

KIC 009426473

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})
009426473-01	OBS	No	1.037045	131.951475	20.4	6.439	8.6	5.2	4.66	6231	2.16	46945.10
009426473-02	OBS	No	63.284304	140.796145	576.3	8.541	8.5	9.4	4.66	6231	19.34	195.40
009426473-03	OBS	No	27.312220	154.327238	182.6	6.860	8.5	5.5	4.66	6231	7.27	599.12
009426473-04	OBS	No	145.259499	157.361685	653.7	17.098	9.3	8.7	4.66	6231	14.83	64.53
009426473-05	OBS	No	28.713763	137.077892	277.3	5.315	8.9	8.1	4.66	6231	8.81	560.45
009426473-06	OBS	No	111.271387	217.136369	653.0	7.702	8.9	8.5	4.66	6231	22.86	92.08
009426473-07	OBS	No	303.882214	282.705089	412.5	3.921	8.9	7.4	4.66	6231	10.58	24.12
009426473-08	OBS	No	109.296456	228.284936	520.0	5.463	8.9	8.5	4.66	6231	13.54	94.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009426473-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009426473-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—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.

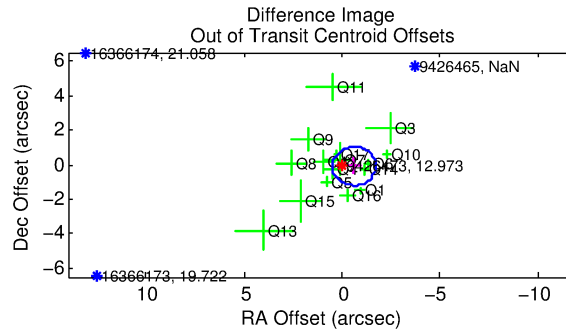
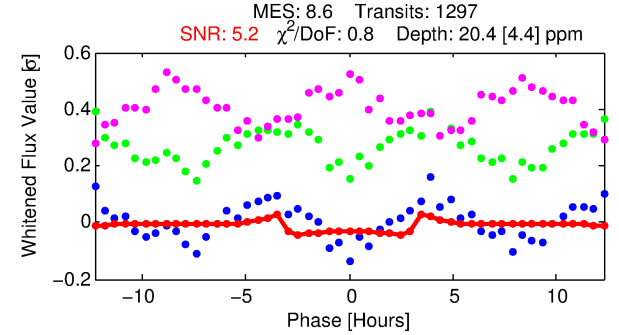
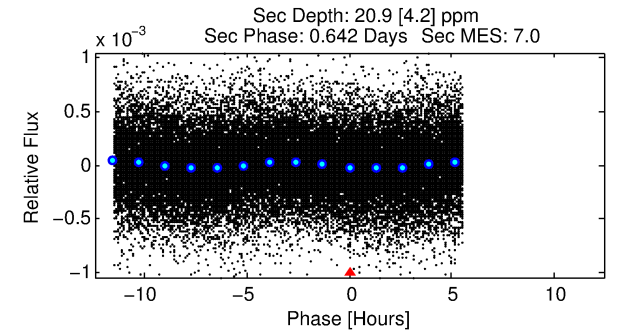
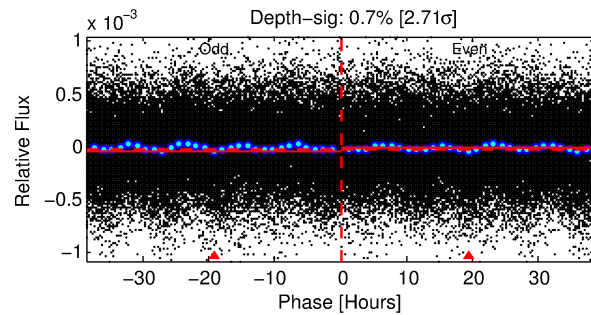
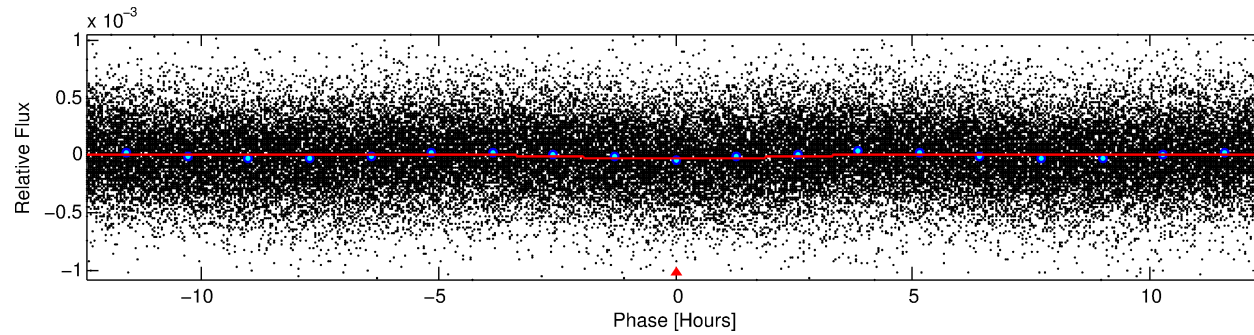
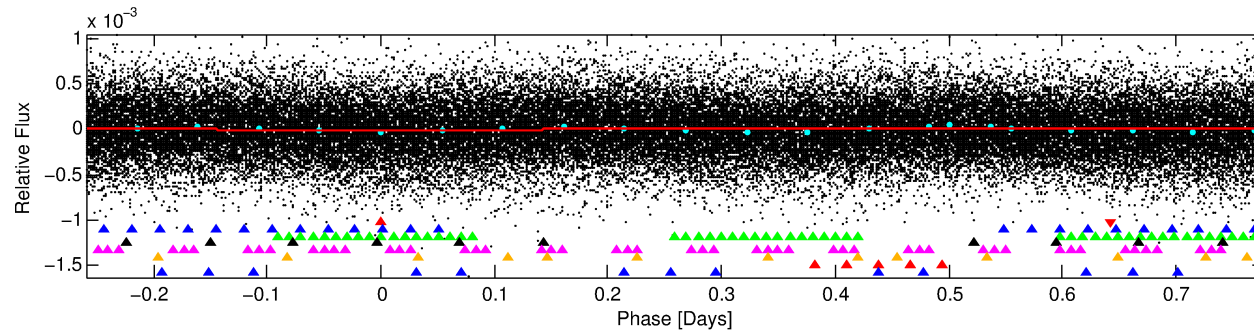
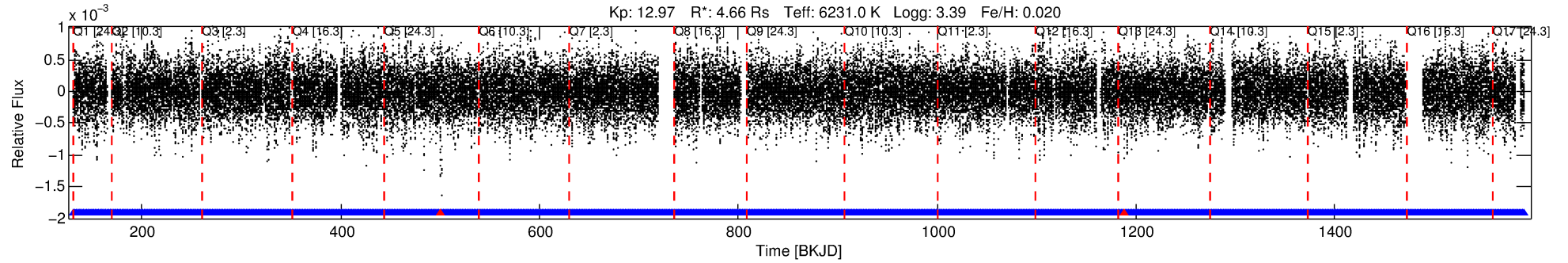
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009426473-01

No Significant Match Found

DV One-Page Summary

KIC: 9426473 Candidate: 1 of 8 Period: 1.037 d



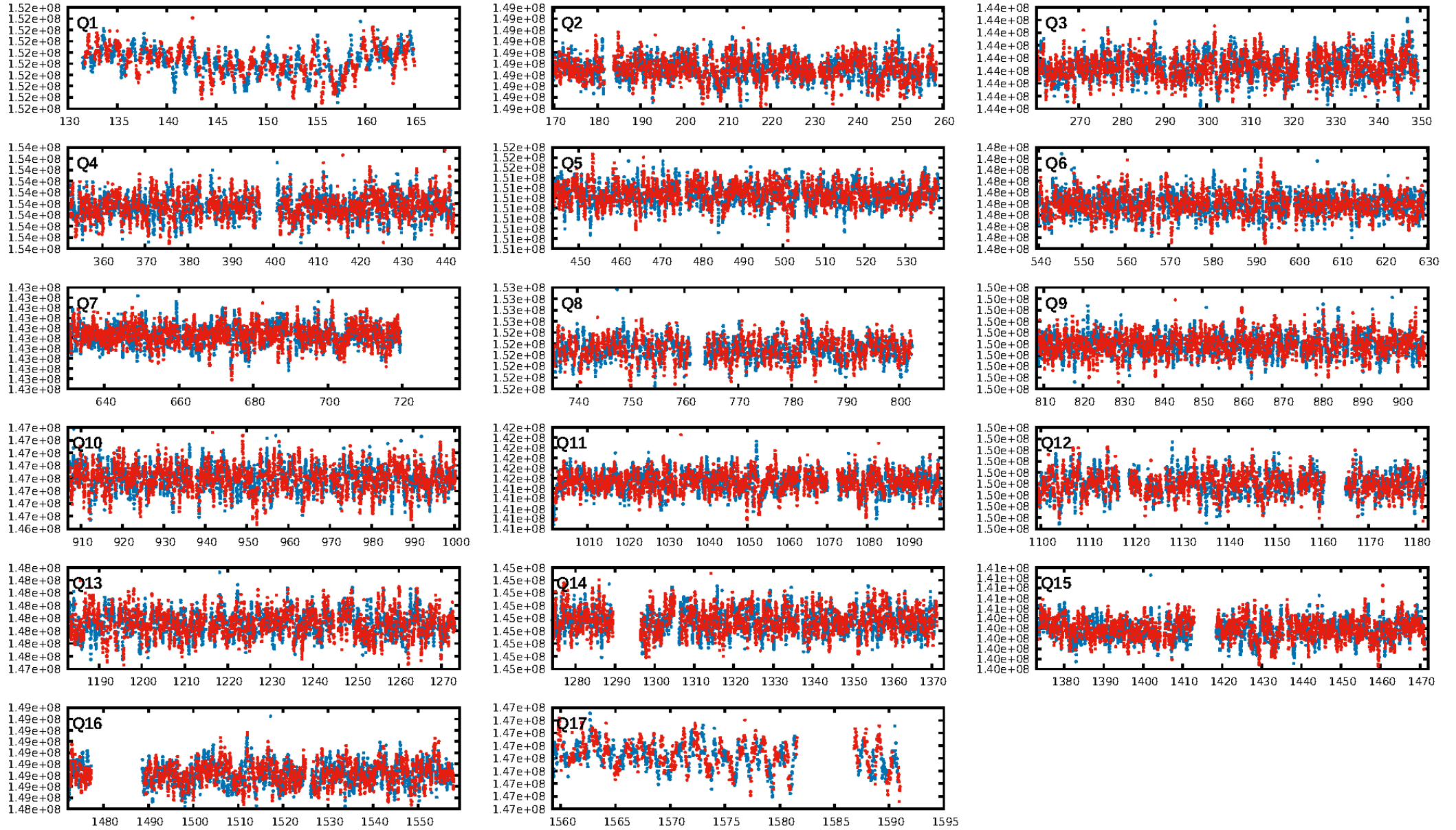
DV Fit Results:

Period = 1.03705 [0.00002] d
Epoch = 131.9515 [0.0050] BKJD
Rp/R* = 0.0042 [0.0023]
a/R* = 1.31 [1.53]
b = 0.46 [4.80]
Seff = 46945.10 [32199.62]
Teq = 3753 [644] K
Rp = 2.16 [1.50] Re
a = 0.0250 [0.0104] AU
Ag = 1.54 [2.01] [0.27 σ]
Teffp = 6467 [1814] K [1.41 σ]

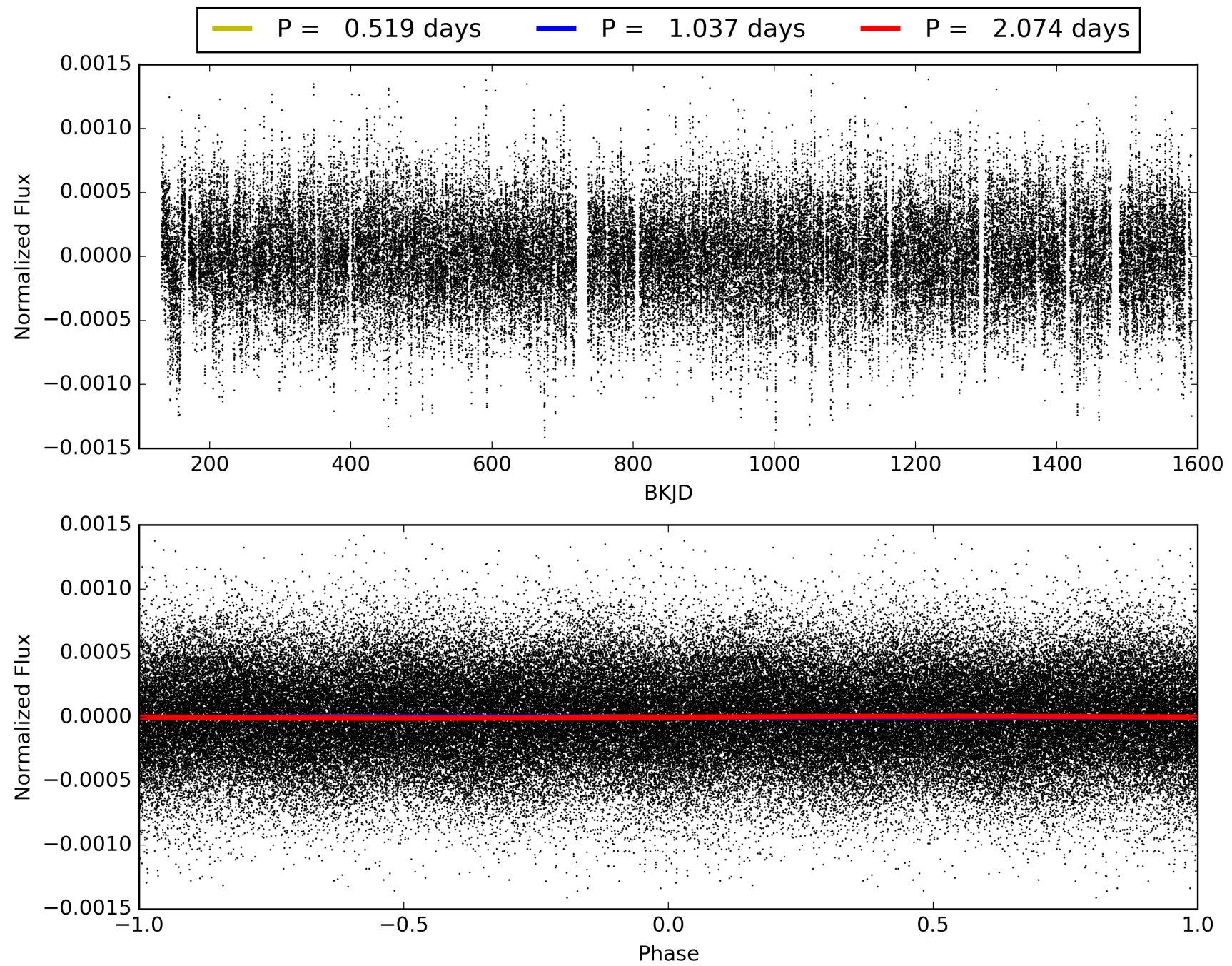
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [67.02 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.76e-13
RollingBand-fgt: 1.00 [1237/1239]
GhostDiagnostic-chr: 0.4132
Centroid-sig: 8.3%
Centroid-so: 1.259 arcsec [1.39 σ]
OotOffset-rm: 0.618 arcsec [1.66 σ]
KicOffset-rm: 0.691 arcsec [2.02 σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.62 [10/16]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009426473-01, PDC Light Curves

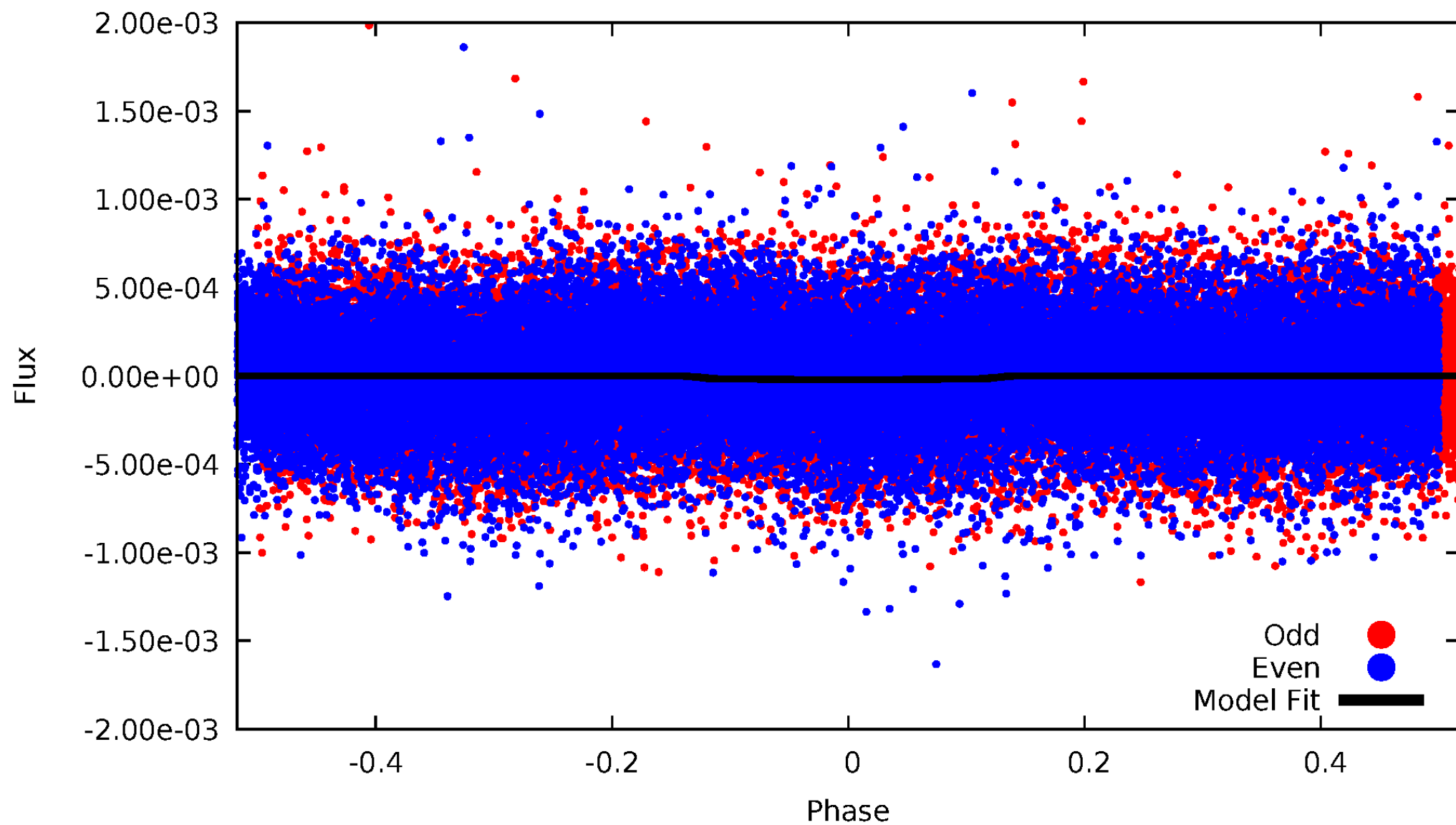


TCE 009426473-01



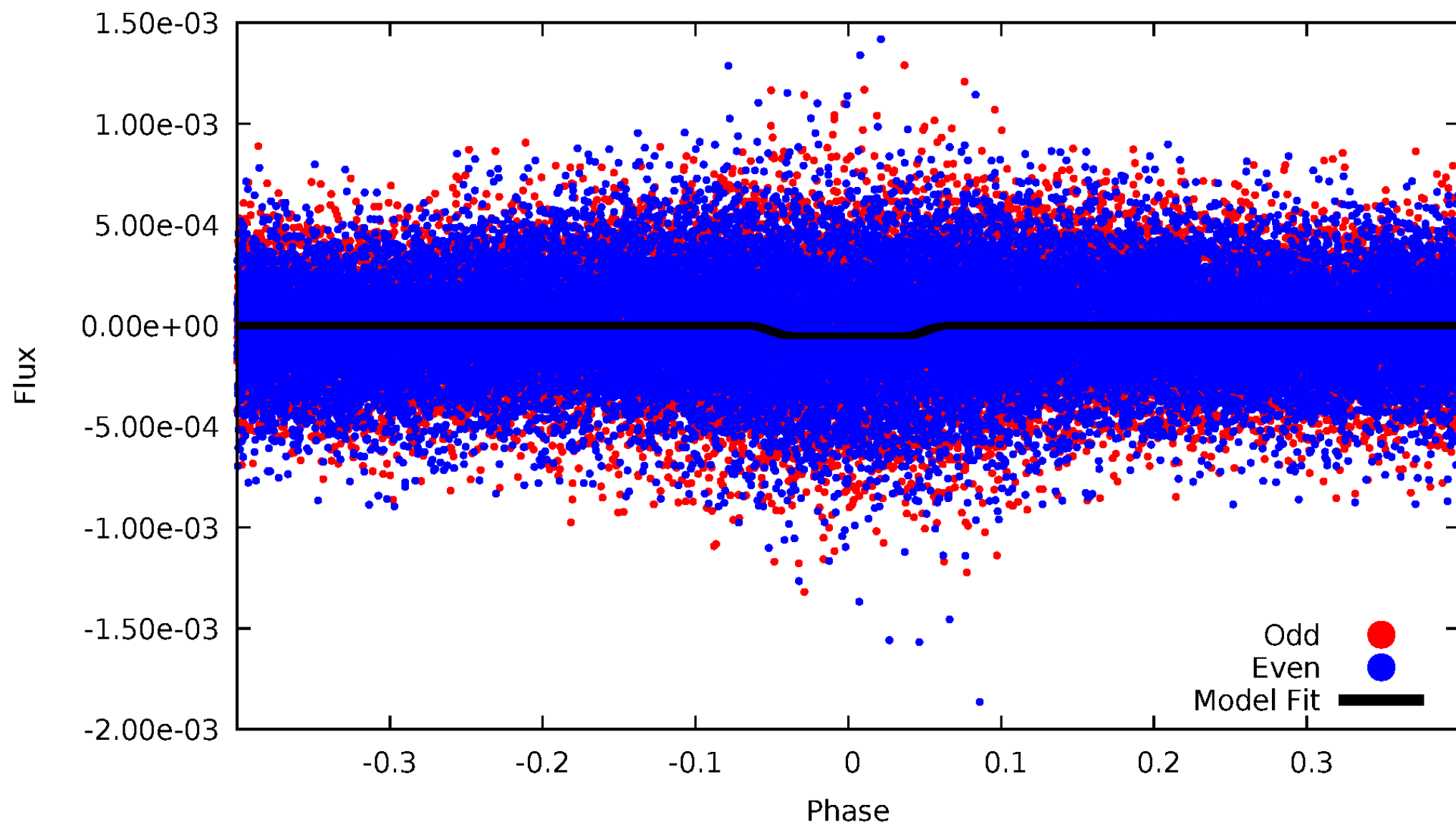
DV Odd/Even

TCE 009426473-01

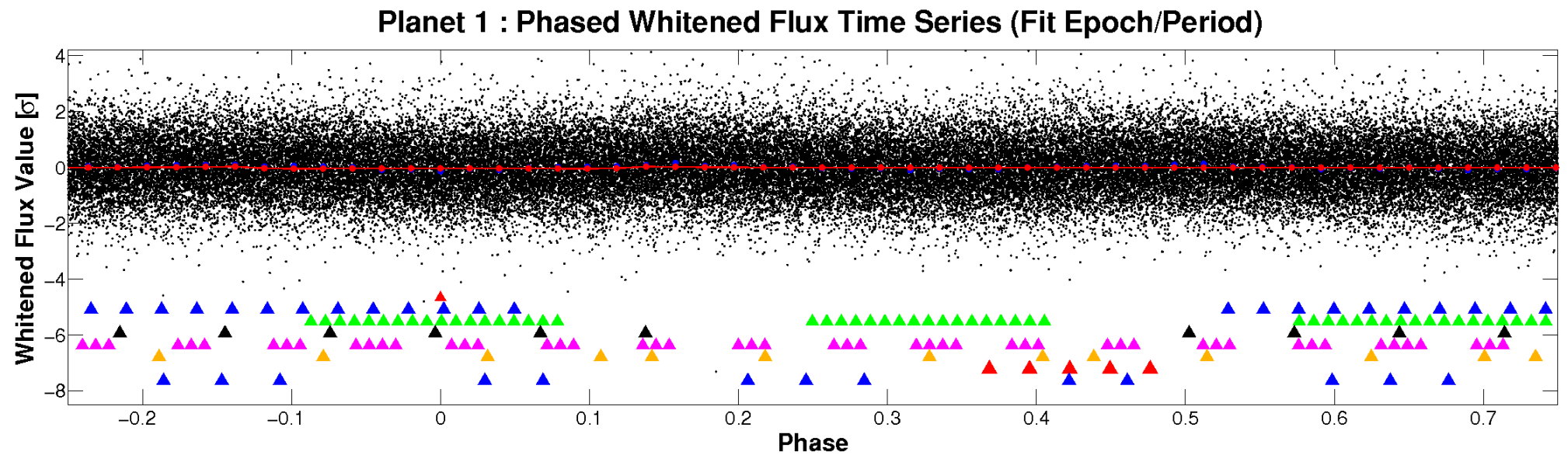
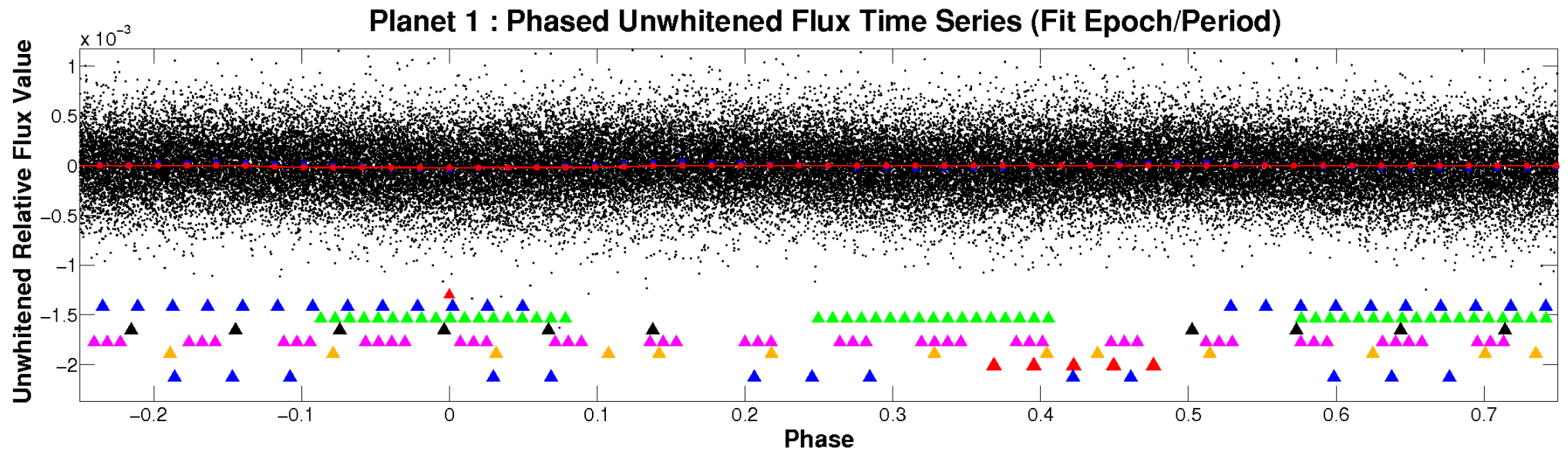


ALT Odd/Even

TCE 009426473-01

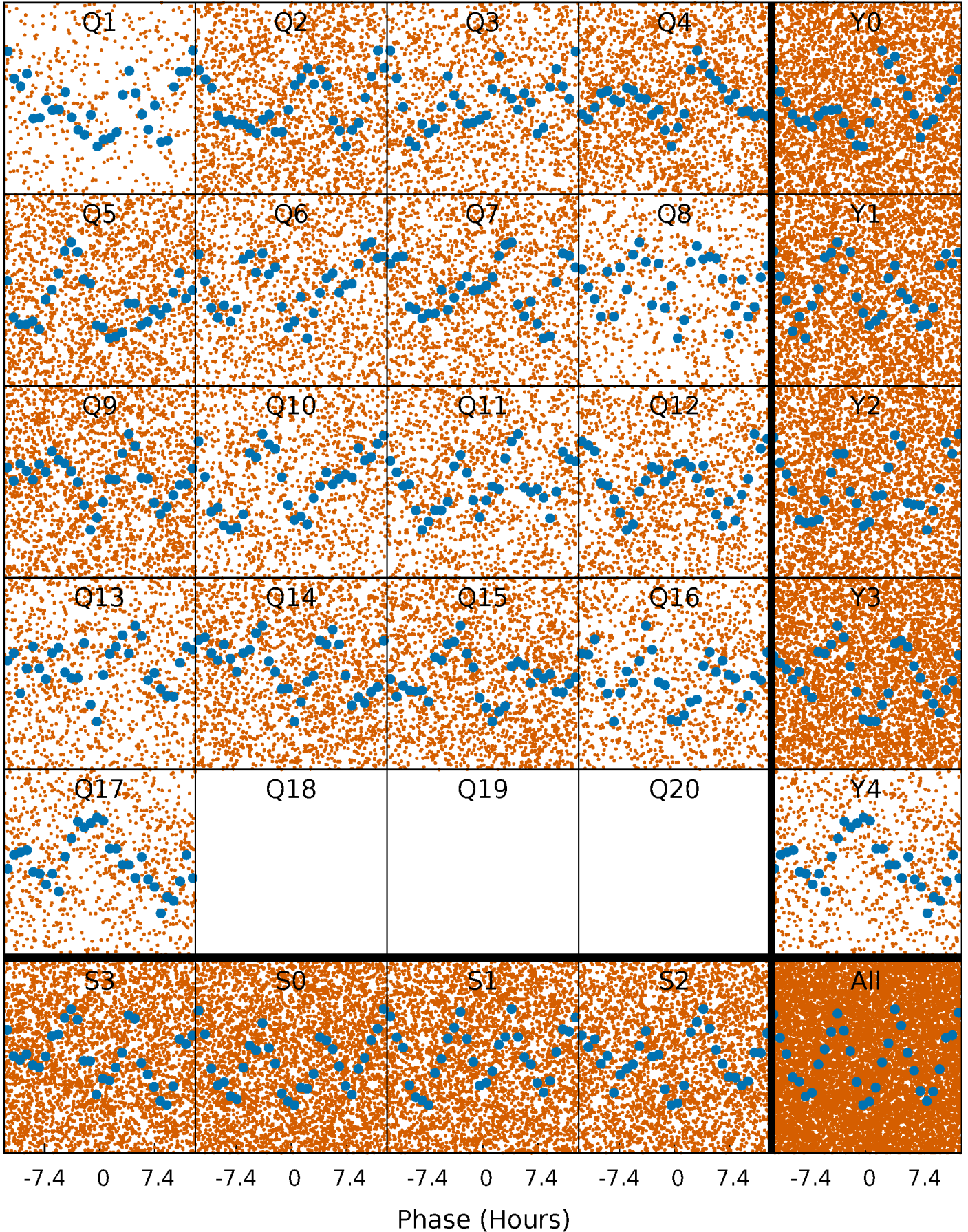


Non-Whitened Vs. Whitened Light Curve



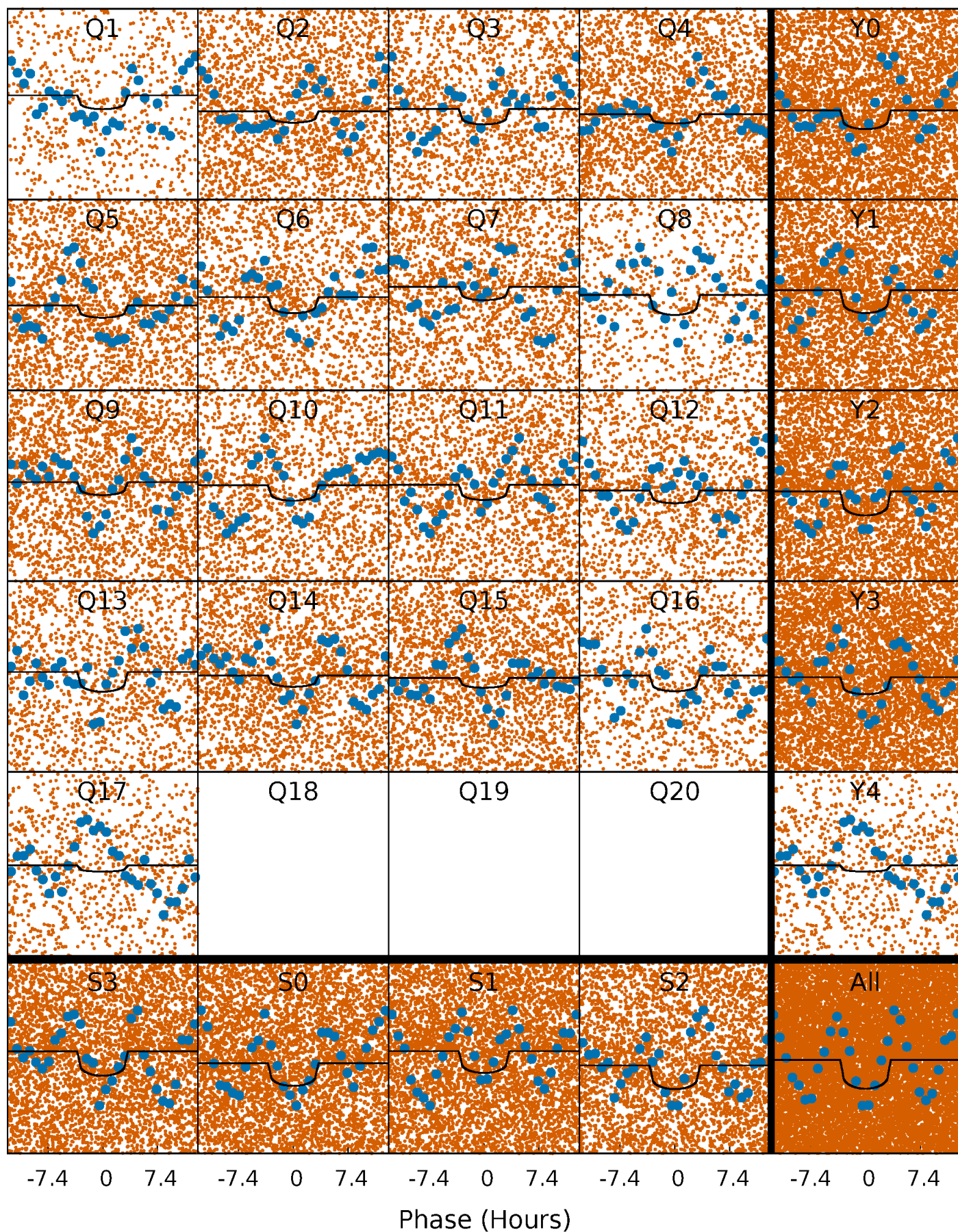
PDC Quarter-Phased Transit Curves

TCE 009426473-01 P= 1.037045 Days $T_0=131.951475$ (BKJD)



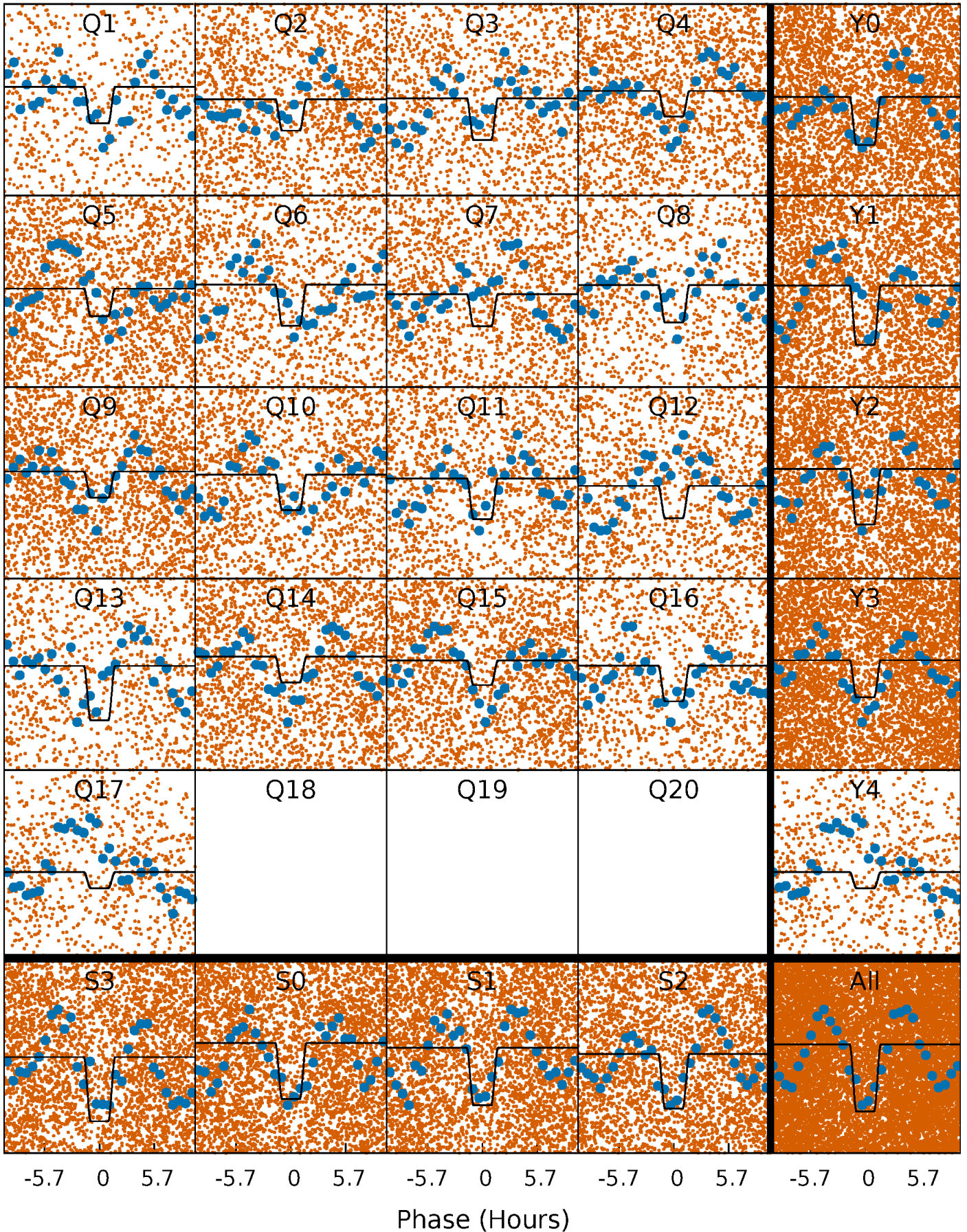
DV Quarter-Phased Transit Curves

TCE 009426473-01 P= 1.037045 Days $T_0=131.951475$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

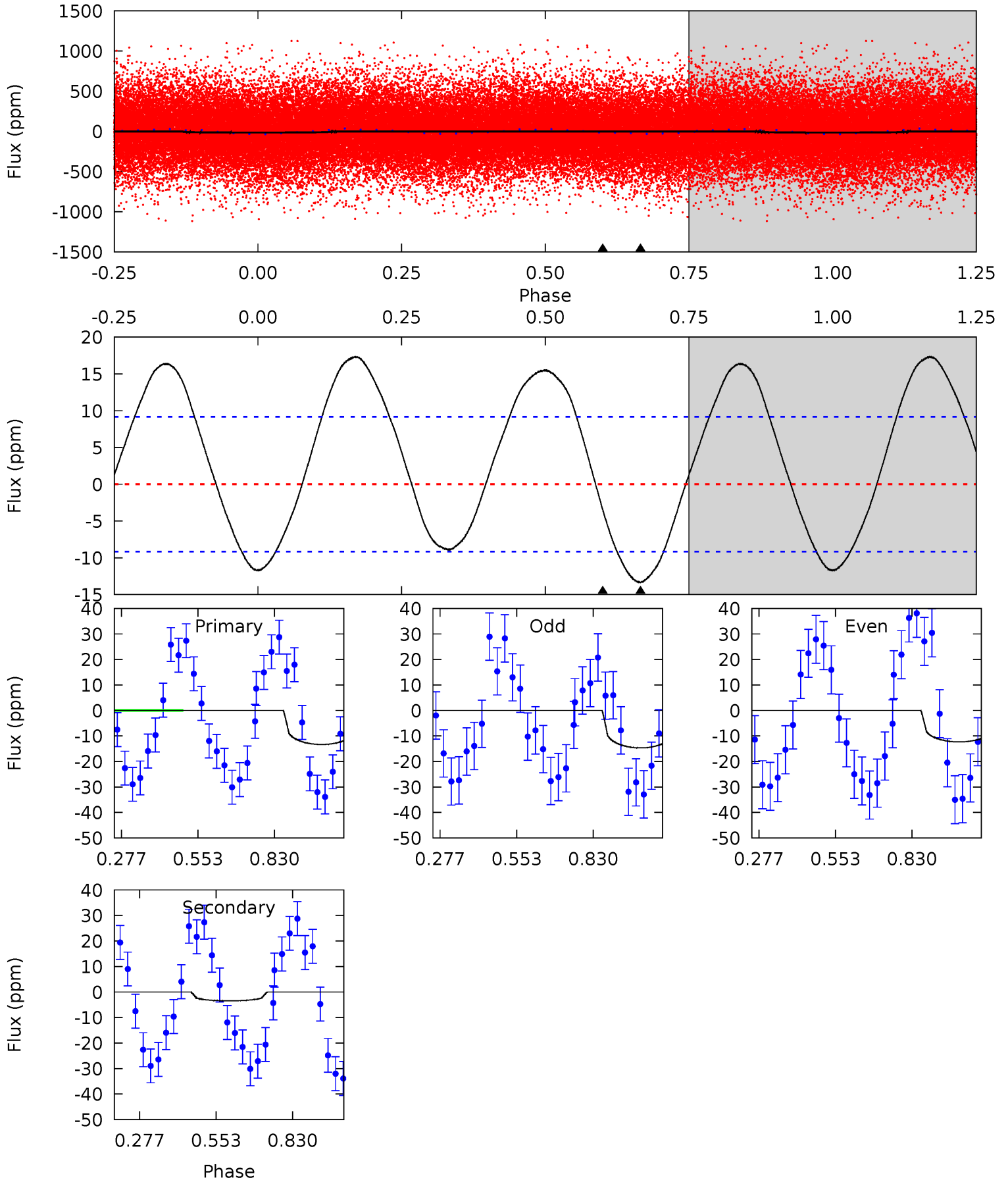
TCE 009426473-01 P= 1.037094 Days $T_0=131.922270$ (BKJD)



DV Model-Shift Uniqueness Test

009426473-01, P = 1.037045 Days, E = 130.914430 Days

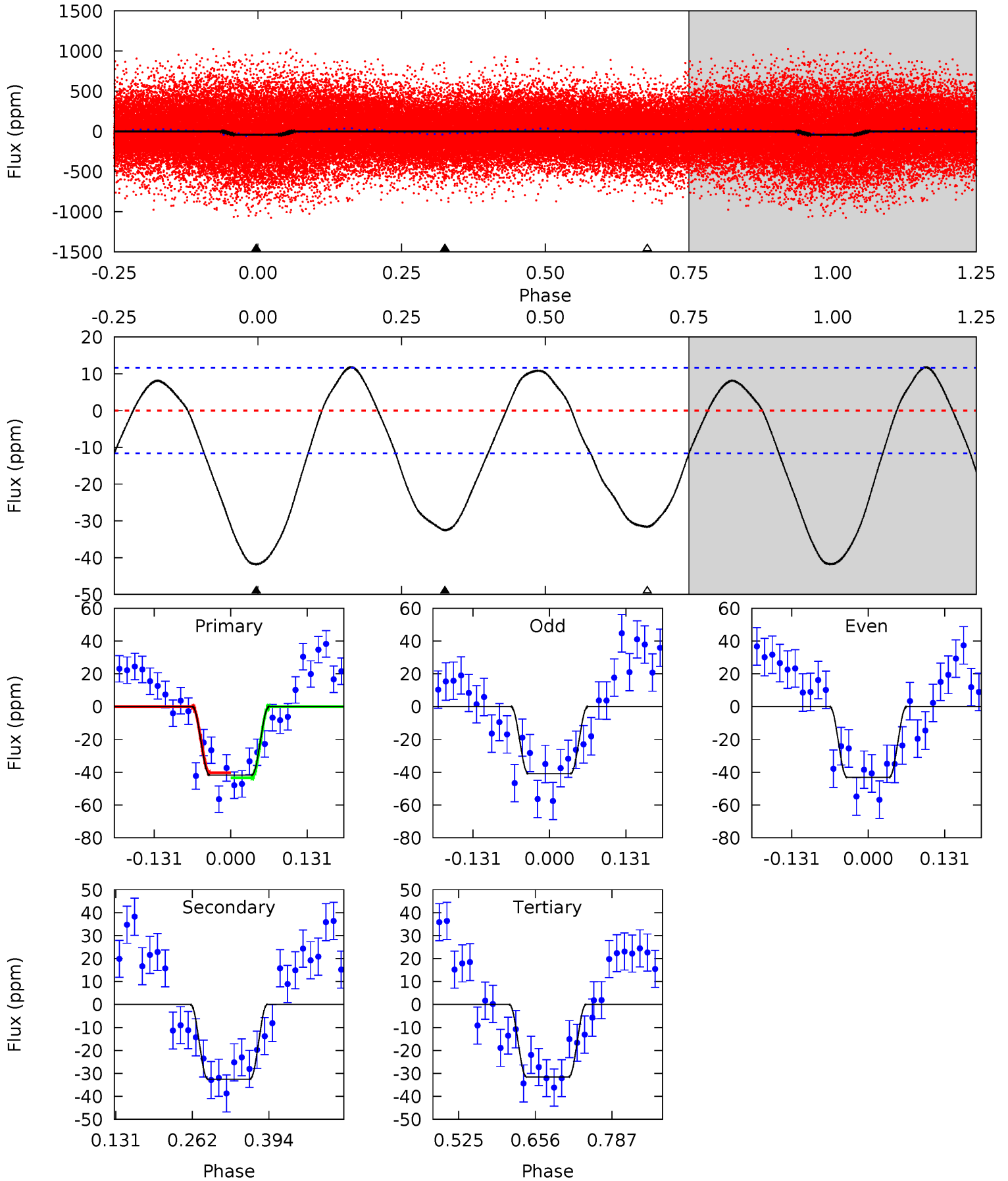
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.32	1.64	0	0	4.35	1.09	4.72	6.32	6.32	1.64	1.64	0.56	1.94	0.56	0.61



Alt Model-Shift Uniqueness Test

009426473-01, P = 1.037094 Days, E = 130.885176 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.2	12.6	12.3	0	4.51	1.51	5.94	3.97	16.2	0.37	12.6	0.44	0.80	0.22	0.59



Stellar Parameters For KIC 009426473

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6231^{+189}_{-170}	$3.388^{+0.399}_{-0.094}$	$0.020^{+0.300}_{-0.300}$	$4.659^{+0.661}_{-1.984}$	$1.933^{+0.071}_{-0.403}$	$0.027^{+0.085}_{-0.008}$
	+3%/-3%	+12%/-3%	+1500%/-1500%	+14%/-43%	+4%/-21%	+314%/-30%
Source	PHO1	FLK73	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 009426473-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3 ± 2	$2.01^{+1.25}_{-0.92}$	5168^{+315}_{-553}	-3182^{+8477}_{-1067}	$0.255^{+0.843}_{-0.180}$
Alt.	-33 ± 3	$3.27^{+1.43}_{-1.11}$	5177^{+315}_{-599}	5119^{+1449}_{-1033}	$0.981^{+1.416}_{-0.480}$

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 $A_{obs} \gg 1.0$

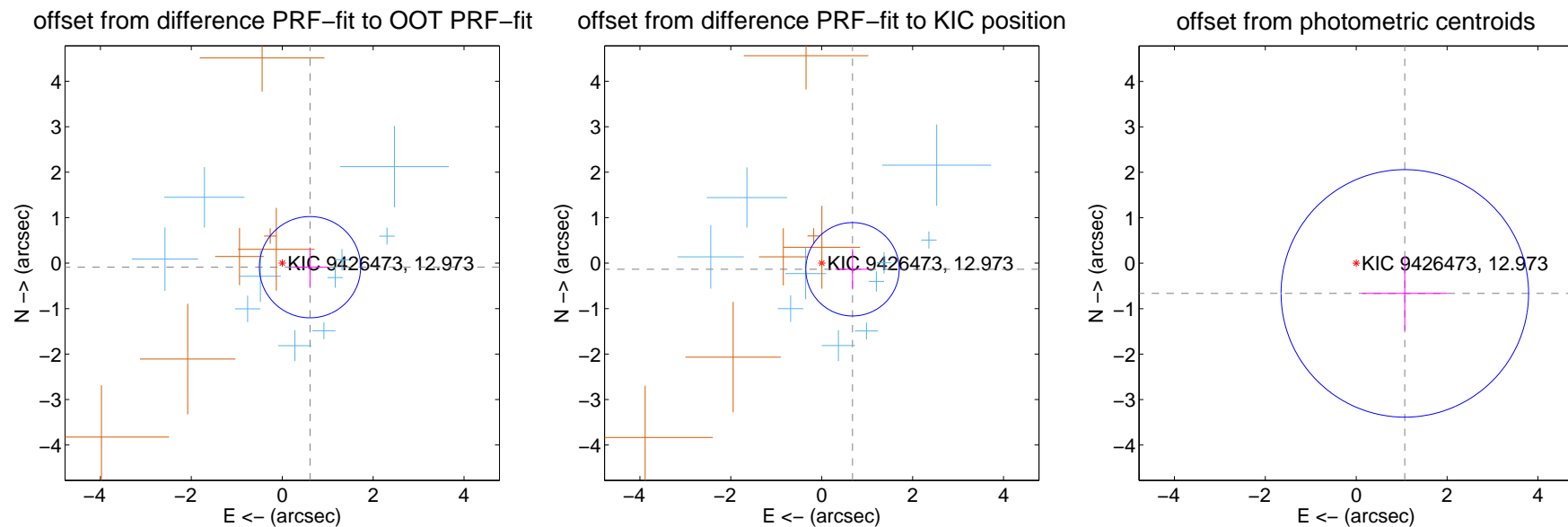
DV Centroid Data

Supplemental centroid analysis for 009426473-01. Kepler magnitude: 12.97. Transit SNR 5.16

There are 10 quarters with good PRF difference image offsets

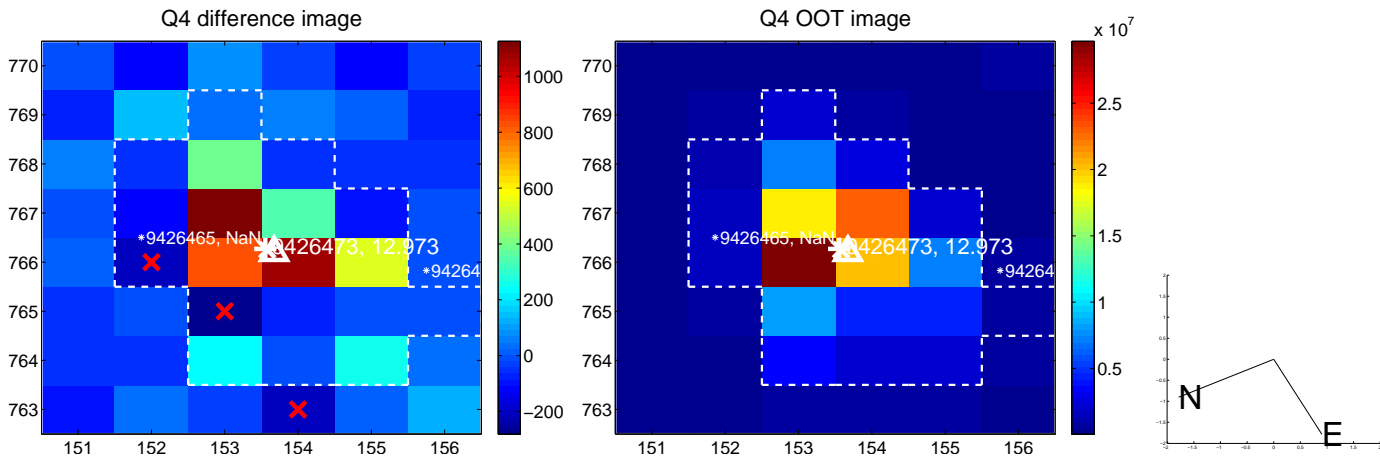
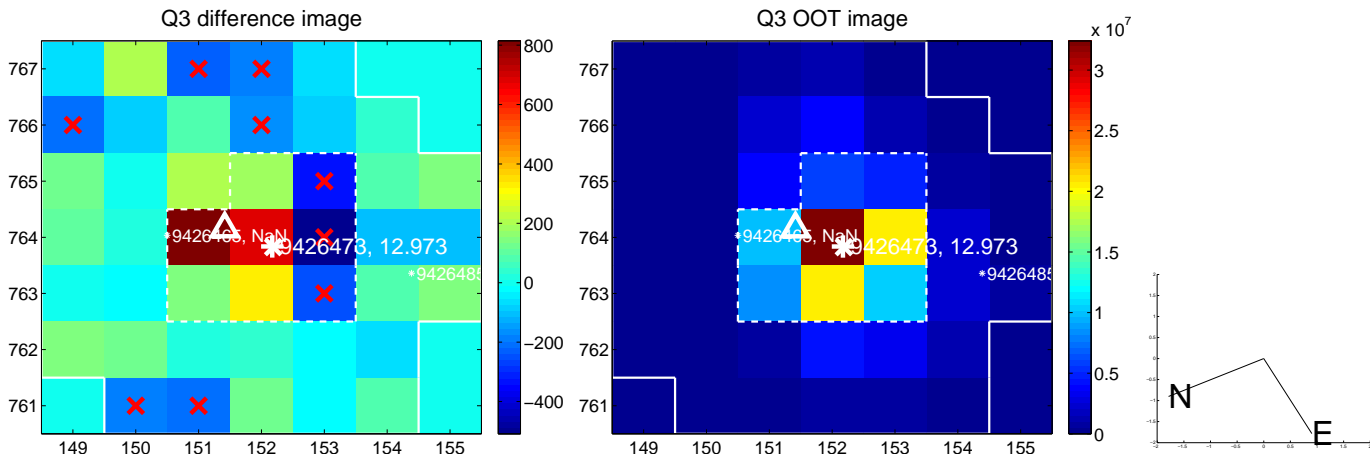
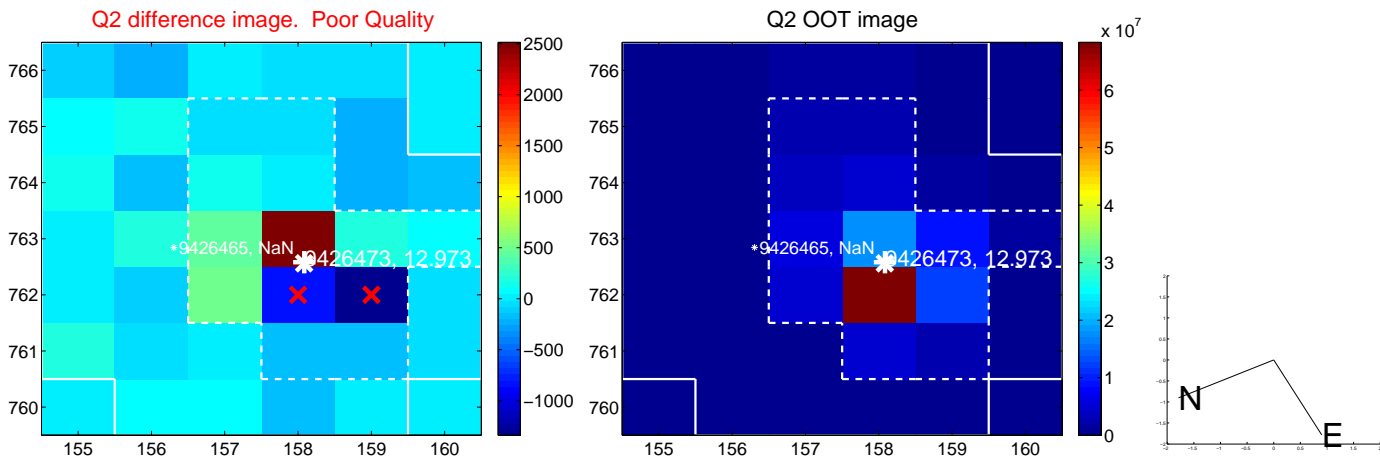
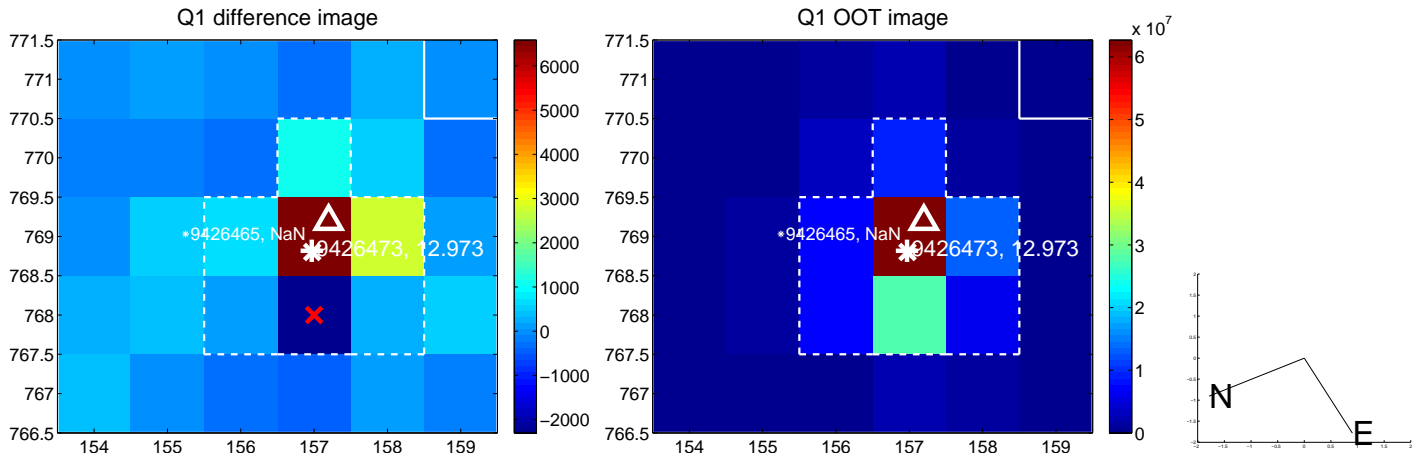
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.618 ± 0.371	1.66	-0.612 ± 0.391	-0.089 ± 0.433
PRF-fit source offset from KIC position	0.691 ± 0.342	2.02	-0.677 ± 0.381	-0.135 ± 0.444
photometric centroid source offset	1.26 ± 0.91	1.39	-1.07 ± 0.94	-0.66 ± 0.82

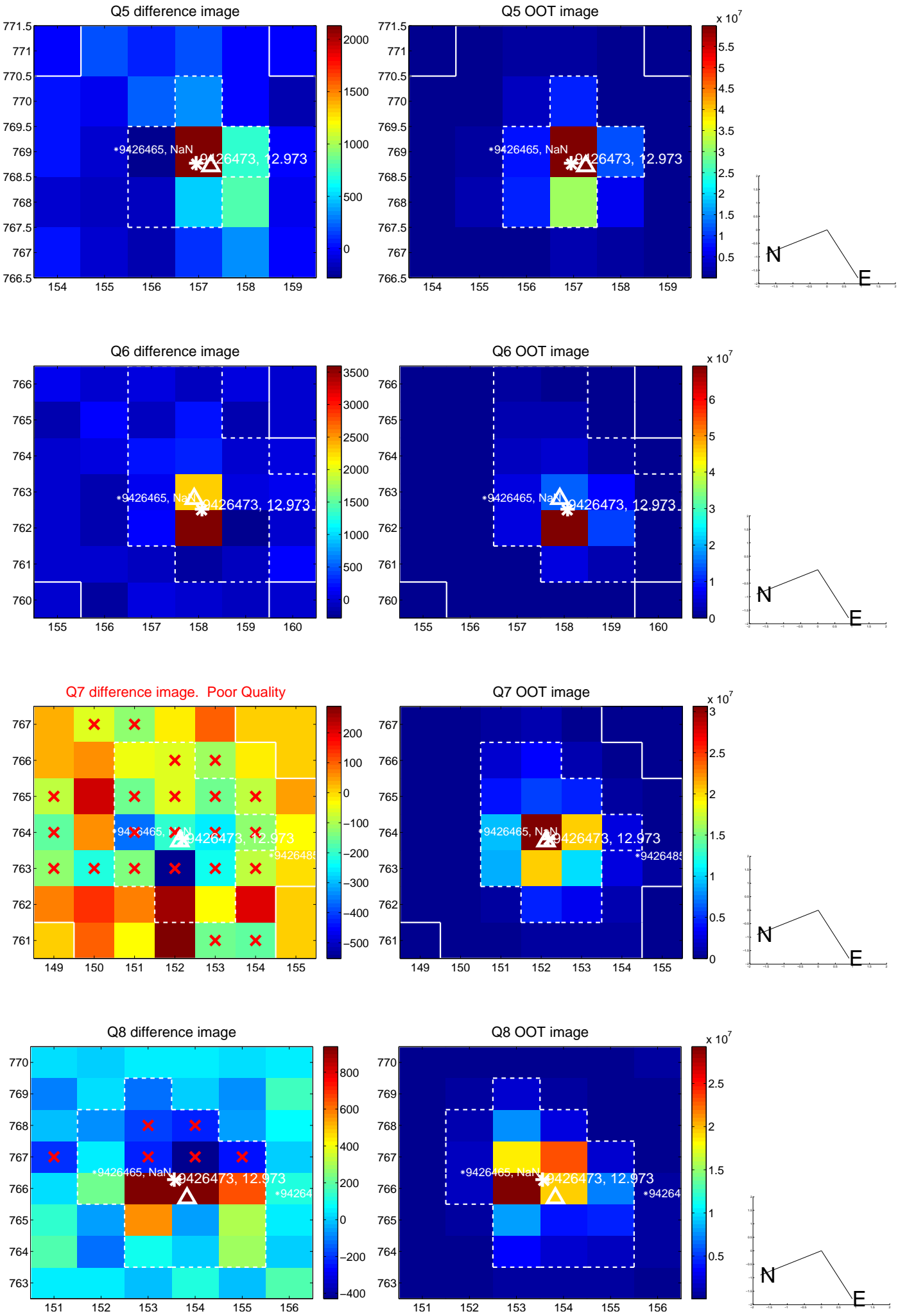


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

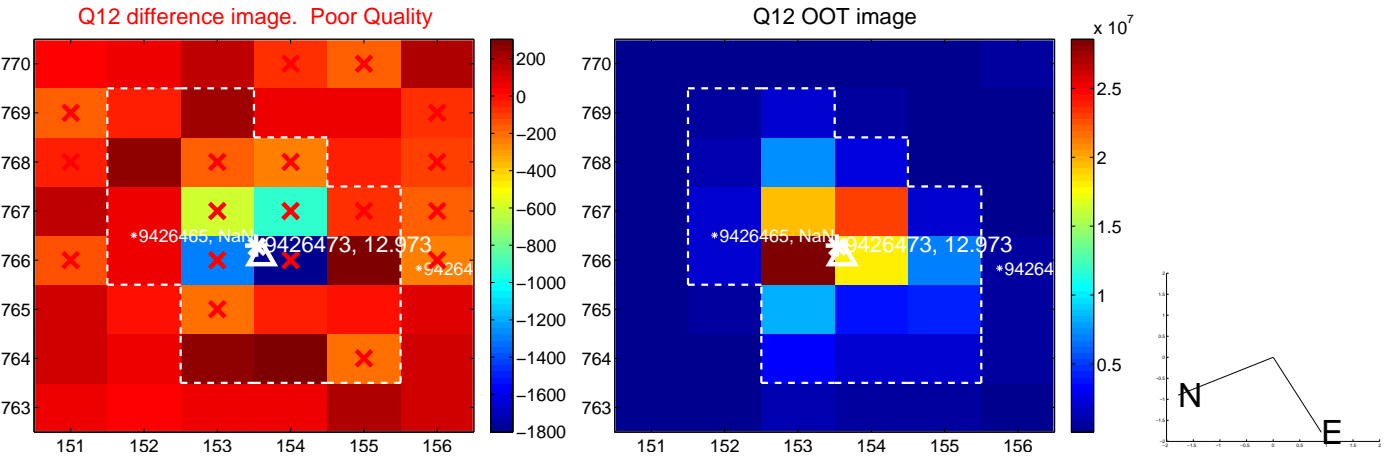
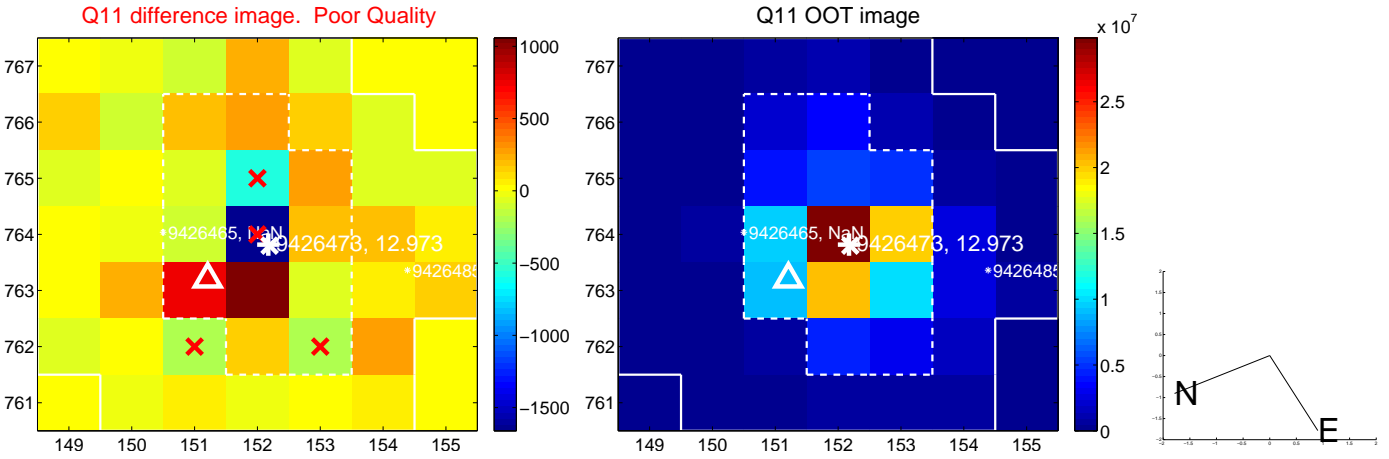
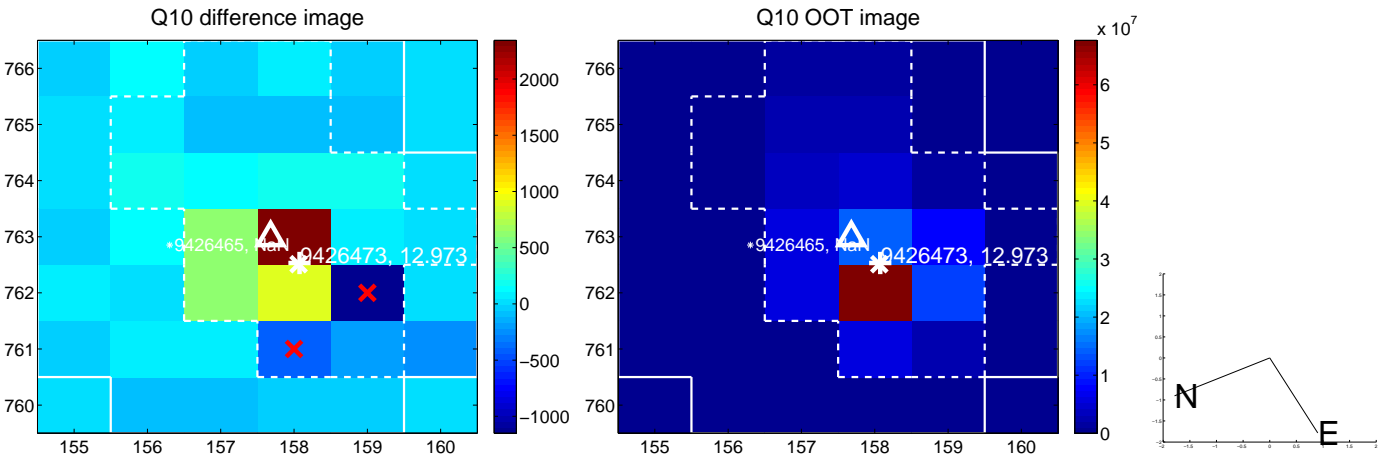
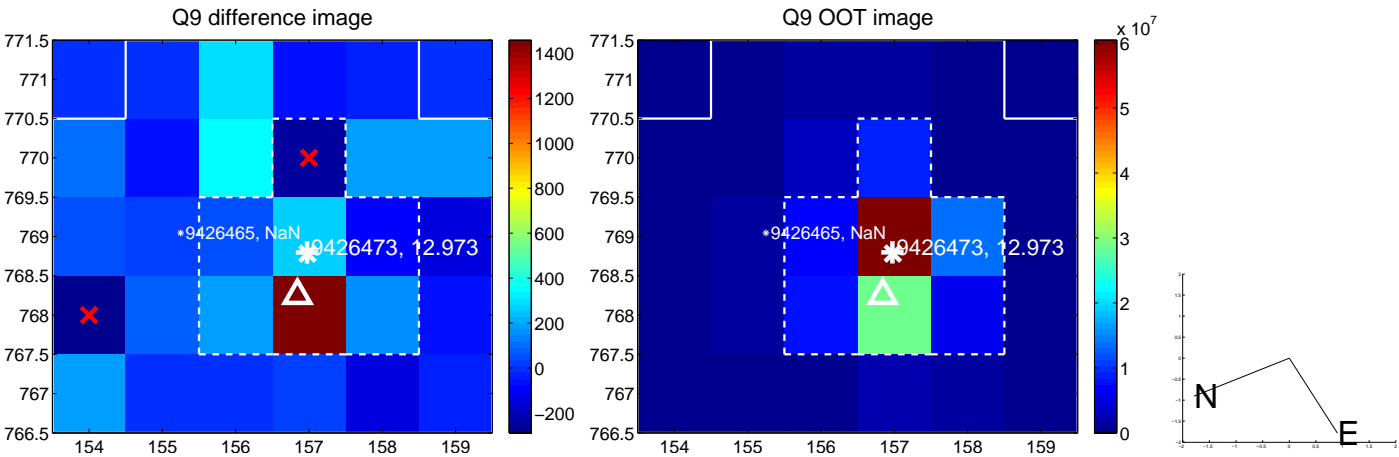
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



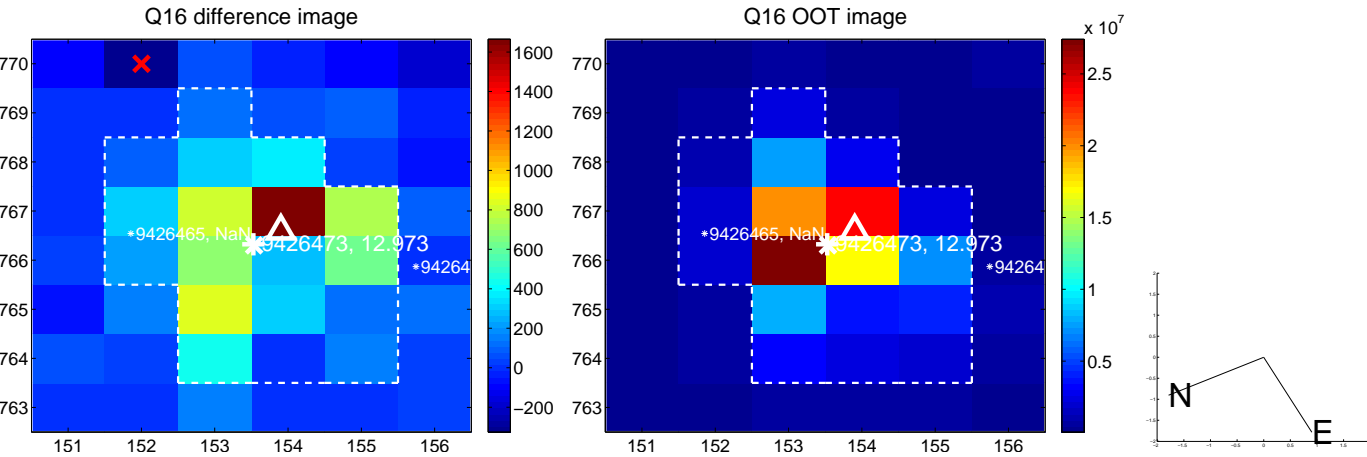
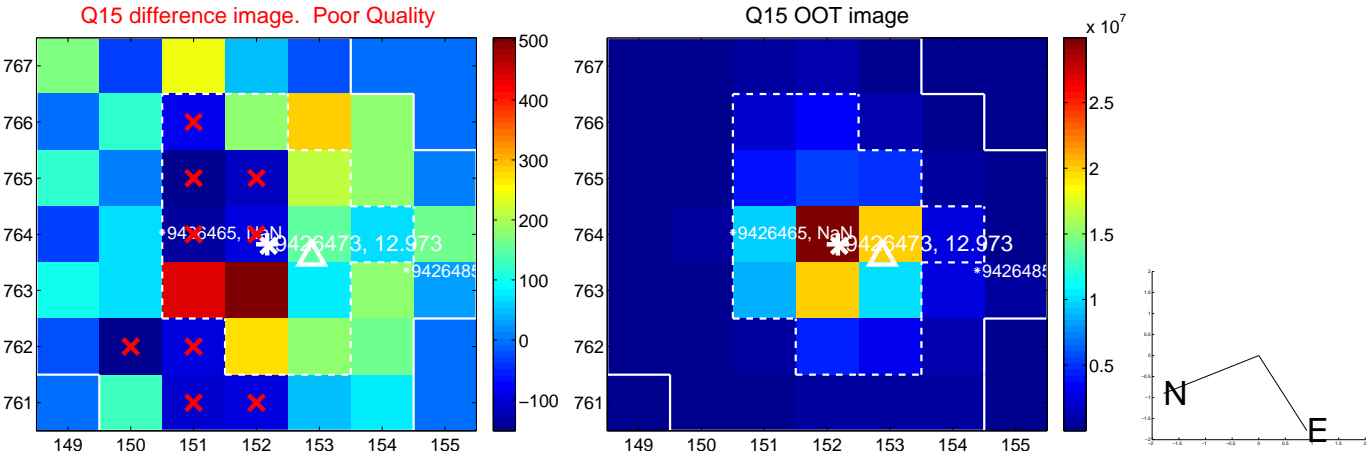
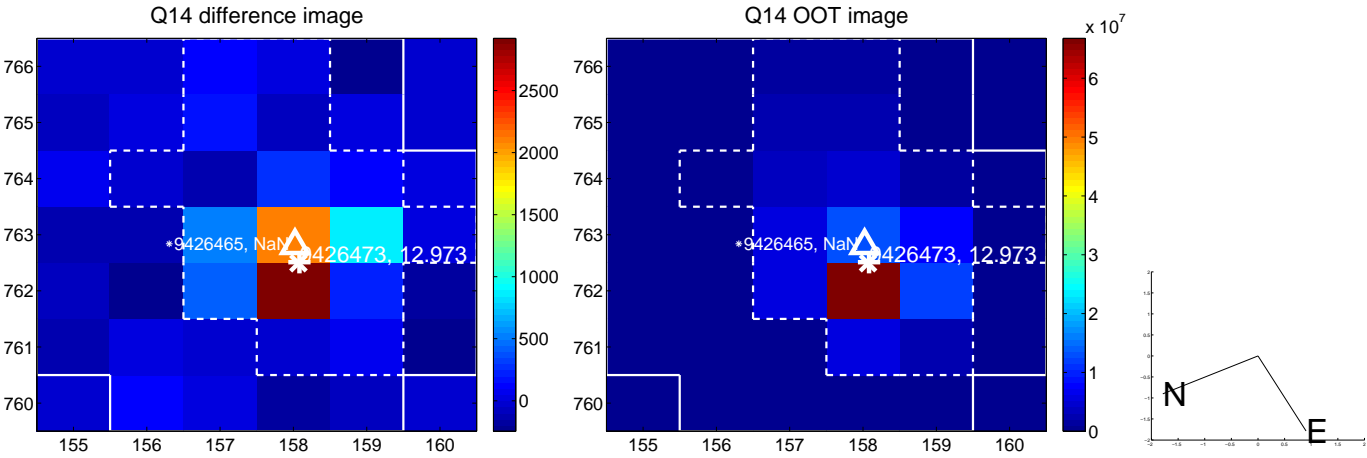
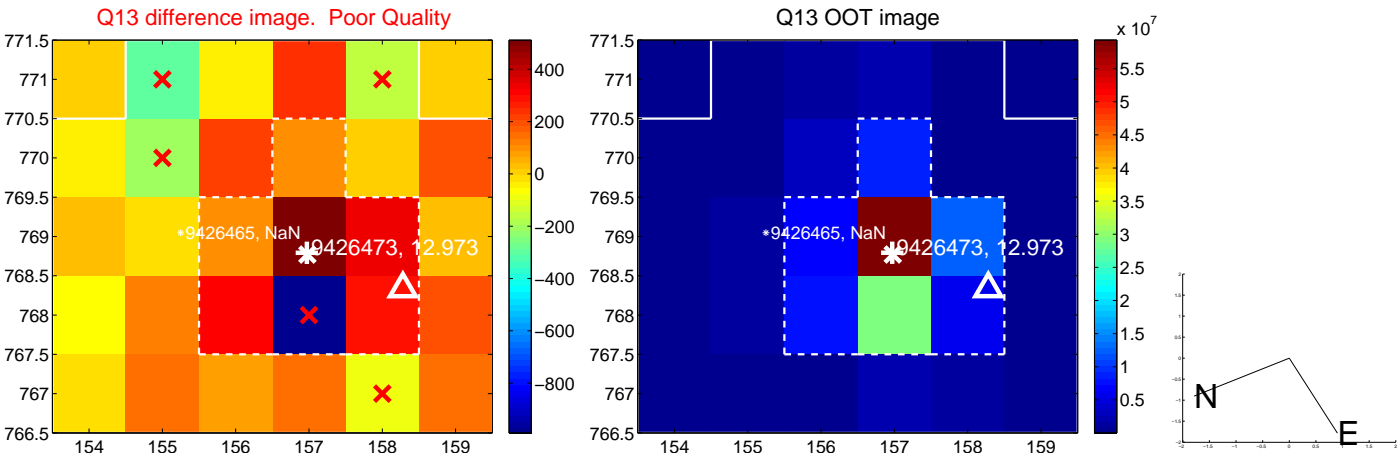
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



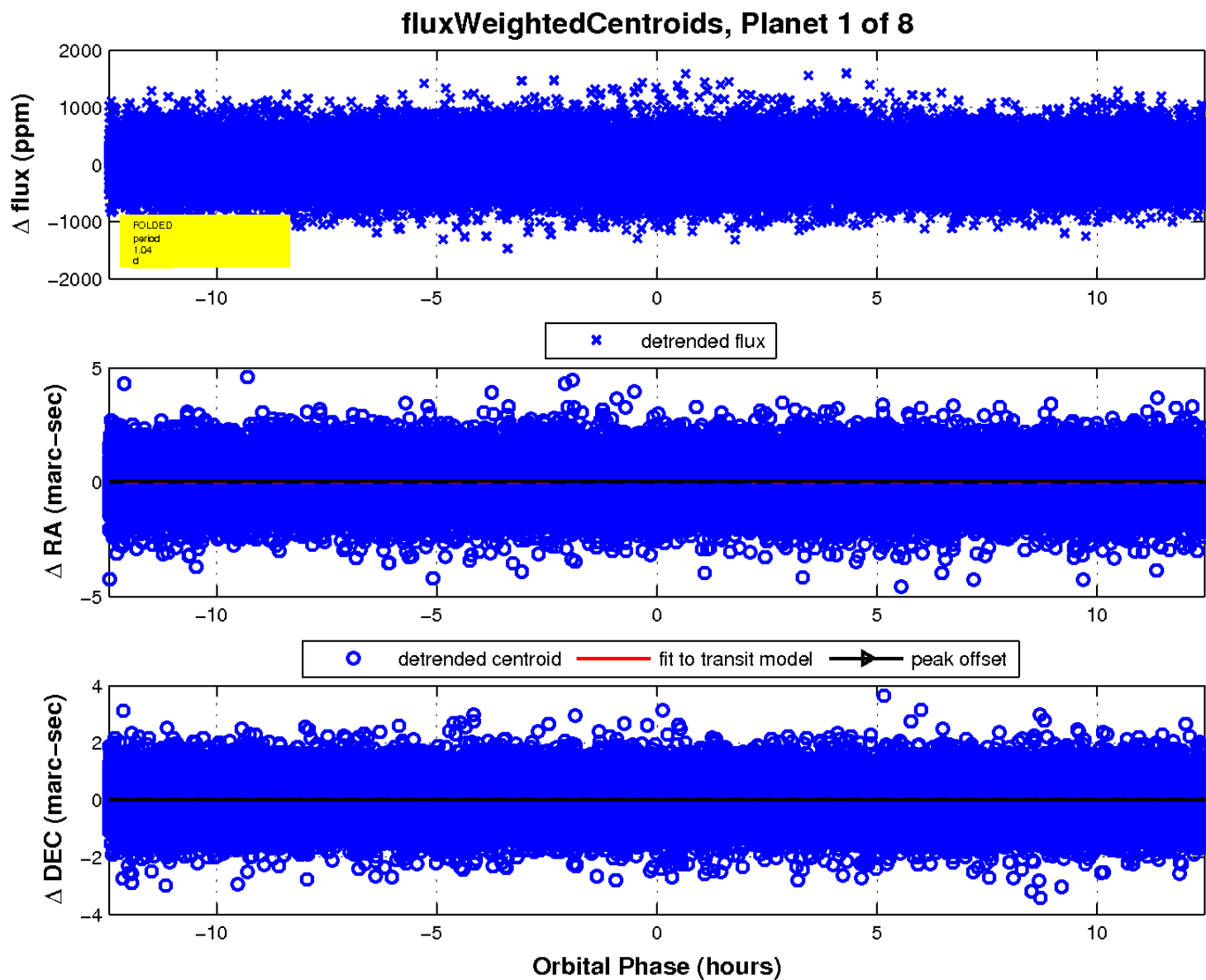
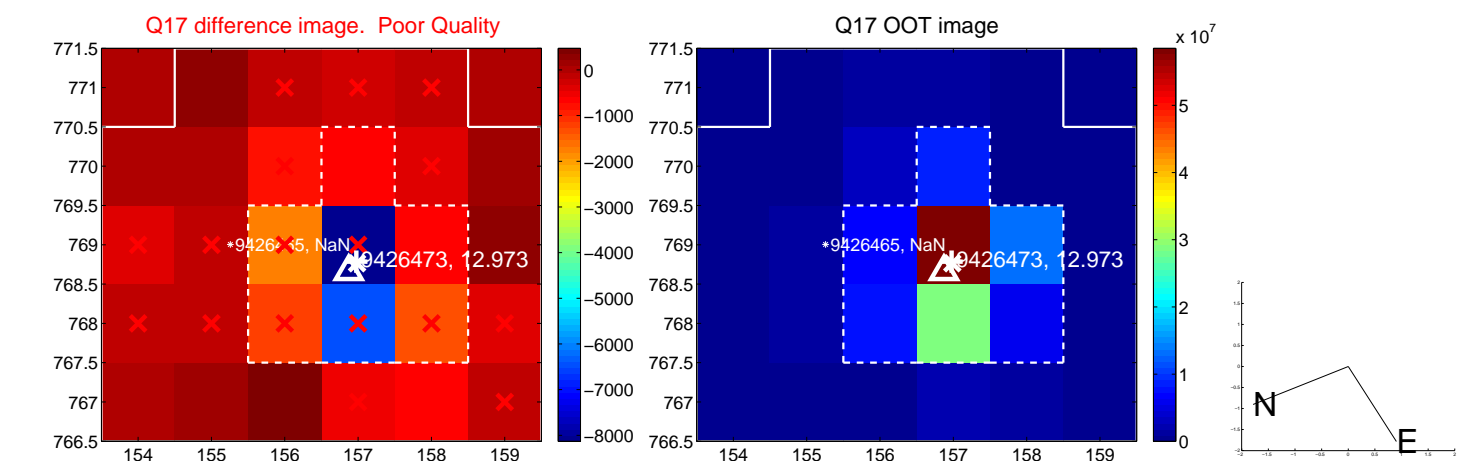
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

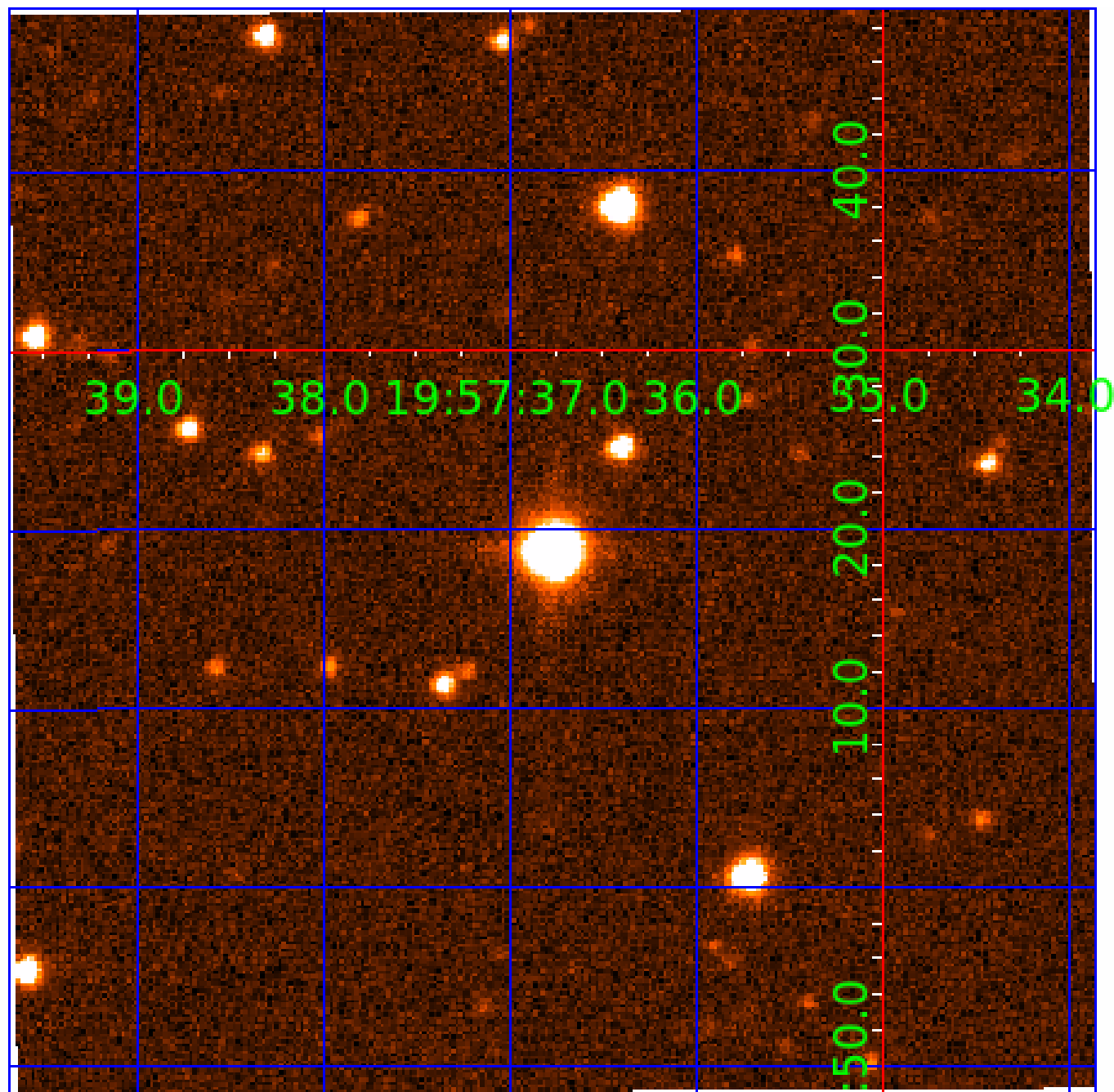


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009426473

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})
009426473-01	OBS	No	1.037045	131.951475	20.4	6.439	8.6	5.2	4.66	6231	2.16	46945.10
009426473-02	OBS	No	63.284304	140.796145	576.3	8.541	8.5	9.4	4.66	6231	19.34	195.40
009426473-03	OBS	No	27.312220	154.327238	182.6	6.860	8.5	5.5	4.66	6231	7.27	599.12
009426473-04	OBS	No	145.259499	157.361685	653.7	17.098	9.3	8.7	4.66	6231	14.83	64.53
009426473-05	OBS	No	28.713763	137.077892	277.3	5.315	8.9	8.1	4.66	6231	8.81	560.45
009426473-06	OBS	No	111.271387	217.136369	653.0	7.702	8.9	8.5	4.66	6231	22.86	92.08
009426473-07	OBS	No	303.882214	282.705089	412.5	3.921	8.9	7.4	4.66	6231	10.58	24.12
009426473-08	OBS	No	109.296456	228.284936	520.0	5.463	8.9	8.5	4.66	6231	13.54	94.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009426473-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009426473-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—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.

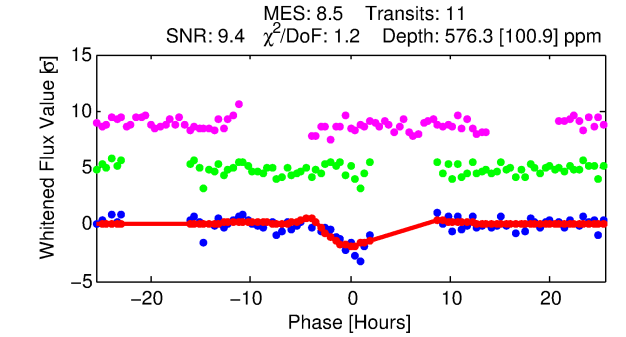
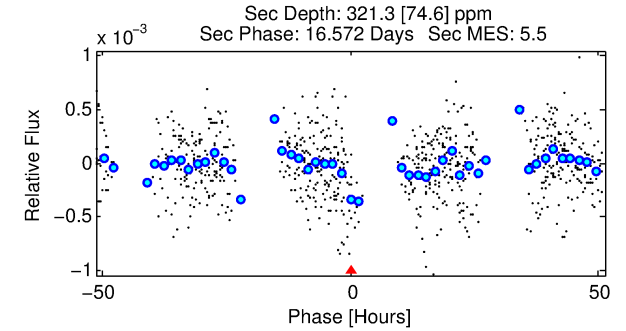
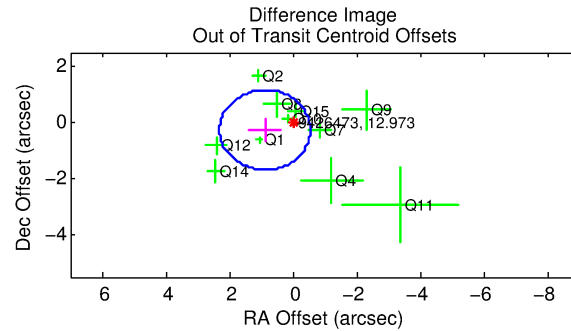
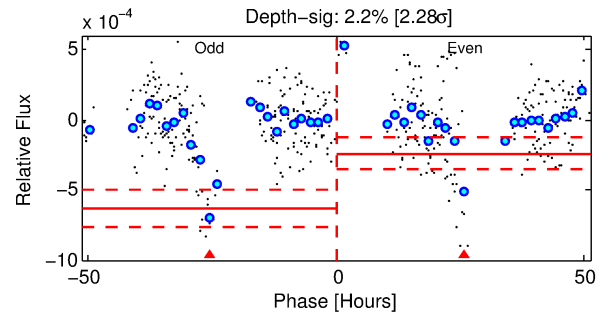
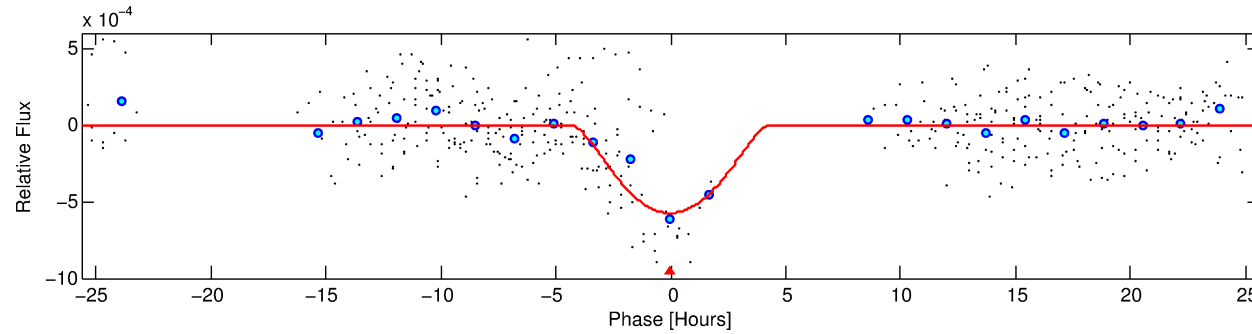
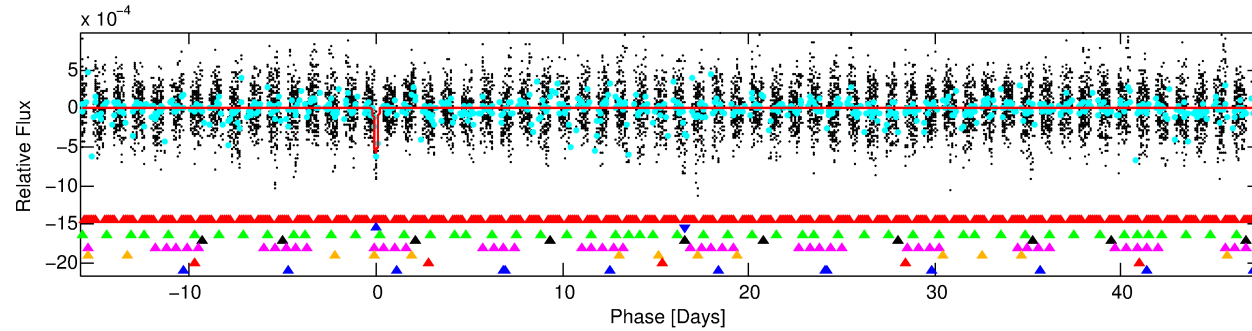
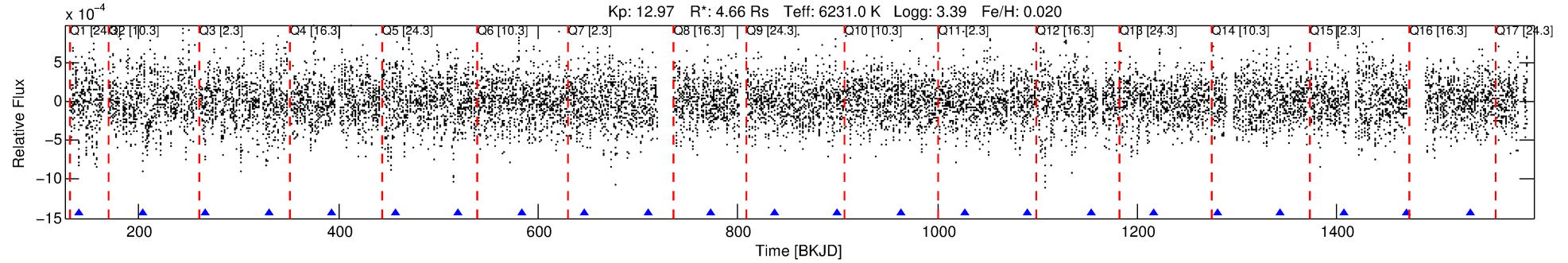
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009426473-02

No Significant Match Found

DV One-Page Summary

KIC: 9426473 Candidate: 2 of 8 Period: 63.284 d



DV Fit Results:

Period = 63.28430 [0.00343] d
Epoch = 140.7961 [0.0253] BKJD
Rp/R* = 0.0380 [0.0568]
a/R* = 17.19 [7.32]
b = 0.99 [0.09]
Seff = 195.40 [134.03]
Teff = 953 [163] K
Rp = 19.34 [30.03] Re
a = 0.3873 [0.1617] AU
Ag = 70.92 [217.76] [0.32 σ]
Teffp = 4278 [3206] K [1.04 σ]

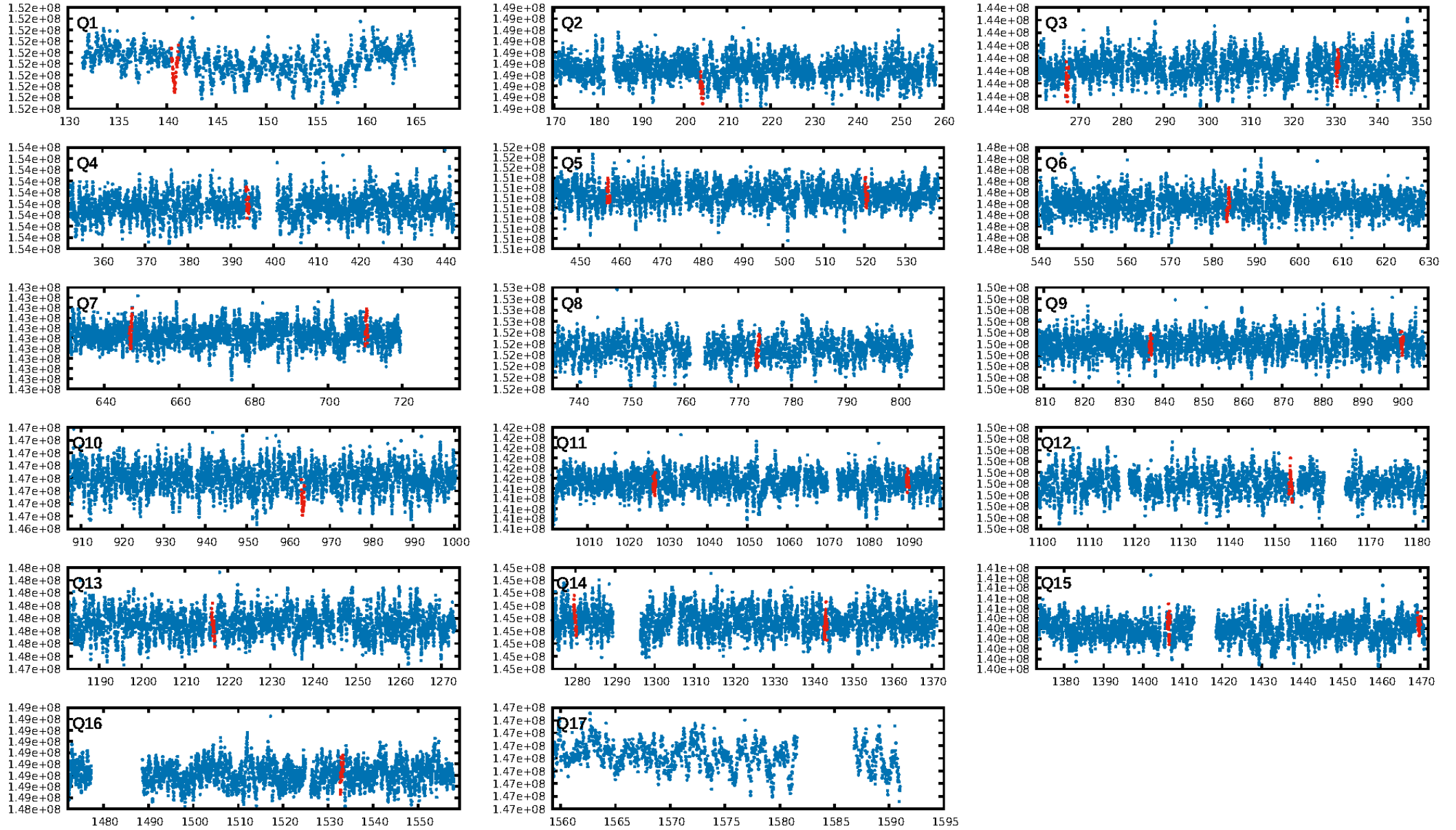
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [82.47 σ]
LongPeriod-sig: 100.0% [108.92 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.68e-09
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 1.877
Centroid-sig: 1.4%
Centroid-so: 0.689 arcsec [2.33 σ]
OotOffset-rm: 0.919 arcsec [1.93 σ]
KicOffset-rm: 0.874 arcsec [1.92 σ]
OotOffset-st: 3/3/3/2 [11]
KicOffset-st: 3/3/3/2 [11]
DiffImageQuality-fgm: 0.55 [6/11]
DiffImageOverlap-fno: 0.00 [0/14]

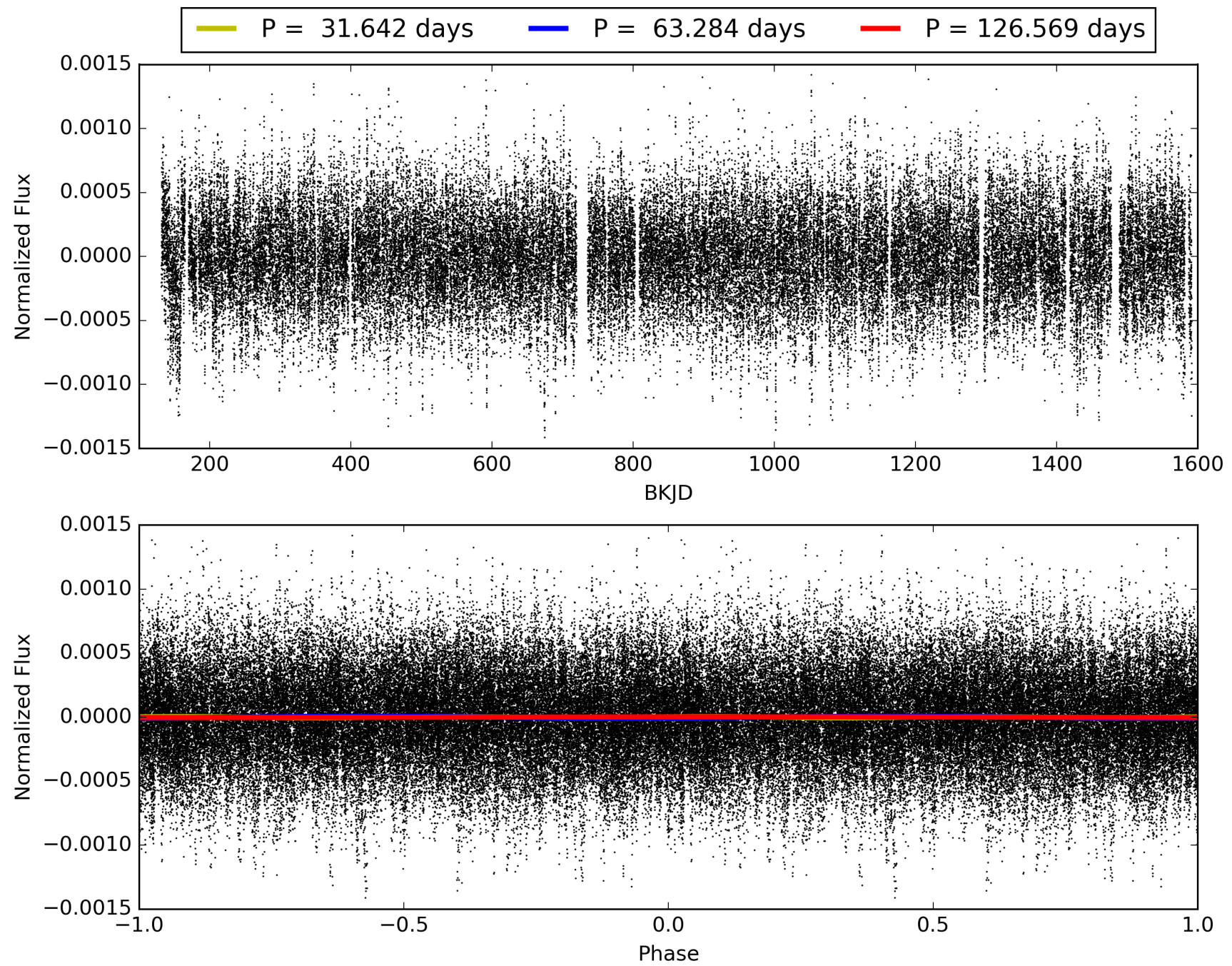
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:29:31 Z

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

TCE 009426473-02, PDC Light Curves

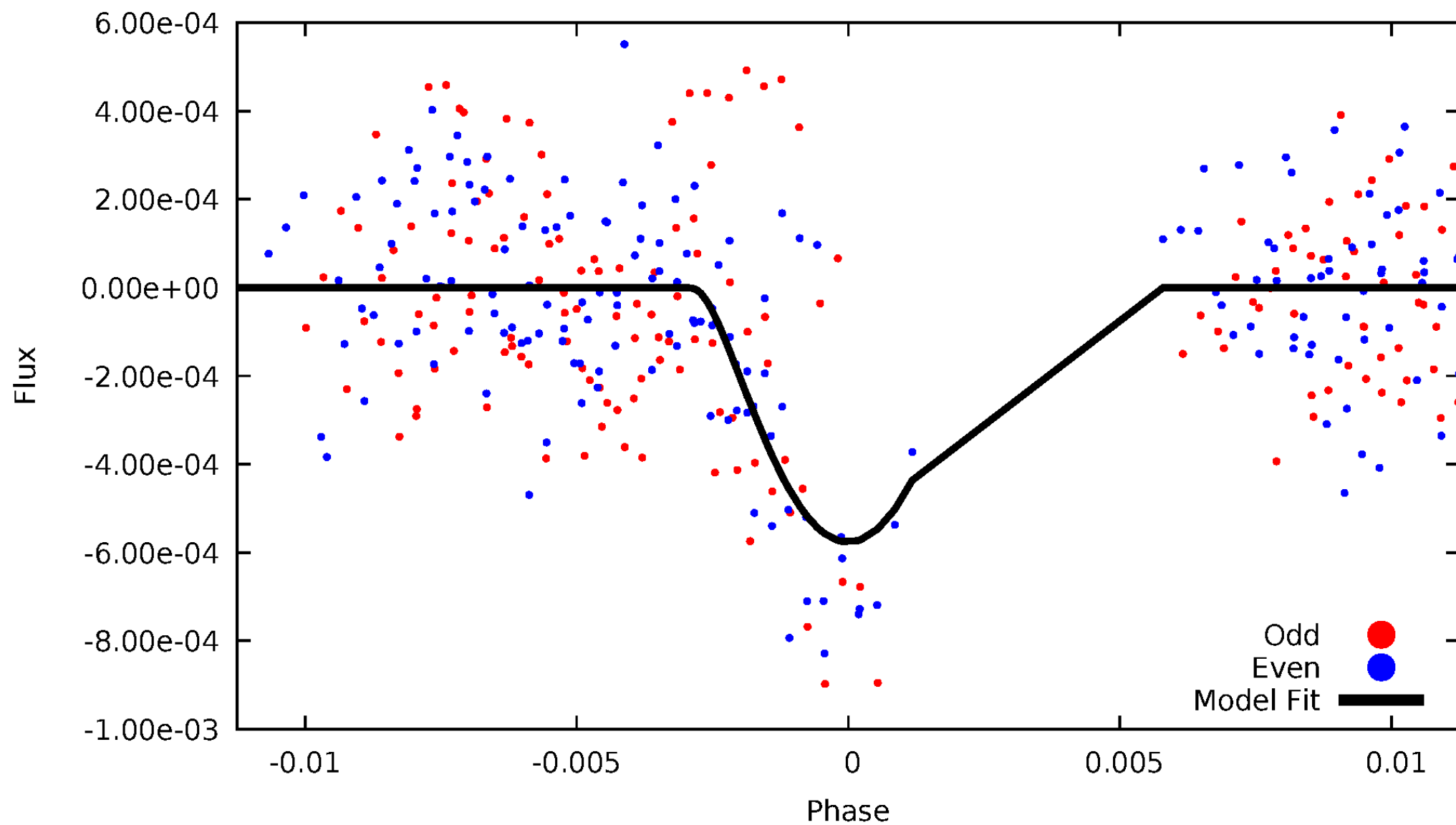


TCE 009426473-02



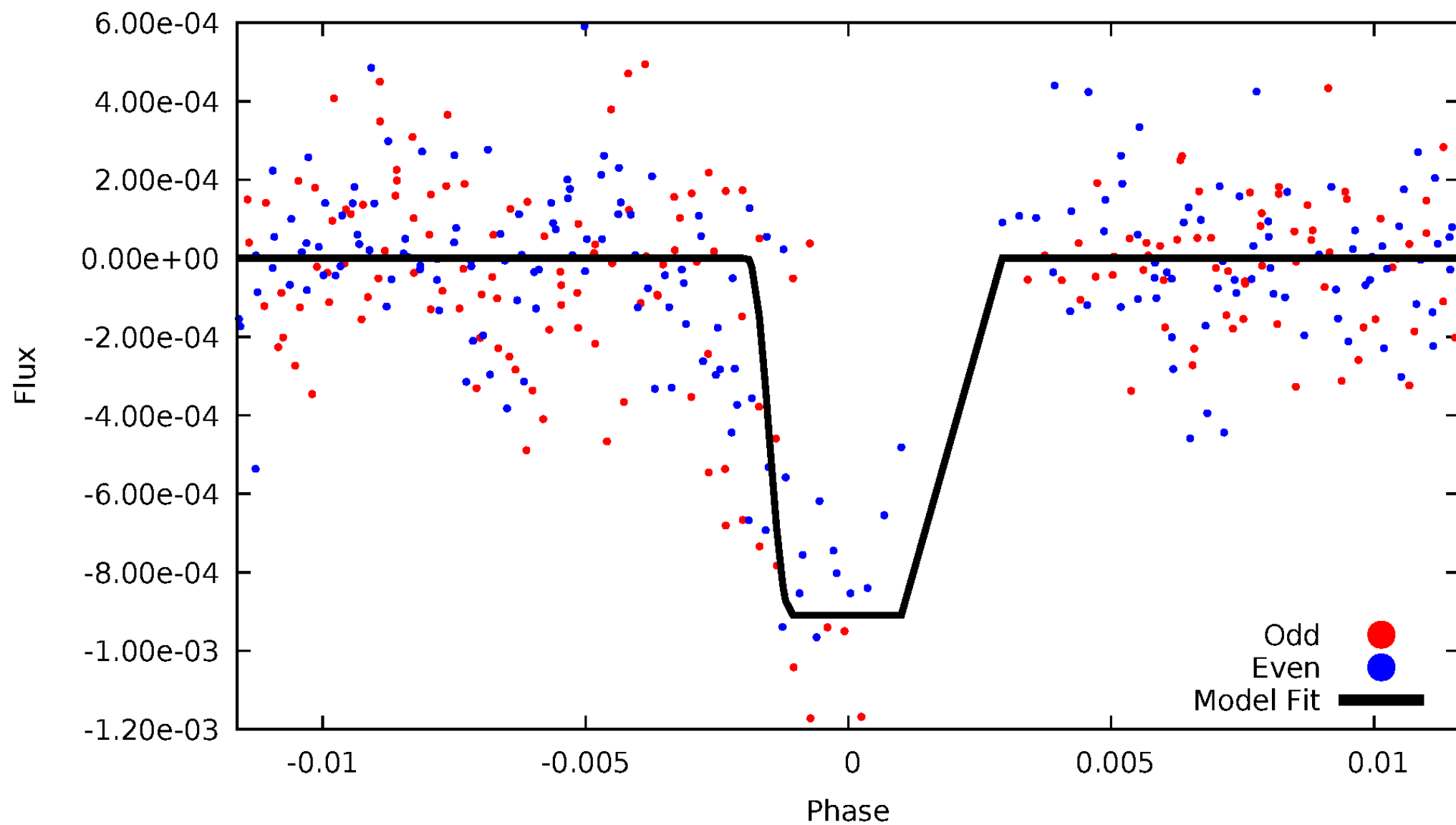
DV Odd/Even

TCE 009426473-02



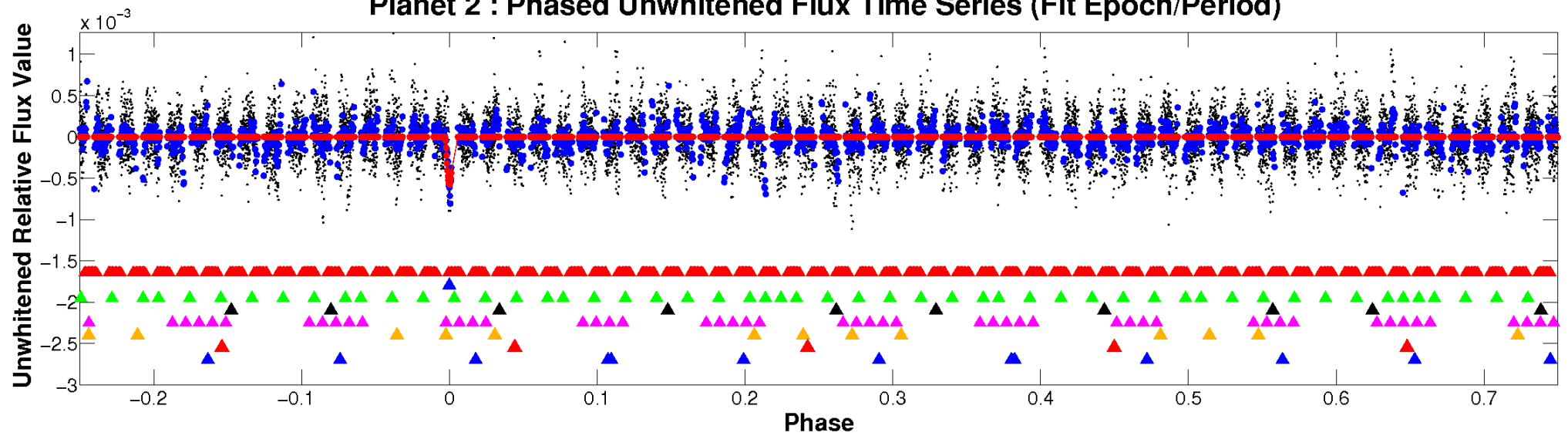
ALT Odd/Even

TCE 009426473-02

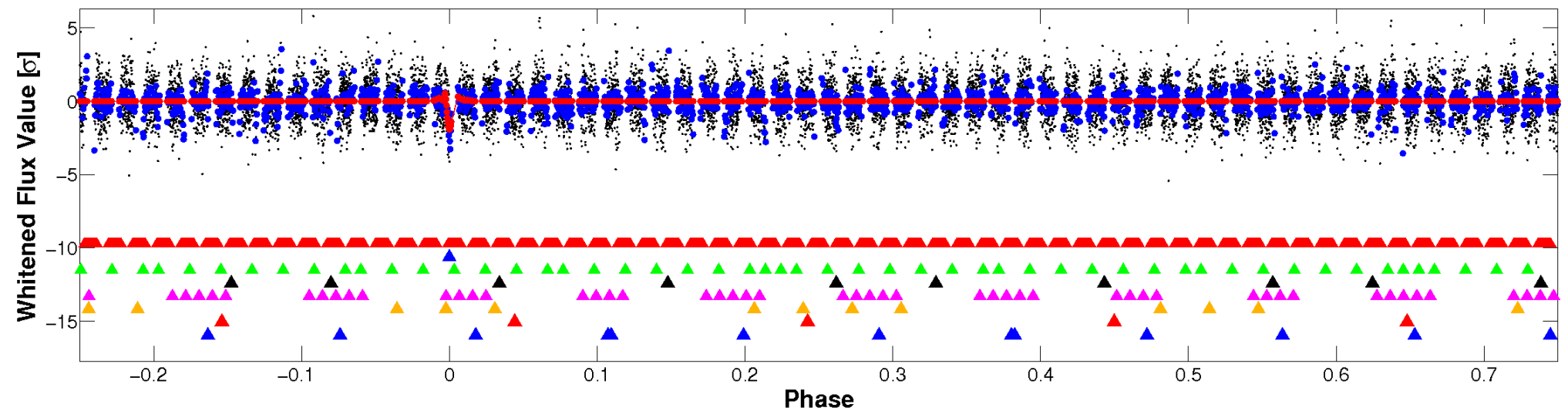


Non-Whitened Vs. Whitened Light Curve

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

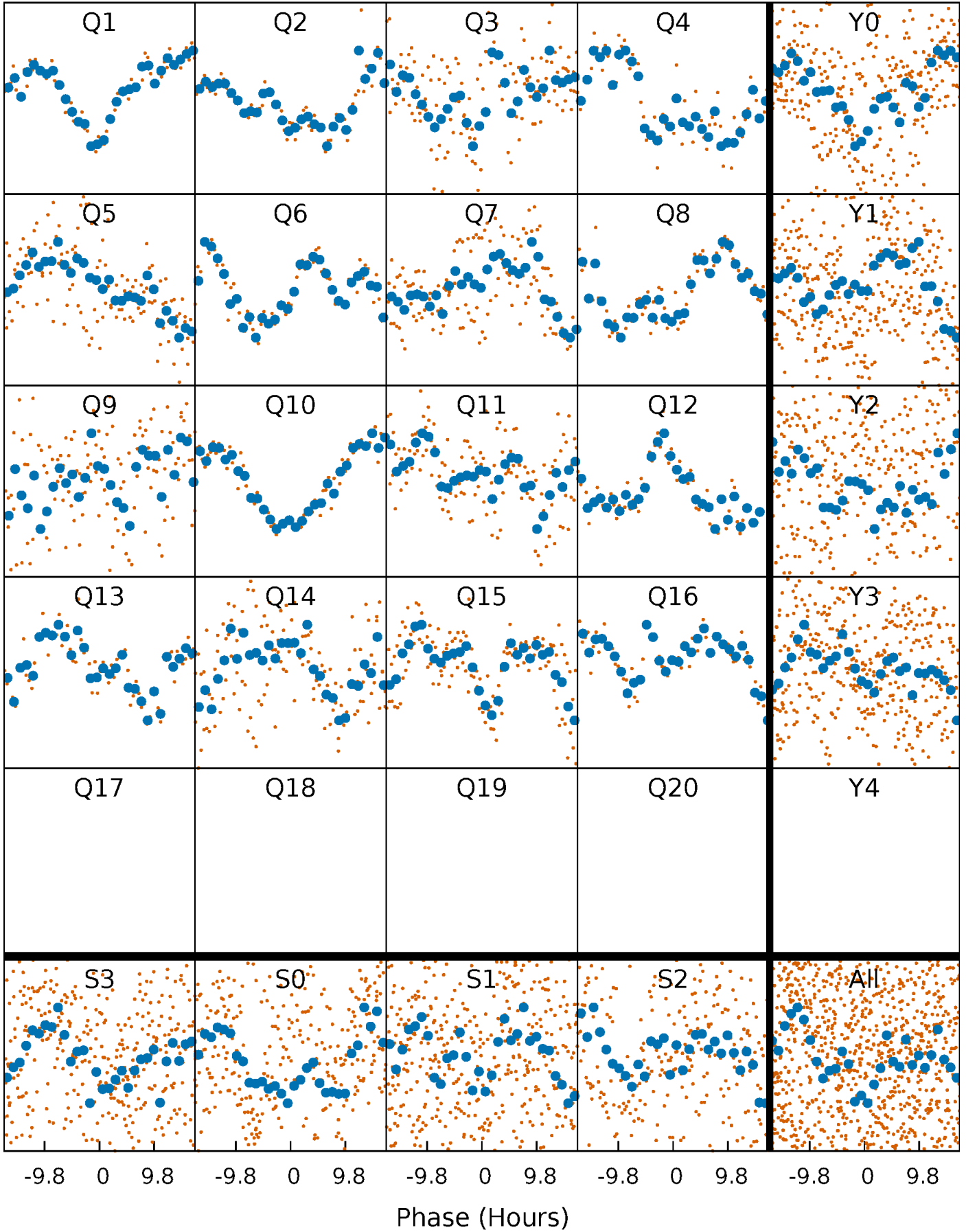


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



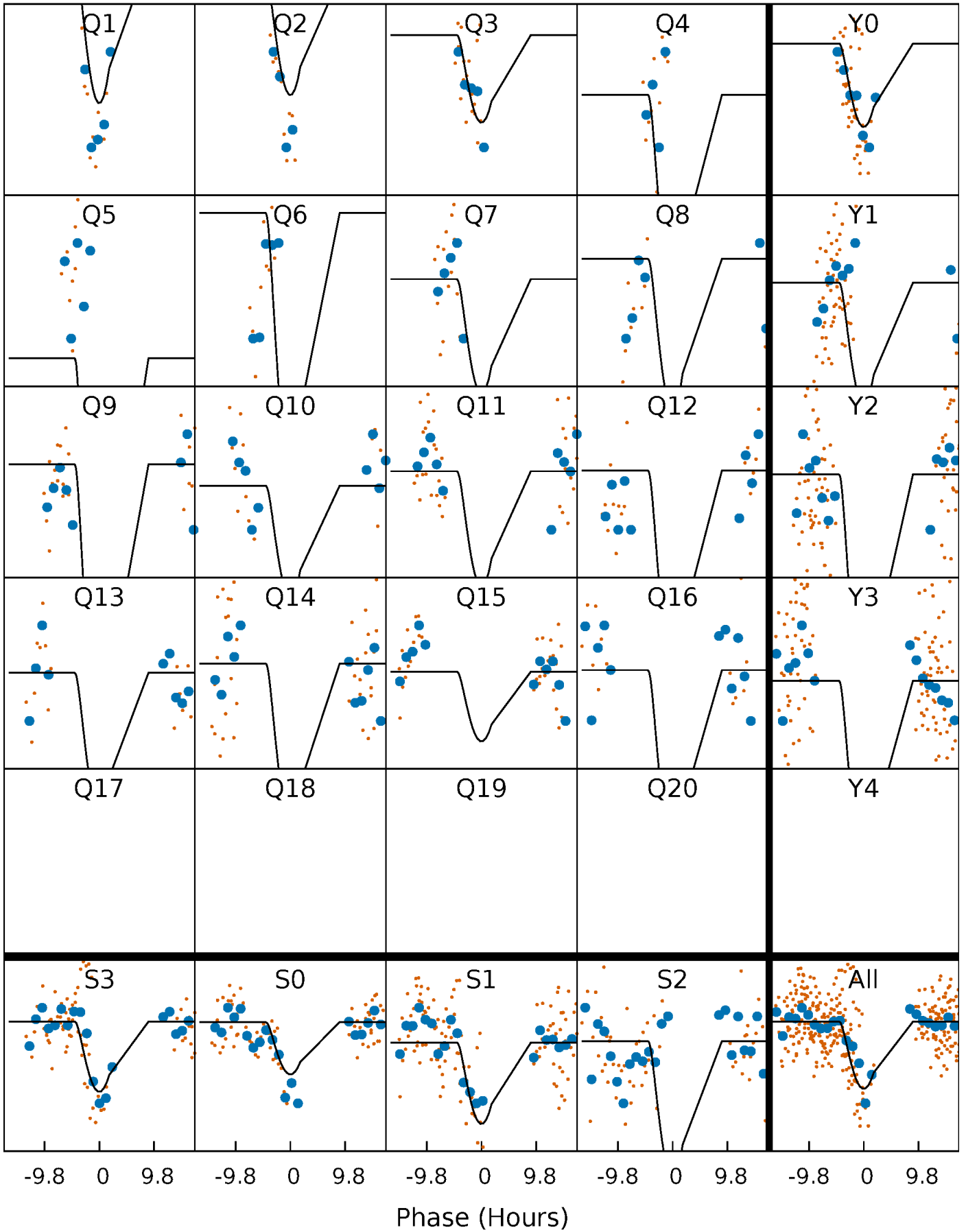
PDC Quarter-Phased Transit Curves

TCE 009426473-02 P= 63.284304 Days $T_0=140.796145$ (BKJD)



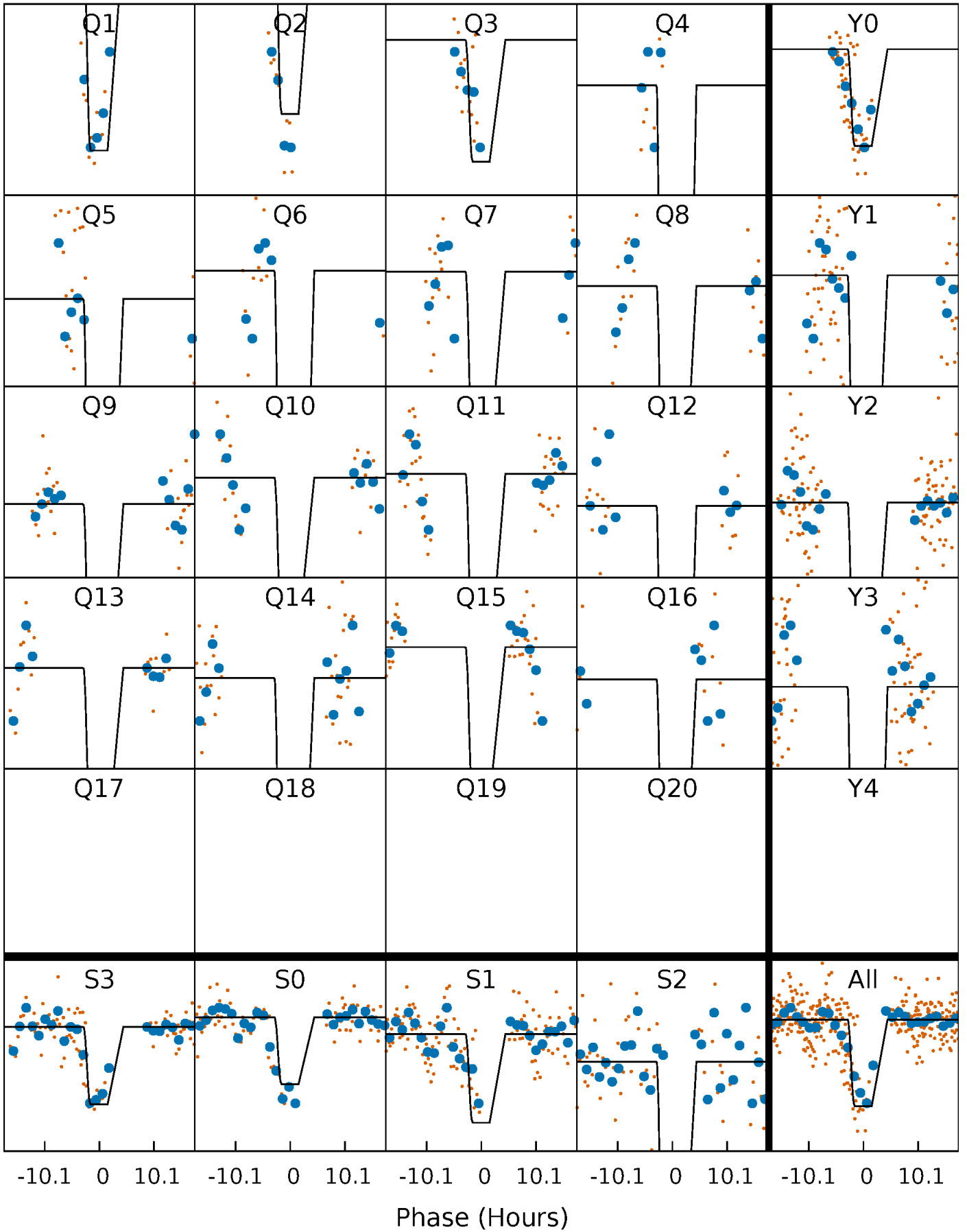
DV Quarter-Phased Transit Curves

TCE 009426473-02 $P = 63.284304$ Days $T_0 = 140.796145$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

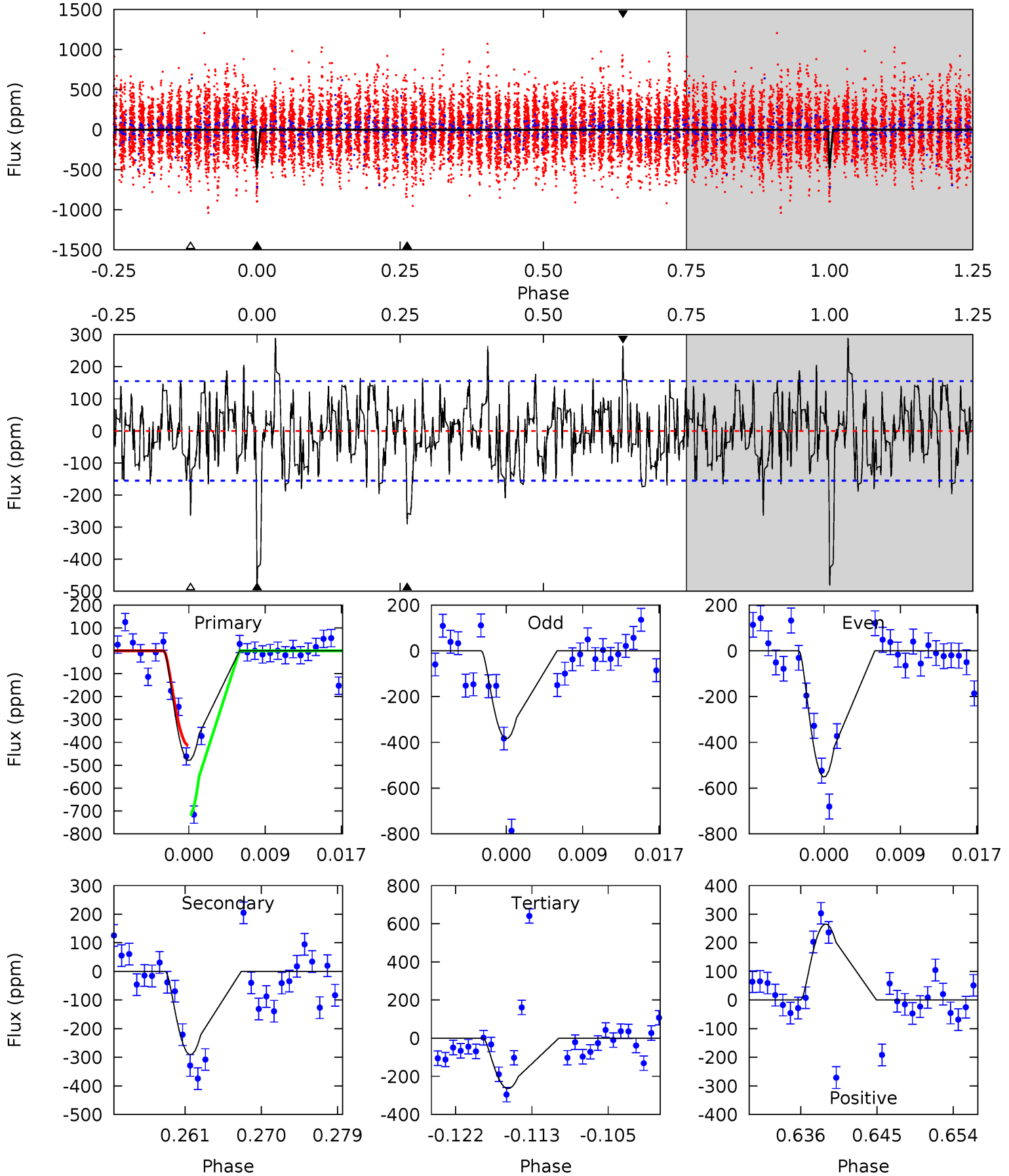
TCE 009426473-02 P= 63.292062 Days $T_0=140.806829$ (BKJD)



DV Model-Shift Uniqueness Test

009426473-02, P = 63.284304 Days, E = 77.511841 Days

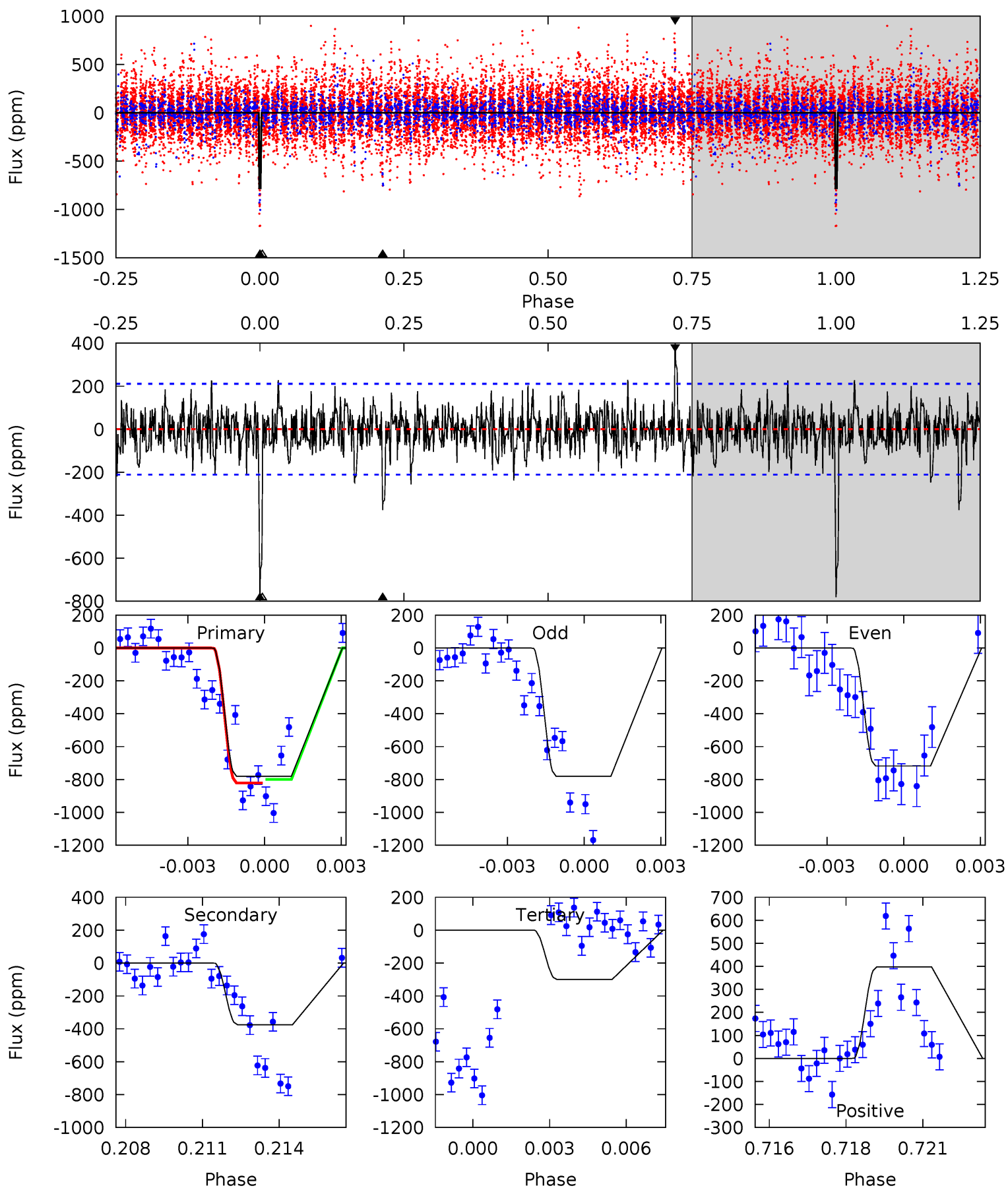
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.6	9.47	8.60	8.65	5.05	2.62	2.44	7.02	6.97	0.87	0.82	2.70	-1.26	0.38	2.97



Alt Model-Shift Uniqueness Test

009426473-02, P = 63.292062 Days, E = 77.514767 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.4	9.35	7.48	9.89	5.26	2.98	1.71	11.9	9.54	1.87	-0.54	0.79	0.76	0.34	0.19



Stellar Parameters For KIC 009426473

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6231^{+189}_{-170}	$3.388^{+0.399}_{-0.094}$	$0.020^{+0.300}_{-0.300}$	$4.659^{+0.661}_{-1.984}$	$1.933^{+0.071}_{-0.403}$	$0.027^{+0.085}_{-0.008}$
	+3%/-3%	+12%/-3%	+1500%/-1500%	+14%/-43%	+4%/-21%	+314%/-30%
Source	PHO1	FLK73	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 009426473-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-291 ± 31	$25.47^{+23.84}_{-16.85}$	1309^{+82}_{-140}	3834^{+2047}_{-722}	36^{+290}_{-26}
Alt.	-376 ± 40	$22.69^{+24.67}_{-14.50}$	1311^{+82}_{-140}	4141^{+2320}_{-839}	57^{+374}_{-43}

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 $A_{obs} \gg 1.0$

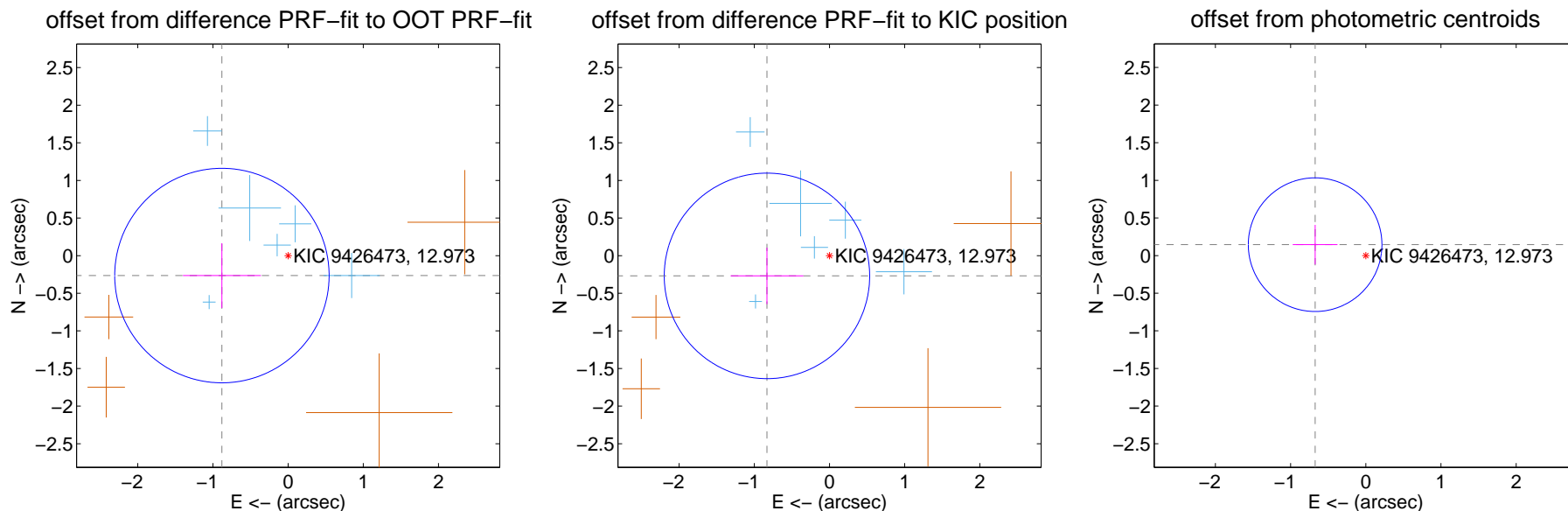
DV Centroid Data

Supplemental centroid analysis for 009426473-02. Kepler magnitude: 12.97. Transit SNR 9.42

There are 6 quarters with good PRF difference image offsets

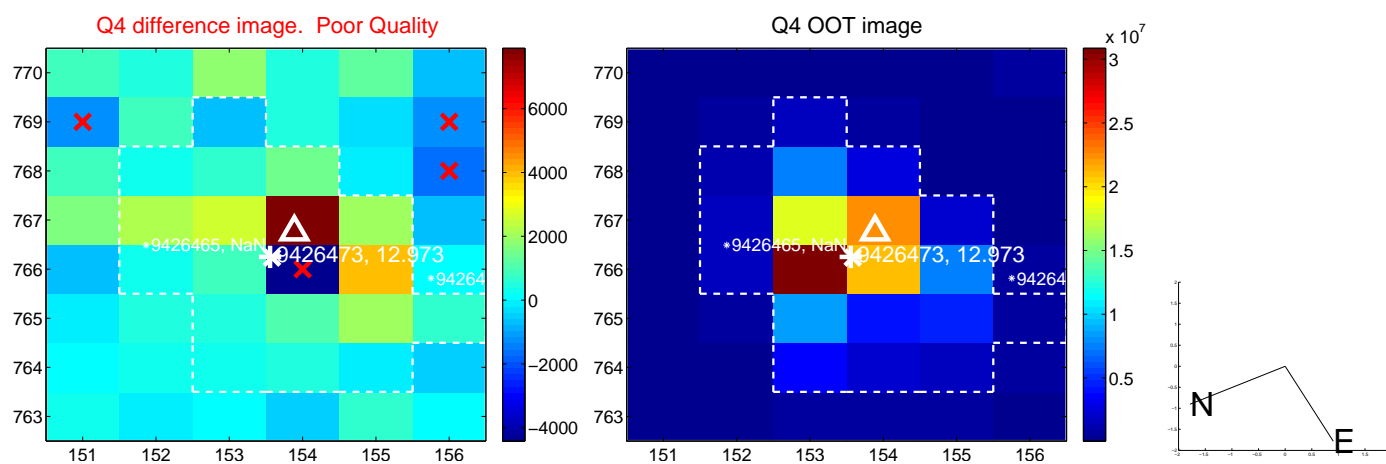
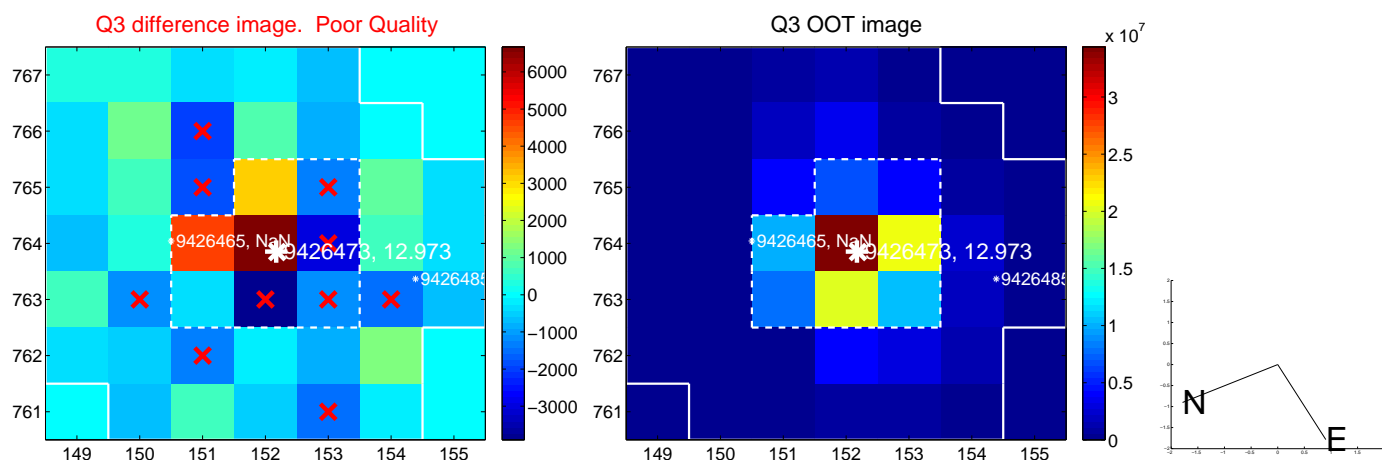
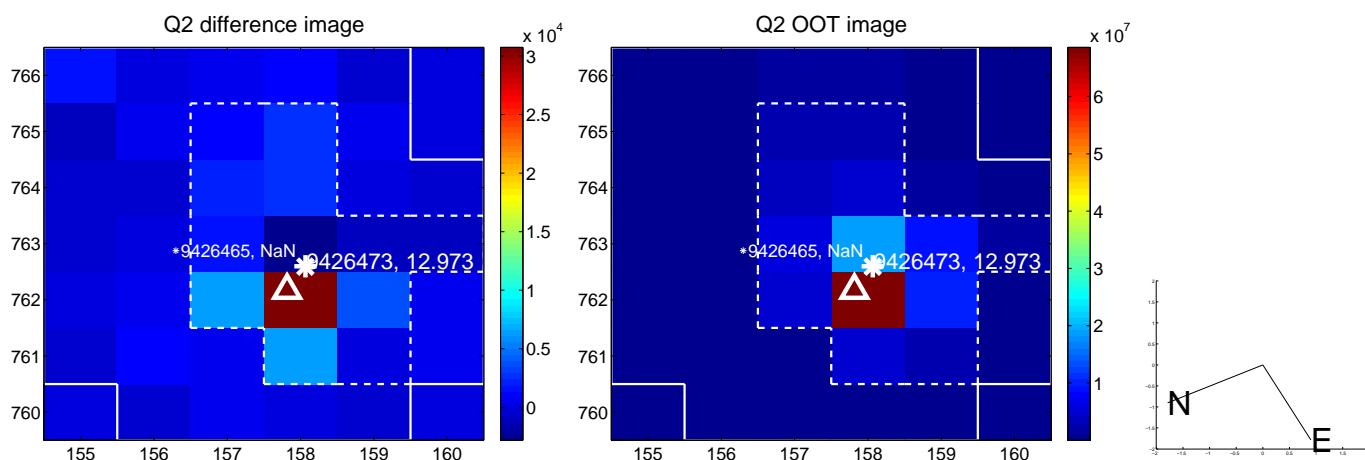
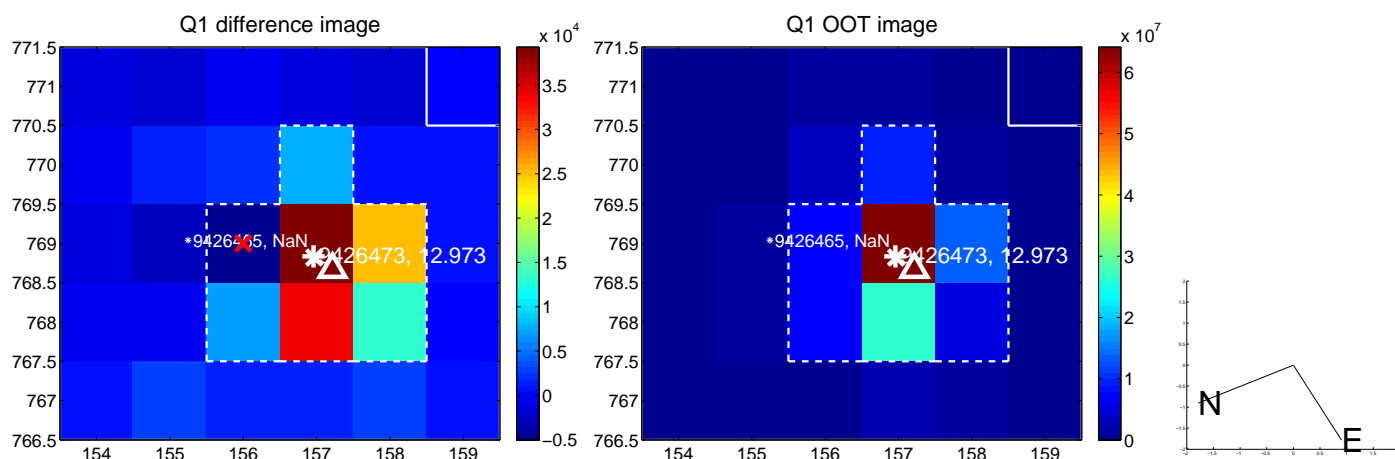
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.919 ± 0.475	1.93	0.881 ± 0.519	-0.265 ± 0.431
PRF-fit source offset from KIC position	0.874 ± 0.455	1.92	0.832 ± 0.483	-0.269 ± 0.375
photometric centroid source offset	0.69 ± 0.30	2.33	0.67 ± 0.30	0.15 ± 0.26

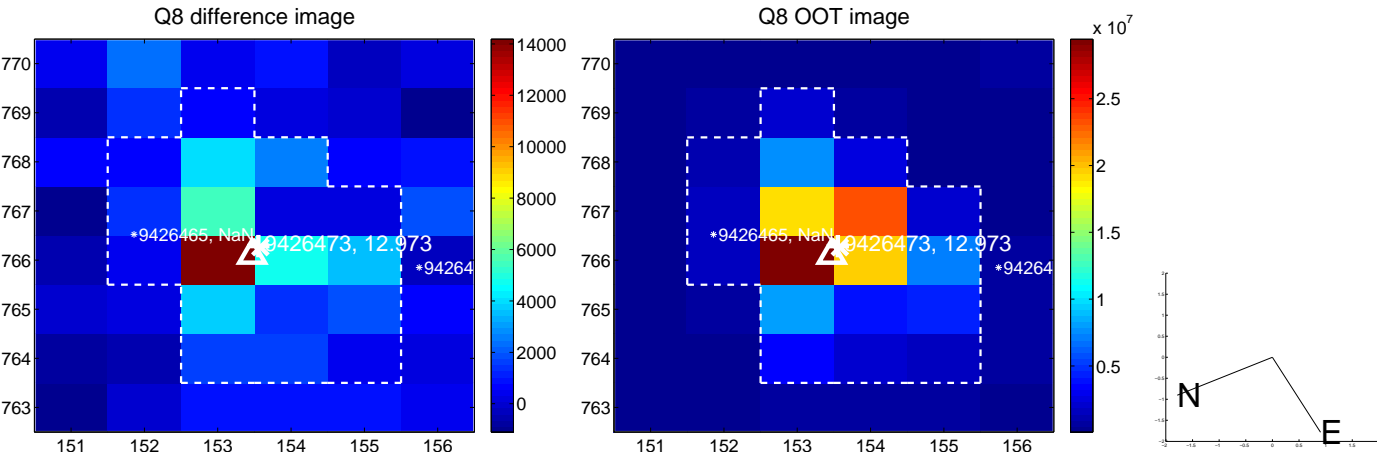
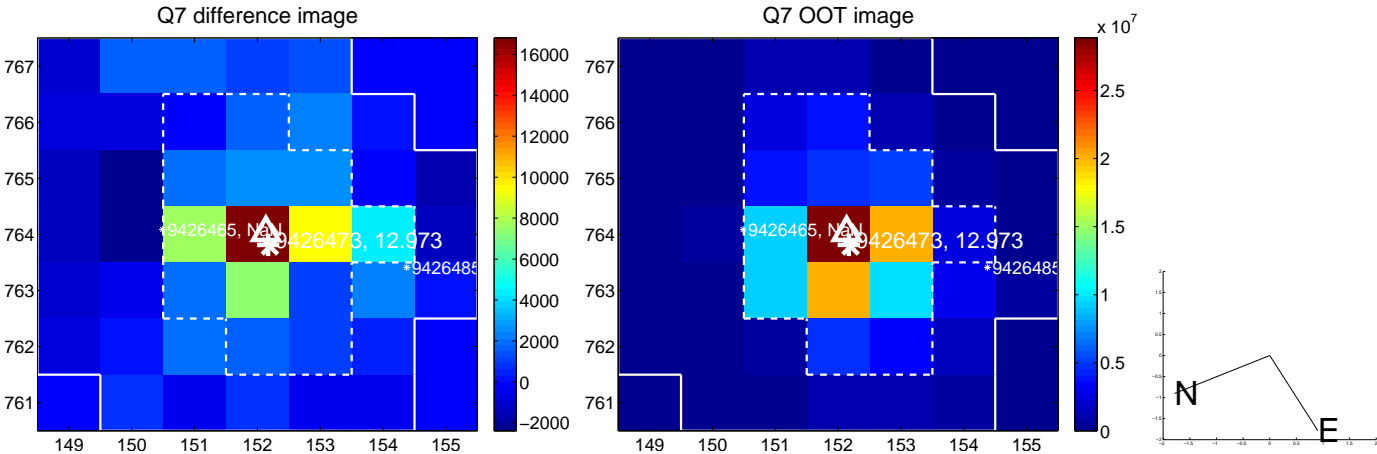
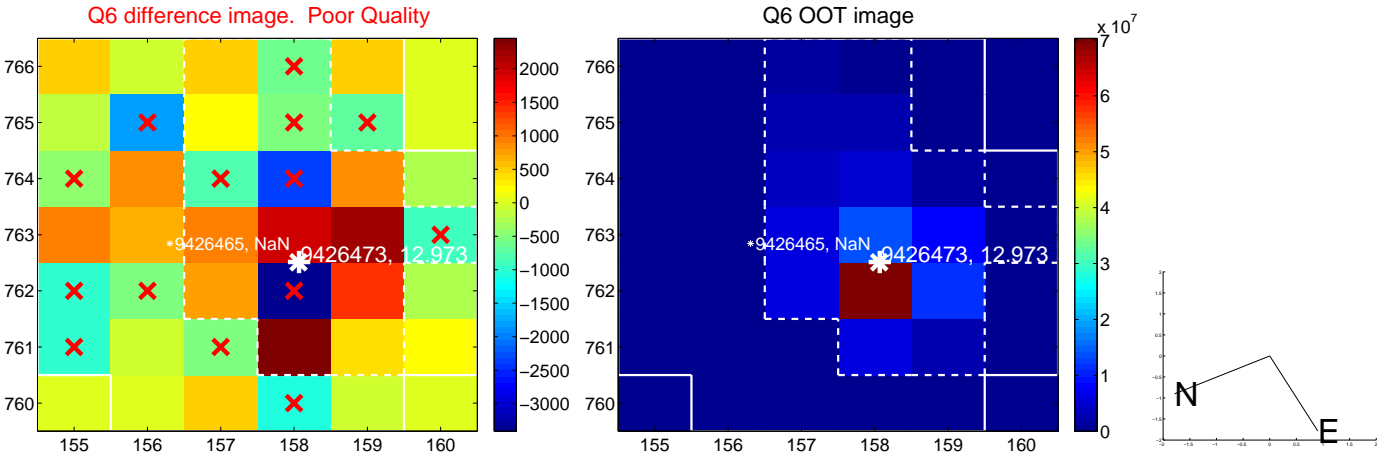
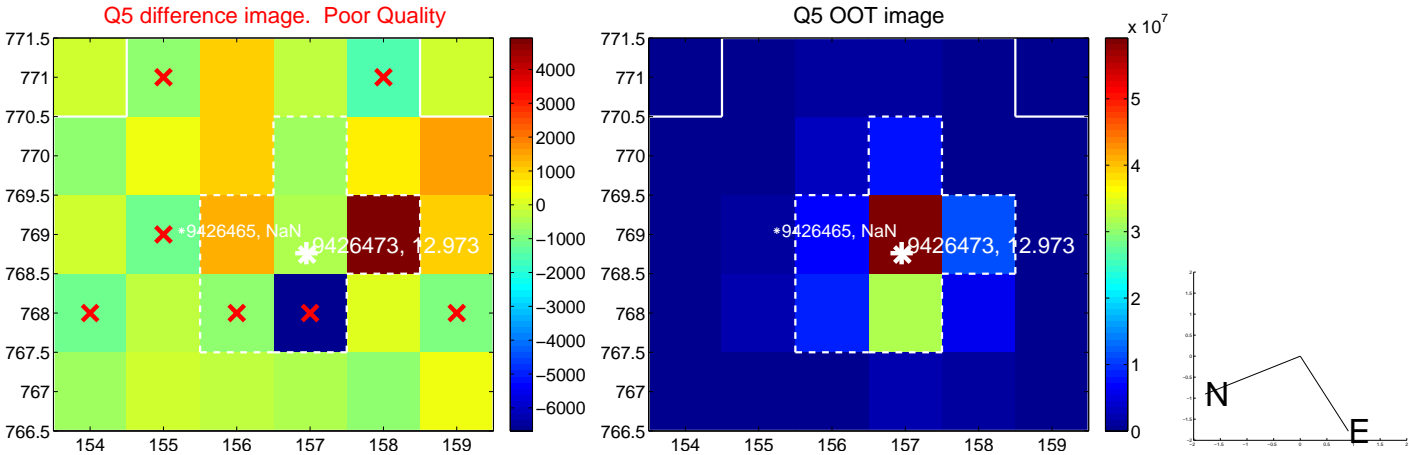


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

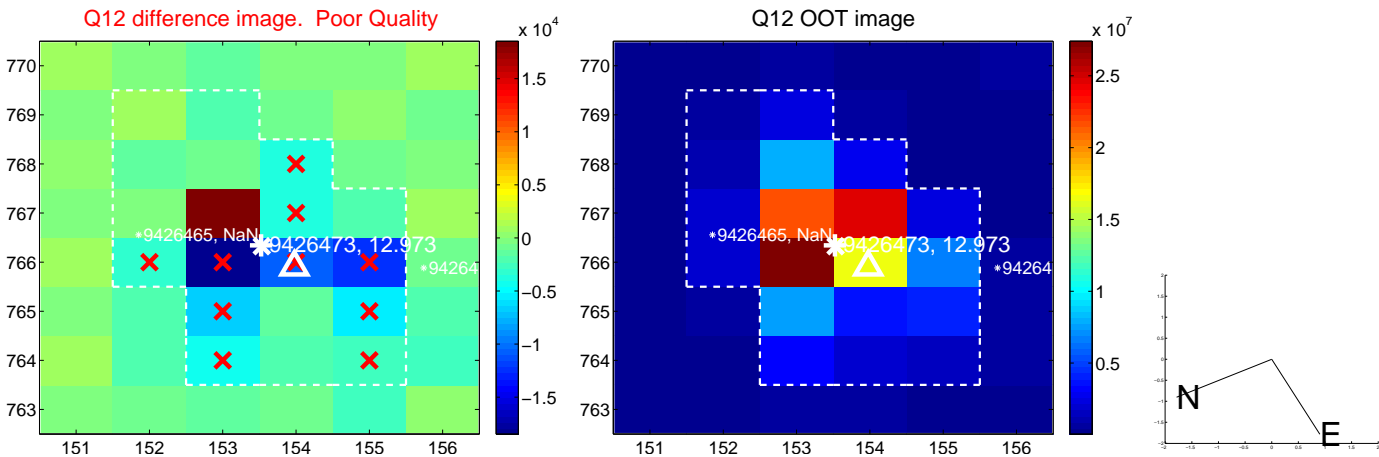
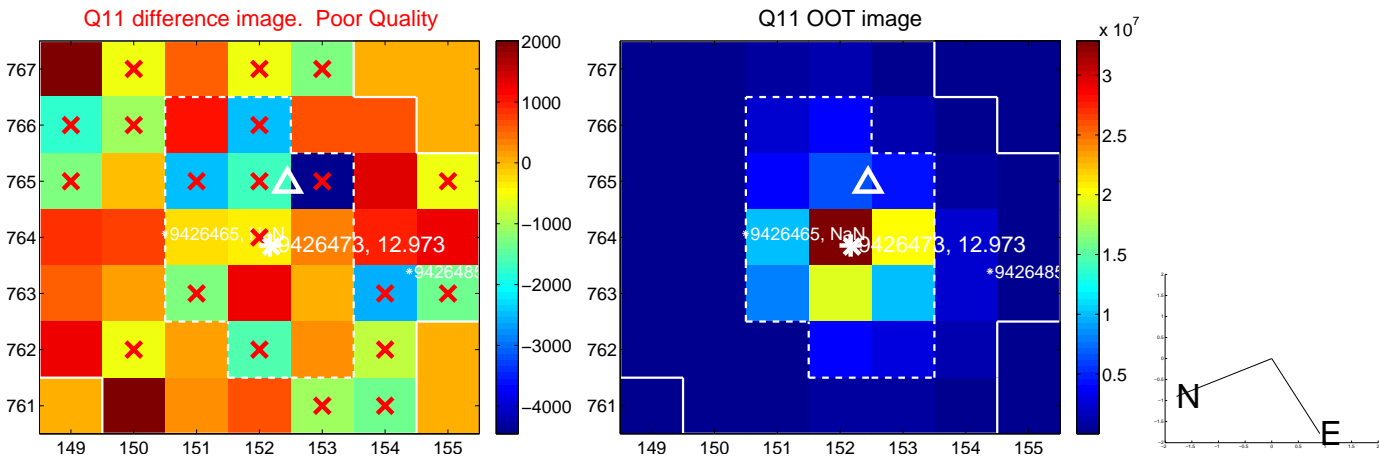
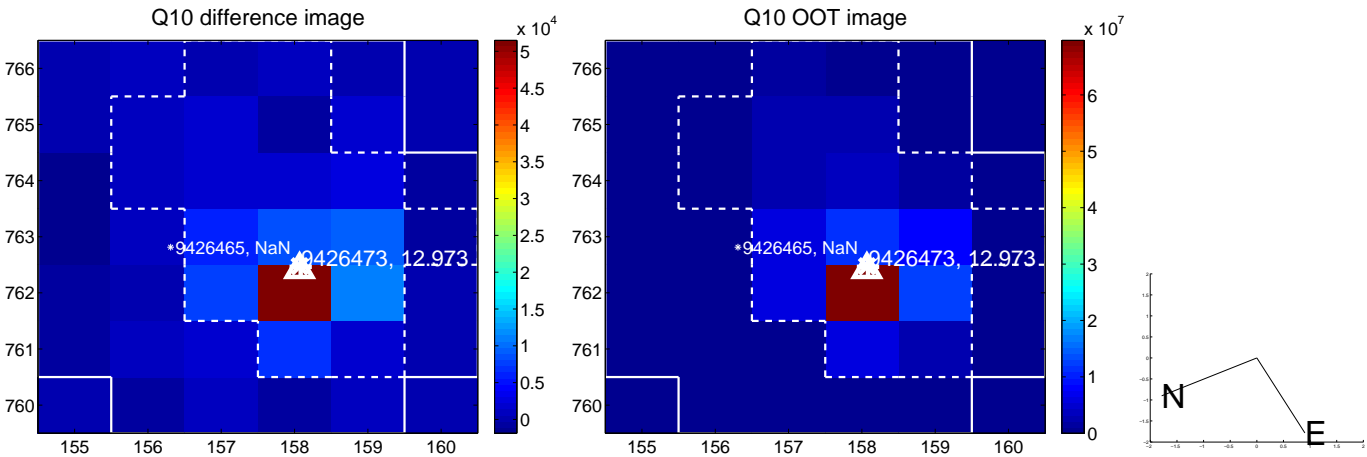
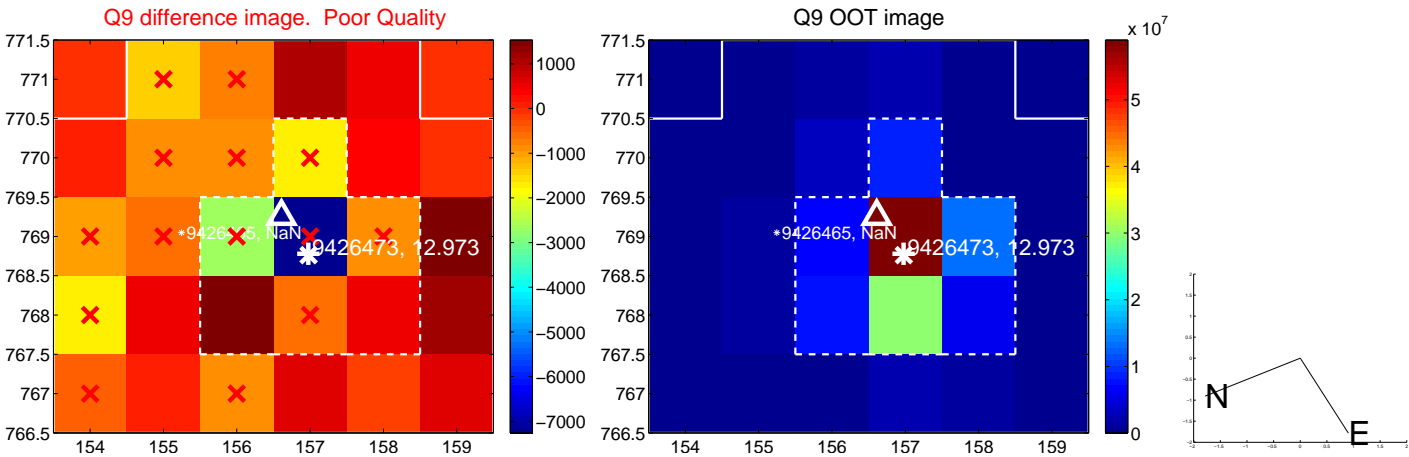
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



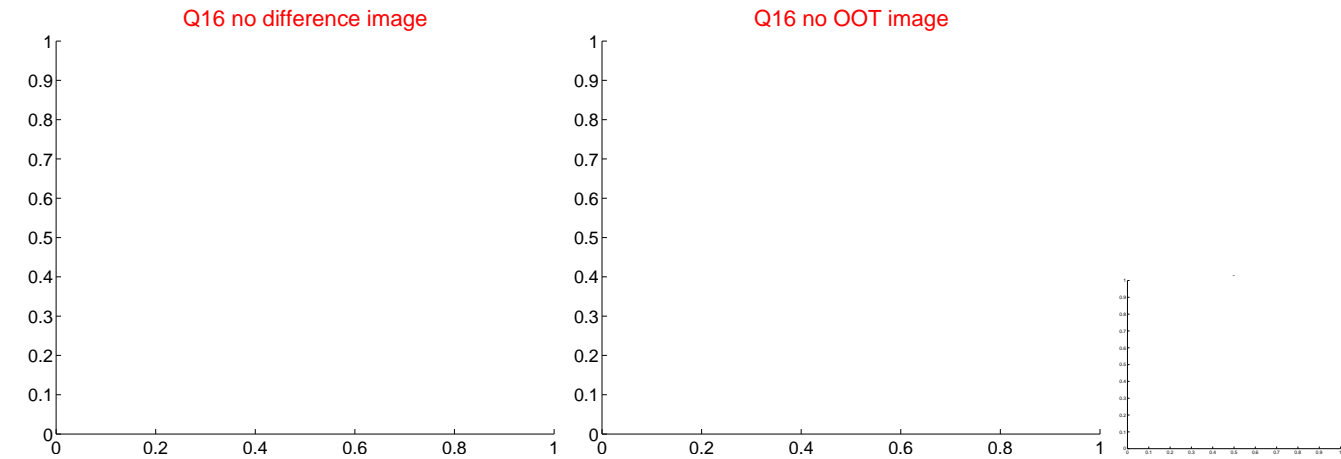
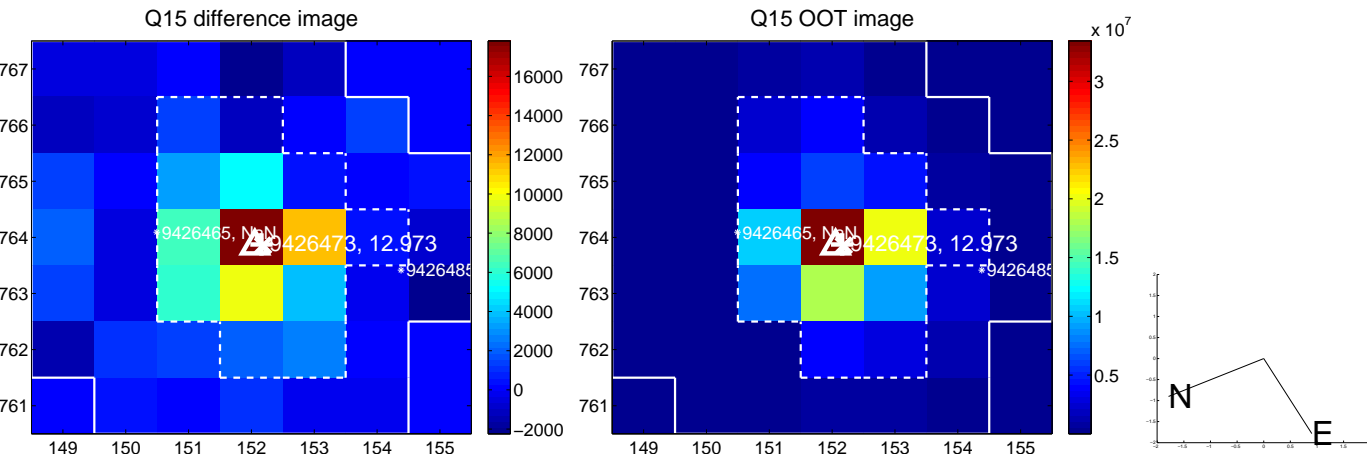
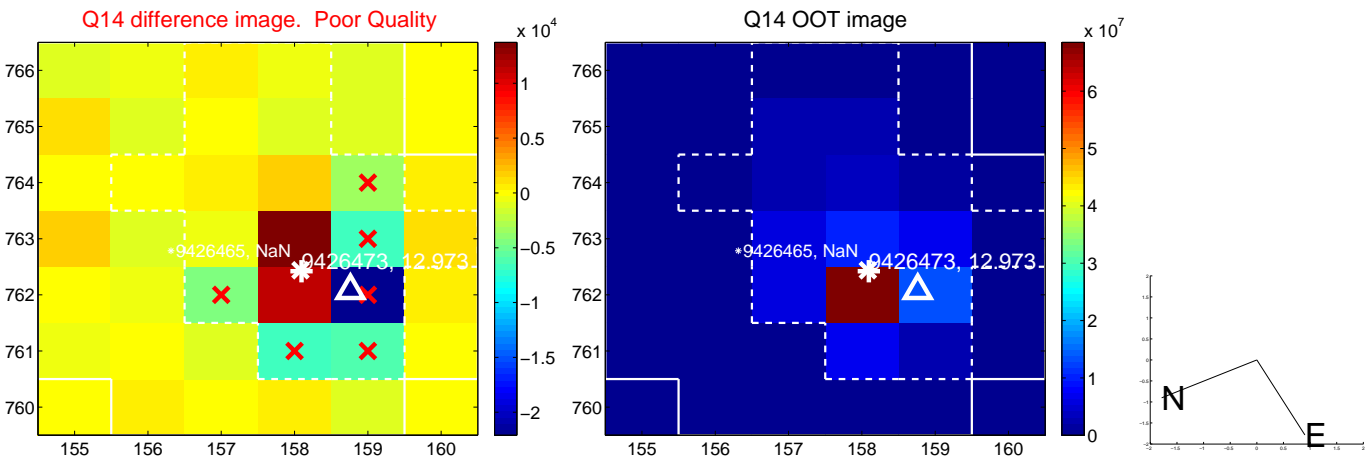
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



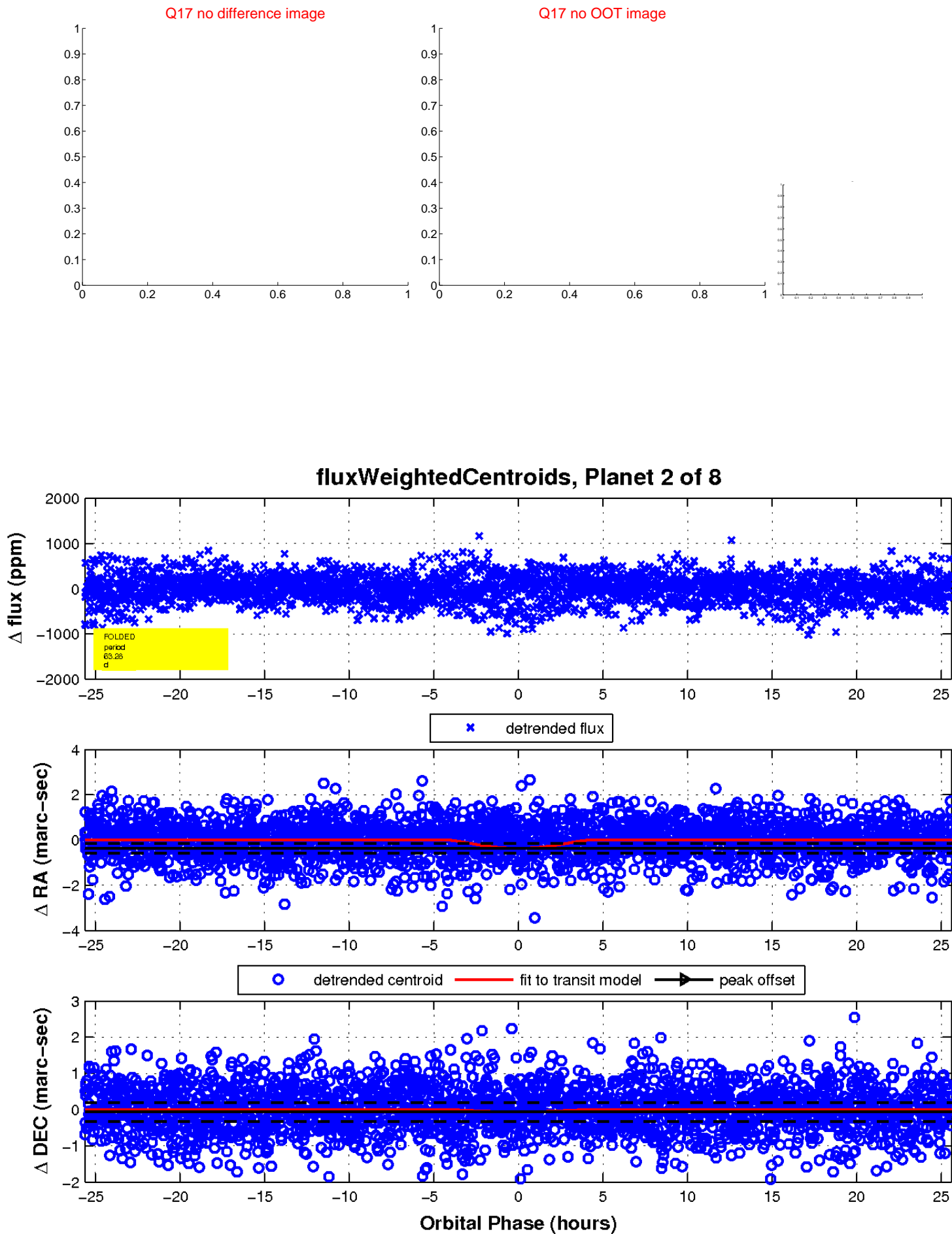
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

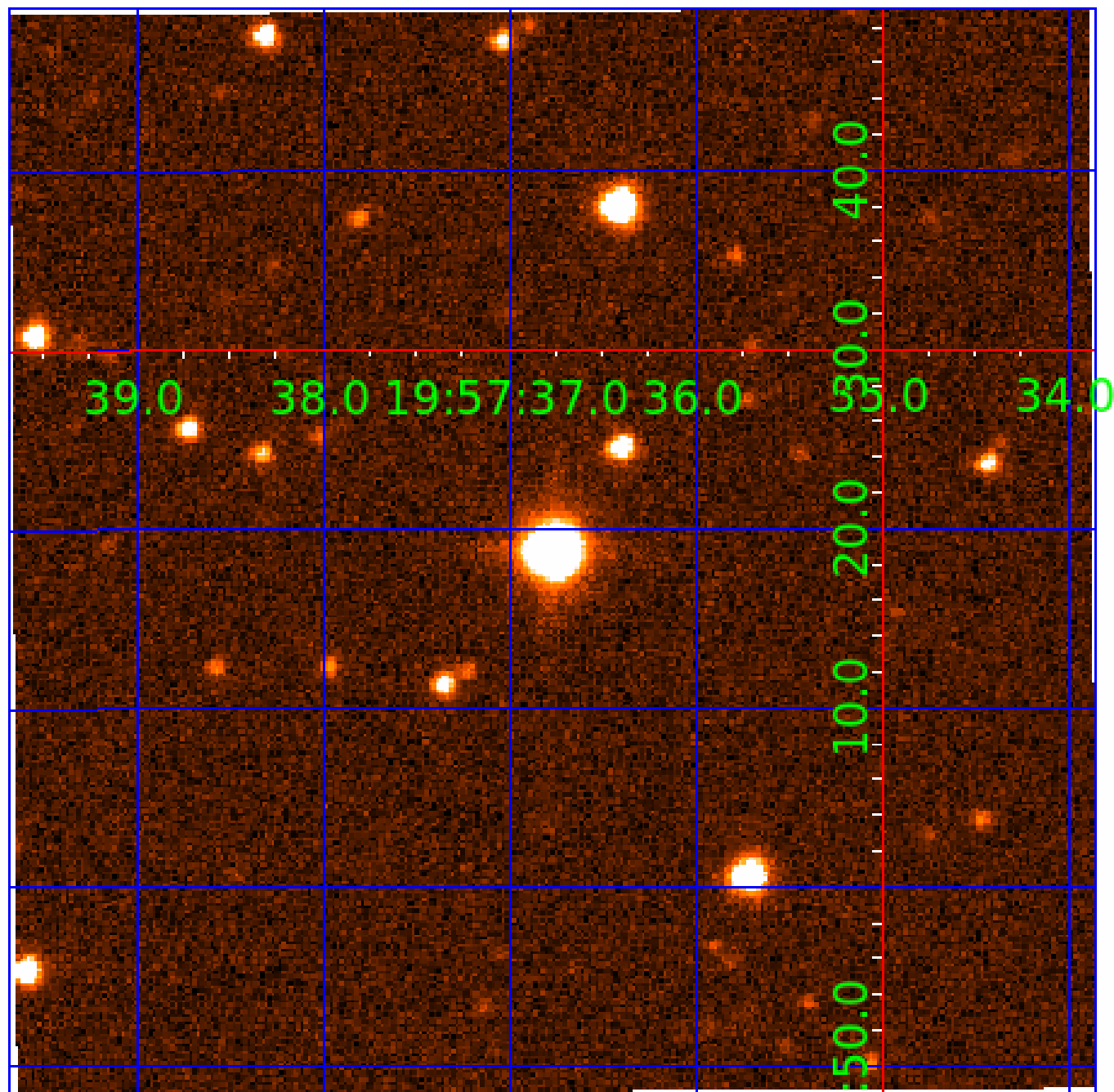


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009426473

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})
009426473-01	OBS	No	1.037045	131.951475	20.4	6.439	8.6	5.2	4.66	6231	2.16	46945.10
009426473-02	OBS	No	63.284304	140.796145	576.3	8.541	8.5	9.4	4.66	6231	19.34	195.40
009426473-03	OBS	No	27.312220	154.327238	182.6	6.860	8.5	5.5	4.66	6231	7.27	599.12
009426473-04	OBS	No	145.259499	157.361685	653.7	17.098	9.3	8.7	4.66	6231	14.83	64.53
009426473-05	OBS	No	28.713763	137.077892	277.3	5.315	8.9	8.1	4.66	6231	8.81	560.45
009426473-06	OBS	No	111.271387	217.136369	653.0	7.702	8.9	8.5	4.66	6231	22.86	92.08
009426473-07	OBS	No	303.882214	282.705089	412.5	3.921	8.9	7.4	4.66	6231	10.58	24.12
009426473-08	OBS	No	109.296456	228.284936	520.0	5.463	8.9	8.5	4.66	6231	13.54	94.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009426473-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009426473-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—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.

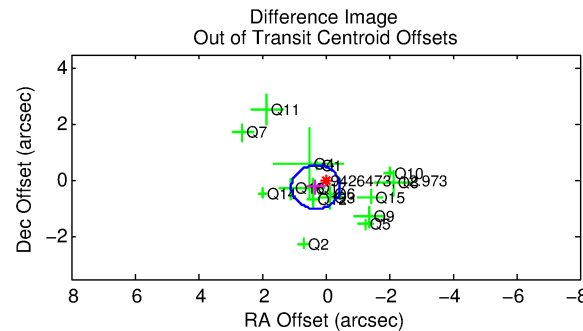
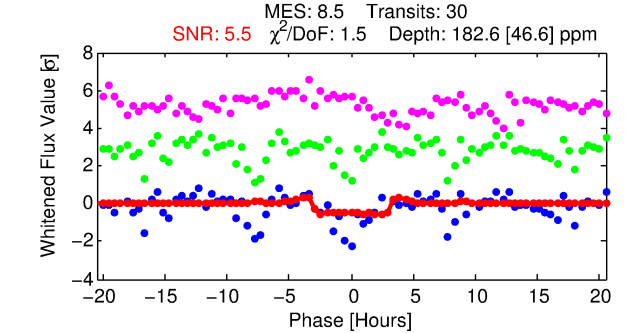
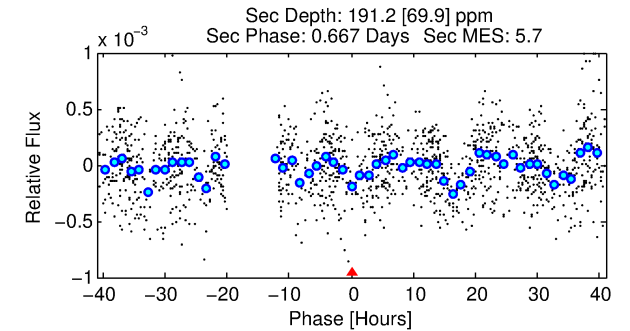
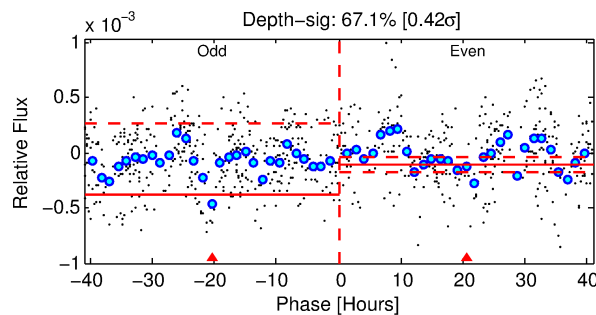
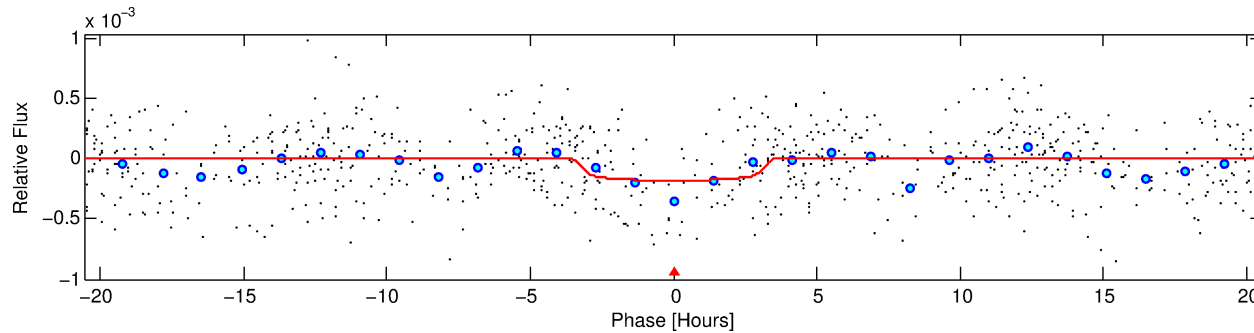
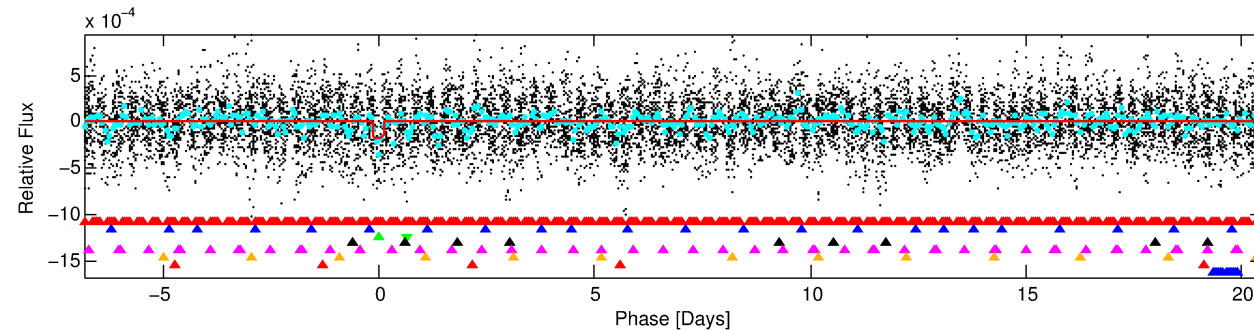
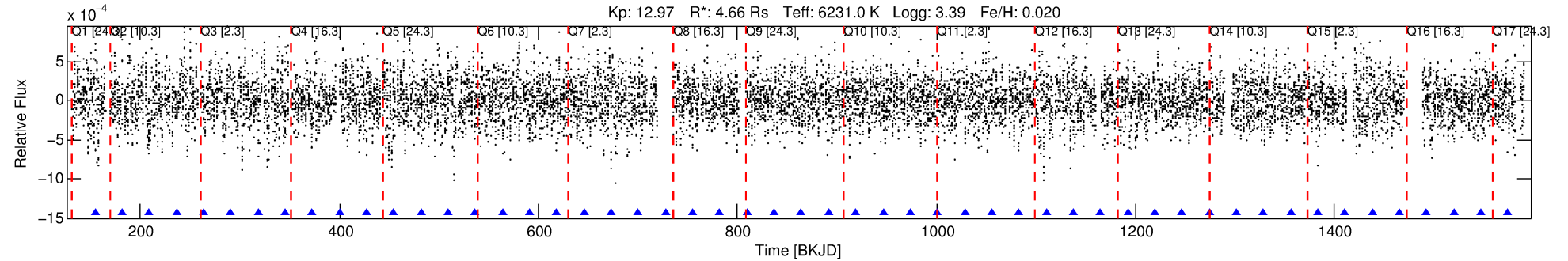
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009426473-03

No Significant Match Found

DV One-Page Summary

KIC: 9426473 Candidate: 3 of 8 Period: 27.312 d



DV Fit Results:

Period = 27.31222 [0.00046] d
Epoch = 154.3272 [0.0136] BKJD
Rp/R* = 0.0143 [0.0047]
a/R* = 15.32 [23.00]
b = 0.88 [0.39]
Seff = 599.12 [410.93]
Teff = 1262 [216] K
Rp = 7.27 [3.92] Re
a = 0.2212 [0.0924] AU
Ag = 97.30 [98.63] [0.98 σ]
Teffp = 6126 [1173] K [4.08 σ]

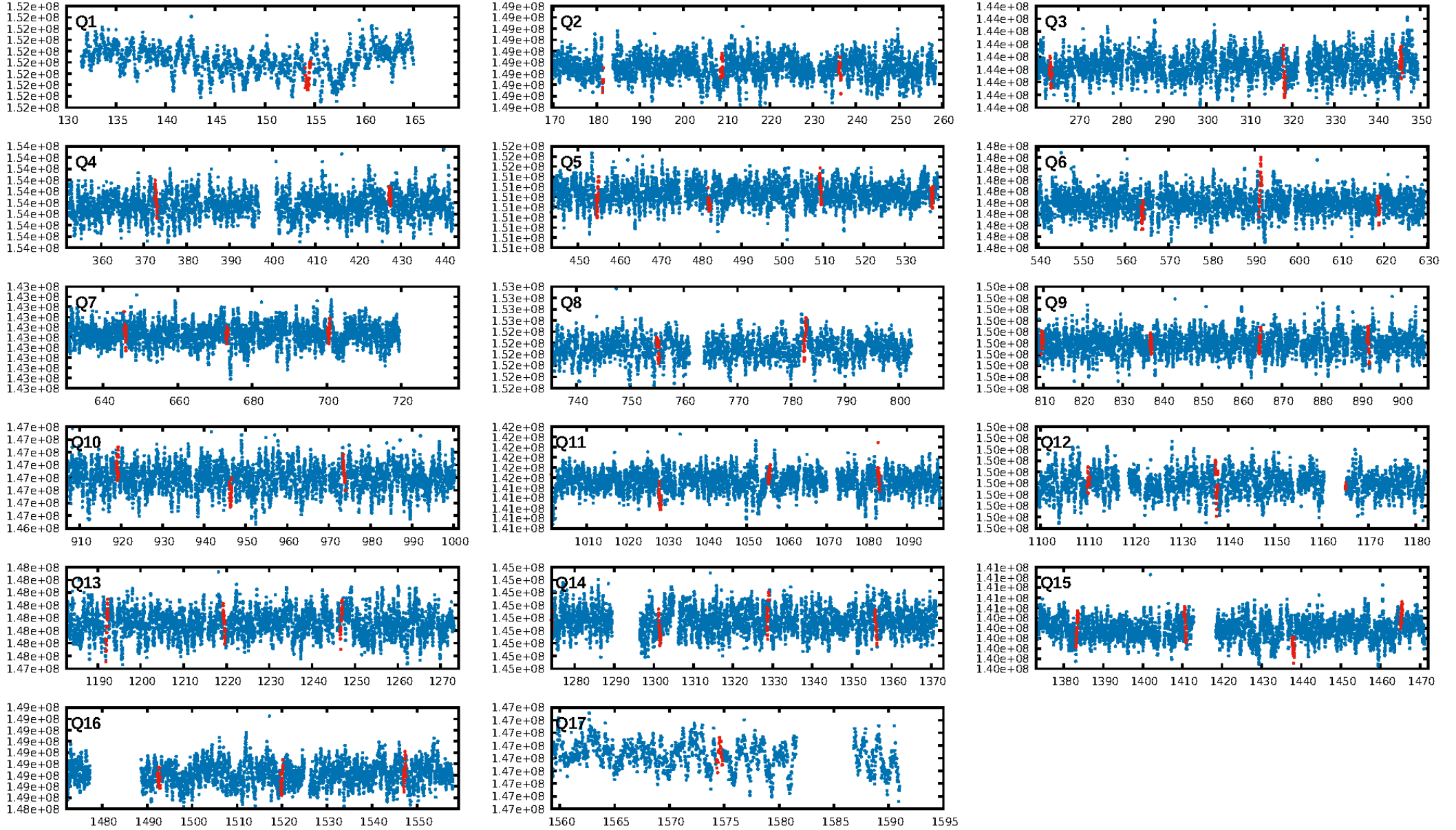
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [67.02 σ]
LongPeriod-sig: 100.0% [3.88 σ]
ModelChiSquare2-sig: 0.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.15e-09
RollingBand-fgt: 1.00 [29/29]
GhostDiagnostic-chr: 11.35
Centroid-sig: 94.0%
Centroid-so: 0.179 arcsec [0.32 σ]
OotOffset-rm: 0.385 arcsec [1.49 σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 0.363 arcsec [1.41 σ]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.62 [10/16]
DiffImageOverlap-fno: 0.00 [0/17]

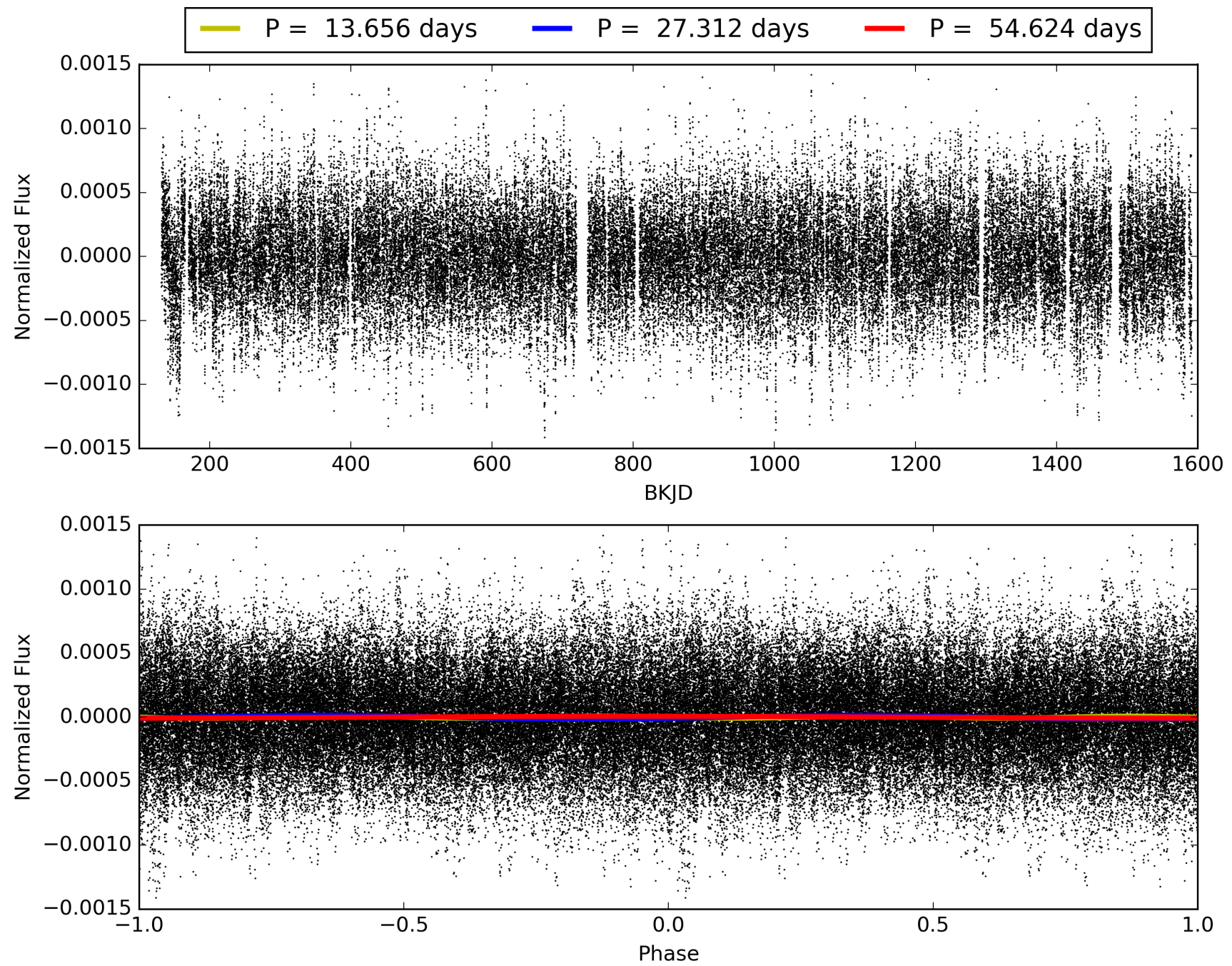
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:29:35 Z

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

TCE 009426473-03, PDC Light Curves

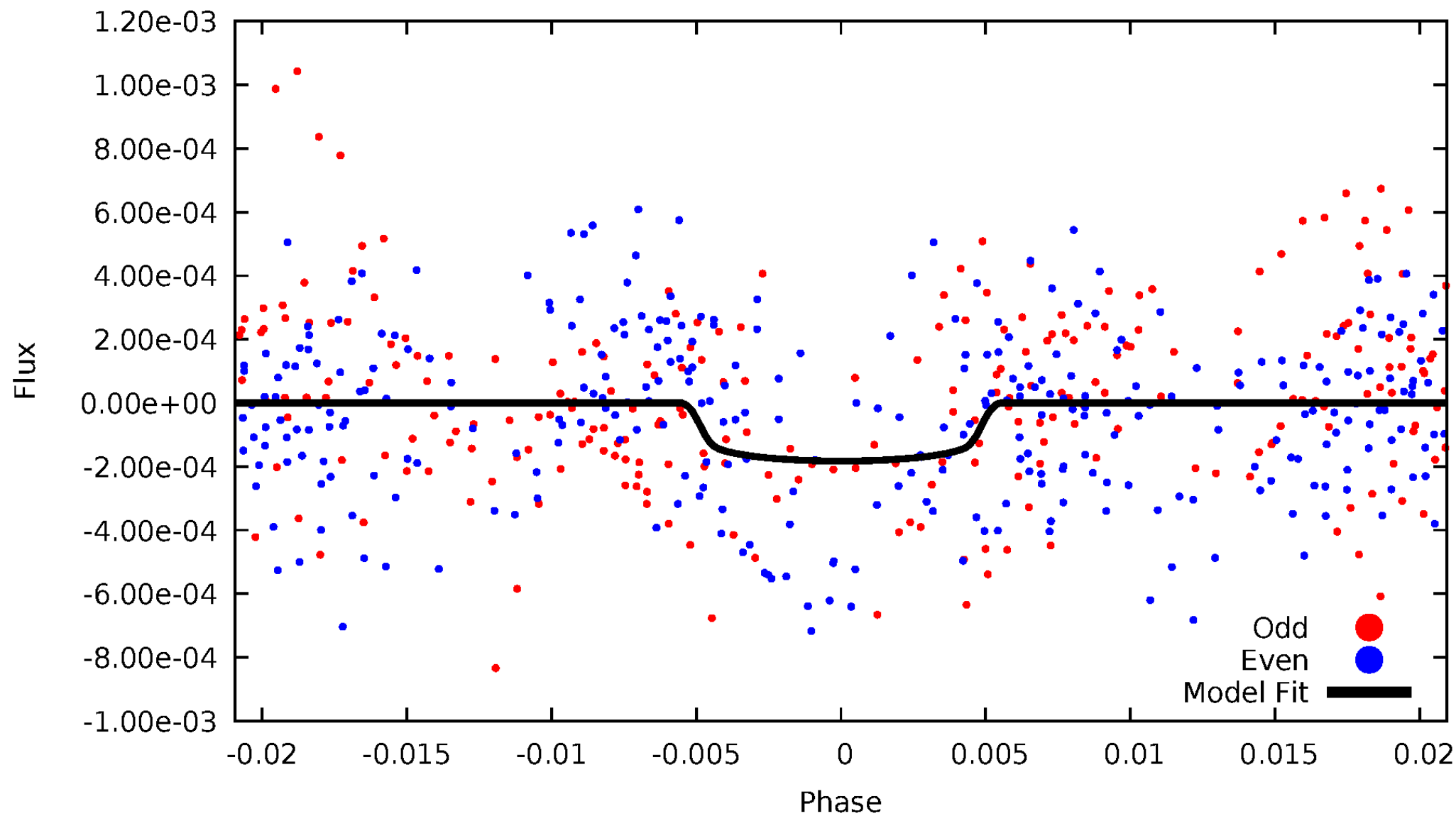


TCE 009426473-03



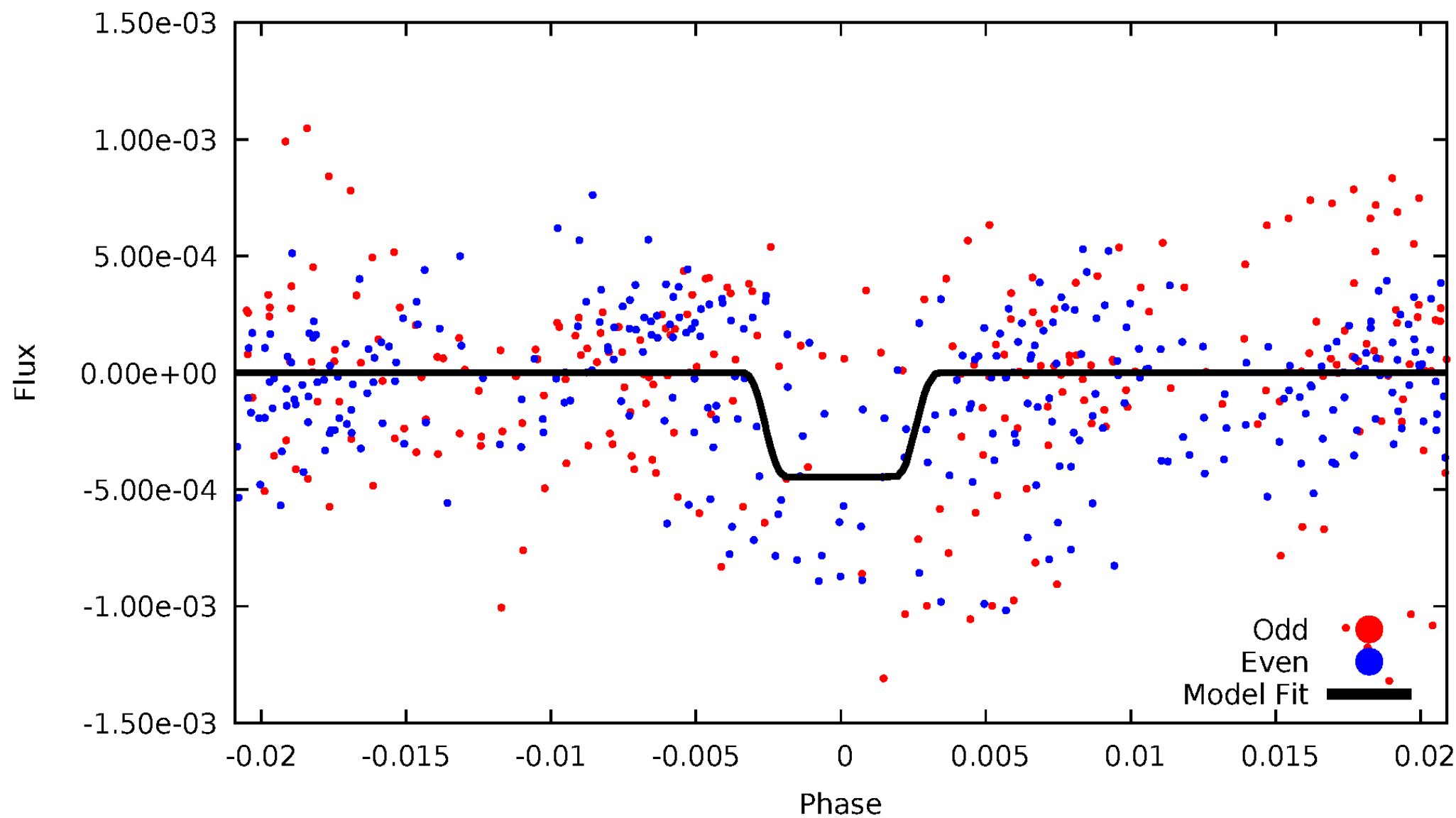
DV Odd/Even

TCE 009426473-03



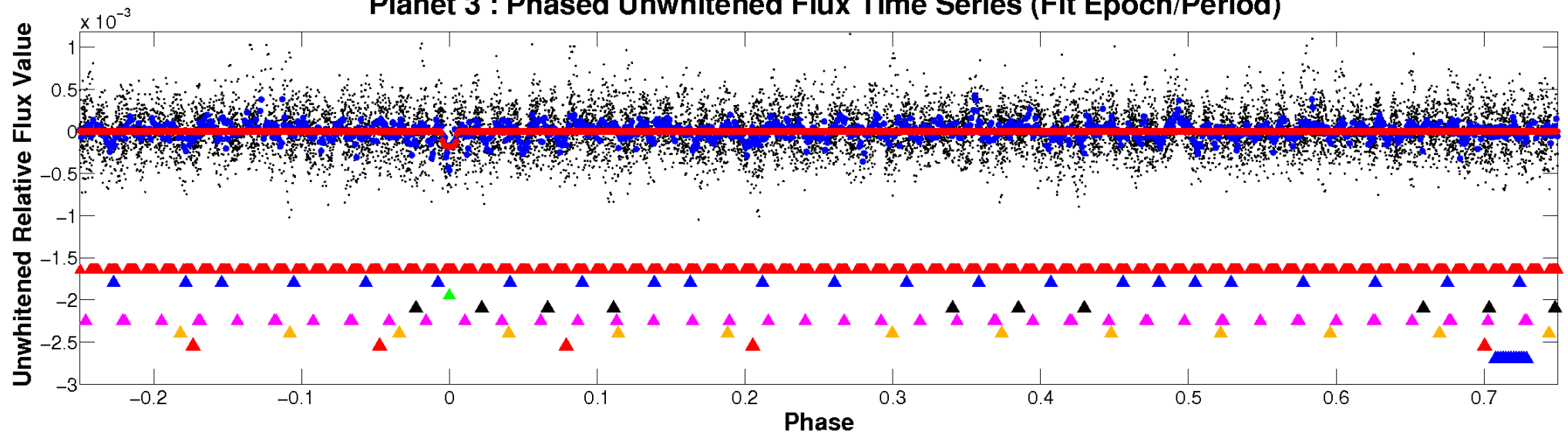
ALT Odd/Even

TCE 009426473-03

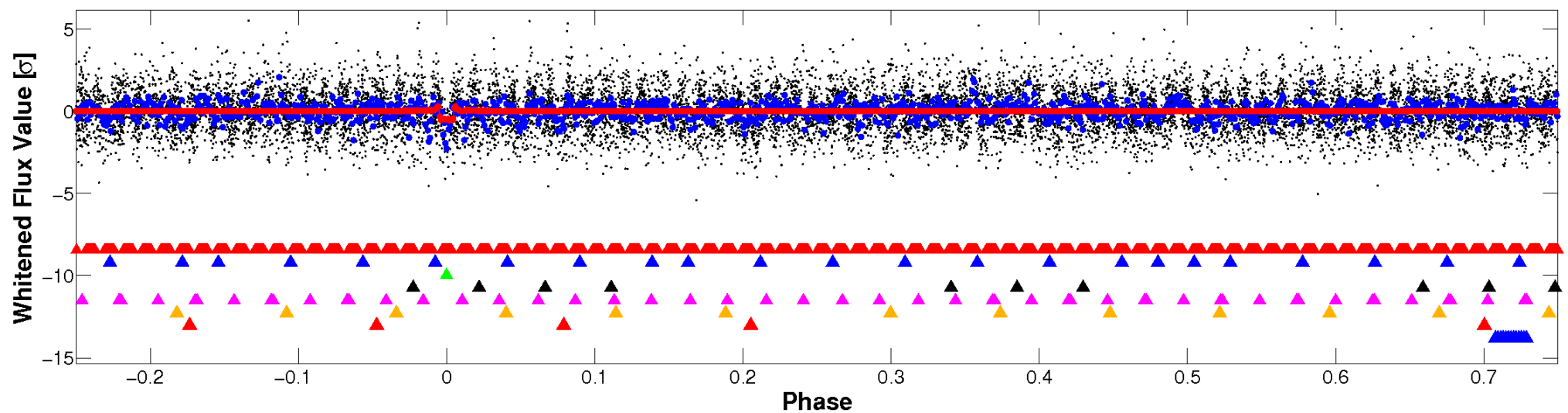


Non-Whitened Vs. Whitened Light Curve

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

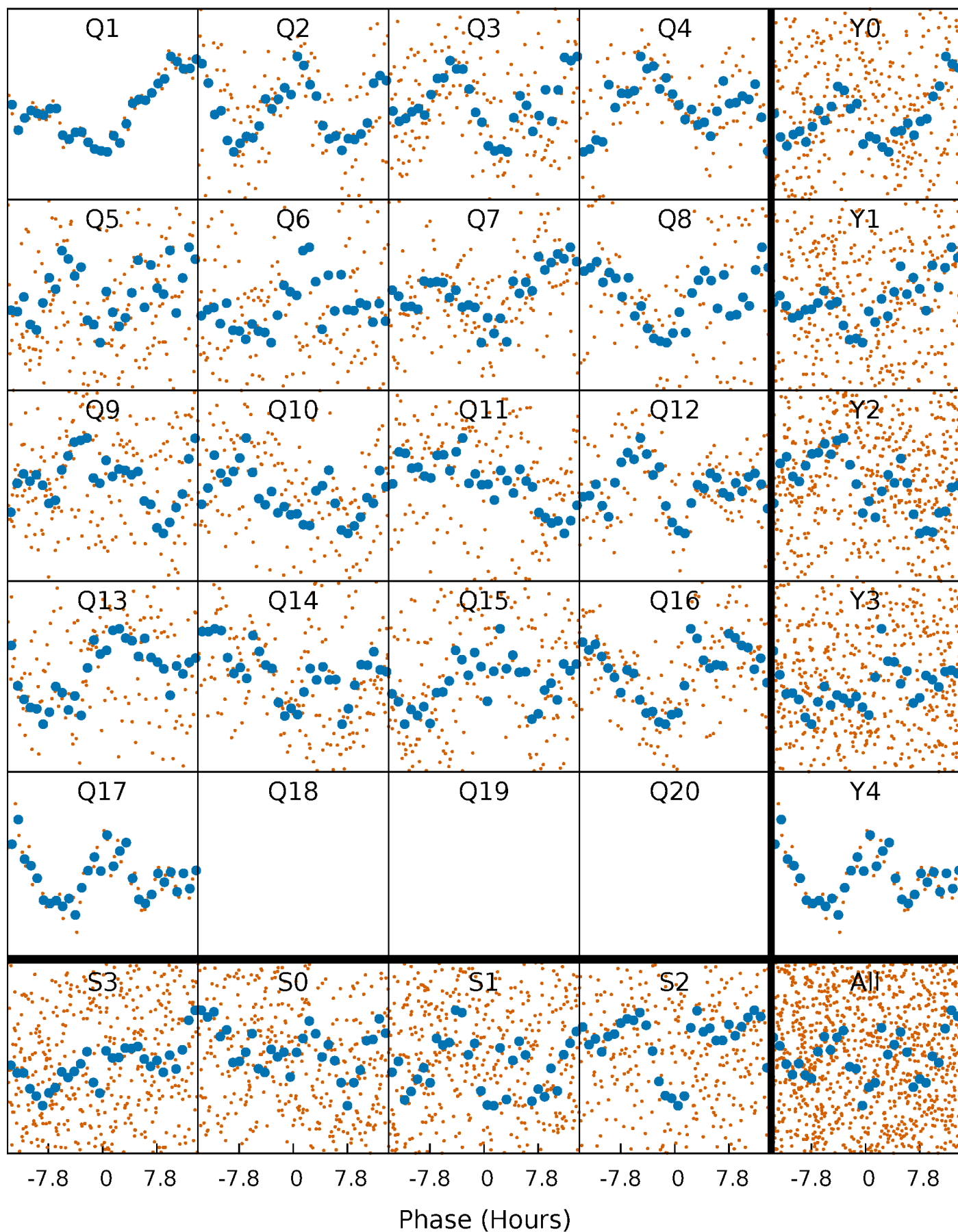


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



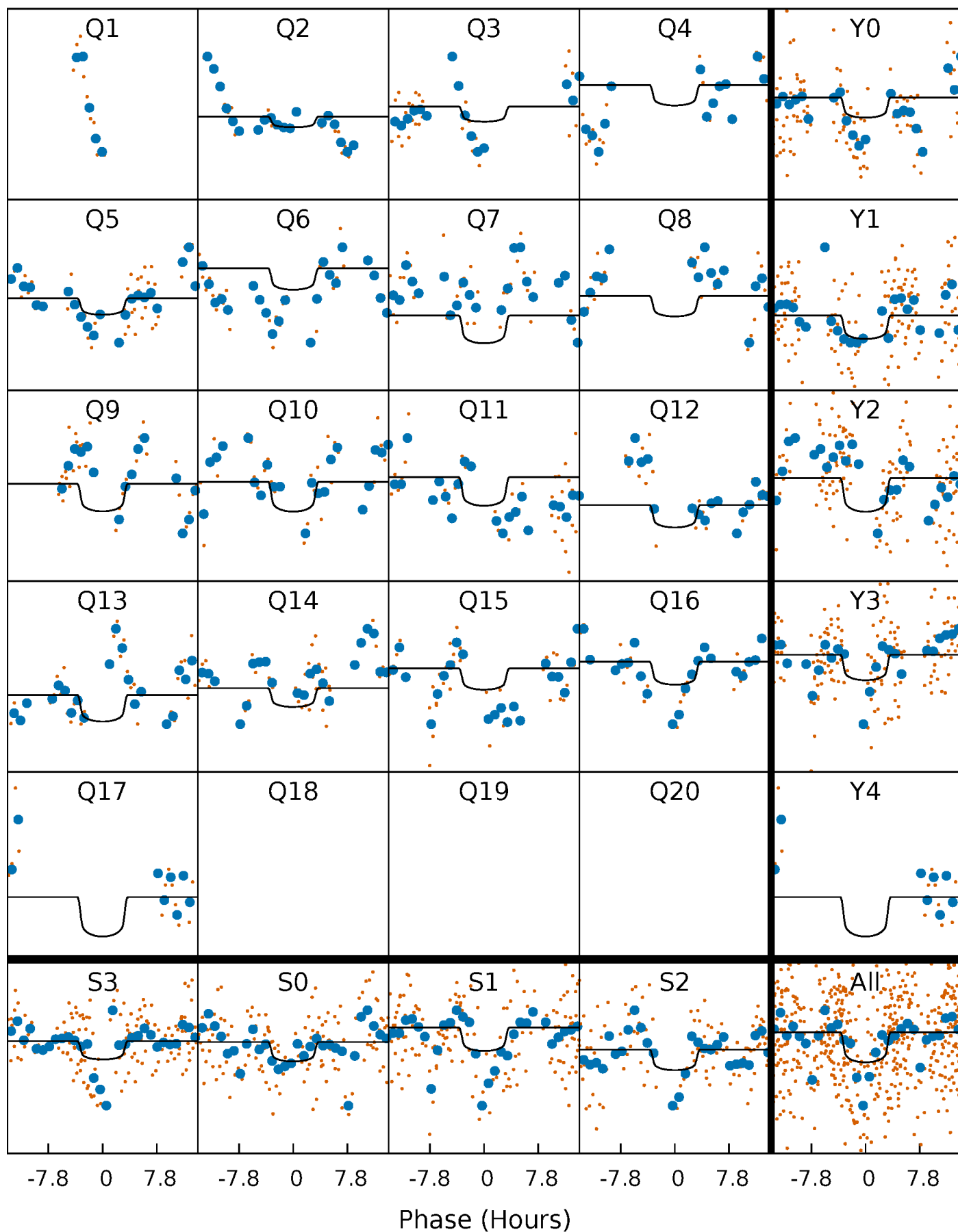
PDC Quarter-Phased Transit Curves

TCE 009426473-03 P= 27.312220 Days $T_0=154.327238$ (BKJD)



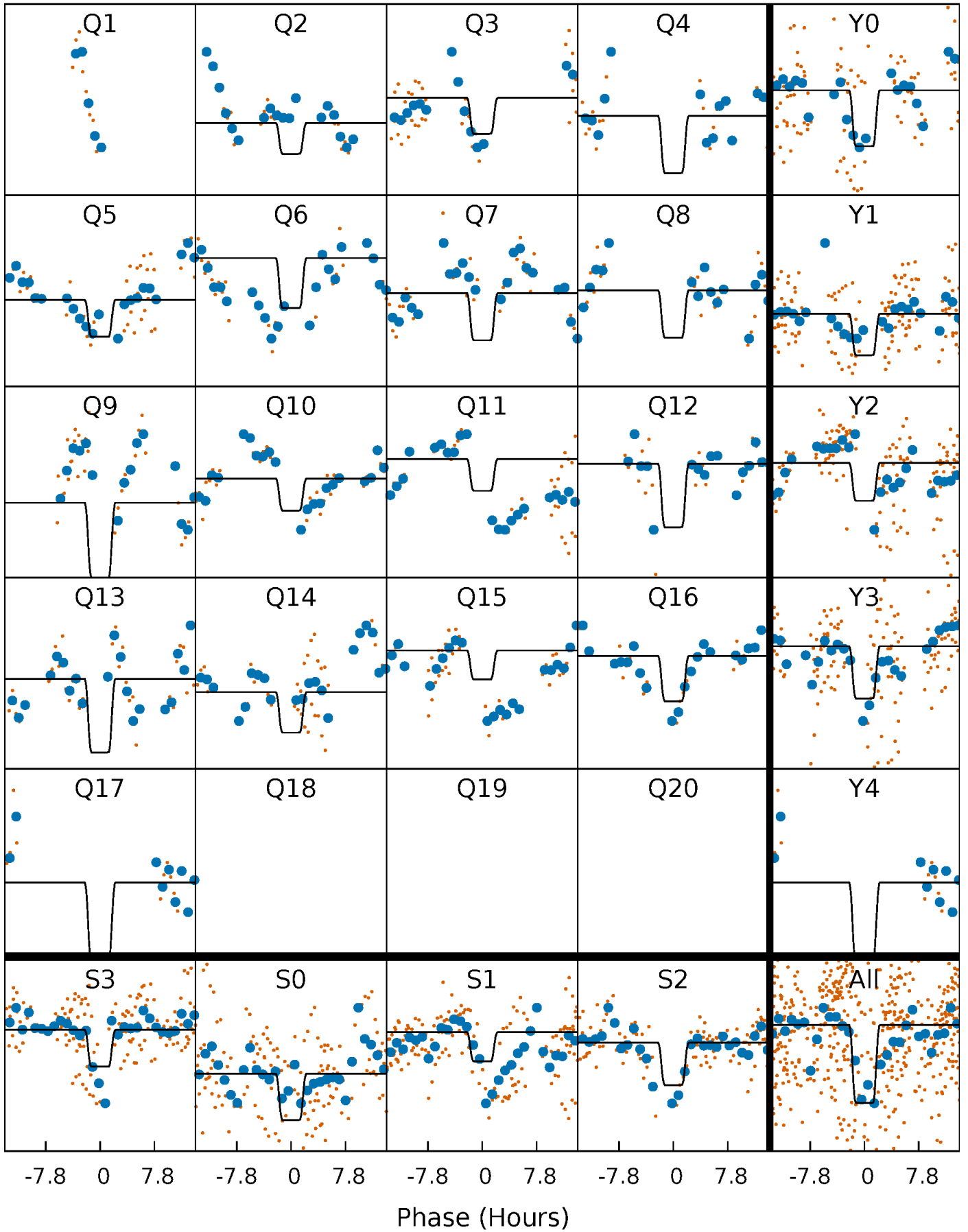
DV Quarter-Phased Transit Curves

TCE 009426473-03 P= 27.312220 Days $T_0=154.327238$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

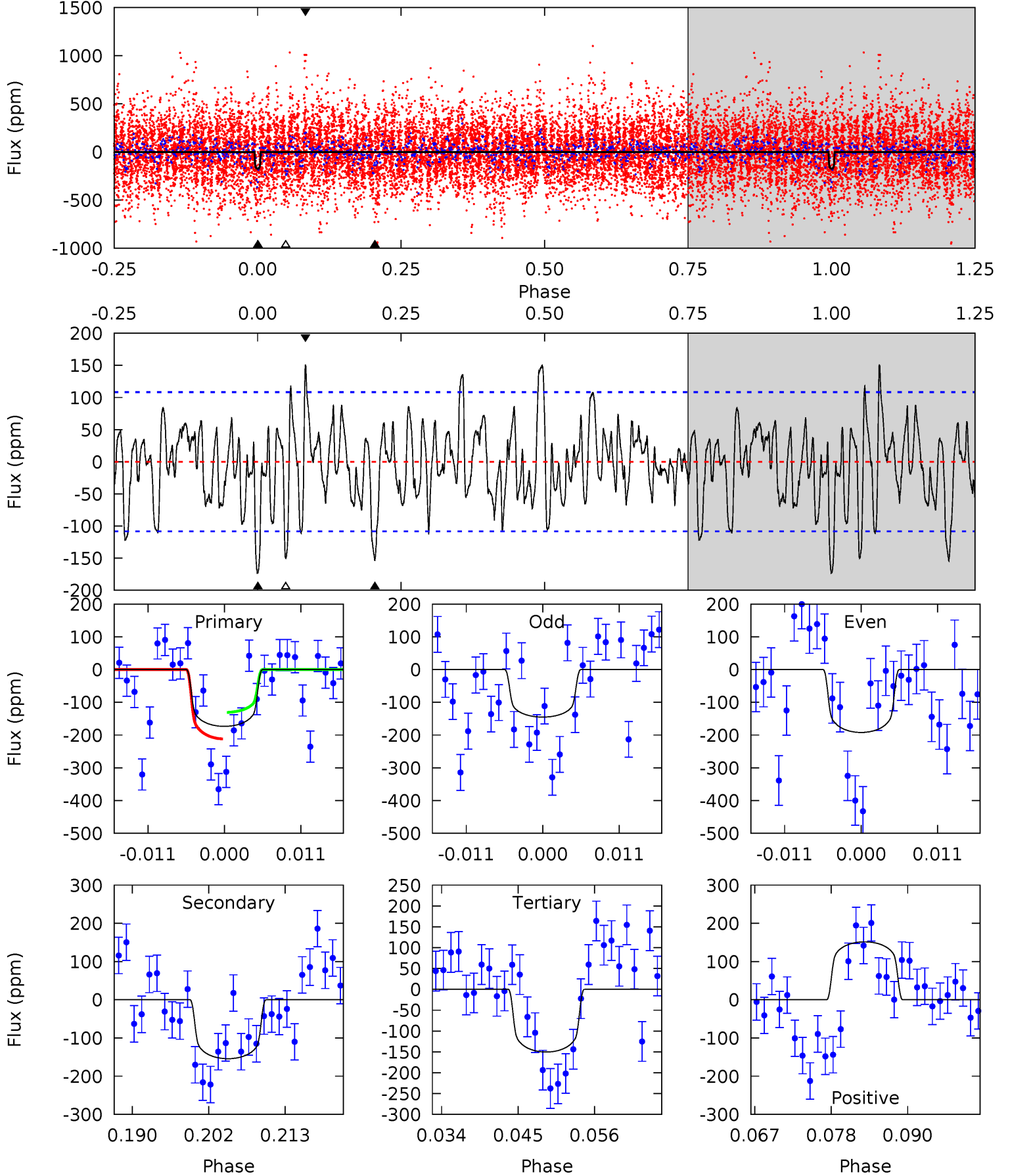
TCE 009426473-03 P= 27.312316 Days $T_0=154.316896$ (BKJD)



DV Model-Shift Uniqueness Test

009426473-03, P = 27.312220 Days, E = 127.015018 Days

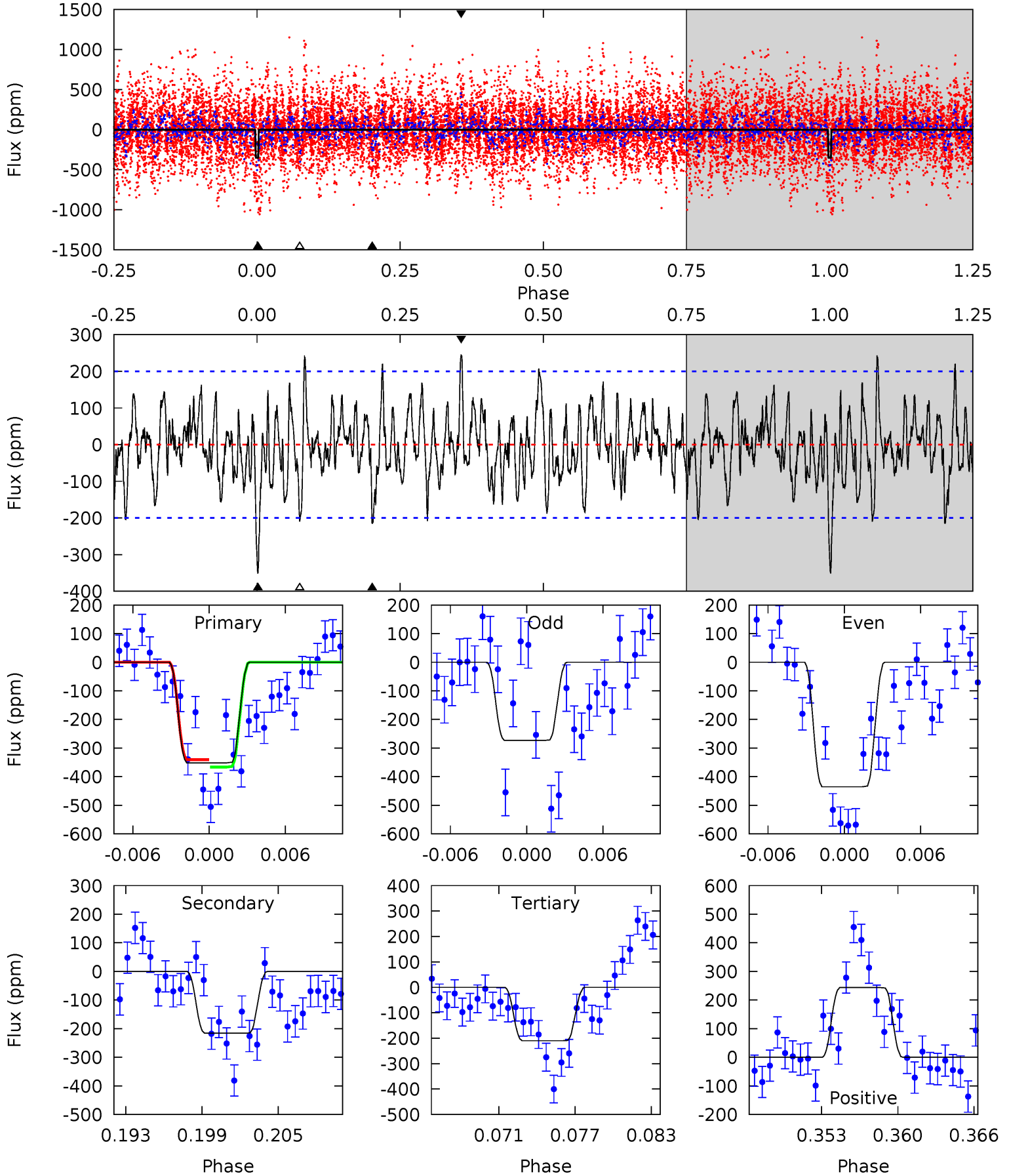
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.02	7.13	6.95	7.00	5.00	2.54	2.27	1.07	1.01	0.18	0.12	1.07	0.82	0.47	1.88



Alt Model-Shift Uniqueness Test

009426473-03, P = 27.312316 Days, E = 127.004580 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.99	5.52	5.38	6.23	5.11	2.73	1.89	3.62	2.76	0.15	-0.71	2.01	1.01	0.41	0.33



Stellar Parameters For KIC 009426473

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6231^{+189}_{-170}	$3.388^{+0.399}_{-0.094}$	$0.020^{+0.300}_{-0.300}$	$4.659^{+0.661}_{-1.984}$	$1.933^{+0.071}_{-0.403}$	$0.027^{+0.085}_{-0.008}$
	+3%/-3%	+12%/-3%	+1500%/-1500%	+14%/-43%	+4%/-21%	+314%/-30%
Source	PHO1	FLK73	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 009426473-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-154 ± 22	$6.56^{+2.84}_{-2.51}$	1735^{+106}_{-188}	5808^{+1465}_{-756}	95^{+145}_{-50}
Alt.	-216 ± 39	$9.84^{+2.97}_{-2.81}$	1725^{+116}_{-203}	5243^{+655}_{-504}	59^{+55}_{-25}

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 $A_{obs} \gg 1.0$

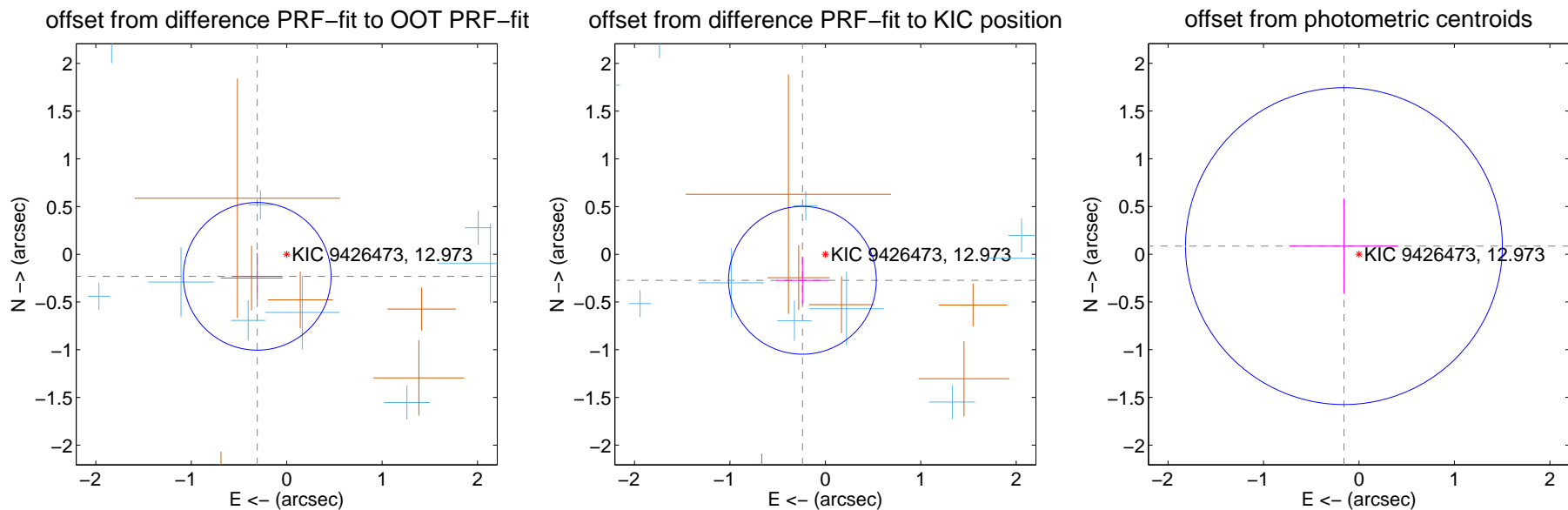
DV Centroid Data

Supplemental centroid analysis for 009426473-03. Kepler magnitude: 12.97. Transit SNR 5.50

There are 10 quarters with good PRF difference image offsets

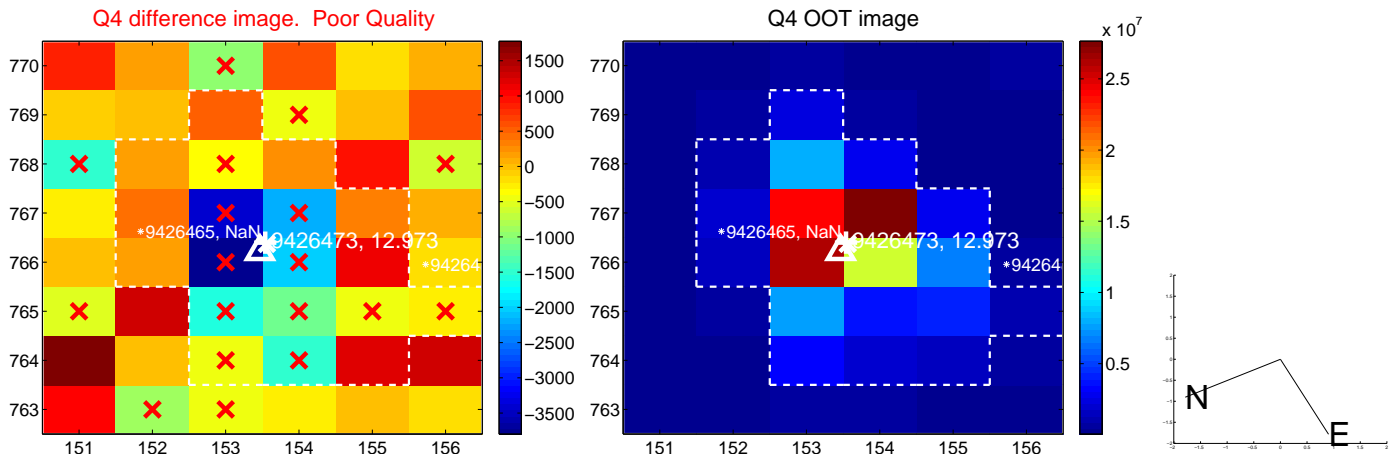
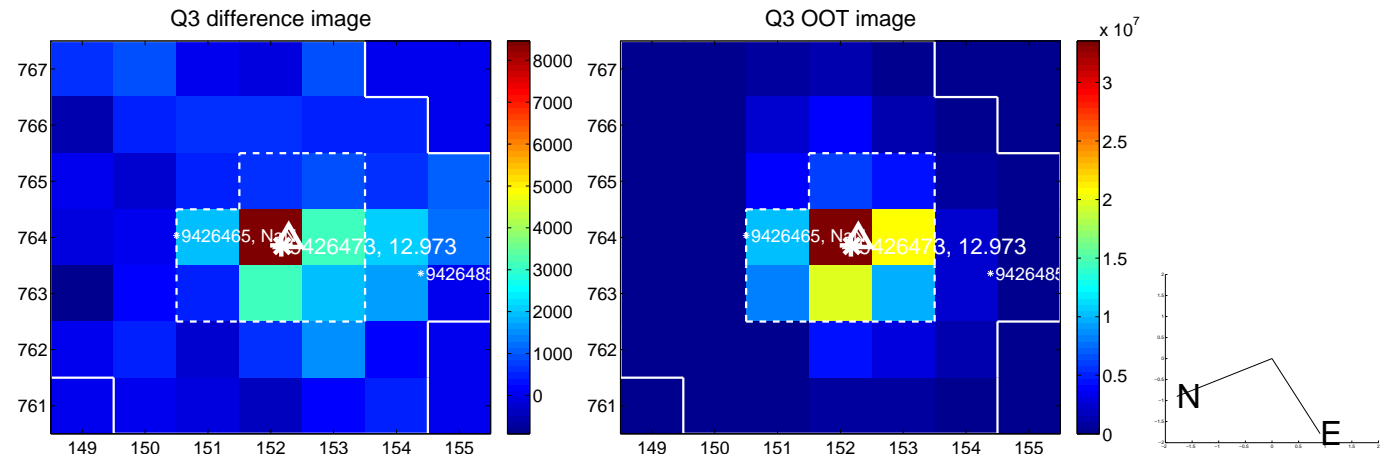
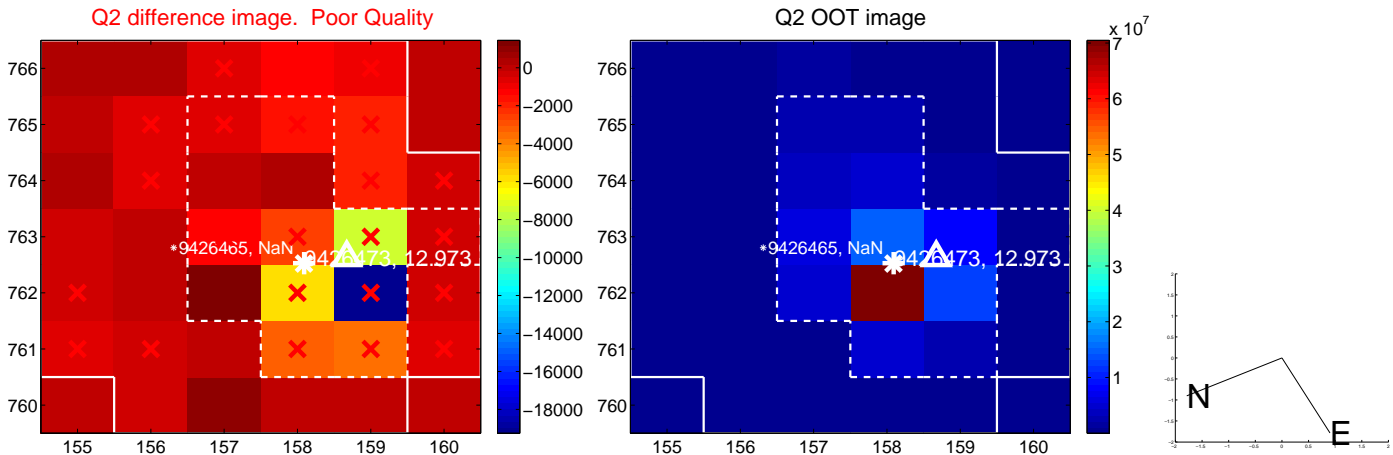
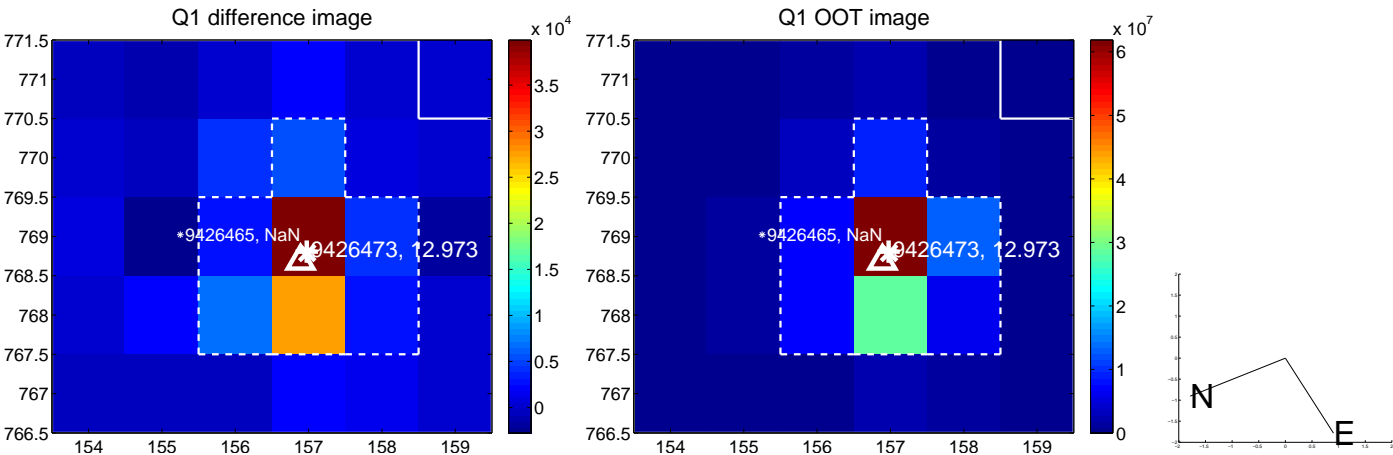
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.385 ± 0.258	1.49	0.309 ± 0.265	-0.231 ± 0.245
PRF-fit source offset from KIC position	0.363 ± 0.258	1.41	0.240 ± 0.272	-0.273 ± 0.246
photometric centroid source offset	0.18 ± 0.55	0.32	0.16 ± 0.57	0.08 ± 0.50

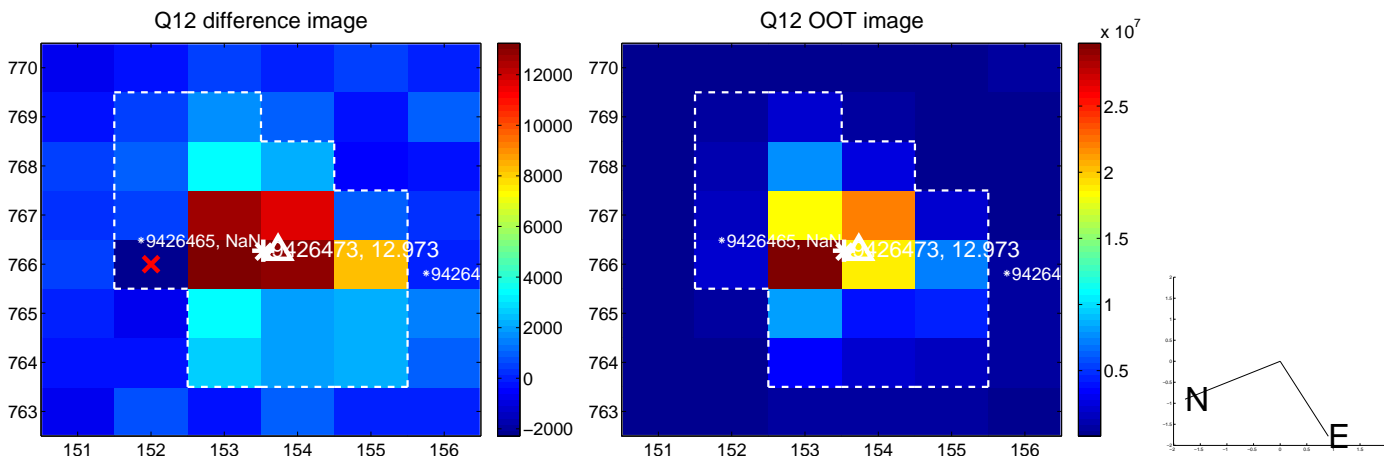
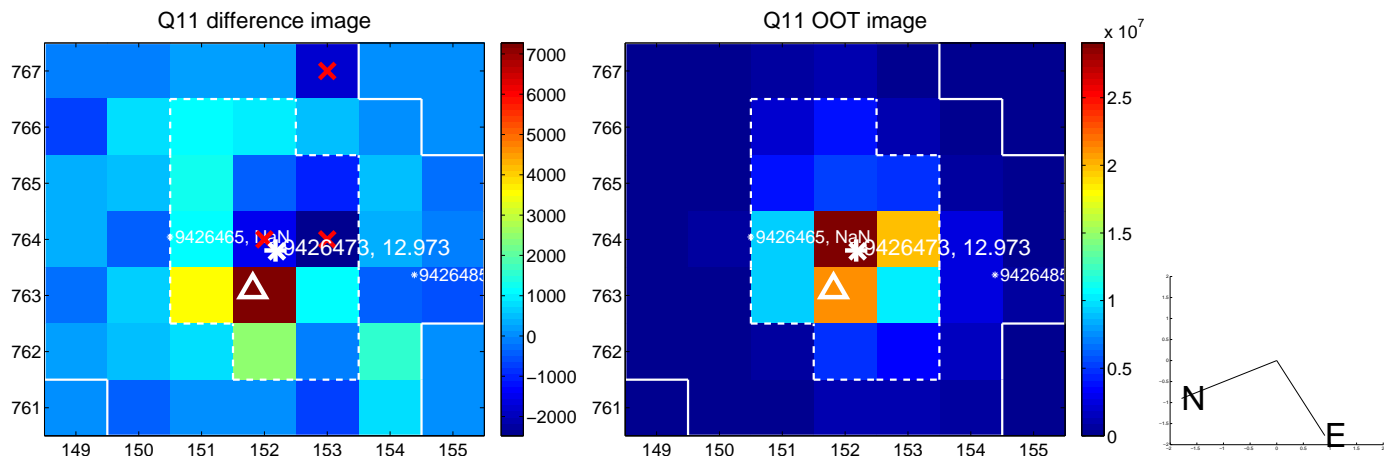
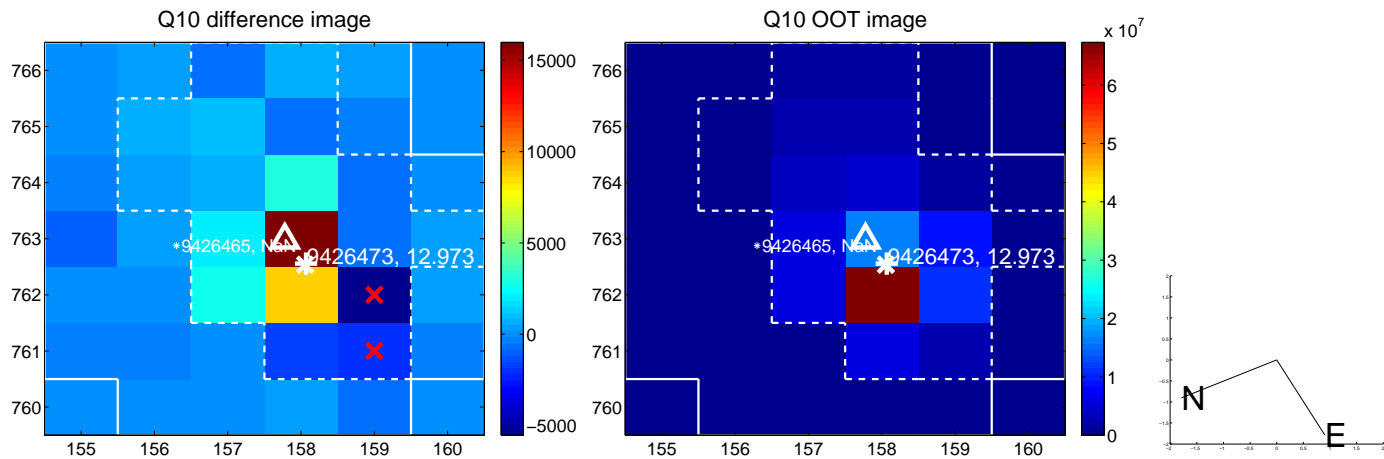
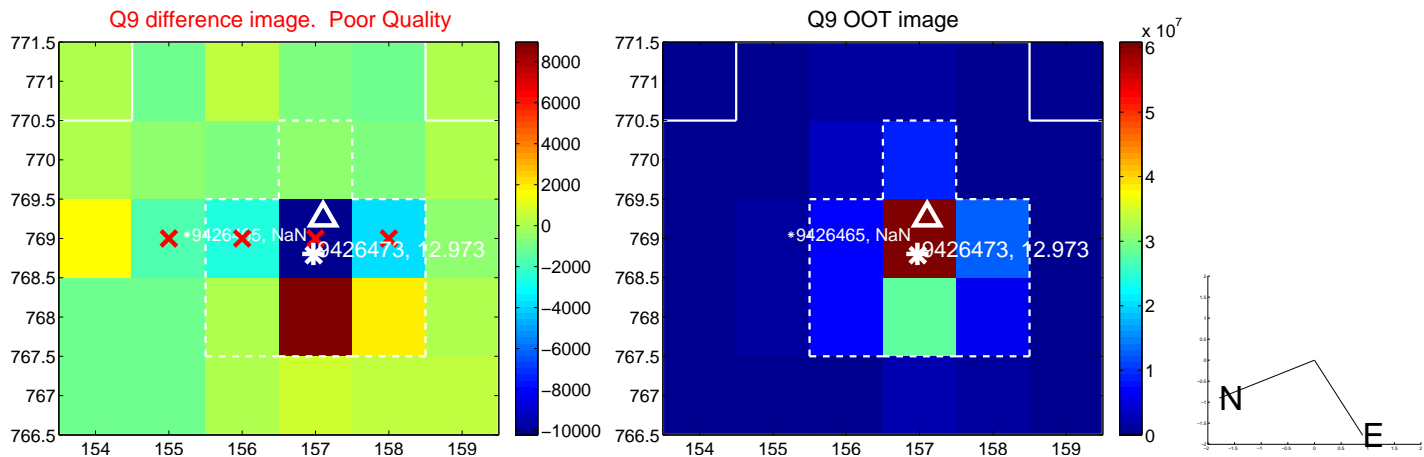


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

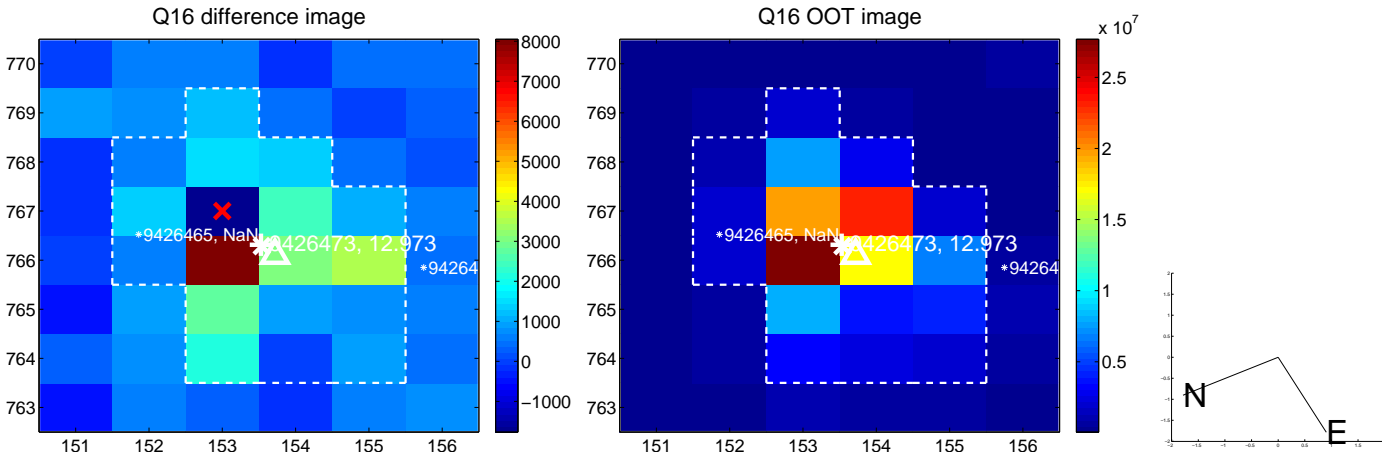
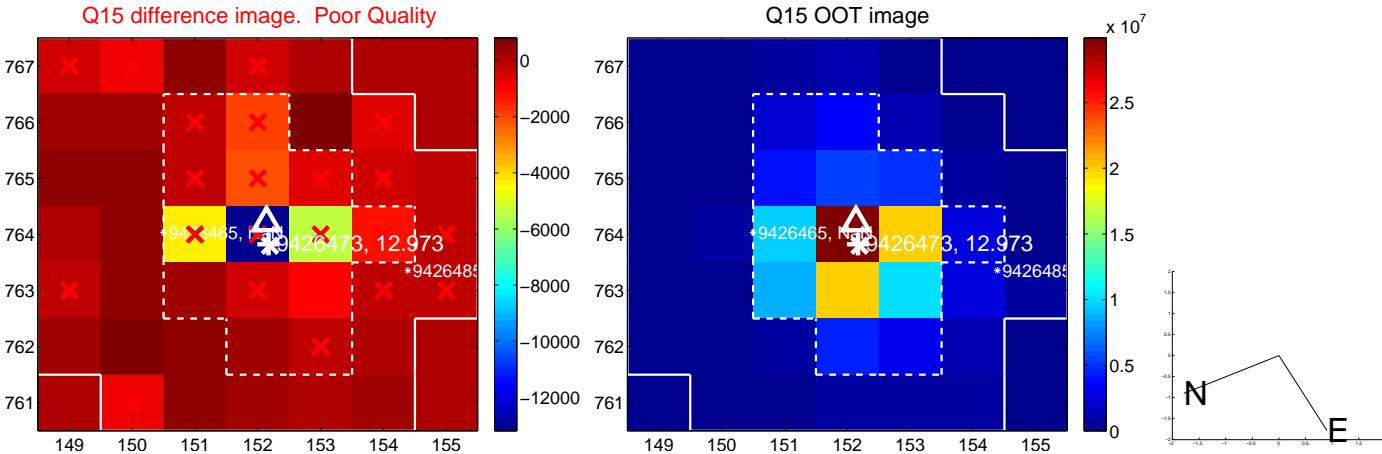
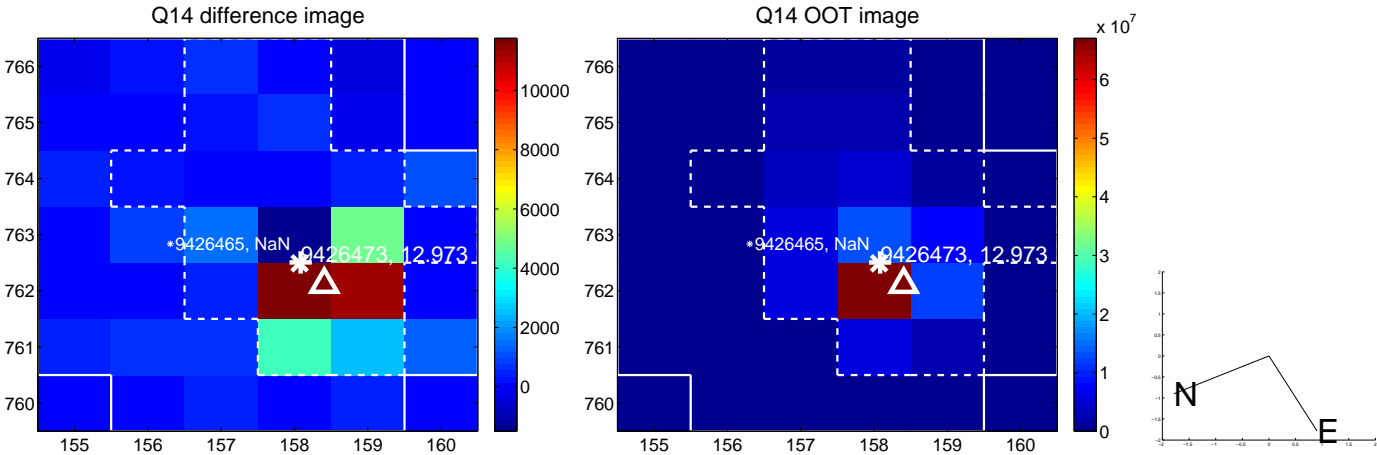
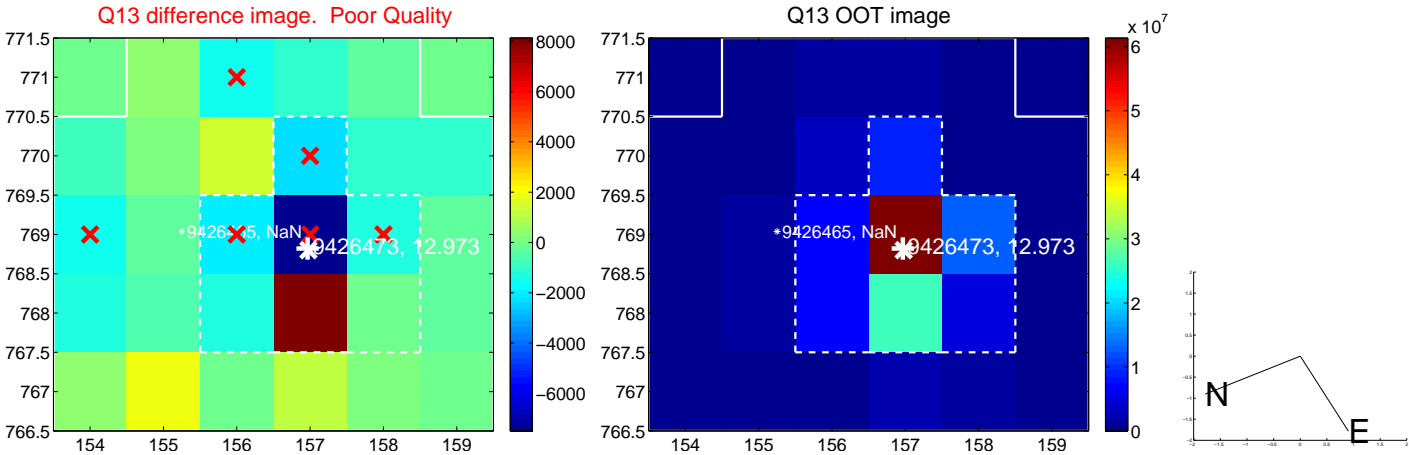
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



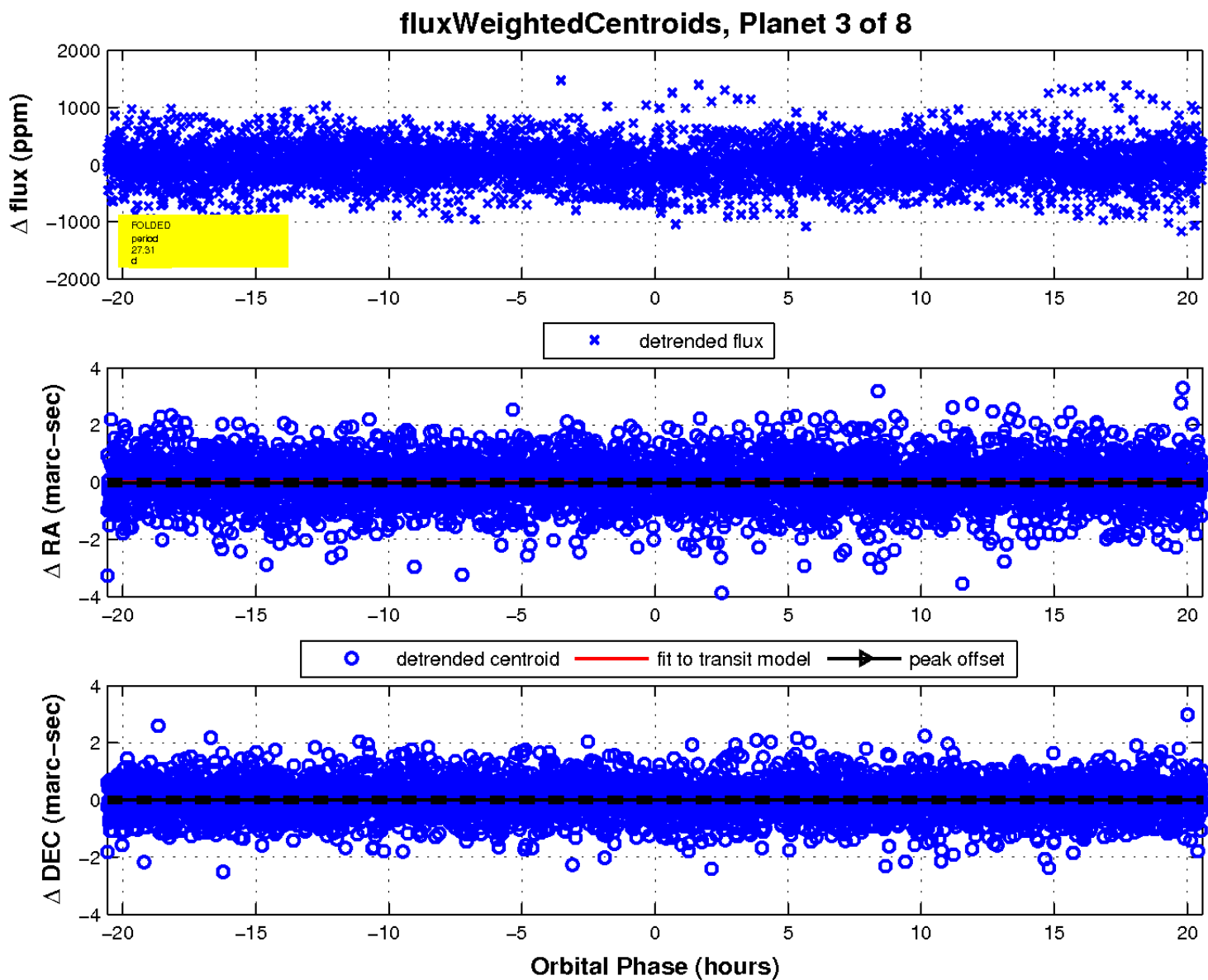
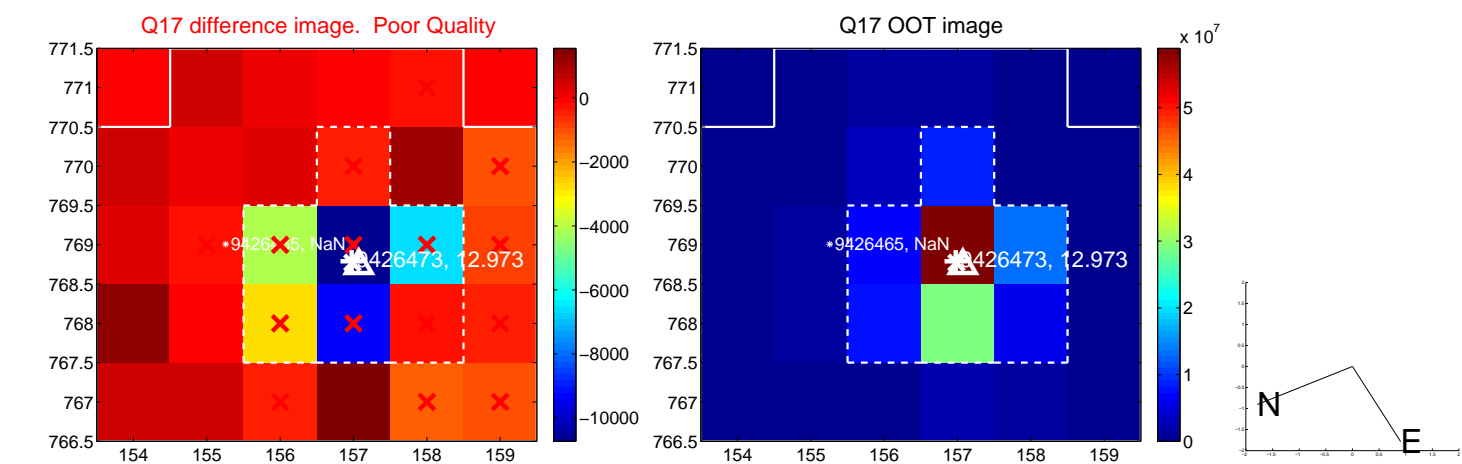
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

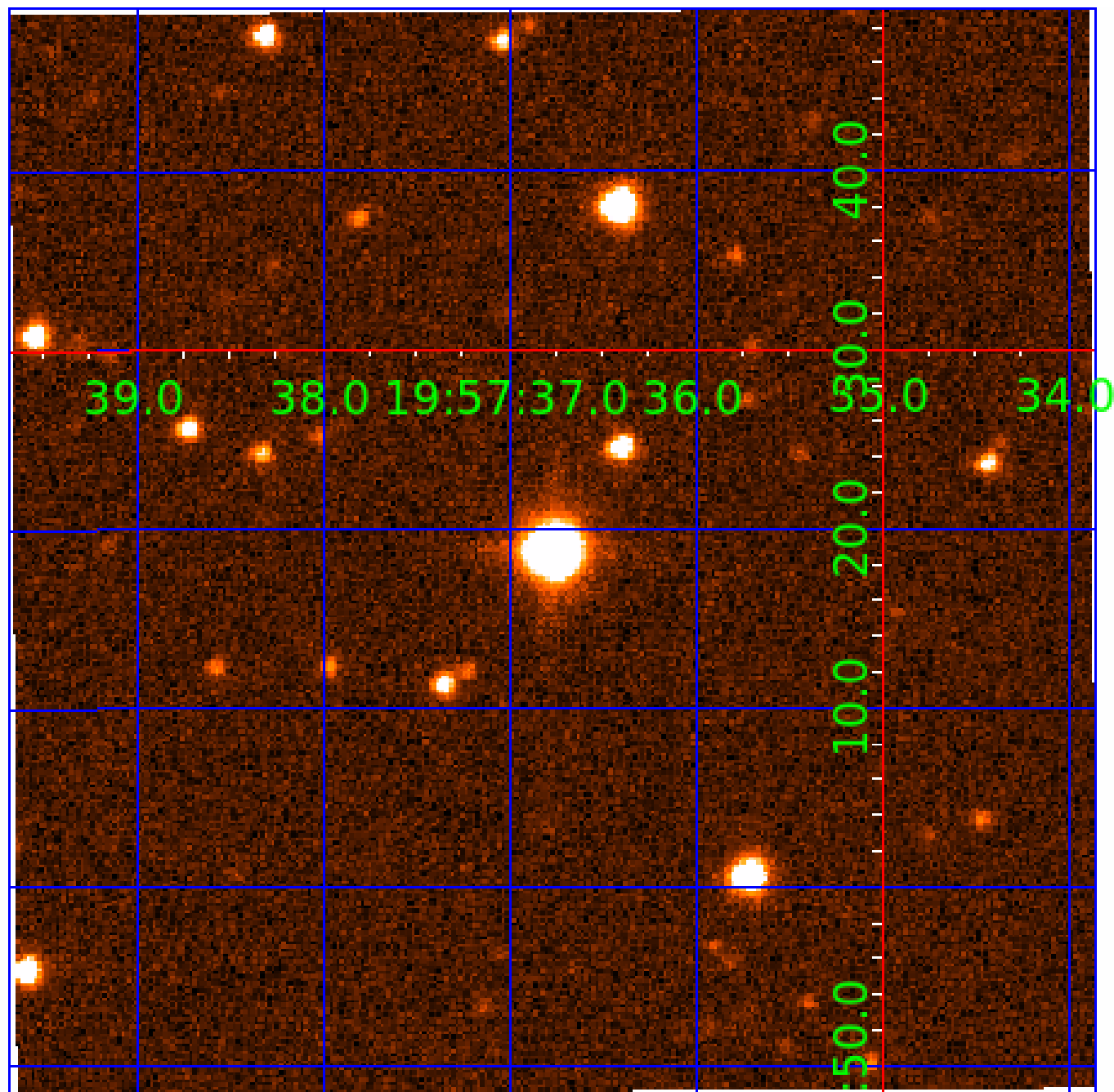


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009426473

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})
009426473-01	OBS	No	1.037045	131.951475	20.4	6.439	8.6	5.2	4.66	6231	2.16	46945.10
009426473-02	OBS	No	63.284304	140.796145	576.3	8.541	8.5	9.4	4.66	6231	19.34	195.40
009426473-03	OBS	No	27.312220	154.327238	182.6	6.860	8.5	5.5	4.66	6231	7.27	599.12
009426473-04	OBS	No	145.259499	157.361685	653.7	17.098	9.3	8.7	4.66	6231	14.83	64.53
009426473-05	OBS	No	28.713763	137.077892	277.3	5.315	8.9	8.1	4.66	6231	8.81	560.45
009426473-06	OBS	No	111.271387	217.136369	653.0	7.702	8.9	8.5	4.66	6231	22.86	92.08
009426473-07	OBS	No	303.882214	282.705089	412.5	3.921	8.9	7.4	4.66	6231	10.58	24.12
009426473-08	OBS	No	109.296456	228.284936	520.0	5.463	8.9	8.5	4.66	6231	13.54	94.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009426473-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009426473-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—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.

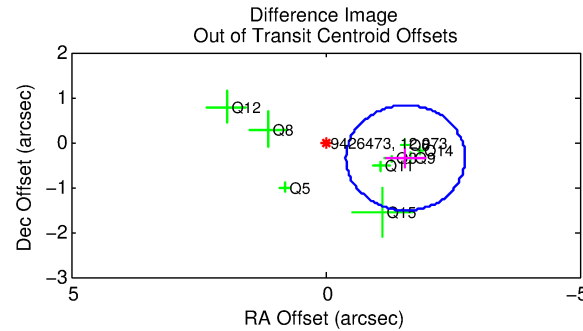
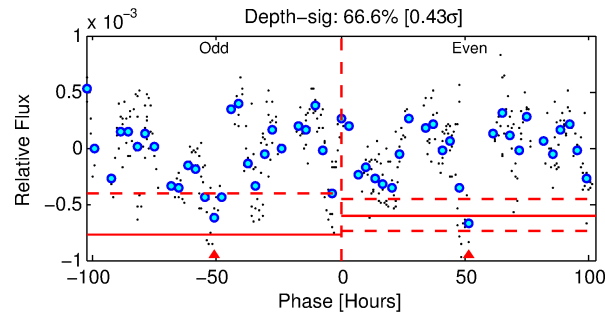
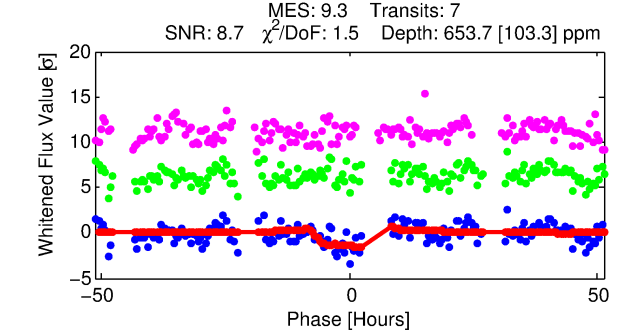
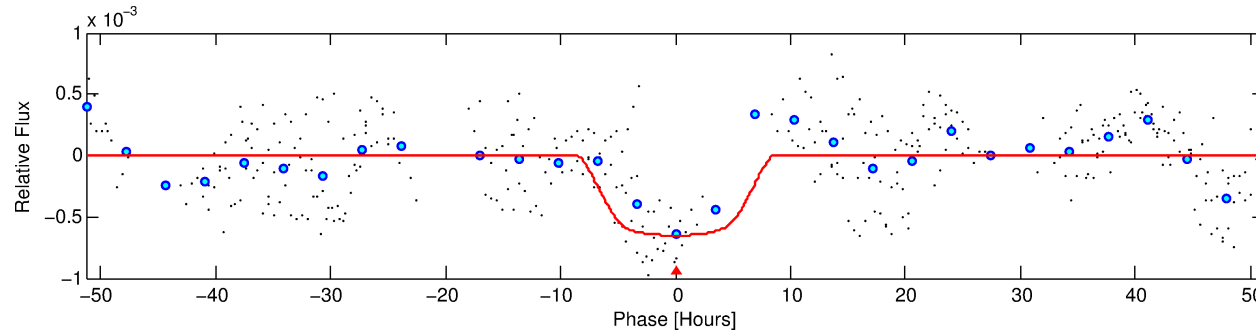
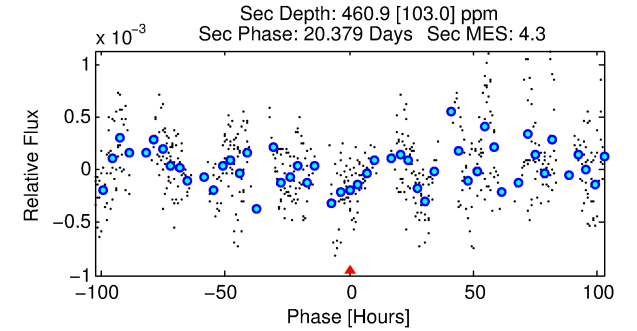
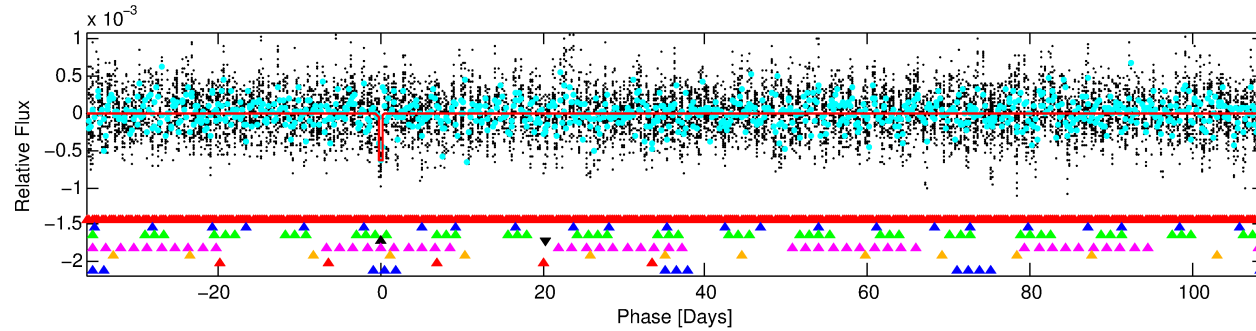
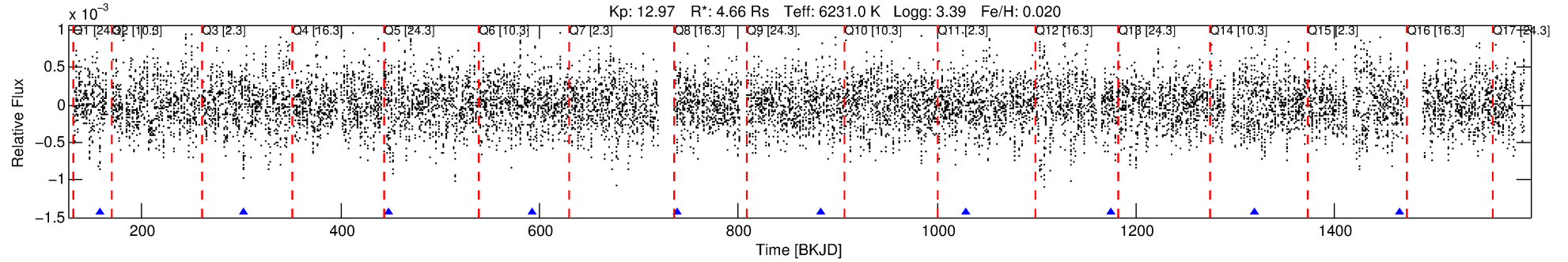
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009426473-04

No Significant Match Found

DV One-Page Summary

KIC: 9426473 Candidate: 4 of 8 Period: 145.259 d



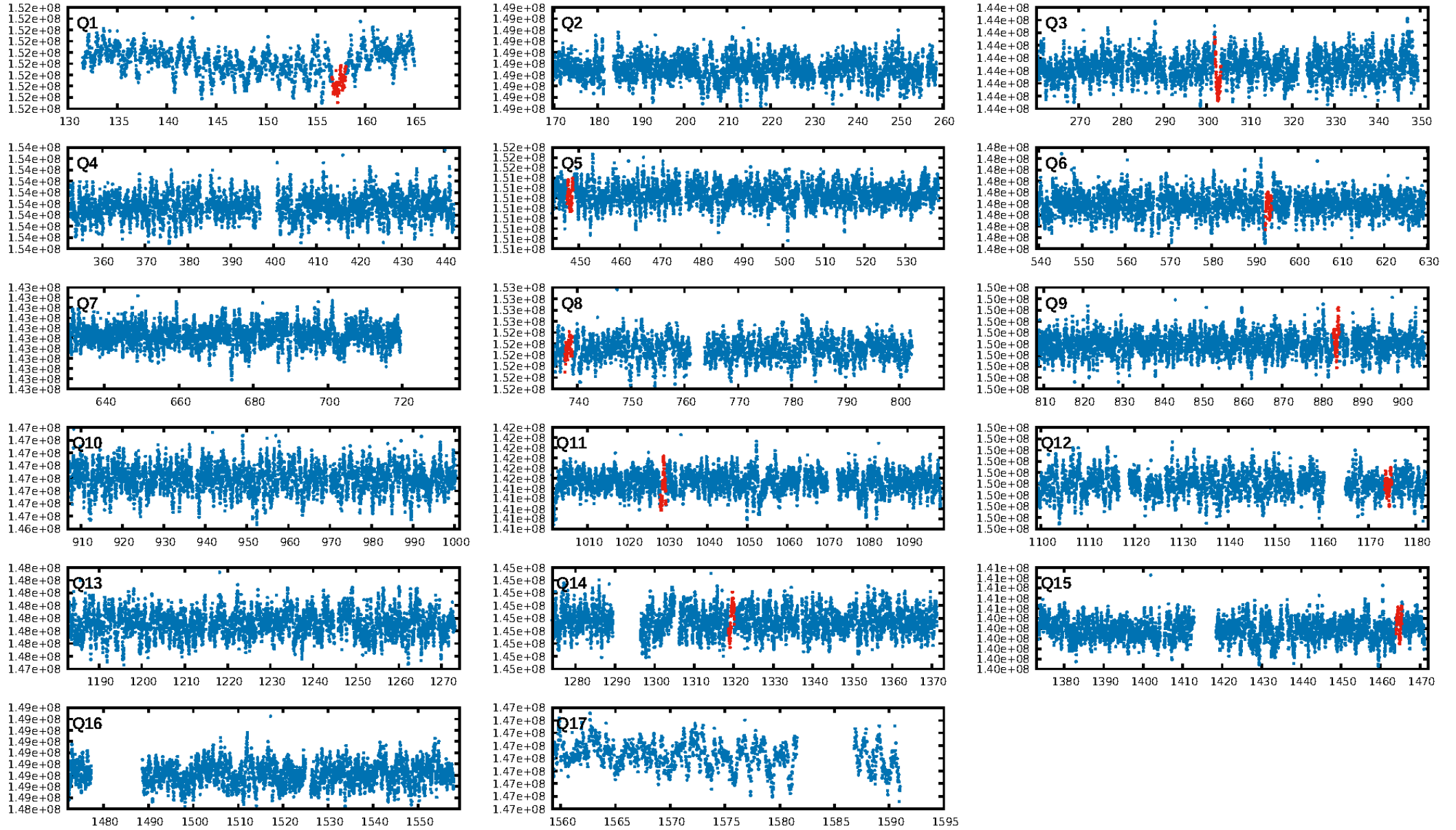
DV Fit Results:

Period = 145.25950 [0.02162] d
Epoch = 157.3617 [0.1250] BKJD
Rp/R* = 0.0292 [0.0027]
a/R* = 25.79 [5.25]
b = 0.95 [0.03]
Seff = 64.53 [44.26]
Teff = 723 [124] K
Rp = 14.83 [6.46] Re
a = 0.6740 [0.2815] AU
Ag = 523.86 [385.17] [1.36 σ]
Teffp = 5346 [422] K [10.52 σ]

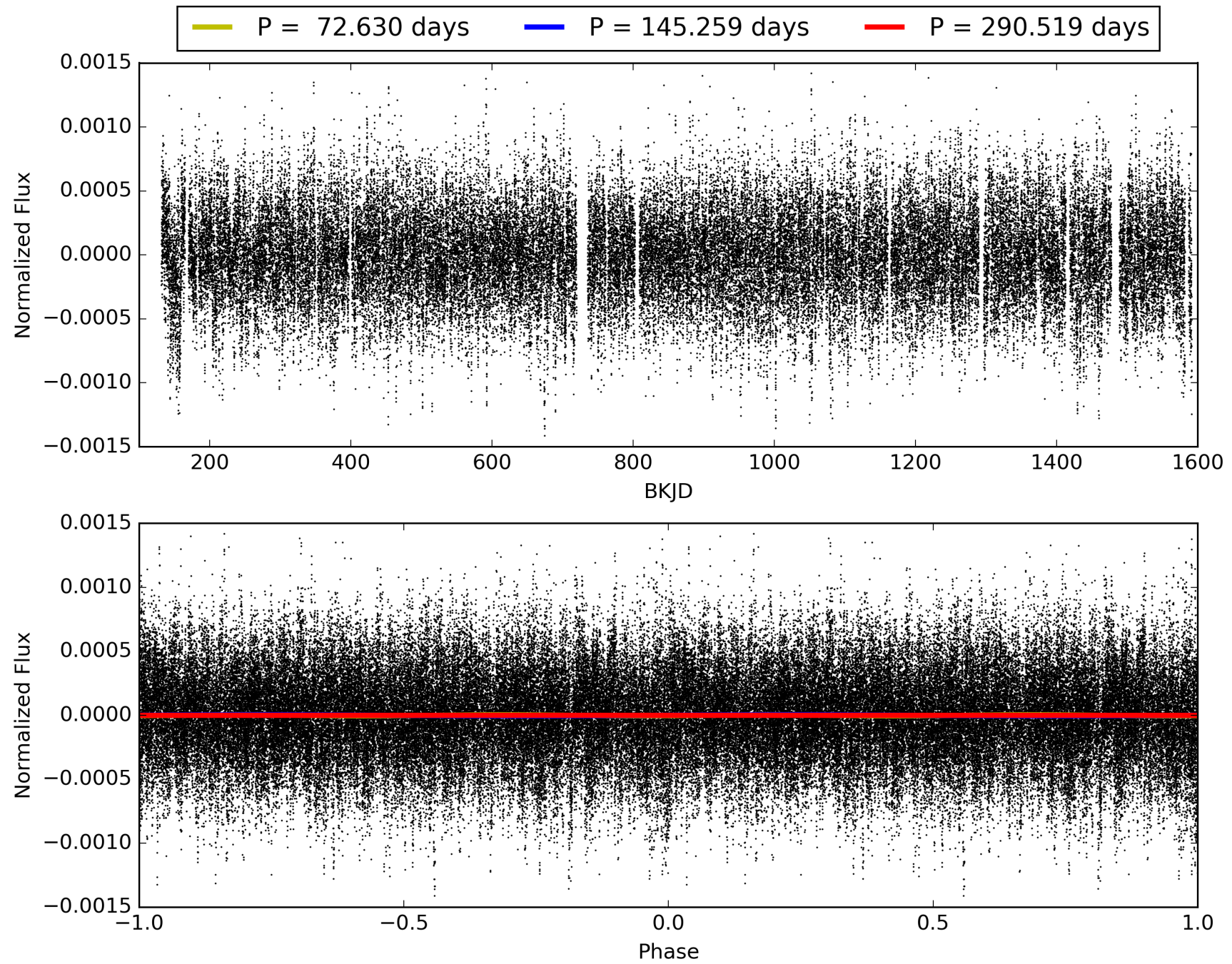
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [43.50 σ]
LongPeriod-sig: 100.0% [217.02 σ]
ModelChiSquare2-sig: 2.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.31e-12
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: -1.367
Centroid-sig: 59.4%
Centroid-so: 0.221 arcsec [0.89 σ]
OotOffset-rm: 1.613 arcsec [4.13 σ]
KicOffset-rm: 1.623 arcsec [3.82 σ]
OotOffset-st: 2/3/2/2 [9]
KicOffset-st: 2/3/2/2 [9]
DiffImageQuality-fgm: 0.56 [5/9]
DiffImageOverlap-fno: 0.00 [0/10]

TCE 009426473-04, PDC Light Curves

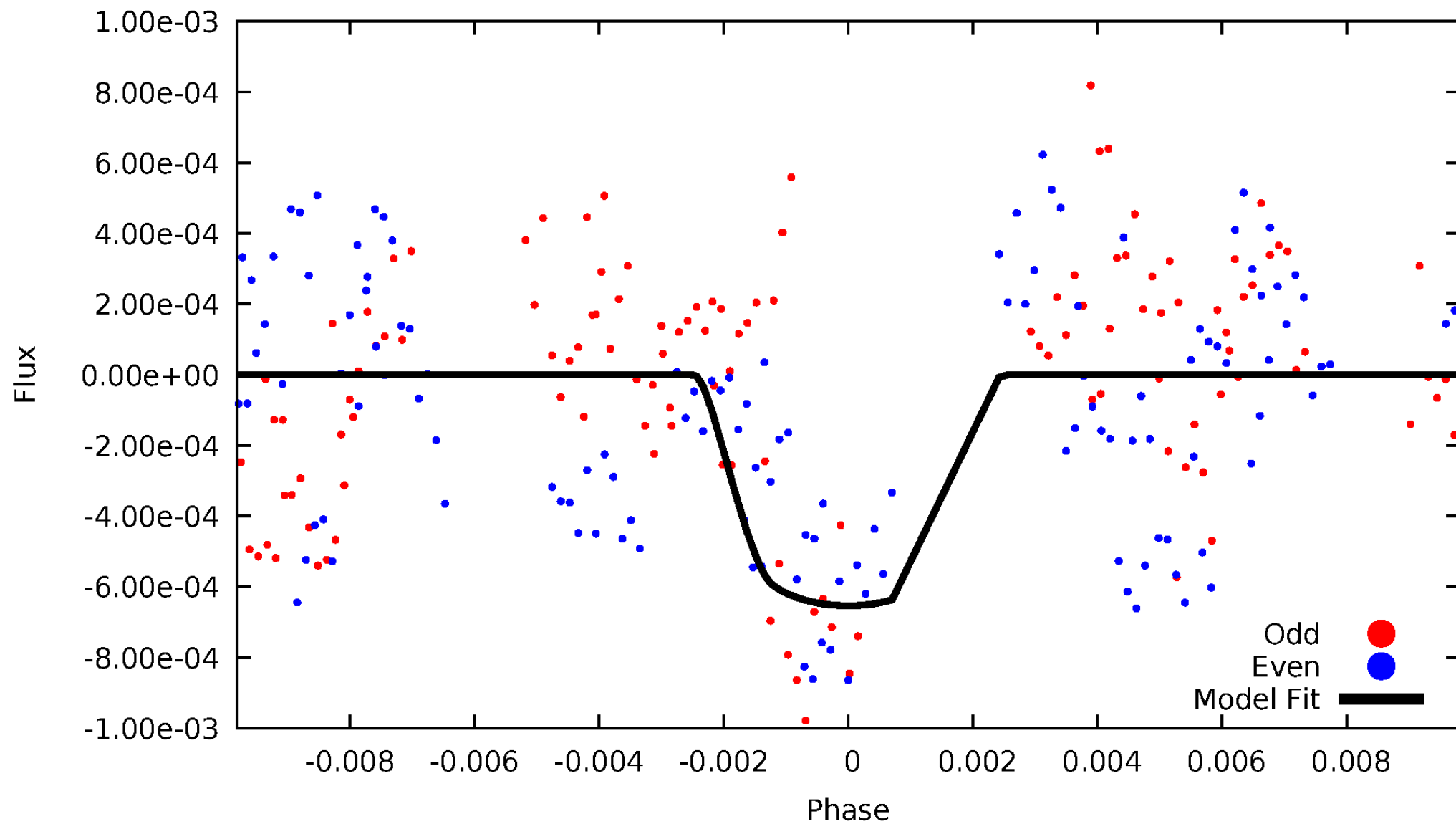


TCE 009426473-04



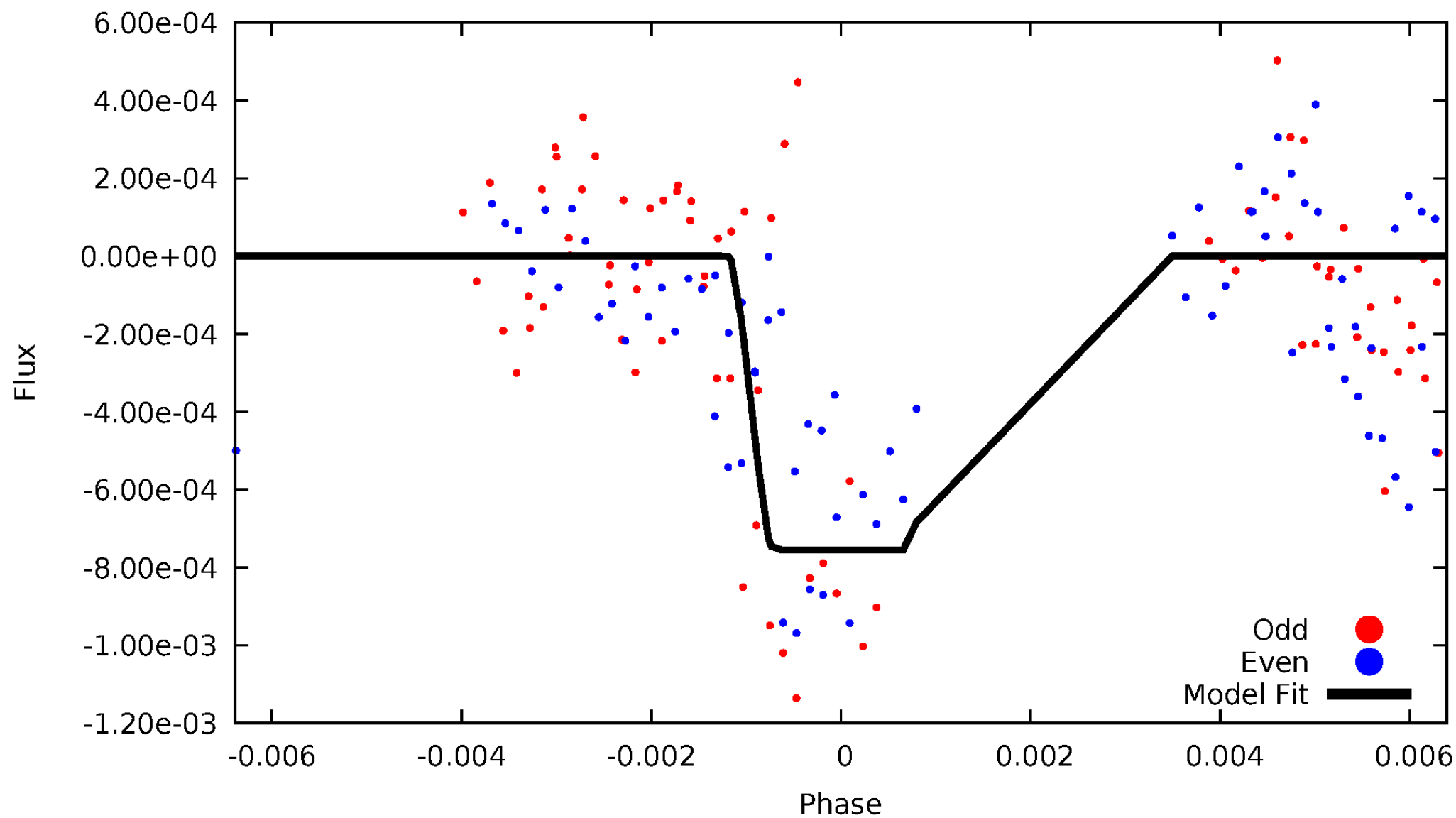
DV Odd/Even

TCE 009426473-04



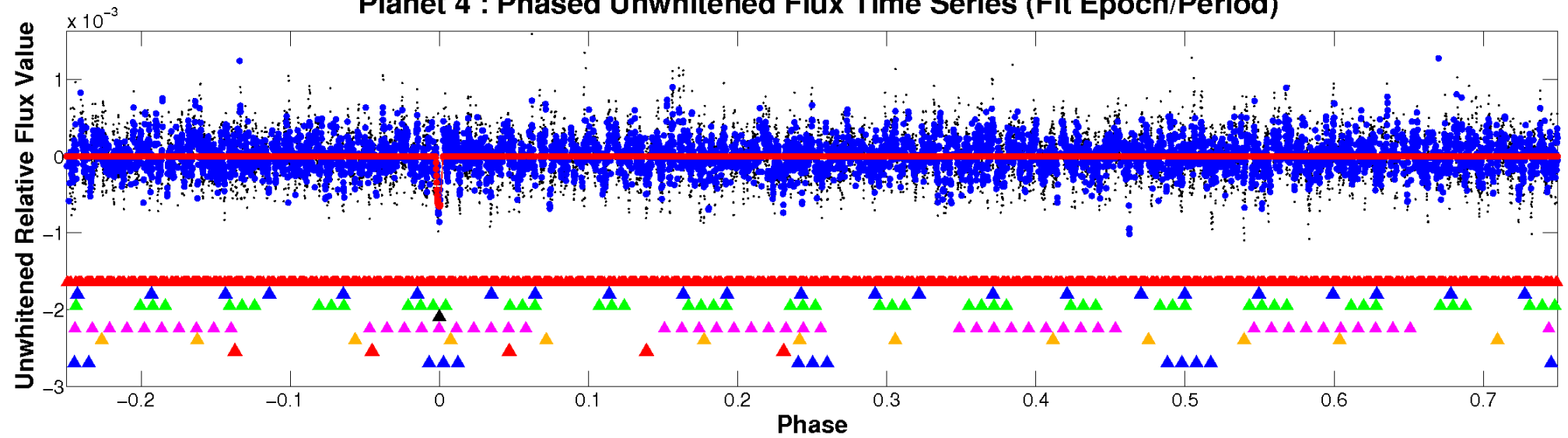
ALT Odd/Even

TCE 009426473-04

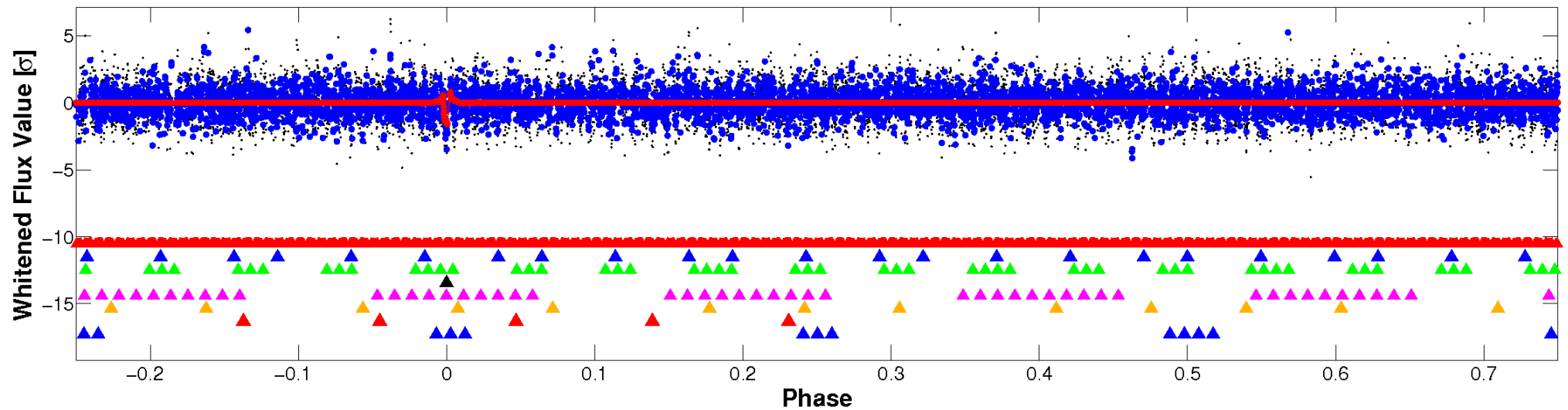


Non-Whitened Vs. Whitened Light Curve

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



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



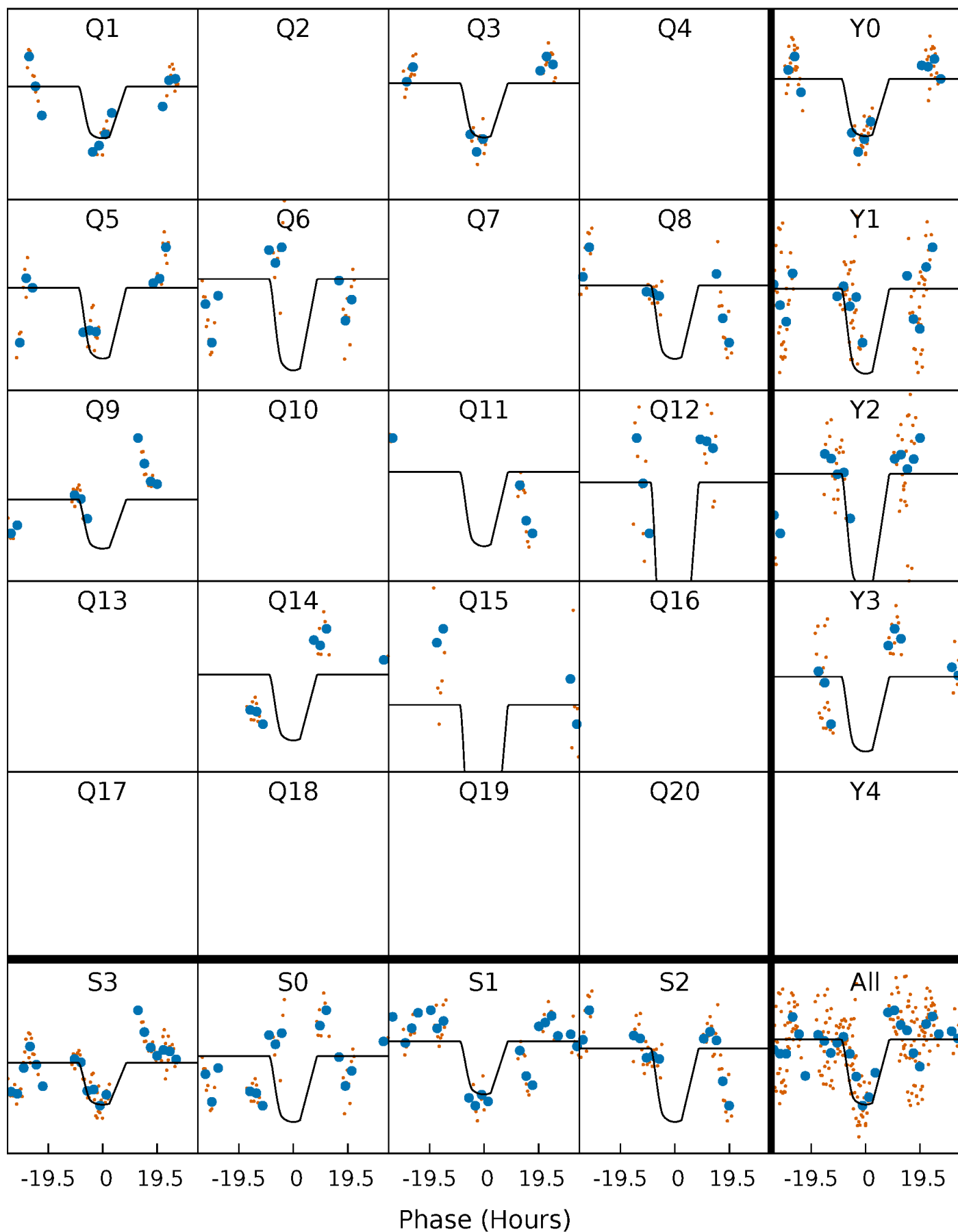
PDC Quarter-Phased Transit Curves

TCE 009426473-04 P=145.259500 Days $T_0=157.361685$ (BKJD)



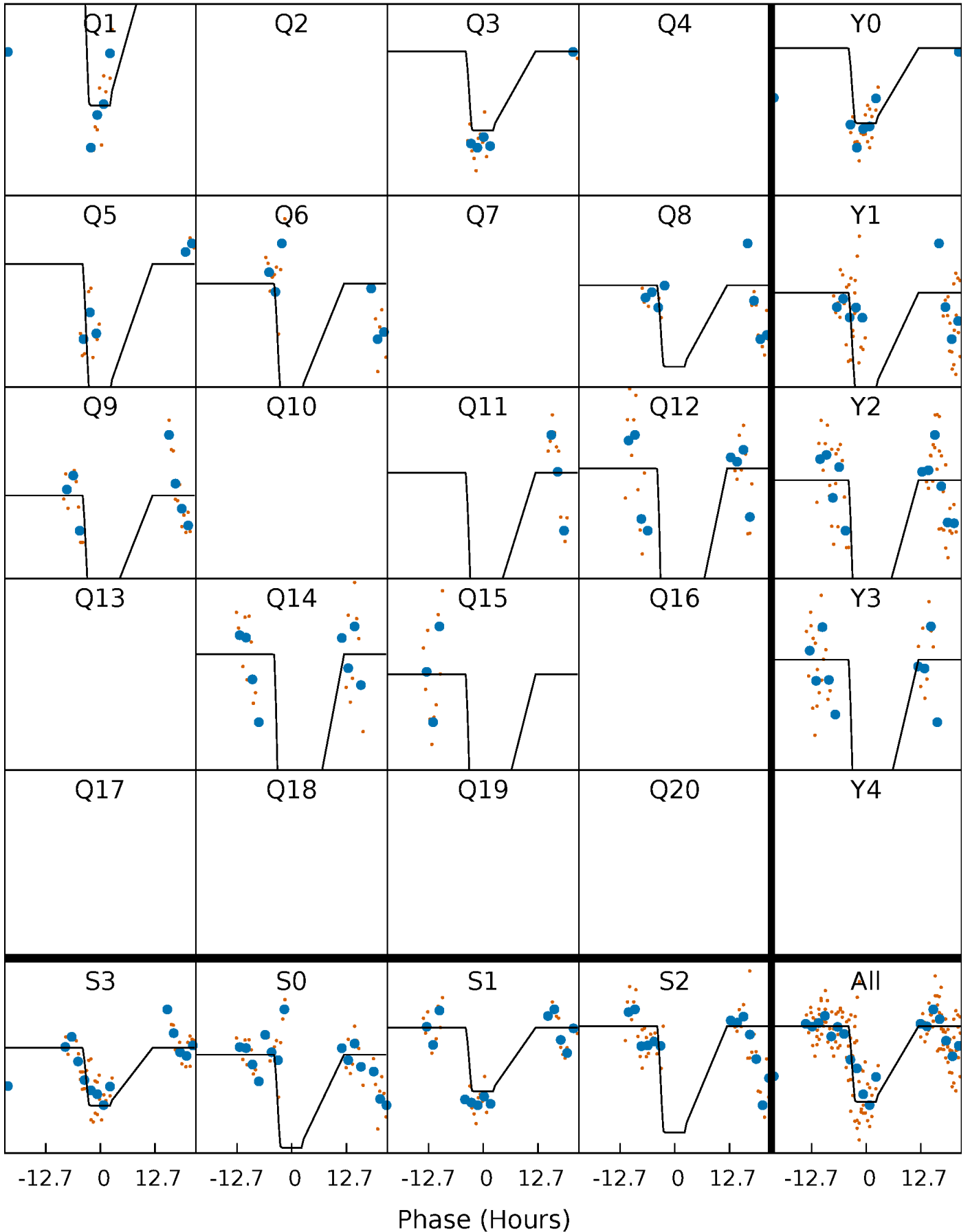
DV Quarter-Phased Transit Curves

TCE 009426473-04 $P=145.259500$ Days $T_0=157.361685$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

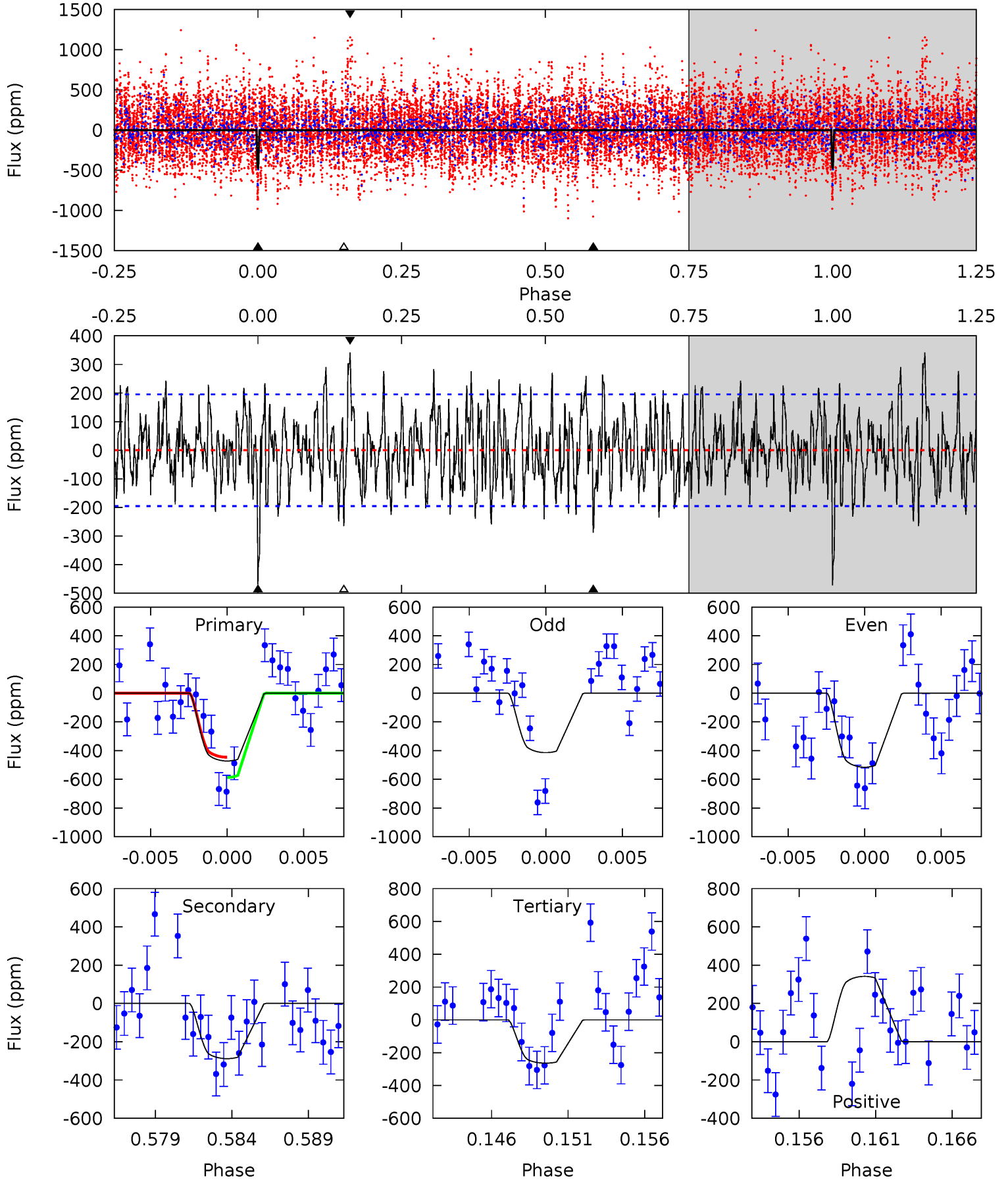
TCE 009426473-04 P=145.241745 Days $T_0=157.347675$ (BKJD)



DV Model-Shift Uniqueness Test

009426473-04, P = 145.259500 Days, E = 12.102185 Days

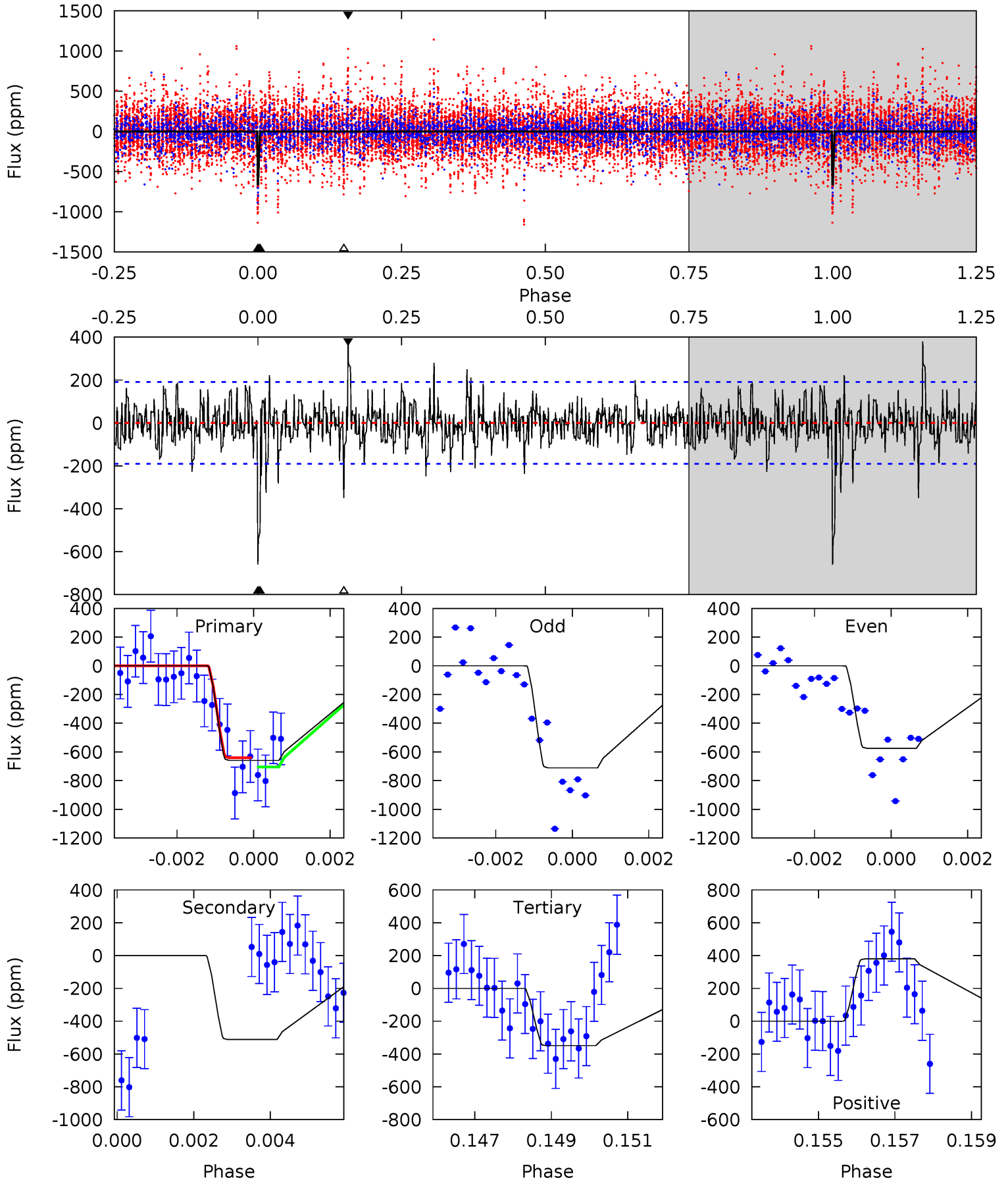
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	7.60	6.97	9.01	5.16	2.80	2.76	5.50	3.45	0.64	-1.41	1.33	0.76	0.42	1.31



Alt Model-Shift Uniqueness Test

009426473-04, P = 145.241745 Days, E = 12.105930 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.4	14.3	9.74	10.6	5.33	3.09	1.94	8.68	7.82	4.54	3.68	1.95	1.07	0.37	0.71



Stellar Parameters For KIC 009426473

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6231^{+189}_{-170}	$3.388^{+0.399}_{-0.094}$	$0.020^{+0.300}_{-0.300}$	$4.659^{+0.661}_{-1.984}$	$1.933^{+0.071}_{-0.403}$	$0.027^{+0.085}_{-0.008}$
	+3%/-3%	+12%/-3%	+1500%/-1500%	+14%/-43%	+4%/-21%	+314%/-30%
Source	PHO1	FLK73	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 009426473-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-288 ± 38	$13.68^{+2.67}_{-3.02}$	984^{+70}_{-108}	4872^{+260}_{-264}	375^{+227}_{-116}
Alt.	-512 ± 36	$13.10^{+2.29}_{-2.92}$	990^{+61}_{-96}	5678^{+325}_{-295}	721^{+448}_{-188}

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

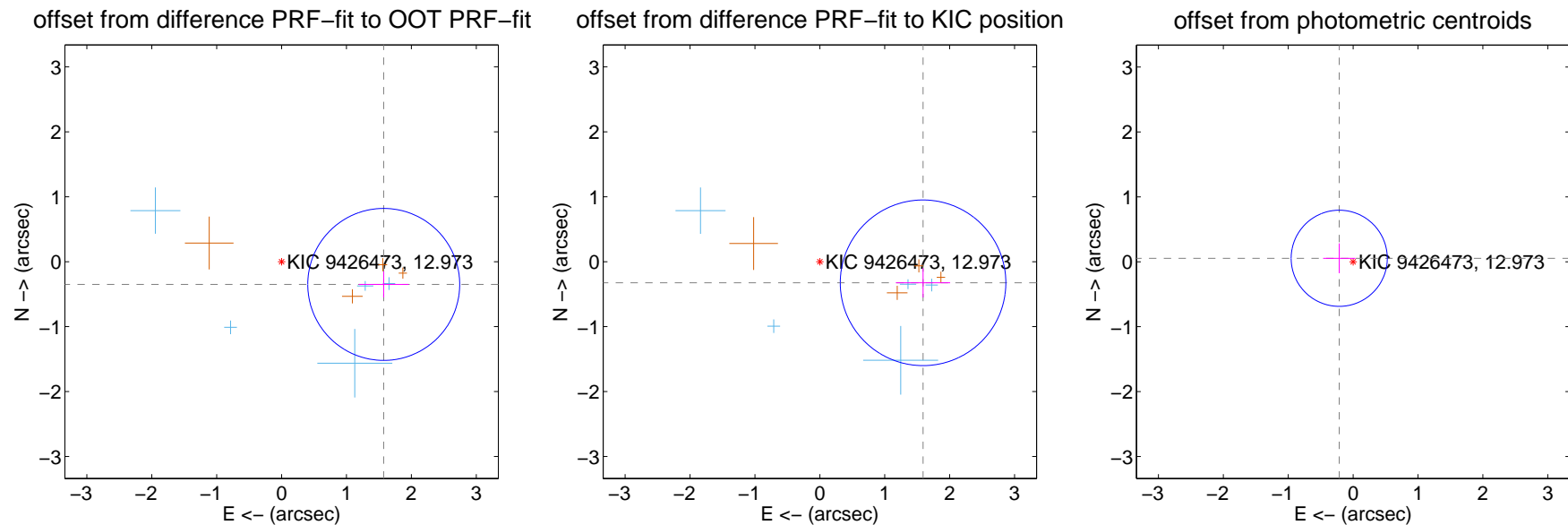
DV Centroid Data

Supplemental centroid analysis for 009426473-04. Kepler magnitude: 12.97. Transit SNR 8.73

There are 5 quarters with good PRF difference image offsets

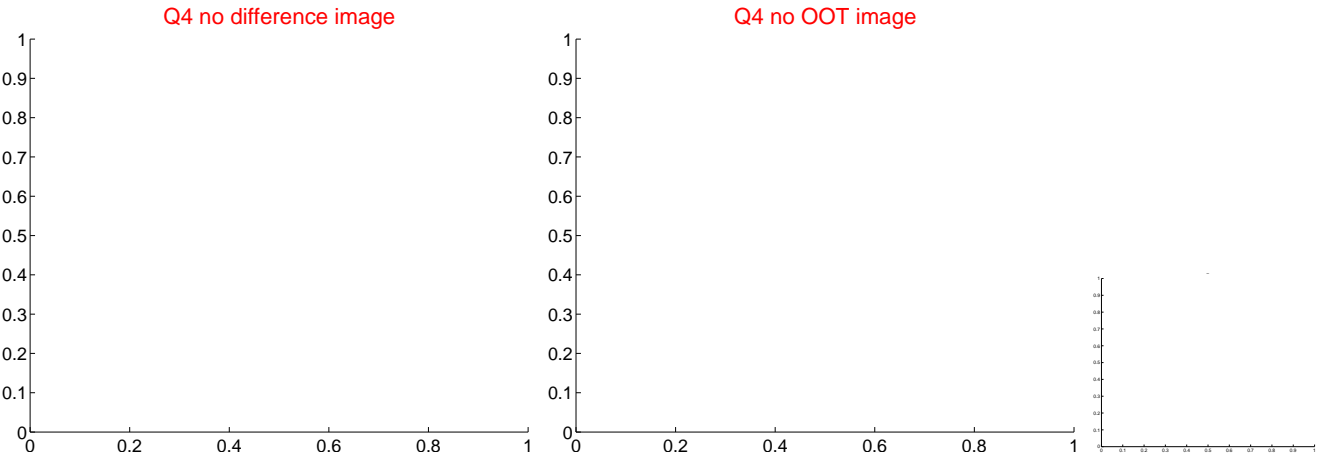
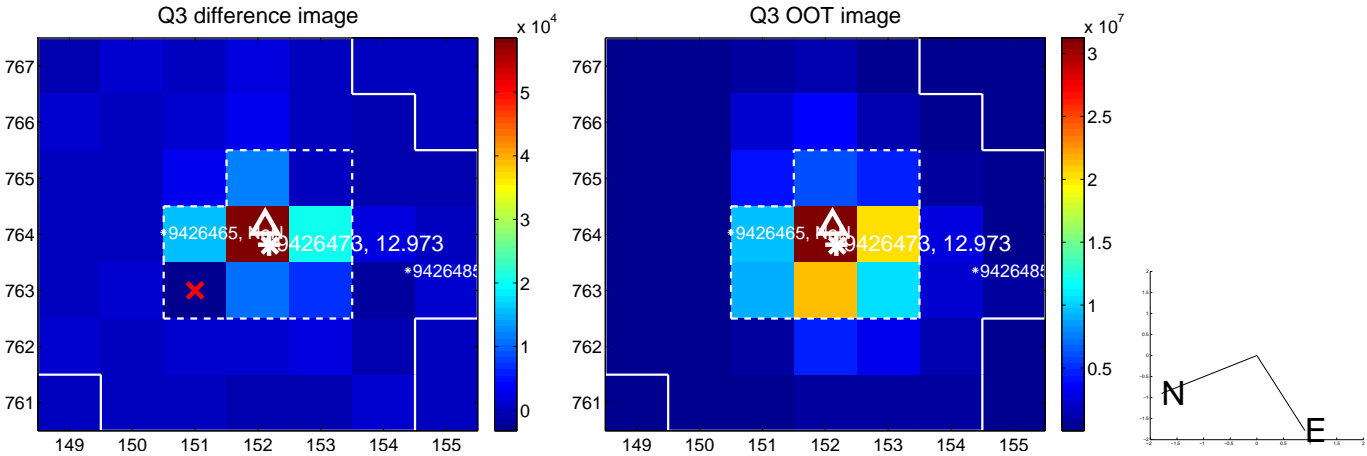
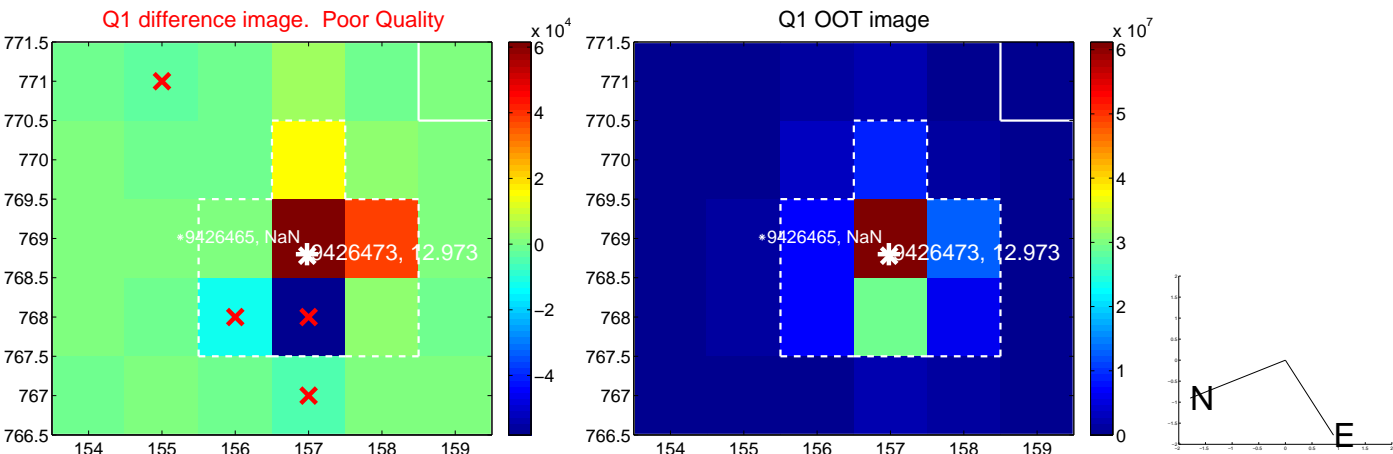
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.613 ± 0.390	4.13	-1.574 ± 0.384	-0.350 ± 0.201
PRF-fit source offset from KIC position	1.623 ± 0.425	3.82	-1.591 ± 0.418	-0.325 ± 0.226
photometric centroid source offset	0.22 ± 0.25	0.89	0.21 ± 0.25	0.05 ± 0.23

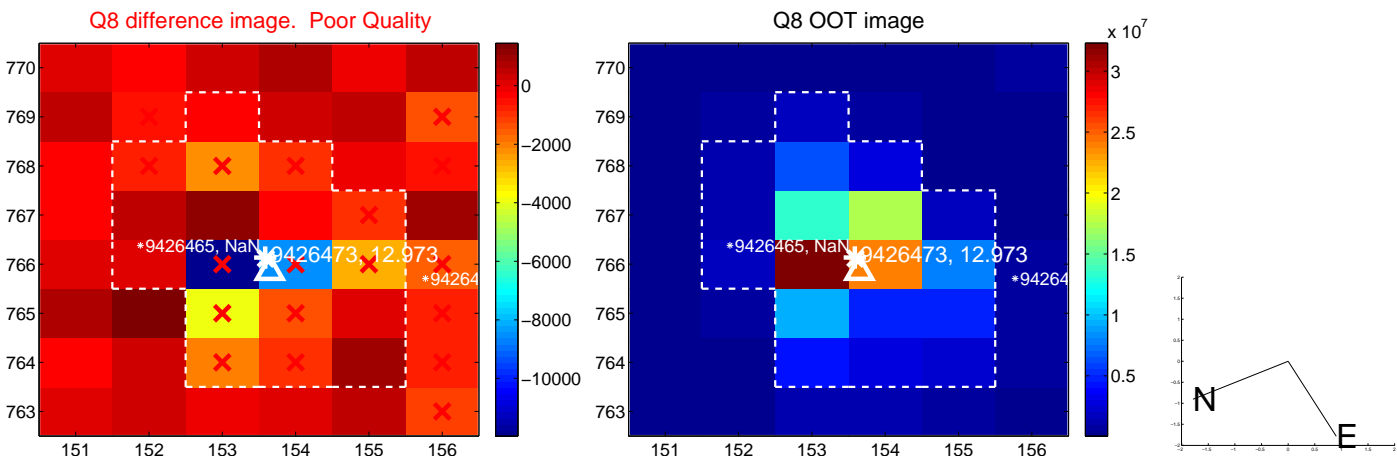
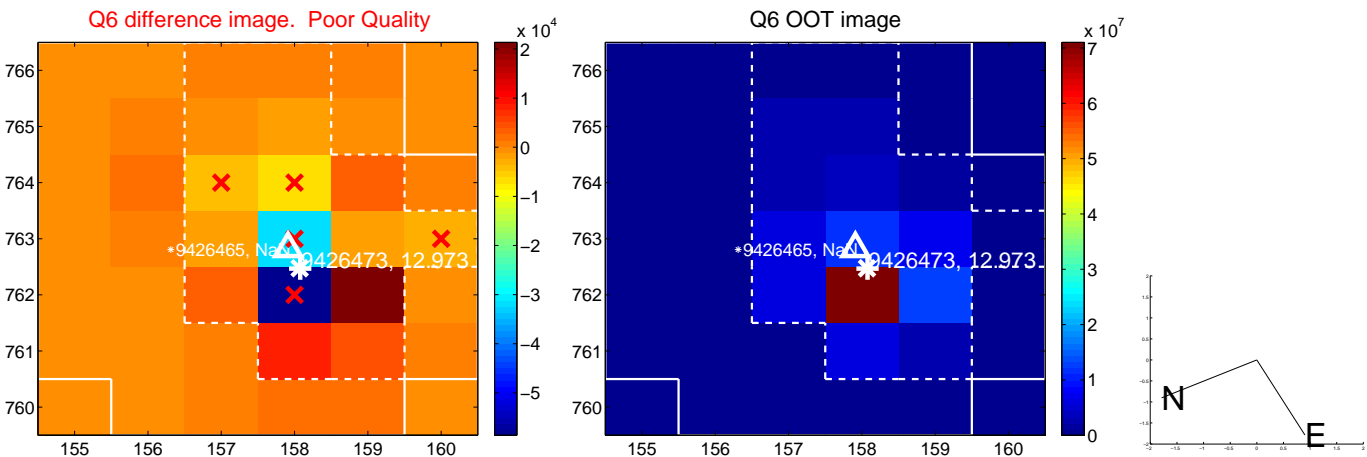
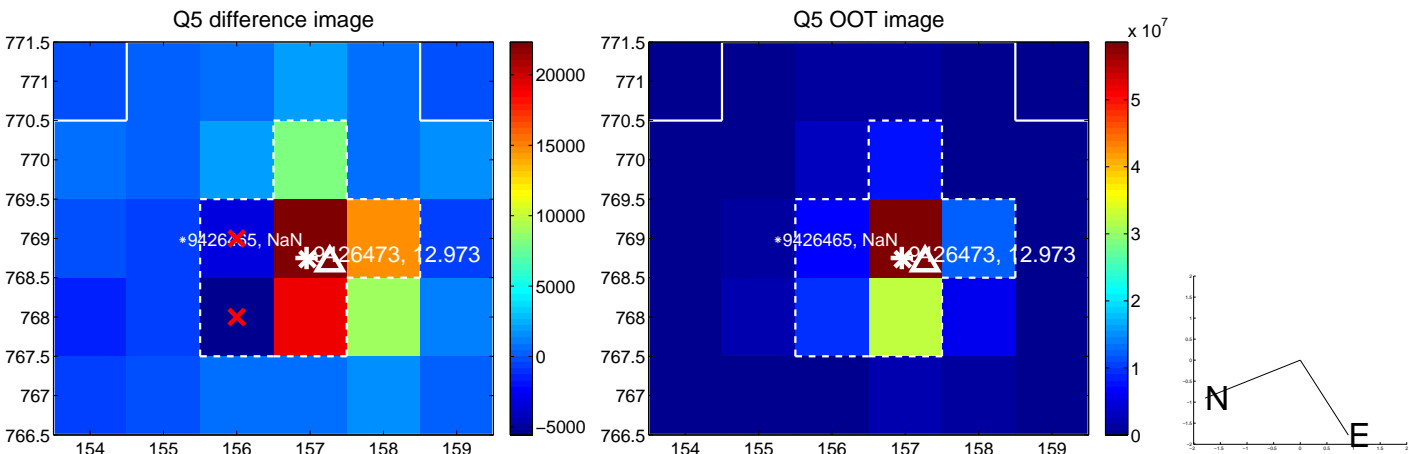


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

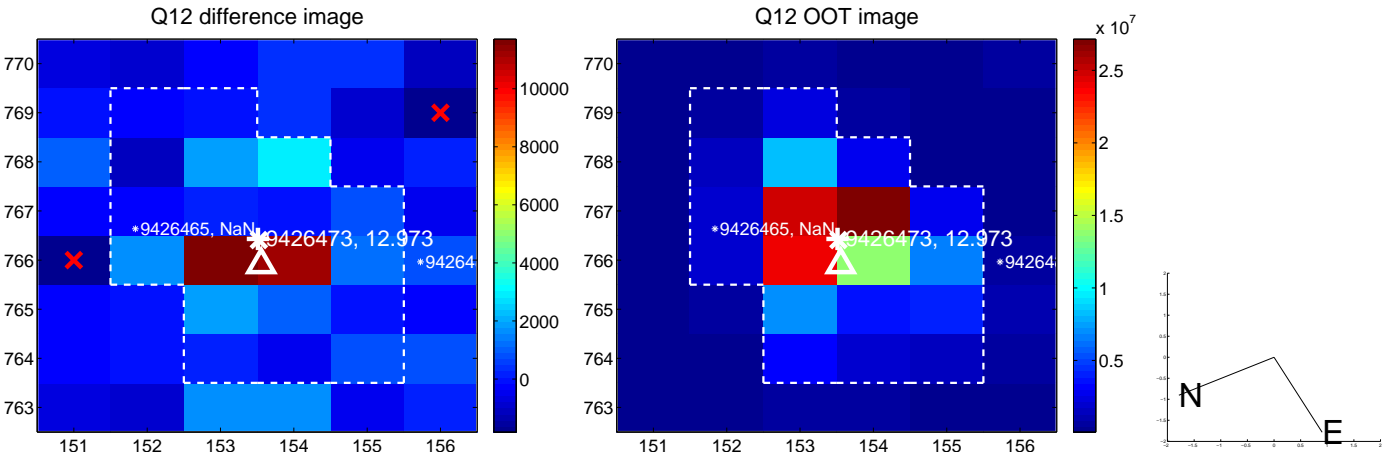
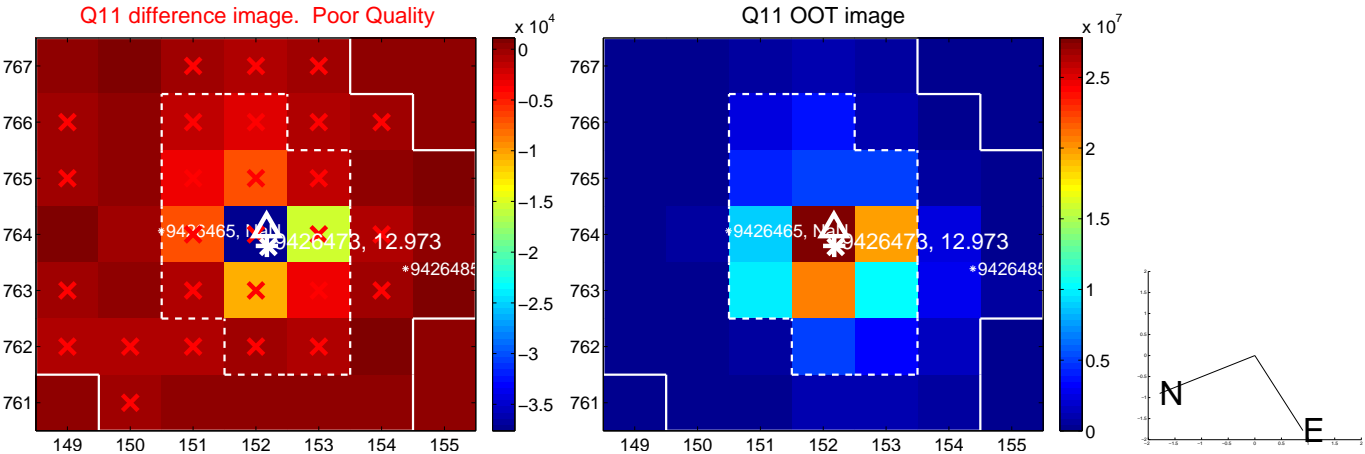
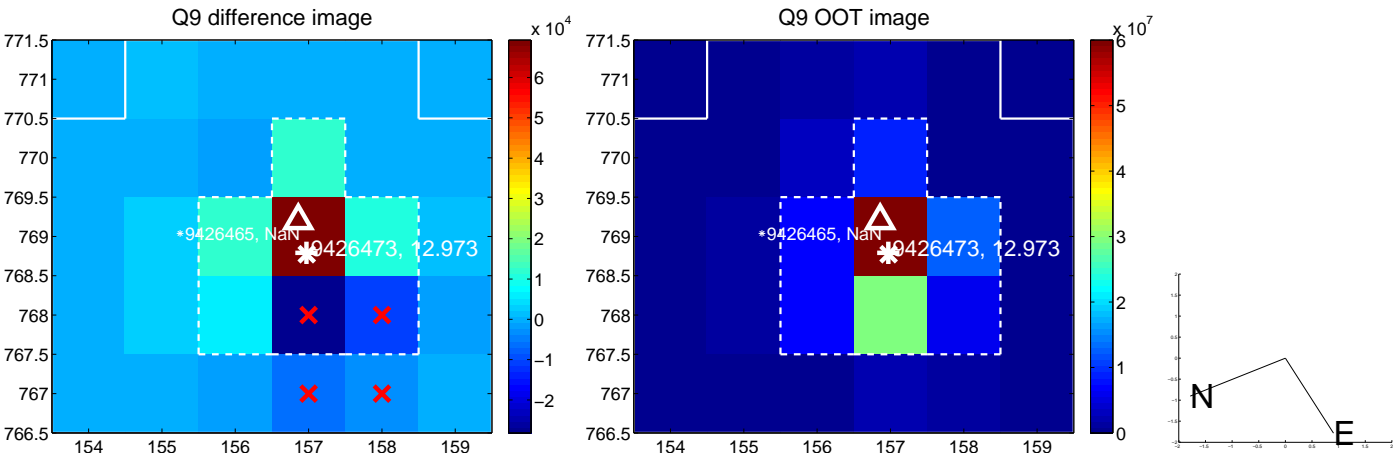
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



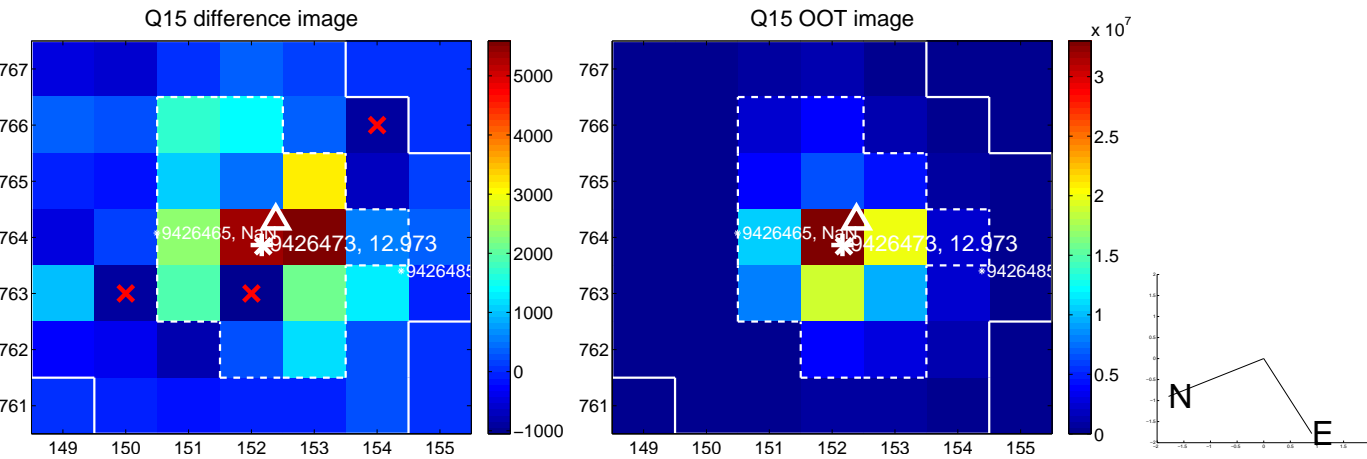
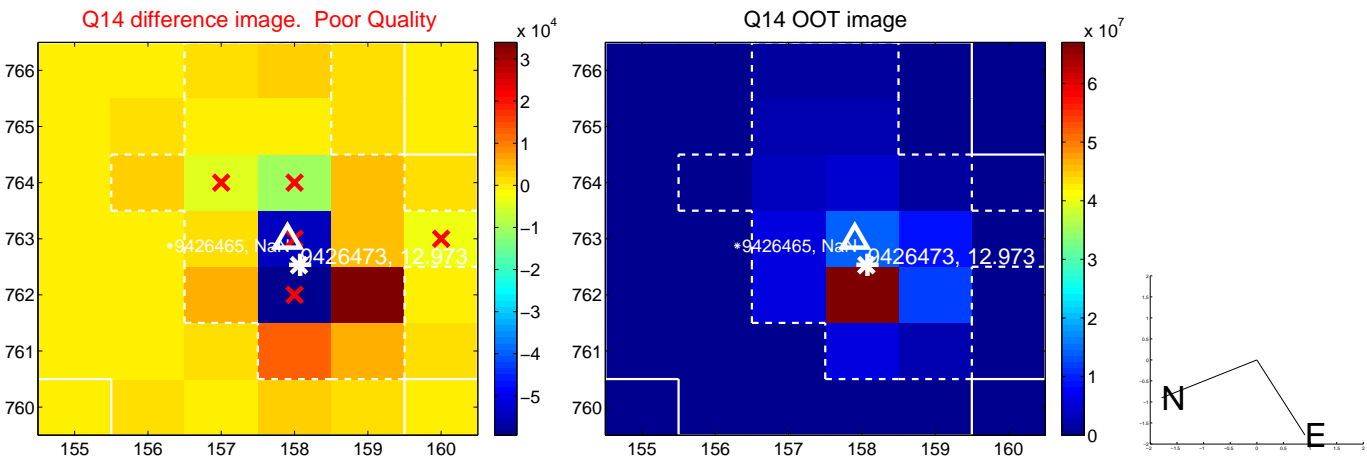
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



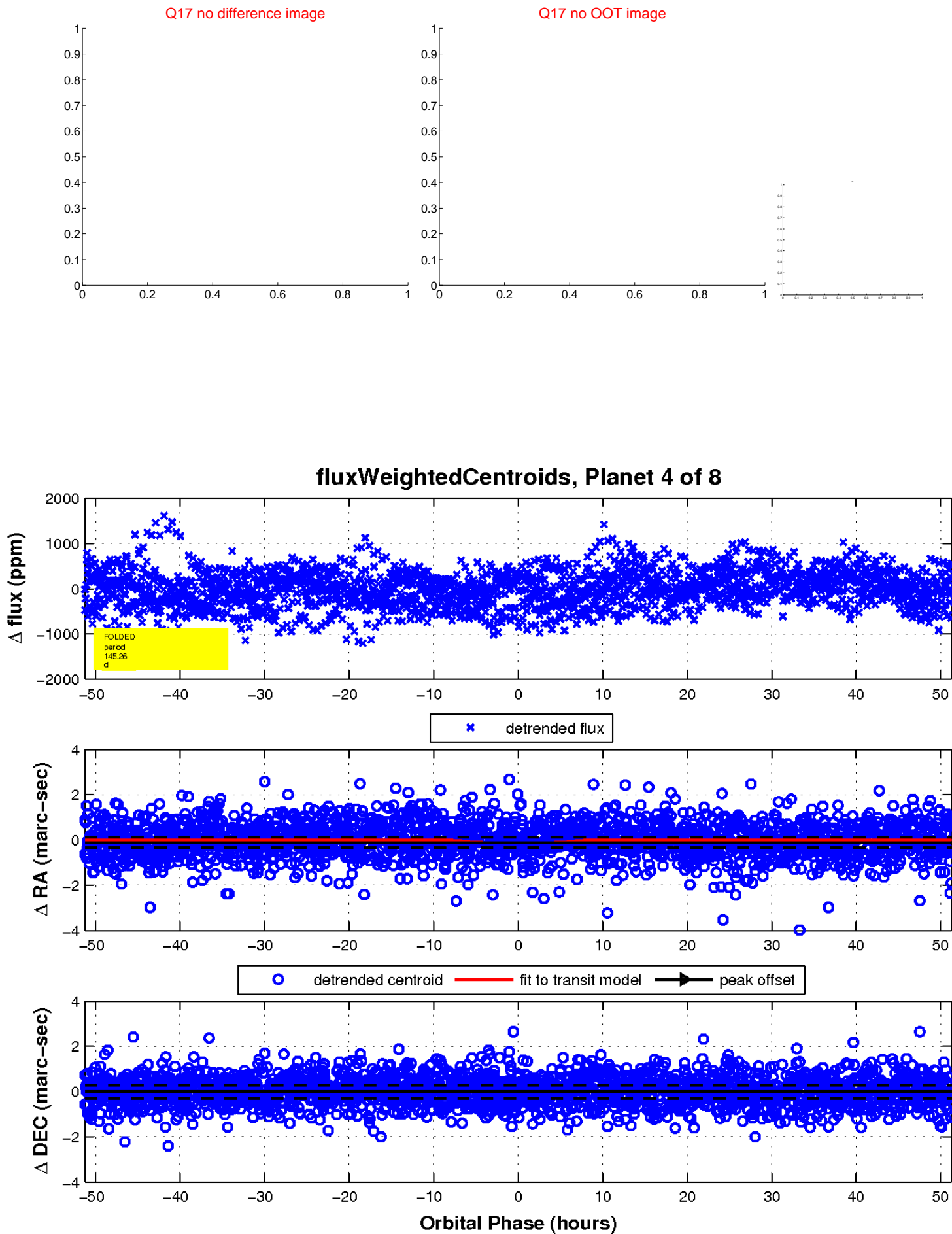
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

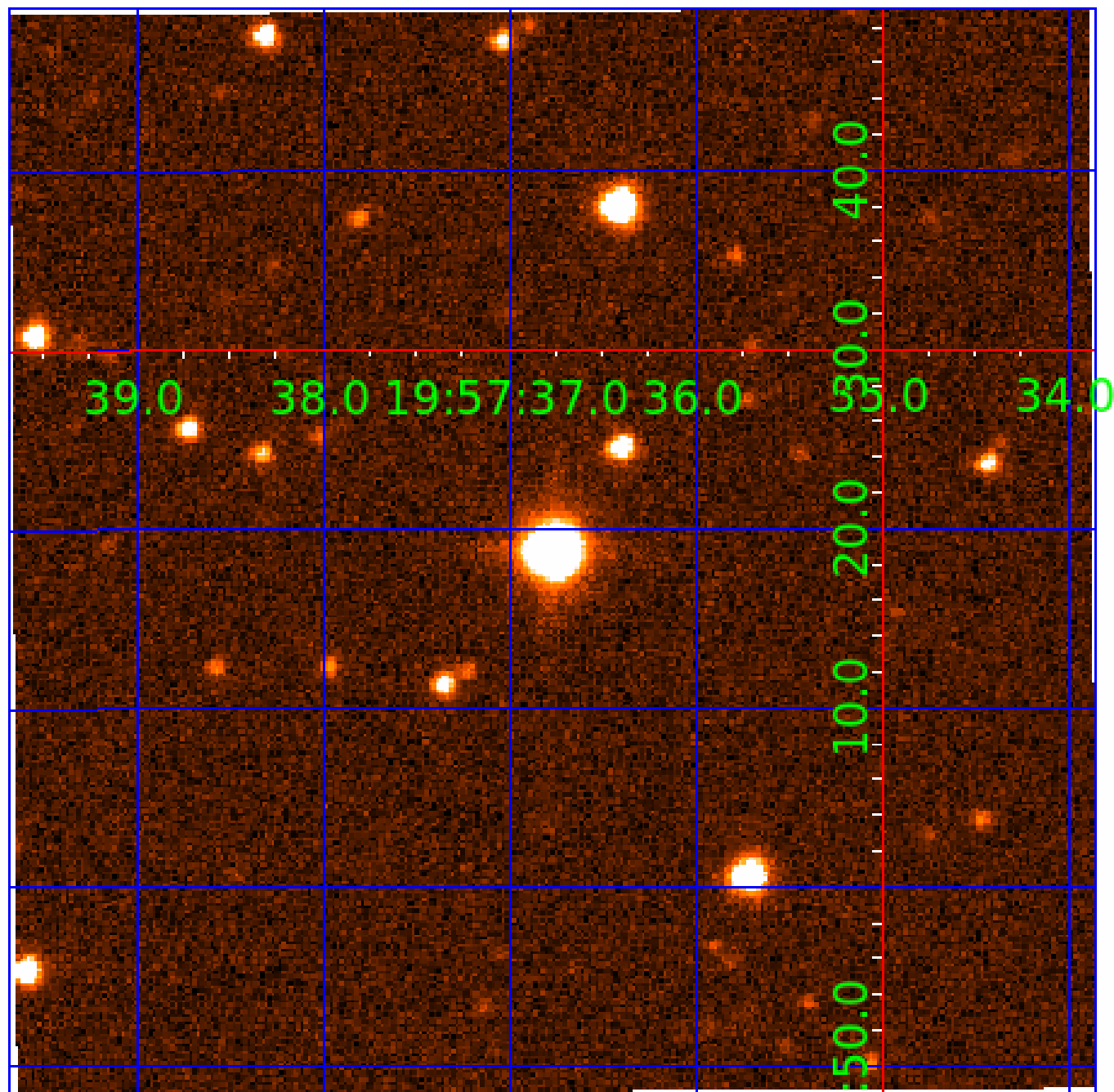


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009426473

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})
009426473-01	OBS	No	1.037045	131.951475	20.4	6.439	8.6	5.2	4.66	6231	2.16	46945.10
009426473-02	OBS	No	63.284304	140.796145	576.3	8.541	8.5	9.4	4.66	6231	19.34	195.40
009426473-03	OBS	No	27.312220	154.327238	182.6	6.860	8.5	5.5	4.66	6231	7.27	599.12
009426473-04	OBS	No	145.259499	157.361685	653.7	17.098	9.3	8.7	4.66	6231	14.83	64.53
009426473-05	OBS	No	28.713763	137.077892	277.3	5.315	8.9	8.1	4.66	6231	8.81	560.45
009426473-06	OBS	No	111.271387	217.136369	653.0	7.702	8.9	8.5	4.66	6231	22.86	92.08
009426473-07	OBS	No	303.882214	282.705089	412.5	3.921	8.9	7.4	4.66	6231	10.58	24.12
009426473-08	OBS	No	109.296456	228.284936	520.0	5.463	8.9	8.5	4.66	6231	13.54	94.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009426473-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009426473-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—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.

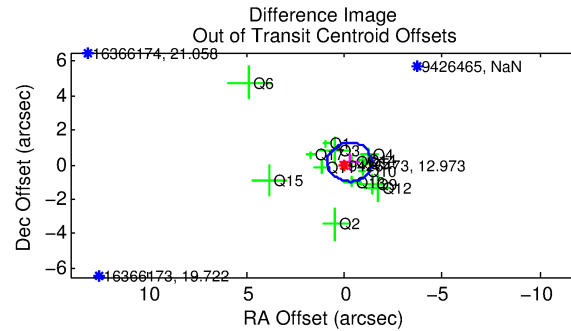
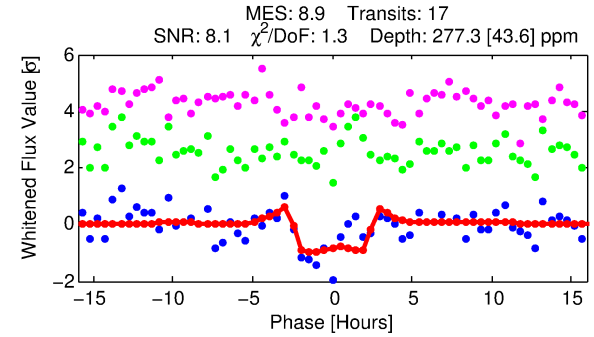
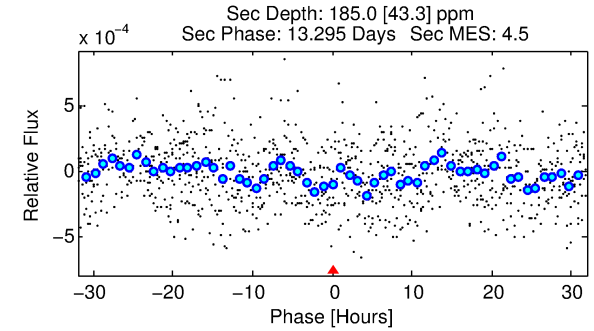
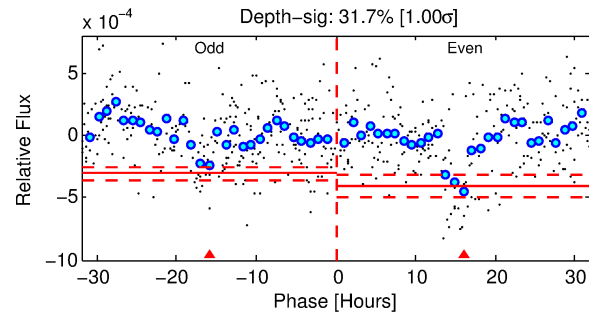
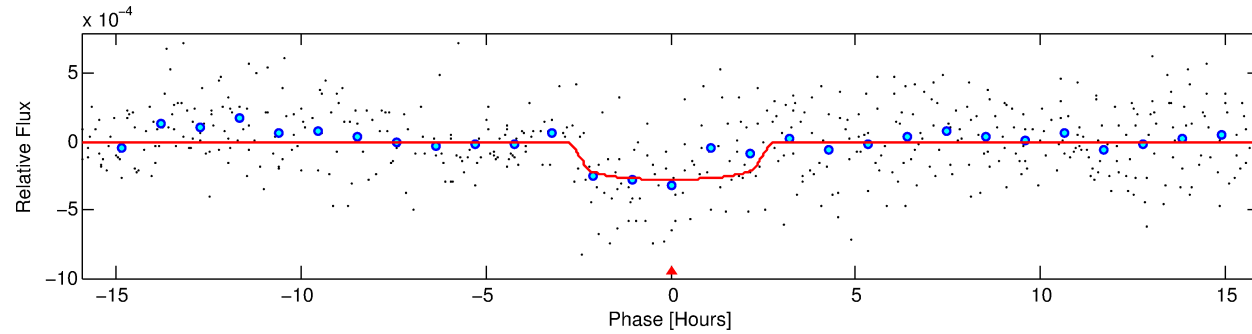
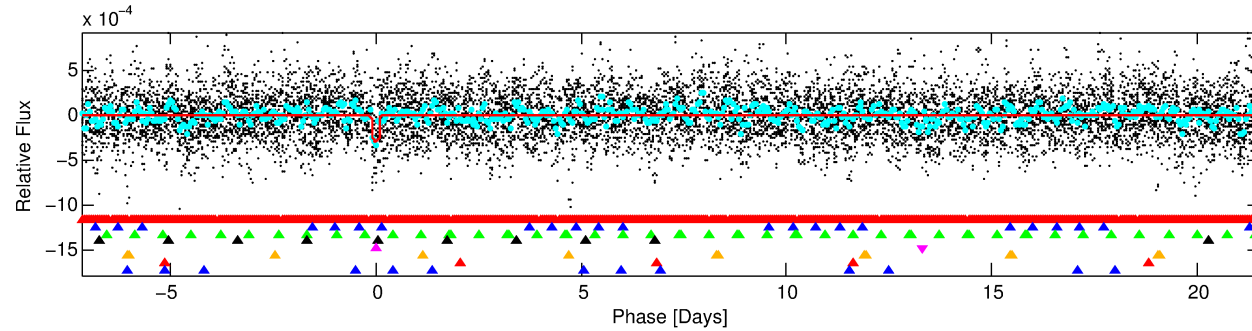
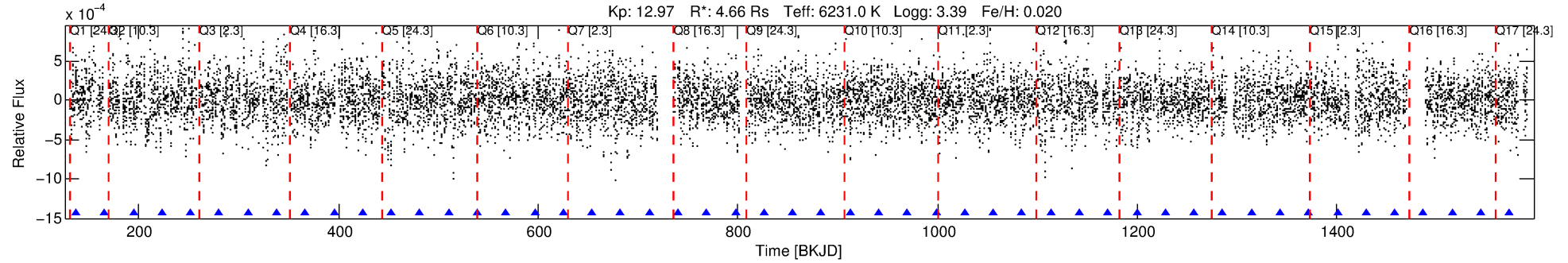
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009426473-05

No Significant Match Found

DV One-Page Summary

KIC: 9426473 Candidate: 5 of 8 Period: 28.714 d



DV Fit Results:

Period = 28.71376 [0.00031] d
Epoch = 137.0779 [0.0092] BKJD
Rp/R* = 0.0173 [0.0074]
a/R* = 22.90 [50.58]
b = 0.85 [0.71]
Seff = 560.45 [384.41]
Teff = 1241 [213] K
Rp = 8.81 [5.33] Re
a = 0.2287 [0.0955] AU
Ag = 68.65 [76.74] [0.88 σ]
Teffp = 5521 [1241] K [3.40 σ]

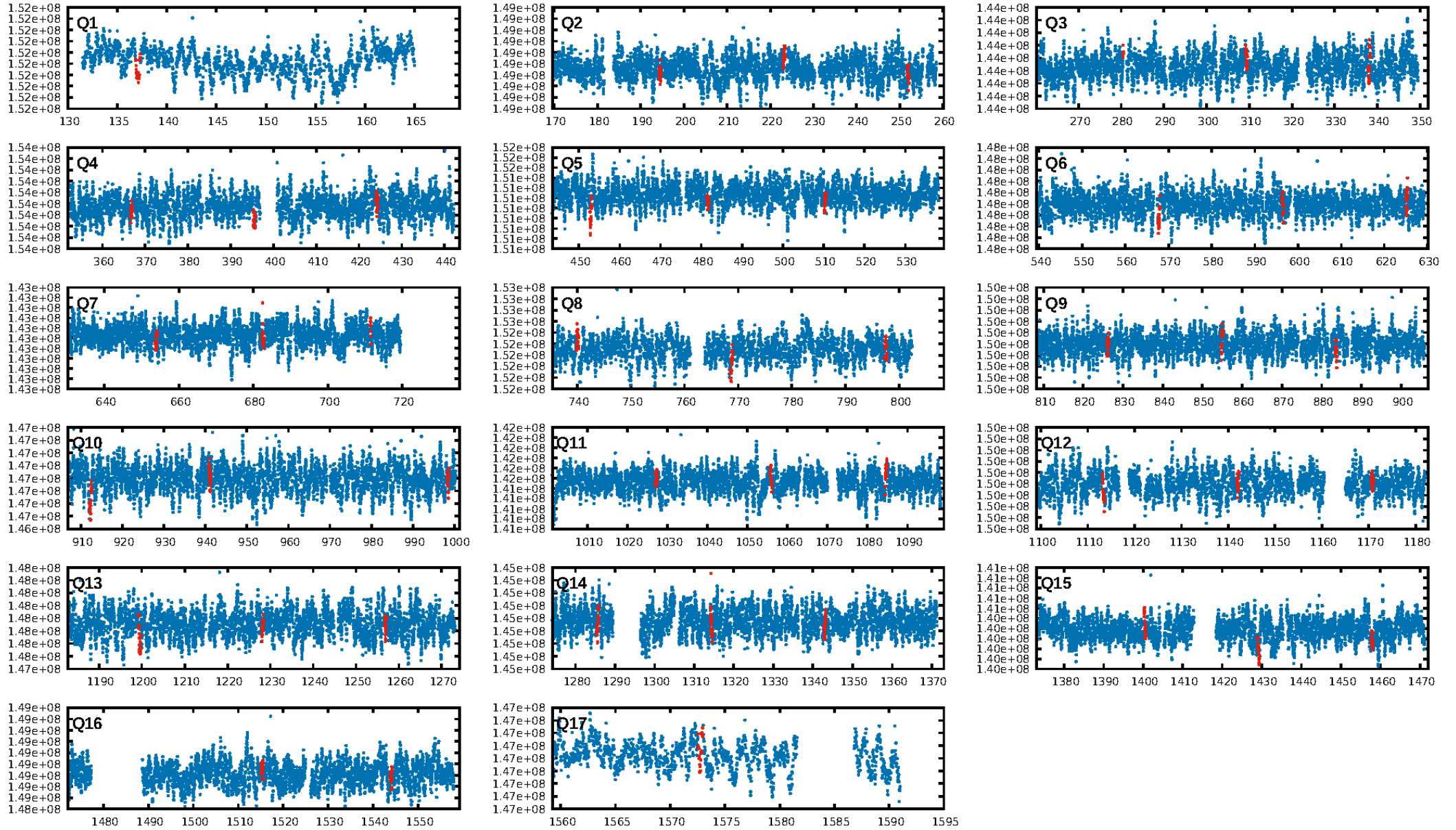
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [3.88 σ]
LongPeriod-sig: 100.0% [82.47 σ]
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.37e-09
RollingBand-fgt: 1.00 [16/16]
GhostDiagnostic-chr: 0.9981
Centroid-sig: 5.4%
Centroid-so: 0.611 arcsec [1.49 σ]
OotOffset-rm: 0.313 arcsec [0.83 σ]
KicOffset-rm: 0.385 arcsec [0.97 σ]
OotOffset-st: 4/3/3/5 [15]
KicOffset-st: 4/3/3/5 [15]
DiffImageQuality-fgm: 0.67 [10/15]
DiffImageOverlap-fno: 0.00 [0/17]

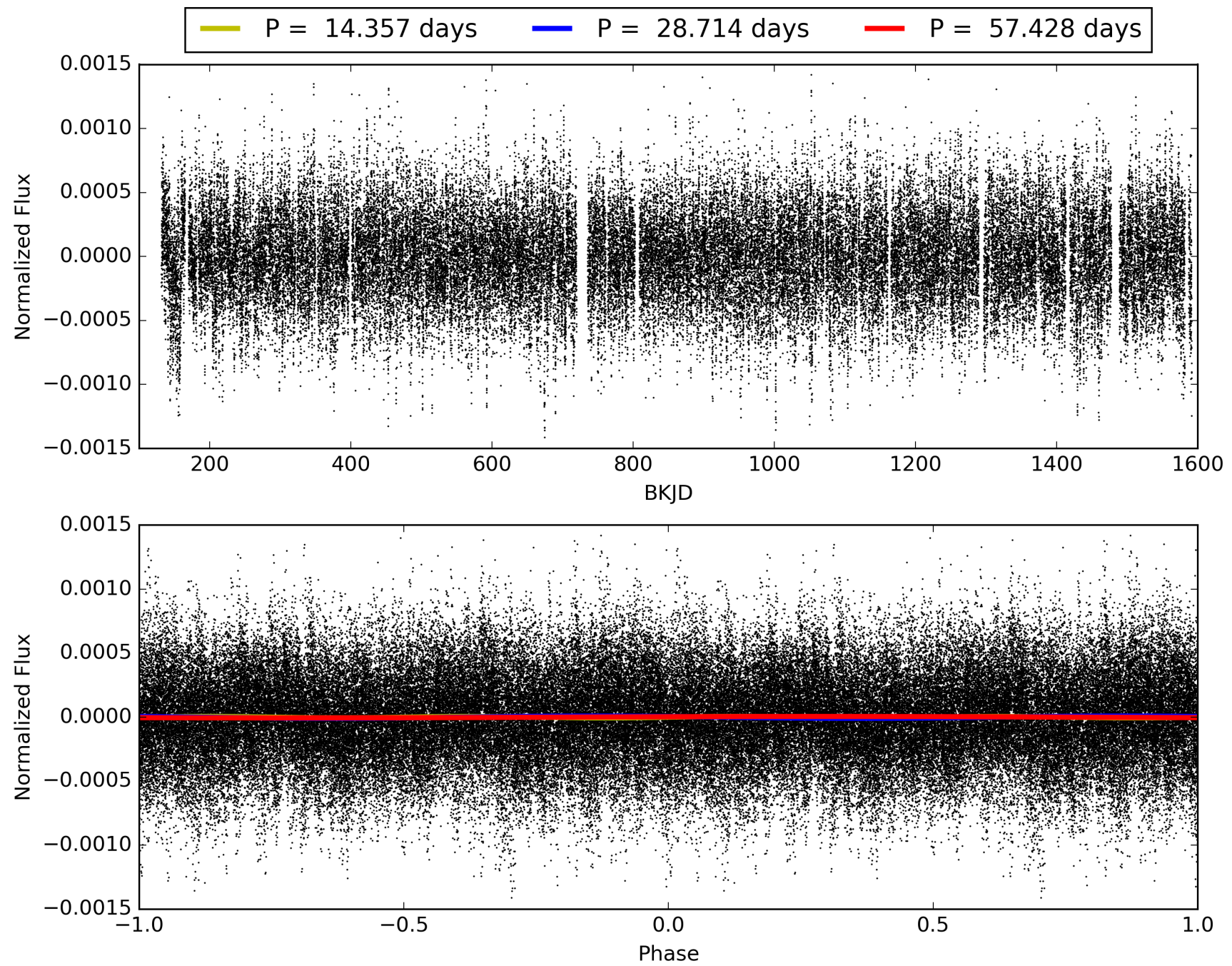
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:29:43 Z

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

TCE 009426473-05, PDC Light Curves

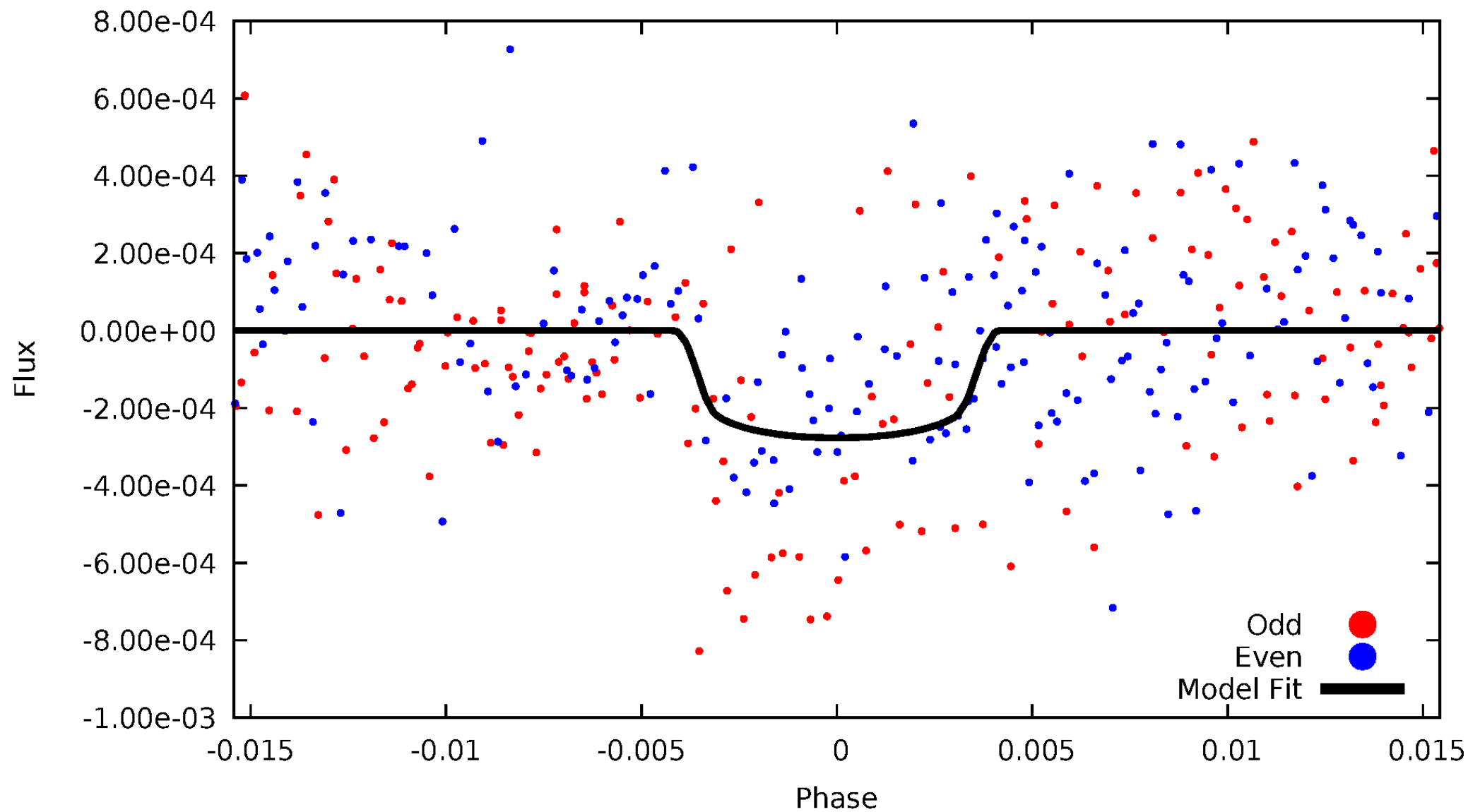


TCE 009426473-05



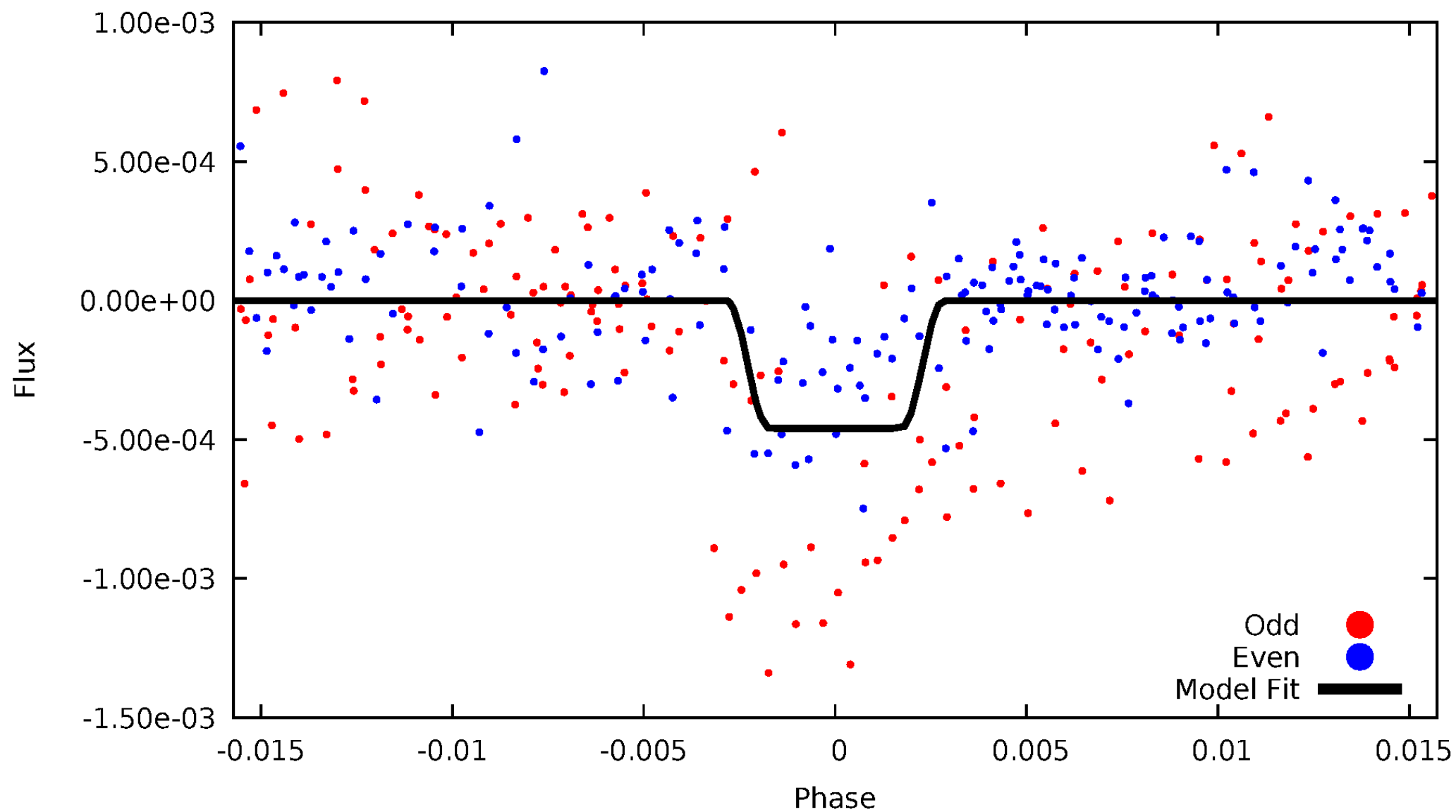
DV Odd/Even

TCE 009426473-05



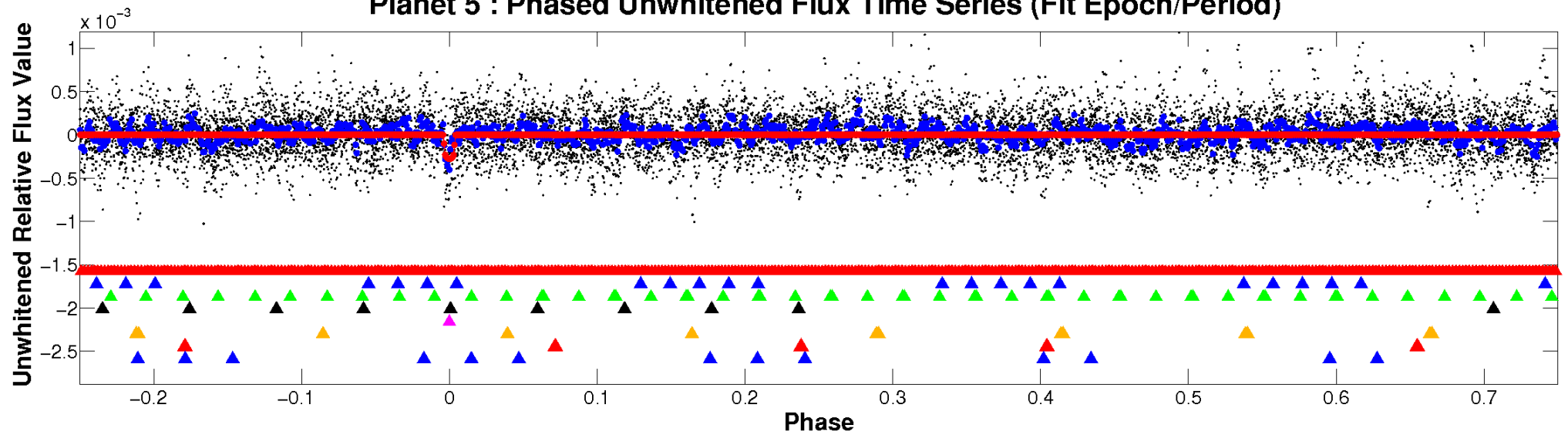
ALT Odd/Even

TCE 009426473-05

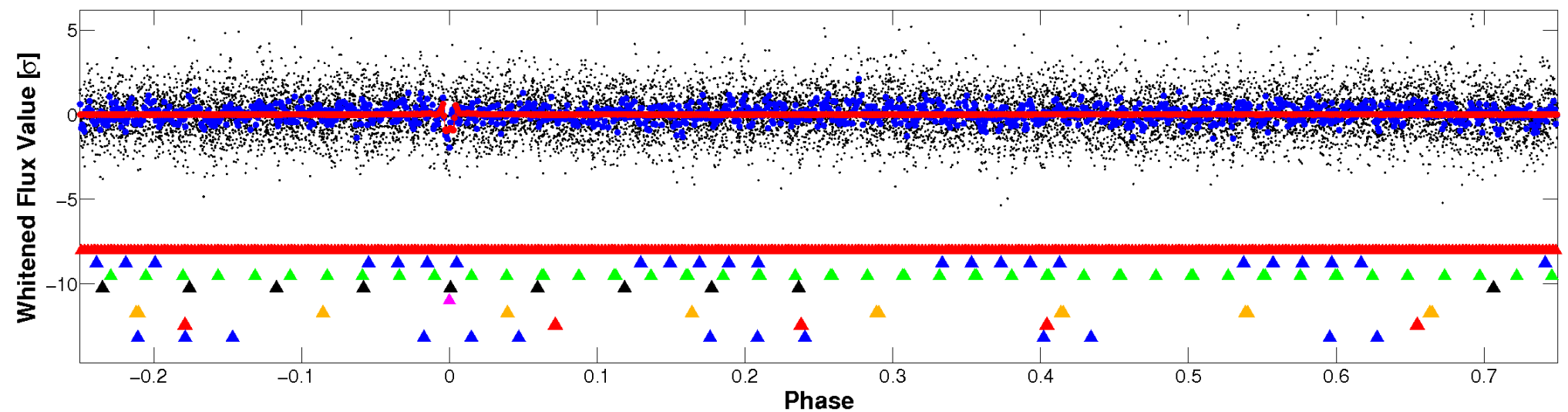


Non-Whitened Vs. Whitened Light Curve

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

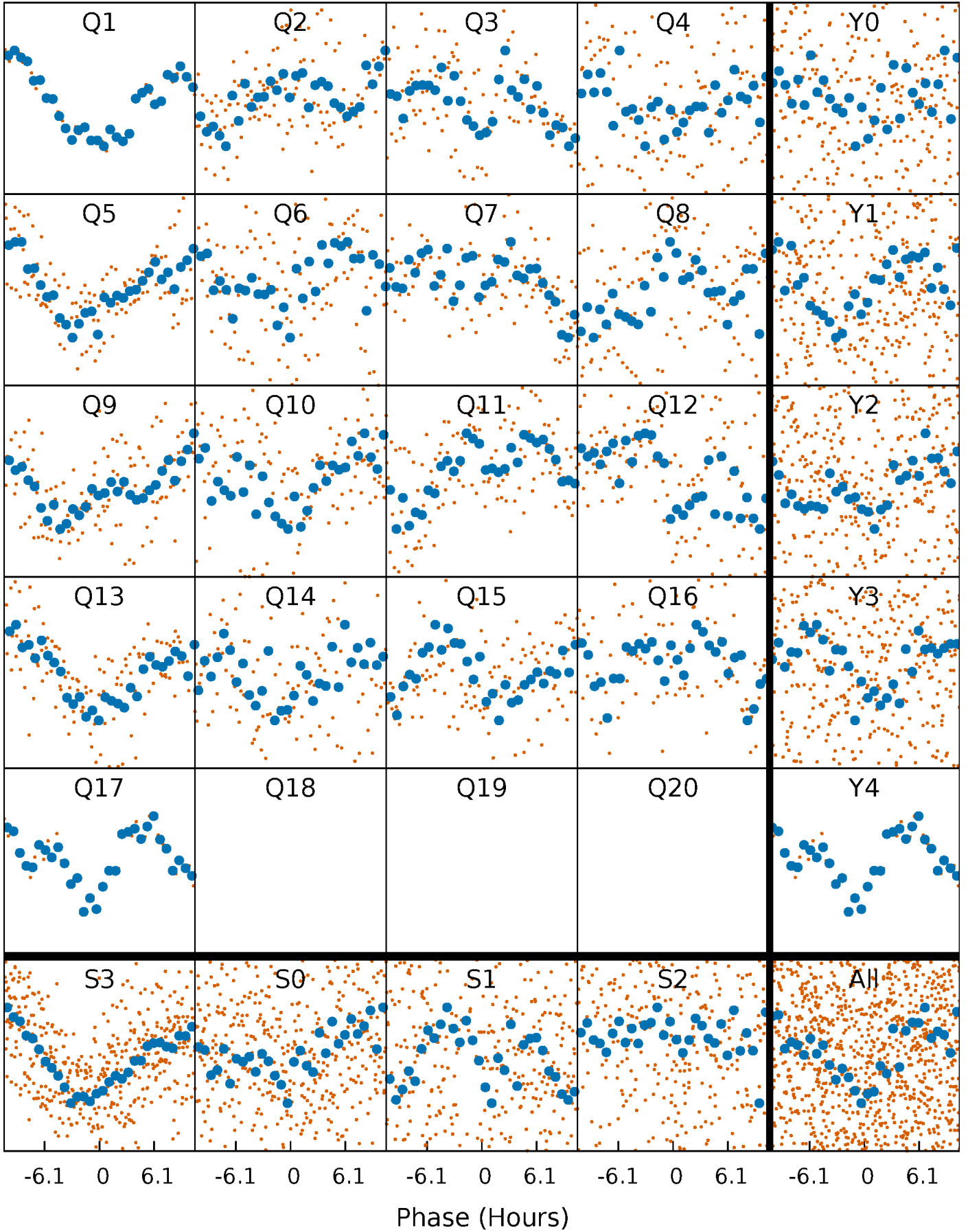


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



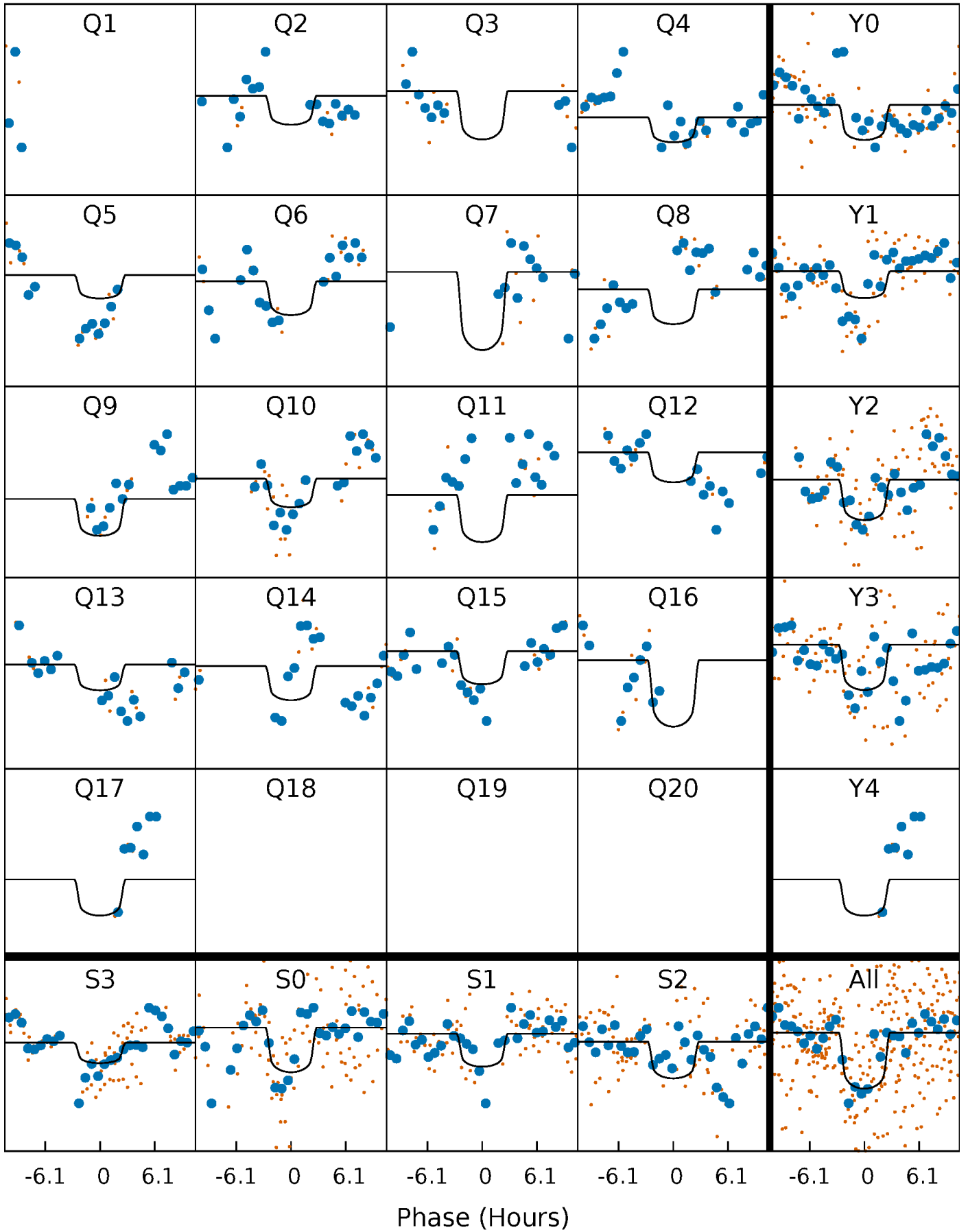
PDC Quarter-Phased Transit Curves

TCE 009426473-05 P= 28.713763 Days $T_0=137.077892$ (BKJD)



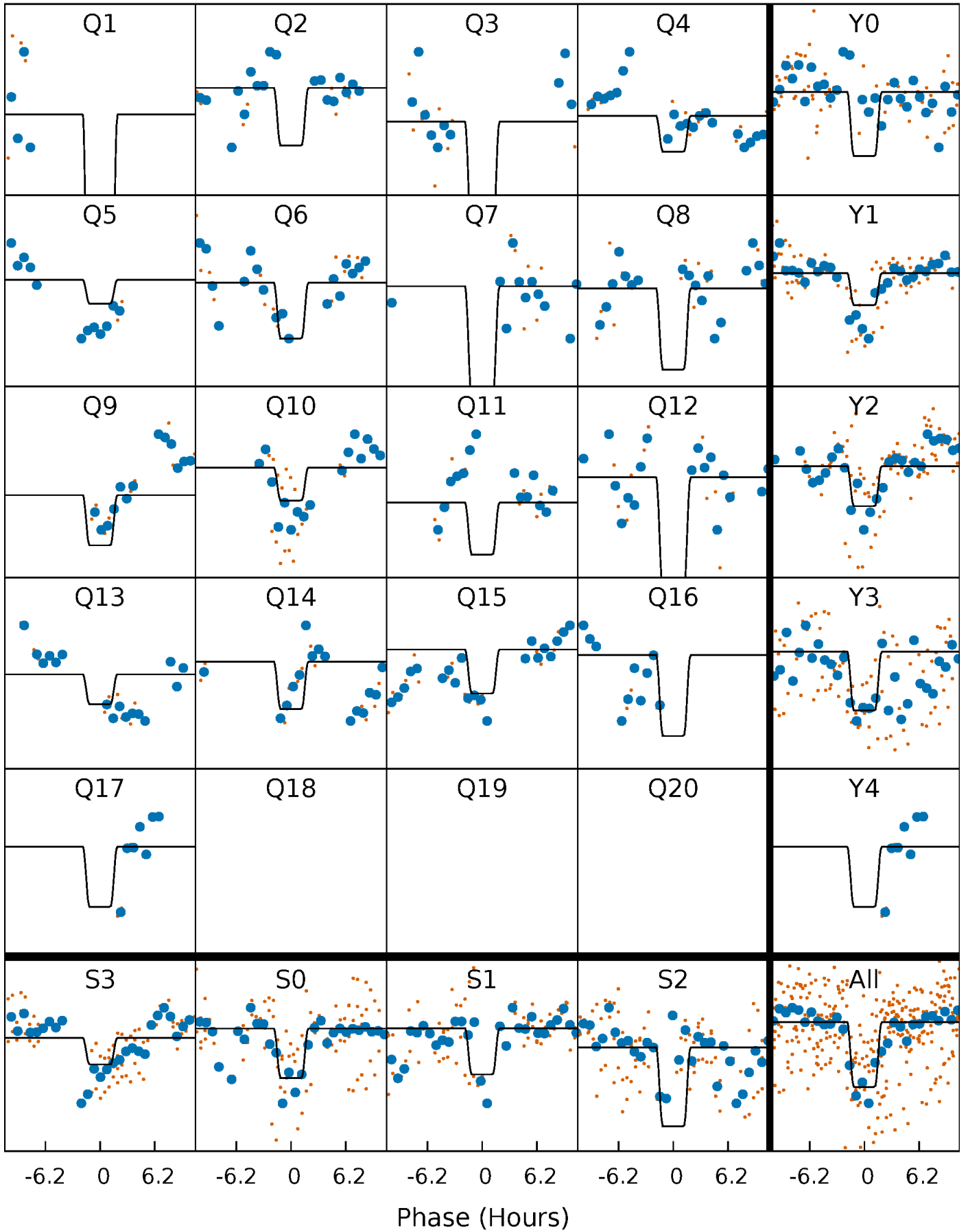
DV Quarter-Phased Transit Curves

TCE 009426473-05 P= 28.713763 Days $T_0=137.077892$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

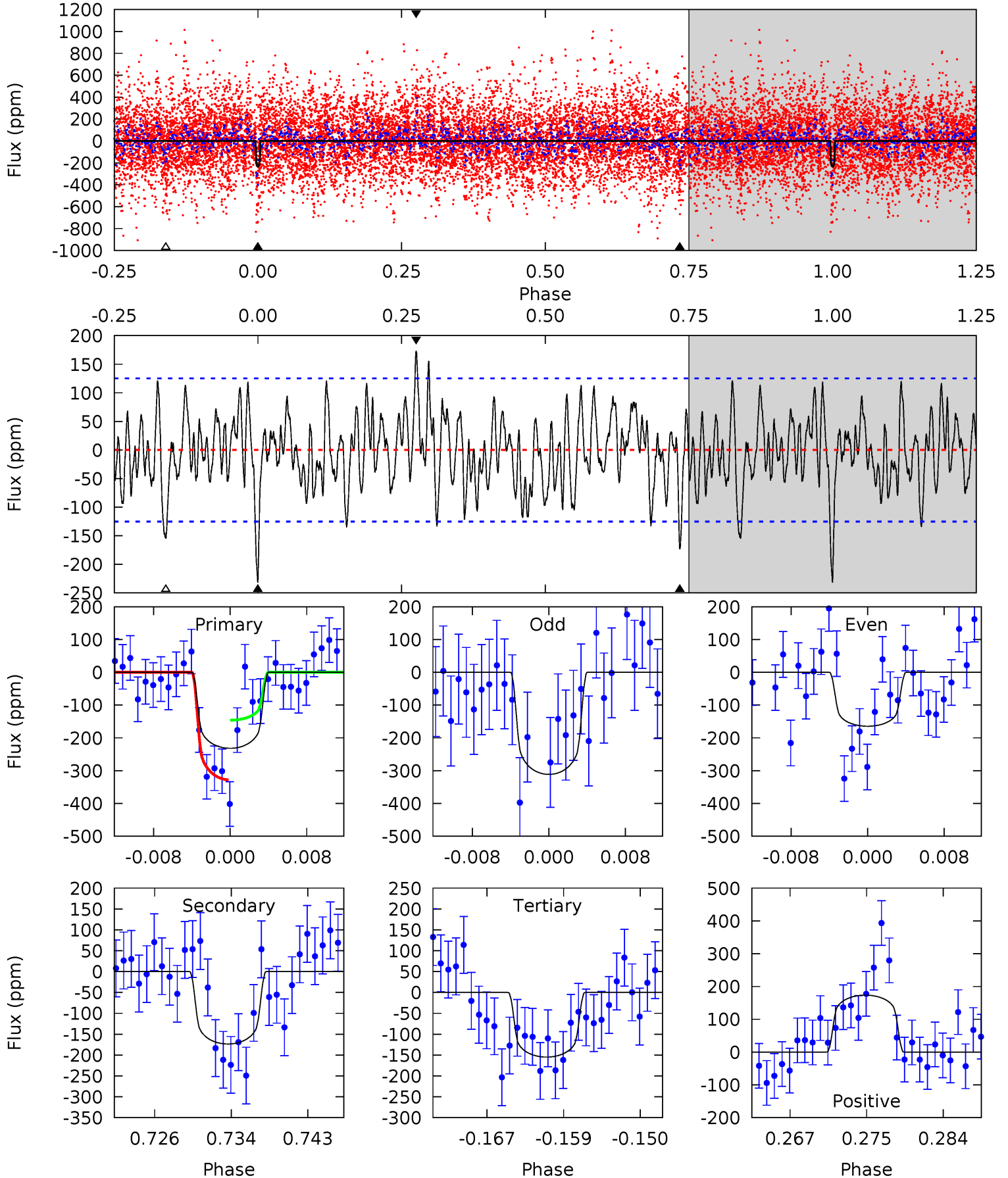
TCE 009426473-05 $P = 28.713950$ Days $T_0 = 137.054289$ (BKJD)



DV Model-Shift Uniqueness Test

009426473-05, P = 28.713763 Days, E = 108.364129 Days

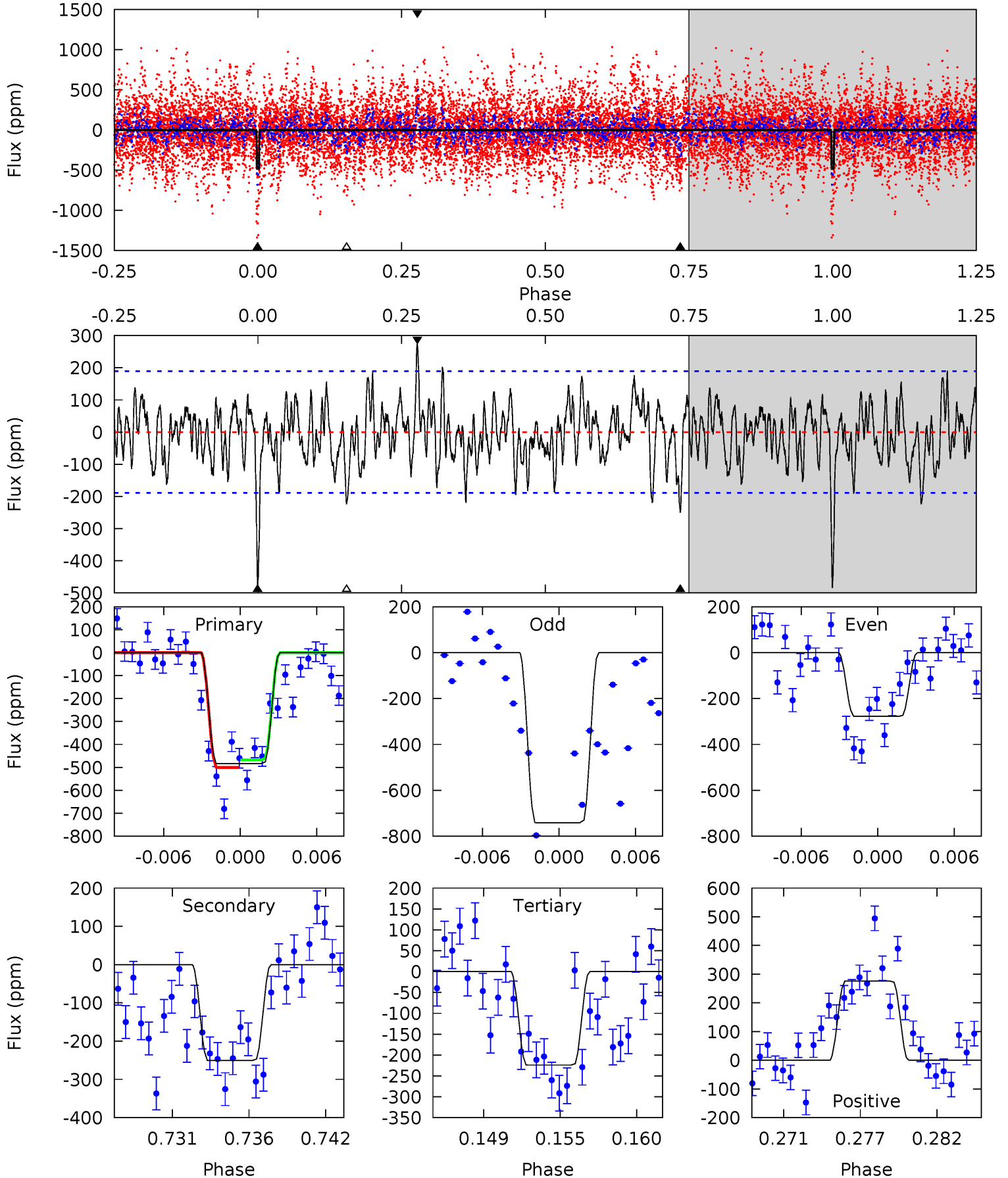
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.37	7.01	6.26	7.01	5.06	2.64	2.22	3.11	2.36	0.75	0.00	2.95	0.98	0.43	3.68



Alt Model-Shift Uniqueness Test

009426473-05, P = 28.713950 Days, E = 108.340339 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	6.81	6.09	7.51	5.14	2.77	2.05	7.05	5.63	0.72	-0.70	6.31	1.09	0.36	0.45



Stellar Parameters For KIC 009426473

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6231^{+189}_{-170}	$3.388^{+0.399}_{-0.094}$	$0.020^{+0.300}_{-0.300}$	$4.659^{+0.661}_{-1.984}$	$1.933^{+0.071}_{-0.403}$	$0.027^{+0.085}_{-0.008}$
	+3%/-3%	+12%/-3%	+1500%/-1500%	+14%/-43%	+4%/-21%	+314%/-30%
Source	PHO1	FLK73	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 009426473-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-174 ± 25	$7.91^{+3.85}_{-3.43}$	1702^{+98}_{-183}	5479^{+1645}_{-830}	76^{+161}_{-43}
Alt.	-251 ± 37	$9.81^{+4.38}_{-3.56}$	1700^{+107}_{-181}	5401^{+1270}_{-706}	72^{+105}_{-36}

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 $A_{obs} \gg 1.0$

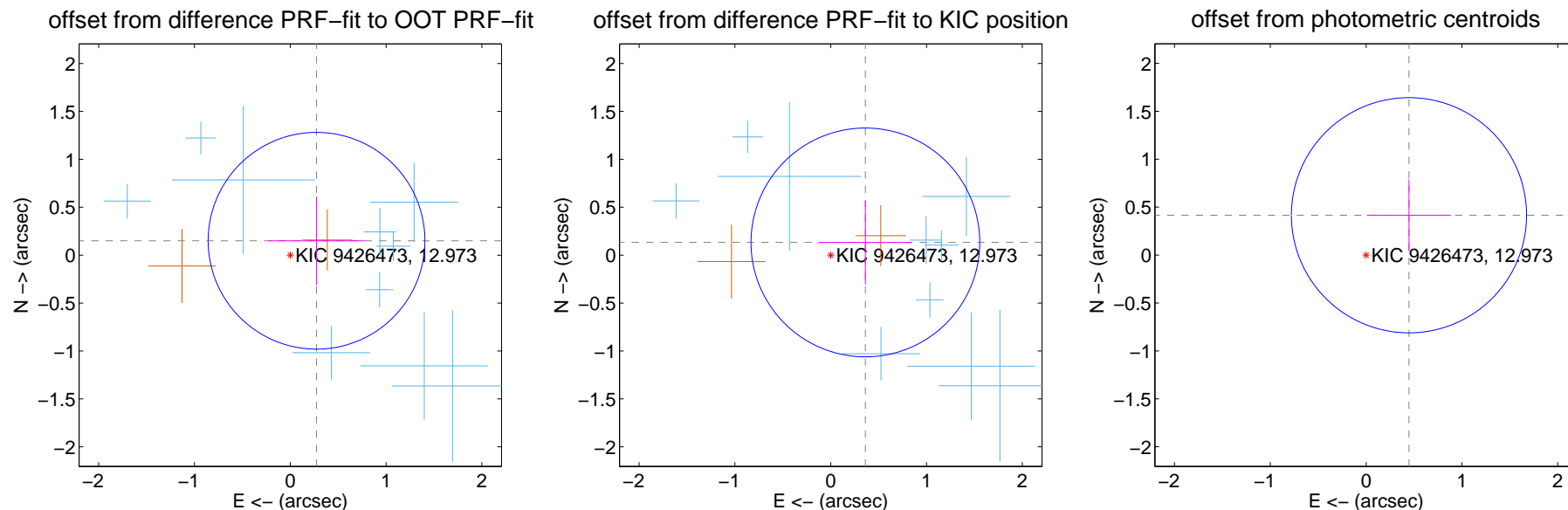
DV Centroid Data

Supplemental centroid analysis for 009426473-05. Kepler magnitude: 12.97. Transit SNR 8.07

There are 10 quarters with good PRF difference image offsets

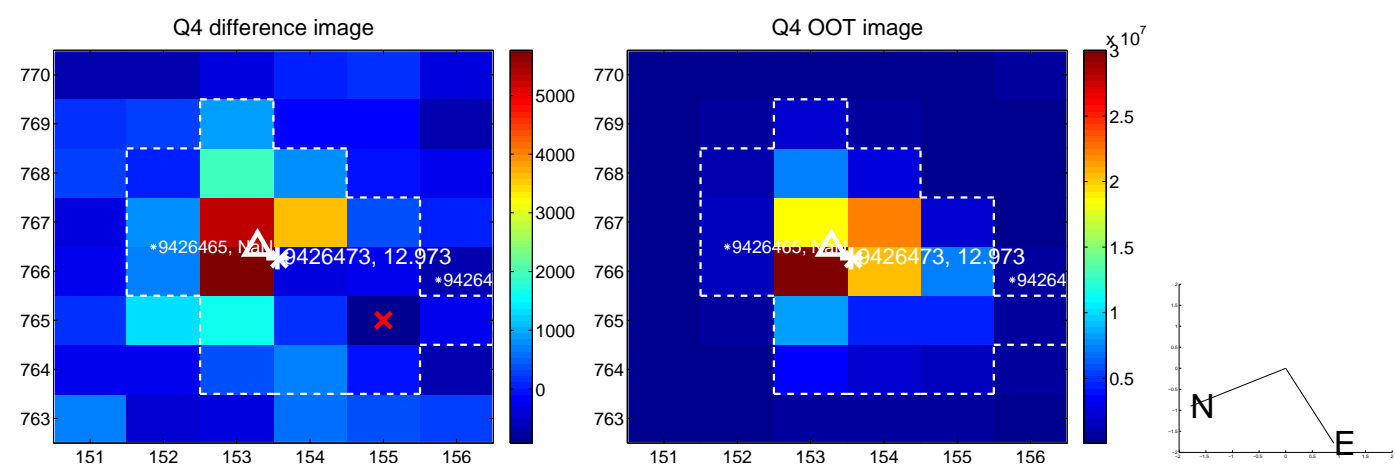
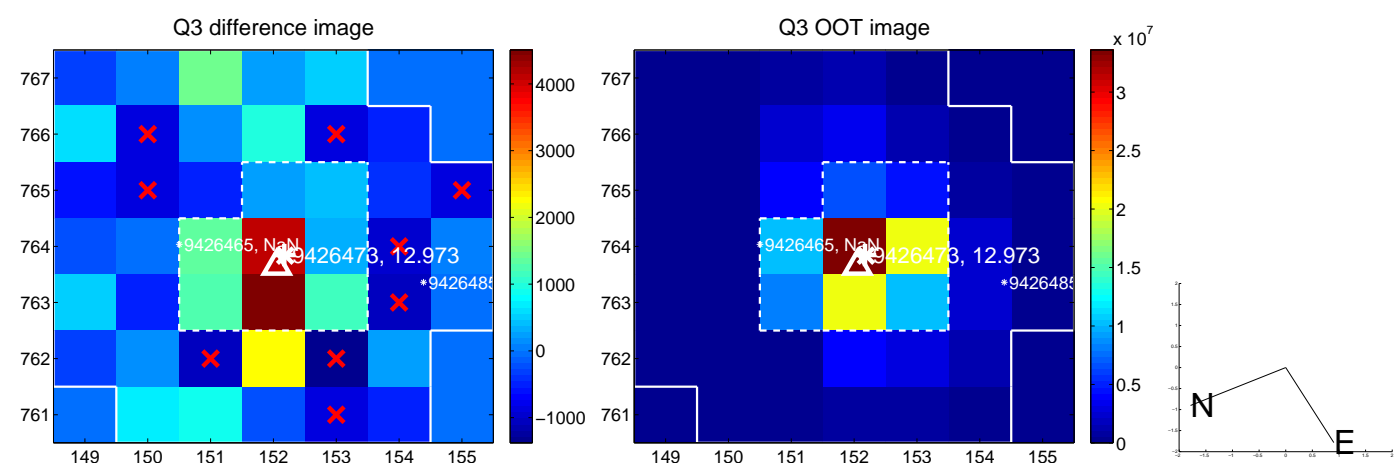
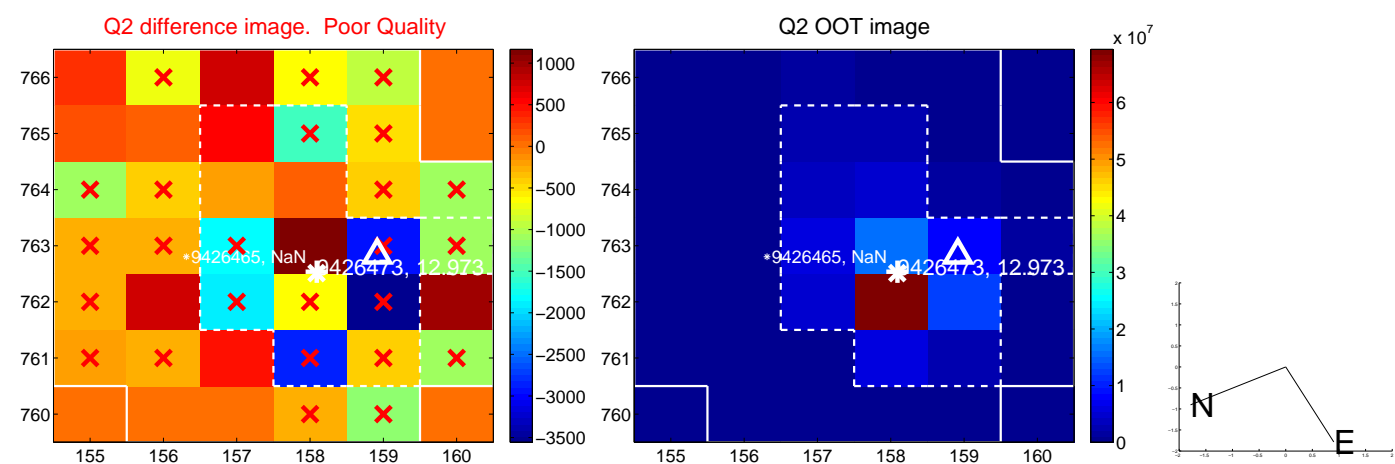
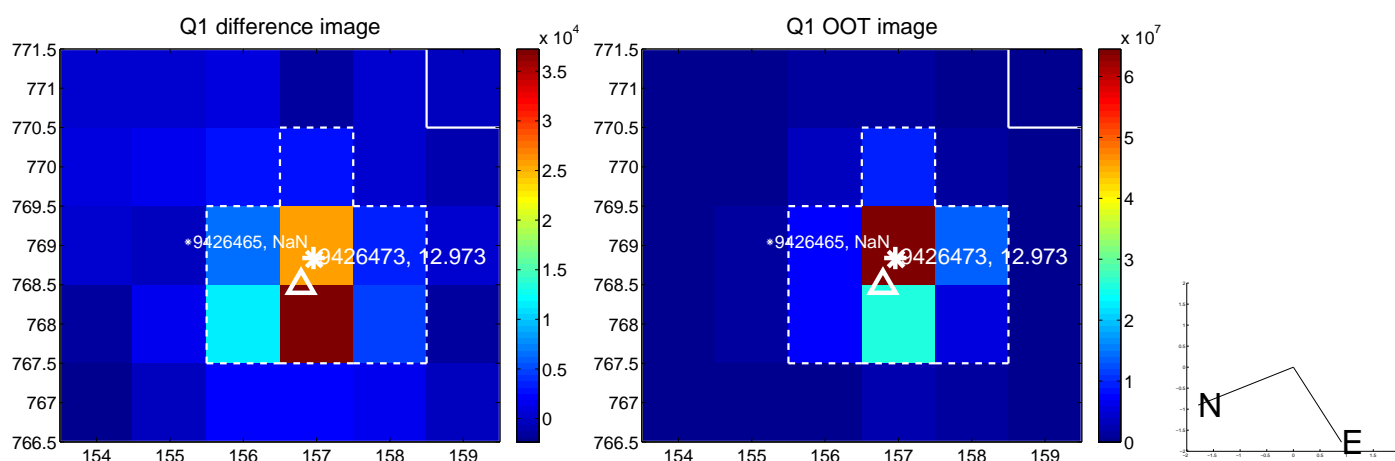
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.313 ± 0.377	0.83	-0.274 ± 0.503	0.150 ± 0.461
PRF-fit source offset from KIC position	0.385 ± 0.398	0.97	-0.362 ± 0.489	0.133 ± 0.437
photometric centroid source offset	0.61 ± 0.41	1.49	-0.45 ± 0.44	0.42 ± 0.38

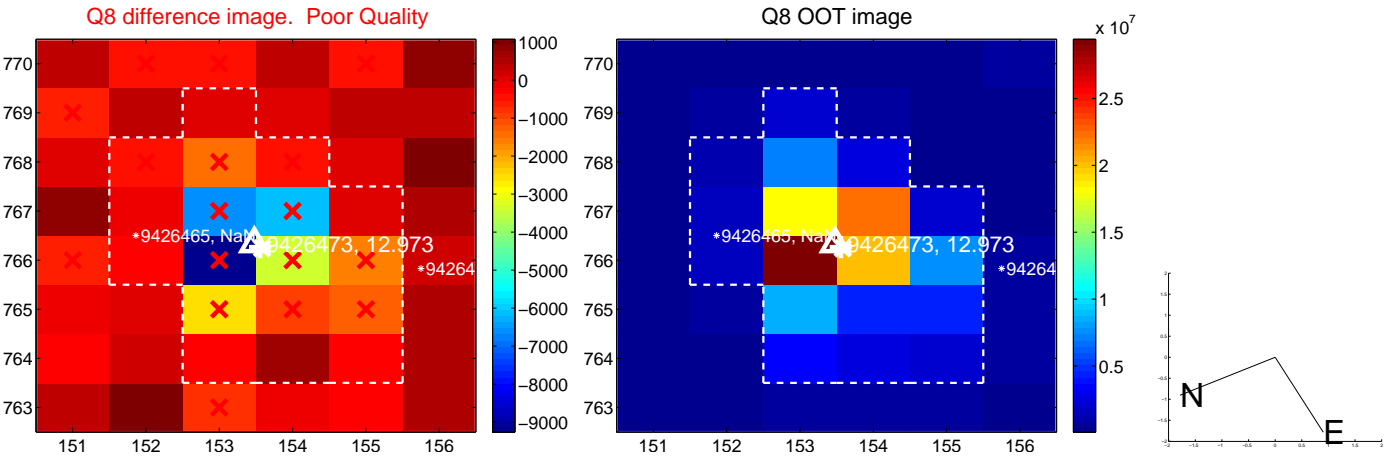
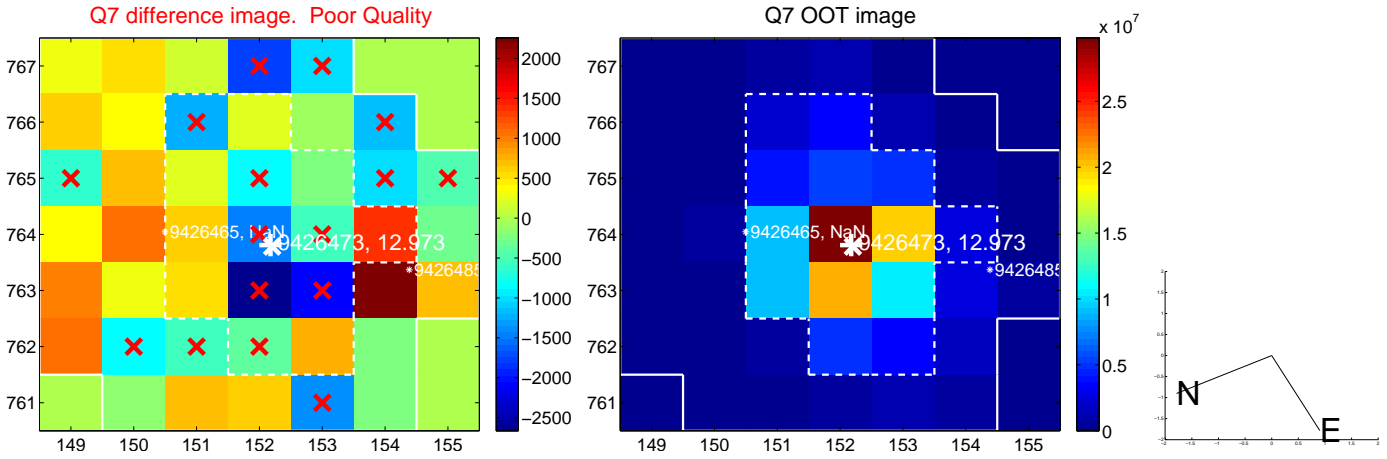
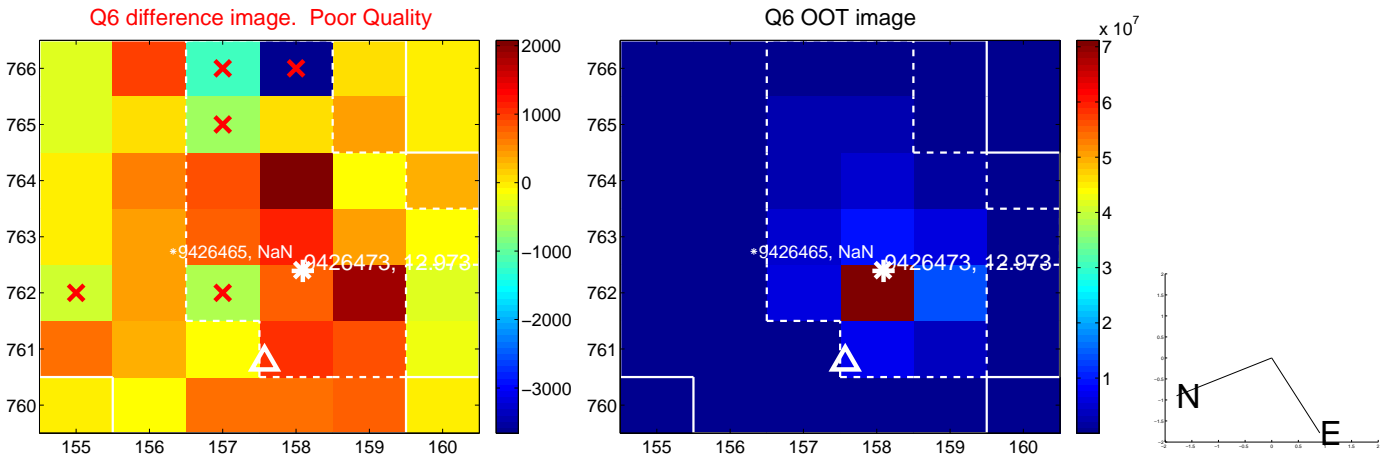
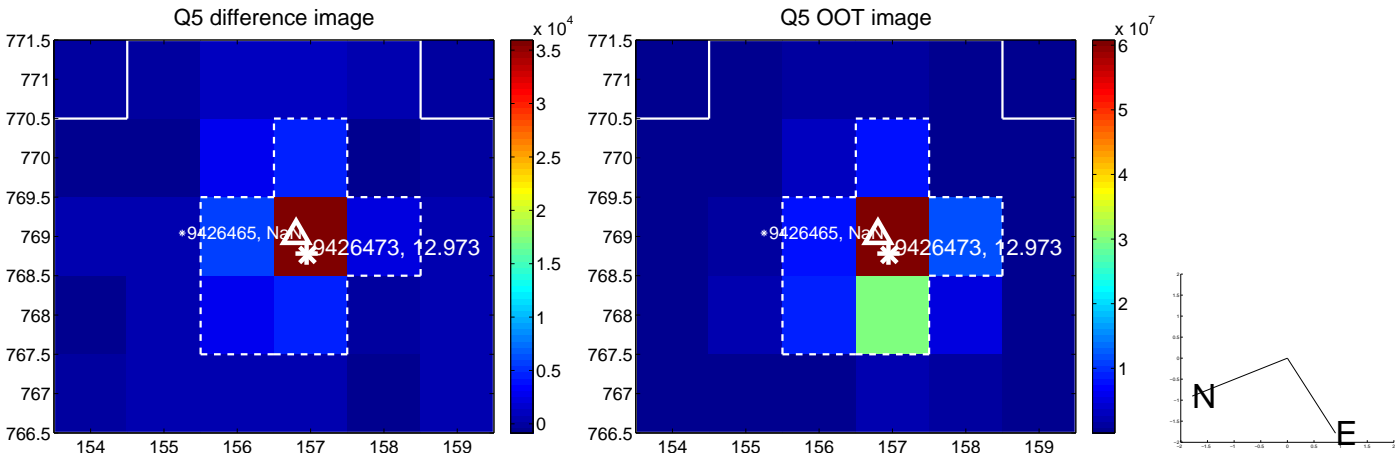


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

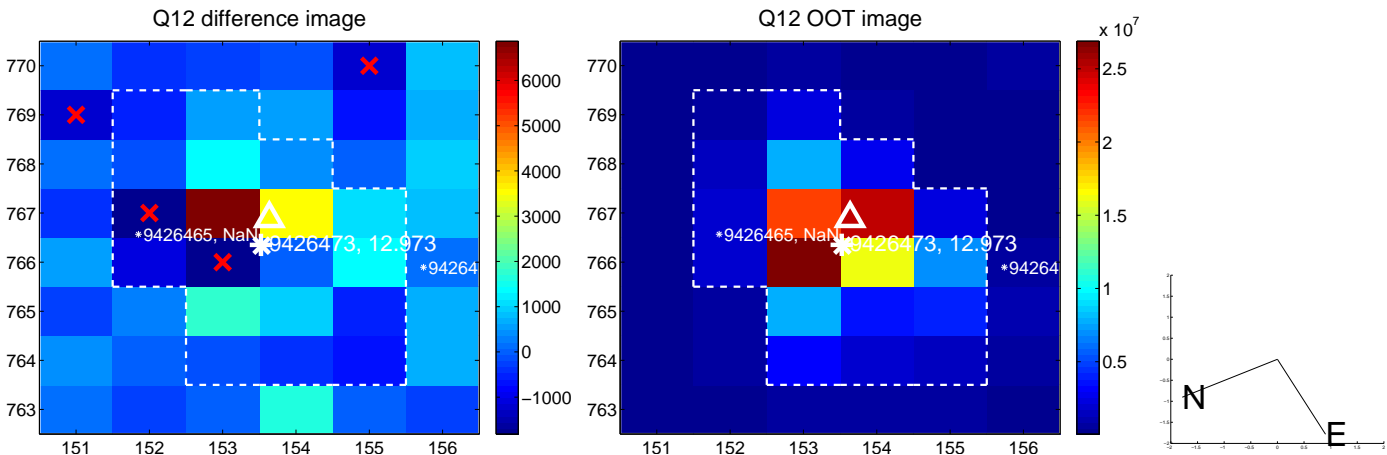
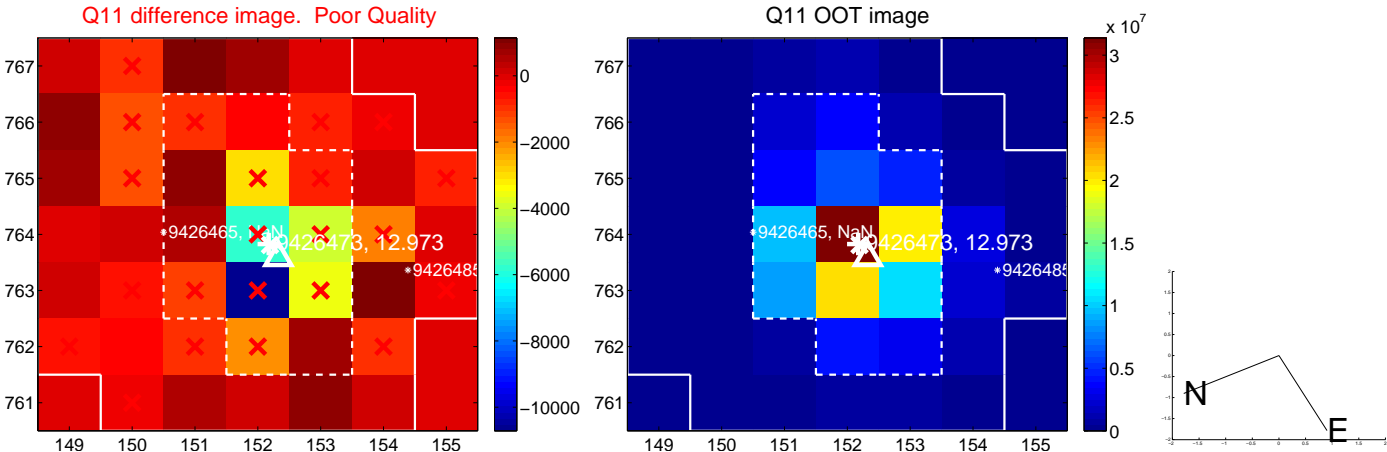
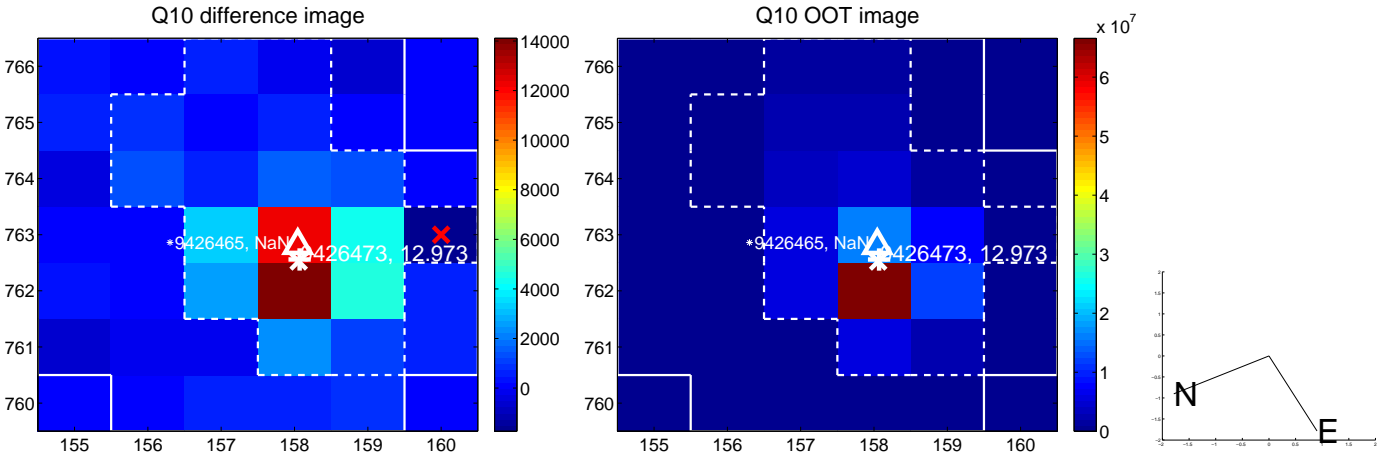
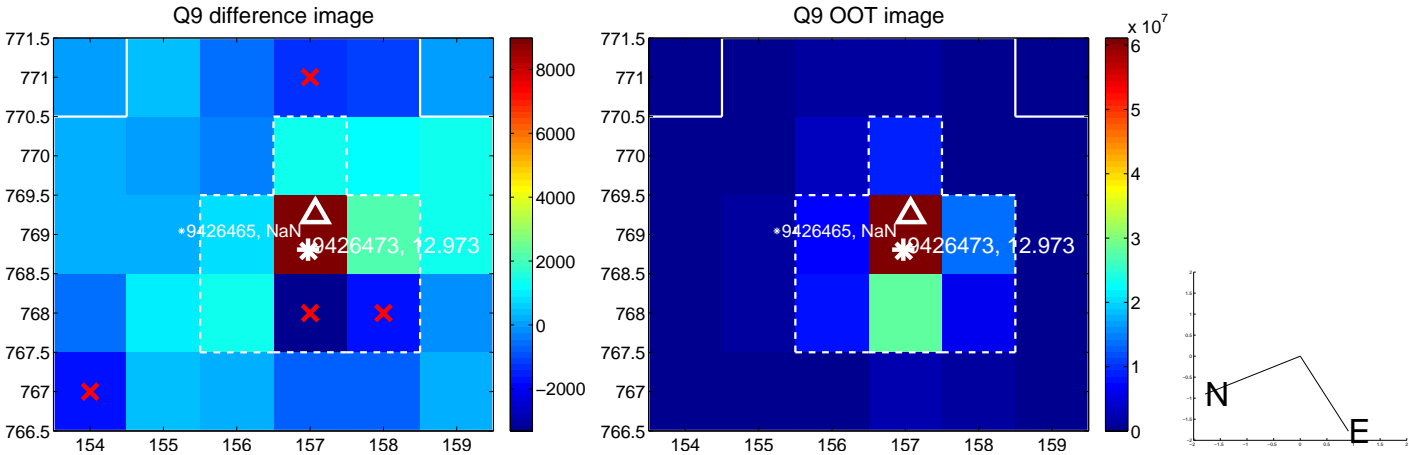
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



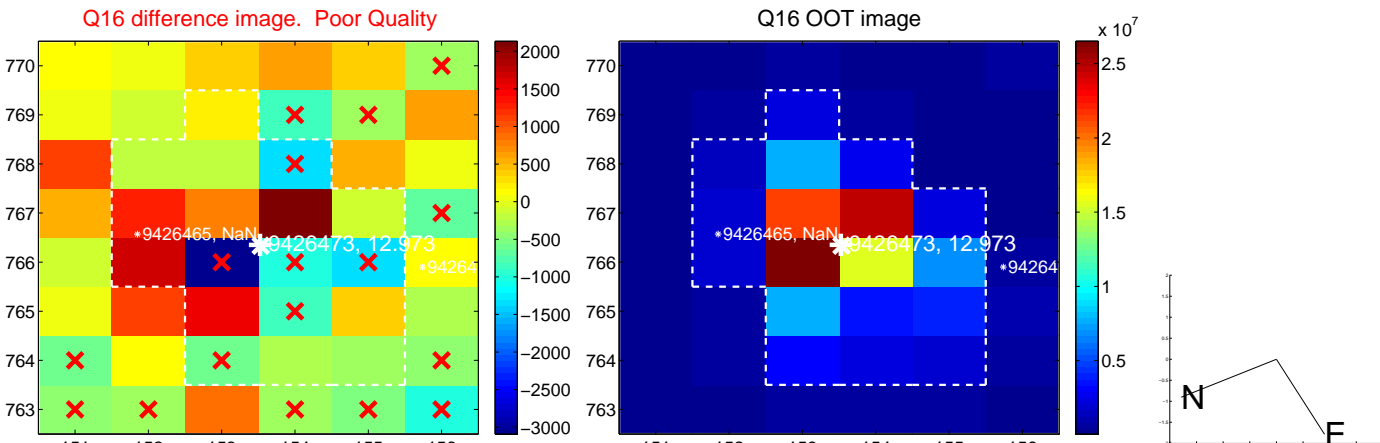
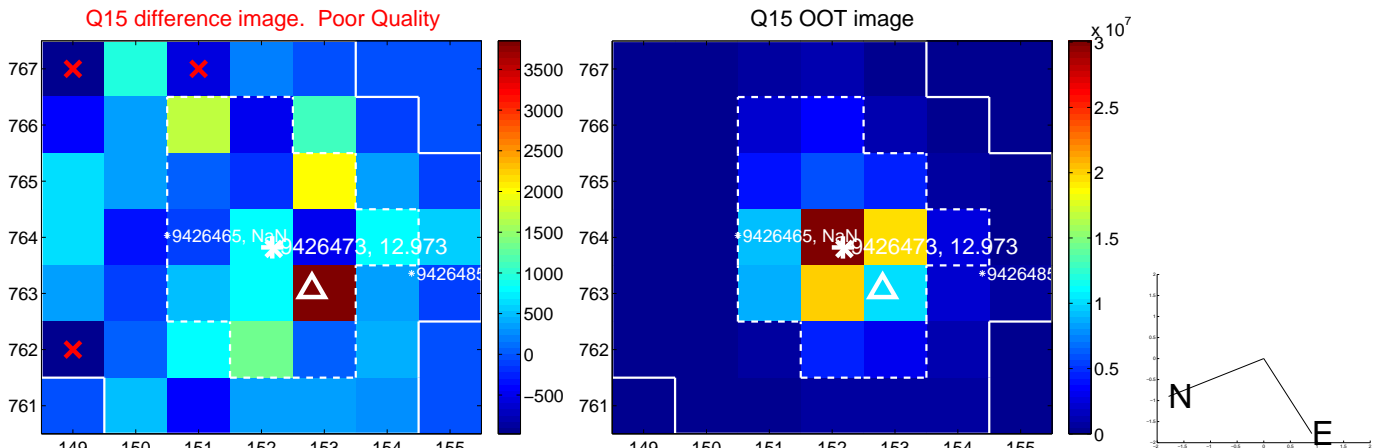
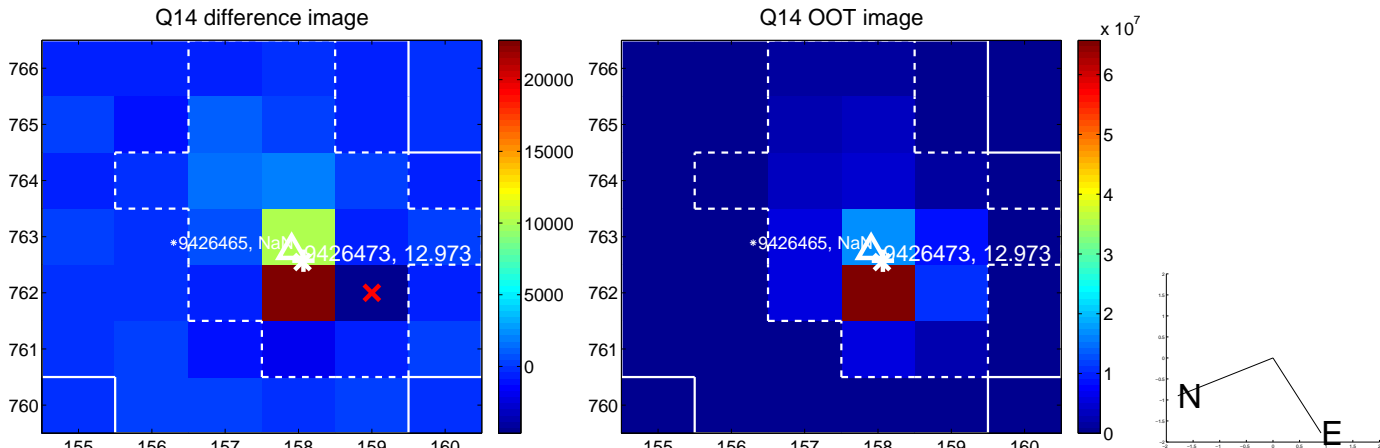
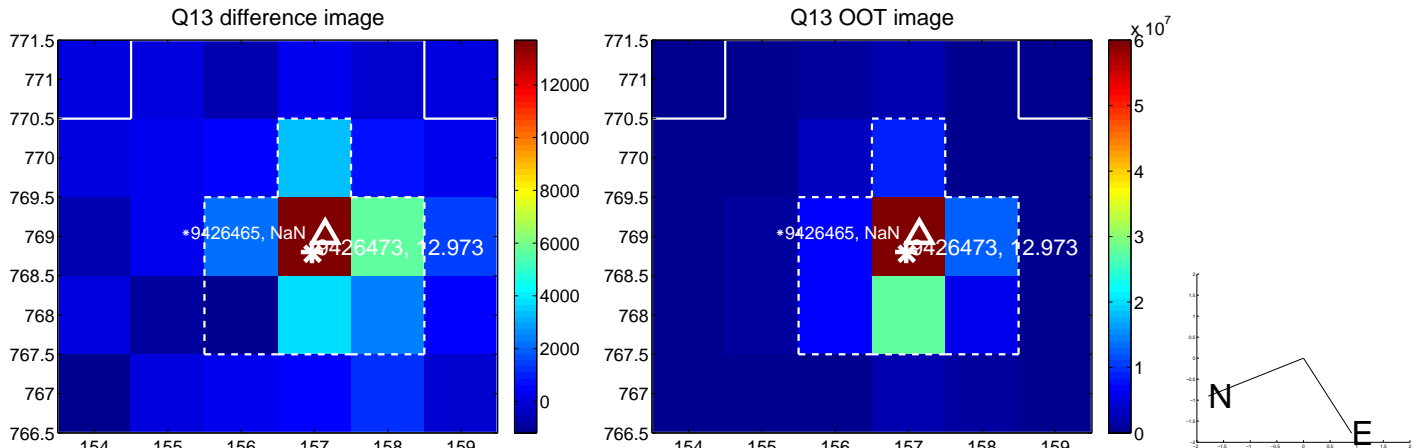
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



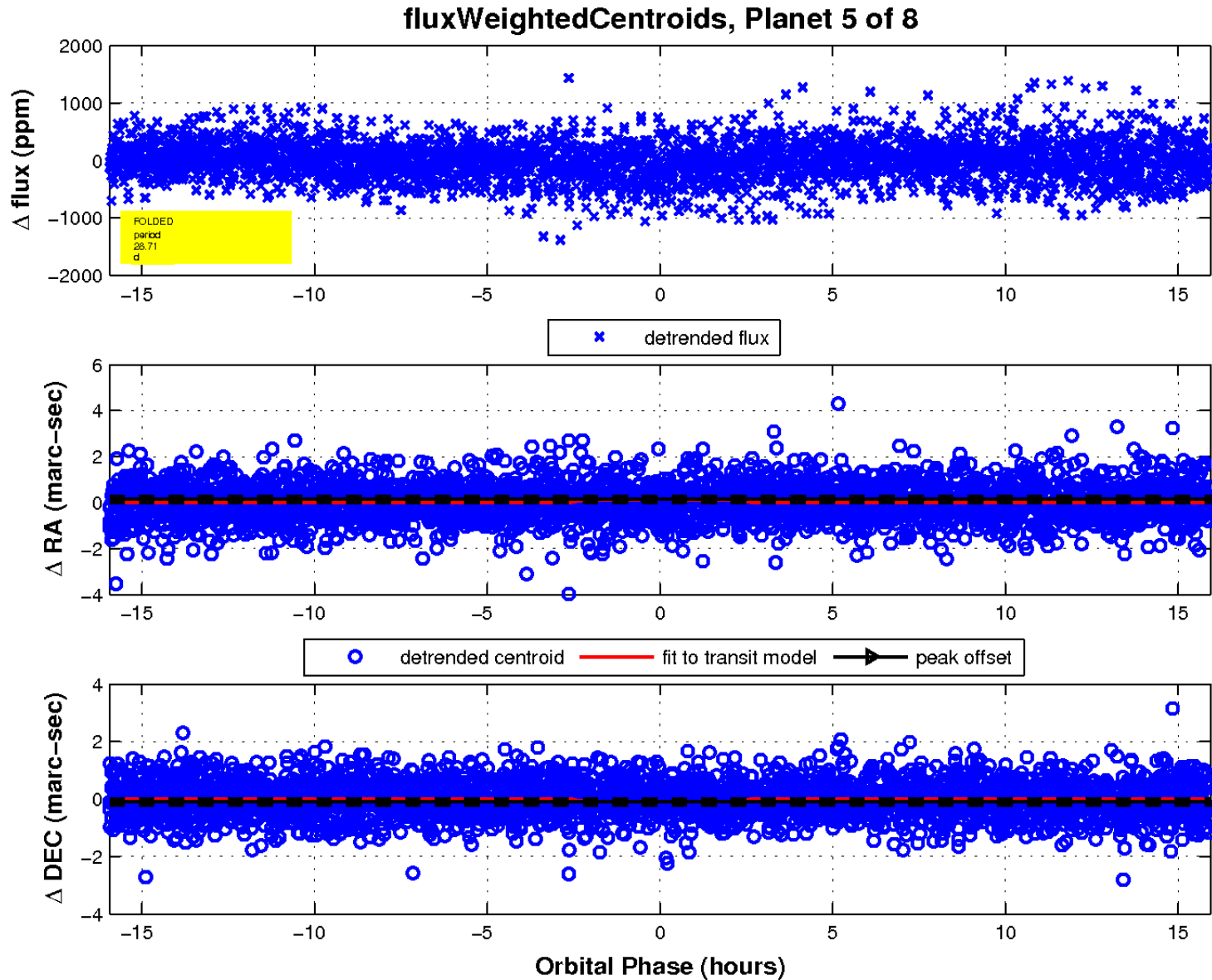
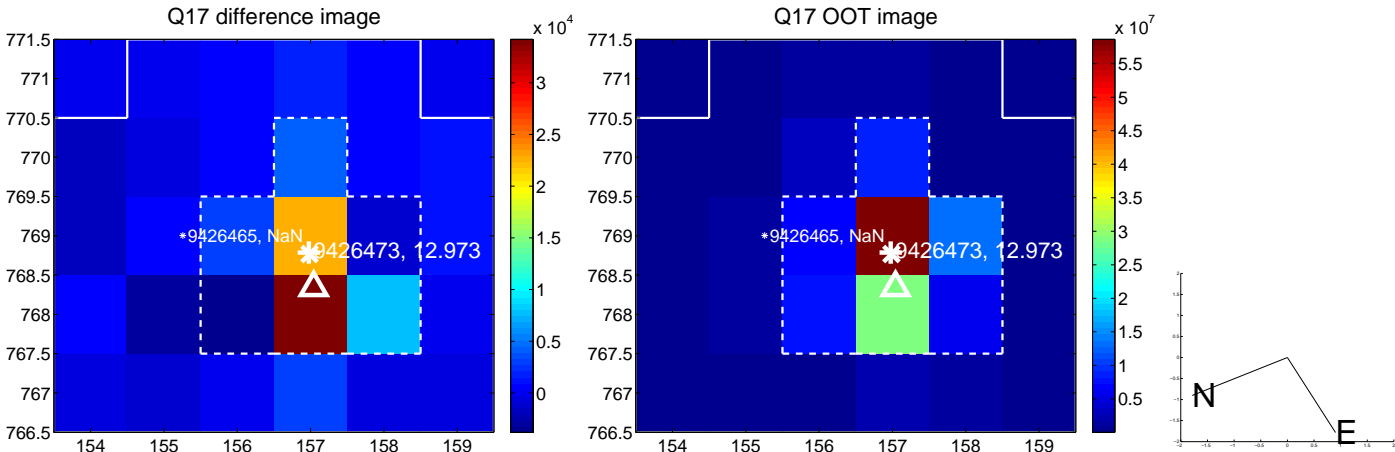
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

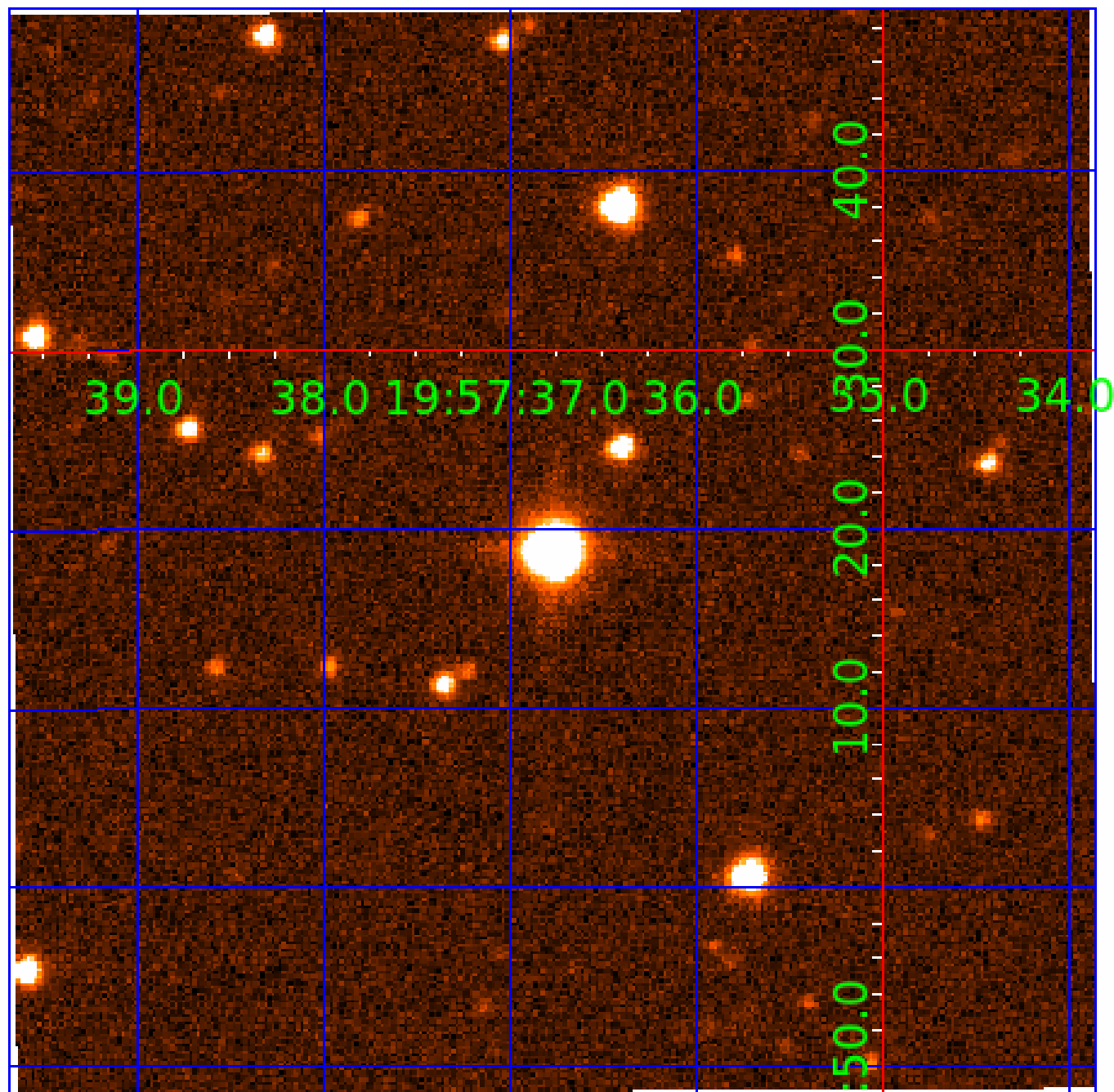


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009426473

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})
009426473-01	OBS	No	1.037045	131.951475	20.4	6.439	8.6	5.2	4.66	6231	2.16	46945.10
009426473-02	OBS	No	63.284304	140.796145	576.3	8.541	8.5	9.4	4.66	6231	19.34	195.40
009426473-03	OBS	No	27.312220	154.327238	182.6	6.860	8.5	5.5	4.66	6231	7.27	599.12
009426473-04	OBS	No	145.259499	157.361685	653.7	17.098	9.3	8.7	4.66	6231	14.83	64.53
009426473-05	OBS	No	28.713763	137.077892	277.3	5.315	8.9	8.1	4.66	6231	8.81	560.45
009426473-06	OBS	No	111.271387	217.136369	653.0	7.702	8.9	8.5	4.66	6231	22.86	92.08
009426473-07	OBS	No	303.882214	282.705089	412.5	3.921	8.9	7.4	4.66	6231	10.58	24.12
009426473-08	OBS	No	109.296456	228.284936	520.0	5.463	8.9	8.5	4.66	6231	13.54	94.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009426473-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009426473-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—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.

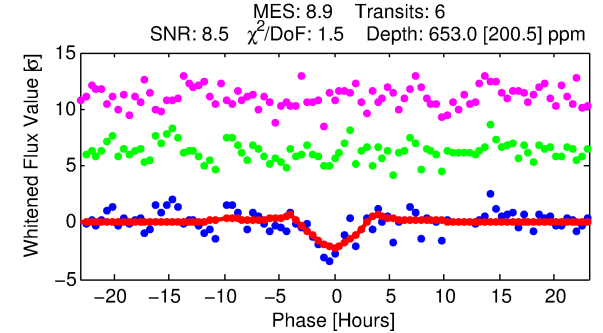
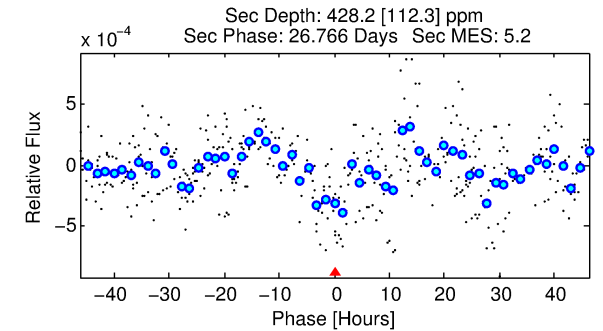
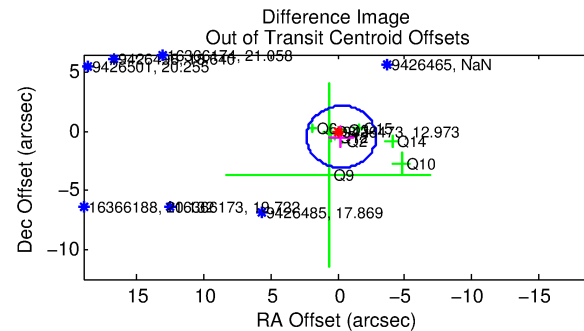
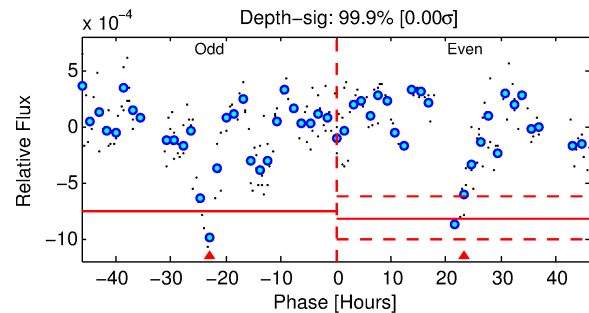
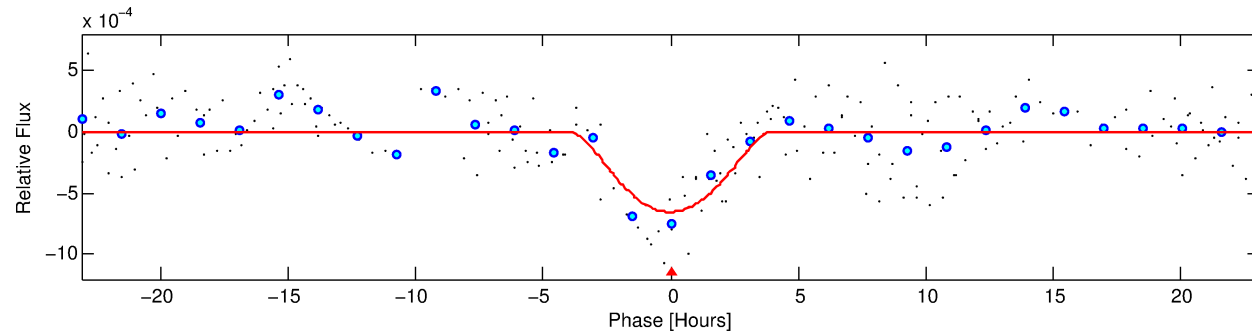
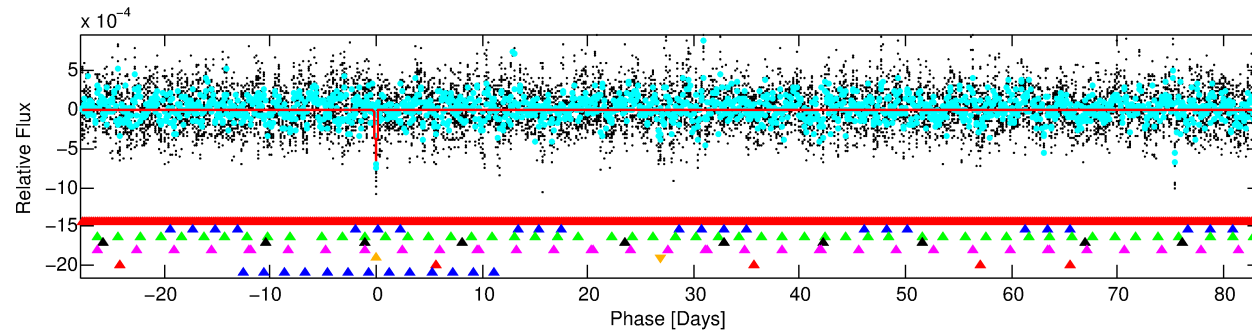
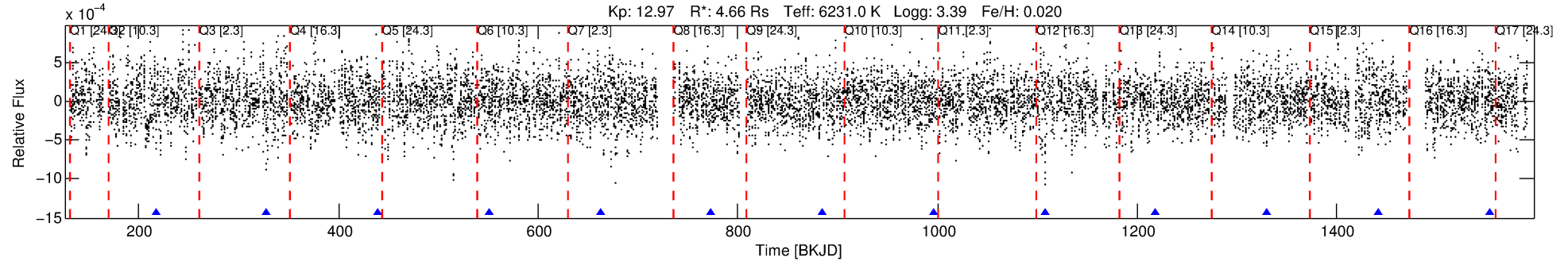
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009426473-06

No Significant Match Found

DV One-Page Summary

KIC: 9426473 Candidate: 6 of 8 Period: 111.271 d



DV Fit Results:

Period = 111.27139 [0.00275] d
 Epoch = 217.1364 [0.0225] BKJD
 Rp/R* = 0.0450 [0.1387]
 a/R* = 33.63 [25.97]
 b = 1.00 [0.21]
 Seff = 92.08 [63.15]
 Teq = 790 [135] K
 Rp = 22.86 [71.19] Re
 a = 0.5643 [0.2356] AU
 Ag = 143.56 [892.02] [0.16σ]
 Tefp = 4227 [6529] K [0.53σ]

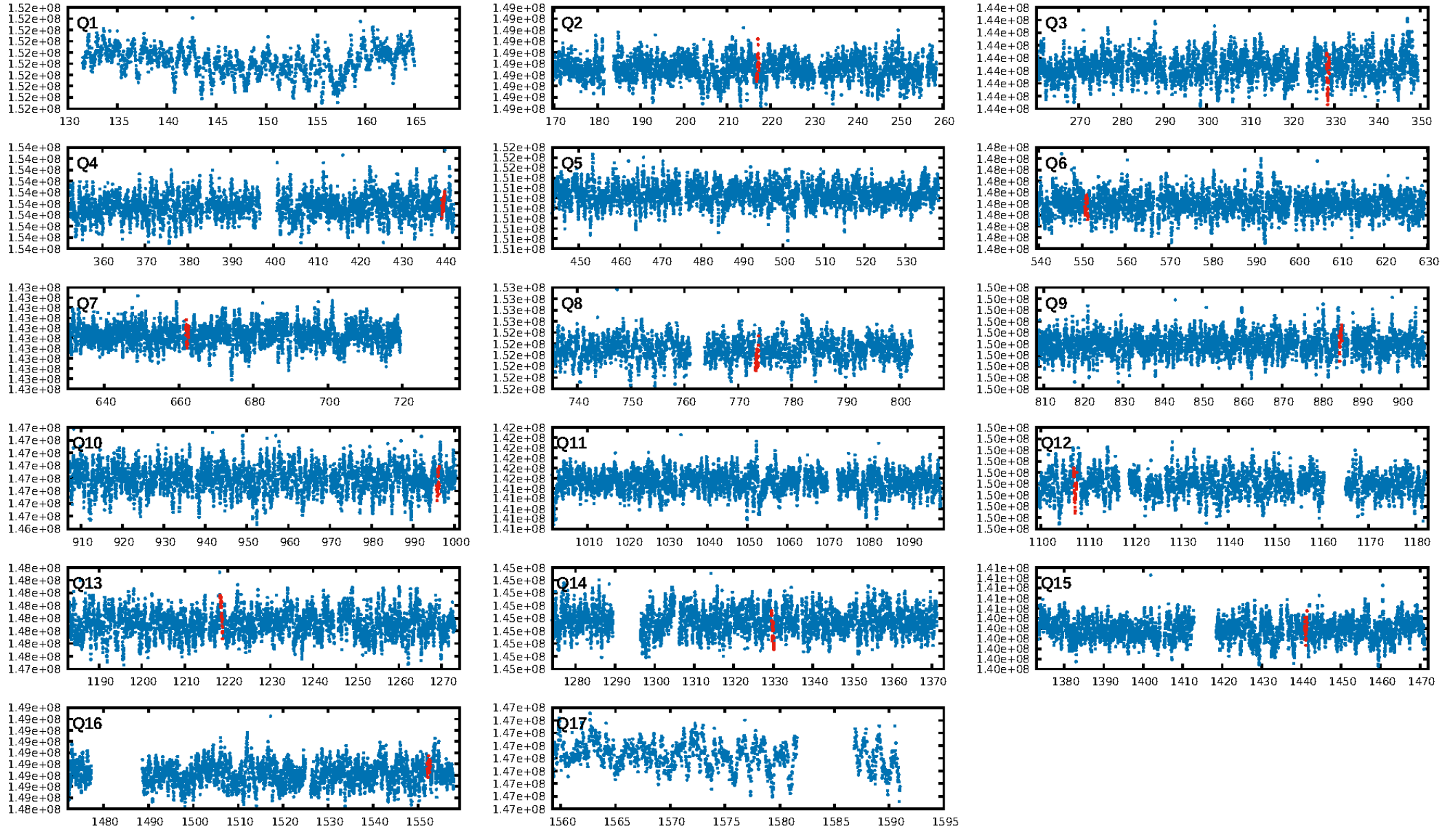
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.02σ]
 LongPeriod-sig: 100.0% [43.50σ]
 ModelChiSquare2-sig: 60.6%
 ModelChiSquareGof-sig: 100.0%
 Bootstrap-pfa: 1.33e-09
 RollingBand-fgt: 1.00 [6/6]
 GhostDiagnostic-chr: -1.816
 Centroid-sig: 7.5%
 Centroid-so: 0.461 arcsec [1.30σ]
 OutOffset-rm: 0.545 arcsec [0.62σ]
 KicOffset-rm: 0.573 arcsec [0.66σ]
 OutOffset-st: 4/2/2/1 [9]
 KicOffset-st: 4/2/2/1 [9]
 DiffImageQuality-fgm: 0.44 [4/9]
 DiffImageOverlap-fno: 0.00 [0/11]

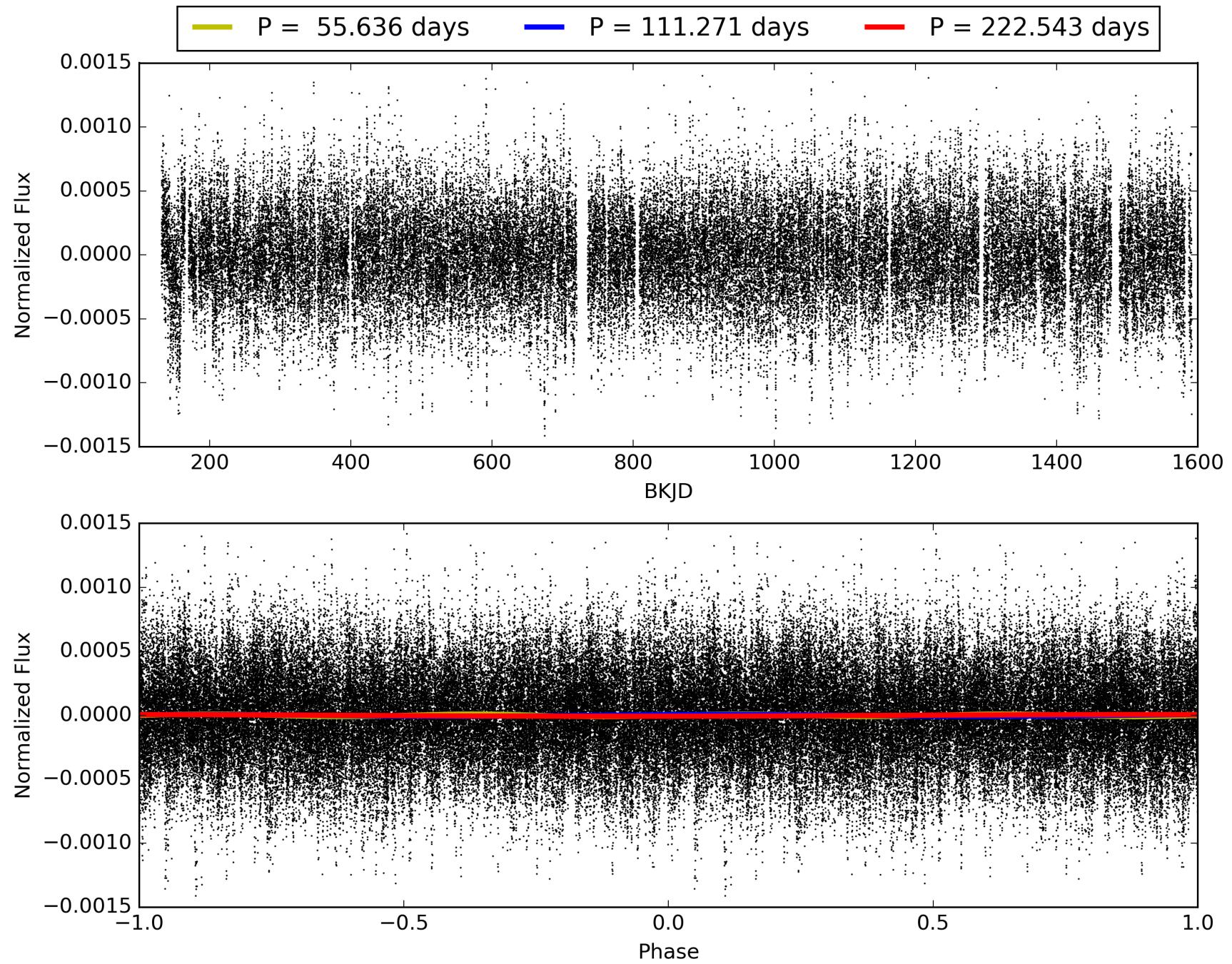
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:29:47 Z

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

TCE 009426473-06, PDC Light Curves

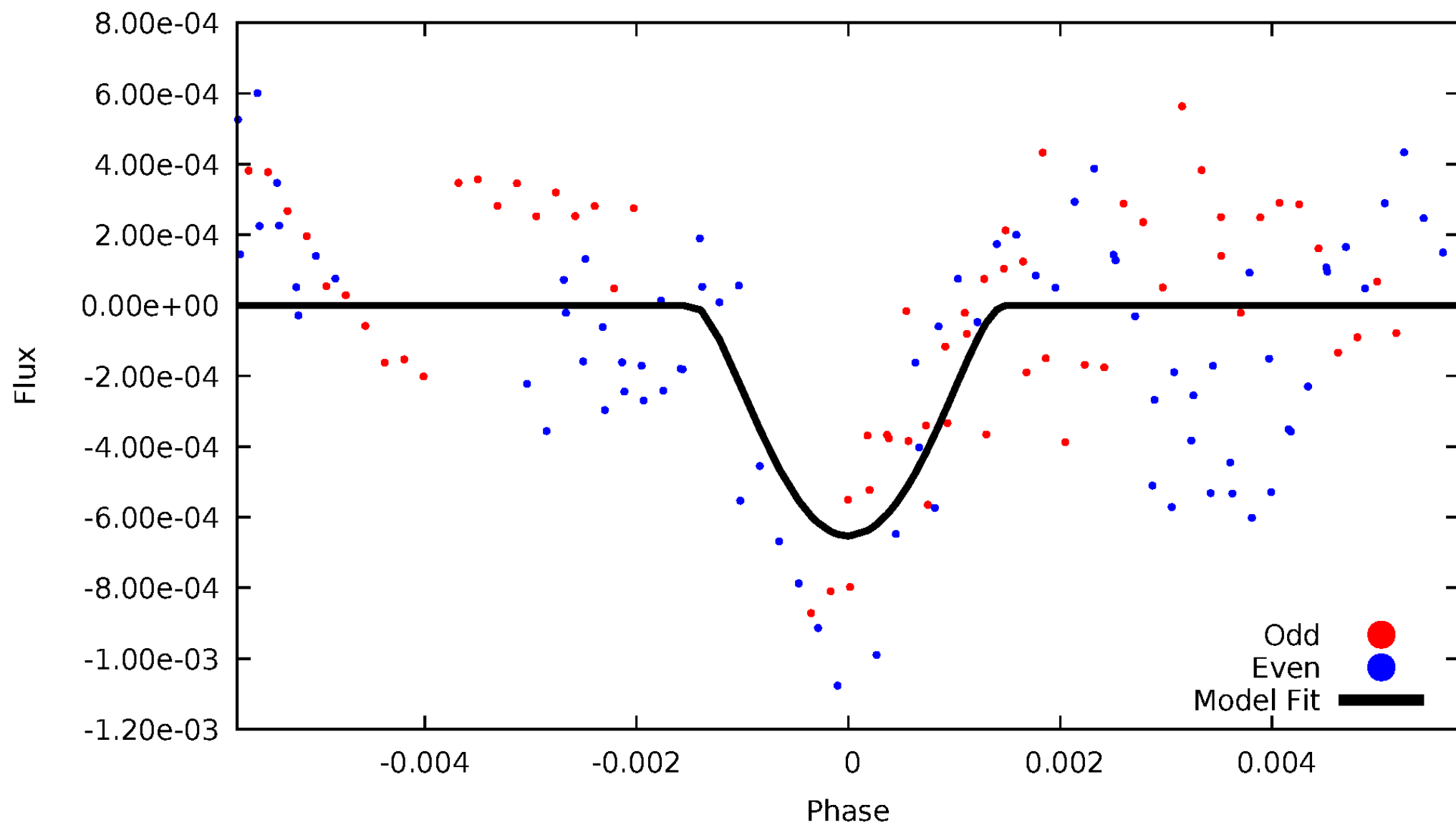


TCE 009426473-06



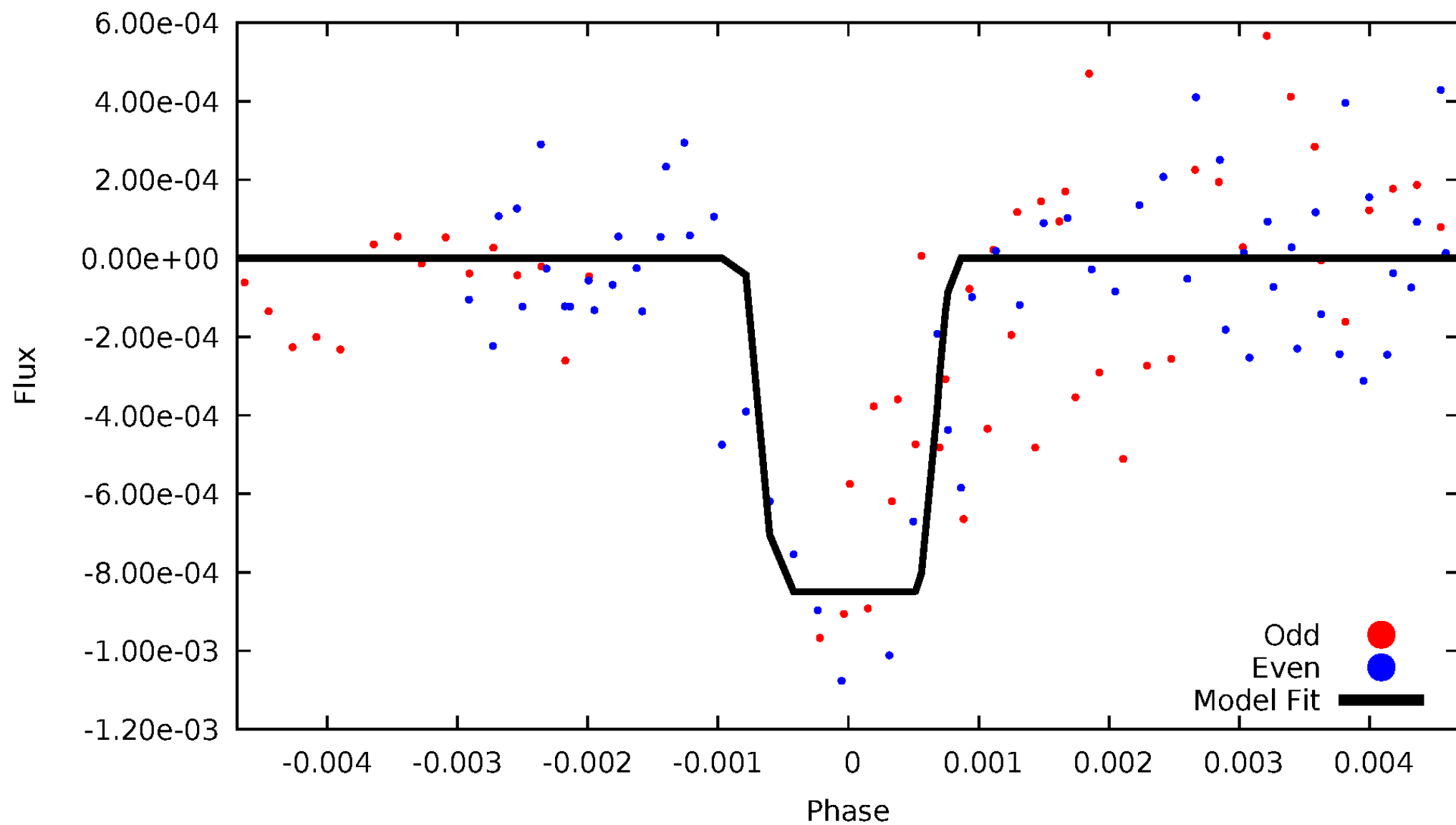
DV Odd/Even

TCE 009426473-06



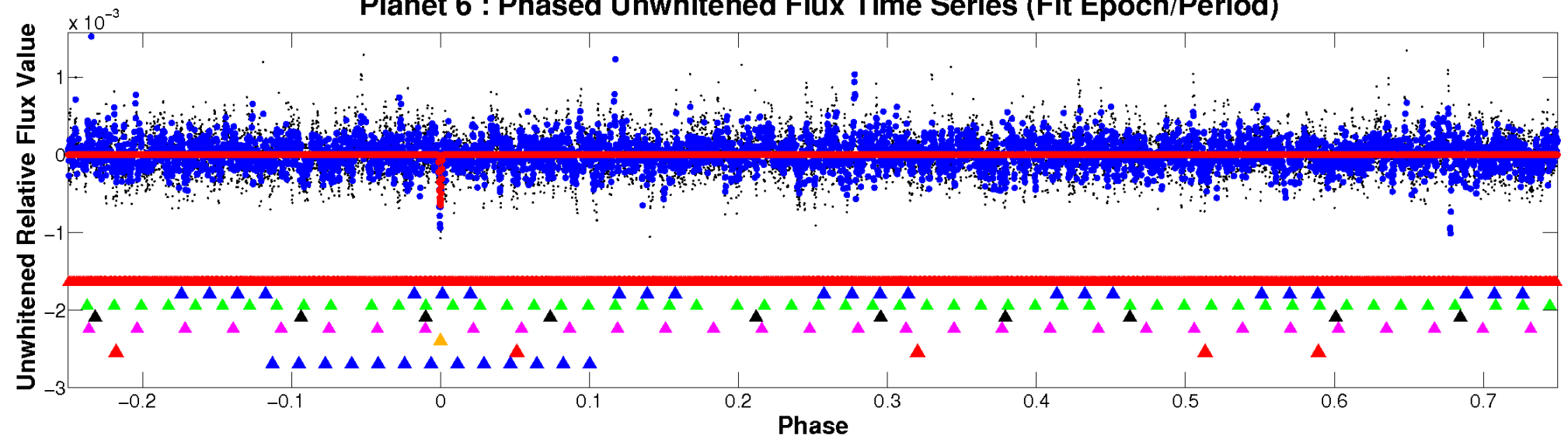
ALT Odd/Even

TCE 009426473-06

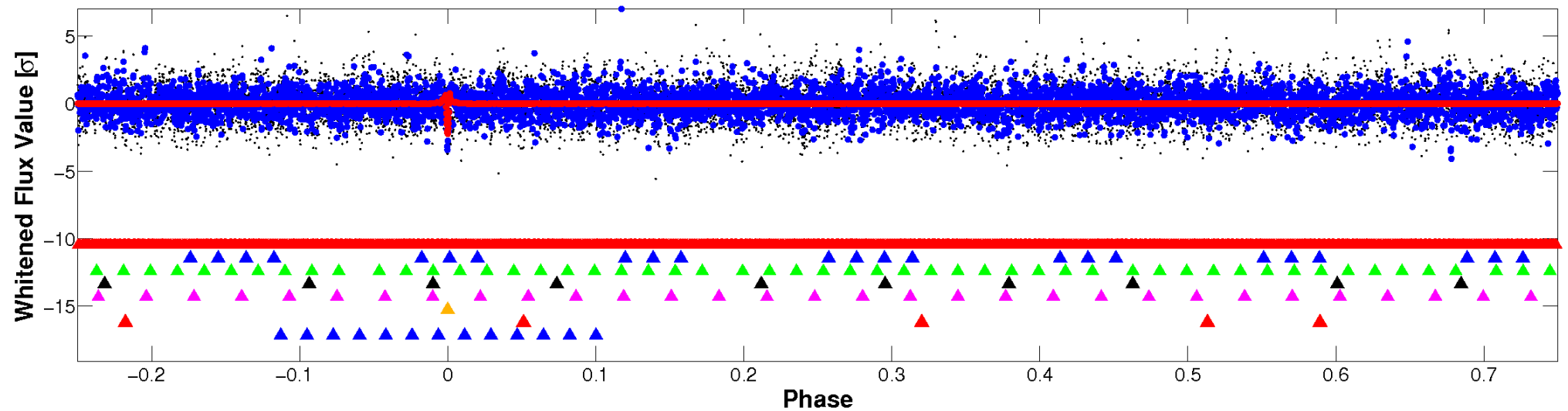


Non-Whitened Vs. Whitened Light Curve

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

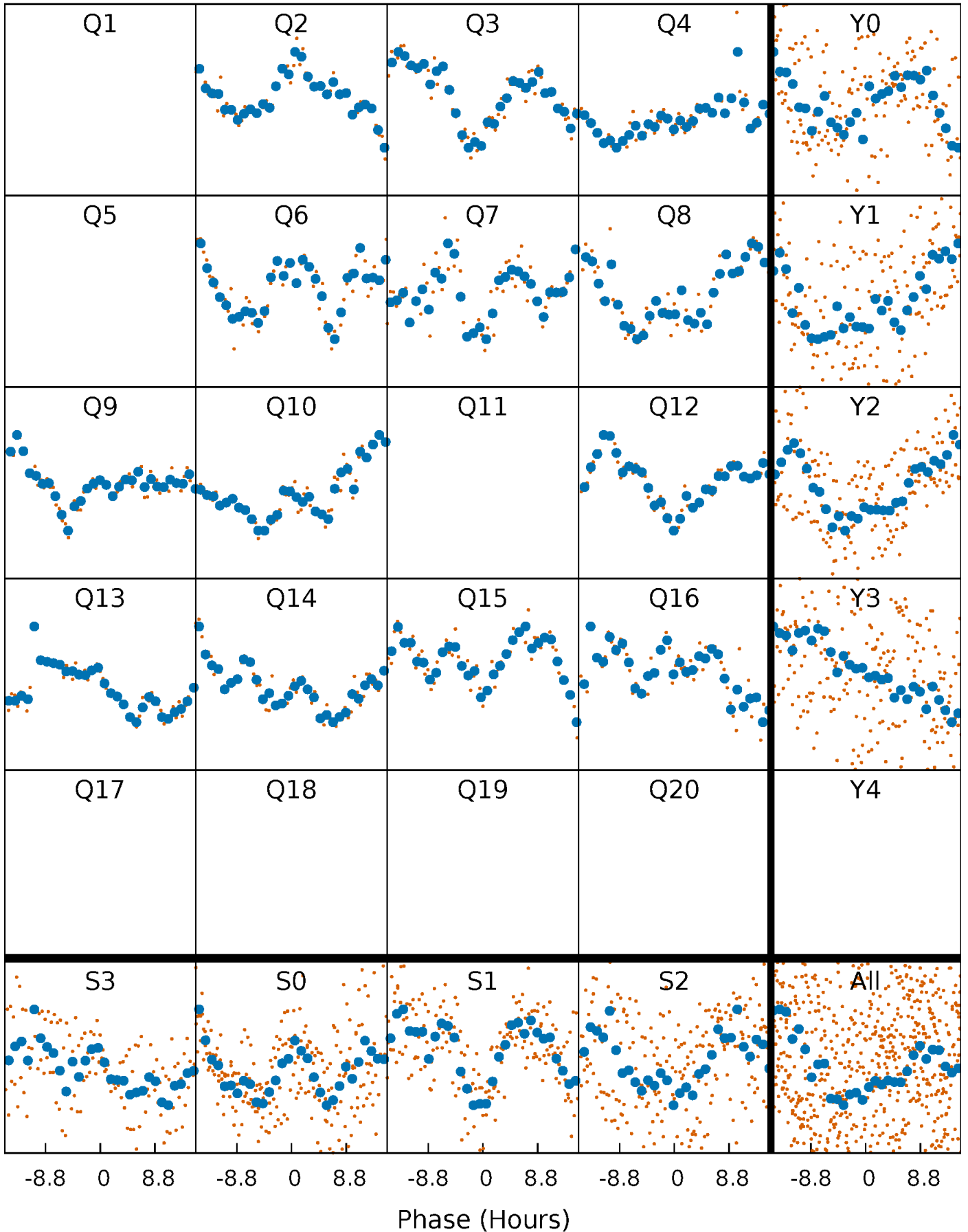


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



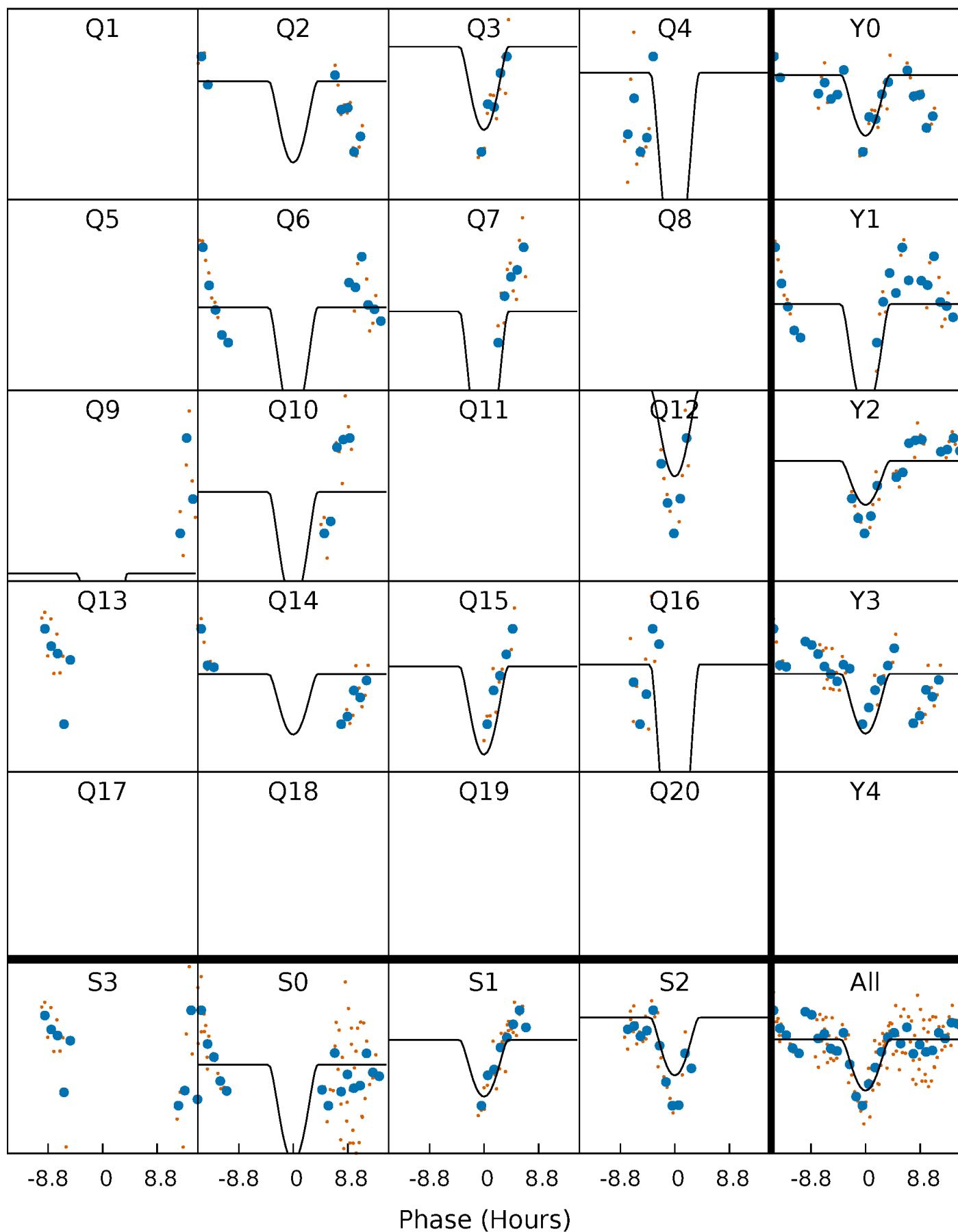
PDC Quarter-Phased Transit Curves

TCE 009426473-06 P=111.271387 Days $T_0=217.136369$ (BKJD)



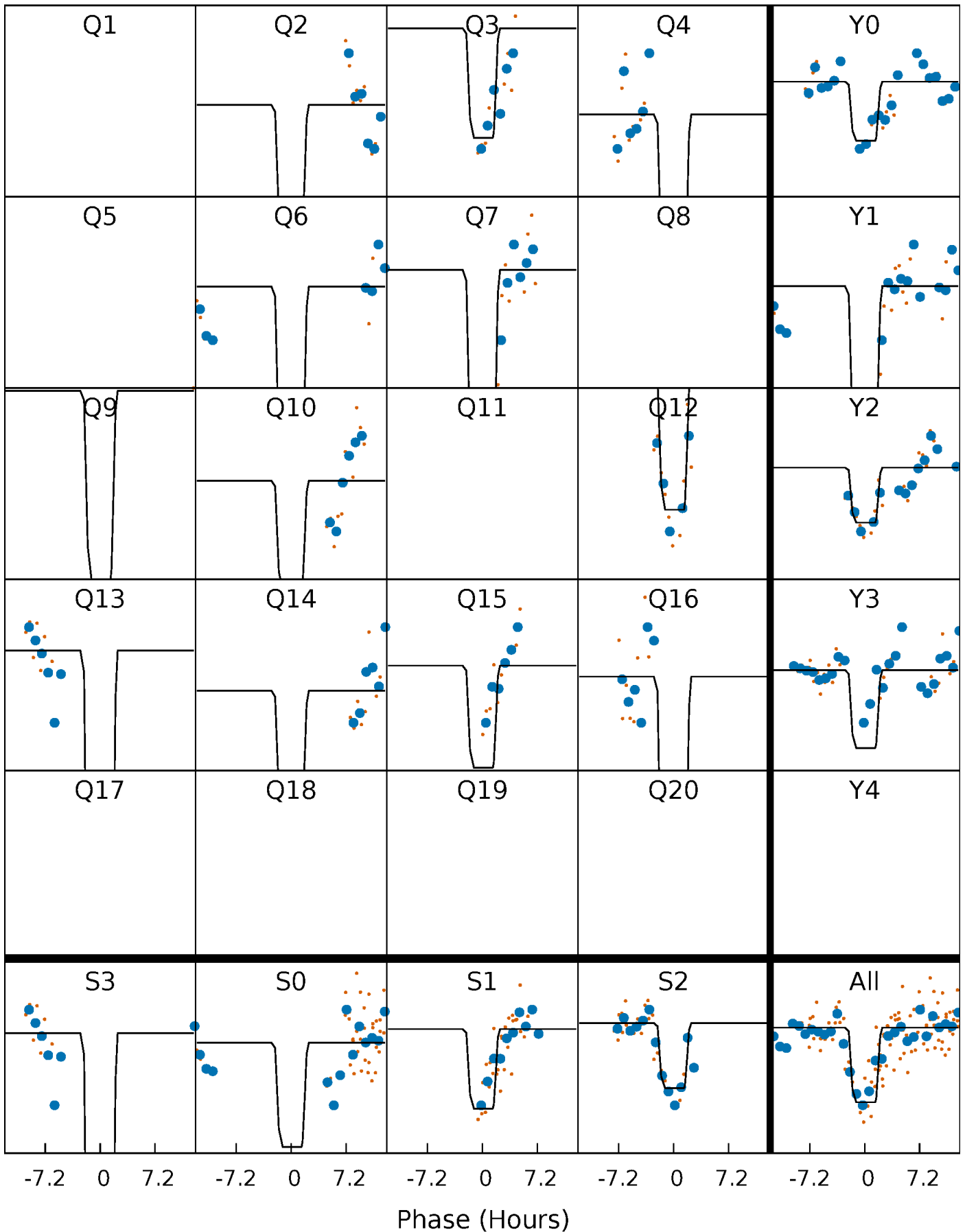
DV Quarter-Phased Transit Curves

TCE 009426473-06 P=111.271387 Days $T_0=217.136369$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

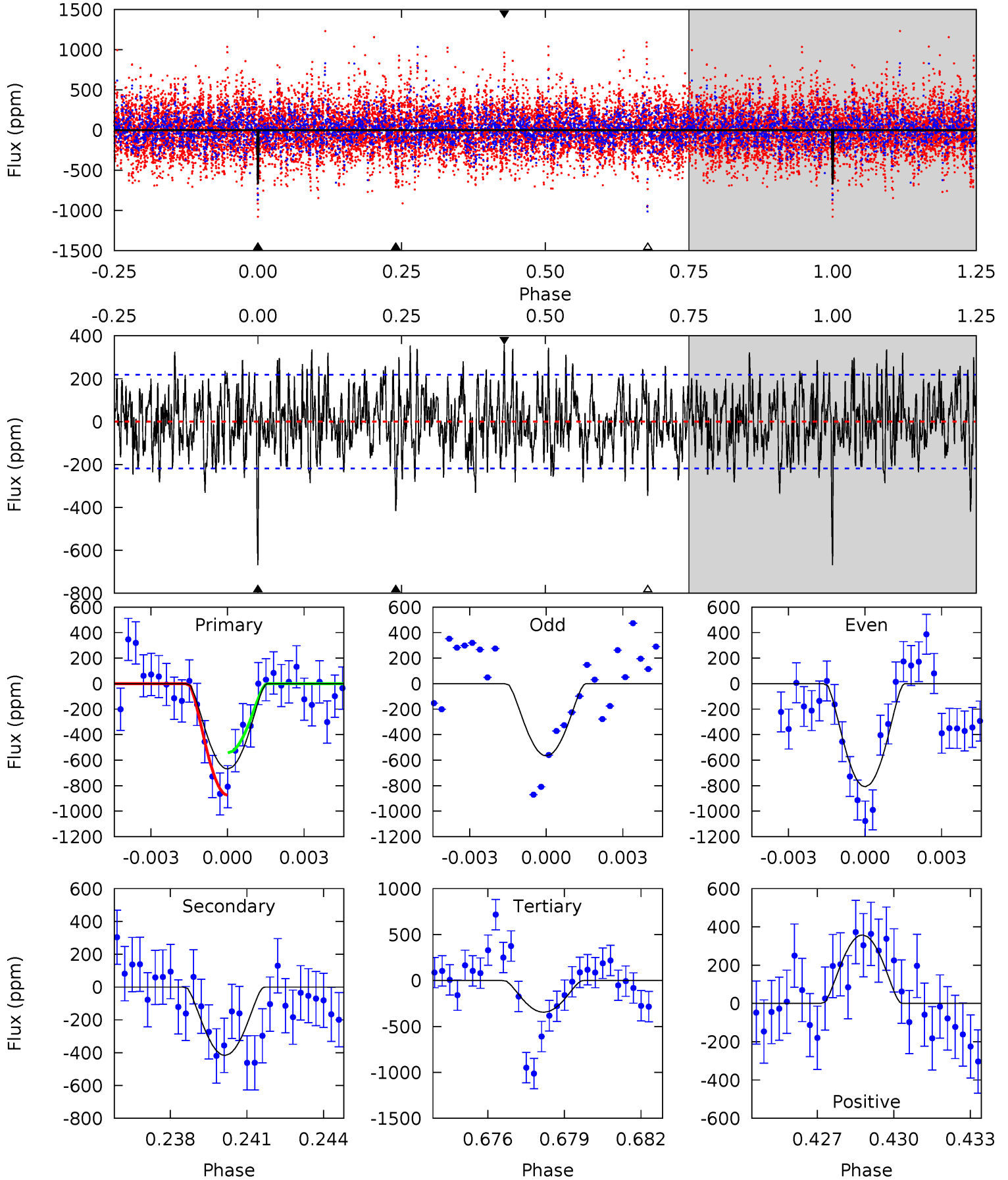
TCE 009426473-06 P=111.272717 Days $T_0=217.120190$ (BKJD)



DV Model-Shift Uniqueness Test

009426473-06, P = 111.271387 Days, E = 105.864982 Days

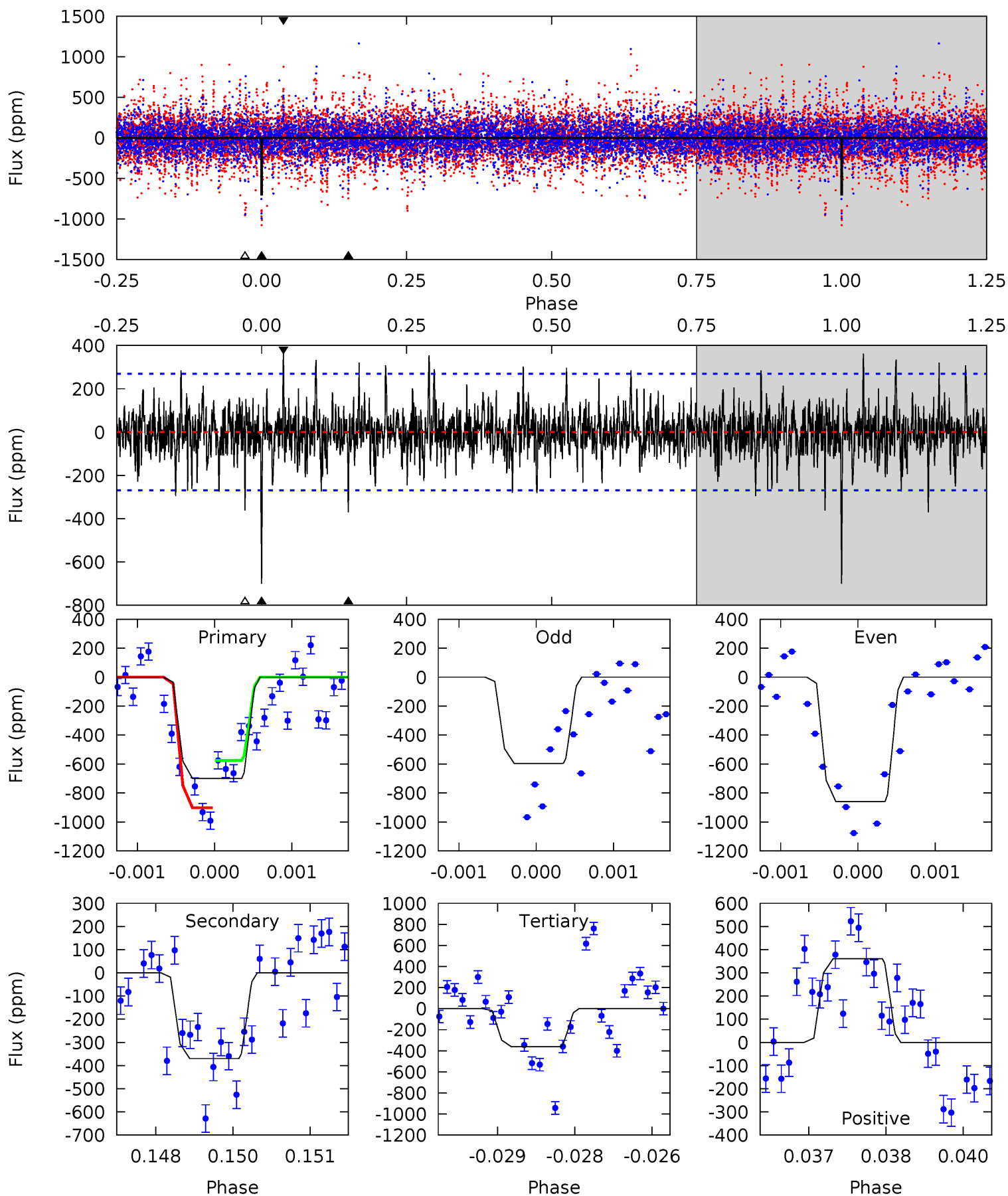
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.1	10.0	8.31	8.61	5.26	2.98	2.86	7.79	7.49	1.71	1.41	2.90	1.15	0.35	3.66



Alt Model-Shift Uniqueness Test

009426473-06, P = 111.272717 Days, E = 105.847473 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.0	7.41	7.23	7.23	5.38	3.18	1.67	6.78	6.78	0.17	0.17	2.59	0.84	0.34	2.95



Stellar Parameters For KIC 009426473

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6231^{+189}_{-170}	$3.388^{+0.399}_{-0.094}$	$0.020^{+0.300}_{-0.300}$	$4.659^{+0.661}_{-1.984}$	$1.933^{+0.071}_{-0.403}$	$0.027^{+0.085}_{-0.008}$
	+3%/-3%	+12%/-3%	+1500%/-1500%	+14%/-43%	+4%/-21%	+314%/-30%
Source	PHO1	FLK73	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 009426473-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-416 ± 42	$48.76^{+51.95}_{-31.64}$	1075^{+74}_{-117}	3234^{+1504}_{-574}	29^{+225}_{-22}
Alt.	-370 ± 50	$48.67^{+47.89}_{-32.95}$	1087^{+67}_{-113}	3247^{+1560}_{-582}	26^{+219}_{-20}

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 $A_{obs} \gg 1.0$

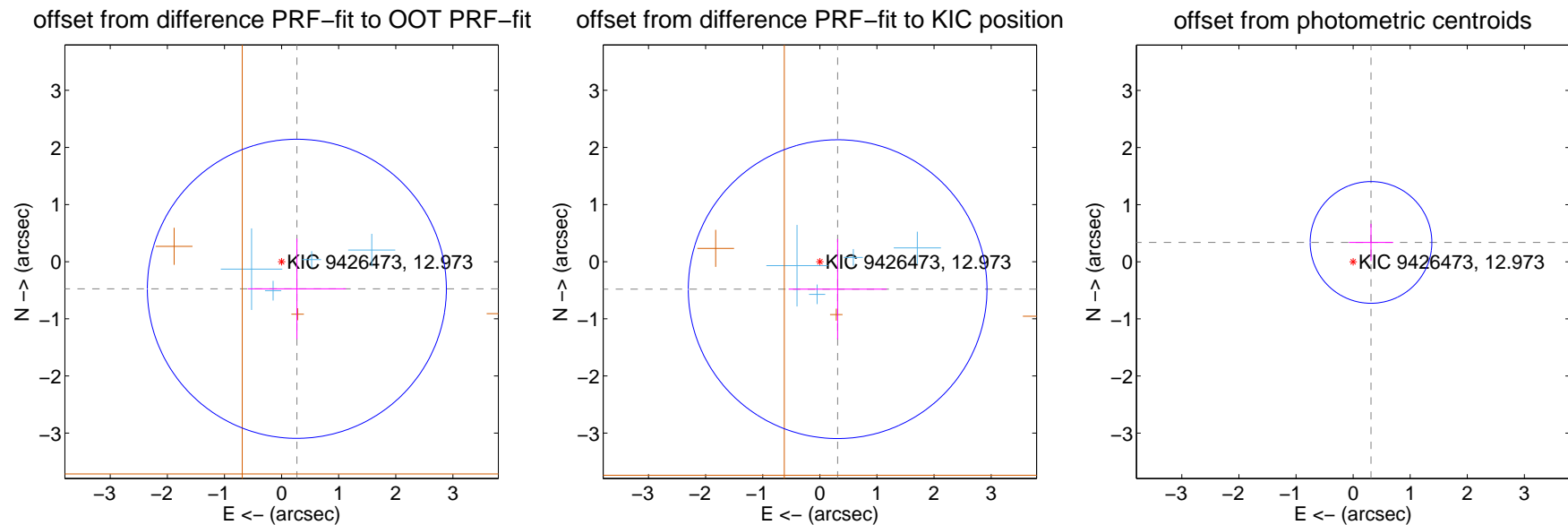
DV Centroid Data

Supplemental centroid analysis for 009426473-06. Kepler magnitude: 12.97. Transit SNR 8.54

There are 4 quarters with good PRF difference image offsets

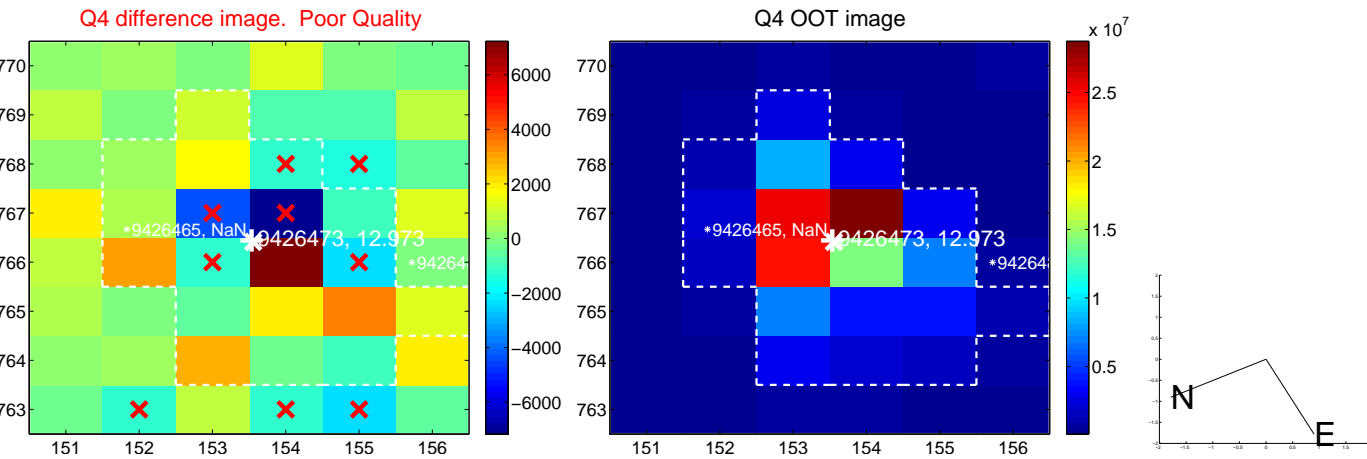
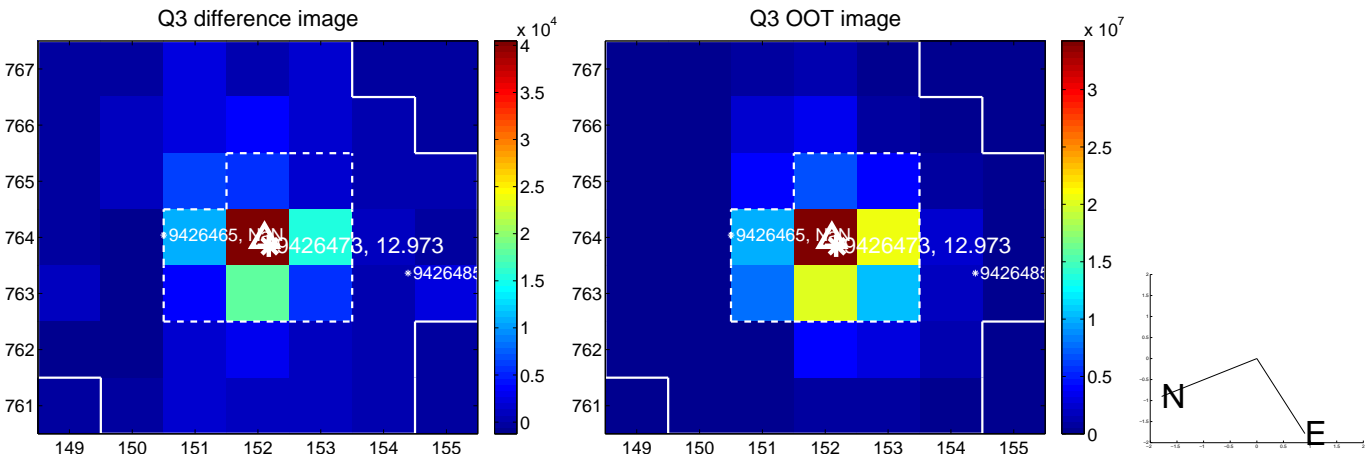
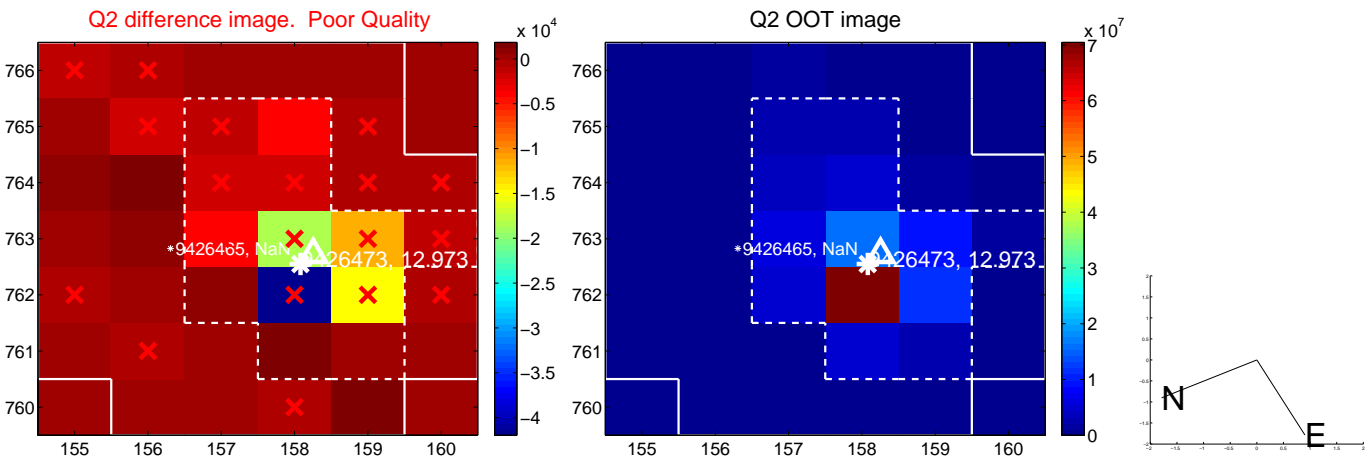
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.545 ± 0.873	0.62	-0.268 ± 0.859	-0.474 ± 0.877
PRF-fit source offset from KIC position	0.573 ± 0.872	0.66	-0.312 ± 0.859	-0.481 ± 0.877
photometric centroid source offset	0.46 ± 0.36	1.30	-0.31 ± 0.39	0.34 ± 0.33



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.

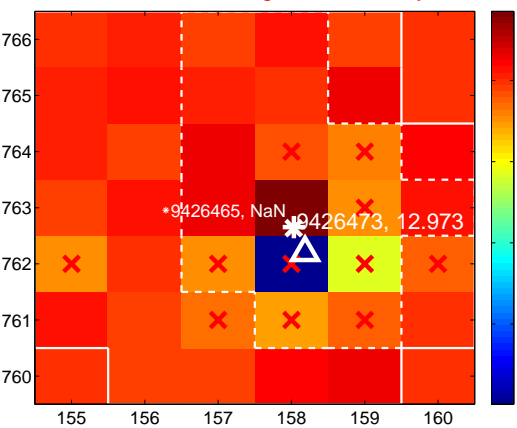
Q5 no difference image



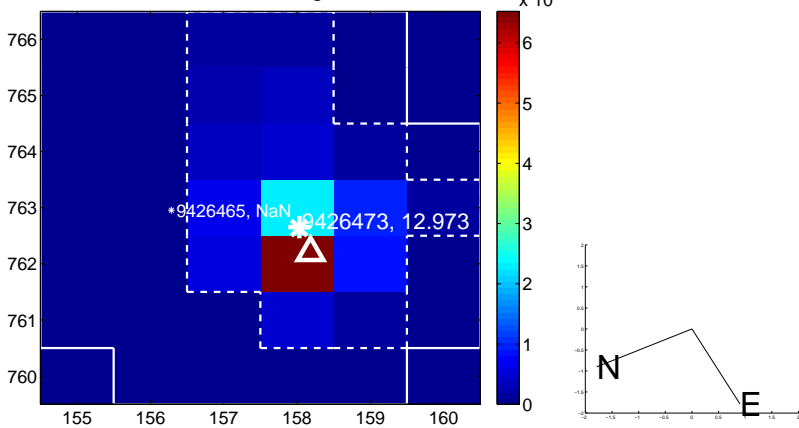
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



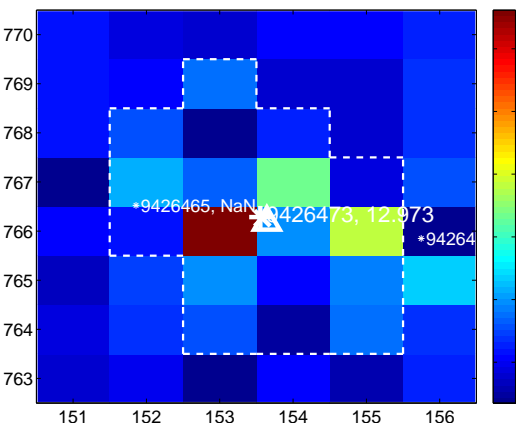
Q7 no difference image



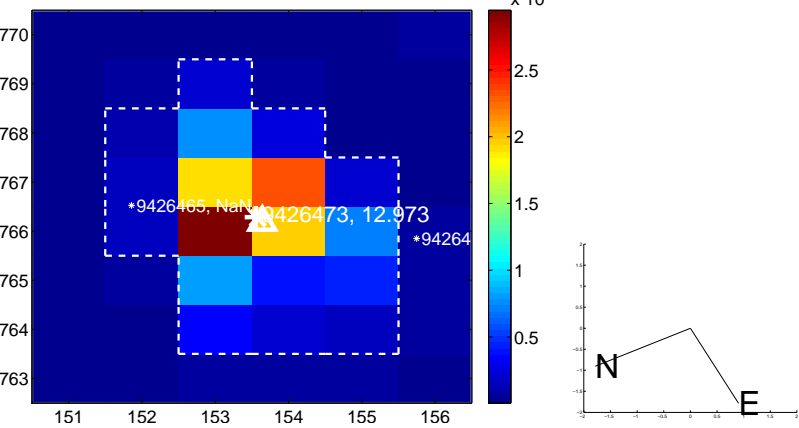
Q7 no OOT image



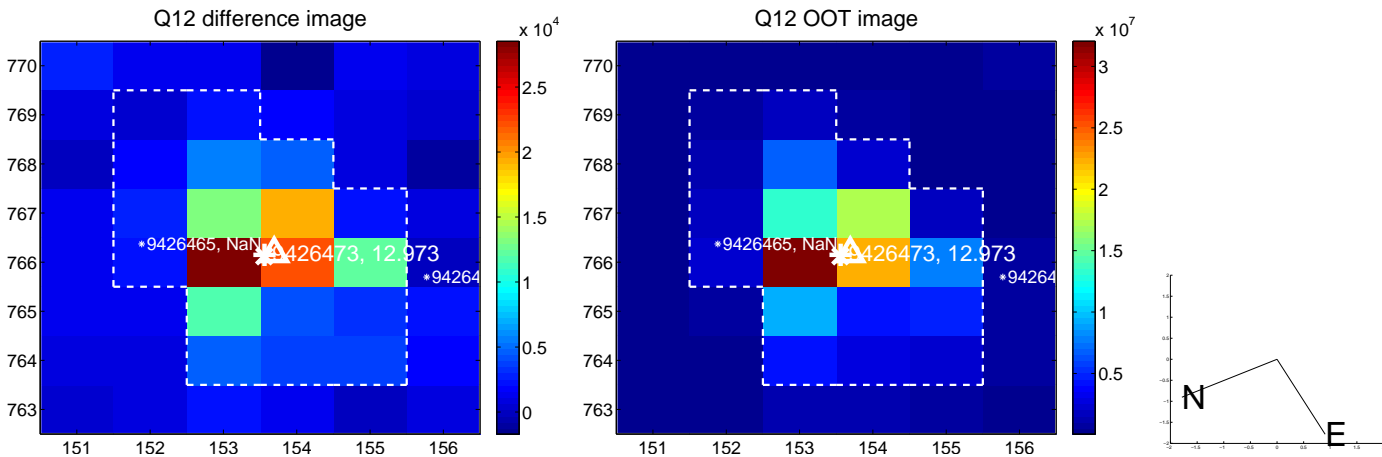
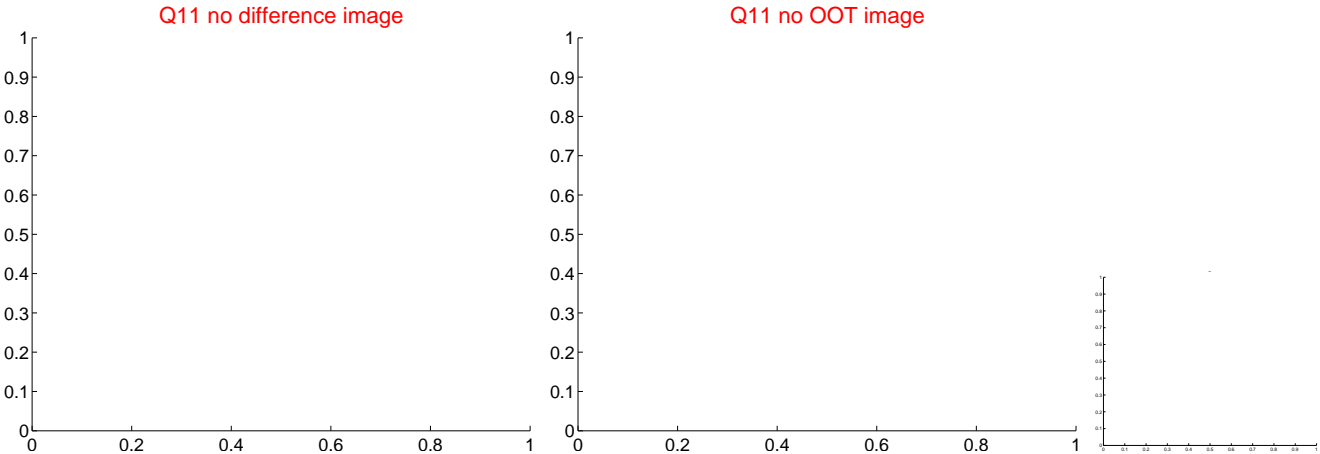
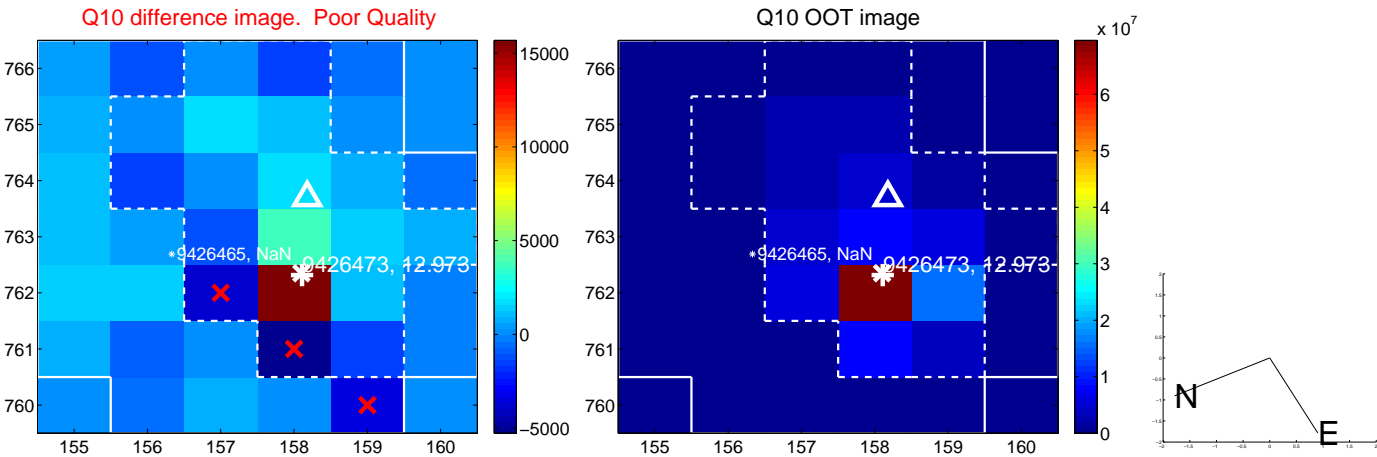
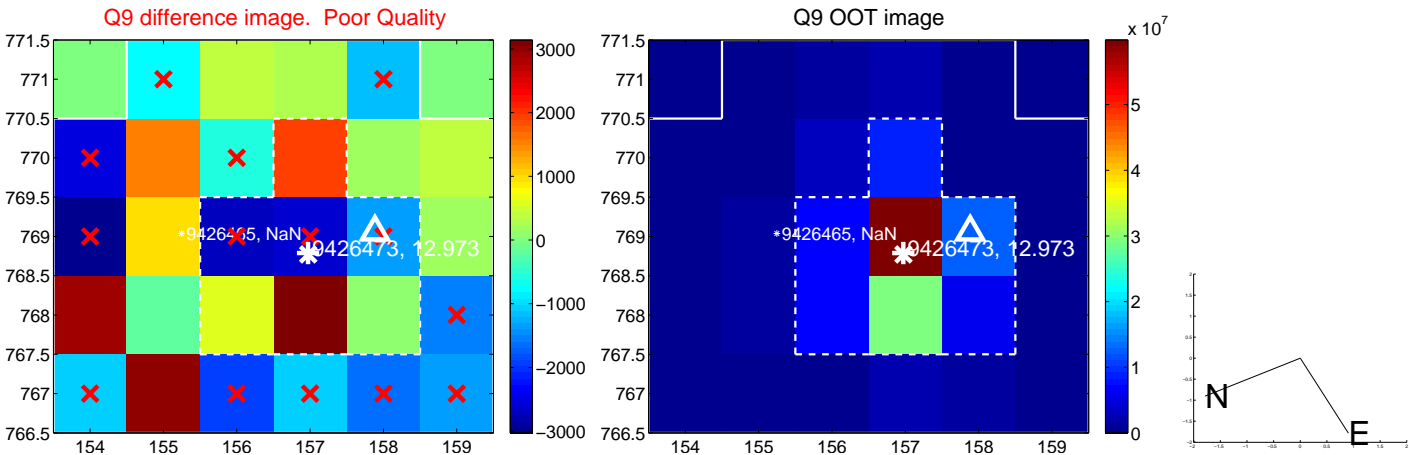
Q8 difference image



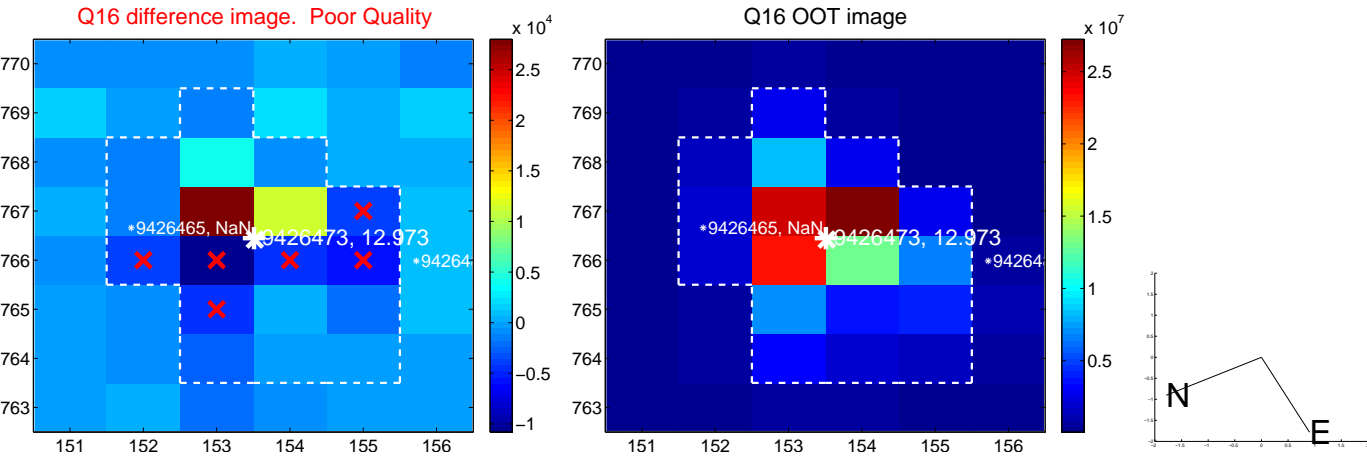
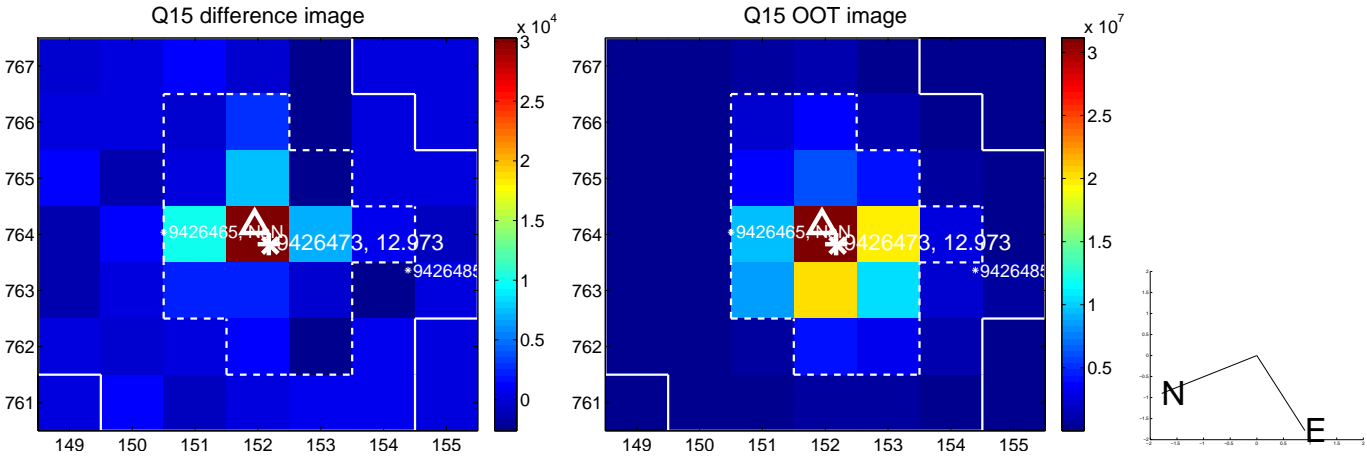
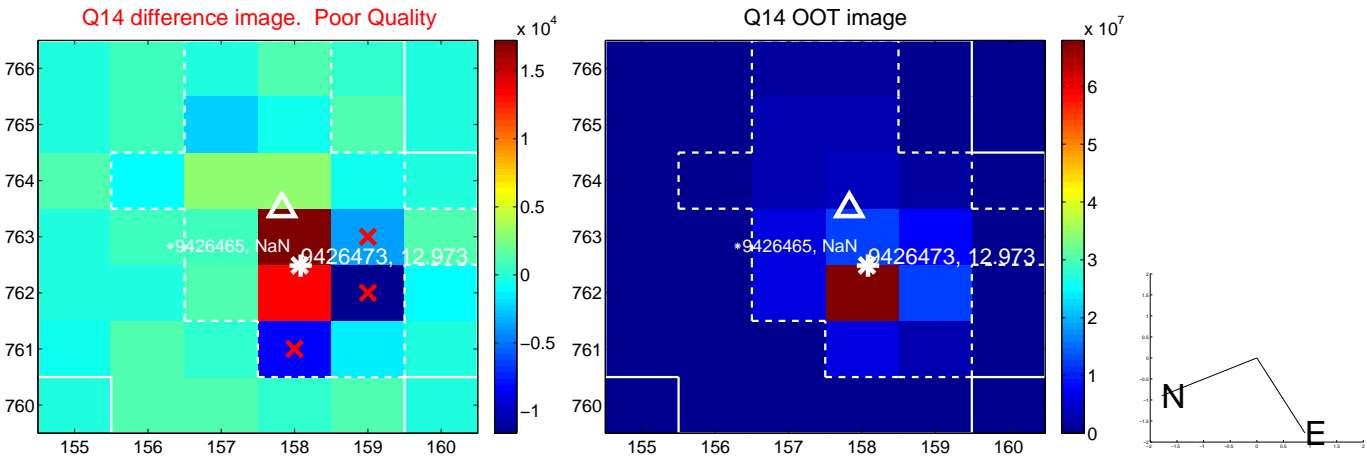
Q8 OOT image



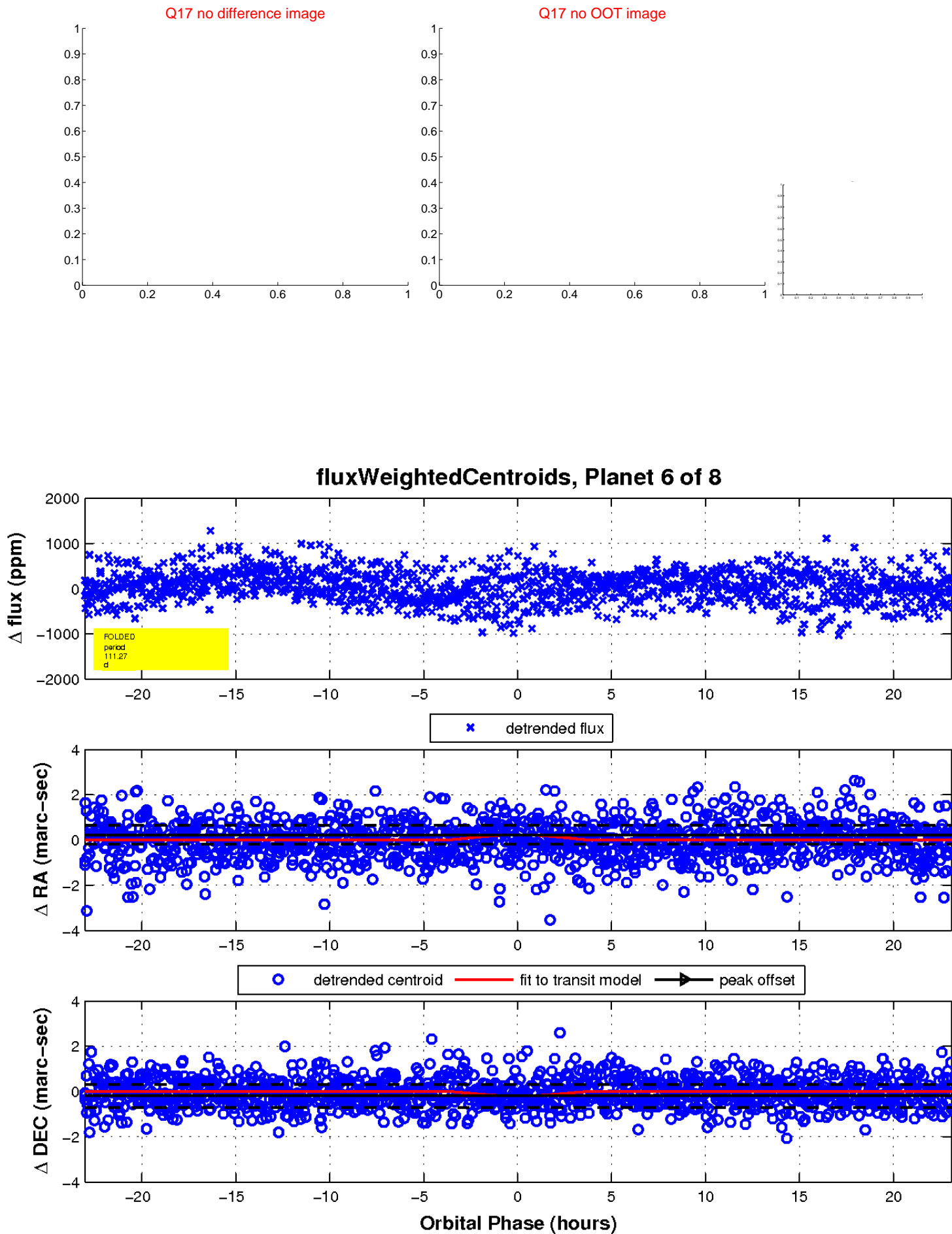
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

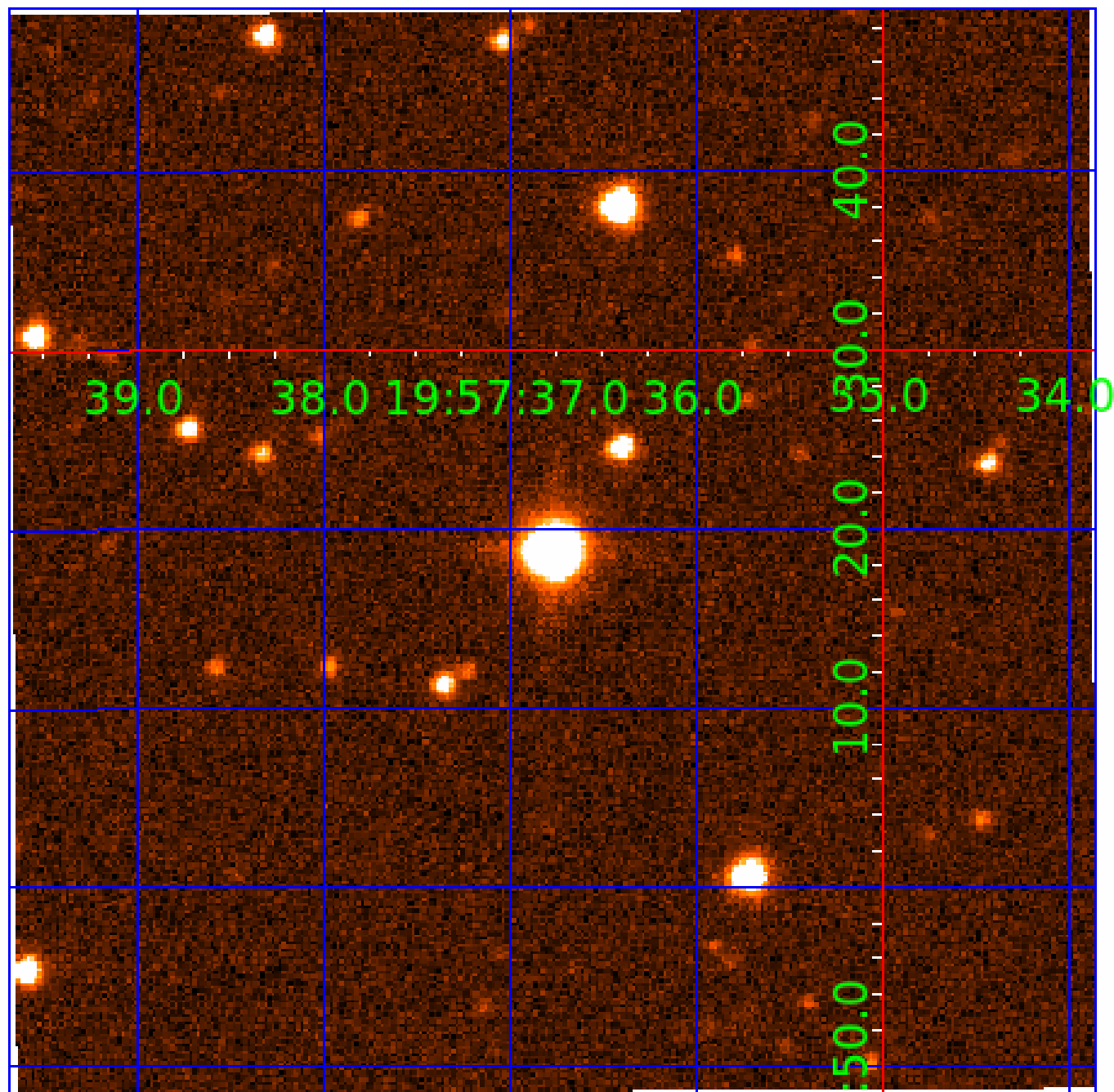


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009426473

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})
009426473-01	OBS	No	1.037045	131.951475	20.4	6.439	8.6	5.2	4.66	6231	2.16	46945.10
009426473-02	OBS	No	63.284304	140.796145	576.3	8.541	8.5	9.4	4.66	6231	19.34	195.40
009426473-03	OBS	No	27.312220	154.327238	182.6	6.860	8.5	5.5	4.66	6231	7.27	599.12
009426473-04	OBS	No	145.259499	157.361685	653.7	17.098	9.3	8.7	4.66	6231	14.83	64.53
009426473-05	OBS	No	28.713763	137.077892	277.3	5.315	8.9	8.1	4.66	6231	8.81	560.45
009426473-06	OBS	No	111.271387	217.136369	653.0	7.702	8.9	8.5	4.66	6231	22.86	92.08
009426473-07	OBS	No	303.882214	282.705089	412.5	3.921	8.9	7.4	4.66	6231	10.58	24.12
009426473-08	OBS	No	109.296456	228.284936	520.0	5.463	8.9	8.5	4.66	6231	13.54	94.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009426473-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009426473-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—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.

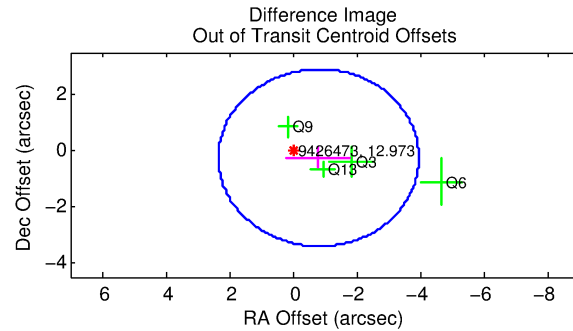
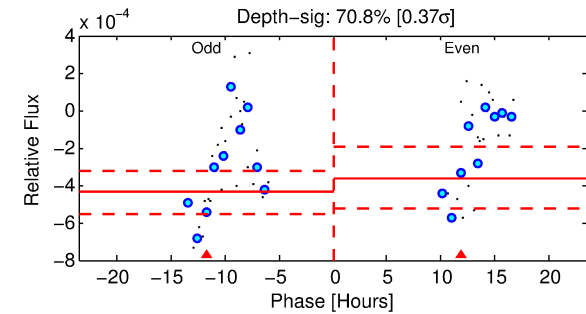
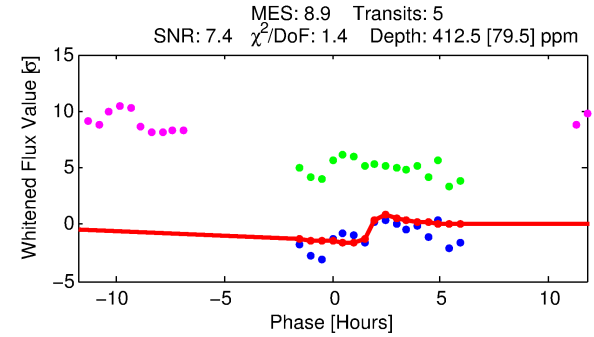
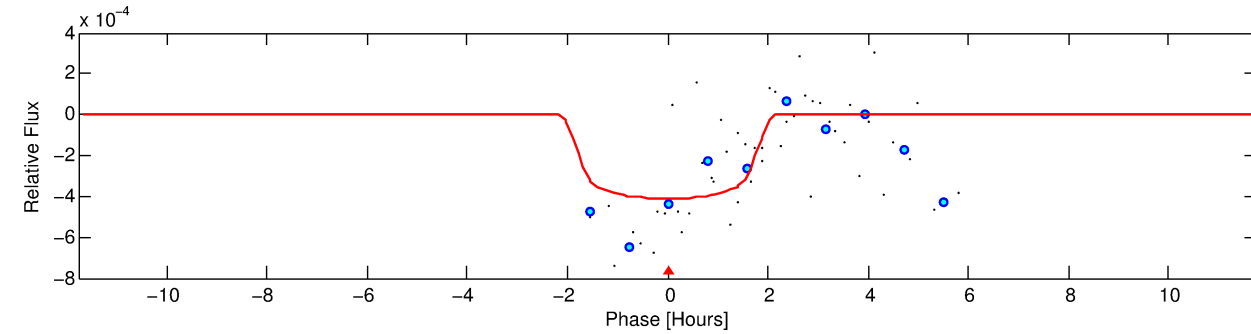
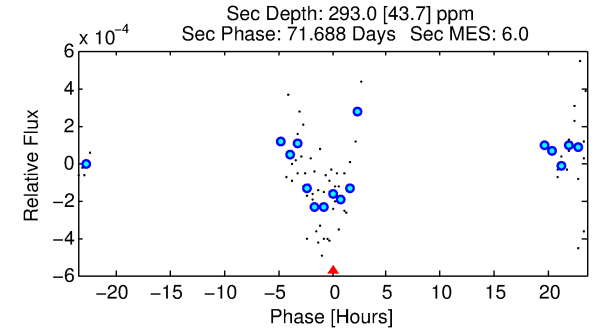
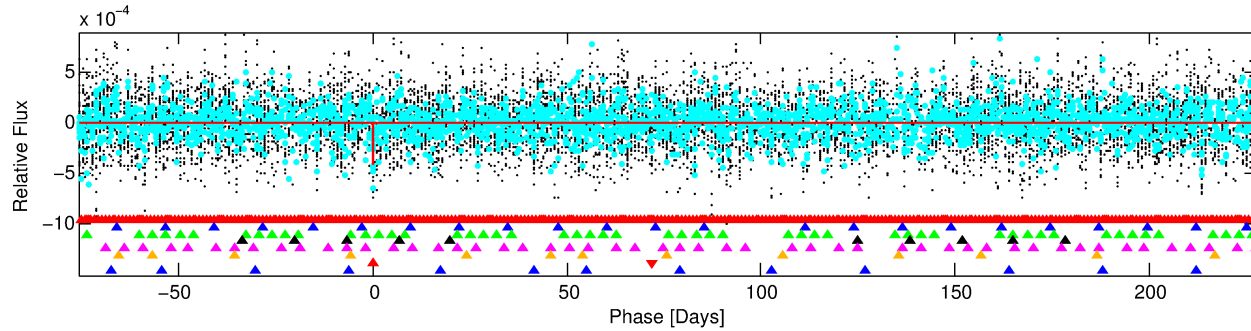
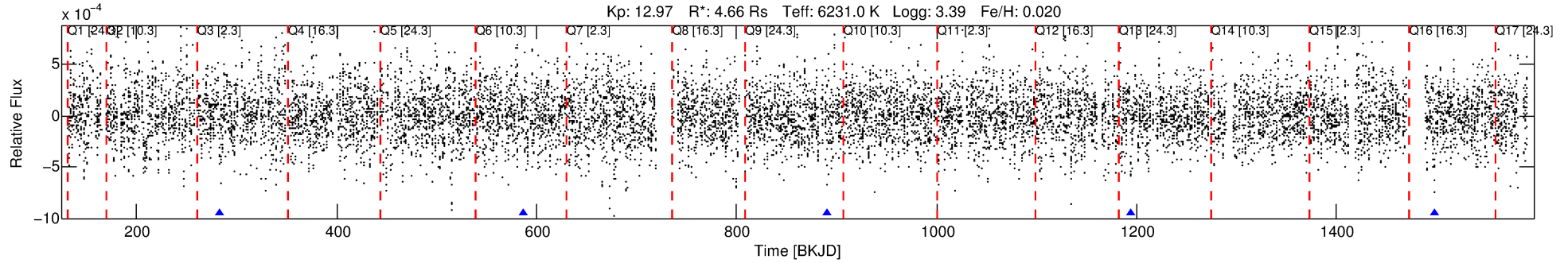
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009426473-07

No Significant Match Found

DV One-Page Summary

KIC: 9426473 Candidate: 7 of 8 Period: 303.882 d



DV Fit Results:

Period = 303.88221 [0.00382] d
Epoch = 282.7051 [0.0164] BKJD
Rp/R* = 0.0208 [0.0146]
a/R* = 356.64 [1291.65]
b = 0.82 [1.39]
Seff = 24.12 [16.54]
Teq = 565 [97] K
Rp = 10.58 [8.68] Re
a = 1.1025 [0.4604] AU
Ag = 1749.49 [2734.75] [0.64σ]
Teffp = 5651 [1999] K [2.54σ]

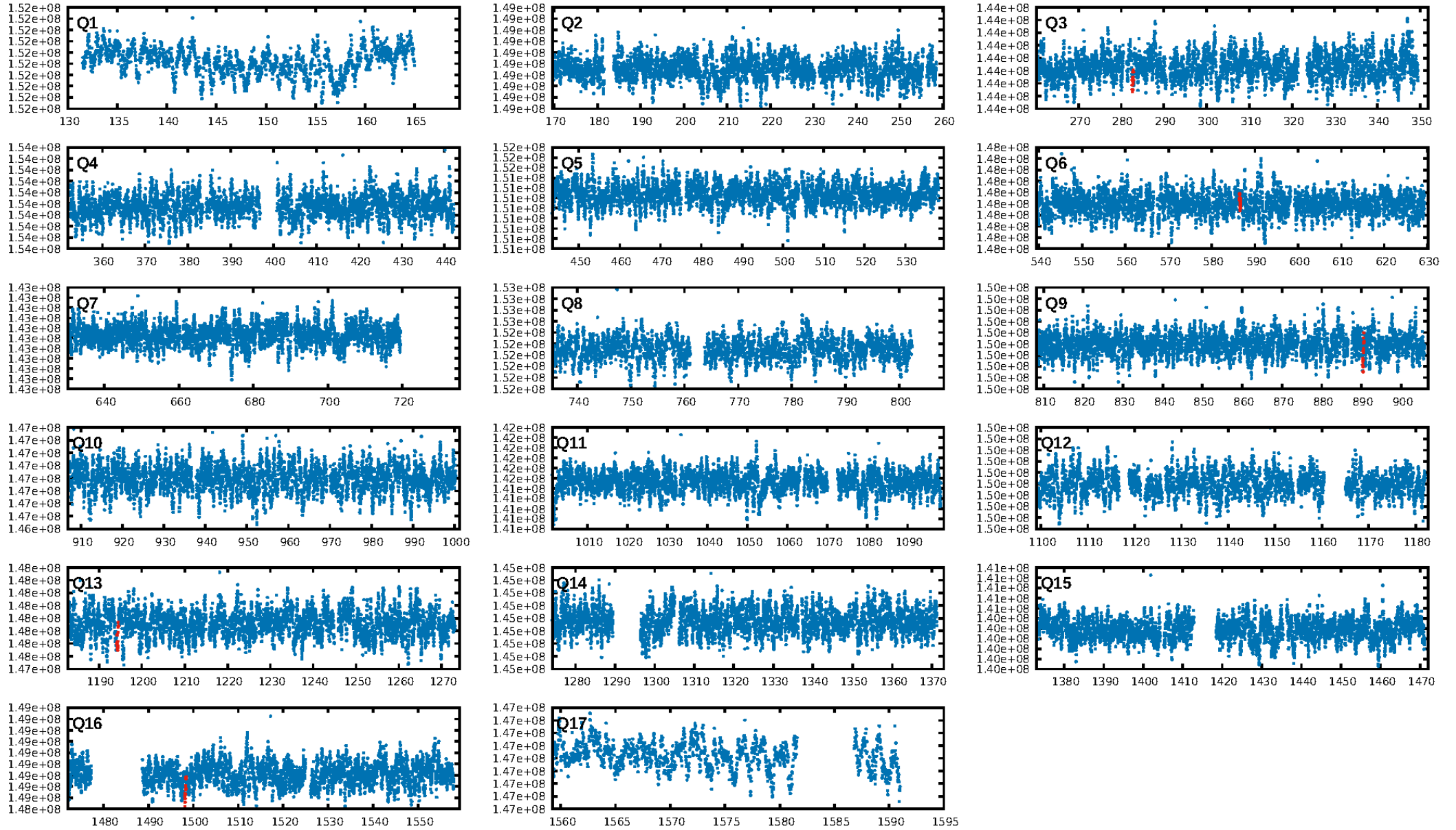
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [217.02σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 97.8%
Bootstrap-pfa: 3.04e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 0.1696
Centroid-sig: 14.9%
Centroid-so: 1.320 arcsec [1.50σ]
OotOffset-rm: 0.853 arcsec [0.81σ]
KicOffset-rm: 0.922 arcsec [0.91σ]
OotOffset-st: 1/1/0/2 [4]
KicOffset-st: 1/1/0/2 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/4]

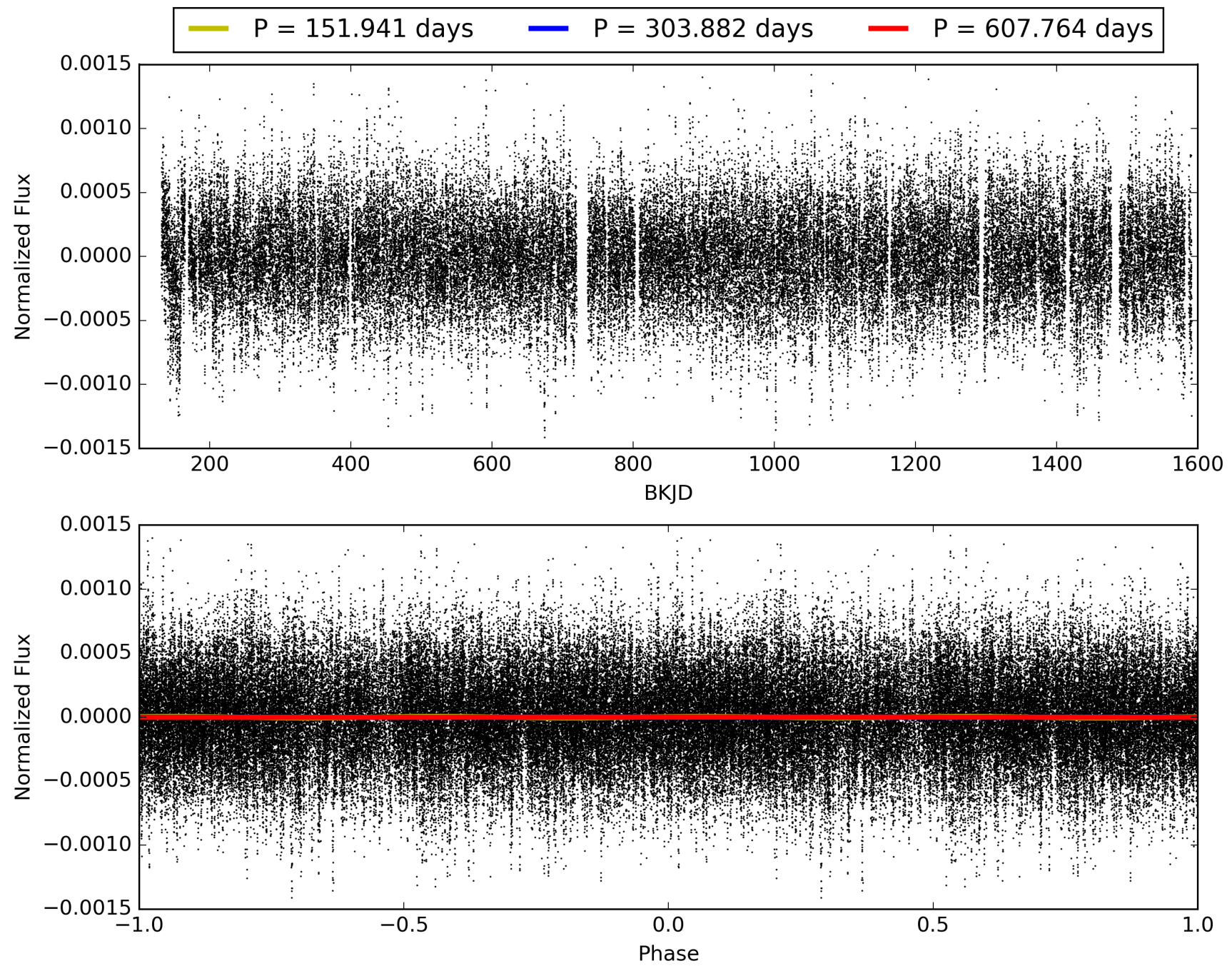
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:29:52 Z

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

TCE 009426473-07, PDC Light Curves

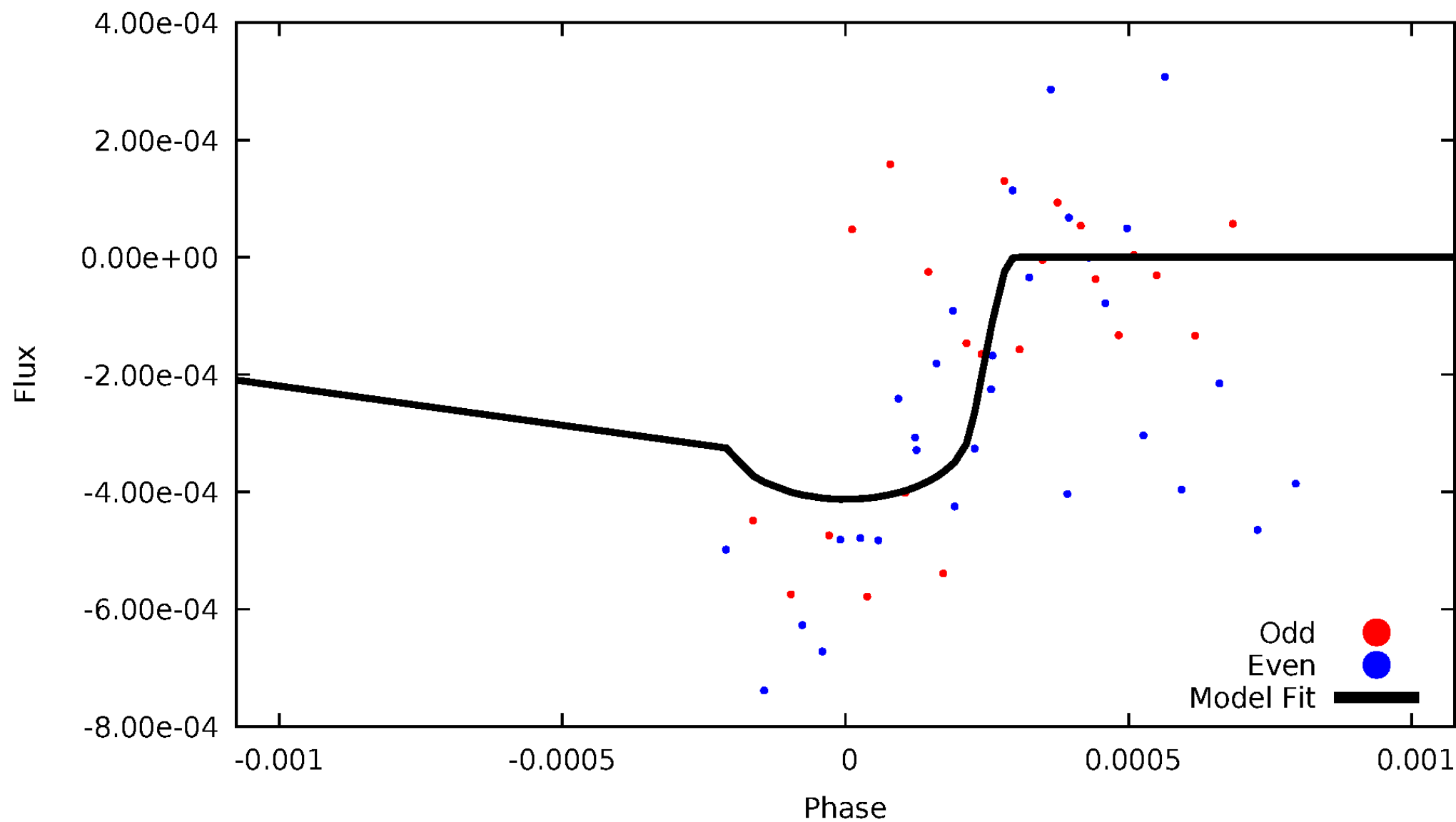


TCE 009426473-07



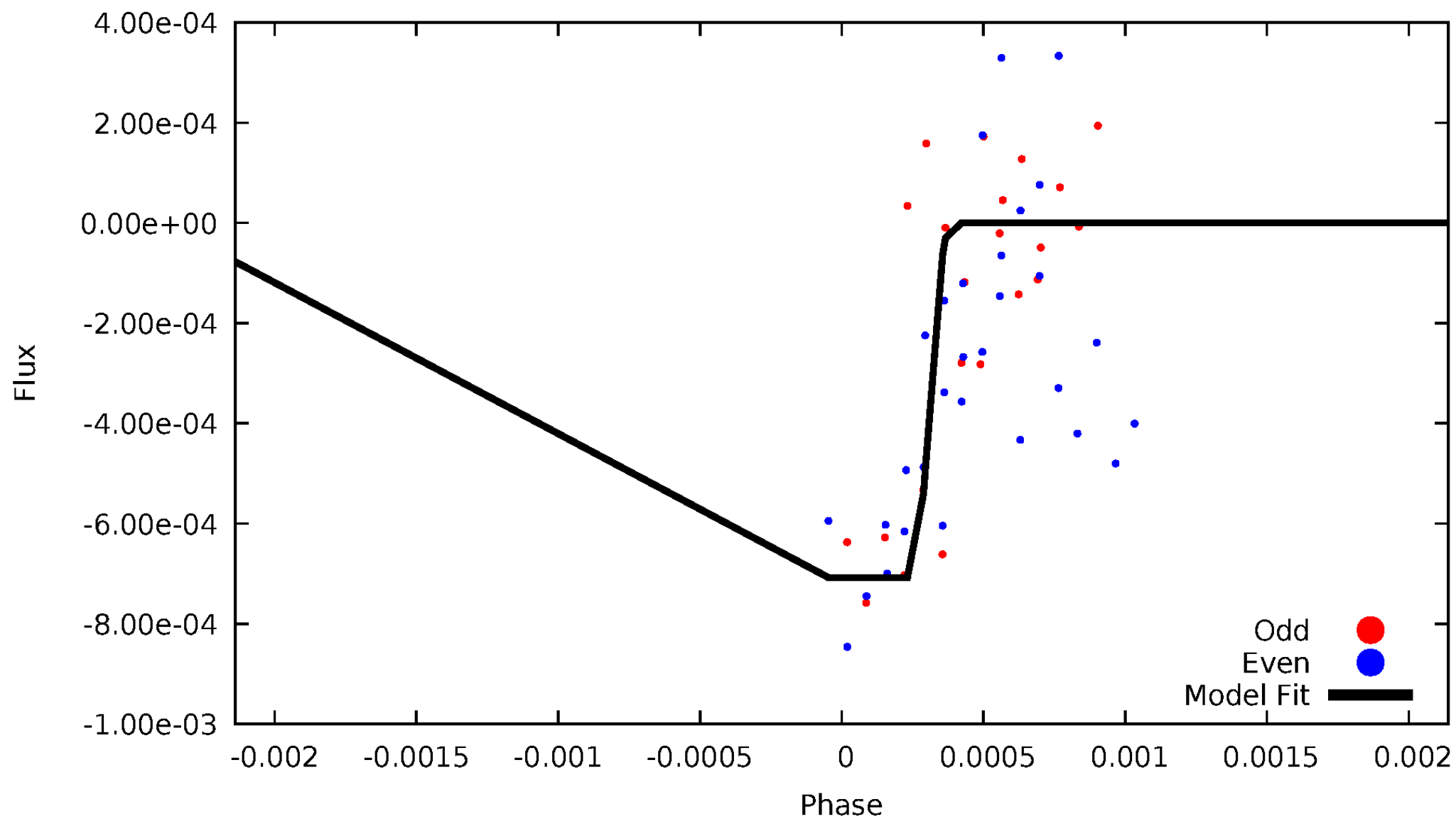
DV Odd/Even

TCE 009426473-07



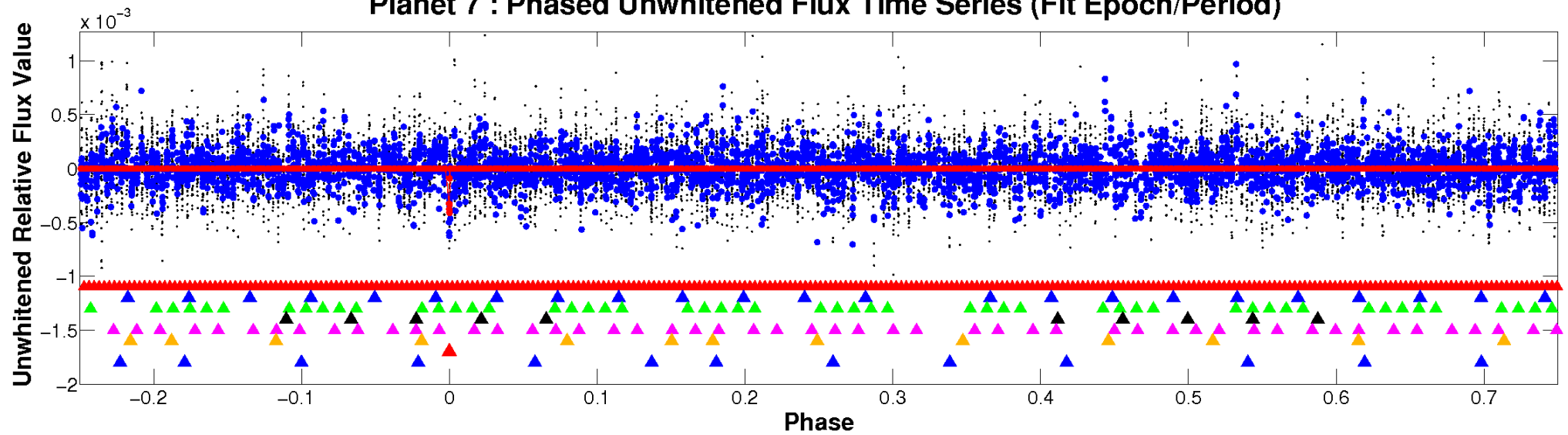
ALT Odd/Even

TCE 009426473-07

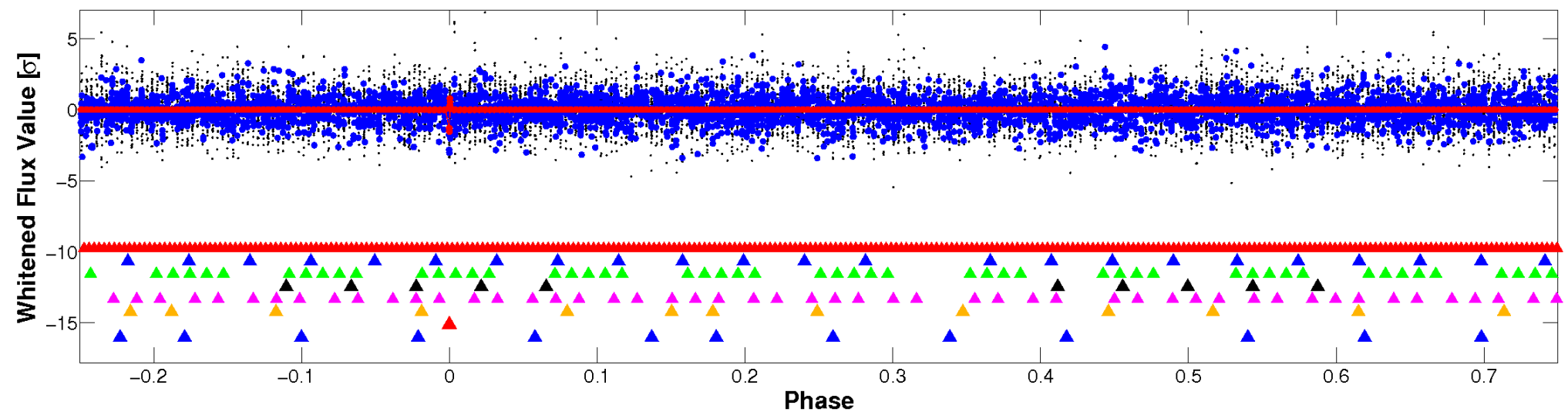


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

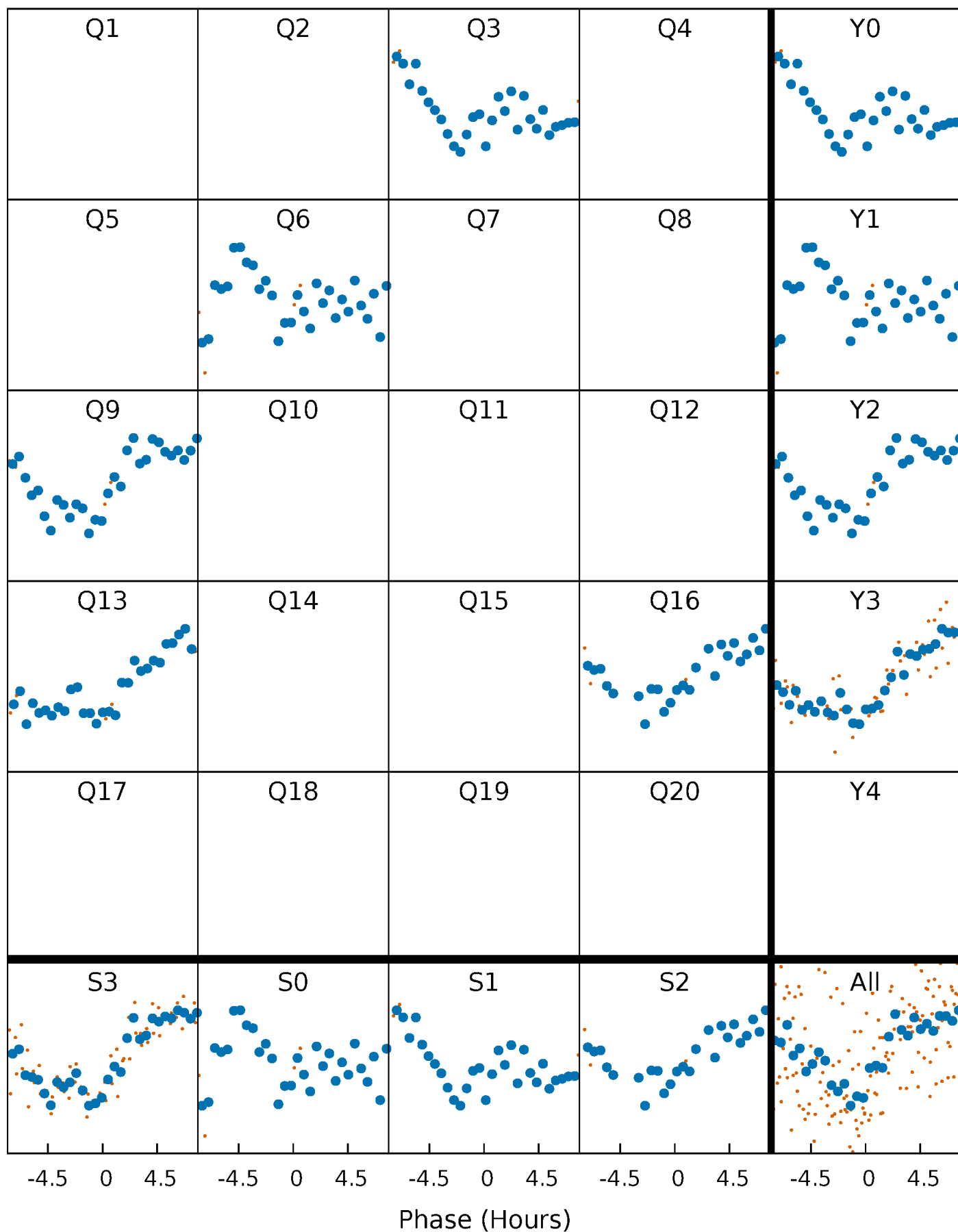


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



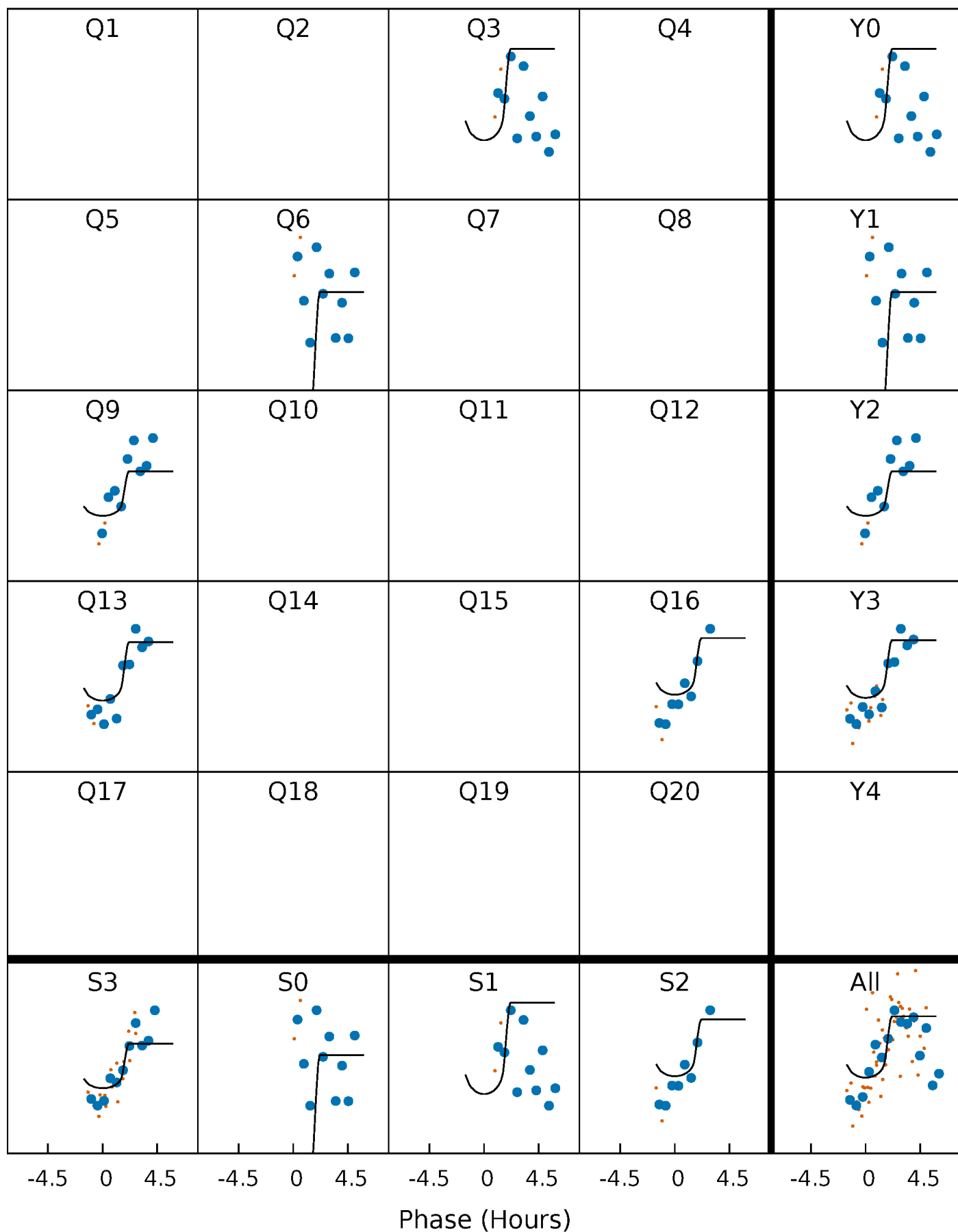
PDC Quarter-Phased Transit Curves

TCE 009426473-07 P=303.882214 Days $T_0=282.705089$ (BKJD)



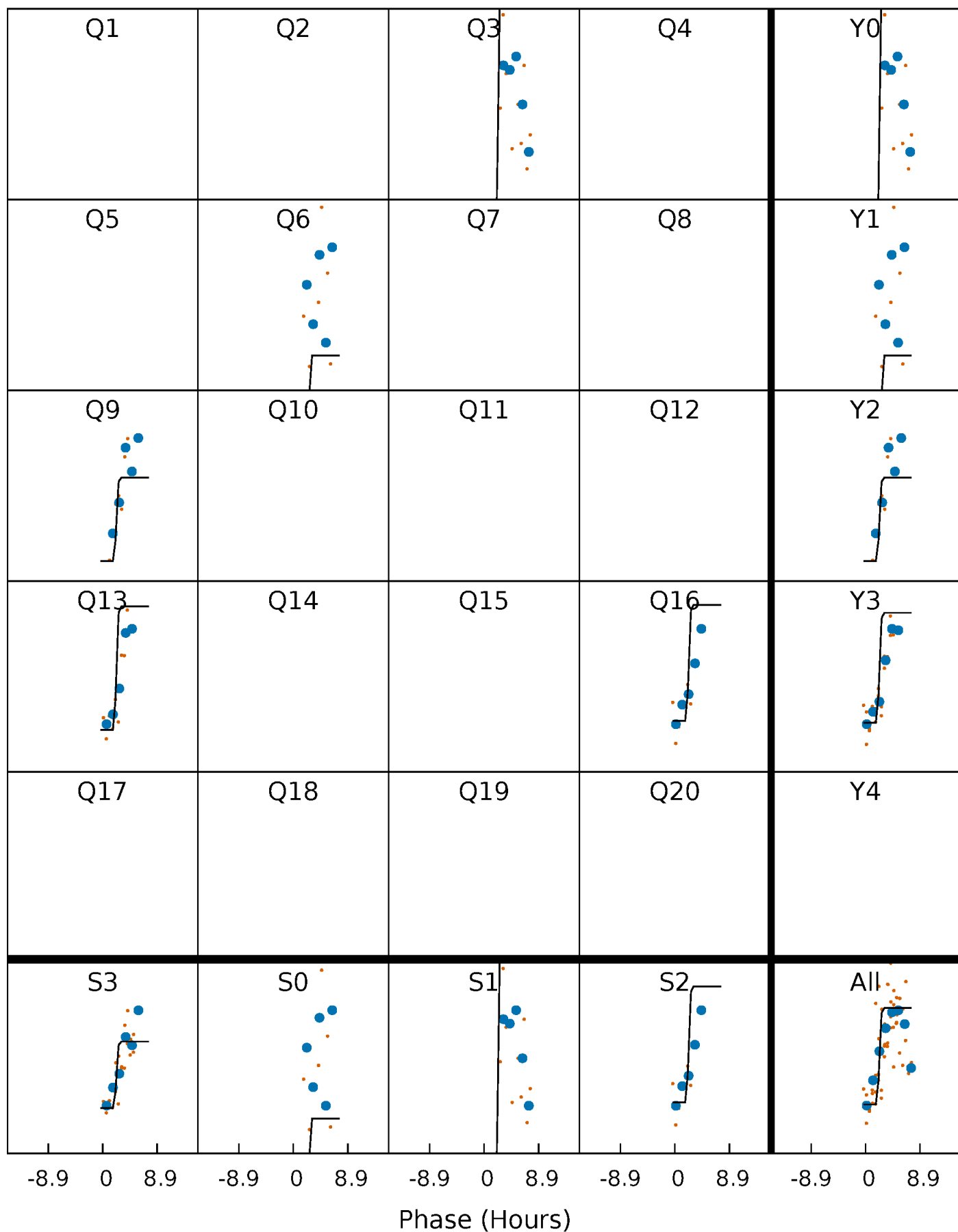
DV Quarter-Phased Transit Curves

TCE 009426473-07 P=303.882214 Days $T_0=282.705089$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

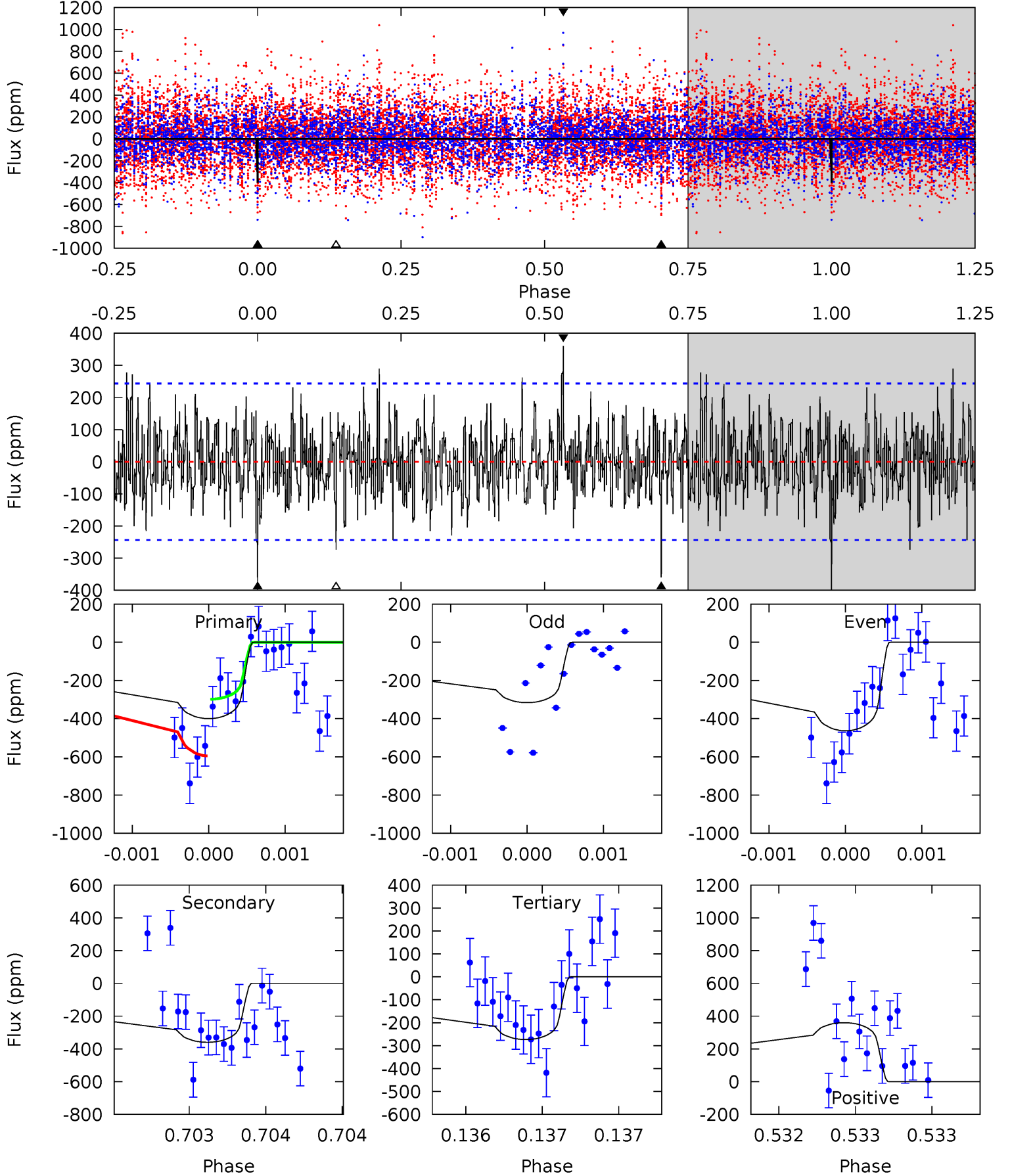
TCE 009426473-07 P=303.887904 Days $T_0=282.632639$ (BKJD)



DV Model-Shift Uniqueness Test

009426473-07, P = 303.882214 Days, E = 282.705089 Days

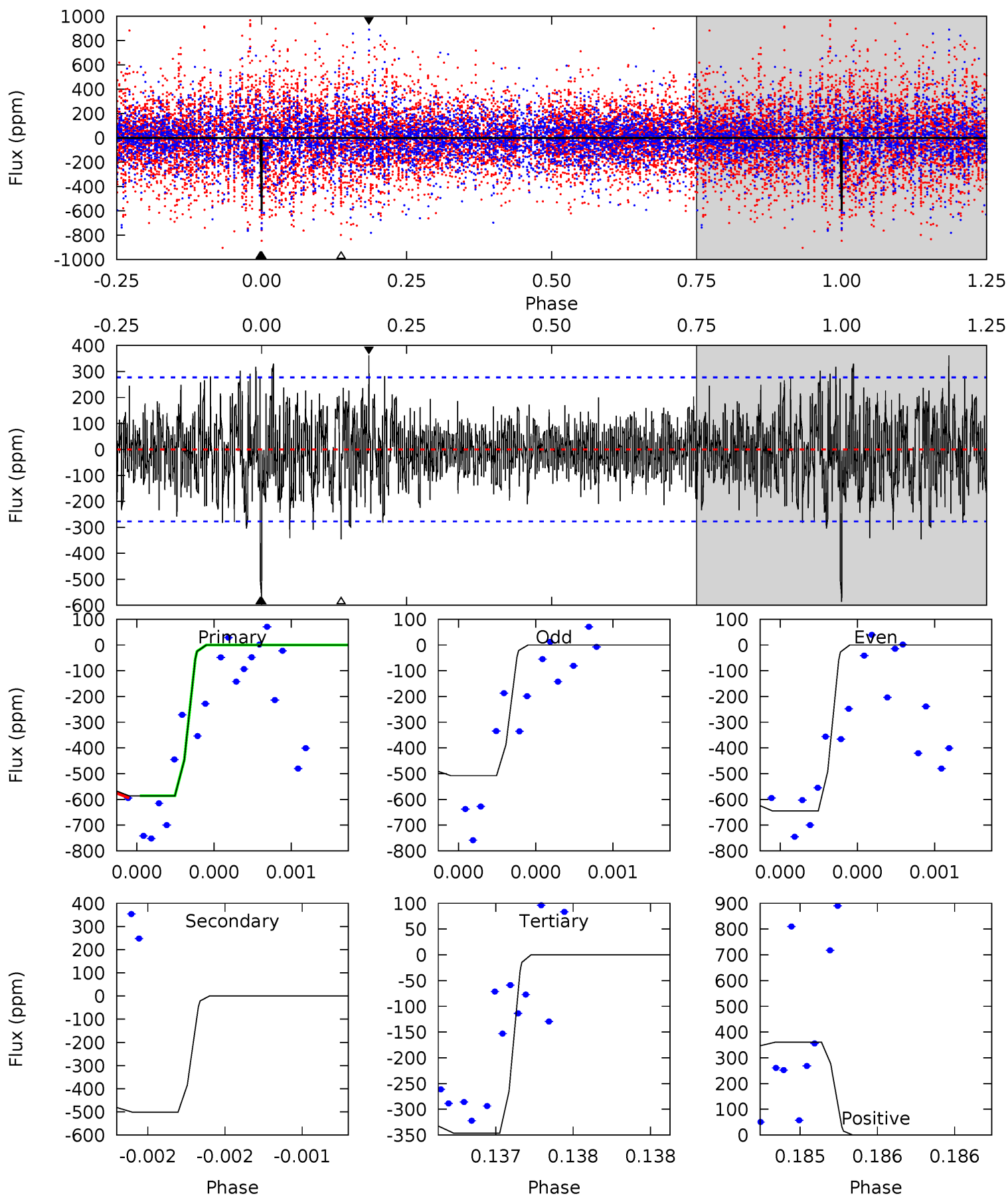
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.14	8.22	6.25	8.23	5.57	3.47	1.94	2.88	0.91	1.97	-0.01	1.65	0.82	0.47	2.90



Alt Model-Shift Uniqueness Test

009426473-07, P = 303.887904 Days, E = 282.632639 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	10.1	6.97	7.27	5.58	3.50	1.80	4.82	4.53	3.11	2.81	1.36	0.74	0.38	0.00



Stellar Parameters For KIC 009426473

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6231^{+189}_{-170}	$3.388^{+0.399}_{-0.094}$	$0.020^{+0.300}_{-0.300}$	$4.659^{+0.661}_{-1.984}$	$1.933^{+0.071}_{-0.403}$	$0.027^{+0.085}_{-0.008}$
	+3%/-3%	+12%/-3%	+1500%/-1500%	+14%/-43%	+4%/-21%	+314%/-30%
Source	PHO1	FLK73	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 009426473-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-360 ± 44	$10.19^{+7.44}_{-5.84}$	775^{+49}_{-90}	5695^{+3444}_{-1083}	2286^{+9794}_{-1545}
Alt.	-501 ± 50	$12.68^{+7.13}_{-6.85}$	774^{+50}_{-86}	5600^{+2507}_{-870}	2040^{+7068}_{-1211}

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 $A_{obs} \gg 1.0$

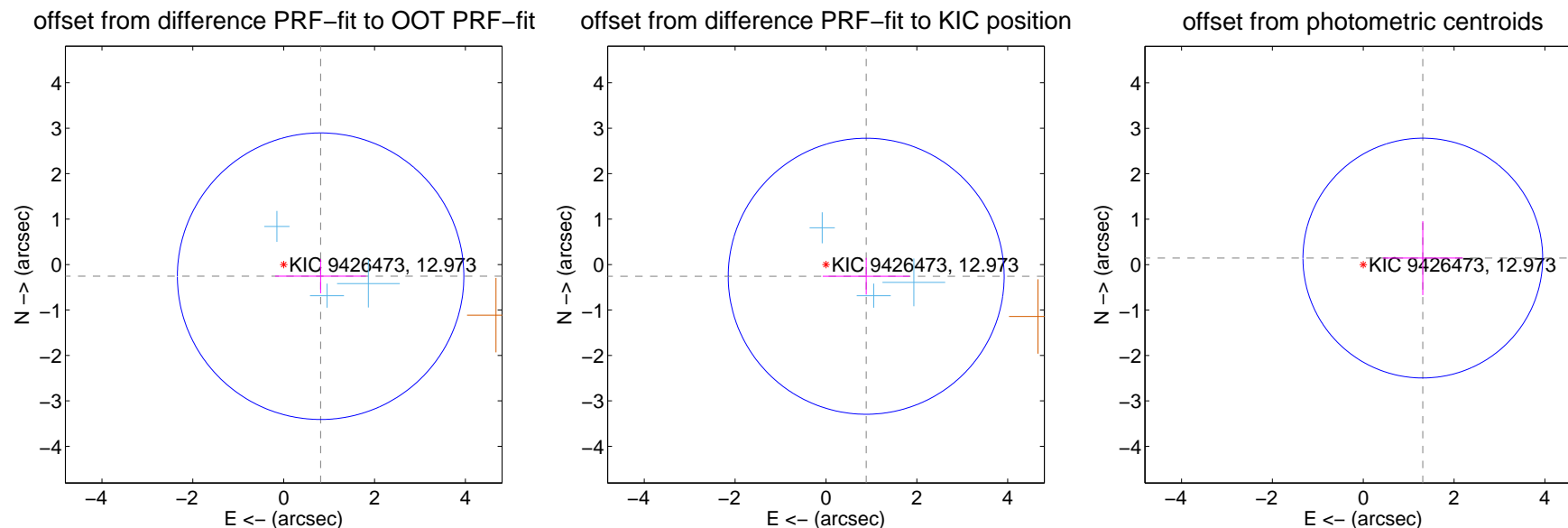
DV Centroid Data

Supplemental centroid analysis for 009426473-07. Kepler magnitude: 12.97. Transit SNR 7.38

There are 3 quarters with good PRF difference image offsets

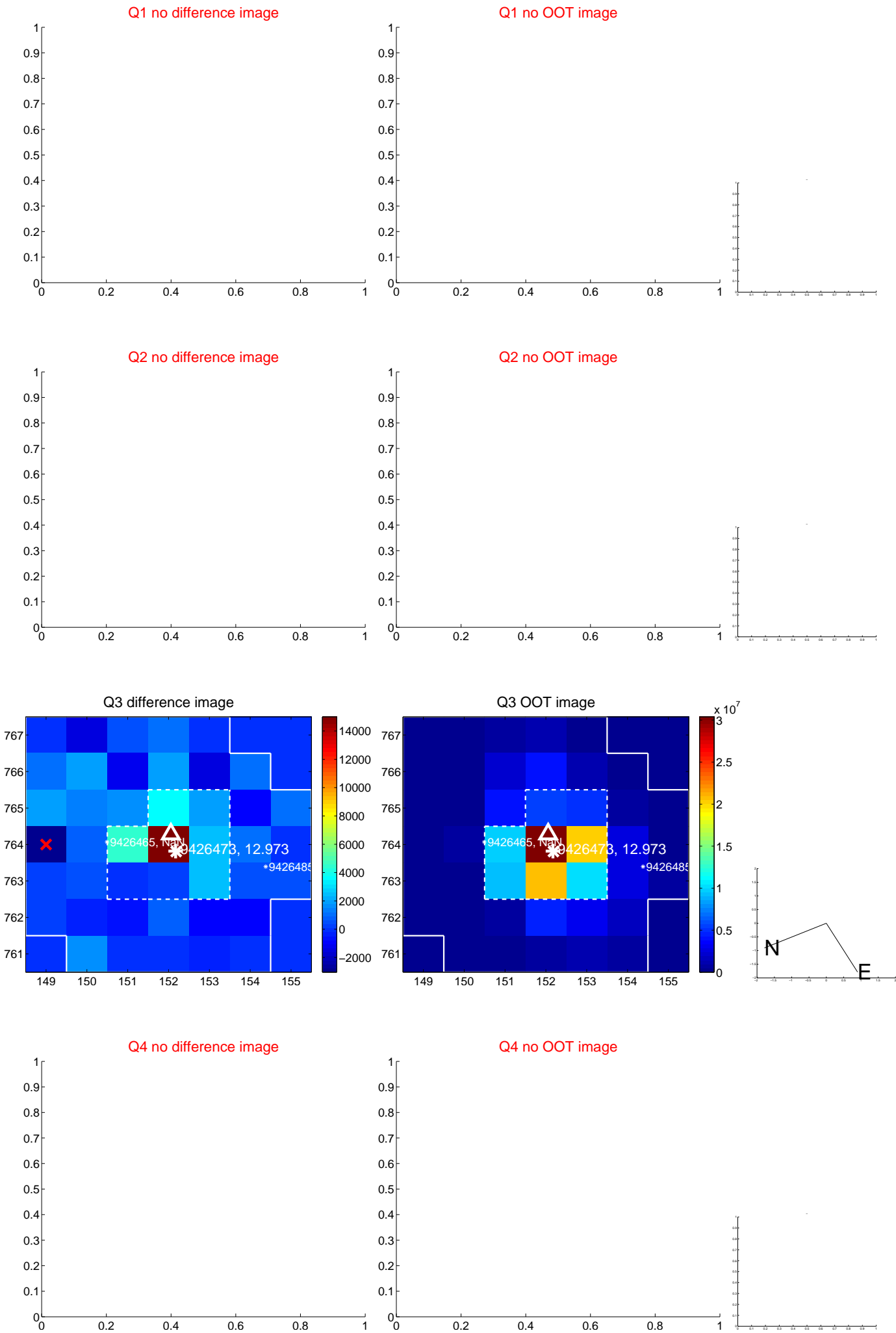
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.853 ± 1.051	0.81	-0.813 ± 1.000	-0.257 ± 0.377
PRF-fit source offset from KIC position	0.922 ± 1.013	0.91	-0.885 ± 0.958	-0.258 ± 0.404
photometric centroid source offset	1.32 ± 0.88	1.50	-1.31 ± 0.88	0.14 ± 0.81

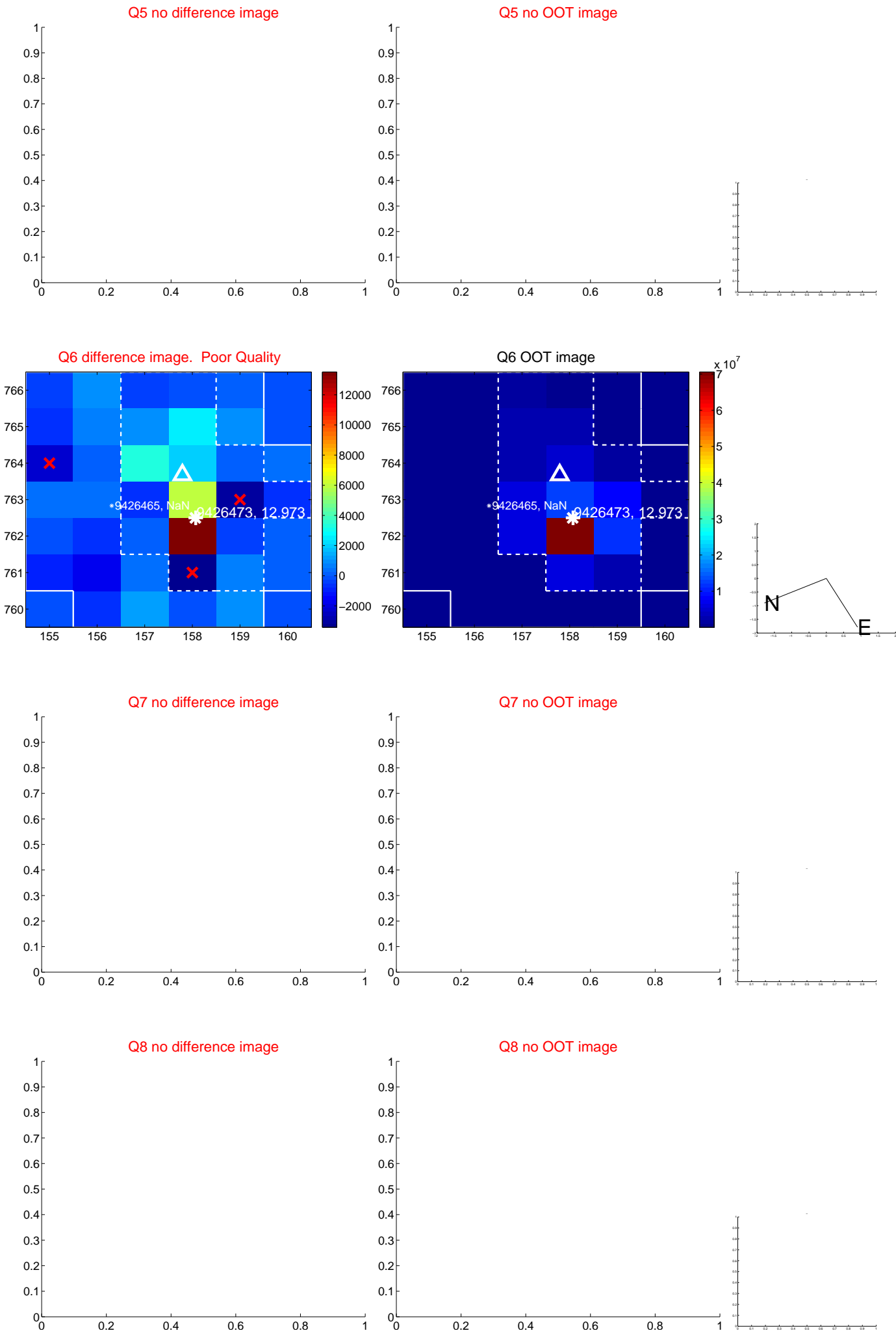


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

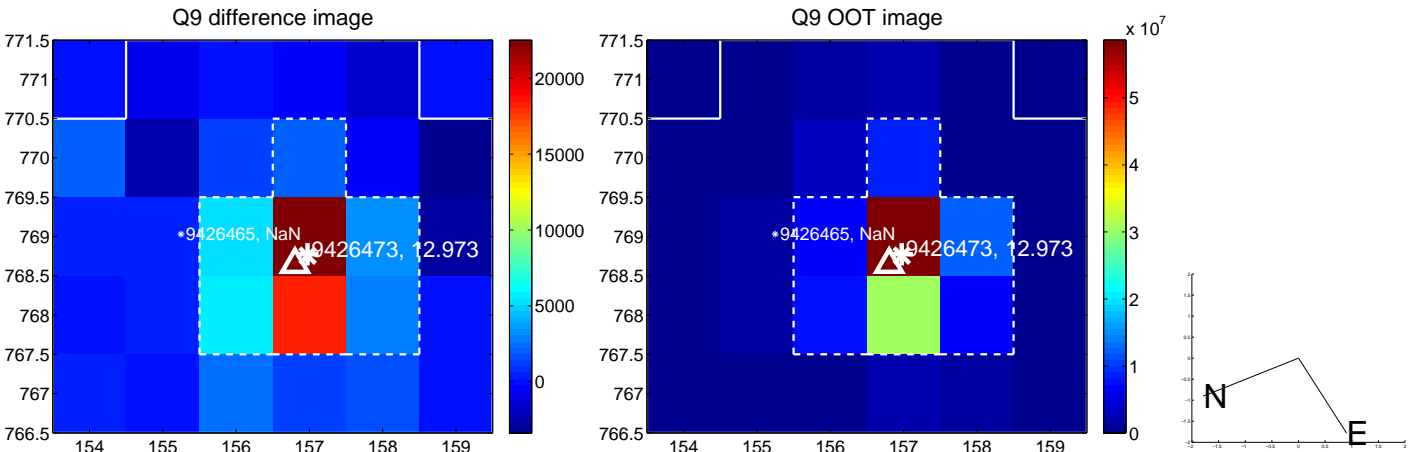
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



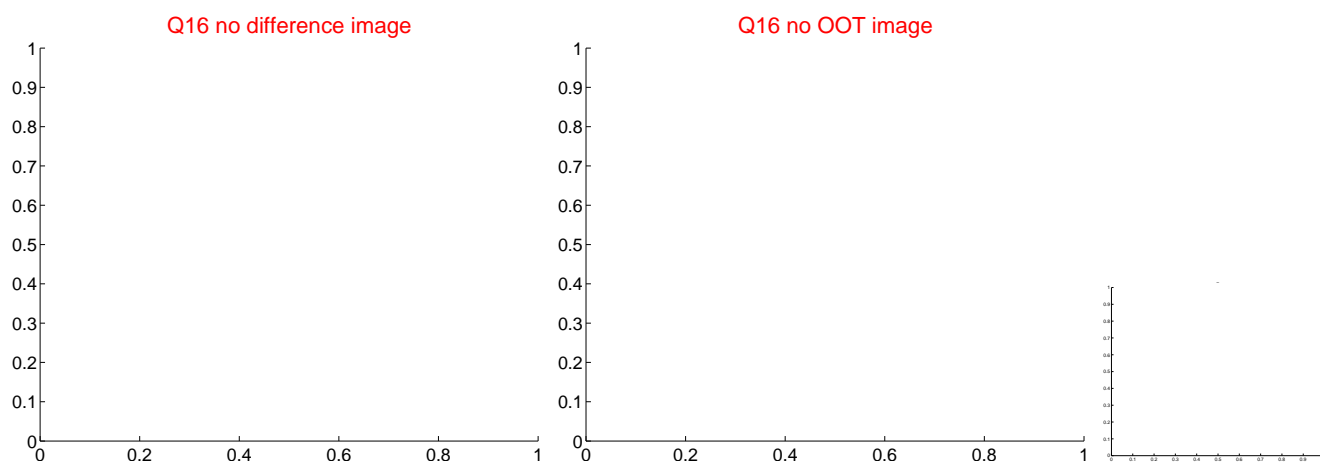
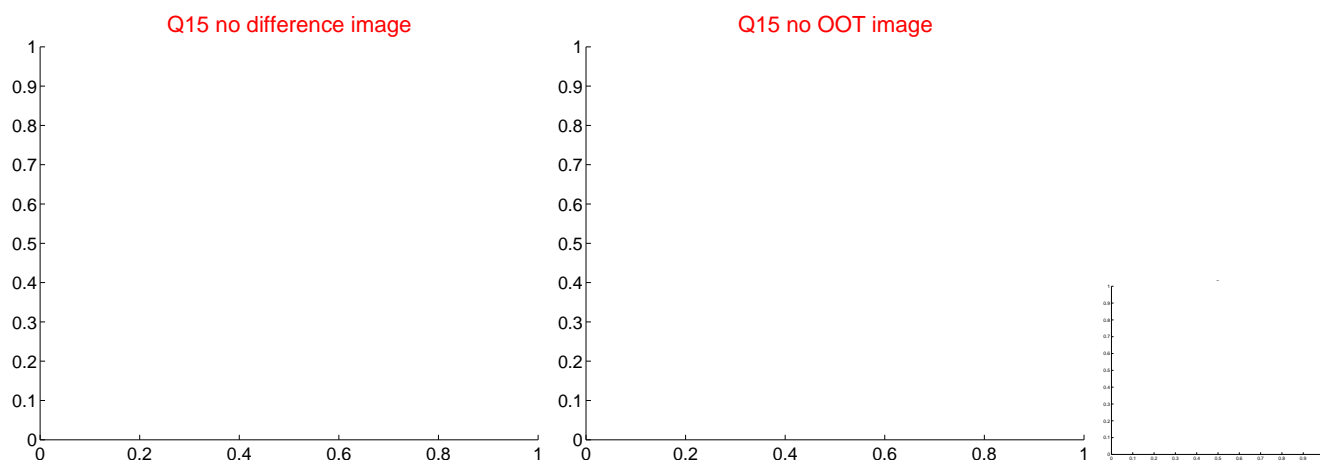
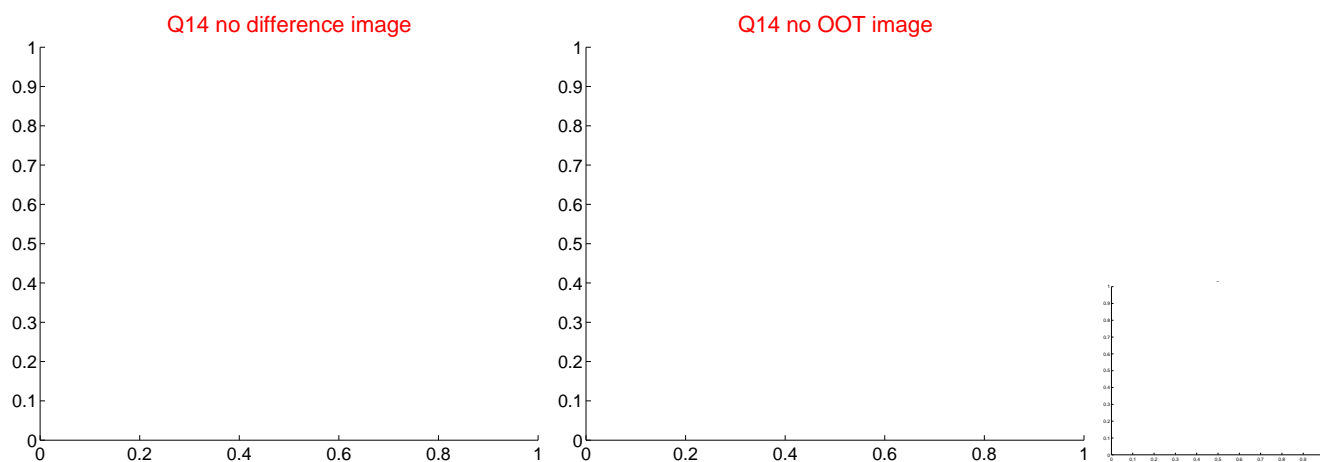
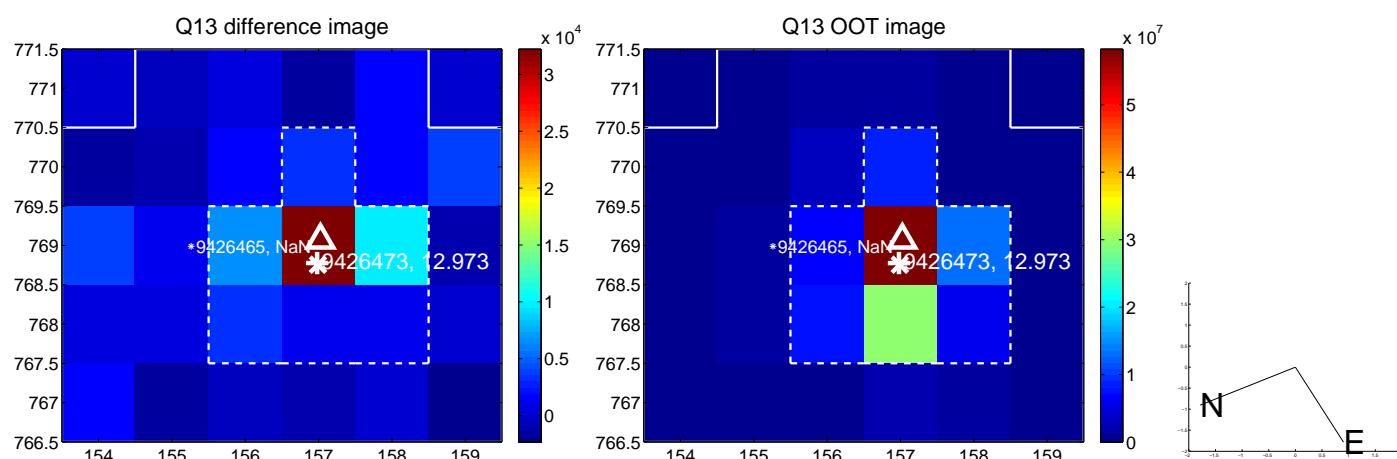
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



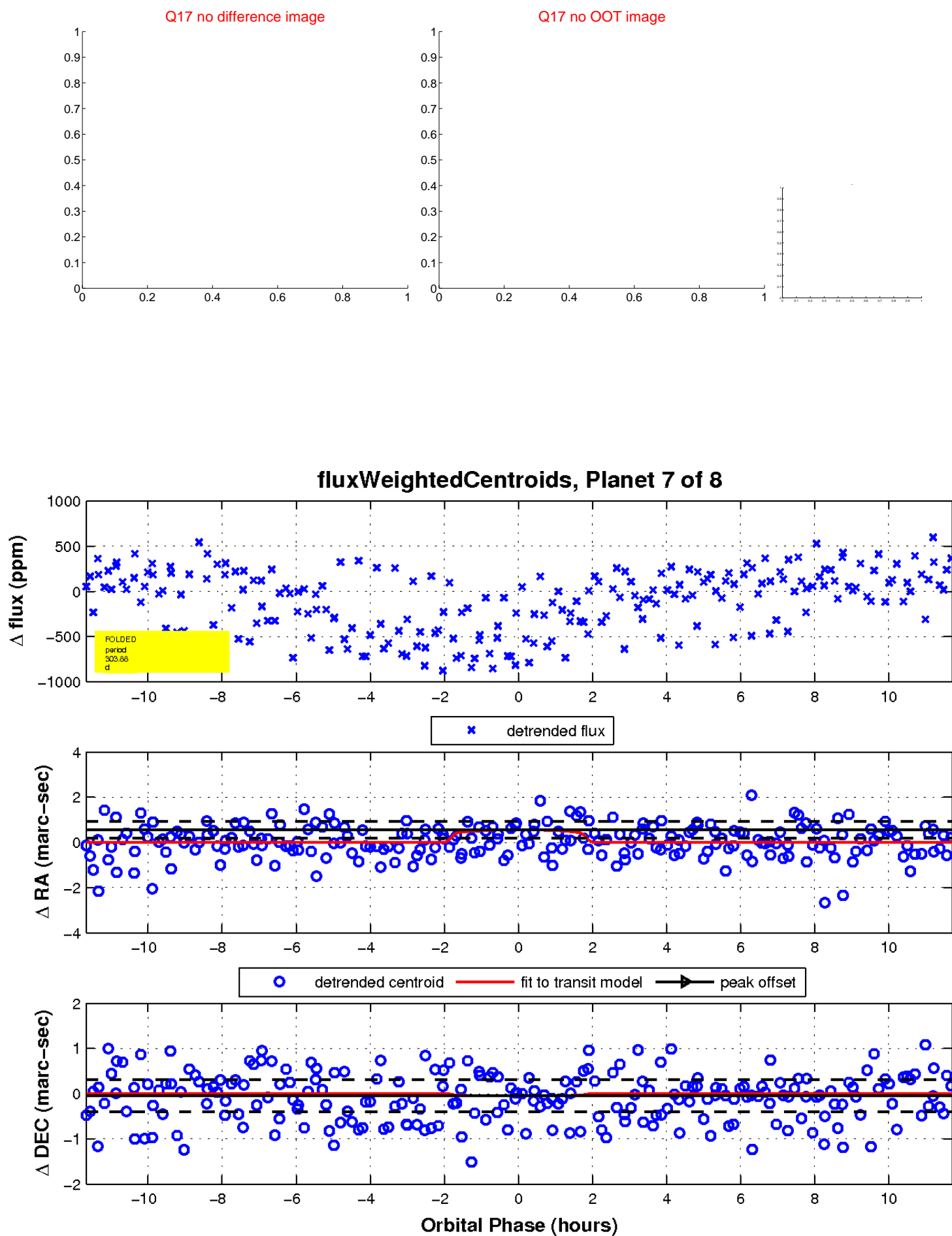
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

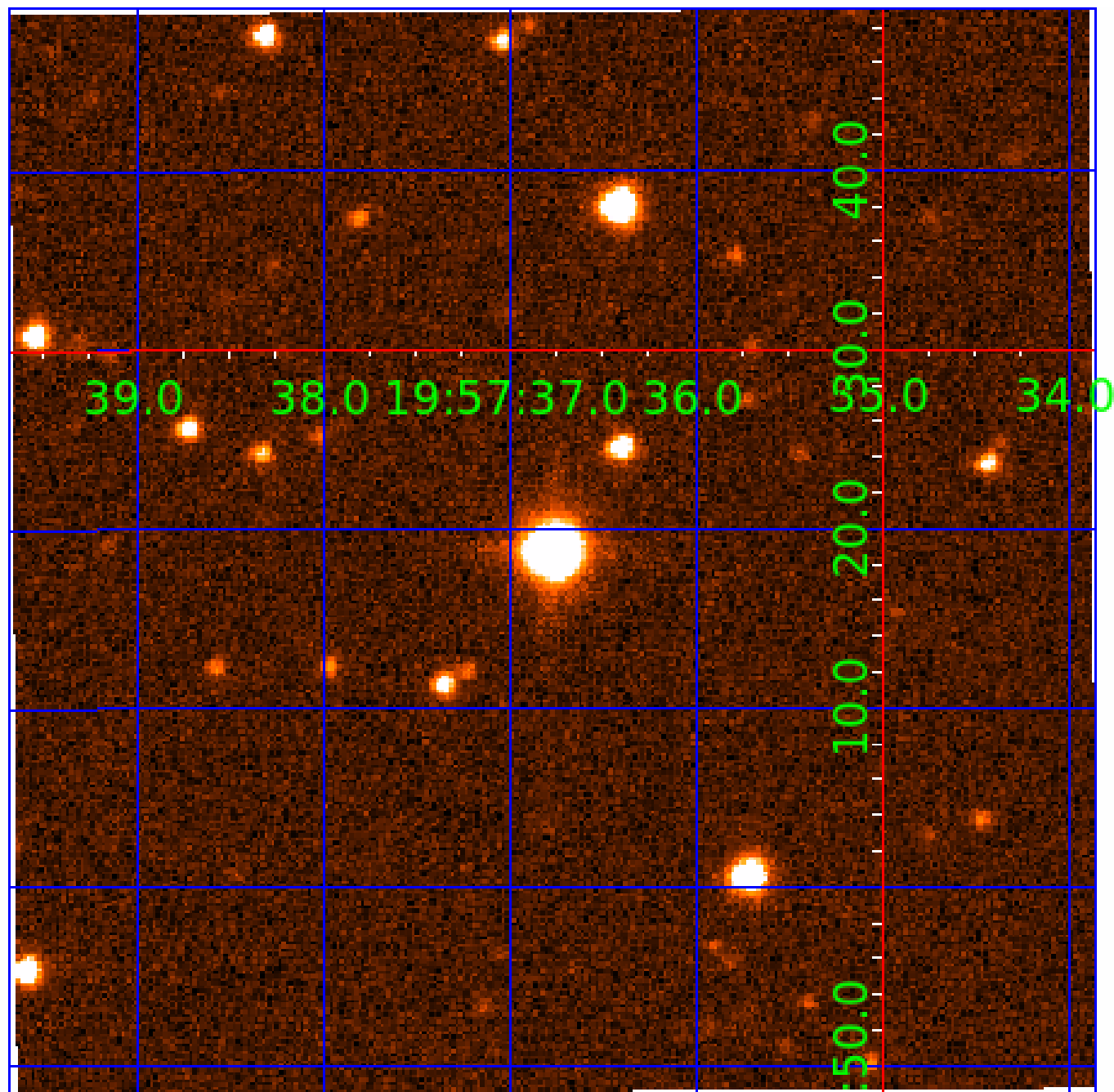


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009426473

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})
009426473-01	OBS	No	1.037045	131.951475	20.4	6.439	8.6	5.2	4.66	6231	2.16	46945.10
009426473-02	OBS	No	63.284304	140.796145	576.3	8.541	8.5	9.4	4.66	6231	19.34	195.40
009426473-03	OBS	No	27.312220	154.327238	182.6	6.860	8.5	5.5	4.66	6231	7.27	599.12
009426473-04	OBS	No	145.259499	157.361685	653.7	17.098	9.3	8.7	4.66	6231	14.83	64.53
009426473-05	OBS	No	28.713763	137.077892	277.3	5.315	8.9	8.1	4.66	6231	8.81	560.45
009426473-06	OBS	No	111.271387	217.136369	653.0	7.702	8.9	8.5	4.66	6231	22.86	92.08
009426473-07	OBS	No	303.882214	282.705089	412.5	3.921	8.9	7.4	4.66	6231	10.58	24.12
009426473-08	OBS	No	109.296456	228.284936	520.0	5.463	8.9	8.5	4.66	6231	13.54	94.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009426473-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009426473-07	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—HALO_GHOST
009426473-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—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.

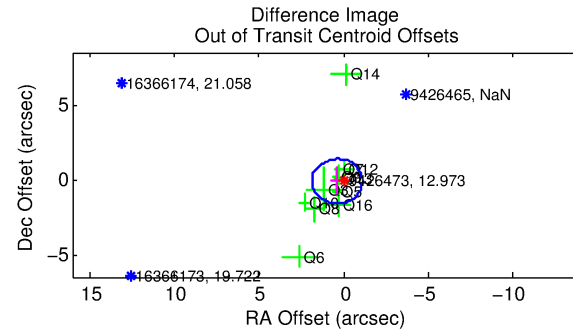
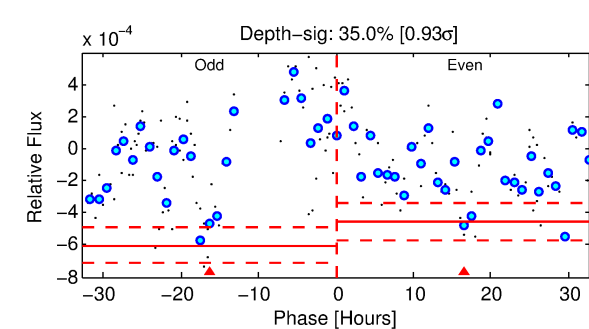
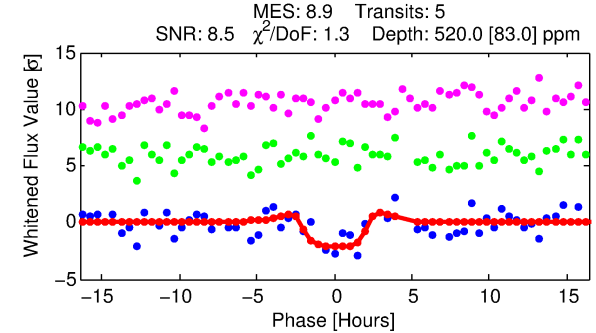
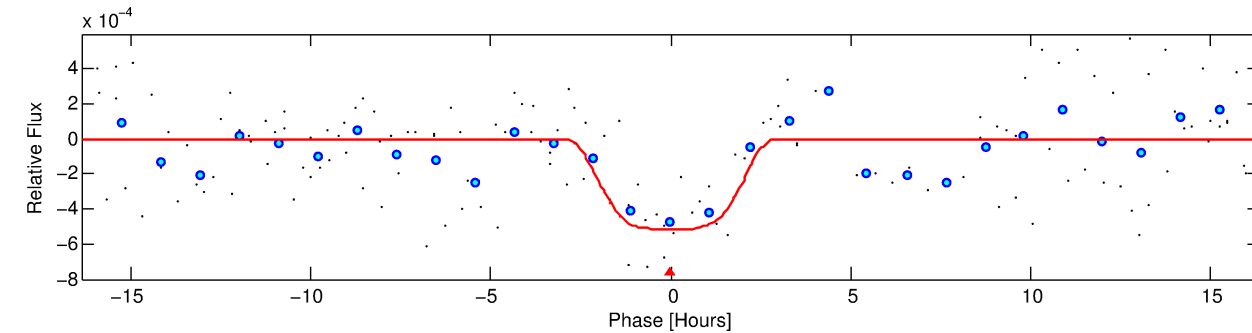
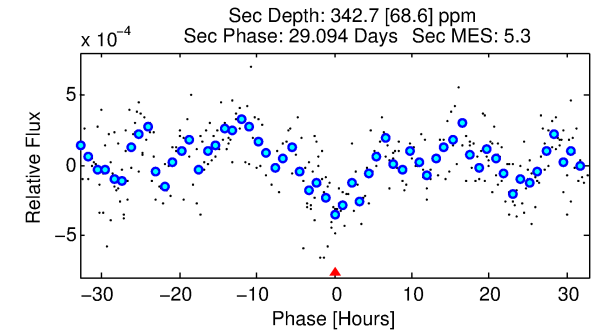
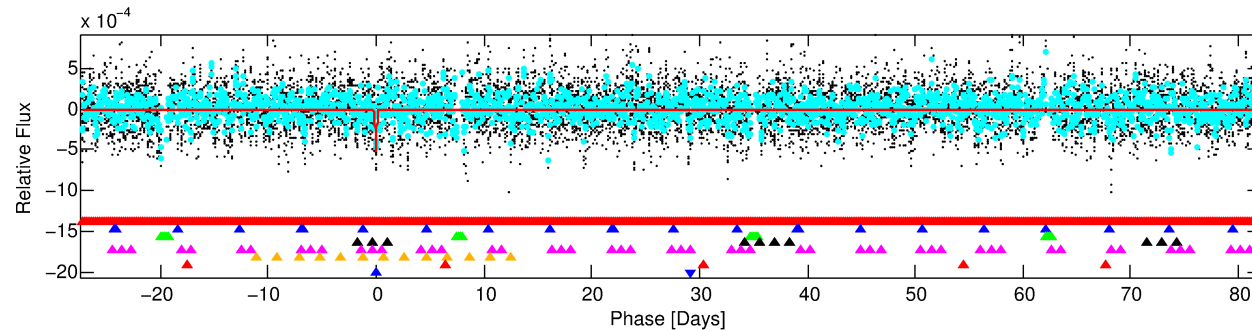
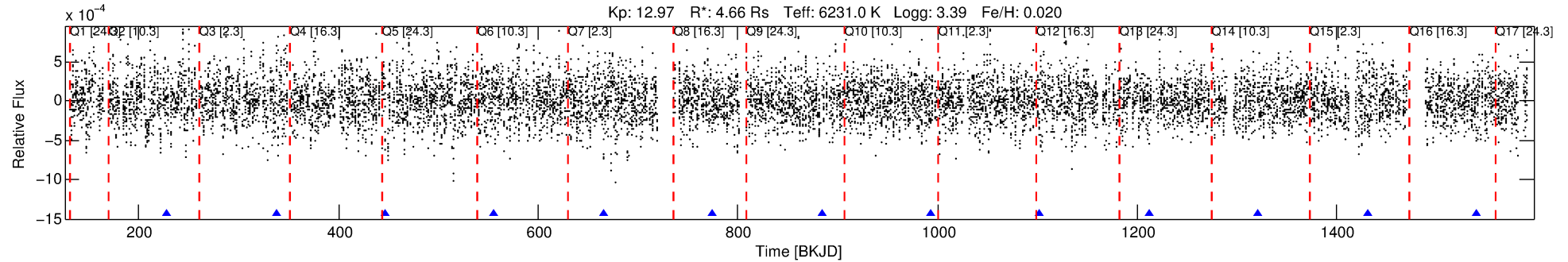
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009426473-08

No Significant Match Found

DV One-Page Summary

KIC: 9426473 Candidate: 8 of 8 Period: 109.296 d



DV Fit Results:

Period = 109.29646 [0.00189] d
Epoch = 228.2849 [0.0146] BKJD
Rp/R* = 0.0266 [0.0028]
a/R* = 55.03 [13.15]
b = 0.96 [0.02]
Seff = 94.30 [64.68]
Teq = 795 [136] K
Rp = 13.54 [5.93] Re
a = 0.5576 [0.2328] AU
Ag = 319.81 [234.68] [1.36σ]
Teffp = 5195 [405] K [10.29σ]

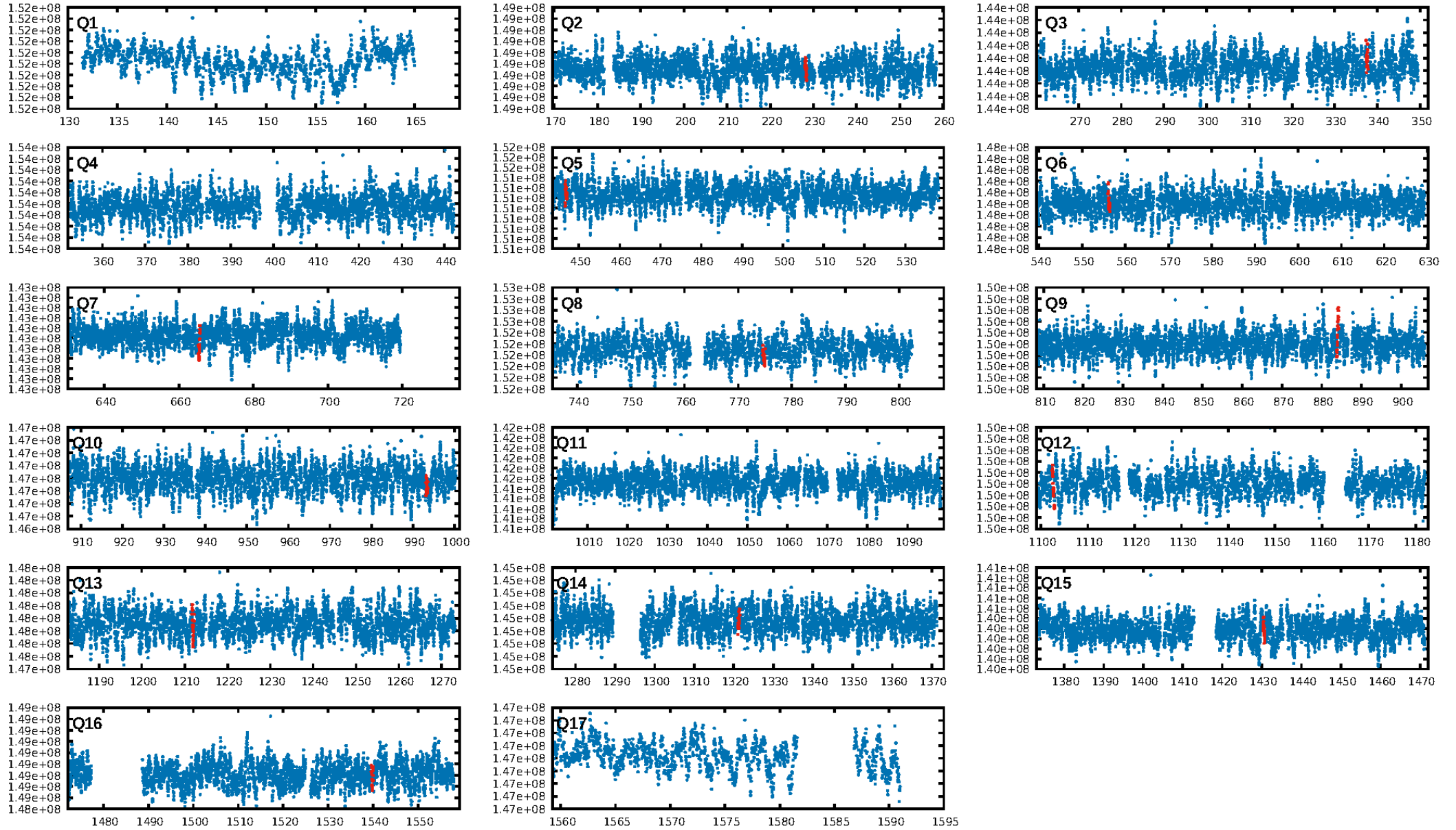
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [108.92σ]
LongPeriod-sig: 100.0% [5.02σ]
ModelChiSquare2-sig: 55.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.07e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -0.3682
Centroid-sig: 8.4%
Centroid-so: 0.542 arcsec [1.30σ]
OotOffset-rm: 0.400 arcsec [0.81σ]
KicOffset-rm: 0.314 arcsec [0.66σ]
OotOffset-st: 3/2/3/3 [11]
KicOffset-st: 3/2/3/3 [11]
DiffImageQuality-fgm: 0.36 [4/11]
DiffImageOverlap-fno: 0.00 [0/13]

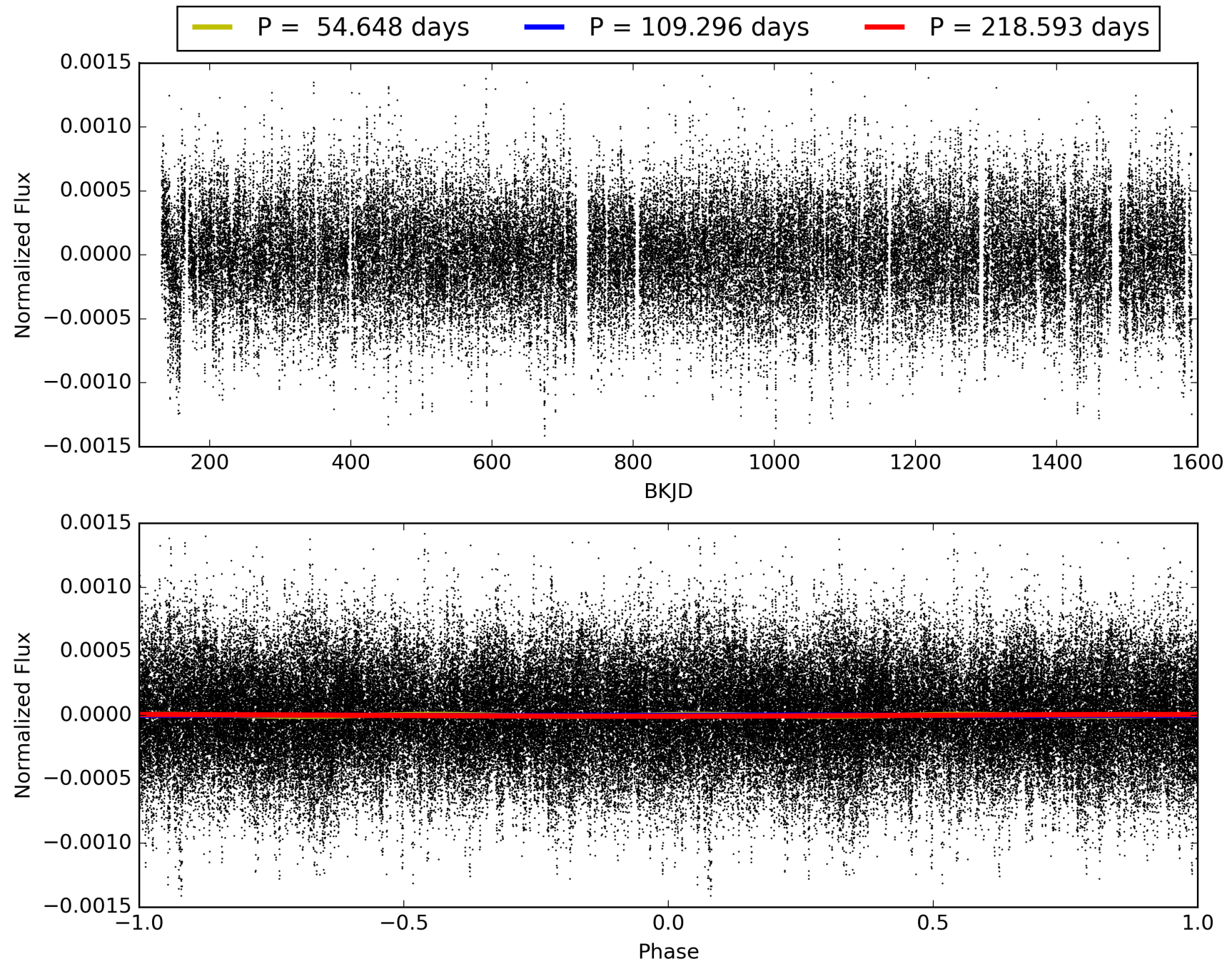
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:29:55 Z

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

TCE 009426473-08, PDC Light Curves

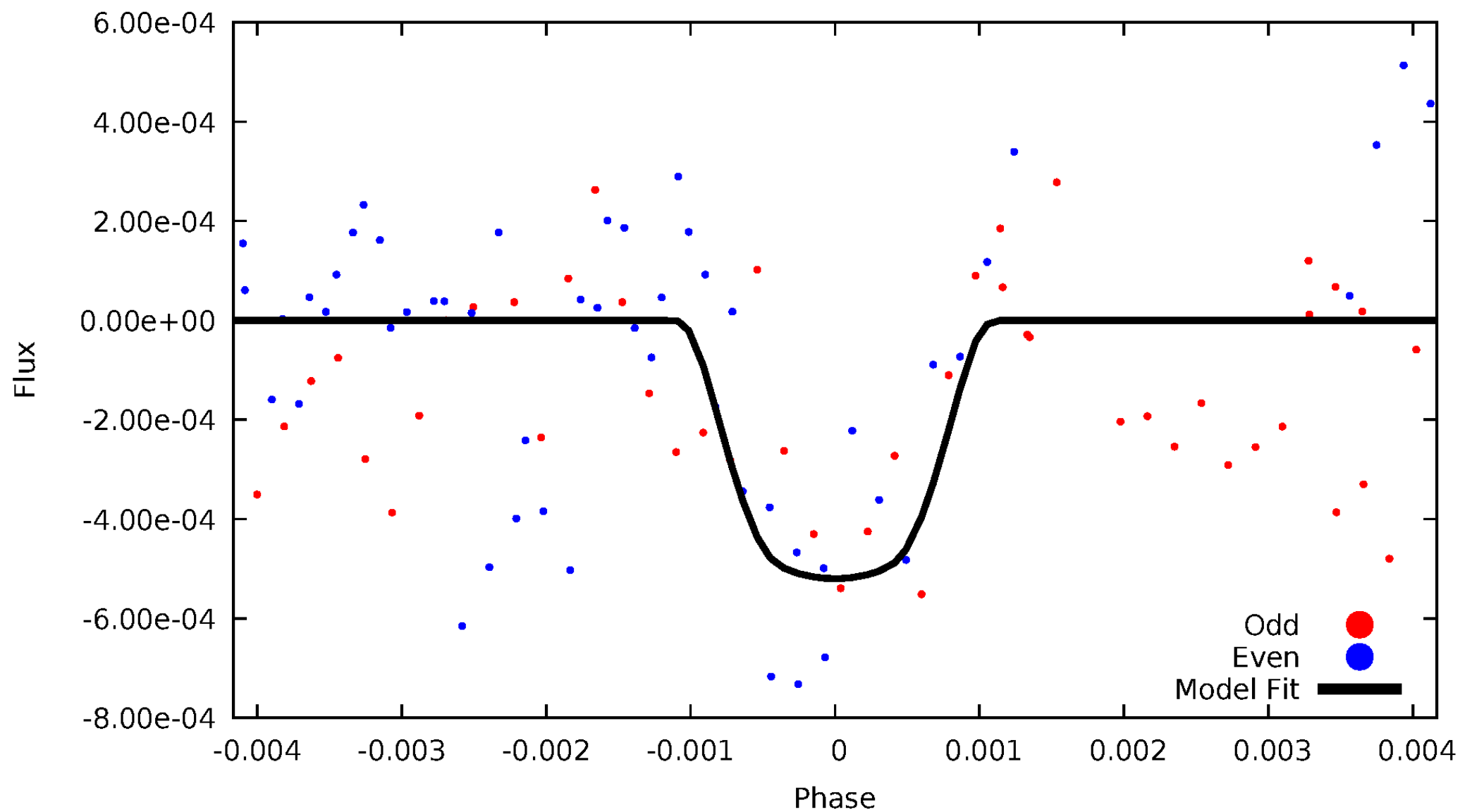


TCE 009426473-08



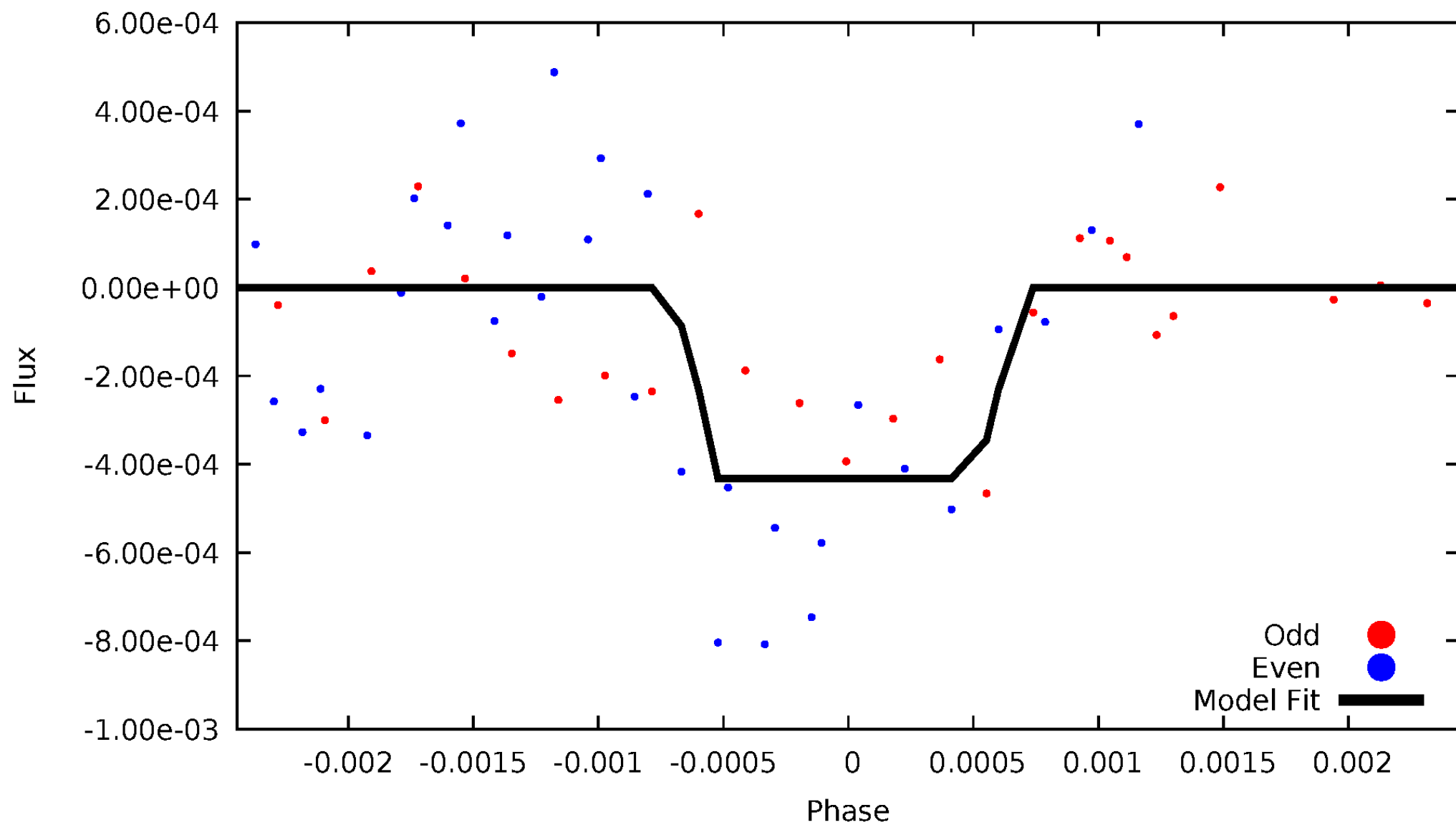
DV Odd/Even

TCE 009426473-08



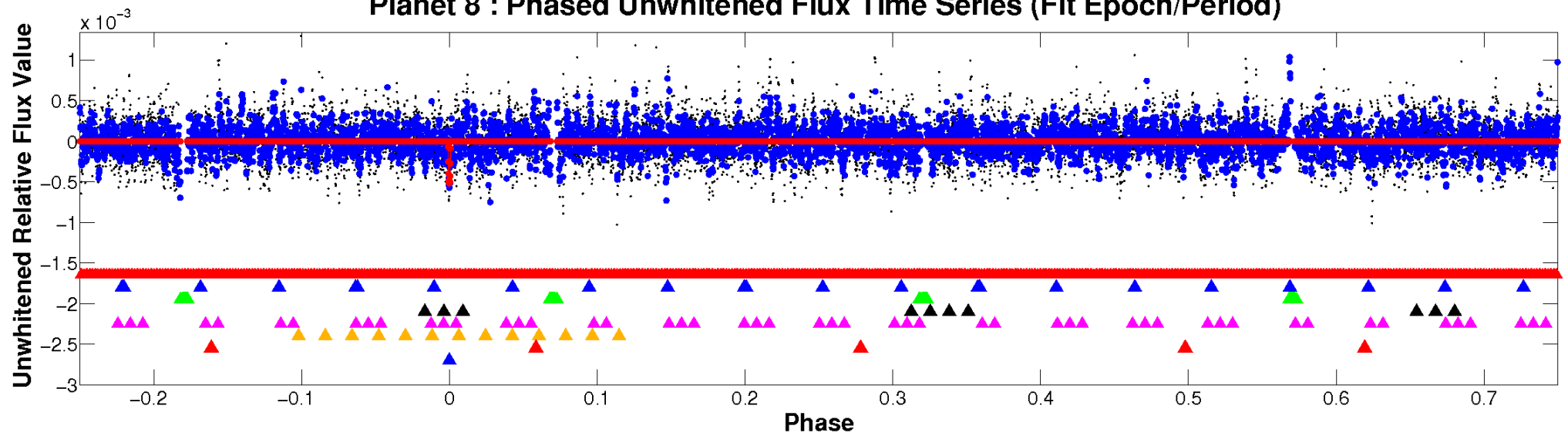
ALT Odd/Even

TCE 009426473-08

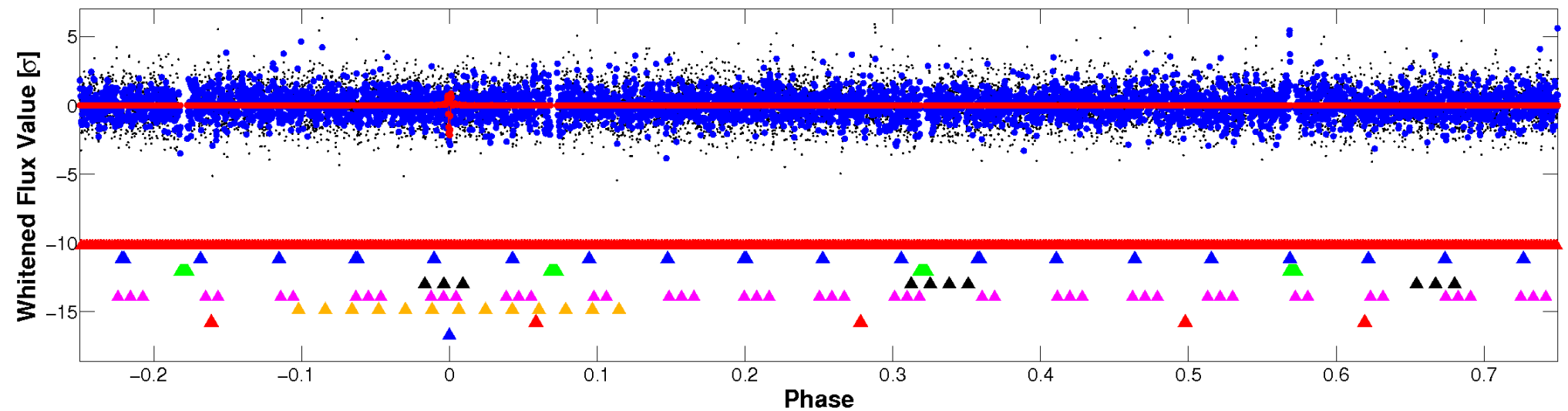


Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

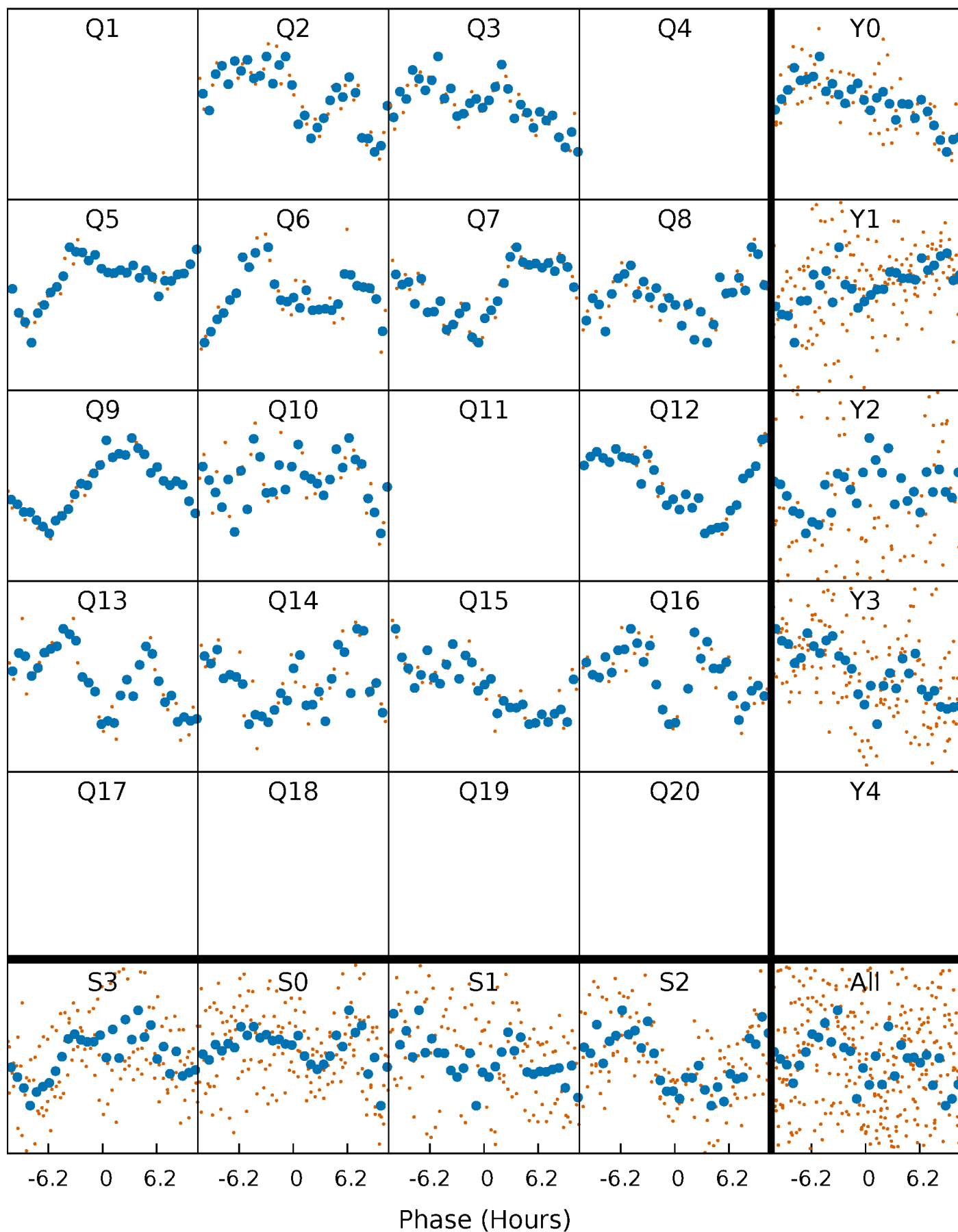


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



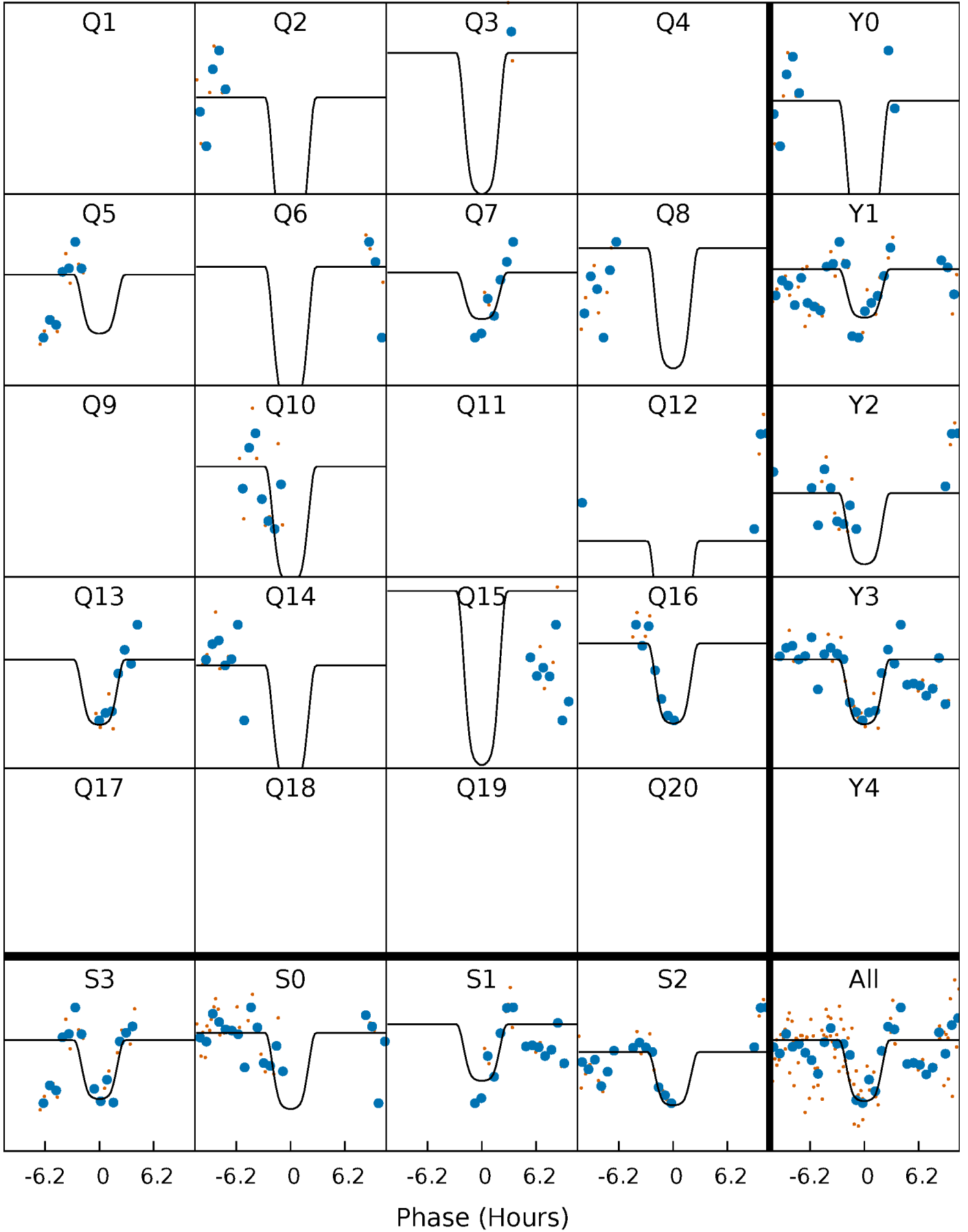
PDC Quarter-Phased Transit Curves

TCE 009426473-08 P=109.296456 Days $T_0=228.284936$ (BKJD)



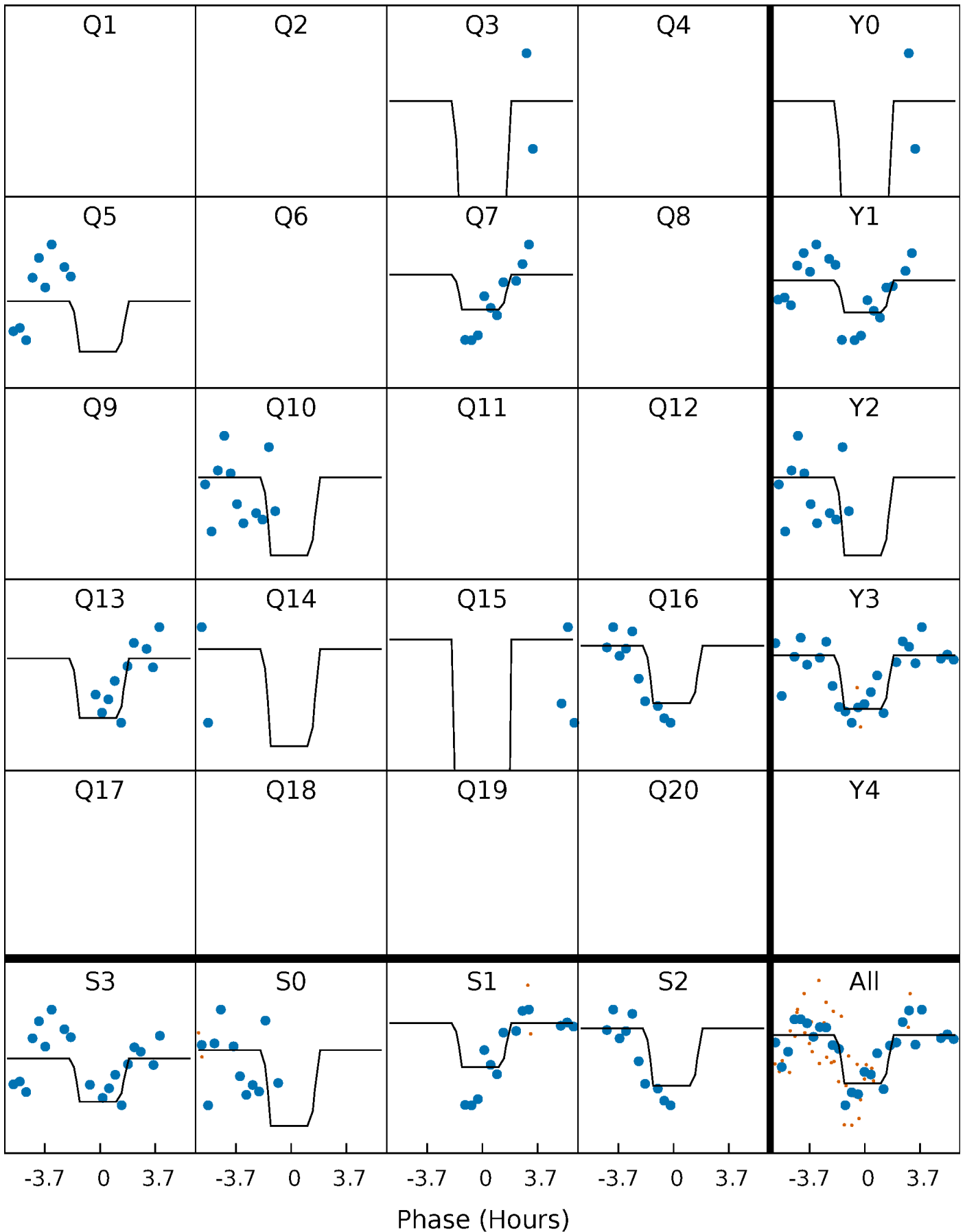
DV Quarter-Phased Transit Curves

TCE 009426473-08 P=109.296456 Days $T_0=228.284936$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

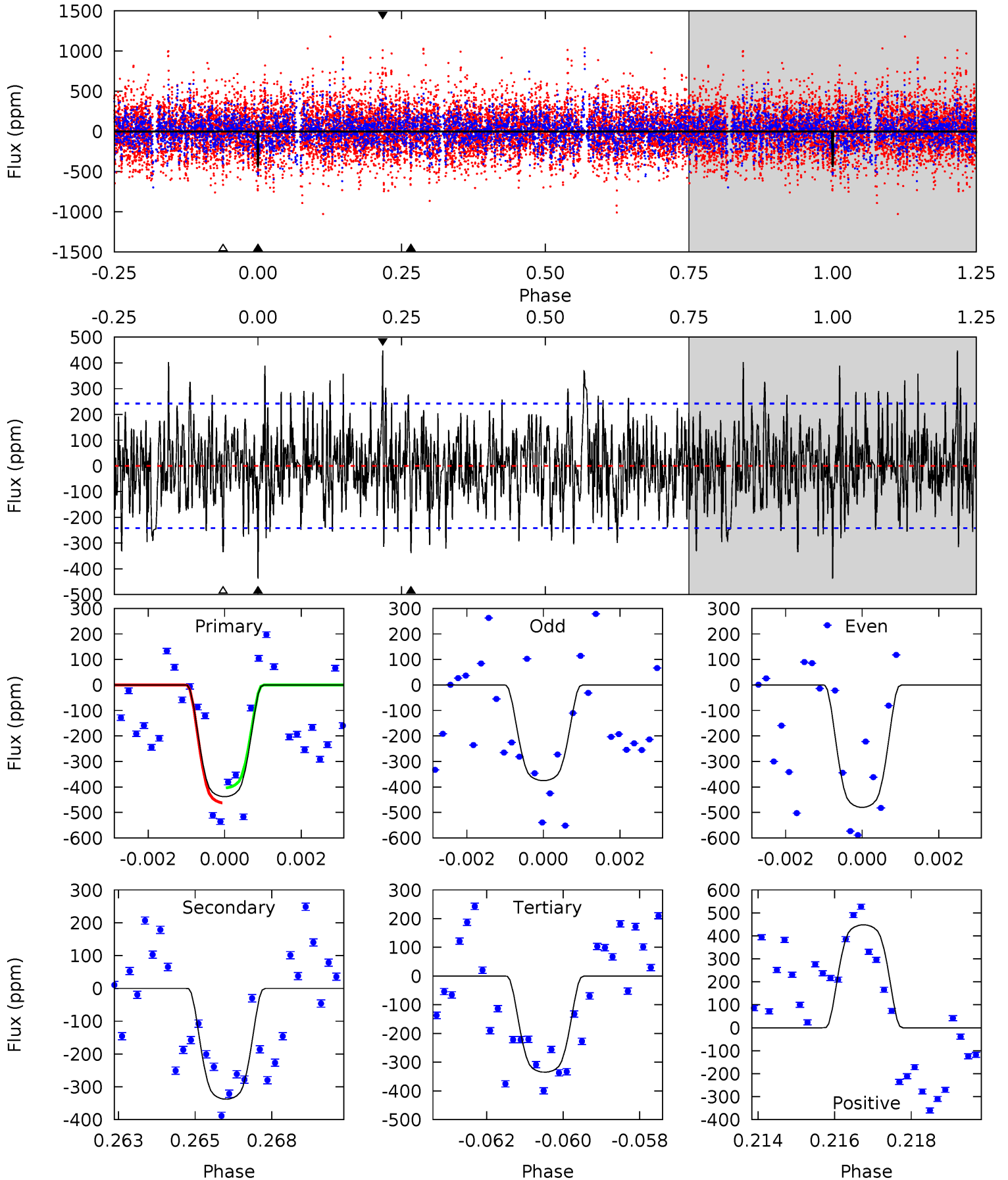
TCE 009426473-08 $P=109.295760$ Days $T_0=228.296343$ (BKJD)



DV Model-Shift Uniqueness Test

009426473-08, P = 109.296456 Days, E = 118.988480 Days

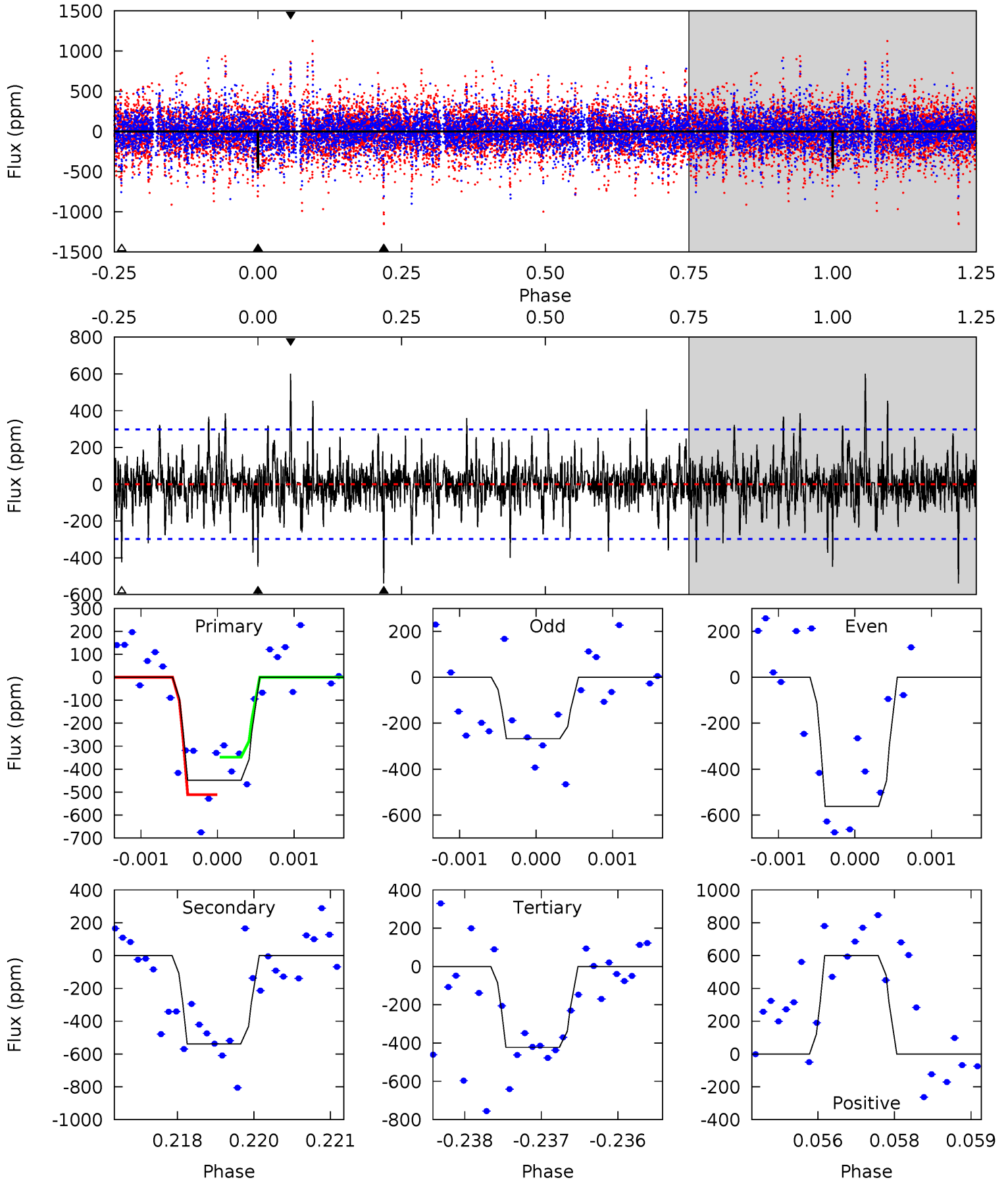
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.62	7.41	7.35	9.84	5.31	3.06	2.49	2.27	-0.22	0.06	-2.42	1.15	0.68	0.51	0.64



Alt Model-Shift Uniqueness Test

009426473-08, P = 109.295760 Days, E = 119.000583 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.11	9.76	7.65	10.9	5.40	3.21	1.77	0.46	-2.76	2.11	-1.11	2.60	0.87	0.53	1.48



Stellar Parameters For KIC 009426473

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6231^{+189}_{-170}	$3.388^{+0.399}_{-0.094}$	$0.020^{+0.300}_{-0.300}$	$4.659^{+0.661}_{-1.984}$	$1.933^{+0.071}_{-0.403}$	$0.027^{+0.085}_{-0.008}$
	+3%/-3%	+12%/-3%	+1500%/-1500%	+14%/-43%	+4%/-21%	+314%/-30%
Source	PHO1	FLK73	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 009426473-08 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-338 ± 46	$12.69^{+2.34}_{-2.78}$	1089^{+70}_{-122}	5244^{+325}_{-300}	354^{+234}_{-110}
Alt.	-539 ± 55	$9.78^{+2.12}_{-2.25}$	1086^{+71}_{-122}	6594^{+583}_{-488}	964^{+608}_{-333}

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

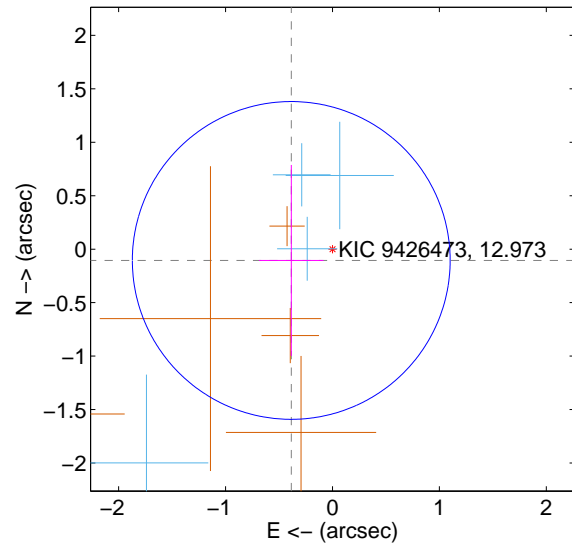
Supplemental centroid analysis for 009426473-08. Kepler magnitude: 12.97. Transit SNR 8.51

There are 4 quarters with good PRF difference image offsets

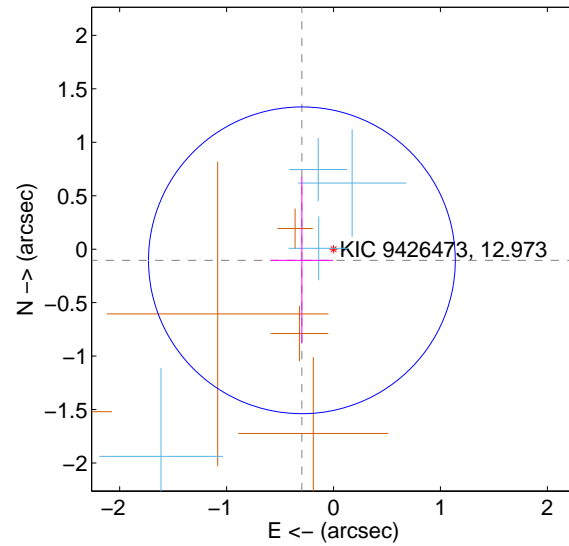
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.400 ± 0.495	0.81	0.386 ± 0.302	-0.105 ± 0.893
PRF-fit source offset from KIC position	0.314 ± 0.478	0.66	0.296 ± 0.293	-0.104 ± 0.778
photometric centroid source offset	0.54 ± 0.42	1.30	-0.18 ± 0.47	0.51 ± 0.41

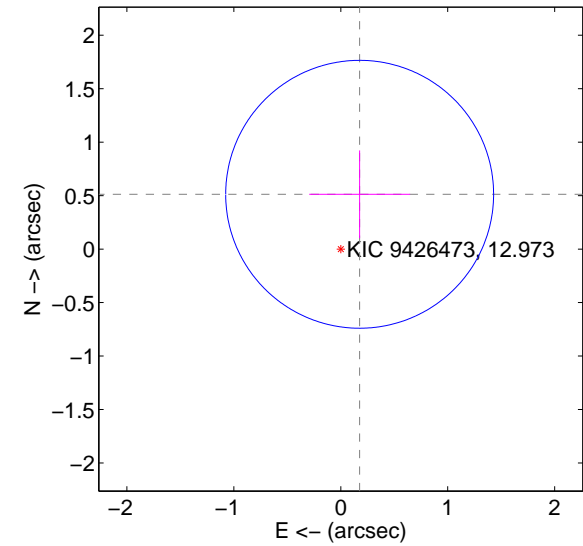
offset from difference PRF-fit to OOT PRF-fit



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.

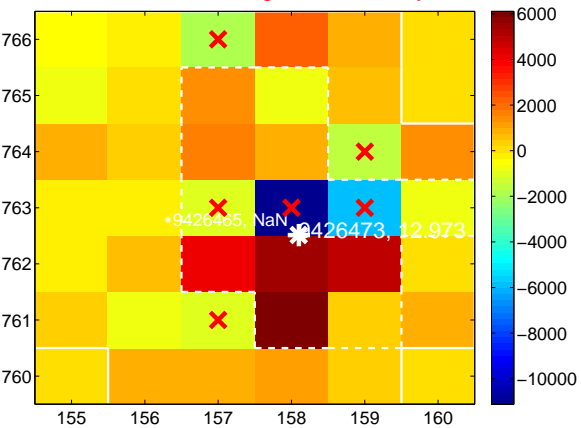
Q1 no difference image



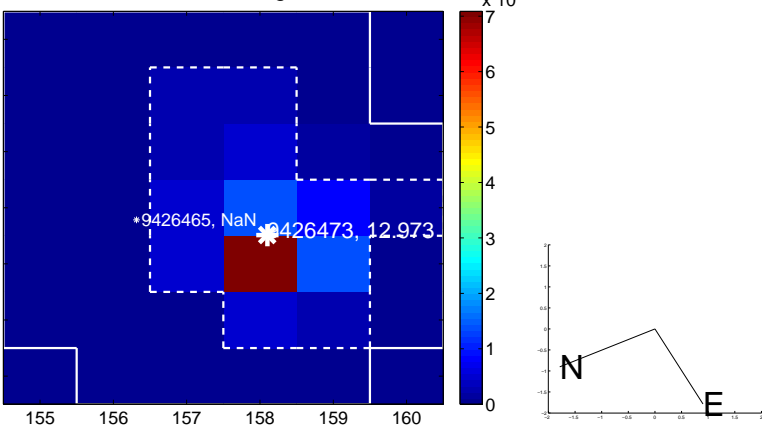
Q1 no OOT image



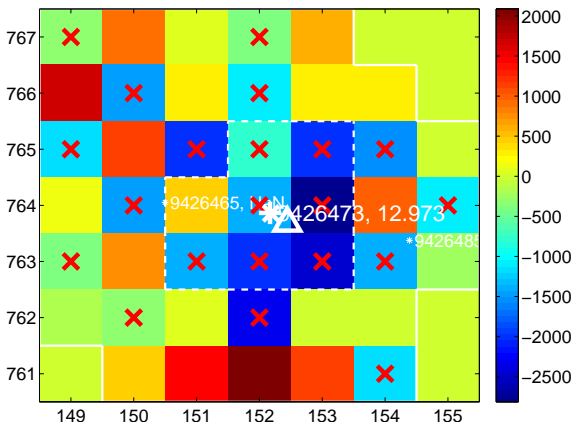
Q2 difference image. Poor Quality



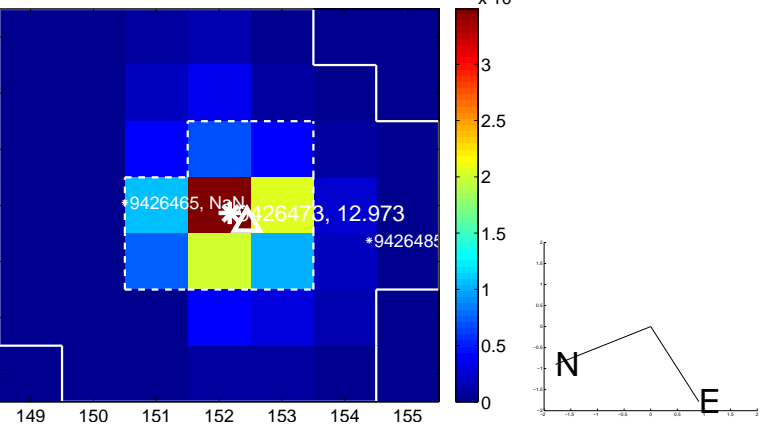
Q2 OOT image



Q3 difference image. Poor Quality



Q3 OOT image



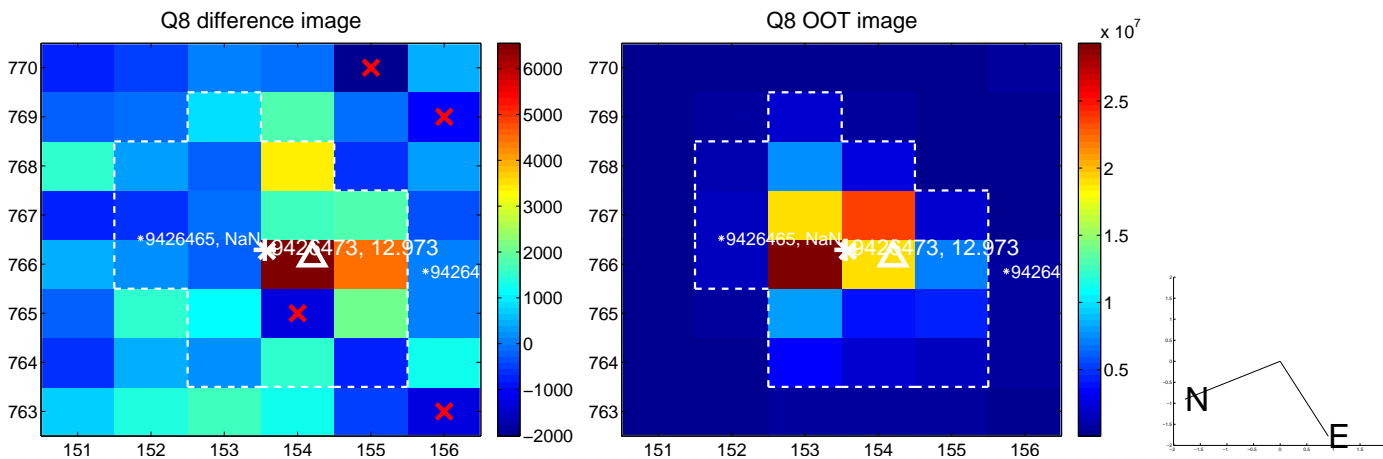
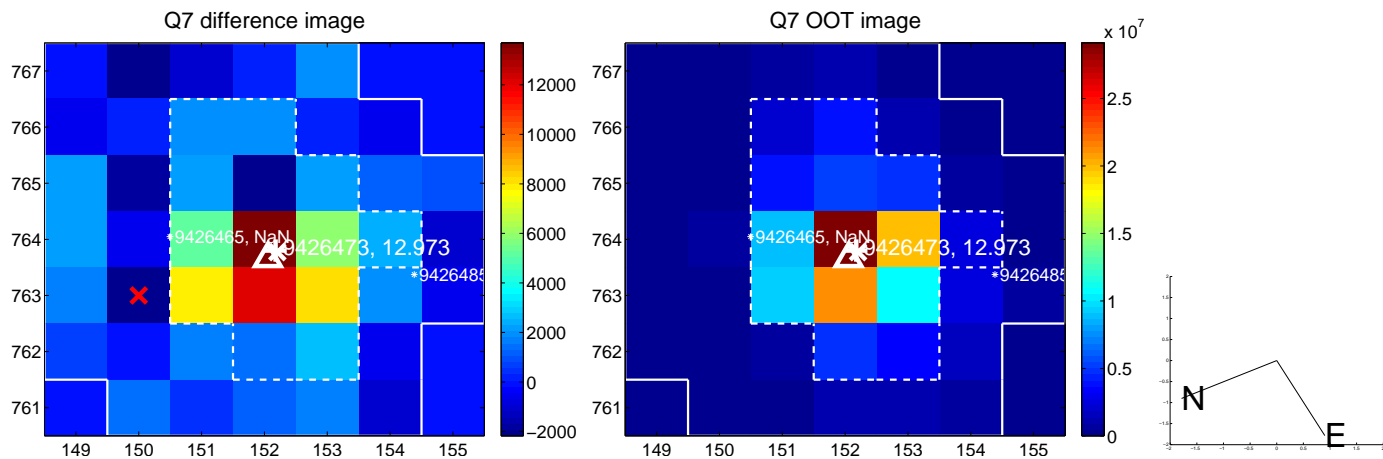
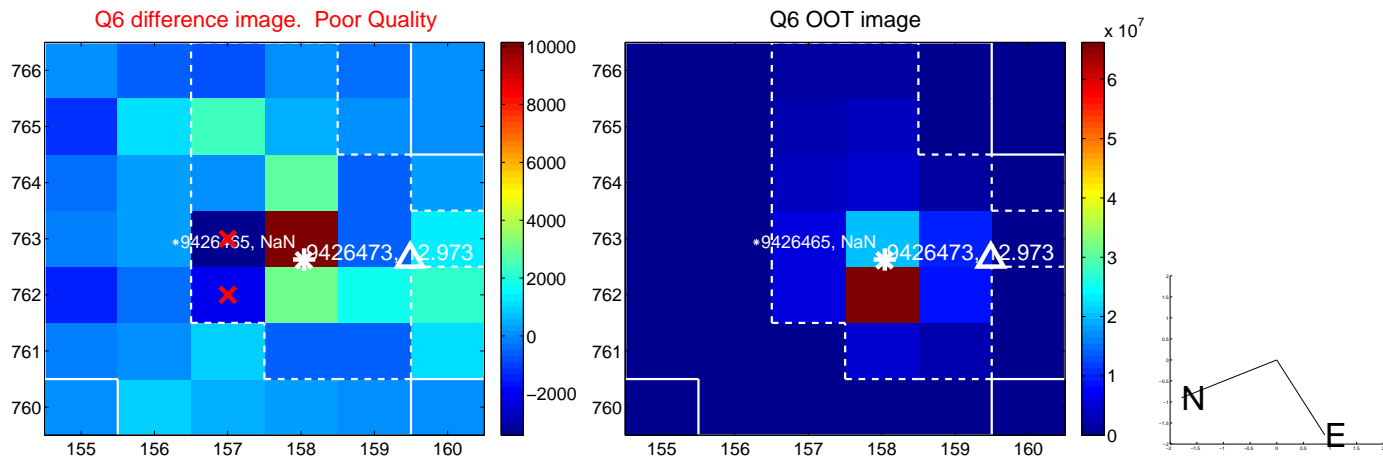
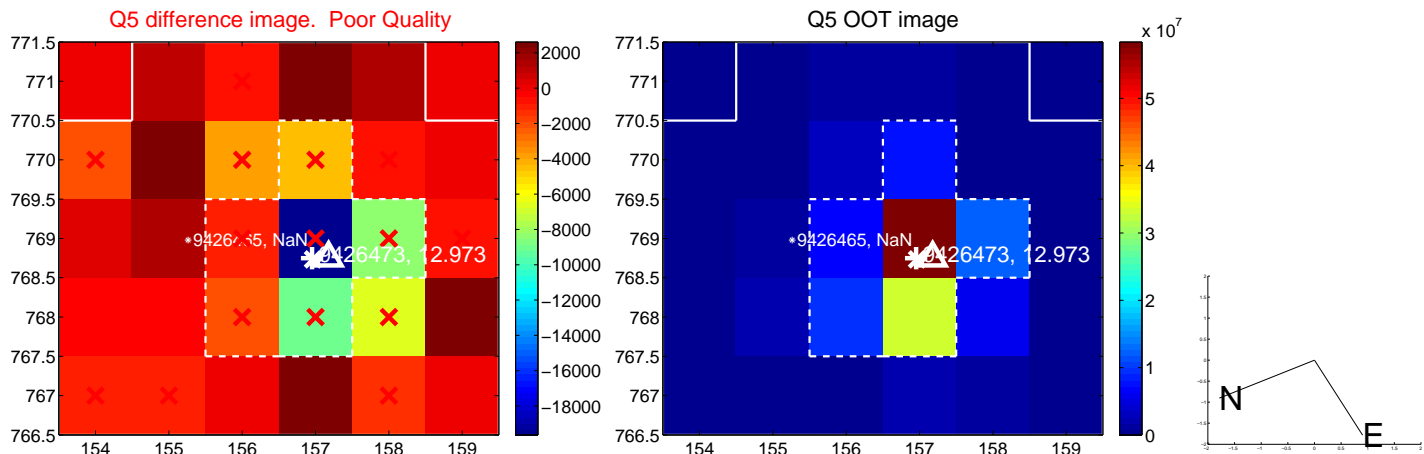
Q4 no difference image



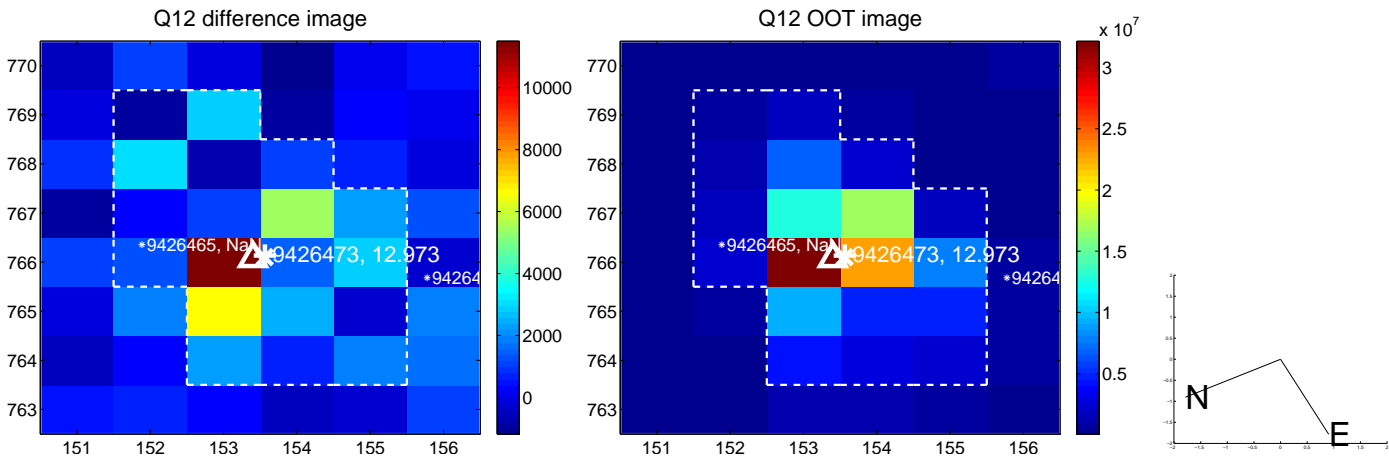
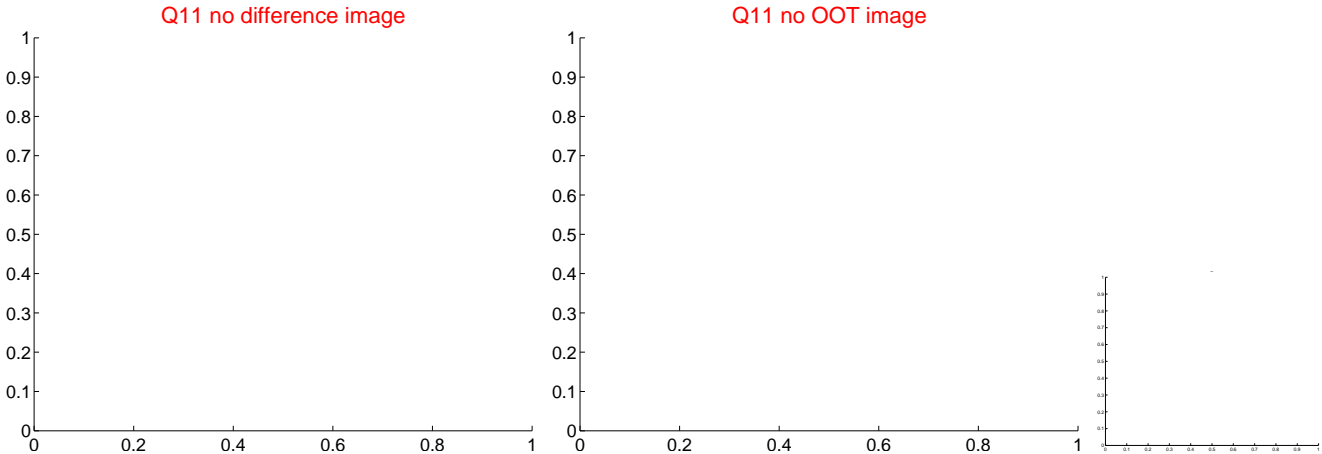
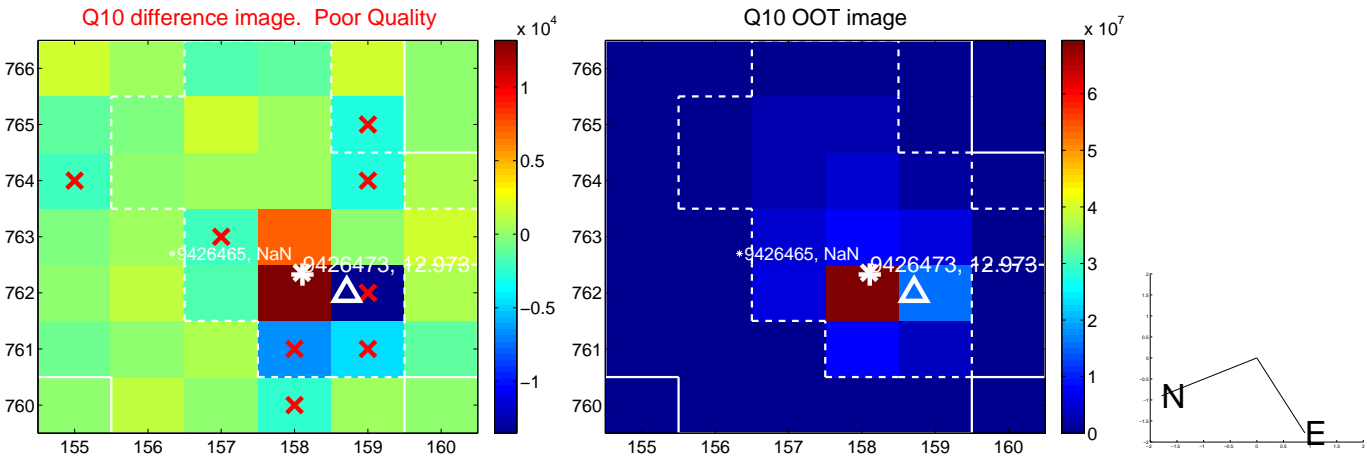
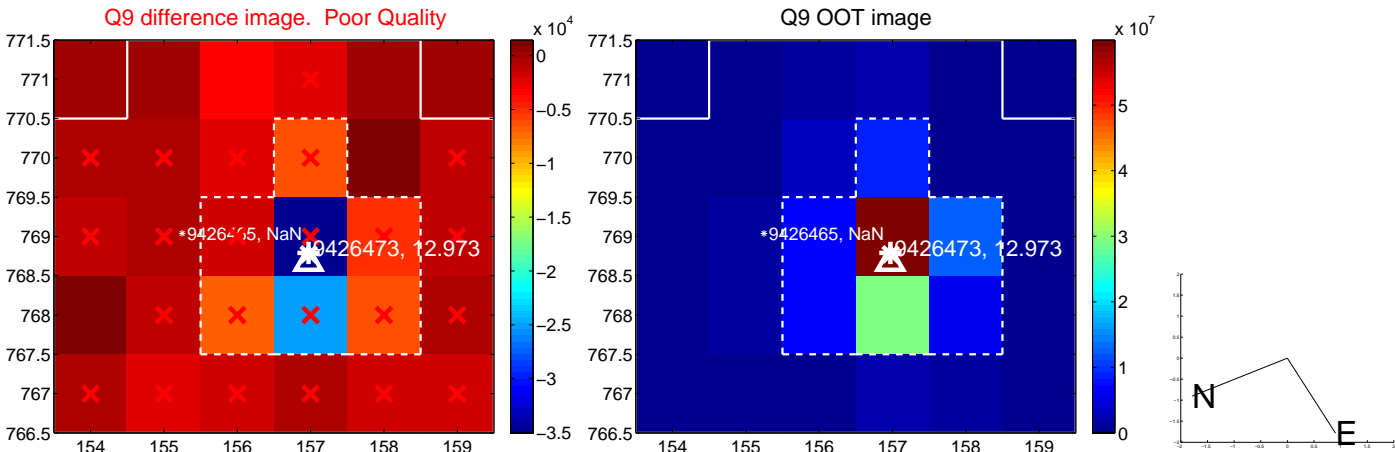
Q4 no OOT image



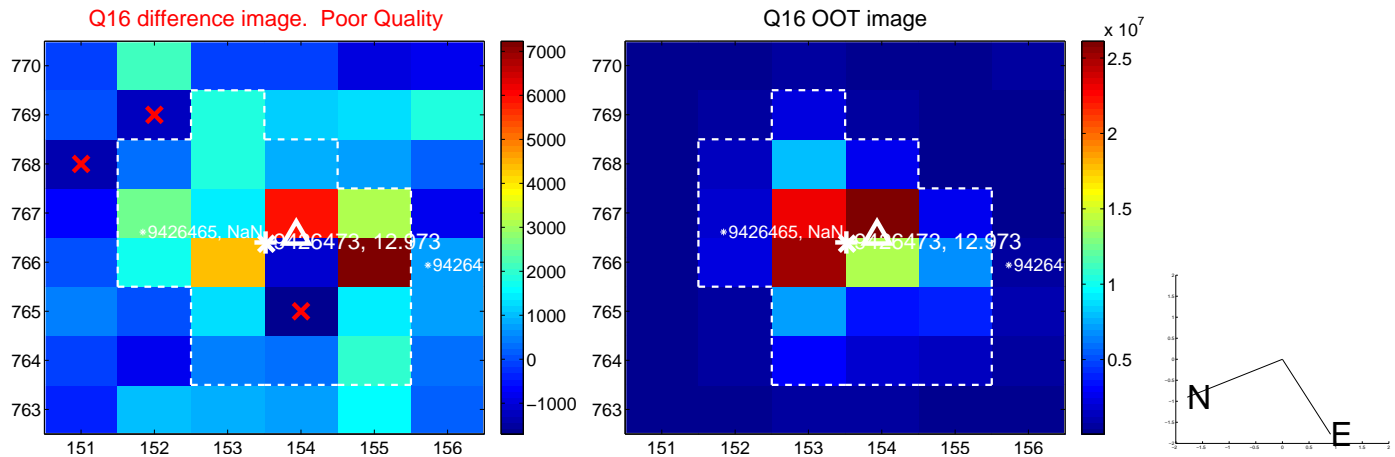
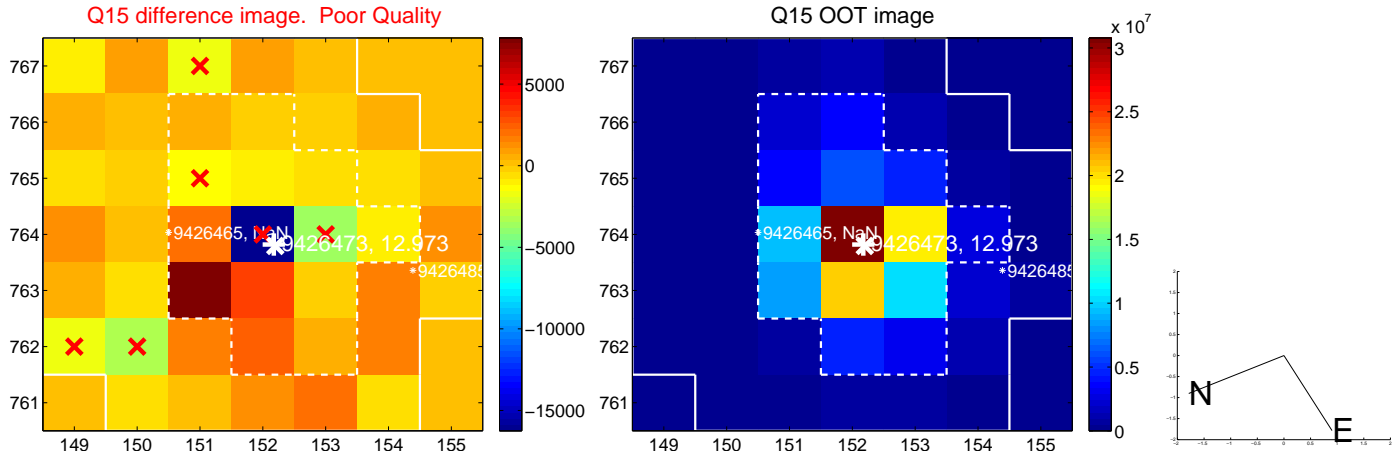
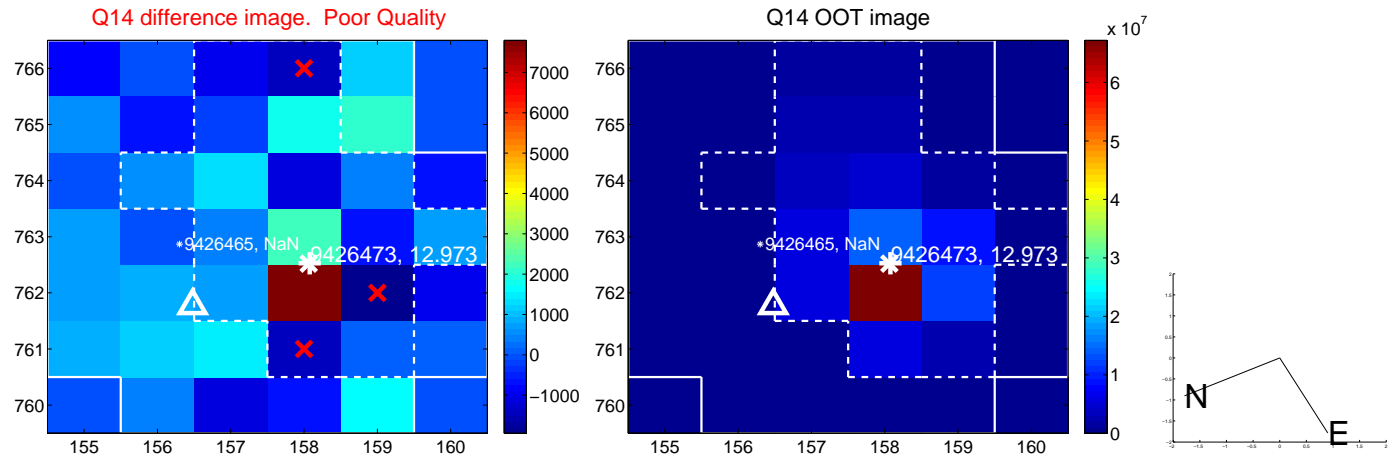
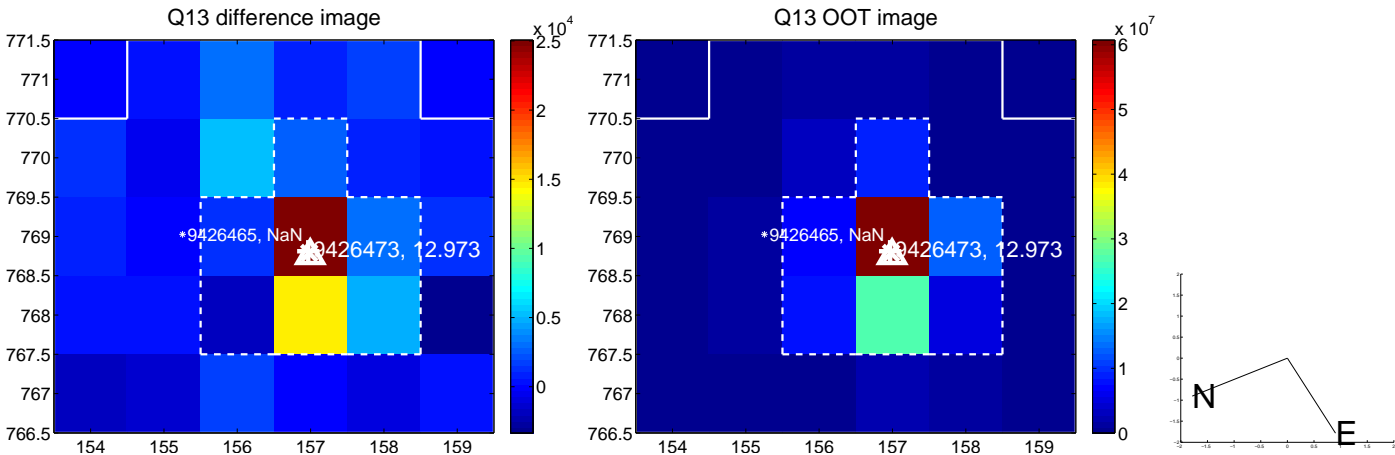
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



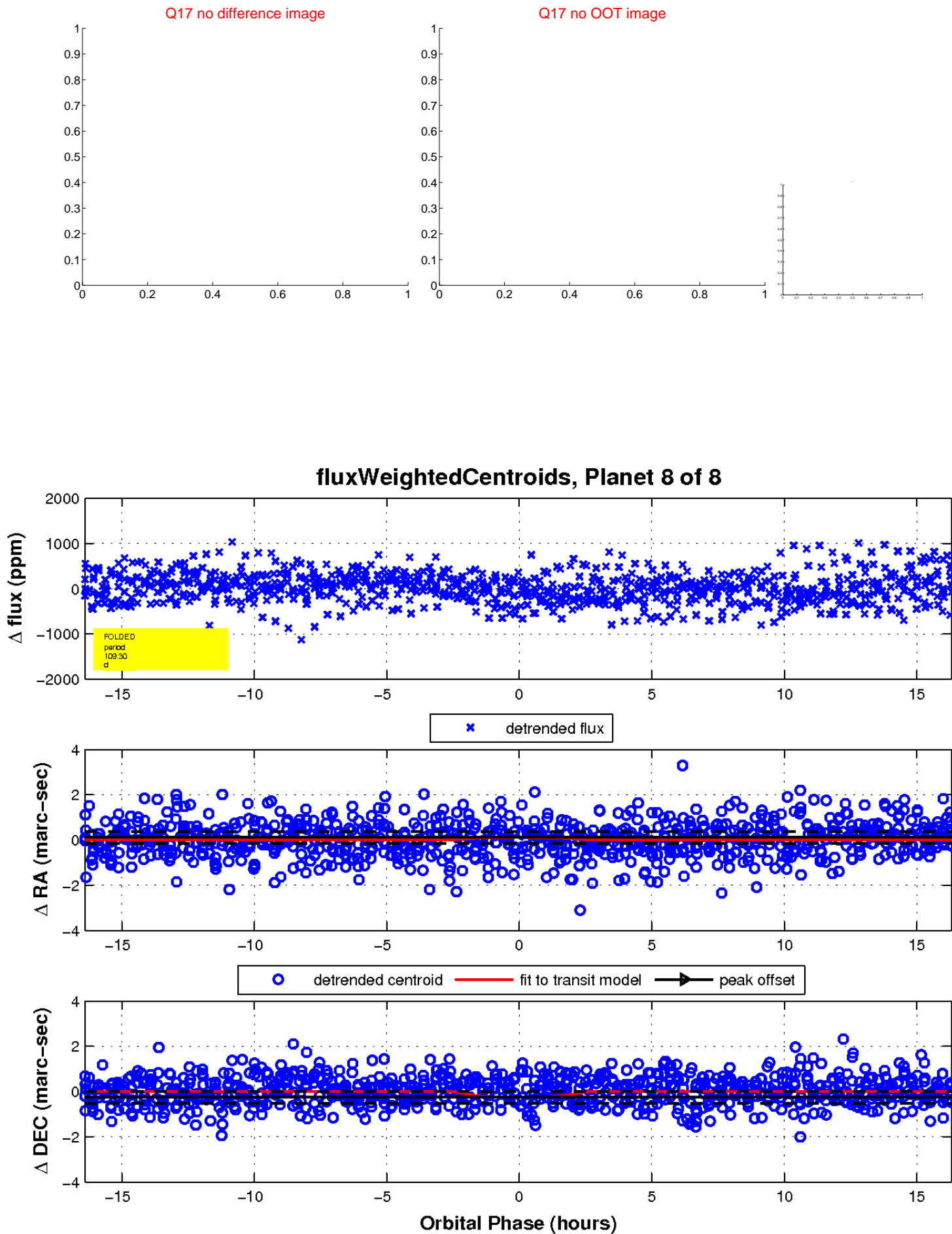
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

