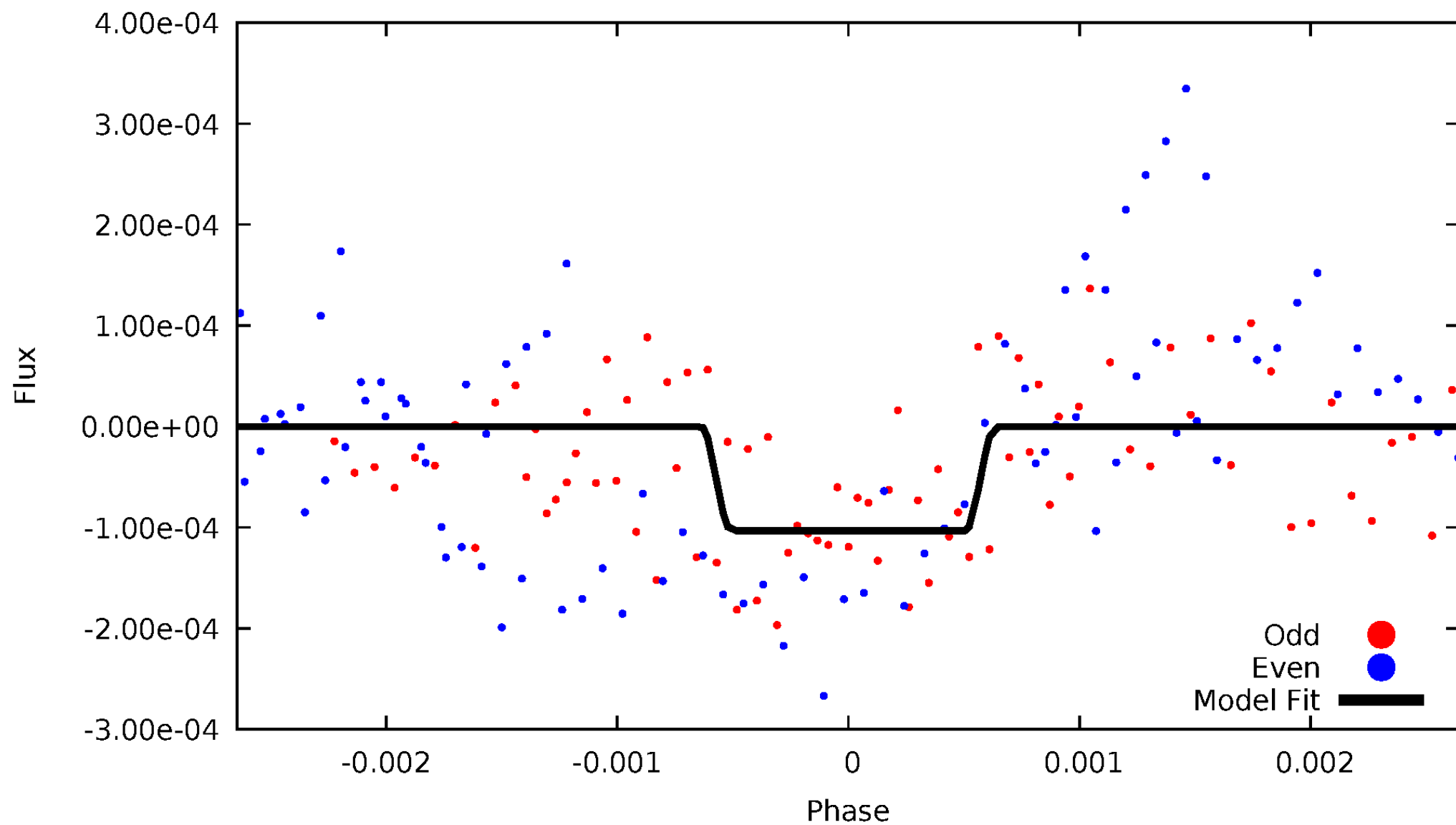
DV Odd/Even

TCE 008823868-05



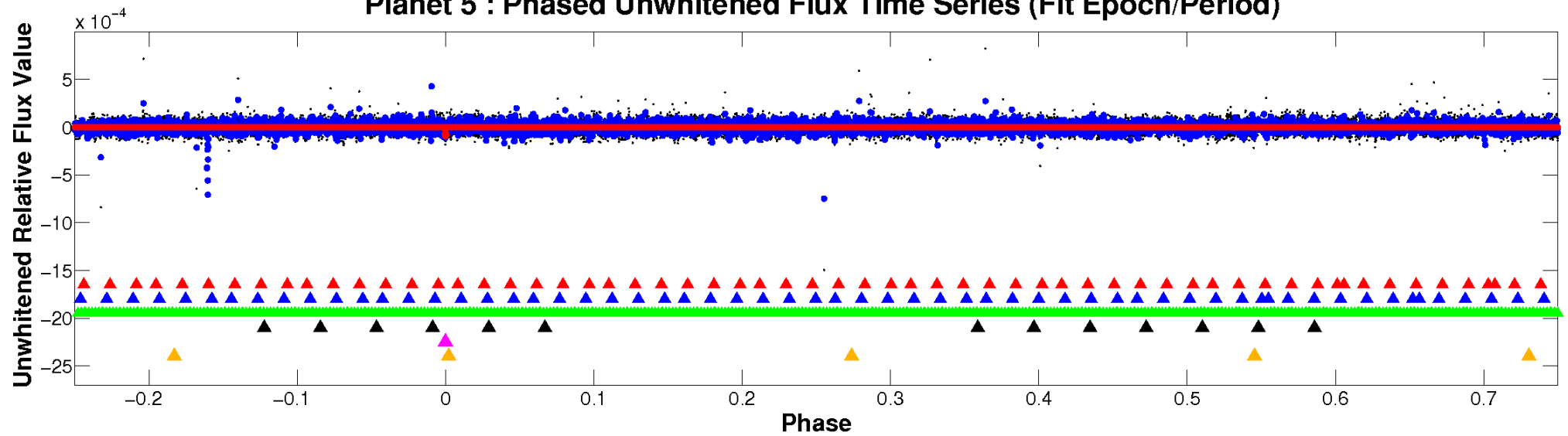
ALT Odd/Even

TCE 008823868-05

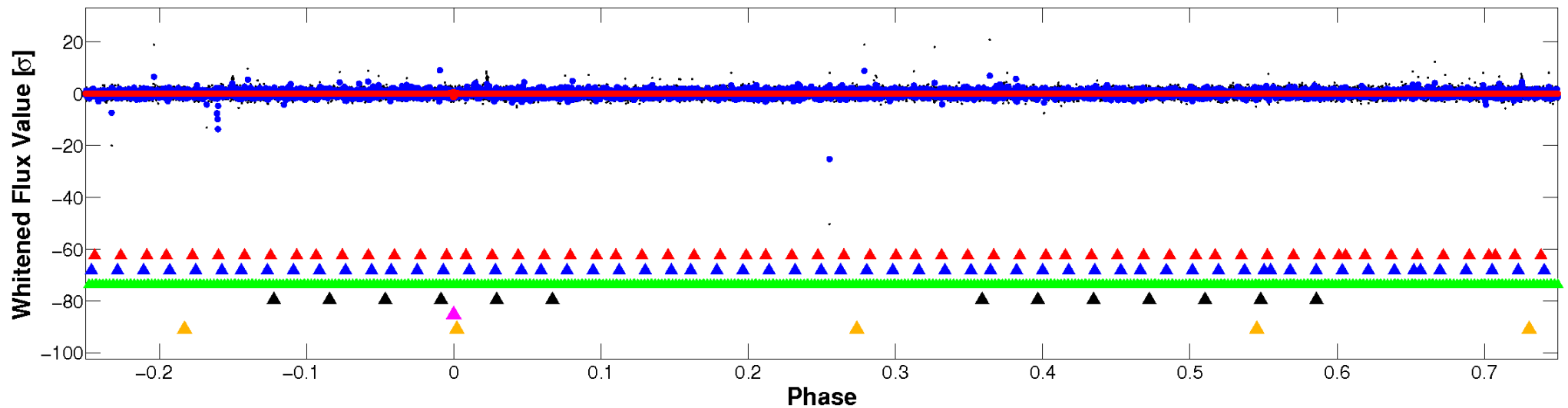


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

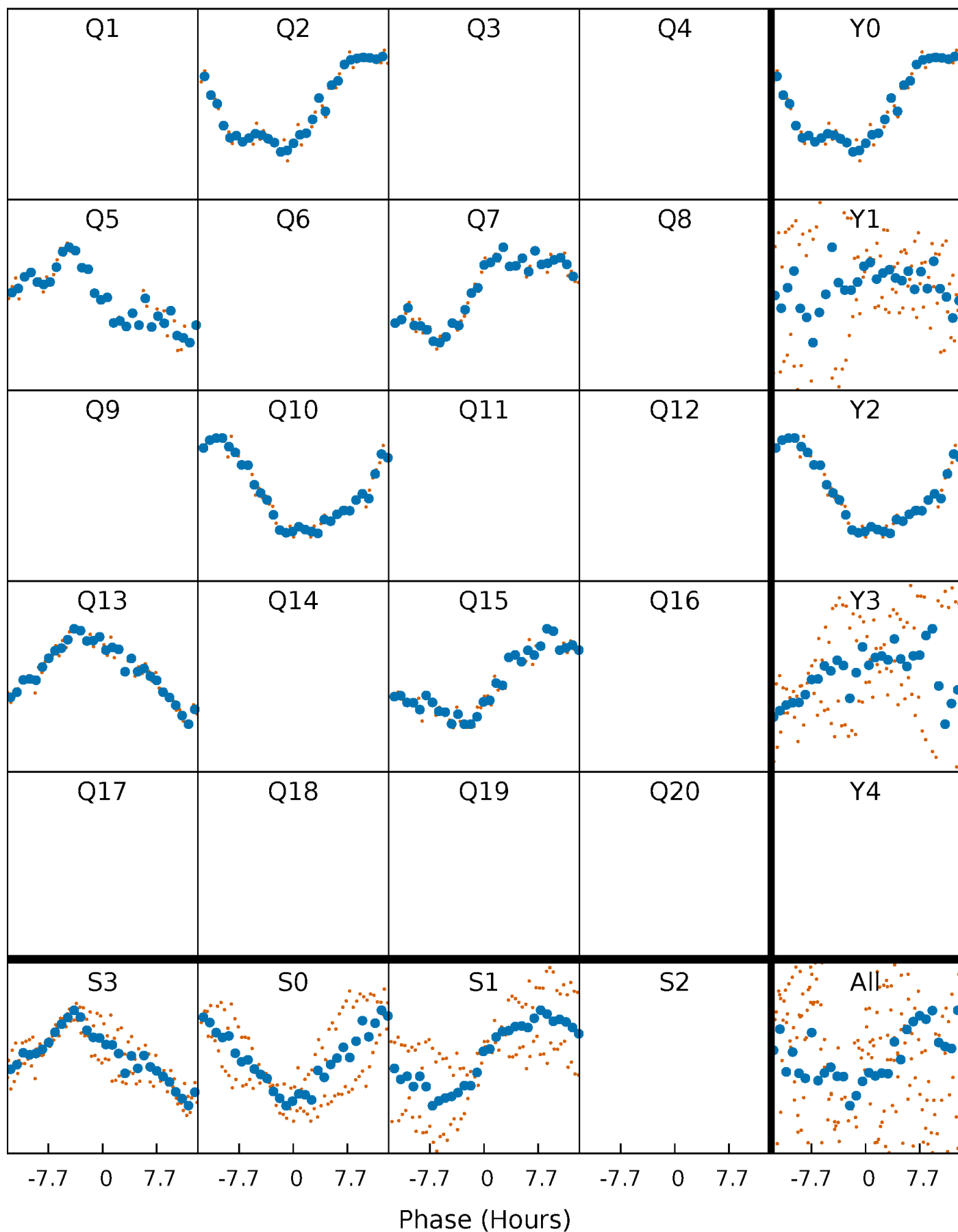


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



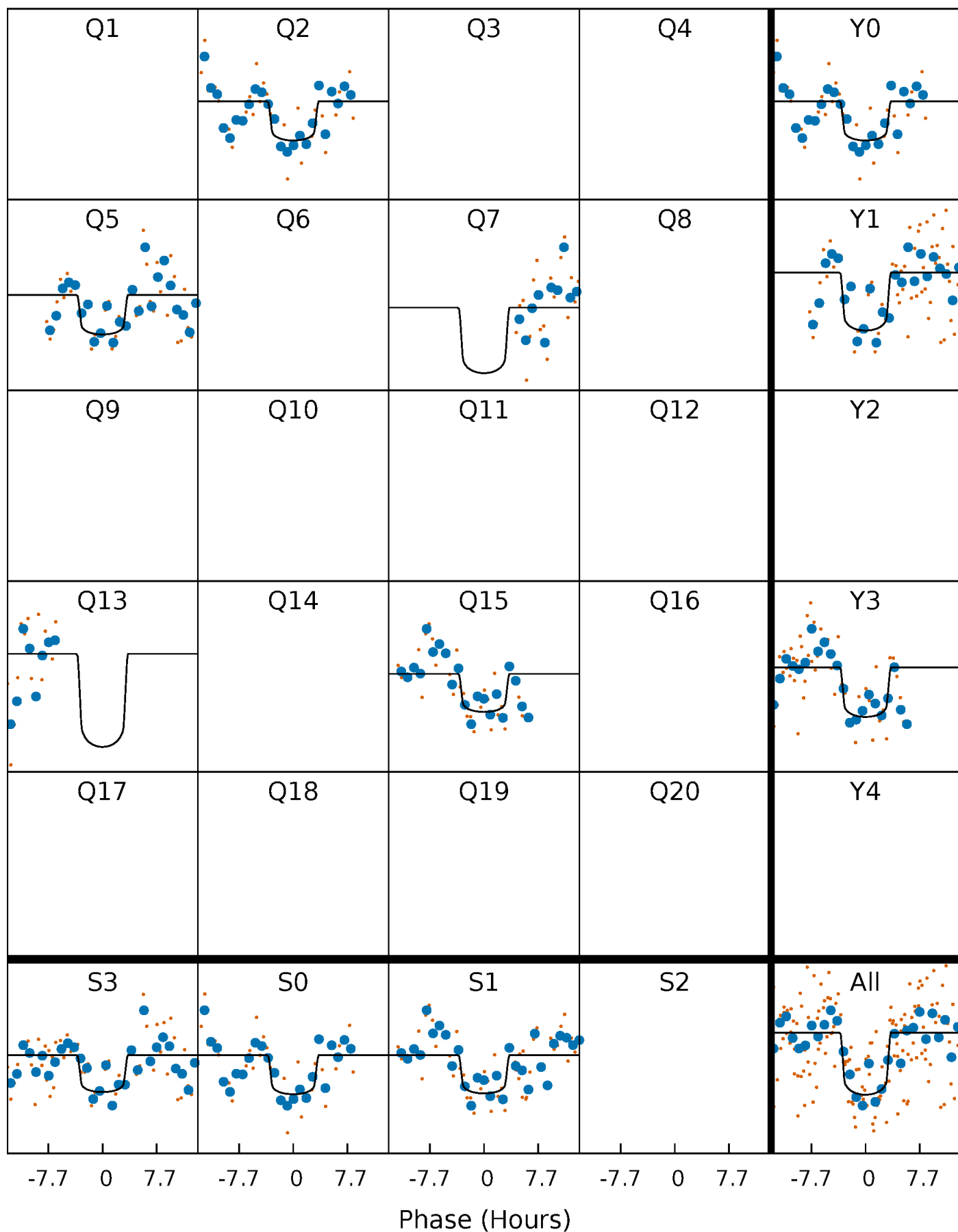
PDC Quarter-Phased Transit Curves

TCE 008823868-05 $P=234.607080$ Days $T_0=248.550170$ (BKJD)



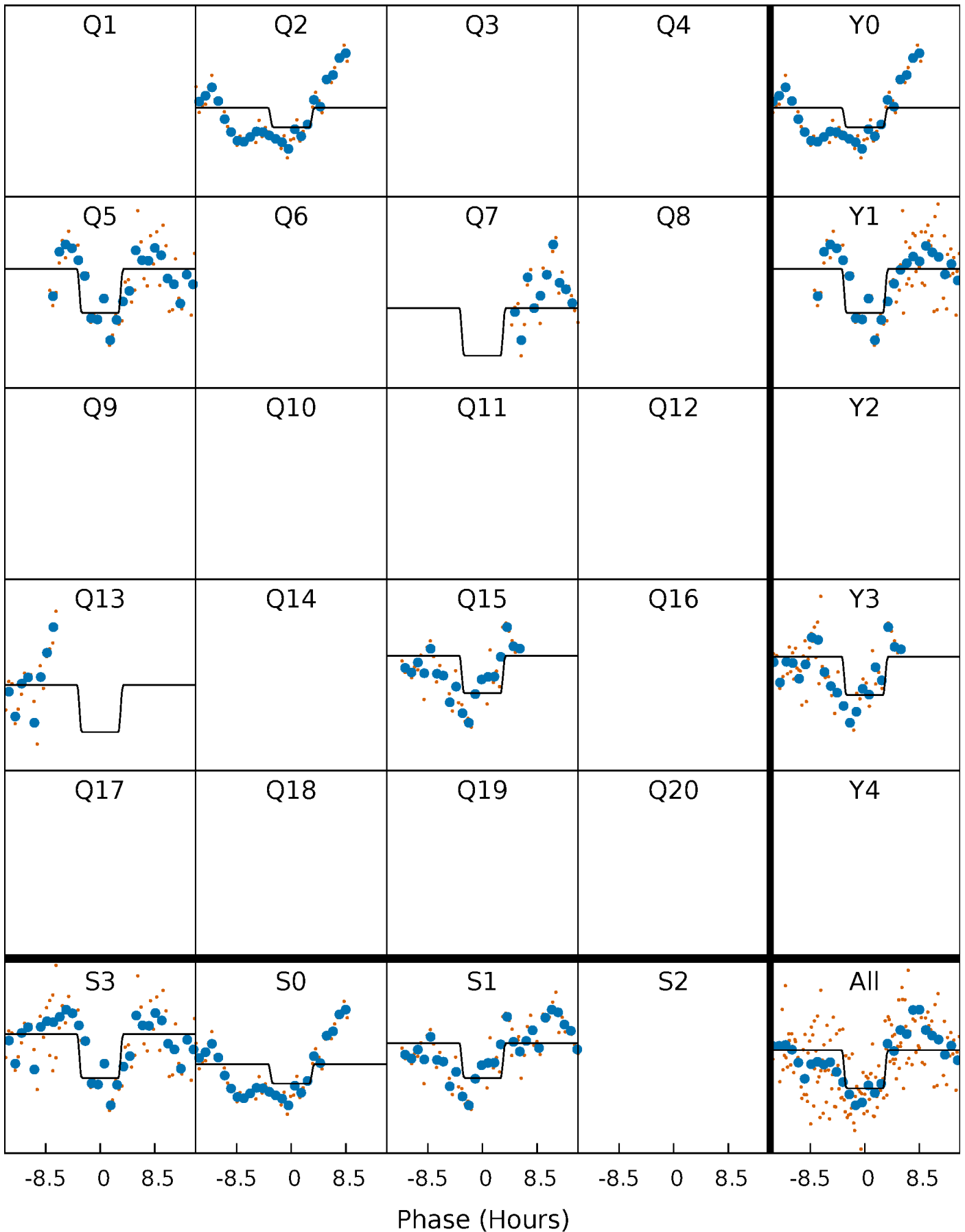
DV Quarter-Phased Transit Curves

TCE 008823868-05 $P=234.607080$ Days $T_0=248.550170$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

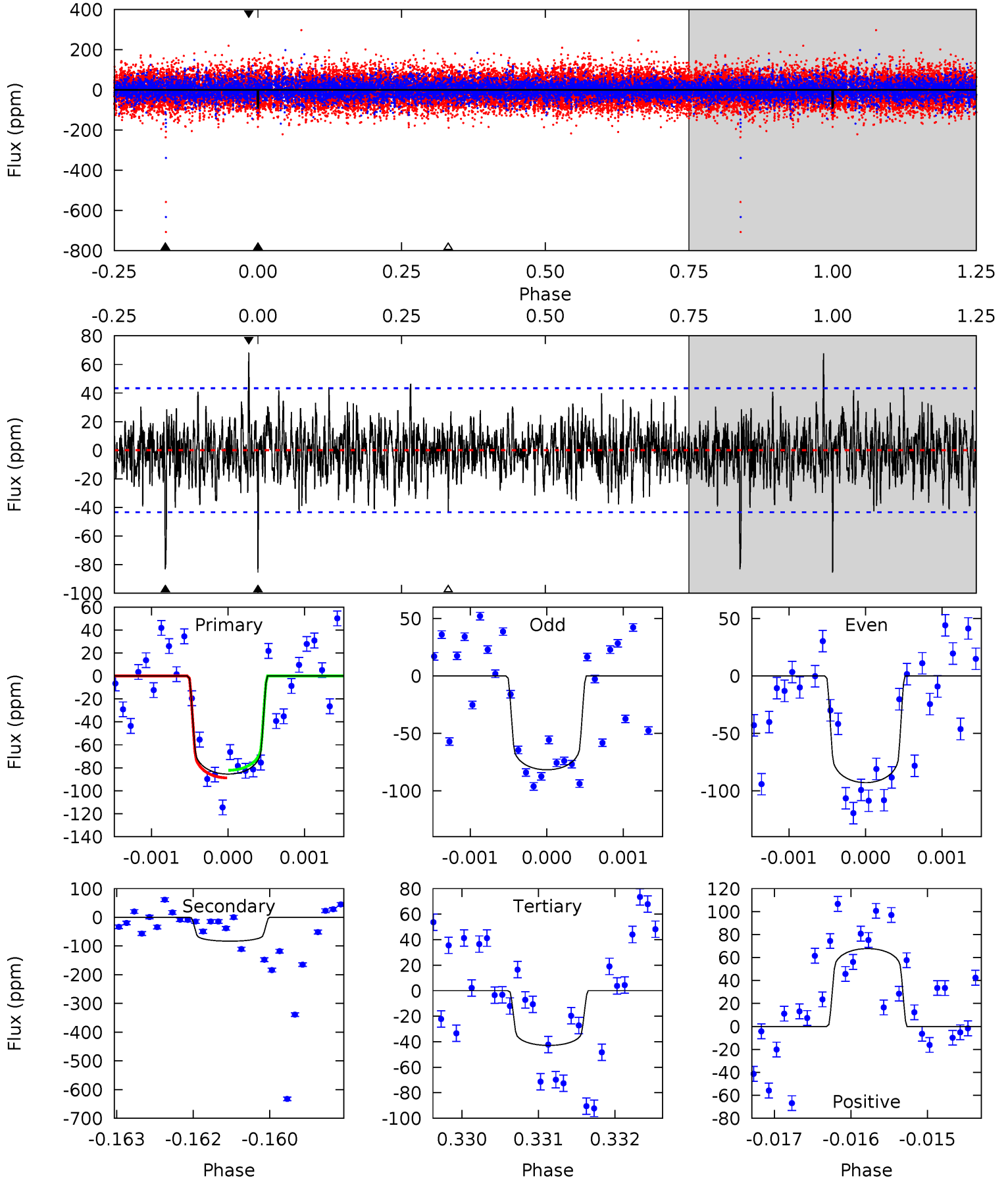
TCE 008823868-05 $P=234.611325$ Days $T_0=248.541675$ (BKJD)



DV Model-Shift Uniqueness Test

008823868-05, $P = 234.607080$ Days, $E = 13.943090$ Days

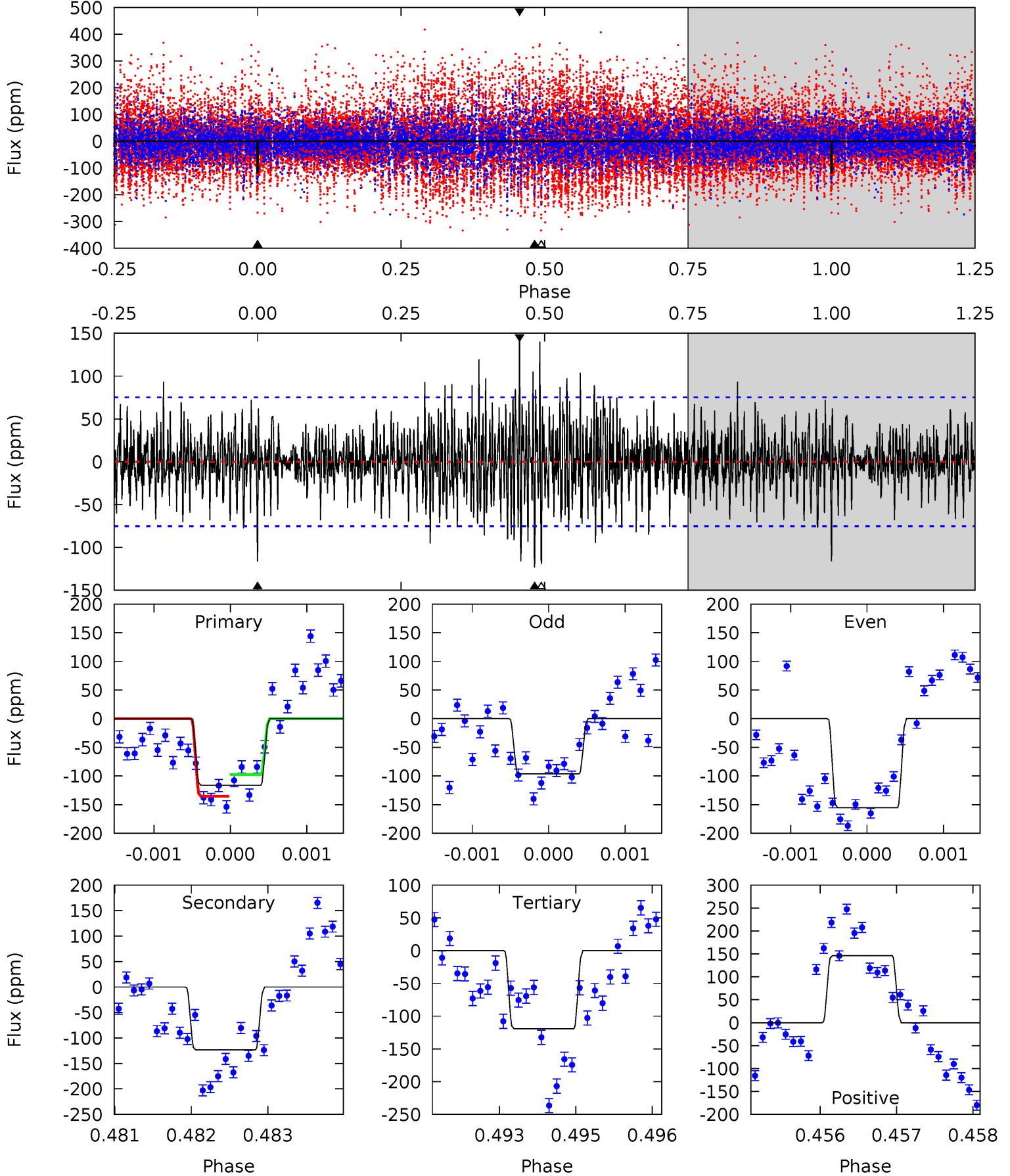
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	10.4	5.36	8.47	5.41	3.23	1.67	5.32	2.22	5.03	1.92	0.65	0.98	0.44	0.41



Alt Model-Shift Uniqueness Test

008823868-05, P = 234.611325 Days, E = 13.930350 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.36	8.88	8.59	10.5	5.41	3.23	2.29	-0.22	-2.17	0.29	-1.65	1.99	1.19	0.54	1.37



Stellar Parameters For KIC 008823868

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9974^{+275}_{-413}	$4.048^{+0.115}_{-0.214}$	$0.210^{+0.050}_{-0.400}$	$2.533^{+0.965}_{-0.414}$	$2.615^{+0.371}_{-0.278}$	$0.227^{+0.120}_{-0.122}$
	+3%/-4%	+3%/-5%	+24%/-190%	+38%/-16%	+14%/-11%	+53%/-54%
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 008823868-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-83 ± 8	$2.78^{+0.92}_{-0.73}$	973^{+85}_{-64}	9407^{+2275}_{-1373}	6166^{+5308}_{-2652}
Alt.	-123 ± 14	$2.91^{+0.79}_{-0.76}$	970^{+81}_{-56}	10622^{+2712}_{-1655}	8434^{+6744}_{-3383}

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

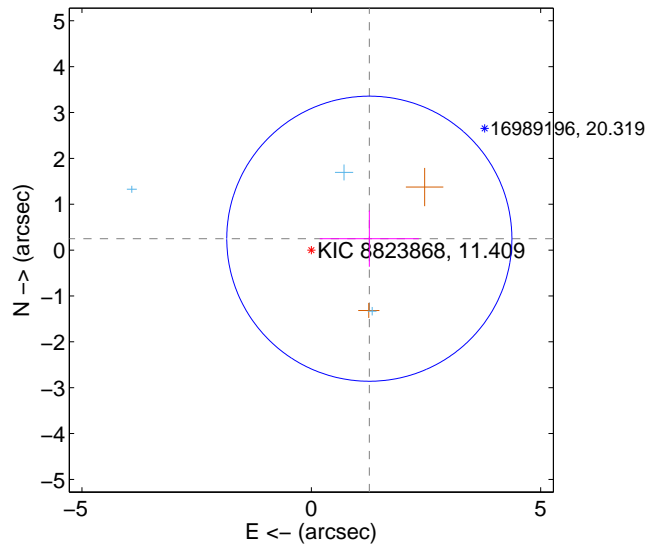
Supplemental centroid analysis for 008823868-05. **Kepler magnitude: 11.41.** Transit SNR 7.77

There are 3 quarters with good PRF difference image offsets

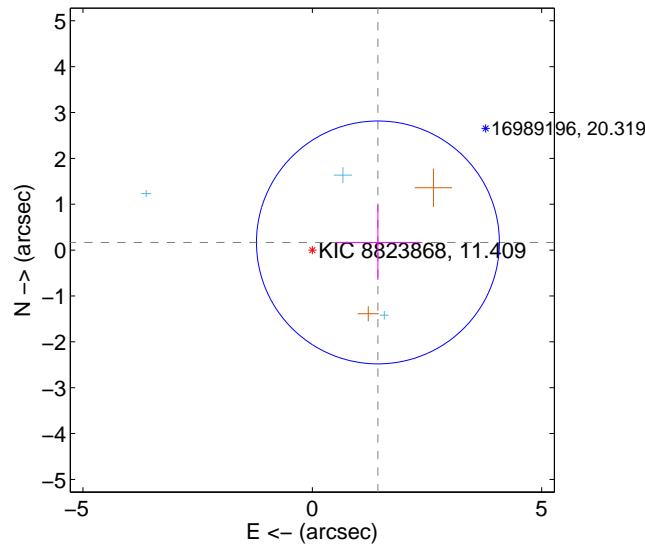
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.289 ± 1.036	1.24	-1.265 ± 1.082	0.248 ± 0.612
PRF-fit source offset from KIC position	1.440 ± 0.883	1.63	-1.431 ± 0.927	0.167 ± 0.818
photometric centroid source offset	0.75 ± 1.21	0.62	-0.73 ± 1.21	-0.15 ± 1.24

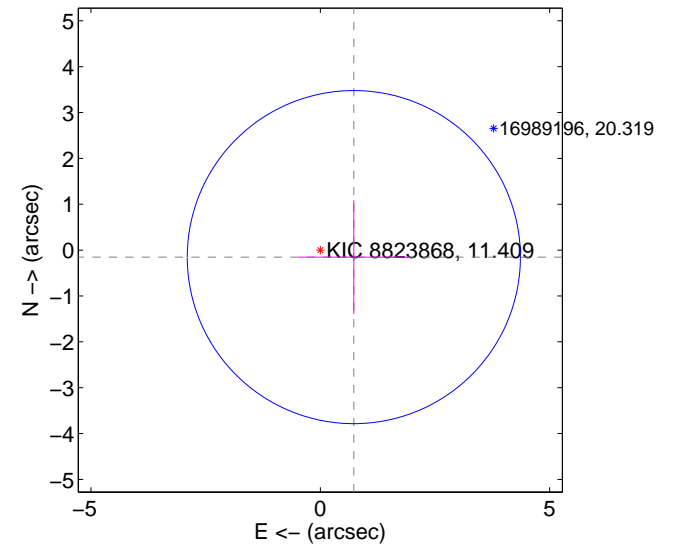
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

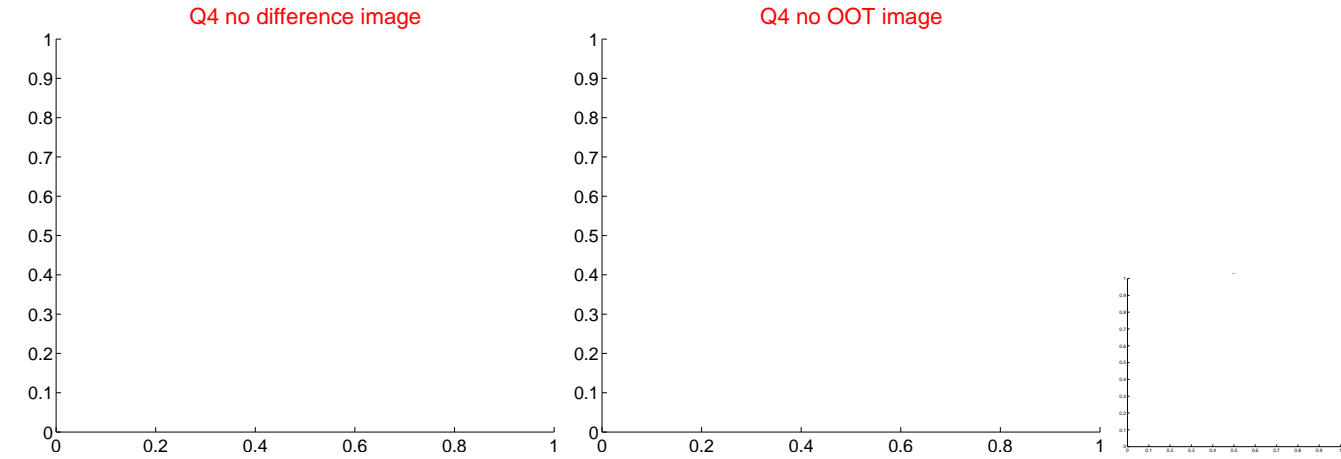
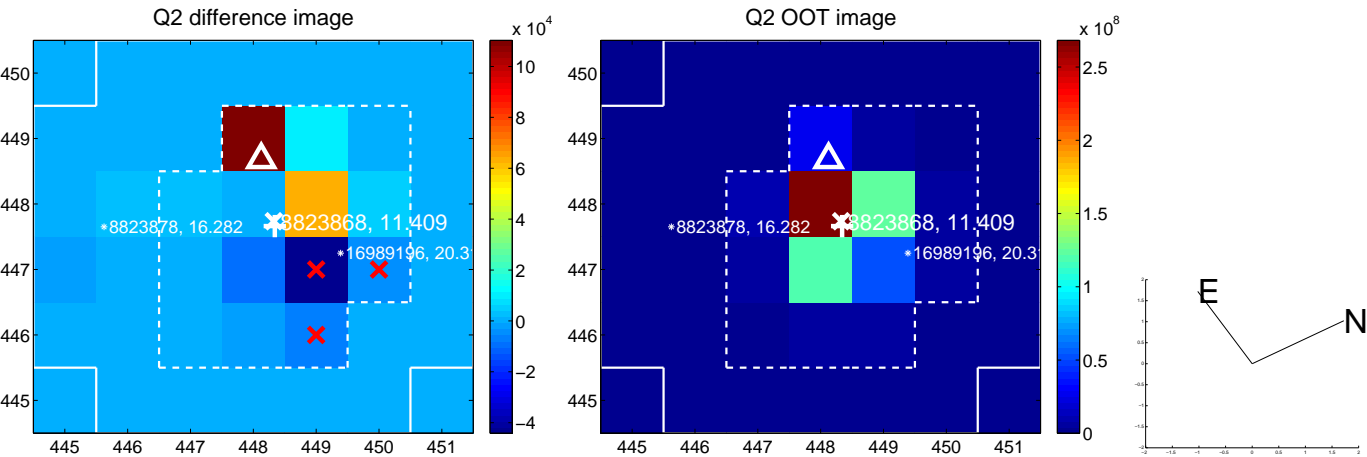


offset from photometric centroids

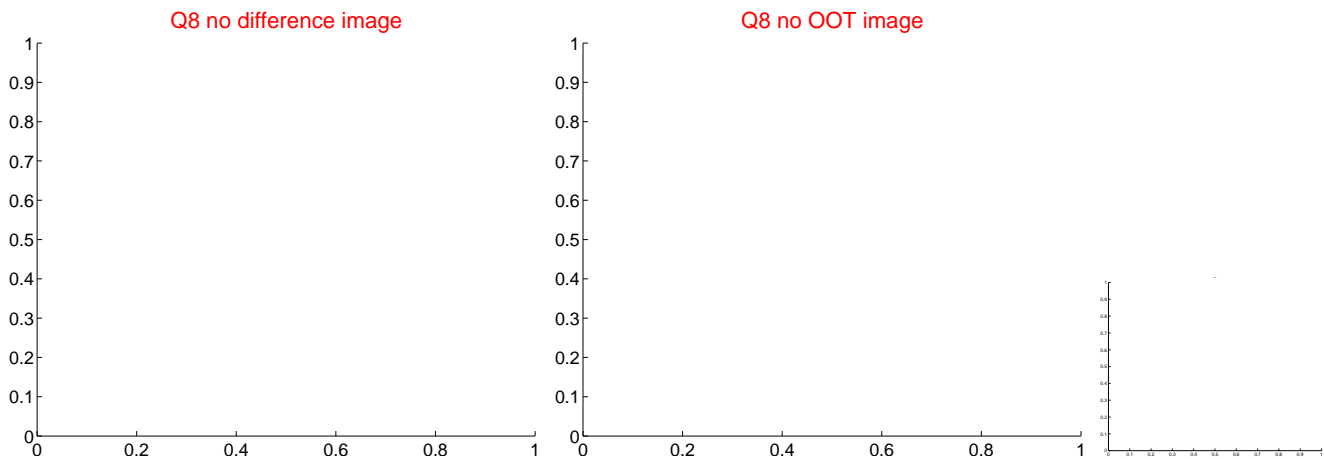
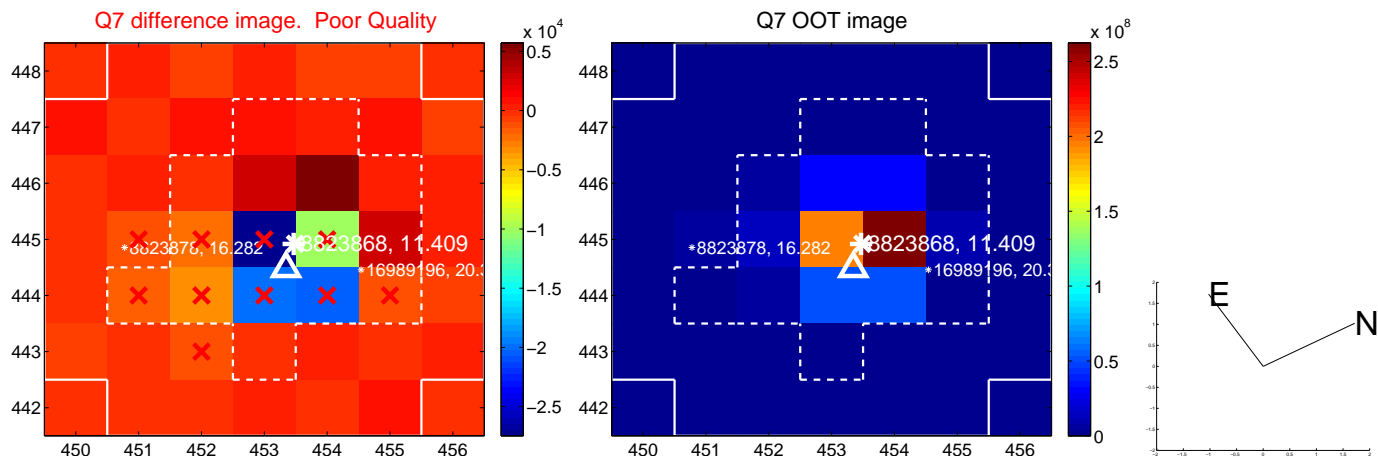
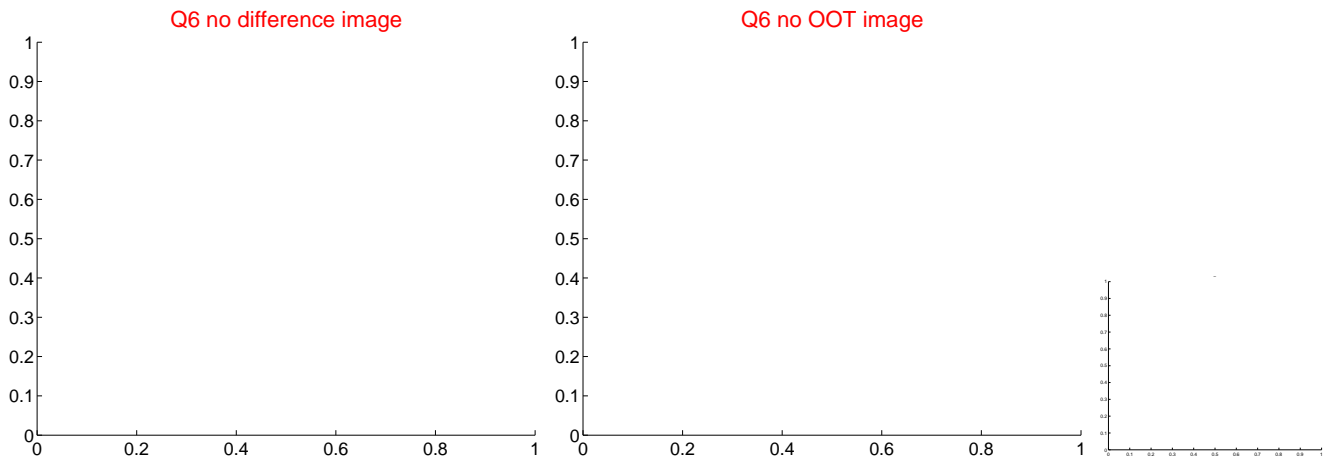
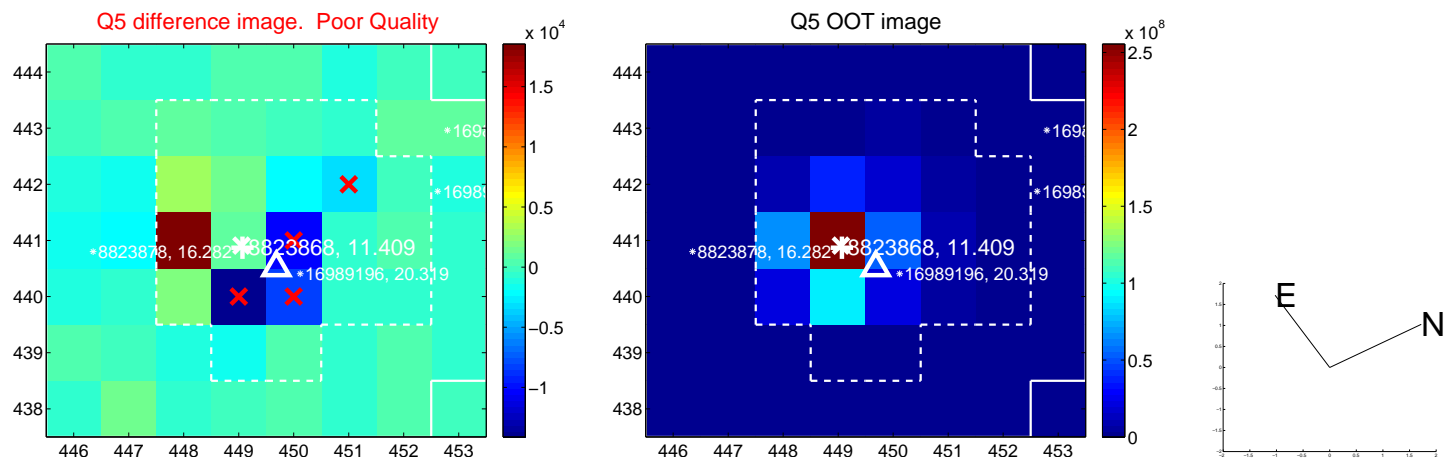


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

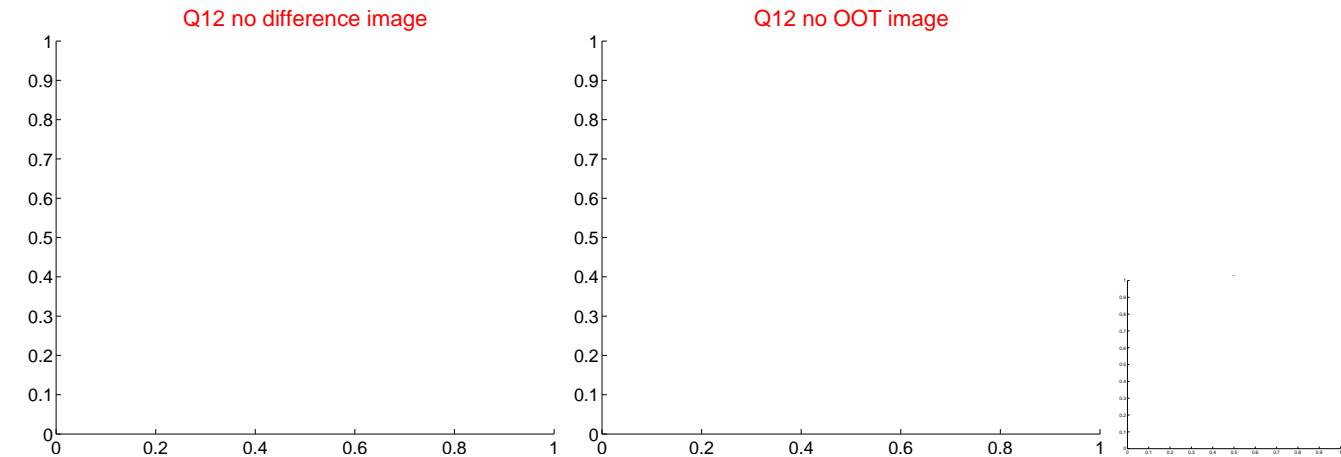
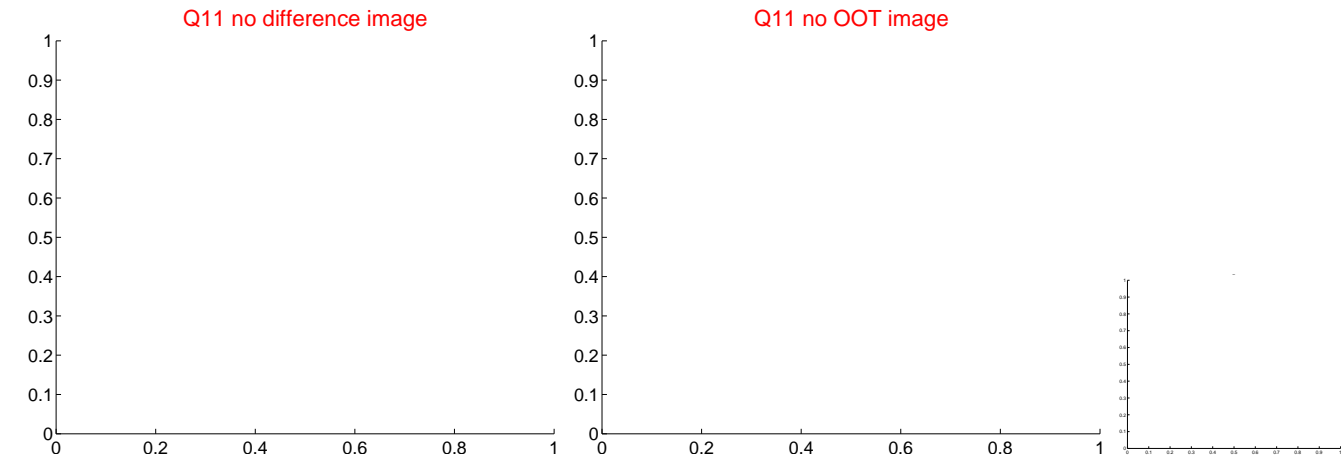
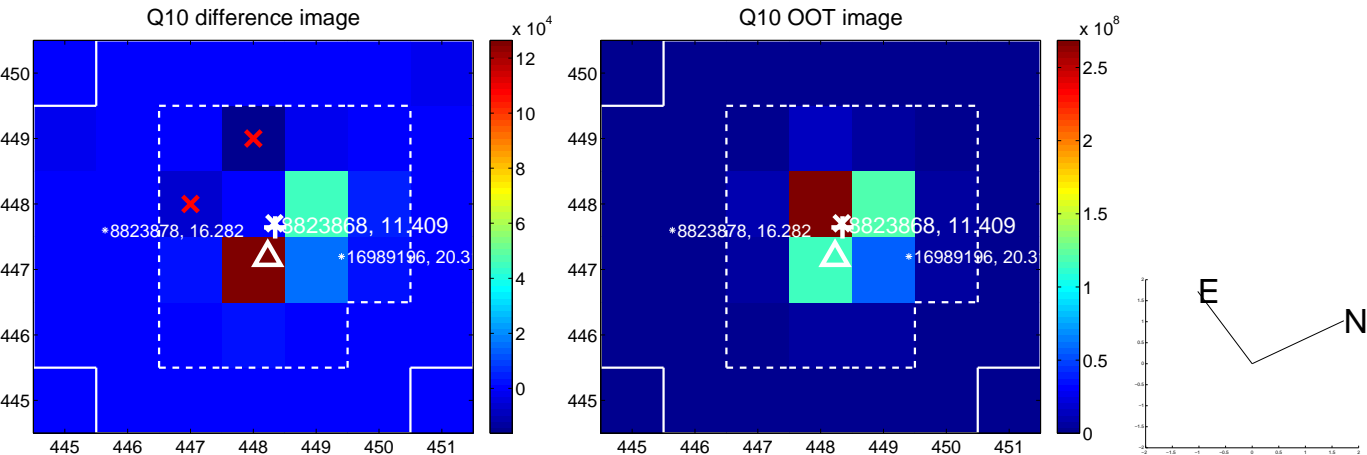
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



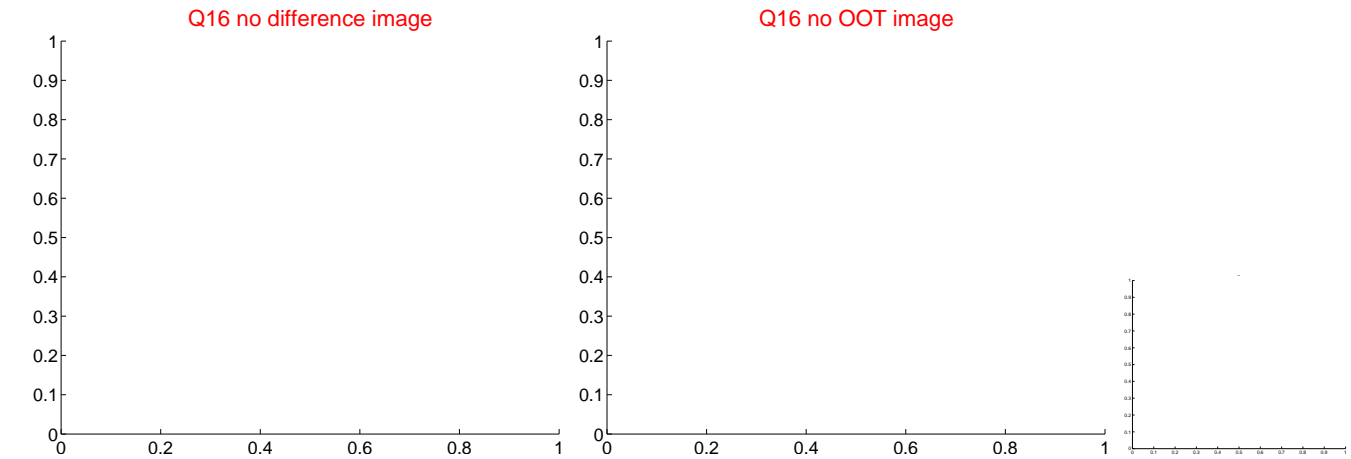
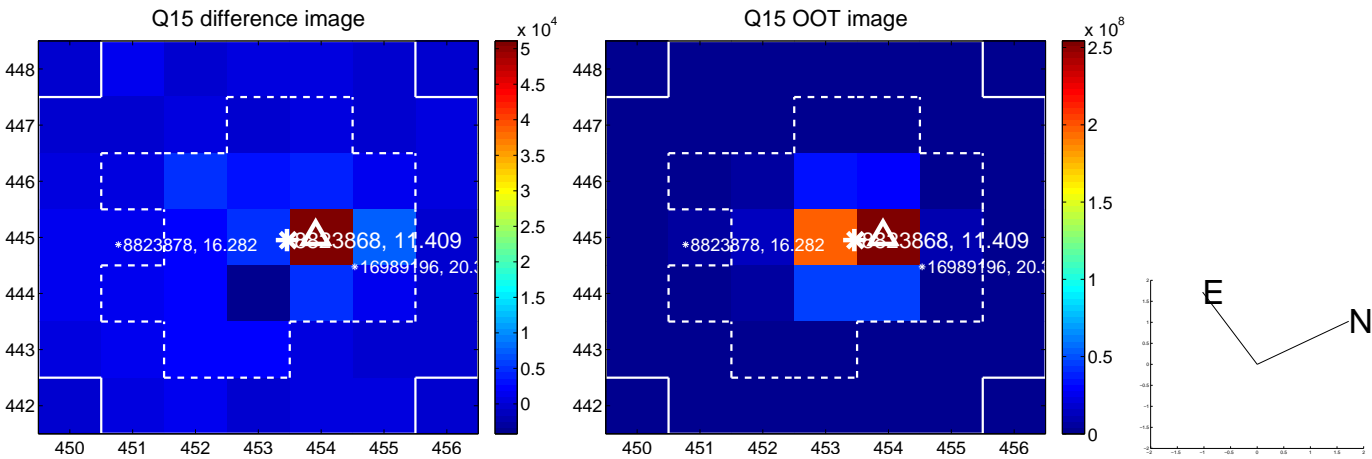
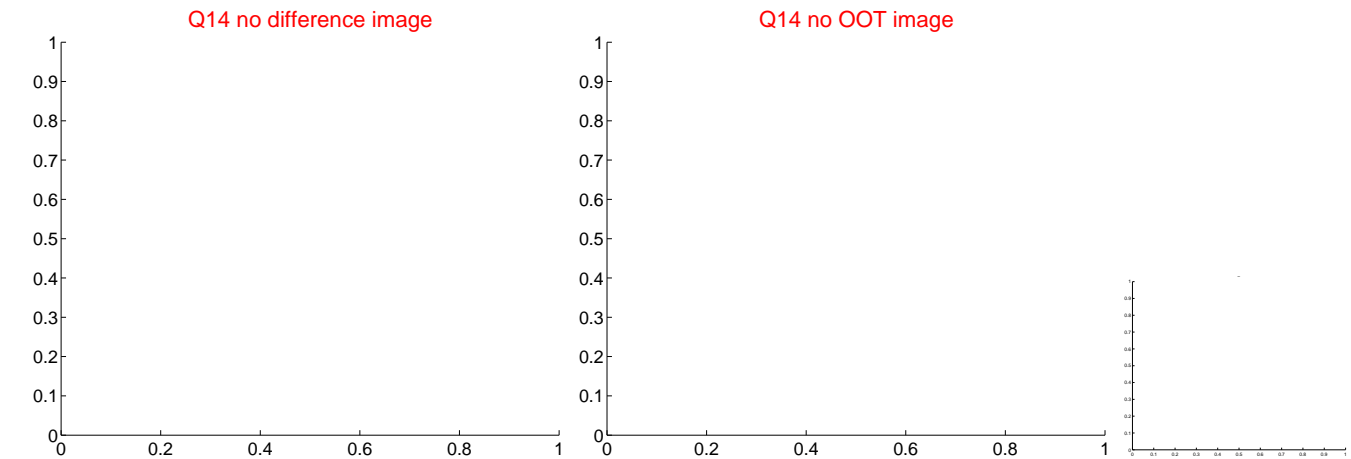
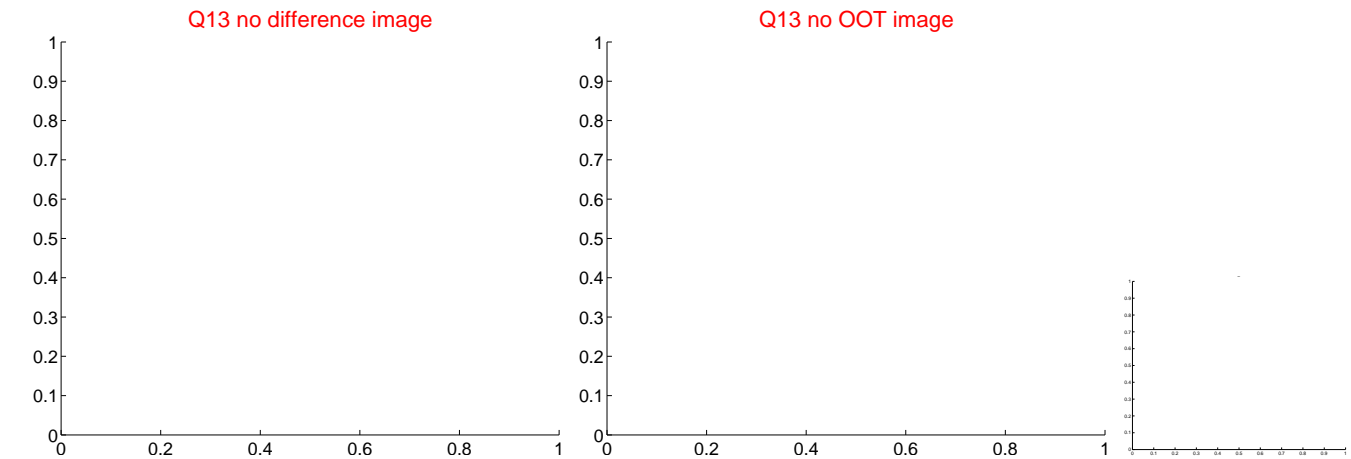
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



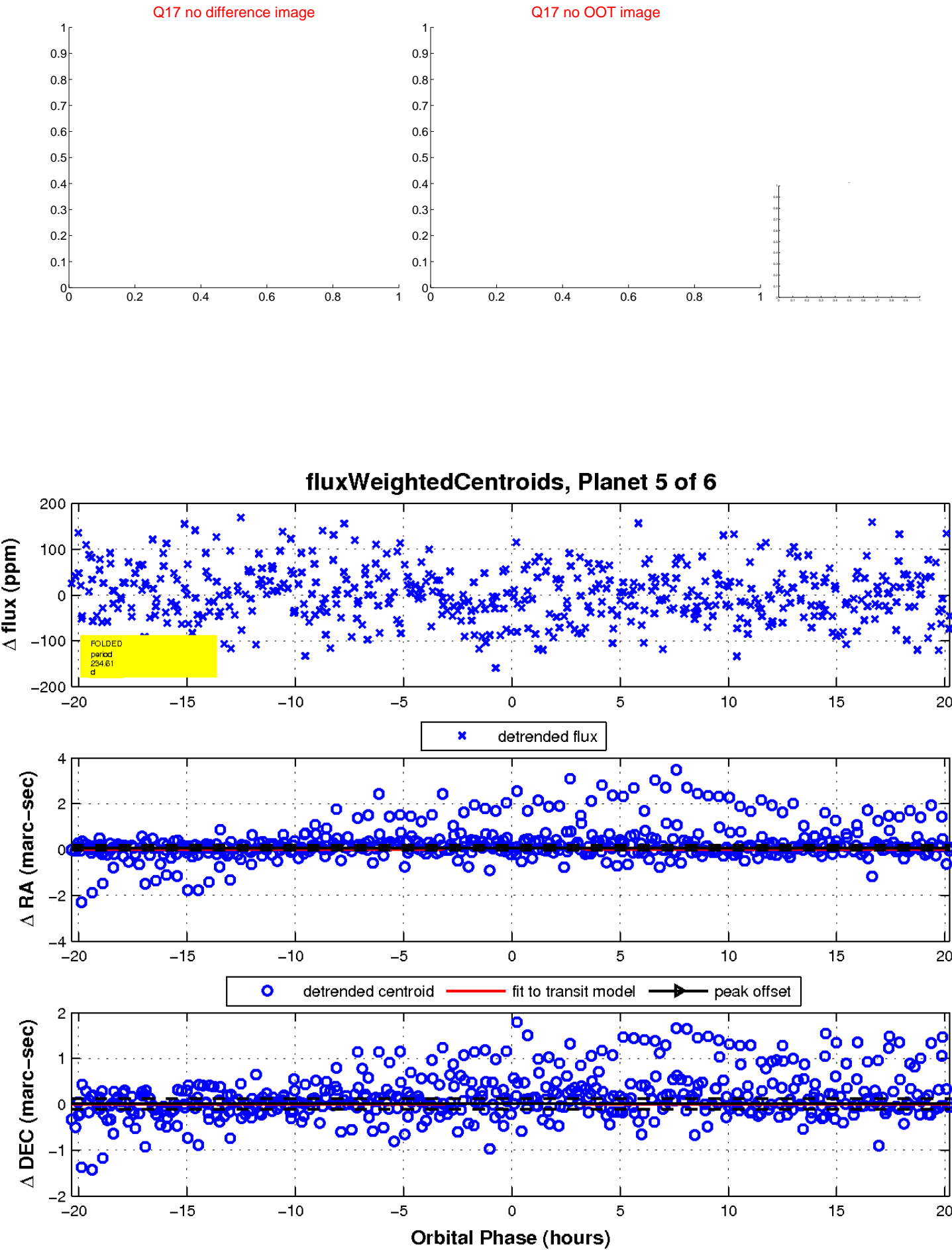
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

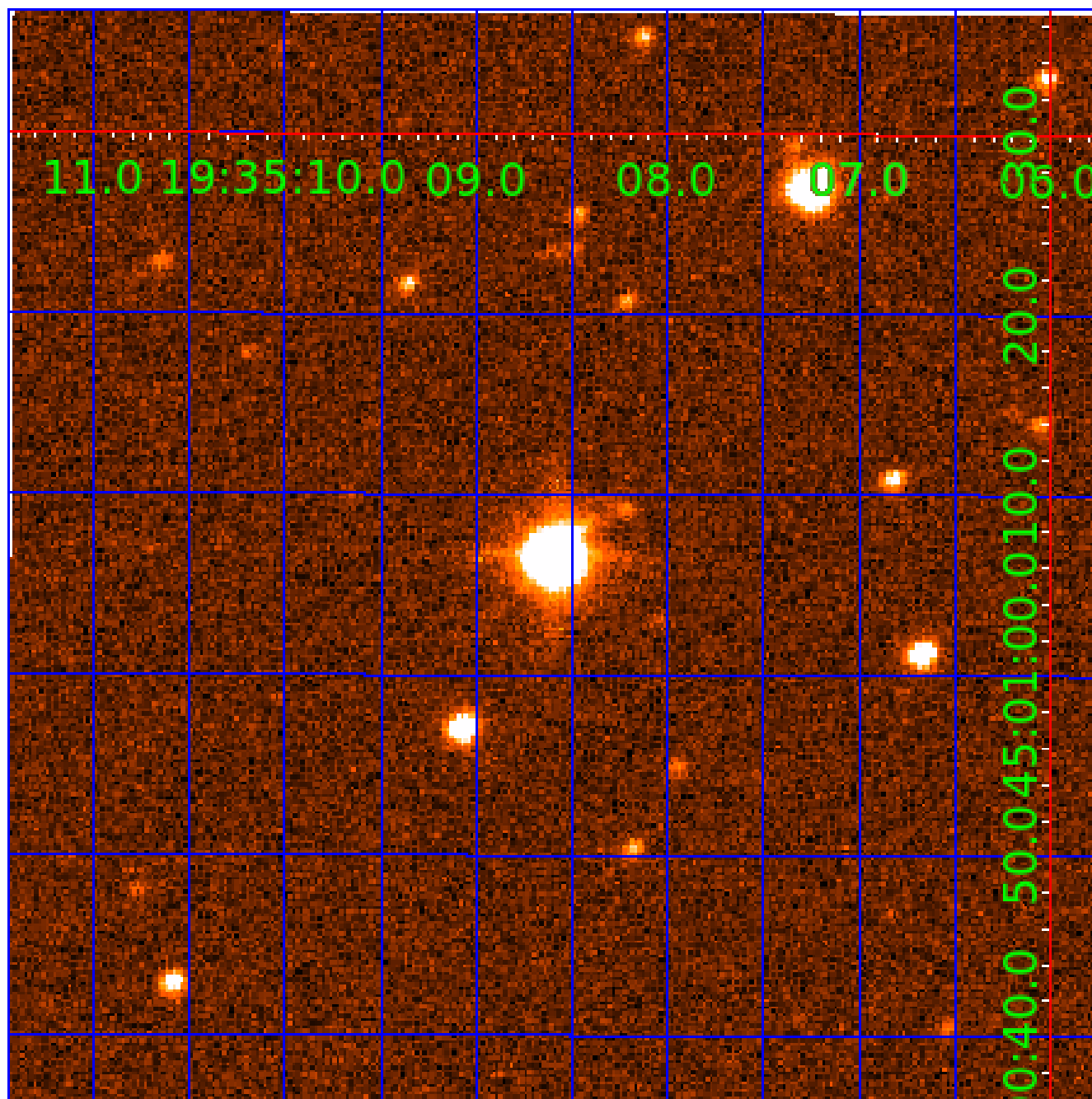


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008823868

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})
008823868-01	OBS	No	23.876136	155.008707	5216.6	9.729	1762.4	1310.8	2.53	9974	18.75	1138.09
008823868-02	OBS	0081.01	23.876136	143.069948	1631.3	9.448	537.8	534.7	2.53	9974	10.78	1138.09
008823868-03	OBS	No	2.766345	133.491080	7.5	11.970	8.5	7.8	2.53	9974	0.74	20149.00
008823868-04	OBS	No	112.864378	151.414628	45.8	15.416	8.0	6.4	2.53	9974	1.90	143.46
008823868-05	OBS	No	234.607080	248.550170	92.5	6.775	7.5	7.8	2.53	9974	2.73	54.08
008823868-06	OBS	No	298.344256	185.313944	98.4	4.843	7.3	7.3	2.53	9974	2.87	39.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008823868-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_SATURATED
008823868-02	OBS	FP	0.00	1	0	0	0	SAME_NTL_PERIOD—CENT_SATURATED
008823868-03	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED—HALO_GHOST
008823868-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
008823868-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
008823868-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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.

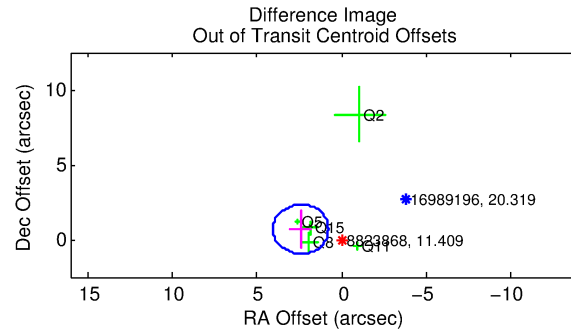
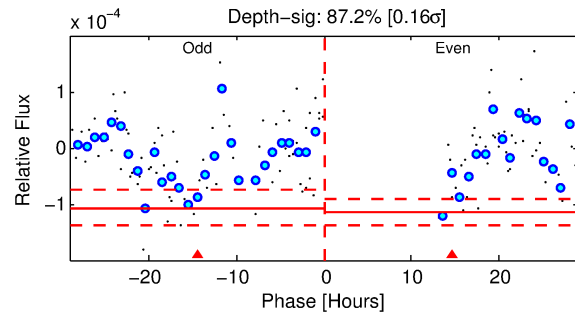
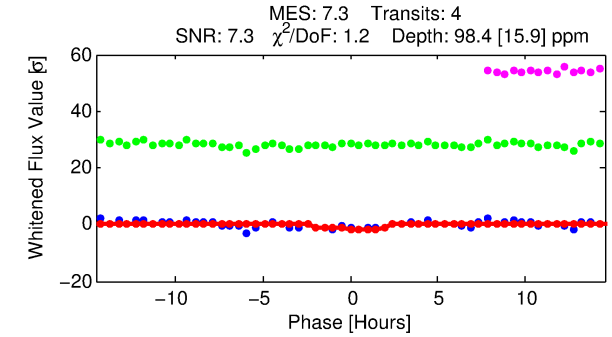
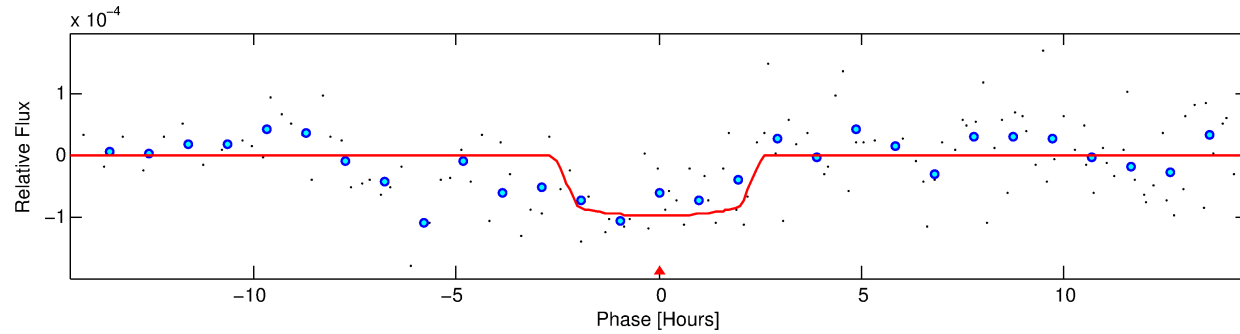
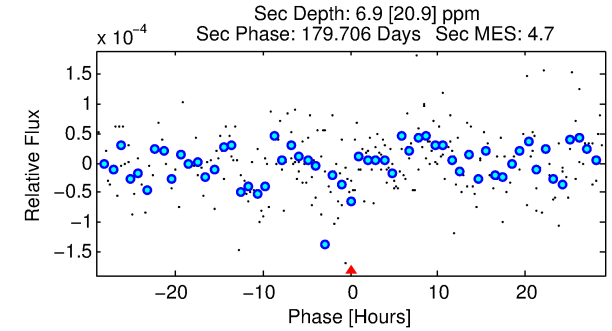
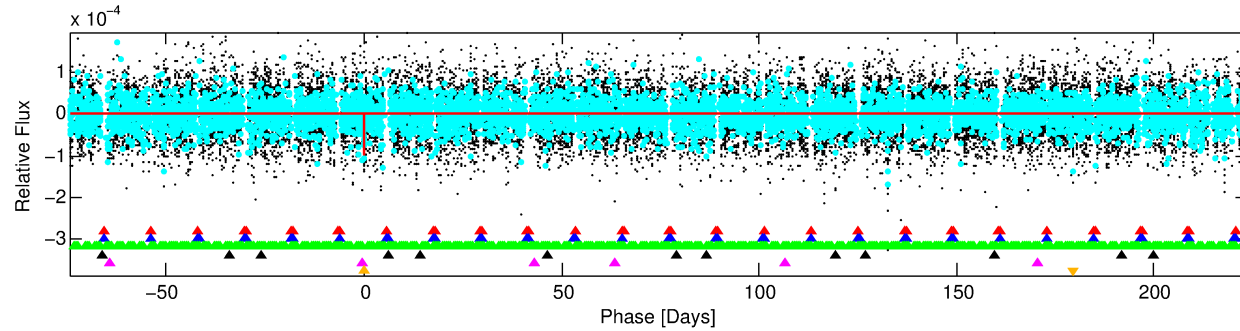
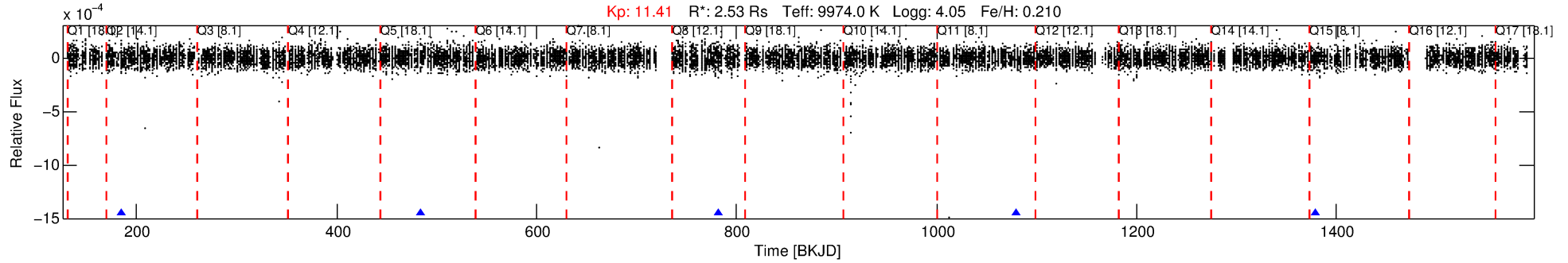
Ephemeris Match Information For 008823868-06

No Significant Match Found

DV One-Page Summary

KIC: 8823868 Candidate: 6 of 6 Period: 298.344 d

KOI: K00081 Corr: No Ephemeris Match



DV Fit Results:

Period = 298.34426 [0.00816] d
Epoch = 185.3139 [0.0153] BKJD
Rp/R* = 0.0104 [0.0047]
a/R* = 222.72 [805.40]
b = 0.89 [0.82]
Seff = 39.25 [17.55]
Teq = 638 [71] K
Rp = 2.87 [1.71] Re
a = 1.2039 [0.3641] AU
Ag = 672.89 [2133.52] [0.31σ]
Teffp = 5026 [3955] K [1.11σ]

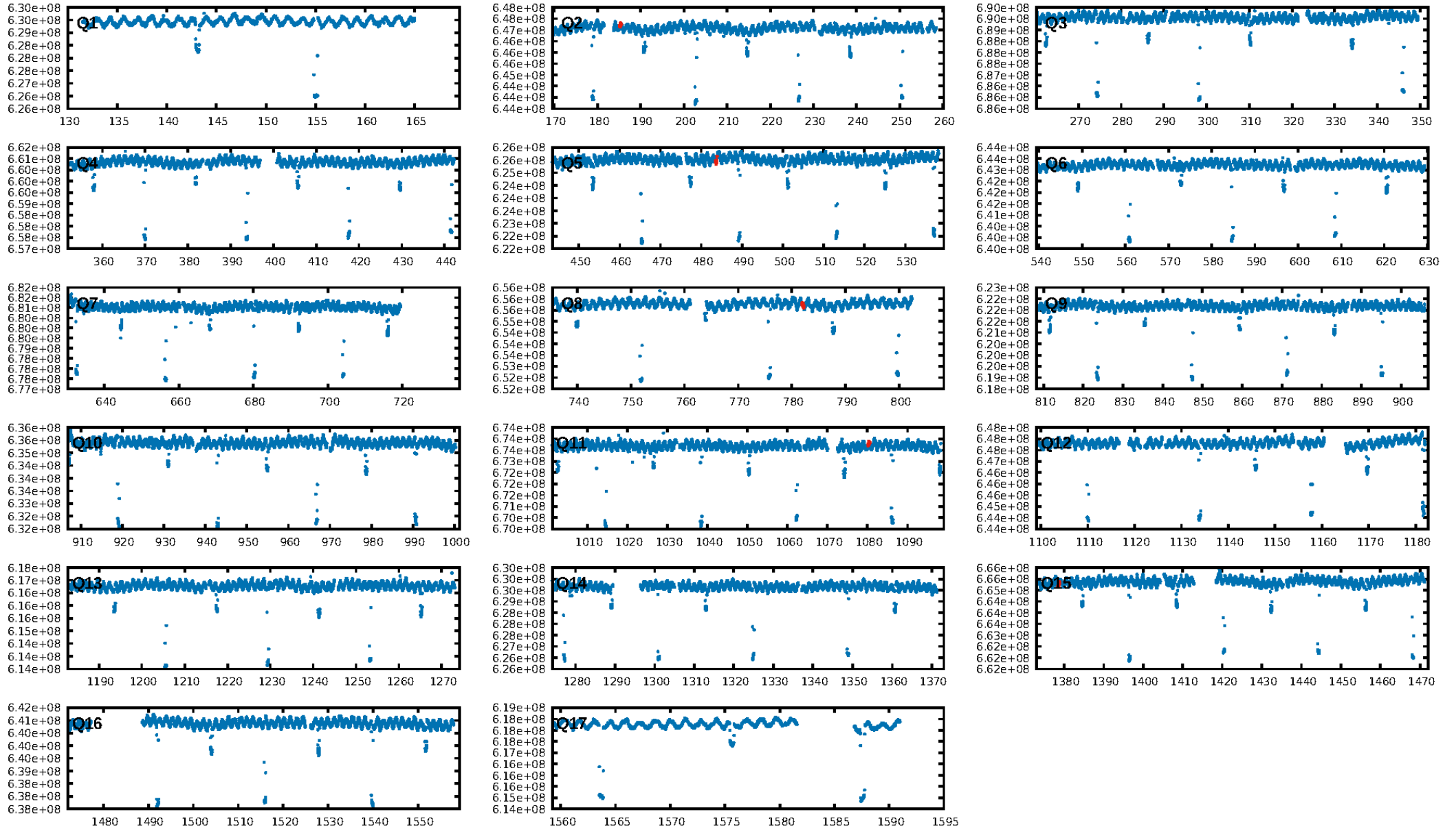
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [183.69σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 73.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.97e-07
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 2.531
Centroid-sig: 2.8%
Centroid-so: 2.428 arcsec [1.80σ]
OotOffset-rm: 2.514 arcsec [4.60σ]
KicOffset-rm: 2.382 arcsec [4.07σ]
OotOffset-st: 1/2/1/1 [5]
KicOffset-st: 1/2/1/1 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 0.60 [3/5]

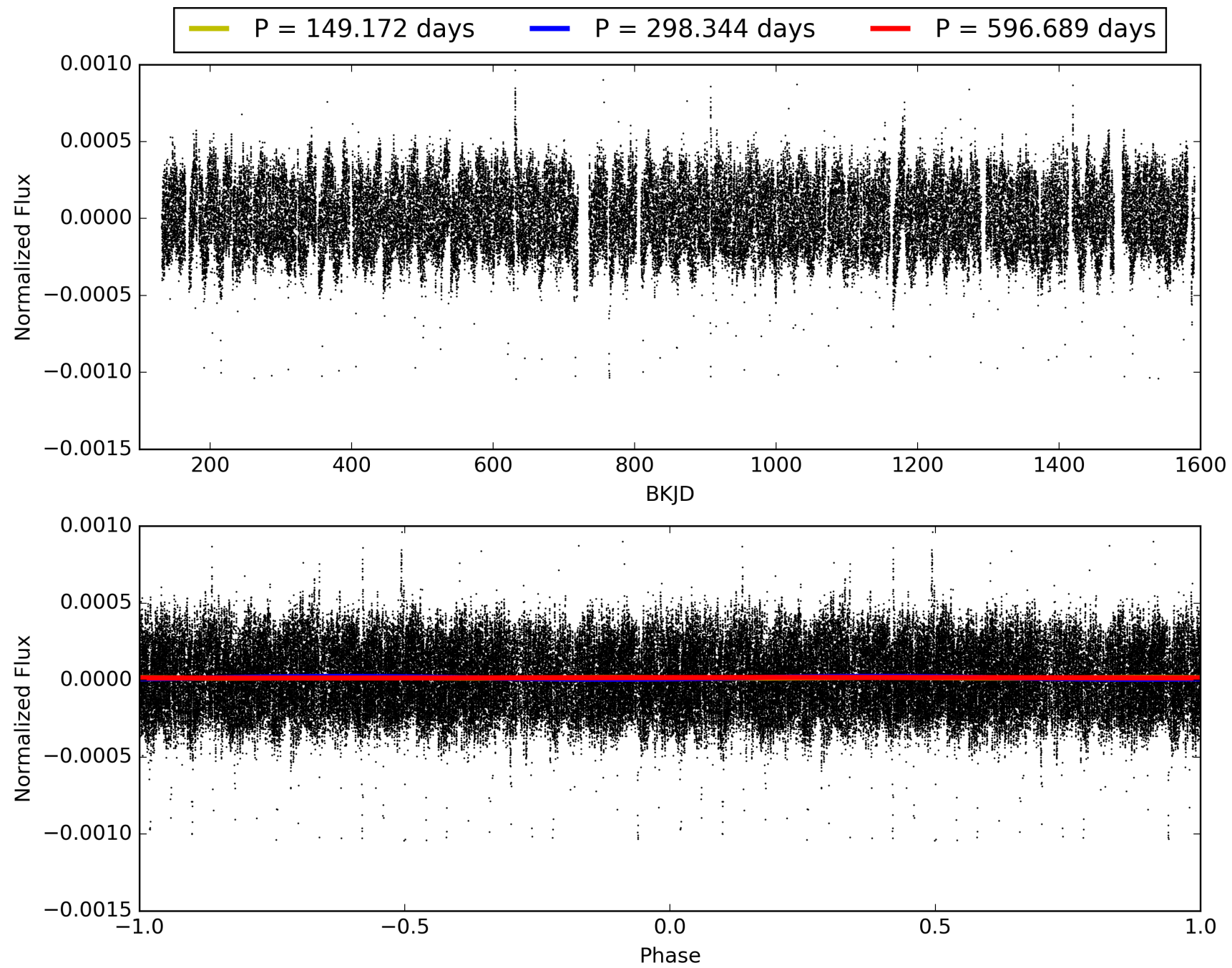
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 20:09:48 Z

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

TCE 008823868-06, PDC Light Curves

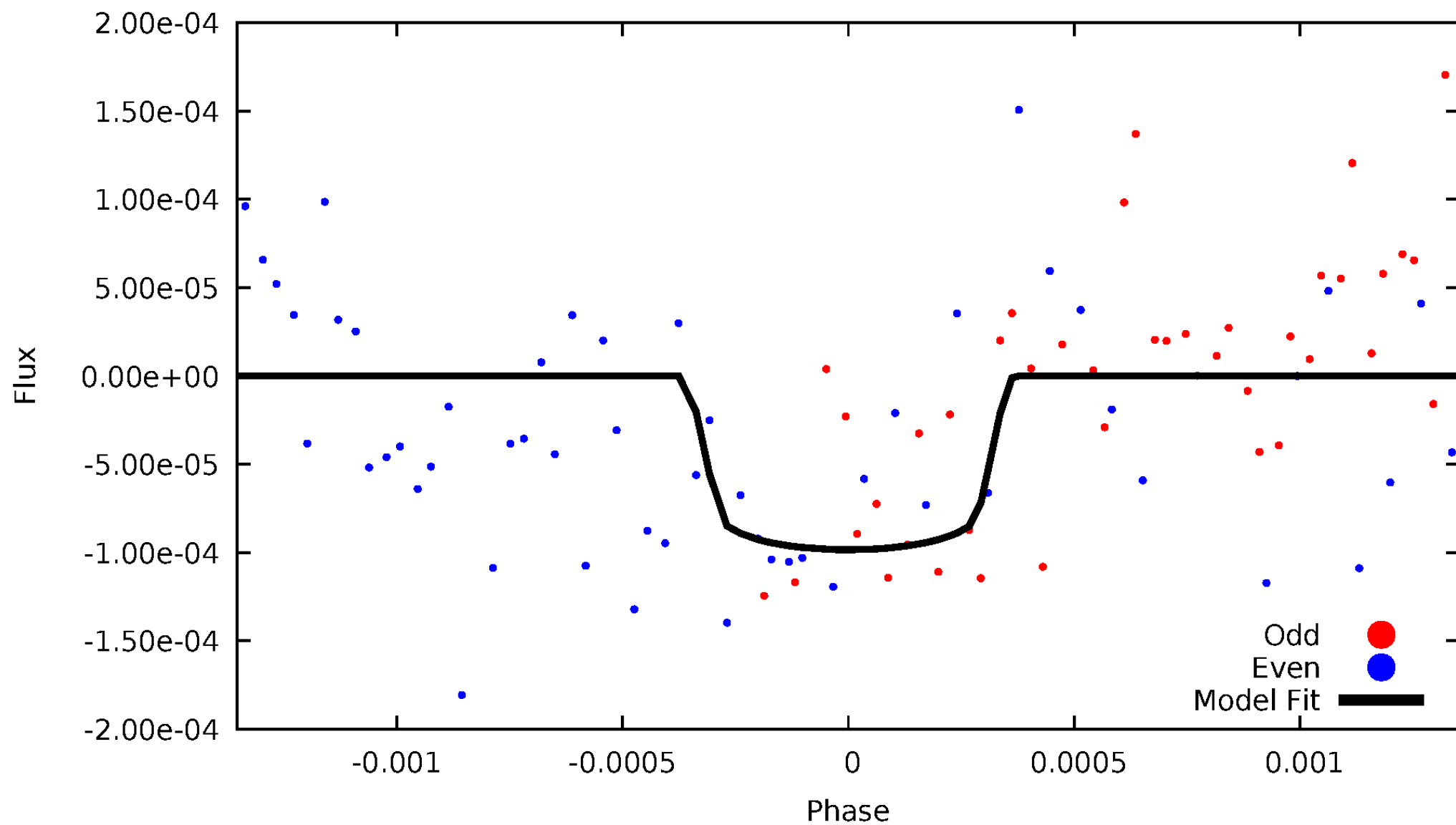


TCE 008823868-06



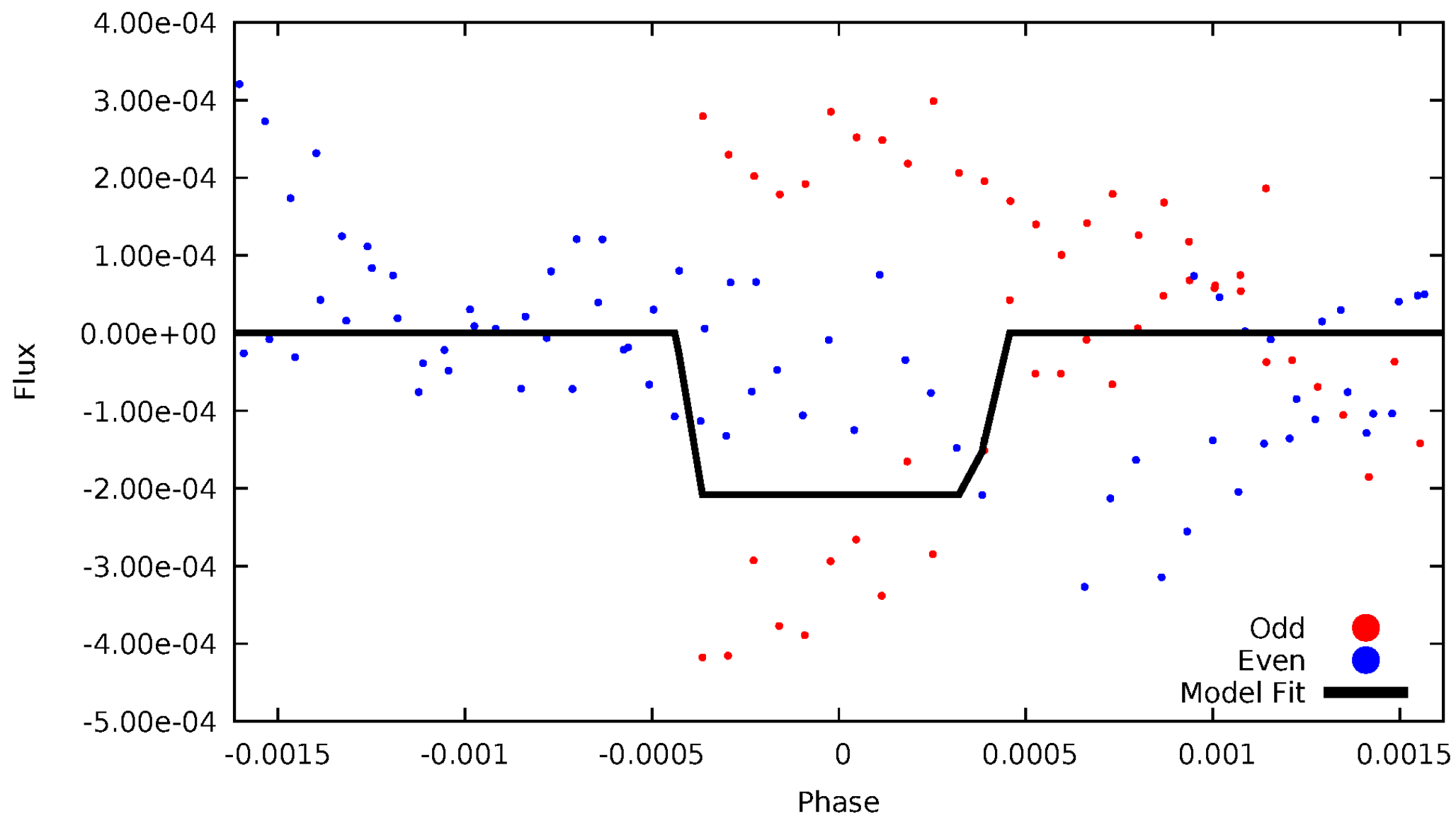
DV Odd/Even

TCE 008823868-06



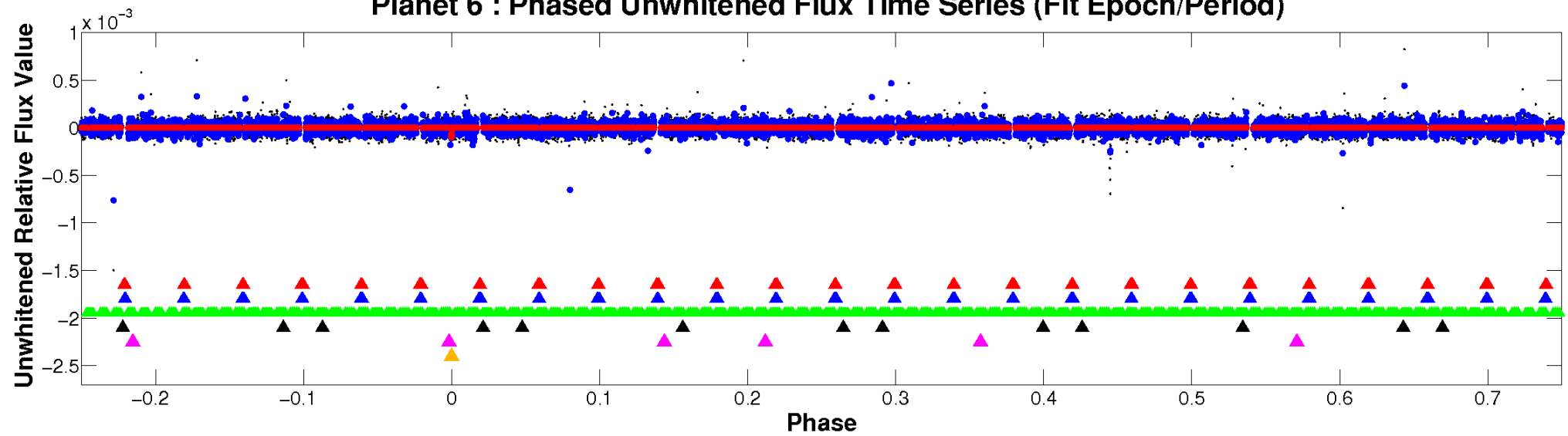
ALT Odd/Even

TCE 008823868-06

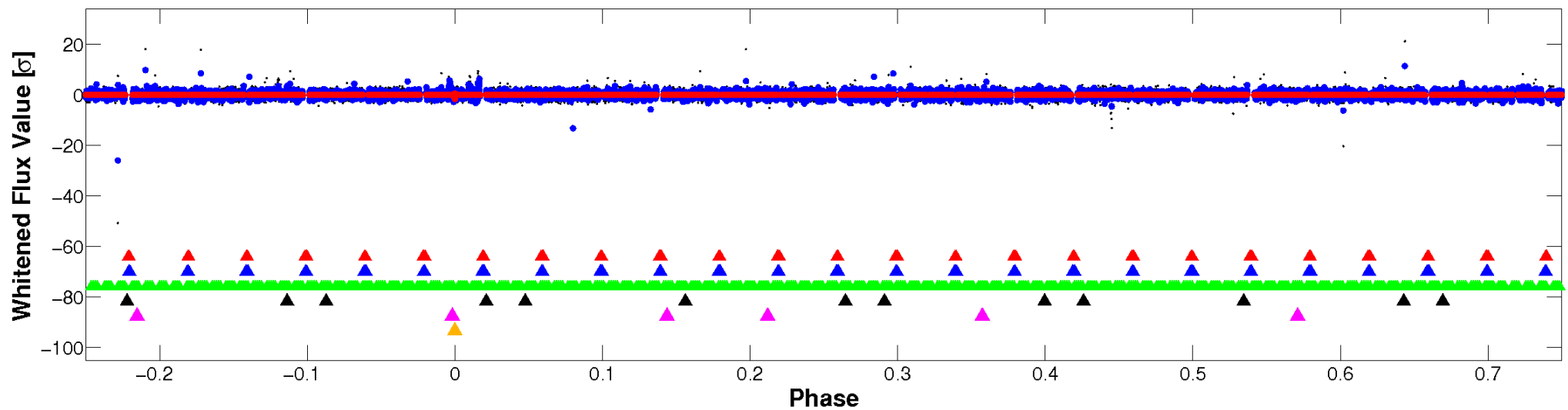


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

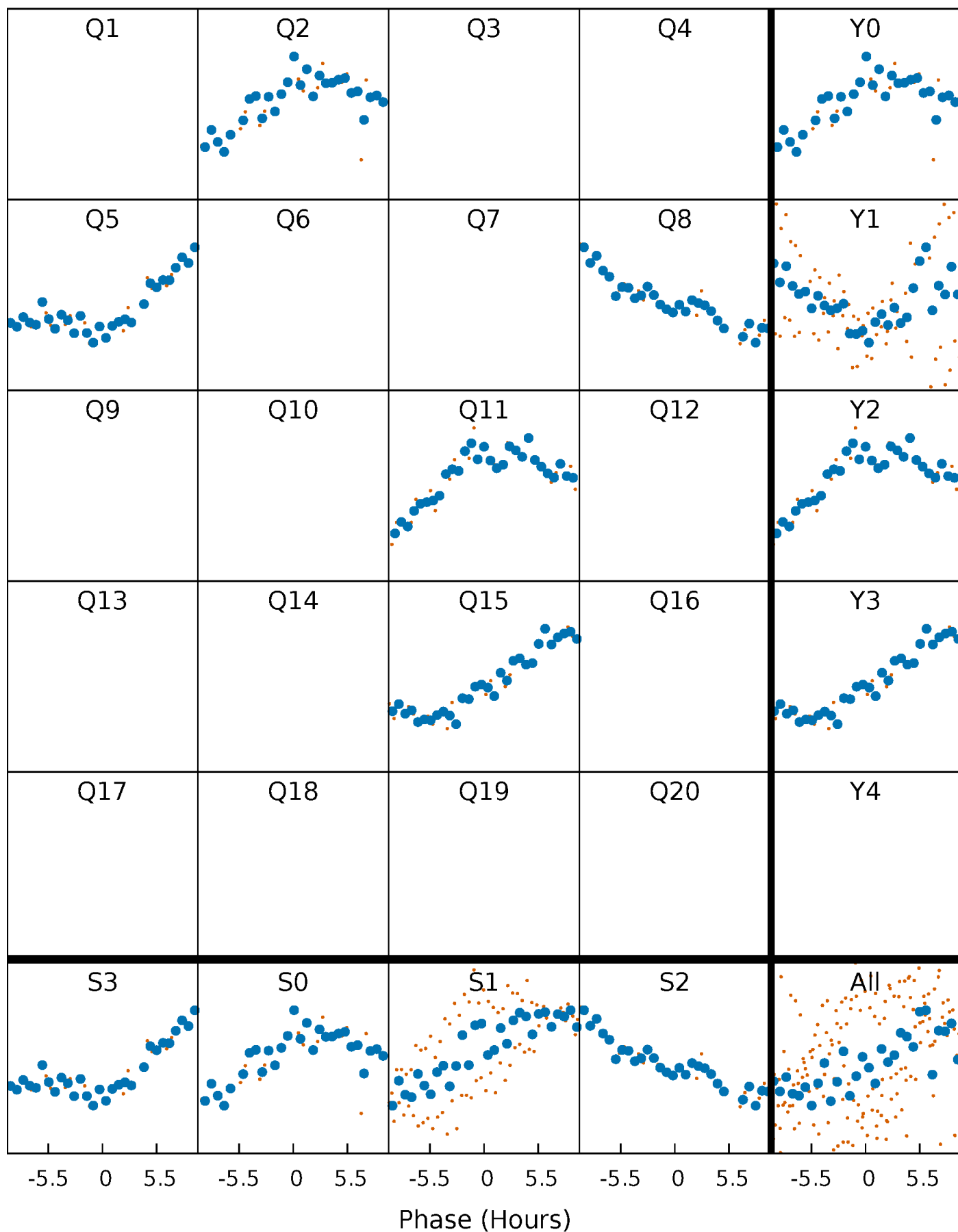


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



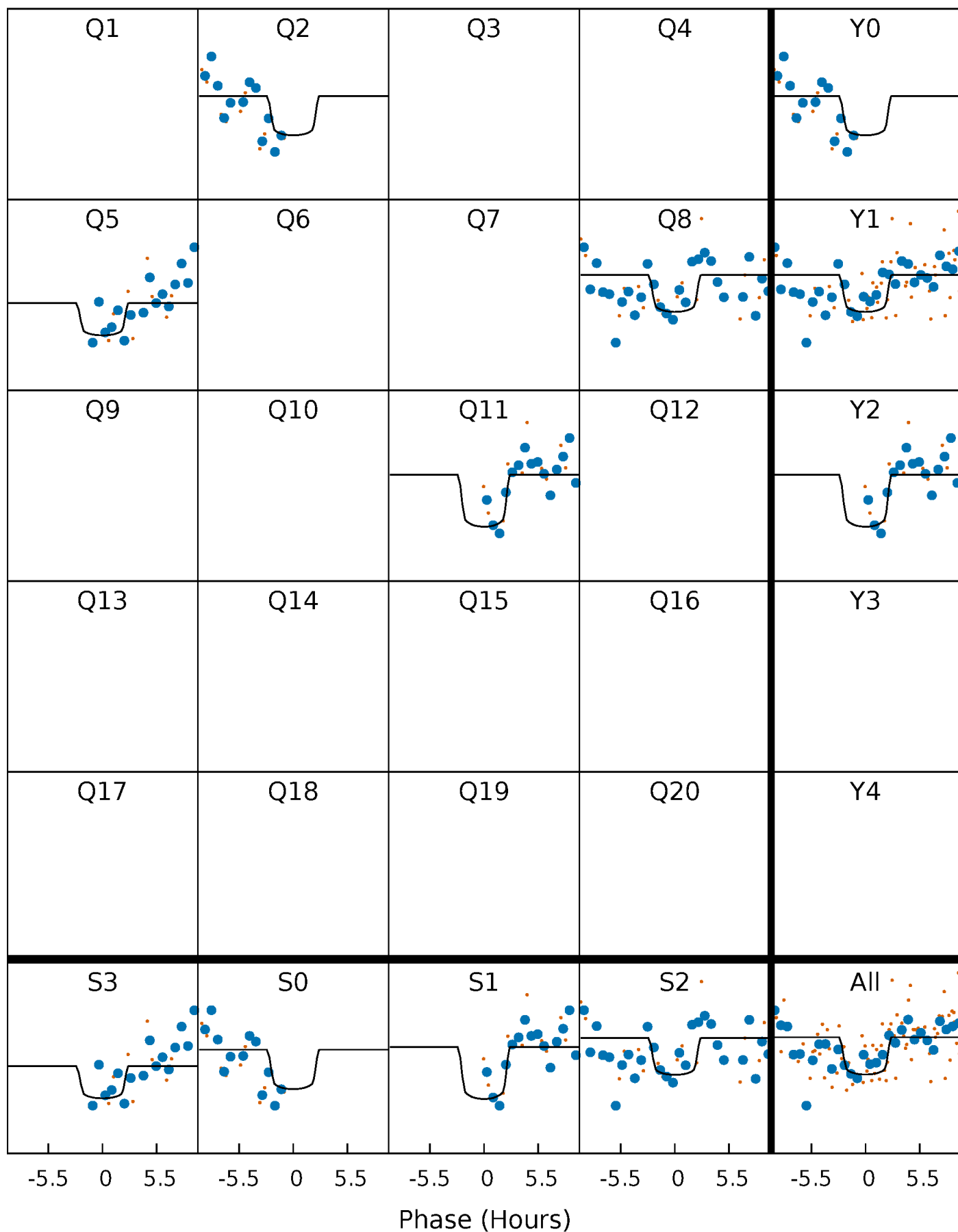
PDC Quarter-Phased Transit Curves

TCE 008823868-06 $P=298.344255$ Days $T_0=185.313944$ (BKJD)



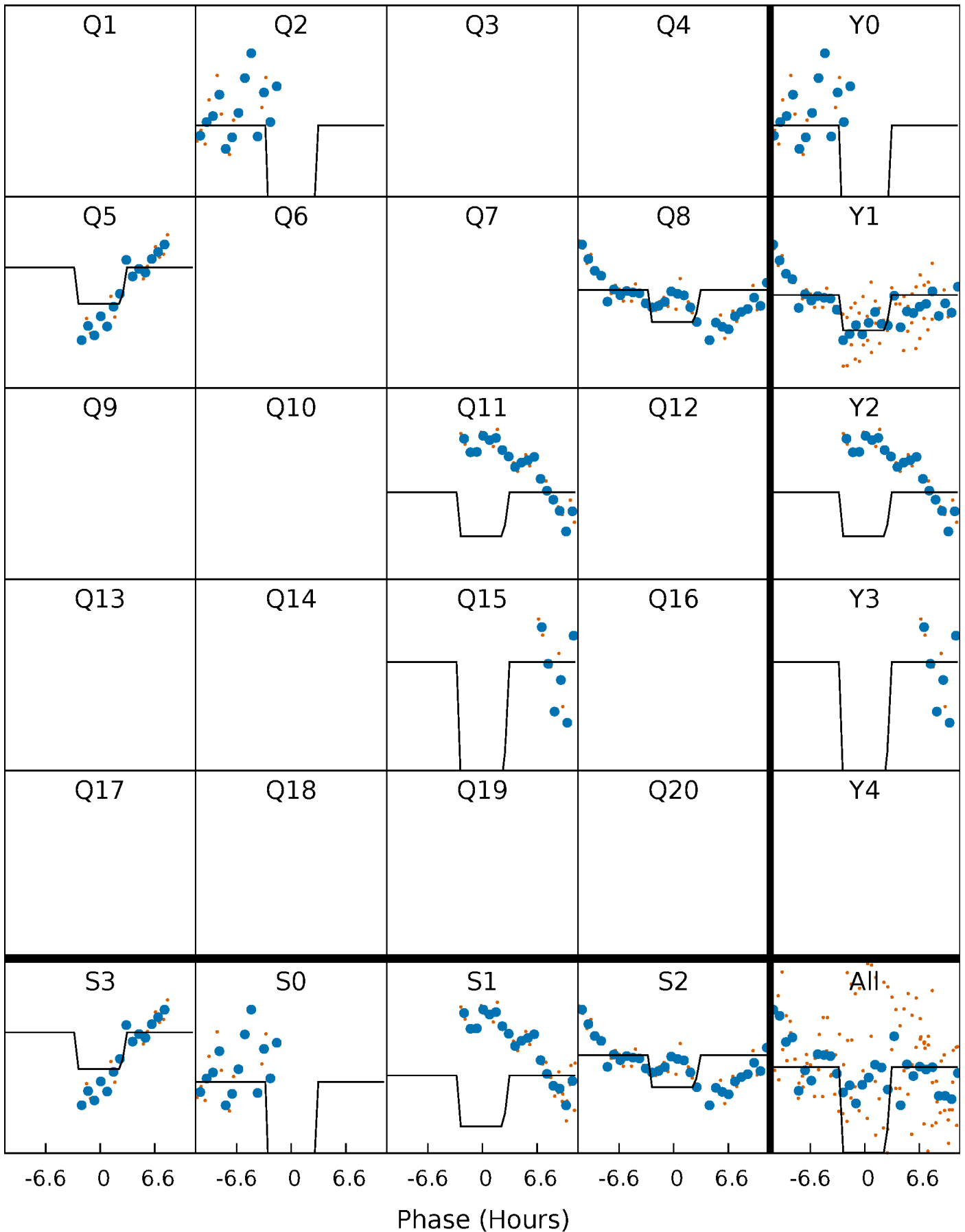
DV Quarter-Phased Transit Curves

TCE 008823868-06 $P=298.344255$ Days $T_0=185.313944$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

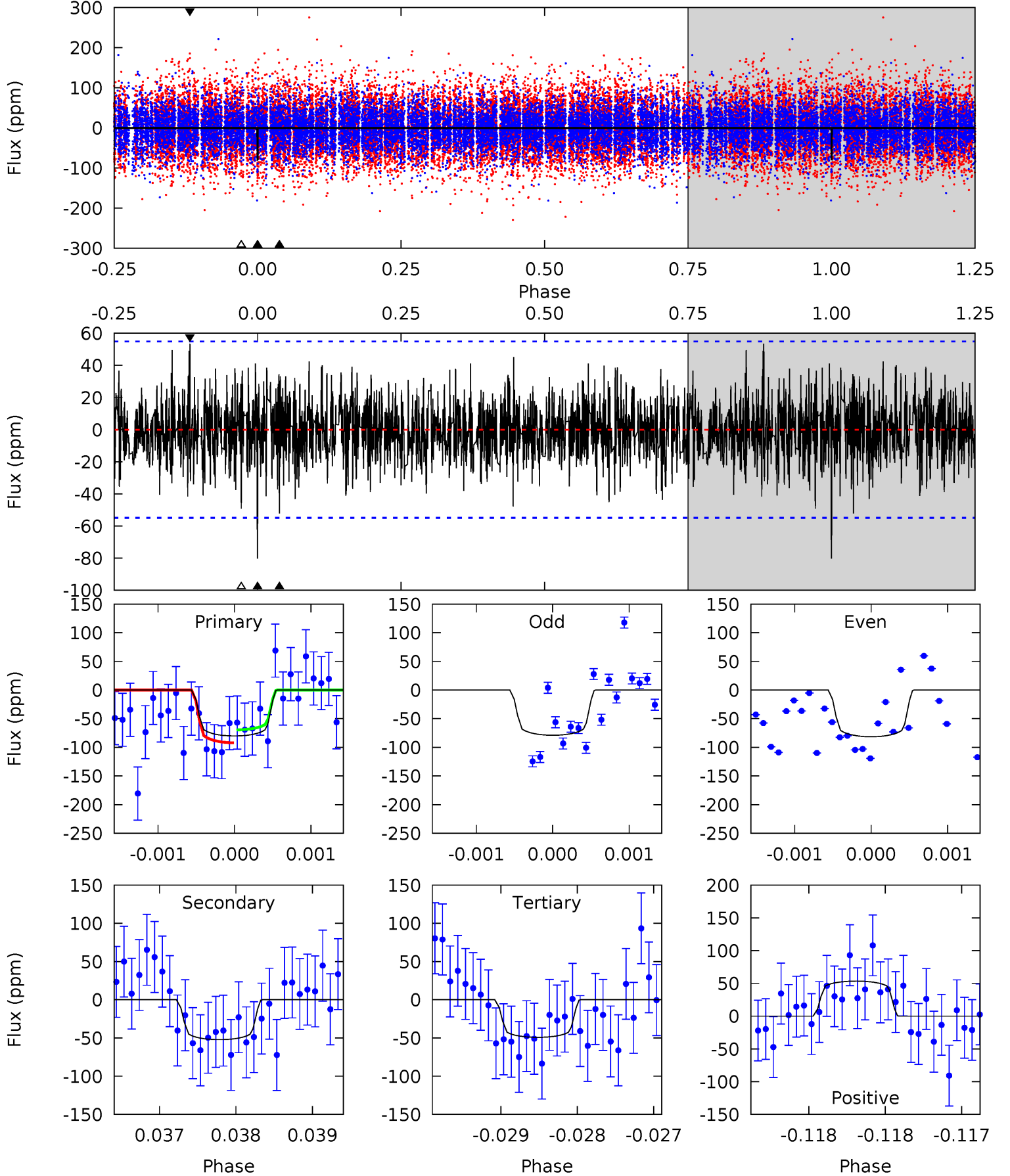
TCE 008823868-06 $P=298.370843$ Days $T_0=185.340744$ (BKJD)



DV Model-Shift Uniqueness Test

008823868-06, P = 298.344255 Days, E = 185.313944 Days

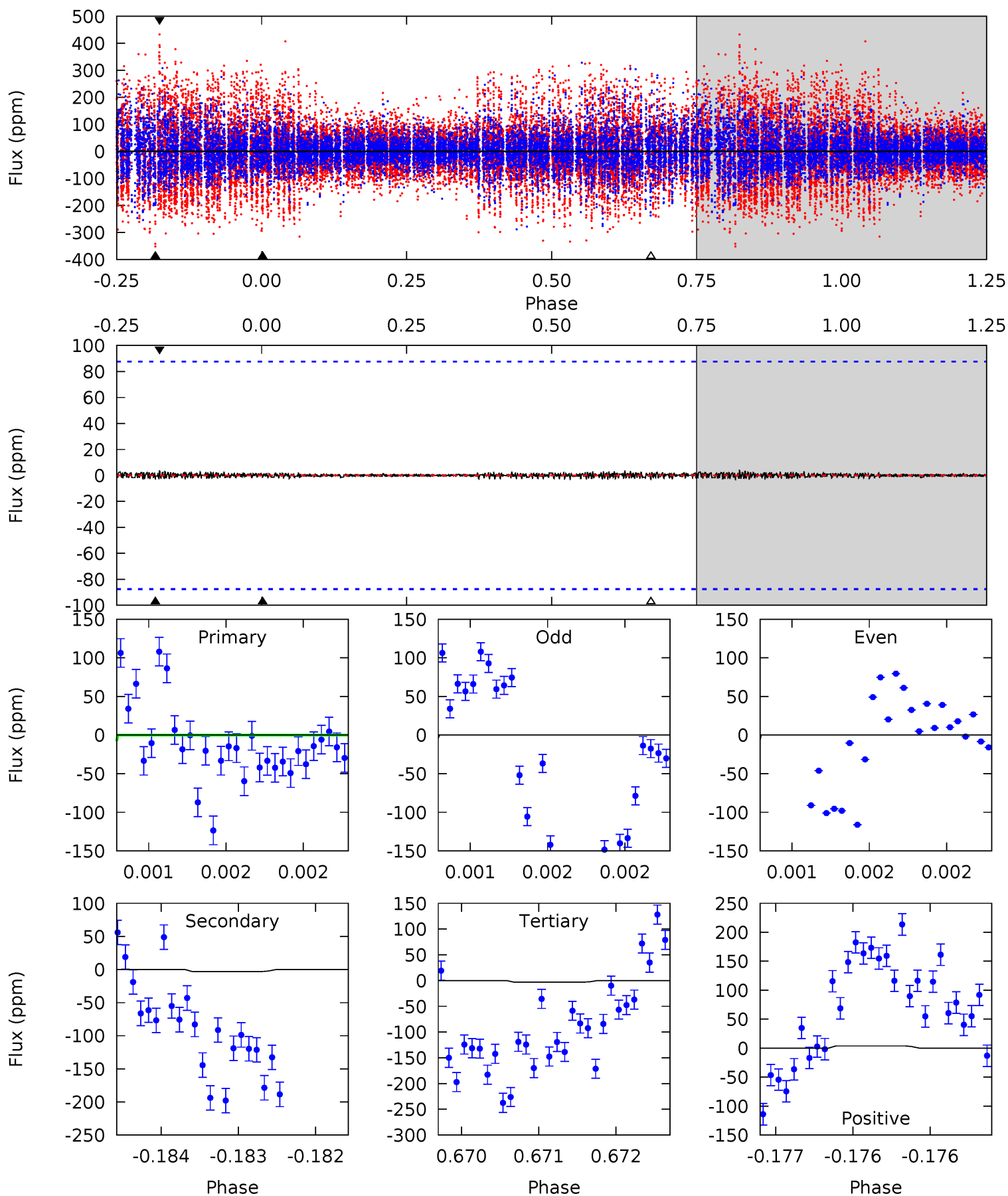
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.07	5.25	4.95	5.38	5.52	3.40	1.41	3.12	2.69	0.30	-0.13	0.13	1.10	0.40	1.12



Alt Model-Shift Uniqueness Test

008823868-06, P = 298.370843 Days, E = 185.340744 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.08	0.20	0.20	0.24	5.50	3.37	0.06	-0.11	-0.15	0.00	-0.04	0.80	1.73	0.55	0.79



Stellar Parameters For KIC 008823868

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	9974^{+275}_{-413}	$4.048^{+0.115}_{-0.214}$	$0.210^{+0.050}_{-0.400}$	$2.533^{+0.965}_{-0.414}$	$2.615^{+0.371}_{-0.278}$	$0.227^{+0.120}_{-0.122}$
	+3%/-4%	+3%/-5%	+24%/-190%	+38%/-16%	+14%/-11%	+53%/-54%
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 008823868-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-52 ± 10	$2.98^{+1.50}_{-1.34}$	898^{+75}_{-55}	7722^{+4224}_{-1479}	4698^{+11408}_{-2735}
Alt.	-3 ± 16	$4.11^{+1.47}_{-1.32}$	895^{+77}_{-48}	3485^{+1800}_{-8274}	111^{+970}_{-749}

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 $A_{obs} \gg 1.0$

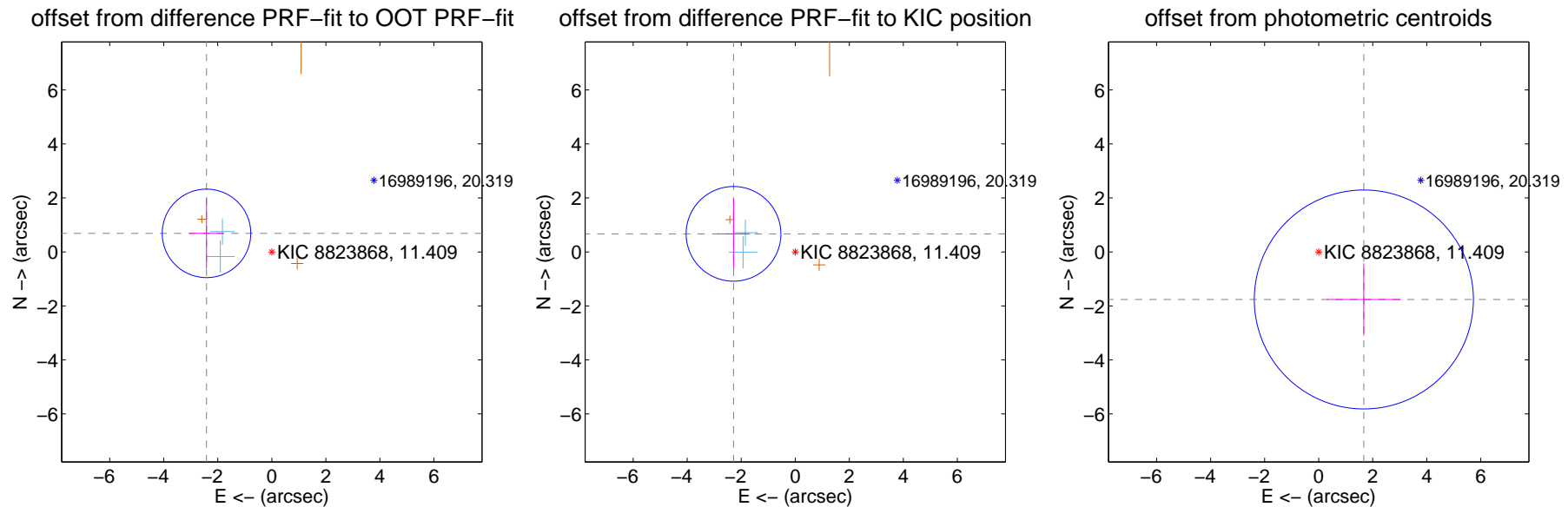
DV Centroid Data

Supplemental centroid analysis for 008823868-06. **Kepler magnitude: 11.41.** Transit SNR 7.31

There are 2 quarters with good PRF difference image offsets

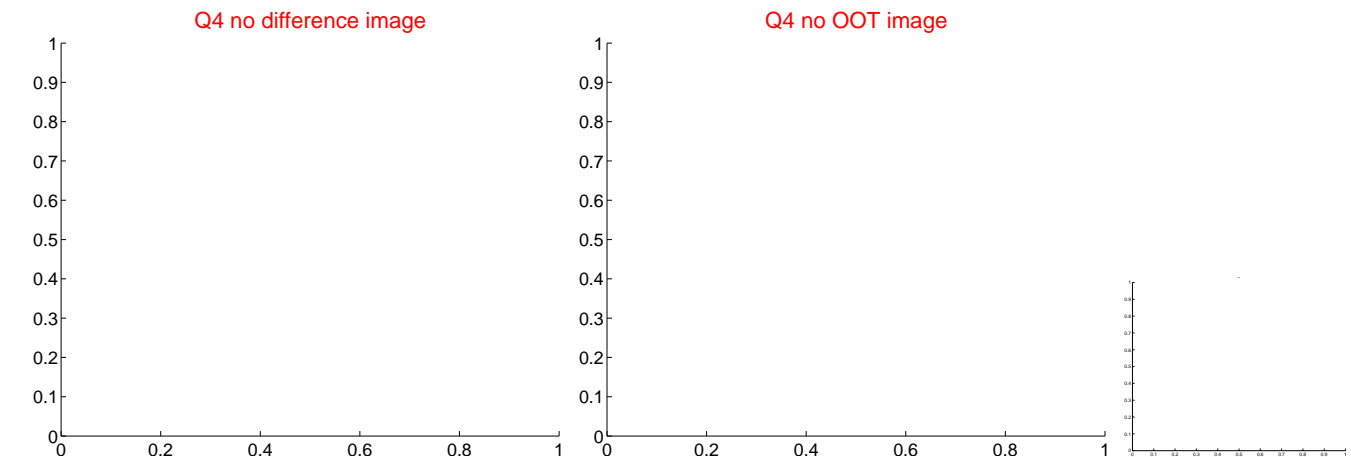
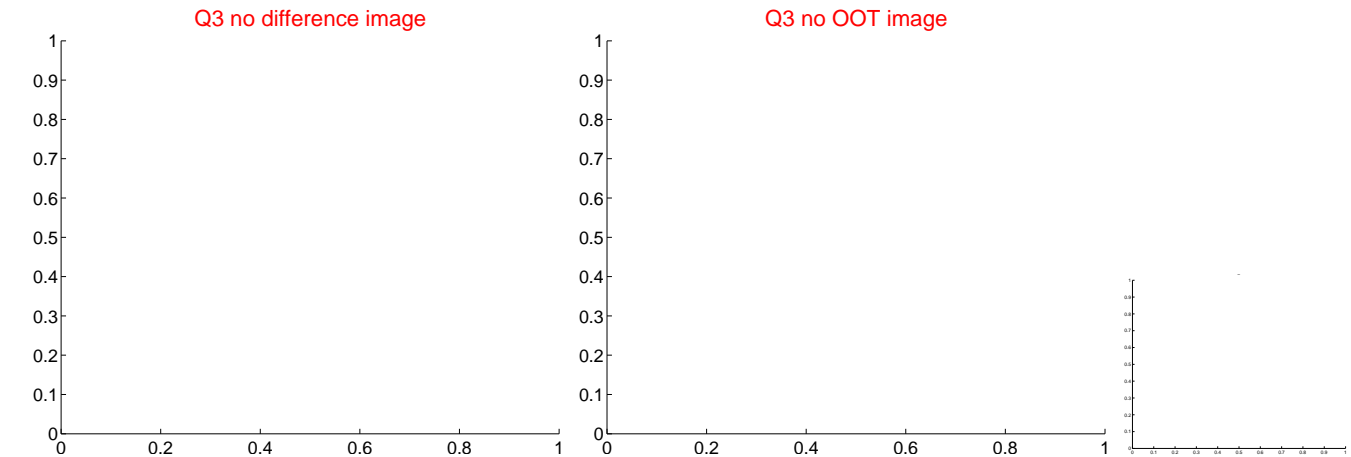
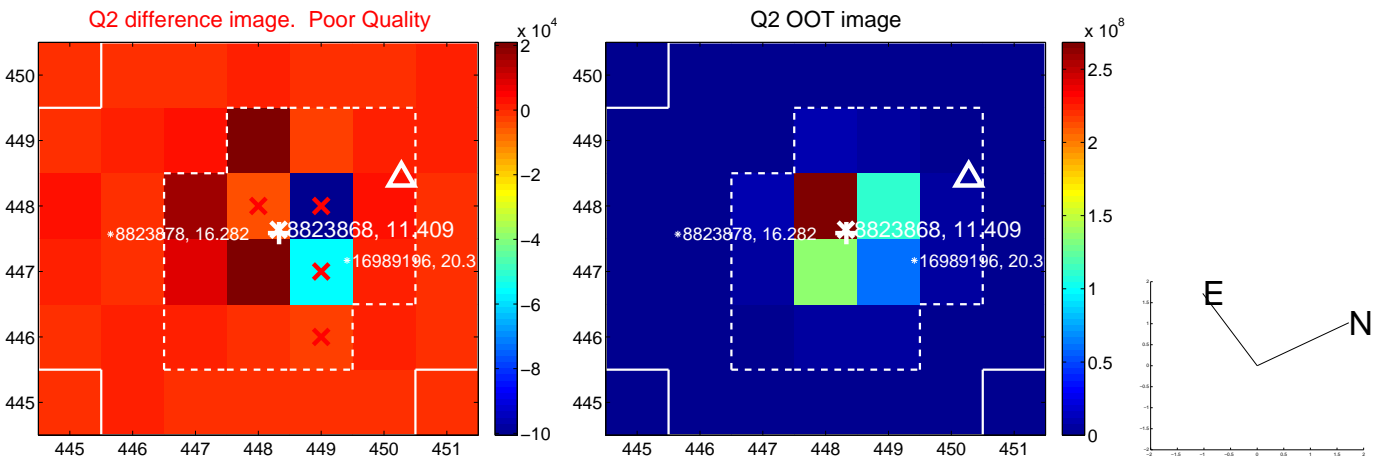
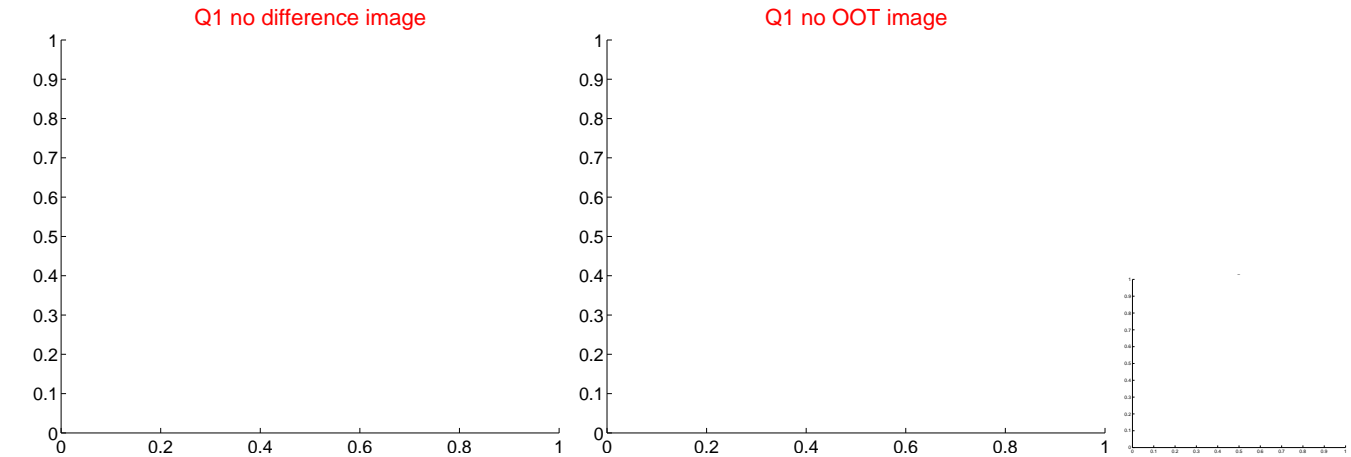
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.514 \pm 0.546	4.60	2.418 \pm 0.640	0.687 \pm 1.296
PRF-fit source offset from KIC position	2.382 \pm 0.585	4.07	2.286 \pm 0.600	0.669 \pm 1.297
photometric centroid source offset	2.43 \pm 1.35	1.80	-1.67 \pm 1.37	-1.76 \pm 1.33

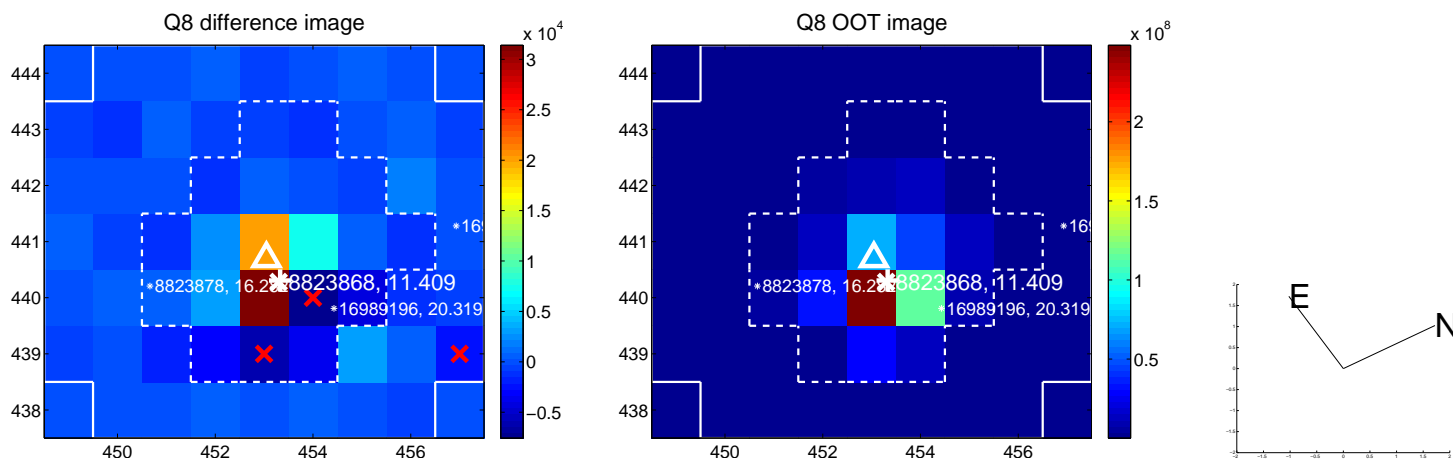
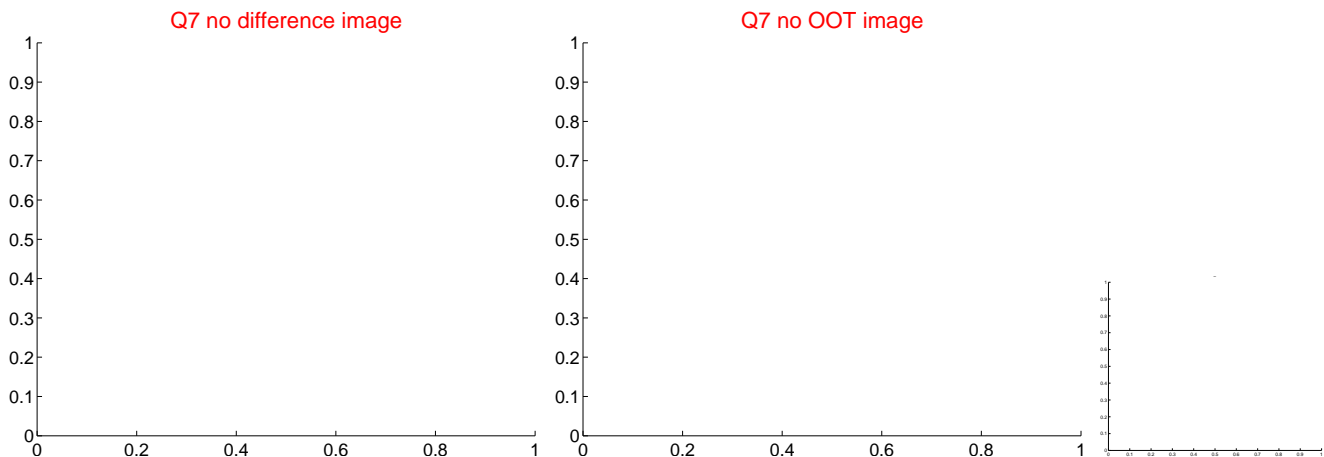
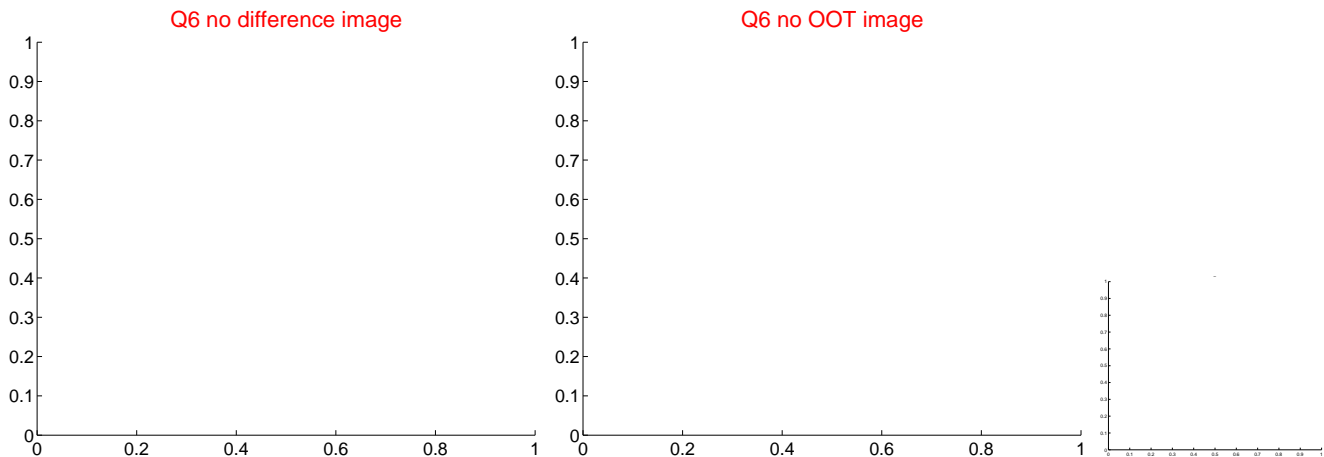
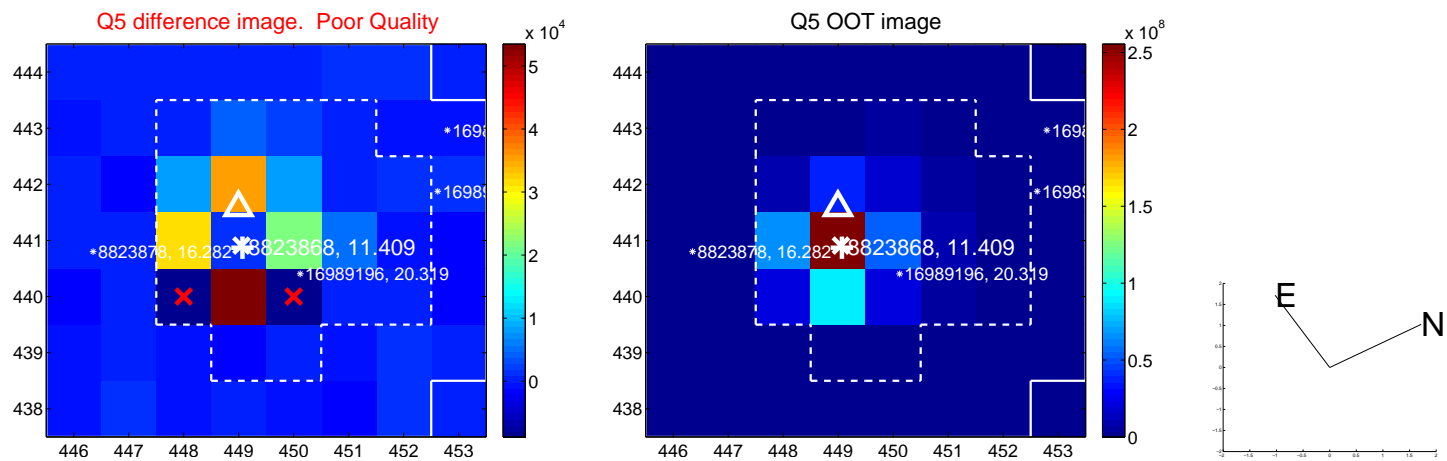


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

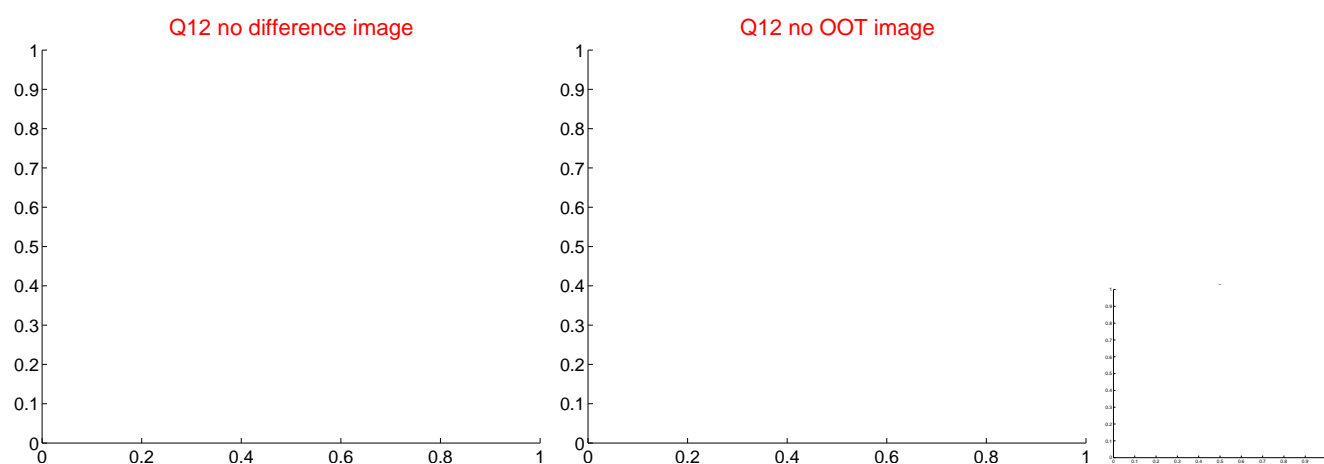
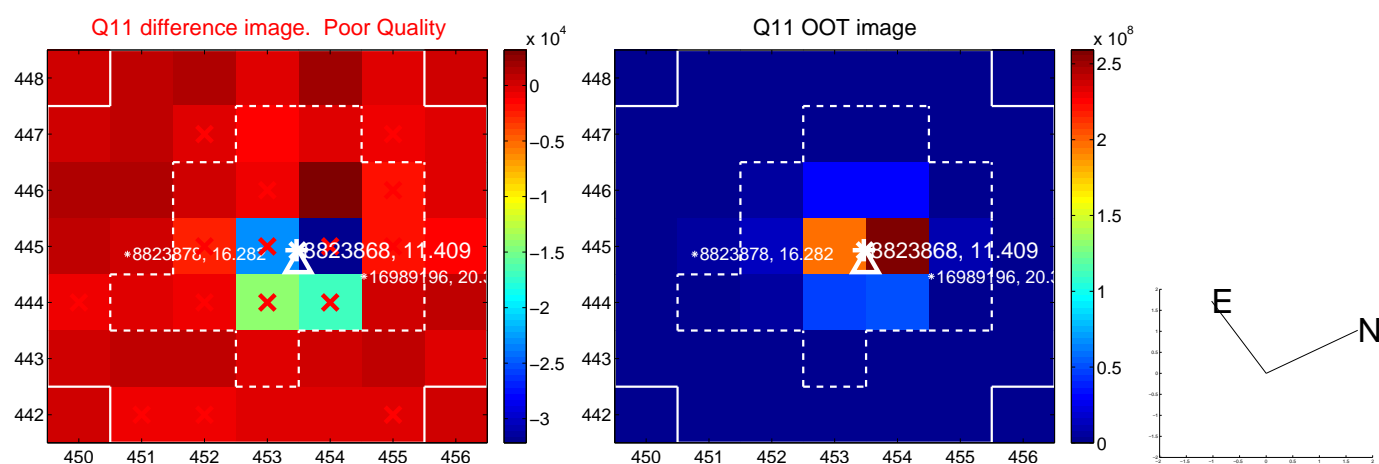
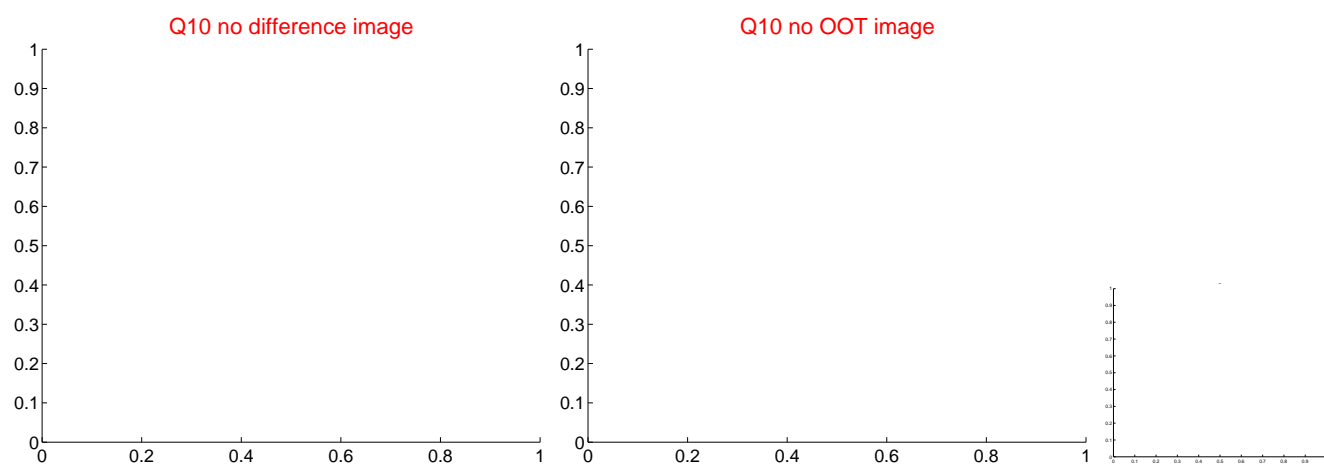
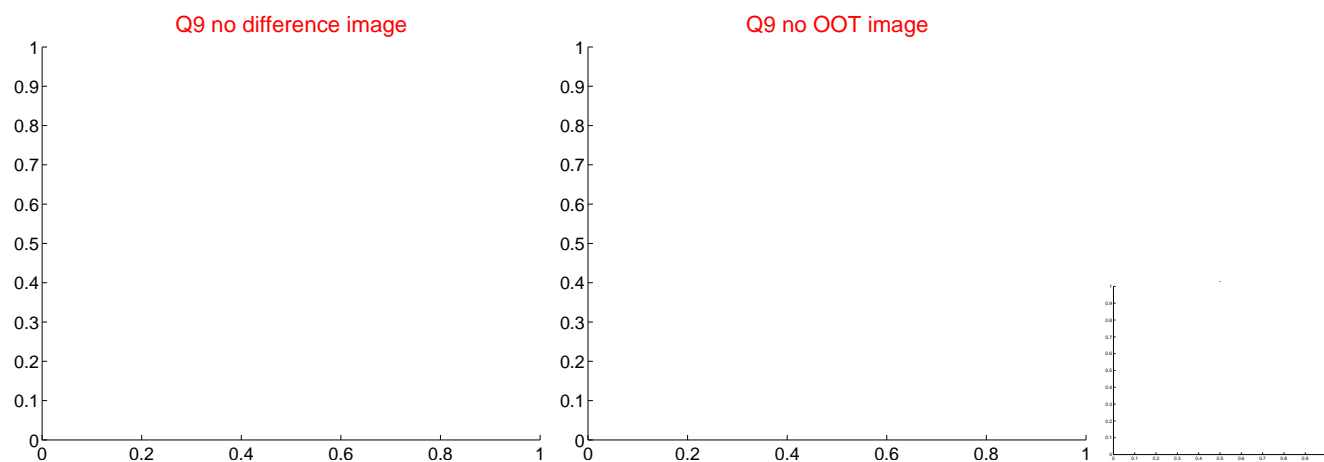
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Q13 no difference image



Q13 no OOT image



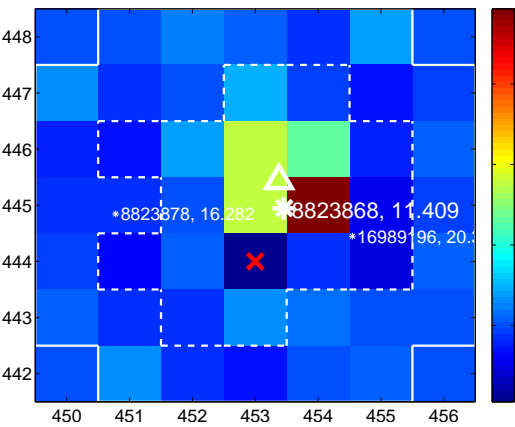
Q14 no difference image



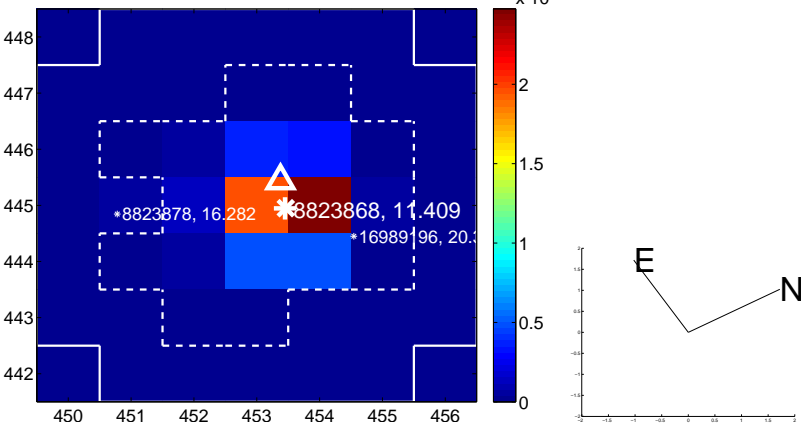
Q14 no OOT image



Q15 difference image



Q15 OOT image



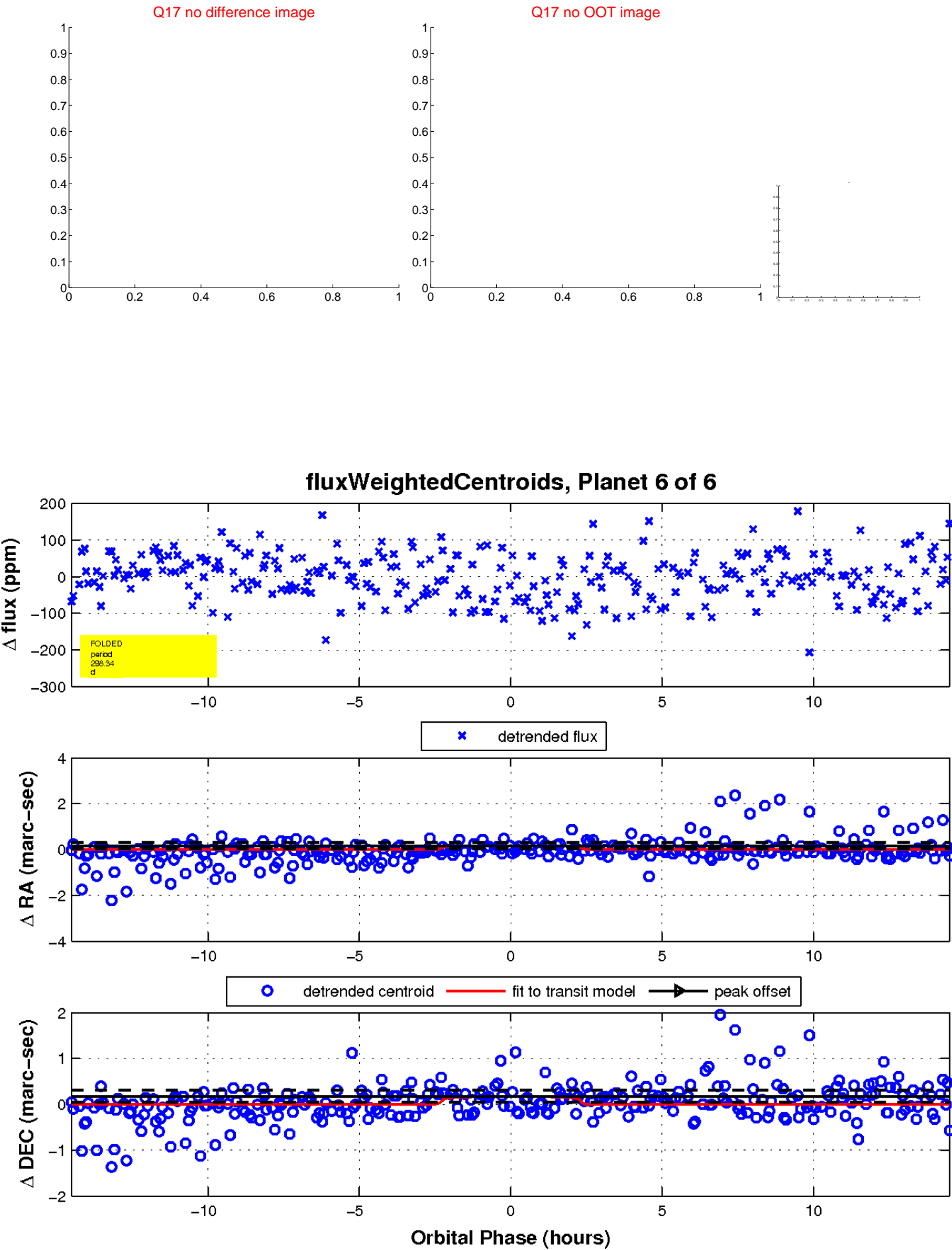
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

