

KIC 004773133

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})
004773133-01	OBS	No	1.318945	132.675957	6.8	7.304	7.7	7.6	1.88	9602	0.51	28663.11
004773133-02	OBS	No	138.005645	136.985104	85.6	6.389	8.8	5.4	1.88	9602	1.93	58.13
004773133-03	OBS	No	182.888566	250.009015	164.1	3.296	8.7	8.4	1.88	9602	2.73	39.94
004773133-04	OBS	No	157.906897	134.030926	108.4	4.404	7.8	7.3	1.88	9602	2.20	48.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004773133-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
004773133-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004773133-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
004773133-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_UNCERTAIN

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

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

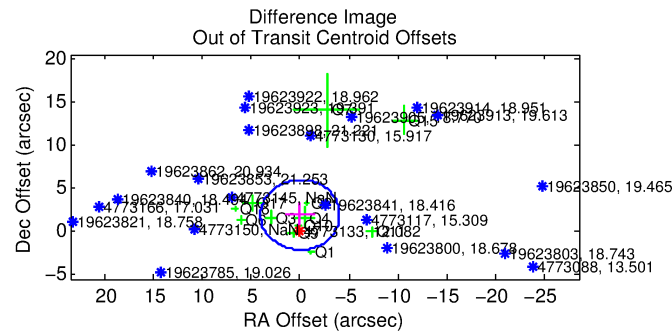
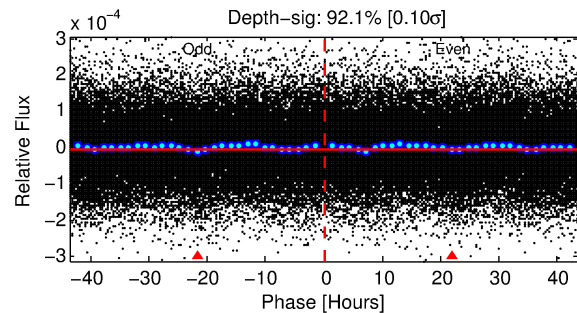
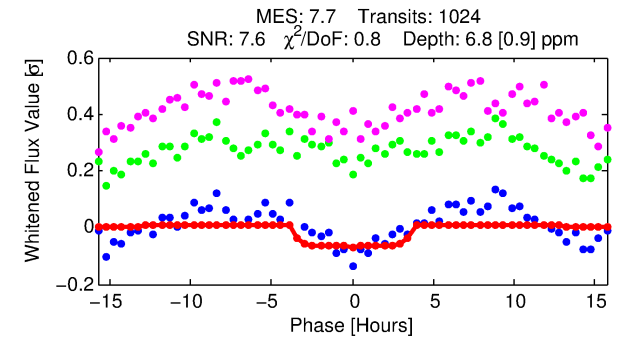
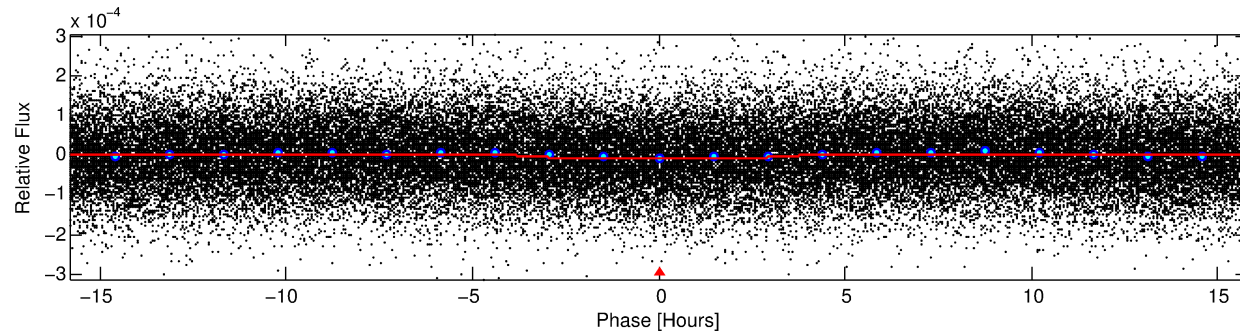
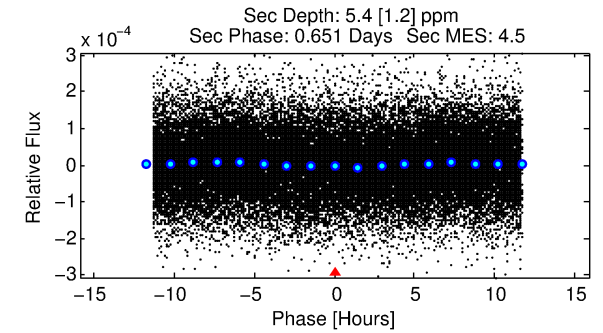
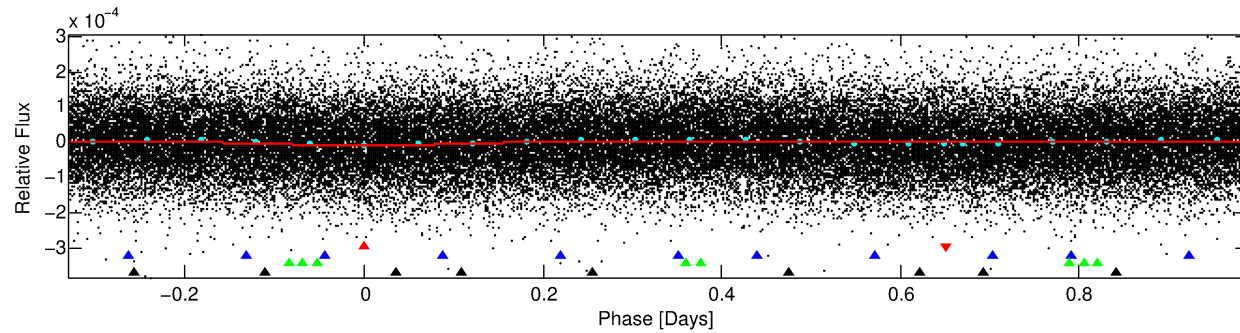
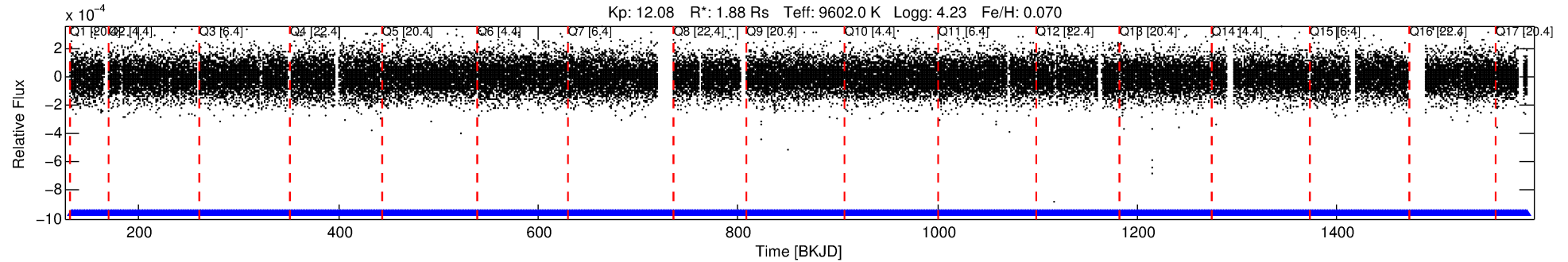
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004773133-01

No Significant Match Found

DV One-Page Summary

KIC: 4773133 Candidate: 1 of 4 Period: 1.319 d



DV Fit Results:

Period = 1.31895 [0.00002] d
Epoch = 132.6760 [0.0080] BKJD
Rp/R* = 0.0025 [0.0008]
a/R* = 1.45 [1.79]
b = 0.38 [5.39]
Seff = 28663.11 [14458.47]
Teq = 3318 [418] K
Rp = 0.51 [0.28] Re
a = 0.0306 [0.0106] AU
Ag = 10.91 [9.39] [1.06σ]
Teffp = 9322 [1728] K [3.38σ]

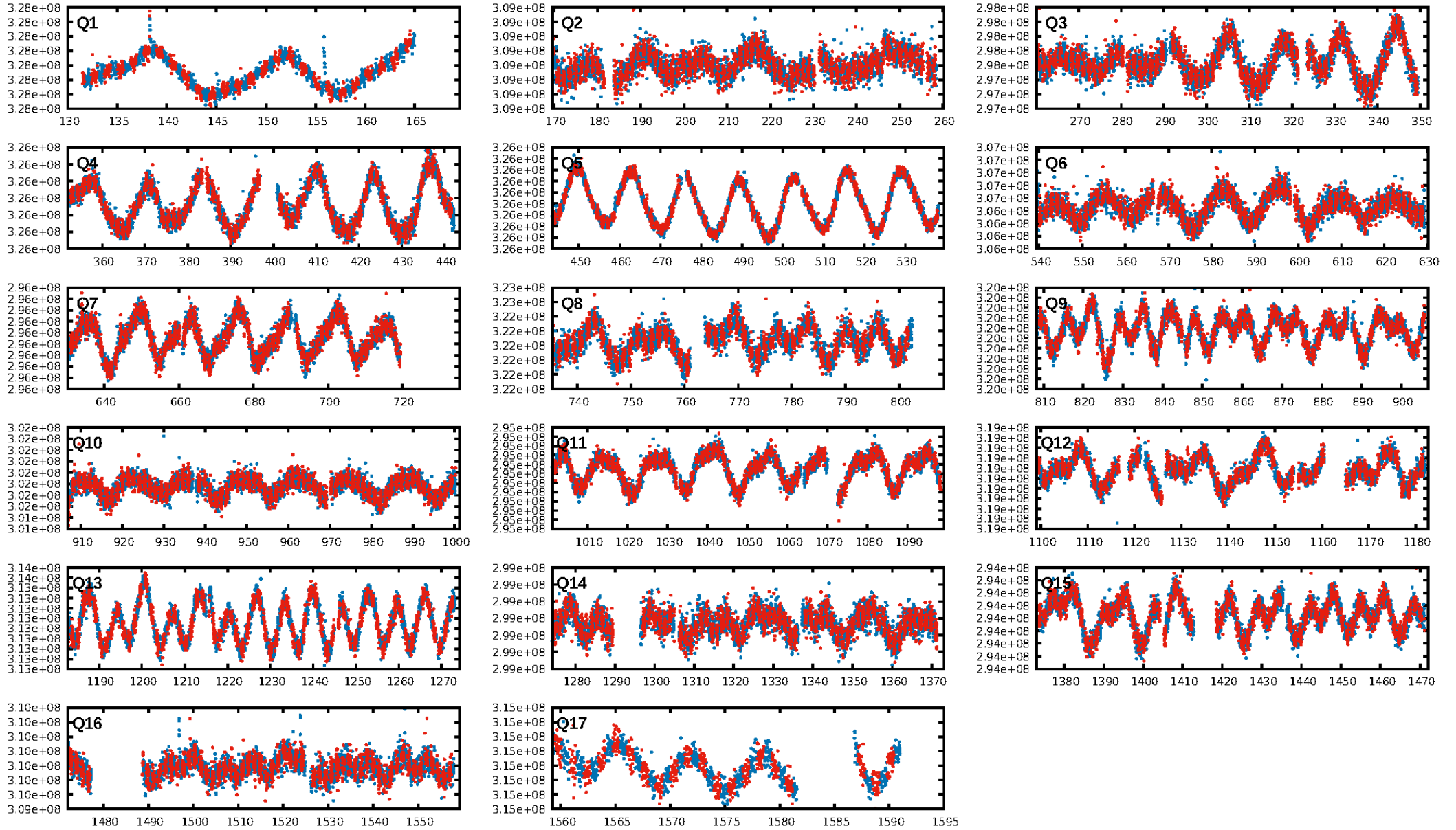
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [338.05σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.89e-10
RollingBand-fgt: 1.00 [978/978]
GhostDiagnostic-chr: 50.23
Centroid-sig: 7.9%
Centroid-so: 4.619 arcsec [1.56σ]
OotOffset-rm: 1.914 arcsec [1.42σ]
KicOffset-rm: 2.082 arcsec [1.47σ]
OotOffset-st: 3/4/2/3 [12]
KicOffset-st: 3/4/2/3 [12]
DiffImageQuality-fgm: 0.25 [3/12]
DiffImageOverlap-fno: 1.00 [17/17]

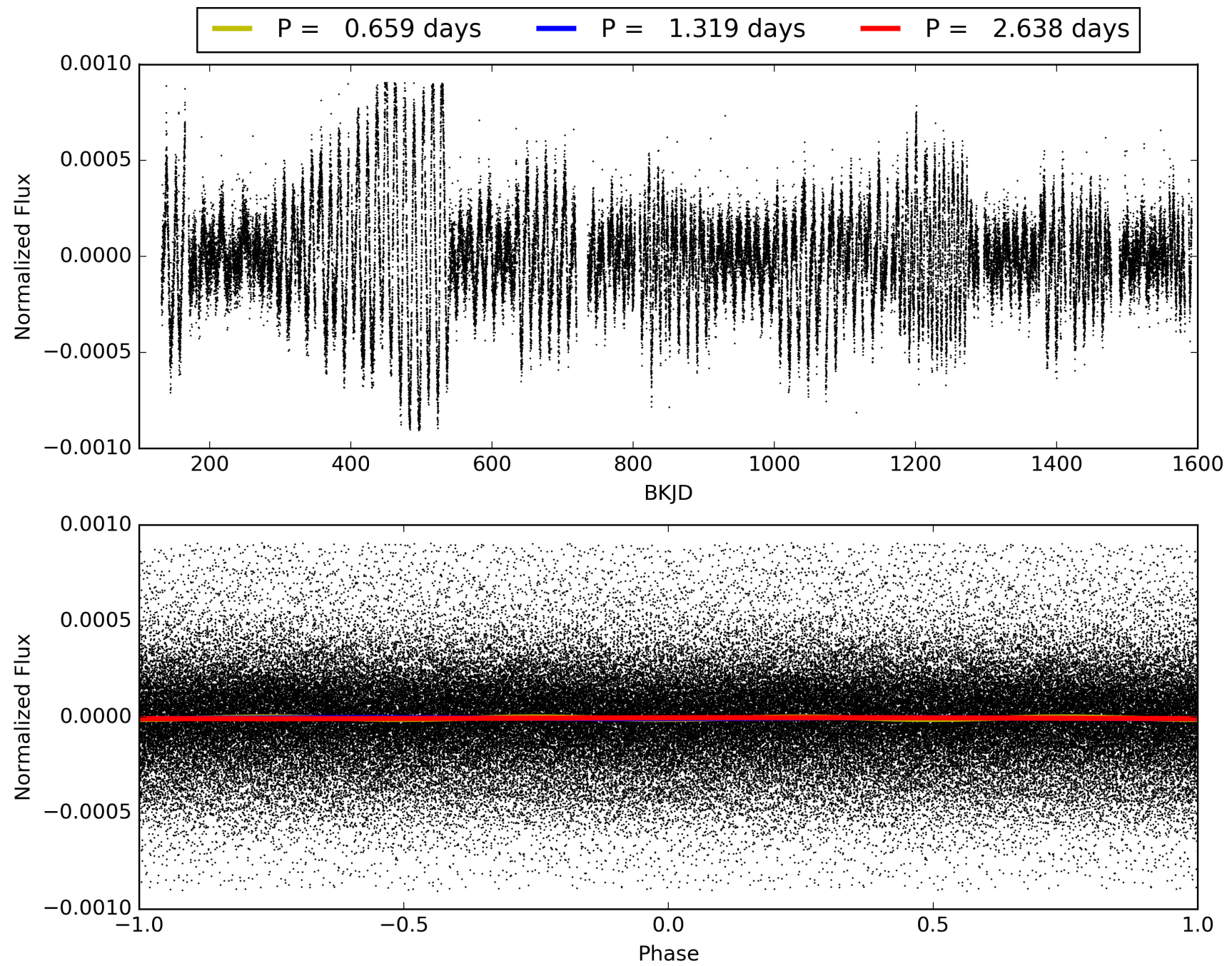
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:08:55 Z

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

TCE 004773133-01, PDC Light Curves

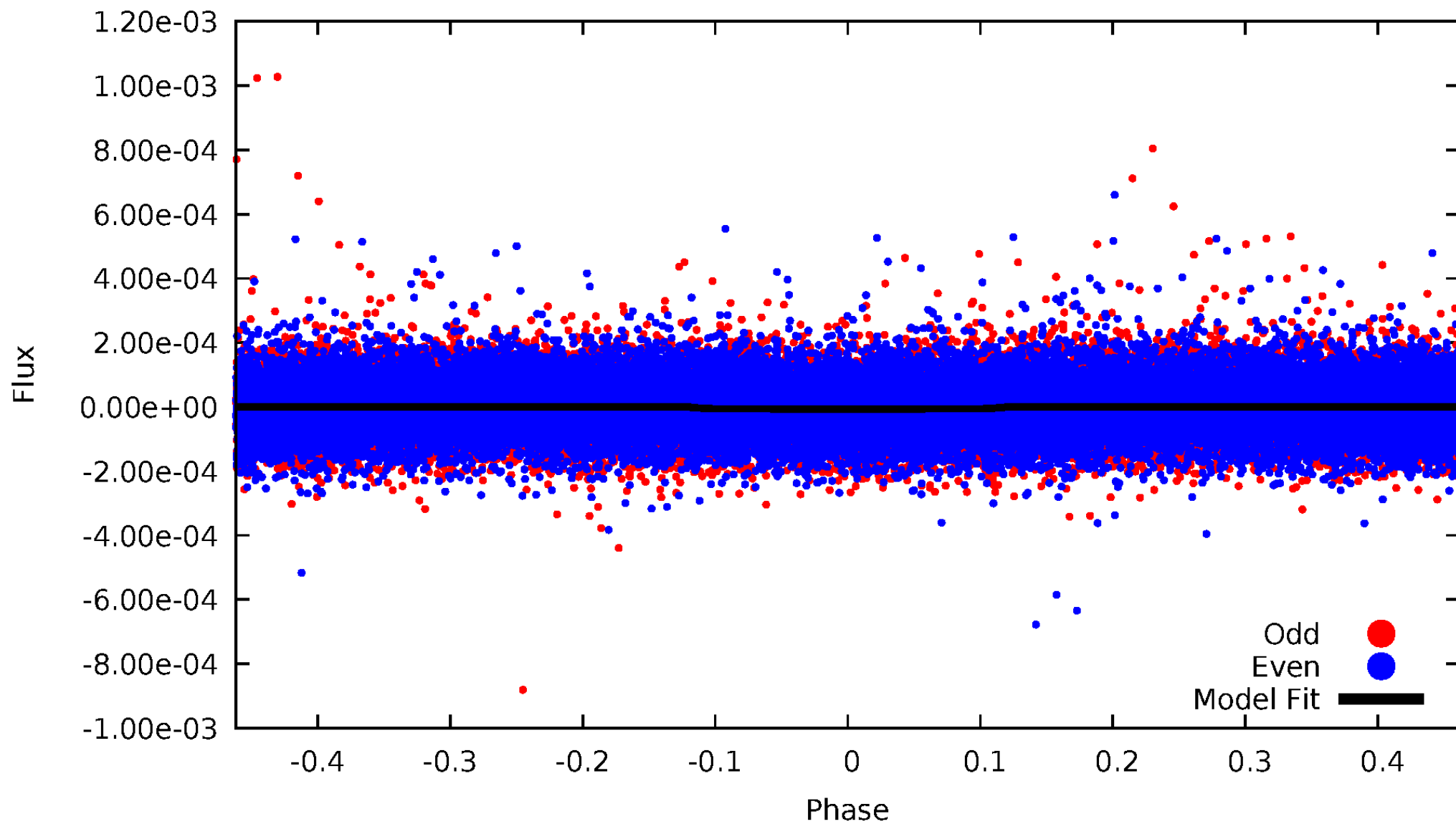


TCE 004773133-01



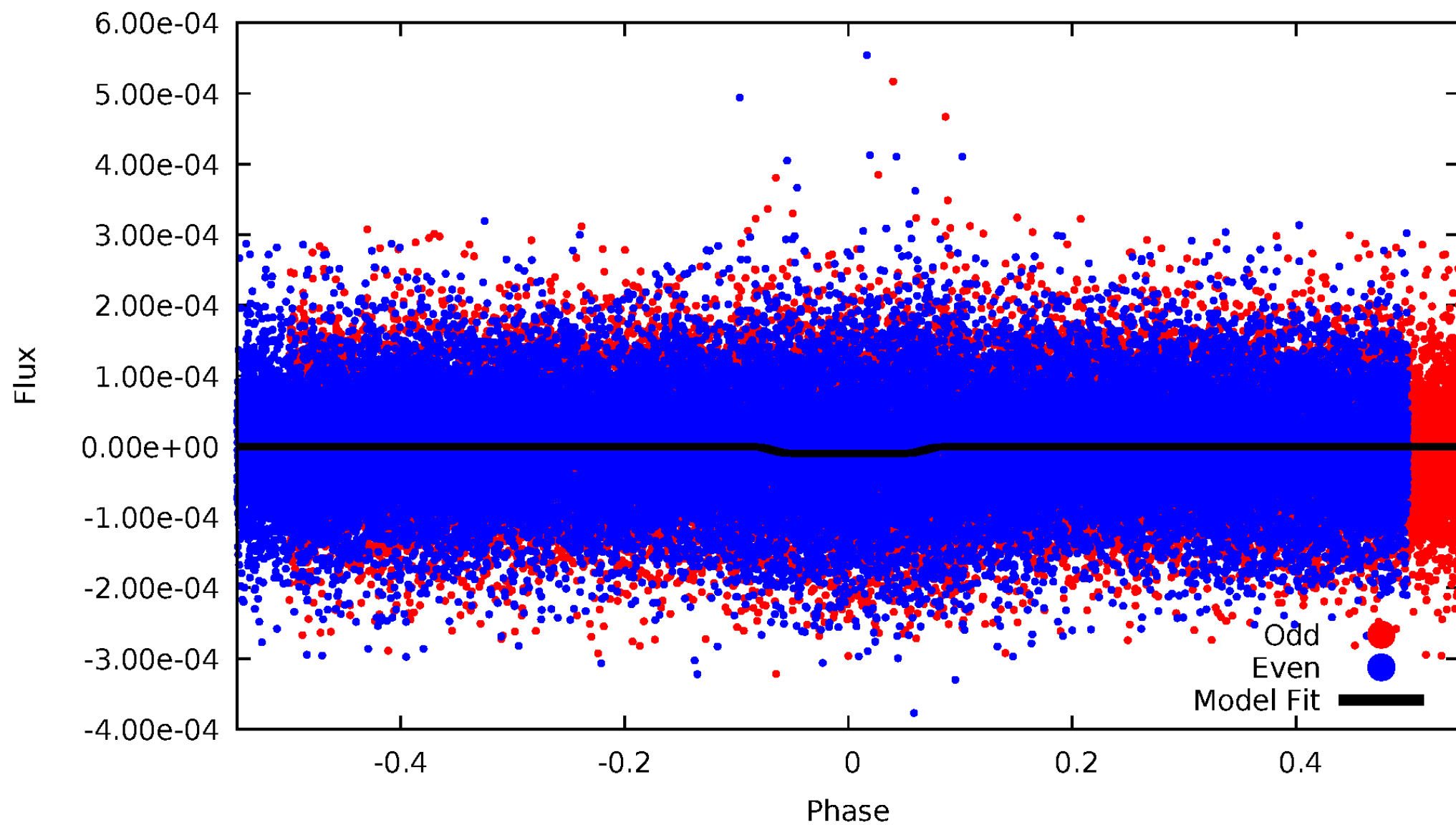
DV Odd/Even

TCE 004773133-01



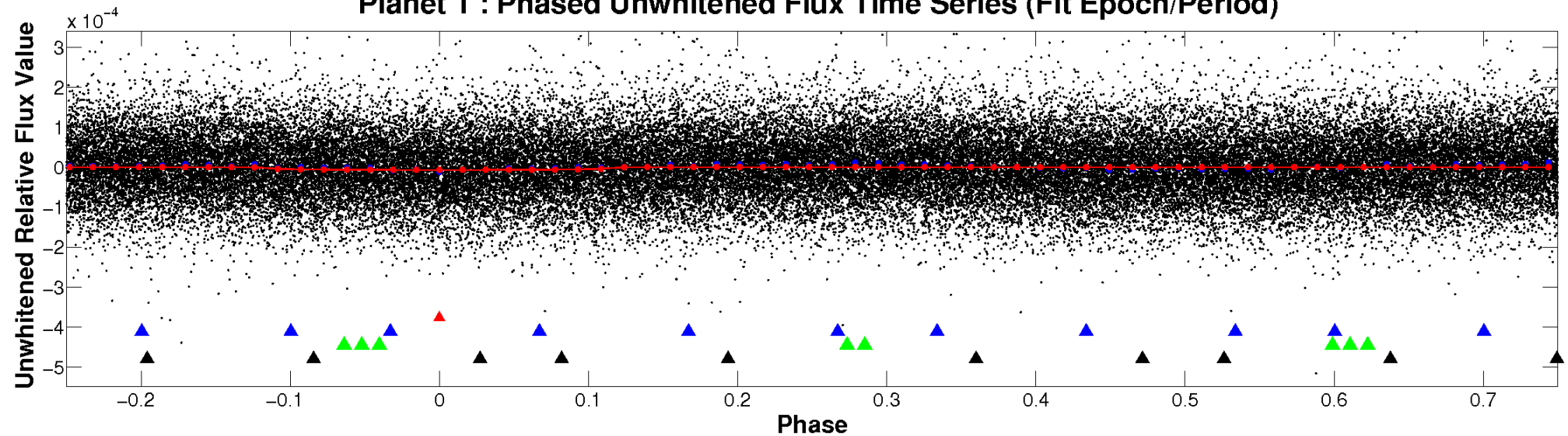
ALT Odd/Even

TCE 004773133-01

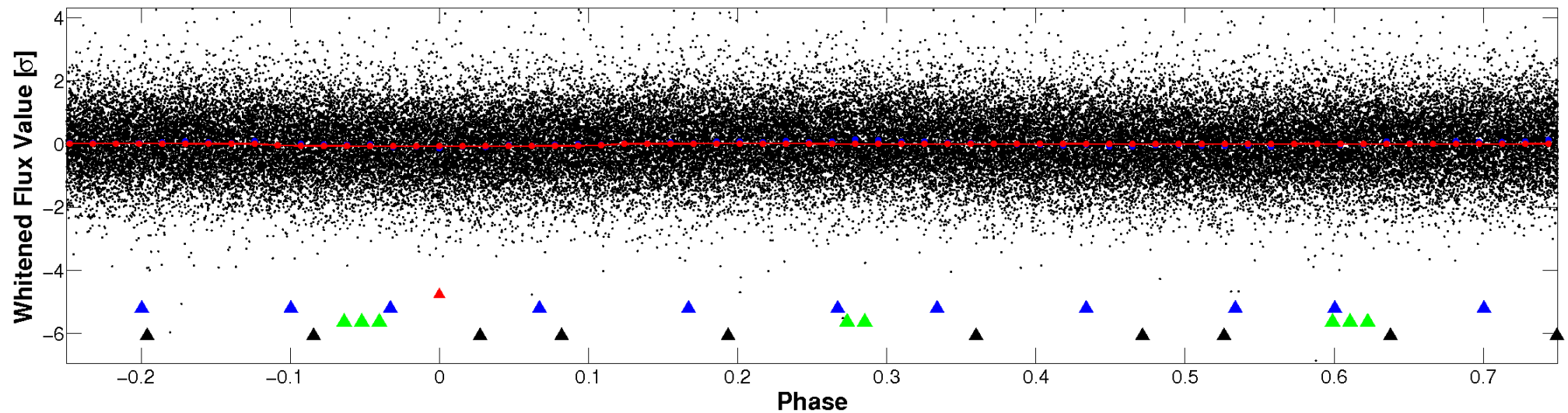


Non-Whitened Vs. Whitened Light Curve

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

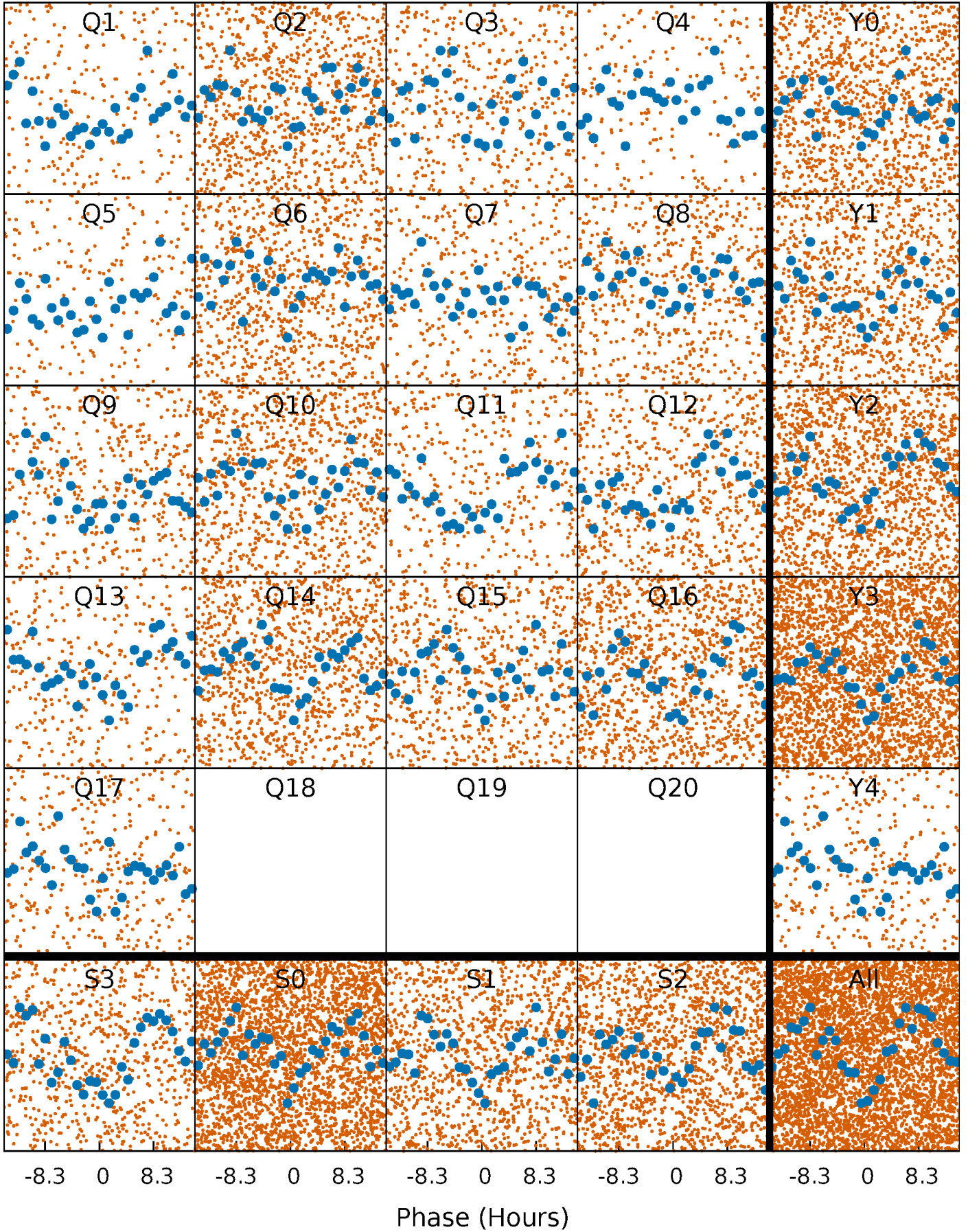


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



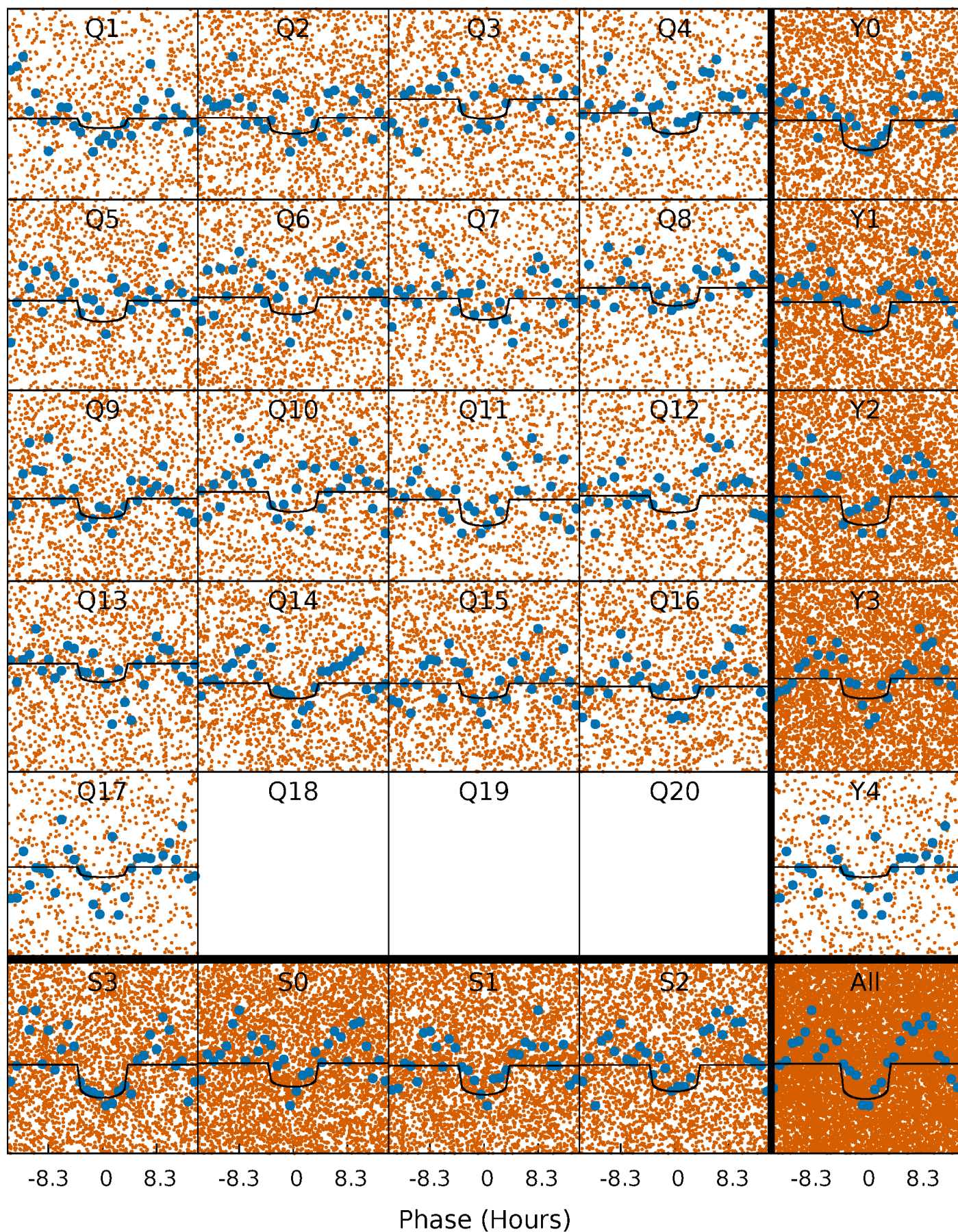
PDC Quarter-Phased Transit Curves

TCE 004773133-01 P= 1.318945 Days $T_0=132.675957$ (BKJD)



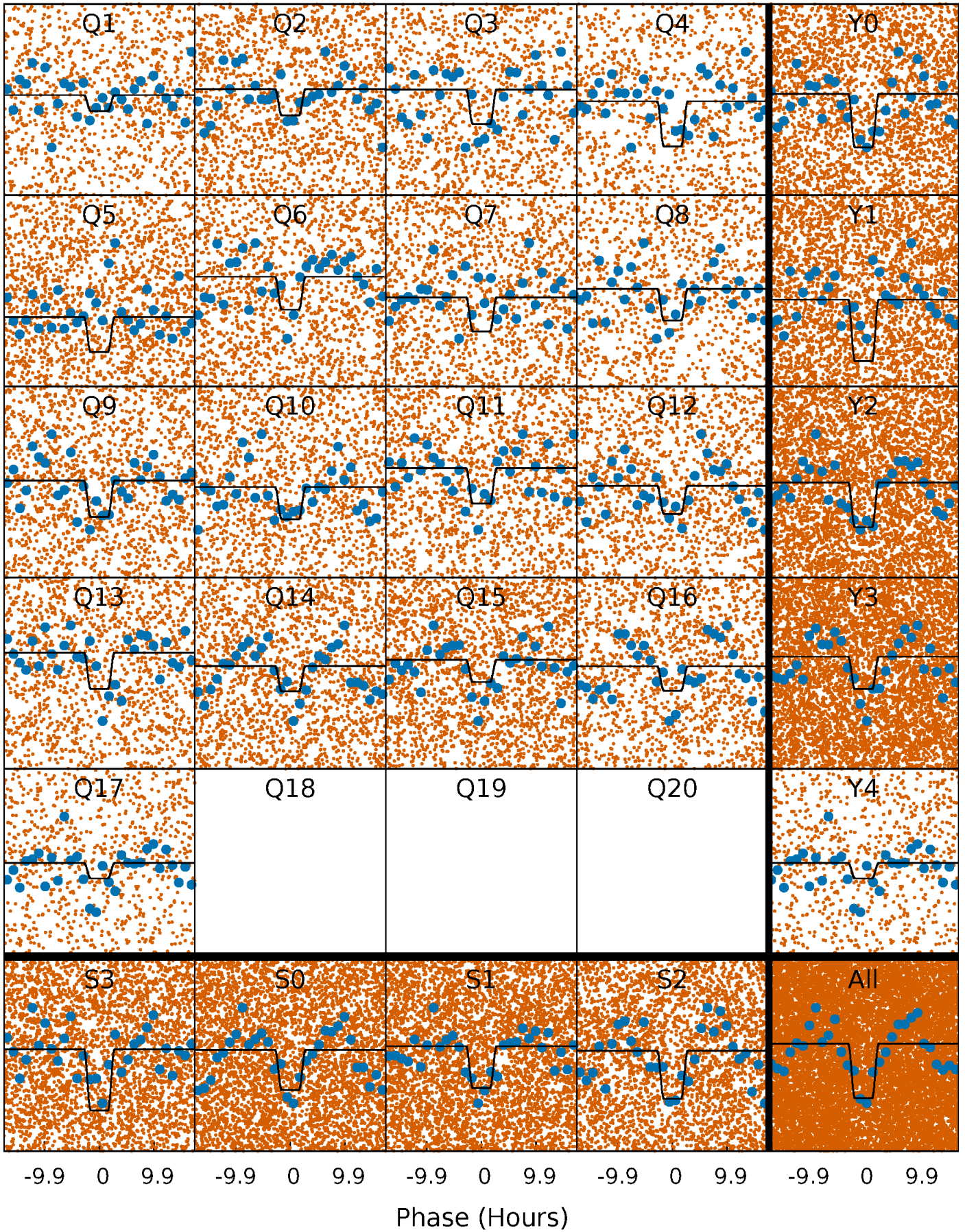
DV Quarter-Phased Transit Curves

TCE 004773133-01 P= 1.318945 Days $T_0=132.675957$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

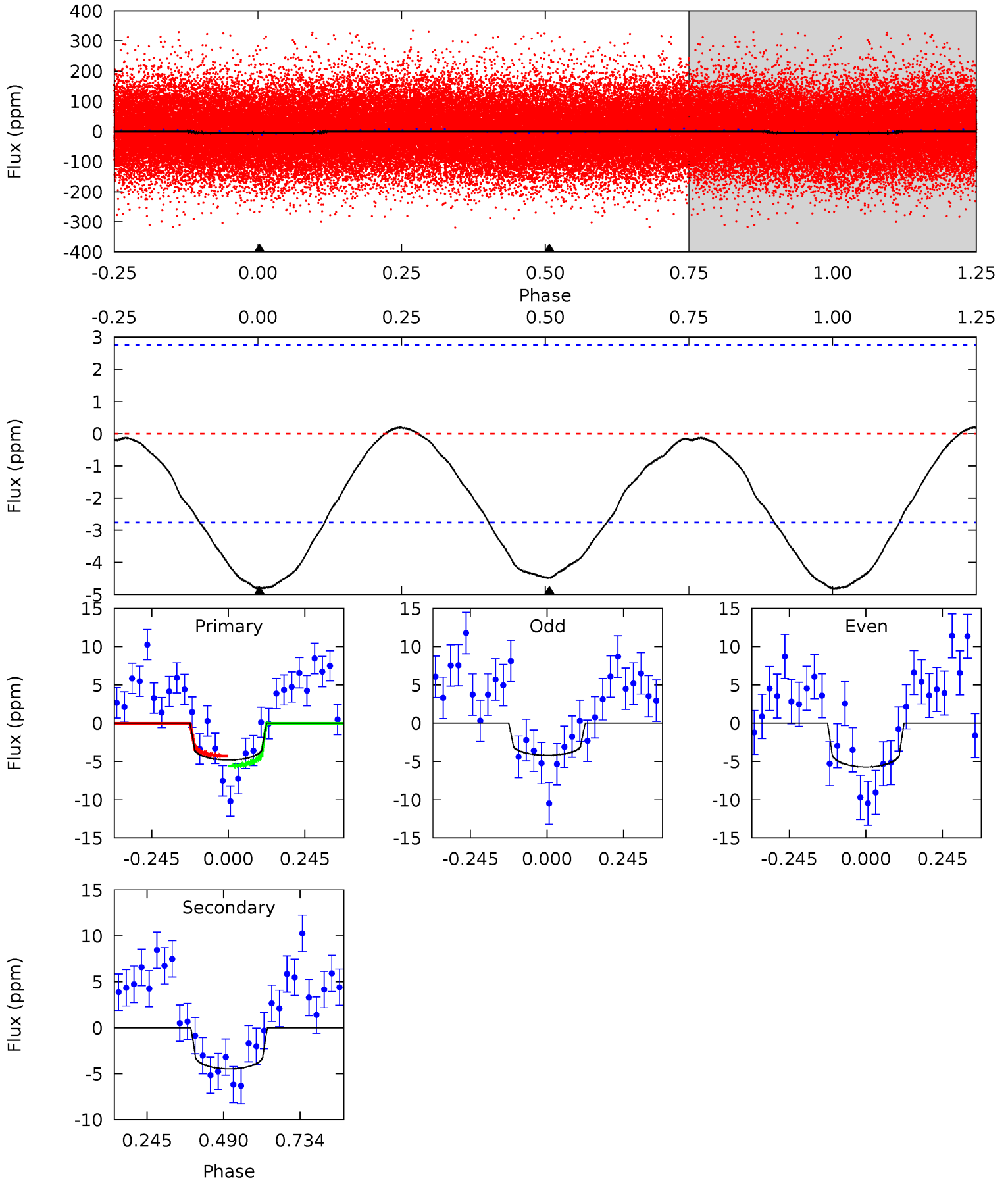
TCE 004773133-01 P= 1.318964 Days $T_0=132.671911$ (BKJD)



DV Model-Shift Uniqueness Test

004773133-01, P = 1.318945 Days, E = 131.357012 Days

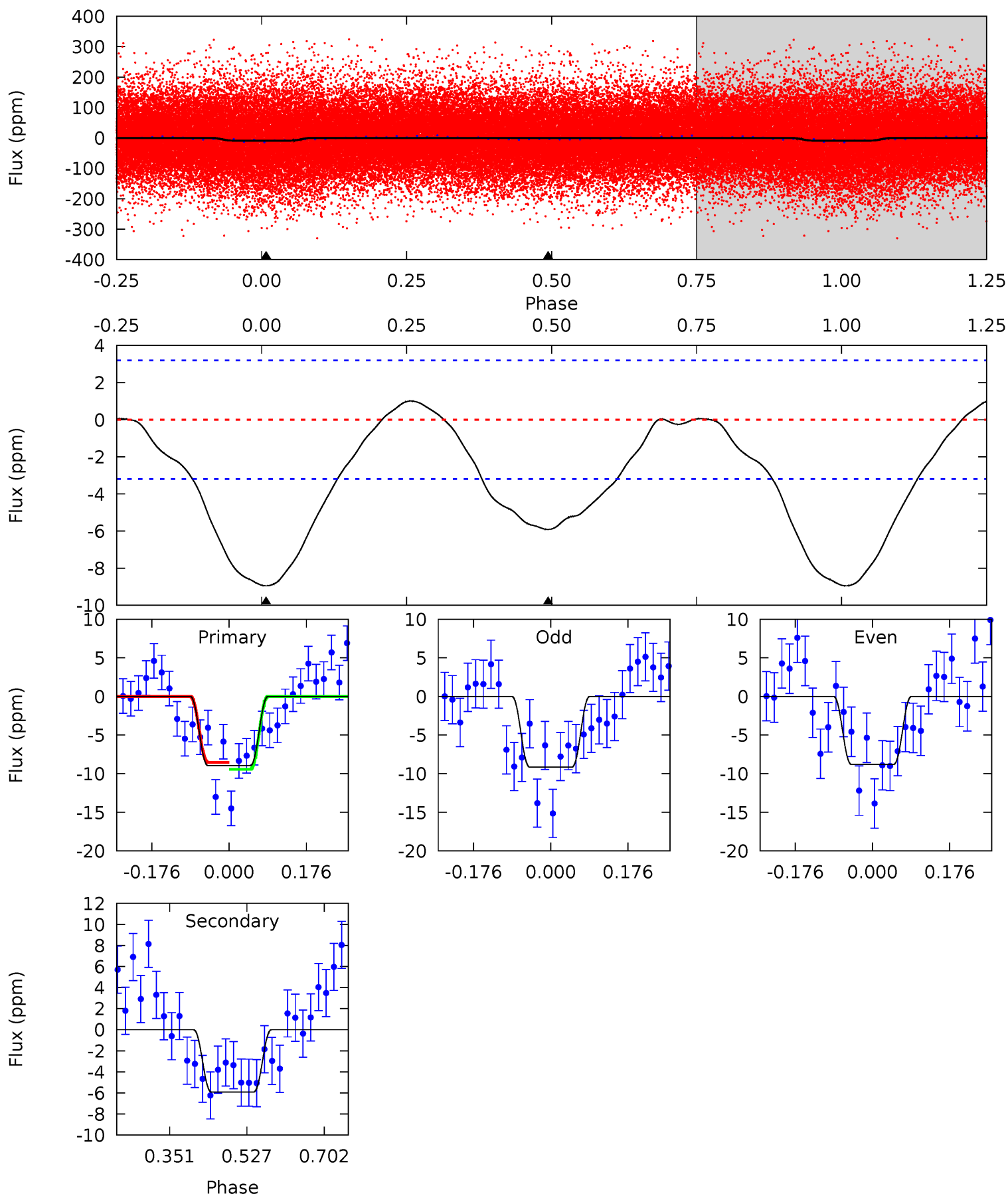
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.63	7.12	0	0	4.37	1.16	0.24	7.63	7.63	7.12	7.12	1.23	0.97	0.04	1.03



Alt Model-Shift Uniqueness Test

004773133-01, P = 1.318964 Days, E = 131.352947 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.4	8.22	0	0	4.45	1.35	0.88	12.4	12.4	8.22	8.22	0.24	0.83	0.10	0.62



Stellar Parameters For KIC 004773133

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9602^{+272}_{-428}	$4.233^{+0.129}_{-0.240}$	$0.070^{+0.150}_{-0.700}$	$1.879^{+0.831}_{-0.384}$	$2.201^{+0.445}_{-0.544}$	$0.468^{+0.313}_{-0.292}$
	+3%/-4%	+3%/-6%	+214%/-1000%	+44%/-20%	+20%/-25%	+67%/-63%
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 004773133-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-4 ± 1	$0.53^{+0.22}_{-0.19}$	4690^{+462}_{-325}	8248^{+3158}_{-1329}	$7.841^{+11.389}_{-3.898}$
Alt.	-6 ± 1	$0.66^{+0.25}_{-0.19}$	4696^{+445}_{-351}	7923^{+1901}_{-1098}	$6.954^{+6.280}_{-3.266}$

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 $A_{obs} \gg 1.0$

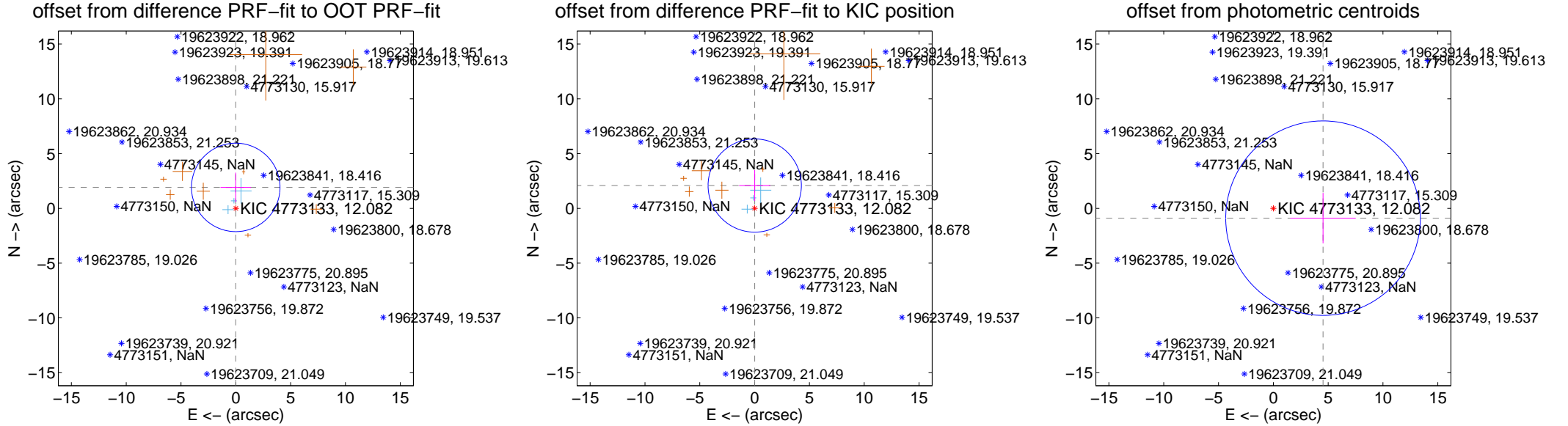
DV Centroid Data

Supplemental centroid analysis for 004773133-01. Kepler magnitude: 12.08. Transit SNR 7.55

There are 3 quarters with good PRF difference image offsets

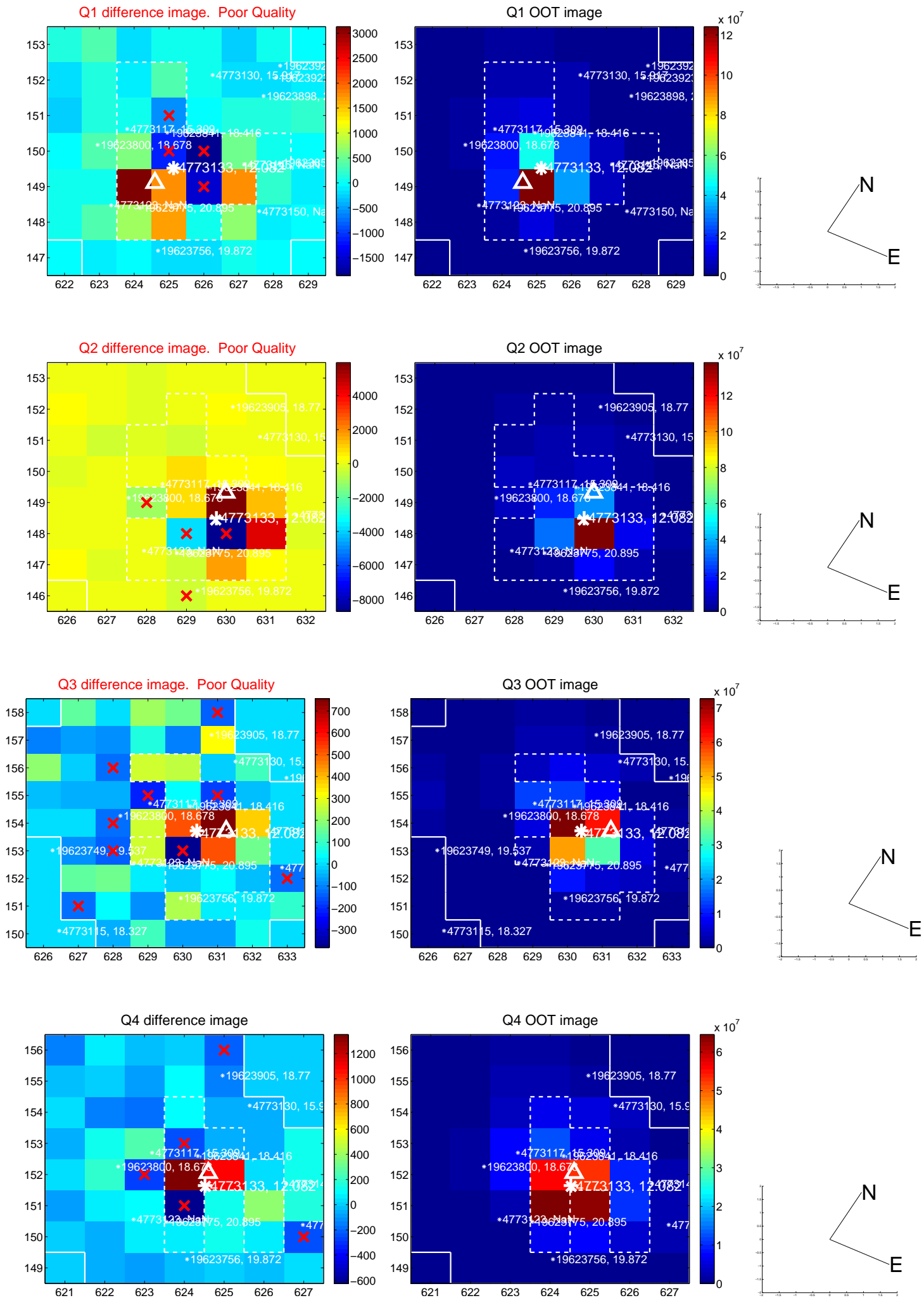
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.914 ± 1.346	1.42	0.009 ± 1.391	1.914 ± 1.349
PRF-fit source offset from KIC position	2.082 ± 1.418	1.47	-0.011 ± 1.423	2.082 ± 1.415
photometric centroid source offset	4.62 ± 2.96	1.56	-4.53 ± 2.98	-0.89 ± 2.30

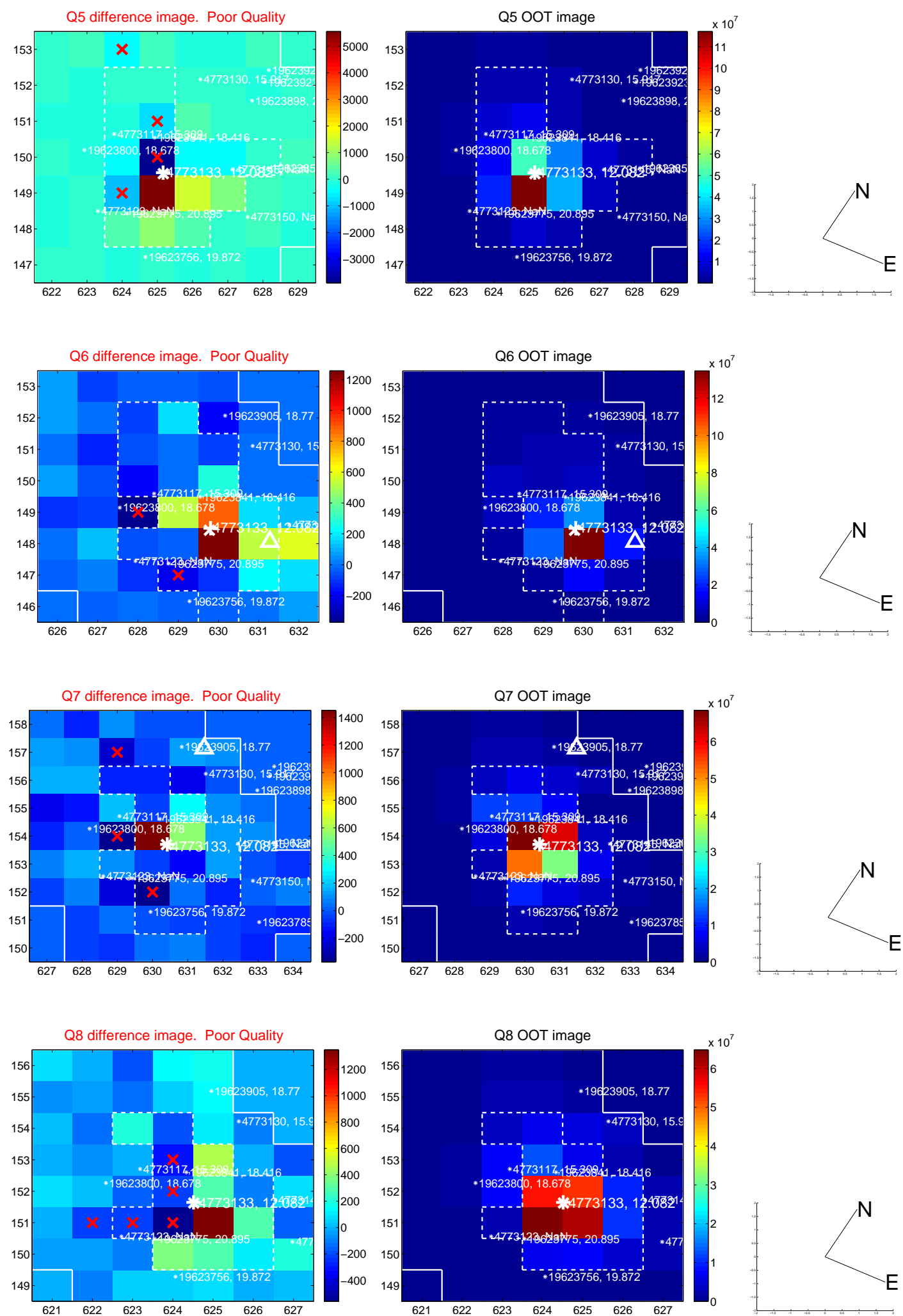


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

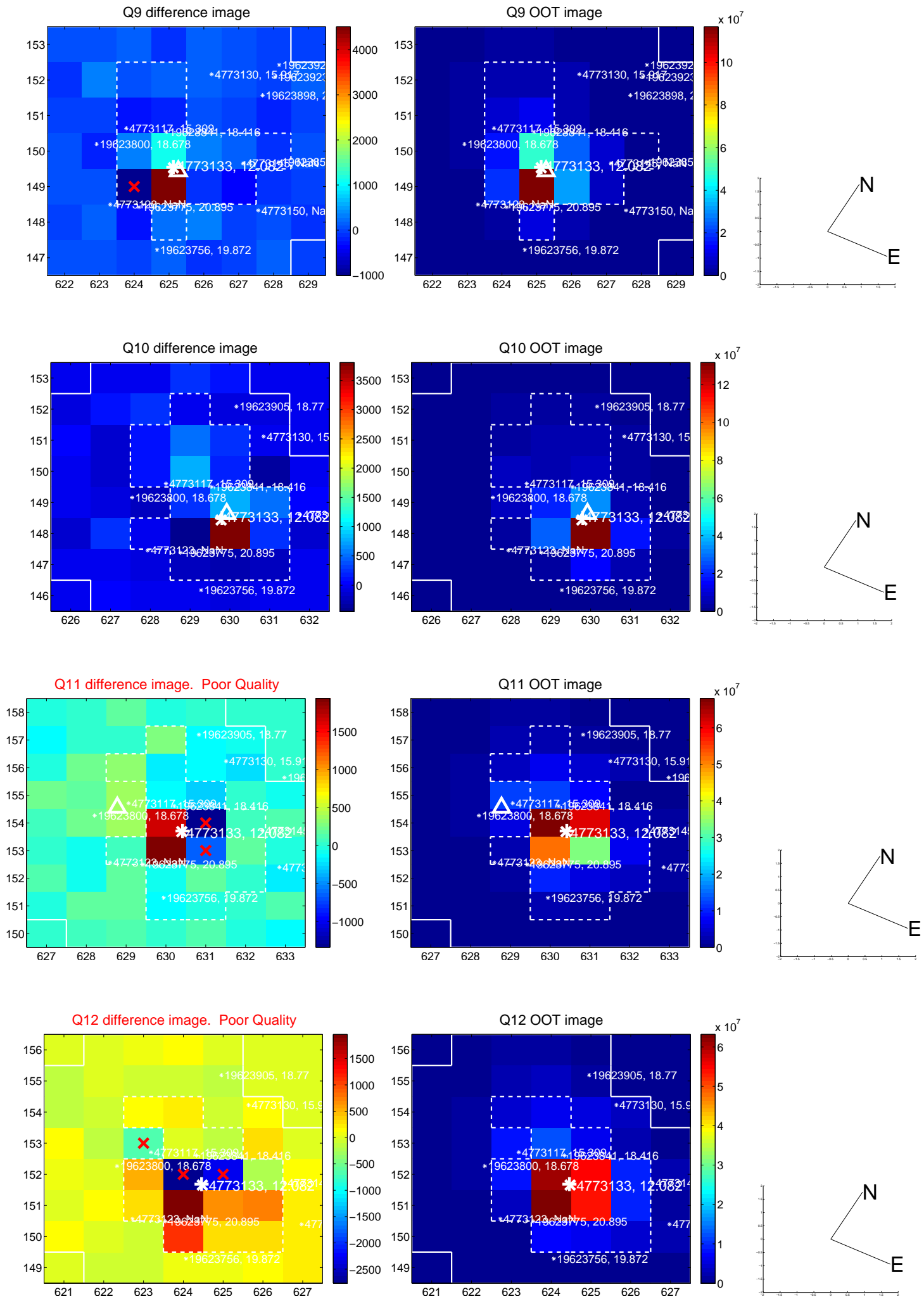
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



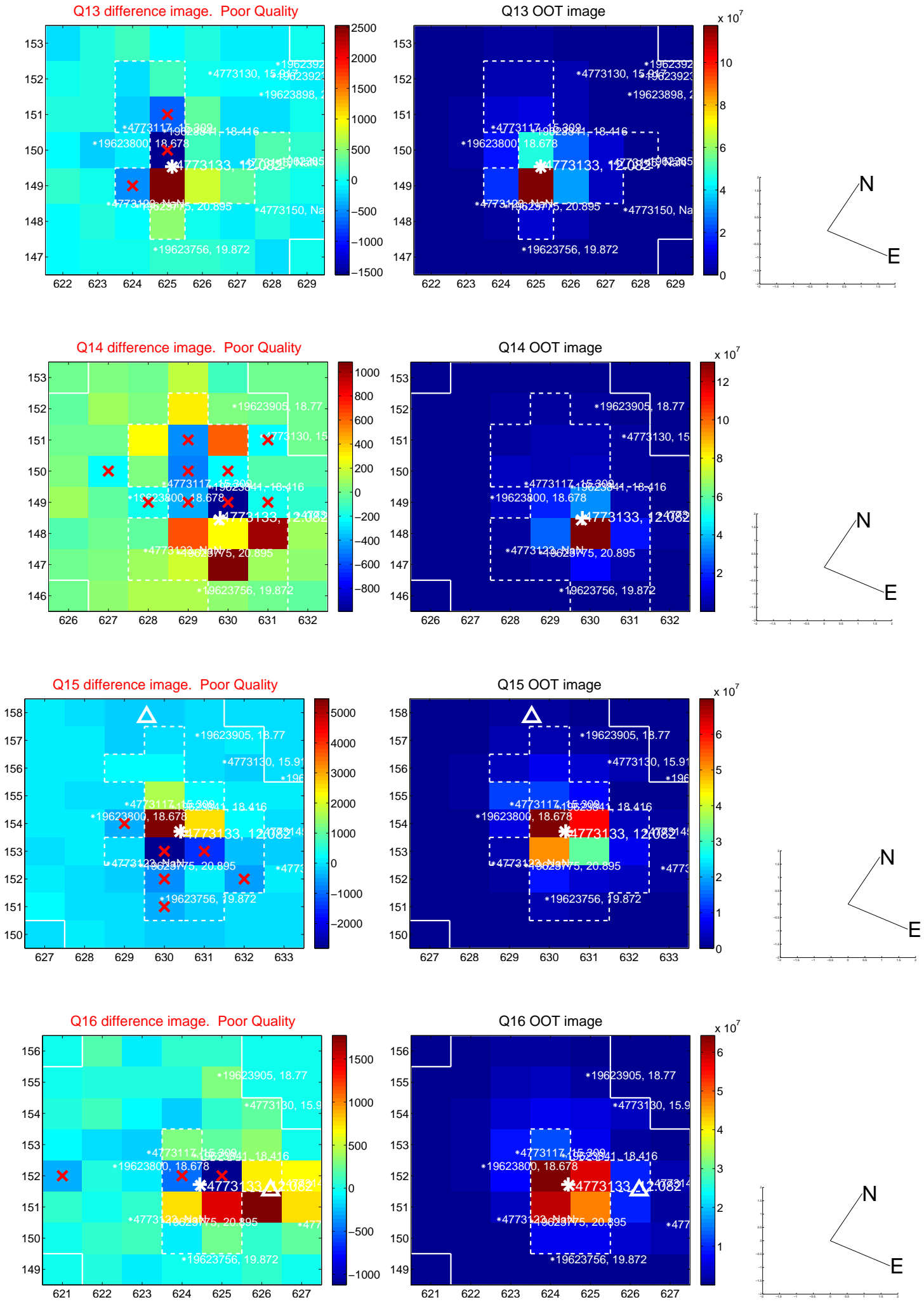
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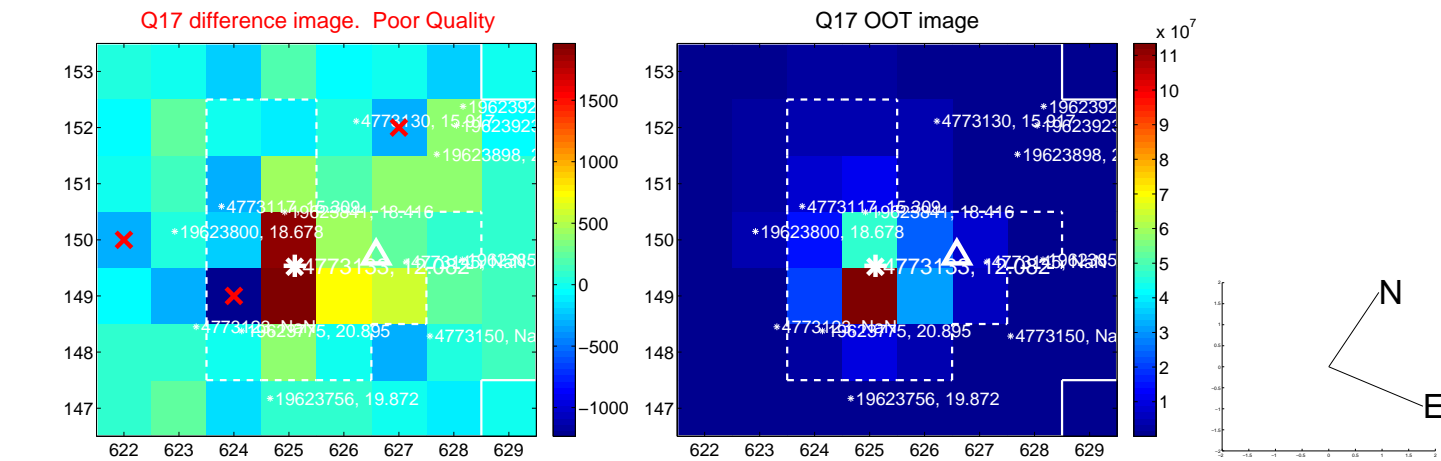
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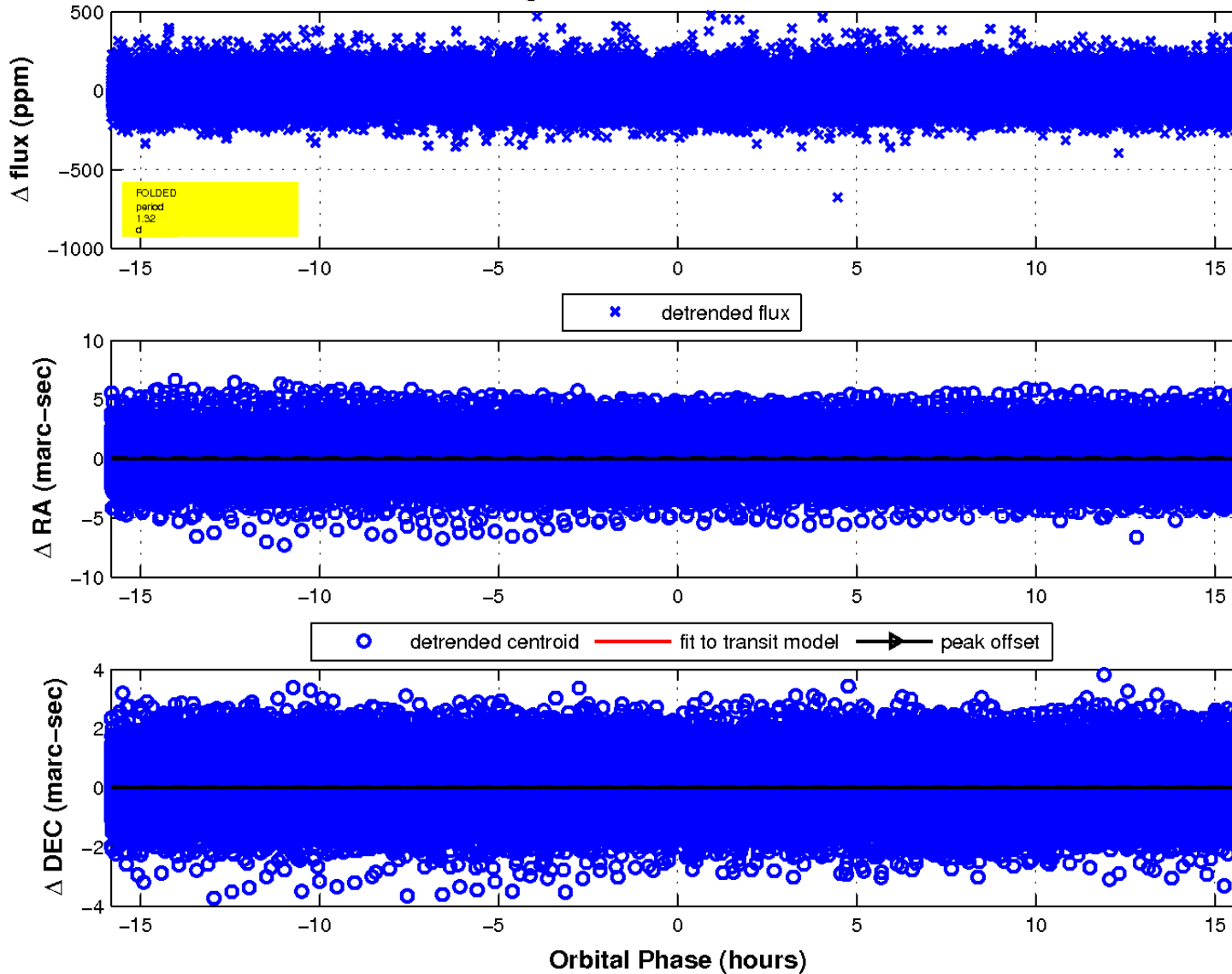
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

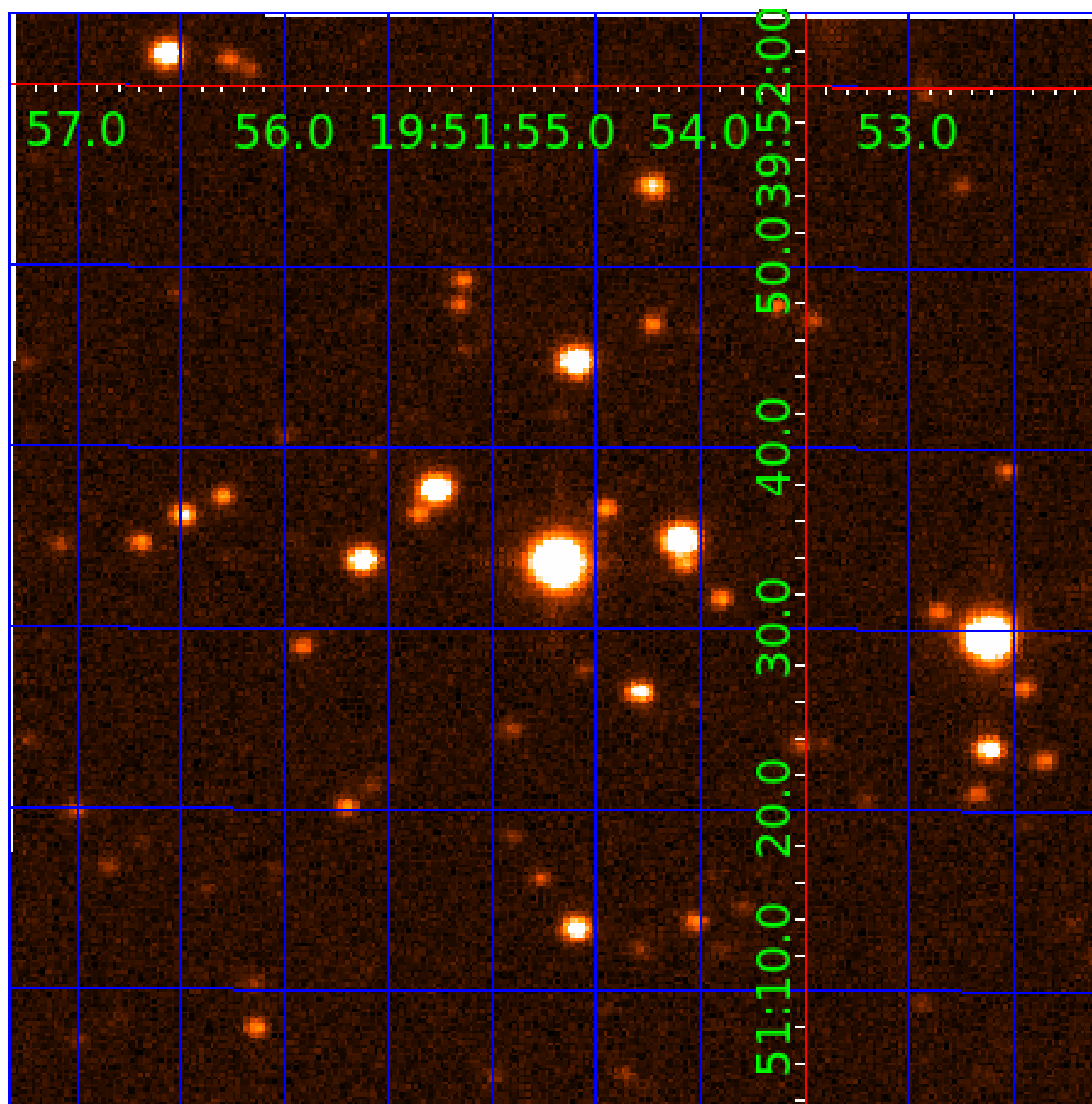


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 004773133

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})
004773133-01	OBS	No	1.318945	132.675957	6.8	7.304	7.7	7.6	1.88	9602	0.51	28663.11
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004773133-03	OBS	No	182.888566	250.009015	164.1	3.296	8.7	8.4	1.88	9602	2.73	39.94
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004773133-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
004773133-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004773133-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
004773133-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_UNCERTAIN

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

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

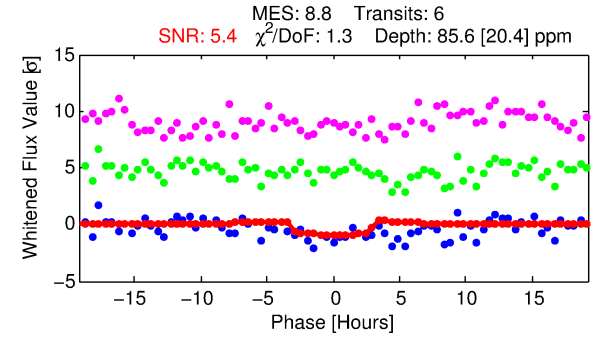
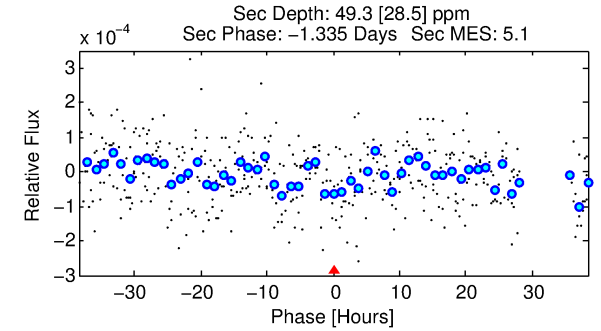
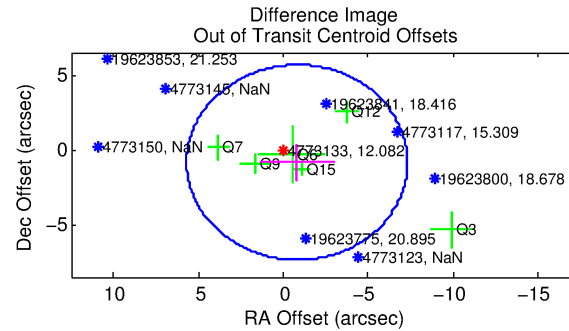
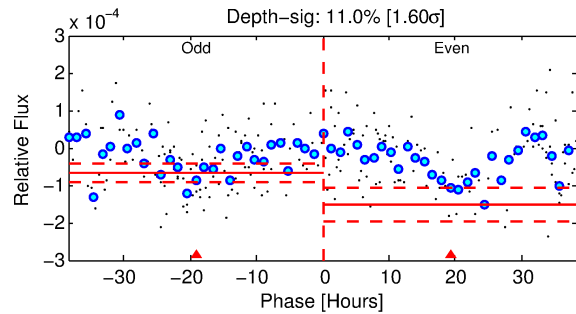
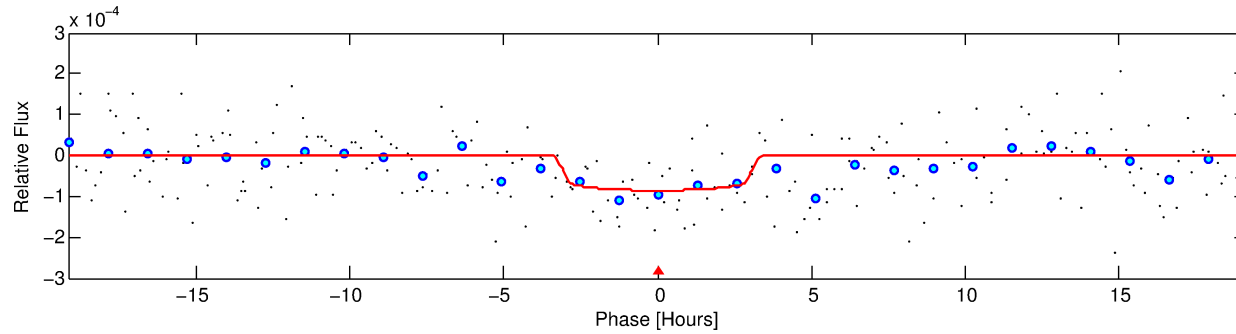
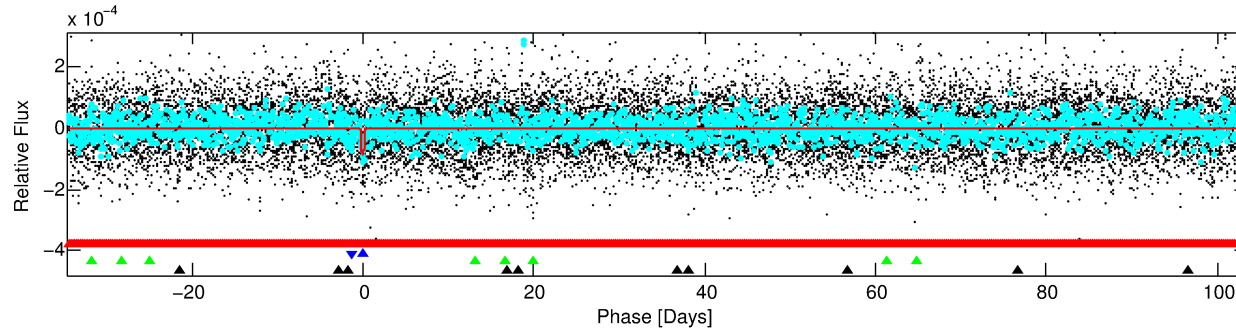
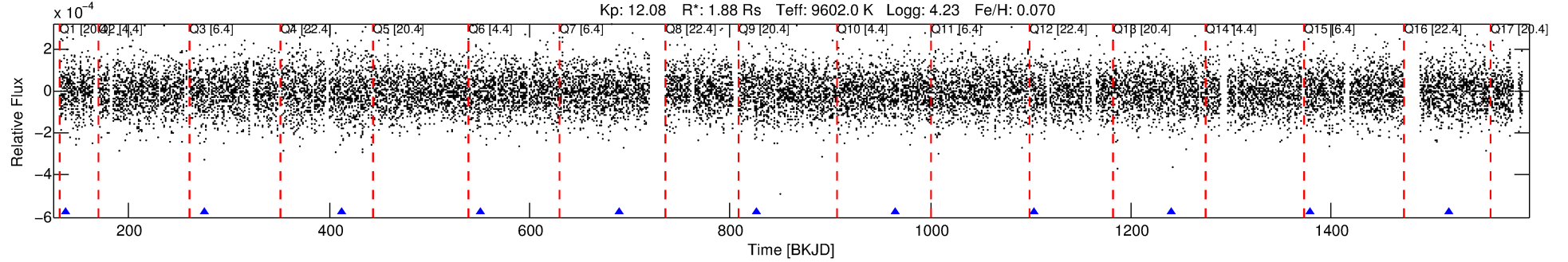
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004773133-02

No Significant Match Found

DV One-Page Summary

KIC: 4773133 Candidate: 2 of 4 Period: 138.006 d



DV Fit Results:

Period = 138.00565 [0.00317] d
Epoch = 136.9851 [0.0200] BKJD
Rp/R* = 0.0094 [0.0076]
a/R* = 96.06 [568.73]
b = 0.82 [2.30]
Seff = 58.13 [29.32]
Teq = 704 [89] K
Rp = 1.93 [1.78] Re
a = 0.6801 [0.2364] AU
Ag = 3367.10 [5986.50] [0.56 σ]
Teffp = 8293 [3573] K [2.12 σ]

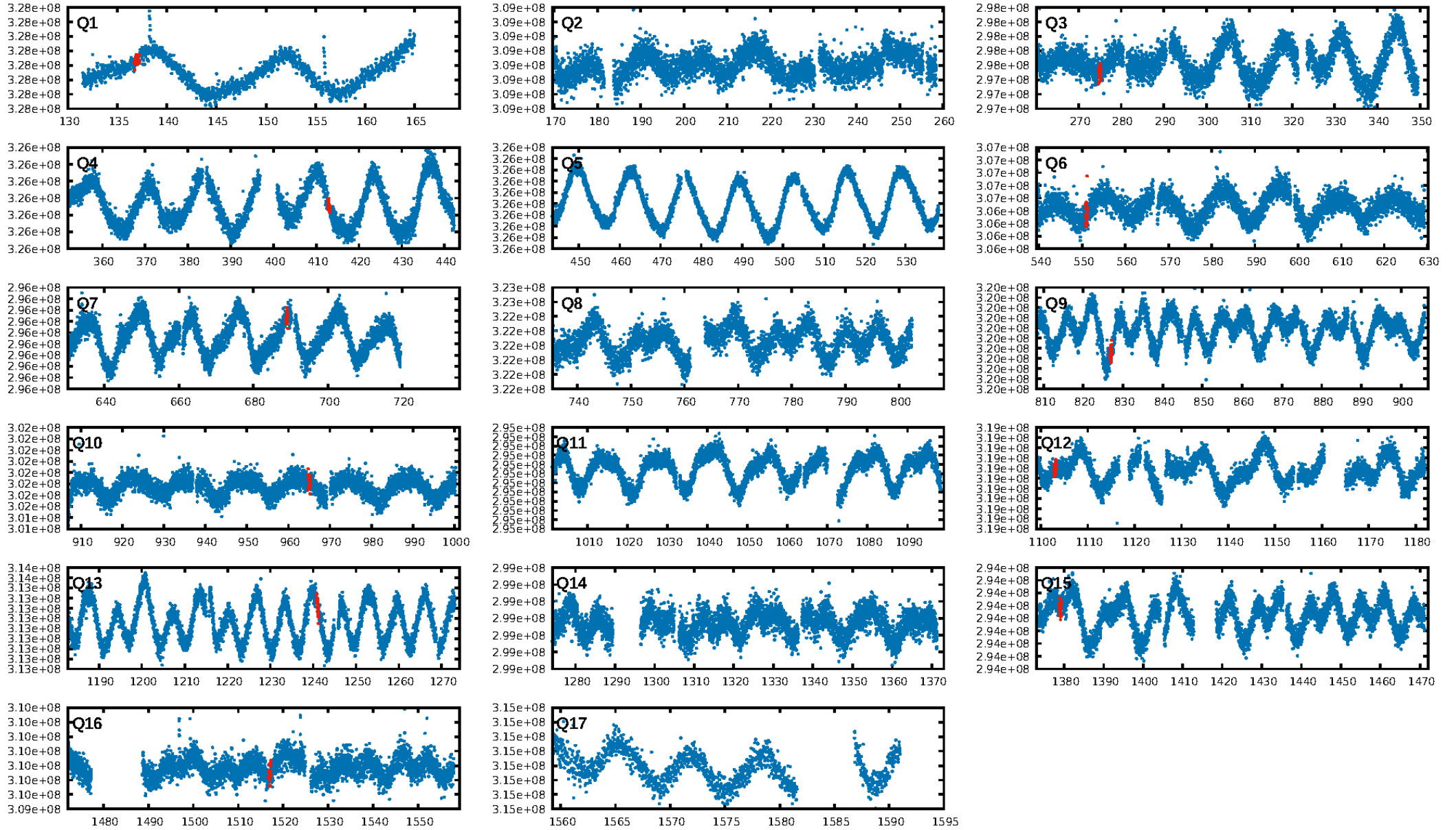
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [338.05 σ]
LongPeriod-sig: 100.0% [61.55 σ]
ModelChiSquare2-sig: 3.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.37e-11
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -0.4416
Centroid-sig: 4.0%
Centroid-so: 2.860 arcsec [1.56 σ]
OotOffset-rm: 1.184 arcsec [0.55 σ]
KicOffset-rm: 1.117 arcsec [0.70 σ]
OotOffset-st: 1/3/1/1 [6]
KicOffset-st: 1/3/1/1 [6]
DiffImageQuality-fgm: 0.33 [2/6]
DiffImageOverlap-fno: 0.00 [0/10]

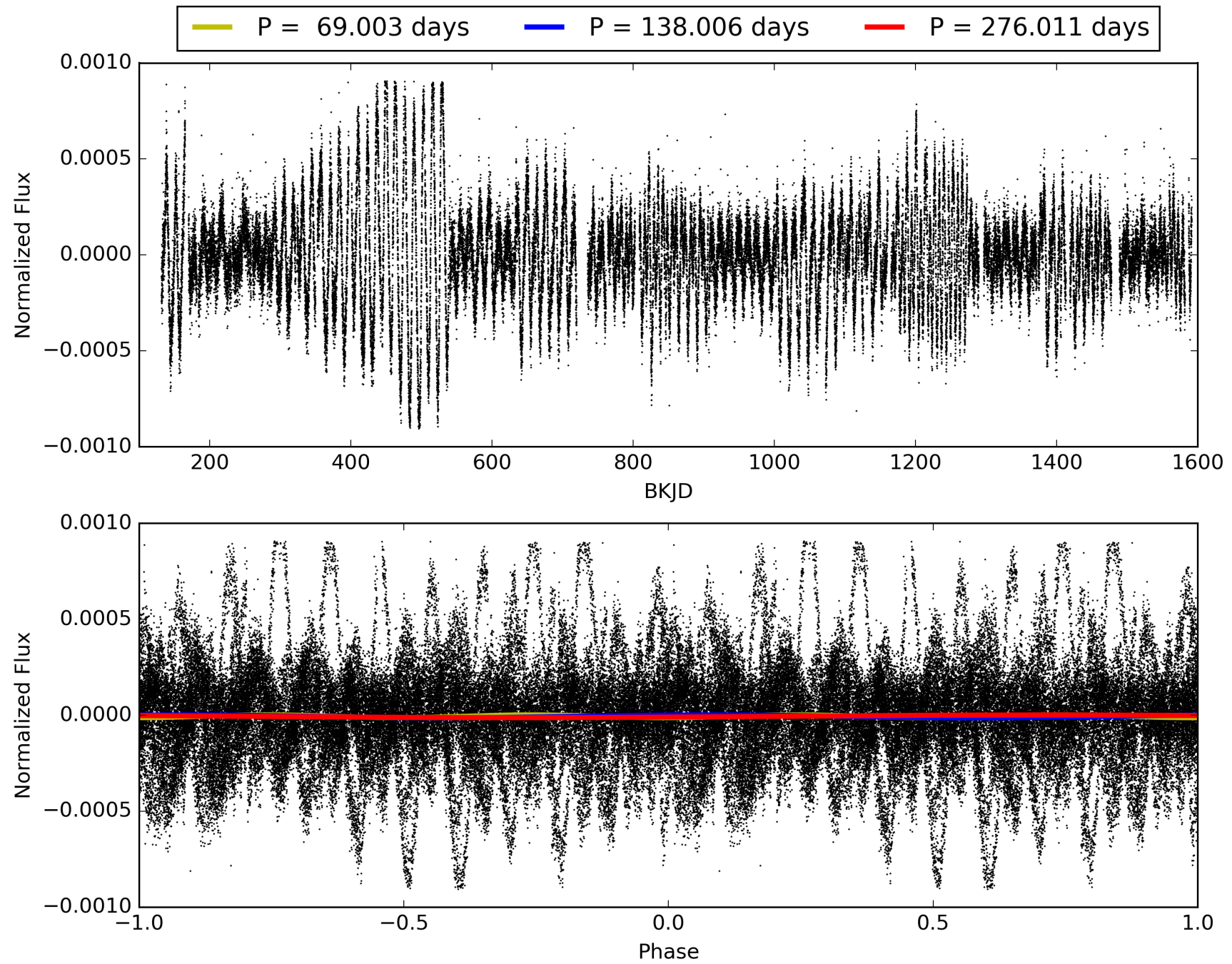
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:09:06 Z

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

TCE 004773133-02, PDC Light Curves

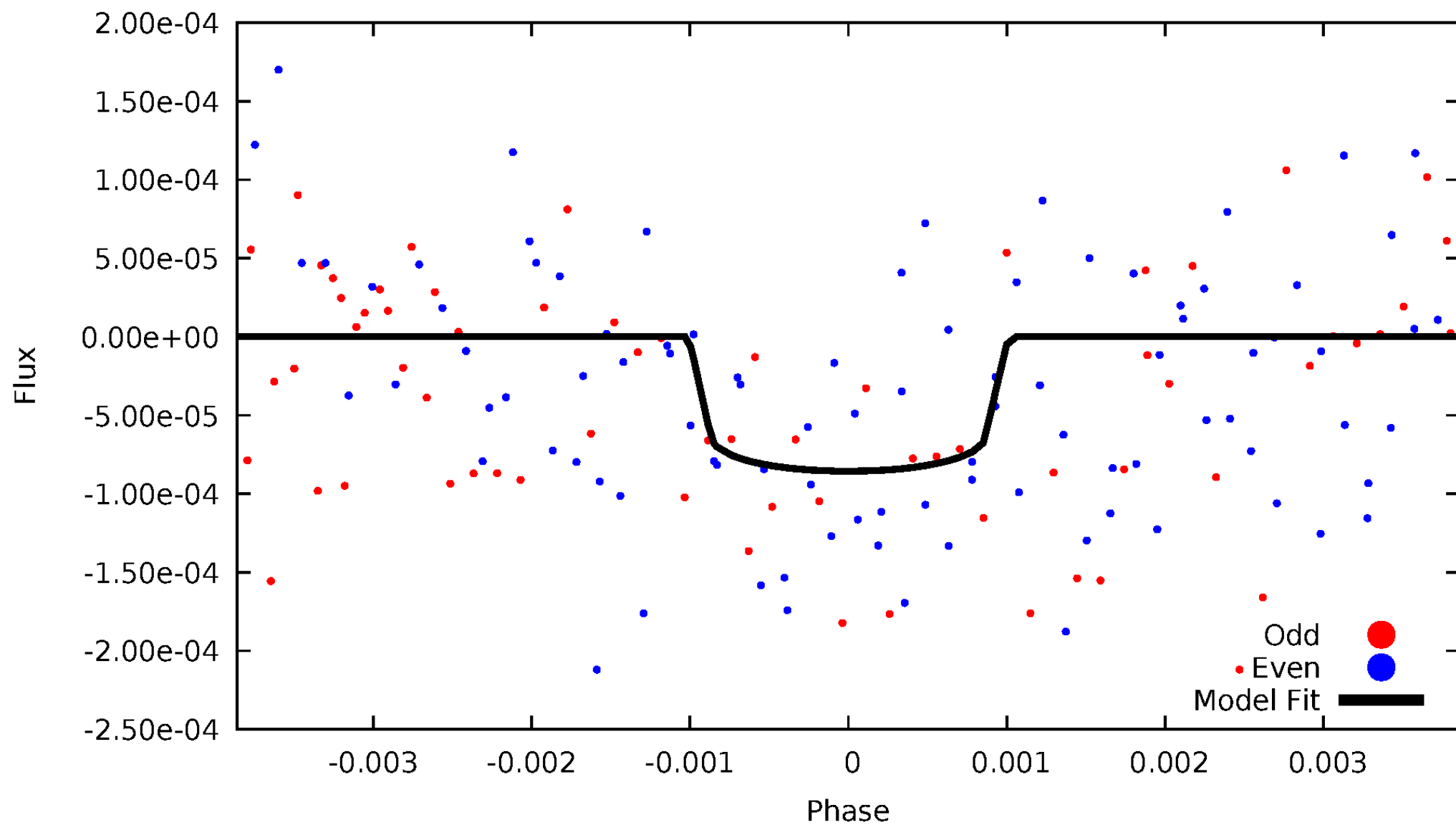


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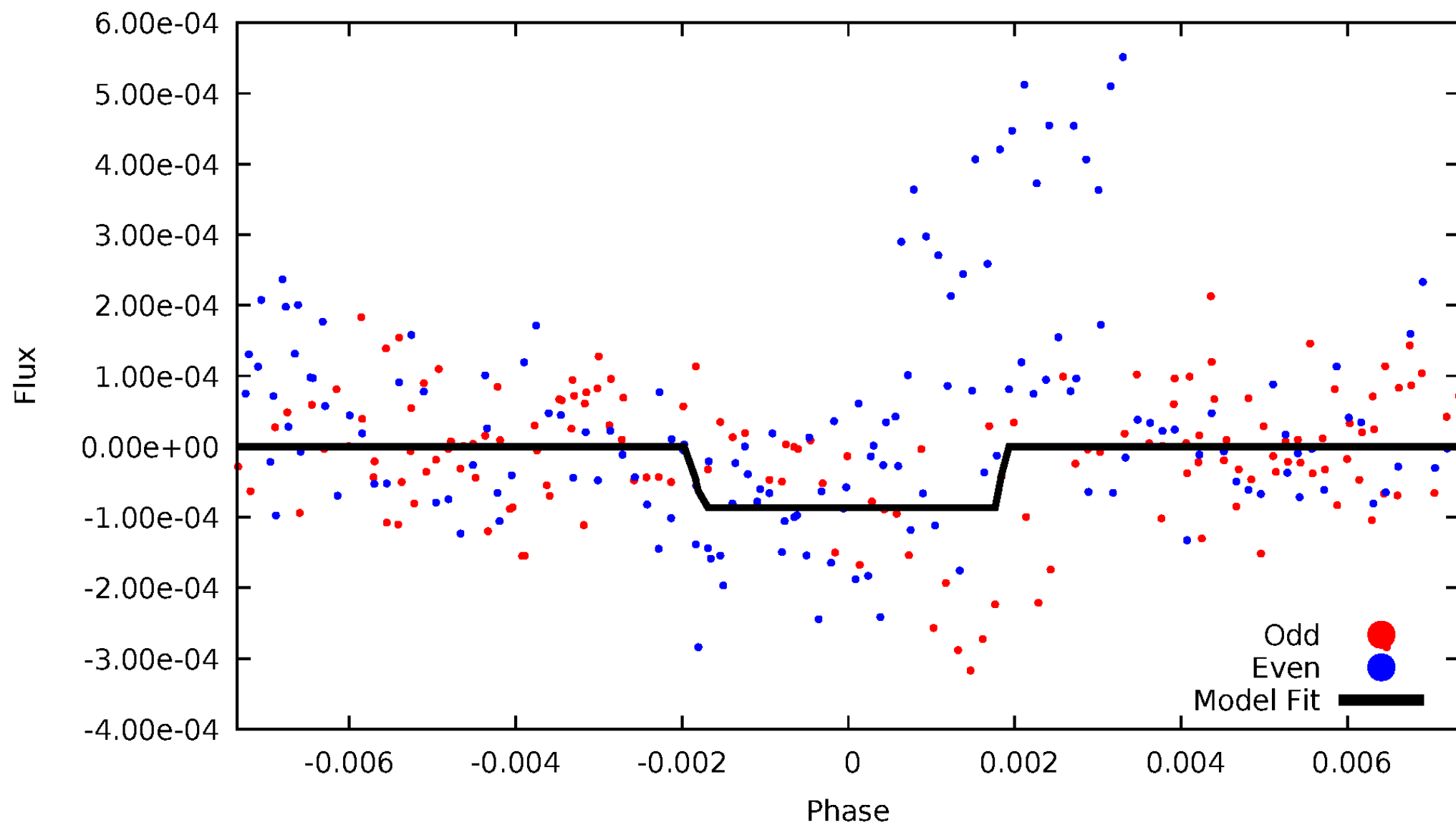
DV Odd/Even

TCE 004773133-02



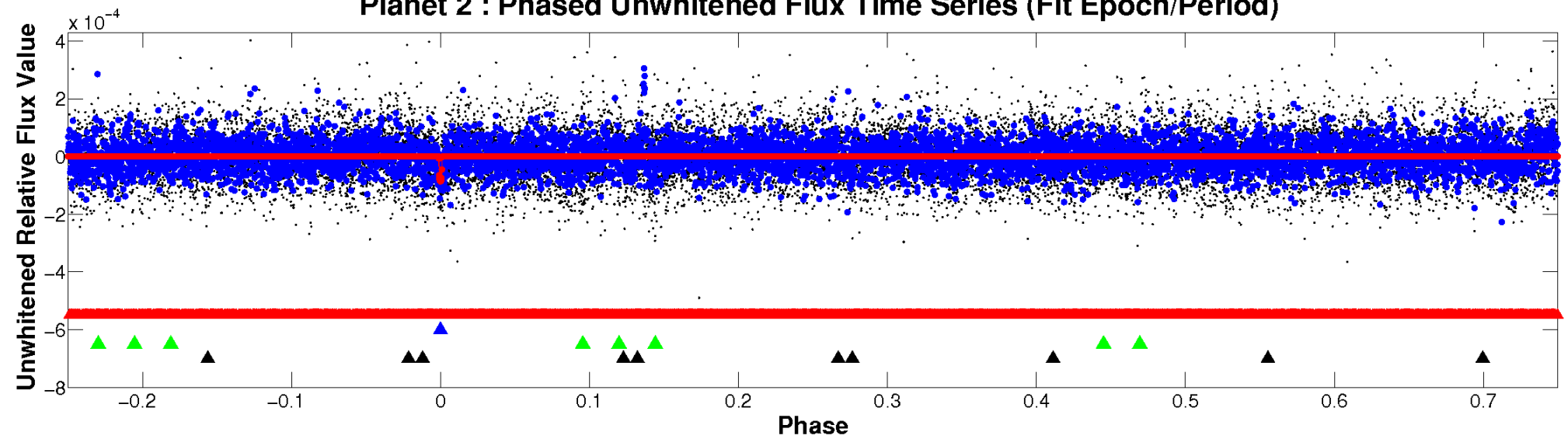
ALT Odd/Even

TCE 004773133-02

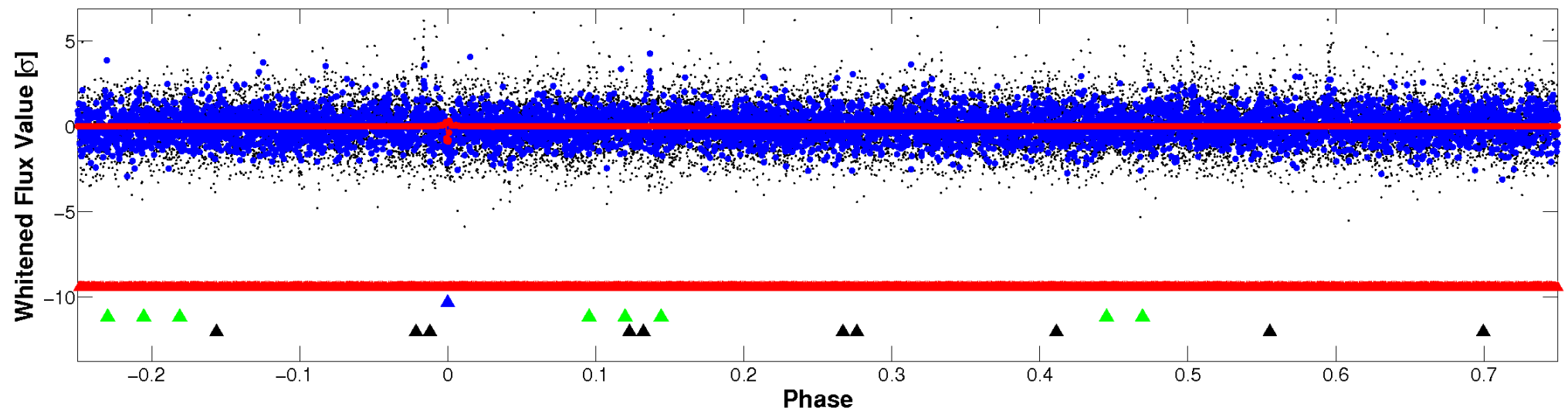


Non-Whitened Vs. Whitened Light Curve

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

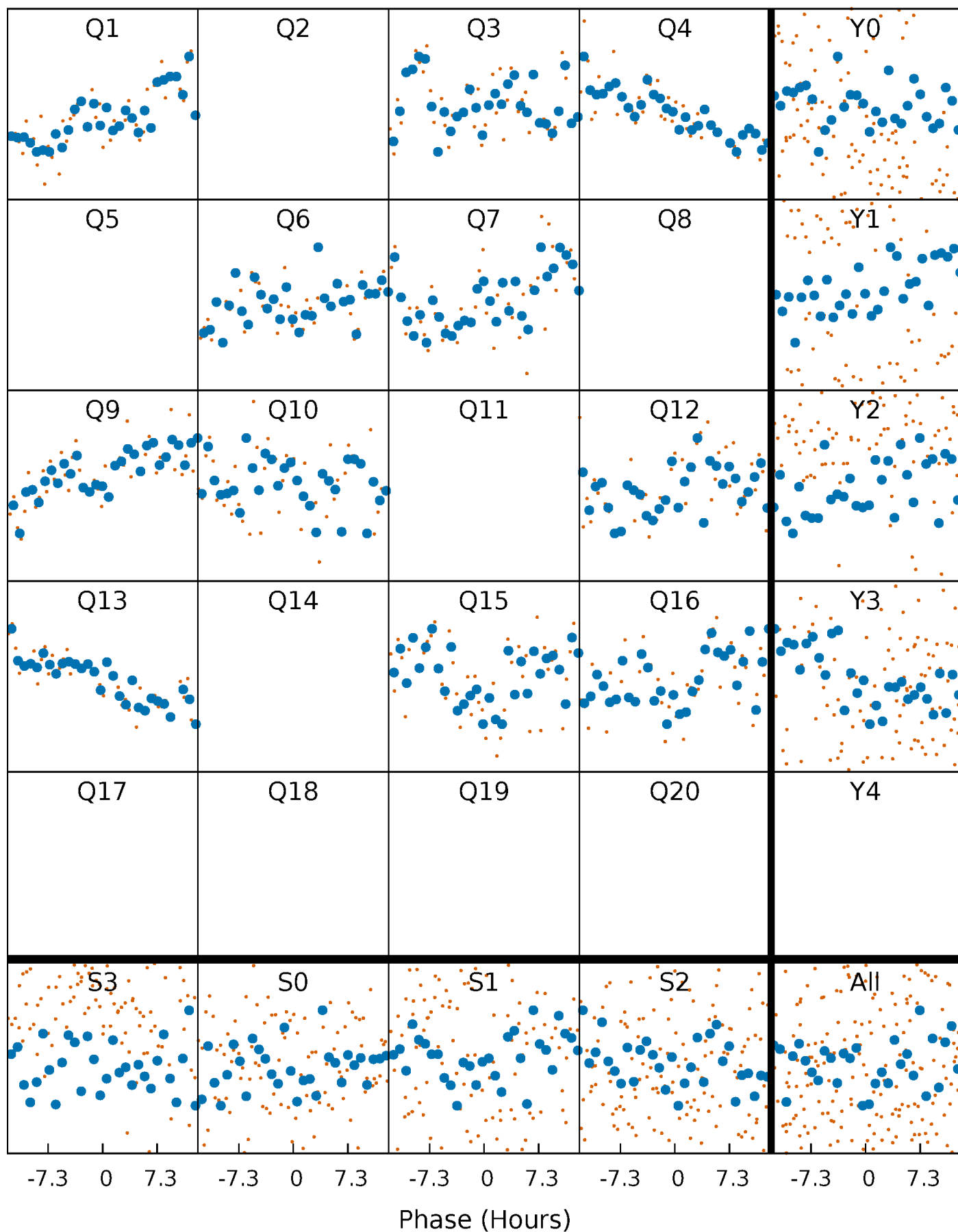


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



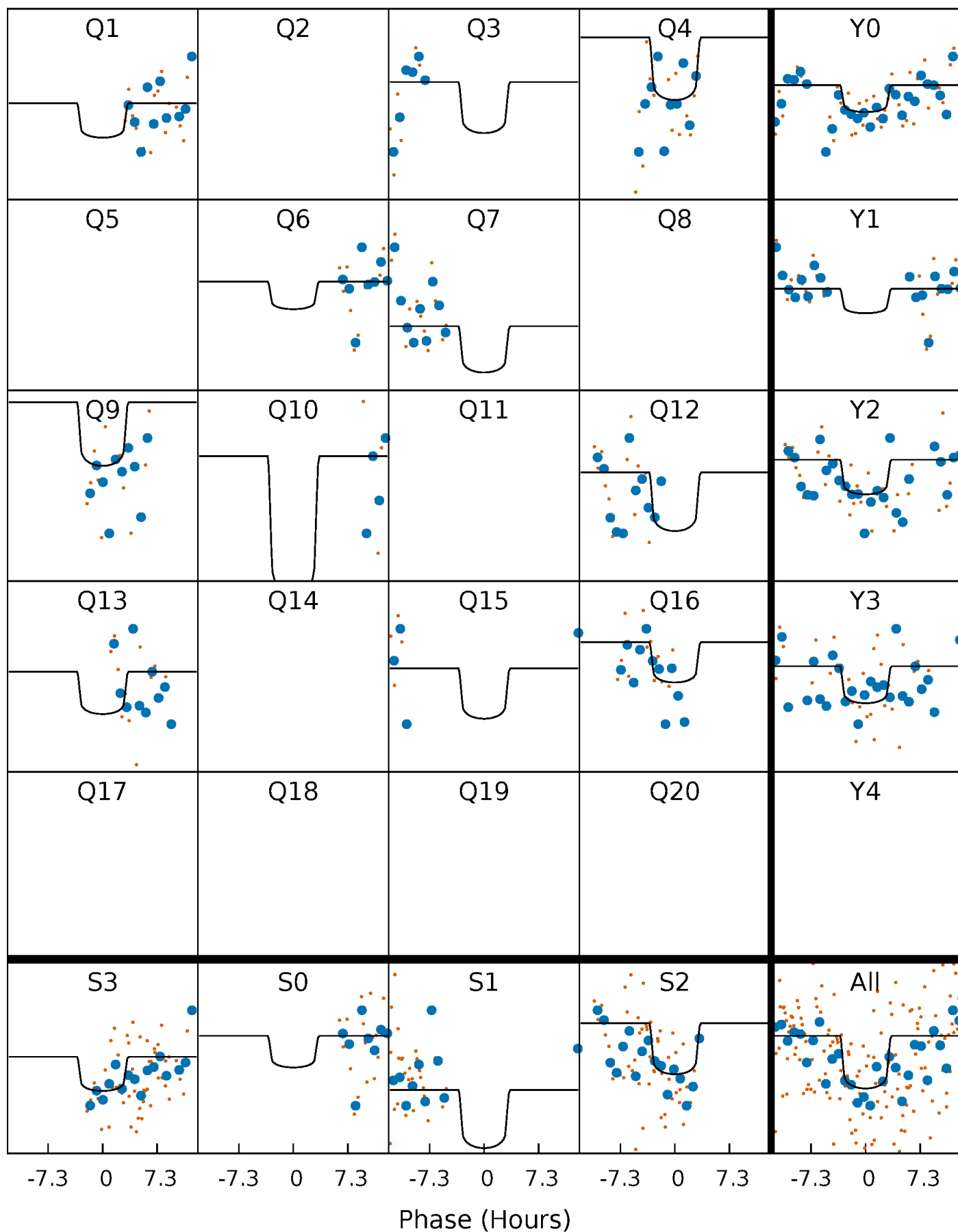
PDC Quarter-Phased Transit Curves

TCE 004773133-02 P=138.005645 Days $T_0=136.985104$ (BKJD)



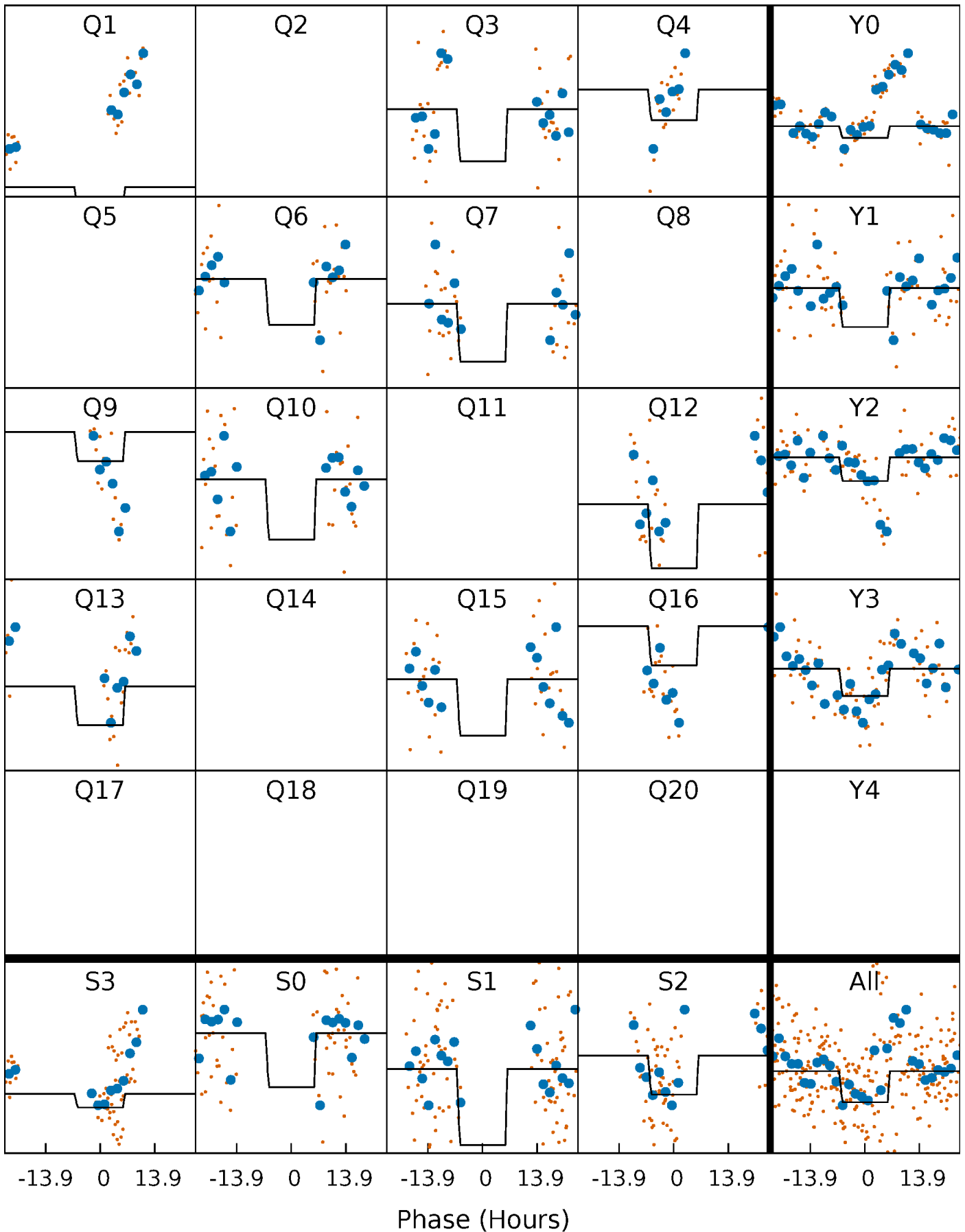
DV Quarter-Phased Transit Curves

TCE 004773133-02 P=138.005645 Days $T_0=136.985104$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

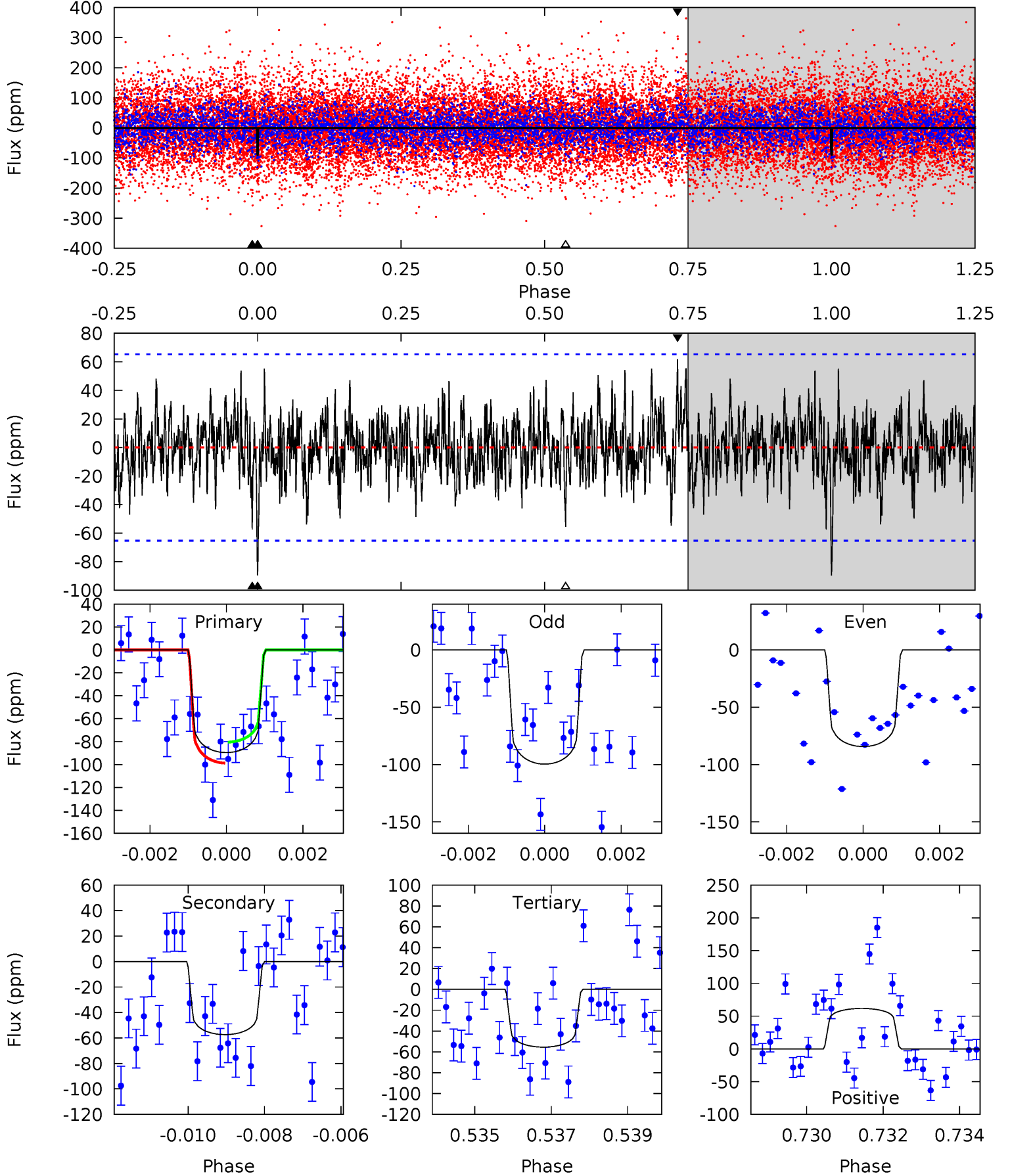
TCE 004773133-02 P=138.001453 Days $T_0=137.023061$ (BKJD)



DV Model-Shift Uniqueness Test

004773133-02, $P = 138.005645$ Days, $E = 136.985104$ Days

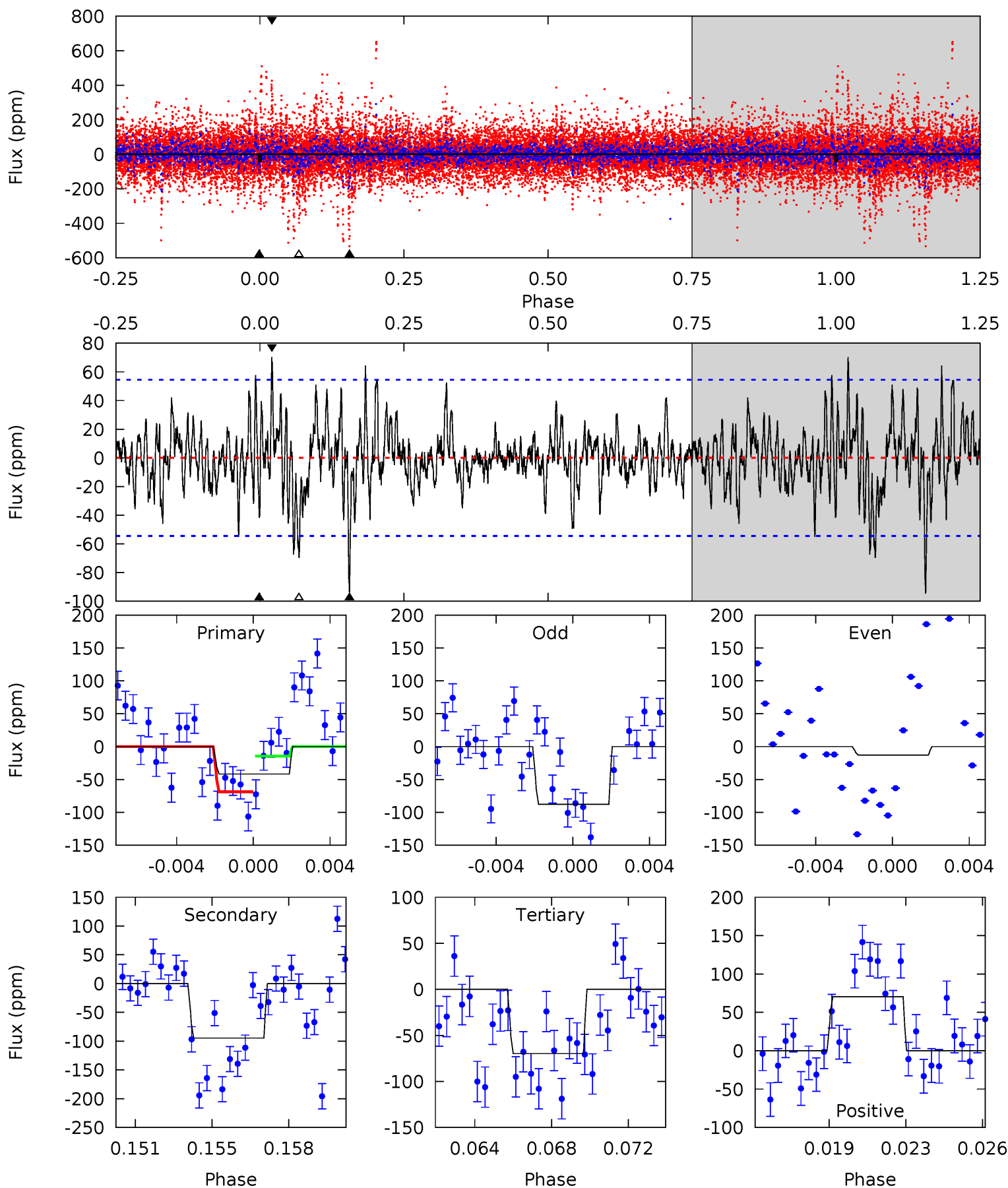
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.30	4.67	4.52	5.03	5.32	3.08	1.42	2.78	2.27	0.16	-0.36	0.60	0.72	0.41	0.75



Alt Model-Shift Uniqueness Test

004773133-02, P = 138.001453 Days, E = 137.023061 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.99	9.06	6.67	6.74	5.21	2.90	1.70	-2.68	-2.75	2.39	2.32	3.44	0.26	0.43	2.63



Stellar Parameters For KIC 004773133

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot cm^{-3})$
	9602^{+272}_{-428}	$4.233^{+0.129}_{-0.240}$	$0.070^{+0.150}_{-0.700}$	$1.879^{+0.831}_{-0.384}$	$2.201^{+0.445}_{-0.544}$	$0.468^{+0.313}_{-0.292}$
	+3%/-4%	+3%/-6%	+214%/-1000%	+44%/-20%	+20%/-25%	+67%/-63%
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 004773133-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-57 ± 12	$2.12^{+1.55}_{-1.22}$	992^{+91}_{-73}	7840^{+7404}_{-1950}	3226^{+13775}_{-2216}
Alt.	-95 ± 10	$2.12^{+1.60}_{-1.23}$	993^{+98}_{-71}	9254^{+9715}_{-2581}	5317^{+25091}_{-3553}

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 $A_{obs} \gg 1.0$

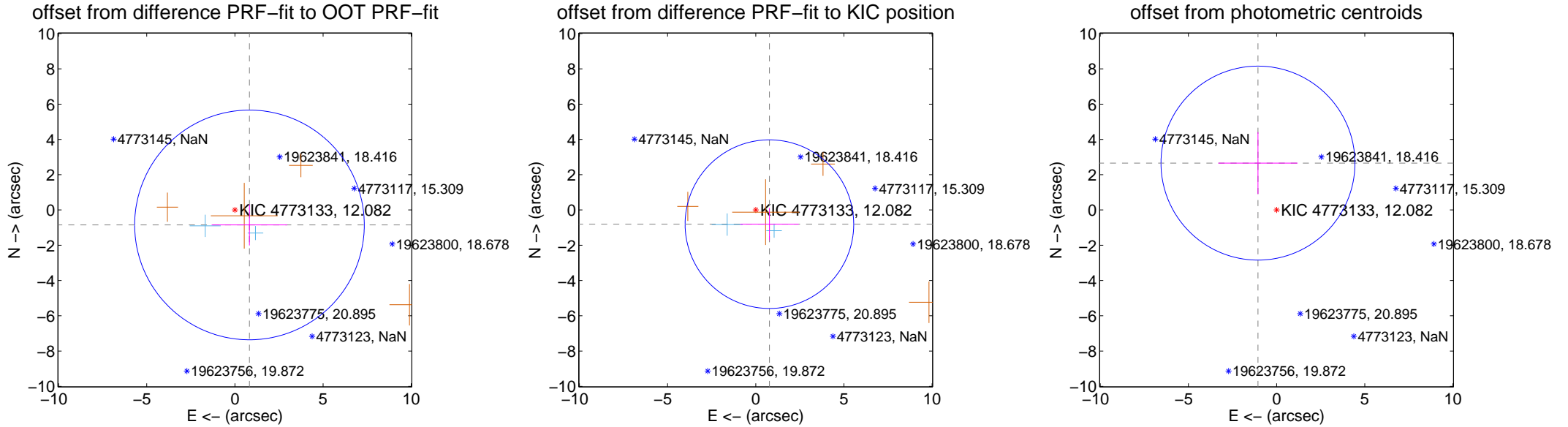
DV Centroid Data

Supplemental centroid analysis for 004773133-02. Kepler magnitude: 12.08. Transit SNR 5.38

There are 2 quarters with good PRF difference image offsets

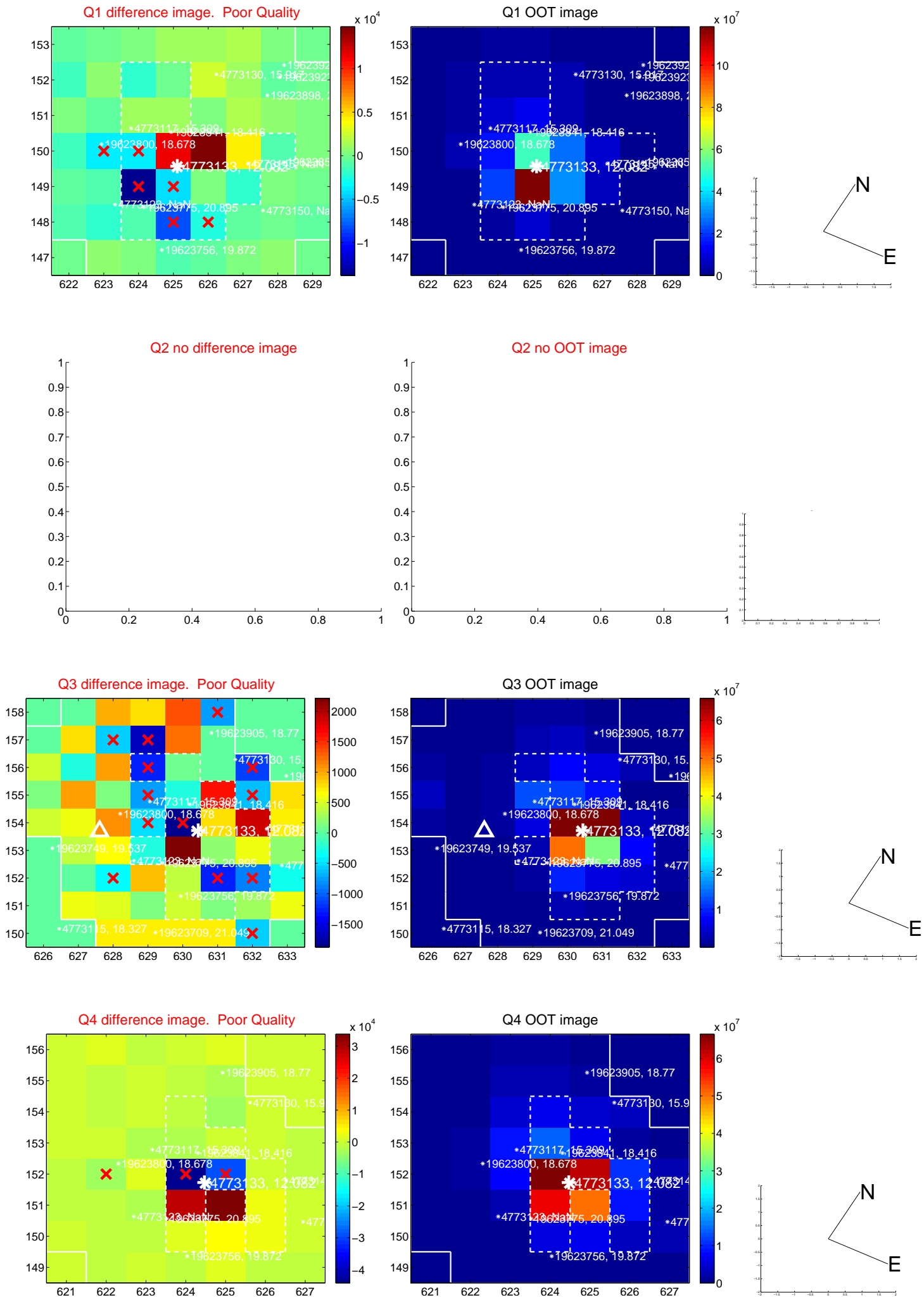
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.184 ± 2.171	0.55	-0.826 ± 2.142	-0.849 ± 1.162
PRF-fit source offset from KIC position	1.117 ± 1.594	0.70	-0.774 ± 1.661	-0.804 ± 0.911
photometric centroid source offset	2.86 ± 1.83	1.56	1.06 ± 2.25	2.66 ± 1.76

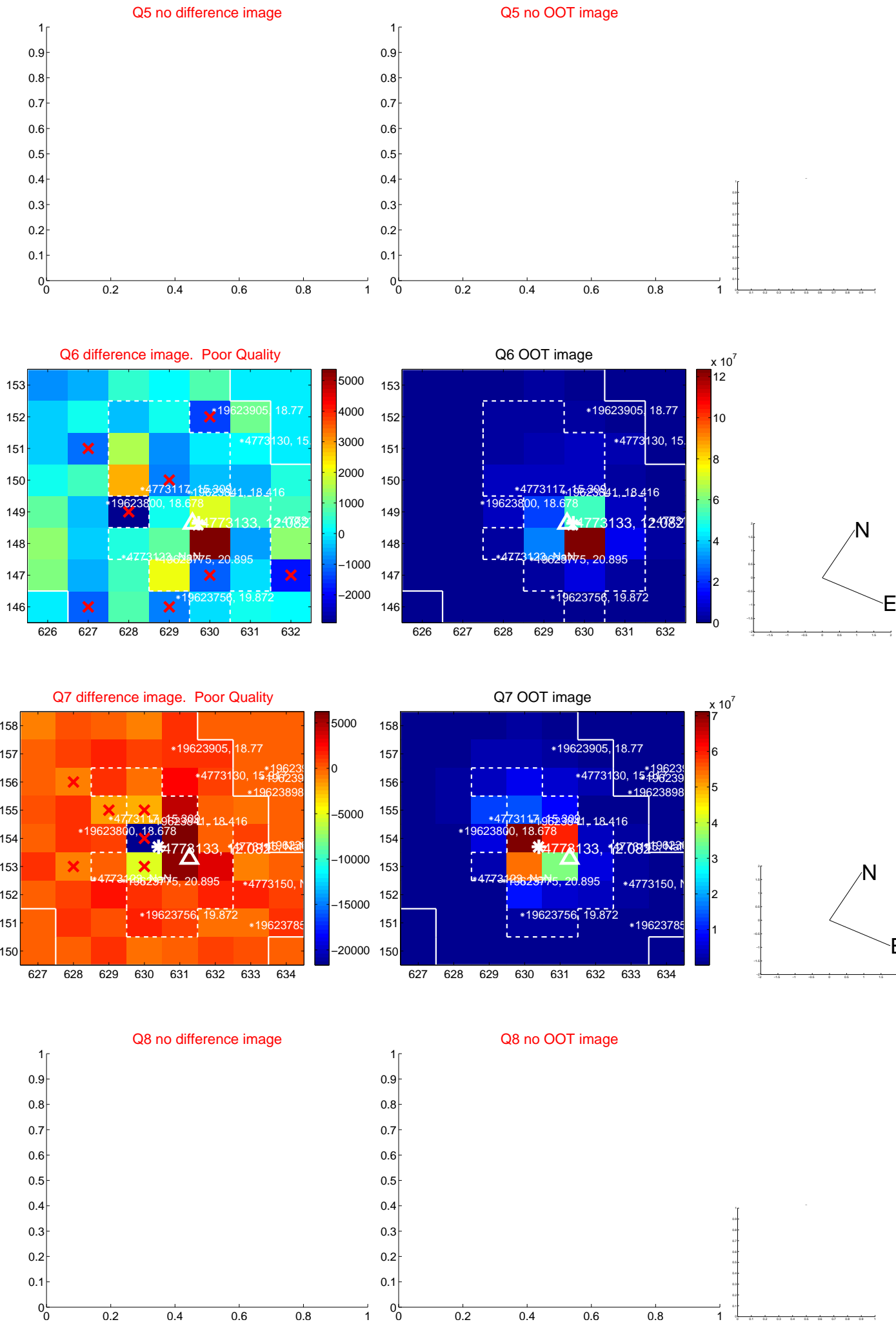


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

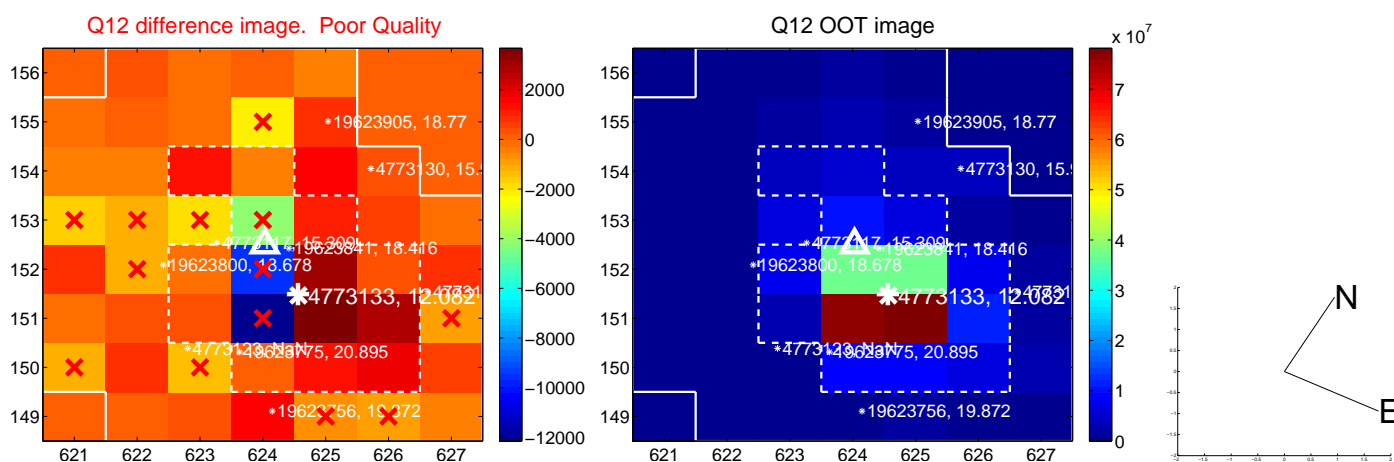
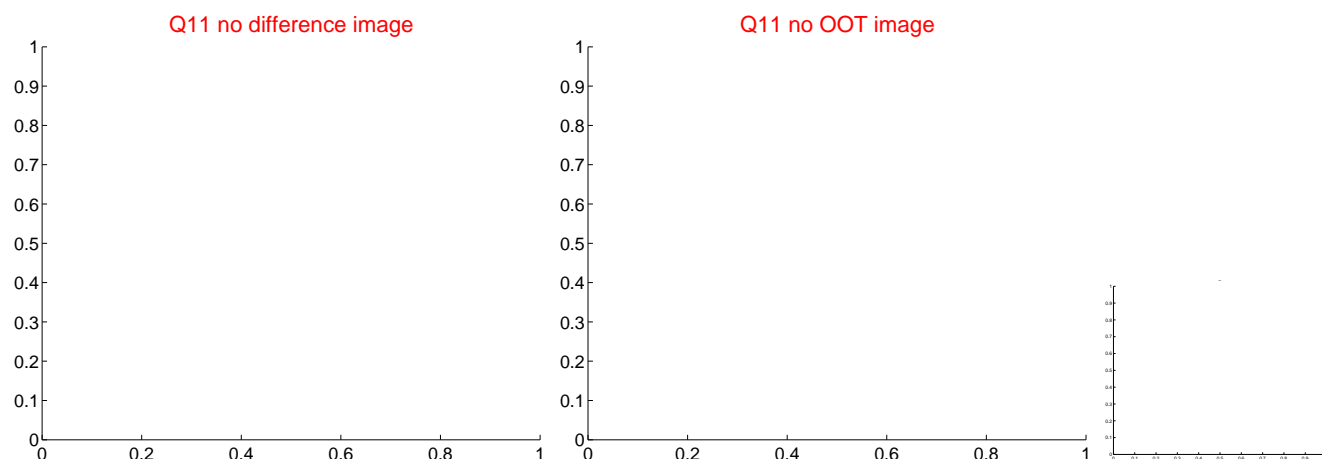
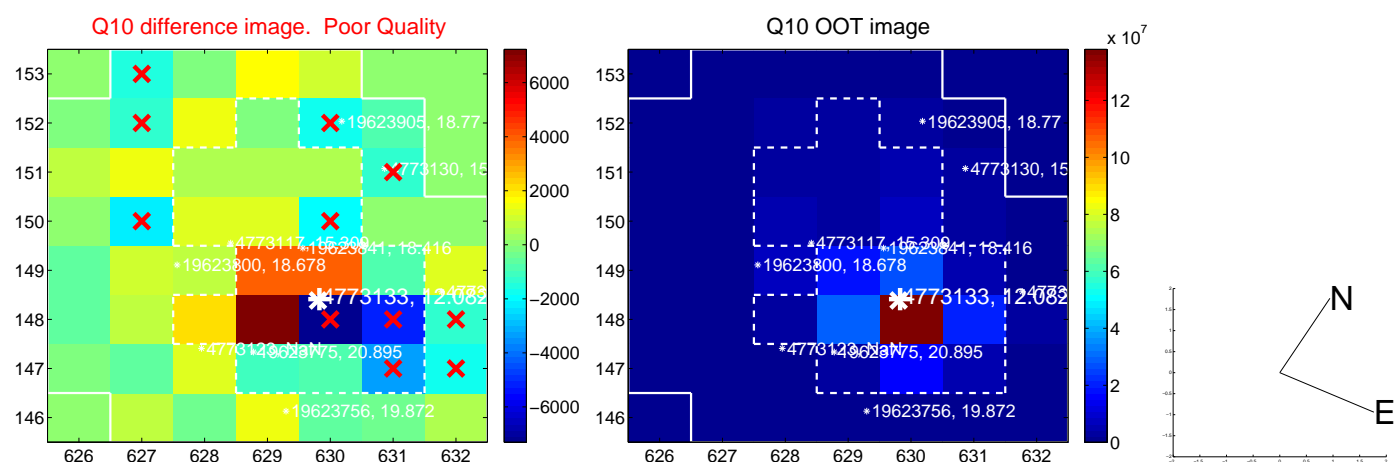
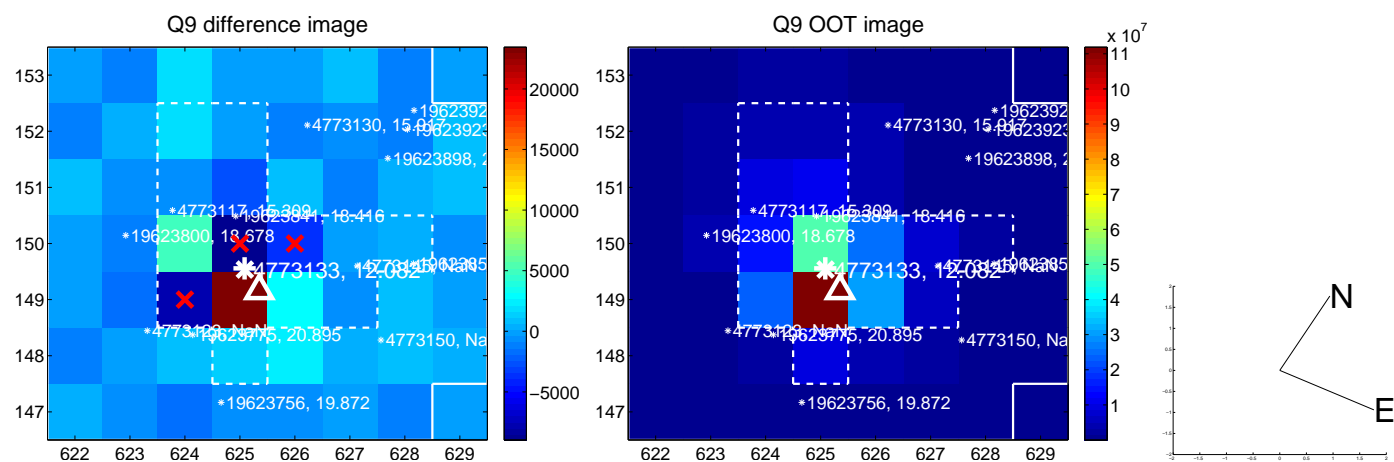
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



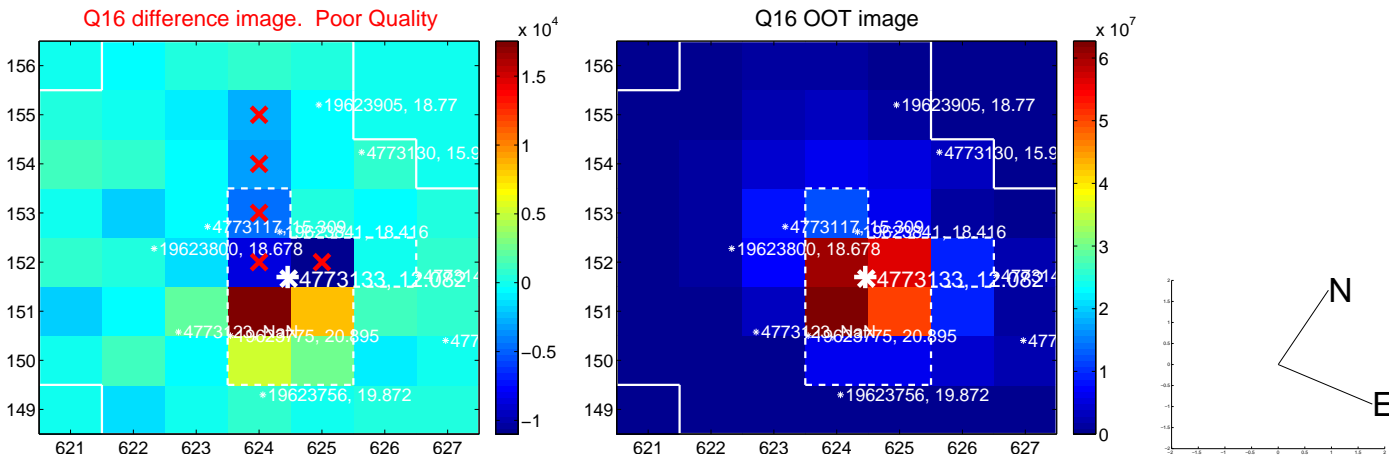
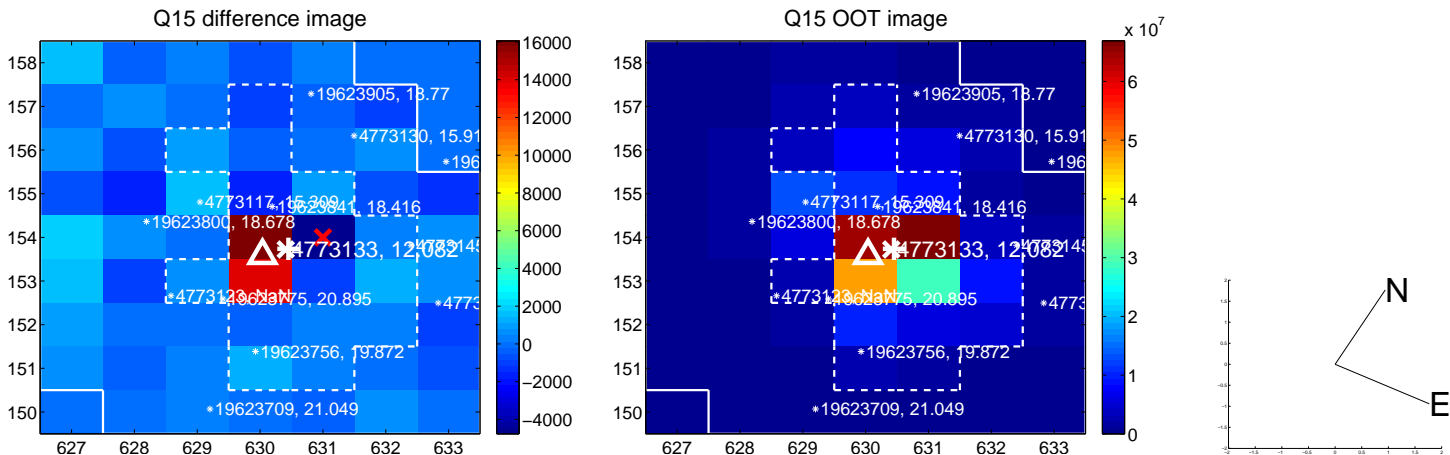
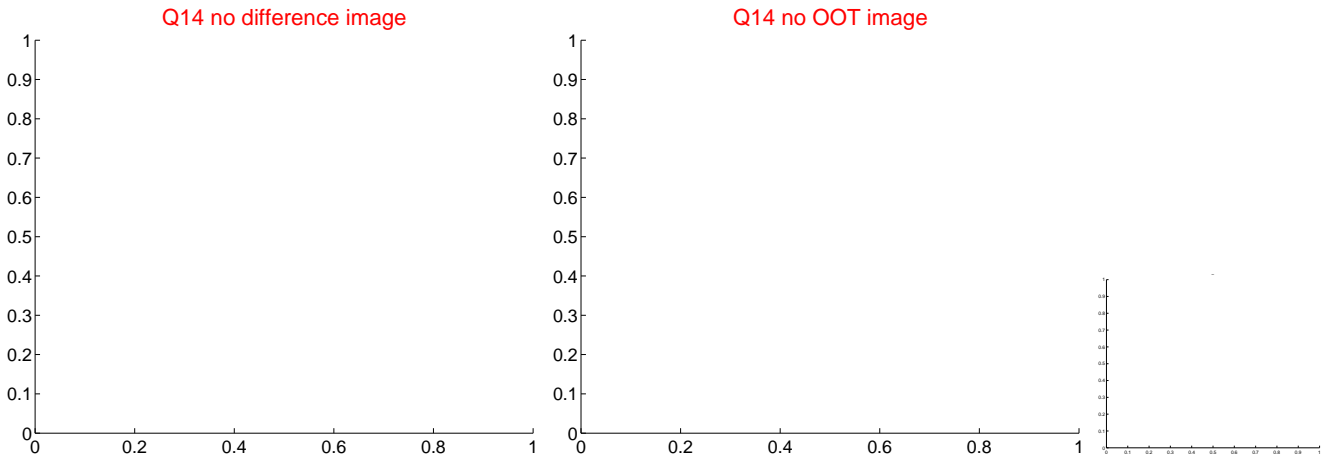
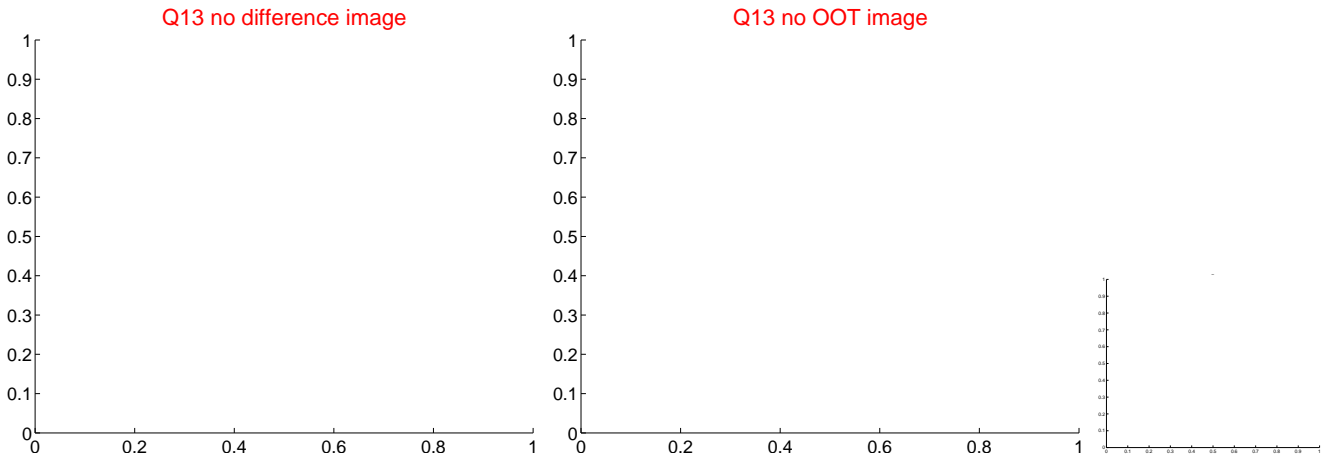
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



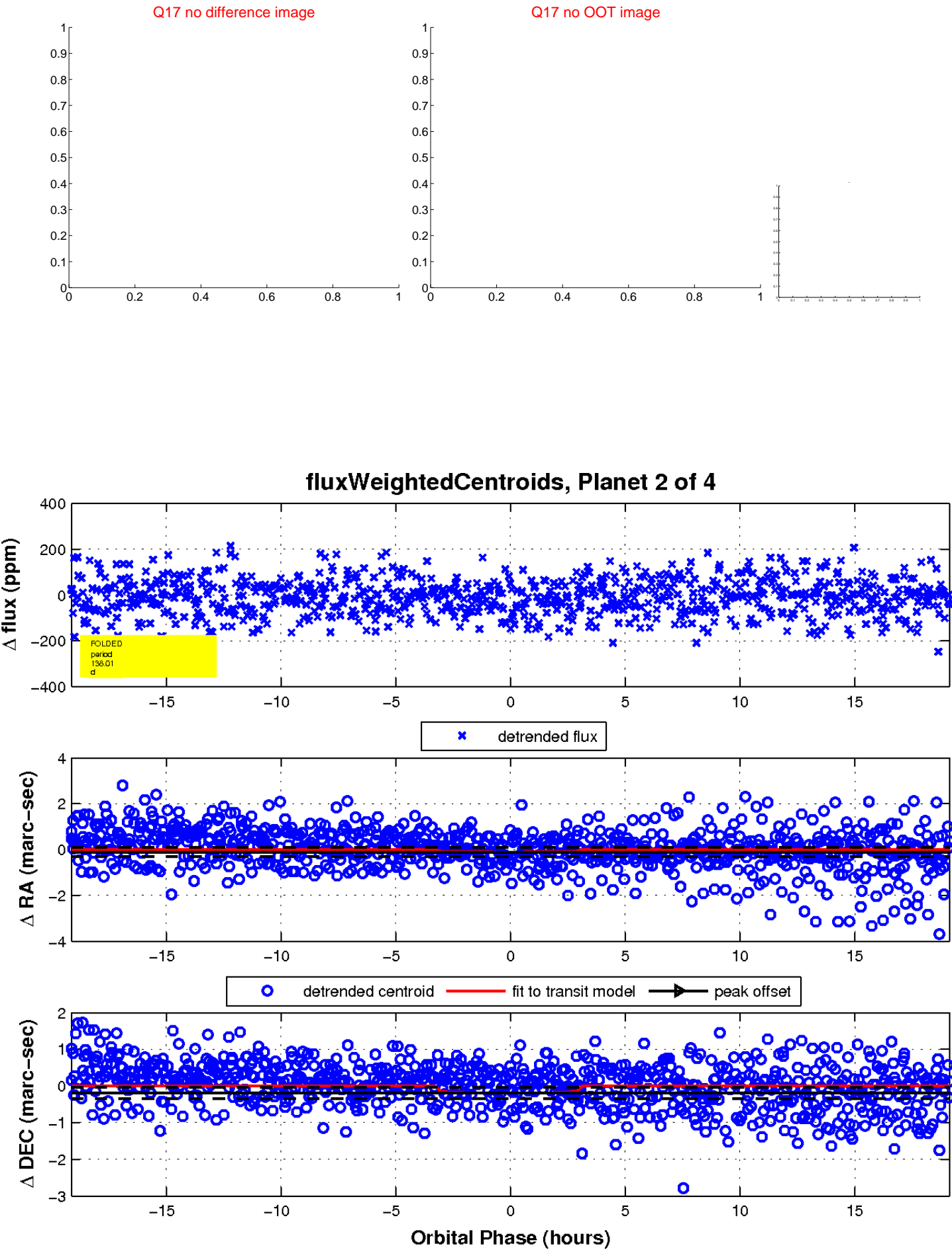
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

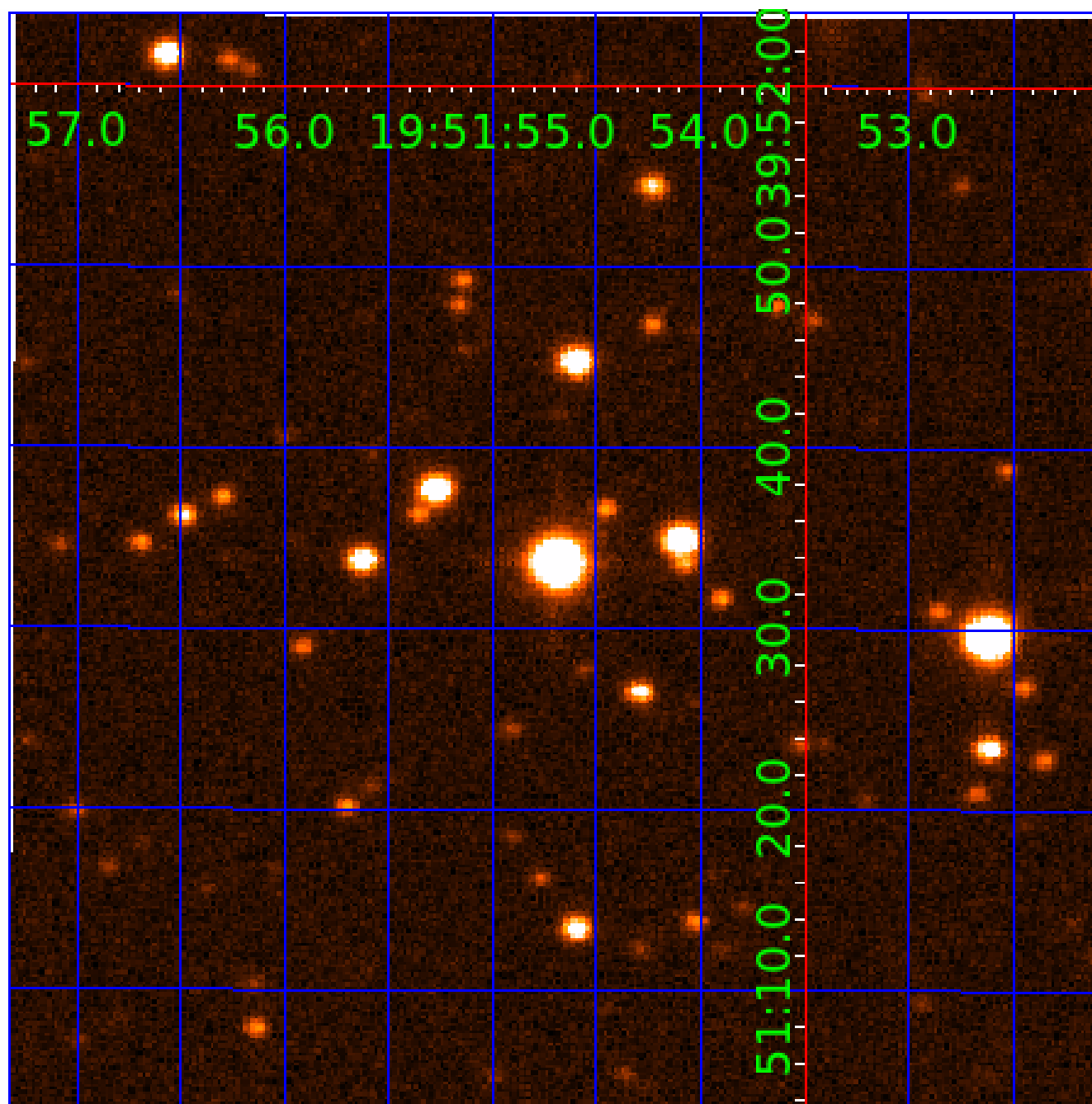


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004773133

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})
004773133-01	OBS	No	1.318945	132.675957	6.8	7.304	7.7	7.6	1.88	9602	0.51	28663.11
004773133-02	OBS	No	138.005645	136.985104	85.6	6.389	8.8	5.4	1.88	9602	1.93	58.13
004773133-03	OBS	No	182.888566	250.009015	164.1	3.296	8.7	8.4	1.88	9602	2.73	39.94
004773133-04	OBS	No	157.906897	134.030926	108.4	4.404	7.8	7.3	1.88	9602	2.20	48.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004773133-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
004773133-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004773133-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
004773133-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_UNCERTAIN

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

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

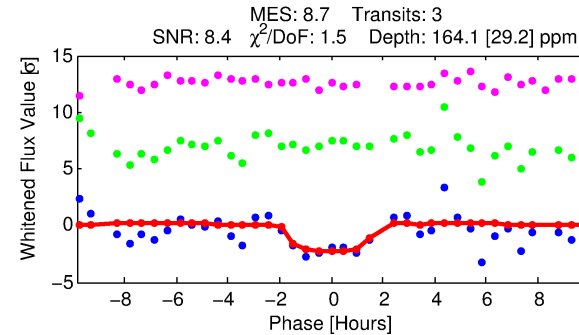
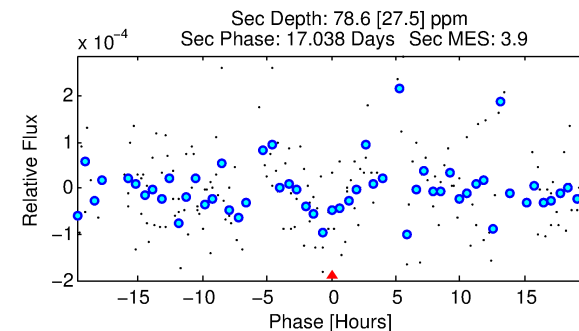
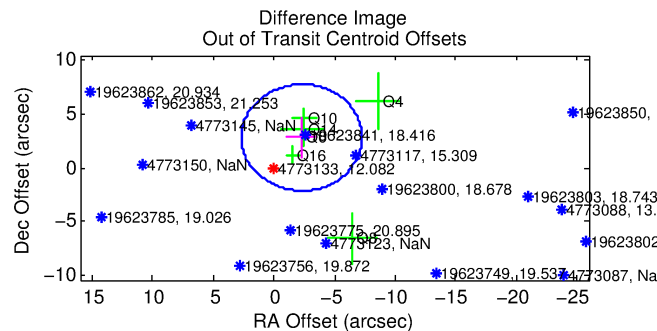
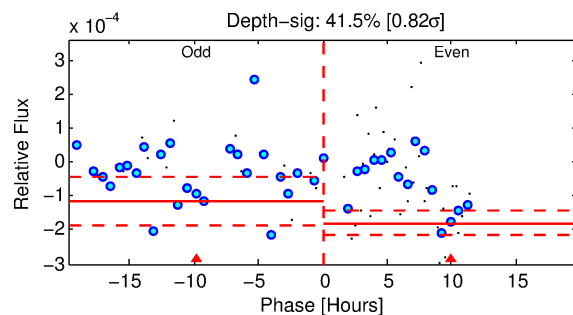
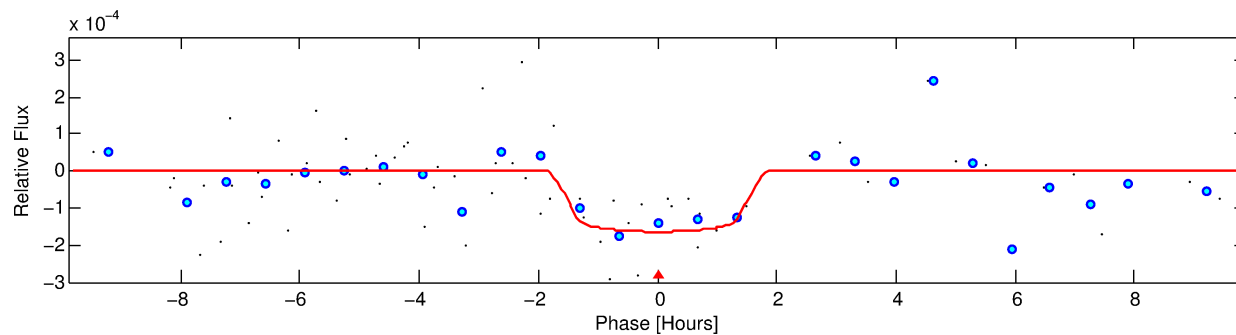
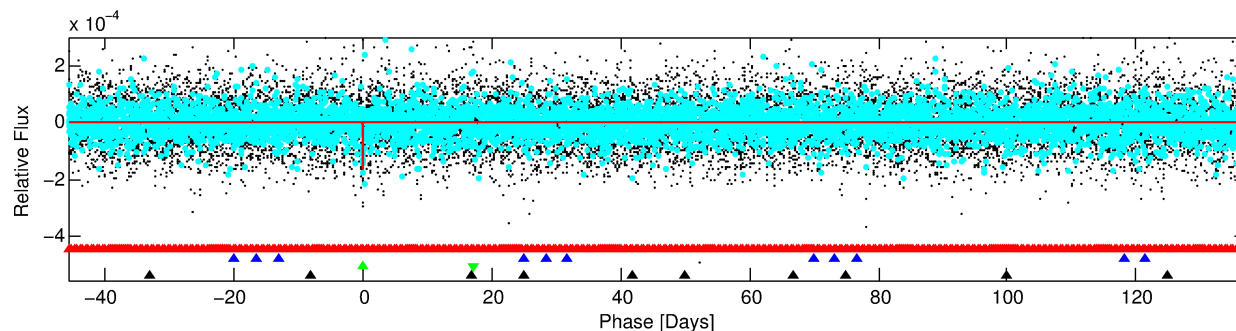
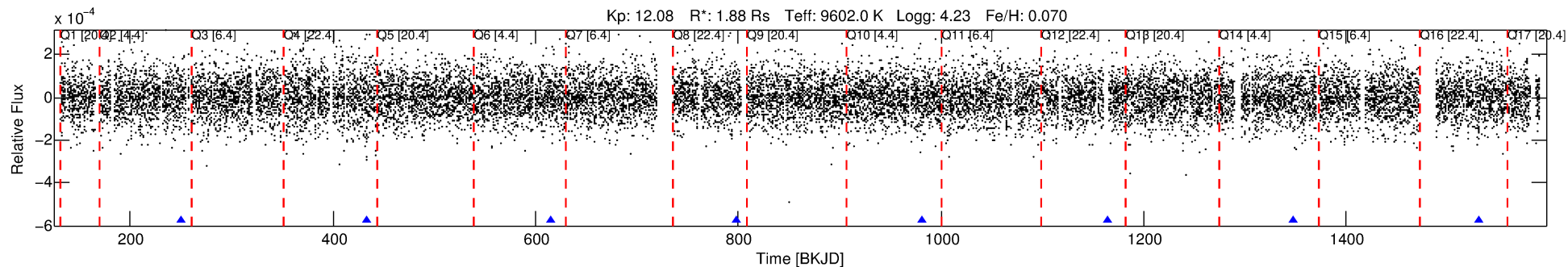
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004773133-03

No Significant Match Found

DV One-Page Summary

KIC: 4773133 Candidate: 3 of 4 Period: 182.889 d



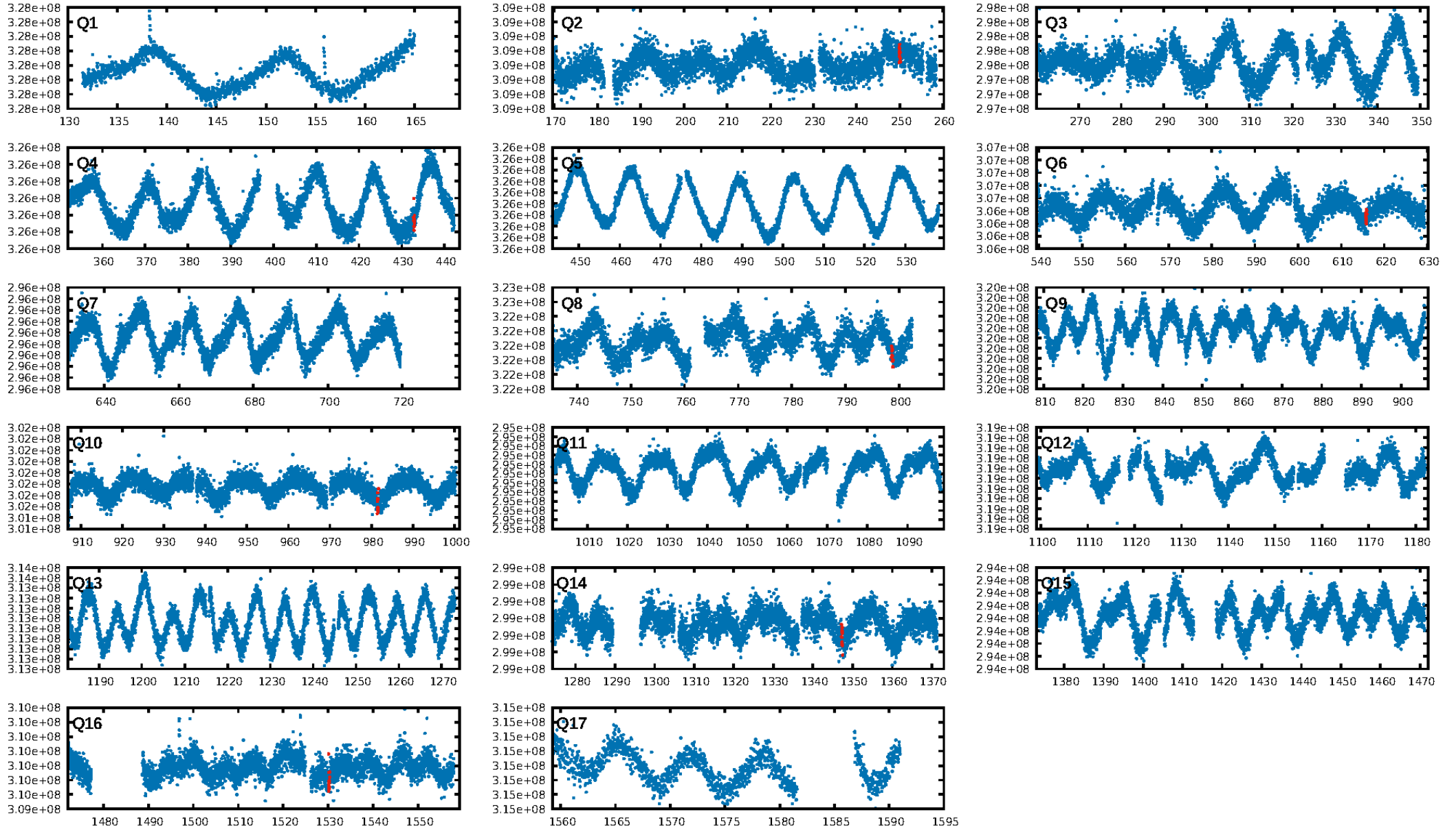
DV Fit Results:

Period = 182.88857 [0.00474] d
Epoch = 250.0090 [0.0265] BKJD
Rp/R* = 0.0133 [0.0164]
a/R* = 215.44 [2007.99]
b = 0.88 [2.51]
Seff = 39.94 [20.15]
Teq = 641 [81] K
Rp = 2.73 [3.58] Re
a = 0.8206 [0.2853] AU
Ag = 3904.86 [9907.30] [0.39σ]
Teffp = 7835 [4895] K [1.47σ]

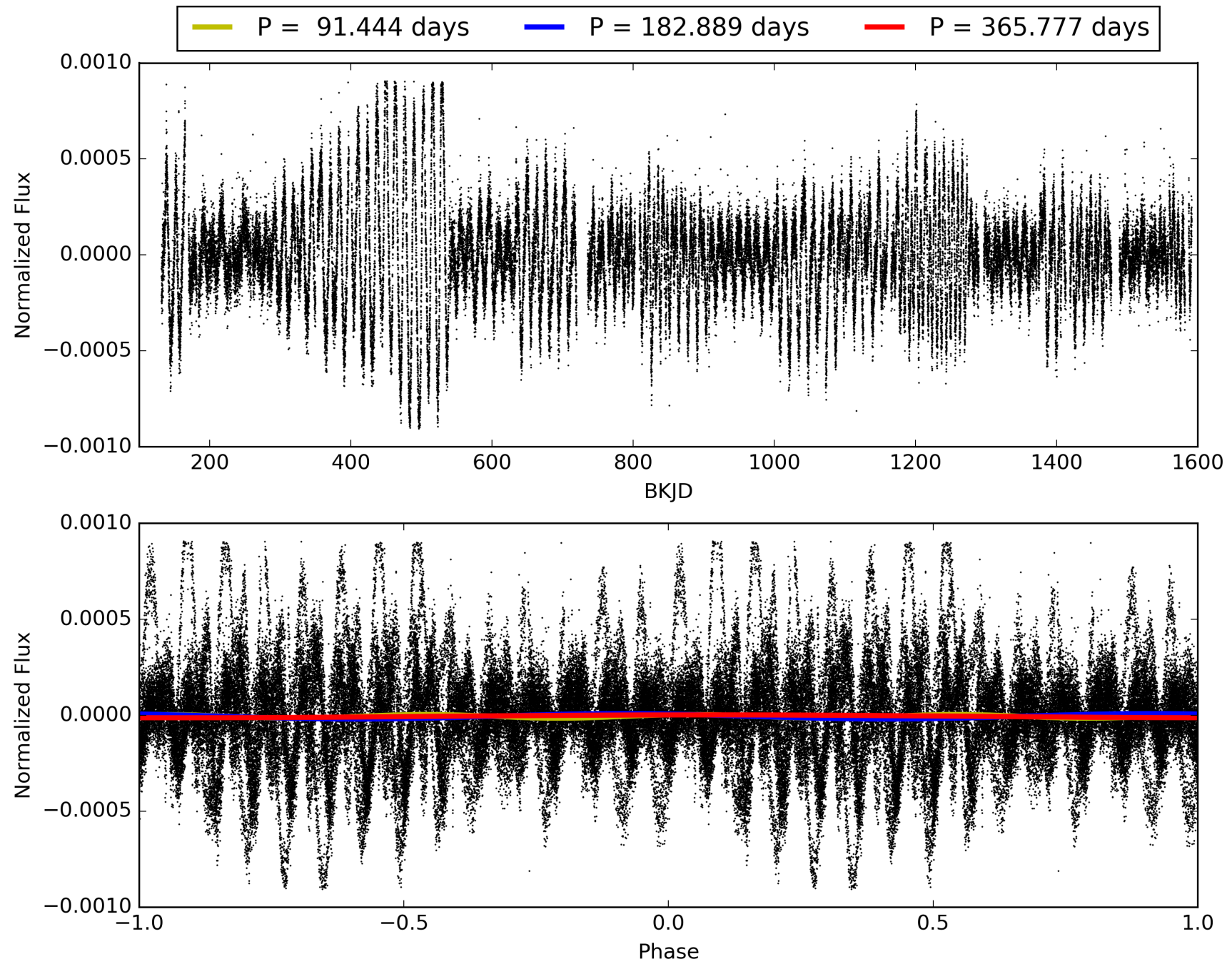
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [109.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 19.2%
ModelChiSquareGof-sig: 98.8%
Bootstrap-pfa: 4.44e-12
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.762
Centroid-sig: 19.3%
Centroid-so: 1.404 arcsec [0.89σ]
OotOffset-rm: 3.623 arcsec [2.19σ]
KicOffset-rm: 3.634 arcsec [2.38σ]
OotOffset-st: 3/0/3/0 [6]
KicOffset-st: 3/0/3/0 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 0.43 [3/7]

TCE 004773133-03, PDC Light Curves

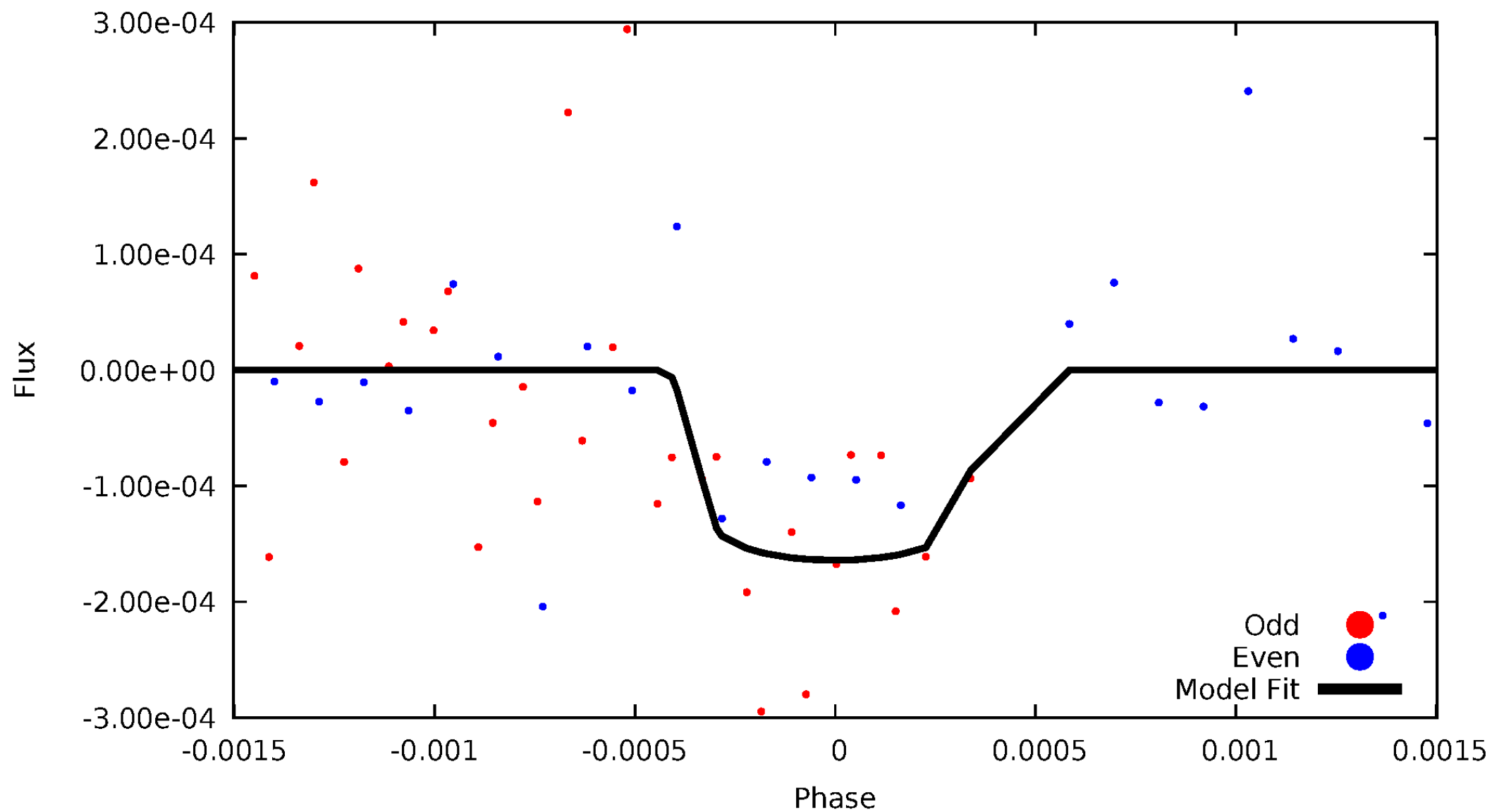


TCE 004773133-03



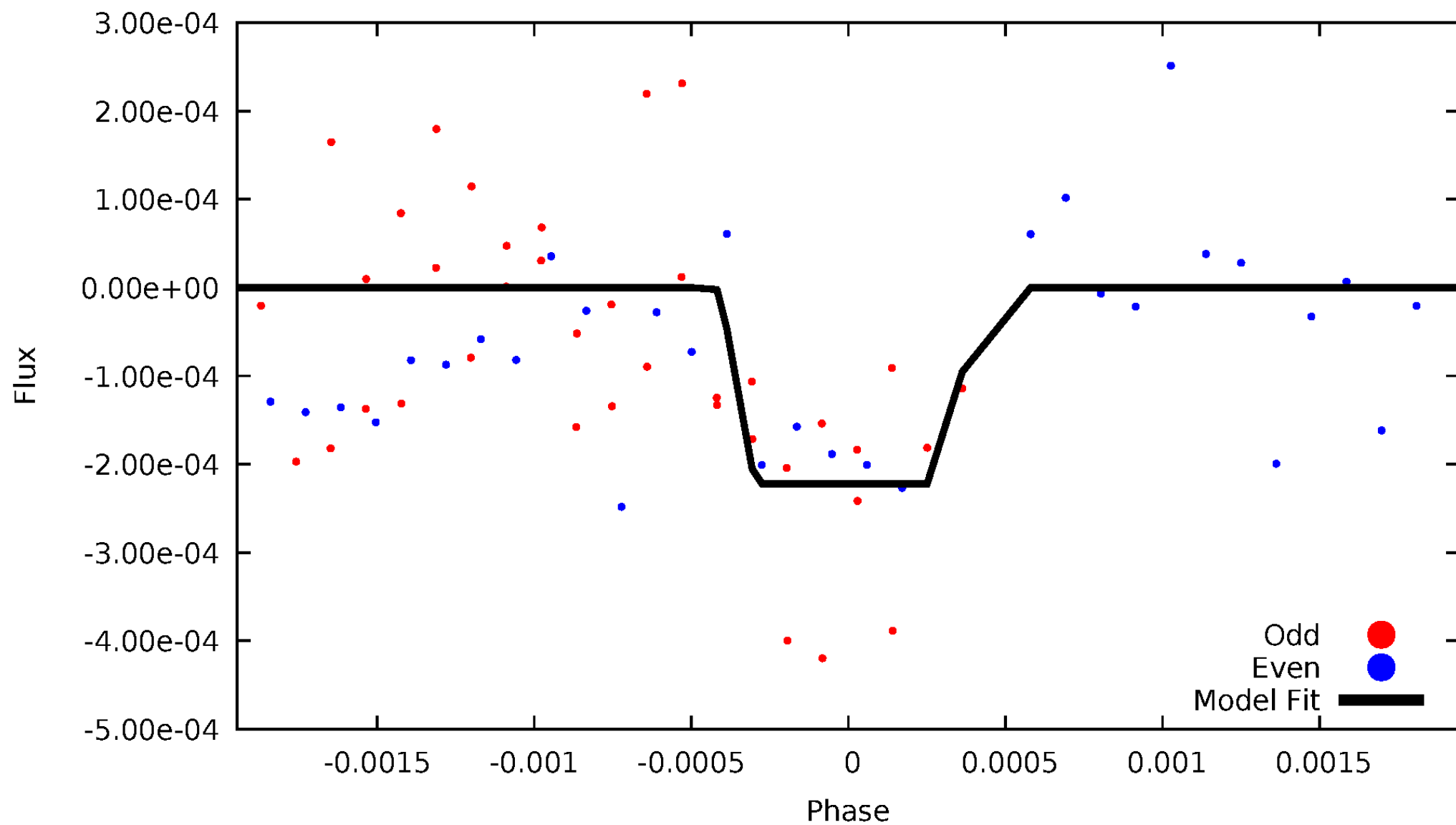
DV Odd/Even

TCE 004773133-03



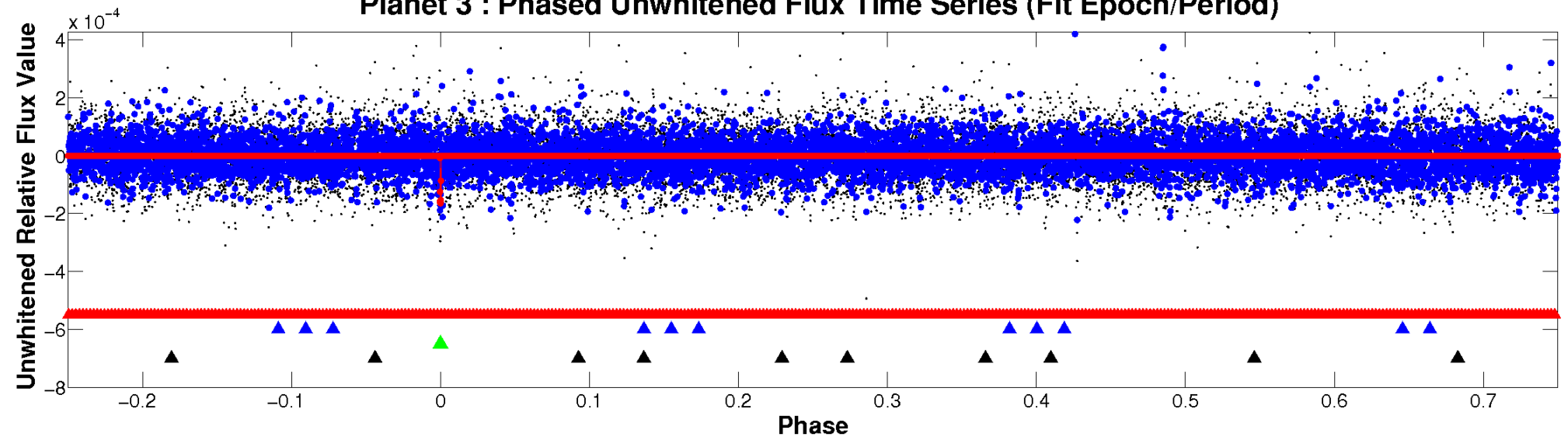
ALT Odd/Even

TCE 004773133-03

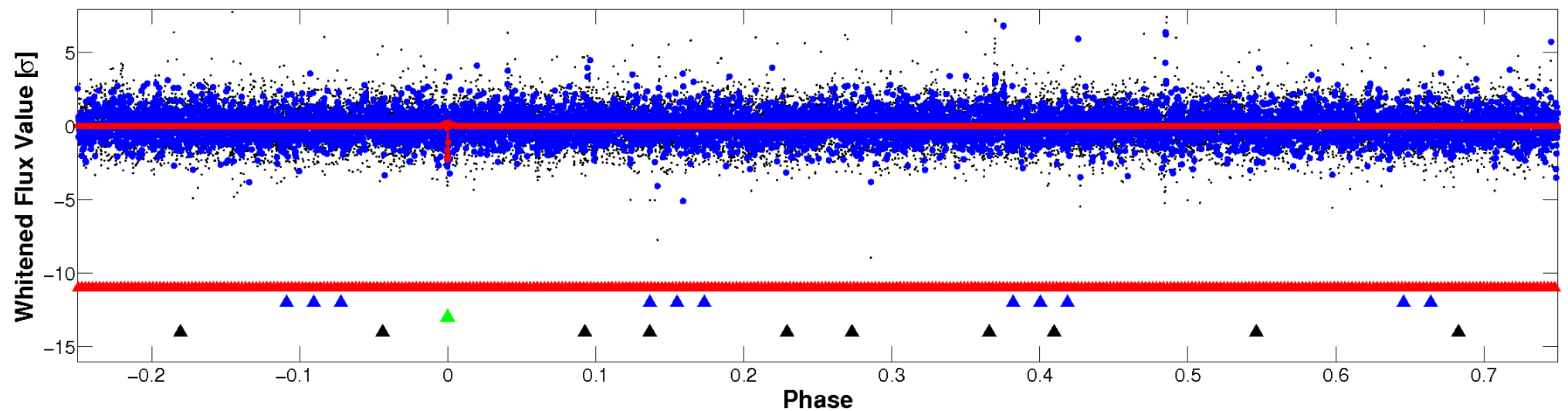


Non-Whitened Vs. Whitened Light Curve

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

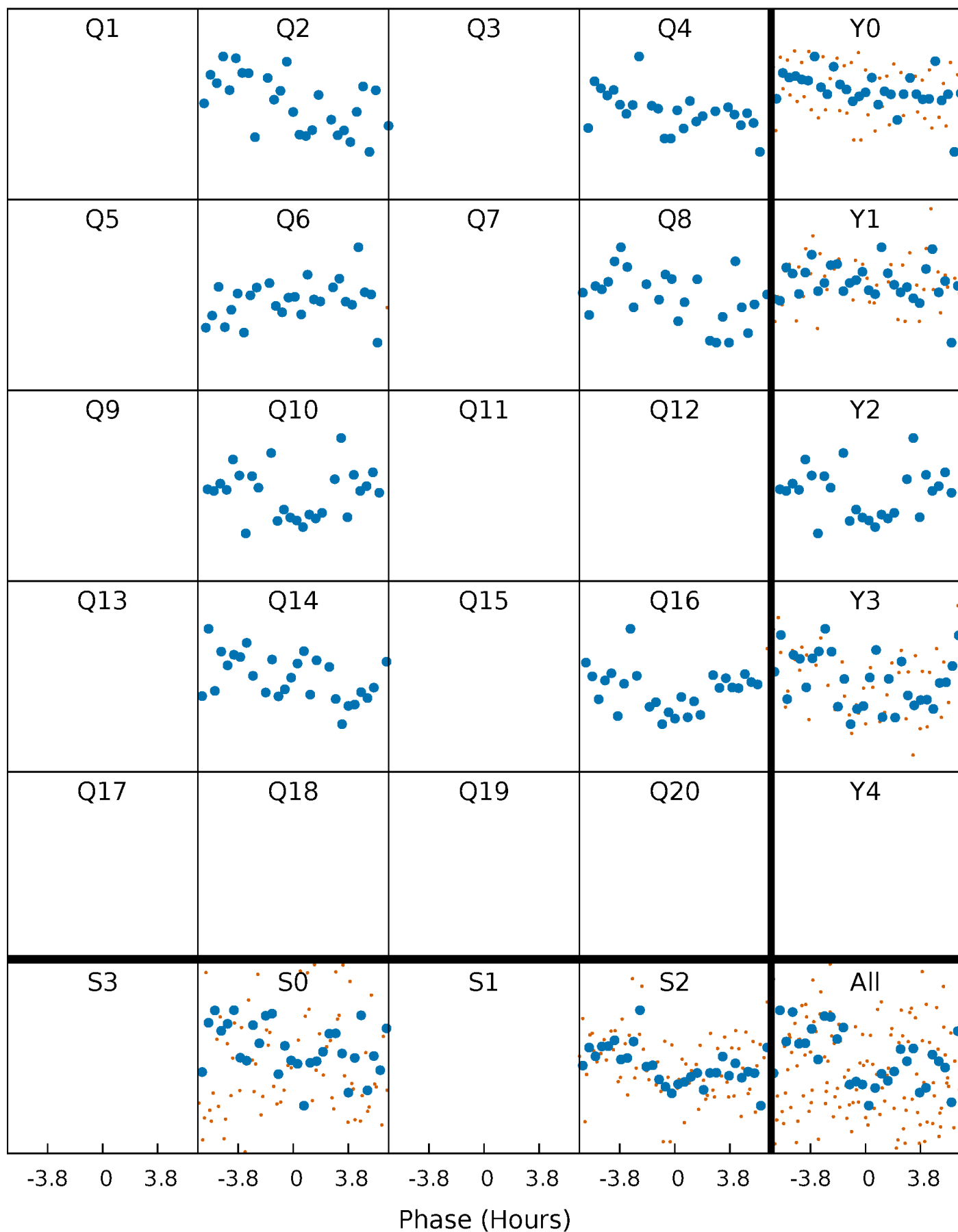


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



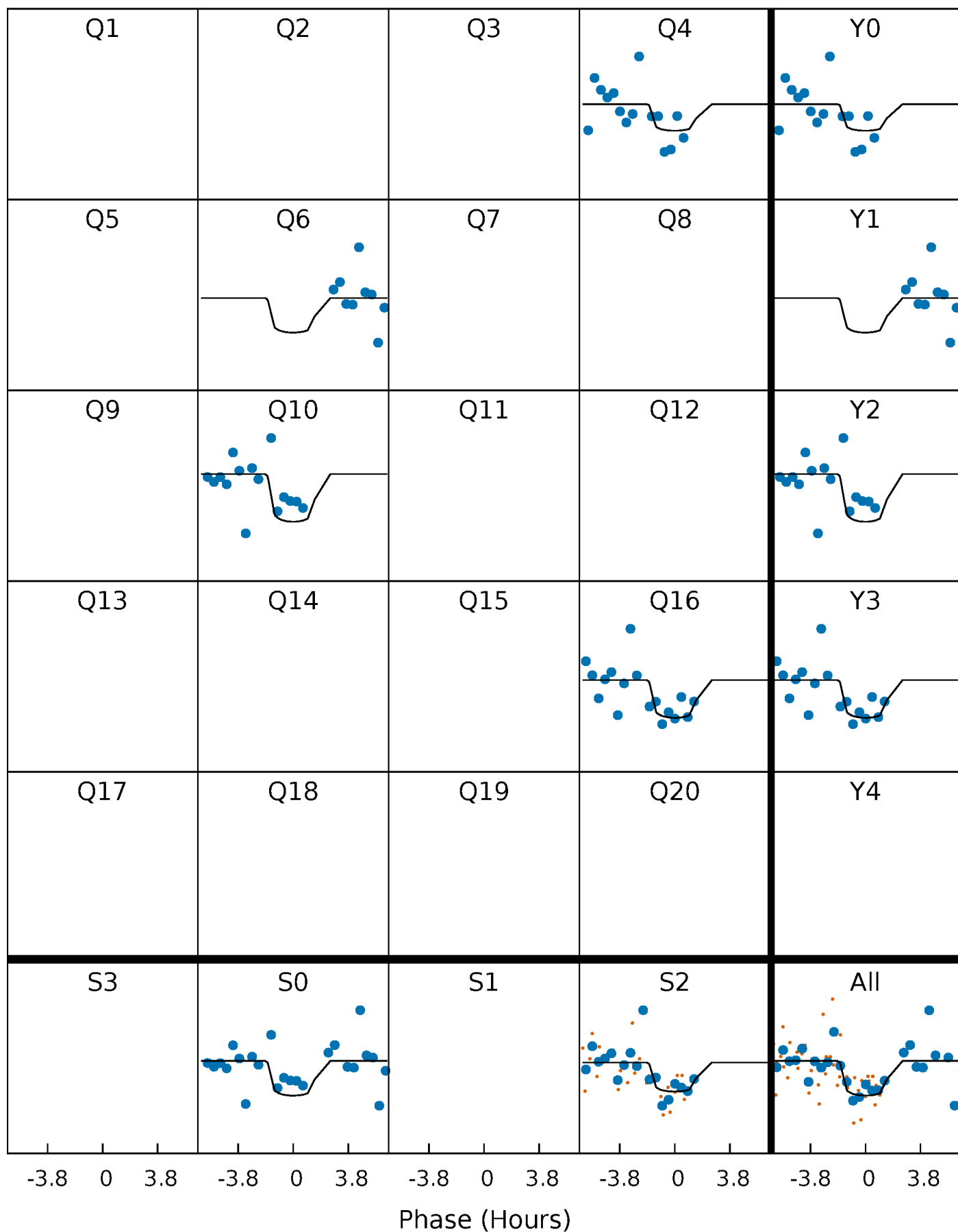
PDC Quarter-Phased Transit Curves

TCE 004773133-03 P=182.888566 Days $T_0=250.009016$ (BKJD)



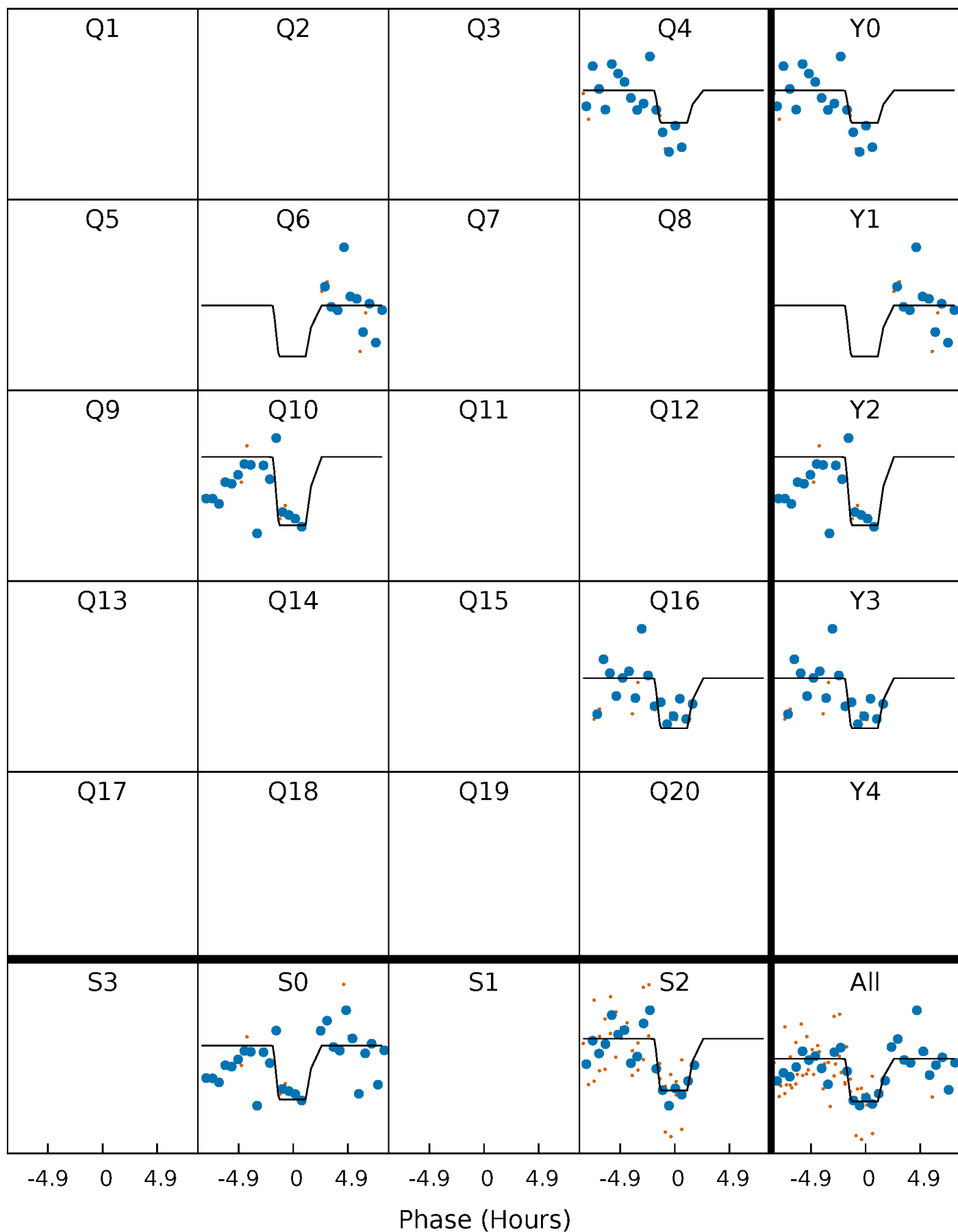
DV Quarter-Phased Transit Curves

TCE 004773133-03 P=182.888566 Days $T_0=250.009016$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

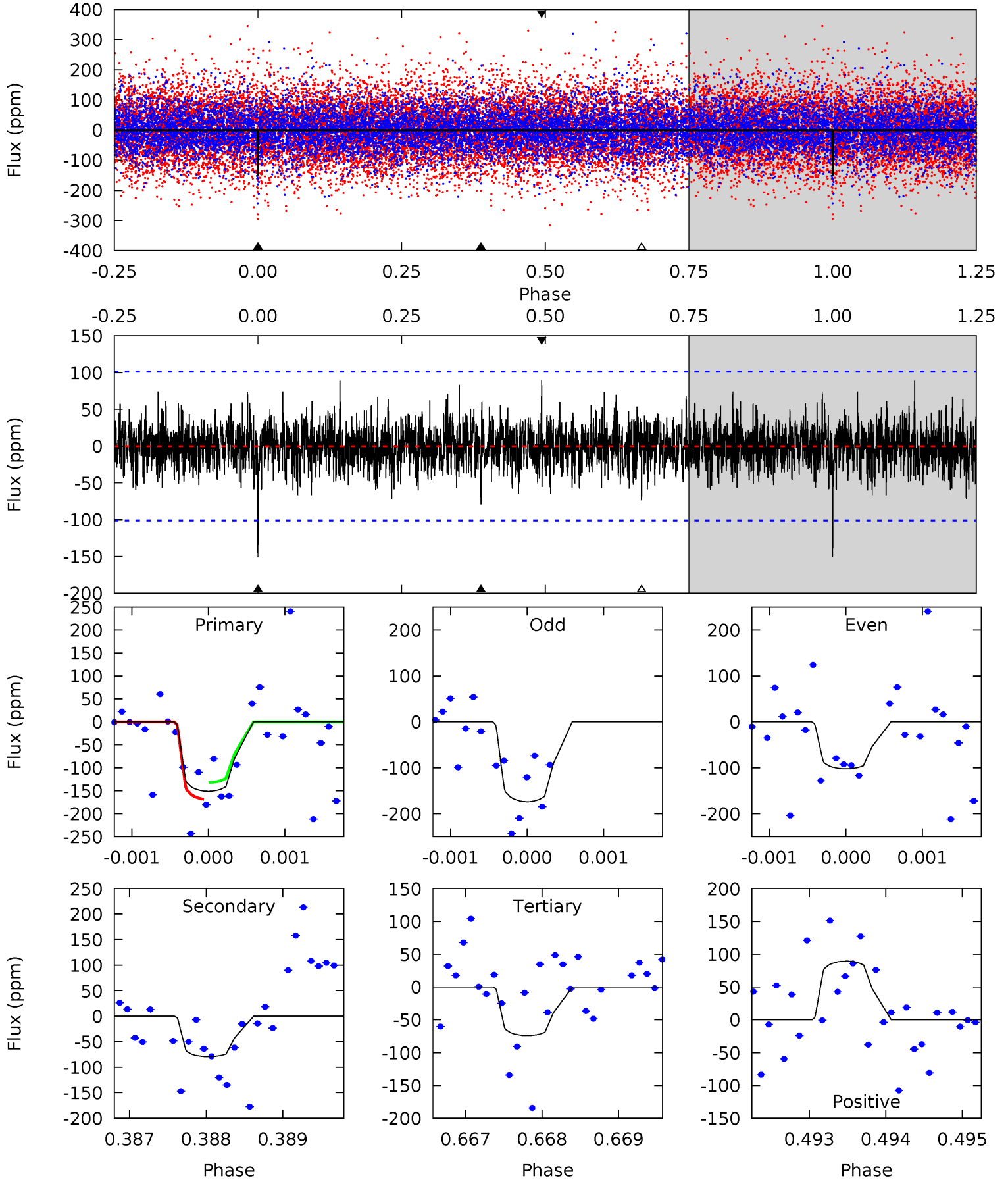
TCE 004773133-03 P=182.887518 Days $T_0=250.011845$ (BKJD)



DV Model-Shift Uniqueness Test

004773133-03, P = 182.888566 Days, E = 67.120450 Days

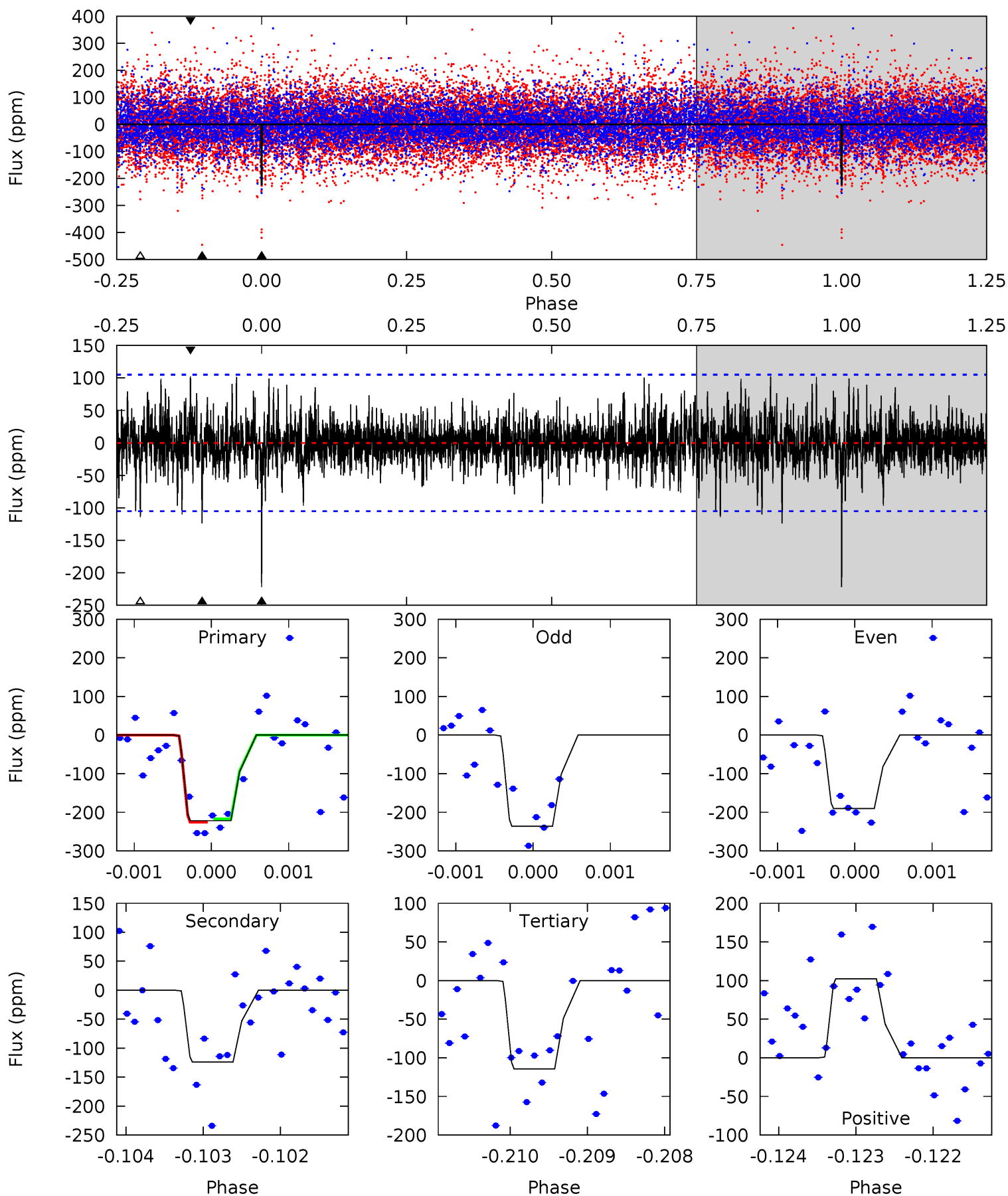
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.13	4.26	3.98	4.81	5.45	3.29	1.16	4.15	3.31	0.28	-0.55	1.81	0.99	0.37	0.98



Alt Model-Shift Uniqueness Test

004773133-03, P = 182.887518 Days, E = 67.124327 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	6.43	5.93	5.30	5.45	3.29	1.40	5.58	6.21	0.50	1.12	1.12	1.19	0.32	0.21



Stellar Parameters For KIC 004773133

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9602^{+272}_{-428}	$4.233^{+0.129}_{-0.240}$	$0.070^{+0.150}_{-0.700}$	$1.879^{+0.831}_{-0.384}$	$2.201^{+0.445}_{-0.544}$	$0.468^{+0.313}_{-0.292}$
	+3%/-4%	+3%/-6%	+214%/-1000%	+44%/-20%	+20%/-25%	+67%/-63%
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 004773133-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-79 ± 19	$3.86^{+3.27}_{-2.67}$	908^{+83}_{-64}	6294^{+6706}_{-1605}	1973^{+16744}_{-1431}
Alt.	-124 ± 19	$3.81^{+3.52}_{-2.40}$	896^{+87}_{-60}	6927^{+7401}_{-1815}	2915^{+19927}_{-2091}

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

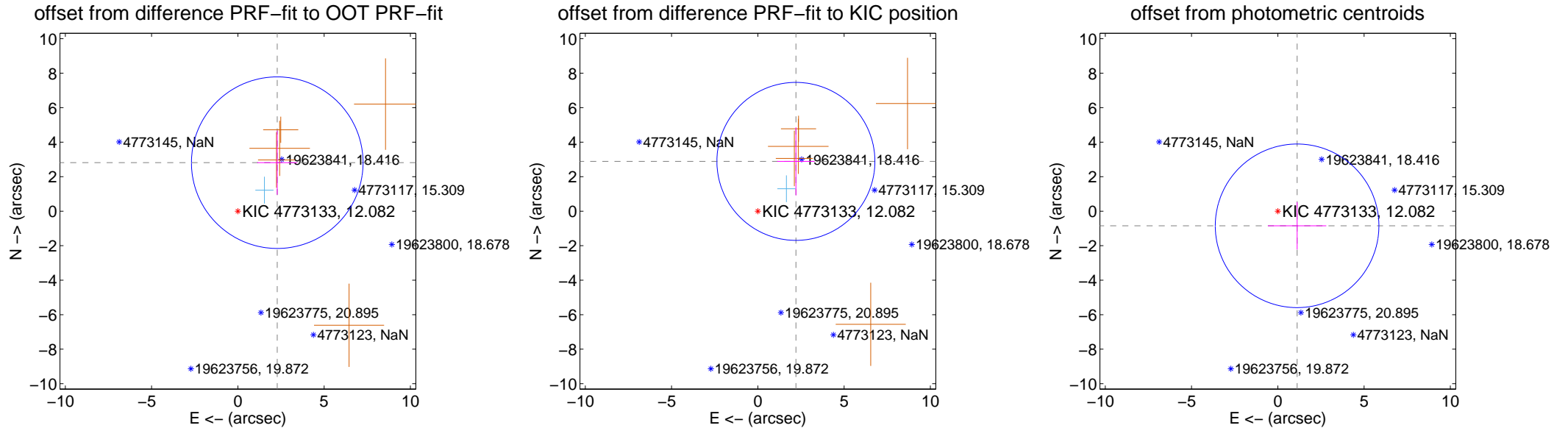
DV Centroid Data

Supplemental centroid analysis for 004773133-03. Kepler magnitude: 12.08. Transit SNR 8.38

There are 1 quarters with good PRF difference image offsets

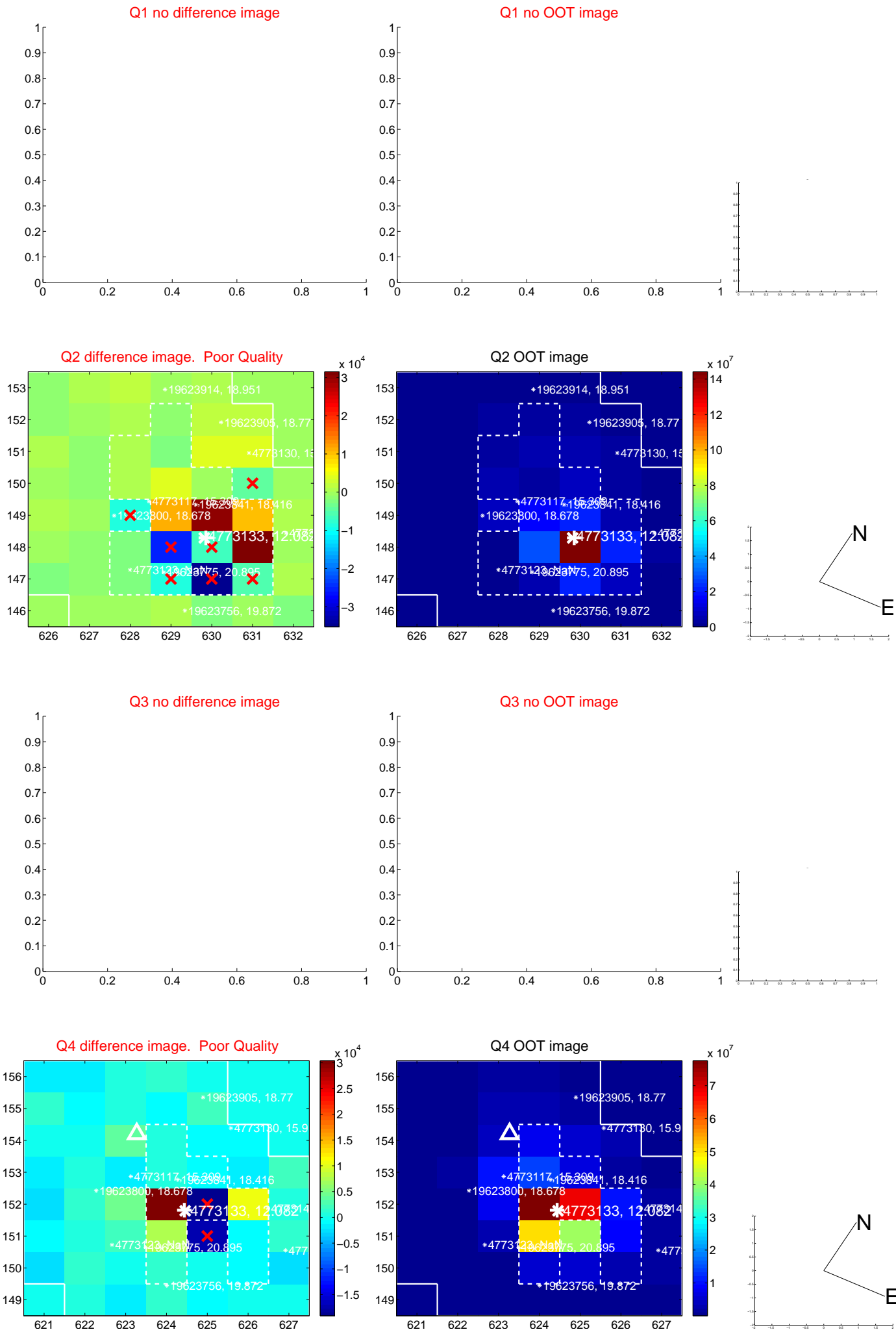
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.623 ± 1.658	2.19	-2.283 ± 1.164	2.812 ± 1.859
PRF-fit source offset from KIC position	3.634 ± 1.526	2.38	-2.207 ± 1.087	2.887 ± 1.971
photometric centroid source offset	1.40 ± 1.58	0.89	-1.12 ± 1.69	-0.85 ± 1.37

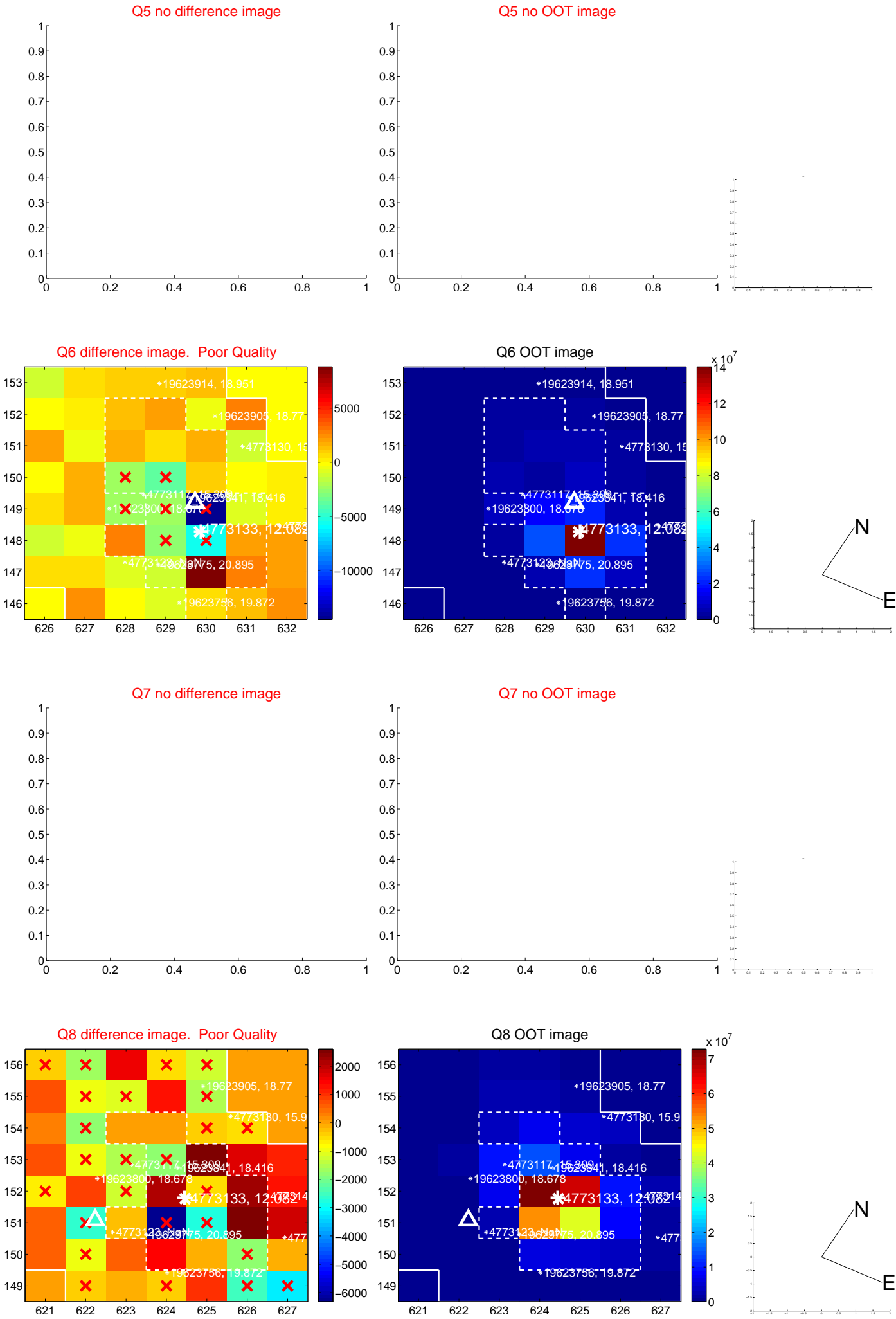


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

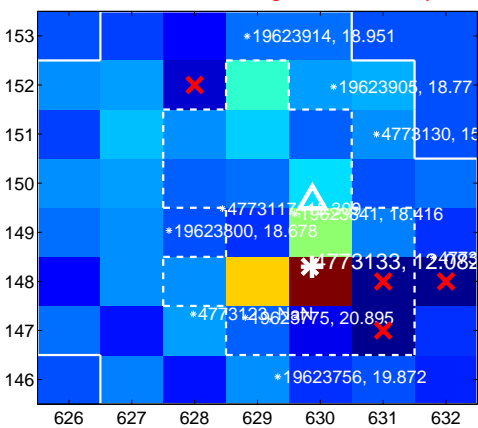
Q9 no difference image



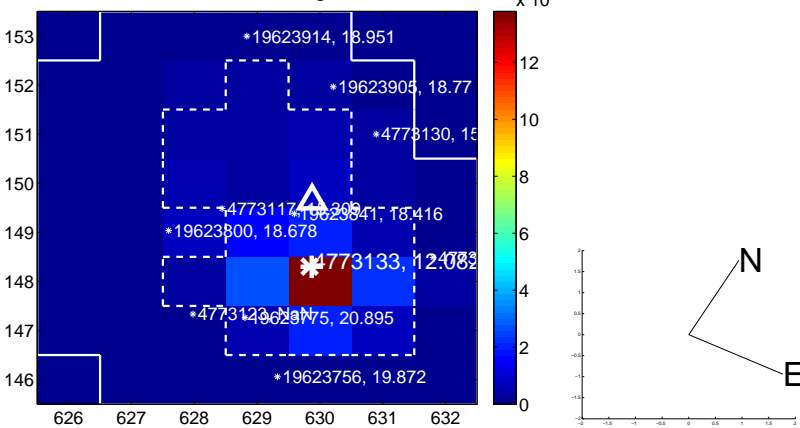
Q9 no OOT image



Q10 difference image. Poor Quality



Q10 OOT image



Q11 no difference image



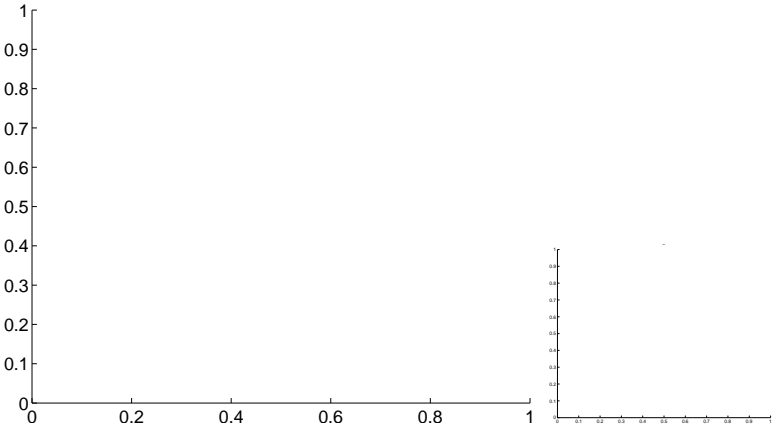
Q11 no OOT image



Q12 no difference image

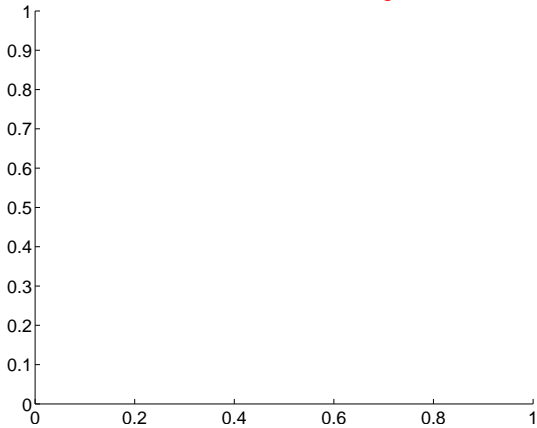


Q12 no OOT image

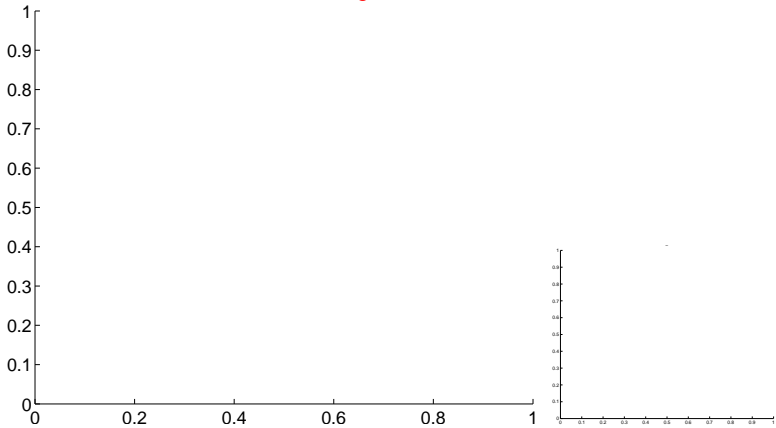


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

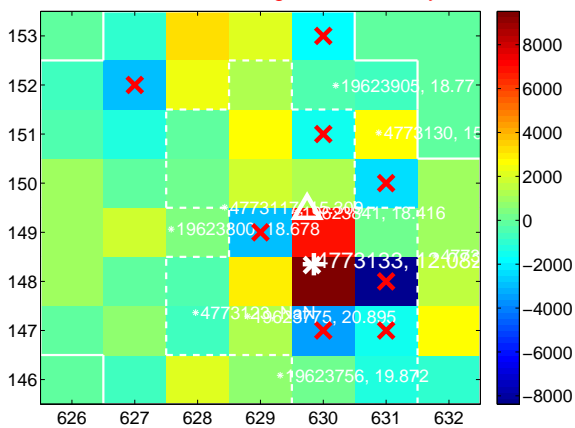
Q13 no difference image



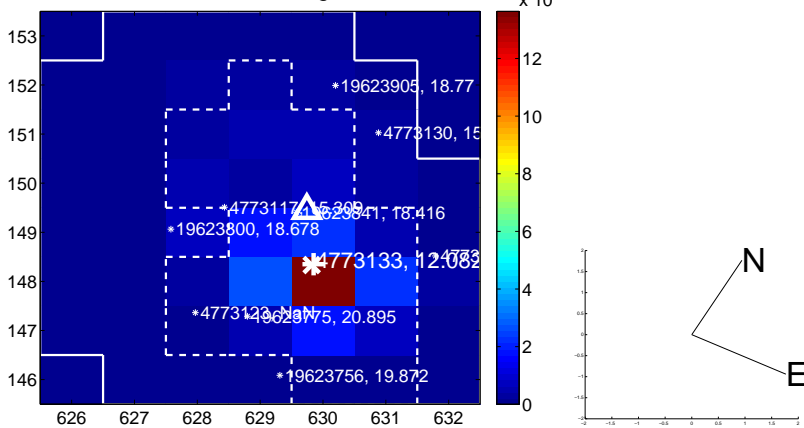
Q13 no OOT image



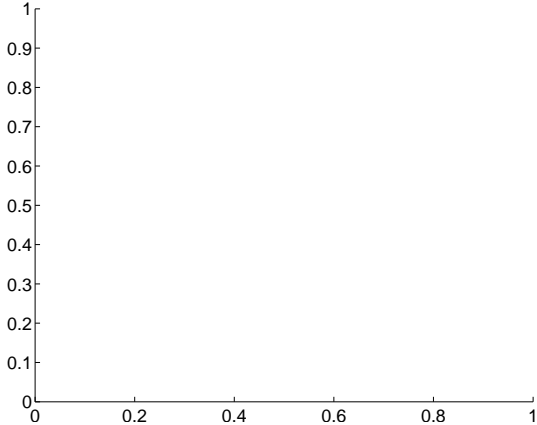
Q14 difference image. Poor Quality



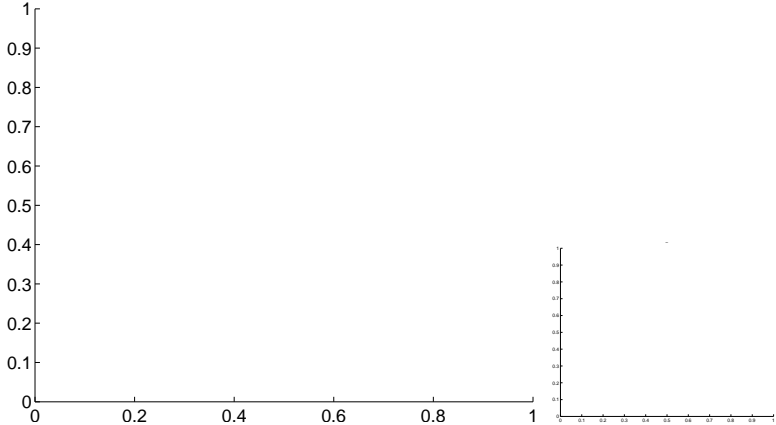
Q14 OOT image



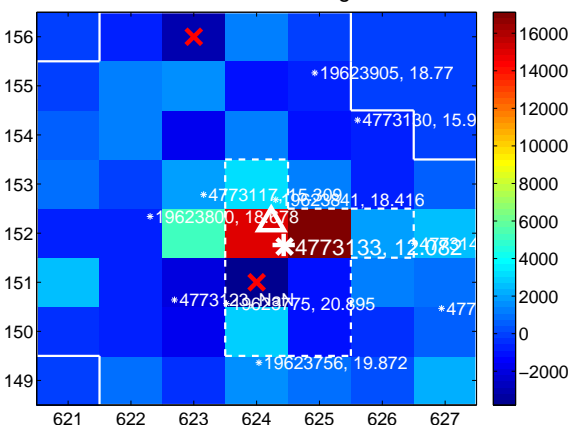
Q15 no difference image



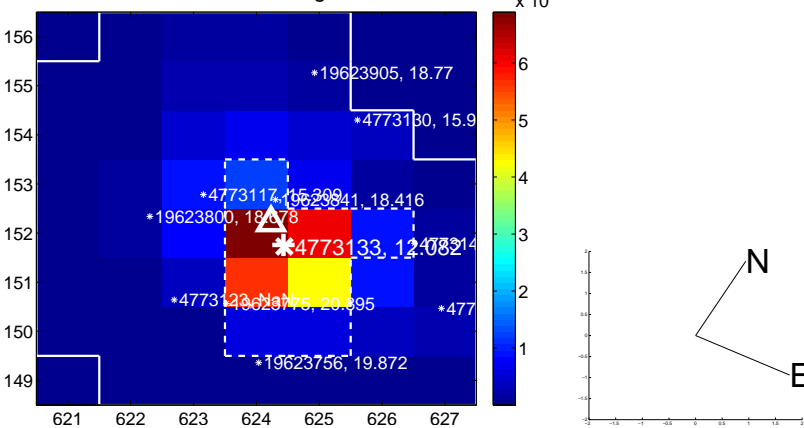
Q15 no OOT image



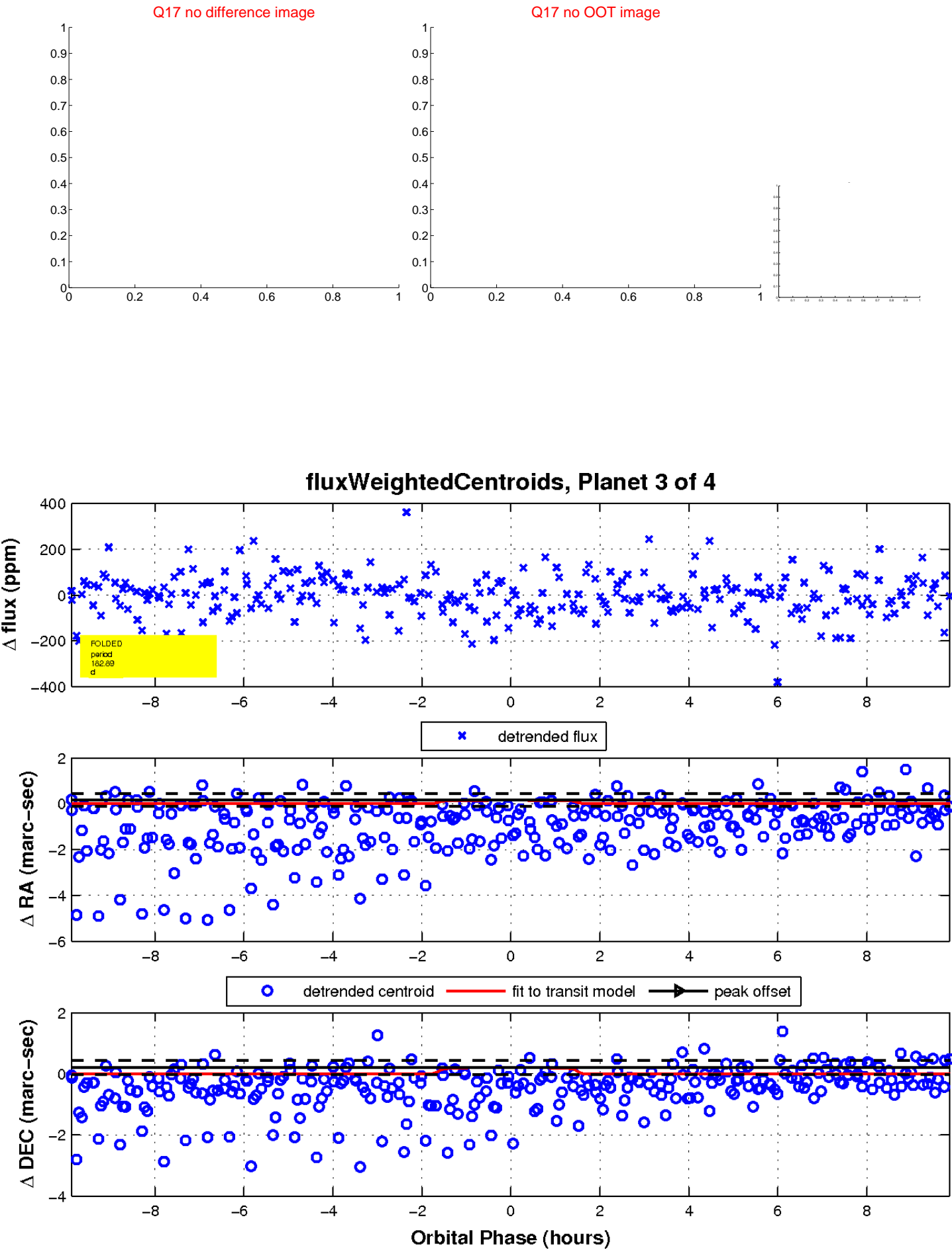
Q16 difference image



Q16 OOT image

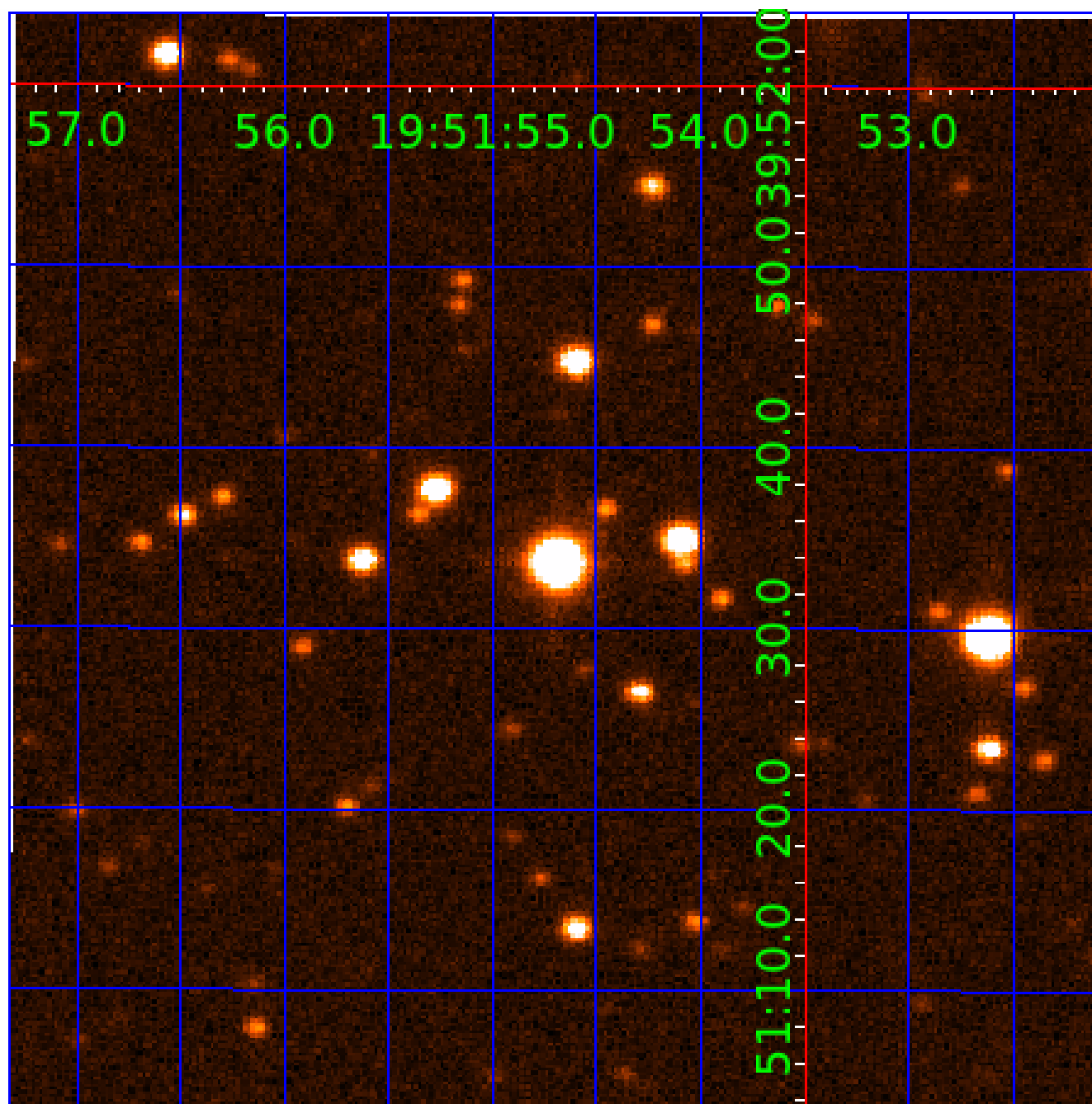


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004773133

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})
004773133-01	OBS	No	1.318945	132.675957	6.8	7.304	7.7	7.6	1.88	9602	0.51	28663.11
004773133-02	OBS	No	138.005645	136.985104	85.6	6.389	8.8	5.4	1.88	9602	1.93	58.13
004773133-03	OBS	No	182.888566	250.009015	164.1	3.296	8.7	8.4	1.88	9602	2.73	39.94
004773133-04	OBS	No	157.906897	134.030926	108.4	4.404	7.8	7.3	1.88	9602	2.20	48.58

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004773133-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
004773133-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004773133-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
004773133-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_UNCERTAIN

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

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

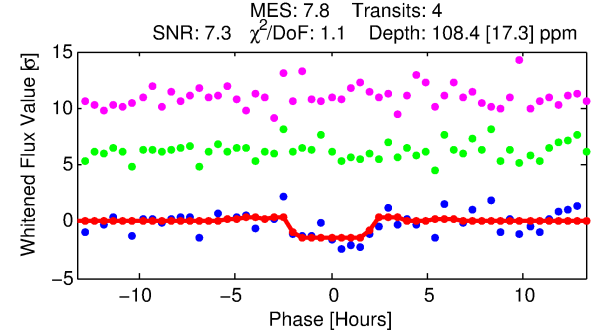
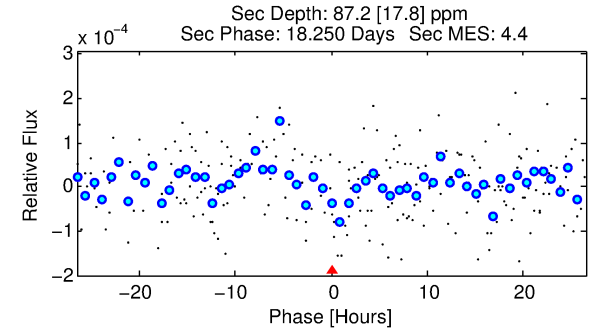
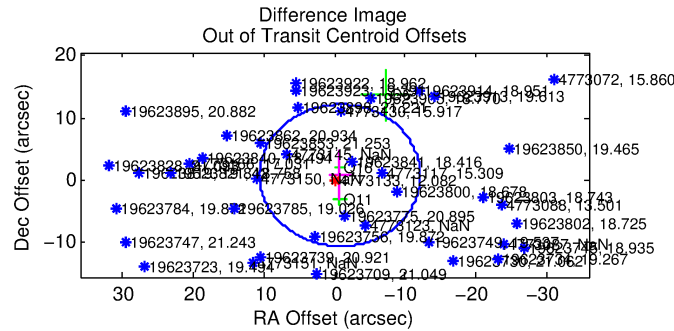
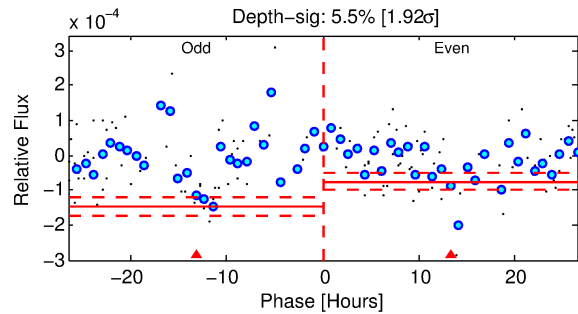
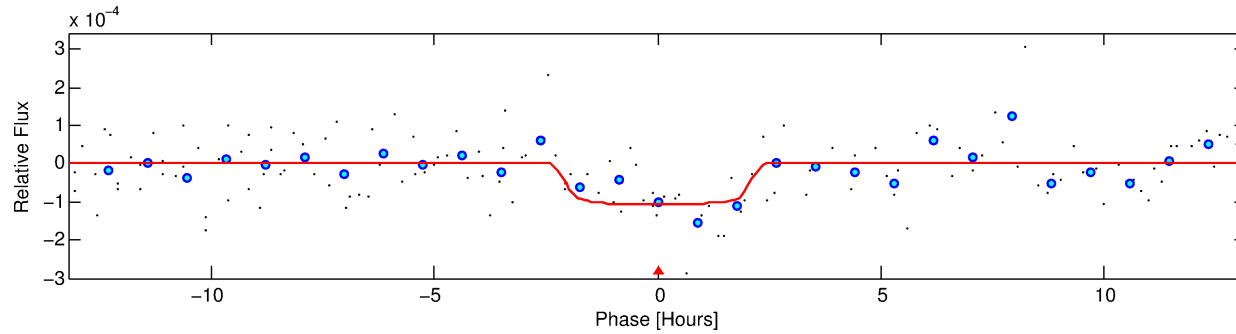
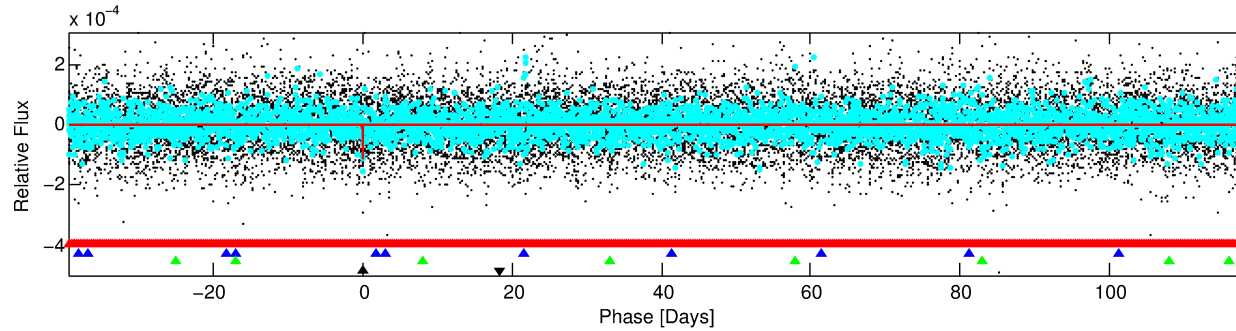
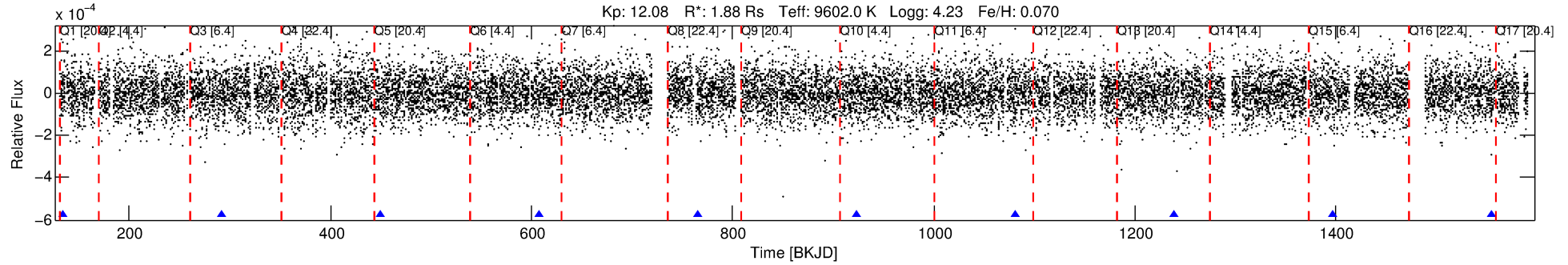
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004773133-04

No Significant Match Found

DV One-Page Summary

KIC: 4773133 Candidate: 4 of 4 Period: 157.907 d



DV Fit Results:

Period = 157.90690 [0.00269] d
Epoch = 134.0309 [0.0132] BKJD
Rp/R* = 0.0107 [0.0099]
a/R* = 145.04 [1004.93]
b = 0.86 [2.12]
Seff = 48.58 [24.50]
Teq = 673 [85] K
Rp = 2.20 [2.26] Re
a = 0.7440 [0.2587] AU
Ag = 5473.29 [10519.19] [0.52σ]
Teffp = 8952 [4189] K [1.98σ]

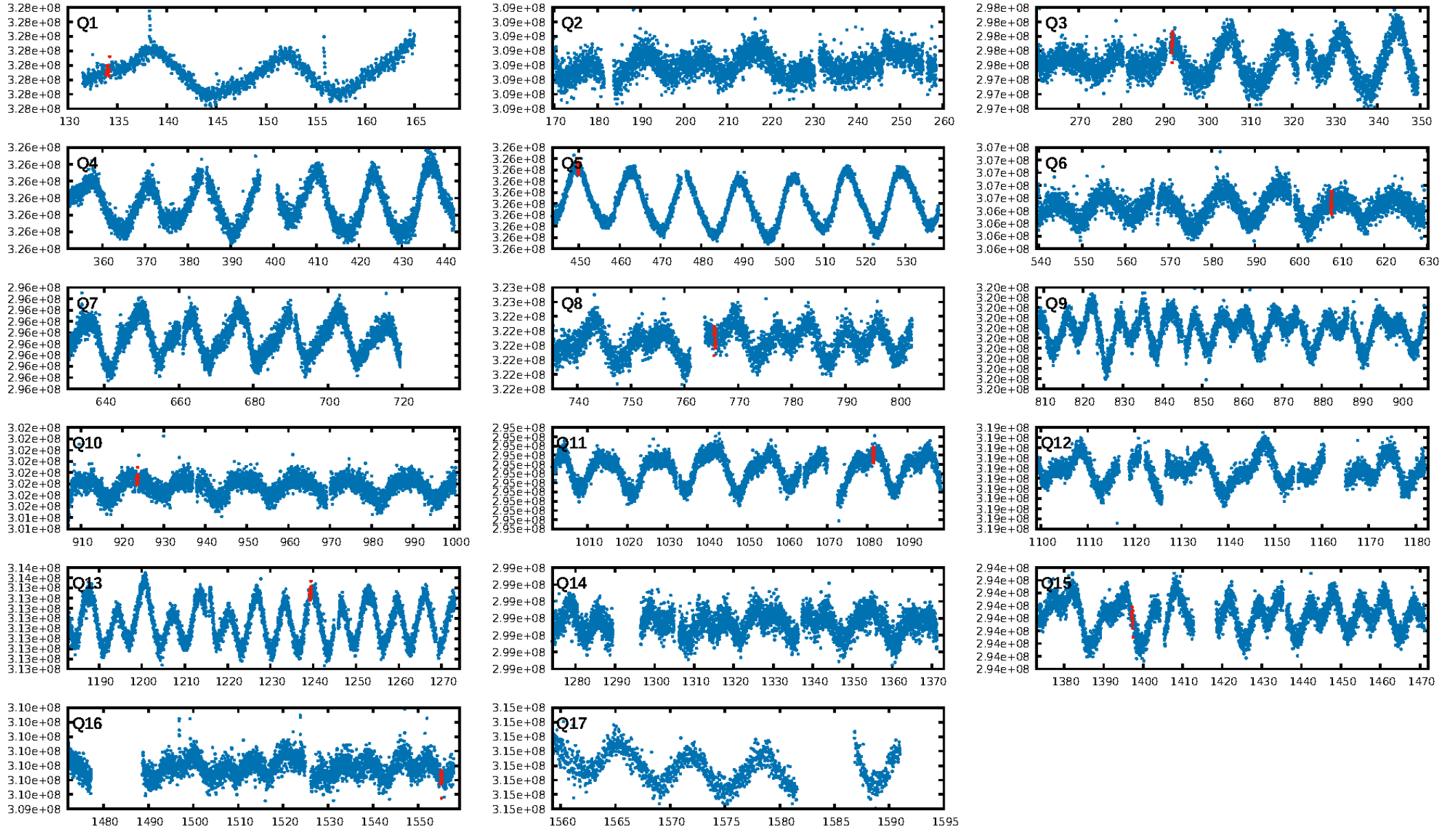
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [61.55σ]
LongPeriod-sig: 100.0% [109.00σ]
ModelChiSquare2-sig: 15.6%
ModelChiSquareGof-sig: 99.8%
Bootstrap-pfa: 4.01e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 3.939
Centroid-sig: 1.9%
Centroid-so: 2.926 arcsec [1.72σ]
OotOffset-rm: 1.094 arcsec [0.29σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 1.183 arcsec [0.35σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.25 [2/8]

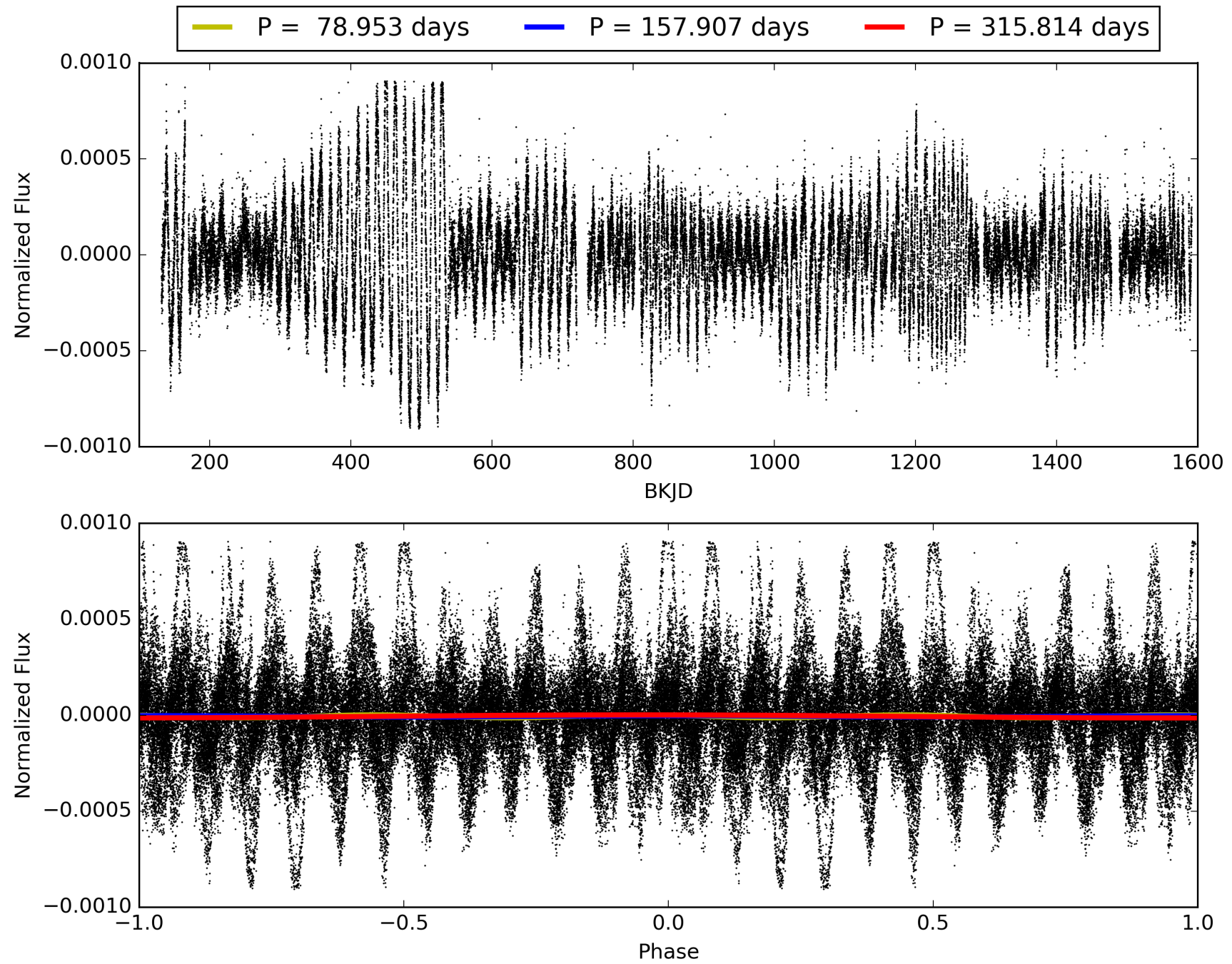
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:09:17 Z

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

TCE 004773133-04, PDC Light Curves

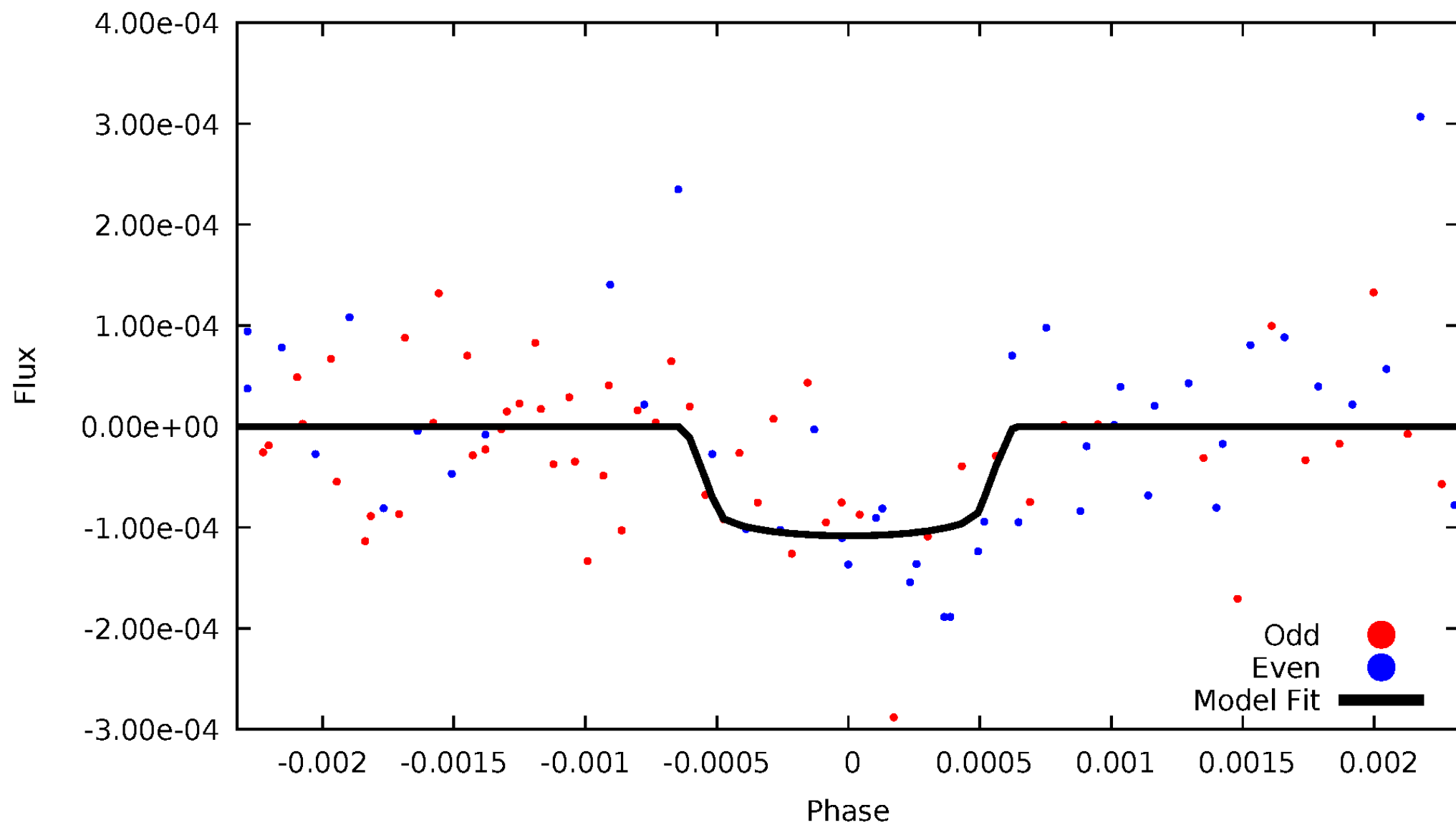


TCE 004773133-04



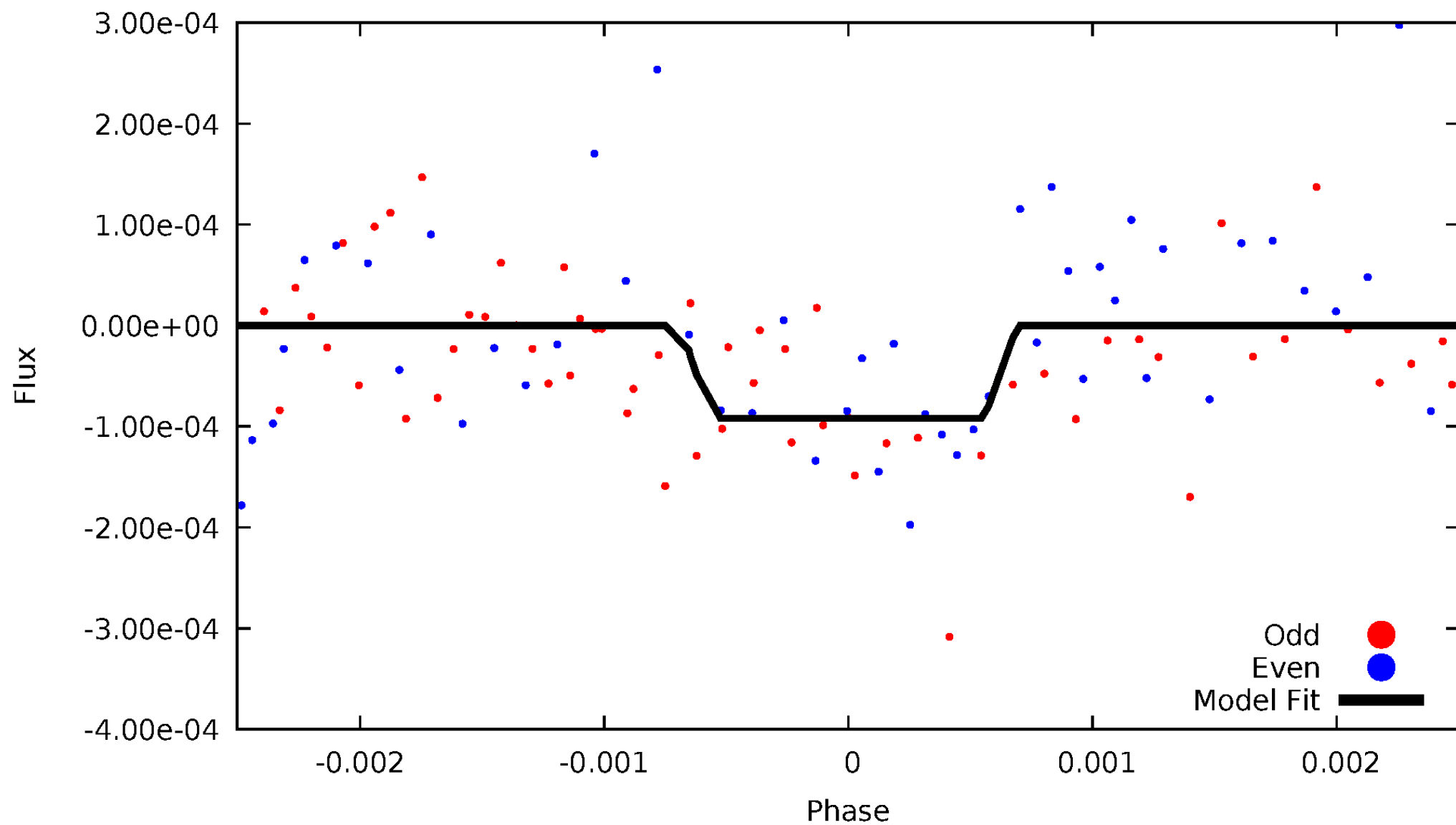
DV Odd/Even

TCE 004773133-04



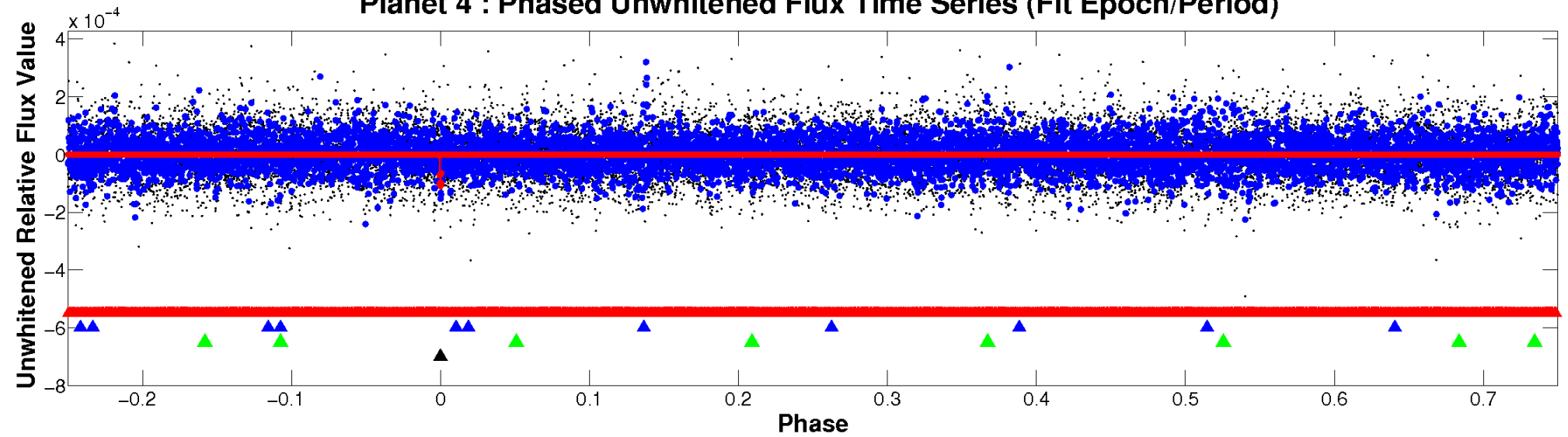
ALT Odd/Even

TCE 004773133-04

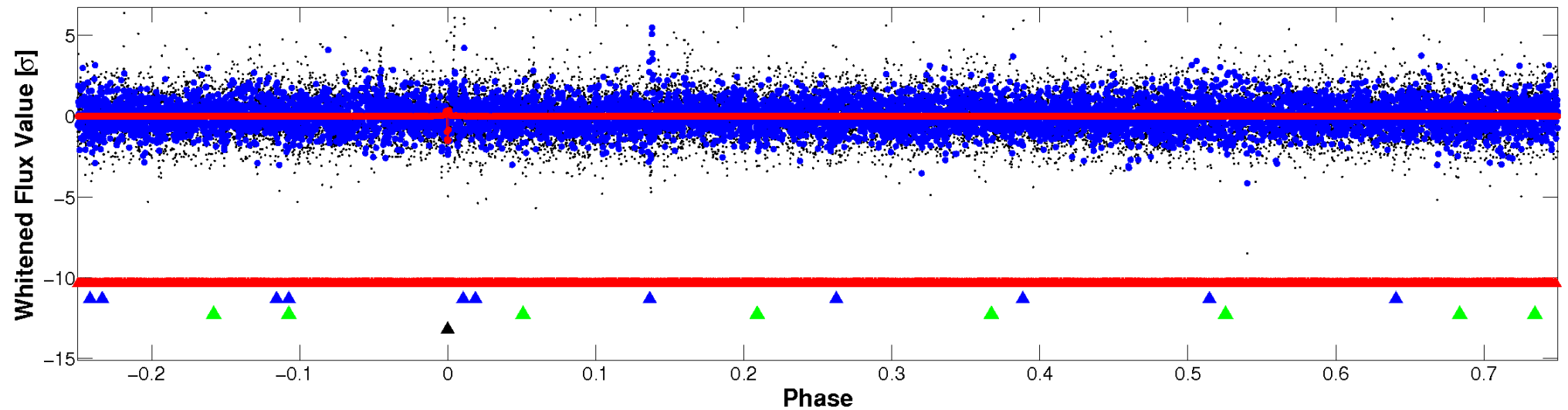


Non-Whitened Vs. Whitened Light Curve

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

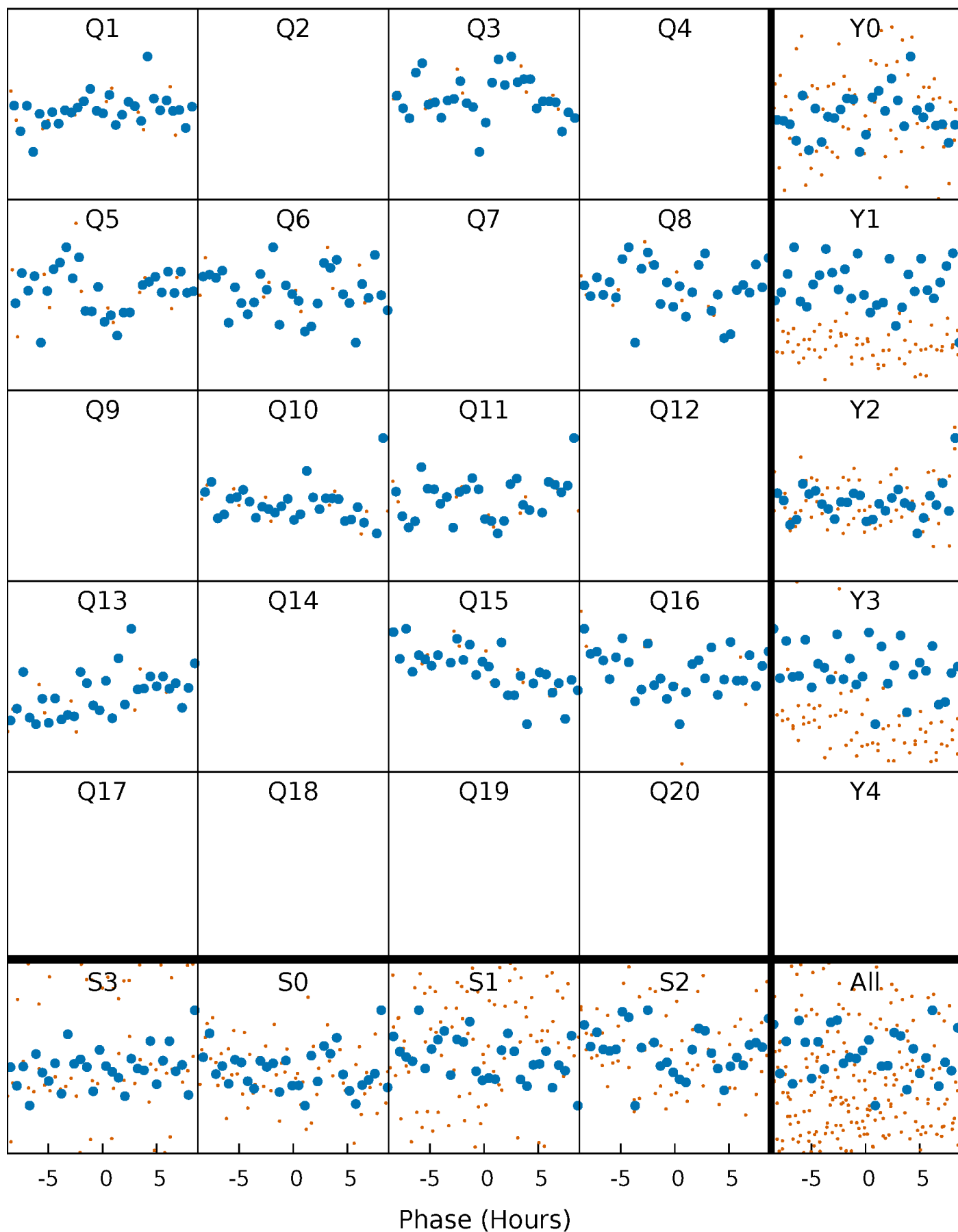


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



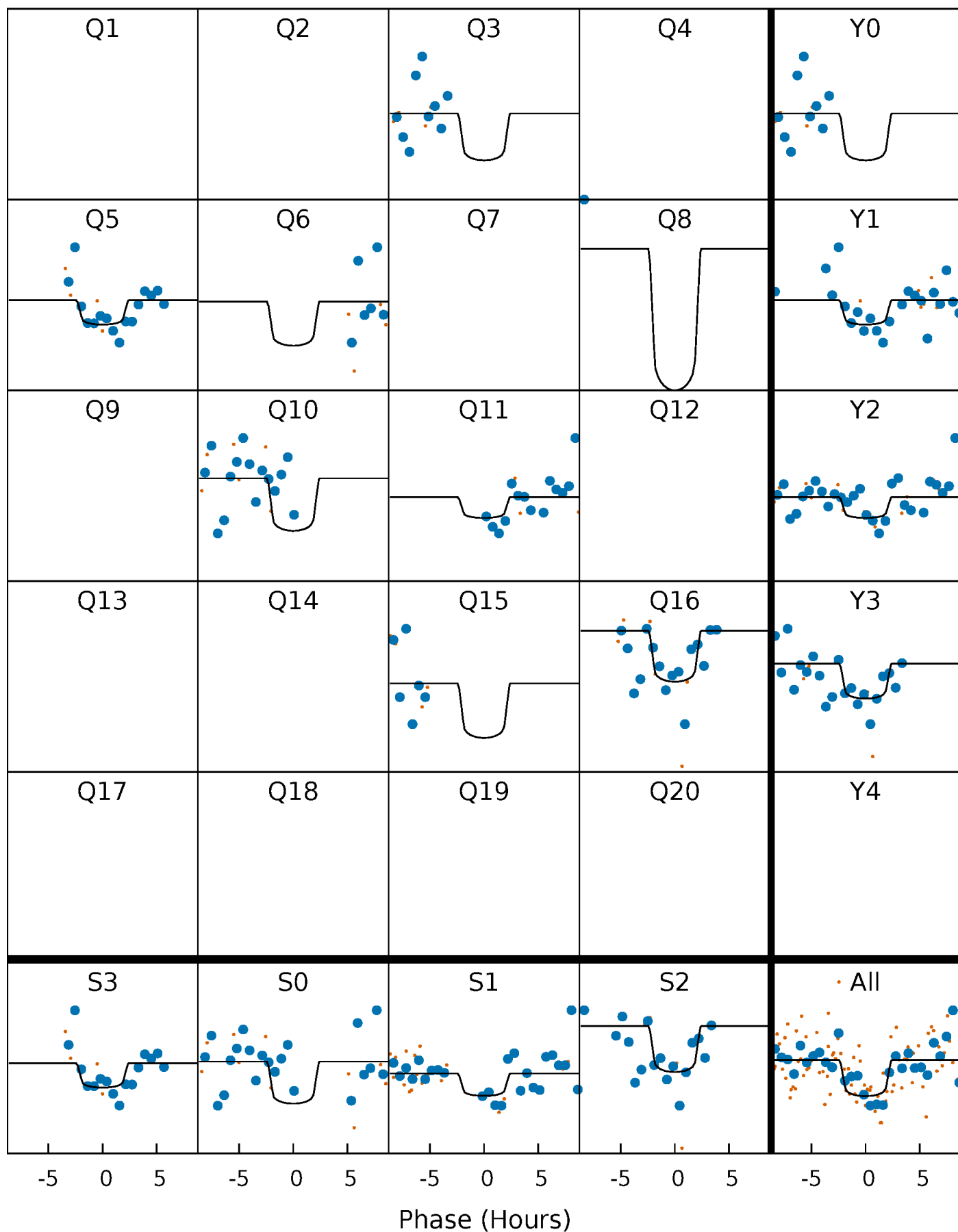
PDC Quarter-Phased Transit Curves

TCE 004773133-04 P=157.906897 Days $T_0=134.030926$ (BKJD)



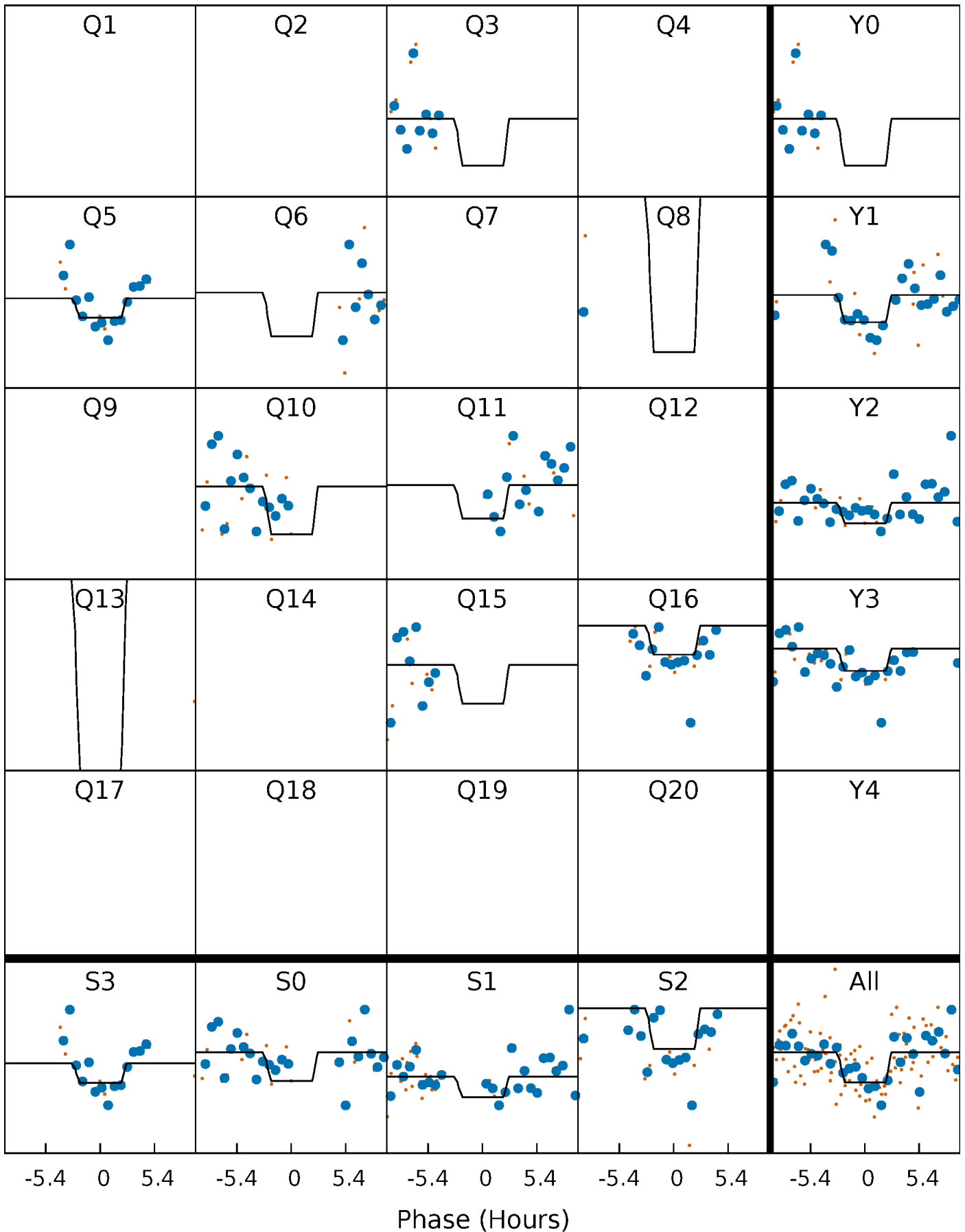
DV Quarter-Phased Transit Curves

TCE 004773133-04 P=157.906897 Days $T_0=134.030926$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

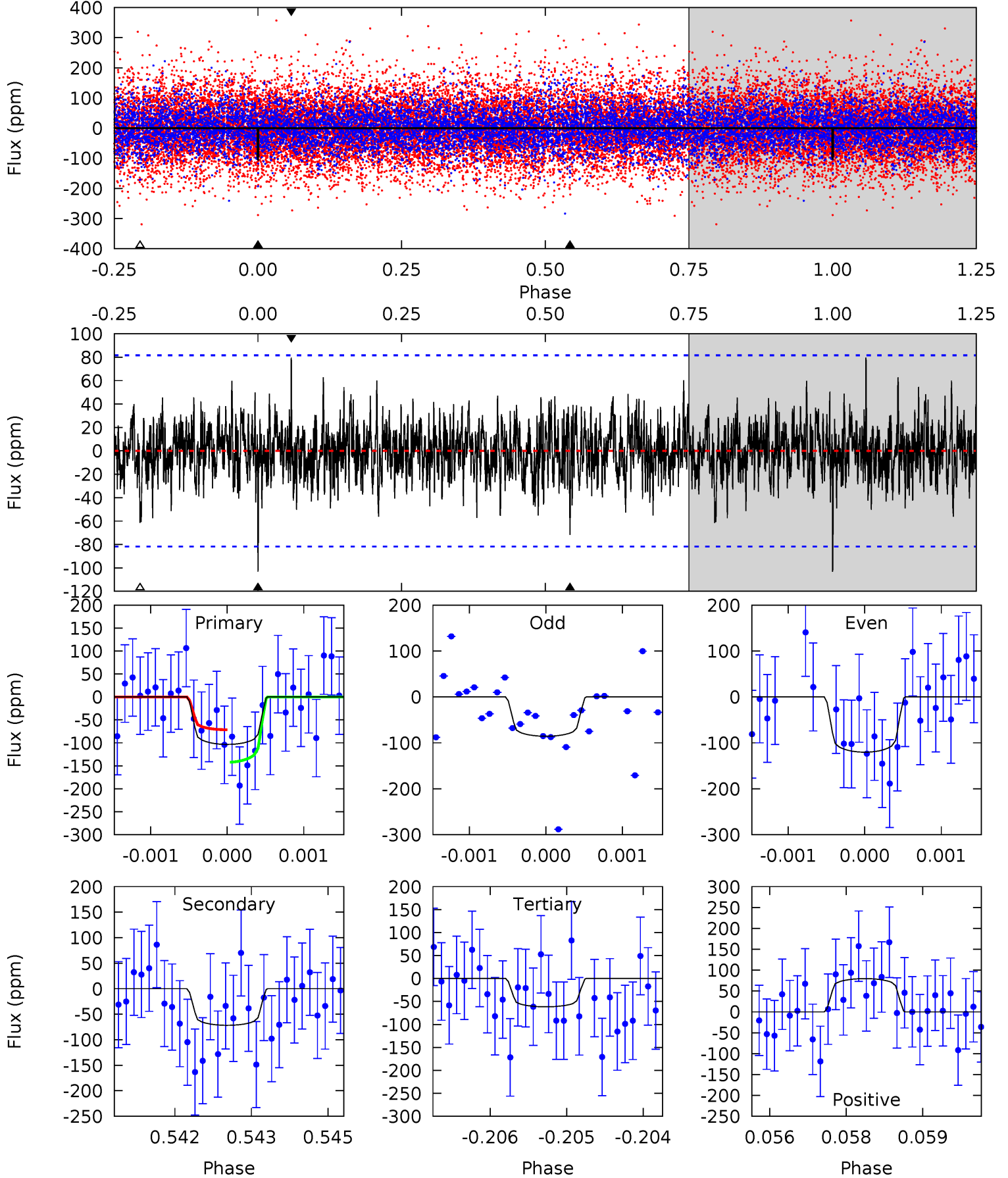
TCE 004773133-04 P=157.898415 Days $T_0=134.069148$ (BKJD)



DV Model-Shift Uniqueness Test

004773133-04, P = 157.906897 Days, E = 134.030926 Days

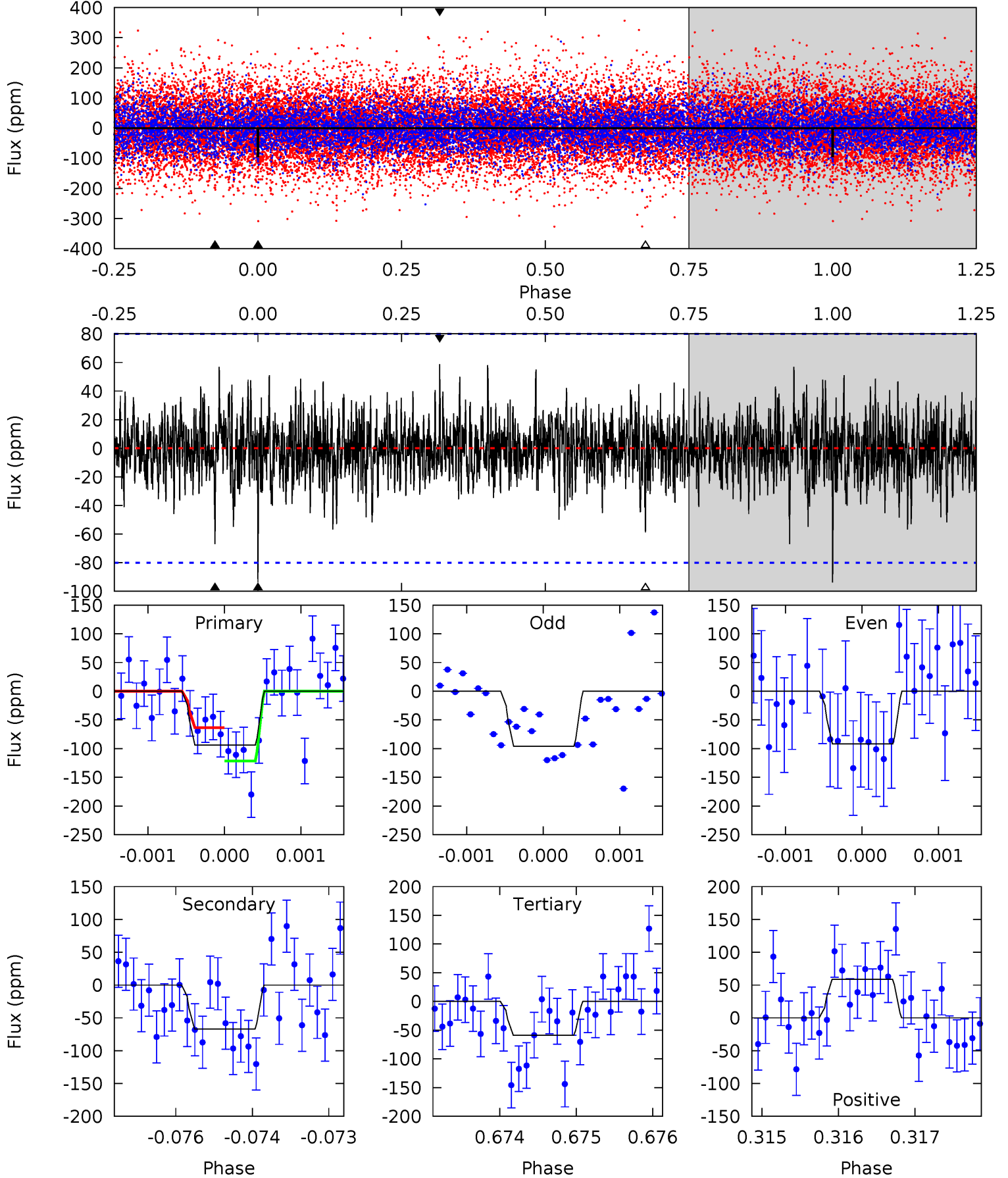
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.85	4.76	4.08	5.28	5.41	3.23	1.24	2.77	1.57	0.68	-0.52	1.15	0.85	0.44	2.34



Alt Model-Shift Uniqueness Test

004773133-04, P = 157.898415 Days, E = 134.069148 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.33	4.52	3.97	3.96	5.40	3.21	1.09	2.36	2.37	0.55	0.56	0.14	0.99	0.38	1.96



Stellar Parameters For KIC 004773133

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot cm^{-3})$
	9602^{+272}_{-428}	$4.233^{+0.129}_{-0.240}$	$0.070^{+0.150}_{-0.700}$	$1.879^{+0.831}_{-0.384}$	$2.201^{+0.445}_{-0.544}$	$0.468^{+0.313}_{-0.292}$
	+3%/-4%	+3%/-6%	+214%/-1000%	+44%/-20%	+20%/-25%	+67%/-63%
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 004773133-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-72 ± 15	$2.57^{+2.07}_{-1.57}$	948^{+94}_{-65}	7552^{+7966}_{-2032}	3254^{+18567}_{-2297}
Alt.	-67 ± 15	$2.50^{+2.01}_{-1.56}$	947^{+90}_{-70}	7524^{+8143}_{-2113}	3146^{+18013}_{-2230}

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 $A_{obs} \gg 1.0$

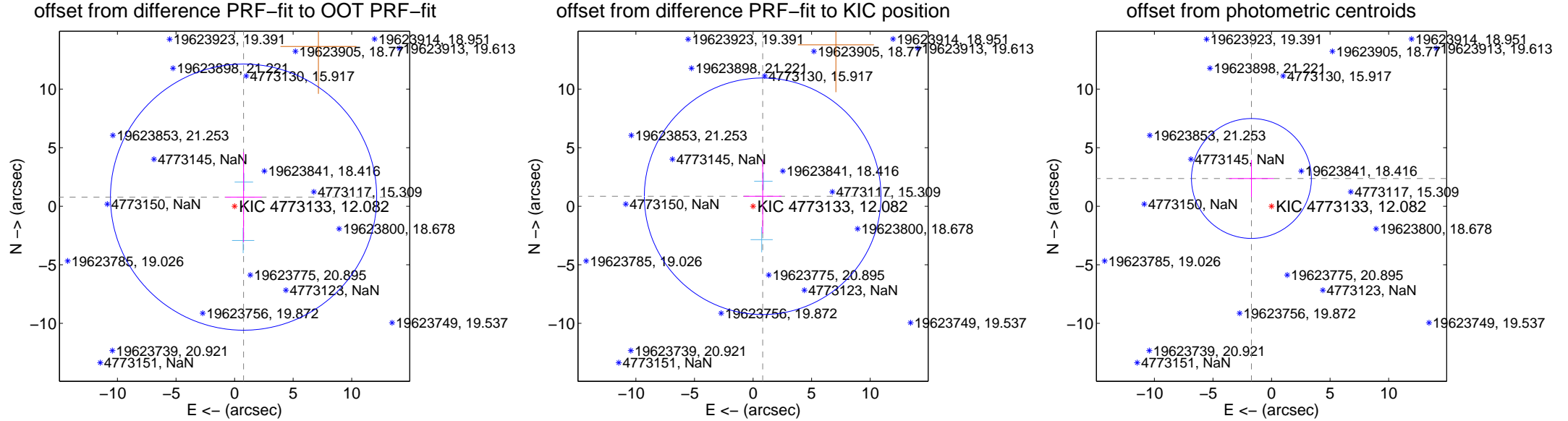
DV Centroid Data

Supplemental centroid analysis for 004773133-04. Kepler magnitude: 12.08. Transit SNR 7.31

There are 2 quarters with good PRF difference image offsets

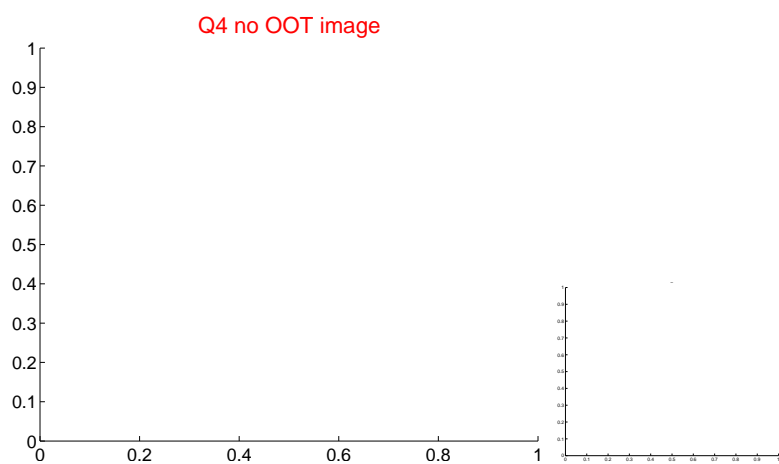
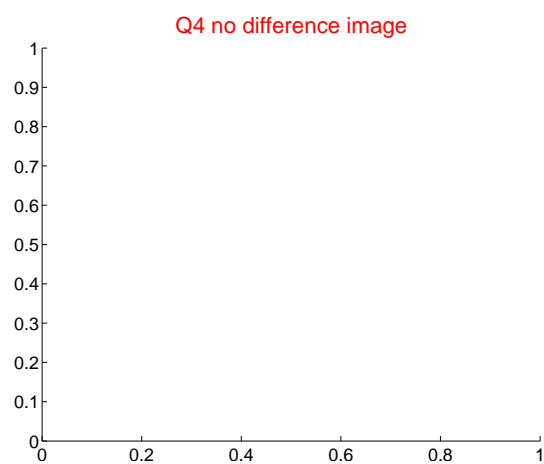
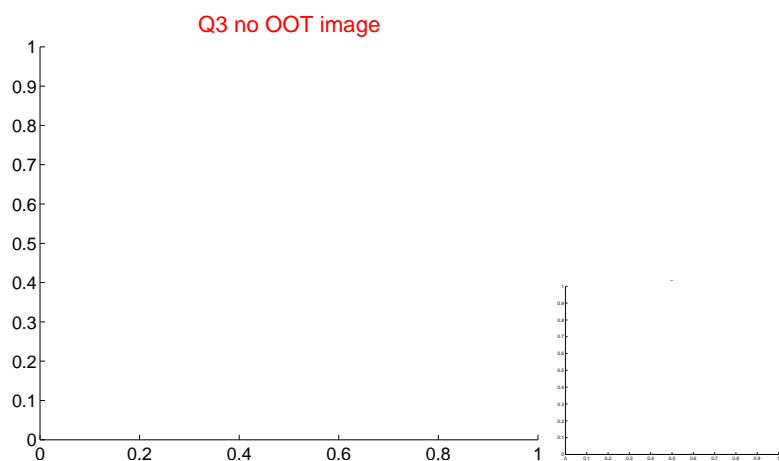
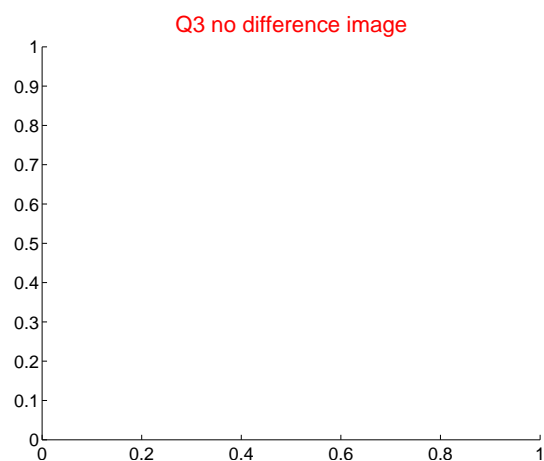
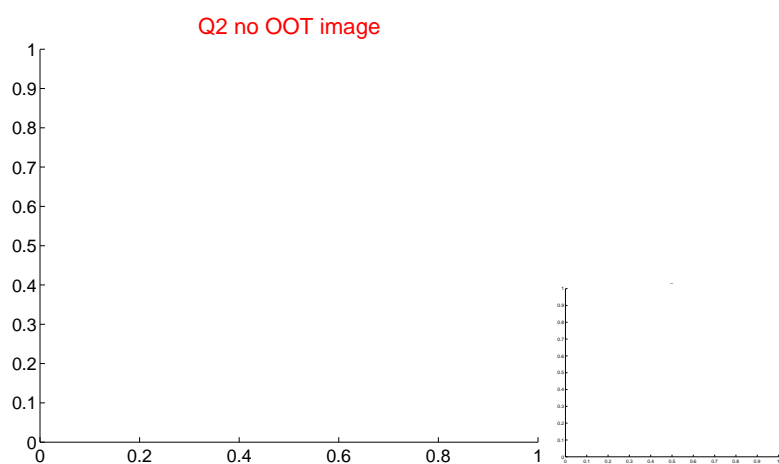
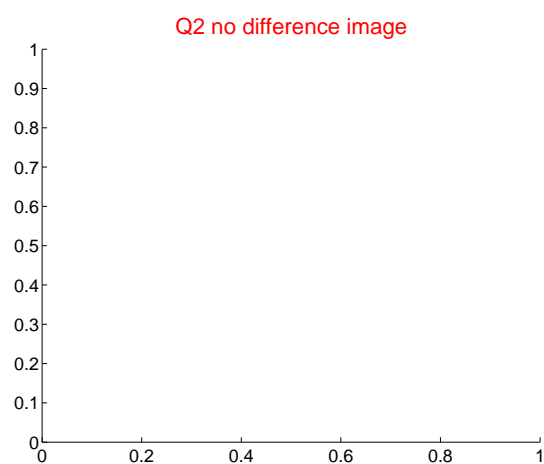
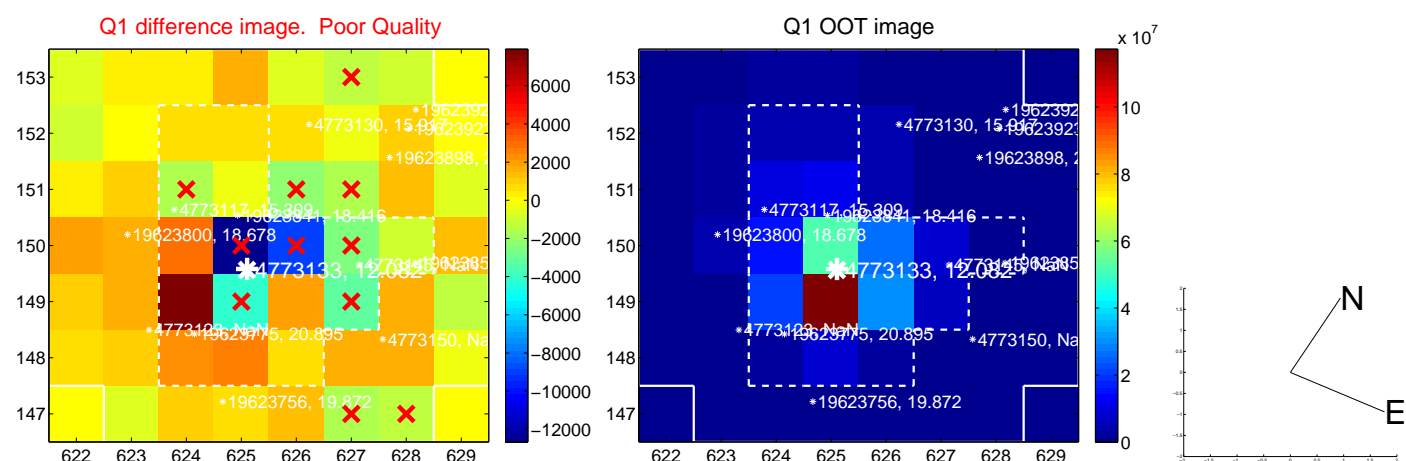
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.094 ± 3.788	0.29	-0.769 ± 1.552	0.778 ± 3.841
PRF-fit source offset from KIC position	1.183 ± 3.367	0.35	-0.821 ± 1.615	0.852 ± 3.168
photometric centroid source offset	2.93 ± 1.71	1.72	1.72 ± 1.91	2.37 ± 1.59

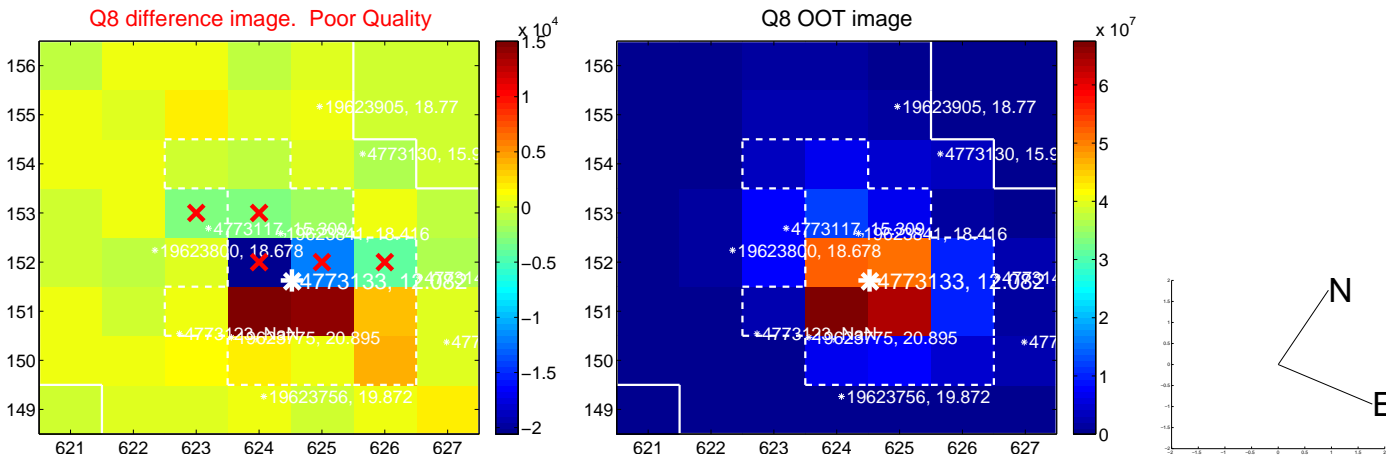
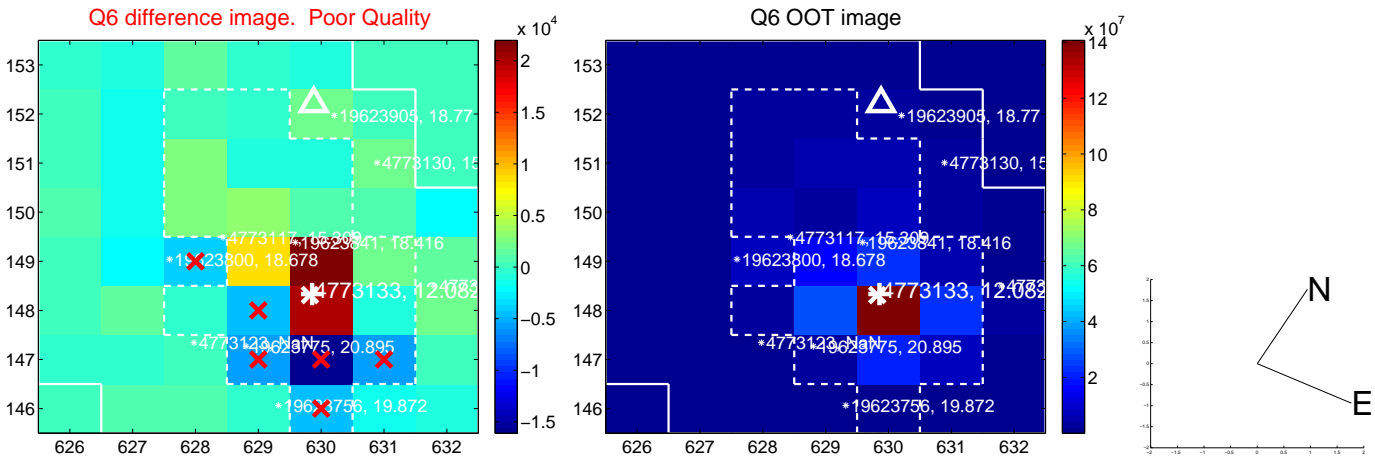
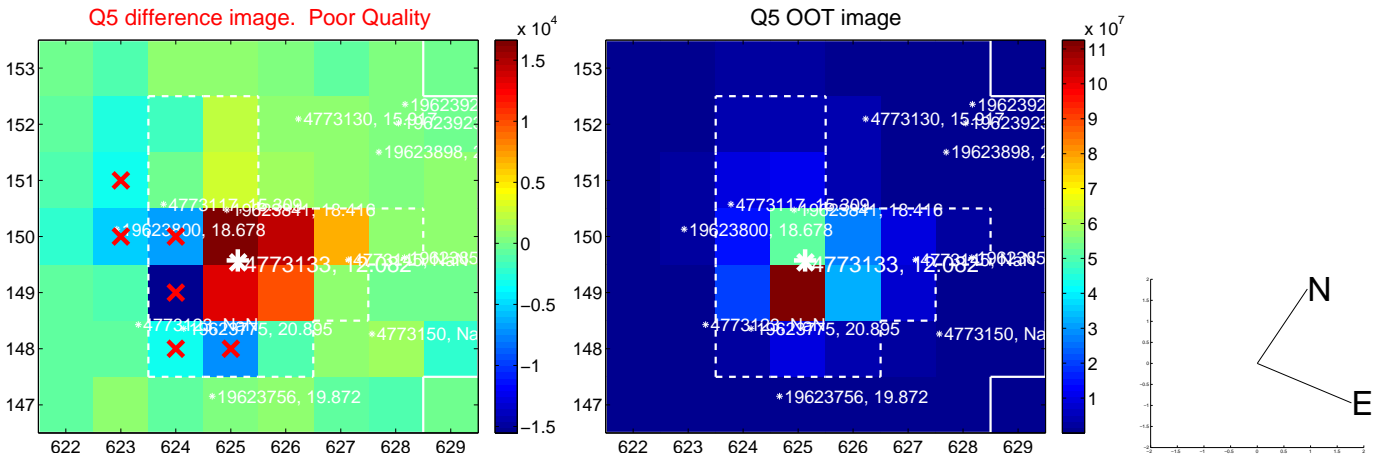


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

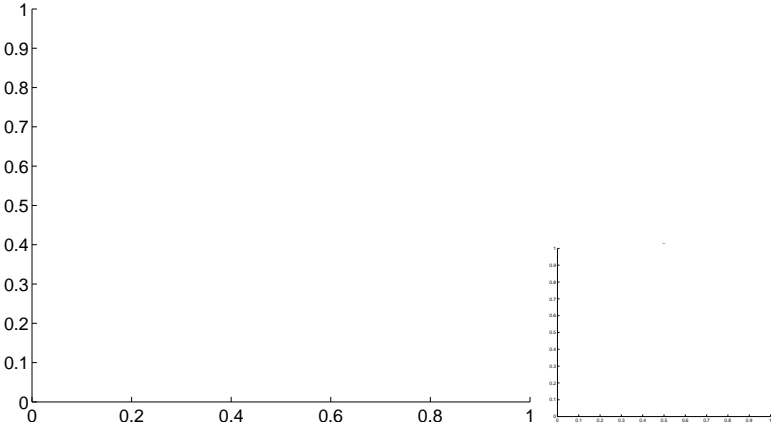


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

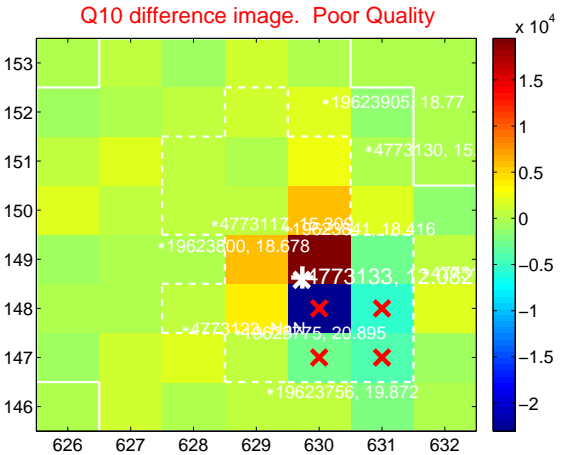
Q9 no difference image



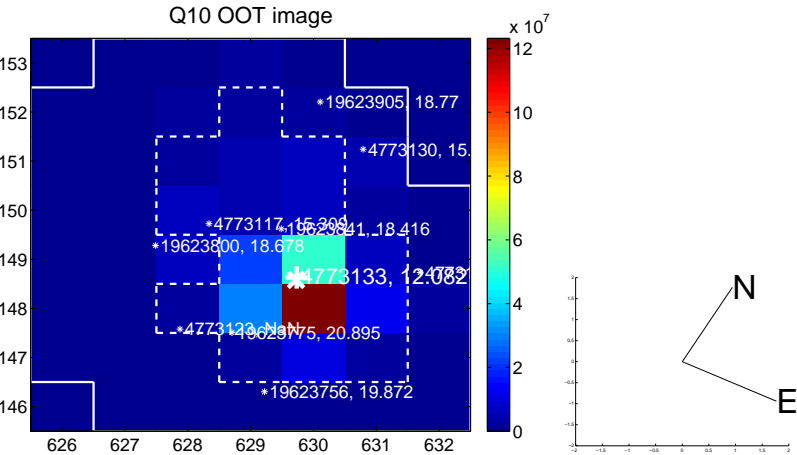
Q9 no OOT image



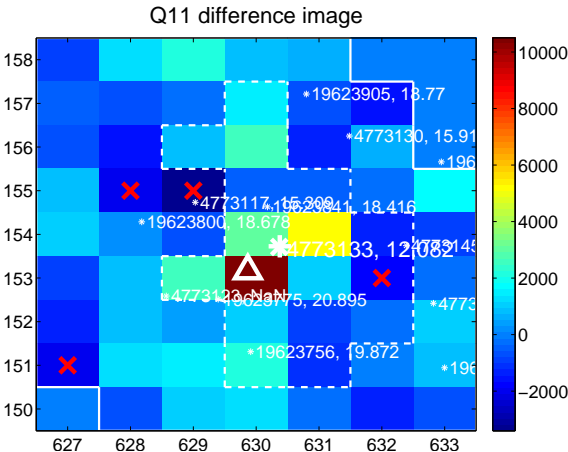
Q10 difference image. Poor Quality



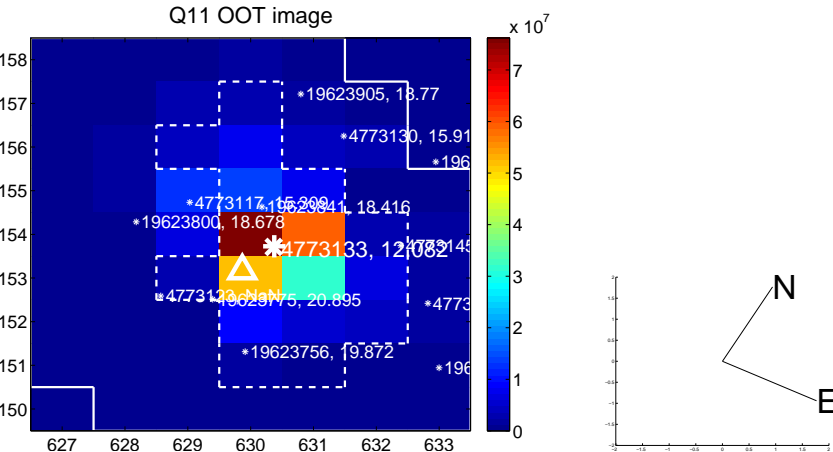
Q10 OOT image



Q11 difference image



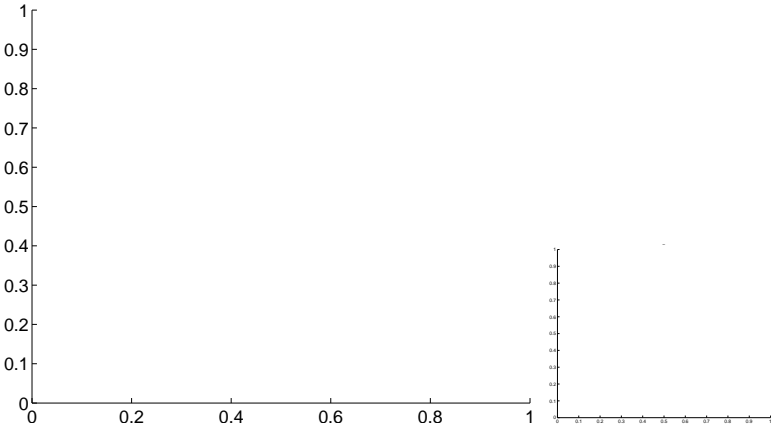
Q11 OOT image



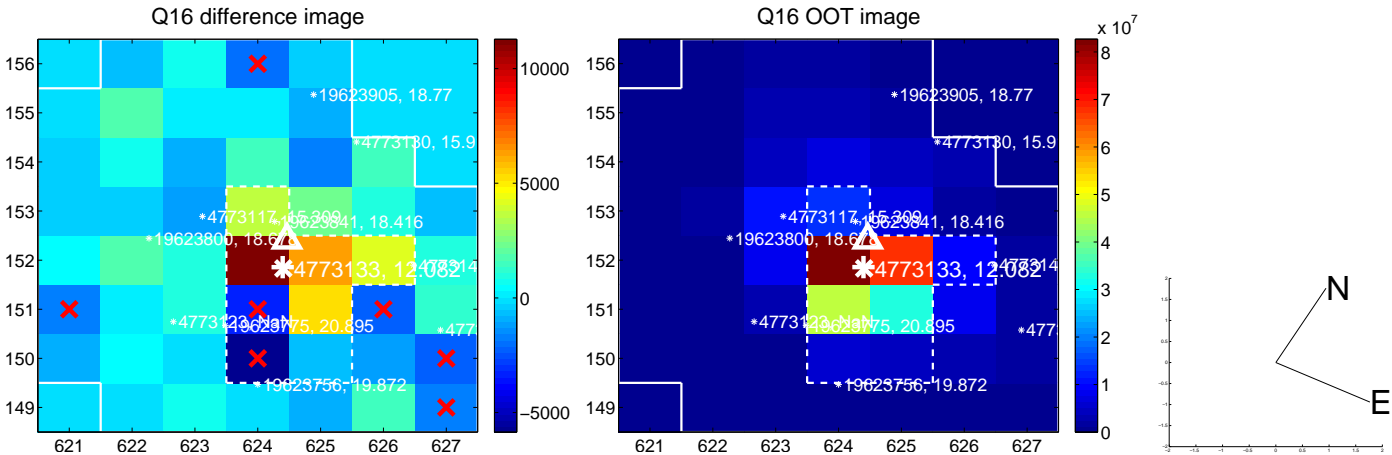
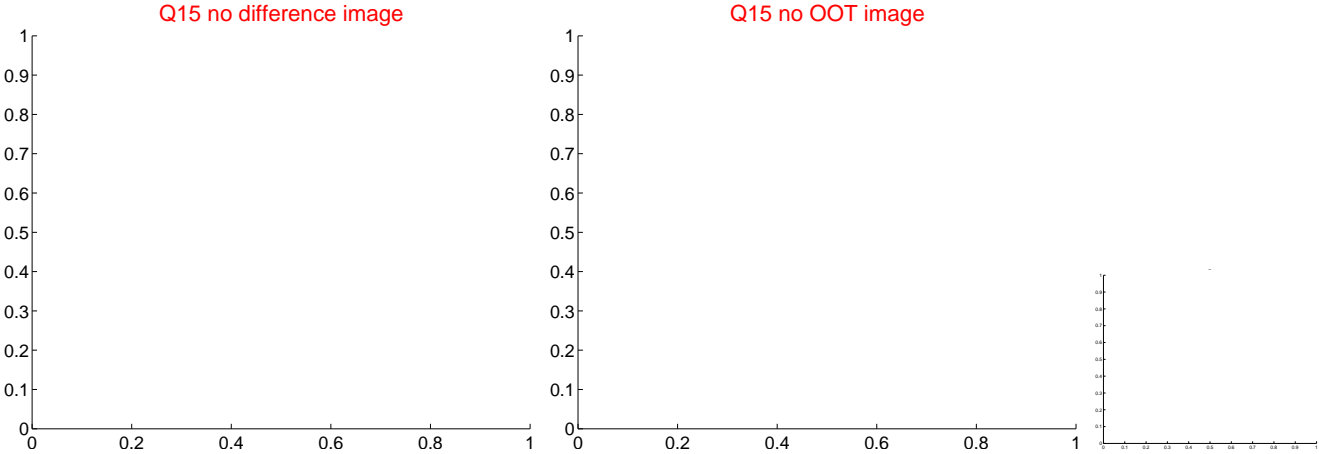
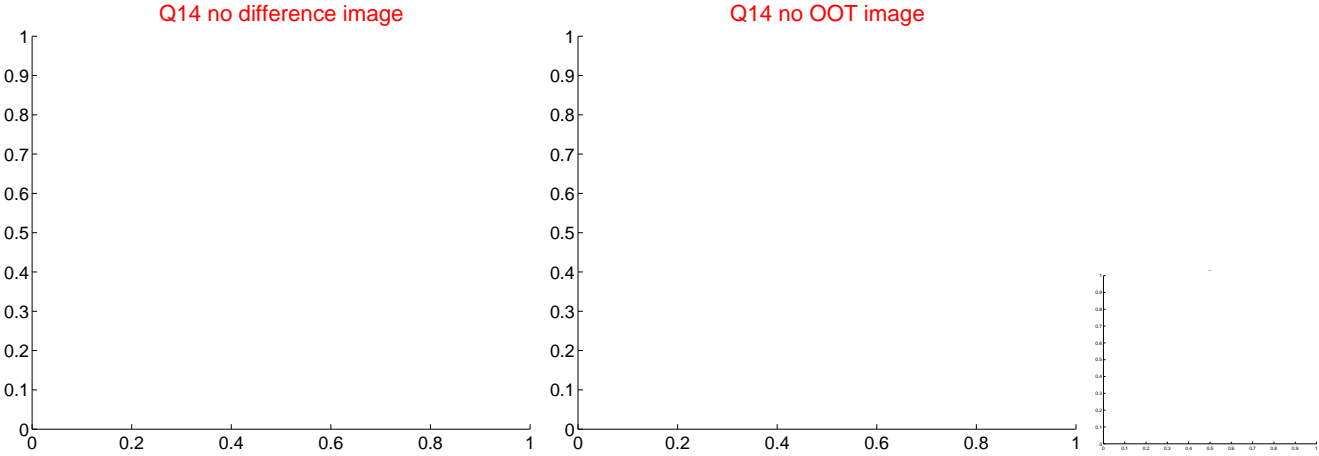
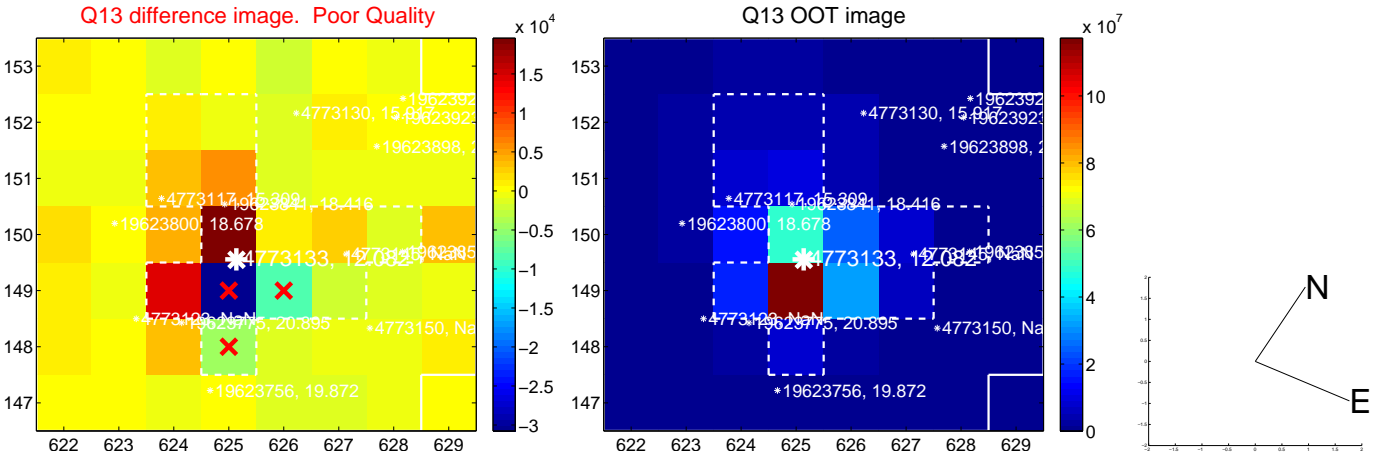
Q12 no difference image



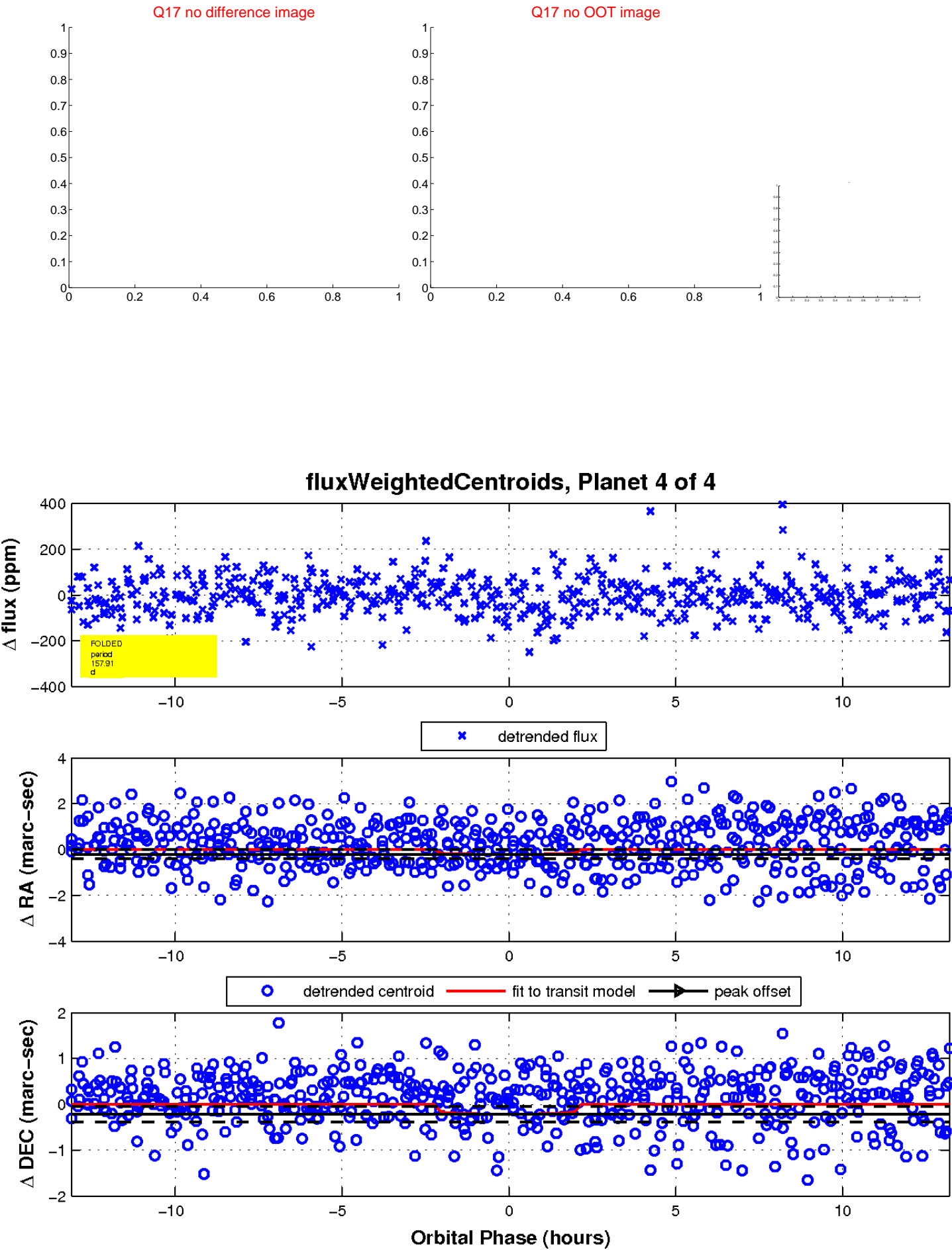
Q12 no OOT image



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

