

KIC 009364543

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})
009364543-01	OBS	No	0.667141	131.642211	199.7	4.502	15.8	10.8	3.43	6321	4.86	55604.25
009364543-02	OBS	No	42.139602	139.711102	798.1	23.157	9.4	7.0	3.43	6321	9.80	221.04
009364543-03	OBS	No	35.334786	146.410400	6706.1	0.844	10.5	10.8	3.43	6321	30.37	279.55
009364543-04	OBS	No	30.674491	144.649291	1594.5	7.102	10.8	9.3	3.43	6321	14.40	337.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009364543-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009364543-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
009364543-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009364543-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

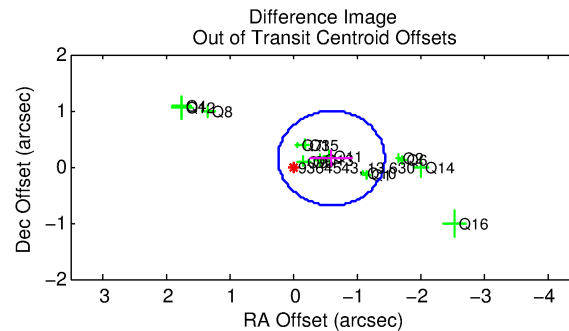
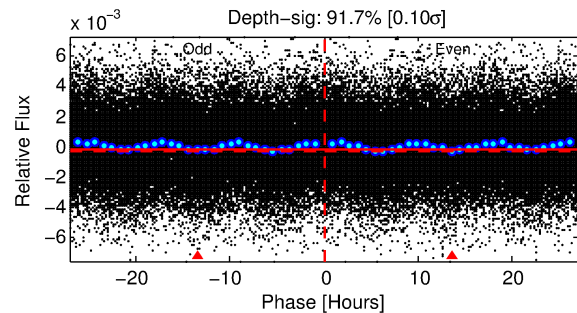
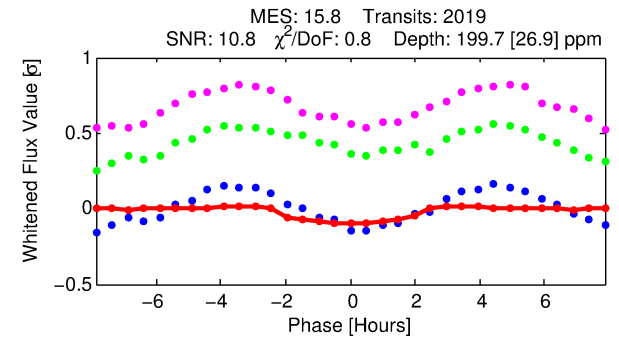
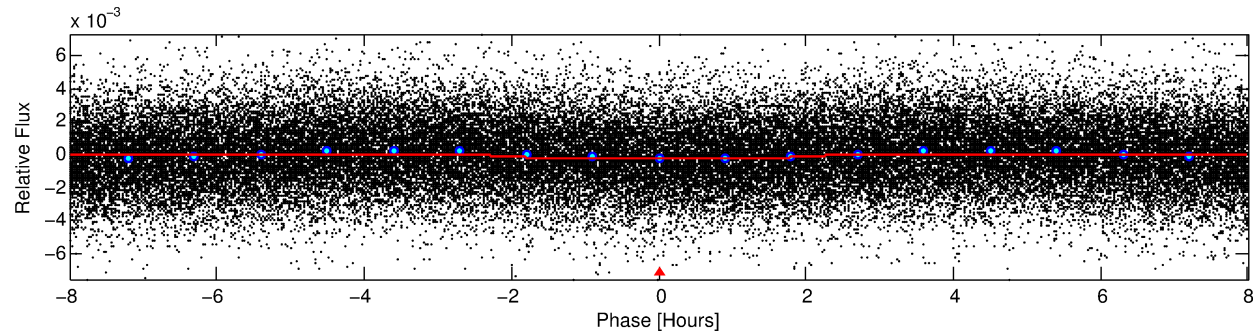
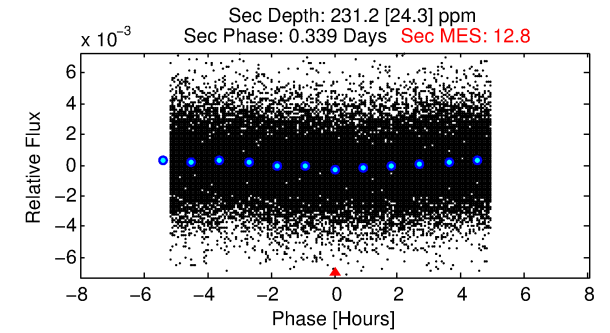
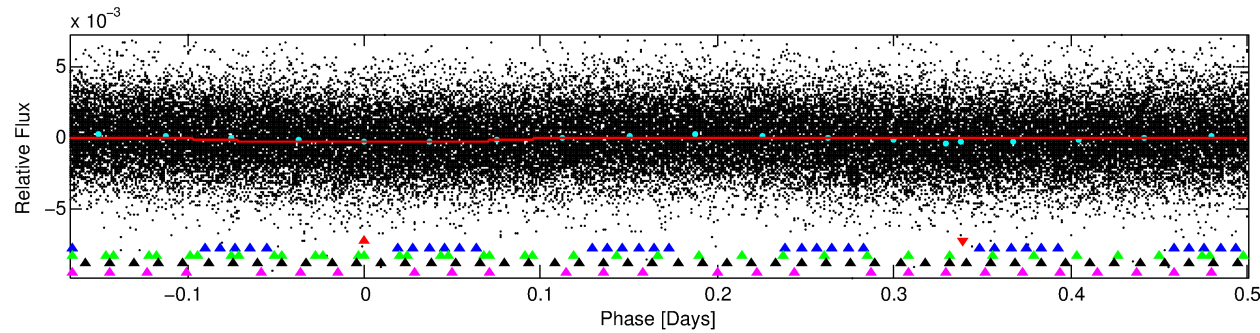
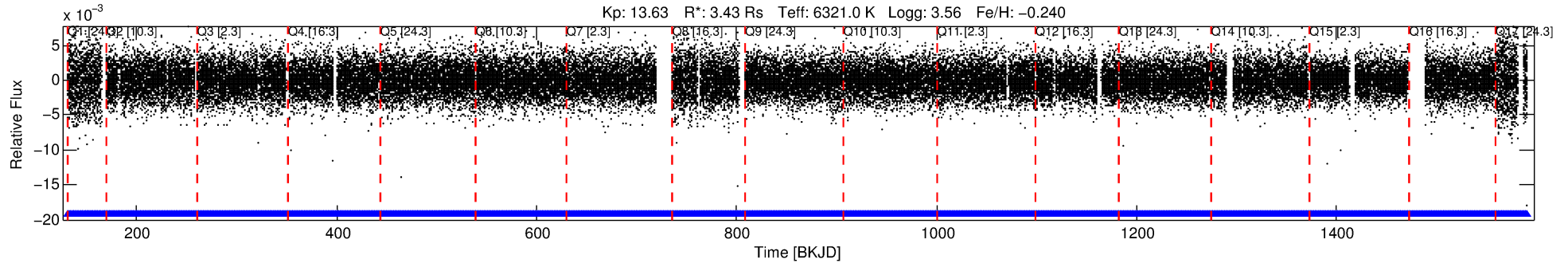
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009364543-01

No Significant Match Found

DV One-Page Summary

KIC: 9364543 Candidate: 1 of 5 Period: 0.667 d



DV Fit Results:

Period = 0.66714 [0.00001] d
Epoch = 131.6422 [0.0041] BKJD
Rp/R* = 0.0130 [0.0147]
a/R* = 1.31 [3.12]
b = 0.10 [57.65]
Seff = 55604.25 [63666.13]
Teq = 3916 [1121] K
Rp = 4.86 [6.30] Re
a = 0.0174 [0.0117] AU
Ag = 1.63 [4.13] [0.15σ]
Teffp = 6836 [3885] K [0.72σ]

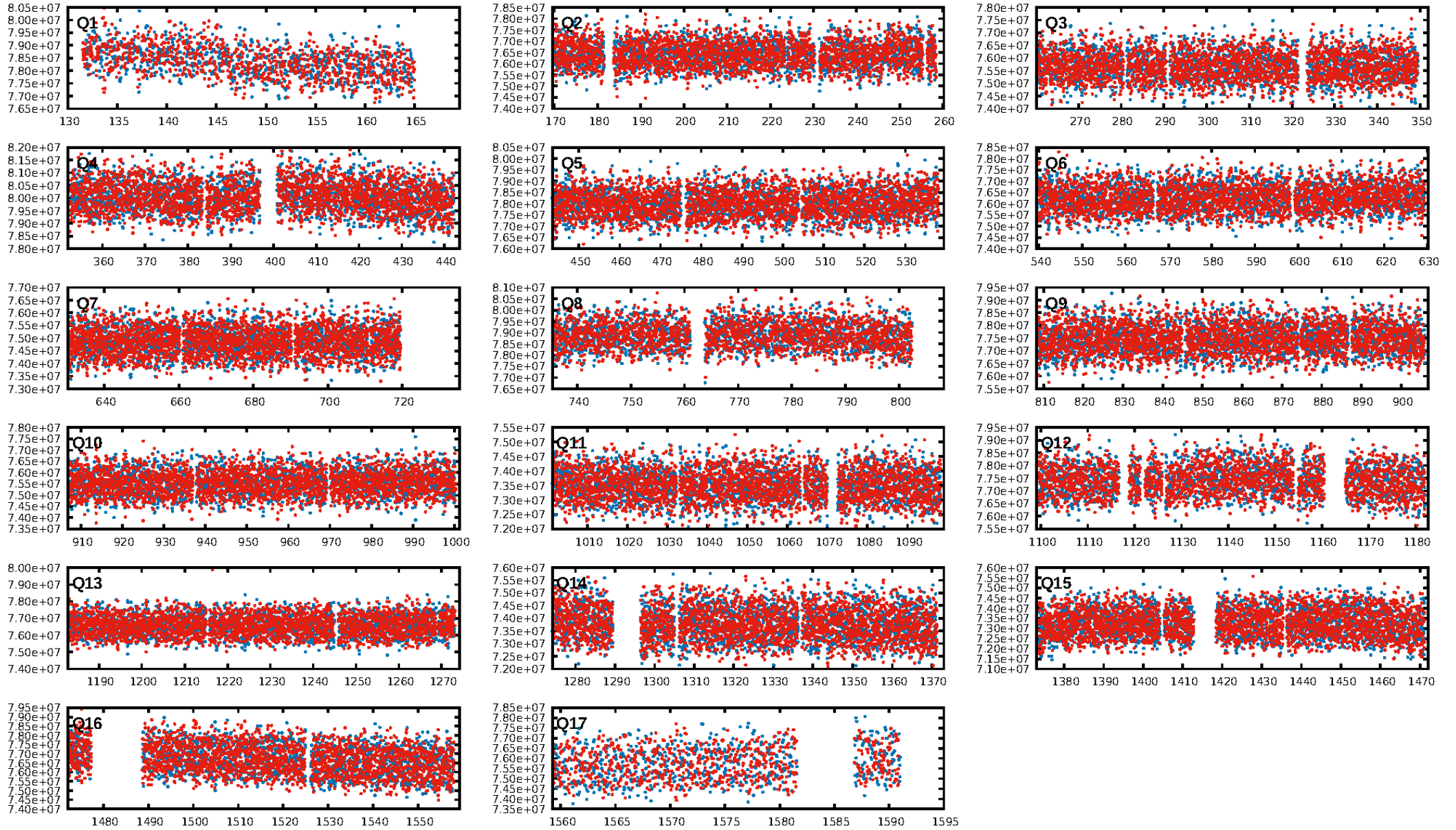
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [85.65σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [1928/1928]
GhostDiagnostic-chr: 59.03
Centroid-sig: 5.9%
Centroid-so: 0.979 arcsec [5.05σ]
OotOffset-rm: 0.624 arcsec [2.23σ]
OotOffset-st: 4/4/4 [16]
KicOffset-rm: 0.410 arcsec [1.32σ]
KicOffset-st: 4/4/4 [16]
DiffImageQuality-fgm: 0.88 [14/16]
DiffImageOverlap-fno: 1.00 [17/17]

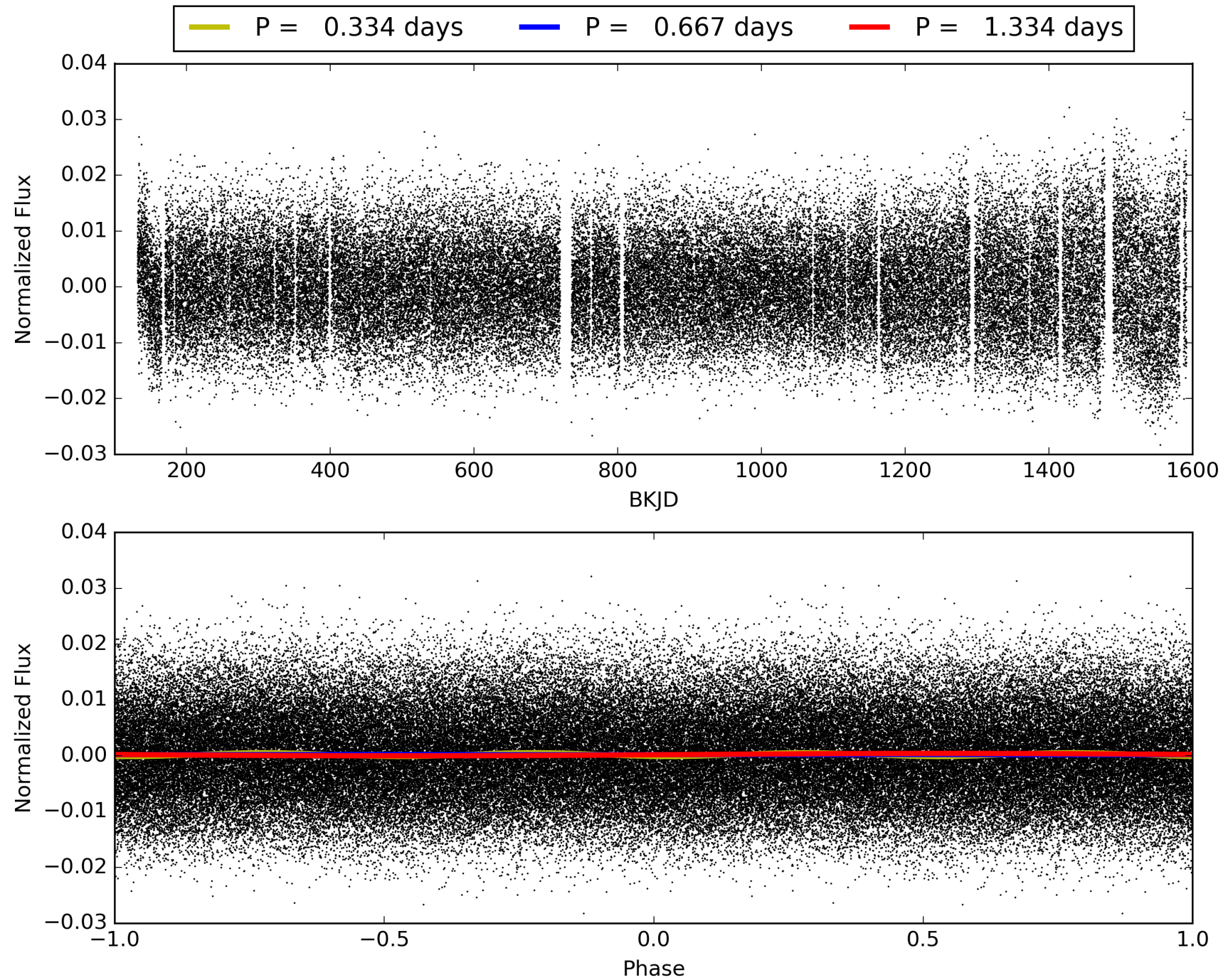
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:07:25 Z

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

TCE 009364543-01, PDC Light Curves

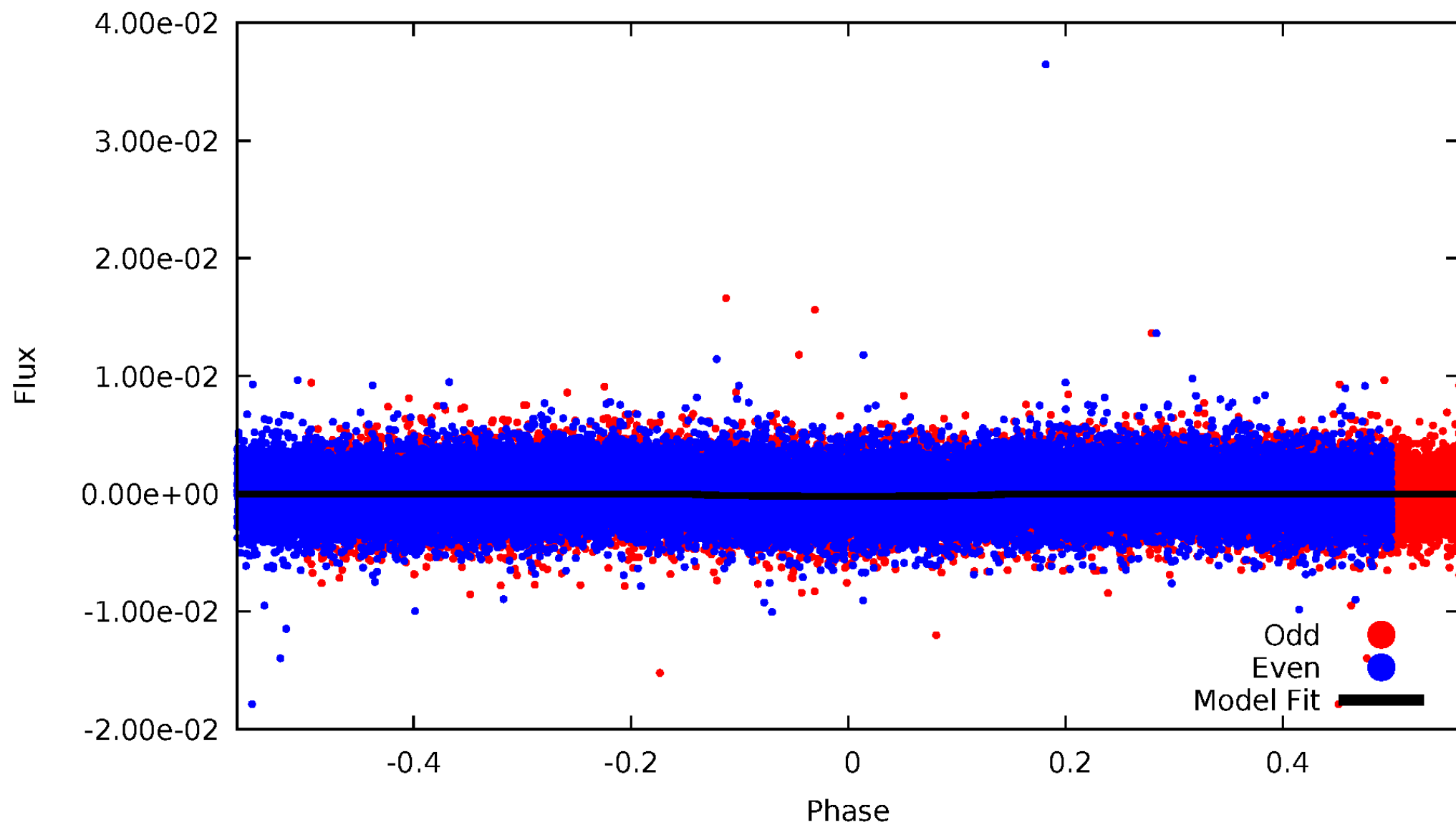


TCE 009364543-01



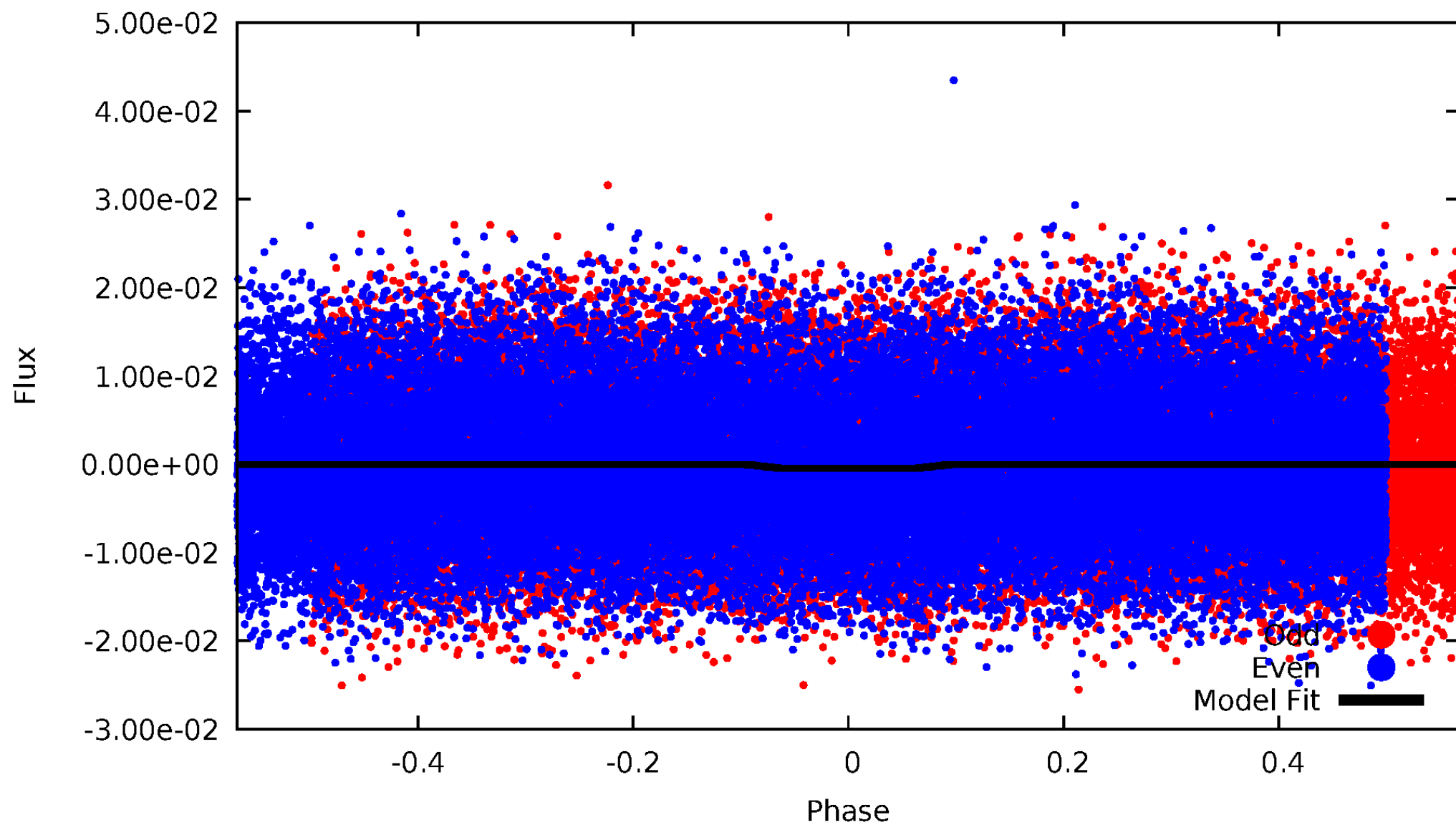
DV Odd/Even

TCE 009364543-01

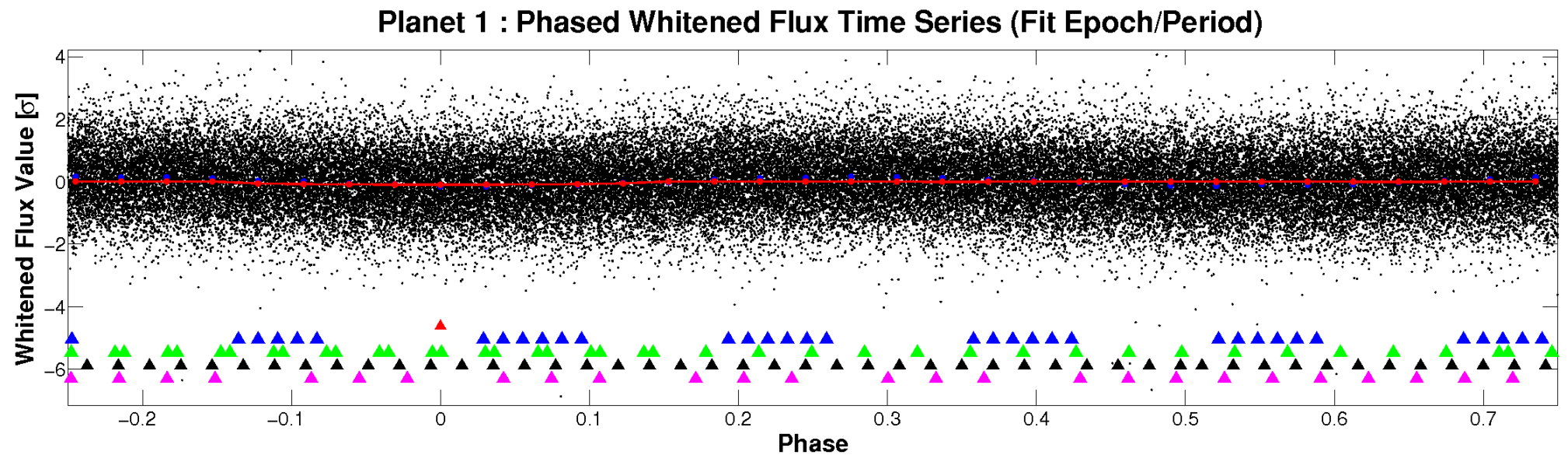
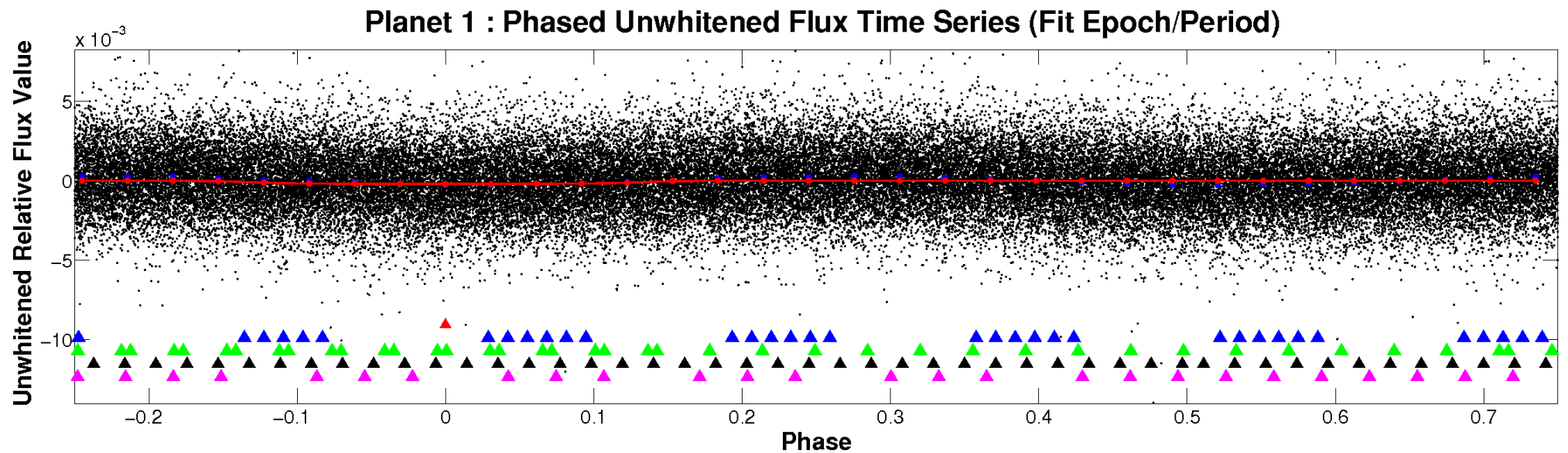


ALT Odd/Even

TCE 009364543-01

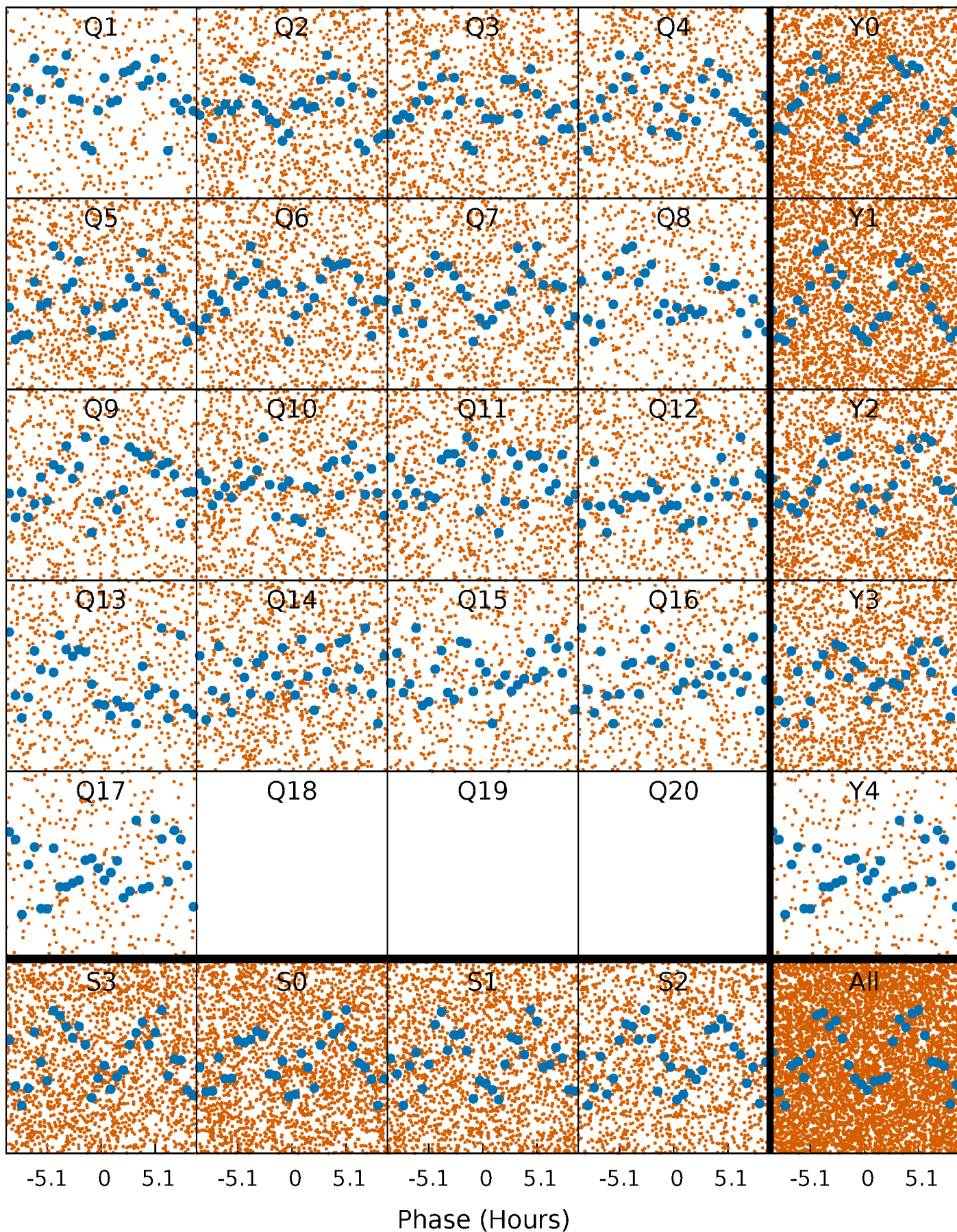


Non-Whitened Vs. Whitened Light Curve



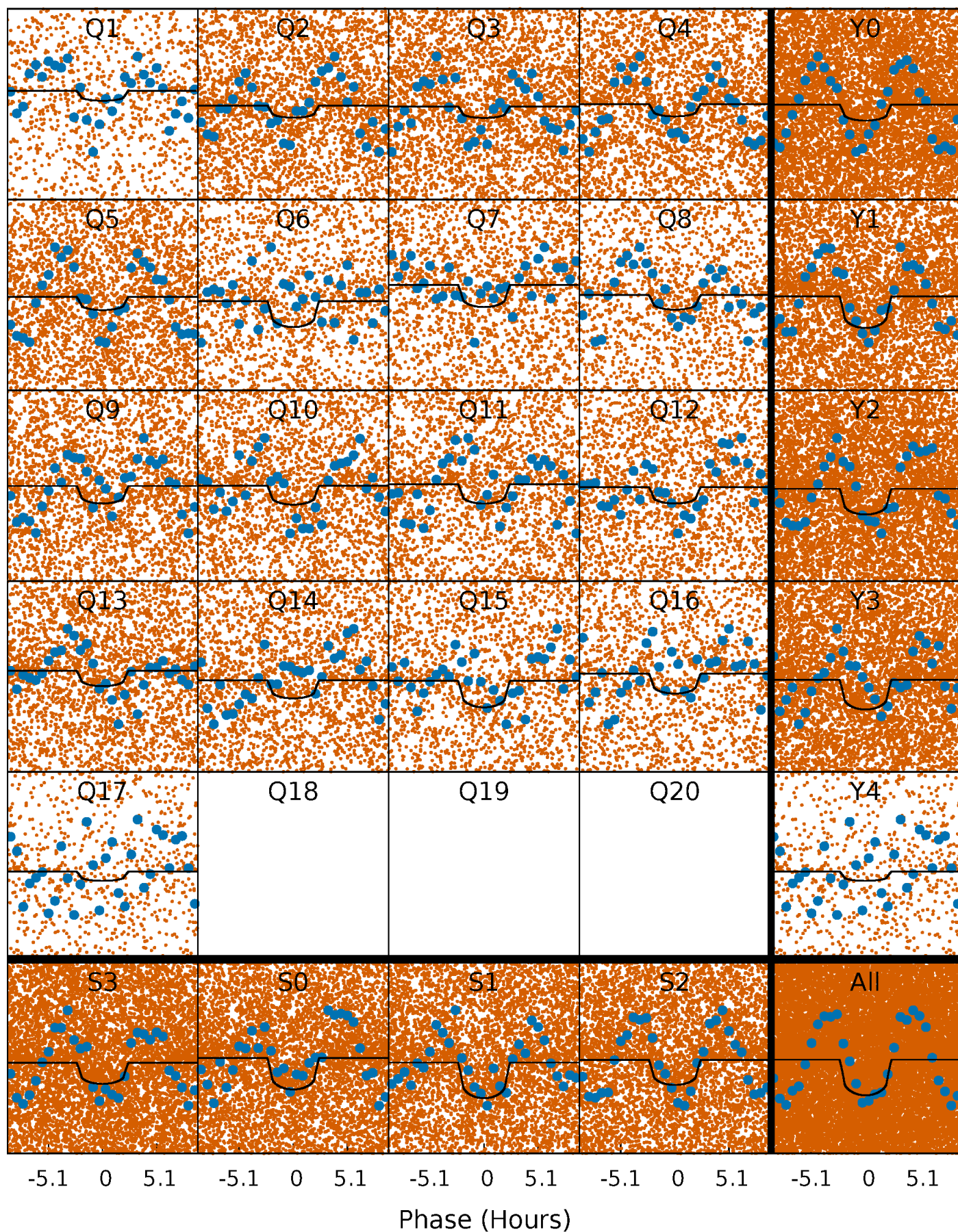
PDC Quarter-Phased Transit Curves

TCE 009364543-01 P= 0.667141 Days $T_0=131.642211$ (BKJD)



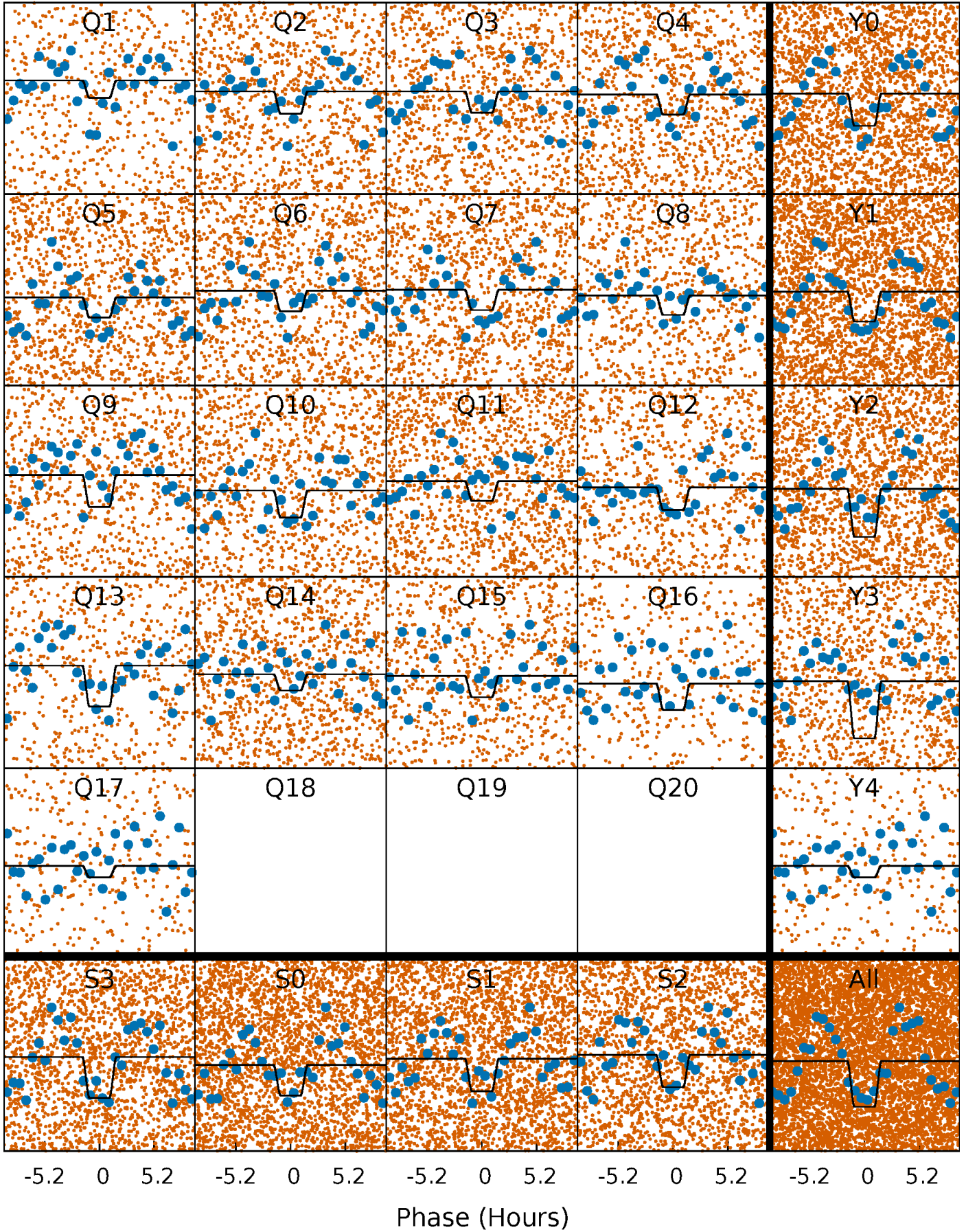
DV Quarter-Phased Transit Curves

TCE 009364543-01 P= 0.667141 Days $T_0=131.642211$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

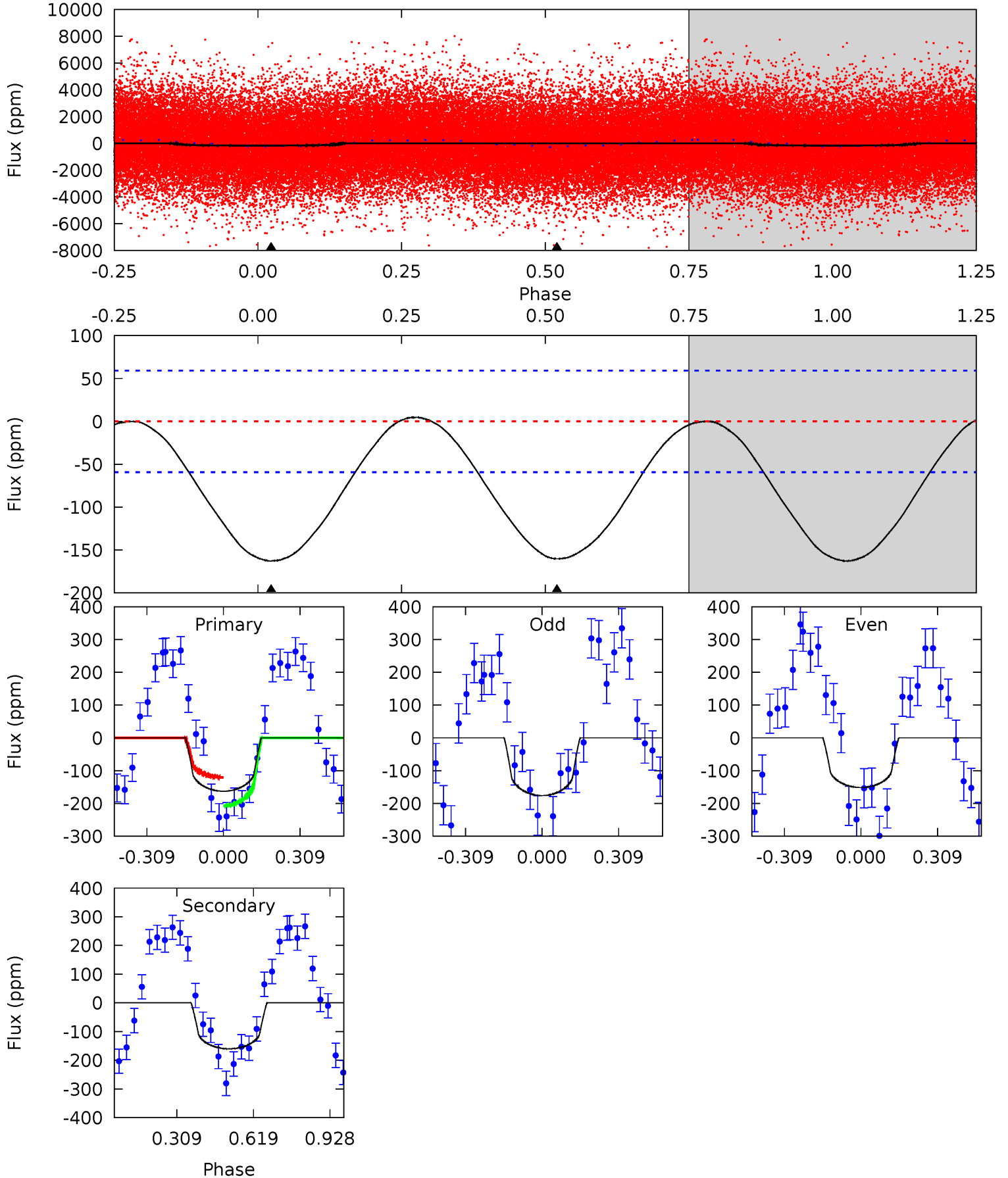
TCE 009364543-01 P= 0.667191 Days $T_0=131.616183$ (BKJD)



DV Model-Shift Uniqueness Test

009364543-01, P = 0.667141 Days, E = 130.975070 Days

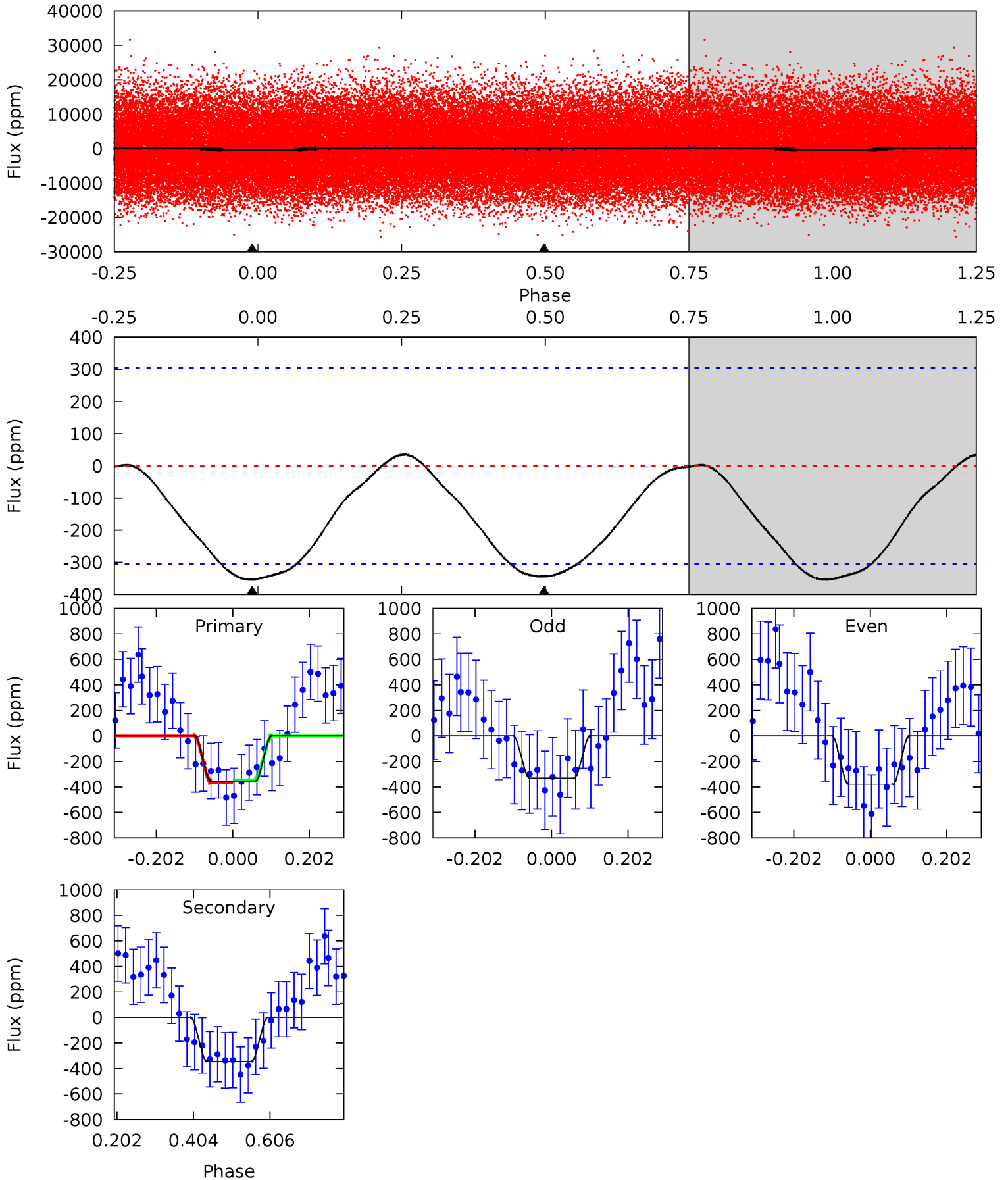
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.9	11.7	0	0	4.32	1.02	0.21	11.9	11.9	11.7	11.7	0.90	1.02	0.03	3.22



Alt Model-Shift Uniqueness Test

009364543-01, P = 0.667191 Days, E = 130.948992 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.14	4.99	0	0	4.41	1.28	0.27	5.14	5.14	4.99	4.99	0.35	0.78	0.09	0.14



Stellar Parameters For KIC 009364543

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6321^{+203}_{-226}	$3.565^{+0.688}_{-0.121}$	$-0.240^{+0.300}_{-0.250}$	$3.428^{+0.538}_{-2.152}$	$1.575^{+0.174}_{-0.522}$	$0.055^{+0.641}_{-0.020}$
	+3%/-4%	+19%/-3%	+125%/-104%	+16%/-63%	+11%/-33%	+1165%/-37%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009364543-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-160 ± 14	$5.19^{+5.03}_{-3.39}$	5303^{+388}_{-917}	4994^{+4300}_{-8237}	$0.980^{+6.575}_{-0.722}$
Alt.	-344 ± 69	$6.73^{+6.26}_{-3.82}$	5294^{+437}_{-860}	5370^{+3853}_{-2288}	$1.163^{+5.074}_{-0.833}$

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

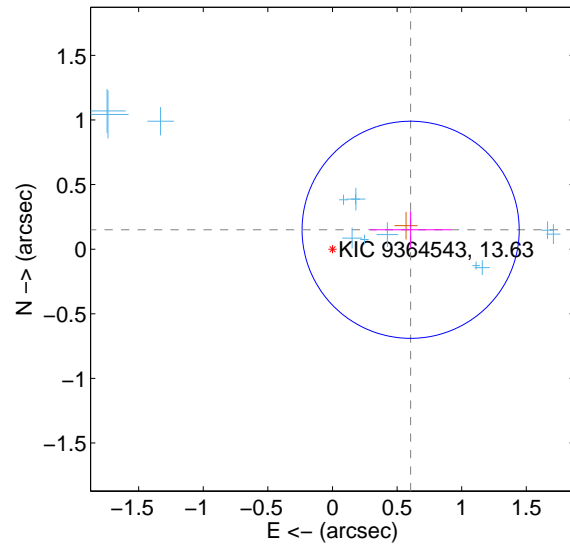
Supplemental centroid analysis for 009364543-01. Kepler magnitude: 13.63. Transit SNR 10.82

There are 14 quarters with good PRF difference image offsets

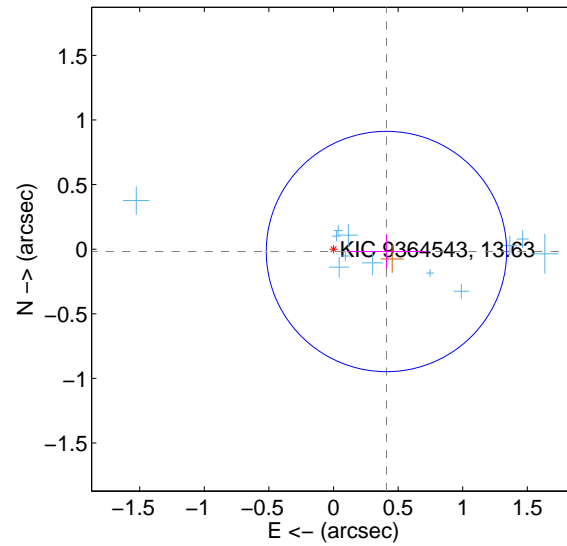
The direct PRF centroid is offset from the target star catalog position by about 0.74 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.624 ± 0.280	2.23	-0.605 ± 0.316	0.150 ± 0.144
PRF-fit source offset from KIC position	0.410 ± 0.310	1.32	-0.410 ± 0.307	-0.018 ± 0.134
photometric centroid source offset	0.98 ± 0.19	5.05	0.70 ± 0.17	-0.69 ± 0.21

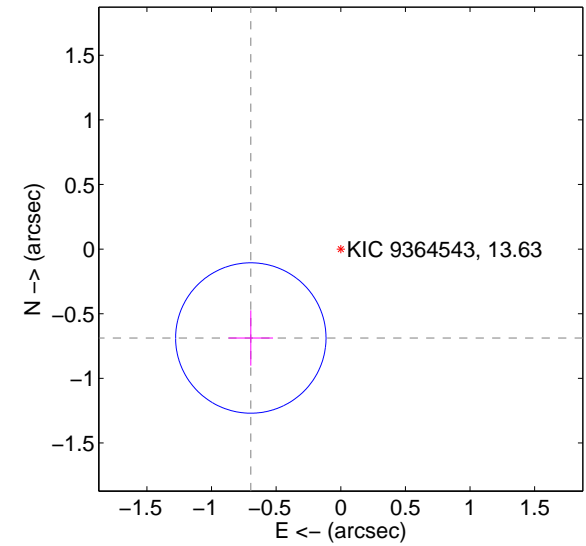
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

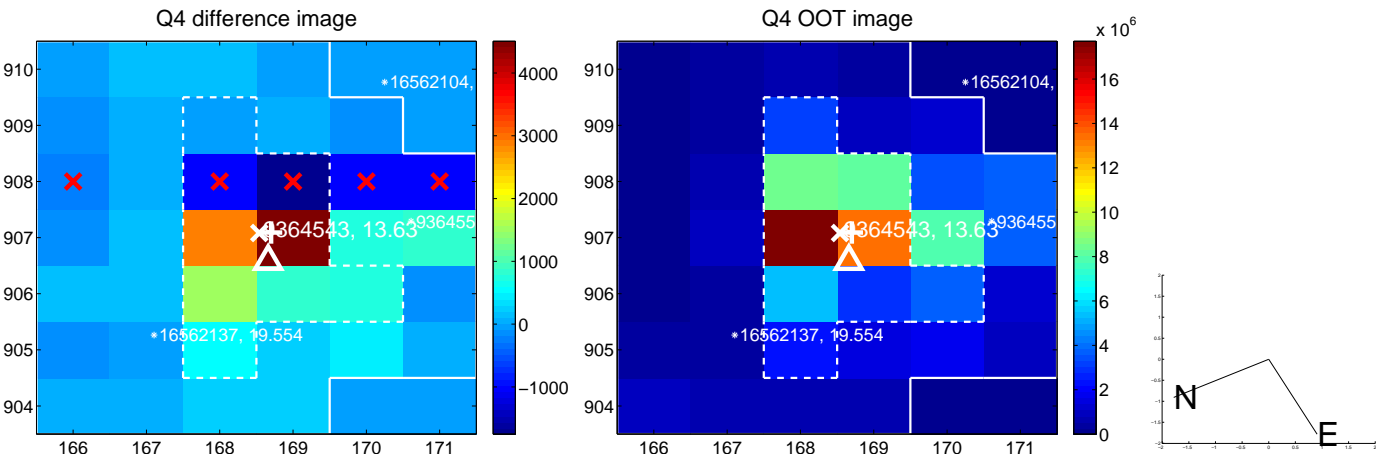
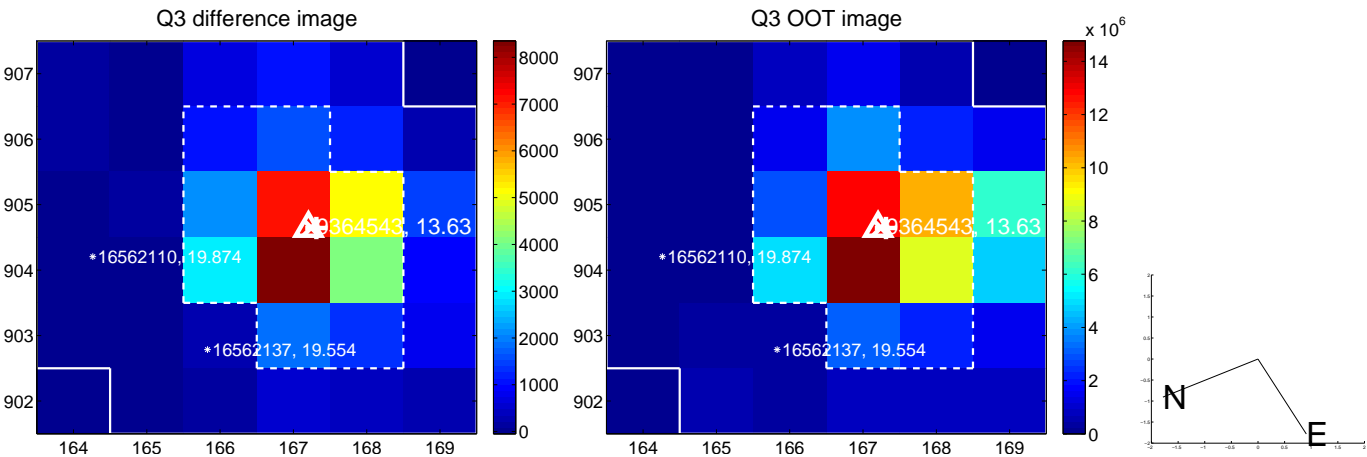
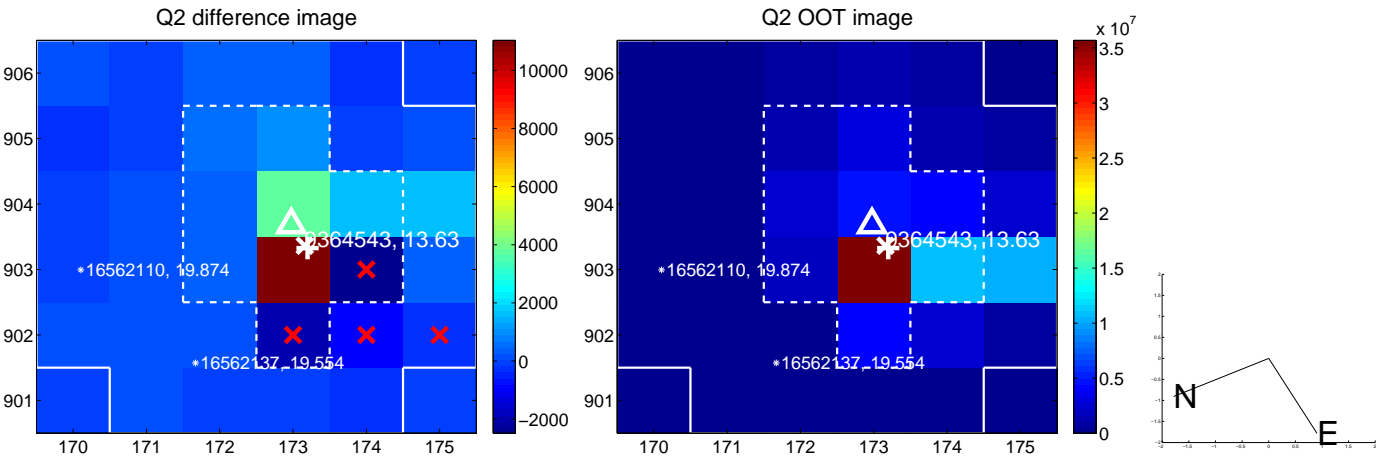
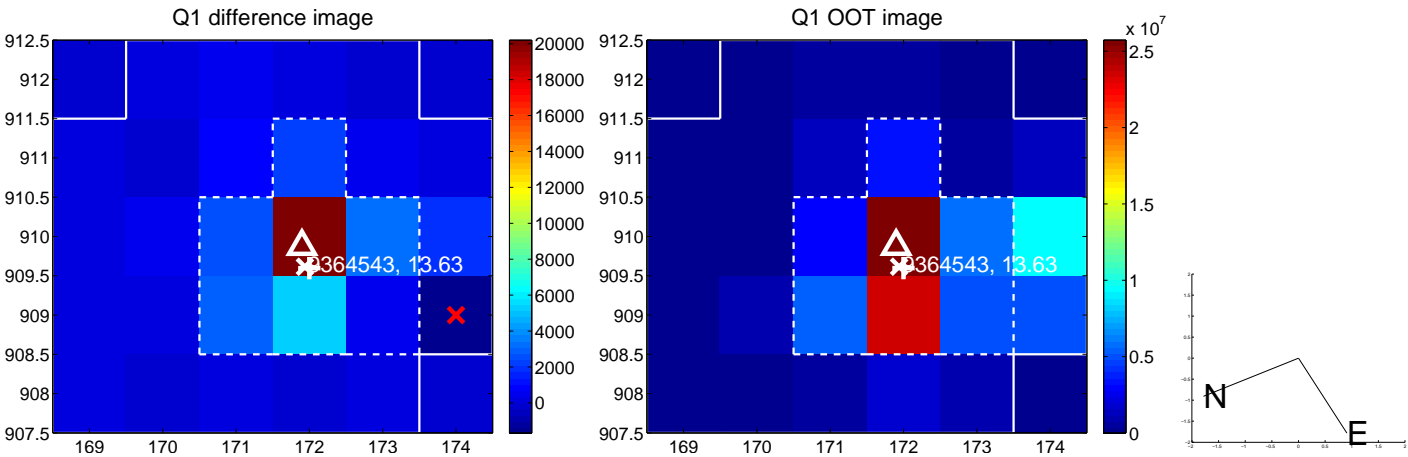


offset from photometric centroids

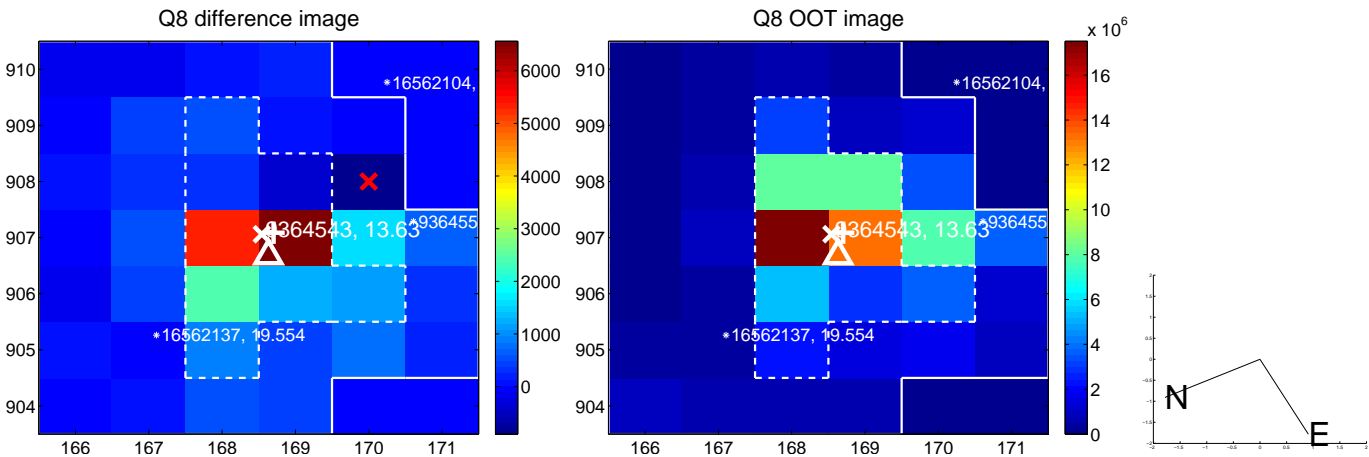
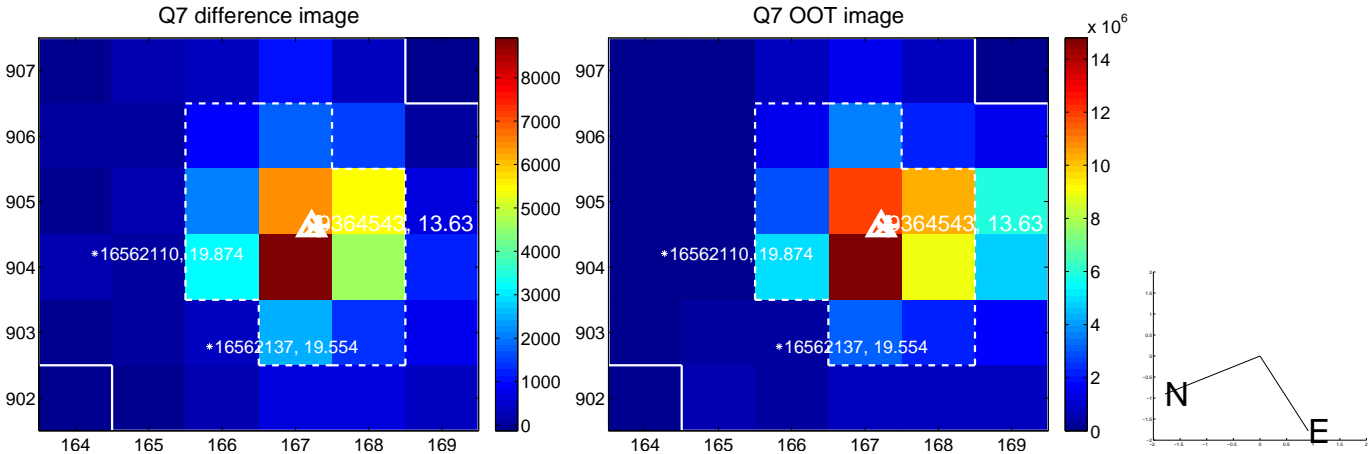
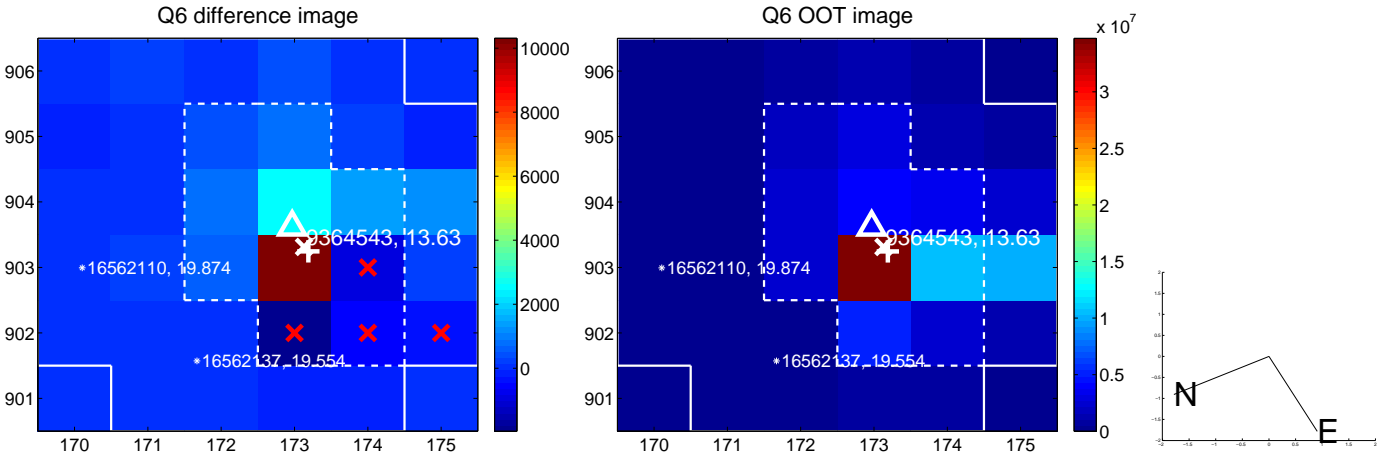
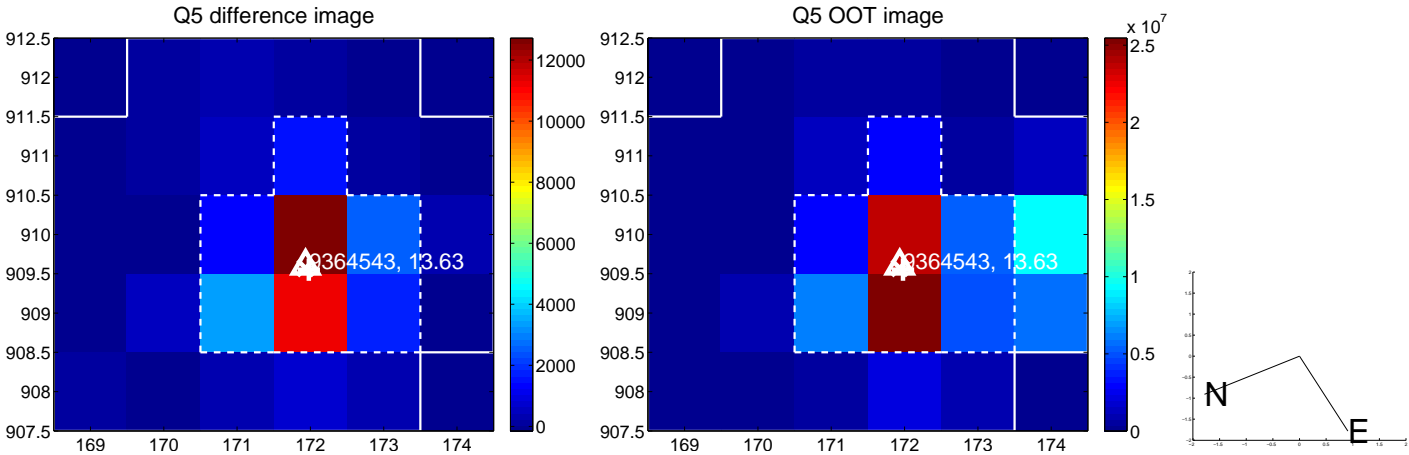


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

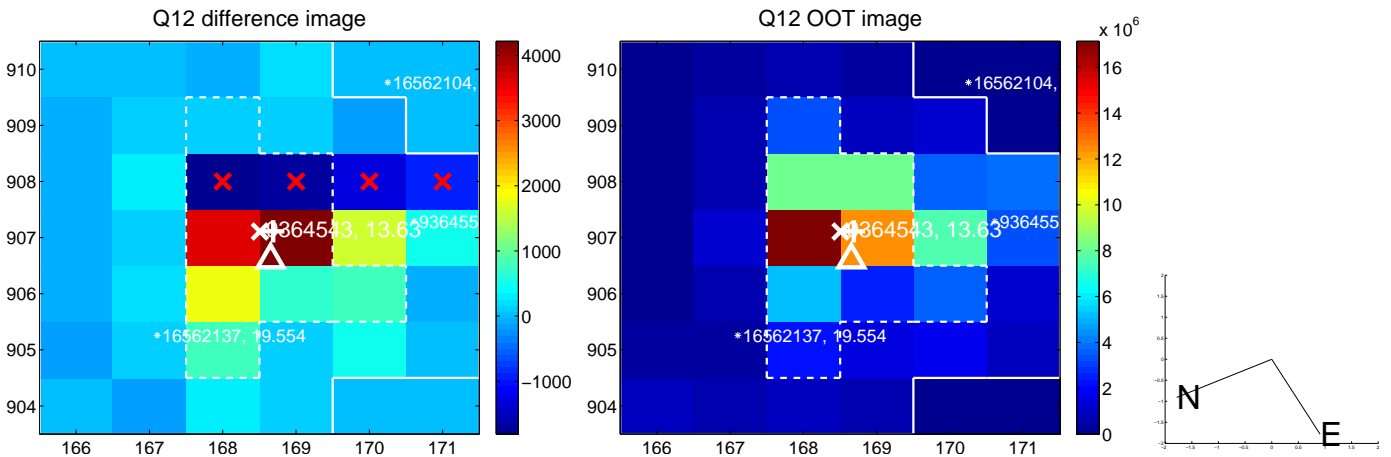
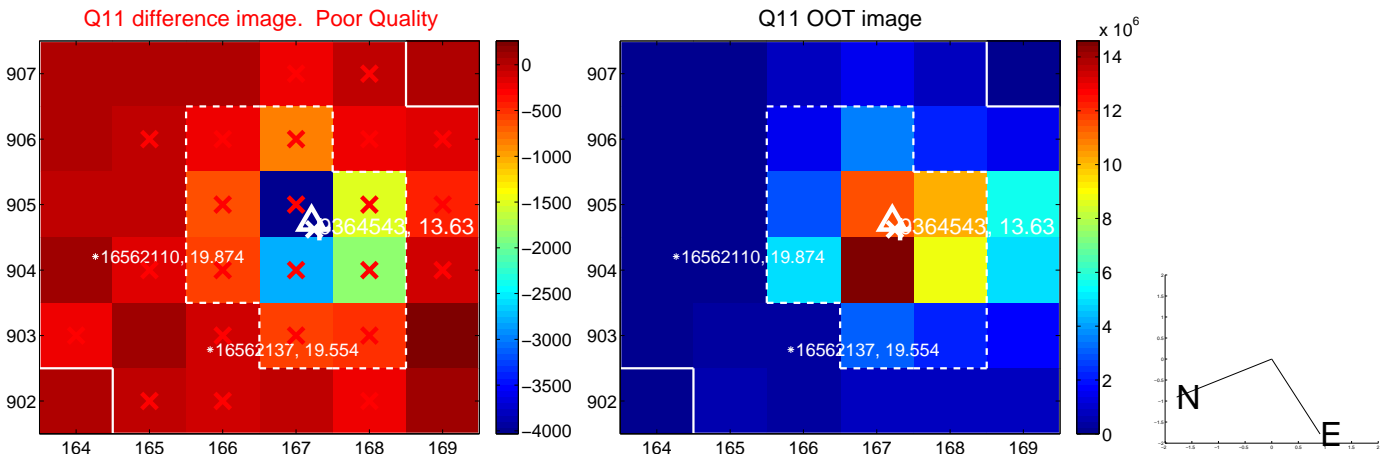
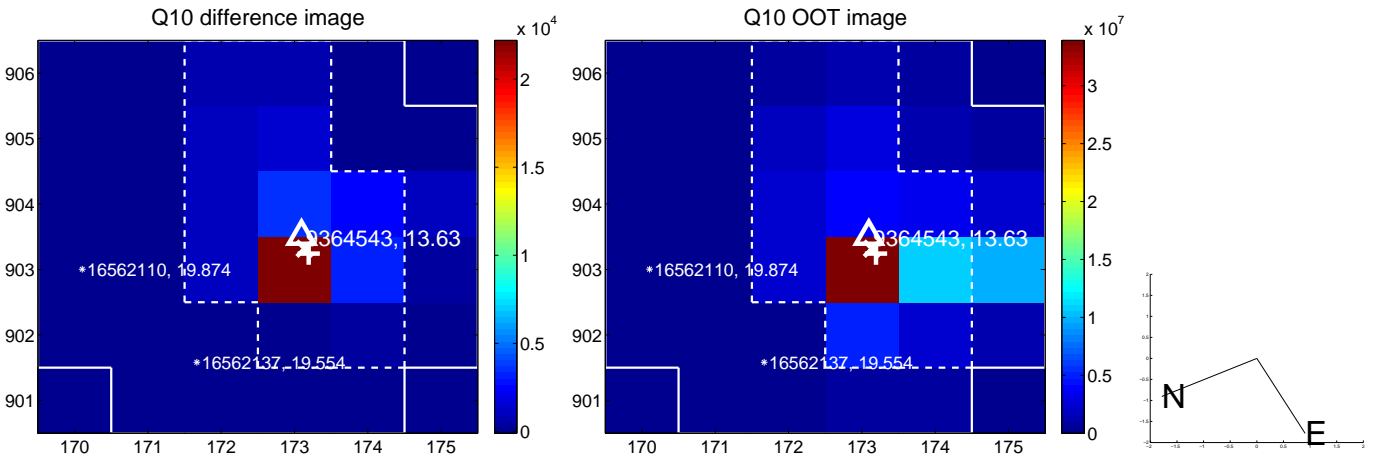
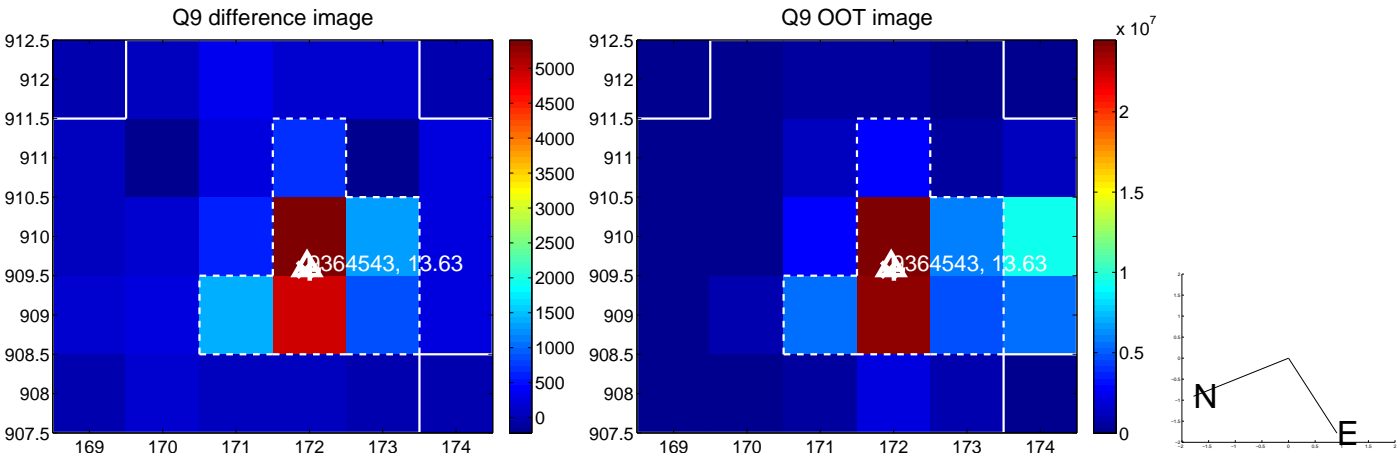
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



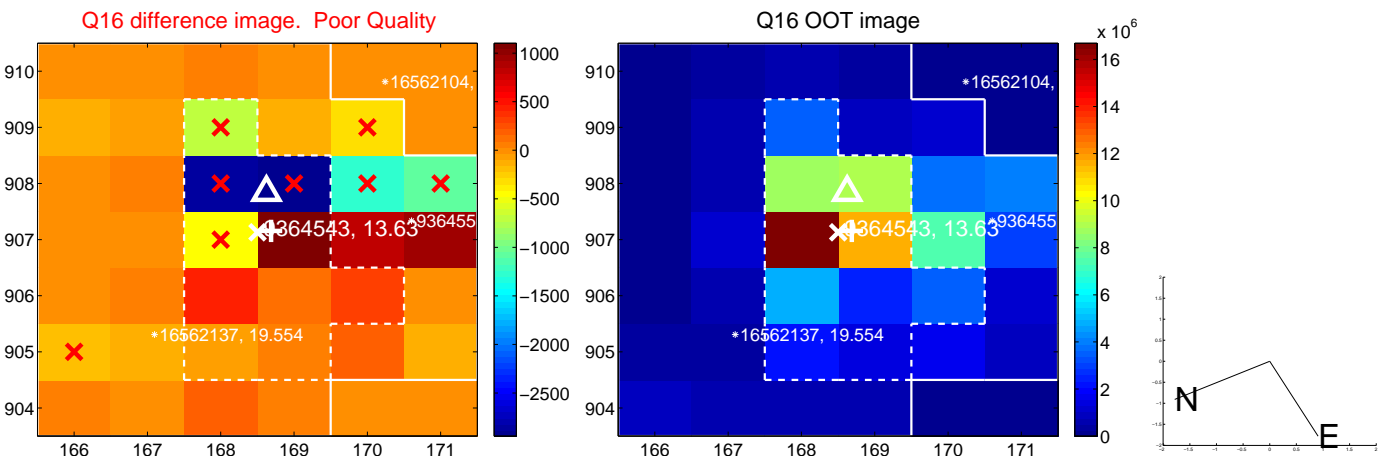
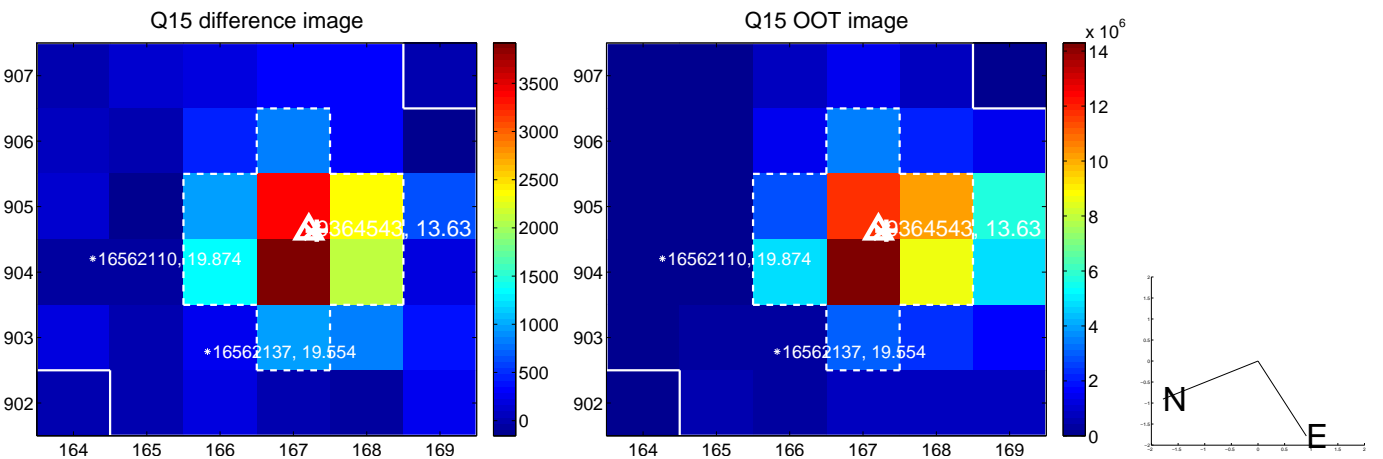
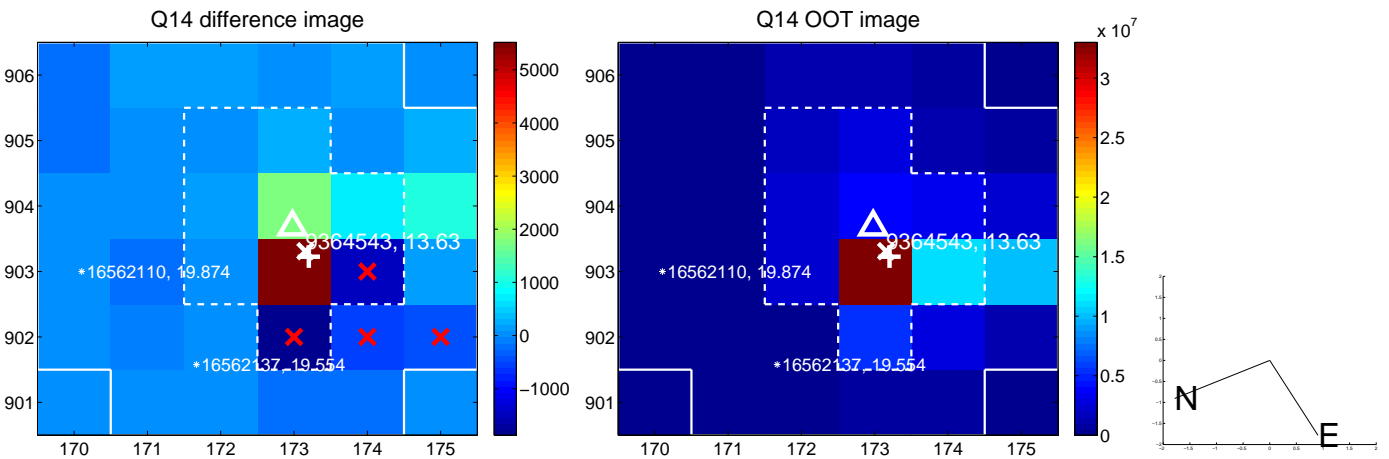
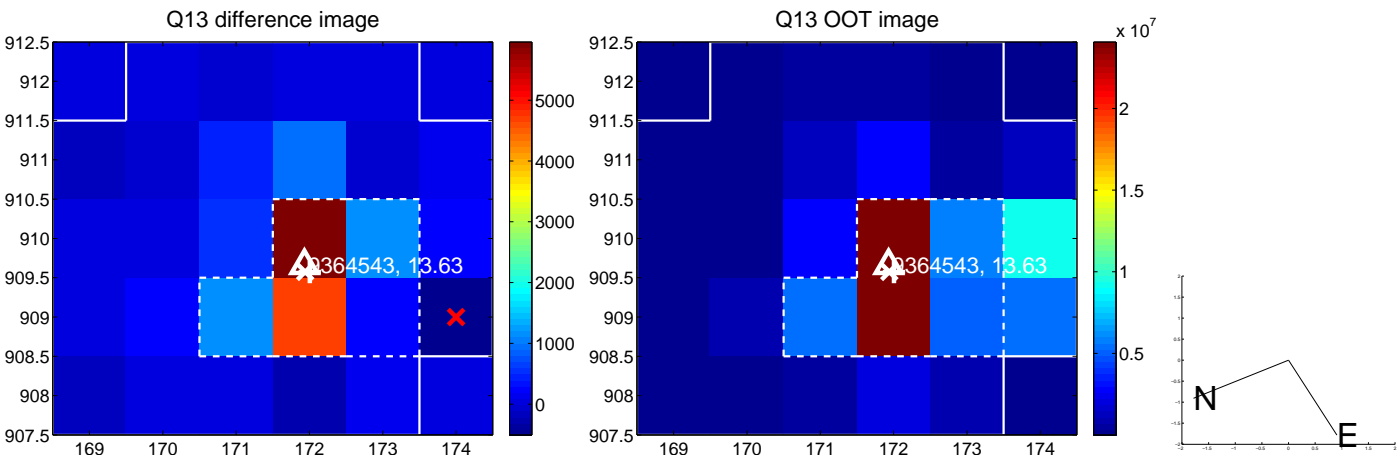
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



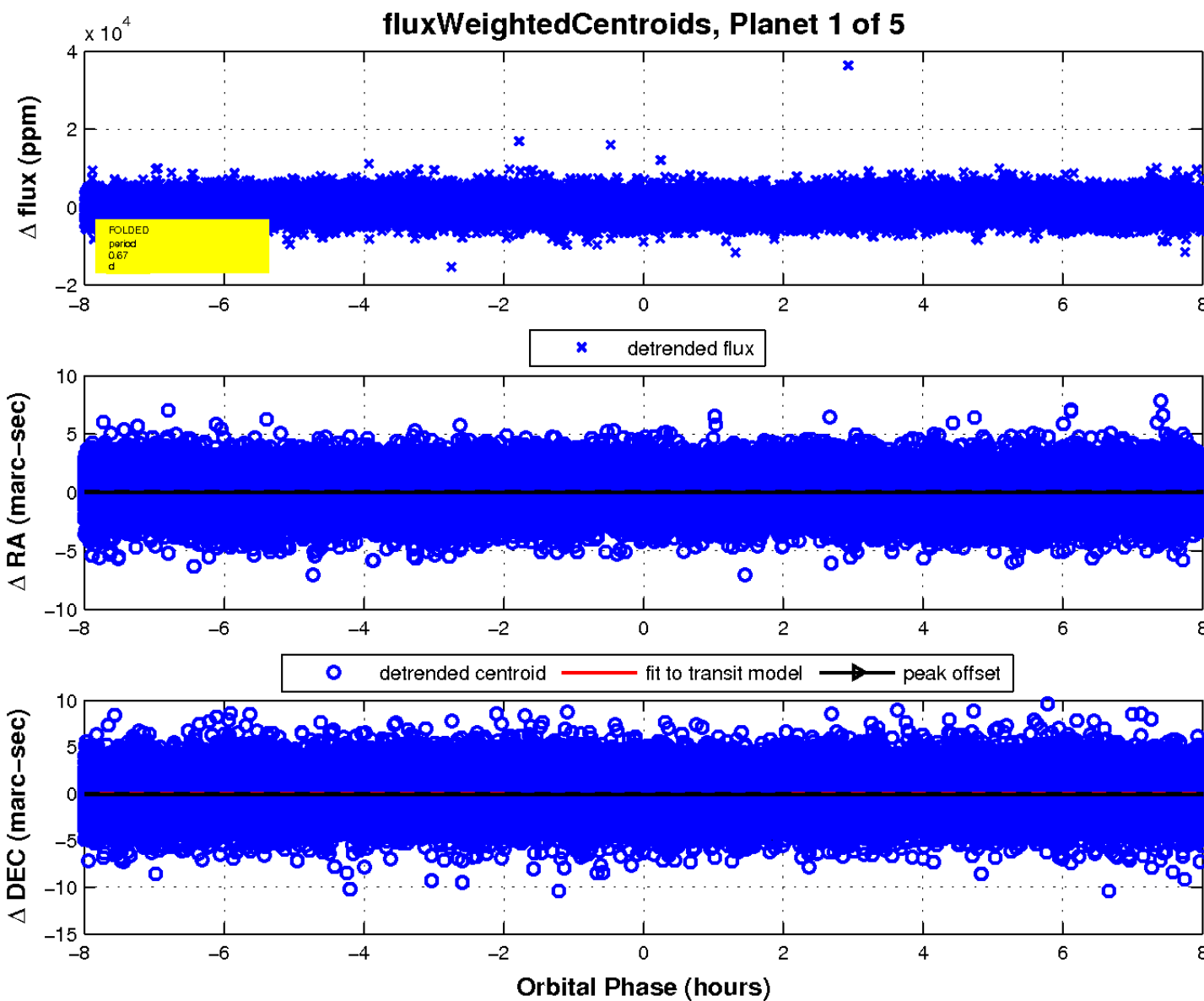
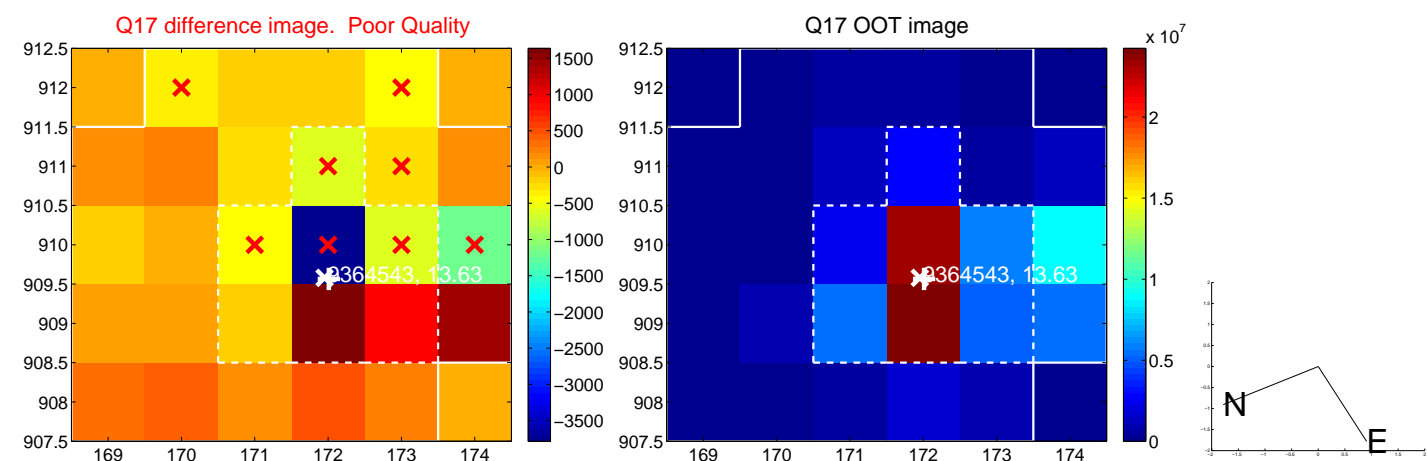
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

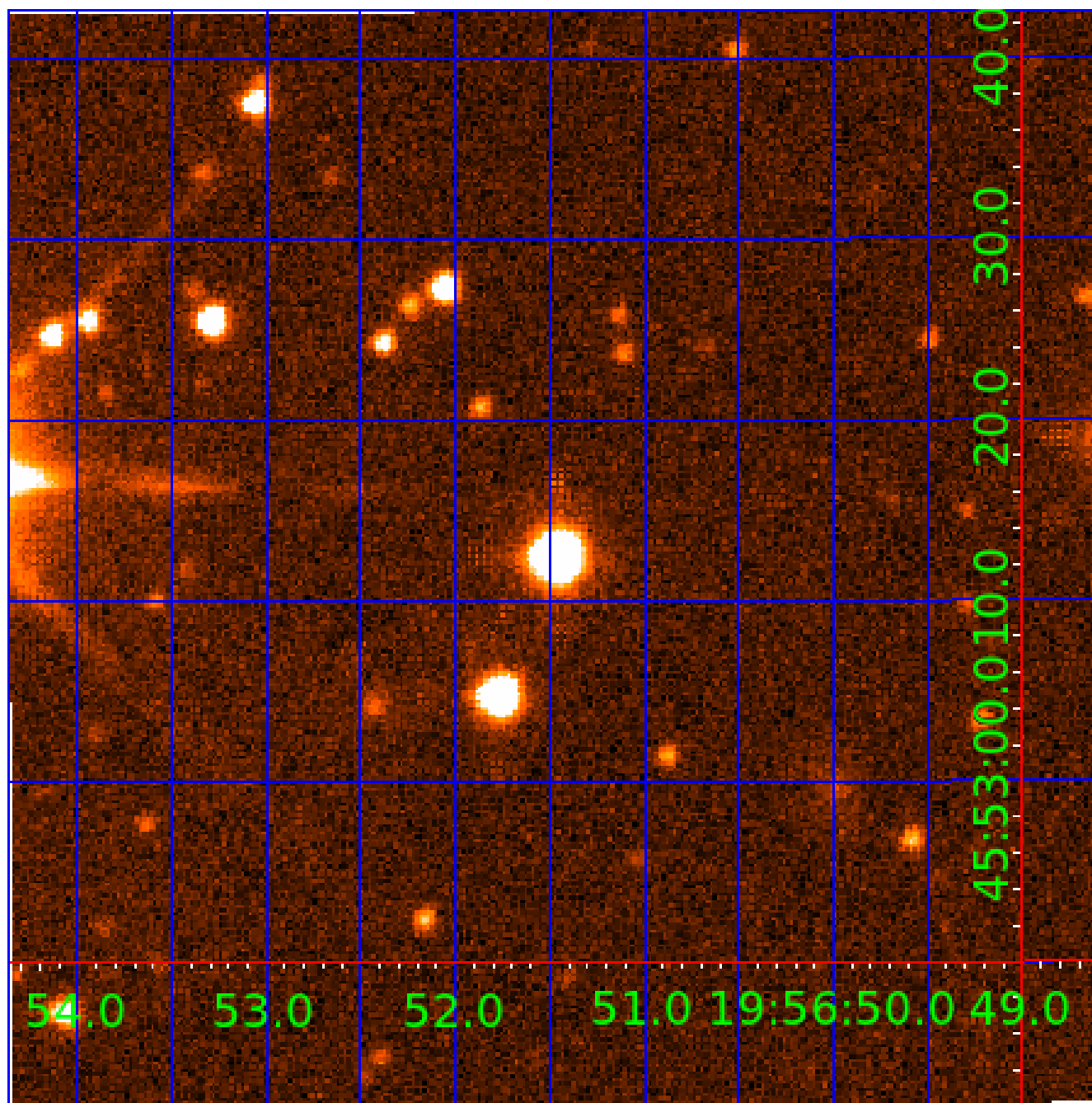


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009364543

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})
009364543-01	OBS	No	0.667141	131.642211	199.7	4.502	15.8	10.8	3.43	6321	4.86	55604.25
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009364543-03	OBS	No	35.334786	146.410400	6706.1	0.844	10.5	10.8	3.43	6321	30.37	279.55
009364543-04	OBS	No	30.674491	144.649291	1594.5	7.102	10.8	9.3	3.43	6321	14.40	337.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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009364543-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
009364543-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009364543-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

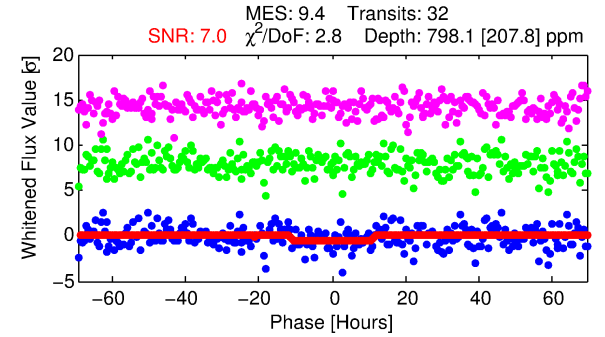
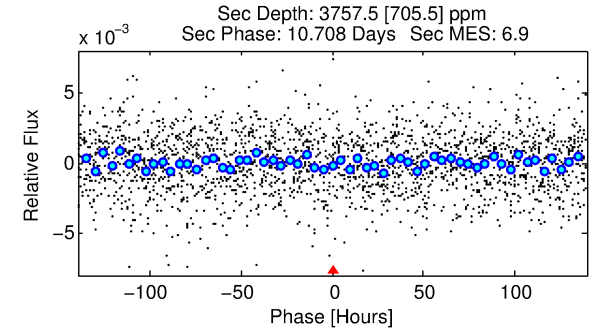
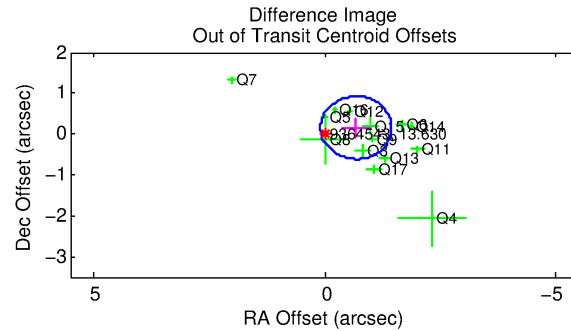
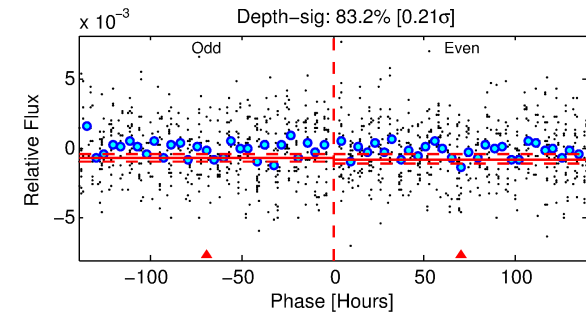
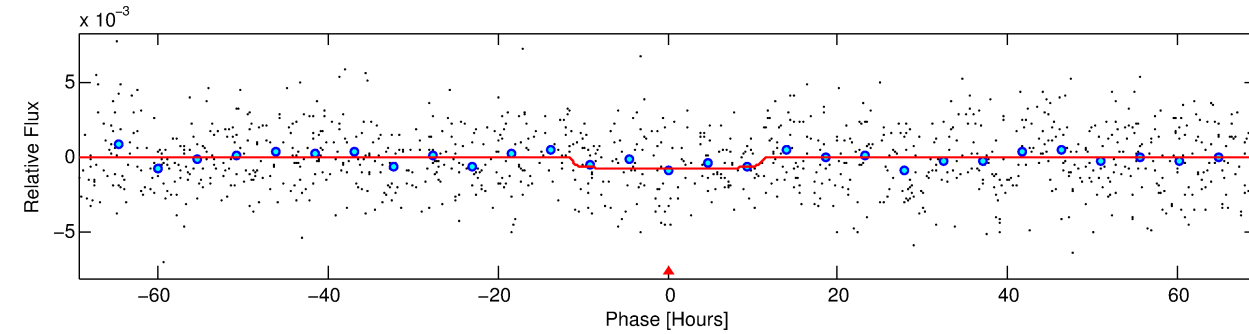
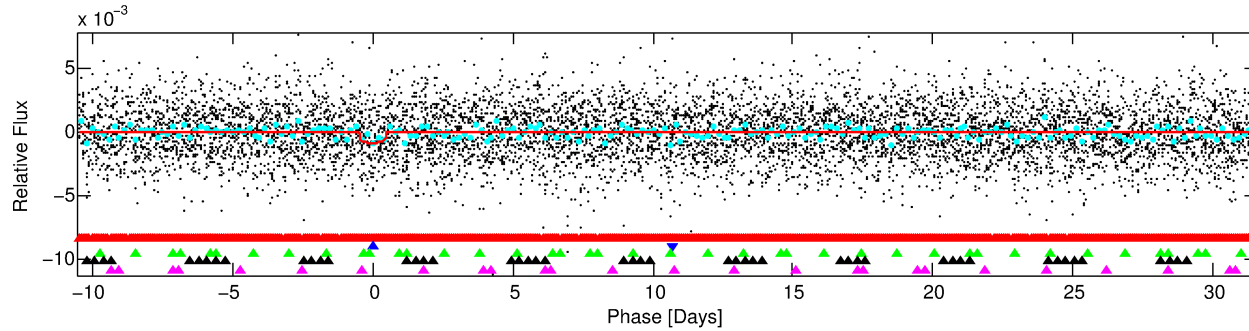
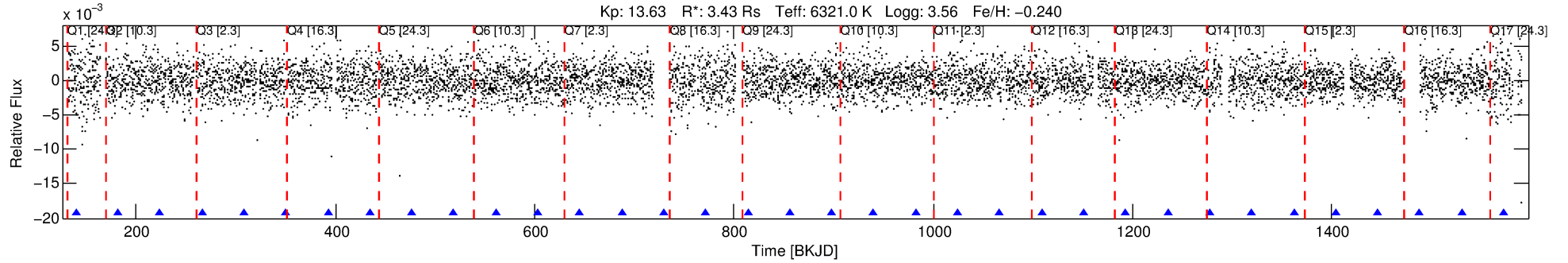
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009364543-02

No Significant Match Found

DV One-Page Summary

KIC: 9364543 Candidate: 2 of 5 Period: 42.140 d



DV Fit Results:

Period = 42.13960 [0.00474] d
Epoch = 139.7111 [0.0833] BKJD
Rp/R* = 0.0262 [0.0246]
a/R* = 13.63 [64.14]
b = 0.31 [14.18]
Seff = 221.04 [253.09]
Teq = 983 [281] K
Rp = 9.80 [11.08] Re
a = 0.2758 [0.1858] AU
Ag = 1635.73 [3604.26] [0.45 σ]
Teffp = 9667 [4576] K [1.89 σ]

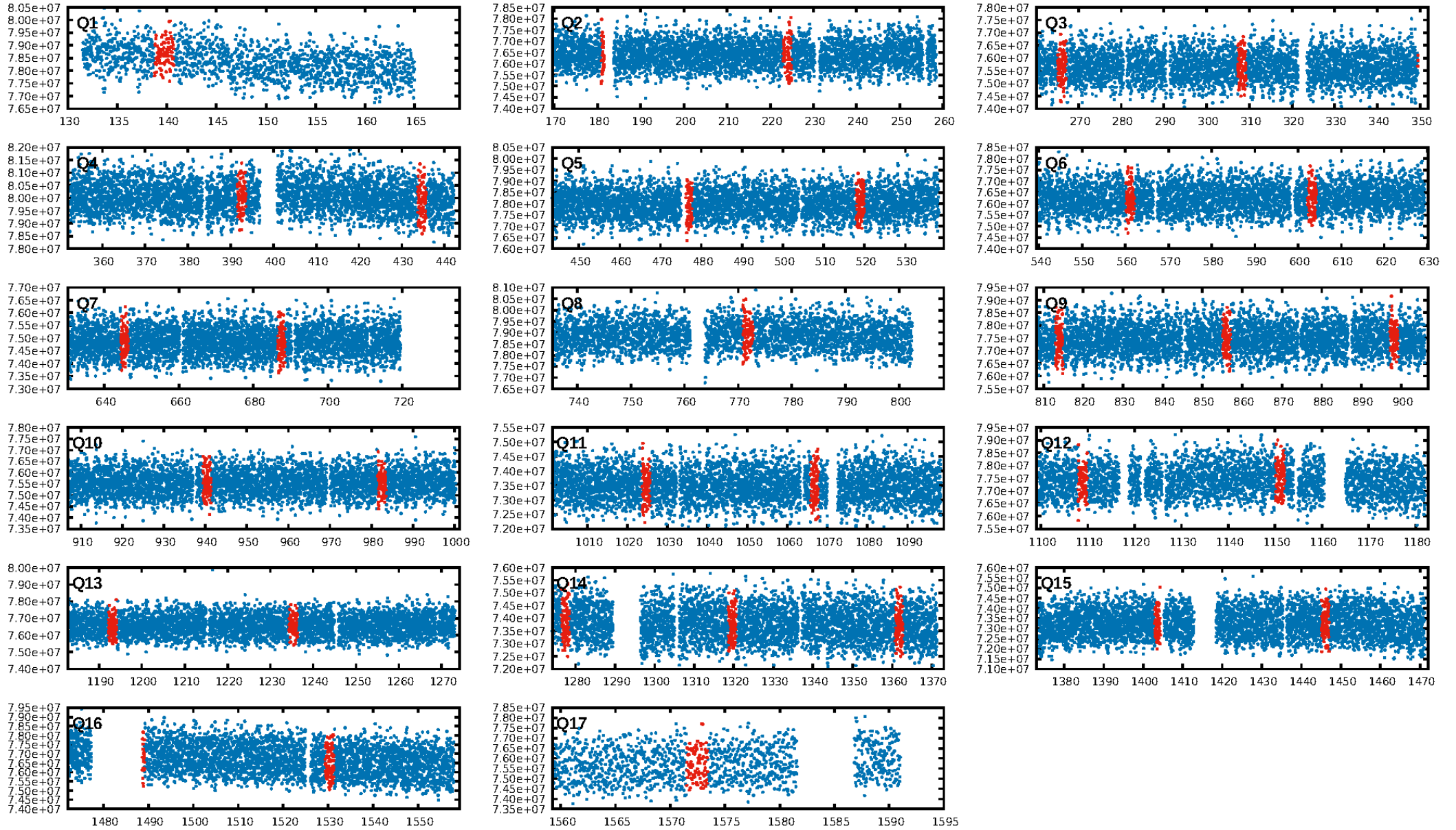
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.05 σ]
LongPeriod-sig: 100.0% [10.87 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [30/30]
GhostDiagnostic-chr: 2.167
Centroid-sig: 18.1%
Centroid-so: 1.199 arcsec [5.06 σ]
OotOffset-rm: 0.699 arcsec [2.72 σ]
KicOffset-rm: 0.534 arcsec [1.71 σ]
OotOffset-st: 2/4/4/4 [14]
KicOffset-st: 2/4/4/4 [14]
DiffImageQuality-fgm: 0.21 [3/14]
DiffImageOverlap-fno: 0.00 [0/16]

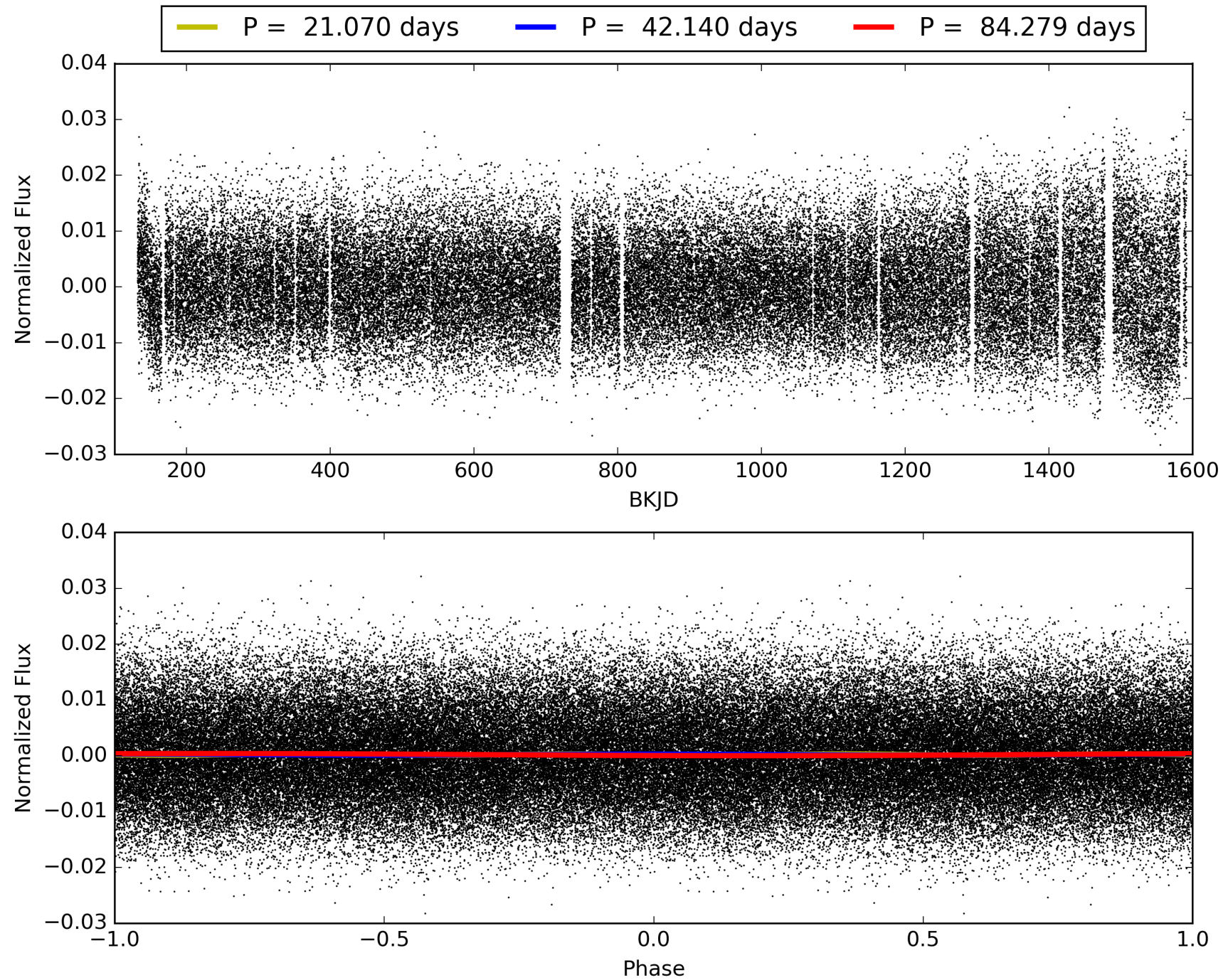
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:07:36 Z

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

TCE 009364543-02, PDC Light Curves

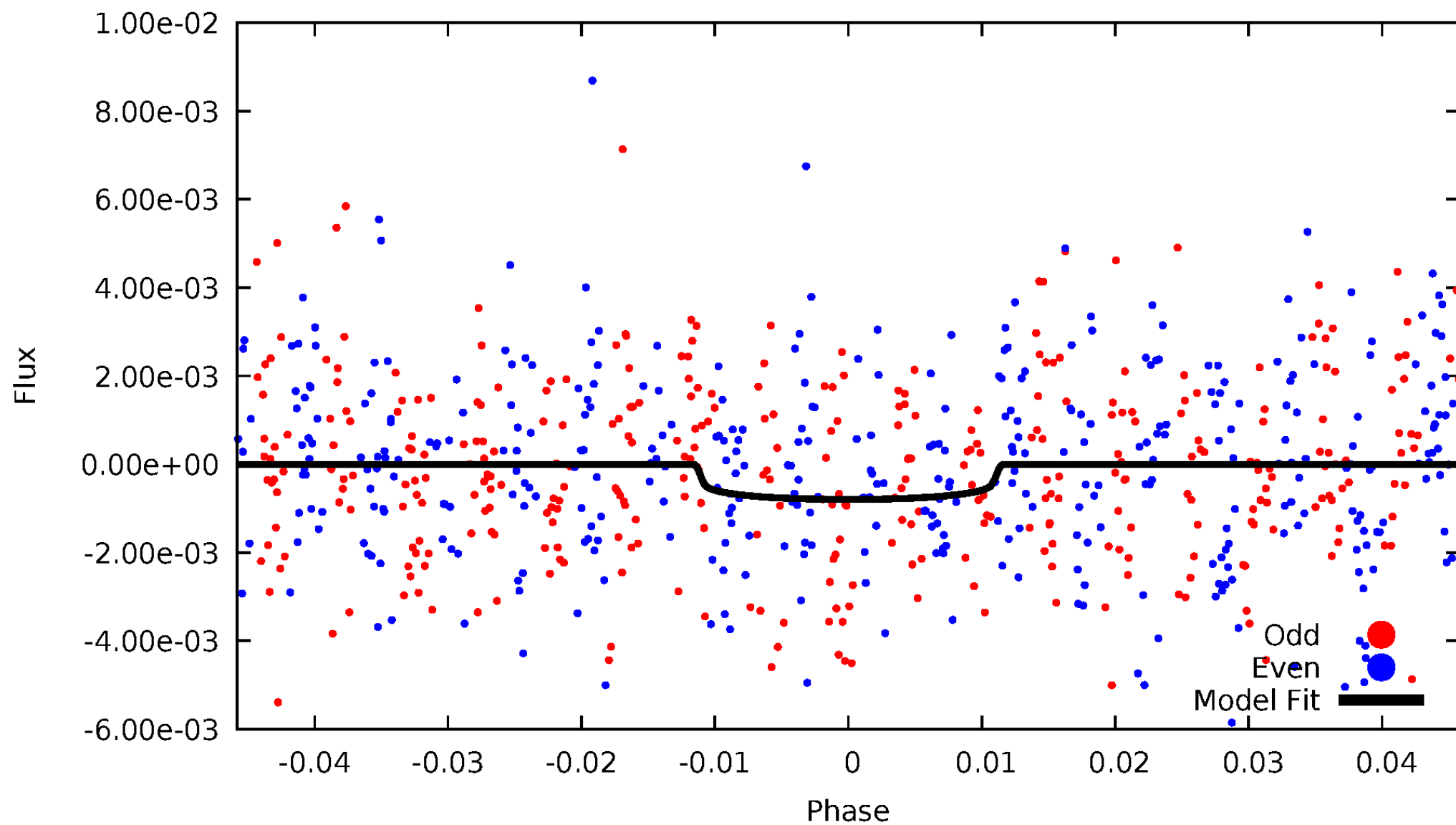


TCE 009364543-02



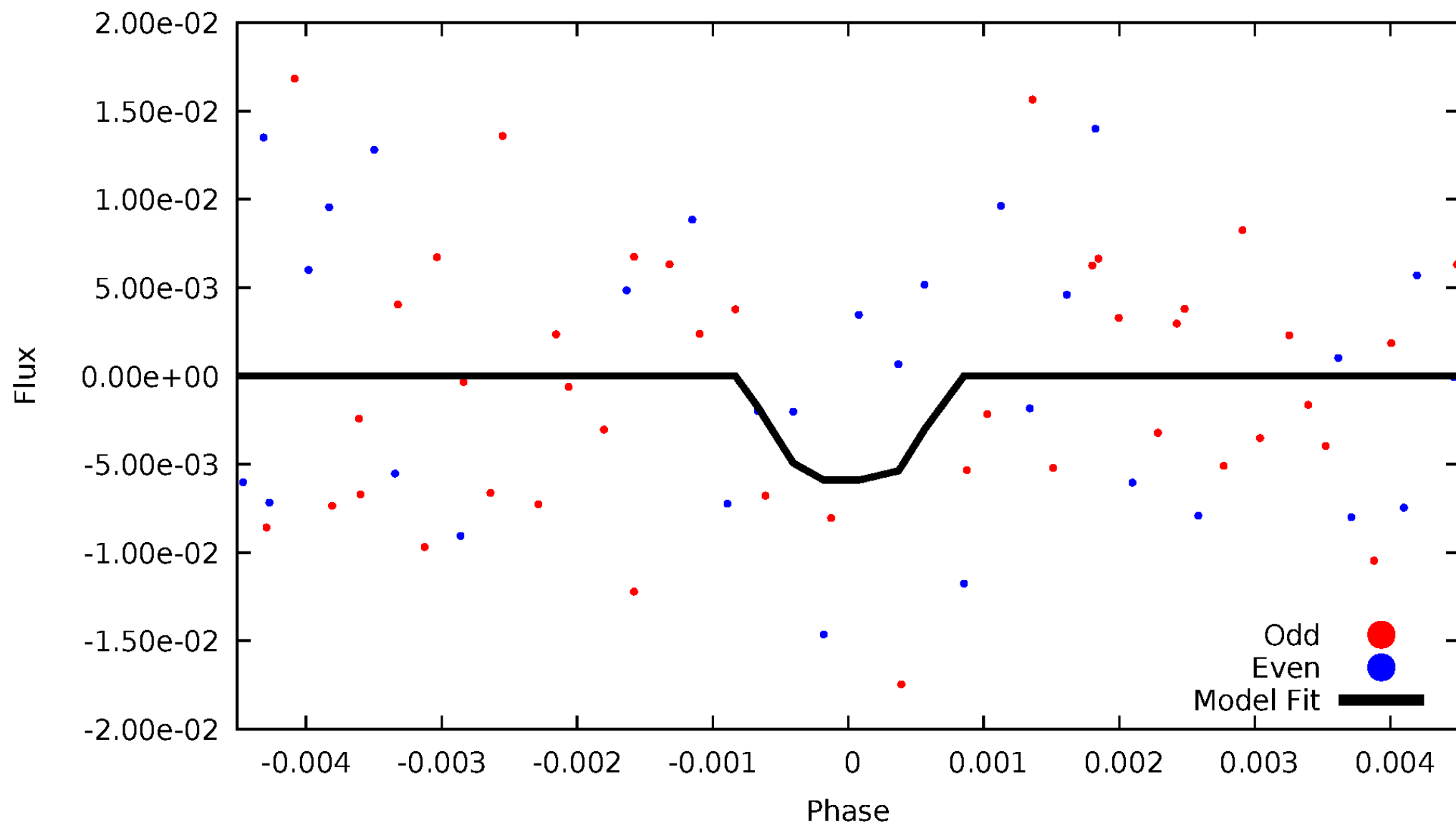
DV Odd/Even

TCE 009364543-02



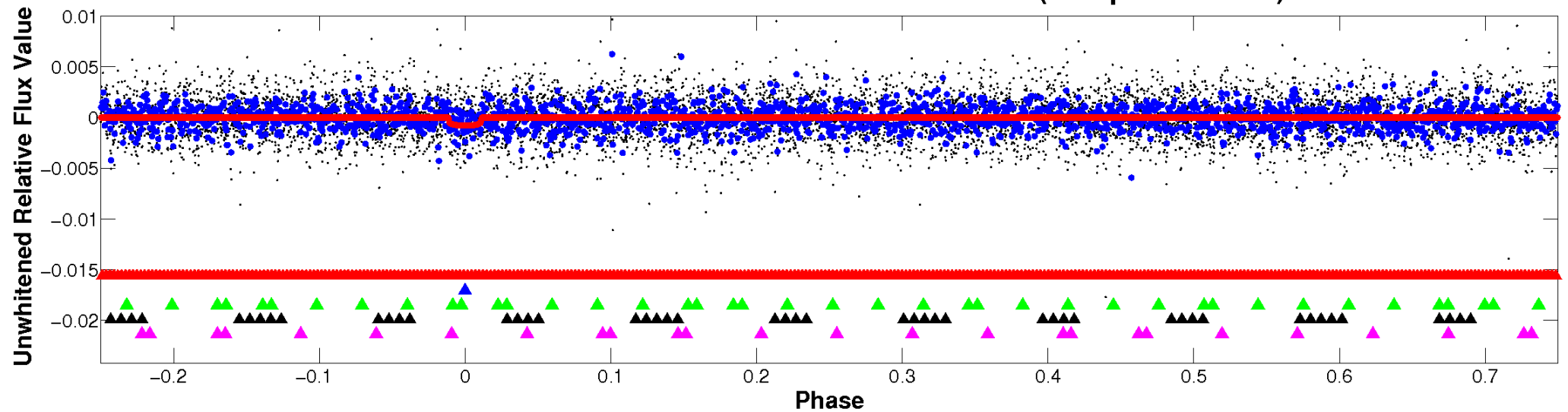
ALT Odd/Even

TCE 009364543-02

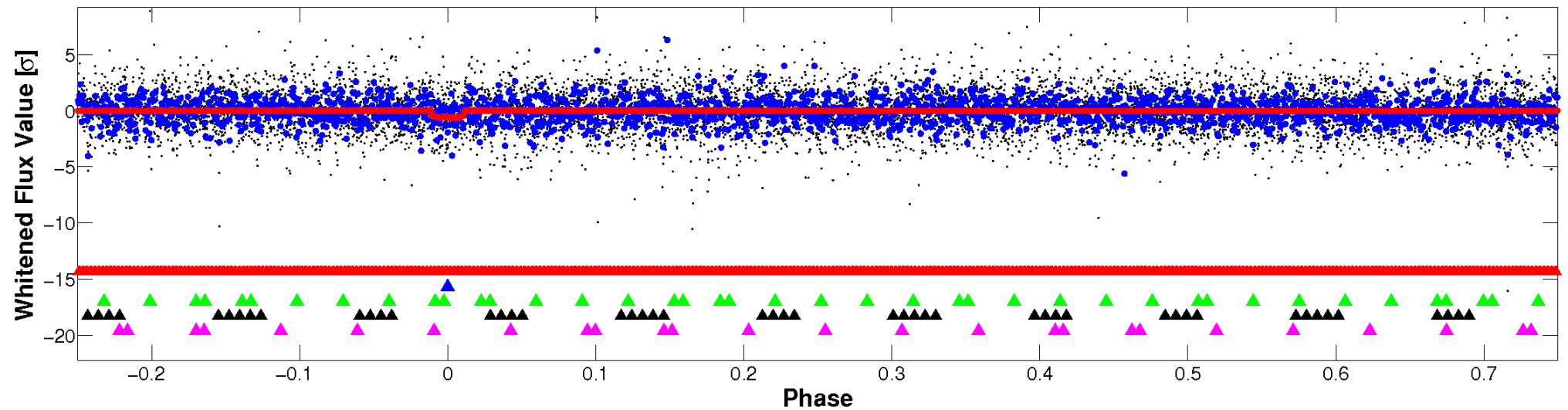


Non-Whitened Vs. Whitened Light Curve

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

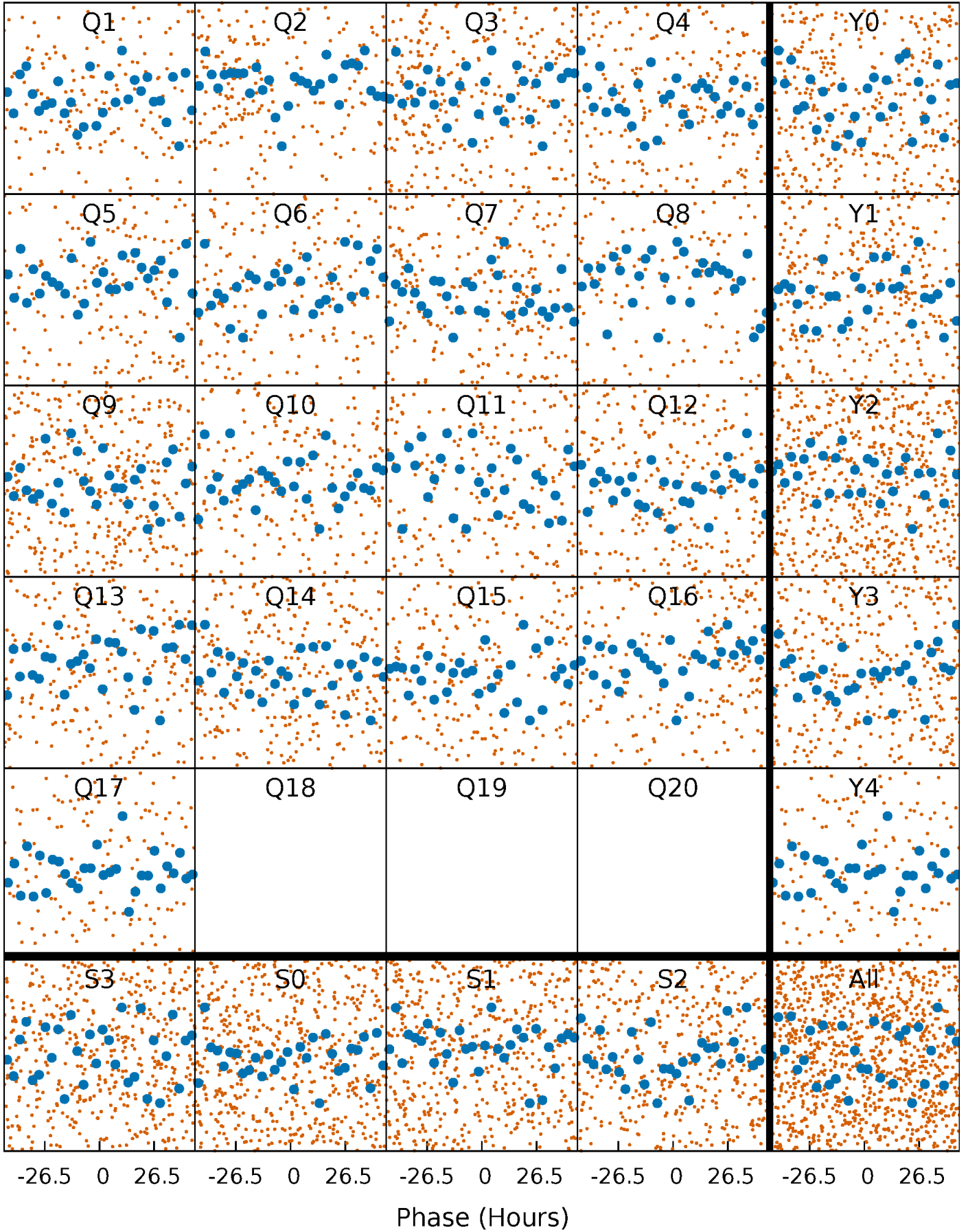


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



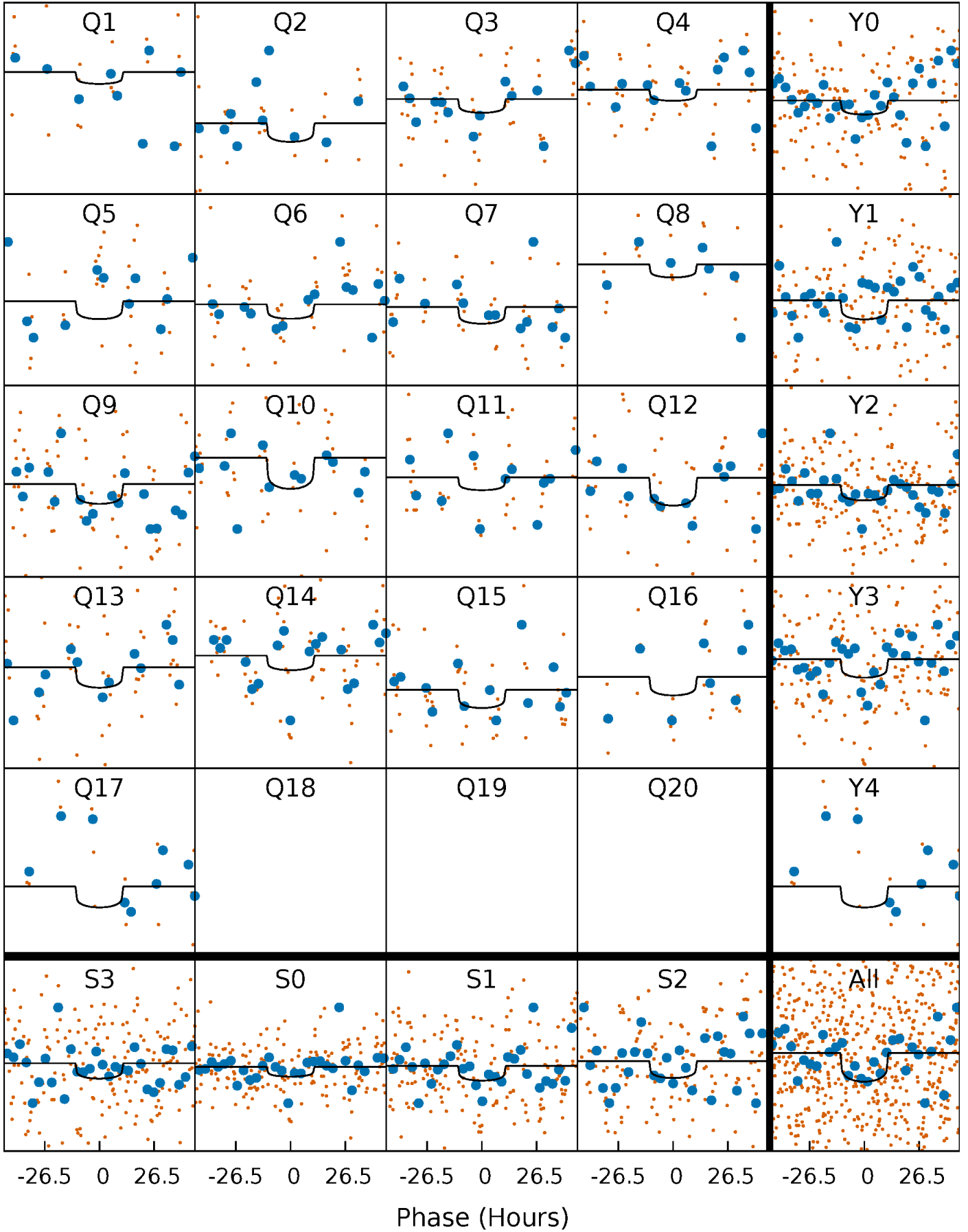
PDC Quarter-Phased Transit Curves

TCE 009364543-02 P= 42.139602 Days $T_0=139.711102$ (BKJD)



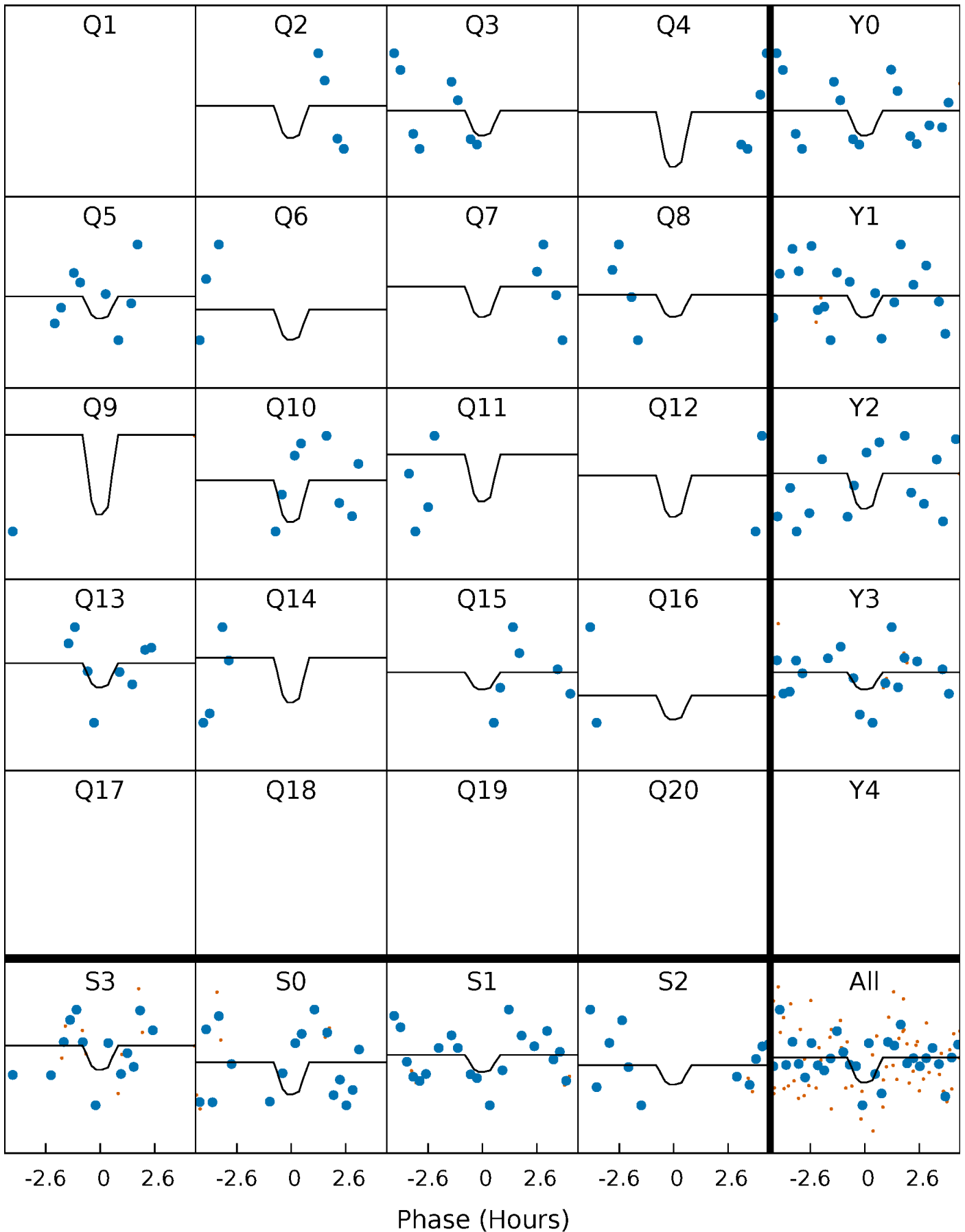
DV Quarter-Phased Transit Curves

TCE 009364543-02 P= 42.139602 Days $T_0=139.711102$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

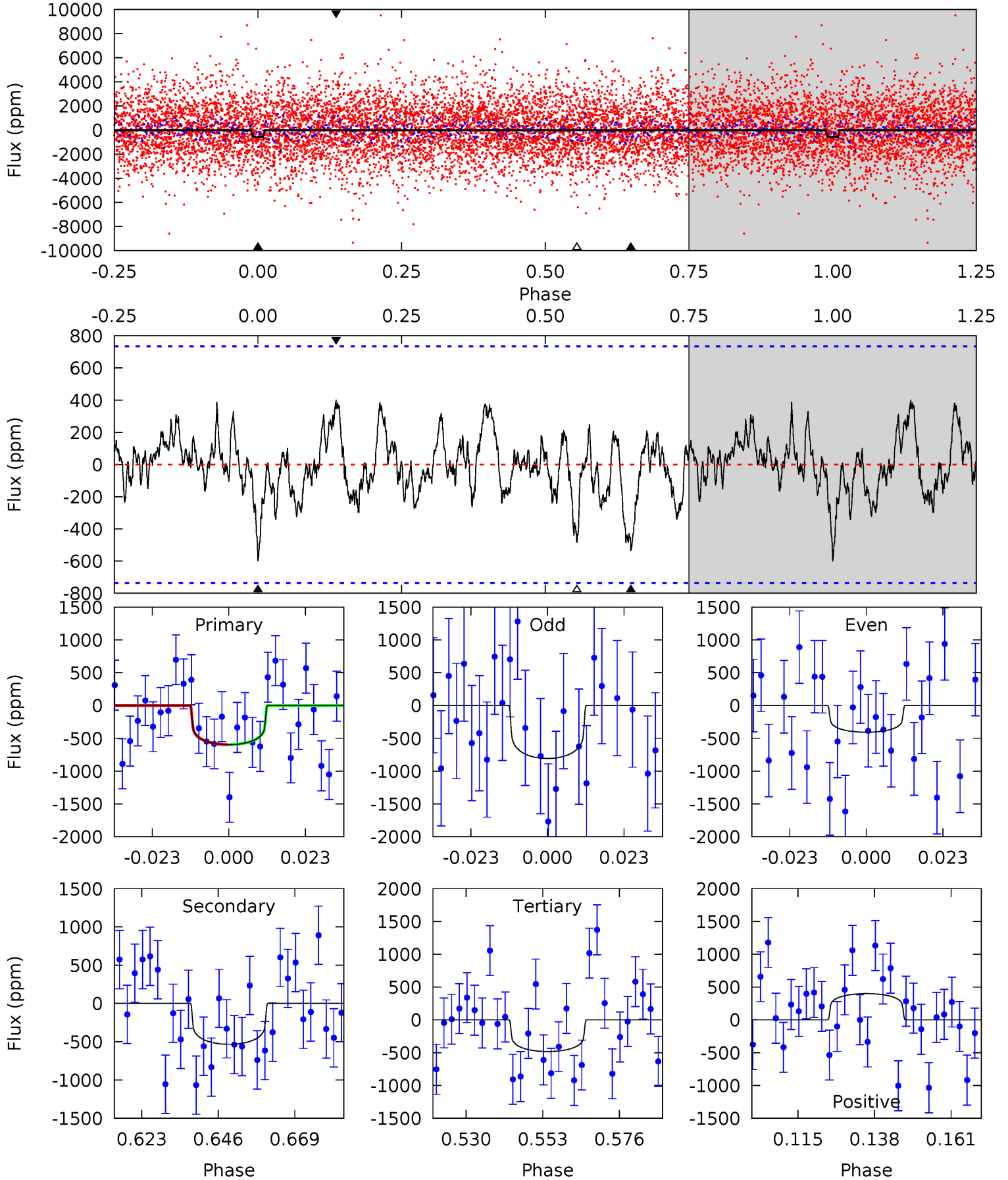
TCE 009364543-02 P= 42.145618 Days $T_0=139.678440$ (BKJD)



DV Model-Shift Uniqueness Test

009364543-02, P = 42.139602 Days, E = 97.571500 Days

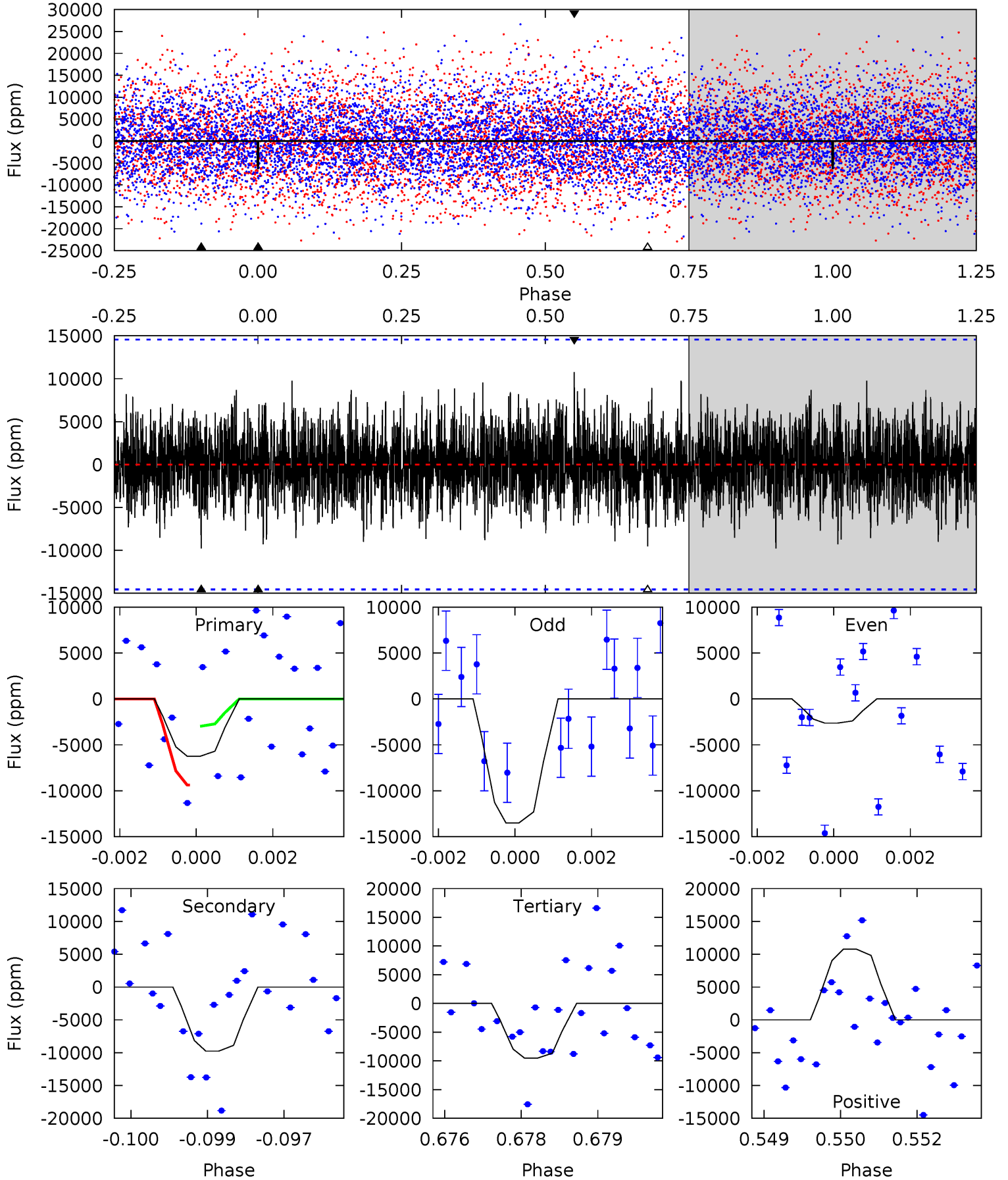
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.95	3.53	3.19	2.65	4.86	2.27	1.05	0.76	1.30	0.34	0.88	1.34	0.80	0.40	0.00



Alt Model-Shift Uniqueness Test

009364543-02, P = 42.145618 Days, E = 97.532822 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.31	3.60	3.52	3.98	5.38	3.17	1.17	-1.21	-1.68	0.09	-0.38	1.95	0.76	0.52	1.18



Stellar Parameters For KIC 009364543

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6321^{+203}_{-226}	$3.565^{+0.688}_{-0.121}$	$-0.240^{+0.300}_{-0.250}$	$3.428^{+0.538}_{-2.152}$	$1.575^{+0.174}_{-0.522}$	$0.055^{+0.641}_{-0.020}$
	+3%/-4%	+19%/-3%	+125%/-104%	+16%/-63%	+11%/-33%	+1165%/-37%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009364543-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-534±151	$9.68^{+9.40}_{-6.28}$	1341^{+101}_{-197}	5506^{+4236}_{-1217}	223^{+1523}_{-166}
Alt.	-9762±2708	$24.67^{+11.92}_{-10.29}$	1330^{+103}_{-219}	7141^{+2177}_{-1102}	628^{+1197}_{-354}

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 $A_{obs} \gg 1.0$

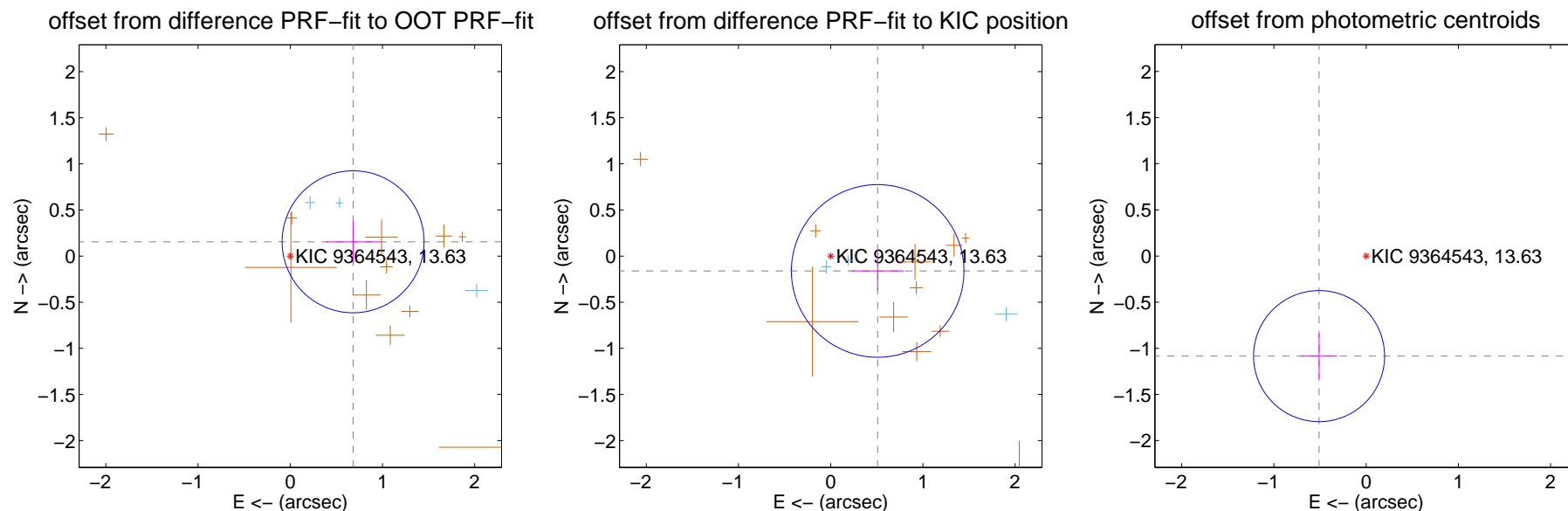
DV Centroid Data

Supplemental centroid analysis for 009364543-02. Kepler magnitude: 13.63. Transit SNR 7.05

There are 3 quarters with good PRF difference image offsets

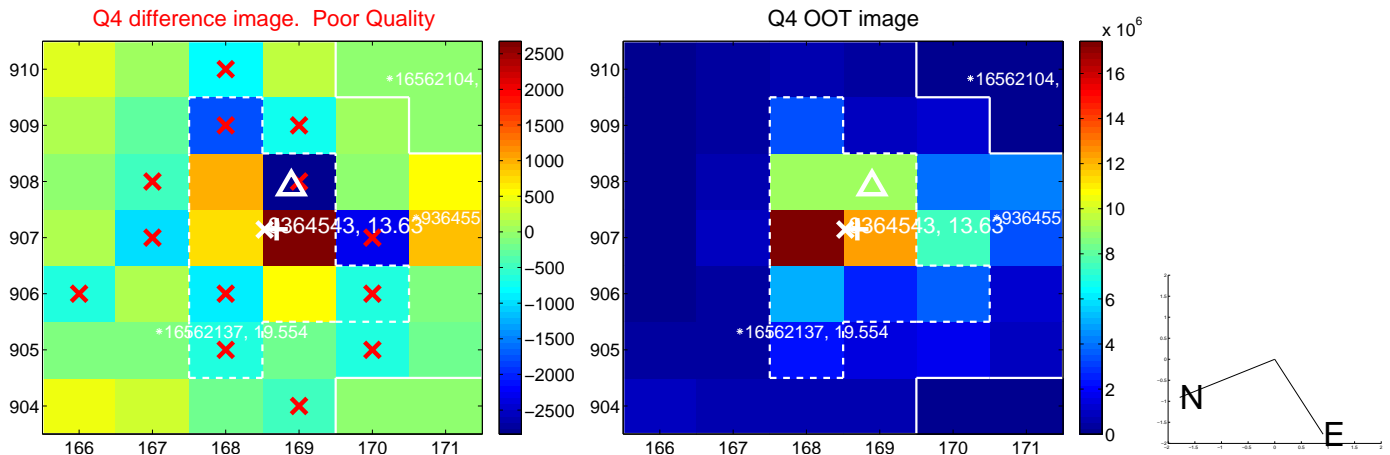
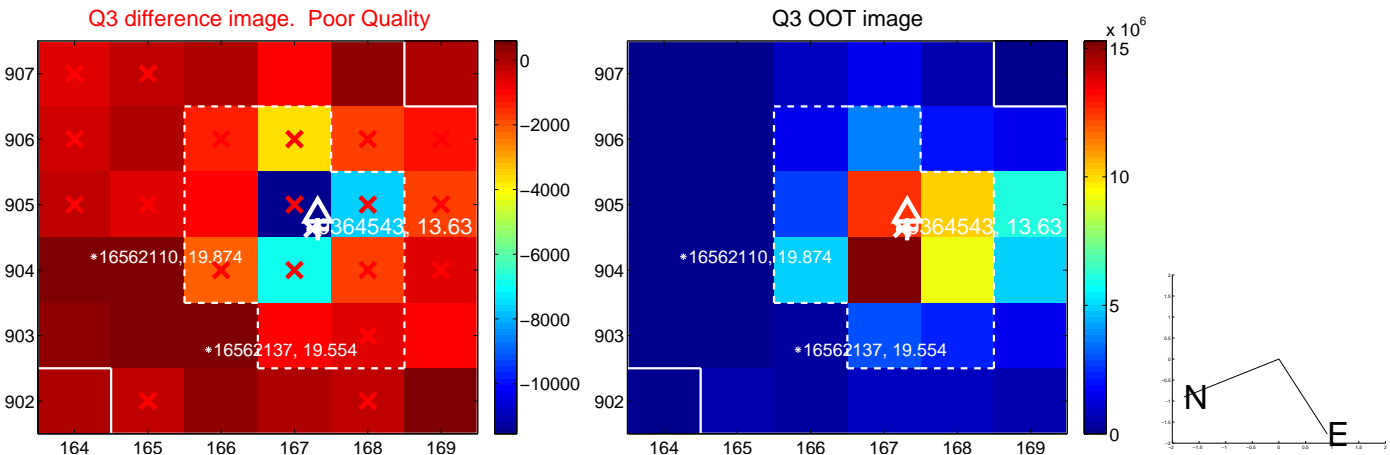
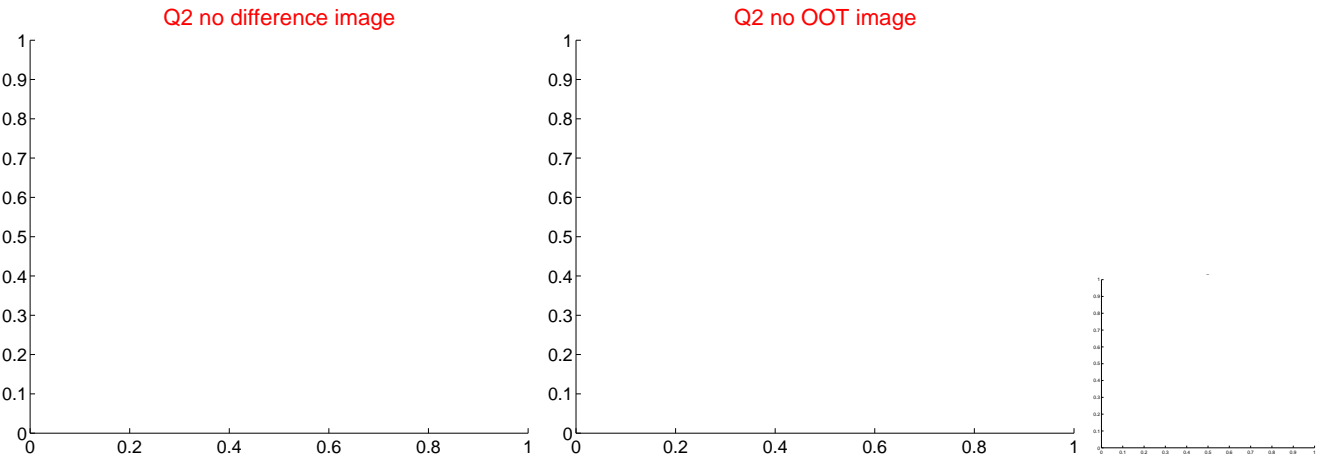
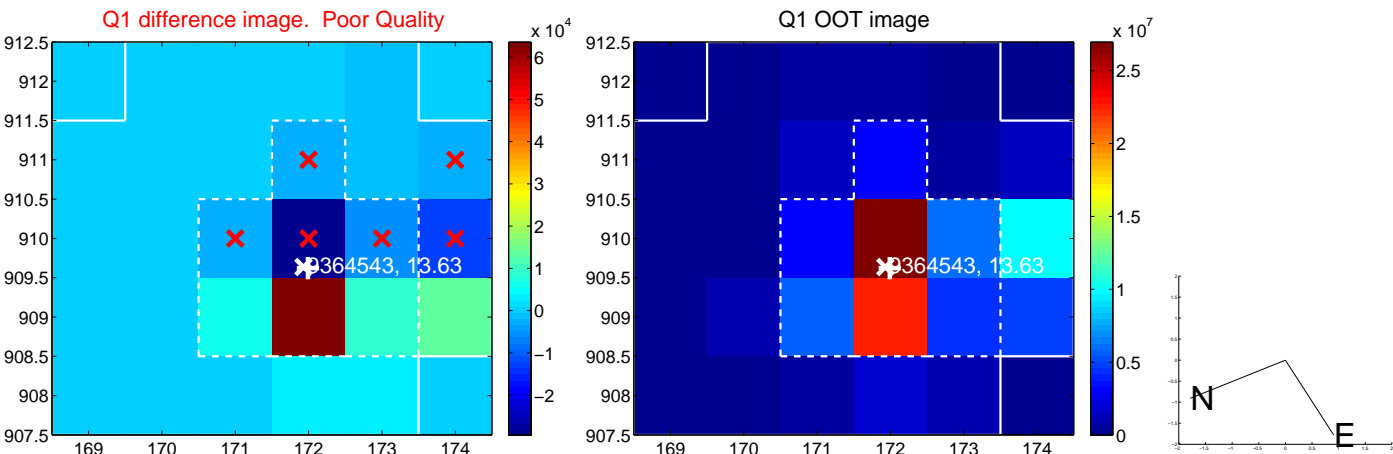
The direct PRF centroid is offset from the target star catalog position by about 0.23 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.699 ± 0.257	2.72	-0.681 ± 0.294	0.155 ± 0.222
PRF-fit source offset from KIC position	0.534 ± 0.312	1.71	-0.509 ± 0.284	-0.161 ± 0.218
photometric centroid source offset	1.20 ± 0.24	5.06	0.51 ± 0.20	-1.08 ± 0.25

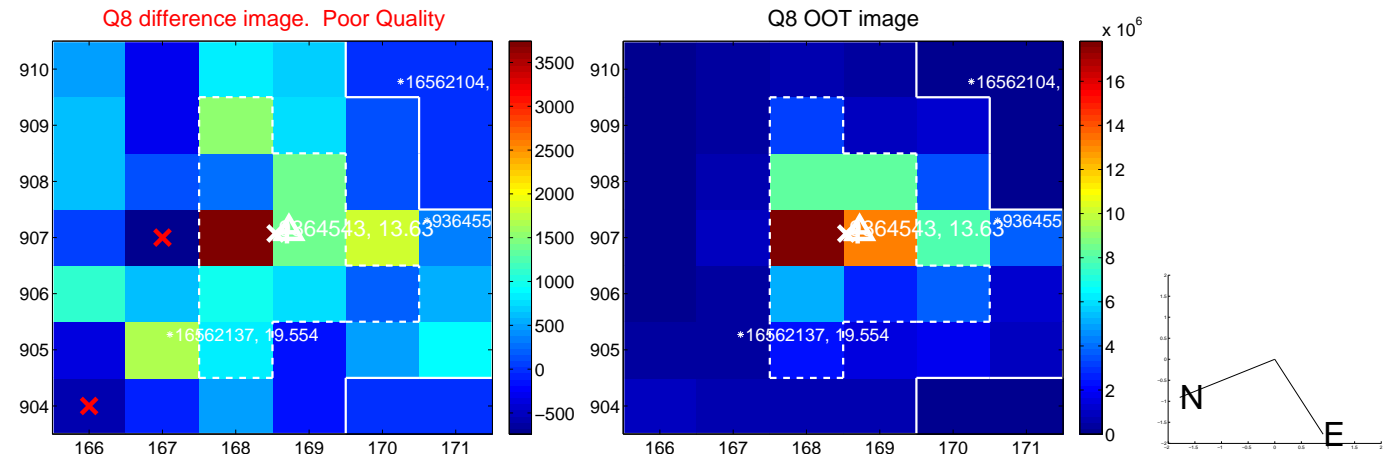
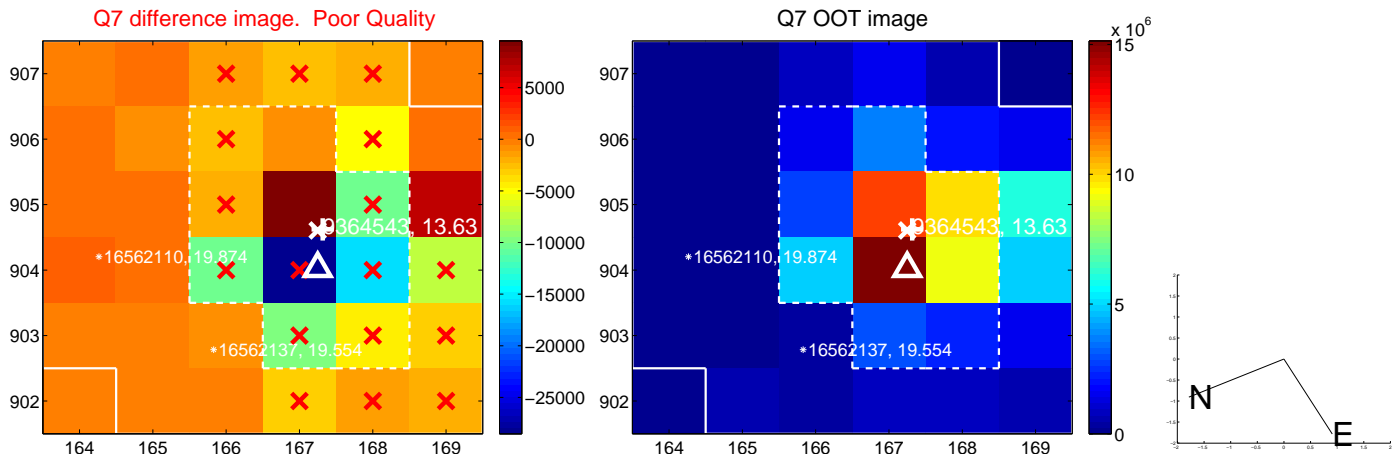
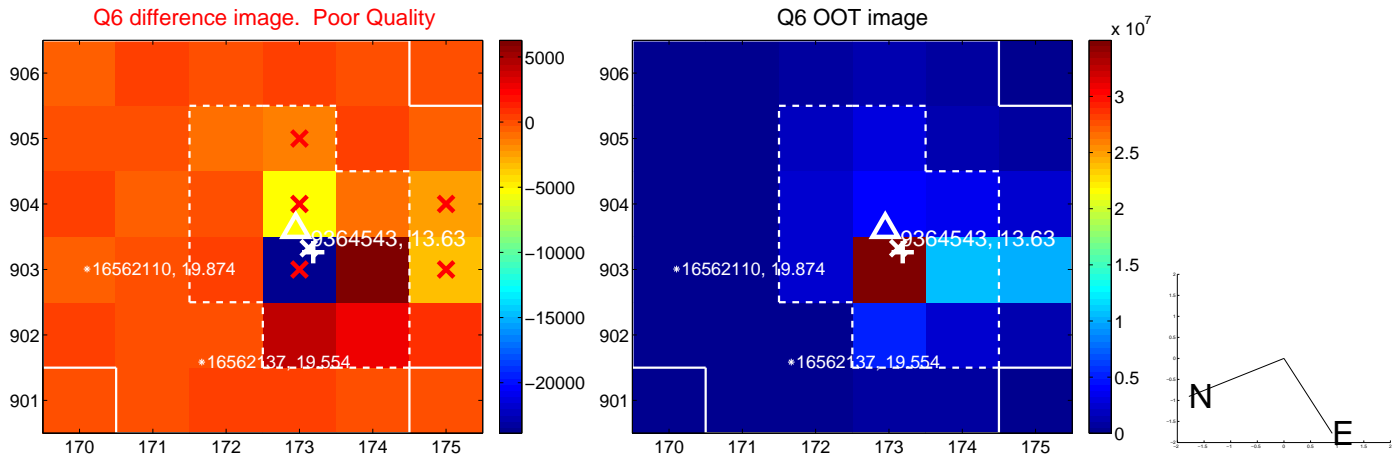
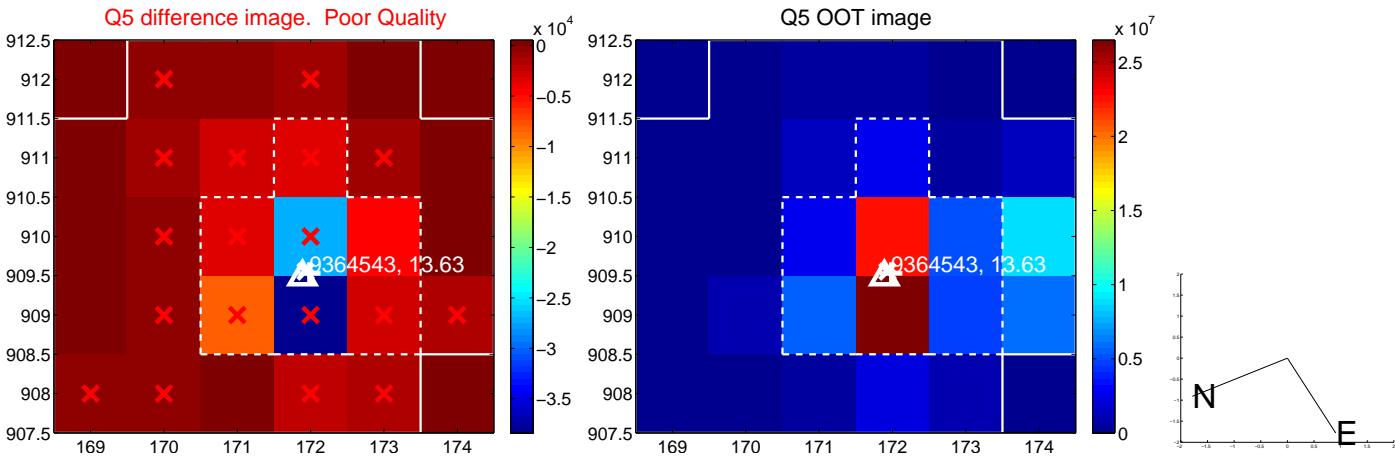


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

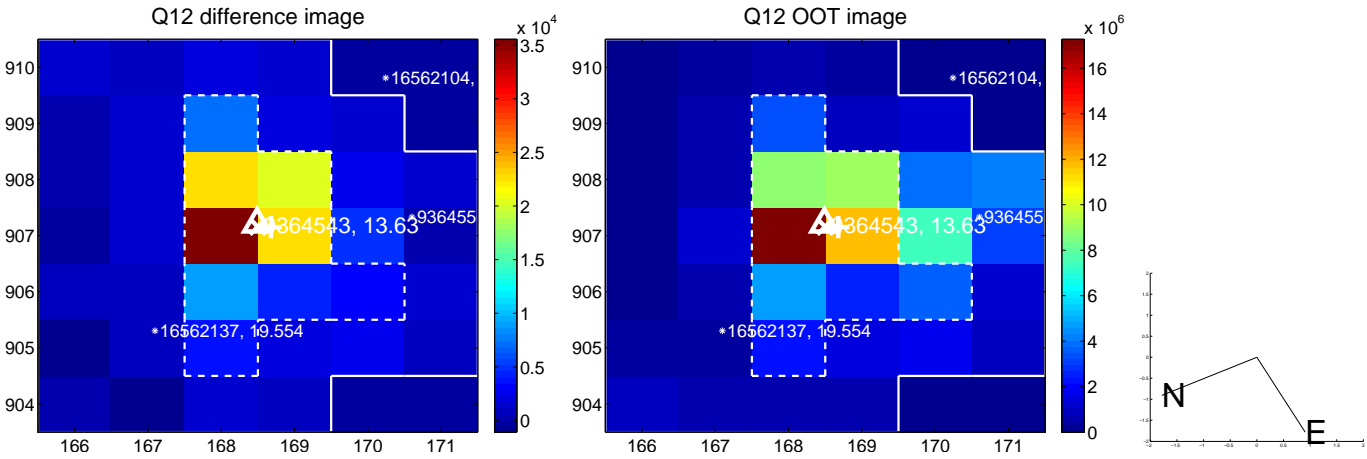
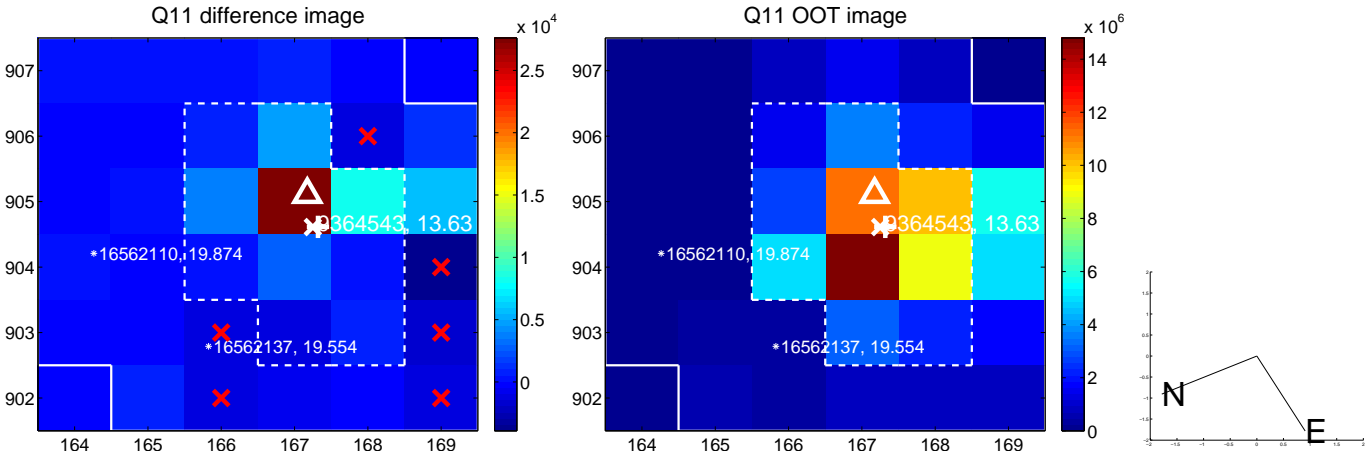
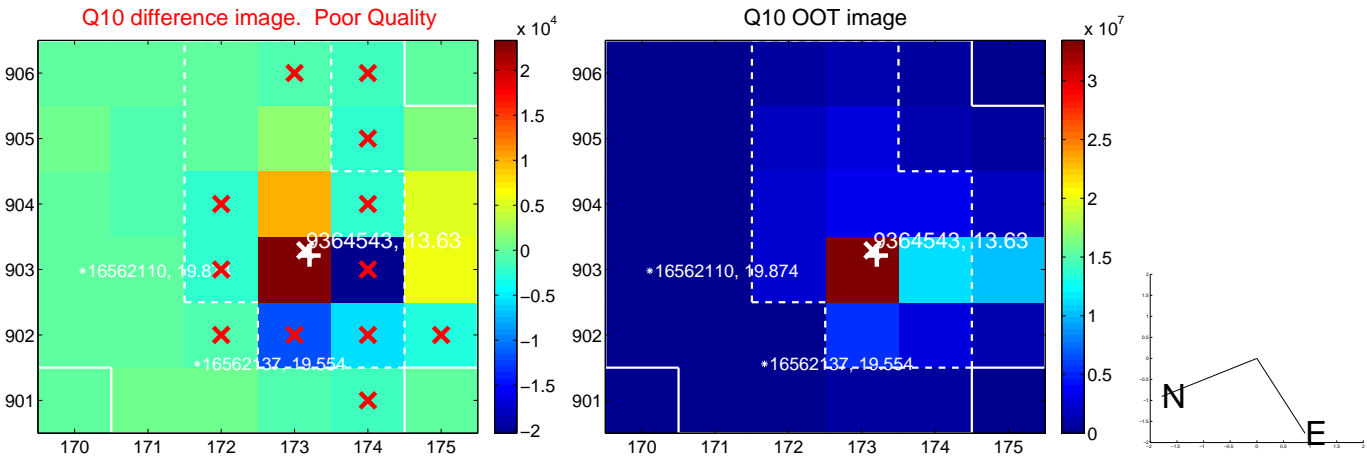
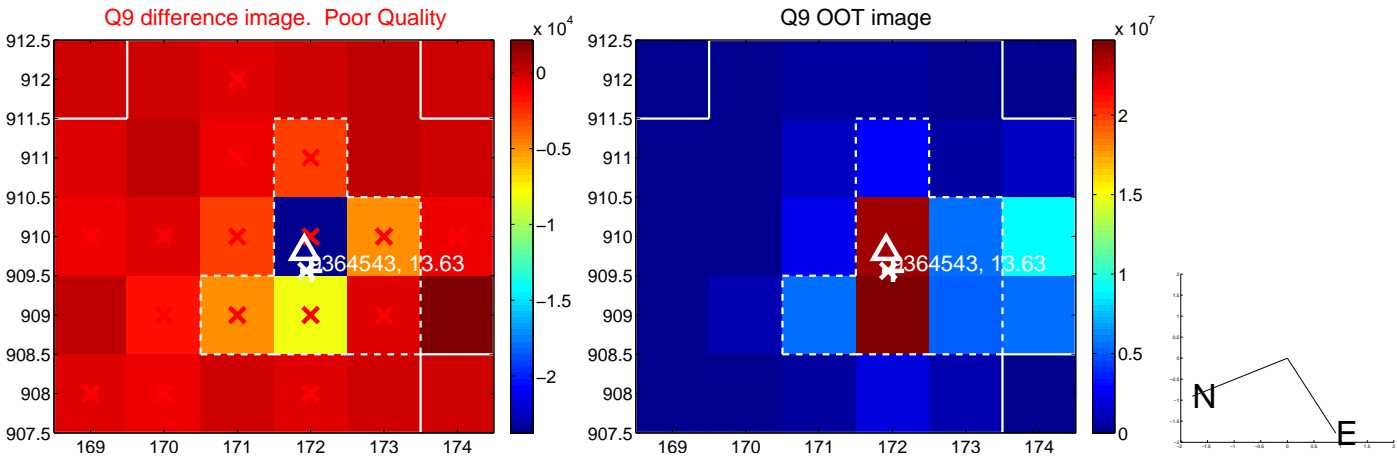
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



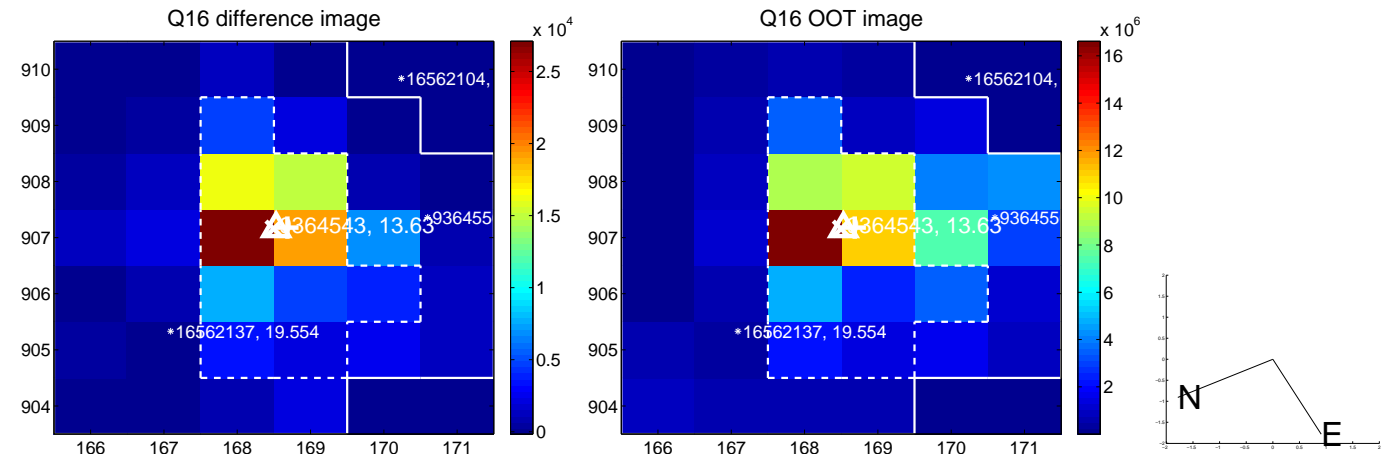
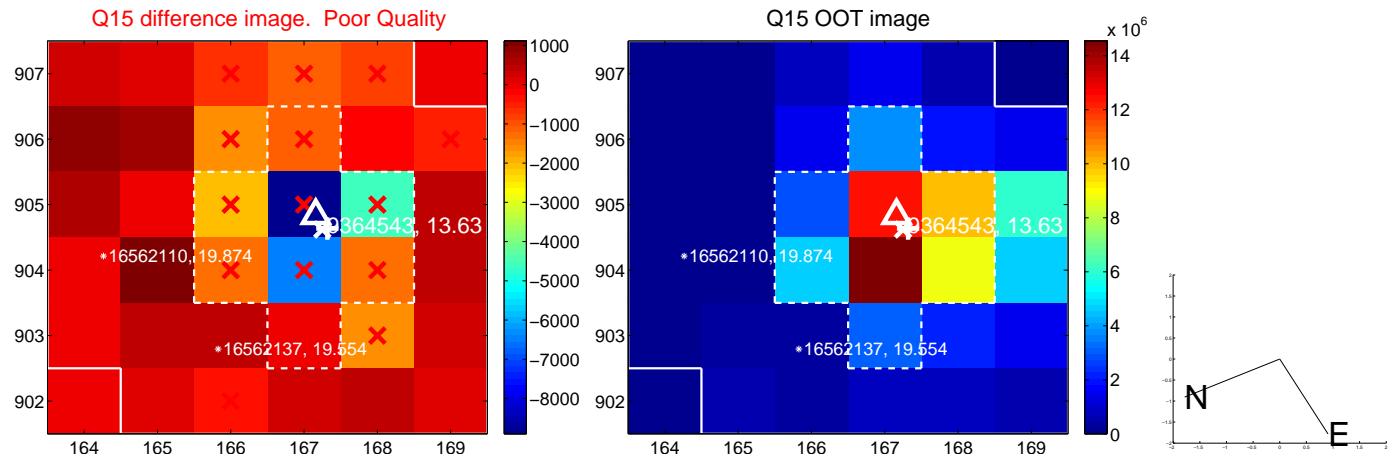
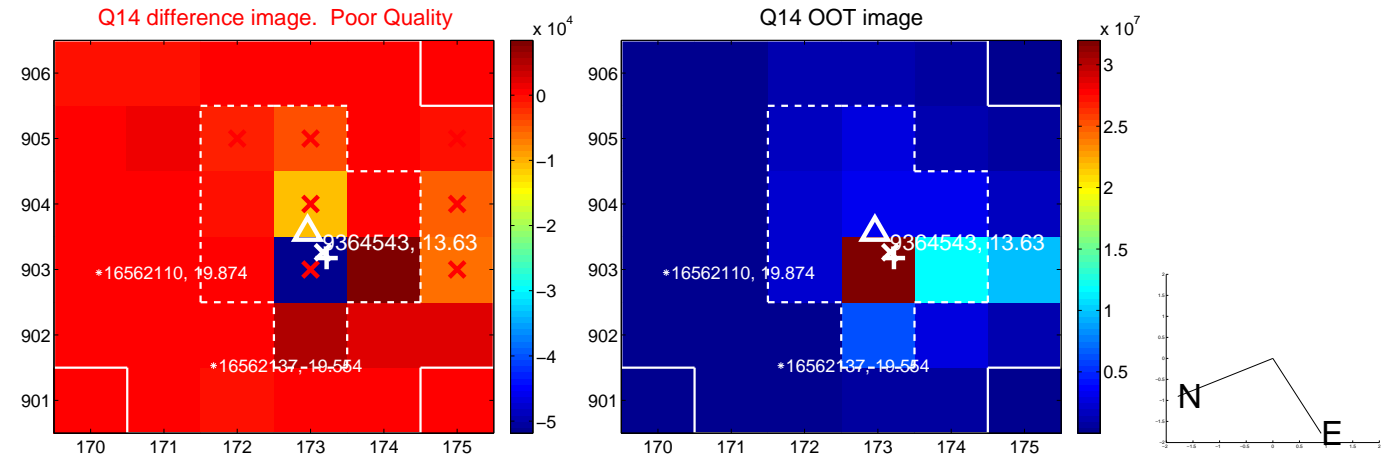
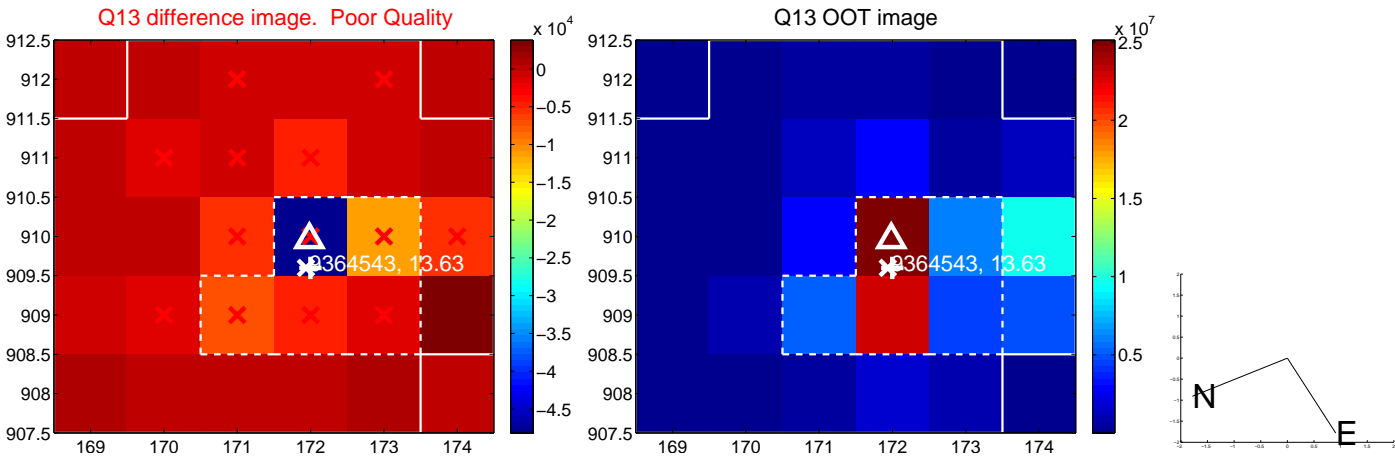
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



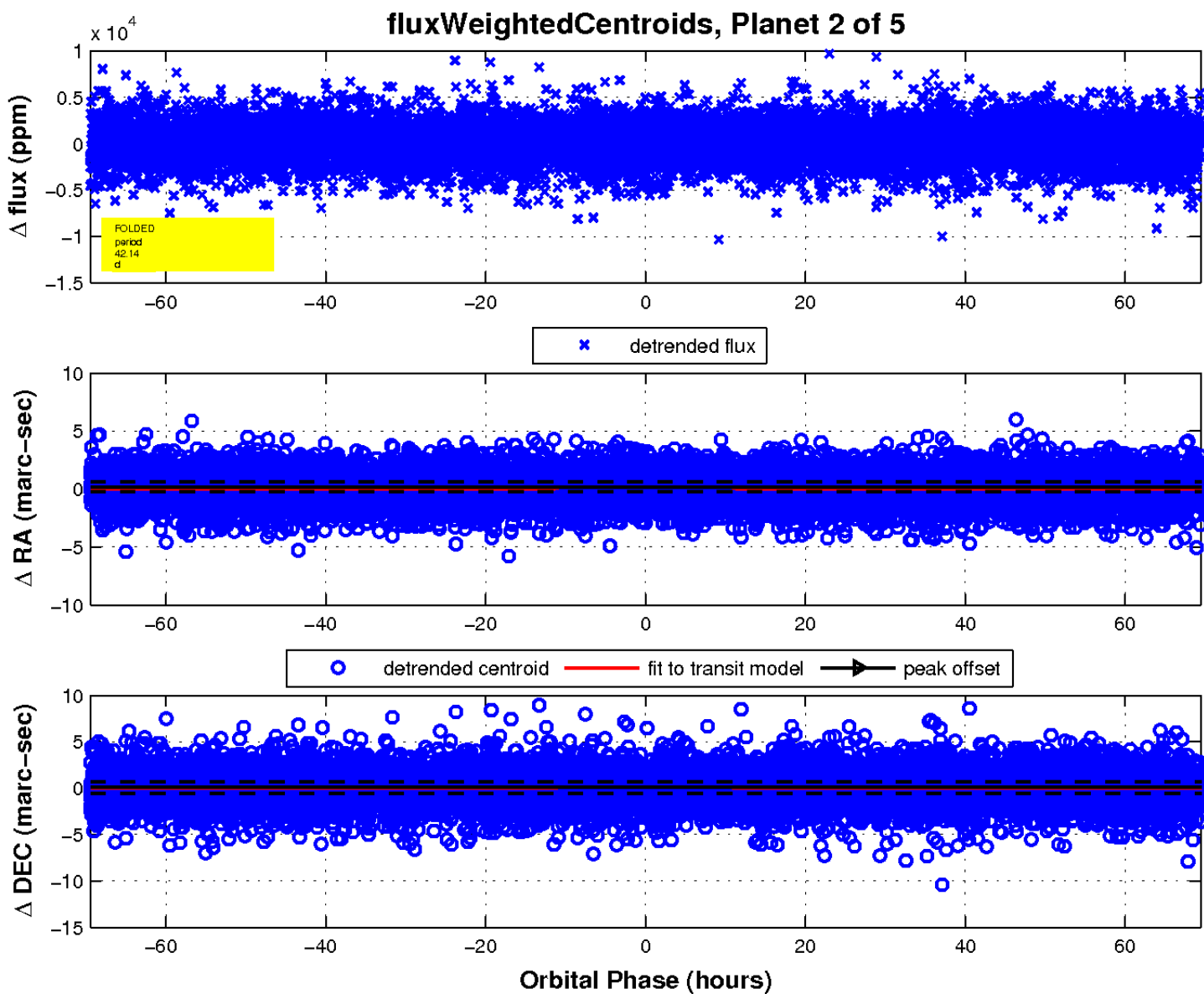
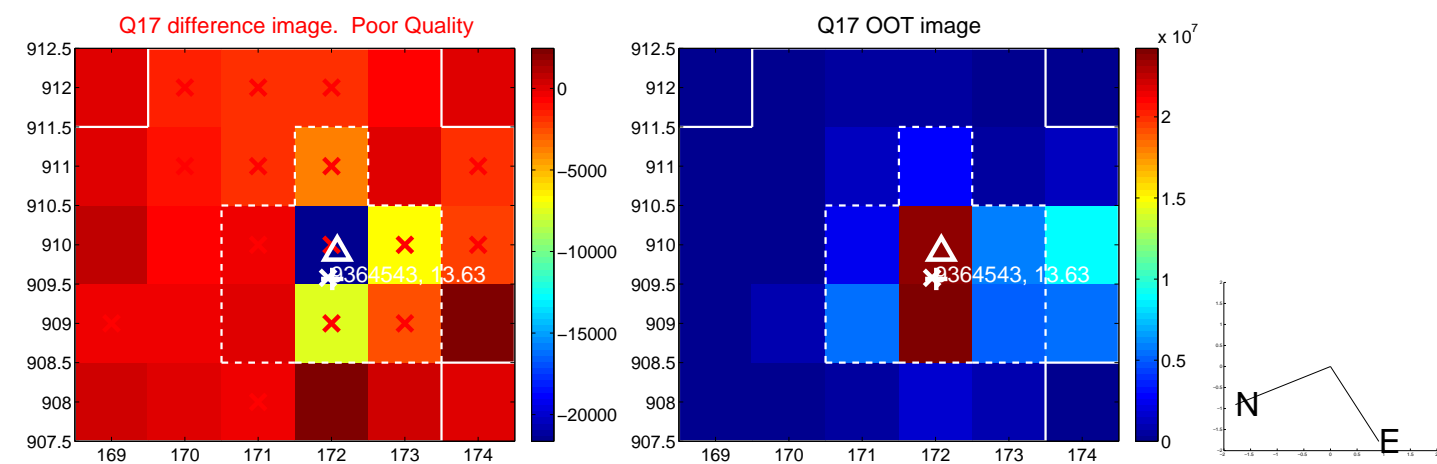
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

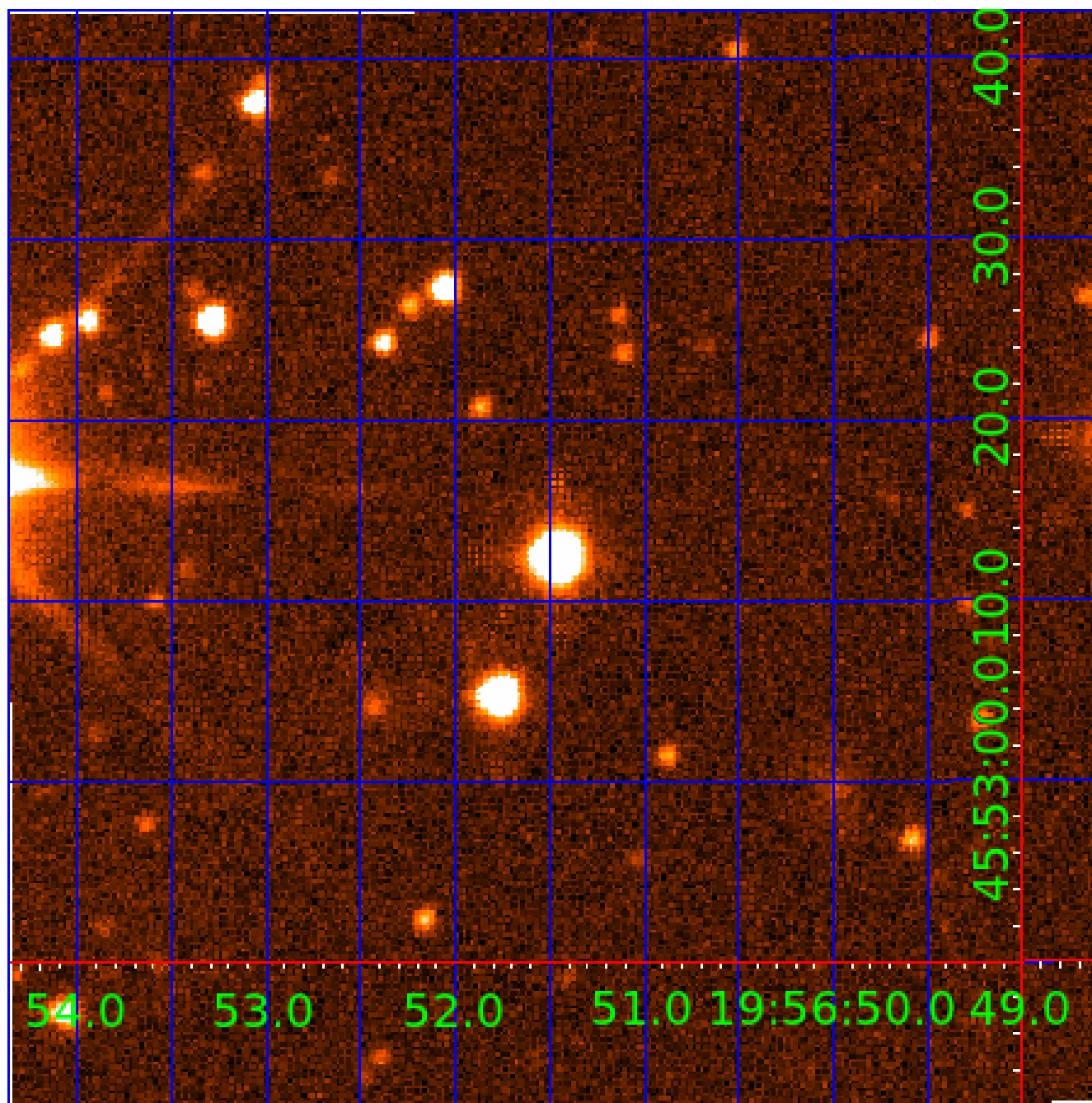


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009364543

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})
009364543-01	OBS	No	0.667141	131.642211	199.7	4.502	15.8	10.8	3.43	6321	4.86	55604.25
009364543-02	OBS	No	42.139602	139.711102	798.1	23.157	9.4	7.0	3.43	6321	9.80	221.04
009364543-03	OBS	No	35.334786	146.410400	6706.1	0.844	10.5	10.8	3.43	6321	30.37	279.55
009364543-04	OBS	No	30.674491	144.649291	1594.5	7.102	10.8	9.3	3.43	6321	14.40	337.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009364543-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009364543-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
009364543-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009364543-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

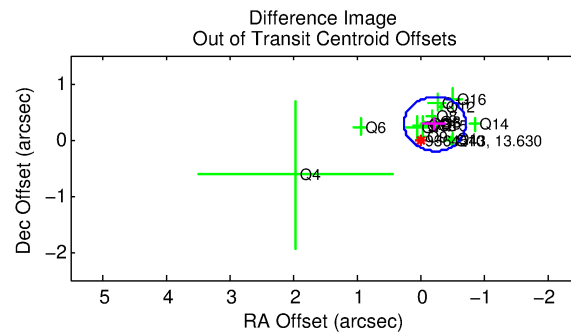
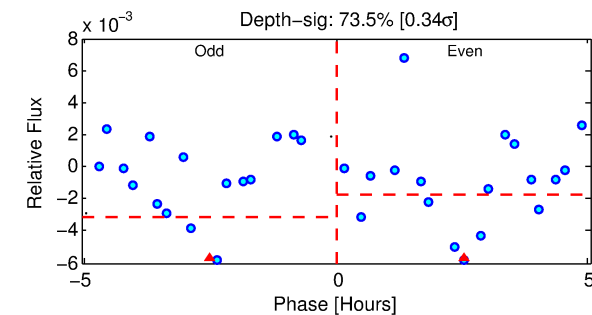
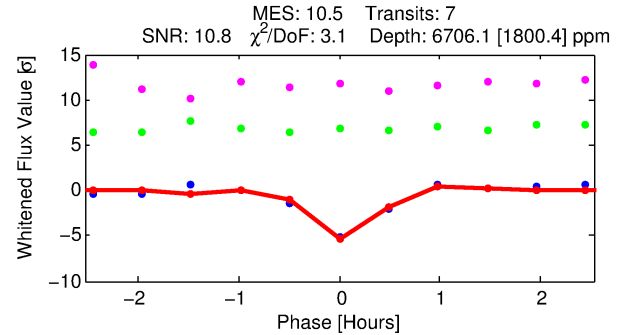
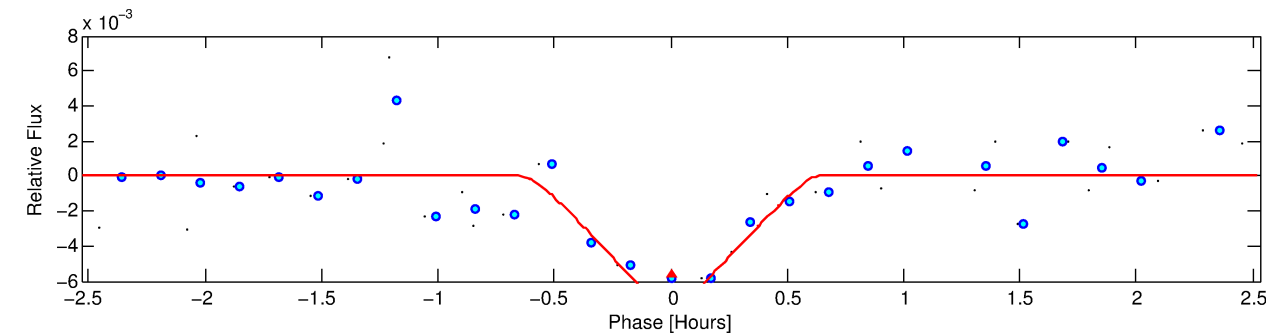
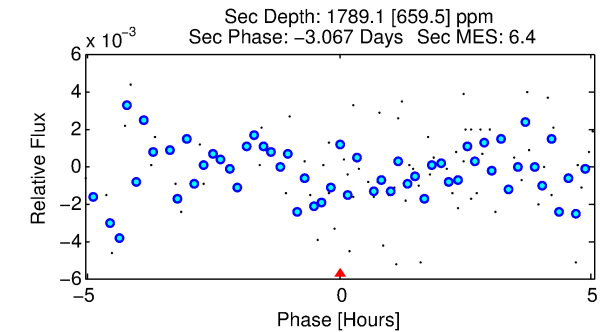
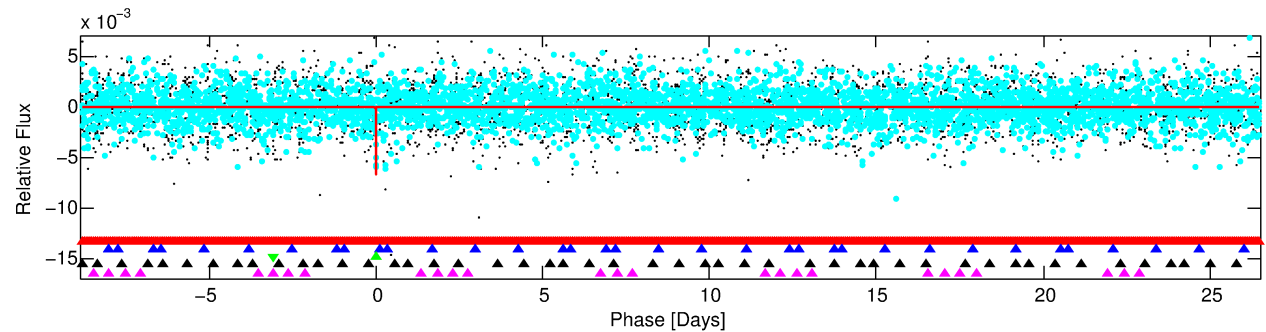
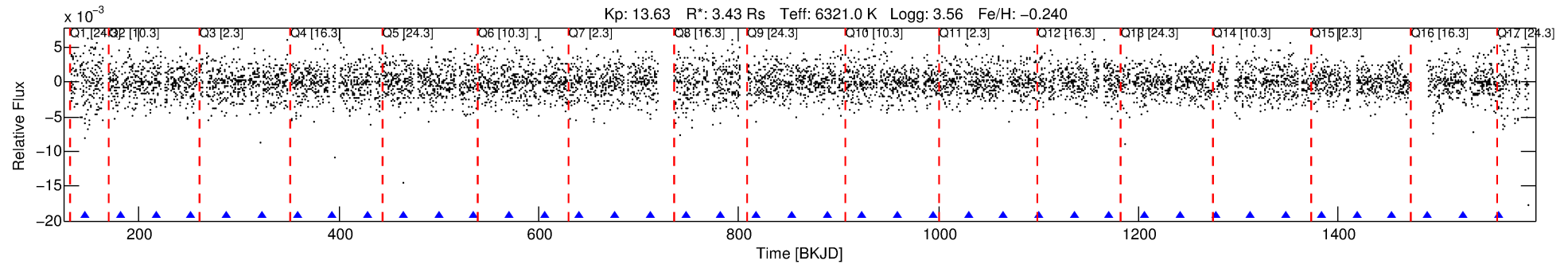
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009364543-03

No Significant Match Found

DV One-Page Summary

KIC: 9364543 Candidate: 3 of 5 Period: 35.335 d



DV Fit Results:

Period = 35.33479 [0.00192] d
Epoch = 146.4104 [0.0363] BKJD
Rp/R* = 0.0812 [0.2037]
a/R* = 269.89 [3600.74]
b = 0.68 [10.76]
Seff = 279.55 [320.08]
Teq = 1043 [298] K
Rp = 30.37 [78.56] Re
a = 0.2452 [0.1652] AU
Ag = 64.17 [331.04] [0.19 σ]
Teffp = 4563 [5743] K [0.61 σ]

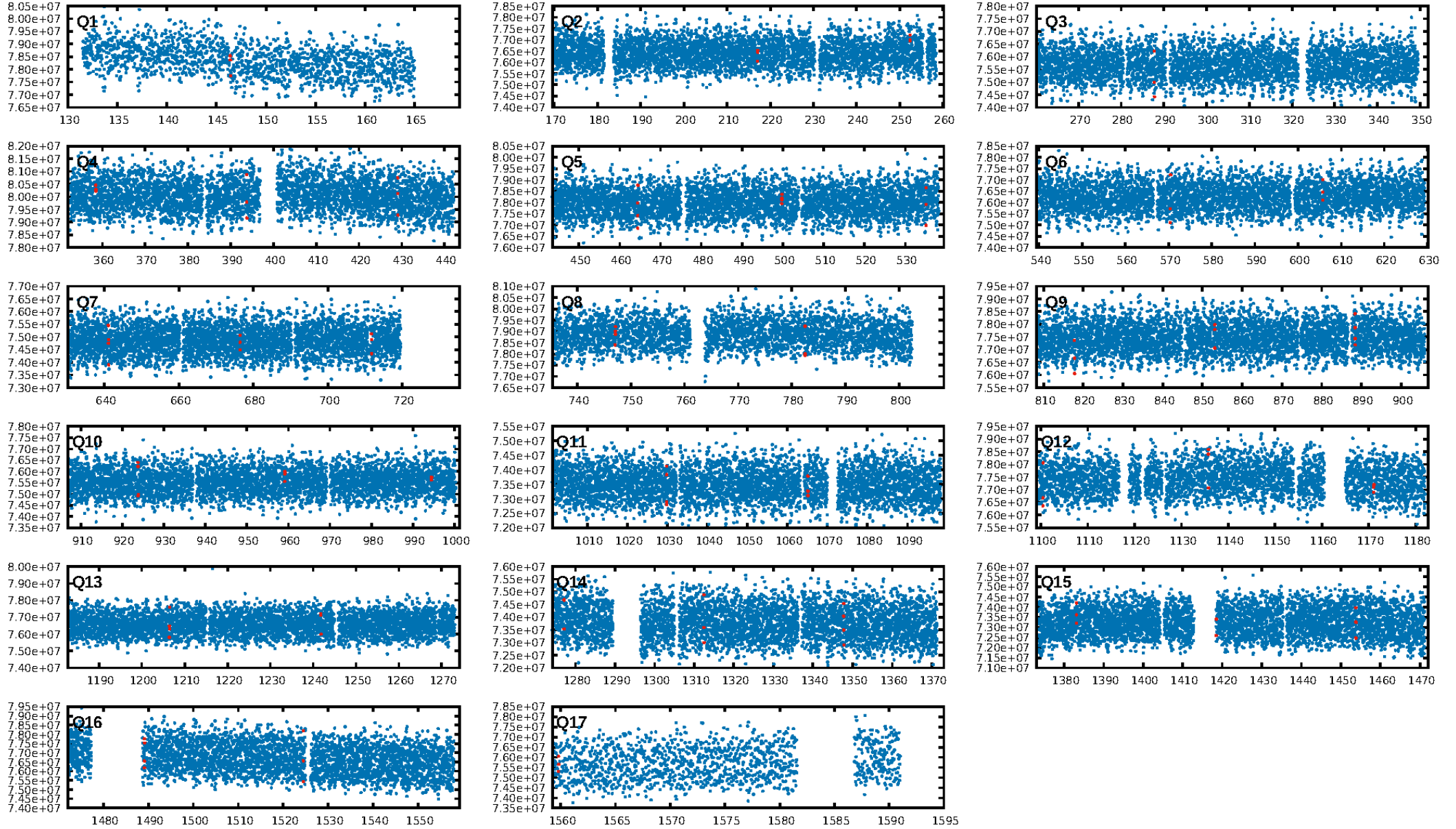
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.64 σ]
LongPeriod-sig: 100.0% [7.05 σ]
ModelChiSquare2-sig: 37.5%
ModelChiSquareGof-sig: 94.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 0.896
Centroid-sig: 51.6%
Centroid-so: 1.203 arcsec [11.33 σ]
OotOffset-rm: 0.364 arcsec [2.25 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 0.081 arcsec [0.46 σ]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.31 [5/16]
DiffImageOverlap-fno: 0.06 [1/16]

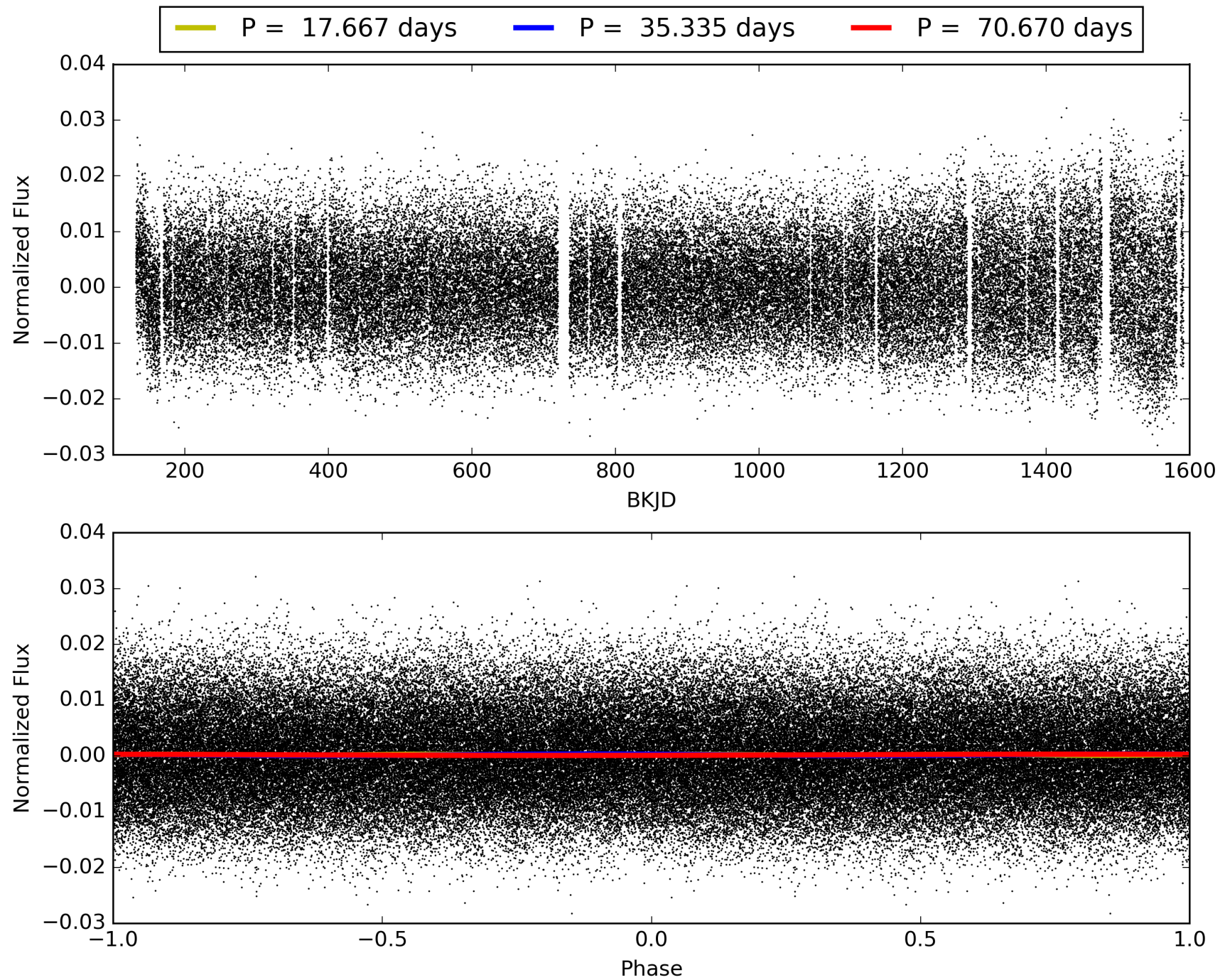
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:07:40 Z

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

TCE 009364543-03, PDC Light Curves

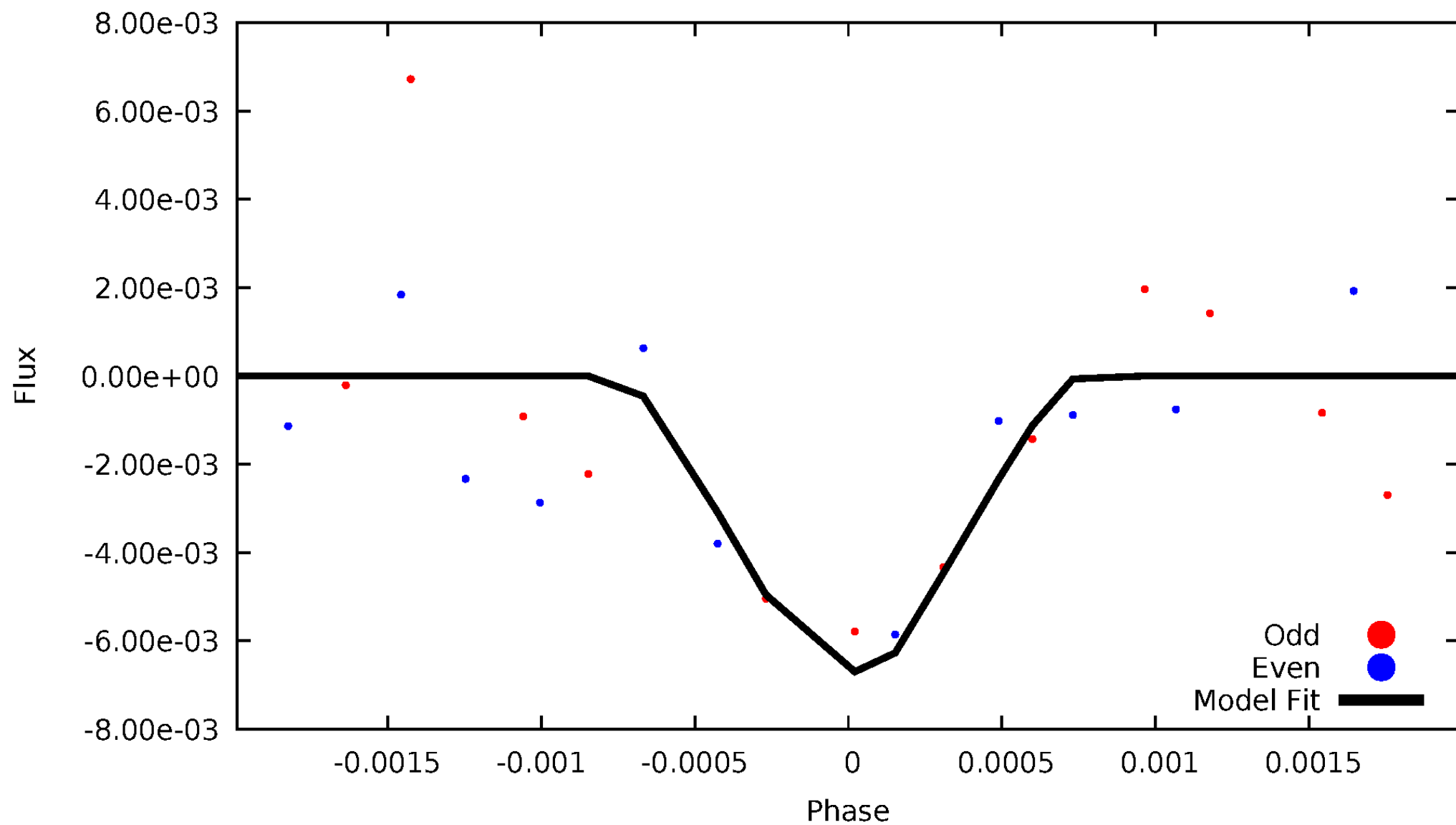


TCE 009364543-03



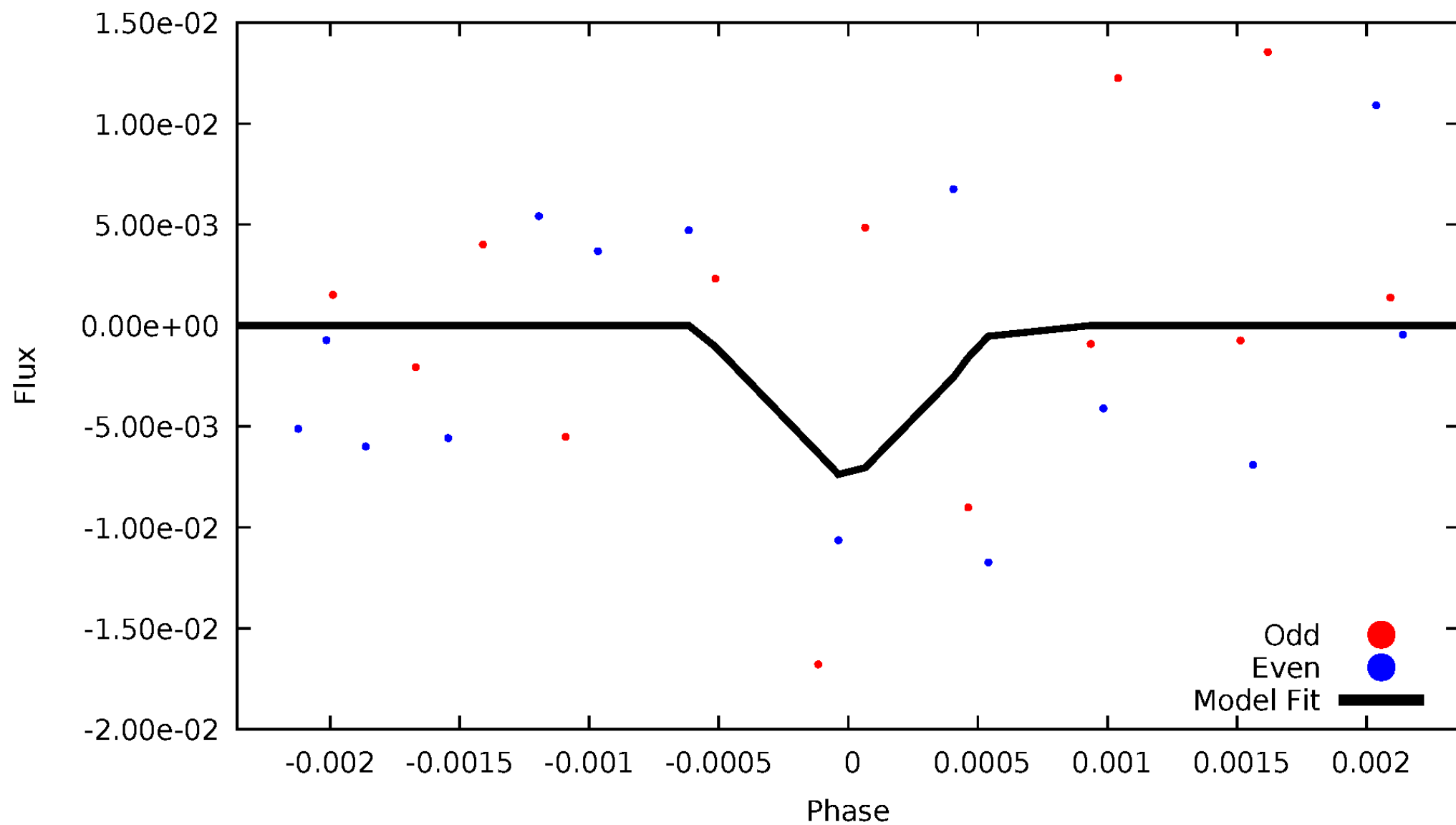
DV Odd/Even

TCE 009364543-03



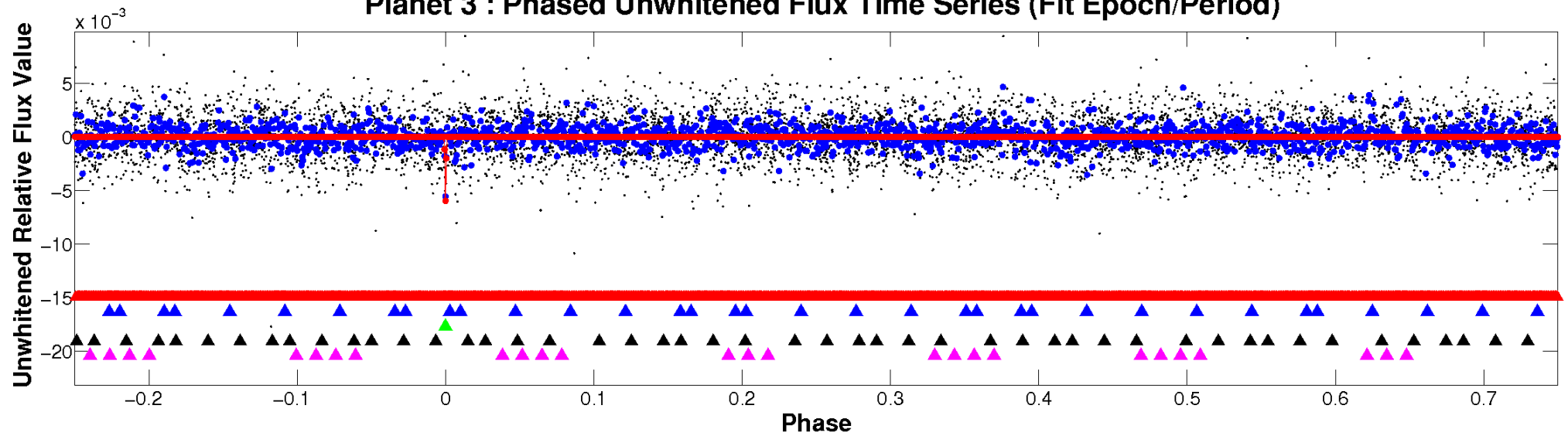
ALT Odd/Even

TCE 009364543-03

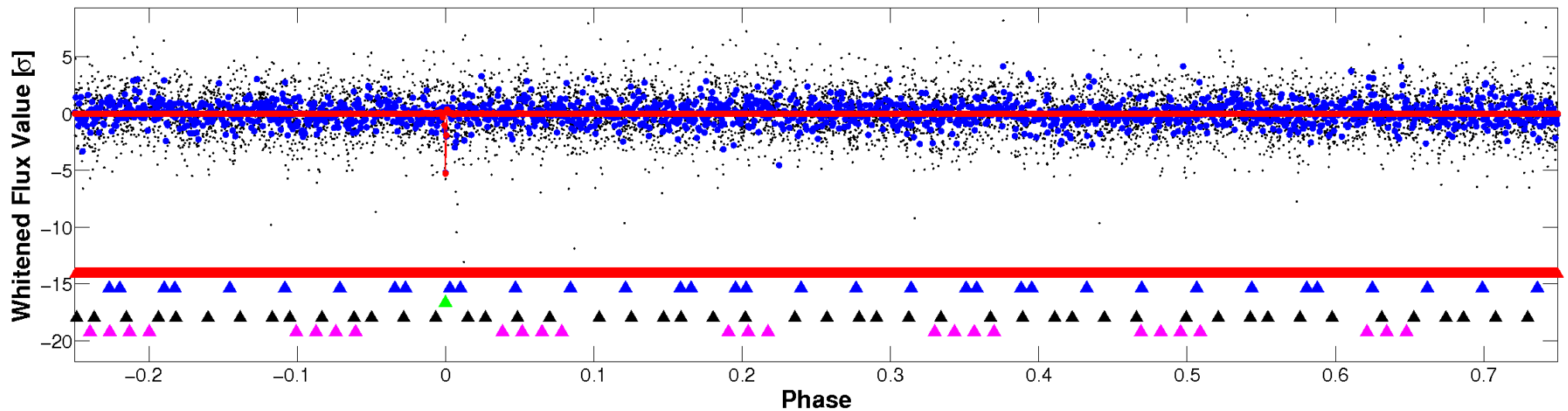


Non-Whitened Vs. Whitened Light Curve

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

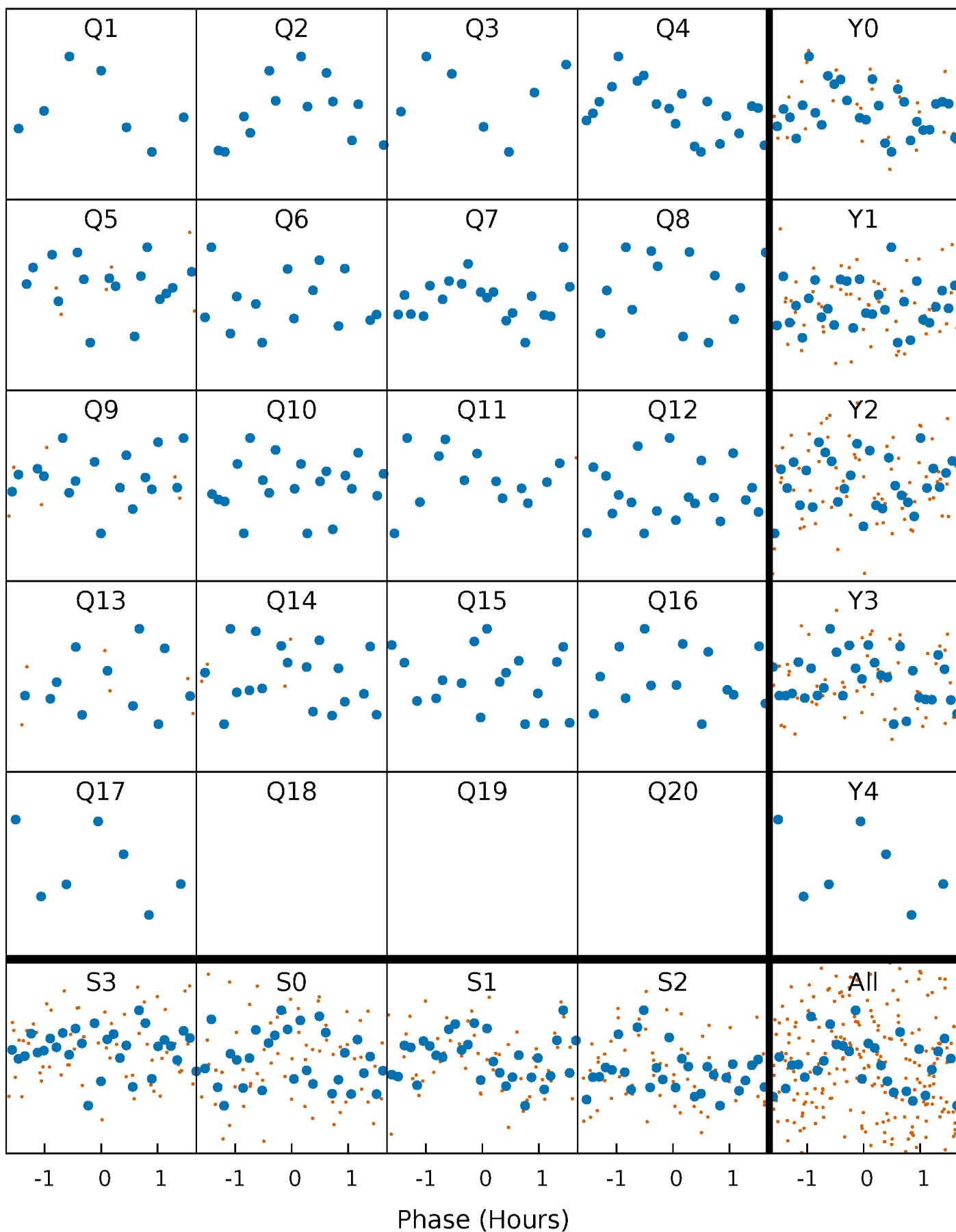


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



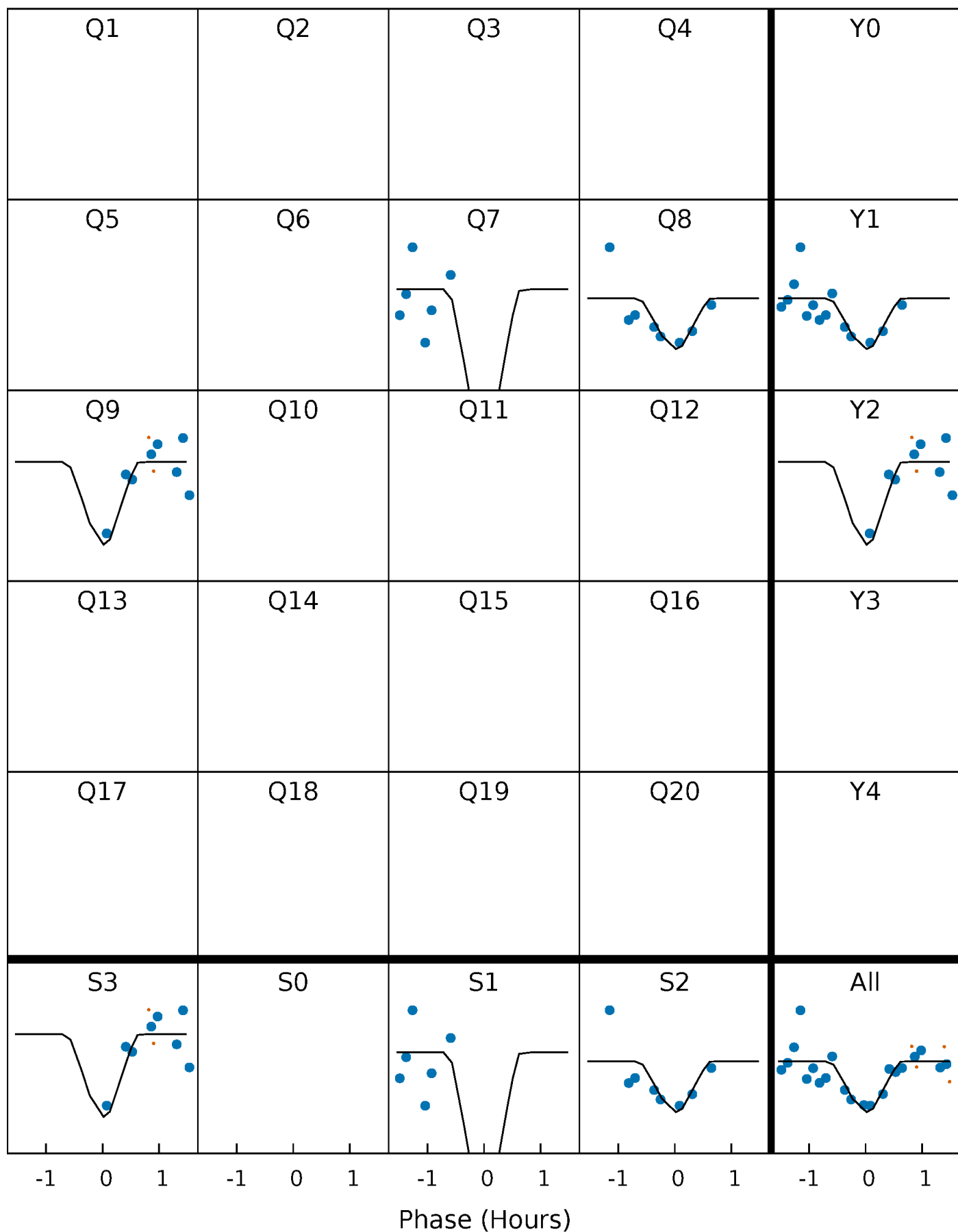
PDC Quarter-Phased Transit Curves

TCE 009364543-03 $P = 35.334786$ Days $T_0 = 146.410400$ (BKJD)



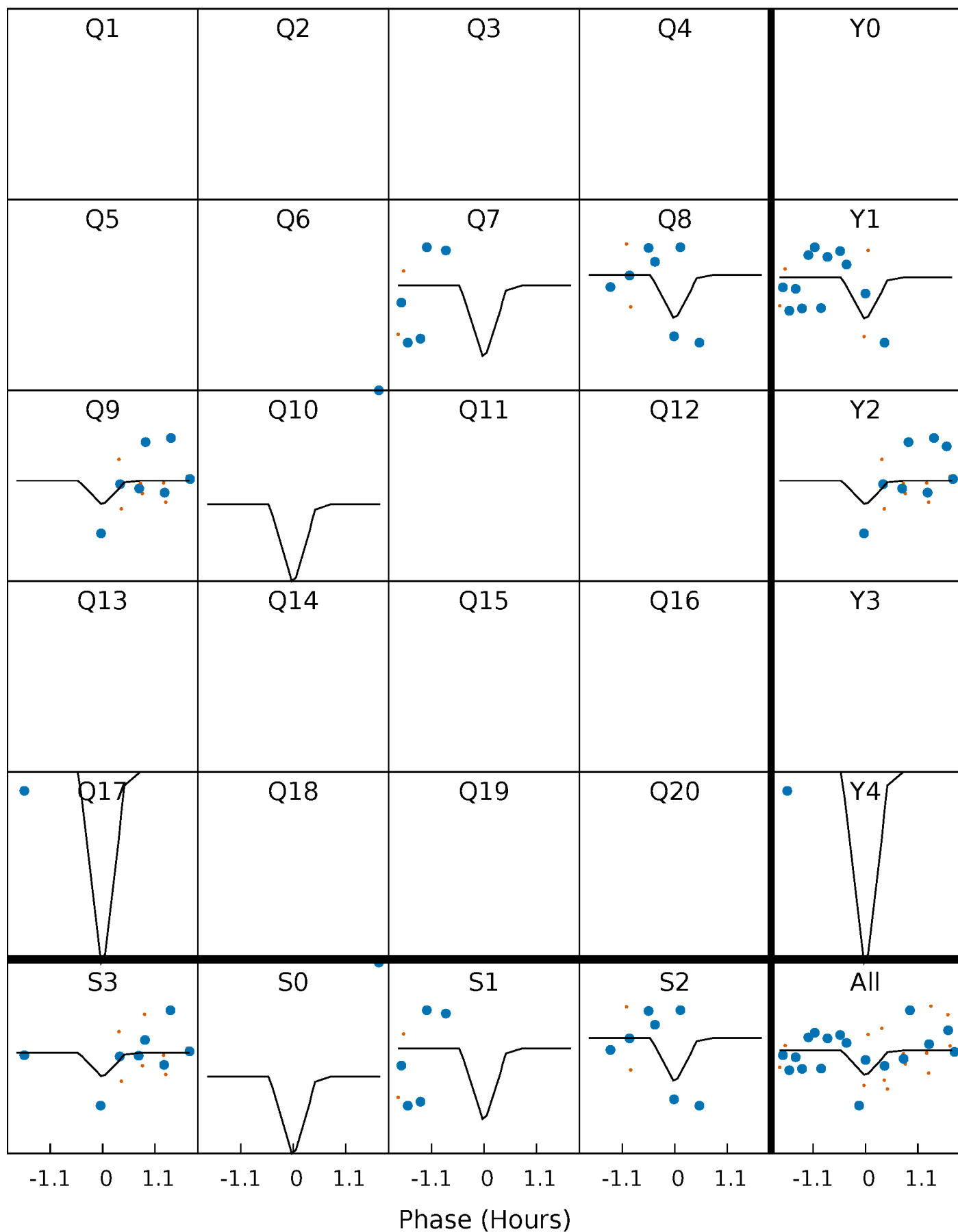
DV Quarter-Phased Transit Curves

TCE 009364543-03 P= 35.334786 Days $T_0=146.410400$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

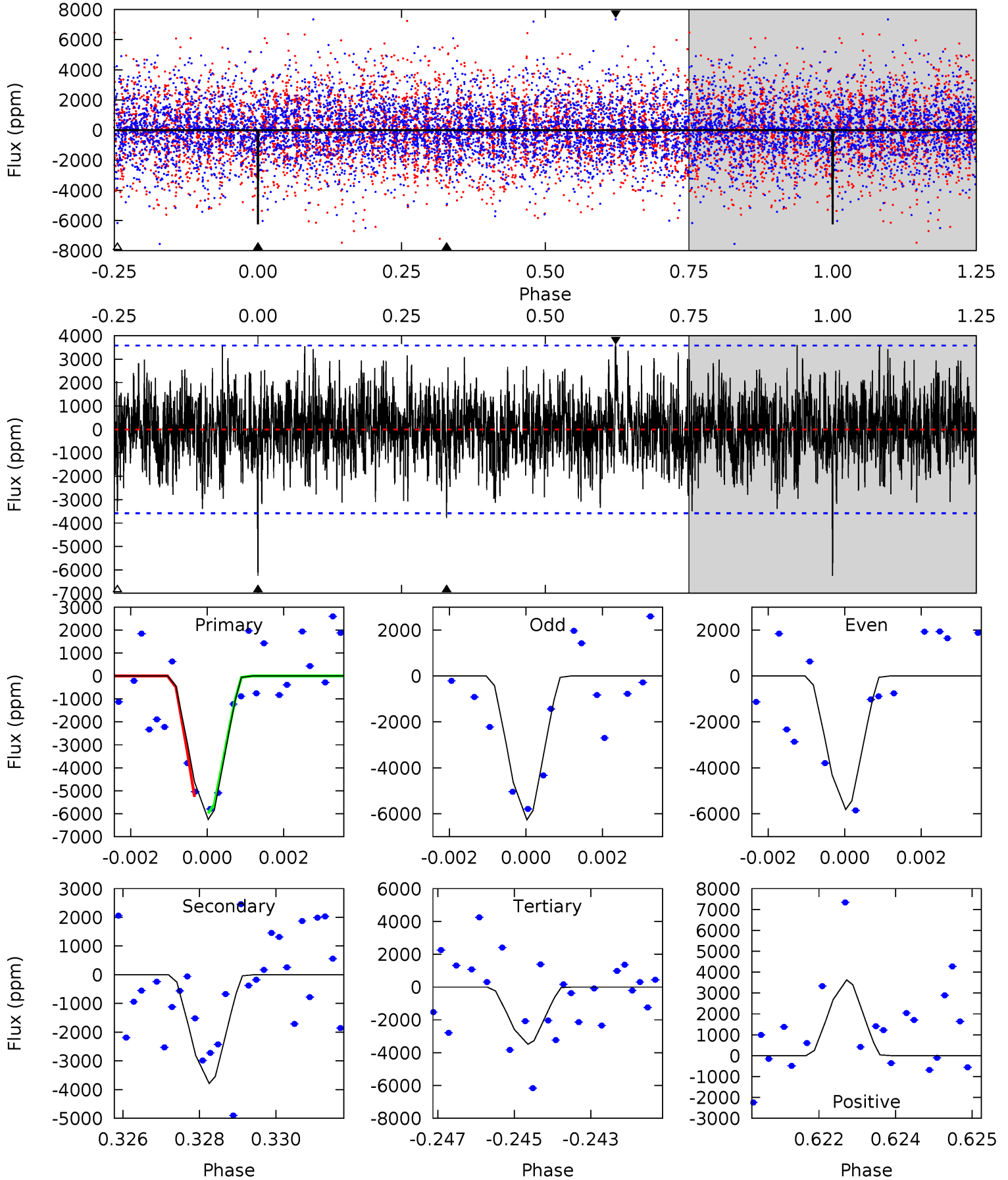
TCE 009364543-03 P= 35.332882 Days $T_0=146.451409$ (BKJD)



DV Model-Shift Uniqueness Test

009364543-03, P = 35.334786 Days, E = 111.075614 Days

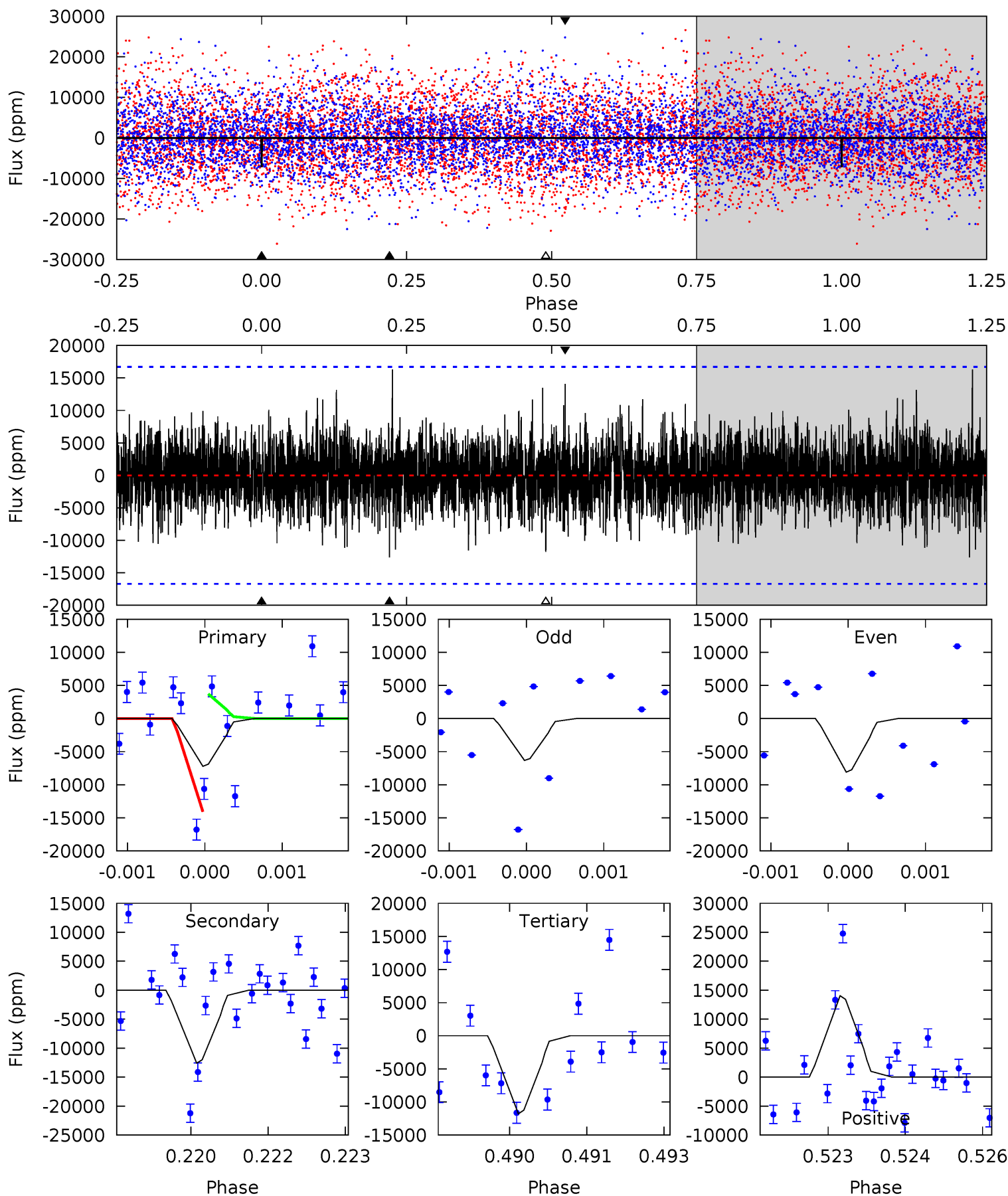
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.34	5.67	5.22	5.43	5.36	3.15	1.59	4.12	3.92	0.44	0.24	0.33	0.96	0.37	0.47



Alt Model-Shift Uniqueness Test

009364543-03, P = 35.332882 Days, E = 111.118527 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.33	4.06	3.80	4.53	5.39	3.18	1.14	-1.47	-2.20	0.26	-0.47	0.29	0.79	0.56	1.59



Stellar Parameters For KIC 009364543

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6321^{+203}_{-226}	$3.565^{+0.688}_{-0.121}$	$-0.240^{+0.300}_{-0.250}$	$3.428^{+0.538}_{-2.152}$	$1.575^{+0.174}_{-0.522}$	$0.055^{+0.641}_{-0.020}$
	+3%/-4%	+19%/-3%	+125%/-104%	+16%/-63%	+11%/-33%	+1165%/-37%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009364543-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3788 ± 668	$49.38^{+65.32}_{-33.38}$	1417^{+113}_{-219}	4169^{+2780}_{-949}	48^{+401}_{-39}
Alt.	-12582 ± 3101	$57.47^{+68.23}_{-37.45}$	1418^{+102}_{-220}	4993^{+3561}_{-1120}	119^{+885}_{-94}

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 $A_{obs} \gg 1.0$

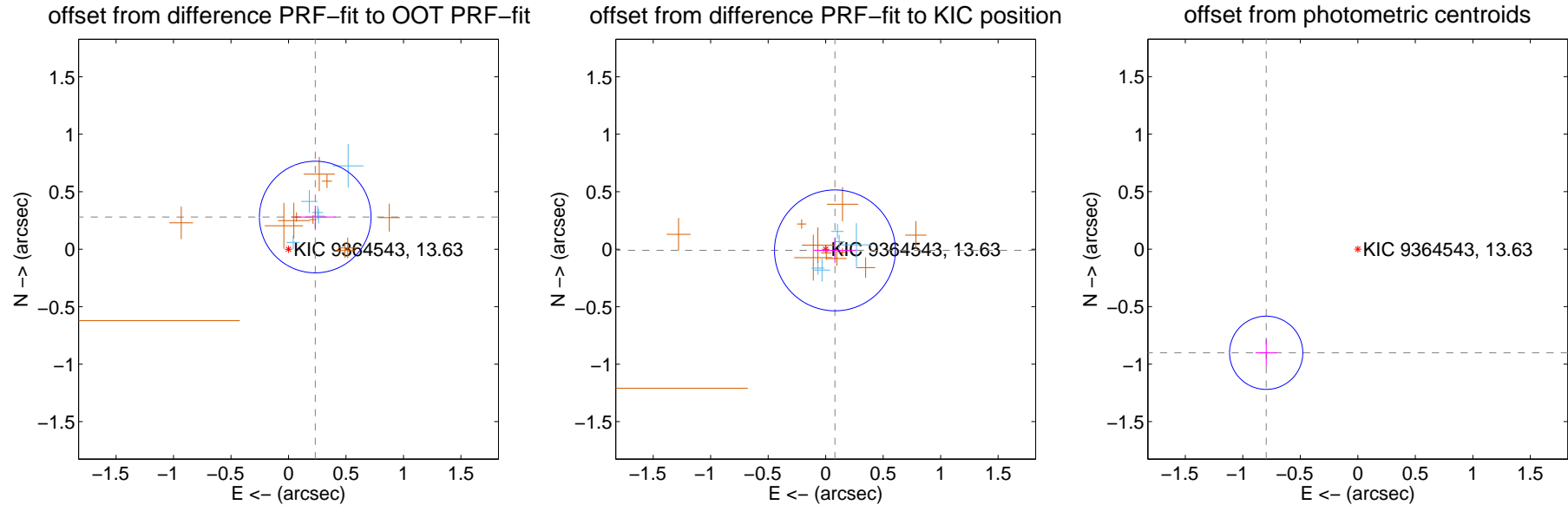
DV Centroid Data

Supplemental centroid analysis for 009364543-03. Kepler magnitude: 13.63. Transit SNR 10.78

There are 5 quarters with good PRF difference image offsets

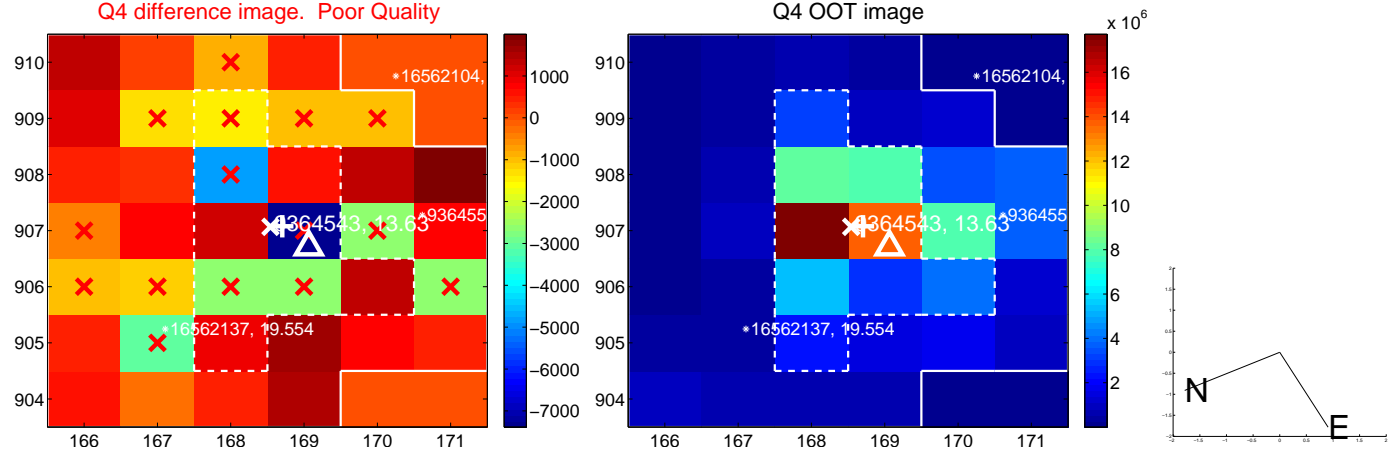
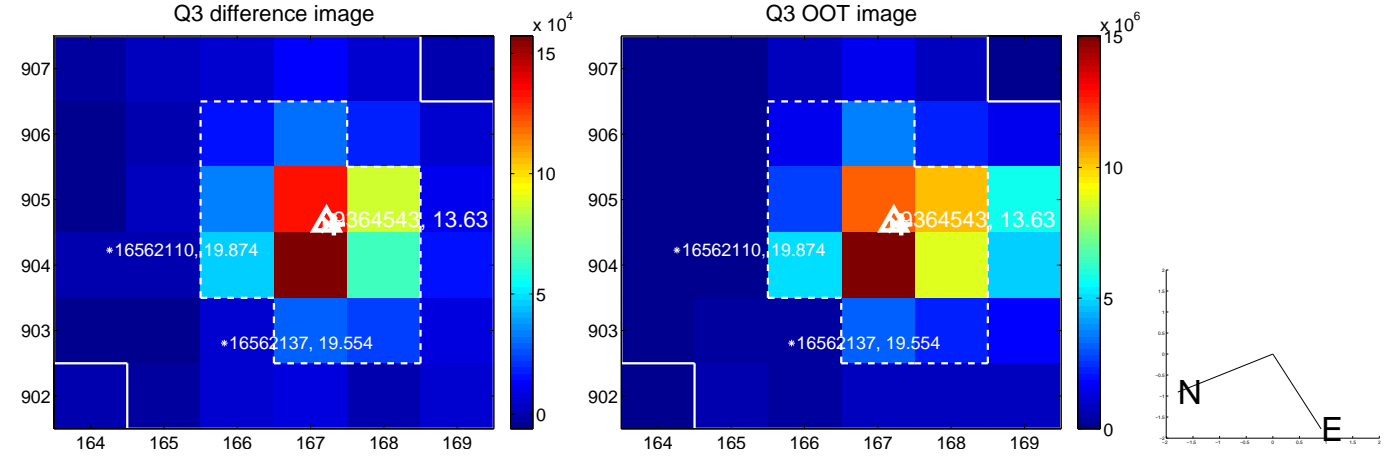
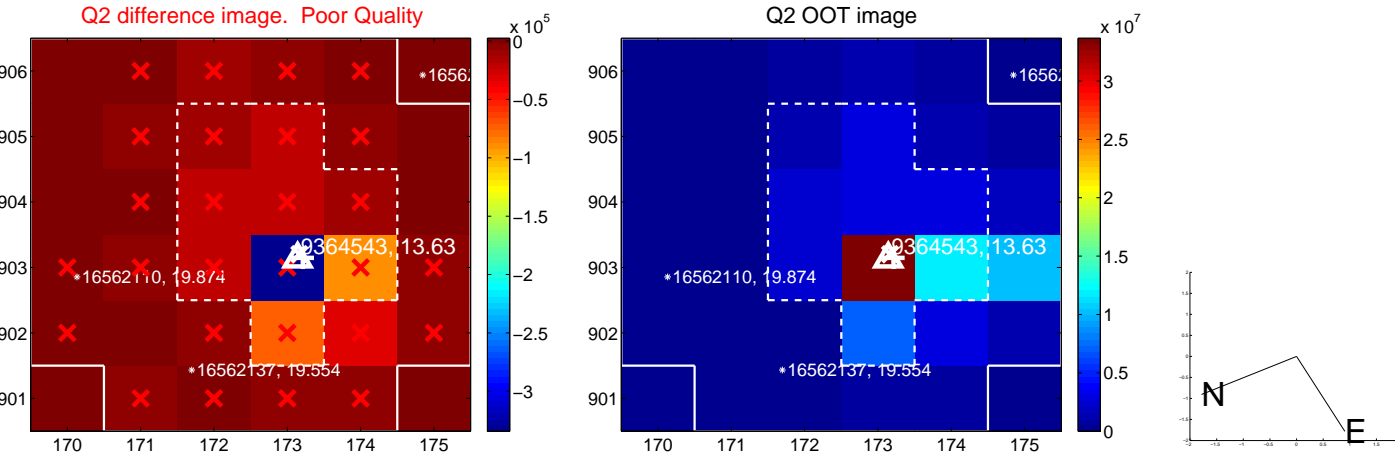
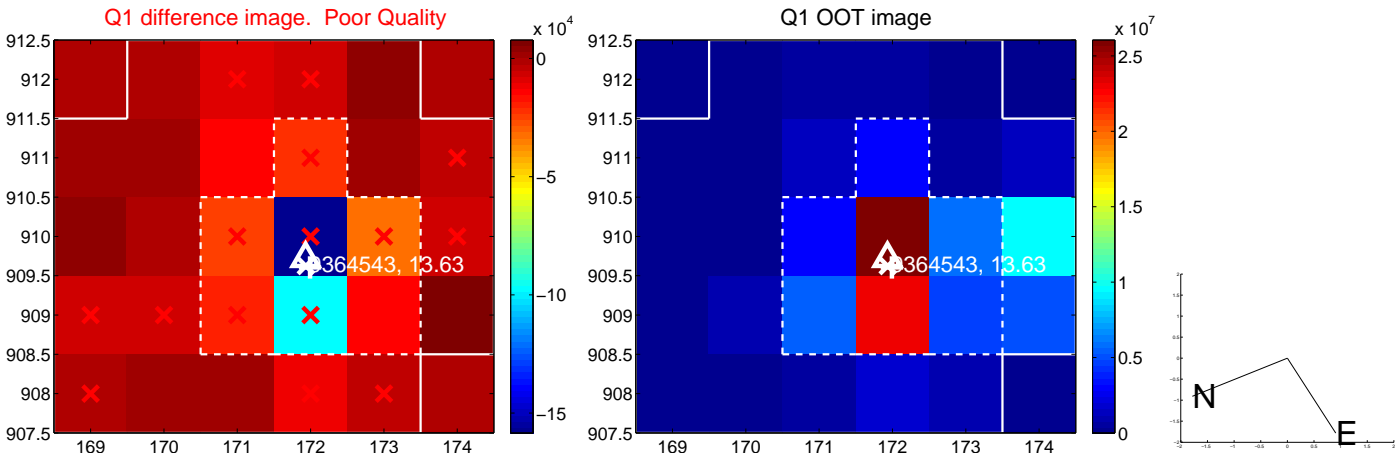
The direct PRF centroid is offset from the target star catalog position by about 0.73 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.364 ± 0.162	2.25	-0.233 ± 0.176	0.280 ± 0.099
PRF-fit source offset from KIC position	0.081 ± 0.175	0.46	-0.081 ± 0.184	-0.010 ± 0.109
photometric centroid source offset	1.20 ± 0.11	11.33	0.80 ± 0.09	-0.90 ± 0.12

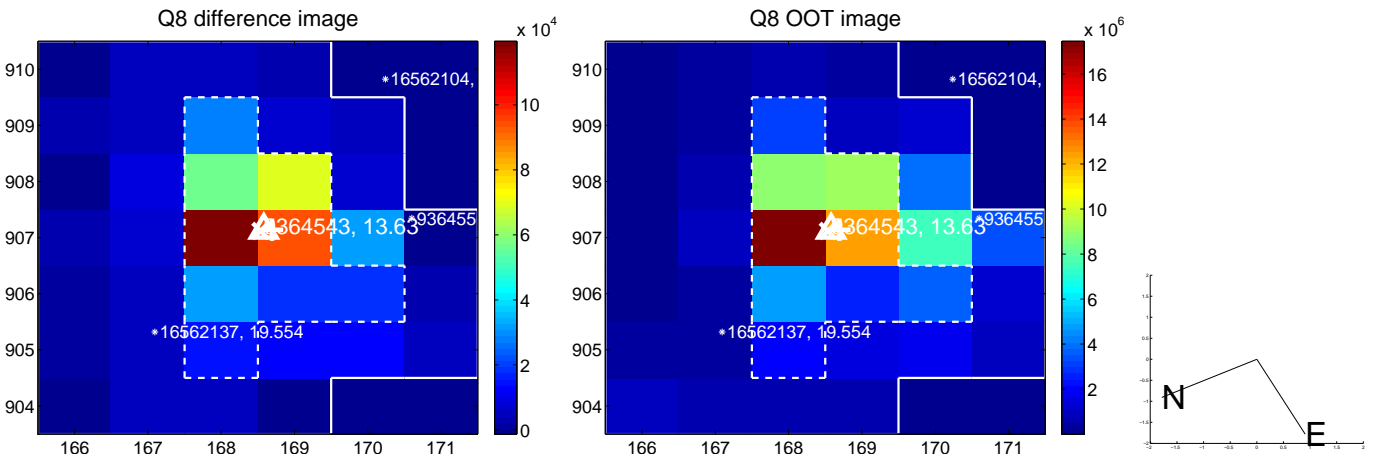
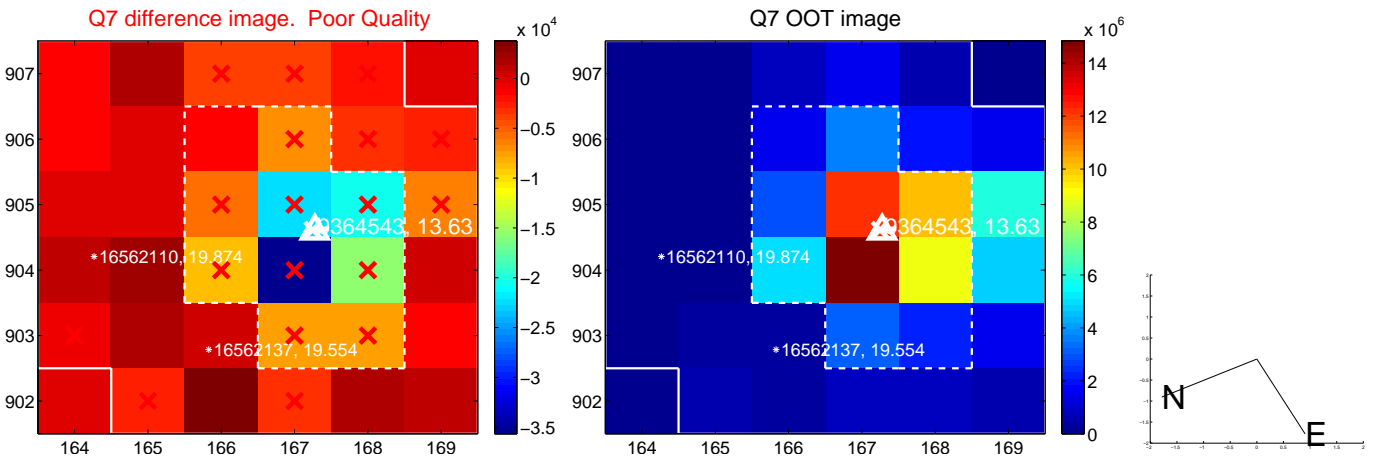
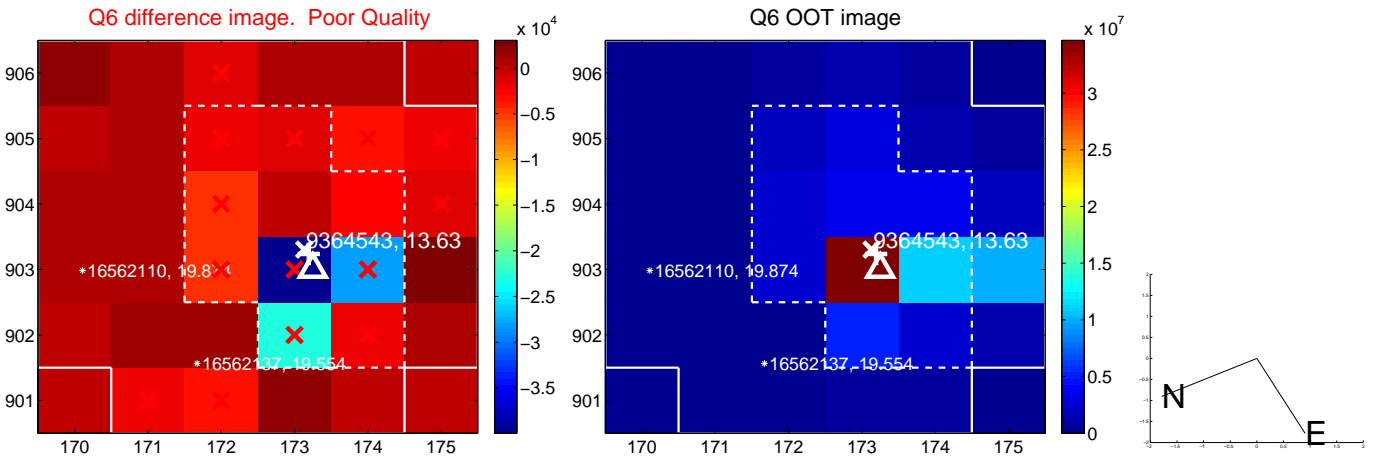
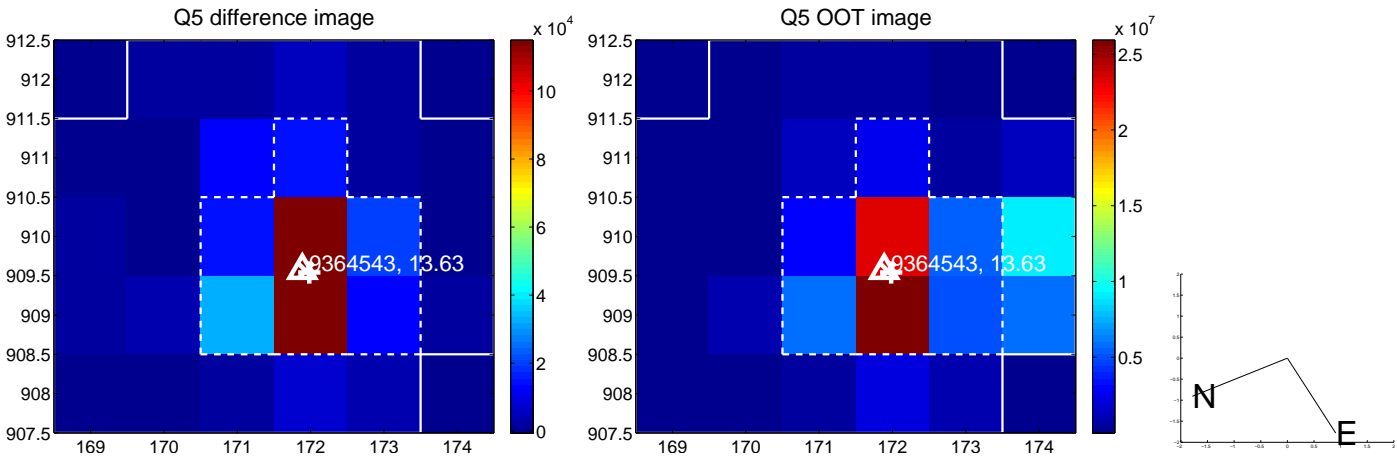


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

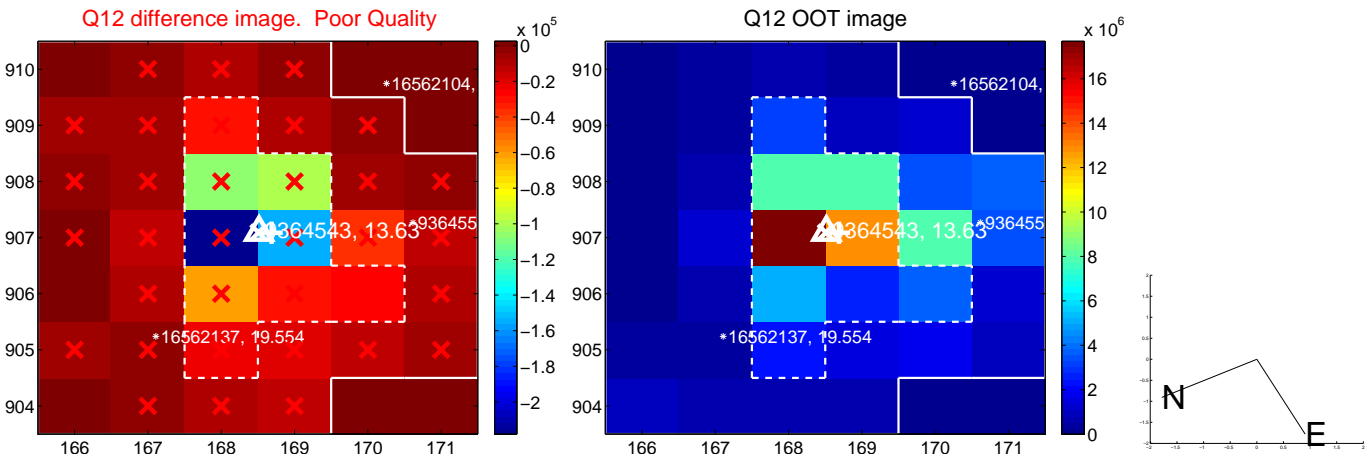
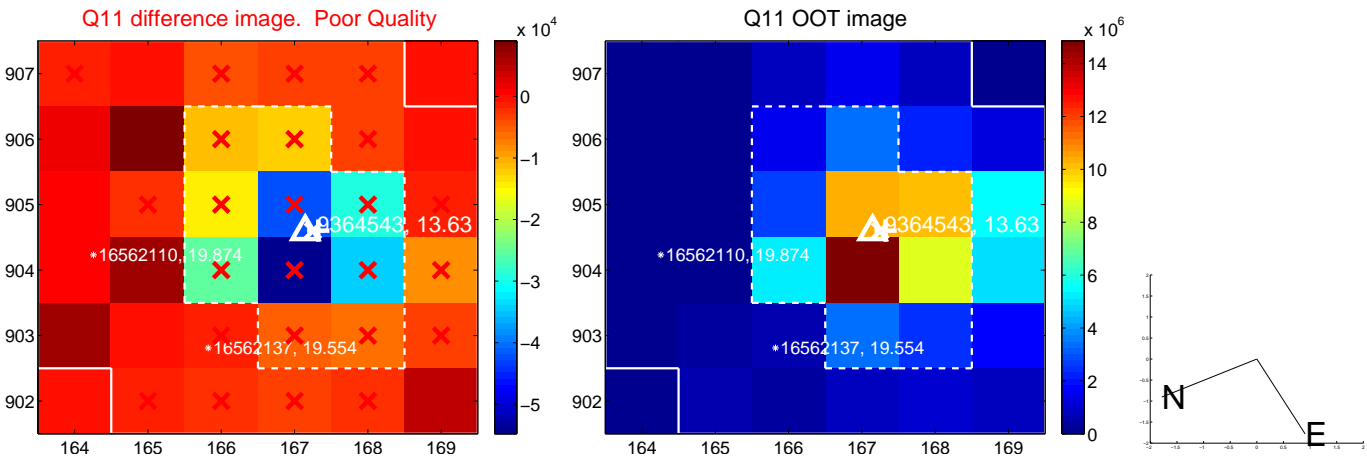
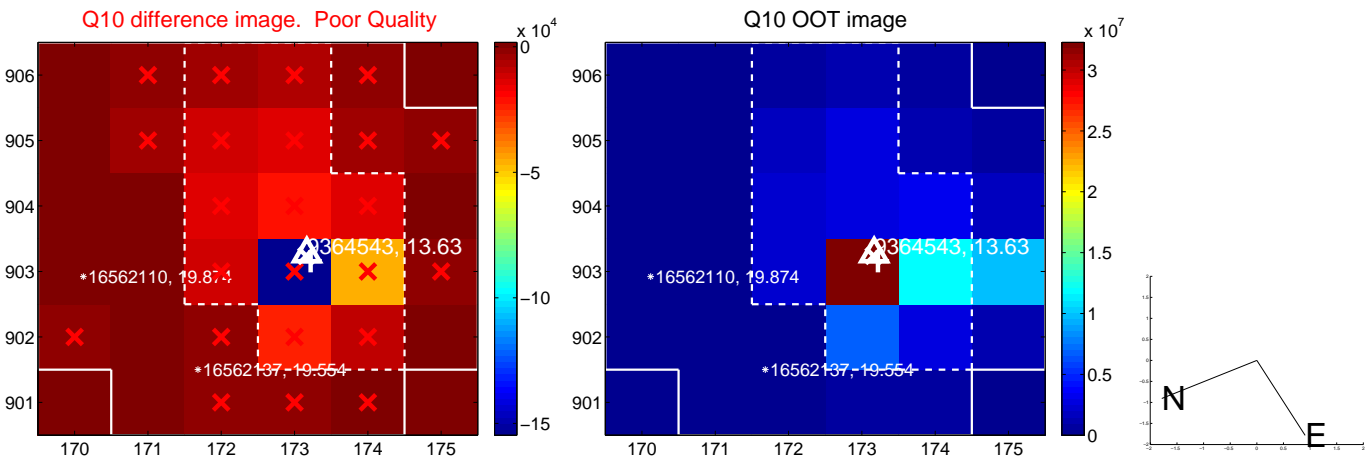
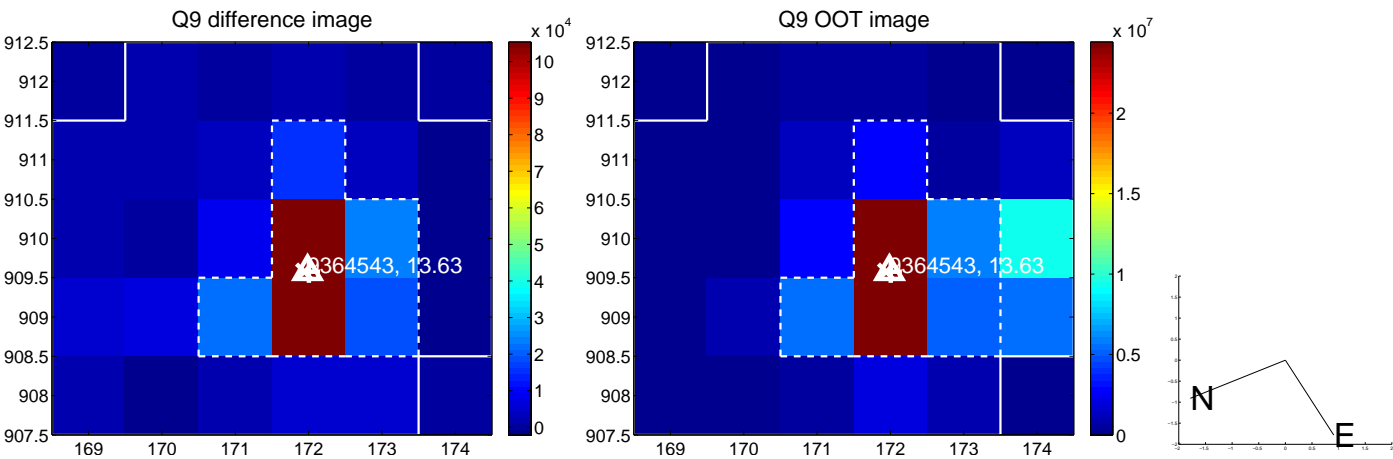
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



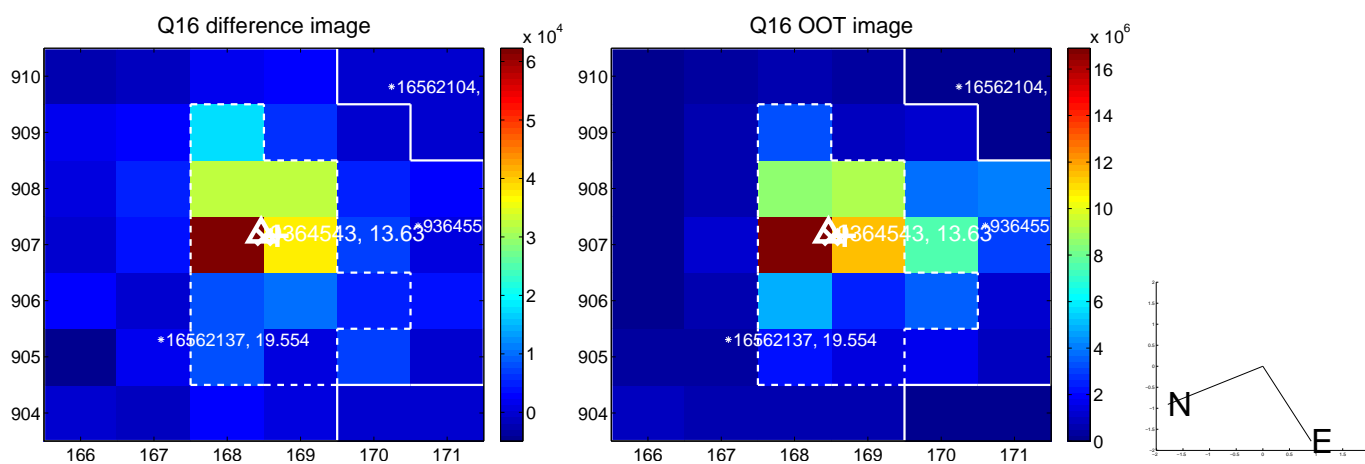
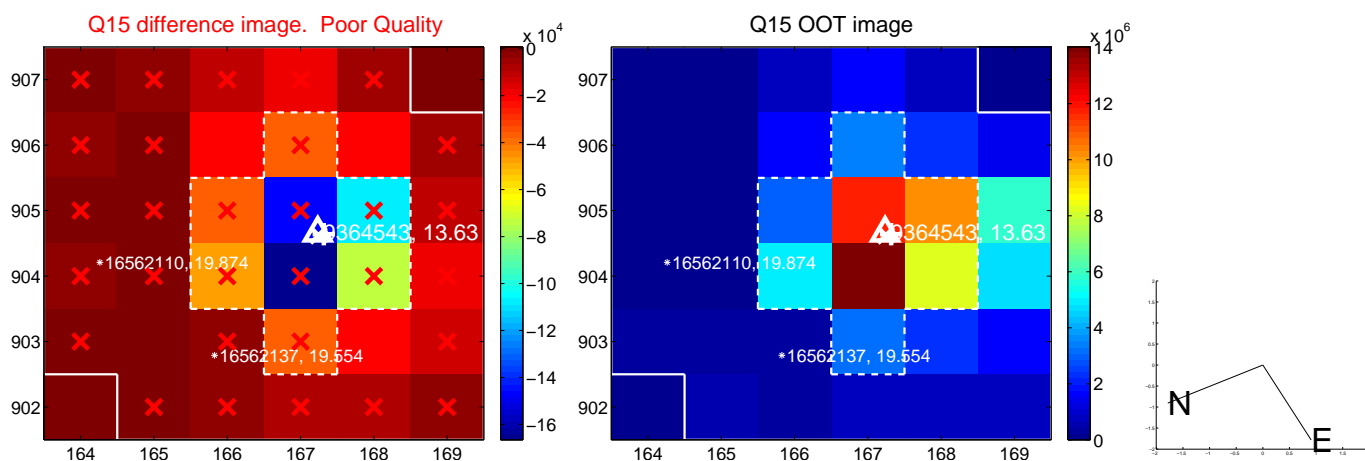
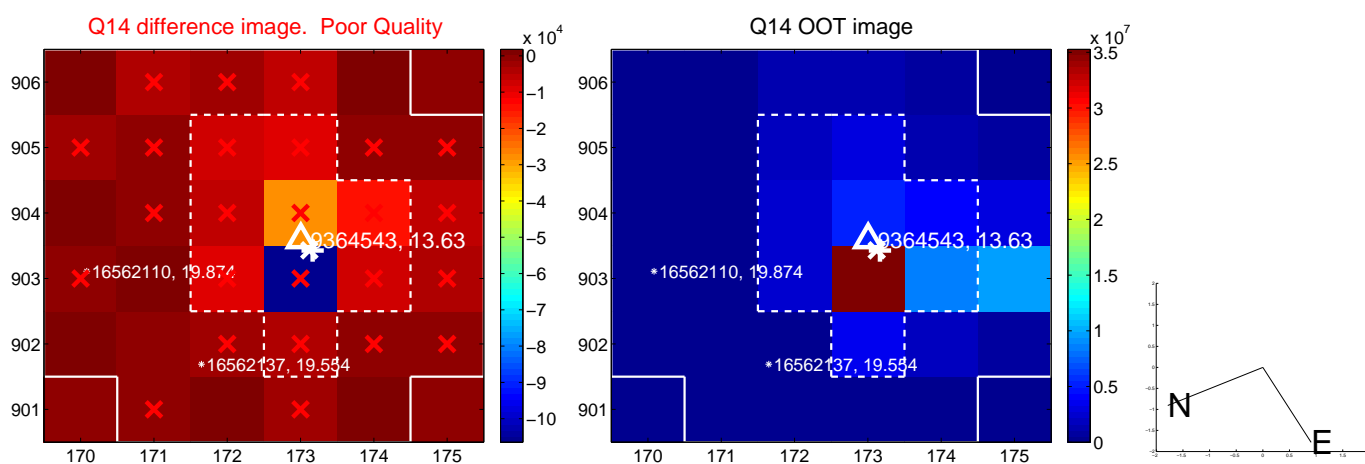
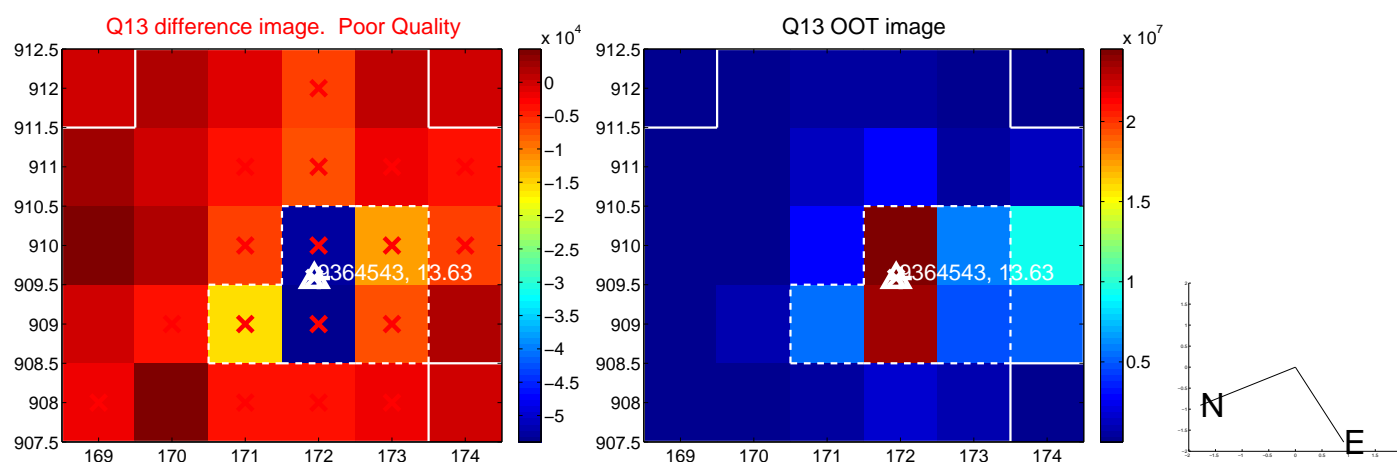
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



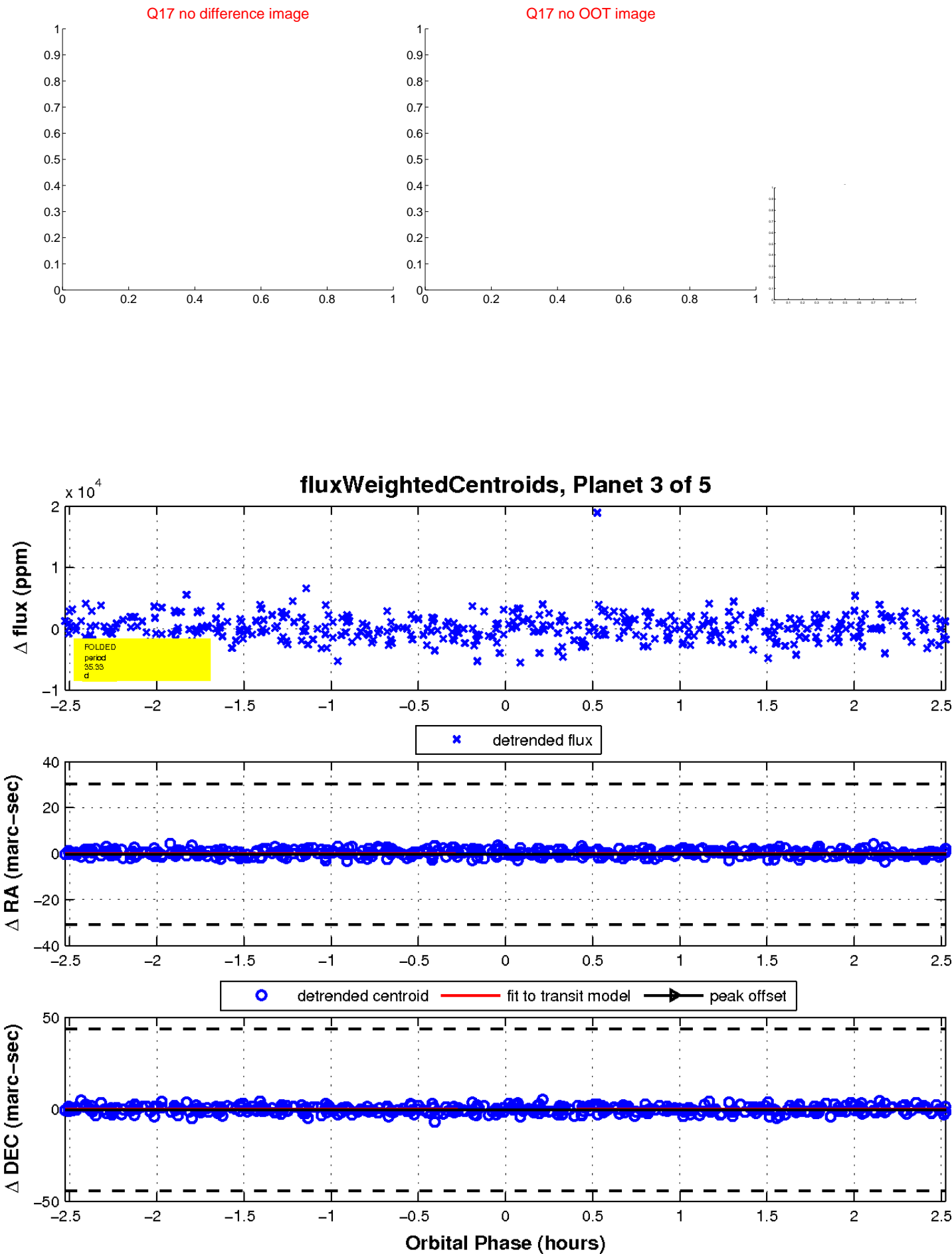
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

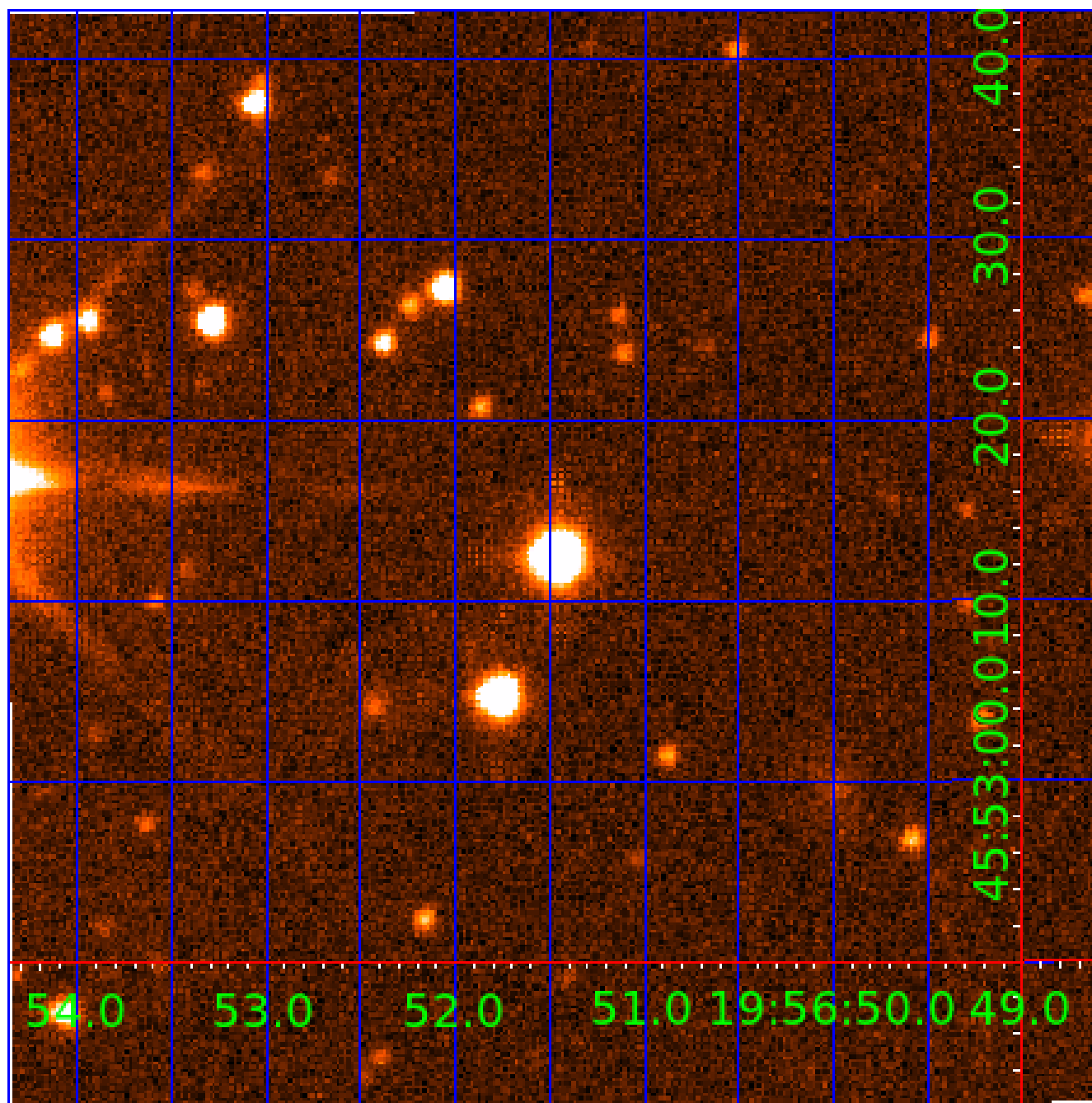


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009364543

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})
009364543-01	OBS	No	0.667141	131.642211	199.7	4.502	15.8	10.8	3.43	6321	4.86	55604.25
009364543-02	OBS	No	42.139602	139.711102	798.1	23.157	9.4	7.0	3.43	6321	9.80	221.04
009364543-03	OBS	No	35.334786	146.410400	6706.1	0.844	10.5	10.8	3.43	6321	30.37	279.55
009364543-04	OBS	No	30.674491	144.649291	1594.5	7.102	10.8	9.3	3.43	6321	14.40	337.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009364543-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
009364543-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_KIC_POS
009364543-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009364543-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

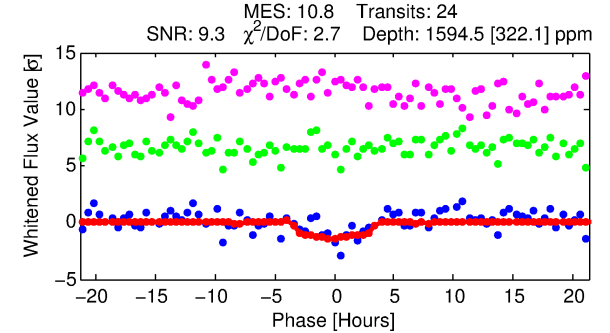
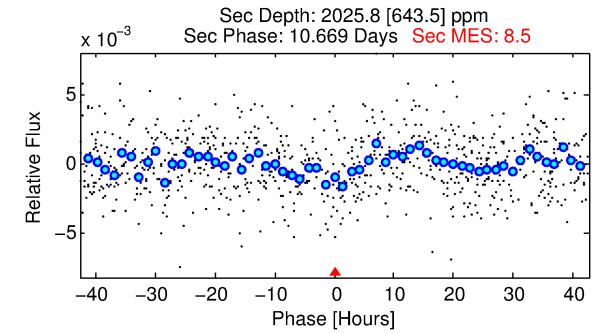
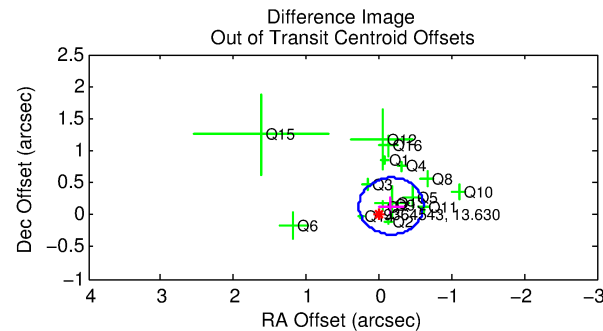
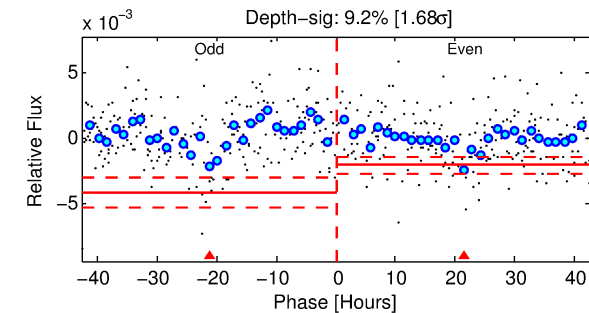
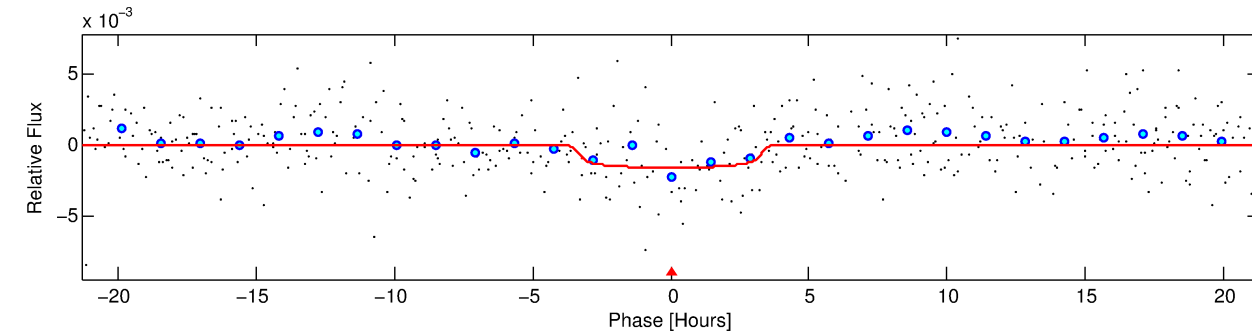
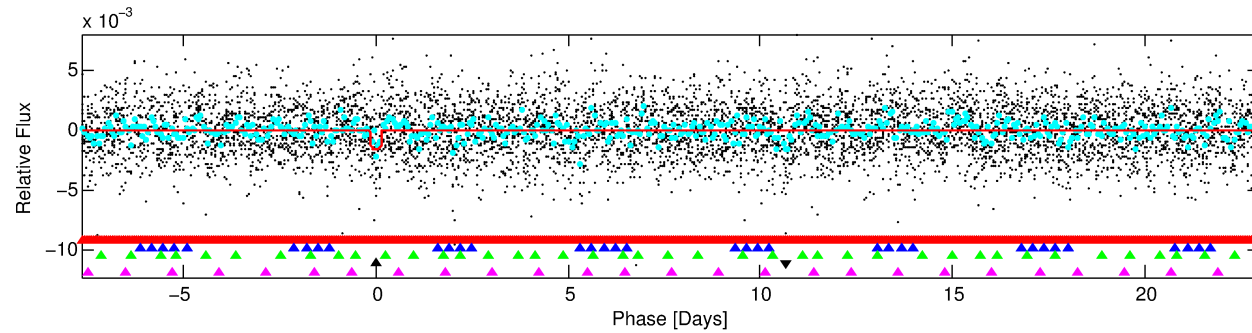
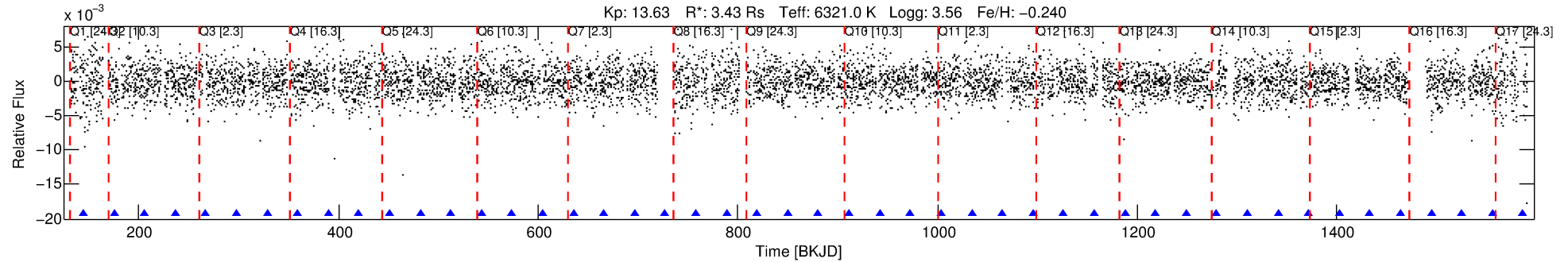
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009364543-04

No Significant Match Found

DV One-Page Summary

KIC: 9364543 Candidate: 4 of 5 Period: 30.674 d



DV Fit Results:

Period = 30.67449 [0.00325] d
Epoch = 144.6493 [0.0796] BKJD
Rp/R* = 0.0385 [0.0227]
a/R* = 27.40 [83.58]
b = 0.62 [2.97]
Seff = 337.57 [386.51]
Teq = 1093 [313] K
Rp = 14.40 [12.41] Re
a = 0.2231 [0.1504] AU
Ag = 267.52 [446.28] [0.60 σ]
Teffp = 6834 [2102] K [2.70 σ]

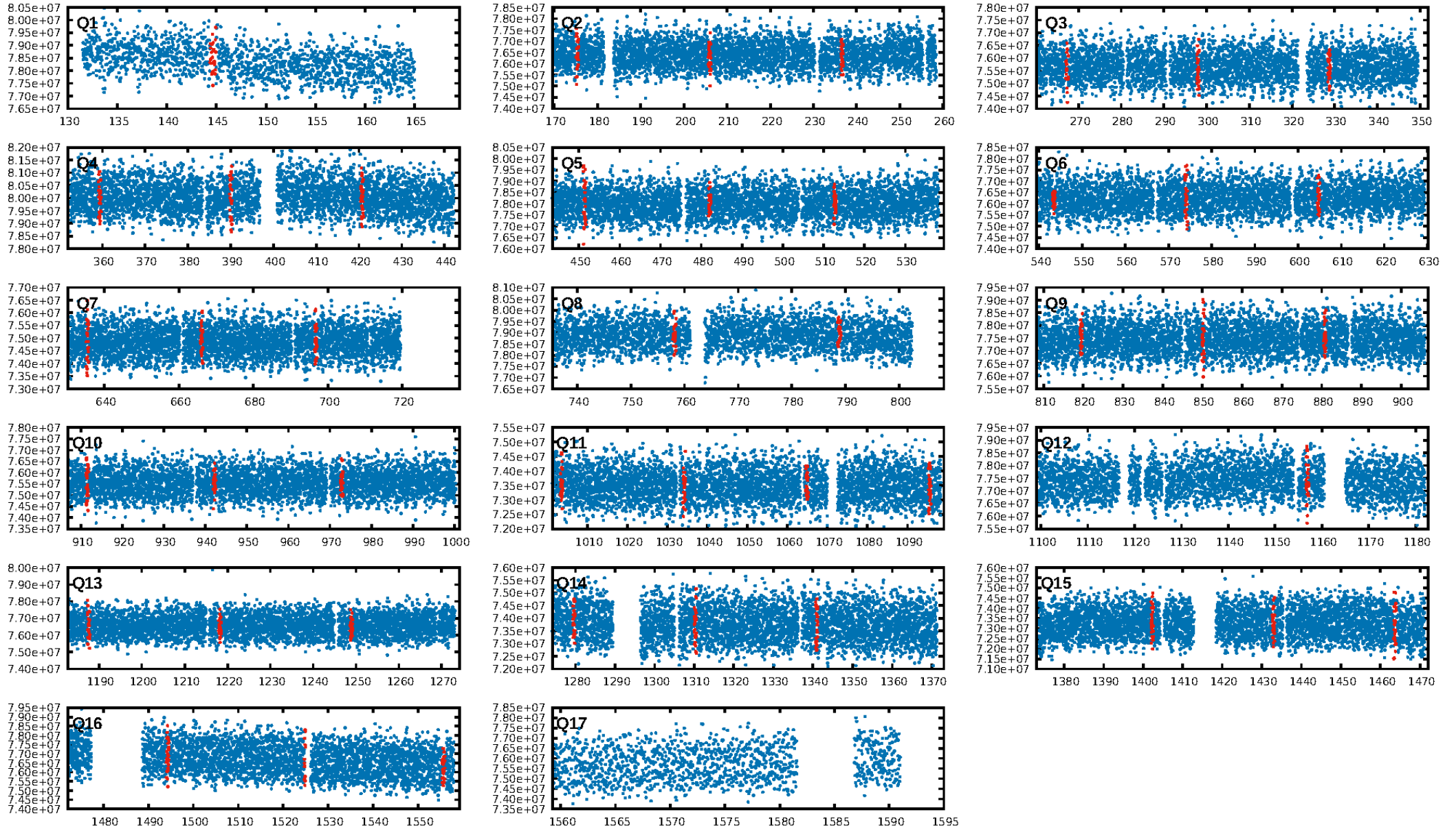
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [85.65 σ]
LongPeriod-sig: 100.0% [15.64 σ]
ModelChiSquare2-sig: 0.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [23/23]
GhostDiagnostic-chr: -1.207
Centroid-sig: 82.6%
Centroid-so: 1.199 arcsec [7.43 σ]
OotOffset-rm: 0.214 arcsec [1.45 σ]
KicOffset-rm: 0.068 arcsec [0.45 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.50 [8/16]
DiffImageOverlap-fno: 0.00 [0/16]

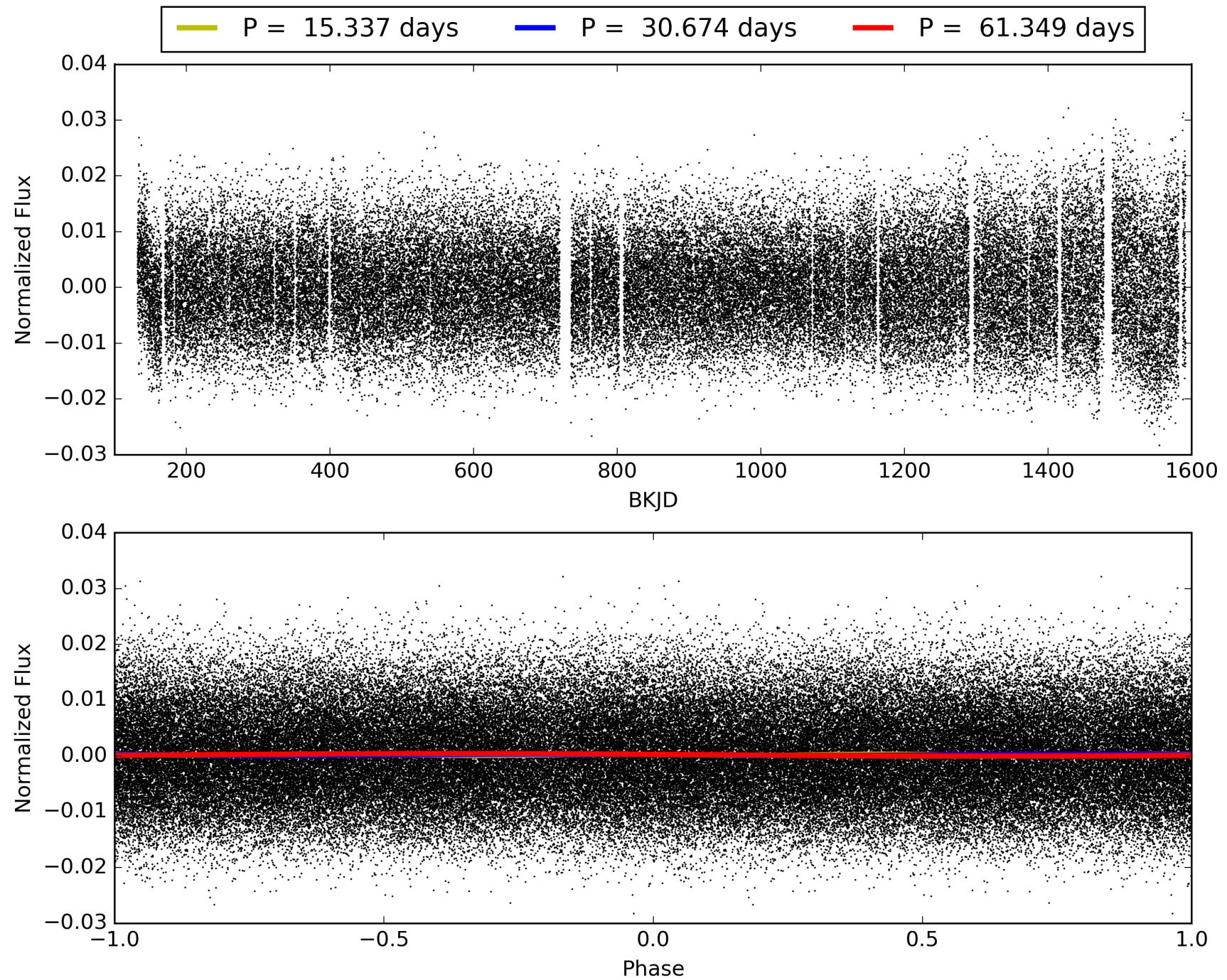
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 13:07:44 Z

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

TCE 009364543-04, PDC Light Curves

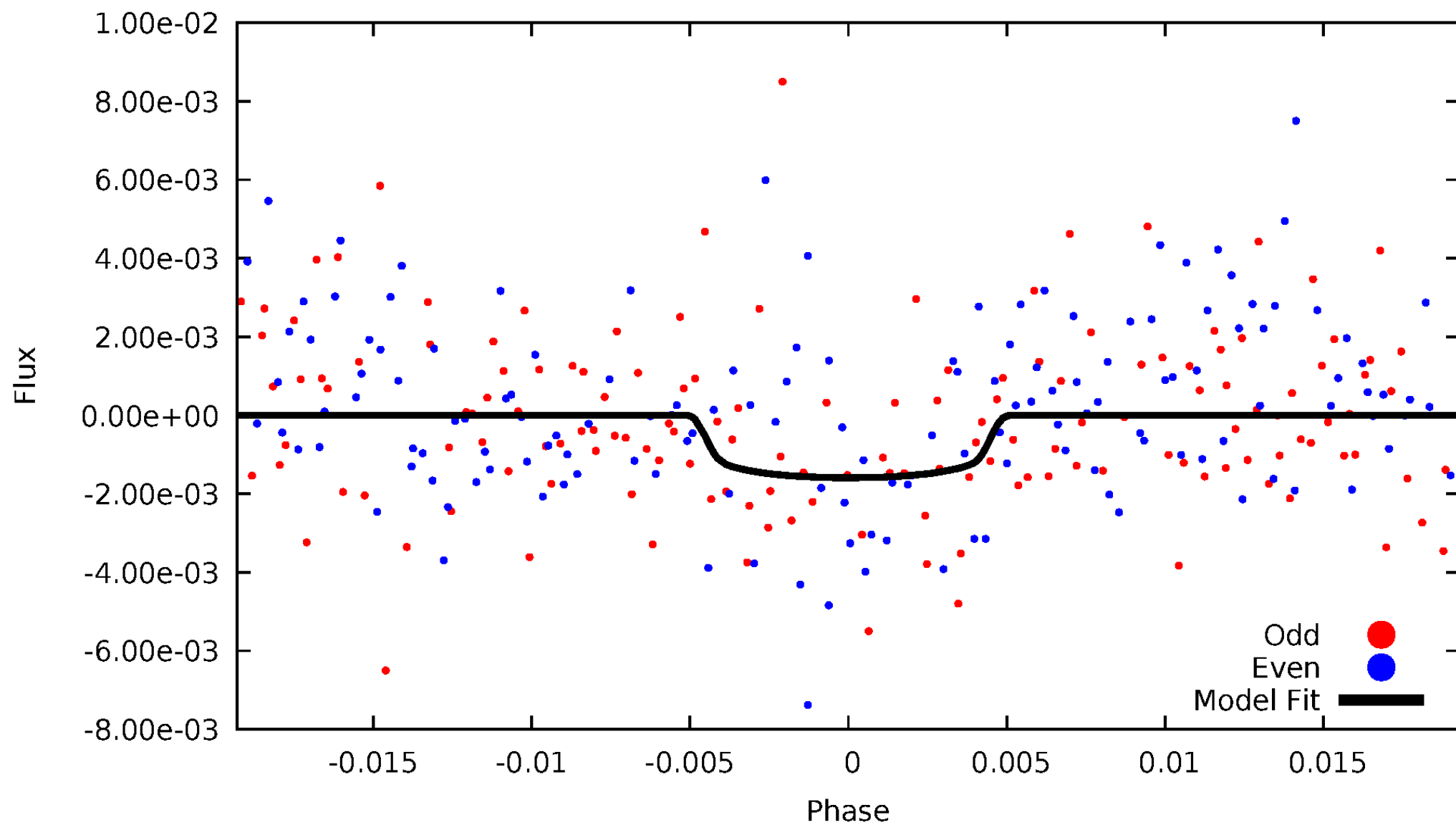


TCE 009364543-04



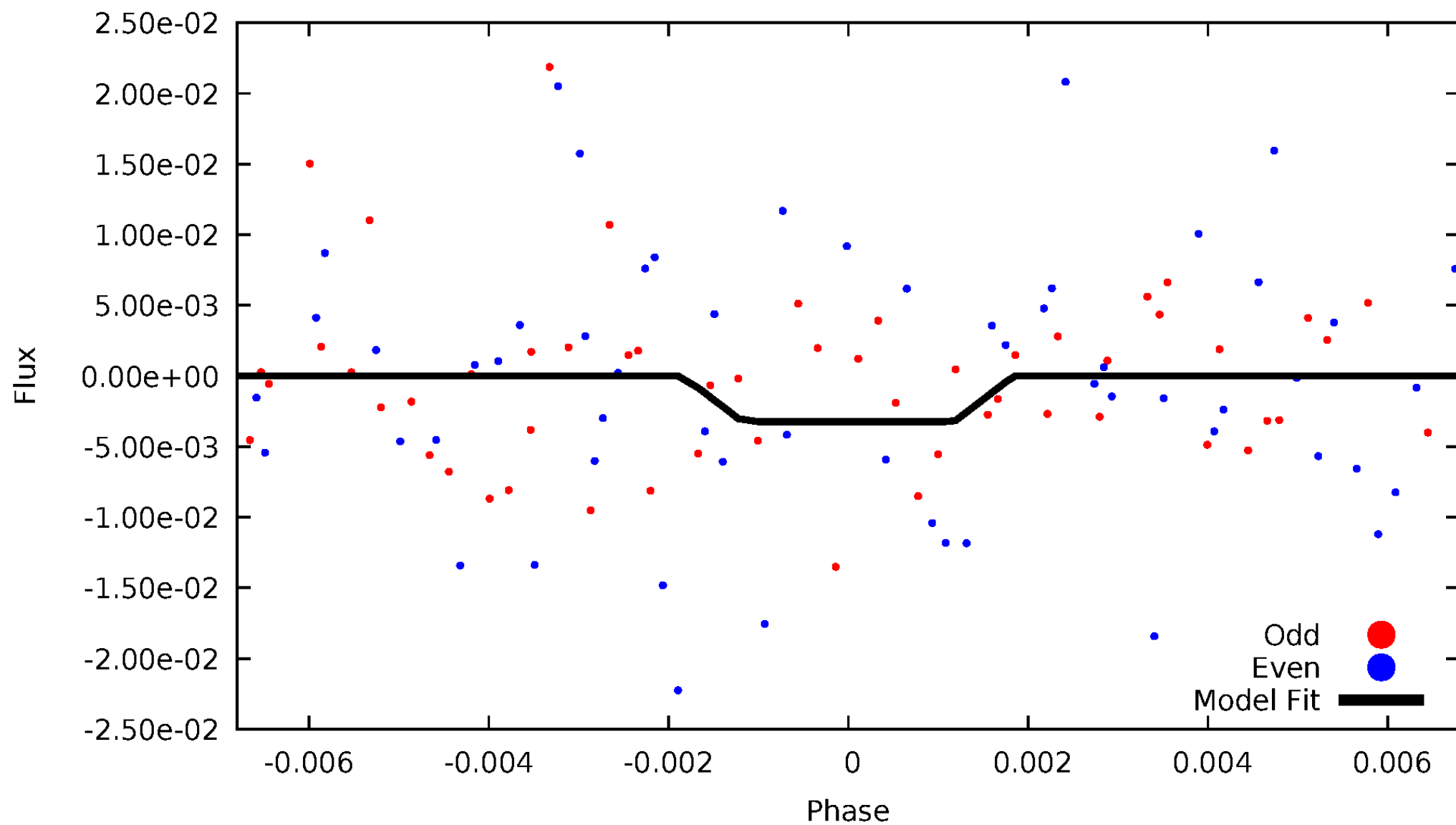
DV Odd/Even

TCE 009364543-04



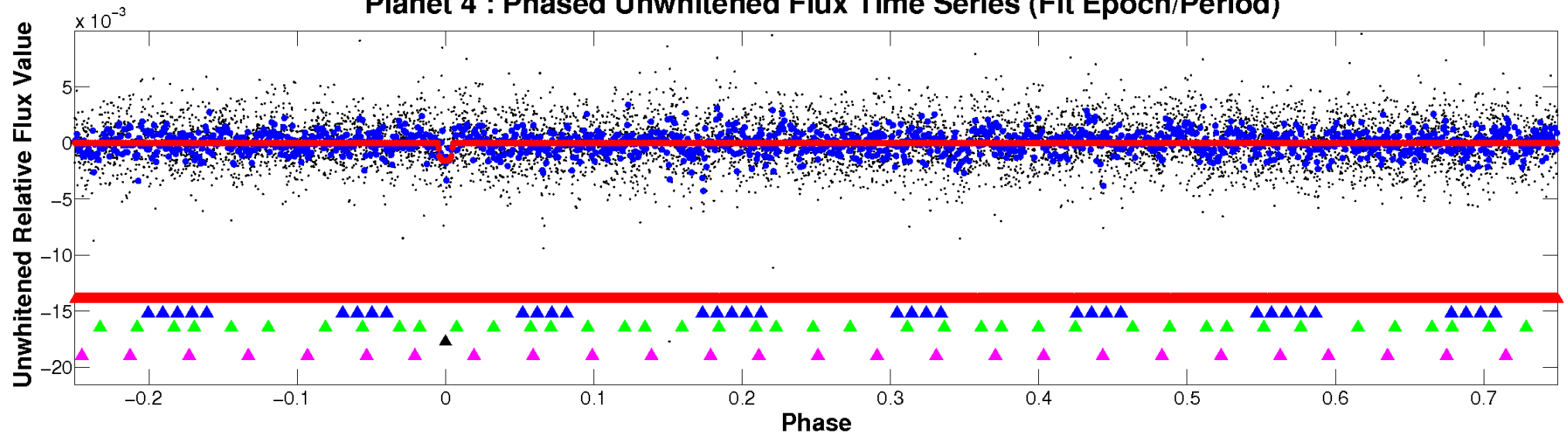
ALT Odd/Even

TCE 009364543-04

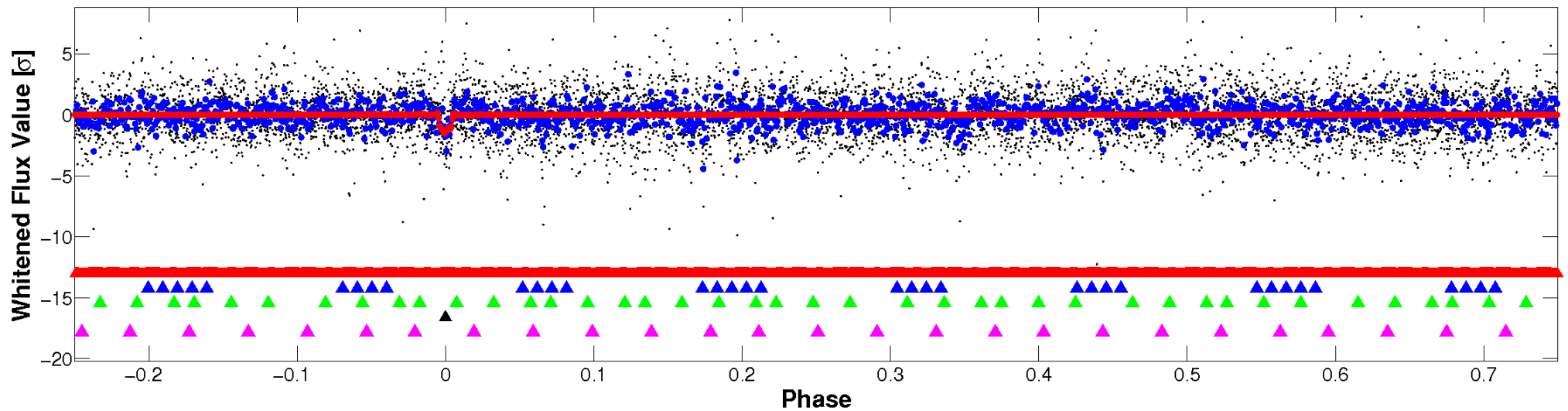


Non-Whitened Vs. Whitened Light Curve

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

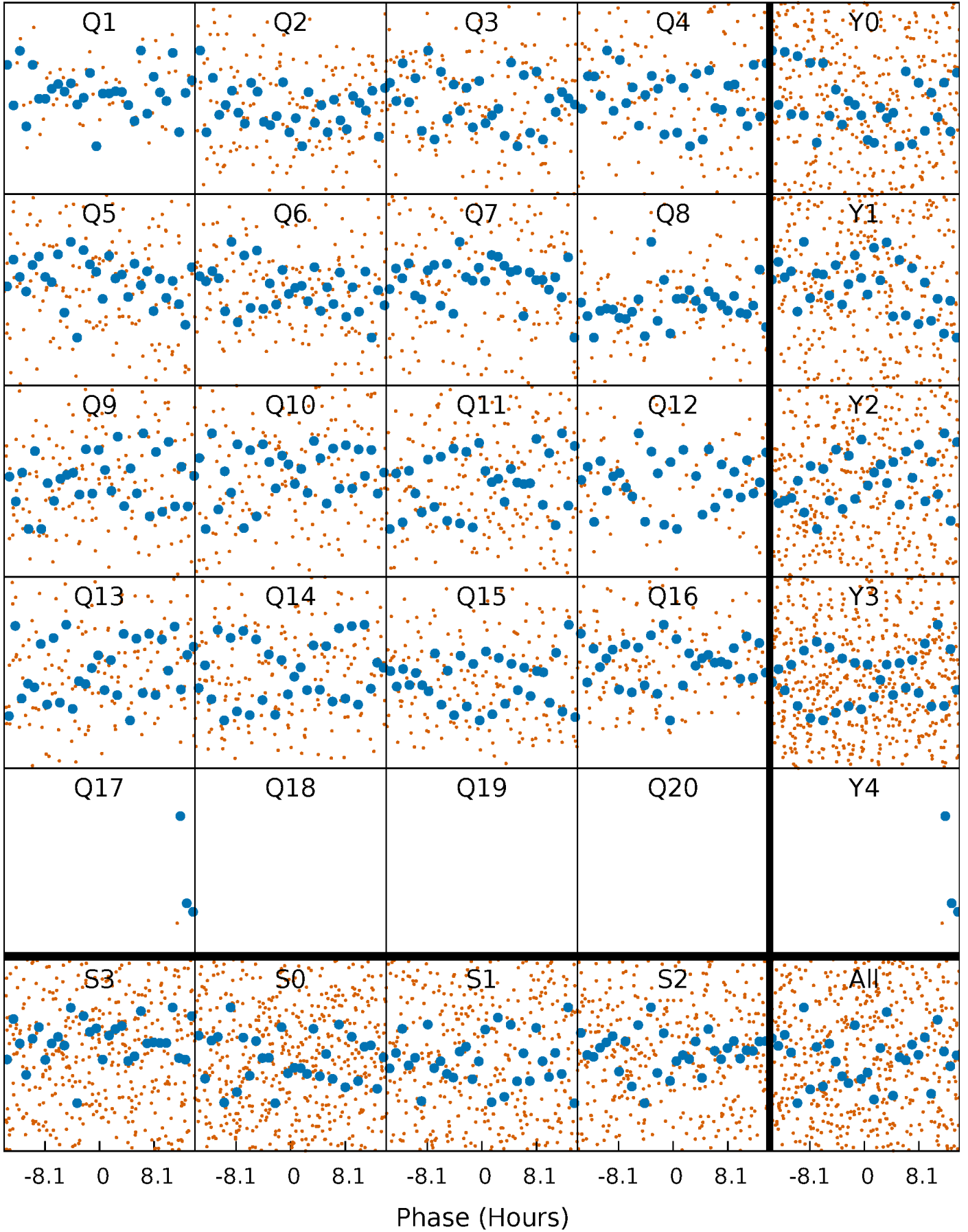


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



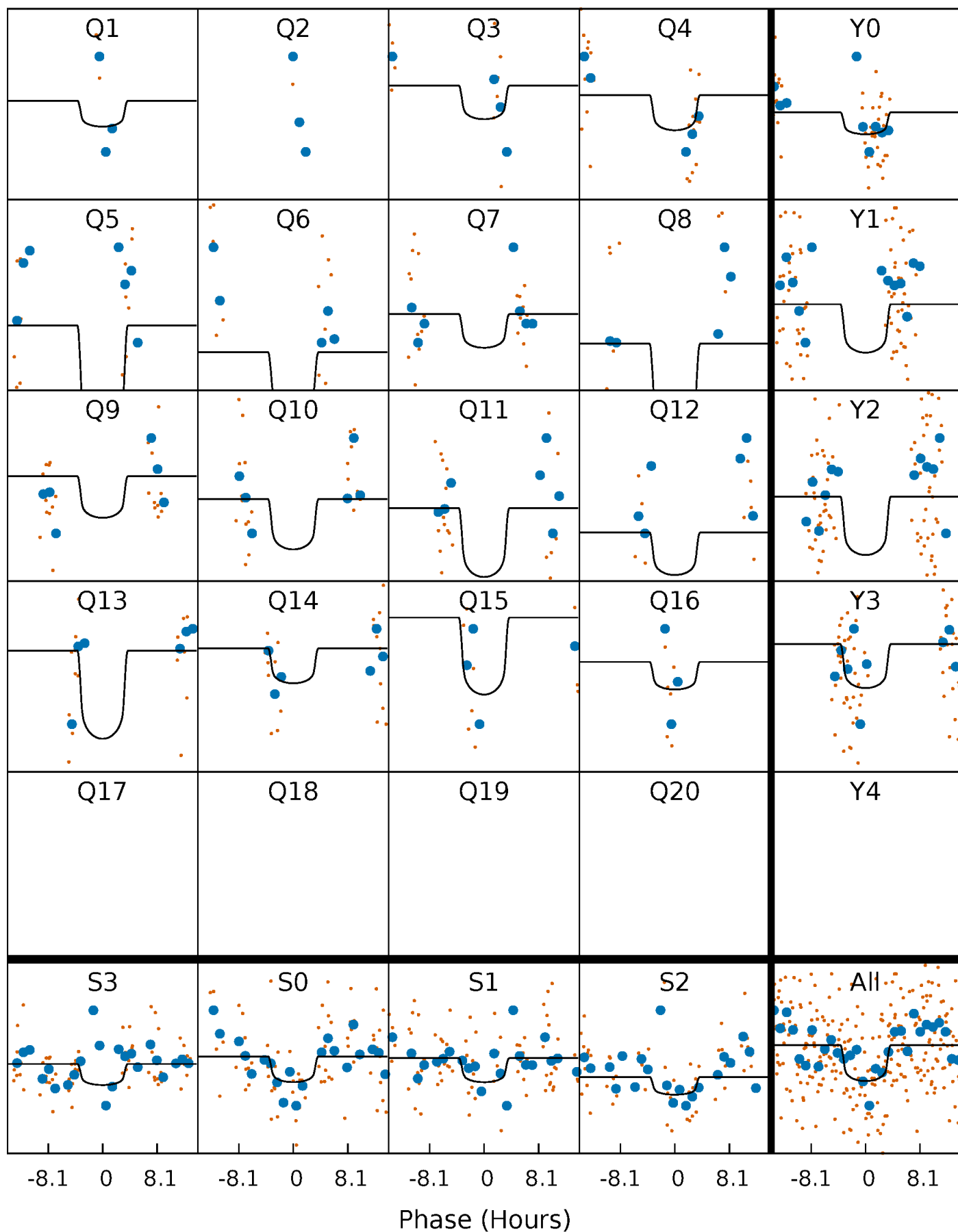
PDC Quarter-Phased Transit Curves

TCE 009364543-04 P= 30.674491 Days $T_0=144.649291$ (BKJD)



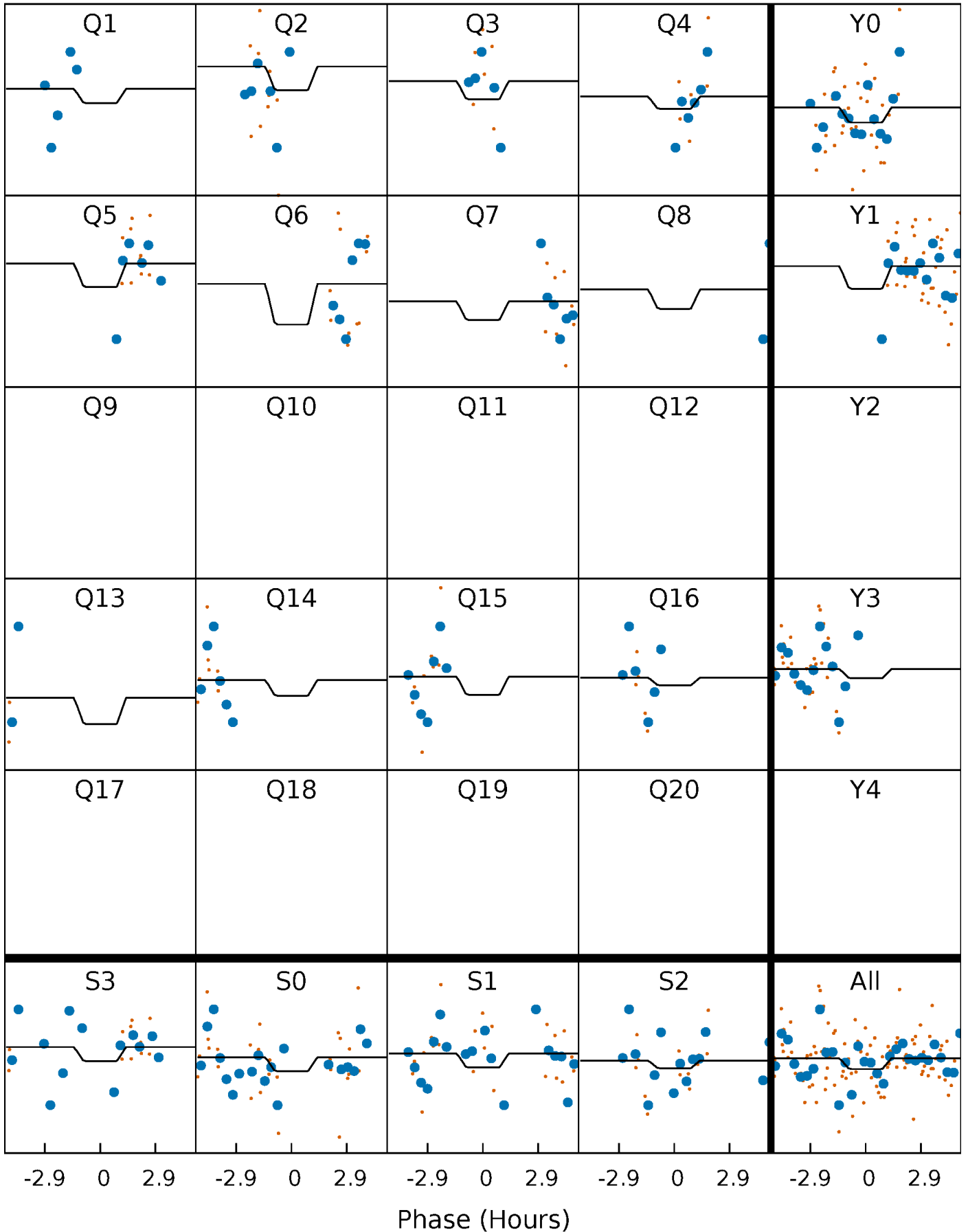
DV Quarter-Phased Transit Curves

TCE 009364543-04 P= 30.674491 Days $T_0=144.649291$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

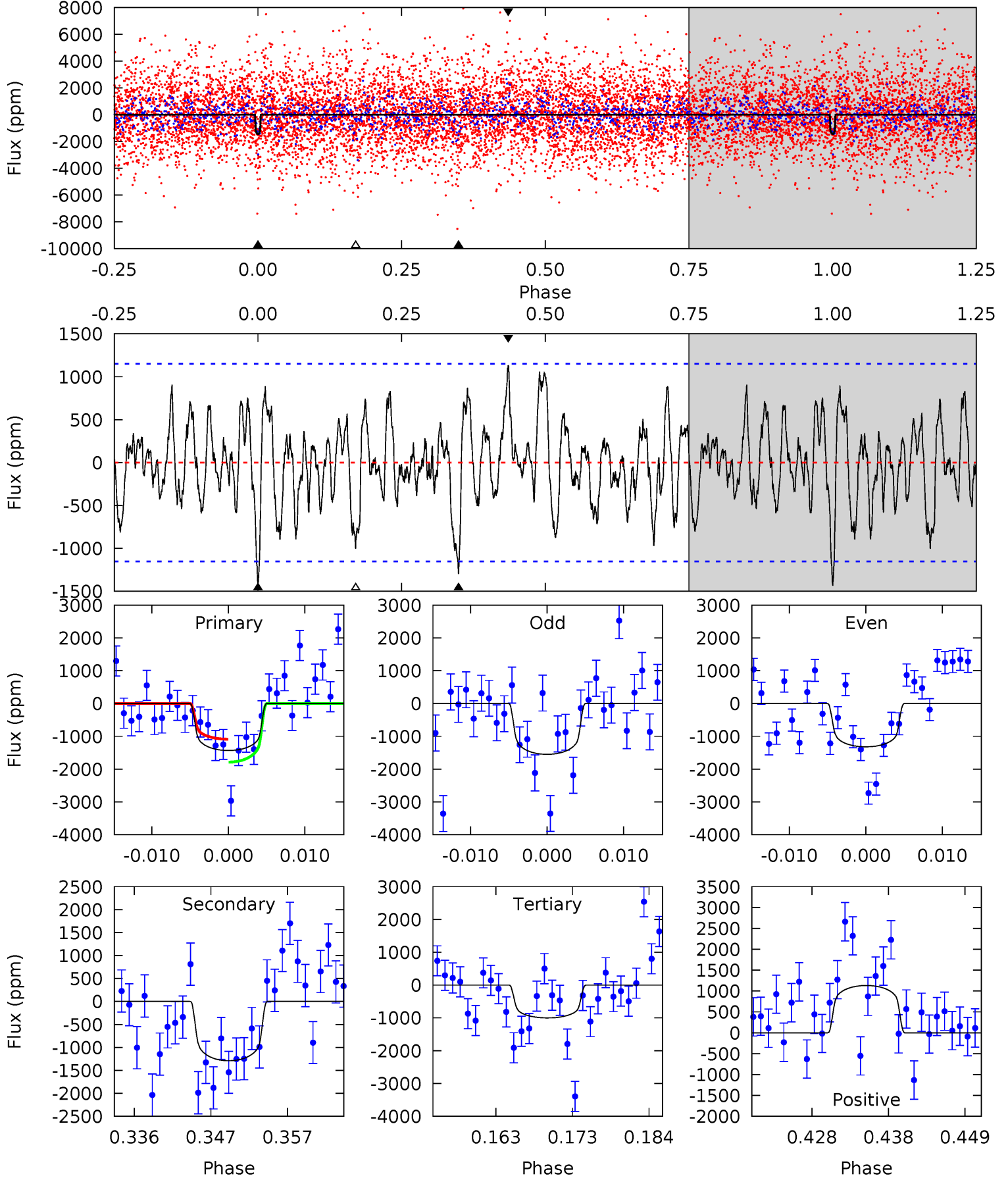
TCE 009364543-04 P= 30.673376 Days $T_0=144.737616$ (BKJD)



DV Model-Shift Uniqueness Test

009364543-04, P = 30.674491 Days, E = 113.974800 Days

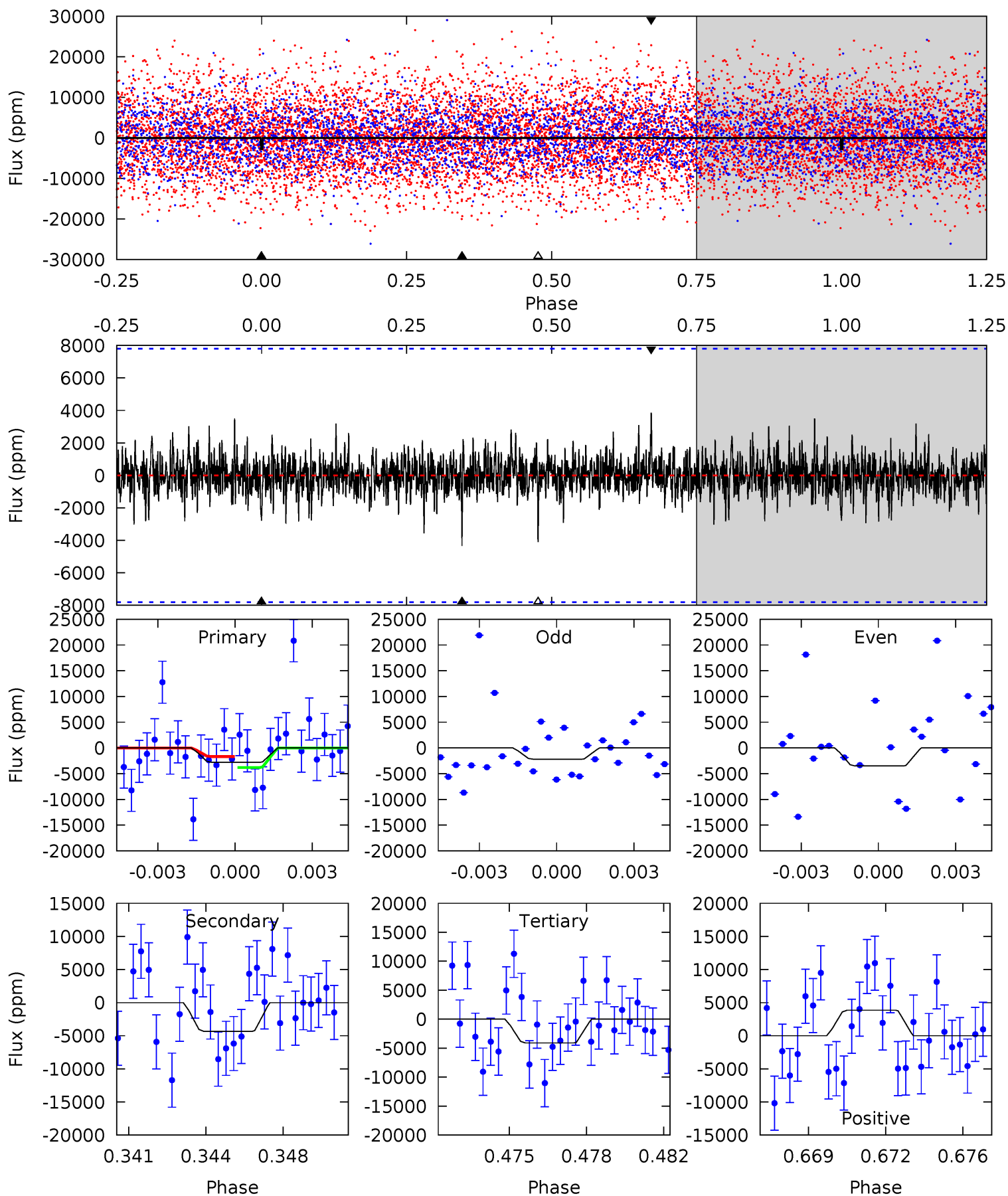
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.25	5.63	4.37	4.94	5.02	2.57	1.76	1.88	1.31	1.26	0.69	0.50	0.62	0.44	1.53



Alt Model-Shift Uniqueness Test

009364543-04, P = 30.673376 Days, E = 114.064240 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.87	2.91	2.75	2.59	5.23	2.93	0.63	-0.88	-0.72	0.15	0.32	0.44	2.09	0.47	0.71



Stellar Parameters For KIC 009364543

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6321^{+203}_{-226}	$3.565^{+0.688}_{-0.121}$	$-0.240^{+0.300}_{-0.250}$	$3.428^{+0.538}_{-2.152}$	$1.575^{+0.174}_{-0.522}$	$0.055^{+0.641}_{-0.020}$
	+3%/-4%	+19%/-3%	+125%/-104%	+16%/-63%	+11%/-33%	+1165%/-37%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009364543-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1291±229	$12.84^{+8.56}_{-7.11}$	1485^{+118}_{-239}	5851^{+3214}_{-956}	210^{+762}_{-135}
Alt.	-4338±1492	$17.97^{+10.12}_{-8.54}$	1485^{+118}_{-234}	6893^{+2850}_{-1374}	344^{+1001}_{-214}

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

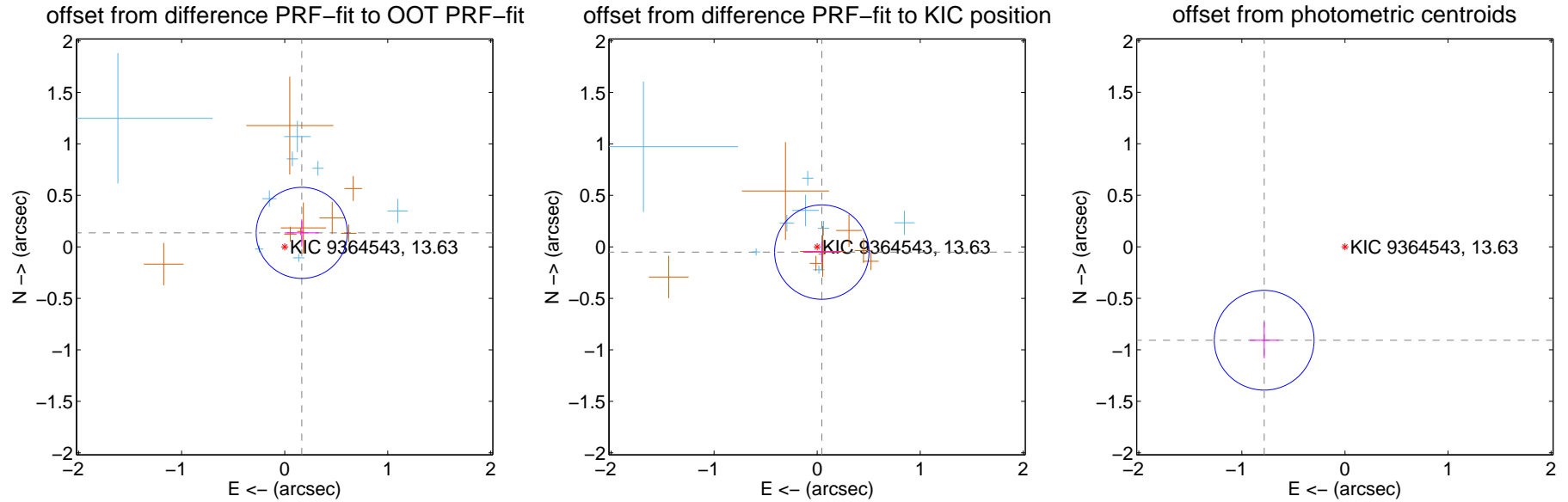
DV Centroid Data

Supplemental centroid analysis for 009364543-04. Kepler magnitude: 13.63. Transit SNR 9.28

There are 8 quarters with good PRF difference image offsets

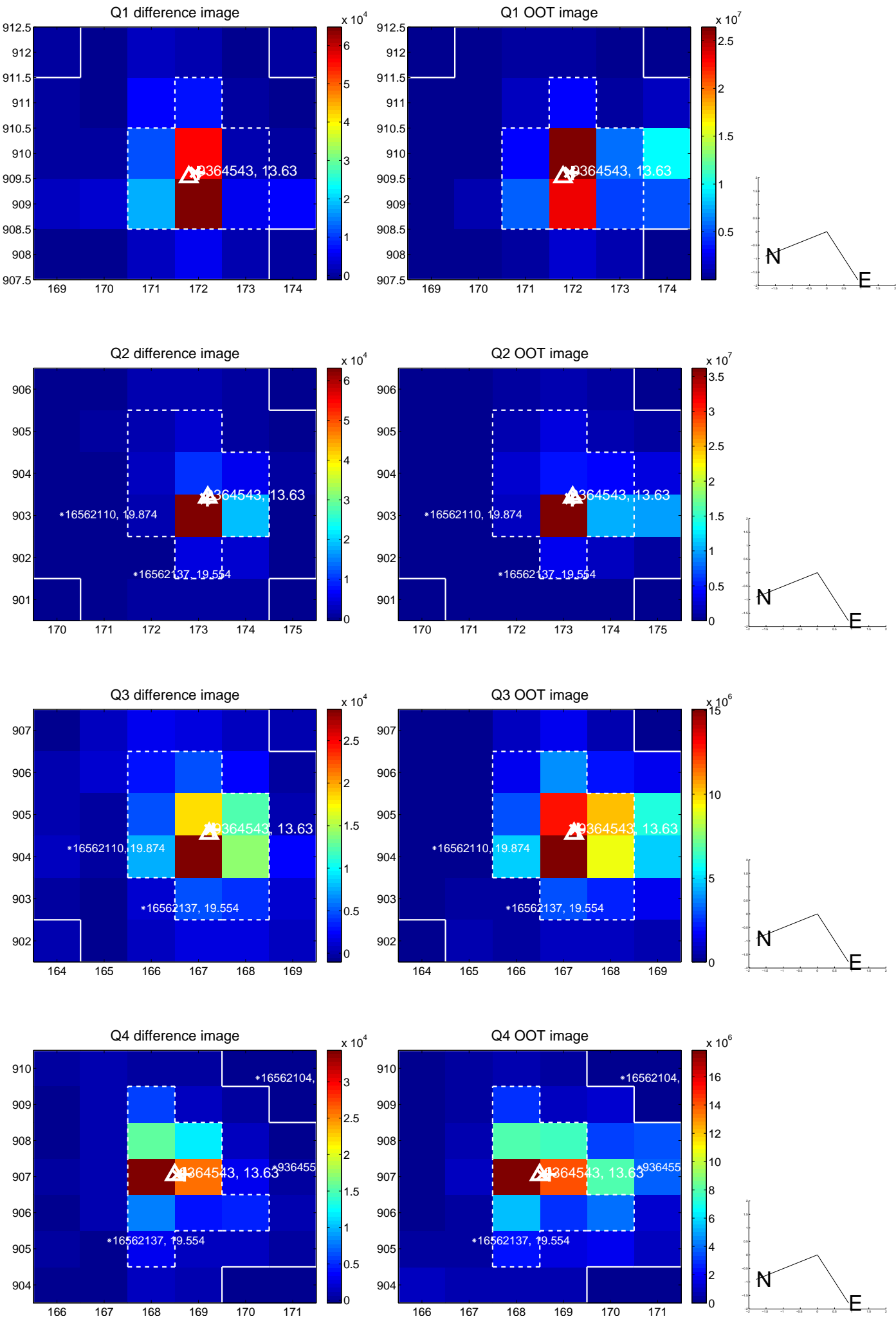
The direct PRF centroid is offset from the target star catalog position by about 0.76 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.214 ± 0.148	1.45	-0.166 ± 0.165	0.136 ± 0.132
PRF-fit source offset from KIC position	0.068 ± 0.153	0.45	-0.045 ± 0.180	-0.051 ± 0.102
photometric centroid source offset	1.20 ± 0.16	7.43	0.78 ± 0.14	-0.91 ± 0.18

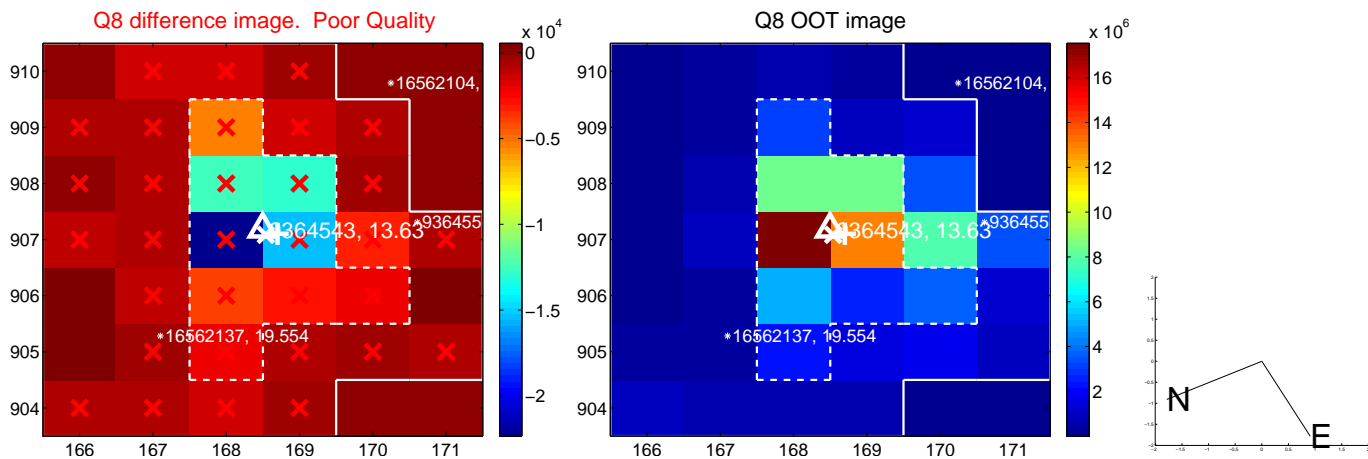
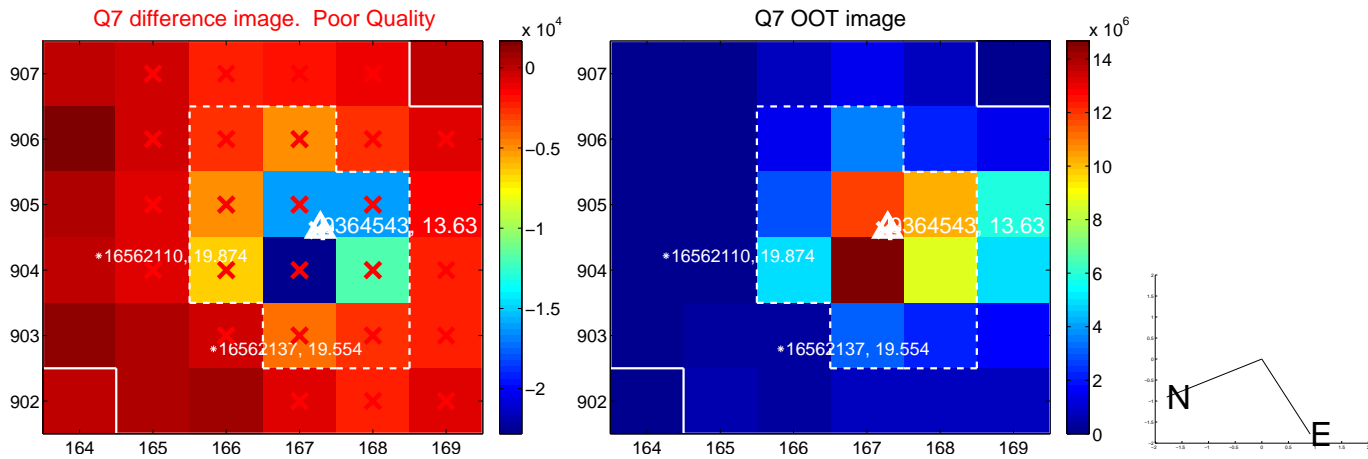
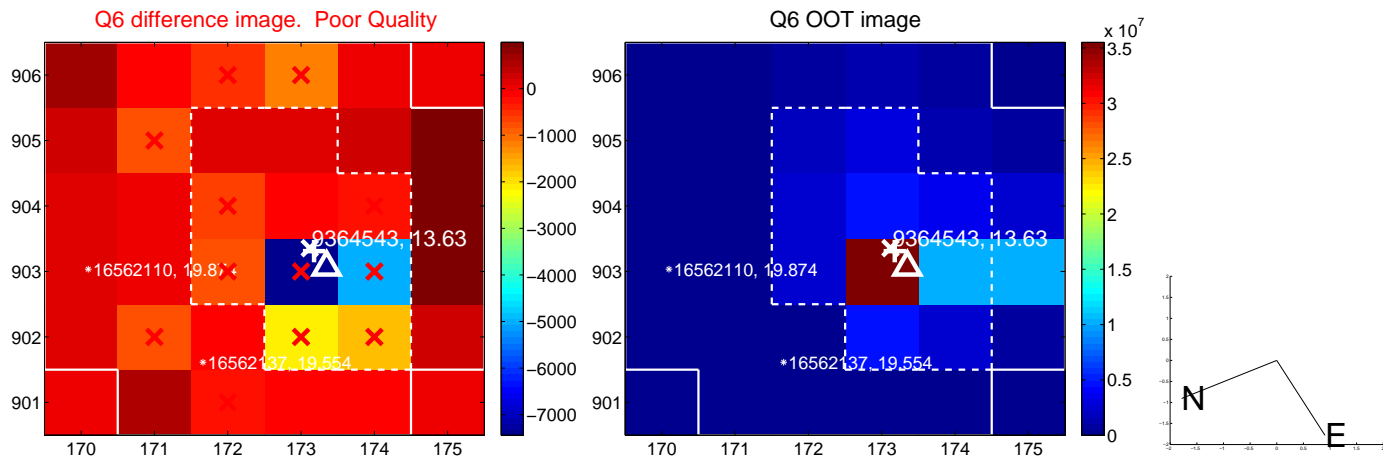
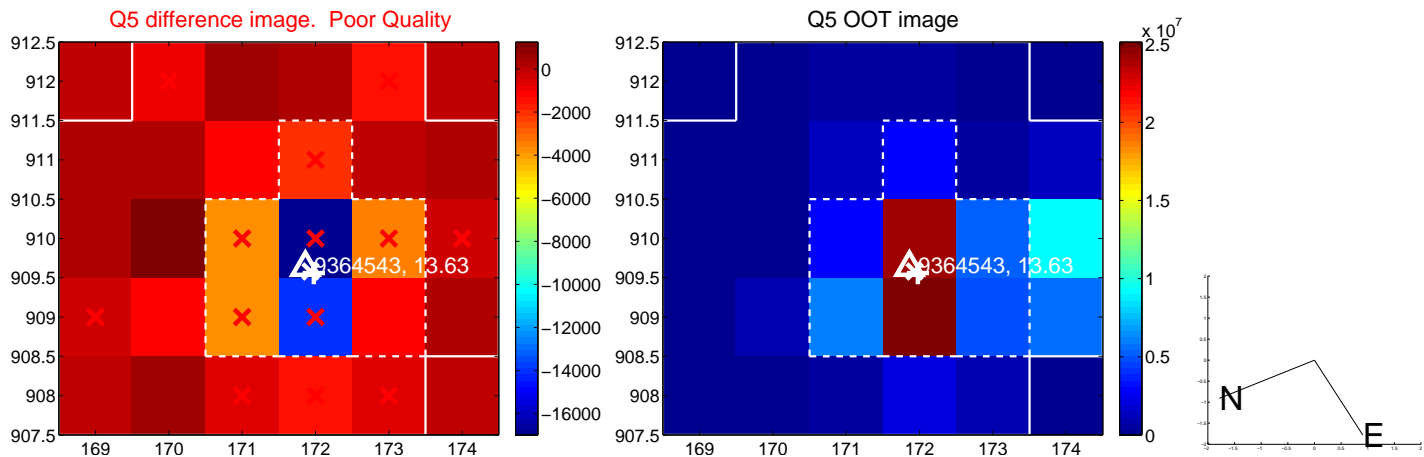


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

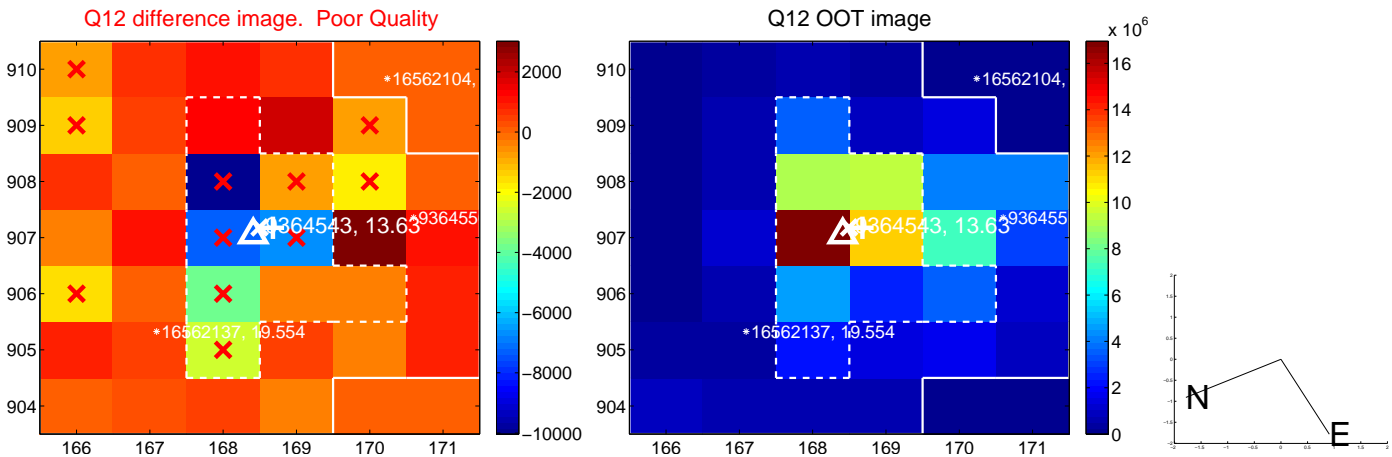
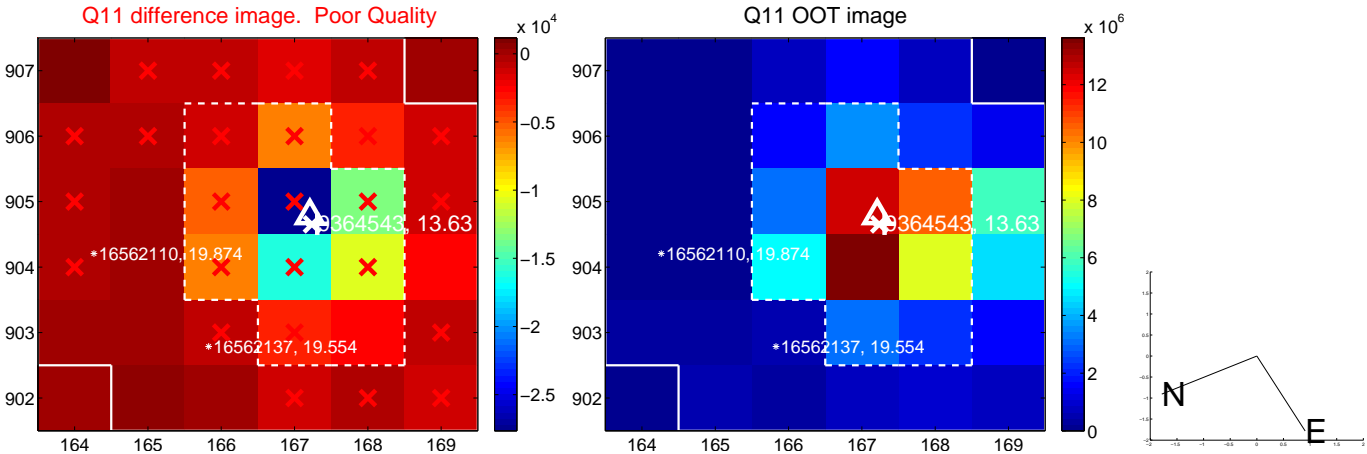
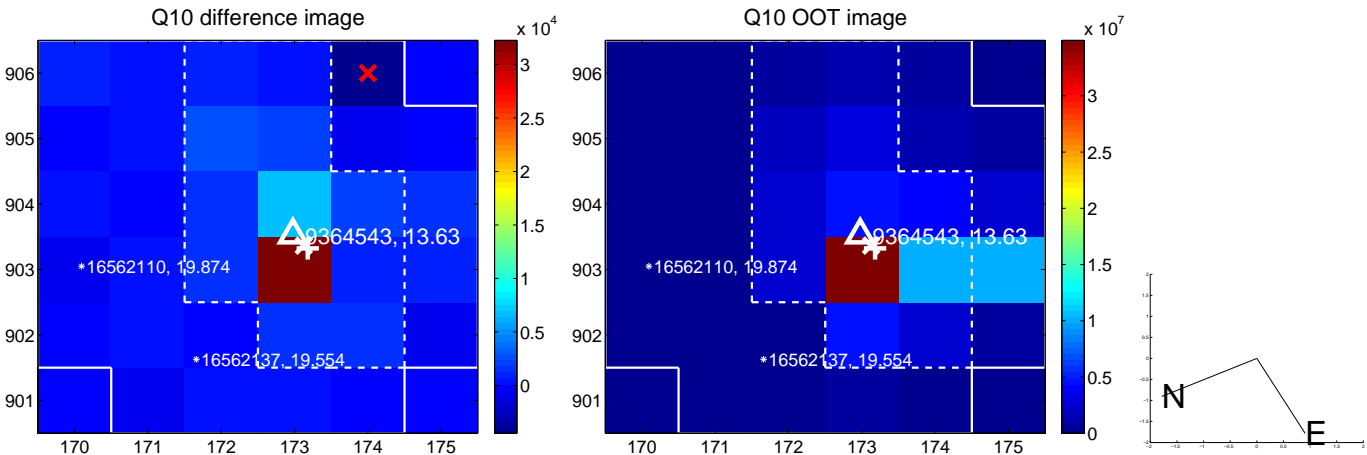
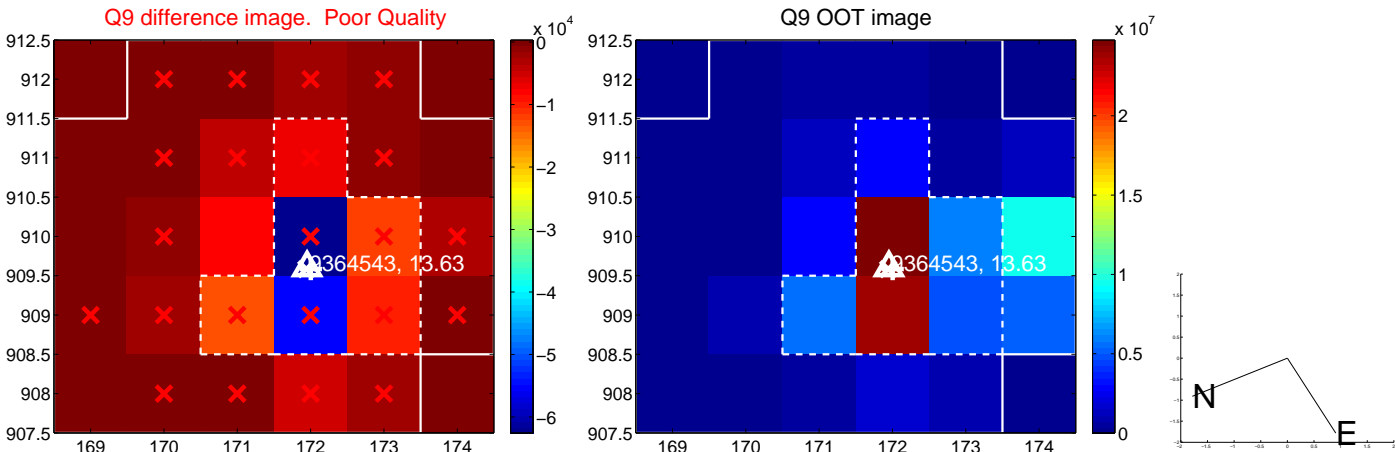
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



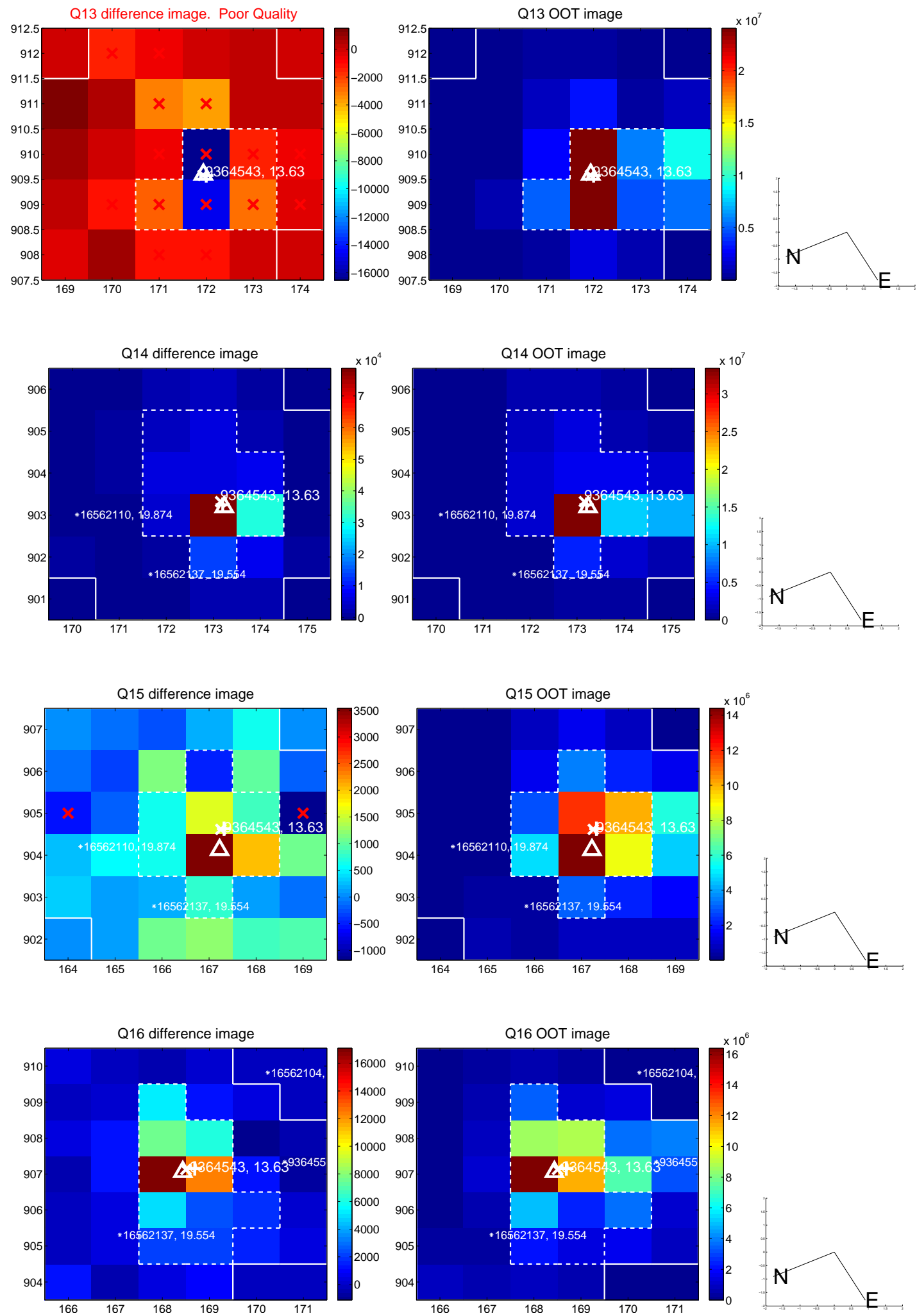
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



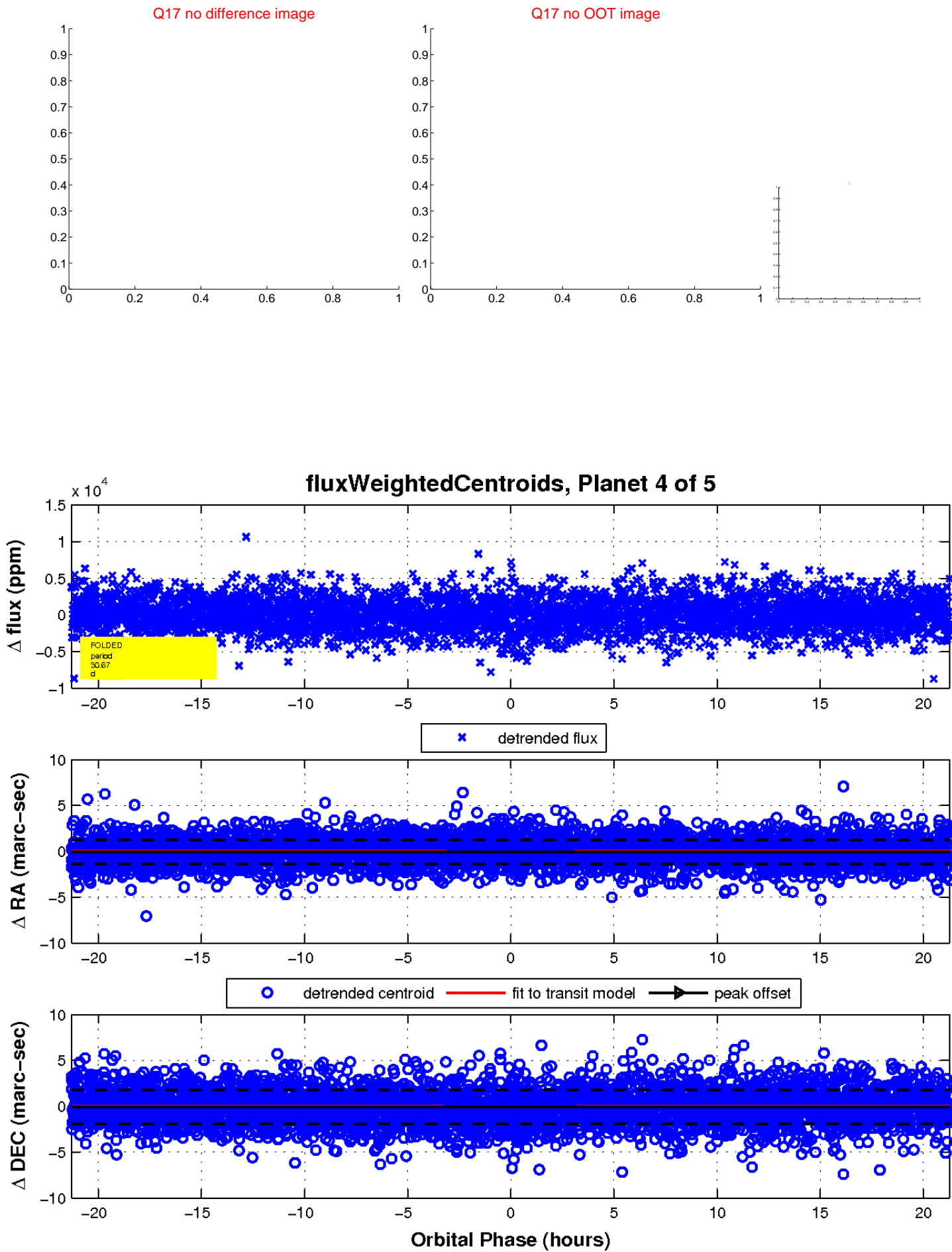
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

