

KIC 007115923

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})
007115923-01	OBS	No	0.566751	131.875527	11.1	4.129	10.8	7.5	1.25	6431	0.42	12055.73
007115923-02	OBS	No	73.790726	199.484127	681.1	2.000	12.6	-1.0	1.25	6431	3.28	18.27
007115923-03	OBS	No	17.237644	135.695531	485.5	1.080	17.8	18.7	1.25	6431	2.95	126.98
007115923-04	OBS	No	24.537466	152.144594	384.8	0.979	10.4	13.1	1.25	6431	2.64	79.30
007115923-05	OBS	No	11.248109	138.601304	273.9	0.967	12.1	12.7	1.25	6431	2.23	224.36
007115923-06	OBS	No	41.379625	145.410891	69.9	20.474	13.3	6.8	1.25	6431	1.06	39.51
007115923-07	OBS	No	11.435674	137.291025	276.5	0.568	12.1	7.3	1.25	6431	2.33	219.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007115923-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007115923-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—NO_FITS—CENT_NOFITS
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007115923-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
007115923-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007115923-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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.

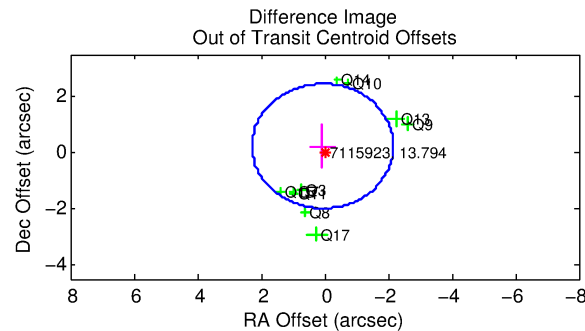
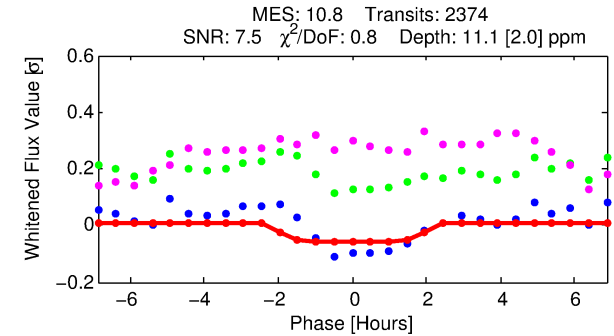
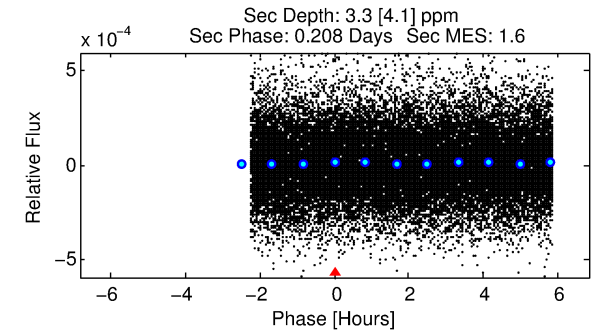
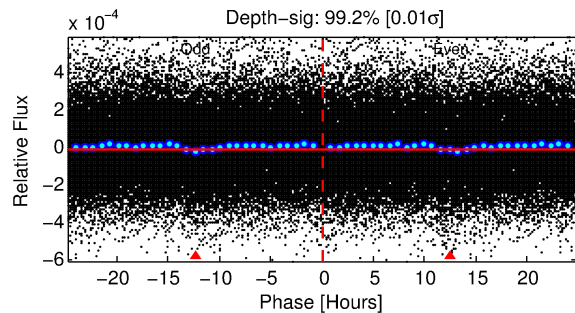
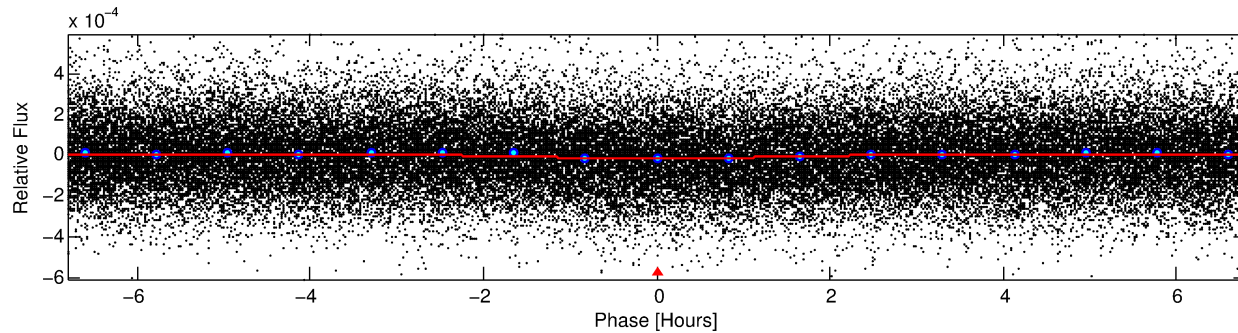
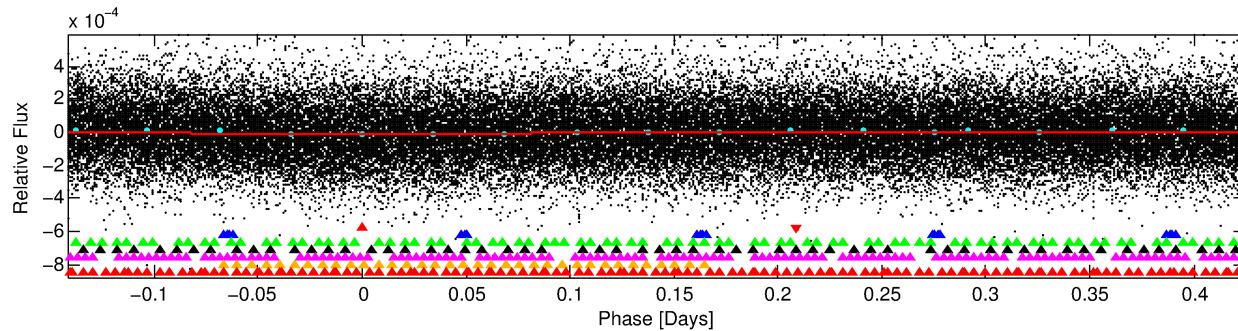
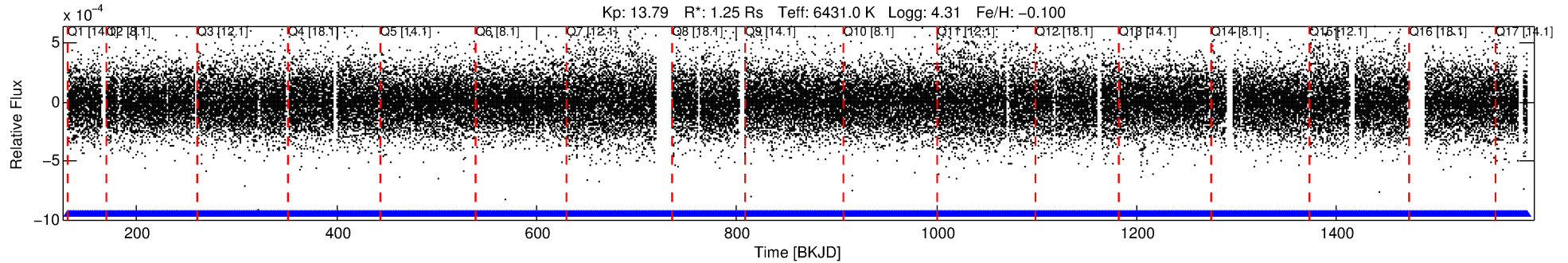
Ephemeris Match Information For 007115923-01

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist ($''$)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
007115923-01	7115923	RR-Lyr-pri	7198959	1:1	578.5	33	-142	7.86	13.79	56663.00	Direct-PRF	0	0.68	20.98

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 7115923 Candidate: 1 of 7 Period: 0.567 d



DV Fit Results:

Period = 0.56675 [0.00001] d
Epoch = 131.8755 [0.0058] BKJD
Rp/R* = 0.0031 [0.0038]
a/R* = 1.21 [2.44]
b = 0.33 [17.52]
Seff = 12055.73 [4699.01]
Teq = 2672 [260] K
Rp = 0.42 [0.54] Re
a = 0.0141 [0.0037] AU
Ag = 2.04 [5.65] [0.18σ]
Teffp = 4937 [3390] K [0.67σ]

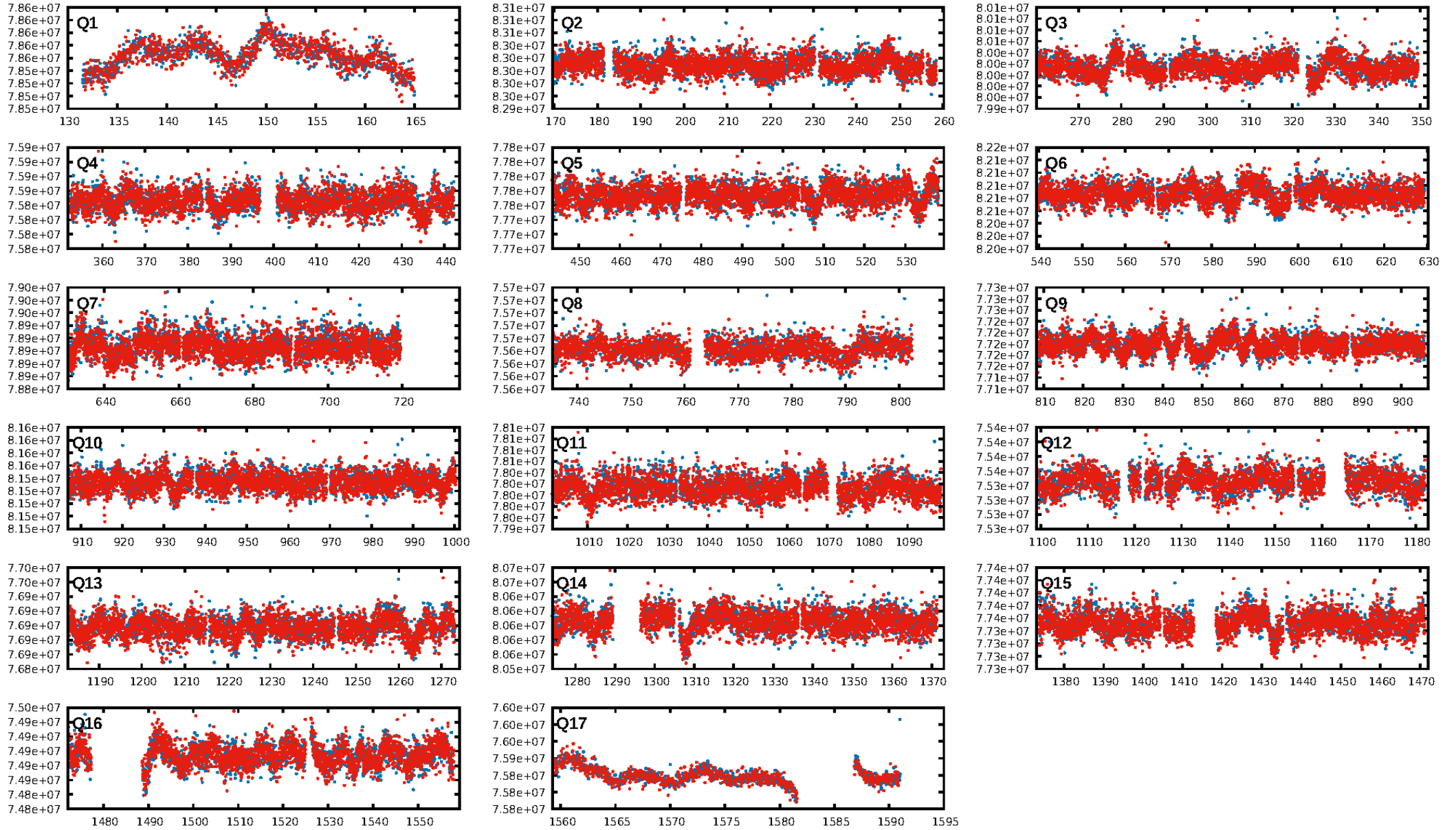
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [60.46σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.57e-31
RollingBand-fgt: 1.00 [2268/2268]
GhostDiagnostic-chr: 0.5277
Centroid-sig: 46.0%
Centroid-so: 0.944 arcsec [0.60σ]
OotOffset-rm: 0.241 arcsec [0.33σ]
KicOffset-rm: 0.349 arcsec [0.49σ]
OotOffset-st: 2/4/1/3 [10]
KicOffset-st: 2/4/1/3 [10]
DiffImageQuality-fgm: 0.70 [7/10]
DiffImageOverlap-fno: 1.00 [17/17]

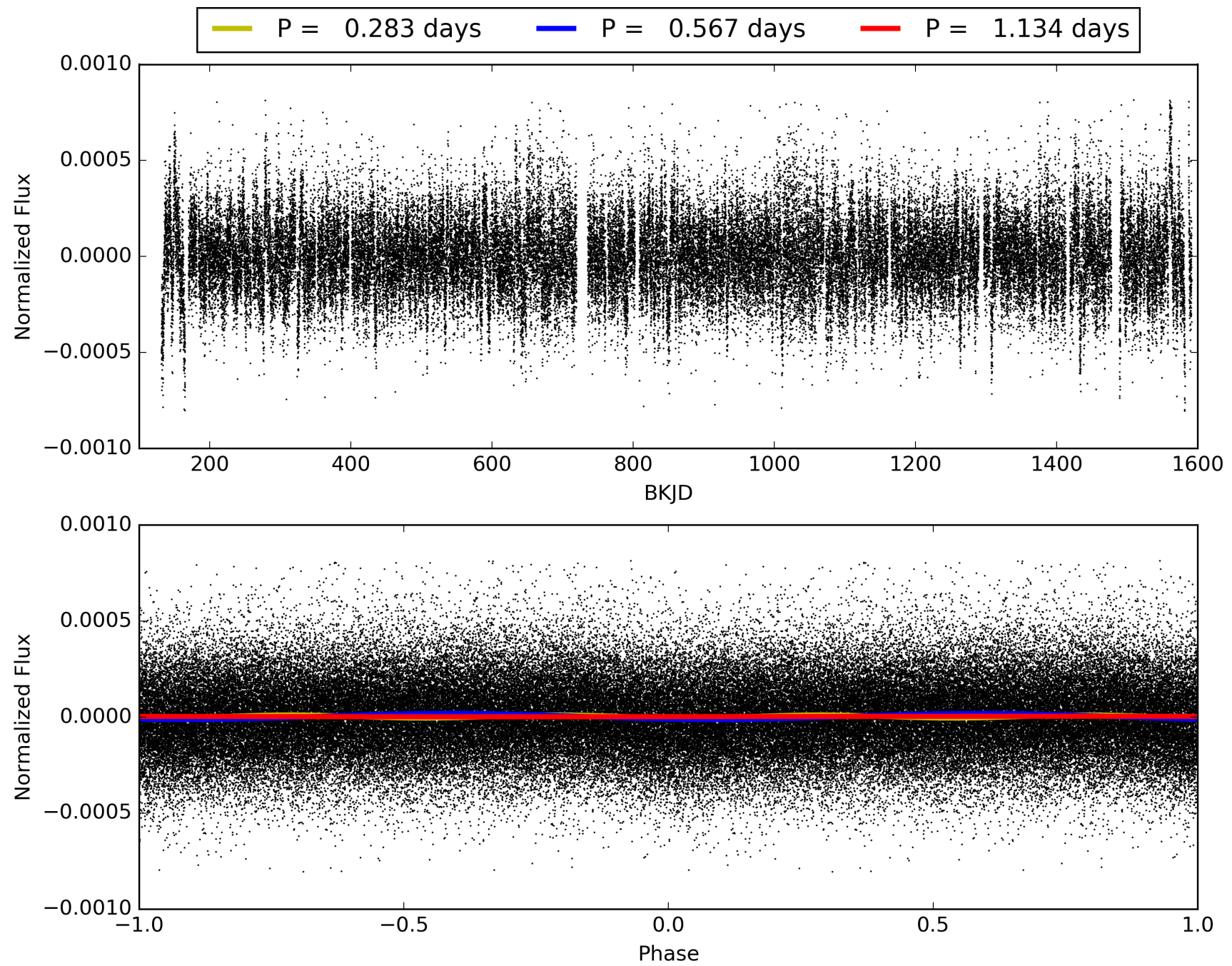
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:50:13 Z

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

TCE 007115923-01, PDC Light Curves

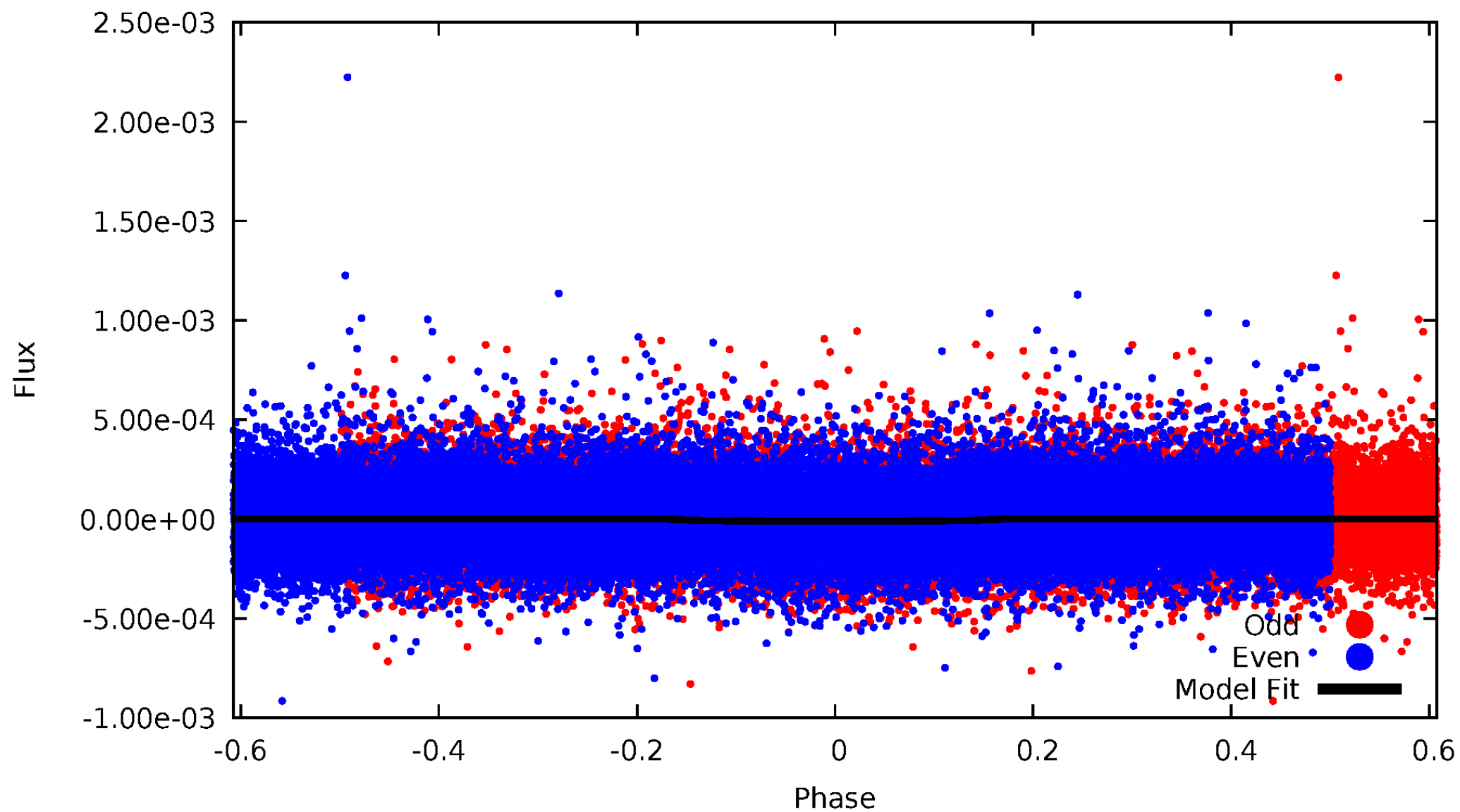


TCE 007115923-01



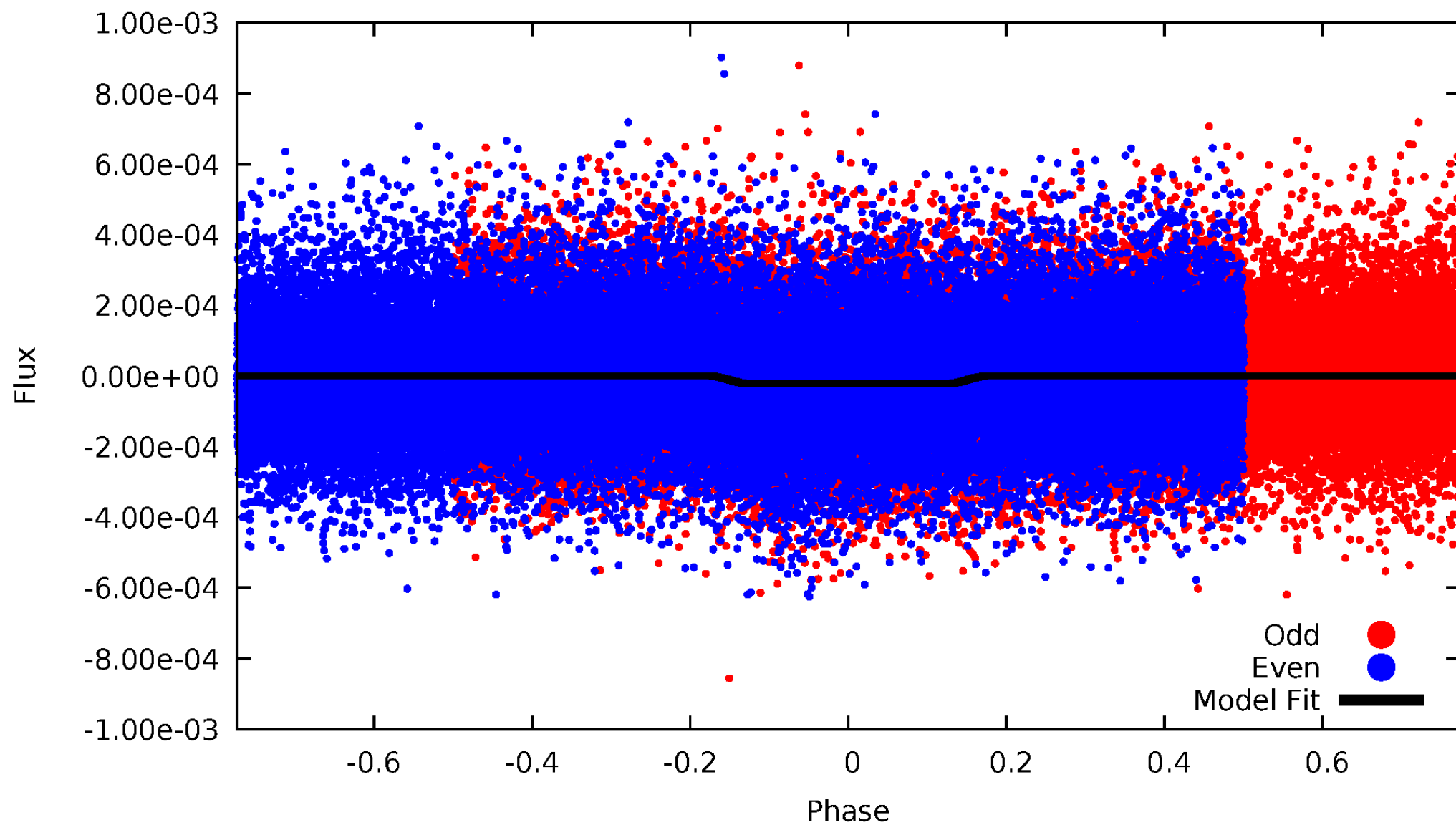
DV Odd/Even

TCE 007115923-01

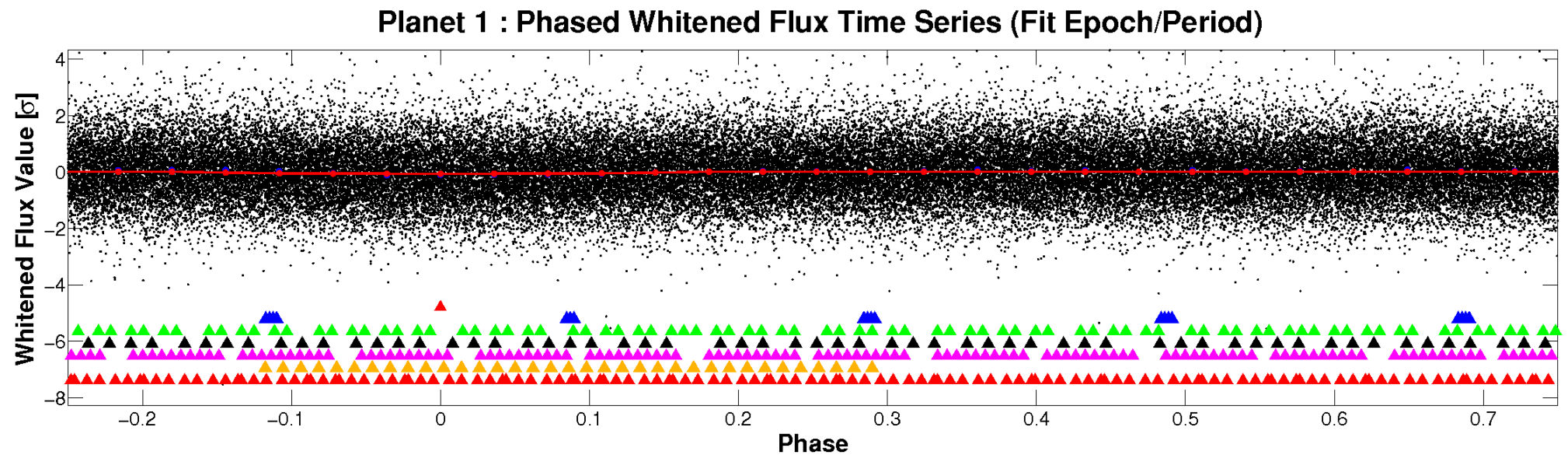
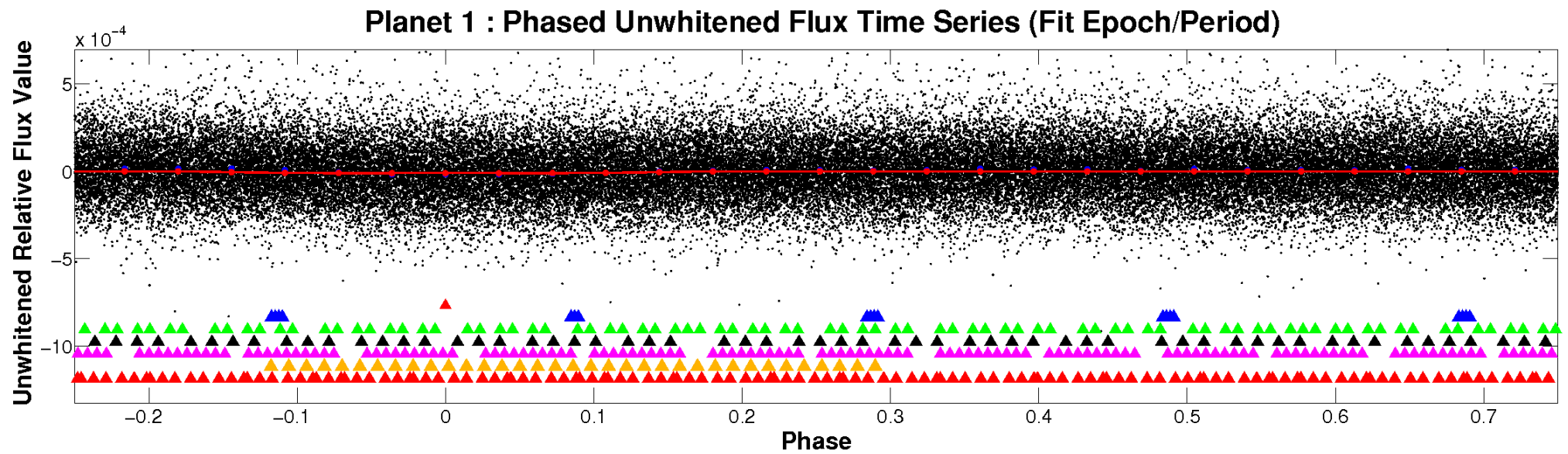


ALT Odd/Even

TCE 007115923-01

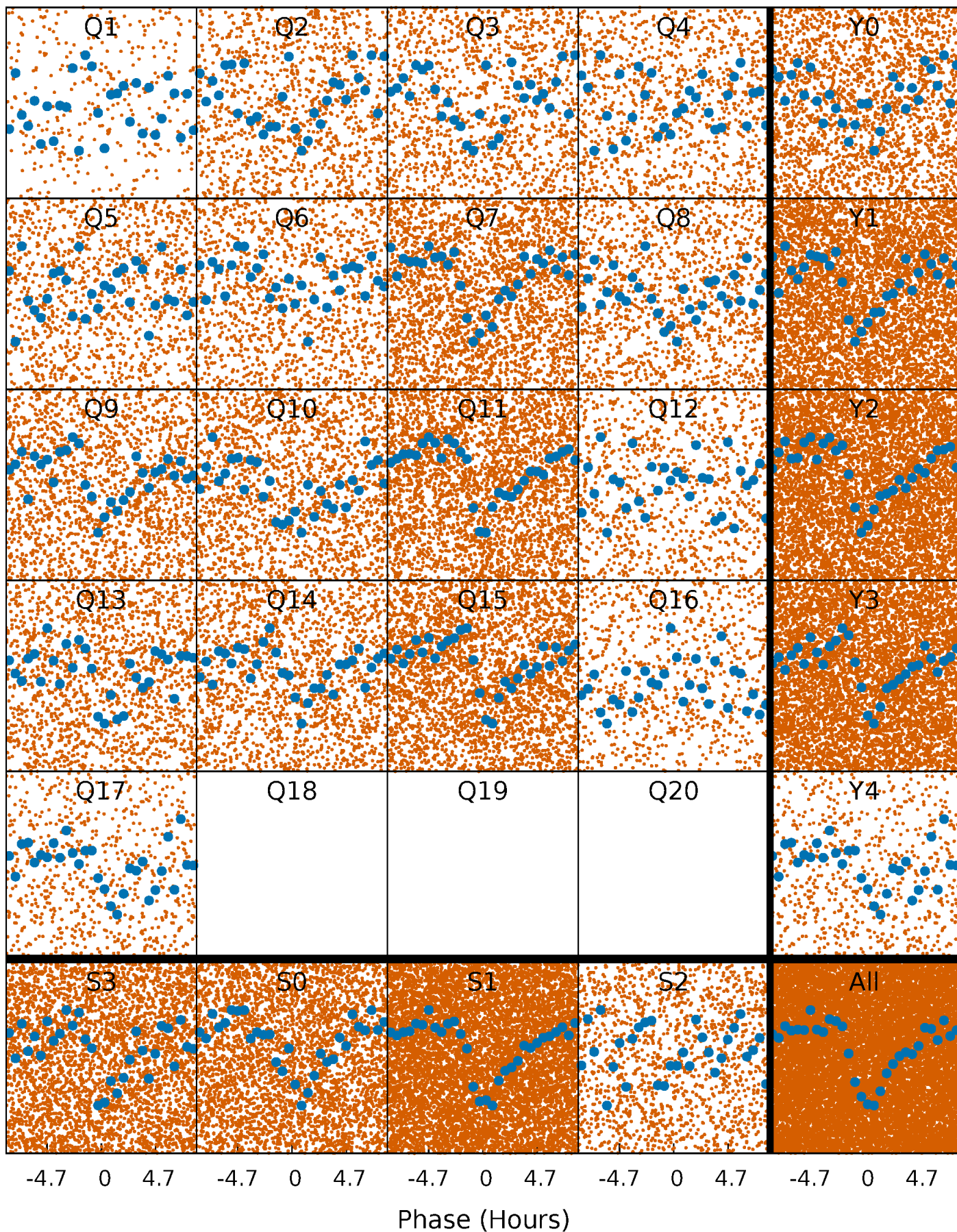


Non-Whitened Vs. Whitened Light Curve



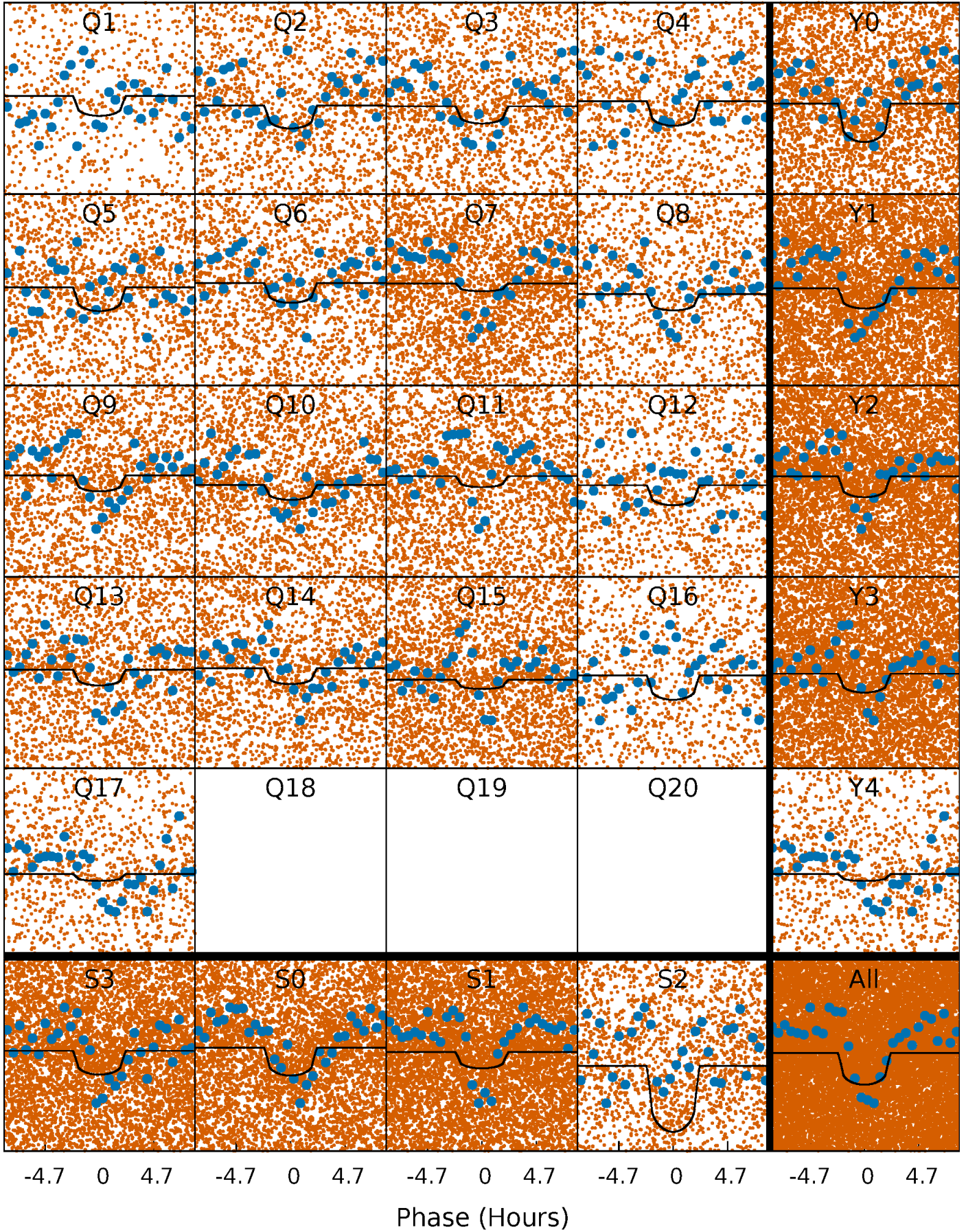
PDC Quarter-Phased Transit Curves

TCE 007115923-01 P= 0.566751 Days $T_0=131.875527$ (BKJD)



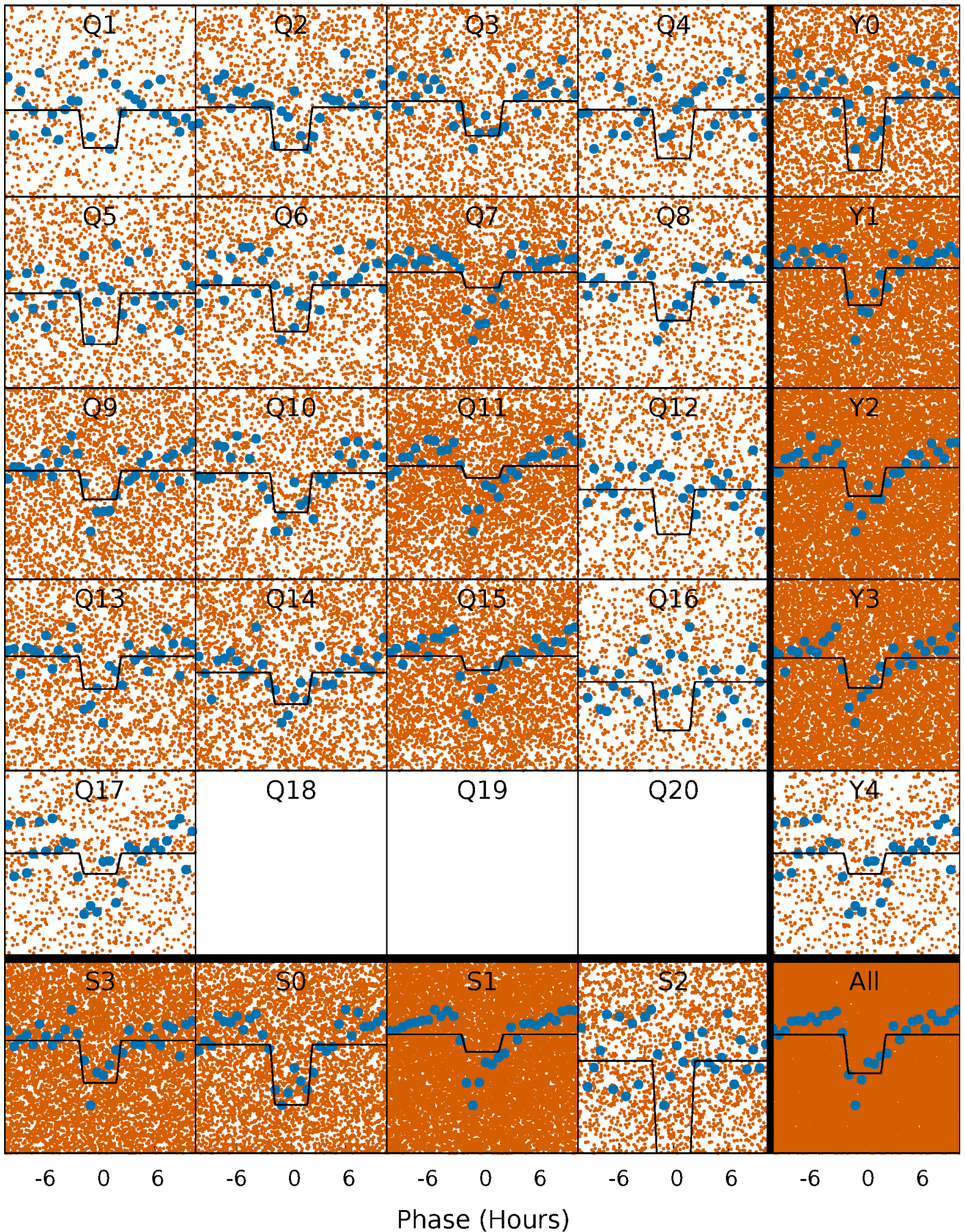
DV Quarter-Phased Transit Curves

TCE 007115923-01 P= 0.566751 Days $T_0=131.875527$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

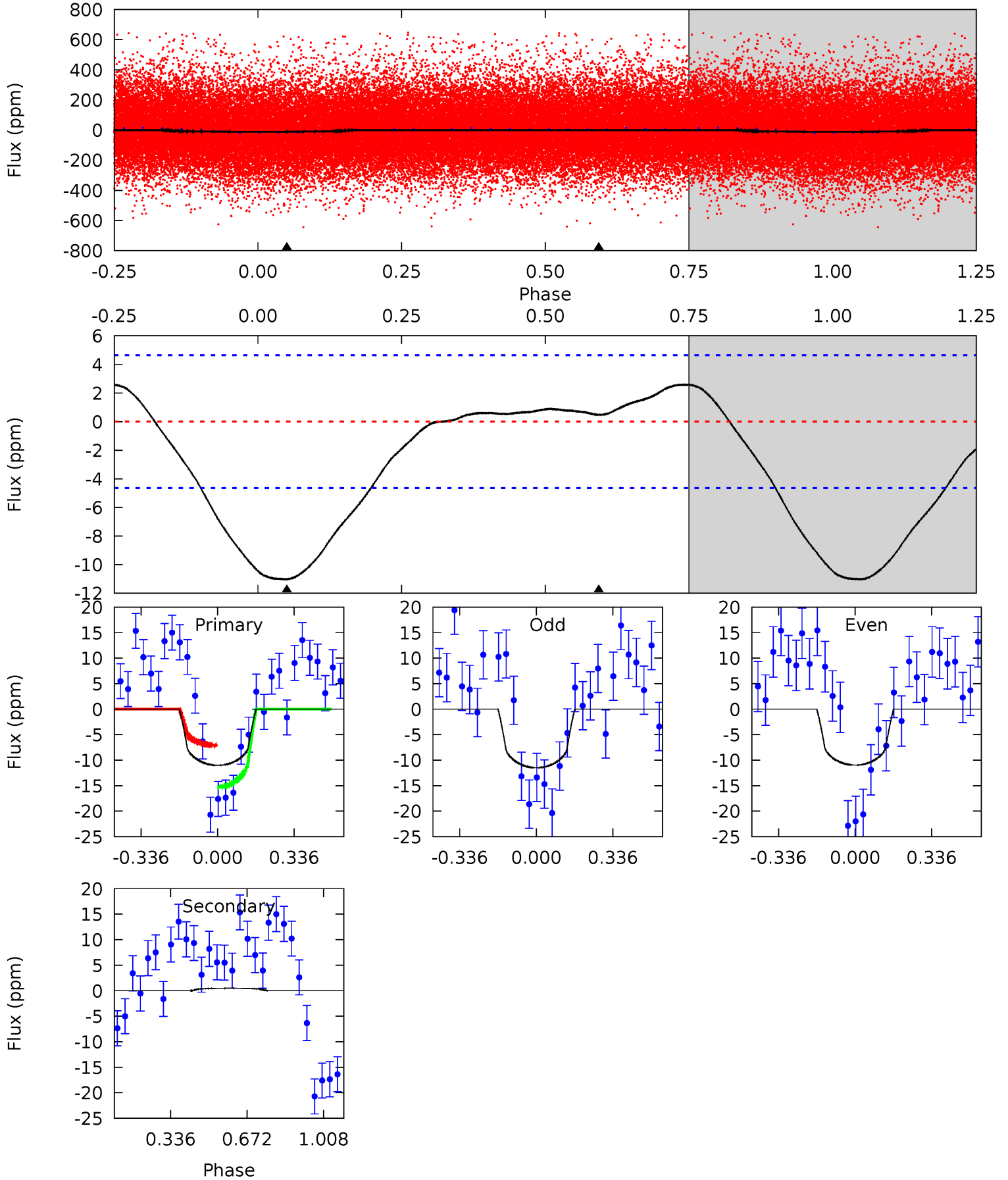
TCE 007115923-01 P= 0.566801 Days $T_0=131.839420$ (BKJD)



DV Model-Shift Uniqueness Test

007115923-01, P = 0.566751 Days, E = 131.308776 Days

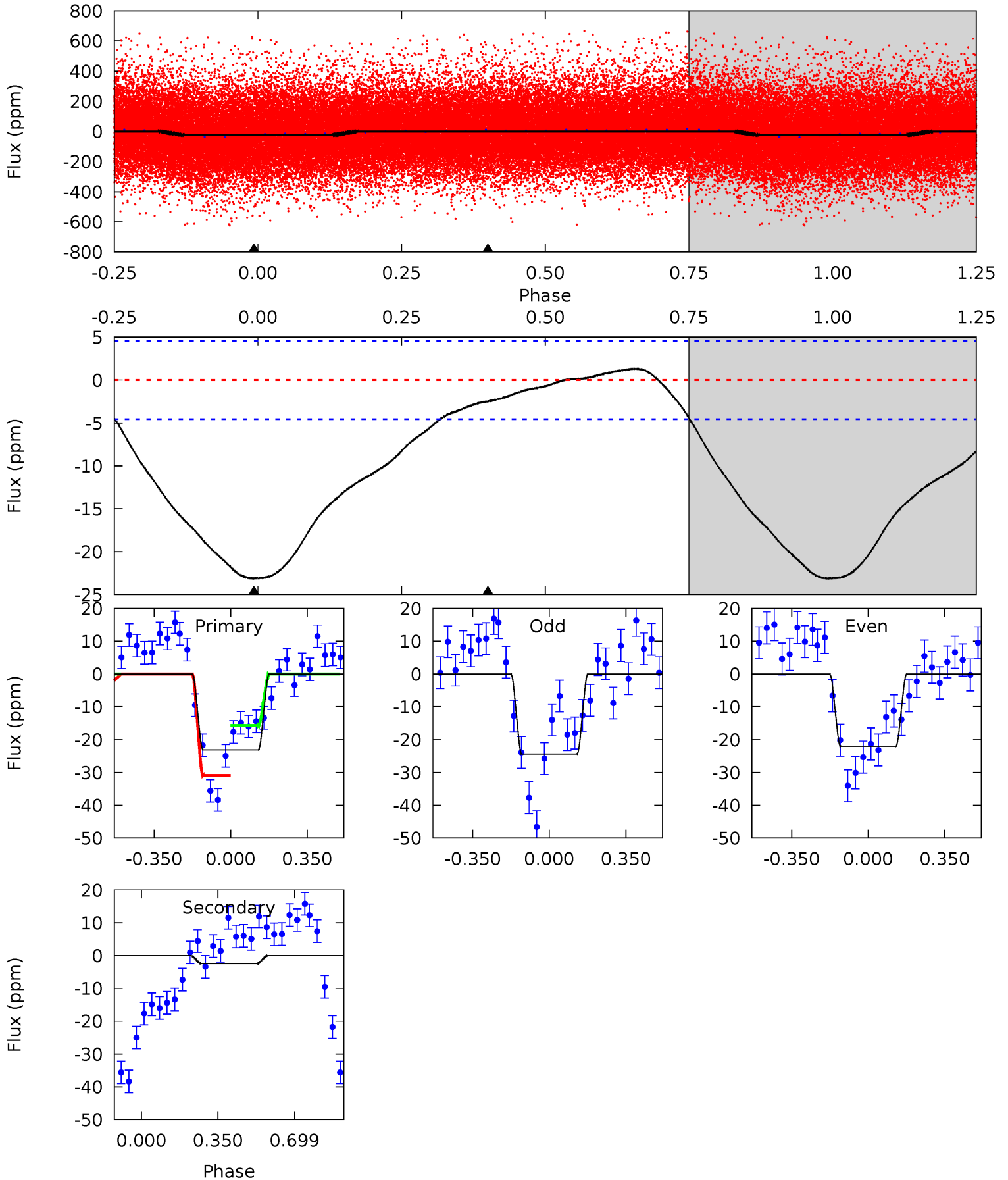
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	-0.44	0	0	4.30	0.96	0.32	10.2	10.2	-0.44	-0.44	0.24	0.92	0.19	3.78



Alt Model-Shift Uniqueness Test

007115923-01, P = 0.566801 Days, E = 131.272619 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.8	2.35	0	0	4.29	0.94	1.62	21.8	21.8	2.35	2.35	1.09	1.13	0.05	7.09



Stellar Parameters For KIC 007115923

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6431^{+144}_{-208}	$4.309^{+0.105}_{-0.195}$	$-0.100^{+0.250}_{-0.300}$	$1.249^{+0.400}_{-0.200}$	$1.159^{+0.185}_{-0.152}$	$0.837^{+0.410}_{-0.441}$
	+2%/-3%	+2%/-5%	+250%/-300%	+32%/-16%	+16%/-13%	+49%/-53%
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 007115923-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1	$0.61^{+0.48}_{-0.39}$	3769^{+232}_{-216}	-3762^{+676}_{-966}	$-0.103^{+0.281}_{-1.027}$
Alt.	-2 ± 1	$0.73^{+0.53}_{-0.44}$	3757^{+283}_{-211}	3275^{+2106}_{-6501}	$0.482^{+2.633}_{-0.343}$

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 $A_{obs} \gg 1.0$

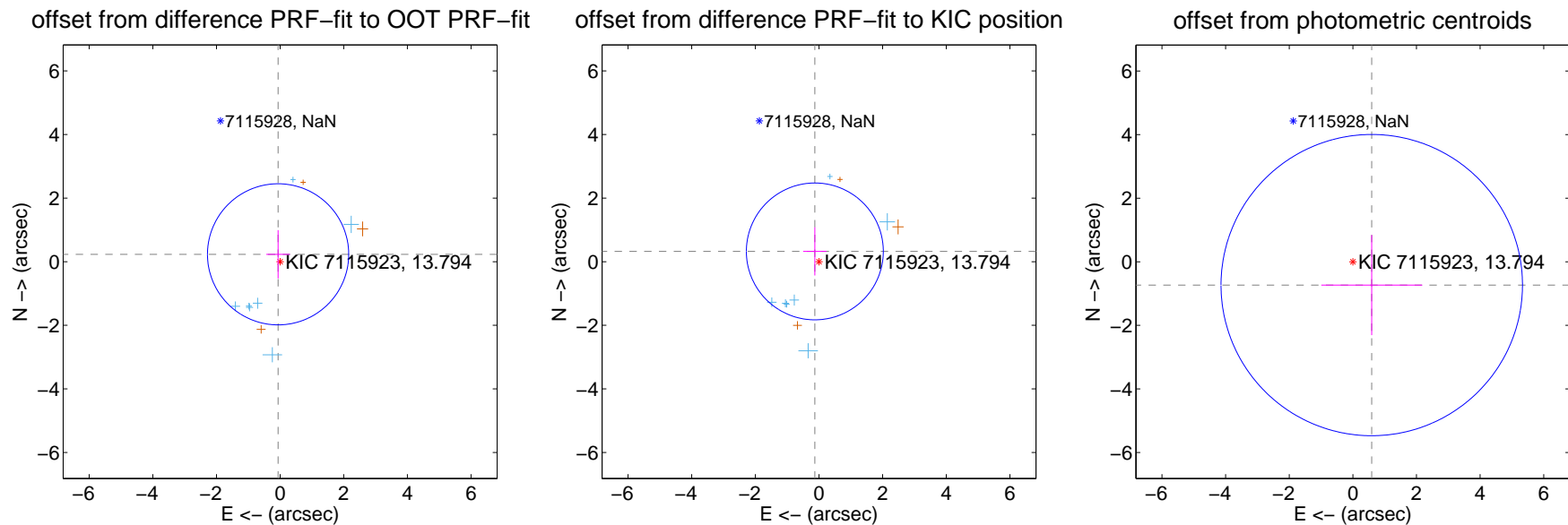
DV Centroid Data

Supplemental centroid analysis for 007115923-01. Kepler magnitude: 13.79. Transit SNR 7.48

There are 7 quarters with good PRF difference image offsets

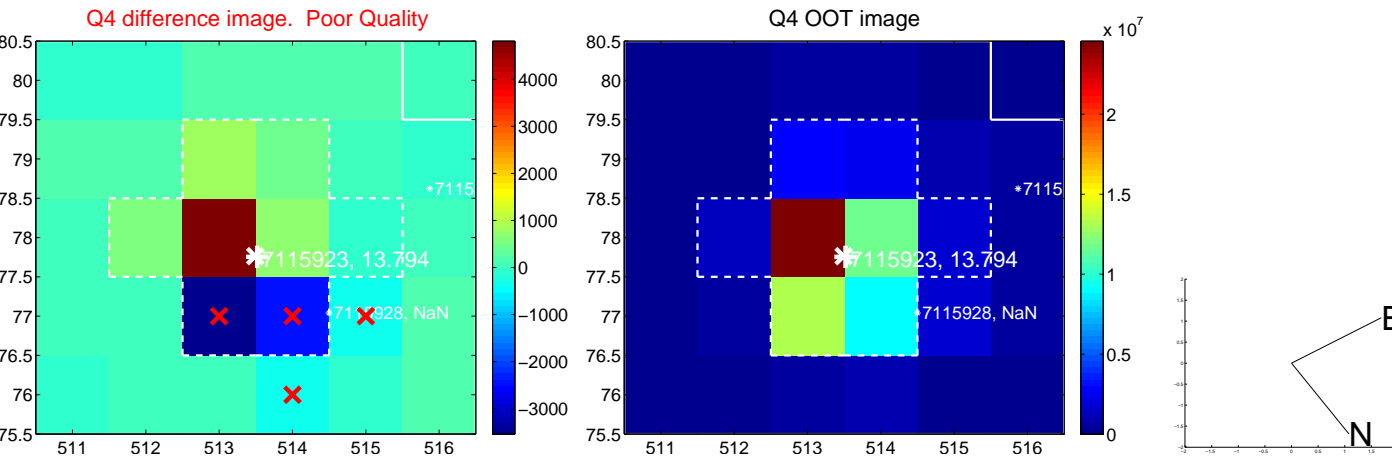
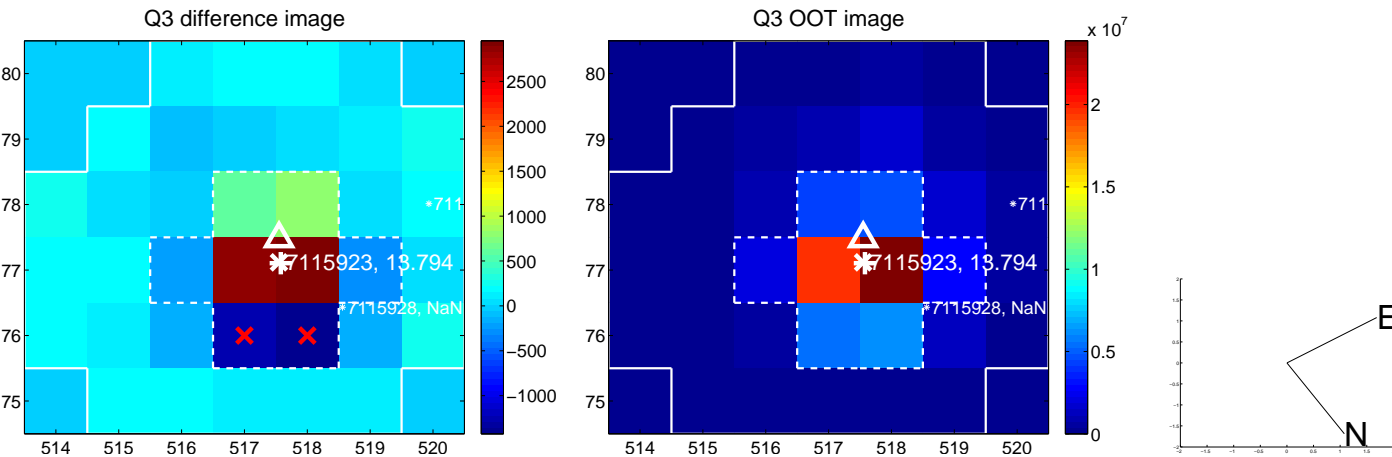
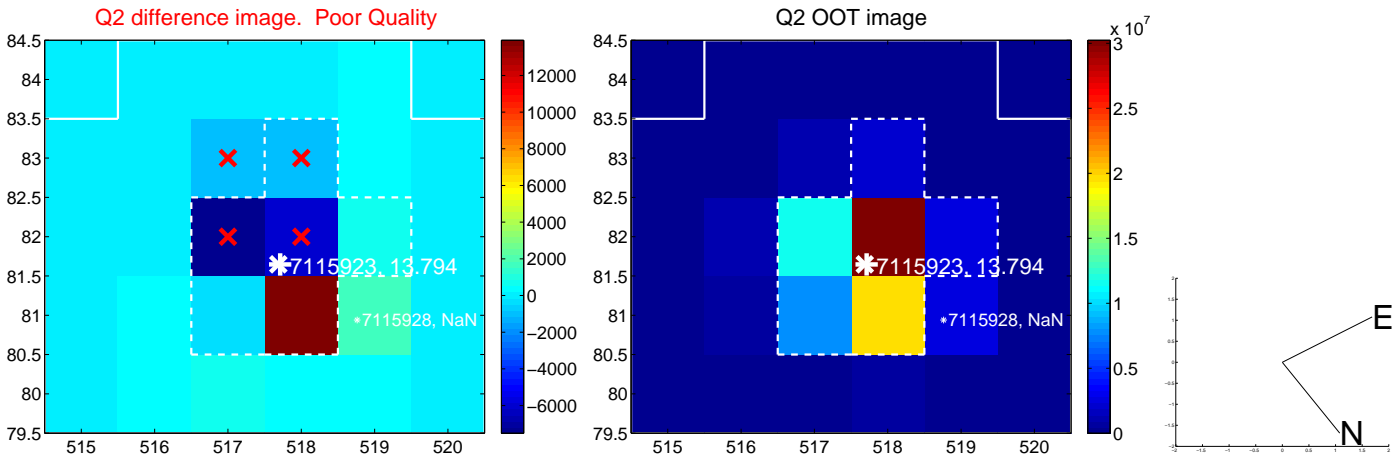
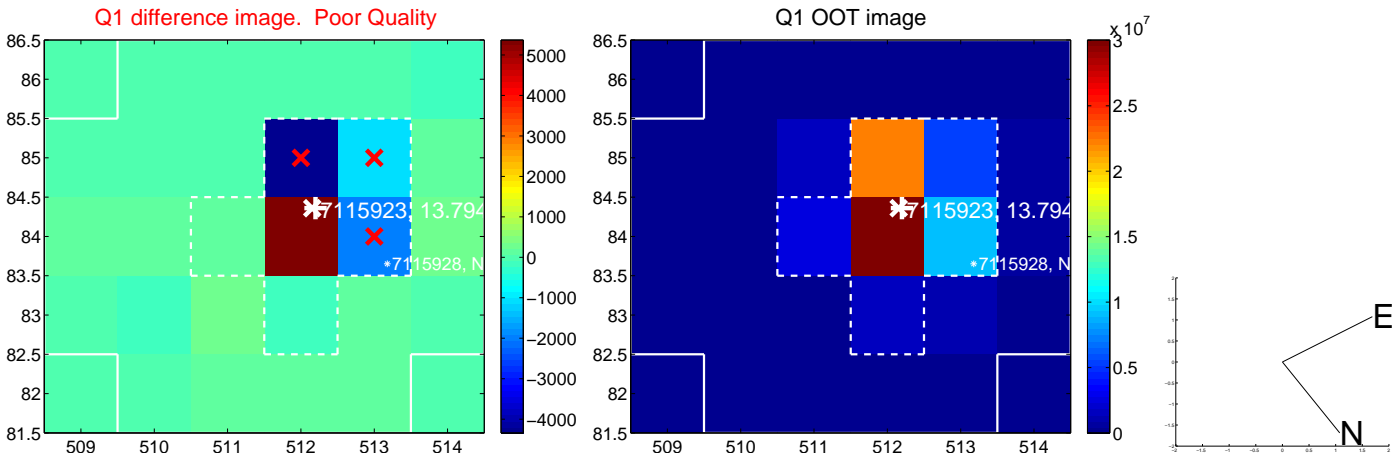
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.241 ± 0.740	0.33	0.063 ± 0.371	0.232 ± 0.760
PRF-fit source offset from KIC position	0.349 ± 0.717	0.49	0.130 ± 0.369	0.323 ± 0.759
photometric centroid source offset	0.94 ± 1.58	0.60	-0.59 ± 1.59	-0.73 ± 1.57

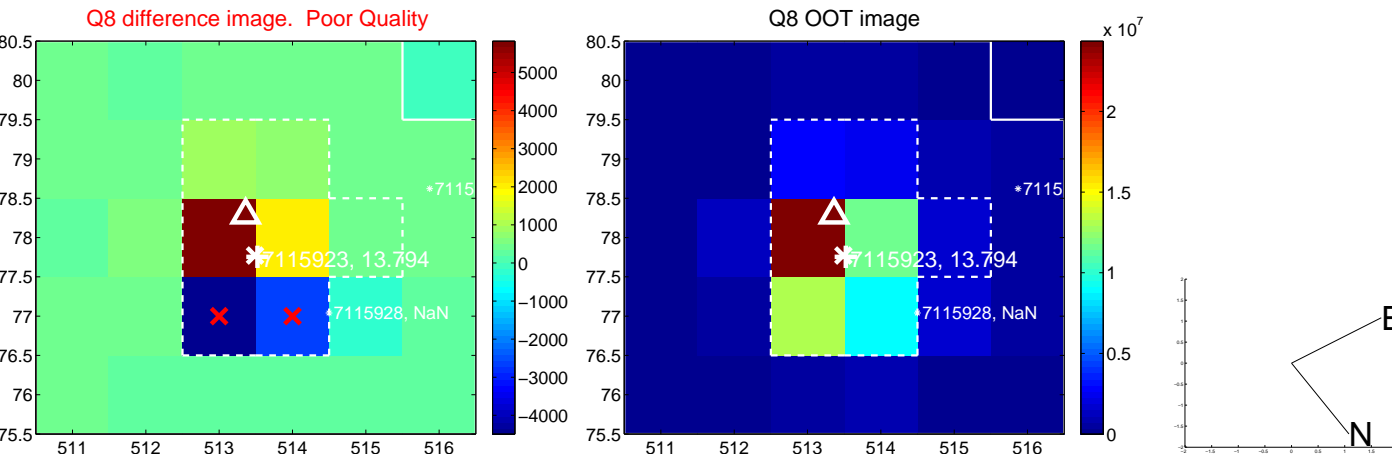
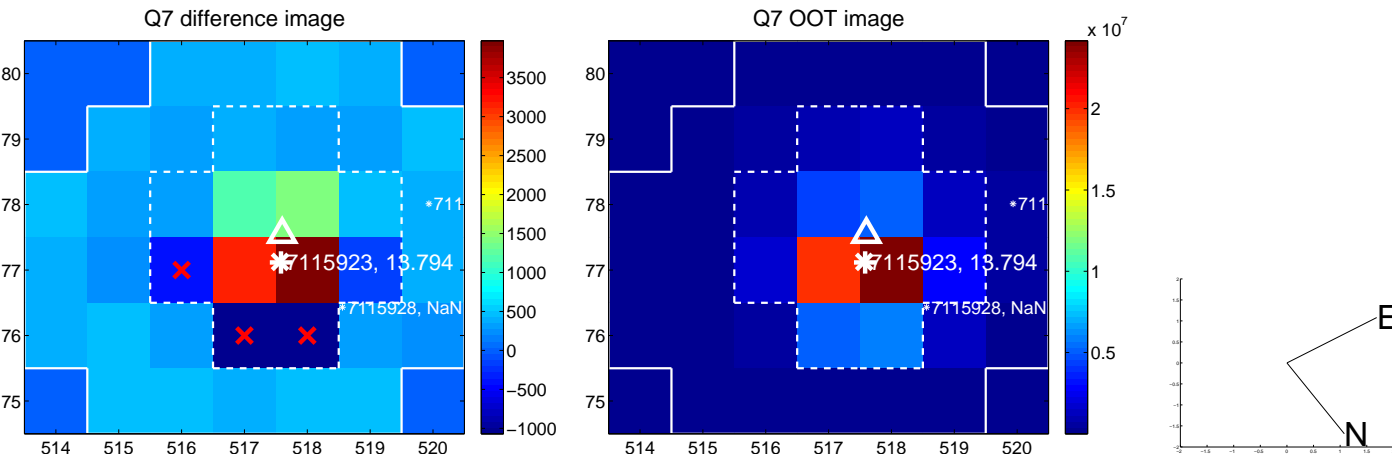
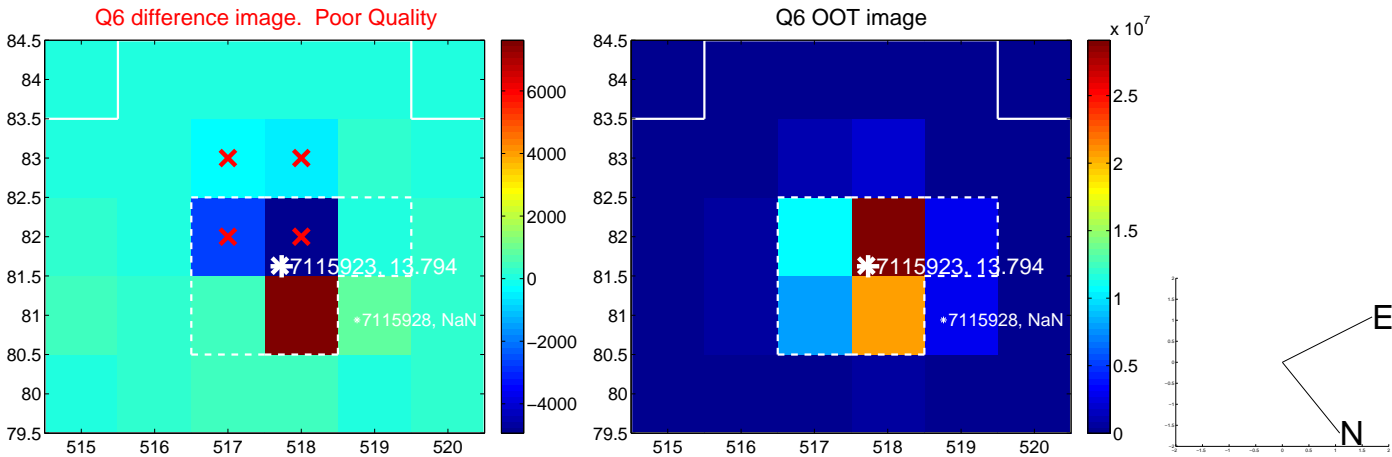
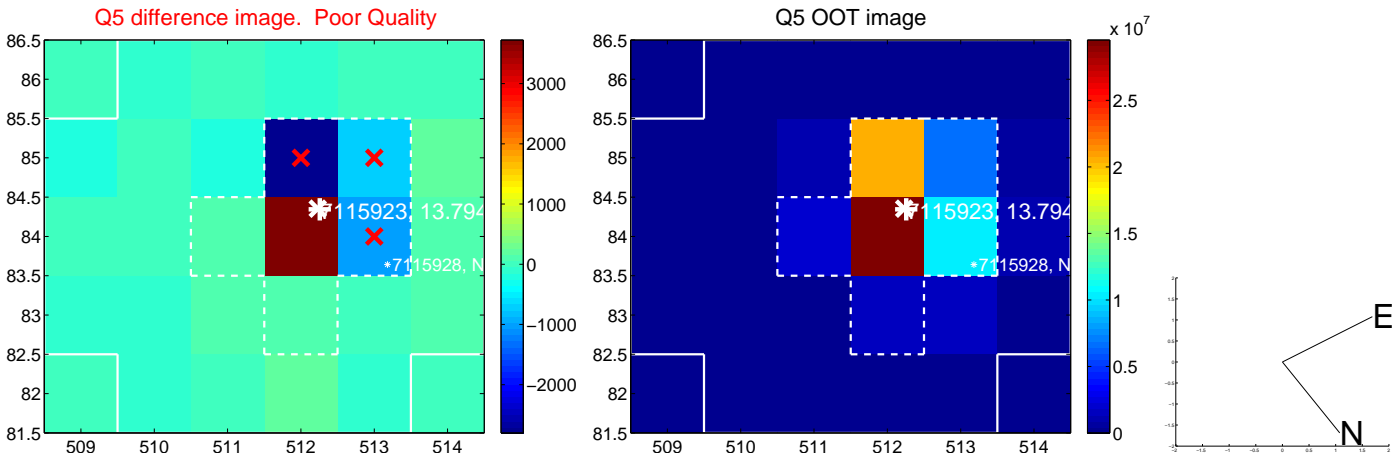


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

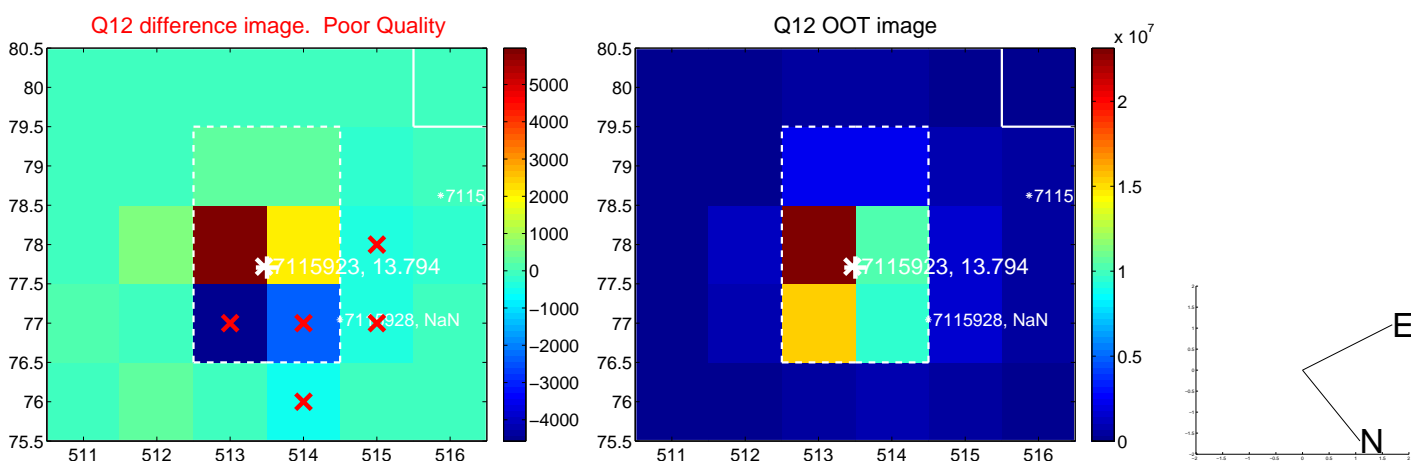
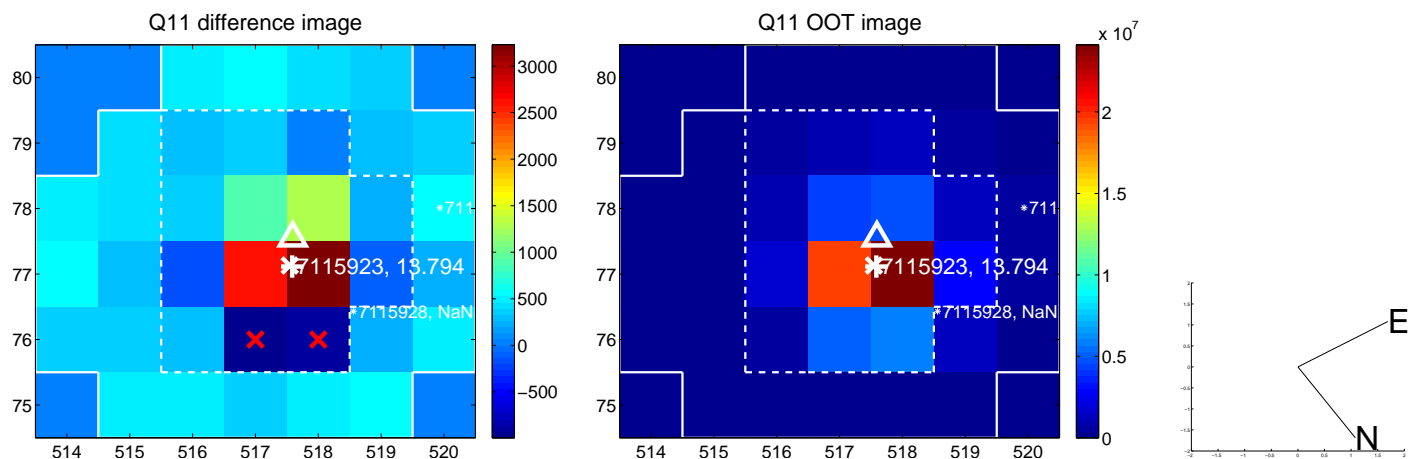
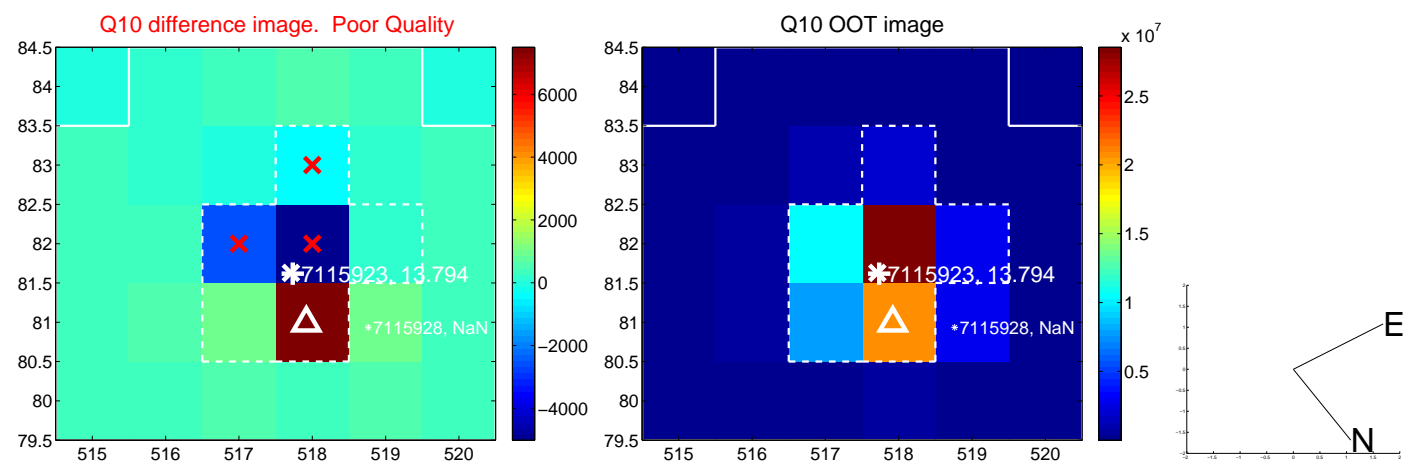
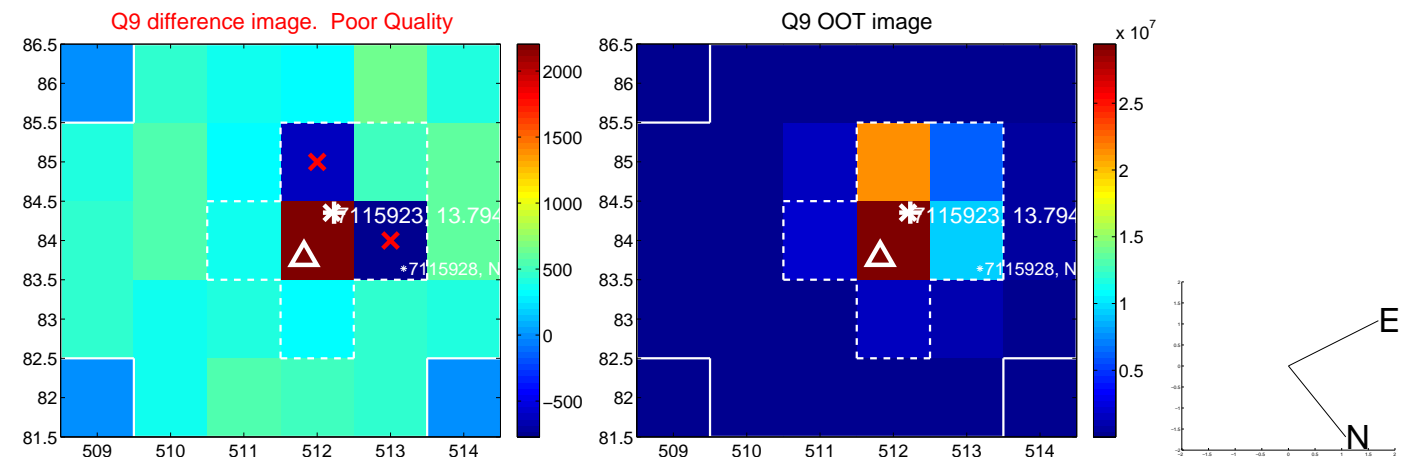
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



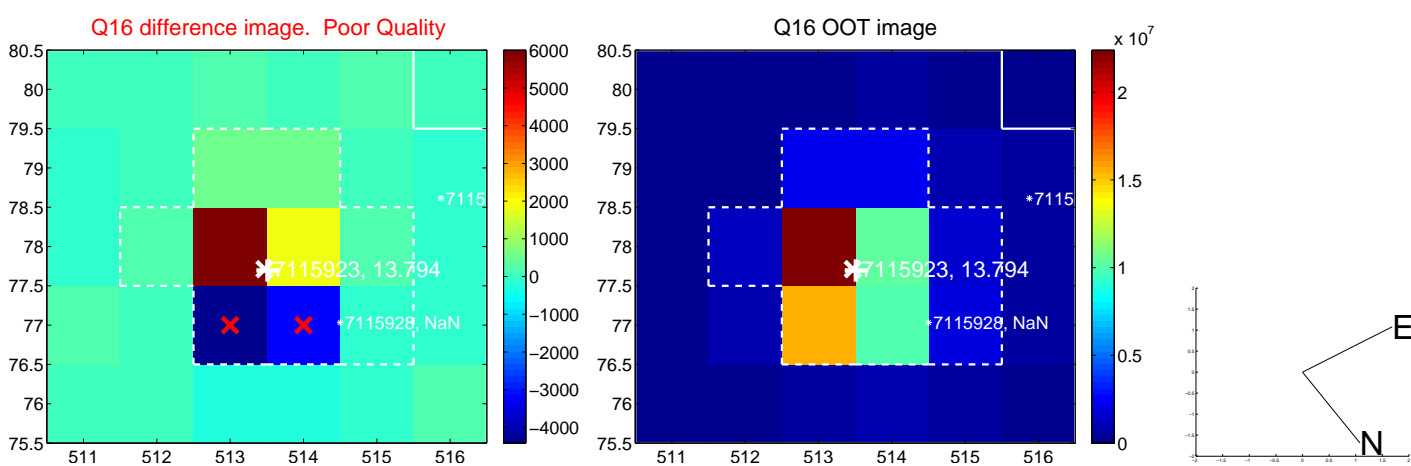
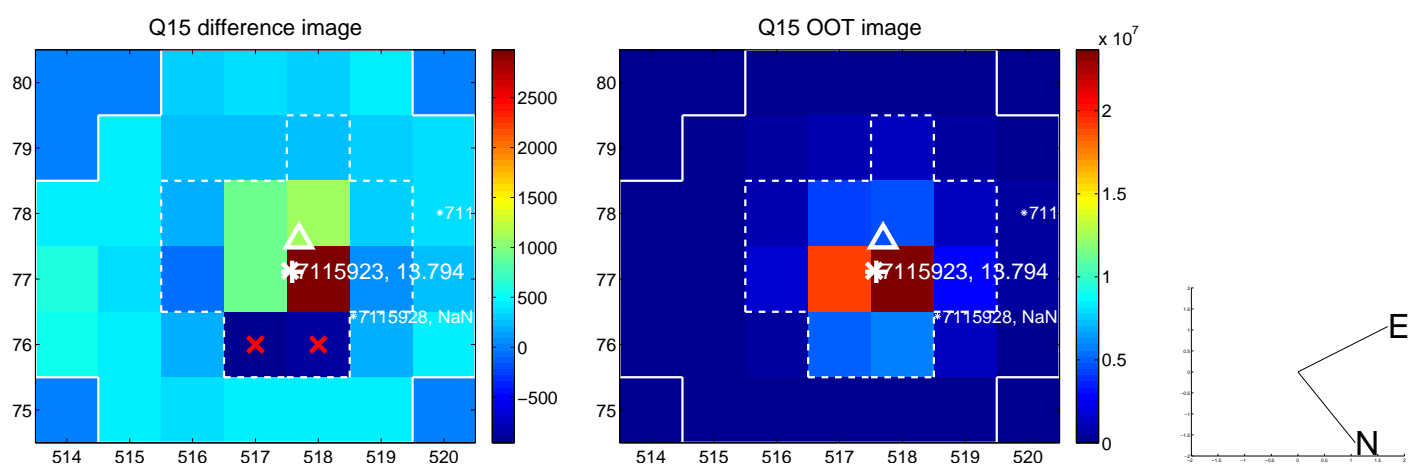
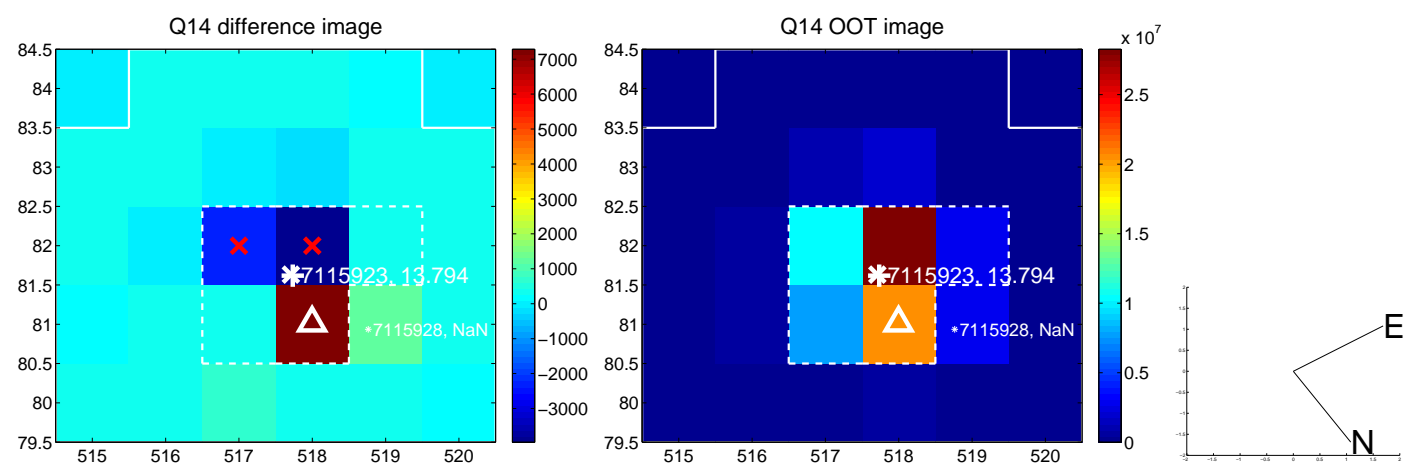
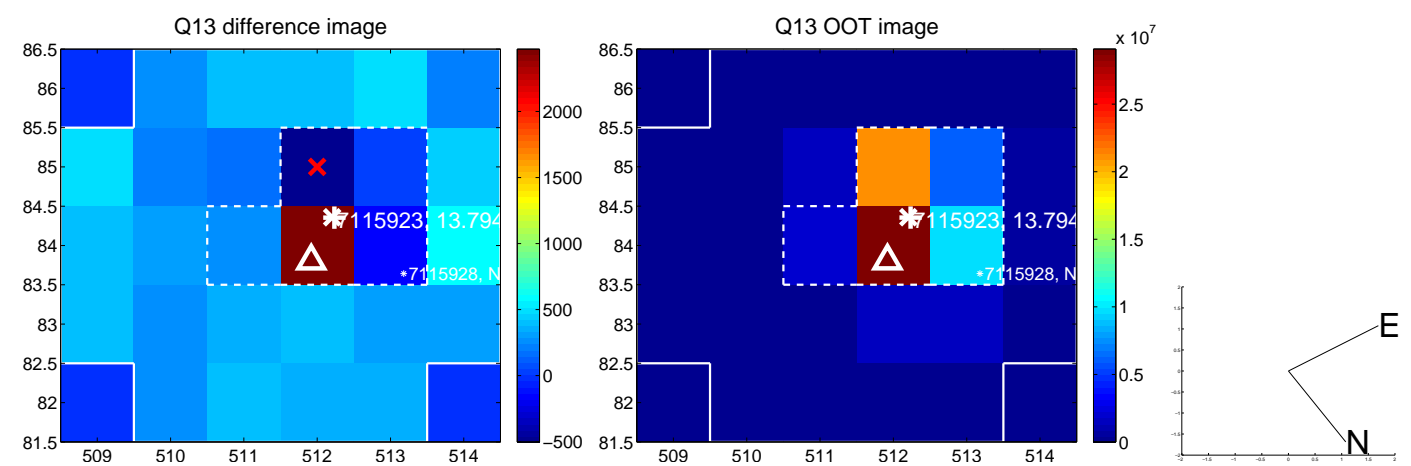
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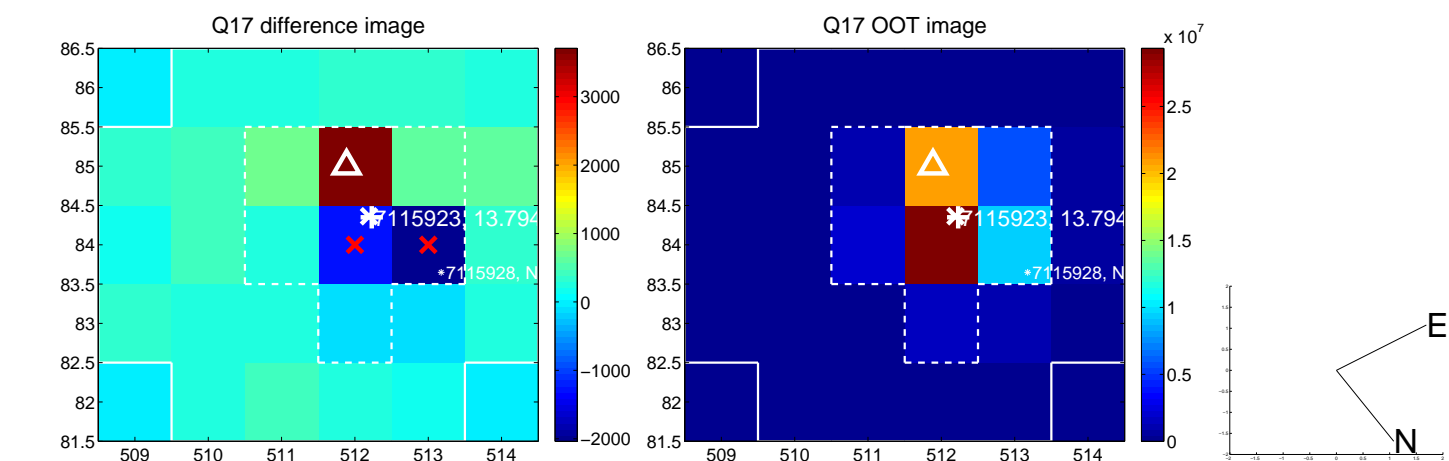
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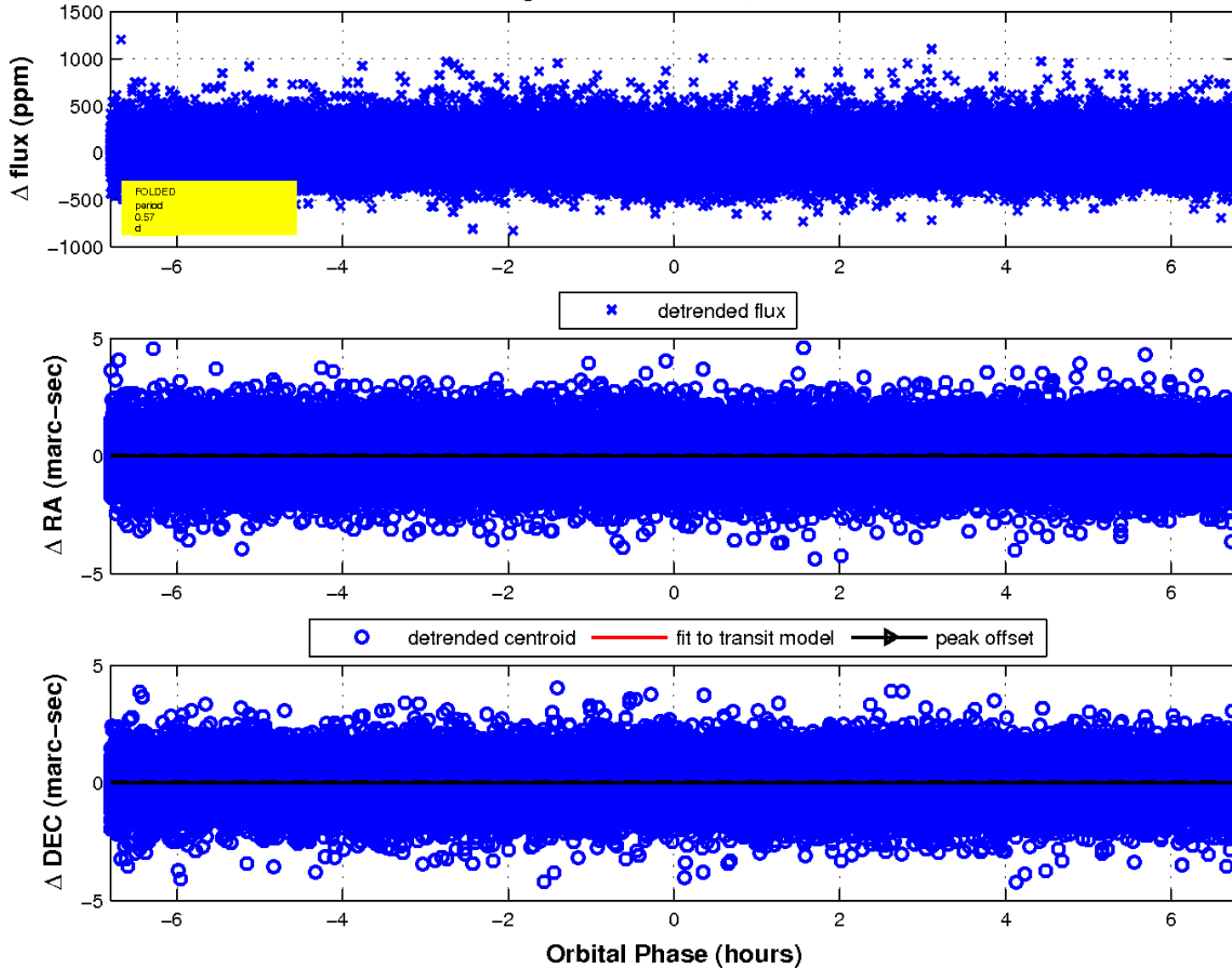
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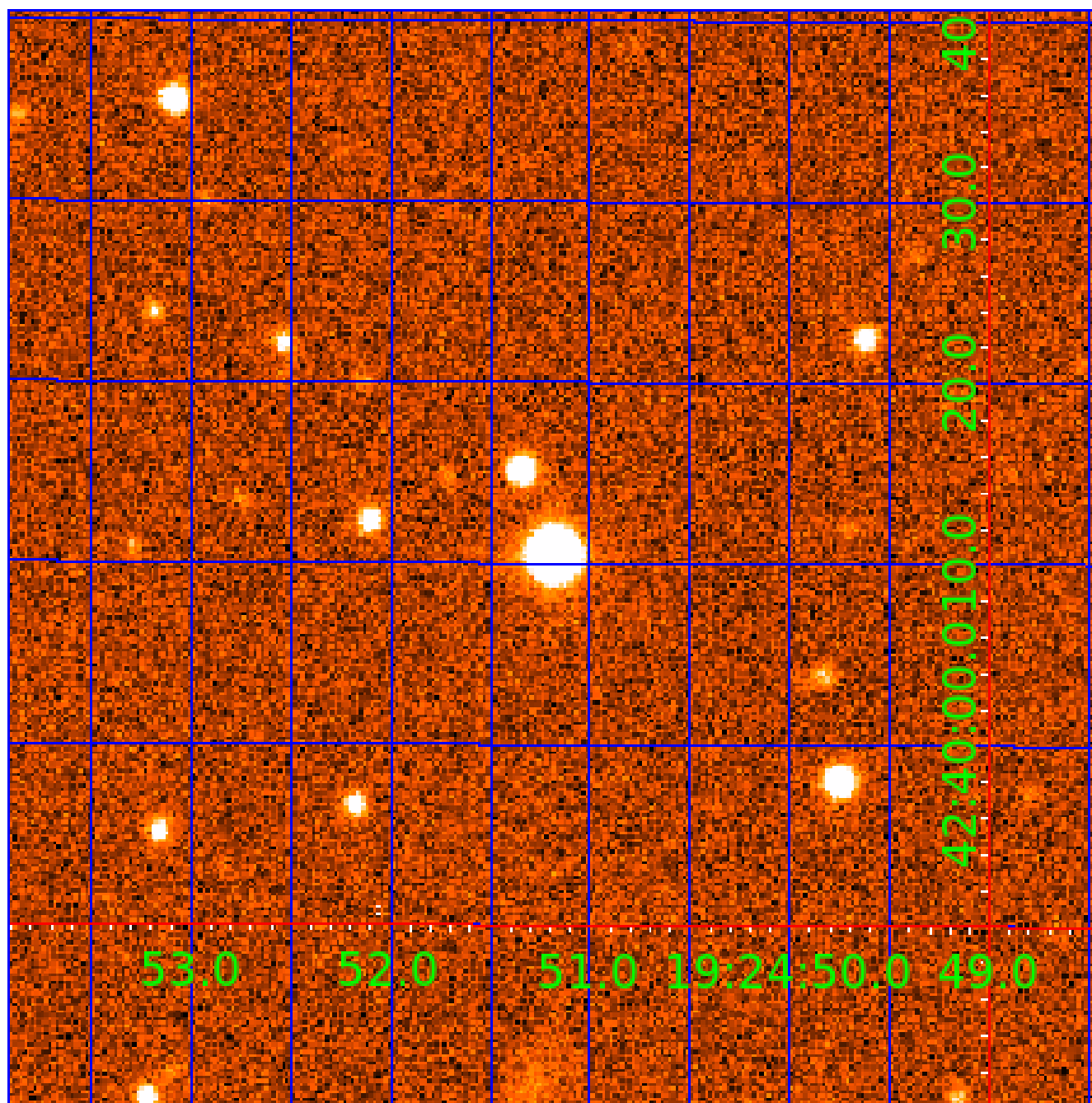


fluxWeightedCentroids, Planet 1 of 7



UKIRT Image

Declination



KIC 007115923

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007115923-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007115923-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

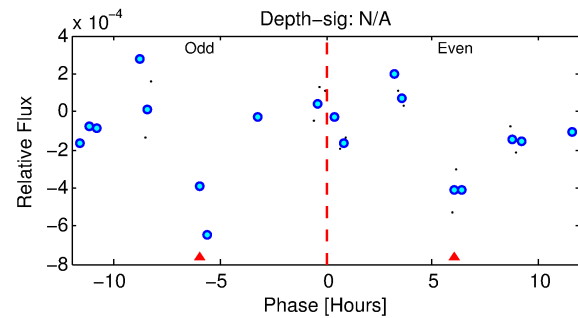
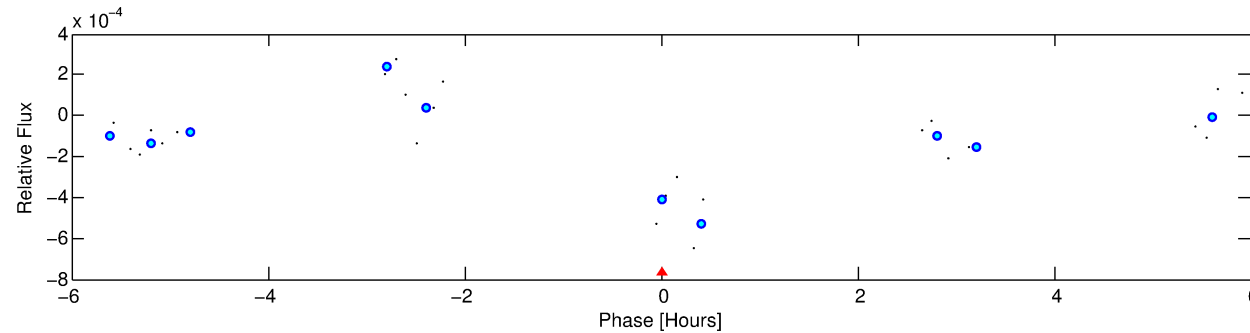
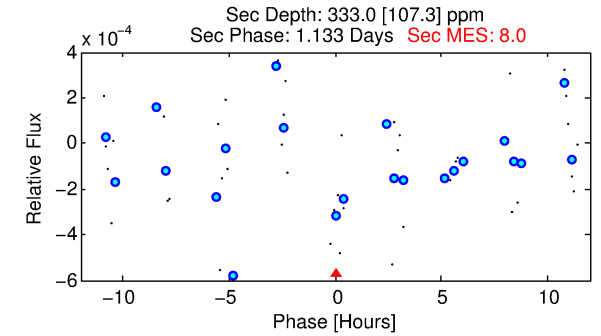
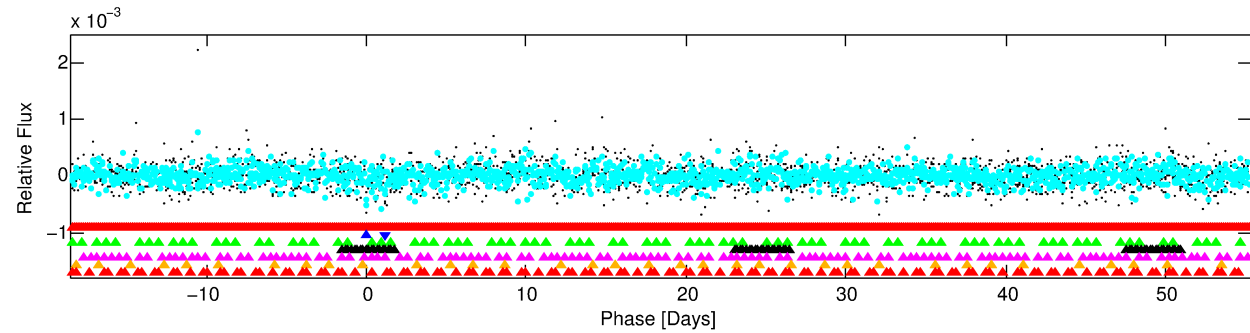
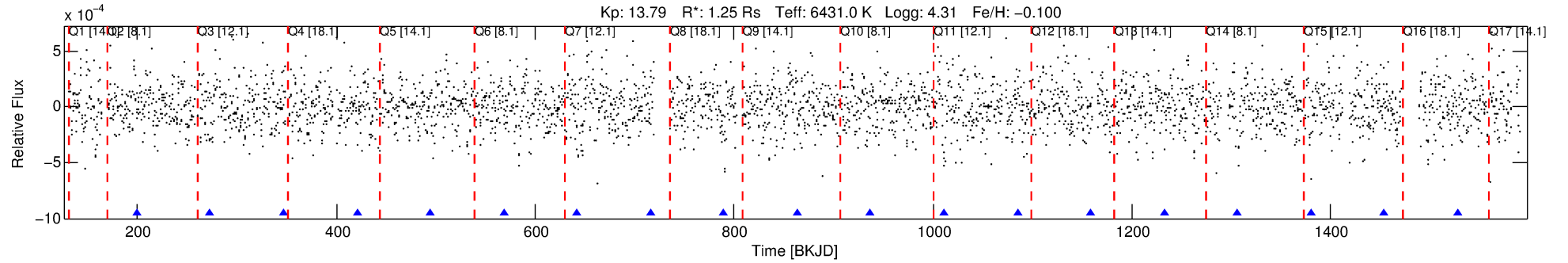
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007115923-02

No Significant Match Found

DV One-Page Summary

KIC: 7115923 Candidate: 2 of 7 Period: 73.791 d



TPS TCE Results:

Period = 73.79073 d
Epoch = 199.4841 BKJD

DV fit results are unavailable

DV Diagnostic Results:

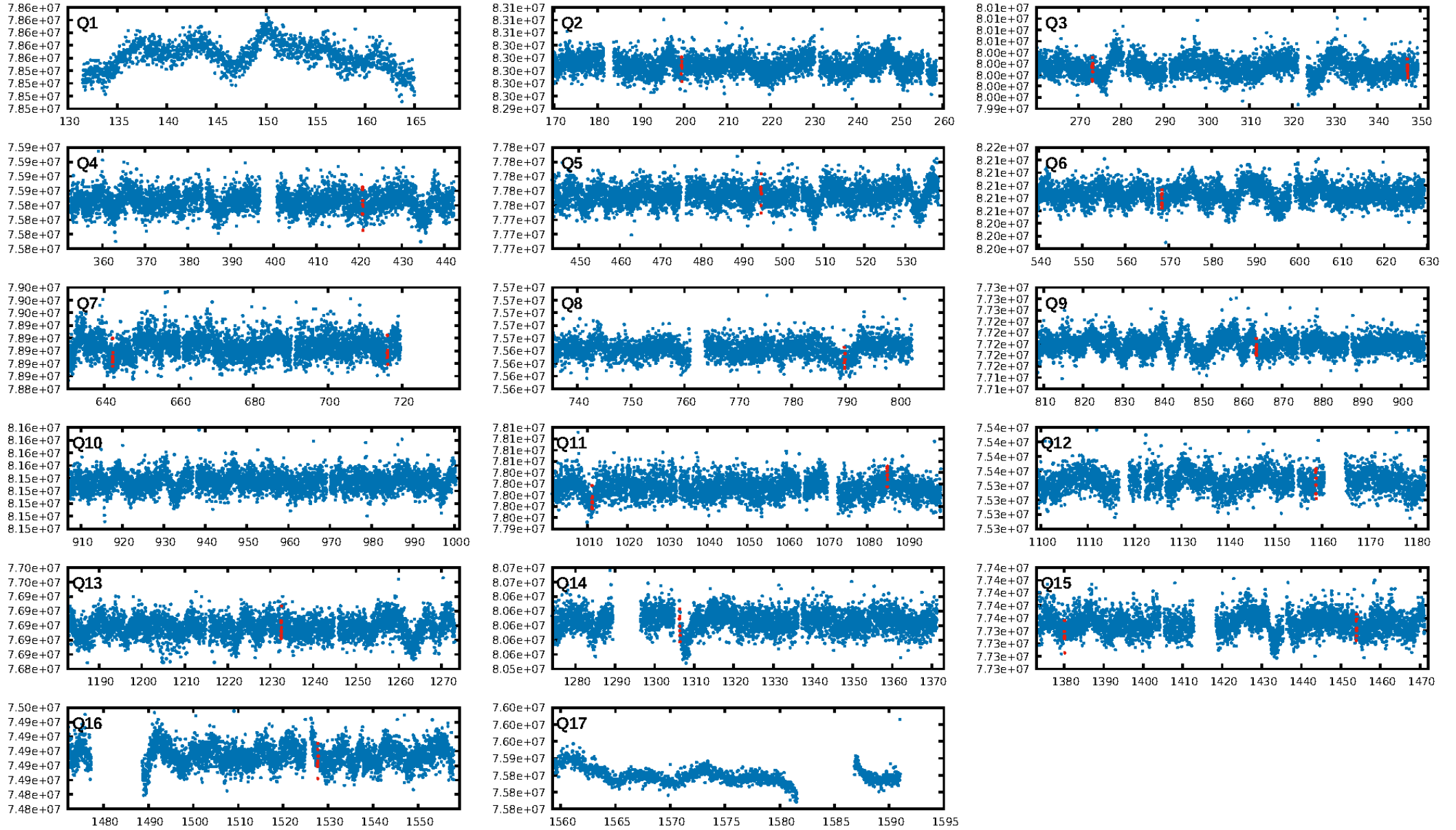
ShortPeriod-sig: 100.0% [37.81σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.79e-17
RollingBand-fgt: N/A
GhostDiagnostic-chr: N/A

Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: N/A

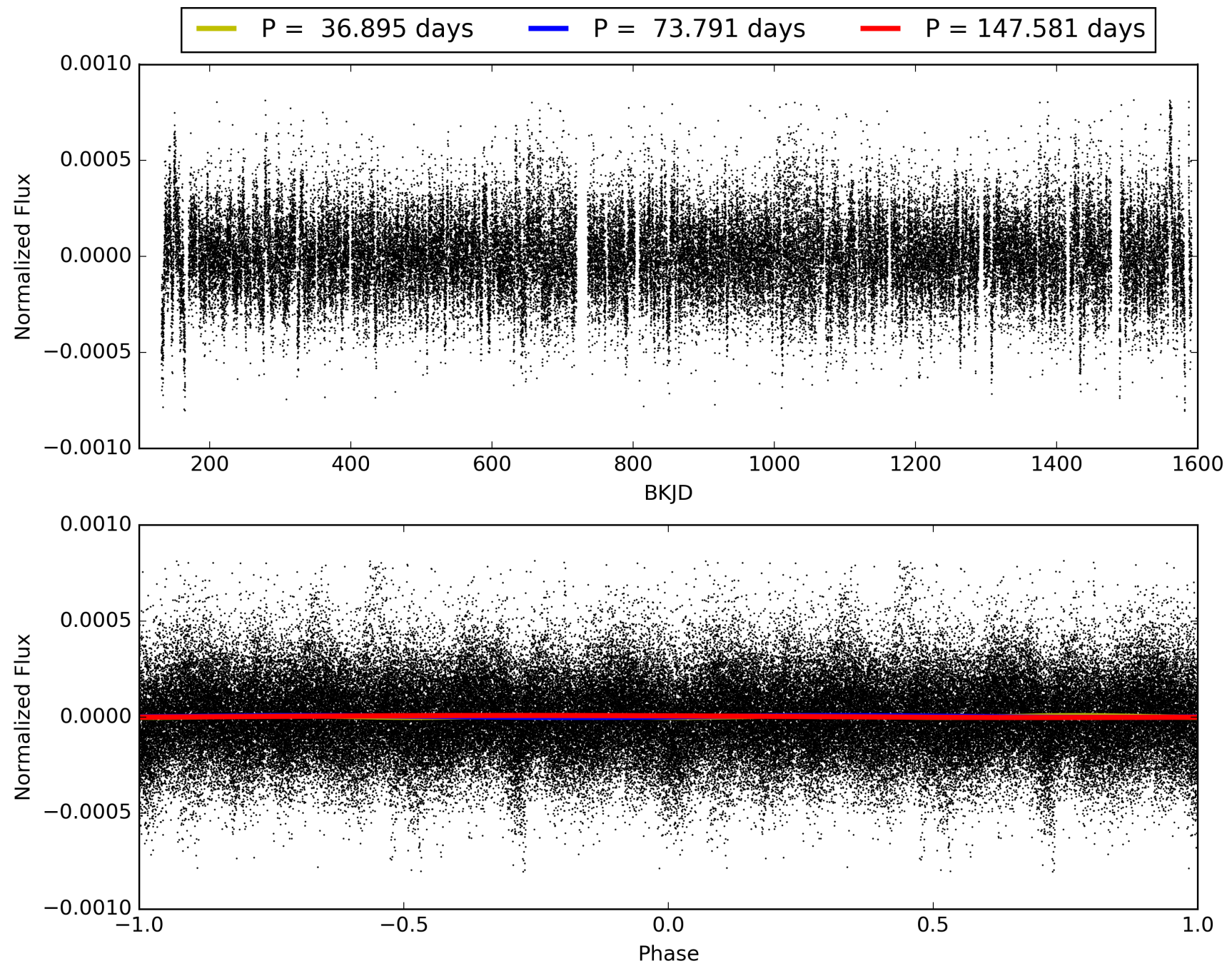
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:50:24 Z

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

TCE 007115923-02, PDC Light Curves

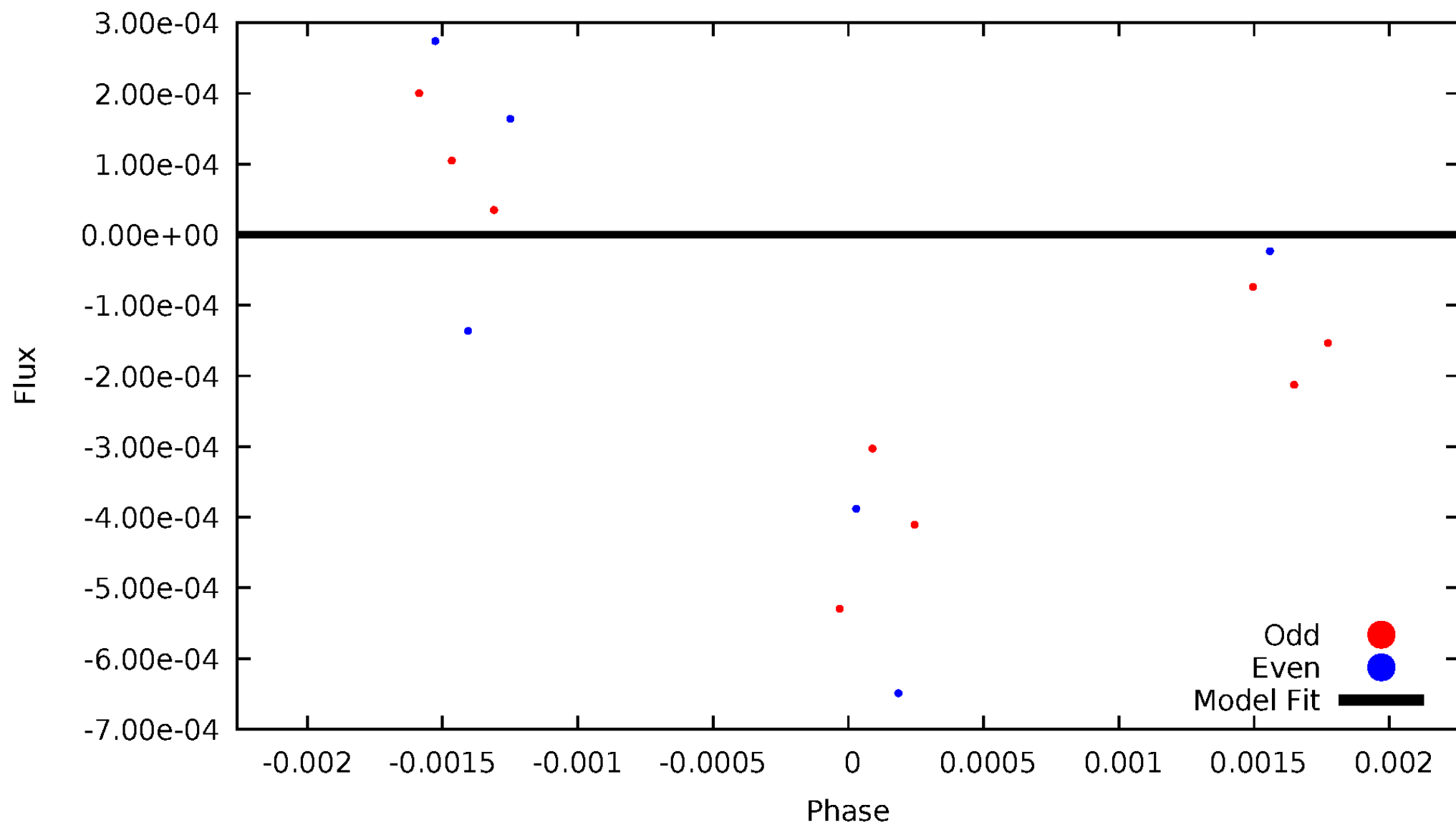


TCE 007115923-02



DV Odd/Even

TCE 007115923-02

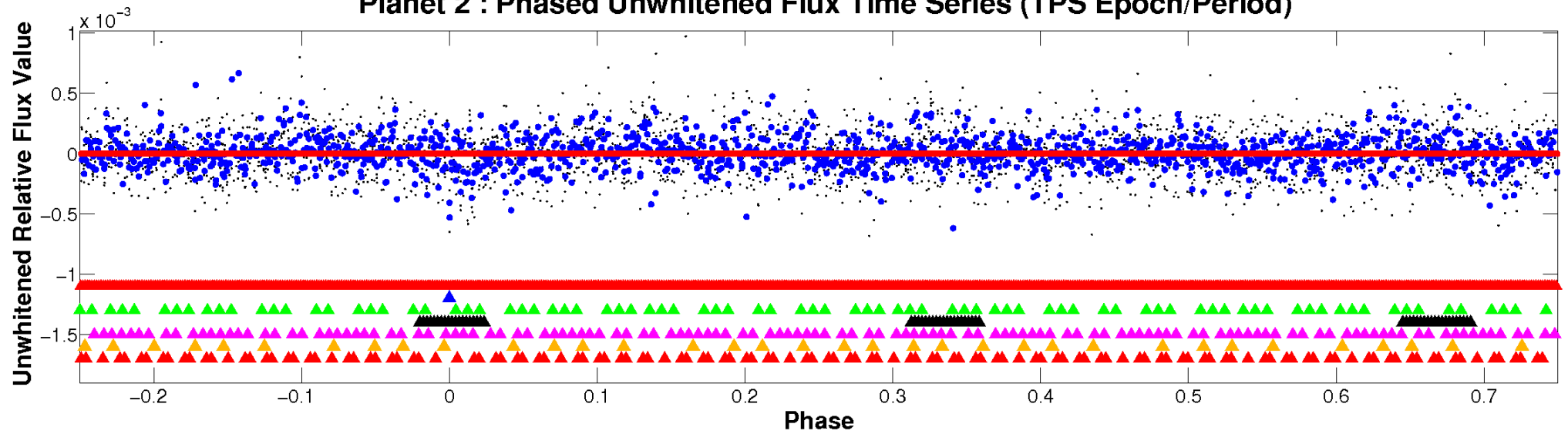


ALT Odd/Even

This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

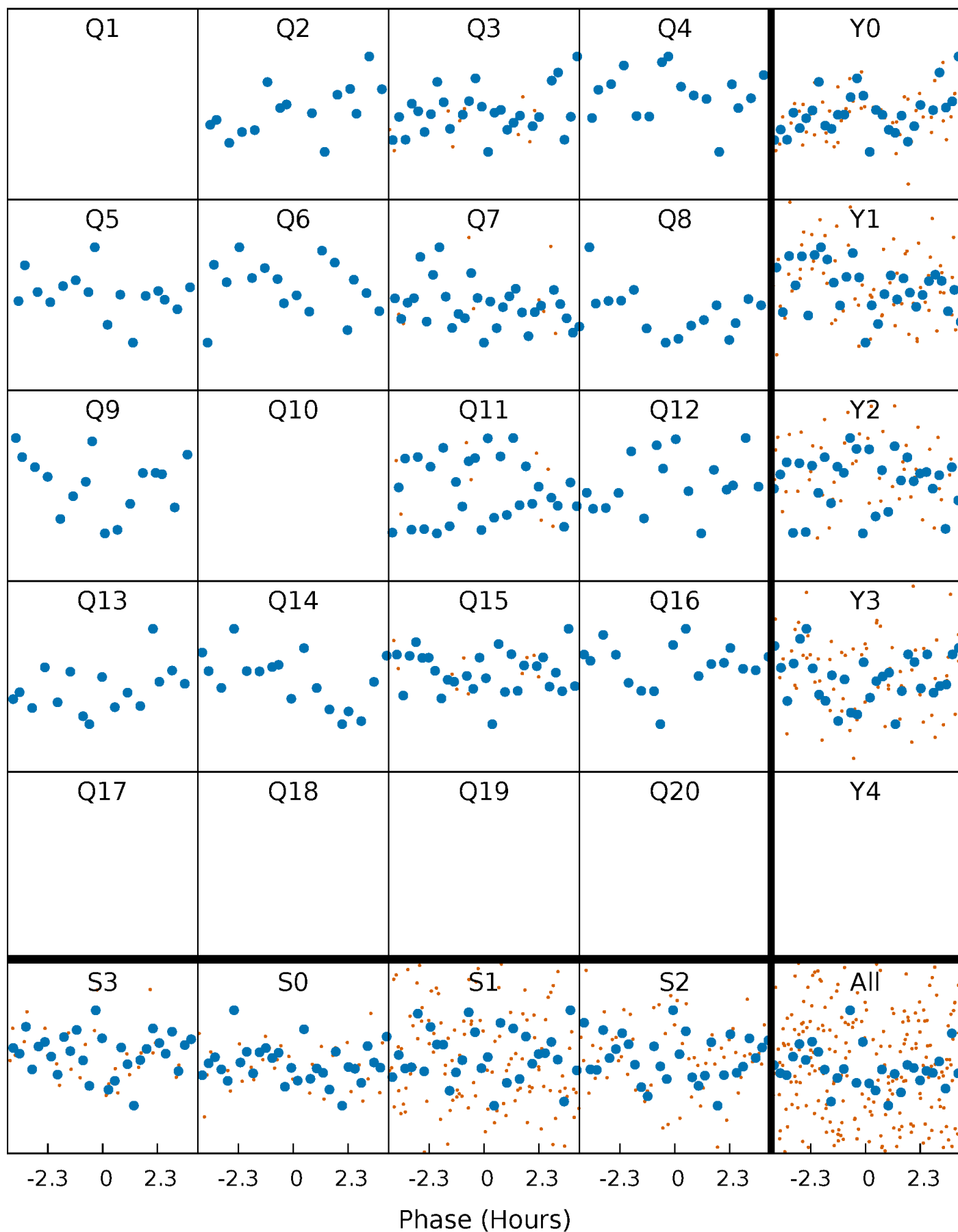


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



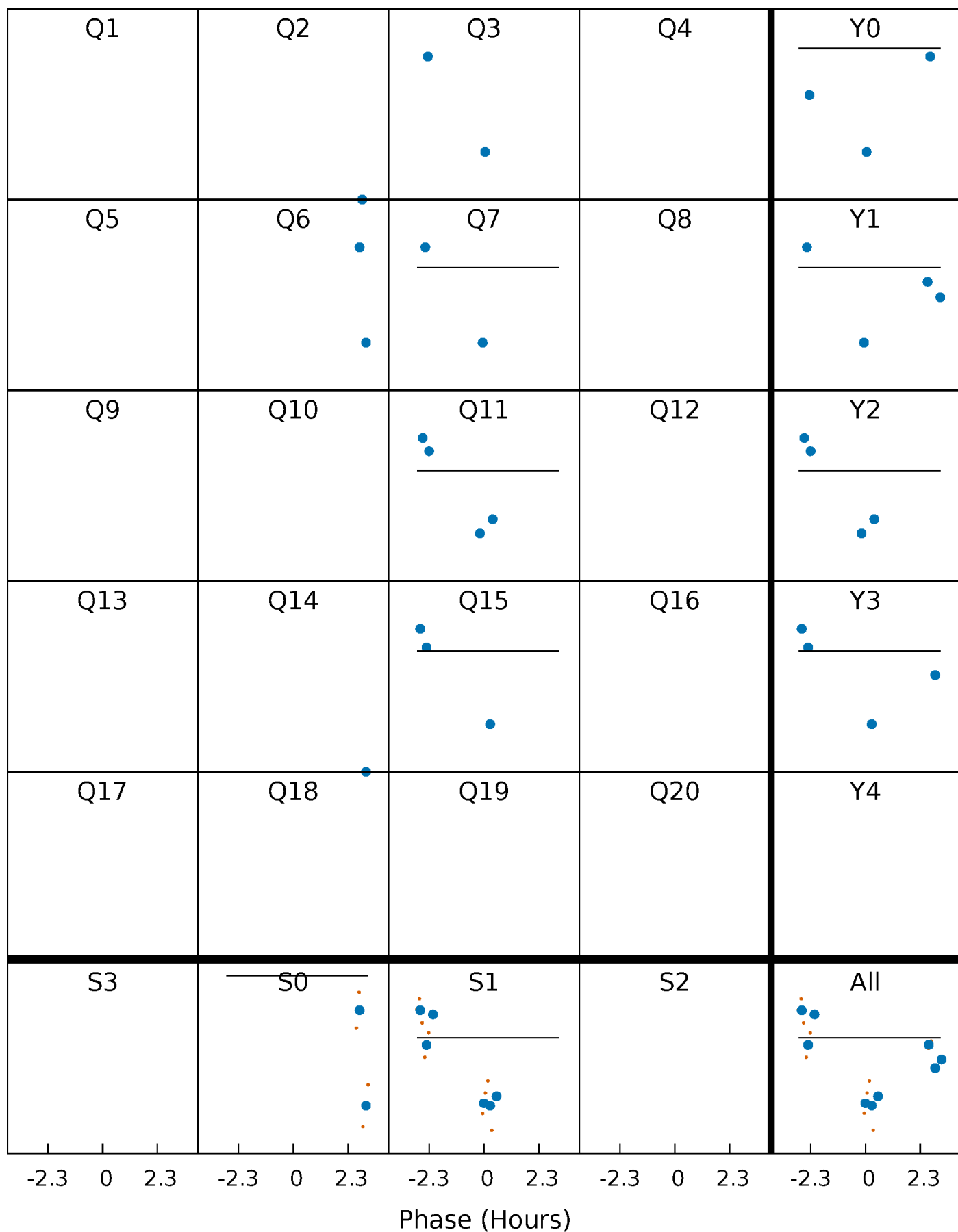
PDC Quarter-Phased Transit Curves

TCE 007115923-02 P= 73.790726 Days $T_0=199.484127$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 007115923-02 P= 73.790726 Days $T_0=199.484127$ (BKJD)

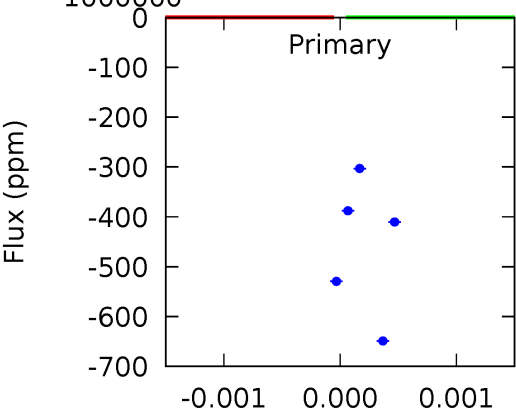
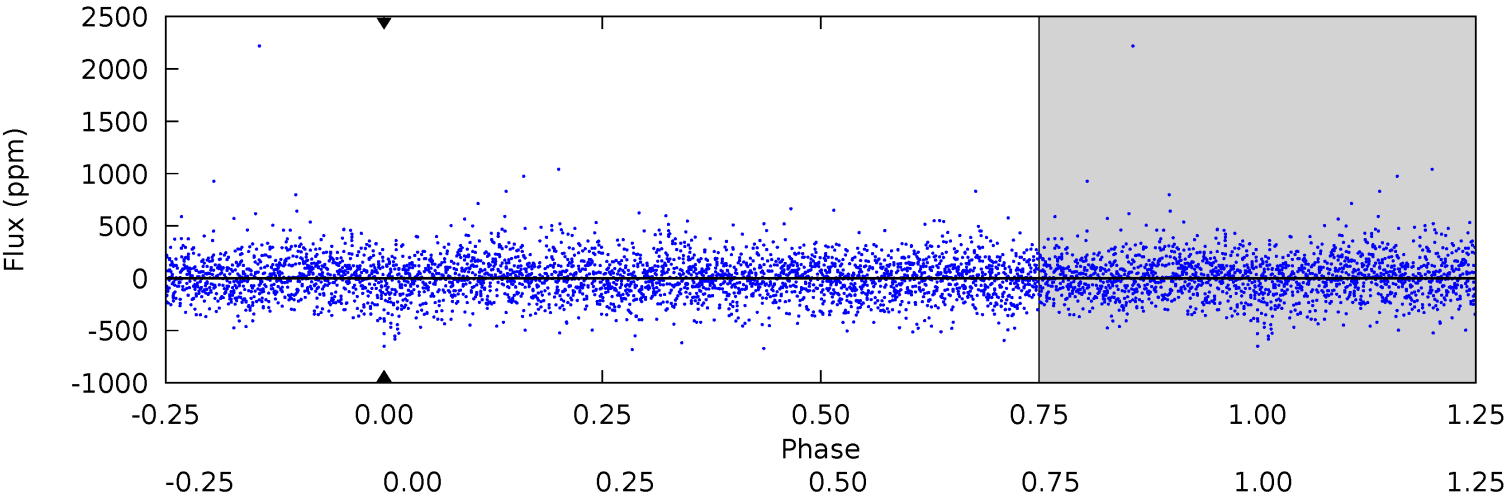


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

007115923-02, P = 73.790726 Days, E = 125.693401 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

This plot does not exist for this TCE.

Stellar Parameters For KIC 007115923

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6431^{+144}_{-208}	$4.309^{+0.105}_{-0.195}$	$-0.100^{+0.250}_{-0.300}$	$1.249^{+0.400}_{-0.200}$	$1.159^{+0.185}_{-0.152}$	$0.837^{+0.410}_{-0.441}$
	+2%/-3%	+2%/-5%	+250%/-300%	+32%/-16%	+16%/-13%	+49%/-53%
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 007115923-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$10.77^{+11.61}_{-7.39}$	745^{+51}_{-38}	-5155^{+31251}_{-23016}	$-1248.254^{+117359.216}_{-120182.439}$
Alt.	N/A	N/A	N/A	N/A	N/A

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 $A_{obs} \gg 1.0$

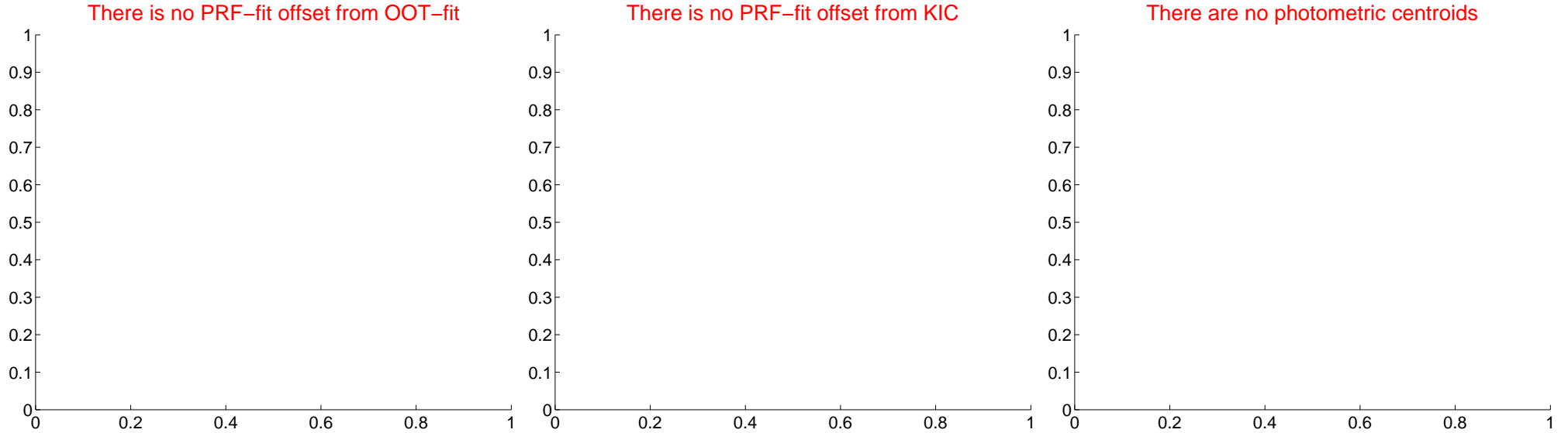
DV Centroid Data

Supplemental centroid analysis for 007115923-02. Kepler magnitude: 13.79. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	—	—	—	—



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.



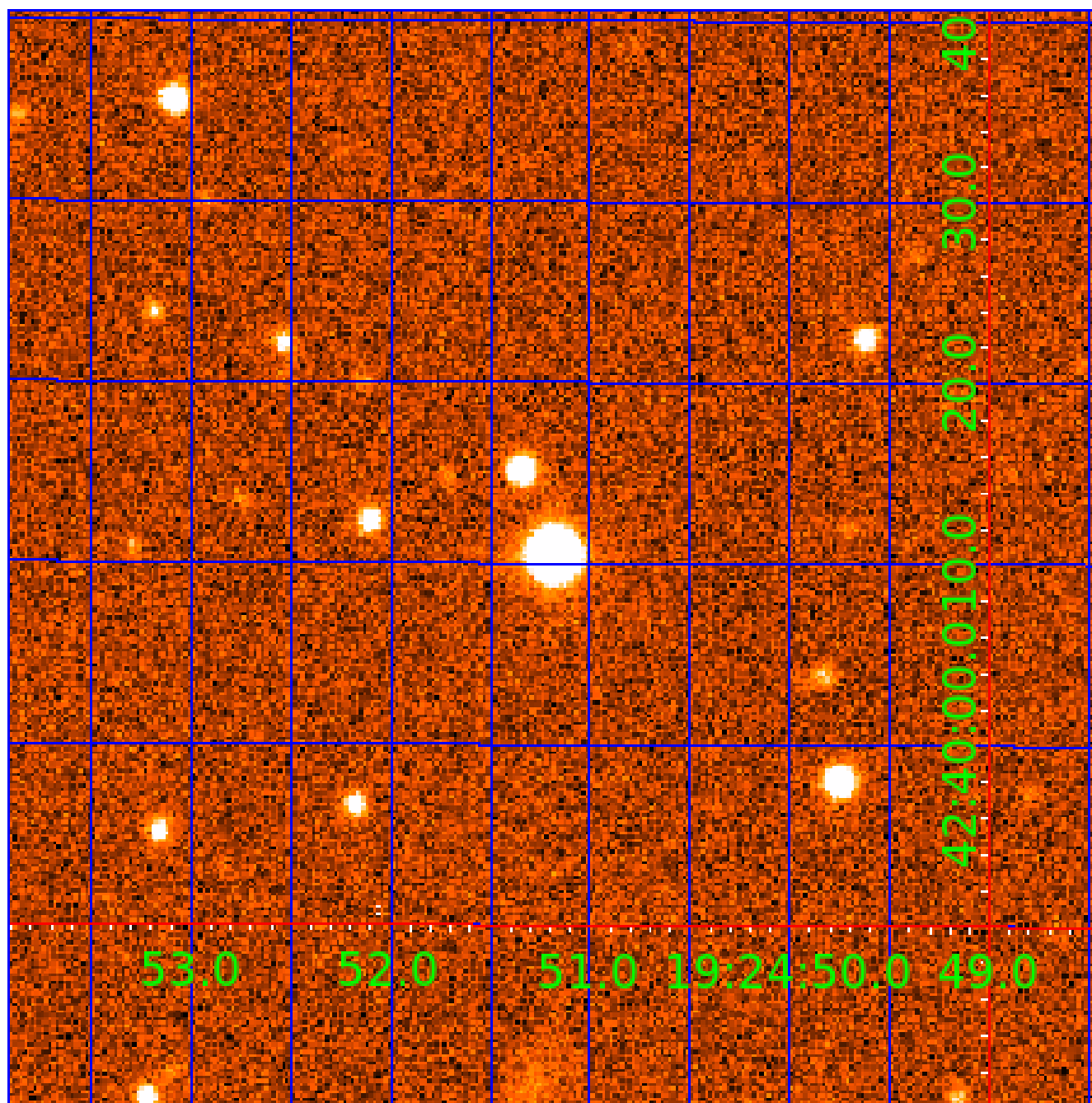
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 007115923

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})
007115923-01	OBS	No	0.566751	131.875527	11.1	4.129	10.8	7.5	1.25	6431	0.42	12055.73
007115923-02	OBS	No	73.790726	199.484127	681.1	2.000	12.6	-1.0	1.25	6431	3.28	18.27
007115923-03	OBS	No	17.237644	135.695531	485.5	1.080	17.8	18.7	1.25	6431	2.95	126.98
007115923-04	OBS	No	24.537466	152.144594	384.8	0.979	10.4	13.1	1.25	6431	2.64	79.30
007115923-05	OBS	No	11.248109	138.601304	273.9	0.967	12.1	12.7	1.25	6431	2.23	224.36
007115923-06	OBS	No	41.379625	145.410891	69.9	20.474	13.3	6.8	1.25	6431	1.06	39.51
007115923-07	OBS	No	11.435674	137.291025	276.5	0.568	12.1	7.3	1.25	6431	2.33	219.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007115923-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007115923-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—NO_FITS—CENT_NOFITS
007115923-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
007115923-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007115923-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
007115923-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007115923-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

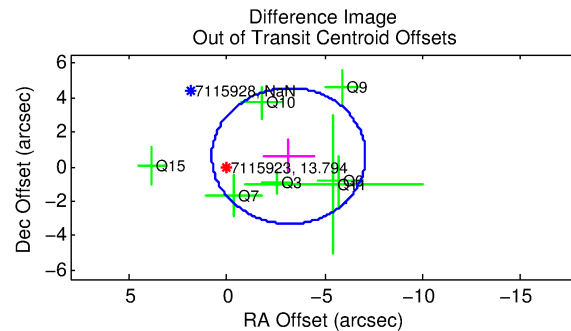
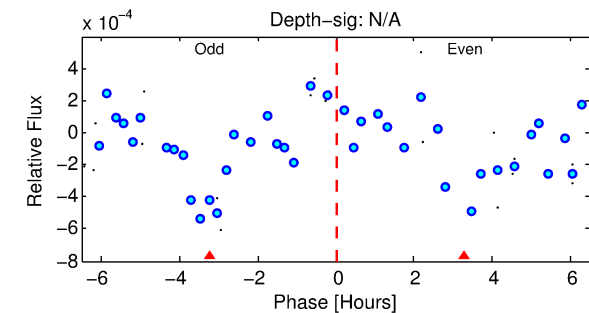
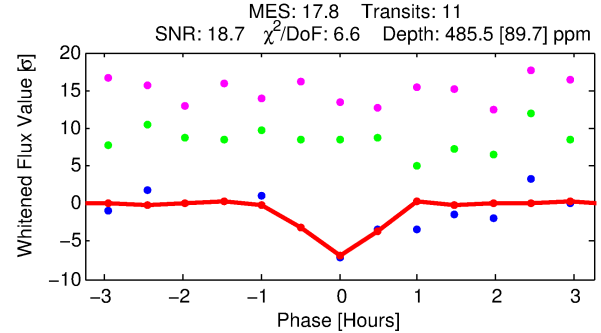
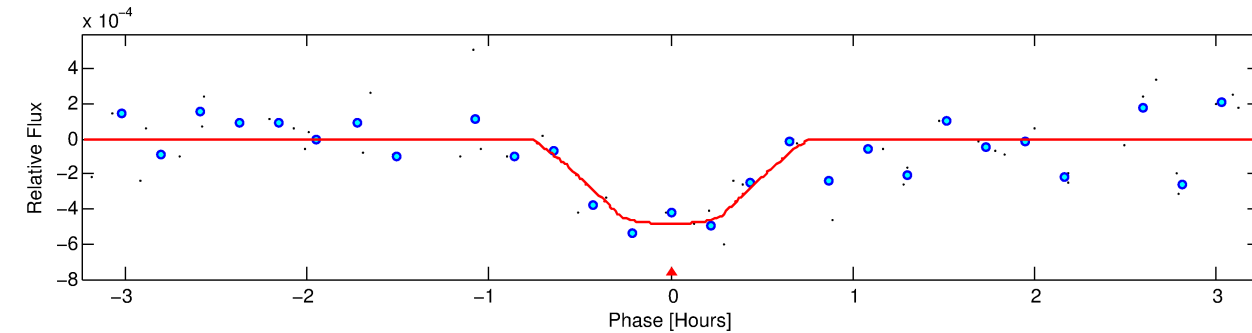
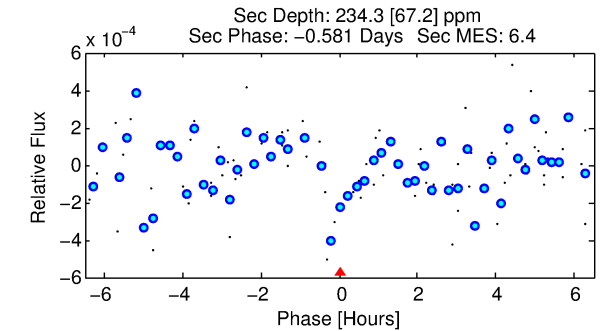
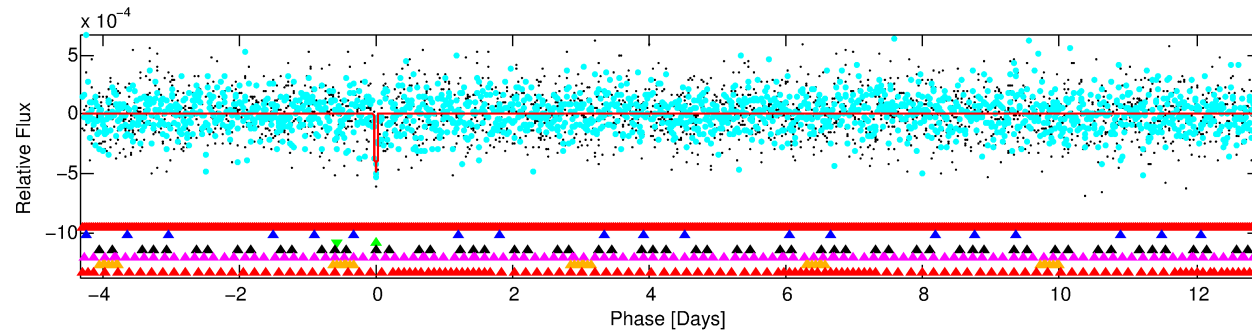
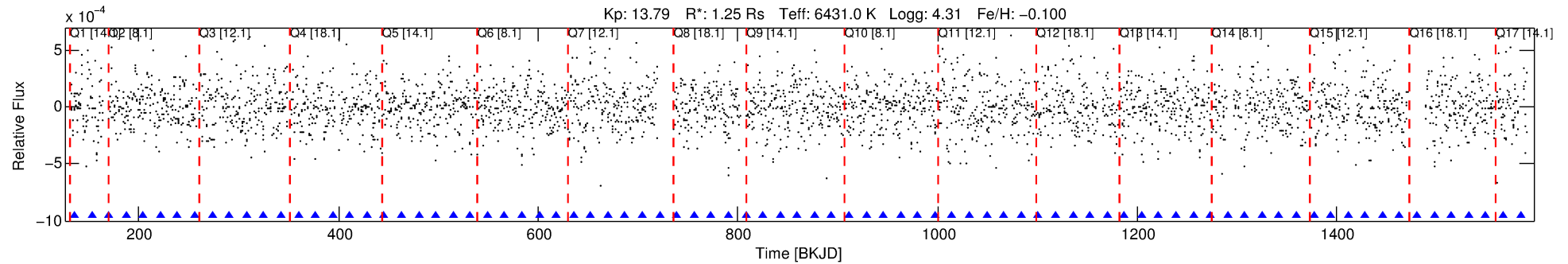
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007115923-03

No Significant Match Found

DV One-Page Summary

KIC: 7115923 Candidate: 3 of 7 Period: 17.238 d



DV Fit Results:

Period = 17.23764 [0.00015] d
Epoch = 135.6955 [0.0073] BKJD
Rp/R* = 0.0217 [0.0241]
a/R* = 92.95 [543.52]
b = 0.68 [4.72]
Seff = 126.98 [49.49]
Teq = 856 [83] K
Rp = 2.95 [3.41] Re
a = 0.1372 [0.0358] AU
Ag = 278.67 [633.10] [0.44 σ]
Teffp = 5407 [3036] K [1.50 σ]

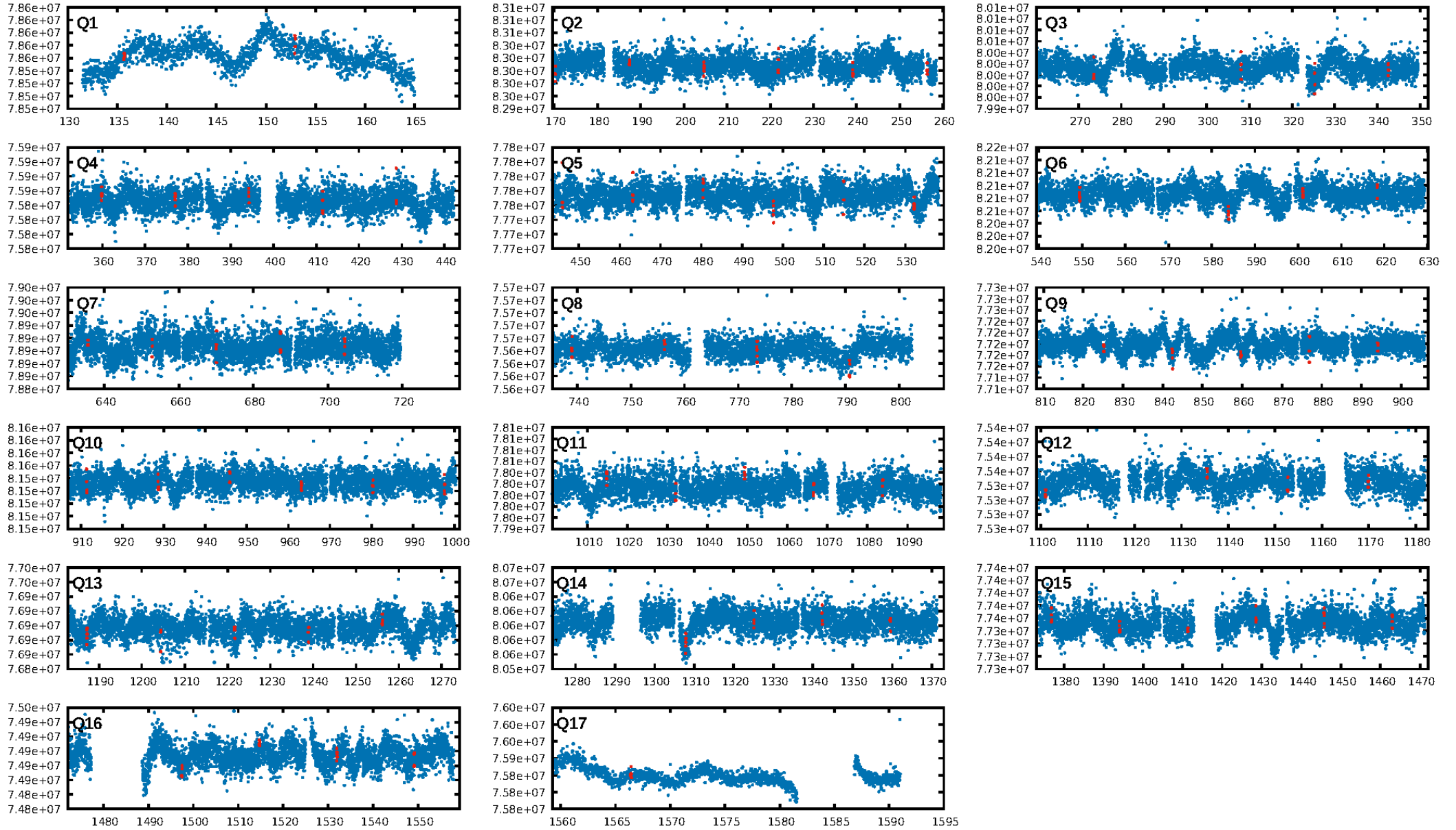
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [114.10 σ]
LongPeriod-sig: 100.0% [120.18 σ]
ModelChiSquare2-sig: 8.9%
ModelChiSquareGof-sig: 88.4%
Bootstrap-pfa: 2.64e-25
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: 91.21
Centroid-sig: 0.4%
Centroid-so: 1.012 arcsec [2.51 σ]
OotOffset-rm: 3.228 arcsec [2.46 σ]
KicOffset-rm: 3.200 arcsec [2.59 σ]
OotOffset-st: 2/4/0/1 [7]
KicOffset-st: 2/4/0/1 [7]
DiffImageQuality-fgm: 0.00 [0/7]
DiffImageOverlap-fno: 0.00 [0/17]

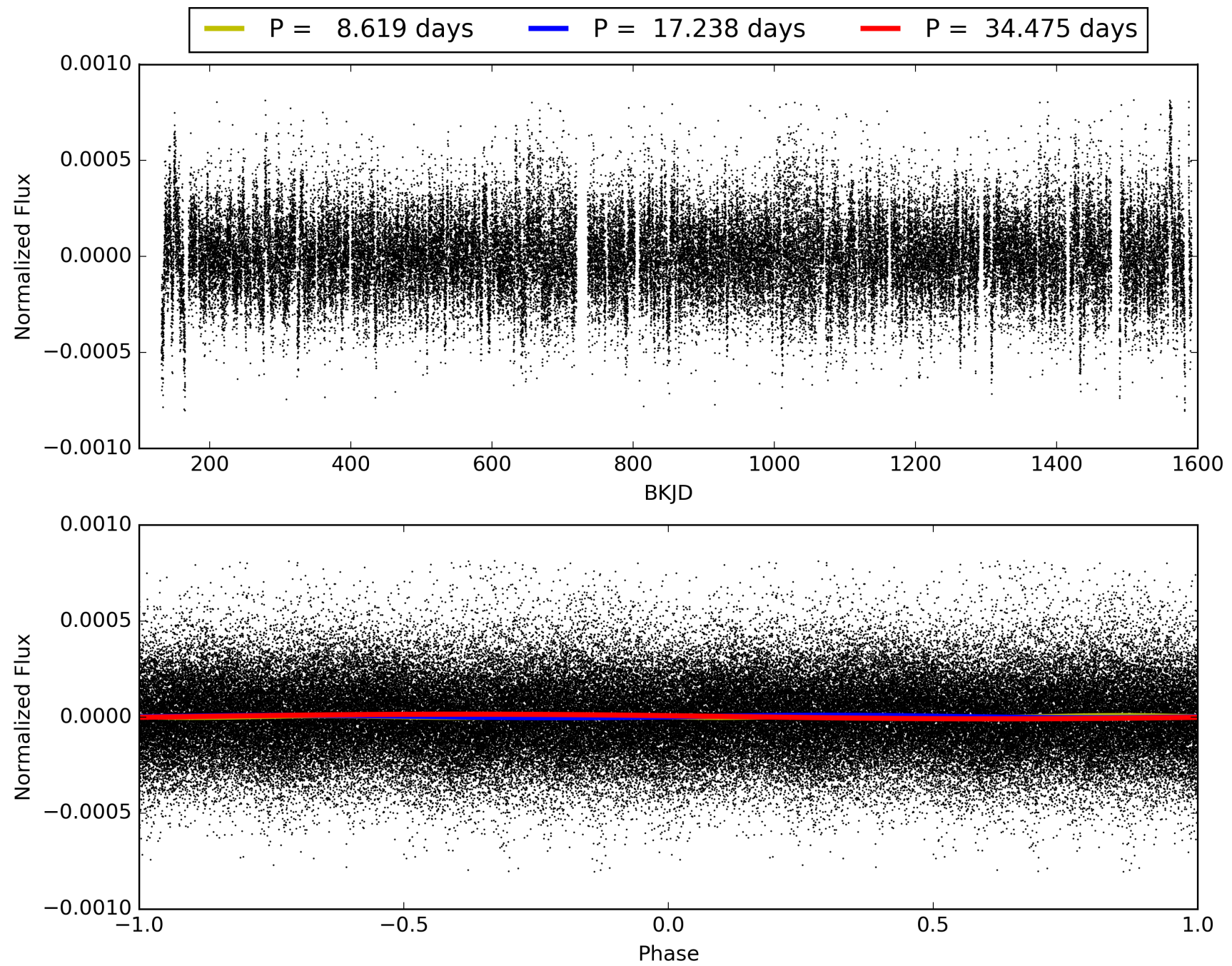
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:50:27 Z

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

TCE 007115923-03, PDC Light Curves

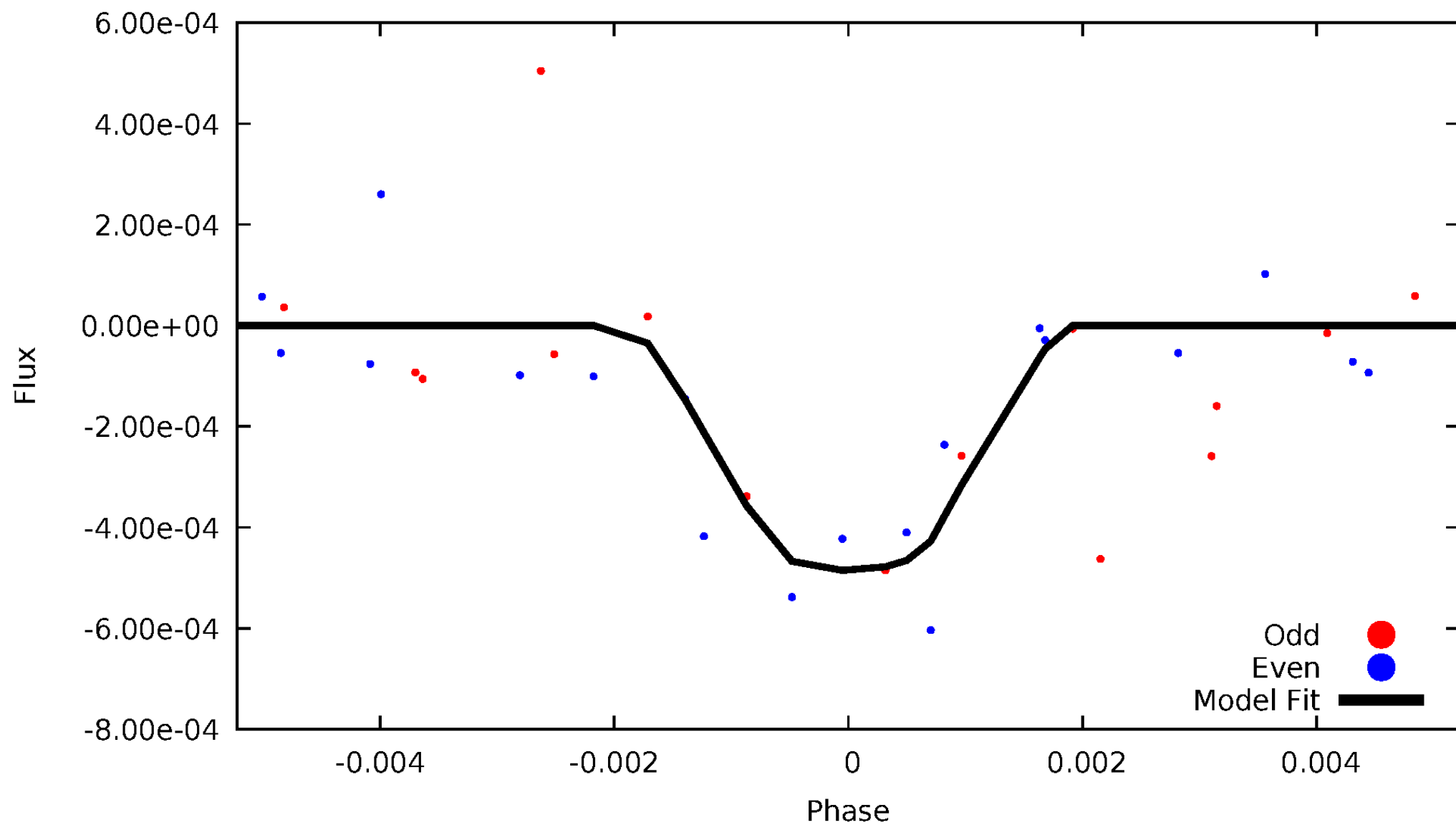


TCE 007115923-03



DV Odd/Even

TCE 007115923-03

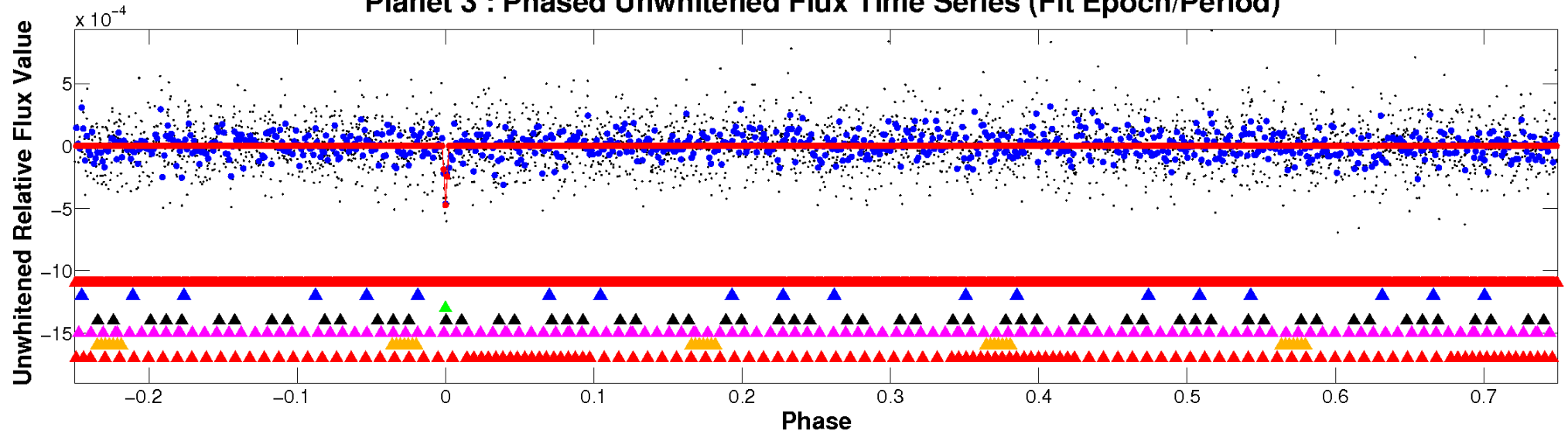


ALT Odd/Even

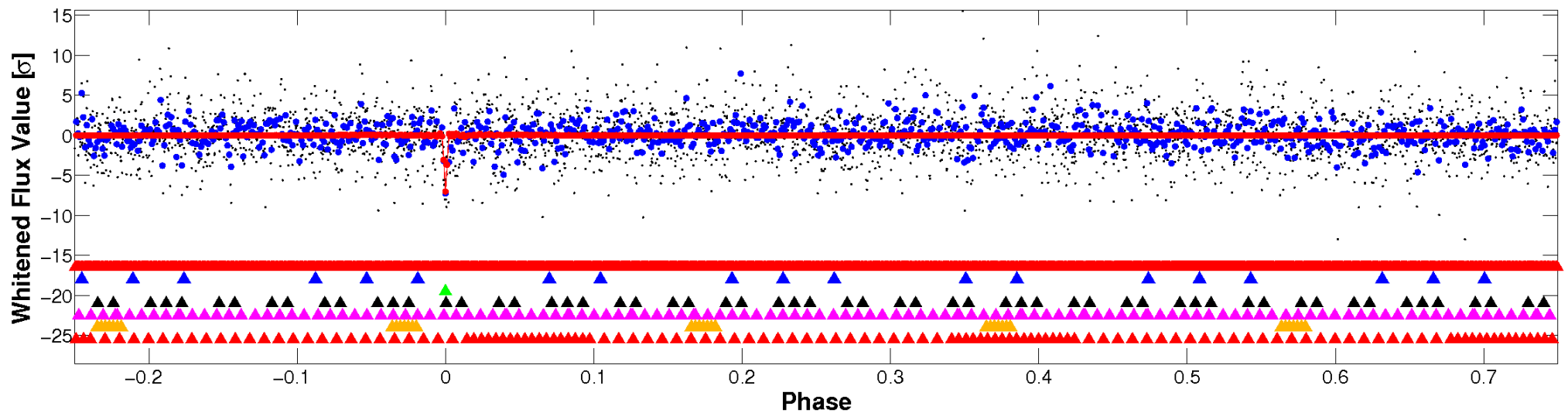
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

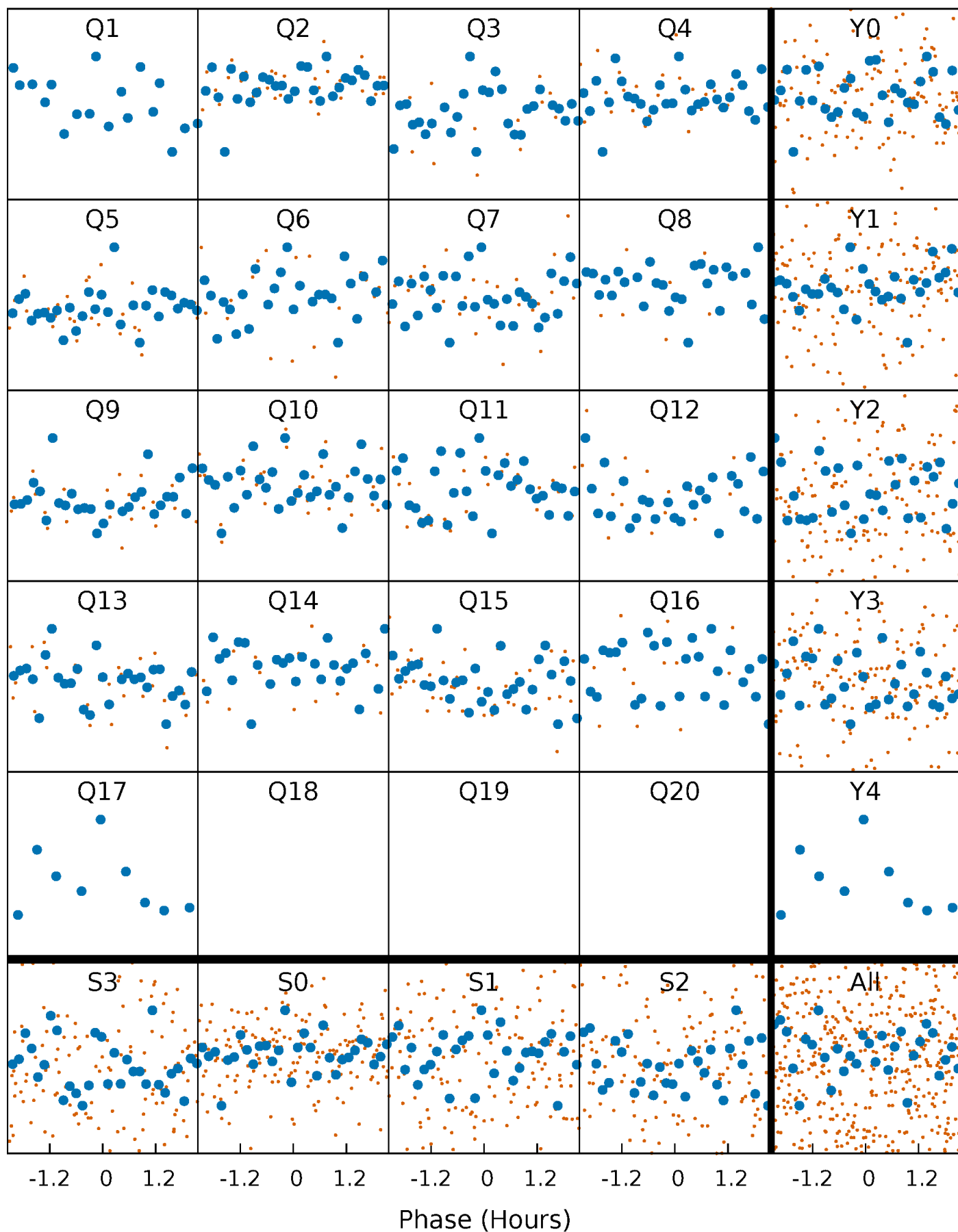


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



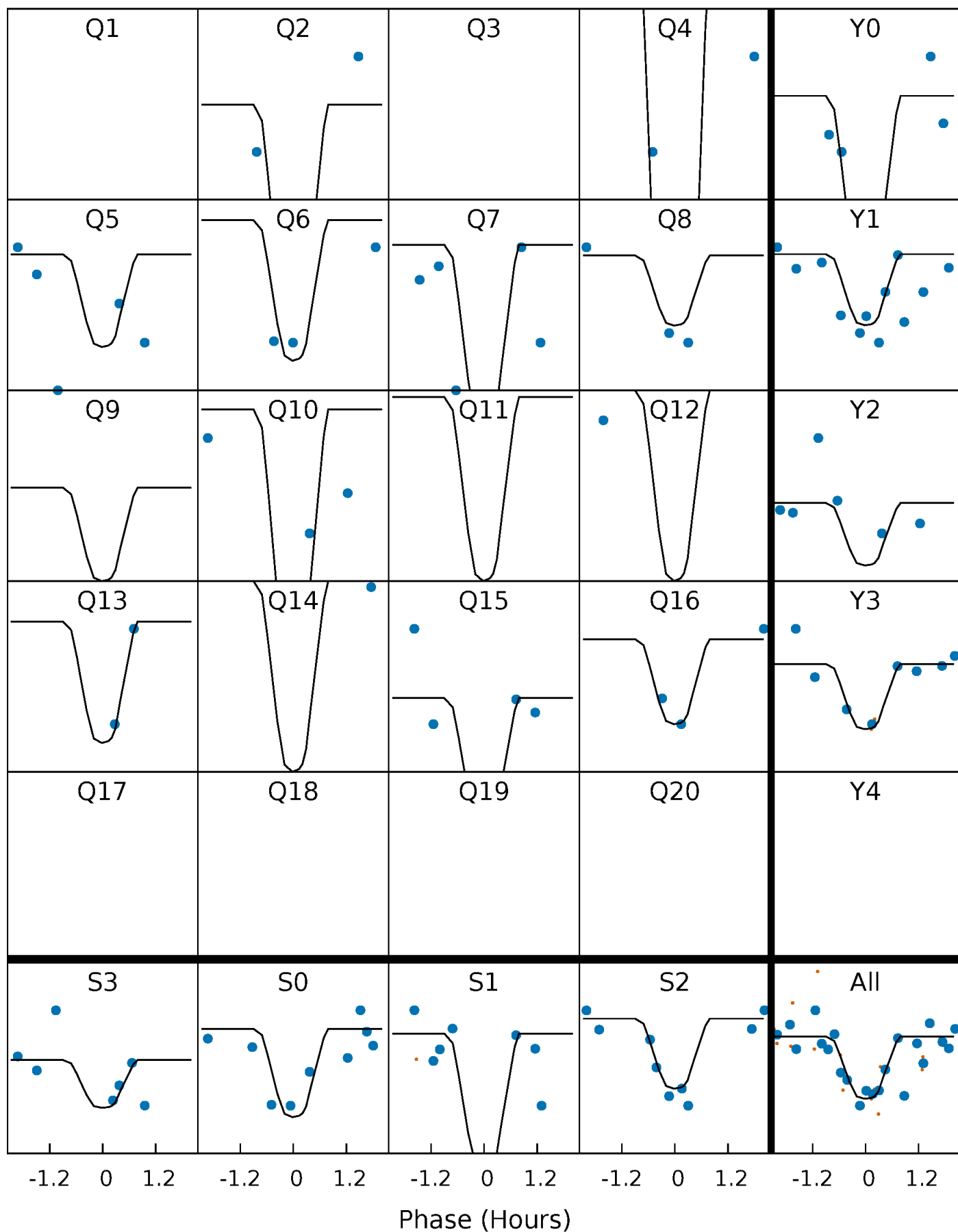
PDC Quarter-Phased Transit Curves

TCE 007115923-03 P= 17.237644 Days $T_0=135.695531$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 007115923-03 P= 17.237644 Days $T_0=135.695531$ (BKJD)

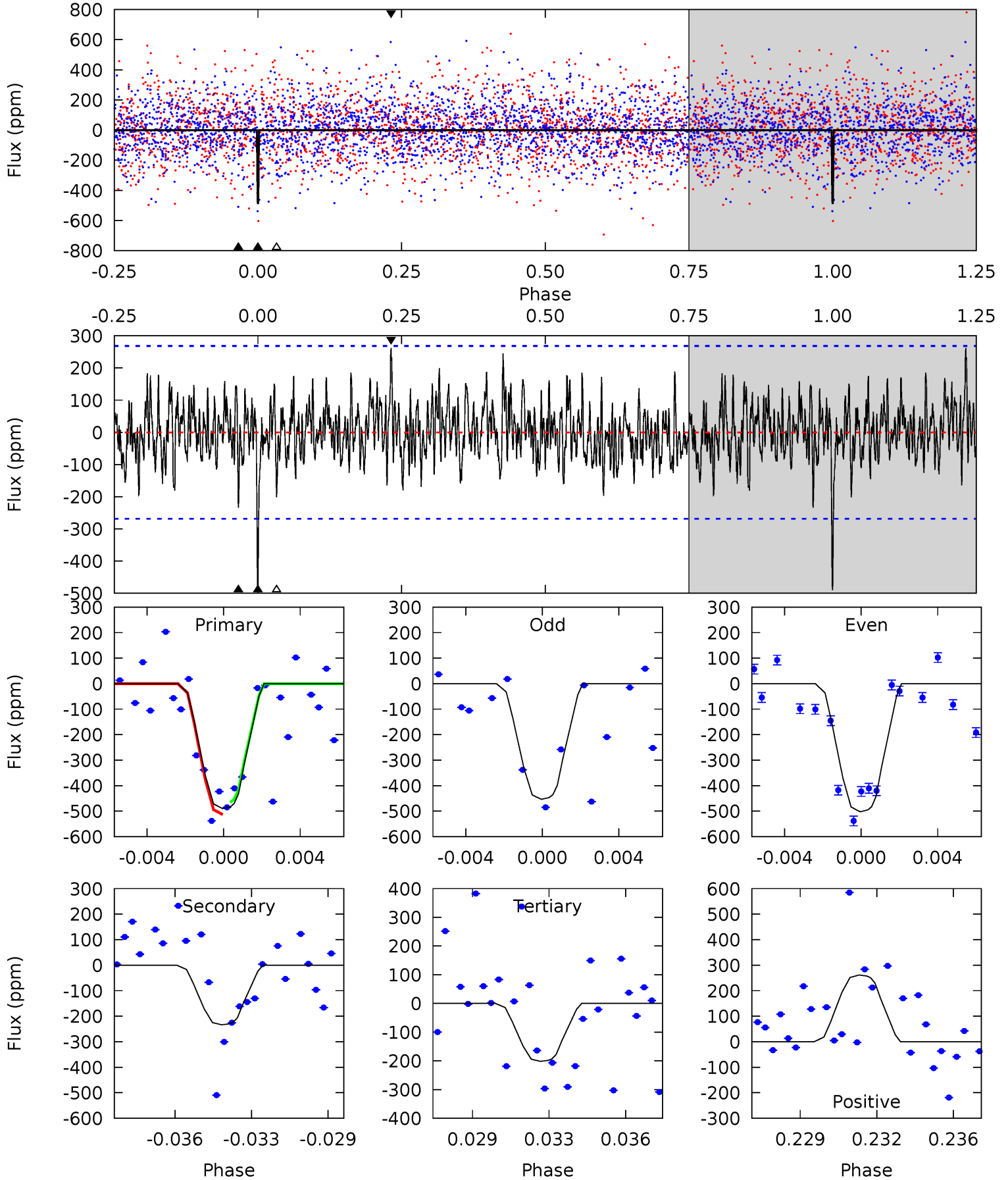


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

007115923-03, P = 17.237644 Days, E = 118.457887 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.52	4.54	3.92	5.08	5.22	2.91	1.41	5.60	4.44	0.62	-0.54	0.41	1.03	0.35	0.46



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 007115923

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6431^{+144}_{-208}	$4.309^{+0.105}_{-0.195}$	$-0.100^{+0.250}_{-0.300}$	$1.249^{+0.400}_{-0.200}$	$1.159^{+0.185}_{-0.152}$	$0.837^{+0.410}_{-0.441}$
	+2%/-3%	+2%/-5%	+250%/-300%	+32%/-16%	+16%/-13%	+49%/-53%
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 007115923-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-234 ± 51	$3.74^{+3.07}_{-2.33}$	1208^{+91}_{-71}	4896^{+3240}_{-974}	167^{+926}_{-119}
Alt.	N/A	N/A	N/A	N/A	N/A

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

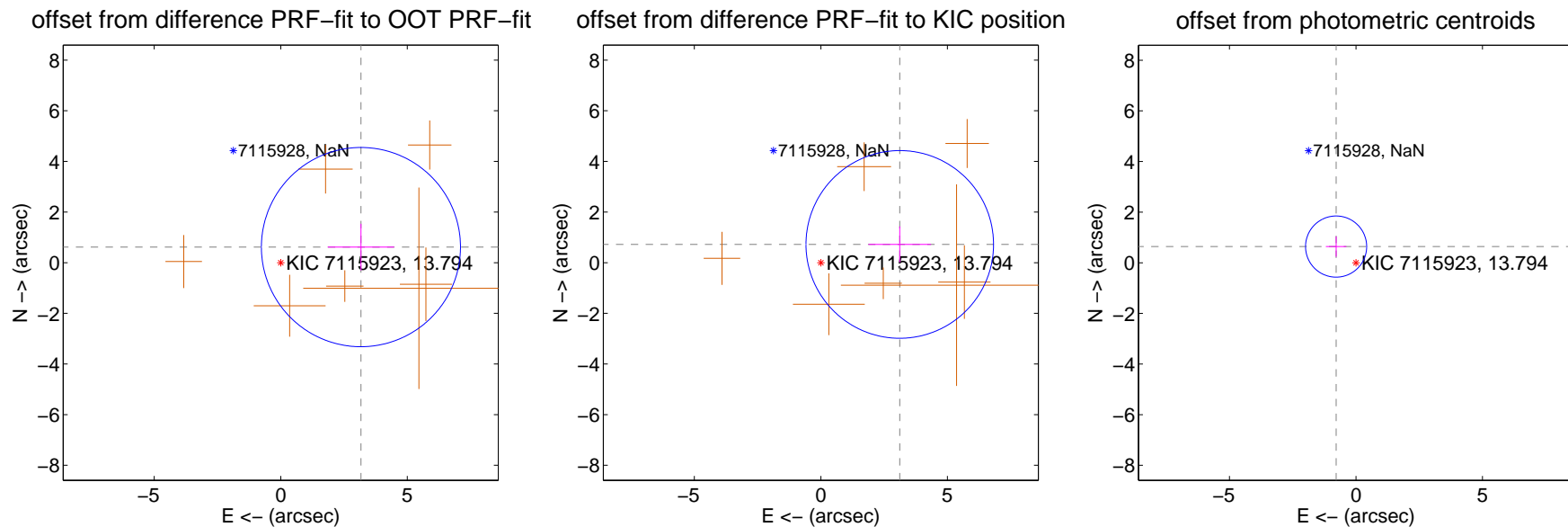
DV Centroid Data

Supplemental centroid analysis for 007115923-03. Kepler magnitude: 13.79. Transit SNR 18.73

There are 0 quarters with good PRF difference image offsets

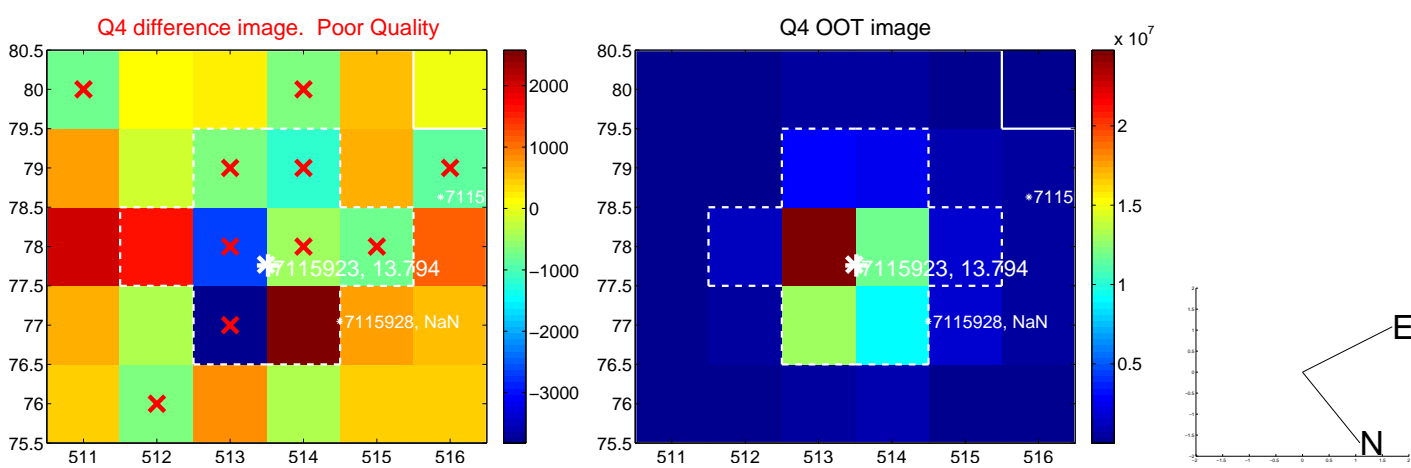
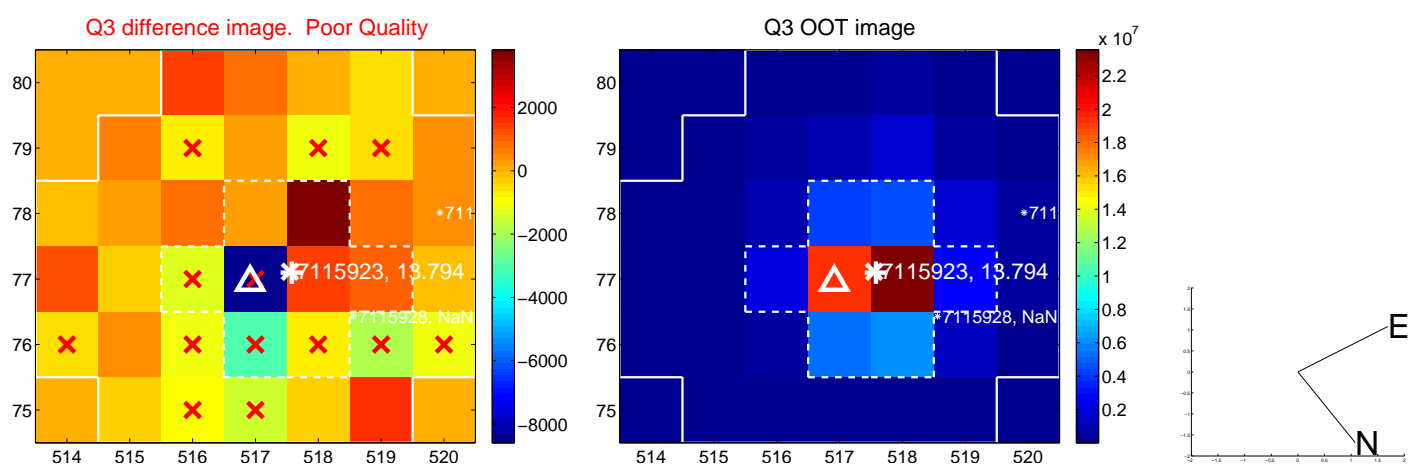
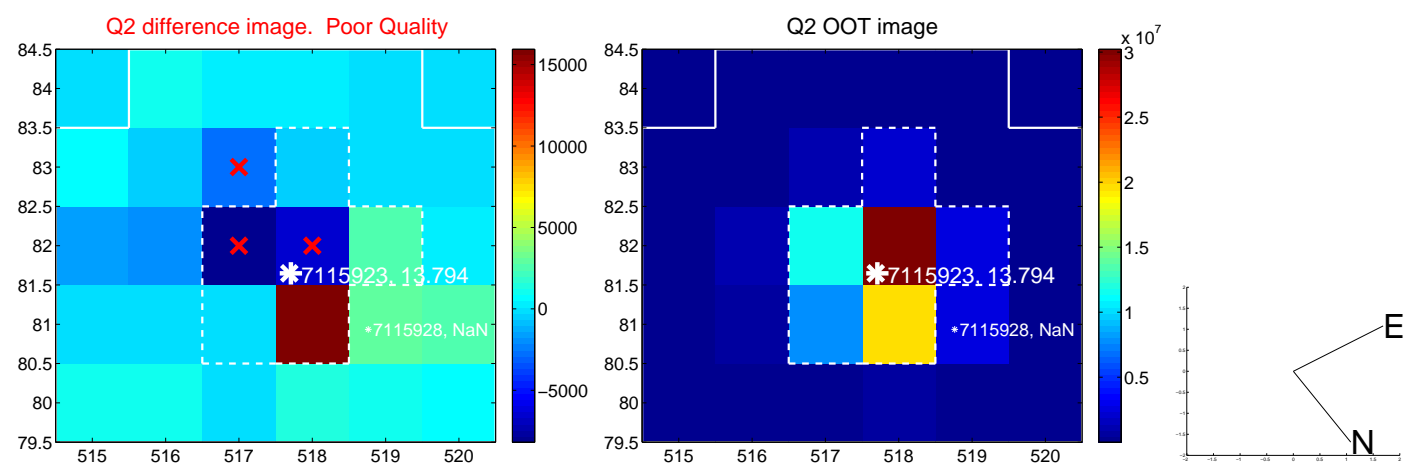
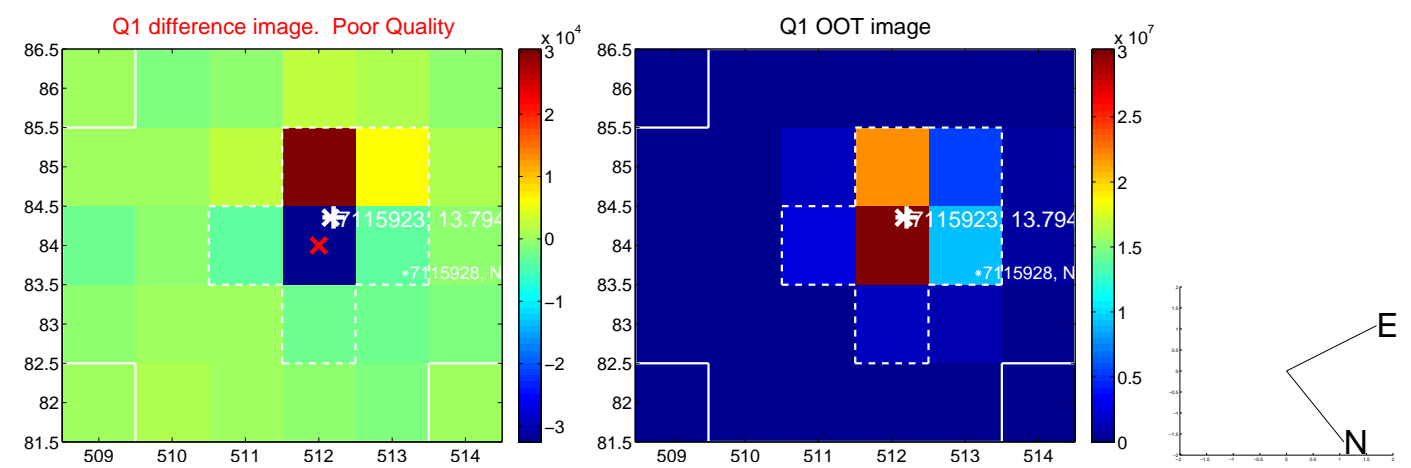
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.228 ± 1.311	2.46	-3.169 ± 1.311	0.616 ± 0.919
PRF-fit source offset from KIC position	3.200 ± 1.235	2.59	-3.118 ± 1.237	0.722 ± 0.712
photometric centroid source offset	1.01 ± 0.40	2.51	0.78 ± 0.40	0.64 ± 0.40

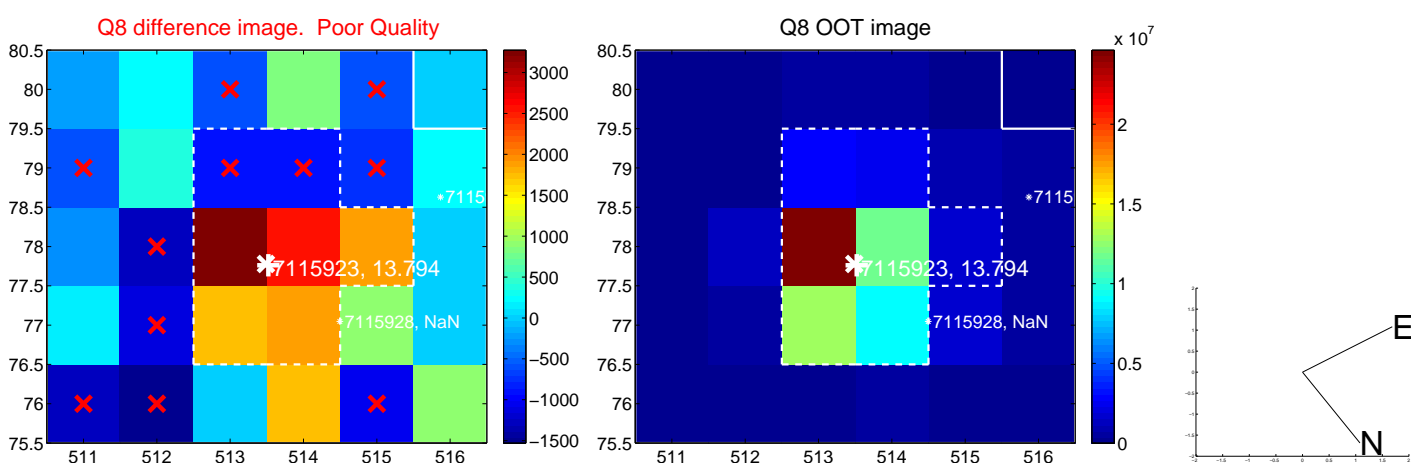
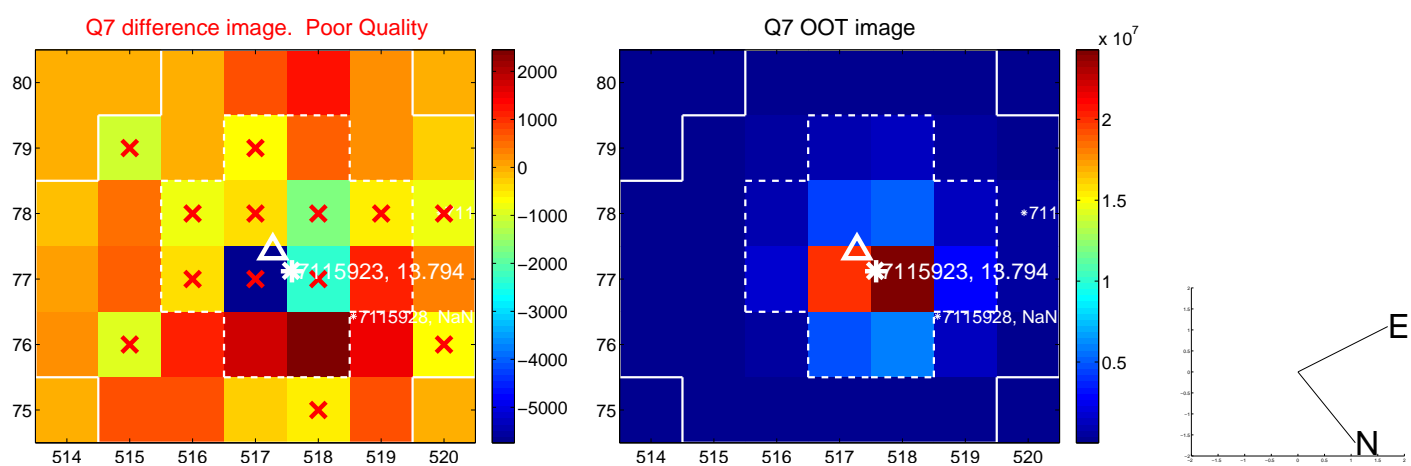
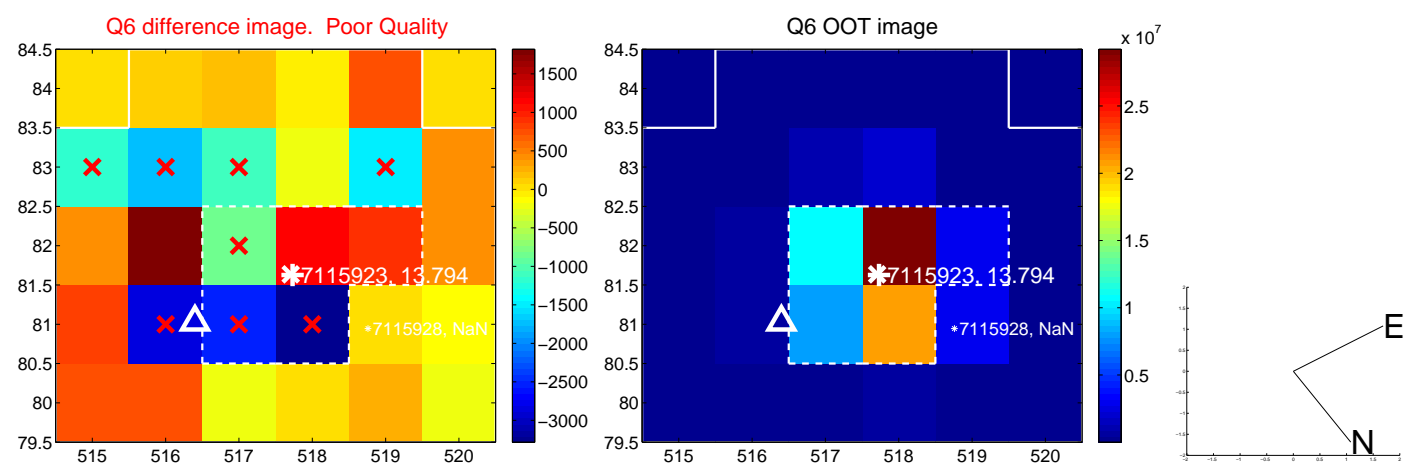
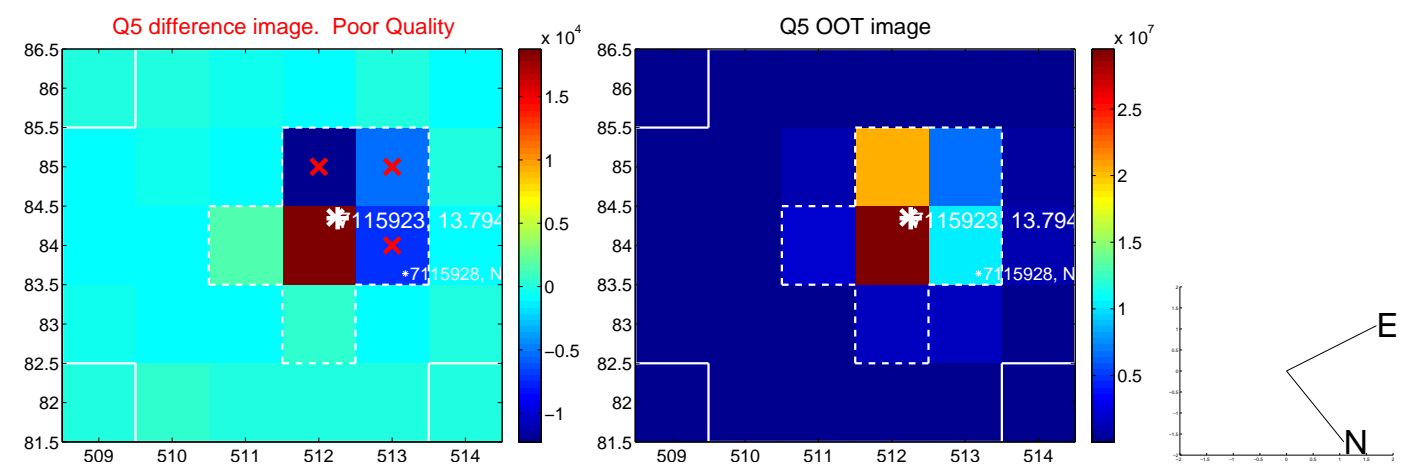


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

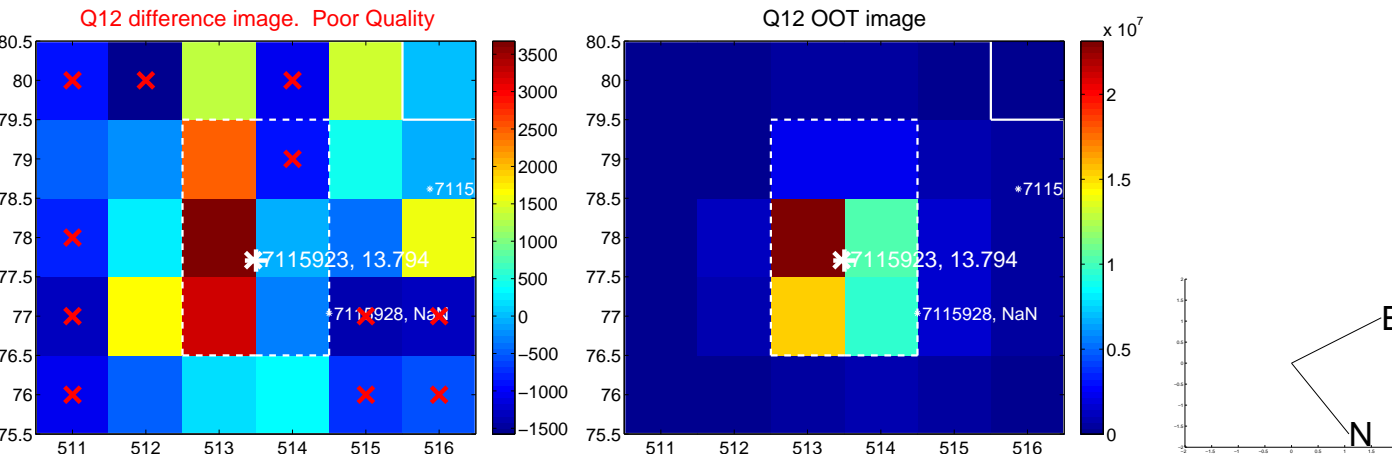
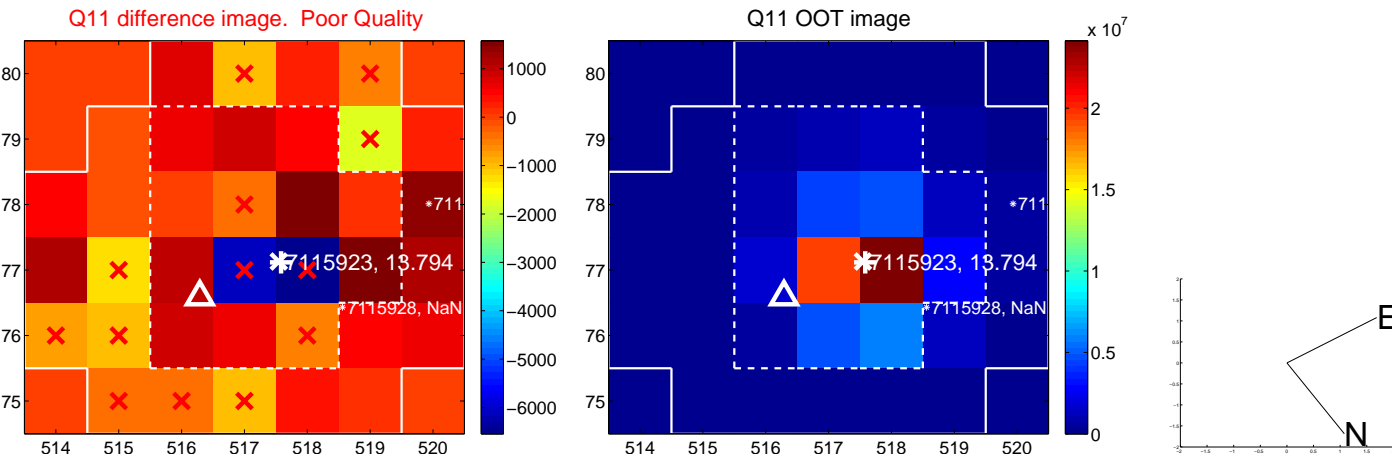
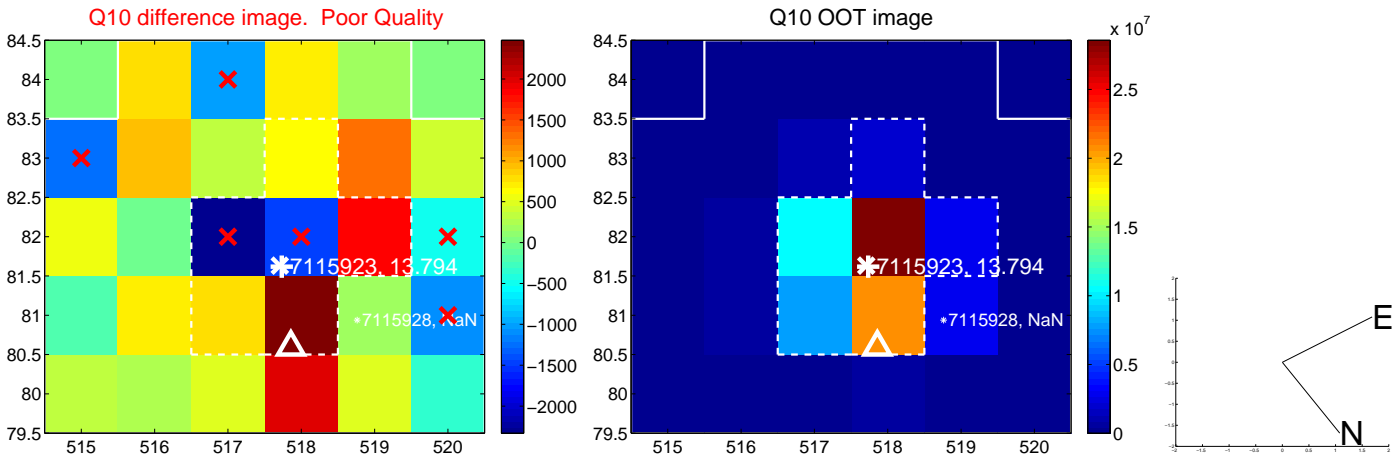
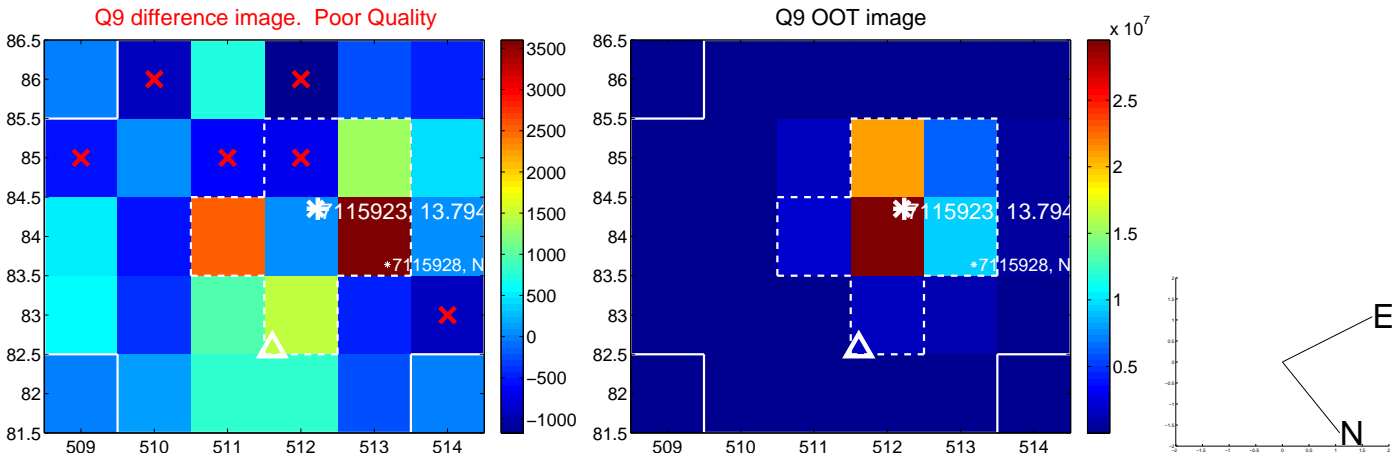
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



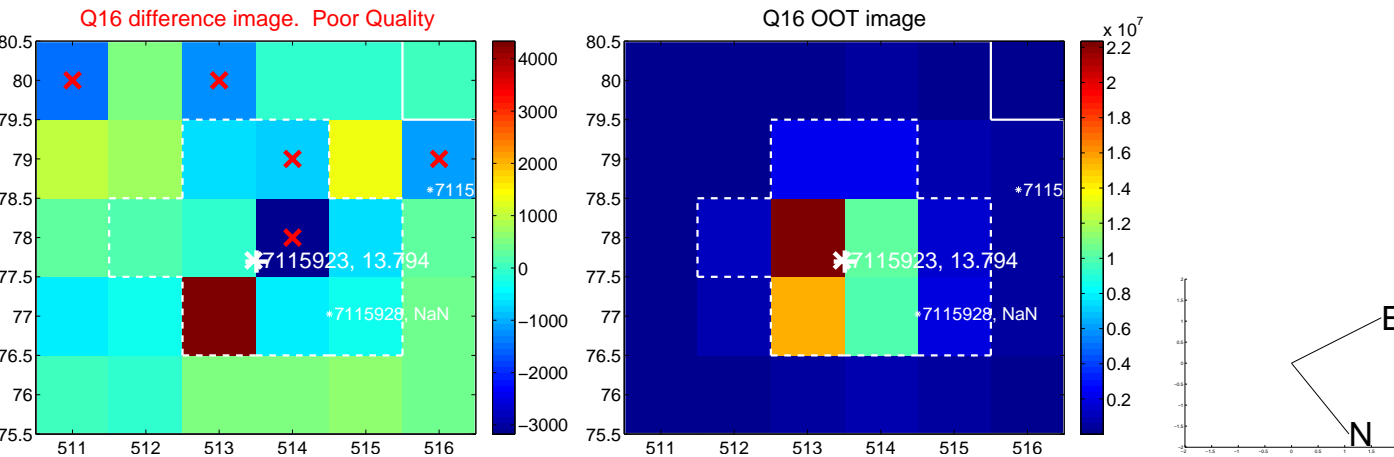
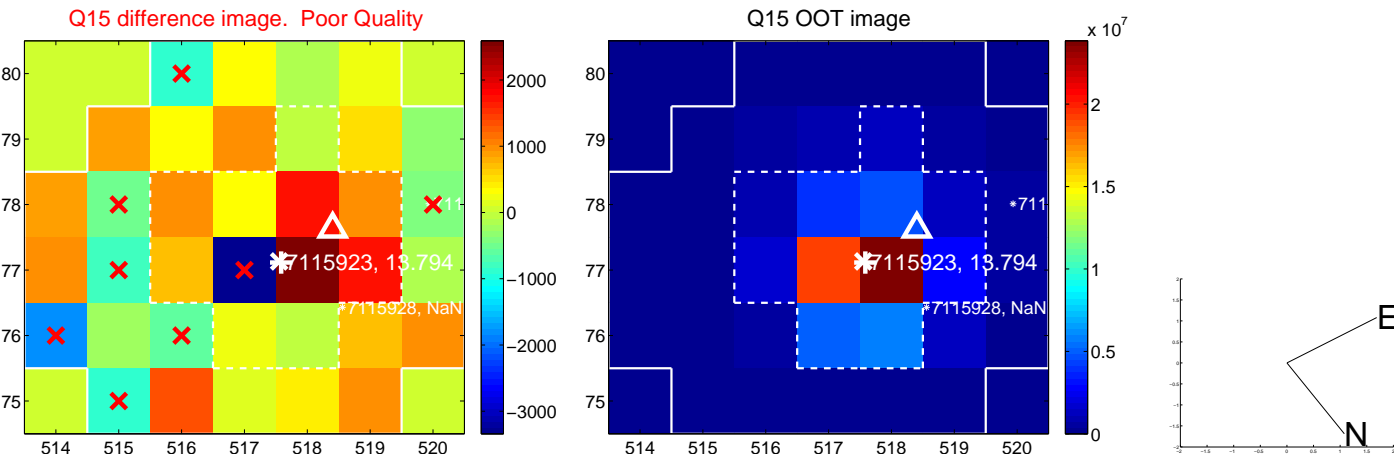
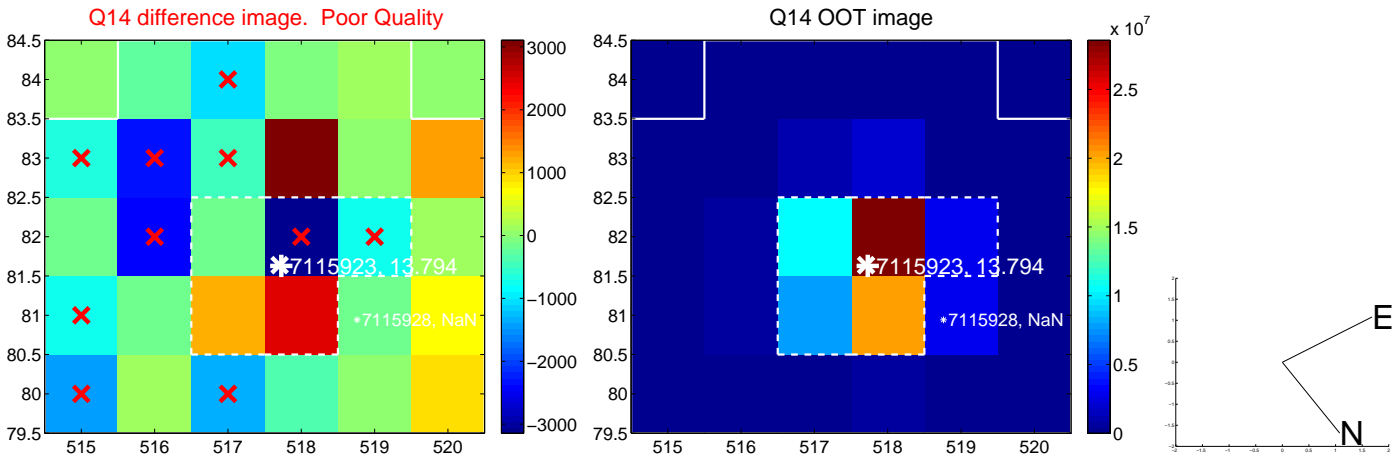
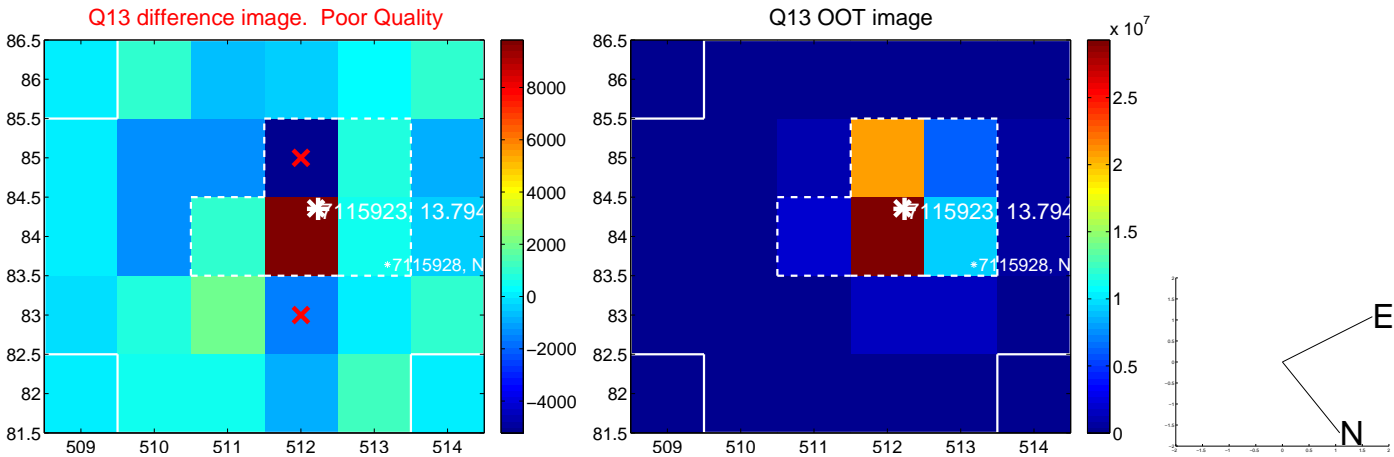
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



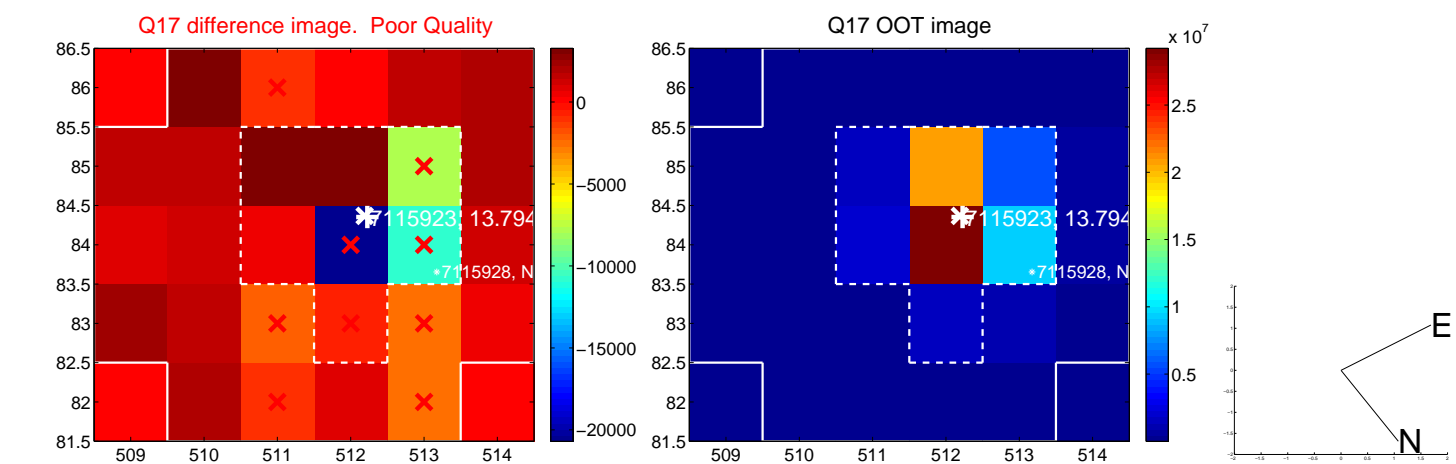
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



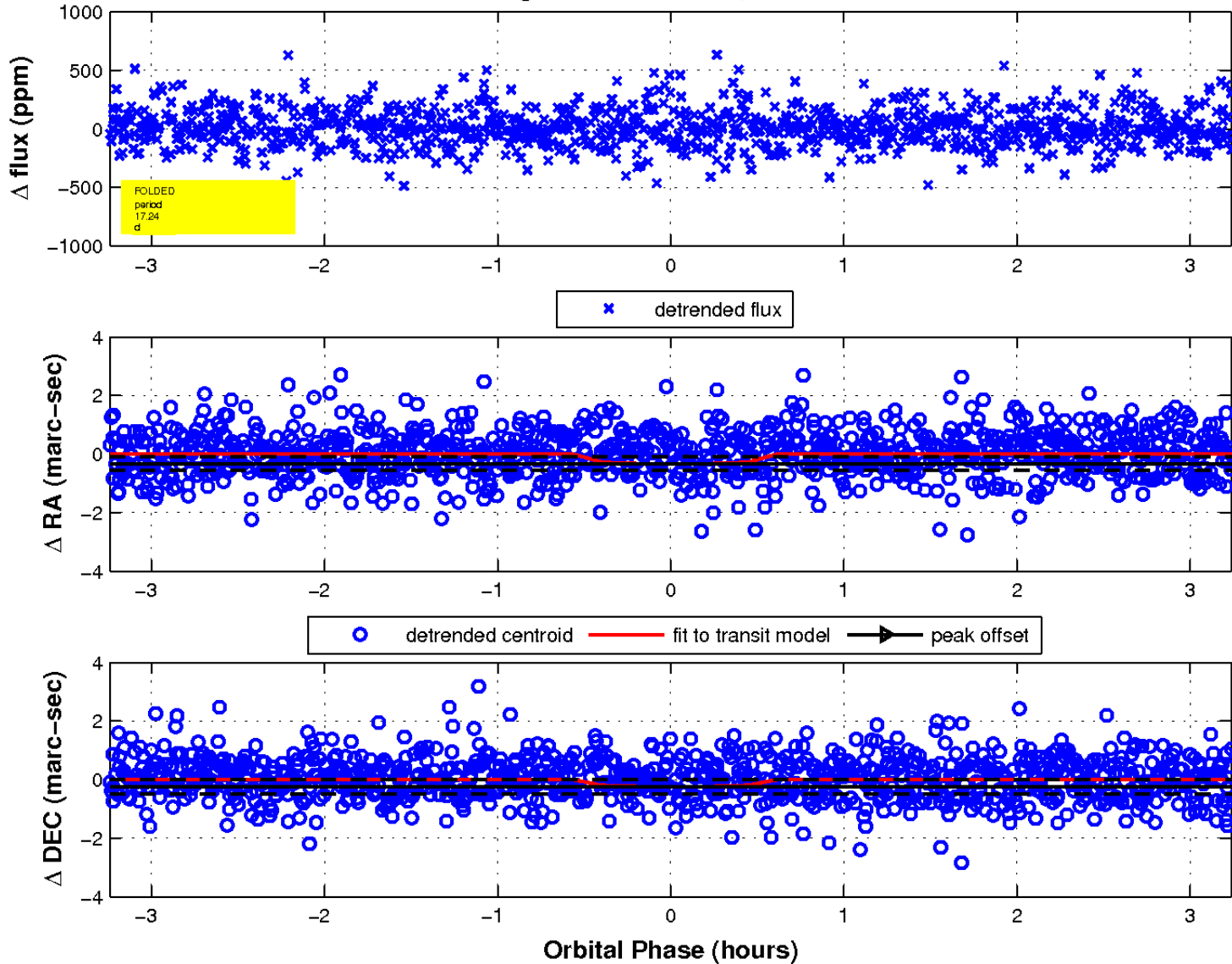
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

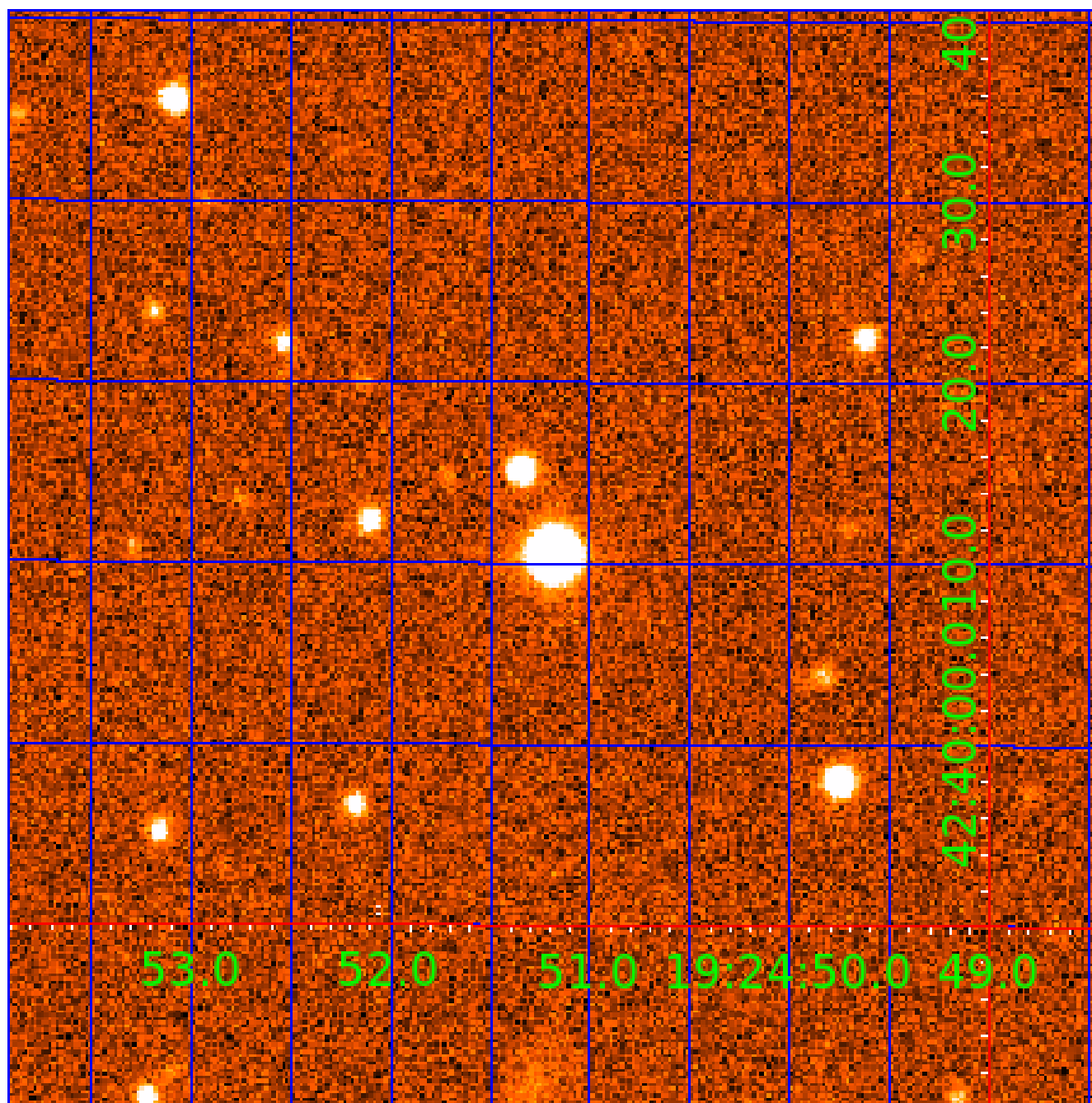


fluxWeightedCentroids, Planet 3 of 7



UKIRT Image

Declination



KIC 007115923

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})
007115923-01	OBS	No	0.566751	131.875527	11.1	4.129	10.8	7.5	1.25	6431	0.42	12055.73
007115923-02	OBS	No	73.790726	199.484127	681.1	2.000	12.6	-1.0	1.25	6431	3.28	18.27
007115923-03	OBS	No	17.237644	135.695531	485.5	1.080	17.8	18.7	1.25	6431	2.95	126.98
007115923-04	OBS	No	24.537466	152.144594	384.8	0.979	10.4	13.1	1.25	6431	2.64	79.30
007115923-05	OBS	No	11.248109	138.601304	273.9	0.967	12.1	12.7	1.25	6431	2.23	224.36
007115923-06	OBS	No	41.379625	145.410891	69.9	20.474	13.3	6.8	1.25	6431	1.06	39.51
007115923-07	OBS	No	11.435674	137.291025	276.5	0.568	12.1	7.3	1.25	6431	2.33	219.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007115923-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007115923-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—NO_FITS—CENT_NOFITS
007115923-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
007115923-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007115923-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
007115923-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007115923-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

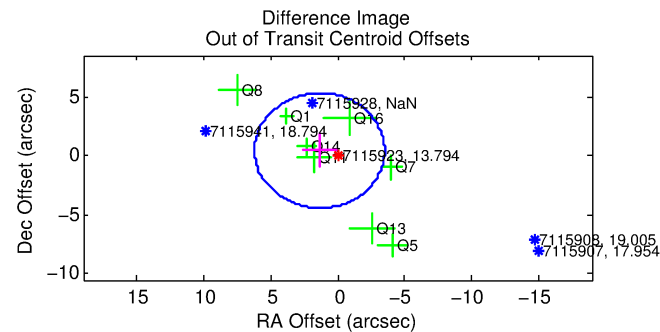
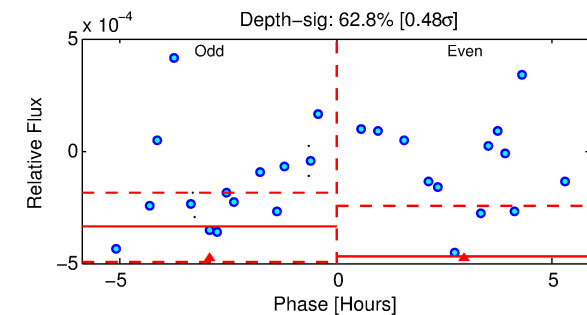
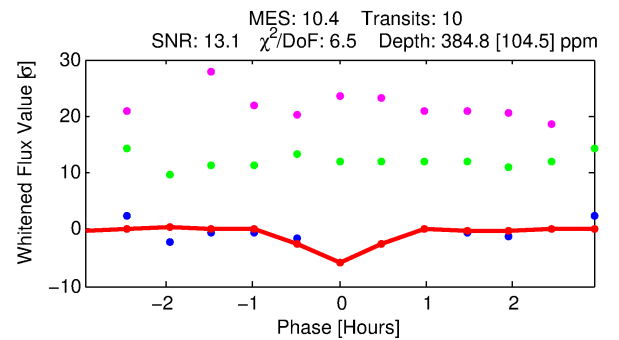
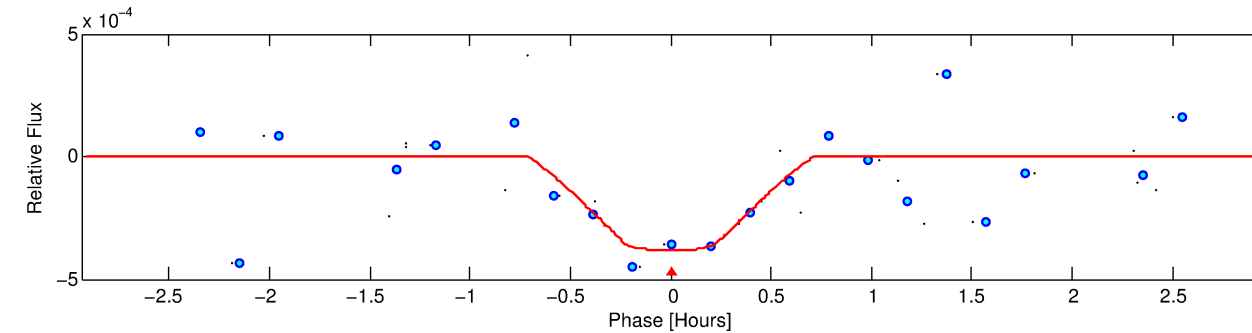
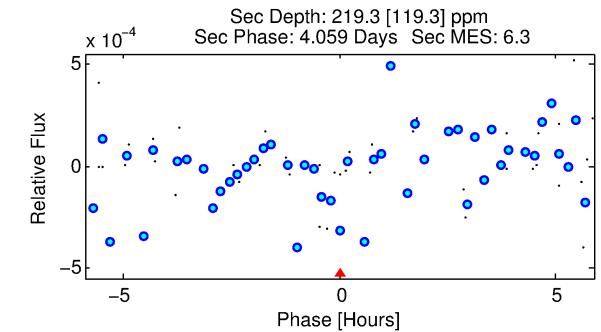
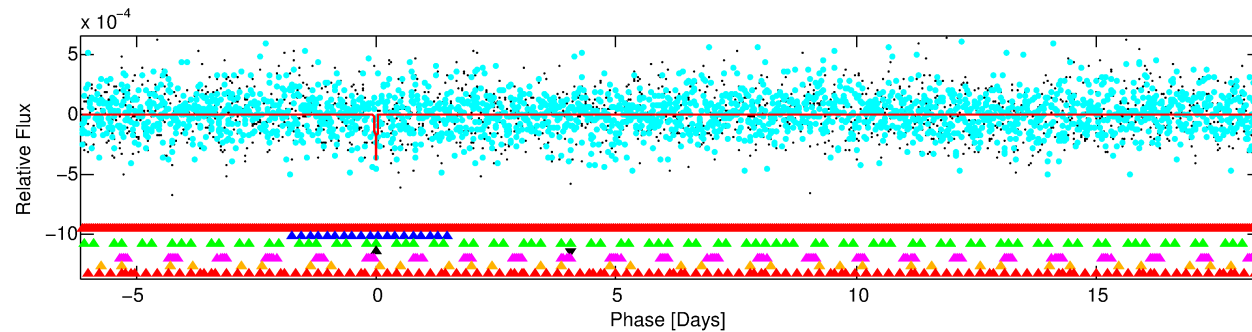
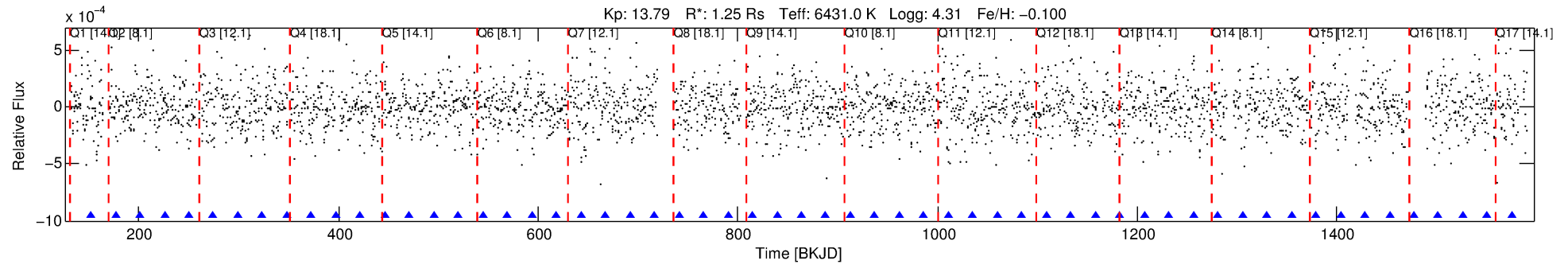
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007115923-04

No Significant Match Found

DV One-Page Summary

KIC: 7115923 Candidate: 4 of 7 Period: 24.537 d



DV Fit Results:

Period = 24.53747 [0.00030] d
Epoch = 152.1446 [0.0073] BKJD
Rp/R* = 0.0194 [0.0268]
a/R* = 141.96 [1059.12]
b = 0.70 [5.44]
Seff = 79.30 [30.91]
Teq = 761 [74] K
Rp = 2.64 [3.75] Re
a = 0.1736 [0.0453] AU
Ag = 520.05 [1476.03] [0.35 σ]
Teffp = 5618 [3957] K [1.23 σ]

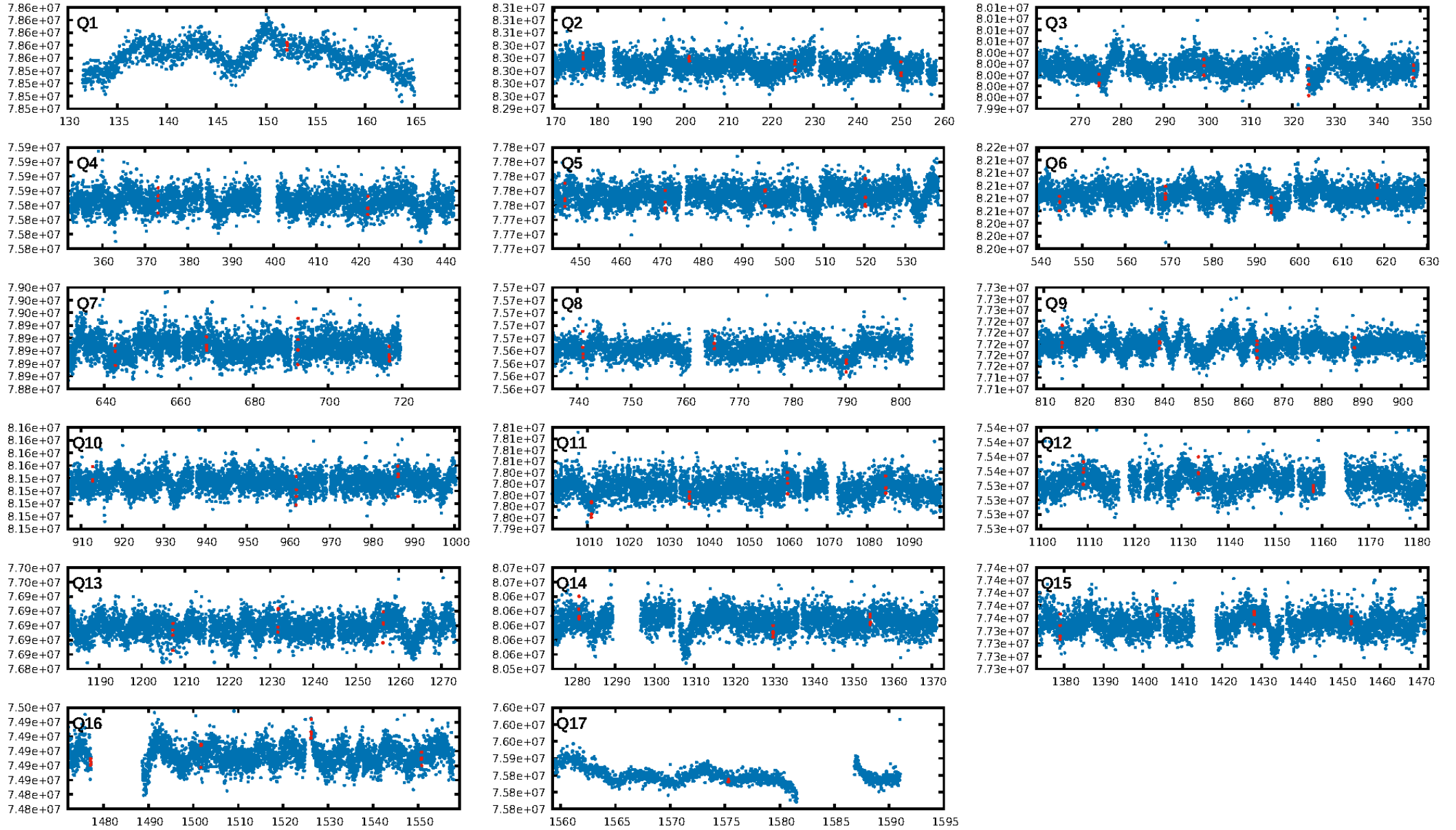
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [120.18 σ]
LongPeriod-sig: 100.0% [19.72 σ]
ModelChiSquare2-sig: 0.0%
a/R* = 141.96 [1059.12]
Bootstrap-pfa: 4.60e-17
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: -2.505
Centroid-sig: 6.6%
Centroid-so: 1.112 arcsec [1.76 σ]
OotOffset-rm: 1.421 arcsec [0.88 σ]
KicOffset-rm: 1.545 arcsec [0.83 σ]
OotOffset-st: 1/2/2/3 [8]
KicOffset-st: 1/2/2/3 [8]
DiffImageQuality-fgm: 0.00 [0/8]
DiffImageOverlap-fno: 0.00 [0/17]

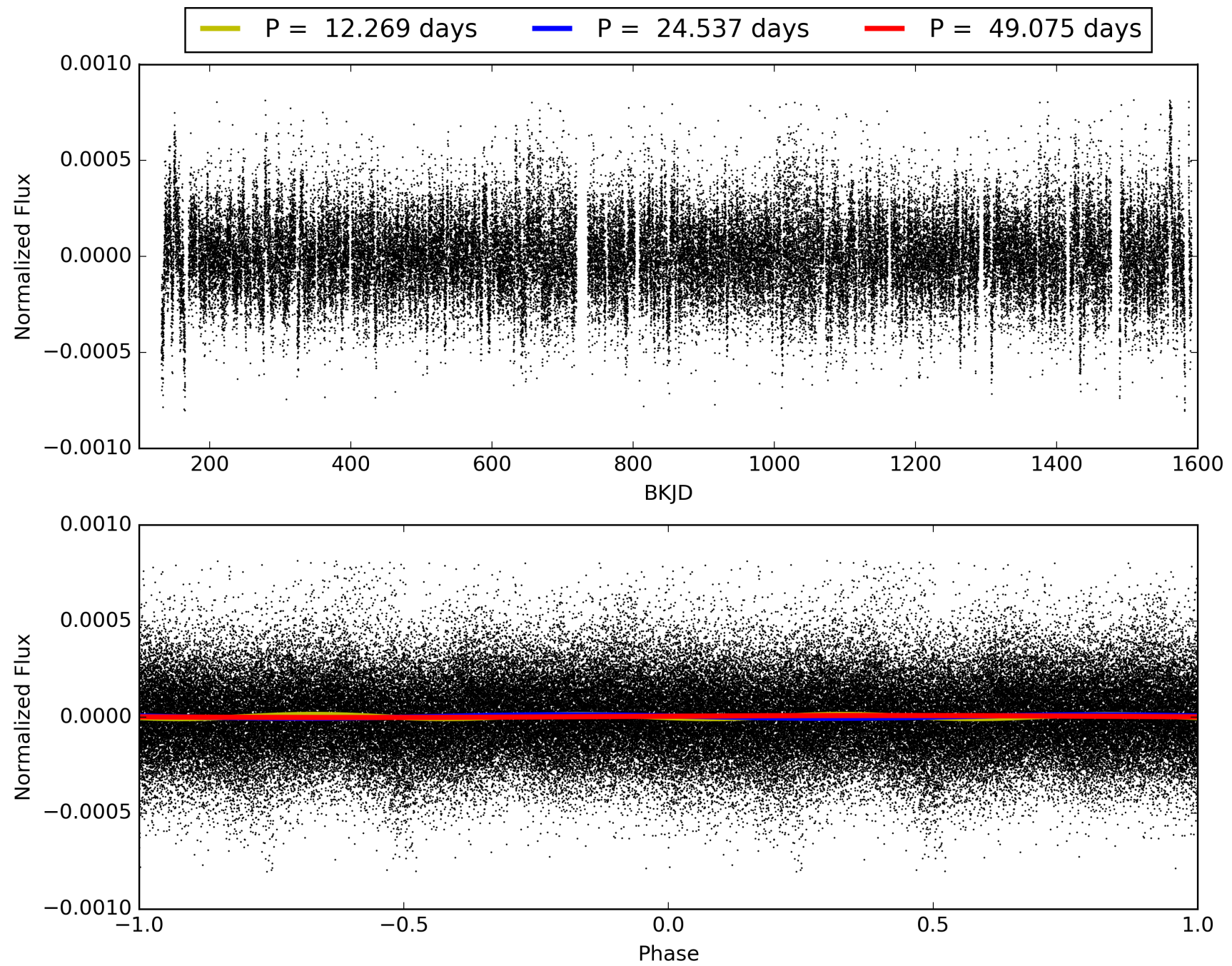
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:50:30 Z

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

TCE 007115923-04, PDC Light Curves

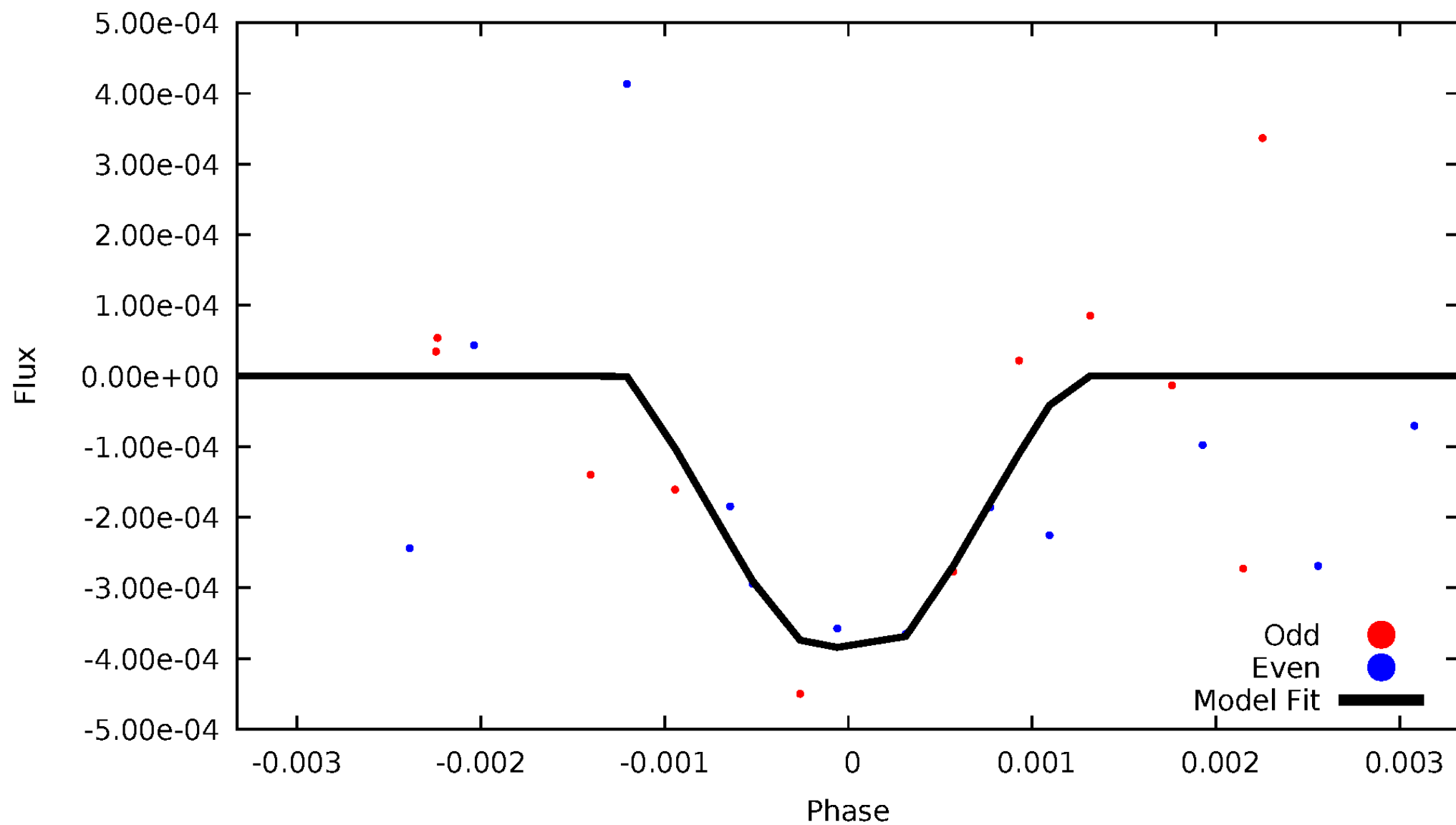


TCE 007115923-04



DV Odd/Even

TCE 007115923-04

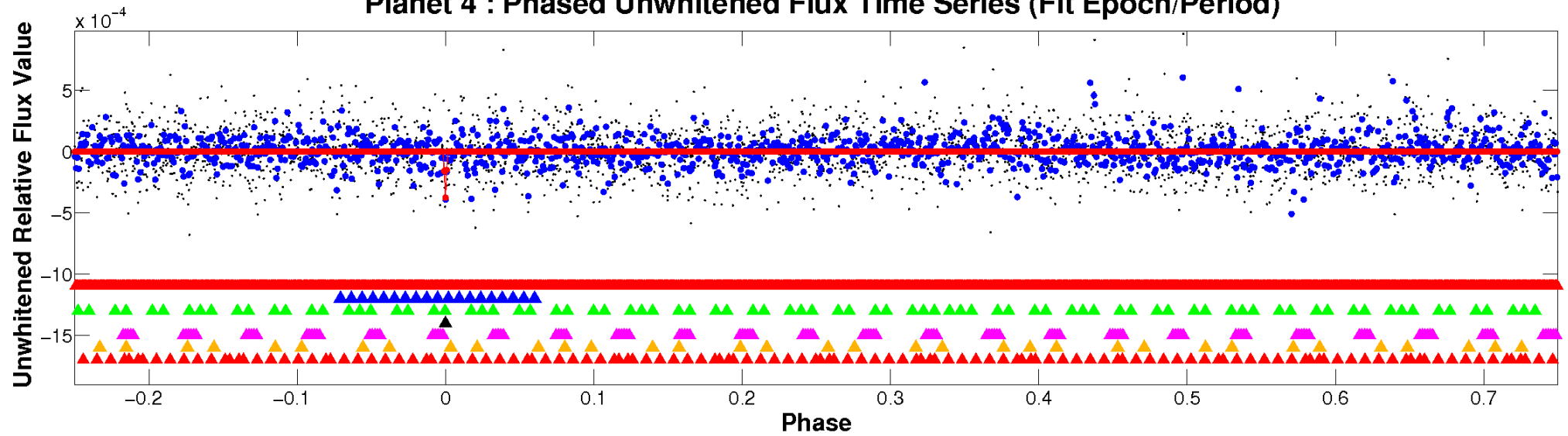


ALT Odd/Even

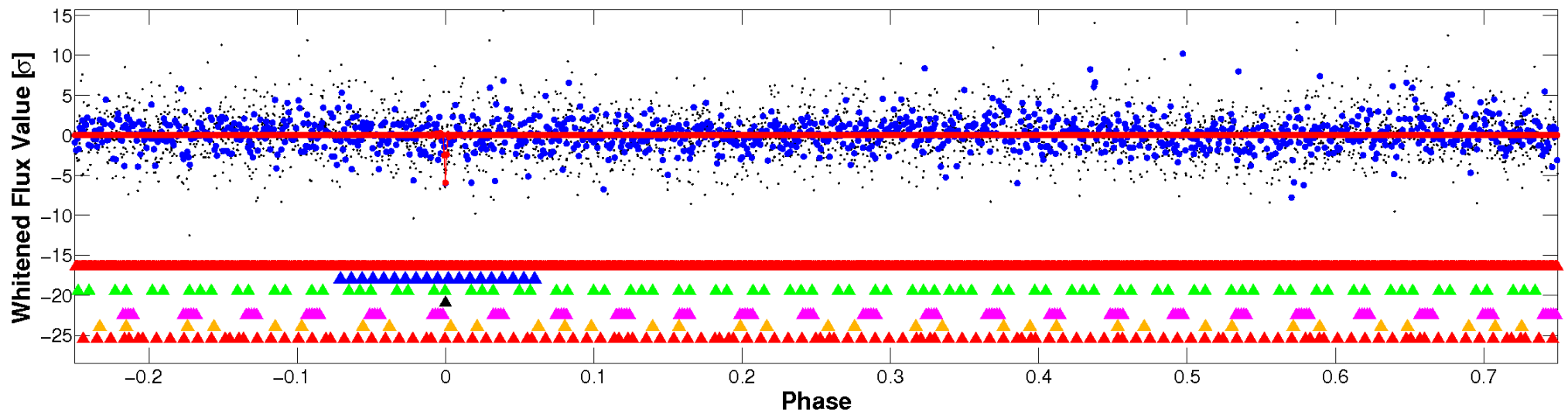
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

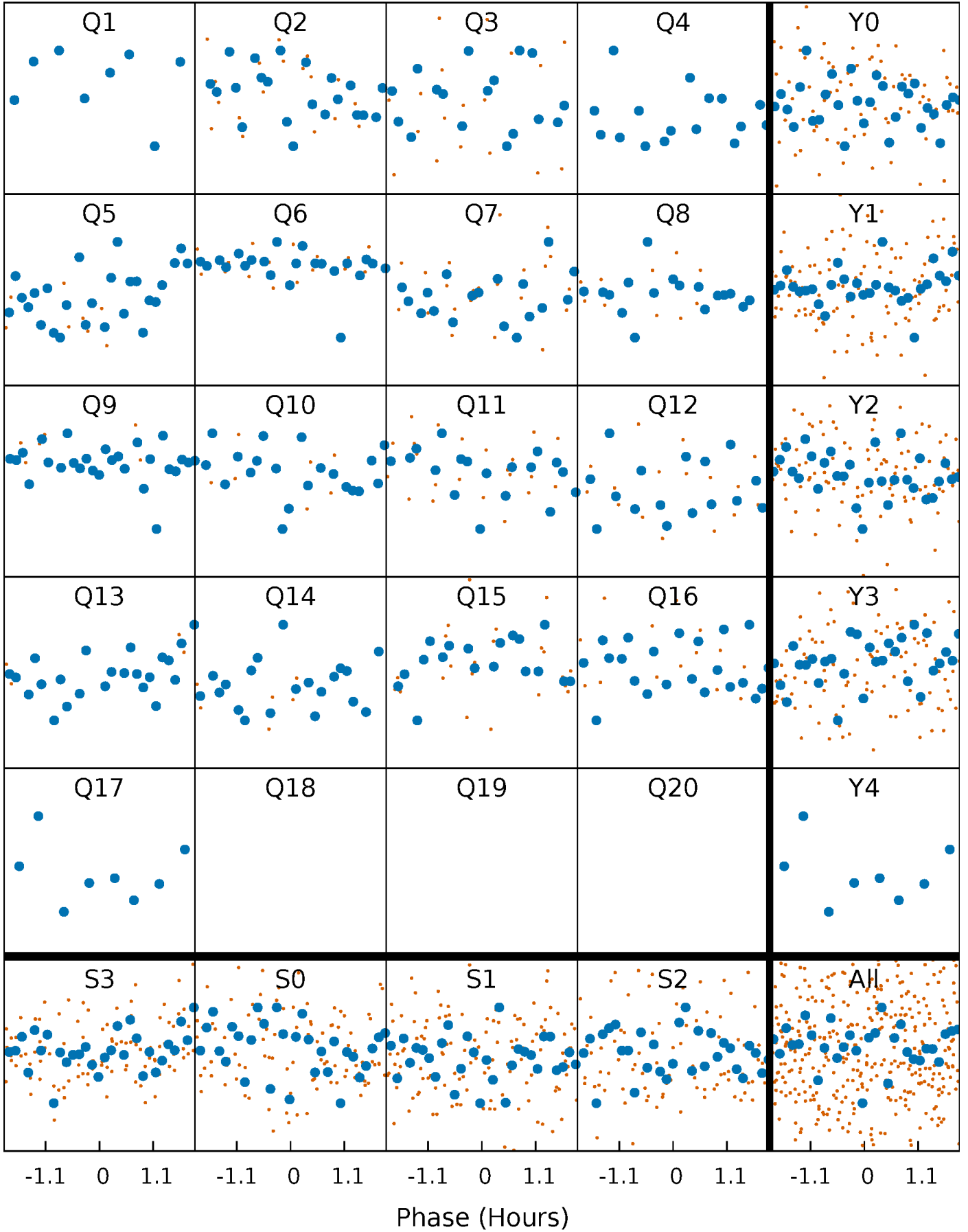


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



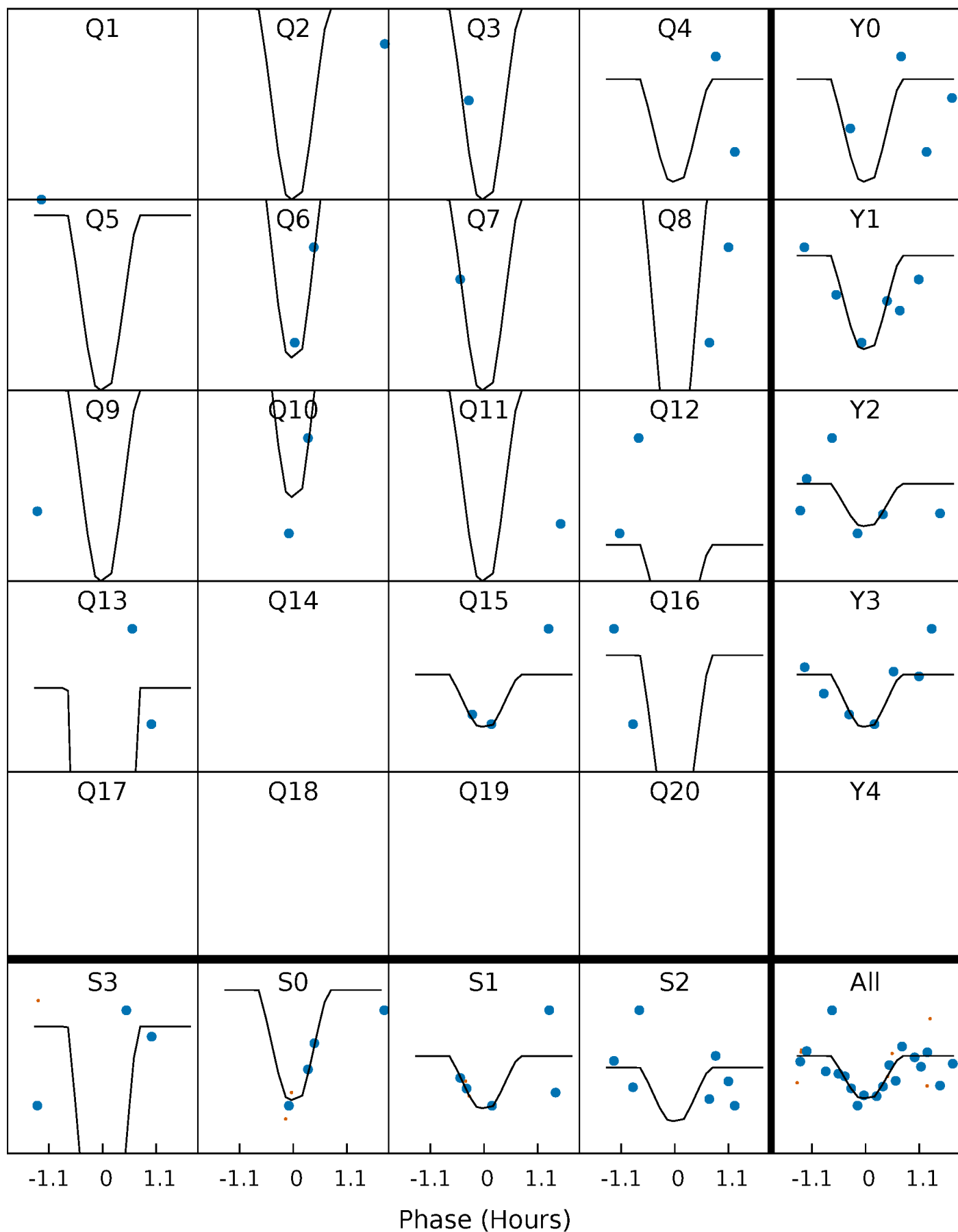
PDC Quarter-Phased Transit Curves

TCE 007115923-04 P= 24.537466 Days $T_0=152.144594$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 007115923-04 P= 24.537466 Days $T_0=152.144594$ (BKJD)

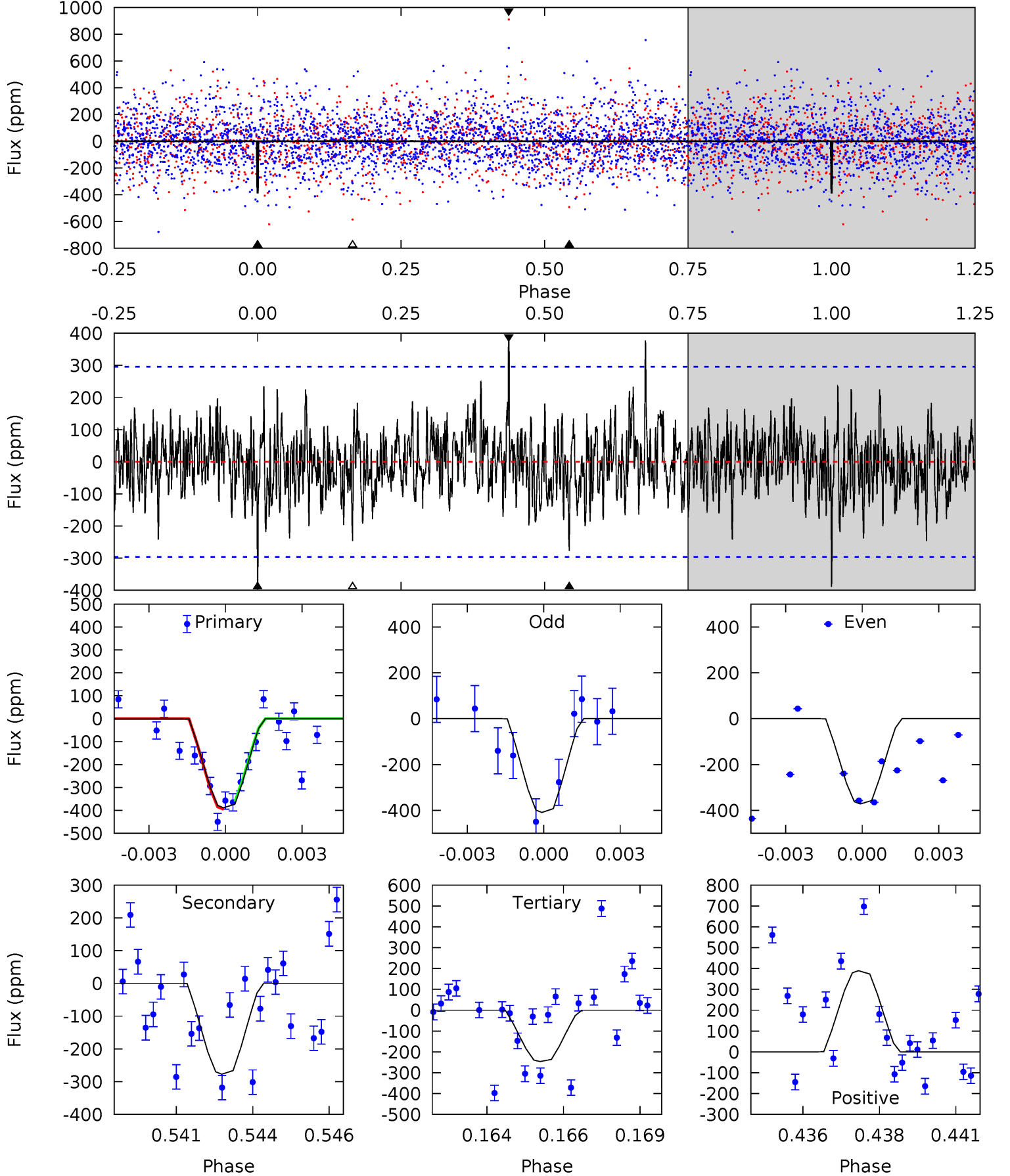


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

007115923-04, P = 24.537466 Days, E = 127.607128 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.94	4.95	4.40	6.95	5.28	3.02	1.51	2.54	-0.01	0.56	-2.00	0.33	1.03	0.50	0.30



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 007115923

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6431^{+144}_{-208}	$4.309^{+0.105}_{-0.195}$	$-0.100^{+0.250}_{-0.300}$	$1.249^{+0.400}_{-0.200}$	$1.159^{+0.185}_{-0.152}$	$0.837^{+0.410}_{-0.441}$
	+2%/-3%	+2%/-5%	+250%/-300%	+32%/-16%	+16%/-13%	+49%/-53%
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 007115923-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-277 ± 56	$3.69^{+3.52}_{-2.56}$	1071^{+76}_{-59}	5132^{+4534}_{-1149}	335^{+3138}_{-249}
Alt.	N/A	N/A	N/A	N/A	N/A

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 $A_{obs} \gg 1.0$

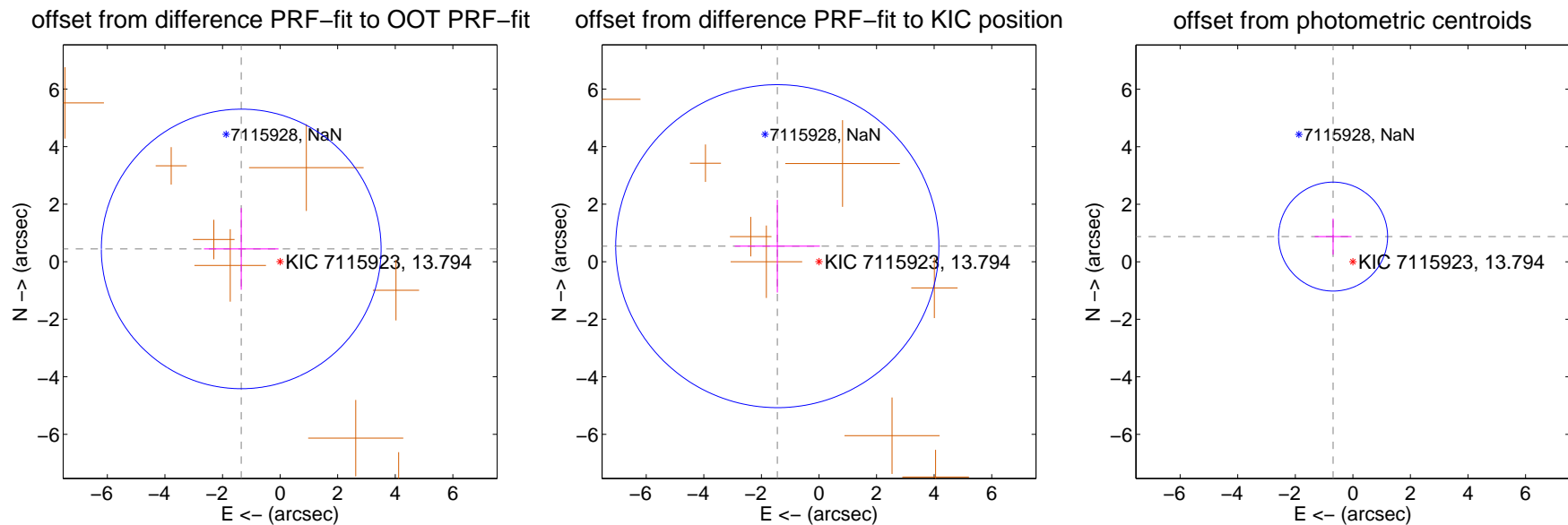
DV Centroid Data

Supplemental centroid analysis for 007115923-04. Kepler magnitude: 13.79. Transit SNR 13.10

There are 0 quarters with good PRF difference image offsets

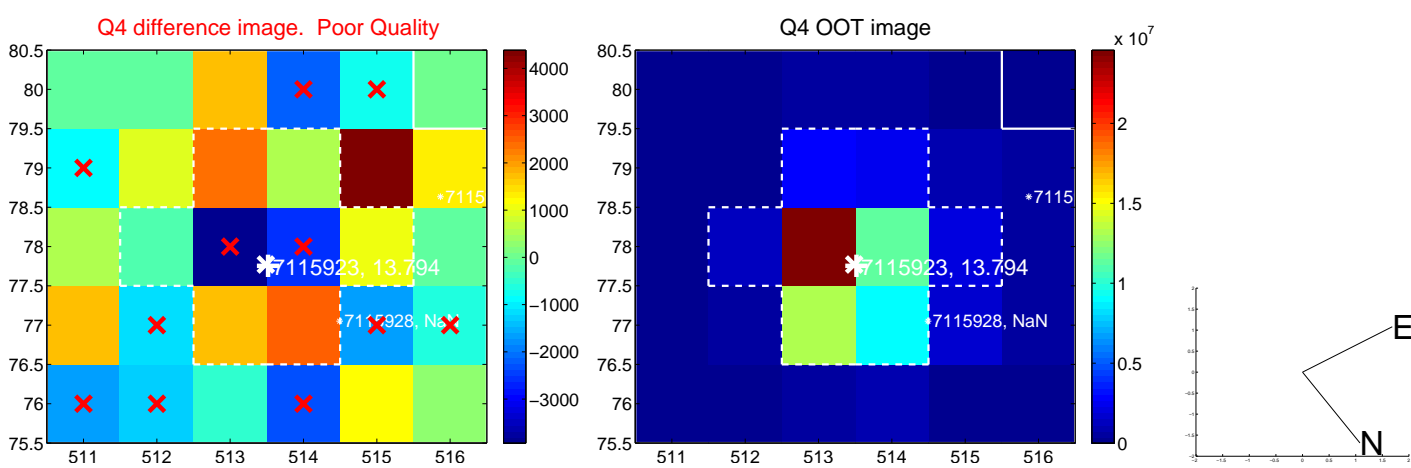
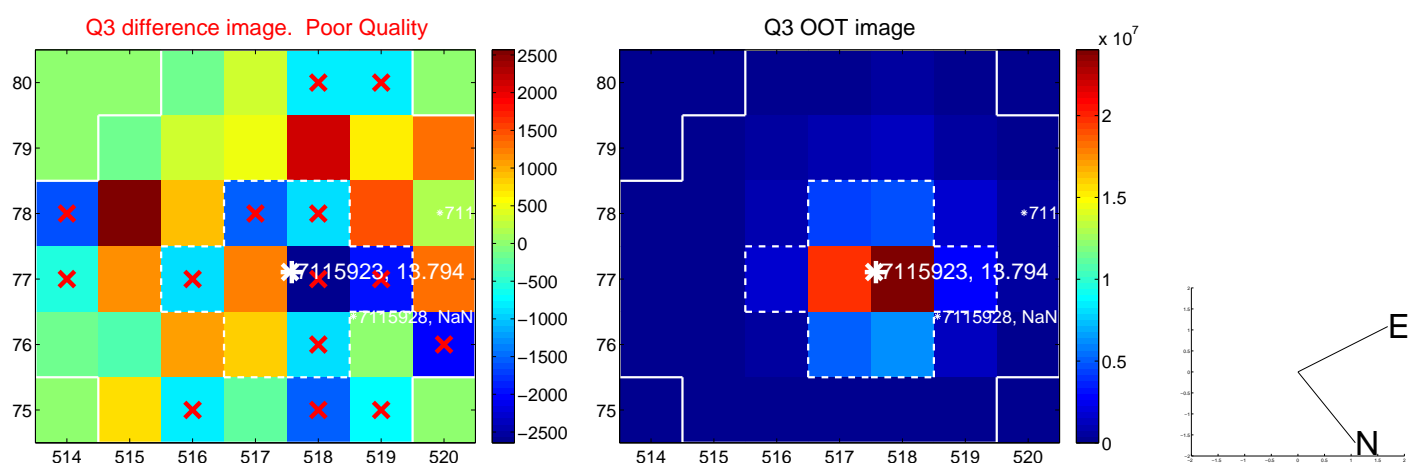
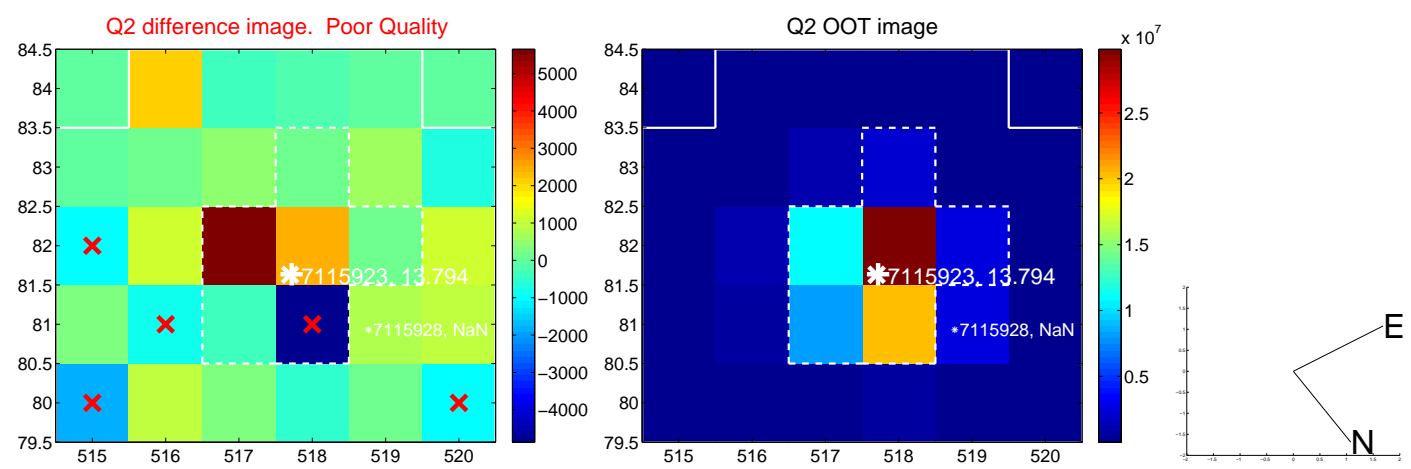
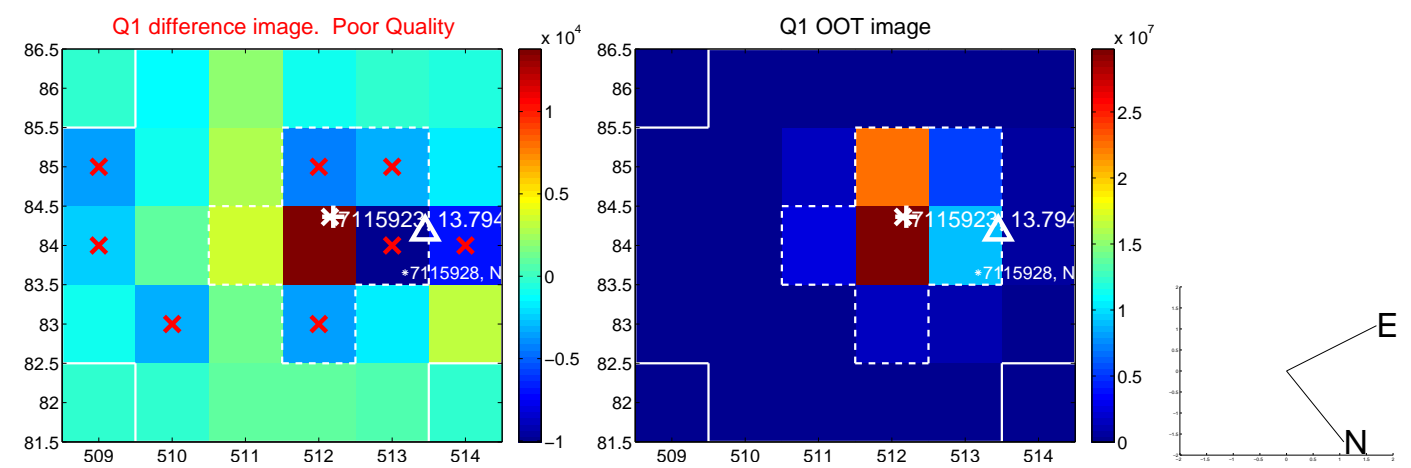
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.421 ± 1.619	0.88	1.350 ± 1.294	0.443 ± 1.418
PRF-fit source offset from KIC position	1.545 ± 1.871	0.83	1.447 ± 1.479	0.540 ± 1.610
photometric centroid source offset	1.11 ± 0.63	1.76	0.69 ± 0.64	0.88 ± 0.63

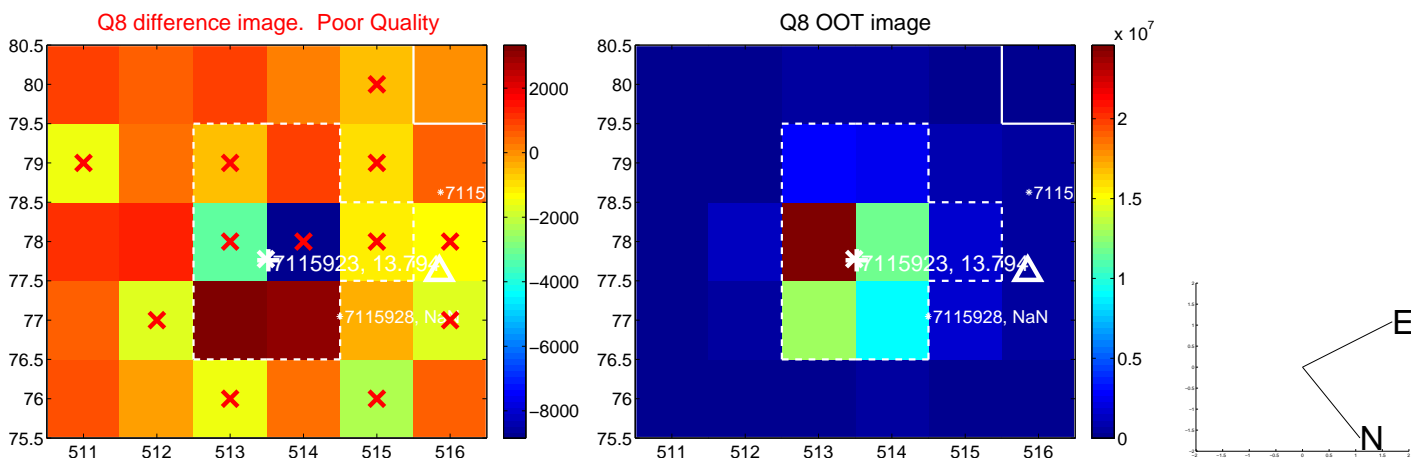
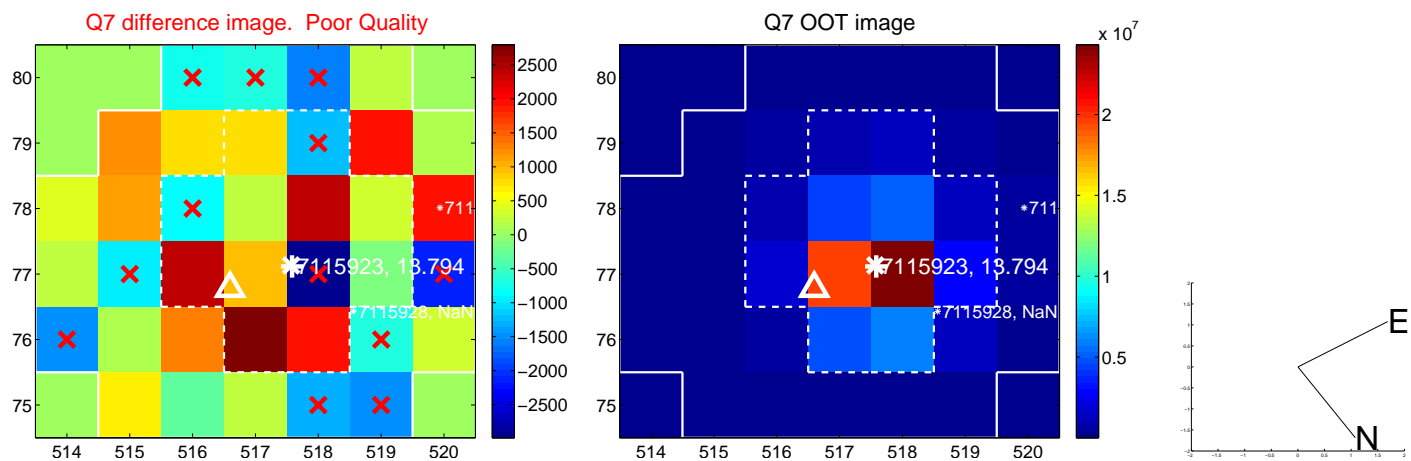
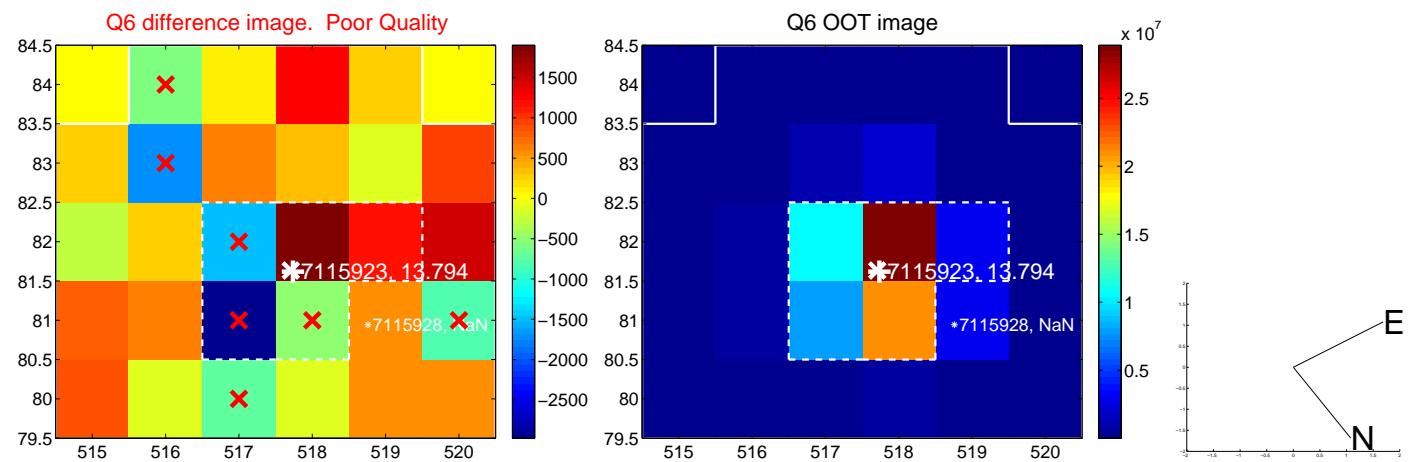
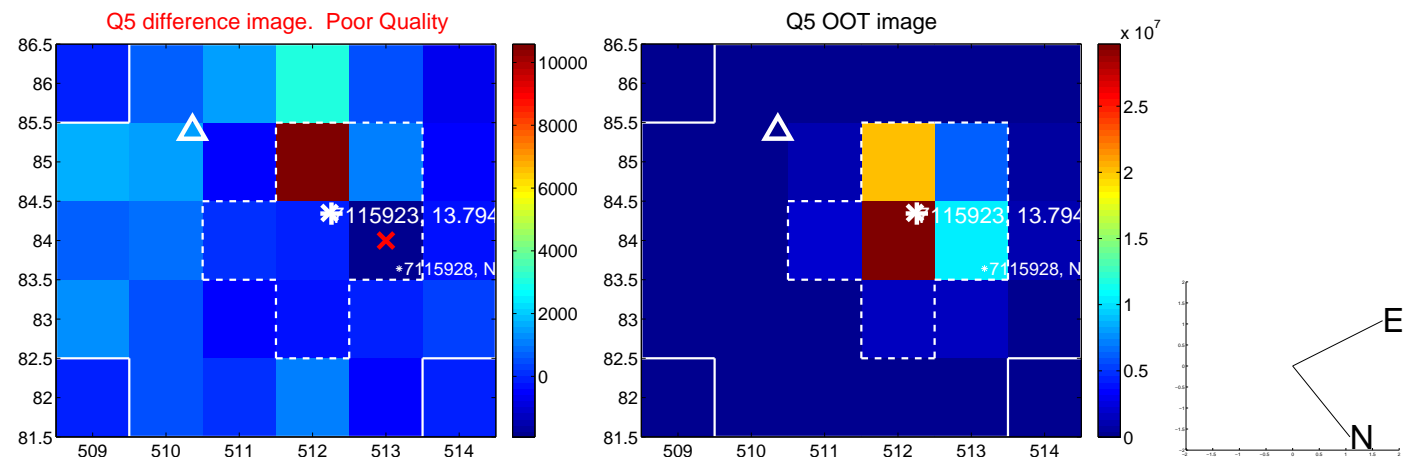


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

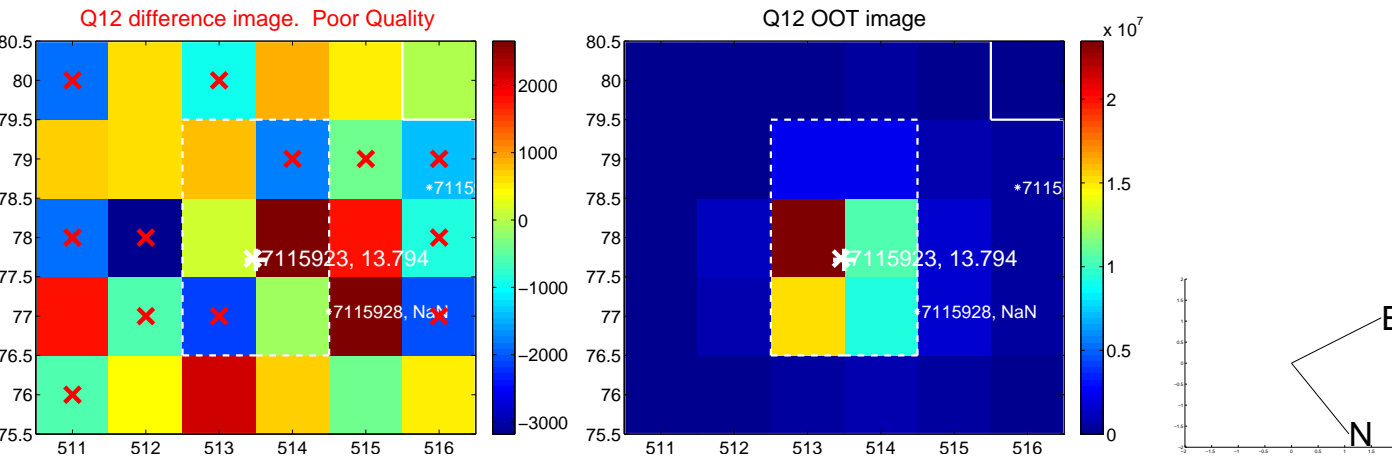
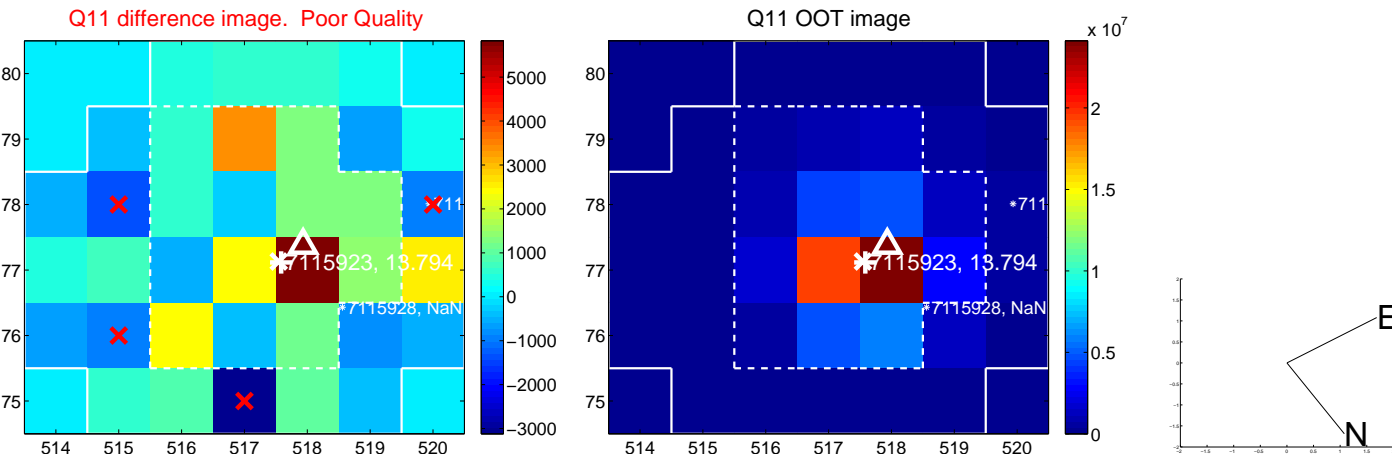
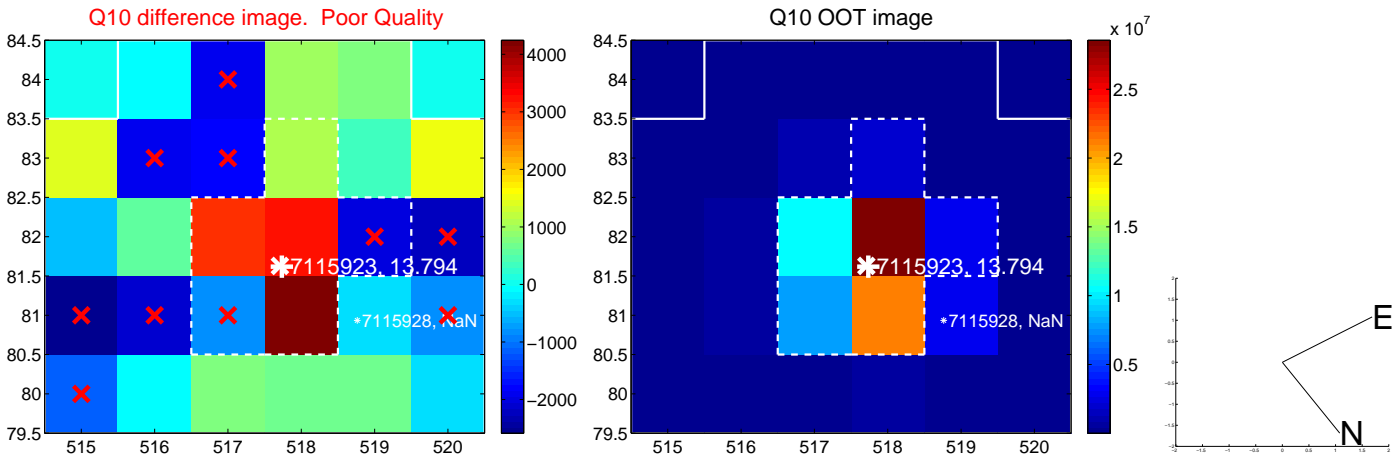
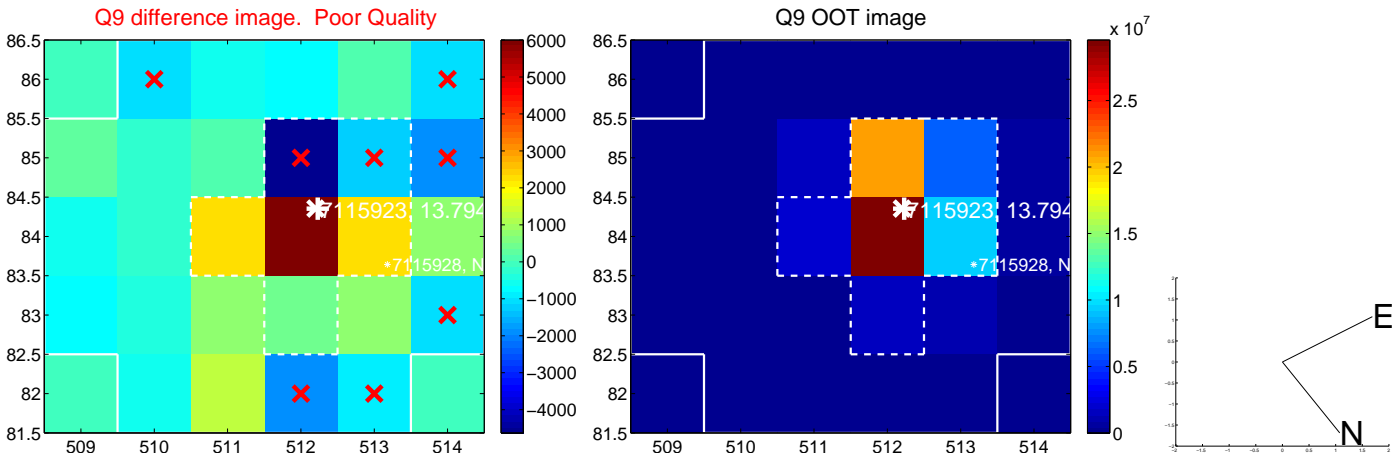
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



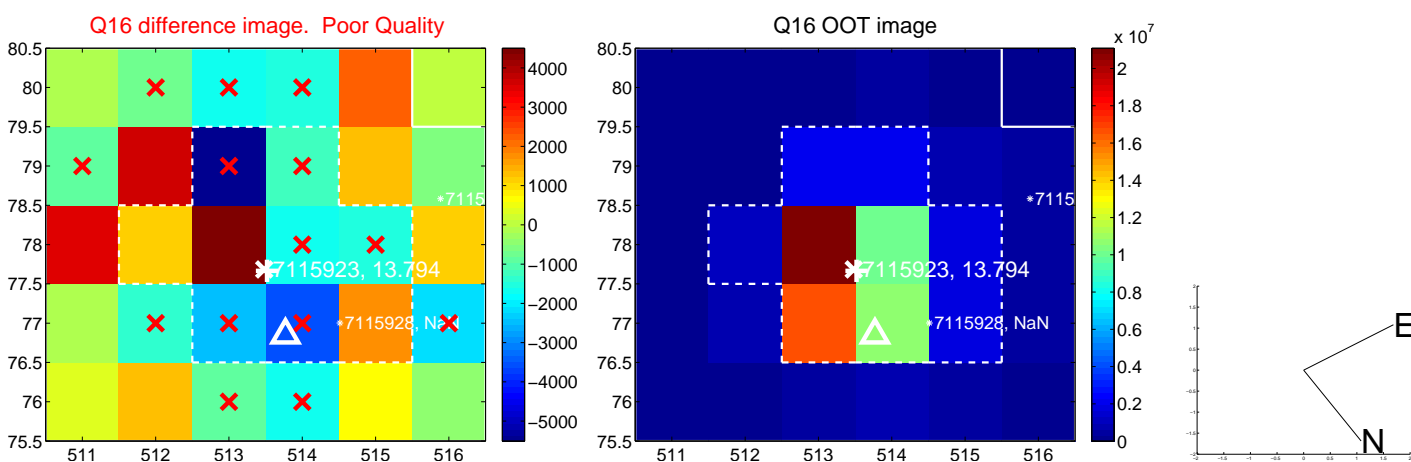
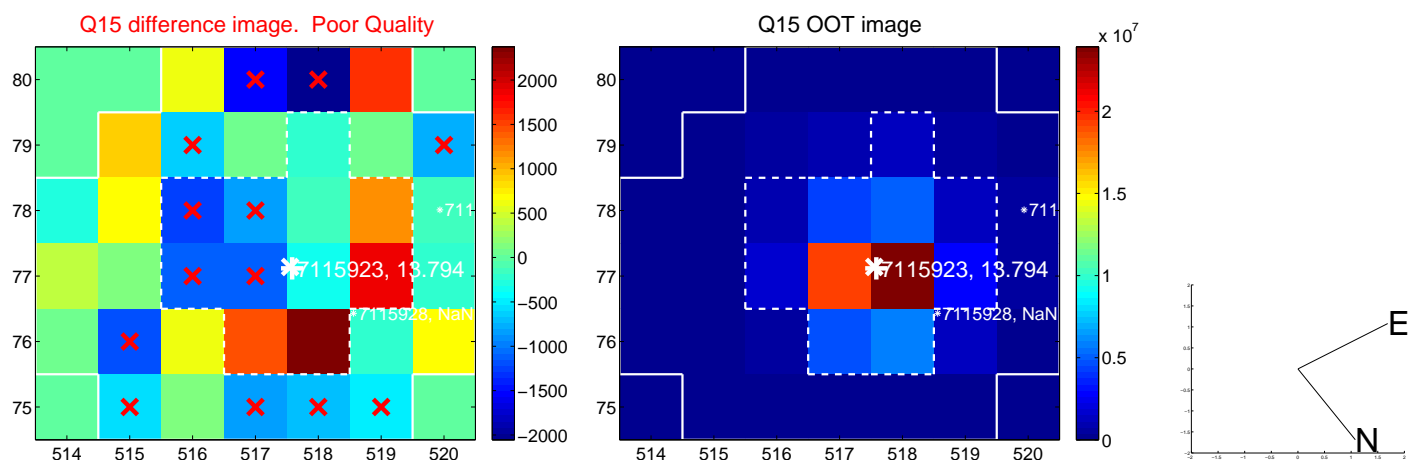
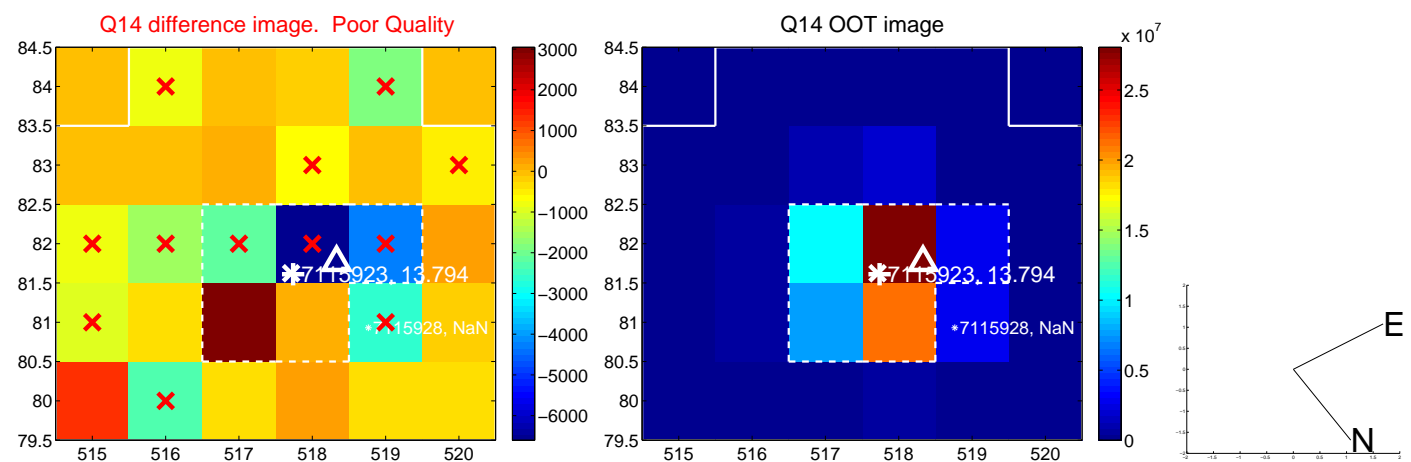
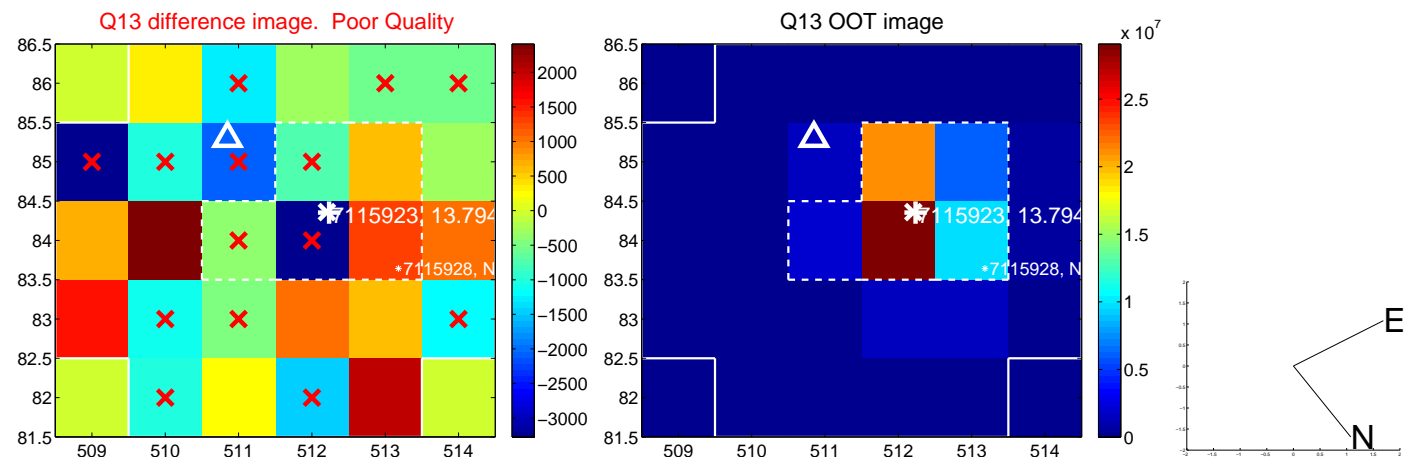
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

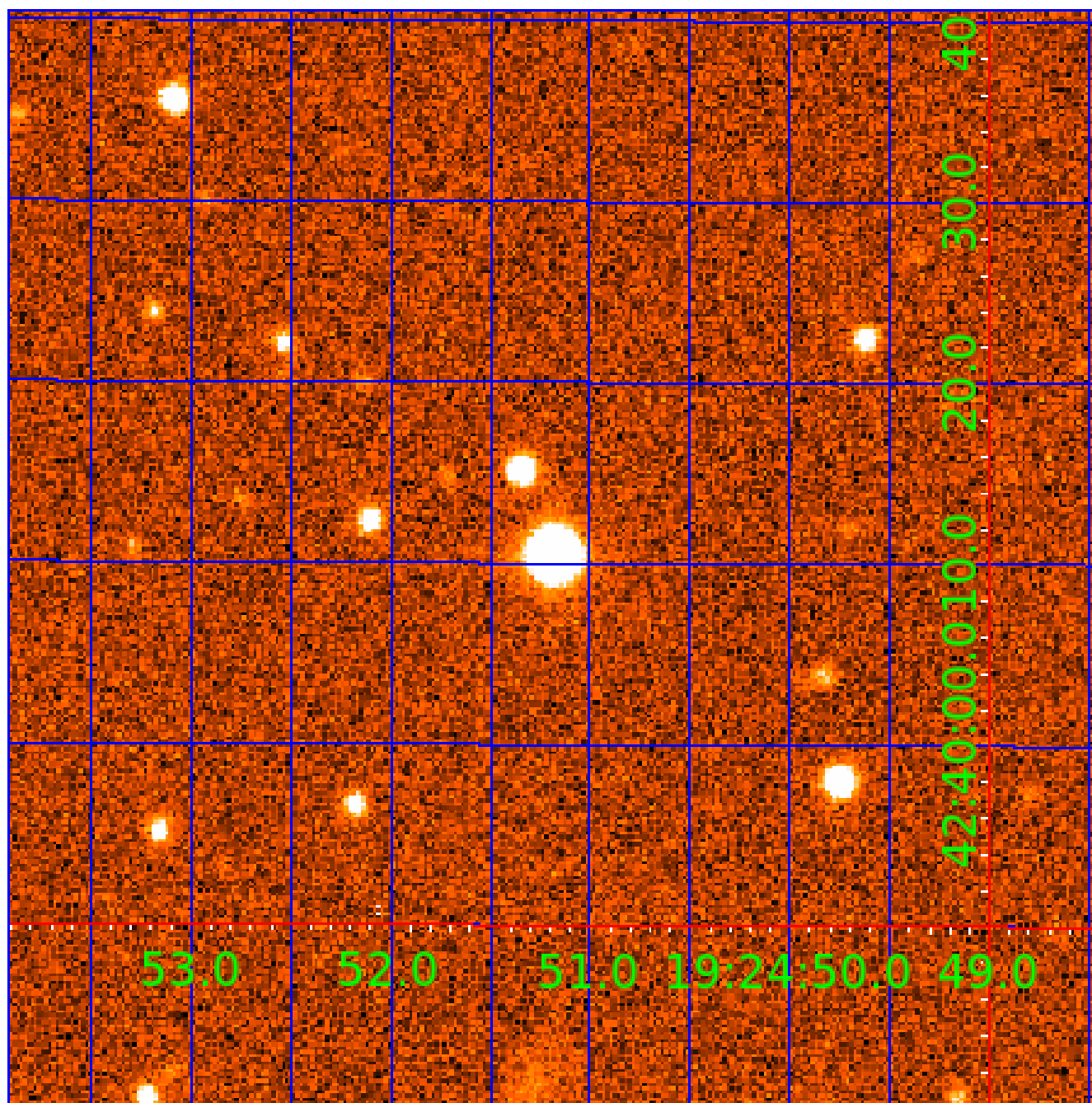


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007115923

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})
007115923-01	OBS	No	0.566751	131.875527	11.1	4.129	10.8	7.5	1.25	6431	0.42	12055.73
007115923-02	OBS	No	73.790726	199.484127	681.1	2.000	12.6	-1.0	1.25	6431	3.28	18.27
007115923-03	OBS	No	17.237644	135.695531	485.5	1.080	17.8	18.7	1.25	6431	2.95	126.98
007115923-04	OBS	No	24.537466	152.144594	384.8	0.979	10.4	13.1	1.25	6431	2.64	79.30
007115923-05	OBS	No	11.248109	138.601304	273.9	0.967	12.1	12.7	1.25	6431	2.23	224.36
007115923-06	OBS	No	41.379625	145.410891	69.9	20.474	13.3	6.8	1.25	6431	1.06	39.51
007115923-07	OBS	No	11.435674	137.291025	276.5	0.568	12.1	7.3	1.25	6431	2.33	219.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007115923-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007115923-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—NO_FITS—CENT_NOFITS
007115923-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
007115923-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007115923-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
007115923-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007115923-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

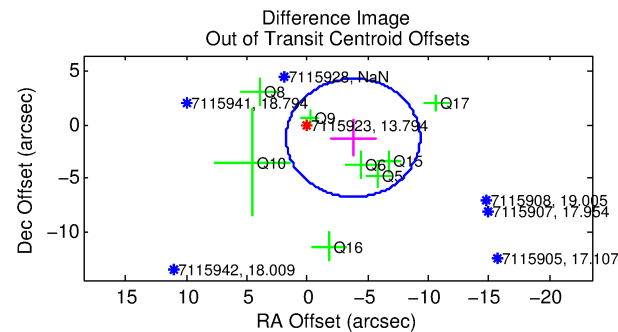
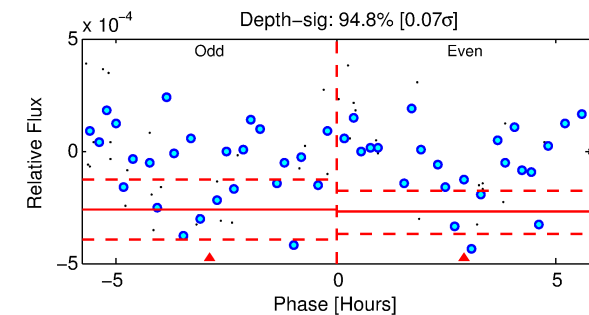
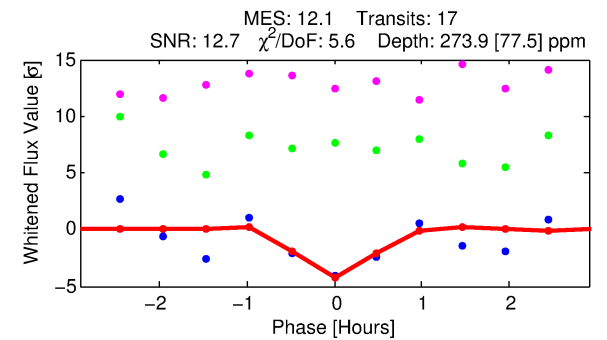
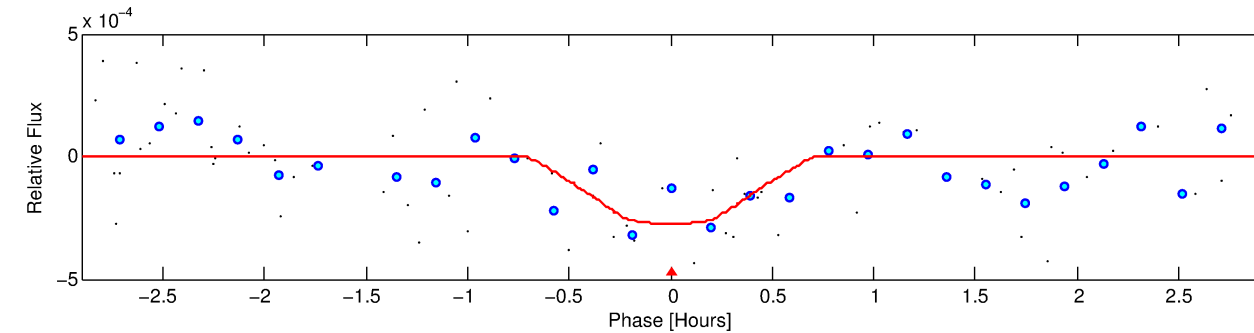
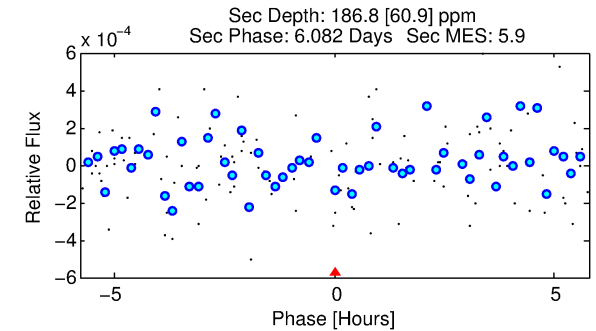
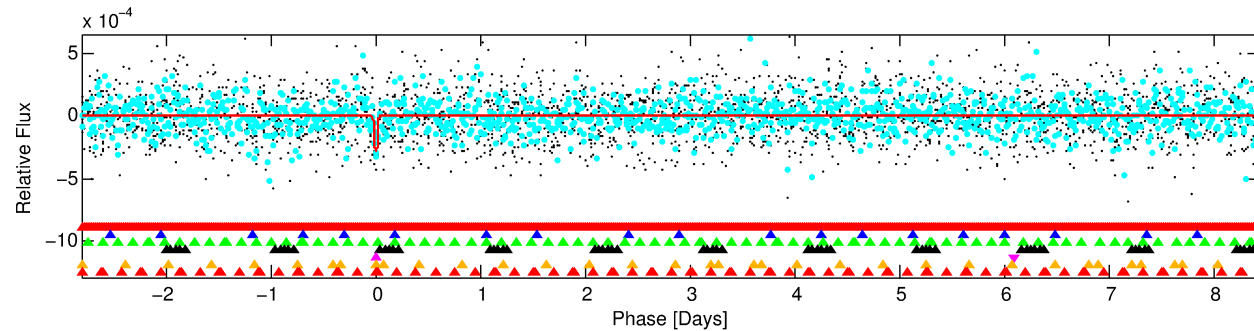
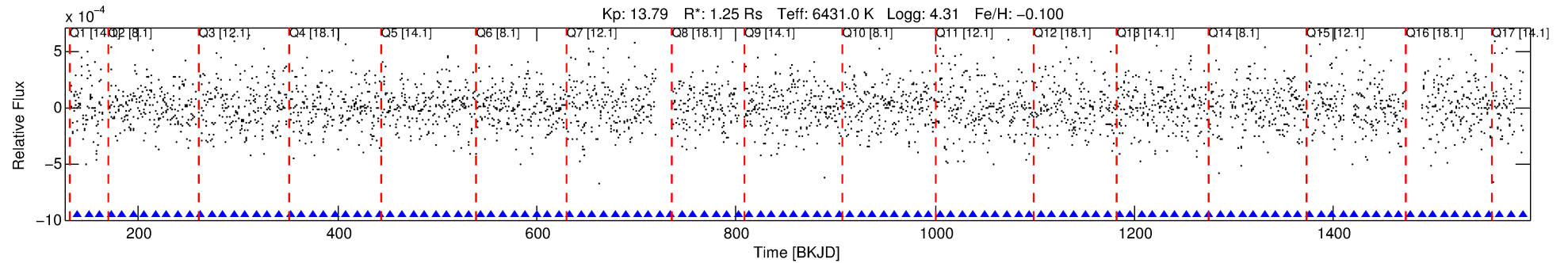
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007115923-05

No Significant Match Found

DV One-Page Summary

KIC: 7115923 Candidate: 5 of 7 Period: 11.248 d



DV Fit Results:

Period = 11.24811 [0.00015] d
Epoch = 138.6013 [0.0081] BKJD
Rp/R* = 0.0163 [0.0167]
a/R* = 66.08 [352.20]
b = 0.69 [4.02]
Seff = 224.36 [87.45]
Teq = 987 [96] K
Rp = 2.23 [2.38] Re
a = 0.1032 [0.0269] AU
Ag = 220.72 [463.80] [0.47σ]
Teffp = 5881 [3048] K [1.61σ]

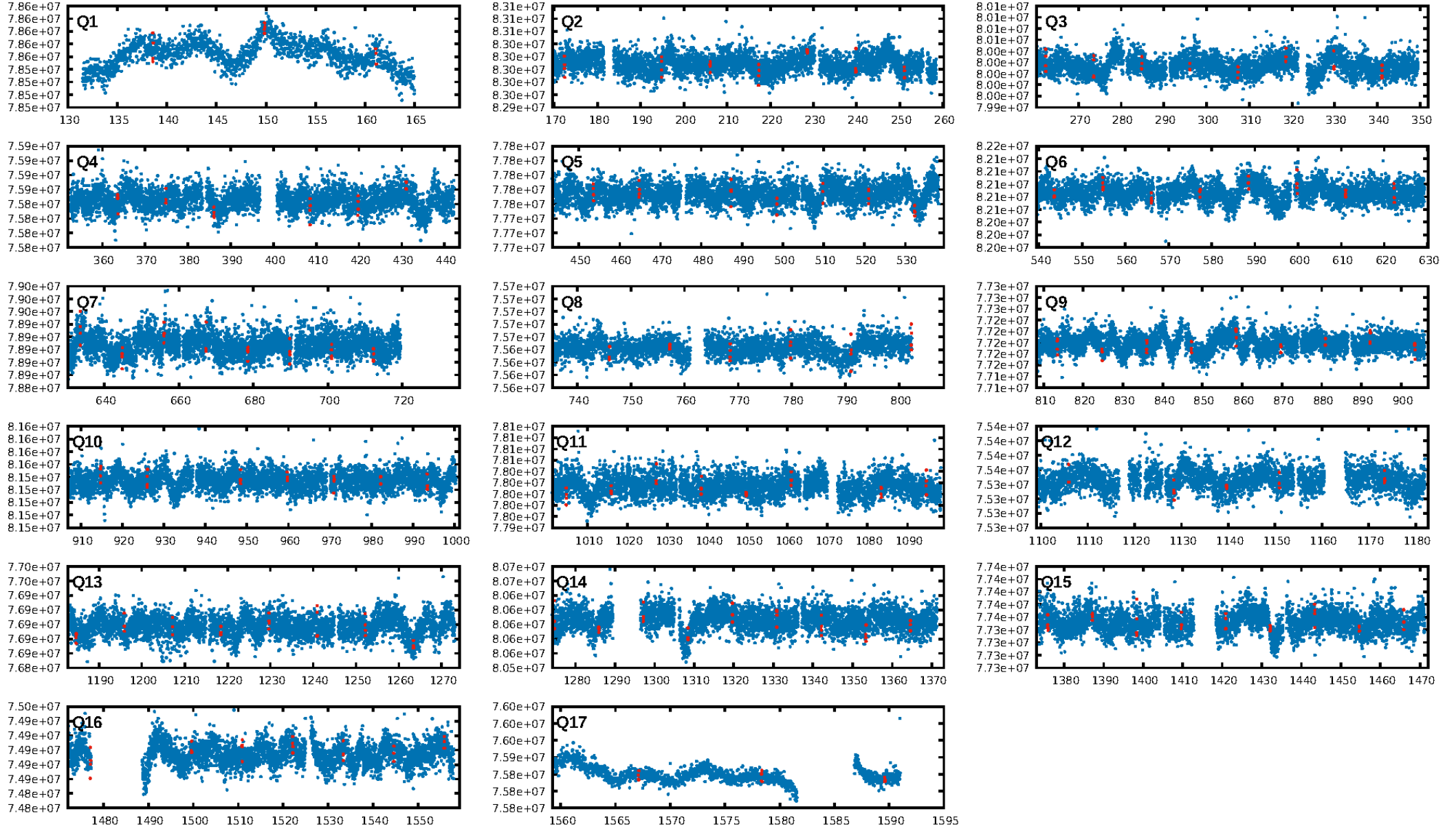
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [60.46σ]
LongPeriod-sig: 100.0% [4.02σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 27.9%
Bootstrap-pfa: 6.67e-13
RollingBand-fgt: 1.00 [16/16]
GhostDiagnostic-chr: 47.99
Centroid-sig: 48.6%
Centroid-so: 0.551 arcsec [0.92σ]
OotOffset-rm: 3.972 arcsec [2.15σ]
OotOffset-st: 2/1/2/3 [8]
KicOffset-rm: 3.860 arcsec [2.06σ]
KicOffset-st: 2/1/2/3 [8]
DiffImageQuality-fgm: 0.12 [1/8]
DiffImageOverlap-fno: 0.00 [0/17]

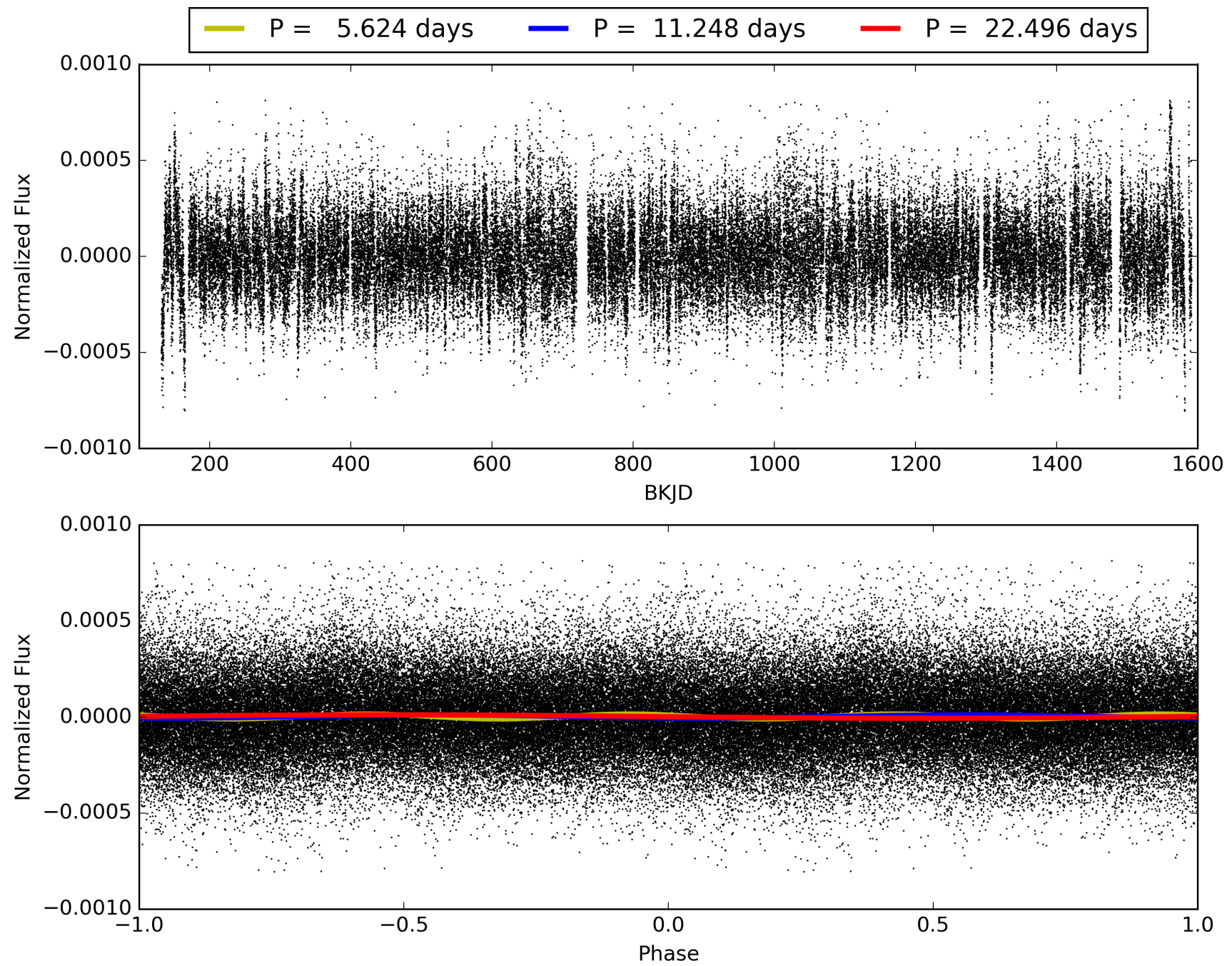
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:50:33 Z

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

TCE 007115923-05, PDC Light Curves

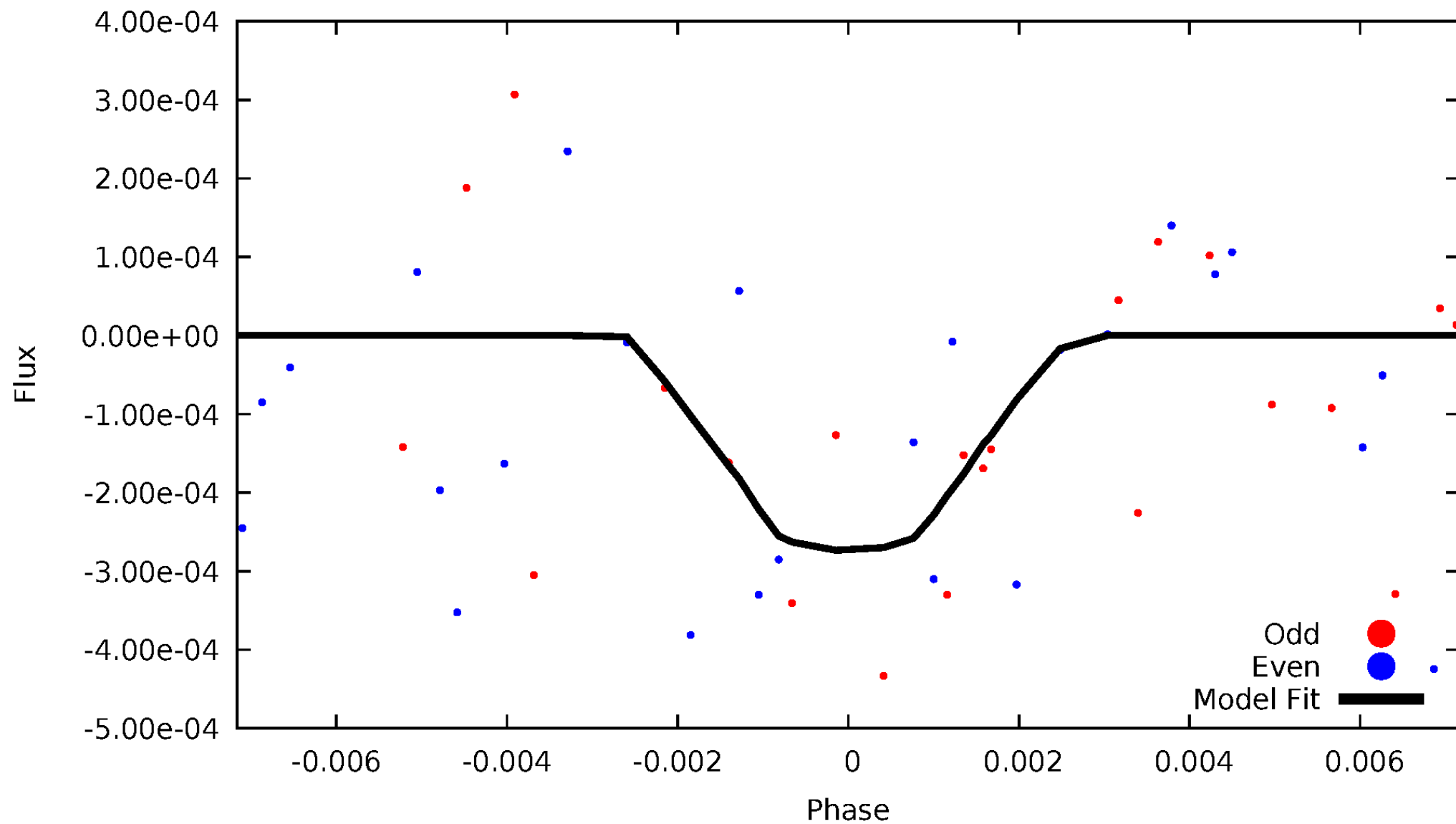


TCE 007115923-05



DV Odd/Even

TCE 007115923-05

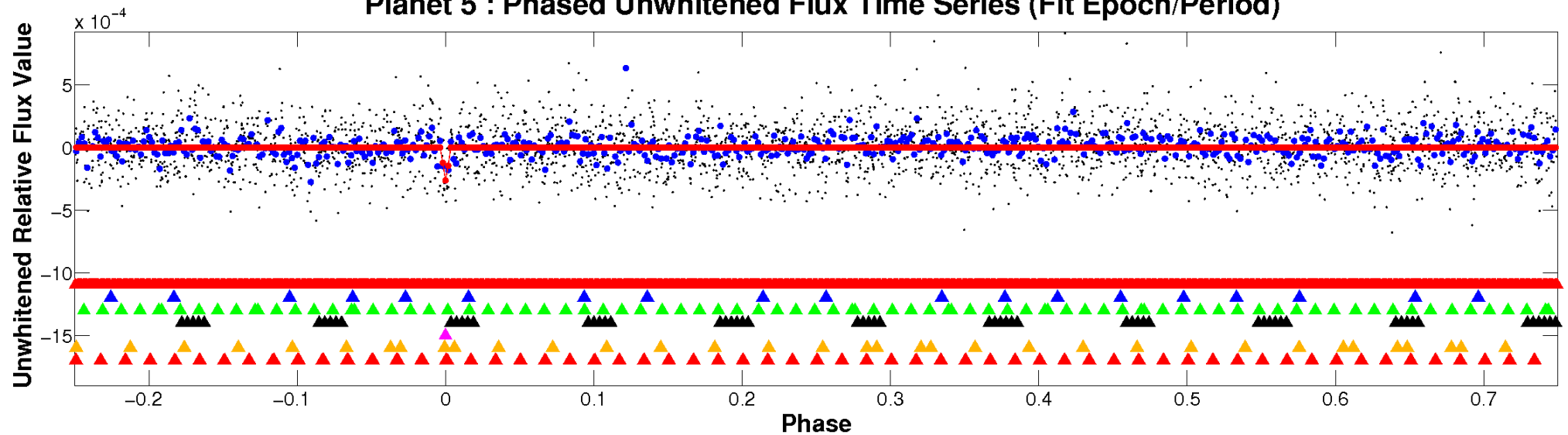


ALT Odd/Even

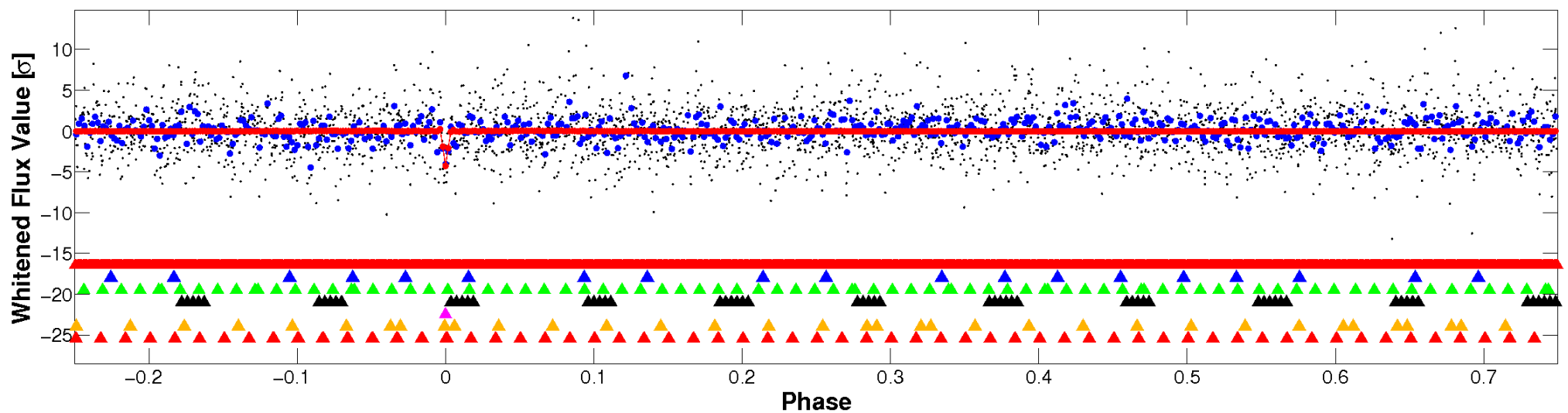
This plot does not exist for this TCE.

Non-Whitened Vs. Whitened Light Curve

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

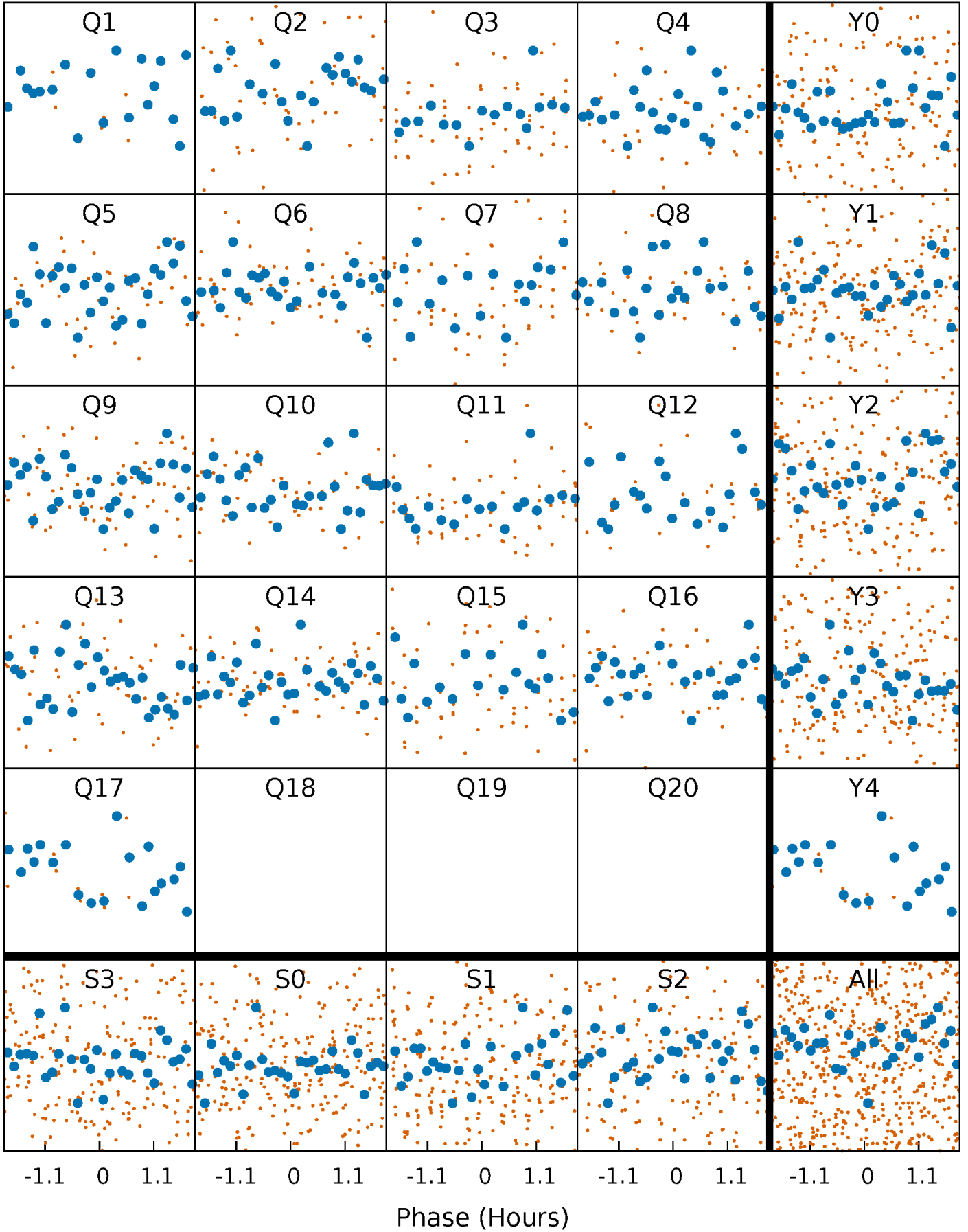


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



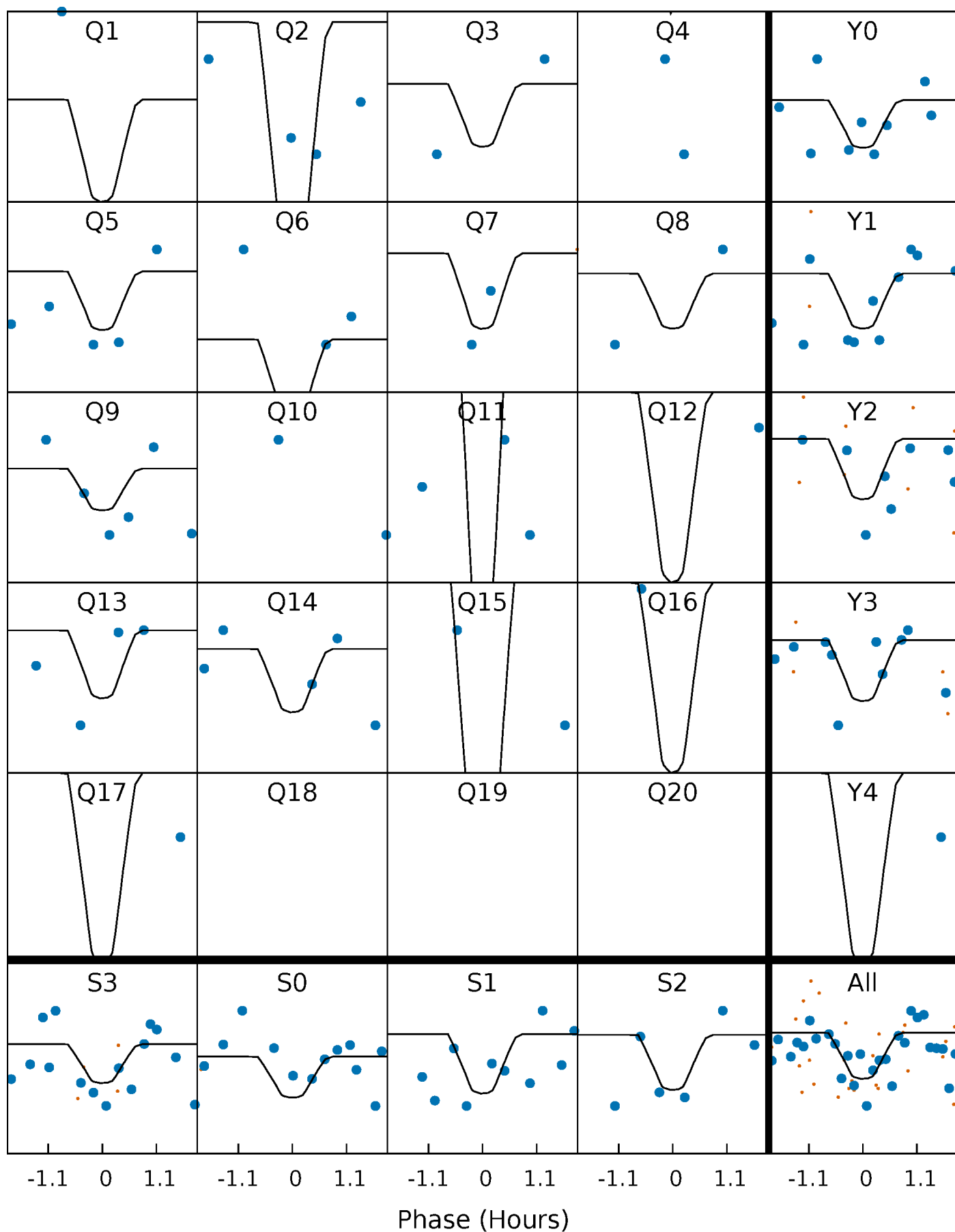
PDC Quarter-Phased Transit Curves

TCE 007115923-05 P= 11.248109 Days $T_0=138.601304$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 007115923-05 P= 11.248109 Days $T_0=138.601304$ (BKJD)

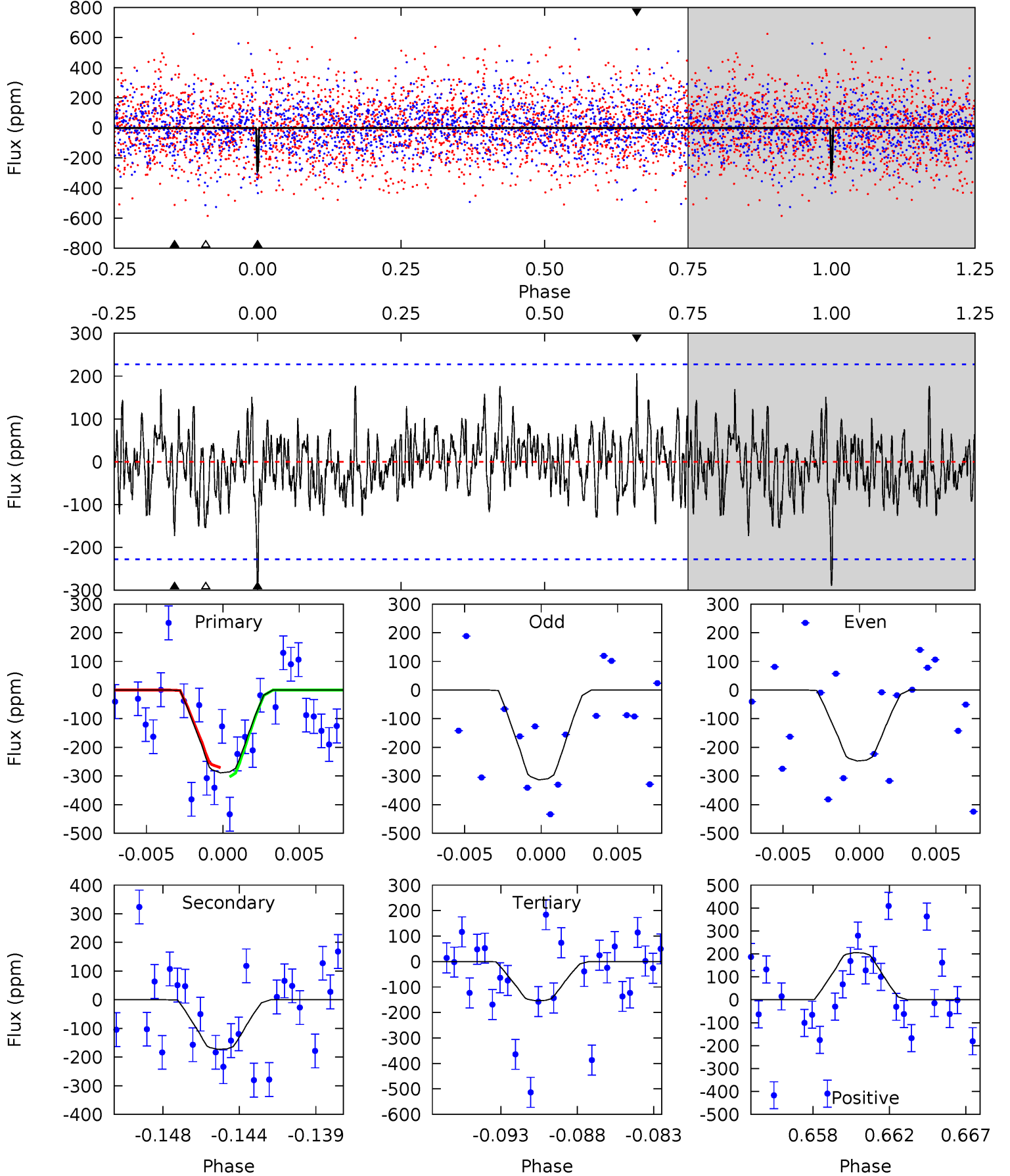


This plot does not exist for this TCE.

DV Model-Shift Uniqueness Test

007115923-05, P = 11.248109 Days, E = 127.353195 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.58	3.94	3.51	4.68	5.17	2.83	1.31	3.07	1.89	0.43	-0.75	0.75	0.91	0.42	0.36



Alt Model-Shift Uniqueness Test

This plot does not exist for this TCE.

Stellar Parameters For KIC 007115923

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6431^{+144}_{-208}	$4.309^{+0.105}_{-0.195}$	$-0.100^{+0.250}_{-0.300}$	$1.249^{+0.400}_{-0.200}$	$1.159^{+0.185}_{-0.152}$	$0.837^{+0.410}_{-0.441}$
	+2%/-3%	+2%/-5%	+250%/-300%	+32%/-16%	+16%/-13%	+49%/-53%
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 007115923-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-173 ± 44	$2.83^{+2.17}_{-1.84}$	1387^{+100}_{-77}	5216^{+4162}_{-1070}	127^{+936}_{-88}
Alt.	N/A	N/A	N/A	N/A	N/A

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

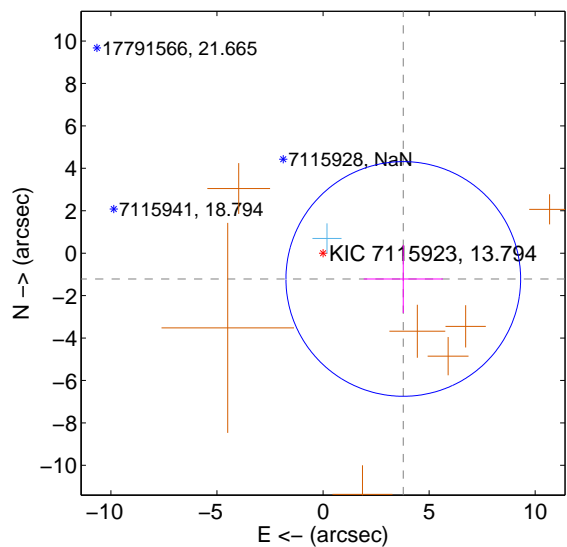
Supplemental centroid analysis for 007115923-05. Kepler magnitude: 13.79. Transit SNR 12.65

There are 1 quarters with good PRF difference image offsets

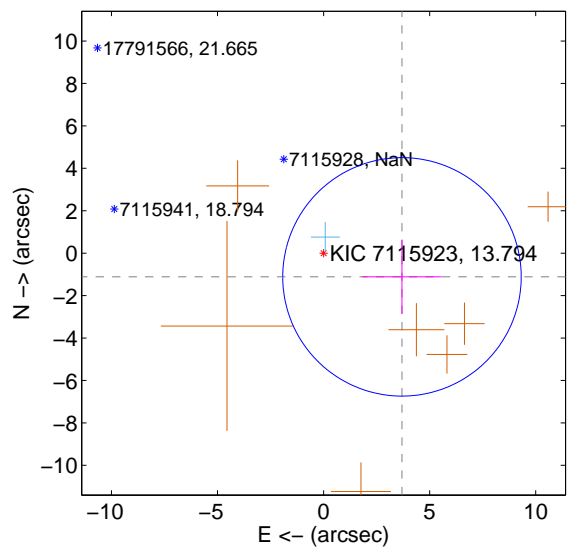
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.972 ± 1.843	2.15	-3.782 ± 1.866	-1.215 ± 1.606
PRF-fit source offset from KIC position	3.860 ± 1.873	2.06	-3.695 ± 1.867	-1.117 ± 1.745
photometric centroid source offset	0.55 ± 0.60	0.92	0.28 ± 0.61	0.47 ± 0.60

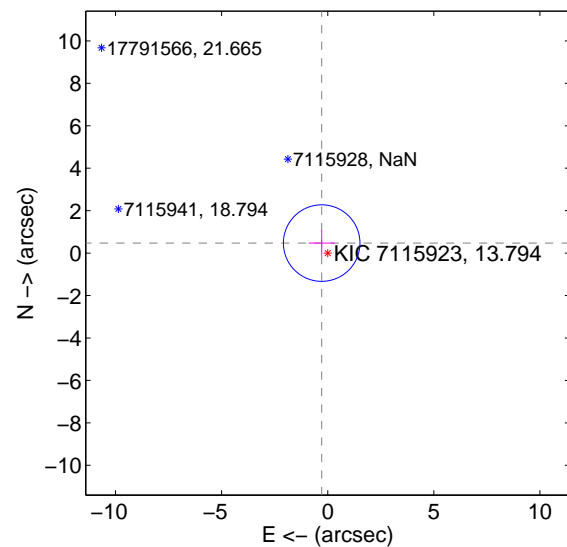
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

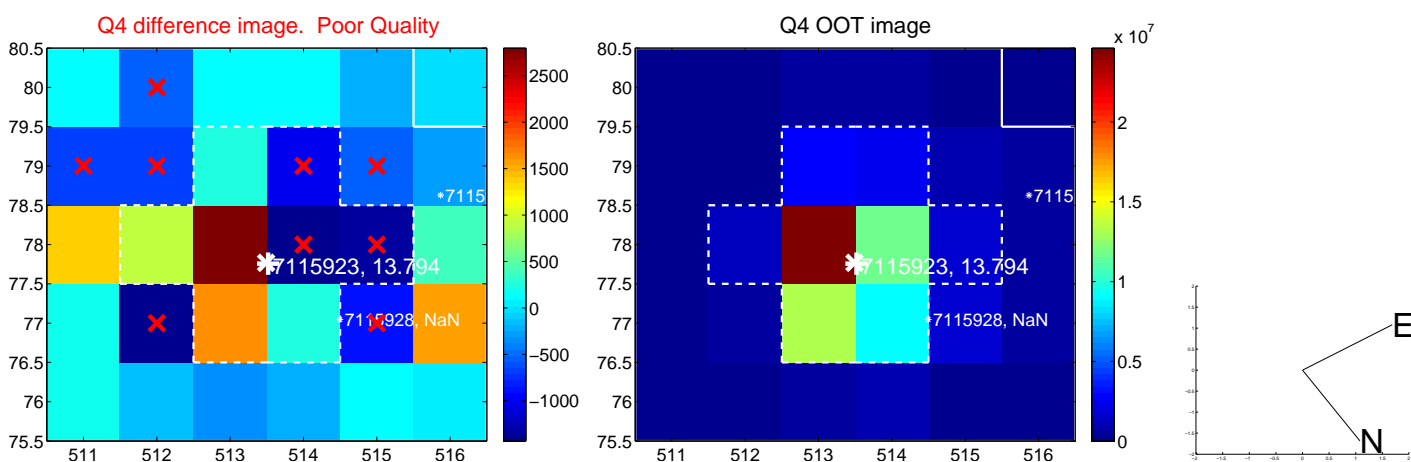
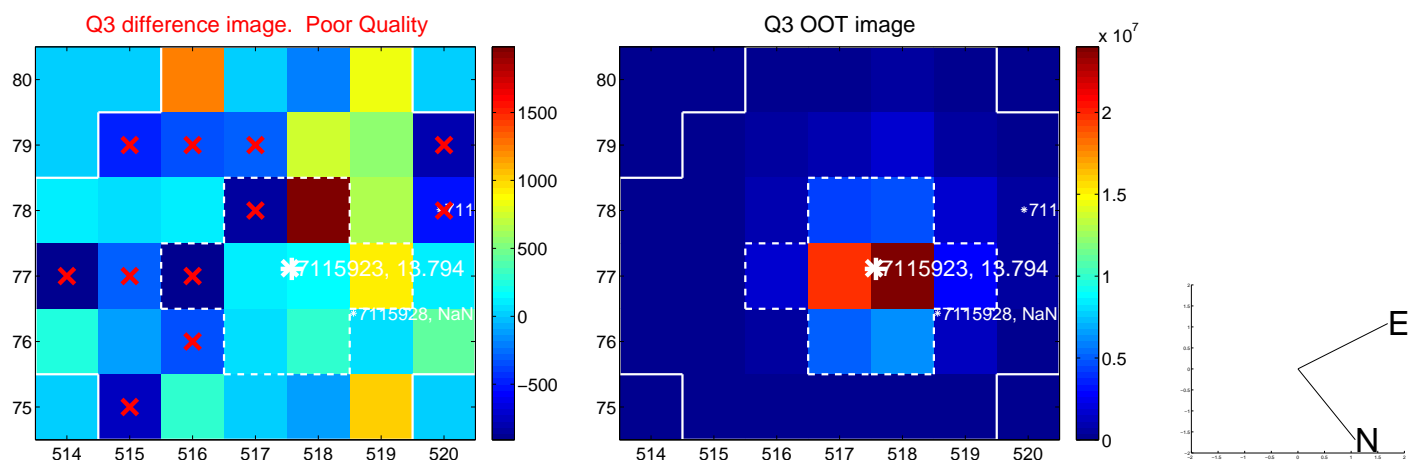
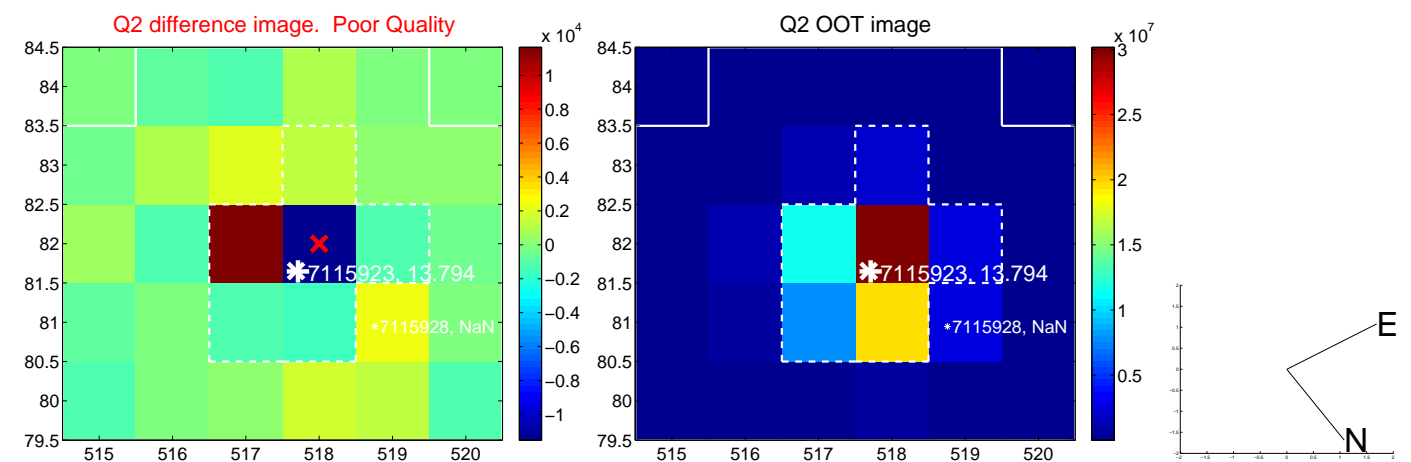
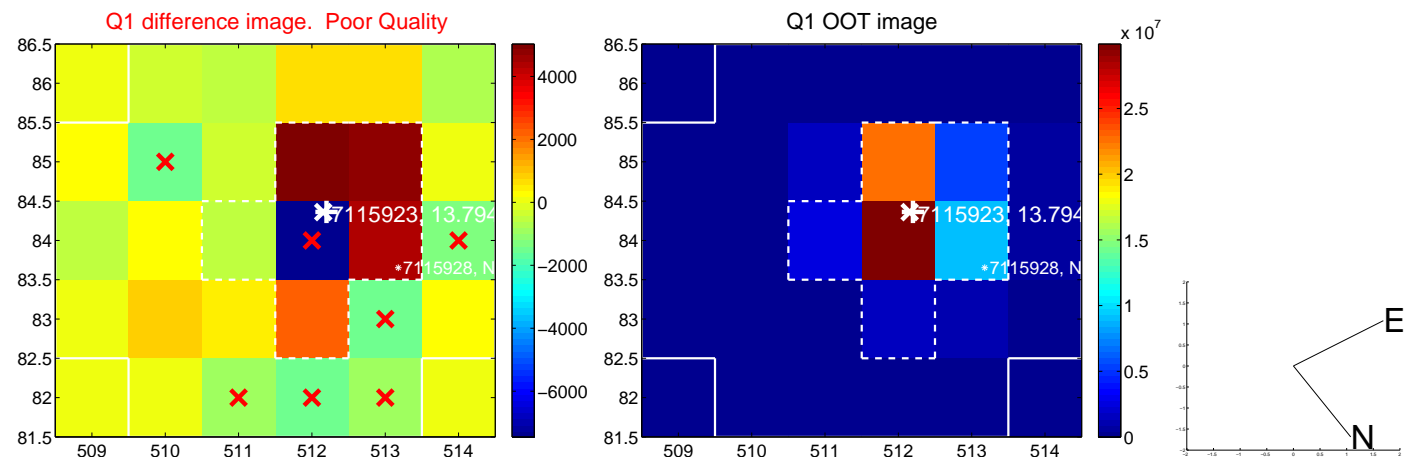


offset from photometric centroids

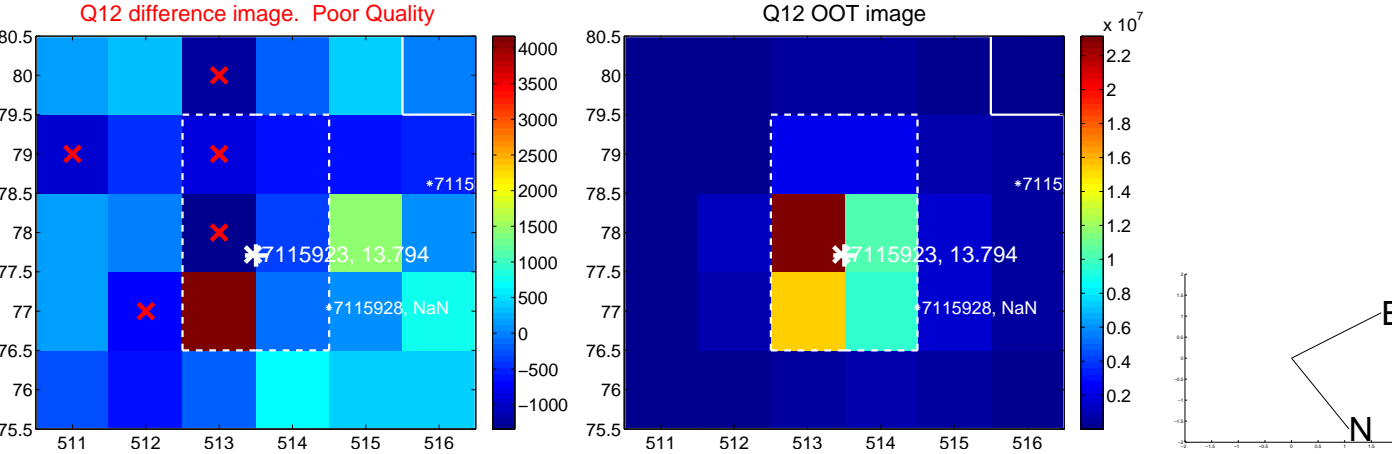
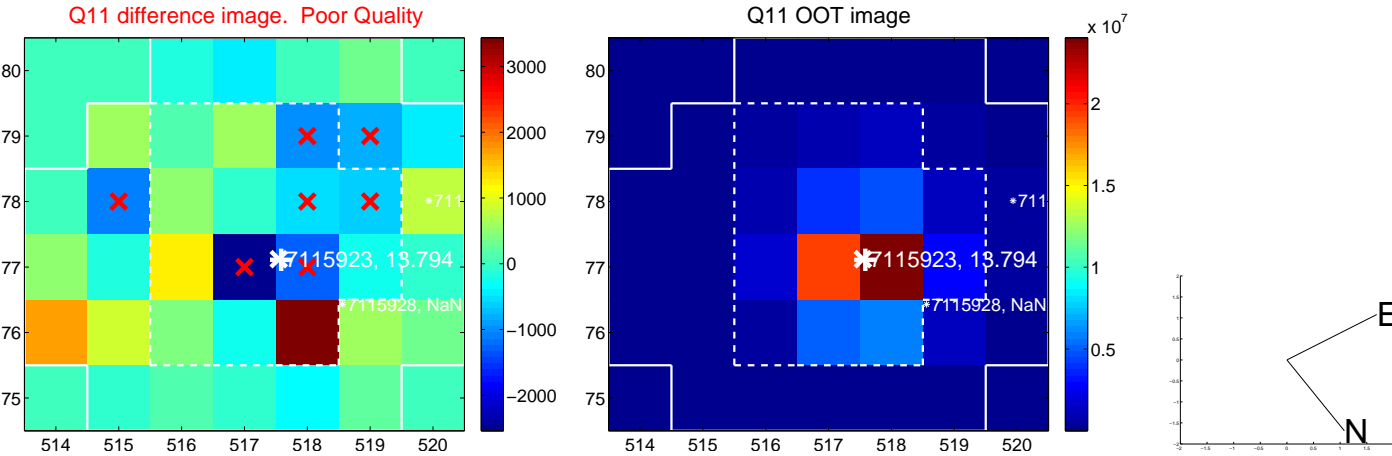
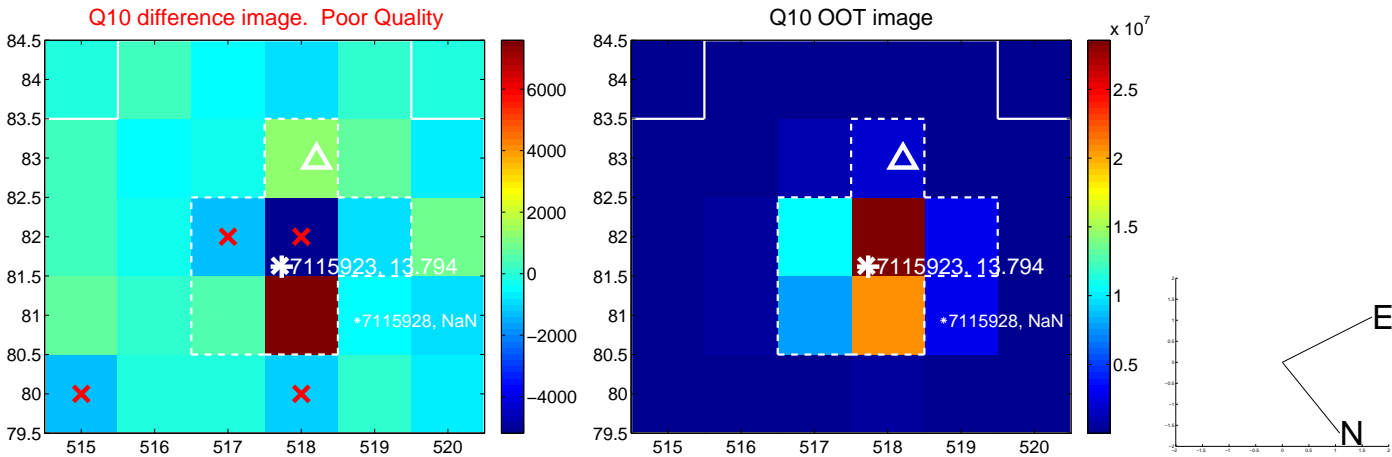
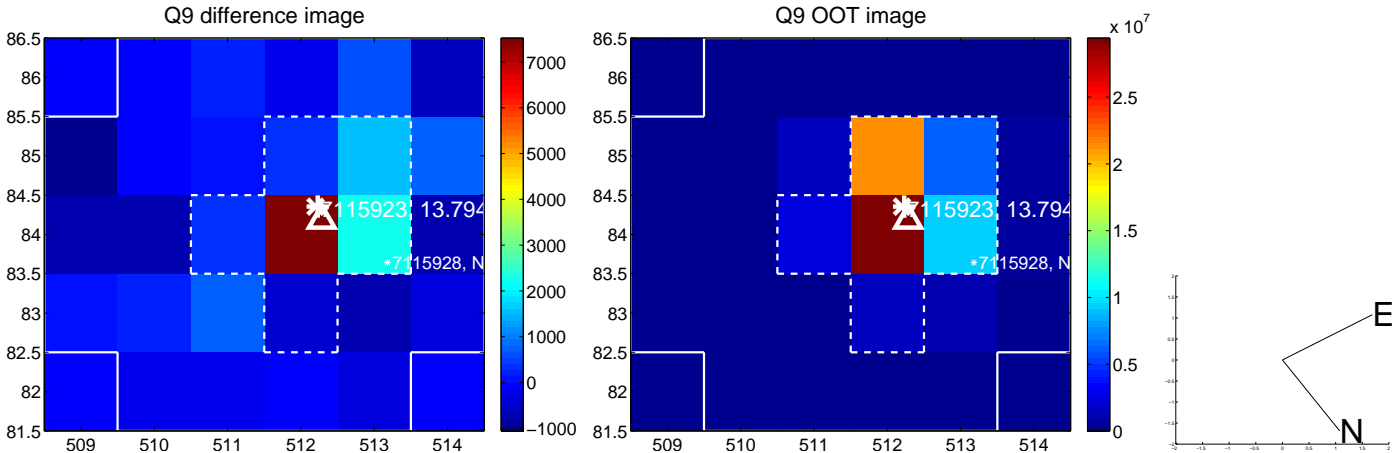


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

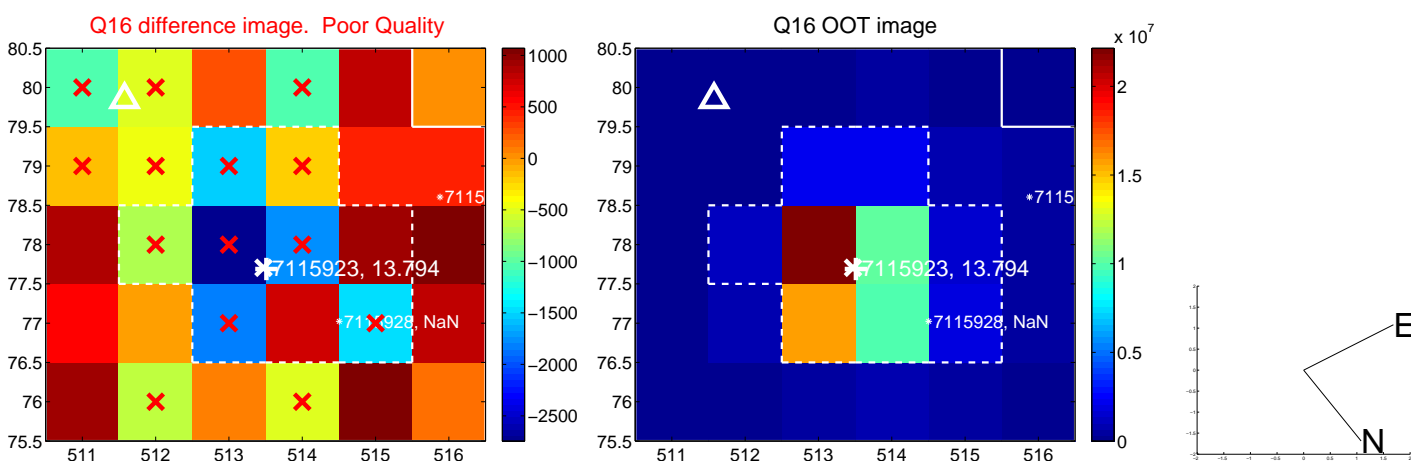
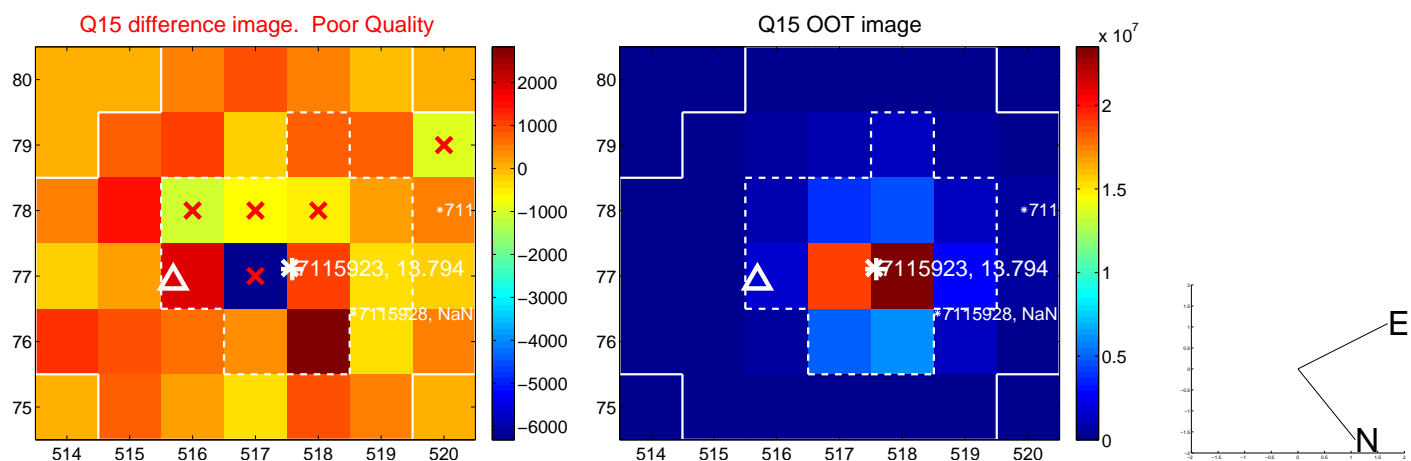
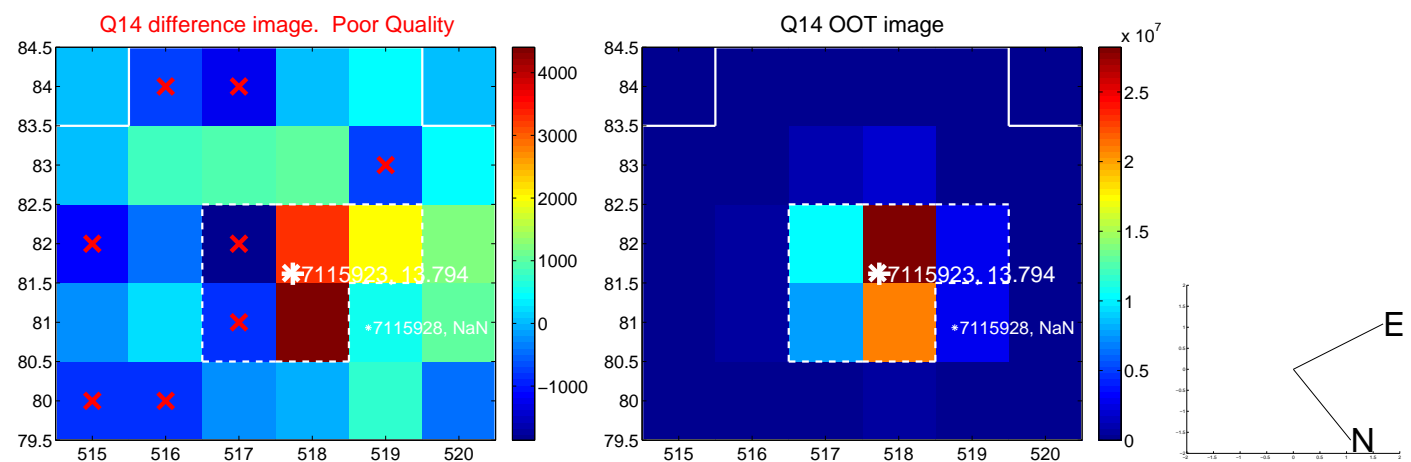
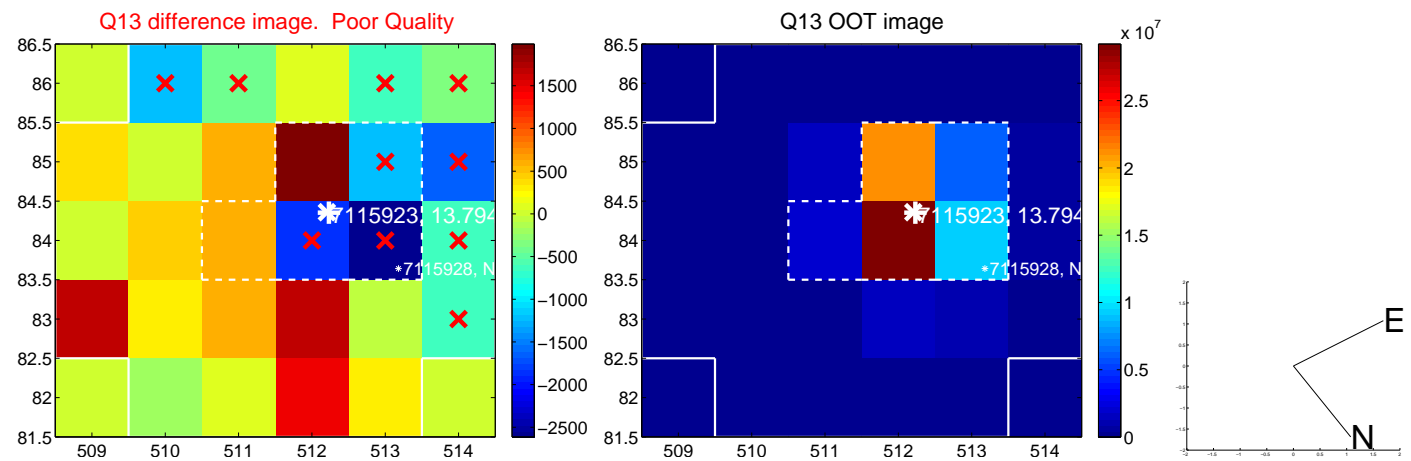
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



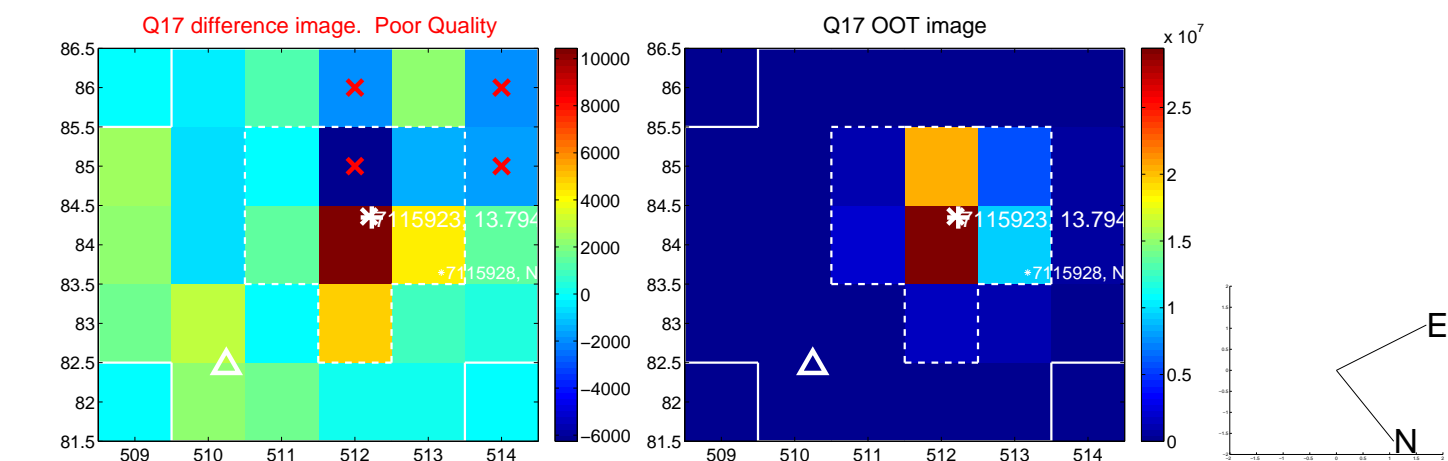
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



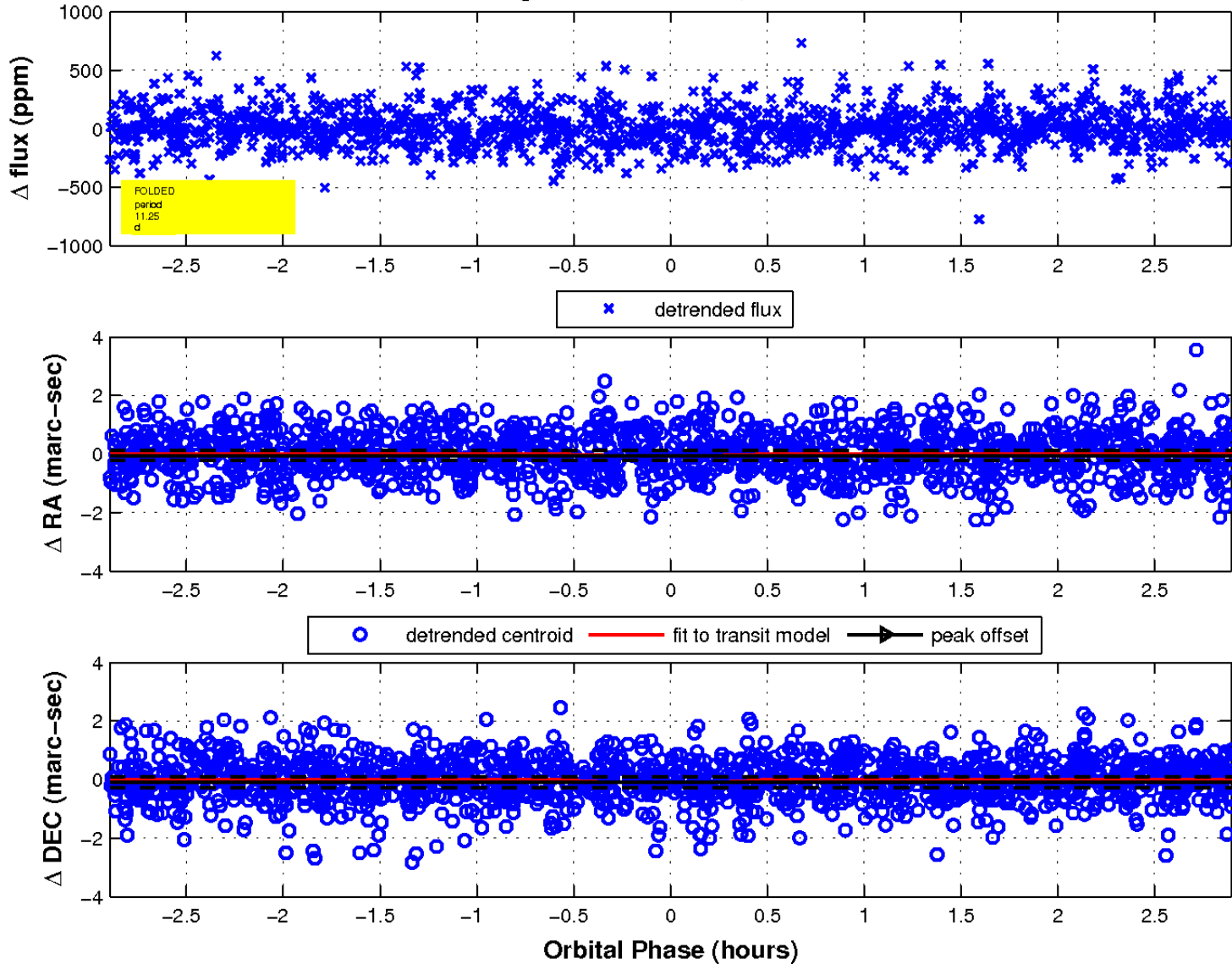
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

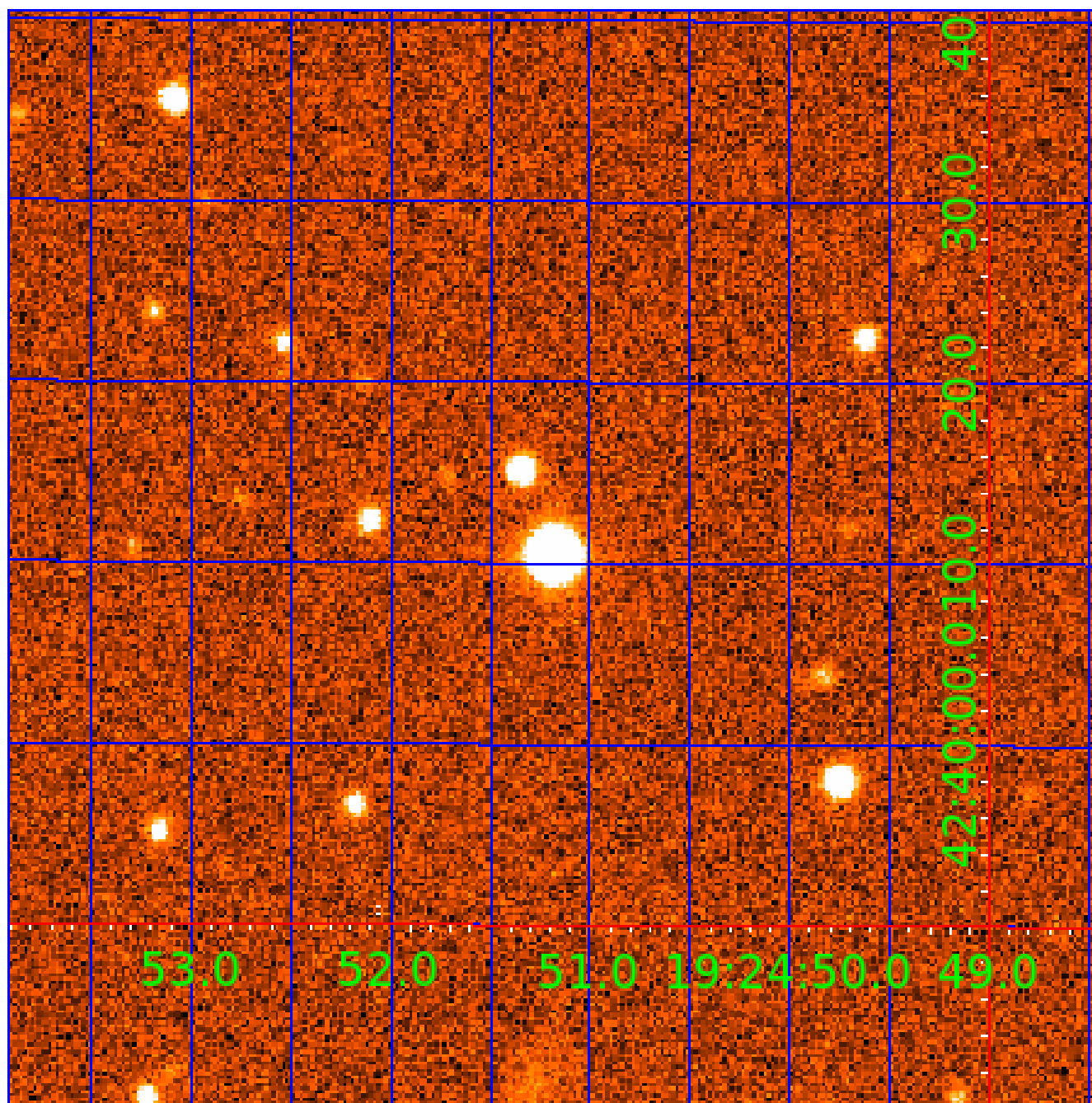


fluxWeightedCentroids, Planet 5 of 7



UKIRT Image

Declination



KIC 007115923

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})
007115923-01	OBS	No	0.566751	131.875527	11.1	4.129	10.8	7.5	1.25	6431	0.42	12055.73
007115923-02	OBS	No	73.790726	199.484127	681.1	2.000	12.6	-1.0	1.25	6431	3.28	18.27
007115923-03	OBS	No	17.237644	135.695531	485.5	1.080	17.8	18.7	1.25	6431	2.95	126.98
007115923-04	OBS	No	24.537466	152.144594	384.8	0.979	10.4	13.1	1.25	6431	2.64	79.30
007115923-05	OBS	No	11.248109	138.601304	273.9	0.967	12.1	12.7	1.25	6431	2.23	224.36
007115923-06	OBS	No	41.379625	145.410891	69.9	20.474	13.3	6.8	1.25	6431	1.06	39.51
007115923-07	OBS	No	11.435674	137.291025	276.5	0.568	12.1	7.3	1.25	6431	2.33	219.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007115923-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007115923-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—NO_FITS—CENT_NOFITS
007115923-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
007115923-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007115923-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
007115923-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007115923-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

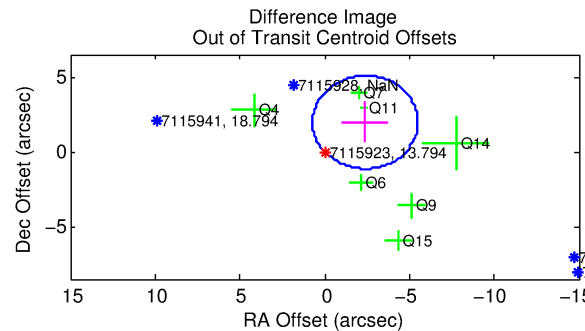
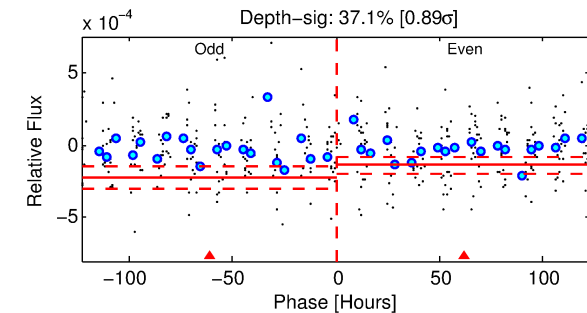
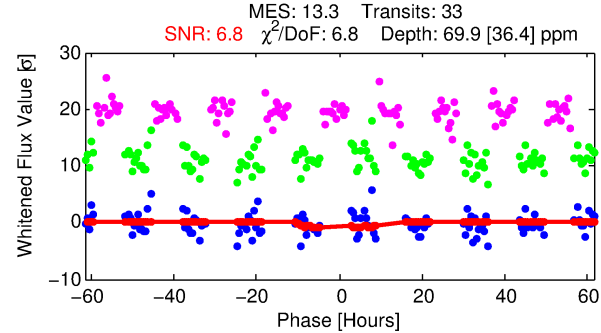
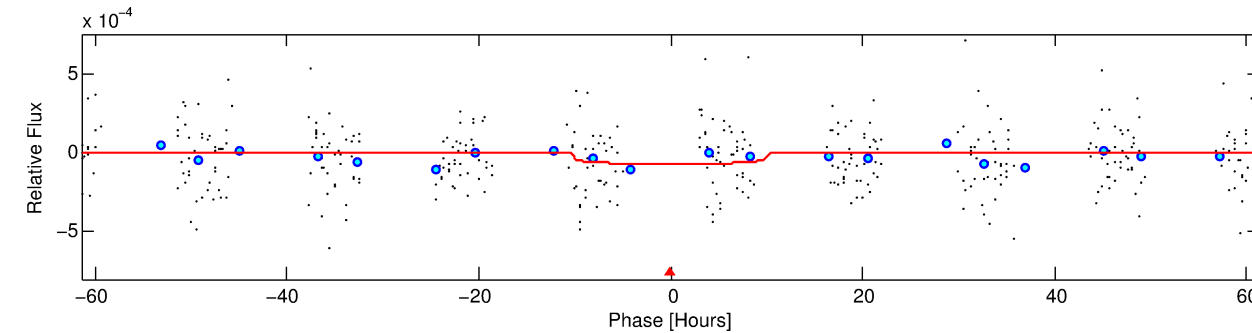
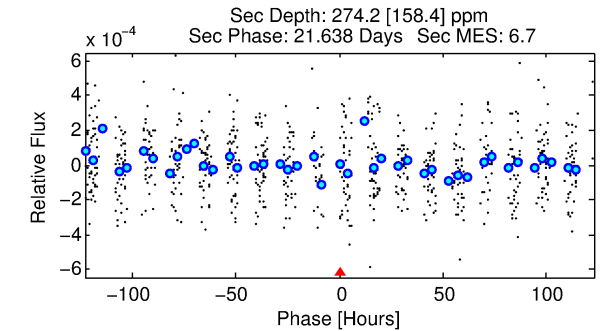
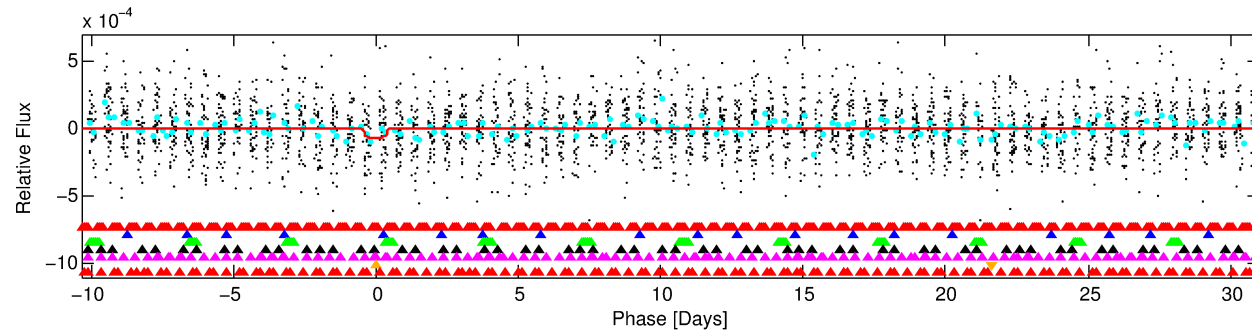
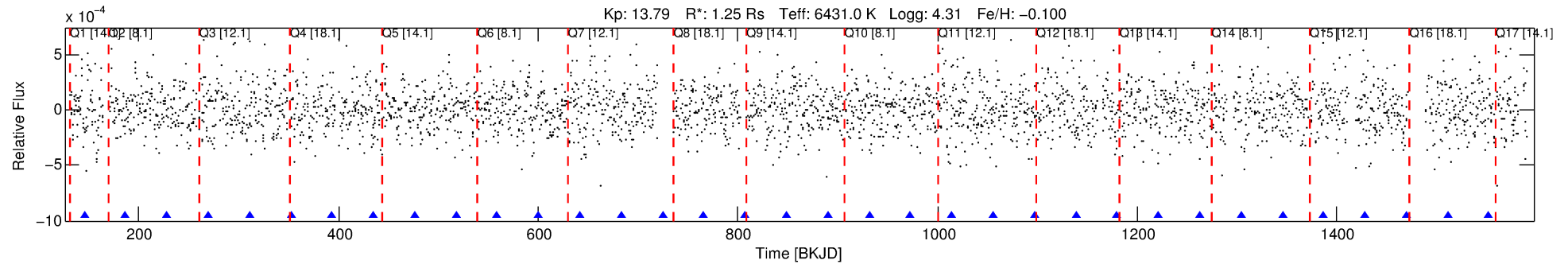
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007115923-06

No Significant Match Found

DV One-Page Summary

KIC: 7115923 Candidate: 6 of 7 Period: 41.380 d



DV Fit Results:

Period = 41.37963 [0.01969] d
Epoch = 145.4109 [0.3212] BKJD
Rp/R* = 0.0078 [0.0339]
a/R* = 14.65 [335.16]
b = 0.34 [60.13]
Seff = 39.51 [15.40]
Teq = 639 [62] K
Rp = 1.06 [4.64] Re
a = 0.2460 [0.0641] AU
Ag = 8122.71 [71084.21] [0.11 σ]
Teffp = 9383 [20513] K [0.43 σ]

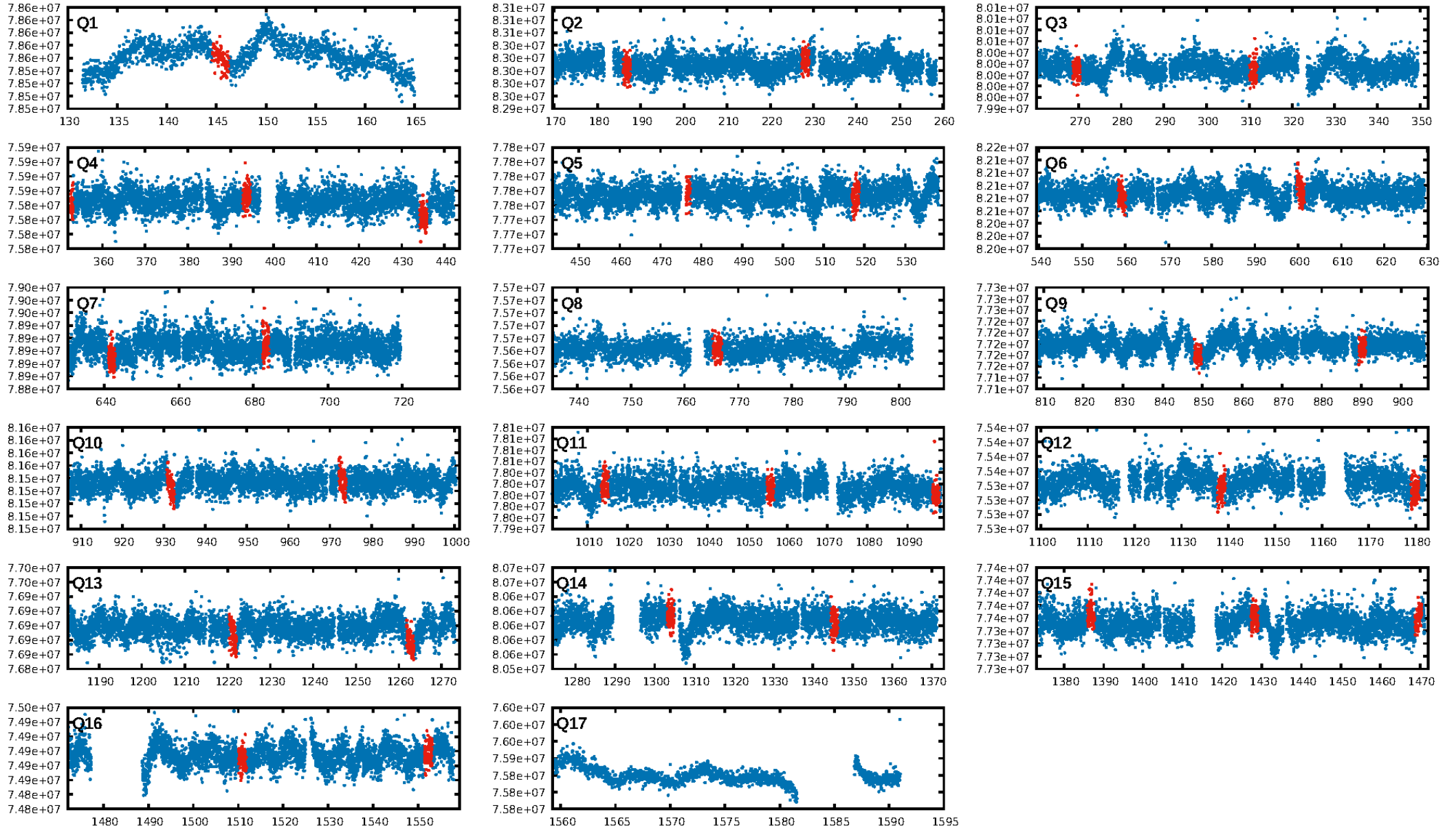
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [19.72 σ]
LongPeriod-sig: 100.0% [37.81 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.06e-14
RollingBand-fgt: 1.00 [32/32]
GhostDiagnostic-chr: -1.134
Centroid-sig: 39.7%
Centroid-so: 0.946 arcsec [0.92 σ]
OotOffset-rm: 3.091 arcsec [2.99 σ]
OotOffset-st: 2/3/1/1 [7]
KicOffset-rm: 3.098 arcsec [3.61 σ]
KicOffset-st: 2/3/1/1 [7]
DiffImageQuality-fgm: 0.00 [0/7]
DiffImageOverlap-fno: 0.00 [0/16]

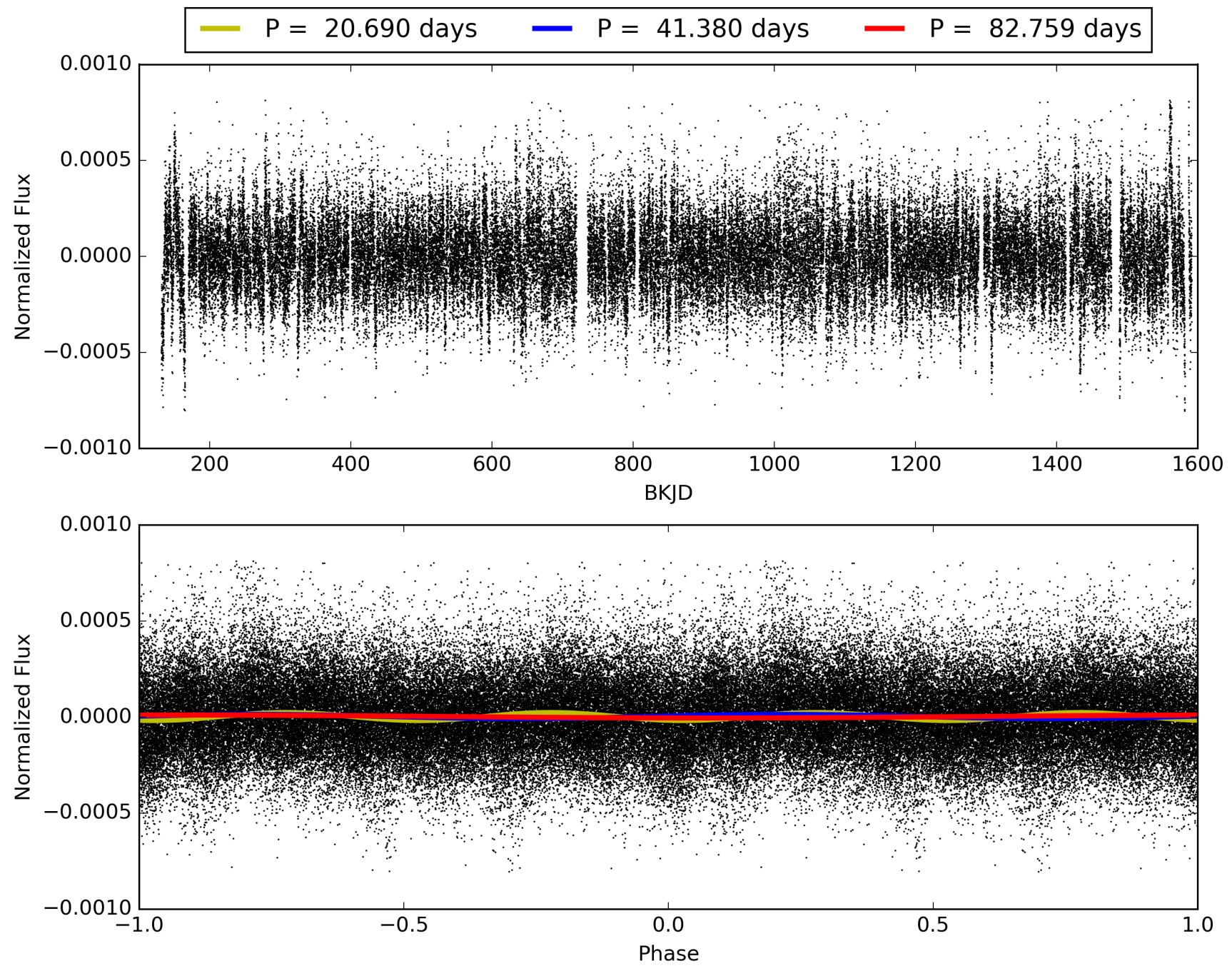
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:50:37 Z

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

TCE 007115923-06, PDC Light Curves

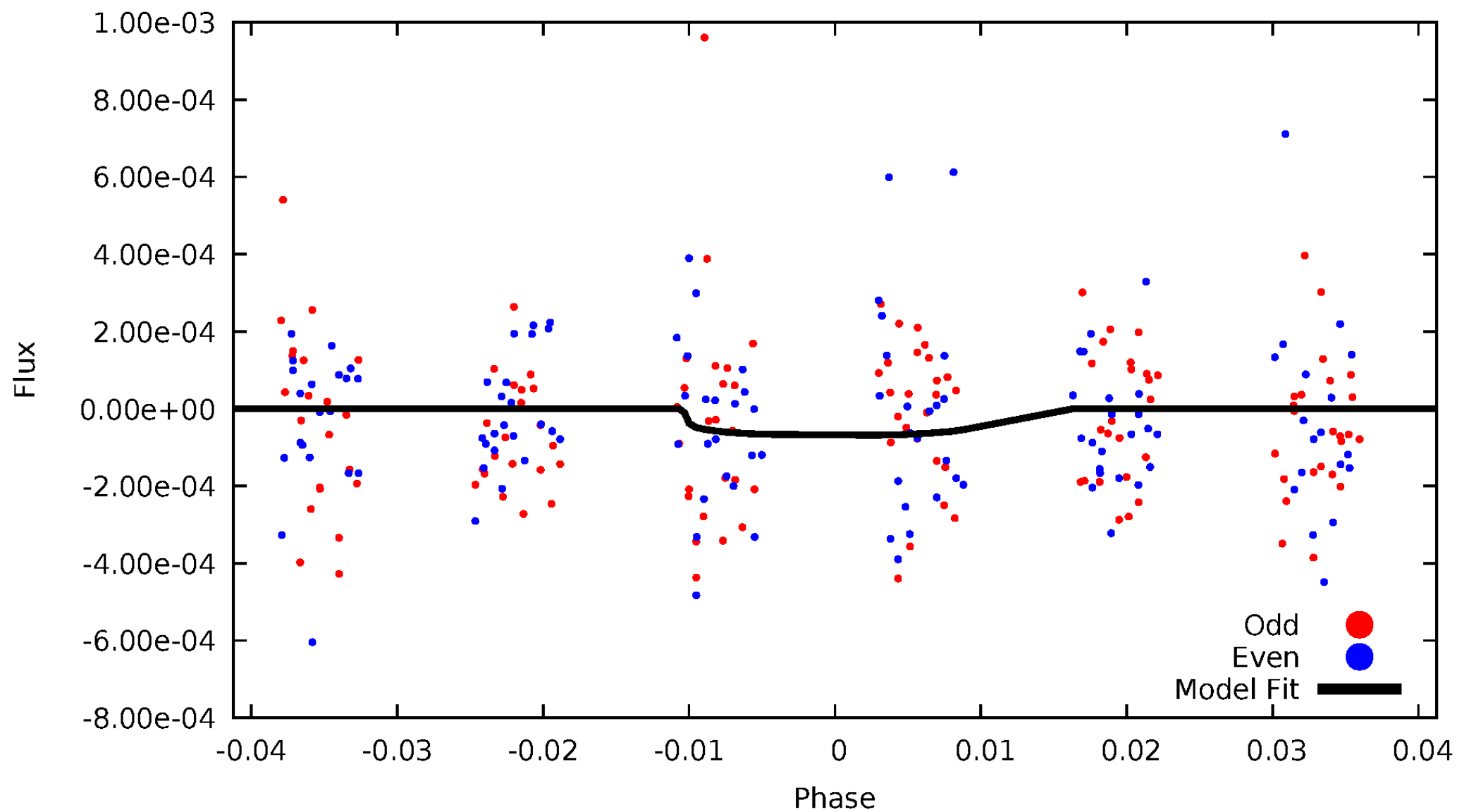


TCE 007115923-06



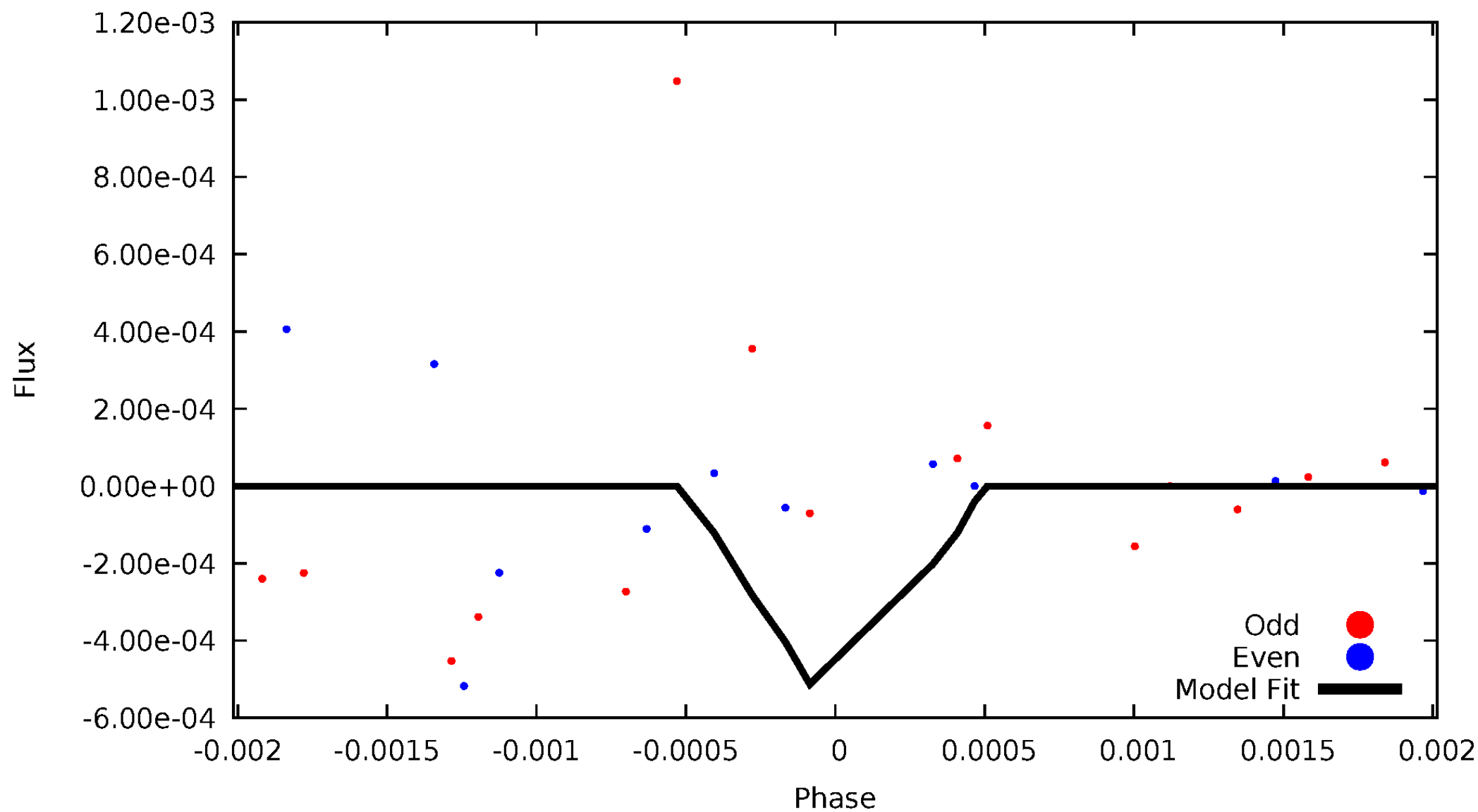
DV Odd/Even

TCE 007115923-06



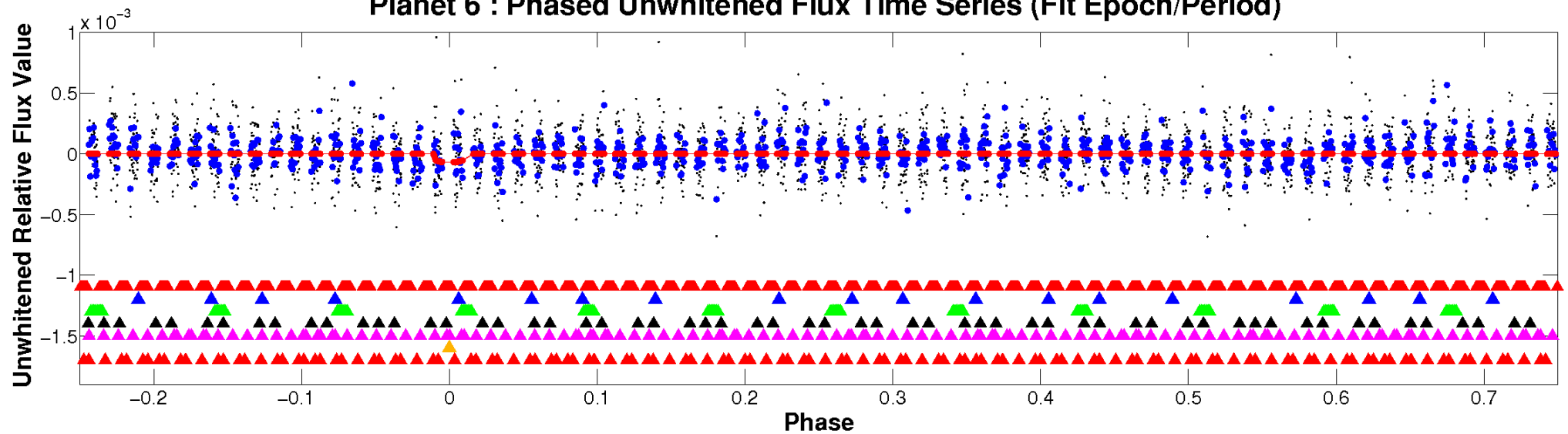
ALT Odd/Even

TCE 007115923-06

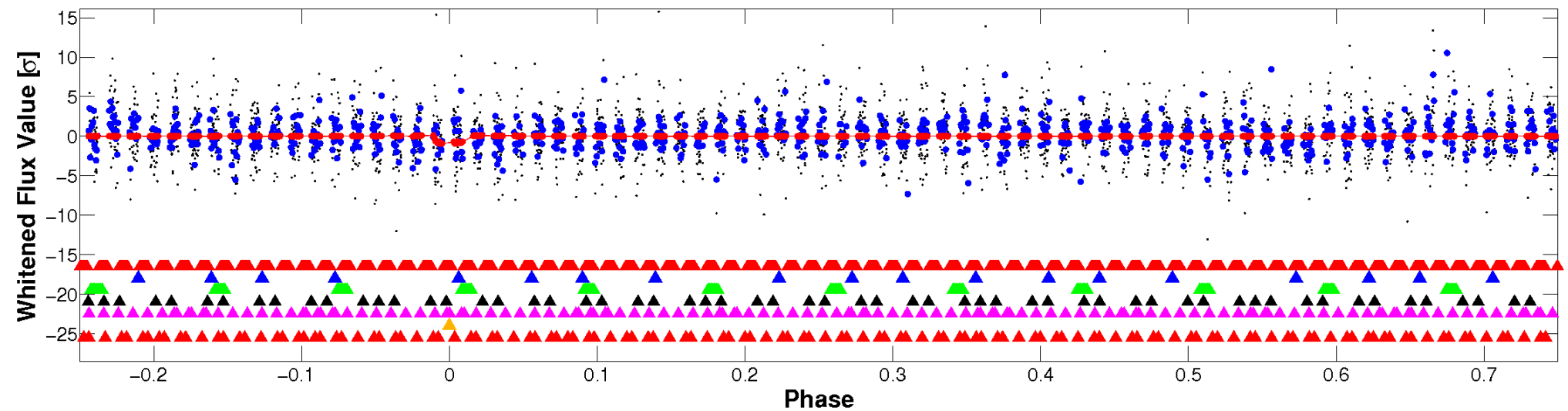


Non-Whitened Vs. Whitened Light Curve

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

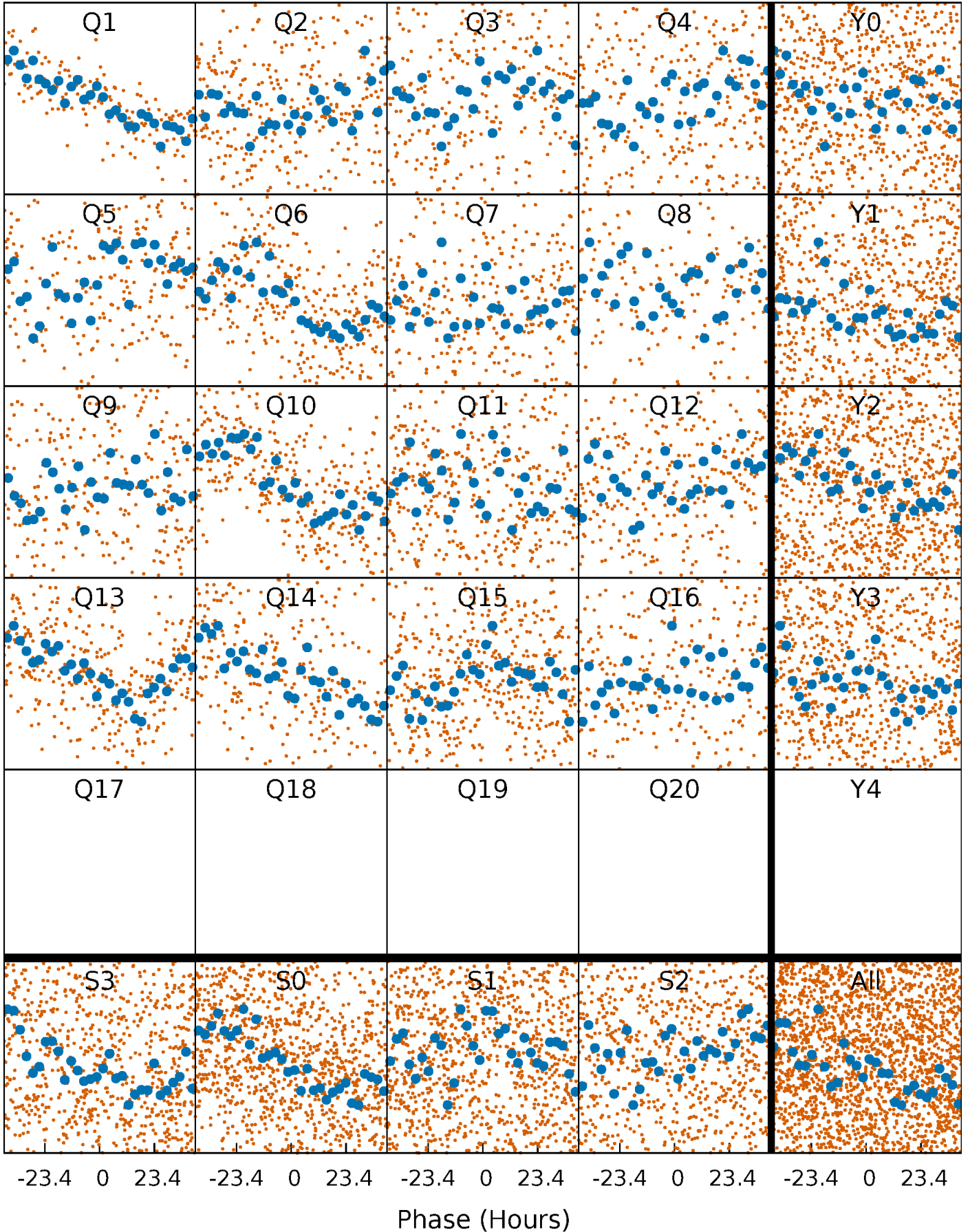


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



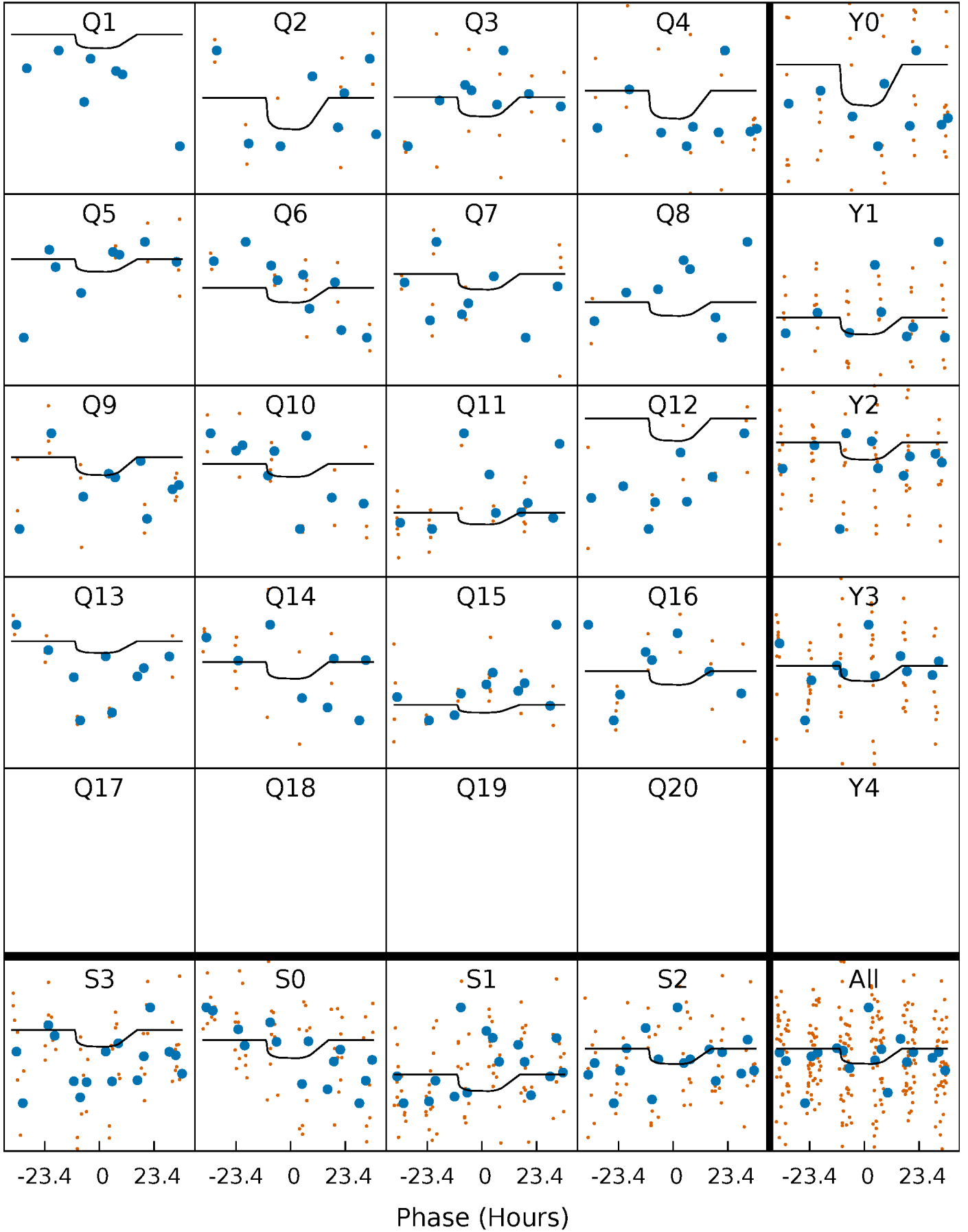
PDC Quarter-Phased Transit Curves

TCE 007115923-06 P= 41.379625 Days $T_0=145.410891$ (BKJD)



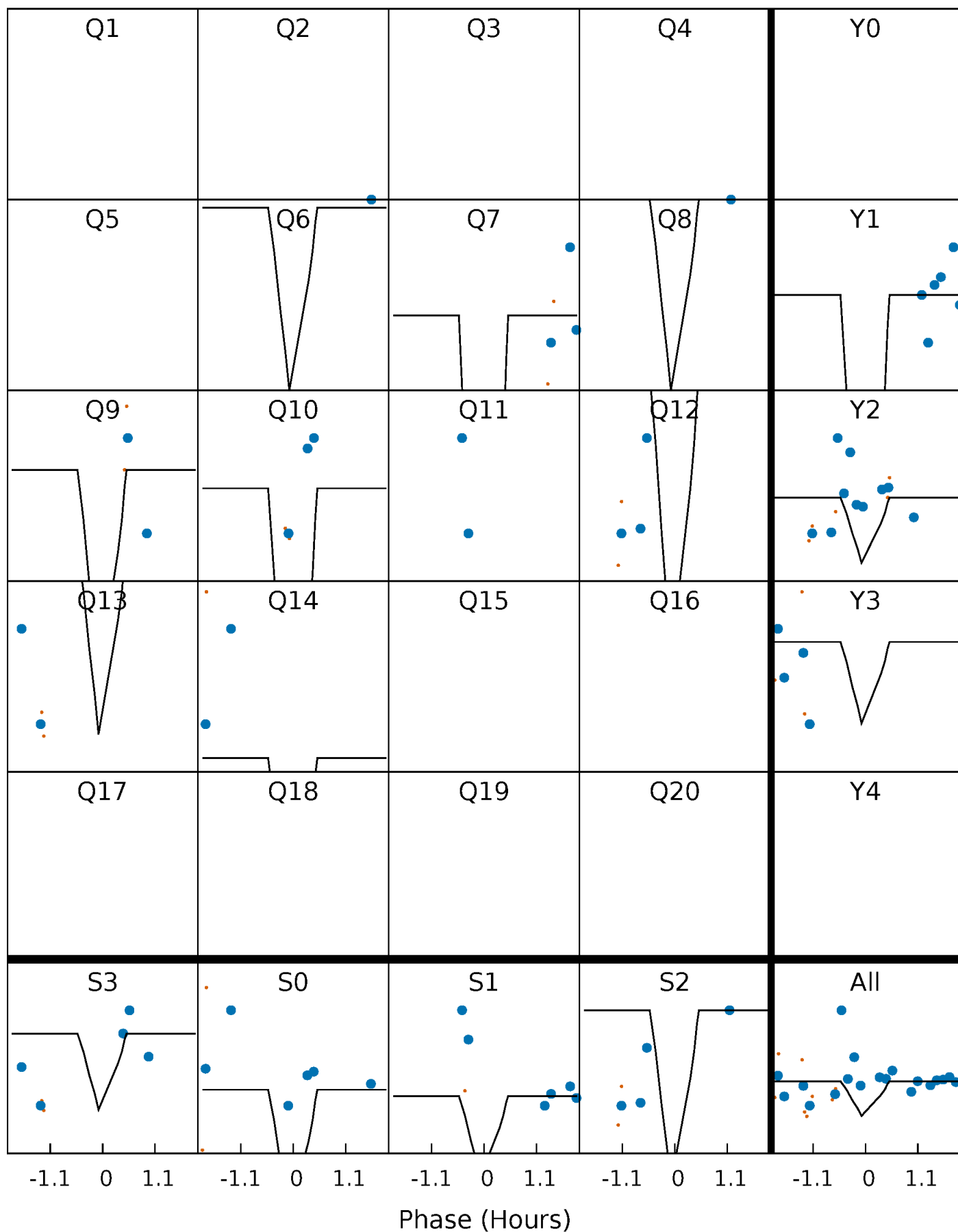
DV Quarter-Phased Transit Curves

TCE 007115923-06 P= 41.379625 Days $T_0=145.410891$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

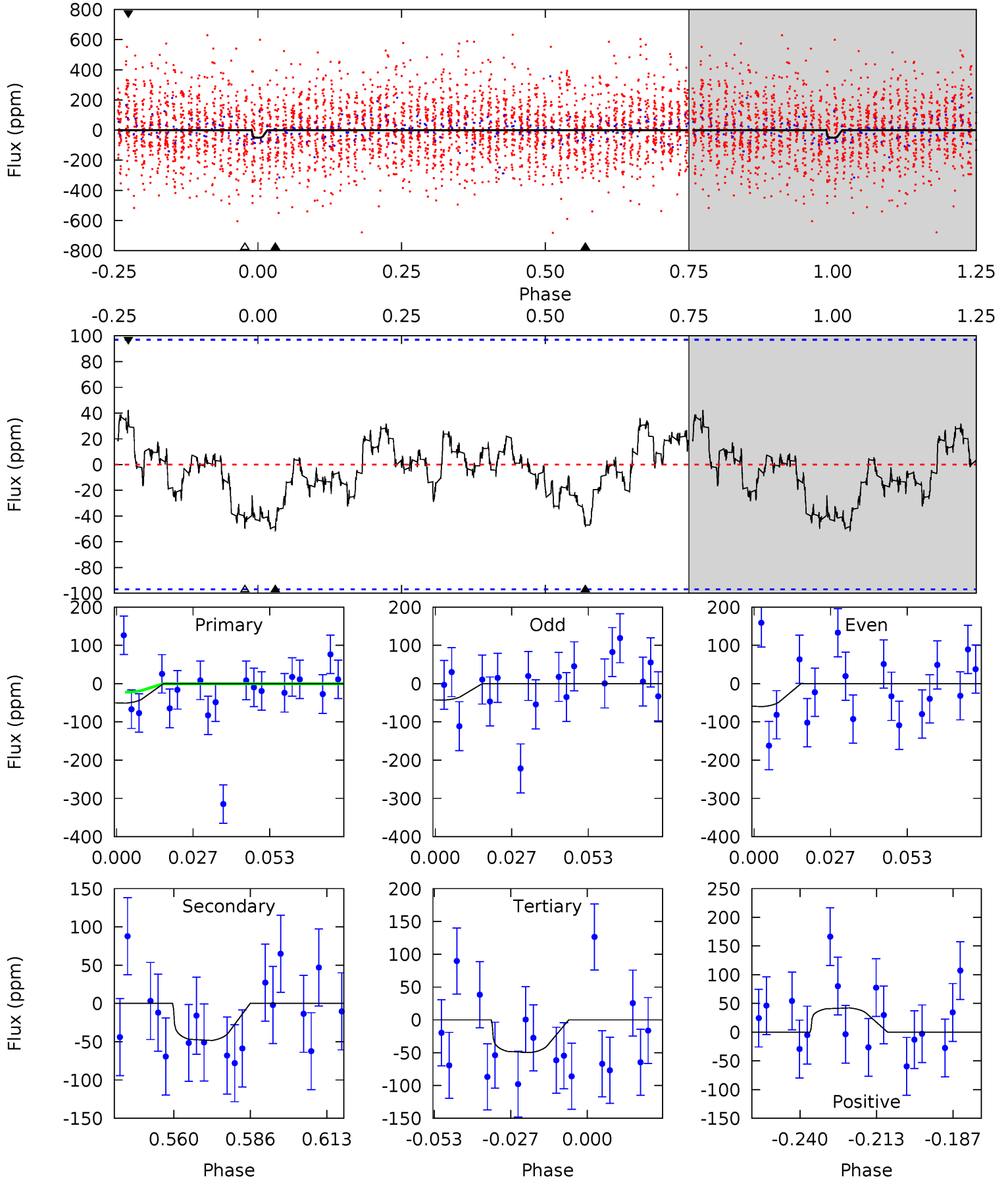
TCE 007115923-06 P= 41.381548 Days $T_0=145.018927$ (BKJD)



DV Model-Shift Uniqueness Test

007115923-06, P = 41.379625 Days, E = 104.031266 Days

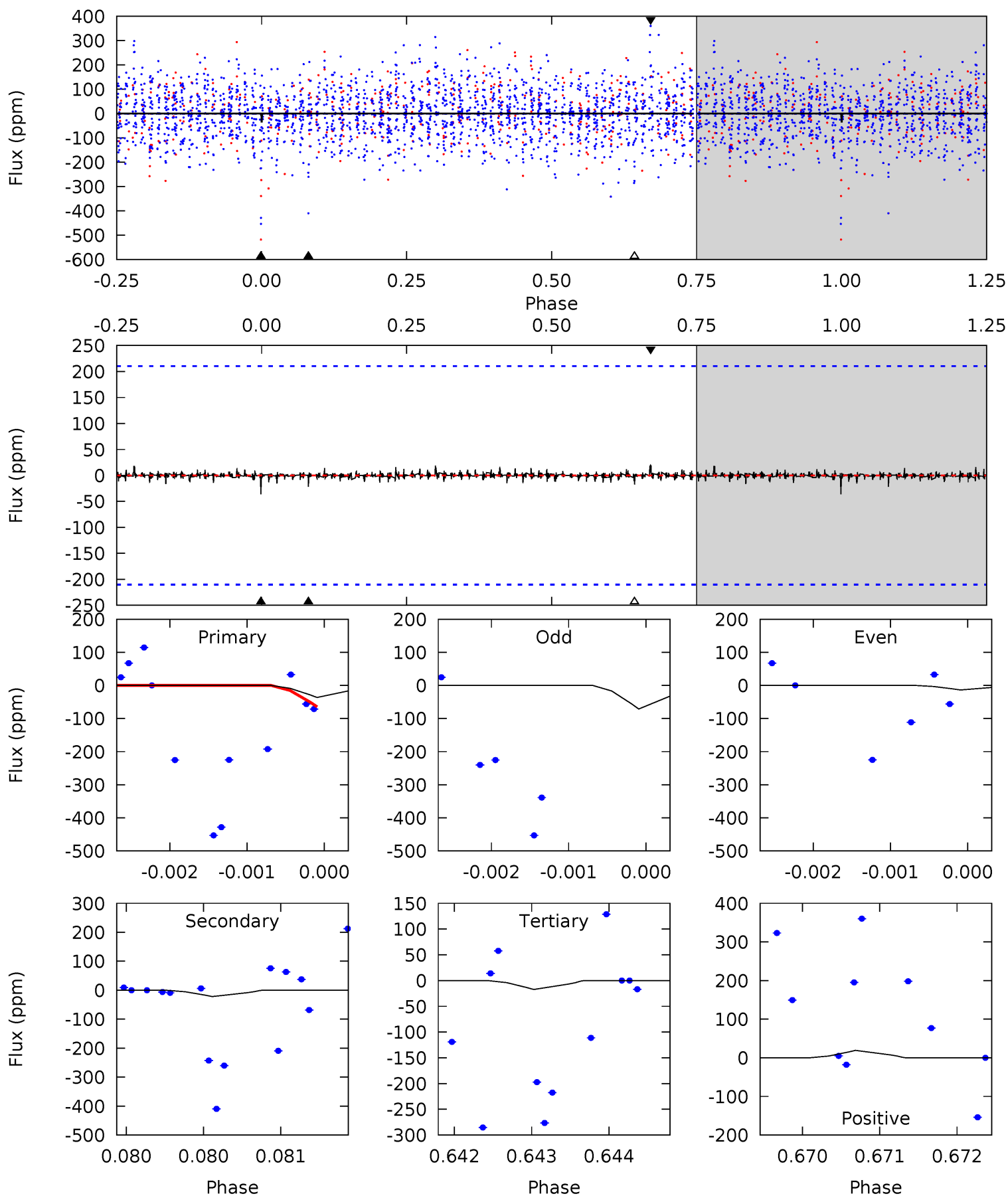
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.55	2.42	2.49	2.11	4.83	2.22	0.88	0.06	0.44	-0.07	0.31	0.43	0.62	0.45	2.01



Alt Model-Shift Uniqueness Test

007115923-06, P = 41.381548 Days, E = 103.637379 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.95	0.57	0.45	0.50	5.47	3.32	0.10	0.50	0.45	0.12	0.07	0.55	1.00	0.35	0.08



Stellar Parameters For KIC 007115923

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6431^{+144}_{-208}	$4.309^{+0.105}_{-0.195}$	$-0.100^{+0.250}_{-0.300}$	$1.249^{+0.400}_{-0.200}$	$1.159^{+0.185}_{-0.152}$	$0.837^{+0.410}_{-0.441}$
	+2%/-3%	+2%/-5%	+250%/-300%	+32%/-16%	+16%/-13%	+49%/-53%
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 007115923-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-48 ± 20	$3.66^{+4.02}_{-2.46}$	900^{+62}_{-47}	3671^{+2073}_{-793}	111^{+952}_{-90}
Alt.	-22 ± 38	$4.69^{+4.43}_{-3.21}$	904^{+63}_{-53}	2807^{+1556}_{-5702}	18^{+259}_{-41}

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 $A_{obs} \gg 1.0$

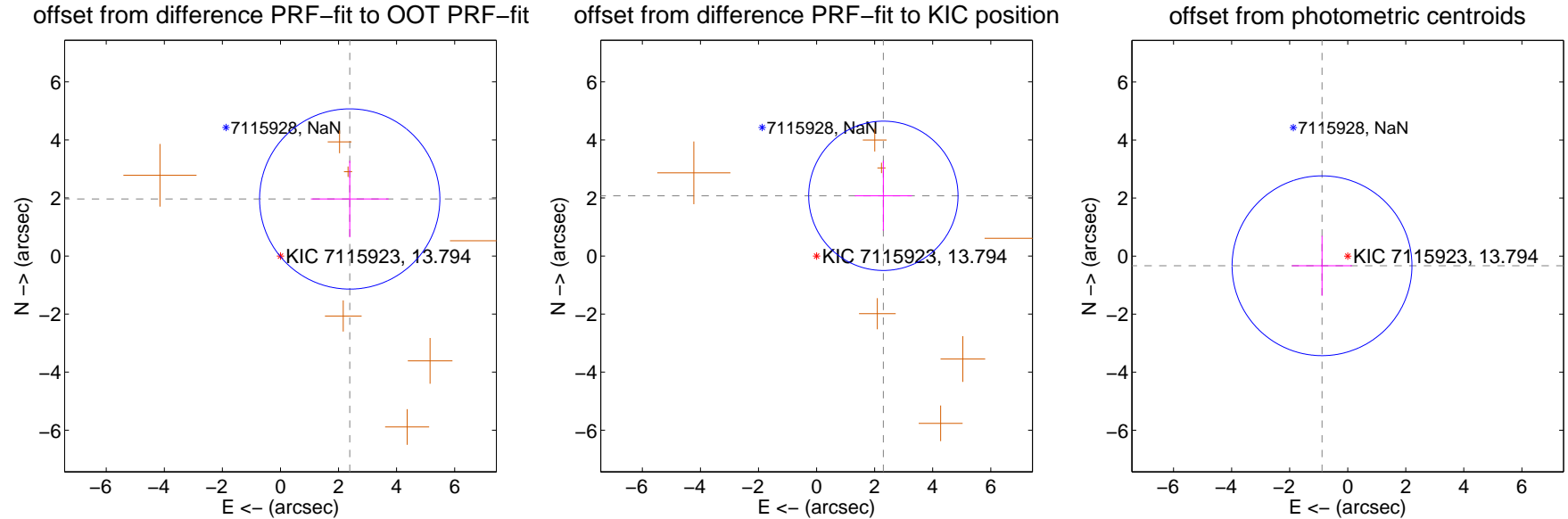
DV Centroid Data

Supplemental centroid analysis for 007115923-06. Kepler magnitude: 13.79. Transit SNR 6.77

There are 0 quarters with good PRF difference image offsets

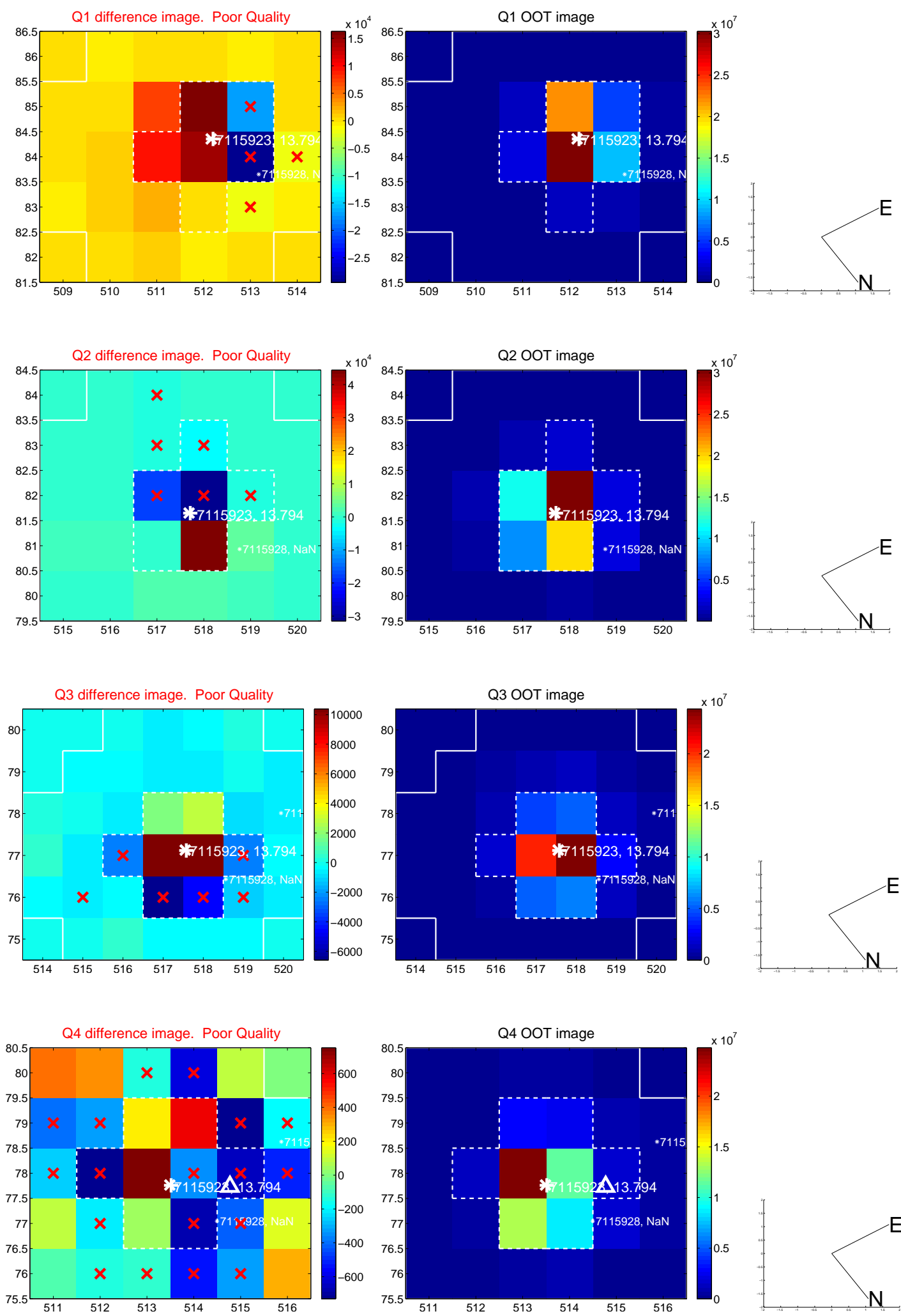
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.091 ± 1.035	2.99	-2.386 ± 1.338	1.965 ± 1.320
PRF-fit source offset from KIC position	3.098 ± 0.857	3.61	-2.300 ± 0.984	2.074 ± 1.205
photometric centroid source offset	0.95 ± 1.03	0.92	0.89 ± 1.03	-0.33 ± 1.03

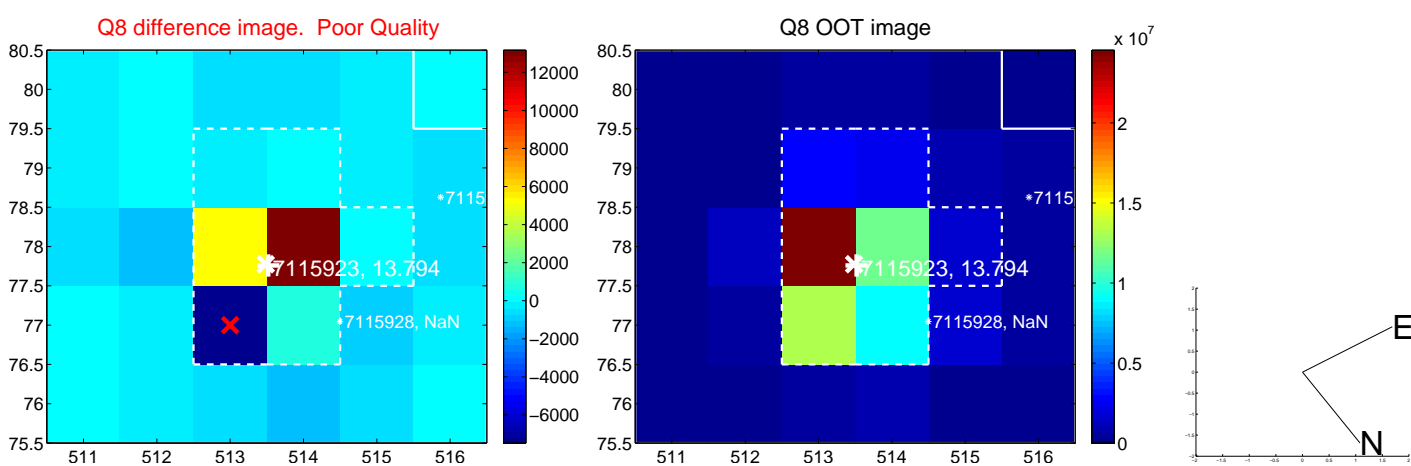
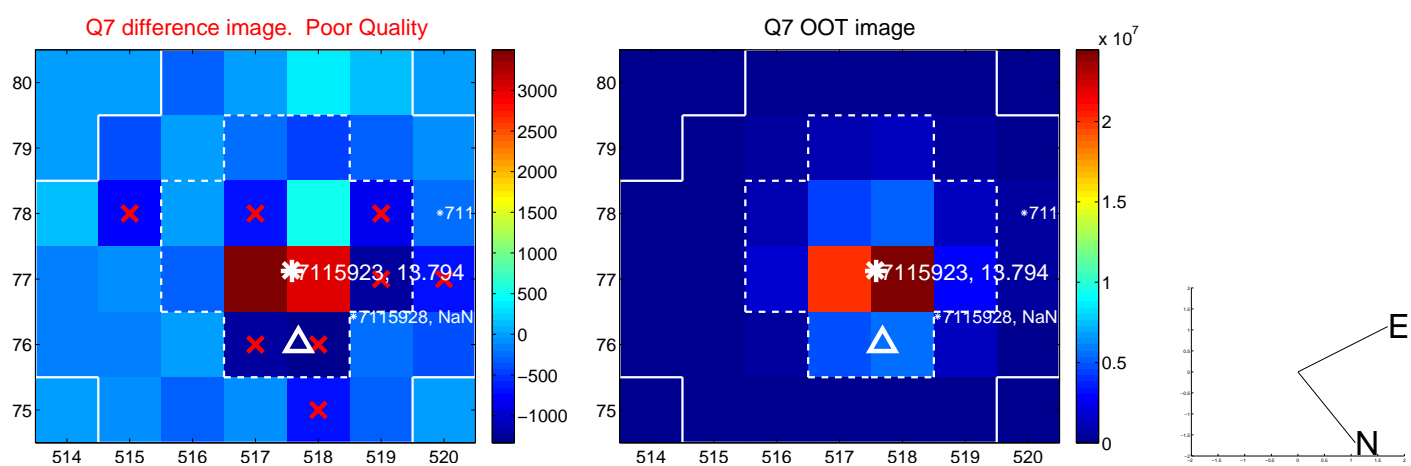
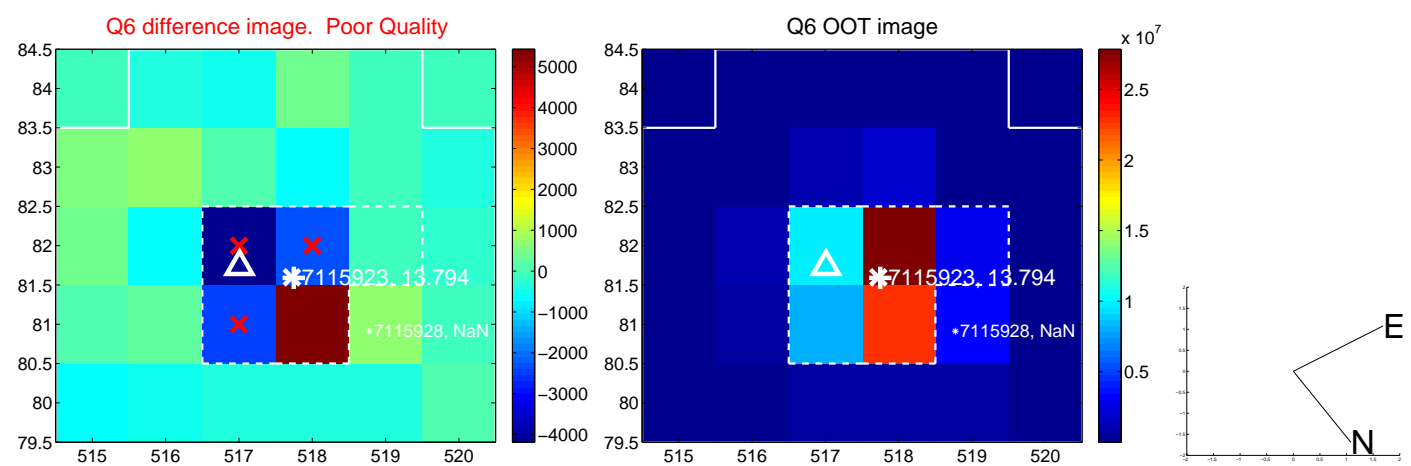
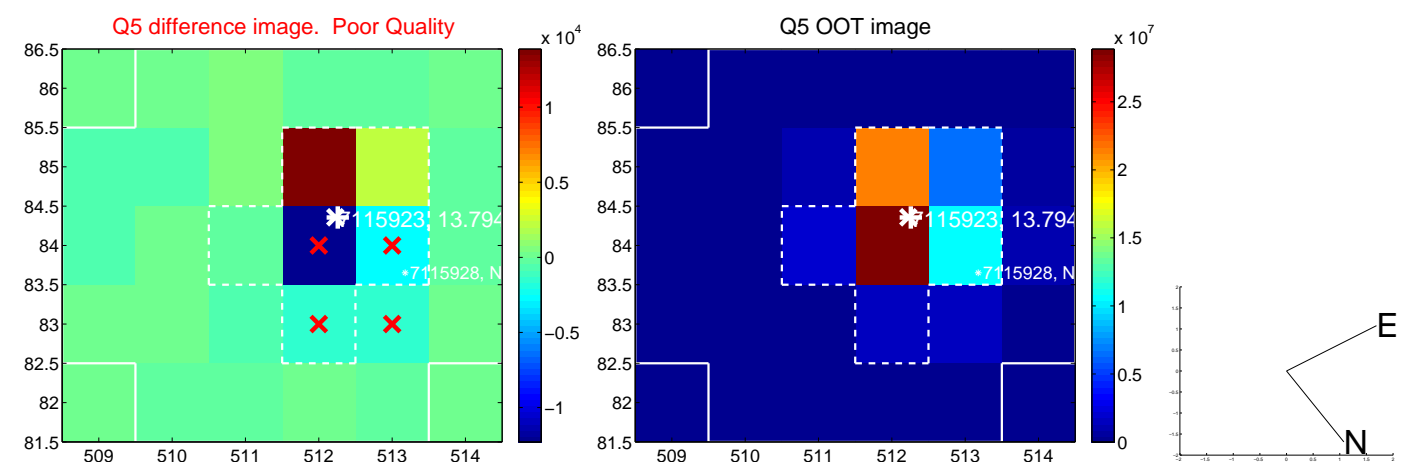


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

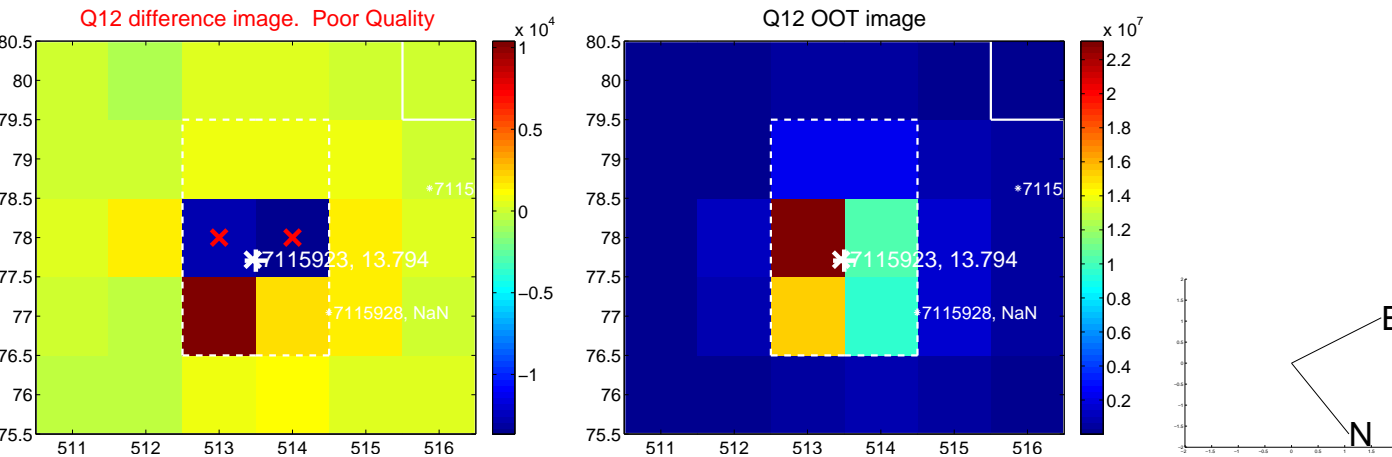
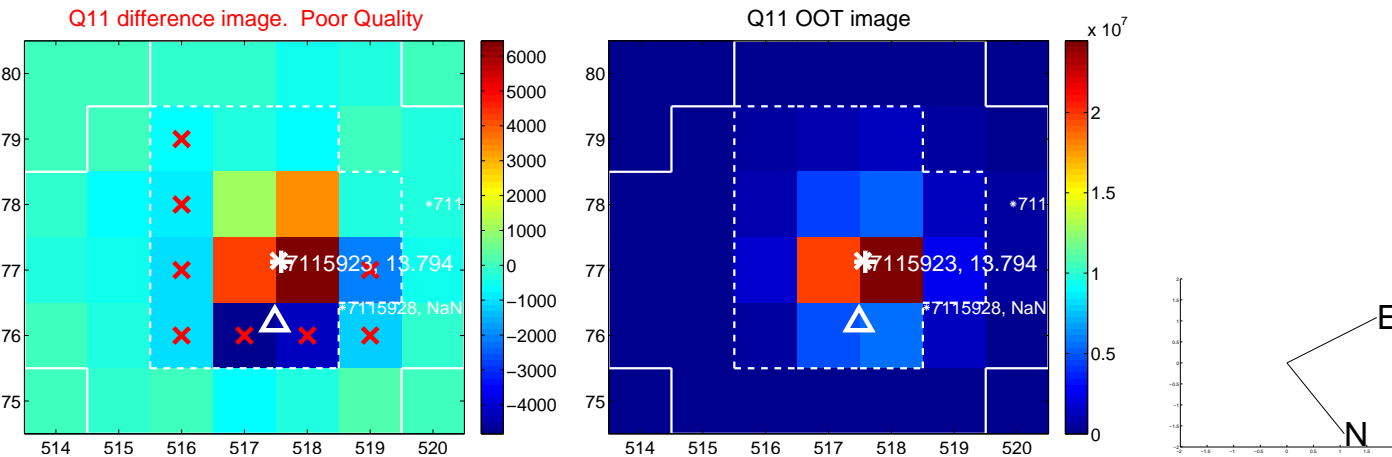
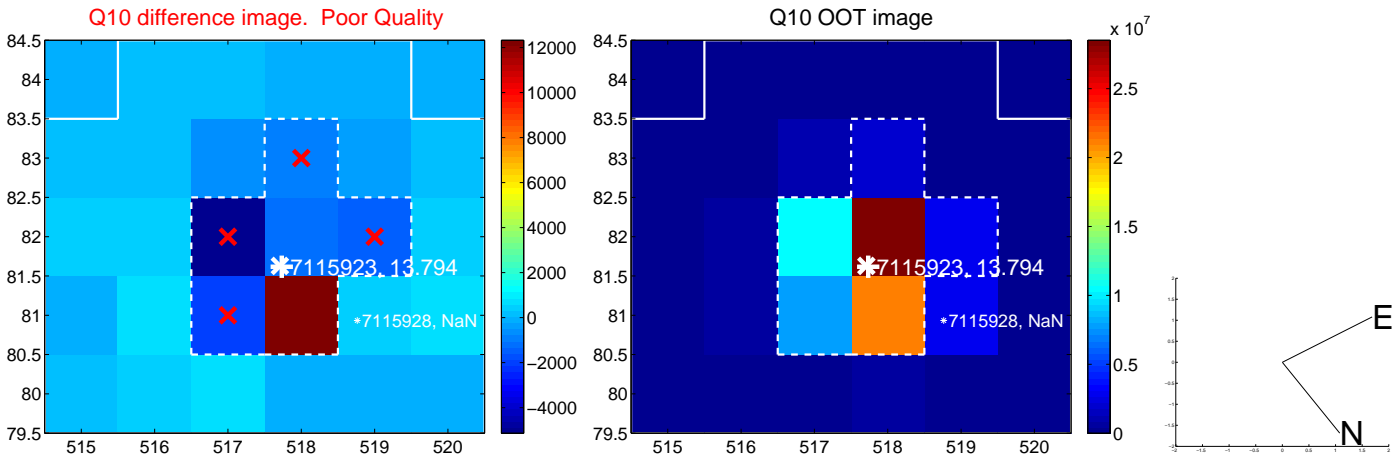
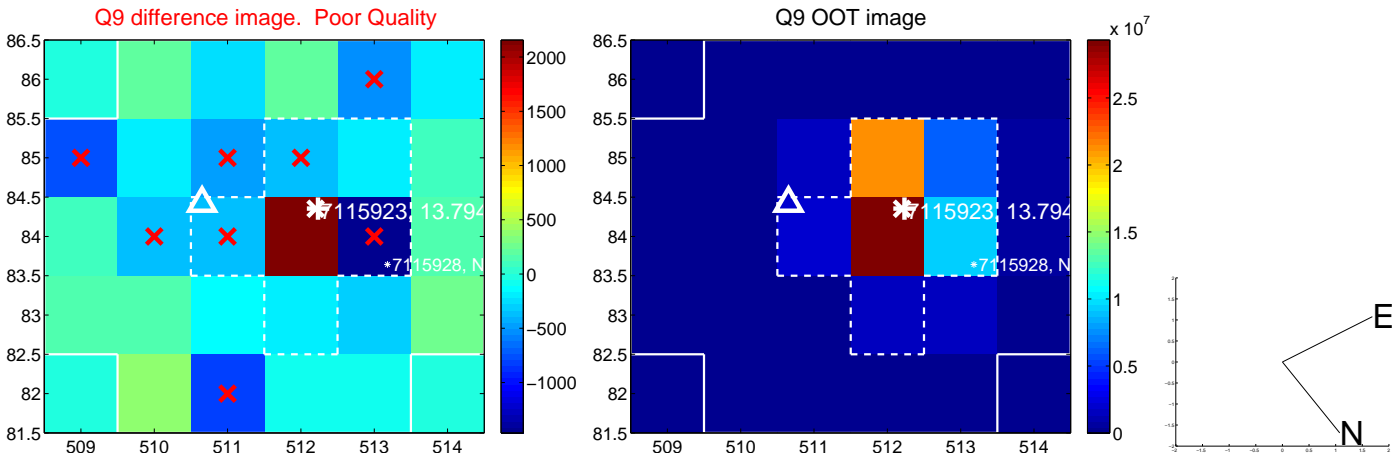
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



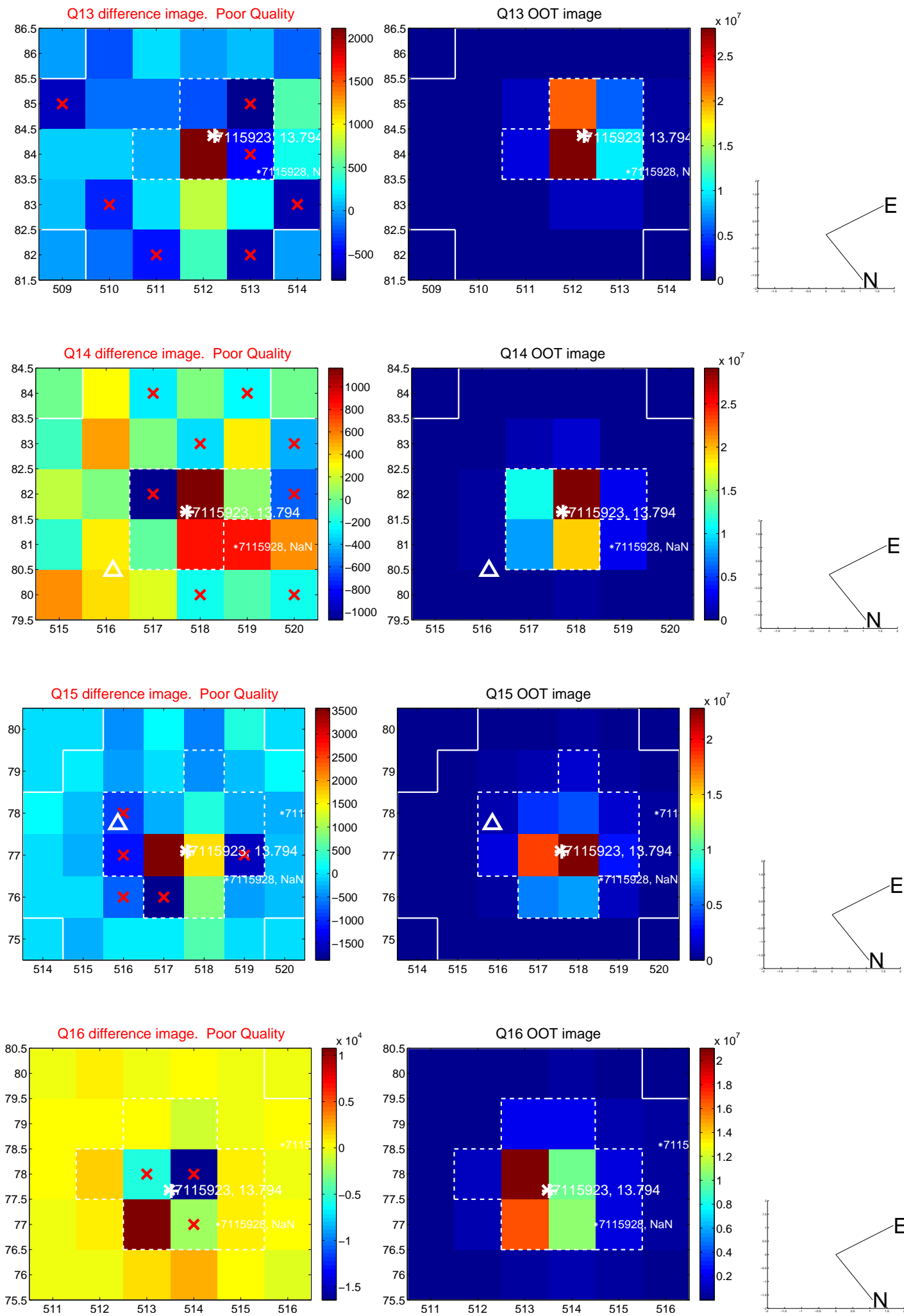
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



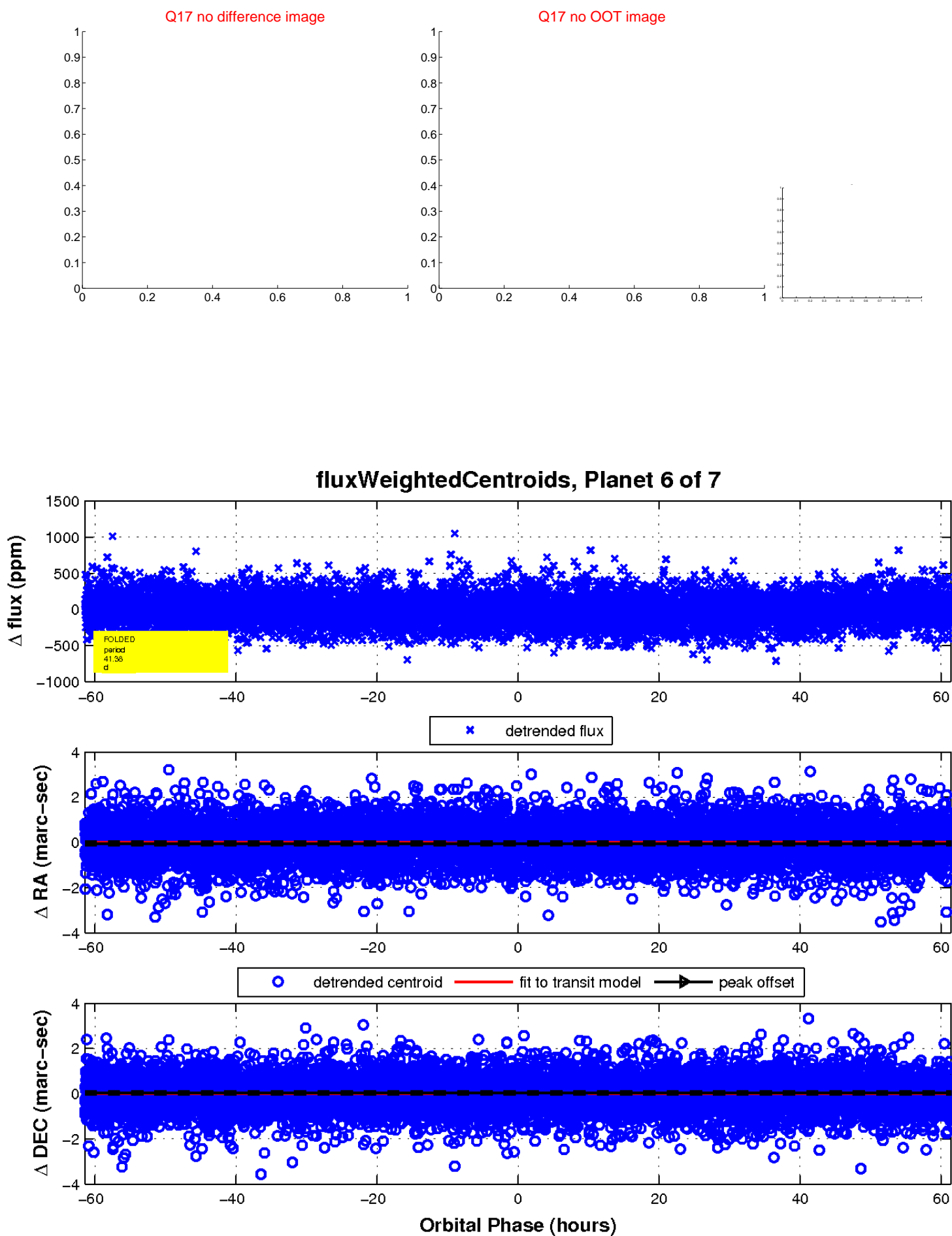
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

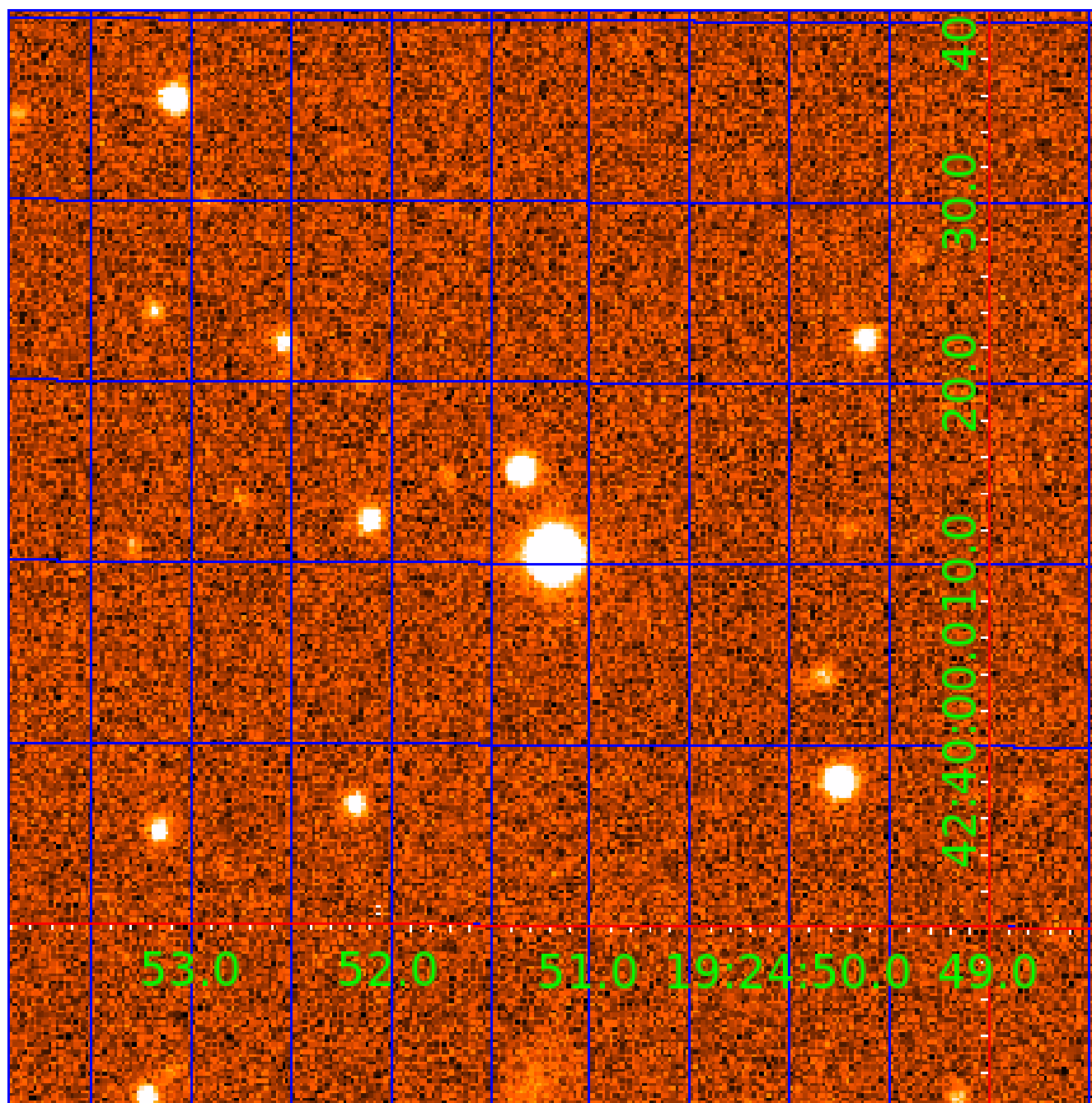


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007115923

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})
007115923-01	OBS	No	0.566751	131.875527	11.1	4.129	10.8	7.5	1.25	6431	0.42	12055.73
007115923-02	OBS	No	73.790726	199.484127	681.1	2.000	12.6	-1.0	1.25	6431	3.28	18.27
007115923-03	OBS	No	17.237644	135.695531	485.5	1.080	17.8	18.7	1.25	6431	2.95	126.98
007115923-04	OBS	No	24.537466	152.144594	384.8	0.979	10.4	13.1	1.25	6431	2.64	79.30
007115923-05	OBS	No	11.248109	138.601304	273.9	0.967	12.1	12.7	1.25	6431	2.23	224.36
007115923-06	OBS	No	41.379625	145.410891	69.9	20.474	13.3	6.8	1.25	6431	1.06	39.51
007115923-07	OBS	No	11.435674	137.291025	276.5	0.568	12.1	7.3	1.25	6431	2.33	219.47

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007115923-01	OBS	FP	0.00	1	0	1	1	LPP_DV—CENT_UNRESOLVED_OFFSET—EPHEM_MATCH
007115923-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—NO_FITS—CENT_NOFITS
007115923-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
007115923-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007115923-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_MEAS
007115923-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
007115923-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

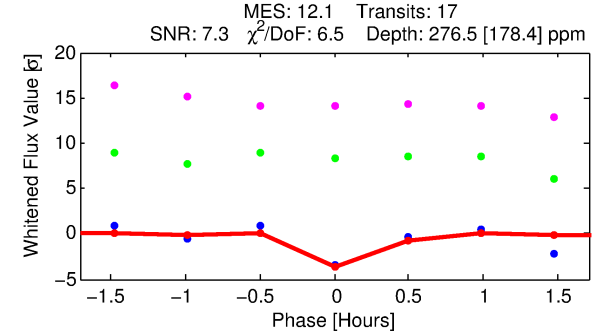
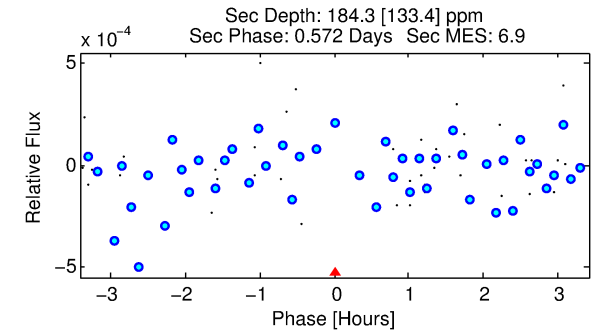
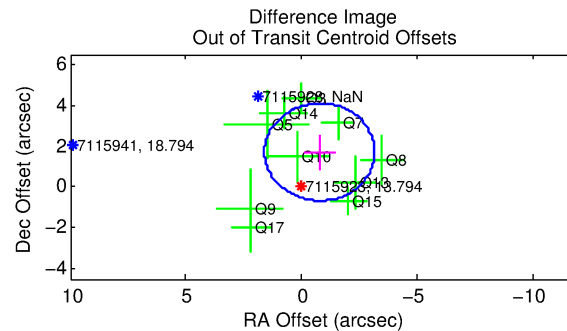
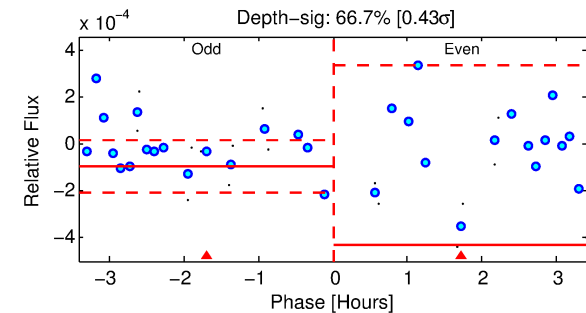
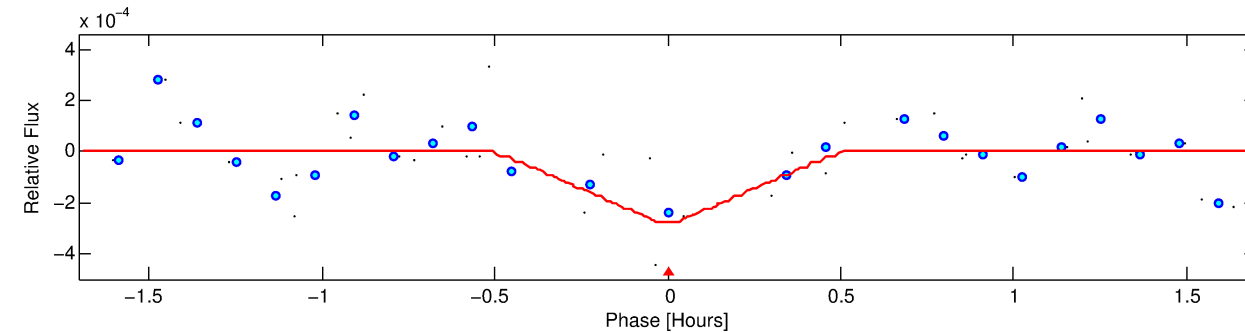
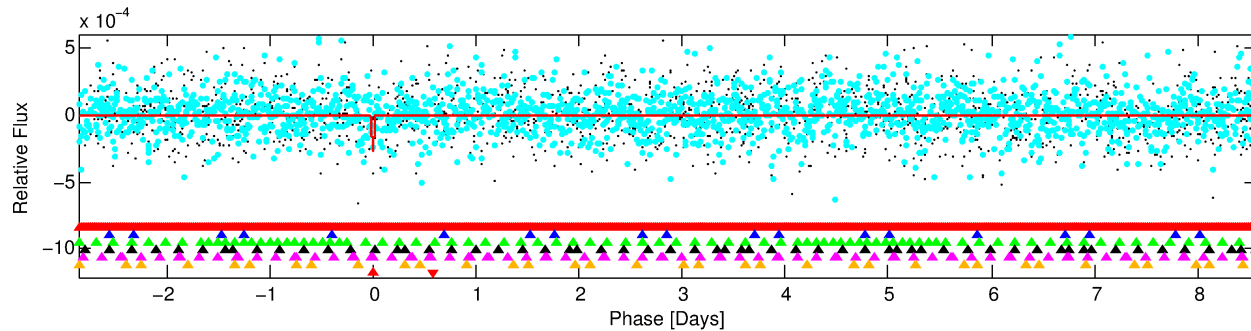
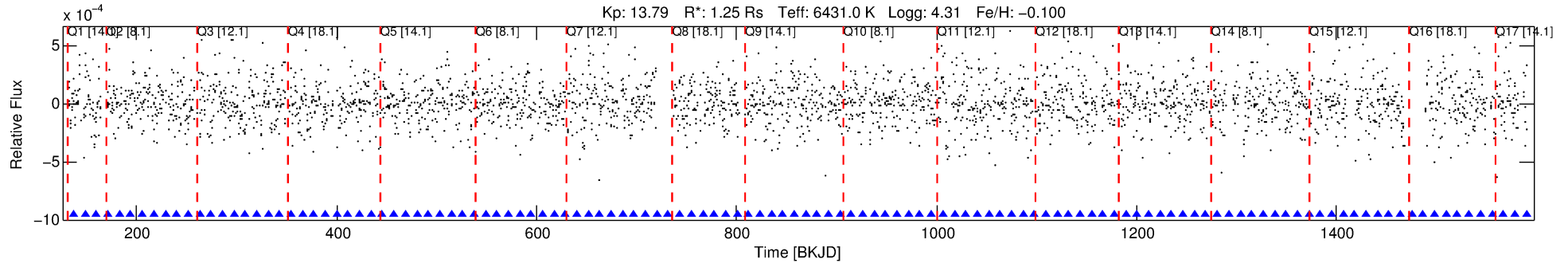
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007115923-07

No Significant Match Found

DV One-Page Summary

KIC: 7115923 Candidate: 7 of 7 Period: 11.436 d



DV Fit Results:

Period = 11.43567 [0.00018] d
Epoch = 137.2910 [0.0085] BKJD
Rp/R* = 0.0171 [0.0285]
a/R* = 105.41 [970.17]
b = 0.75 [5.33]
Seff = 219.47 [85.54]
Teq = 981 [96] K
Rp = 2.33 [3.96] Re
a = 0.1044 [0.0272] AU
Ag = 203.48 [699.13] [0.29 σ]
Teffp = 5731 [4898] K [0.97 σ]

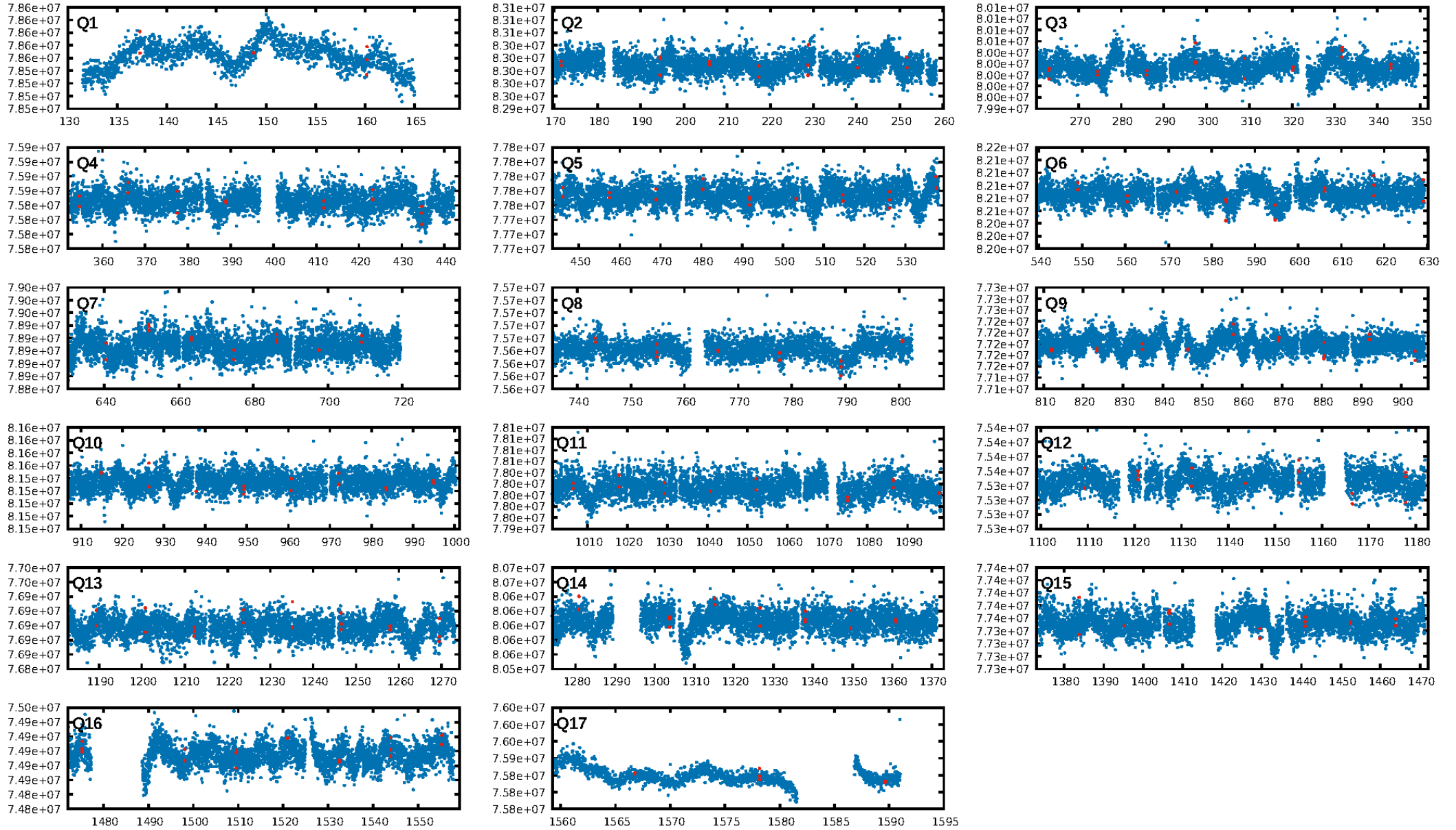
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.02 σ]
LongPeriod-sig: 100.0% [114.10 σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 6.3%
Bootstrap-pfa: 4.97e-13
RollingBand-fgt: 1.00 [16/16]
GhostDiagnostic-chr: 13.05
Centroid-sig: 13.4%
Centroid-so: 1.170 arcsec [1.44 σ]
OotOffset-rm: 1.884 arcsec [2.37 σ]
KicOffset-rm: 1.947 arcsec [2.44 σ]
OotOffset-st: 2/3/1/4 [10]
KicOffset-st: 2/3/1/4 [10]
DiffImageQuality-fgm: 0.10 [1/10]
DiffImageOverlap-fno: 0.00 [0/17]

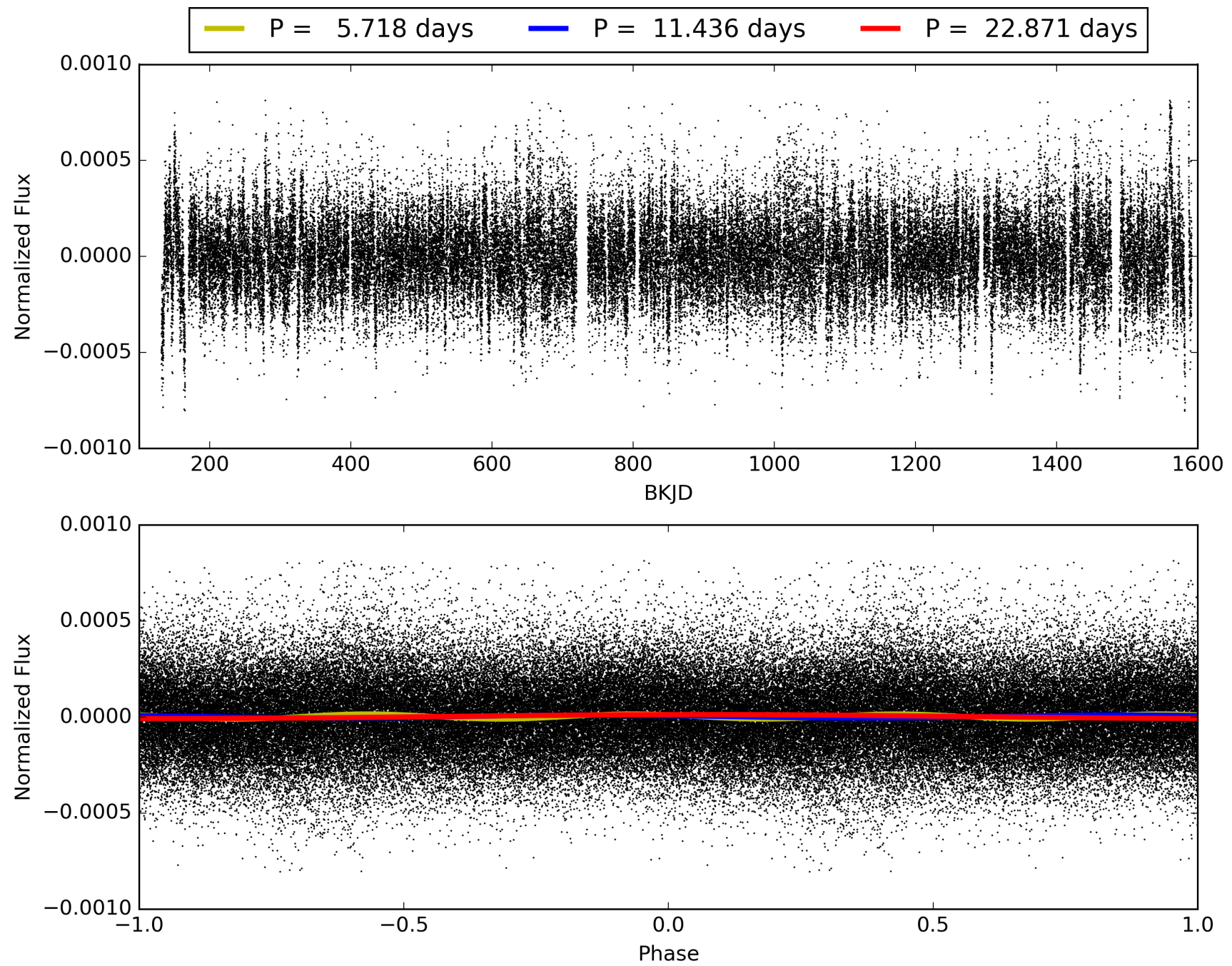
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:50:40 Z

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

TCE 007115923-07, PDC Light Curves

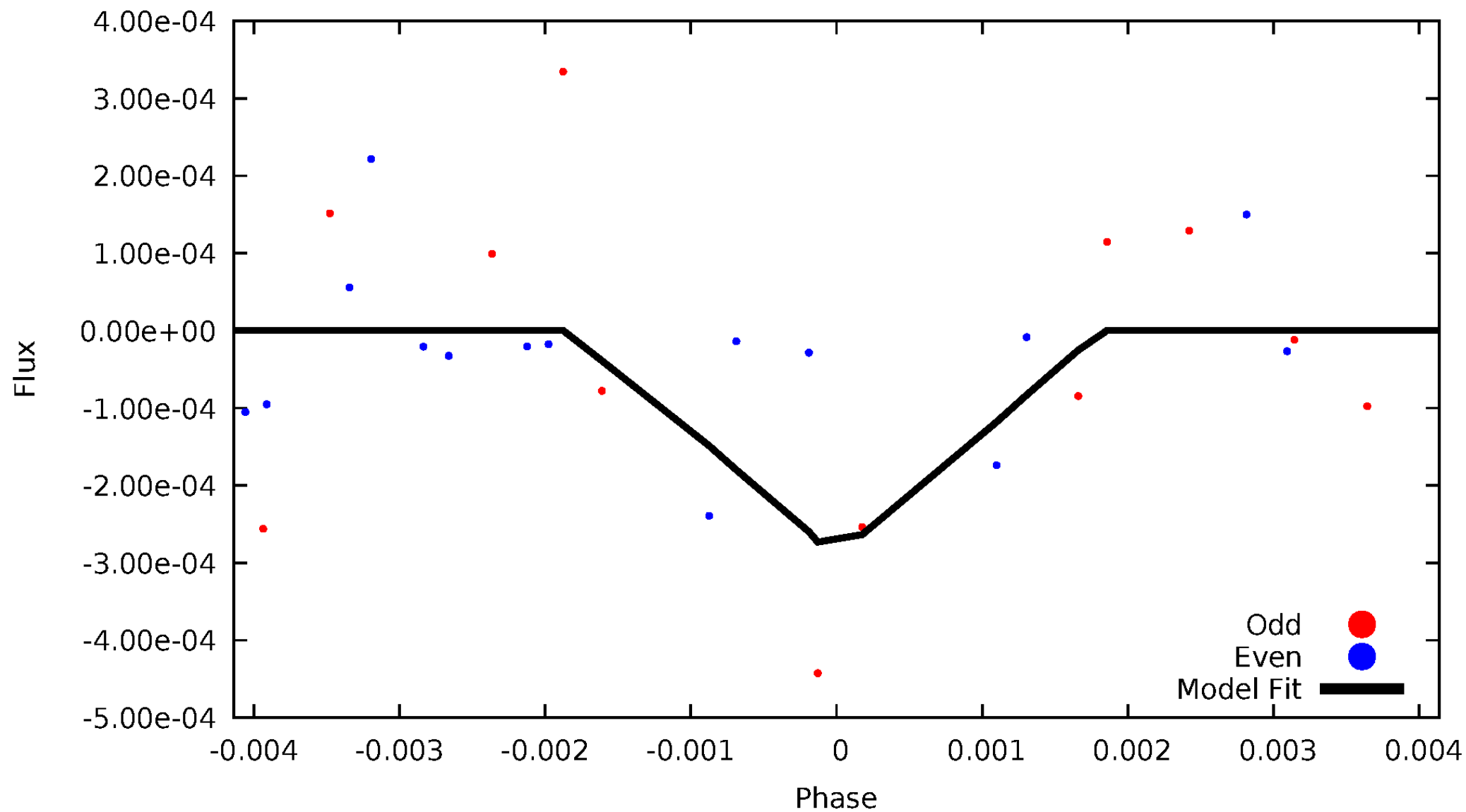


TCE 007115923-07



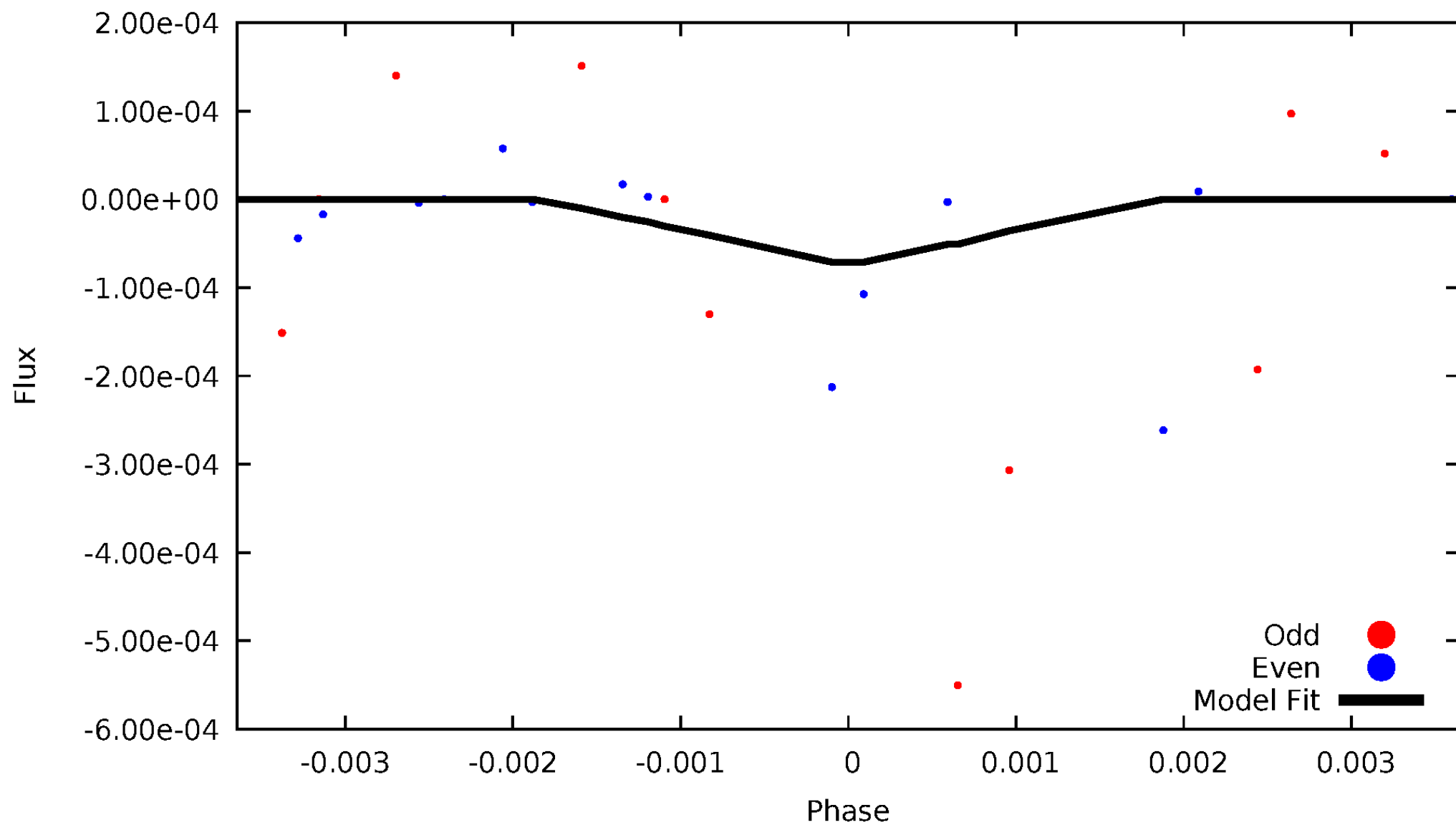
DV Odd/Even

TCE 007115923-07

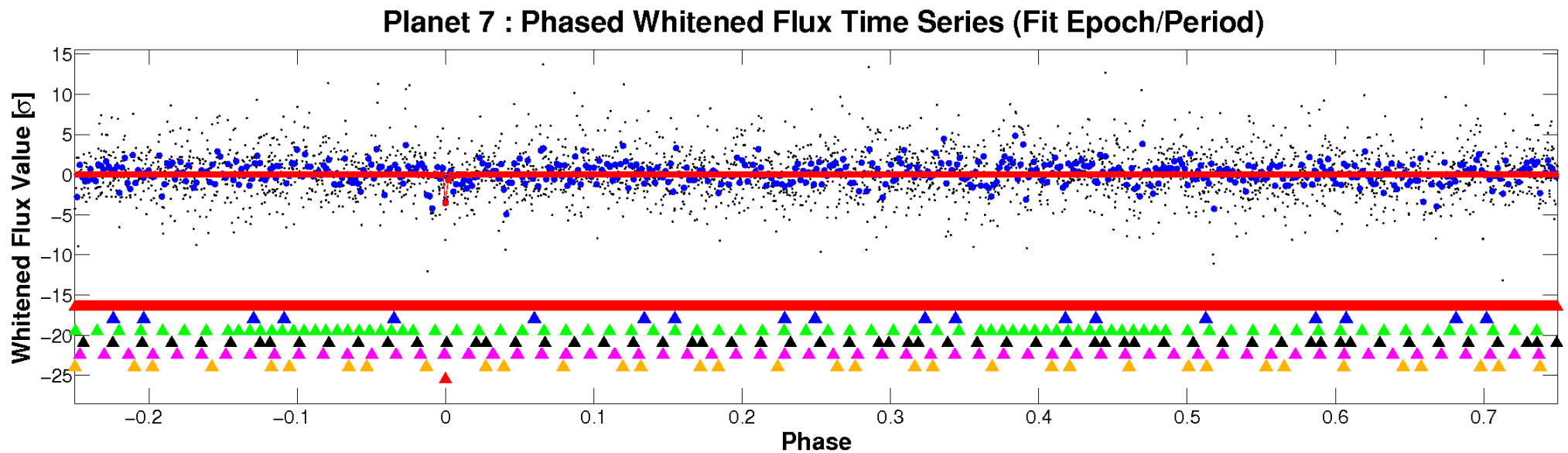
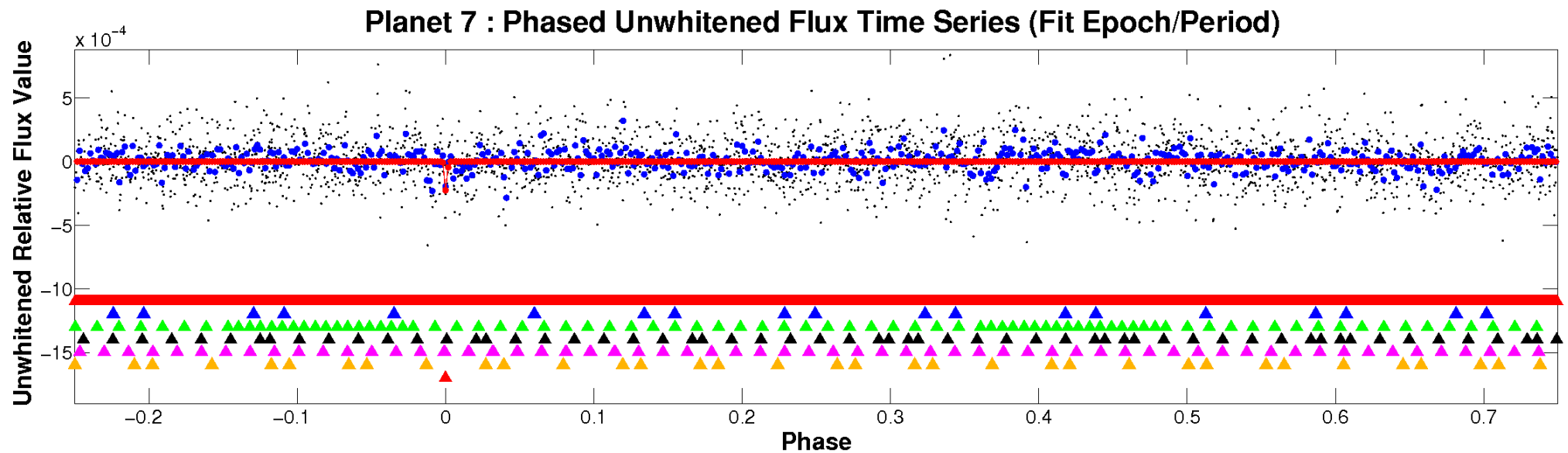


ALT Odd/Even

TCE 007115923-07

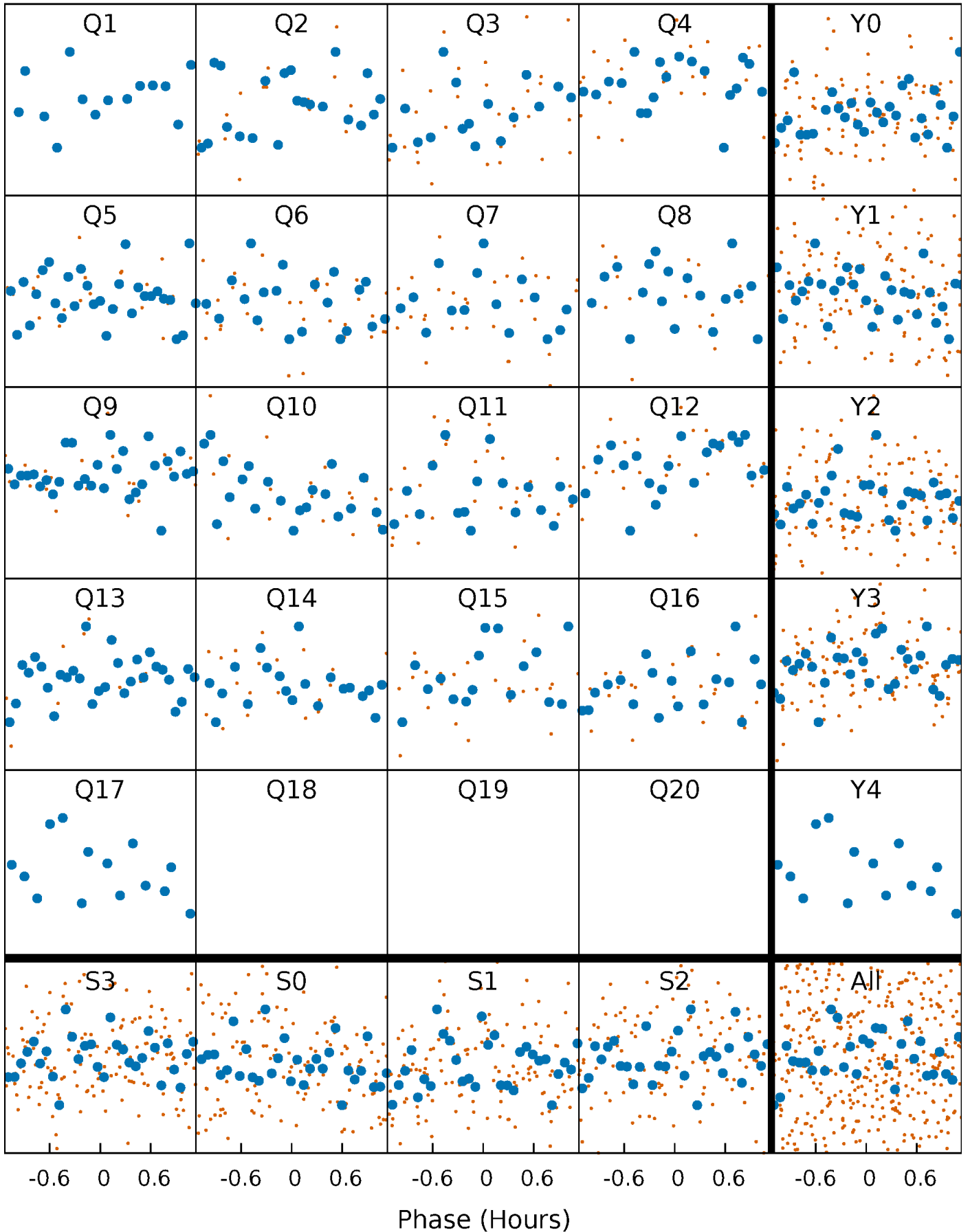


Non-Whitened Vs. Whitened Light Curve



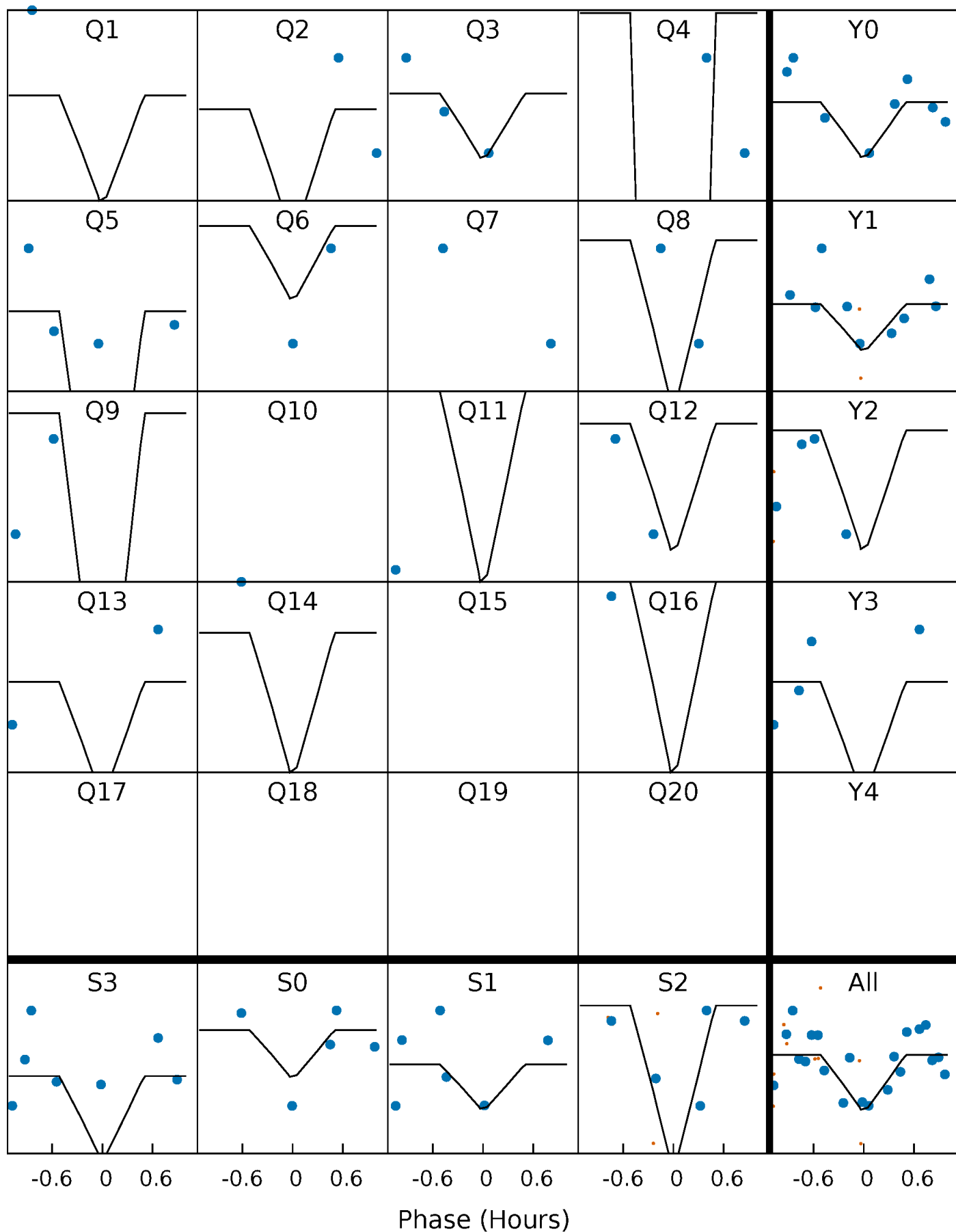
PDC Quarter-Phased Transit Curves

TCE 007115923-07 P= 11.435674 Days $T_0=137.291025$ (BKJD)



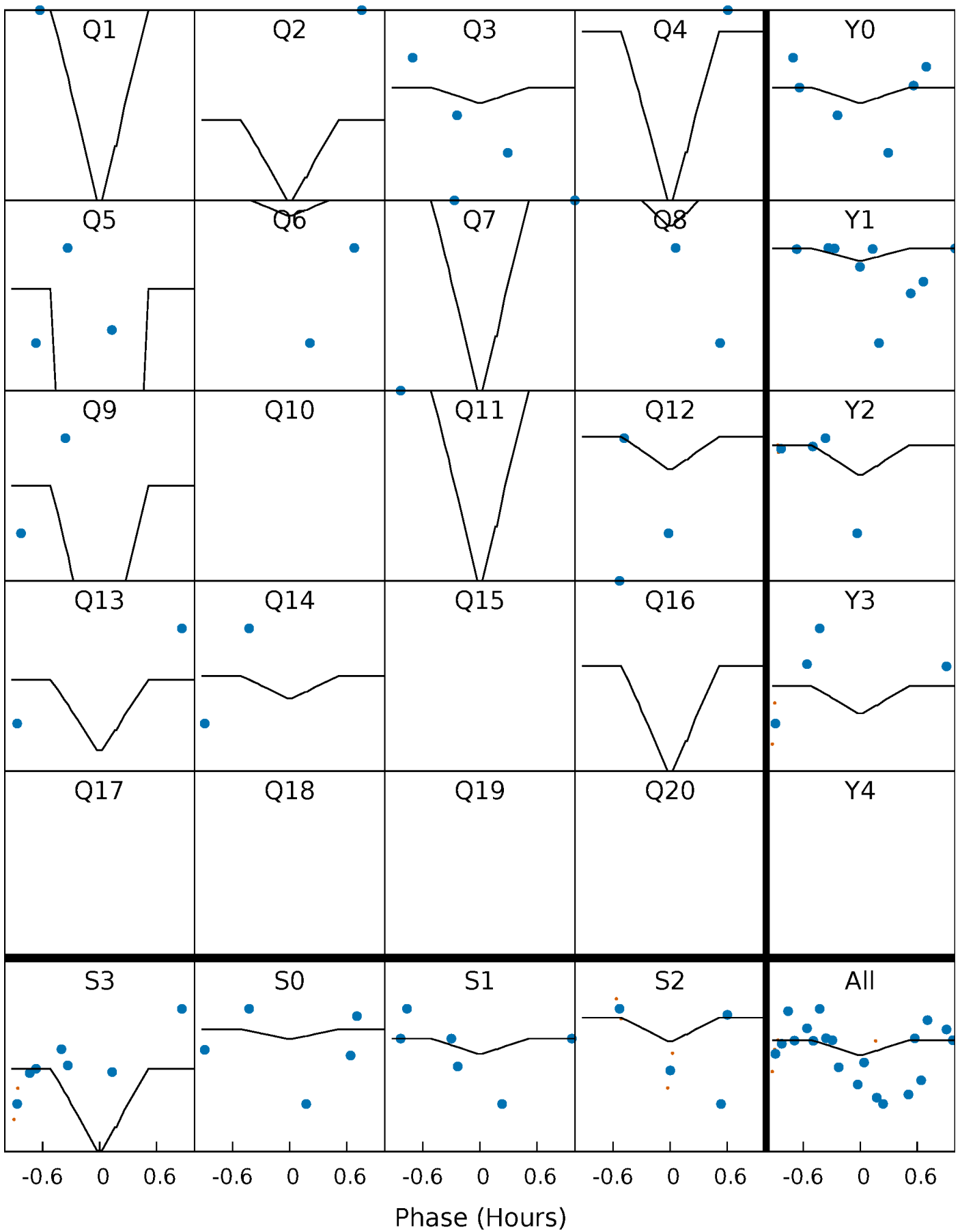
DV Quarter-Phased Transit Curves

TCE 007115923-07 P= 11.435674 Days $T_0=137.291025$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

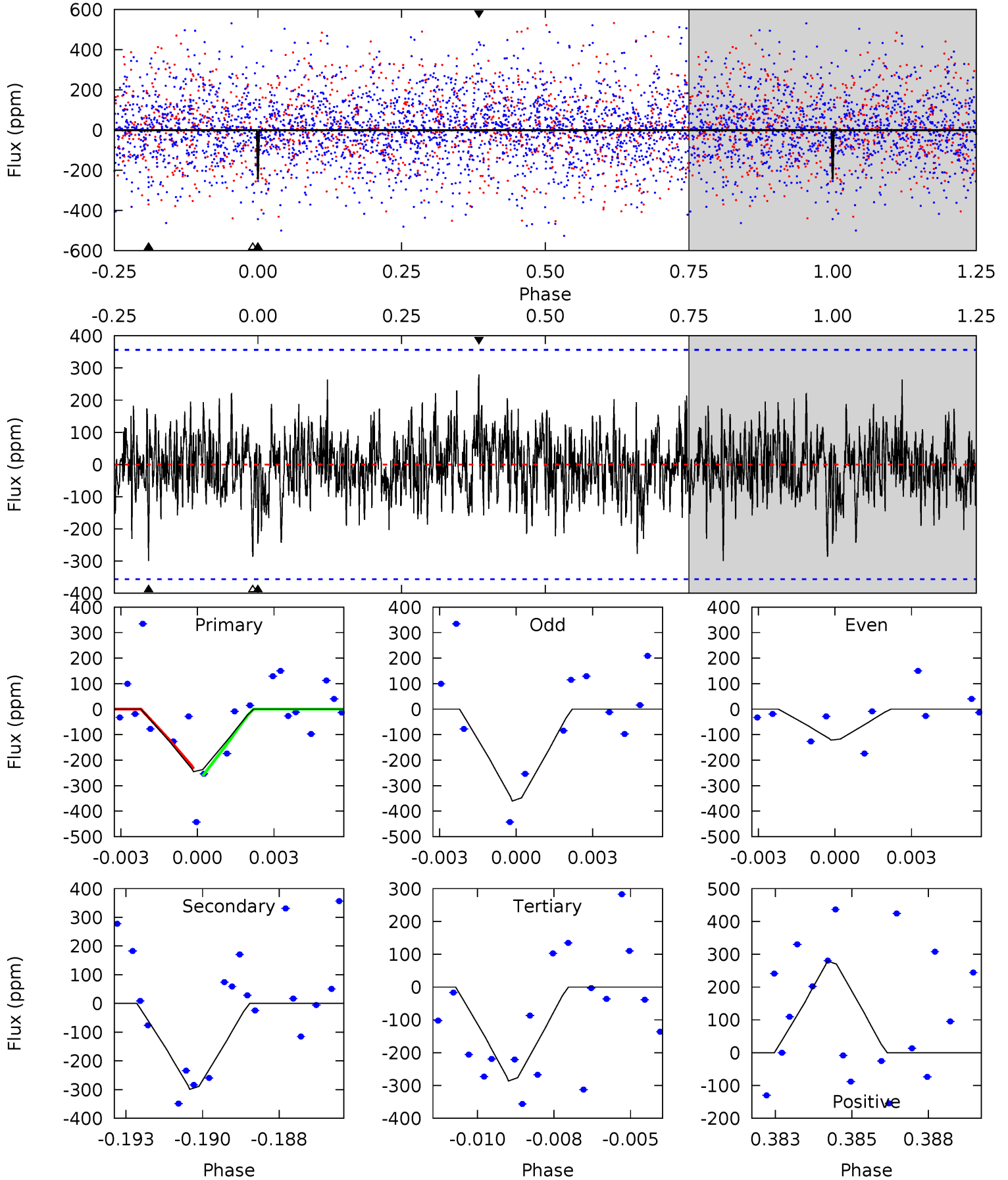
TCE 007115923-07 P= 11.435675 Days $T_0=137.282062$ (BKJD)



DV Model-Shift Uniqueness Test

007115923-07, $P = 11.435674$ Days, $E = 125.855351$ Days

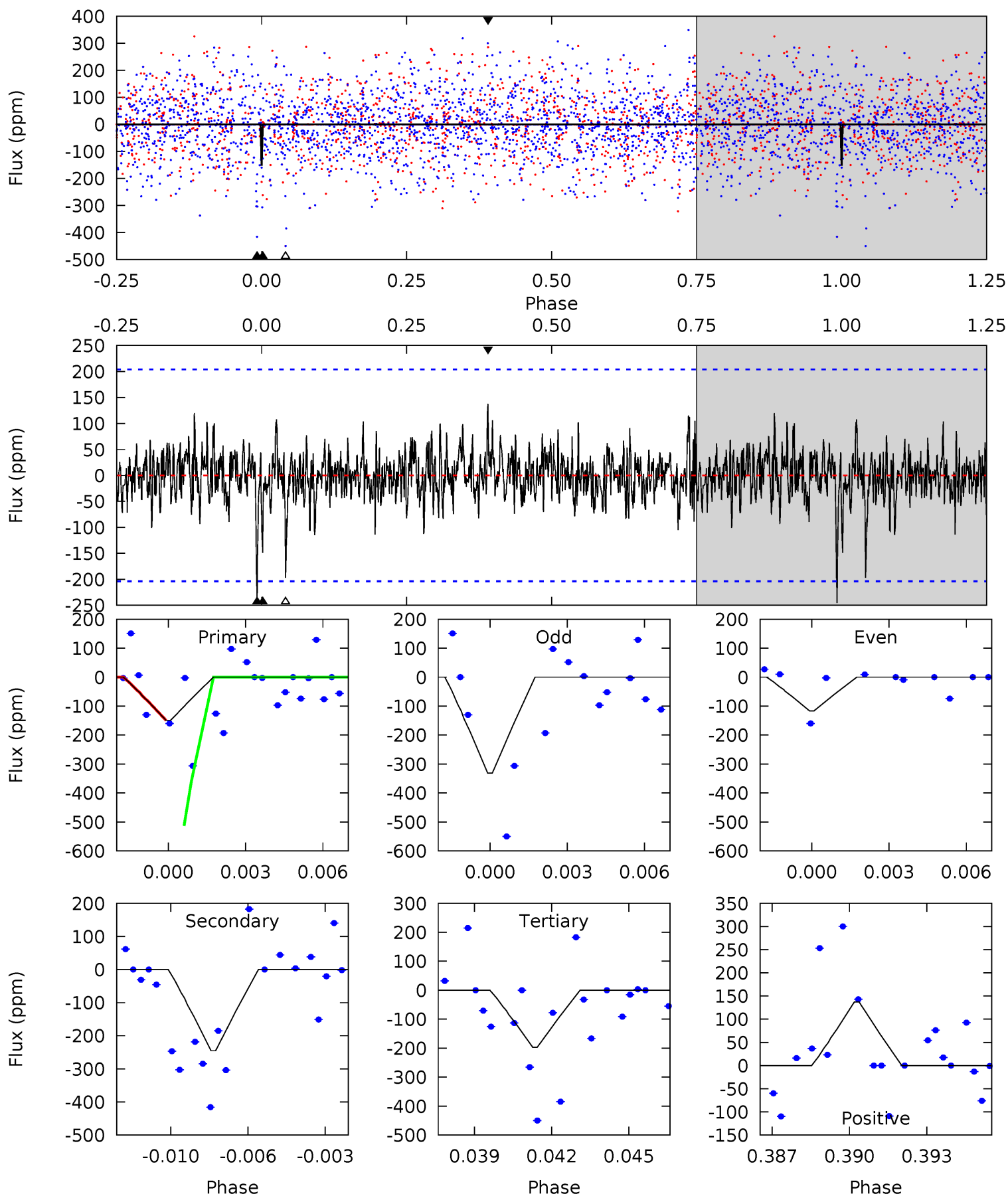
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.64	4.44	4.25	4.15	5.28	3.02	1.19	-0.61	-0.51	0.19	0.29	1.73	1.06	0.48	0.21



Alt Model-Shift Uniqueness Test

007115923-07, P = 11.435675 Days, E = 125.846387 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.83	6.30	5.06	3.53	5.24	2.95	0.95	-1.22	0.30	1.25	2.77	3.14	1.00	0.36	4.24



Stellar Parameters For KIC 007115923

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6431^{+144}_{-208}	$4.309^{+0.105}_{-0.195}$	$-0.100^{+0.250}_{-0.300}$	$1.249^{+0.400}_{-0.200}$	$1.159^{+0.185}_{-0.152}$	$0.837^{+0.410}_{-0.441}$
	+2%/-3%	+2%/-5%	+250%/-300%	+32%/-16%	+16%/-13%	+49%/-53%
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 007115923-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-299 ± 67	$4.01^{+3.14}_{-2.76}$	1385^{+94}_{-79}	5058^{+4345}_{-1057}	113^{+955}_{-80}
Alt.	-245 ± 39	$3.18^{+3.05}_{-2.20}$	1383^{+102}_{-81}	5379^{+4693}_{-1249}	150^{+1215}_{-113}

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 $A_{obs} \gg 1.0$

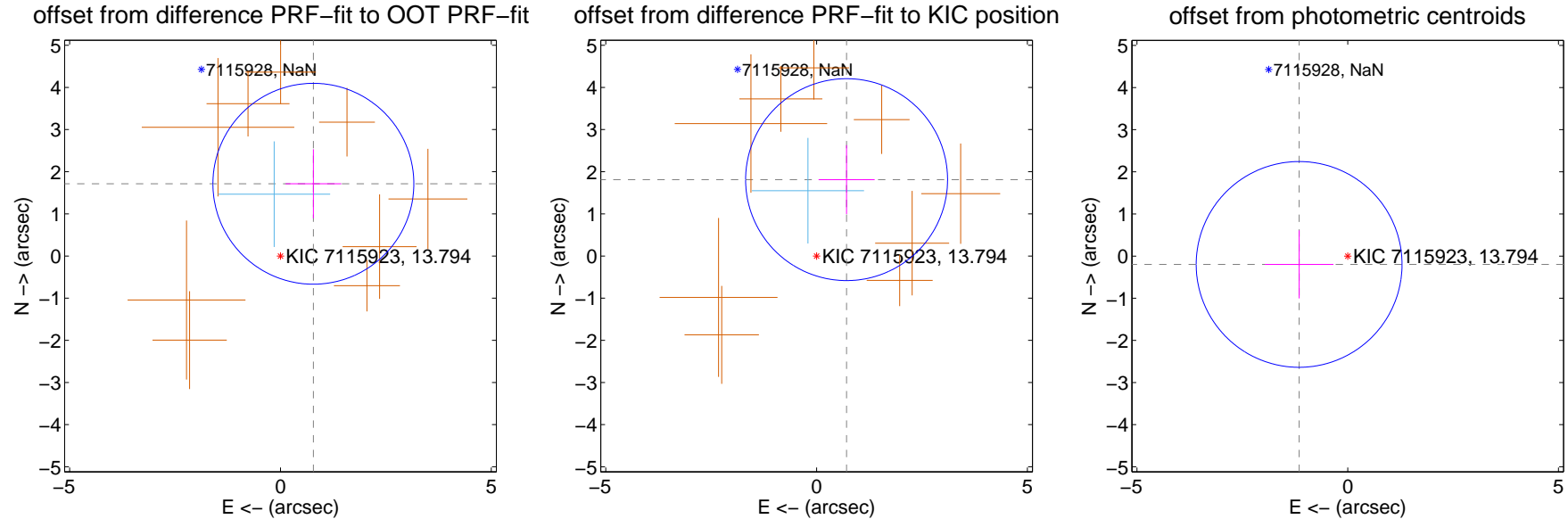
DV Centroid Data

Supplemental centroid analysis for 007115923-07. Kepler magnitude: 13.79. Transit SNR 7.33

There are 1 quarters with good PRF difference image offsets

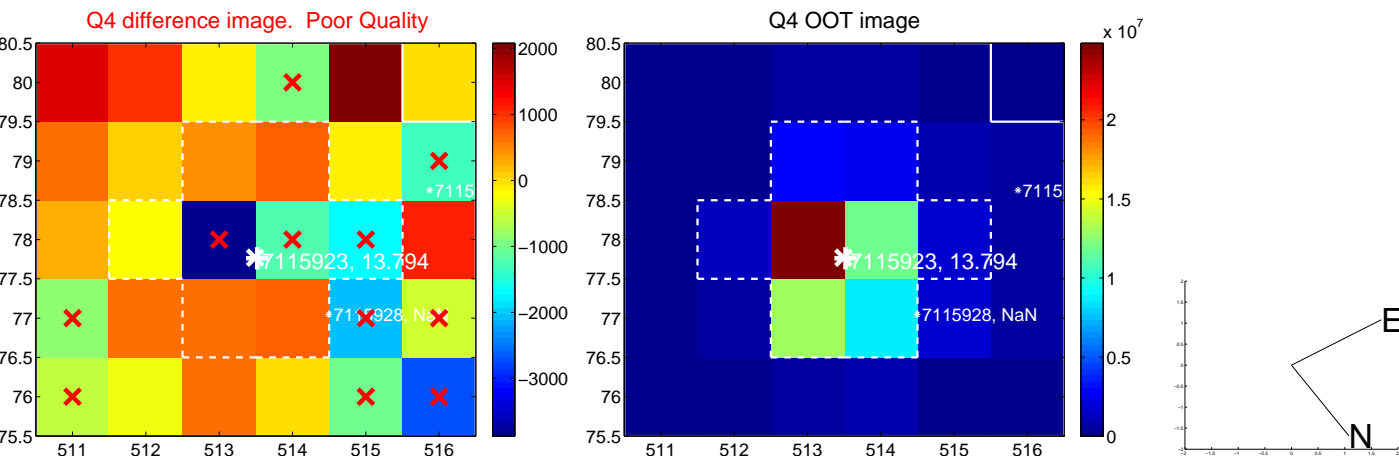
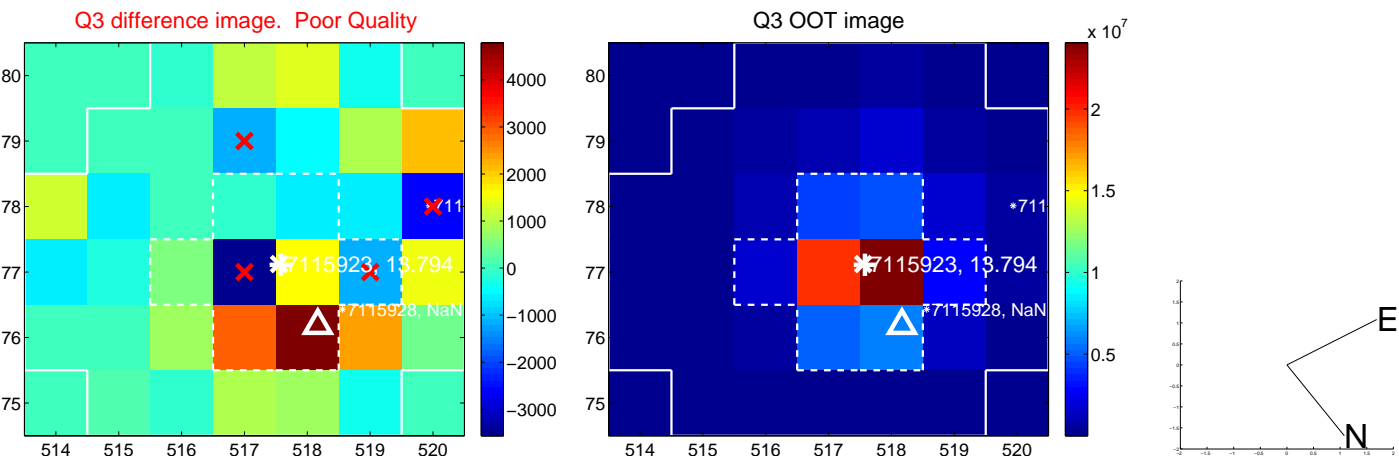
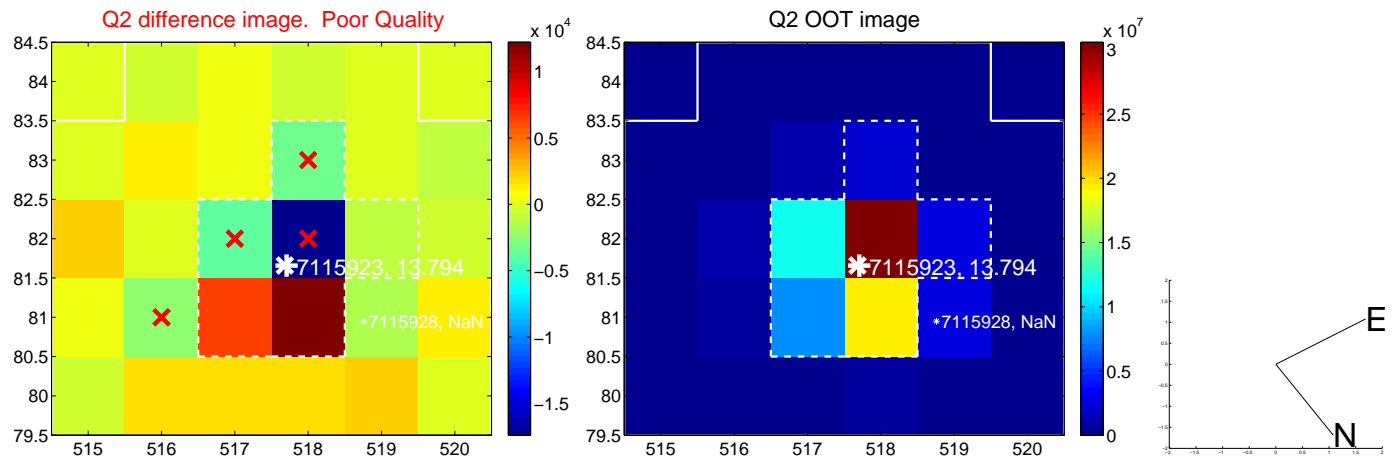
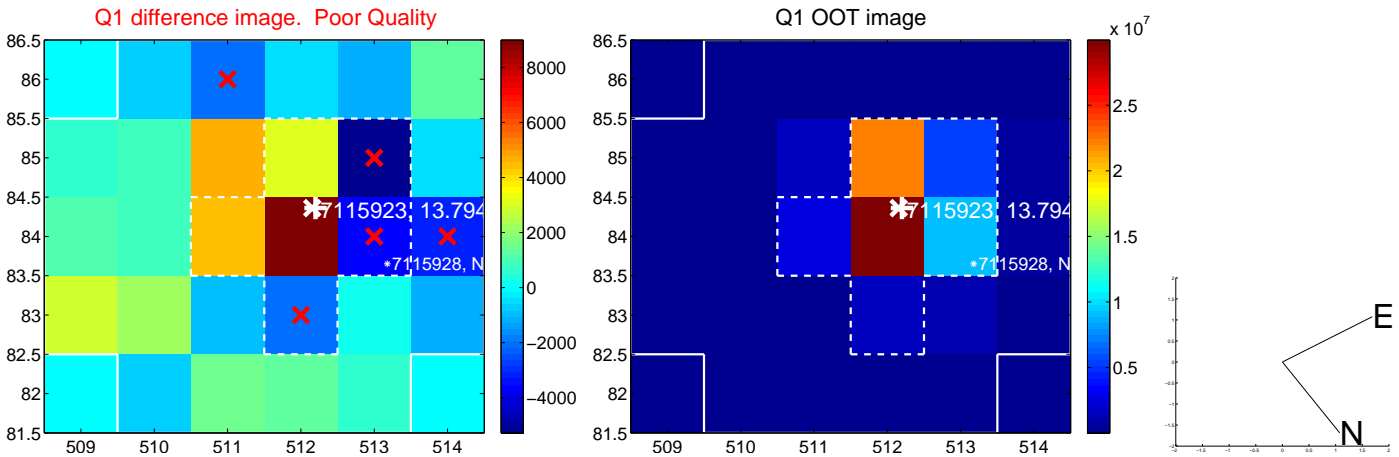
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.884 ± 0.794	2.37	-0.781 ± 0.662	1.714 ± 0.819
PRF-fit source offset from KIC position	1.947 ± 0.798	2.44	-0.712 ± 0.665	1.812 ± 0.817
photometric centroid source offset	1.17 ± 0.81	1.44	1.15 ± 0.81	-0.20 ± 0.81

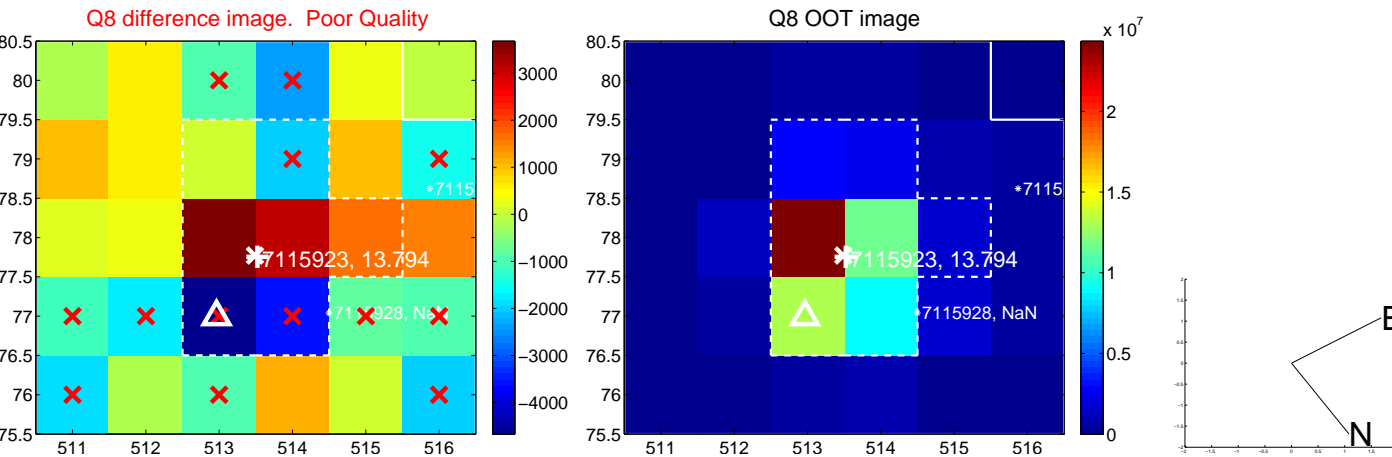
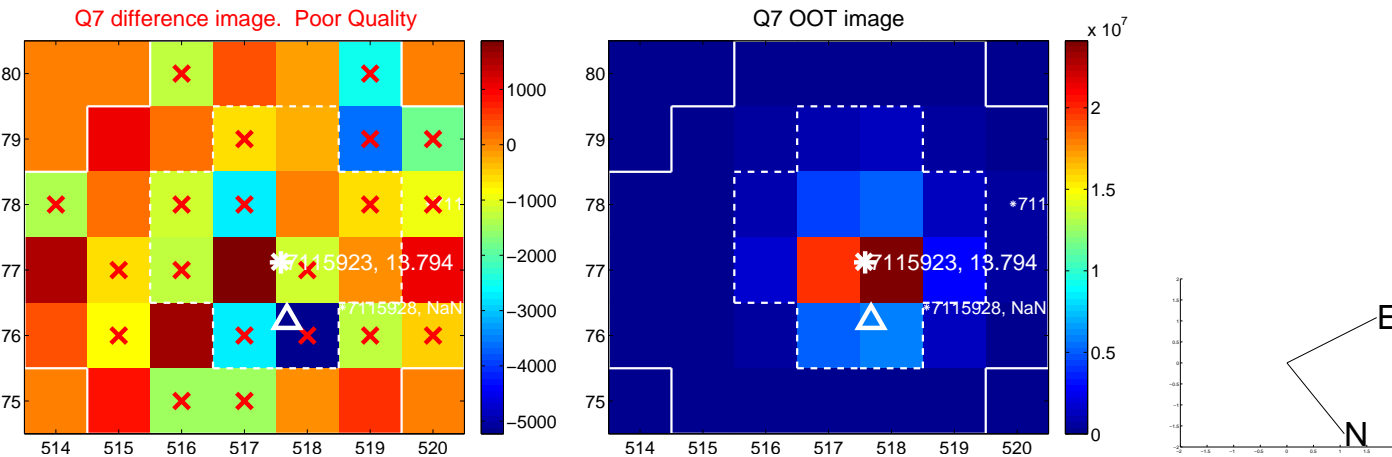
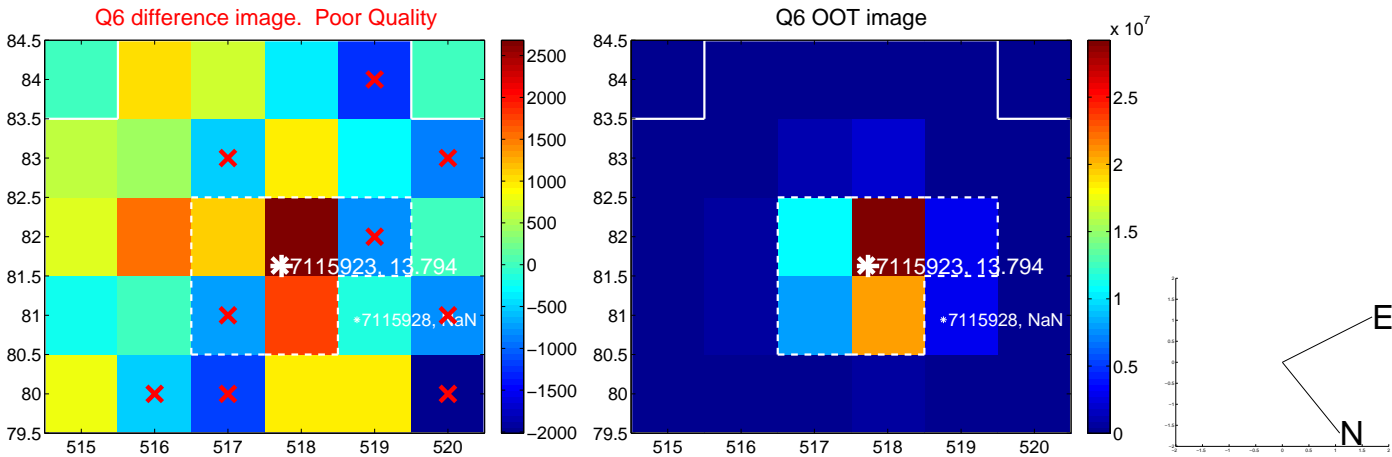
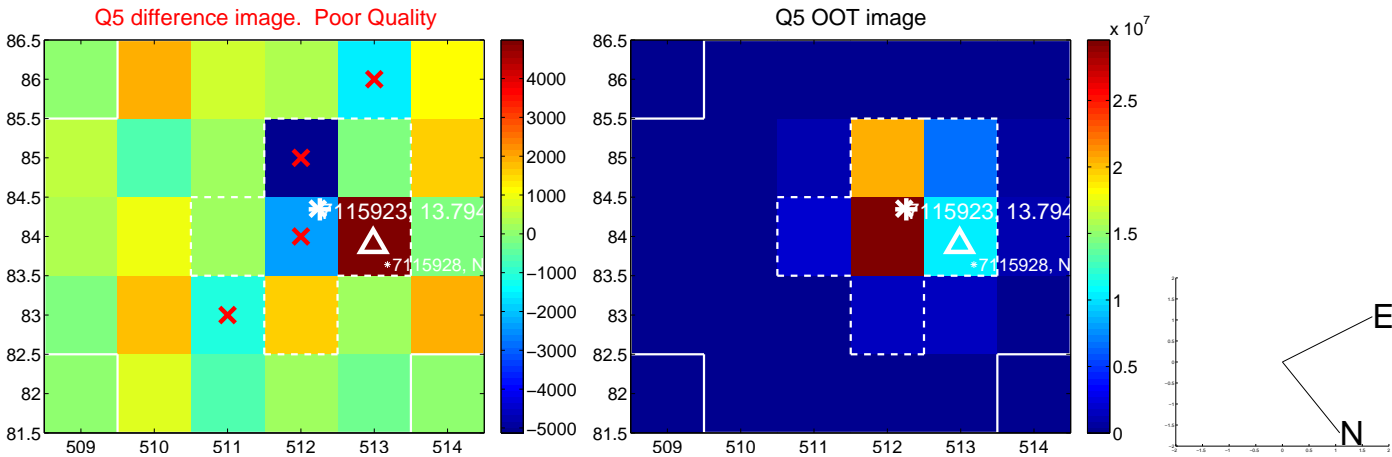


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

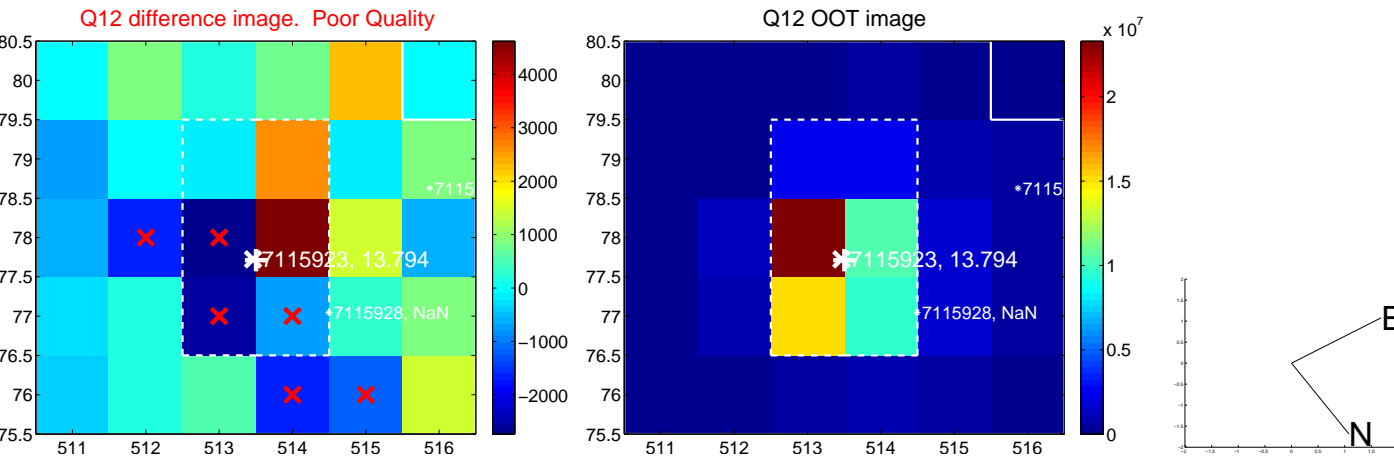
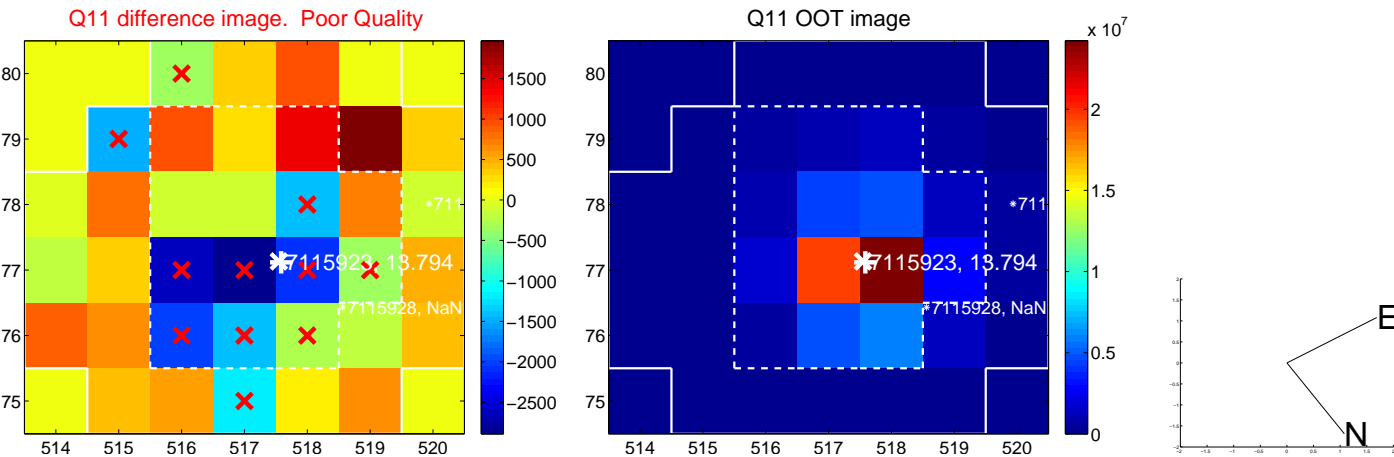
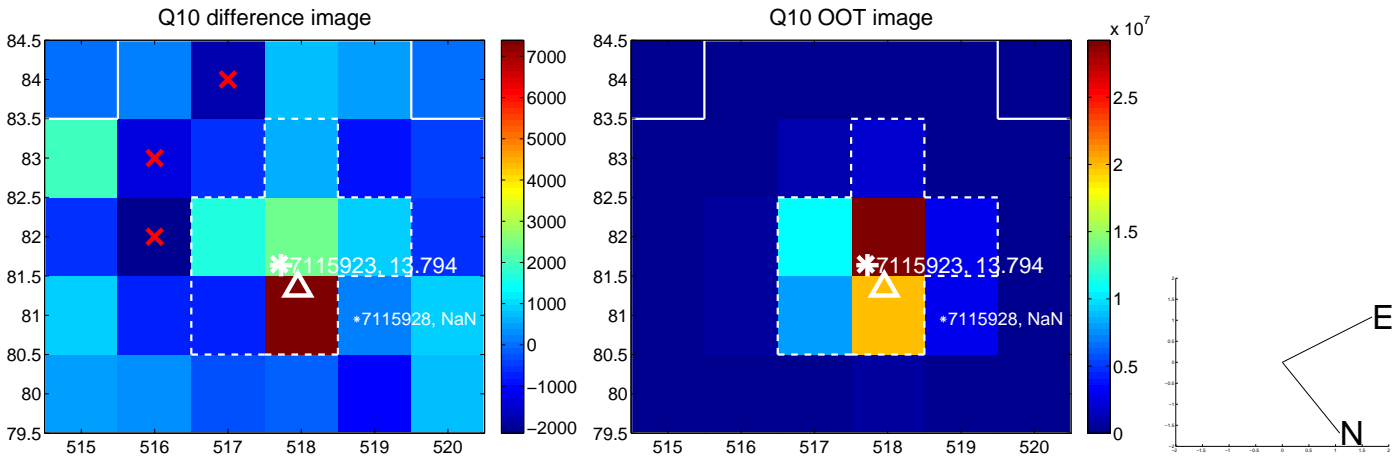
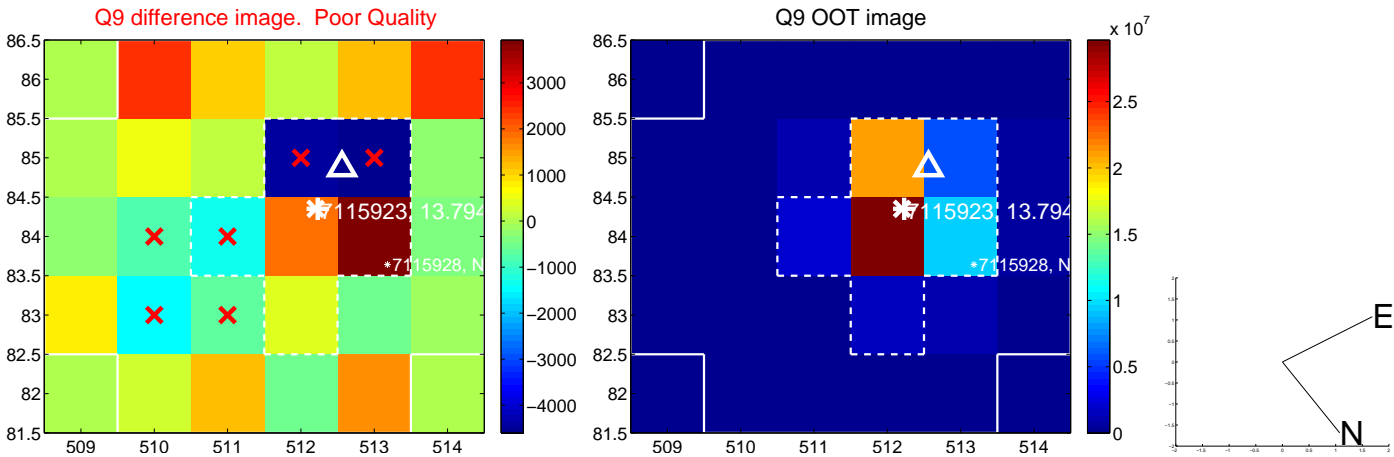
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



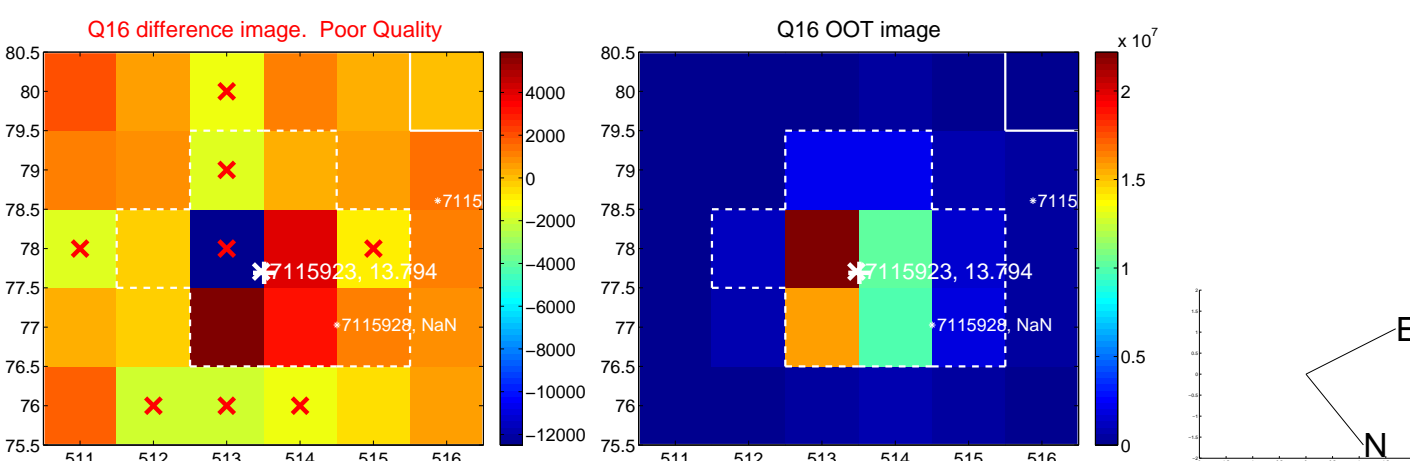
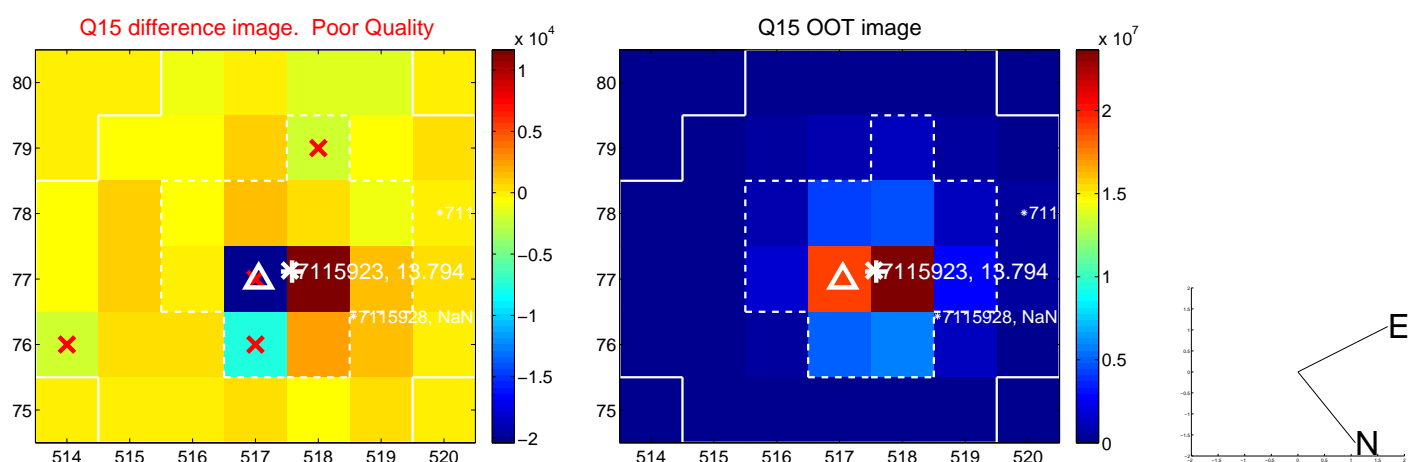
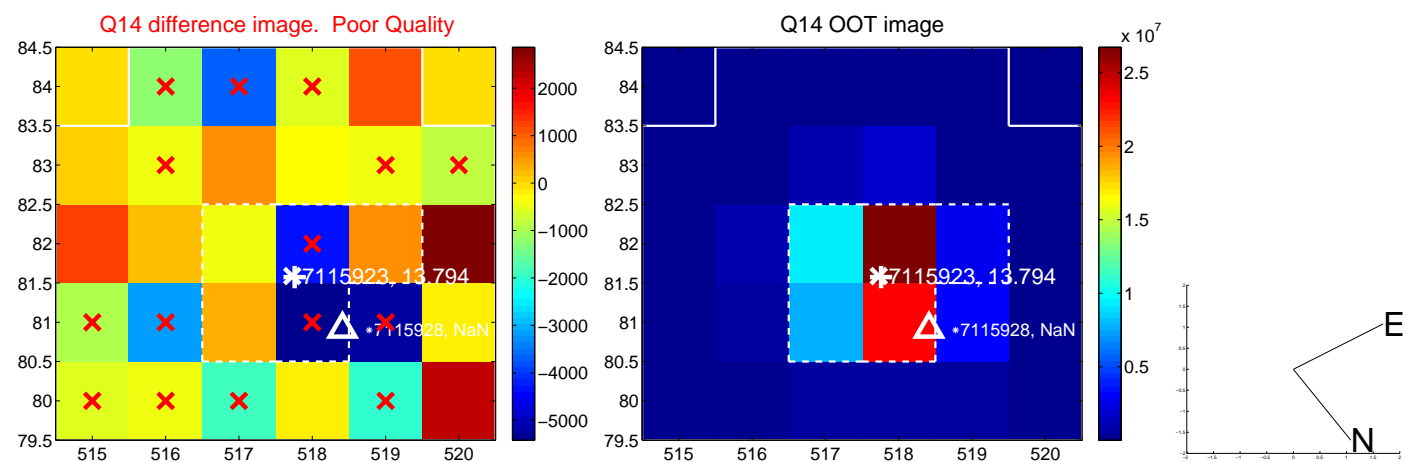
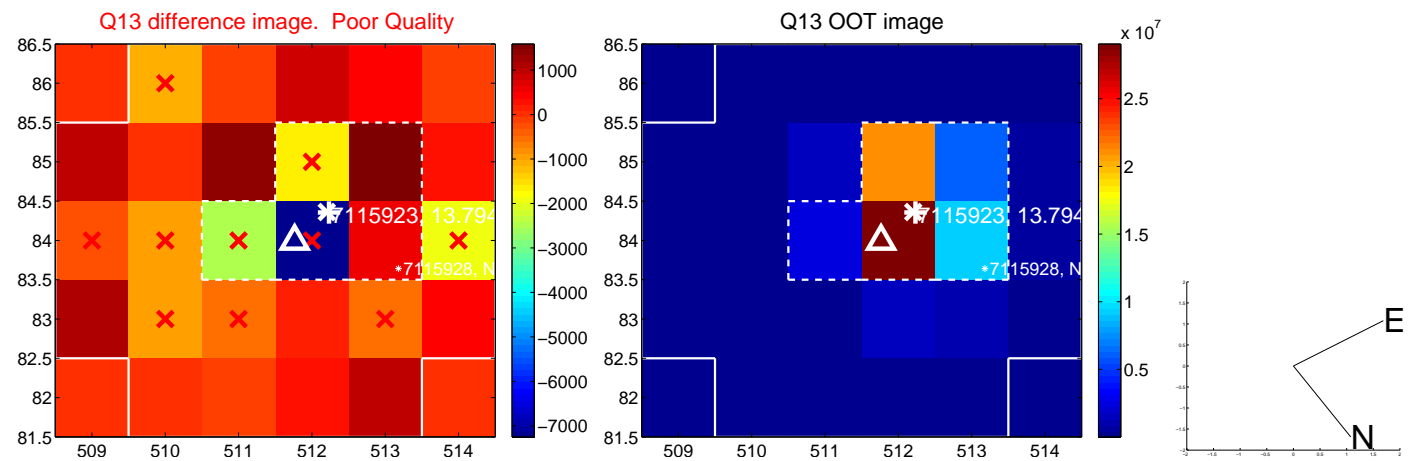
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



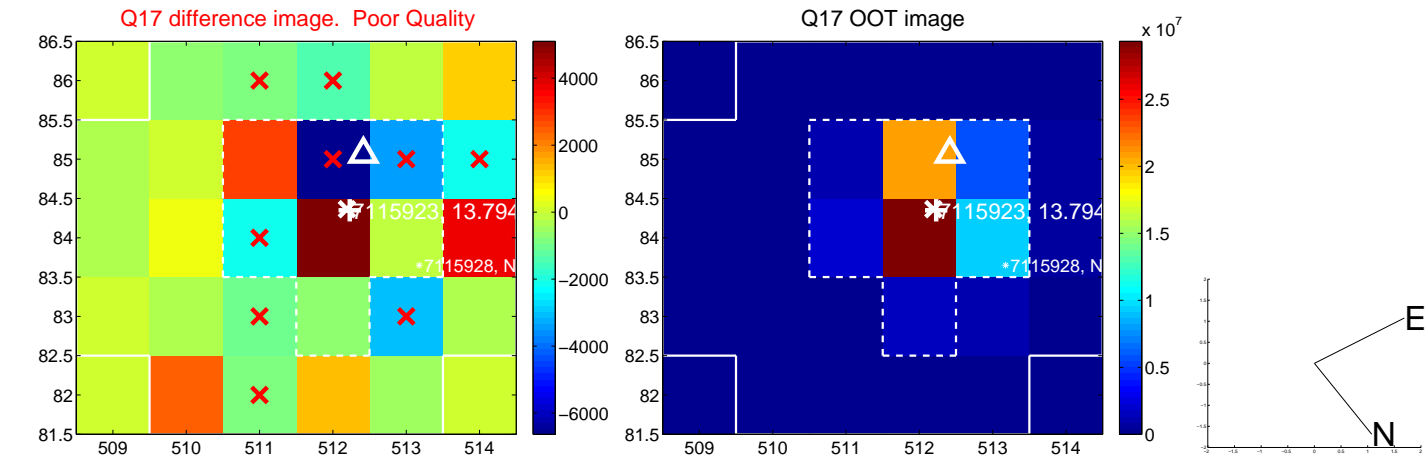
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



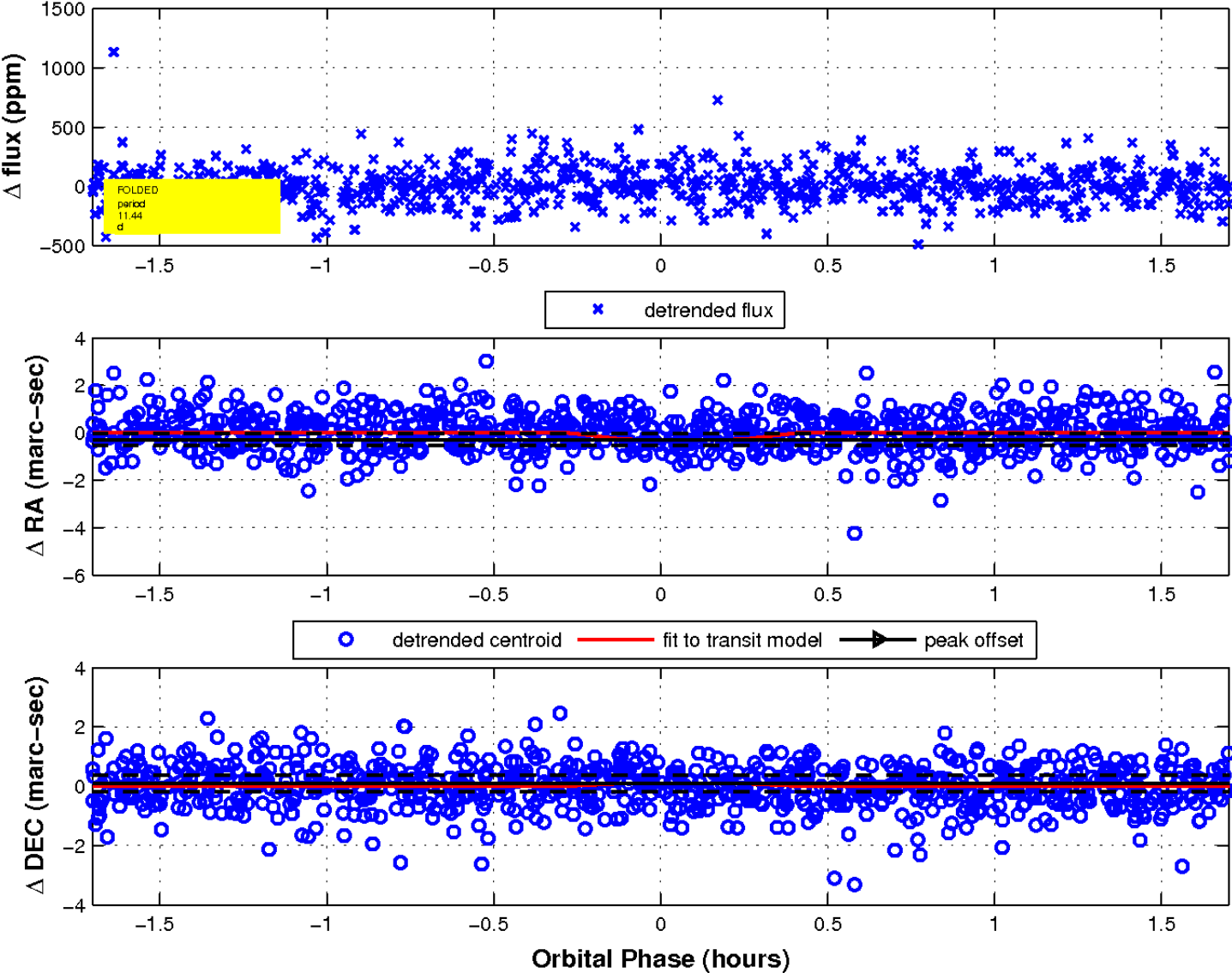
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 7 of 7



UKIRT Image

Declination

