

KIC 003650040

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})
003650040-01	OBS	No	1.882292	132.493171	14.5	12.399	10.0	2.5	1.76	6942	0.69	5639.68
003650040-03	OBS	No	66.229047	195.393080	543.6	13.582	8.7	8.1	1.76	6942	4.81	48.91

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003650040-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
003650040-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

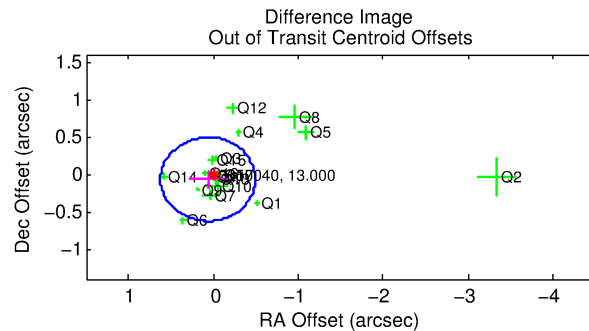
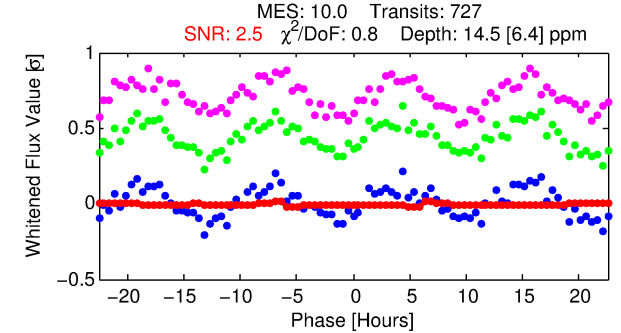
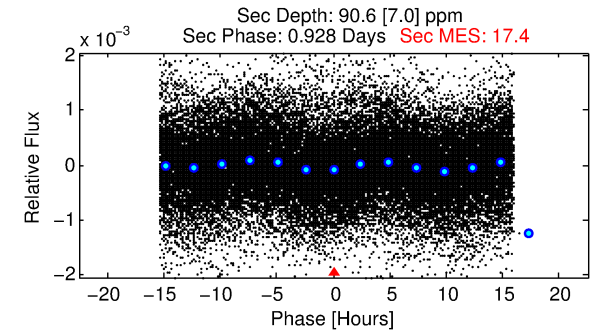
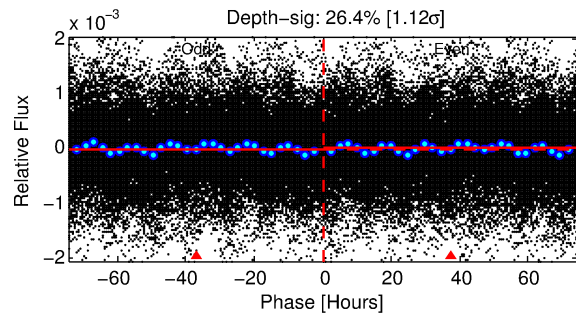
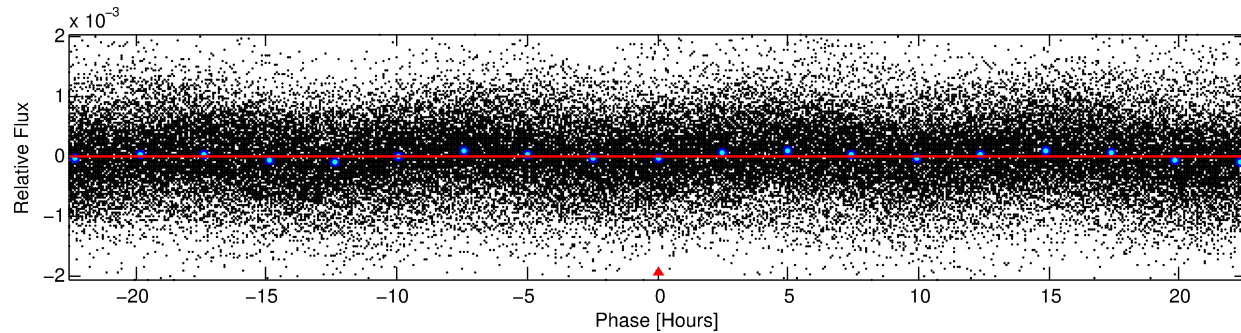
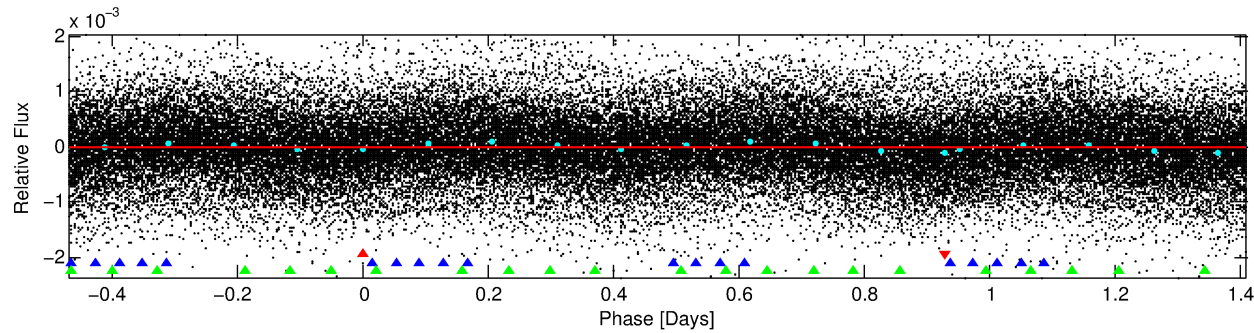
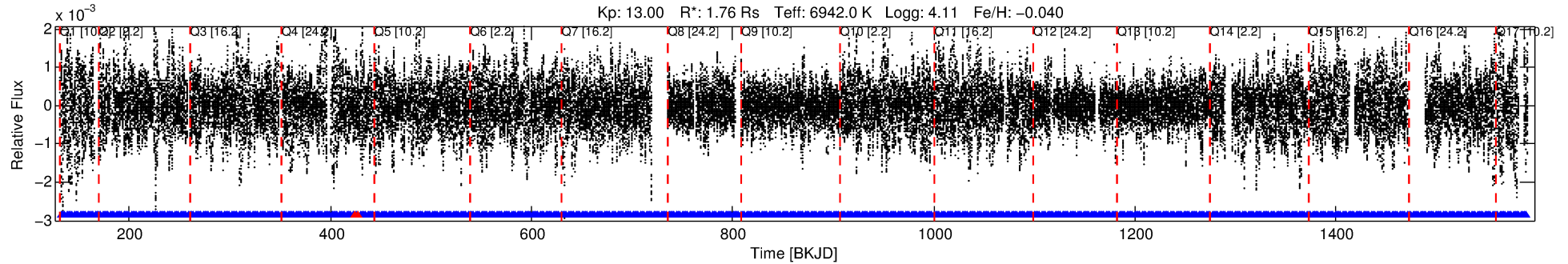
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003650040-01

No Significant Match Found

DV One-Page Summary

KIC: 3650040 Candidate: 1 of 3 Period: 1.882 d



DV Fit Results:

Period = 1.88229 [0.00005] d
Epoch = 132.4932 [0.0098] BKJD
Rp/R* = 0.0036 [0.0045]
a/R* = 1.28 [3.71]
b = 0.37 [17.03]
Seff = 5639.68 [1198.23]
Teq = 2210 [117] K
Rp = 0.69 [0.87] Re
a = 0.0338 [0.0049] AU
Ag = 121.00 [306.12] [0.39 σ]
Teffp = 11331 [7145] K [1.28 σ]

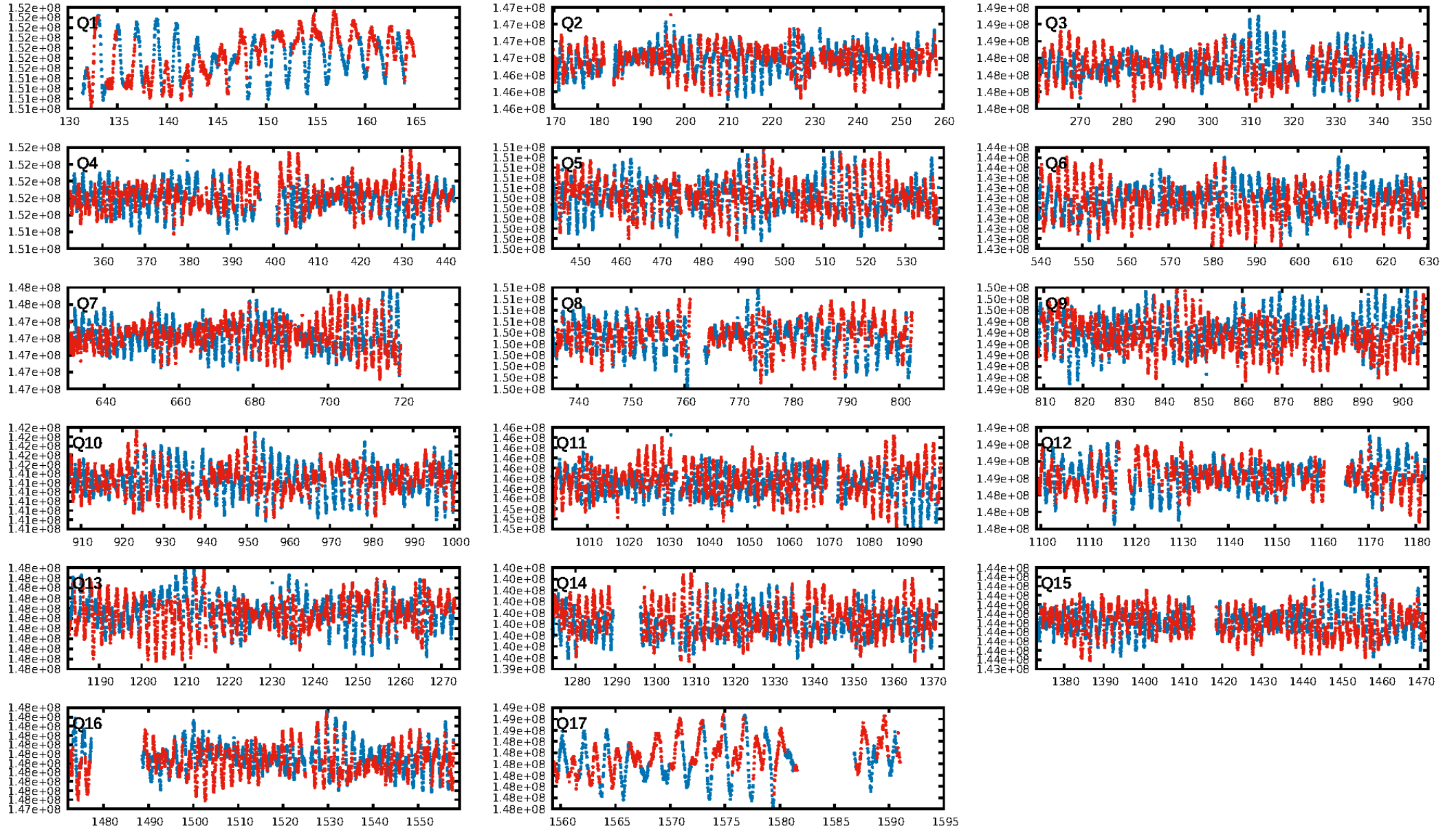
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [83.97 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.62e-08
RollingBand-fgt: 1.00 [692/694]
GhostDiagnostic-chr: 3.014
Centroid-sig: 12.4%
Centroid-so: 1.912 arcsec [1.34 σ]
OotOffset-rm: 0.094 arcsec [0.50 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-rm: 0.117 arcsec [0.61 σ]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.41 [7/17]
DiffImageOverlap-fno: 1.00 [17/17]

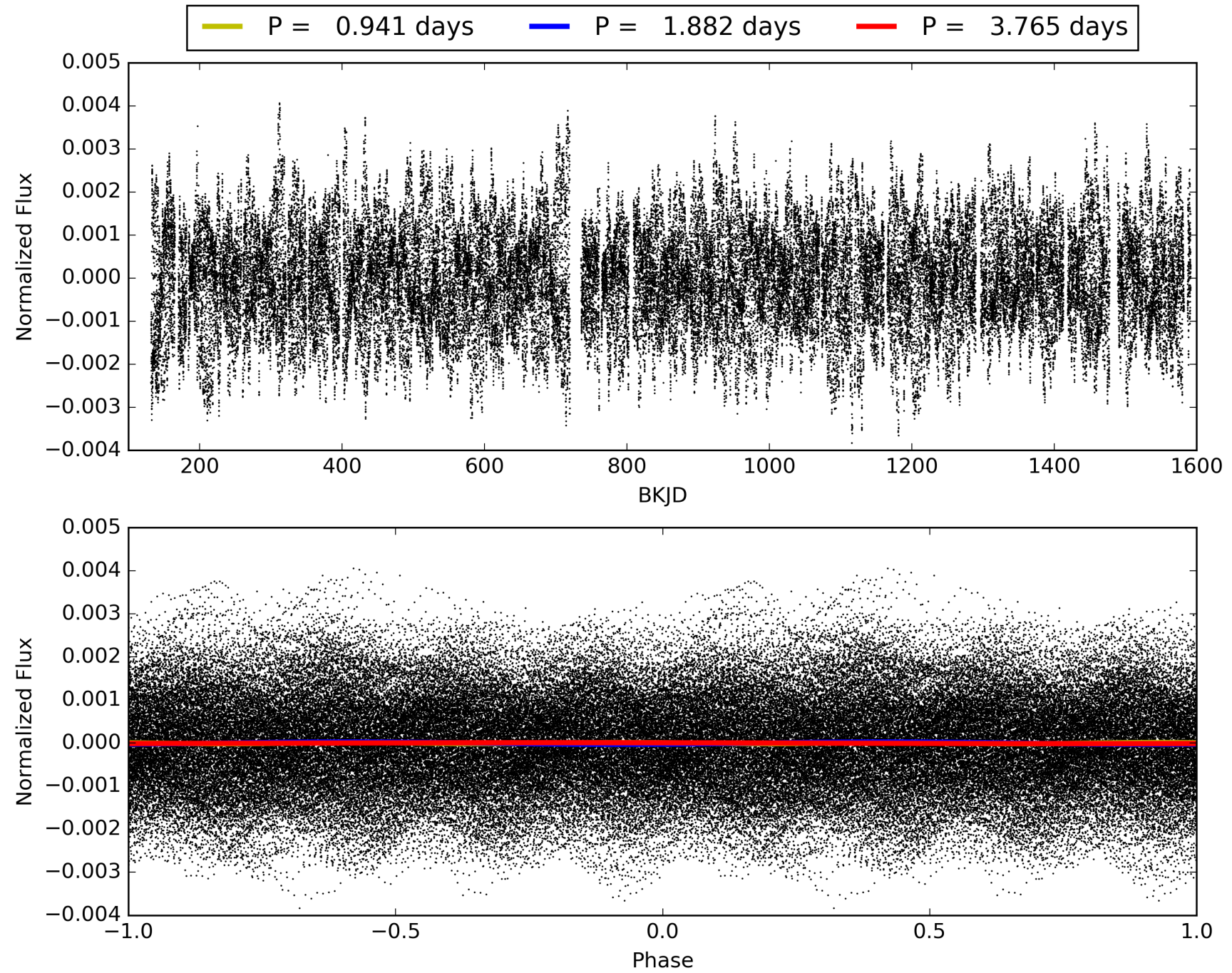
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:06:16 Z

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

TCE 003650040-01, PDC Light Curves

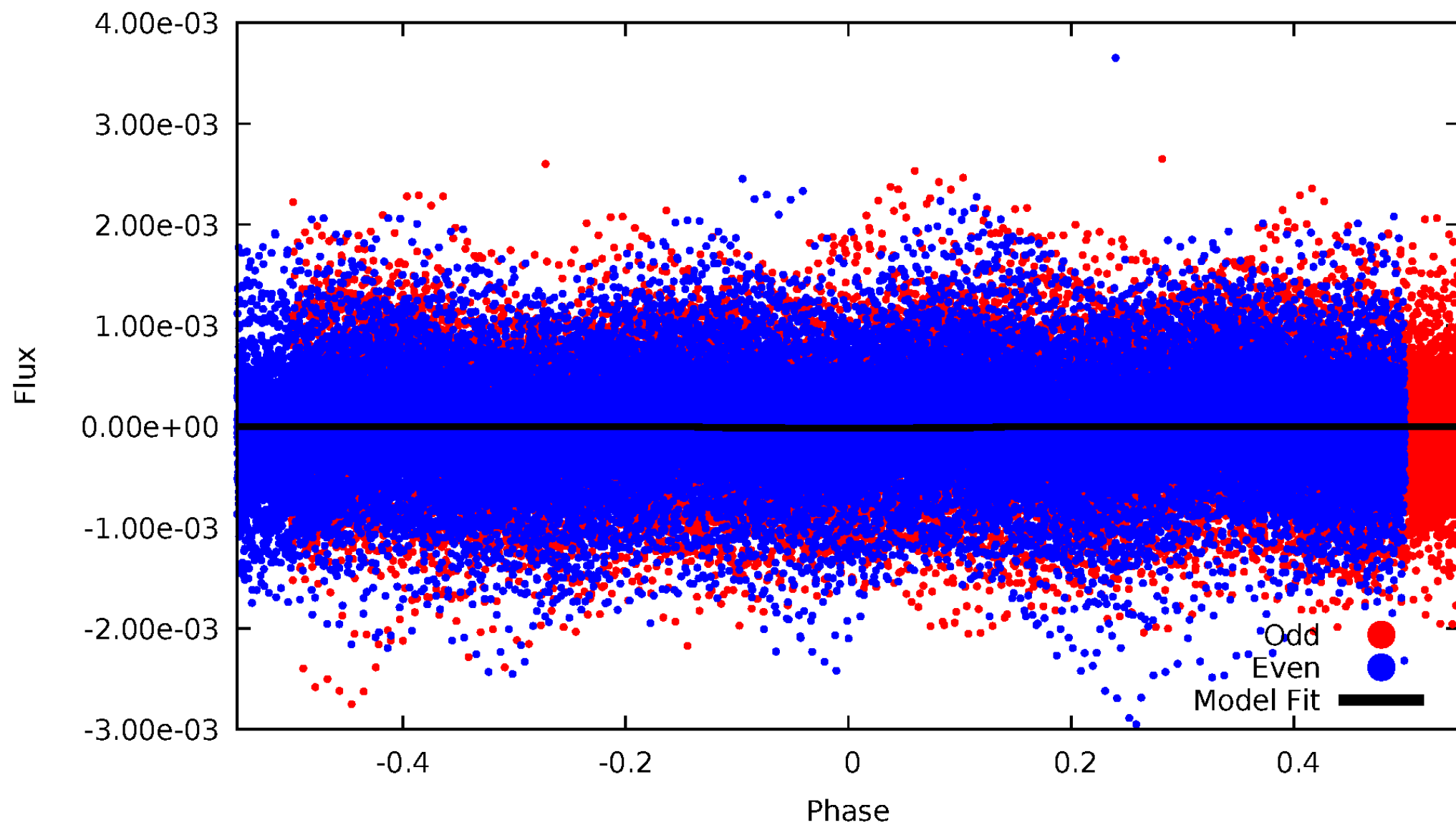


TCE 003650040-01



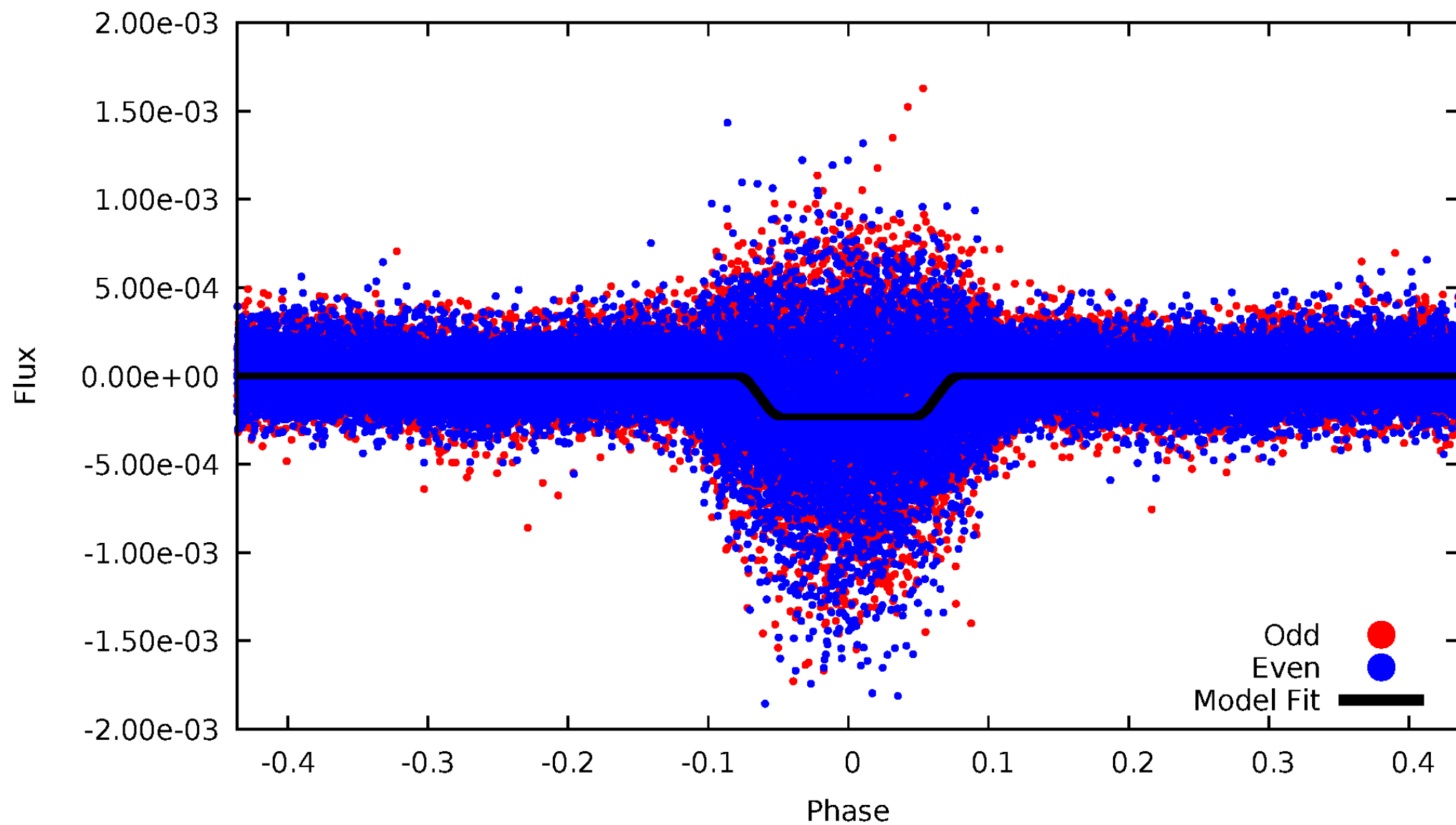
DV Odd/Even

TCE 003650040-01

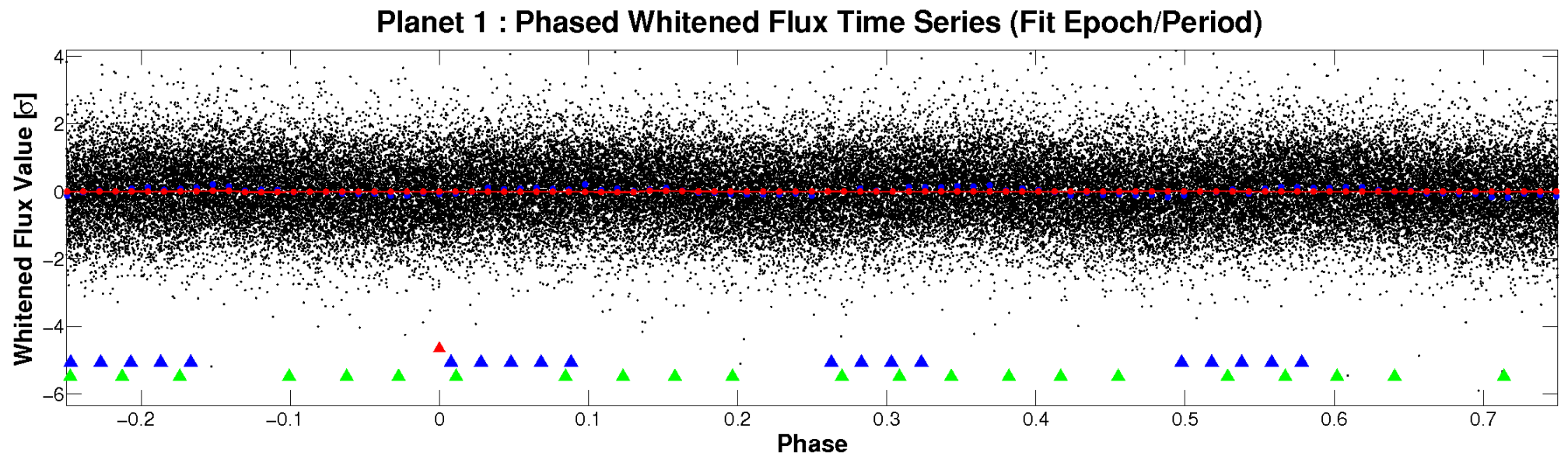
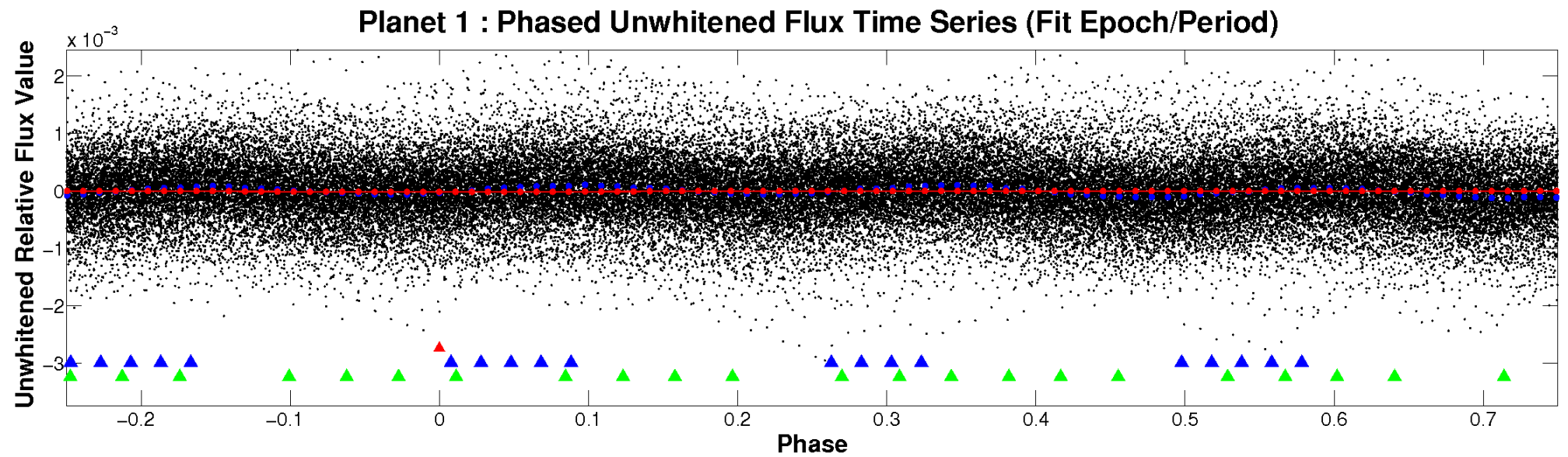


ALT Odd/Even

TCE 003650040-01

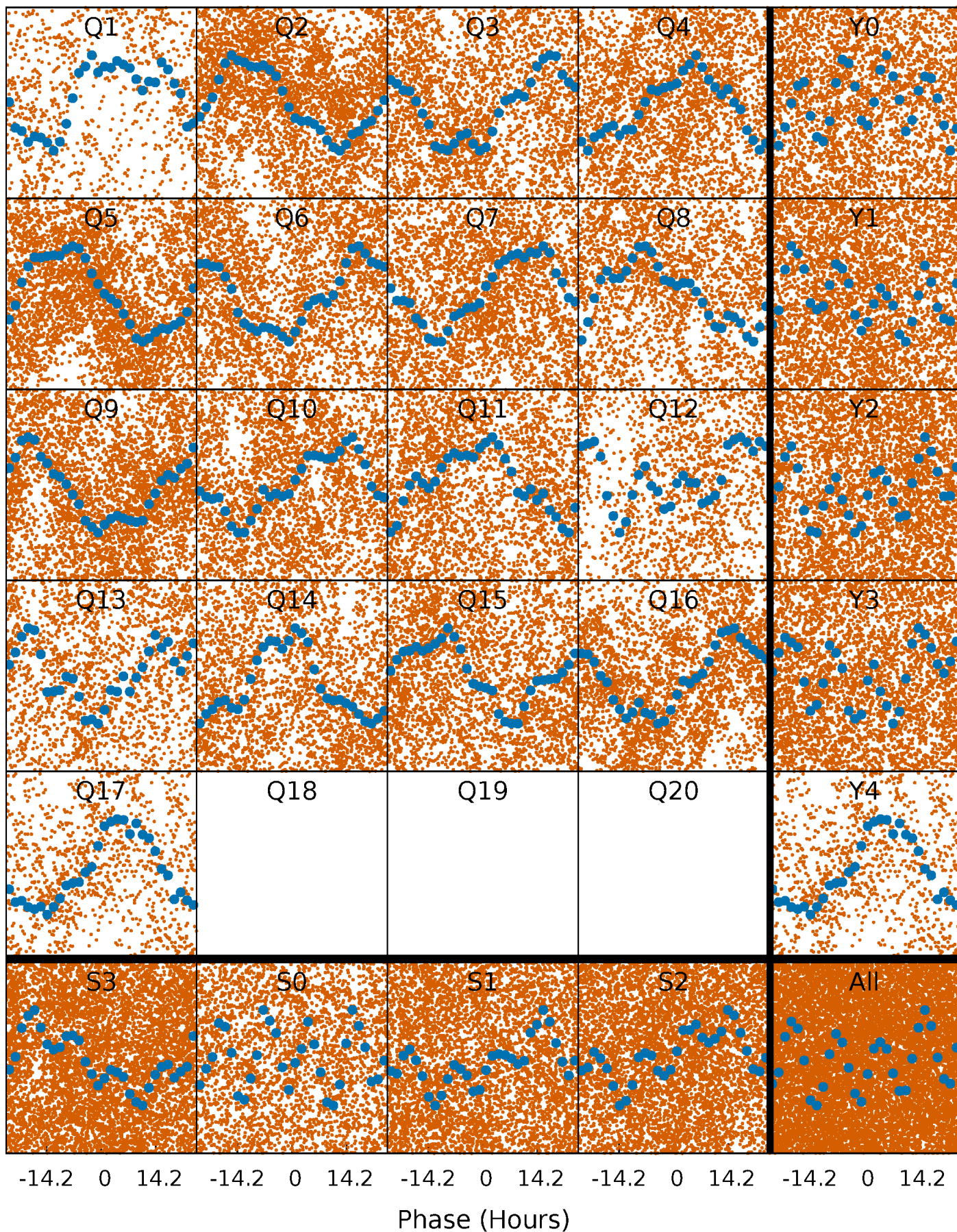


Non-Whitened Vs. Whitened Light Curve



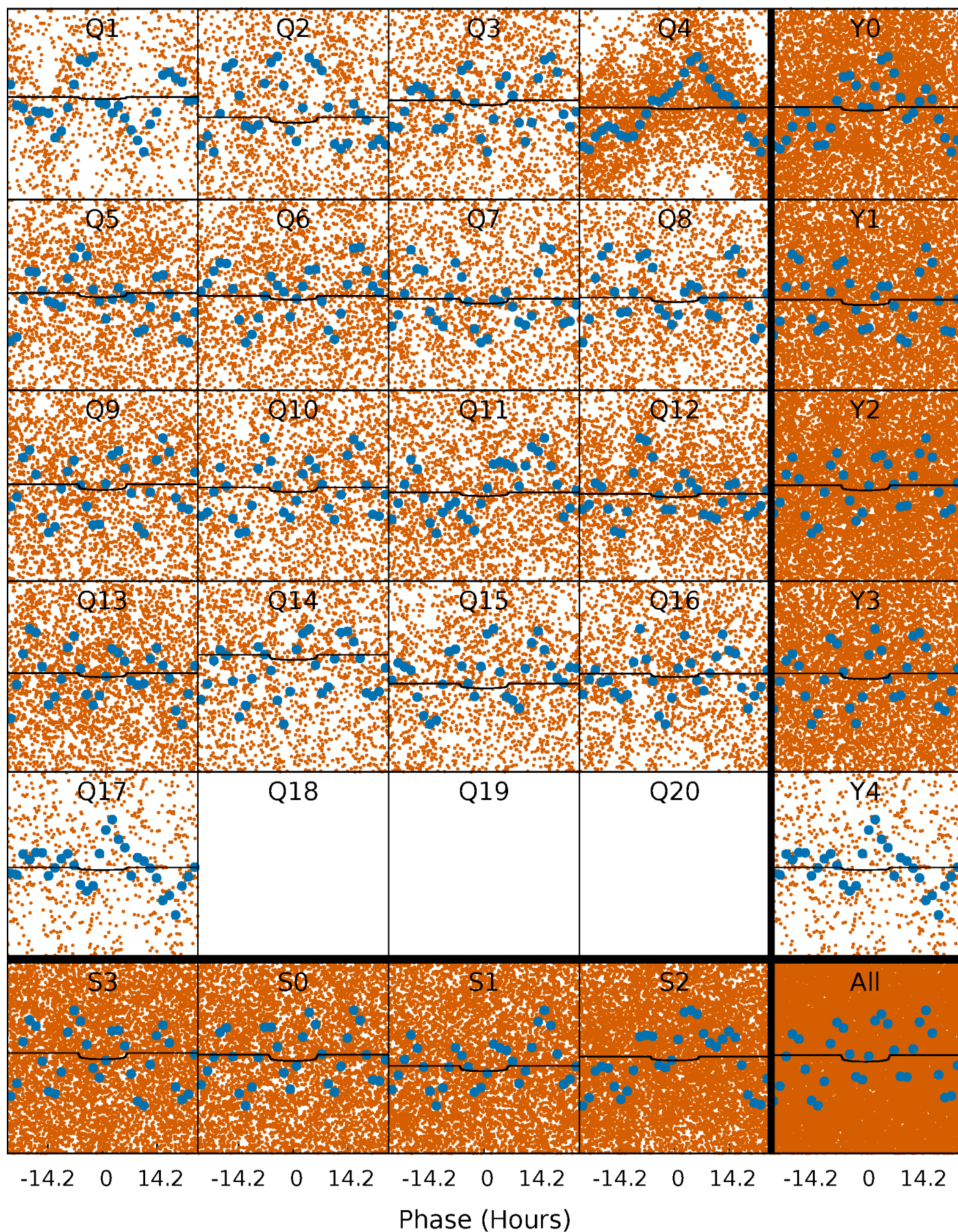
PDC Quarter-Phased Transit Curves

TCE 003650040-01 P= 1.882292 Days $T_0=132.493171$ (BKJD)



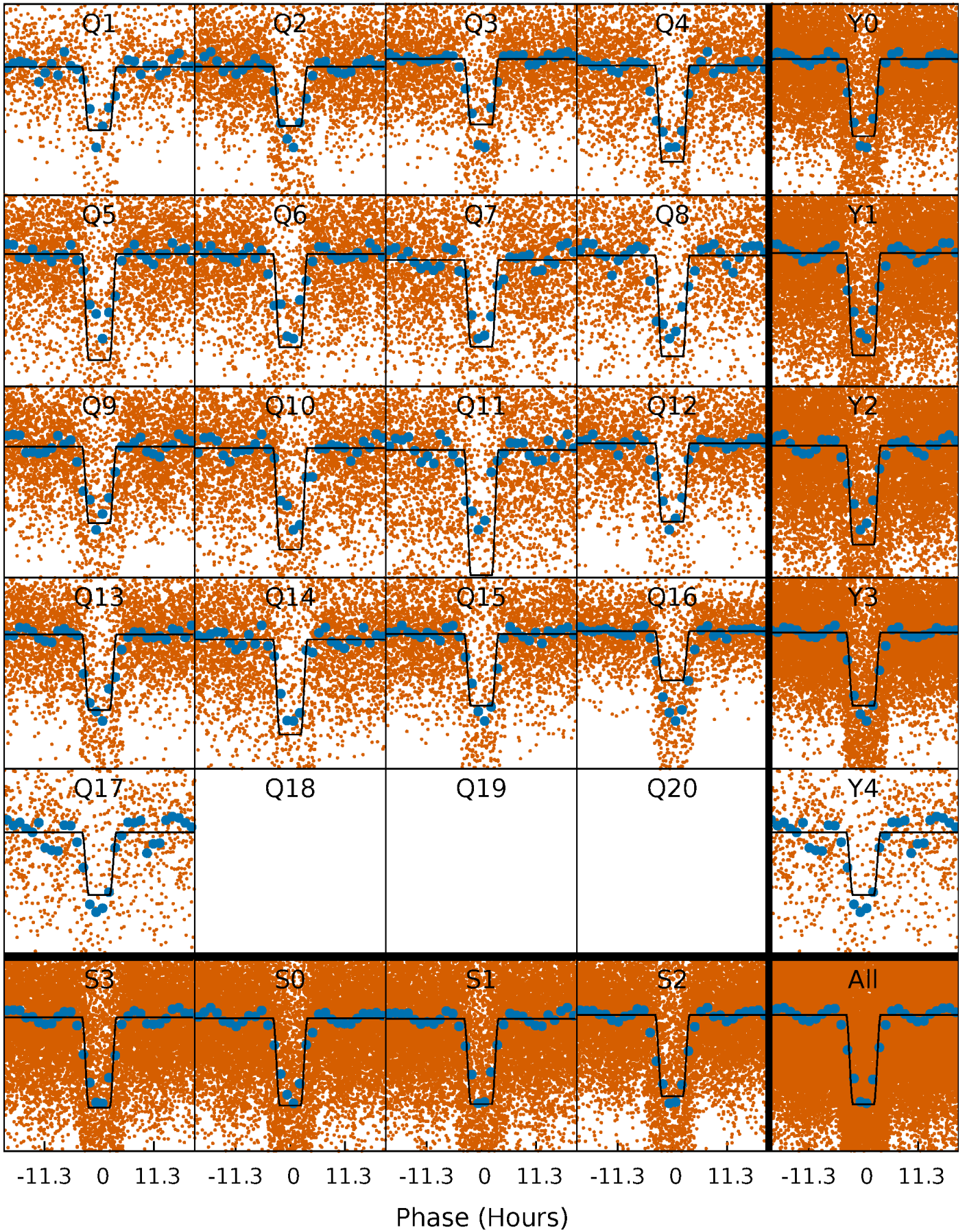
DV Quarter-Phased Transit Curves

TCE 003650040-01 P= 1.882292 Days $T_0=132.493171$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

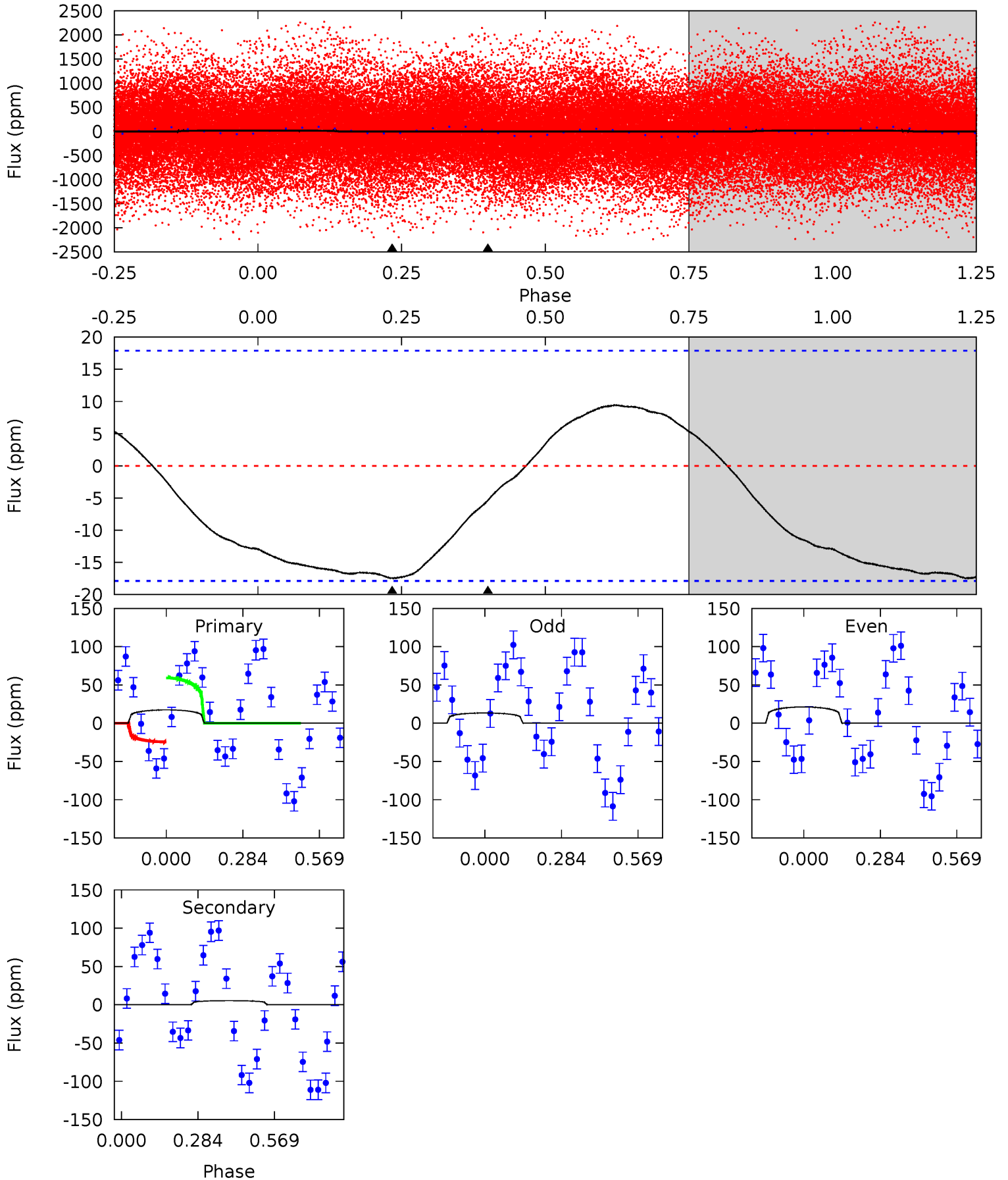
TCE 003650040-01 P= 1.882061 Days $T_0=132.520273$ (BKJD)



DV Model-Shift Uniqueness Test

003650040-01, P = 1.882292 Days, E = 130.610879 Days

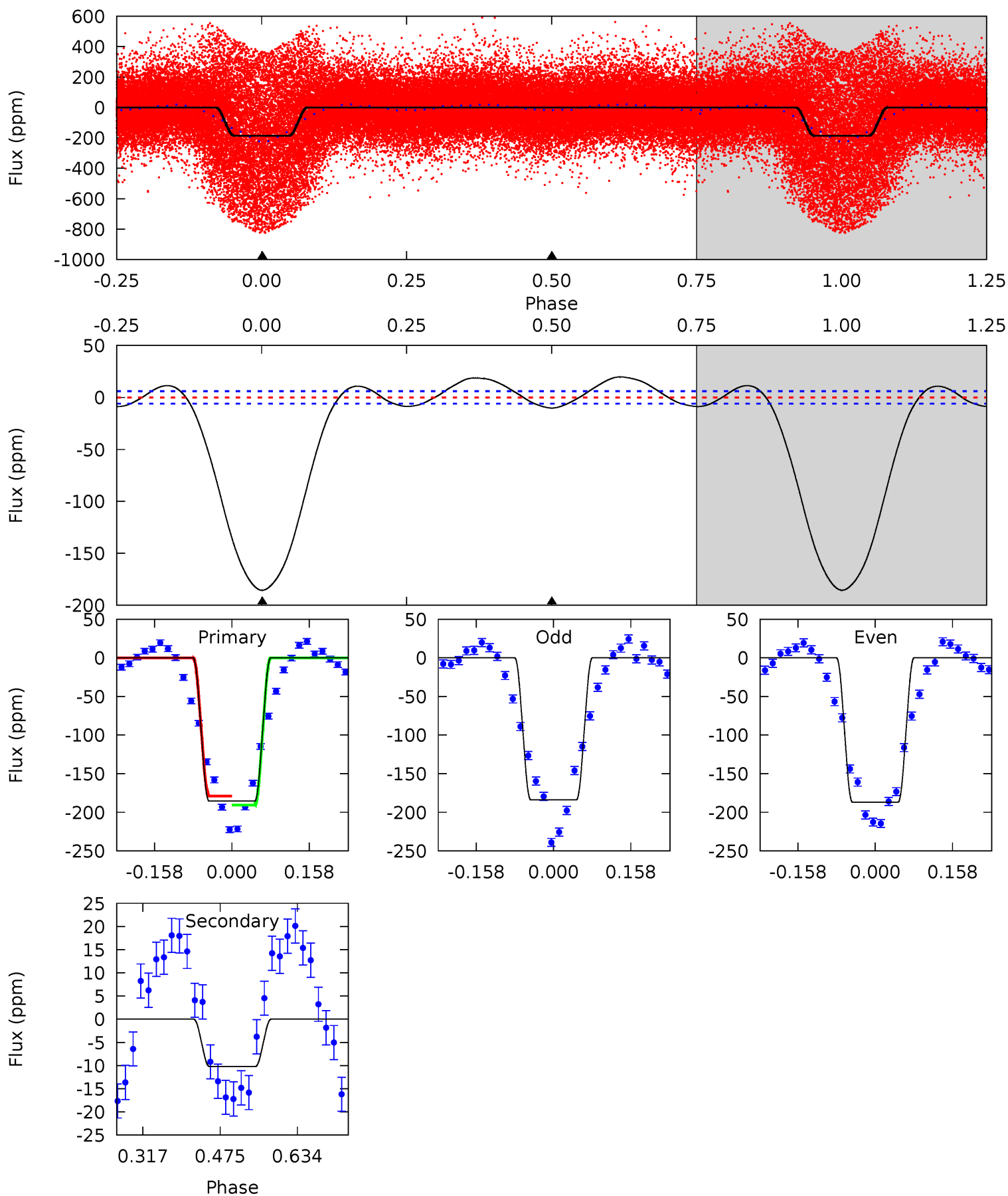
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.24	1.30	0	0	4.34	1.07	1.59	4.24	4.24	1.30	1.30	0.95	1.16	0.35	4.23



Alt Model-Shift Uniqueness Test

003650040-01, P = 1.882061 Days, E = 130.638212 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
138.3	7.62	0	0	4.47	1.41	5.47	138.3	138.3	7.62	7.62	1.13	1.07	0.10	4.34



Stellar Parameters For KIC 003650040

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6942^{+72}_{-93}	$4.110^{+0.110}_{-0.110}$	$-0.040^{+0.150}_{-0.150}$	$1.762^{+0.310}_{-0.254}$	$1.460^{+0.112}_{-0.102}$	$0.376^{+0.190}_{-0.125}$
	+1%/-1%	+3%/-3%	+375%/-375%	+18%/-14%	+8%/-7%	+50%/-33%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 003650040-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-5 ± 4	$0.92^{+0.73}_{-0.64}$	3071^{+136}_{-121}	4549^{+3828}_{-1542}	$3.174^{+27.478}_{-2.673}$
Alt.	-10 ± 1	$2.94^{+0.93}_{-0.88}$	3082^{+148}_{-128}	3300^{+622}_{-542}	$0.730^{+0.802}_{-0.318}$

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

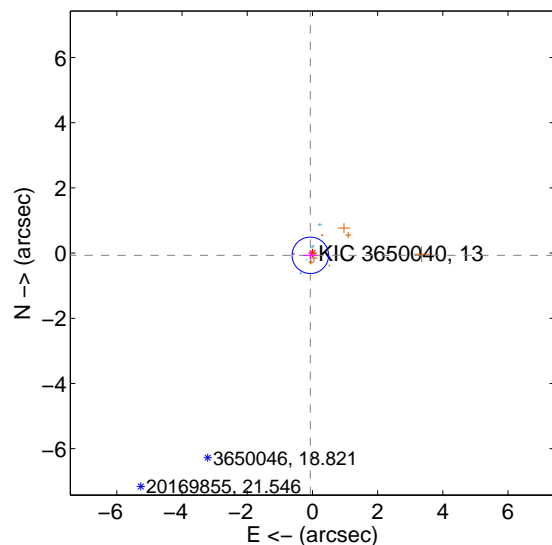
Supplemental centroid analysis for 003650040-01. Kepler magnitude: 13.00. Transit SNR 2.53

There are 7 quarters with good PRF difference image offsets

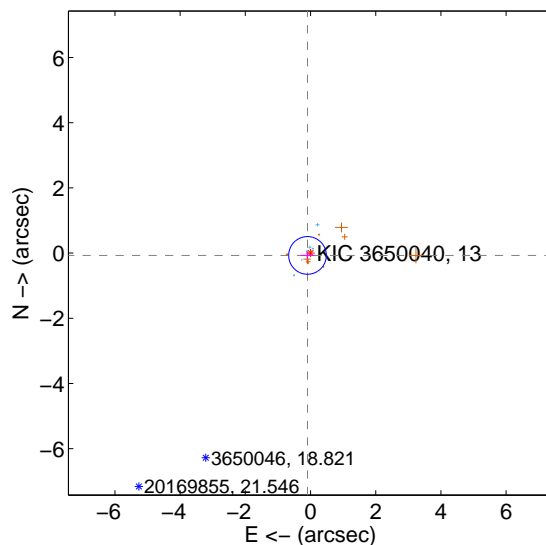
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.094 ± 0.186	0.50	0.065 ± 0.222	-0.068 ± 0.117
PRF-fit source offset from KIC position	0.117 ± 0.193	0.61	0.093 ± 0.214	-0.071 ± 0.120
photometric centroid source offset	1.91 ± 1.43	1.34	1.87 ± 1.42	0.40 ± 1.55

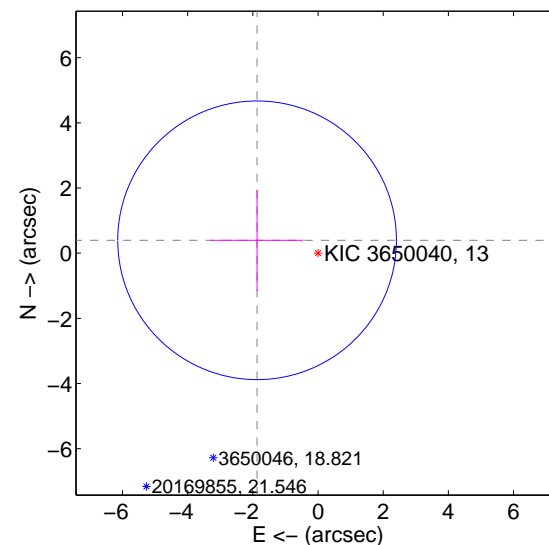
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

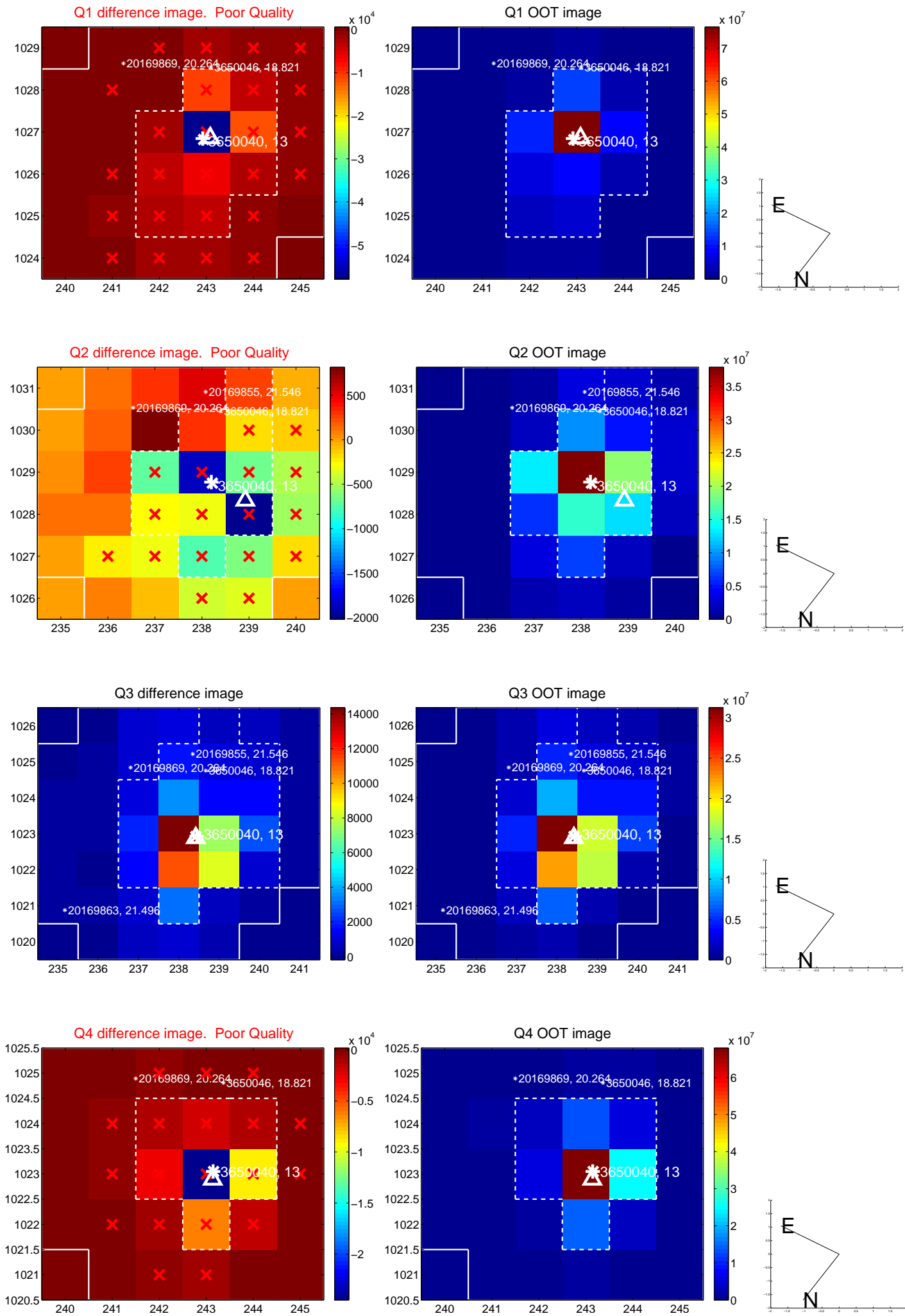


offset from photometric centroids

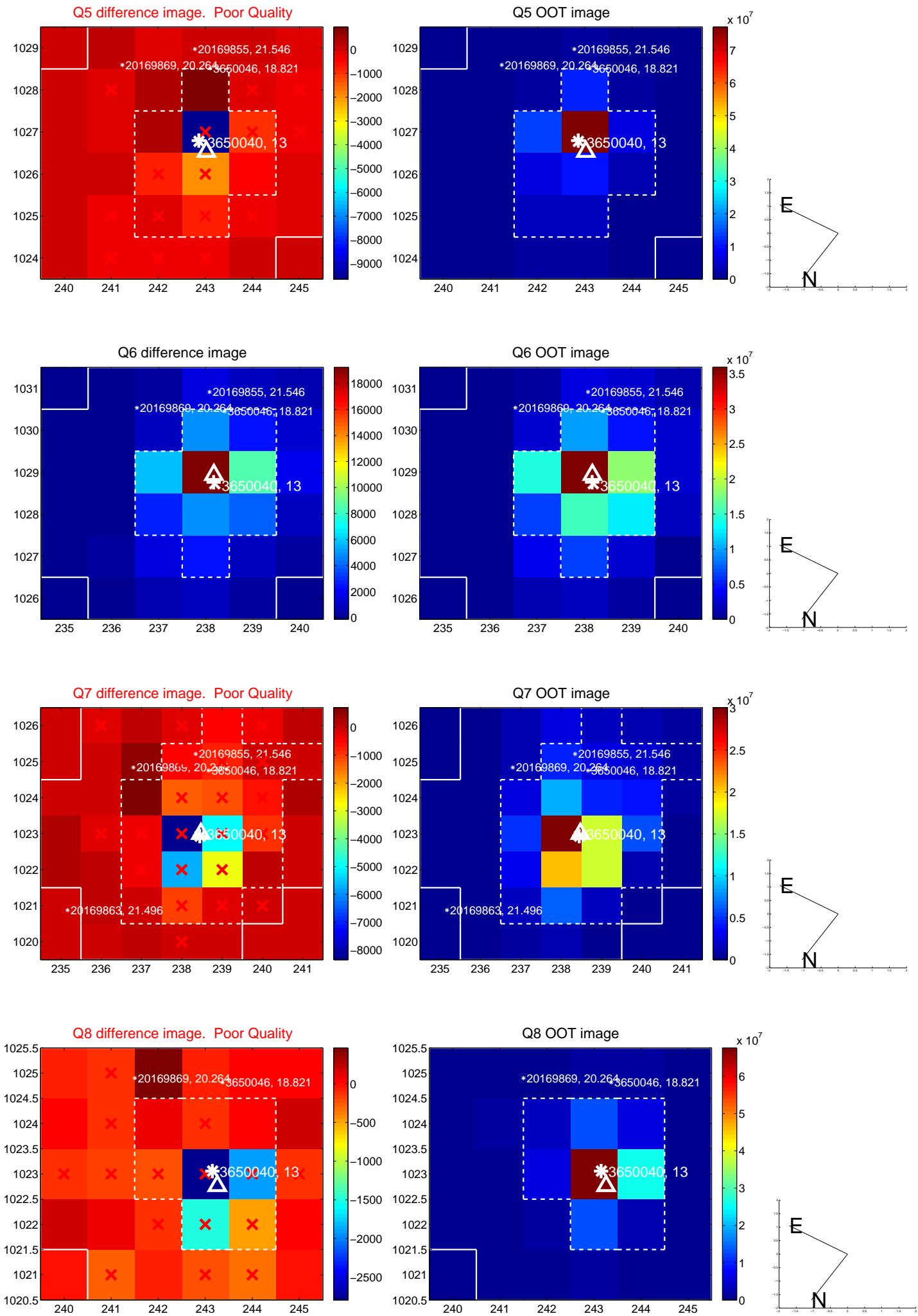


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

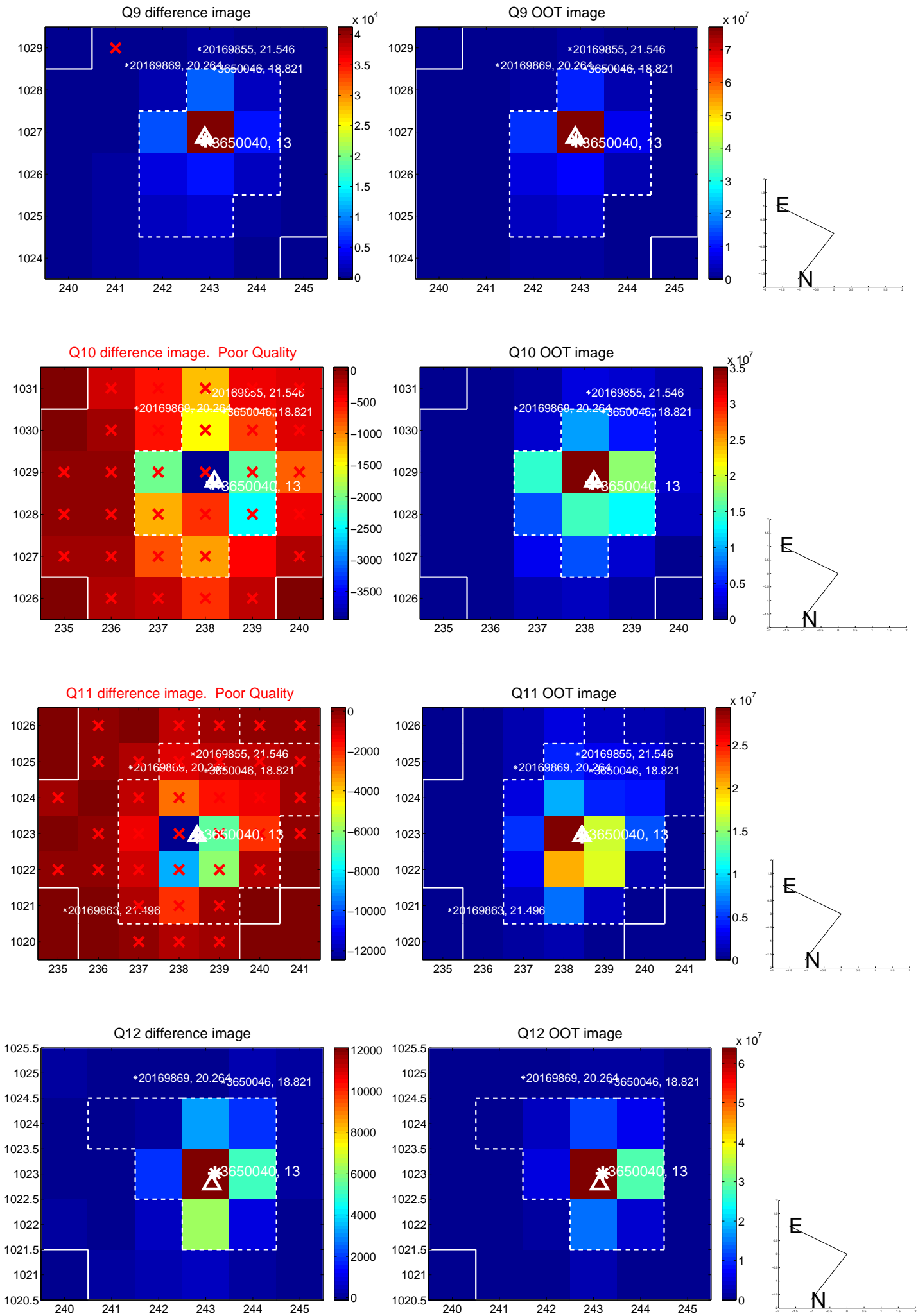
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



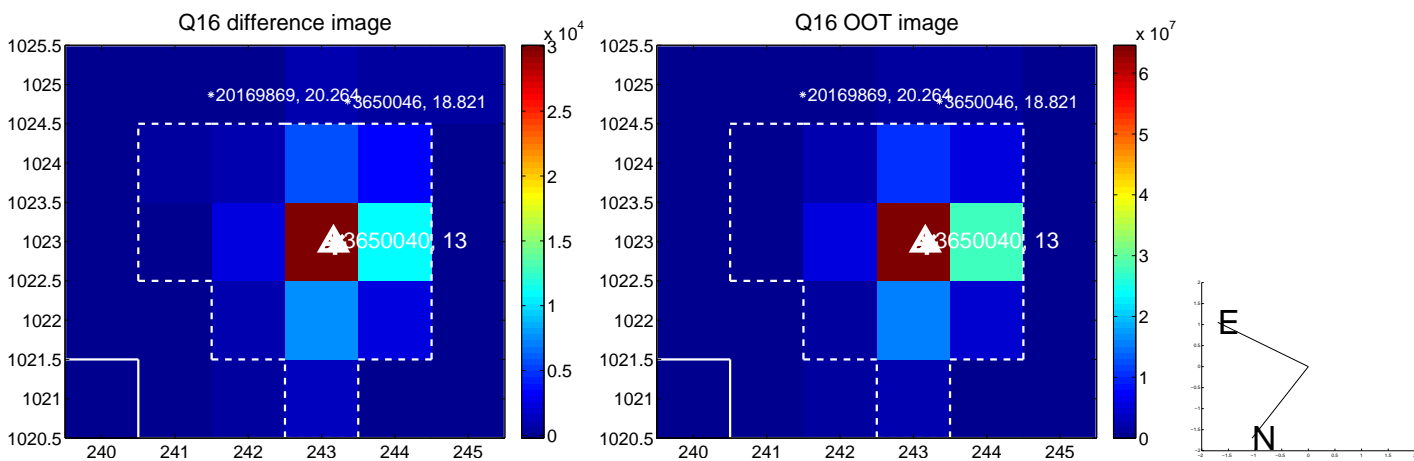
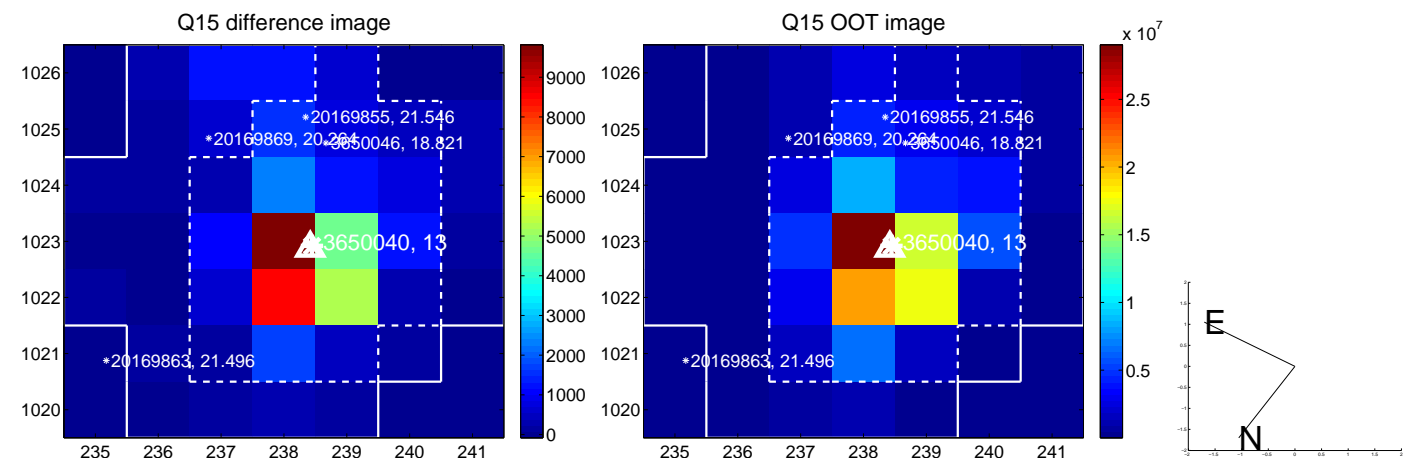
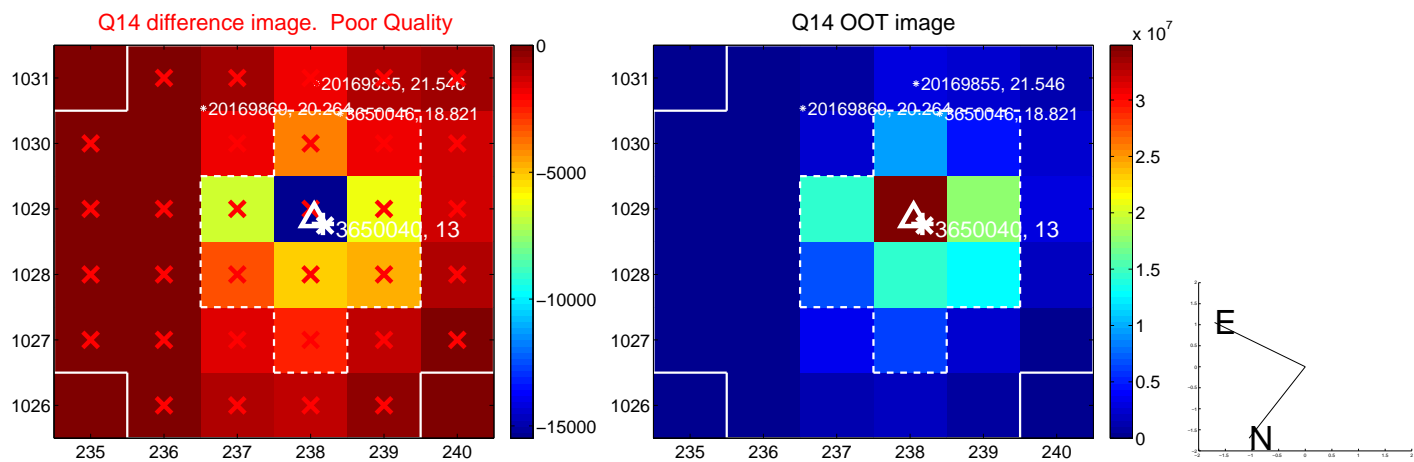
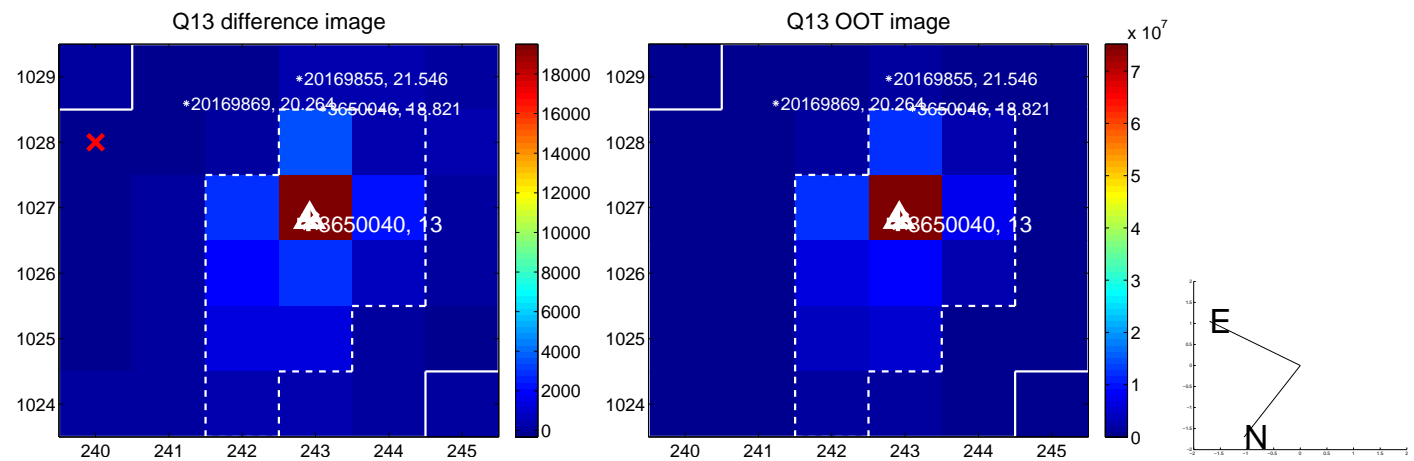
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



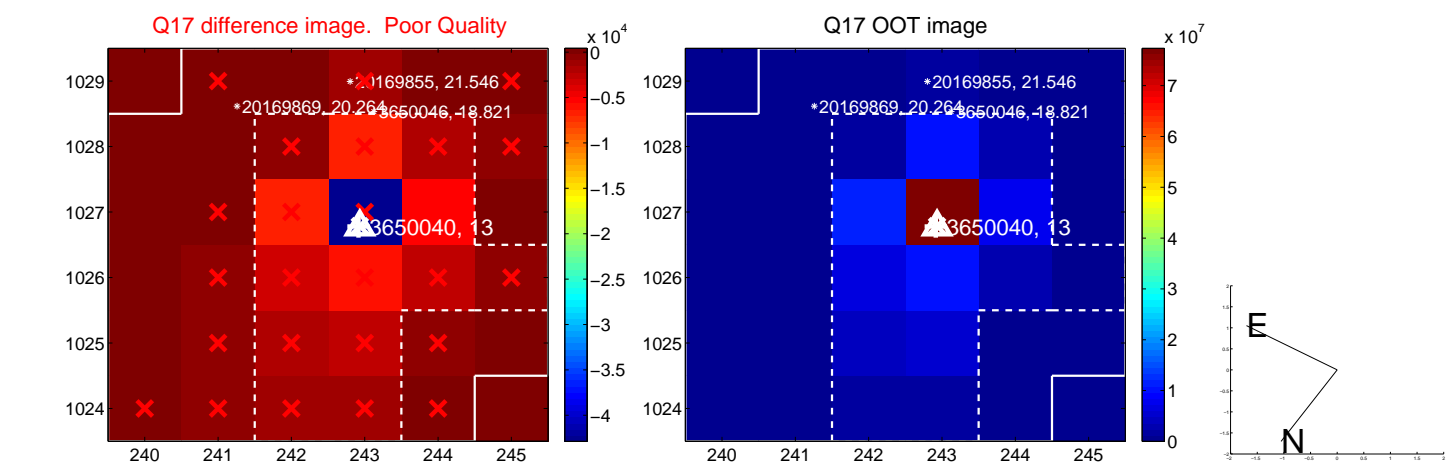
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



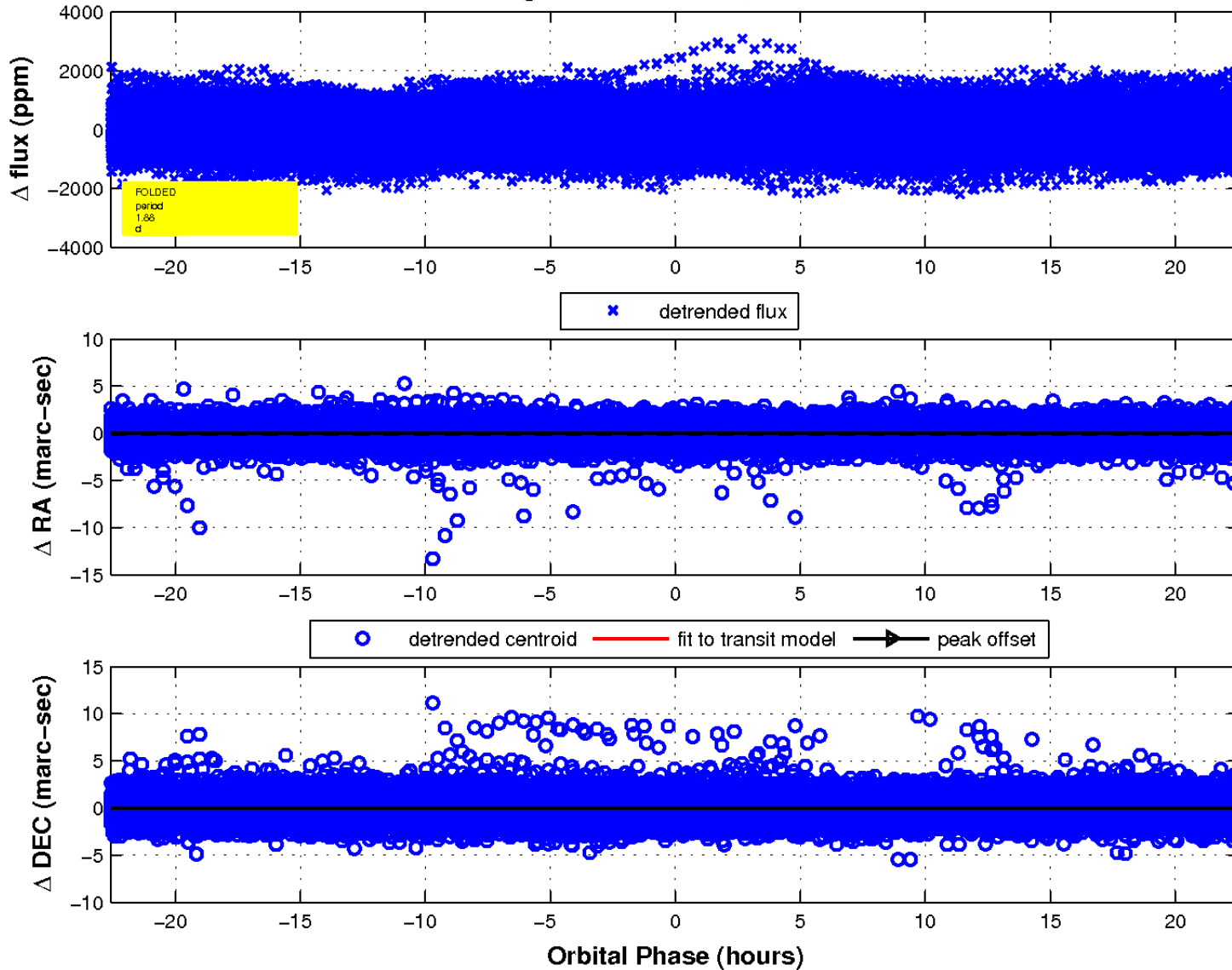
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

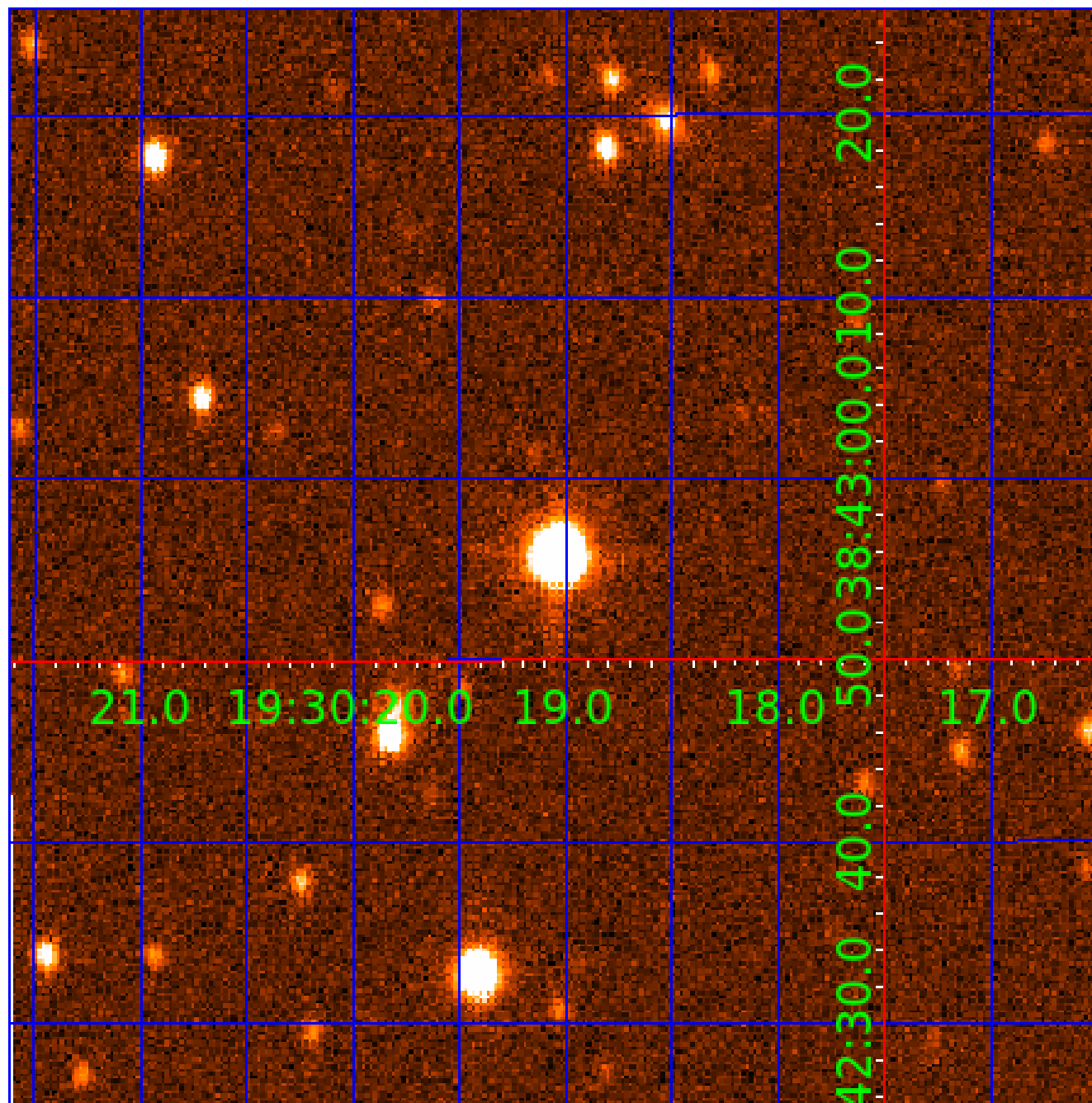


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 003650040

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})
003650040-01	OBS	No	1.882292	132.493171	14.5	12.399	10.0	2.5	1.76	6942	0.69	5639.68
003650040-03	OBS	No	66.229047	195.393080	543.6	13.582	8.7	8.1	1.76	6942	4.81	48.91

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003650040-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
003650040-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

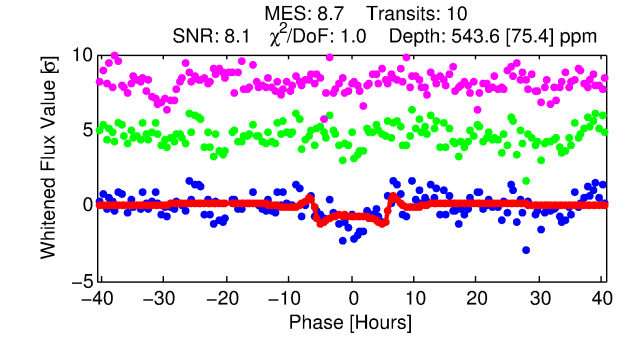
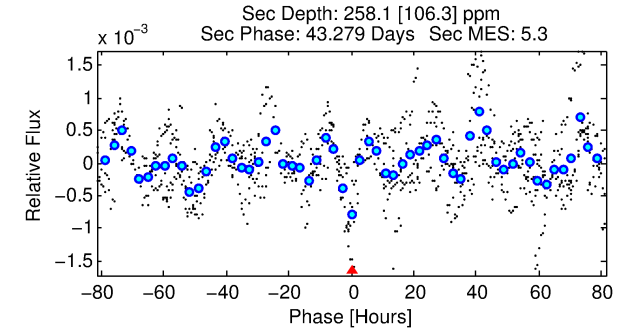
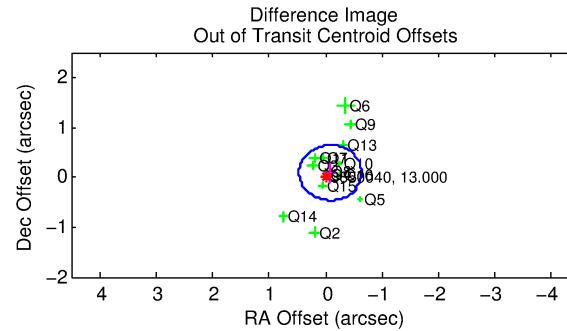
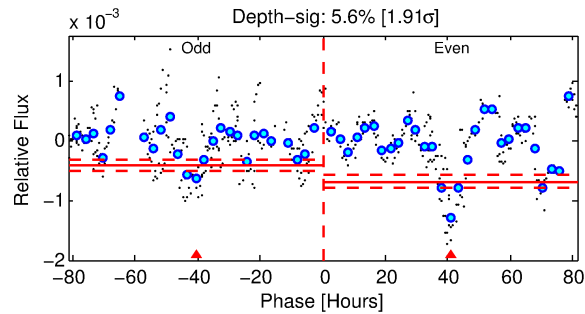
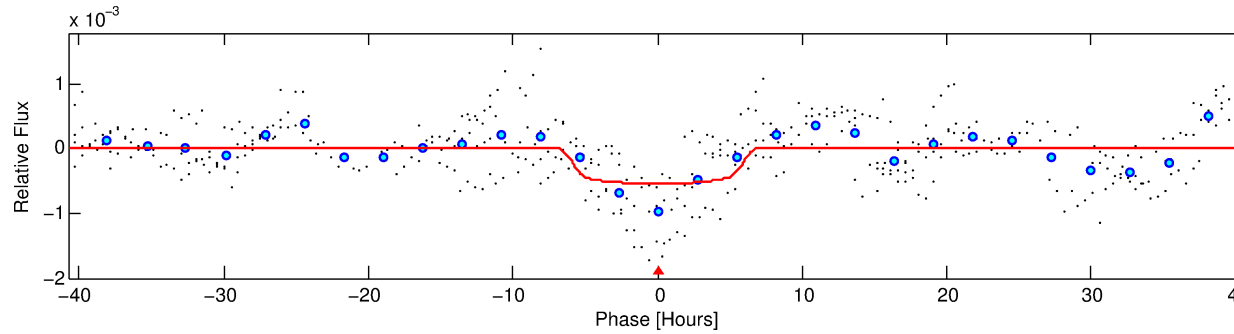
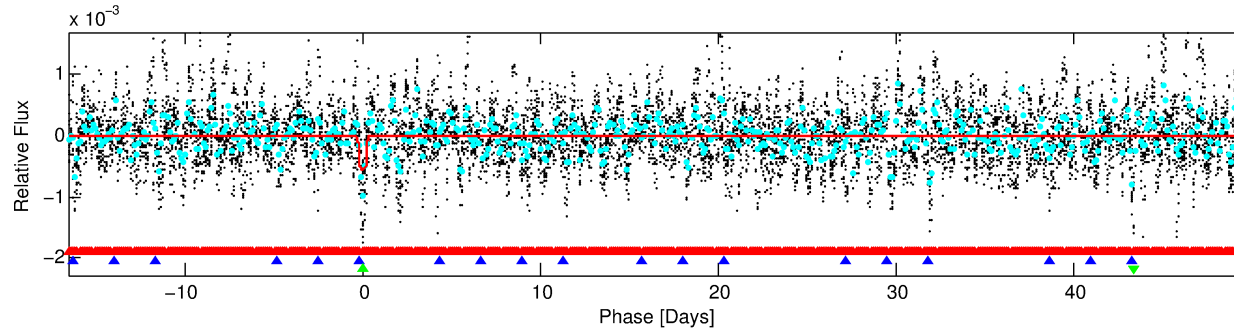
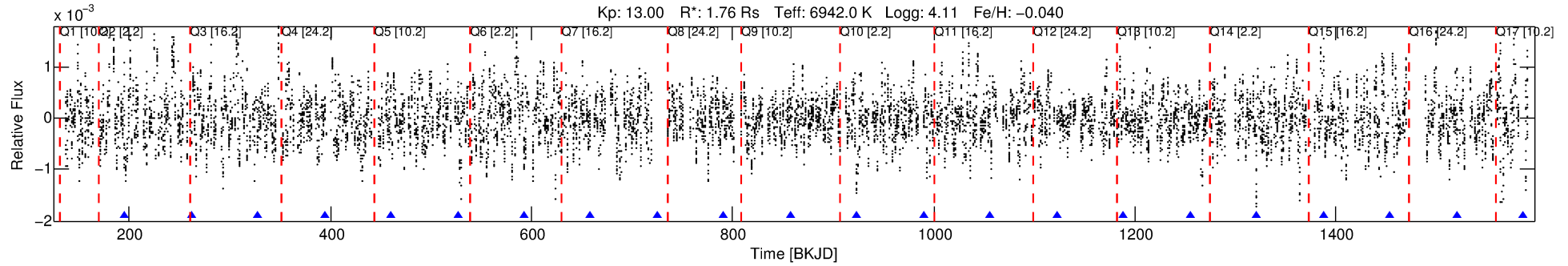
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003650040-03

No Significant Match Found

DV One-Page Summary

KIC: 3650040 Candidate: 3 of 3 Period: 66.229 d



DV Fit Results:

Period = 66.22905 [0.00123] d
Epoch = 195.3931 [0.0136] BKJD
Rp/R* = 0.0250 [0.0020]
a/R* = 17.67 [3.15]
b = 0.91 [0.03]
Seff = 48.91 [10.39]
Teff = 674 [36] K
Rp = 4.81 [0.93] Re
a = 0.3634 [0.0525] AU
Ag = 809.97 [394.84] [2.05 σ]
Teffp = 5562 [619] K [7.88 σ]

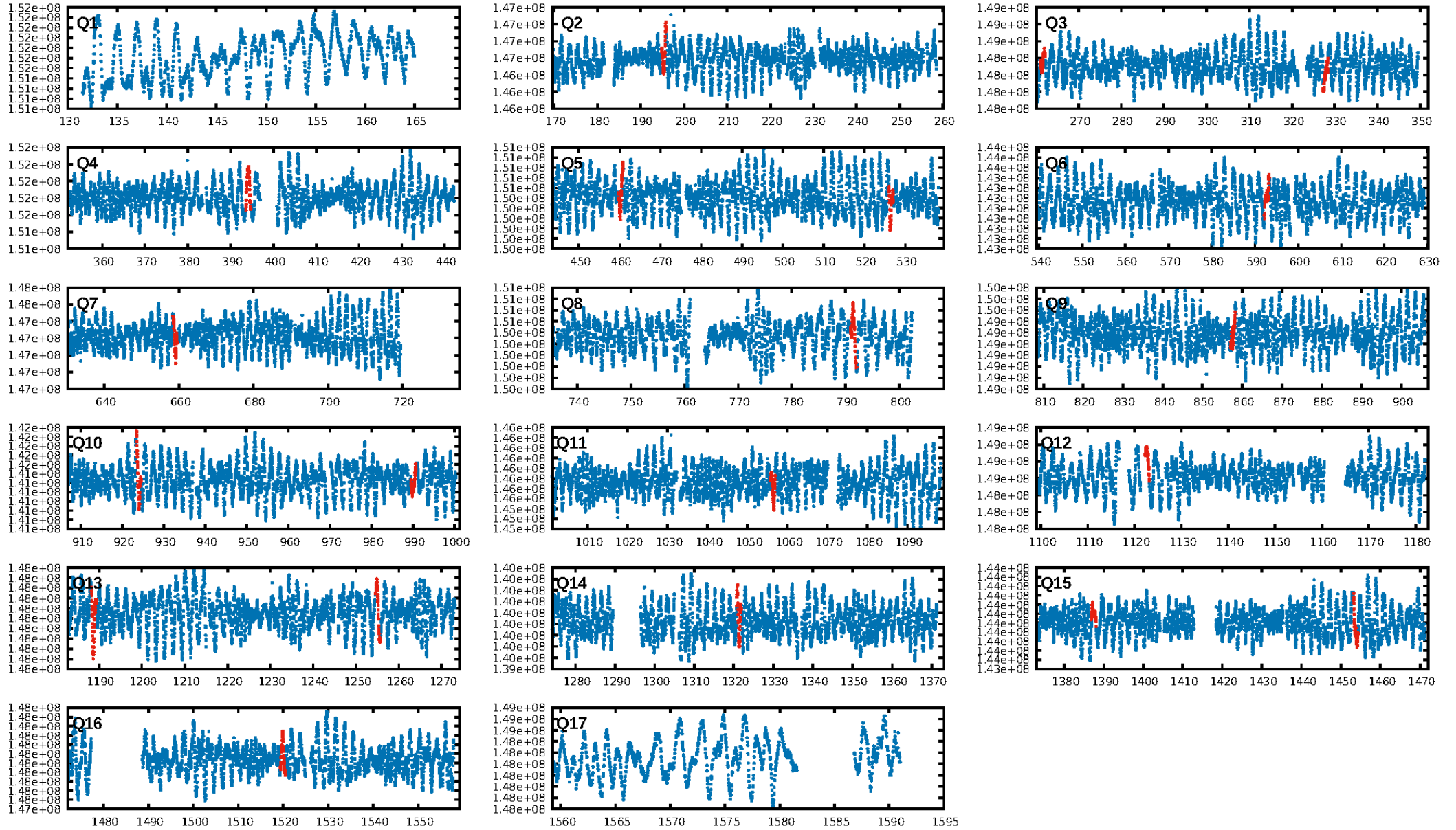
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [83.97 σ]
LongPeriod-sig: 100.0% [7.55 σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.32e-12
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 0.537
Centroid-sig: 88.1%
Centroid-so: 0.028 arcsec [0.11 σ]
OotOffset-rm: 0.119 arcsec [0.65 σ]
KicOffset-rm: 0.106 arcsec [0.50 σ]
OotOffset-st: 4/4/3/3 [14]
KicOffset-st: 4/4/3/3 [14]
DiffImageQuality-fgm: 0.64 [9/14]
DiffImageOverlap-fno: 0.00 [0/14]

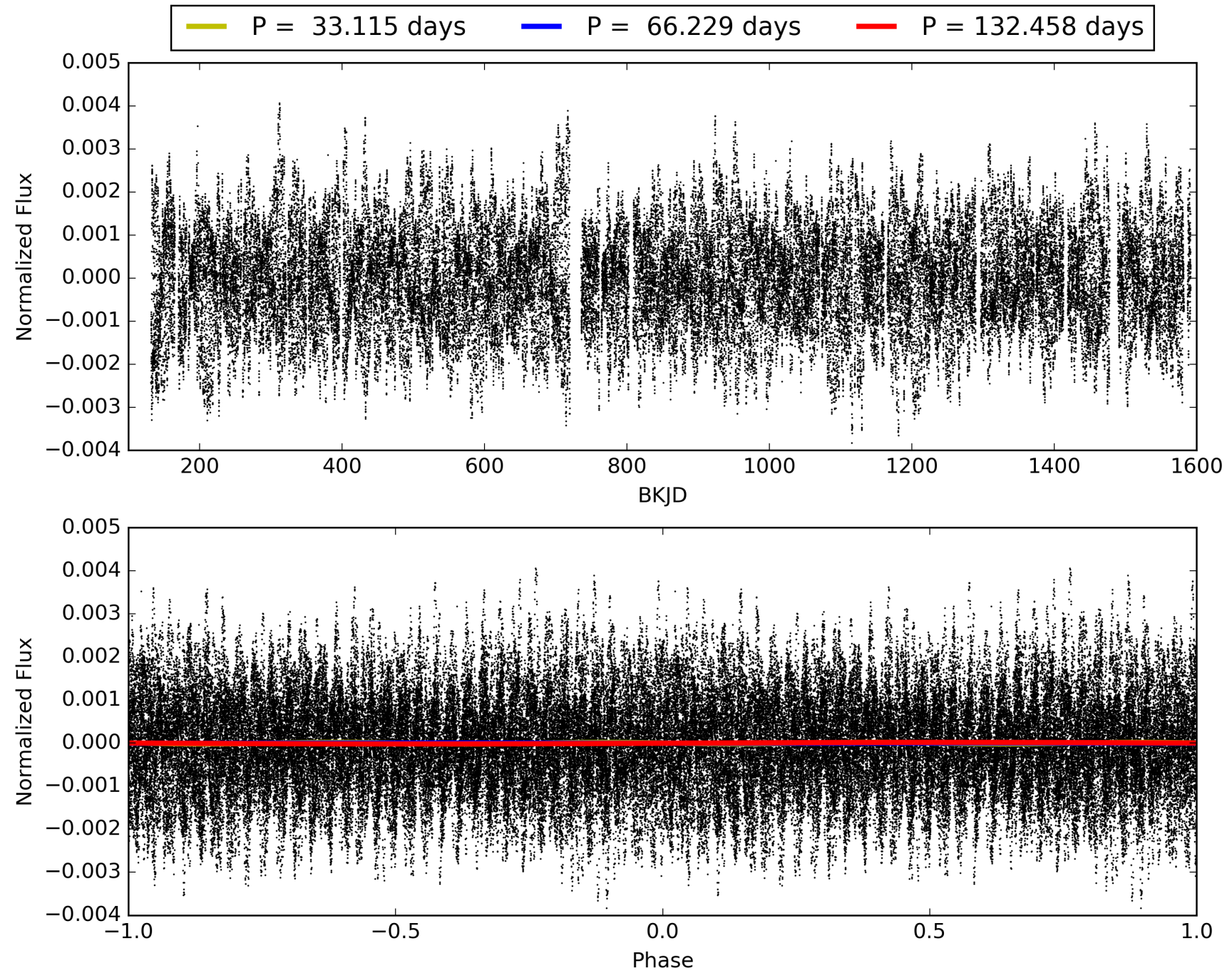
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:06:32 Z

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

TCE 003650040-03, PDC Light Curves

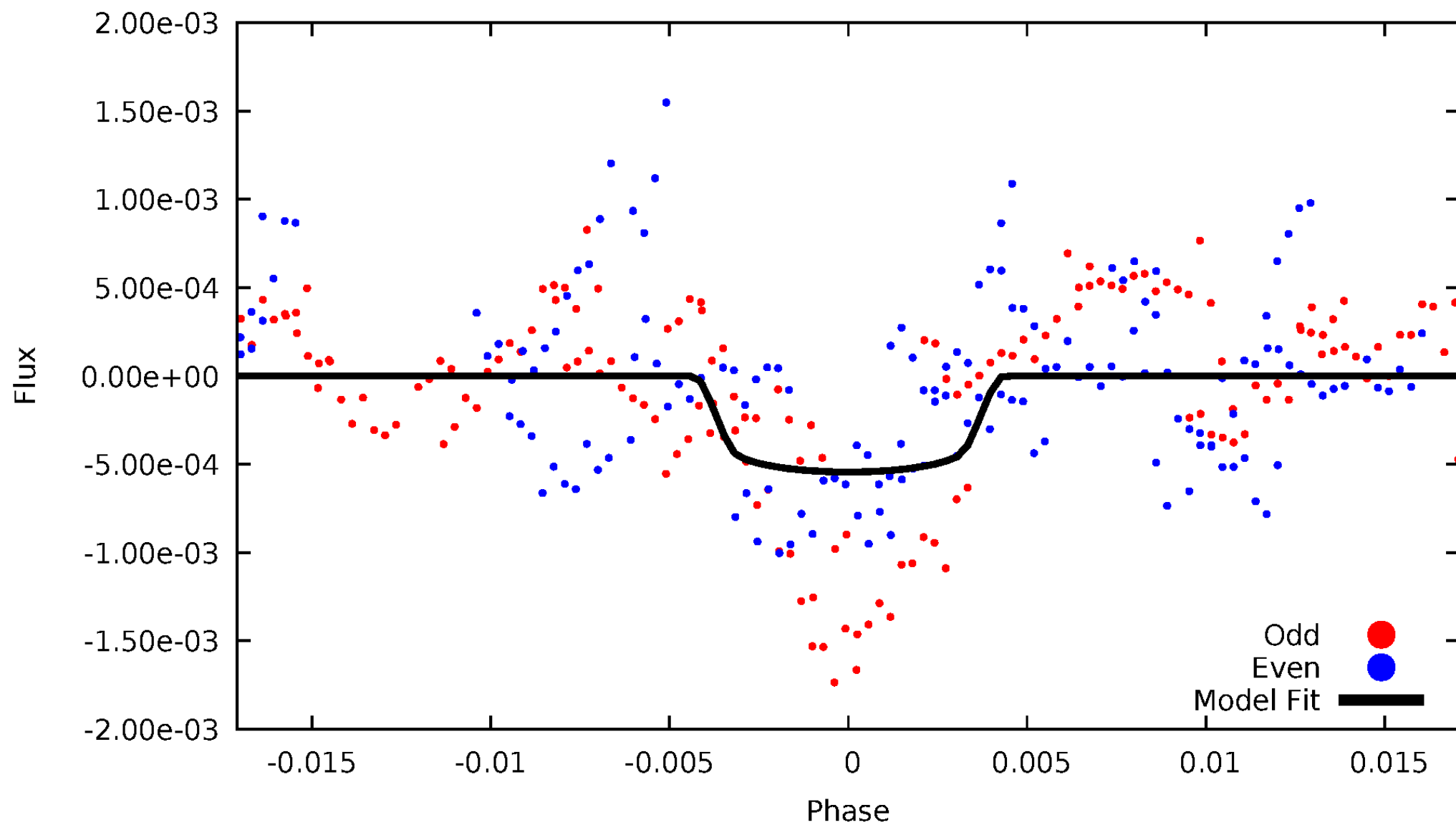


TCE 003650040-03



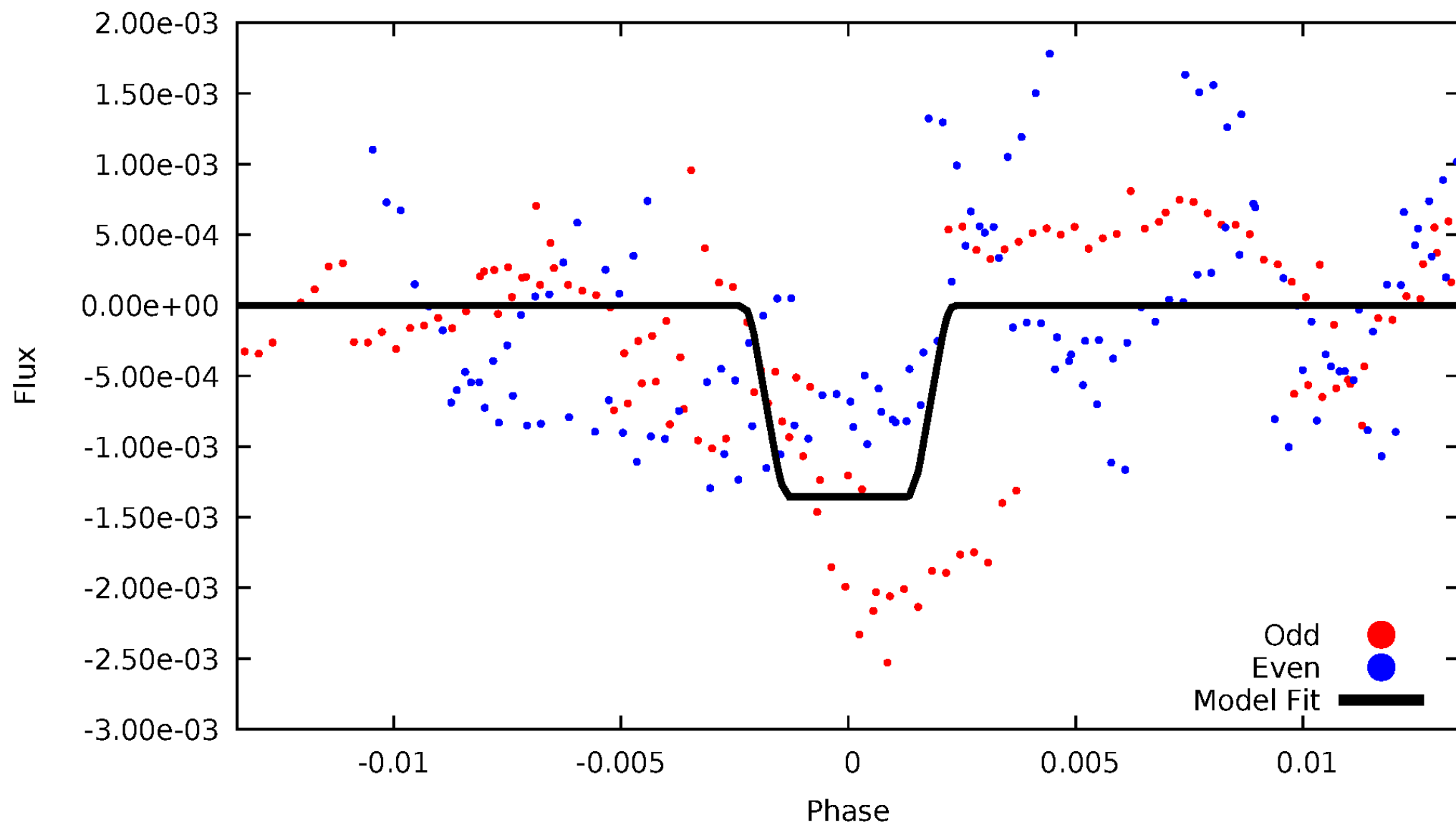
DV Odd/Even

TCE 003650040-03



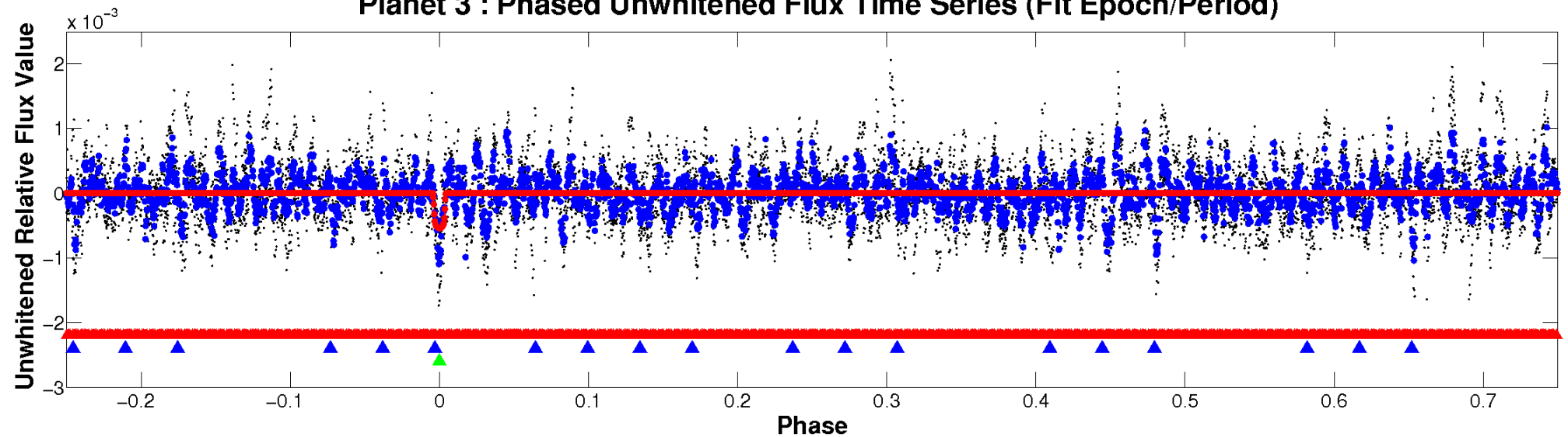
ALT Odd/Even

TCE 003650040-03

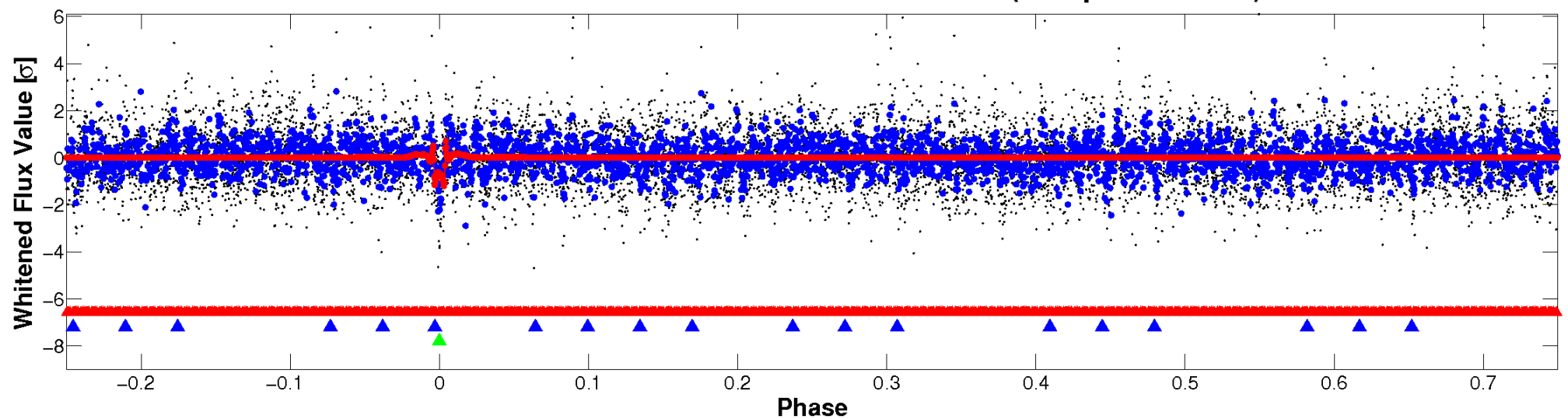


Non-Whitened Vs. Whitened Light Curve

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

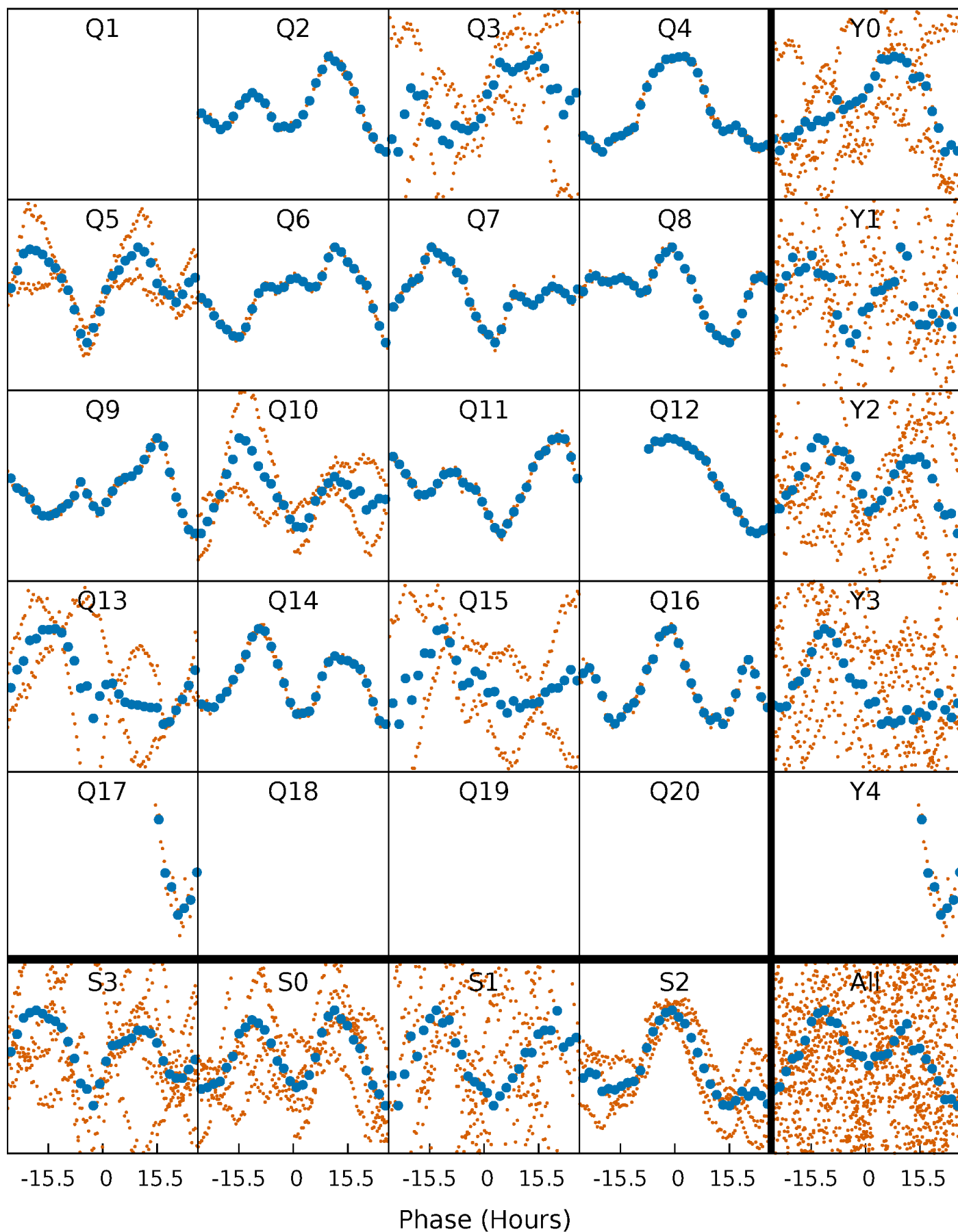


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



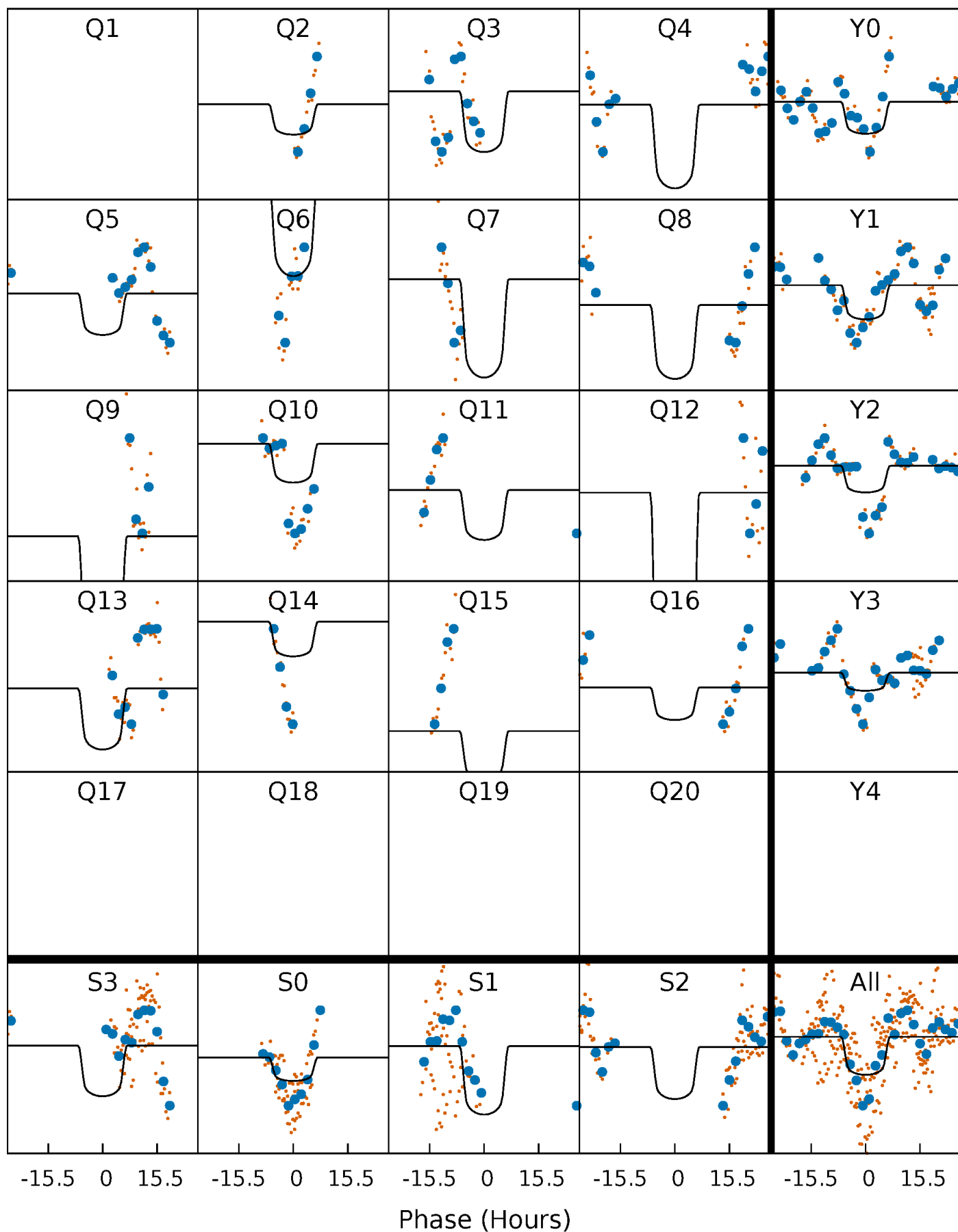
PDC Quarter-Phased Transit Curves

TCE 003650040-03 P= 66.229047 Days $T_0=195.393080$ (BKJD)



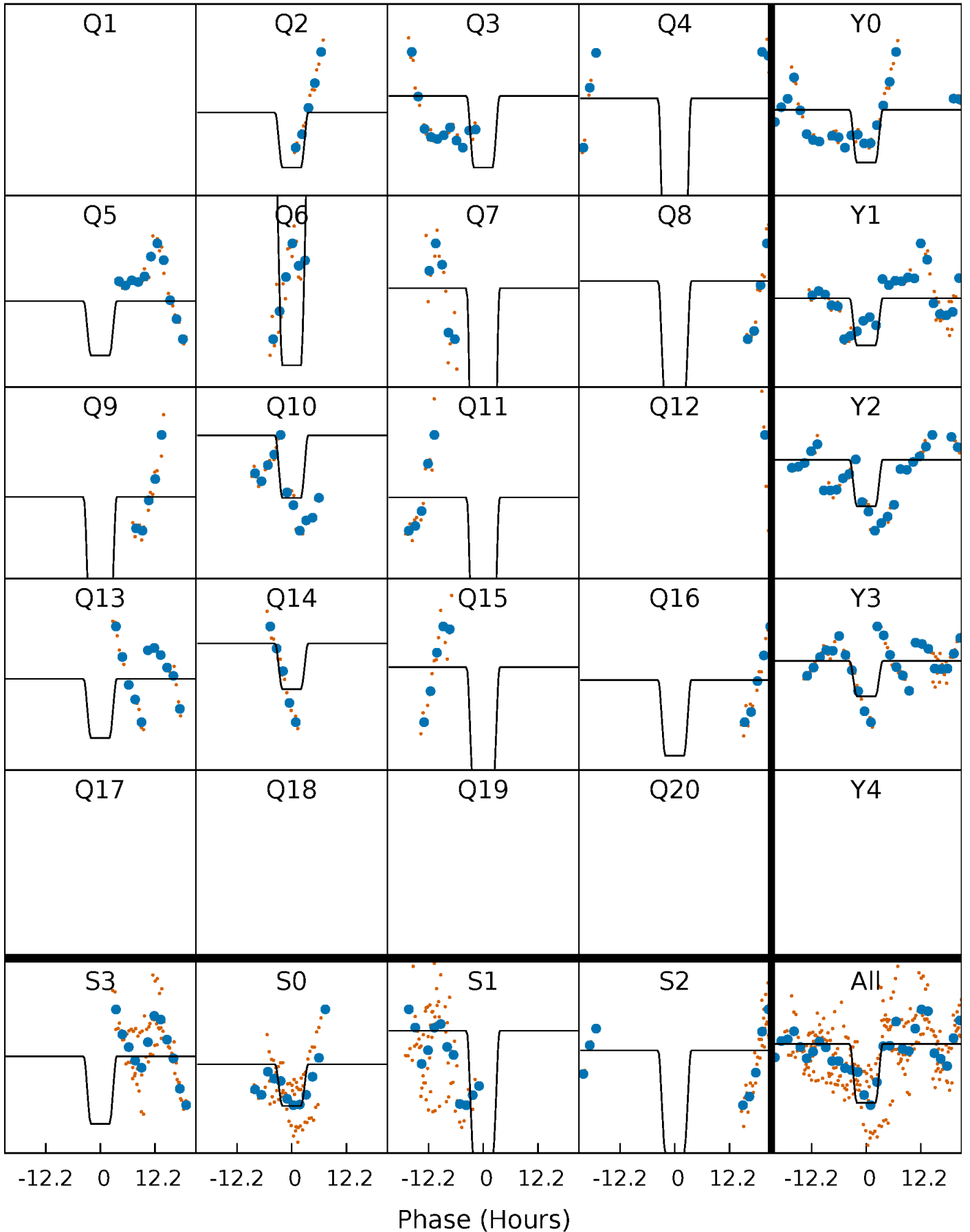
DV Quarter-Phased Transit Curves

TCE 003650040-03 P= 66.229047 Days $T_0=195.393080$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

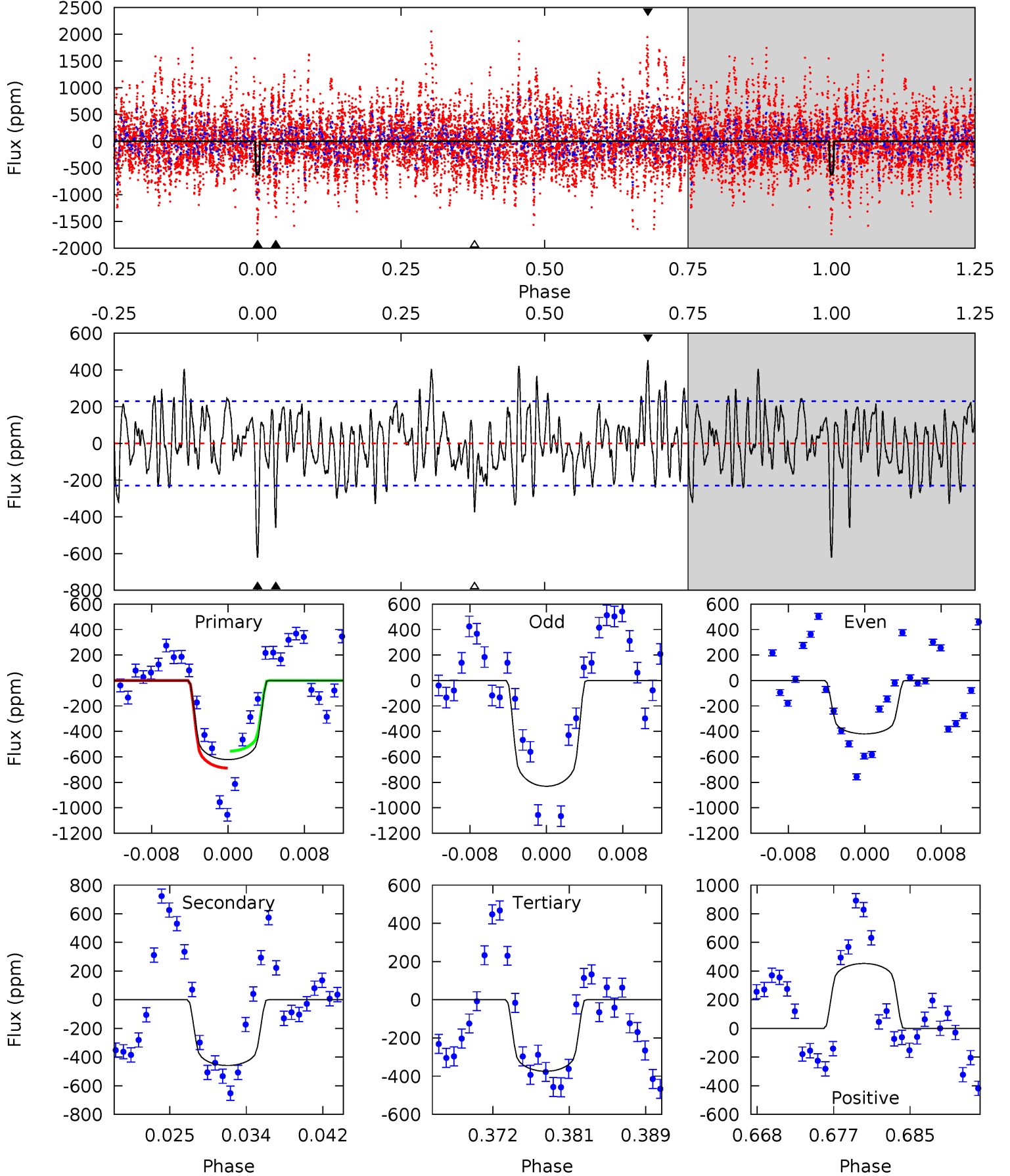
TCE 003650040-03 P= 66.225986 Days $T_0=195.403270$ (BKJD)



DV Model-Shift Uniqueness Test

003650040-03, P = 66.229047 Days, E = 129.164033 Days

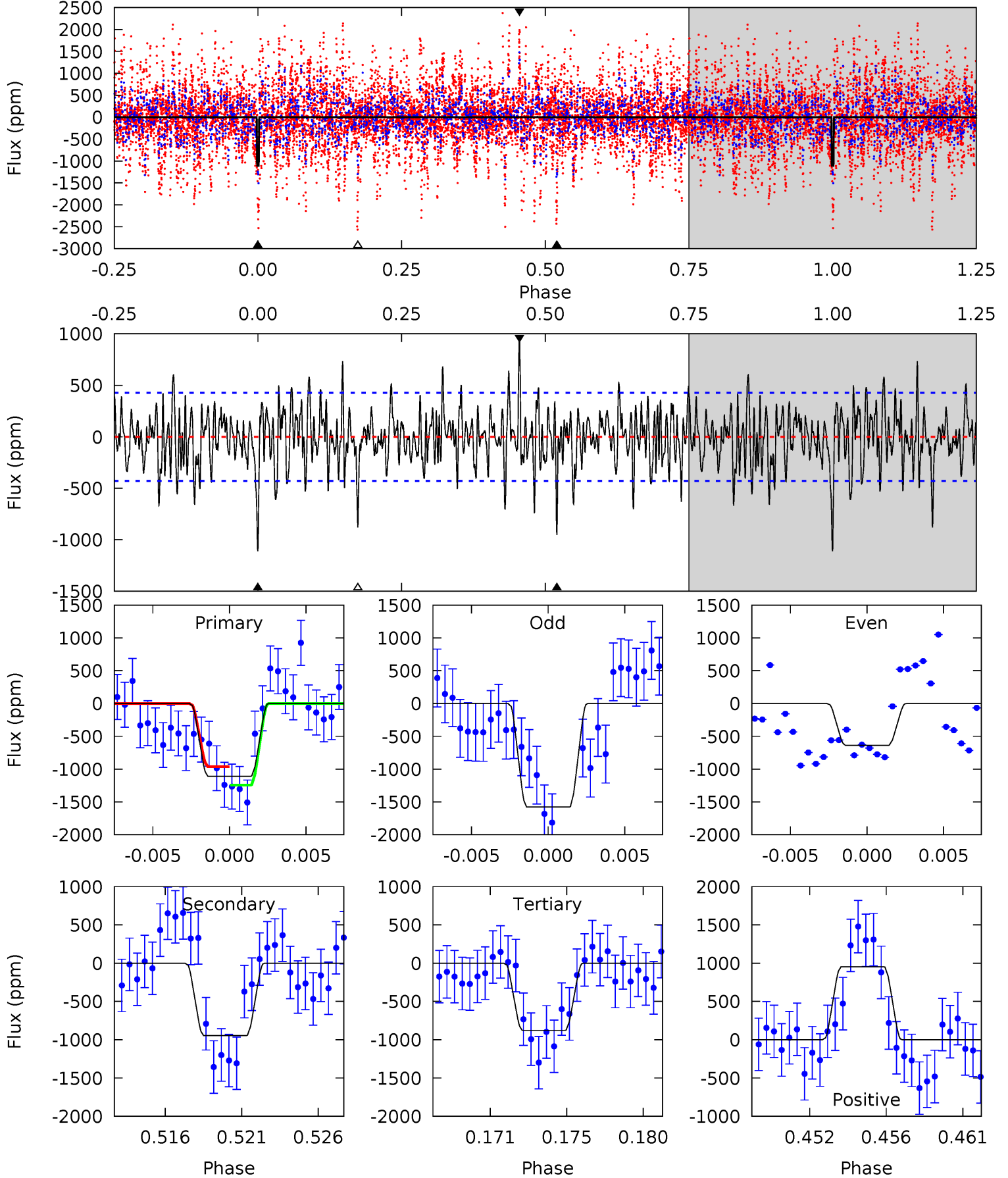
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.7	10.1	8.25	9.99	5.06	2.63	3.13	5.45	3.71	1.86	0.12	4.53	1.22	0.42	1.46



Alt Model-Shift Uniqueness Test

003650040-03, P = 66.225986 Days, E = 129.177284 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.4	11.4	10.6	11.5	5.17	2.83	2.88	2.80	1.89	0.83	-0.09	5.72	0.58	0.46	1.70



Stellar Parameters For KIC 003650040

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6942^{+72}_{-93}	$4.110^{+0.110}_{-0.110}$	$-0.040^{+0.150}_{-0.150}$	$1.762^{+0.310}_{-0.254}$	$1.460^{+0.112}_{-0.102}$	$0.376^{+0.190}_{-0.125}$
	+1%/-1%	+3%/-3%	+375%/-375%	+18%/-14%	+8%/-7%	+50%/-33%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 003650040-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-459 ± 45	$4.80^{+0.60}_{-0.52}$	938^{+44}_{-37}	6373^{+345}_{-302}	1451^{+415}_{-323}
Alt.	-946 ± 83	$7.05^{+0.80}_{-0.65}$	941^{+42}_{-39}	6313^{+255}_{-255}	1376^{+325}_{-278}

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

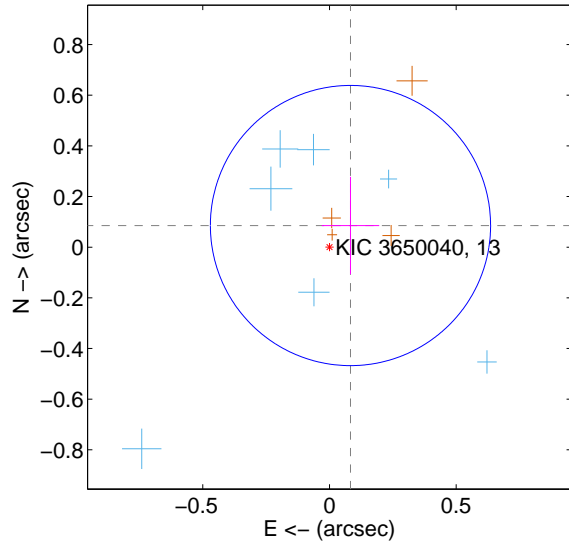
Supplemental centroid analysis for 003650040-03. Kepler magnitude: 13.00. Transit SNR 8.08

There are 9 quarters with good PRF difference image offsets

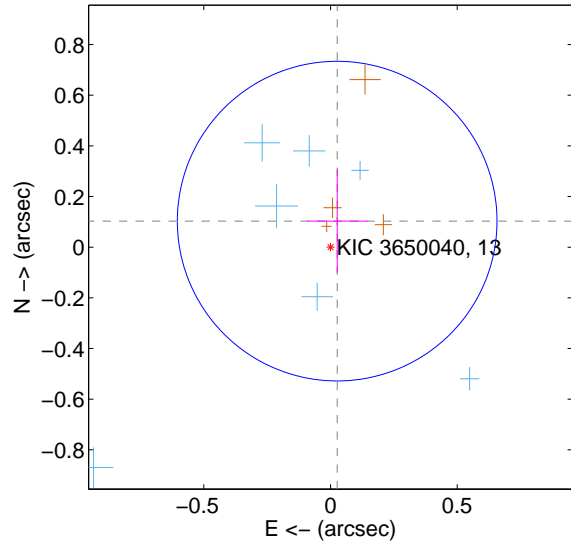
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.119 ± 0.184	0.65	-0.083 ± 0.114	0.085 ± 0.192
PRF-fit source offset from KIC position	0.106 ± 0.210	0.50	-0.026 ± 0.120	0.103 ± 0.203
photometric centroid source offset	0.03 ± 0.26	0.11	-0.03 ± 0.25	-0.01 ± 0.28

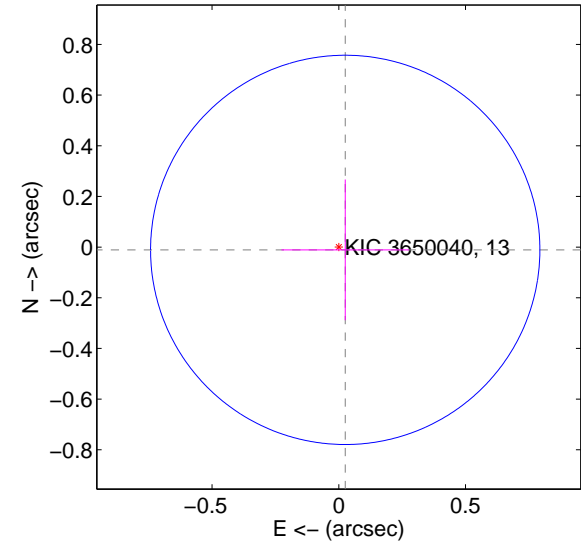
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

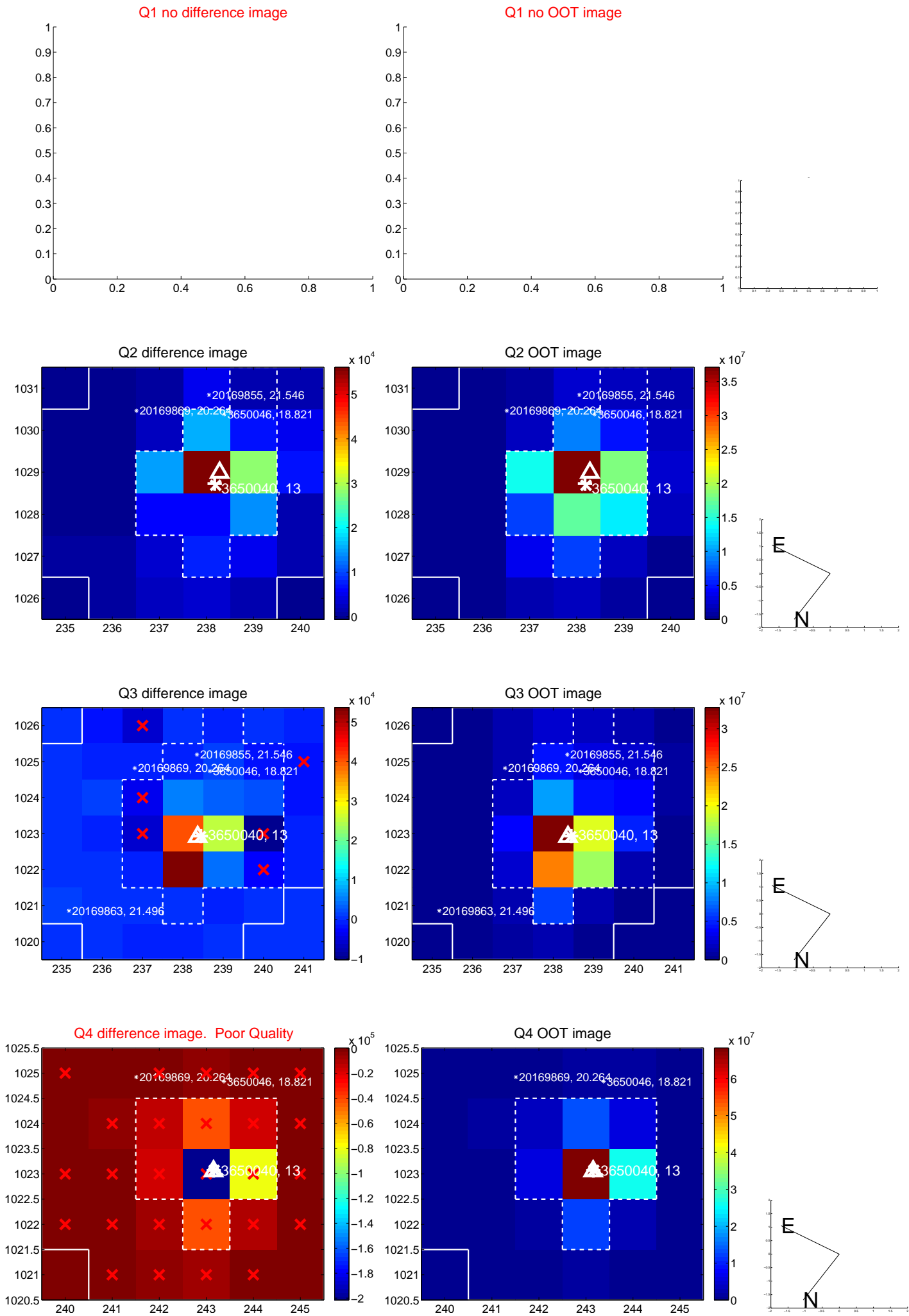


offset from photometric centroids

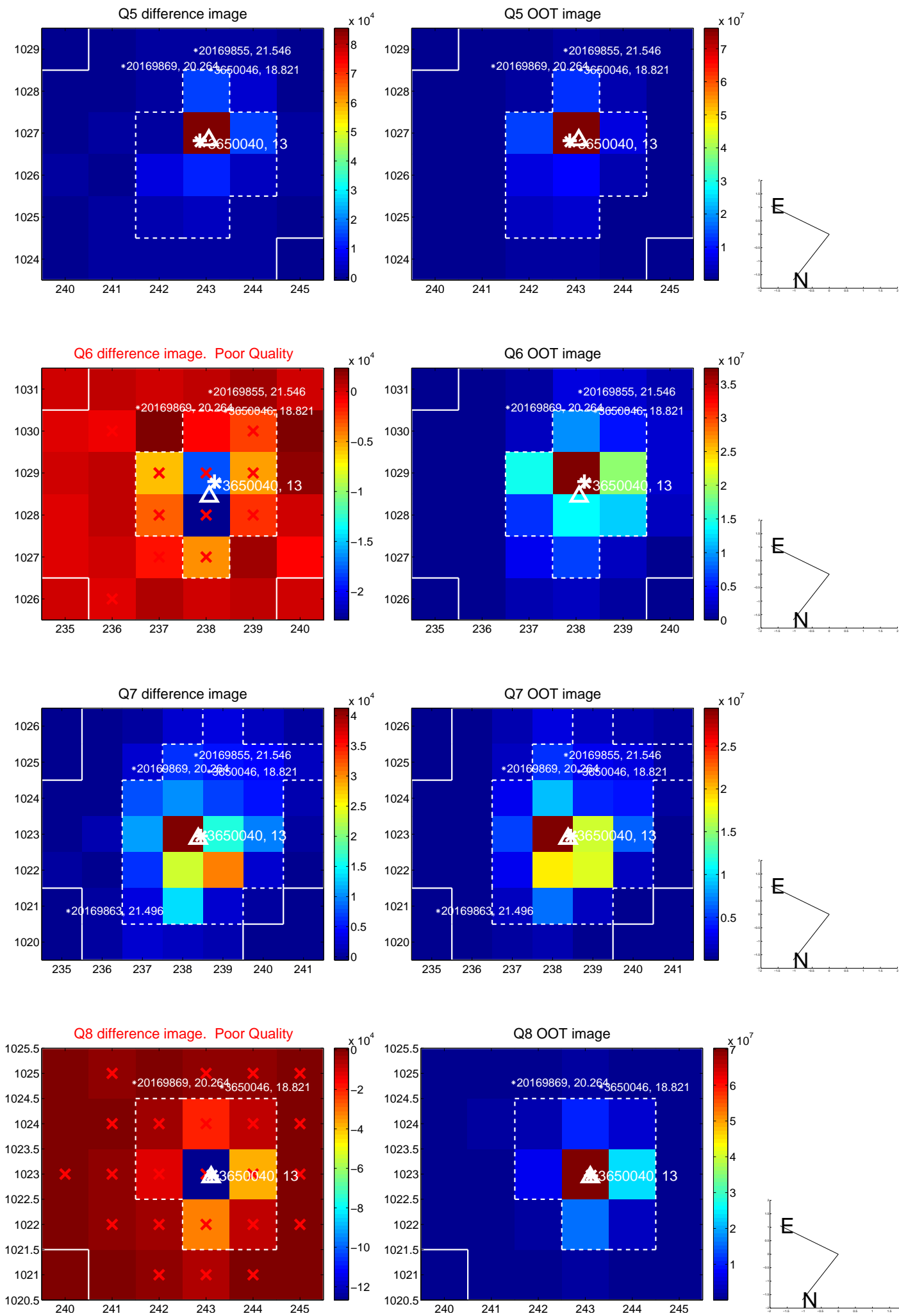


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

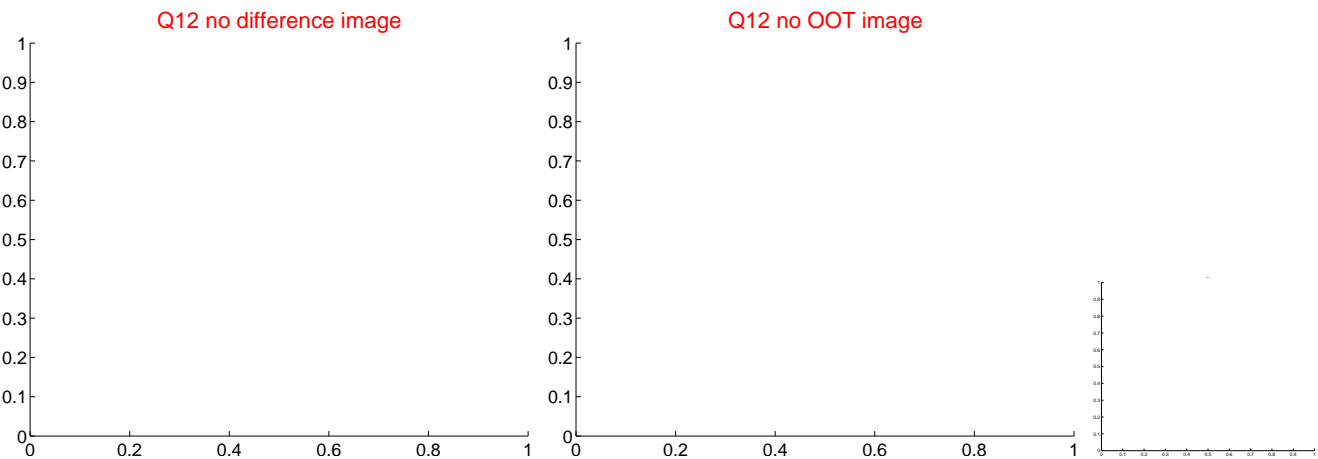
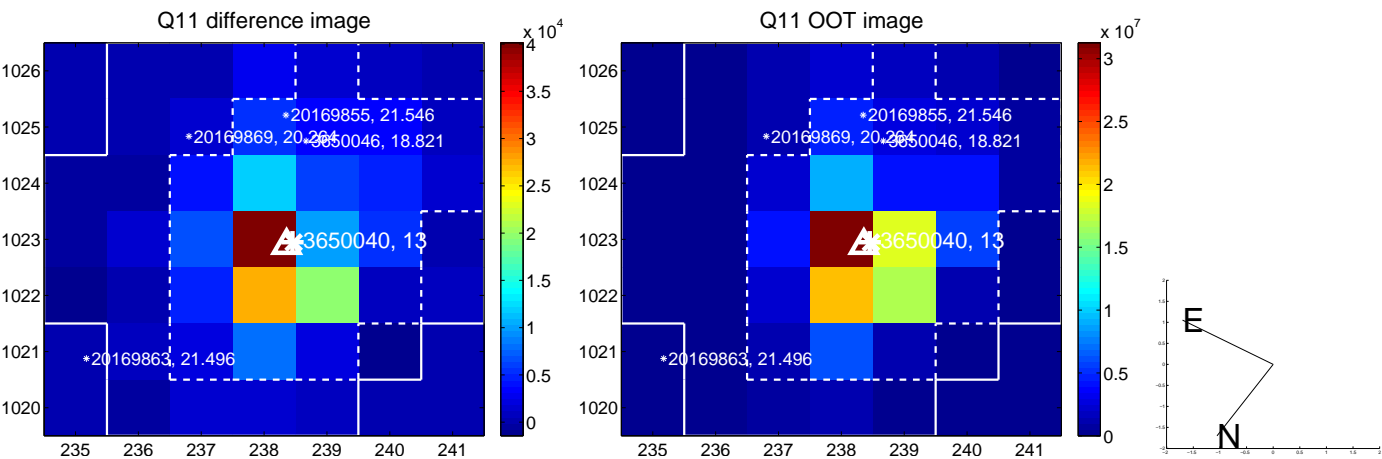
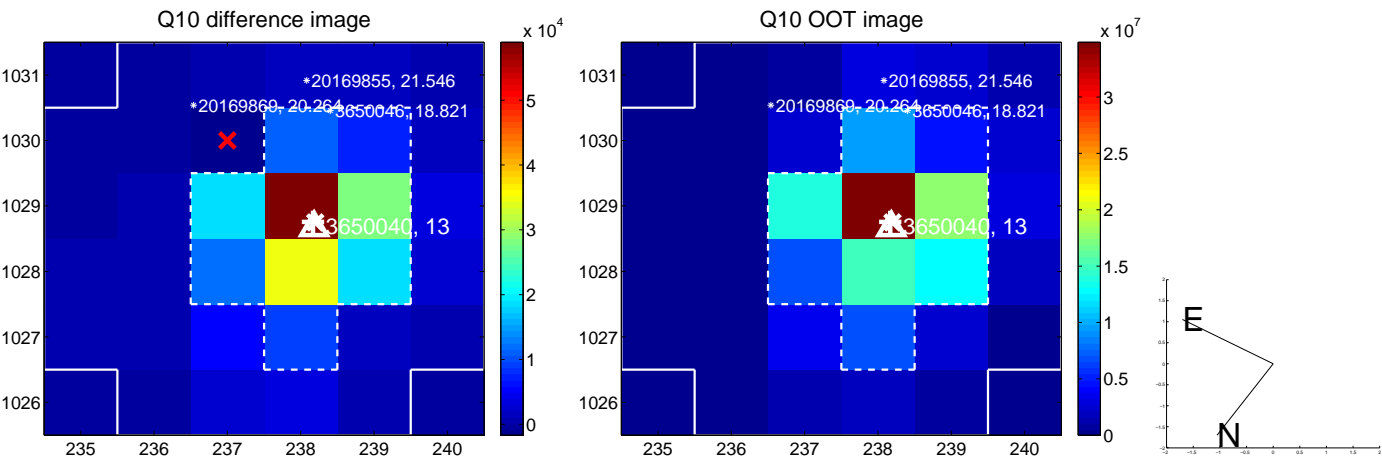
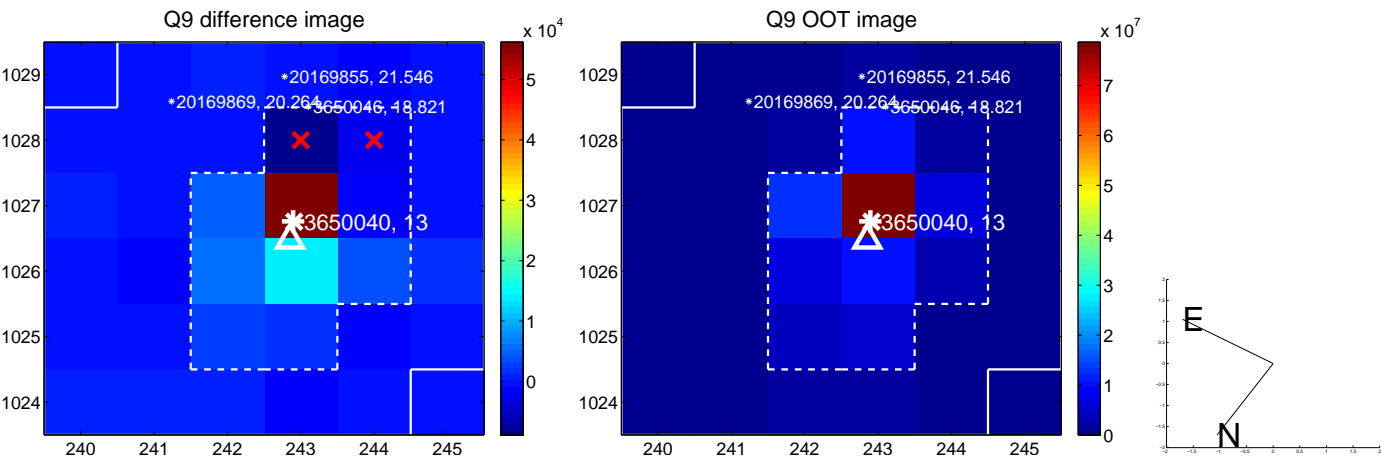
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



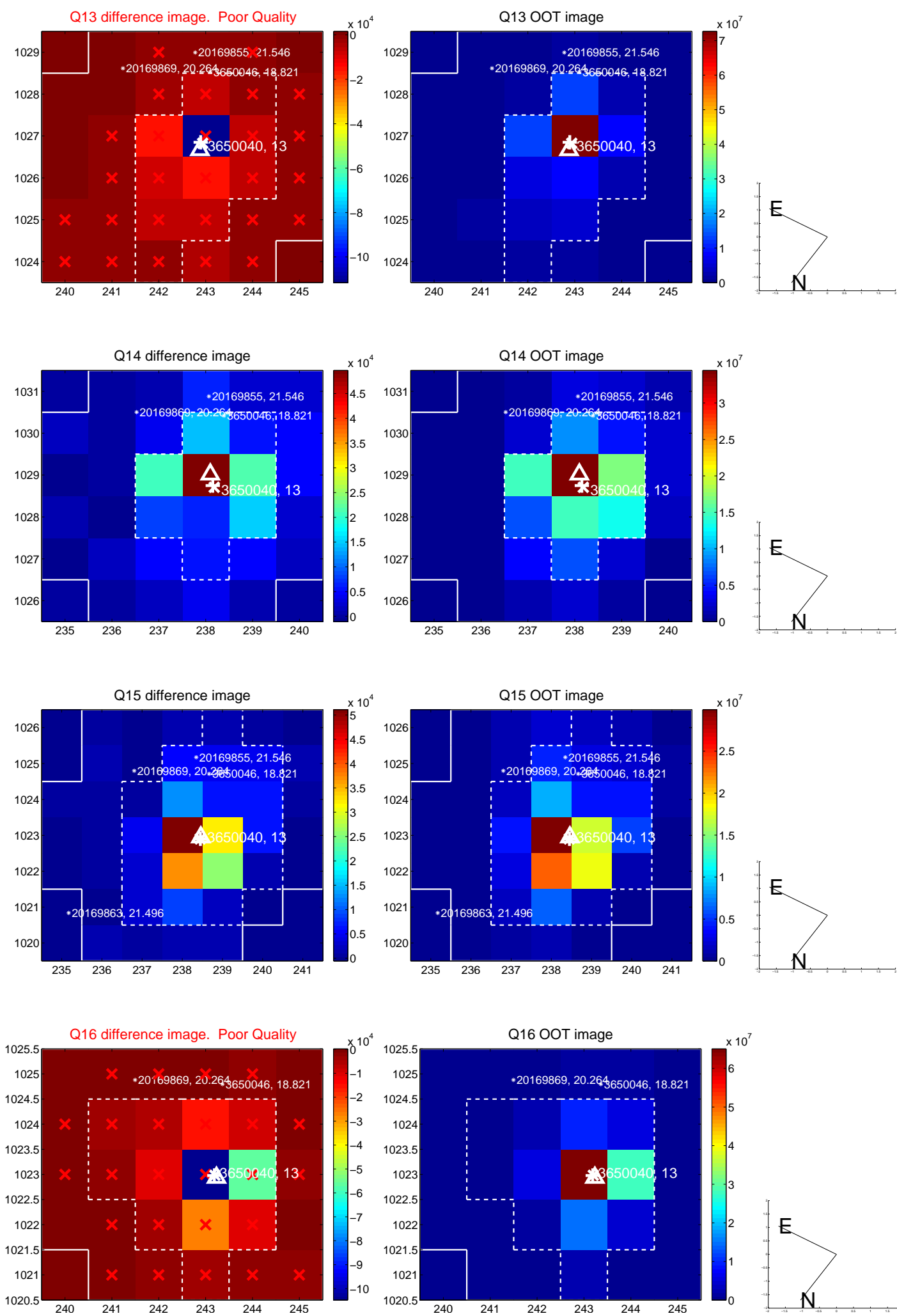
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



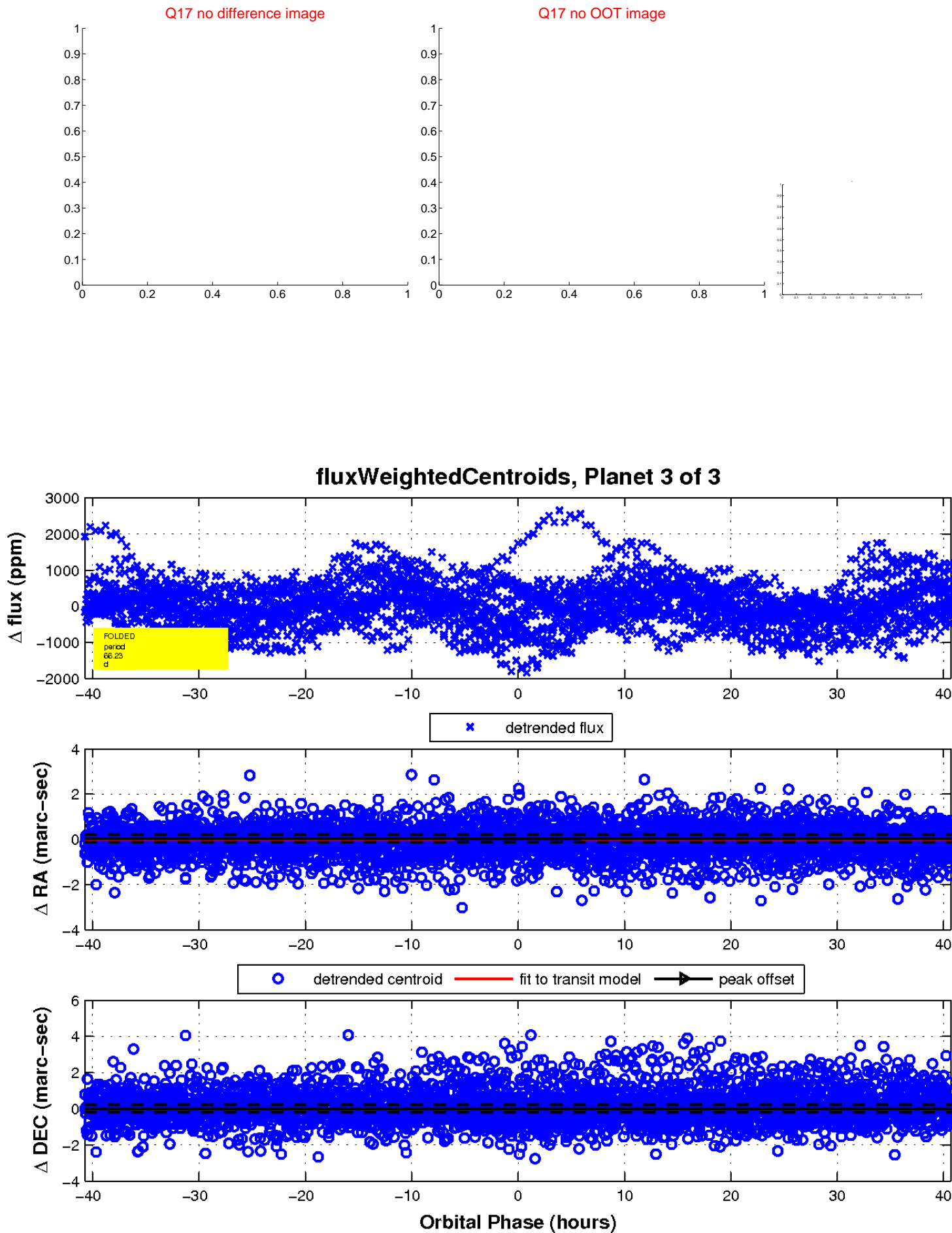
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

