

KIC 003437940

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})
003437940-01	OBS	No	0.590580	131.627944	110.2	3.828	8.8	11.3	1.95	7703	2.38	42672.60
003437940-02	OBS	No	27.521413	140.299122	225.5	4.782	8.9	2.4	1.95	7703	3.37	254.46
003437940-03	OBS	No	100.162571	197.130296	2344.7	2.518	10.5	11.4	1.95	7703	15.30	45.45
003437940-04	OBS	No	47.456283	147.220052	1192.4	4.043	8.8	9.5	1.95	7703	7.29	123.06
003437940-05	OBS	No	60.343864	177.774588	1851.7	2.155	10.3	9.6	1.95	7703	8.96	89.33

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003437940-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED
003437940-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003437940-03	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—CENT_SATURATED
003437940-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003437940-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

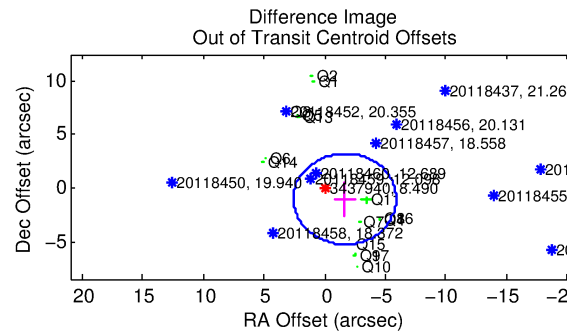
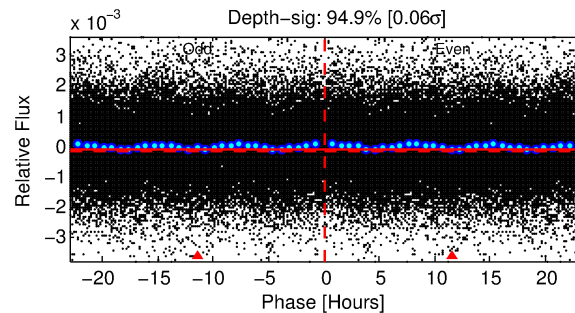
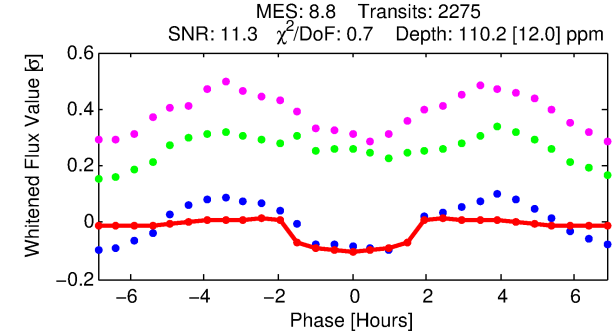
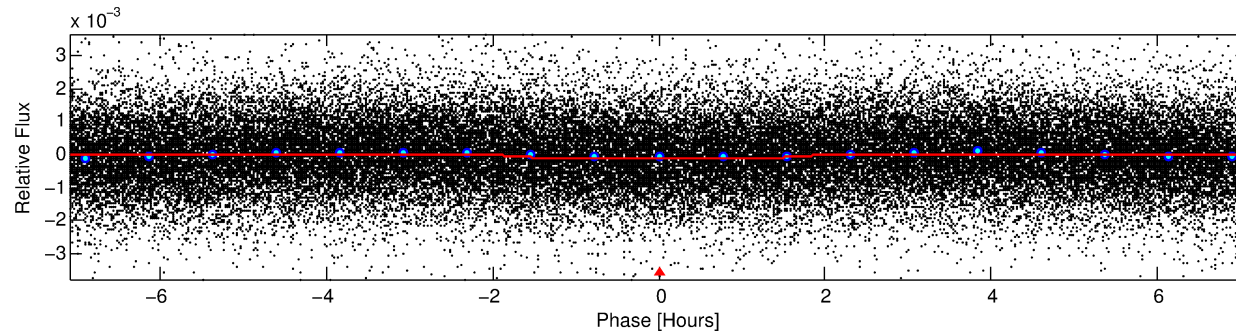
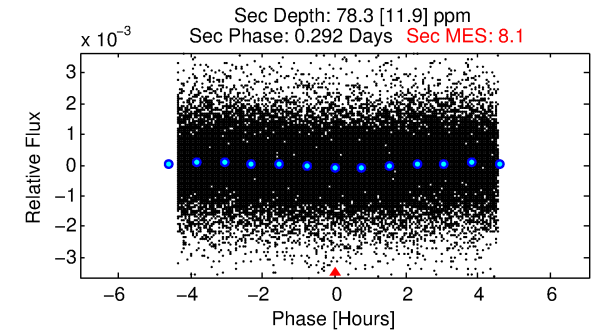
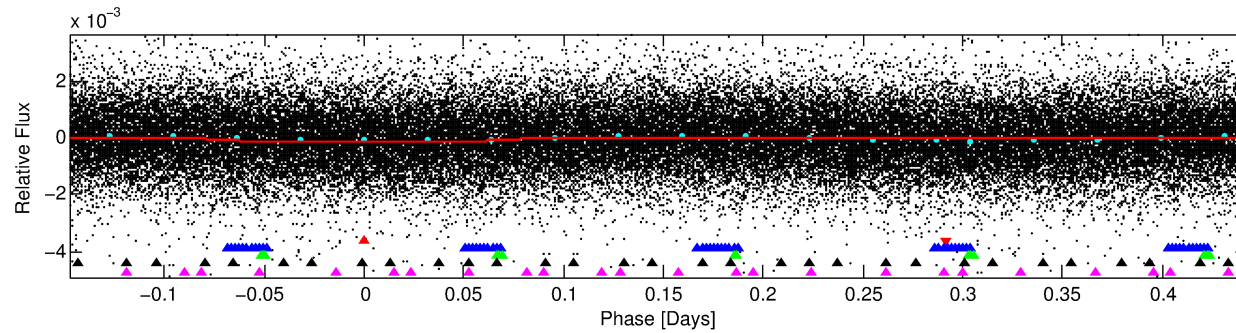
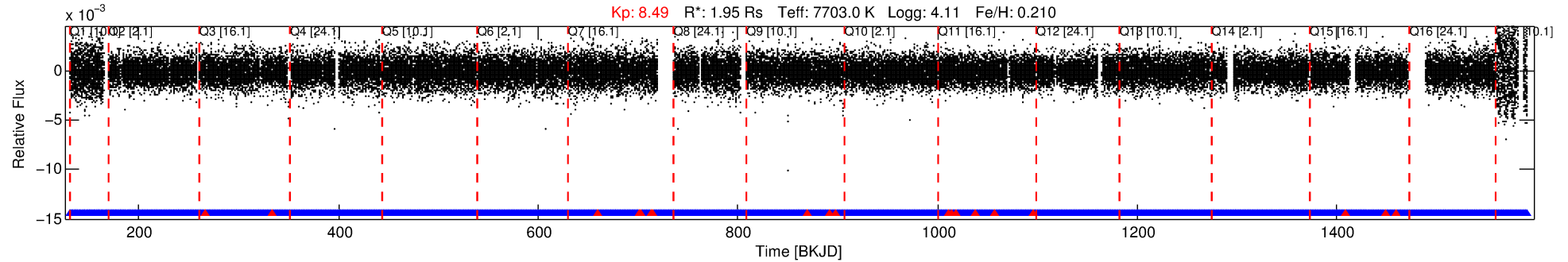
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003437940-01

No Significant Match Found

DV One-Page Summary

KIC: 3437940 Candidate: 1 of 5 Period: 0.591 d



DV Fit Results:

Period = 0.59058 [0.00001] d
Epoch = 131.6279 [0.0029] BKJD
Rp/R* = 0.0112 [0.0025]
a/R* = 1.09 [0.24]
b = 0.90 [0.29]
Self = 42672.60 [10318.40]
Teq = 3665 [222] K
Rp = 2.38 [0.69] Re
a = 0.0168 [0.0026] AU
Ag = 2.14 [1.13] [1.02 σ]
Teffp = 6856 [835] K [3.69 σ]

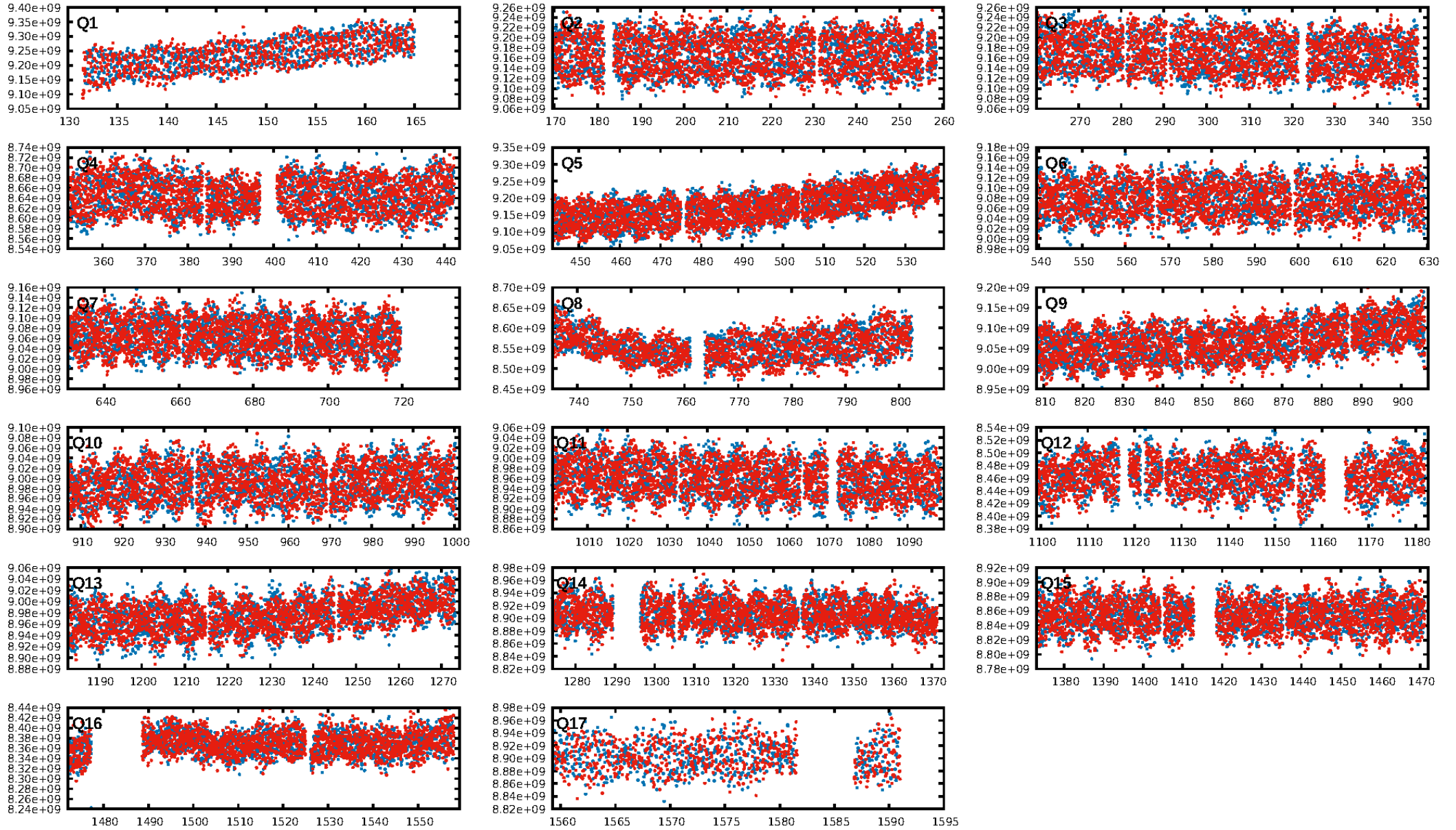
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [105.51 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.60e-09
RollingBand-fgt: 0.99 [2152/2172]
GhostDiagnostic-chr: N/A
Centroid-sig: 1.7%
Centroid-so: 0.229 arcsec [0.72 σ]
OotOffset-rm: 1.955 arcsec [1.38 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-rm: 2.246 arcsec [2.38 σ]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.00 [0/16]
DiffImageOverlap-fno: 1.00 [17/17]

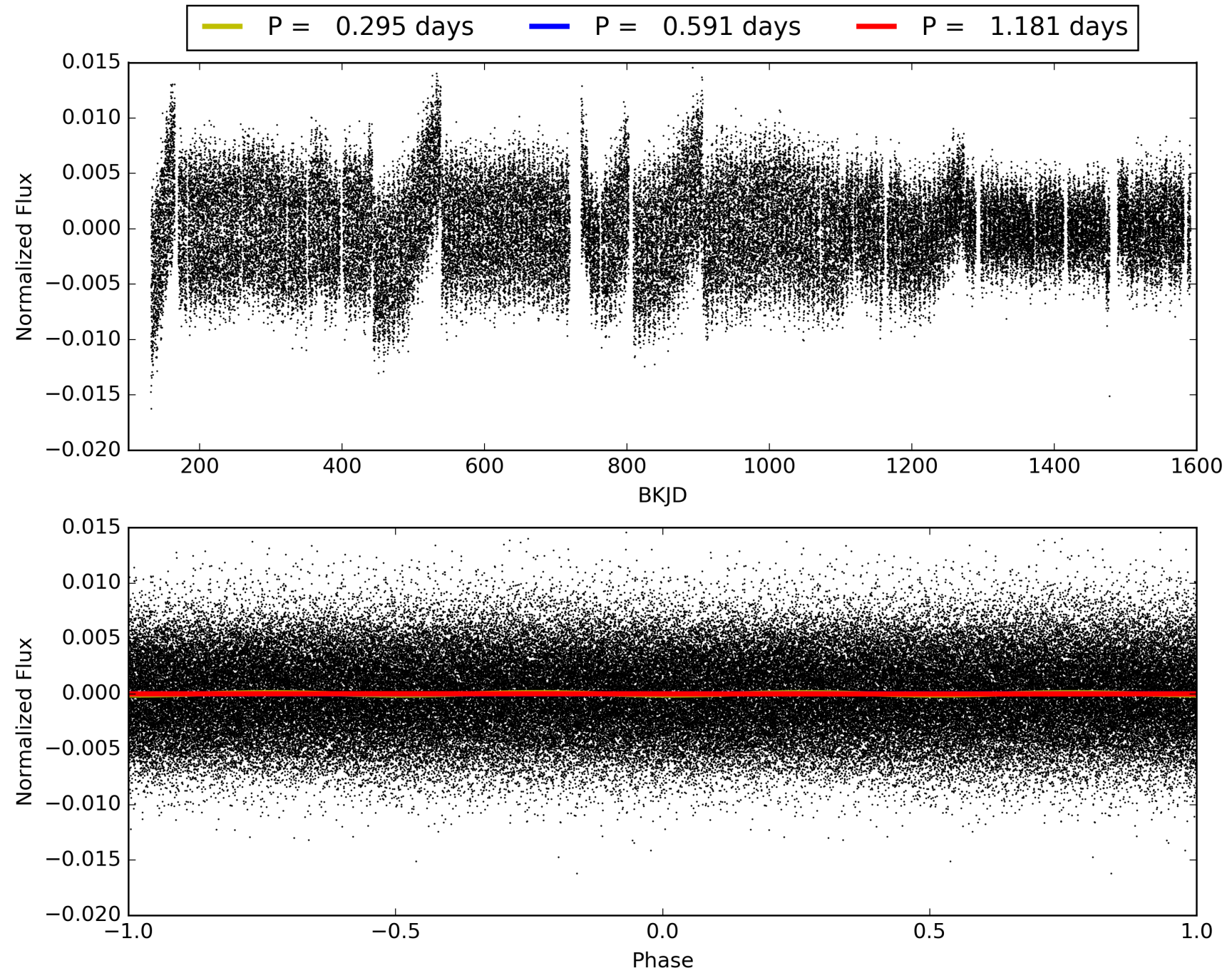
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 15:18:49 Z

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

TCE 003437940-01, PDC Light Curves

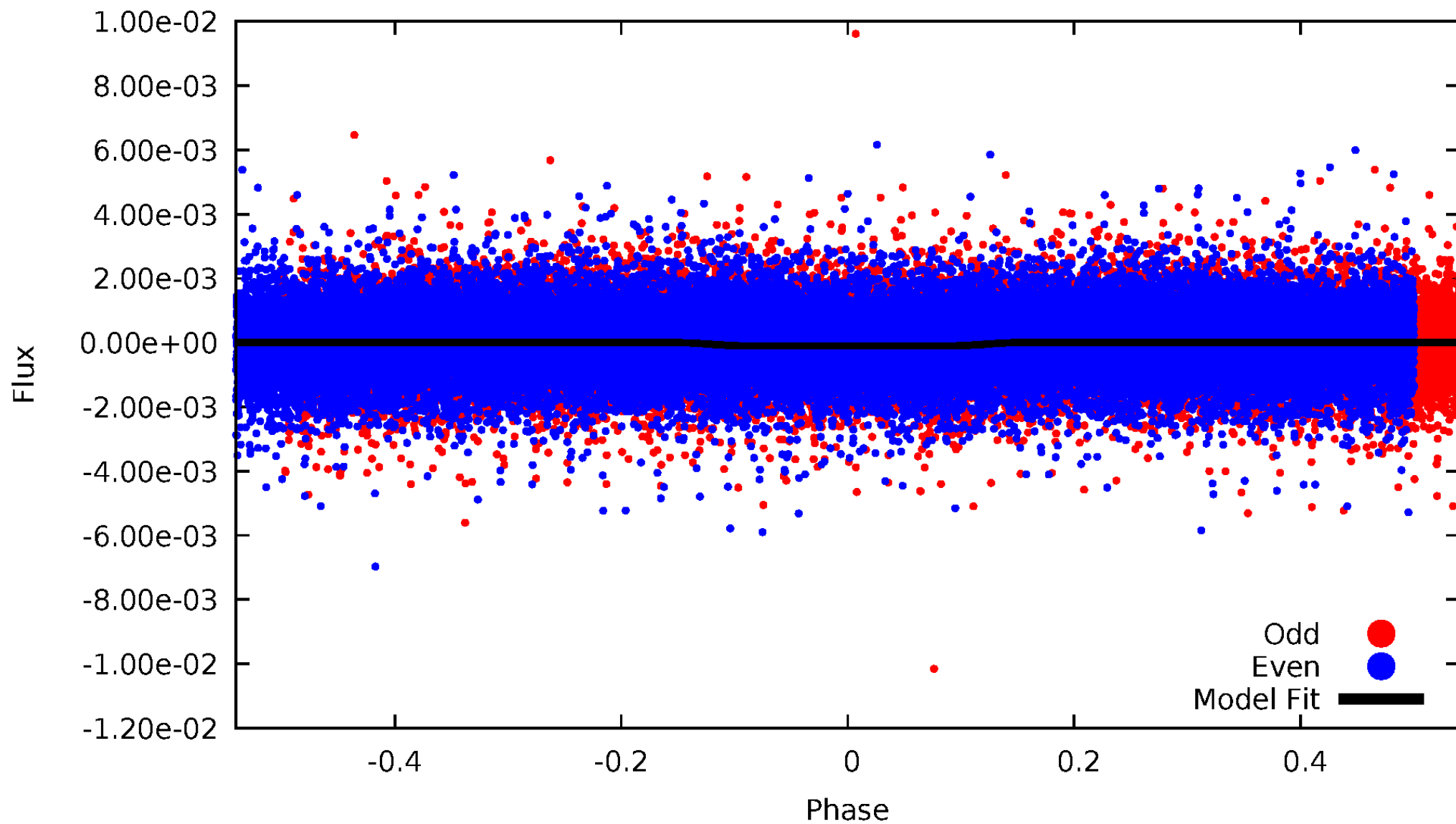


TCE 003437940-01



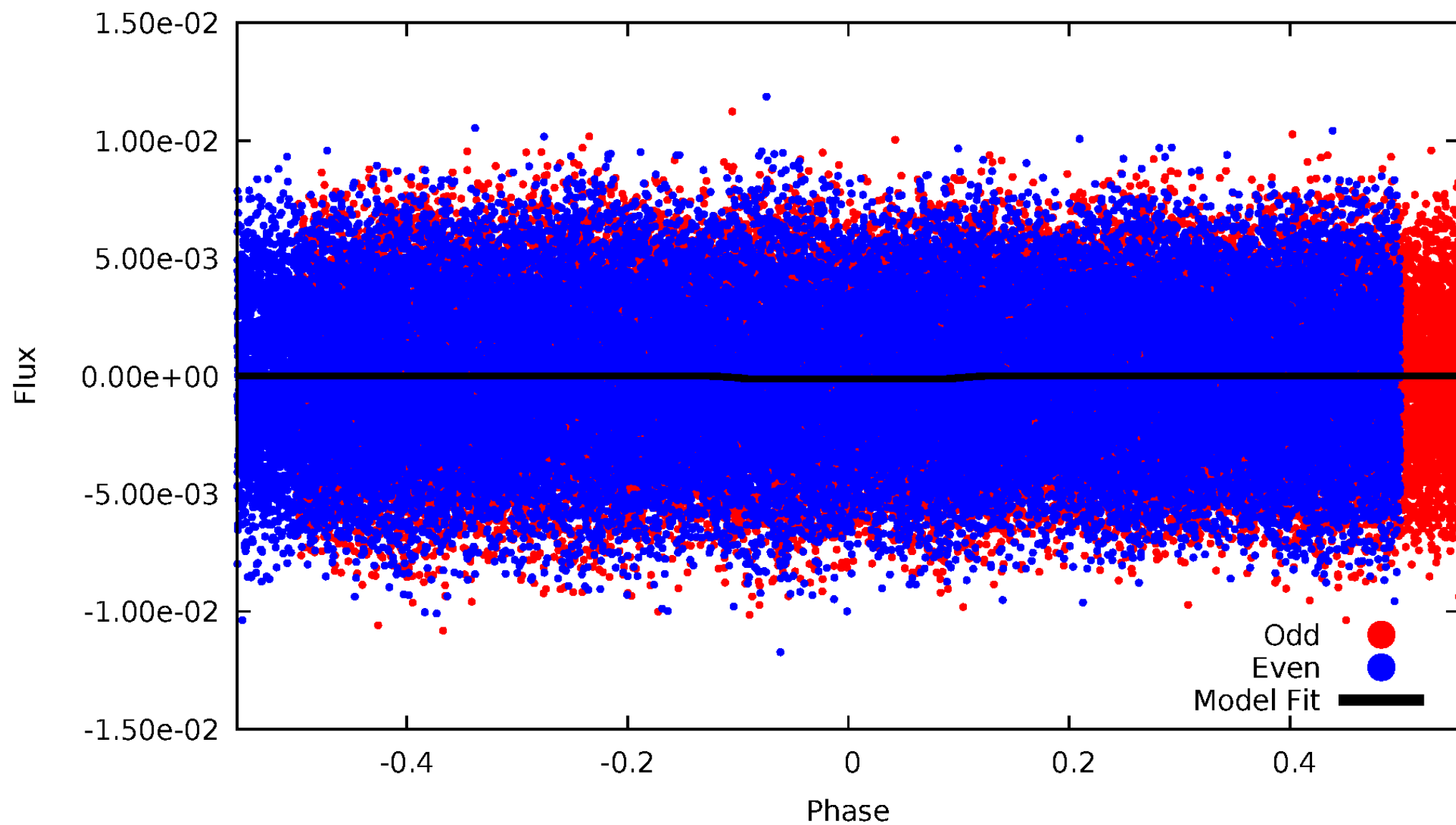
DV Odd/Even

TCE 003437940-01



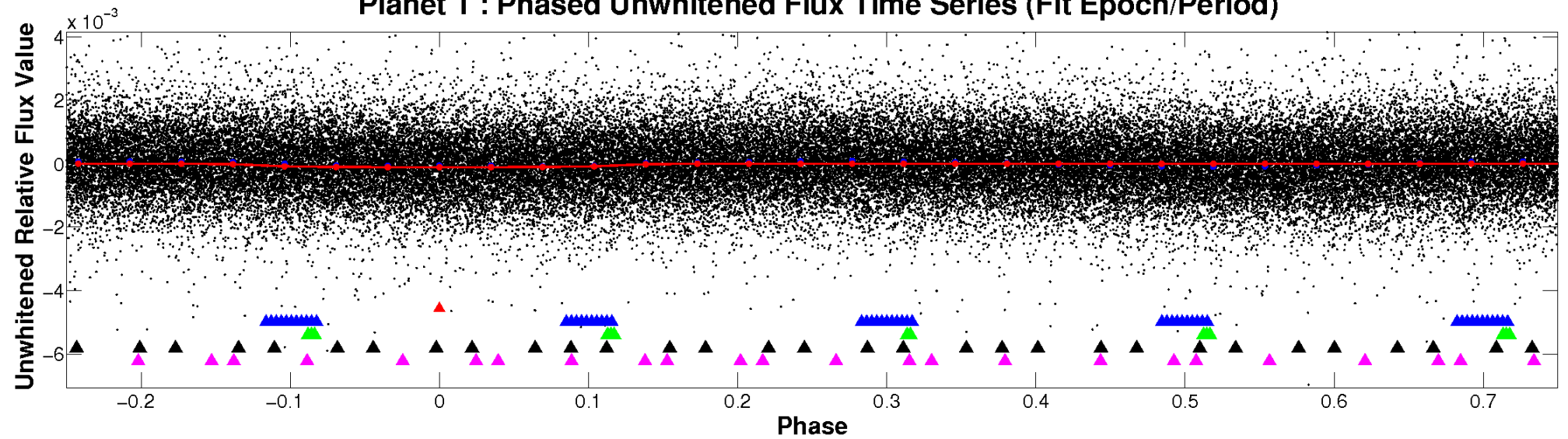
ALT Odd/Even

TCE 003437940-01

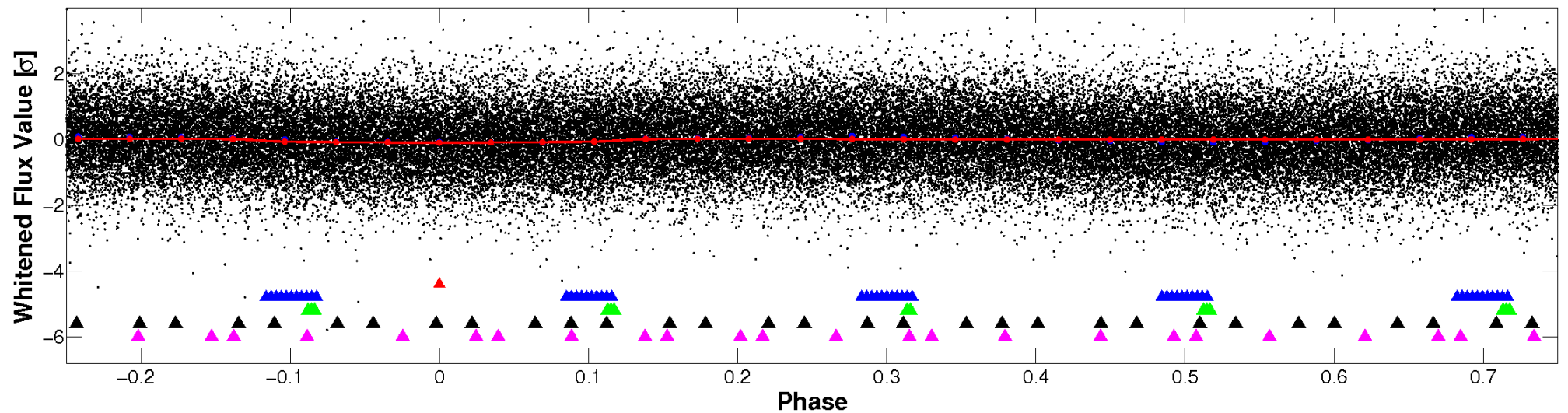


Non-Whitened Vs. Whitened Light Curve

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

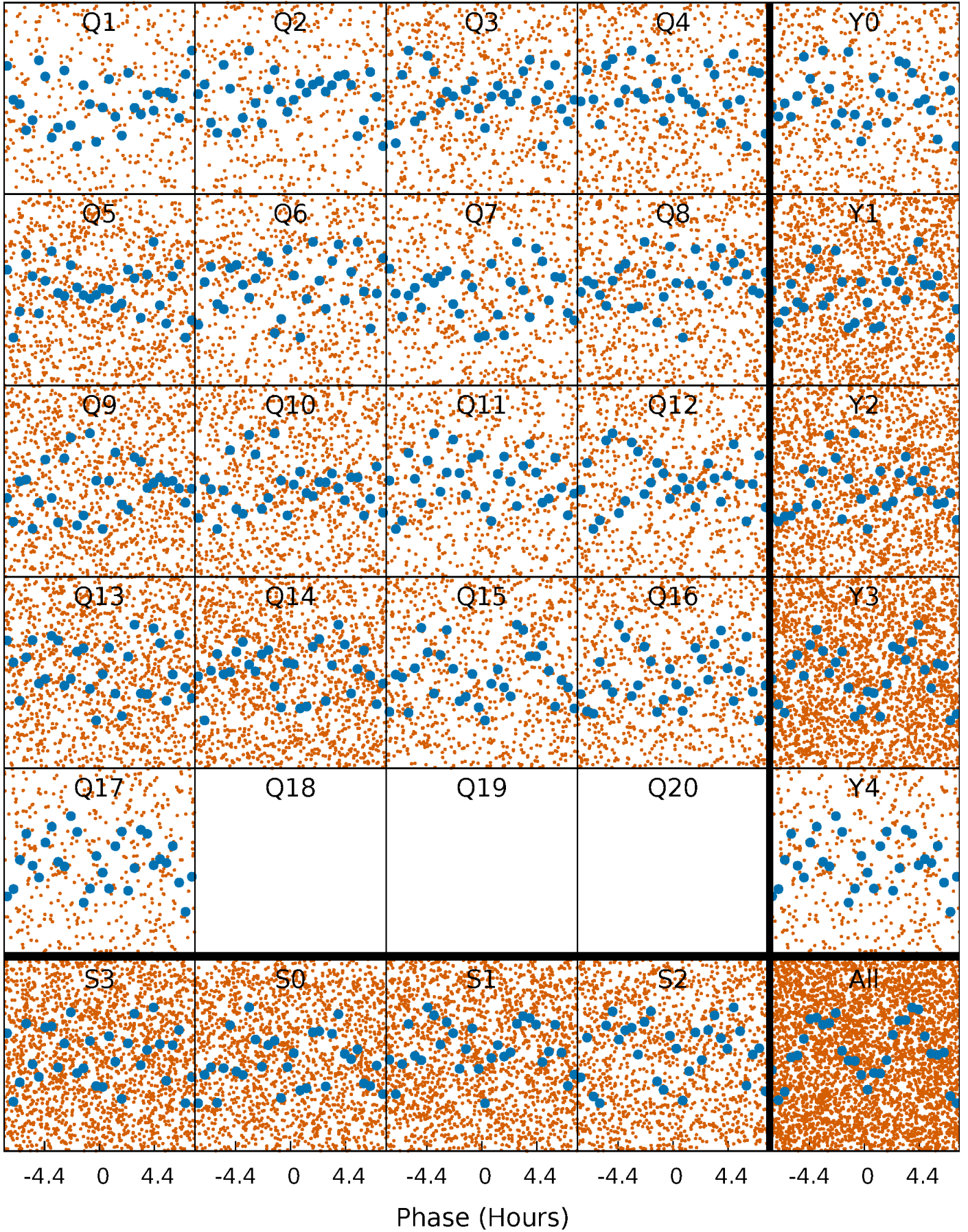


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



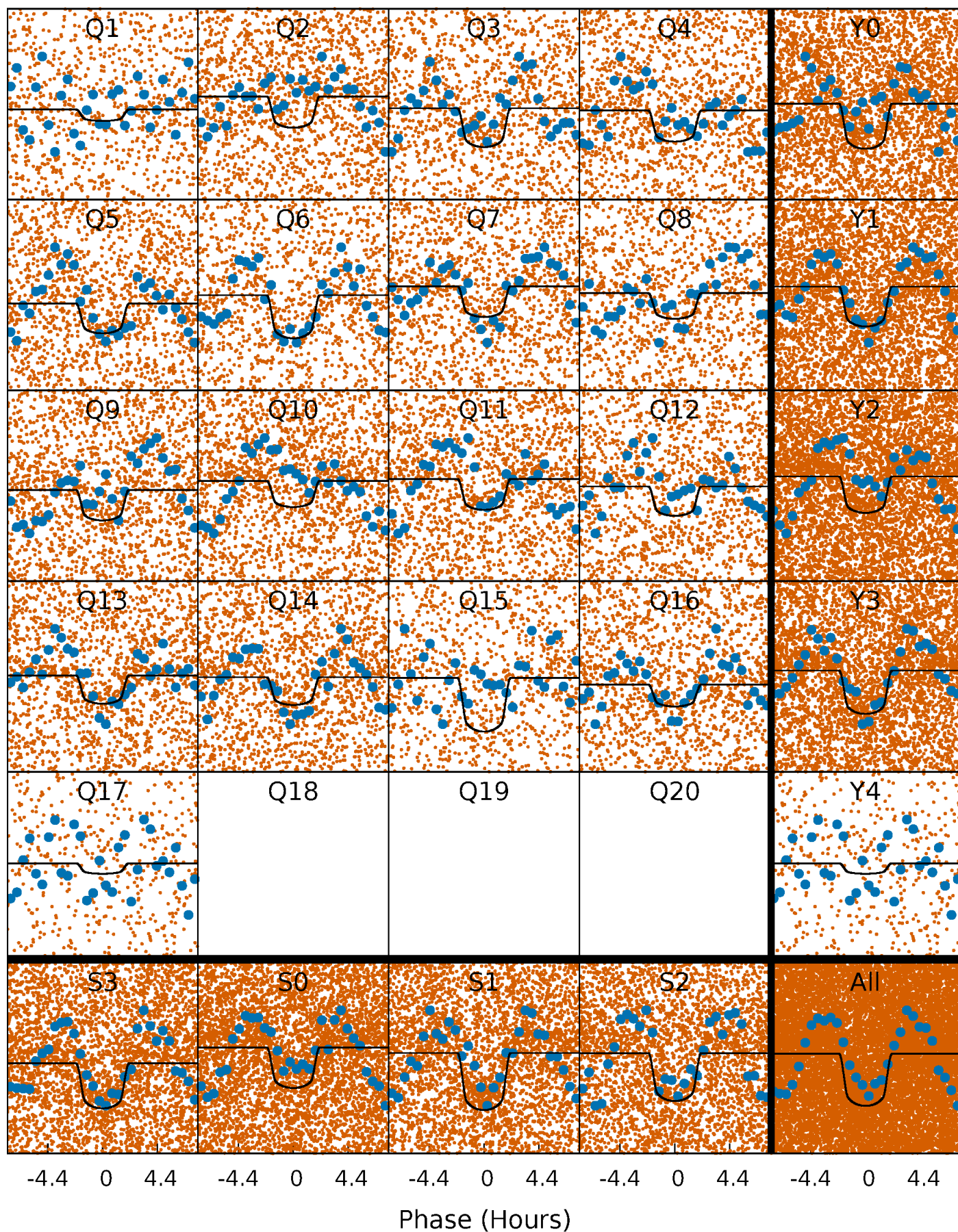
PDC Quarter-Phased Transit Curves

TCE 003437940-01 P= 0.590580 Days $T_0=131.627944$ (BKJD)



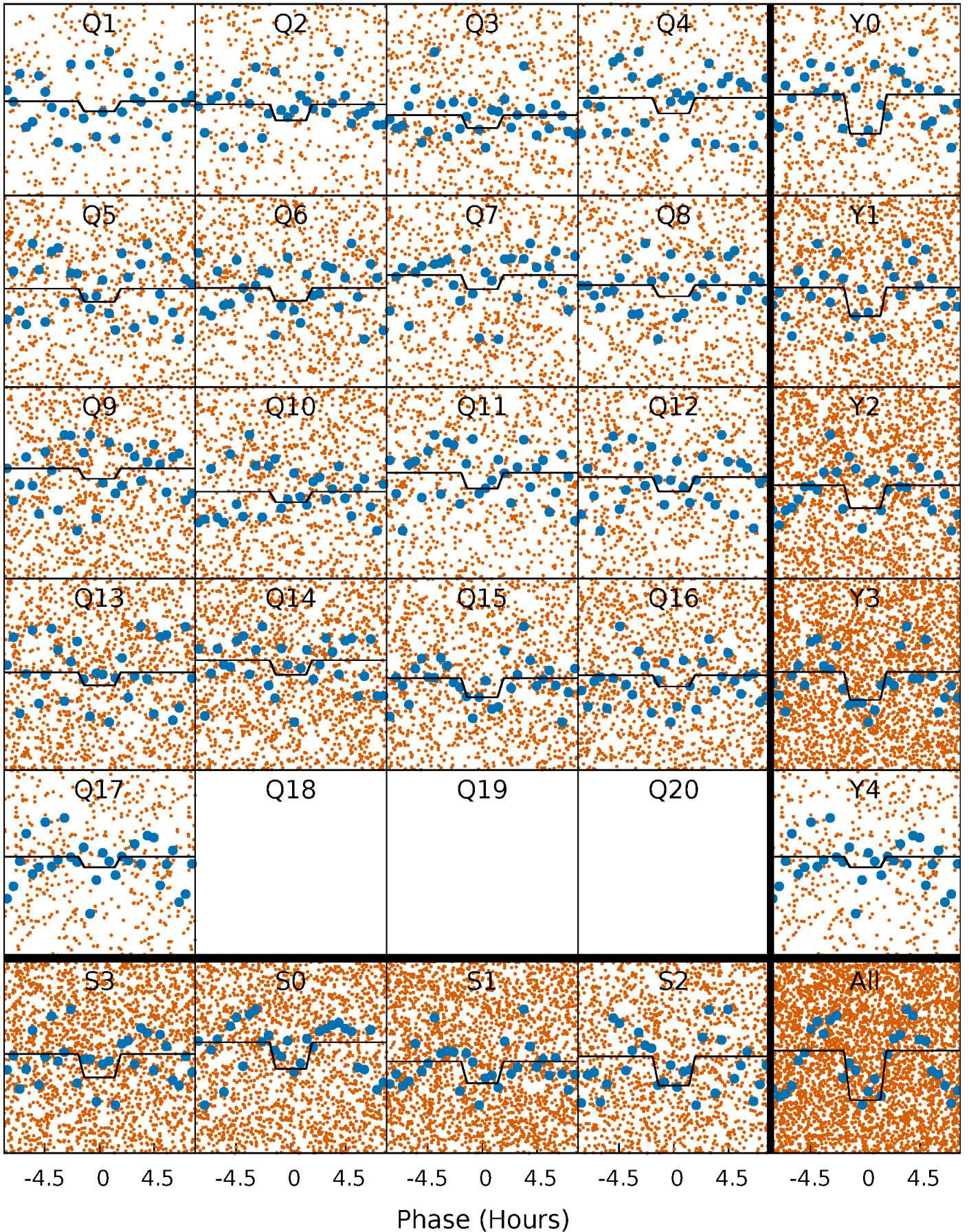
DV Quarter-Phased Transit Curves

TCE 003437940-01 P= 0.590580 Days $T_0=131.627944$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

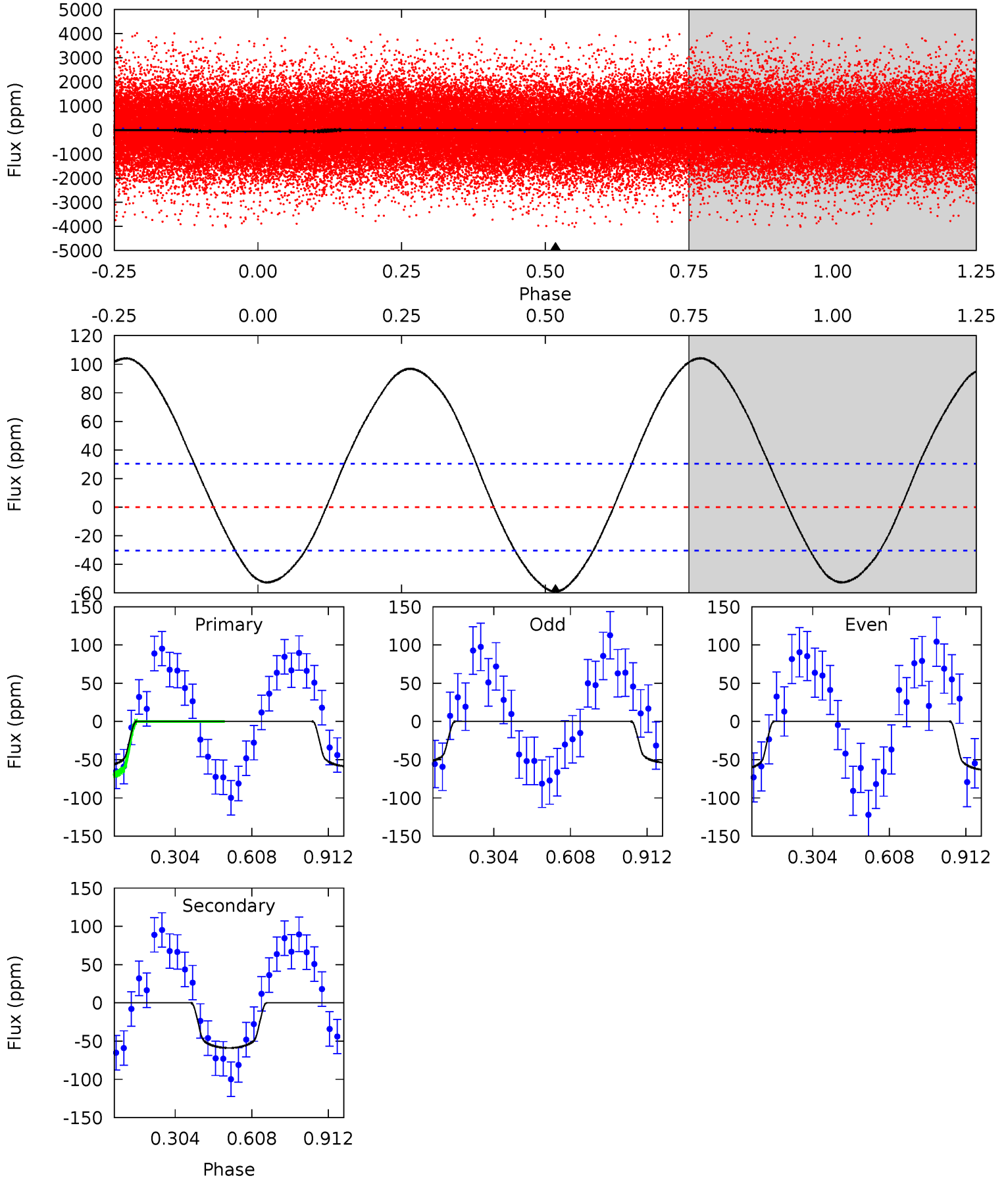
TCE 003437940-01 P= 0.590583 Days $T_0=131.627349$ (BKJD)



DV Model-Shift Uniqueness Test

003437940-01, P = 0.590580 Days, E = 131.037364 Days

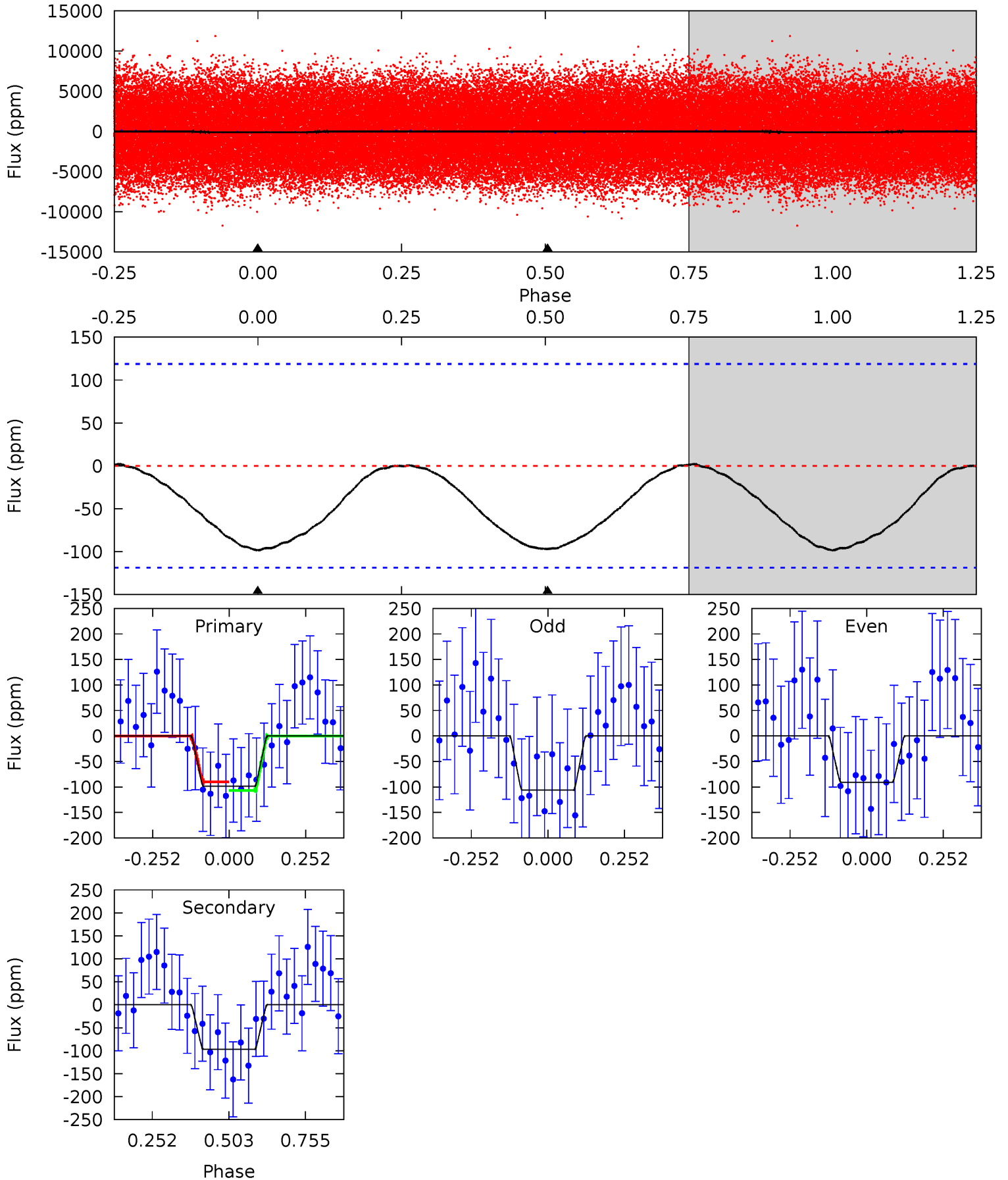
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.41	8.41	0	0	4.33	1.03	6.28	8.41	8.41	8.41	8.41	0.66	0.87	0.64	2.24



Alt Model-Shift Uniqueness Test

003437940-01, P = 0.590583 Days, E = 131.036766 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.62	3.56	0	0	4.37	1.15	0.04	3.62	3.62	3.56	3.56	0.28	0.97	0.02	0.32



Stellar Parameters For KIC 003437940

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7703^{+133}_{-191}	$4.114^{+0.080}_{-0.120}$	$0.210^{+0.150}_{-0.150}$	$1.952^{+0.355}_{-0.207}$	$1.807^{+0.126}_{-0.114}$	$0.342^{+0.116}_{-0.121}$
	+2%/-2%	+2%/-3%	+71%/-71%	+18%/-11%	+7%/-6%	+34%/-35%
Source	SPE4	SPE4	SPE4	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 003437940-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-59 ± 7	$2.41^{+0.60}_{-0.56}$	5132^{+254}_{-194}	5950^{+1001}_{-784}	$1.579^{+1.013}_{-0.581}$
Alt.	-97 ± 27	$2.45^{+0.63}_{-0.58}$	5130^{+235}_{-196}	6735^{+1365}_{-1025}	$2.396^{+1.971}_{-1.042}$

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 $A_{obs} \gg 1.0$

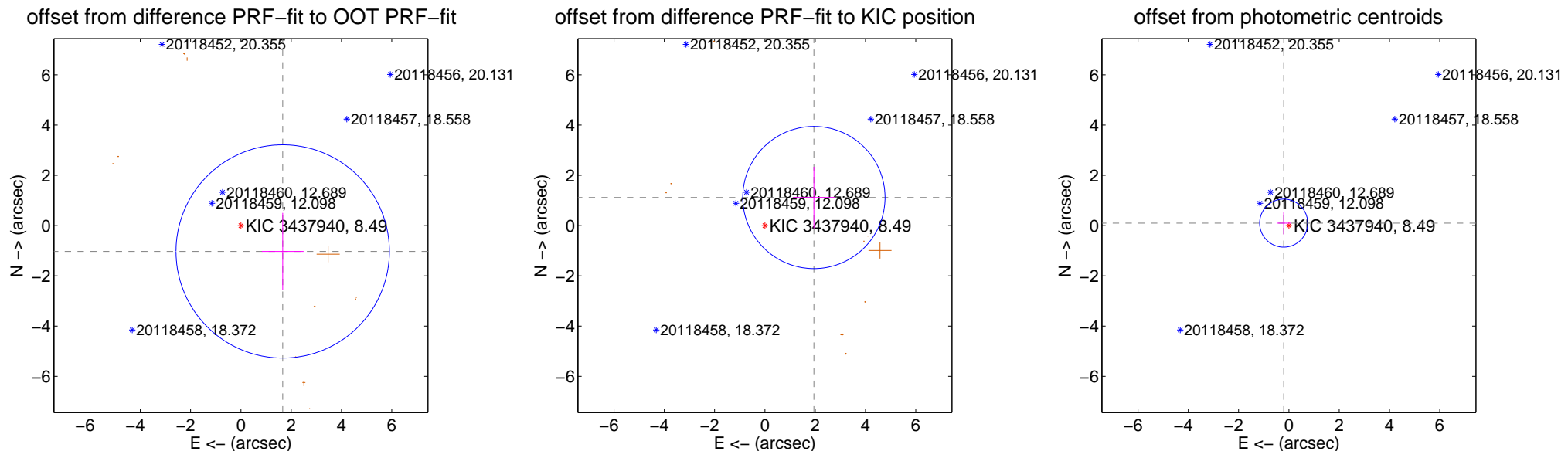
DV Centroid Data

Supplemental centroid analysis for 003437940-01. **Kepler magnitude: 8.49.** Transit SNR 11.33

There are 0 quarters with good PRF difference image offsets

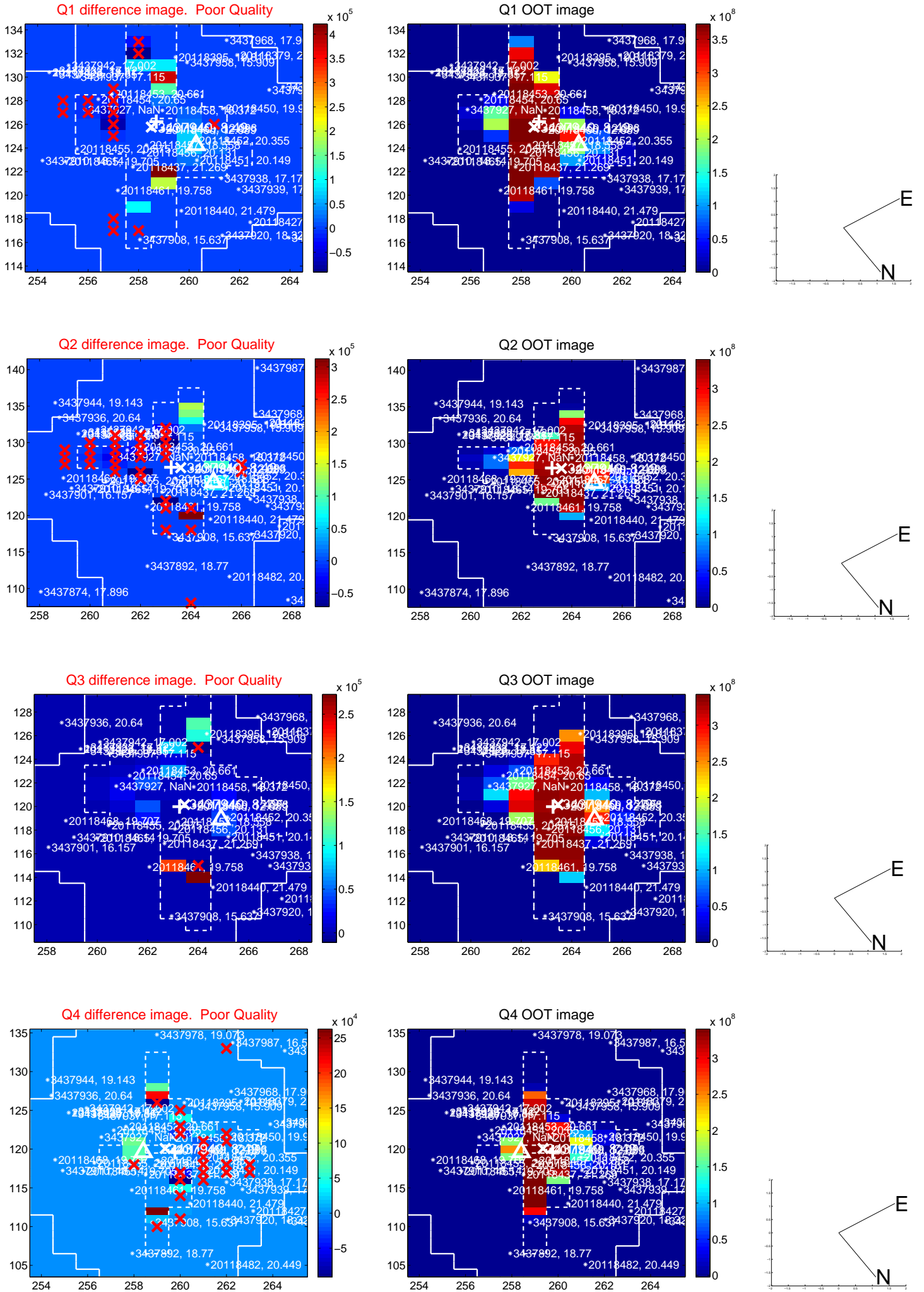
The direct PRF centroid is offset from the target star catalog position by about 1.98 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.955 ± 1.415	1.38	-1.663 ± 0.830	-1.029 ± 1.534
PRF-fit source offset from KIC position	2.246 ± 0.943	2.38	-1.949 ± 0.831	1.117 ± 1.222
photometric centroid source offset	0.23 ± 0.32	0.72	0.21 ± 0.28	0.10 ± 0.45

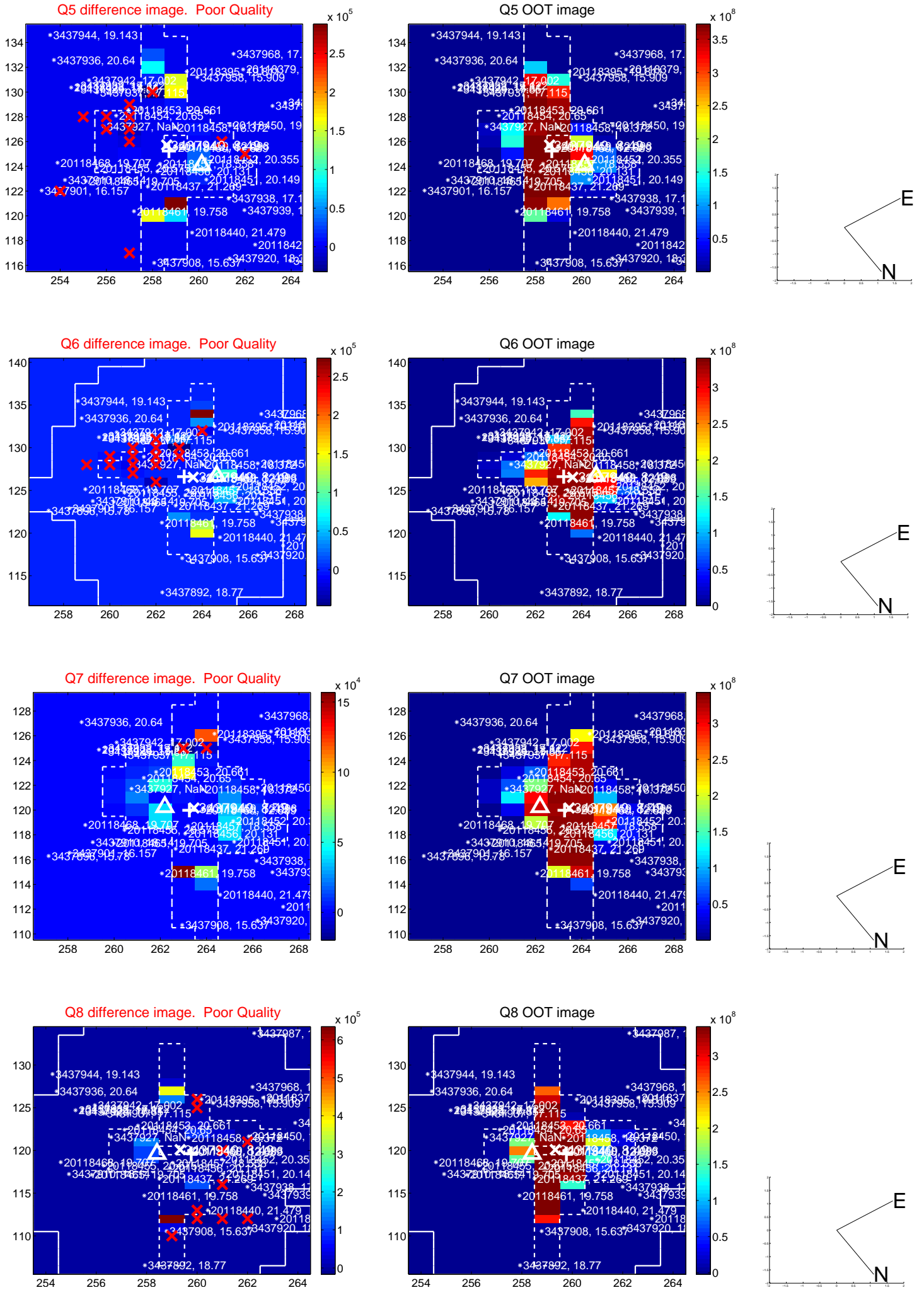


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

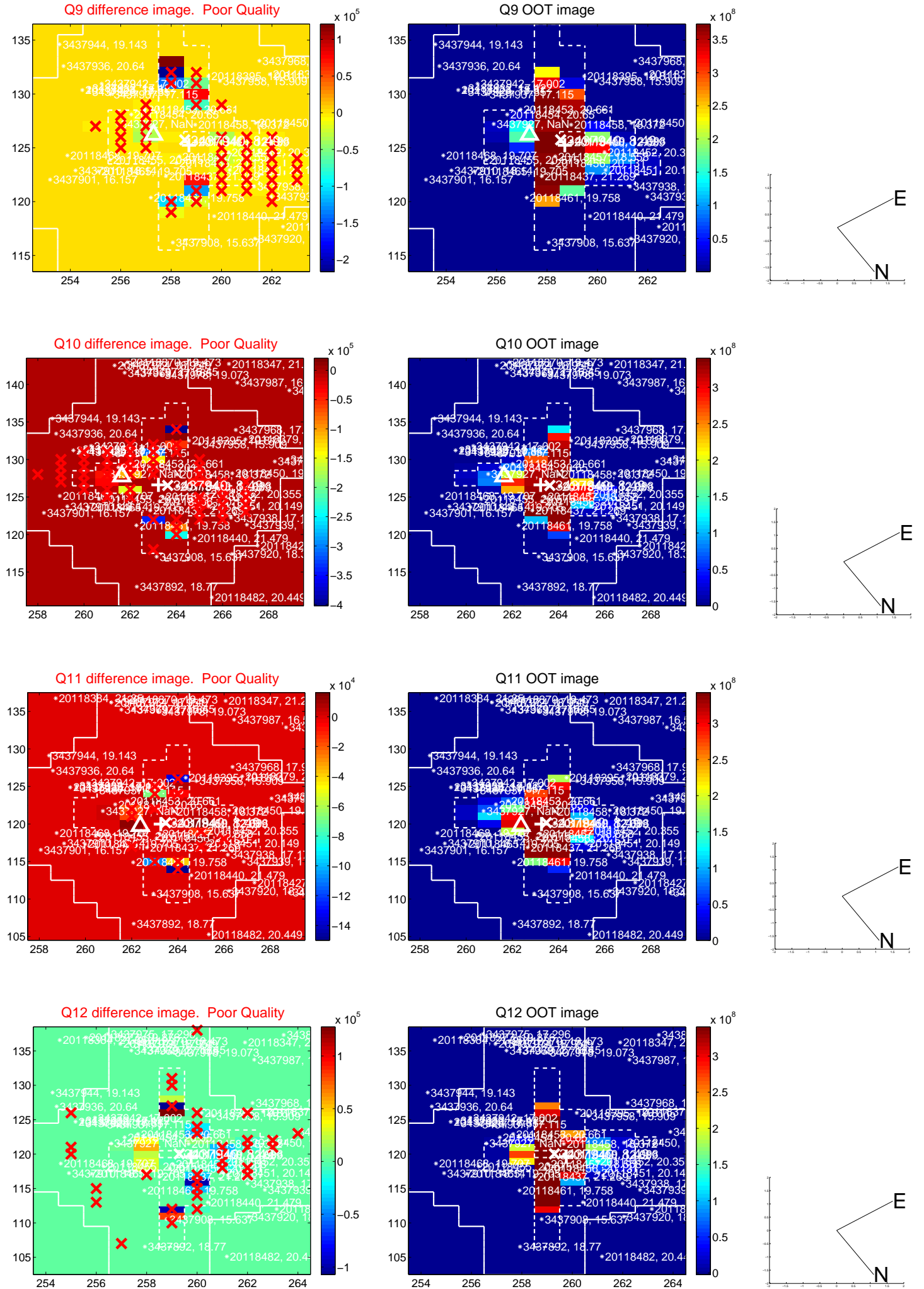
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



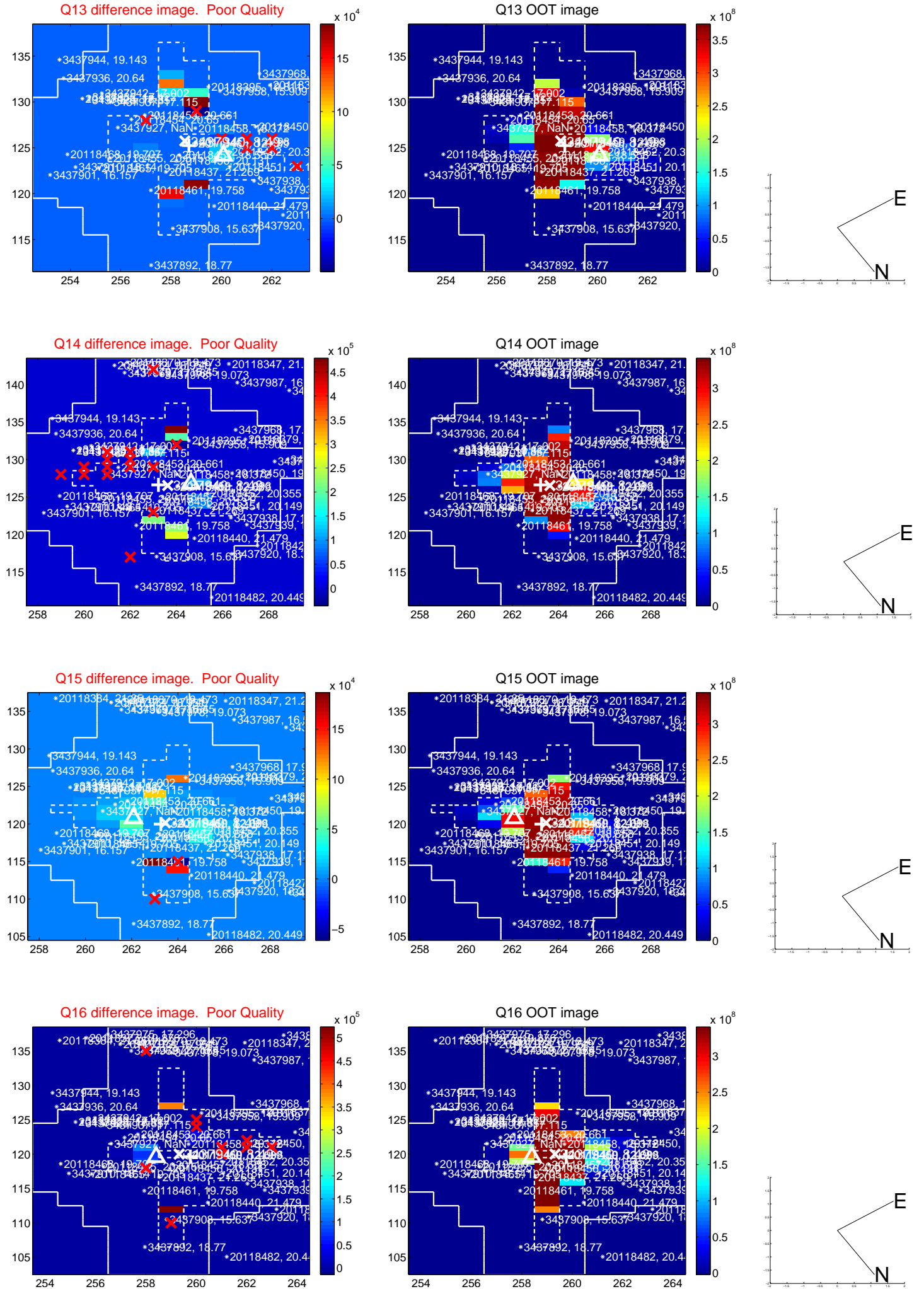
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



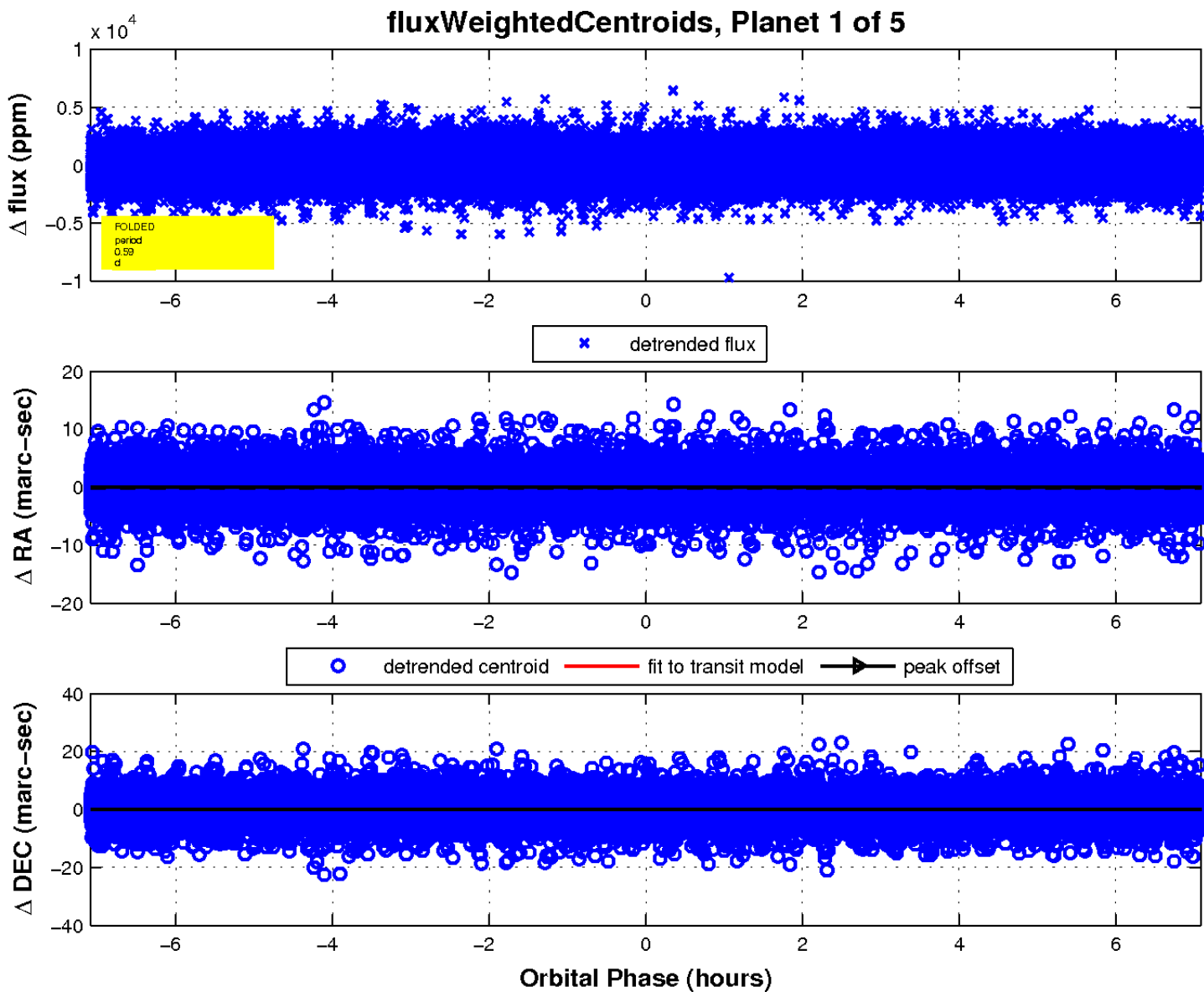
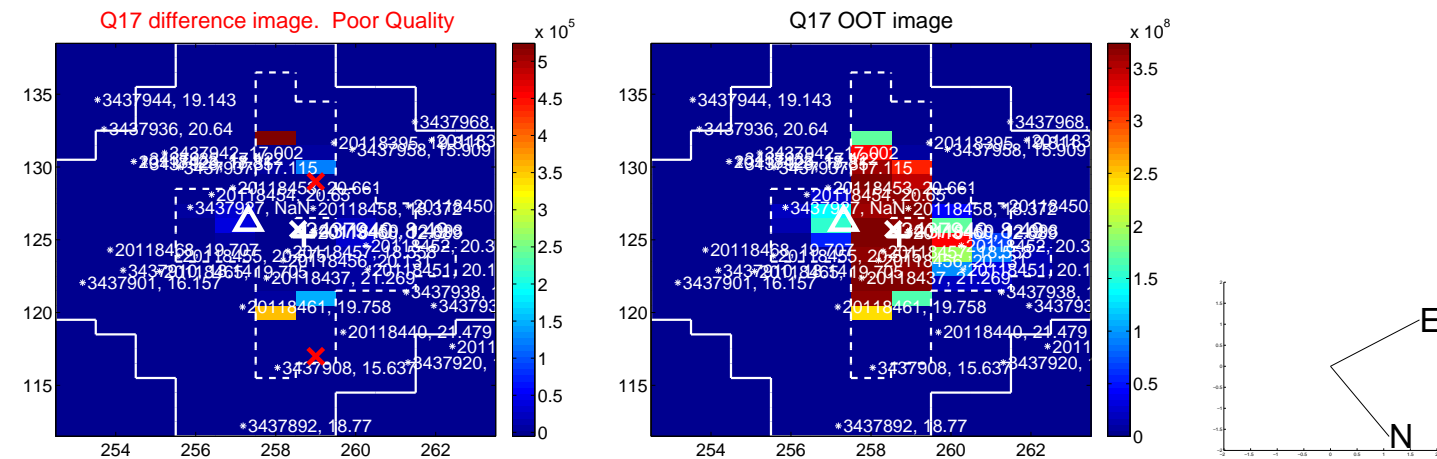
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

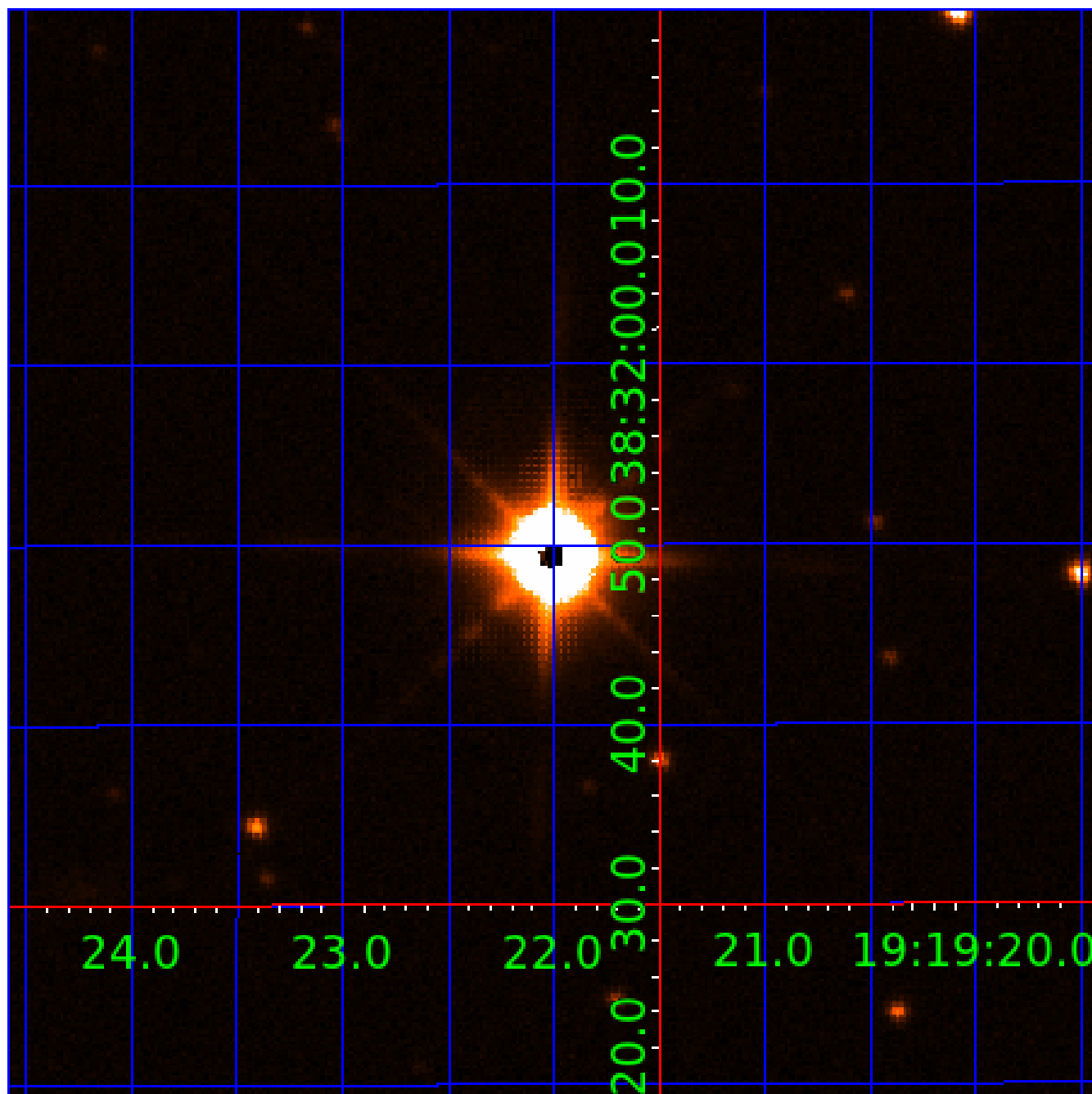


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003437940

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})
003437940-01	OBS	No	0.590580	131.627944	110.2	3.828	8.8	11.3	1.95	7703	2.38	42672.60
003437940-02	OBS	No	27.521413	140.299122	225.5	4.782	8.9	2.4	1.95	7703	3.37	254.46
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003437940-04	OBS	No	47.456283	147.220052	1192.4	4.043	8.8	9.5	1.95	7703	7.29	123.06
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003437940-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED
003437940-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003437940-03	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—CENT_SATURATED
003437940-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003437940-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

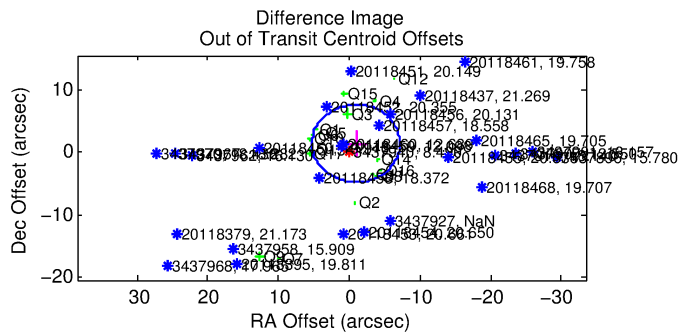
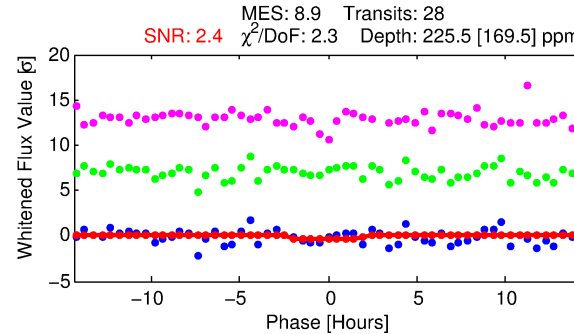
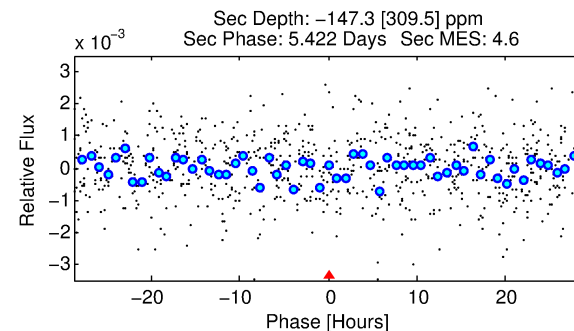
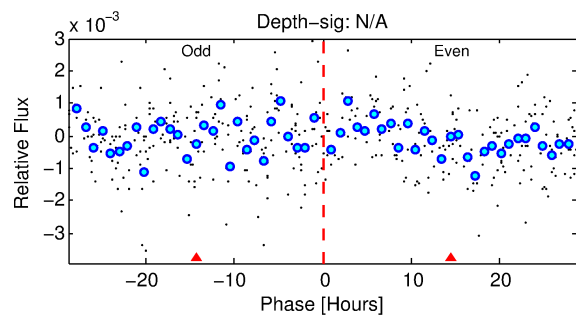
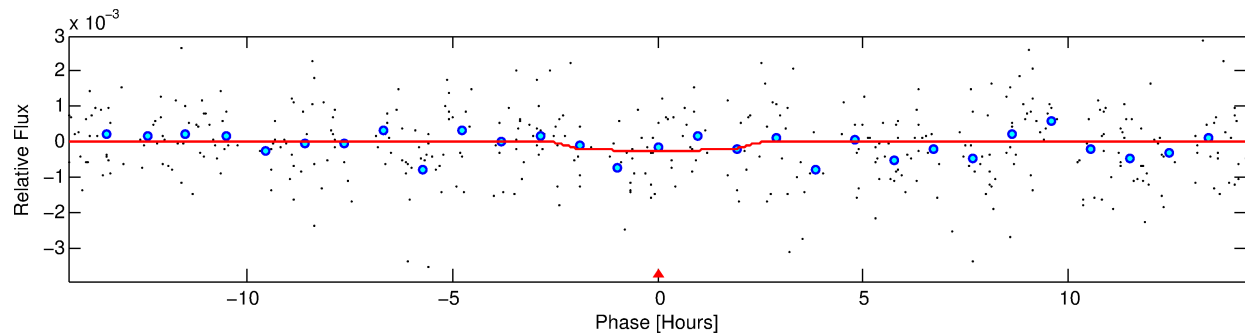
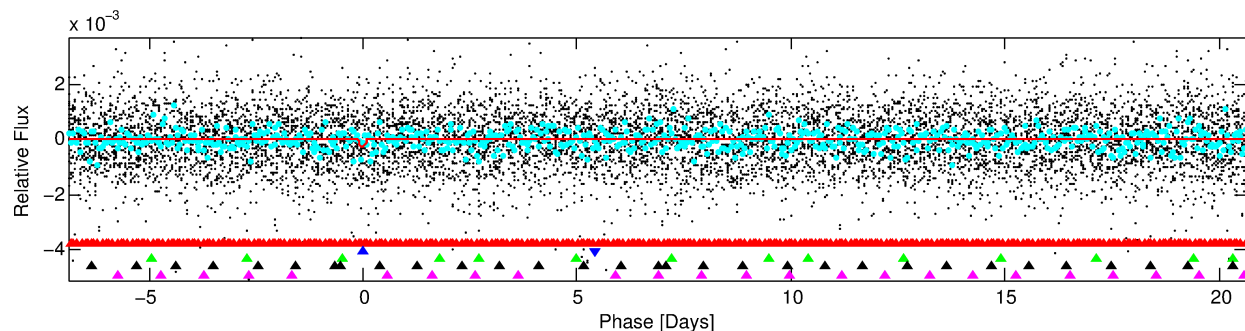
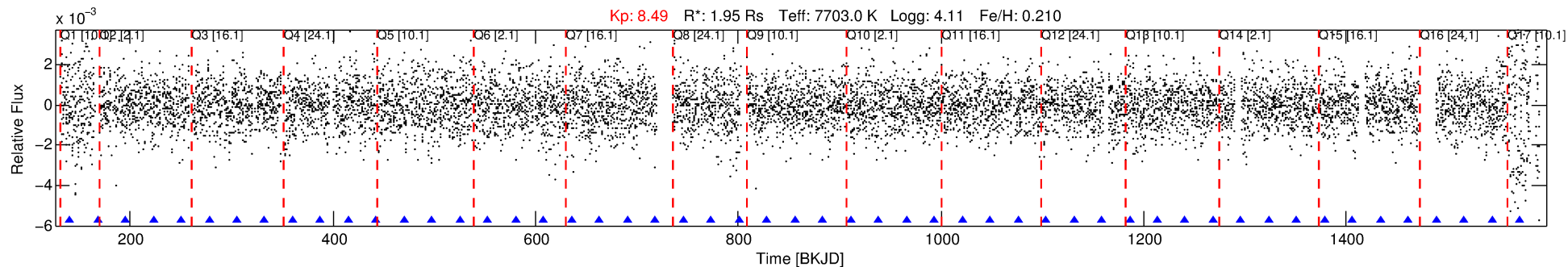
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003437940-02

No Significant Match Found

DV One-Page Summary

KIC: 3437940 Candidate: 2 of 5 Period: 27.521 d



DV Fit Results:

Period = 27.52141 [0.00194] d
Epoch = 140.2991 [0.0601] BKJD
Rp/R* = 0.0158 [0.0231]
a/R* = 21.59 [185.76]
b = 0.89 [2.05]
Seff = 254.46 [61.53]
Teq = 1018 [62] K
Rp = 3.37 [4.96] Re
a = 0.2173 [0.0331] AU
Ag = N/A
Teffp = N/A

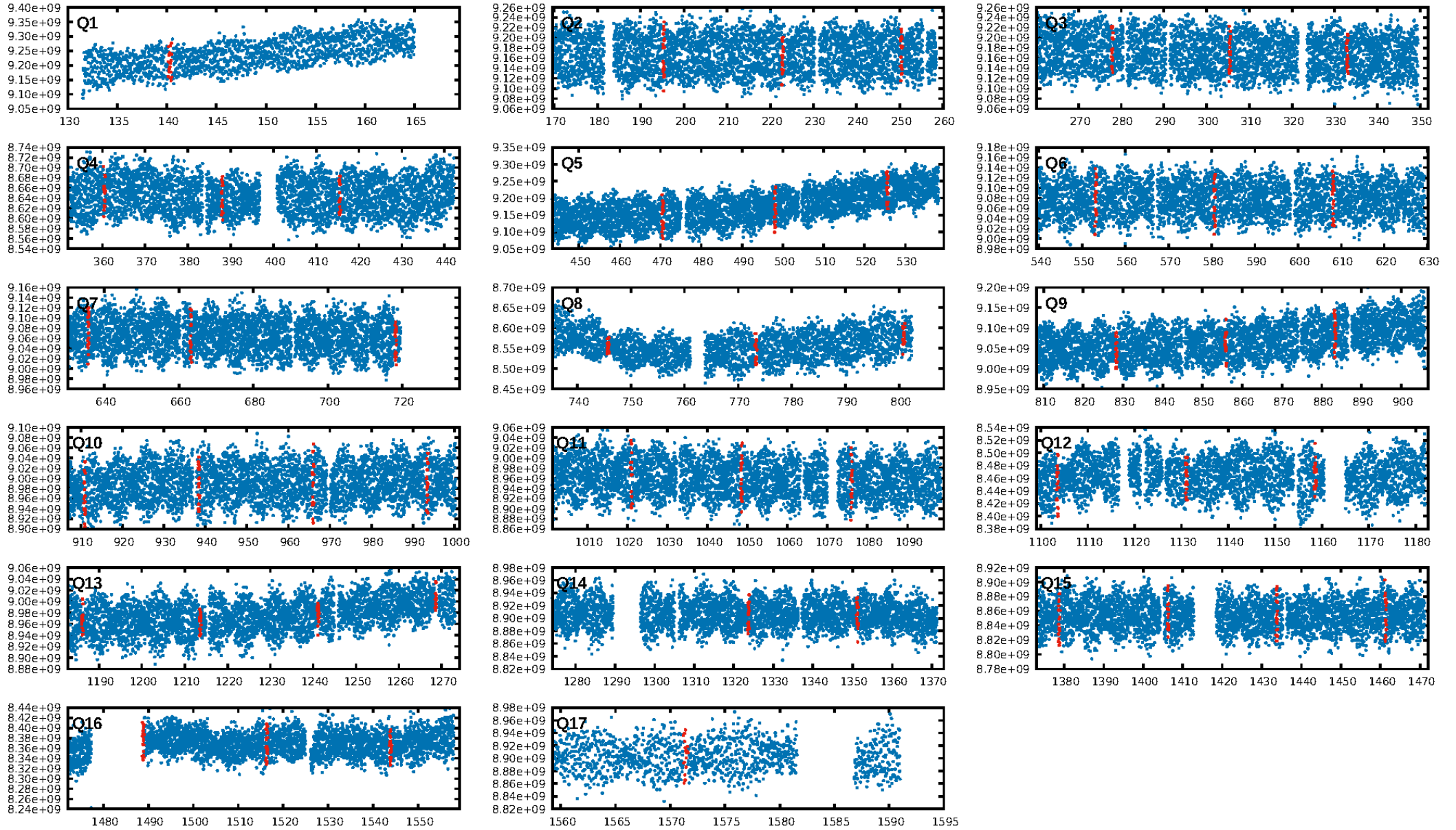
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [105.51σ]
LongPeriod-sig: 100.0% [76.40σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.48e-18
RollingBand-fgt: 1.00 [27/27]
GhostDiagnostic-chr: N/A
Centroid-sig: 27.6%
Centroid-so: 1.702 arcsec [1.08σ]
OotOffset-rm: 1.667 arcsec [0.80σ]
KicOffset-rm: 2.228 arcsec [1.08σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
DiffImageOverlap-fno: 0.00 [0/17]

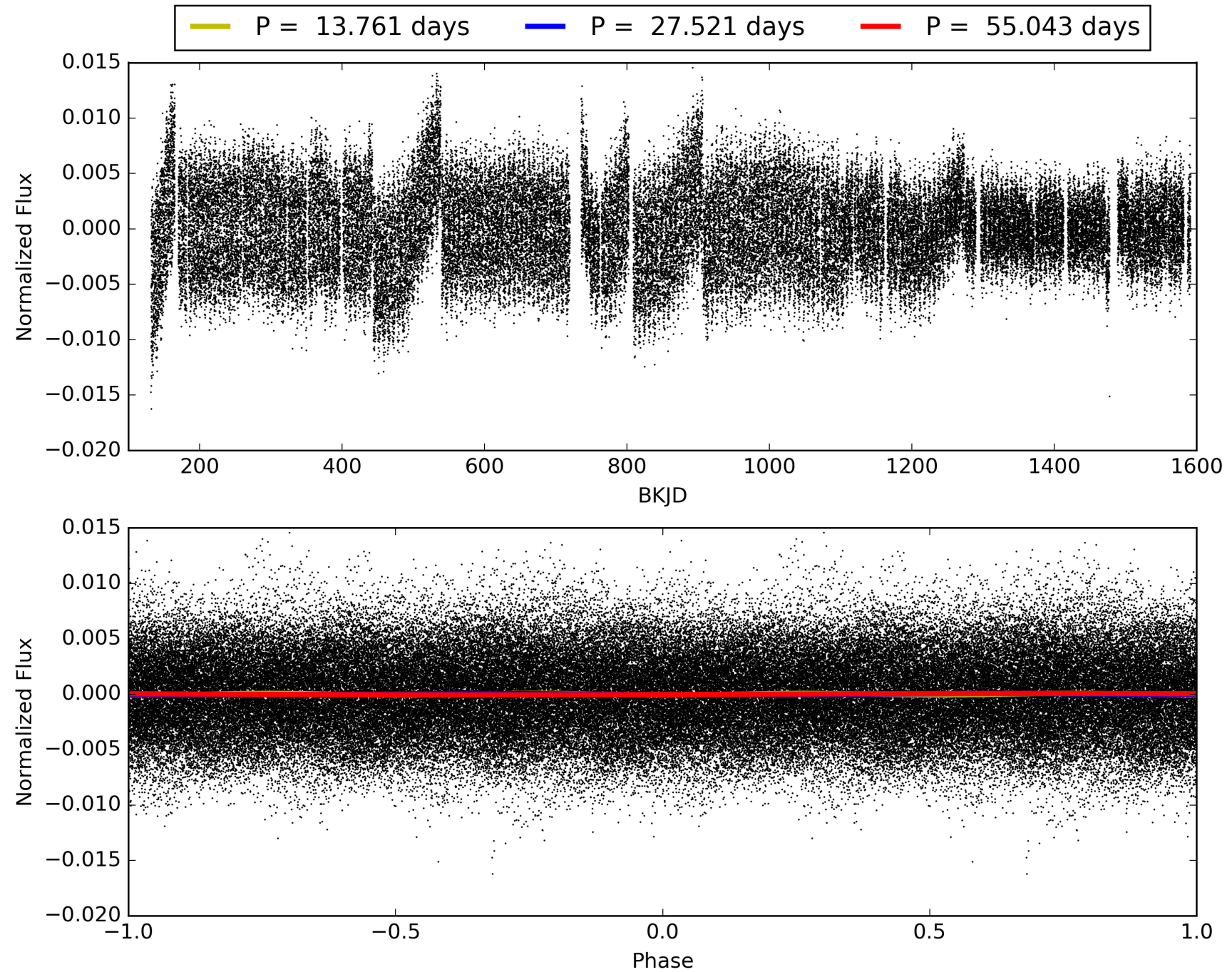
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 15:19:00 Z

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

TCE 003437940-02, PDC Light Curves

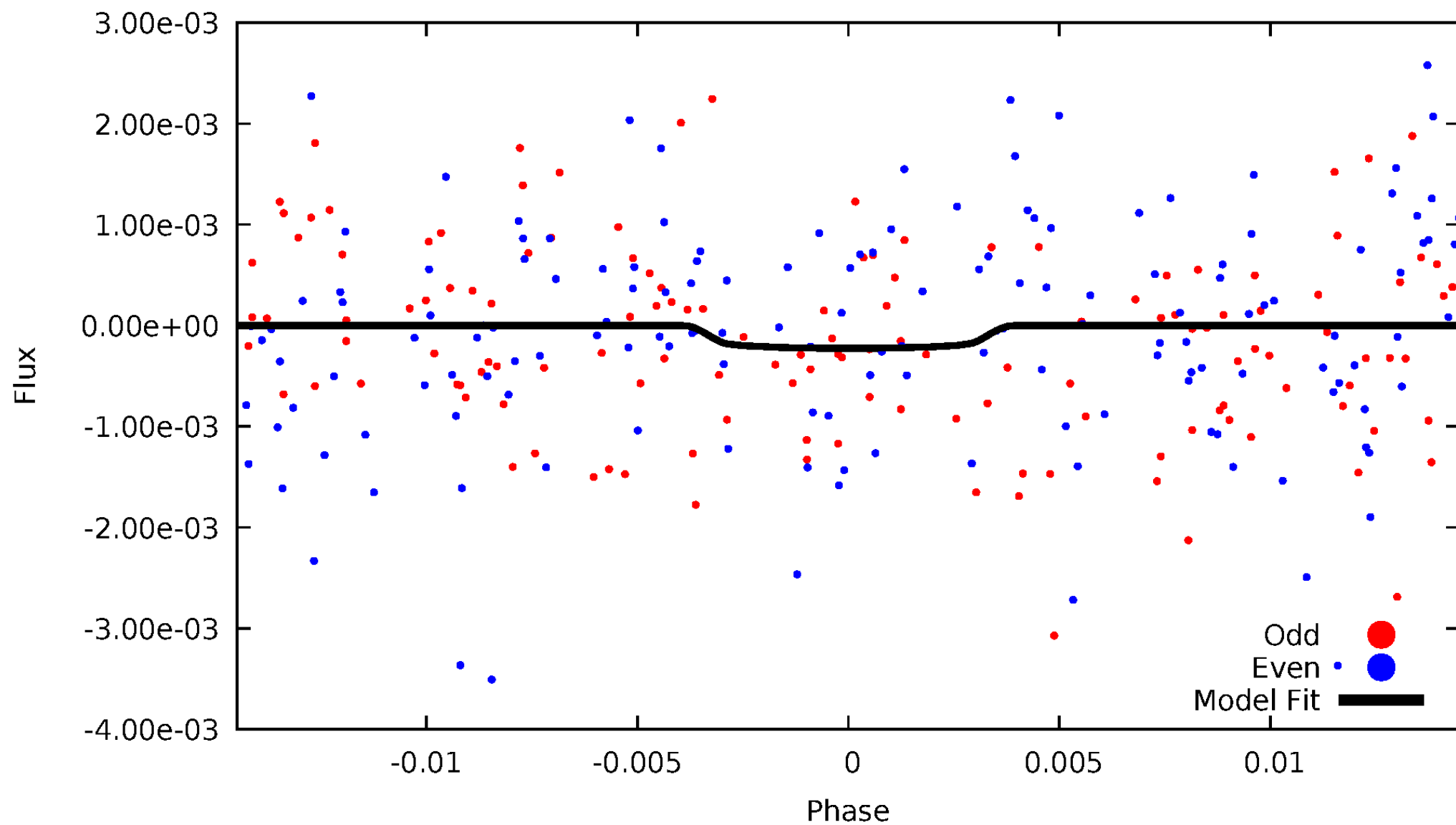


TCE 003437940-02



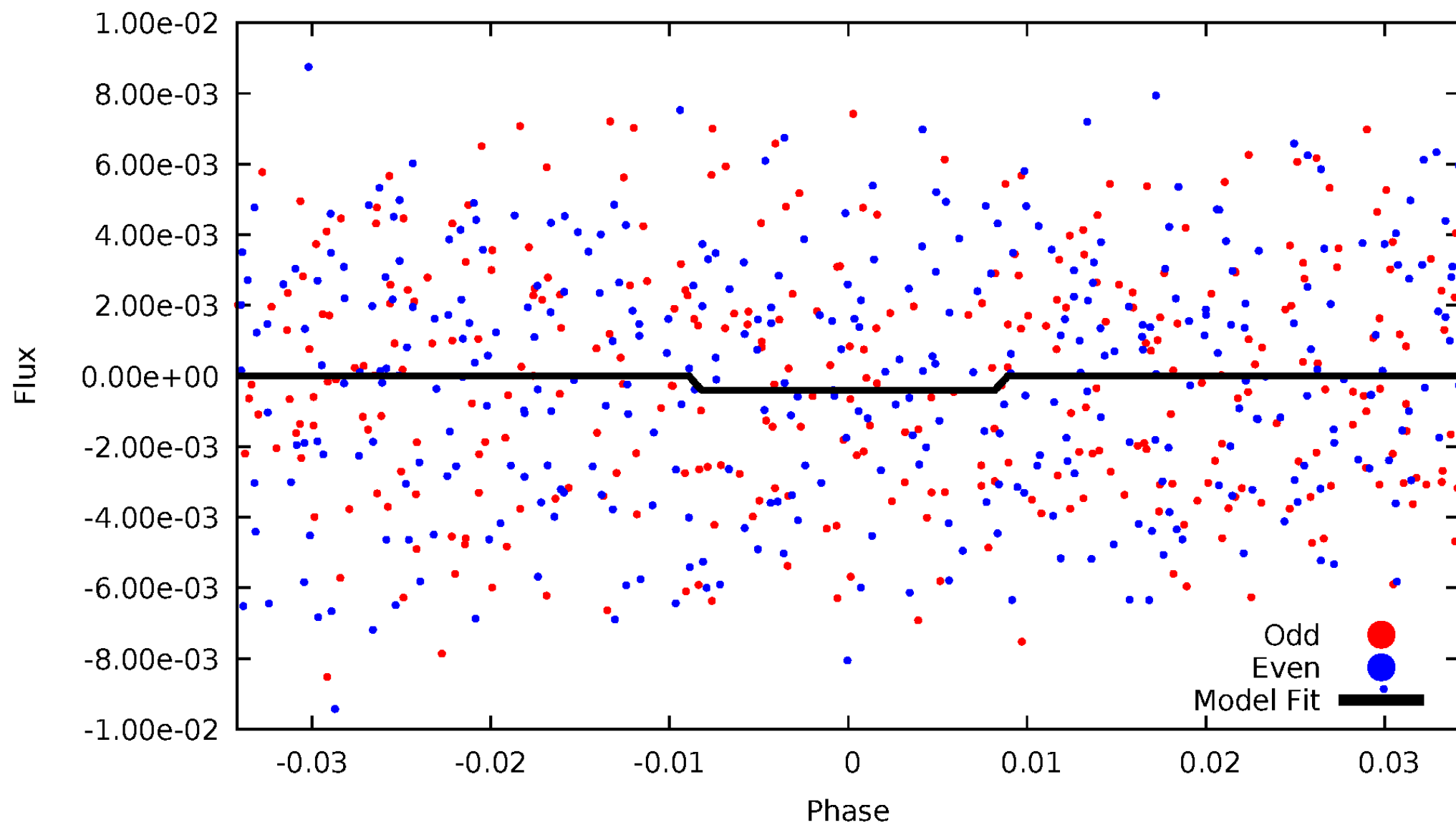
DV Odd/Even

TCE 003437940-02



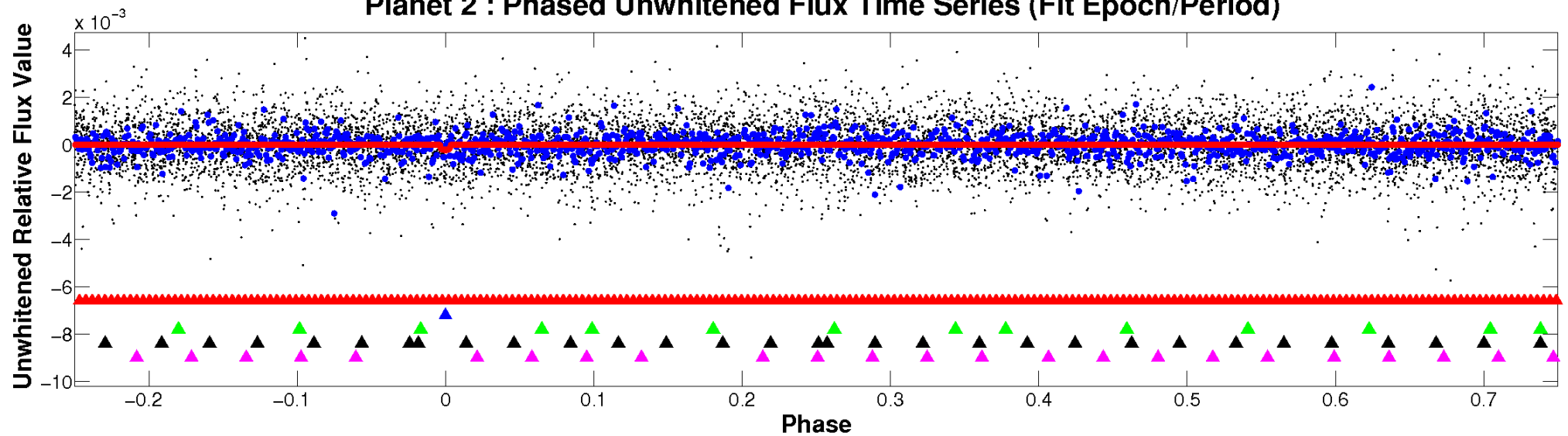
ALT Odd/Even

TCE 003437940-02

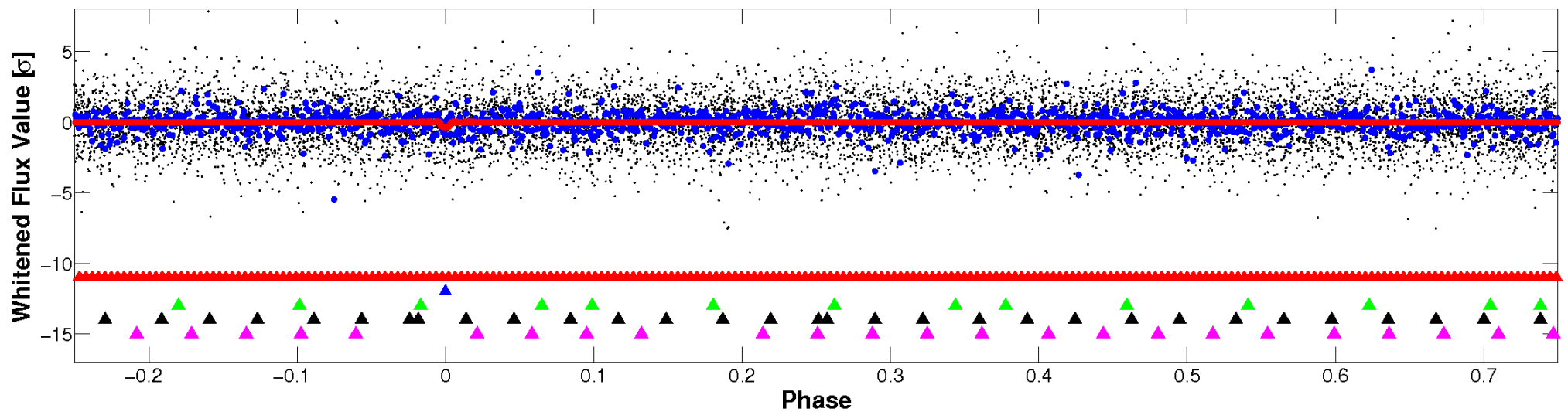


Non-Whitened Vs. Whitened Light Curve

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

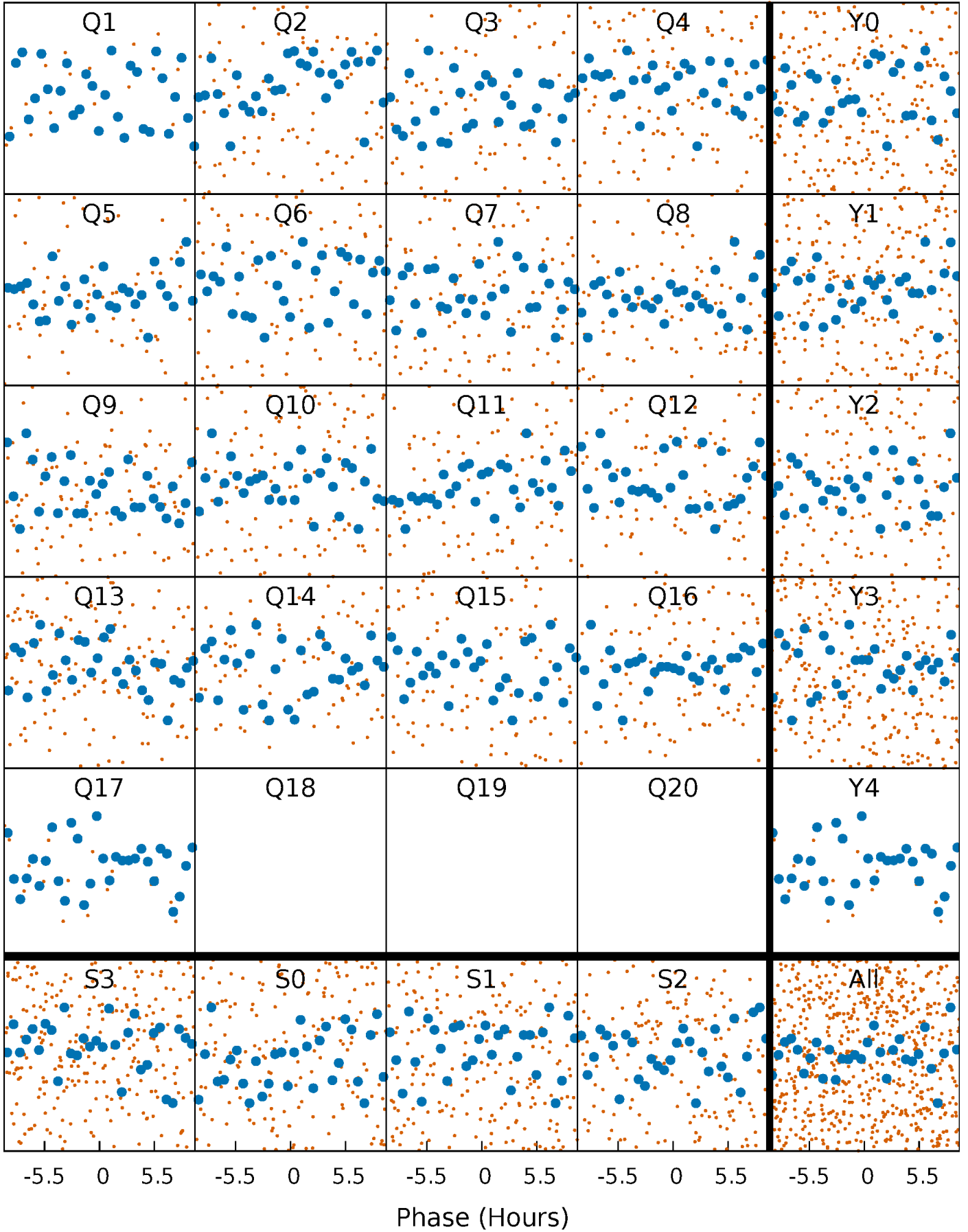


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



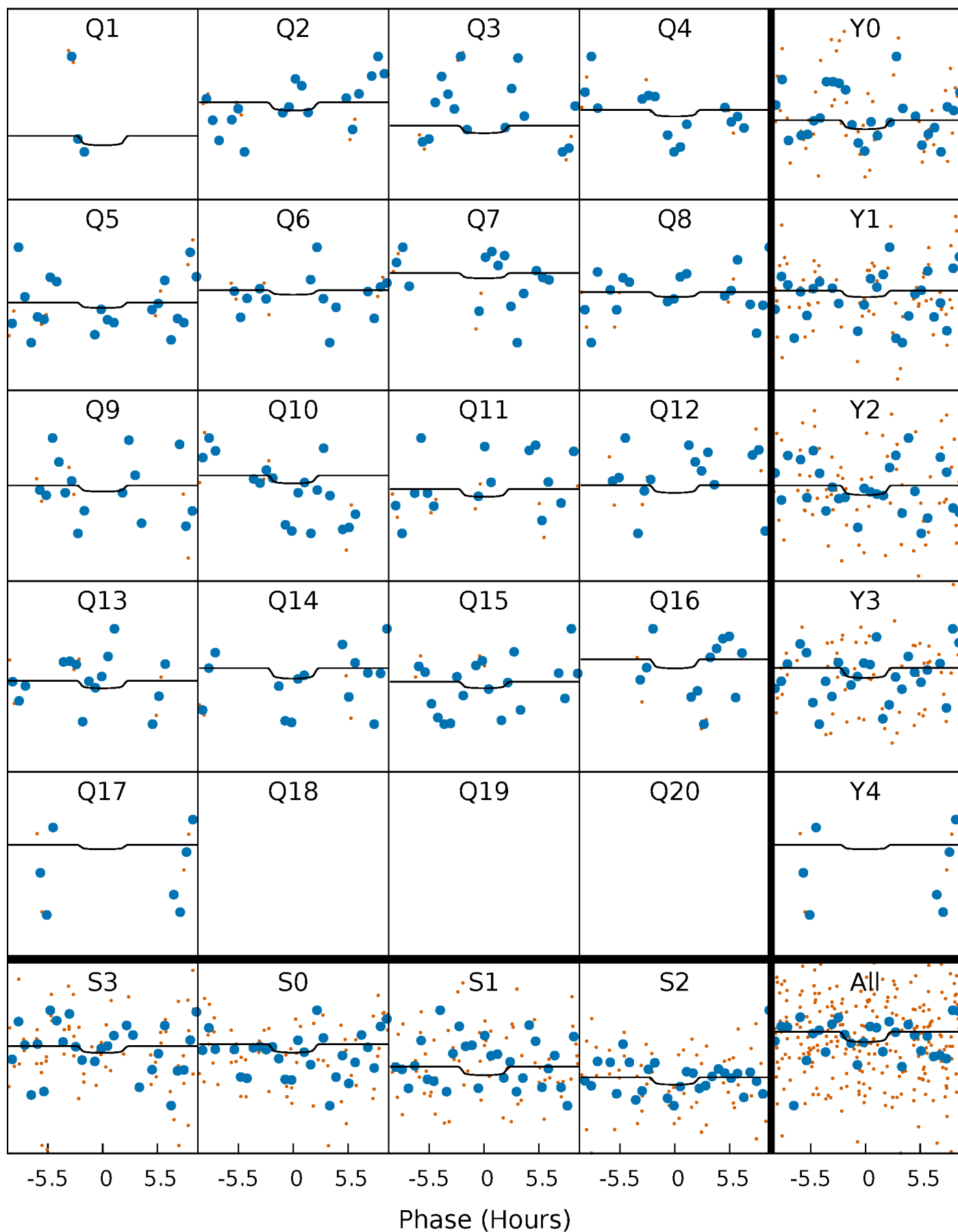
PDC Quarter-Phased Transit Curves

TCE 003437940-02 P= 27.521413 Days $T_0=140.299122$ (BKJD)



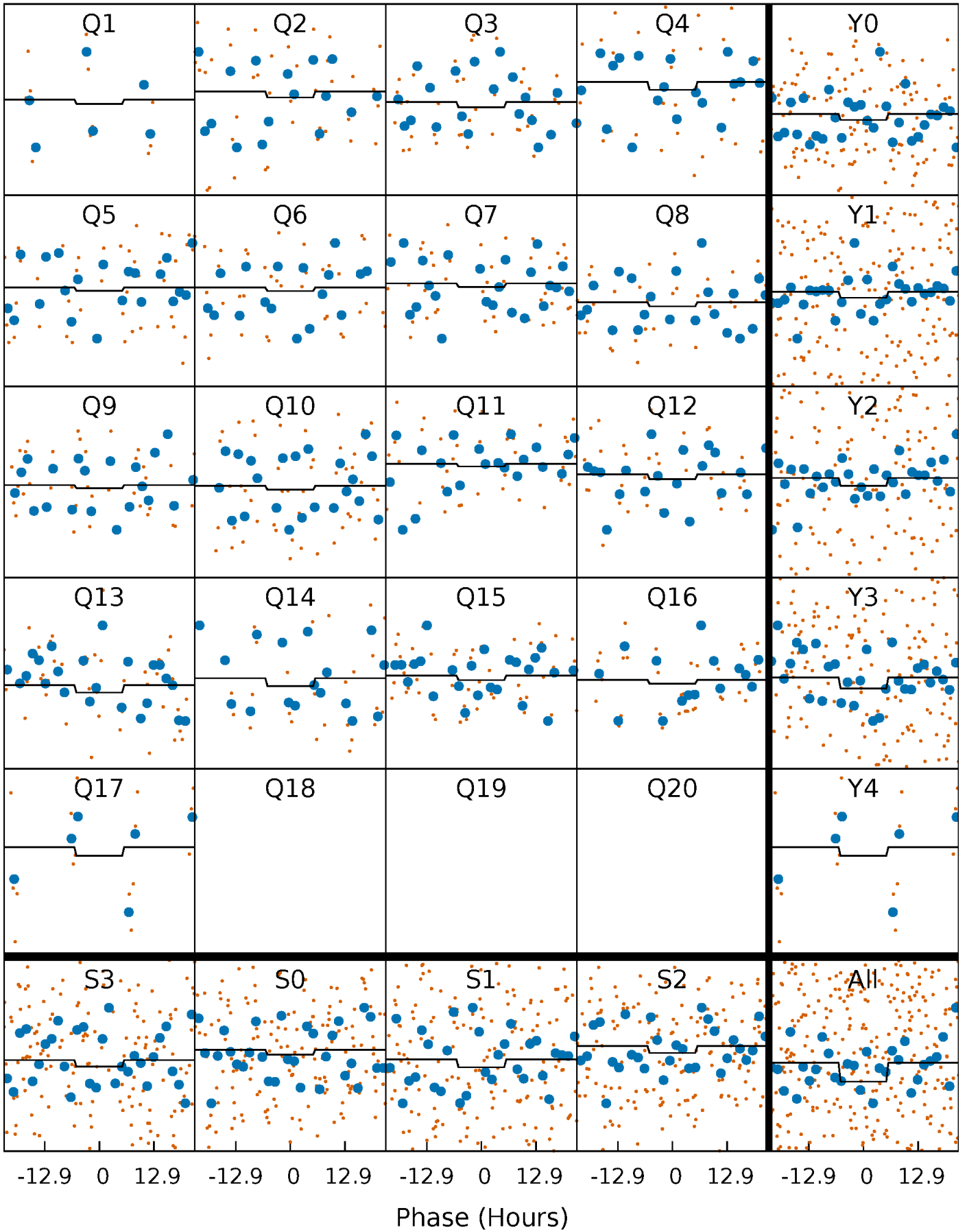
DV Quarter-Phased Transit Curves

TCE 003437940-02 P= 27.521413 Days $T_0=140.299122$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

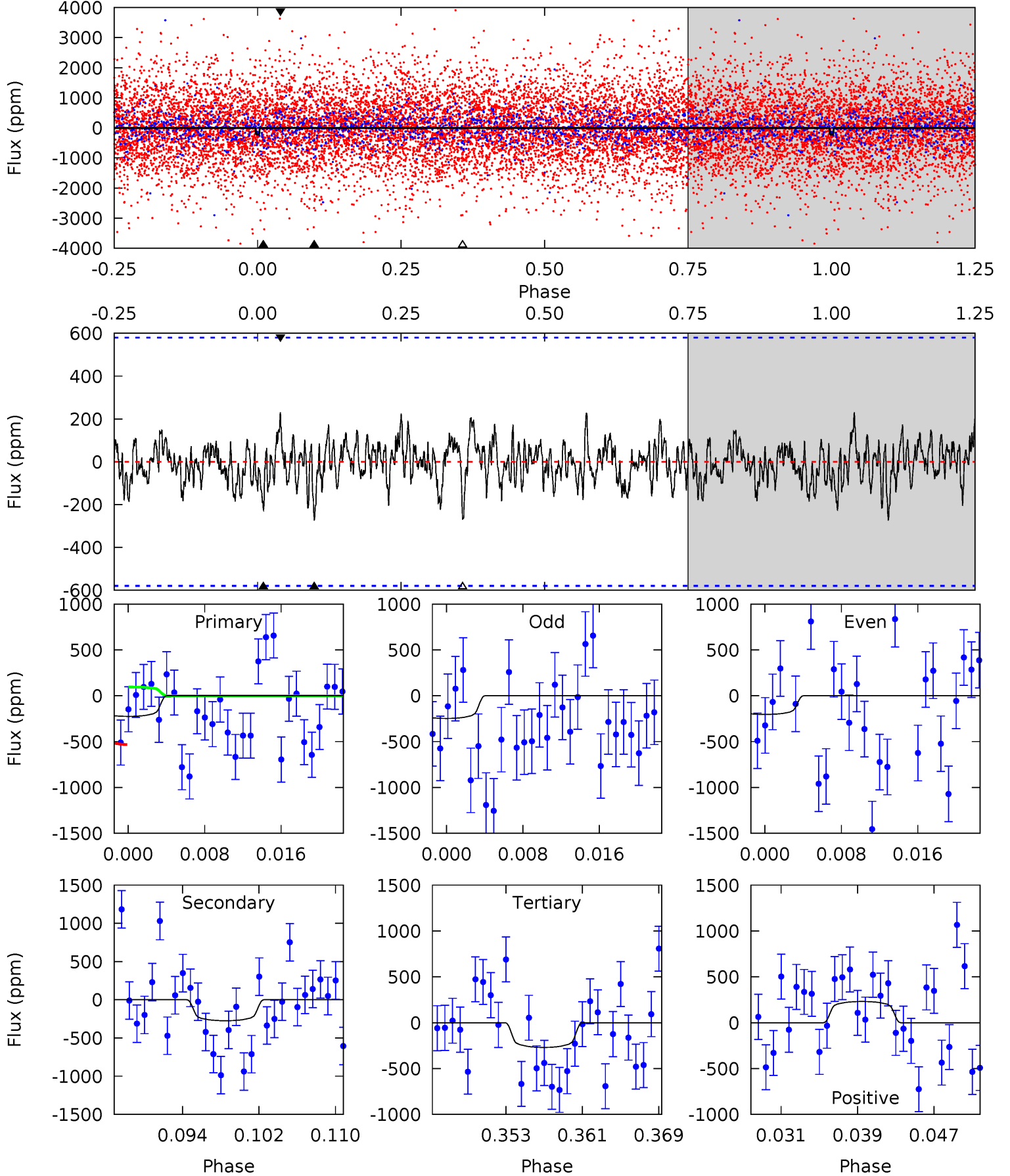
TCE 003437940-02 P= 27.521772 Days $T_0=140.284246$ (BKJD)



DV Model-Shift Uniqueness Test

003437940-02, $P = 27.521413$ Days, $E = 112.777709$ Days

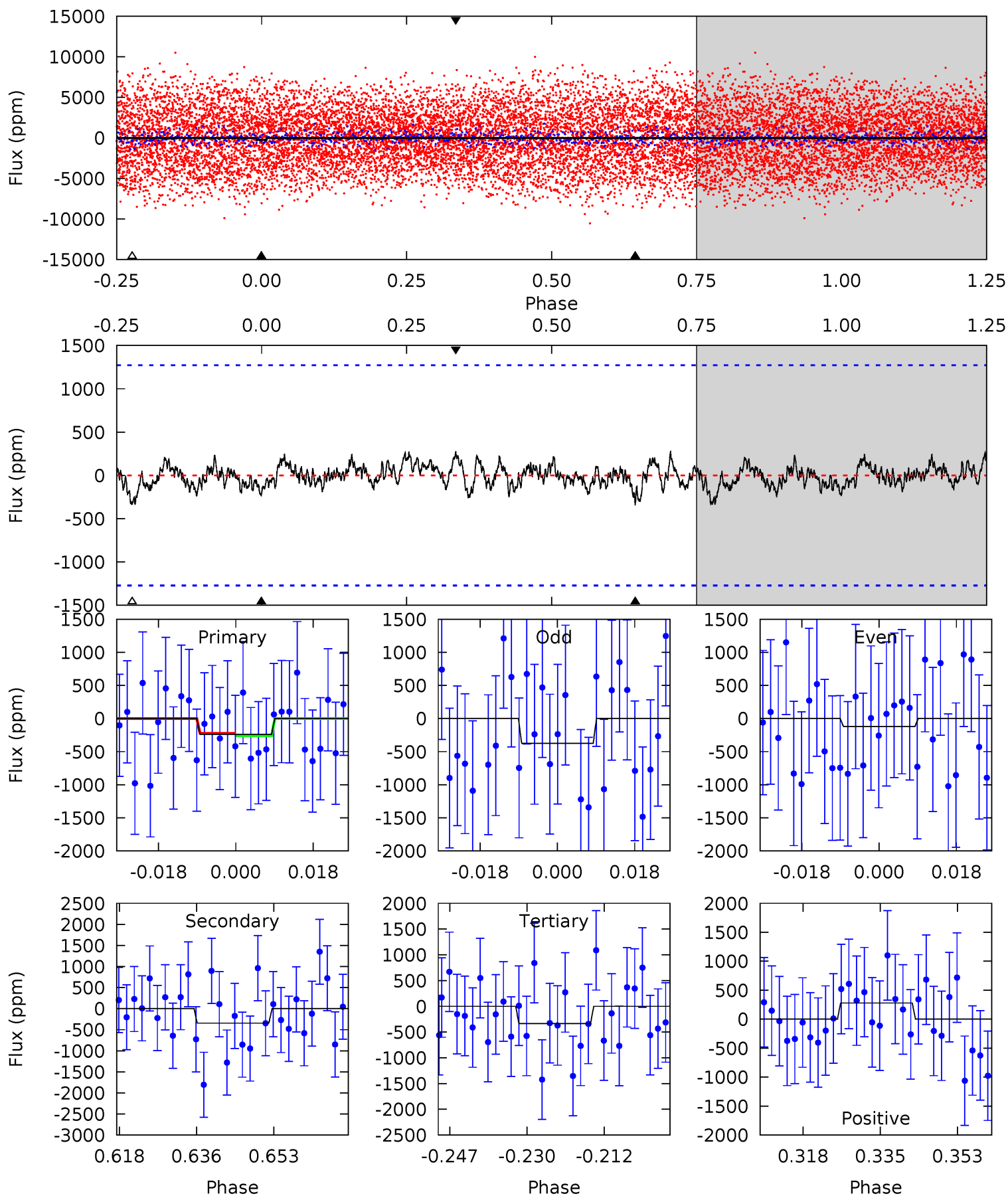
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.97	2.40	2.36	2.02	5.07	2.66	0.72	-0.39	-0.05	0.04	0.38	0.19	0.71	0.46	1.92



Alt Model-Shift Uniqueness Test

003437940-02, P = 27.521772 Days, E = 112.762474 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.93	1.33	1.31	1.08	4.92	2.37	0.42	-0.38	-0.15	0.02	0.25	0.49	0.94	0.45	0.07



Stellar Parameters For KIC 003437940

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7703^{+133}_{-191}	$4.114^{+0.080}_{-0.120}$	$0.210^{+0.150}_{-0.150}$	$1.952^{+0.355}_{-0.207}$	$1.807^{+0.126}_{-0.114}$	$0.342^{+0.116}_{-0.121}$
	+2%/-2%	+2%/-3%	+71%/-71%	+18%/-11%	+7%/-6%	+34%/-35%
Source	SPE4	SPE4	SPE4	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 003437940-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-274 ± 114	$4.78^{+4.37}_{-3.29}$	1427^{+64}_{-55}	6450^{+8064}_{-1815}	299^{+2772}_{-231}
Alt.	-344 ± 259	$5.26^{+4.63}_{-3.39}$	1428^{+63}_{-59}	6044^{+5820}_{-2282}	223^{+1627}_{-201}

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

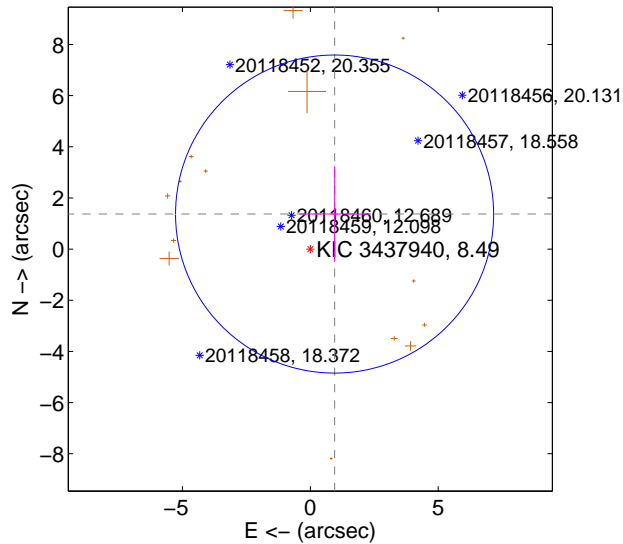
Supplemental centroid analysis for 003437940-02. **Kepler magnitude: 8.49.** Transit SNR 2.40

There are 0 quarters with good PRF difference image offsets

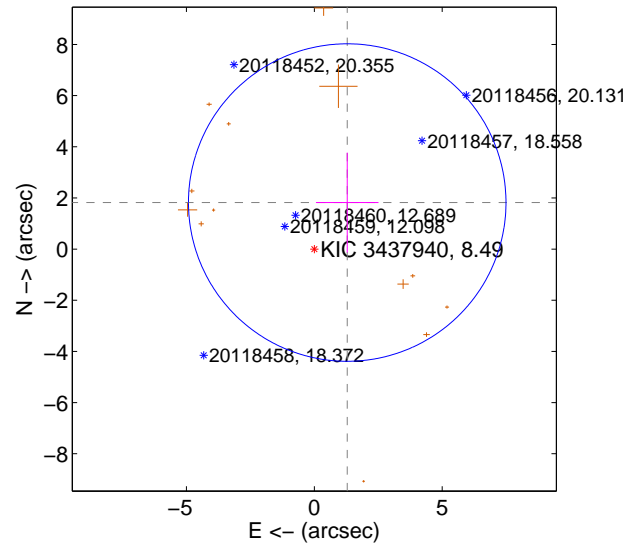
The direct PRF centroid is offset from the target star catalog position by about 1.98 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.667 ± 2.072	0.80	-0.949 ± 1.367	1.370 ± 1.875
PRF-fit source offset from KIC position	2.228 ± 2.069	1.08	-1.287 ± 1.224	1.819 ± 1.952
photometric centroid source offset	1.70 ± 1.58	1.08	-0.14 ± 0.96	1.70 ± 1.58

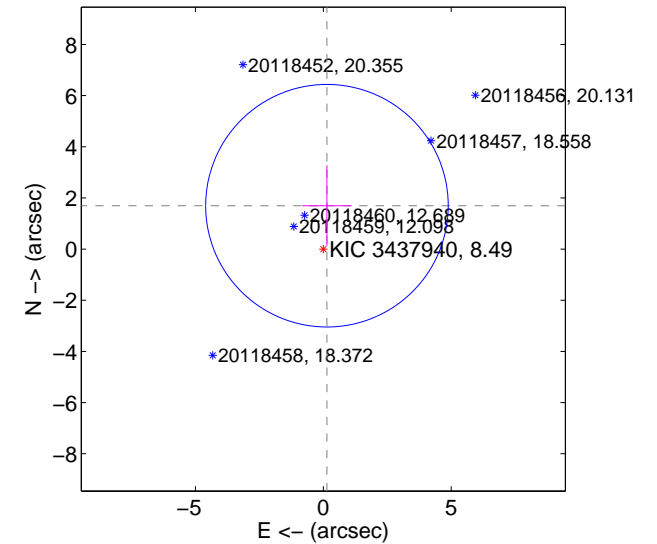
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

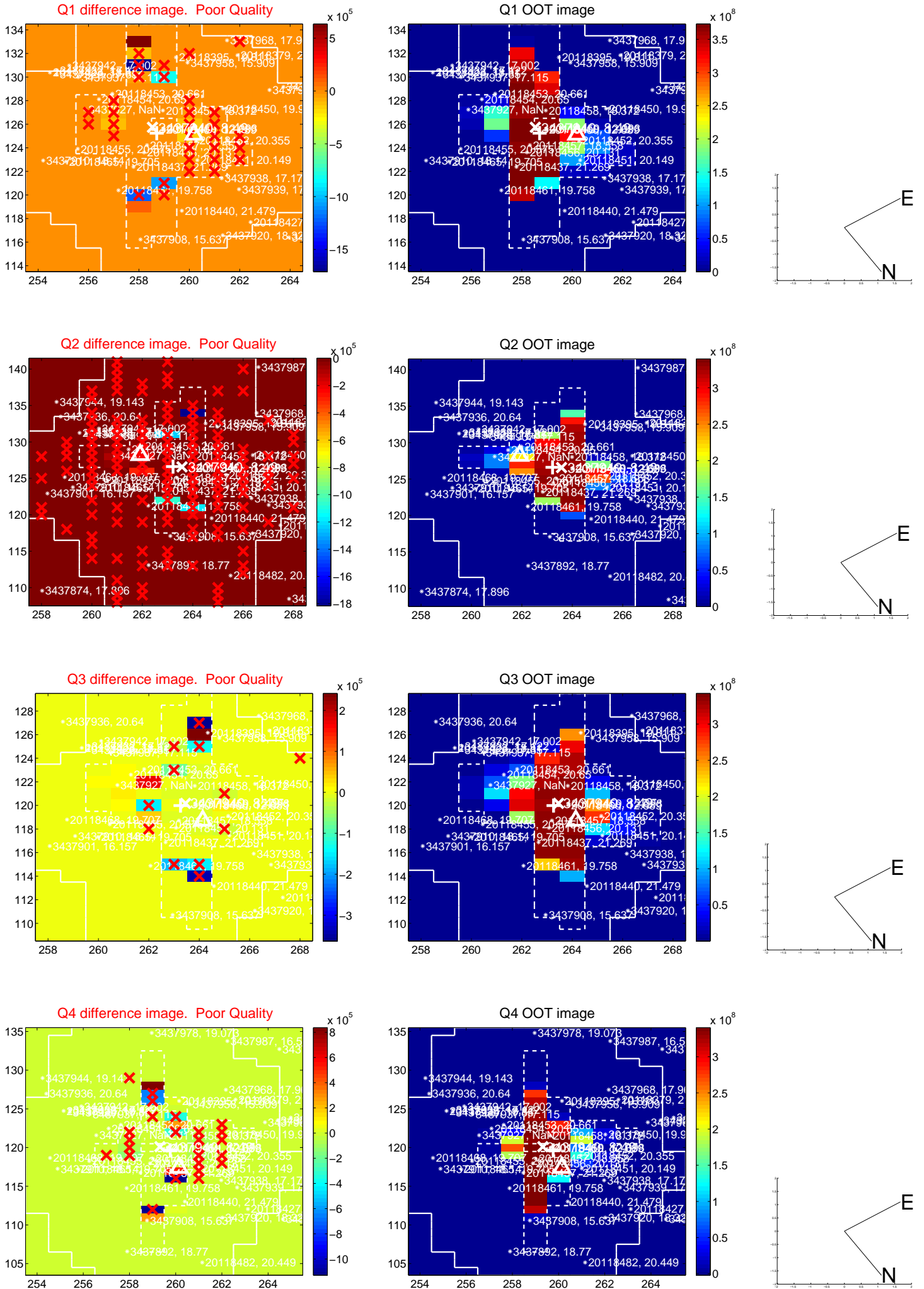


offset from photometric centroids

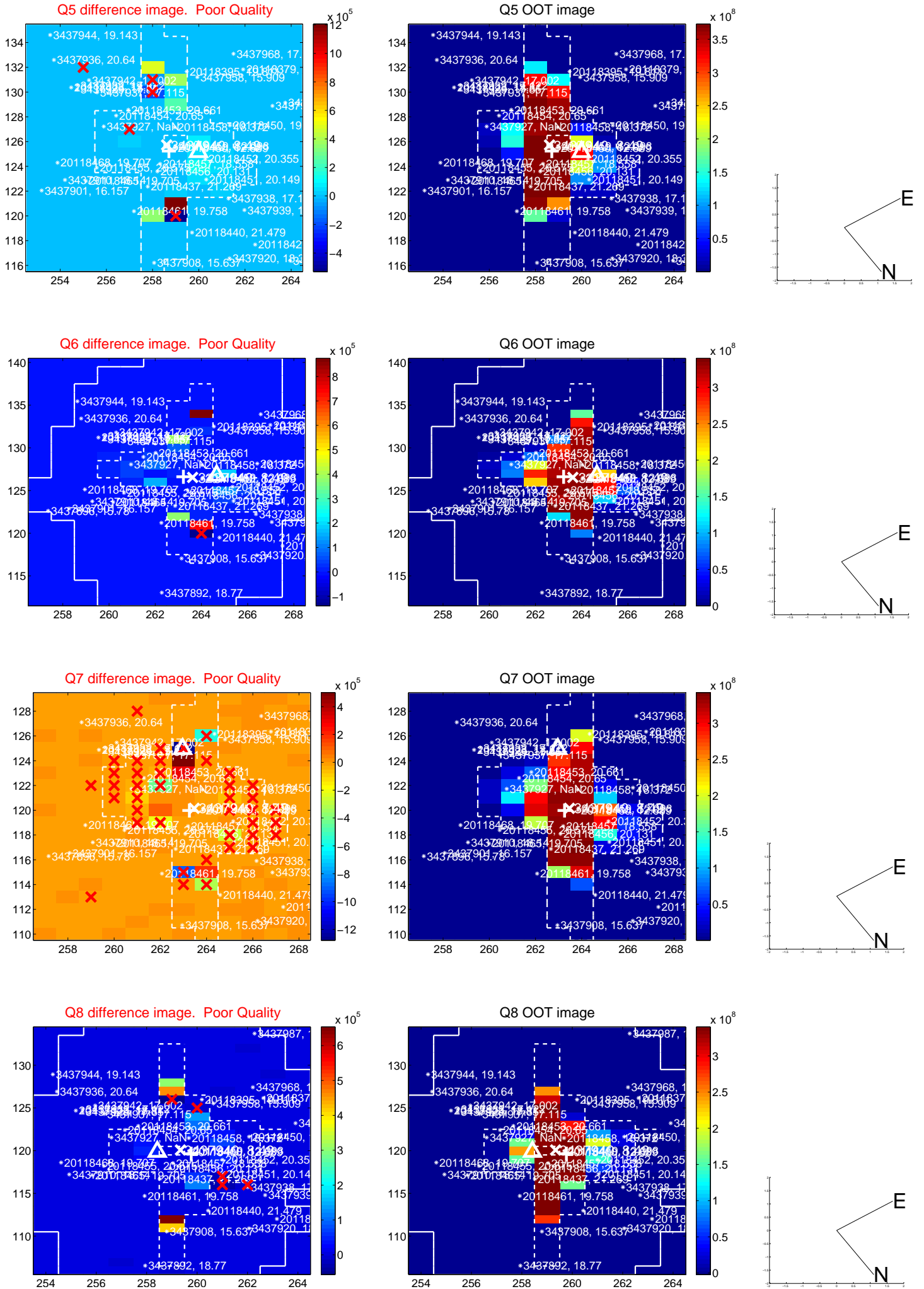


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

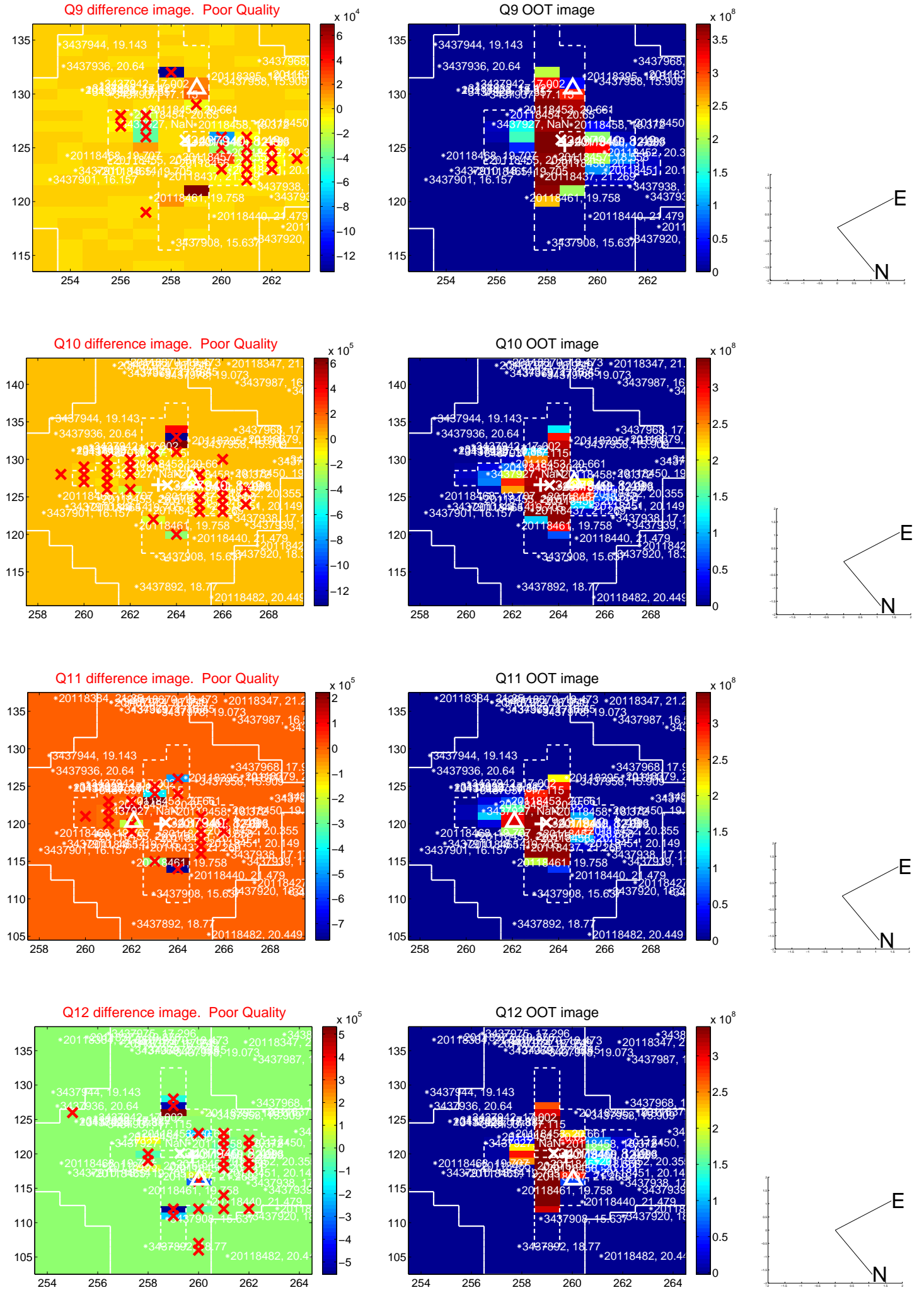
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



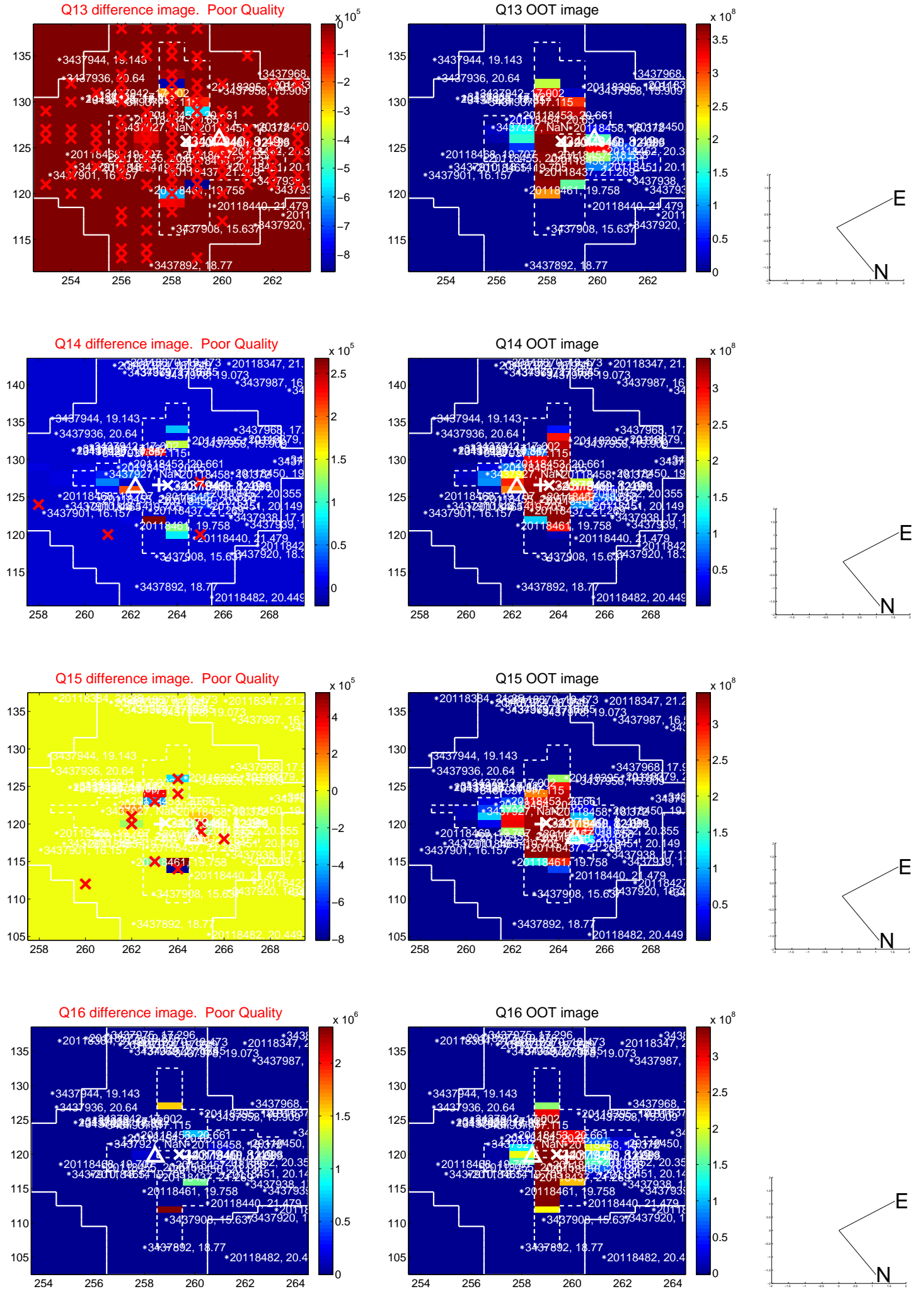
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



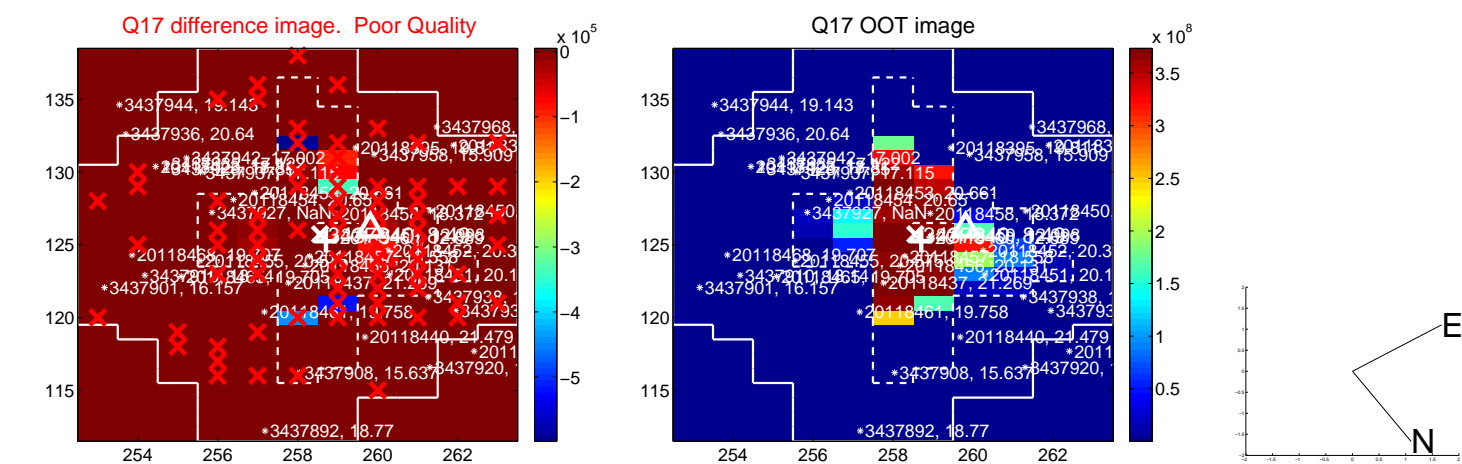
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



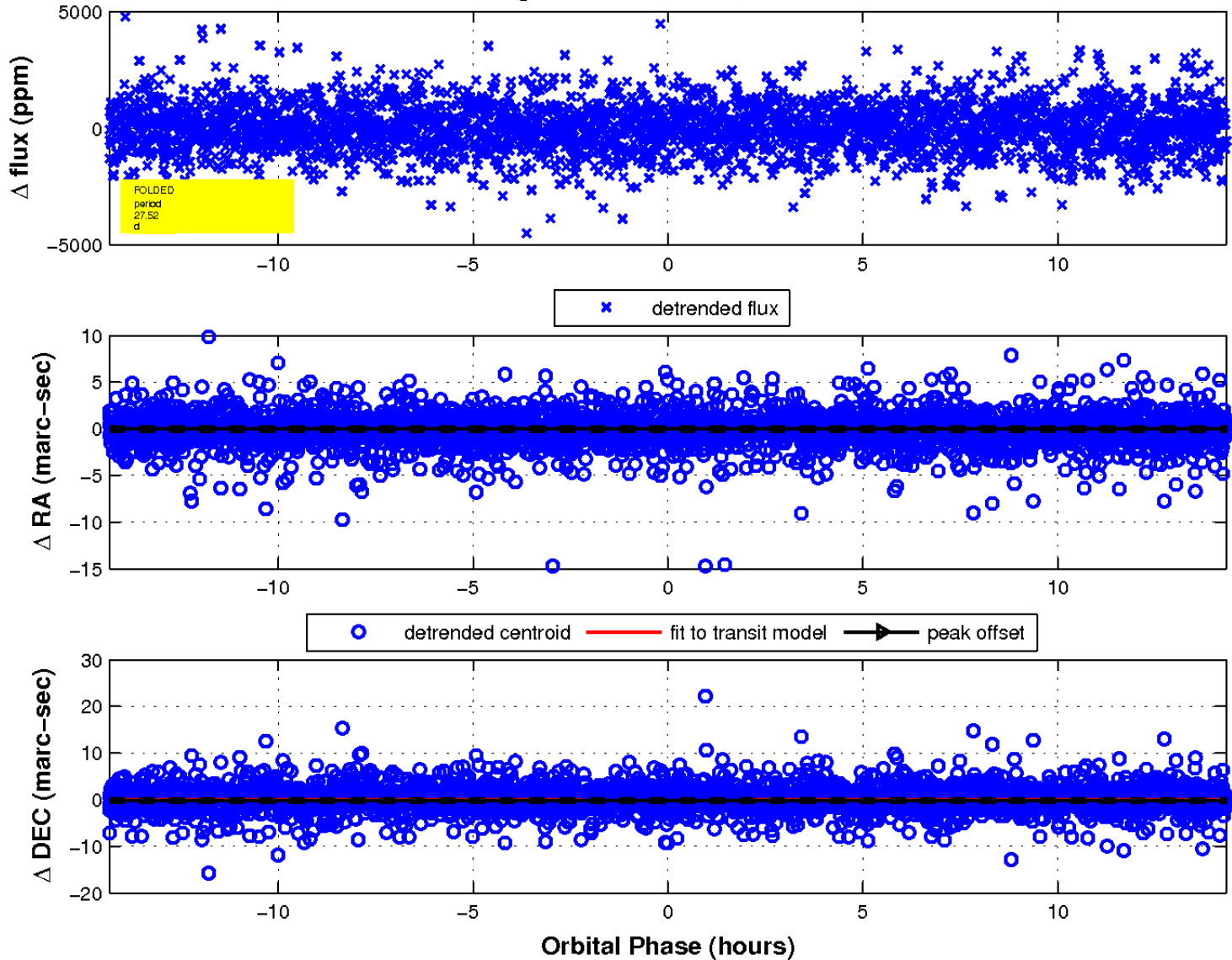
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

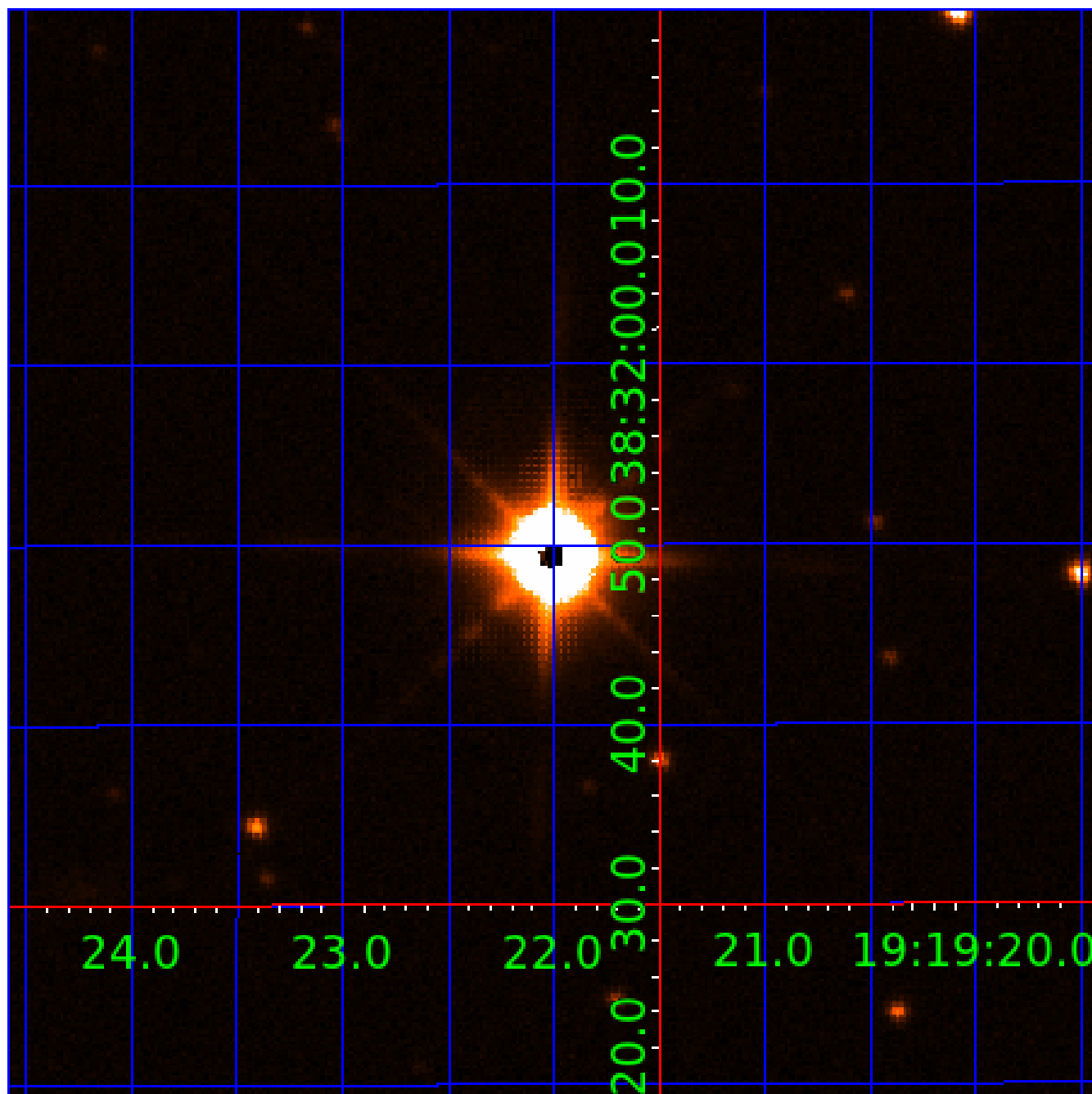


fluxWeightedCentroids, Planet 2 of 5



UKIRT Image

Declination



KIC 003437940

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})
003437940-01	OBS	No	0.590580	131.627944	110.2	3.828	8.8	11.3	1.95	7703	2.38	42672.60
003437940-02	OBS	No	27.521413	140.299122	225.5	4.782	8.9	2.4	1.95	7703	3.37	254.46
003437940-03	OBS	No	100.162571	197.130296	2344.7	2.518	10.5	11.4	1.95	7703	15.30	45.45
003437940-04	OBS	No	47.456283	147.220052	1192.4	4.043	8.8	9.5	1.95	7703	7.29	123.06
003437940-05	OBS	No	60.343864	177.774588	1851.7	2.155	10.3	9.6	1.95	7703	8.96	89.33

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003437940-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED
003437940-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003437940-03	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—CENT_SATURATED
003437940-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003437940-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

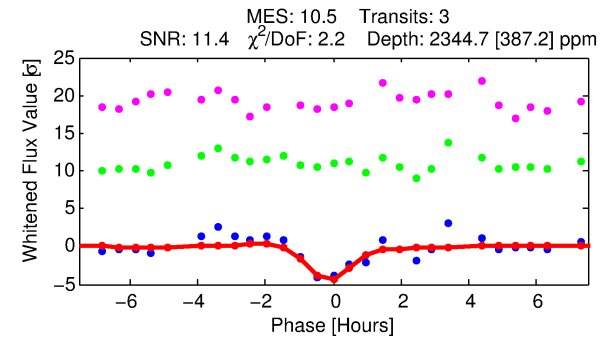
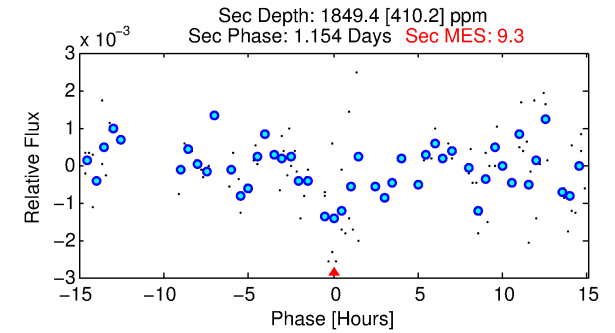
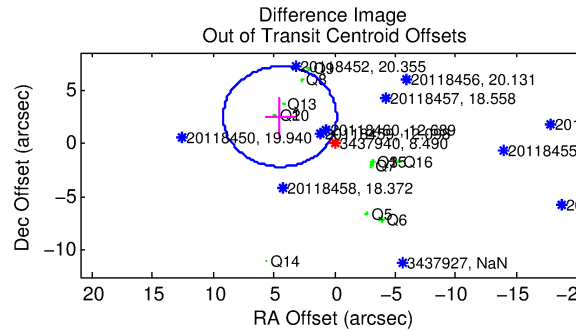
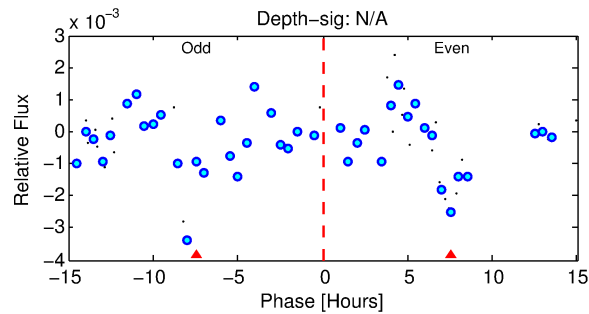
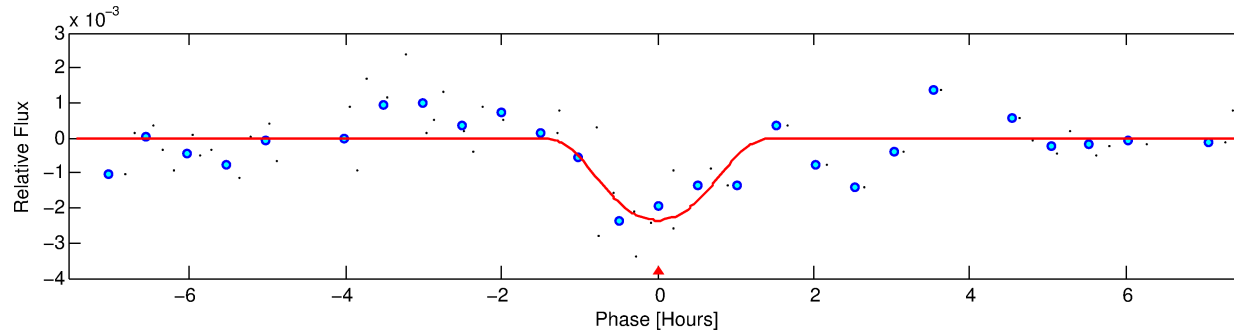
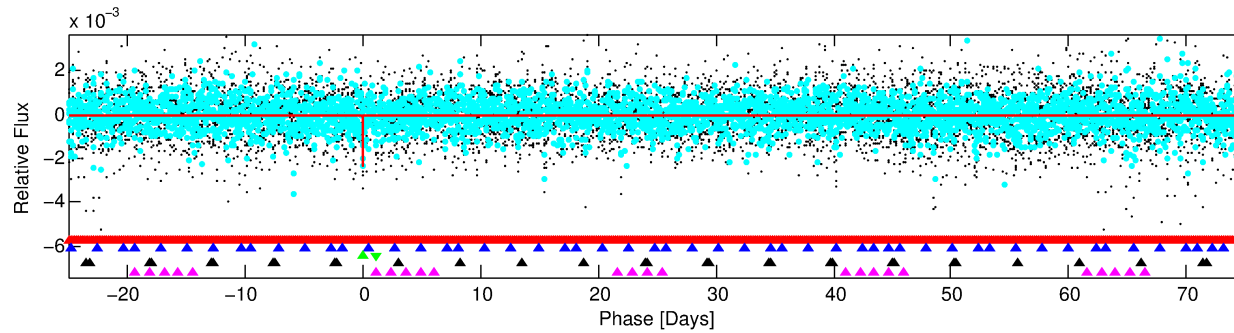
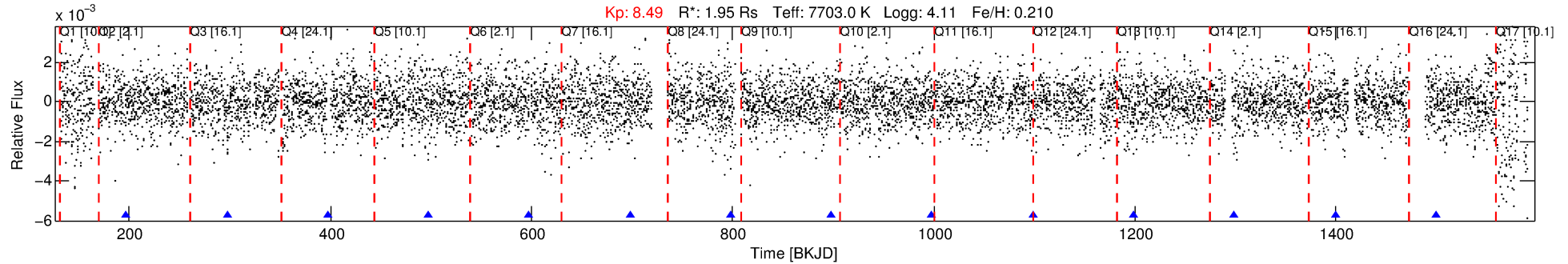
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003437940-03

No Significant Match Found

DV One-Page Summary

KIC: 3437940 Candidate: 3 of 5 Period: 100.163 d



DV Fit Results:

Period = 100.16257 [0.00113] d
Epoch = 197.1303 [0.0083] BKJD
Rp/R* = 0.0718 [0.3364]
a/R* = 127.87 [171.76]
b = 0.99 [0.55]
Seff = 45.45 [10.99]
Teq = 662 [40] K
Rp = 15.30 [71.71] Re
a = 0.5142 [0.0783] AU
Ag = 1148.99 [10766.93] [0.11σ]
Teff = 5960 [13959] K [0.38σ]

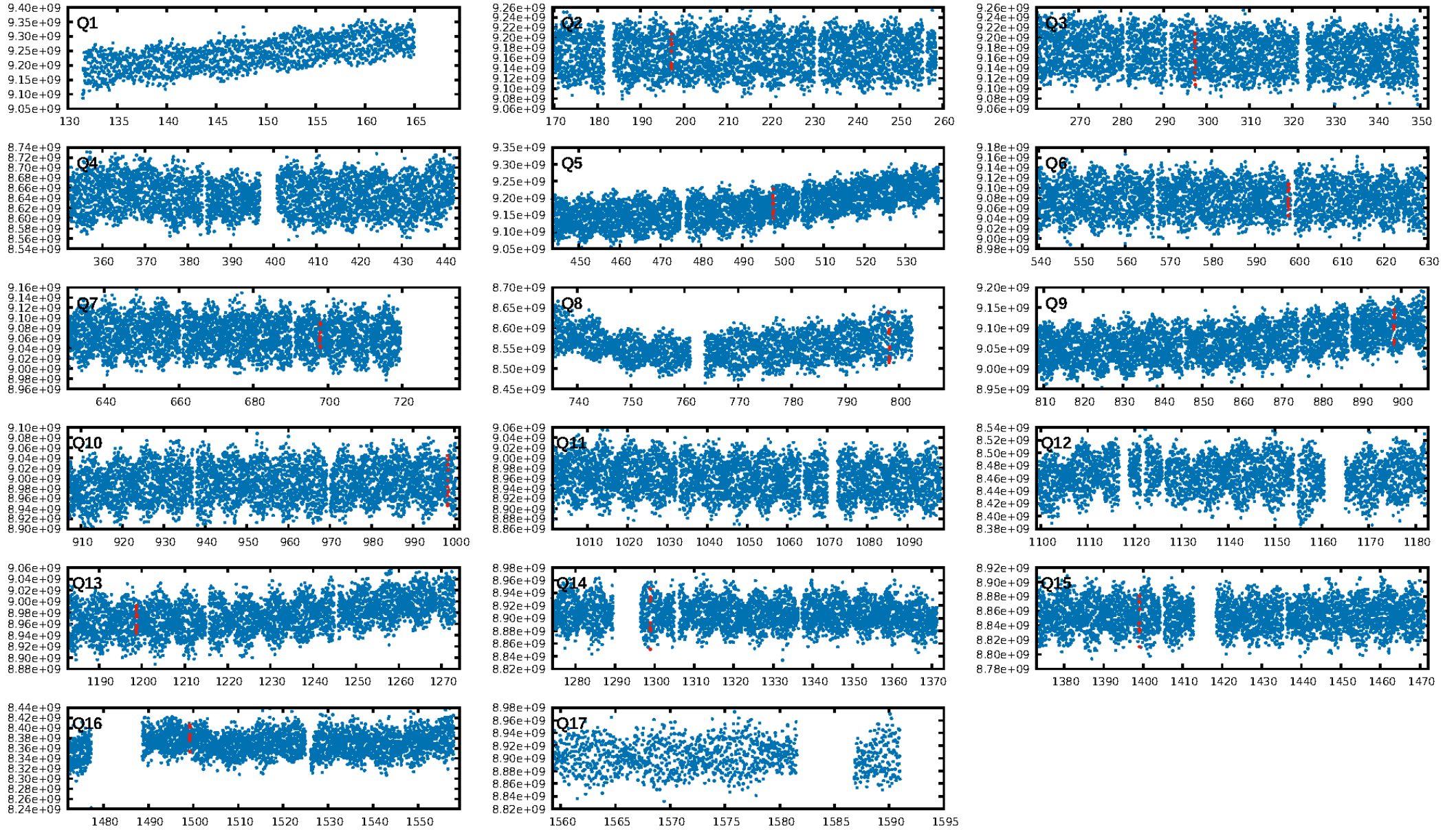
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [288.33σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 93.6%
ModelChiSquareGof-sig: 58.4%
Bootstrap-pfa: 4.50e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: N/A
Centroid-sig: 7.4%
Centroid-so: 1.080 arcsec [2.30σ]
OotOffset-rm: 5.154 arcsec [3.30σ]
OotOffset-st: 4/3/2/3 [12]
KicOffset-rm: 4.154 arcsec [2.60σ]
KicOffset-st: 4/3/2/3 [12]
DiffImageQuality-fgm: 0.00 [0/12]
DiffImageOverlap-fno: 0.00 [0/12]

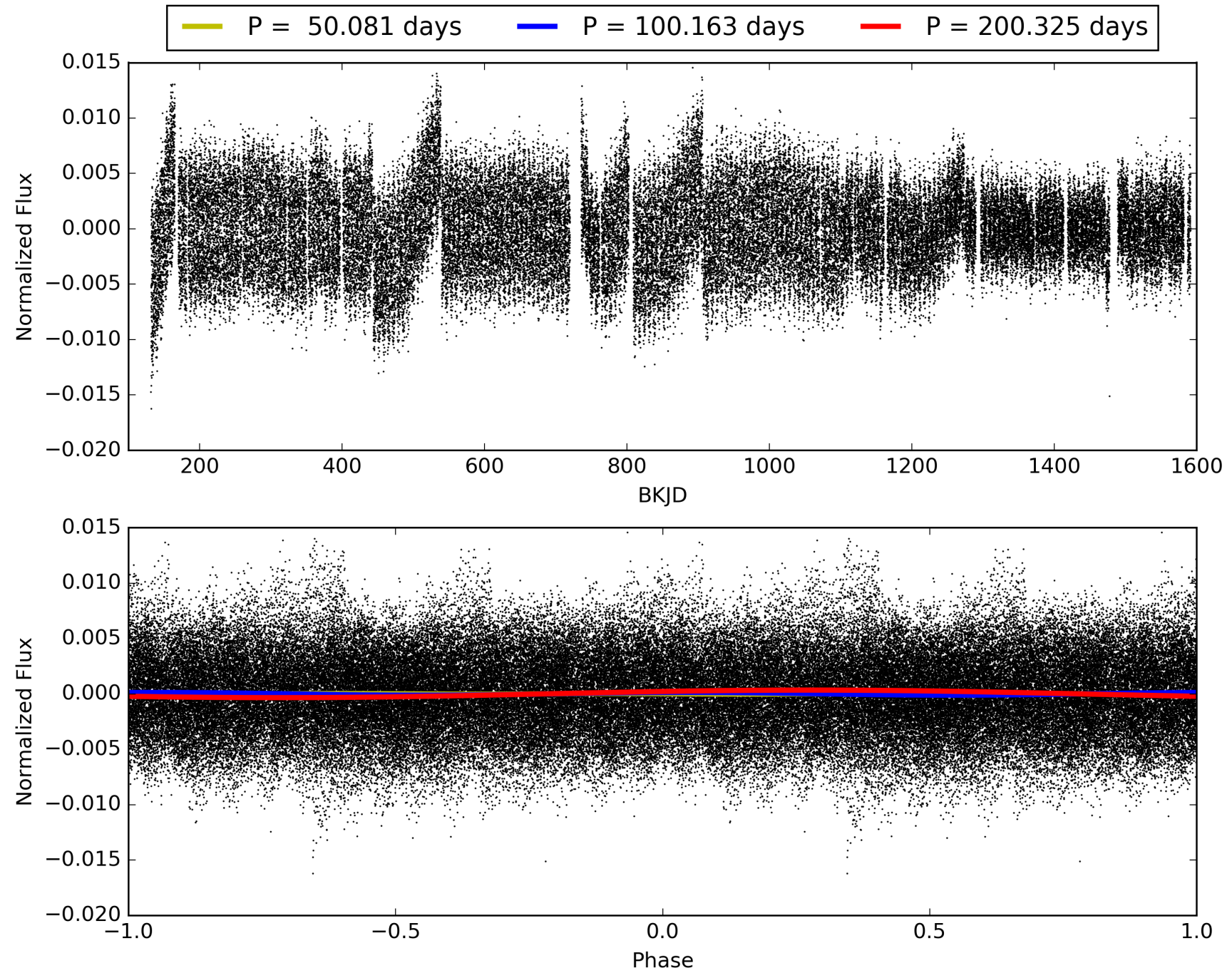
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 15:19:04 Z

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

TCE 003437940-03, PDC Light Curves

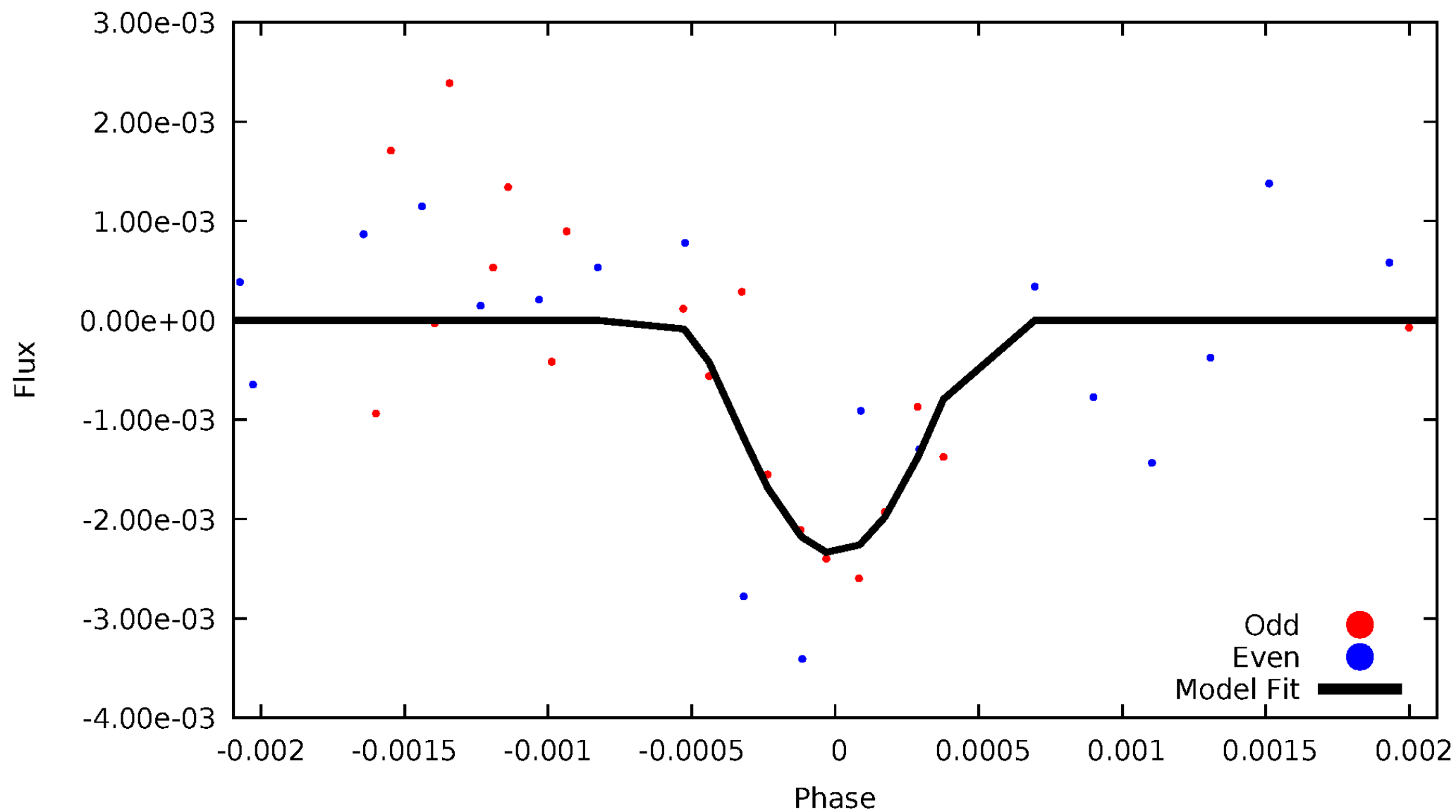


TCE 003437940-03



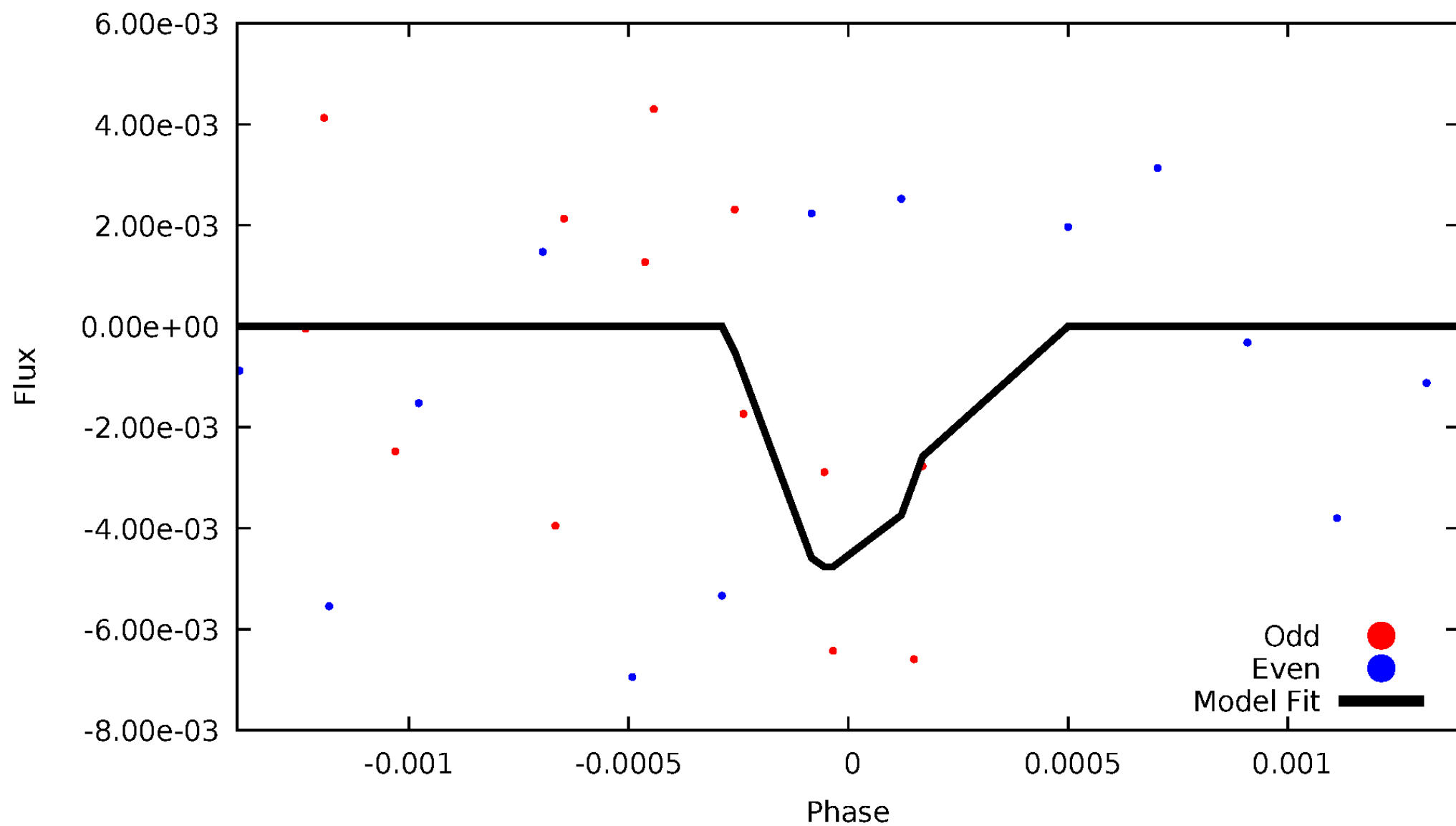
DV Odd/Even

TCE 003437940-03



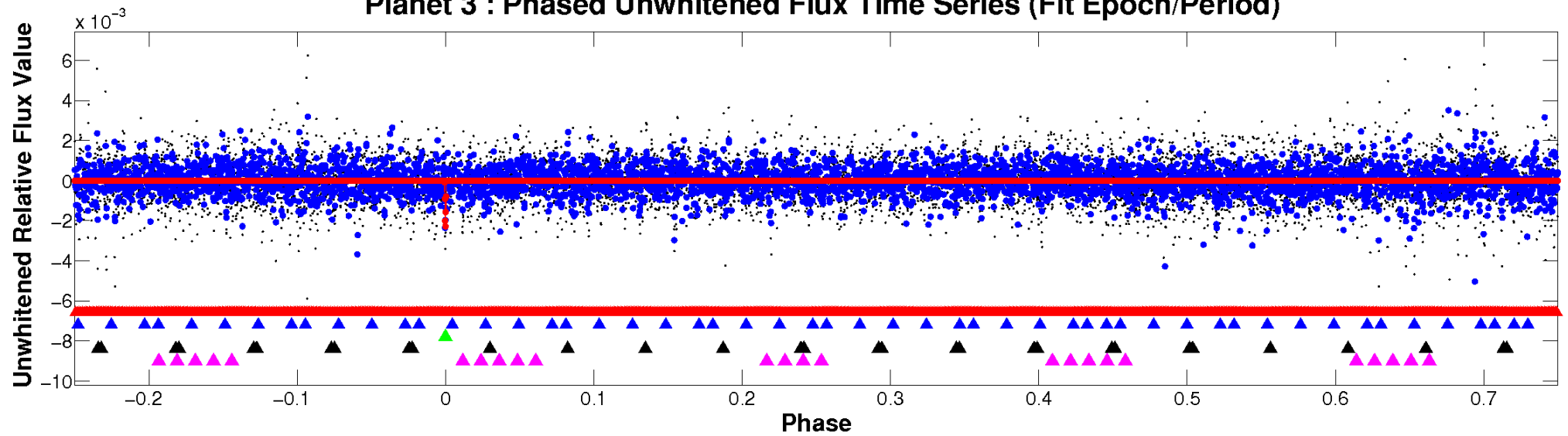
ALT Odd/Even

TCE 003437940-03

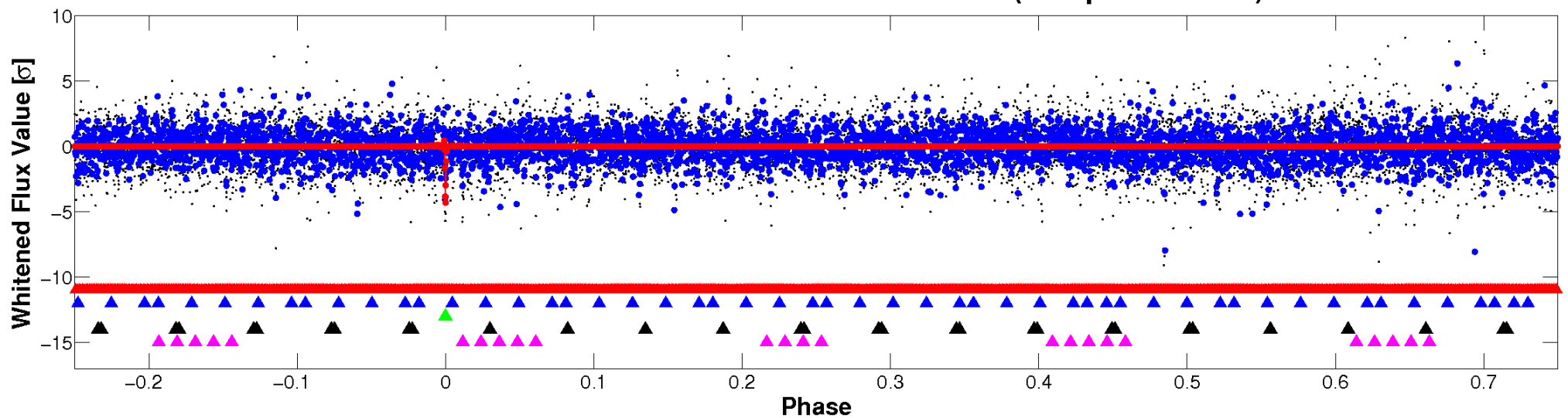


Non-Whitened Vs. Whitened Light Curve

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

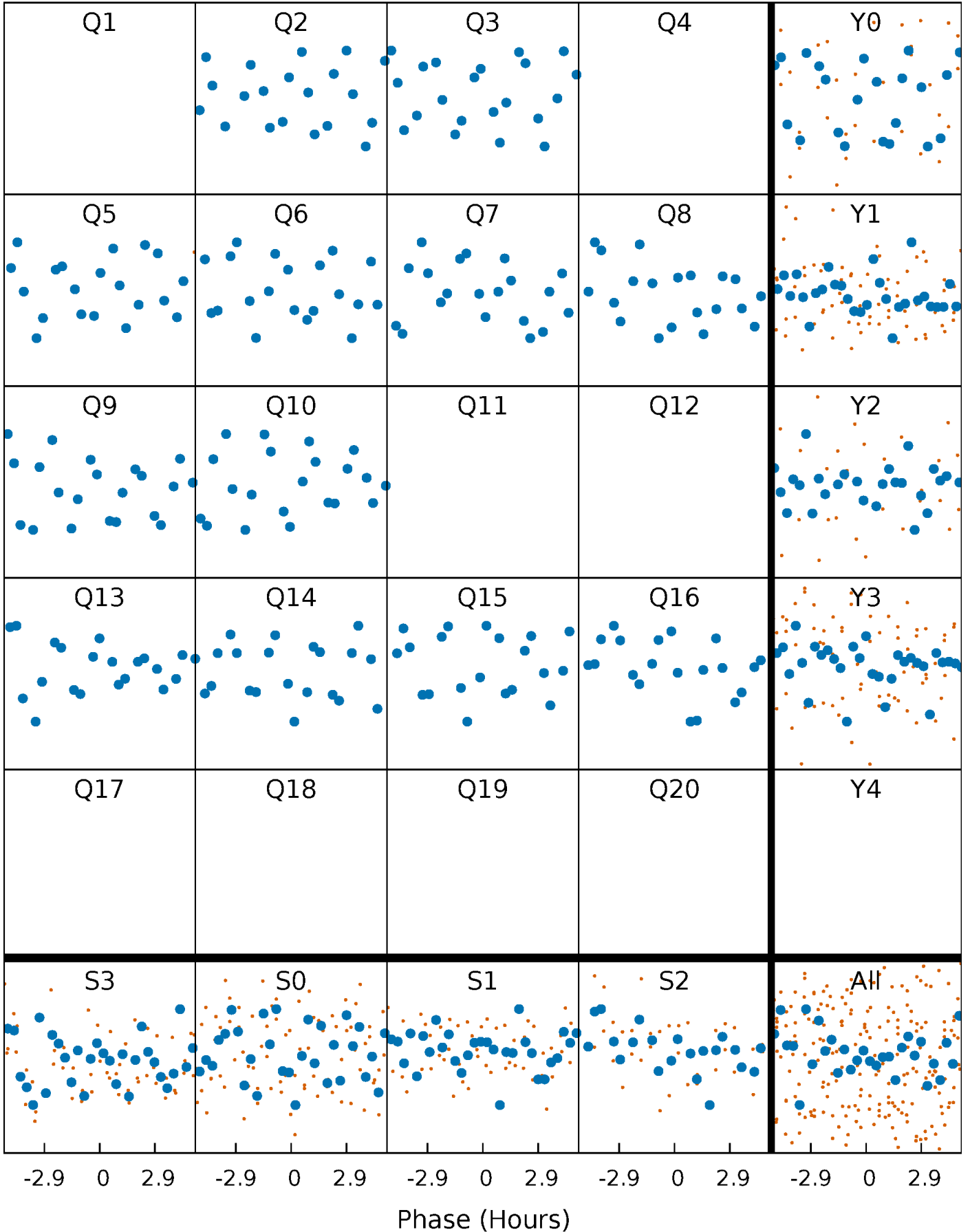


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



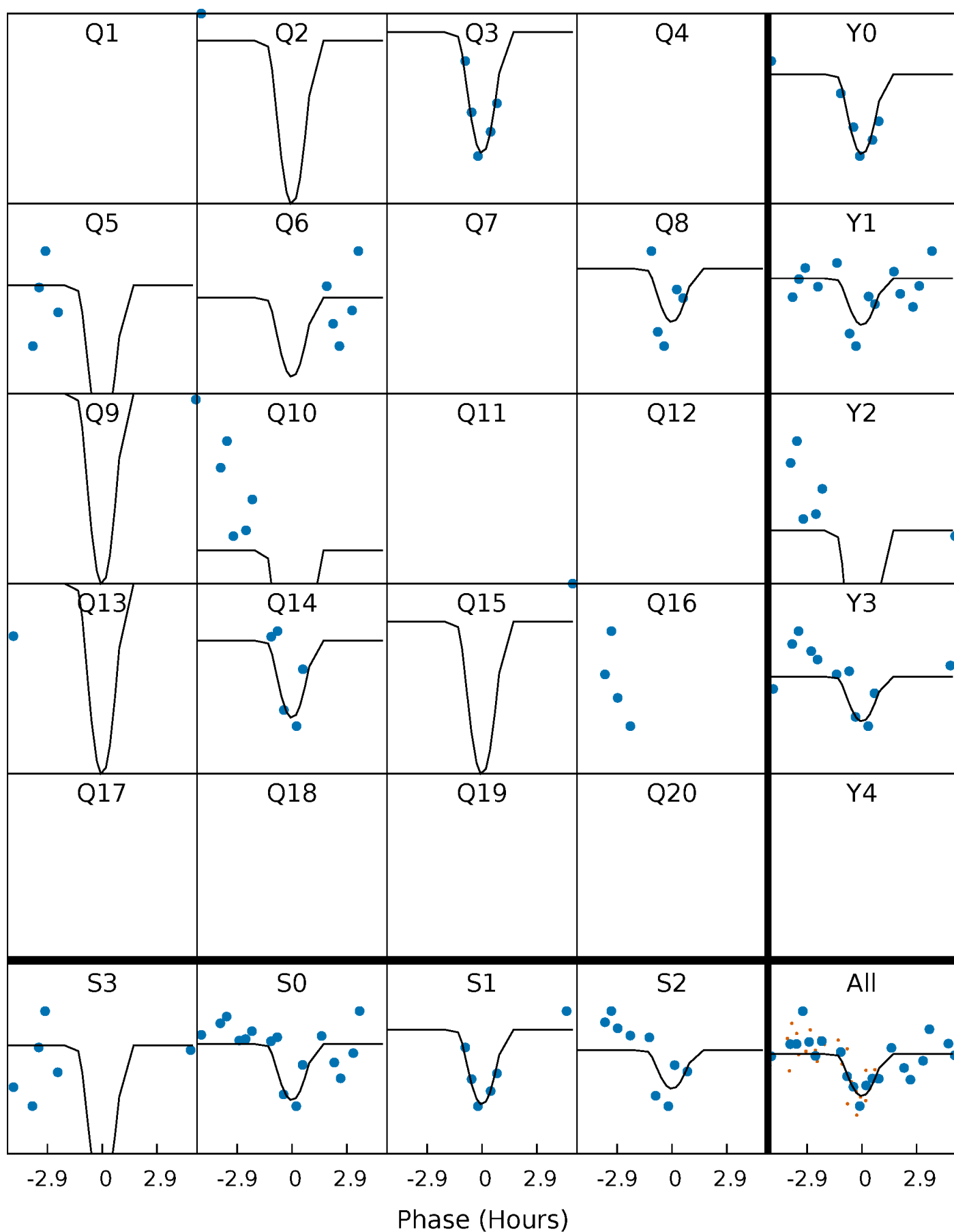
PDC Quarter-Phased Transit Curves

TCE 003437940-03 $P=100.162571$ Days $T_0=197.130296$ (BKJD)



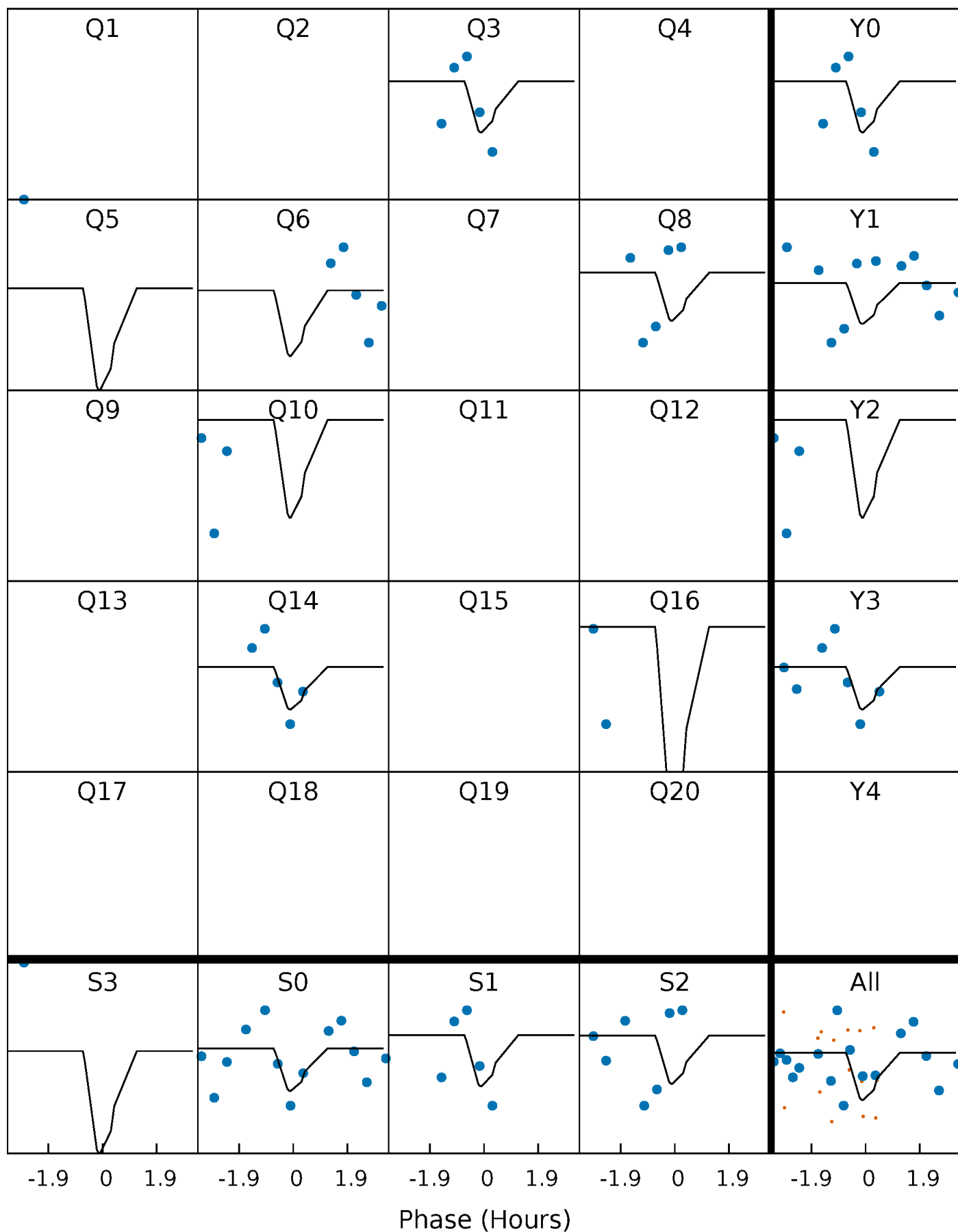
DV Quarter-Phased Transit Curves

TCE 003437940-03 P=100.162571 Days $T_0=197.130296$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

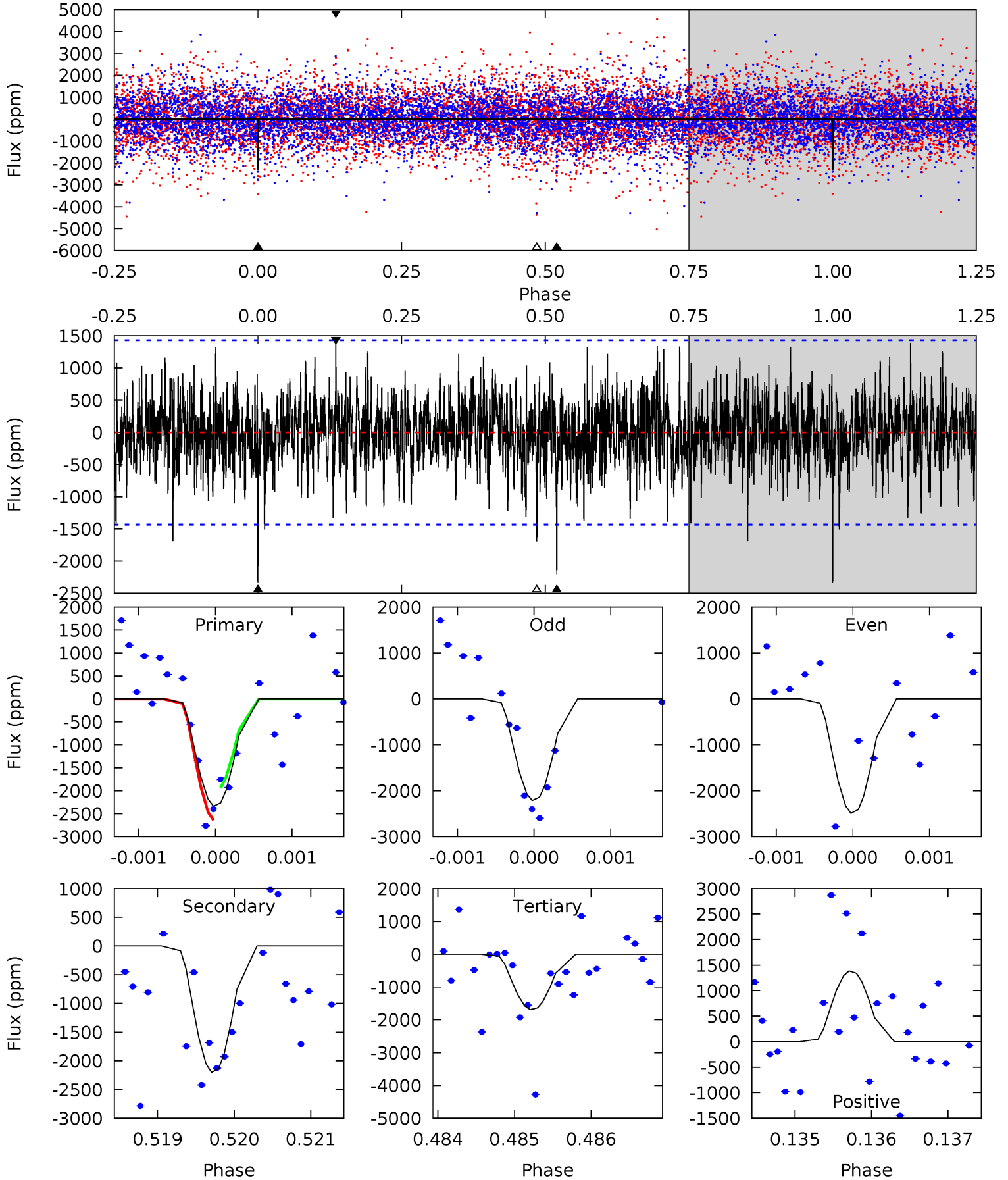
TCE 003437940-03 P=100.161471 Days $T_0=197.154222$ (BKJD)



DV Model-Shift Uniqueness Test

003437940-03, P = 100.162571 Days, E = 96.967725 Days

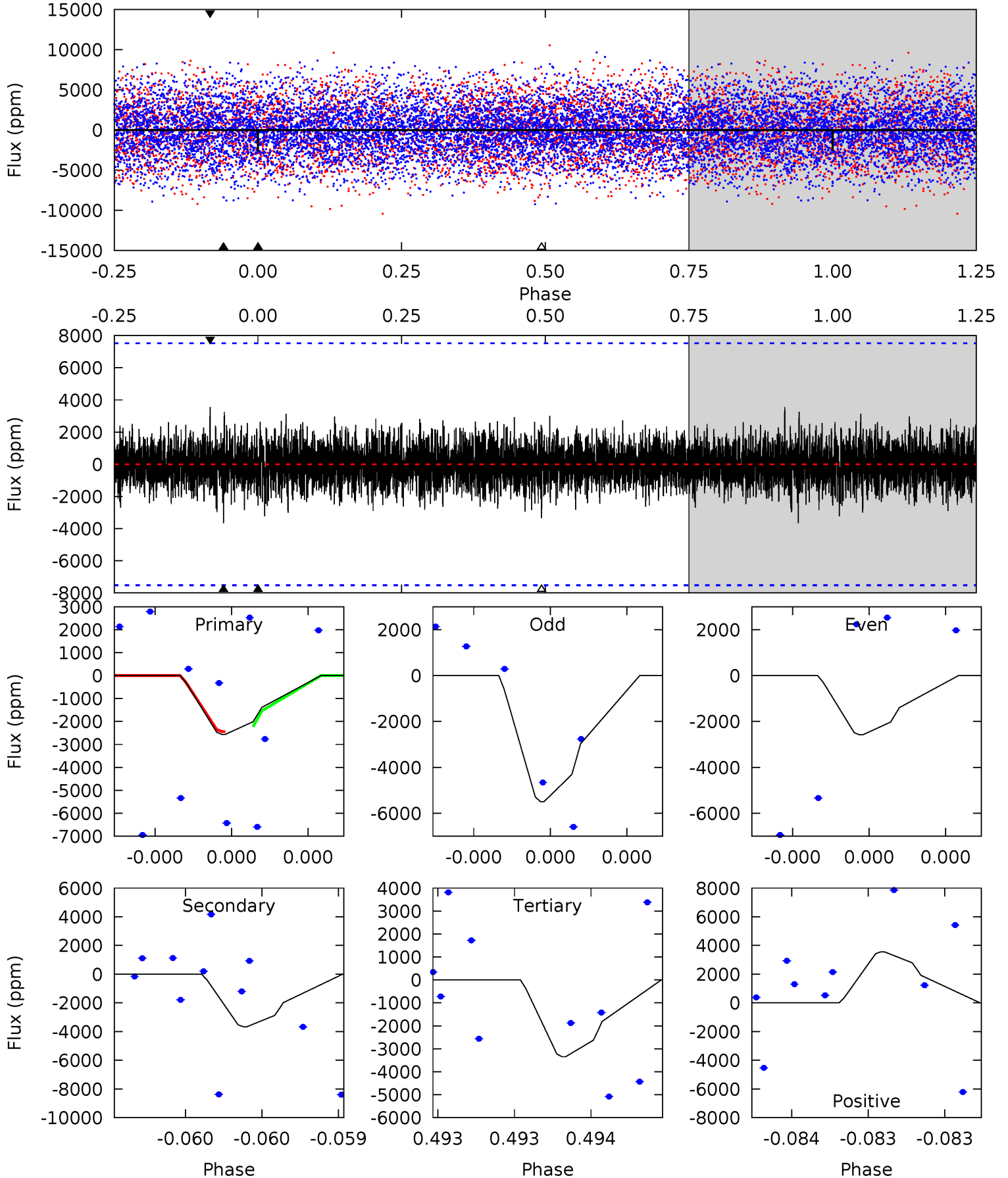
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.83	8.31	6.39	5.24	5.42	3.23	1.61	2.44	3.59	1.93	3.07	0.50	0.97	0.37	1.33



Alt Model-Shift Uniqueness Test

003437940-03, P = 100.161471 Days, E = 96.992751 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.91	2.73	2.49	2.65	5.60	3.52	0.70	-0.59	-0.74	0.24	0.08	1.02	0.58	0.49	0.07



Stellar Parameters For KIC 003437940

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7703^{+133}_{-191}	$4.114^{+0.080}_{-0.120}$	$0.210^{+0.150}_{-0.150}$	$1.952^{+0.355}_{-0.207}$	$1.807^{+0.126}_{-0.114}$	$0.342^{+0.116}_{-0.121}$
	+2%/-2%	+2%/-3%	+71%/-71%	+18%/-11%	+7%/-6%	+34%/-35%
Source	SPE4	SPE4	SPE4	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 003437940-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2200 ± 265	$56.44^{+59.31}_{-40.61}$	926^{+45}_{-36}	3615^{+2351}_{-686}	99^{+1097}_{-76}
Alt.	-3665 ± 1343	$54.72^{+60.75}_{-37.10}$	926^{+43}_{-36}	3921^{+2716}_{-823}	159^{+1707}_{-122}

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 $A_{obs} \gg 1.0$

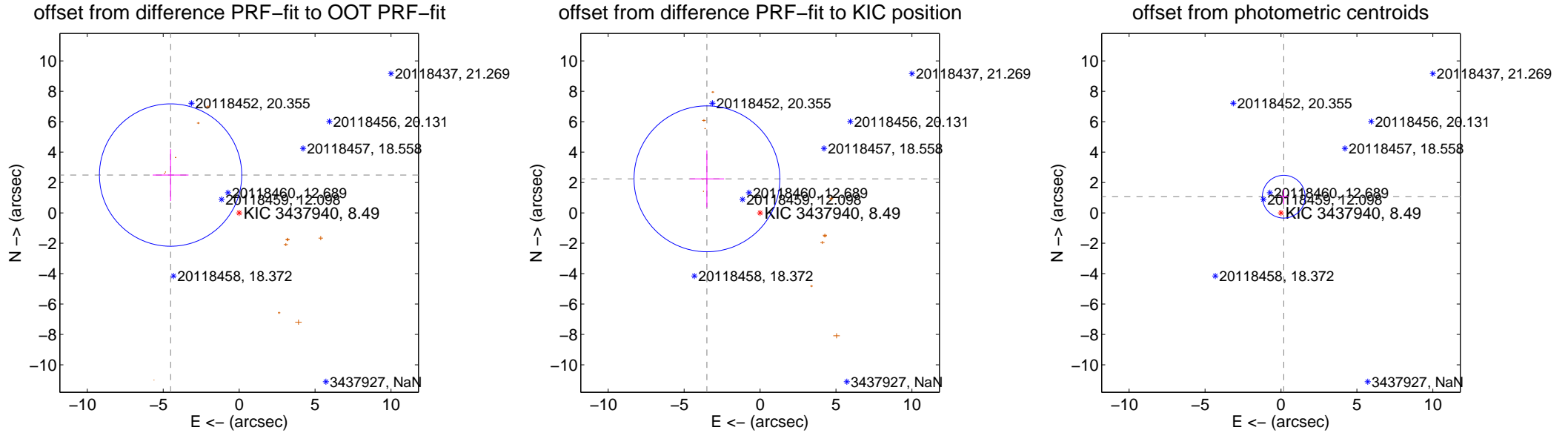
DV Centroid Data

Supplemental centroid analysis for 003437940-03. **Kepler magnitude: 8.49.** Transit SNR 11.45

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 2.69 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.154 \pm 1.562	3.30	4.513 \pm 1.180	2.489 \pm 1.704
PRF-fit source offset from KIC position	4.154 \pm 1.600	2.60	3.498 \pm 1.133	2.240 \pm 1.872
photometric centroid source offset	1.08 \pm 0.47	2.30	-0.18 \pm 0.29	1.07 \pm 0.47



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

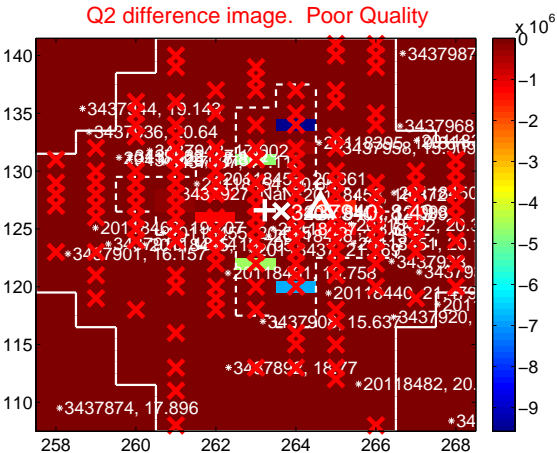
Q1 no difference image



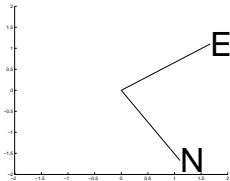
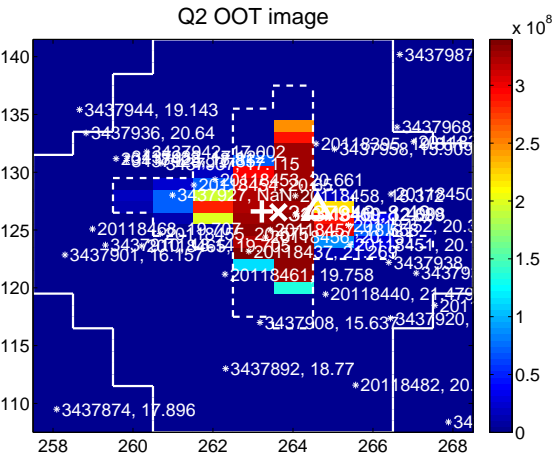
Q1 no OOT image



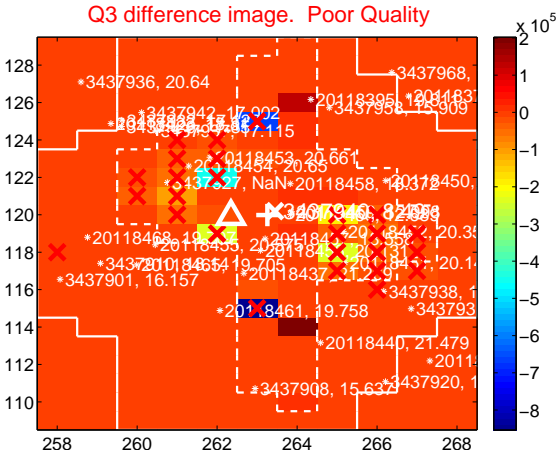
Q2 difference image. Poor Quality



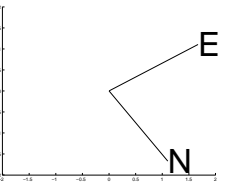
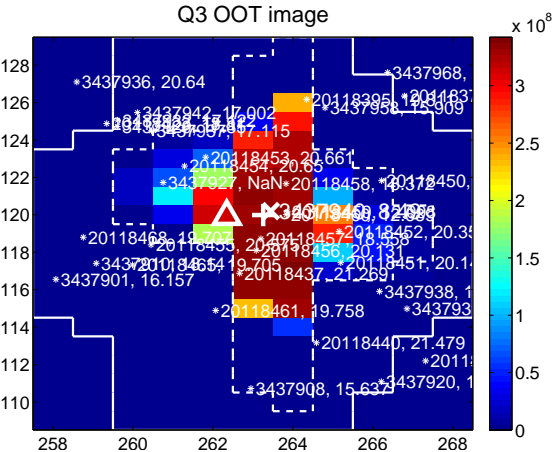
Q2 OOT image



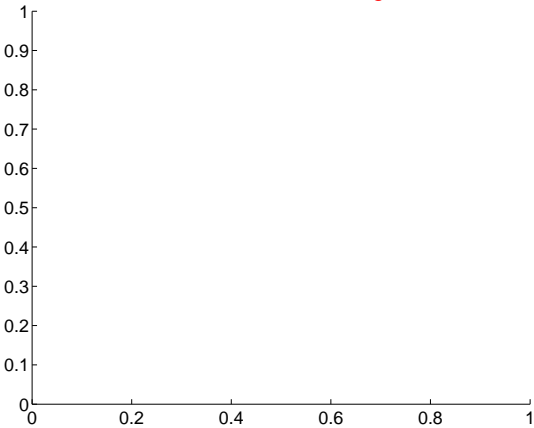
Q3 difference image. Poor Quality



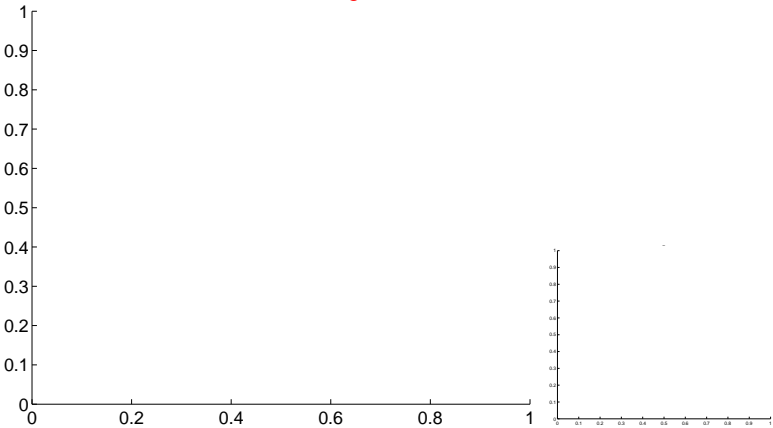
Q3 OOT image



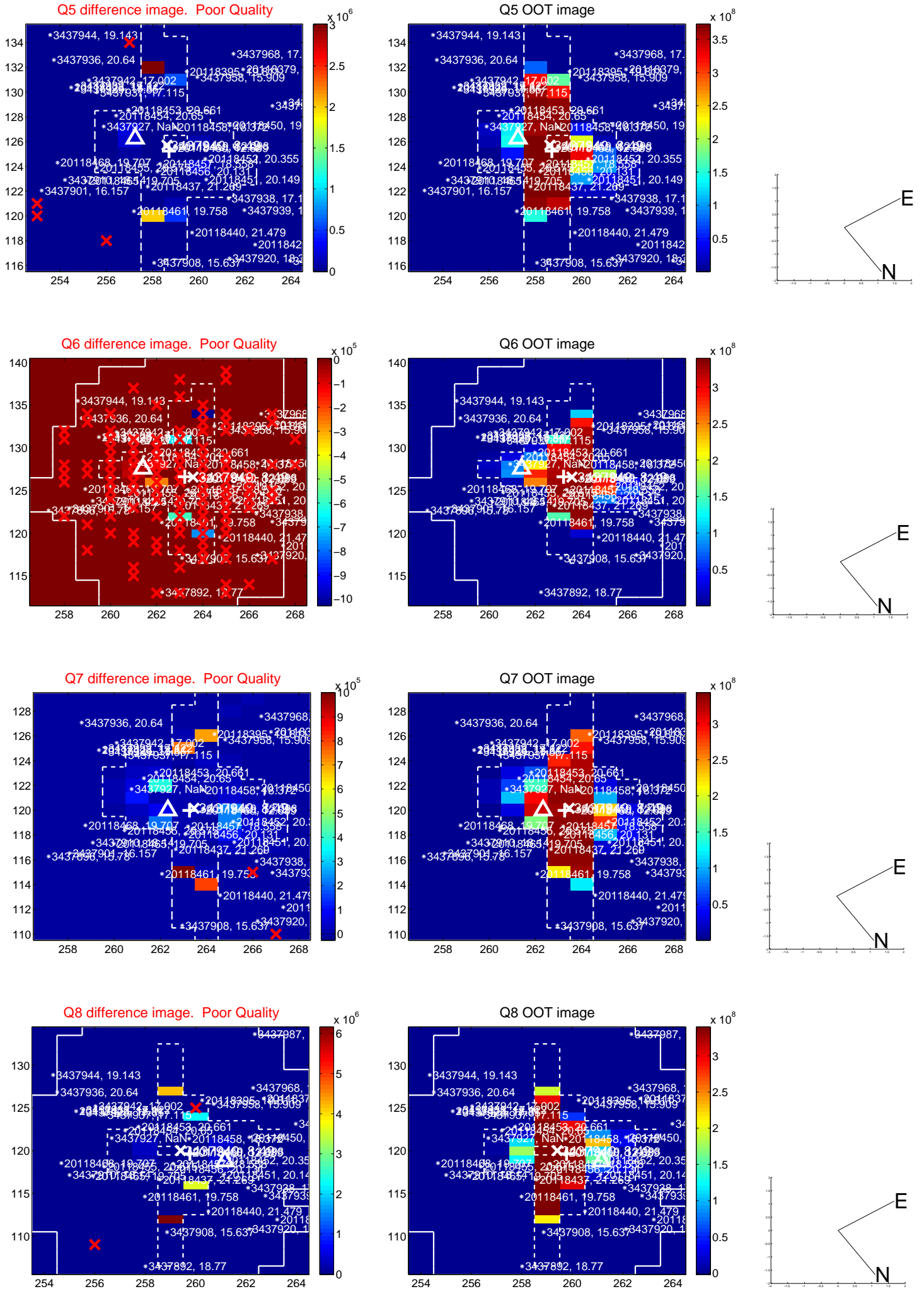
Q4 no difference image



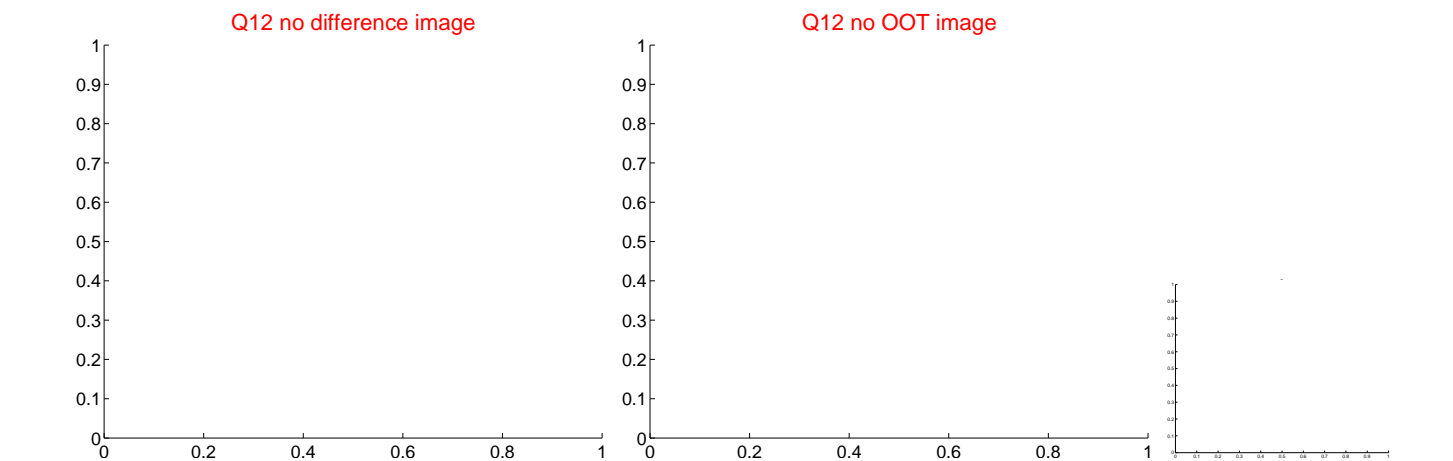
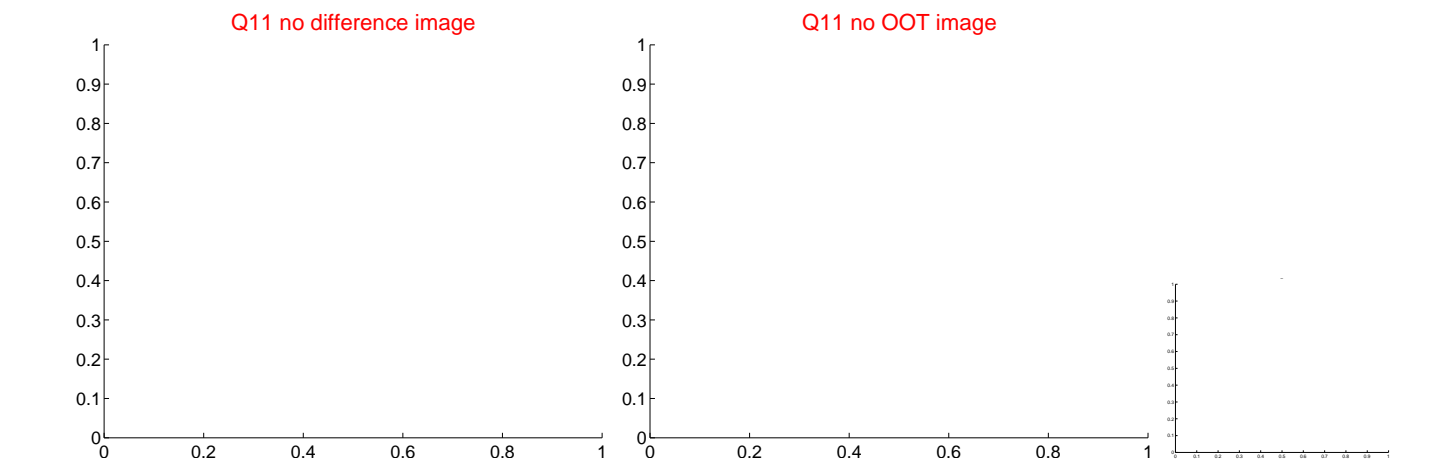
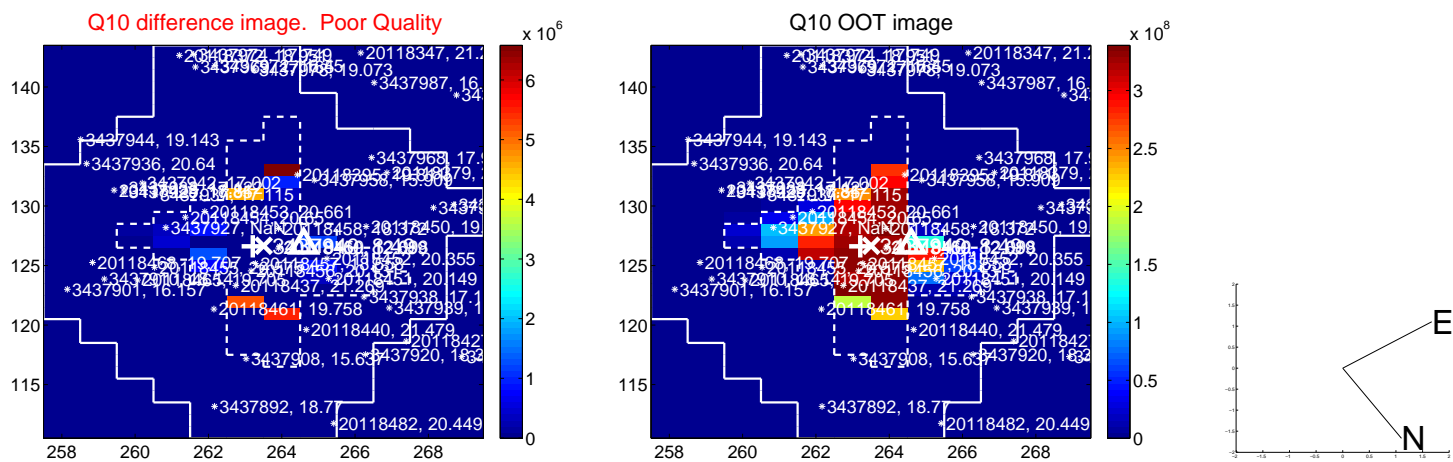
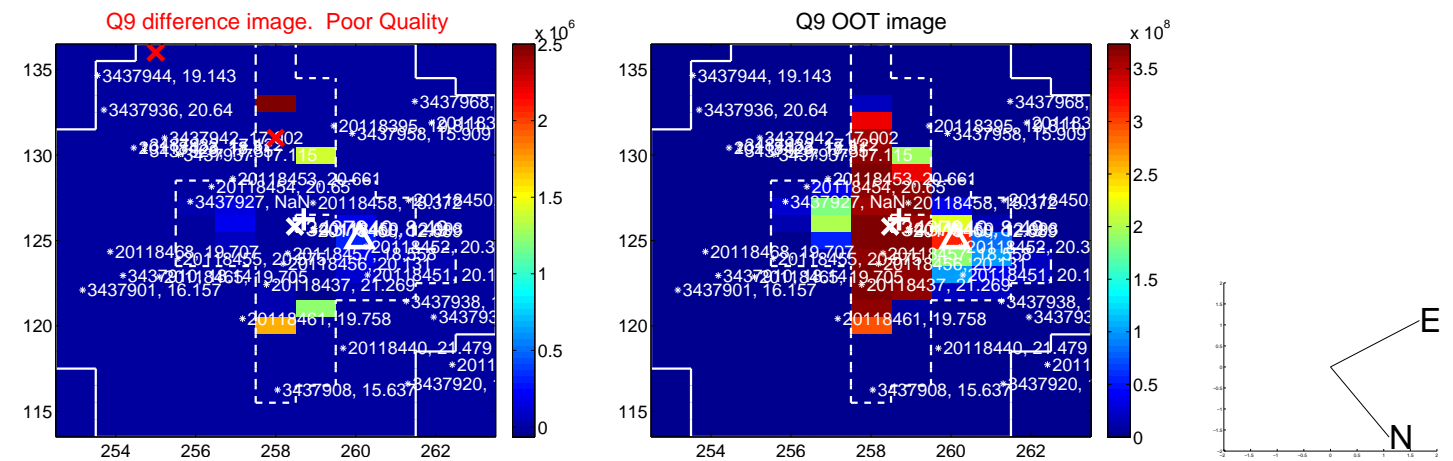
Q4 no OOT image



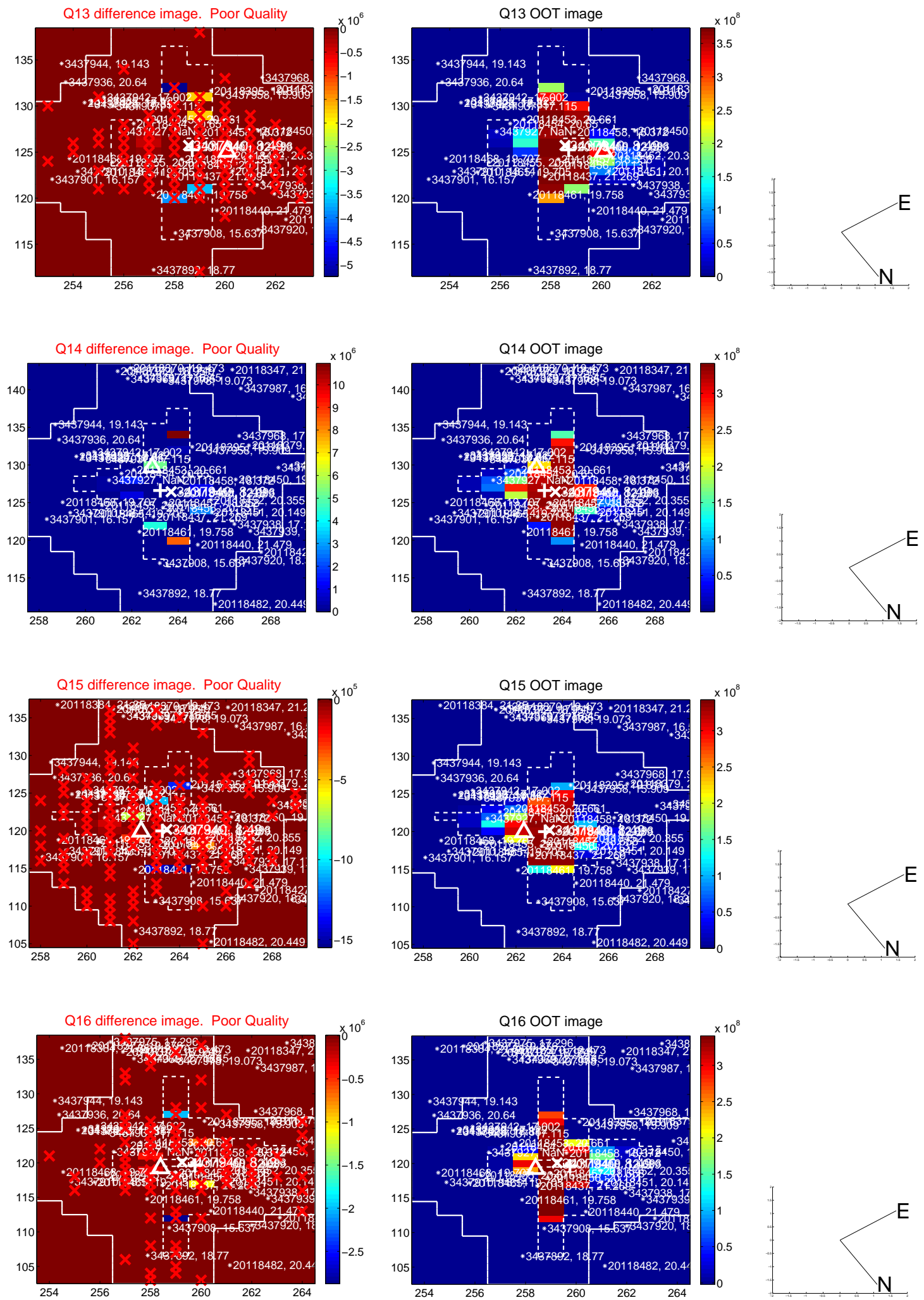
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



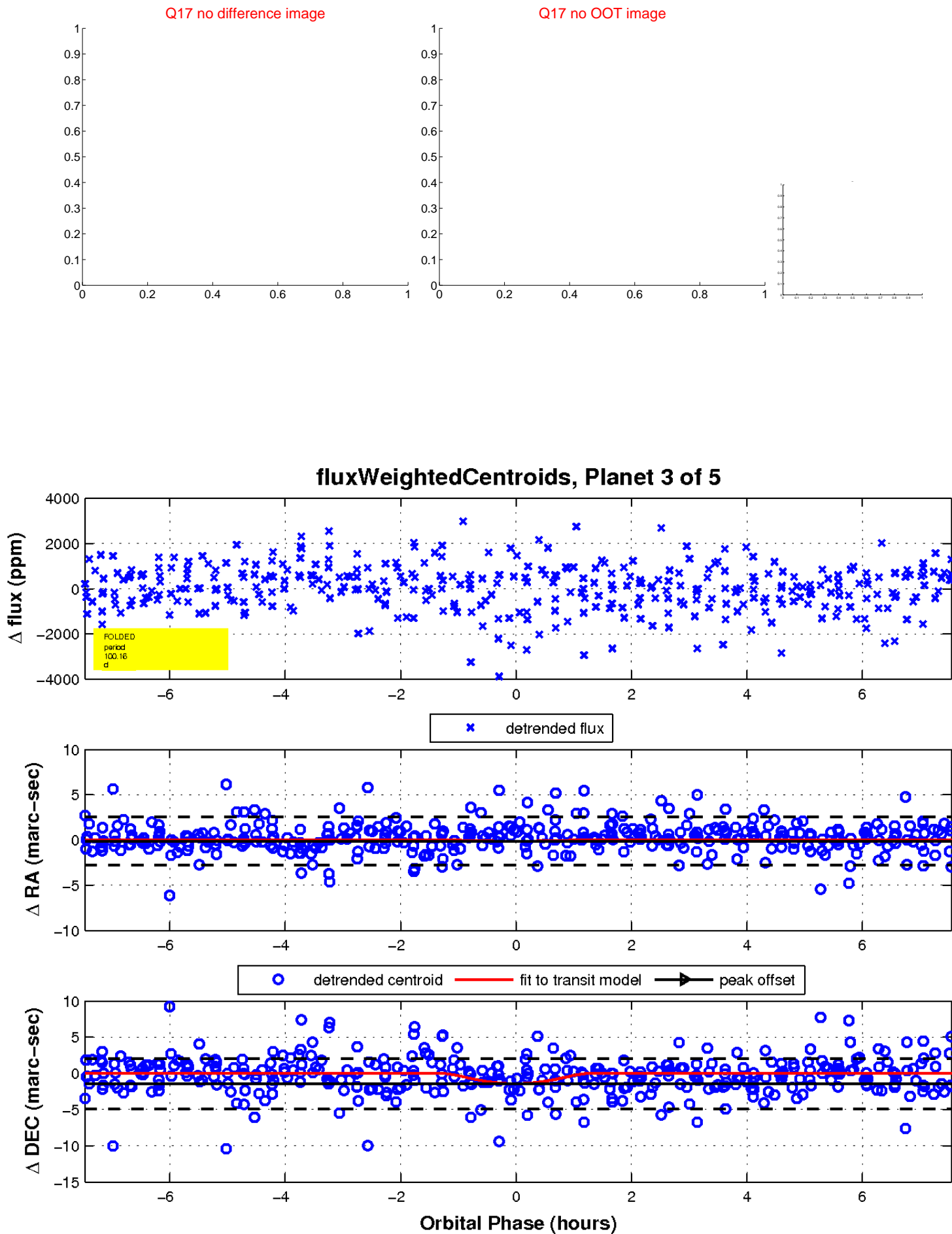
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

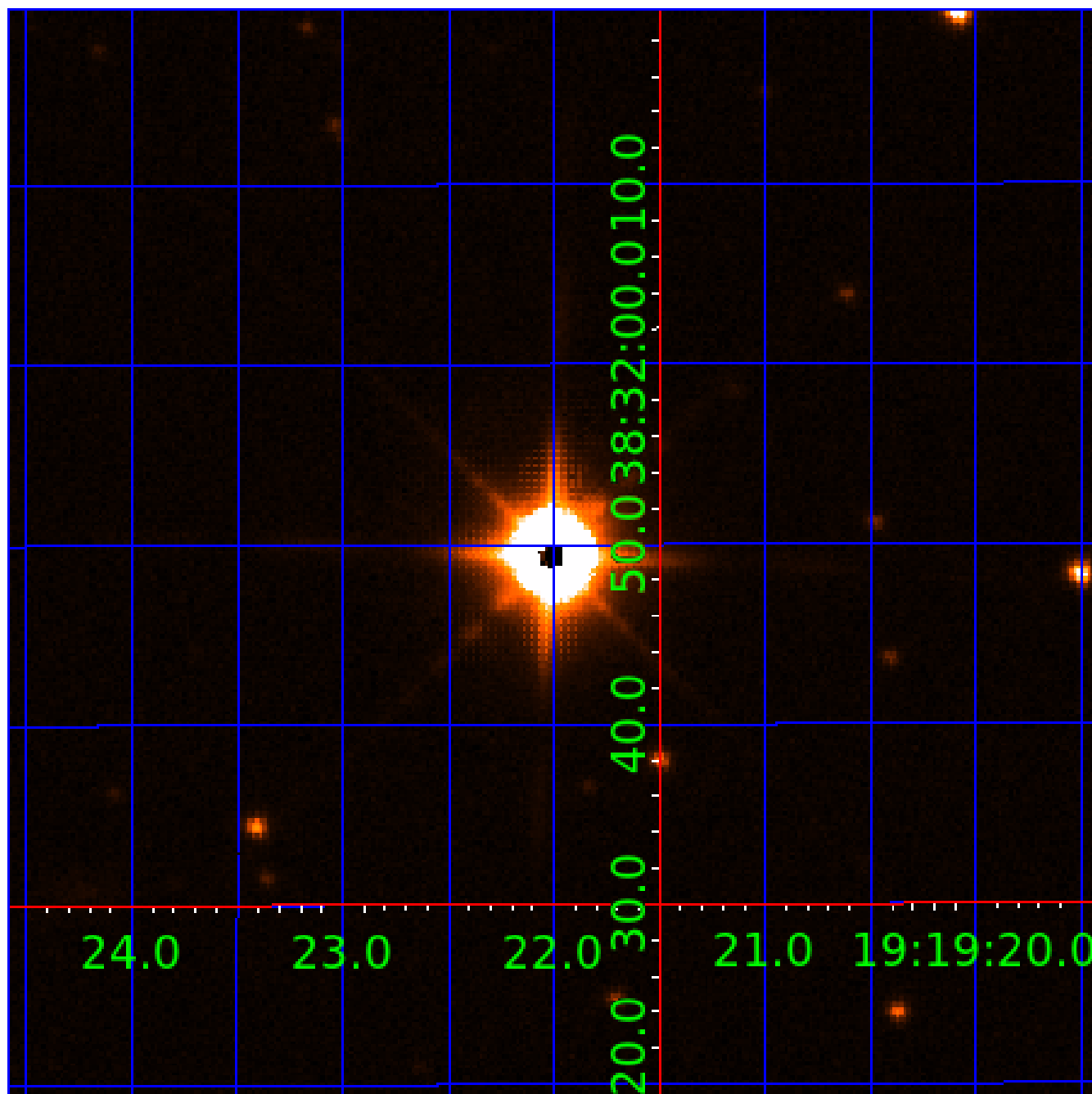


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003437940

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})
003437940-01	OBS	No	0.590580	131.627944	110.2	3.828	8.8	11.3	1.95	7703	2.38	42672.60
003437940-02	OBS	No	27.521413	140.299122	225.5	4.782	8.9	2.4	1.95	7703	3.37	254.46
003437940-03	OBS	No	100.162571	197.130296	2344.7	2.518	10.5	11.4	1.95	7703	15.30	45.45
003437940-04	OBS	No	47.456283	147.220052	1192.4	4.043	8.8	9.5	1.95	7703	7.29	123.06
003437940-05	OBS	No	60.343864	177.774588	1851.7	2.155	10.3	9.6	1.95	7703	8.96	89.33

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003437940-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED
003437940-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003437940-03	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—CENT_SATURATED
003437940-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003437940-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

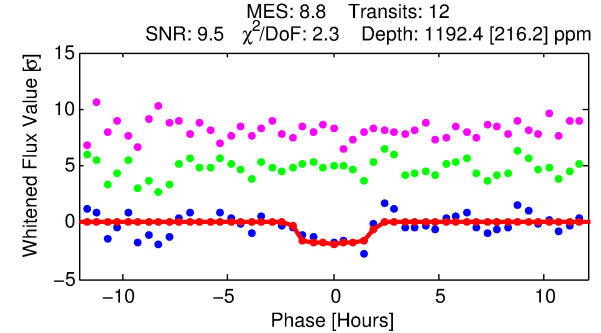
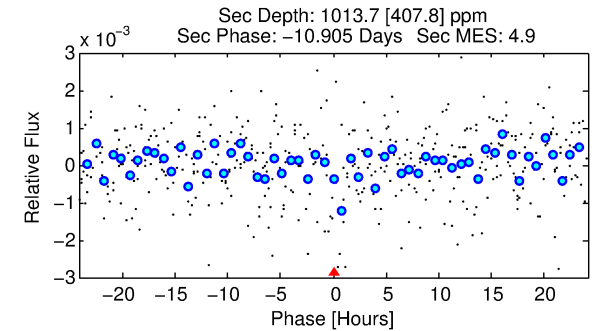
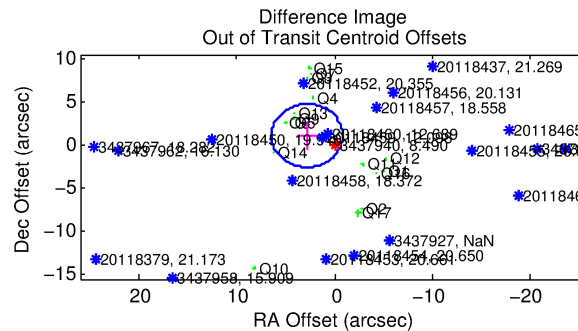
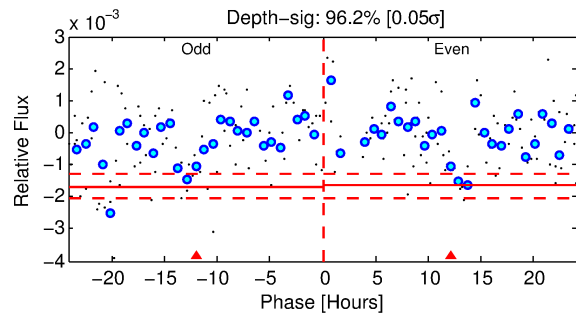
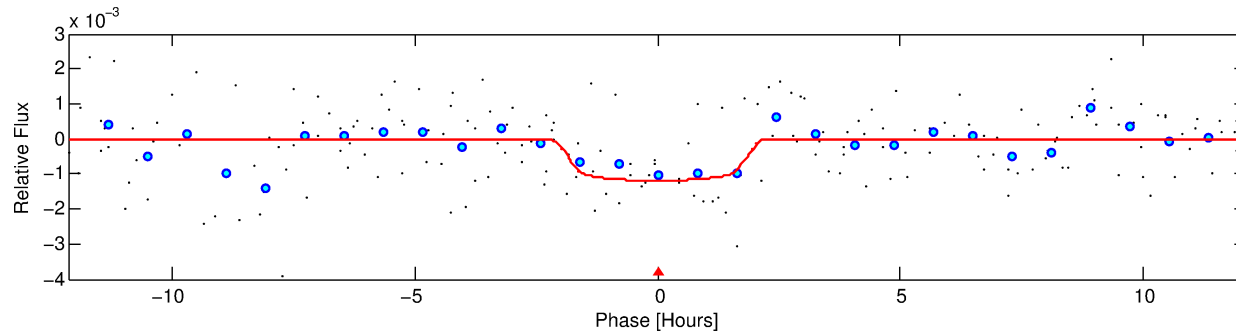
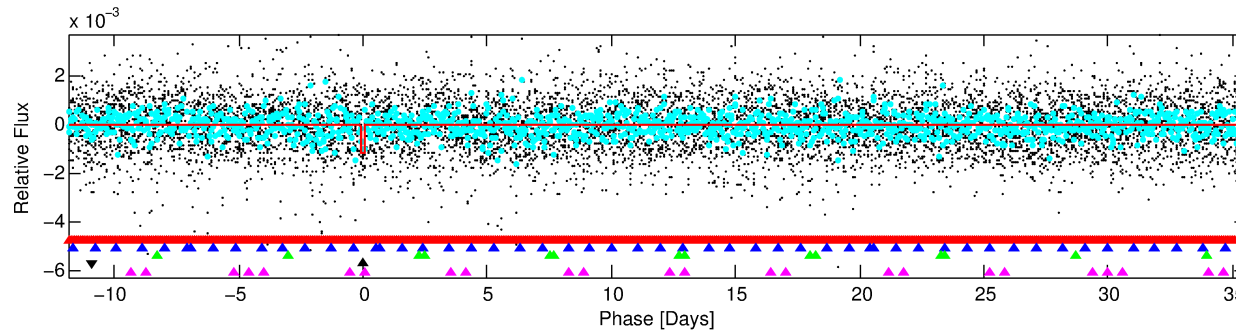
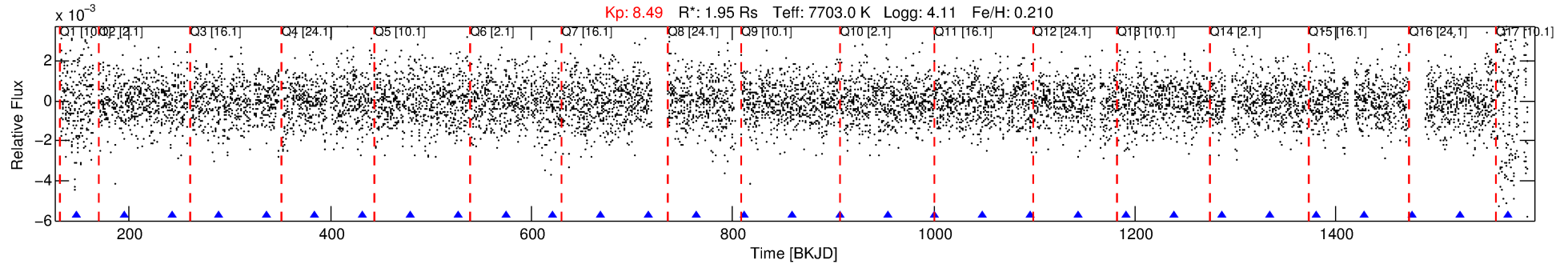
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003437940-04

No Significant Match Found

DV One-Page Summary

KIC: 3437940 Candidate: 4 of 5 Period: 47.456 d



DV Fit Results:

Period = 47.45628 [0.00112] d
Epoch = 147.2201 [0.0195] BKJD
Rp/R* = 0.0342 [0.0198]
a/R* = 65.35 [228.39]
b = 0.73 [2.20]
Seff = 123.06 [29.76]
Teq = 849 [51] K
Rp = 7.28 [4.42] Re
a = 0.3125 [0.0476] AU
Ag = 1026.34 [1278.90] [0.80 σ]
Teff = 7432 [2286] K [2.88 σ]

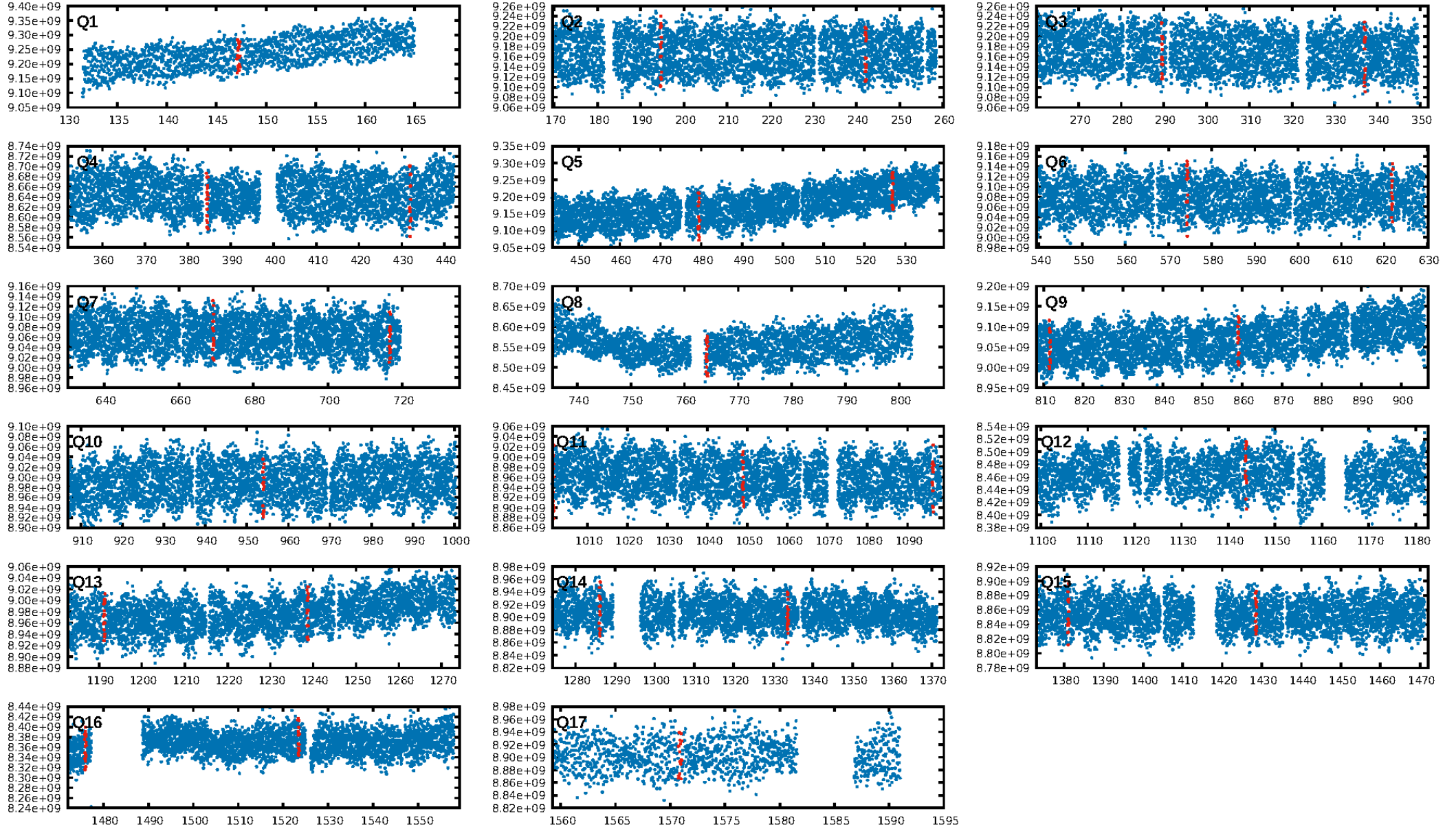
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [76.40 σ]
LongPeriod-sig: 100.0% [67.52 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.86e-11
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: N/A
Centroid-sig: 47.6%
Centroid-so: 0.650 arcsec [1.63 σ]
OotOffset-rm: 3.028 arcsec [2.49 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-rm: 2.037 arcsec [1.30 σ]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.00 [0/16]
DiffImageOverlap-fno: 0.00 [0/16]

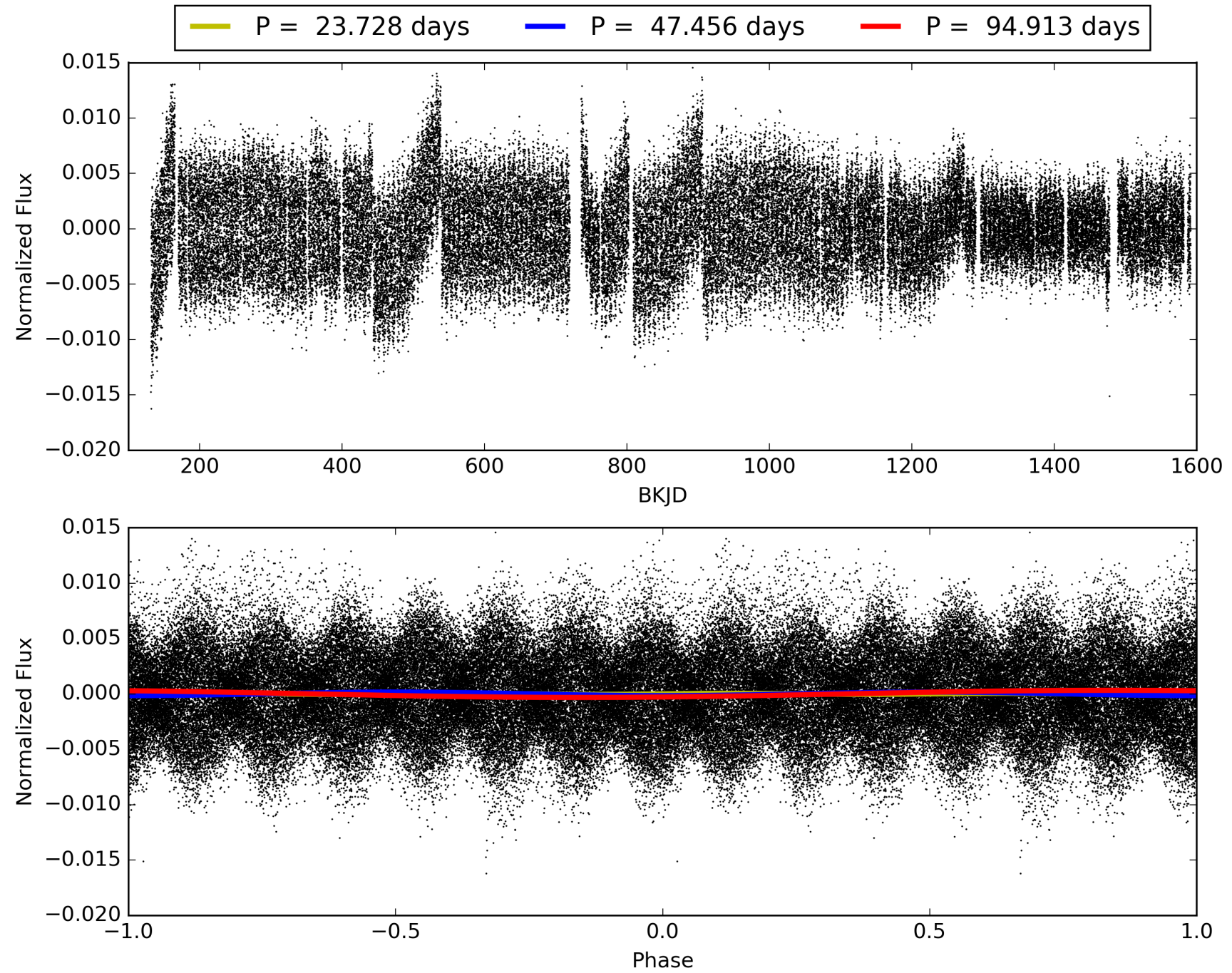
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 15:19:07 Z

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

TCE 003437940-04, PDC Light Curves

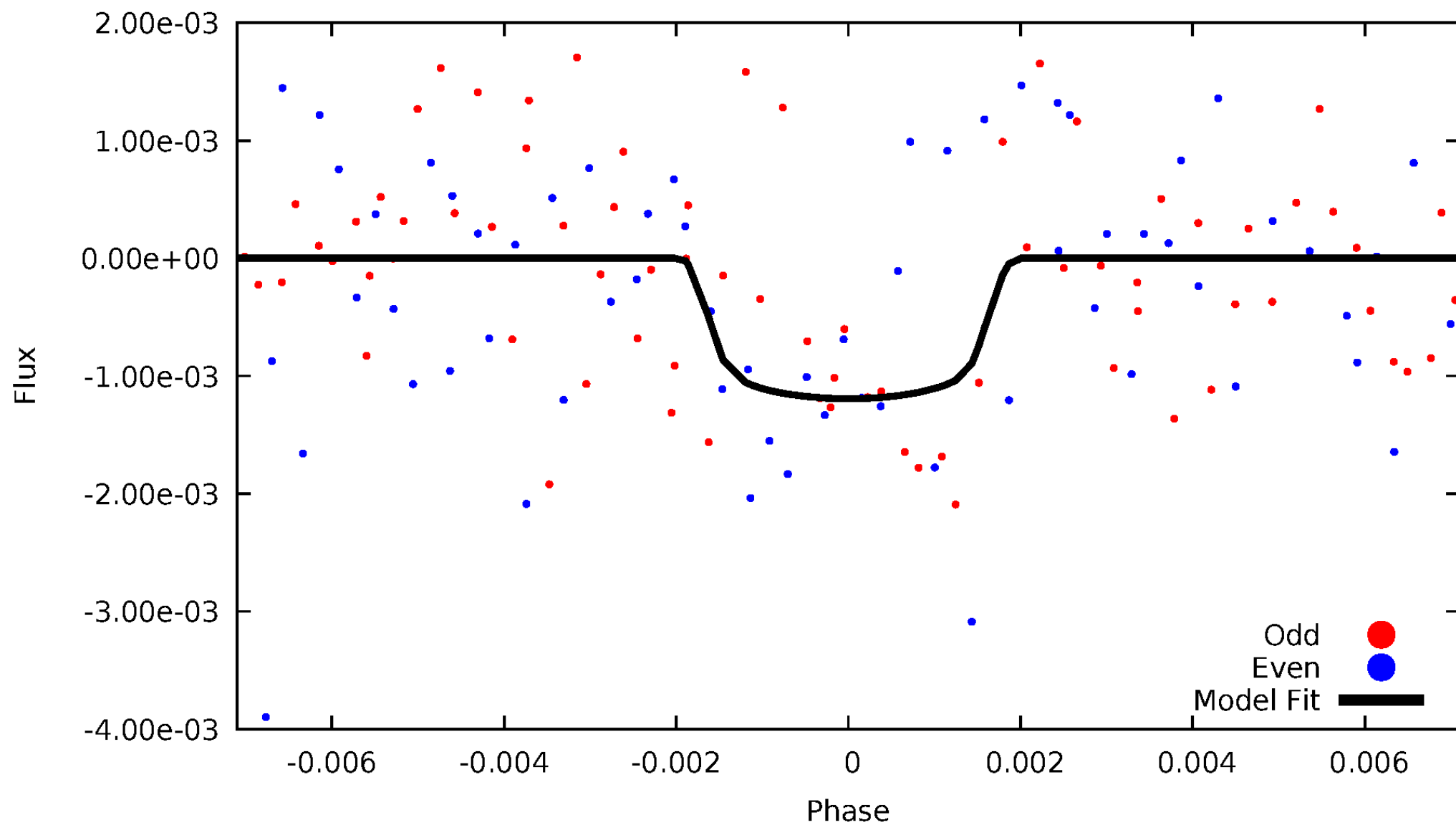


TCE 003437940-04



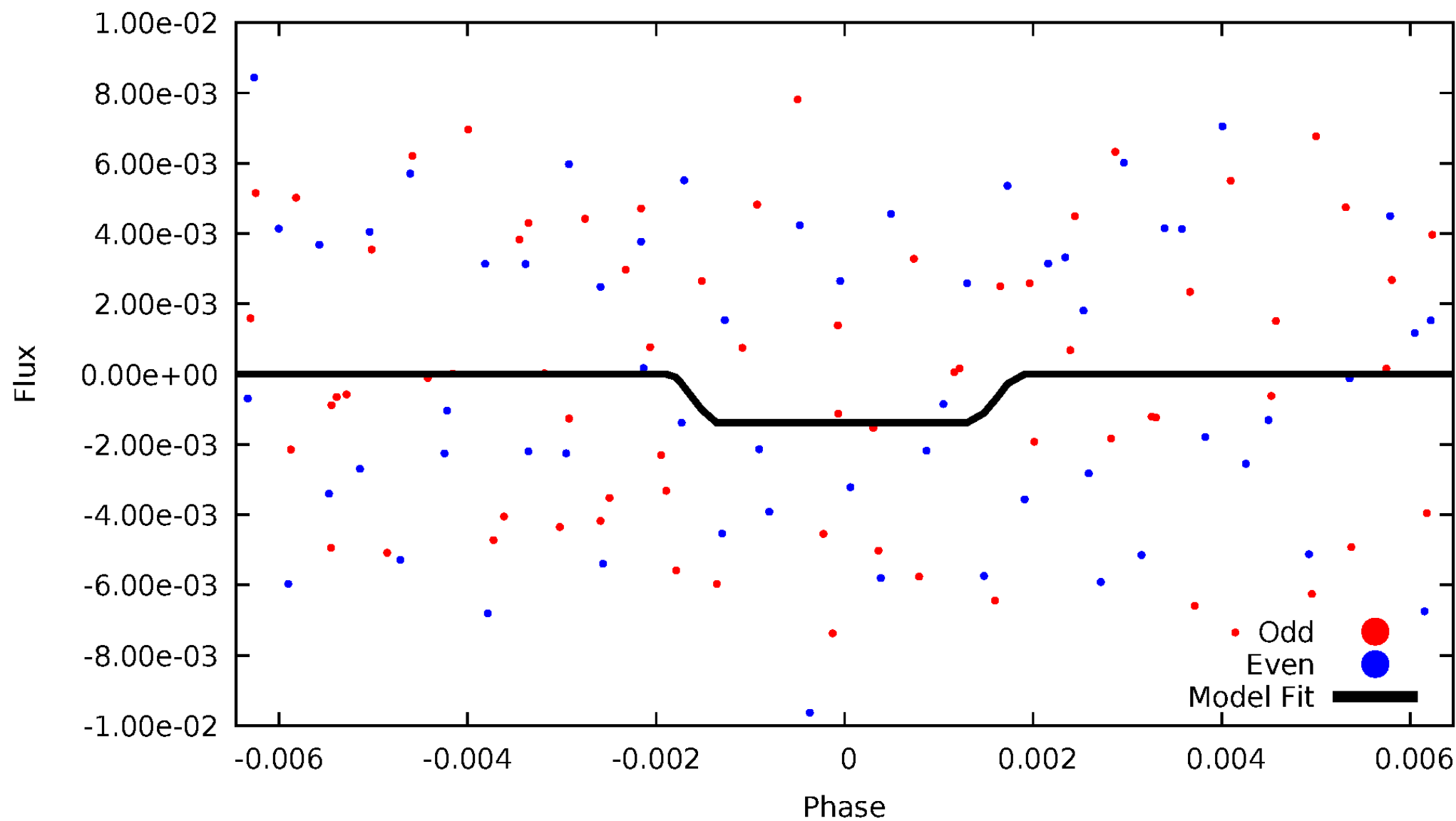
DV Odd/Even

TCE 003437940-04



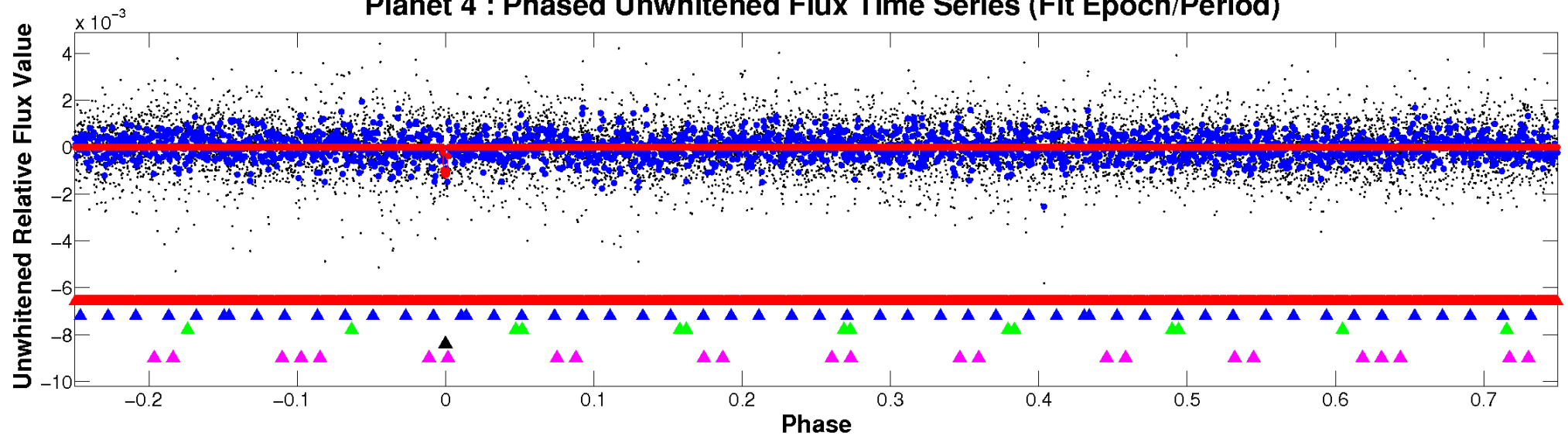
ALT Odd/Even

TCE 003437940-04

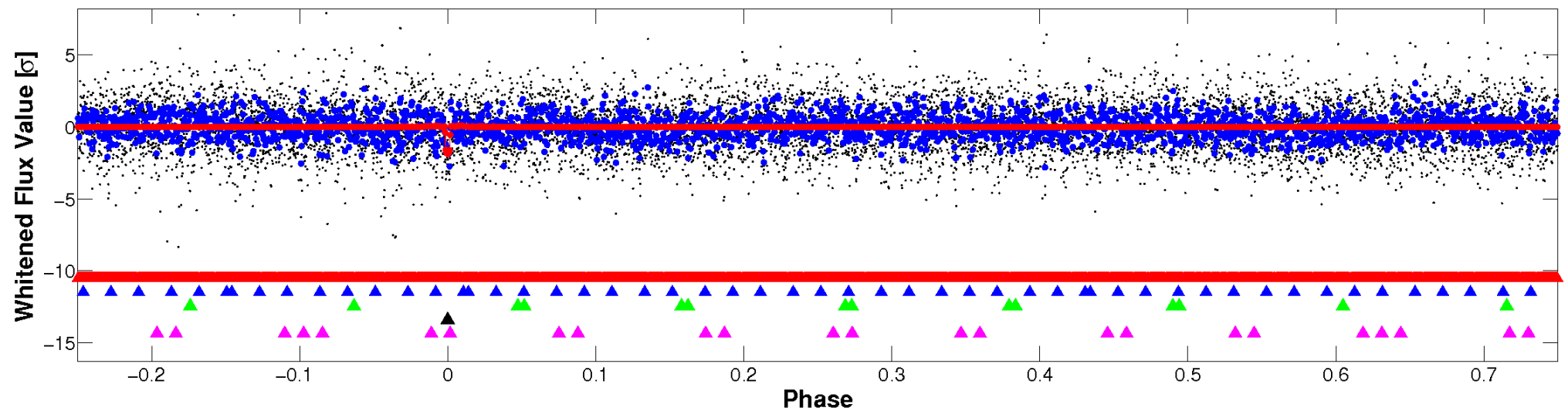


Non-Whitened Vs. Whitened Light Curve

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

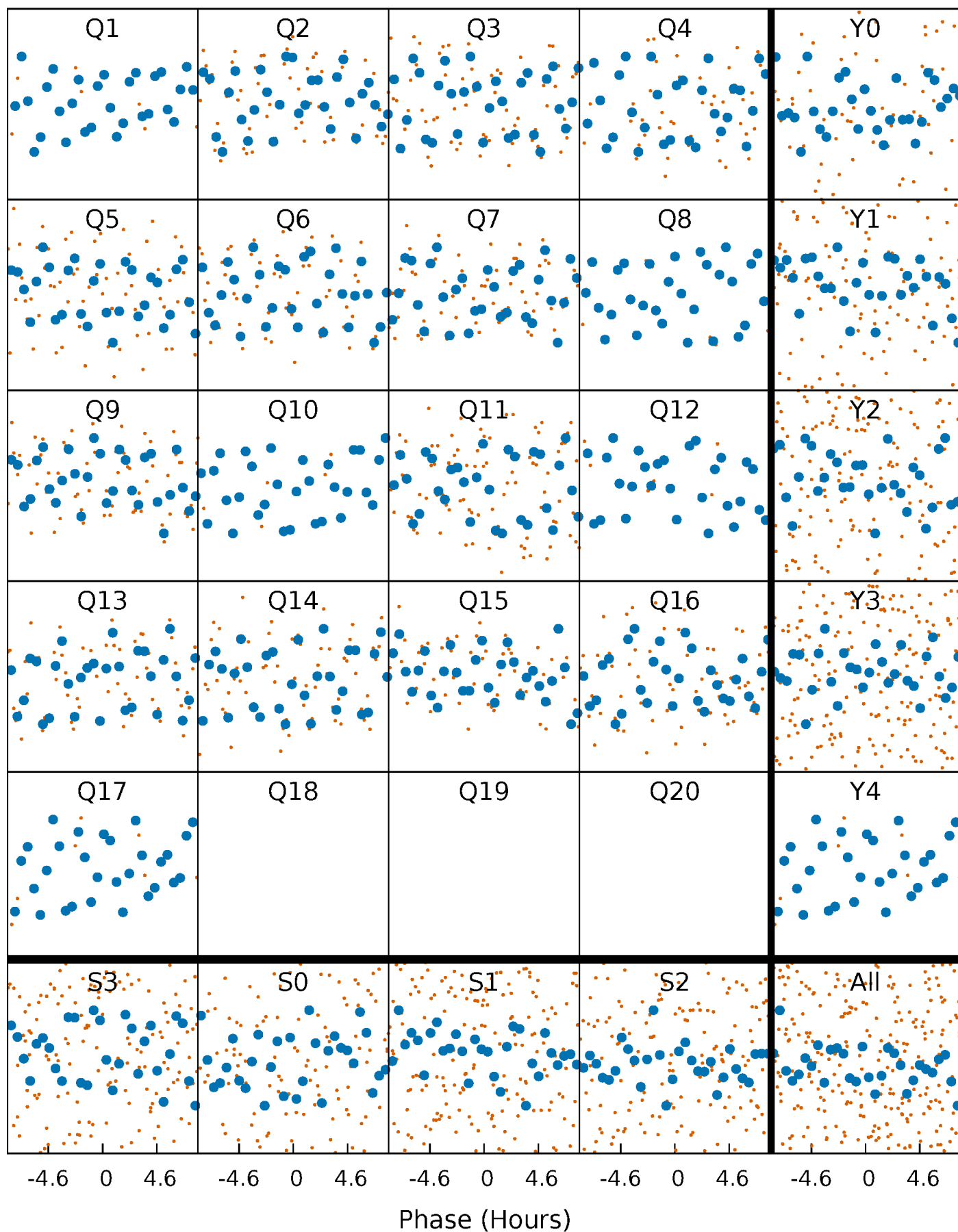


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



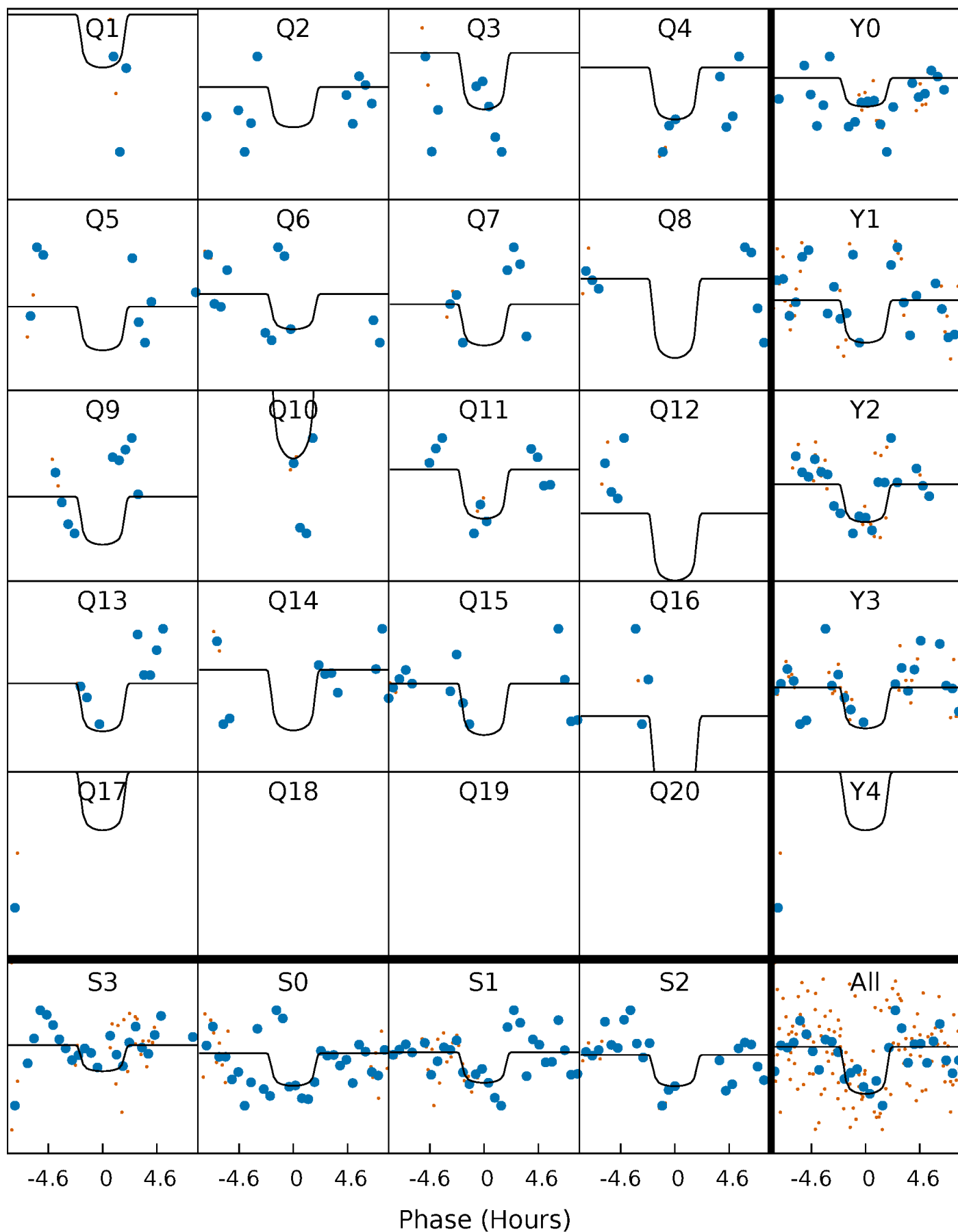
PDC Quarter-Phased Transit Curves

TCE 003437940-04 $P = 47.456283$ Days $T_0 = 147.220052$ (BKJD)



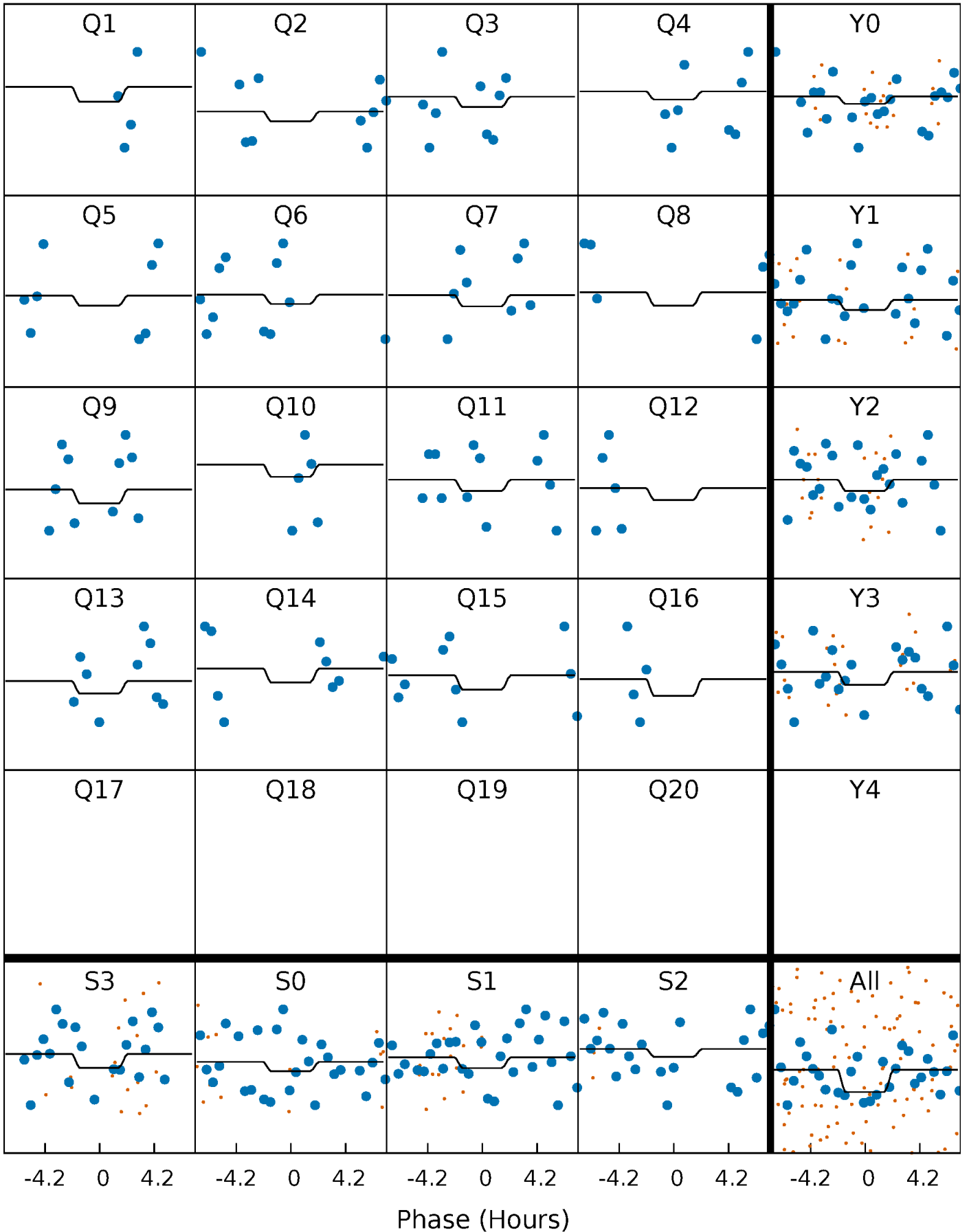
DV Quarter-Phased Transit Curves

TCE 003437940-04 $P = 47.456283$ Days $T_0 = 147.220052$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

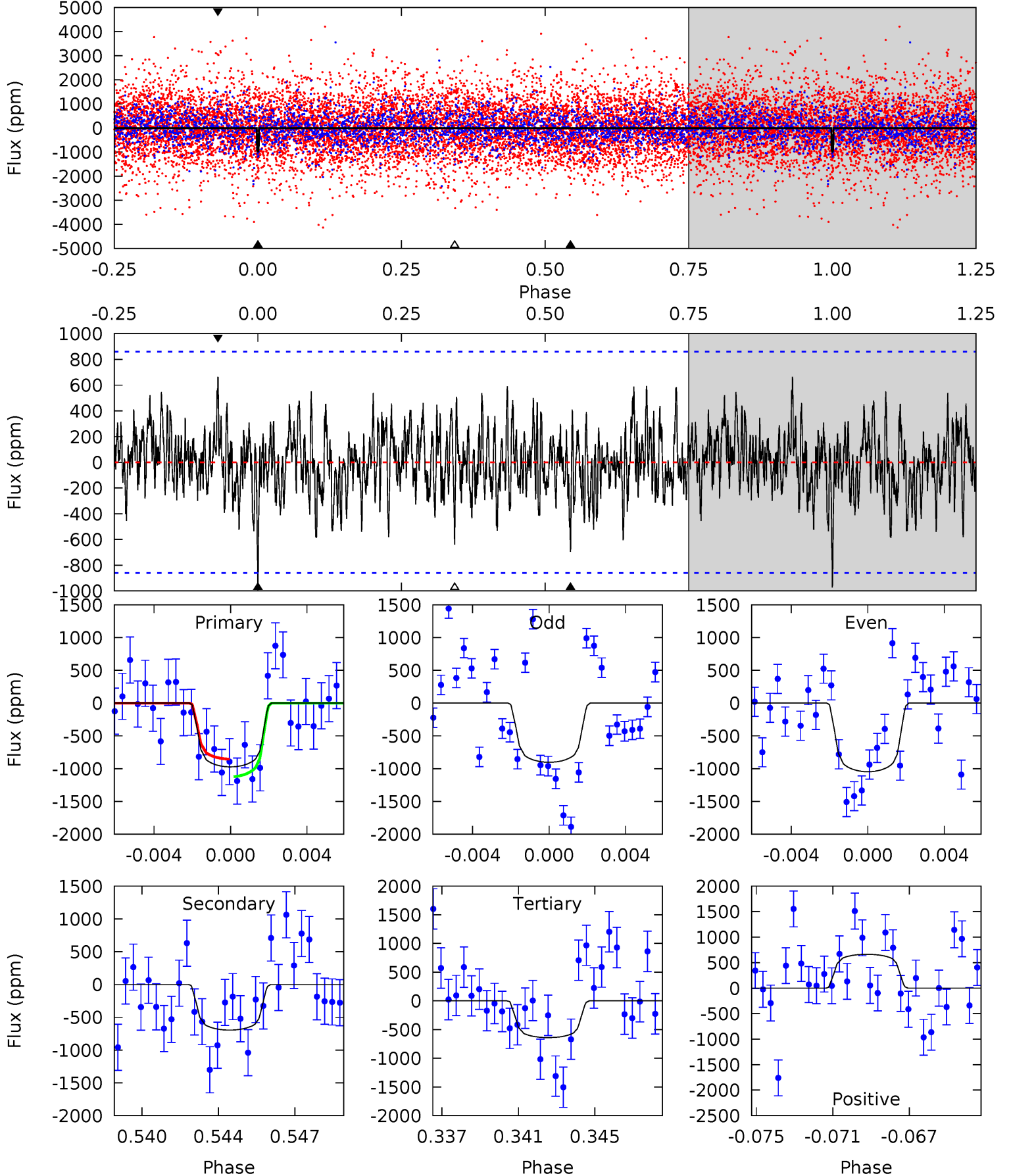
TCE 003437940-04 $P = 47.457393$ Days $T_0 = 147.197465$ (BKJD)



DV Model-Shift Uniqueness Test

003437940-04, P = 47.456283 Days, E = 99.763769 Days

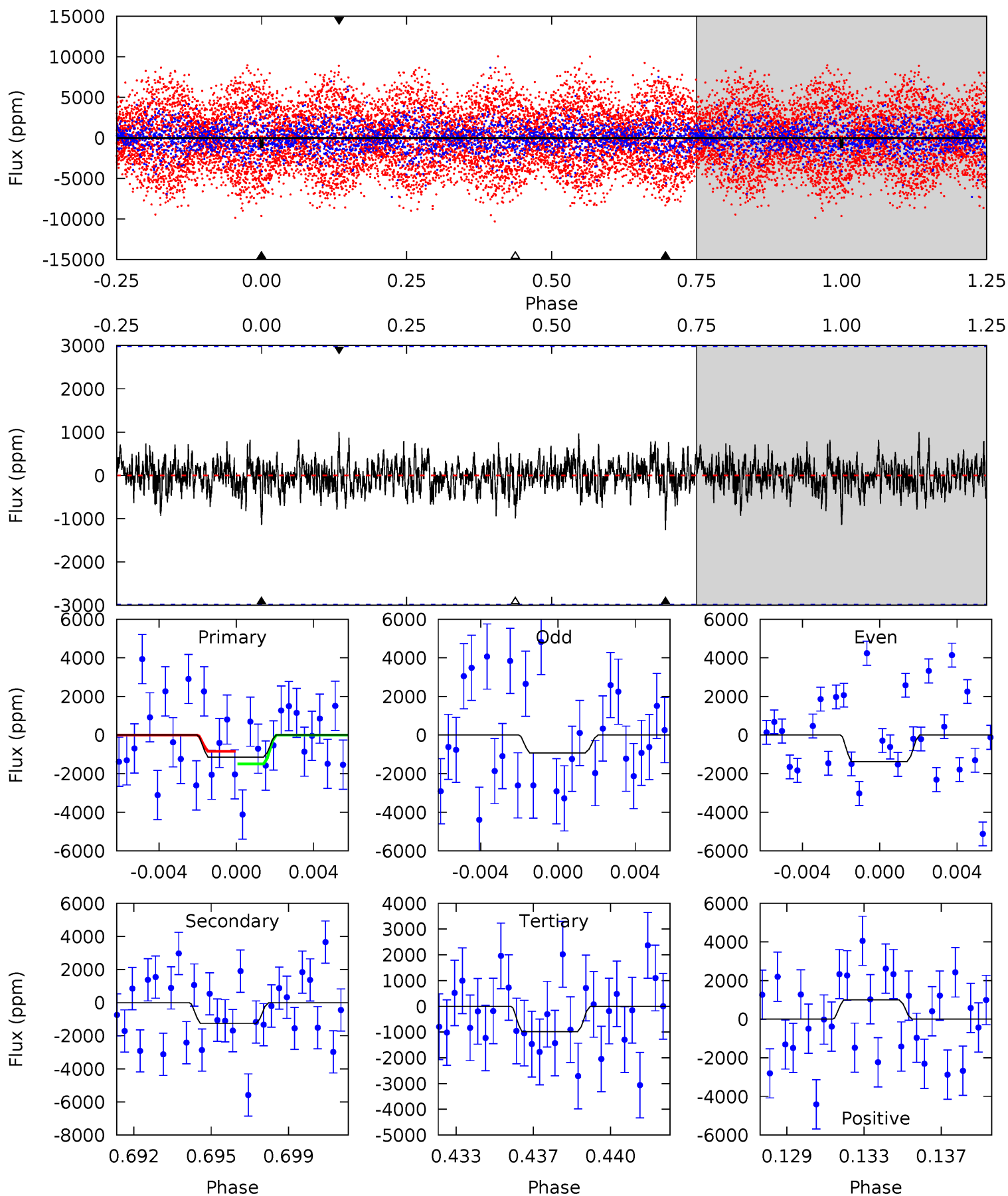
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.90	4.21	3.88	4.02	5.21	2.90	1.29	2.02	1.88	0.33	0.19	0.44	0.74	0.41	0.81



Alt Model-Shift Uniqueness Test

003437940-04, P = 47.457393 Days, E = 99.740072 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.00	2.20	1.73	1.75	5.21	2.90	0.49	0.27	0.25	0.47	0.45	0.40	0.83	0.44	0.57



Stellar Parameters For KIC 003437940

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7703^{+133}_{-191}	$4.114^{+0.080}_{-0.120}$	$0.210^{+0.150}_{-0.150}$	$1.952^{+0.355}_{-0.207}$	$1.807^{+0.126}_{-0.114}$	$0.342^{+0.116}_{-0.121}$
	+2%/-2%	+2%/-3%	+71%/-71%	+18%/-11%	+7%/-6%	+34%/-35%
Source	SPE4	SPE4	SPE4	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 003437940-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-695 ± 165	$7.39^{+4.34}_{-3.92}$	1187^{+56}_{-45}	6541^{+4083}_{-1282}	663^{+2408}_{-402}
Alt.	-1258 ± 572	$8.37^{+3.95}_{-4.04}$	1186^{+50}_{-43}	7194^{+4112}_{-1538}	930^{+2700}_{-557}

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

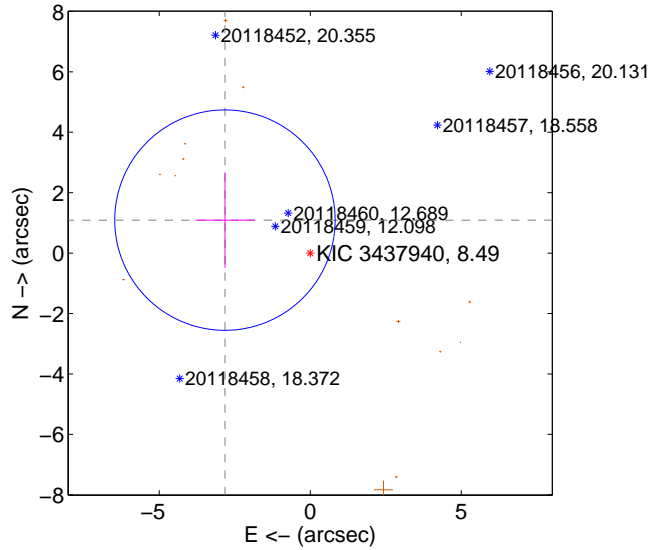
Supplemental centroid analysis for 003437940-04. **Kepler magnitude: 8.49.** Transit SNR 9.46

There are 0 quarters with good PRF difference image offsets

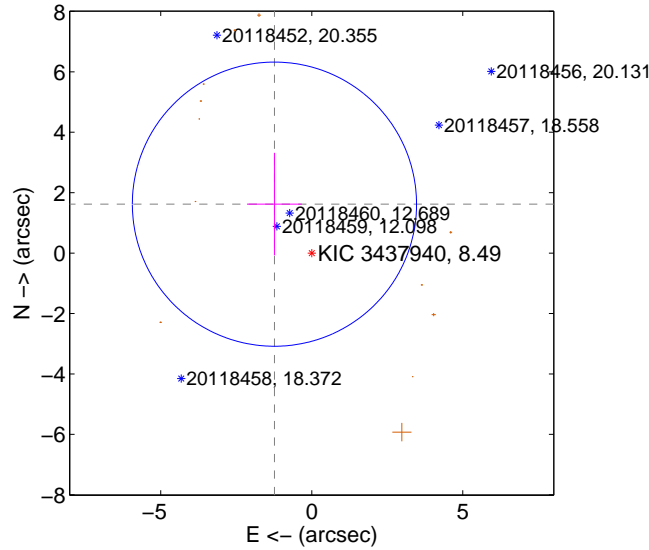
The direct PRF centroid is offset from the target star catalog position by about 1.99 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.028 ± 1.216	2.49	2.824 ± 0.981	1.091 ± 1.577
PRF-fit source offset from KIC position	2.037 ± 1.568	1.30	1.234 ± 0.908	1.620 ± 1.698
photometric centroid source offset	0.65 ± 0.40	1.63	-0.08 ± 0.25	0.64 ± 0.40

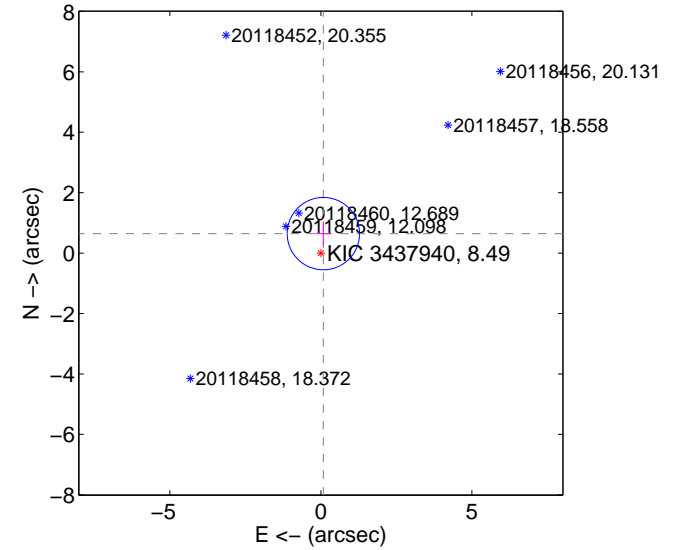
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

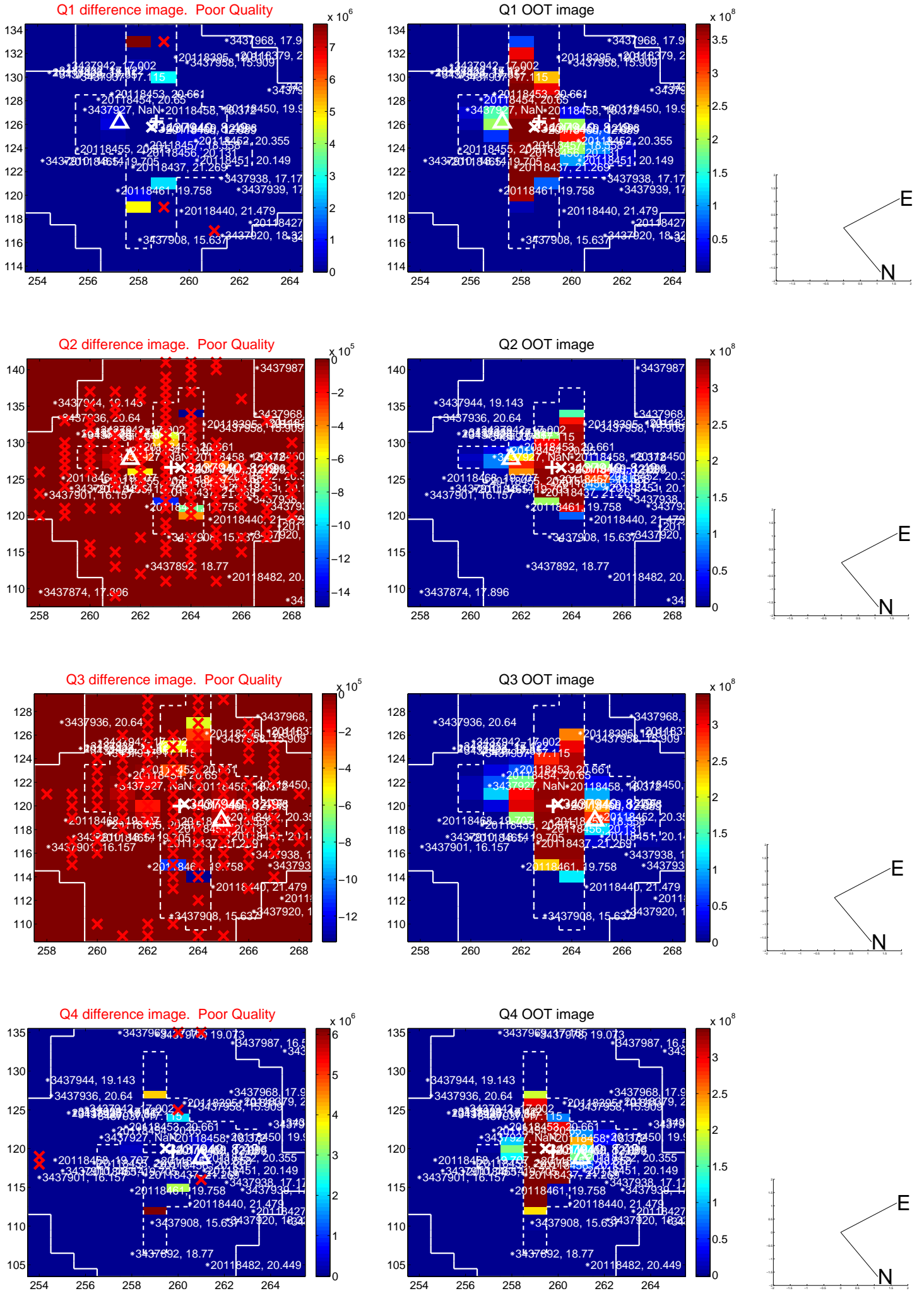


offset from photometric centroids

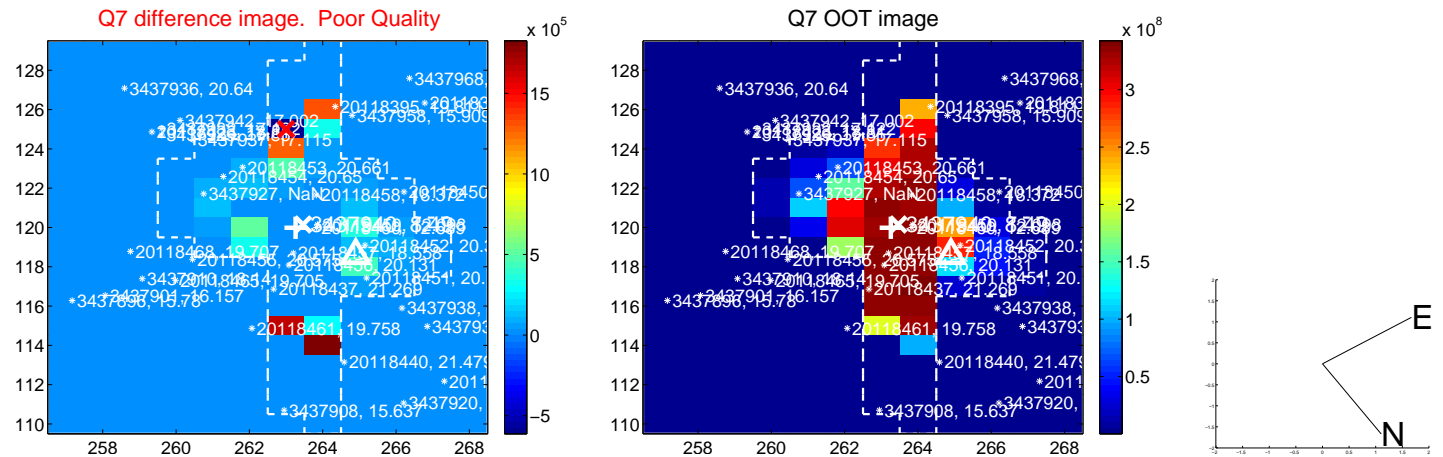
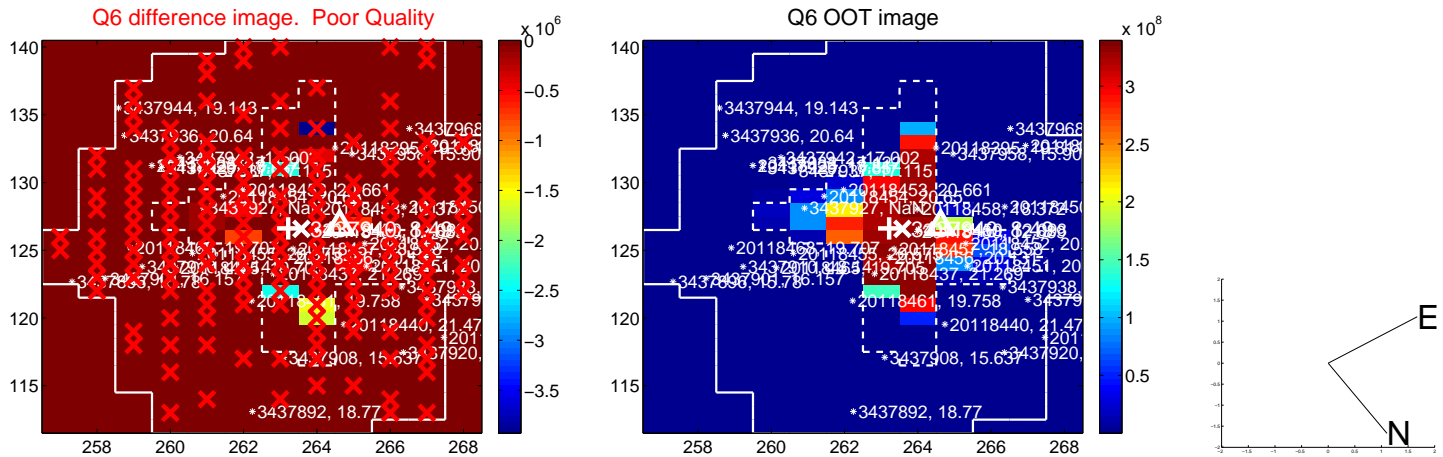
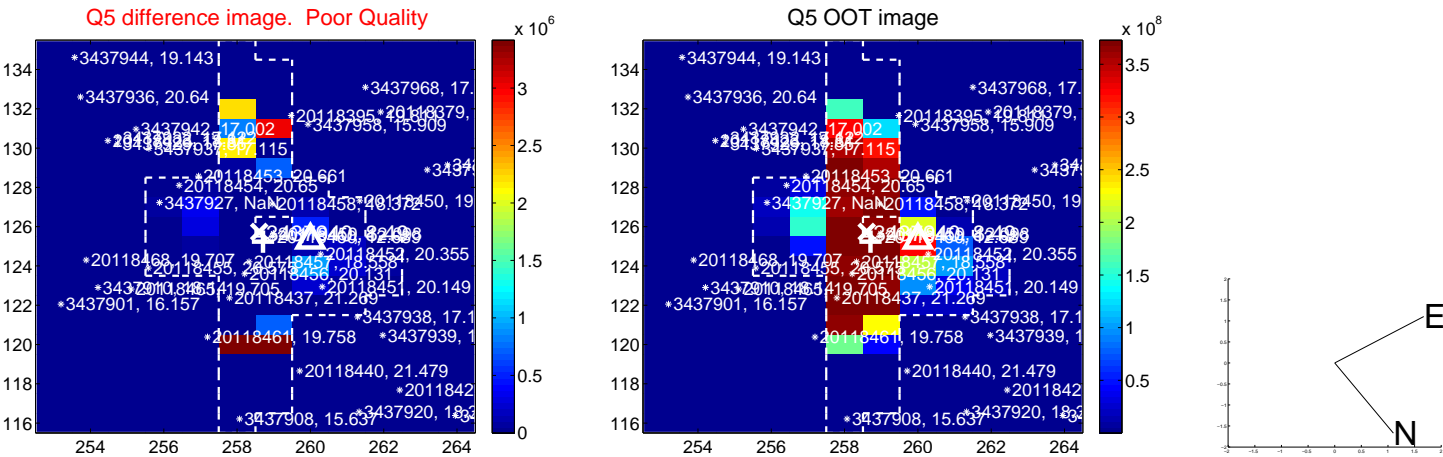


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

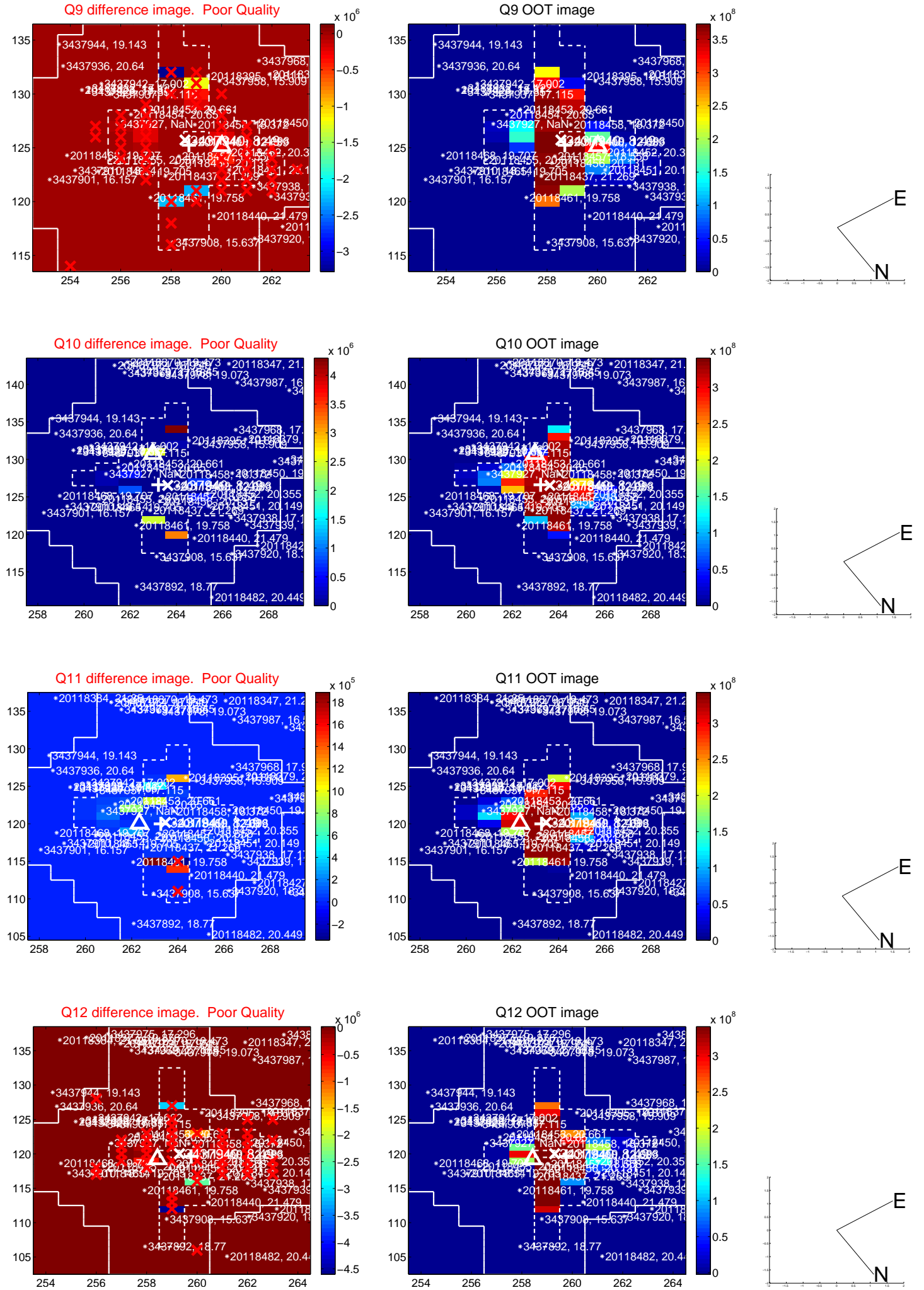
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



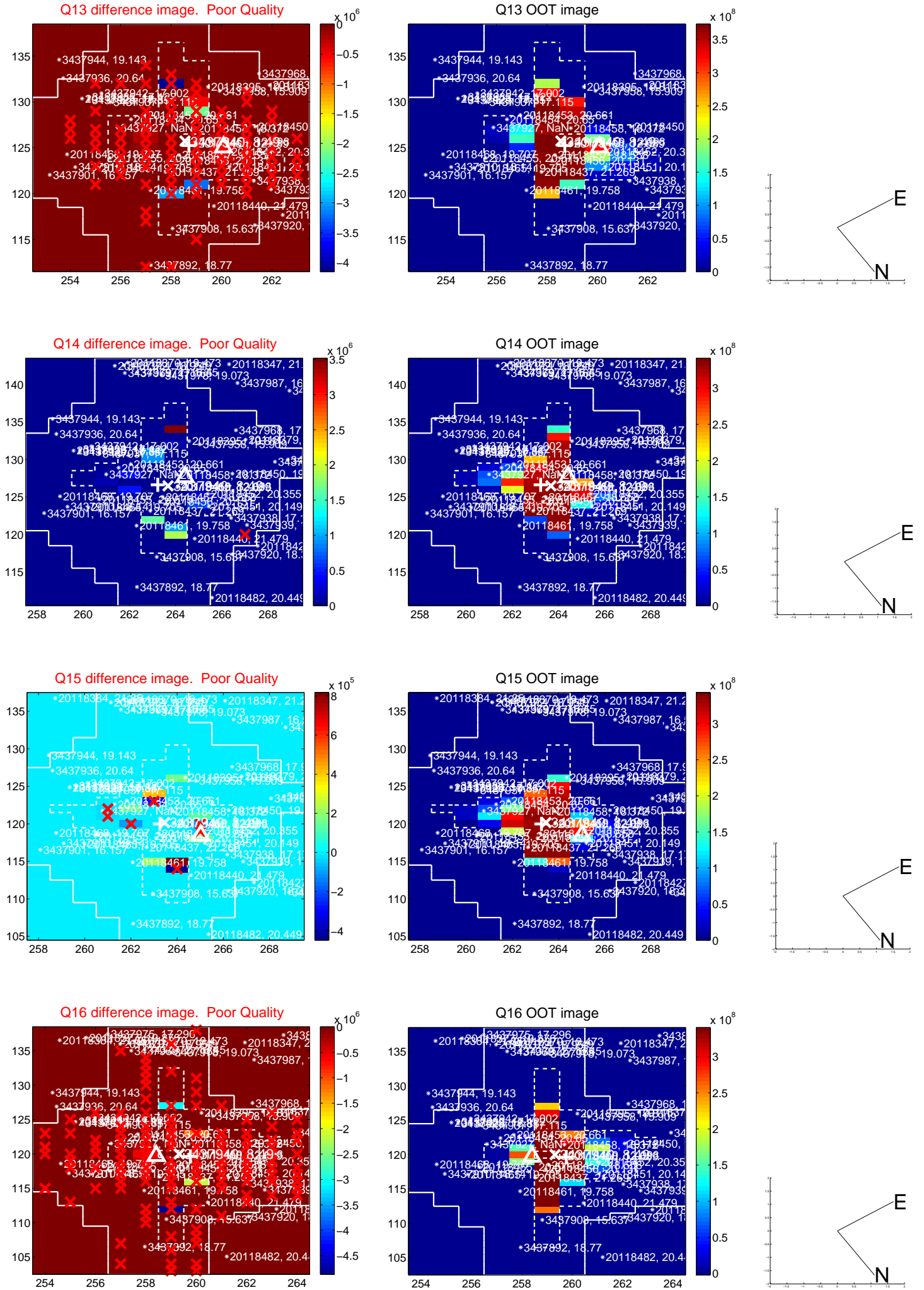
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



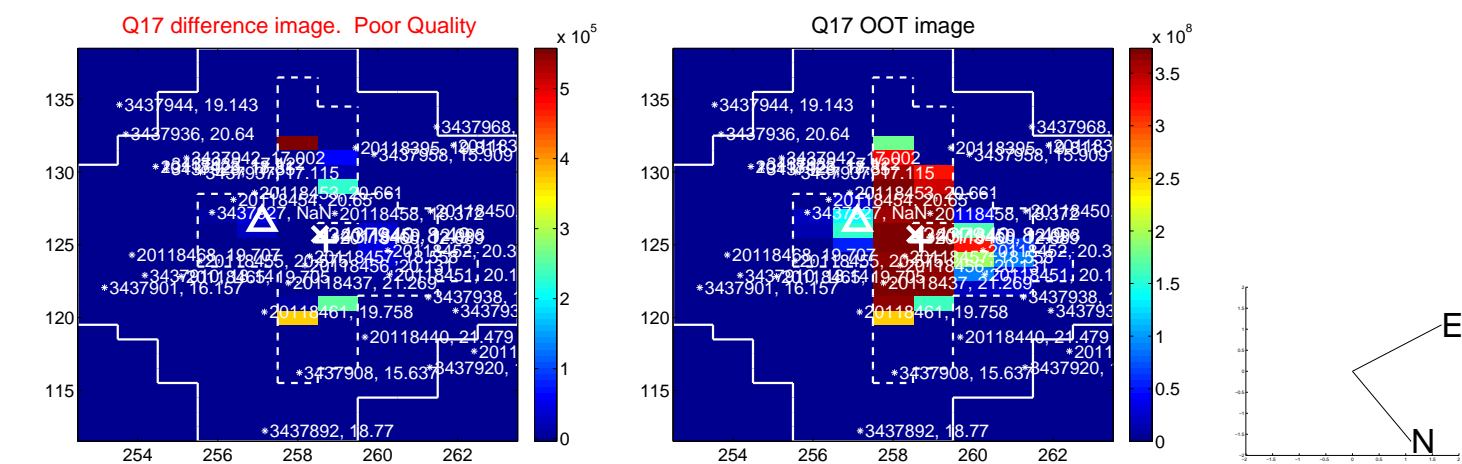
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



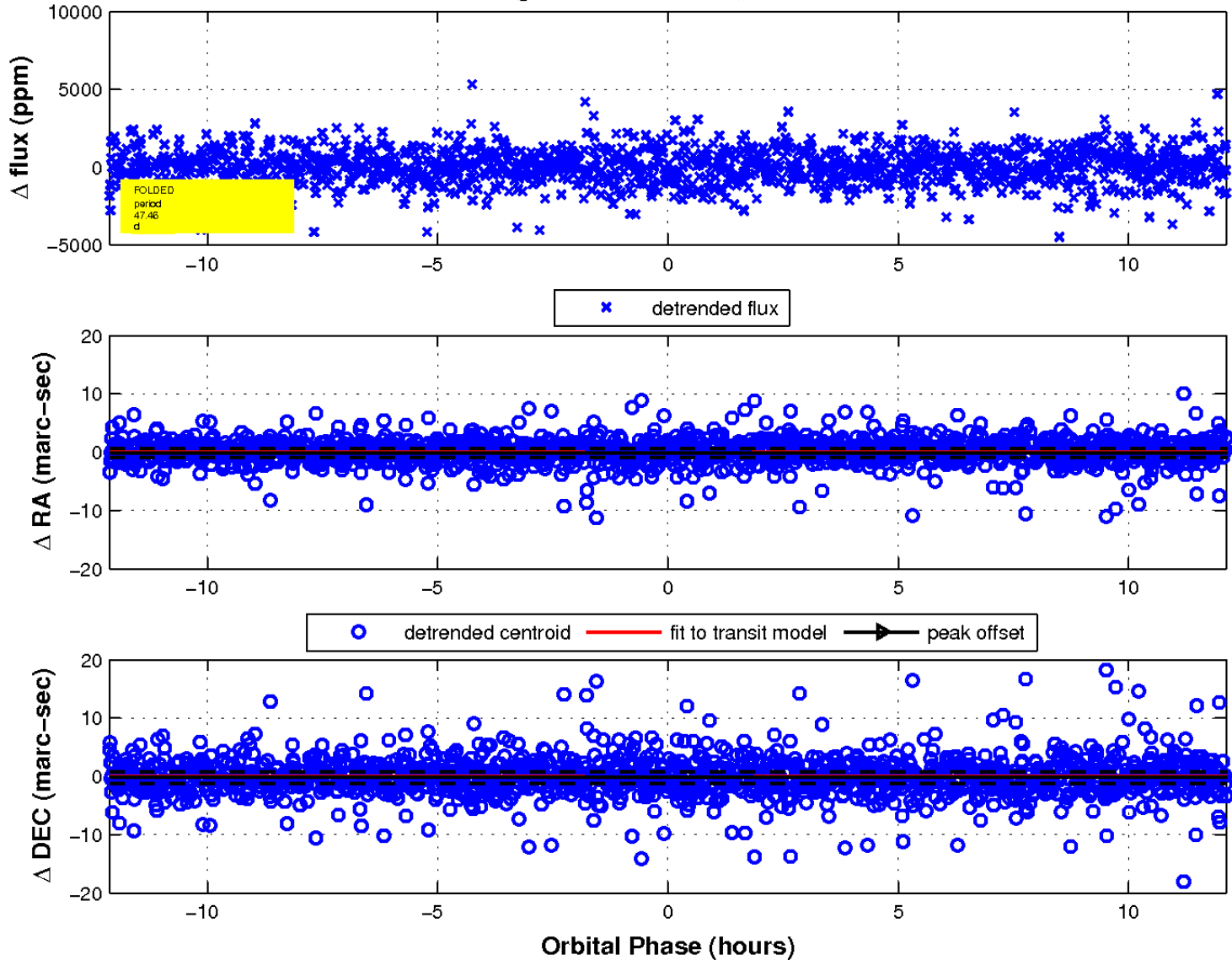
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

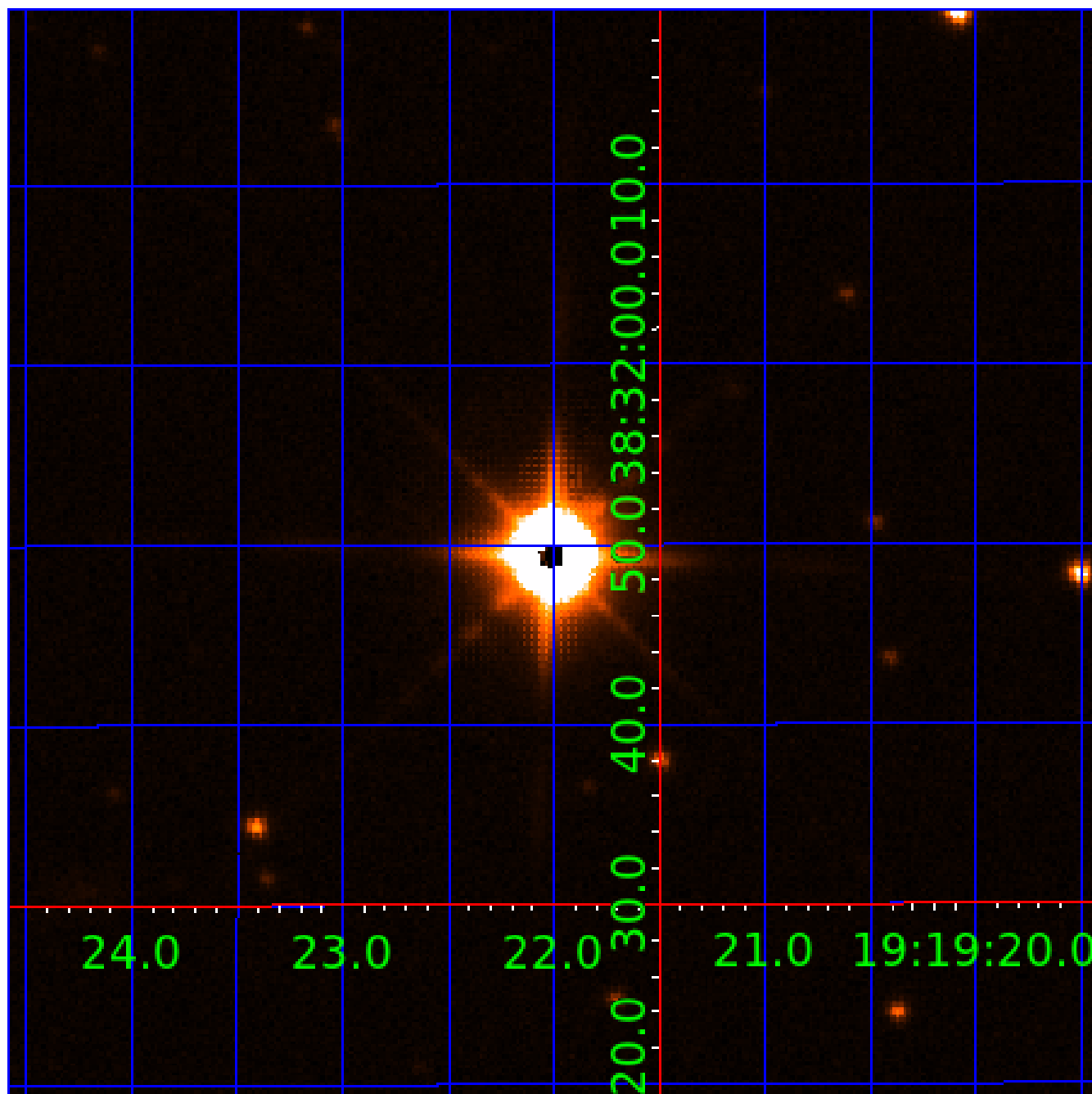


fluxWeightedCentroids, Planet 4 of 5



UKIRT Image

Declination



KIC 003437940

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})
003437940-01	OBS	No	0.590580	131.627944	110.2	3.828	8.8	11.3	1.95	7703	2.38	42672.60
003437940-02	OBS	No	27.521413	140.299122	225.5	4.782	8.9	2.4	1.95	7703	3.37	254.46
003437940-03	OBS	No	100.162571	197.130296	2344.7	2.518	10.5	11.4	1.95	7703	15.30	45.45
003437940-04	OBS	No	47.456283	147.220052	1192.4	4.043	8.8	9.5	1.95	7703	7.29	123.06
003437940-05	OBS	No	60.343864	177.774588	1851.7	2.155	10.3	9.6	1.95	7703	8.96	89.33

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003437940-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—CENT_SATURATED
003437940-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003437940-03	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—CENT_SATURATED
003437940-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
003437940-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED

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

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

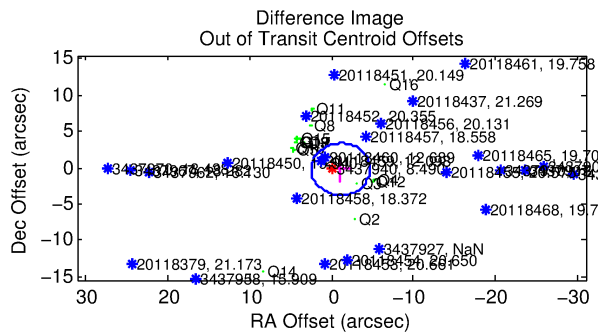
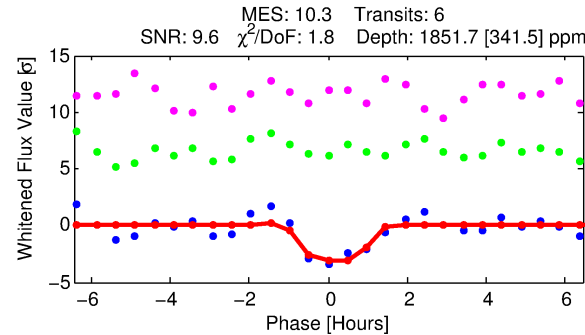
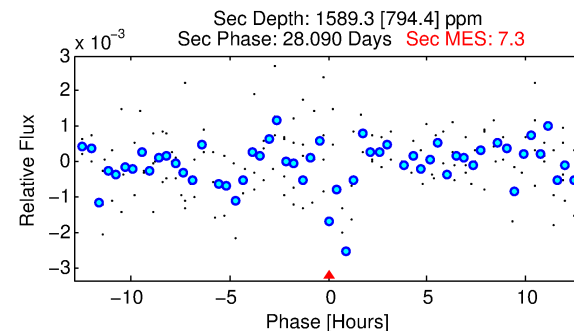
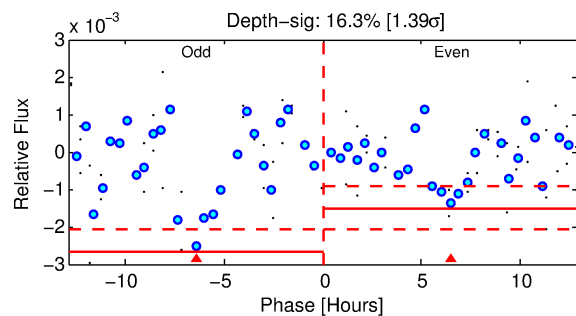
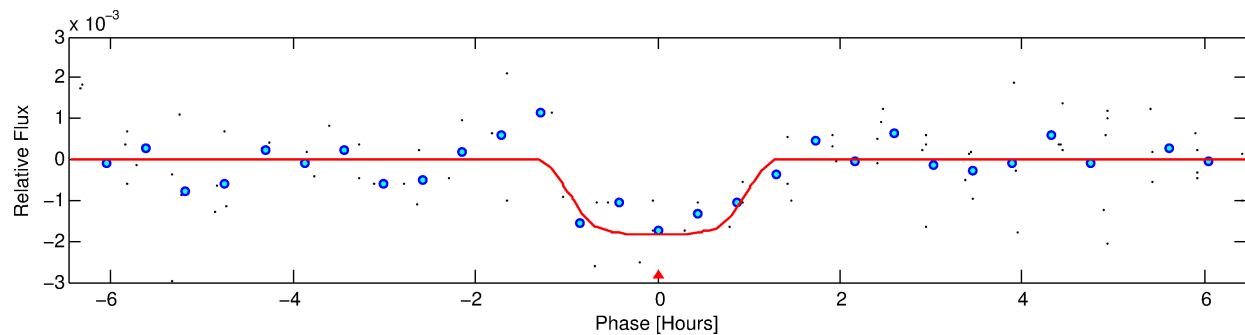
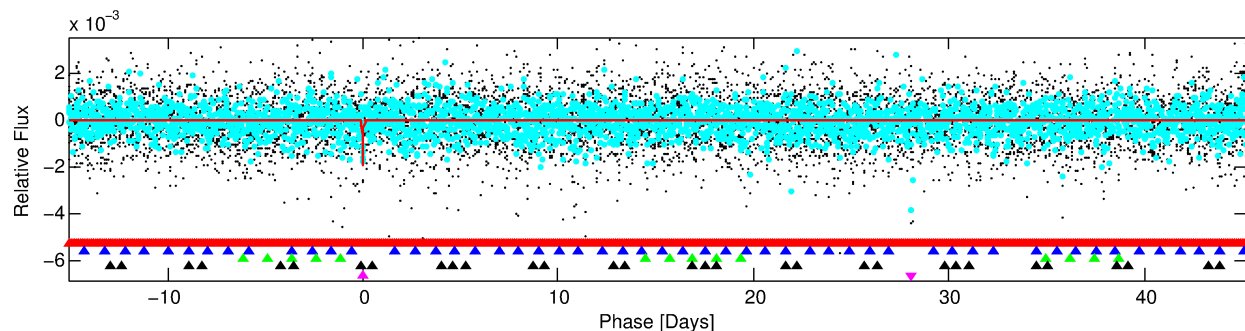
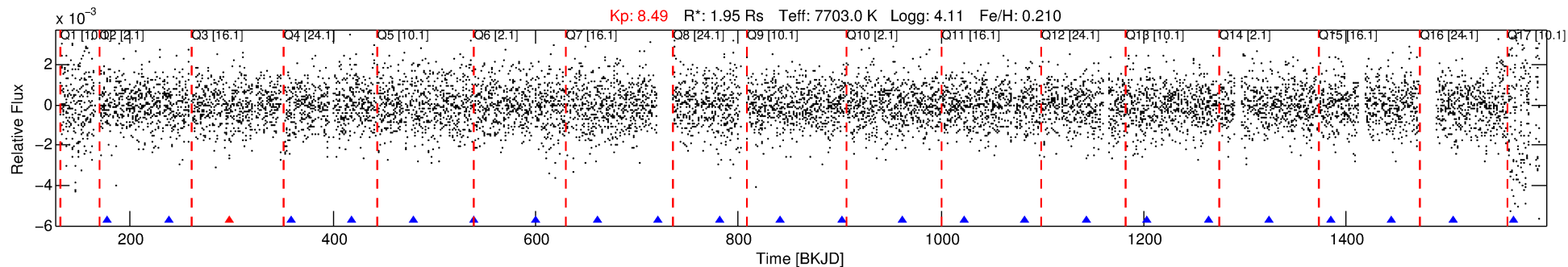
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003437940-05

No Significant Match Found

DV One-Page Summary

KIC: 3437940 Candidate: 5 of 5 Period: 60.344 d



DV Fit Results:

Period = 60.34386 [0.00100] d
Epoch = 177.7746 [0.0145] BKJD
Rp/R* = 0.0421 [0.0858]
a/R* = 170.82 [2116.66]
b = 0.67 [10.25]
Seff = 89.33 [21.60]
Teq = 784 [47] K
Rp = 8.96 [18.35] Re
a = 0.3668 [0.0559] AU
Ag = 1465.73 [6034.03] [0.24 σ]
Teffp = 7500 [7710] K [0.87 σ]

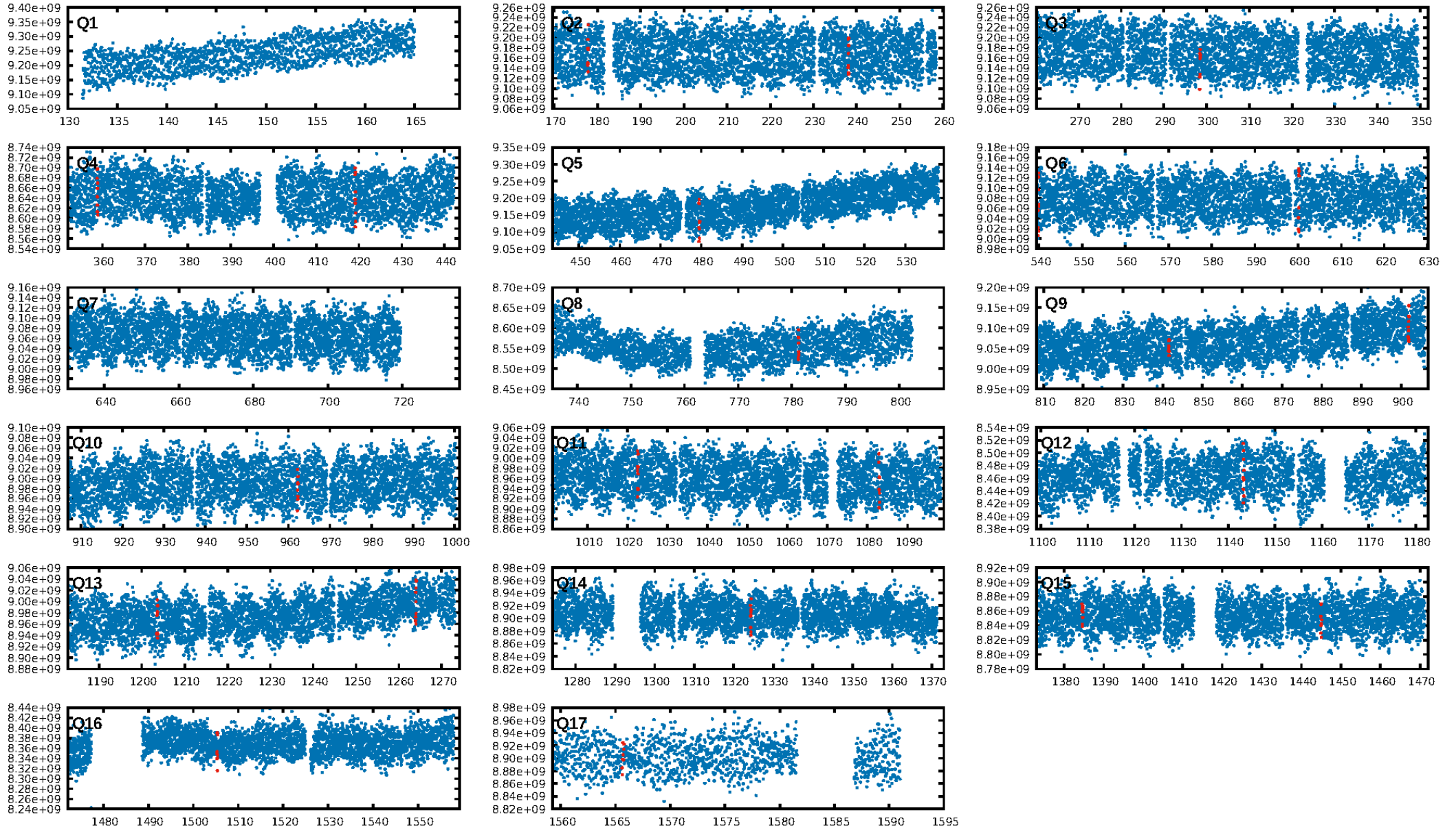
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [67.52 σ]
LongPeriod-sig: 100.0% [288.33 σ]
ModelChiSquare2-sig: 11.8%
ModelChiSquareGof-sig: 99.7%
Bootstrap-pfa: 3.78e-11
RollingBand-fgt: 0.83 [5/6]
GhostDiagnostic-chr: N/A
Centroid-sig: 48.1%
Centroid-so: 0.732 arcsec [2.03 σ]
OotOffset-rm: 1.131 arcsec [0.94 σ]
OotOffset-st: 3/3/4/4 [14]
KicOffset-rm: 4.317 arcsec [3.37 σ]
KicOffset-st: 3/3/4/4 [14]
DiffImageQuality-fgm: 0.00 [0/14]
DiffImageOverlap-fno: 0.00 [0/14]

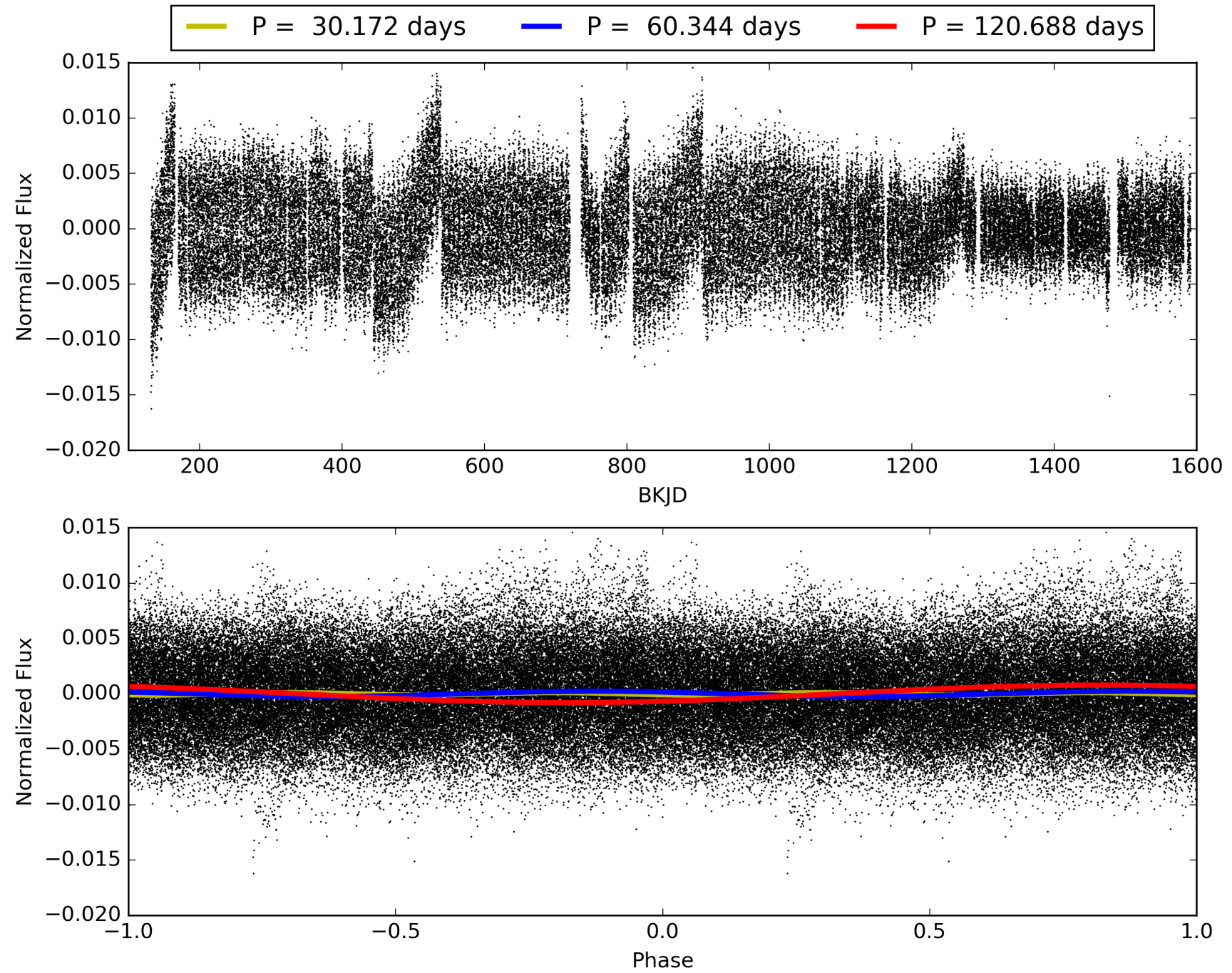
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 15:19:11 Z

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

TCE 003437940-05, PDC Light Curves

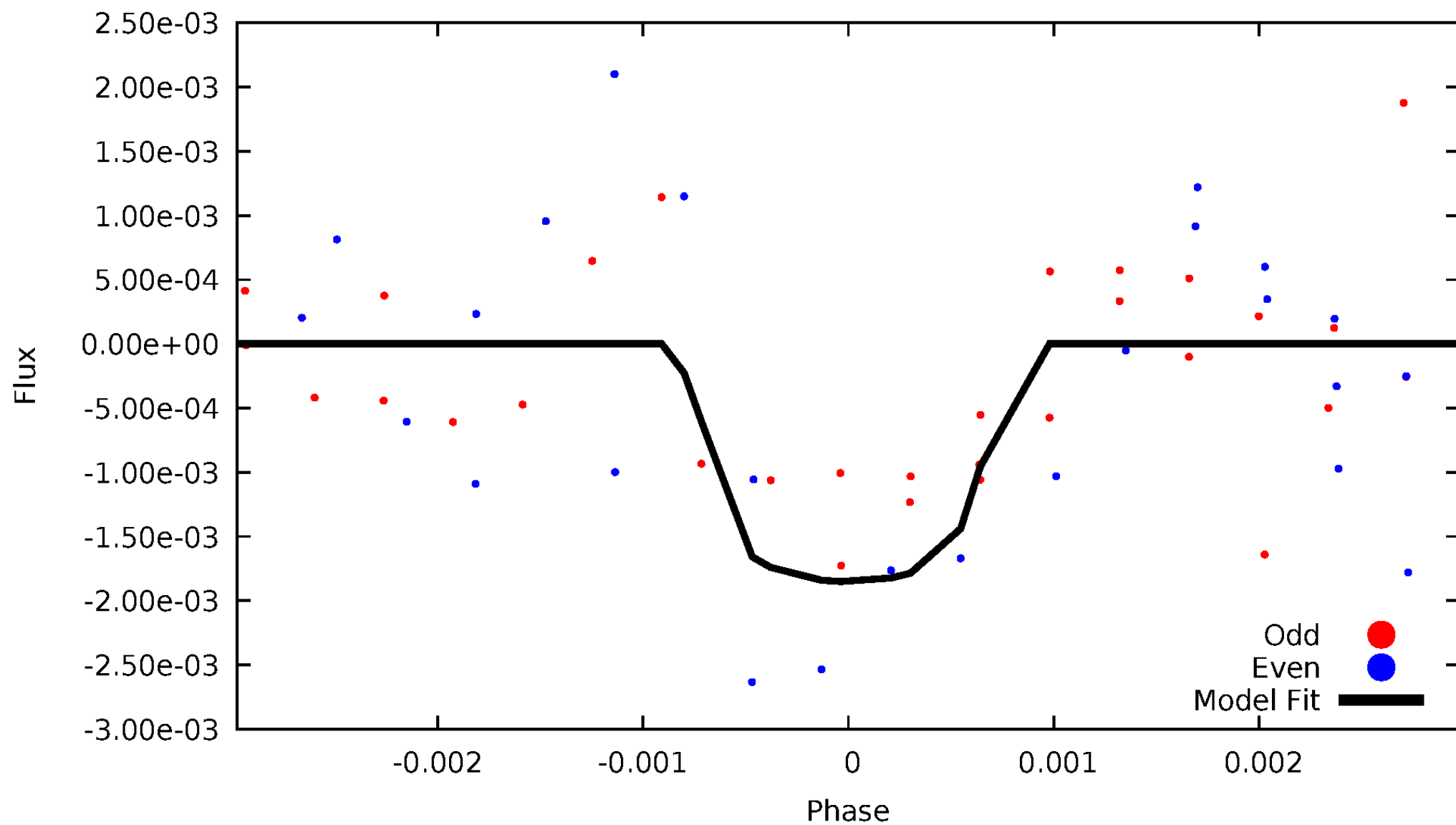


TCE 003437940-05



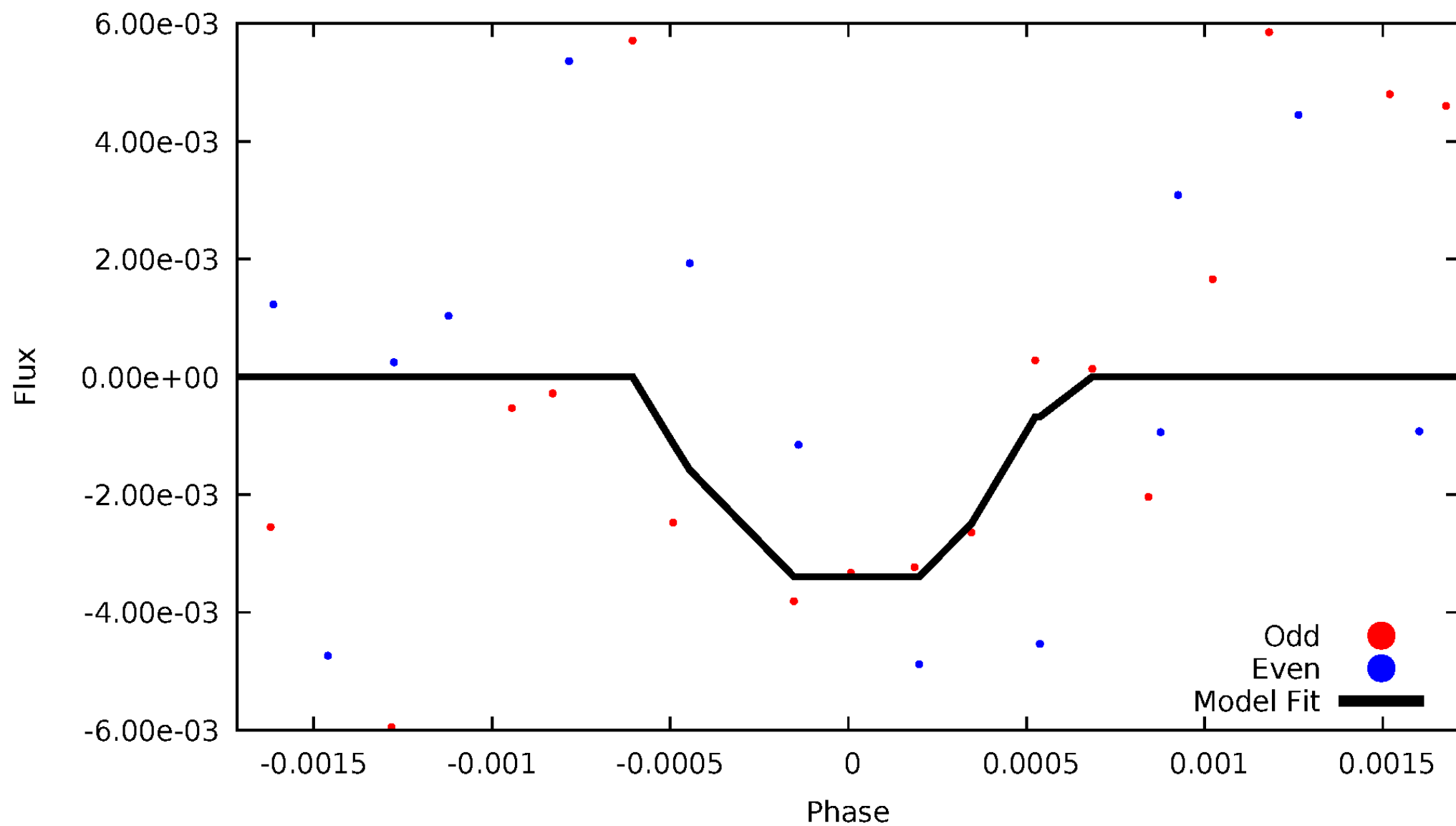
DV Odd/Even

TCE 003437940-05



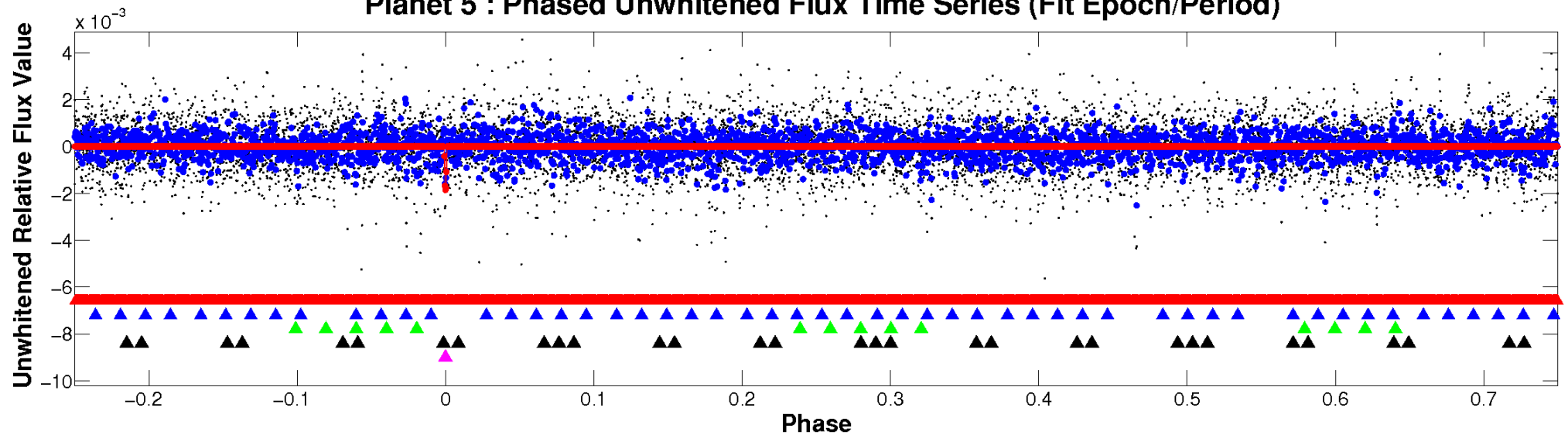
ALT Odd/Even

TCE 003437940-05

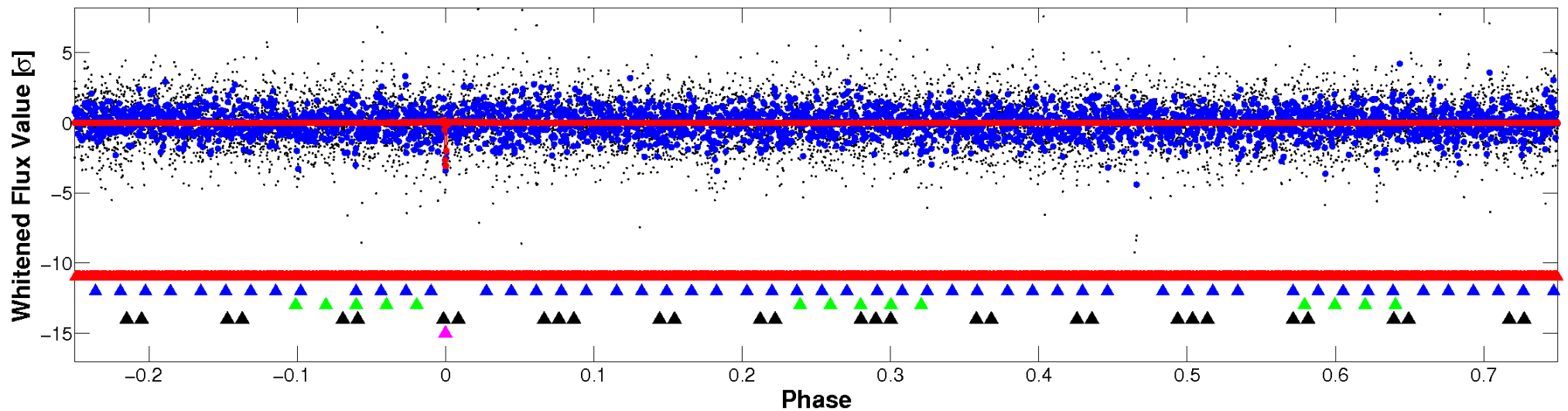


Non-Whitened Vs. Whitened Light Curve

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

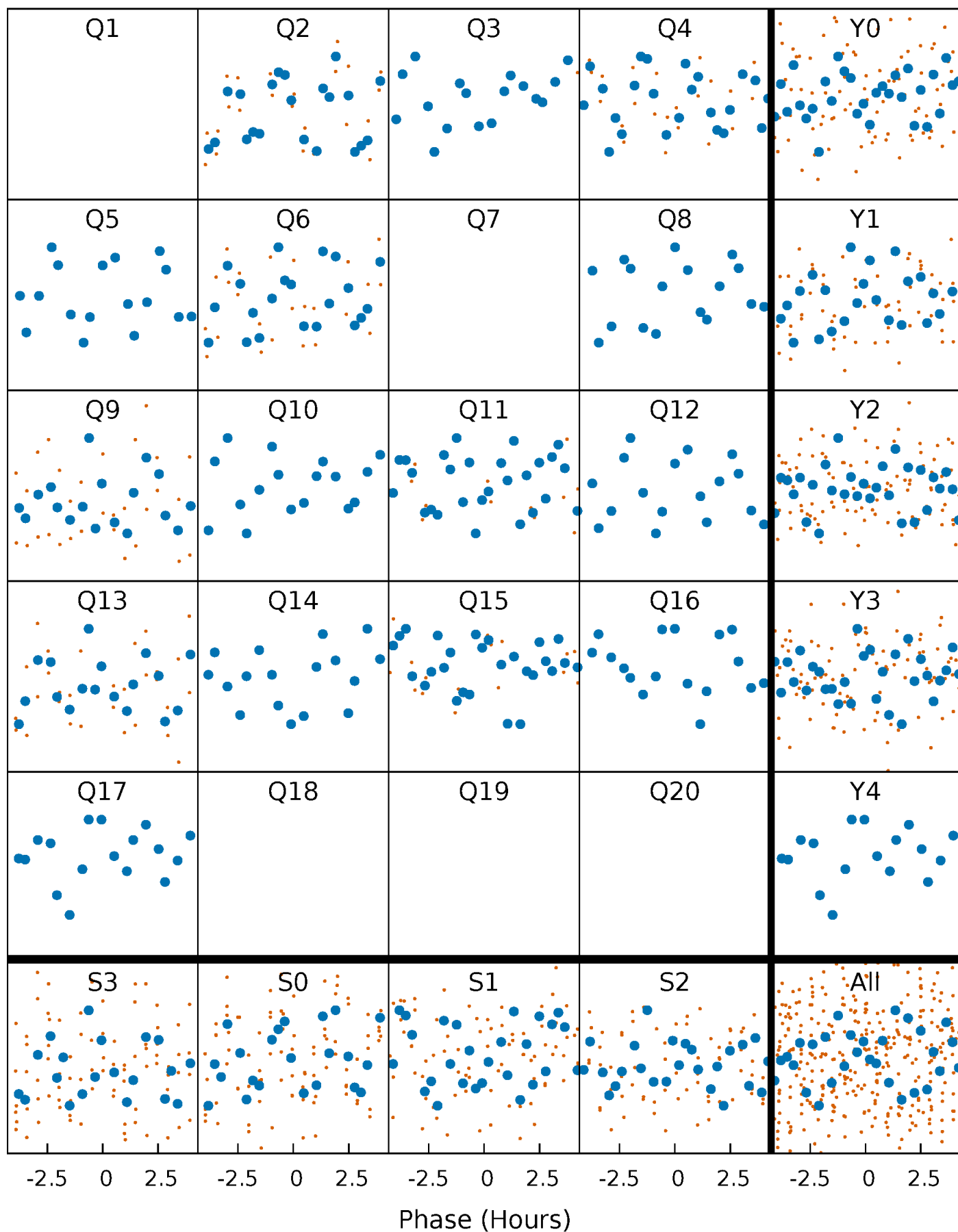


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



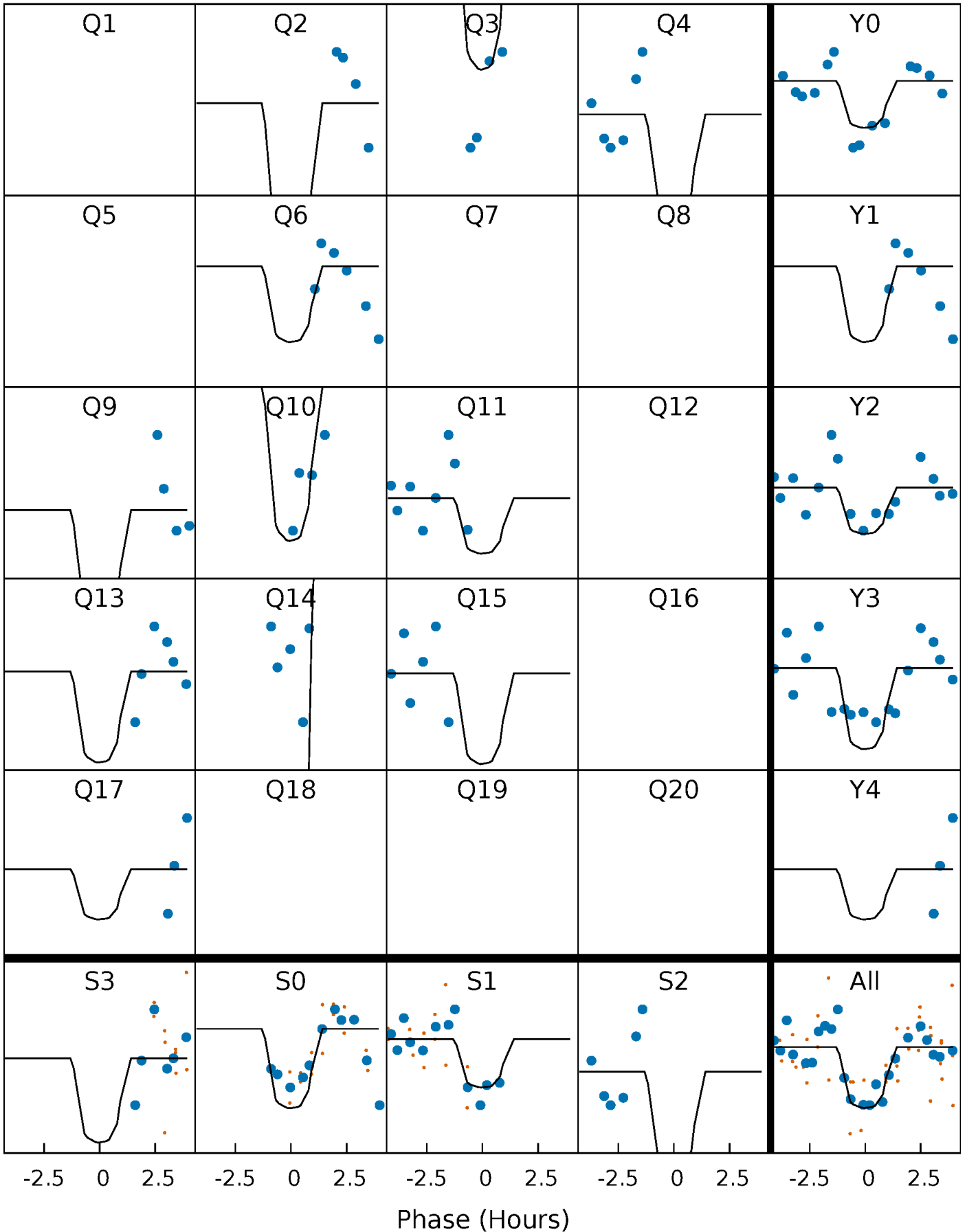
PDC Quarter-Phased Transit Curves

TCE 003437940-05 $P = 60.343864$ Days $T_0 = 177.774588$ (BKJD)



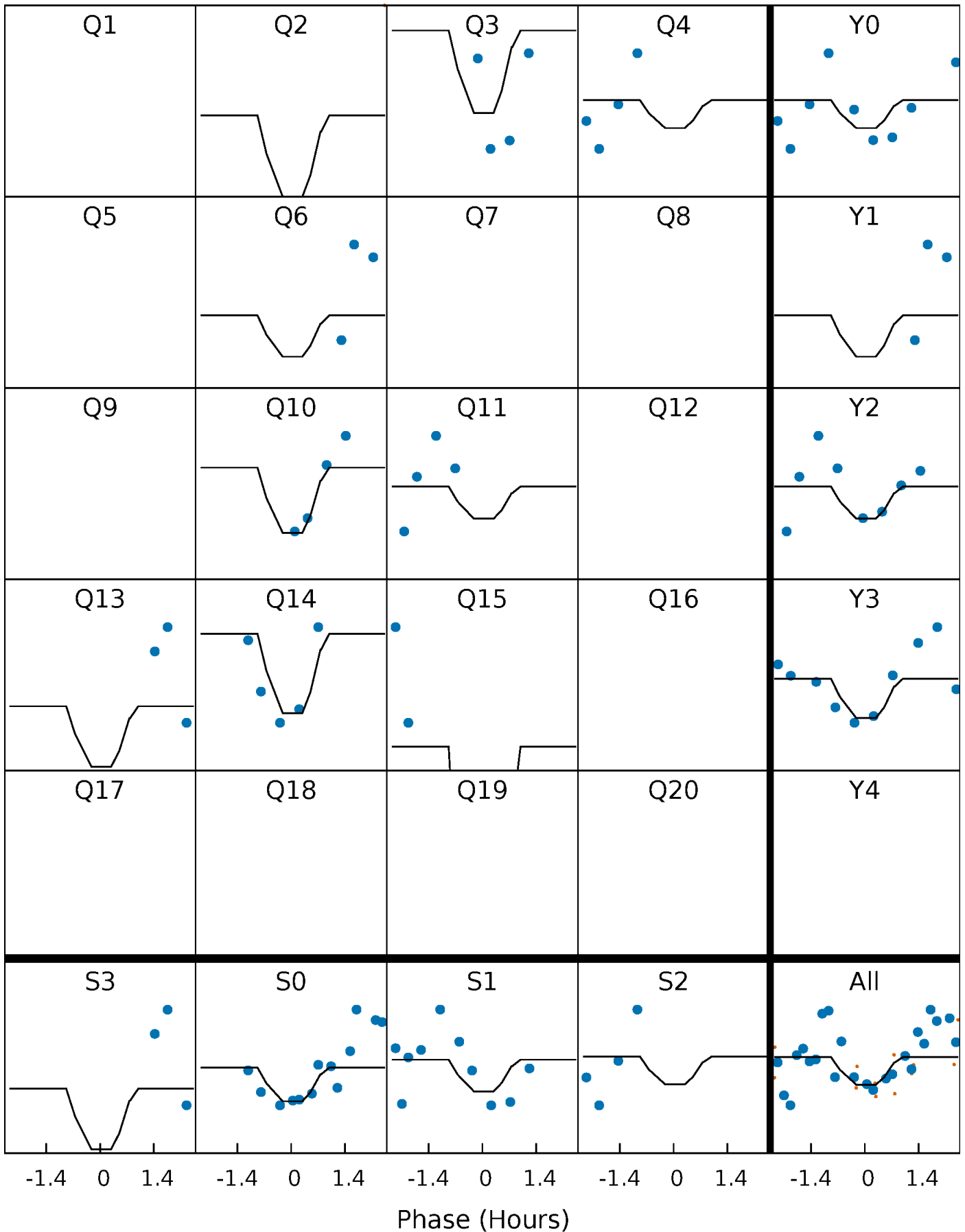
DV Quarter-Phased Transit Curves

TCE 003437940-05 $P = 60.343864$ Days $T_0 = 177.774588$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

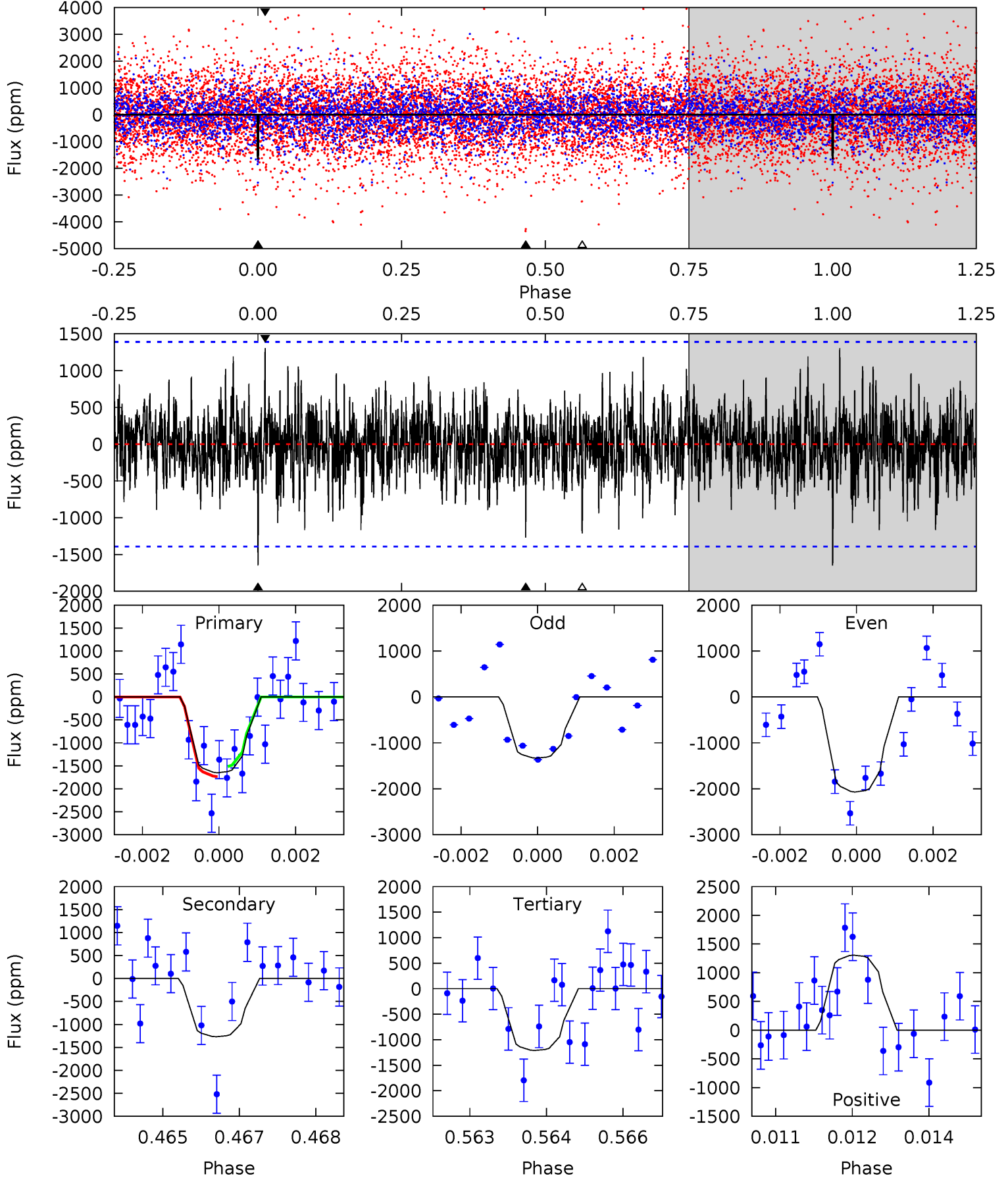
TCE 003437940-05 $P = 60.345438$ Days $T_0 = 177.751554$ (BKJD)



DV Model-Shift Uniqueness Test

003437940-05, P = 60.343864 Days, E = 117.430724 Days

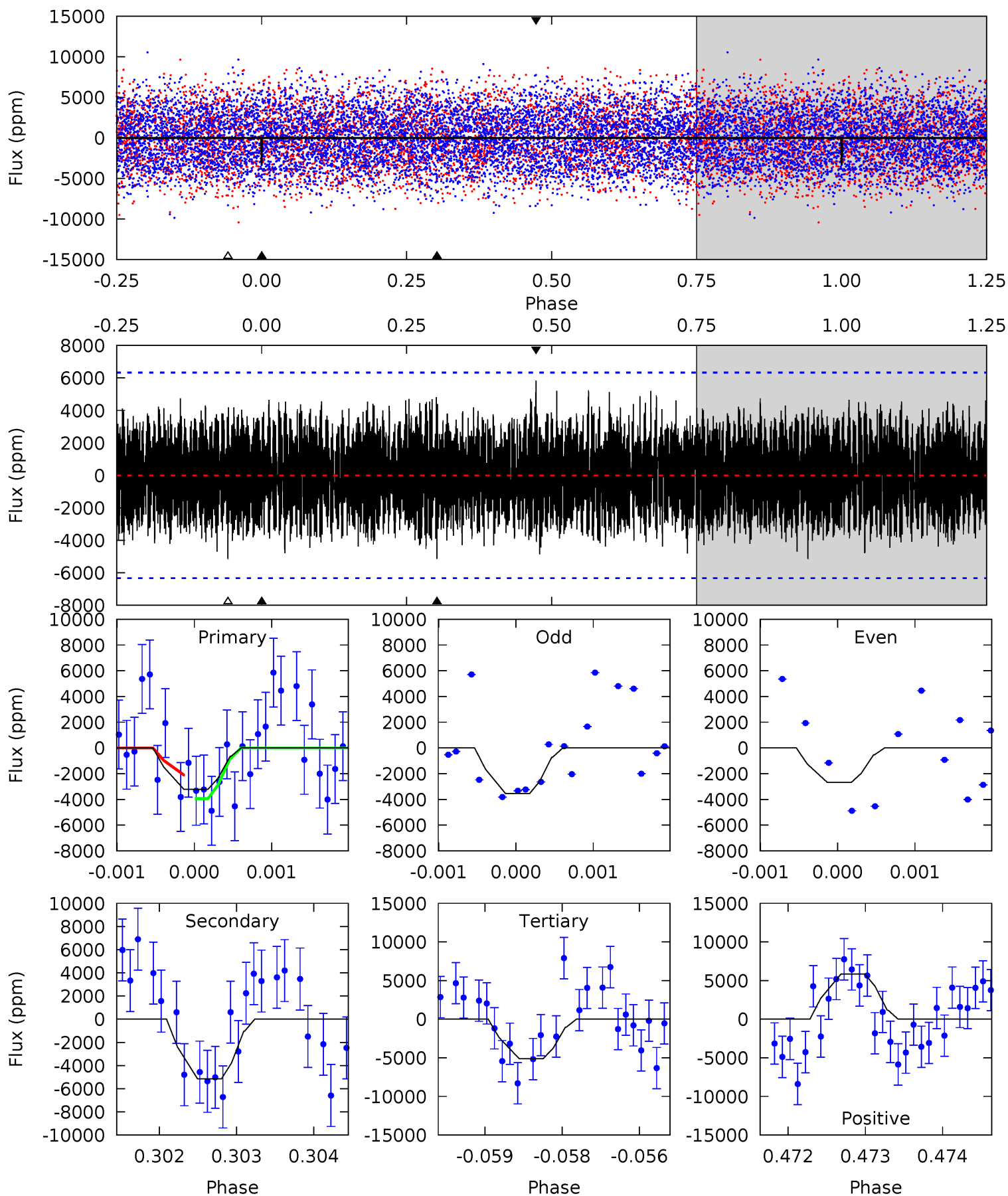
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.34	4.87	4.65	5.02	5.35	3.12	1.31	1.69	1.33	0.22	-0.15	1.36	1.11	0.44	0.42



Alt Model-Shift Uniqueness Test

003437940-05, P = 60.345438 Days, E = 117.406116 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.76	4.41	4.38	5.01	5.43	3.26	1.78	-1.62	-2.25	0.03	-0.59	0.36	1.02	0.53	0.68



Stellar Parameters For KIC 003437940

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7703^{+133}_{-191}	$4.114^{+0.080}_{-0.120}$	$0.210^{+0.150}_{-0.150}$	$1.952^{+0.355}_{-0.207}$	$1.807^{+0.126}_{-0.114}$	$0.342^{+0.116}_{-0.121}$
	+2%/-2%	+2%/-3%	+71%/-71%	+18%/-11%	+7%/-6%	+34%/-35%
Source	SPE4	SPE4	SPE4	DSEP		

KIC = Kepler Input Catalog; PHO = Photometry; SPE = Spectroscopy; AST = Asteroseismology
 TRA = Transits; DESP = Dartmouth Models; MULT = Multiple Models

Secondary Eclipse Parameters for KIC 003437940-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1268 ± 260	$15.00^{+15.20}_{-9.78}$	1094^{+53}_{-40}	5392^{+4234}_{-1309}	397^{+2983}_{-298}
Alt.	-5142 ± 1165	$19.11^{+16.31}_{-12.18}$	1095^{+49}_{-37}	6737^{+6963}_{-1709}	1016^{+7069}_{-730}

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

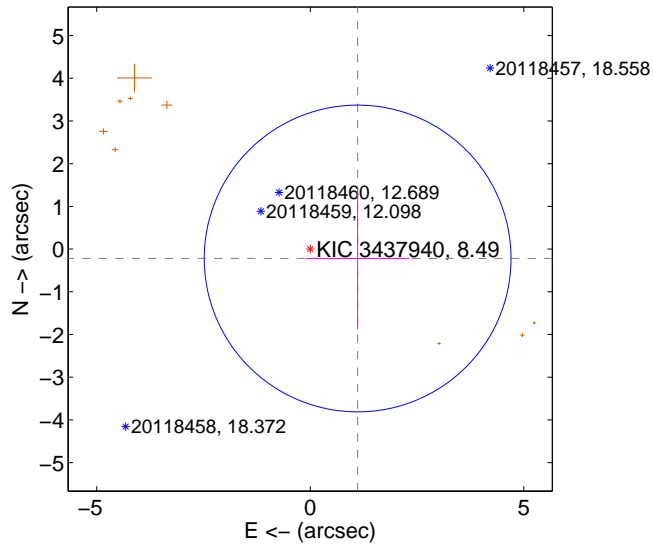
Supplemental centroid analysis for 003437940-05. **Kepler magnitude: 8.49.** Transit SNR 9.59

There are 0 quarters with good PRF difference image offsets

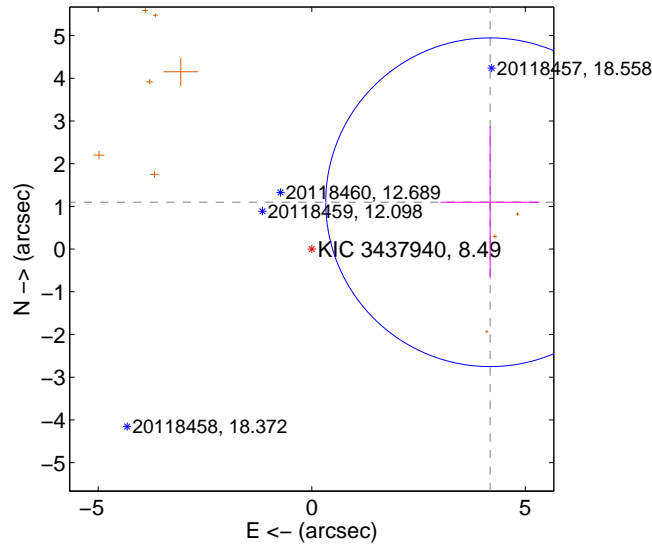
The OOT PRF centroid is offset from the target star catalog position by about 2.02 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.131 ± 1.197	0.94	-1.109 ± 1.202	-0.220 ± 1.662
PRF-fit source offset from KIC position	4.317 ± 1.283	3.37	-4.175 ± 1.159	1.097 ± 1.781
photometric centroid source offset	0.73 ± 0.36	2.03	-0.25 ± 0.23	0.69 ± 0.37

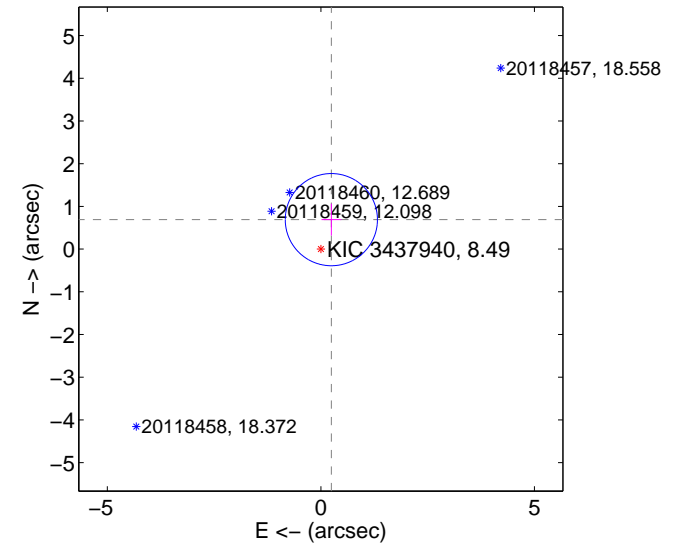
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

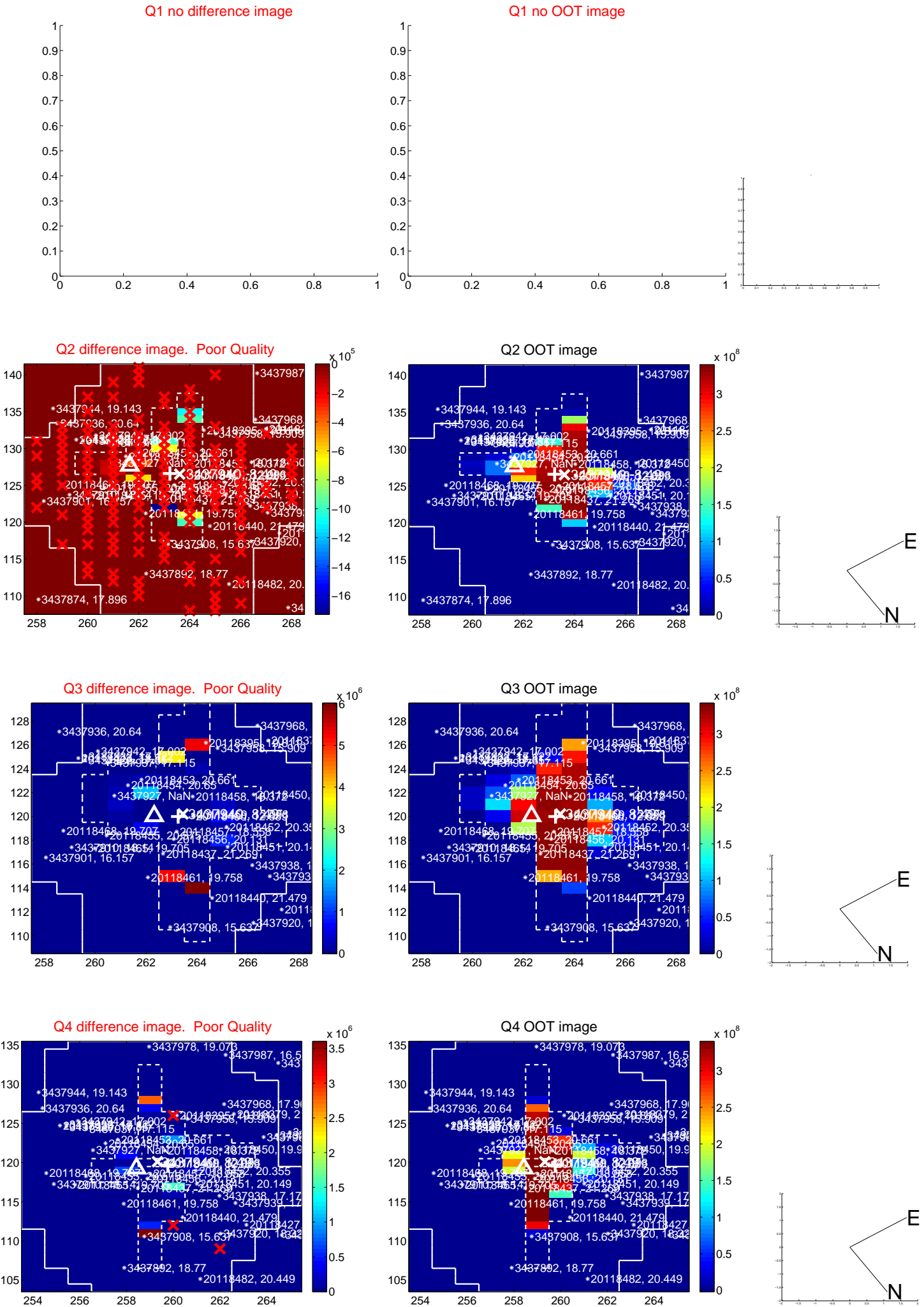


offset from photometric centroids

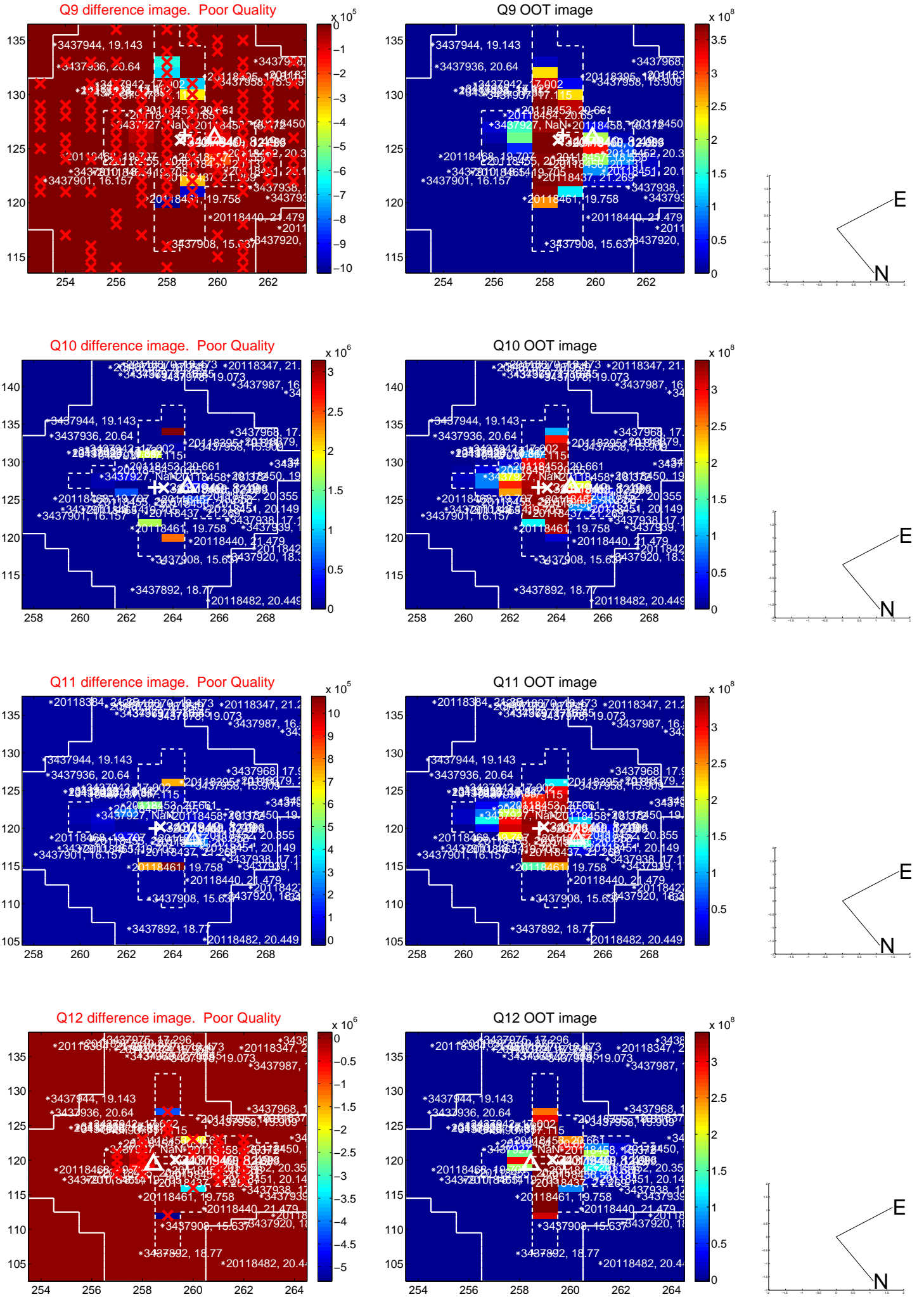


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

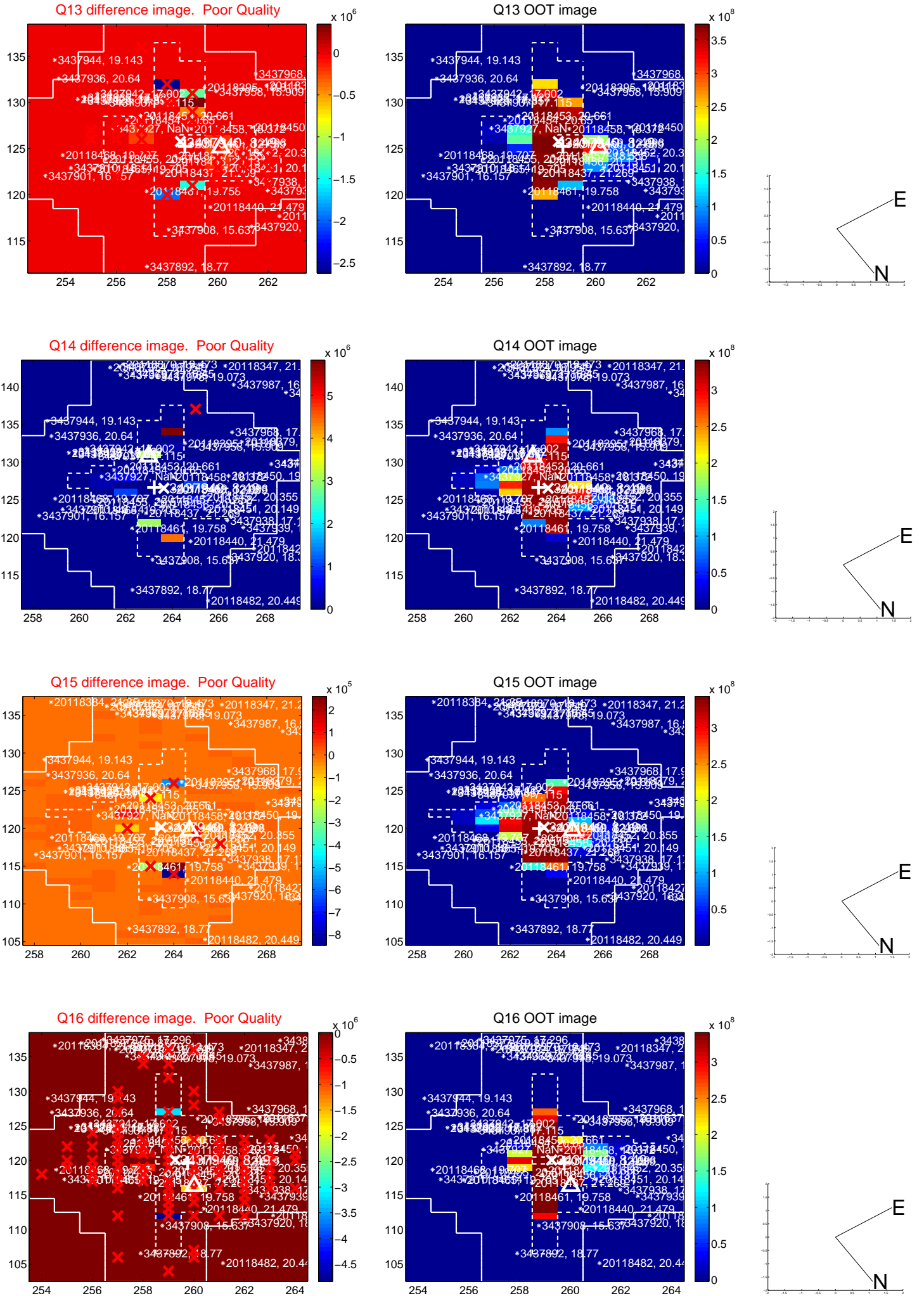
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



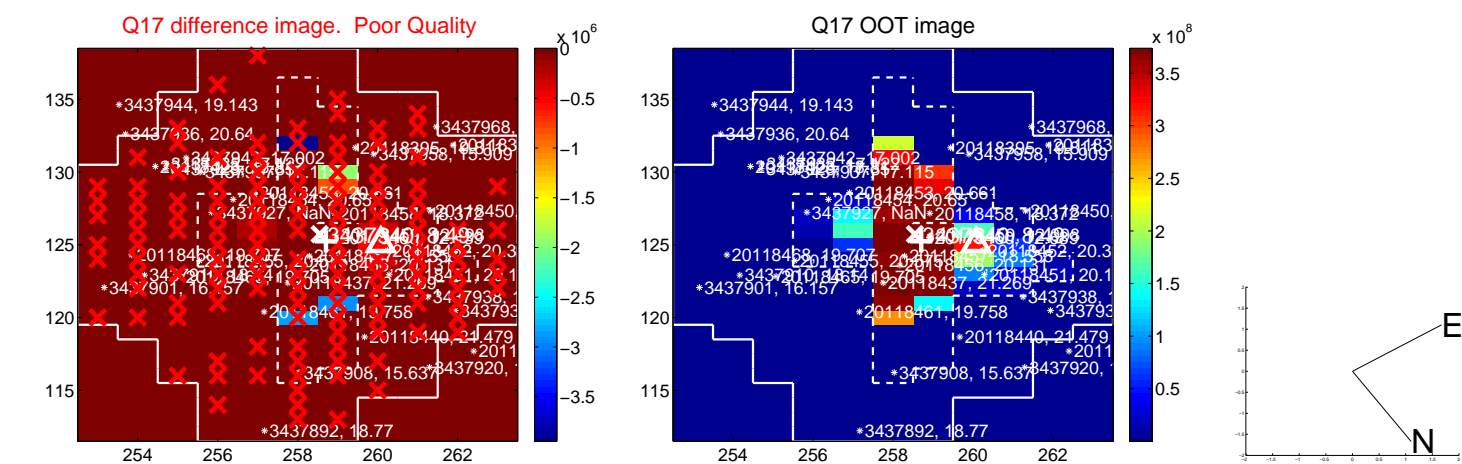
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



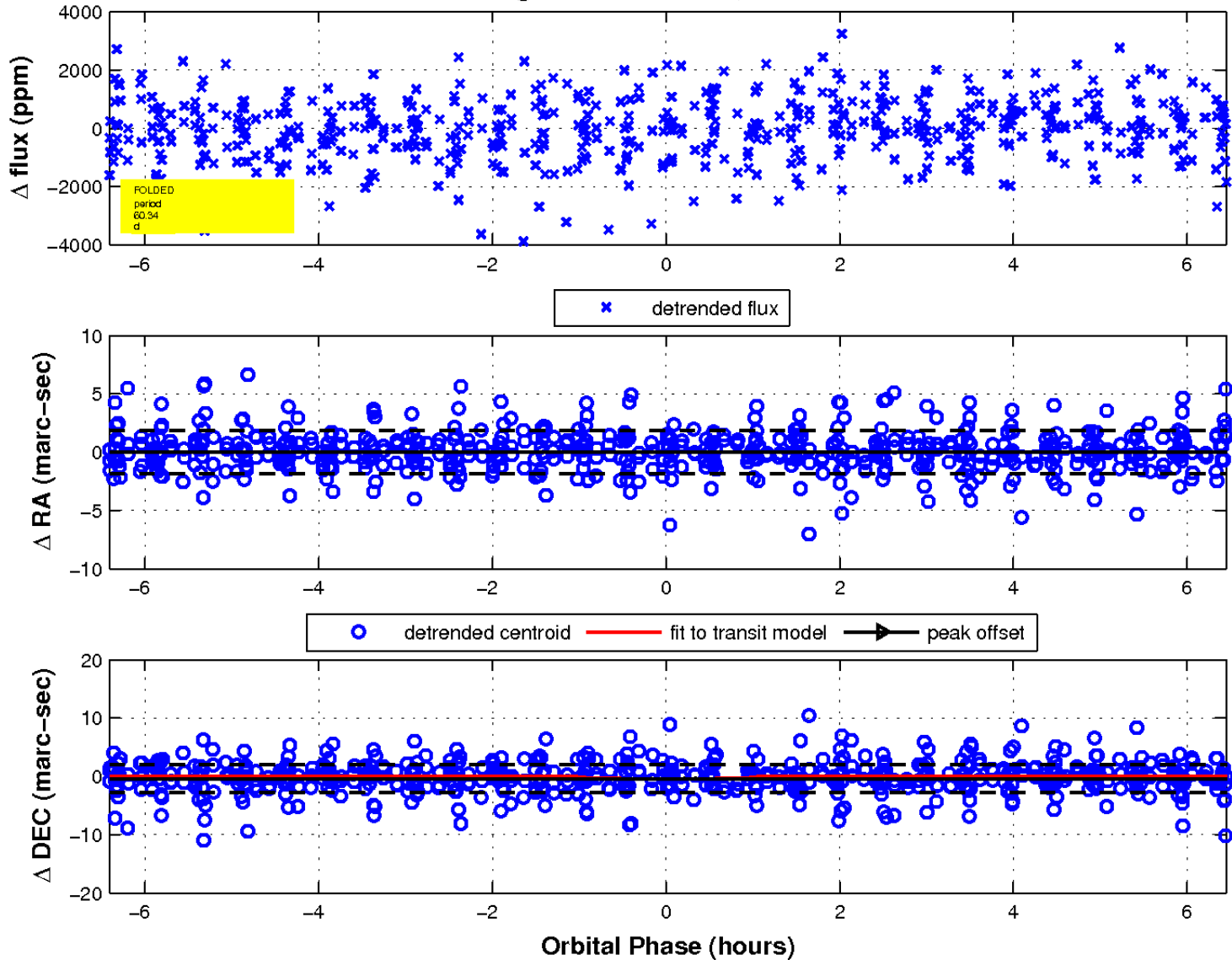
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 5 of 5



UKIRT Image

Declination

