

KIC 009935422

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})
009935422-01	OBS	No	2.679006	133.156733	5.3	17.483	8.8	5.6	4.17	7202	1.09	18009.40
009935422-02	OBS	No	78.796943	133.714185	68.1	29.342	39.2	8.4	4.17	7202	3.74	198.36
009935422-03	OBS	No	74.775086	171.059174	145.0	27.461	22.0	15.1	4.17	7202	6.51	212.71
009935422-04	OBS	No	81.592655	208.305996	149.7	1.994	8.5	9.2	4.17	7202	6.02	189.35
009935422-05	OBS	No	62.724559	166.271539	103.0	2.464	7.9	7.7	4.17	7202	4.88	268.87
009935422-06	OBS	No	63.003490	183.025760	146.8	2.271	8.1	8.2	4.17	7202	5.86	267.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009935422-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009935422-02	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_FEW_MEAS
009935422-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009935422-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009935422-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009935422-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_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.

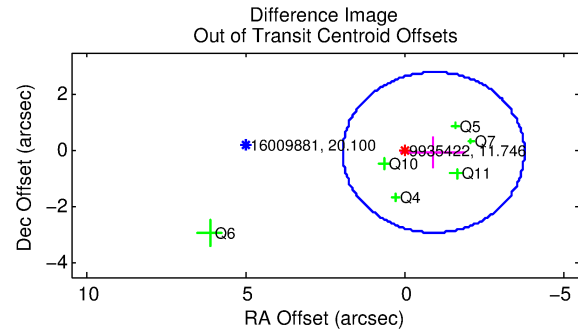
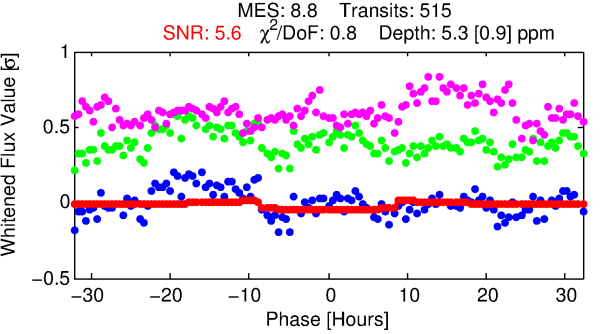
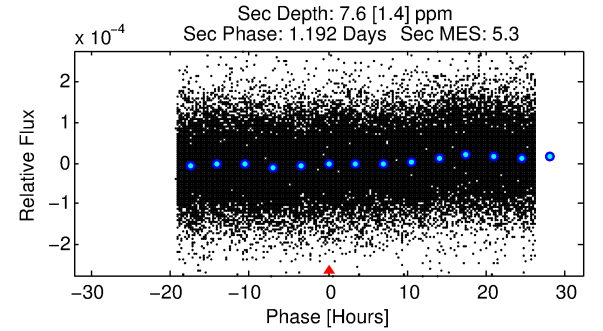
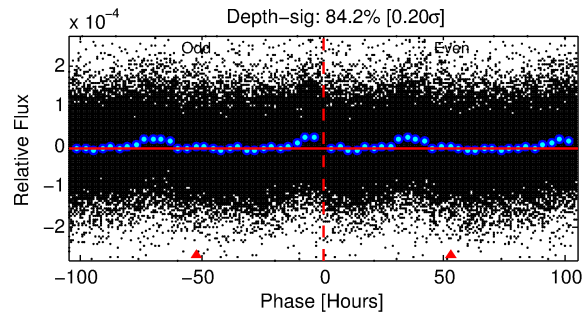
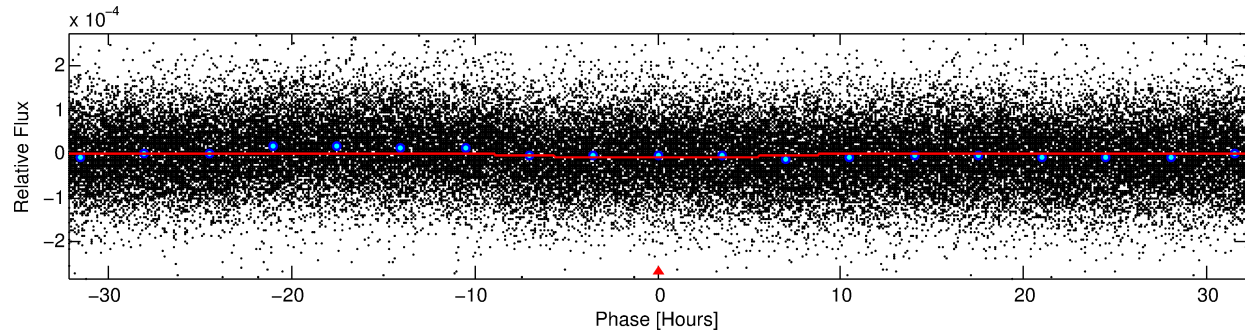
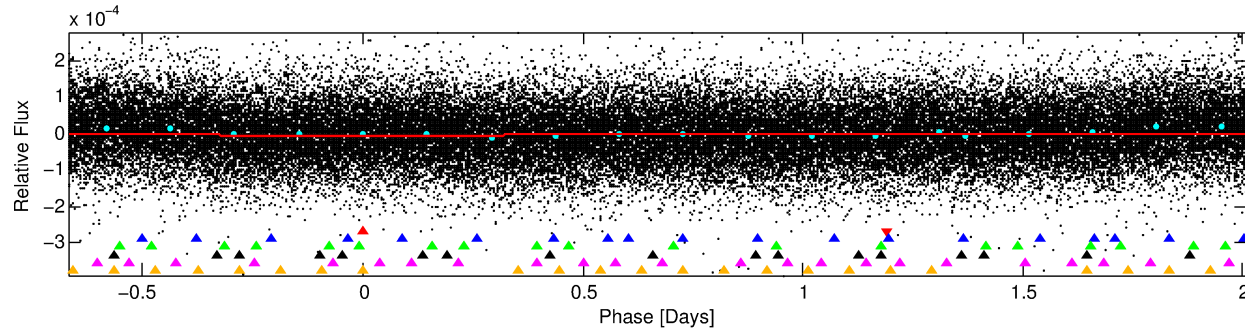
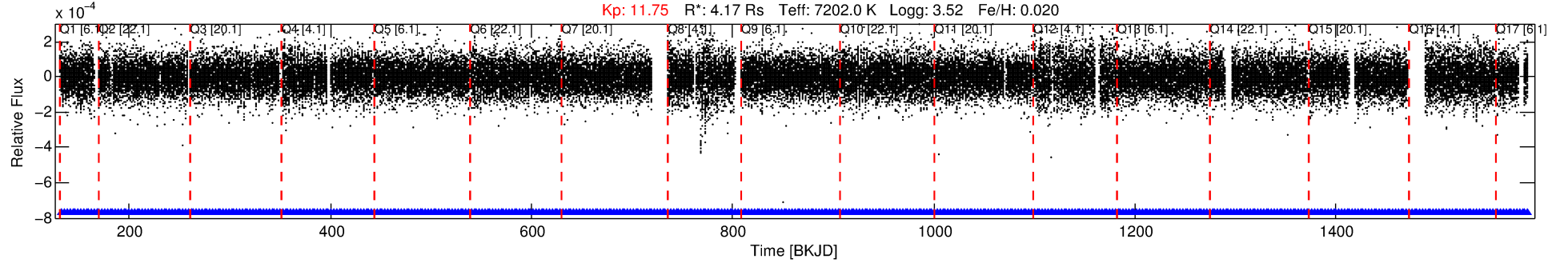
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009935422-01

No Significant Match Found

DV One-Page Summary

KIC: 9935422 Candidate: 1 of 6 Period: 2.679 d



DV Fit Results:

Period = 2.67901 [0.00008] d
Epoch = 133.1567 [0.0162] BKJD
Rp/R* = 0.0024 [0.0008]
a/R* = 1.10 [0.41]
b = 0.86 [0.66]
Seff = 18009.40 [17400.49]
Teq = 2954 [714] K
Rp = 1.09 [0.74] Re
a = 0.0482 [0.0280] AU
Ag = 8.23 [9.89] [0.73 σ]
Teffp = 7737 [1452] K [2.96 σ]

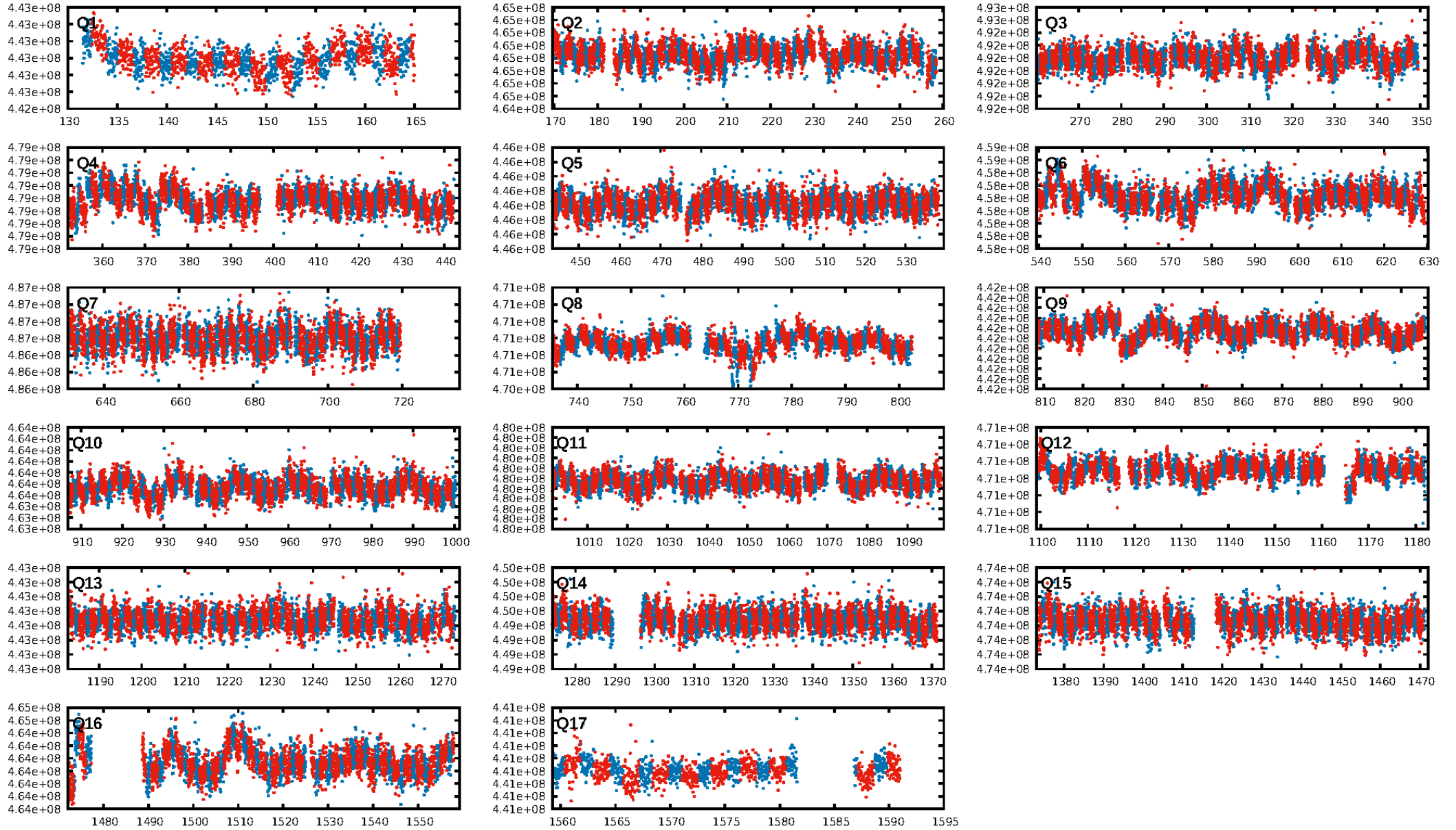
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [81.62 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.29e-09
RollingBand-fgt: 1.00 [492/492]
GhostDiagnostic-chr: 42.89
Centroid-sig: 0.0%
Centroid-so: 7.550 arcsec [3.56 σ]
OotOffset-rm: 0.900 arcsec [0.94 σ]
KicOffset-rm: 0.910 arcsec [0.87 σ]
OotOffset-st: 2/2/1/1 [6]
KicOffset-st: 2/2/1/1 [6]
DiffImageQuality-fgm: 0.67 [4/6]
DiffImageOverlap-fno: 1.00 [17/17]

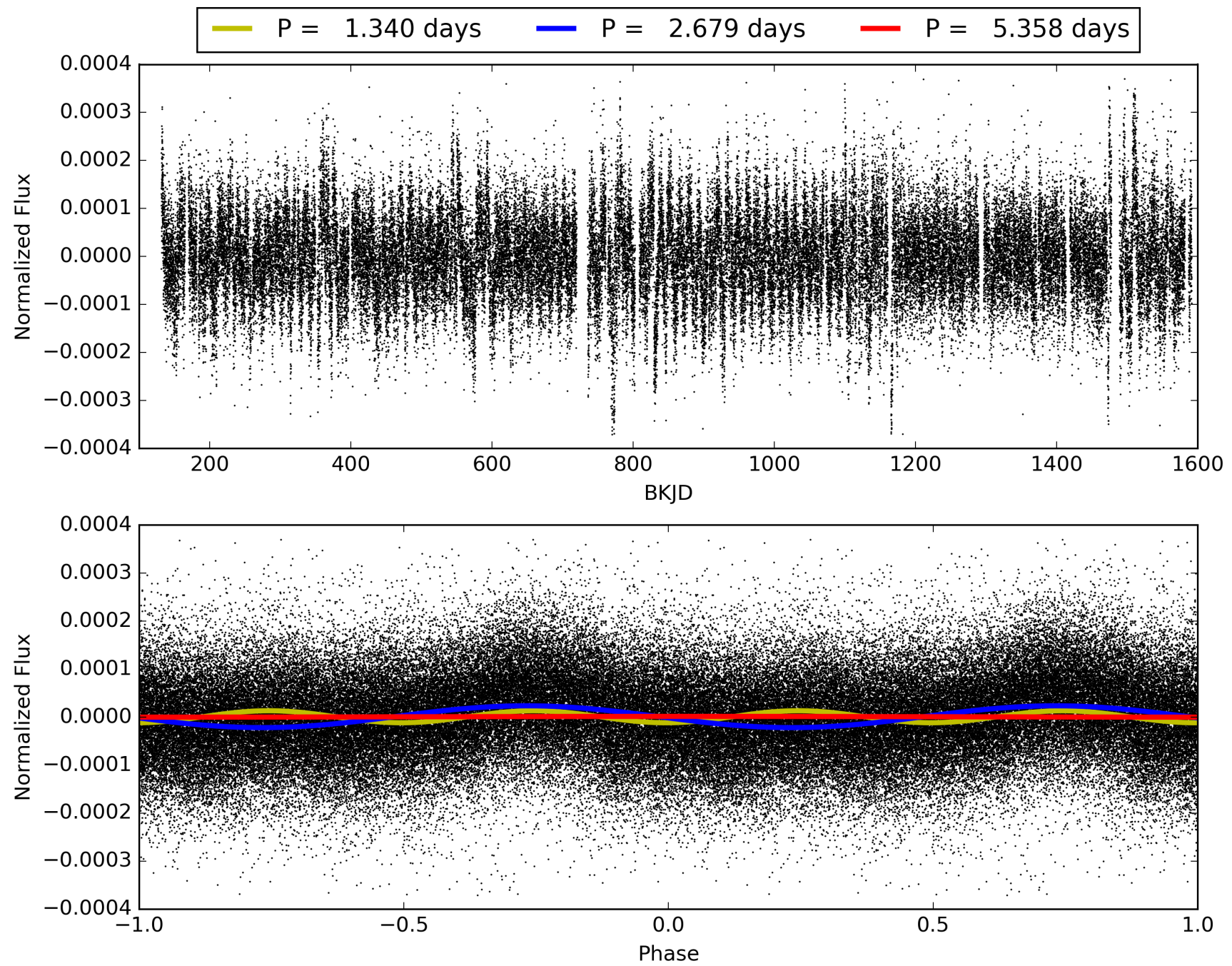
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009935422-01, PDC Light Curves

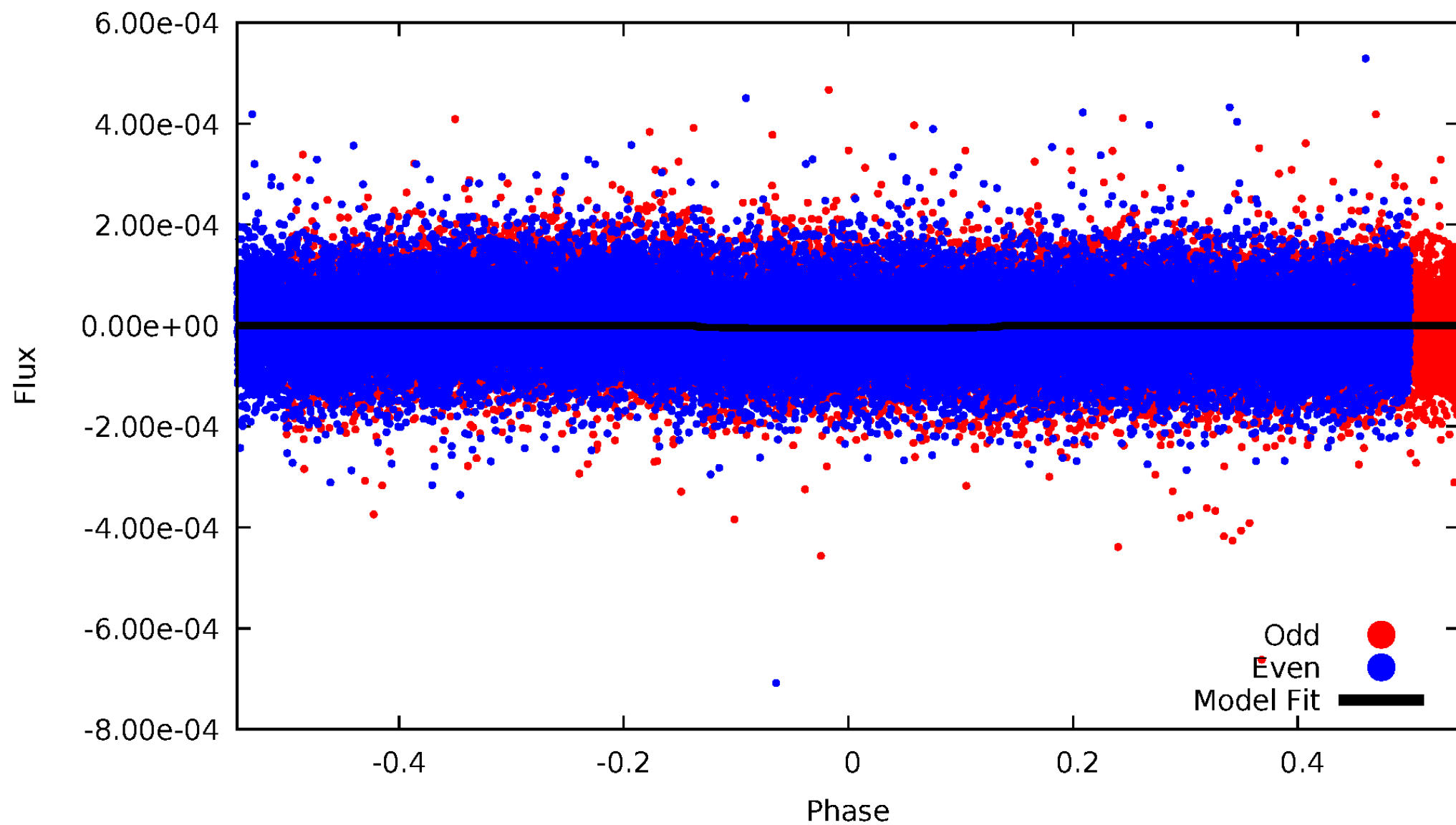


TCE 009935422-01



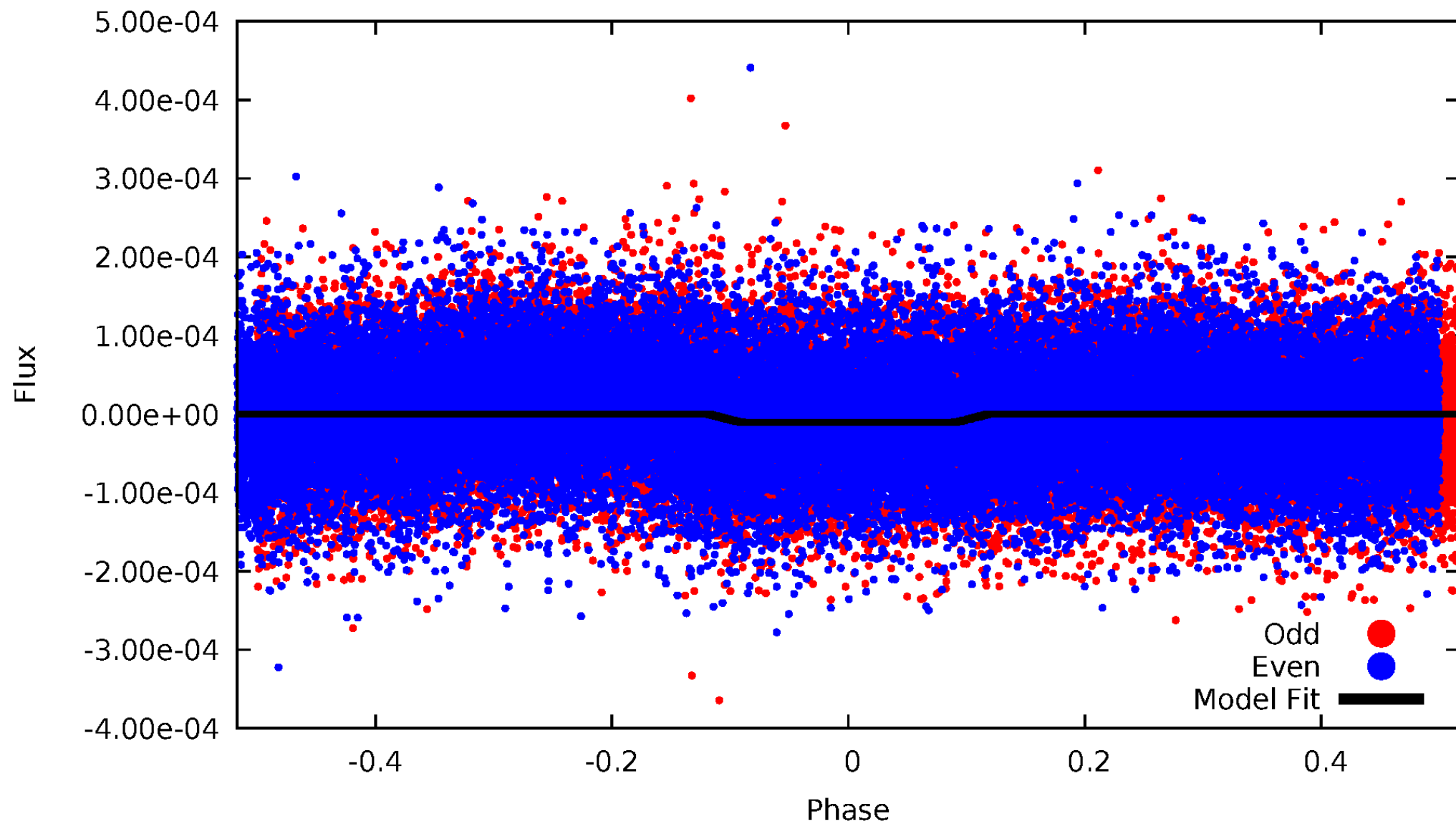
DV Odd/Even

TCE 009935422-01



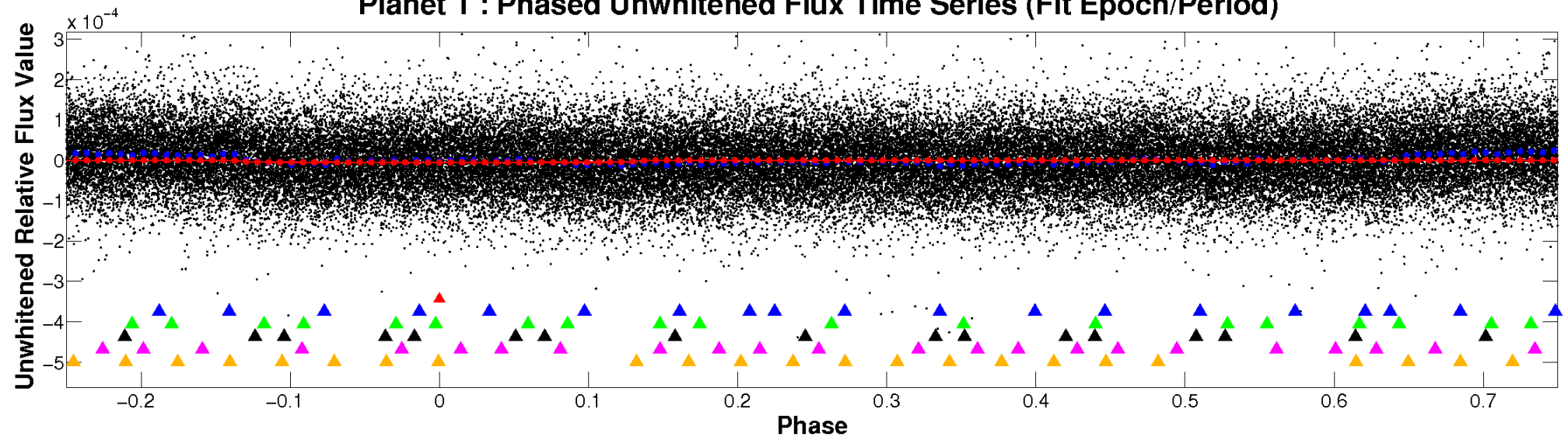
ALT Odd/Even

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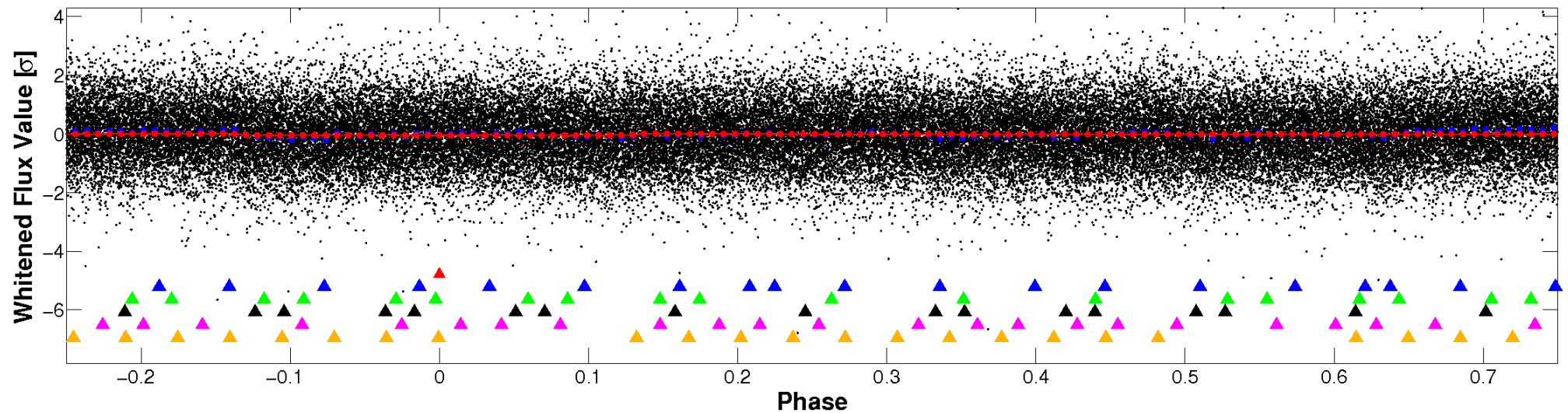


Non-Whitened Vs. Whitened Light Curve

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

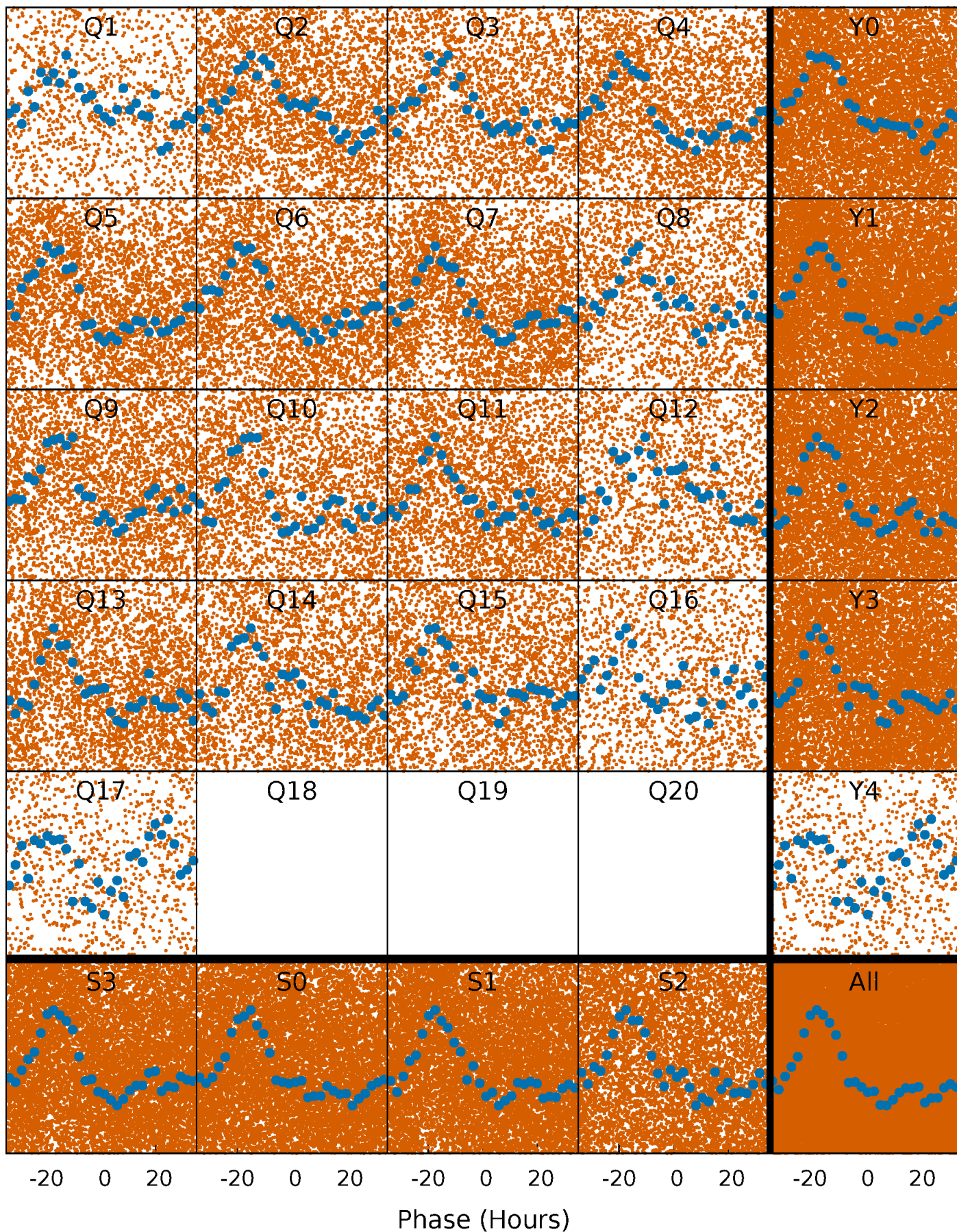


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



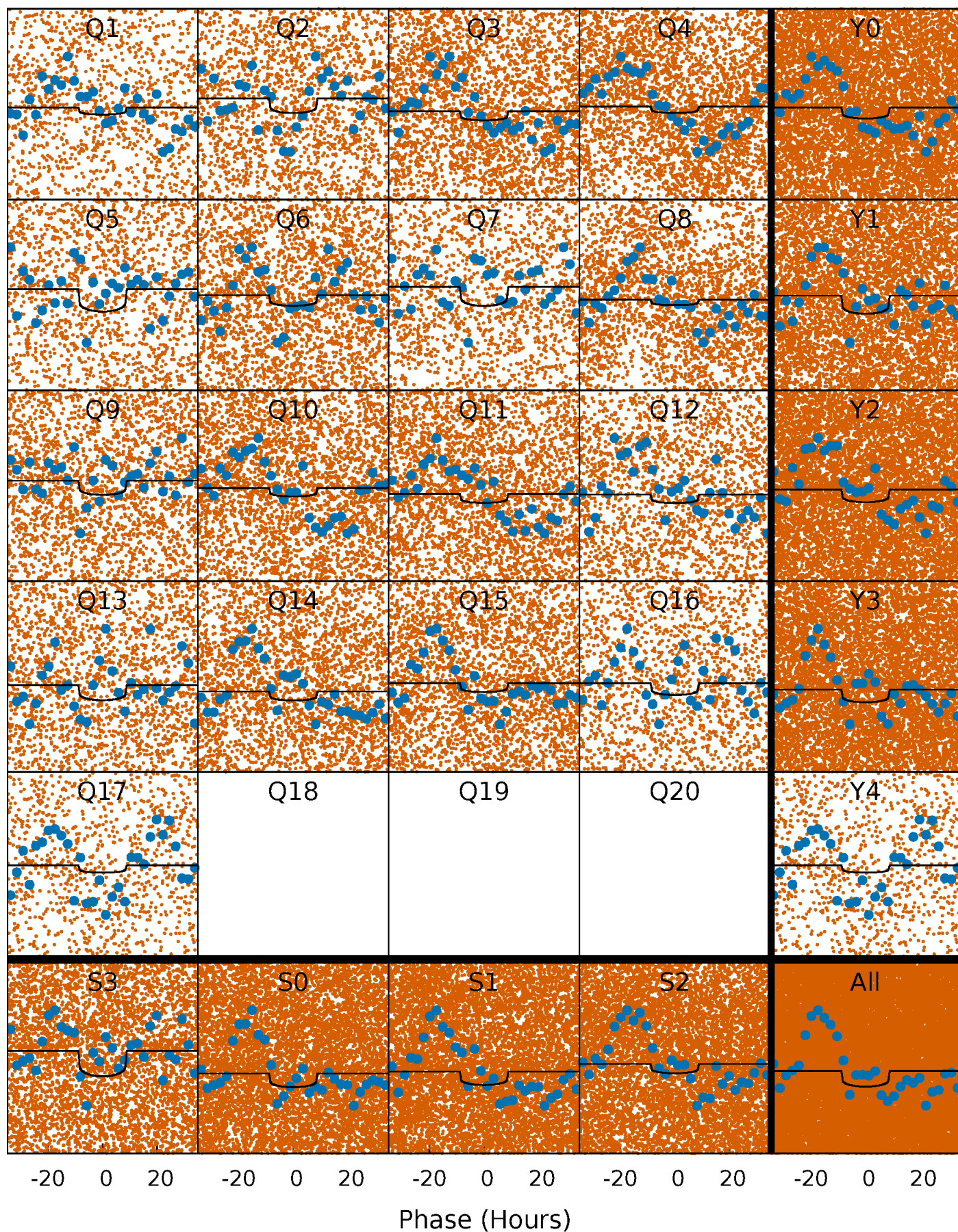
PDC Quarter-Phased Transit Curves

TCE 009935422-01 P= 2.679006 Days $T_0=133.156733$ (BKJD)



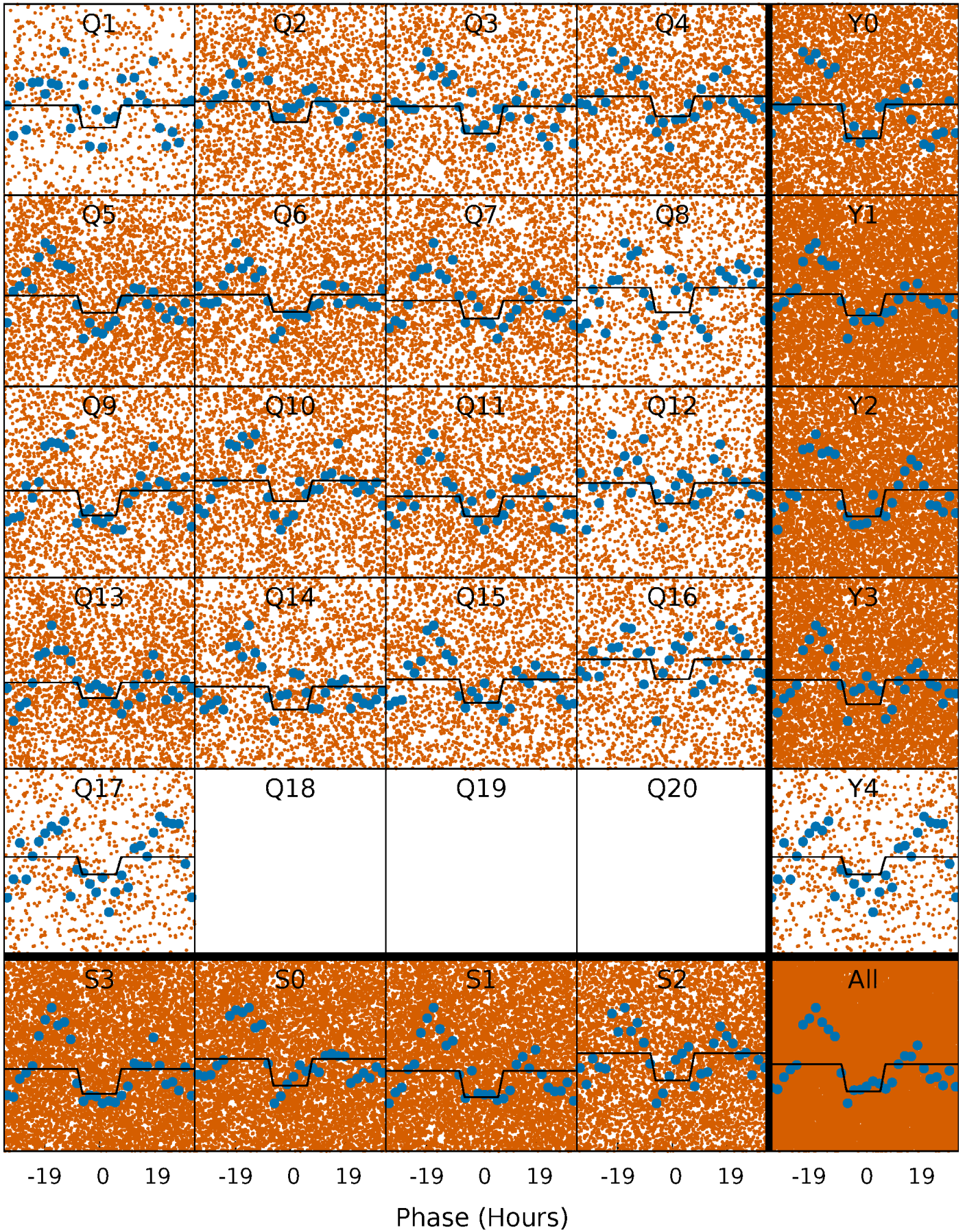
DV Quarter-Phased Transit Curves

TCE 009935422-01 P= 2.679006 Days $T_0=133.156733$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

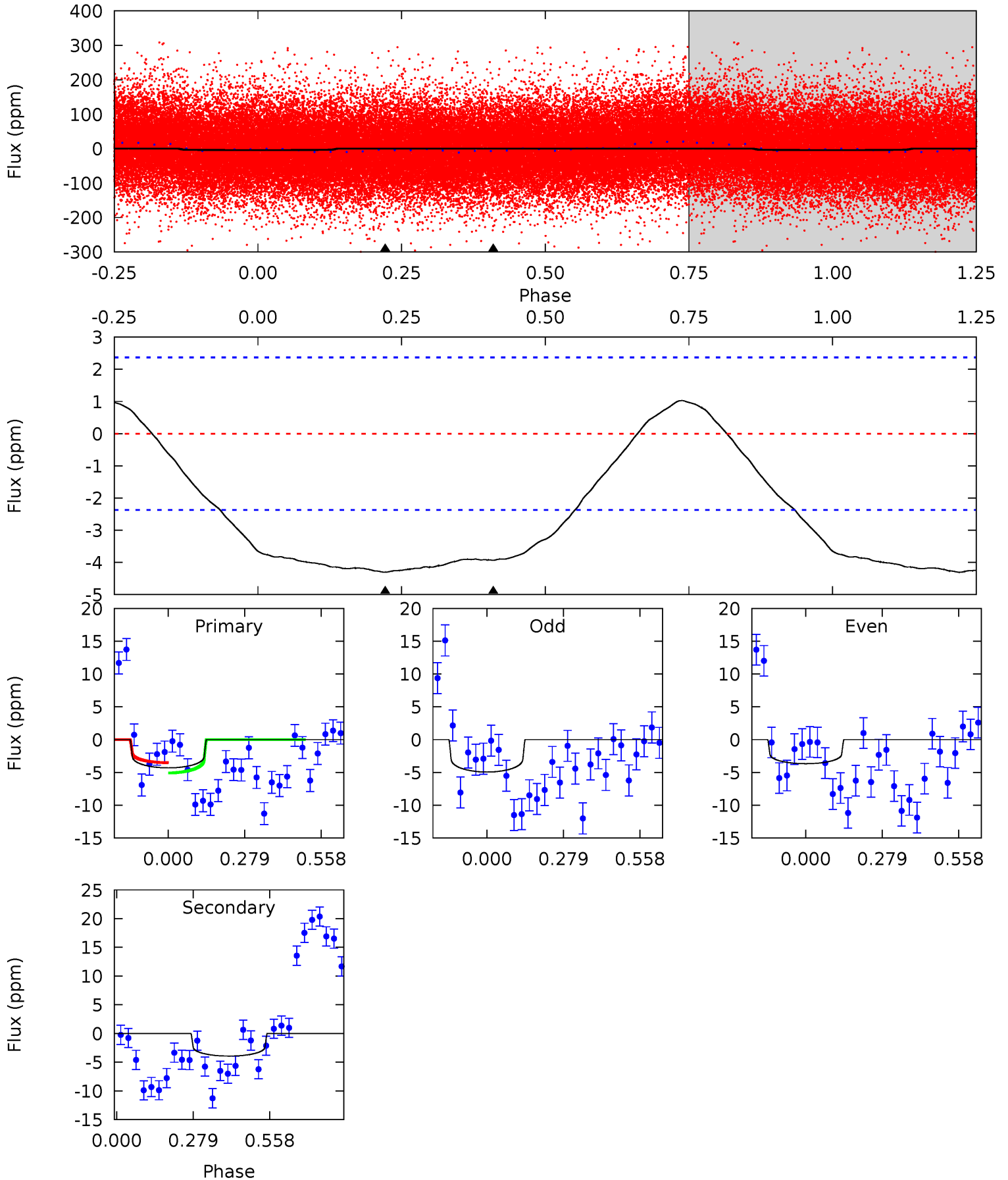
TCE 009935422-01 P= 2.678847 Days $T_0=133.184849$ (BKJD)



DV Model-Shift Uniqueness Test

009935422-01, P = 2.679006 Days, E = 130.477727 Days

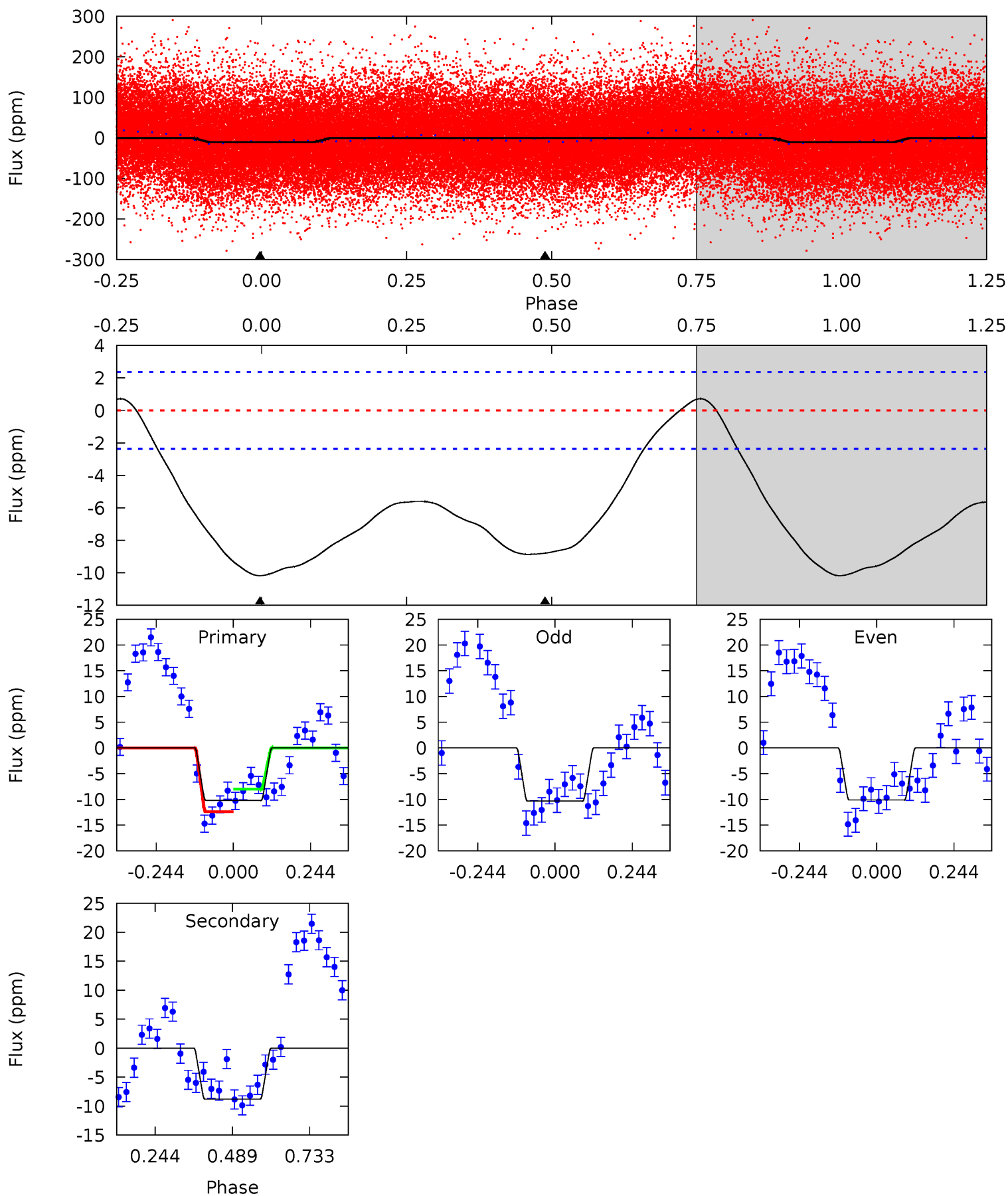
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.90	7.22	0	0	4.34	1.08	2.15	7.90	7.90	7.22	7.22	1.17	1.19	0.19	1.46



Alt Model-Shift Uniqueness Test

009935422-01, P = 2.678847 Days, E = 130.506002 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.8	16.3	0	0	4.37	1.16	5.61	18.8	18.8	16.3	16.3	0.20	1.00	0.07	4.00



Stellar Parameters For KIC 009935422

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7202^{+225}_{-300}	$3.517^{+0.567}_{-0.063}$	$0.020^{+0.200}_{-0.300}$	$4.170^{+0.401}_{-2.408}$	$2.087^{+0.144}_{-0.575}$	$0.041^{+0.304}_{-0.008}$
	+3%/-4%	+16%/-2%	+1000%/-1500%	+10%/-58%	+7%/-28%	+750%/-19%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009935422-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-4 ± 1	$0.94^{+0.43}_{-0.42}$	3959^{+275}_{-590}	6307^{+2033}_{-938}	$5.499^{+11.910}_{-2.865}$
Alt.	-9 ± 1	$1.32^{+0.43}_{-0.47}$	3977^{+265}_{-532}	6733^{+1351}_{-813}	$6.305^{+8.555}_{-2.560}$

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 $A_{obs} \gg 1.0$

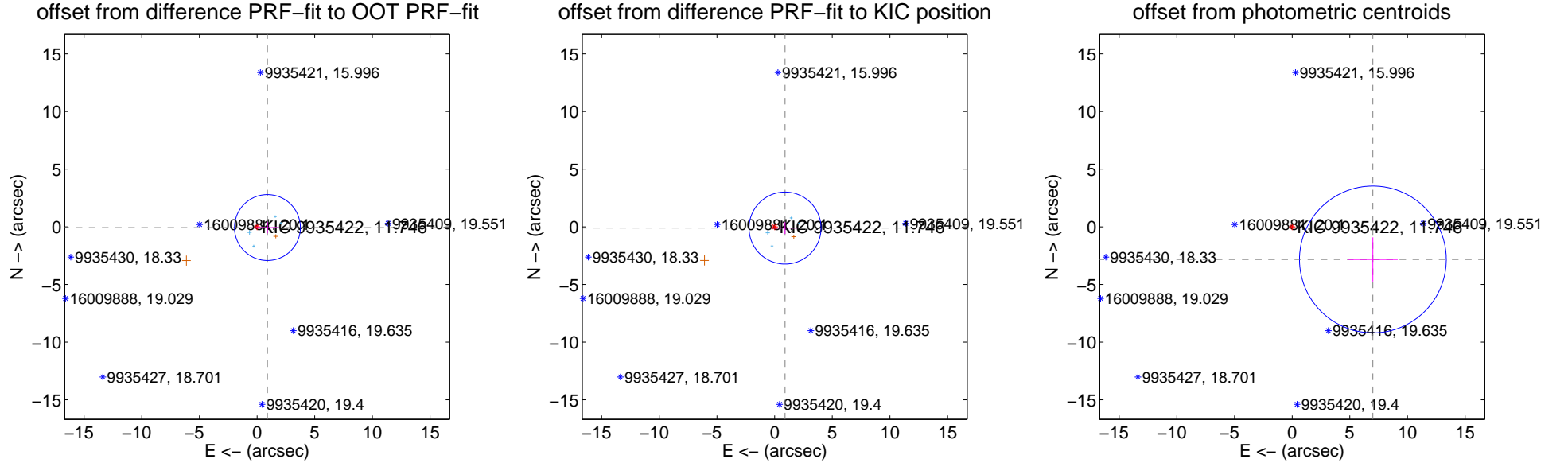
DV Centroid Data

Supplemental centroid analysis for 009935422-01. **Kepler magnitude: 11.75.** Transit SNR 5.64

There are 4 quarters with good PRF difference image offsets

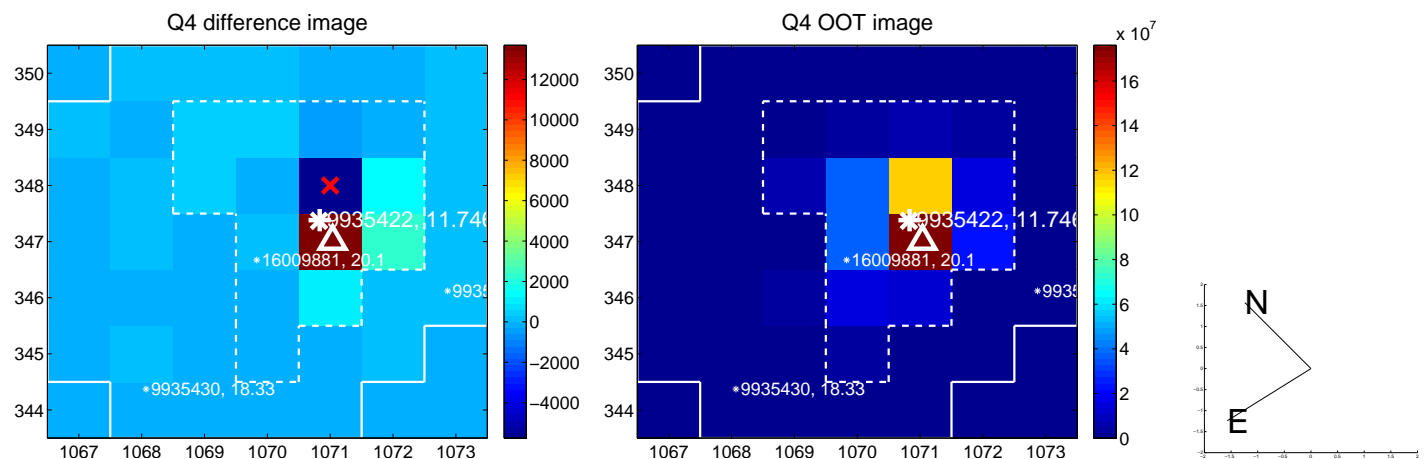
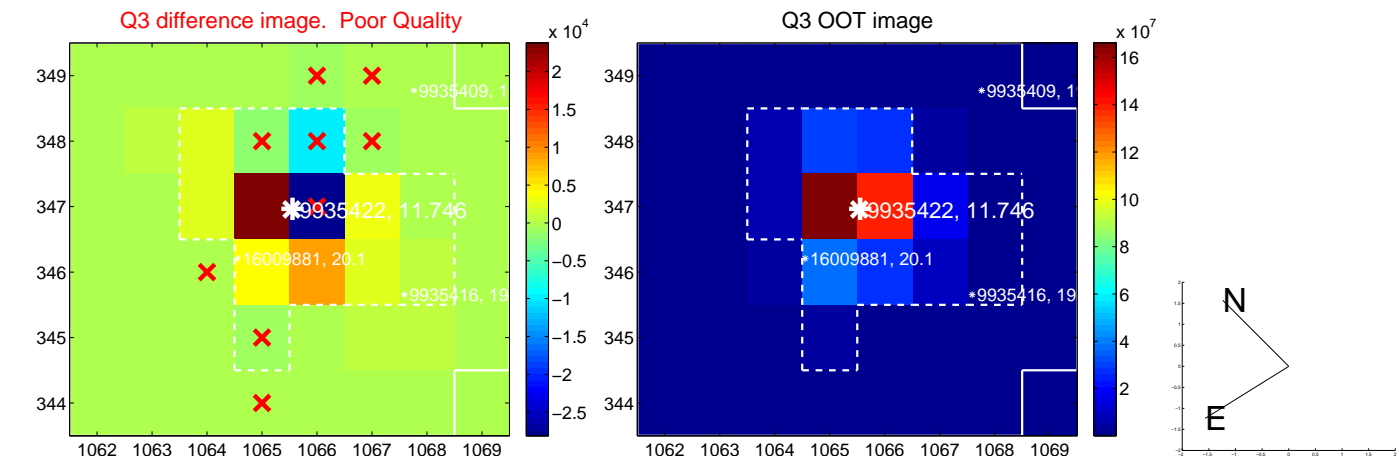
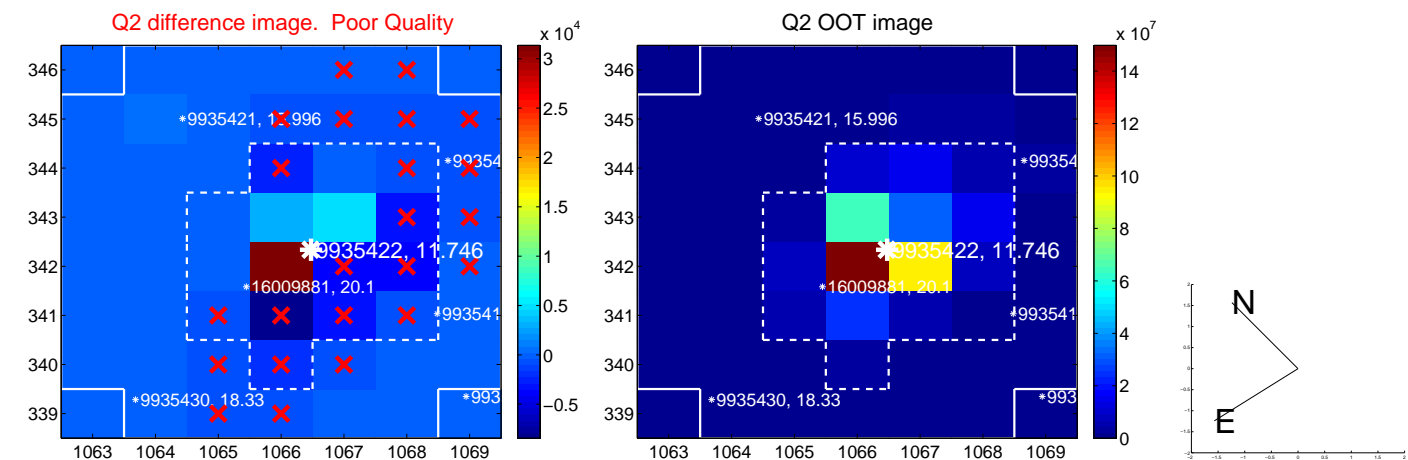
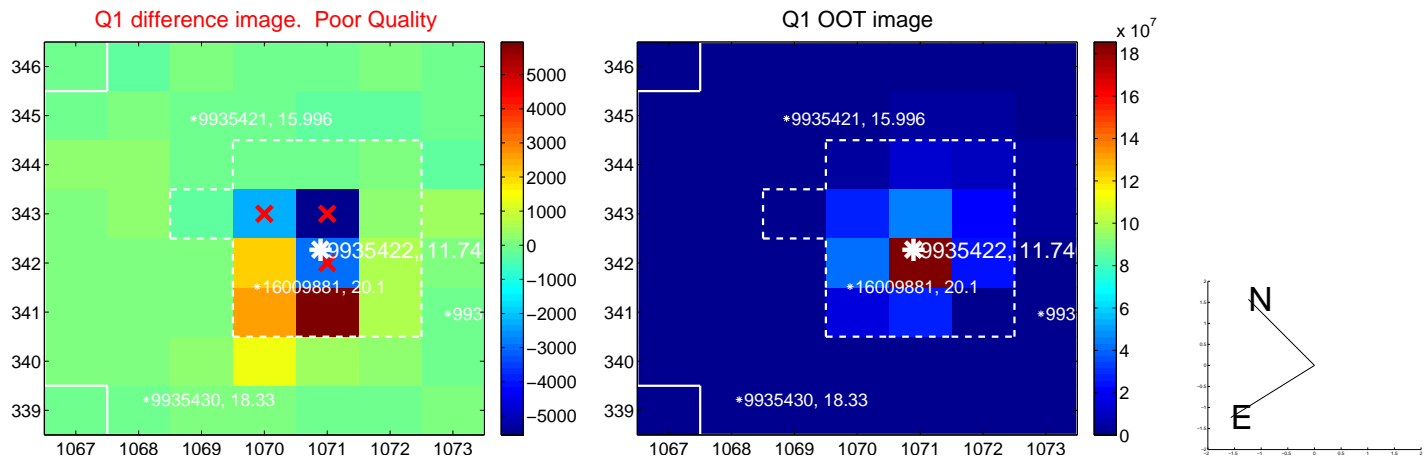
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.900 ± 0.953	0.94	-0.897 ± 0.986	-0.064 ± 0.504
PRF-fit source offset from KIC position	0.910 ± 1.041	0.87	-0.903 ± 1.098	-0.108 ± 0.510
photometric centroid source offset	7.55 ± 2.12	3.56	-7.00 ± 2.15	-2.83 ± 1.91

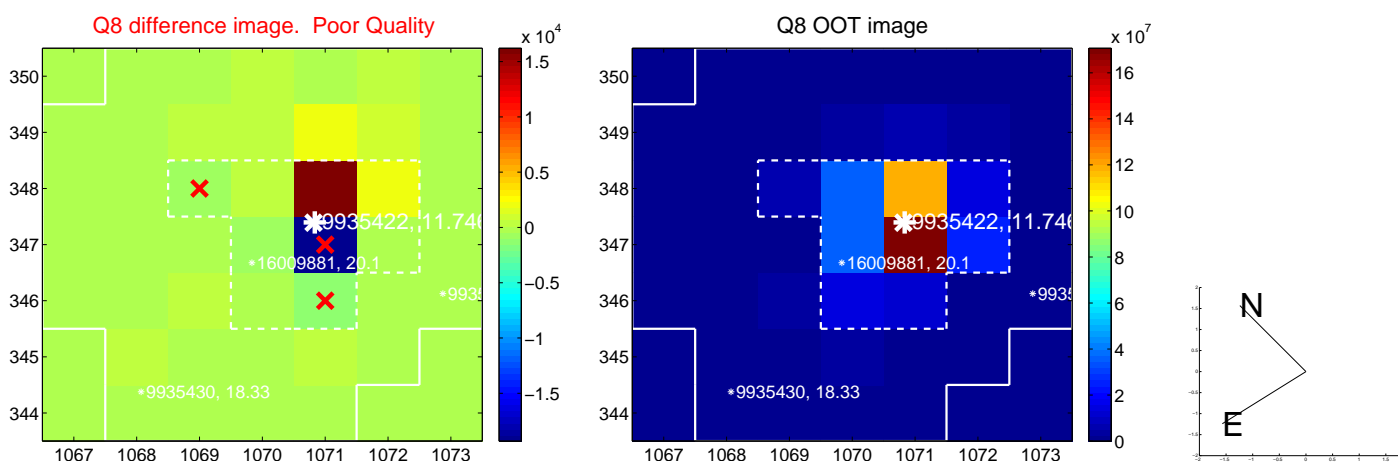
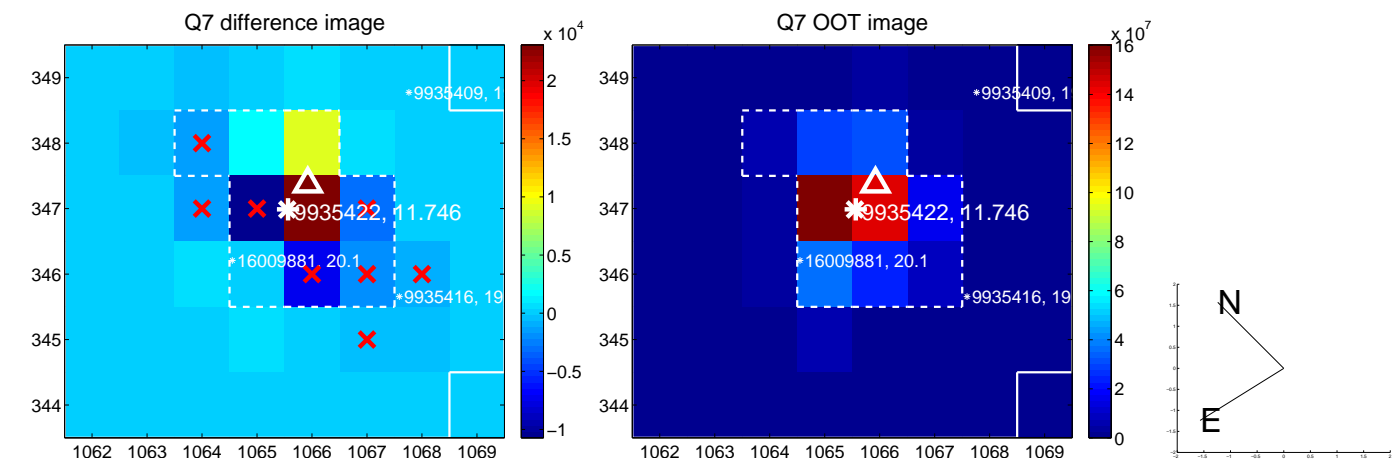
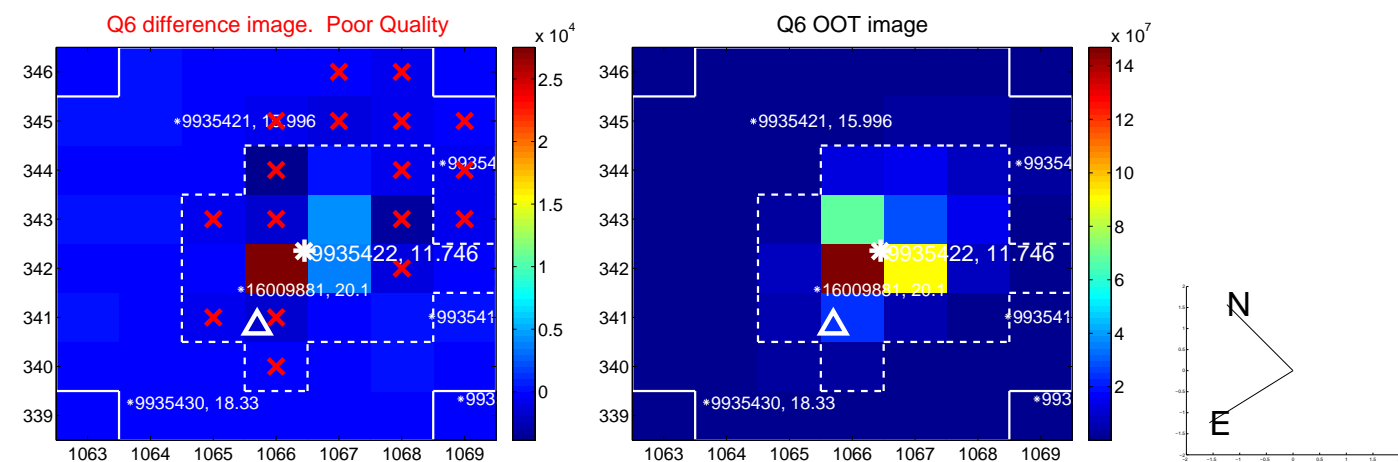
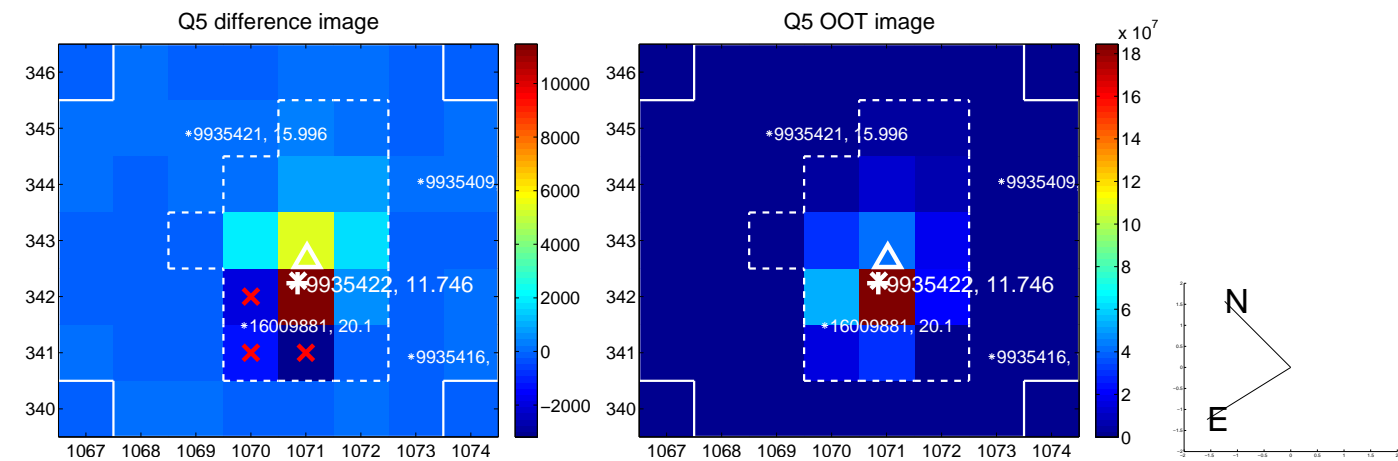


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

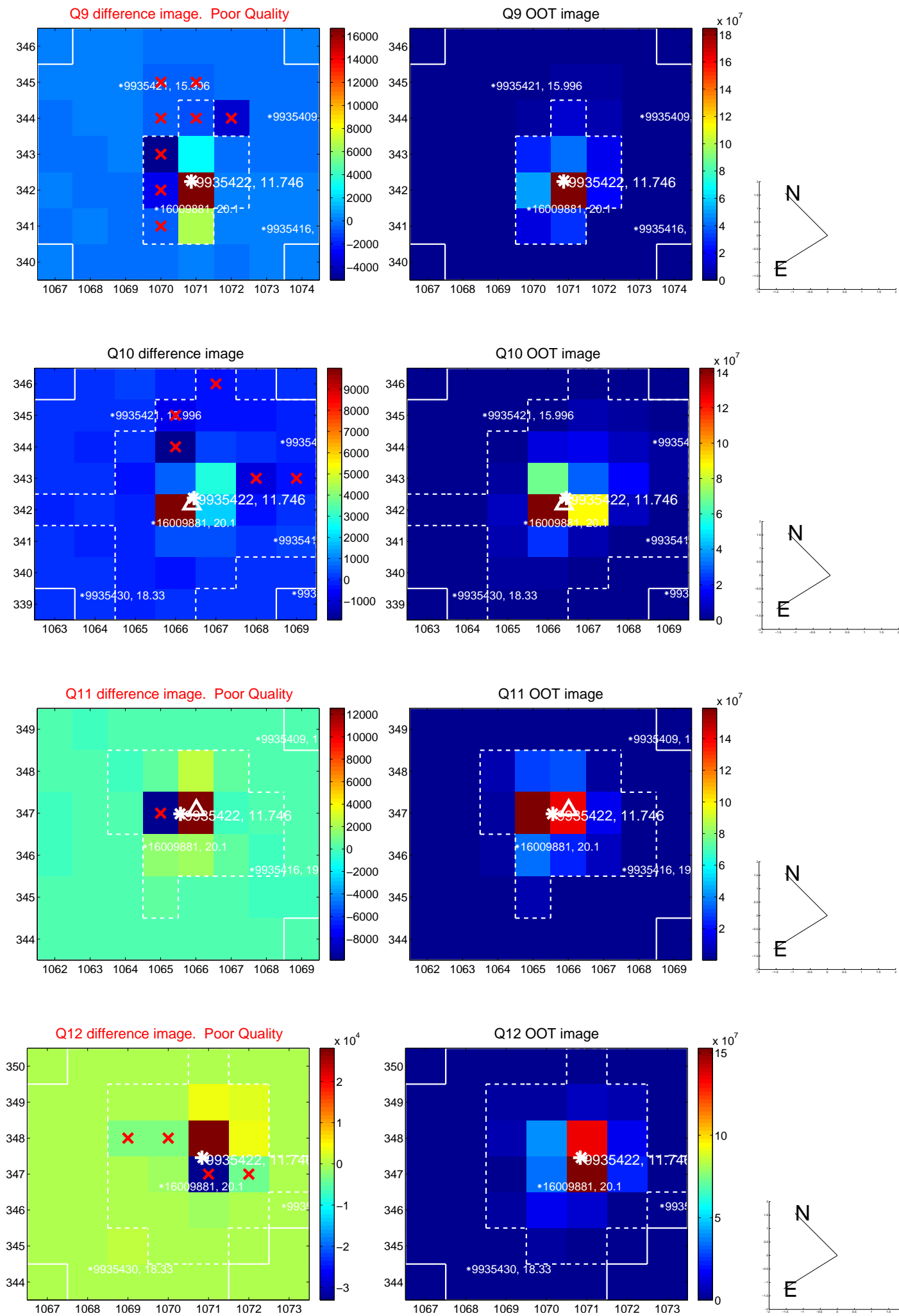
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



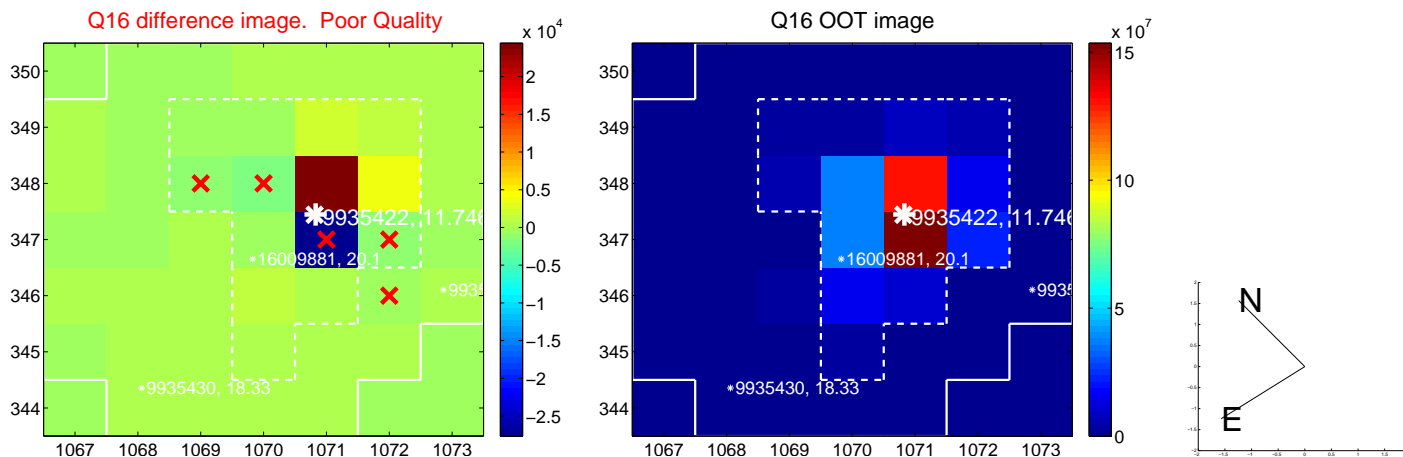
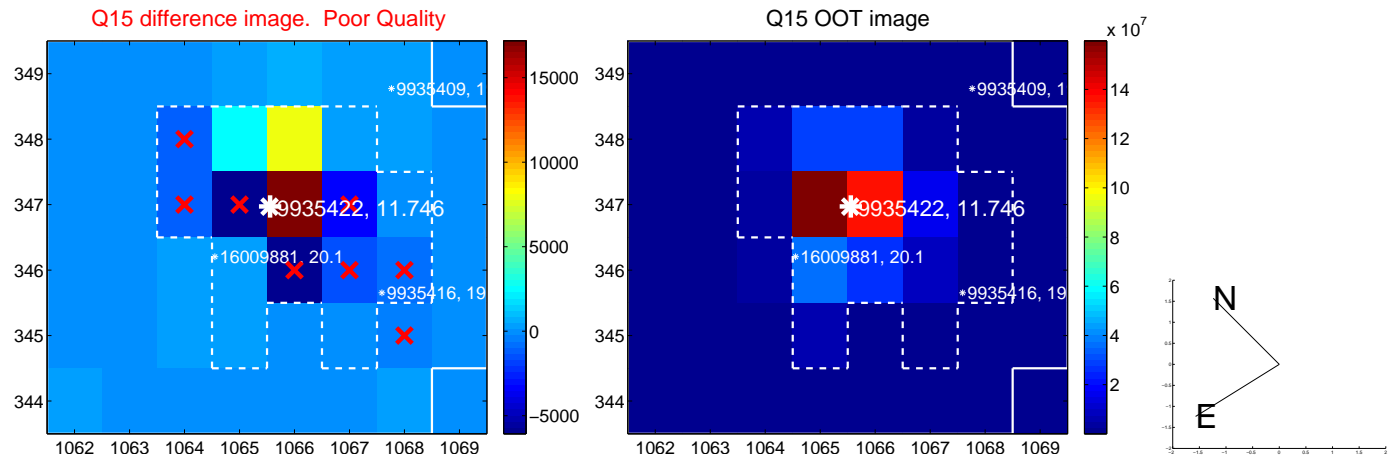
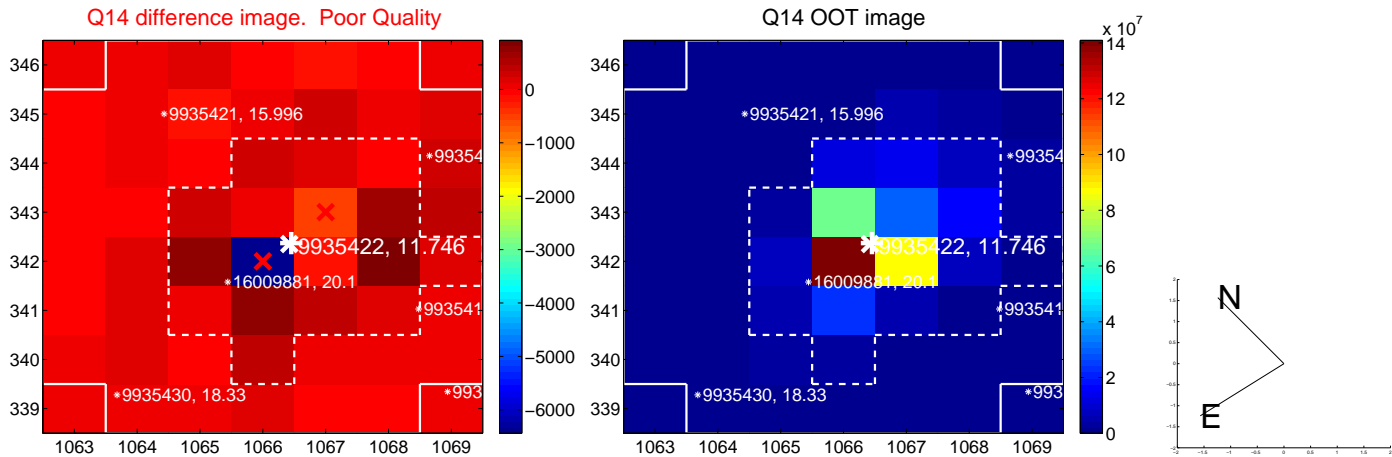
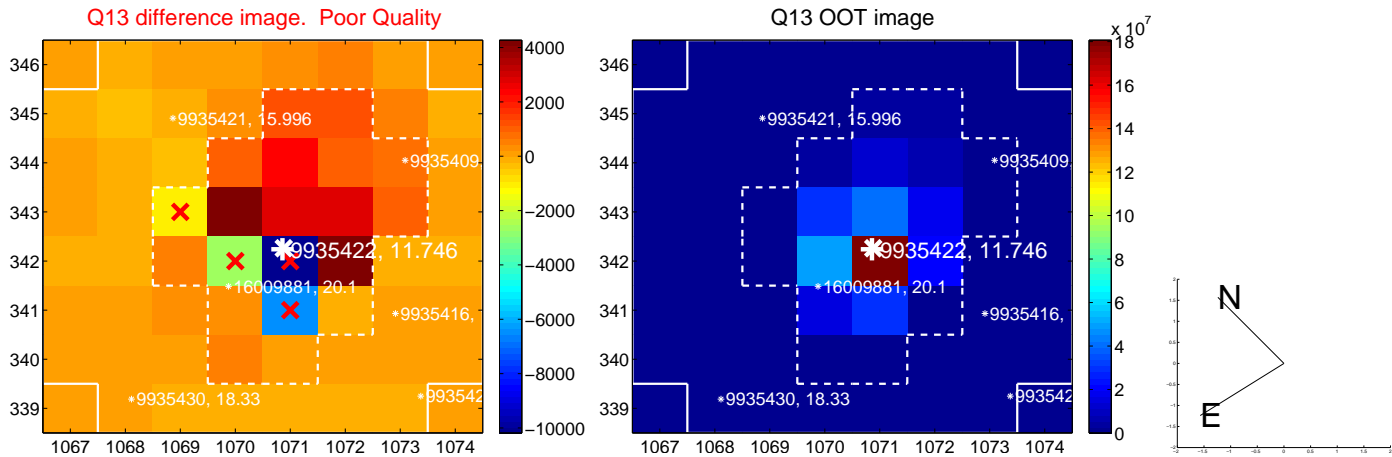
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



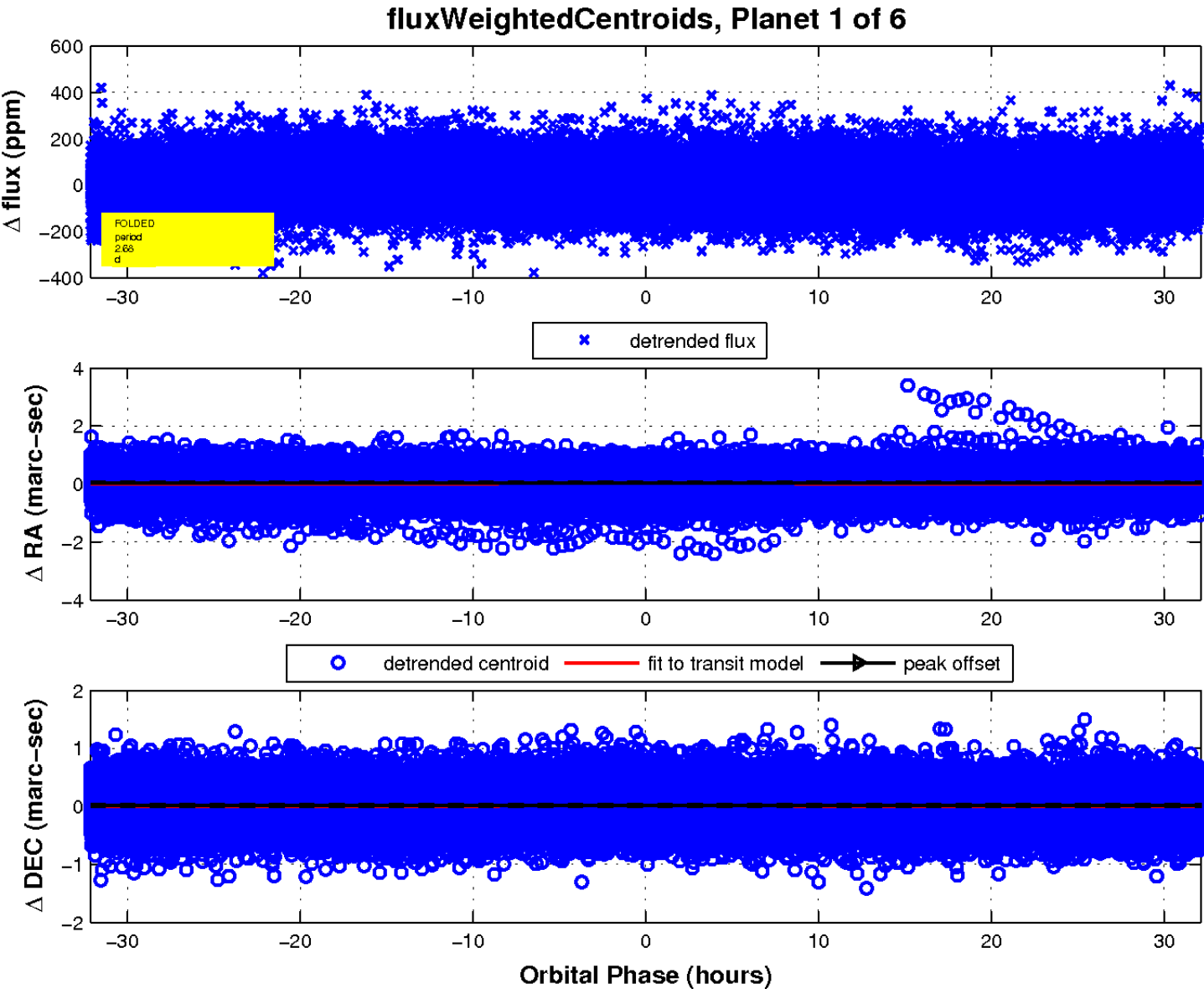
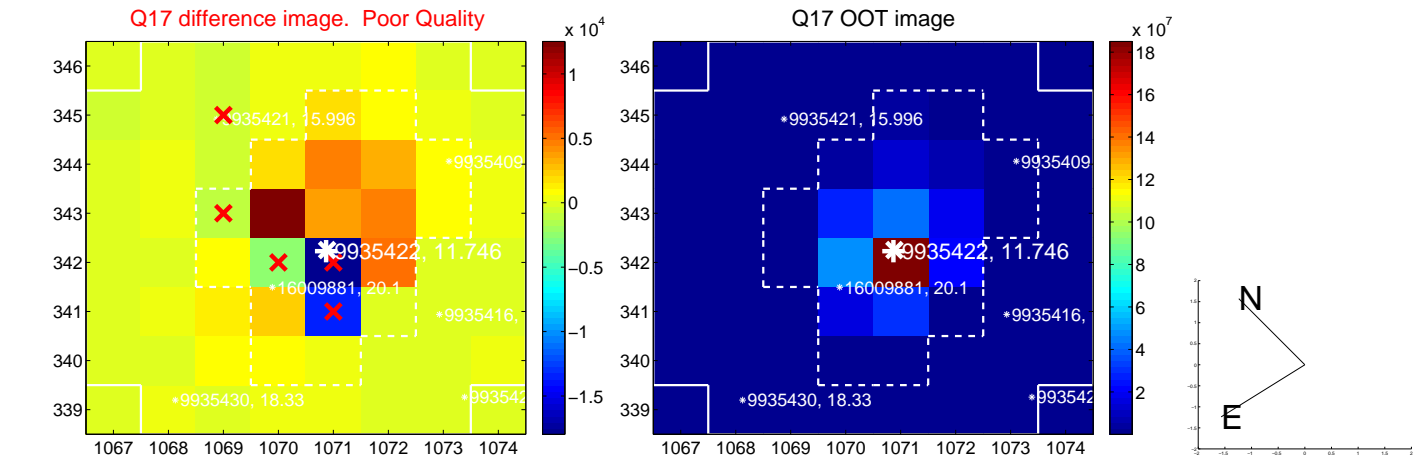
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

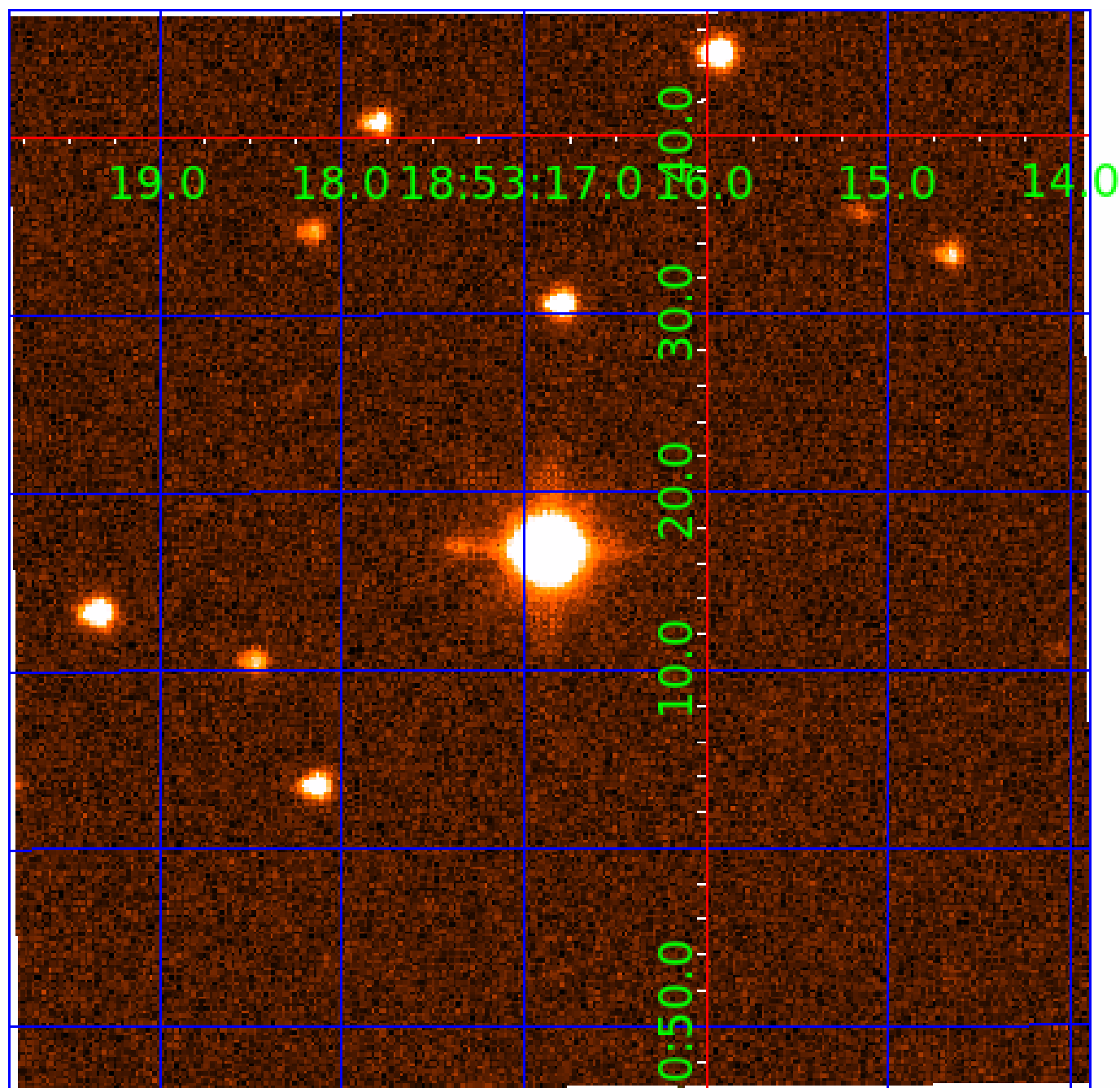


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009935422

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})
009935422-01	OBS	No	2.679006	133.156733	5.3	17.483	8.8	5.6	4.17	7202	1.09	18009.40
009935422-02	OBS	No	78.796943	133.714185	68.1	29.342	39.2	8.4	4.17	7202	3.74	198.36
009935422-03	OBS	No	74.775086	171.059174	145.0	27.461	22.0	15.1	4.17	7202	6.51	212.71
009935422-04	OBS	No	81.592655	208.305996	149.7	1.994	8.5	9.2	4.17	7202	6.02	189.35
009935422-05	OBS	No	62.724559	166.271539	103.0	2.464	7.9	7.7	4.17	7202	4.88	268.87
009935422-06	OBS	No	63.003490	183.025760	146.8	2.271	8.1	8.2	4.17	7202	5.86	267.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009935422-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009935422-02	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_FEW_MEAS
009935422-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009935422-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009935422-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009935422-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_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.

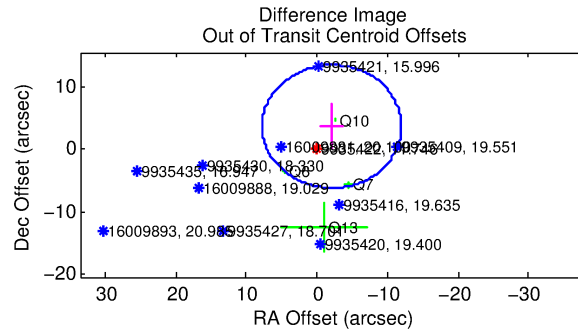
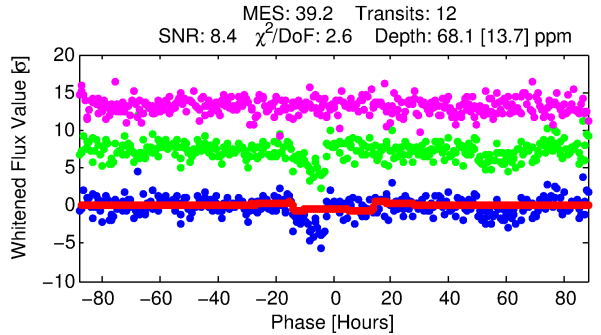
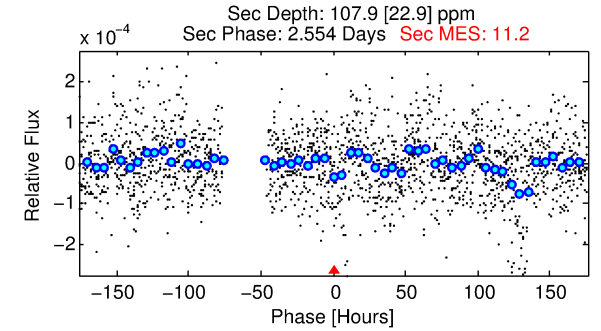
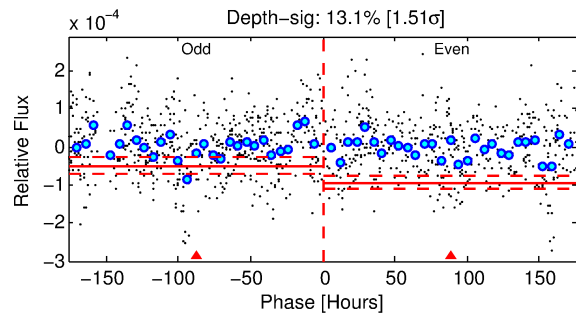
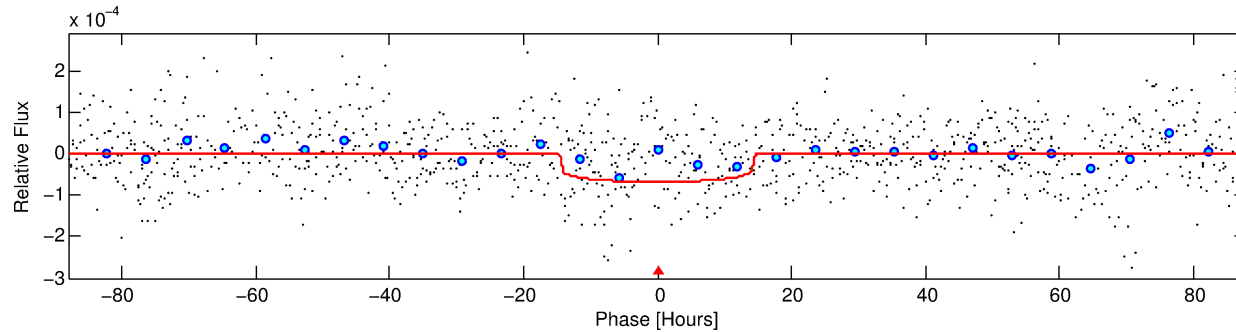
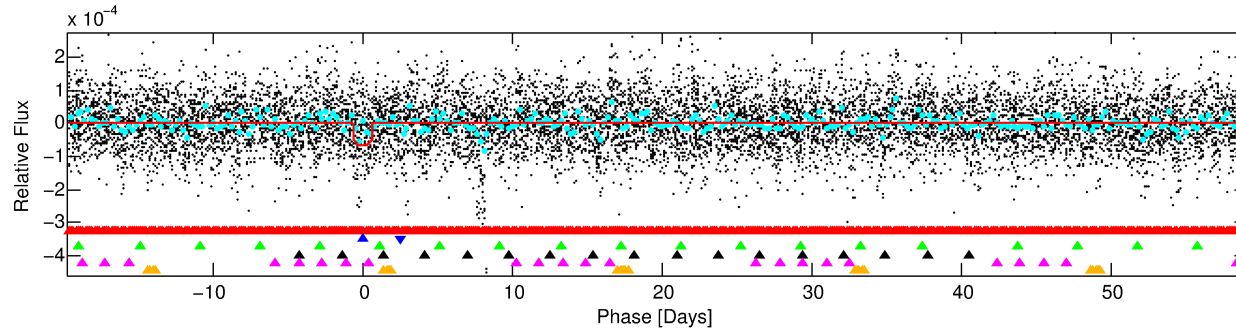
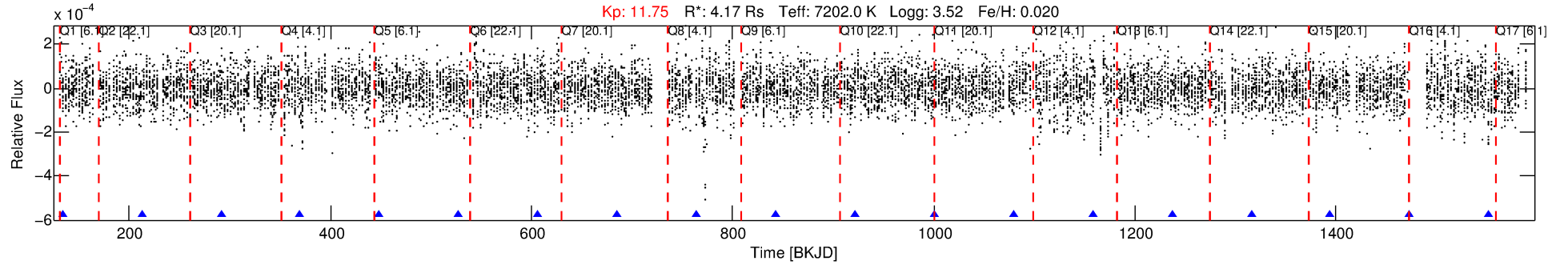
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009935422-02

No Significant Match Found

DV One-Page Summary

KIC: 9935422 Candidate: 2 of 6 Period: 78.797 d



DV Fit Results:

Period = 78.79694 [0.00407] d
Epoch = 133.7142 [0.0379] BKJD
Rp/R* = 0.0082 [0.0018]
a/R* = 13.80 [16.31]
b = 0.75 [0.69]
Seff = 198.36 [191.65]
Teq = 957 [231] K
Rp = 3.74 [2.32] Re
a = 0.4597 [0.2671] AU
Ag = 897.60 [963.29] [0.93 σ]
Teffp = 8098 [1059] K [6.59 σ]

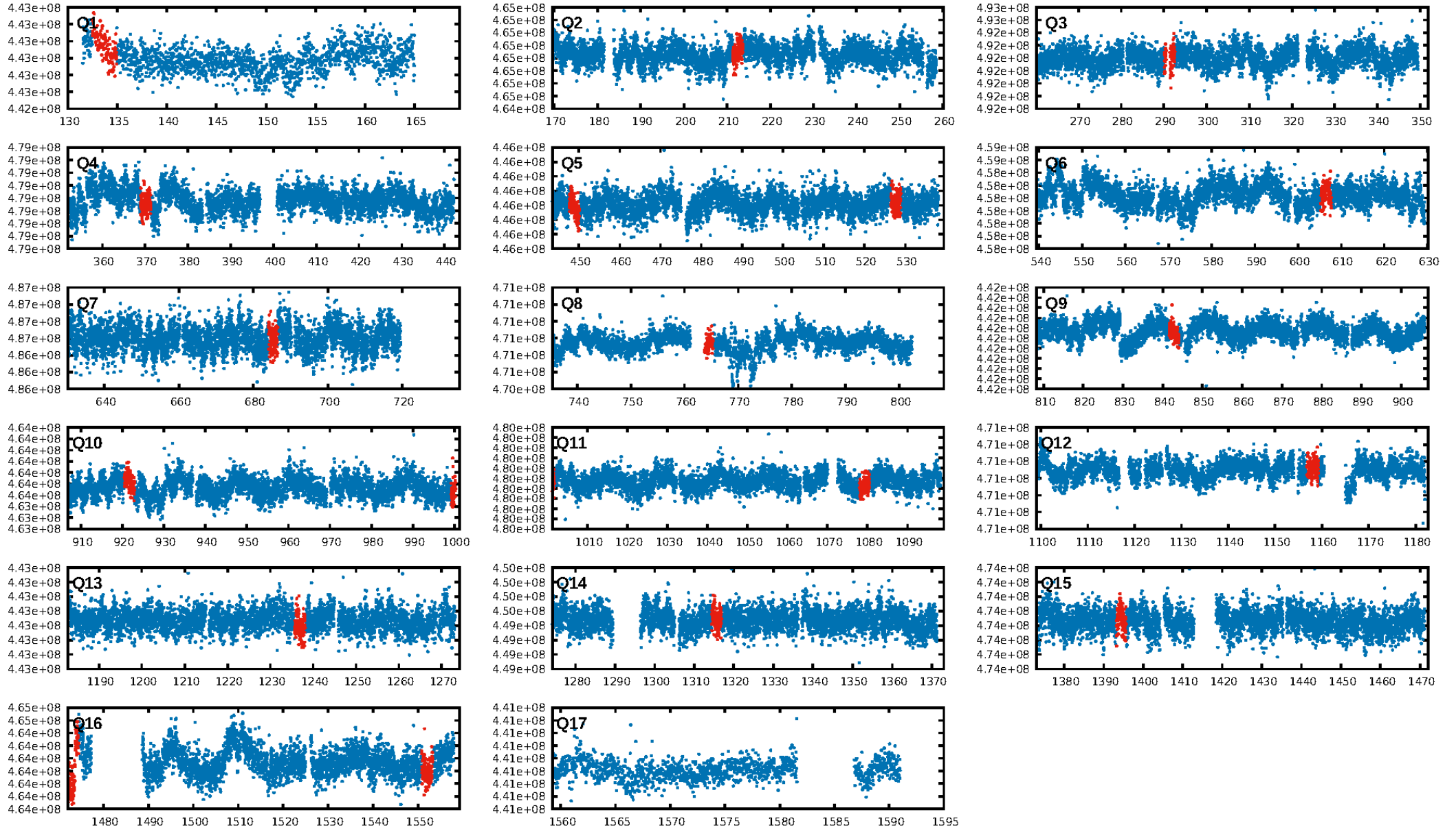
DV Diagnostic Results:

ShortPeriod-sig: 98.4% [2.40 σ]
LongPeriod-sig: 97.7% [2.28 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.71e-116
RollingBand-fgt: 1.00 [11/11]
GhostDiagnostic-chr: -1.976
Centroid-sig: 14.2%
Centroid-so: 1.250 arcsec [1.42 σ]
OotOffset-rm: 4.183 arcsec [1.27 σ]
OotOffset-st: 2/1/0/1 [4]
KicOffset-rm: 4.174 arcsec [1.28 σ]
KicOffset-st: 2/1/0/1 [4]
DiffImageQuality-fgm: 0.00 [0/4]
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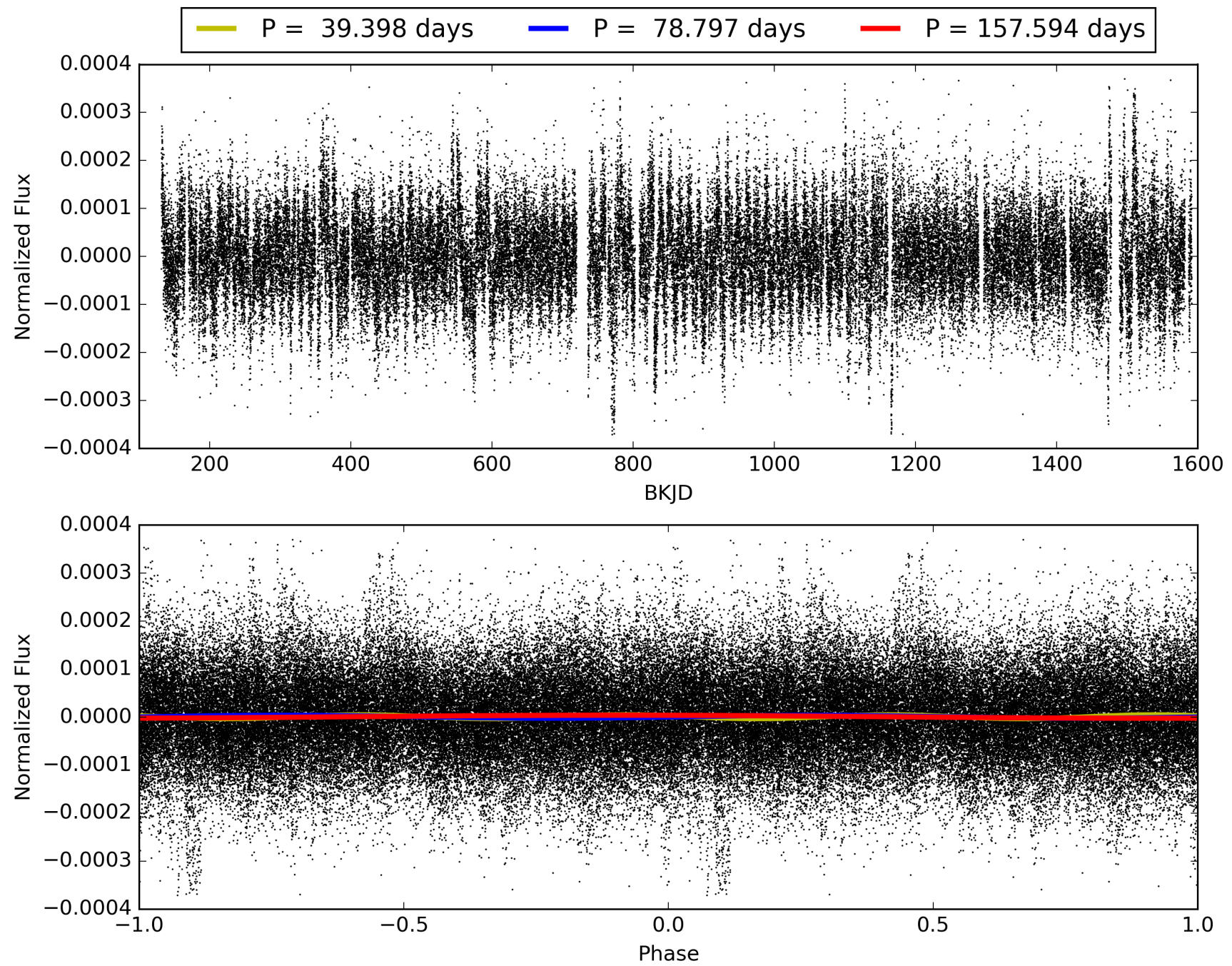
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:20:42 Z

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

TCE 009935422-02, PDC Light Curves

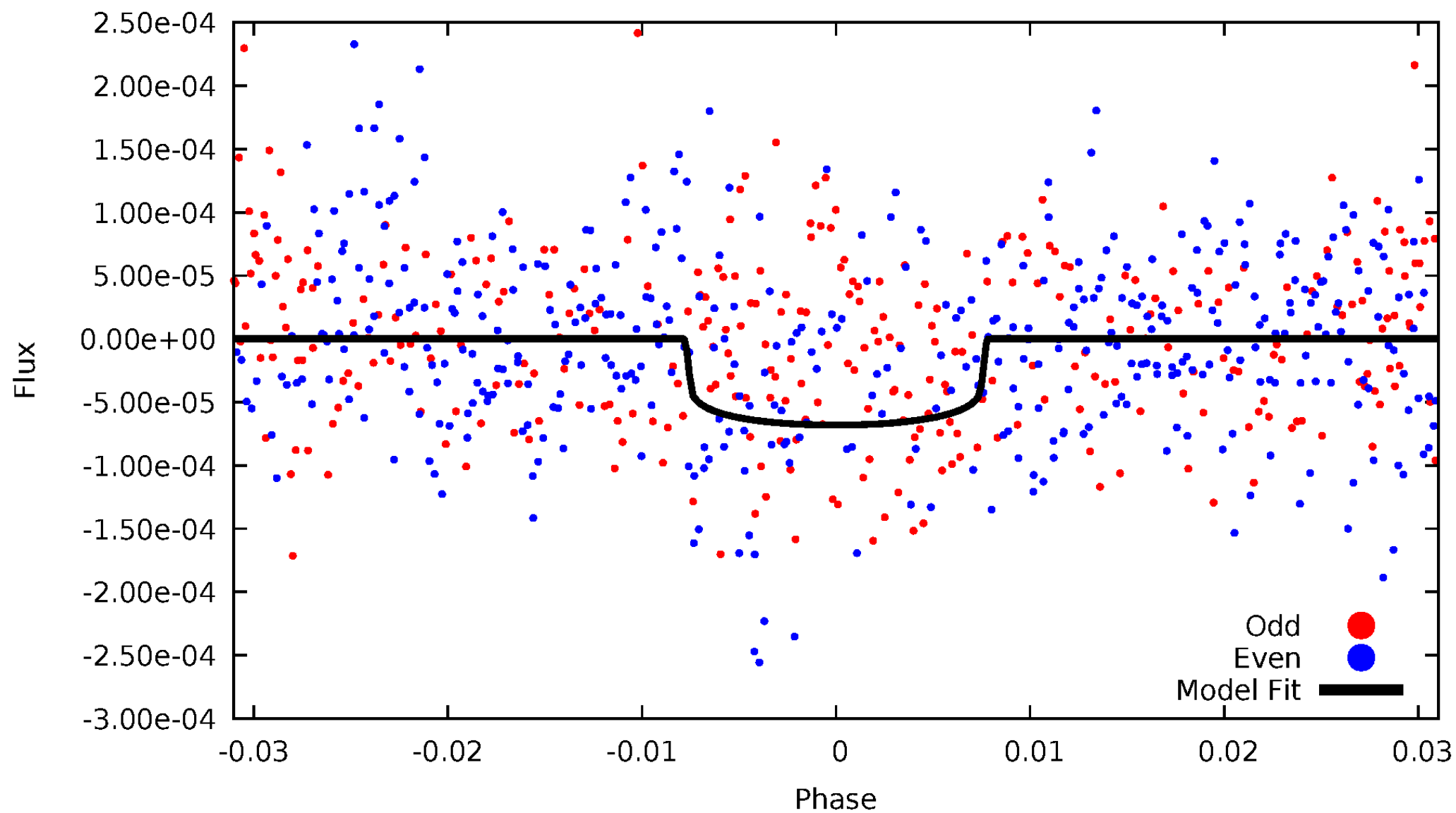


TCE 009935422-02



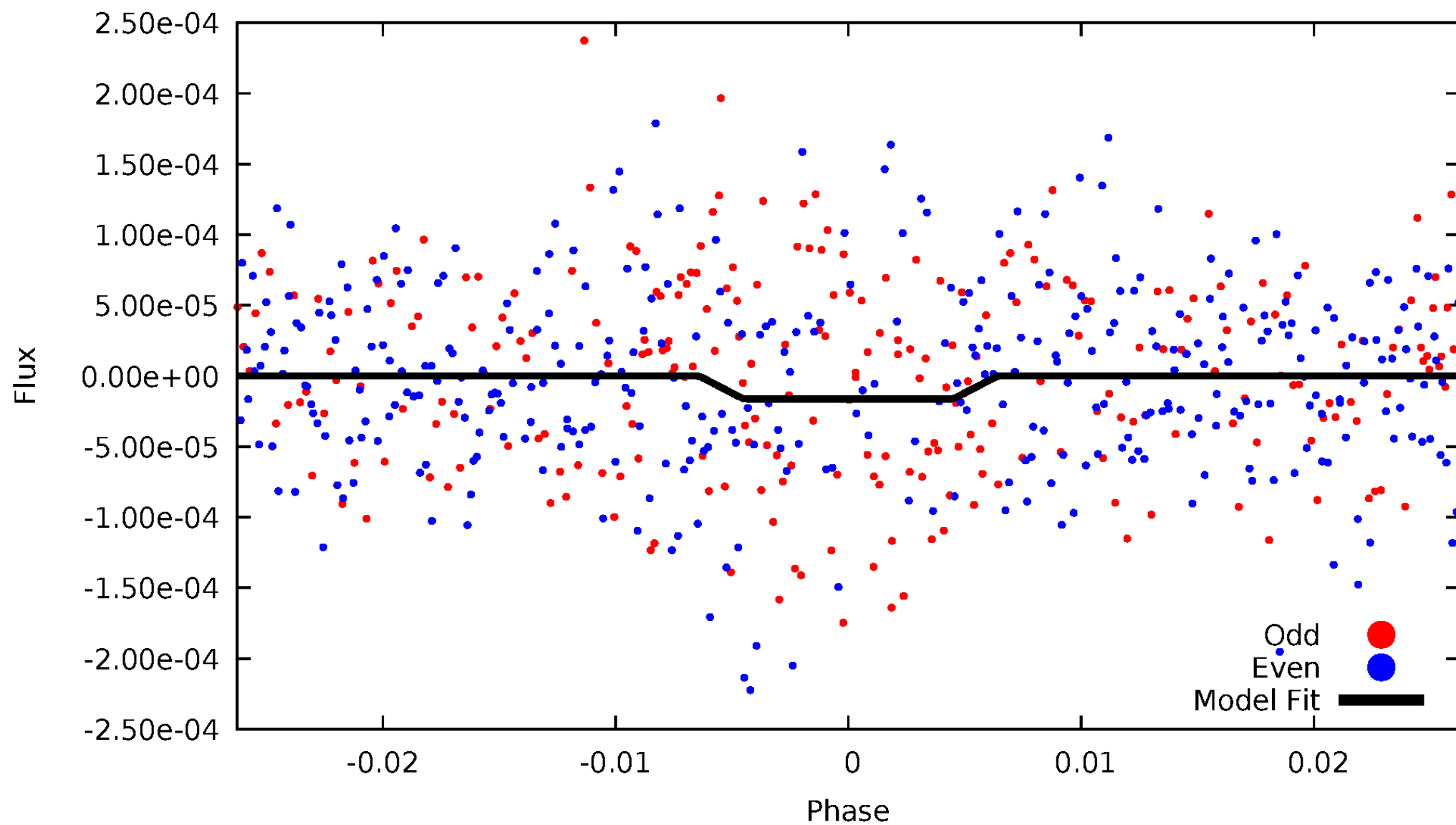
DV Odd/Even

TCE 009935422-02



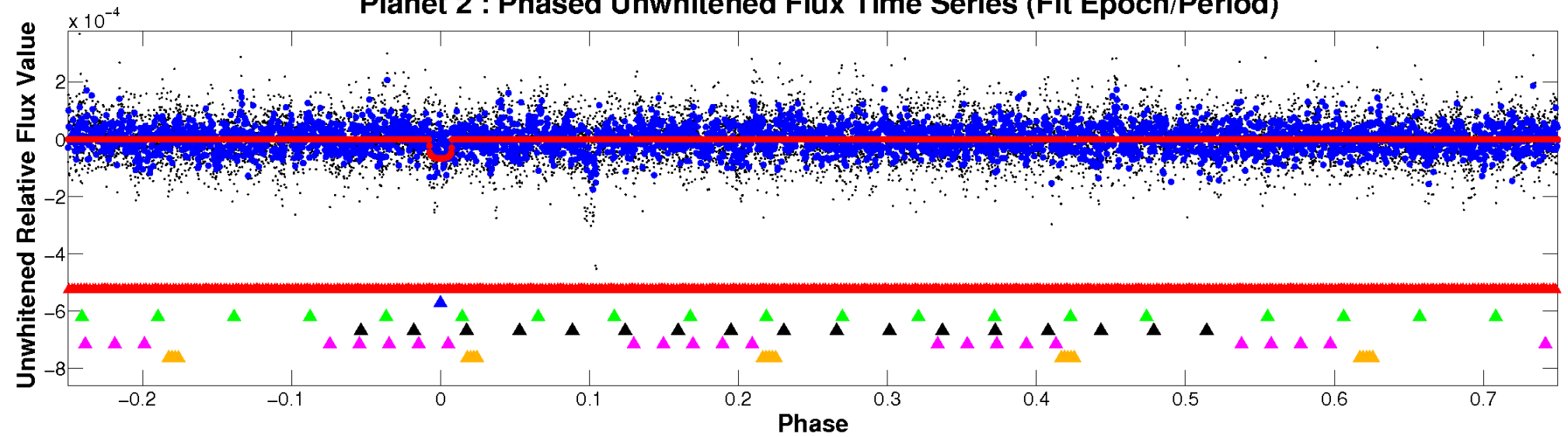
ALT Odd/Even

TCE 009935422-02

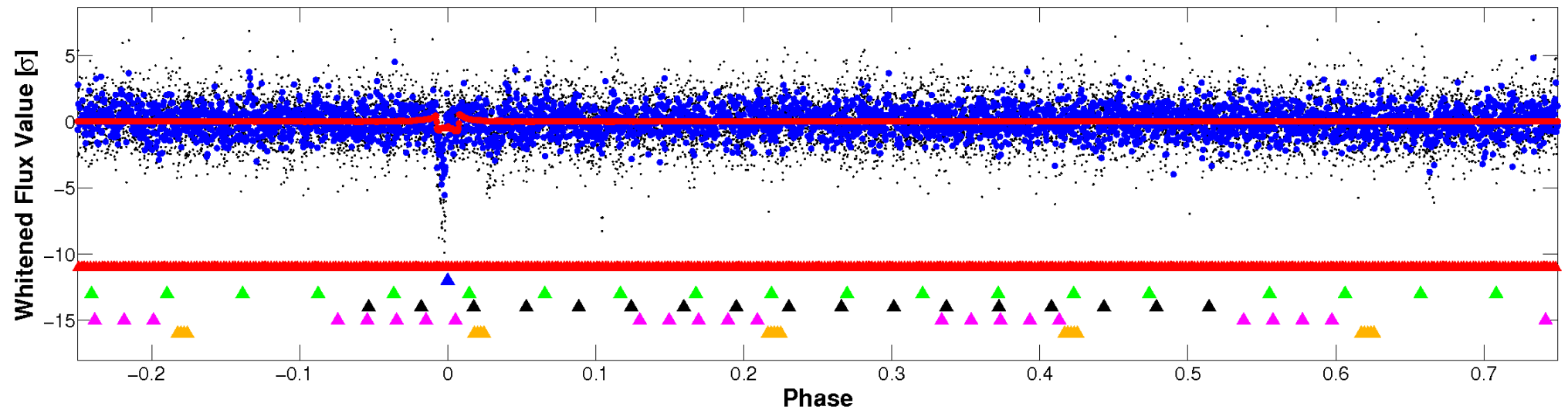


Non-Whitened Vs. Whitened Light Curve

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

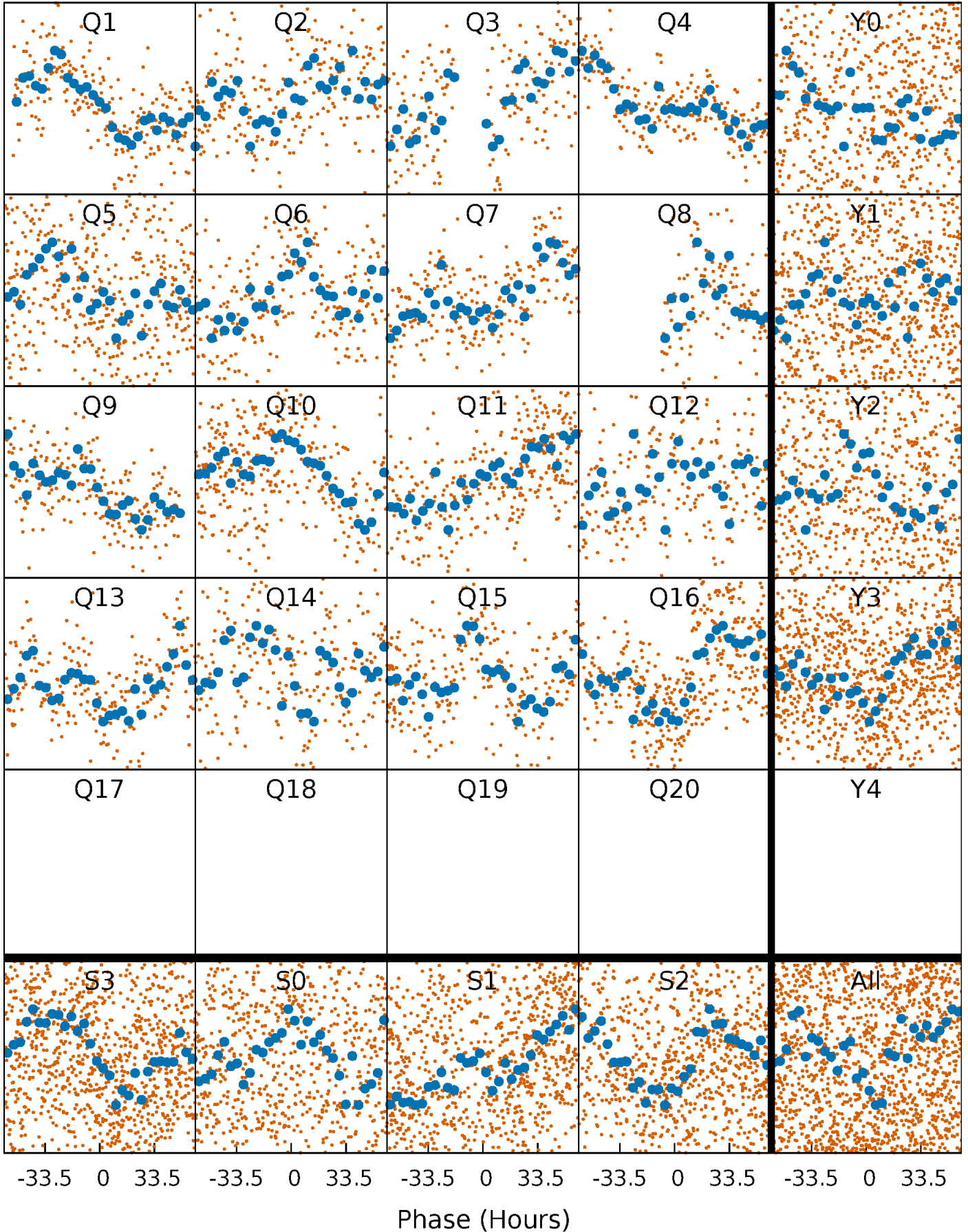


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



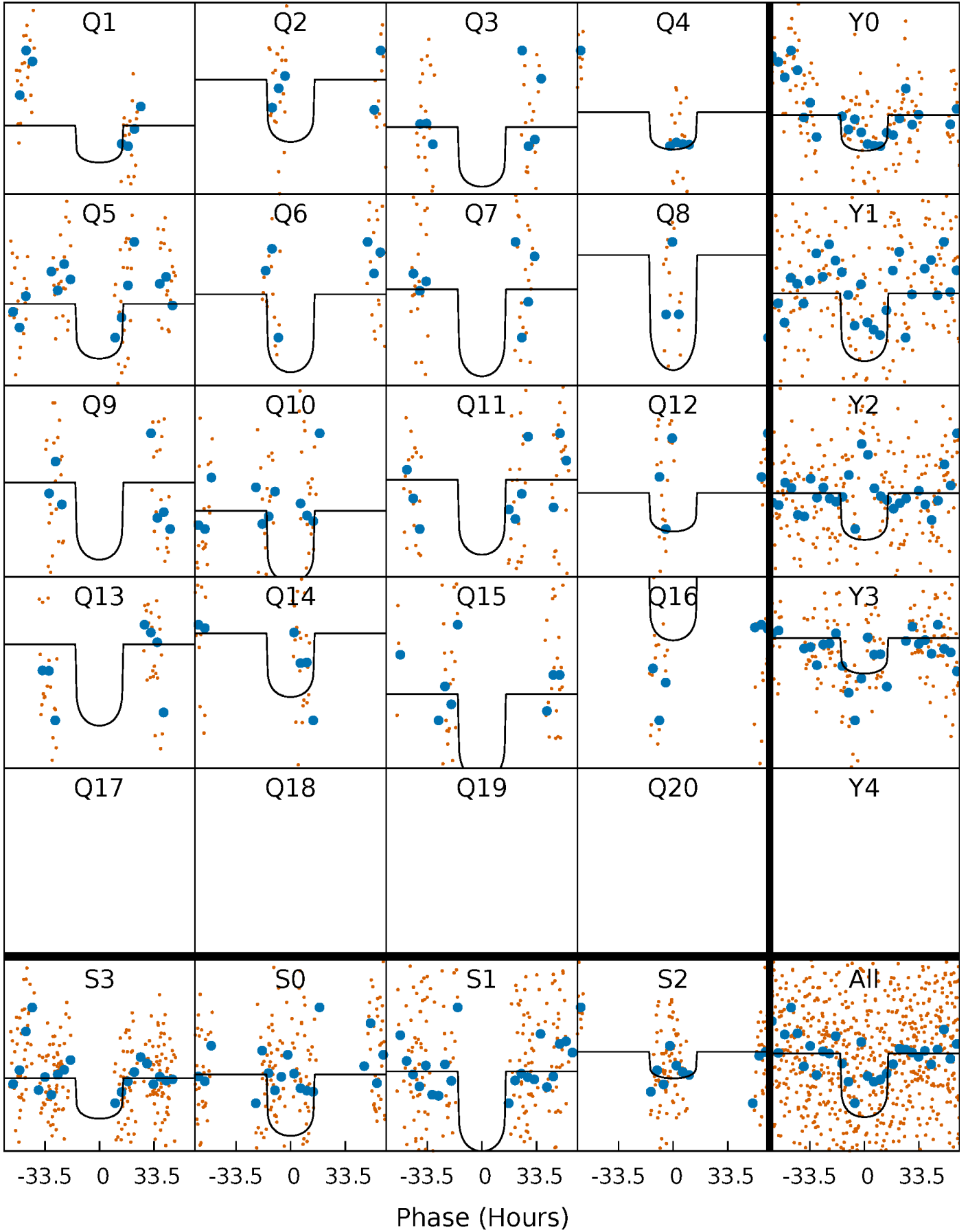
PDC Quarter-Phased Transit Curves

TCE 009935422-02 P= 78.796943 Days $T_0=133.714185$ (BKJD)



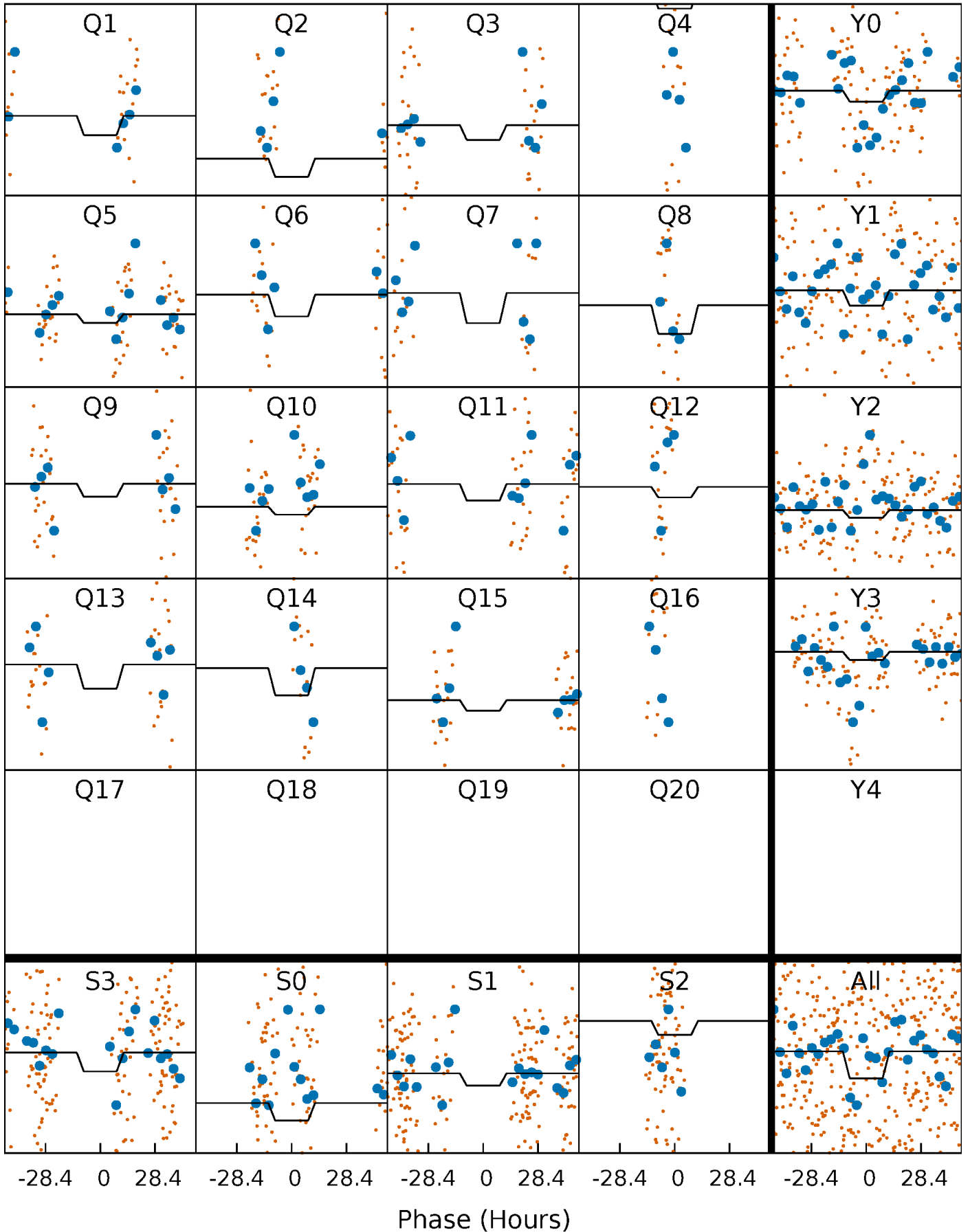
DV Quarter-Phased Transit Curves

TCE 009935422-02 $P = 78.796943$ Days $T_0 = 133.714185$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

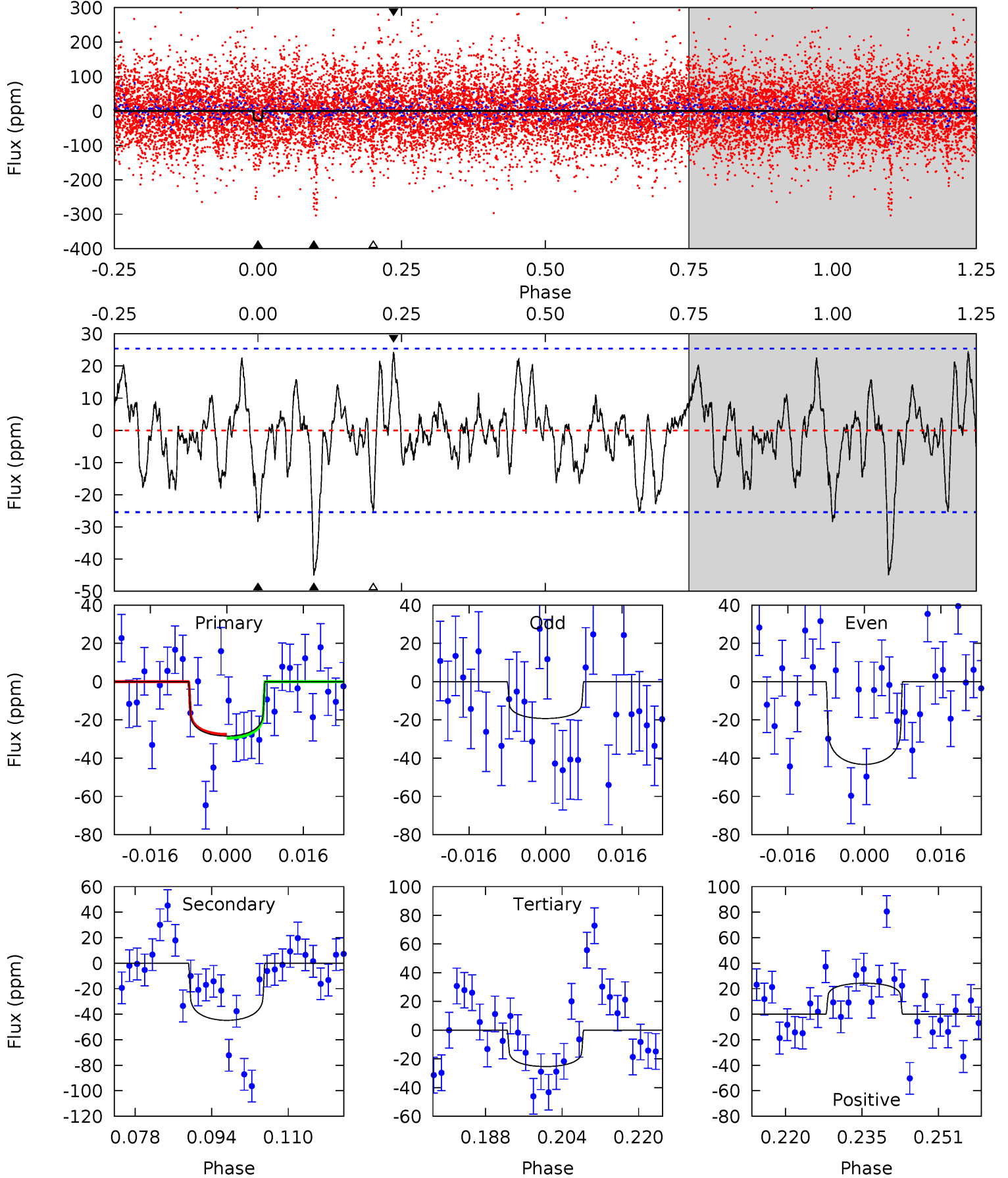
TCE 009935422-02 P= 78.787083 Days $T_0=133.911612$ (BKJD)



DV Model-Shift Uniqueness Test

009935422-02, P = 78.796943 Days, E = 54.917242 Days

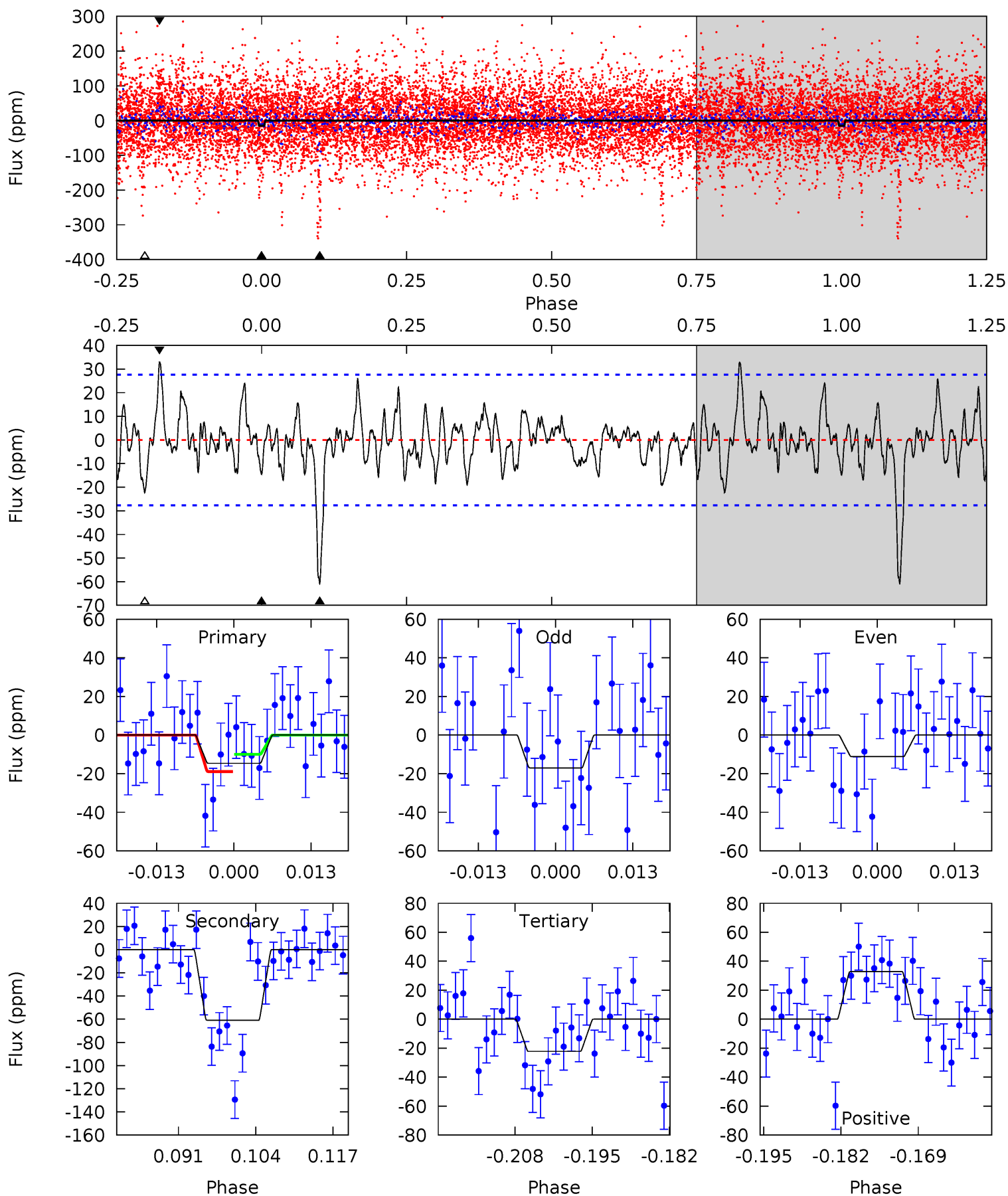
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.53	8.71	4.92	4.72	4.94	2.42	1.71	0.61	0.81	3.78	3.98	2.30	1.61	0.35	0.19



Alt Model-Shift Uniqueness Test

009935422-02, P = 78.787083 Days, E = 55.124529 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.63	10.9	3.99	5.90	4.98	2.48	1.54	-1.37	-3.27	6.95	5.04	0.52	-16.7	0.35	0.81



Stellar Parameters For KIC 009935422

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7202^{+225}_{-300}	$3.517^{+0.567}_{-0.063}$	$0.020^{+0.200}_{-0.300}$	$4.170^{+0.401}_{-2.408}$	$2.087^{+0.144}_{-0.575}$	$0.041^{+0.304}_{-0.008}$
	+3%/-4%	+16%/-2%	+1000%/-1500%	+10%/-58%	+7%/-28%	+750%/-19%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009935422-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-45 ± 5	$3.28^{+1.10}_{-1.06}$	1282^{+93}_{-169}	6404^{+1013}_{-647}	472^{+529}_{-200}
Alt.	-61 ± 6	$1.61^{+0.93}_{-0.78}$	1285^{+87}_{-180}	10968^{+7049}_{-2667}	2703^{+6921}_{-1601}

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

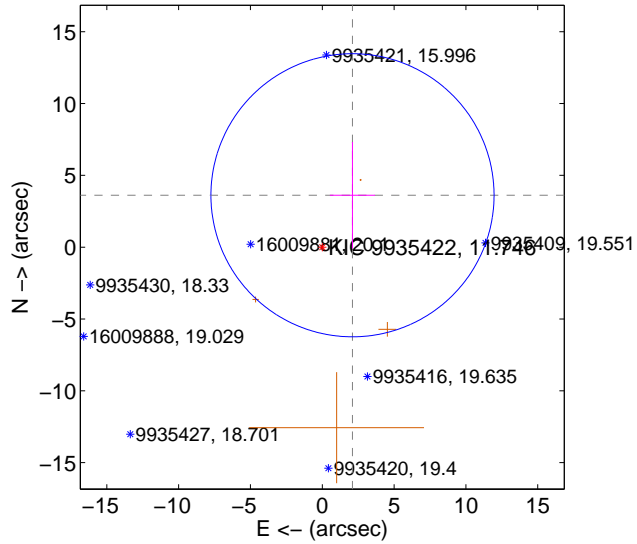
Supplemental centroid analysis for 009935422-02. **Kepler magnitude: 11.75.** Transit SNR 8.36

There are 0 quarters with good PRF difference image offsets

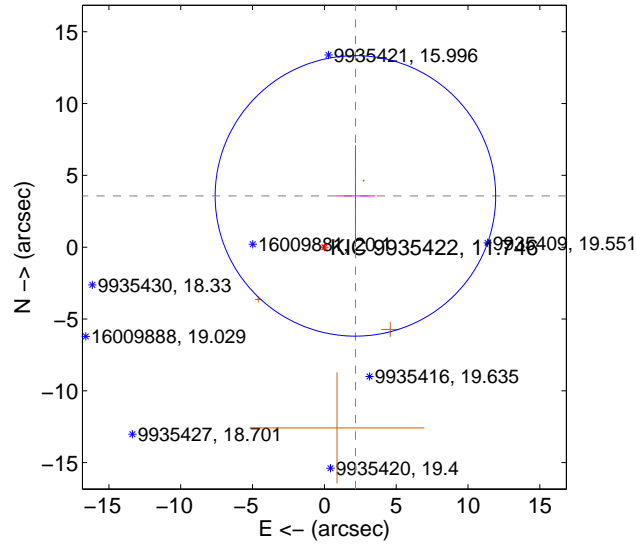
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.183 ± 3.286	1.27	-2.104 ± 1.572	3.615 ± 3.710
PRF-fit source offset from KIC position	4.174 ± 3.256	1.28	-2.162 ± 1.393	3.571 ± 3.532
photometric centroid source offset	1.25 ± 0.88	1.42	1.20 ± 0.89	0.35 ± 0.80

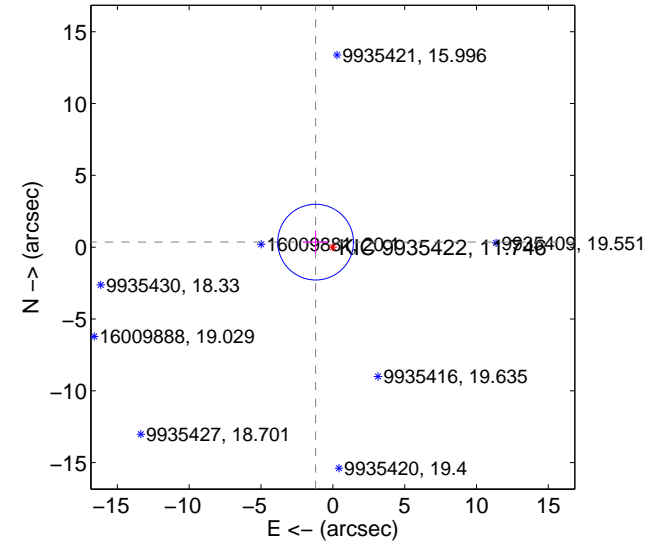
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

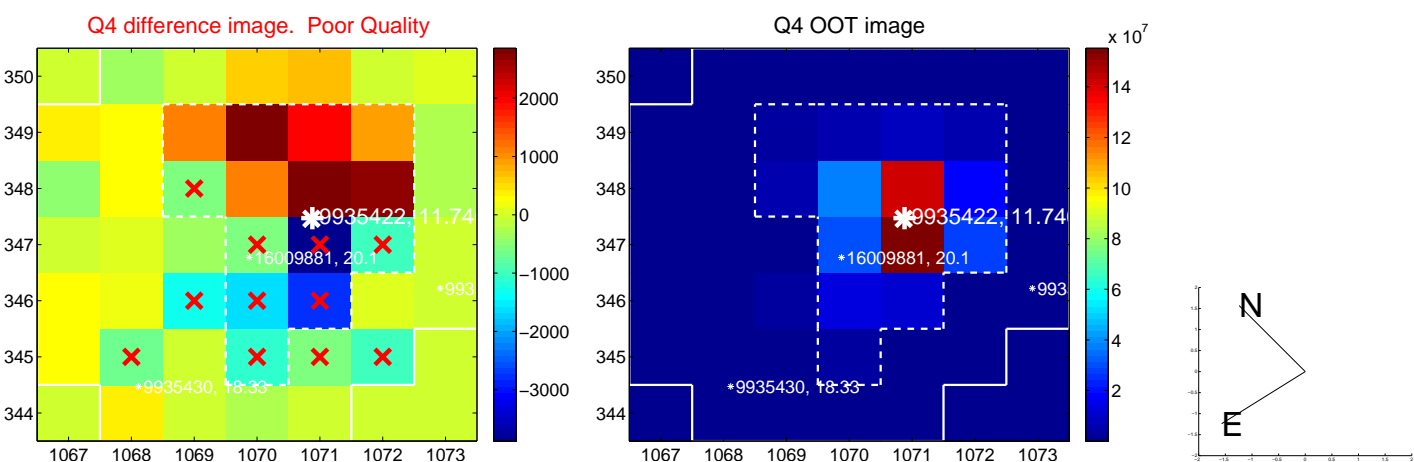
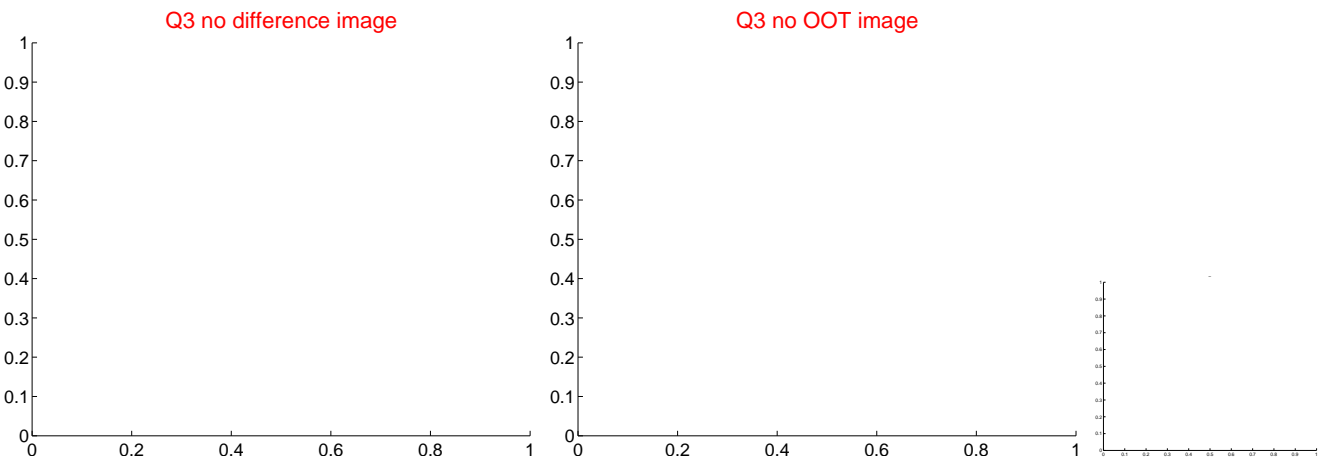
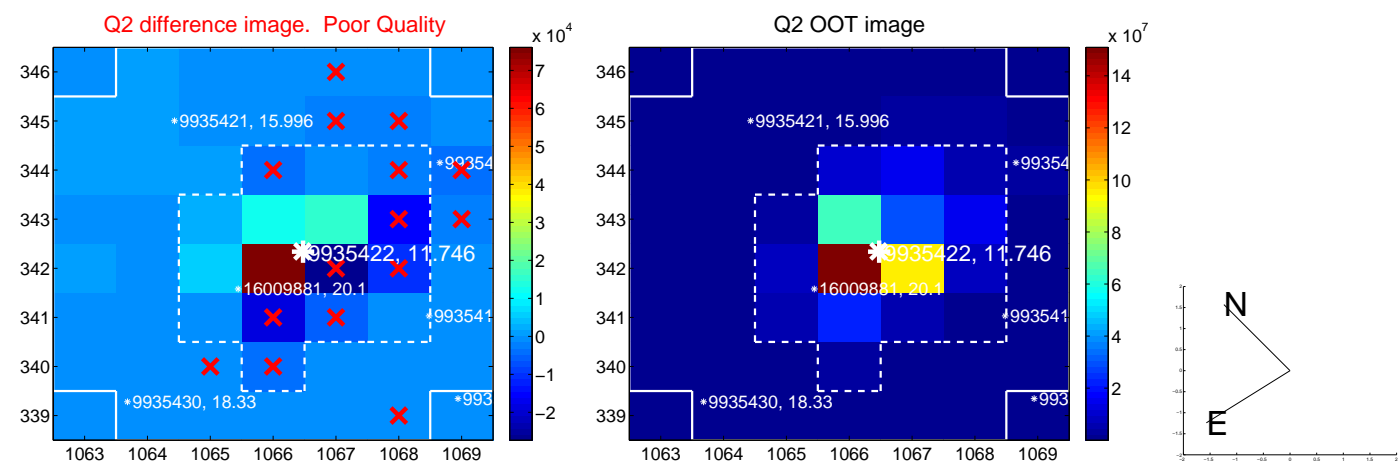
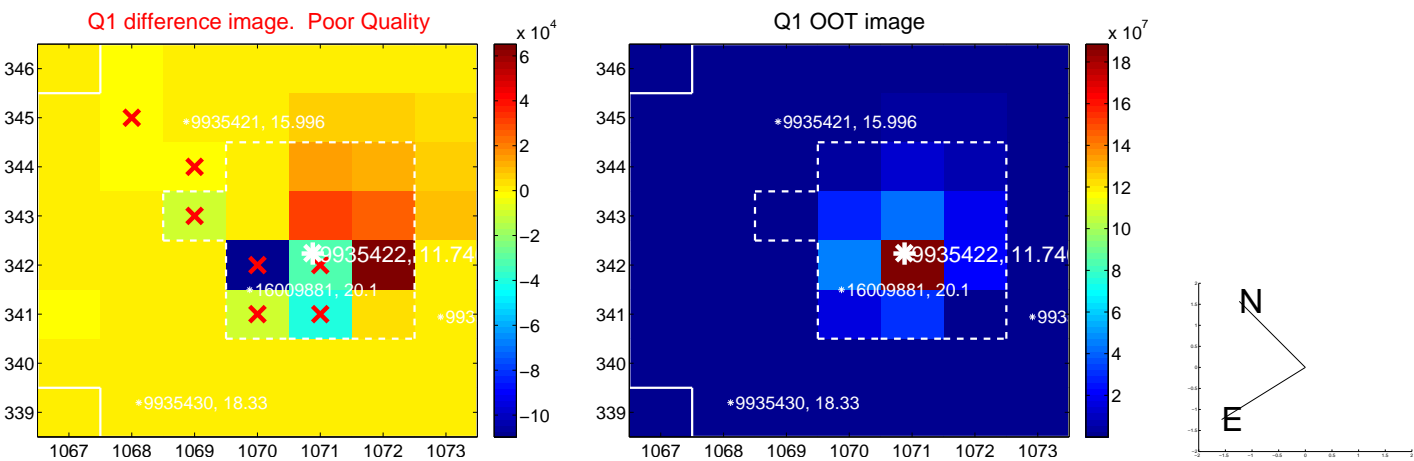


offset from photometric centroids

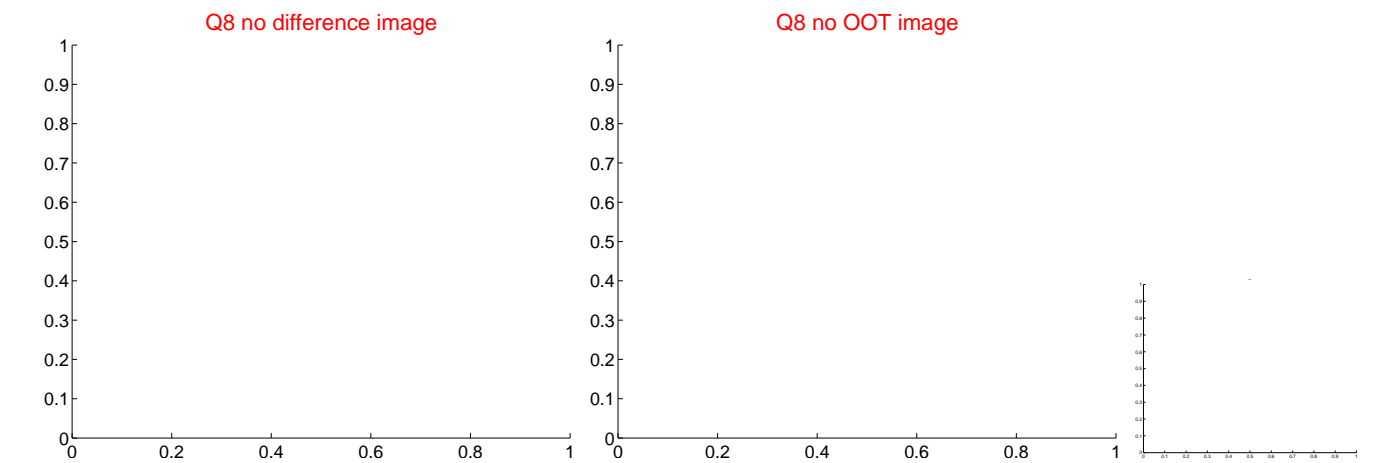
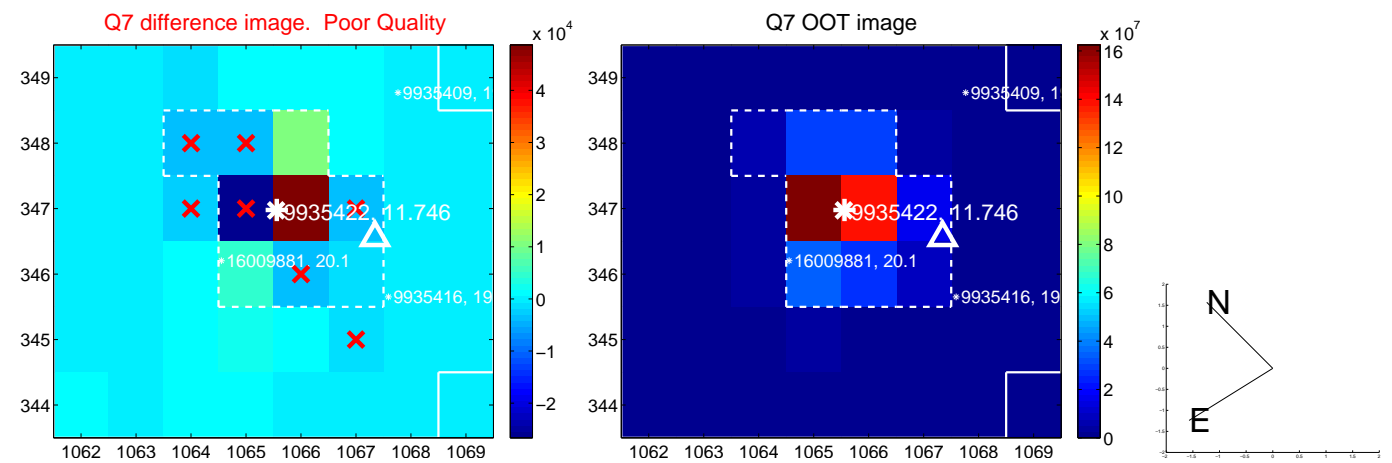
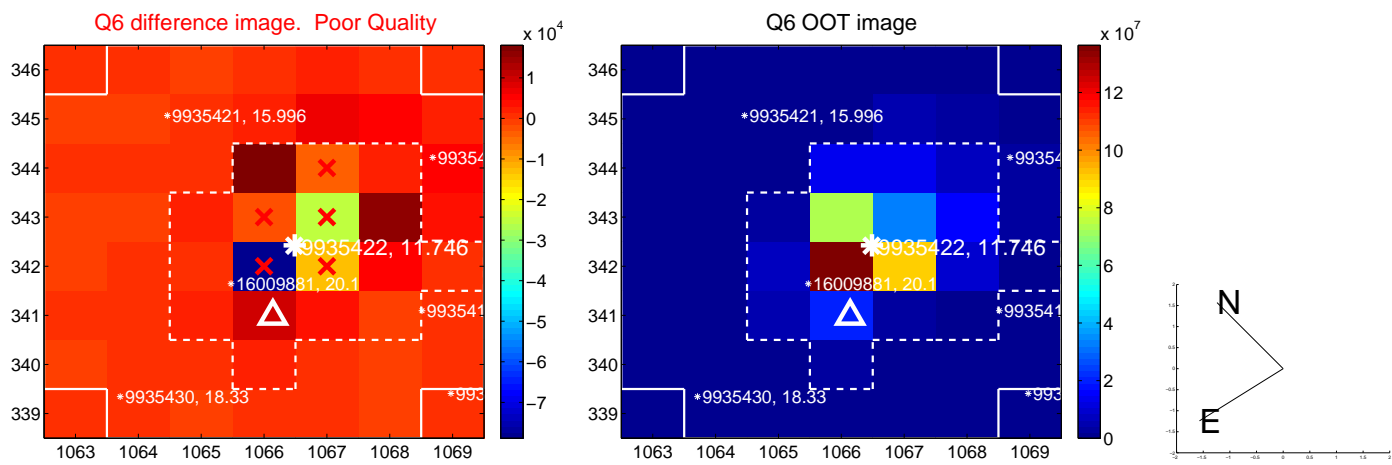
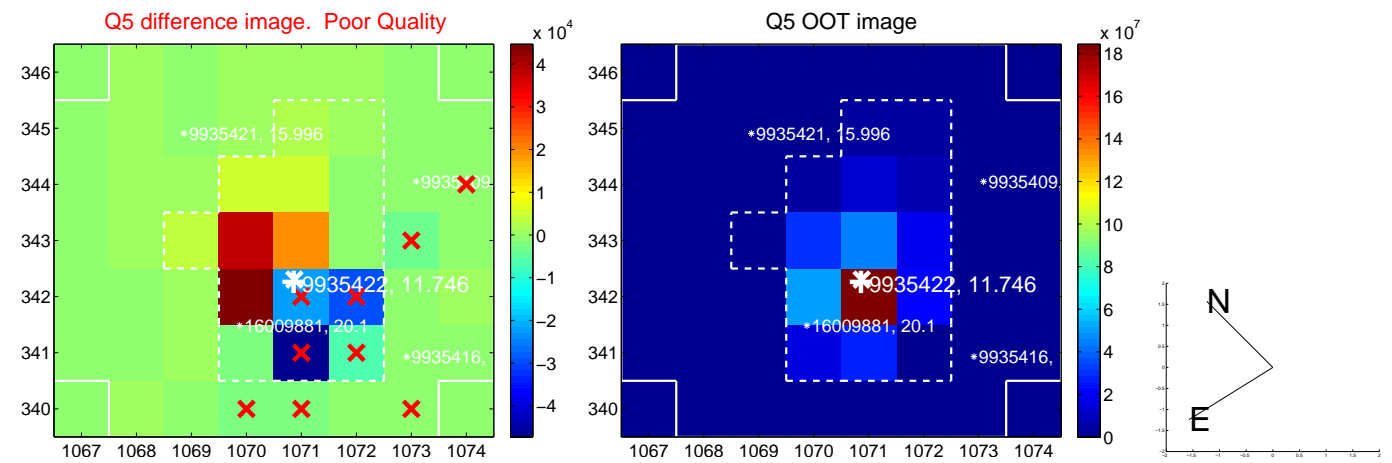


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

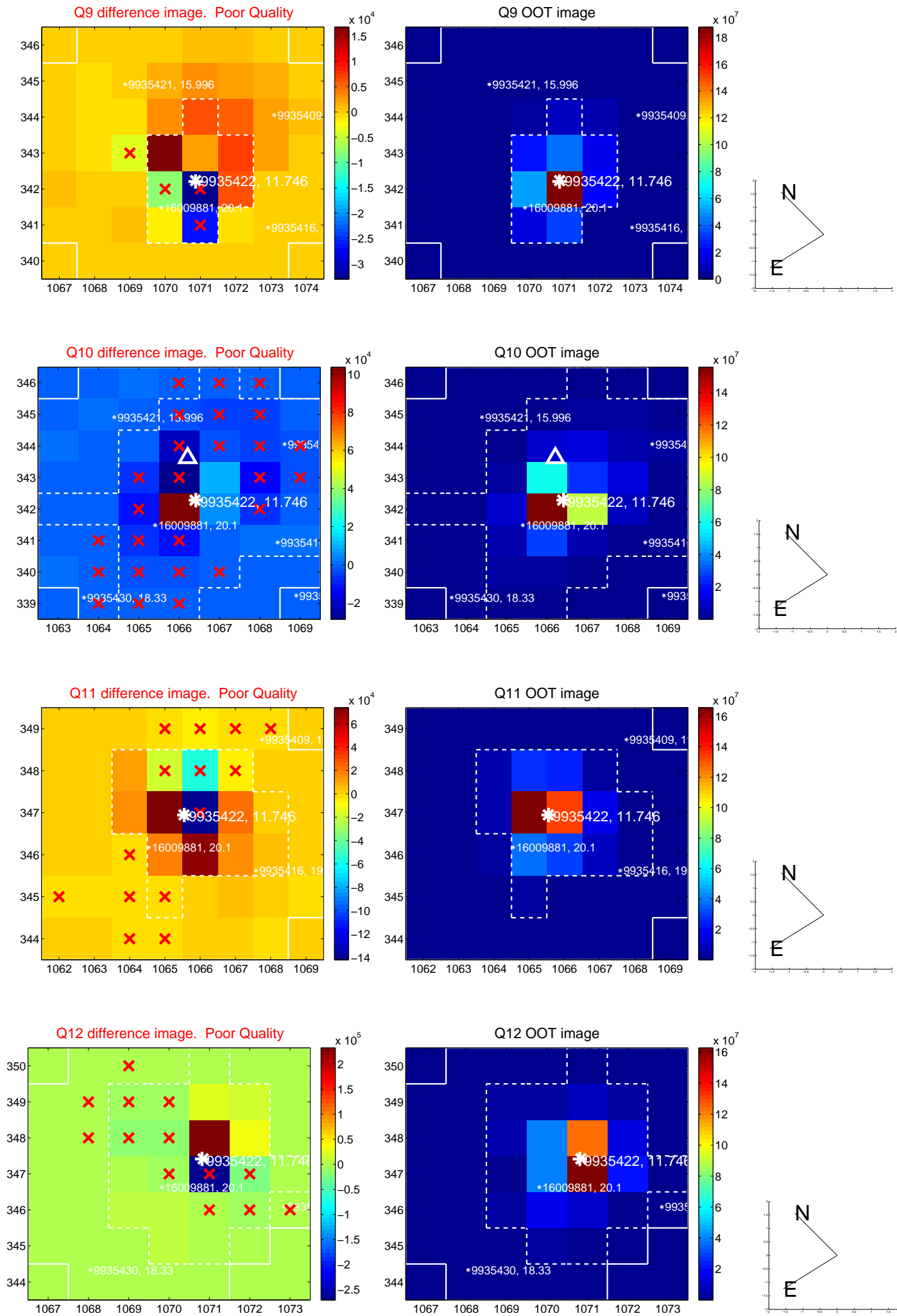
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



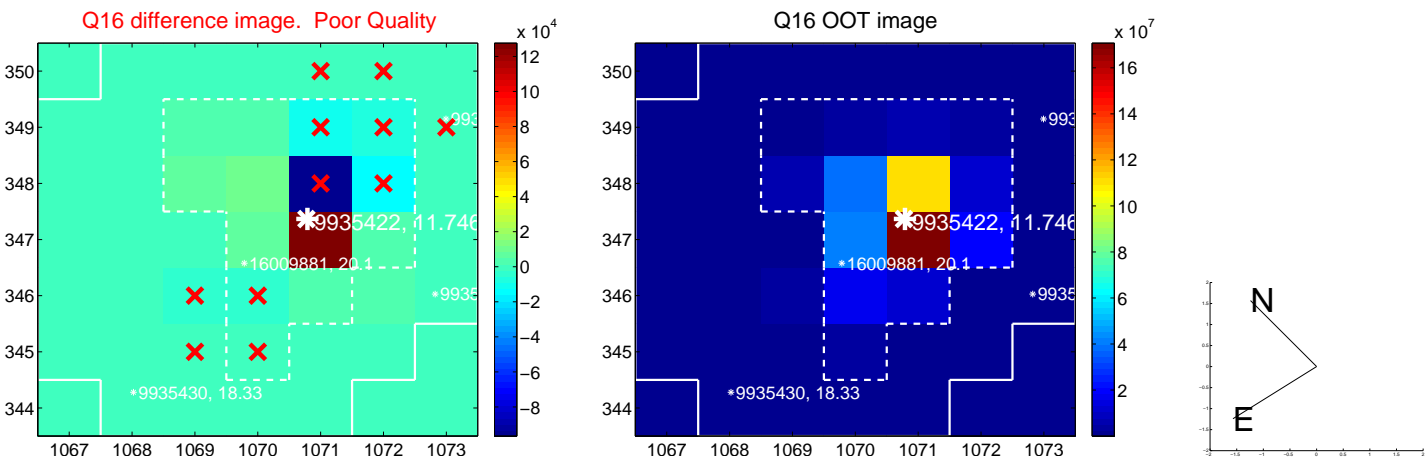
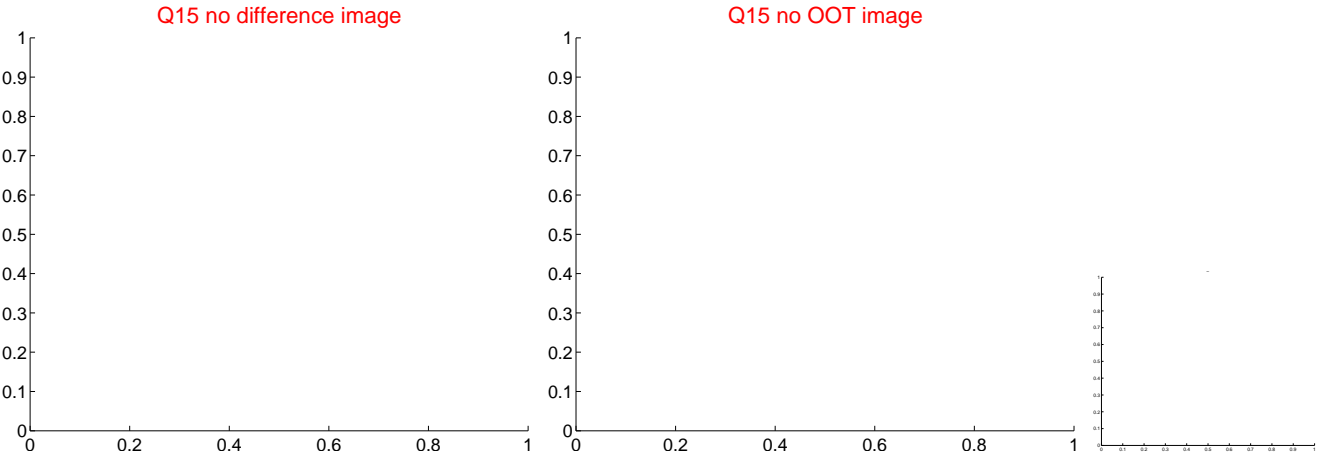
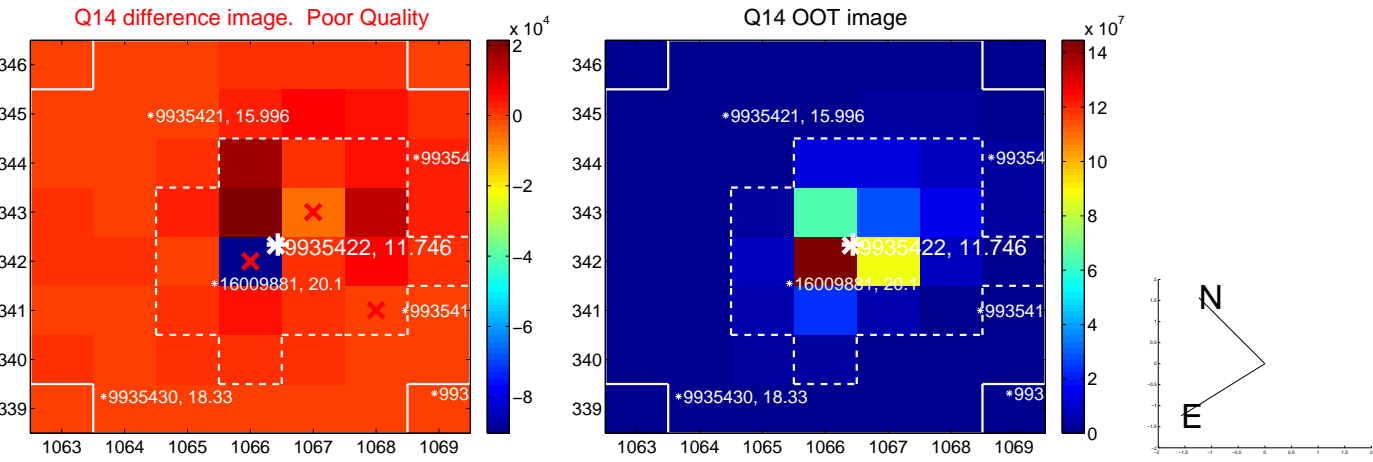
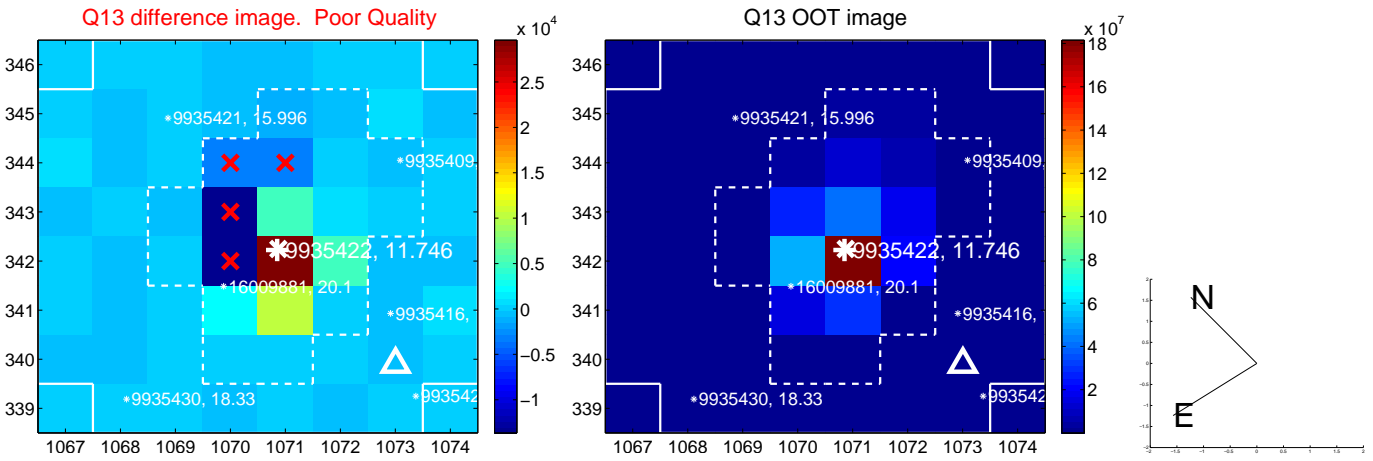
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



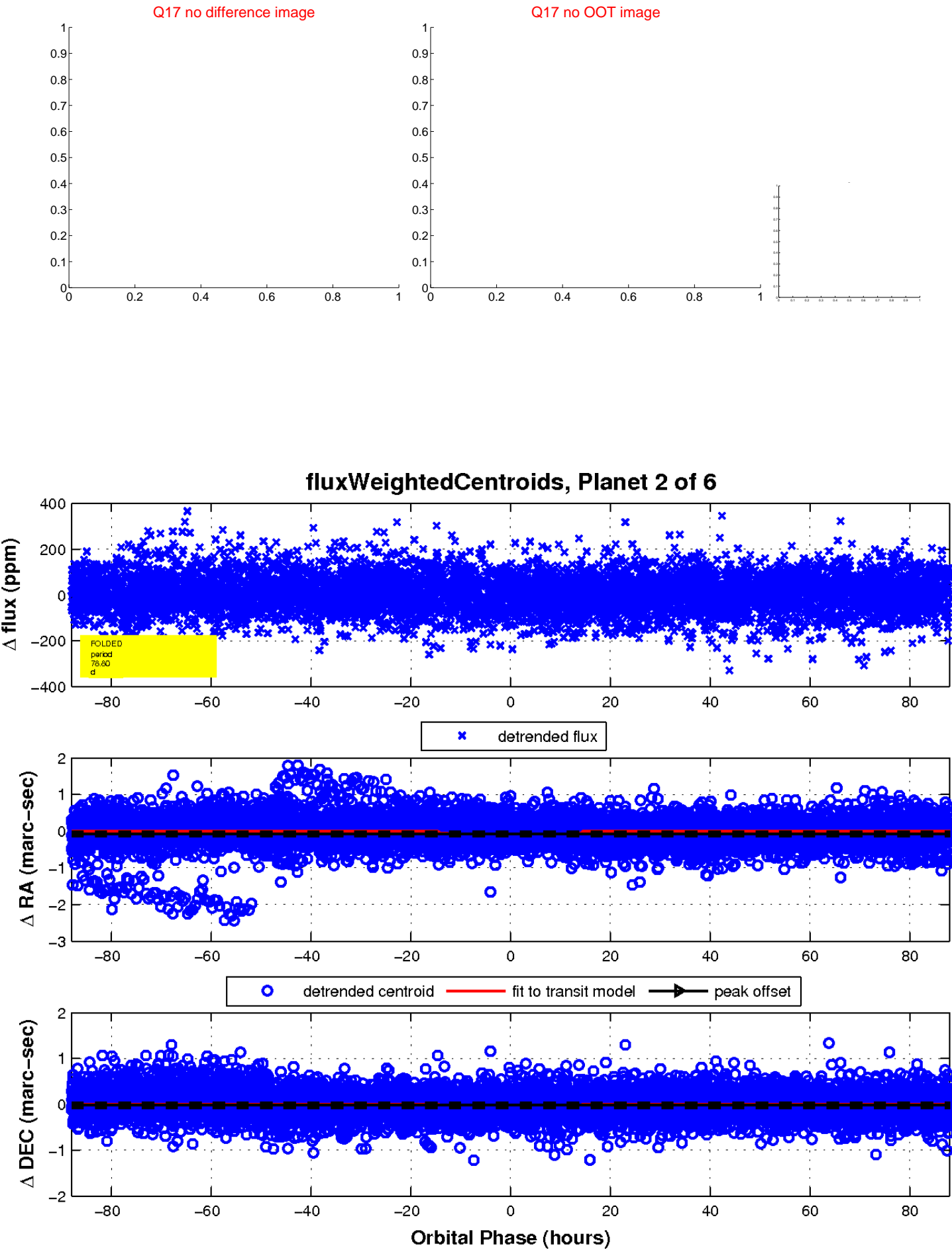
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

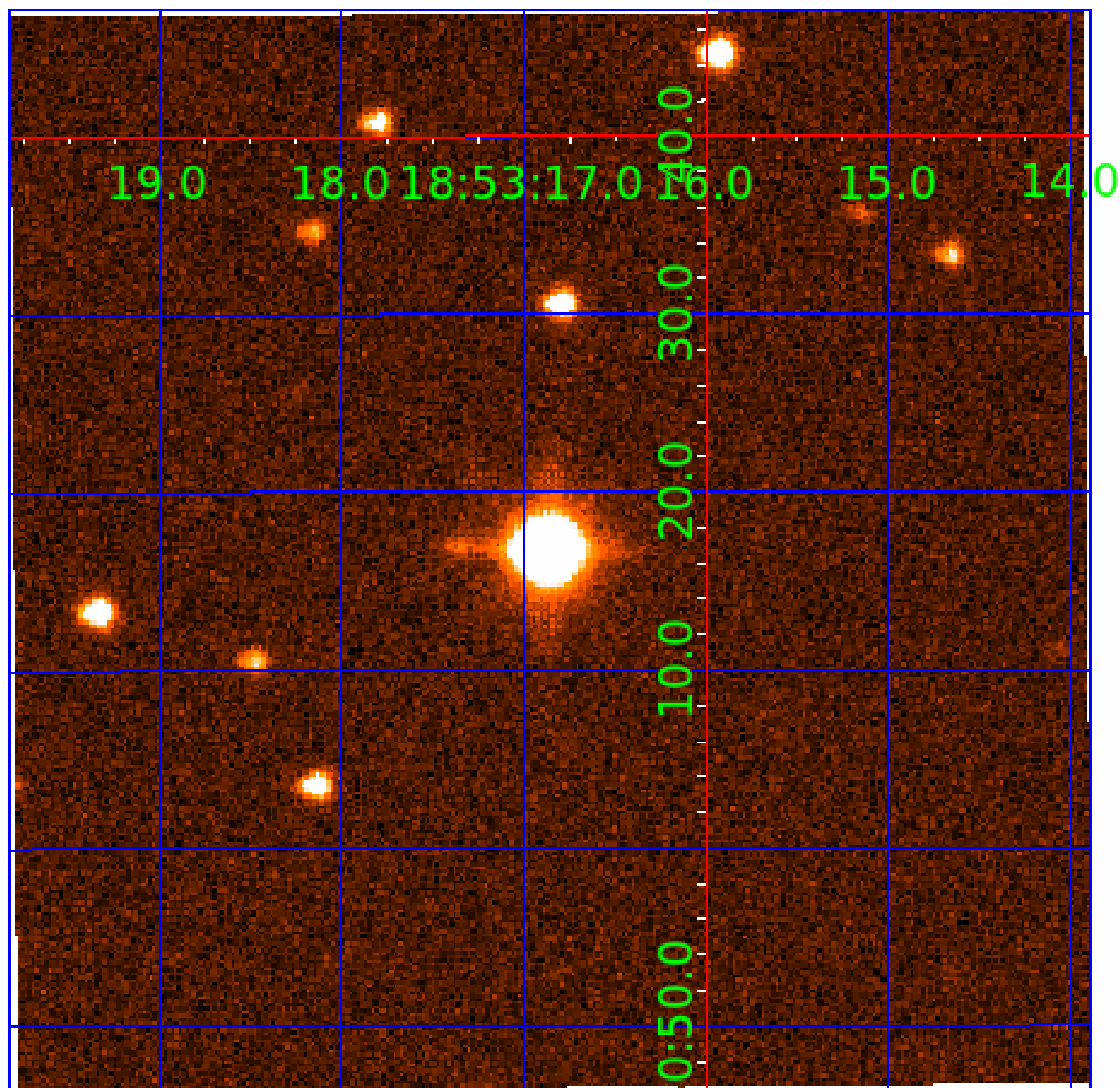


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009935422

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})
009935422-01	OBS	No	2.679006	133.156733	5.3	17.483	8.8	5.6	4.17	7202	1.09	18009.40
009935422-02	OBS	No	78.796943	133.714185	68.1	29.342	39.2	8.4	4.17	7202	3.74	198.36
009935422-03	OBS	No	74.775086	171.059174	145.0	27.461	22.0	15.1	4.17	7202	6.51	212.71
009935422-04	OBS	No	81.592655	208.305996	149.7	1.994	8.5	9.2	4.17	7202	6.02	189.35
009935422-05	OBS	No	62.724559	166.271539	103.0	2.464	7.9	7.7	4.17	7202	4.88	268.87
009935422-06	OBS	No	63.003490	183.025760	146.8	2.271	8.1	8.2	4.17	7202	5.86	267.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009935422-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009935422-02	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_FEW_MEAS
009935422-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009935422-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009935422-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009935422-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_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.

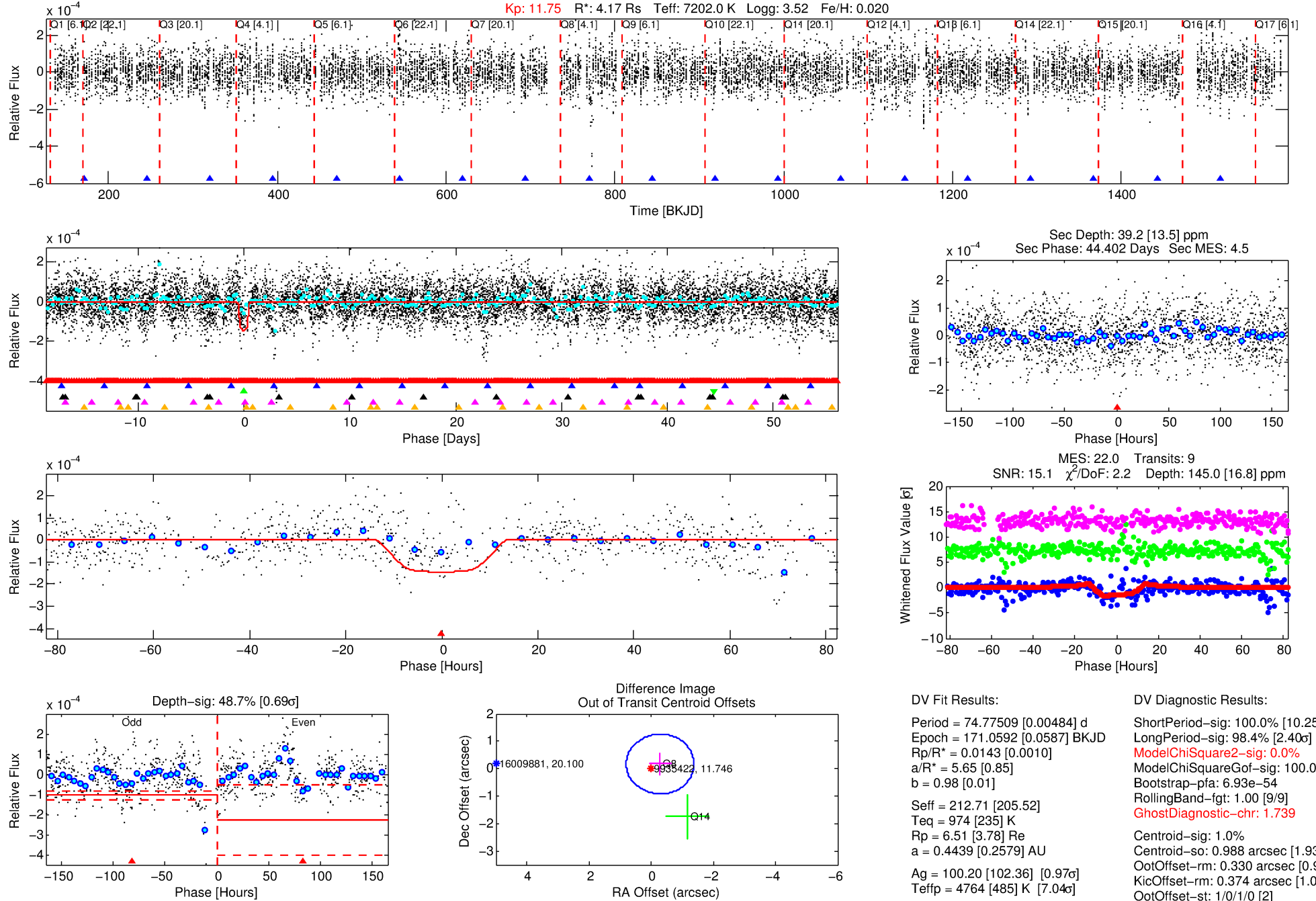
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009935422-03

No Significant Match Found

DV One-Page Summary

KIC: 9935422 Candidate: 3 of 6 Period: 74.775 d



DV Fit Results:

Period = 74.77509 [0.00484] d
Epoch = 171.0592 [0.0587] BKJD
Rp/R* = 0.0143 [0.0010]
a/R* = 5.65 [0.85]
b = 0.98 [0.01]
Seff = 212.71 [205.52]
Teq = 974 [235] K
Rp = 6.51 [3.78] Re
a = 0.4439 [0.2579] AU
Ag = 100.20 [102.36] [0.97σ]
Teffp = 4764 [485] K [7.04σ]

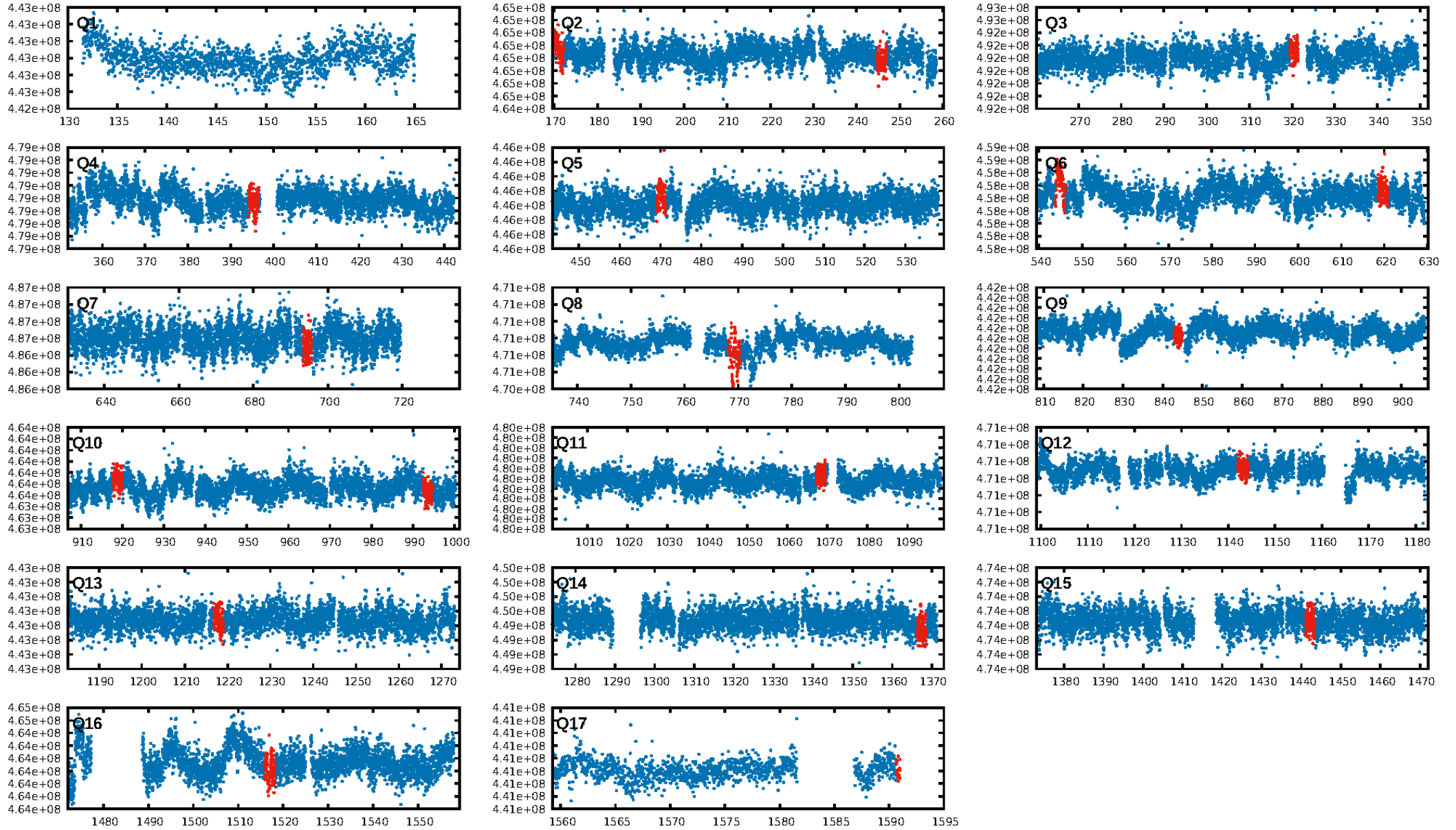
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [10.25σ]
LongPeriod-sig: 98.4% [2.40σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.93e-54
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 1.739
Centroid-sig: 1.0%
Centroid-so: 0.988 arcsec [1.93σ]
OotOffset-rm: 0.330 arcsec [0.91σ]
KicOffset-rm: 0.374 arcsec [1.06σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.00 [0/8]

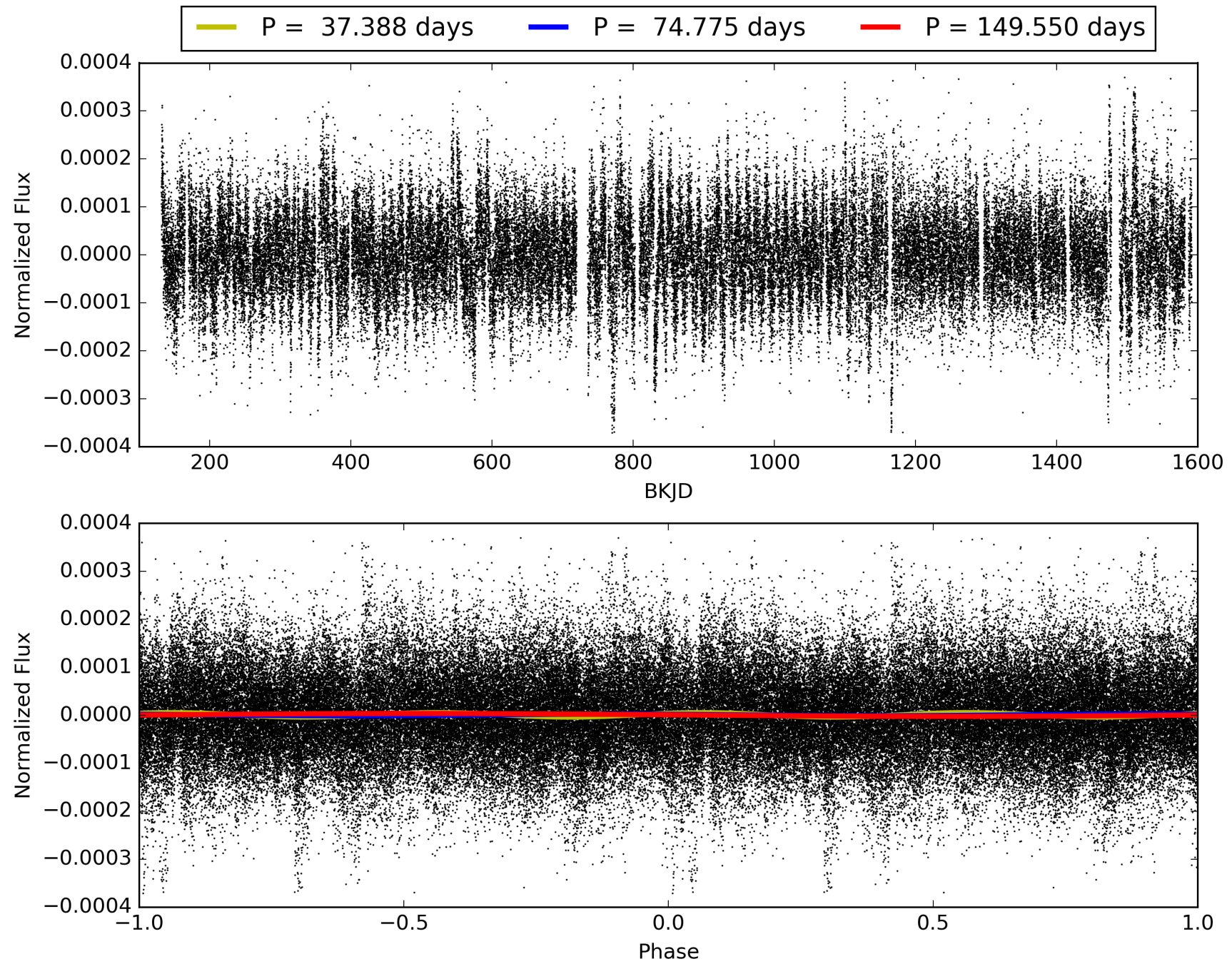
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:20:46 Z

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TCE 009935422-03, PDC Light Curves

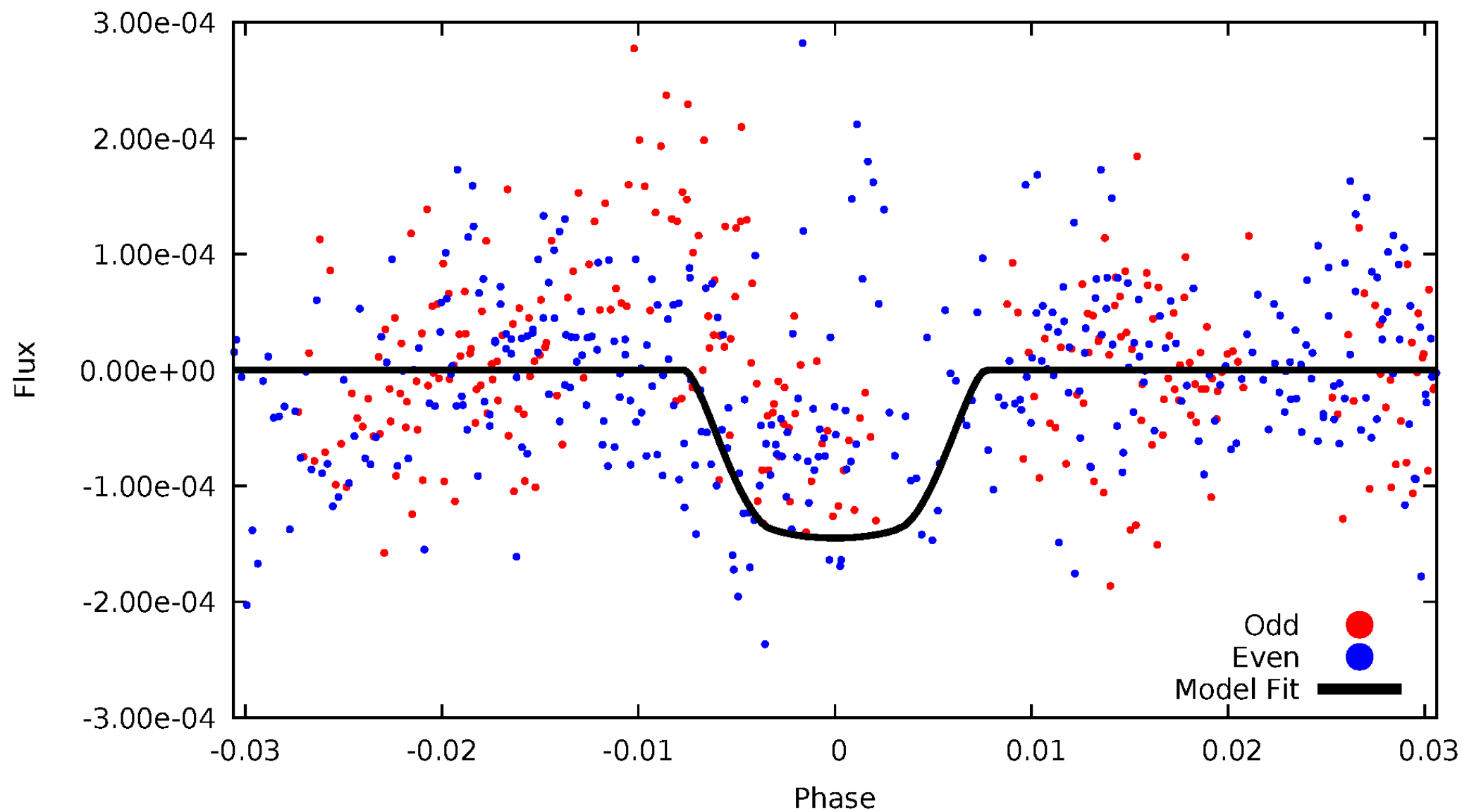


TCE 009935422-03



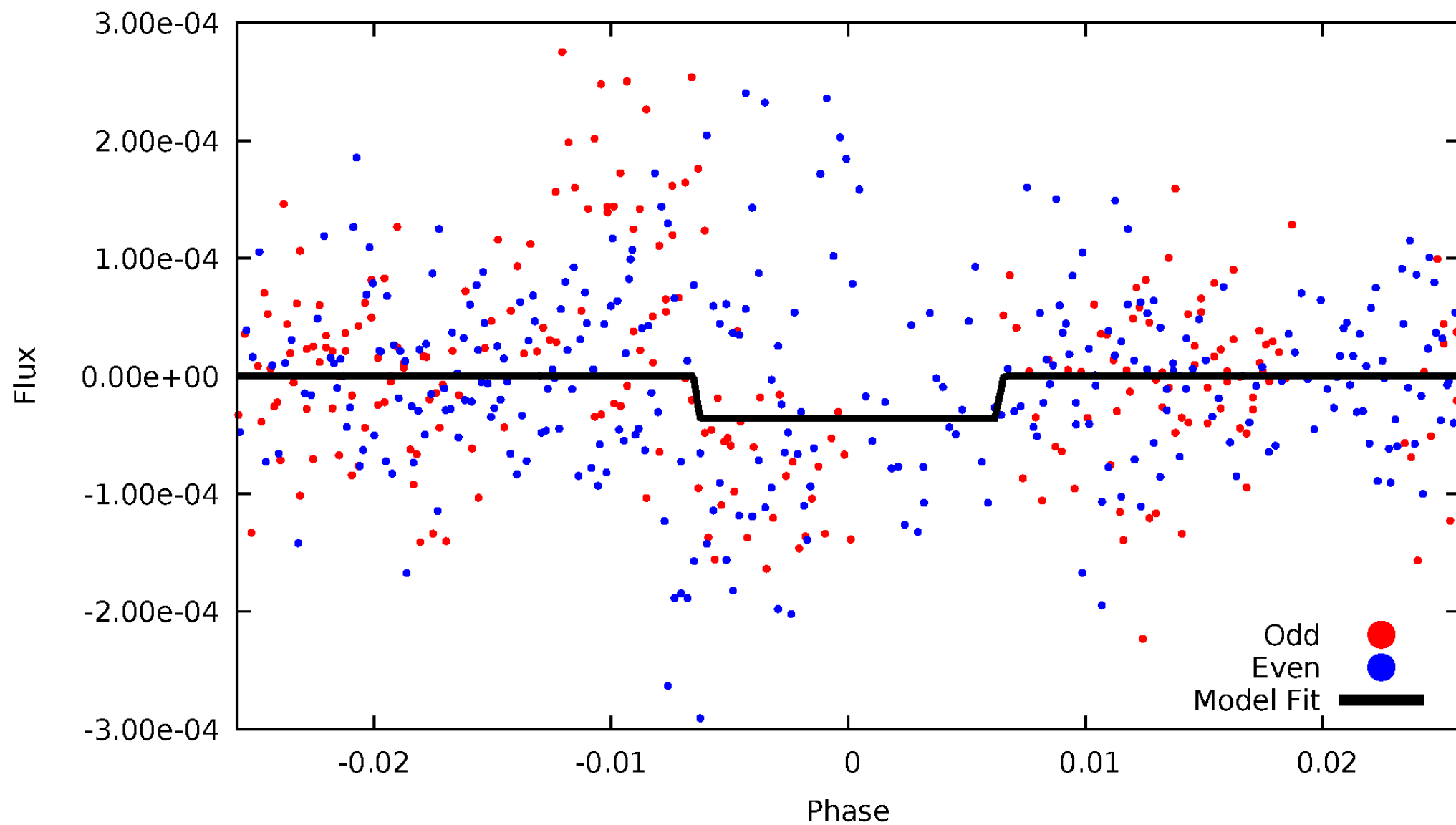
DV Odd/Even

TCE 009935422-03



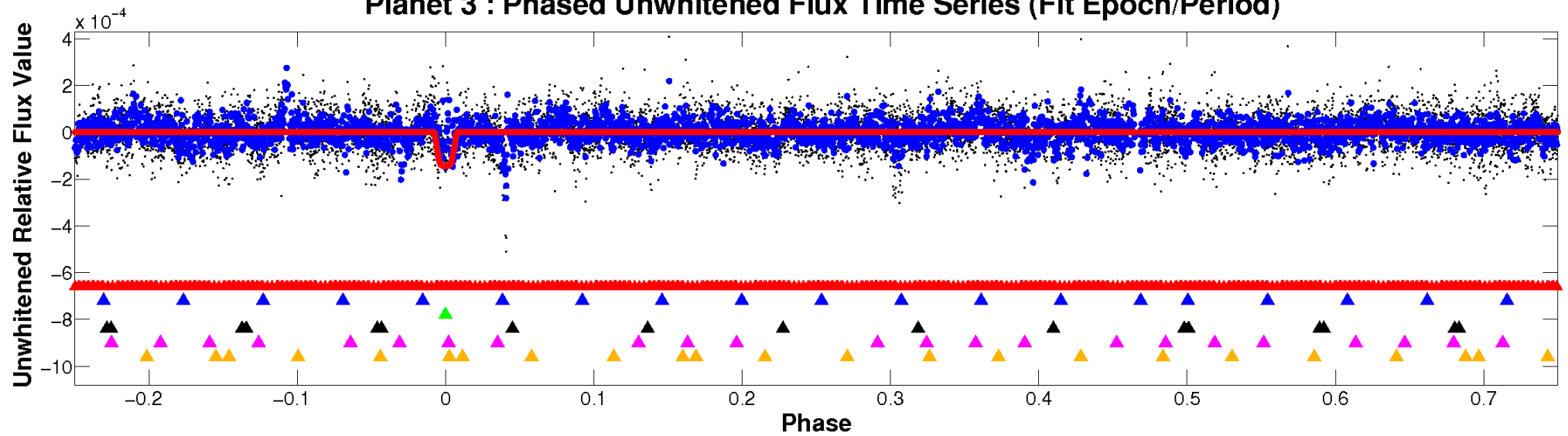
ALT Odd/Even

TCE 009935422-03

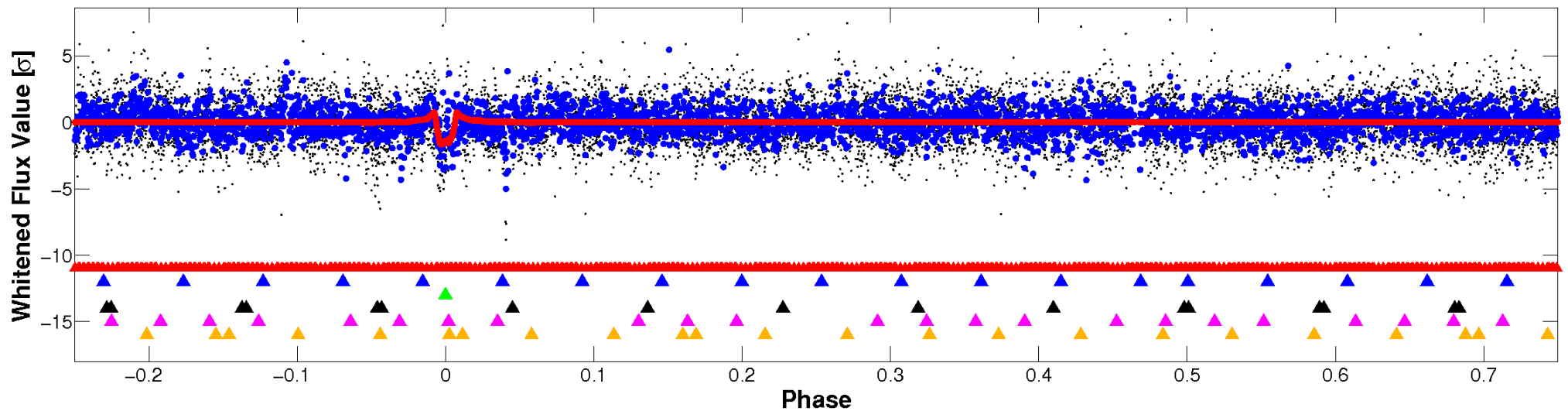


Non-Whitened Vs. Whitened Light Curve

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

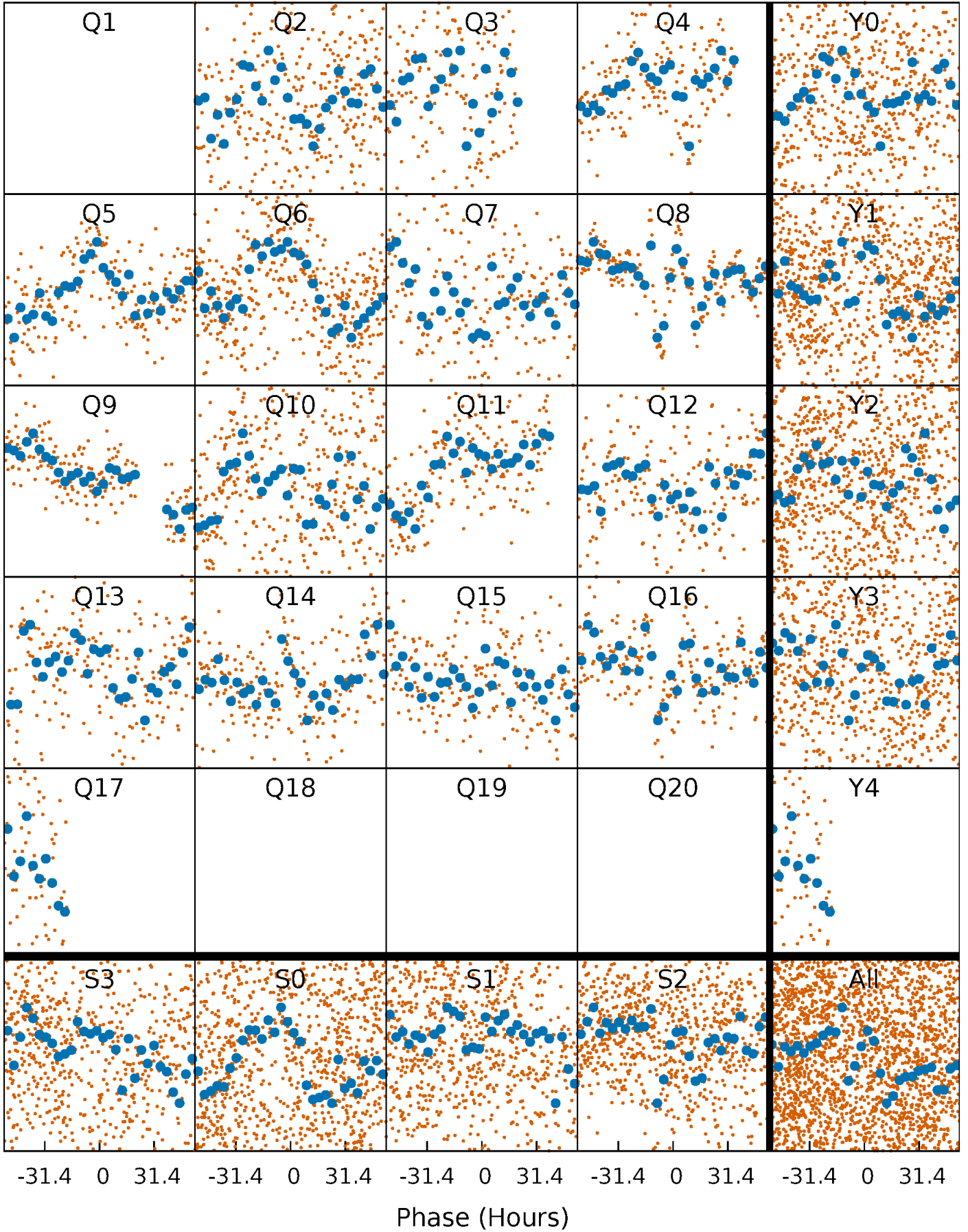


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



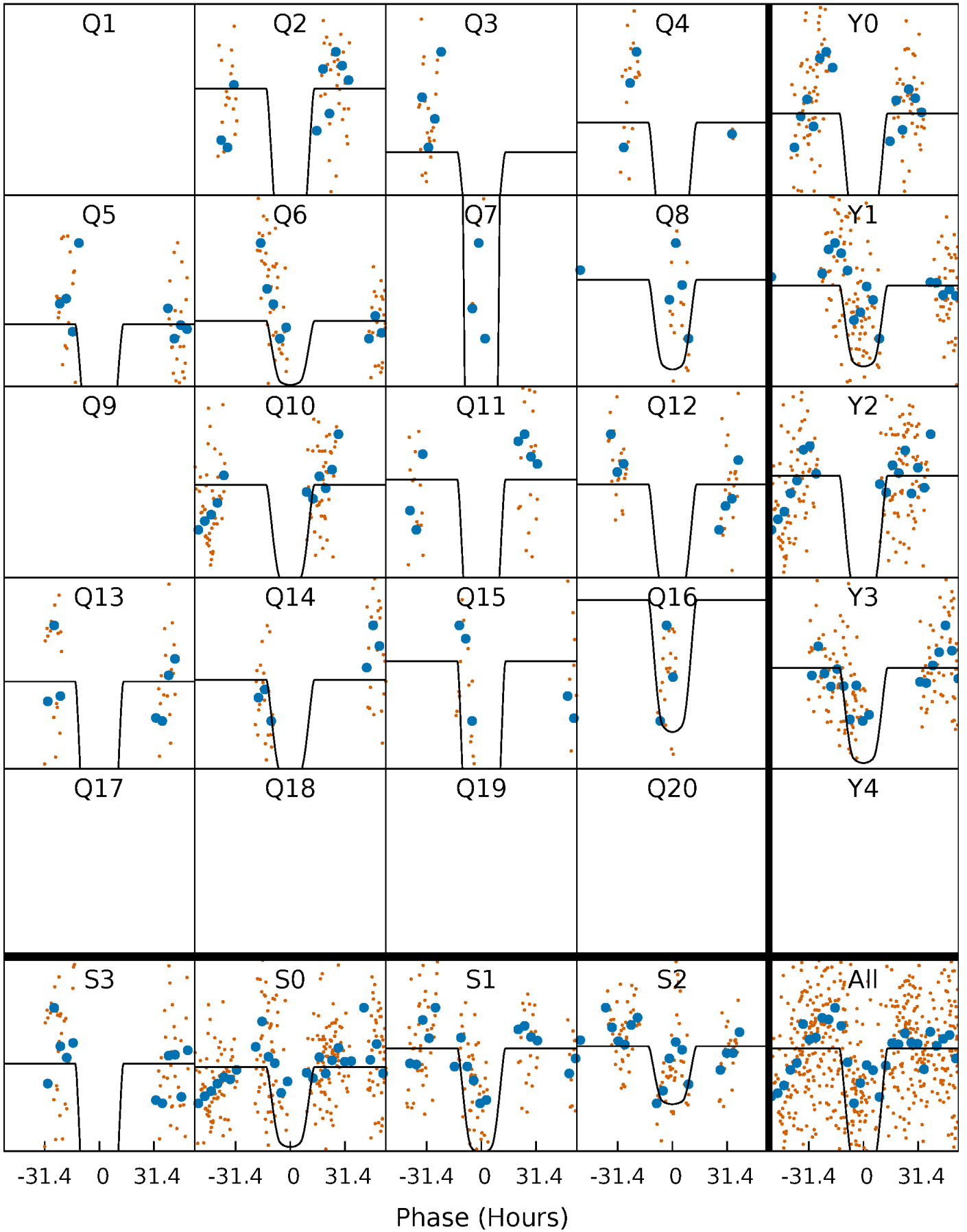
PDC Quarter-Phased Transit Curves

TCE 009935422-03 $P = 74.775086$ Days $T_0 = 171.059174$ (BKJD)



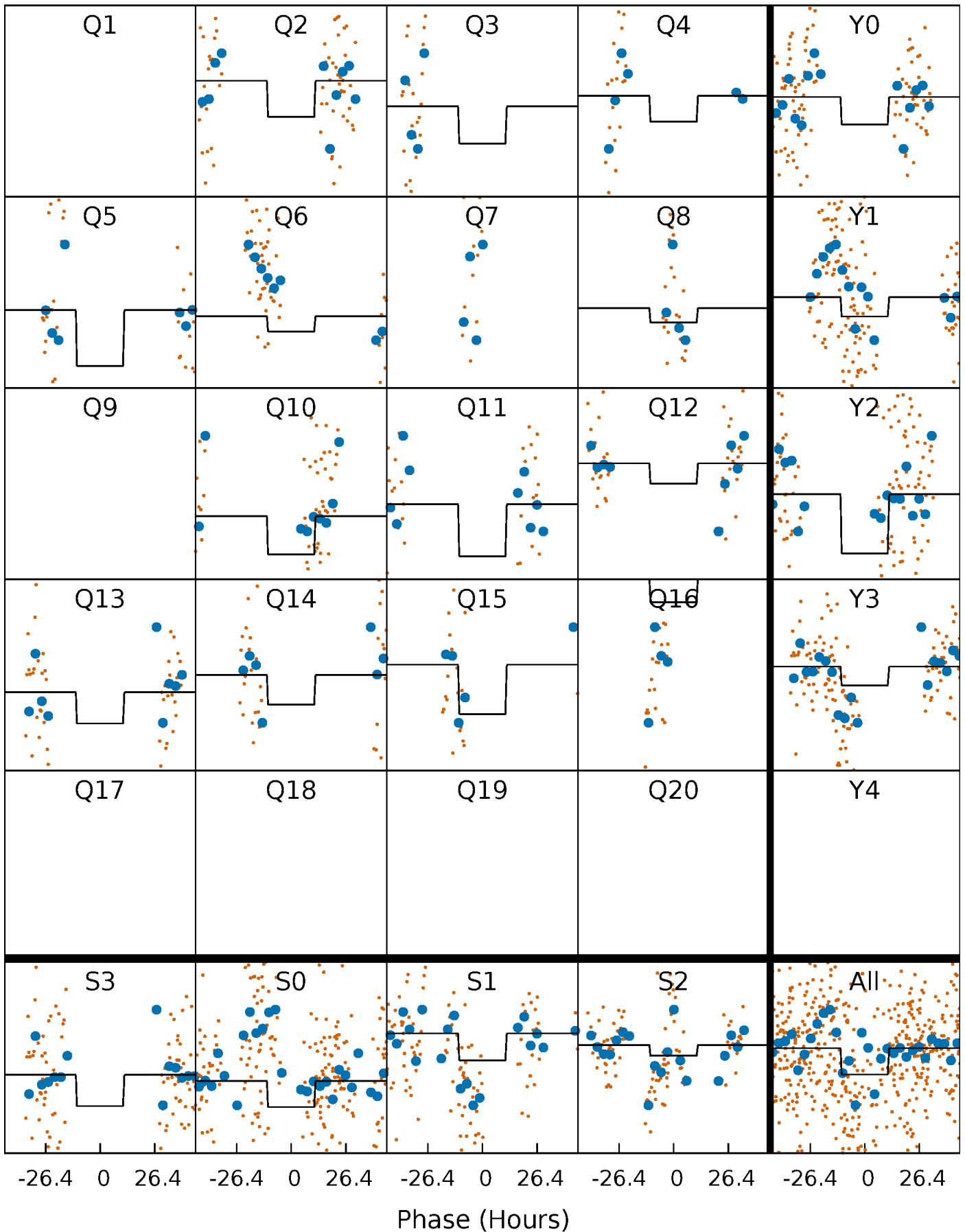
DV Quarter-Phased Transit Curves

TCE 009935422-03 P= 74.775086 Days $T_0=171.059174$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

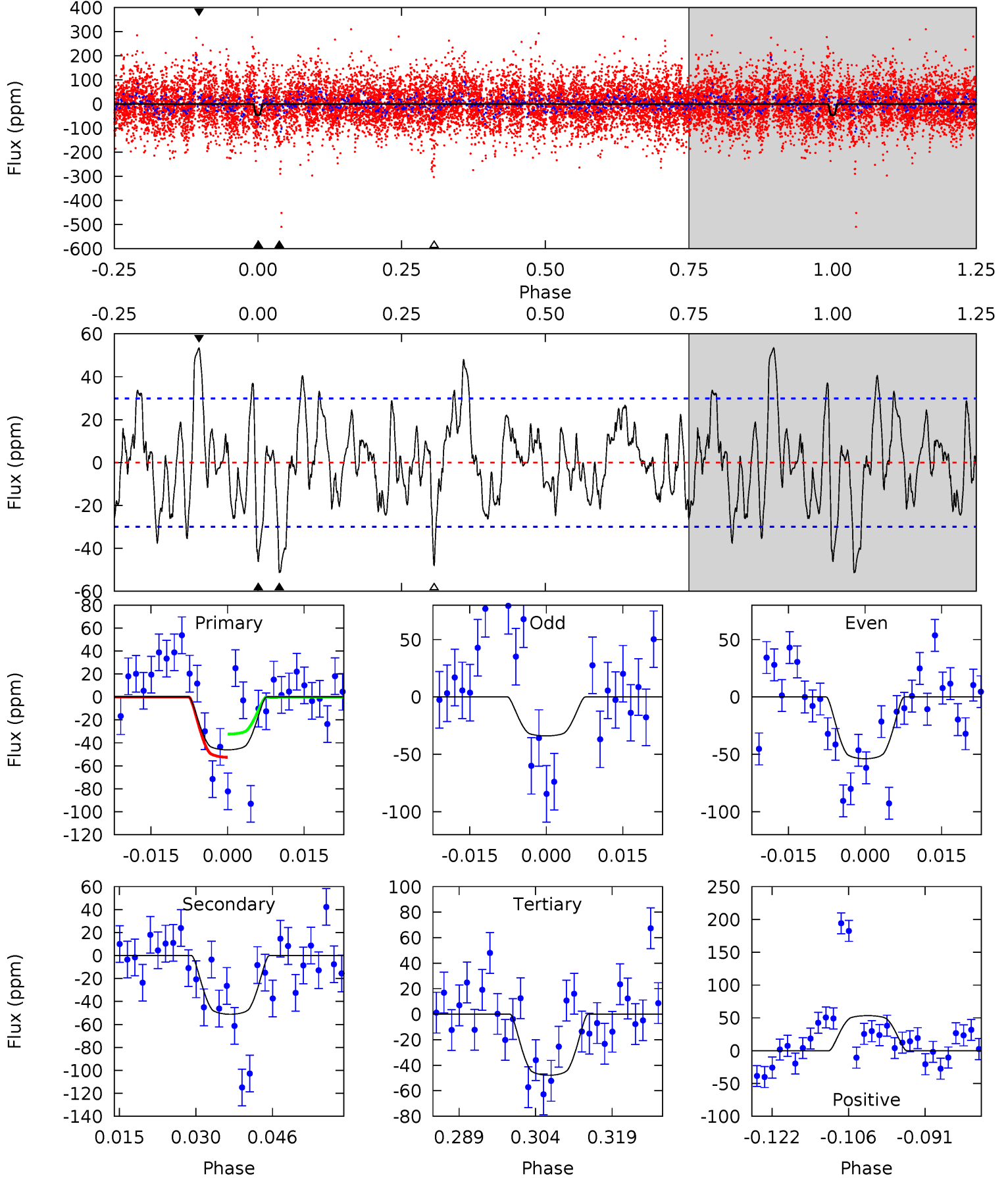
TCE 009935422-03 P= 74.779851 Days $T_0=171.173315$ (BKJD)



DV Model-Shift Uniqueness Test

009935422-03, P = 74.775086 Days, E = 96.284088 Days

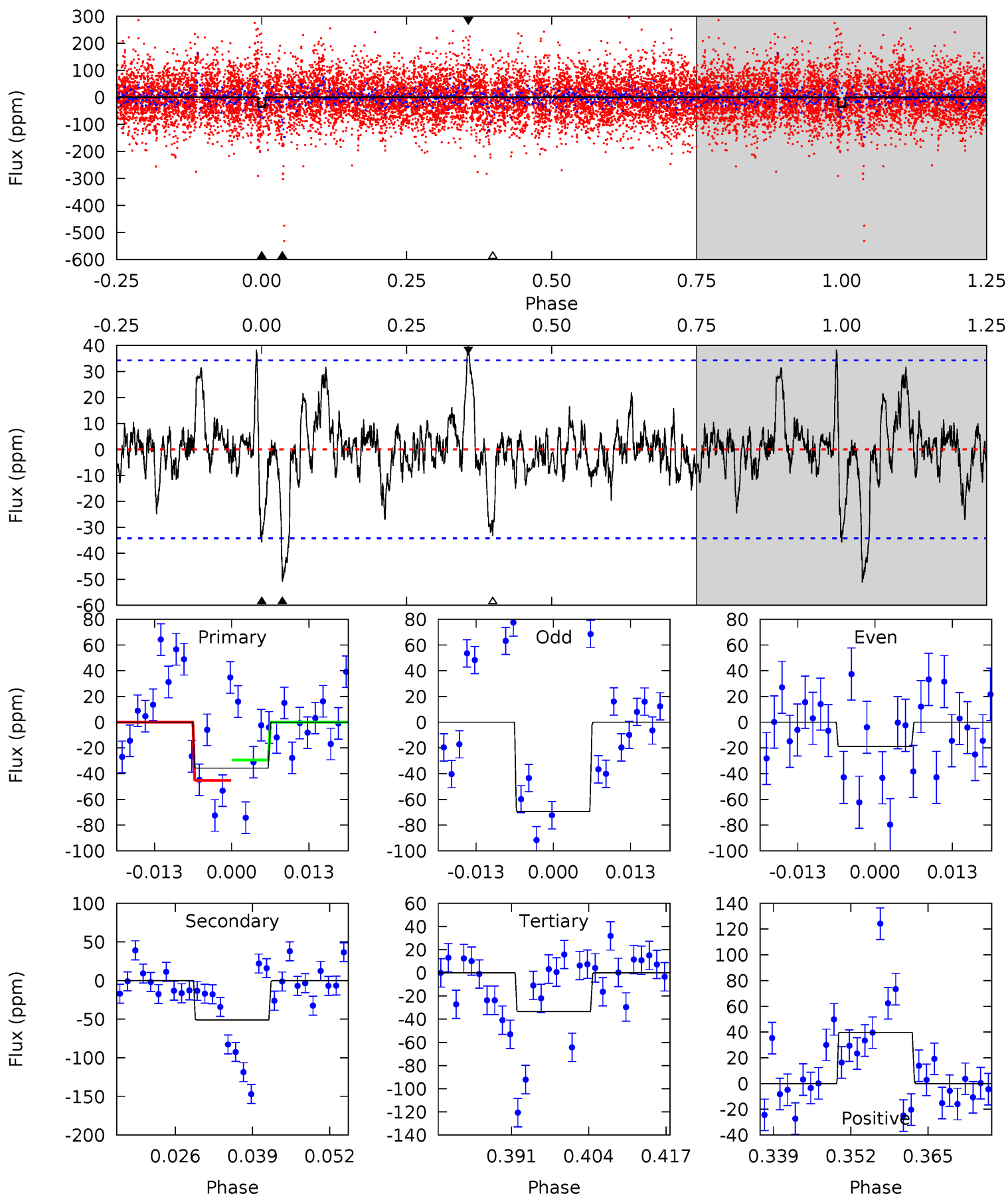
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.62	8.46	7.91	8.83	4.95	2.43	2.61	-0.29	-1.21	0.55	-0.37	1.61	-7.53	0.51	1.50



Alt Model-Shift Uniqueness Test

009935422-03, P = 74.779851 Days, E = 96.393464 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.19	7.38	4.84	5.76	4.98	2.48	1.26	0.35	-0.57	2.54	1.62	3.45	0.11	0.44	1.01



Stellar Parameters For KIC 009935422

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7202^{+225}_{-300}	$3.517^{+0.567}_{-0.063}$	$0.020^{+0.200}_{-0.300}$	$4.170^{+0.401}_{-2.408}$	$2.087^{+0.144}_{-0.575}$	$0.041^{+0.304}_{-0.008}$
	+3%/-4%	+16%/-2%	+1000%/-1500%	+10%/-58%	+7%/-28%	+750%/-19%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009935422-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-51 ± 6	$6.04^{+0.90}_{-1.78}$	1307^{+95}_{-196}	5103^{+238}_{-238}	155^{+139}_{-41}
Alt.	-51 ± 7	$2.42^{+0.64}_{-0.76}$	1299^{+96}_{-199}	7899^{+1109}_{-795}	936^{+940}_{-362}

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

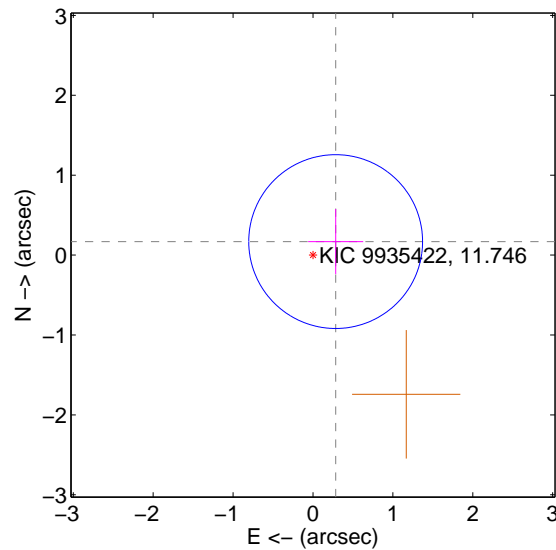
Supplemental centroid analysis for 009935422-03. **Kepler magnitude: 11.75.** Transit SNR 15.11

There are 1 quarters with good PRF difference image offsets

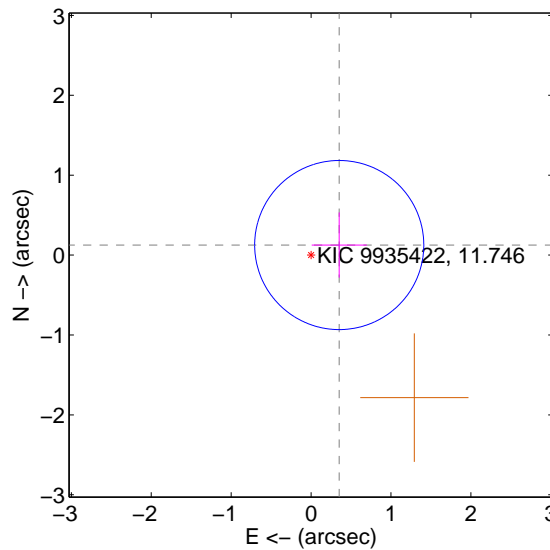
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.330 ± 0.363	0.91	-0.284 ± 0.345	0.169 ± 0.408
PRF-fit source offset from KIC position	0.374 ± 0.353	1.06	-0.352 ± 0.345	0.126 ± 0.408
photometric centroid source offset	0.99 ± 0.51	1.93	-0.77 ± 0.54	0.61 ± 0.47

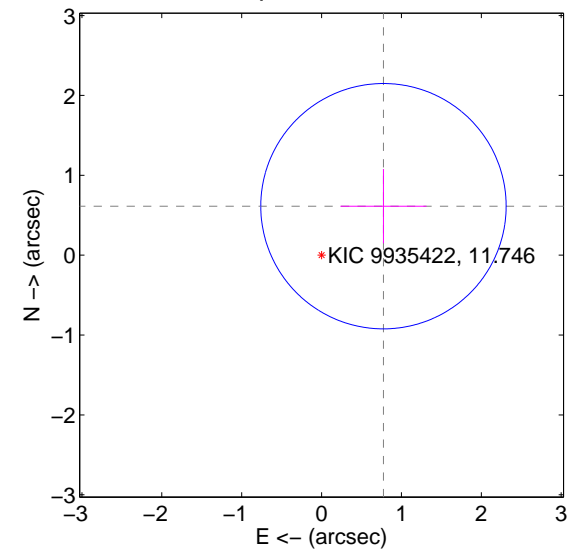
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

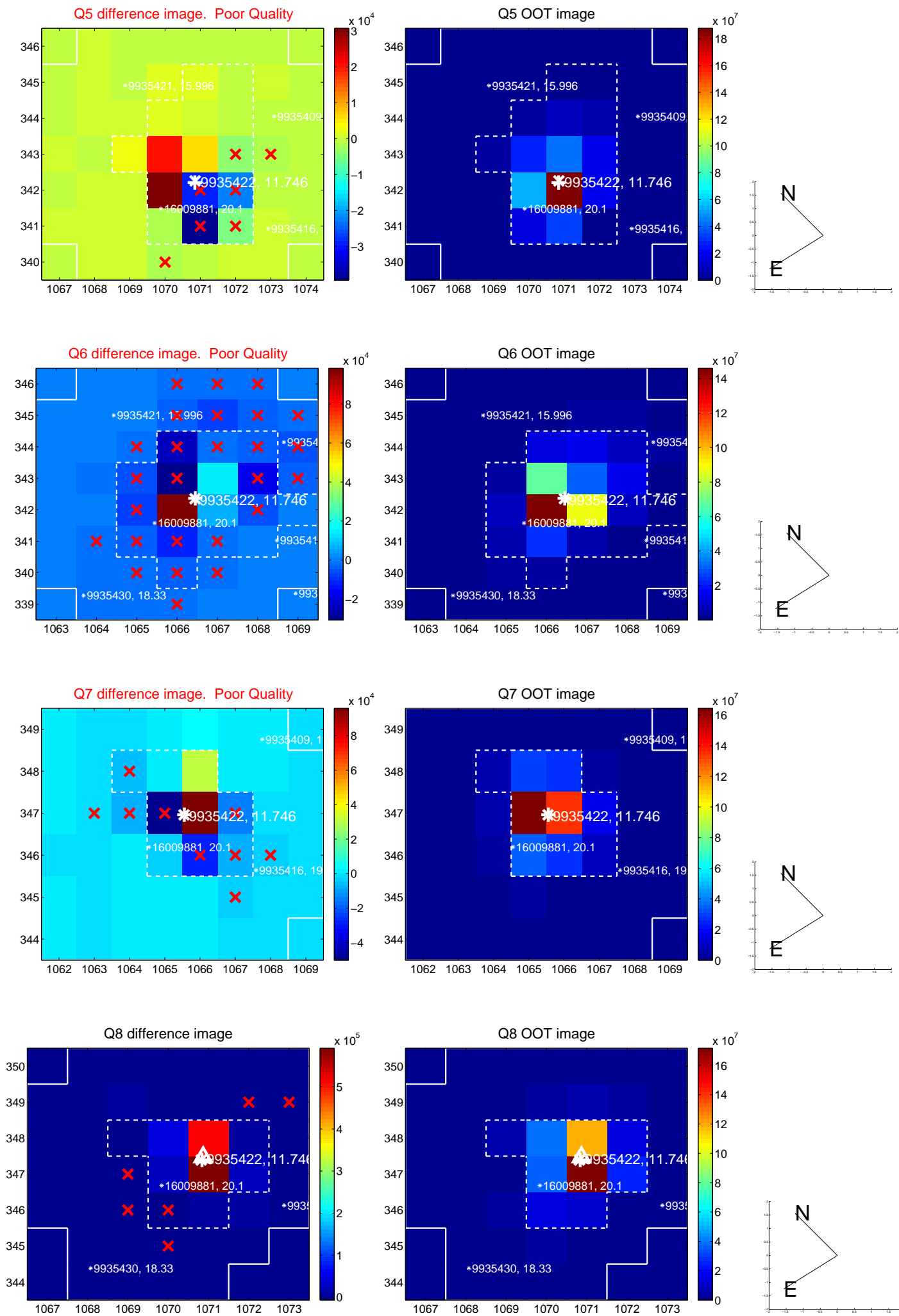


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

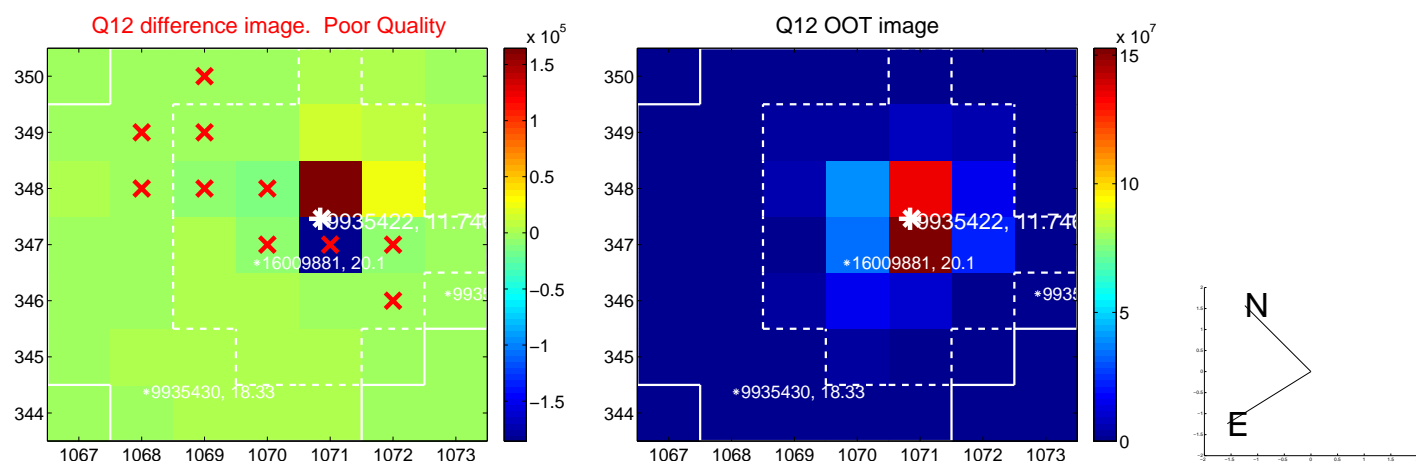
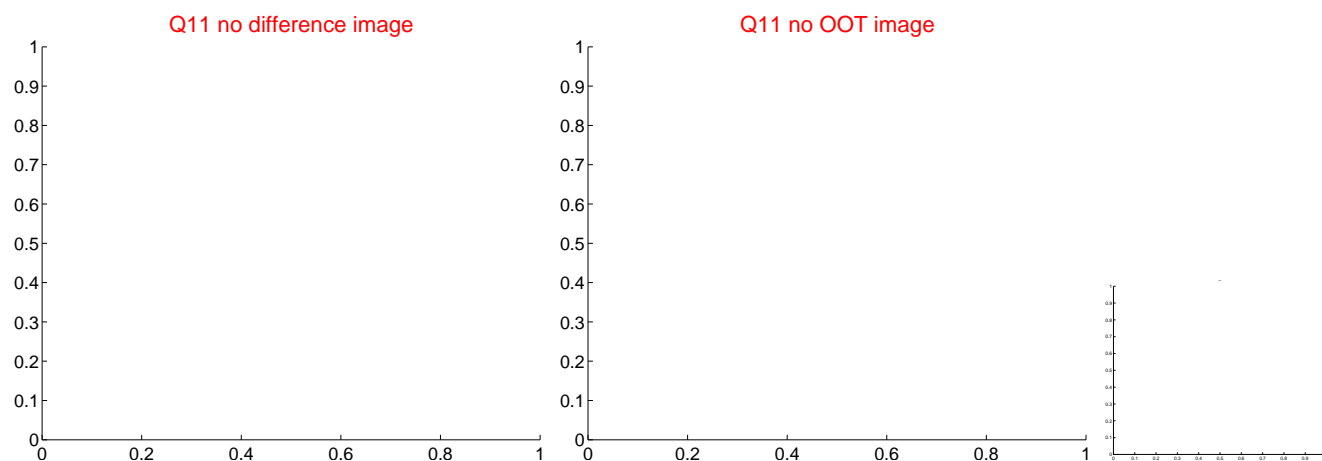
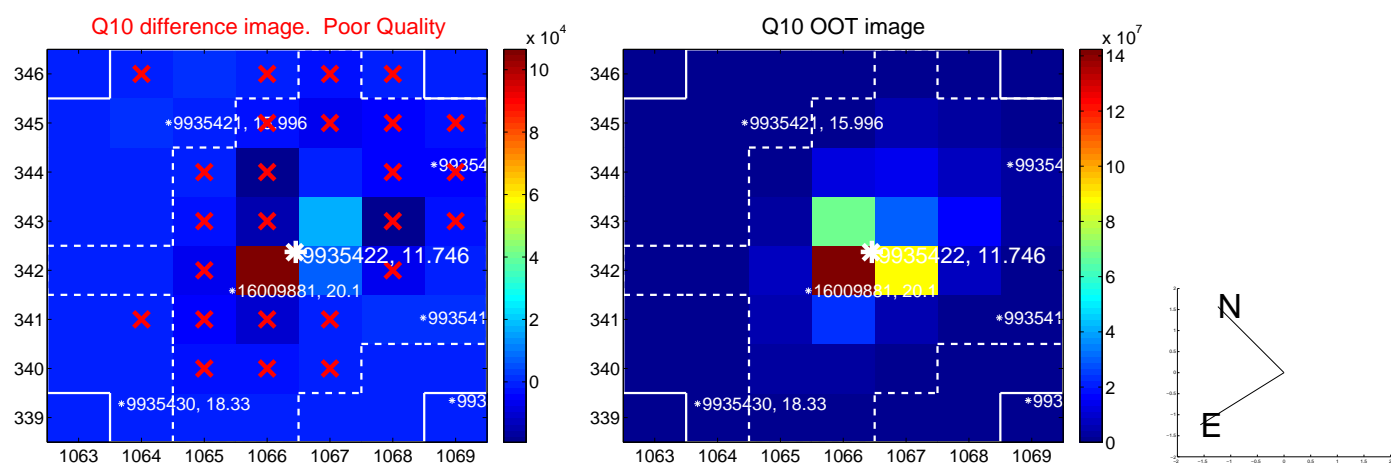
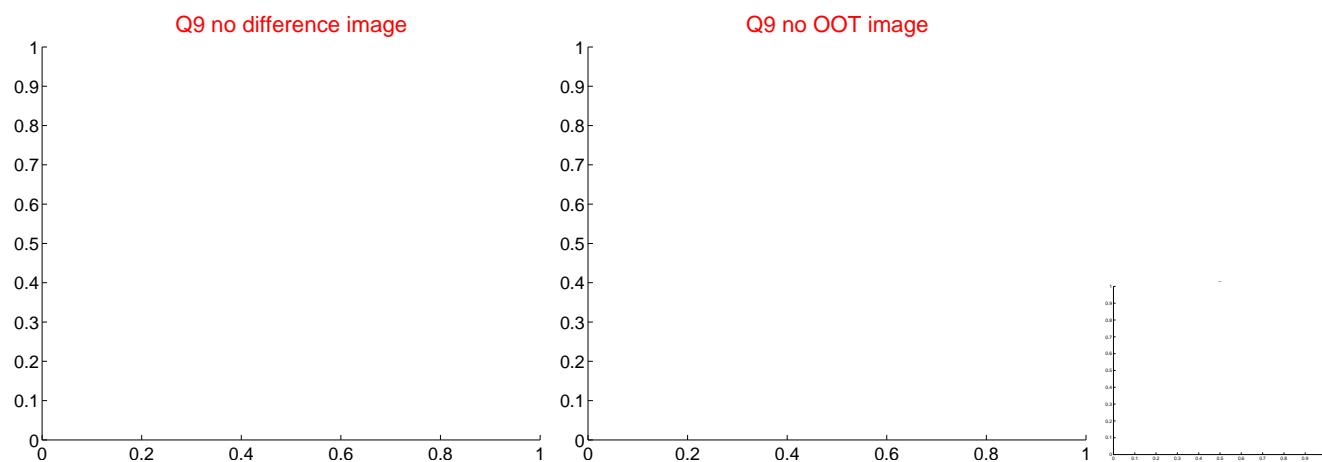
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.

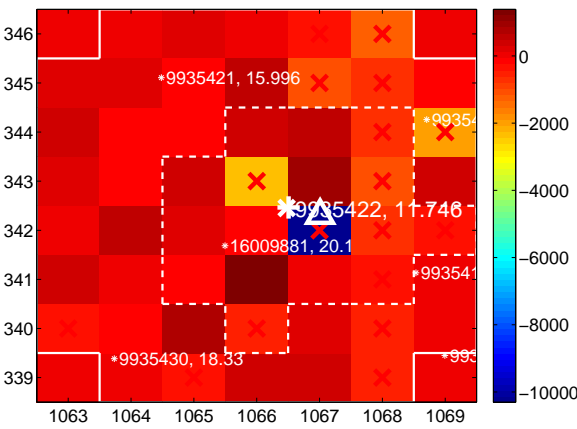
Q13 no difference image



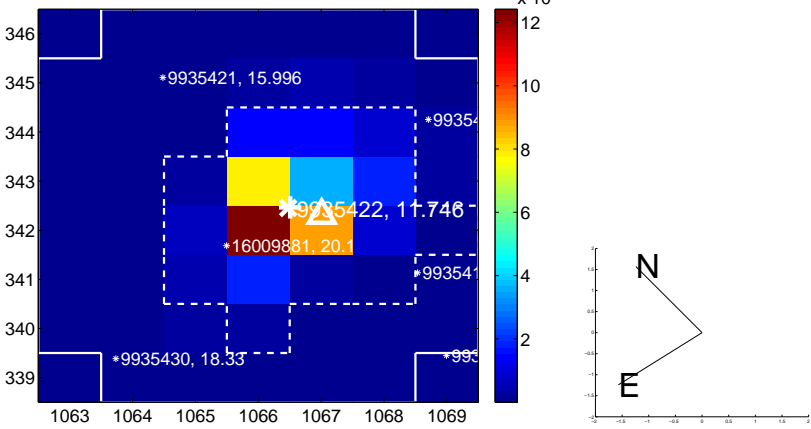
Q13 no OOT image



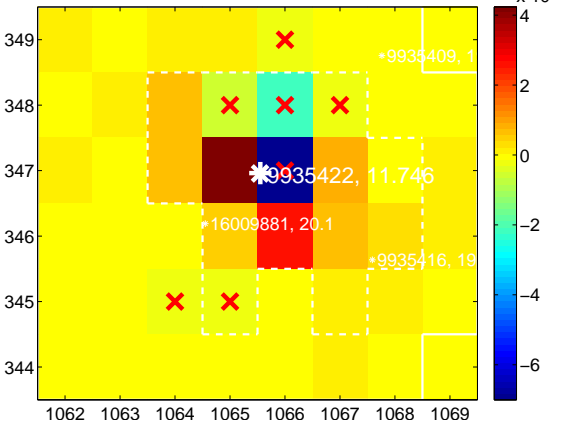
Q14 difference image. Poor Quality



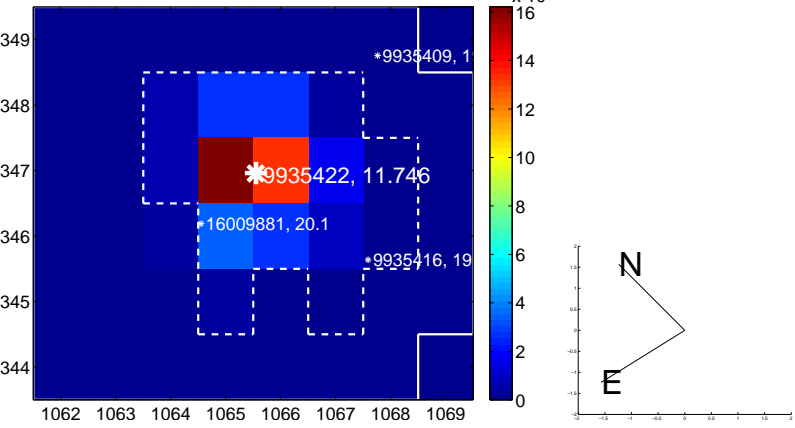
Q14 OOT image



Q15 difference image. Poor Quality



Q15 OOT image



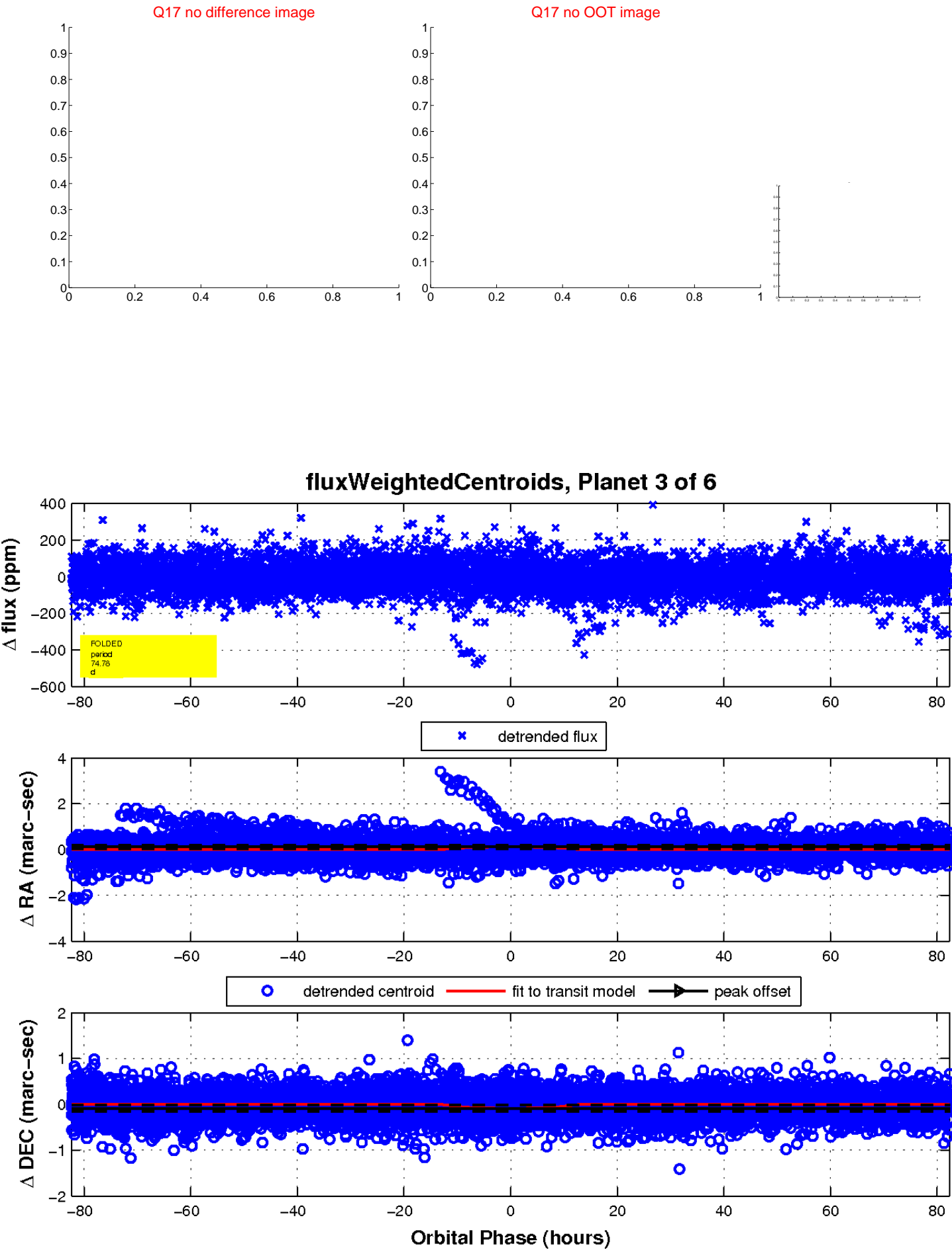
Q16 no difference image



Q16 no OOT image

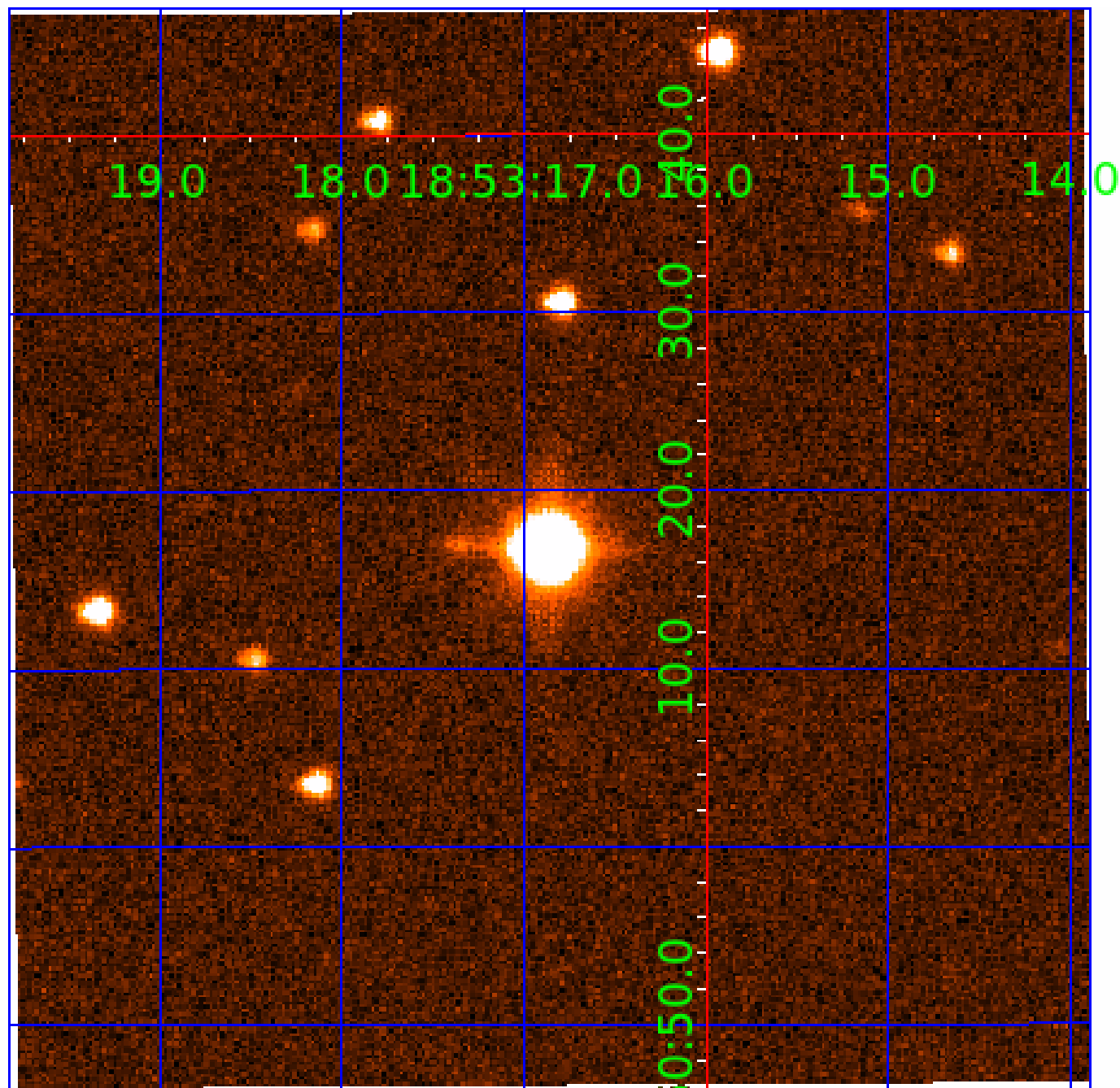


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009935422

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})
009935422-01	OBS	No	2.679006	133.156733	5.3	17.483	8.8	5.6	4.17	7202	1.09	18009.40
009935422-02	OBS	No	78.796943	133.714185	68.1	29.342	39.2	8.4	4.17	7202	3.74	198.36
009935422-03	OBS	No	74.775086	171.059174	145.0	27.461	22.0	15.1	4.17	7202	6.51	212.71
009935422-04	OBS	No	81.592655	208.305996	149.7	1.994	8.5	9.2	4.17	7202	6.02	189.35
009935422-05	OBS	No	62.724559	166.271539	103.0	2.464	7.9	7.7	4.17	7202	4.88	268.87
009935422-06	OBS	No	63.003490	183.025760	146.8	2.271	8.1	8.2	4.17	7202	5.86	267.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009935422-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009935422-02	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_FEW_MEAS
009935422-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009935422-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009935422-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009935422-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_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.

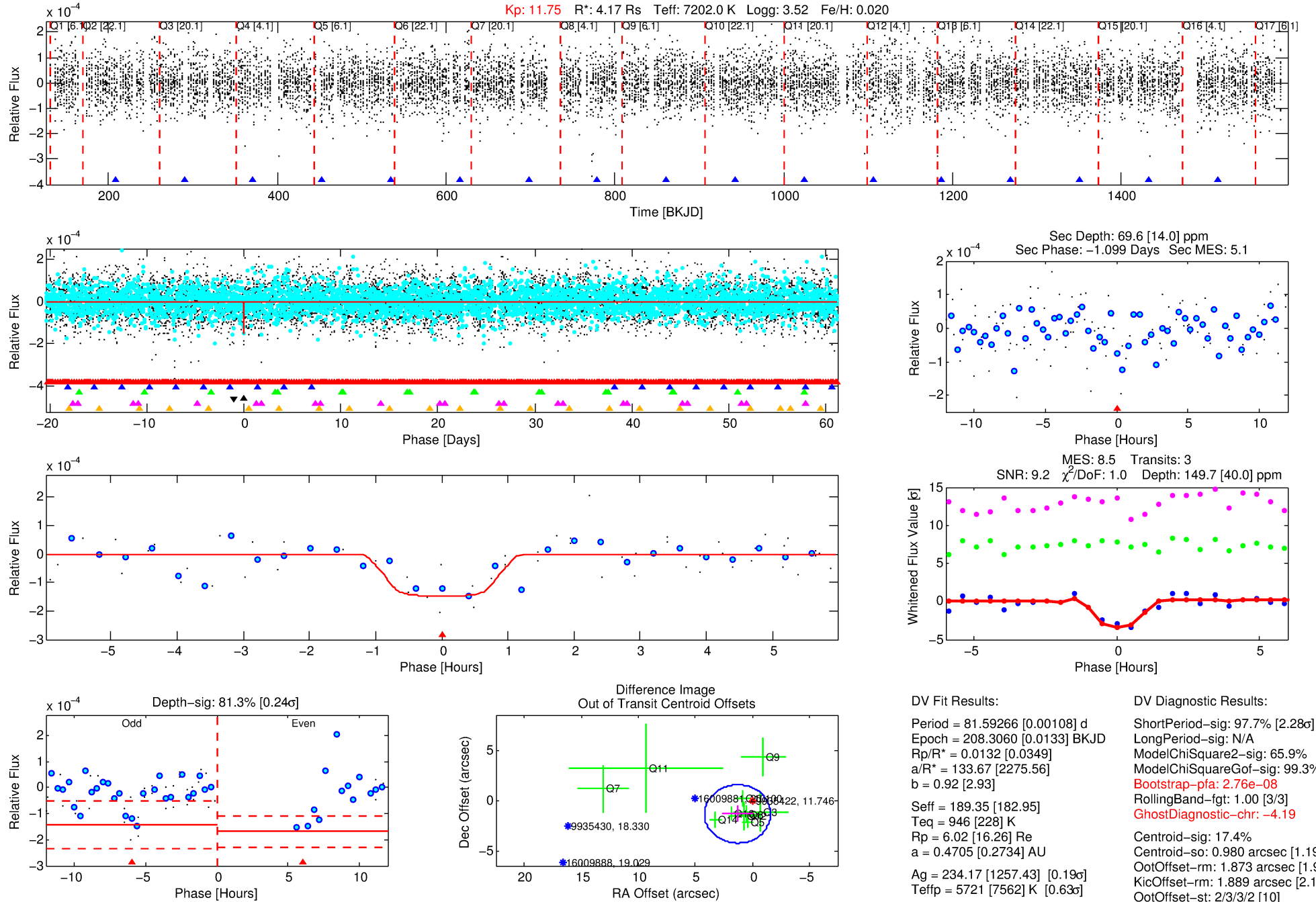
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009935422-04

No Significant Match Found

DV One-Page Summary

KIC: 9935422 Candidate: 4 of 6 Period: 81.593 d



DV Fit Results:

Period = 81.59266 [0.00108] d
Epoch = 208.3060 [0.0133] BKJD
Rp/R* = 0.0132 [0.0349]
a/R* = 133.67 [2275.56]
b = 0.92 [2.93]
Seff = 189.35 [182.95]
Teq = 946 [228] K
Rp = 6.02 [16.26] Re
a = 0.4705 [0.2734] AU
Ag = 234.17 [1257.43] [0.19σ]
Teffp = 5721 [7562] K [0.63σ]

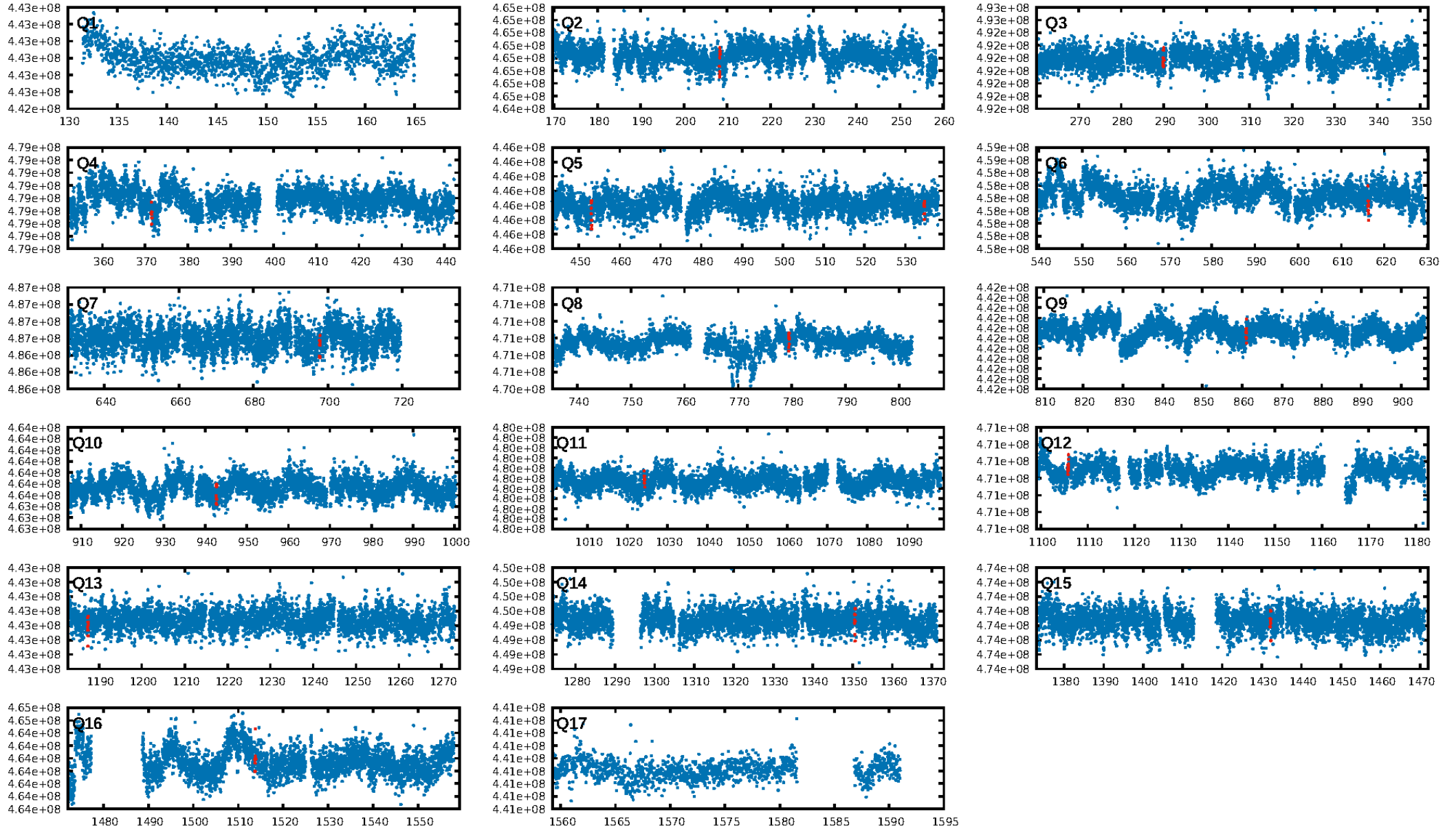
DV Diagnostic Results:

ShortPeriod-sig: 97.7% [2.28σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 65.9%
ModelChiSquareGof-sig: 99.3%
Bootstrap-pfa: 2.76e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -4.19
Centroid-sig: 17.4%
Centroid-so: 0.980 arcsec [1.19σ]
OotOffset-rm: 1.873 arcsec [1.94σ]
KicOffset-rm: 1.889 arcsec [2.19σ]
OotOffset-st: 2/3/3/2 [10]
KicOffset-st: 2/3/3/2 [10]
DiffImageQuality-fgm: 0.30 [3/10]
DiffImageOverlap-fno: 0.57 [8/14]

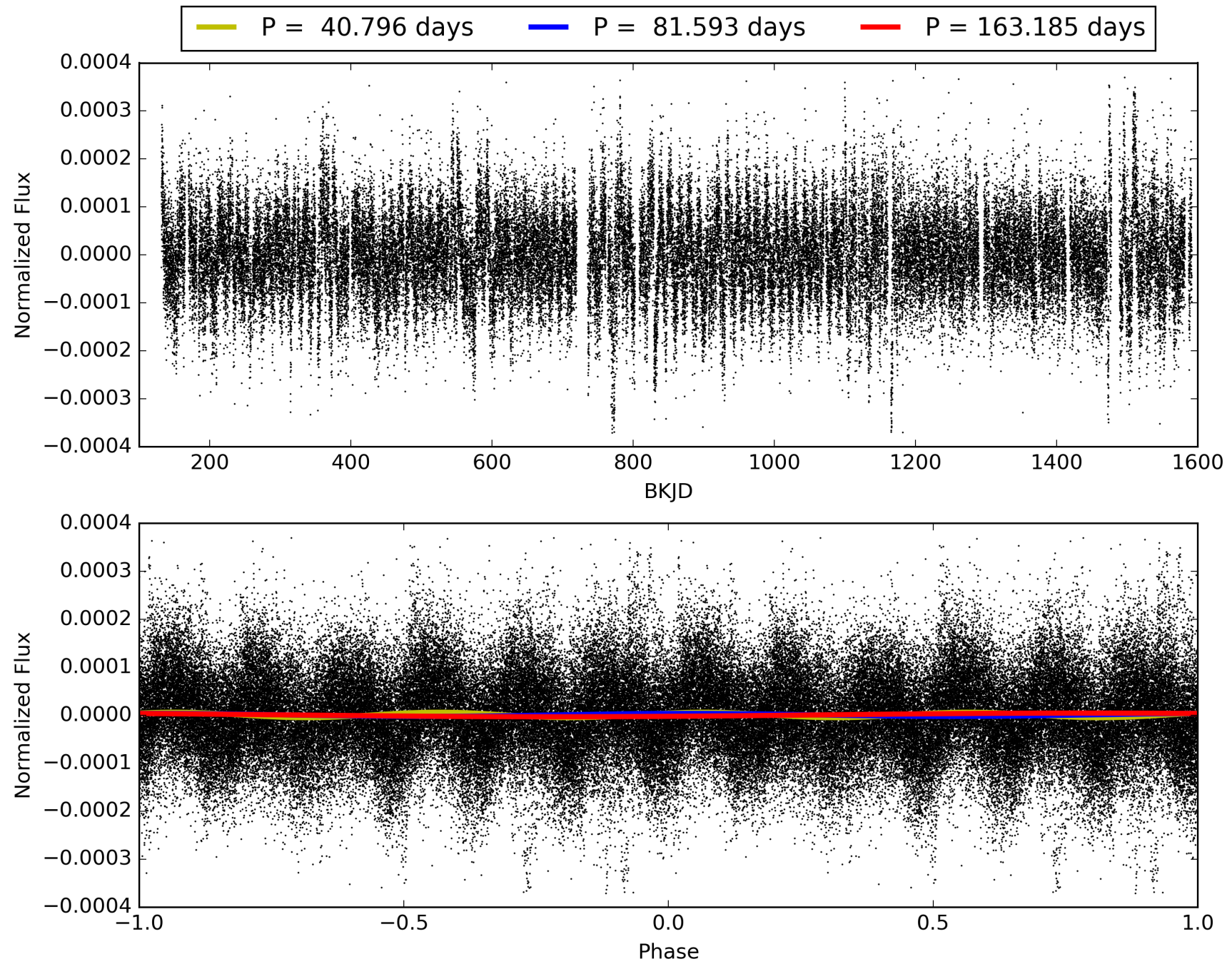
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:20:50 Z

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

TCE 009935422-04, PDC Light Curves

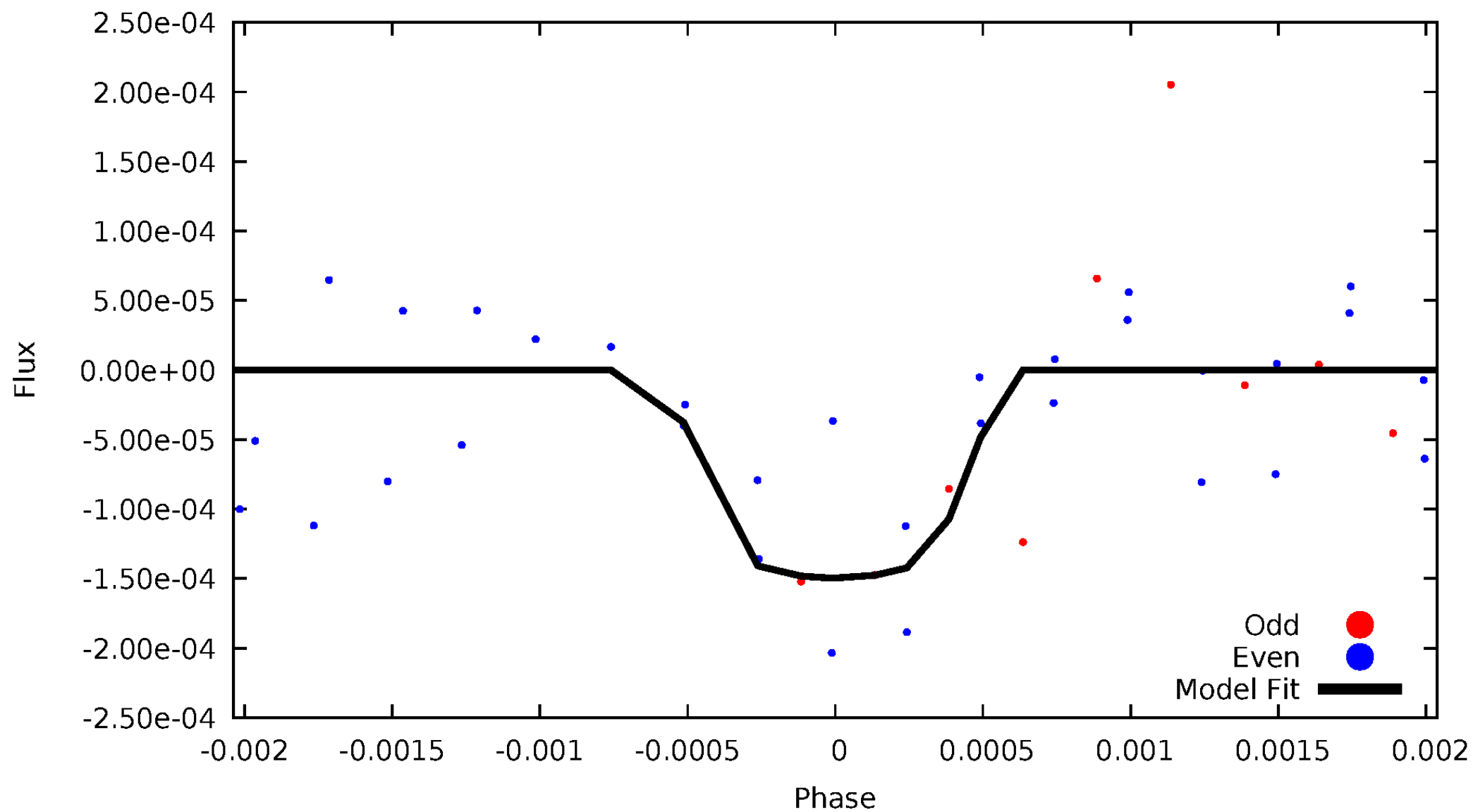


TCE 009935422-04



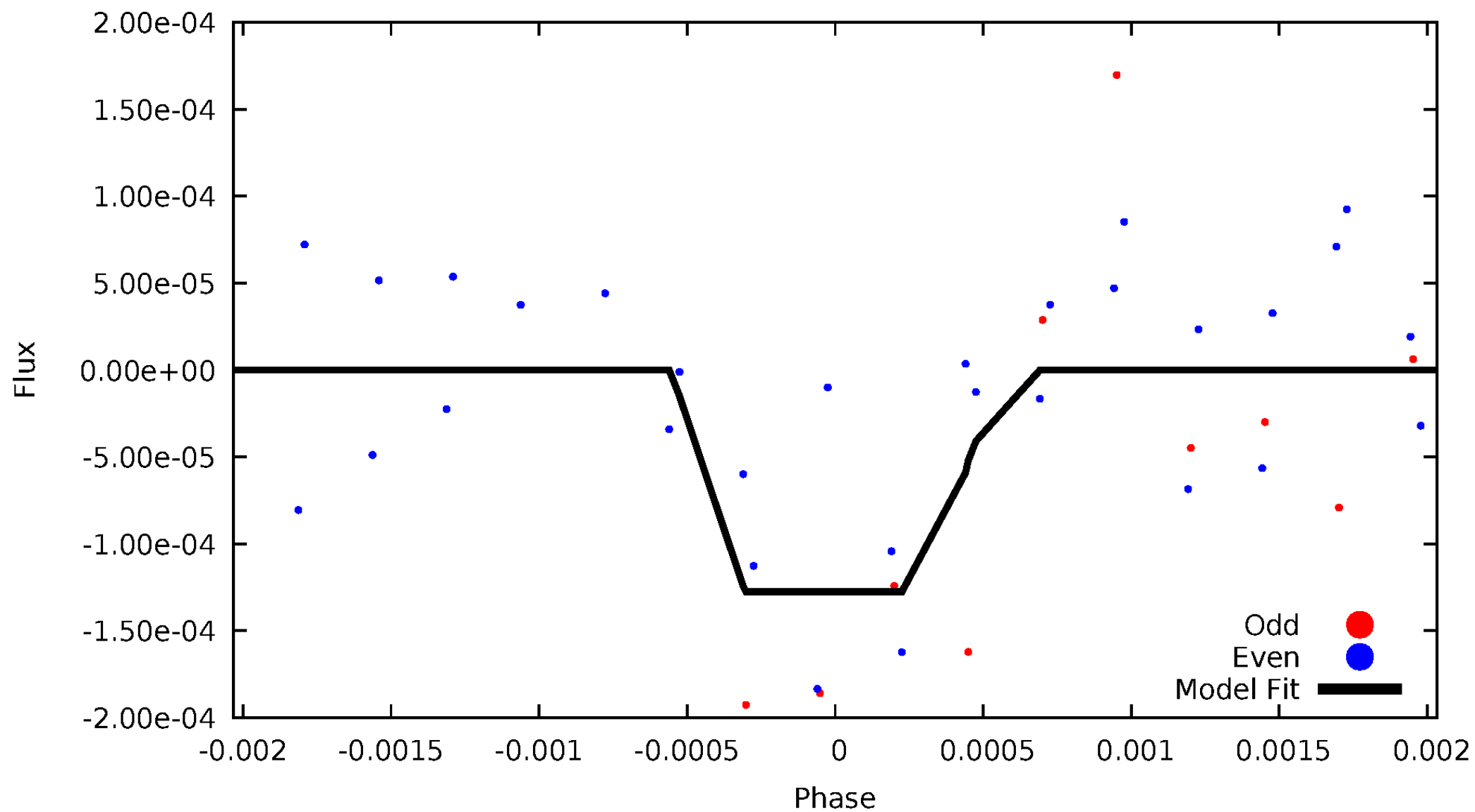
DV Odd/Even

TCE 009935422-04



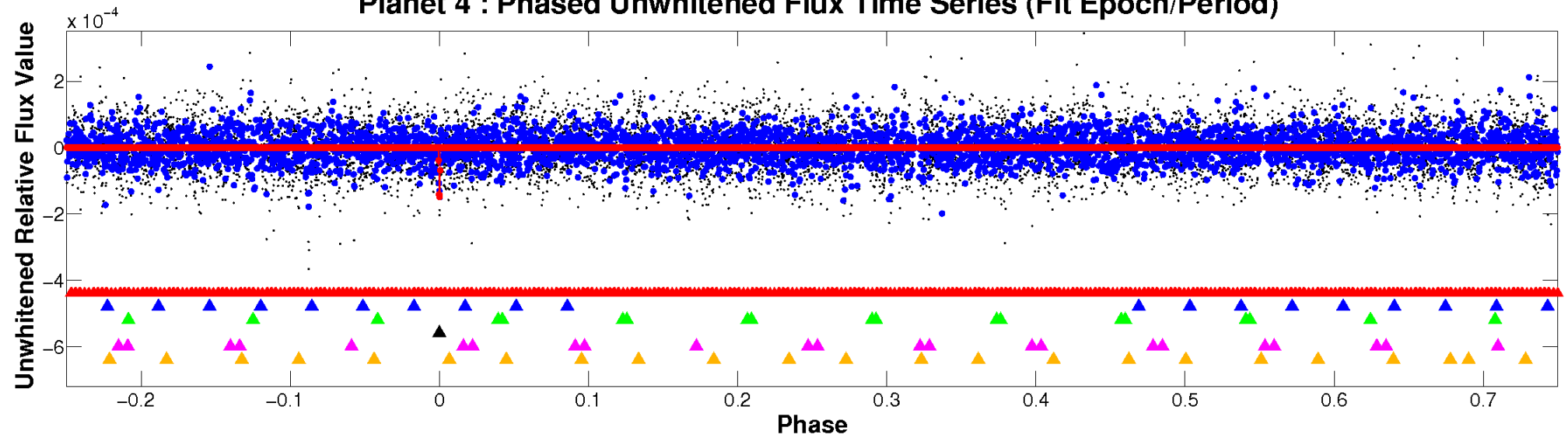
ALT Odd/Even

TCE 009935422-04

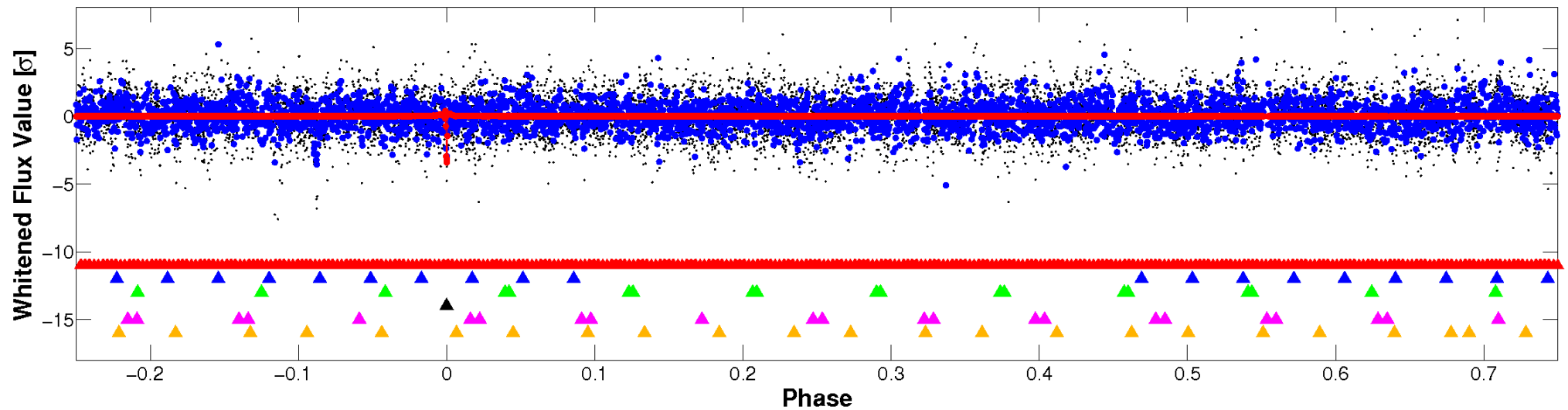


Non-Whitened Vs. Whitened Light Curve

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

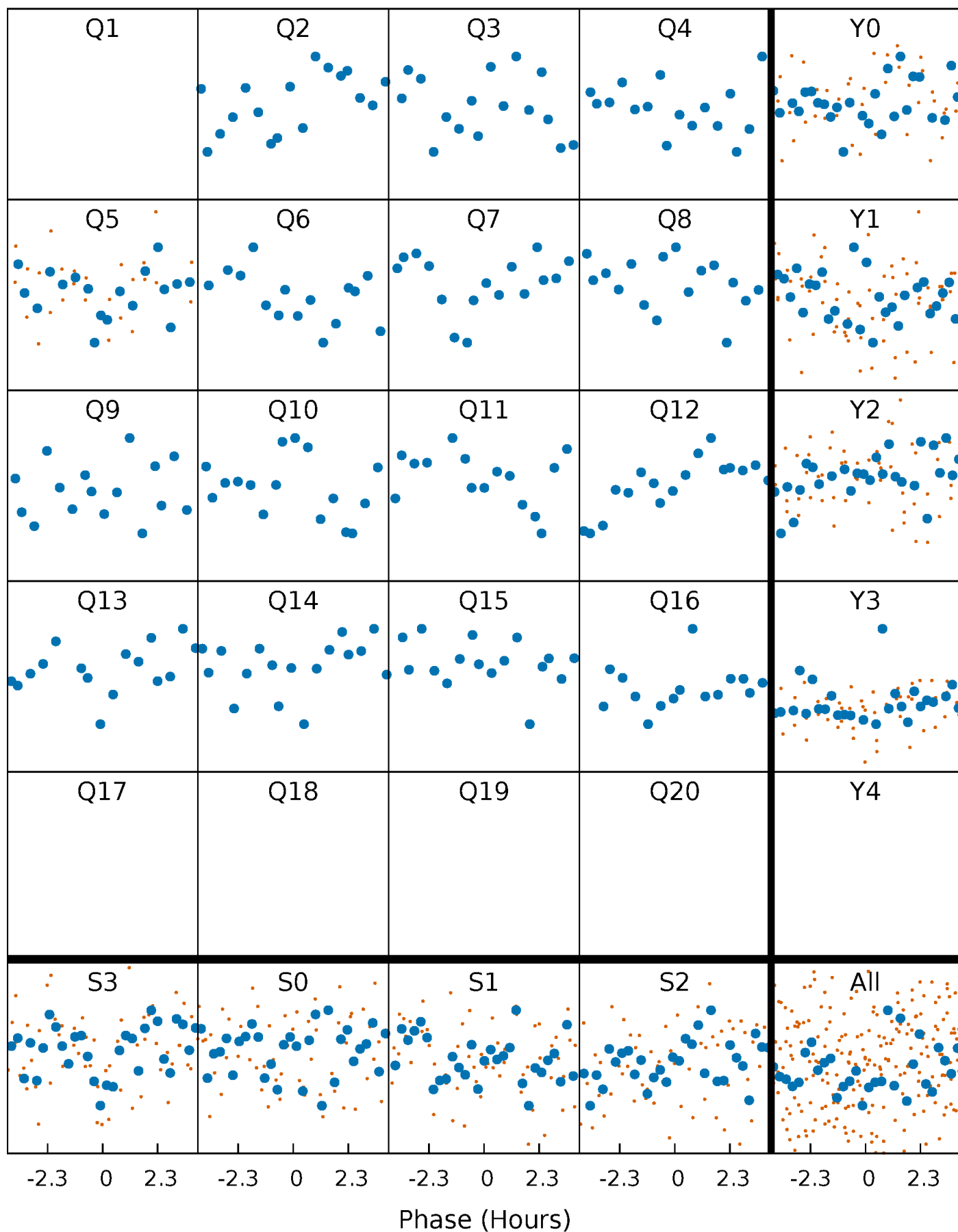


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



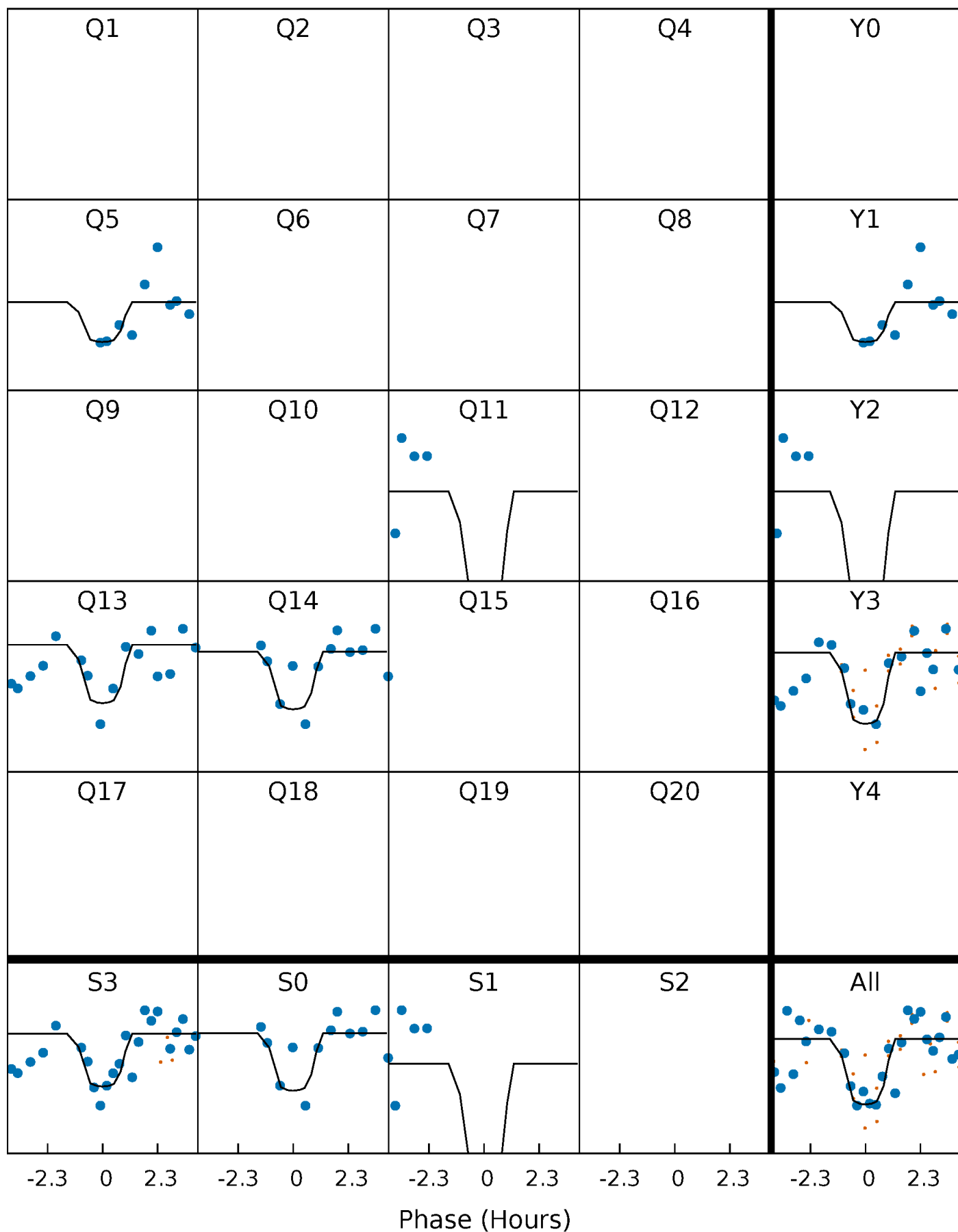
PDC Quarter-Phased Transit Curves

TCE 009935422-04 P= 81.592655 Days $T_0=208.305996$ (BKJD)



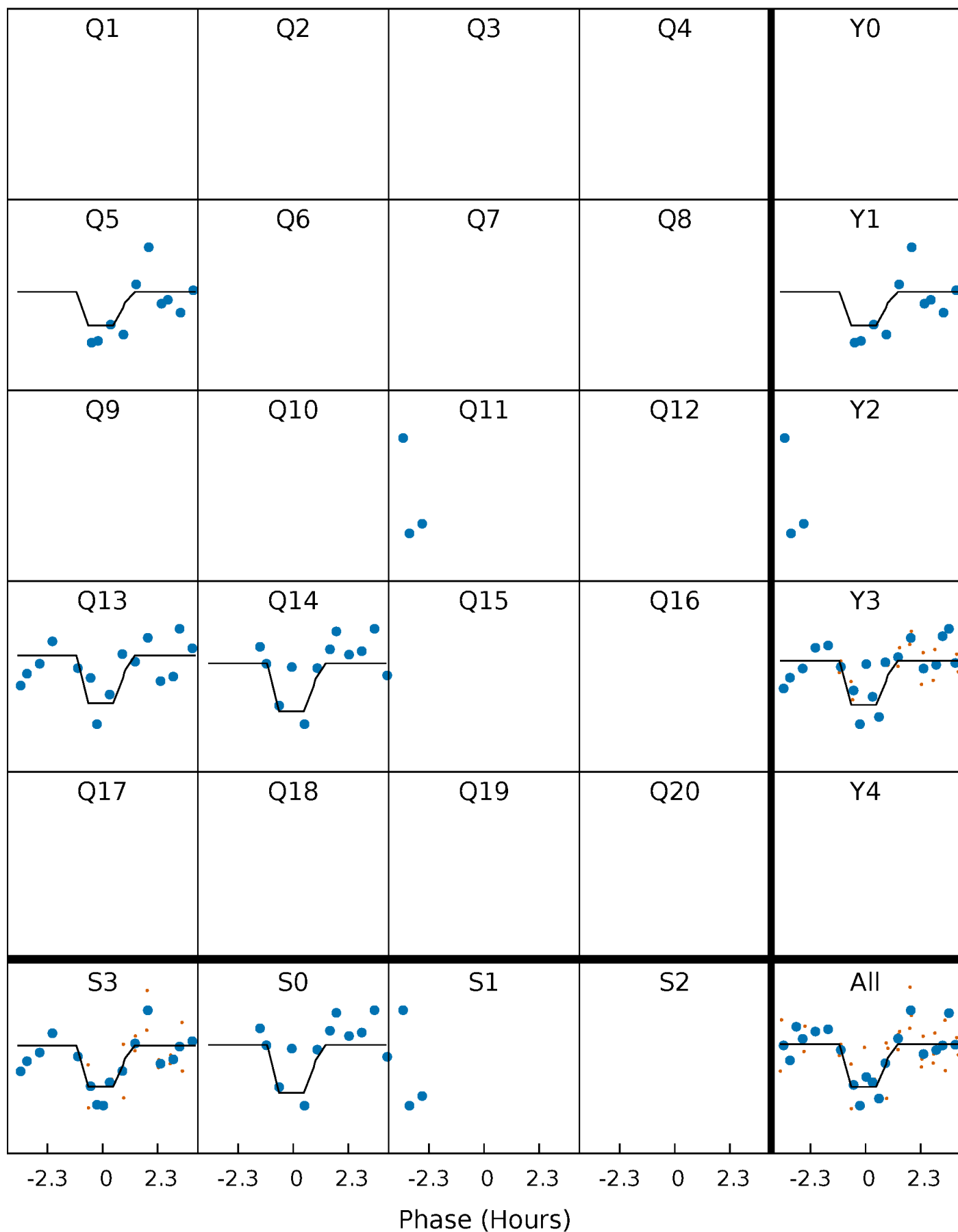
DV Quarter-Phased Transit Curves

TCE 009935422-04 P= 81.592655 Days $T_0=208.305996$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

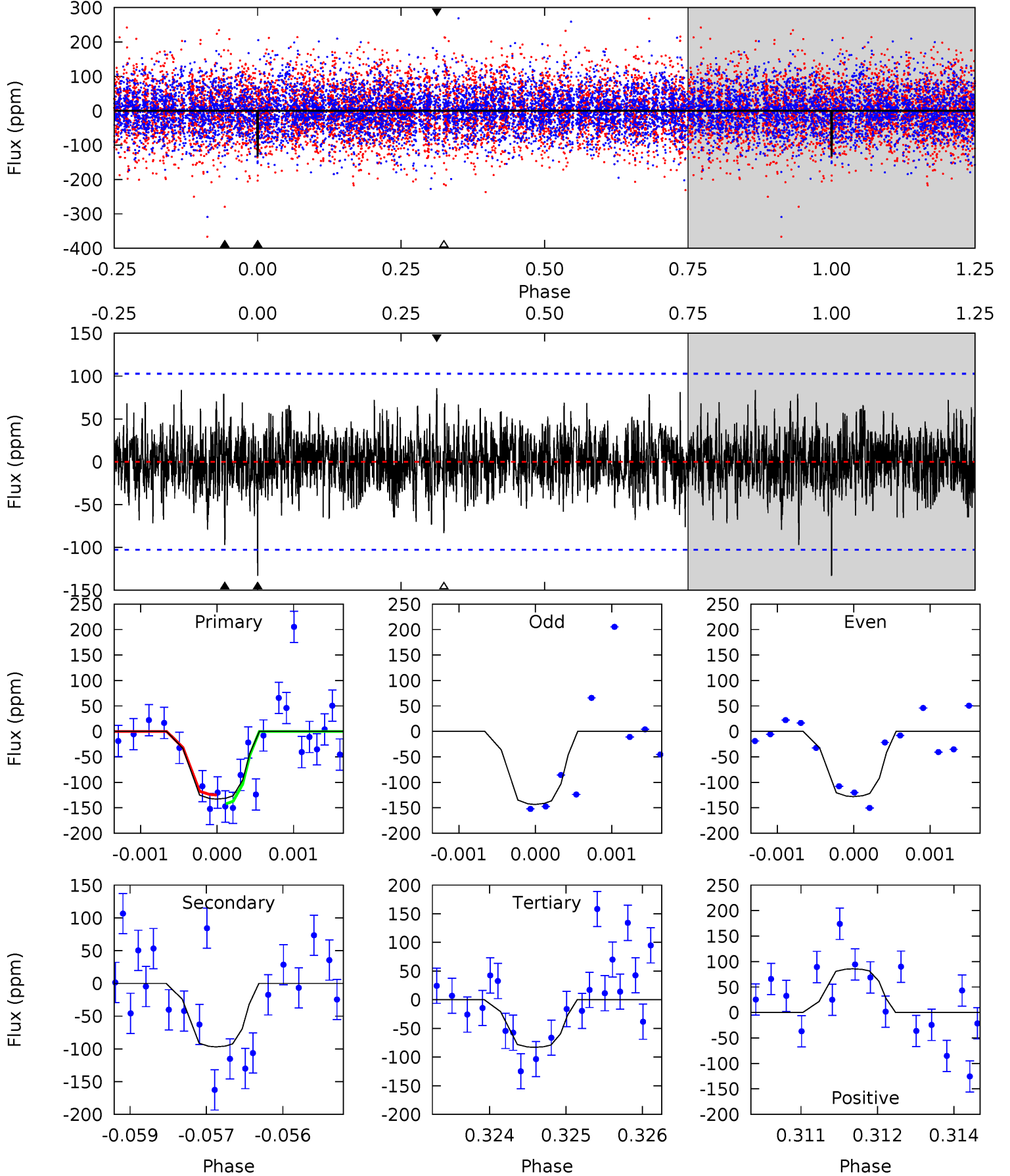
TCE 009935422-04 P= 81.591407 Days $T_0=208.324881$ (BKJD)



DV Model-Shift Uniqueness Test

009935422-04, P = 81.592655 Days, E = 126.713341 Days

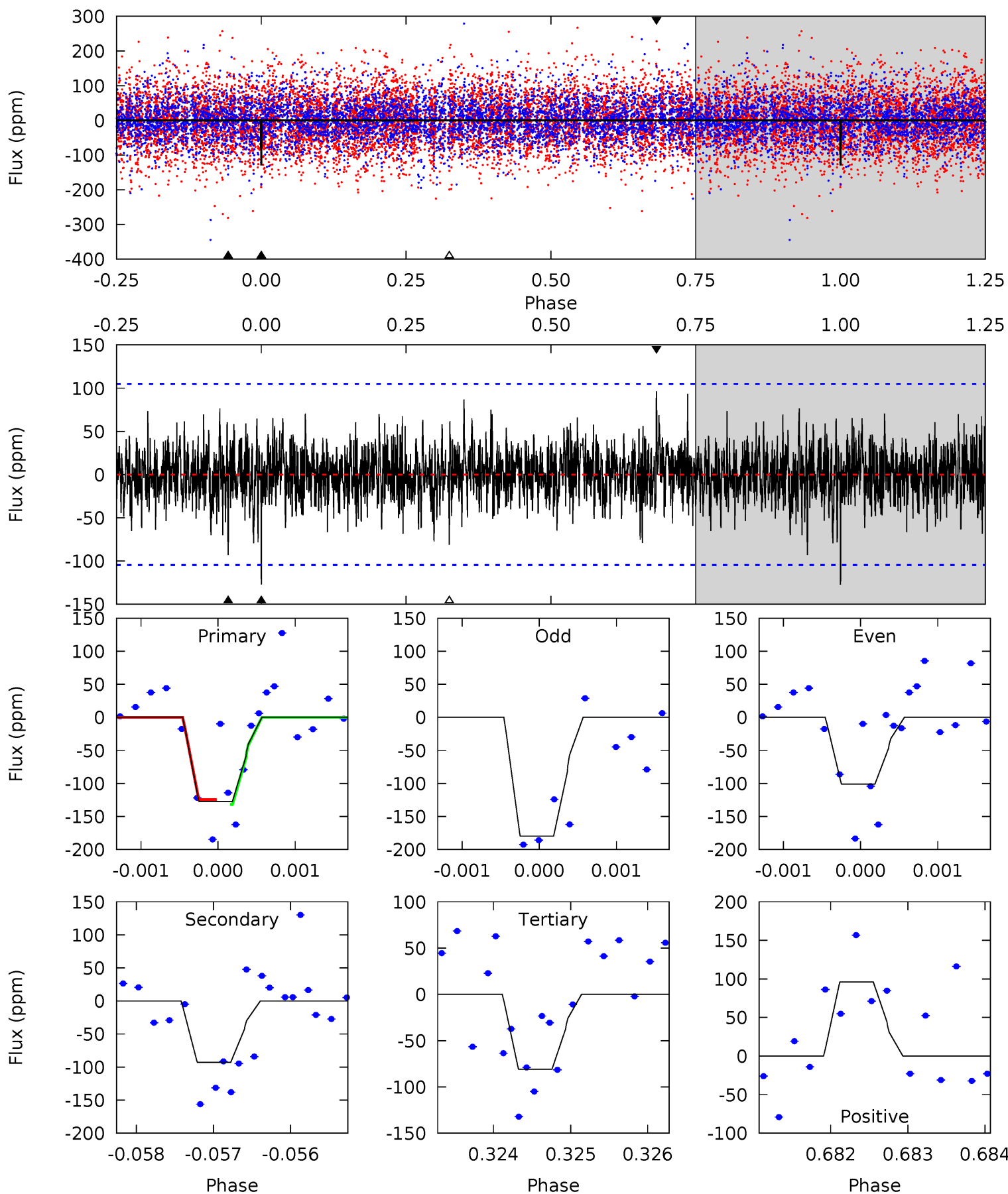
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.02	5.12	4.38	4.53	5.43	3.25	1.26	2.64	2.49	0.74	0.59	0.35	1.00	0.39	0.46



Alt Model-Shift Uniqueness Test

009935422-04, P = 81.591407 Days, E = 126.733474 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.58	4.80	4.19	4.97	5.42	3.23	1.22	2.40	1.61	0.61	-0.17	1.92	1.17	0.43	0.19



Stellar Parameters For KIC 009935422

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7202^{+225}_{-300}	$3.517^{+0.567}_{-0.063}$	$0.020^{+0.200}_{-0.300}$	$4.170^{+0.401}_{-2.408}$	$2.087^{+0.144}_{-0.575}$	$0.041^{+0.304}_{-0.008}$
	+3%/-4%	+16%/-2%	+1000%/-1500%	+10%/-58%	+7%/-28%	+750%/-19%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009935422-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-97 ± 19	$11.44^{+12.61}_{-7.79}$	1272^{+90}_{-163}	4333^{+3024}_{-932}	89^{+834}_{-69}
Alt.	-93 ± 19	$10.49^{+12.48}_{-6.95}$	1268^{+88}_{-185}	4420^{+3266}_{-996}	102^{+790}_{-80}

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

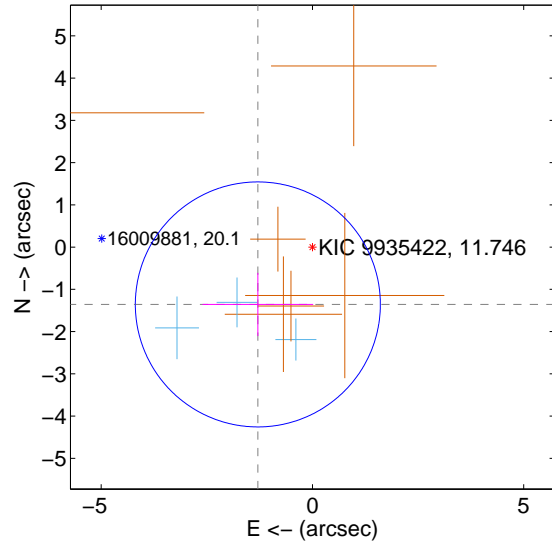
Supplemental centroid analysis for 009935422-04. **Kepler magnitude: 11.75.** Transit SNR 9.21

There are 3 quarters with good PRF difference image offsets

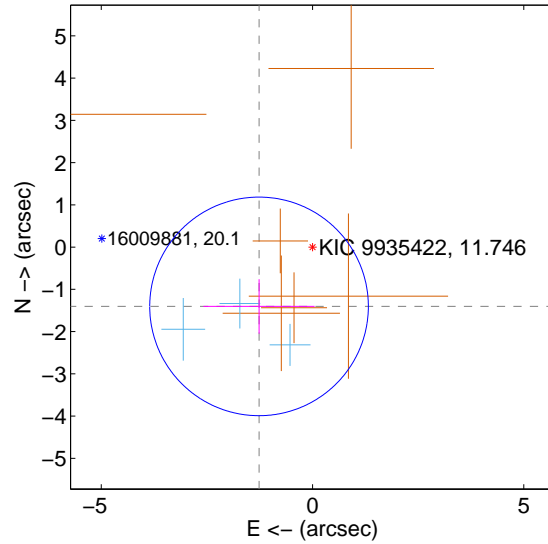
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.873 ± 0.966	1.94	1.292 ± 1.309	-1.356 ± 0.749
PRF-fit source offset from KIC position	1.889 ± 0.862	2.19	1.266 ± 1.316	-1.403 ± 0.643
photometric centroid source offset	0.98 ± 0.82	1.19	0.84 ± 0.83	0.50 ± 0.80

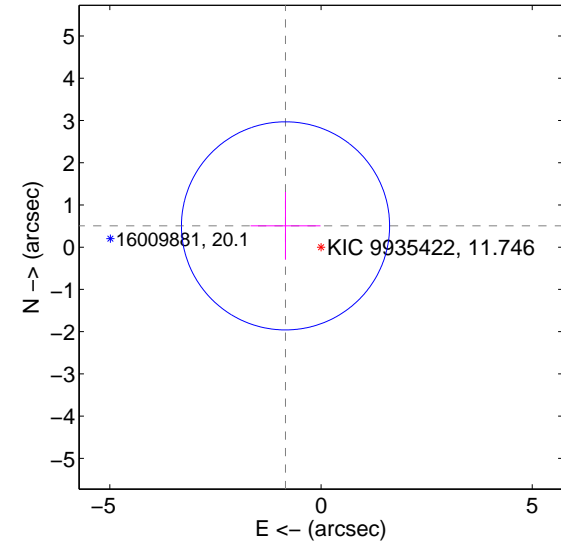
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

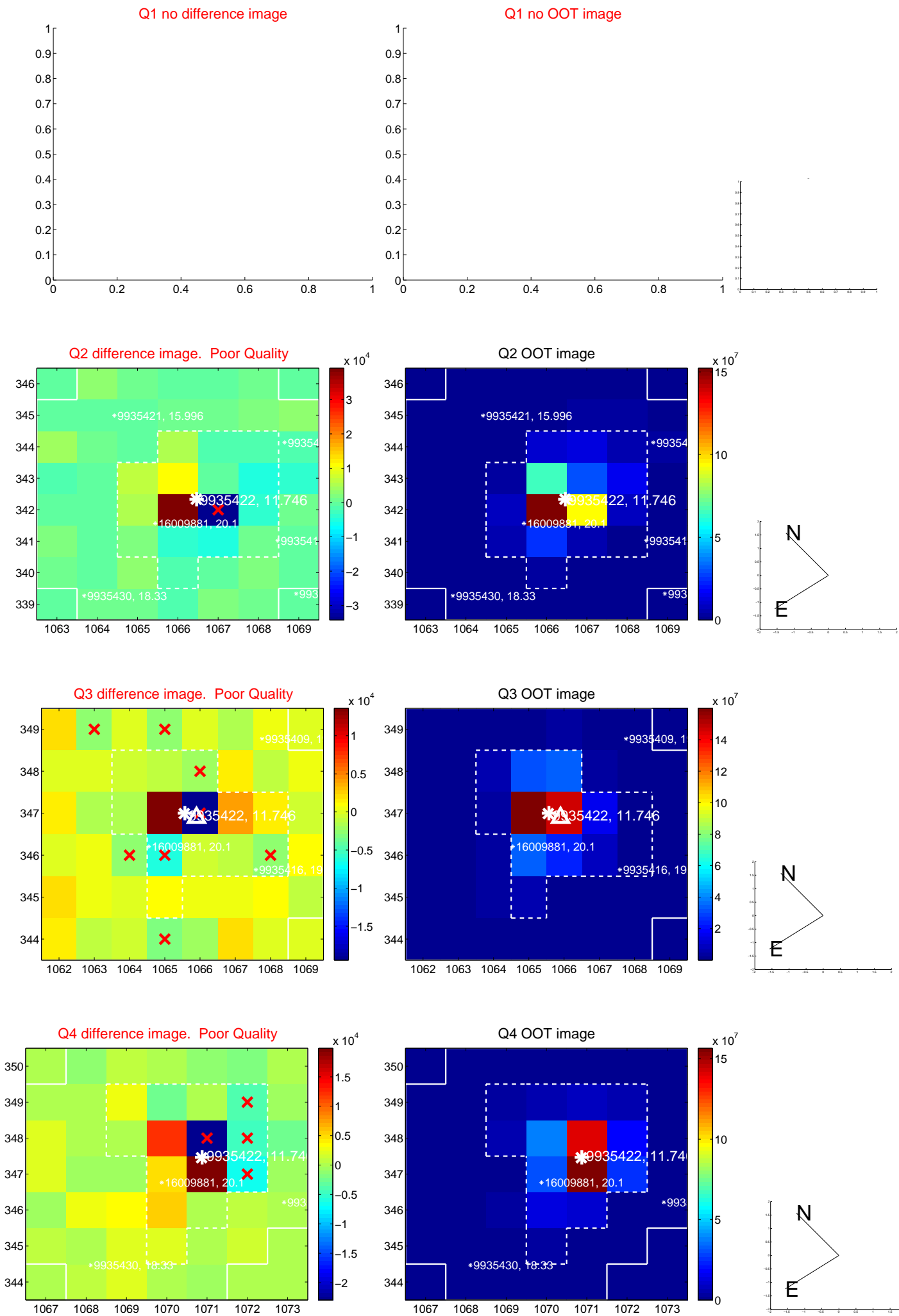


offset from photometric centroids

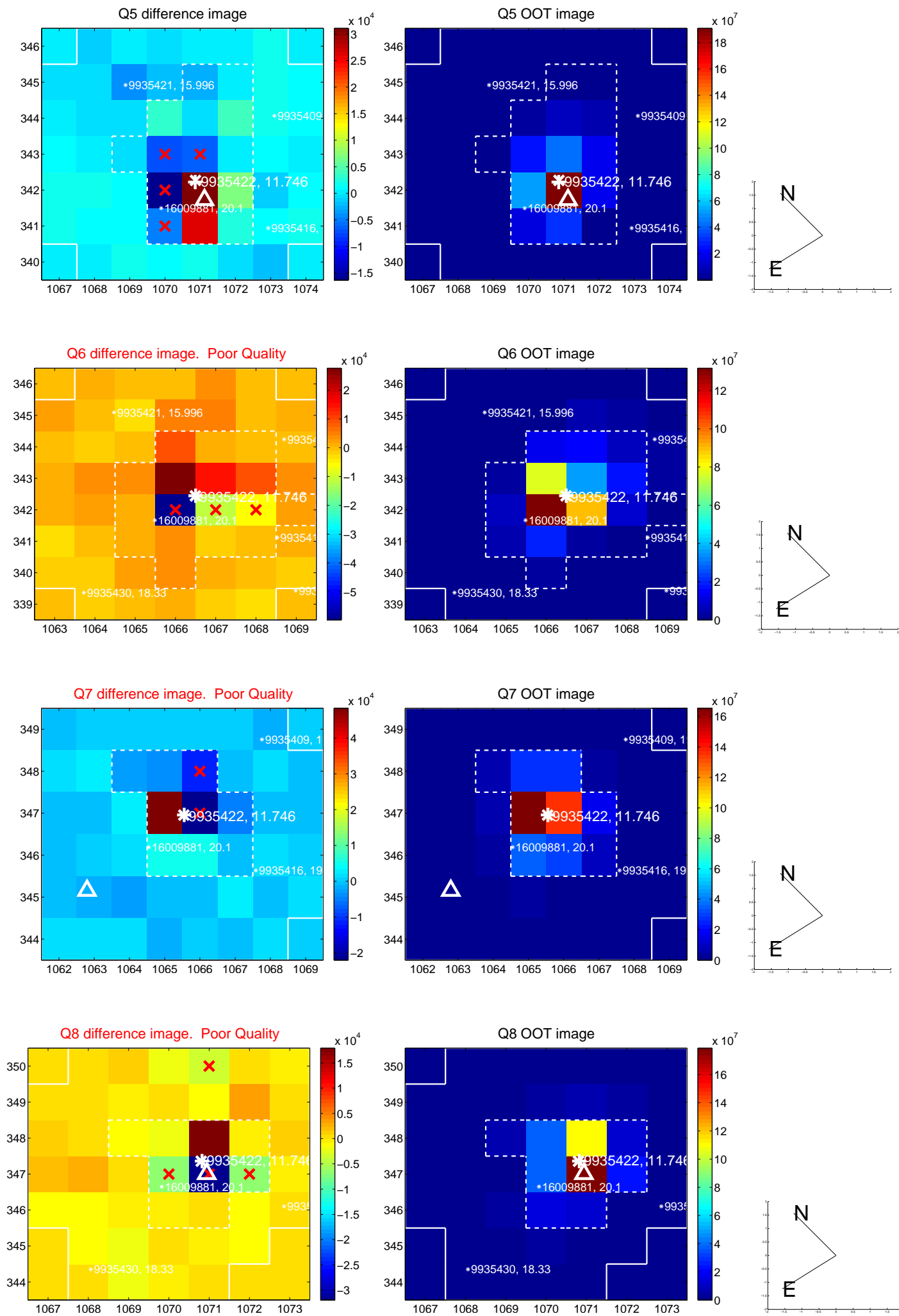


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

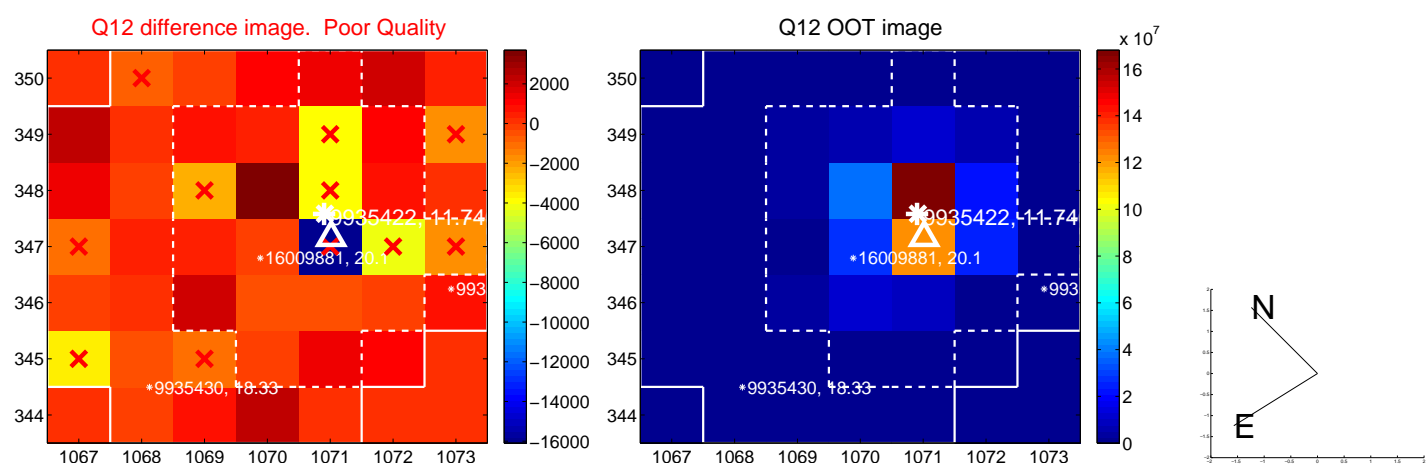
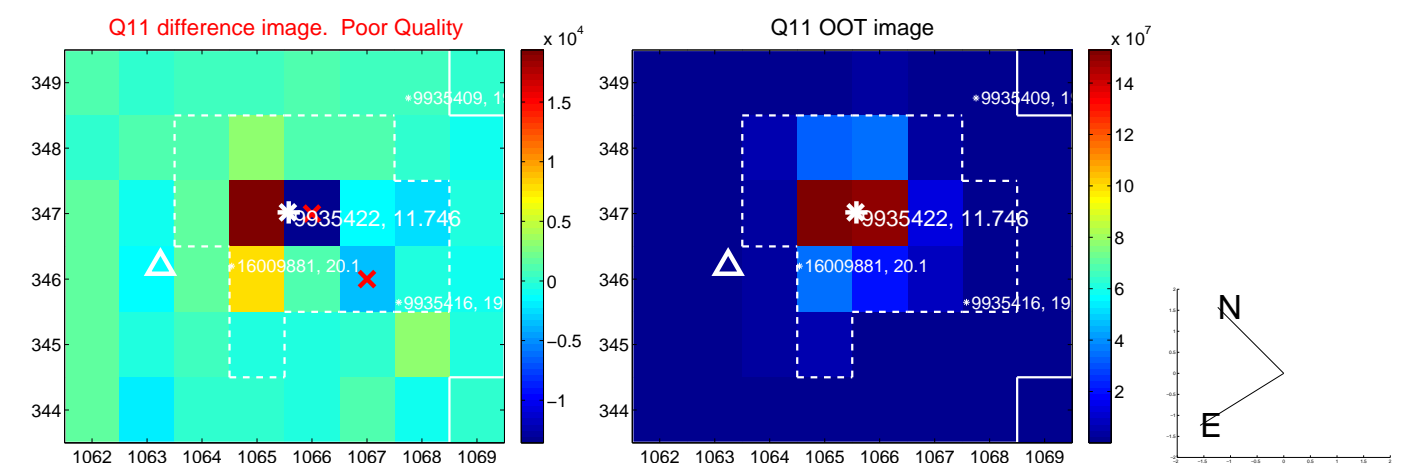
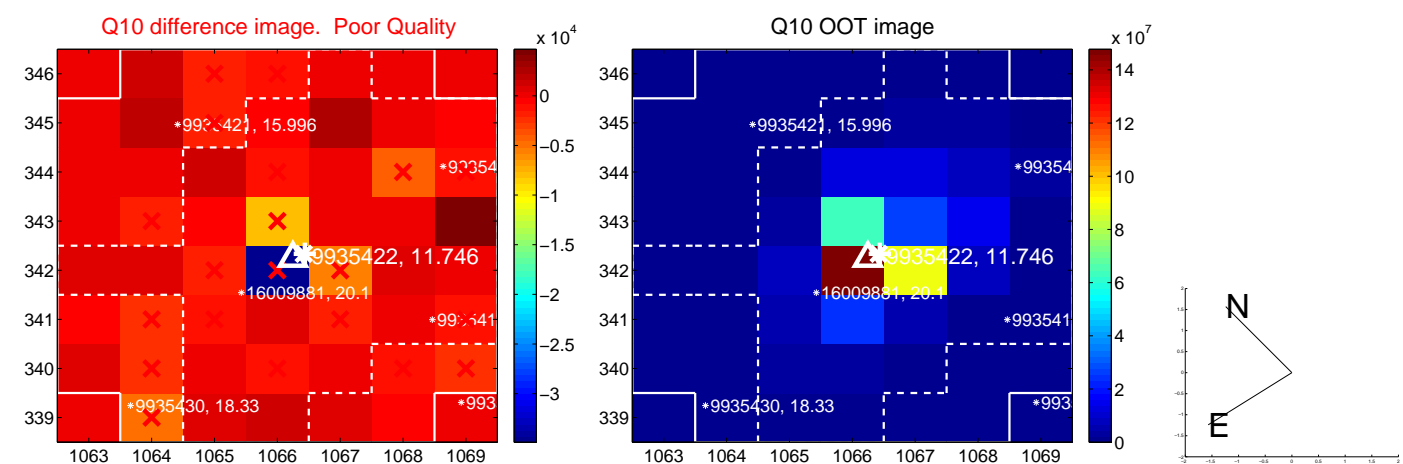
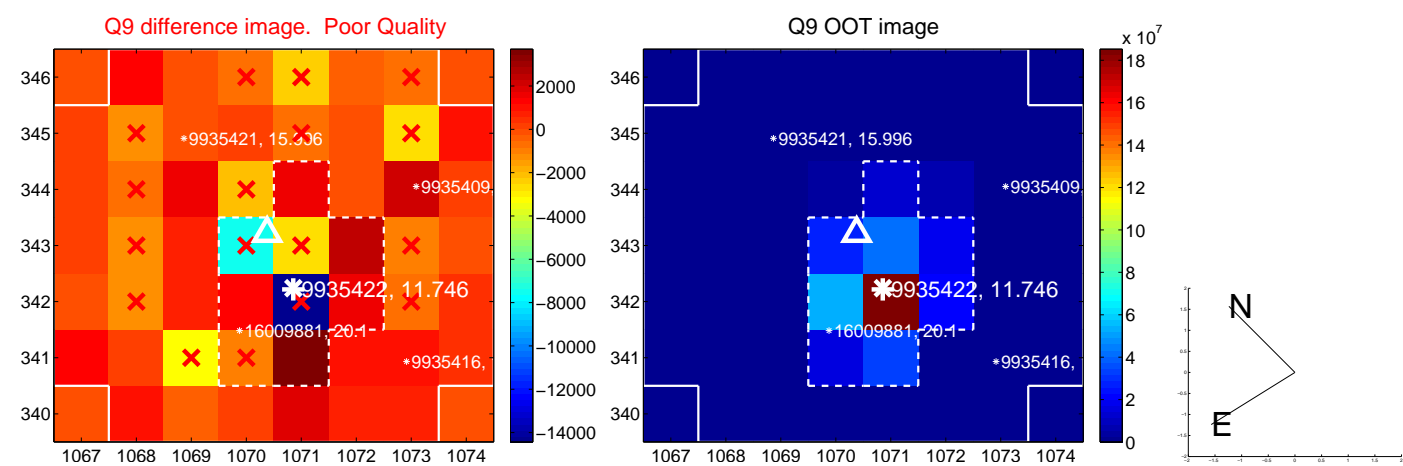
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



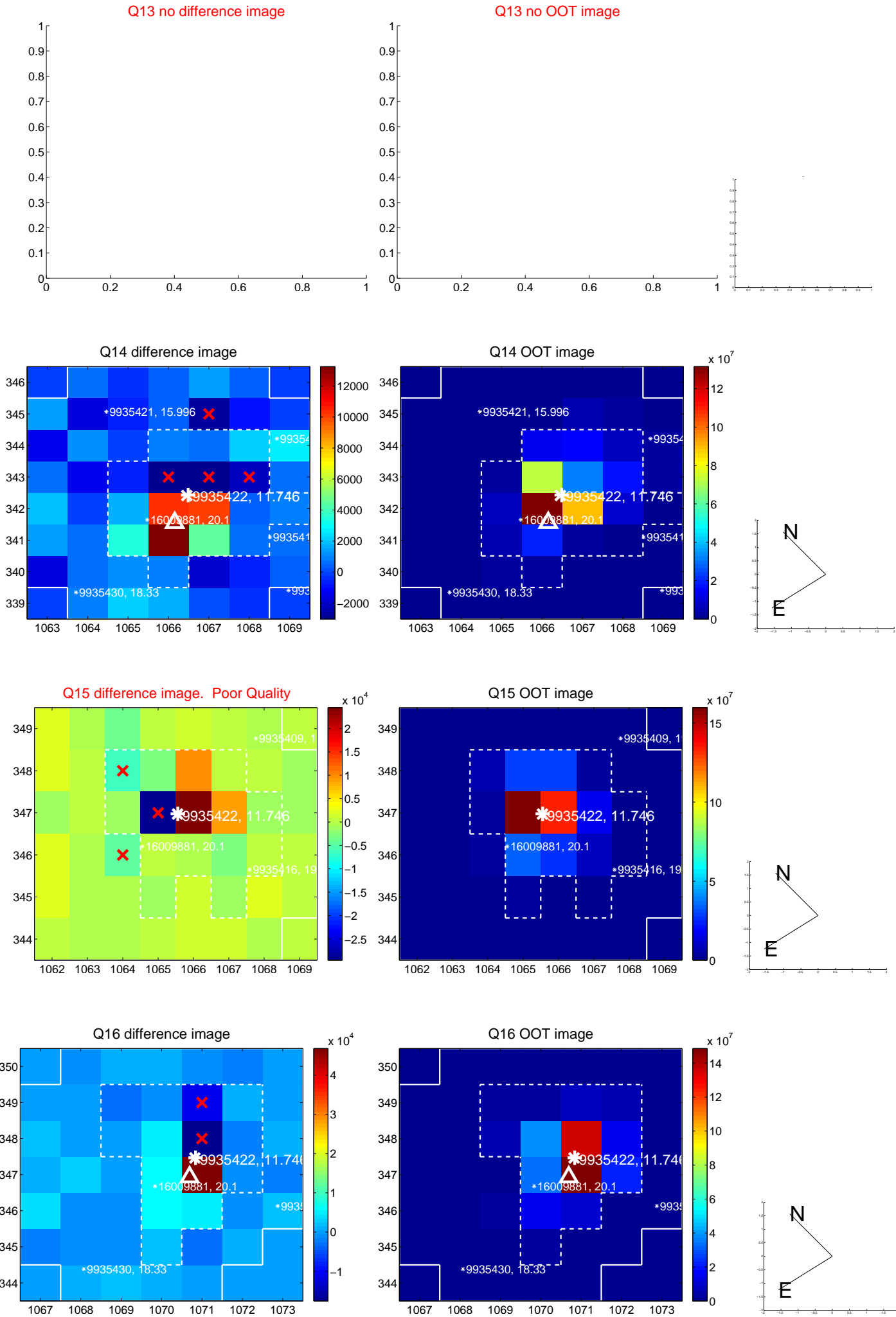
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



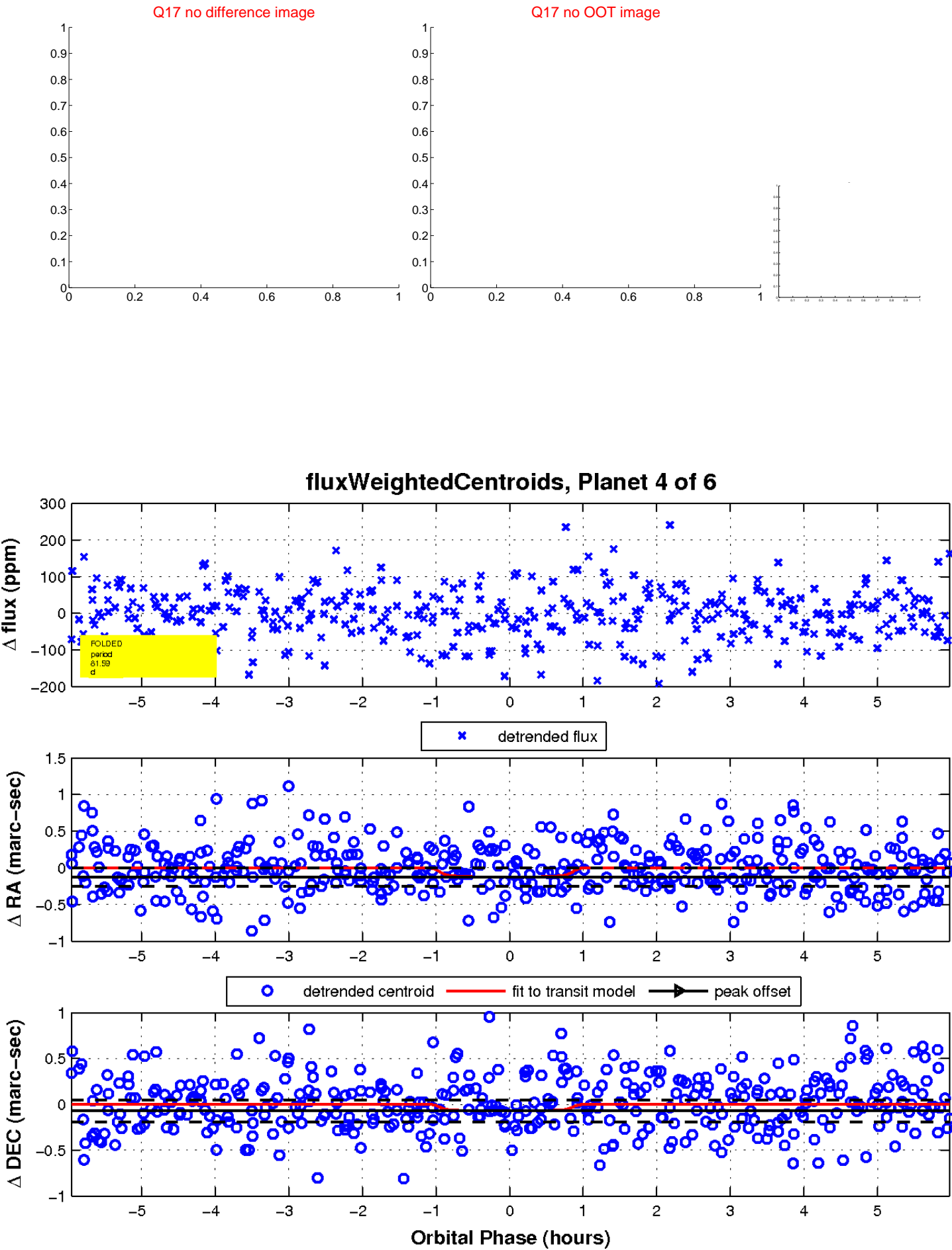
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

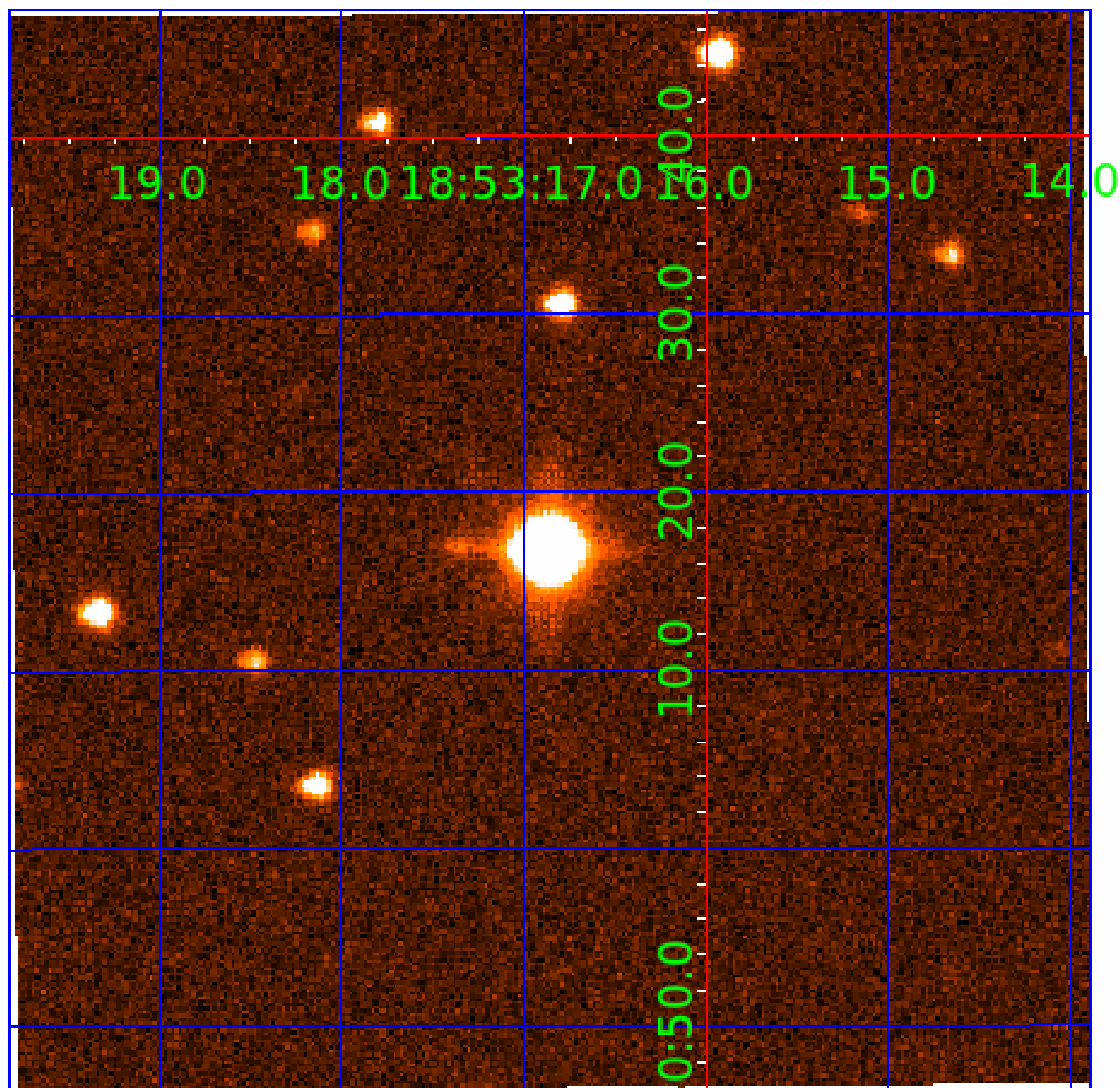


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009935422

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})
009935422-01	OBS	No	2.679006	133.156733	5.3	17.483	8.8	5.6	4.17	7202	1.09	18009.40
009935422-02	OBS	No	78.796943	133.714185	68.1	29.342	39.2	8.4	4.17	7202	3.74	198.36
009935422-03	OBS	No	74.775086	171.059174	145.0	27.461	22.0	15.1	4.17	7202	6.51	212.71
009935422-04	OBS	No	81.592655	208.305996	149.7	1.994	8.5	9.2	4.17	7202	6.02	189.35
009935422-05	OBS	No	62.724559	166.271539	103.0	2.464	7.9	7.7	4.17	7202	4.88	268.87
009935422-06	OBS	No	63.003490	183.025760	146.8	2.271	8.1	8.2	4.17	7202	5.86	267.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009935422-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009935422-02	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_FEW_MEAS
009935422-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009935422-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009935422-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009935422-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_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.

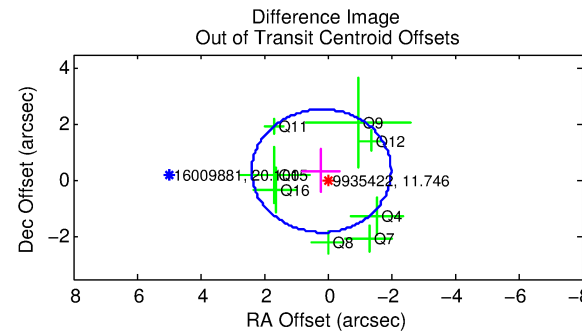
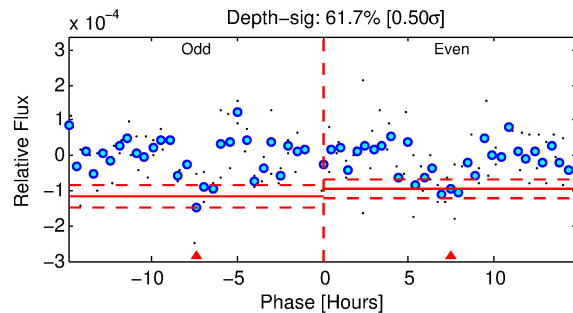
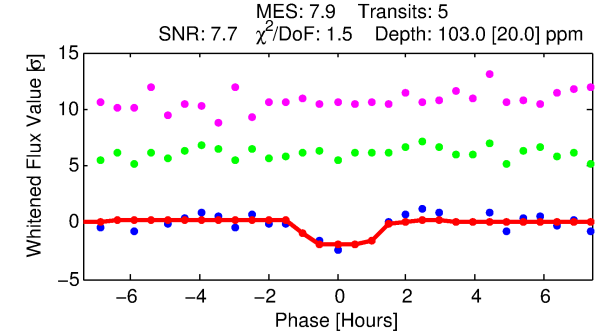
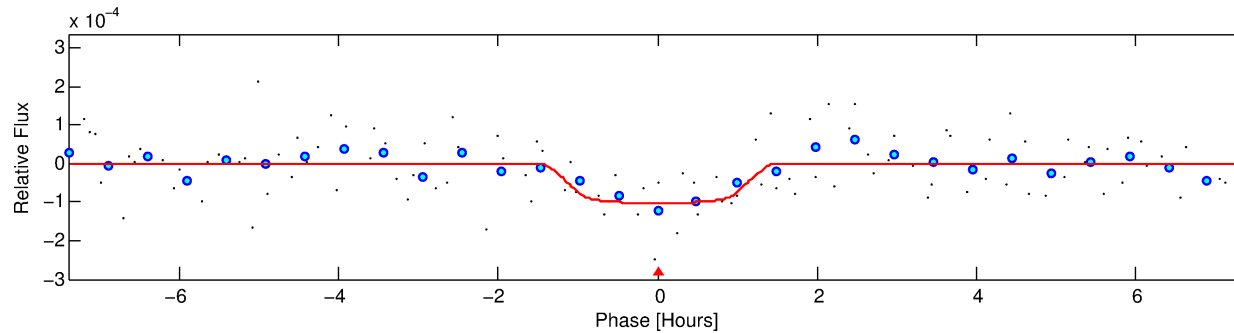
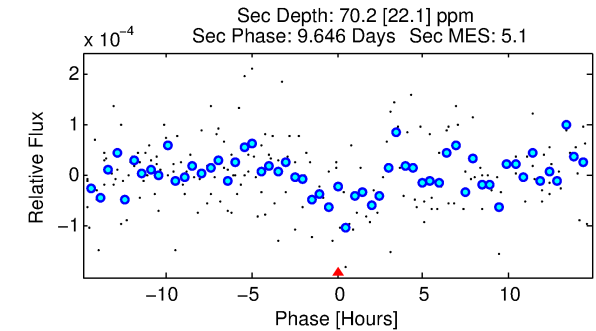
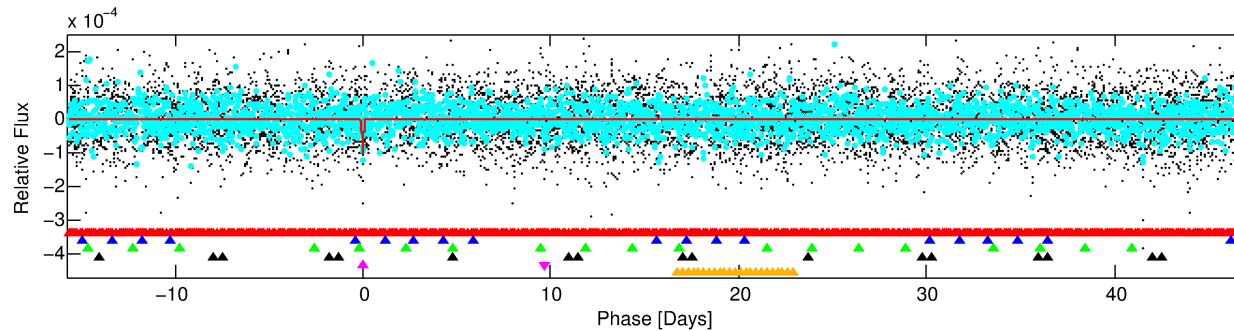
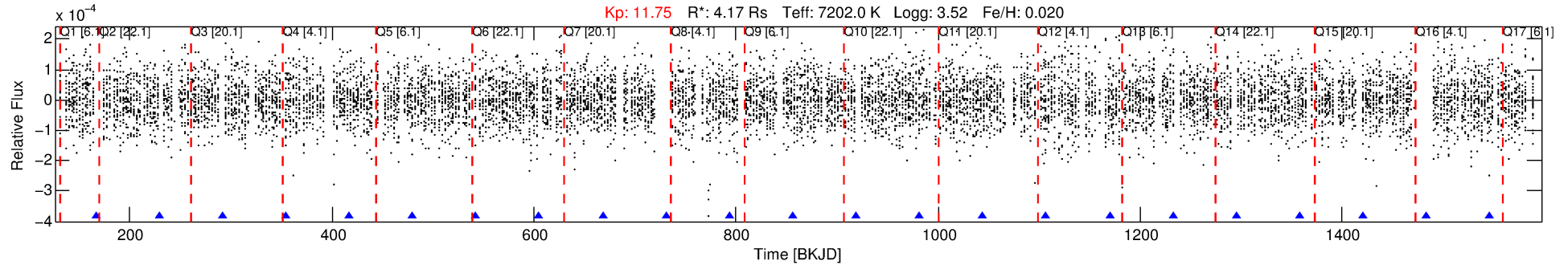
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009935422-05

No Significant Match Found

DV One-Page Summary

KIC: 9935422 Candidate: 5 of 6 Period: 62.725 d



DV Fit Results:

Period = 62.72456 [0.00087] d
Epoch = 166.2715 [0.0127] BKJD
Rp/R* = 0.0107 [0.0079]
a/R* = 92.96 [442.96]
b = 0.89 [1.12]
Seff = 268.87 [259.78]
Teq = 1033 [249] K
Rp = 4.88 [4.58] Re
a = 0.3948 [0.2294] AU
Ag = 253.02 [452.50] [0.56σ]
Teffp = 6367 [2425] K [2.19σ]

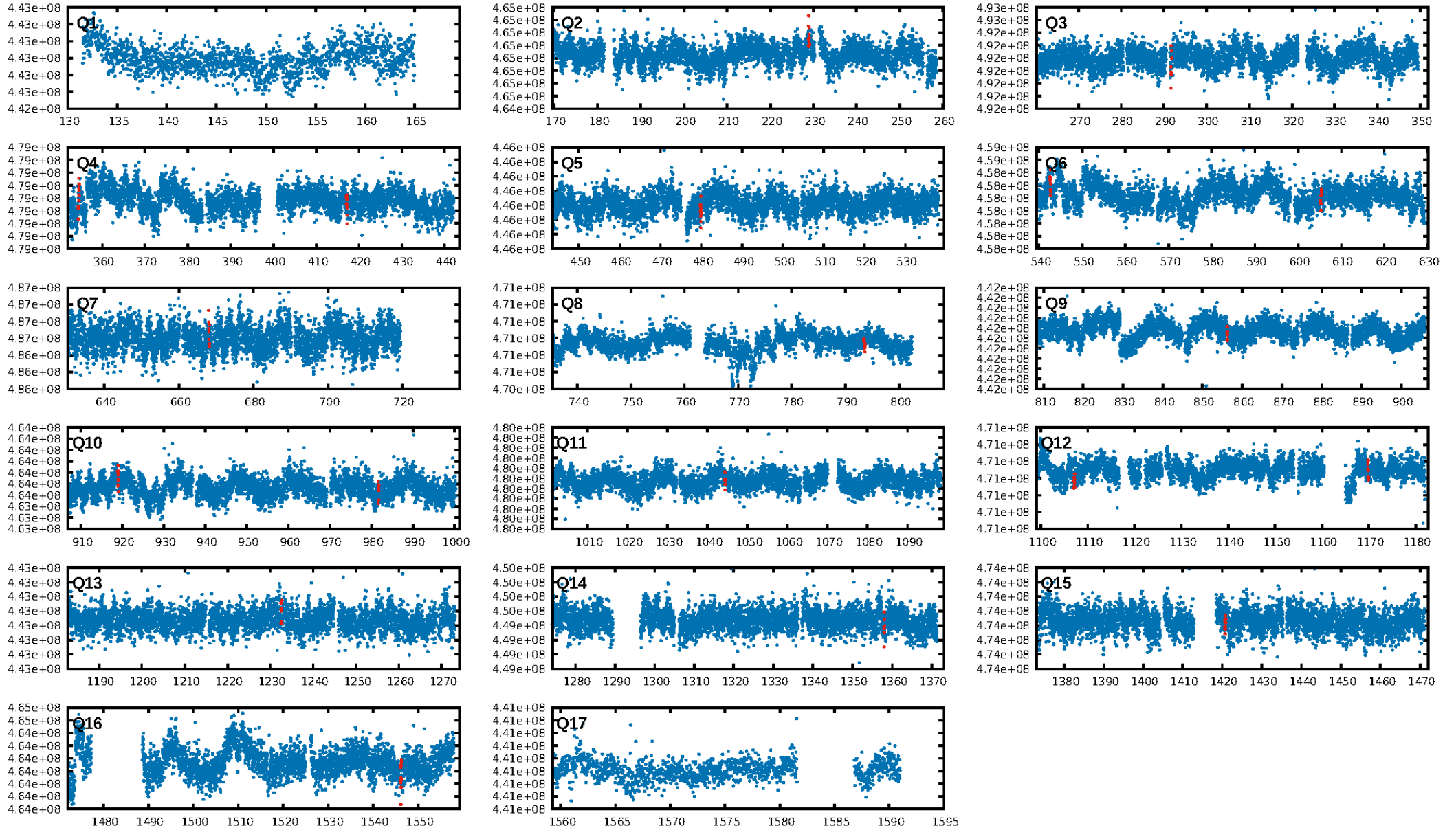
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [81.62σ]
LongPeriod-sig: 95.4% [2.00σ]
ModelChiSquare2-sig: 96.3%
ModelChiSquareGof-sig: 86.9%
Bootstrap-pfa: 1.85e-07
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -3.062
Centroid-sig: 86.6%
Centroid-so: 0.390 arcsec [0.38σ]
OotOffset-rm: 0.396 arcsec [0.54σ]
OotOffset-st: 0/3/4/1 [8]
KicOffset-rm: 0.384 arcsec [0.52σ]
KicOffset-st: 0/3/4/1 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 0.71 [10/14]

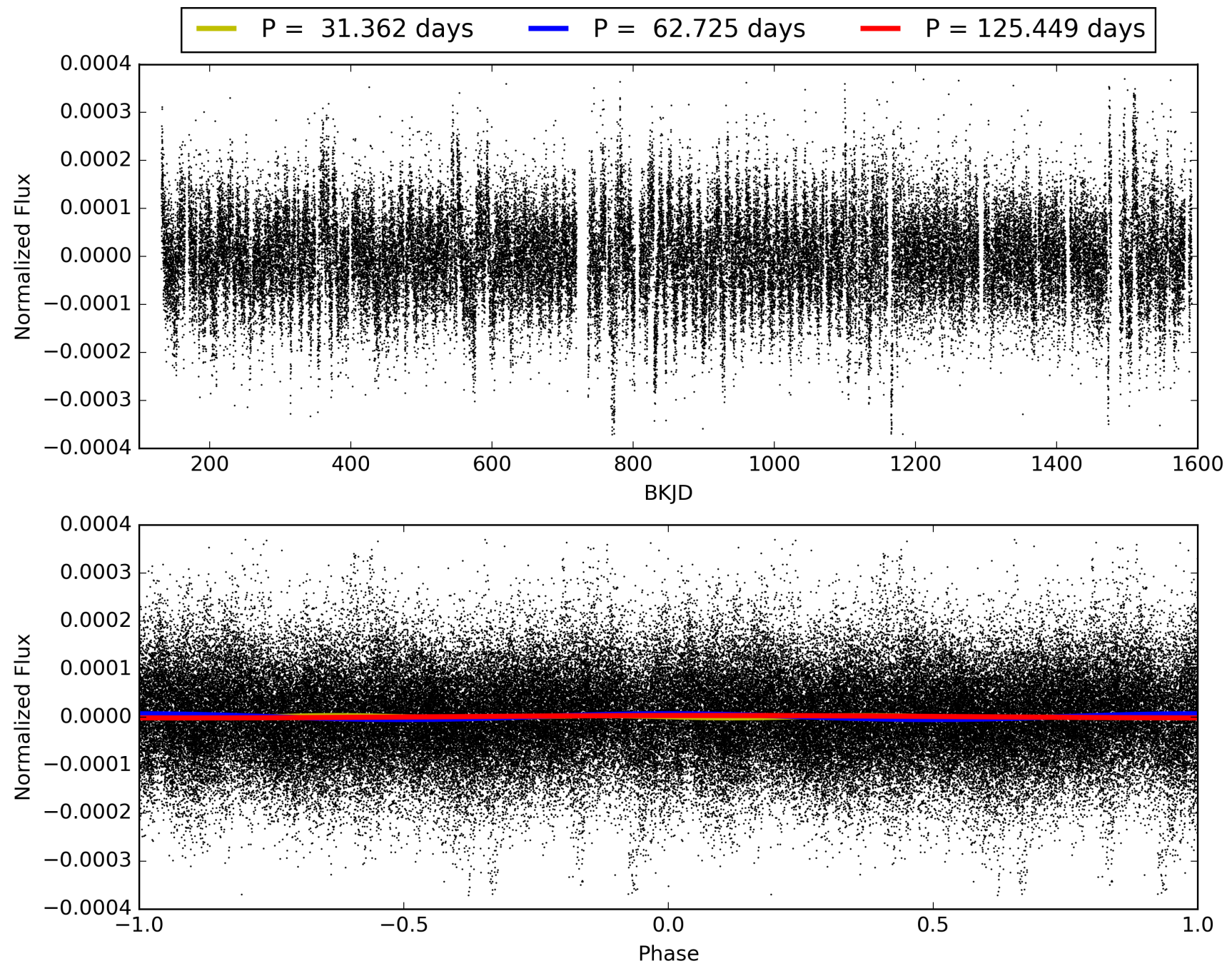
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:20:54 Z

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

TCE 009935422-05, PDC Light Curves

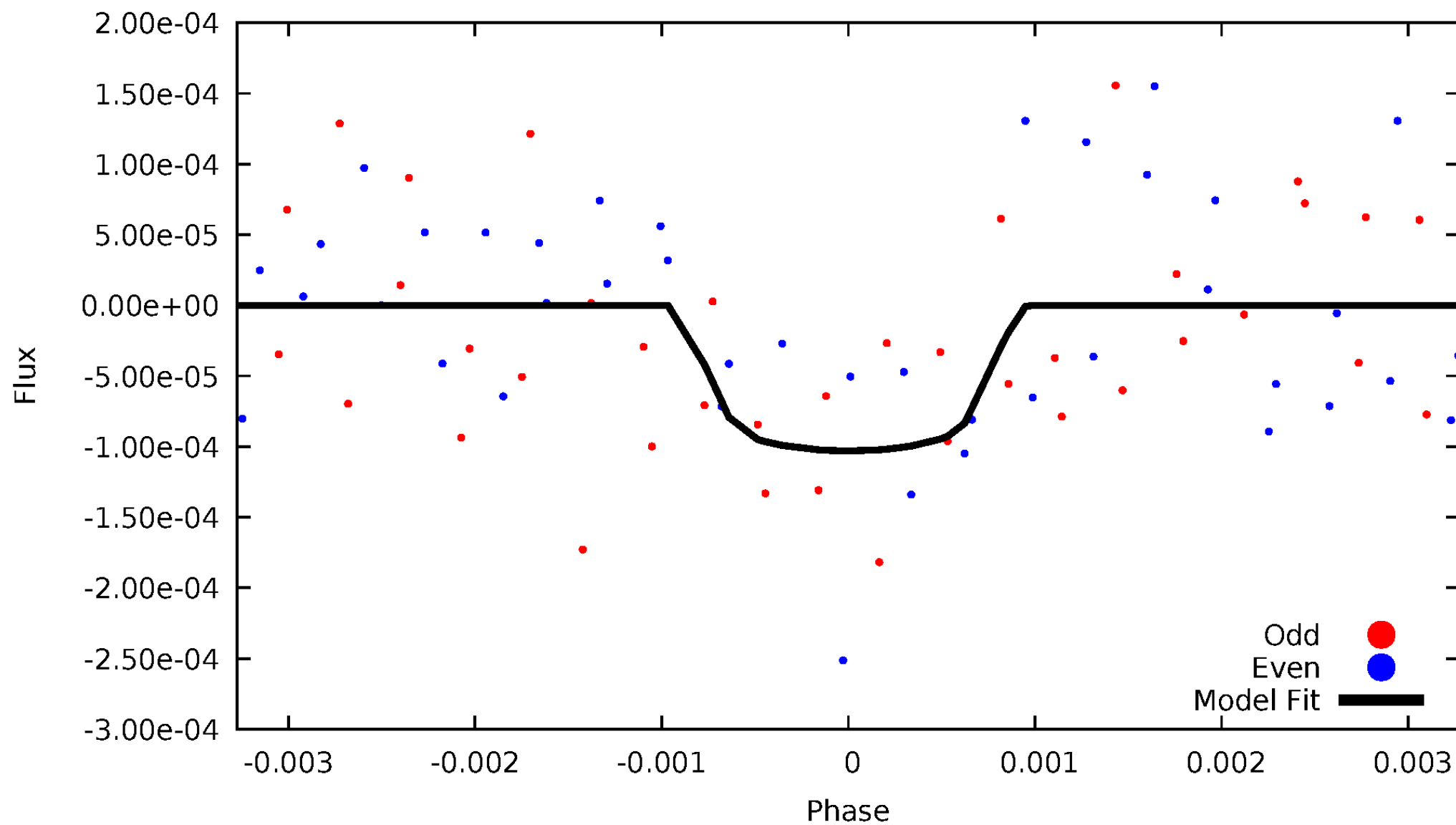


TCE 009935422-05



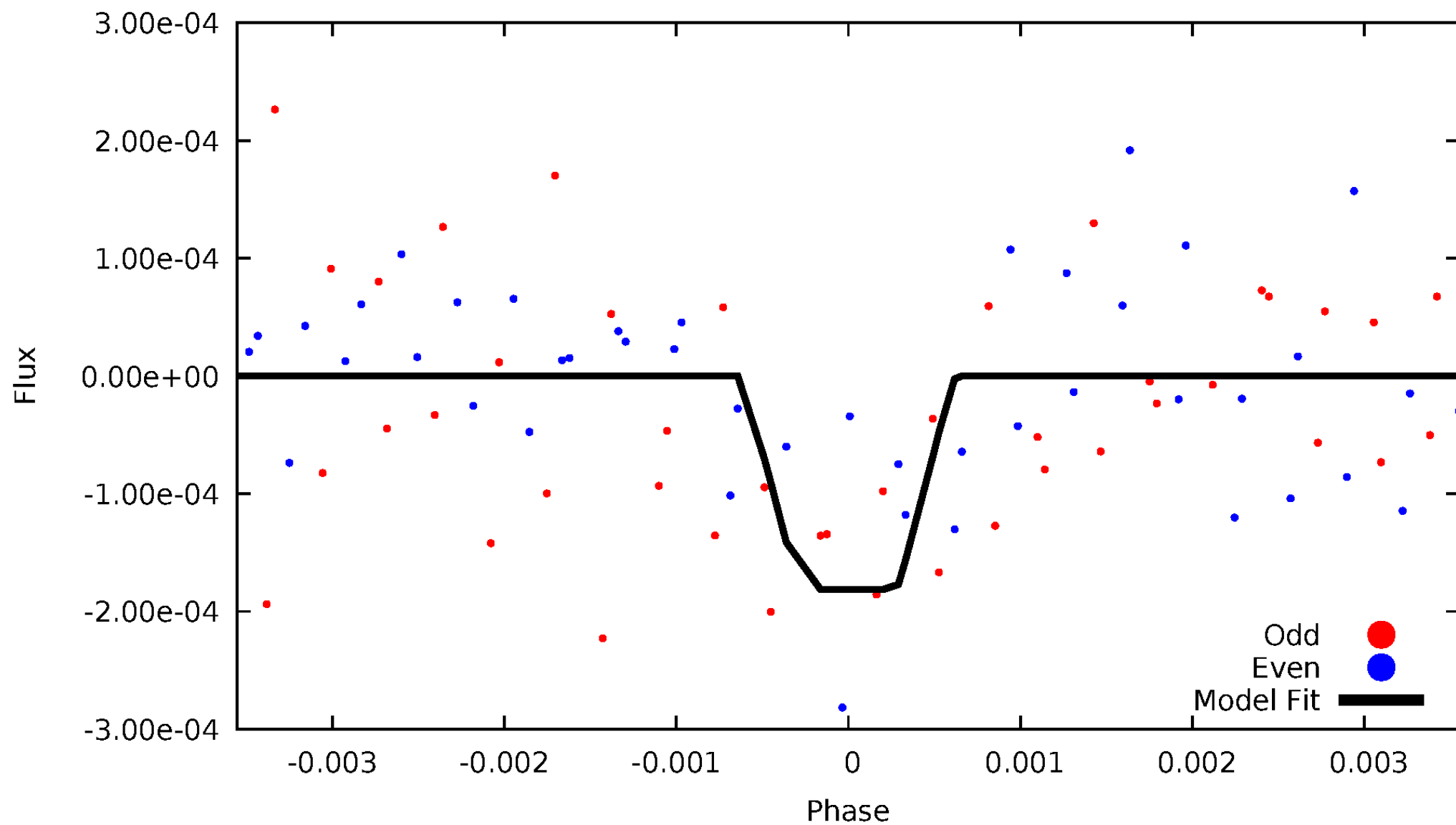
DV Odd/Even

TCE 009935422-05



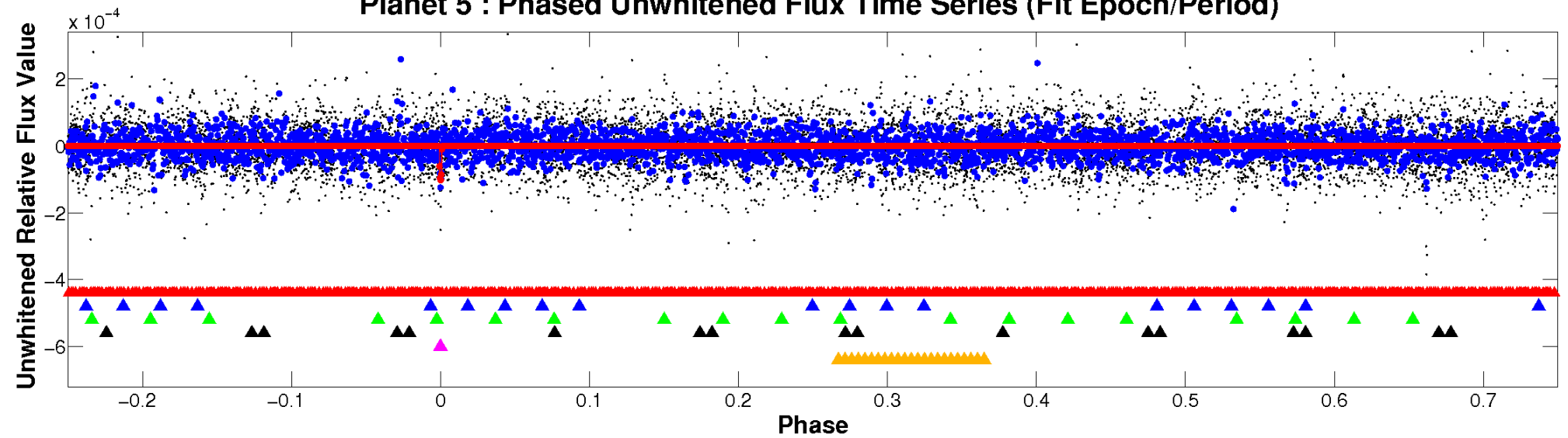
ALT Odd/Even

TCE 009935422-05

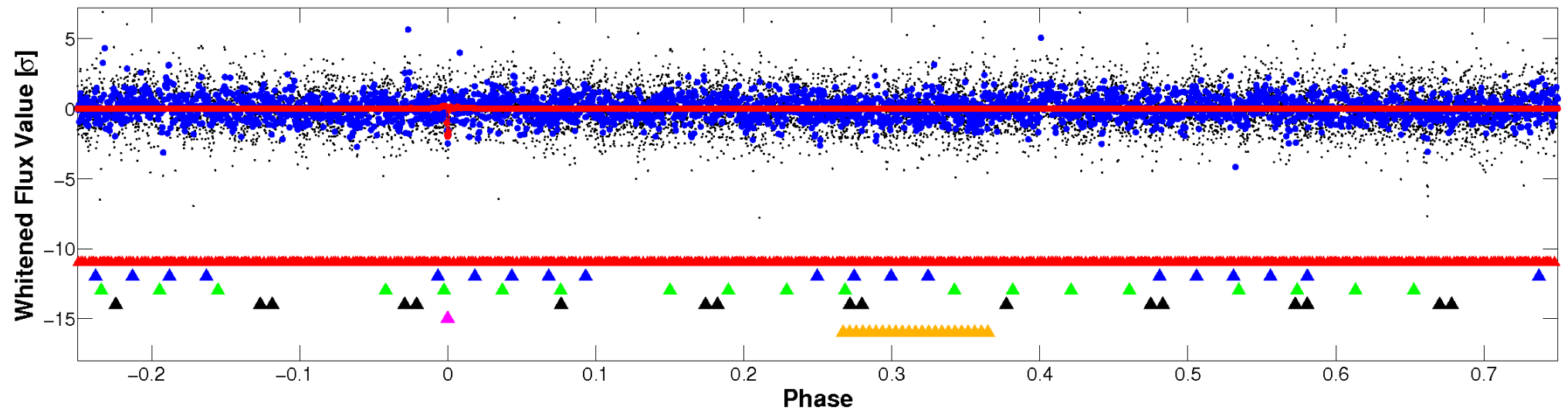


Non-Whitened Vs. Whitened Light Curve

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

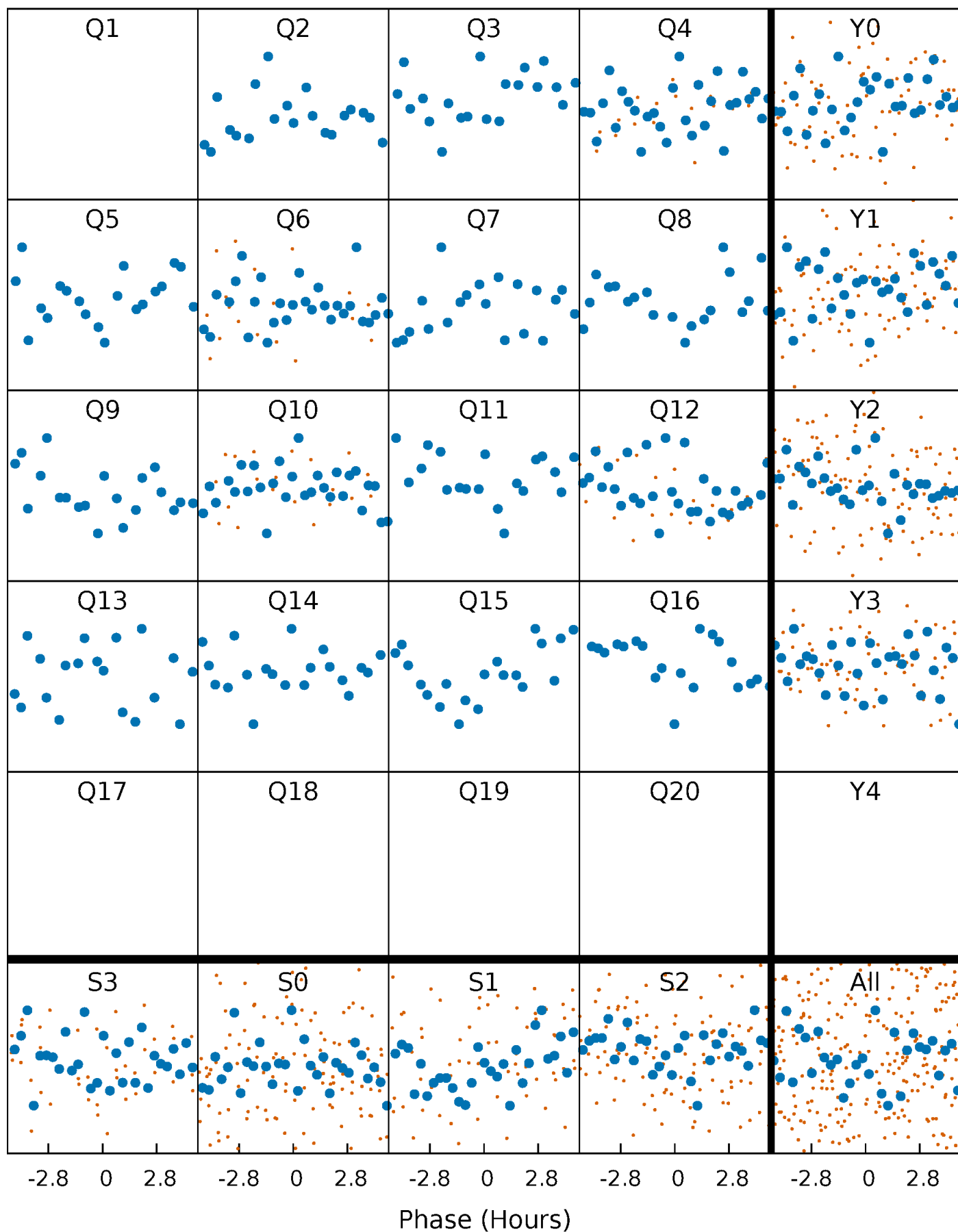


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



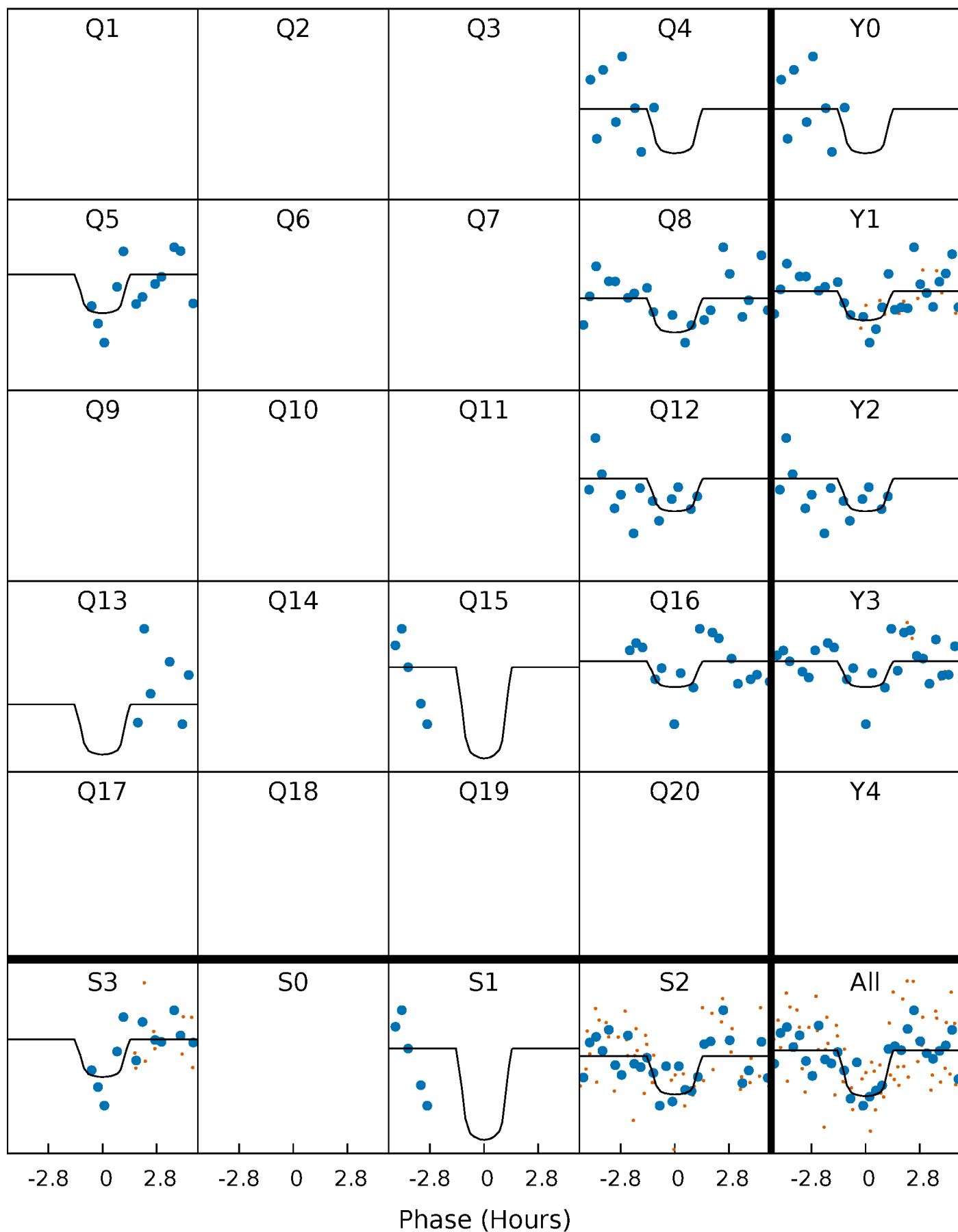
PDC Quarter-Phased Transit Curves

TCE 009935422-05 $P = 62.724559$ Days $T_0 = 166.271539$ (BKJD)



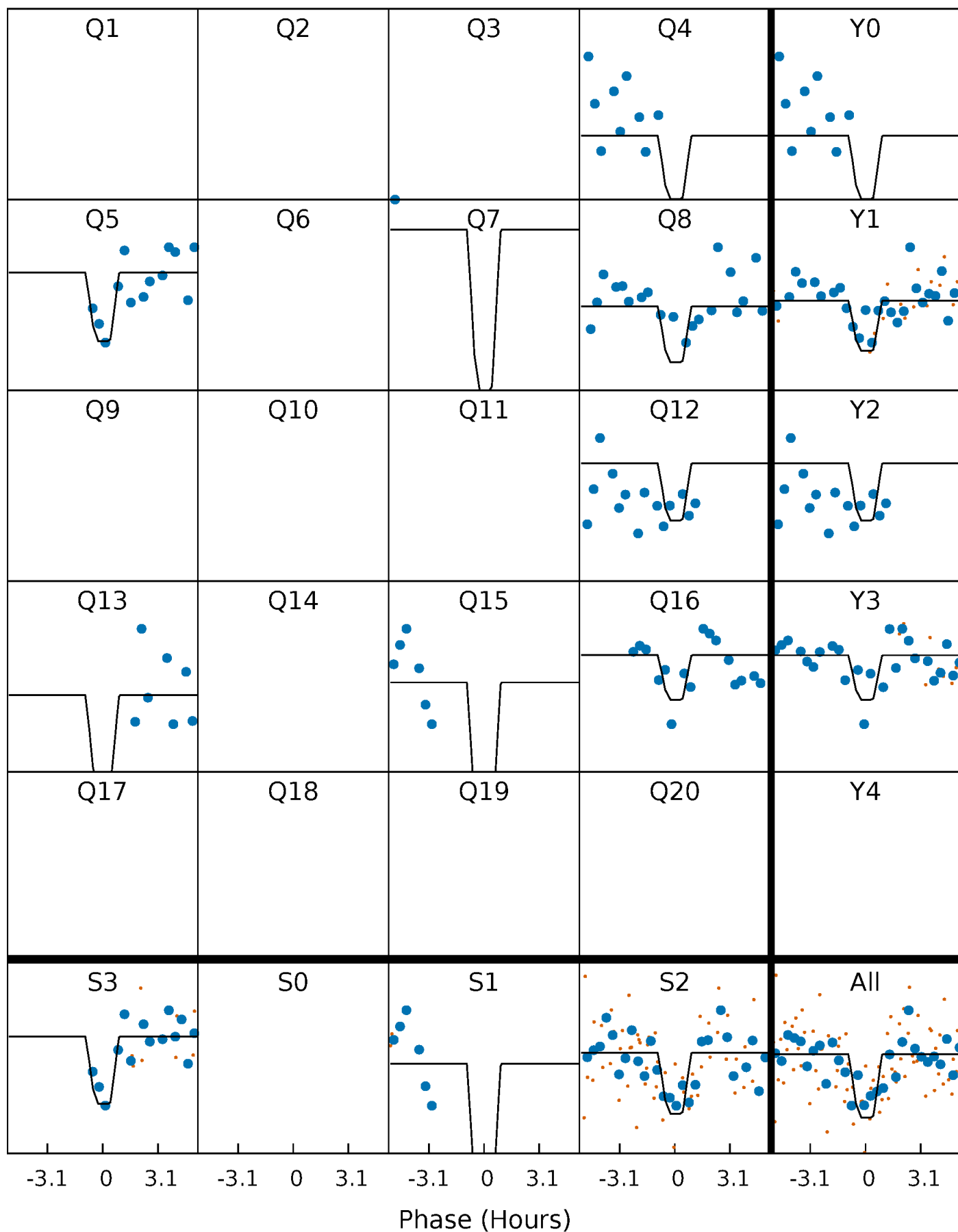
DV Quarter-Phased Transit Curves

TCE 009935422-05 $P = 62.724559$ Days $T_0 = 166.271539$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

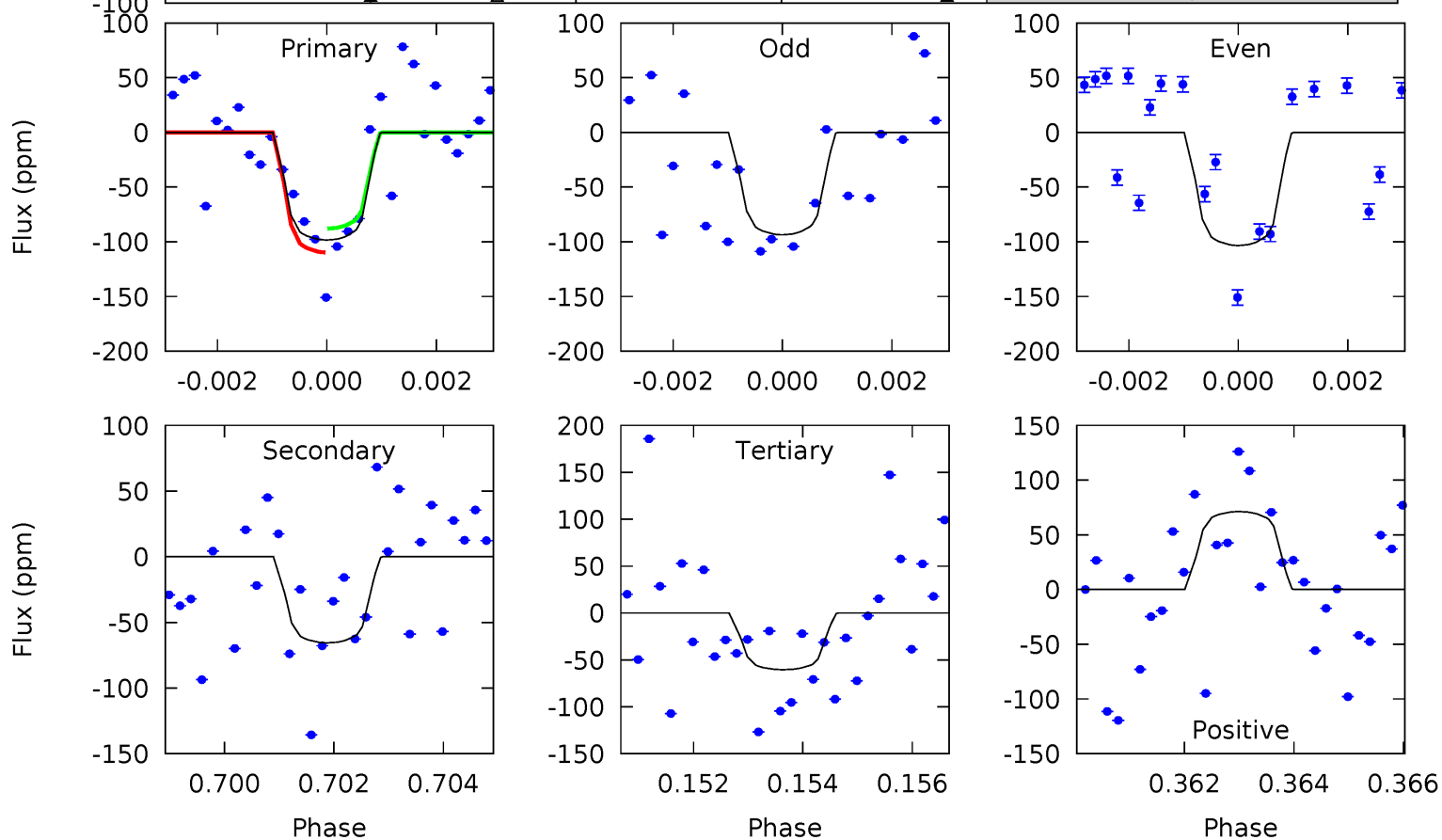
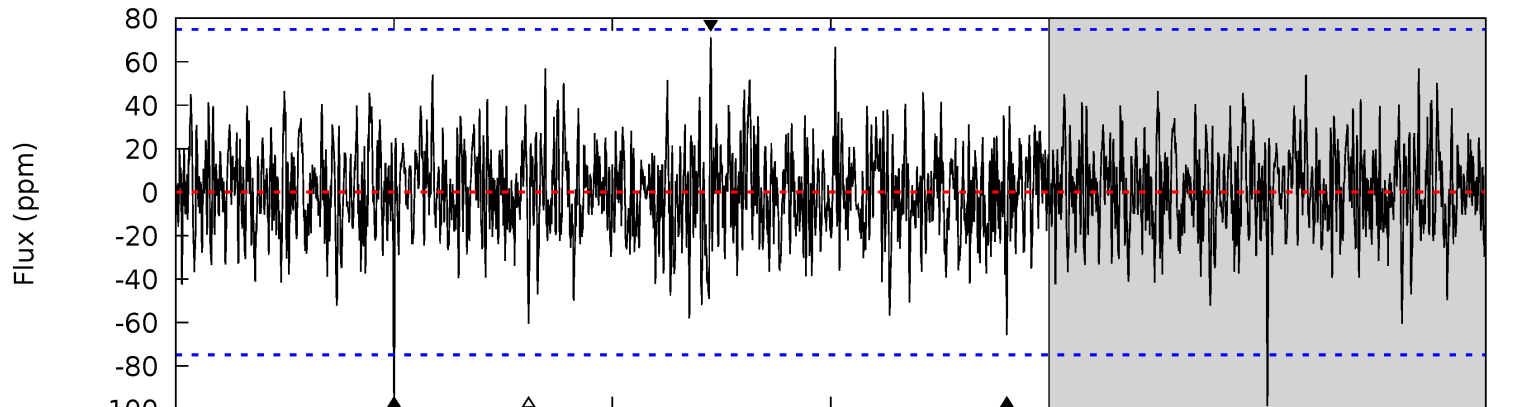
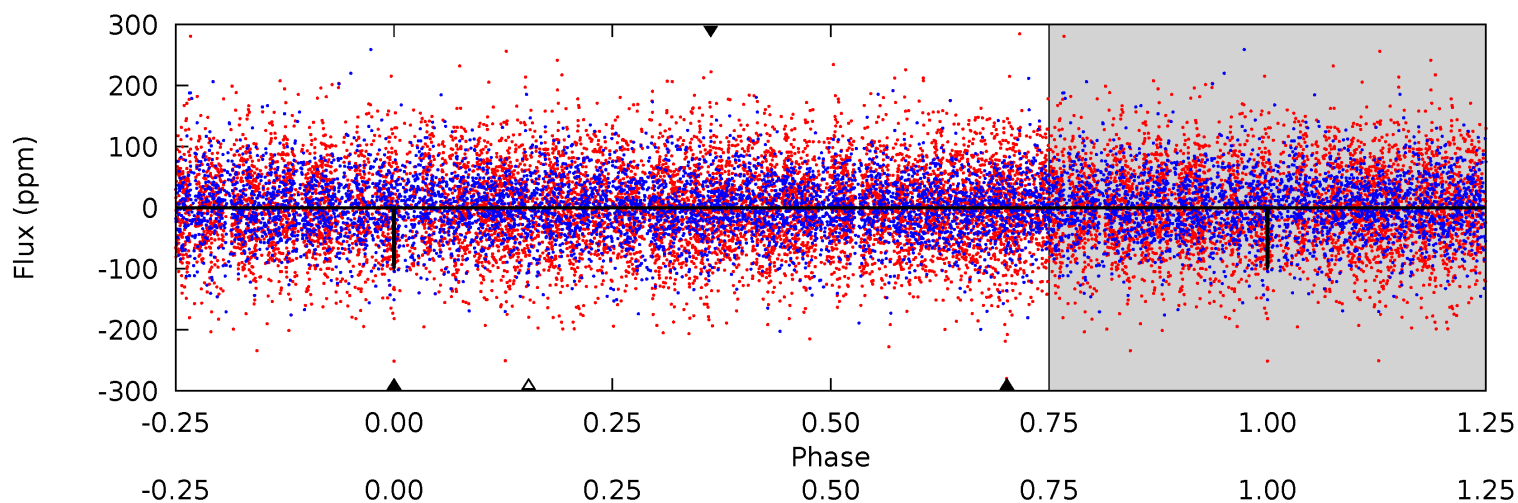
TCE 009935422-05 P= 62.724575 Days $T_0=166.271573$ (BKJD)



DV Model-Shift Uniqueness Test

009935422-05, P = 62.724559 Days, E = 103.546980 Days

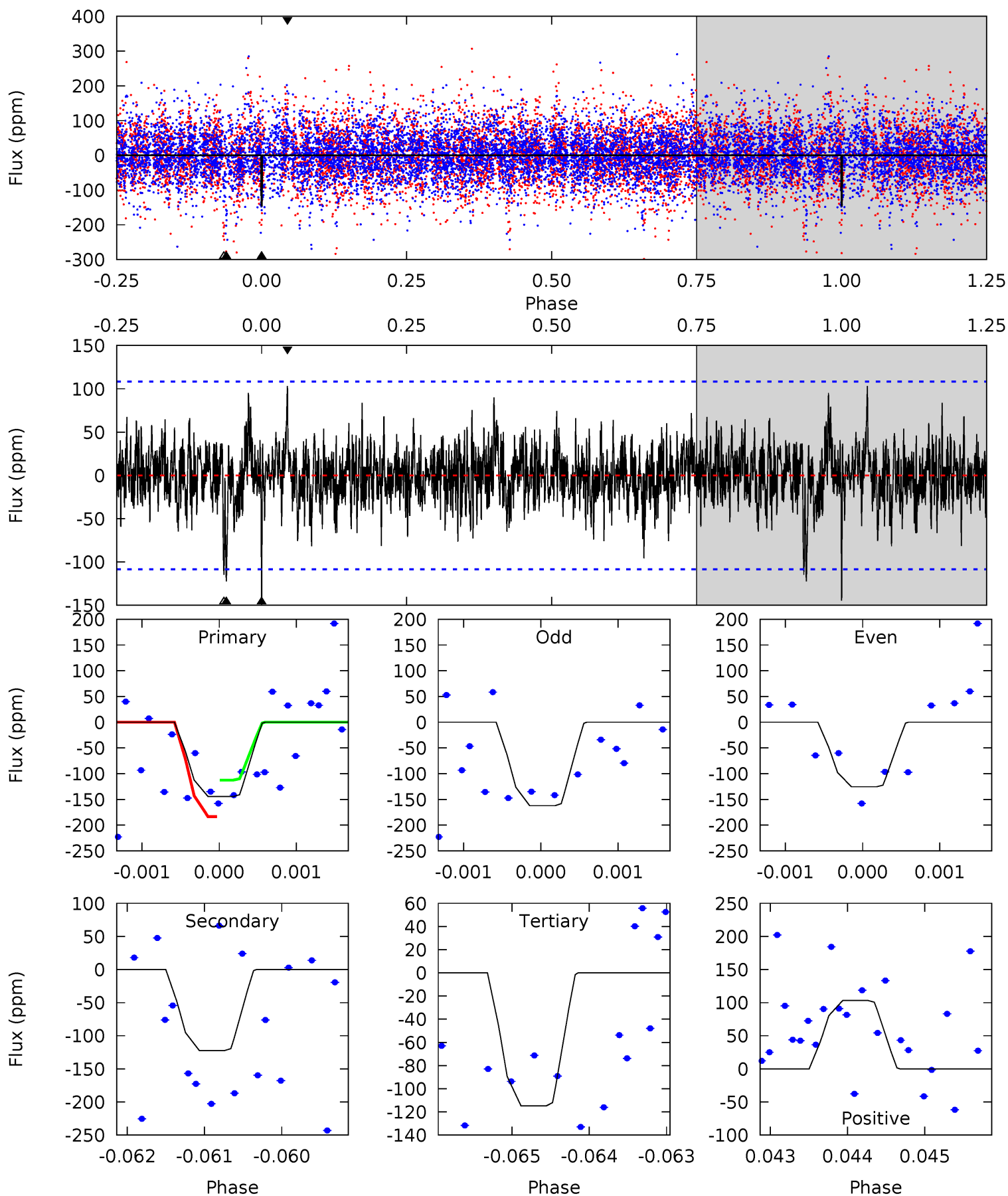
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.00	4.67	4.30	5.07	5.33	3.10	1.26	2.70	1.93	0.37	-0.40	0.35	1.02	0.42	0.77



Alt Model-Shift Uniqueness Test

009935422-05, P = 62.724575 Days, E = 103.546998 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.24	6.14	5.76	5.18	5.43	3.26	1.31	1.49	2.06	0.38	0.96	0.92	0.88	0.42	1.68



Stellar Parameters For KIC 009935422

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7202^{+225}_{-300}	$3.517^{+0.567}_{-0.063}$	$0.020^{+0.200}_{-0.300}$	$4.170^{+0.401}_{-2.408}$	$2.087^{+0.144}_{-0.575}$	$0.041^{+0.304}_{-0.008}$
	+3%/-4%	+16%/-2%	+1000%/-1500%	+10%/-58%	+7%/-28%	+750%/-19%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009935422-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-66 ± 14	$4.66^{+3.03}_{-2.80}$	1384^{+103}_{-195}	5872^{+3991}_{-1153}	249^{+1237}_{-160}
Alt.	-122 ± 20	$5.44^{+3.43}_{-2.89}$	1388^{+91}_{-196}	6256^{+3486}_{-1160}	348^{+1194}_{-218}

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

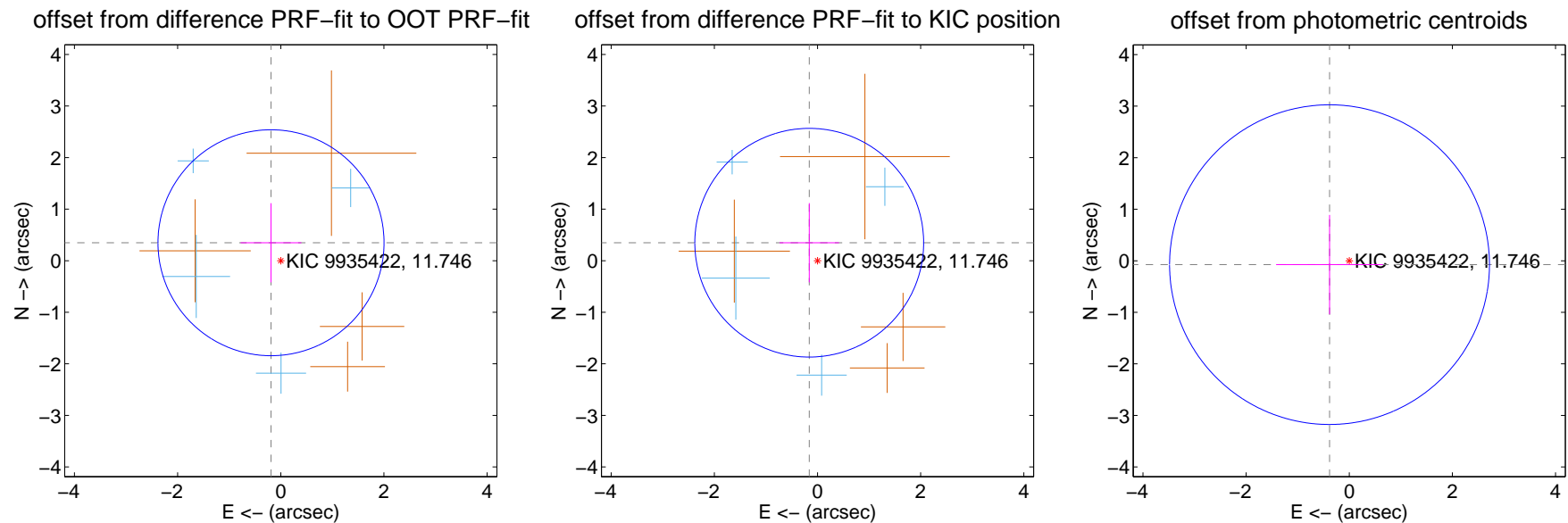
DV Centroid Data

Supplemental centroid analysis for 009935422-05. **Kepler magnitude: 11.75.** Transit SNR 7.68

There are 4 quarters with good PRF difference image offsets

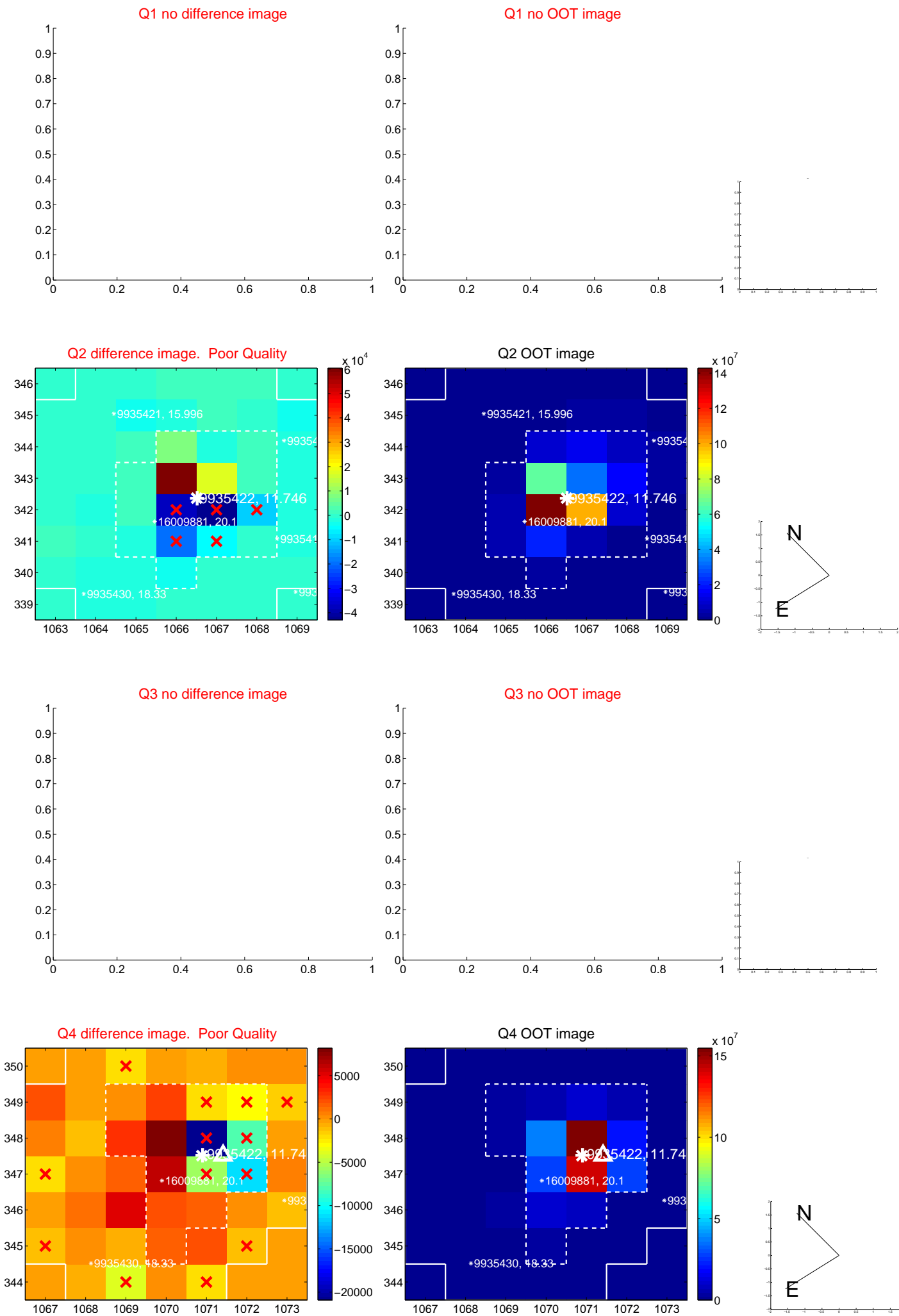
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.396 ± 0.730	0.54	0.189 ± 0.589	0.348 ± 0.767
PRF-fit source offset from KIC position	0.384 ± 0.739	0.52	0.161 ± 0.577	0.349 ± 0.769
photometric centroid source offset	0.39 ± 1.03	0.38	0.38 ± 1.04	-0.08 ± 0.96

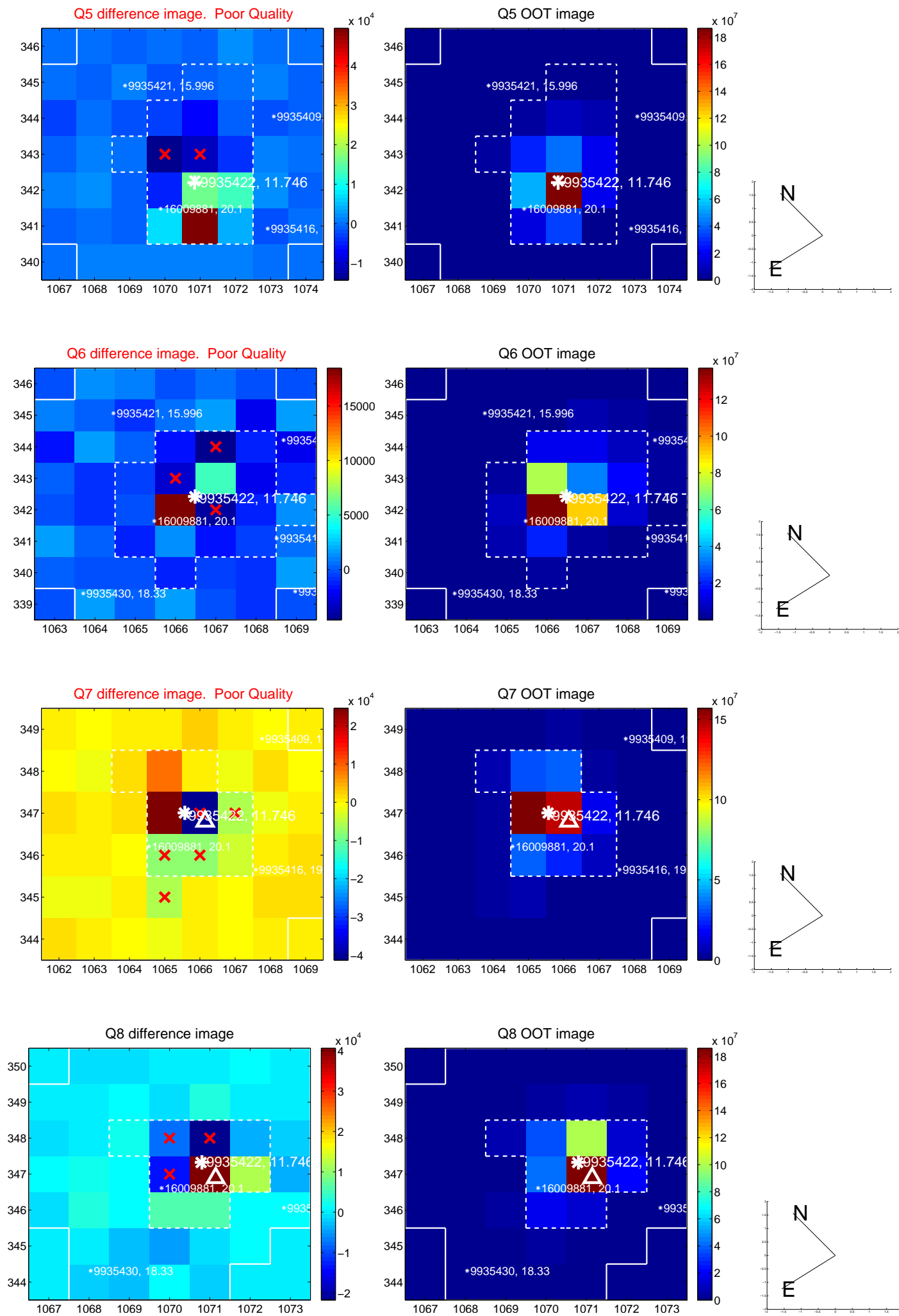


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

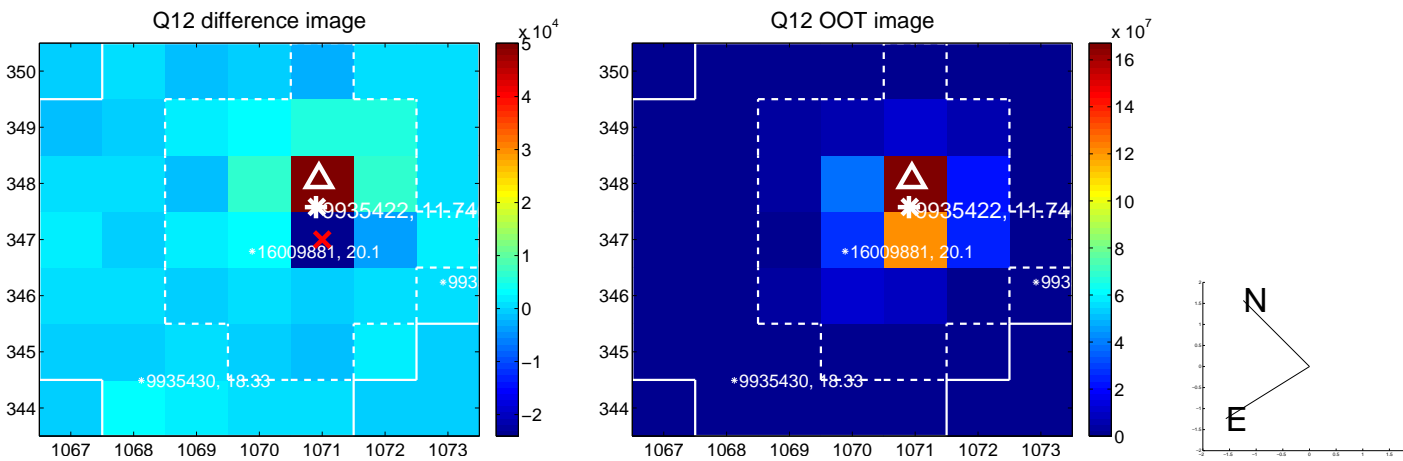
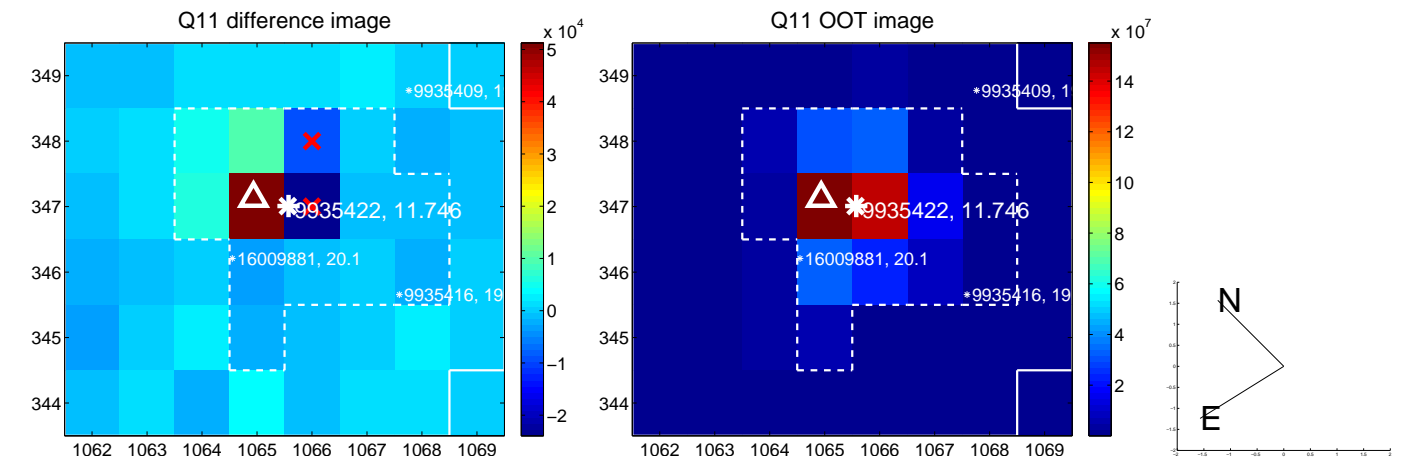
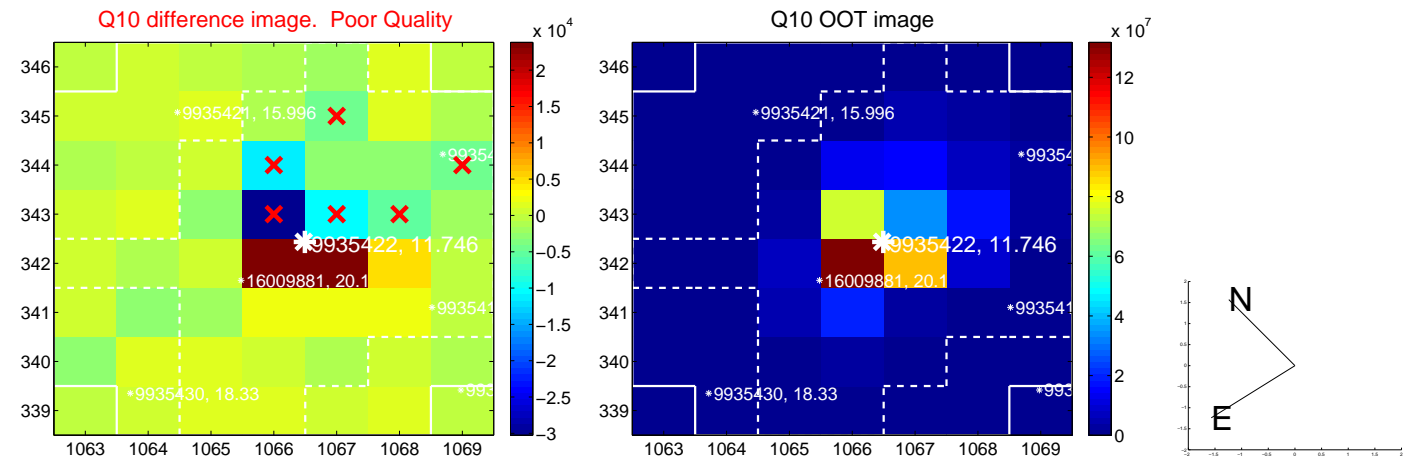
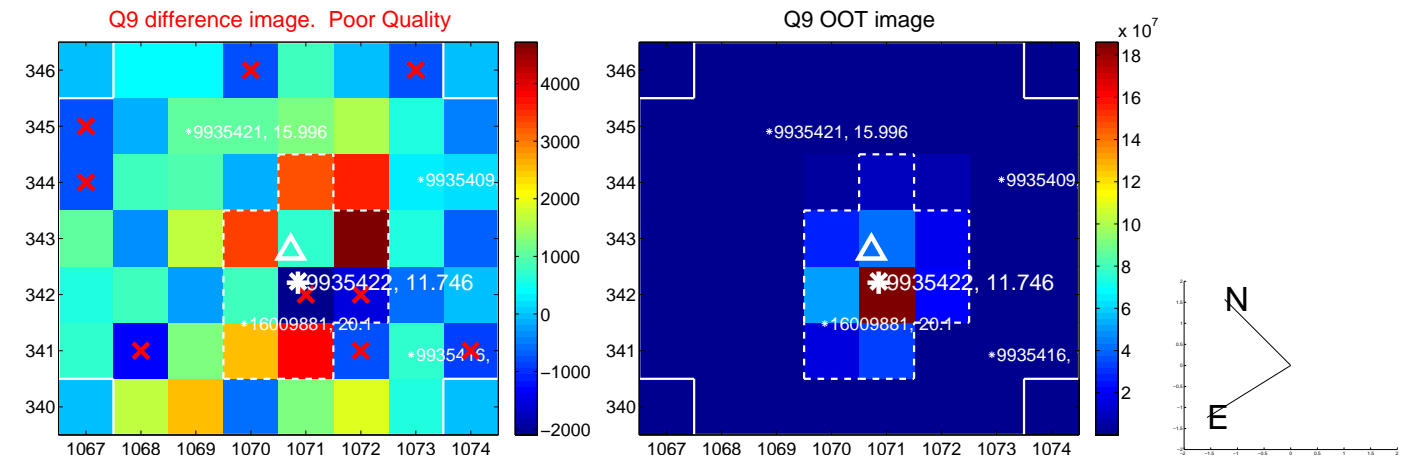
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



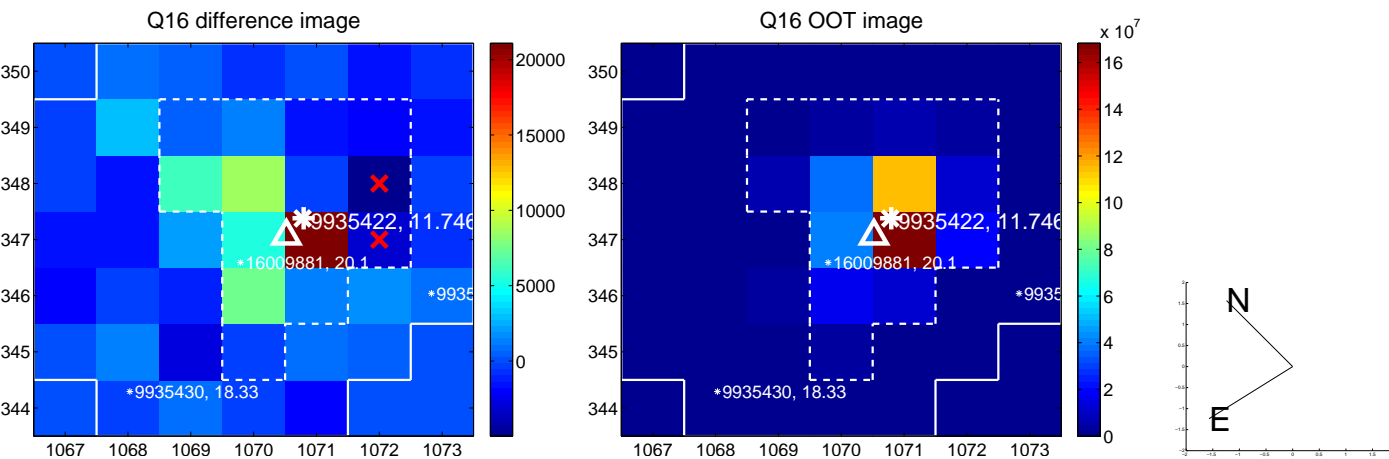
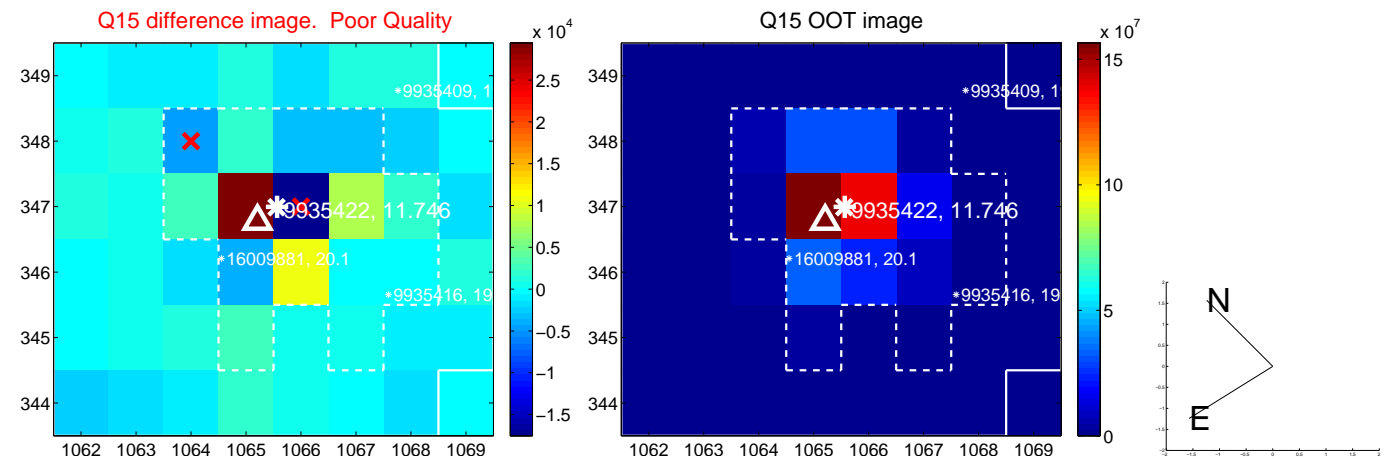
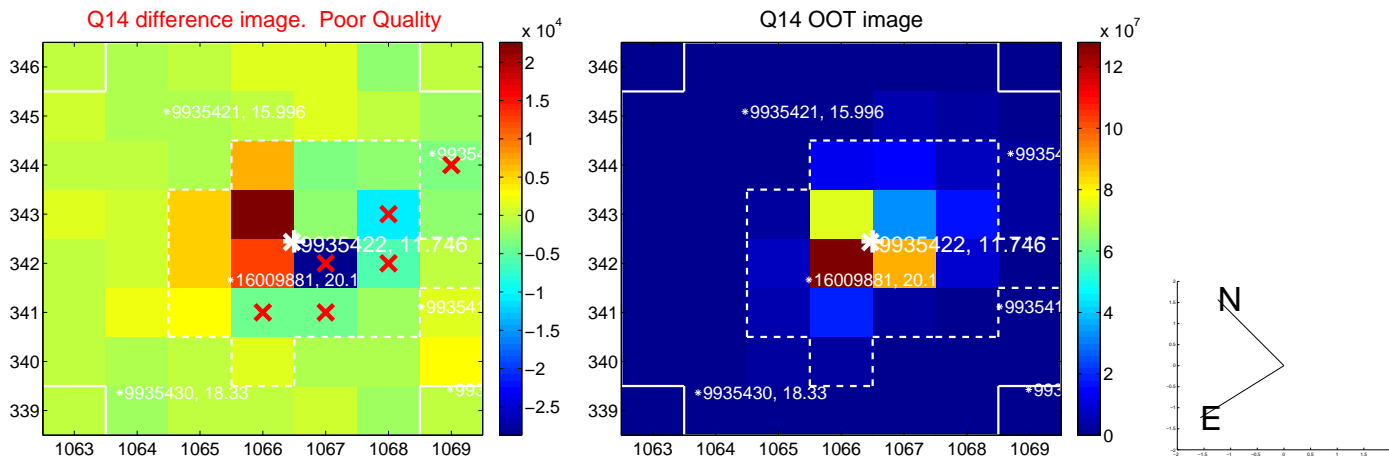
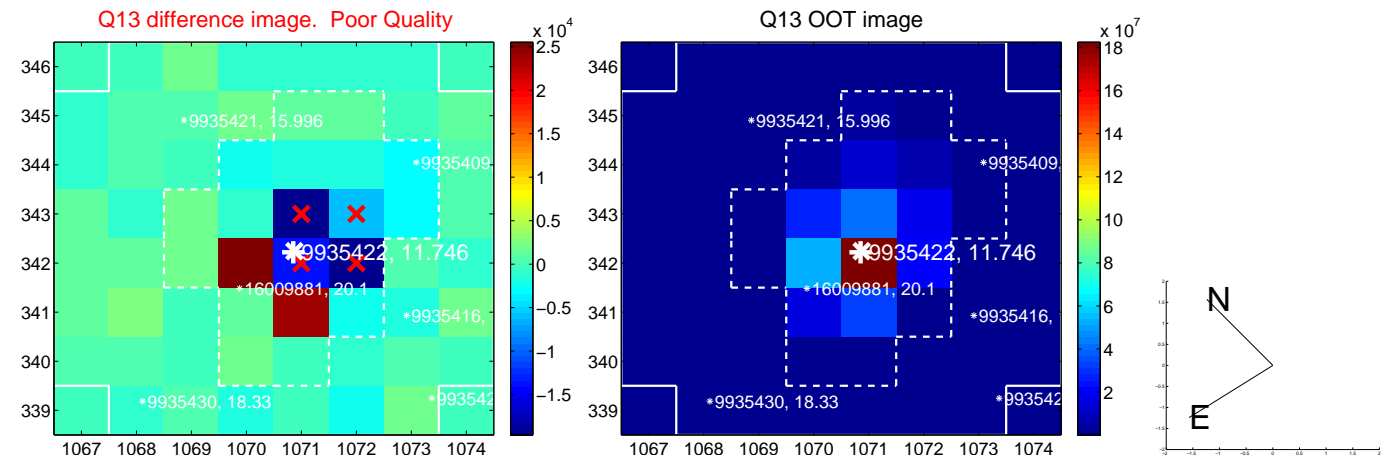
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



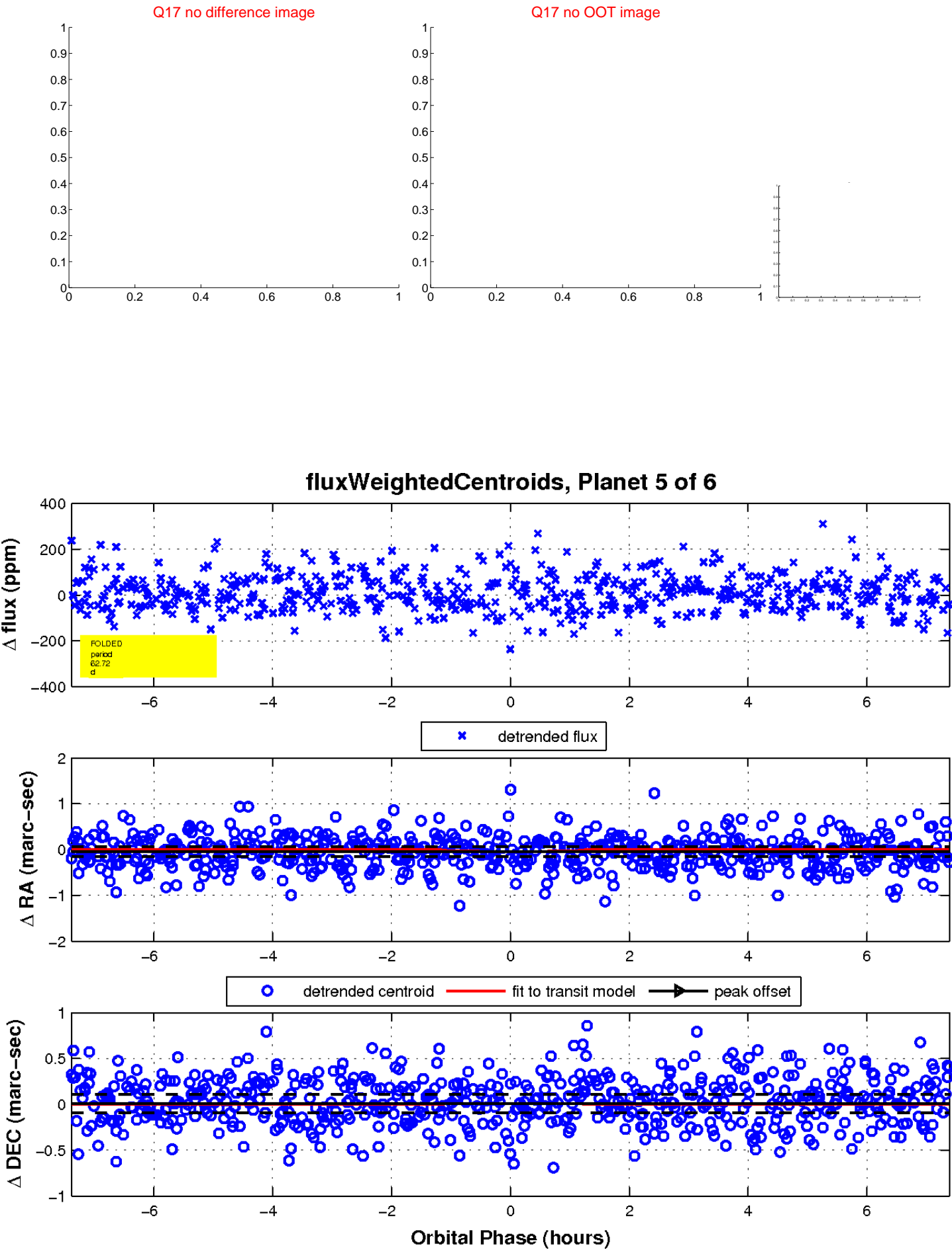
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

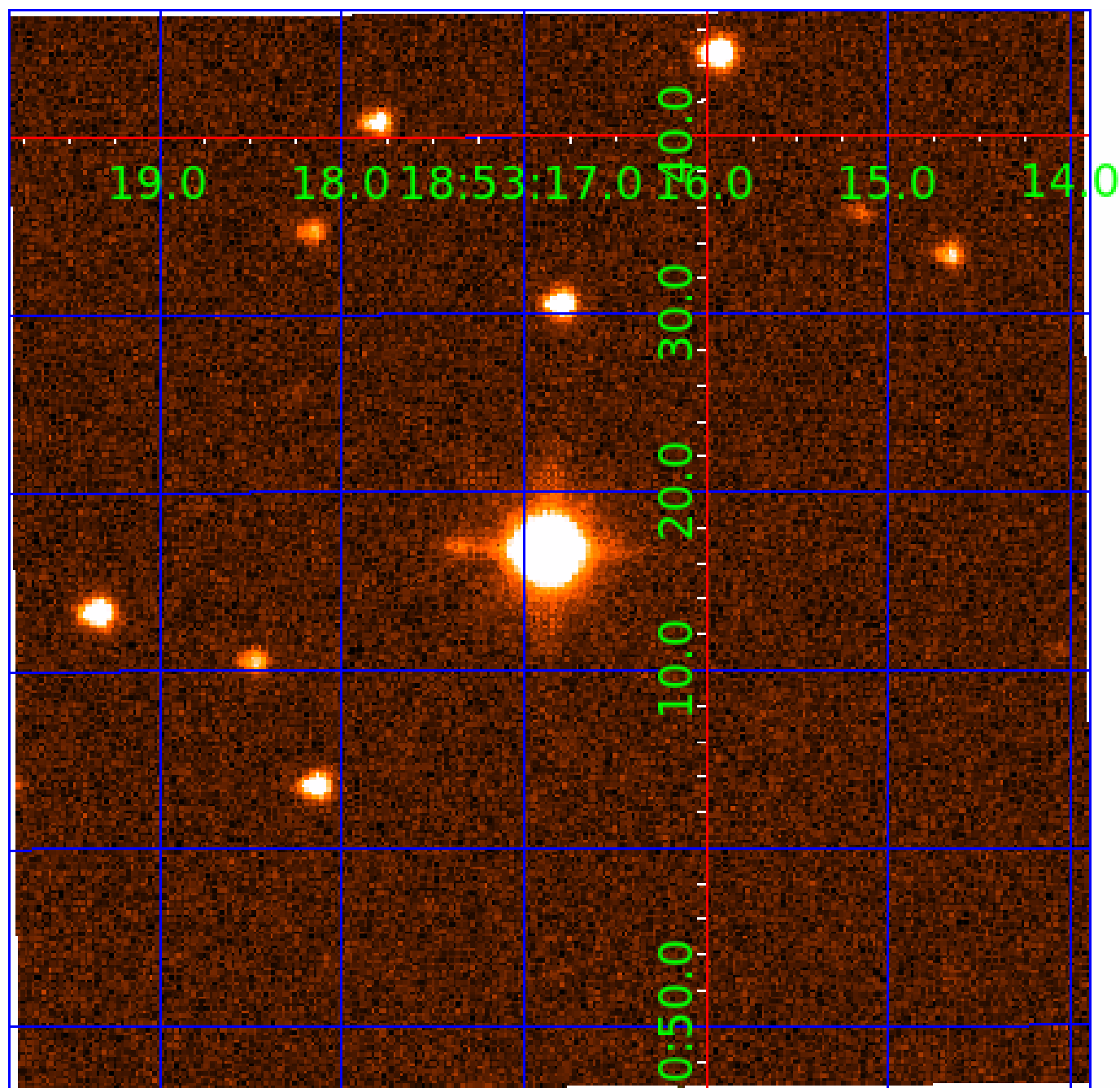


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009935422

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})
009935422-01	OBS	No	2.679006	133.156733	5.3	17.483	8.8	5.6	4.17	7202	1.09	18009.40
009935422-02	OBS	No	78.796943	133.714185	68.1	29.342	39.2	8.4	4.17	7202	3.74	198.36
009935422-03	OBS	No	74.775086	171.059174	145.0	27.461	22.0	15.1	4.17	7202	6.51	212.71
009935422-04	OBS	No	81.592655	208.305996	149.7	1.994	8.5	9.2	4.17	7202	6.02	189.35
009935422-05	OBS	No	62.724559	166.271539	103.0	2.464	7.9	7.7	4.17	7202	4.88	268.87
009935422-06	OBS	No	63.003490	183.025760	146.8	2.271	8.1	8.2	4.17	7202	5.86	267.29

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009935422-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009935422-02	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_FEW_MEAS
009935422-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS
009935422-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
009935422-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009935422-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_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.

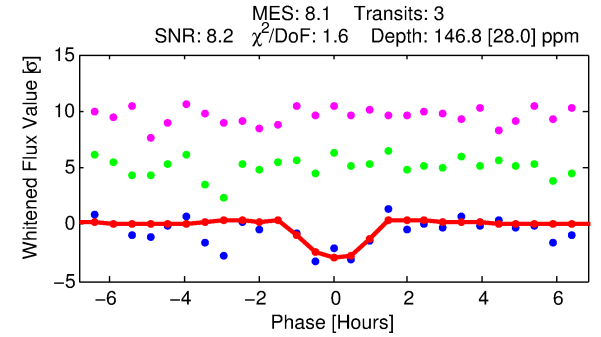
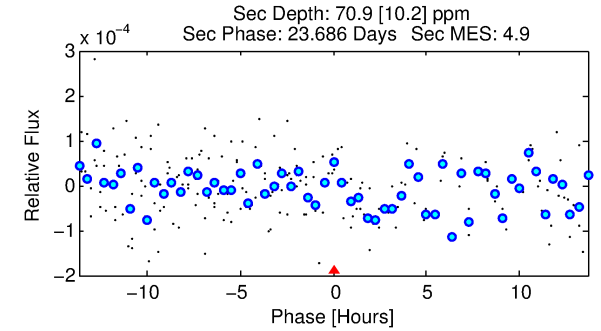
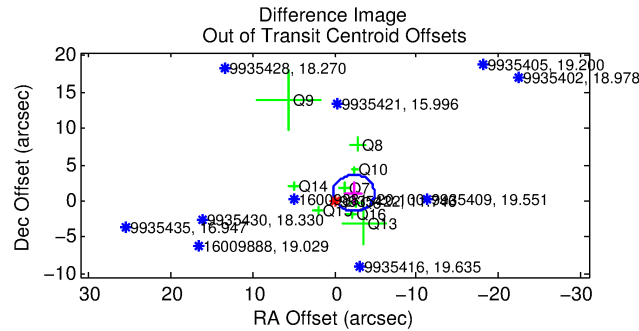
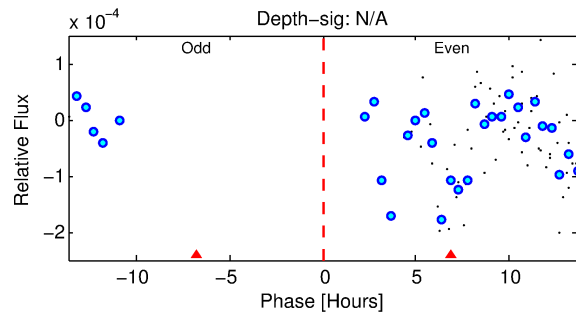
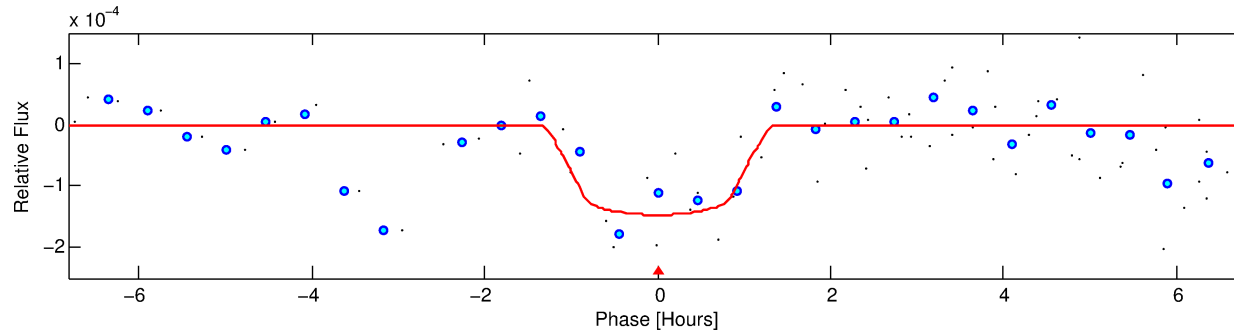
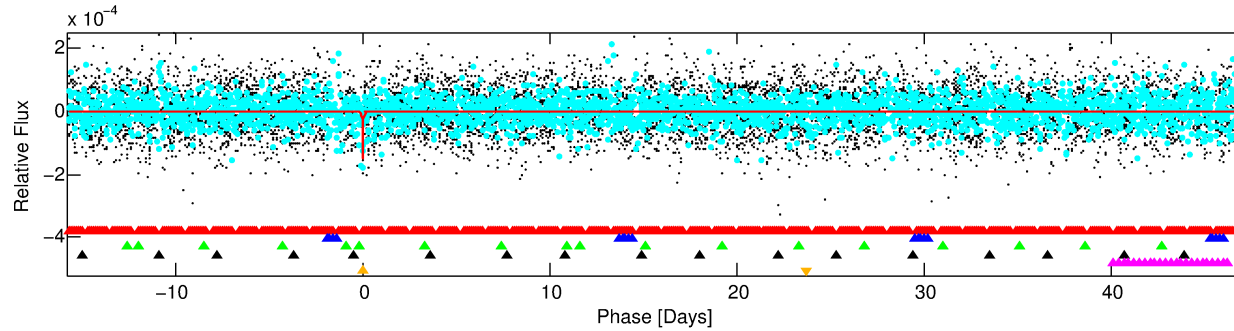
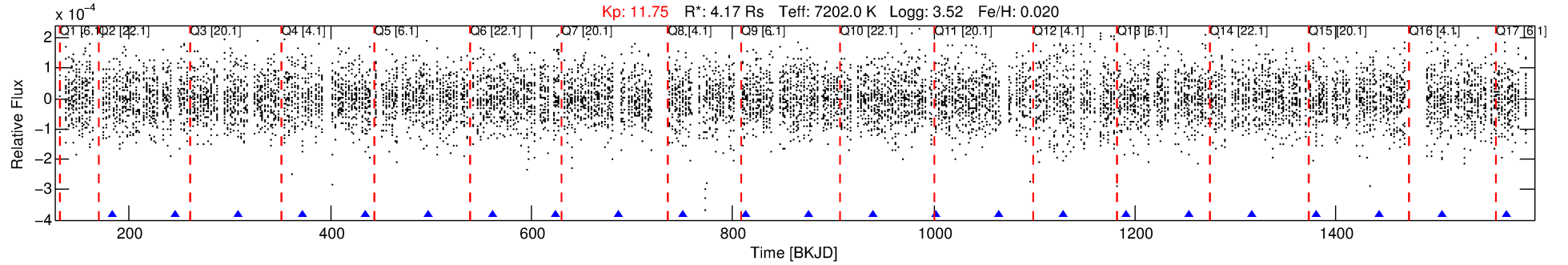
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009935422-06

No Significant Match Found

DV One-Page Summary

KIC: 9935422 Candidate: 6 of 6 Period: 63.003 d



DV Fit Results:

Period = 63.00349 [0.00195] d
Epoch = 183.0258 [0.0375] BKJD
Rp/R* = 0.0129 [0.0253]
a/R* = 99.60 [1275.89]
b = 0.90 [2.79]
Seff = 267.29 [258.25]
Teq = 1031 [249] K
Rp = 5.86 [11.99] Re
a = 0.3960 [0.2301] AU
Ag = 178.36 [721.63] [0.25σ]
Teffp = 5826 [5732] K [0.84σ]

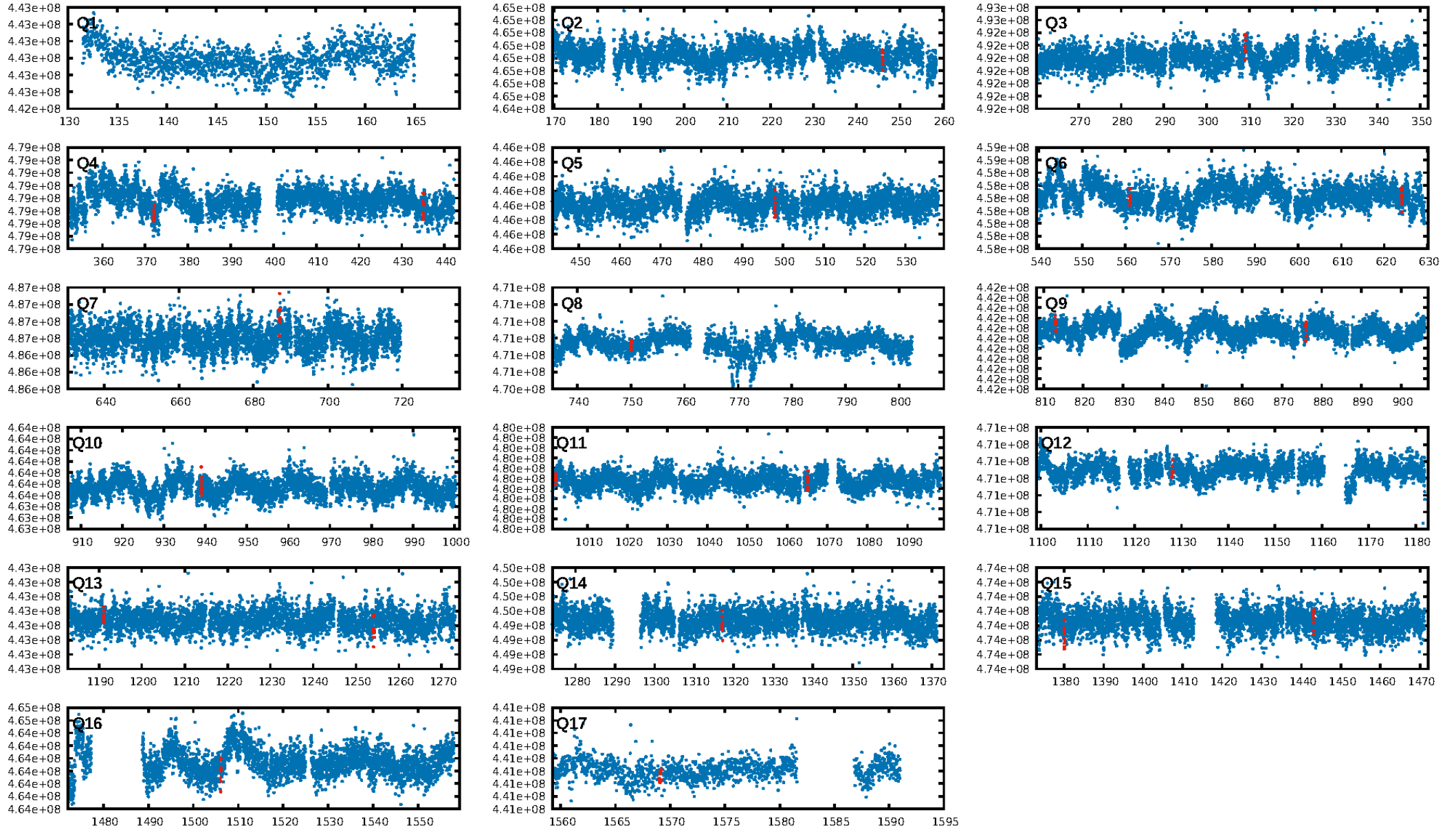
DV Diagnostic Results:

ShortPeriod-sig: 95.4% [2.00σ]
LongPeriod-sig: 100.0% [10.25σ]
ModelChiSquare2-sig: 55.0%
ModelChiSquareGof-sig: 89.3%
Bootstrap-pfa: 8.39e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.034
Centroid-sig: 0.0%
Centroid-so: 1.859 arcsec [2.80σ]
OotOffset-rm: 2.547 arcsec [3.02σ]
KicOffset-rm: 2.590 arcsec [2.72σ]
OotOffset-st: 3/2/2/2 [9]
KicOffset-st: 3/2/2/2 [9]
DiffImageQuality-fgm: 0.22 [2/9]
DiffImageOverlap-fno: 0.71 [10/14]

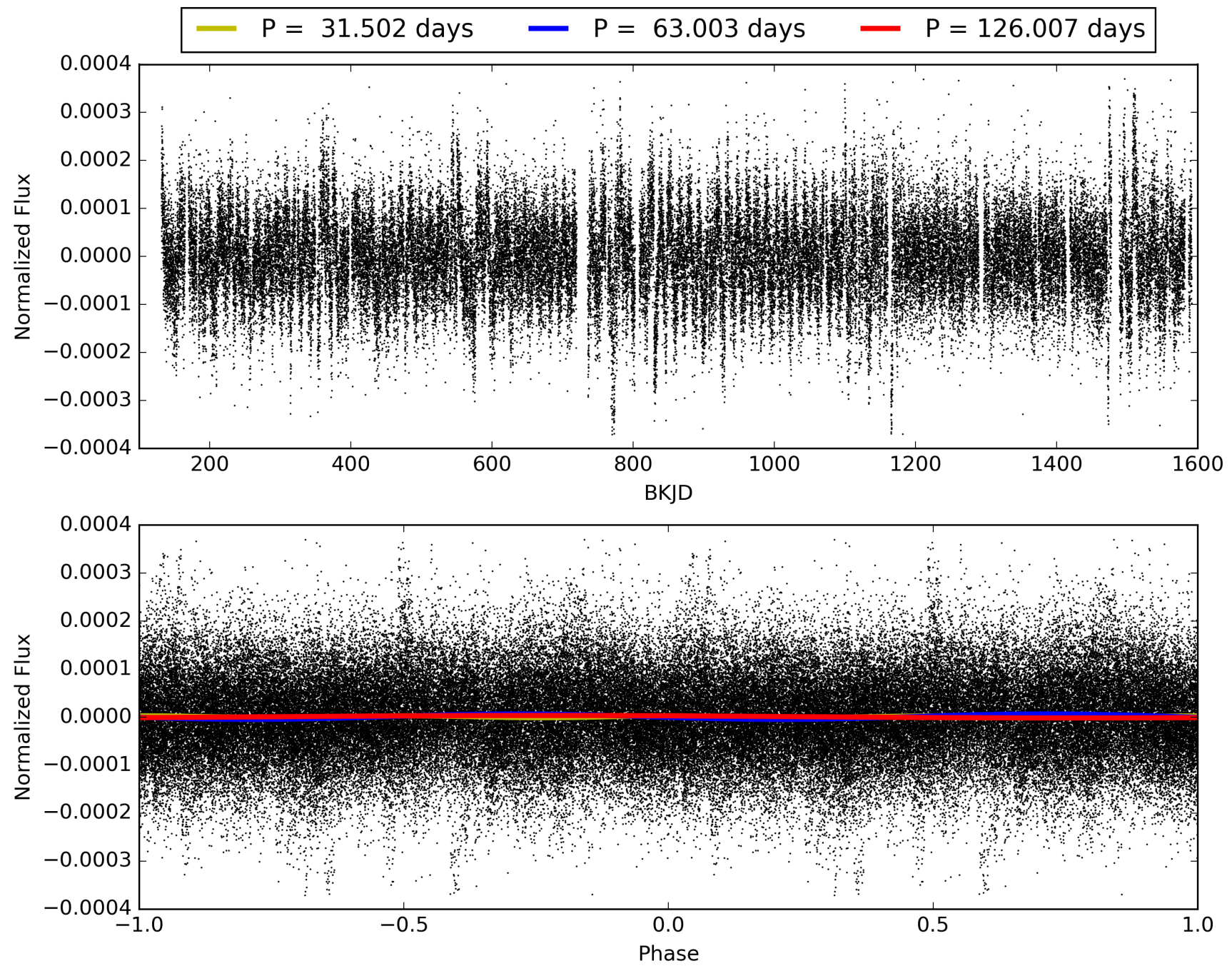
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:20:58 Z

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

TCE 009935422-06, PDC Light Curves

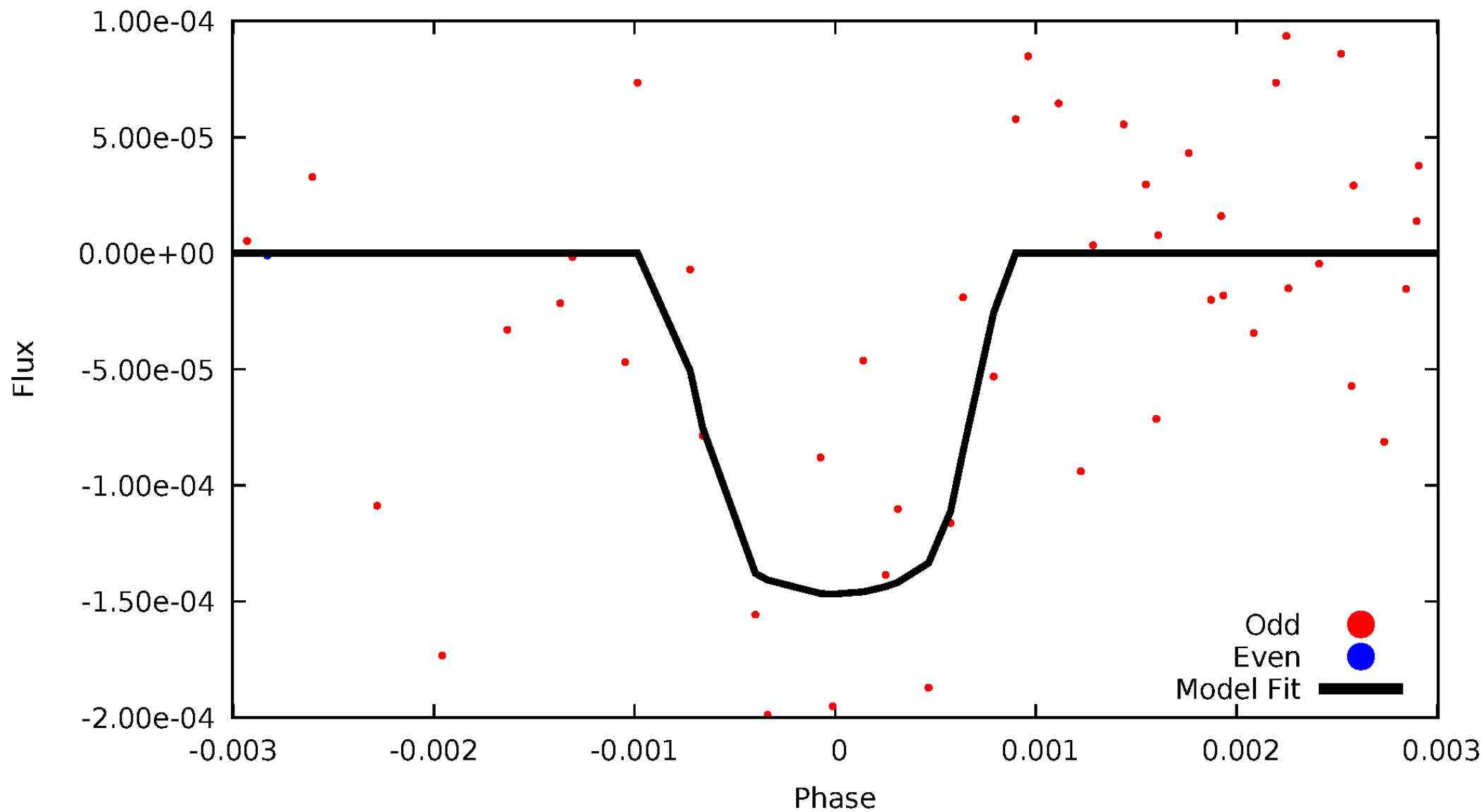


TCE 009935422-06



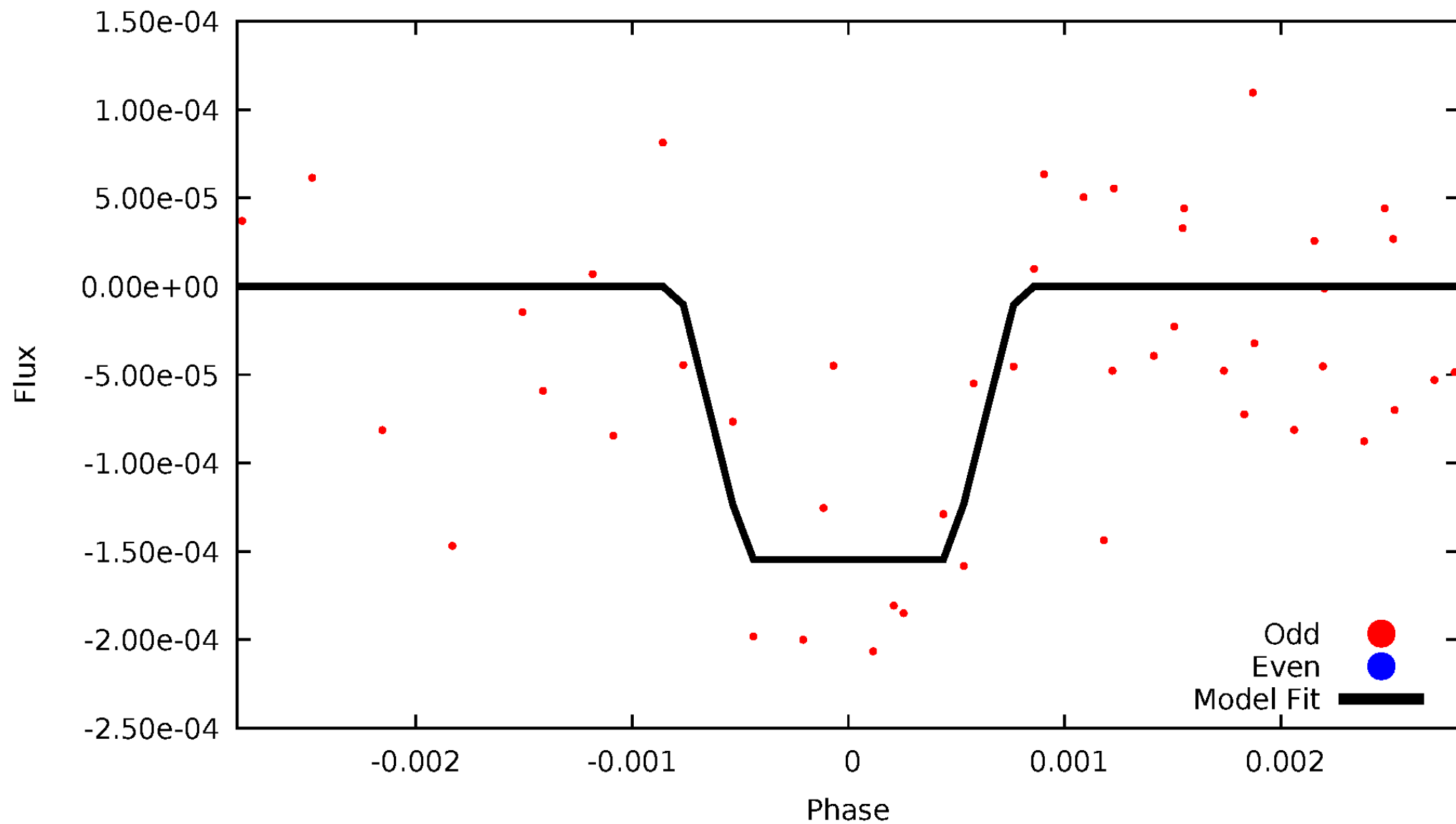
DV Odd/Even

TCE 009935422-06



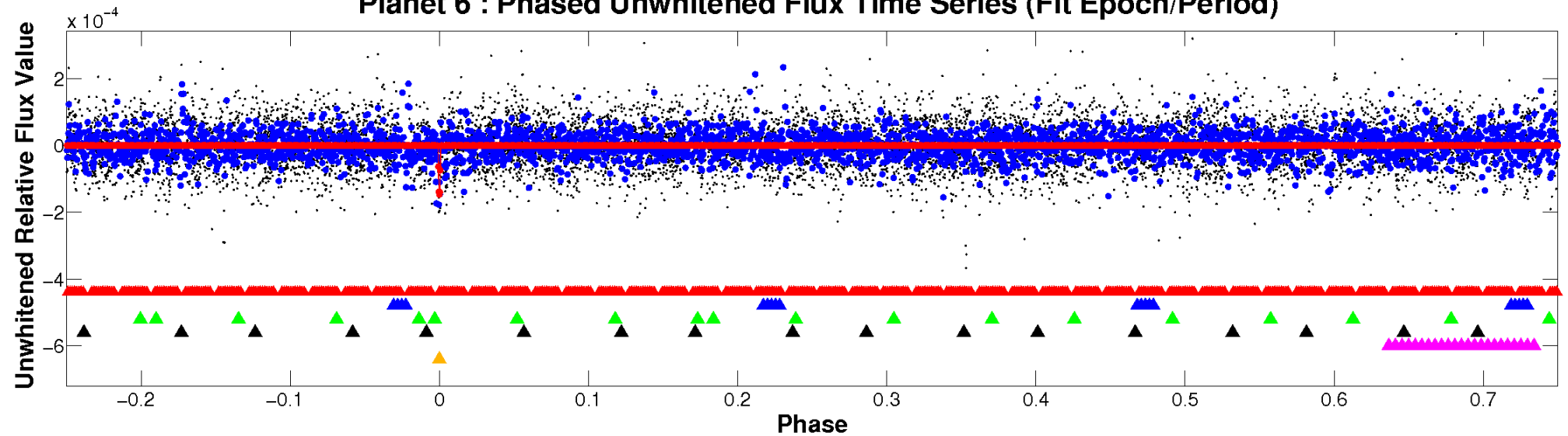
ALT Odd/Even

TCE 009935422-06

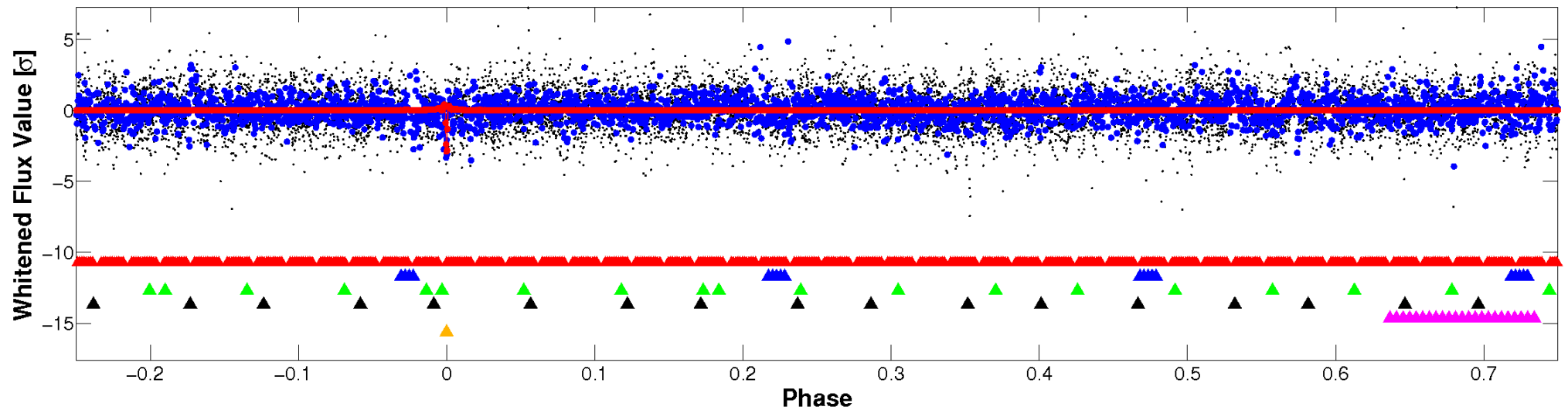


Non-Whitened Vs. Whitened Light Curve

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

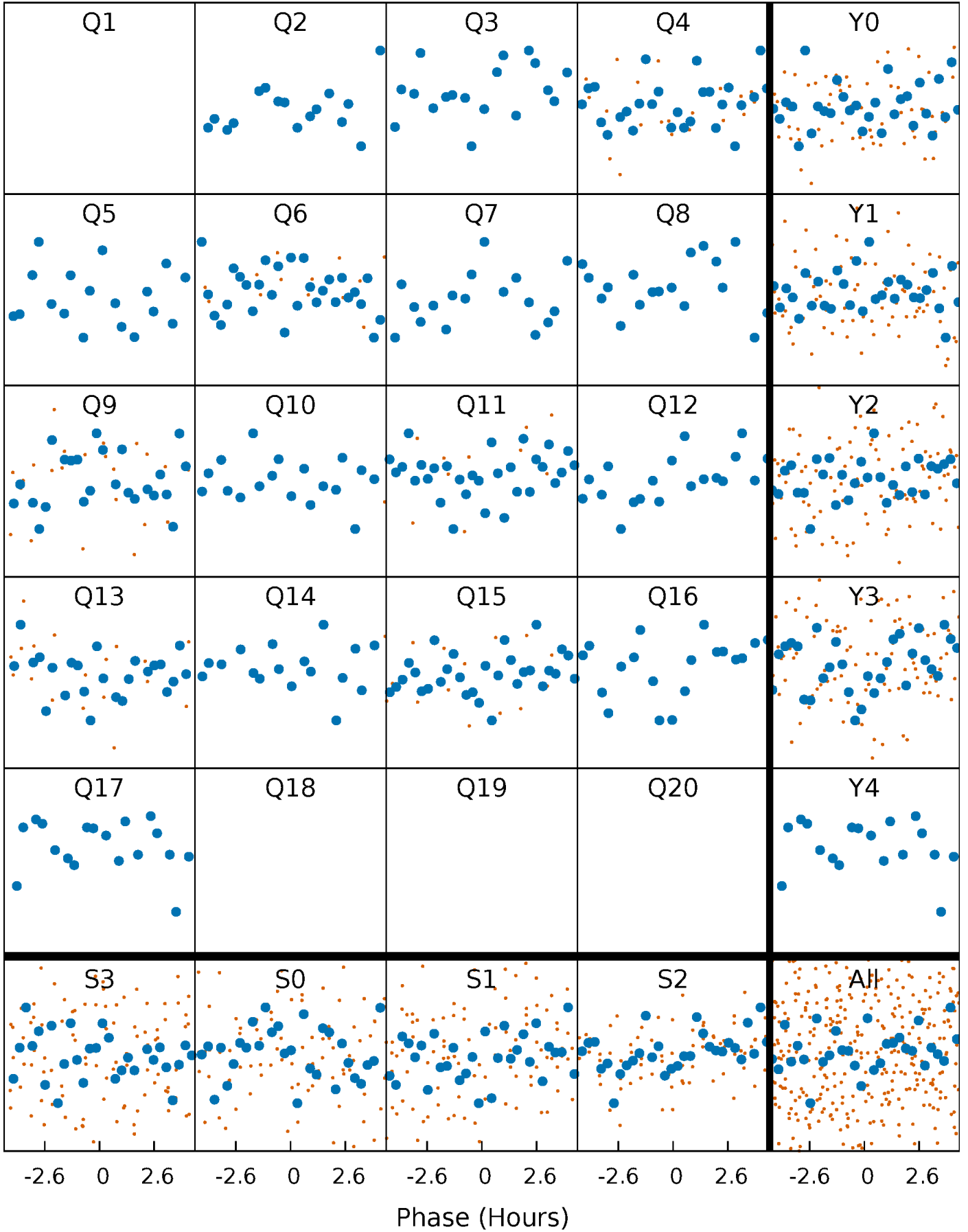


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



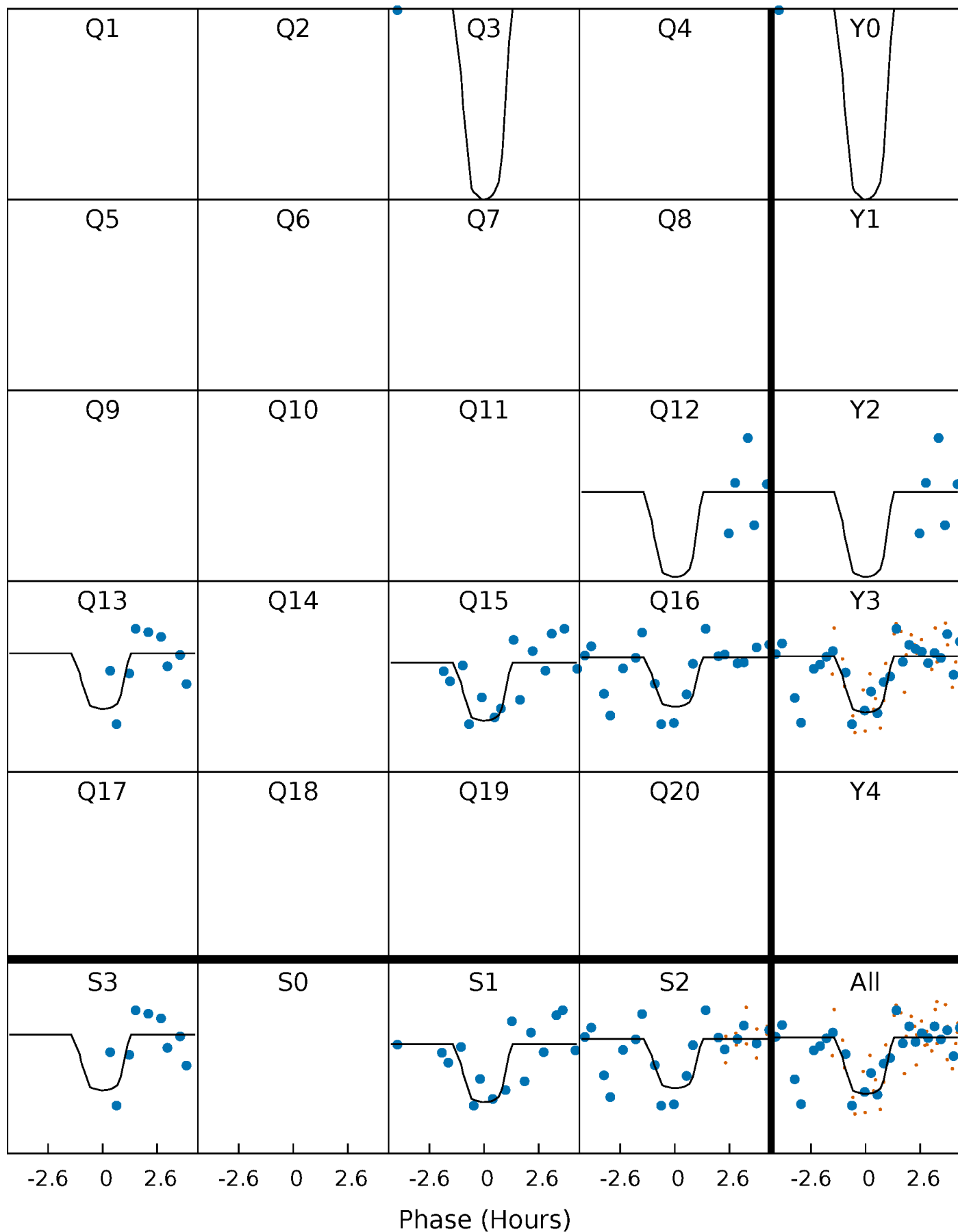
PDC Quarter-Phased Transit Curves

TCE 009935422-06 P= 63.003490 Days $T_0=183.025760$ (BKJD)



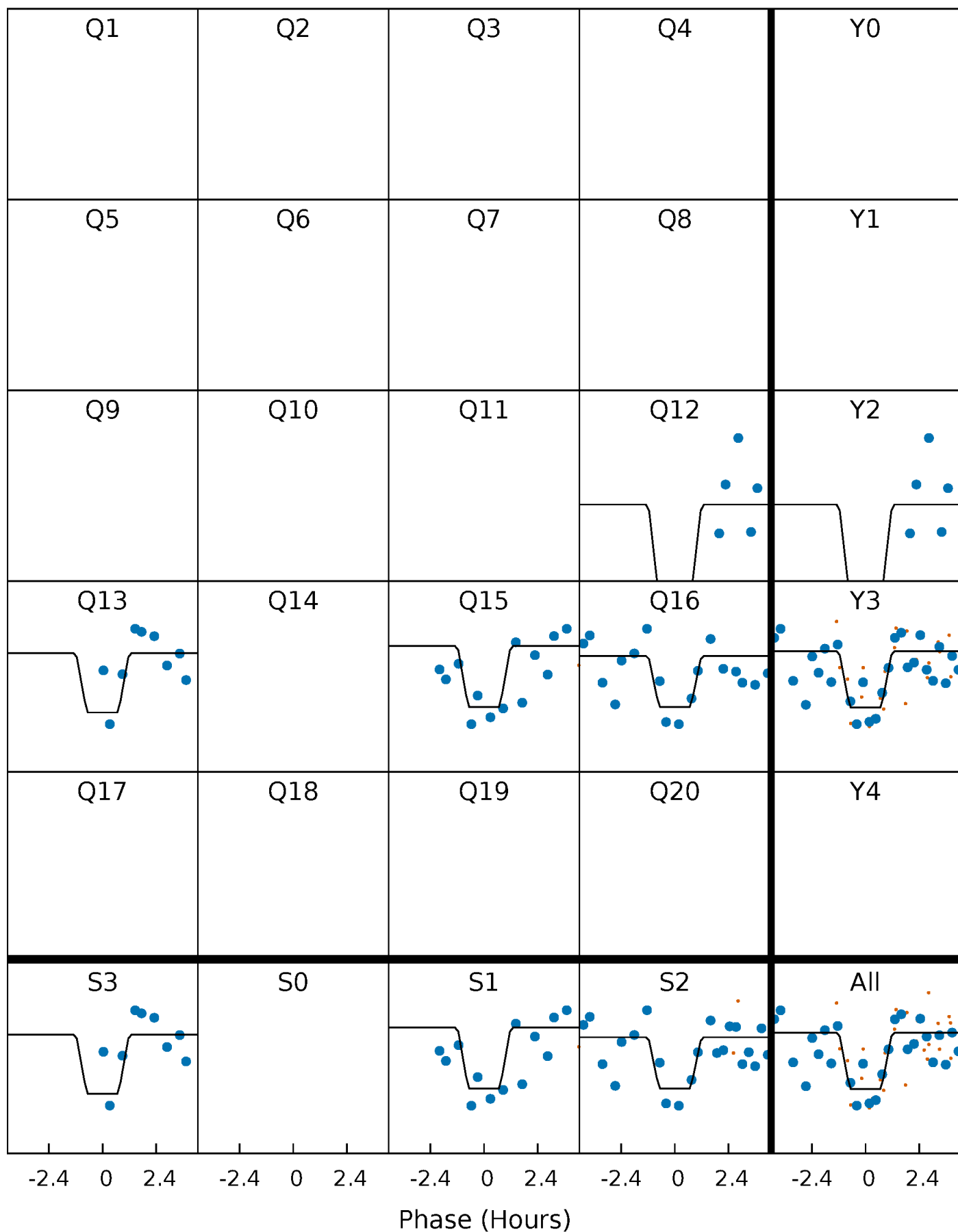
DV Quarter-Phased Transit Curves

TCE 009935422-06 P= 63.003490 Days $T_0=183.025760$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

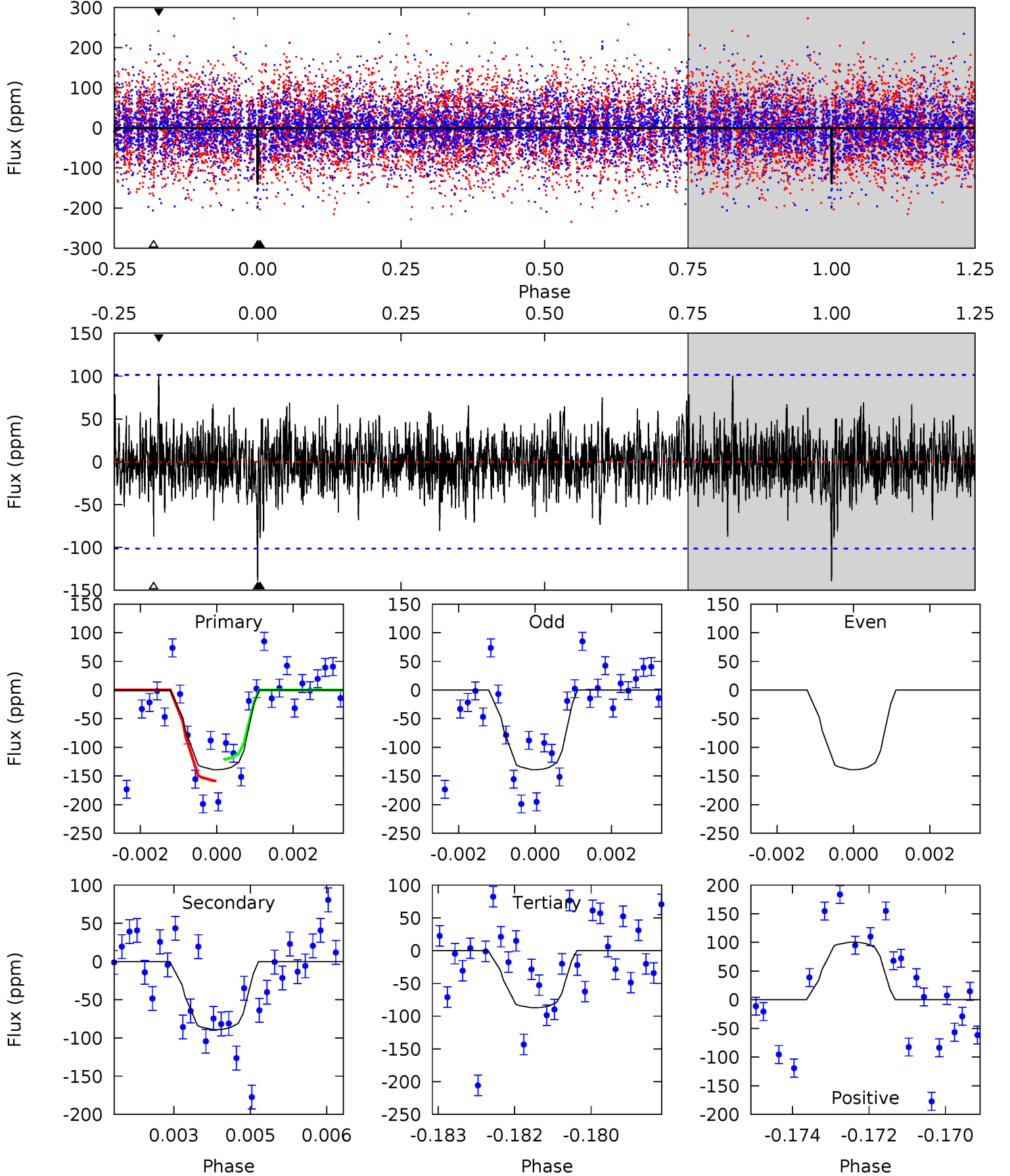
TCE 009935422-06 P= 62.998186 Days $T_0=183.129116$ (BKJD)



DV Model-Shift Uniqueness Test

009935422-06, P = 63.003490 Days, E = 120.022270 Days

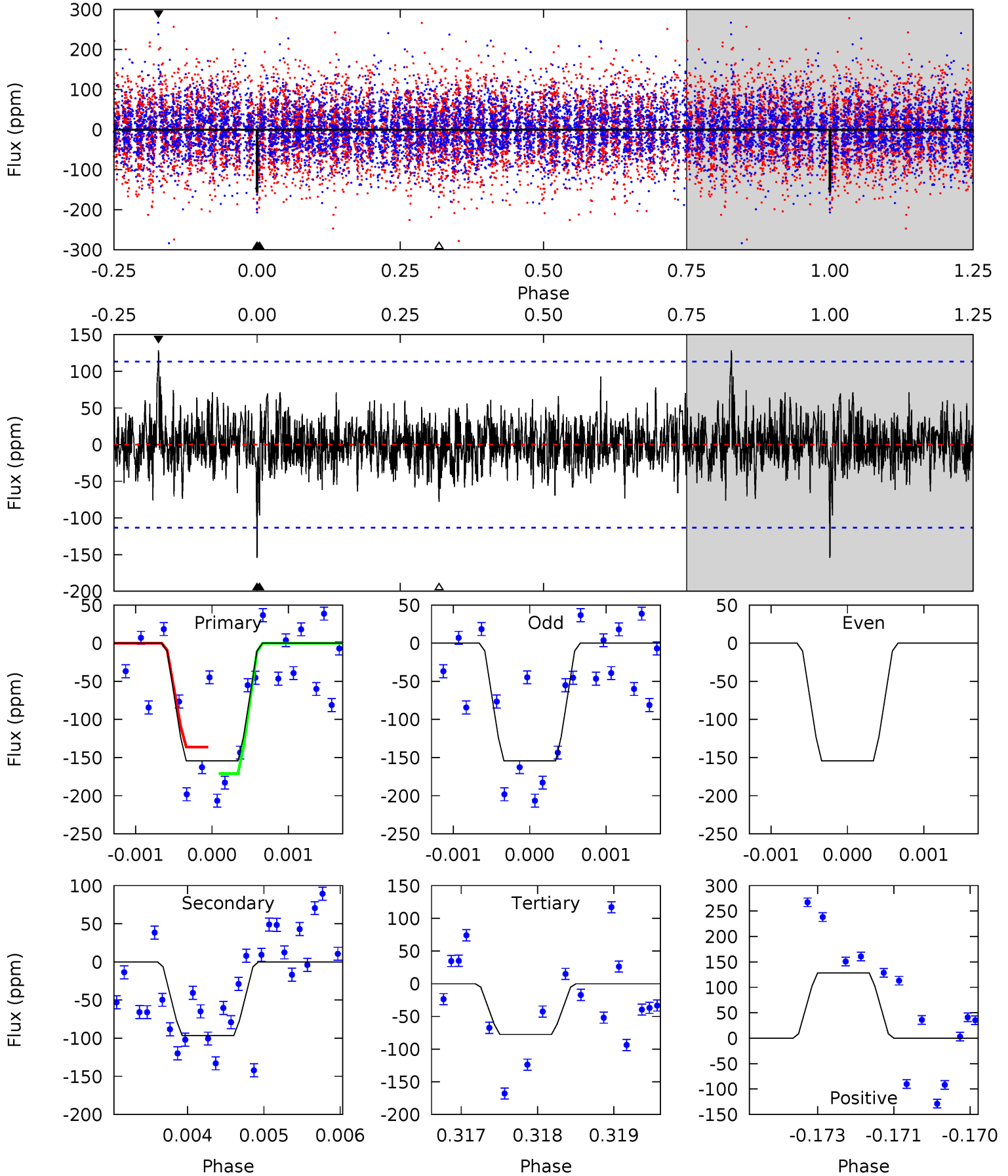
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.37	4.72	4.62	5.32	5.36	3.15	1.19	2.75	2.05	0.10	-0.60	0	1.05	0.42	0.97



Alt Model-Shift Uniqueness Test

009935422-06, P = 62.998186 Days, E = 120.130930 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.36	4.61	3.70	6.13	5.40	3.22	1.09	3.66	1.23	0.90	-1.52	0	0.91	0.45	0.81



Stellar Parameters For KIC 009935422

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7202^{+225}_{-300}	$3.517^{+0.567}_{-0.063}$	$0.020^{+0.200}_{-0.300}$	$4.170^{+0.401}_{-2.408}$	$2.087^{+0.144}_{-0.575}$	$0.041^{+0.304}_{-0.008}$
	+3%/-4%	+16%/-2%	+1000%/-1500%	+10%/-58%	+7%/-28%	+750%/-19%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009935422-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-89 ± 19	$8.91^{+8.69}_{-5.65}$	1387^{+105}_{-188}	4702^{+2677}_{-989}	96^{+579}_{-72}
Alt.	-97 ± 21	$8.98^{+9.25}_{-6.27}$	1391^{+96}_{-193}	4761^{+4061}_{-1032}	100^{+1030}_{-77}

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 $A_{obs} \gg 1.0$

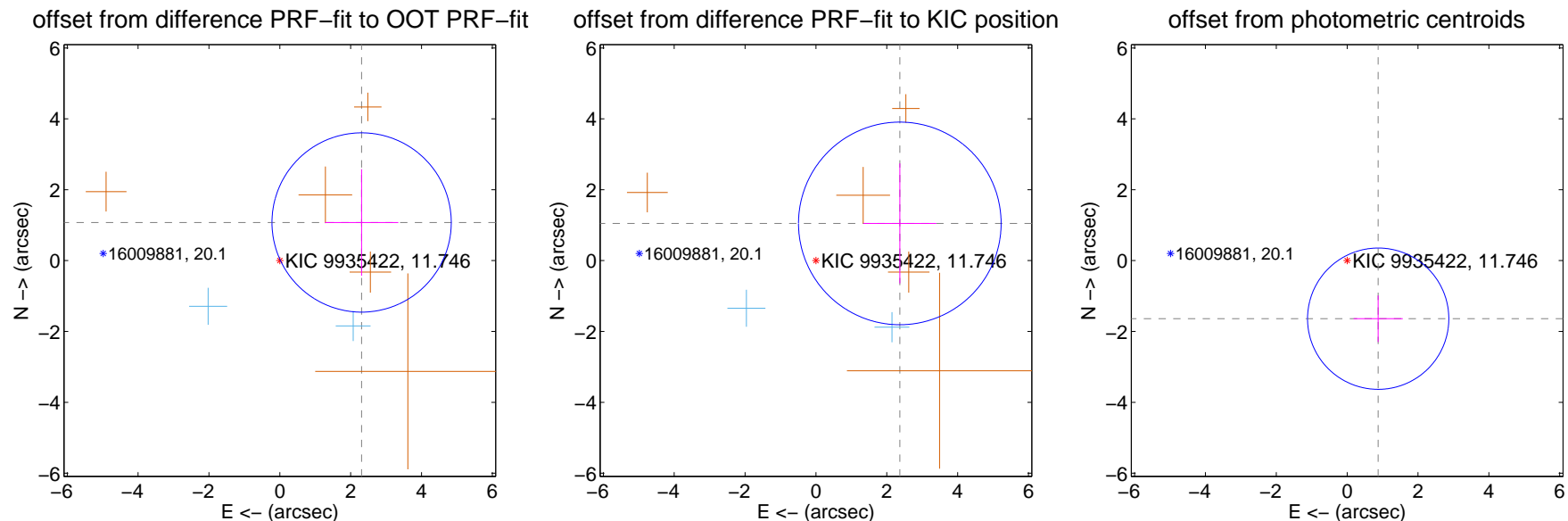
DV Centroid Data

Supplemental centroid analysis for 009935422-06. **Kepler magnitude: 11.75.** Transit SNR 8.17

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.547 ± 0.843	3.02	-2.309 ± 1.037	1.075 ± 1.503
PRF-fit source offset from KIC position	2.590 ± 0.953	2.72	-2.368 ± 1.031	1.049 ± 1.694
photometric centroid source offset	1.86 ± 0.66	2.80	-0.88 ± 0.69	-1.64 ± 0.66



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.

Q1 no difference image



Q1 no OOT image



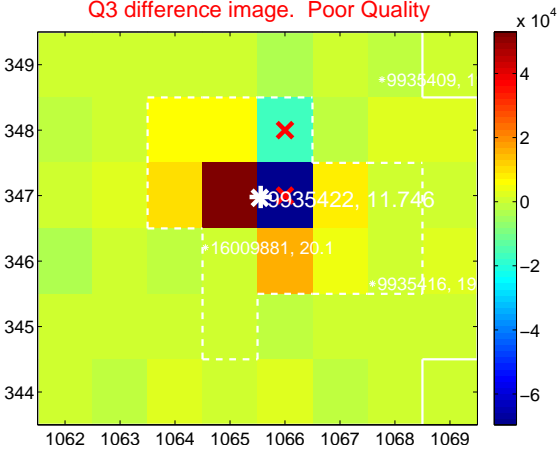
Q2 no difference image



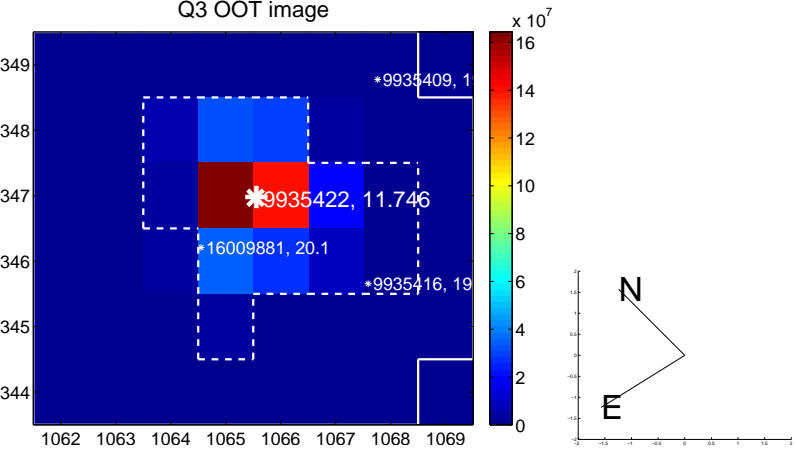
Q2 no OOT image



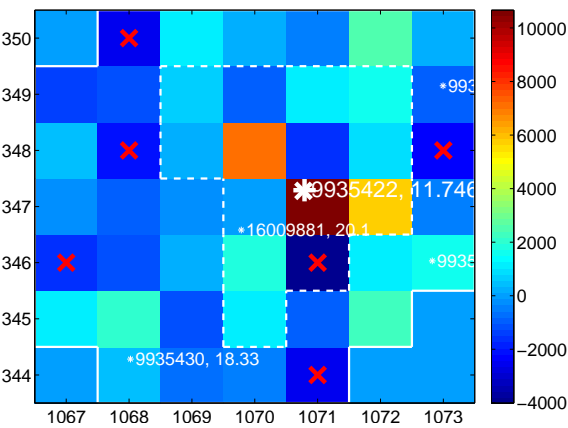
Q3 difference image. Poor Quality



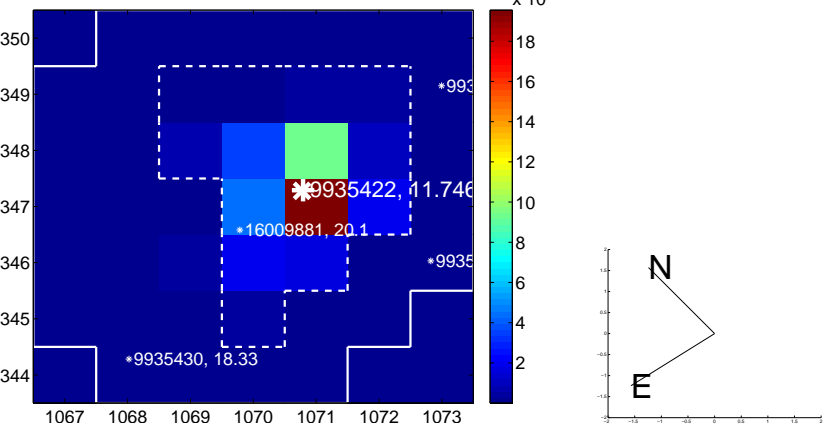
Q3 OOT image



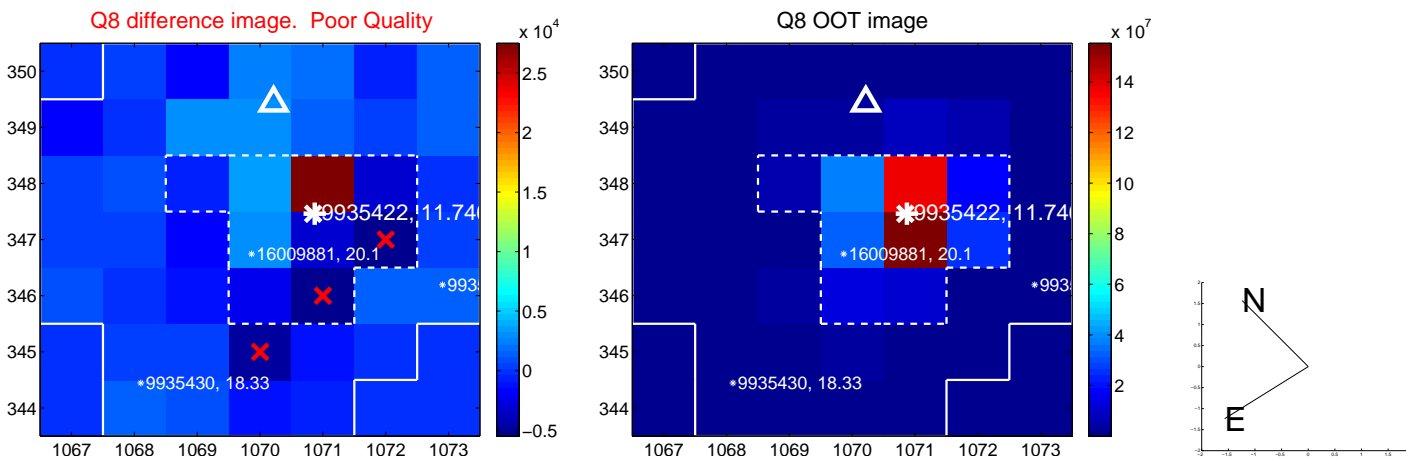
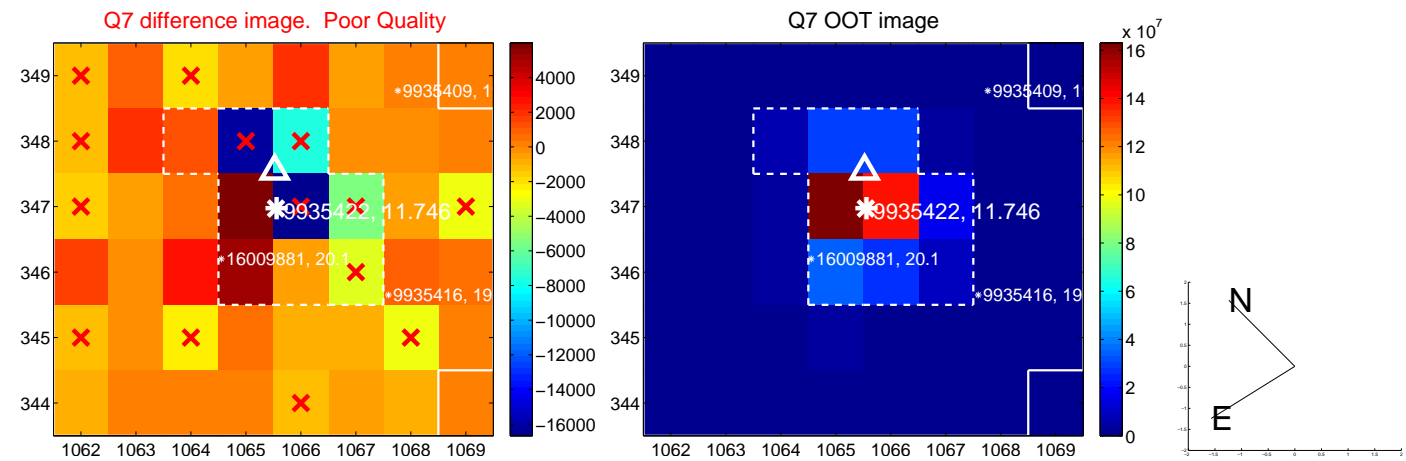
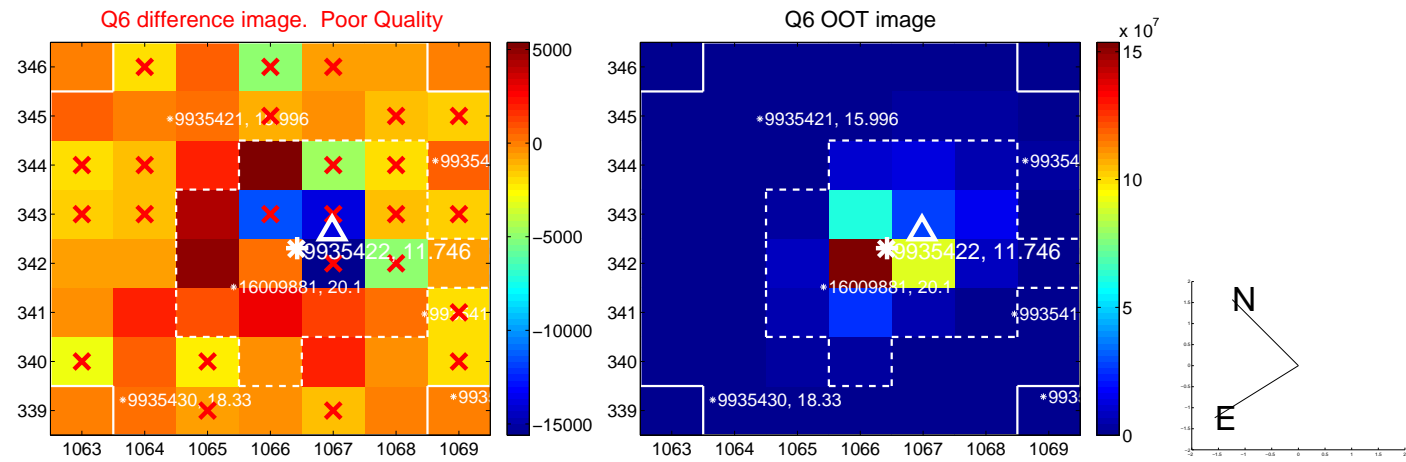
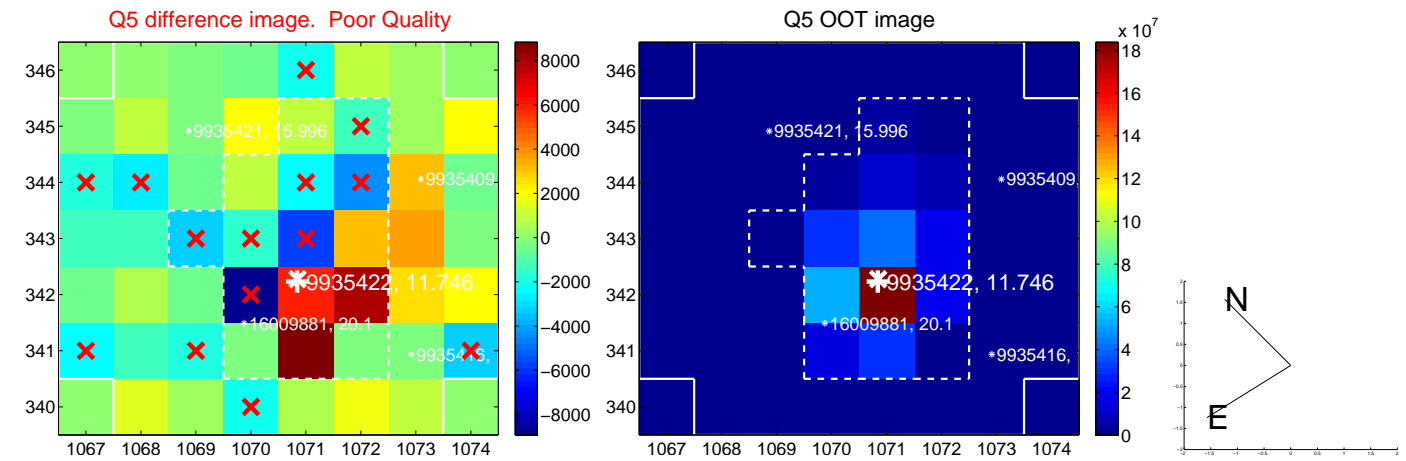
Q4 difference image. Poor Quality



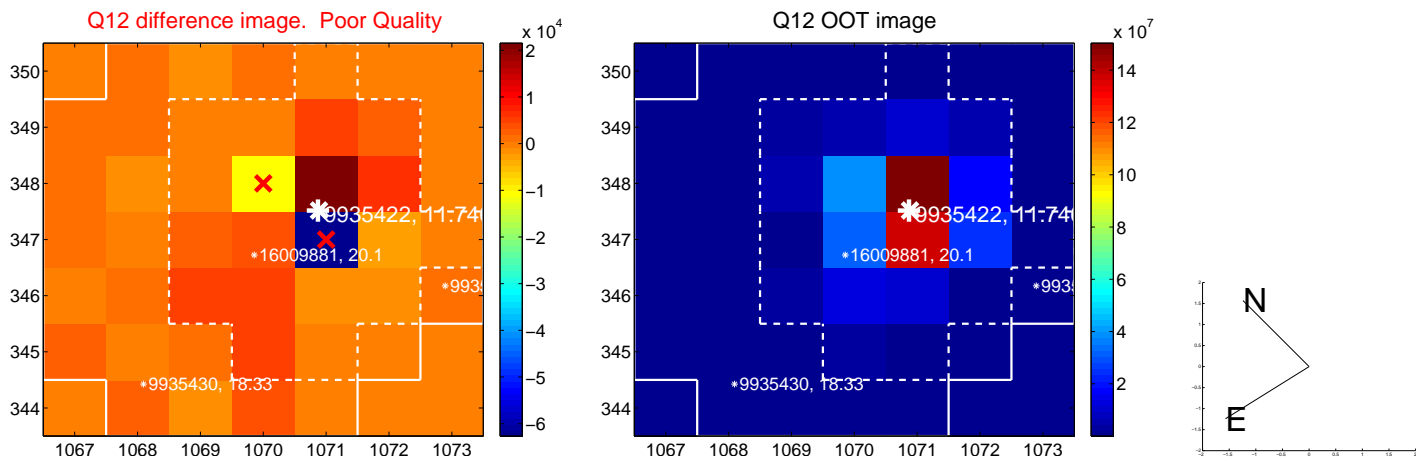
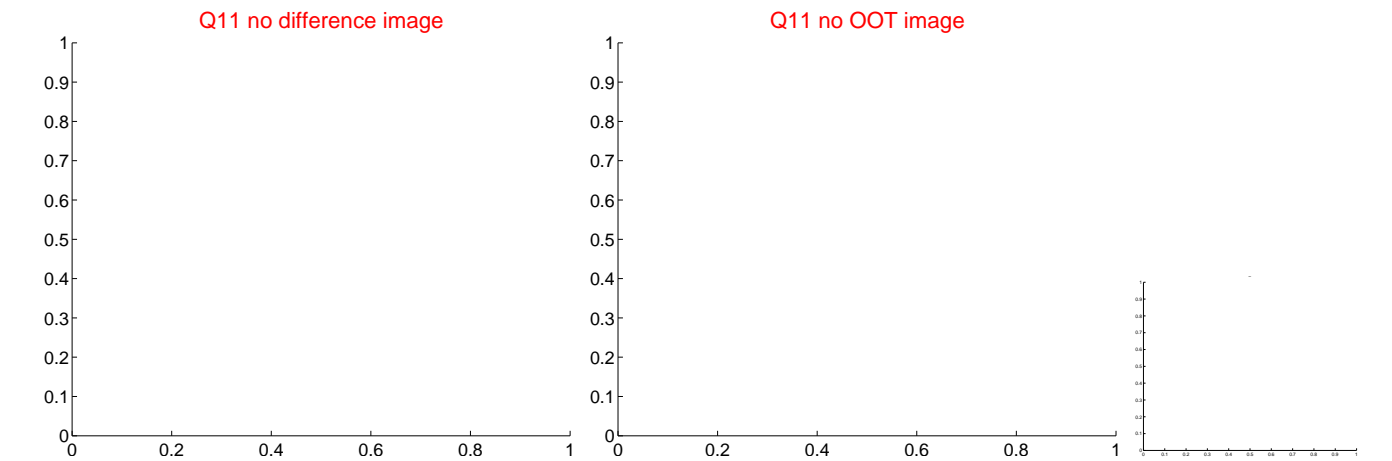
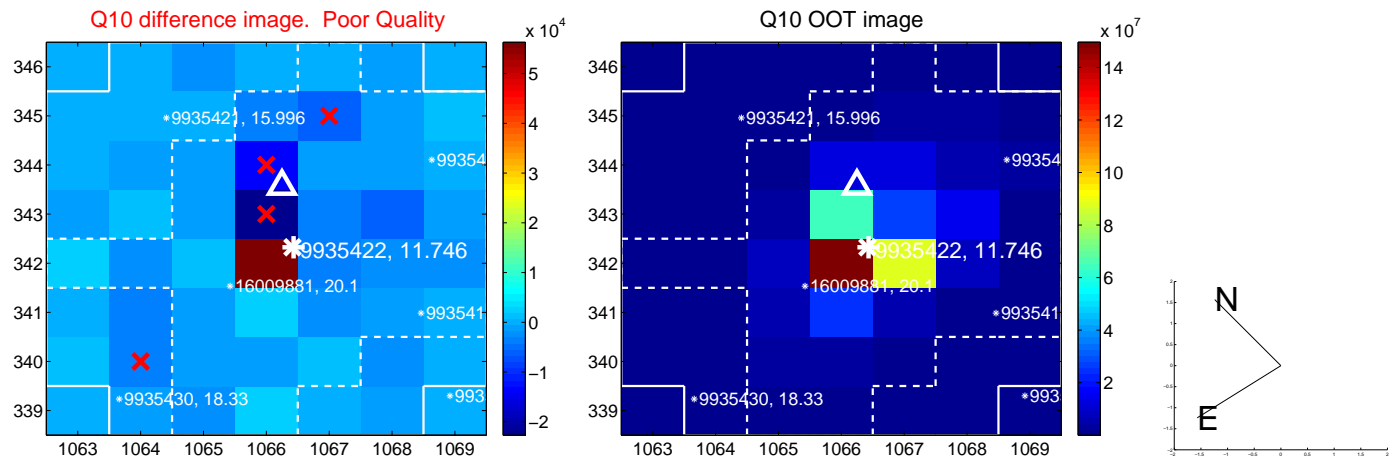
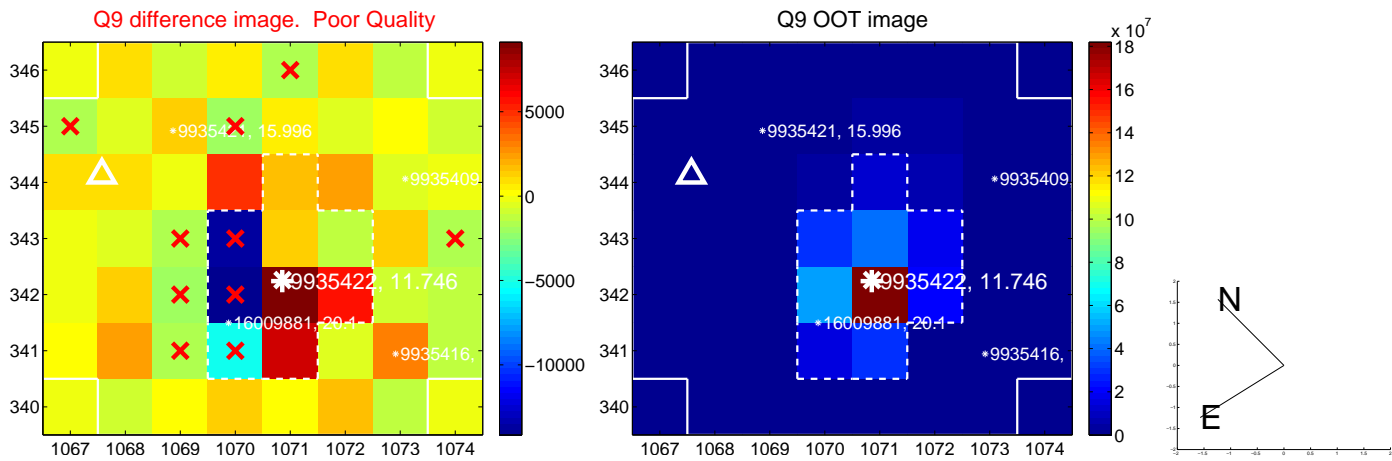
Q4 OOT image



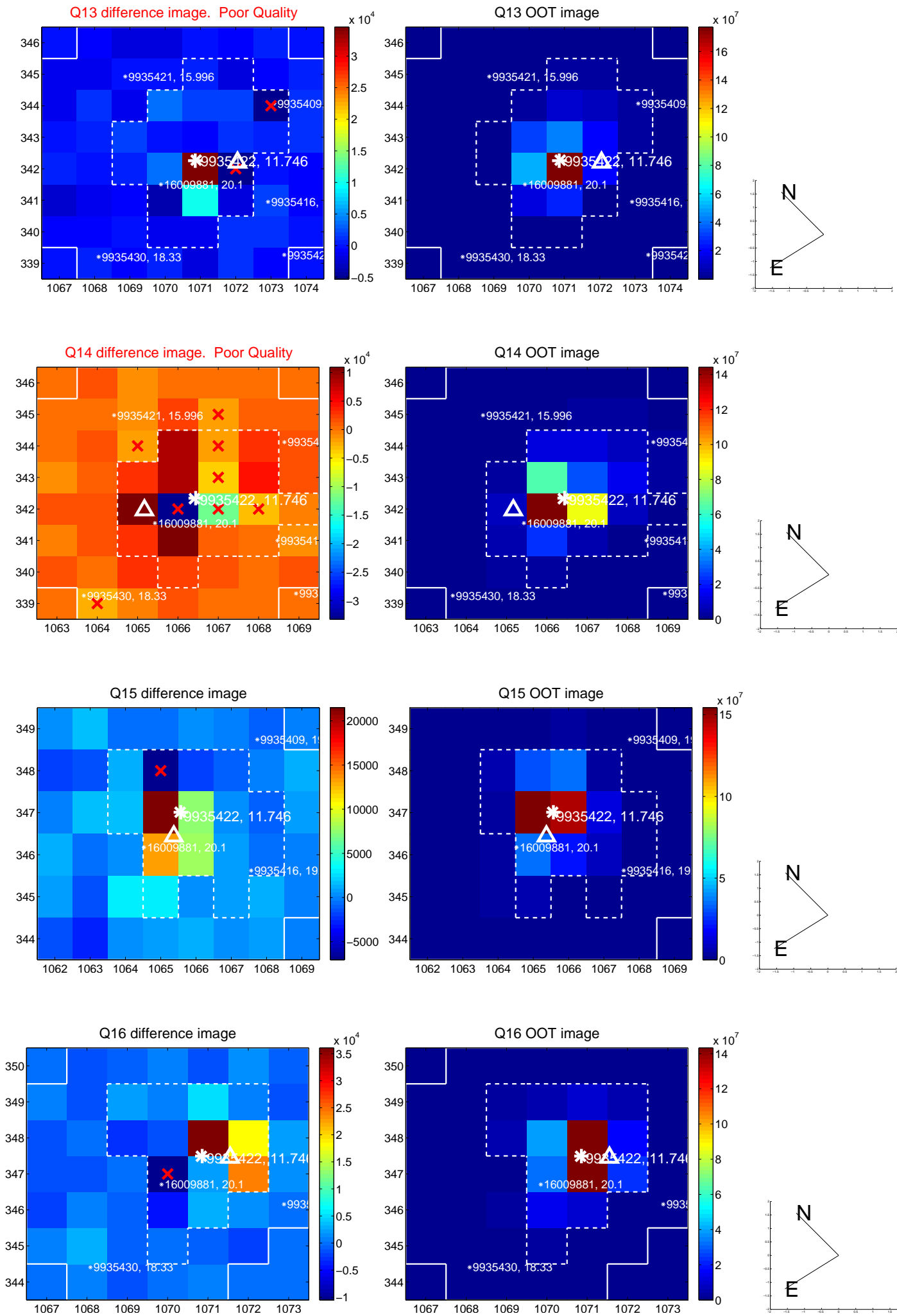
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



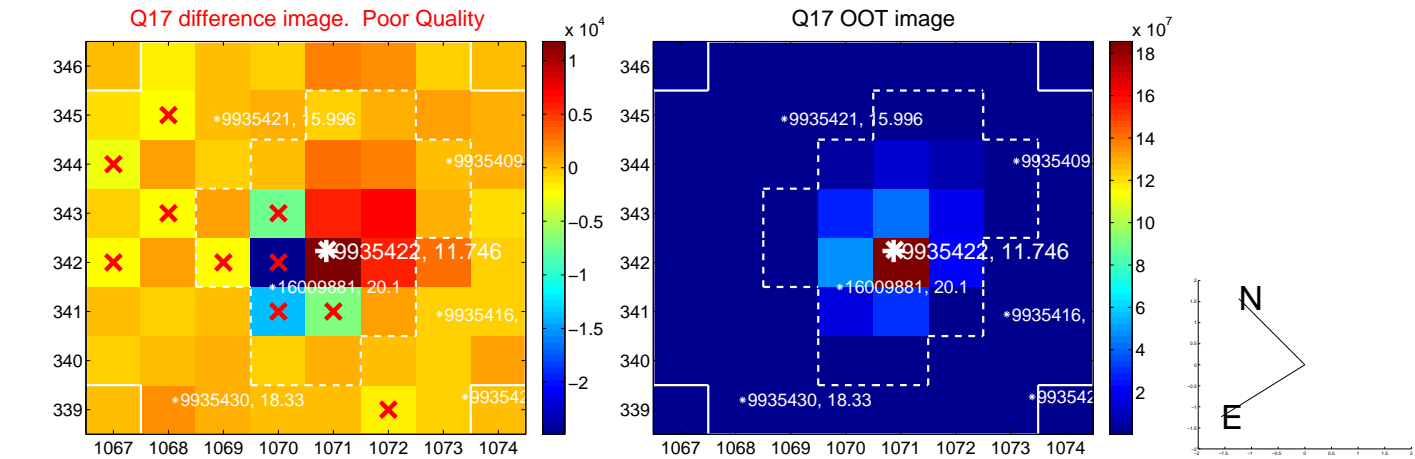
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



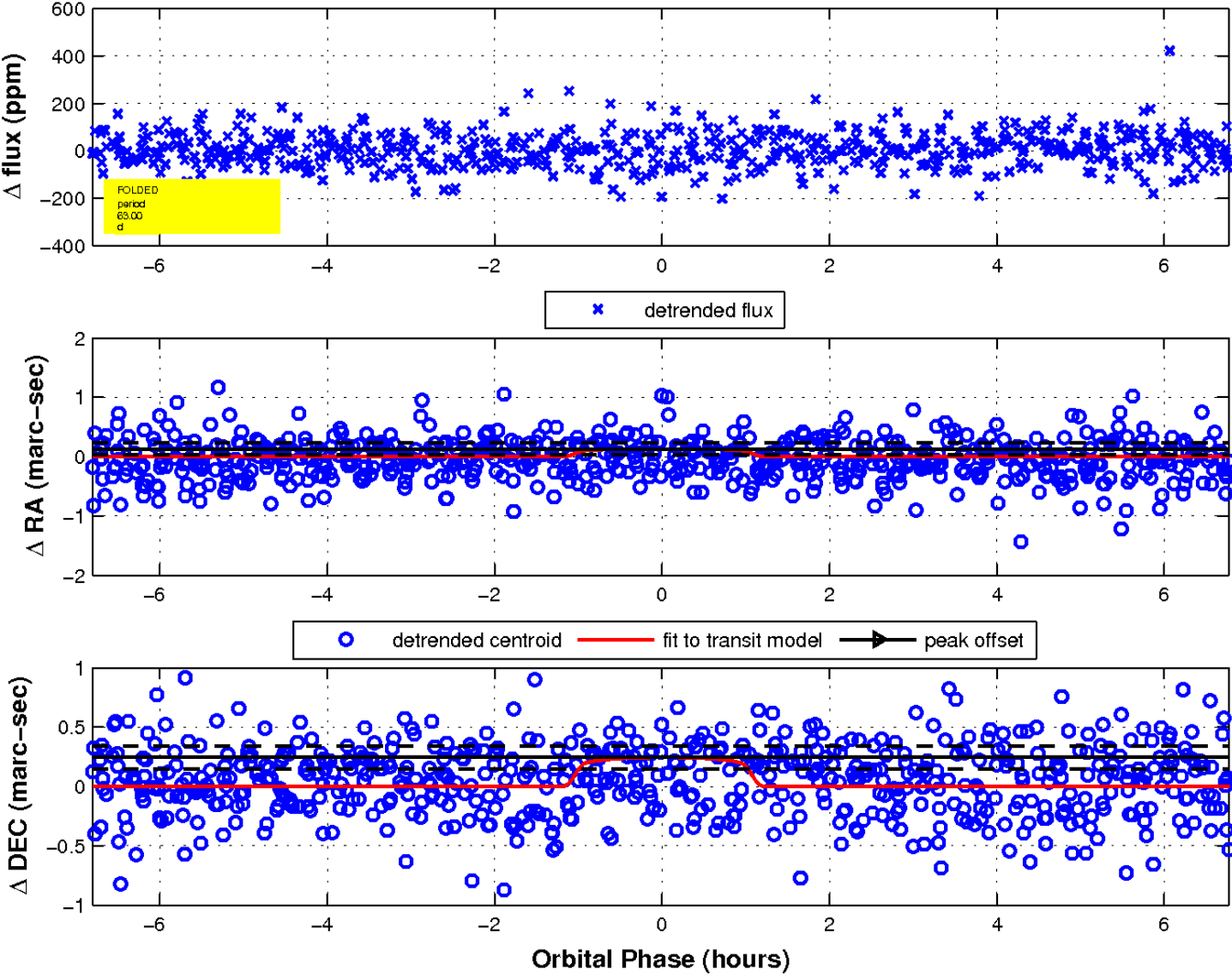
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 6 of 6



UKIRT Image

Declination

