

KIC 012405950

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})
012405950-01	OBS	3778.01	3.539641	132.772763	1163.2	1.450	179.4	192.3	2.63	7021	11.83	5689.47
012405950-02	OBS	No	3.539613	134.363793	343.8	0.961	42.6	58.1	2.63	7021	5.73	5689.53
012405950-03	OBS	No	2.654873	133.072202	18.8	12.956	7.6	7.6	2.63	7021	1.15	8348.83
012405950-04	OBS	No	64.079148	145.775835	112.3	9.314	8.2	7.2	2.63	7021	3.11	119.69
012405950-05	OBS	No	81.706403	134.515598	178.7	4.763	7.7	7.6	2.63	7021	4.03	86.56
012405950-06	OBS	No	113.552188	146.497204	135.5	13.721	7.7	7.4	2.63	7021	3.40	55.82
012405950-07	OBS	No	73.331738	182.647921	239.5	2.885	8.2	7.4	2.63	7021	4.36	99.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012405950-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
012405950-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
012405950-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012405950-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012405950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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

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

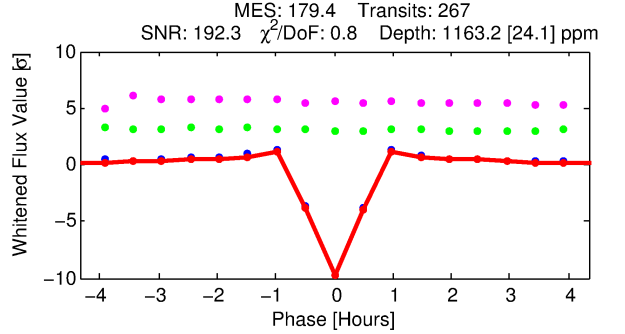
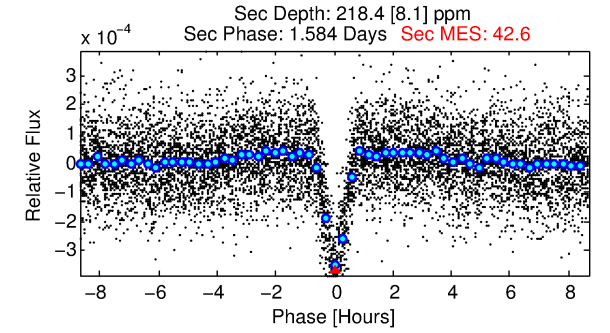
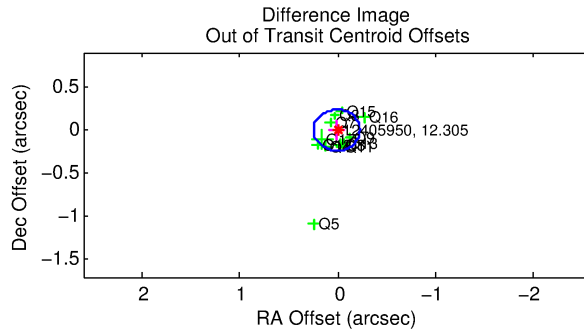
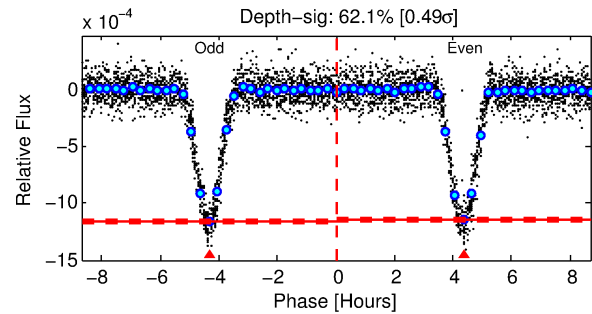
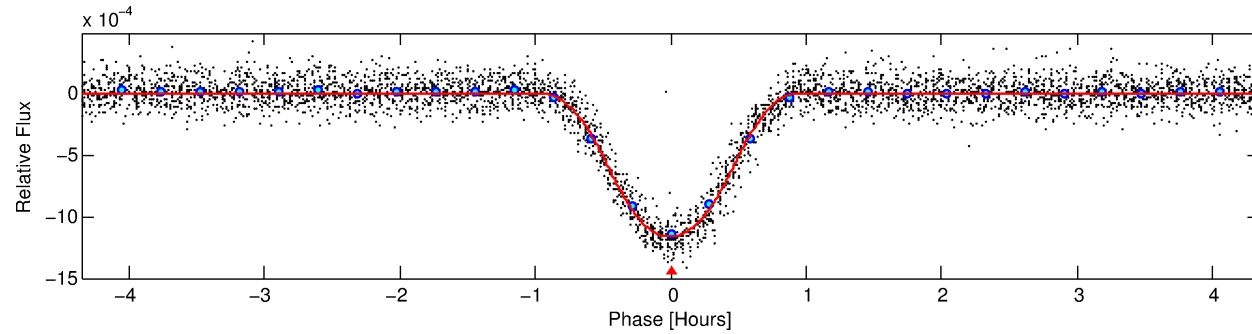
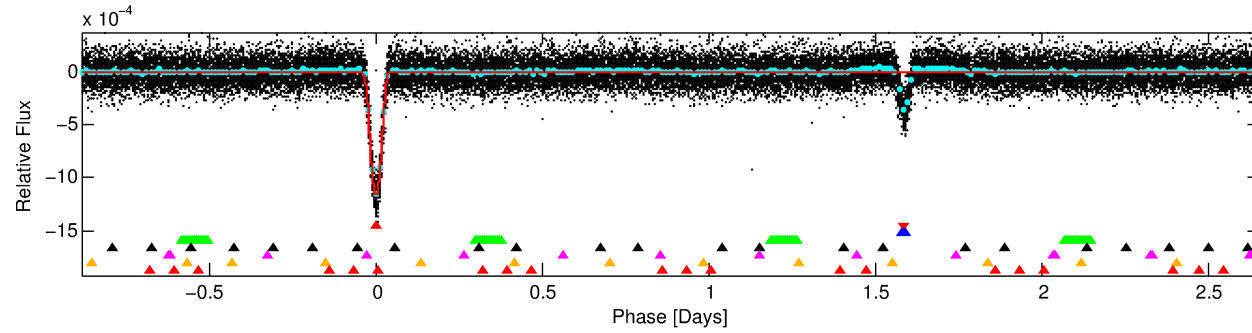
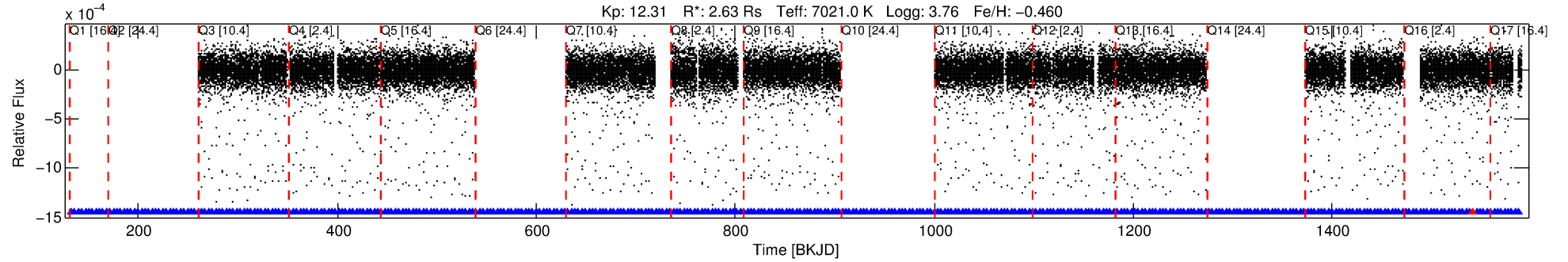
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012405950-01

No Significant Match Found

DV One-Page Summary

KIC: 12405950 Candidate: 1 of 7 Period: 3.540 d
KOI: K03778.01 Corr: 0.978



DV Fit Results:

Period = 3.53964 [0.00000] d
Epoch = 132.7728 [0.0001] BKJD
Rp/R* = 0.0412 [0.0019]
a/R* = 7.34 [0.27]
b = 0.97 [0.01]
Seff = 5689.47 [3104.37]
Teq = 2215 [302] K
Rp = 11.83 [4.30] Re
a = 0.0514 [0.0172] AU
Ag = 2.27 [1.21] [1.05 σ]
Teffp = 4203 [188] K [5.59 σ]

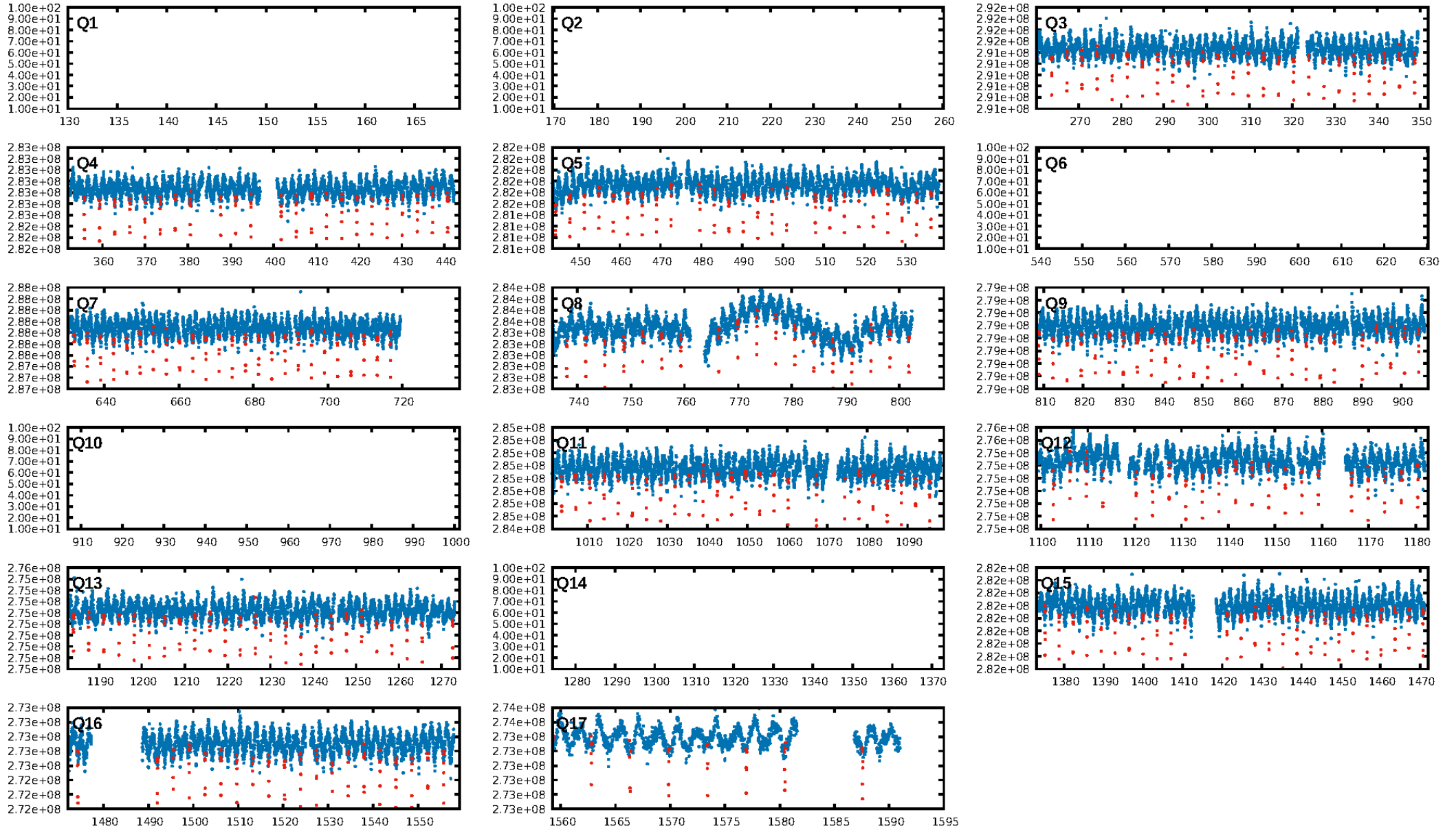
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: 100.0% [154.14 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [258/259]
GhostDiagnostic-chr: 5.326
Centroid-sig: 0.0%
Centroid-so: 0.112 arcsec [2.27 σ]
OotOffset-rm: 0.008 arcsec [0.10 σ]
KicOffset-rm: 0.134 arcsec [1.25 σ]
OotOffset-st: 0/4/4/4 [12]
KicOffset-st: 0/4/4/4 [12]
DiffImageQuality-fgm: 1.00 [12/12]
DiffImageOverlap-fno: 1.00 [12/12]

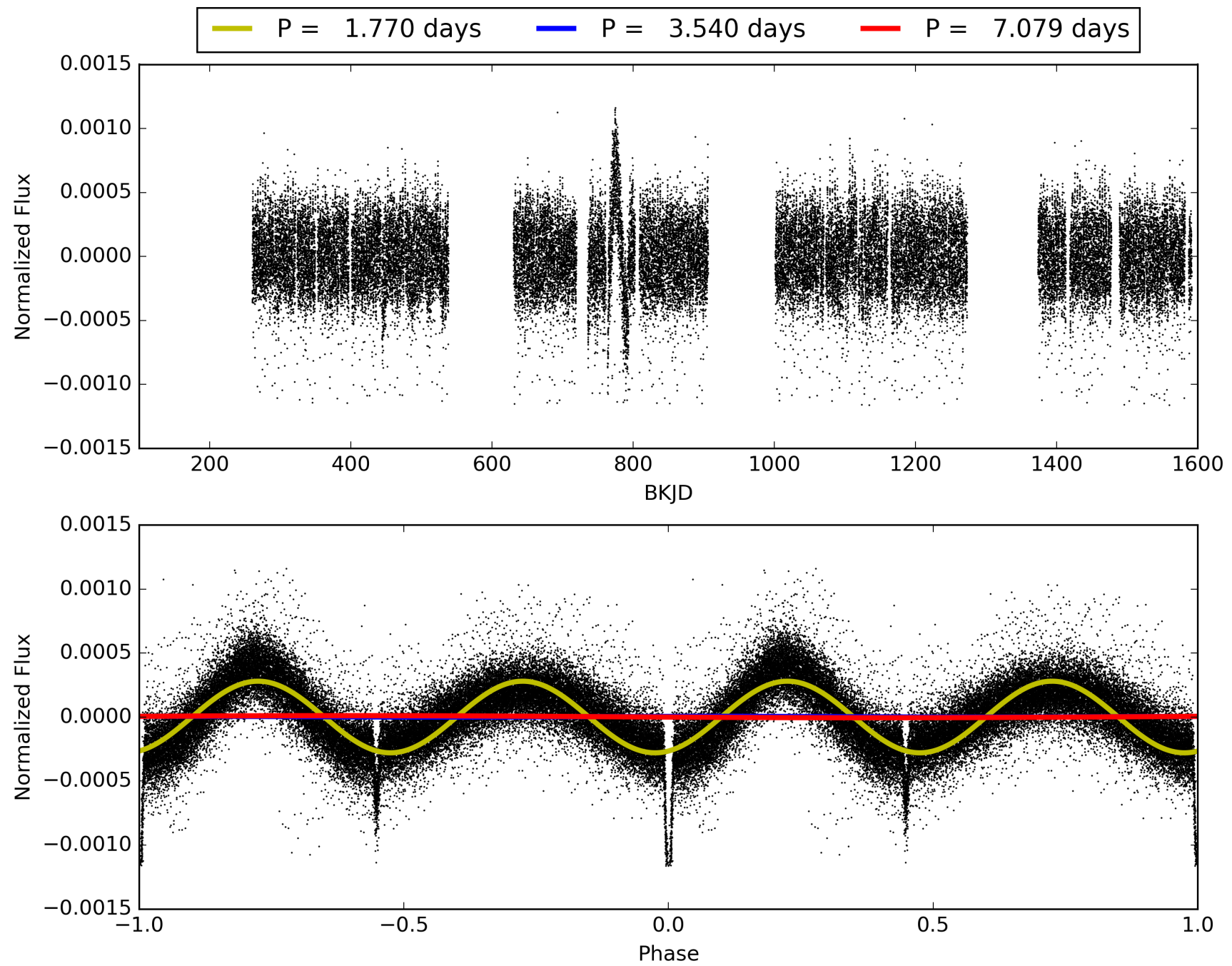
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:59:50 Z

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

TCE 012405950-01, PDC Light Curves

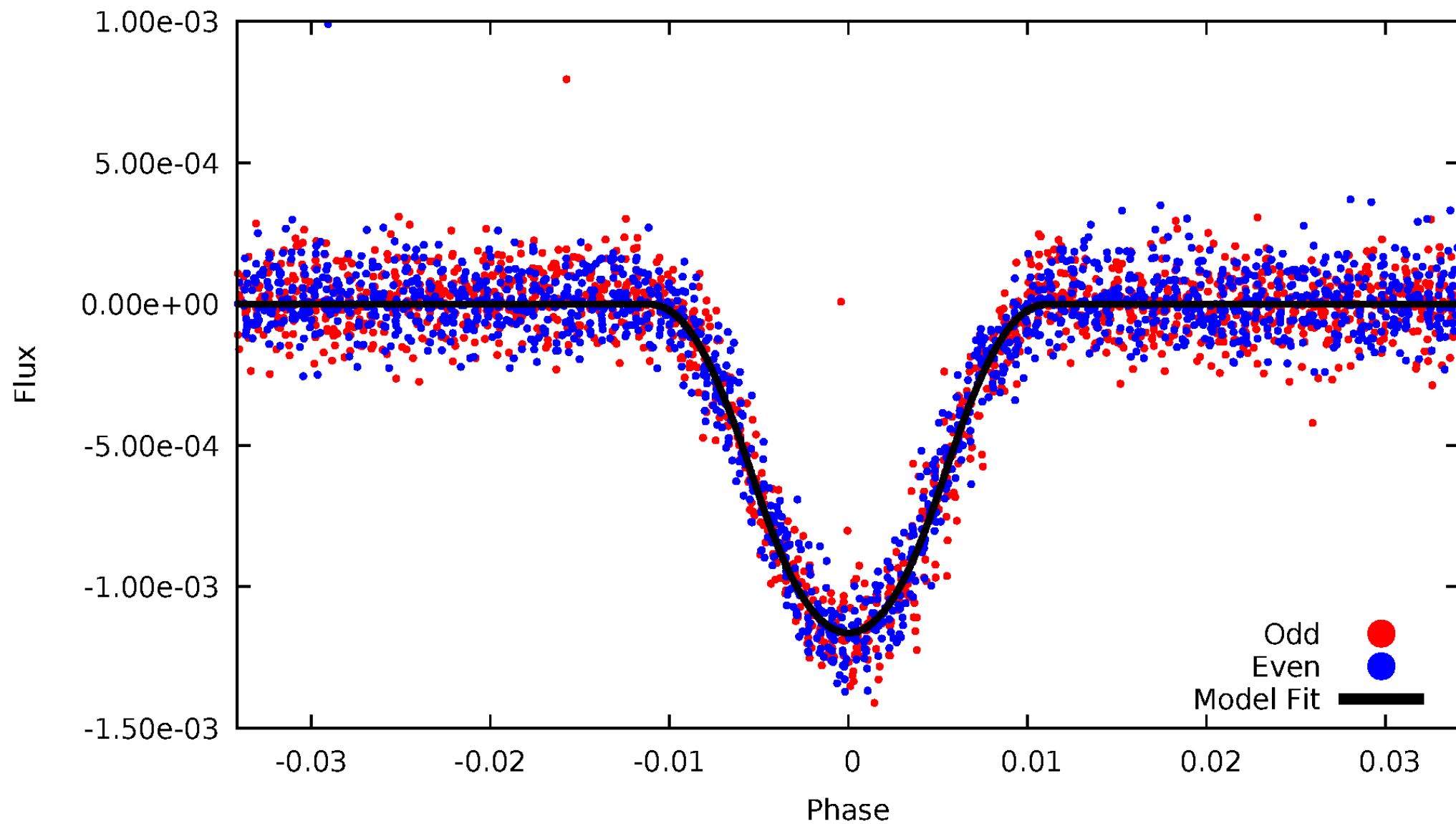


TCE 012405950-01



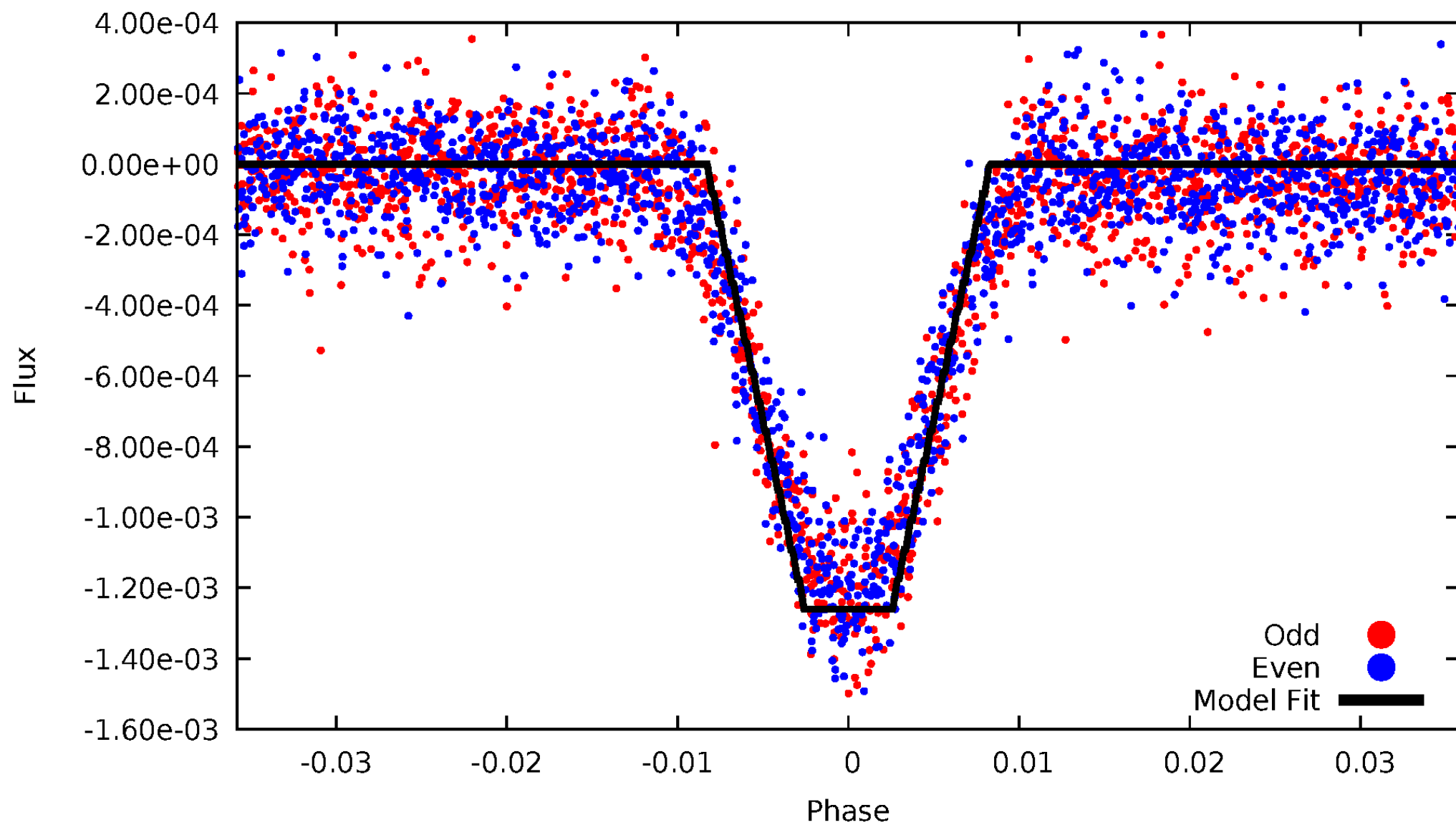
DV Odd/Even

TCE 012405950-01



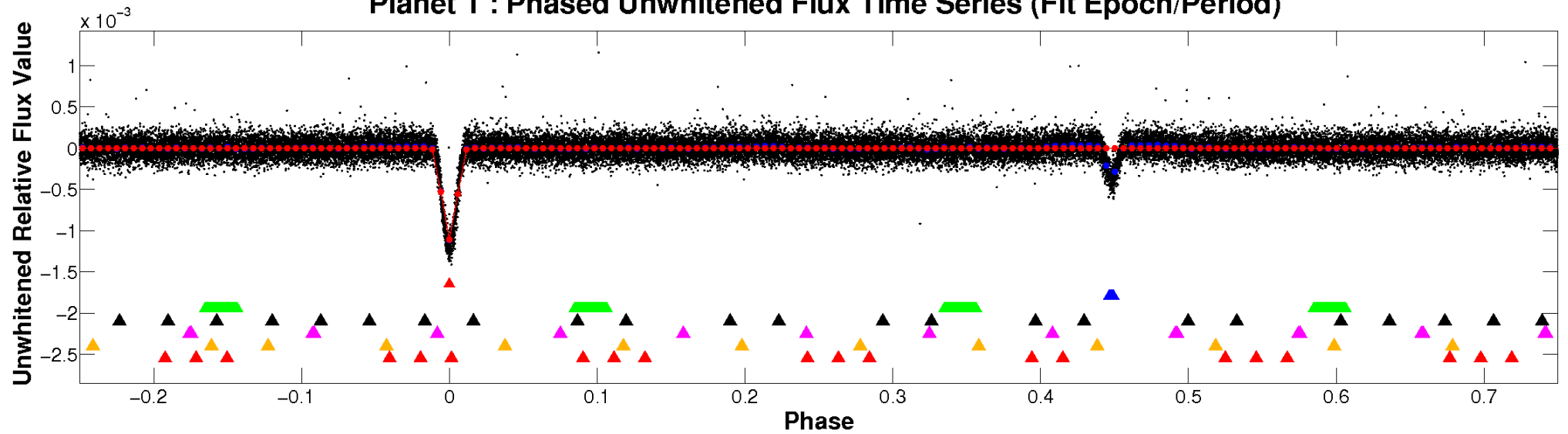
ALT Odd/Even

TCE 012405950-01

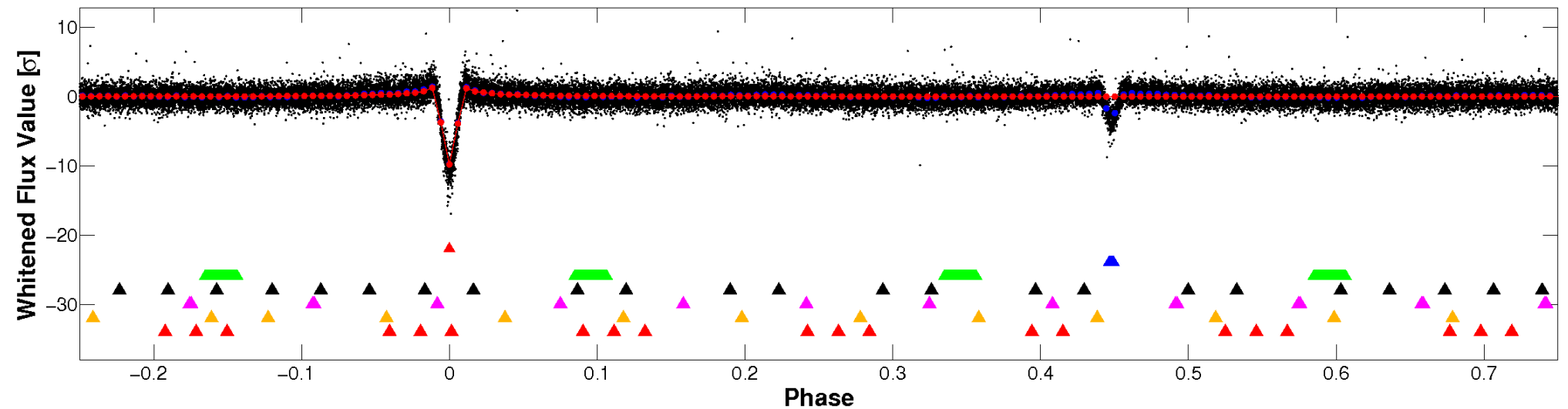


Non-Whitened Vs. Whitened Light Curve

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

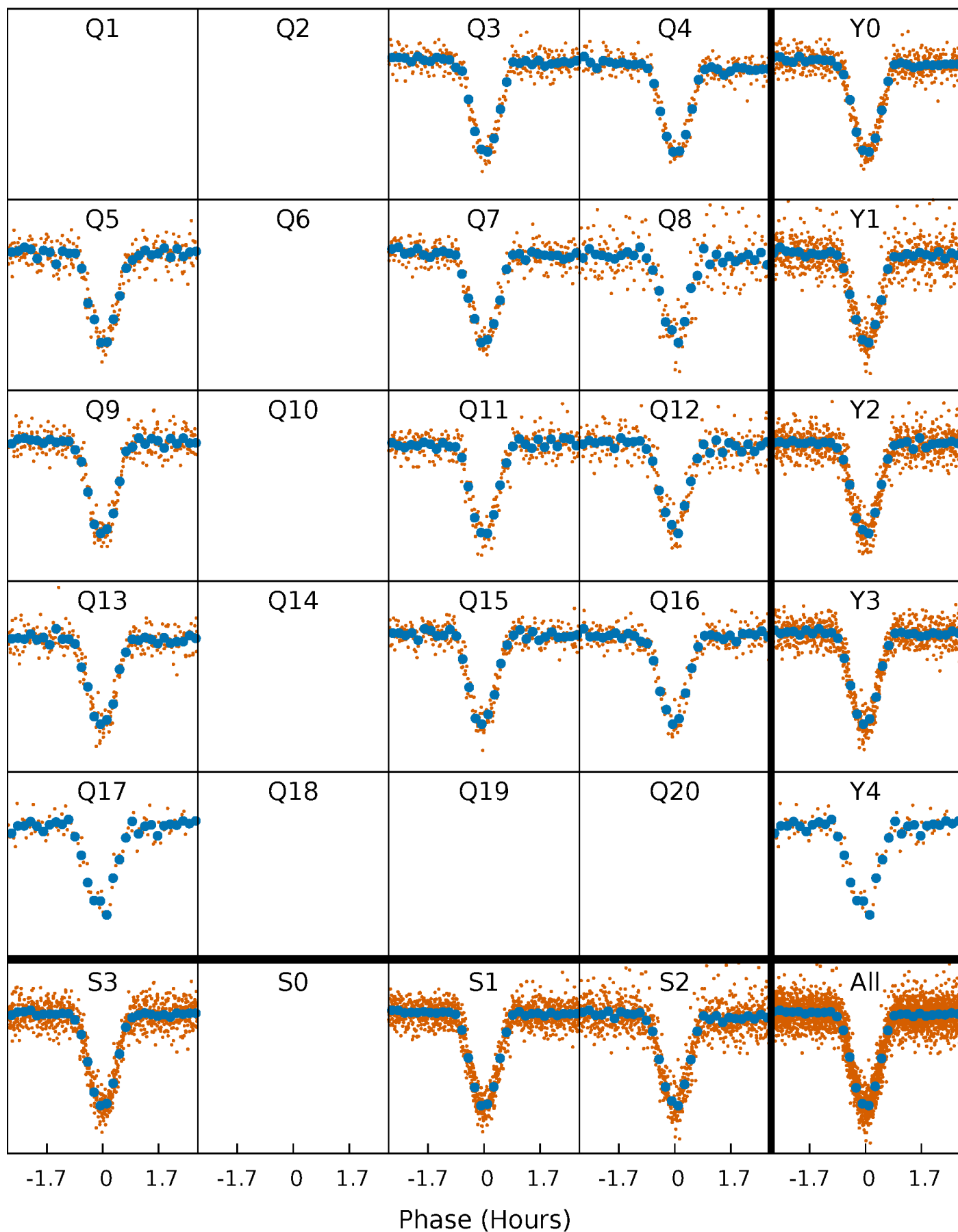


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



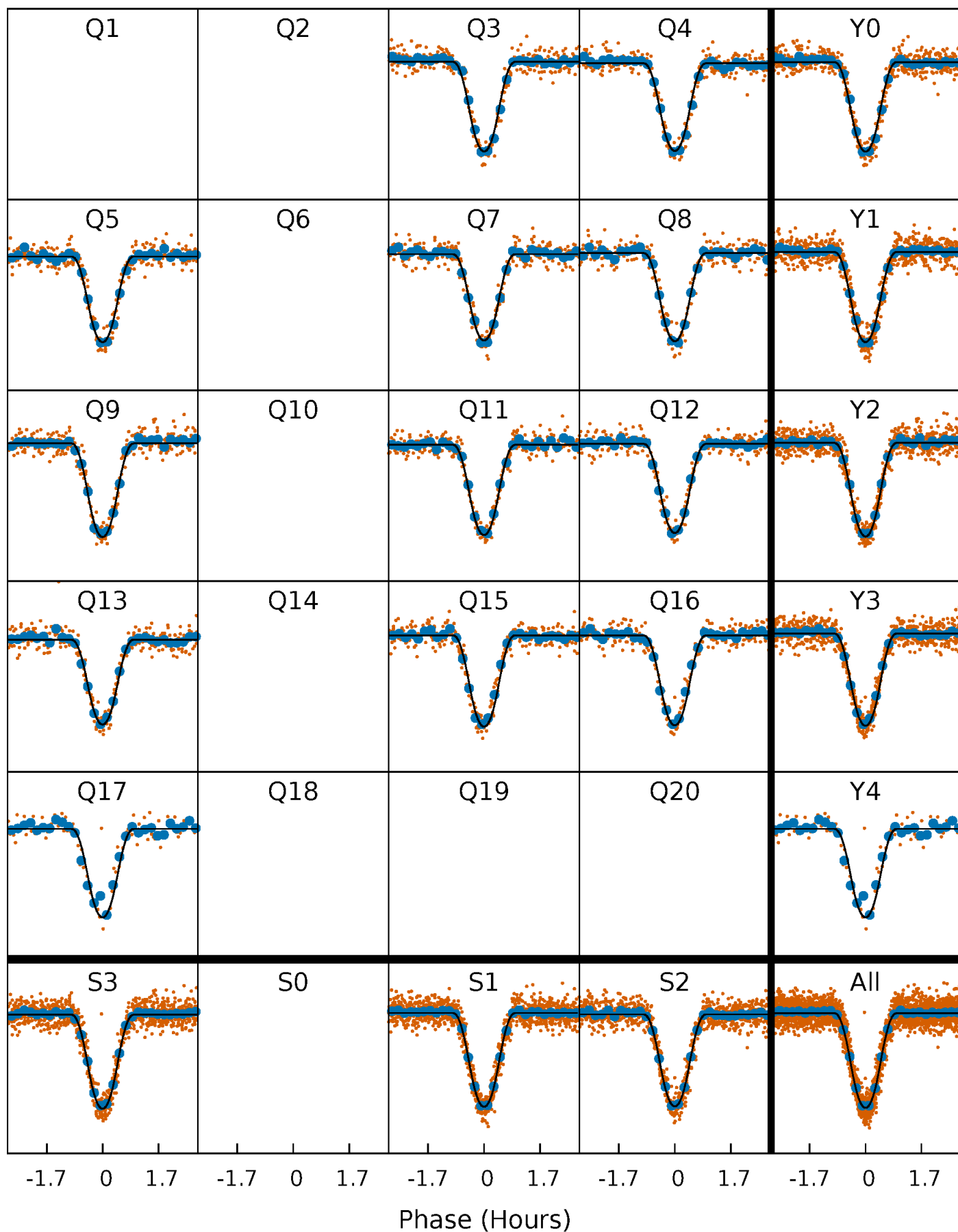
PDC Quarter-Phased Transit Curves

TCE 012405950-01 P= 3.539641 Days $T_0=132.772763$ (BKJD)



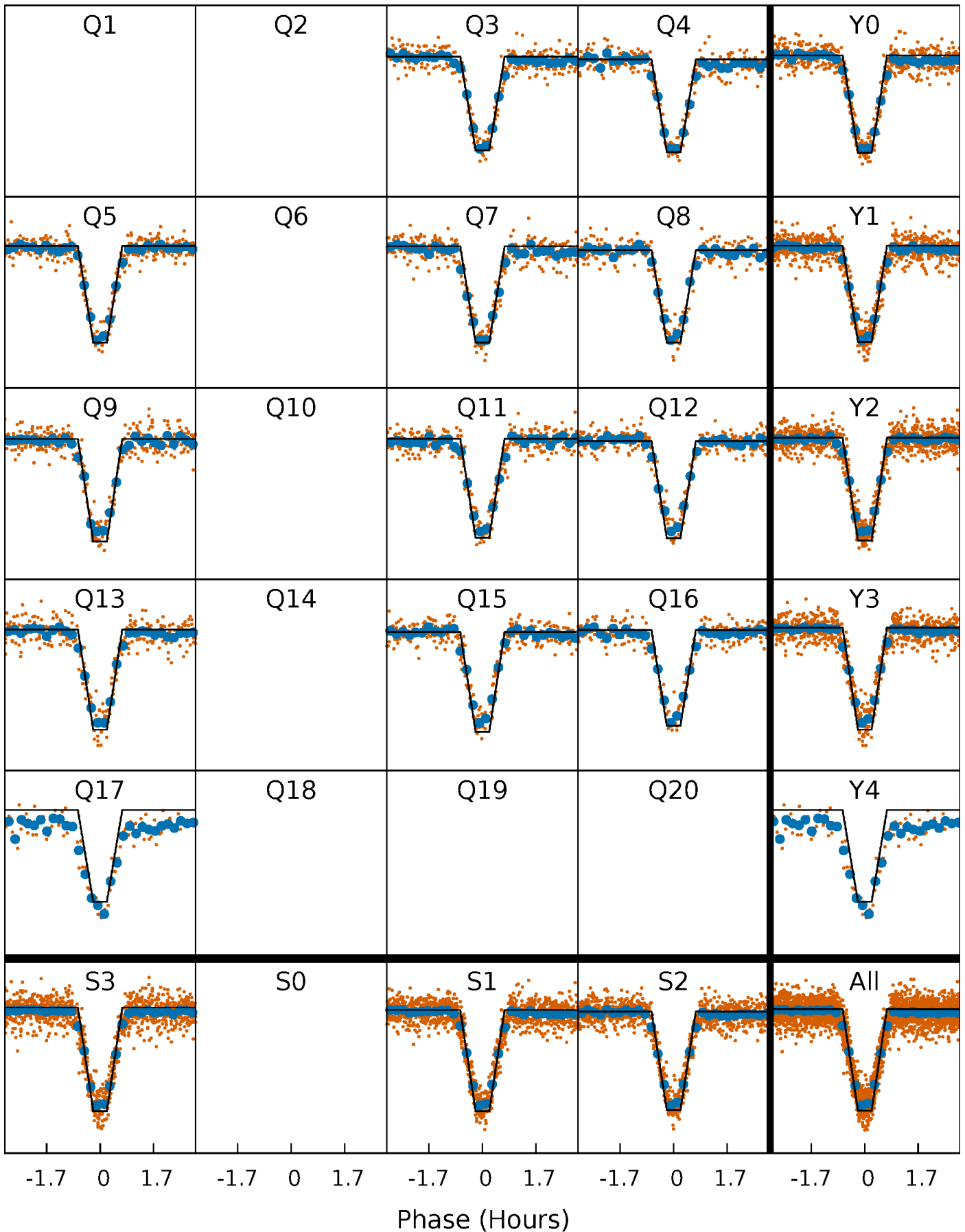
DV Quarter-Phased Transit Curves

TCE 012405950-01 P= 3.539641 Days $T_0=132.772763$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

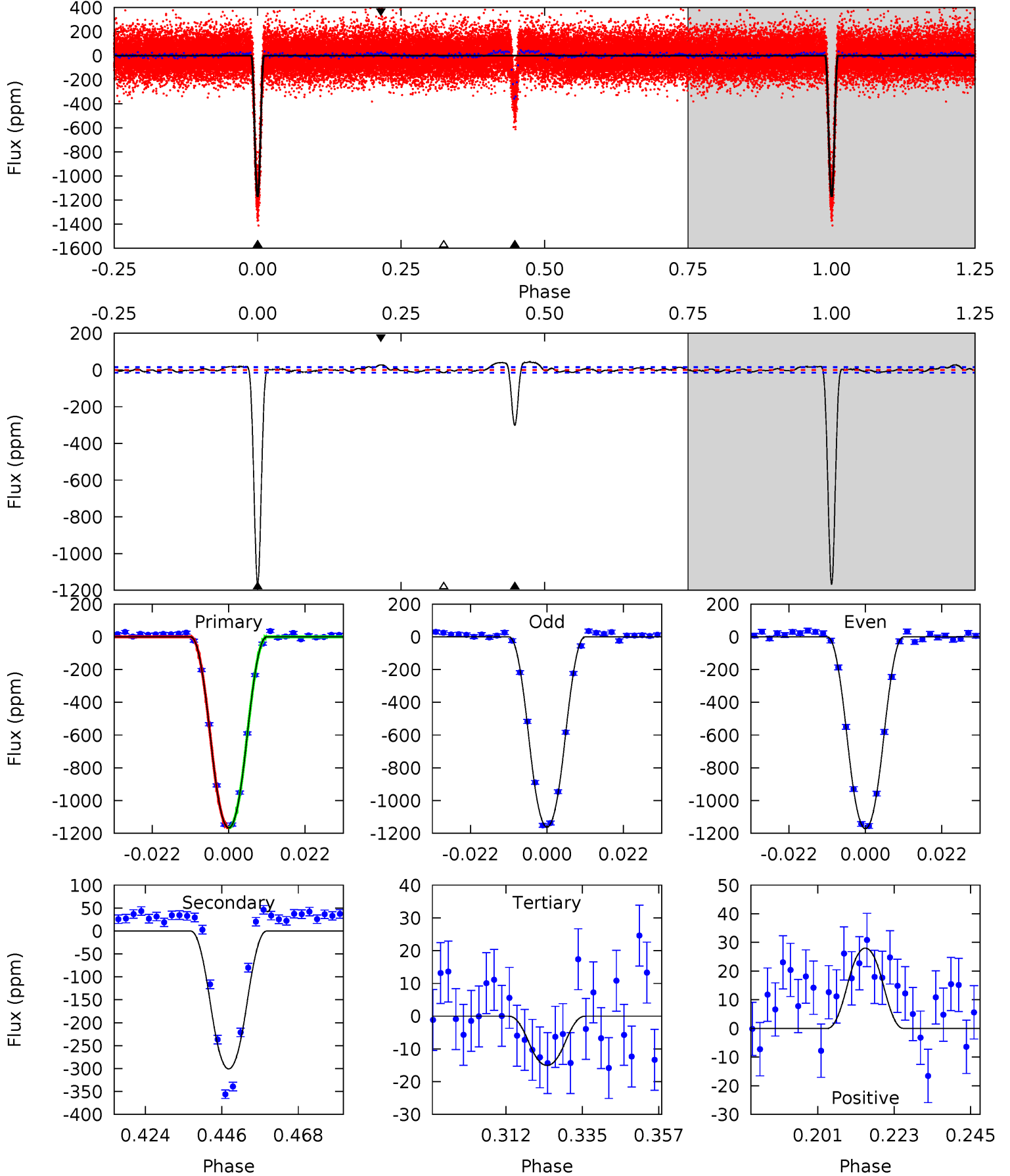
TCE 012405950-01 P= 3.539635 Days $T_0=132.774173$ (BKJD)



DV Model-Shift Uniqueness Test

012405950-01, P = 3.539641 Days, E = 132.772763 Days

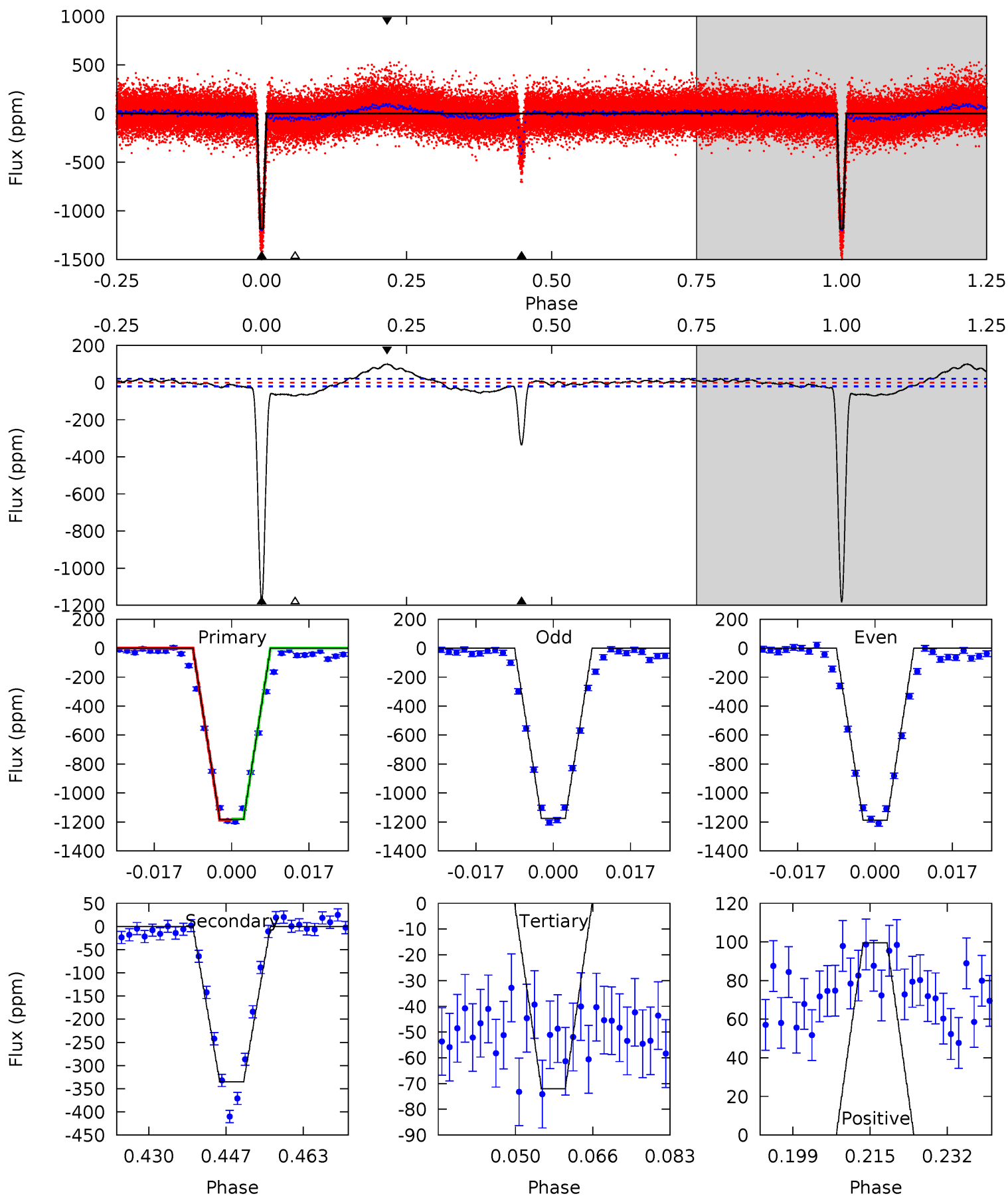
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
378.1	97.4	4.87	9.08	4.87	2.29	3.50	373.2	369.0	92.6	88.4	1.55	0.99	0.04	0.02



Alt Model-Shift Uniqueness Test

012405950-01, P = 3.539635 Days, E = 132.774173 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
284.9	80.8	17.4	24.0	4.93	2.40	8.51	267.5	260.9	63.5	56.8	1.56	1.00	0.08	0.80



Stellar Parameters For KIC 012405950

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7021^{+214}_{-262}	$3.759^{+0.304}_{-0.076}$	$-0.460^{+0.300}_{-0.250}$	$2.629^{+0.406}_{-0.947}$	$1.447^{+0.231}_{-0.282}$	$0.112^{+0.229}_{-0.035}$
	+3%/-4%	+8%/-2%	+65%/-54%	+15%/-36%	+16%/-19%	+204%/-31%
Source	KIC0	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 012405950-01 / KOI 3778.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-301 ± 3	$11.50^{+1.45}_{-2.25}$	3007^{+188}_{-285}	4582^{+143}_{-159}	$3.424^{+1.509}_{-0.661}$
Alt.	-335 ± 4	$9.91^{+1.23}_{-1.89}$	3009^{+186}_{-257}	5014^{+179}_{-184}	$5.086^{+2.295}_{-0.972}$

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 $A_{obs} \gg 1.0$

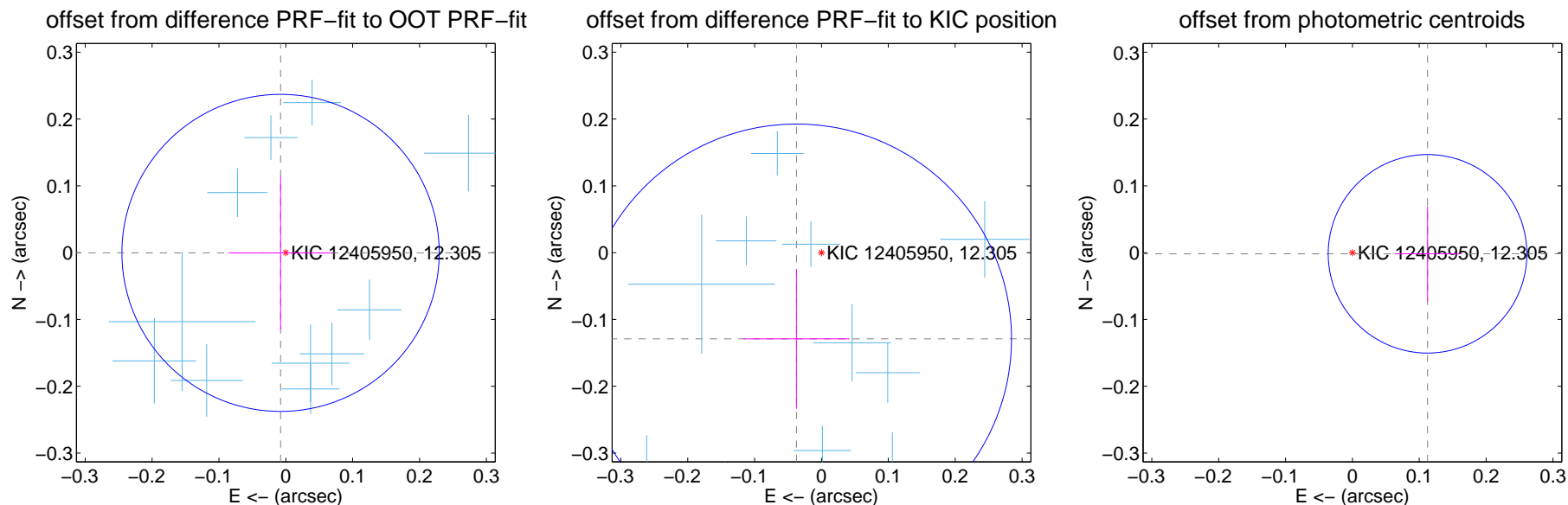
DV Centroid Data

Supplemental centroid analysis for 012405950-01. Kepler magnitude: 12.30. Transit SNR 192.28

There are 12 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.008 ± 0.079	0.10	0.008 ± 0.078	-0.000 ± 0.114
PRF-fit source offset from KIC position	0.134 ± 0.107	1.25	0.037 ± 0.079	-0.129 ± 0.105
photometric centroid source offset	0.11 ± 0.05	2.27	-0.11 ± 0.05	-0.00 ± 0.07



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

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

Q1 no difference image



Q1 no OOT image



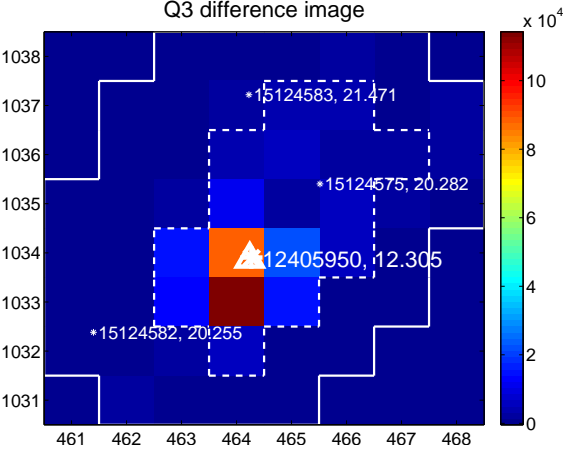
Q2 no difference image



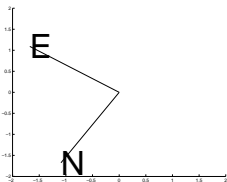
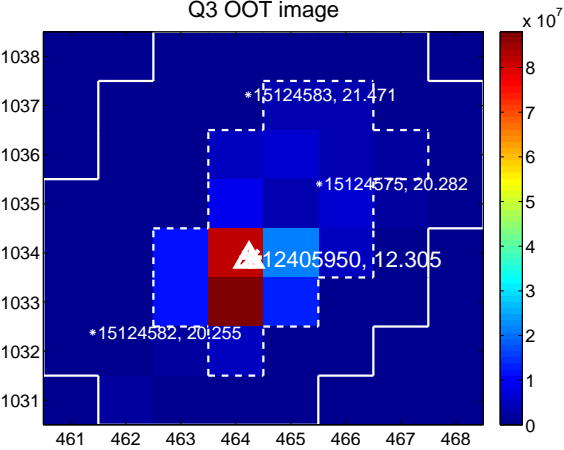
Q2 no OOT image



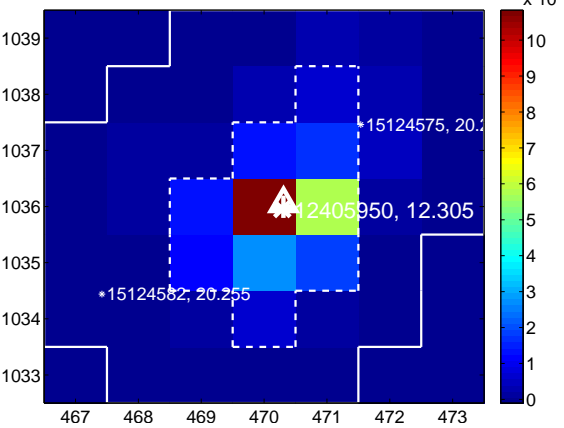
Q3 difference image



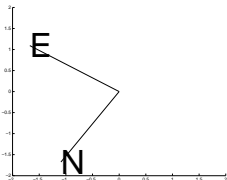
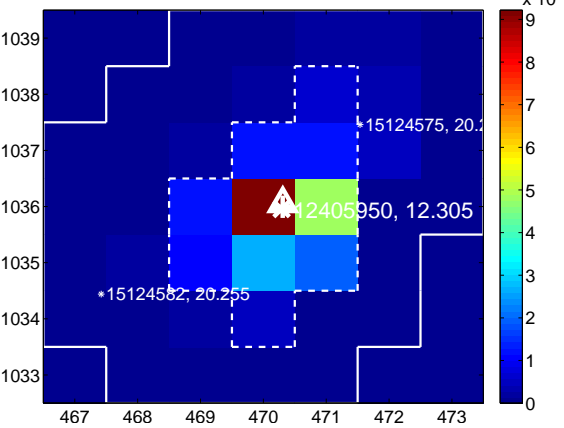
Q3 OOT image



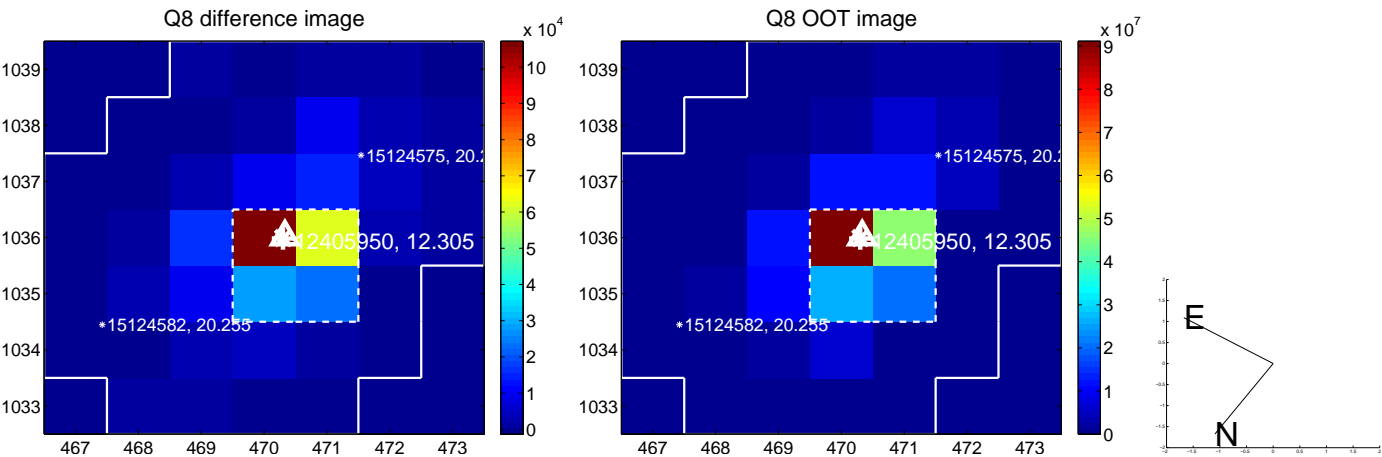
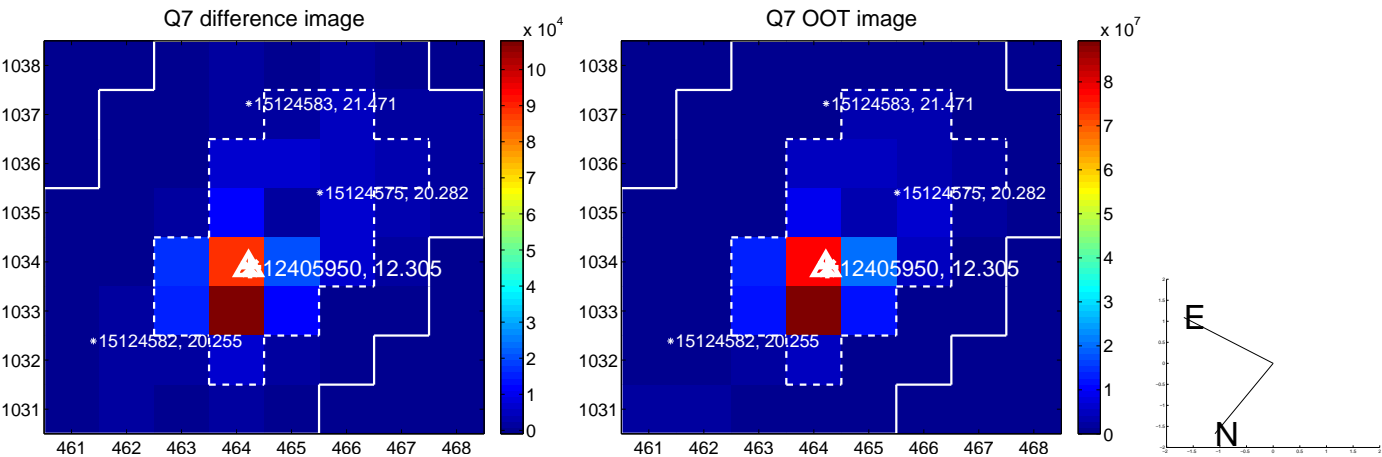
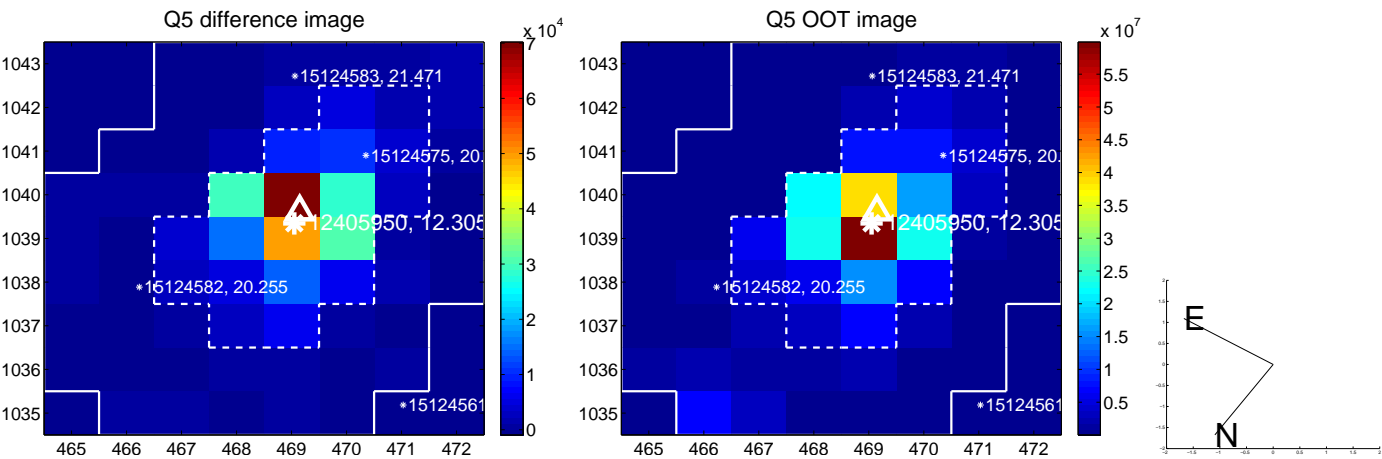
Q4 difference image



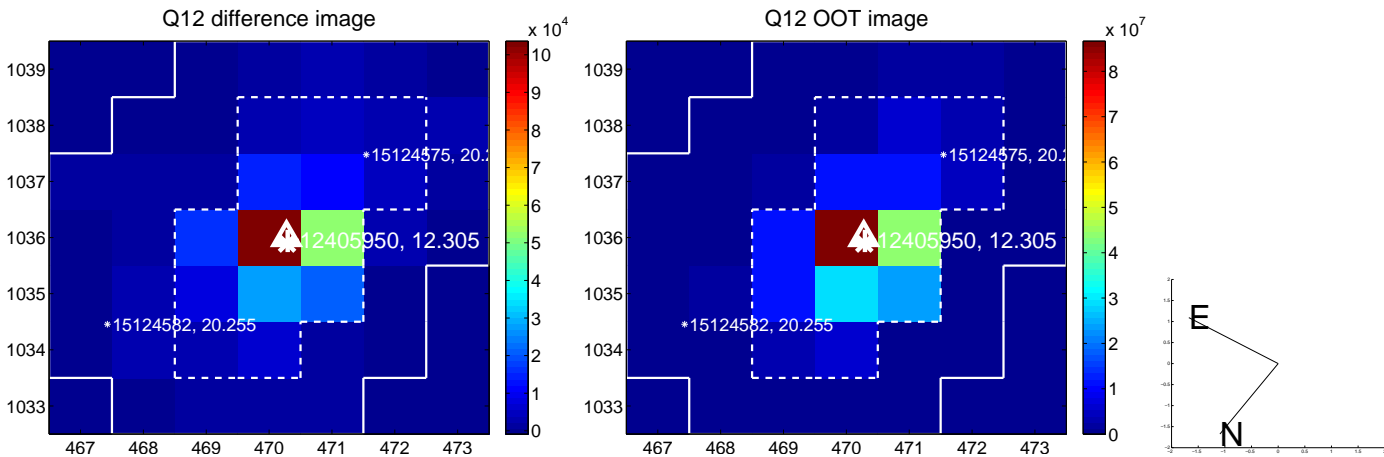
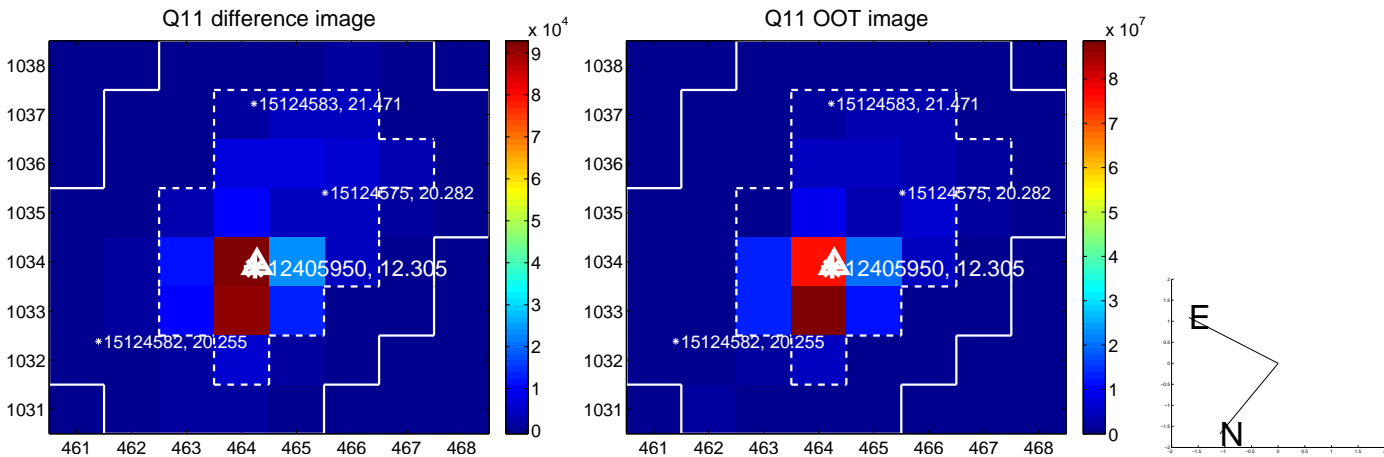
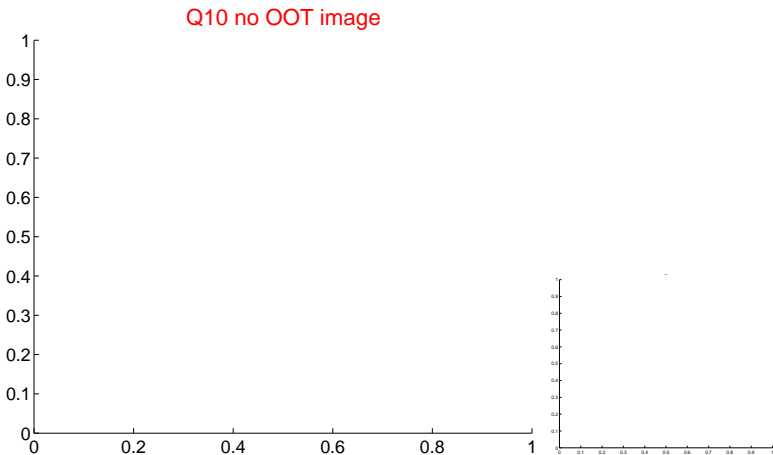
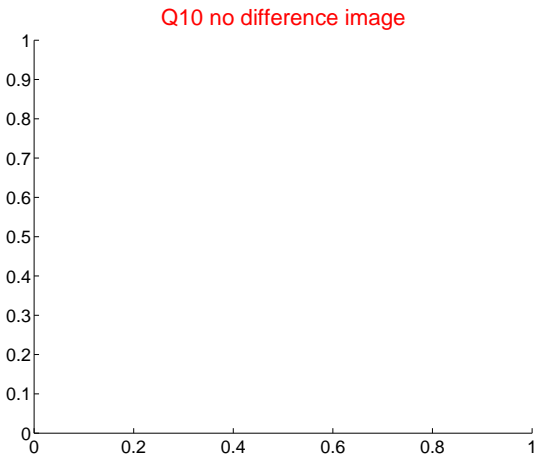
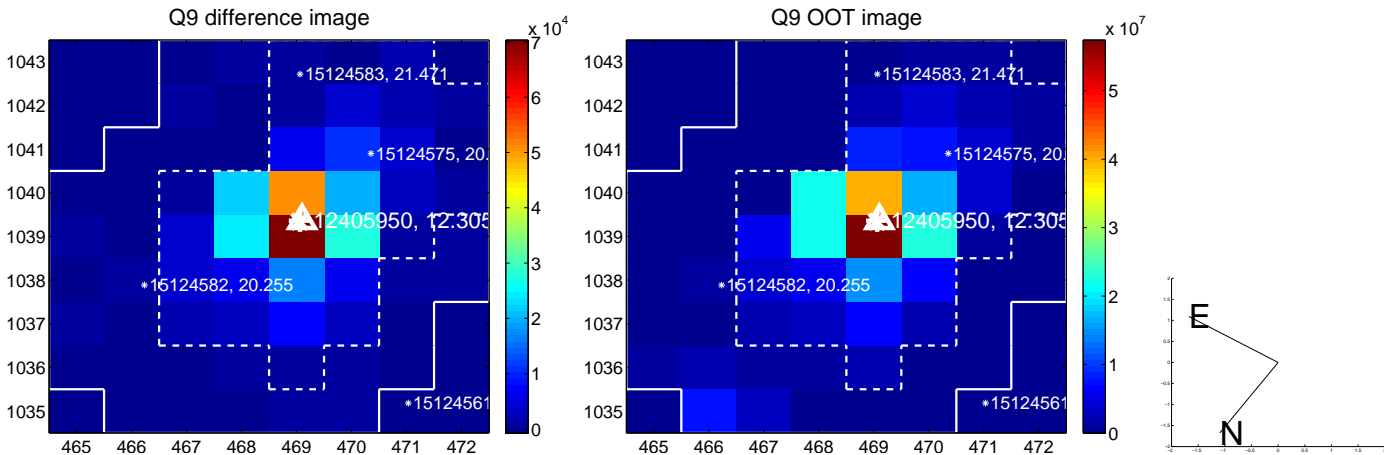
Q4 OOT image



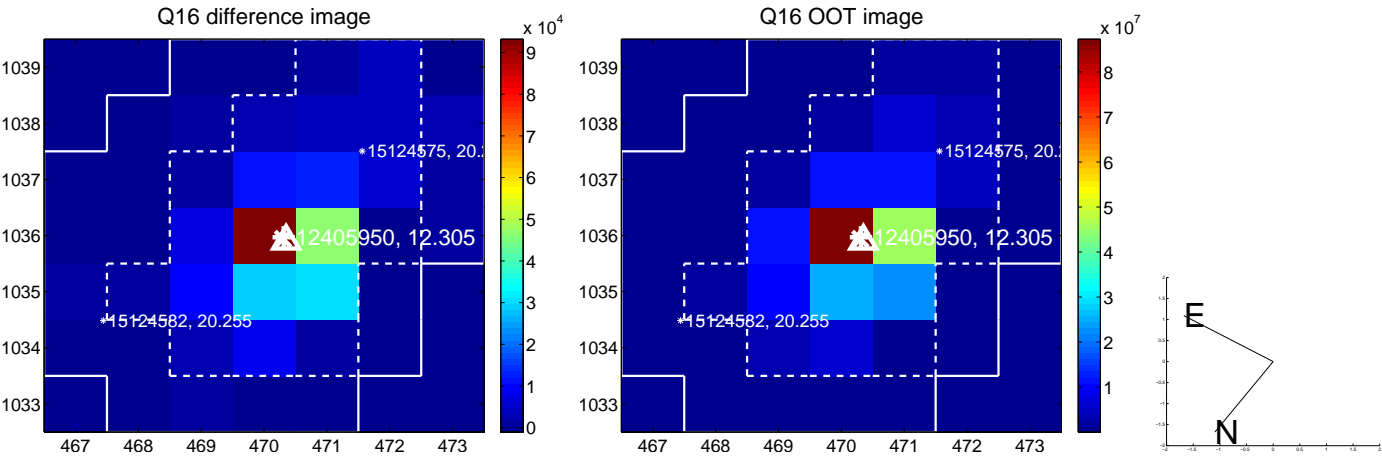
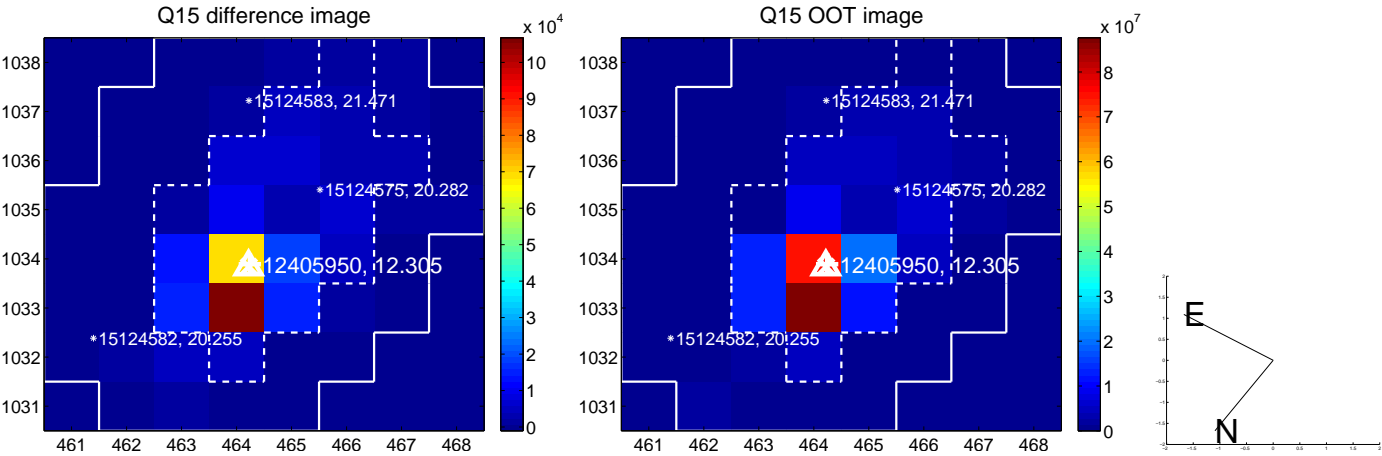
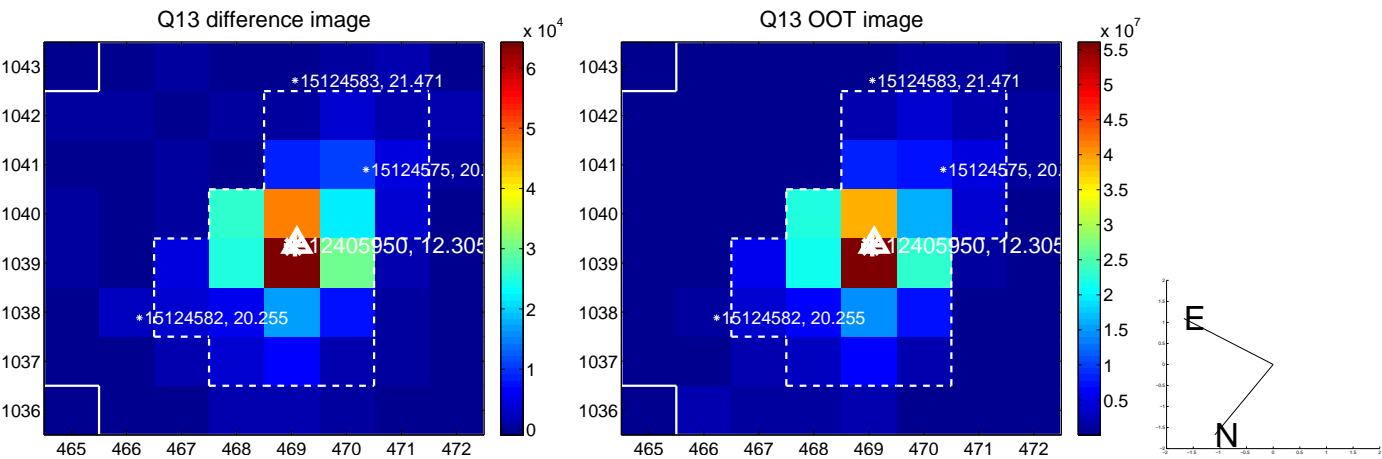
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



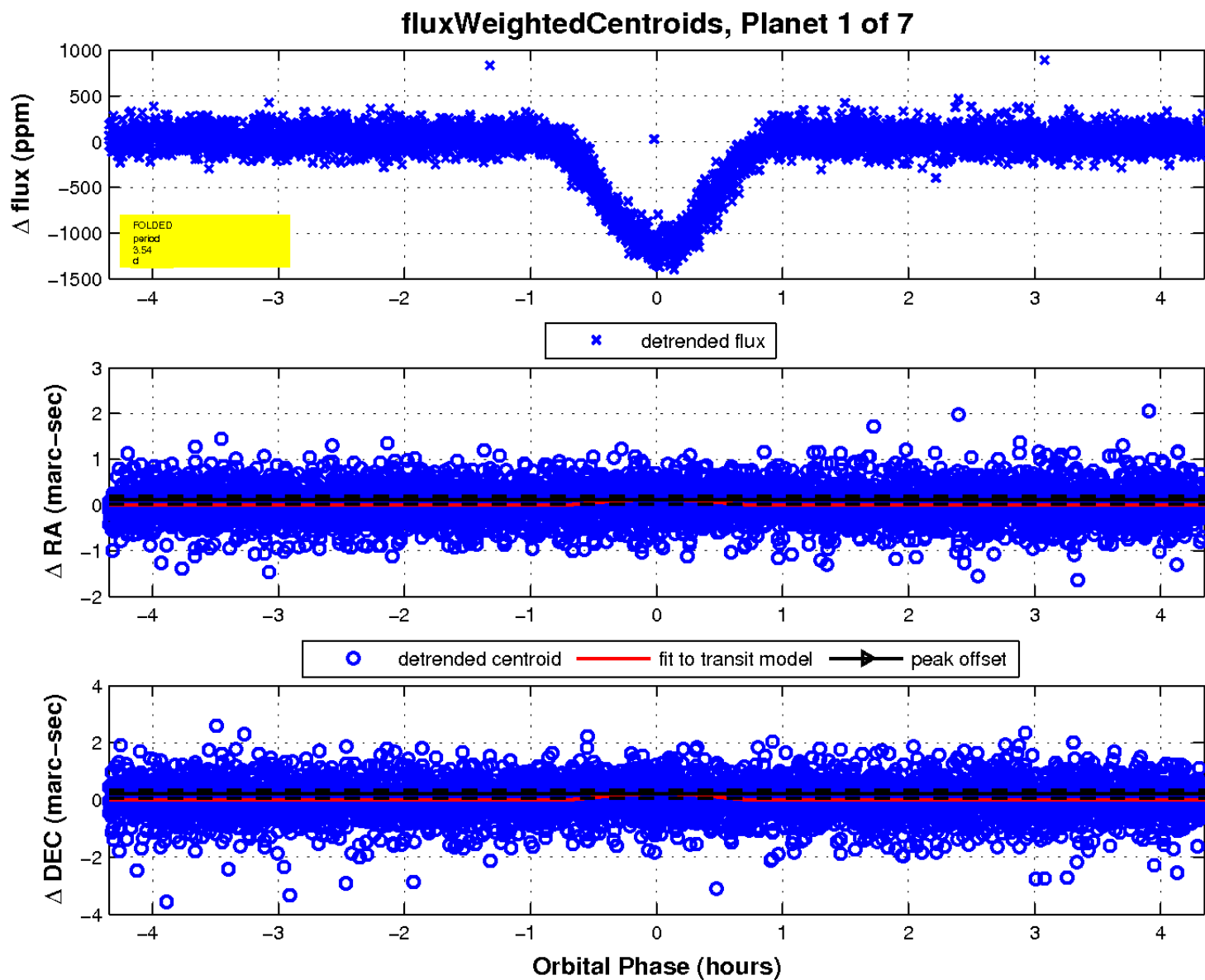
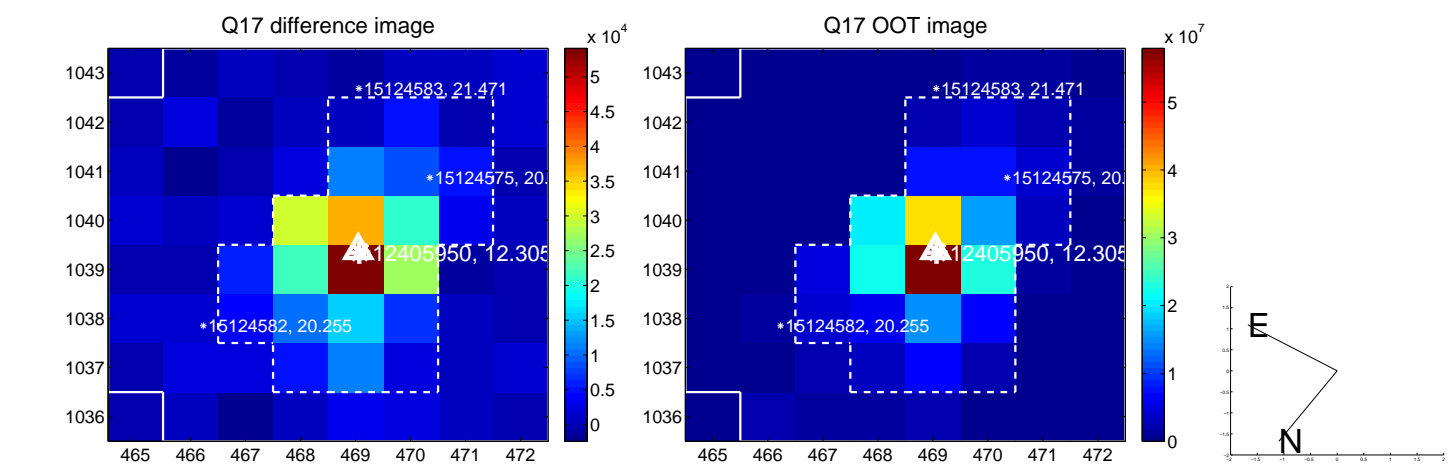
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

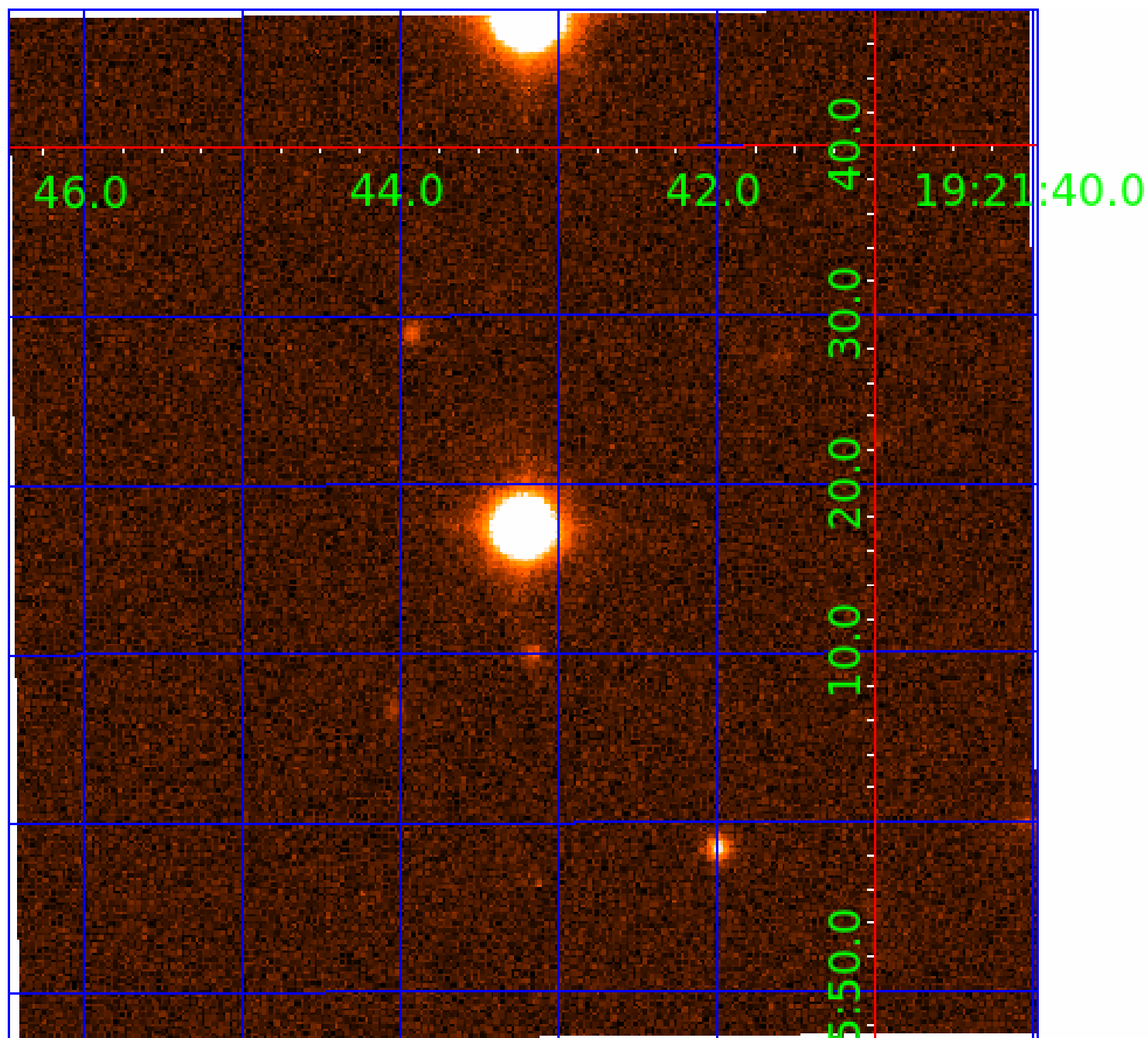


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012405950

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})
012405950-01	OBS	3778.01	3.539641	132.772763	1163.2	1.450	179.4	192.3	2.63	7021	11.83	5689.47
012405950-02	OBS	No	3.539613	134.363793	343.8	0.961	42.6	58.1	2.63	7021	5.73	5689.53
012405950-03	OBS	No	2.654873	133.072202	18.8	12.956	7.6	7.6	2.63	7021	1.15	8348.83
012405950-04	OBS	No	64.079148	145.775835	112.3	9.314	8.2	7.2	2.63	7021	3.11	119.69
012405950-05	OBS	No	81.706403	134.515598	178.7	4.763	7.7	7.6	2.63	7021	4.03	86.56
012405950-06	OBS	No	113.552188	146.497204	135.5	13.721	7.7	7.4	2.63	7021	3.40	55.82
012405950-07	OBS	No	73.331738	182.647921	239.5	2.885	8.2	7.4	2.63	7021	4.36	99.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012405950-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
012405950-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
012405950-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012405950-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012405950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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.

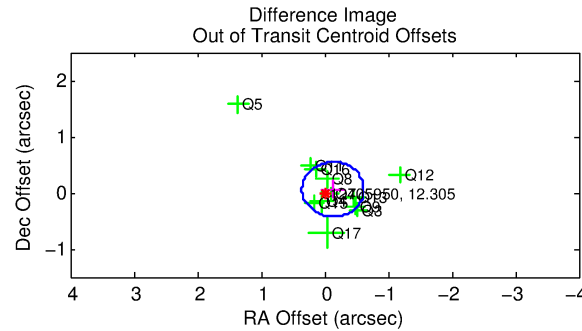
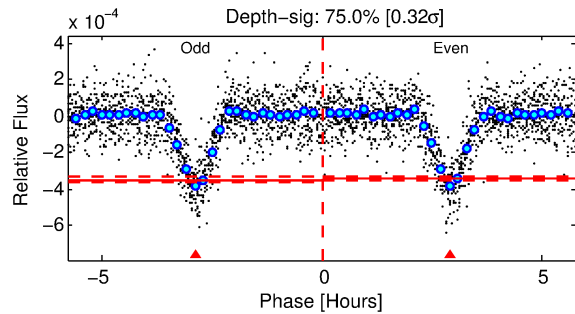
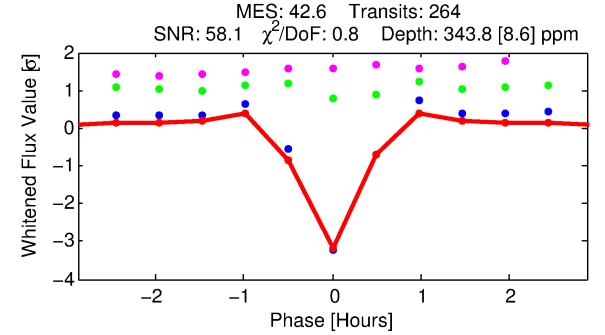
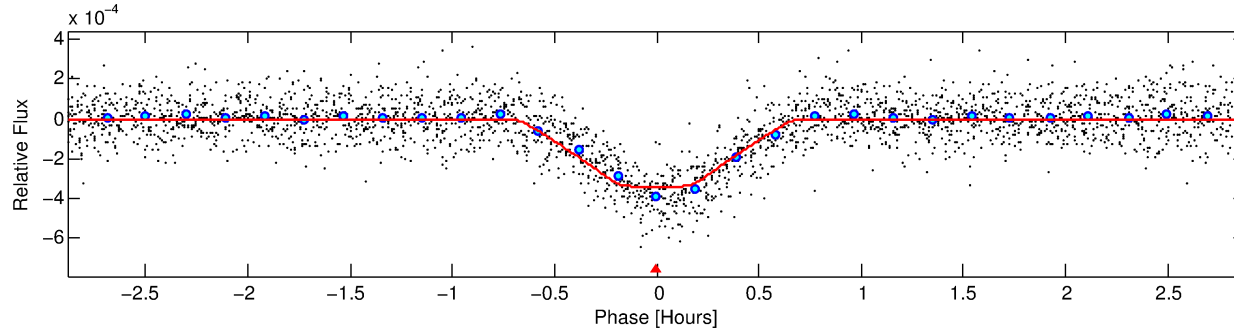
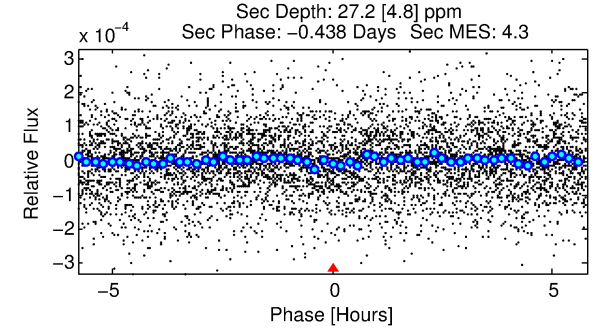
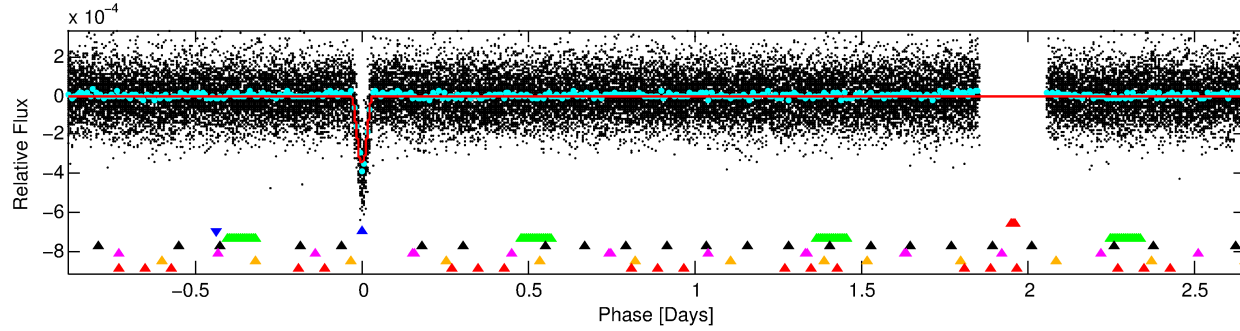
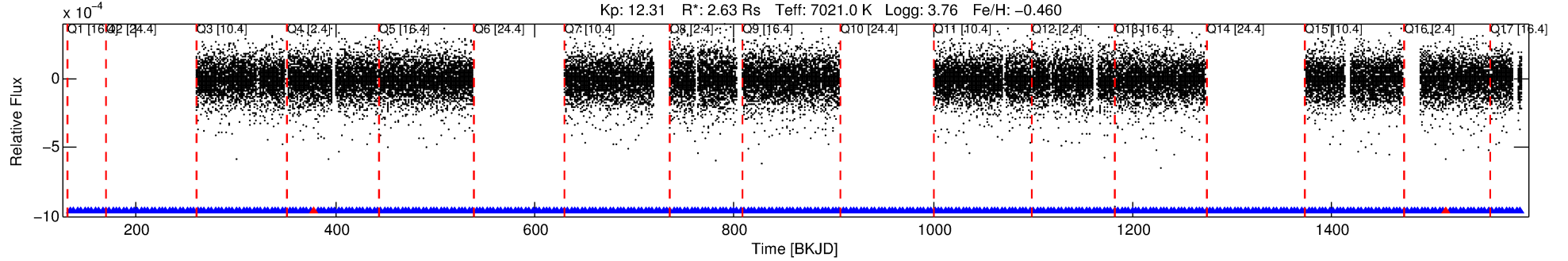
Ephemeris Match Information For 012405950-02

No Significant Match Found

DV One-Page Summary

KIC: 12405950 Candidate: 2 of 7 Period: 3.540 d

KOI: K03778 Corr: No Ephemeris Match



DV Fit Results:

Period = 3.53961 [0.00000] d
Epoch = 134.3638 [0.0003] BKJD
Rp/R* = 0.0200 [0.0016]
a/R* = 13.47 [6.28]
b = 0.90 [0.10]
Seff = 5689.53 [3104.41]
Teq = 2215 [302] K
Rp = 5.73 [2.11] Re
a = 0.0514 [0.0172] AU
Ag = 1.21 [0.69] [0.30σ]
Teffp = 3588 [251] K [3.50σ]

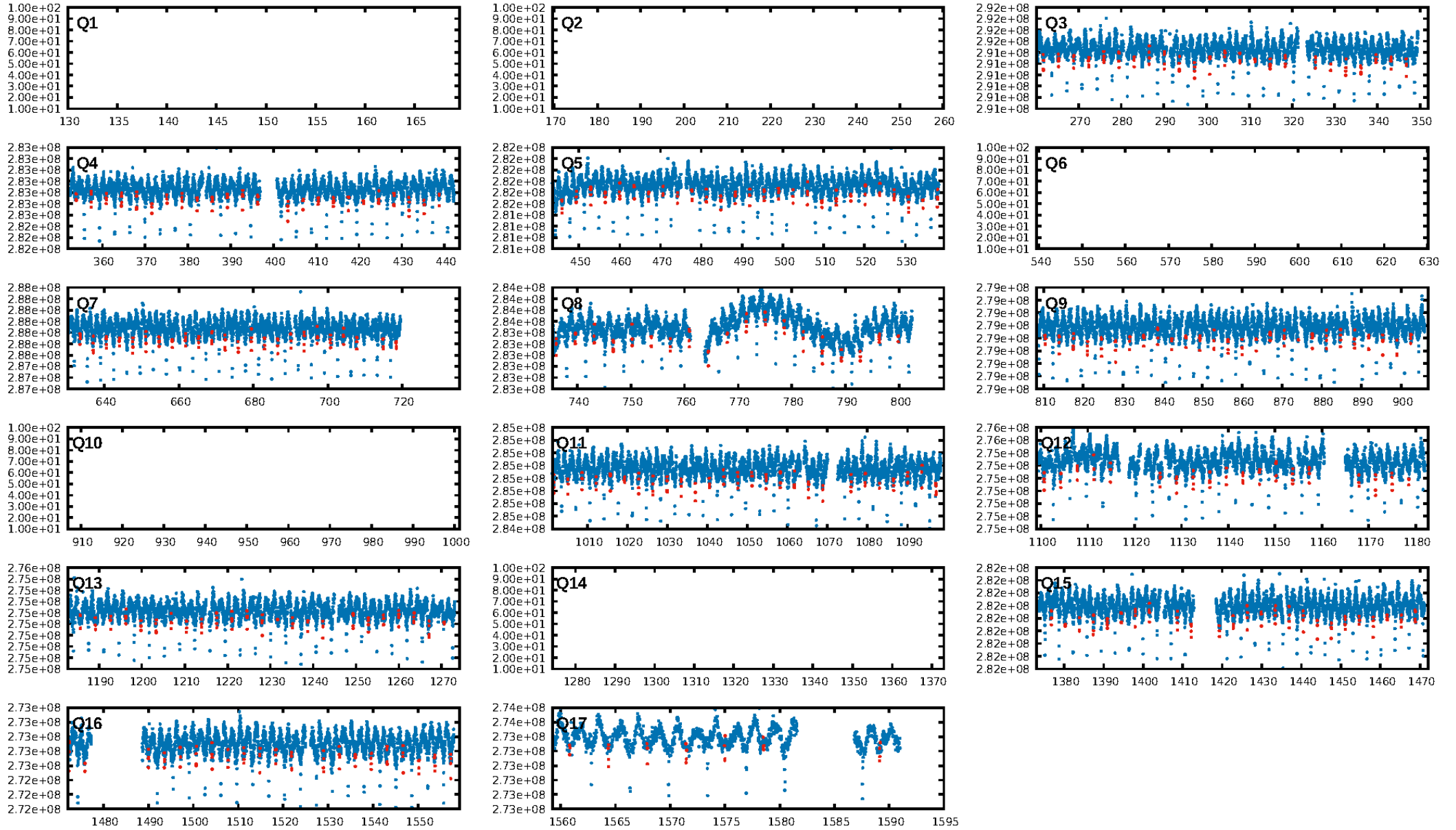
DV Diagnostic Results:

ShortPeriod-sig: 89.8% [1.63σ]
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.31e-252
RollingBand-fgt: 0.99 [255/257]
GhostDiagnostic-chr: 4.199
Centroid-sig: 13.7%
Centroid-so: 0.105 arcsec [0.43σ]
OotOffset-rm: 0.142 arcsec [0.88σ]
KicOffset-rm: 0.106 arcsec [0.50σ]
OotOffset-st: 0/4/4/4 [12]
KicOffset-st: 0/4/4/4 [12]
DiffImageQuality-fgm: 1.00 [12/12]
DiffImageOverlap-fno: 1.00 [12/12]

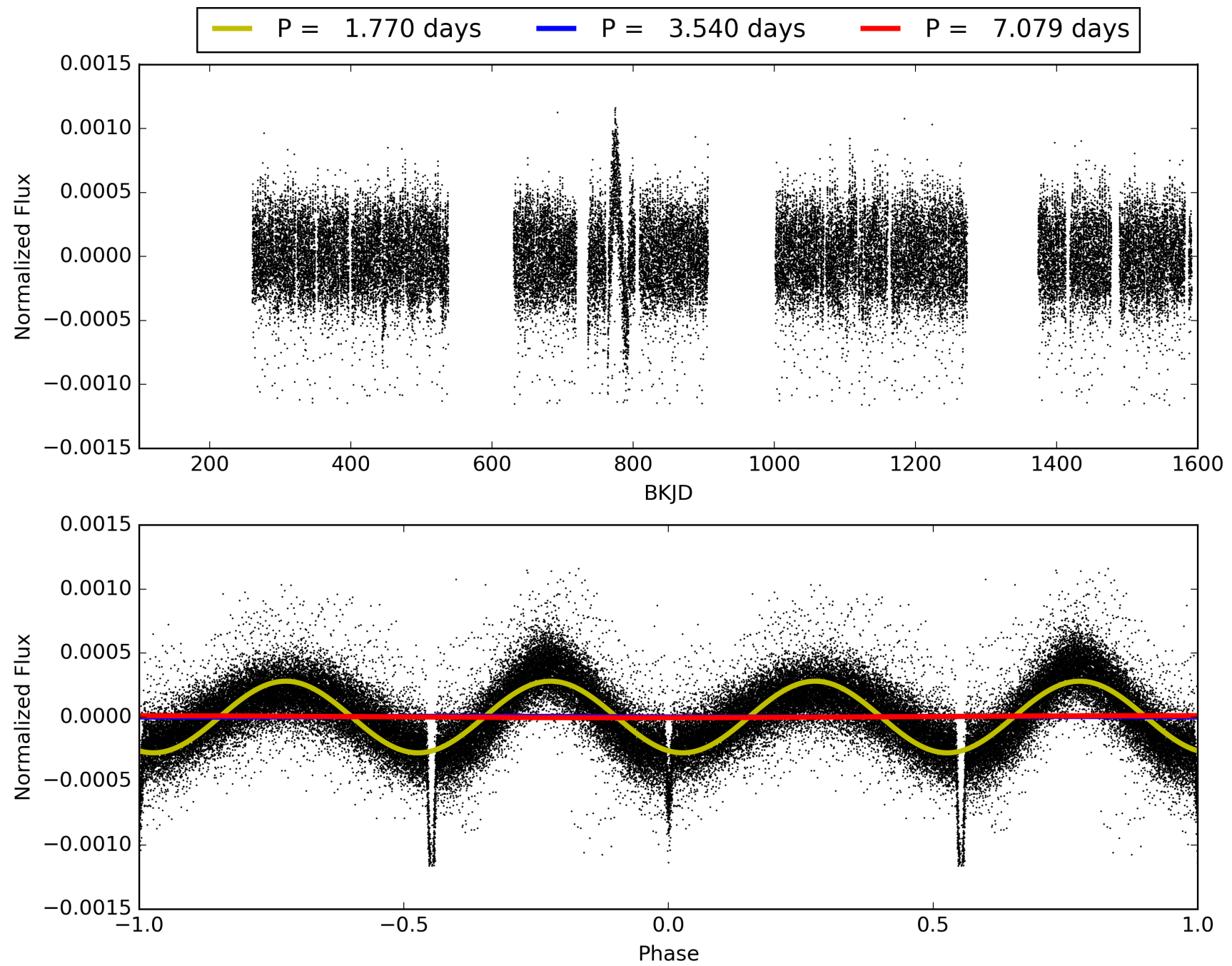
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 17:59:56 Z

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

TCE 012405950-02, PDC Light Curves

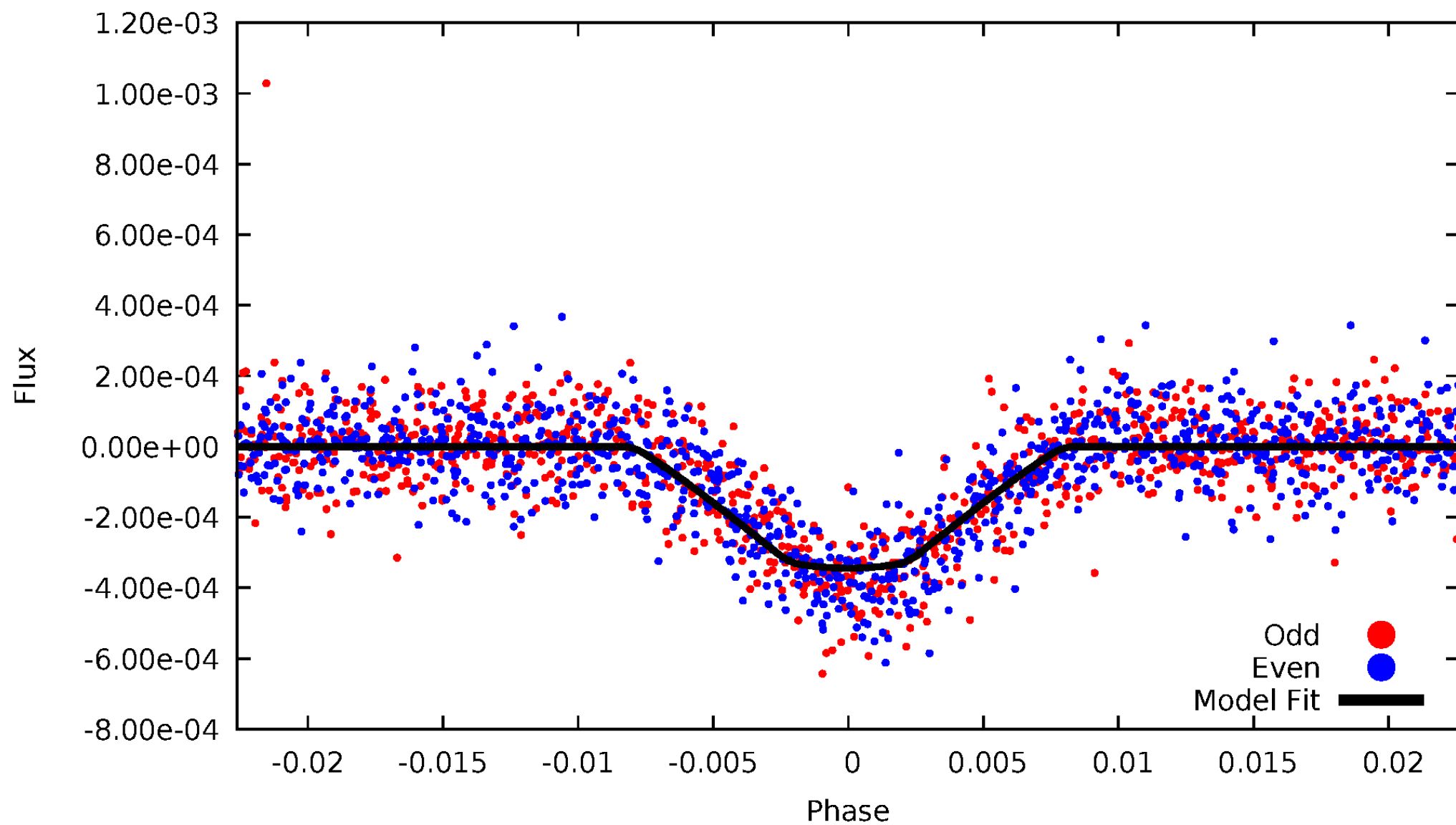


TCE 012405950-02



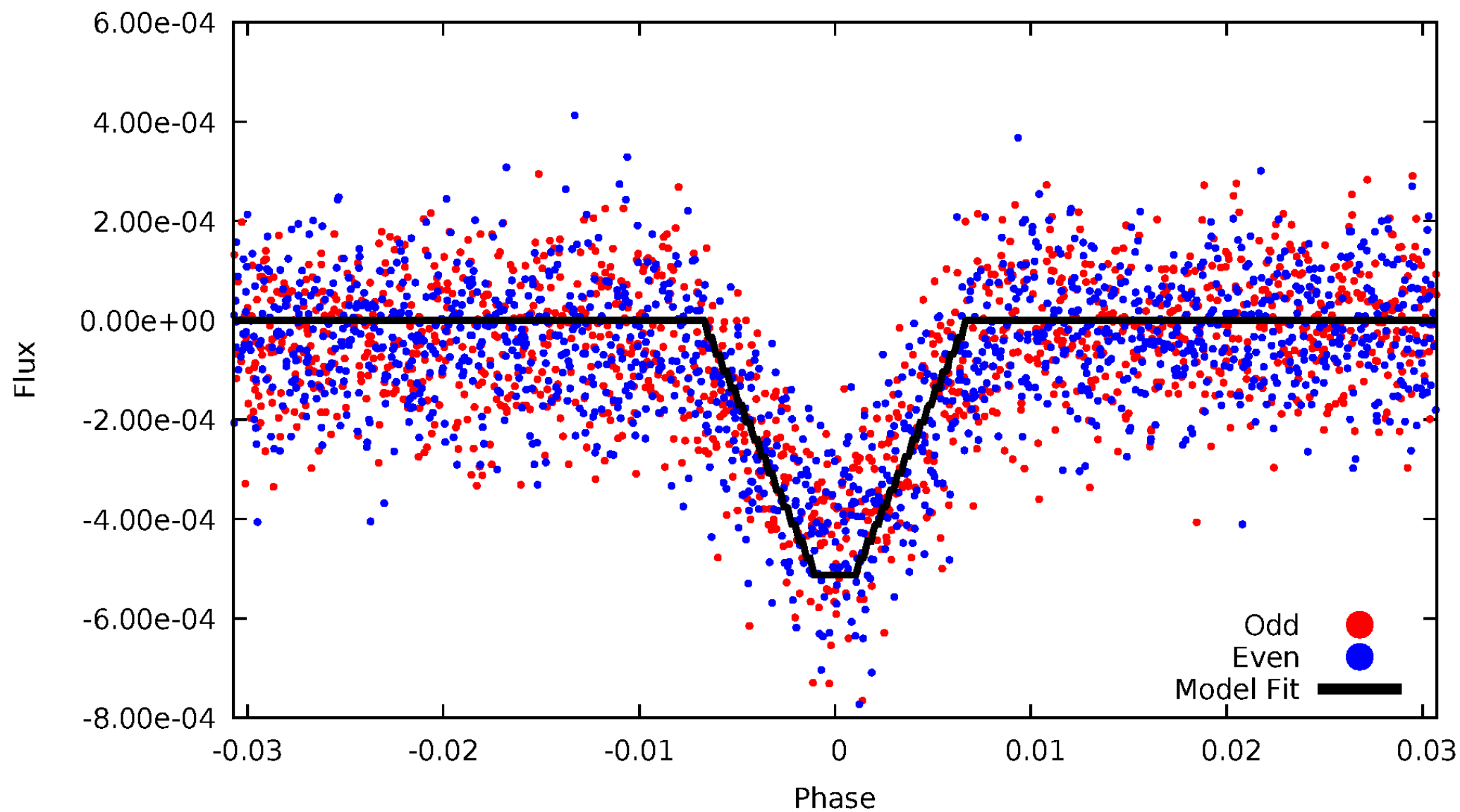
DV Odd/Even

TCE 012405950-02



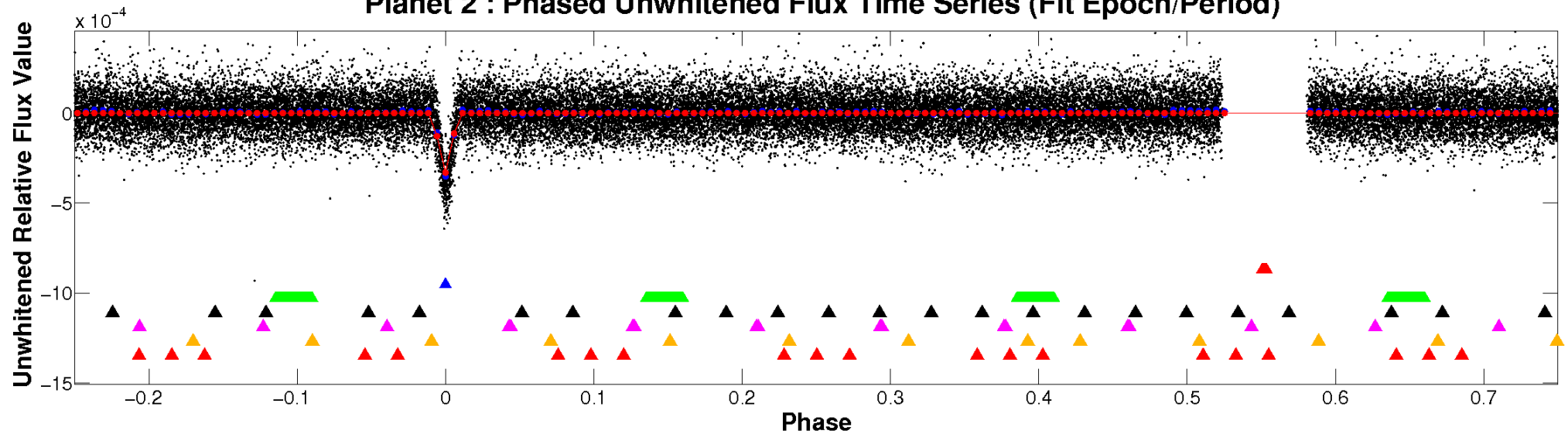
ALT Odd/Even

TCE 012405950-02

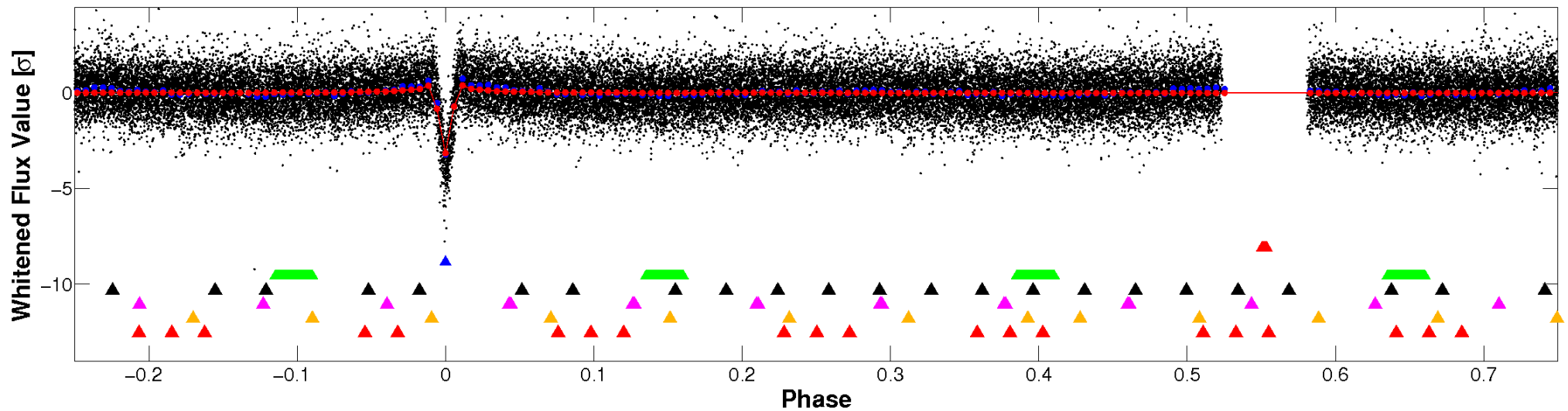


Non-Whitened Vs. Whitened Light Curve

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

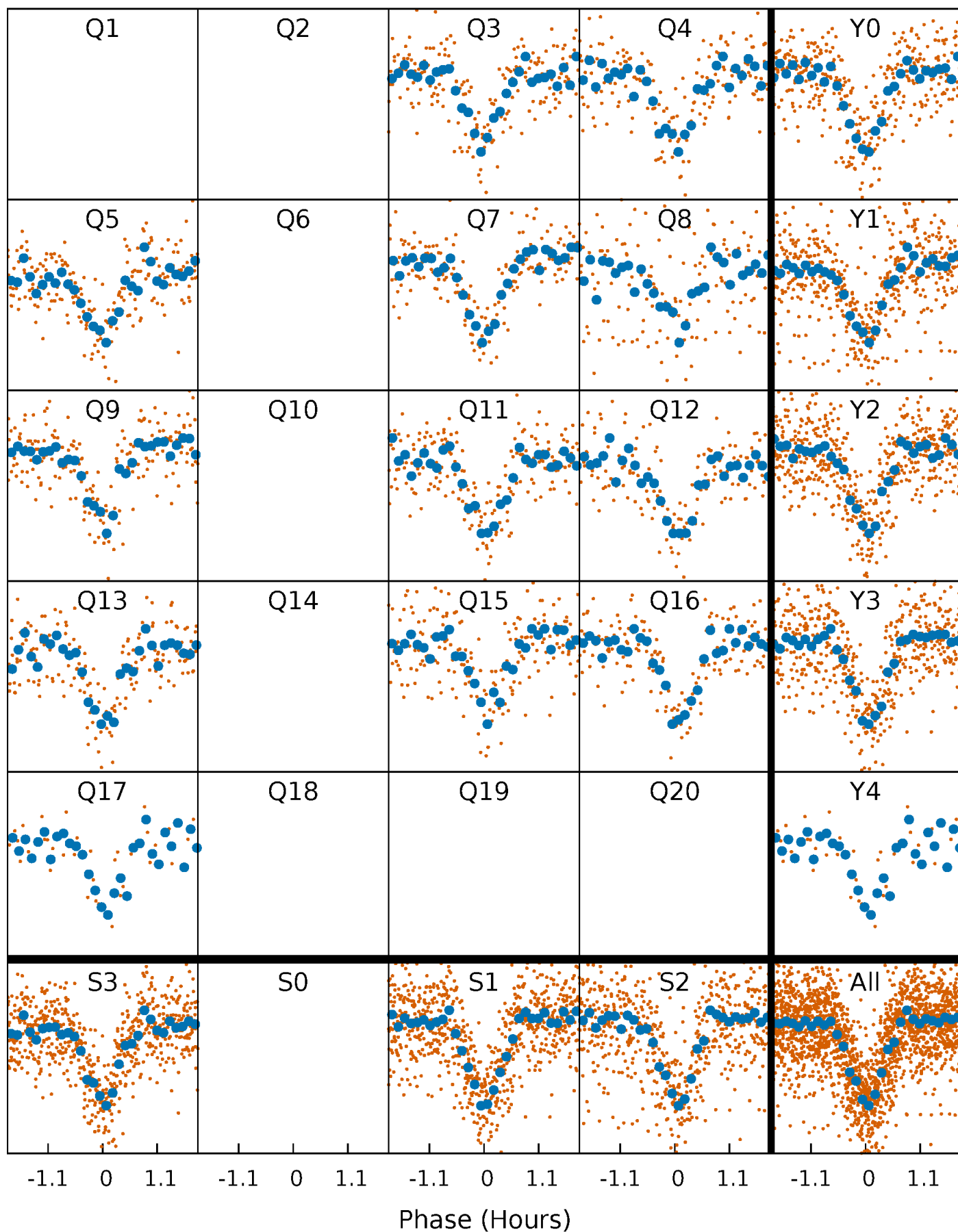


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



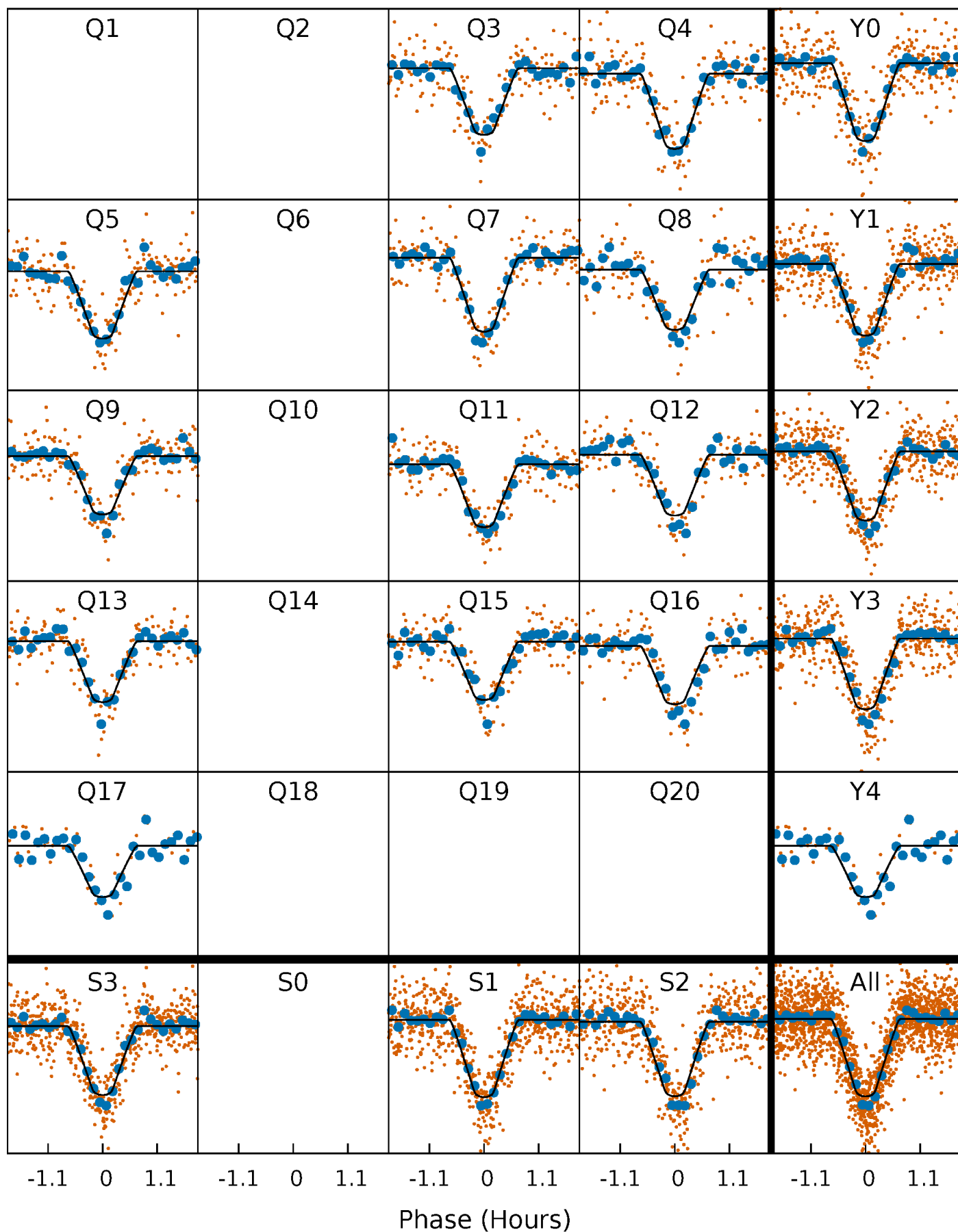
PDC Quarter-Phased Transit Curves

TCE 012405950-02 P= 3.539613 Days $T_0=134.363793$ (BKJD)



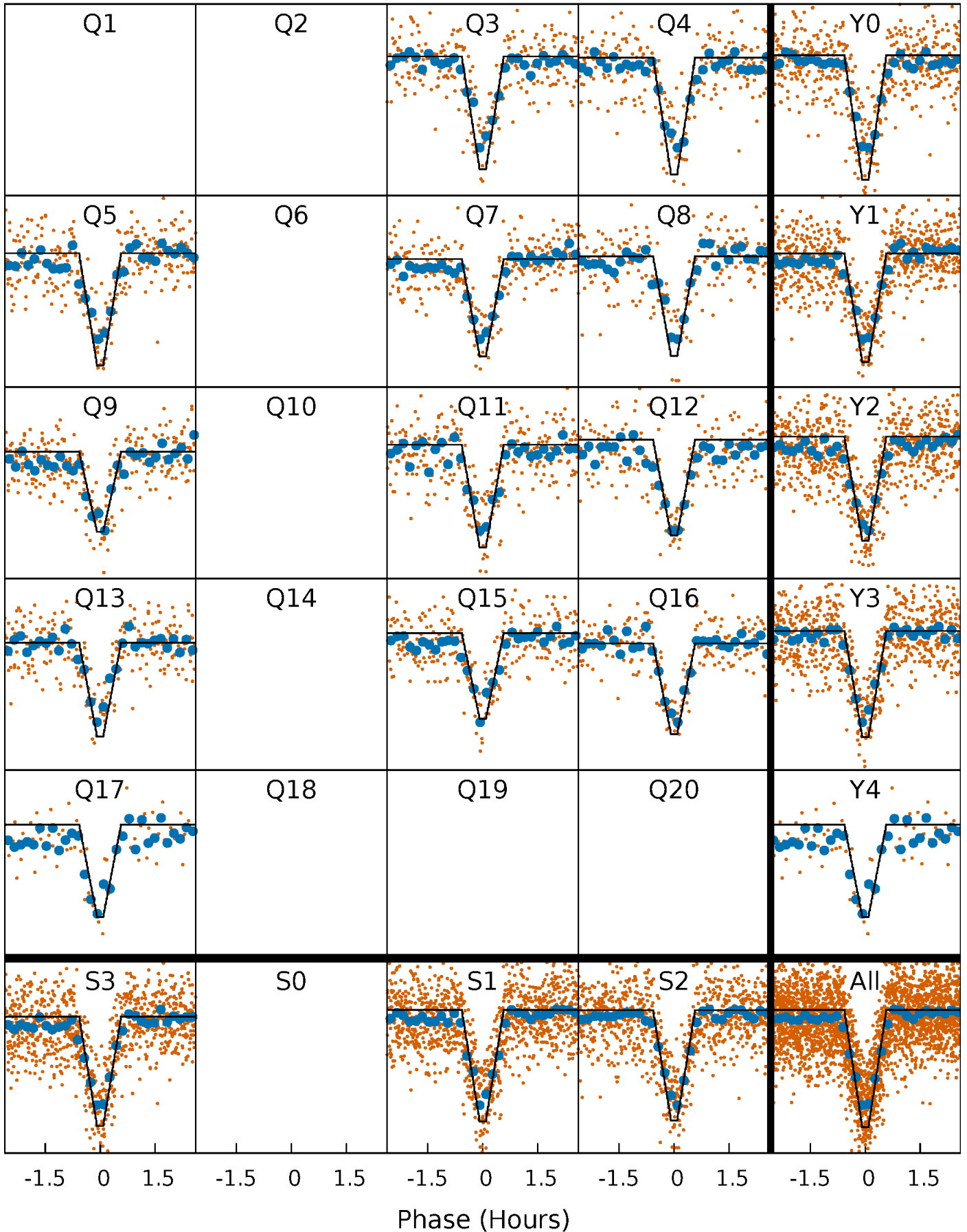
DV Quarter-Phased Transit Curves

TCE 012405950-02 P= 3.539613 Days $T_0=134.363793$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

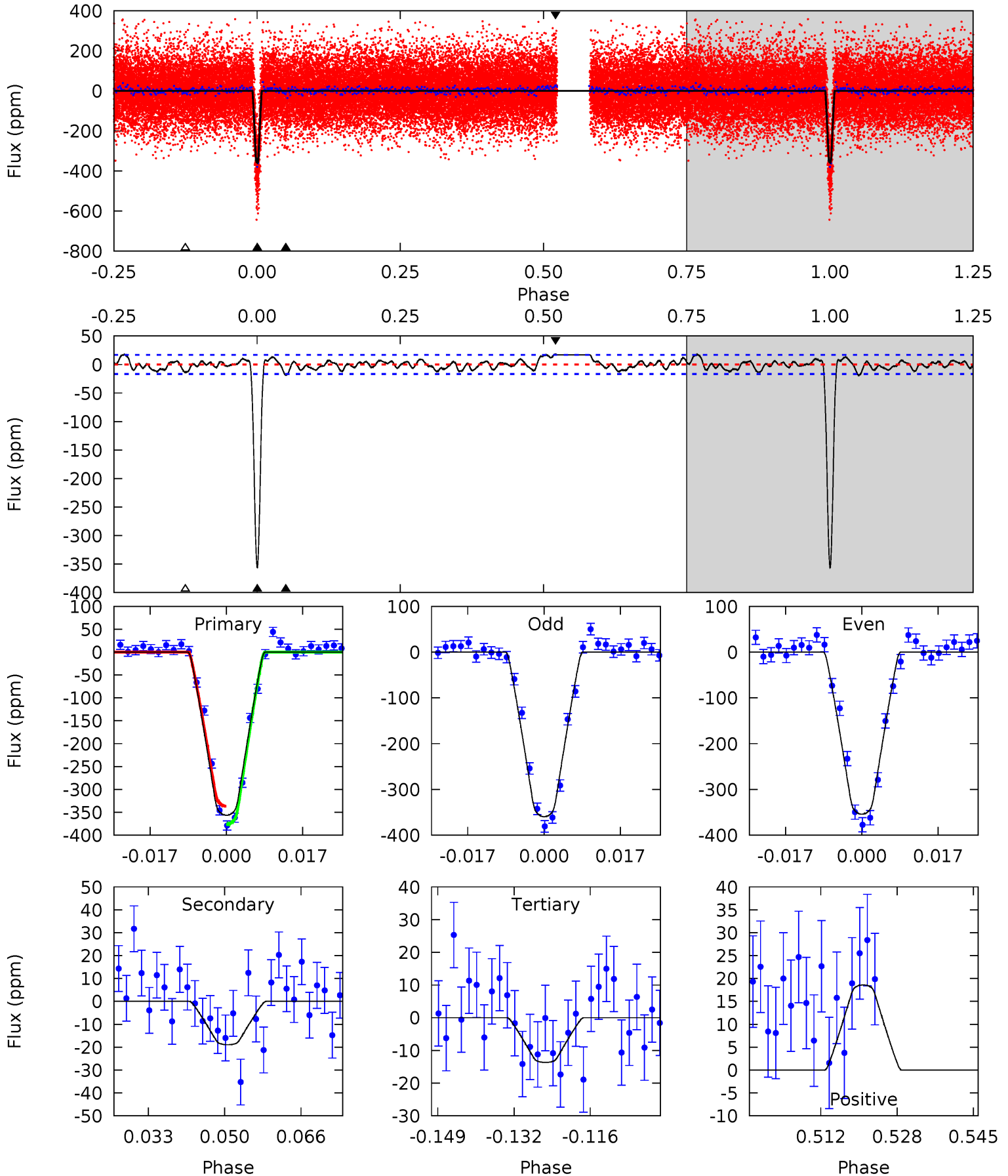
TCE 012405950-02 $P = 3.539635$ Days $T_0 = 134.360043$ (BKJD)



DV Model-Shift Uniqueness Test

012405950-02, P = 3.539613 Days, E = 134.363793 Days

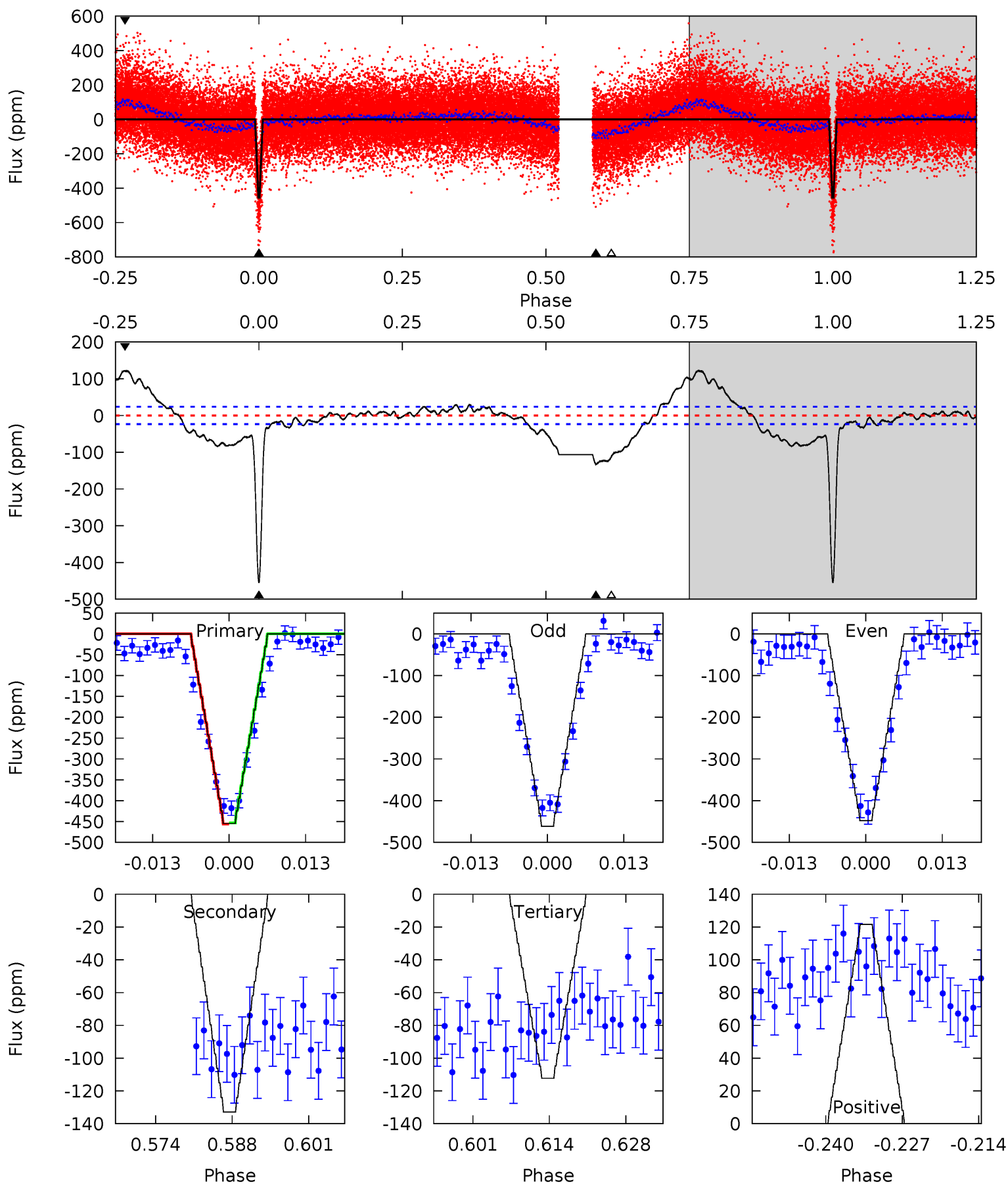
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
104.5	5.55	4.01	5.45	4.93	2.40	1.97	100.5	99.0	1.55	0.10	0.79	1.00	0.05	5.78



Alt Model-Shift Uniqueness Test

012405950-02, P = 3.539635 Days, E = 134.360043 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
95.2	27.8	23.5	25.5	4.97	2.47	10.4	71.7	69.7	4.31	2.35	1.39	1.03	0.21	0.29



Stellar Parameters For KIC 012405950

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7021^{+214}_{-262}	$3.759^{+0.304}_{-0.076}$	$-0.460^{+0.300}_{-0.250}$	$2.629^{+0.406}_{-0.947}$	$1.447^{+0.231}_{-0.282}$	$0.112^{+0.229}_{-0.035}$
	+3%/-4%	+8%/-2%	+65%/-54%	+15%/-36%	+16%/-19%	+204%/-31%
Source	KIC0	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 012405950-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-19 ± 3	$5.45^{+0.88}_{-1.03}$	3009^{+176}_{-245}	3449^{+216}_{-207}	$0.945^{+0.456}_{-0.263}$
Alt.	-133 ± 5	$6.22^{+0.94}_{-1.26}$	3000^{+202}_{-271}	4987^{+210}_{-215}	$5.105^{+2.615}_{-1.162}$

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 $A_{obs} \gg 1.0$

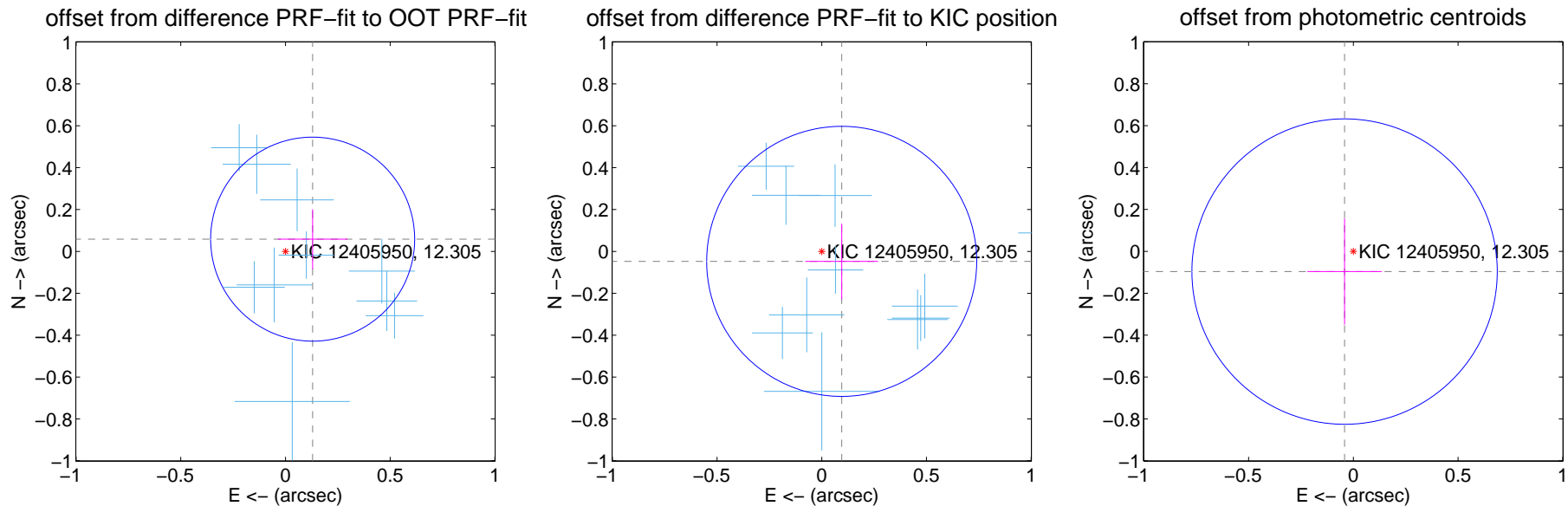
DV Centroid Data

Supplemental centroid analysis for 012405950-02. Kepler magnitude: 12.30. Transit SNR 58.10

There are 12 quarters with good PRF difference image offsets

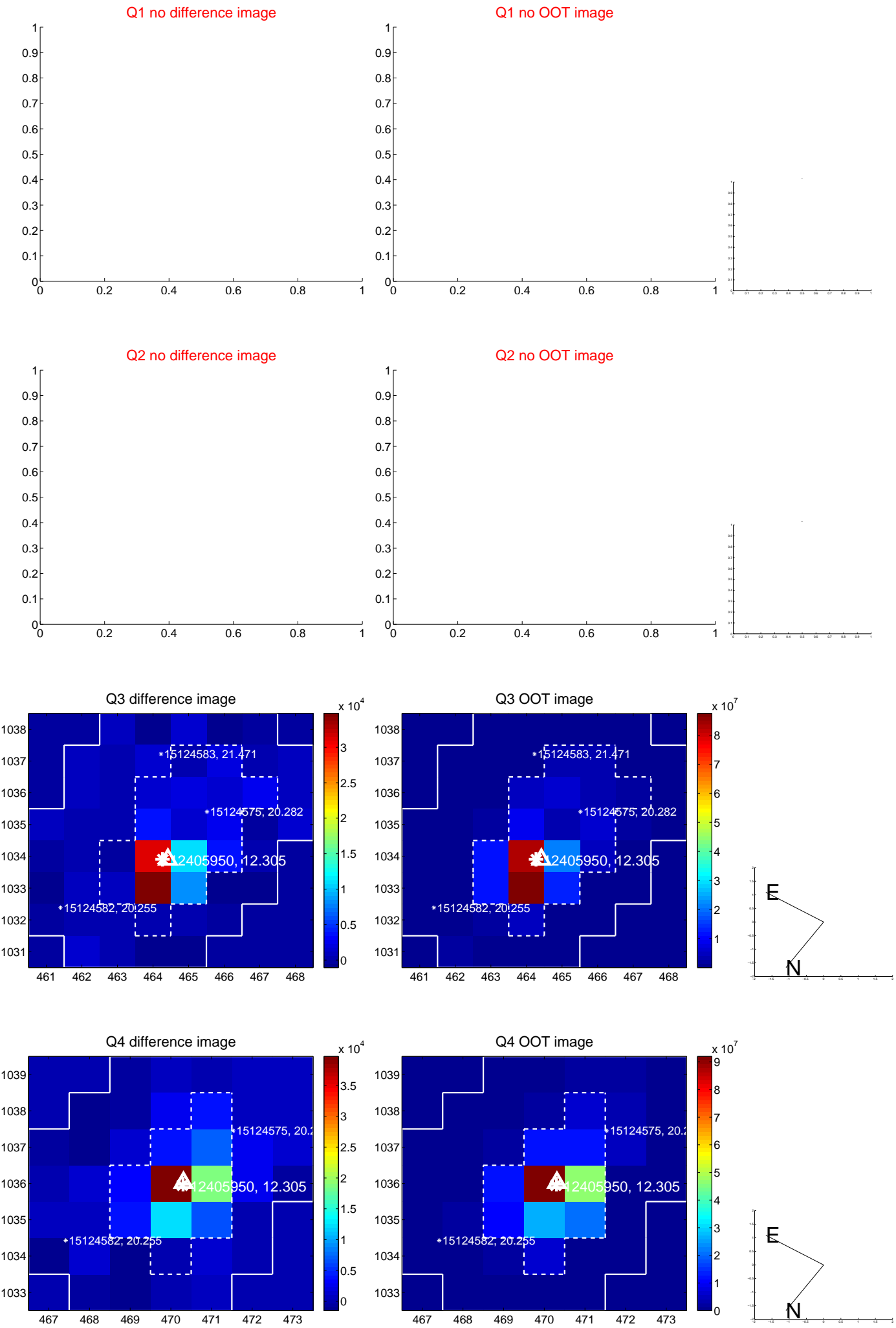
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.142 ± 0.162	0.88	-0.130 ± 0.166	0.059 ± 0.143
PRF-fit source offset from KIC position	0.106 ± 0.215	0.50	-0.095 ± 0.174	-0.047 ± 0.180
photometric centroid source offset	0.11 ± 0.24	0.43	0.04 ± 0.18	-0.10 ± 0.25

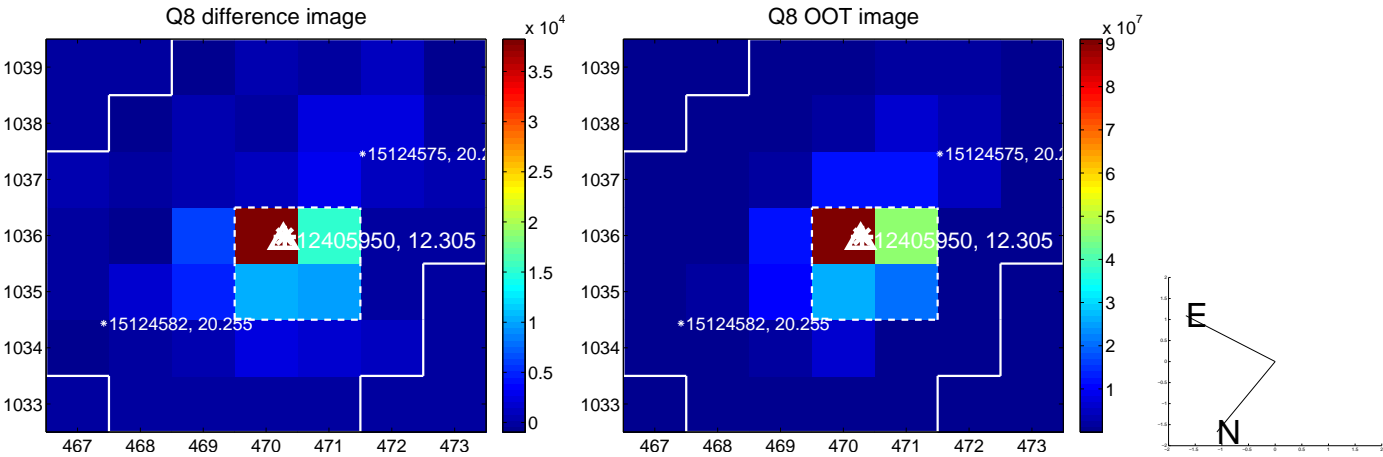
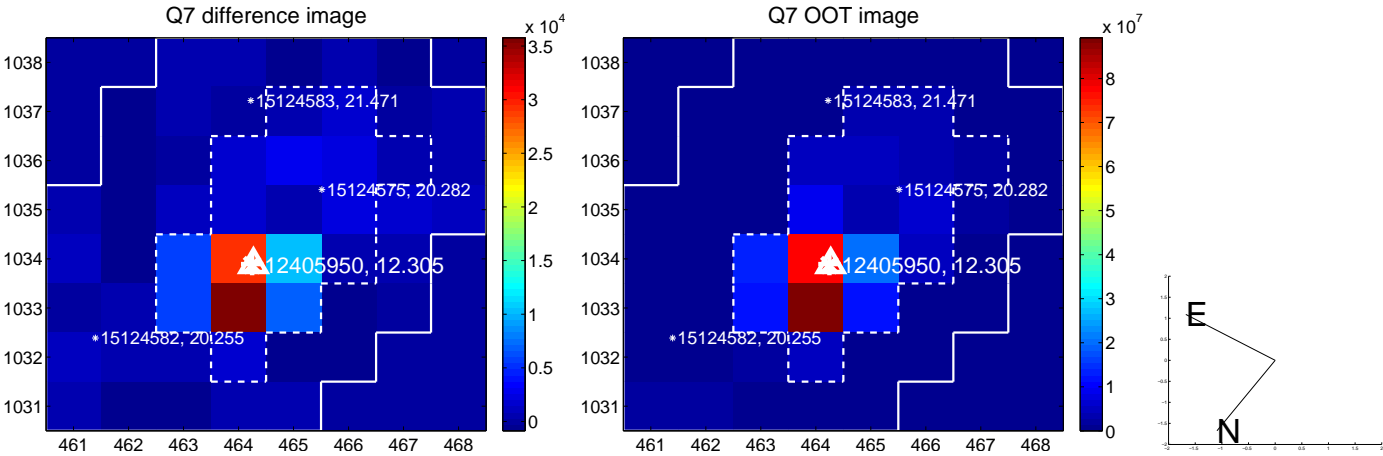
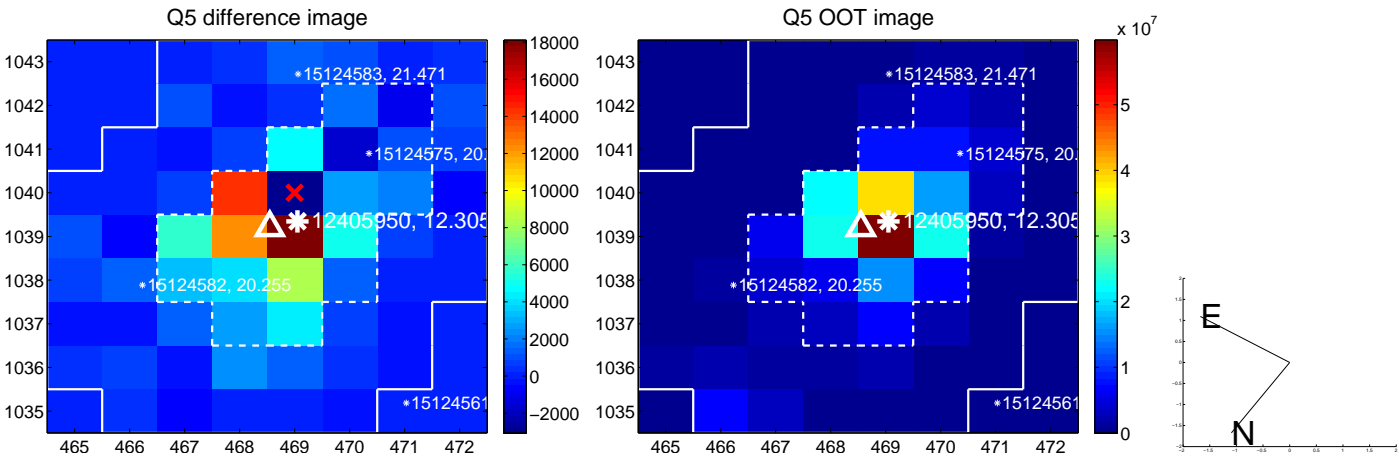


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

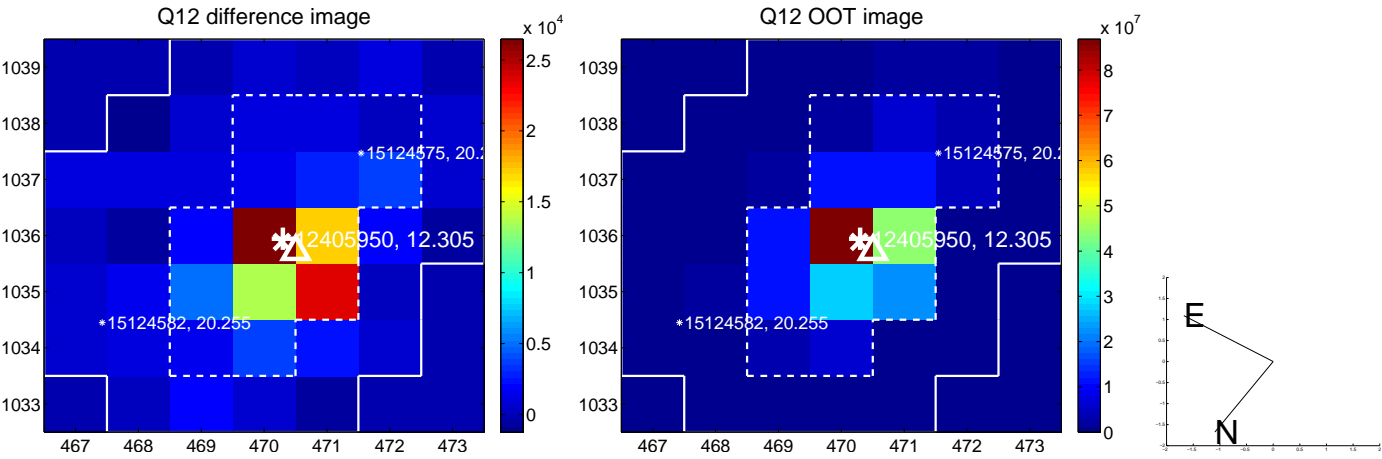
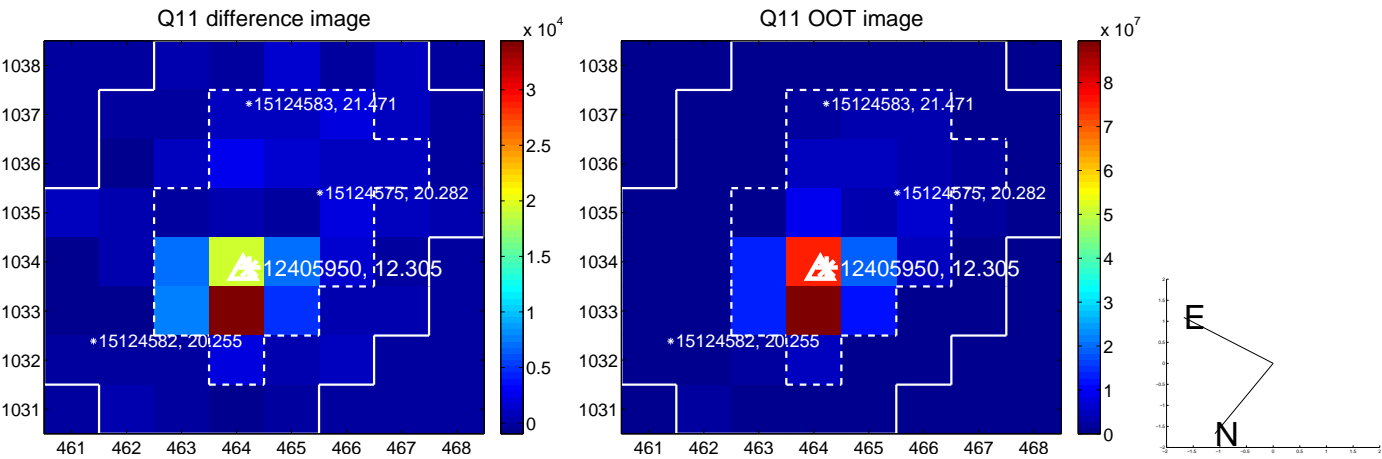
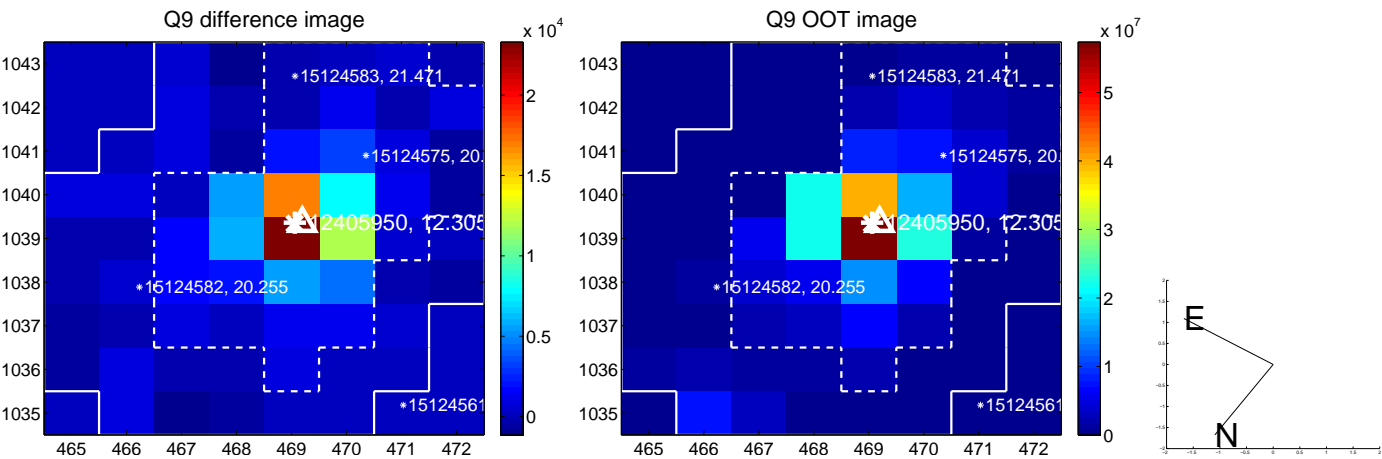
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



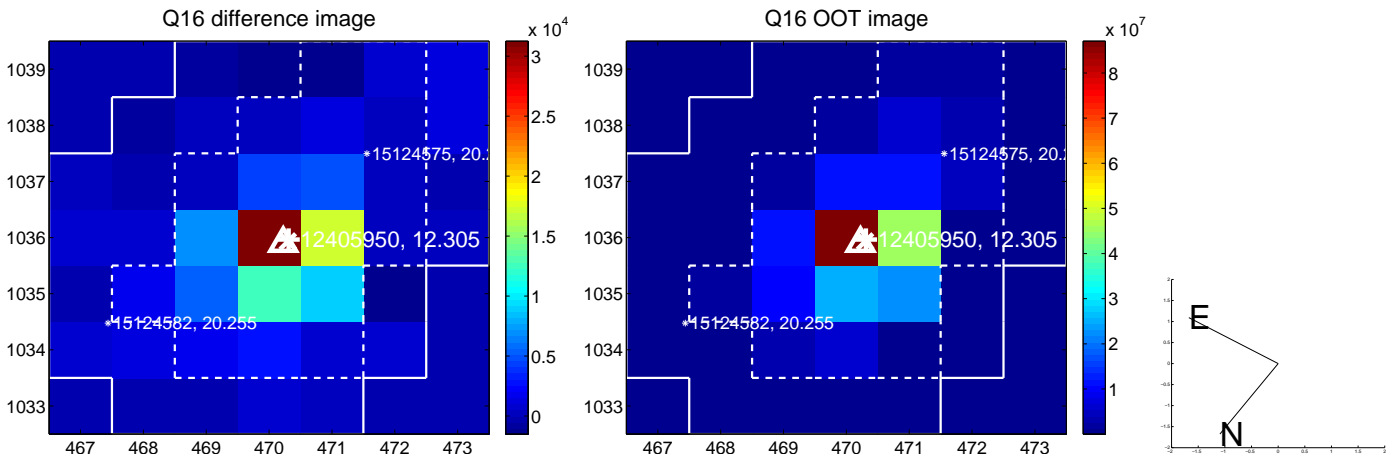
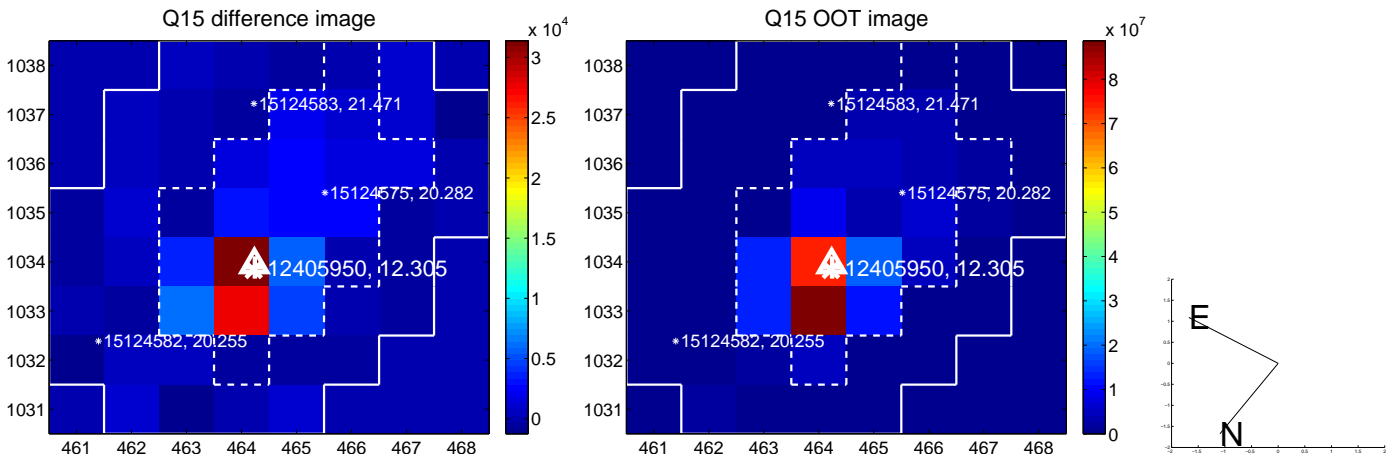
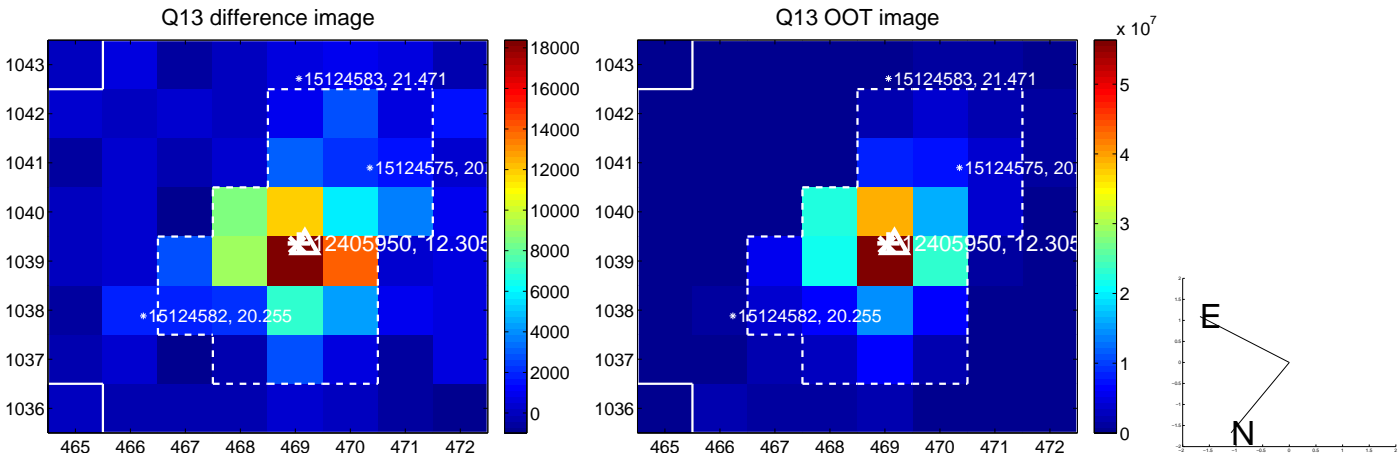
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



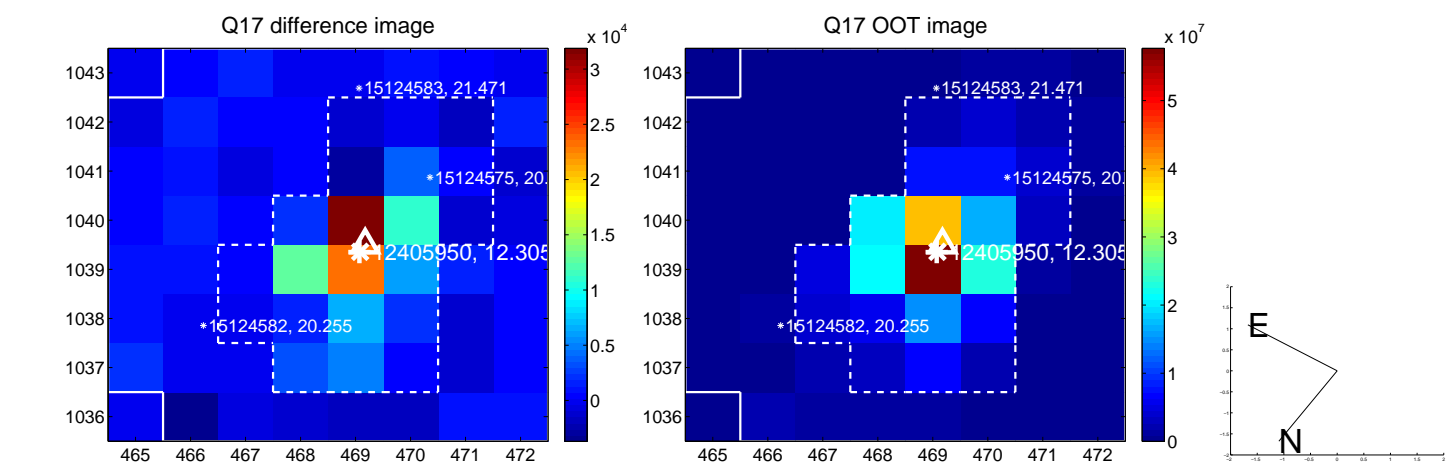
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



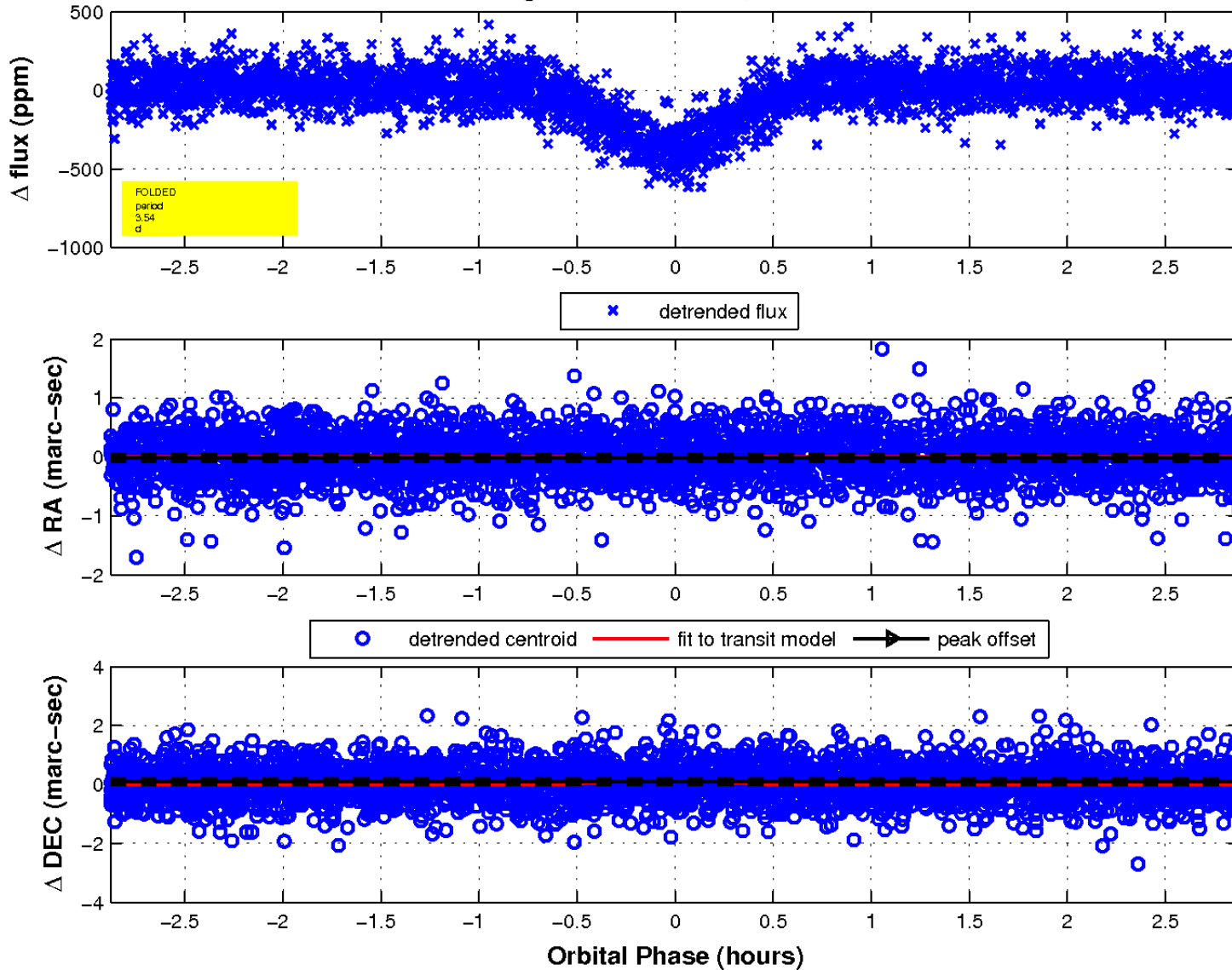
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

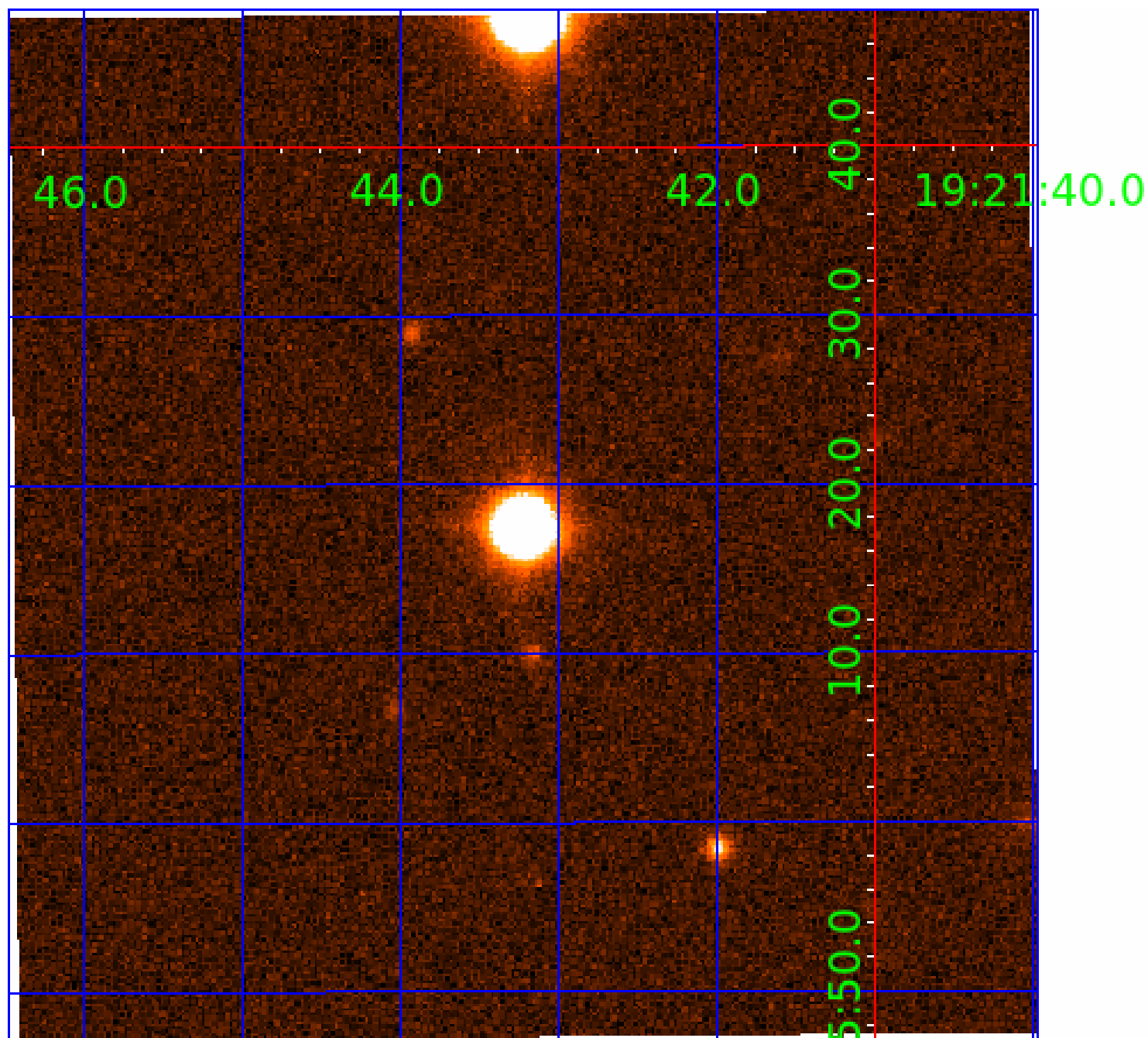


fluxWeightedCentroids, Planet 2 of 7



UKIRT Image

Declination



KIC 012405950

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})
012405950-01	OBS	3778.01	3.539641	132.772763	1163.2	1.450	179.4	192.3	2.63	7021	11.83	5689.47
012405950-02	OBS	No	3.539613	134.363793	343.8	0.961	42.6	58.1	2.63	7021	5.73	5689.53
012405950-03	OBS	No	2.654873	133.072202	18.8	12.956	7.6	7.6	2.63	7021	1.15	8348.83
012405950-04	OBS	No	64.079148	145.775835	112.3	9.314	8.2	7.2	2.63	7021	3.11	119.69
012405950-05	OBS	No	81.706403	134.515598	178.7	4.763	7.7	7.6	2.63	7021	4.03	86.56
012405950-06	OBS	No	113.552188	146.497204	135.5	13.721	7.7	7.4	2.63	7021	3.40	55.82
012405950-07	OBS	No	73.331738	182.647921	239.5	2.885	8.2	7.4	2.63	7021	4.36	99.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012405950-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
012405950-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
012405950-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012405950-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012405950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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

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

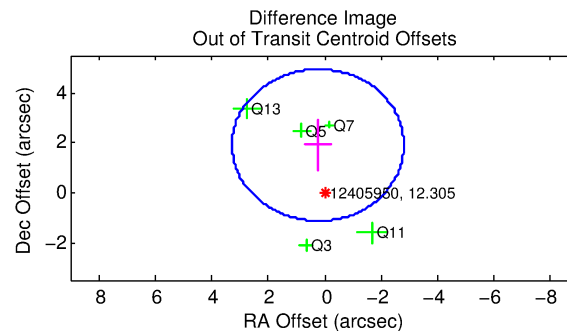
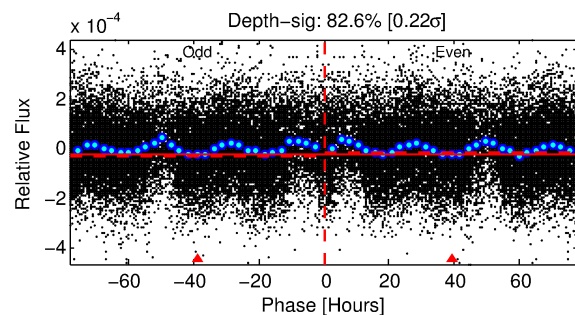
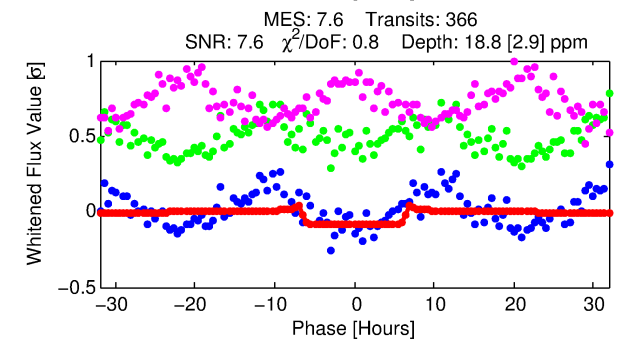
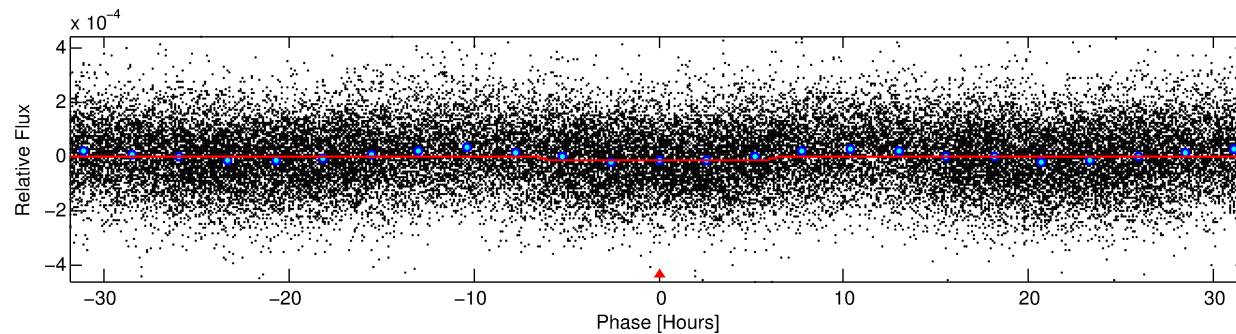
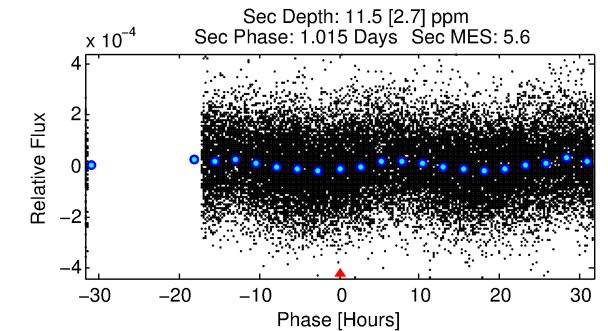
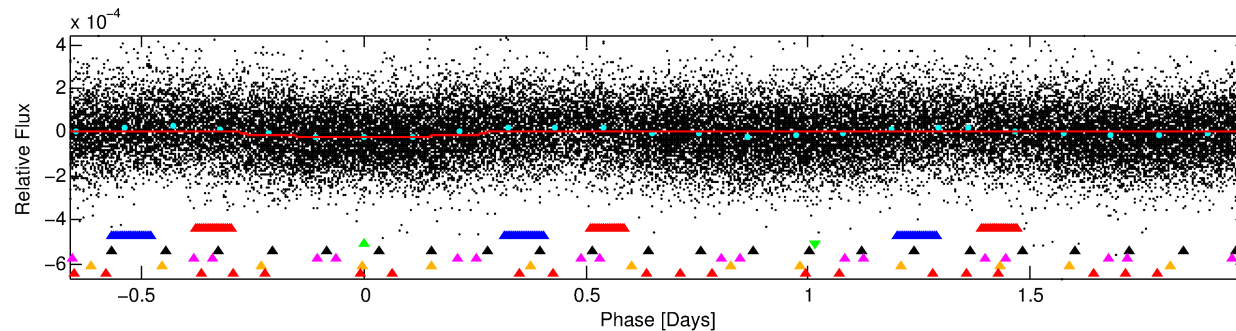
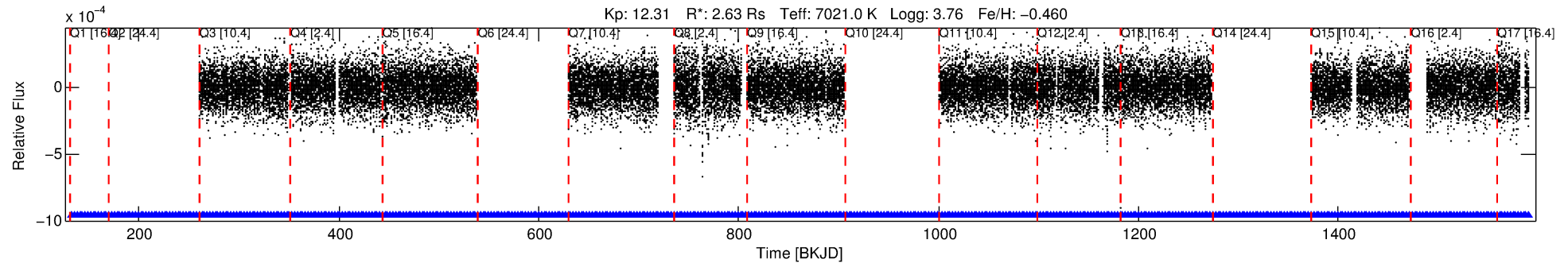
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012405950-03

No Significant Match Found

DV One-Page Summary

KIC: 12405950 Candidate: 3 of 7 Period: 2.655 d
KOI: K03778 Corr: No Ephemeris Match



DV Fit Results:

Period = 2.65487 [0.00004] d
Epoch = 133.0722 [0.0089] BKJD
Rp/R* = 0.0040 [0.0041]
a/R* = 1.68 [6.27]
b = 0.08 [69.59]
Seff = 8348.83 [4555.41]
Teq = 2437 [332] K
Rp = 1.15 [1.25] Re
a = 0.0425 [0.0142] AU
Ag = 8.61 [18.33] [0.42σ]
Teffp = 6456 [3339] K [1.20σ]

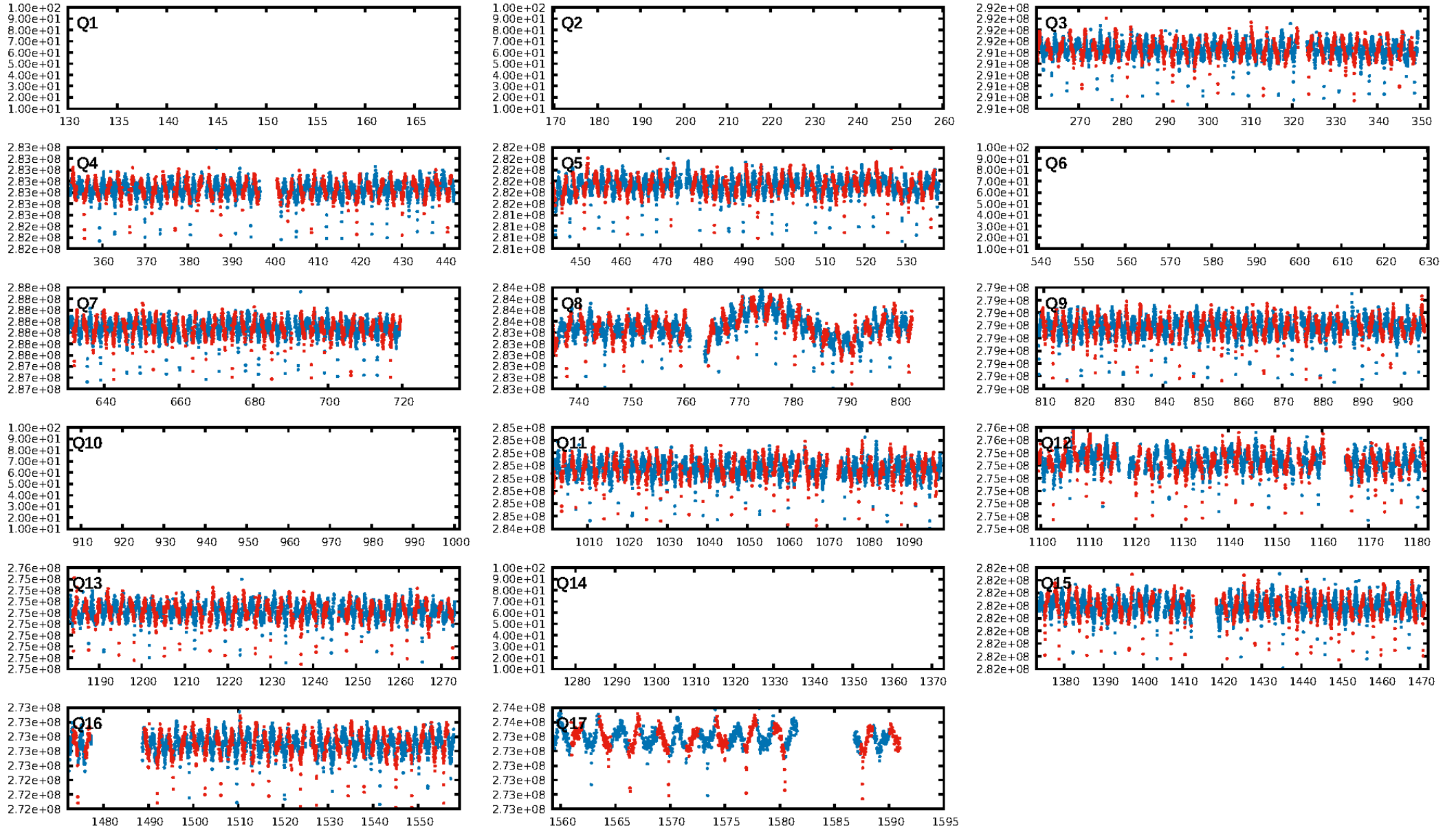
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 89.8% [1.63σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.64e-08
RollingBand-fgt: 1.00 [356/356]
GhostDiagnostic-chr: 2.093
Centroid-sig: 3.6%
Centroid-so: 1.448 arcsec [1.41σ]
OotOffset-rm: 1.917 arcsec [1.89σ]
OotOffset-st: 0/3/0/2 [5]
KicOffset-rm: 1.865 arcsec [1.52σ]
KicOffset-st: 0/3/0/2 [5]
DiffImageQuality-fgm: 0.40 [2/5]
DiffImageOverlap-fno: 0.00 [0/12]

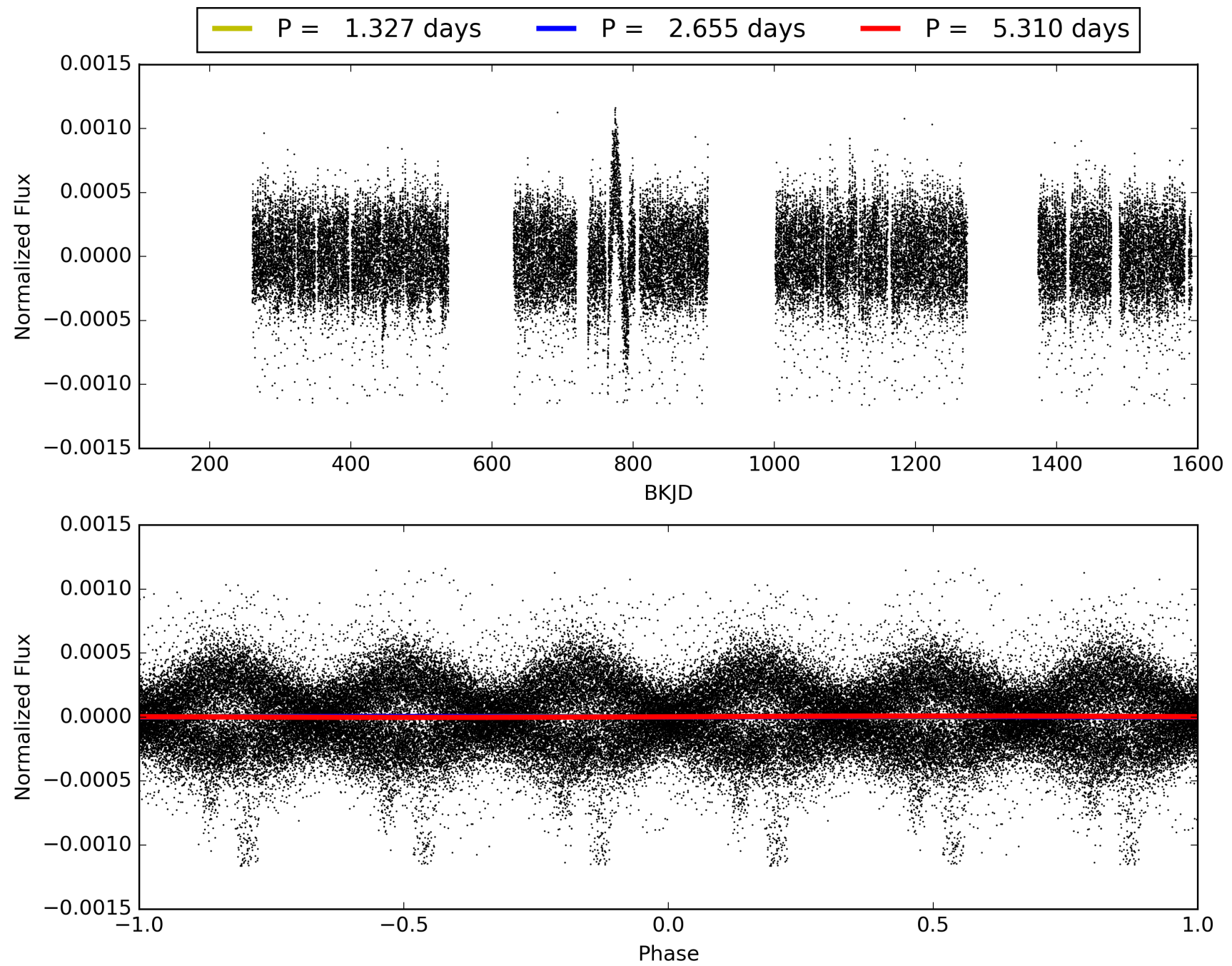
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:00:04 Z

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

TCE 012405950-03, PDC Light Curves

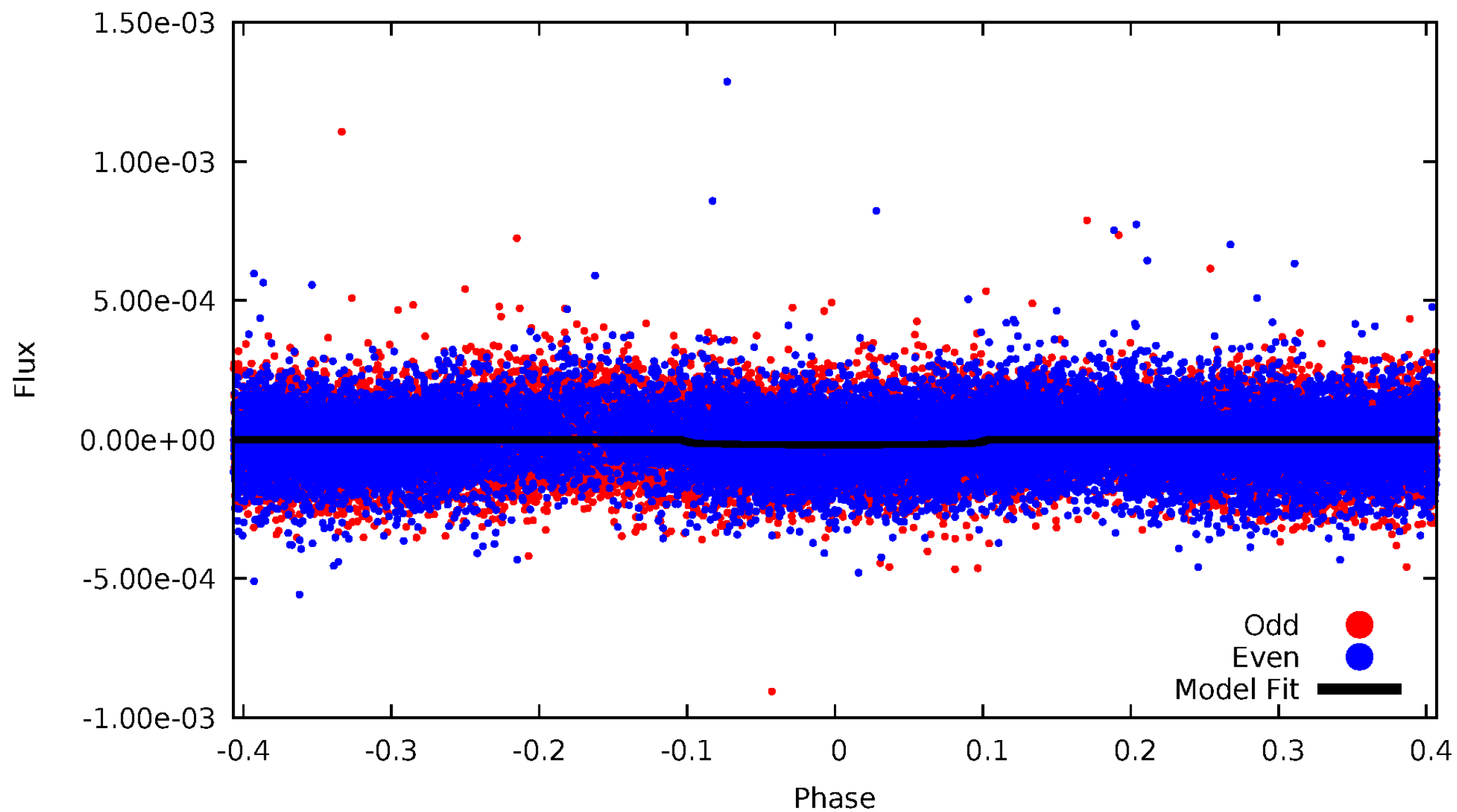


TCE 012405950-03



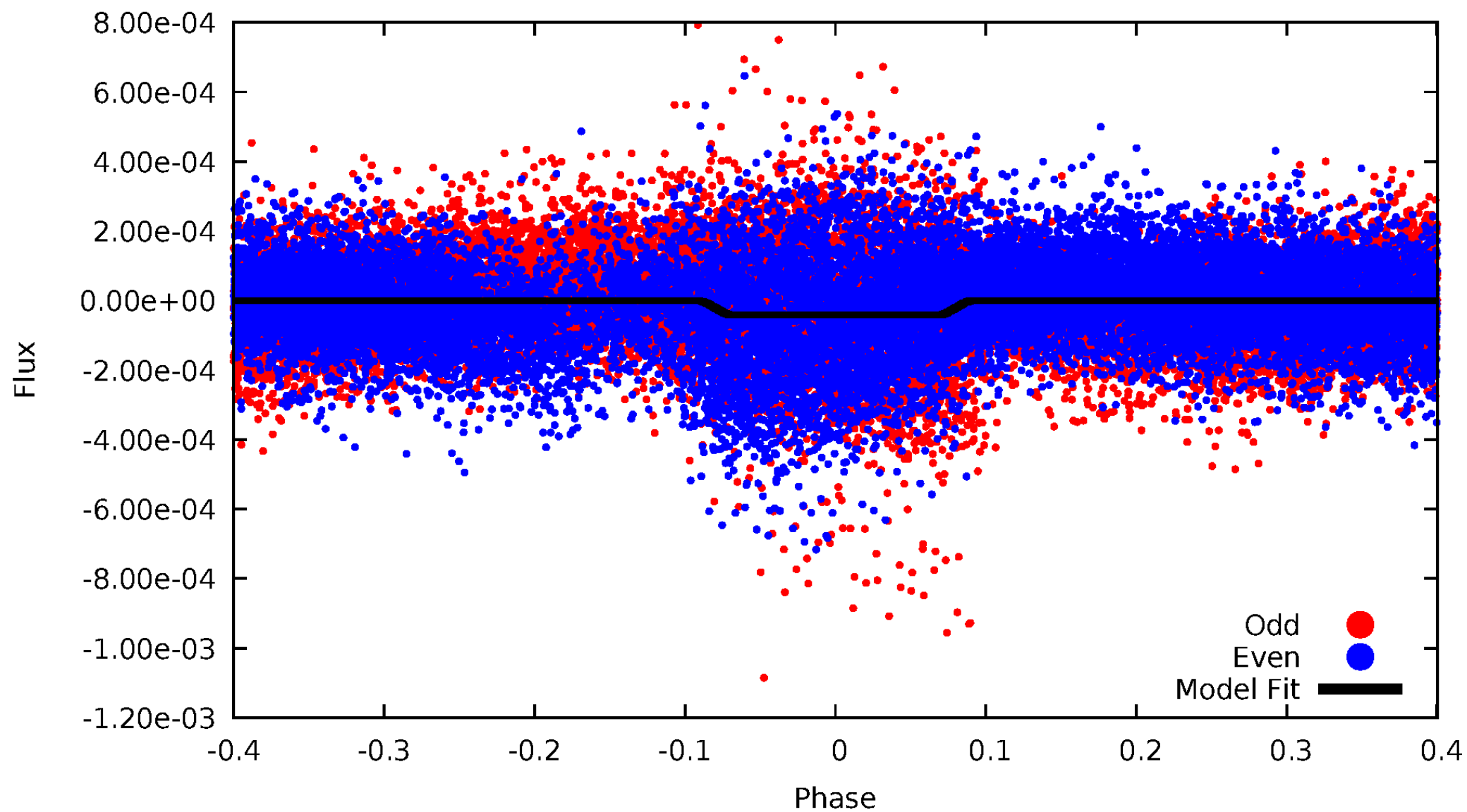
DV Odd/Even

TCE 012405950-03



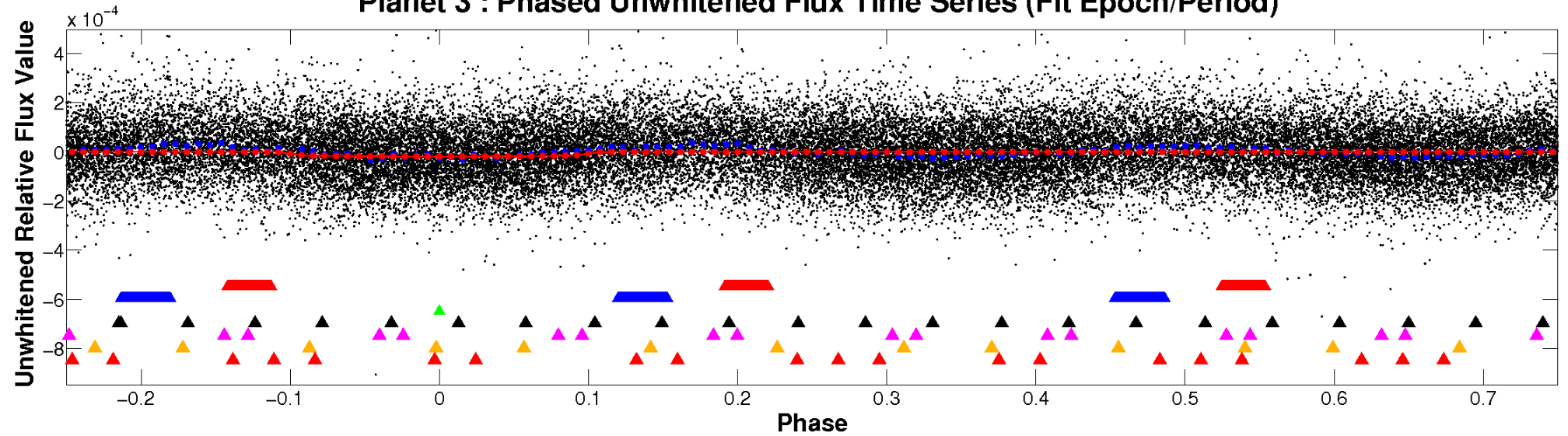
ALT Odd/Even

TCE 012405950-03

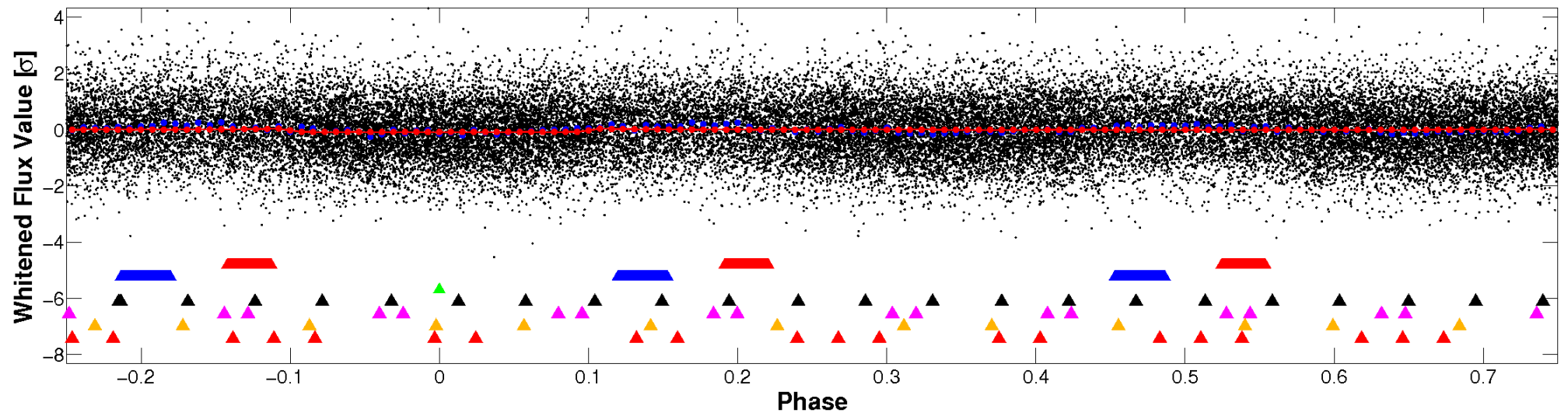


Non-Whitened Vs. Whitened Light Curve

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

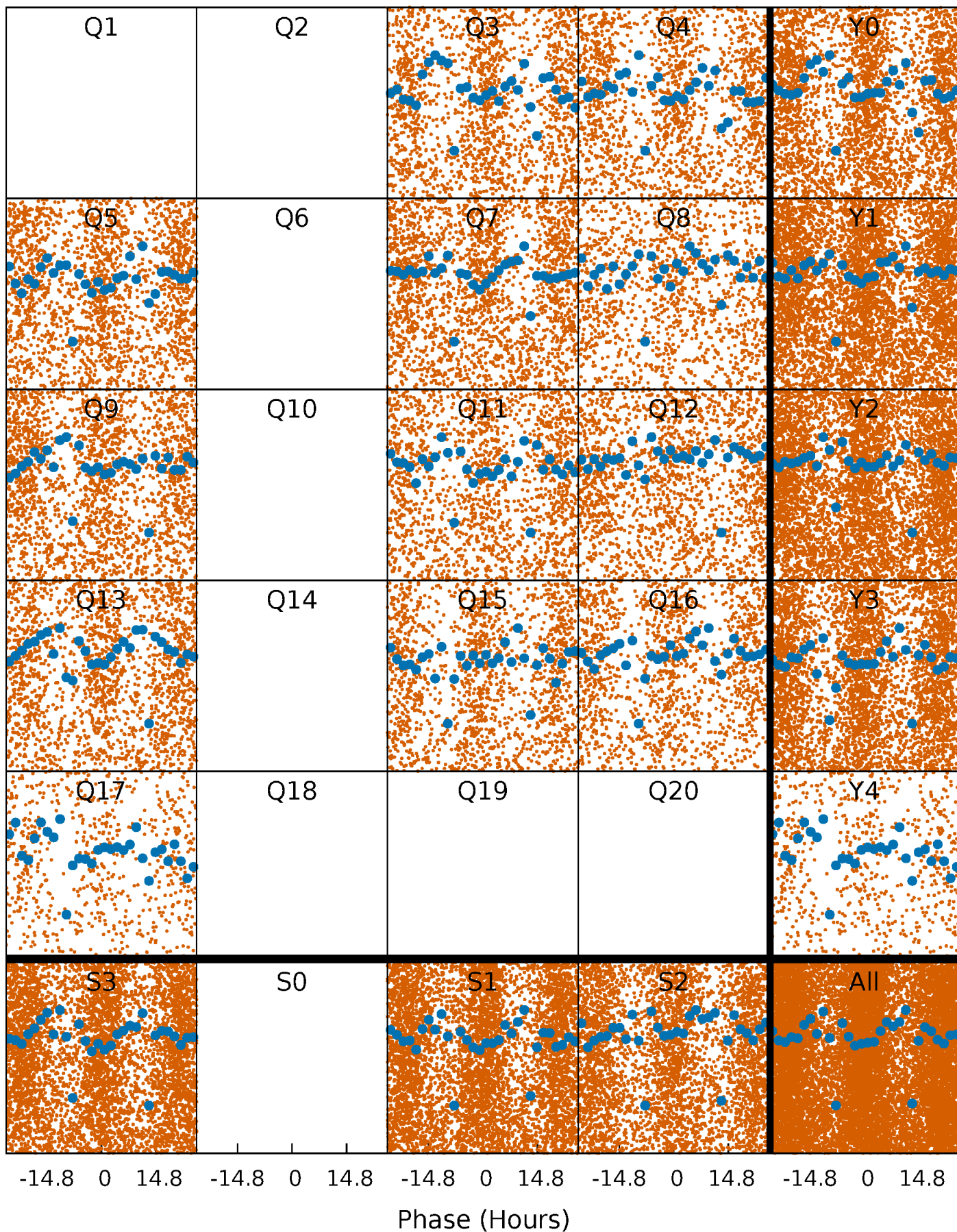


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



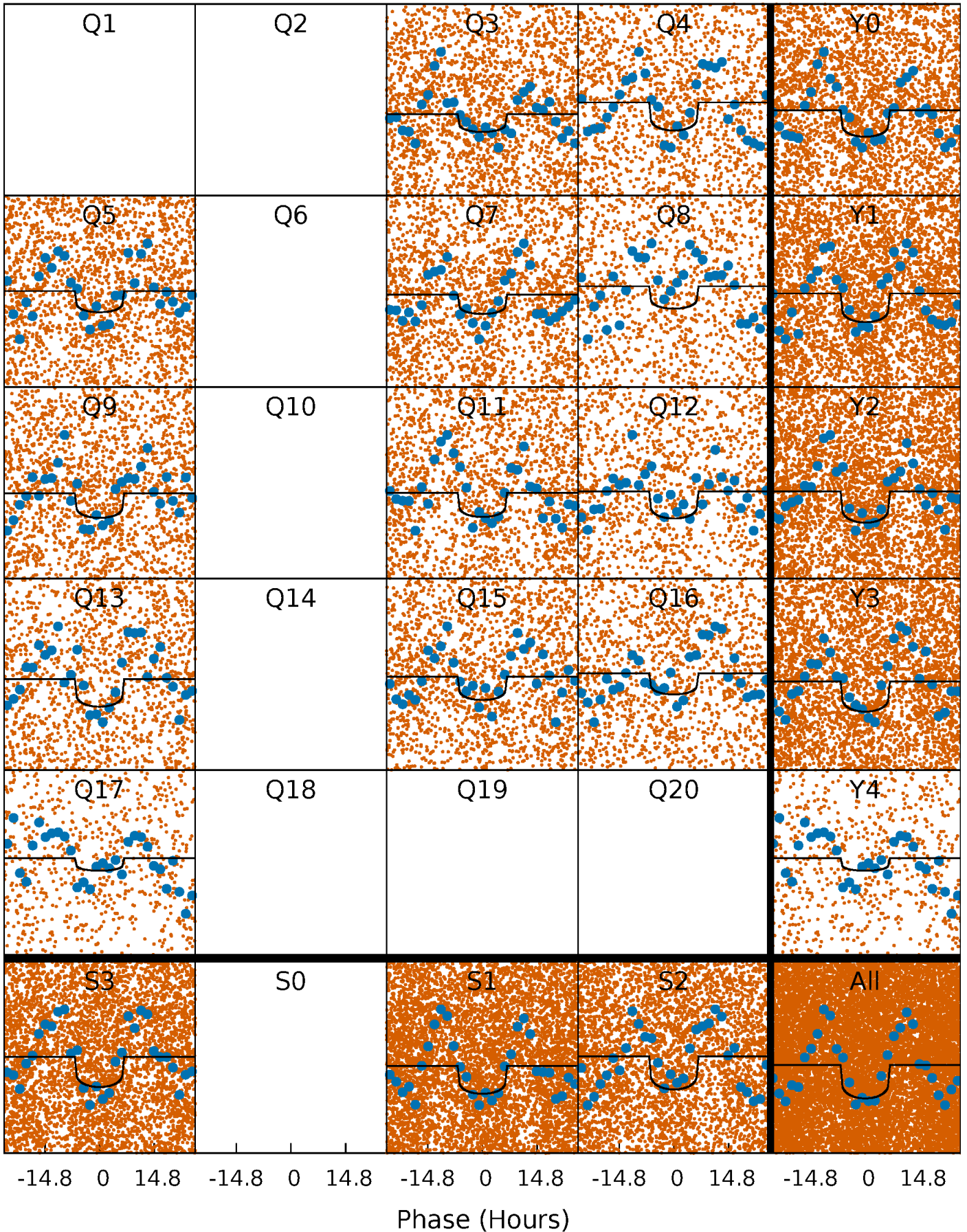
PDC Quarter-Phased Transit Curves

TCE 012405950-03 P= 2.654873 Days $T_0=133.072202$ (BKJD)



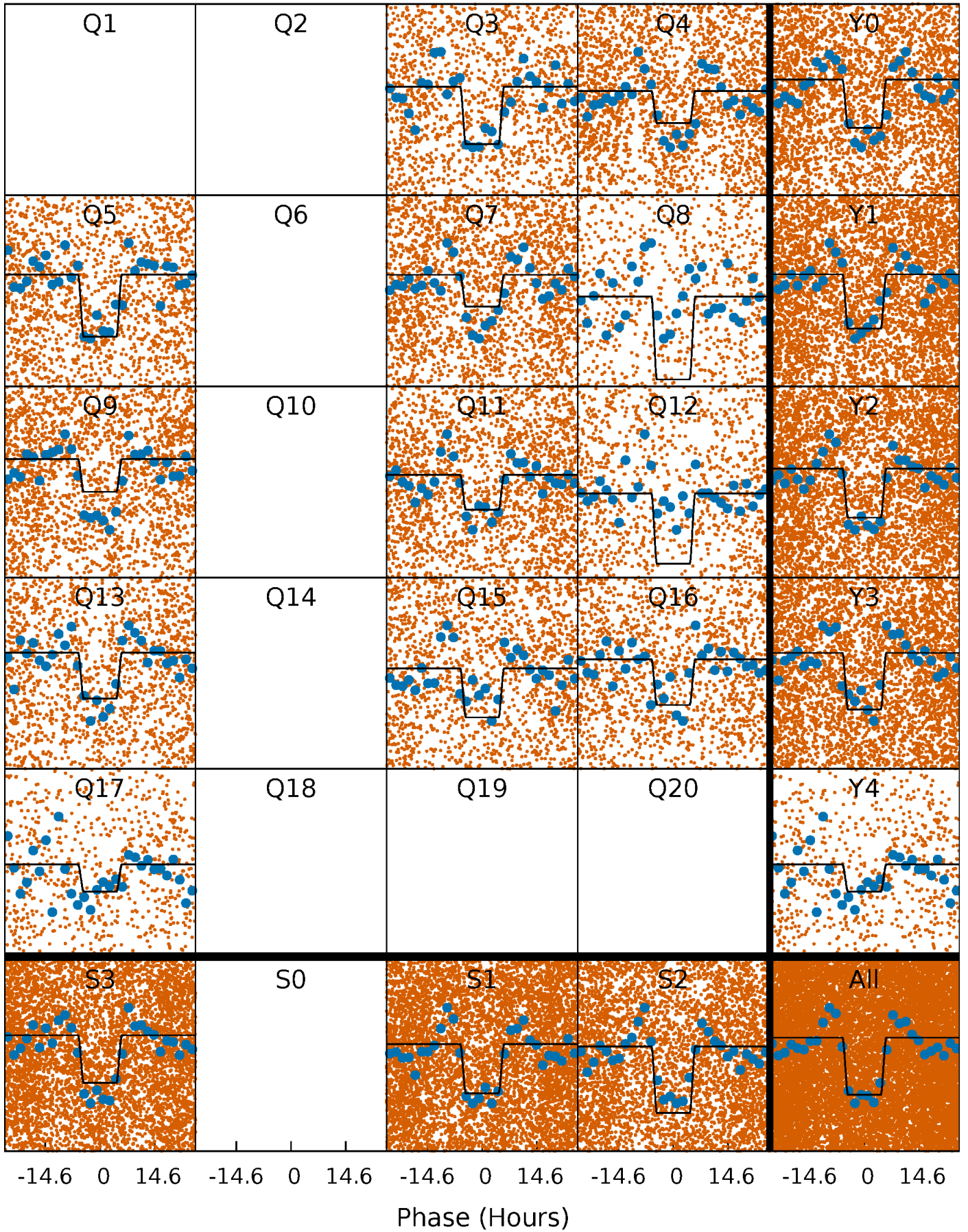
DV Quarter-Phased Transit Curves

TCE 012405950-03 P= 2.654873 Days $T_0=133.072202$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

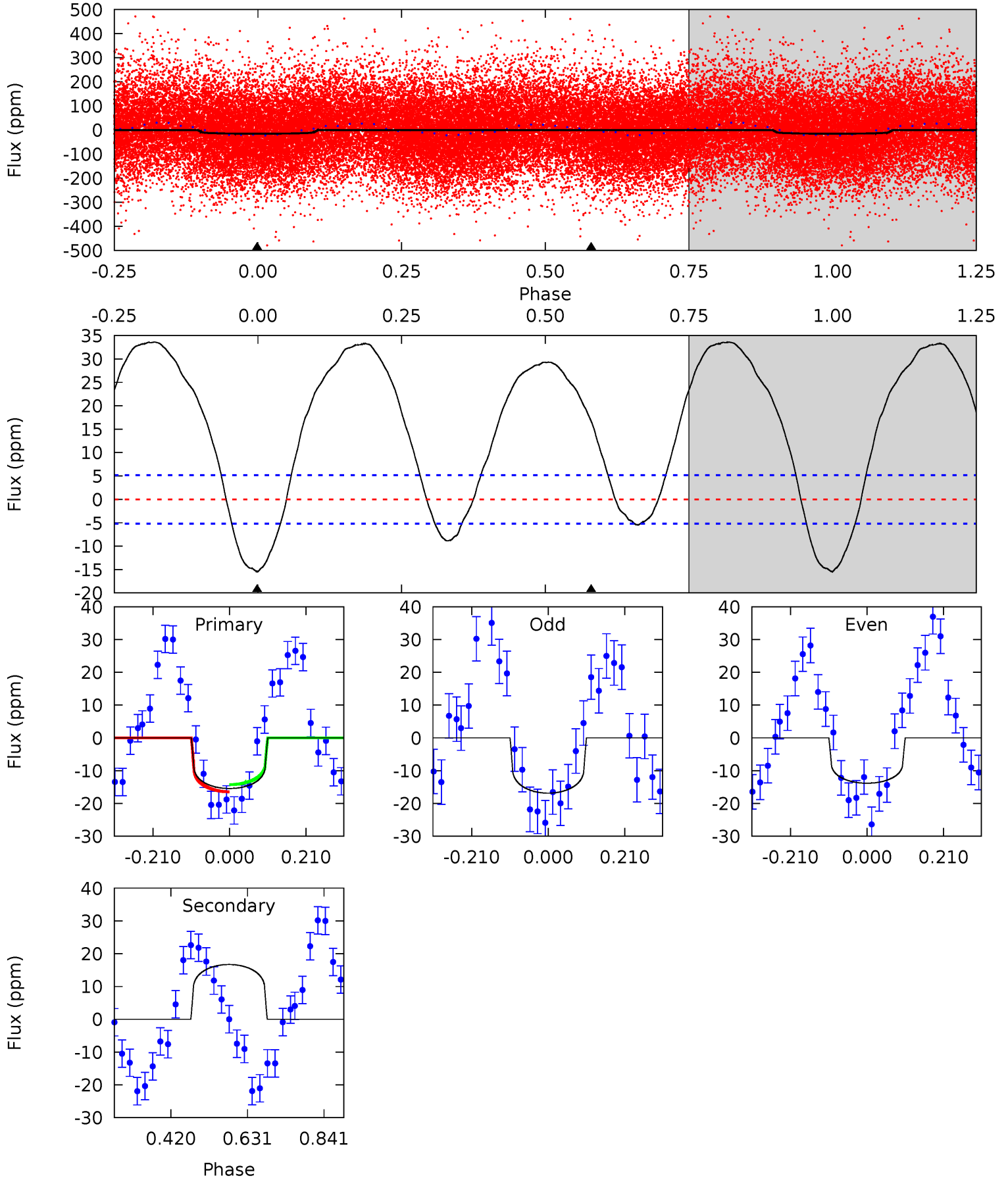
TCE 012405950-03 P= 2.654909 Days $T_0=133.070612$ (BKJD)



DV Model-Shift Uniqueness Test

012405950-03, P = 2.654873 Days, E = 133.072202 Days

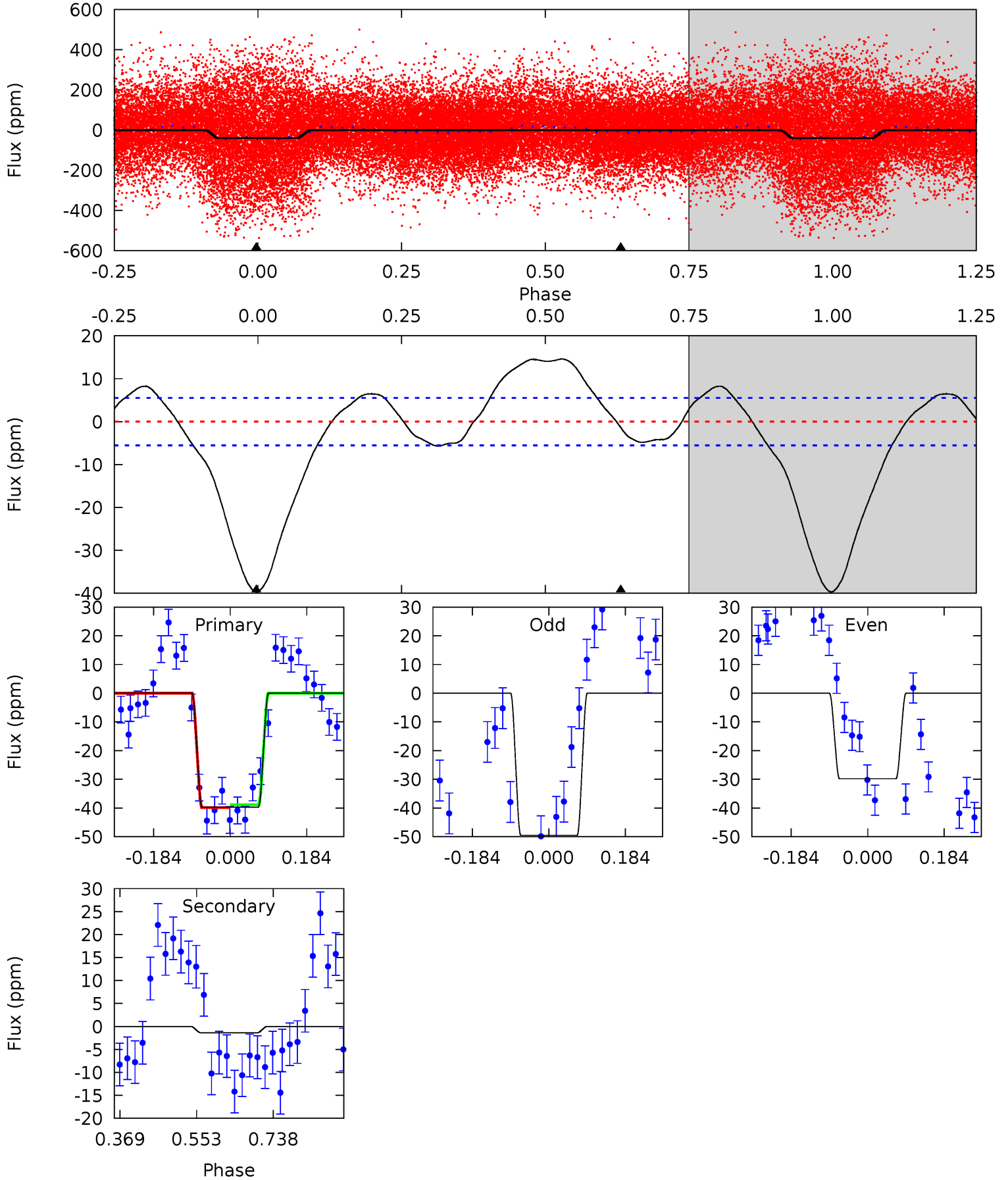
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	-14.2	0	0	4.41	1.25	11.0	13.2	13.2	-14.2	-14.2	1.29	1.02	0.69	0.96



Alt Model-Shift Uniqueness Test

012405950-03, P = 2.654909 Days, E = 133.070612 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.9	1.10	0	0	4.43	1.33	4.35	31.9	31.9	1.10	1.10	8.00	0.94	0.27	0.42



Stellar Parameters For KIC 012405950

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7021^{+214}_{-262}	$3.759^{+0.304}_{-0.076}$	$-0.460^{+0.300}_{-0.250}$	$2.629^{+0.406}_{-0.947}$	$1.447^{+0.231}_{-0.282}$	$0.112^{+0.229}_{-0.035}$
	+3%/-4%	+8%/-2%	+65%/-54%	+15%/-36%	+16%/-19%	+204%/-31%
Source	KIC0	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 012405950-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	17 ± 1	$1.25^{+1.08}_{-0.74}$	3328^{+192}_{-282}	-6520^{+1537}_{-5237}	$-10.279^{+7.274}_{-55.461}$
Alt.	-1 ± 1	$1.79^{+1.21}_{-0.96}$	3303^{+220}_{-301}	2615^{+1603}_{-5857}	$0.356^{+1.605}_{-0.345}$

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

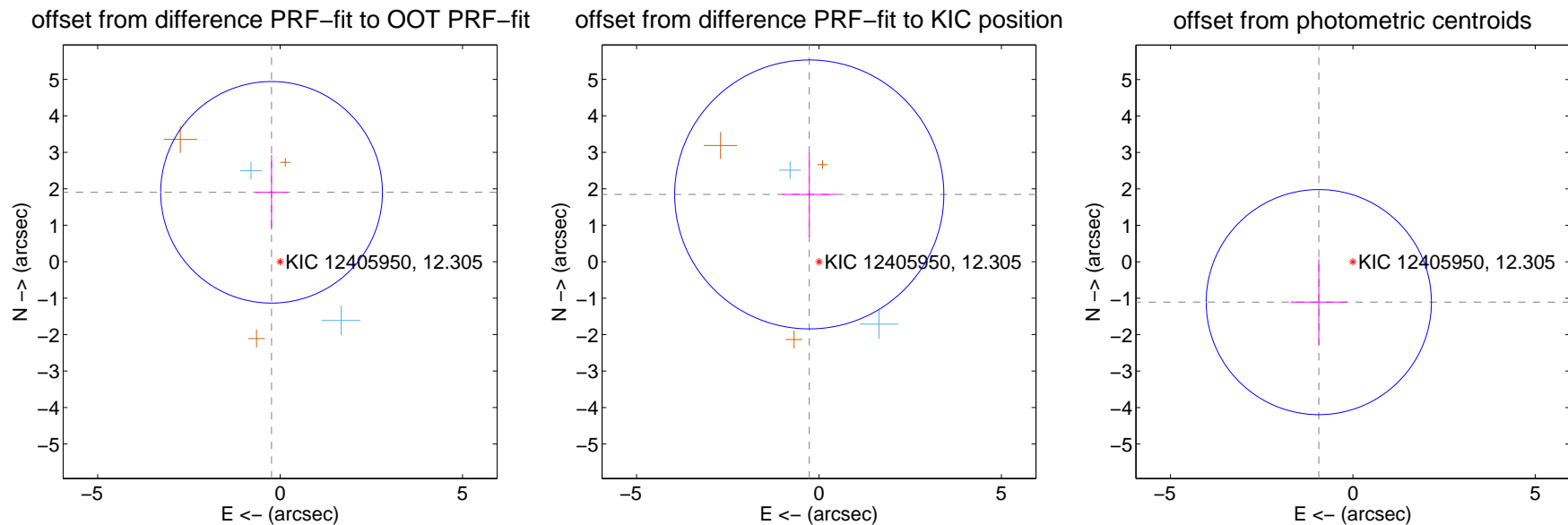
DV Centroid Data

Supplemental centroid analysis for 012405950-03. Kepler magnitude: 12.30. Transit SNR 7.61

There are 2 quarters with good PRF difference image offsets

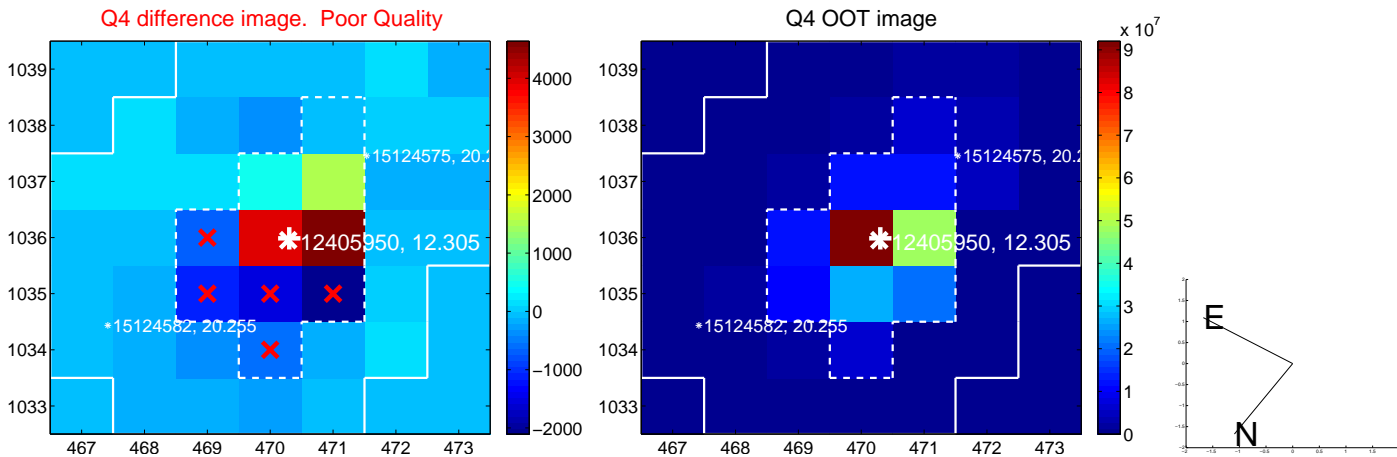
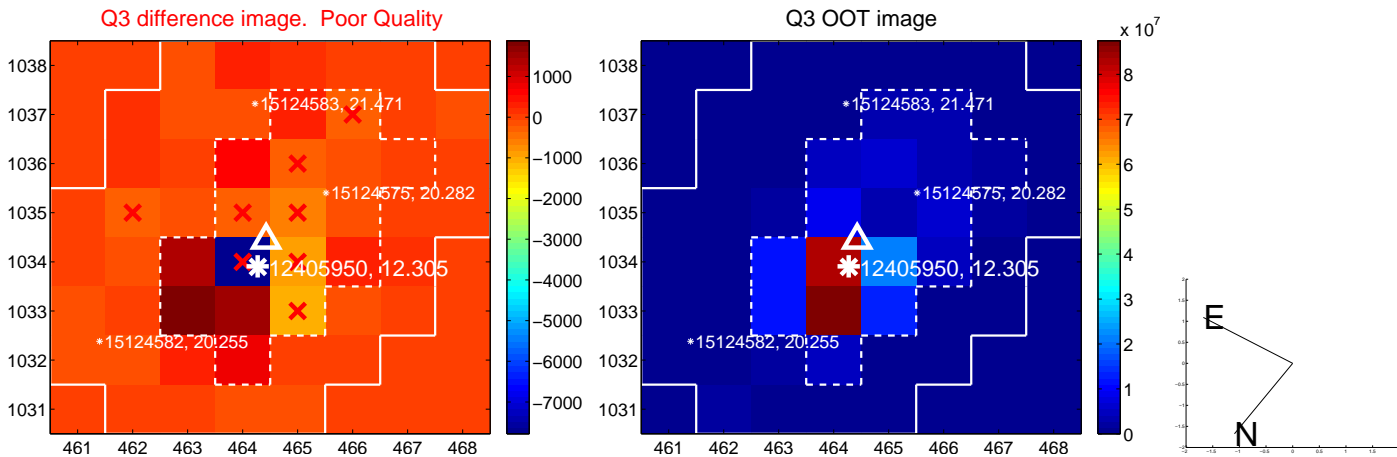
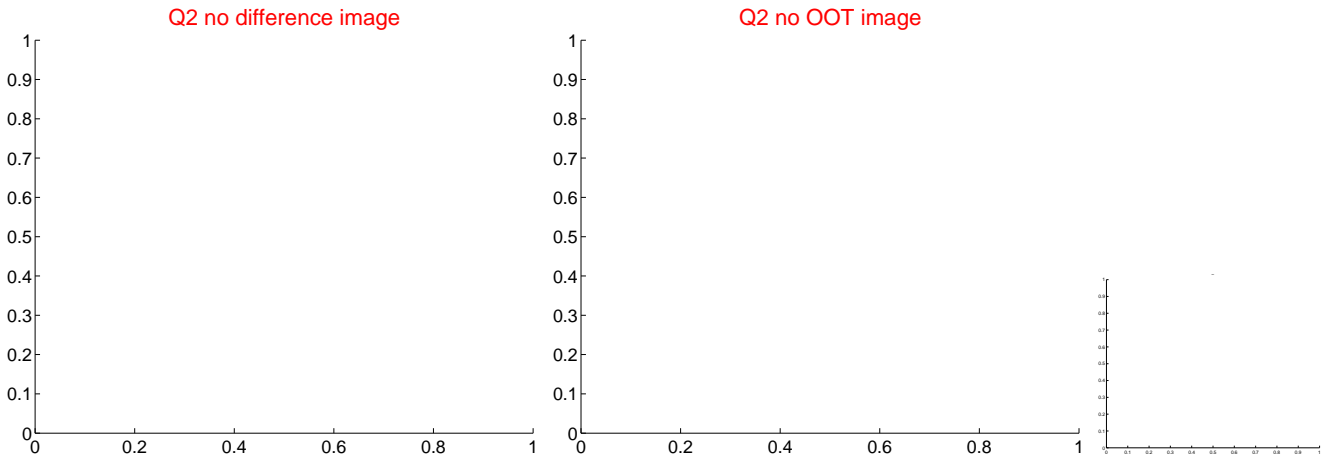
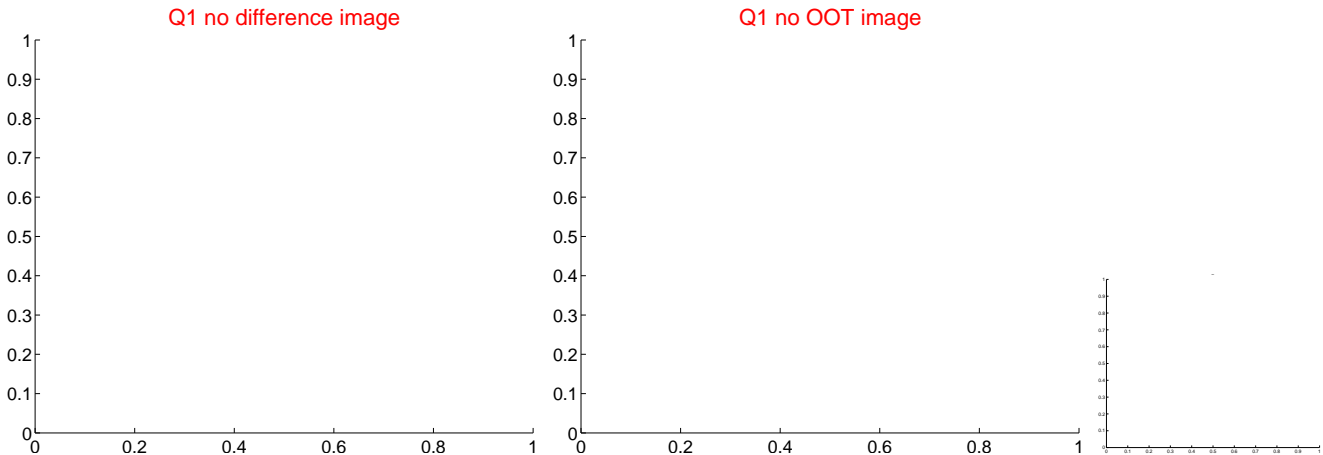
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.917 ± 1.013	1.89	0.234 ± 0.442	1.903 ± 1.019
PRF-fit source offset from KIC position	1.865 ± 1.230	1.52	0.267 ± 0.744	1.846 ± 1.157
photometric centroid source offset	1.45 ± 1.03	1.41	0.93 ± 0.77	-1.11 ± 1.18

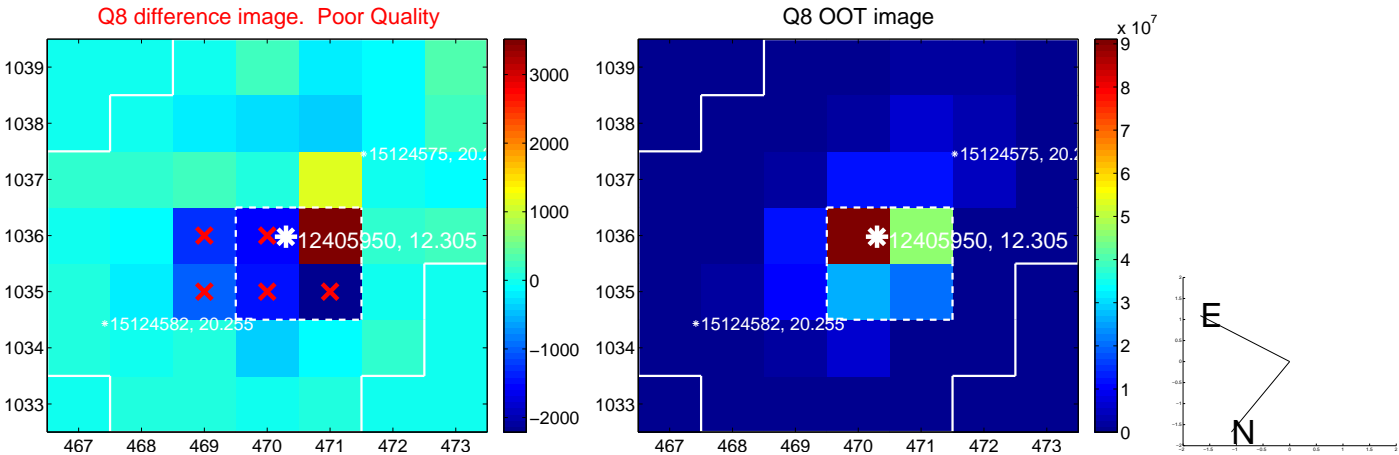
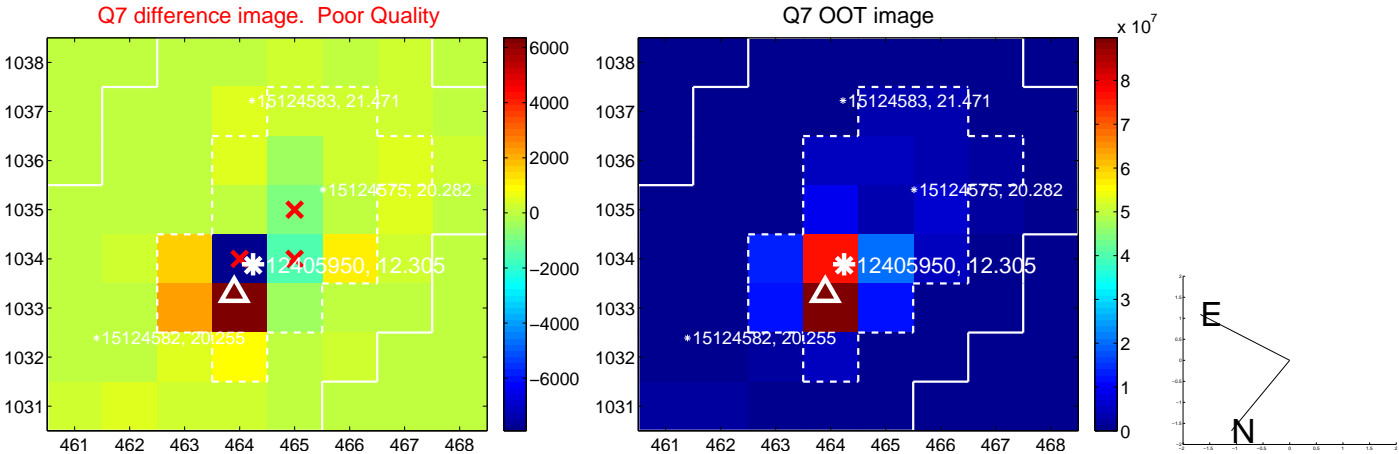
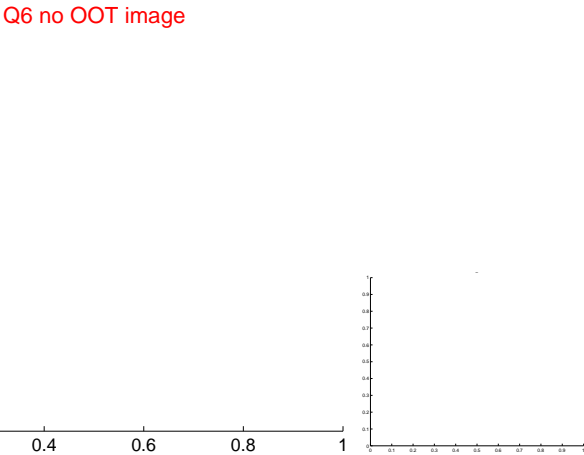
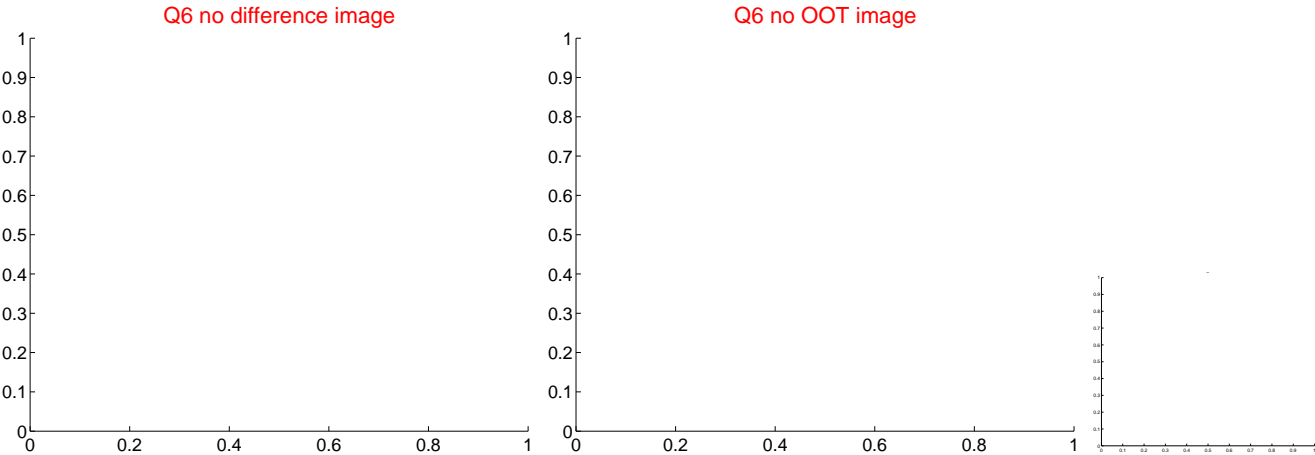
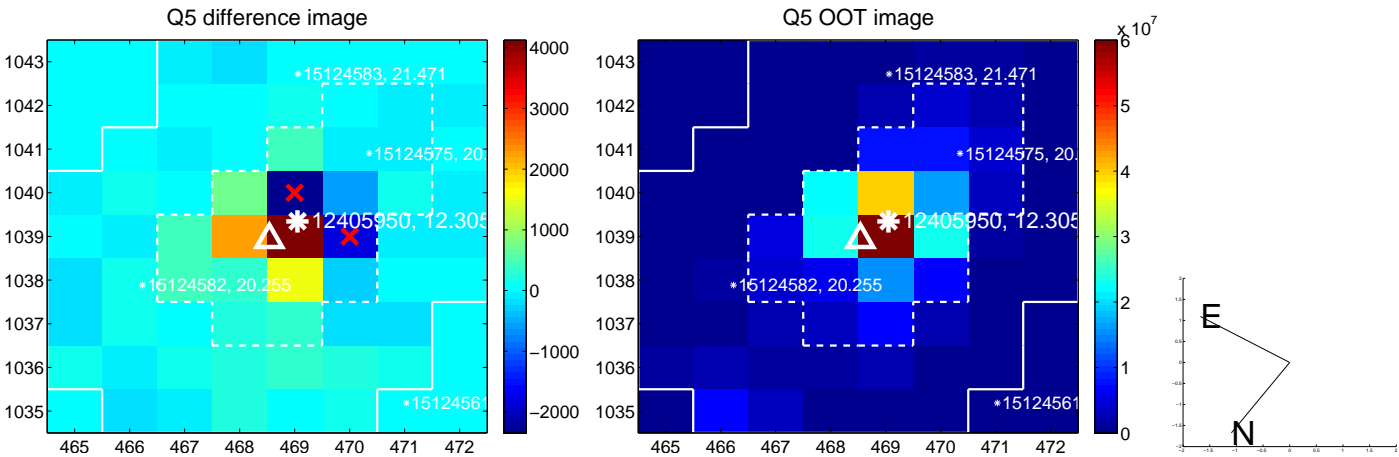


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

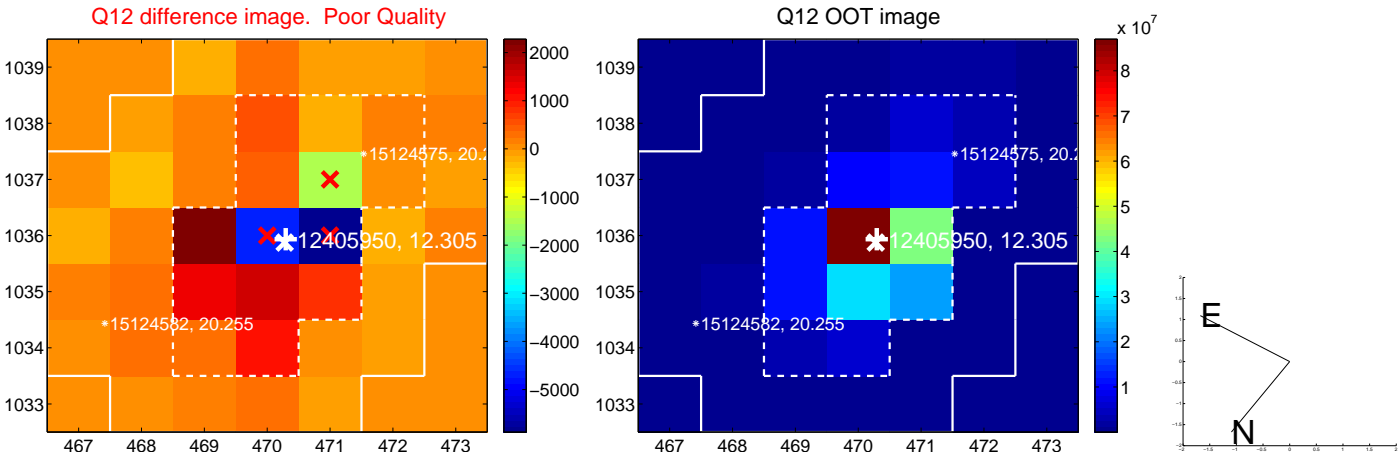
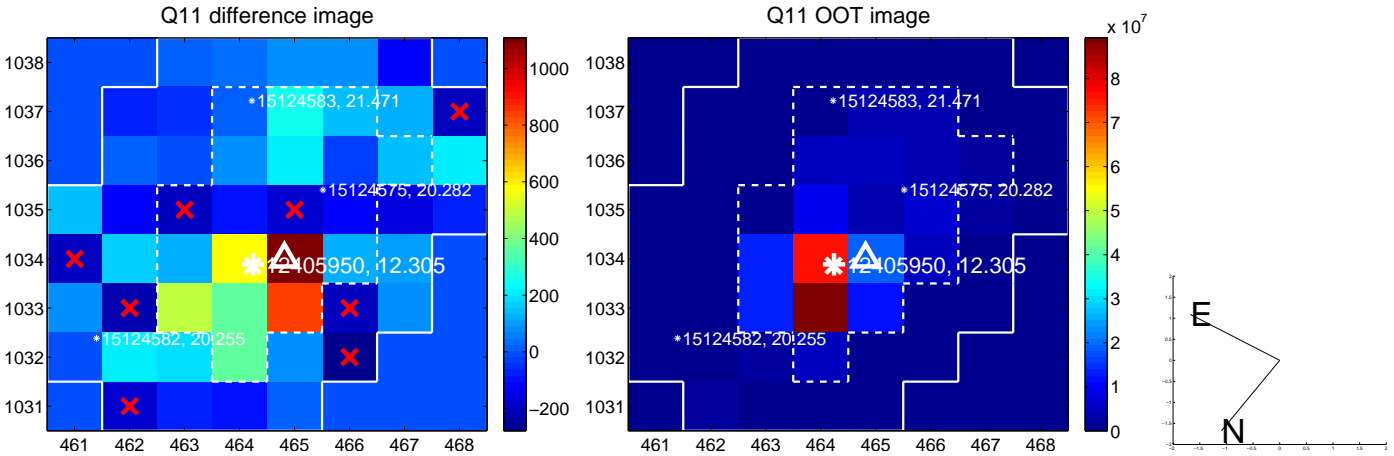
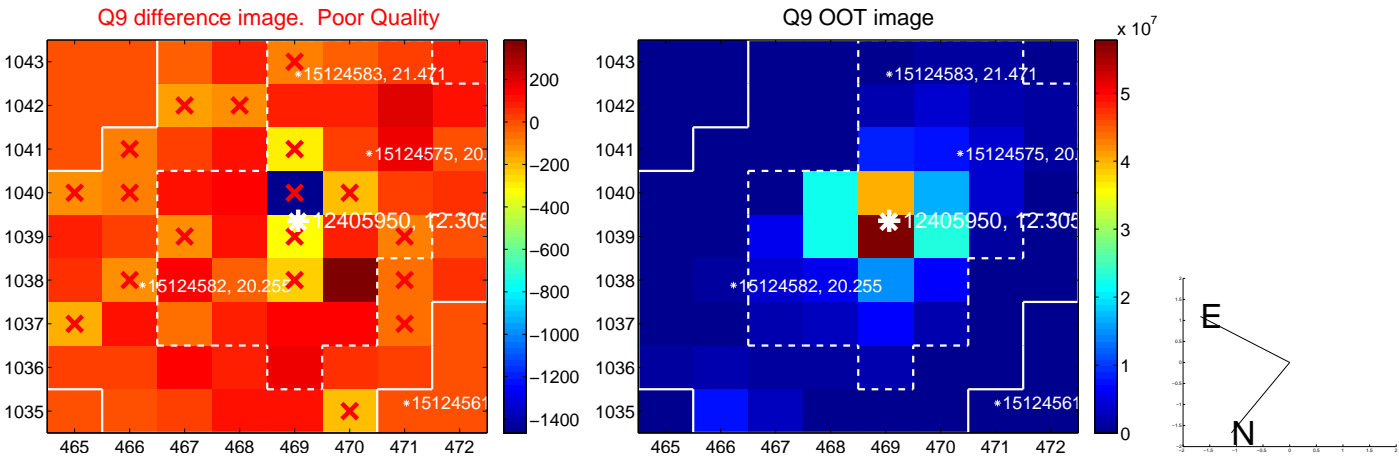
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



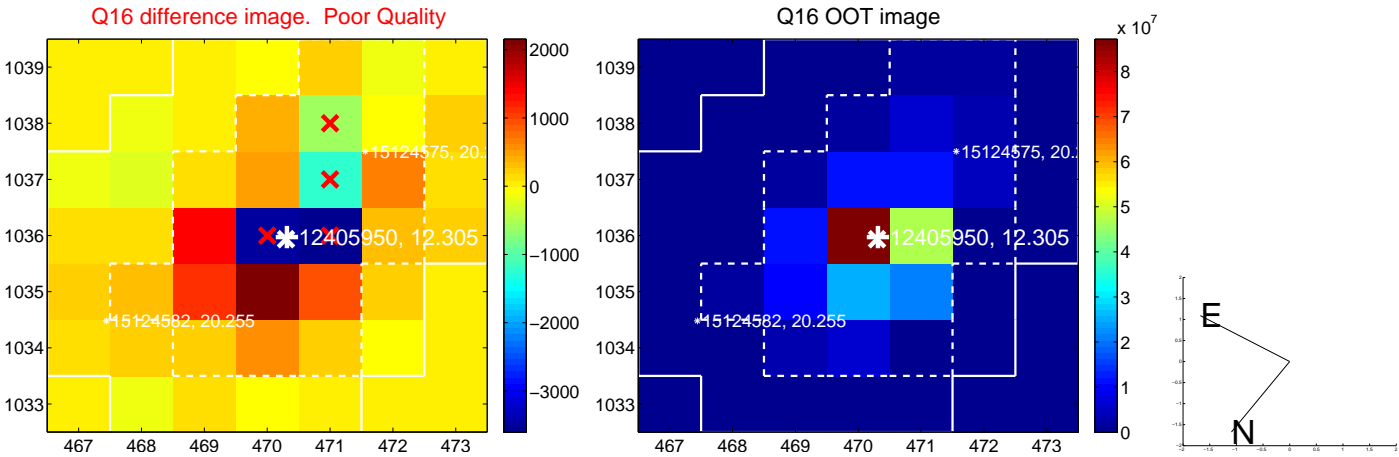
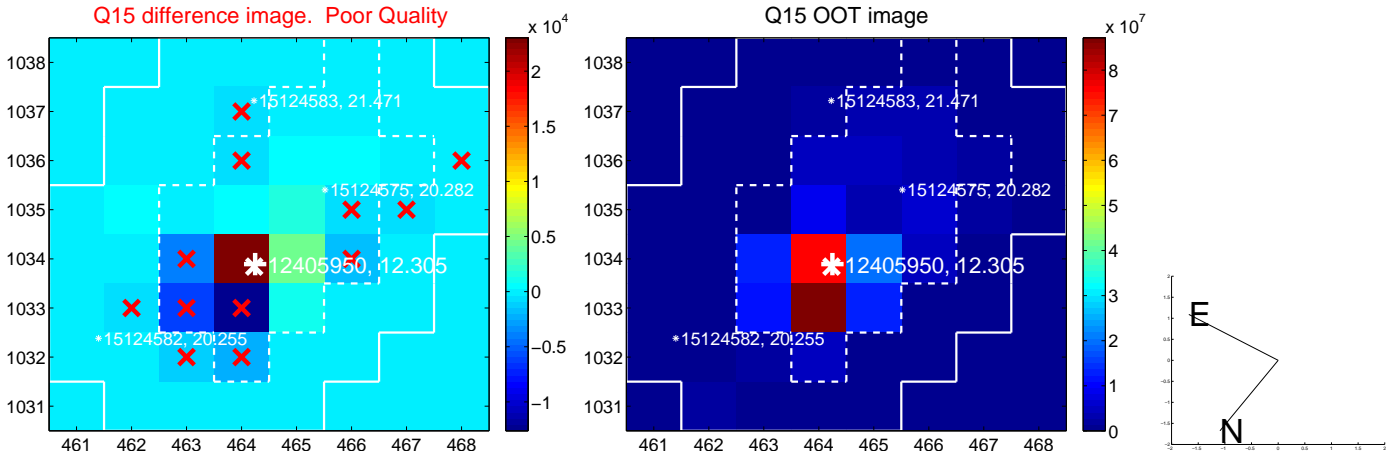
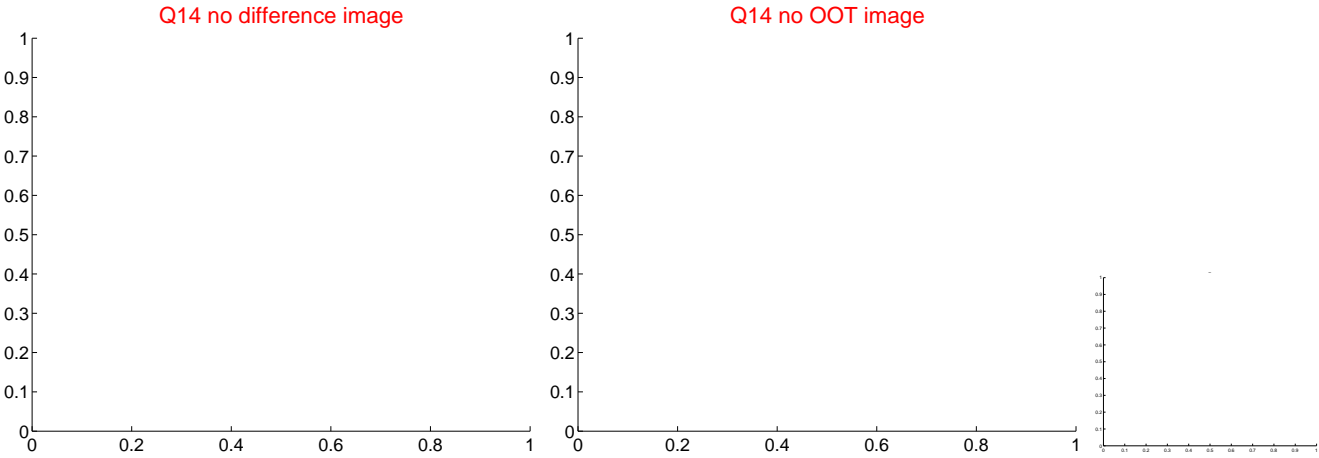
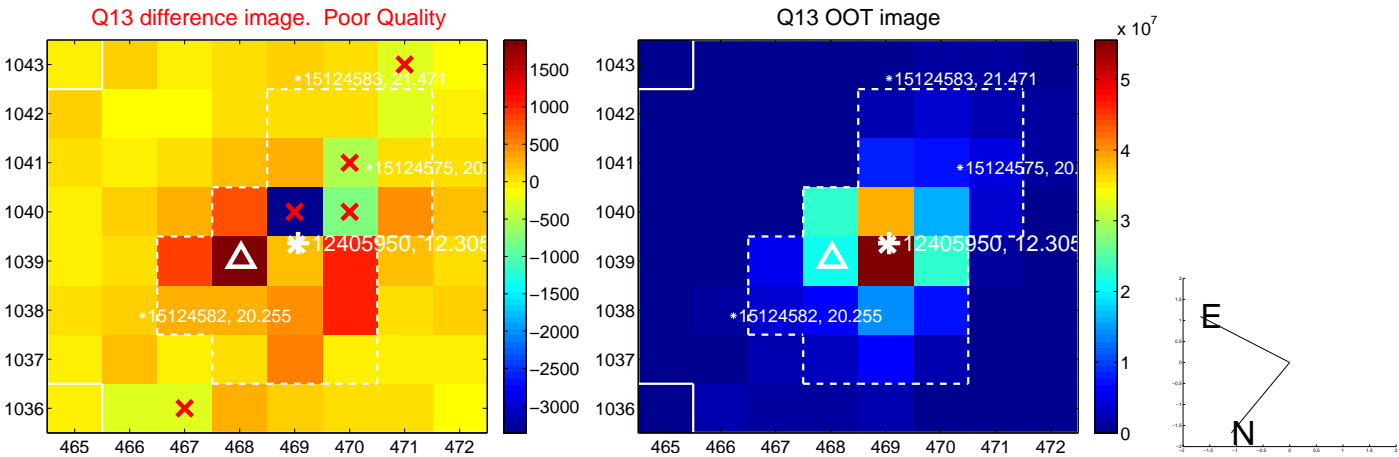
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



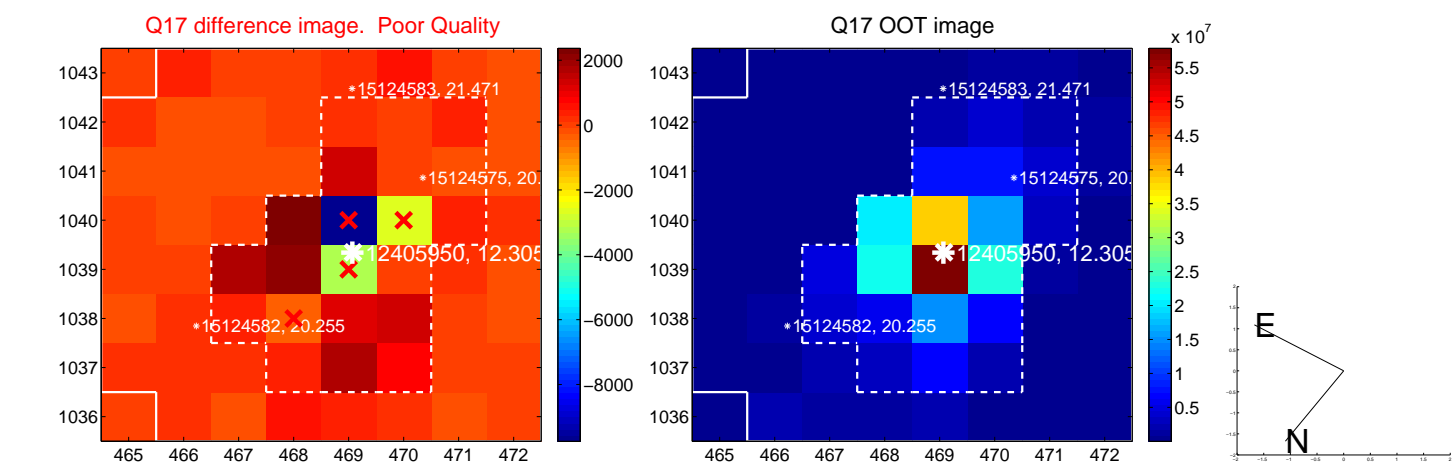
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



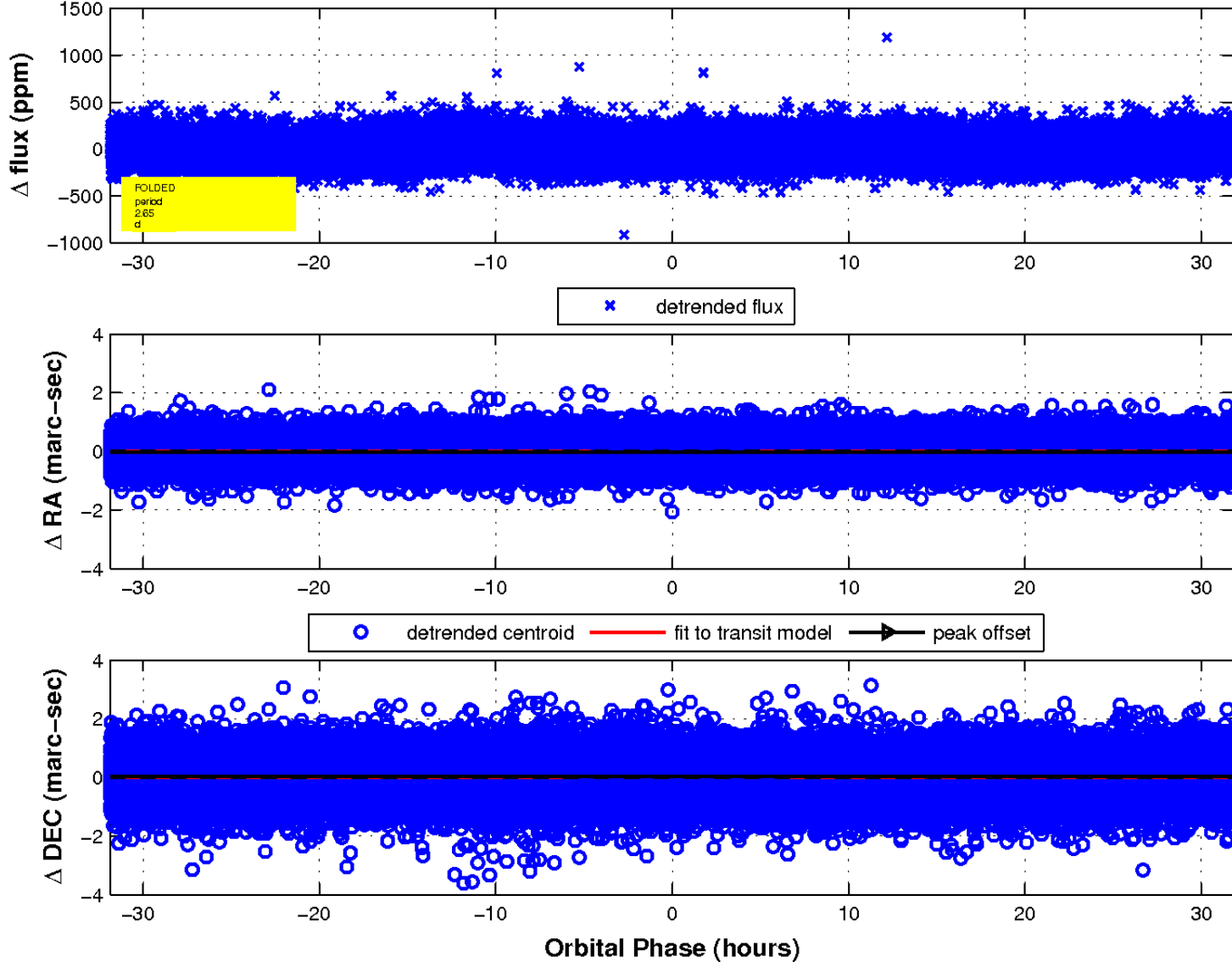
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

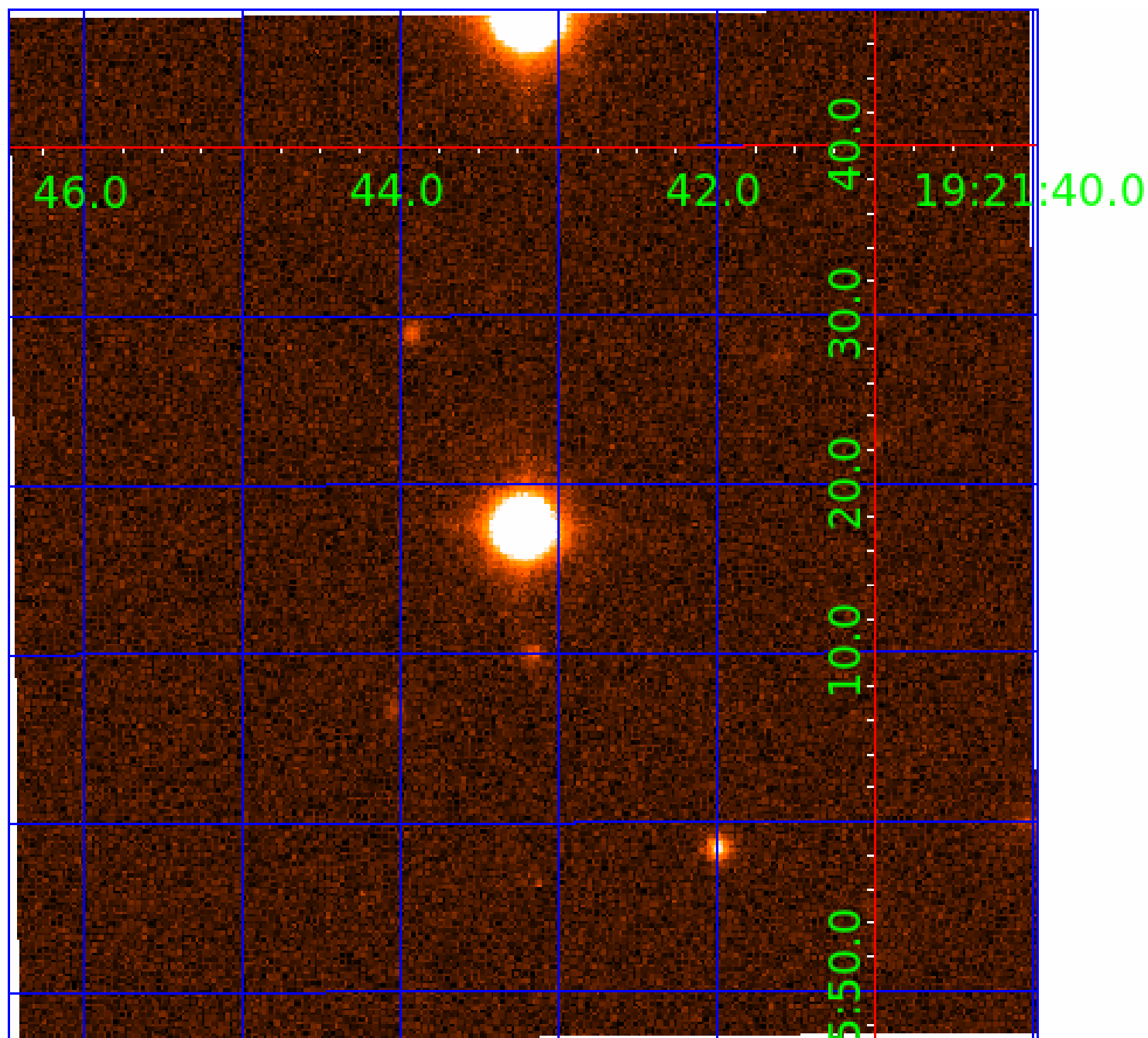


fluxWeightedCentroids, Planet 3 of 7



UKIRT Image

Declination



KIC 012405950

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})
012405950-01	OBS	3778.01	3.539641	132.772763	1163.2	1.450	179.4	192.3	2.63	7021	11.83	5689.47
012405950-02	OBS	No	3.539613	134.363793	343.8	0.961	42.6	58.1	2.63	7021	5.73	5689.53
012405950-03	OBS	No	2.654873	133.072202	18.8	12.956	7.6	7.6	2.63	7021	1.15	8348.83
012405950-04	OBS	No	64.079148	145.775835	112.3	9.314	8.2	7.2	2.63	7021	3.11	119.69
012405950-05	OBS	No	81.706403	134.515598	178.7	4.763	7.7	7.6	2.63	7021	4.03	86.56
012405950-06	OBS	No	113.552188	146.497204	135.5	13.721	7.7	7.4	2.63	7021	3.40	55.82
012405950-07	OBS	No	73.331738	182.647921	239.5	2.885	8.2	7.4	2.63	7021	4.36	99.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012405950-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
012405950-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
012405950-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012405950-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012405950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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.

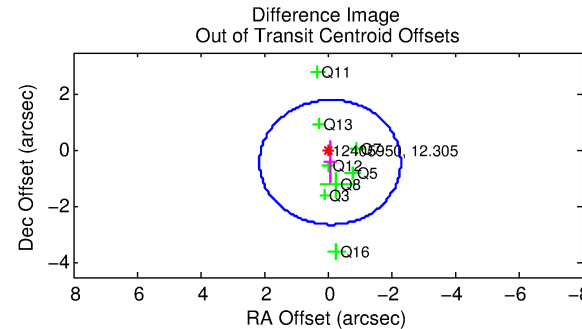
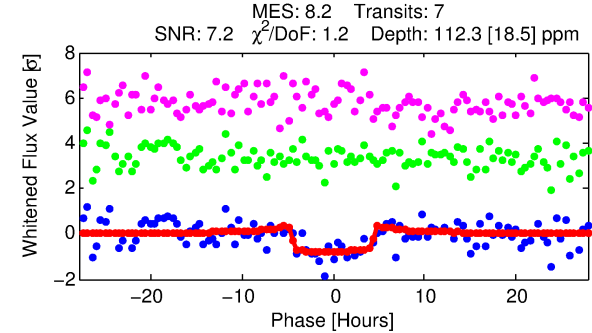
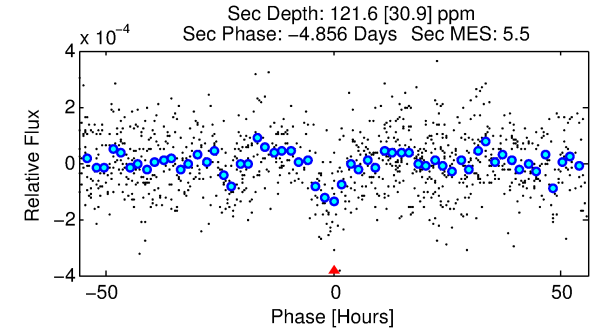
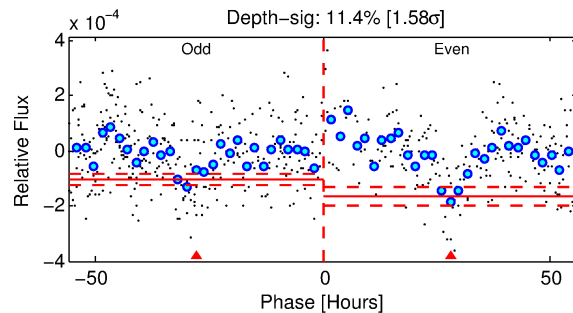
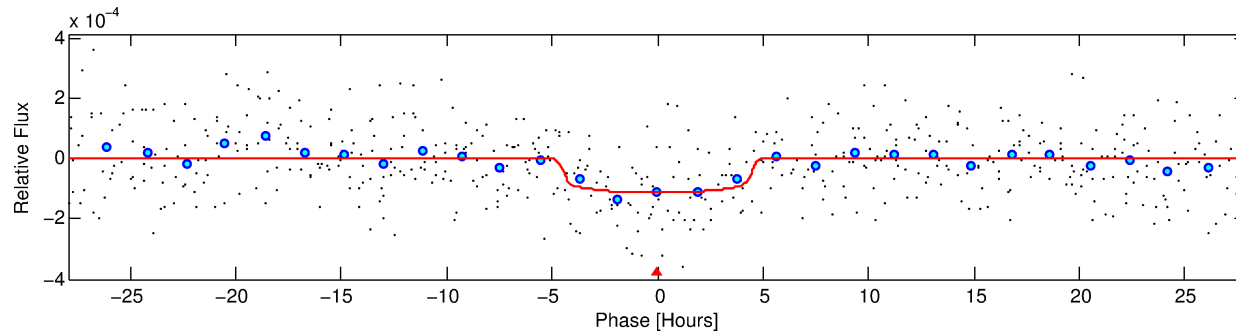
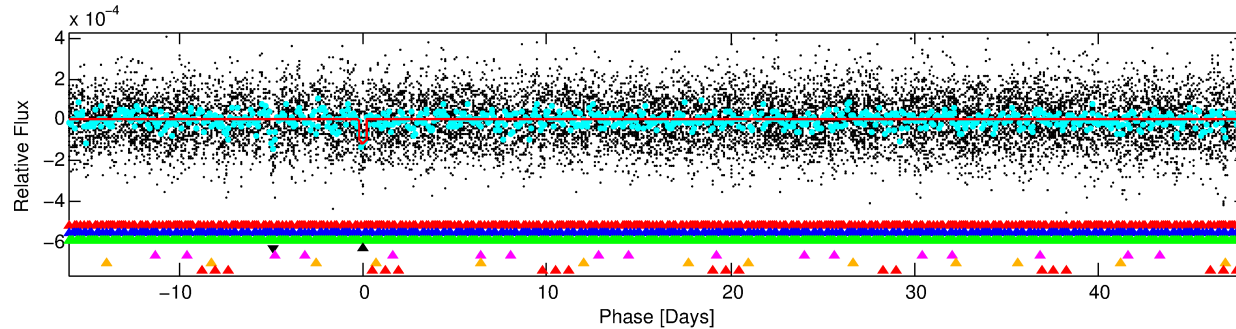
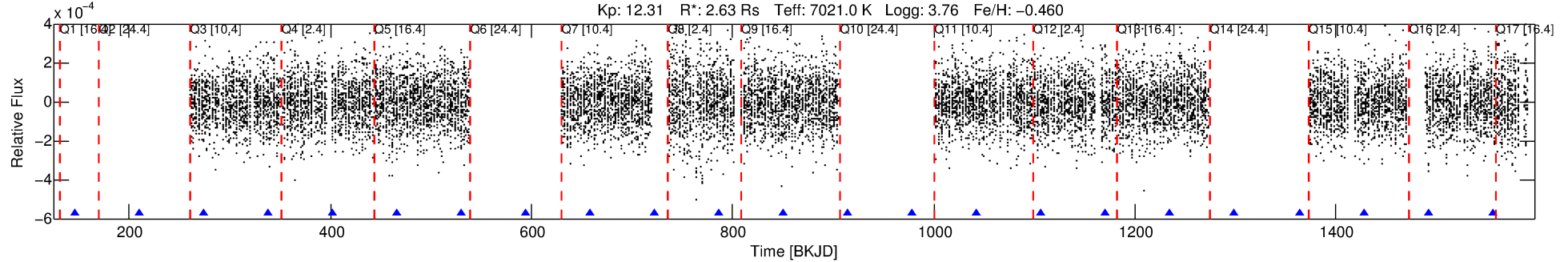
Ephemeris Match Information For 012405950-04

No Significant Match Found

DV One-Page Summary

KIC: 12405950 Candidate: 4 of 7 Period: 64.079 d
KOI: K03778 Corr: No Ephemeris Match

Kp: 12.31 R*: 2.63 Rs Teff: 7021.0 K Logg: 3.76 Fe/H: -0.460



DV Fit Results:

Period = 64.07915 [0.00149] d
Epoch = 145.7758 [0.0176] BKJD
Rp/R* = 0.0108 [0.0045]
a/R* = 30.41 [73.06]
b = 0.83 [0.91]
Seff = 119.69 [65.31]
Teq = 843 [115] K
Rp = 3.11 [1.71] Re
a = 0.3546 [0.1187] AU
Ag = 870.12 [882.32] [0.99σ]
Teffp = 7082 [1559] K [3.99σ]

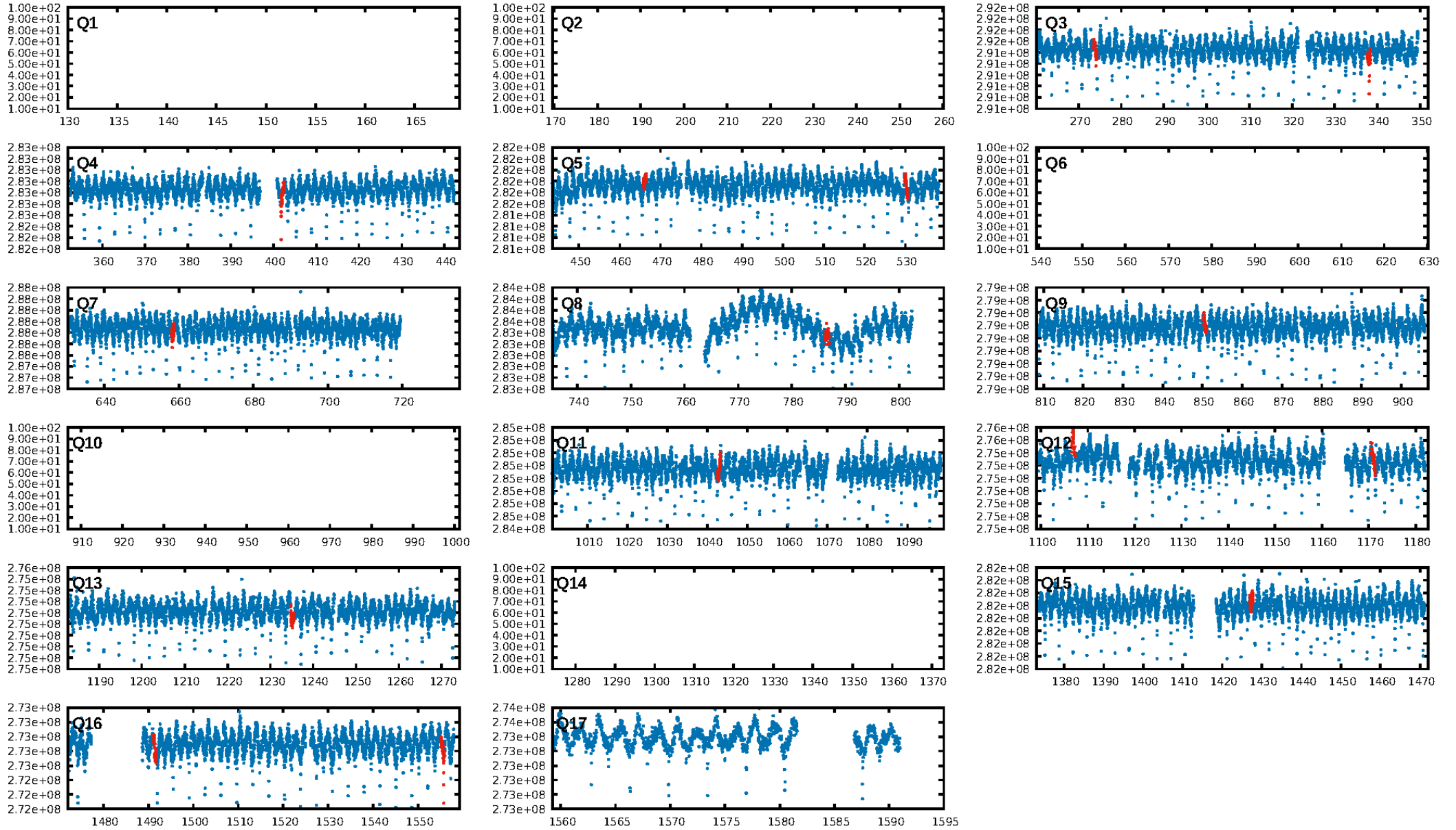
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [154.14σ]
LongPeriod-sig: 100.0% [22.77σ]
ModelChiSquare2-sig: 2.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.01e-09
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -0.3785
Centroid-sig: 62.8%
Centroid-so: 0.585 arcsec [0.75σ]
OotOffset-rm: 0.426 arcsec [0.58σ]
OotOffset-st: 0/3/3/2 [8]
KicOffset-rm: 0.512 arcsec [0.74σ]
KicOffset-st: 0/3/3/2 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 0.10 [1/10]

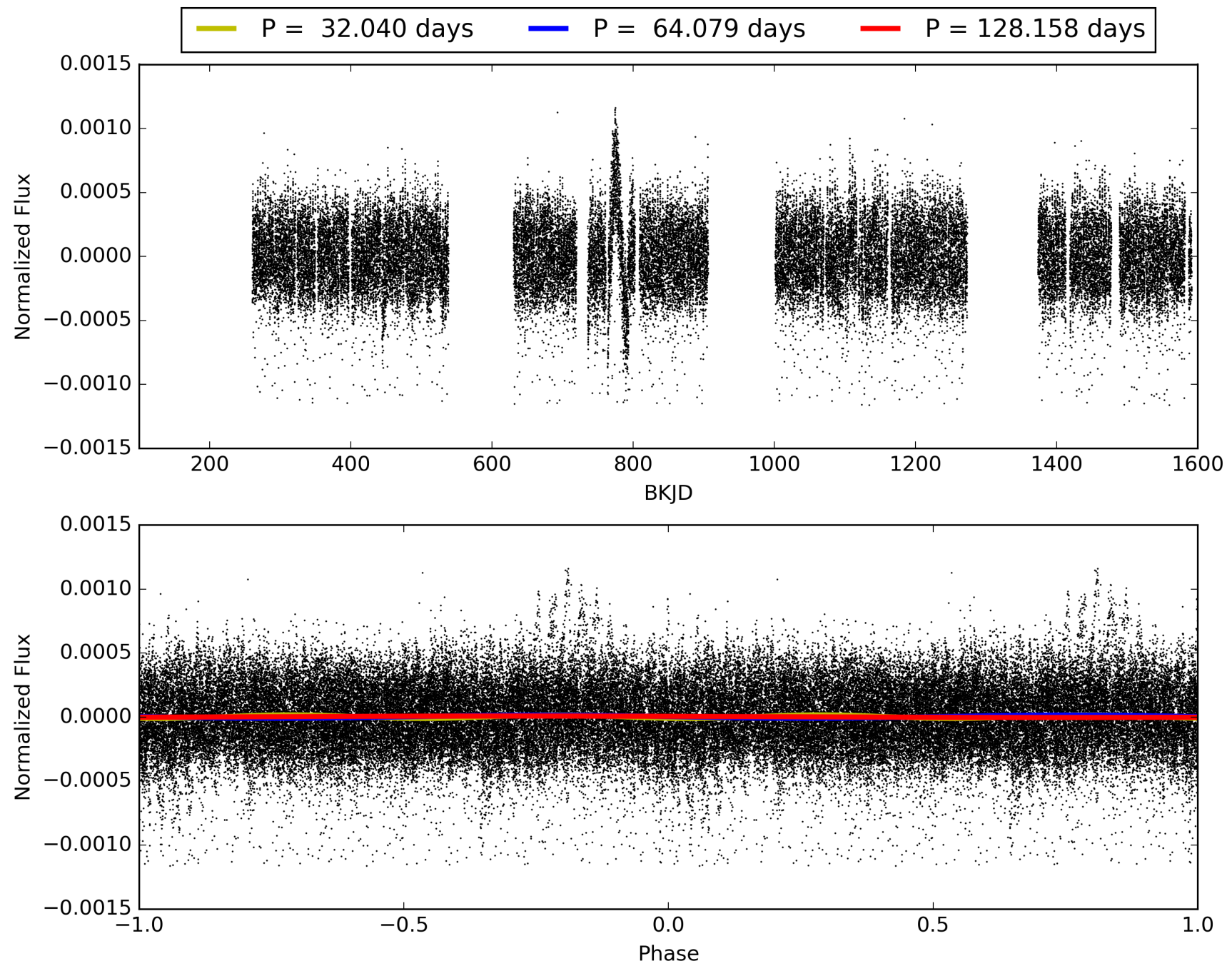
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:00:13 Z

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

TCE 012405950-04, PDC Light Curves

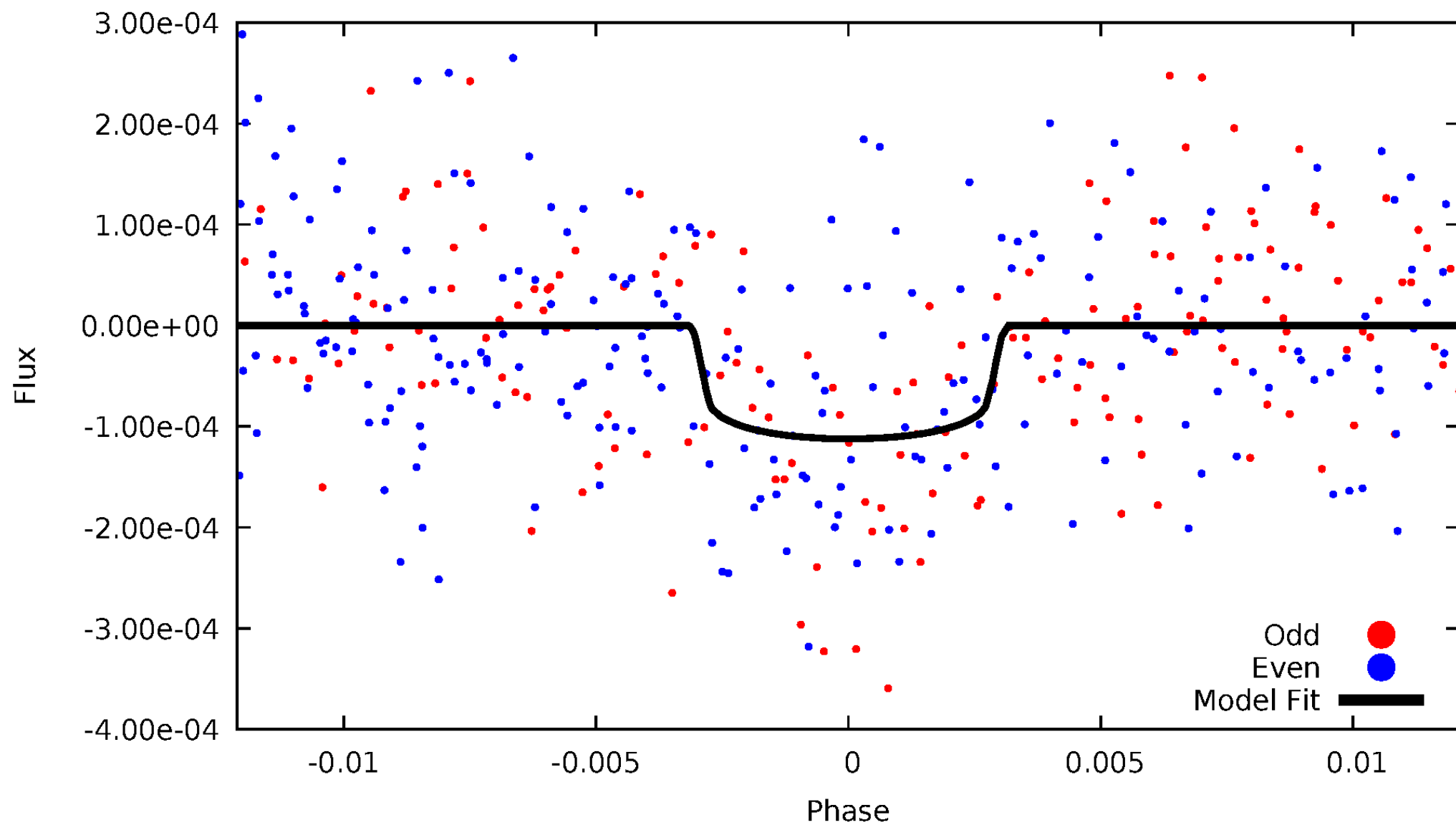


TCE 012405950-04



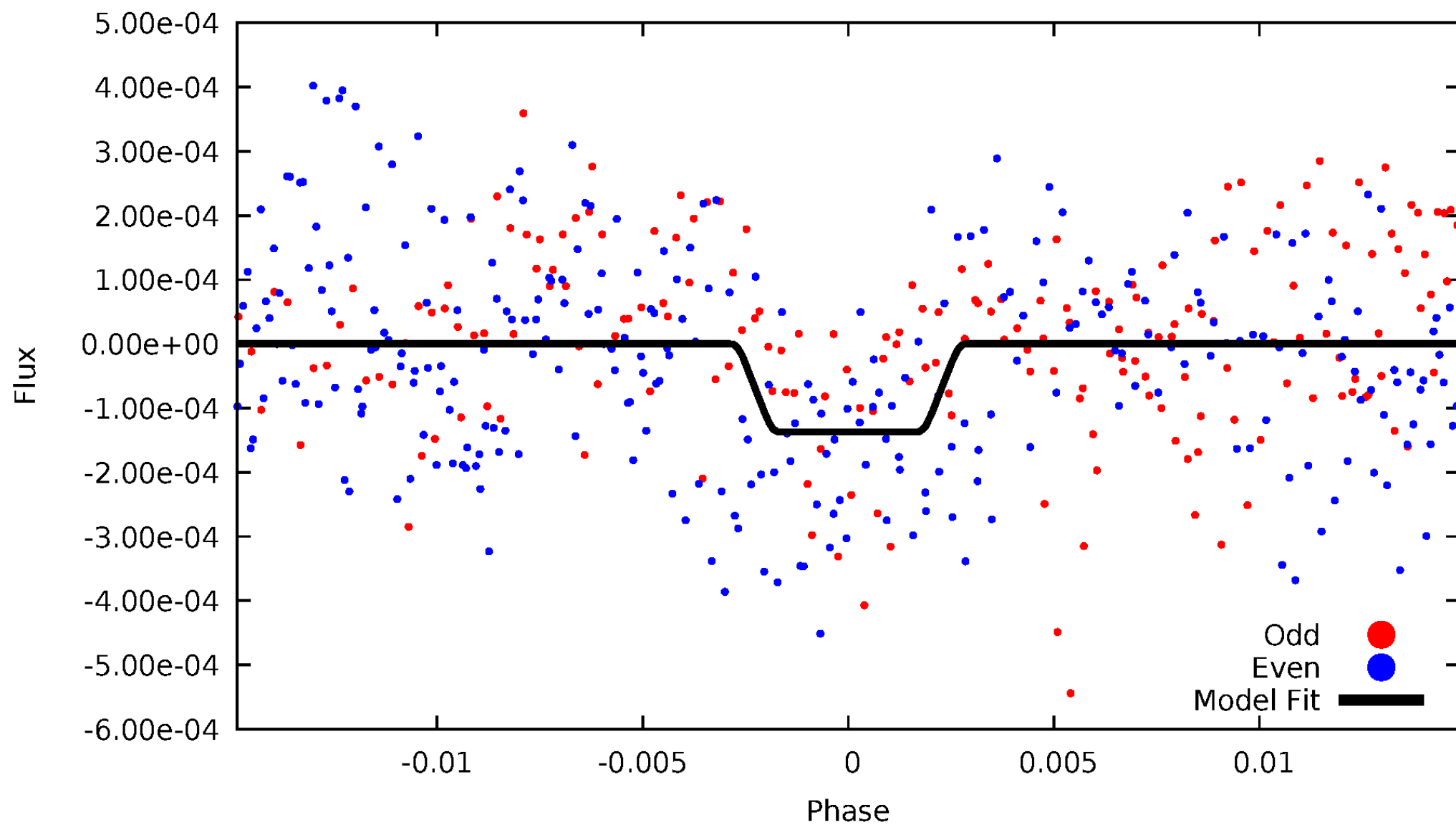
DV Odd/Even

TCE 012405950-04



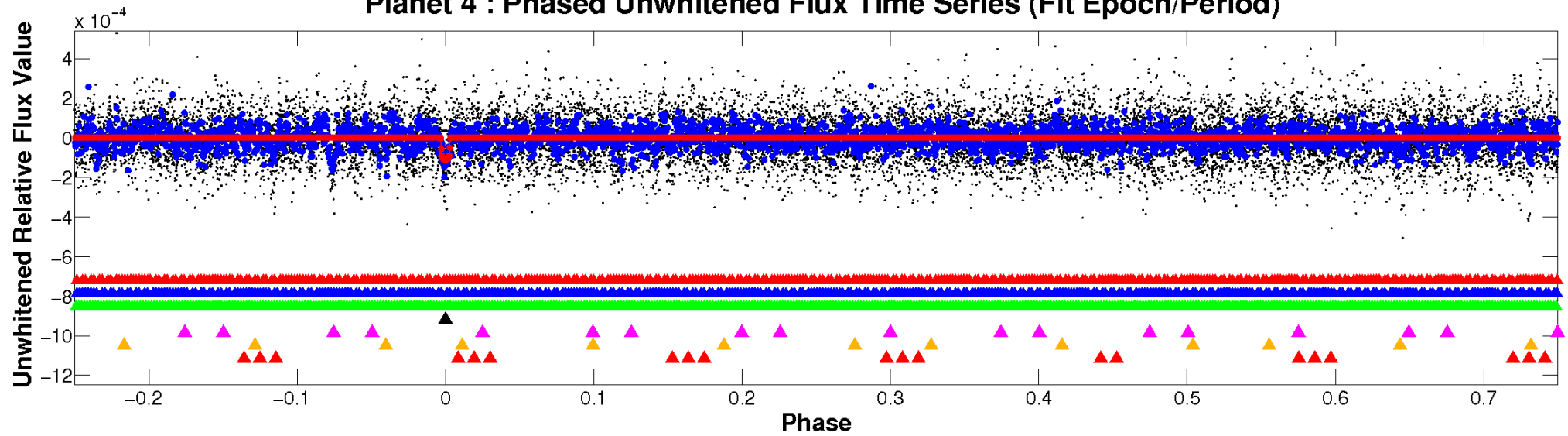
ALT Odd/Even

TCE 012405950-04

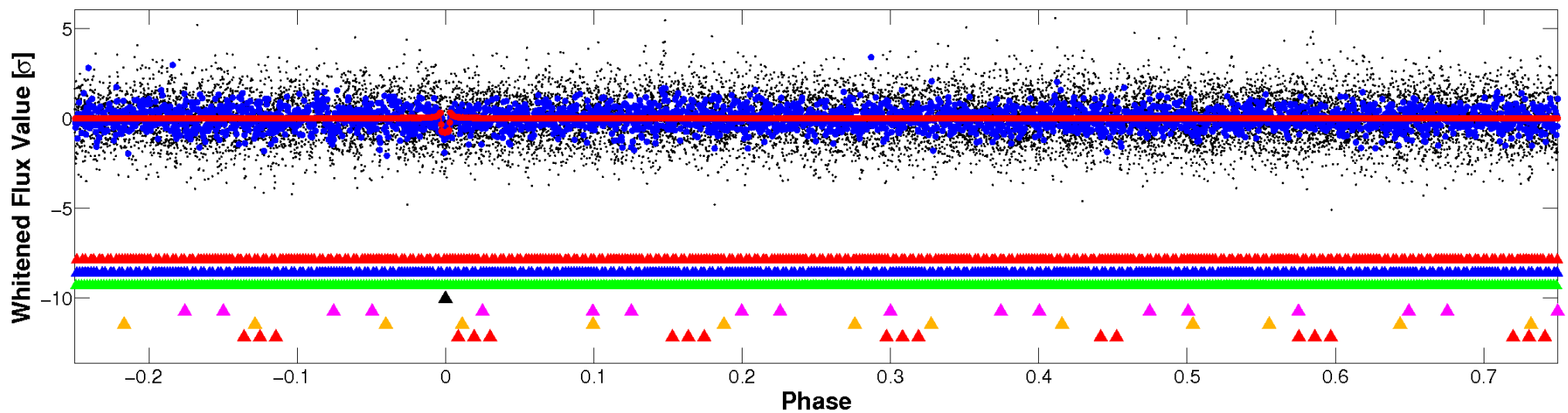


Non-Whitened Vs. Whitened Light Curve

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

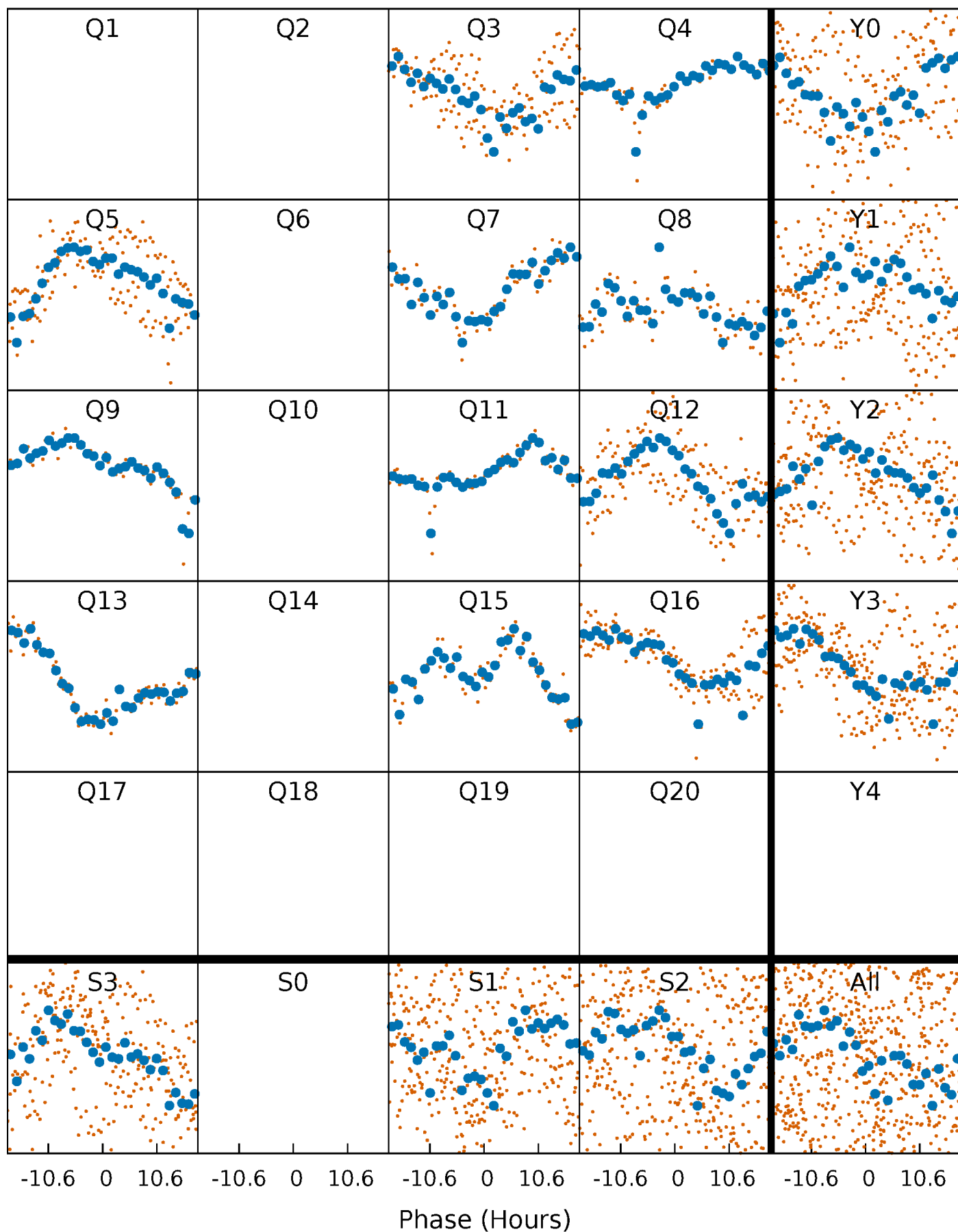


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



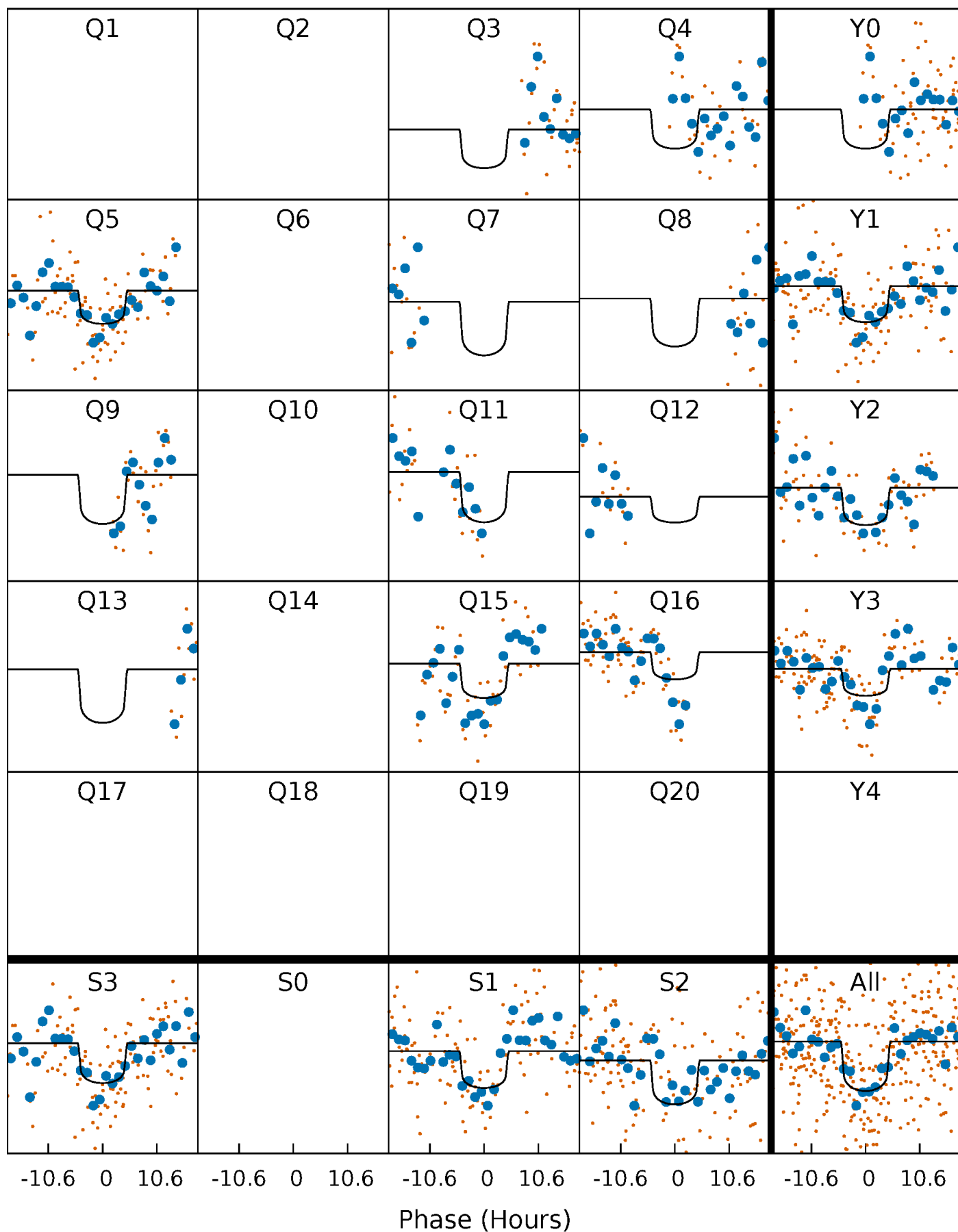
PDC Quarter-Phased Transit Curves

TCE 012405950-04 $P = 64.079148$ Days $T_0 = 145.775835$ (BKJD)



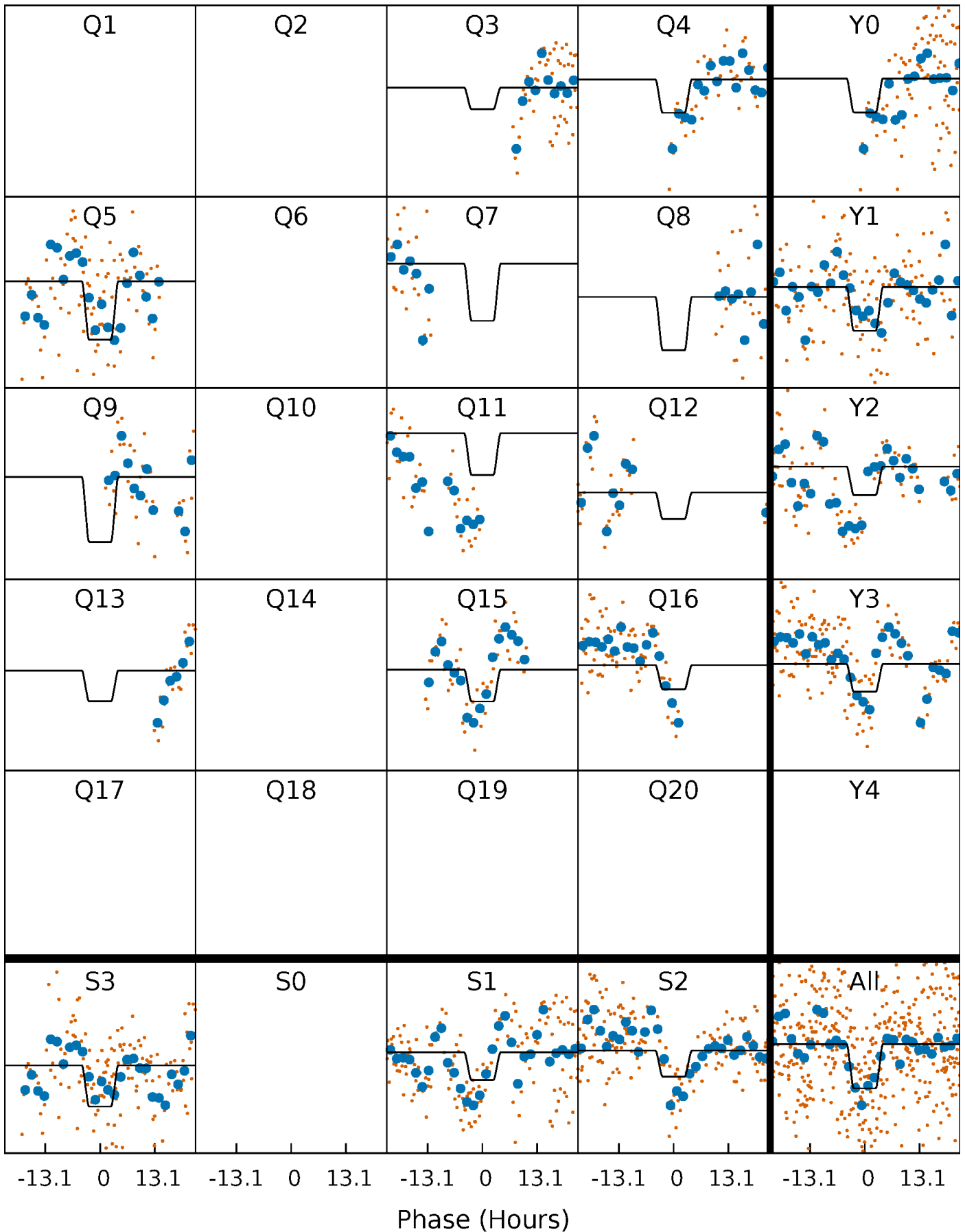
DV Quarter-Phased Transit Curves

TCE 012405950-04 $P = 64.079148$ Days $T_0 = 145.775835$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

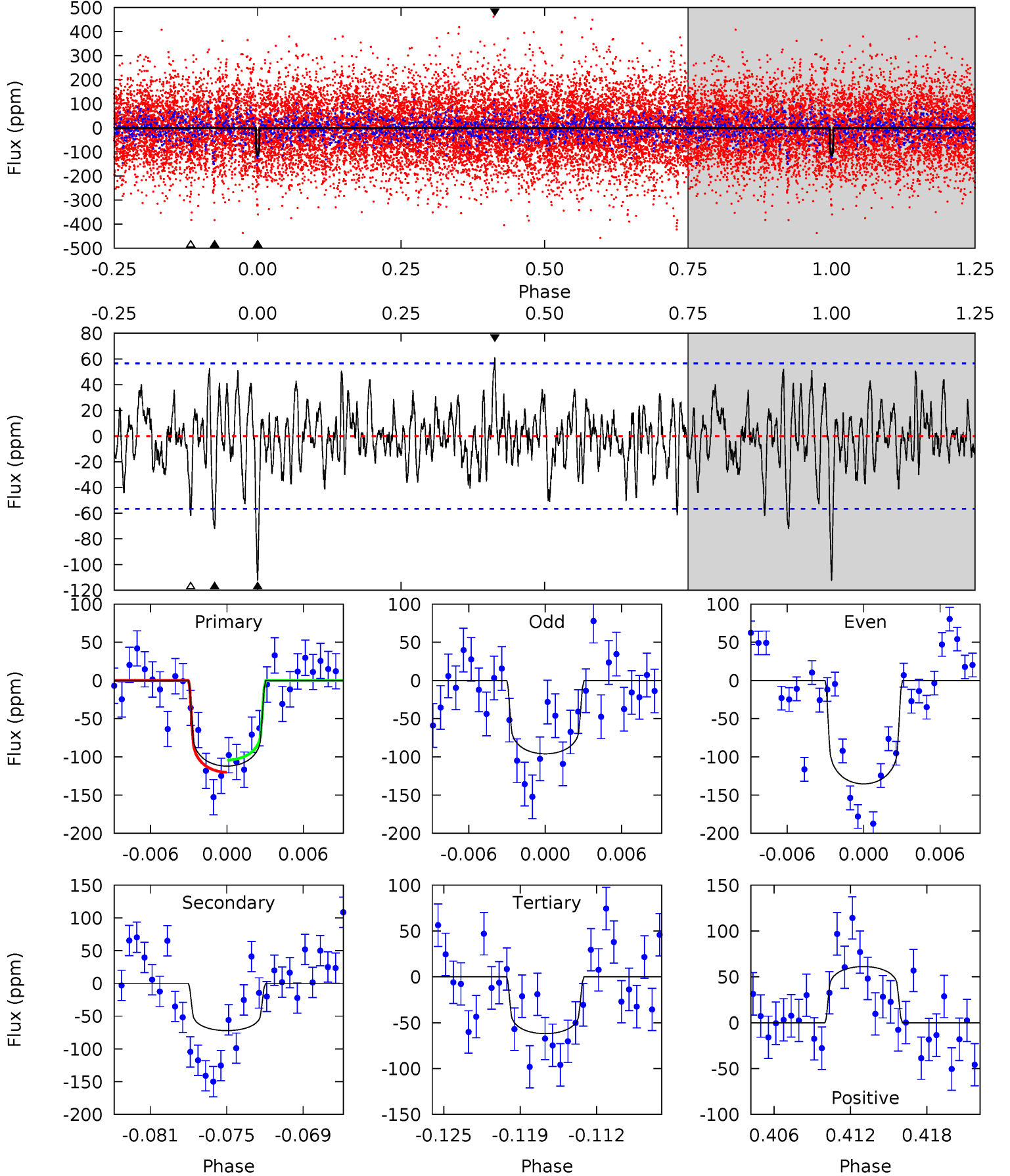
TCE 012405950-04 P= 64.080561 Days $T_0=145.772019$ (BKJD)



DV Model-Shift Uniqueness Test

012405950-04, P = 64.079148 Days, E = 145.775835 Days

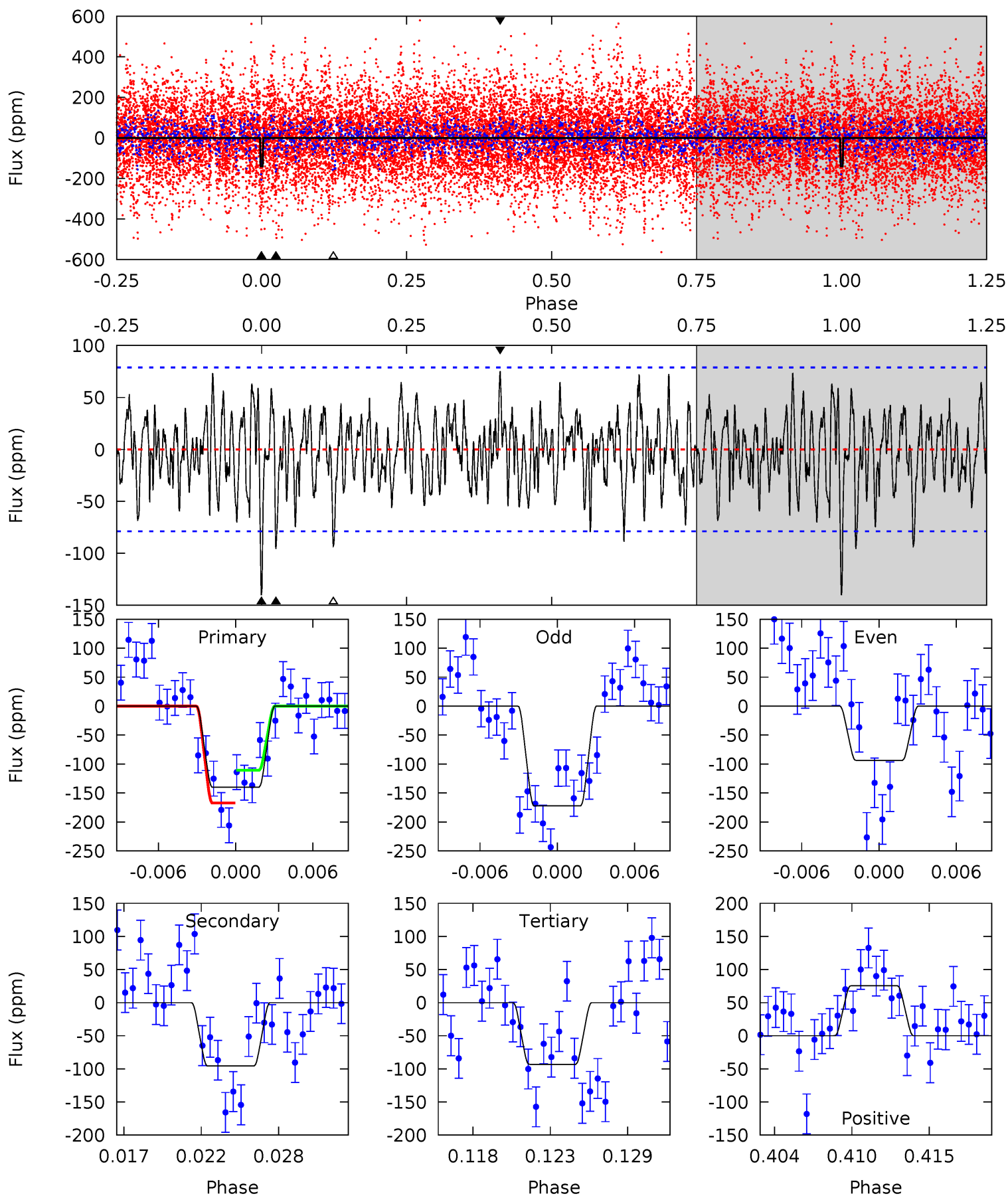
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	6.52	5.60	5.53	5.12	2.73	1.72	4.53	4.60	0.92	0.99	1.75	0.78	0.35	0.72



Alt Model-Shift Uniqueness Test

012405950-04, P = 64.080561 Days, E = 145.772019 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.13	6.23	6.07	4.92	5.14	2.77	1.86	3.06	4.22	0.16	1.31	2.51	1.19	0.35	1.84



Stellar Parameters For KIC 012405950

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7021^{+214}_{-262}	$3.759^{+0.304}_{-0.076}$	$-0.460^{+0.300}_{-0.250}$	$2.629^{+0.406}_{-0.947}$	$1.447^{+0.231}_{-0.282}$	$0.112^{+0.229}_{-0.035}$
	+3%/-4%	+8%/-2%	+65%/-54%	+15%/-36%	+16%/-19%	+204%/-31%
Source	KIC0	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 012405950-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-72 ± 11	$2.86^{+1.44}_{-1.24}$	1141^{+80}_{-99}	6136^{+2196}_{-973}	600^{+1301}_{-321}
Alt.	-96 ± 15	$3.08^{+1.49}_{-1.21}$	1144^{+78}_{-94}	6285^{+2138}_{-922}	687^{+1229}_{-374}

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

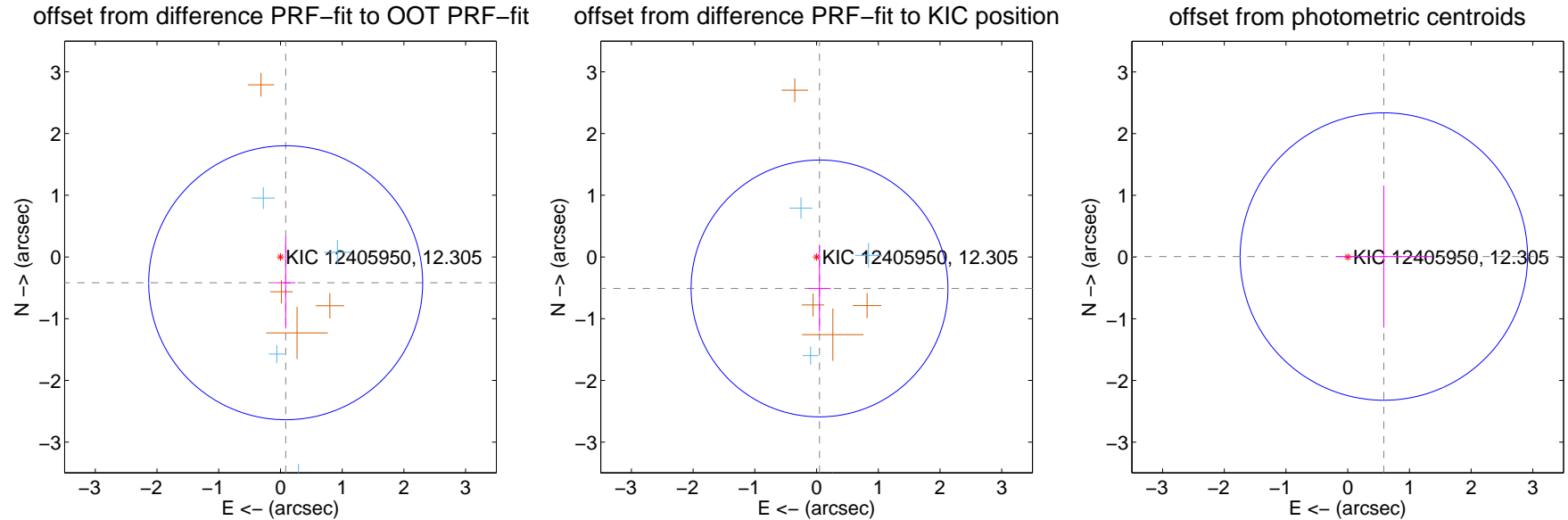
DV Centroid Data

Supplemental centroid analysis for 012405950-04. Kepler magnitude: 12.30. Transit SNR 7.22

There are 4 quarters with good PRF difference image offsets

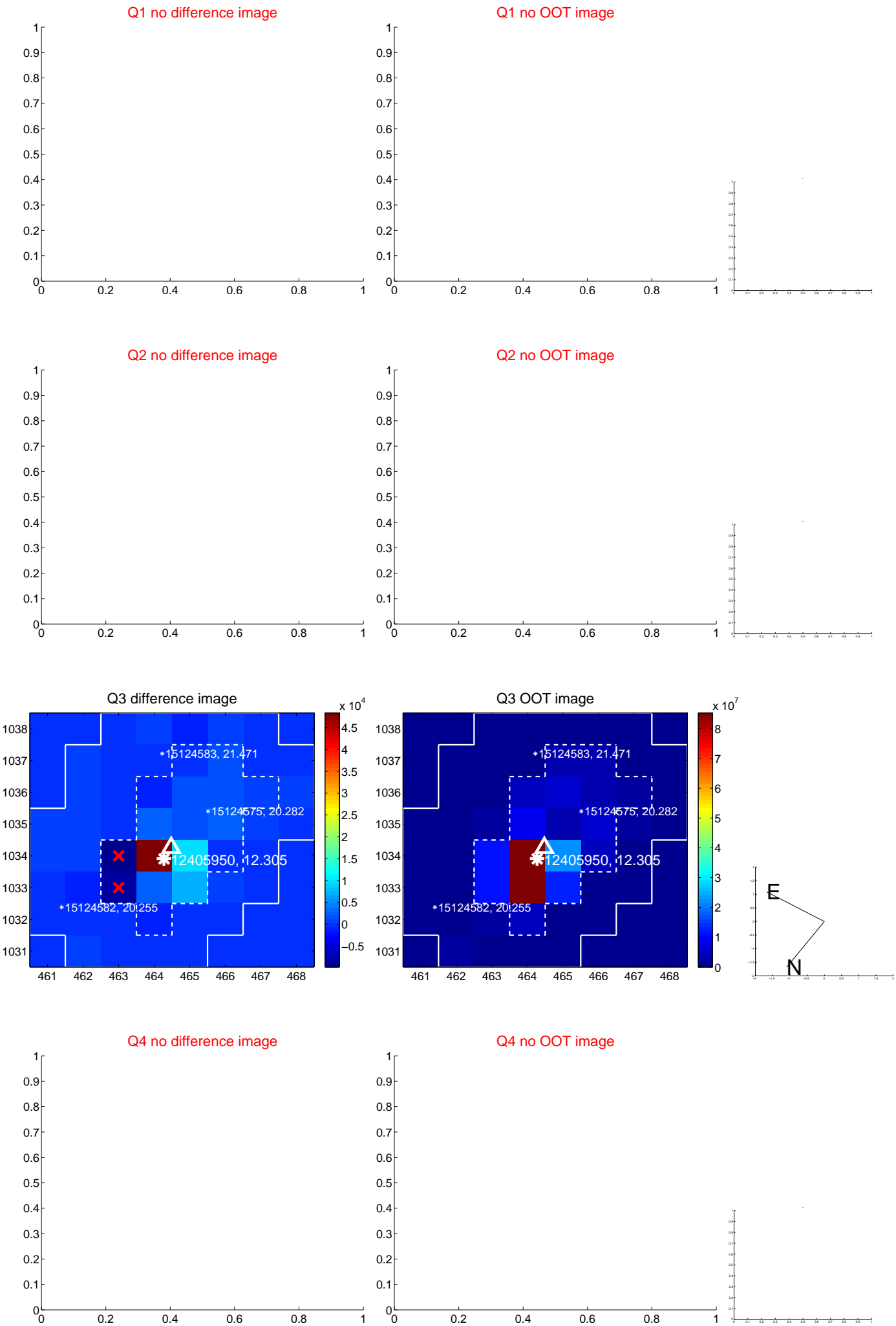
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.426 ± 0.740	0.58	-0.085 ± 0.158	-0.418 ± 0.744
PRF-fit source offset from KIC position	0.512 ± 0.693	0.74	-0.048 ± 0.182	-0.510 ± 0.696
photometric centroid source offset	0.59 ± 0.78	0.75	-0.59 ± 0.78	0.01 ± 1.15

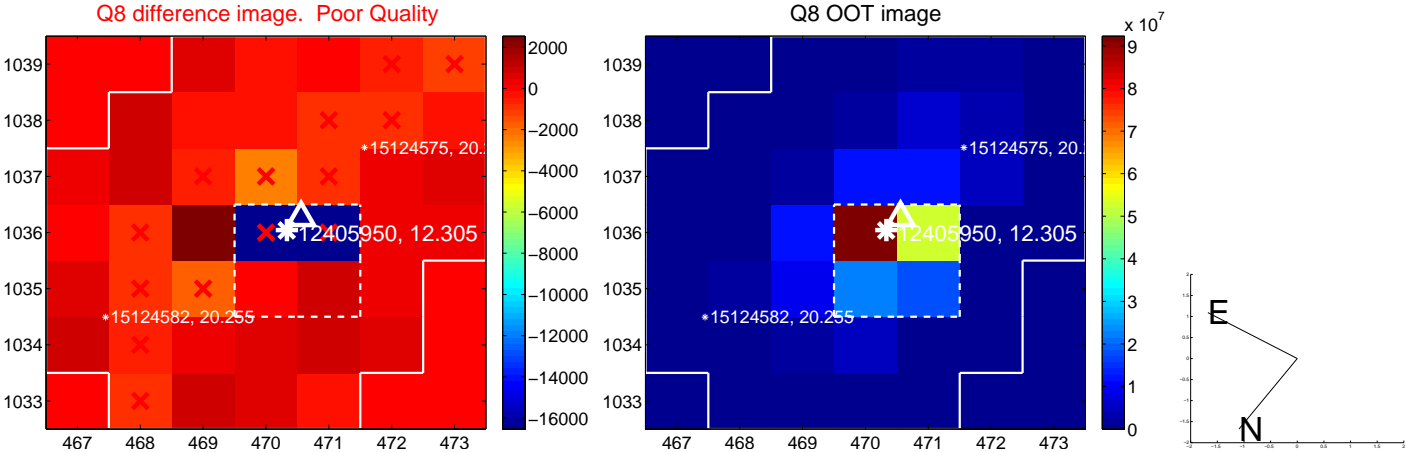
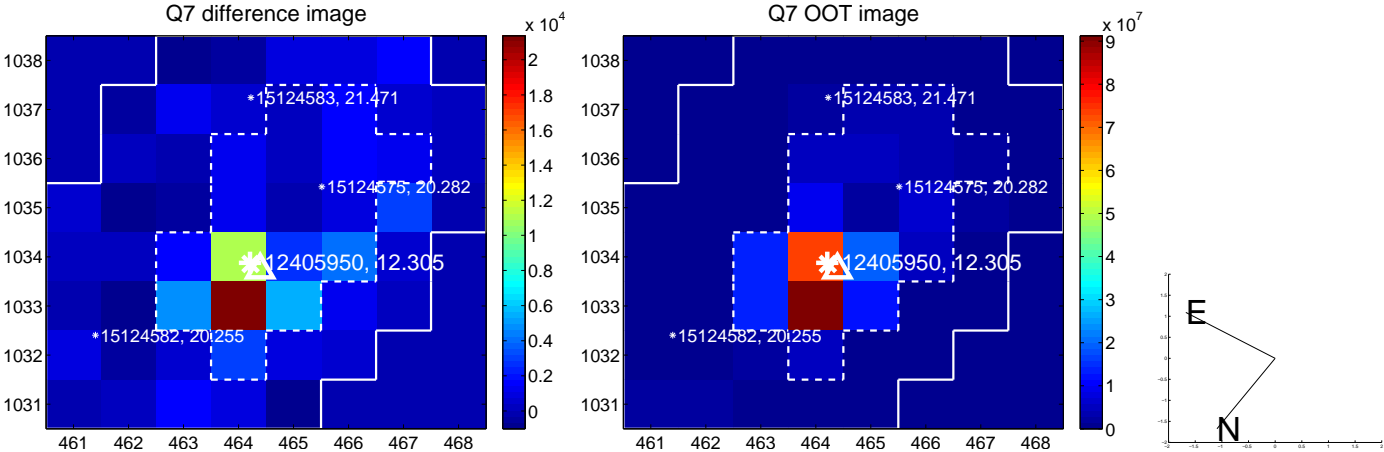
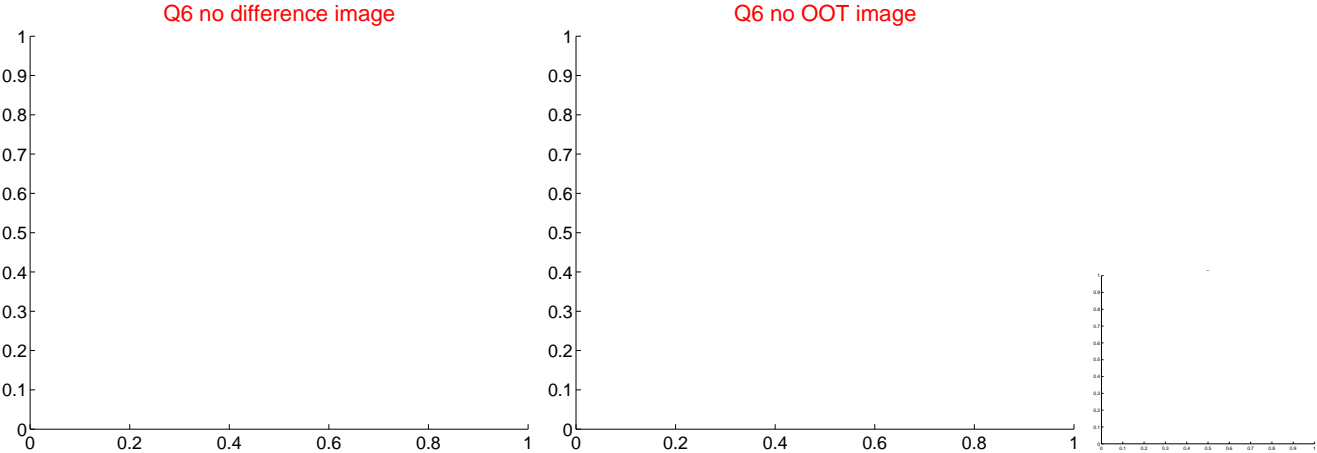
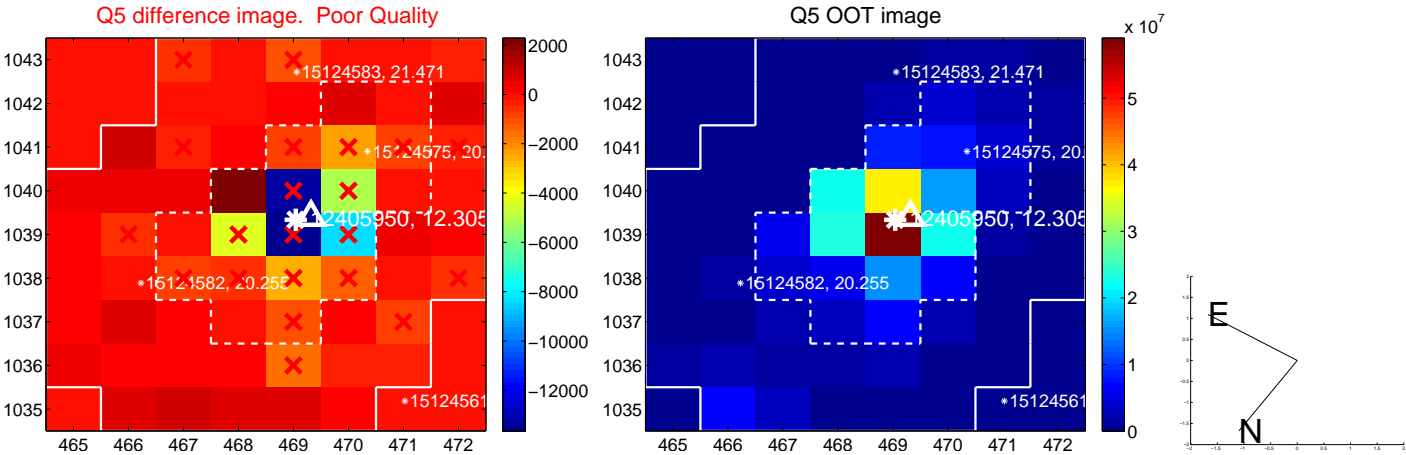


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

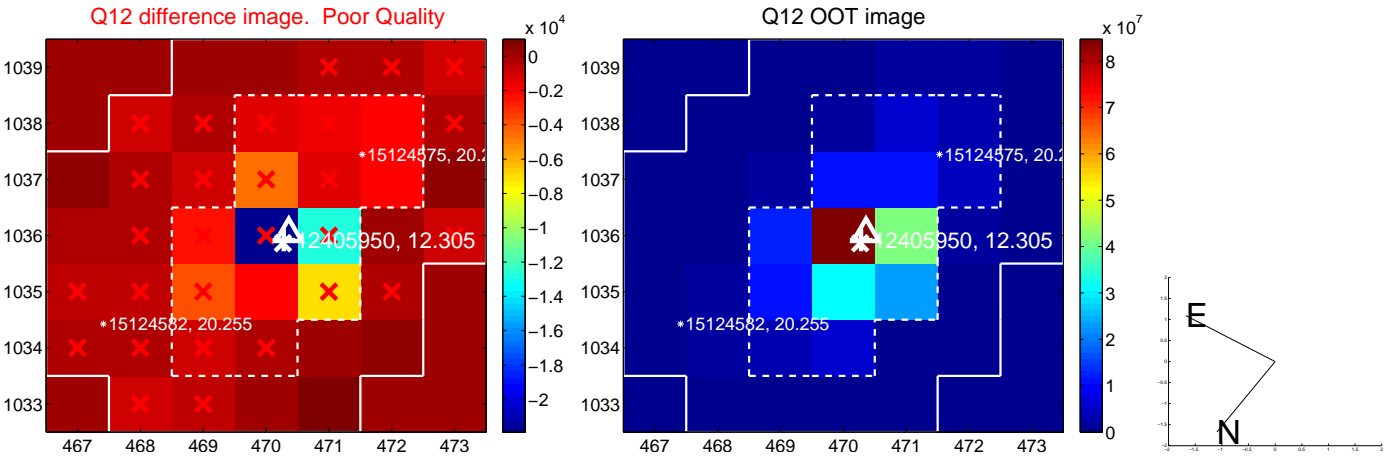
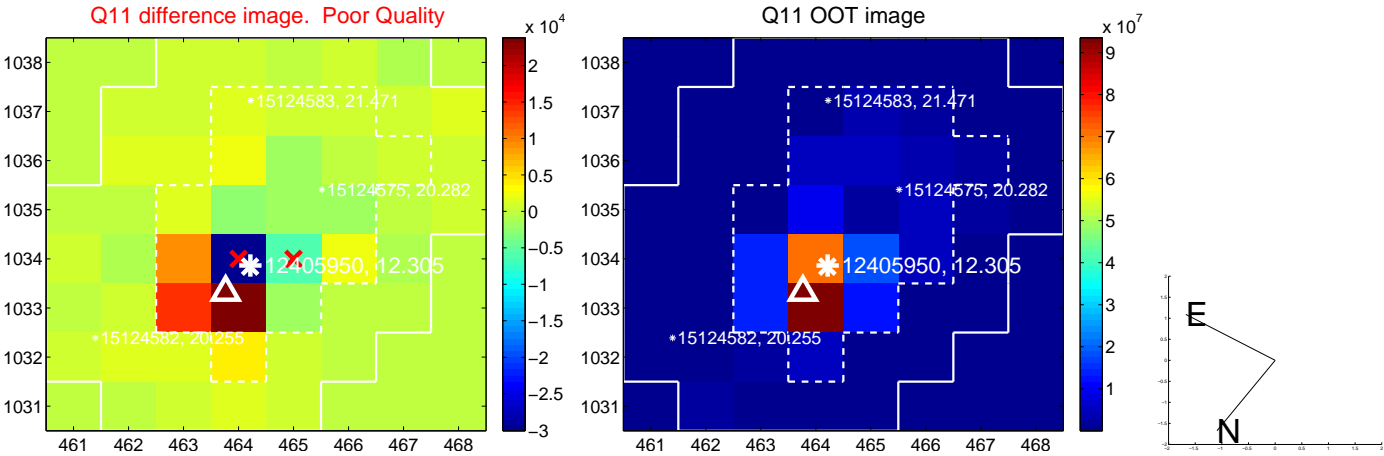
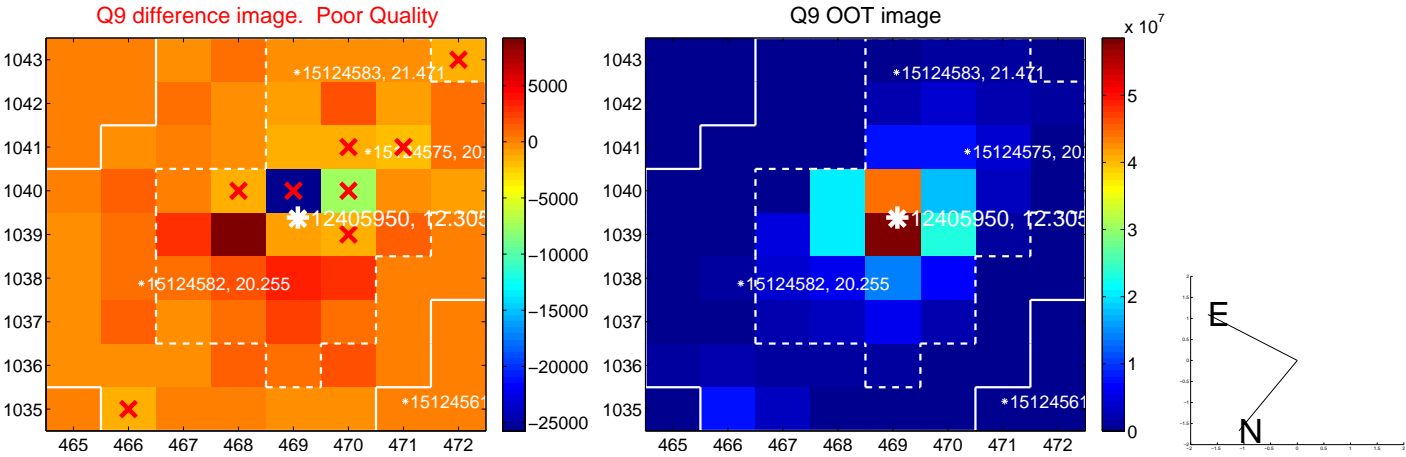
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



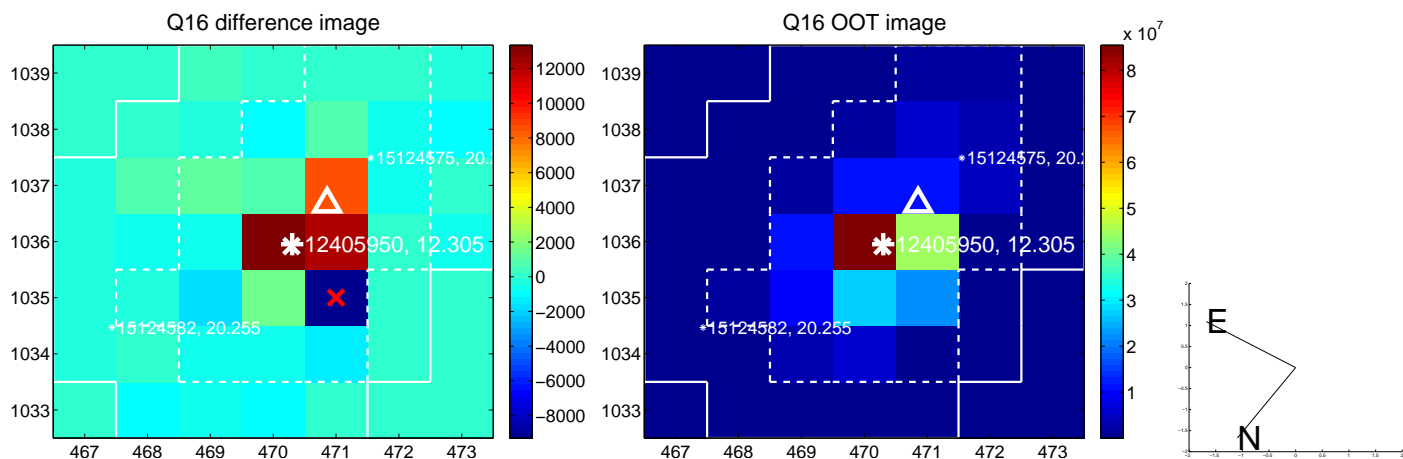
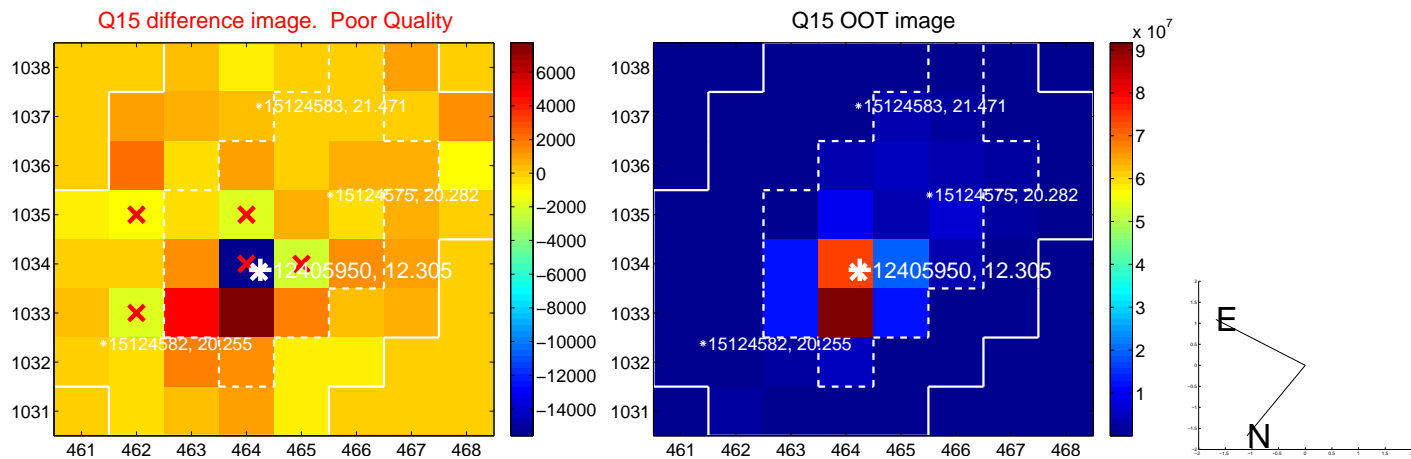
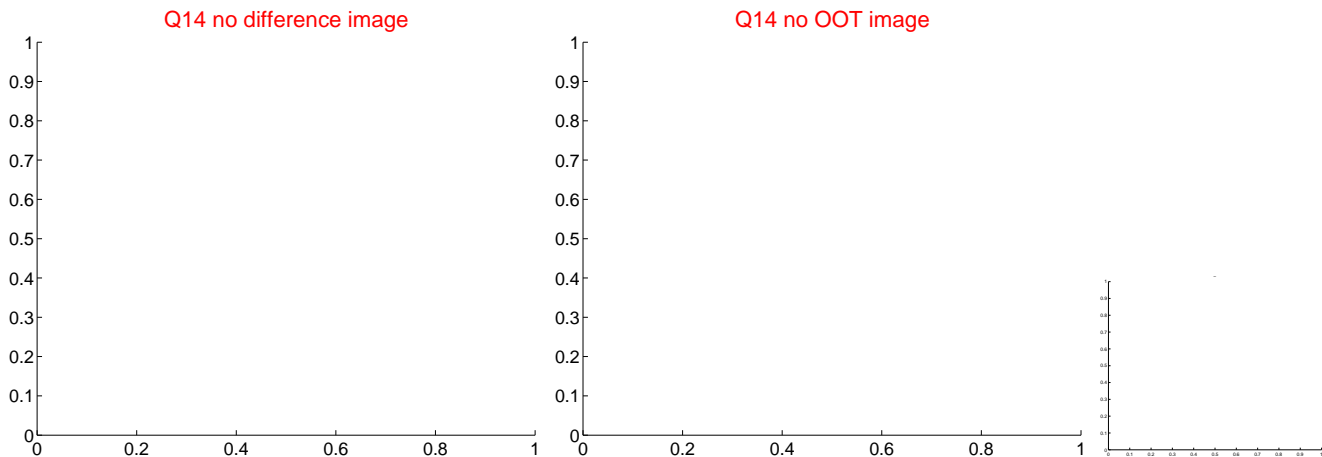
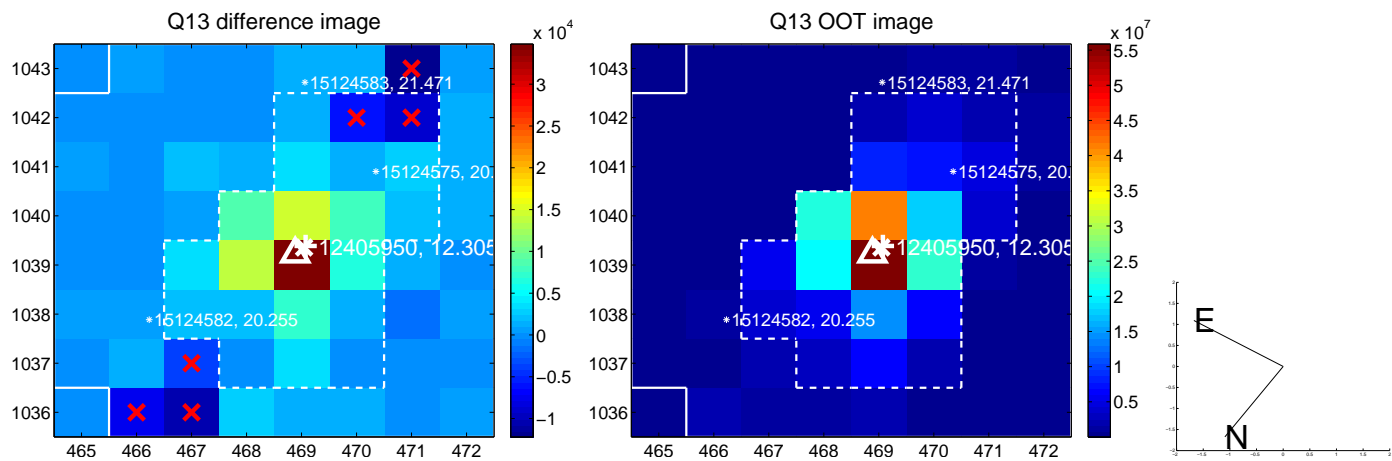
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



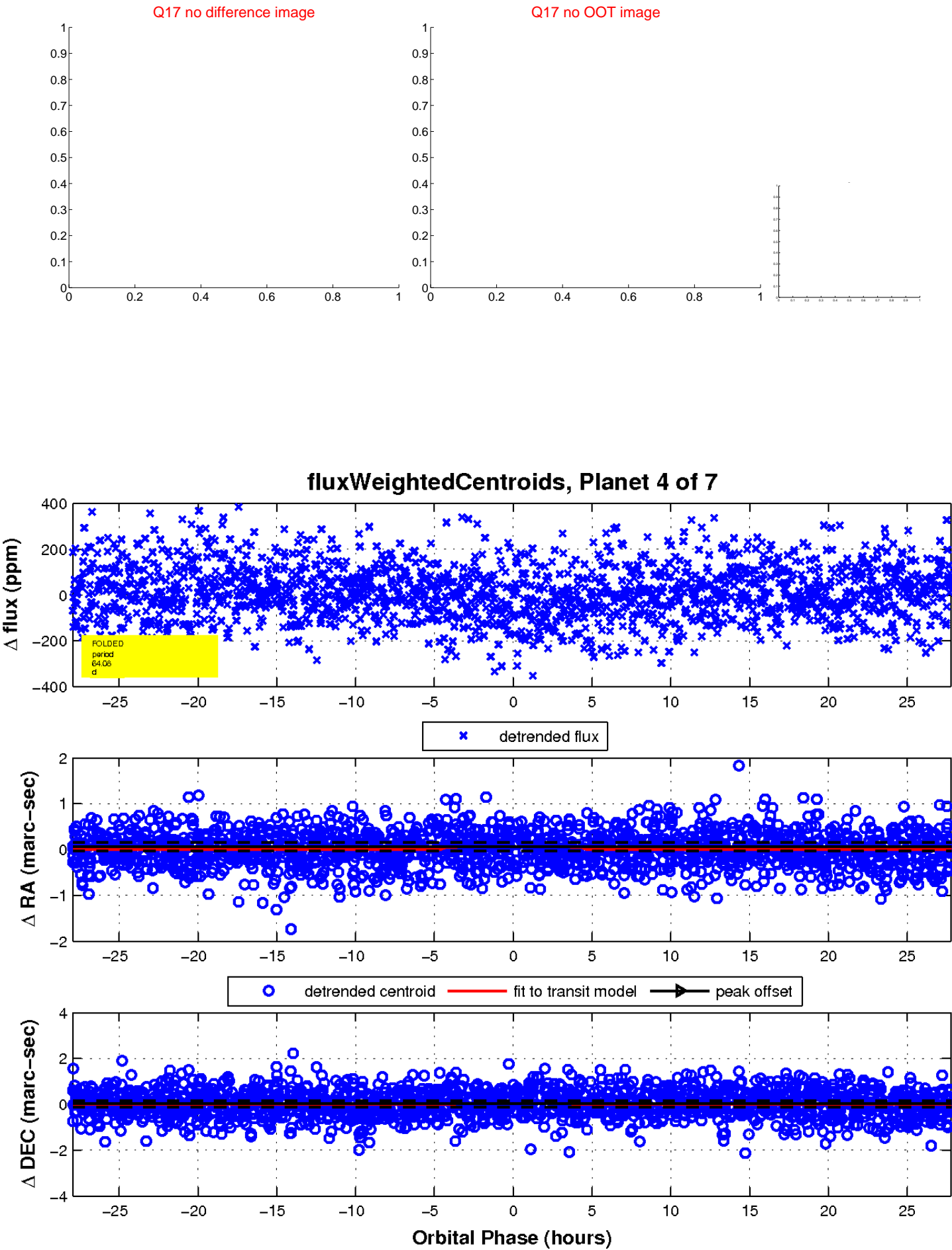
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

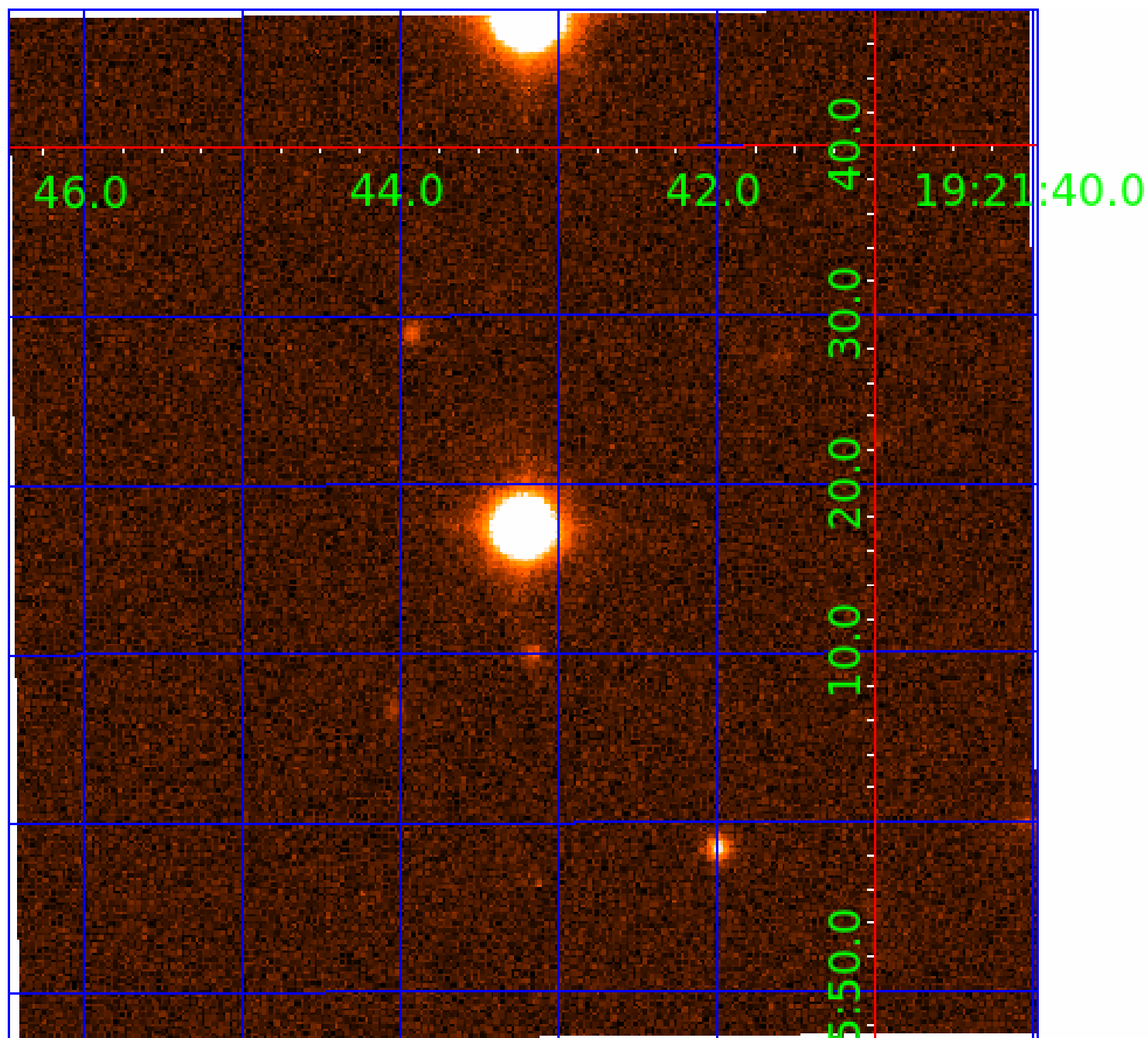


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012405950

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})
012405950-01	OBS	3778.01	3.539641	132.772763	1163.2	1.450	179.4	192.3	2.63	7021	11.83	5689.47
012405950-02	OBS	No	3.539613	134.363793	343.8	0.961	42.6	58.1	2.63	7021	5.73	5689.53
012405950-03	OBS	No	2.654873	133.072202	18.8	12.956	7.6	7.6	2.63	7021	1.15	8348.83
012405950-04	OBS	No	64.079148	145.775835	112.3	9.314	8.2	7.2	2.63	7021	3.11	119.69
012405950-05	OBS	No	81.706403	134.515598	178.7	4.763	7.7	7.6	2.63	7021	4.03	86.56
012405950-06	OBS	No	113.552188	146.497204	135.5	13.721	7.7	7.4	2.63	7021	3.40	55.82
012405950-07	OBS	No	73.331738	182.647921	239.5	2.885	8.2	7.4	2.63	7021	4.36	99.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012405950-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
012405950-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
012405950-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012405950-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012405950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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.

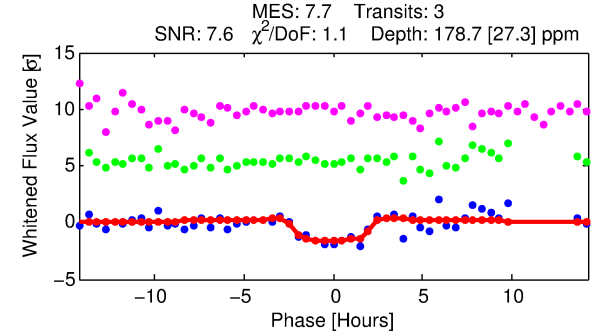
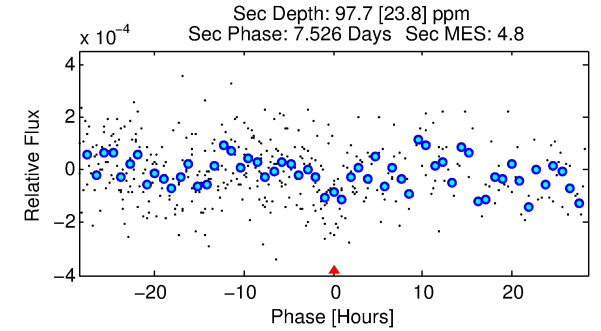
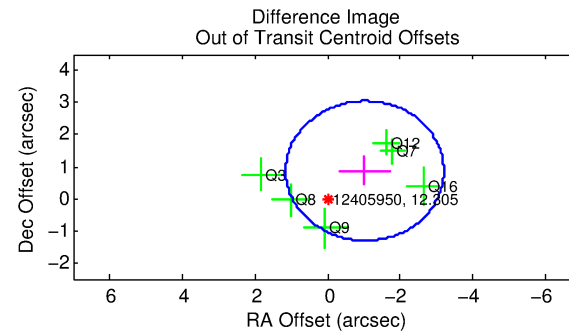
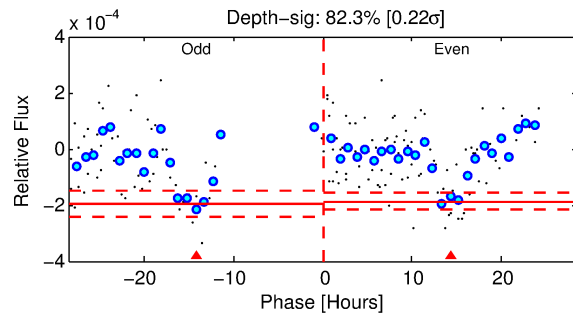
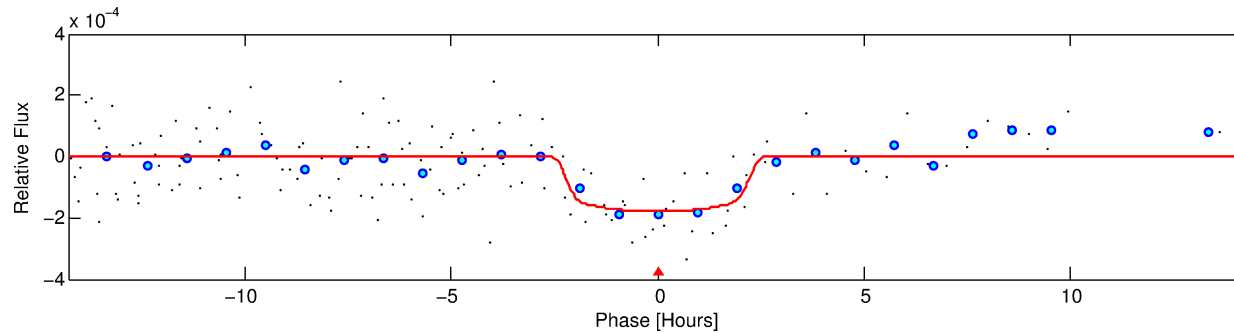
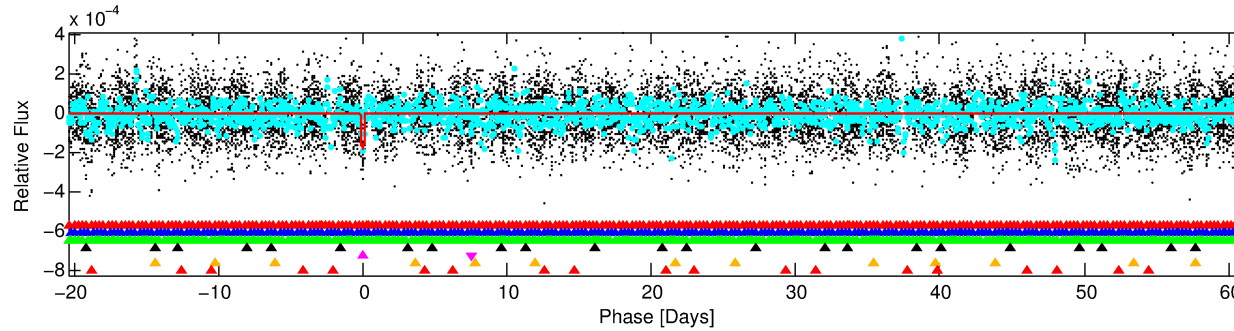
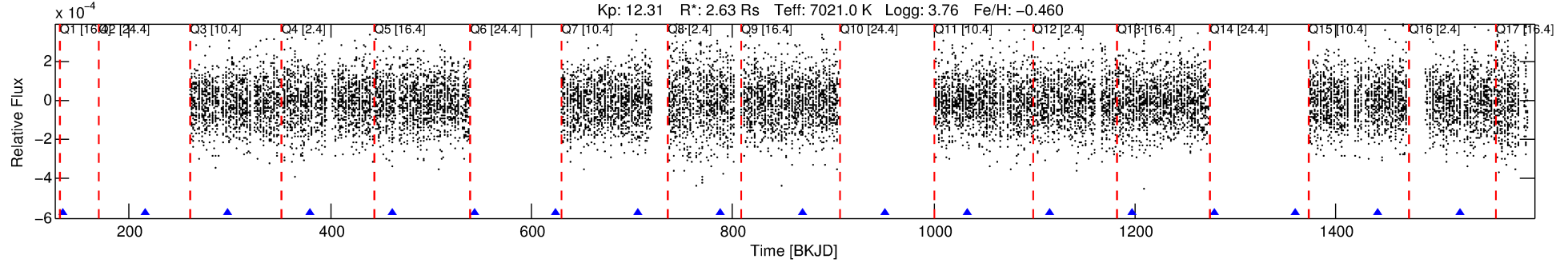
Ephemeris Match Information For 012405950-05

No Significant Match Found

DV One-Page Summary

KIC: 12405950 Candidate: 5 of 7 Period: 81.706 d
KOI: K03778 Corr: No Ephemeris Match

Kp: 12.31 R*: 2.63 Rs Teff: 7021.0 K Logg: 3.76 Fe/H: -0.460



DV Fit Results:

Period = 81.70640 [0.00166] d
Epoch = 134.5156 [0.0156] BKJD
Rp/R* = 0.0140 [0.0181]
a/R* = 66.11 [521.82]
b = 0.88 [2.05]
Seff = 86.57 [47.23]
Teq = 778 [106] K
Rp = 4.03 [5.40] Re
a = 0.4169 [0.1396] AU
Ag = 575.78 [1524.95] [0.38 sigma]
Teffp = 5891 [3829] K [1.33 sigma]

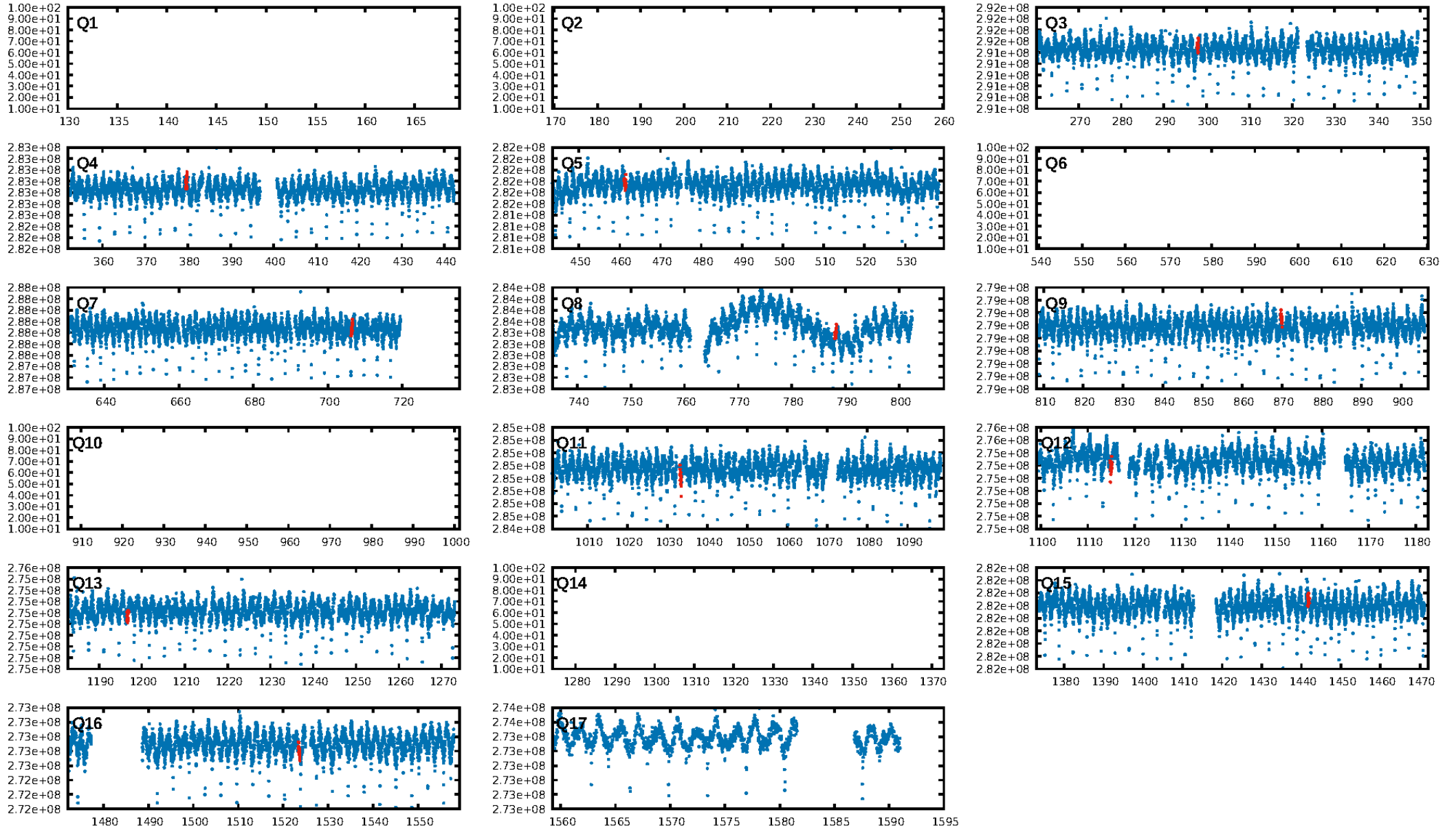
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [36.10 sigma]
LongPeriod-sig: 100.0% [52.62 sigma]
ModelChiSquare2-sig: 64.8%
ModelChiSquareGof-sig: 93.0%
Bootstrap-pfa: 4.96e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.7388
Centroid-sig: 3.6%
Centroid-so: 1.461 arcsec [1.38 sigma]
OotOffset-rm: 1.345 arcsec [1.86 sigma]
KicOffset-rm: 1.234 arcsec [1.98 sigma]
OotOffset-st: 0/2/3/1 [6]
KicOffset-st: 0/2/3/1 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 0.22 [2/9]

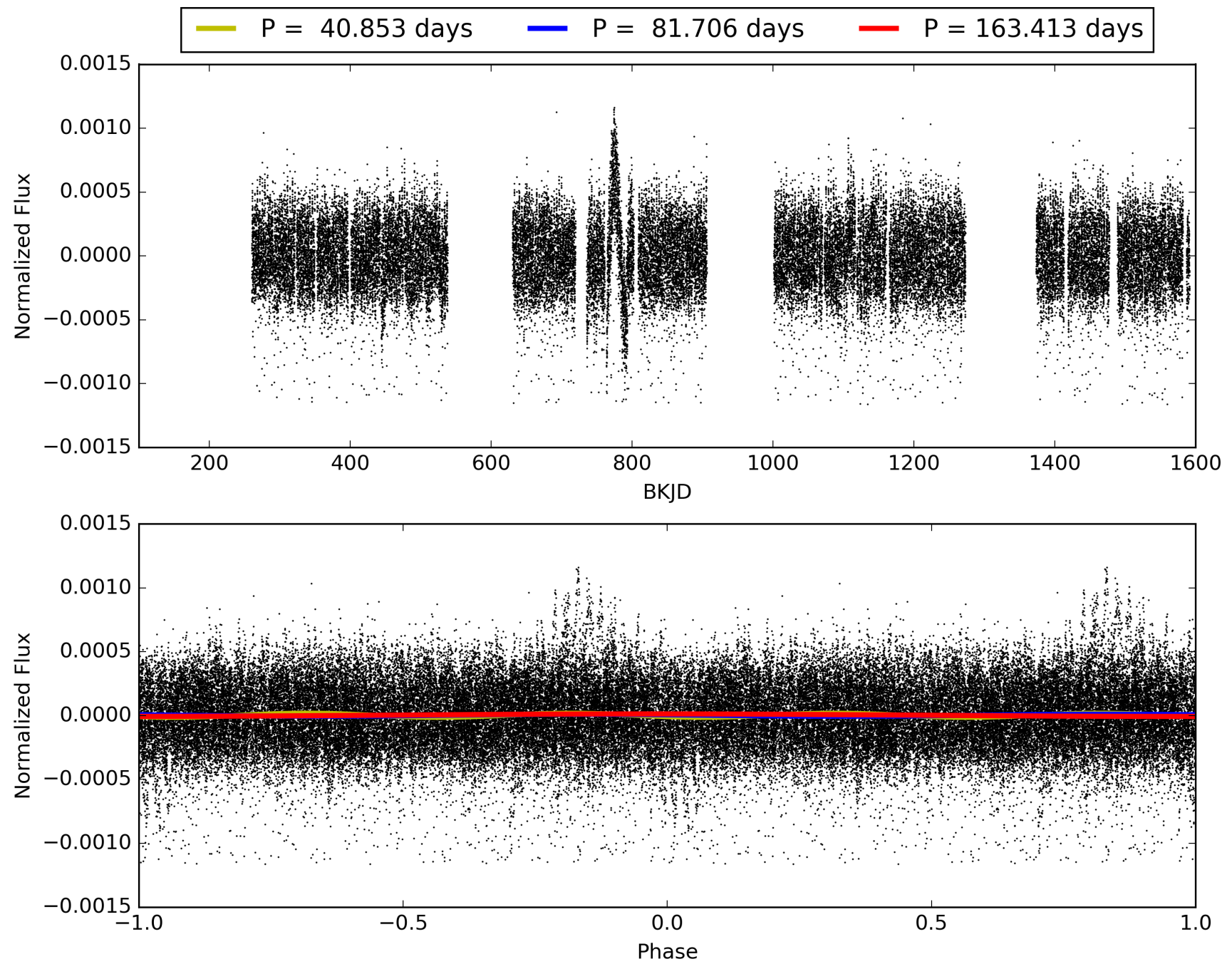
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:00:17 Z

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

TCE 012405950-05, PDC Light Curves

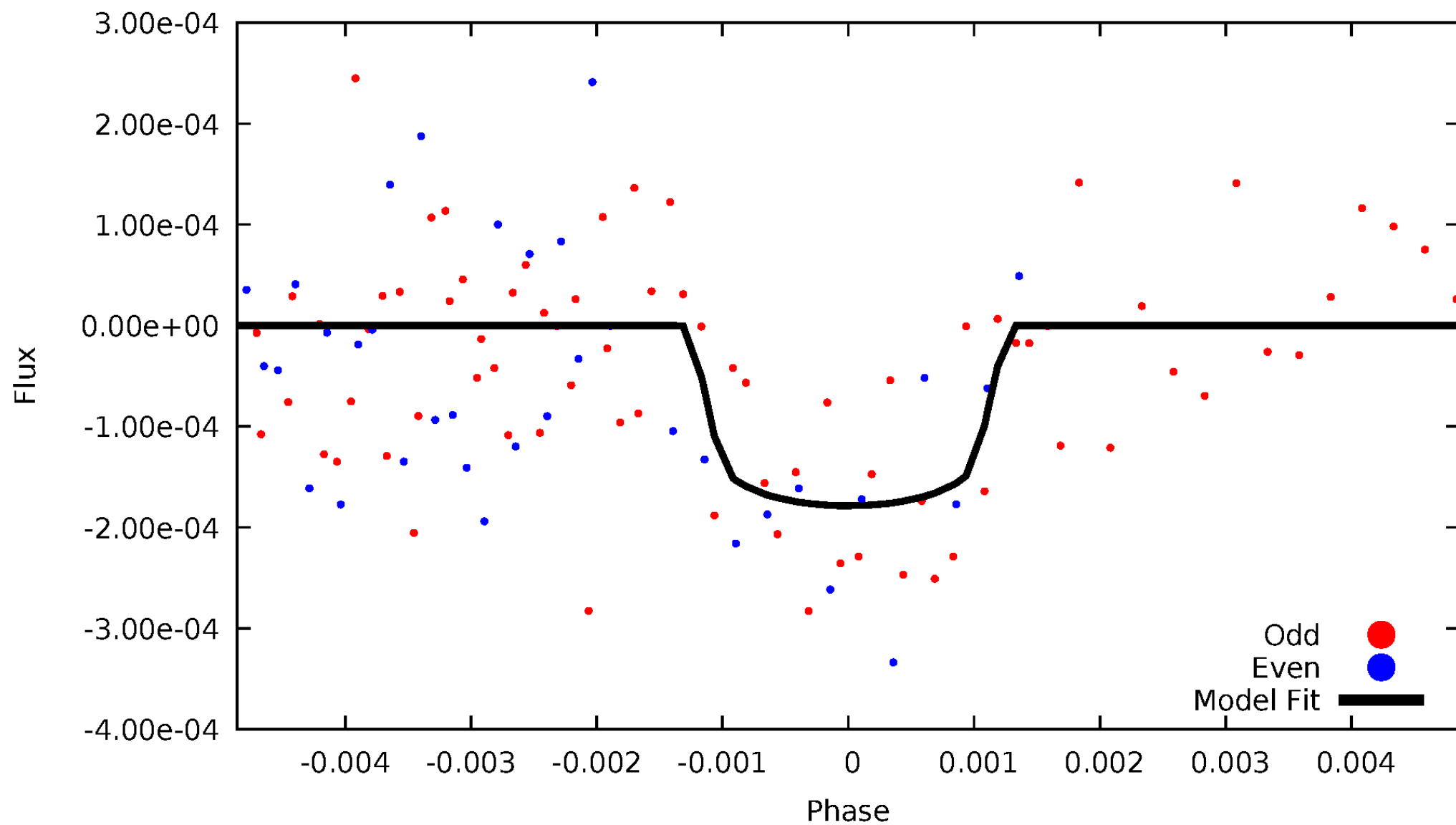


TCE 012405950-05



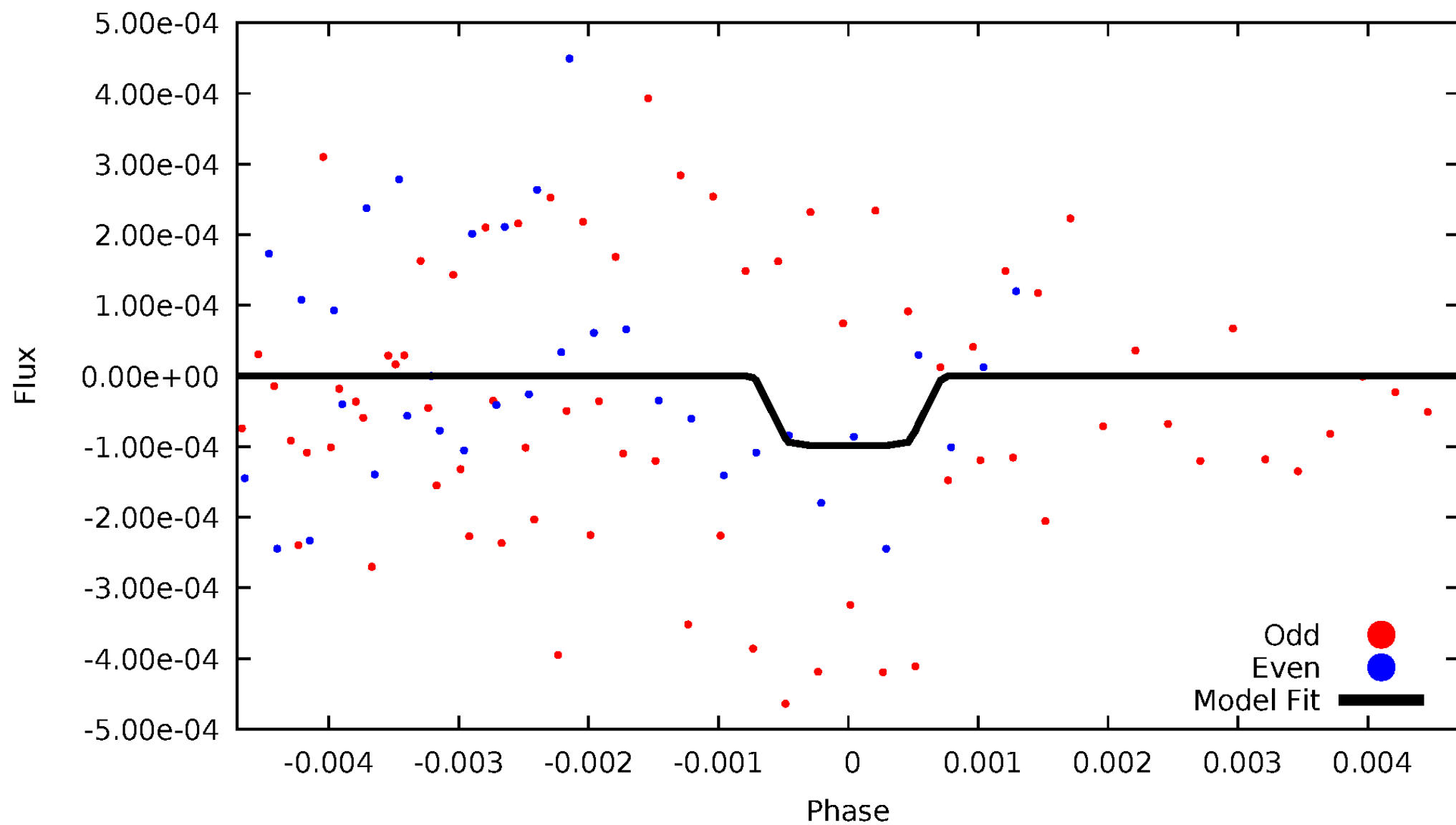
DV Odd/Even

TCE 012405950-05



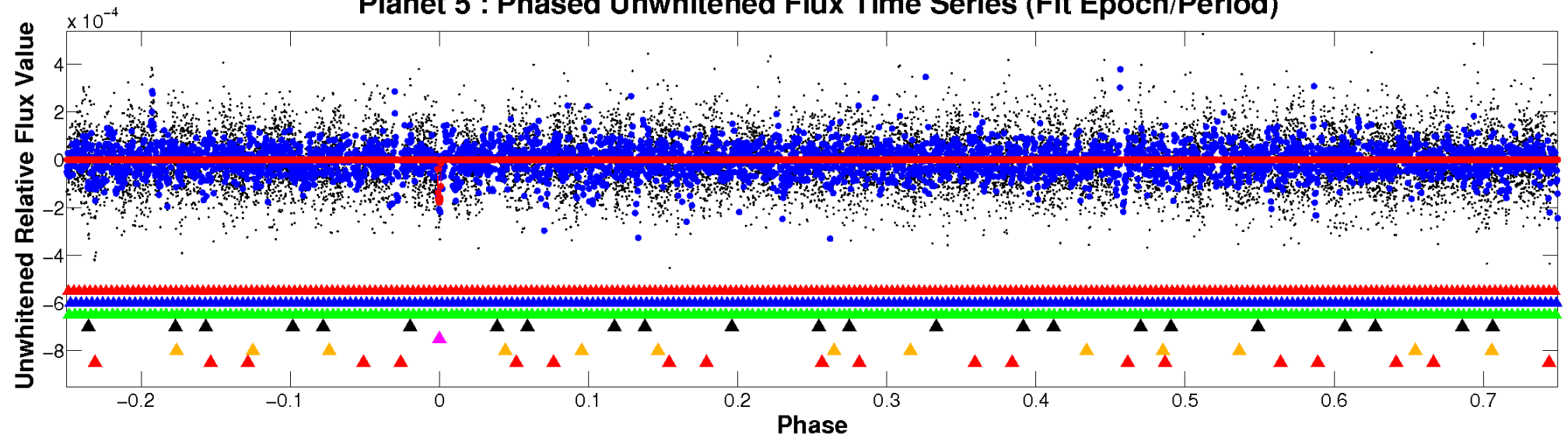
ALT Odd/Even

TCE 012405950-05

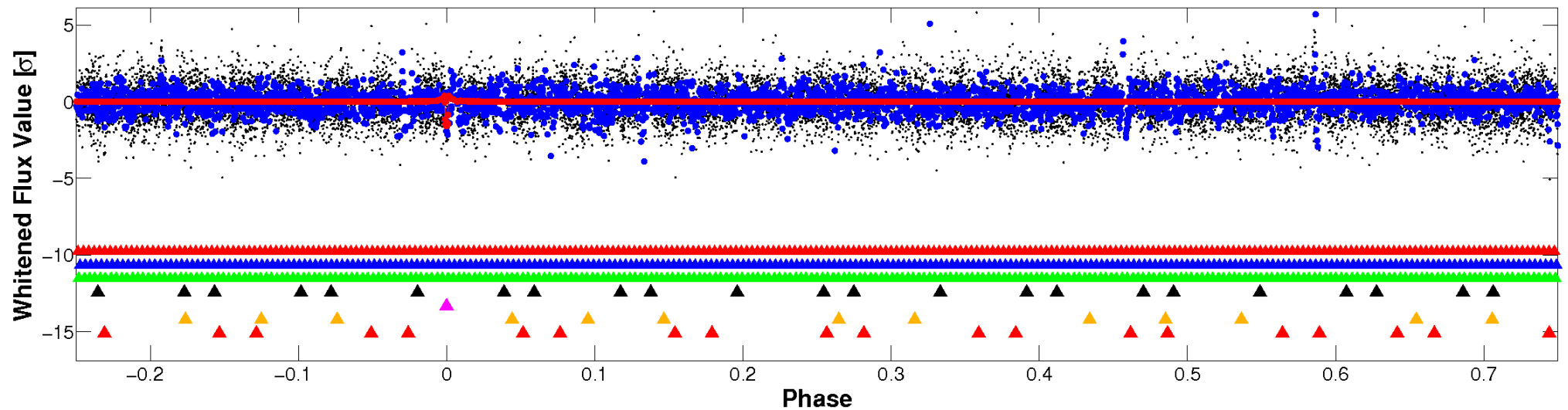


Non-Whitened Vs. Whitened Light Curve

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

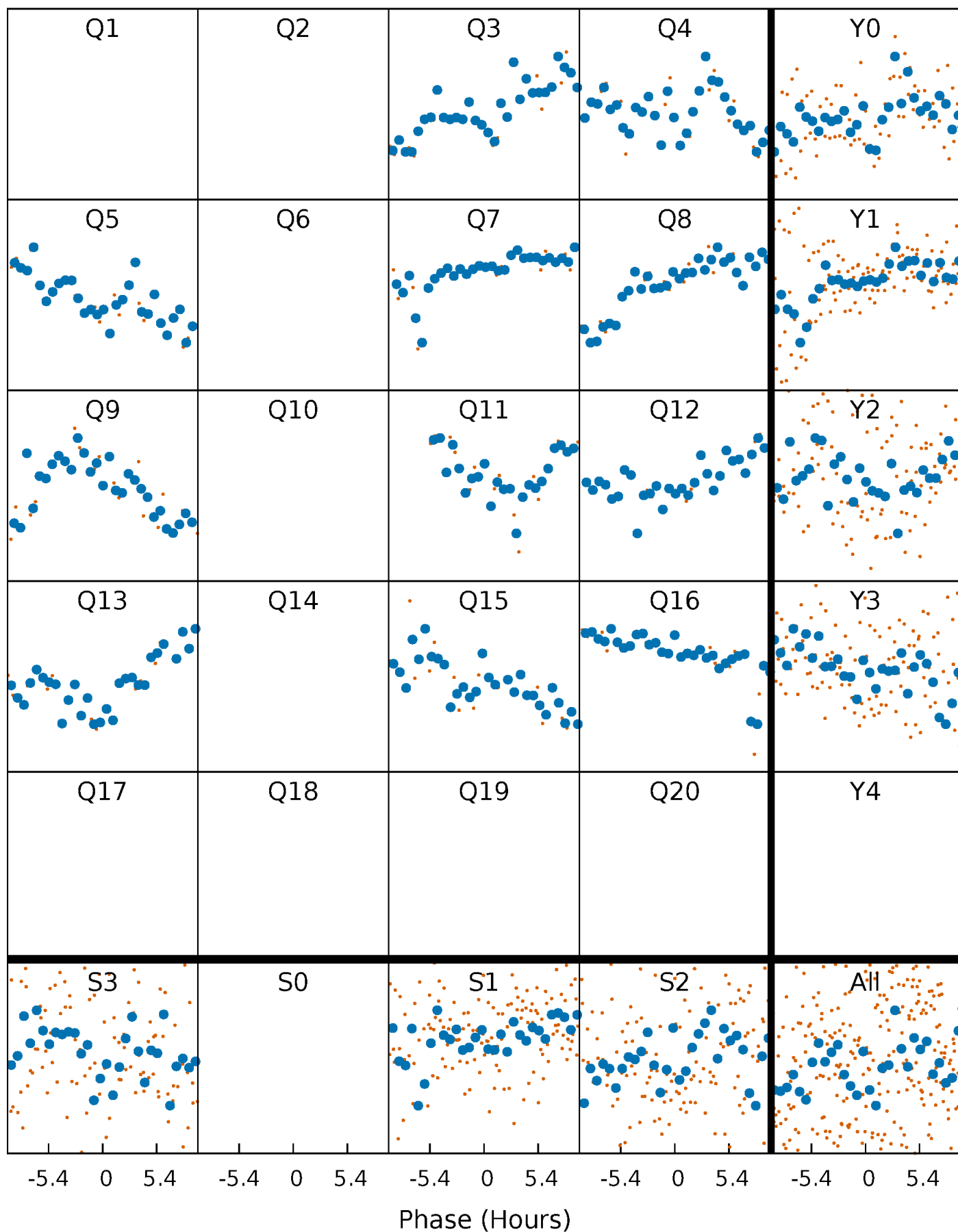


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



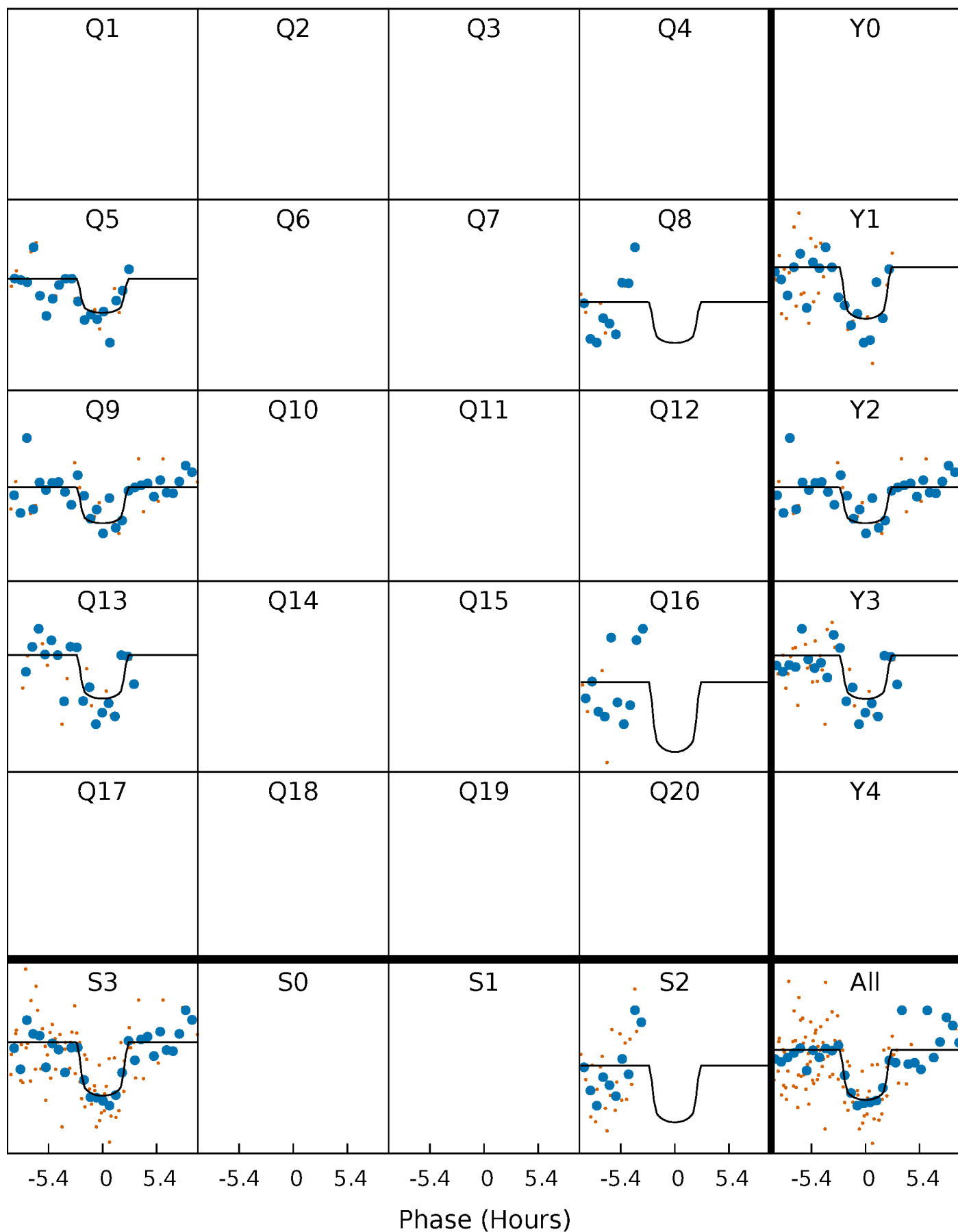
PDC Quarter-Phased Transit Curves

TCE 012405950-05 $P = 81.706403$ Days $T_0 = 134.515598$ (BKJD)



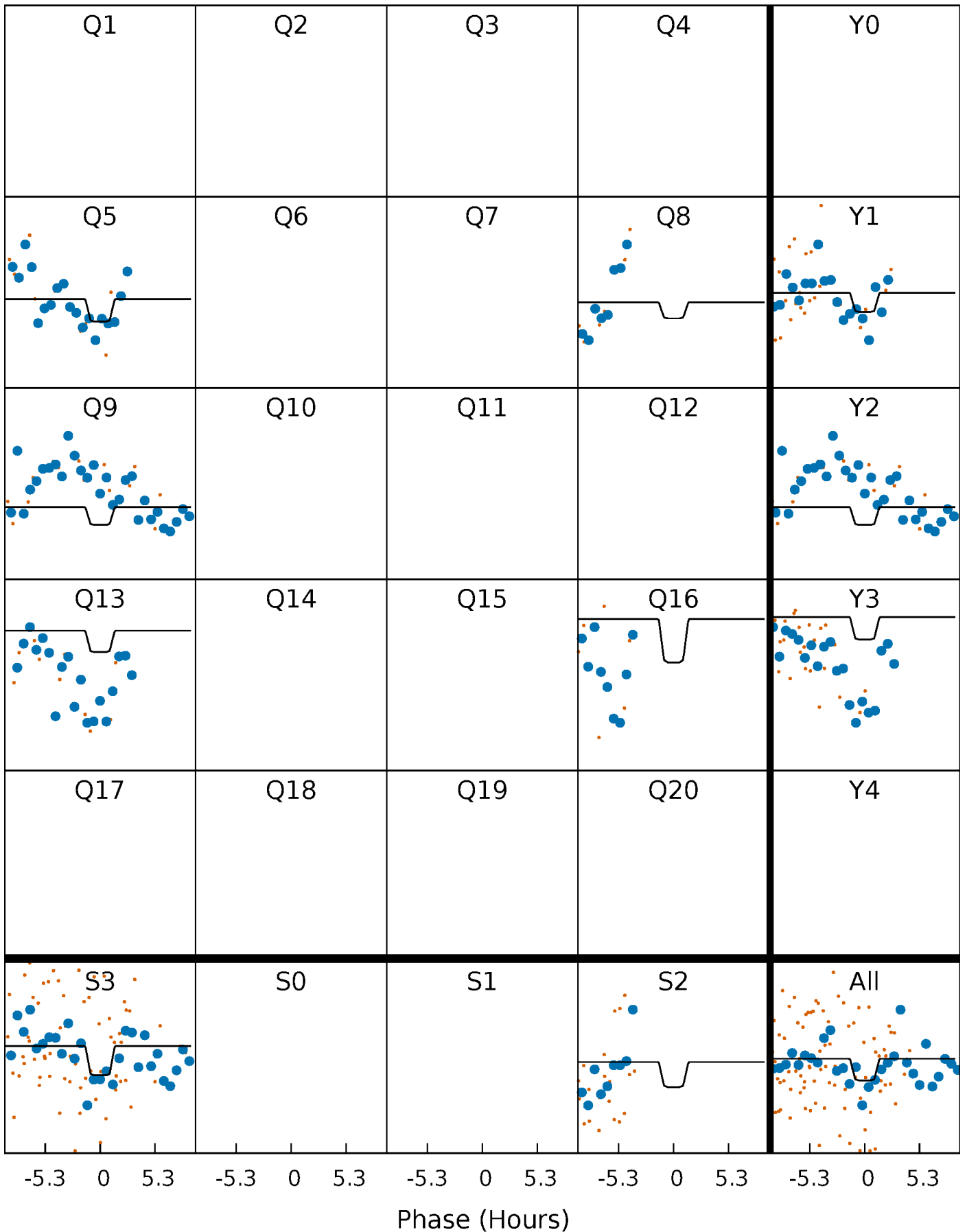
DV Quarter-Phased Transit Curves

TCE 012405950-05 $P = 81.706403$ Days $T_0 = 134.515598$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

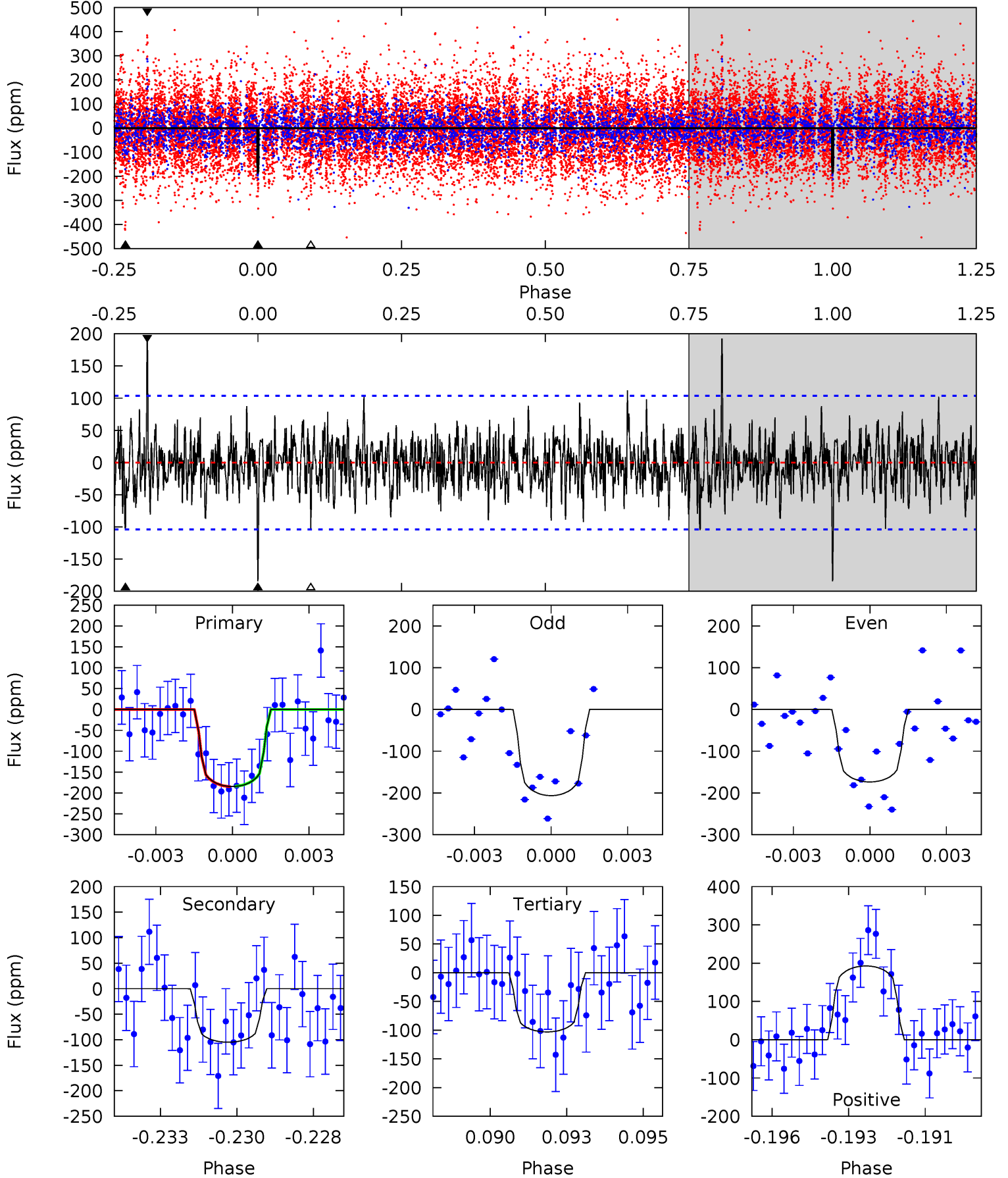
TCE 012405950-05 $P = 81.707350$ Days $T_0 = 134.517164$ (BKJD)



DV Model-Shift Uniqueness Test

012405950-05, P = 81.706403 Days, E = 134.515598 Days

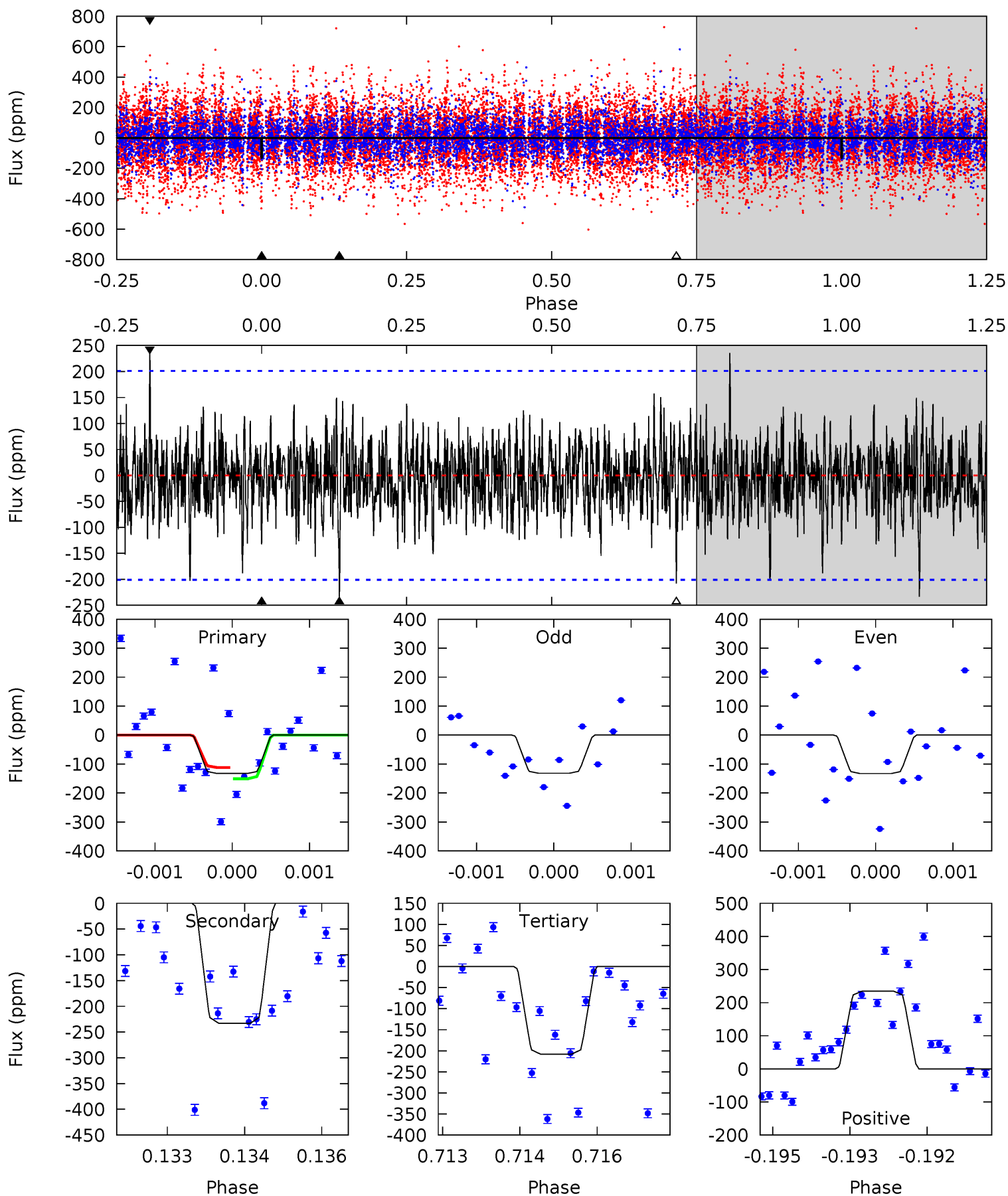
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.38	5.33	5.24	9.80	5.28	3.01	1.58	4.15	-0.41	0.09	-4.47	0.78	0.94	0.51	0.03



Alt Model-Shift Uniqueness Test

012405950-05, $P = 81.707350$ Days, $E = 134.517164$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.55	6.25	5.57	6.30	5.39	3.19	1.31	-2.02	-2.75	0.68	-0.05	0.01	1.00	0.50	0.52



Stellar Parameters For KIC 012405950

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7021^{+214}_{-262}	$3.759^{+0.304}_{-0.076}$	$-0.460^{+0.300}_{-0.250}$	$2.629^{+0.406}_{-0.947}$	$1.447^{+0.231}_{-0.282}$	$0.112^{+0.229}_{-0.035}$
	+3%/-4%	+8%/-2%	+65%/-54%	+15%/-36%	+16%/-19%	+204%/-31%
Source	KIC0	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 012405950-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-105 ± 20	$4.85^{+4.42}_{-3.16}$	1059^{+65}_{-106}	5216^{+3918}_{-1166}	449^{+3124}_{-330}
Alt.	-233 ± 37	$4.03^{+4.24}_{-2.72}$	1057^{+61}_{-98}	7013^{+8524}_{-2043}	1358^{+11897}_{-1021}

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 $A_{obs} \gg 1.0$

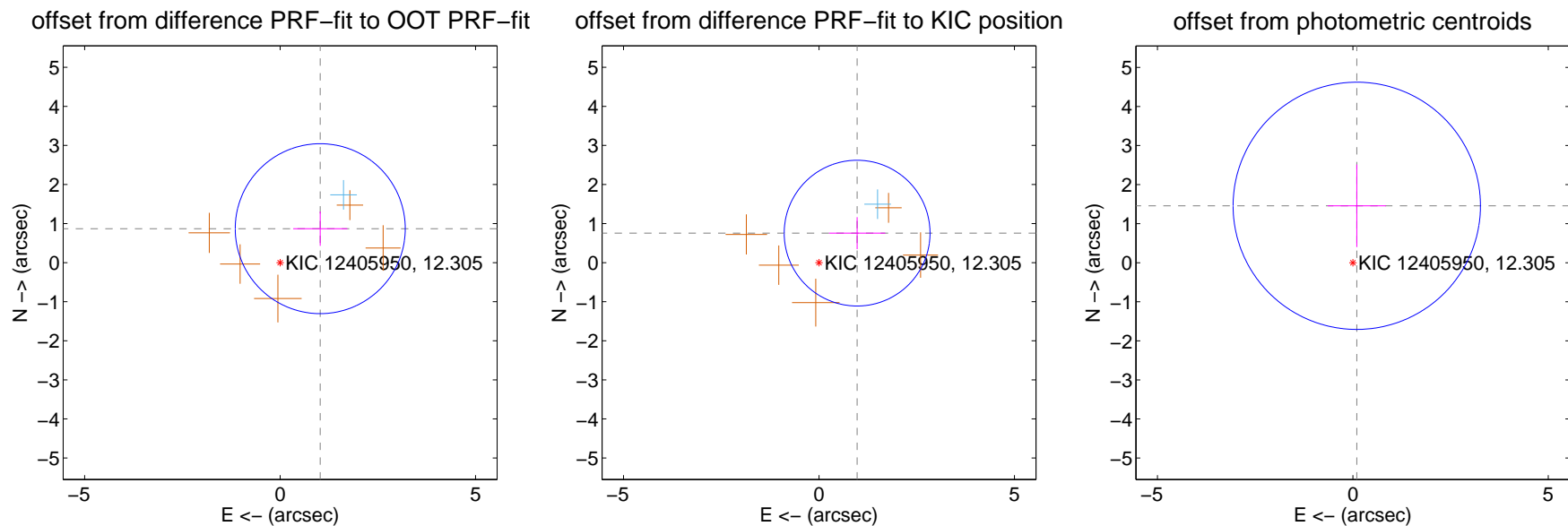
DV Centroid Data

Supplemental centroid analysis for 012405950-05. Kepler magnitude: 12.30. Transit SNR 7.62

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.19 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.345 ± 0.725	1.86	-1.027 ± 0.692	0.869 ± 0.441
PRF-fit source offset from KIC position	1.234 ± 0.622	1.98	-0.975 ± 0.719	0.755 ± 0.411
photometric centroid source offset	1.46 ± 1.05	1.38	-0.10 ± 0.74	1.46 ± 1.06



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

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

Q1 no difference image



Q1 no OOT image



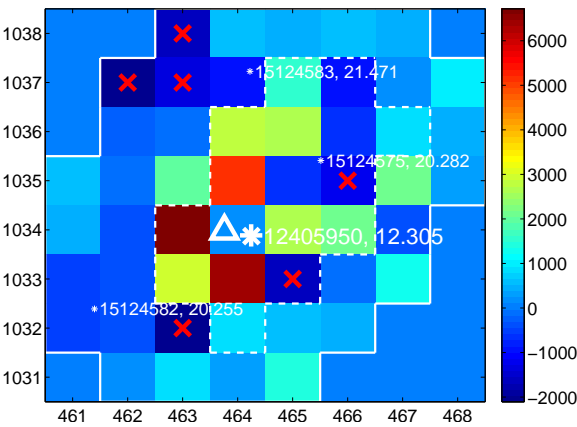
Q2 no difference image



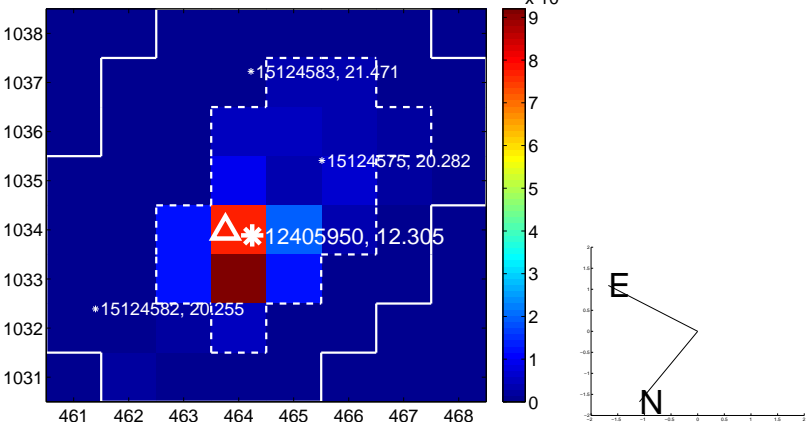
Q2 no OOT image



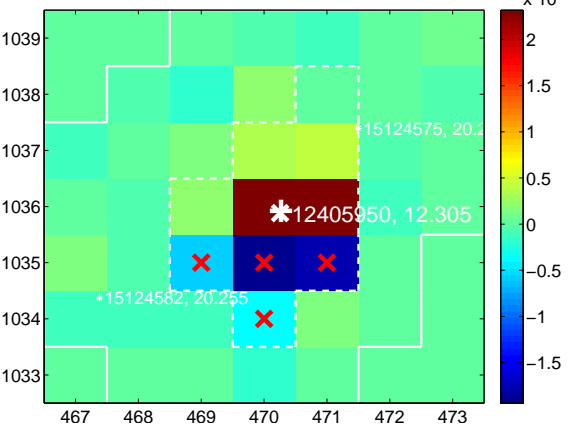
Q3 difference image. Poor Quality



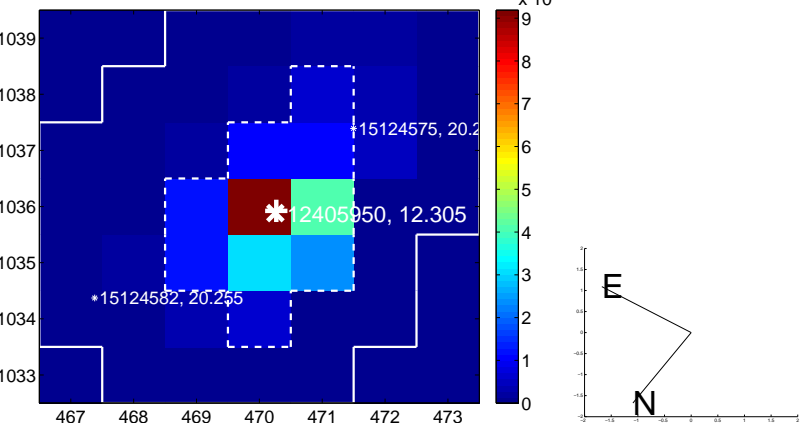
Q3 OOT image



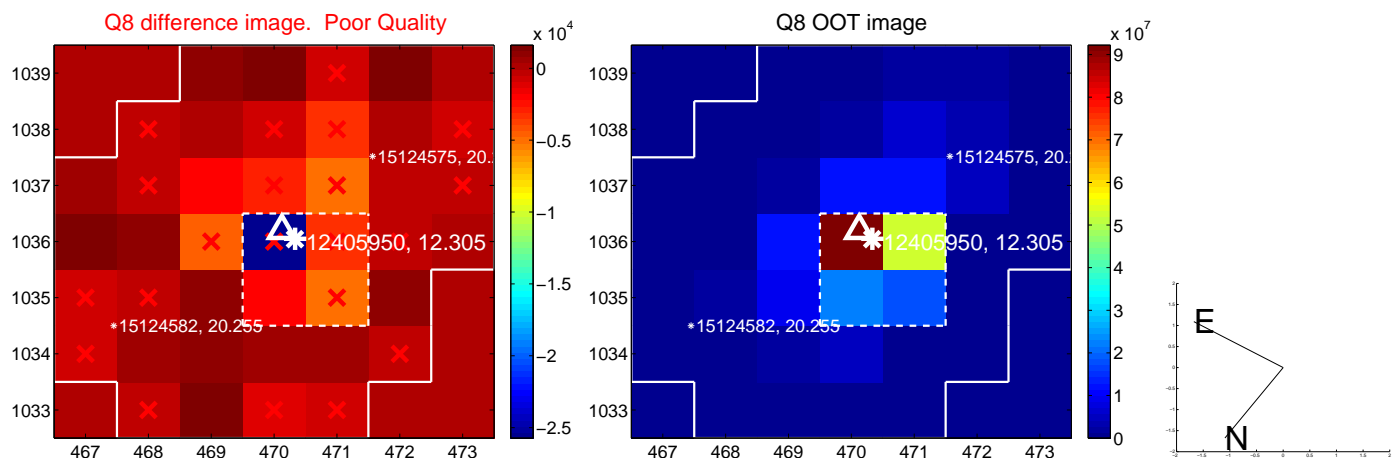
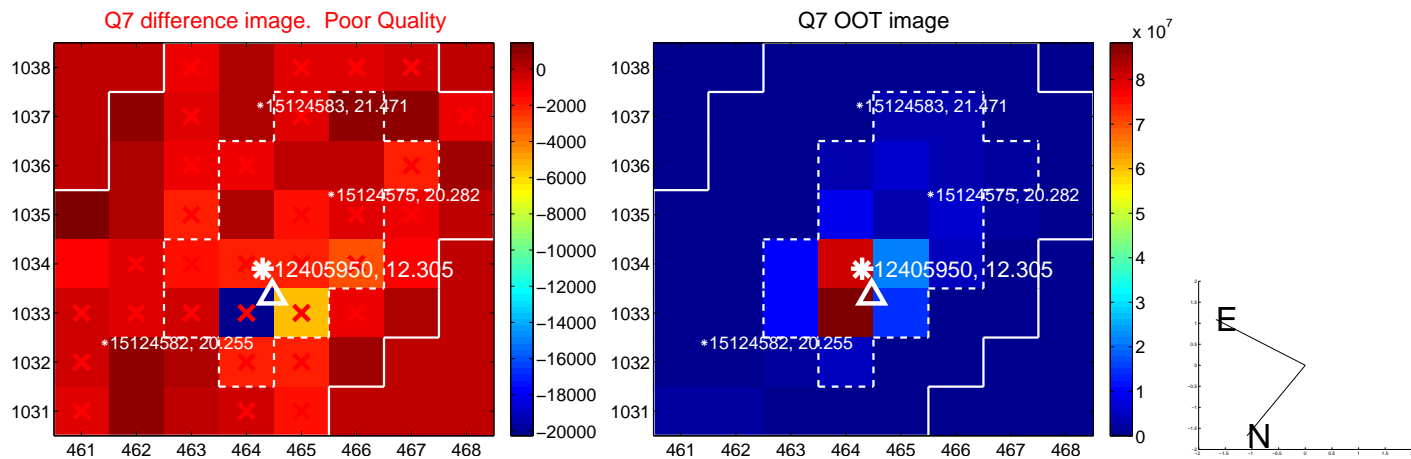
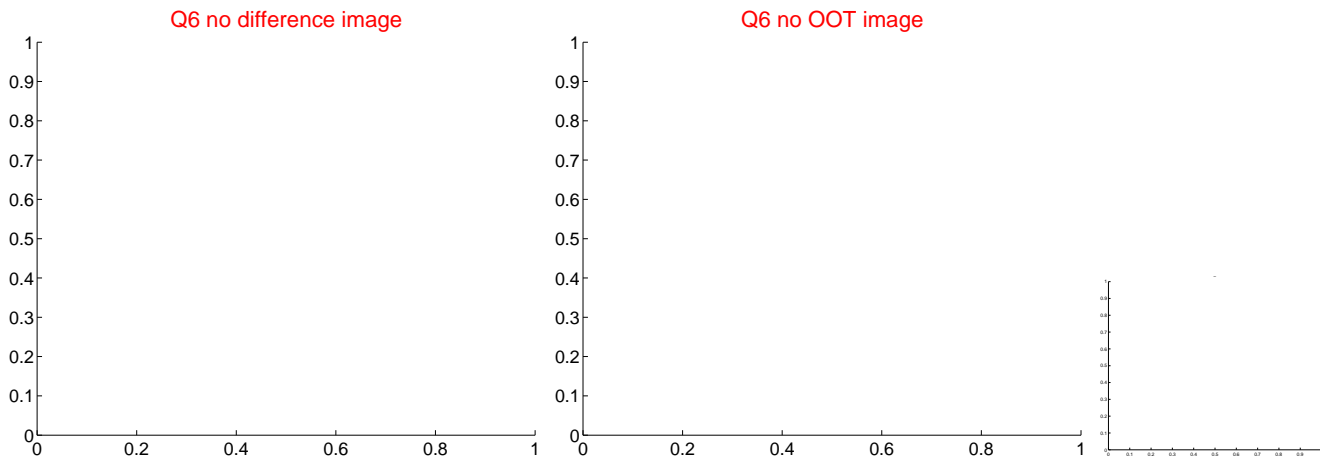
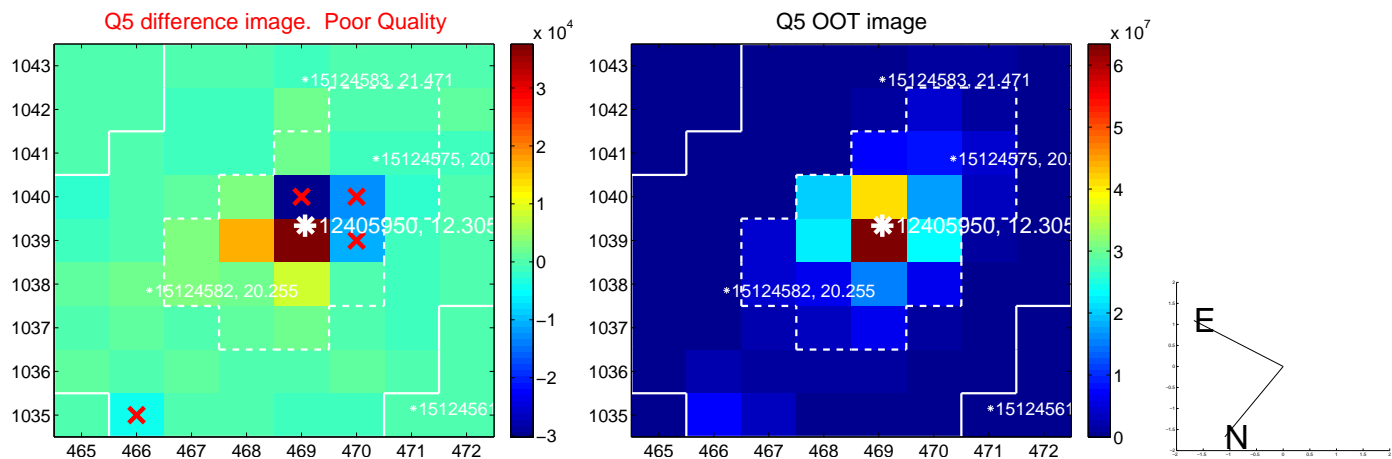
Q4 difference image. Poor Quality



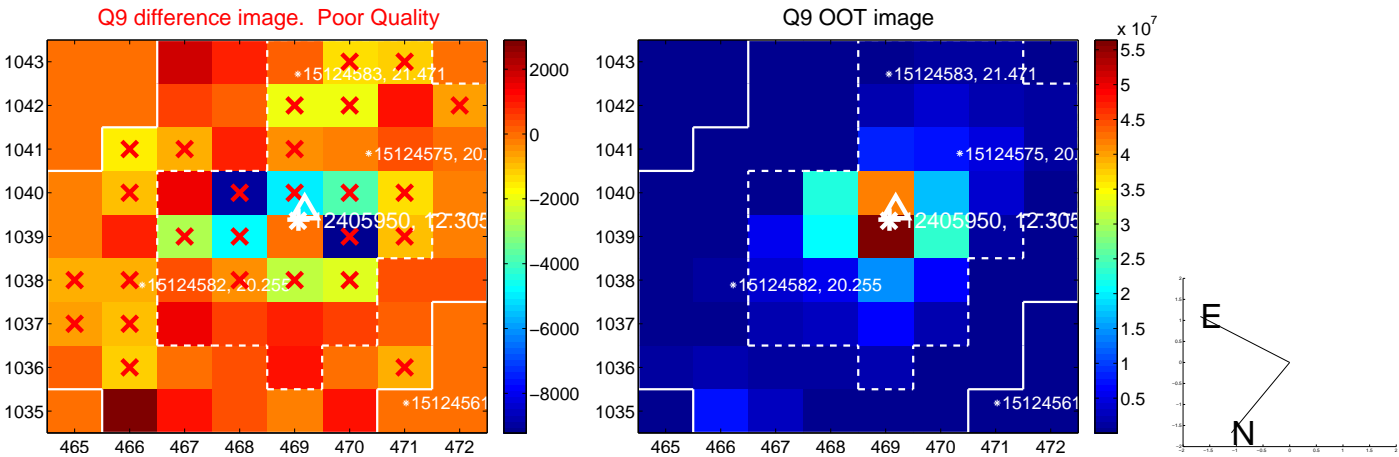
Q4 OOT image



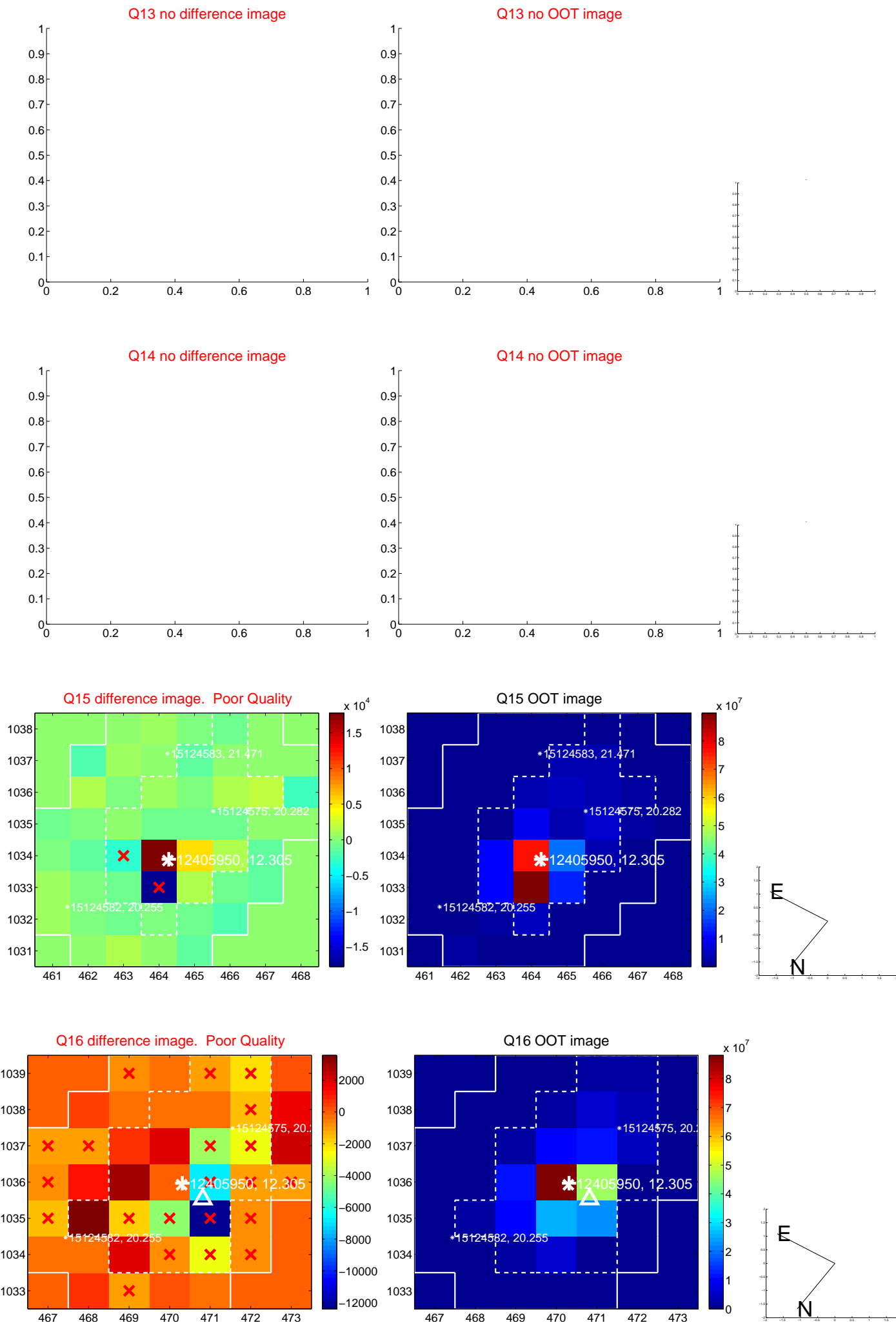
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



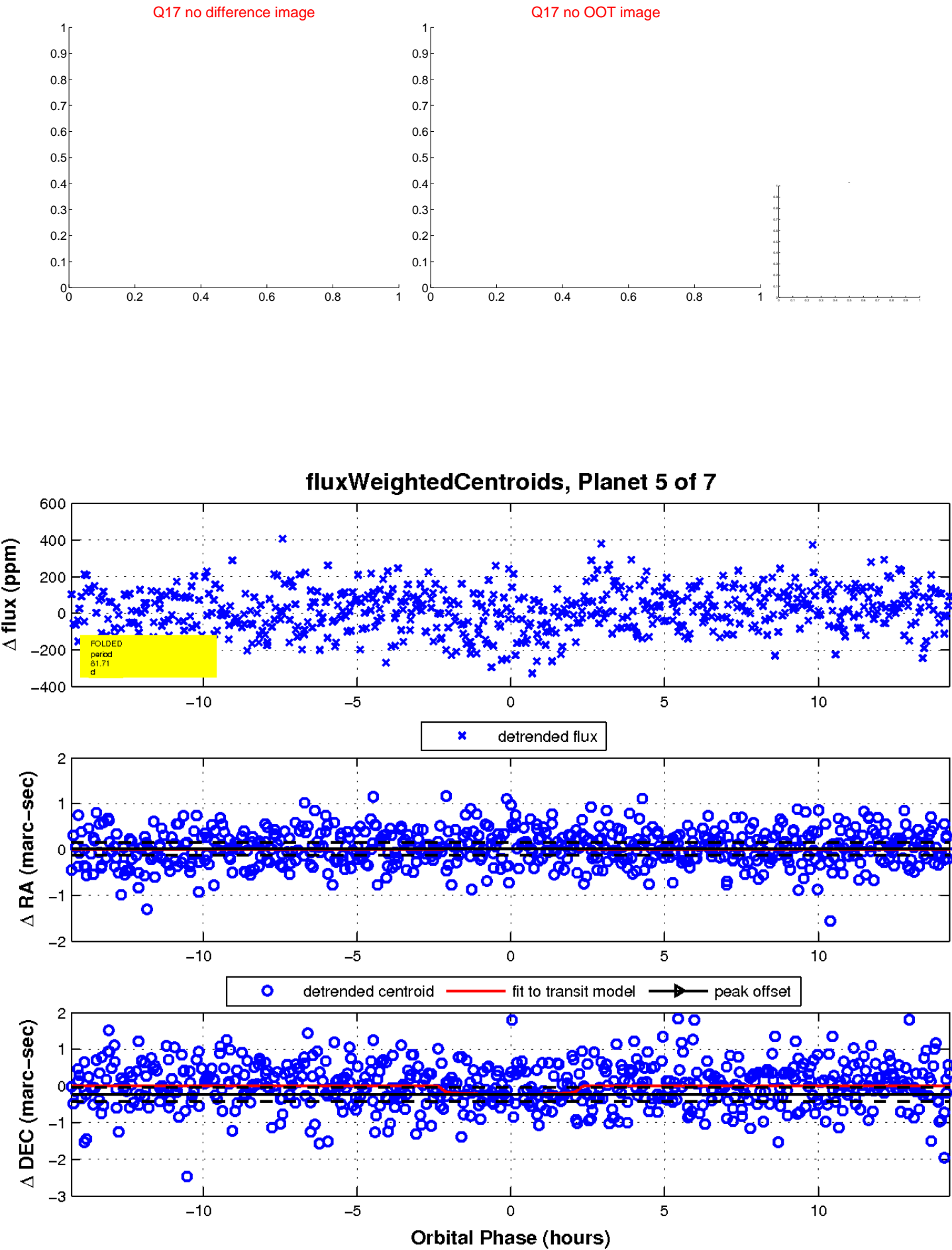
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

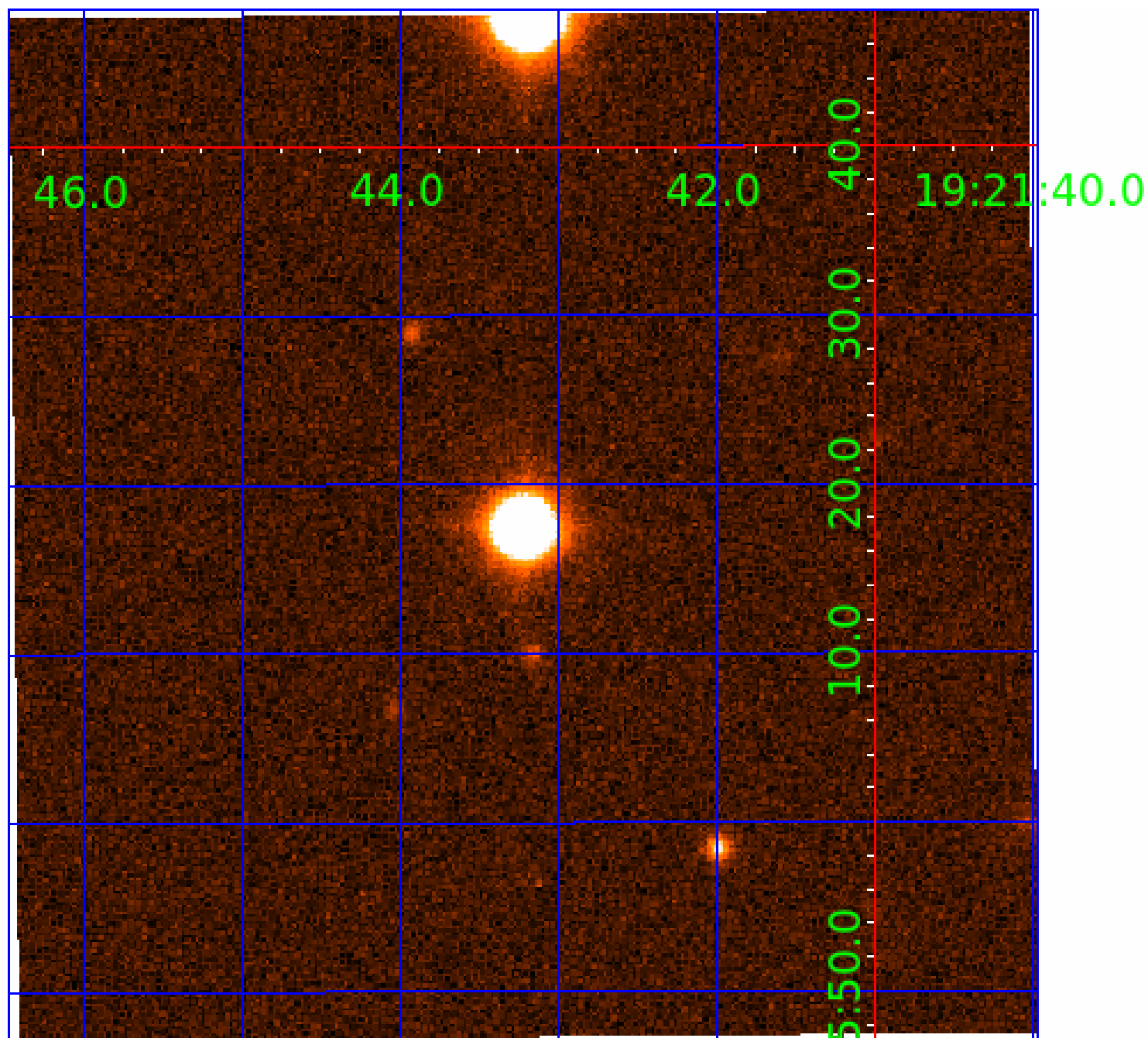


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012405950

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})
012405950-01	OBS	3778.01	3.539641	132.772763	1163.2	1.450	179.4	192.3	2.63	7021	11.83	5689.47
012405950-02	OBS	No	3.539613	134.363793	343.8	0.961	42.6	58.1	2.63	7021	5.73	5689.53
012405950-03	OBS	No	2.654873	133.072202	18.8	12.956	7.6	7.6	2.63	7021	1.15	8348.83
012405950-04	OBS	No	64.079148	145.775835	112.3	9.314	8.2	7.2	2.63	7021	3.11	119.69
012405950-05	OBS	No	81.706403	134.515598	178.7	4.763	7.7	7.6	2.63	7021	4.03	86.56
012405950-06	OBS	No	113.552188	146.497204	135.5	13.721	7.7	7.4	2.63	7021	3.40	55.82
012405950-07	OBS	No	73.331738	182.647921	239.5	2.885	8.2	7.4	2.63	7021	4.36	99.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012405950-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
012405950-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
012405950-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012405950-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012405950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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.

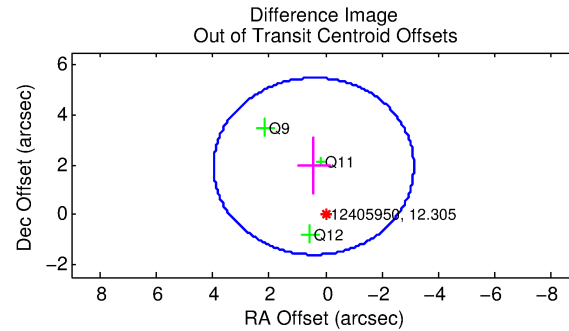
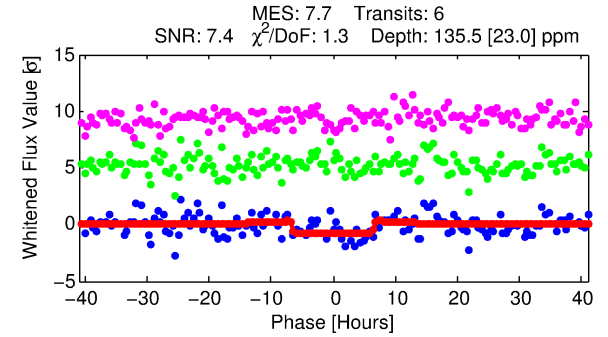
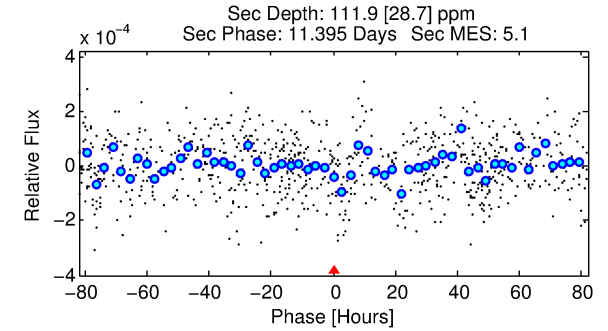
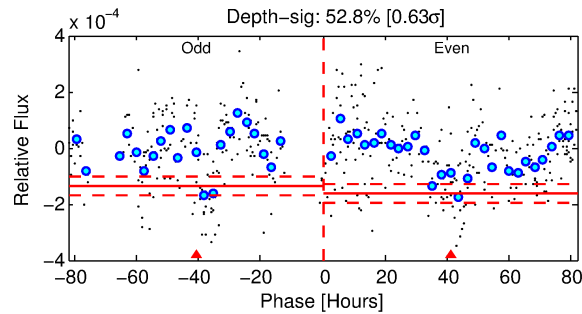
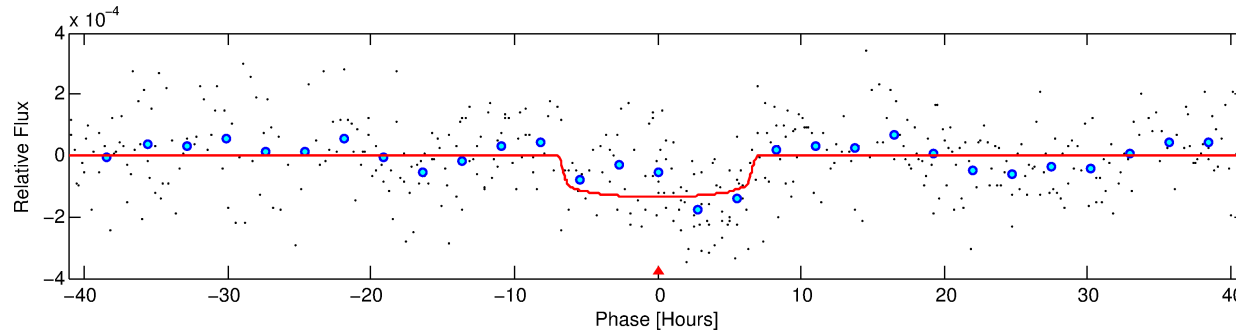
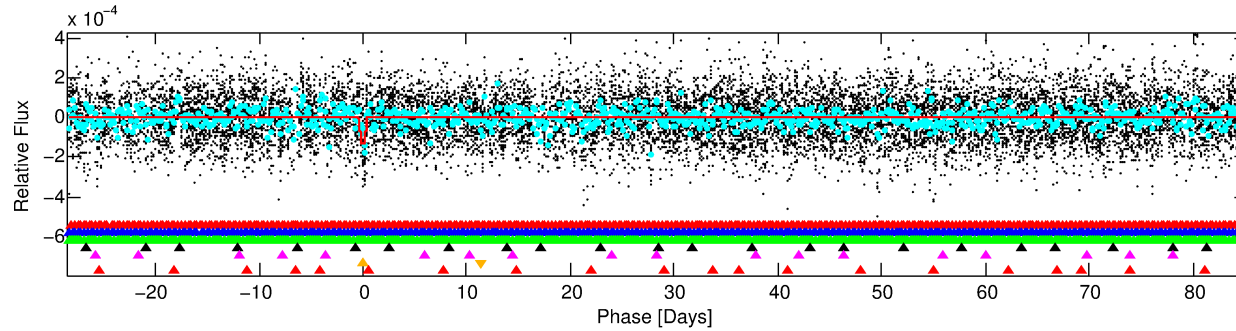
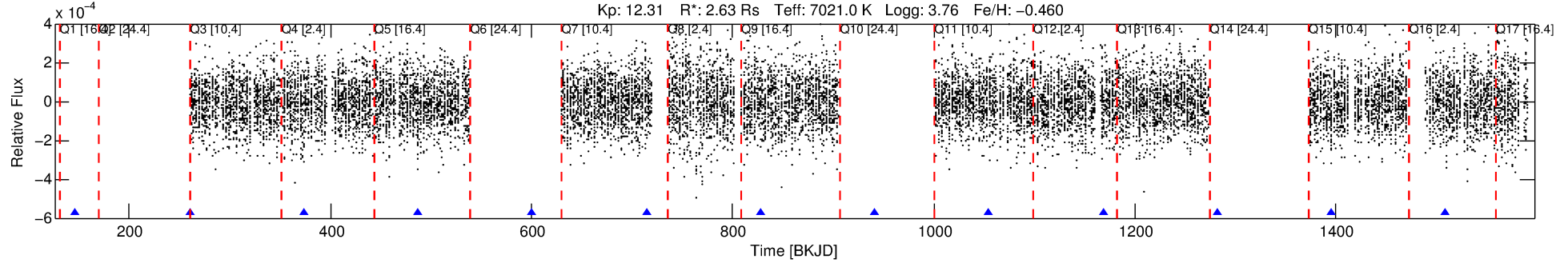
Ephemeris Match Information For 012405950-06

No Significant Match Found

DV One-Page Summary

KIC: 12405950 Candidate: 6 of 7 Period: 113.552 d
KOI: K03778 Corr: No Ephemeris Match

Kp: 12.31 R*: 2.63 Rs Teff: 7021.0 K Logg: 3.76 Fe/H: -0.460



DV Fit Results:

Period = 113.55219 [0.00318] d
Epoch = 146.4972 [0.0263] BKJD
Rp/R* = 0.0118 [0.0029]
a/R* = 37.78 [50.57]
b = 0.82 [0.55]
Seff = 55.82 [30.46]
Teq = 697 [95] K
Rp = 3.40 [1.49] Re
a = 0.5192 [0.1739] AU
Ag = 1438.63 [1103.19] [1.30σ]
Teffp = 6637 [960] K [6.16σ]

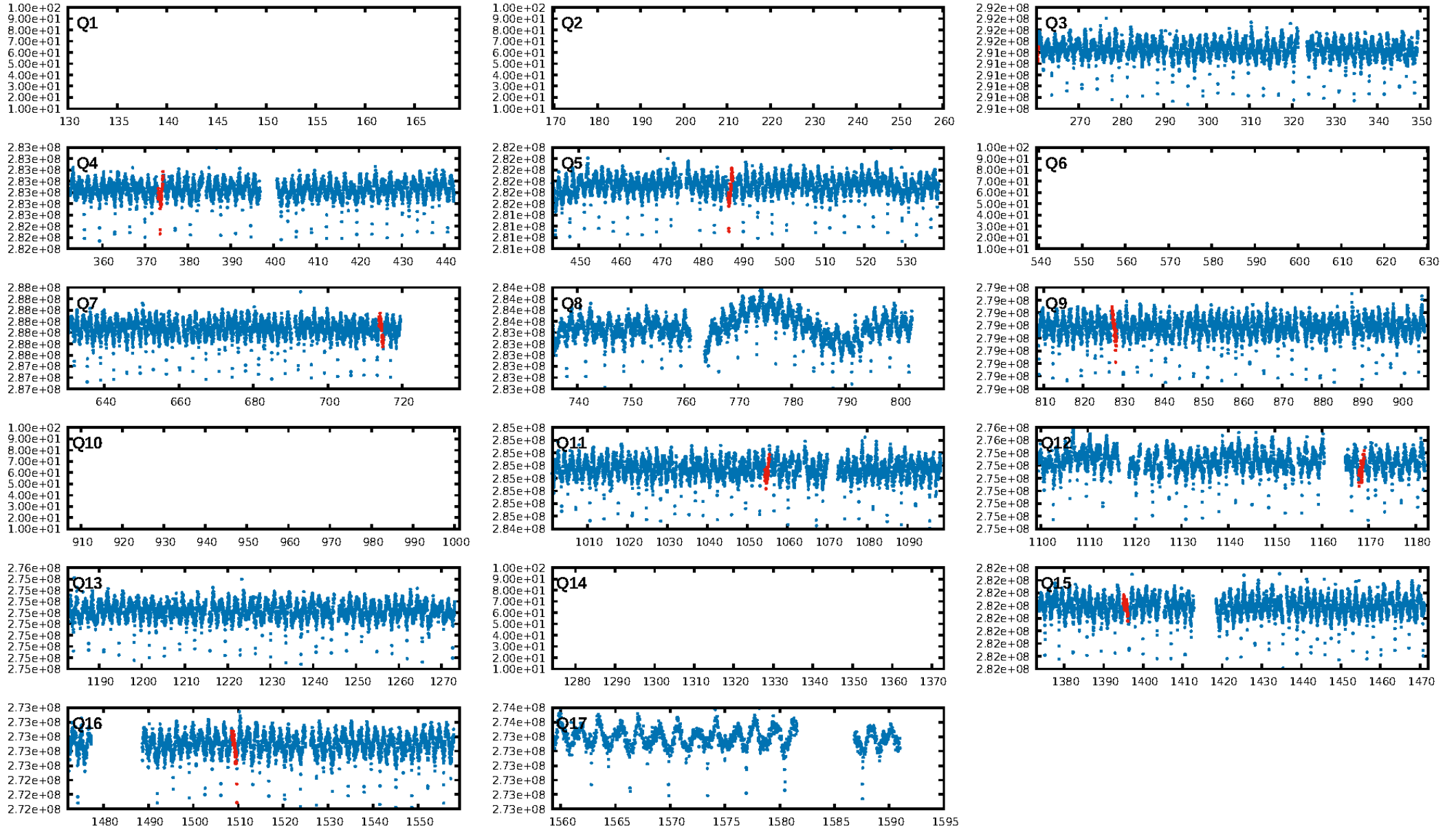
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [52.62σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 53.3%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.07e-08
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 5.487
Centroid-sig: 1.6%
Centroid-so: 2.047 arcsec [1.65σ]
OotOffset-rm: 1.977 arcsec [1.67σ]
KicOffset-rm: 1.872 arcsec [1.63σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/4]

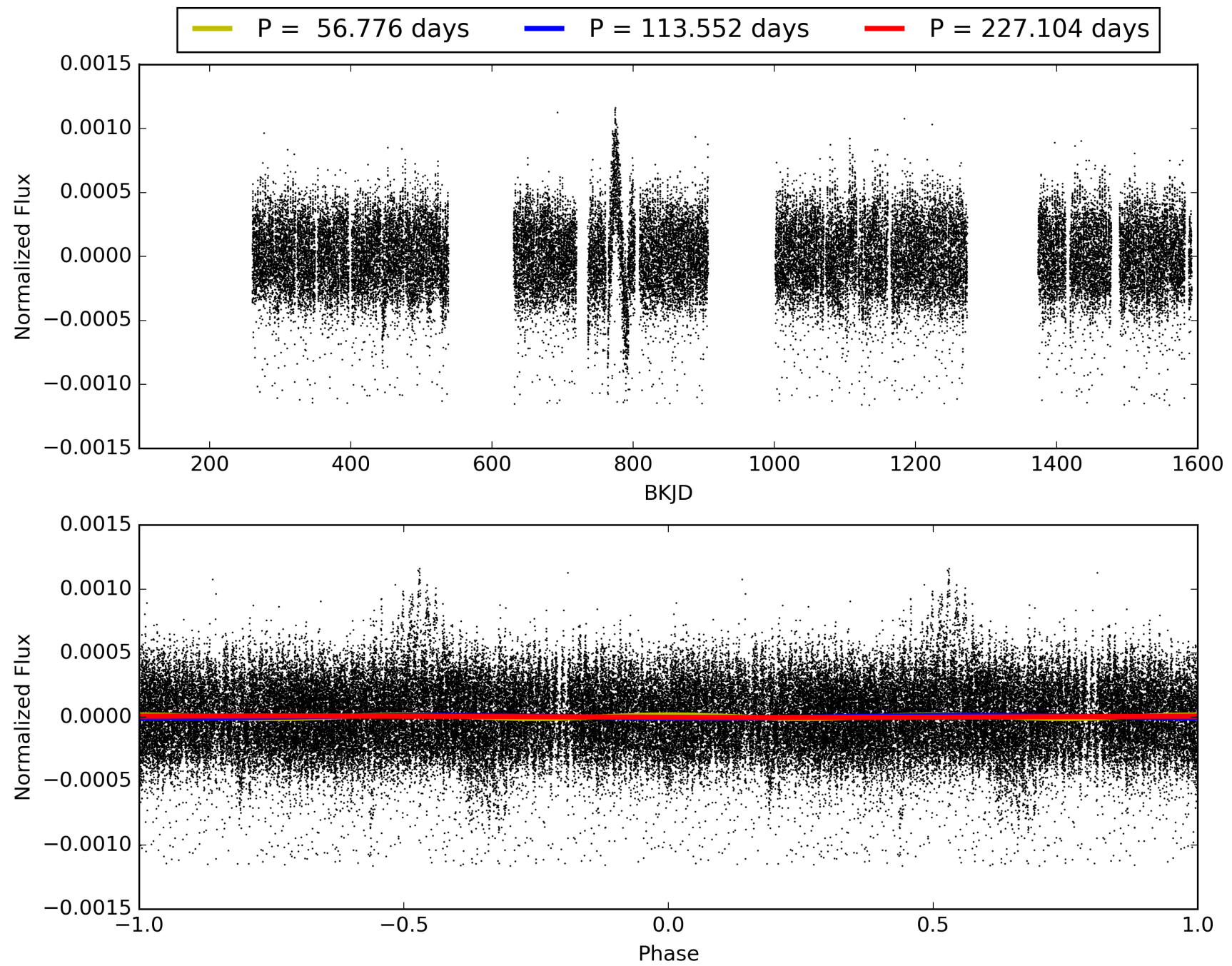
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:00:22 Z

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

TCE 012405950-06, PDC Light Curves

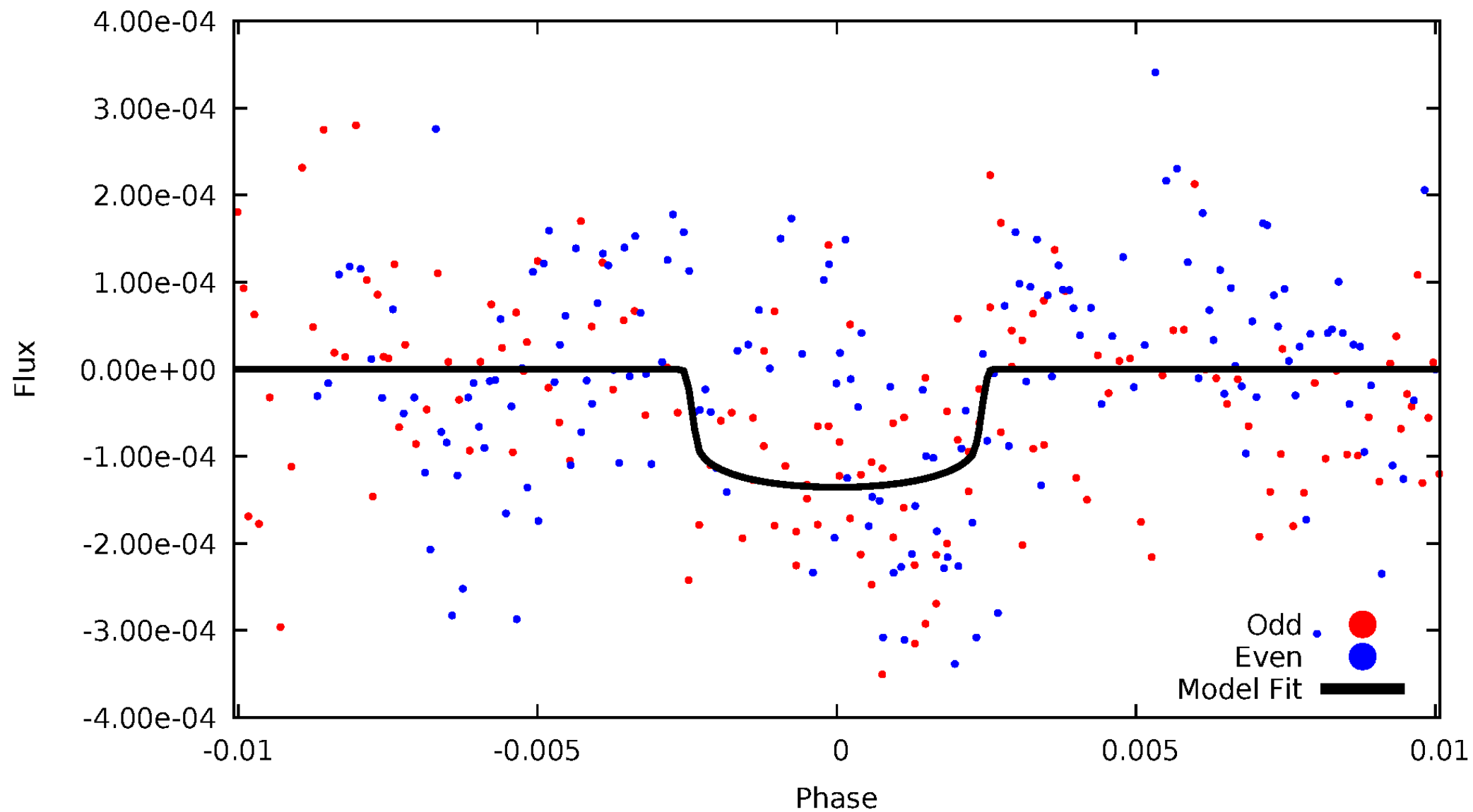


TCE 012405950-06



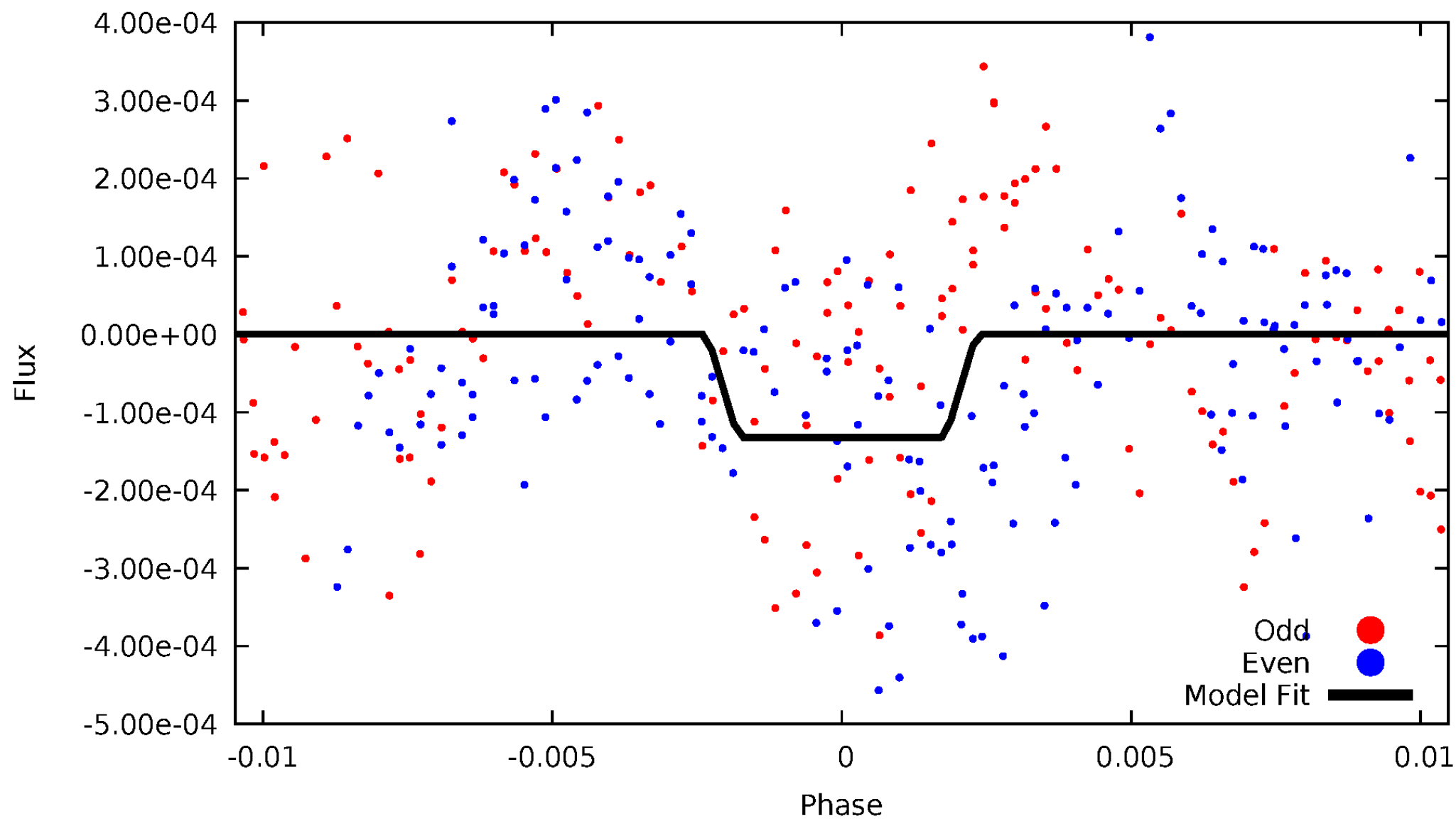
DV Odd/Even

TCE 012405950-06



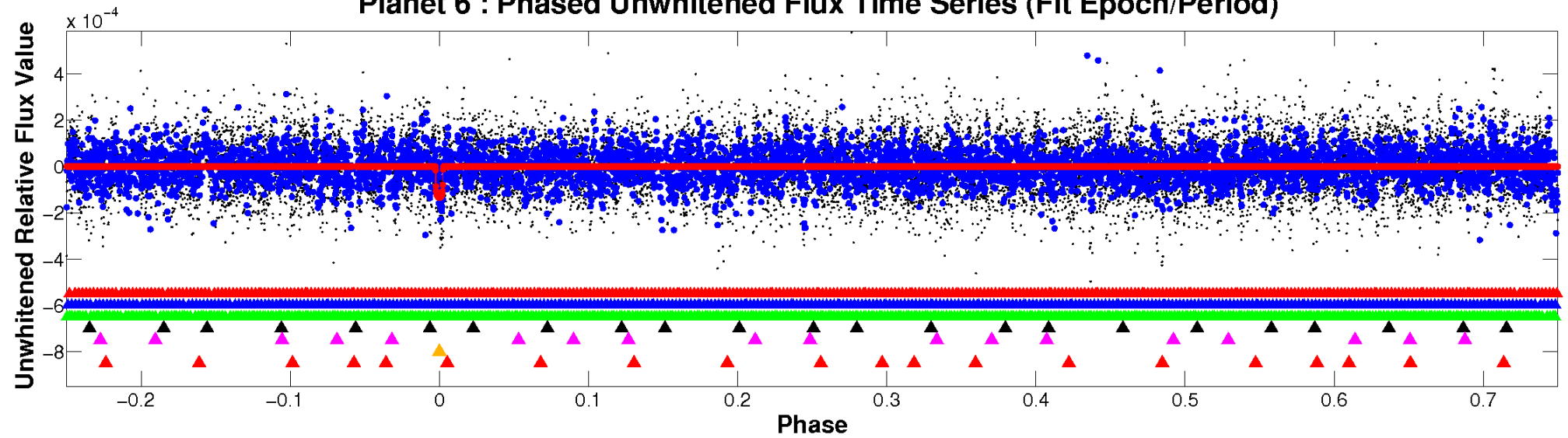
ALT Odd/Even

TCE 012405950-06

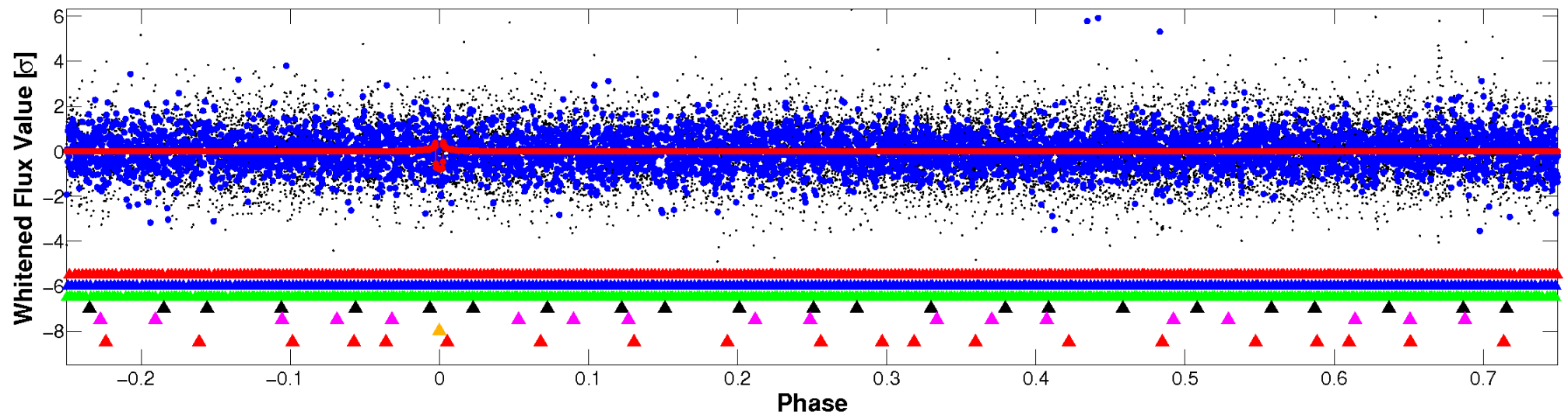


Non-Whitened Vs. Whitened Light Curve

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

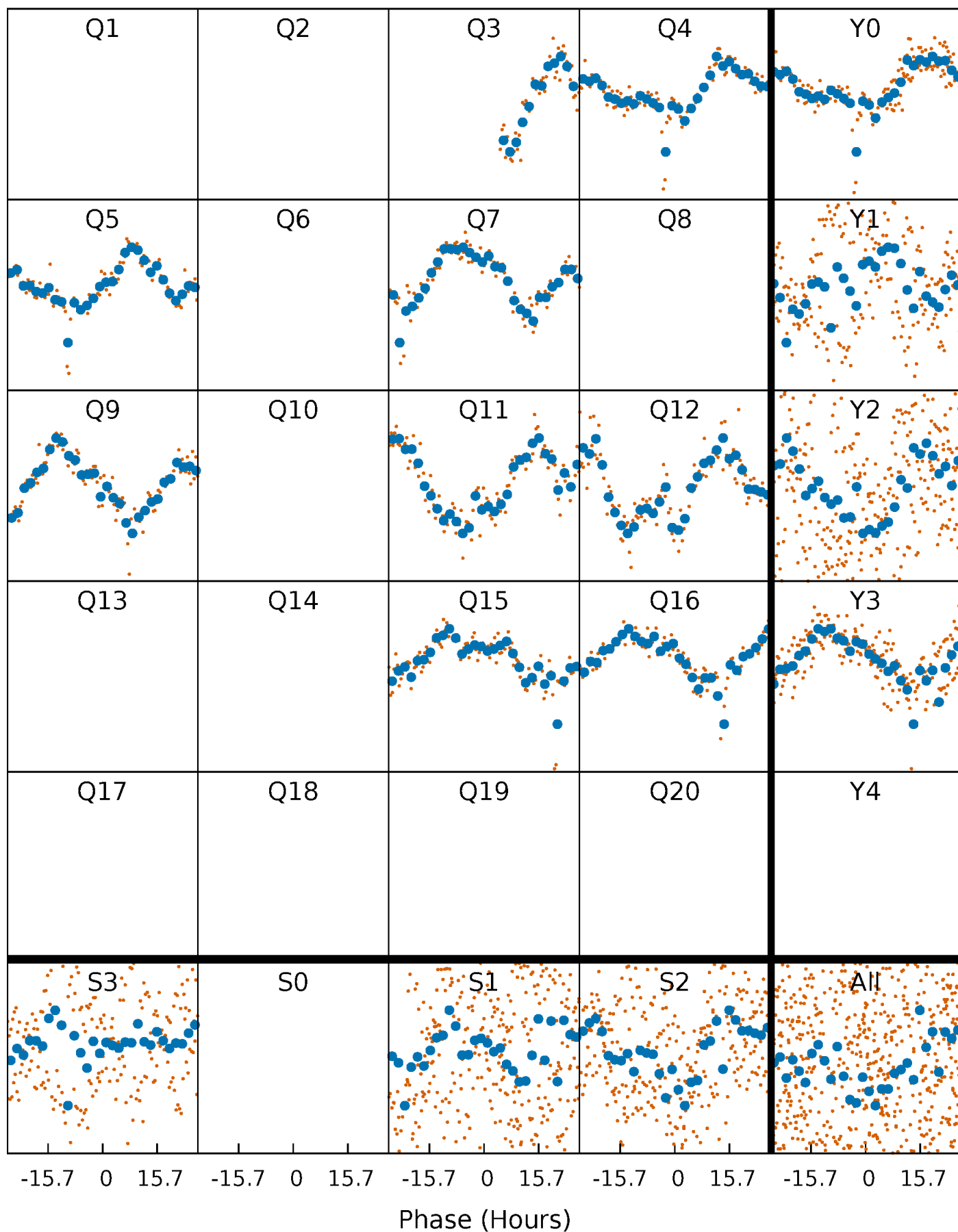


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



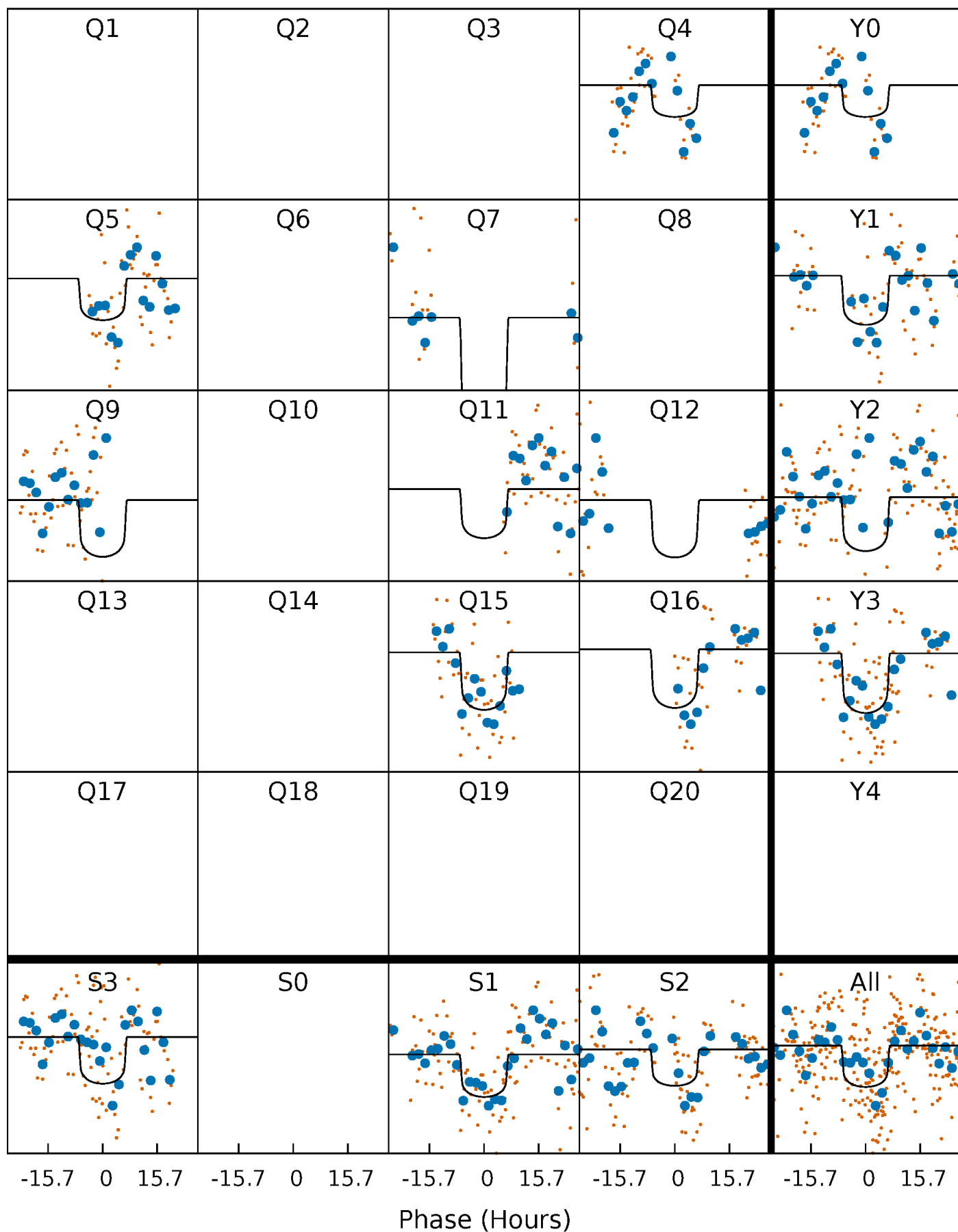
PDC Quarter-Phased Transit Curves

TCE 012405950-06 P=113.552188 Days $T_0=146.497204$ (BKJD)



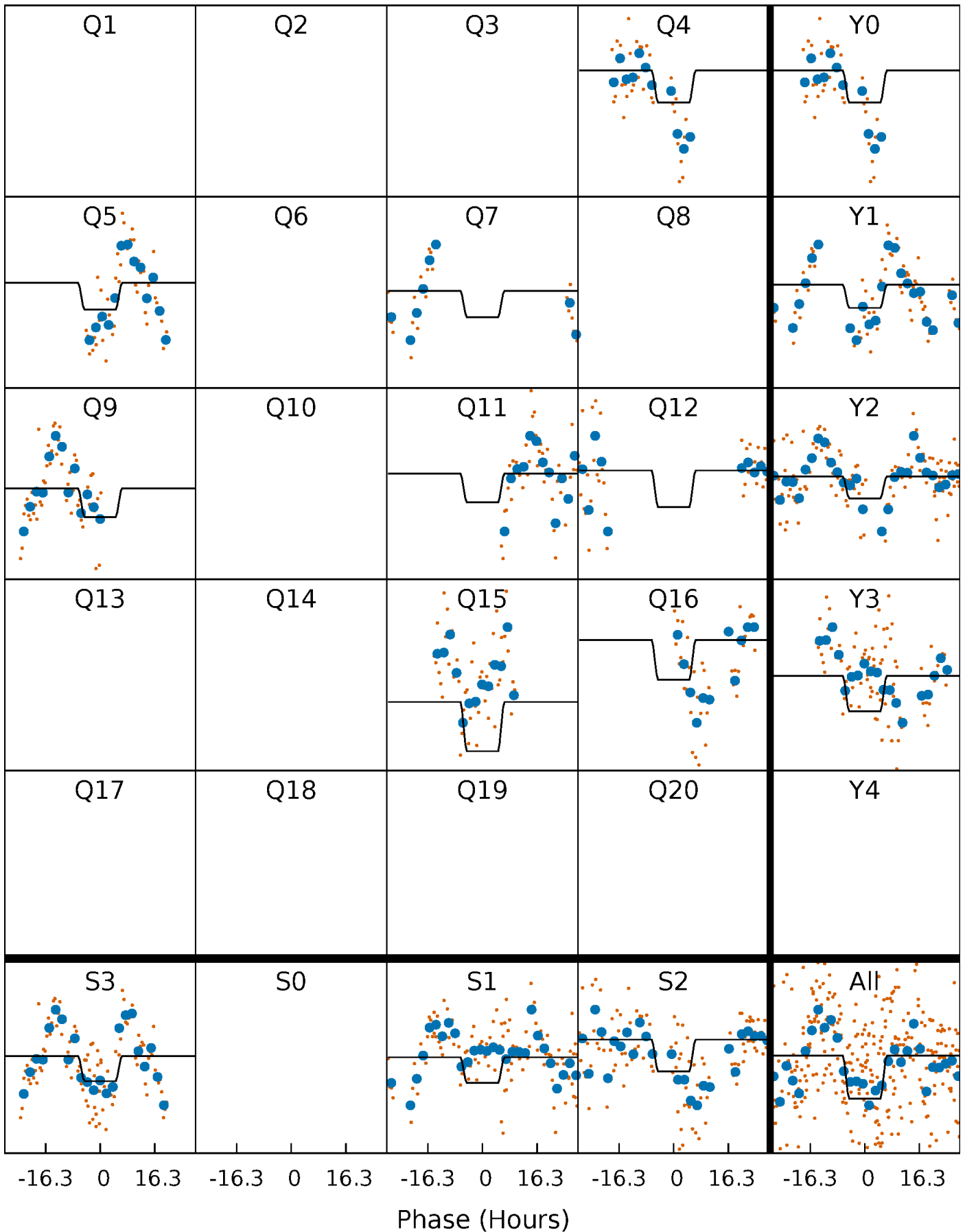
DV Quarter-Phased Transit Curves

TCE 012405950-06 $P=113.552188$ Days $T_0=146.497204$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

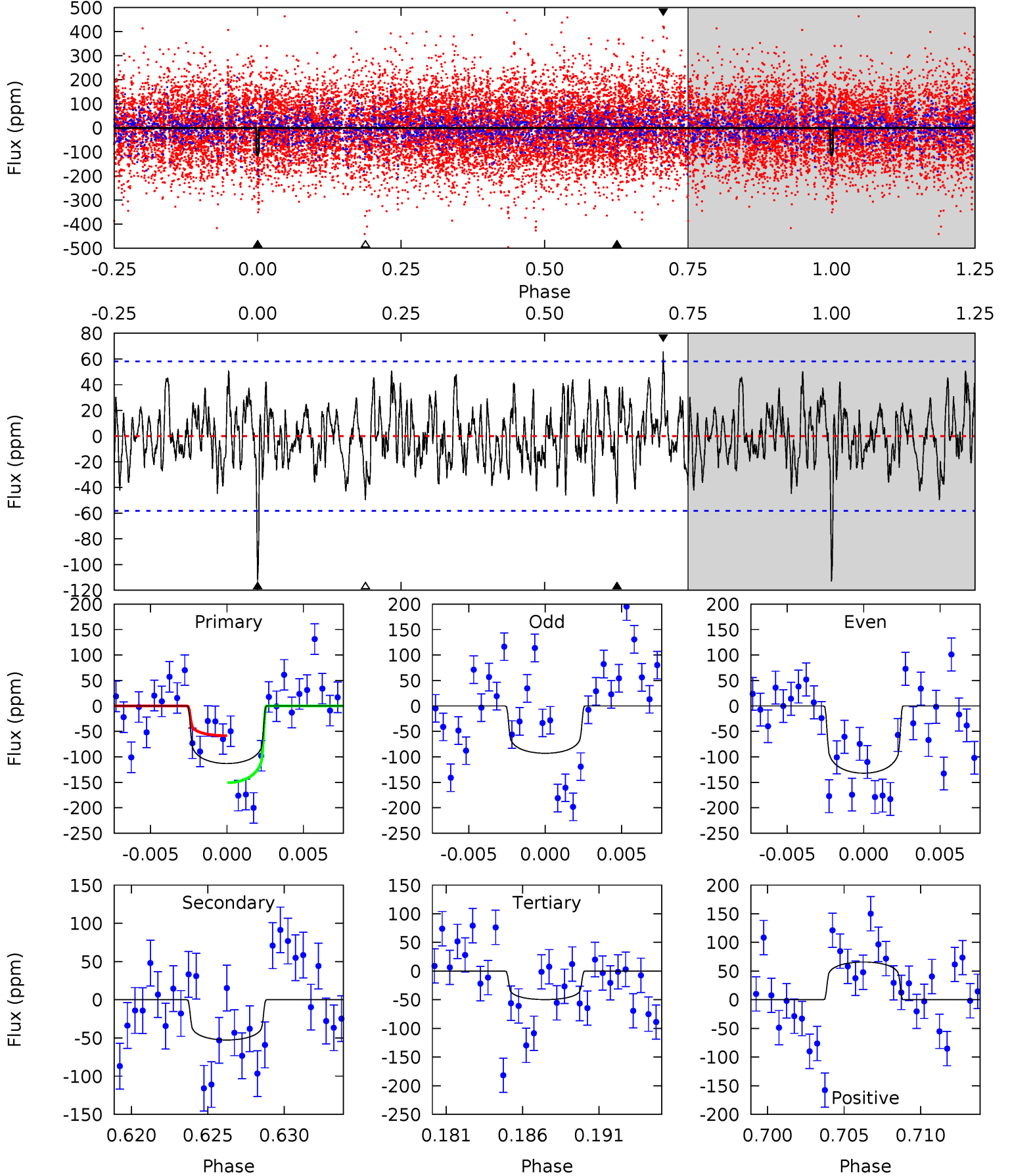
TCE 012405950-06 $P=113.549640$ Days $T_0=146.517235$ (BKJD)



DV Model-Shift Uniqueness Test

012405950-06, P = 113.552188 Days, E = 146.497204 Days

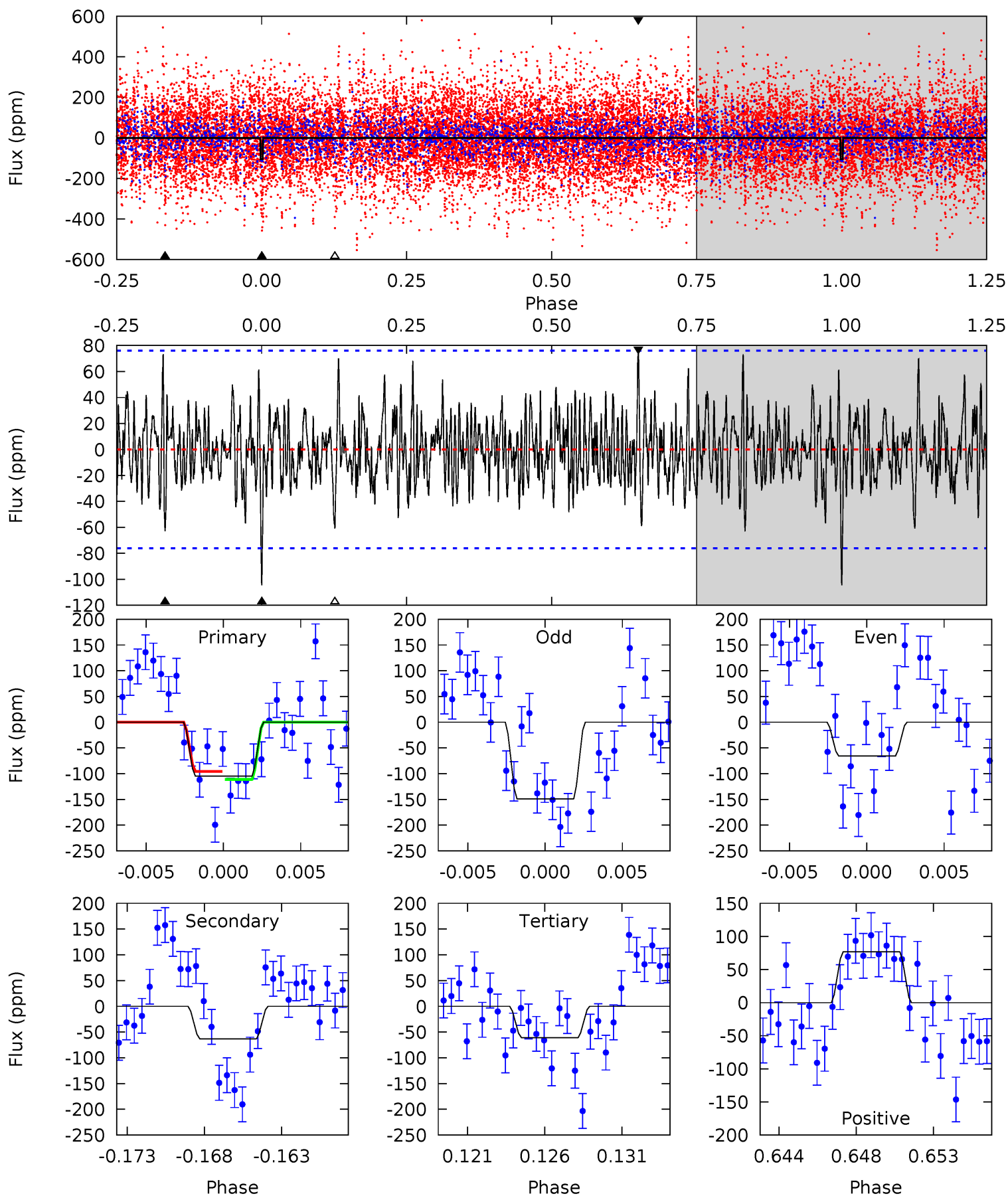
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.0	4.67	4.41	5.84	5.16	2.80	1.70	5.62	4.19	0.26	-1.17	1.74	0.88	0.37	4.01



Alt Model-Shift Uniqueness Test

012405950-06, P = 113.549640 Days, E = 146.517235 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.11	4.28	4.14	5.22	5.17	2.83	1.48	2.98	1.89	0.15	-0.94	2.83	1.74	0.42	0.51



Stellar Parameters For KIC 012405950

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7021^{+214}_{-262}	$3.759^{+0.304}_{-0.076}$	$-0.460^{+0.300}_{-0.250}$	$2.629^{+0.406}_{-0.947}$	$1.447^{+0.231}_{-0.282}$	$0.112^{+0.229}_{-0.035}$
	+3%/-4%	+8%/-2%	+65%/-54%	+15%/-36%	+16%/-19%	+204%/-31%
Source	KIC0	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 012405950-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-53 ± 11	$3.19^{+0.97}_{-0.91}$	947^{+56}_{-89}	5417^{+876}_{-594}	759^{+730}_{-335}
Alt.	-63 ± 15	$3.14^{+0.96}_{-0.96}$	948^{+62}_{-88}	5765^{+1031}_{-698}	941^{+1020}_{-419}

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 $A_{obs} \gg 1.0$

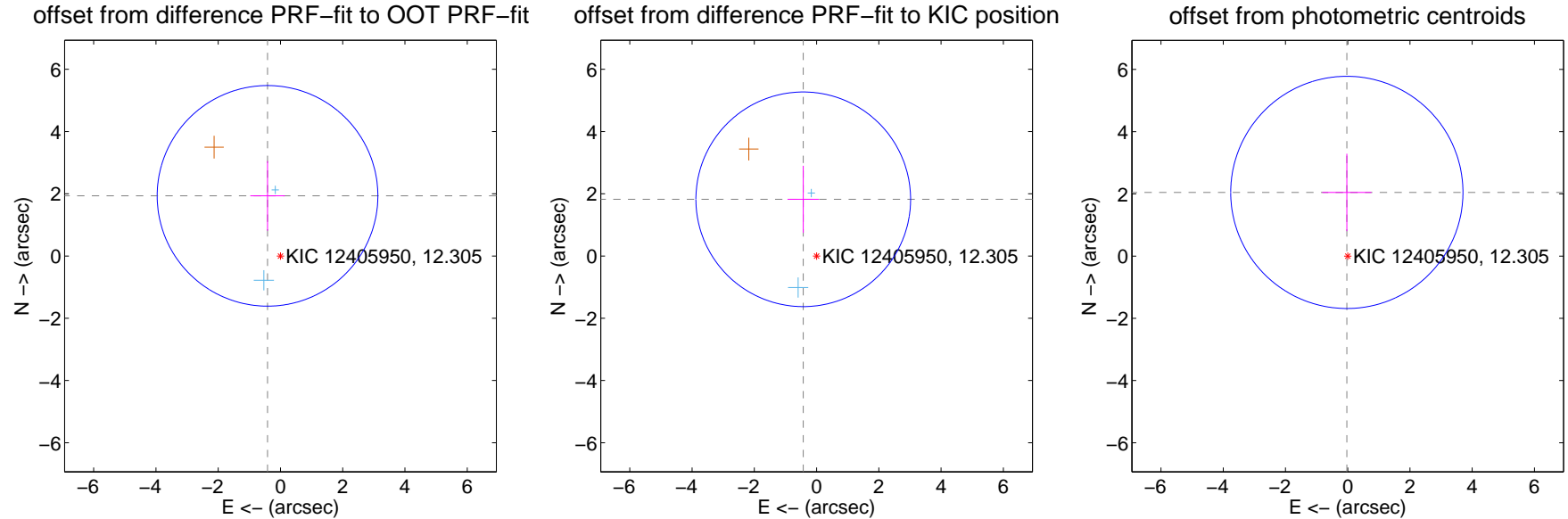
DV Centroid Data

Supplemental centroid analysis for 012405950-06. Kepler magnitude: 12.30. Transit SNR 7.41

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.977 ± 1.181	1.67	0.416 ± 0.555	1.933 ± 1.119
PRF-fit source offset from KIC position	1.872 ± 1.149	1.63	0.428 ± 0.506	1.823 ± 1.076
photometric centroid source offset	2.05 ± 1.24	1.65	0.03 ± 0.79	2.05 ± 1.24

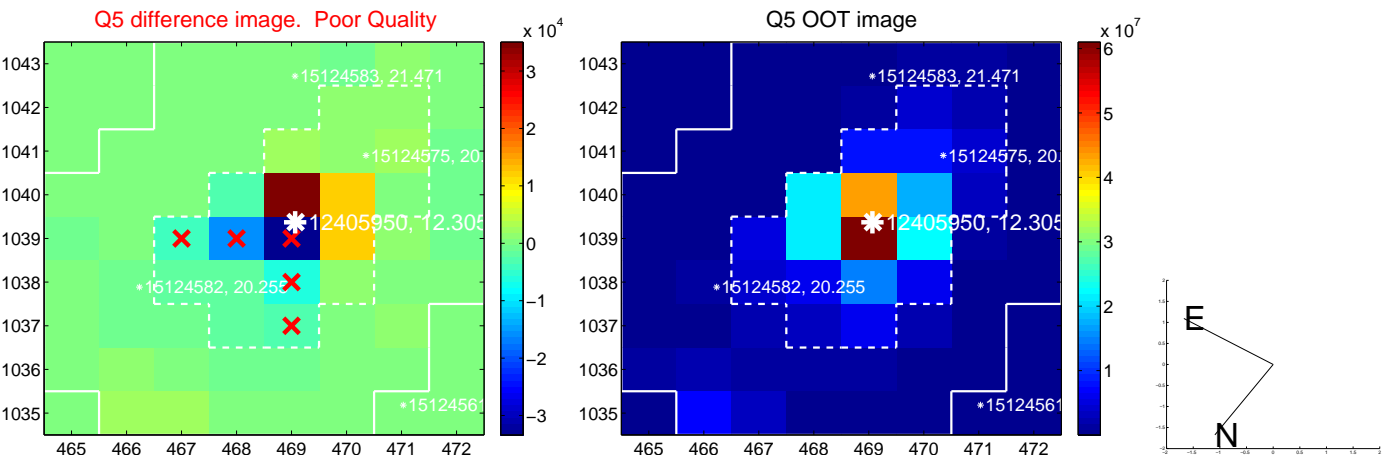


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

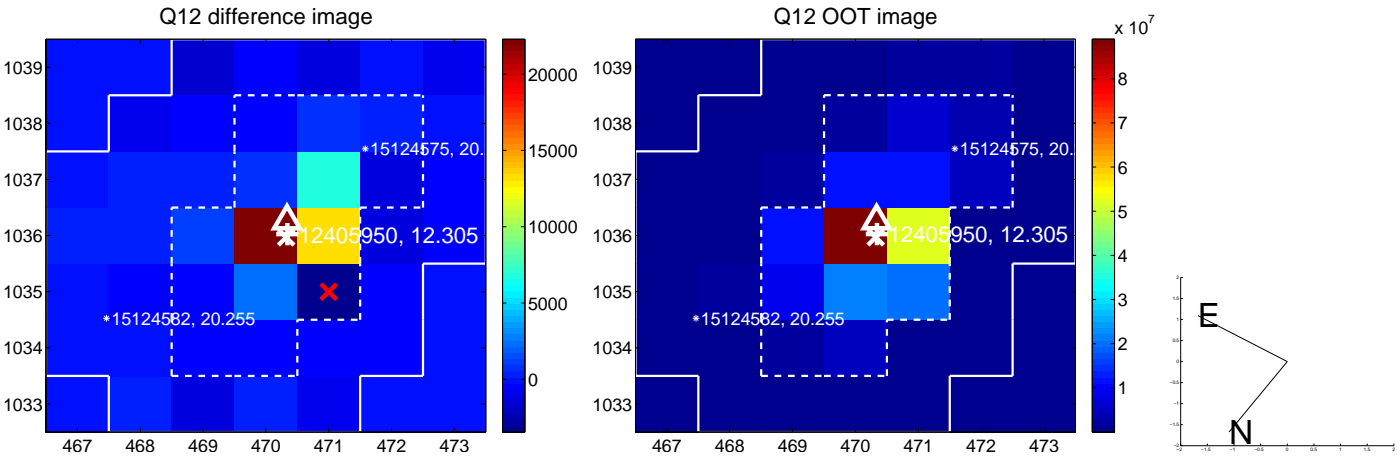
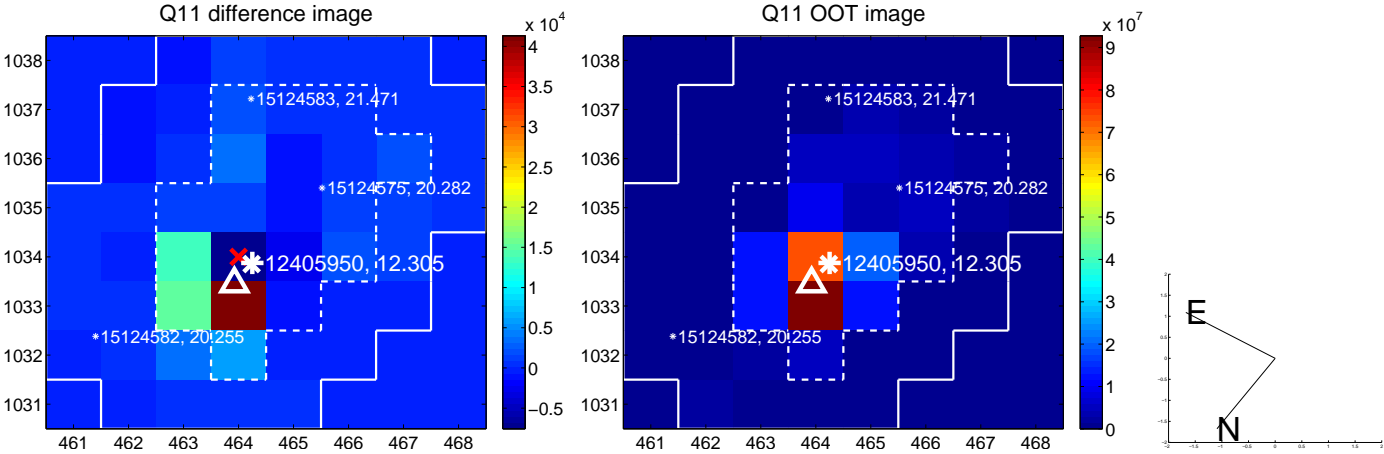
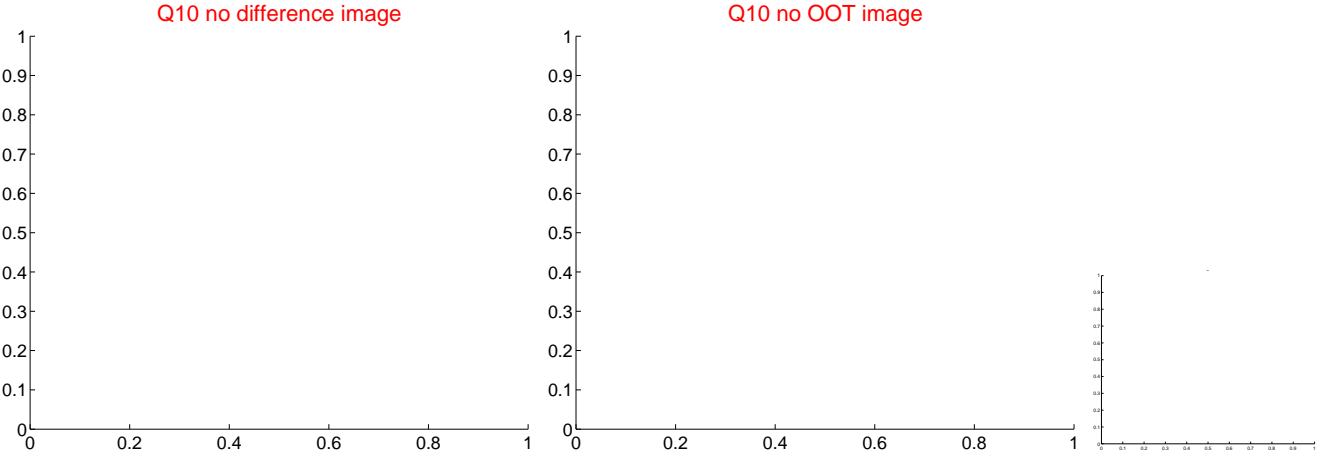
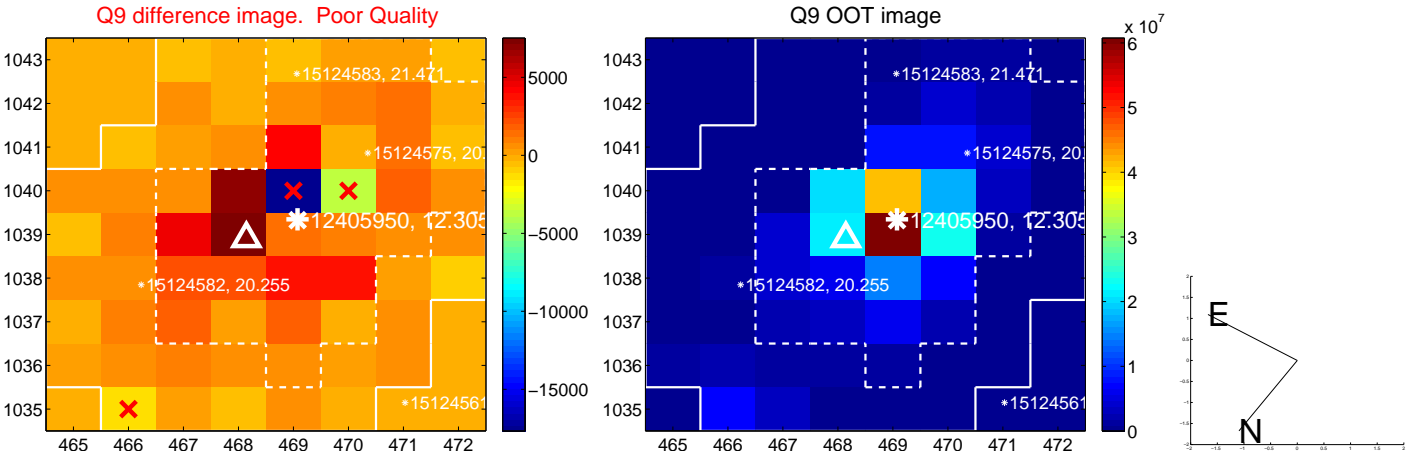
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



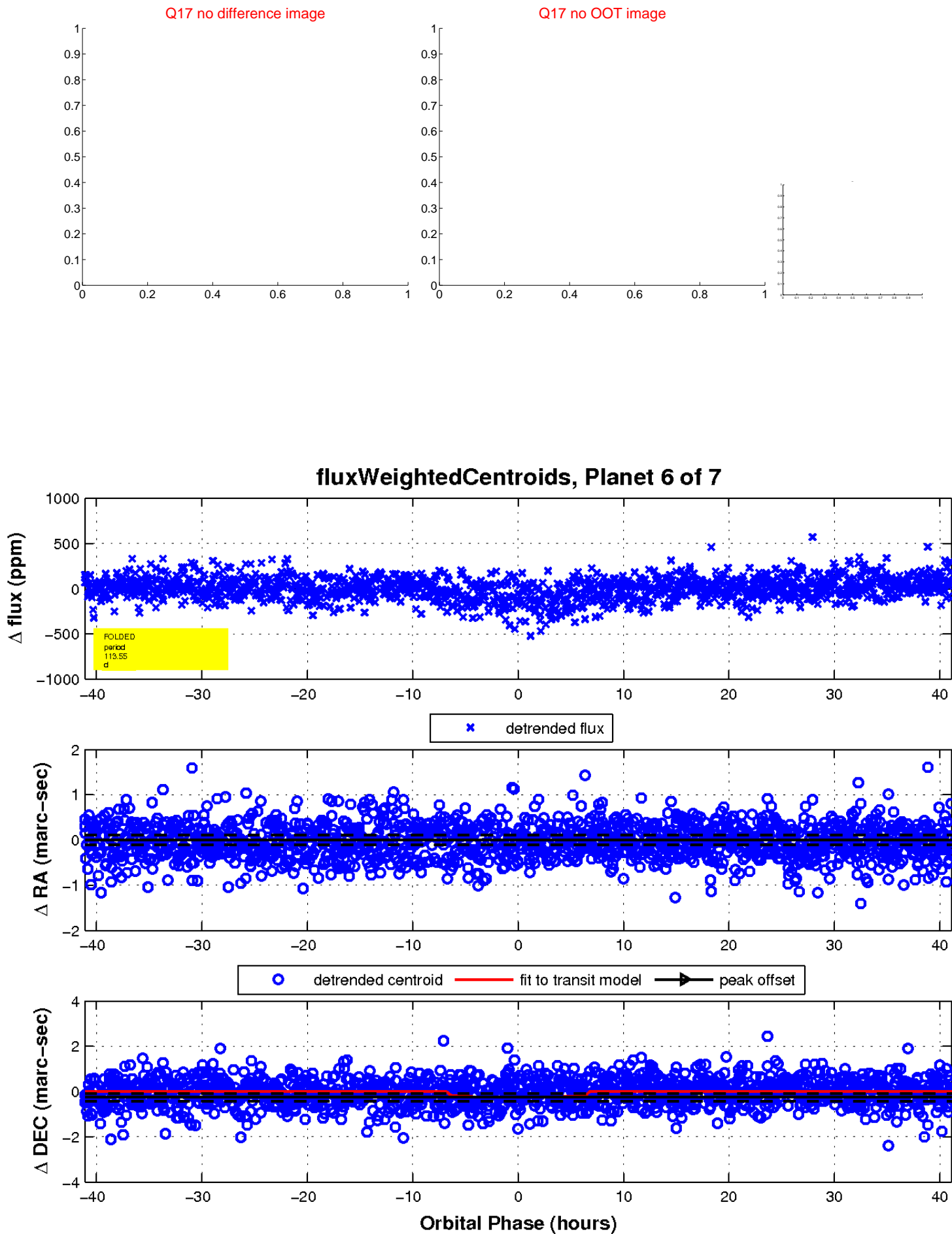
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

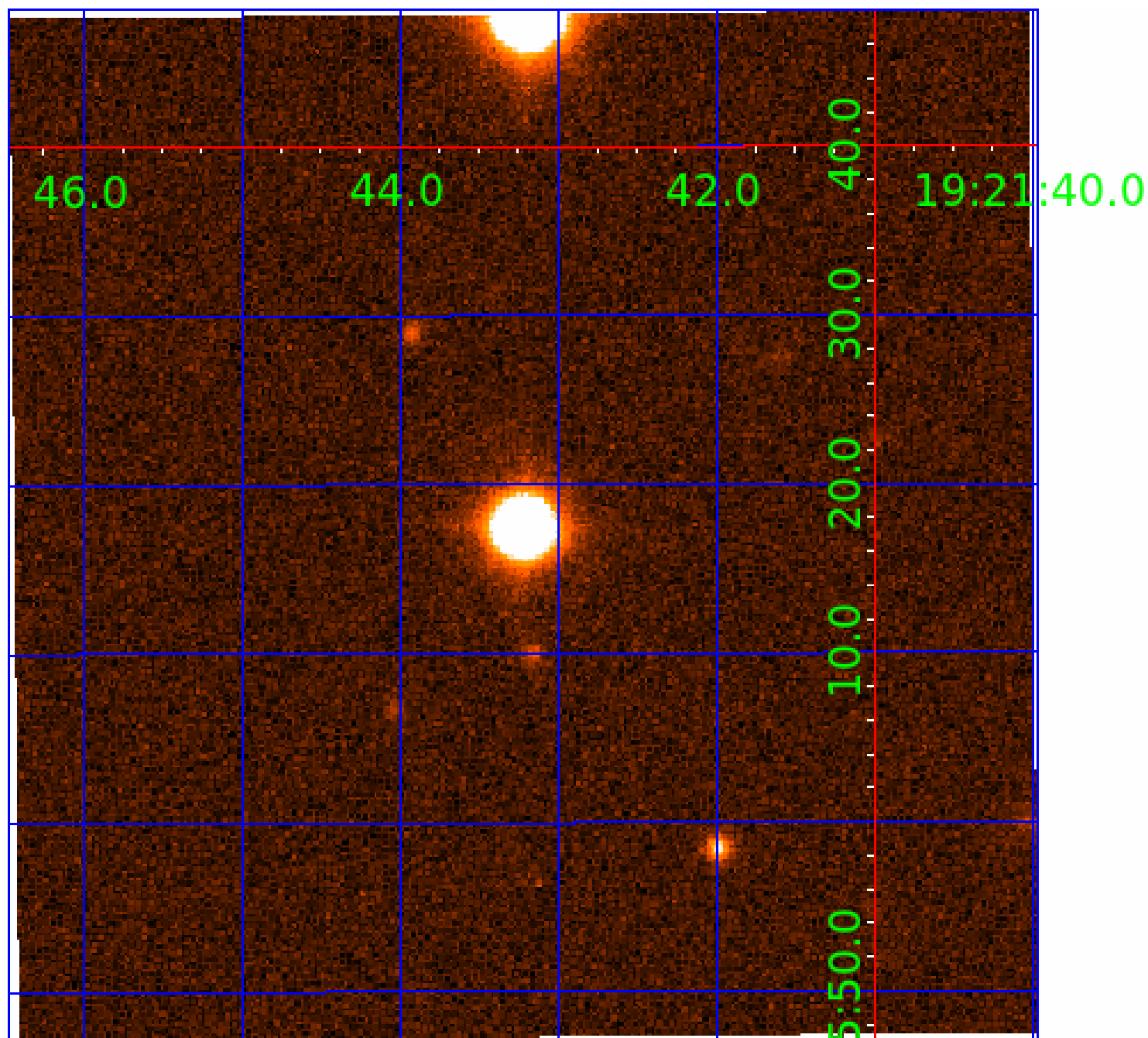


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012405950

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})
012405950-01	OBS	3778.01	3.539641	132.772763	1163.2	1.450	179.4	192.3	2.63	7021	11.83	5689.47
012405950-02	OBS	No	3.539613	134.363793	343.8	0.961	42.6	58.1	2.63	7021	5.73	5689.53
012405950-03	OBS	No	2.654873	133.072202	18.8	12.956	7.6	7.6	2.63	7021	1.15	8348.83
012405950-04	OBS	No	64.079148	145.775835	112.3	9.314	8.2	7.2	2.63	7021	3.11	119.69
012405950-05	OBS	No	81.706403	134.515598	178.7	4.763	7.7	7.6	2.63	7021	4.03	86.56
012405950-06	OBS	No	113.552188	146.497204	135.5	13.721	7.7	7.4	2.63	7021	3.40	55.82
012405950-07	OBS	No	73.331738	182.647921	239.5	2.885	8.2	7.4	2.63	7021	4.36	99.99

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012405950-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
012405950-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
012405950-03	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
012405950-05	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
012405950-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
012405950-07	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_MEAS

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.

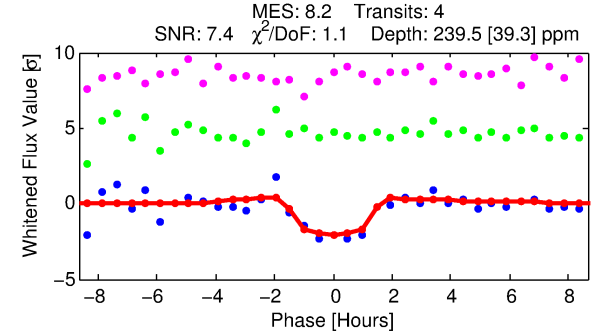
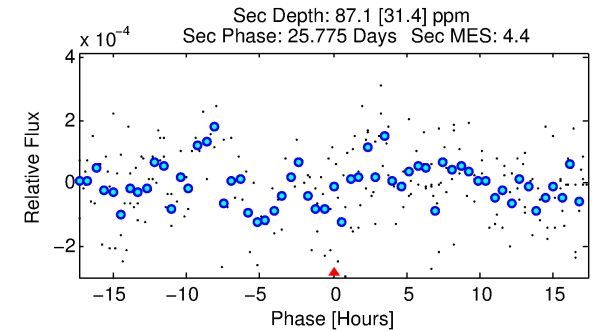
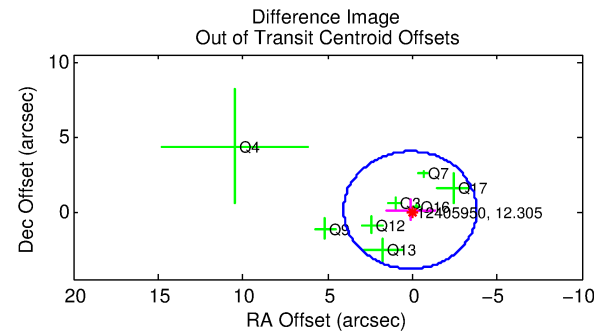
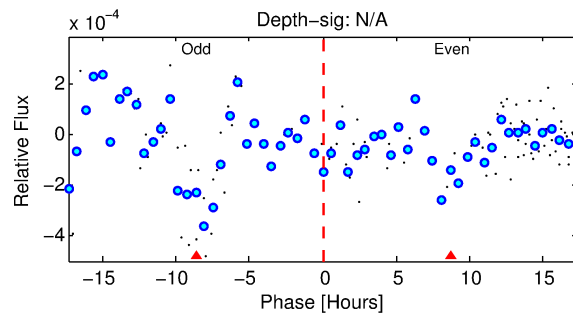
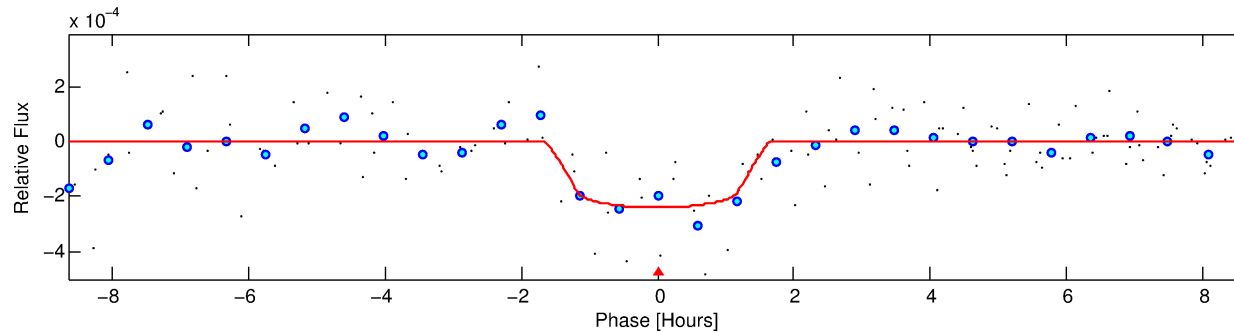
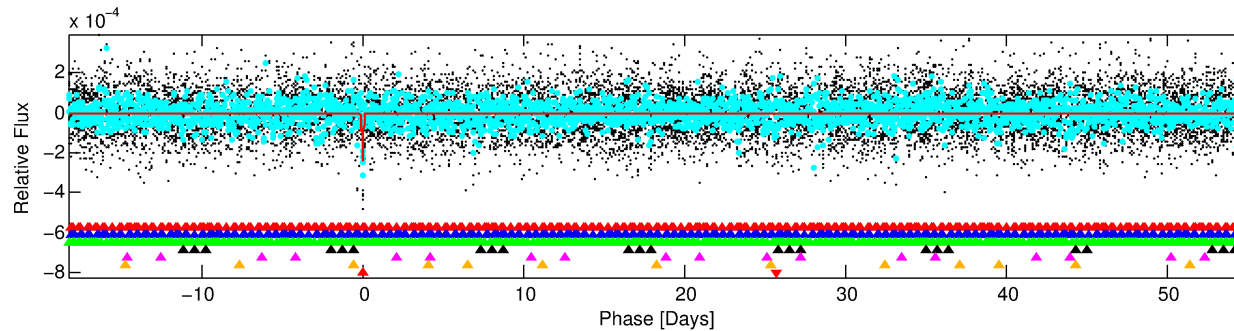
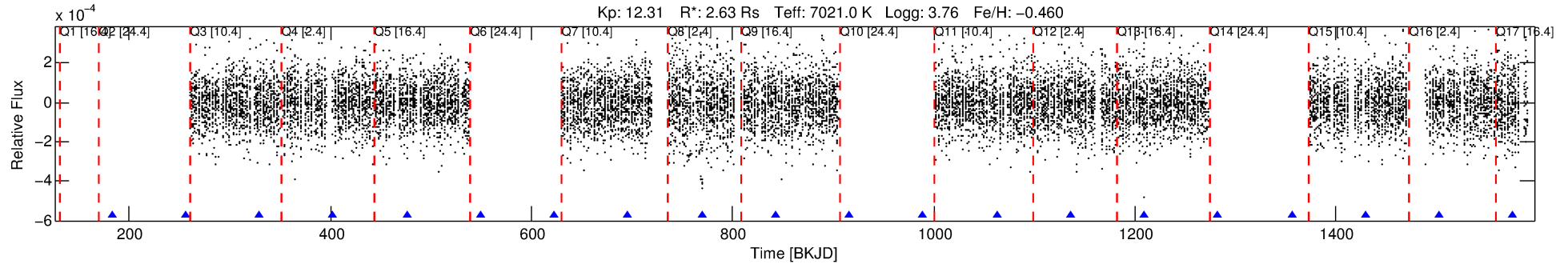
Ephemeris Match Information For 012405950-07

No Significant Match Found

DV One-Page Summary

KIC: 12405950 Candidate: 7 of 7 Period: 73.332 d

KOI: K03778 Corr: No Ephemeris Match



DV Fit Results:

Period = 73.33174 [0.00106] d
Epoch = 182.6479 [0.0129] BKJD
Rp/R* = 0.0152 [0.0675]
a/R* = 143.89 [3724.69]
b = 0.69 [19.58]
Seff = 99.99 [54.56]
Teq = 806 [110] K
Rp = 4.36 [19.44] Re
a = 0.3879 [0.1299] AU
Ag = 379.98 [3389.83] [0.11σ]
Teff = 5504 [12257] K [0.38σ]

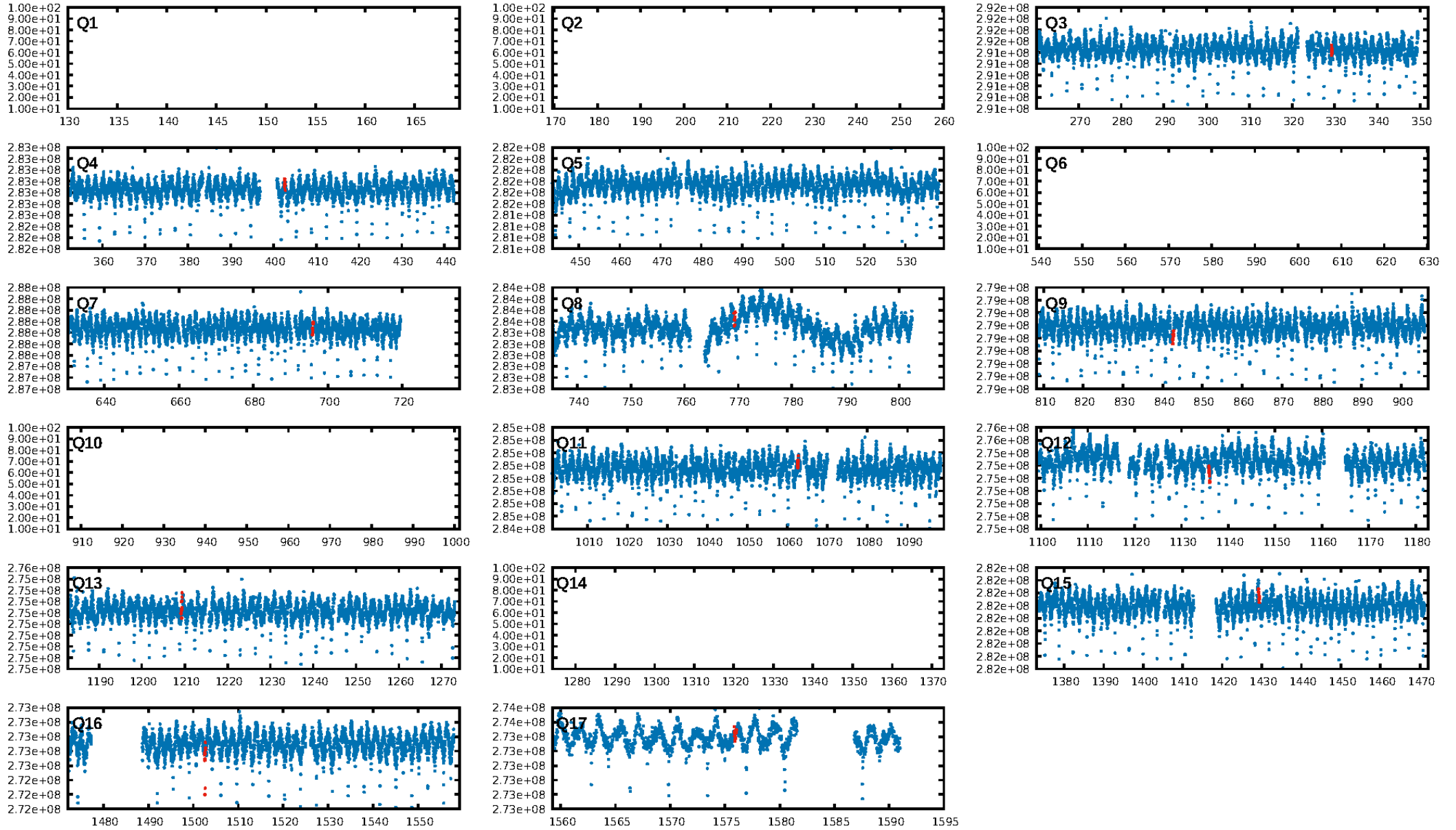
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [22.77σ]
LongPeriod-sig: 100.0% [36.10σ]
ModelChiSquare2-sig: 12.5%
ModelChiSquareGof-sig: 92.1%
Bootstrap-pfa: 2.06e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.2634
Centroid-sig: 71.9%
Centroid-so: 0.595 arcsec [0.62σ]
OotOffset-rm: 0.161 arcsec [0.12σ]
KicOffset-rm: 0.177 arcsec [0.16σ]
OotOffset-st: 0/2/3/3 [8]
KicOffset-st: 0/2/3/3 [8]
DiffImageQuality-fgm: 0.38 [3/8]
DiffImageOverlap-fno: 0.55 [6/11]

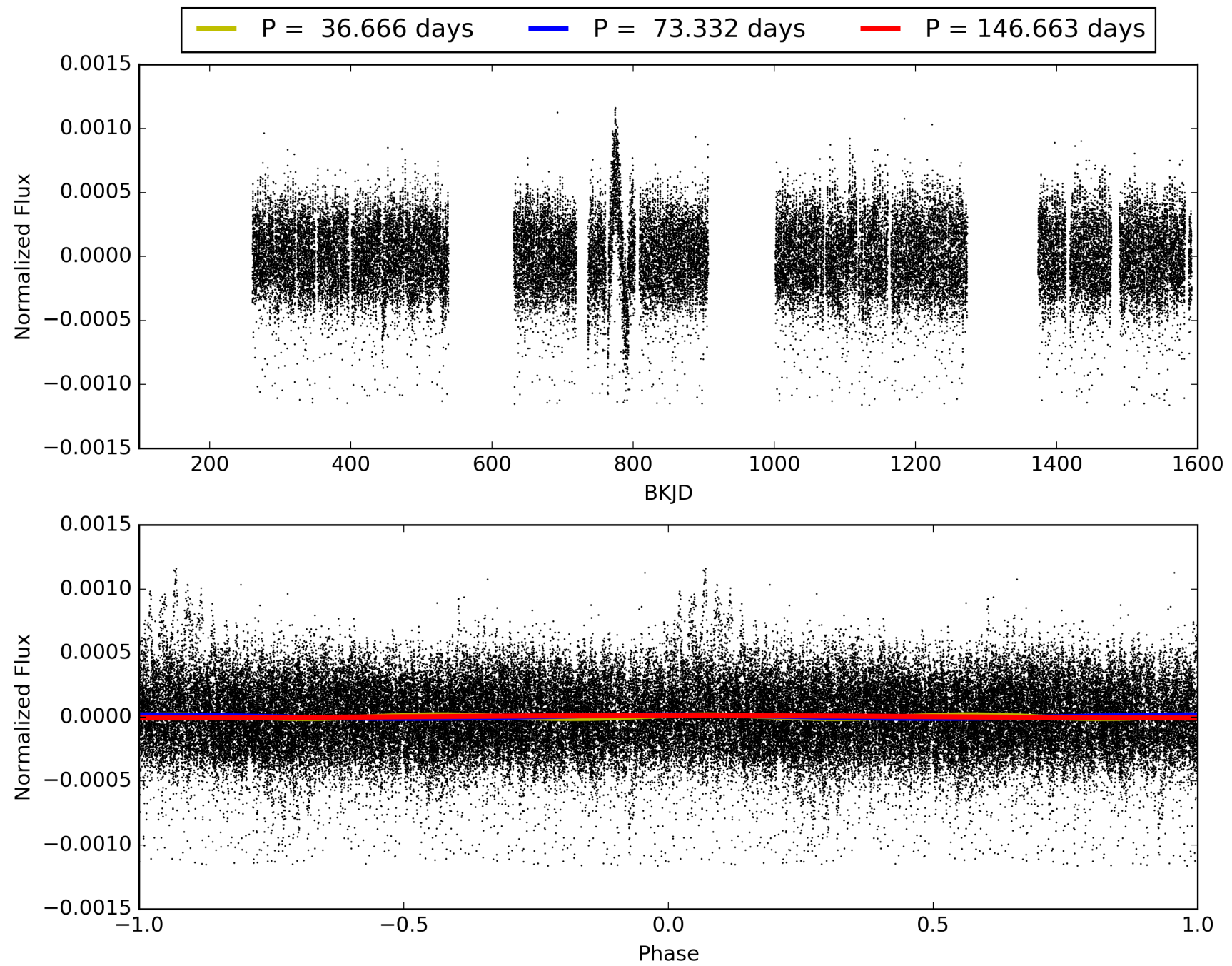
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:00:26 Z

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

TCE 012405950-07, PDC Light Curves

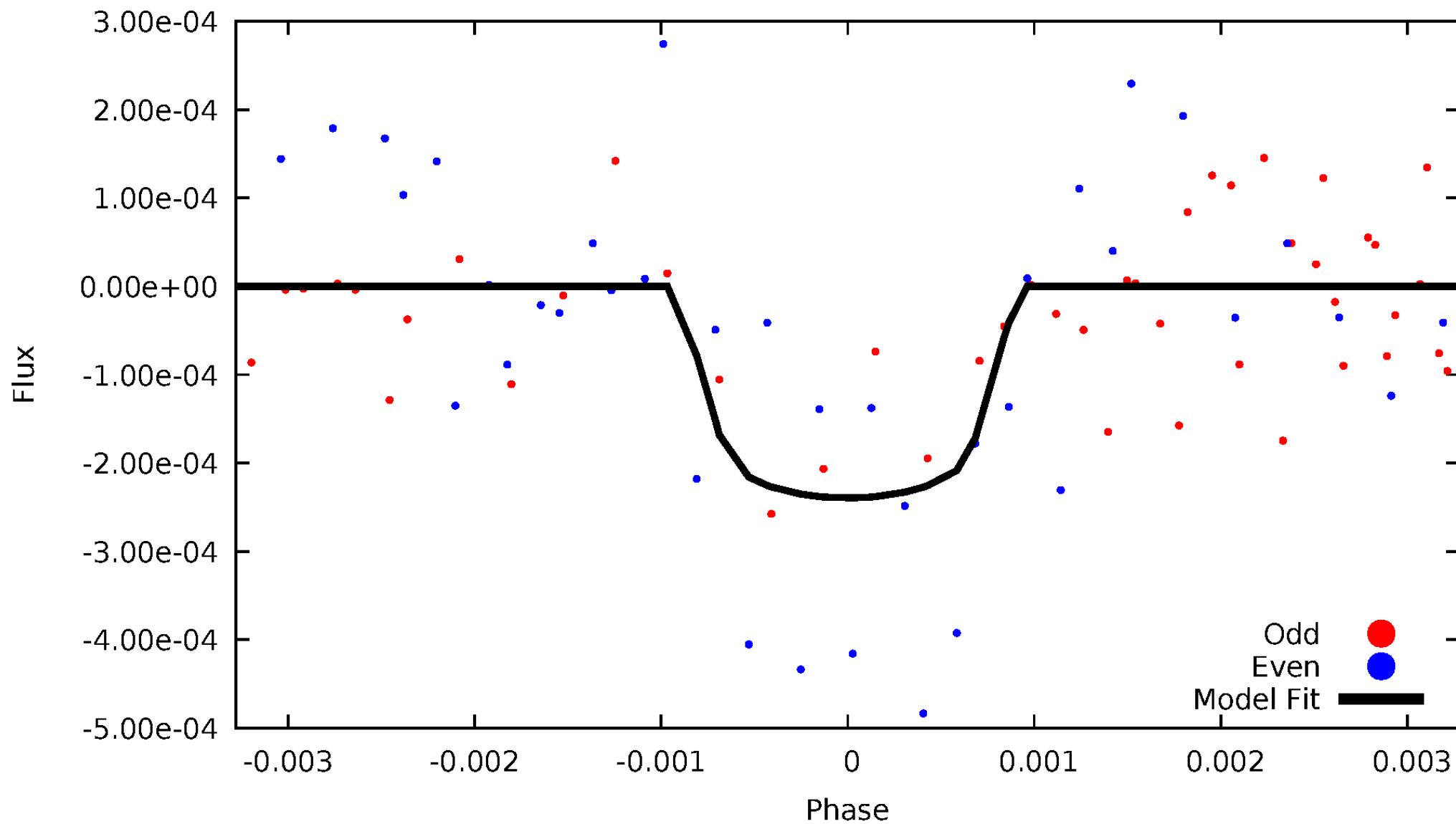


TCE 012405950-07



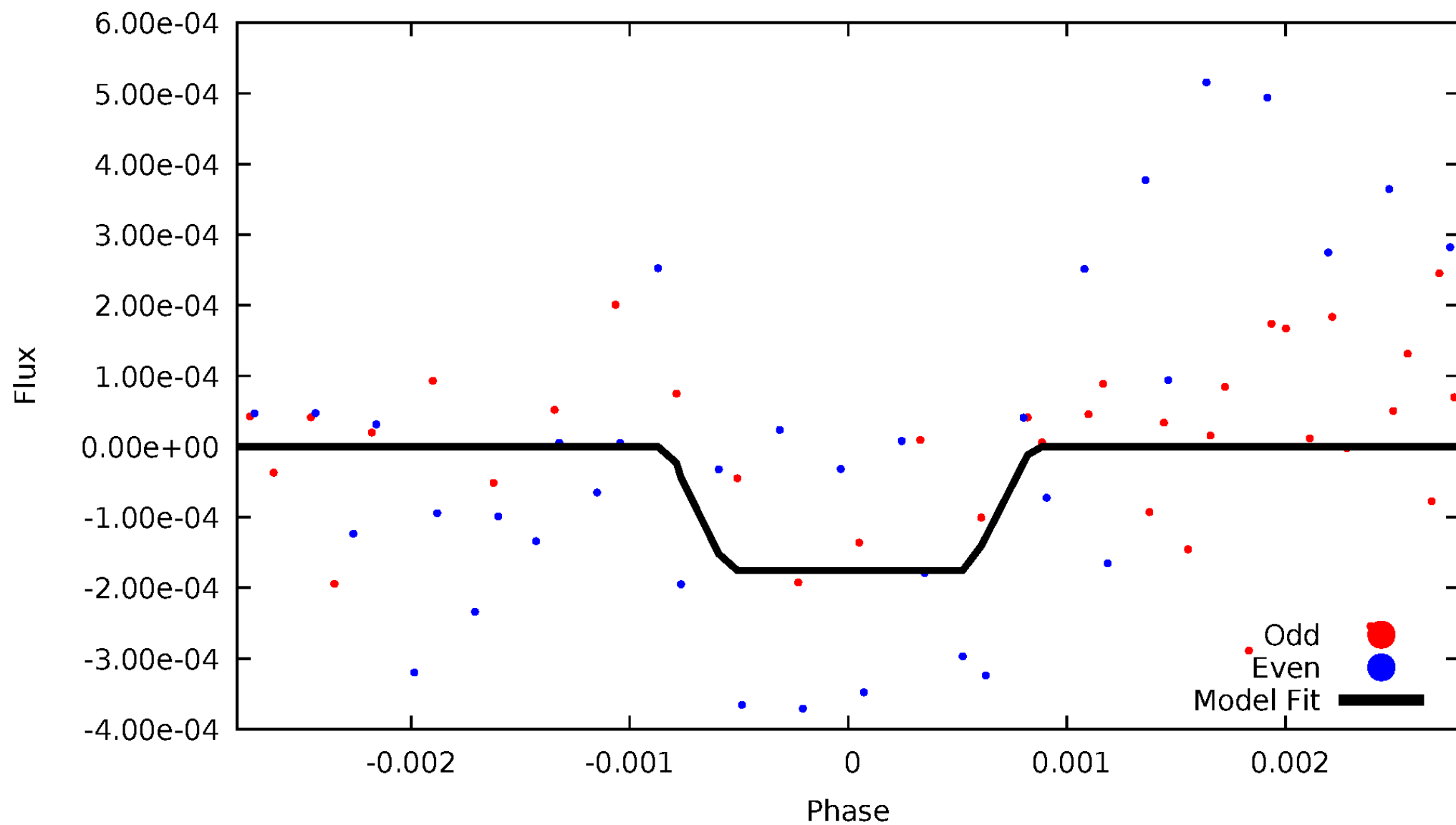
DV Odd/Even

TCE 012405950-07



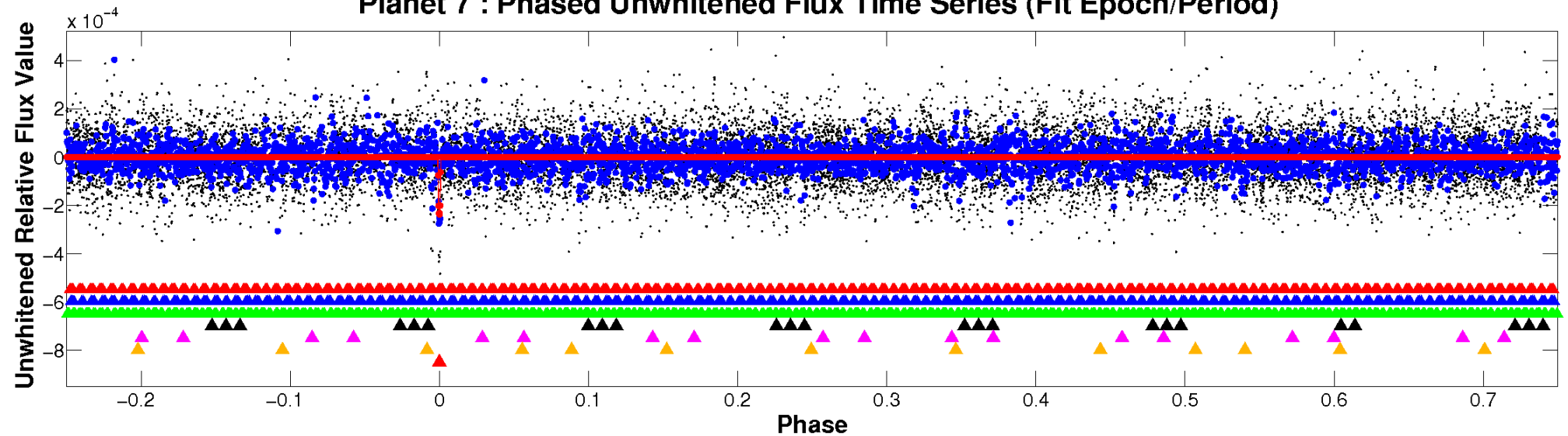
ALT Odd/Even

TCE 012405950-07

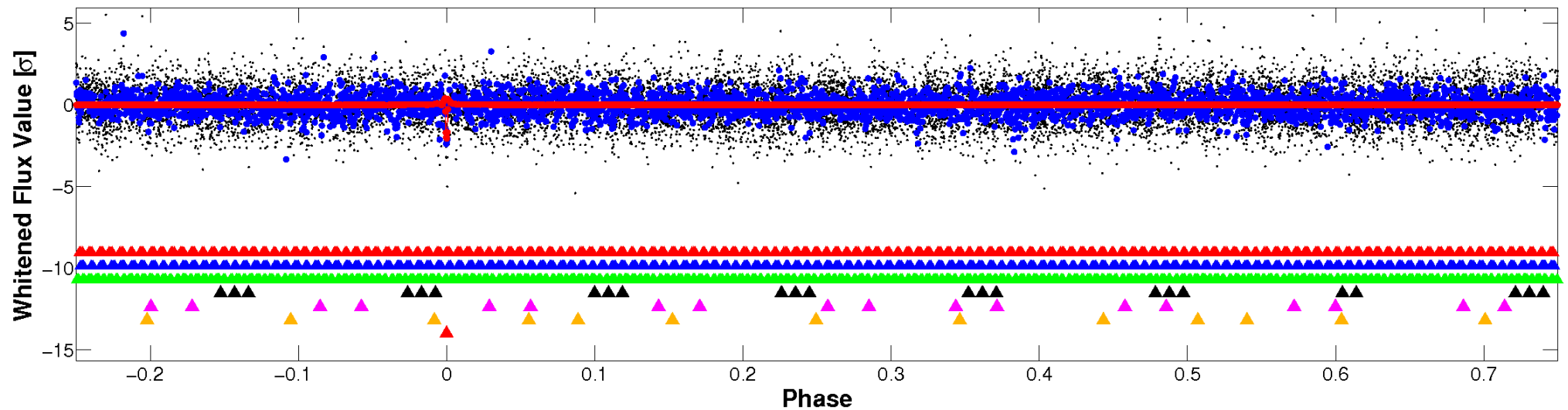


Non-Whitened Vs. Whitened Light Curve

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

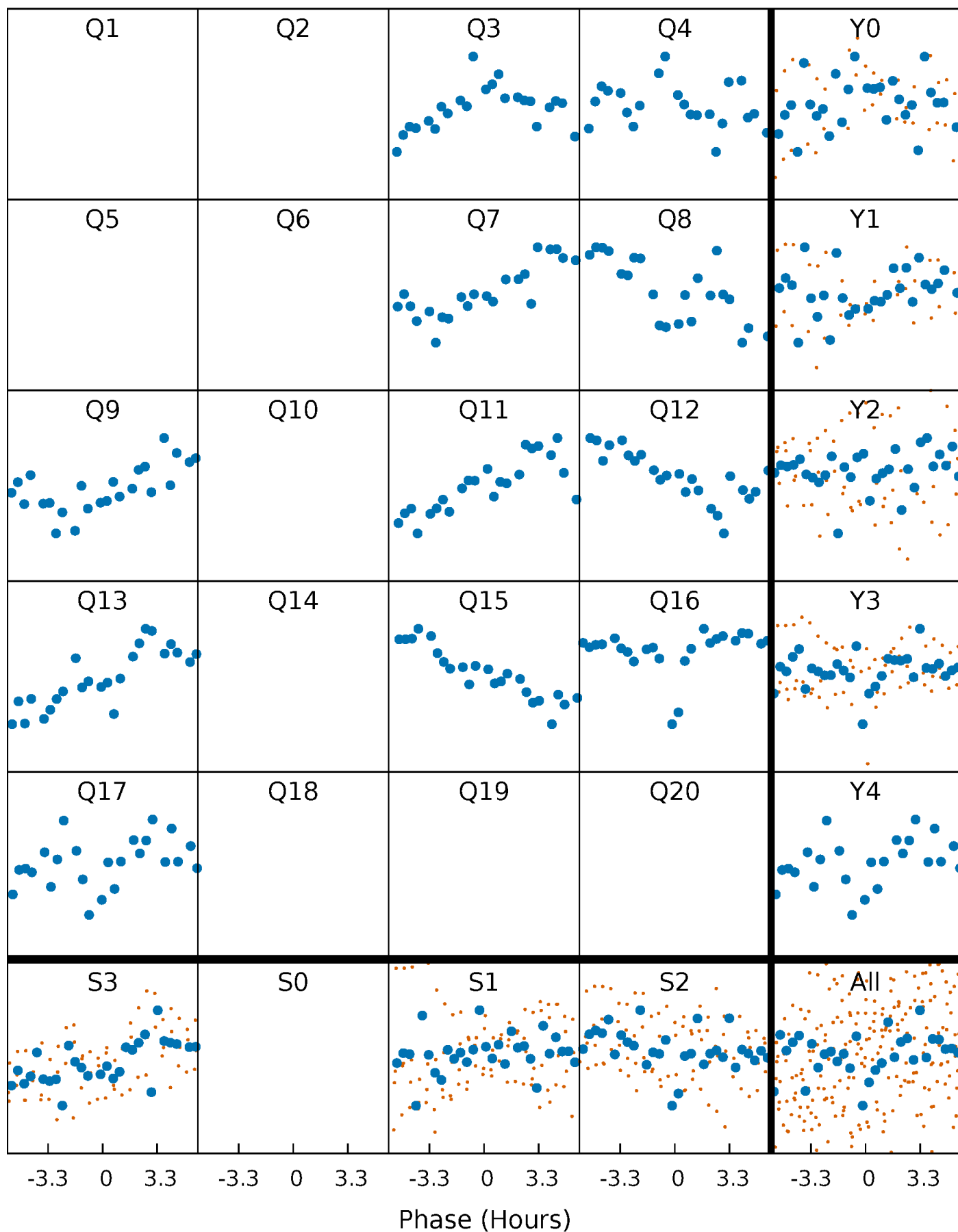


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



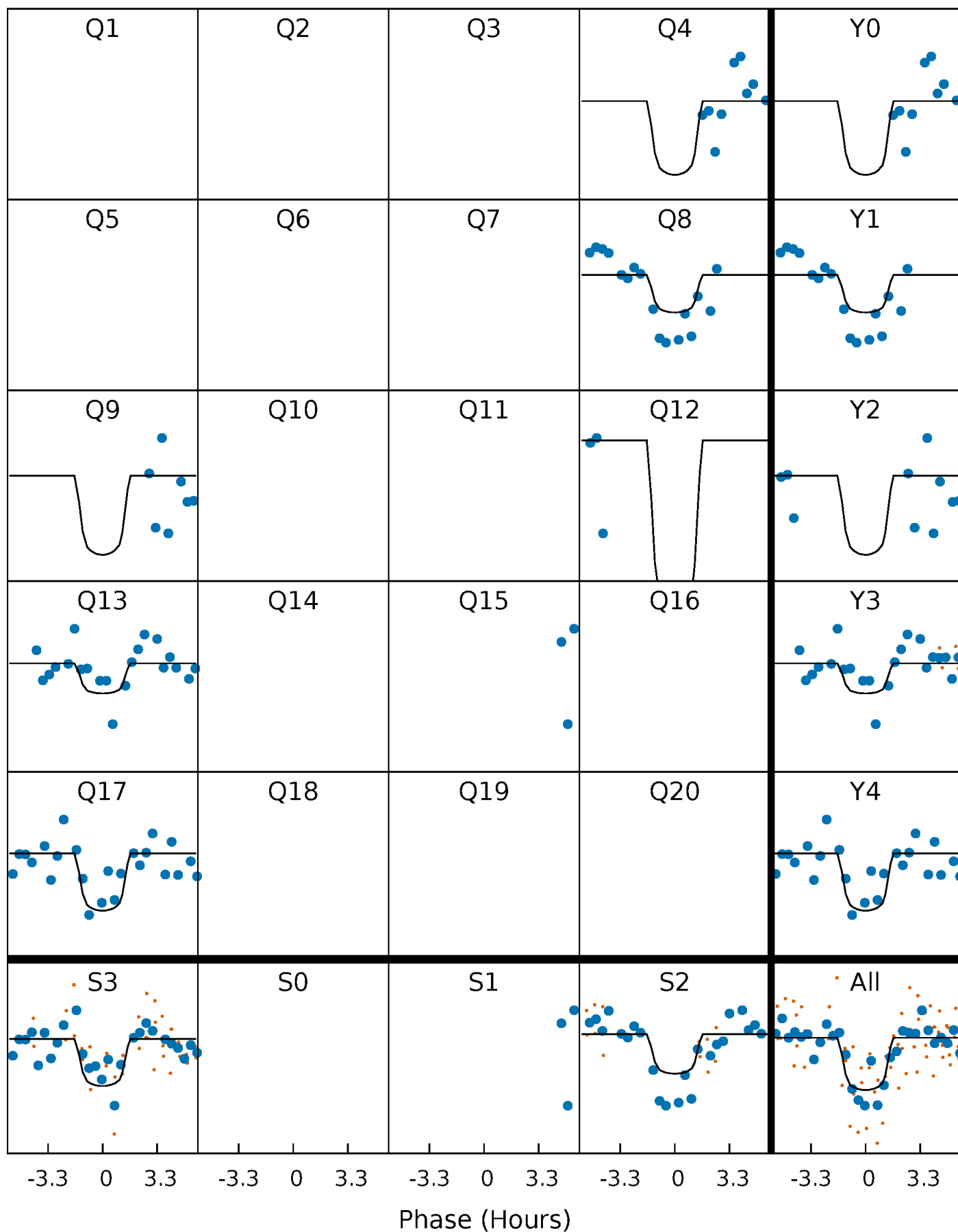
PDC Quarter-Phased Transit Curves

TCE 012405950-07 $P = 73.331738$ Days $T_0 = 182.647921$ (BKJD)



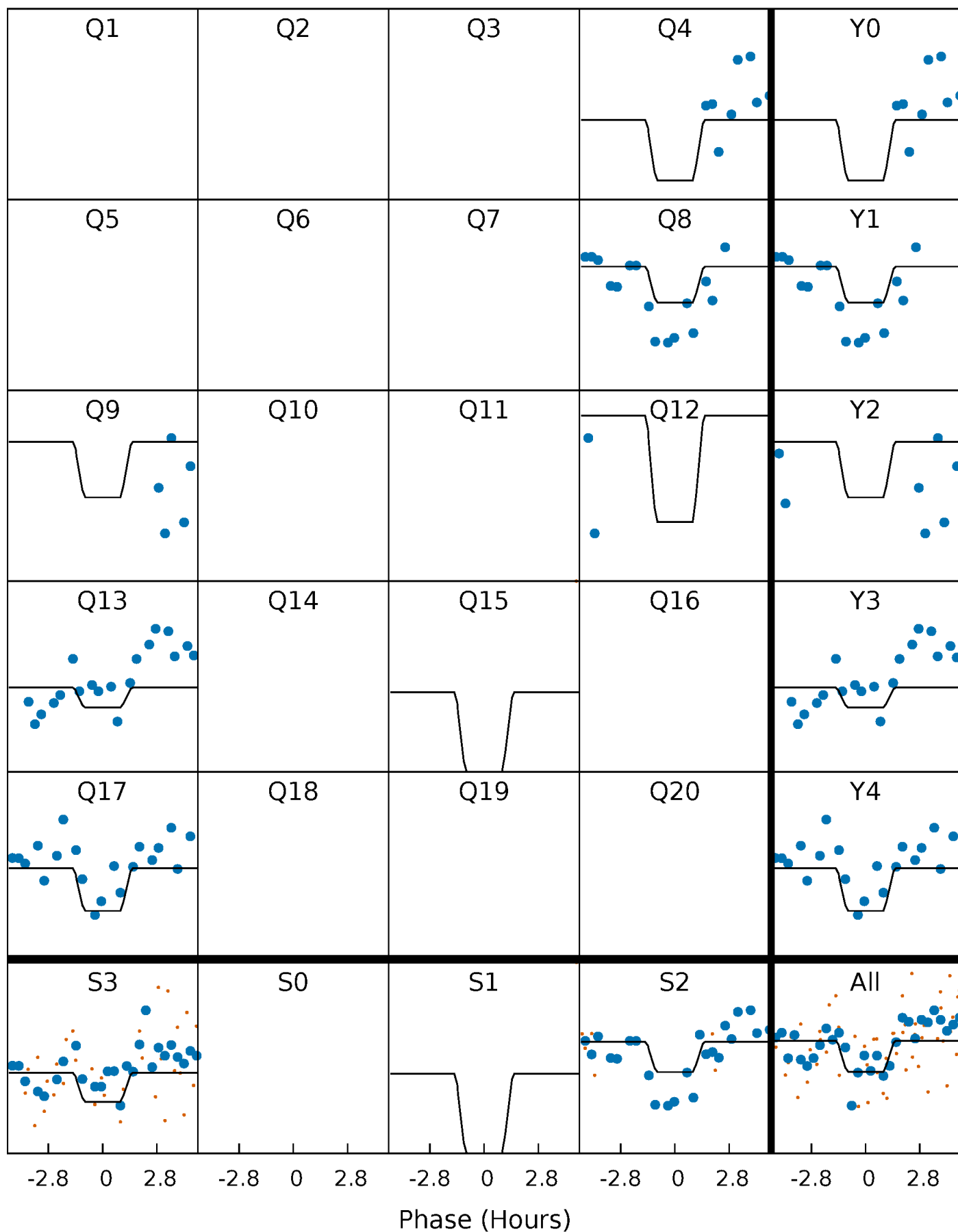
DV Quarter-Phased Transit Curves

TCE 012405950-07 P= 73.331738 Days $T_0=182.647921$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

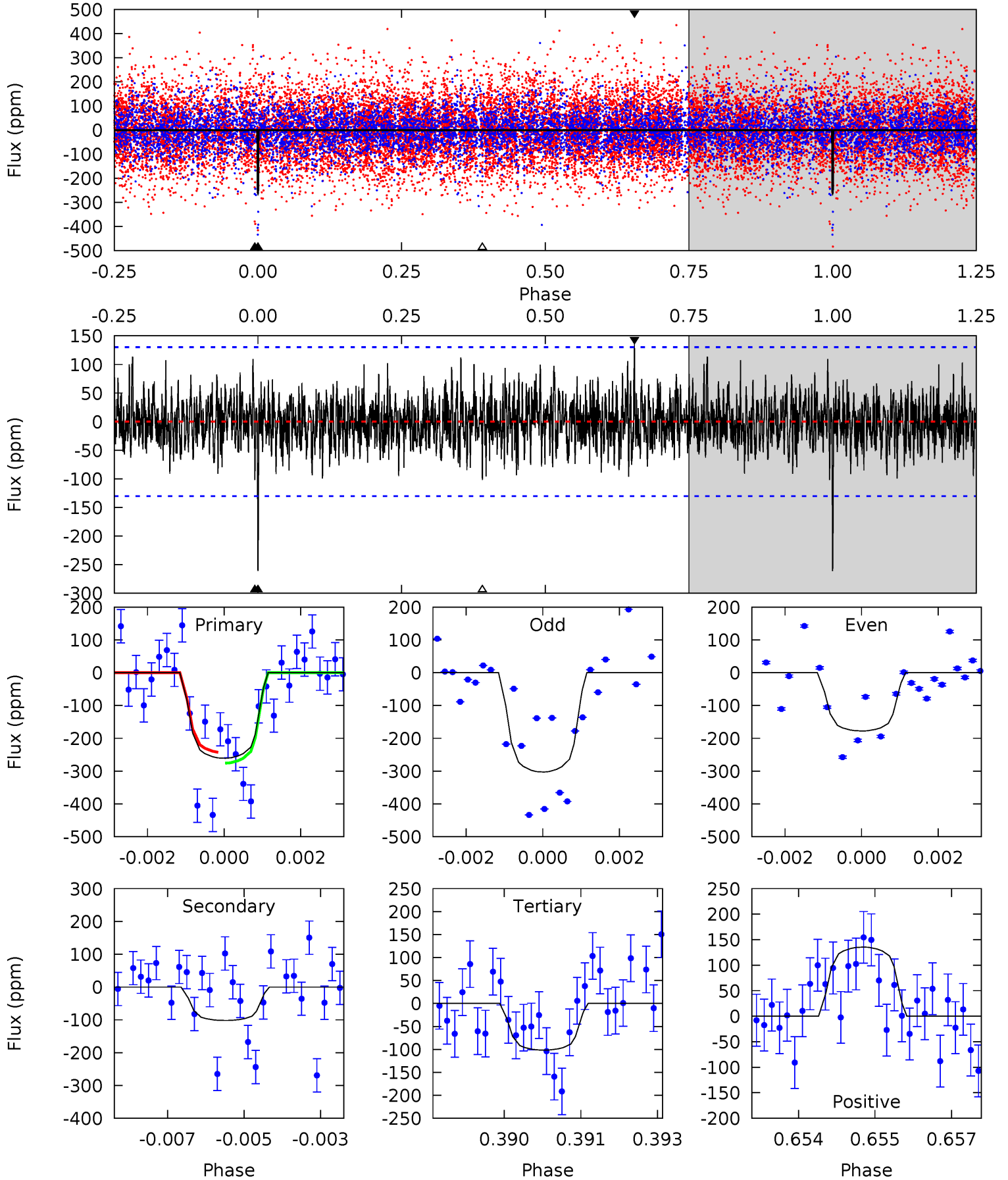
TCE 012405950-07 $P = 73.330825$ Days $T_0 = 182.652039$ (BKJD)



DV Model-Shift Uniqueness Test

012405950-07, P = 73.331738 Days, E = 182.647921 Days

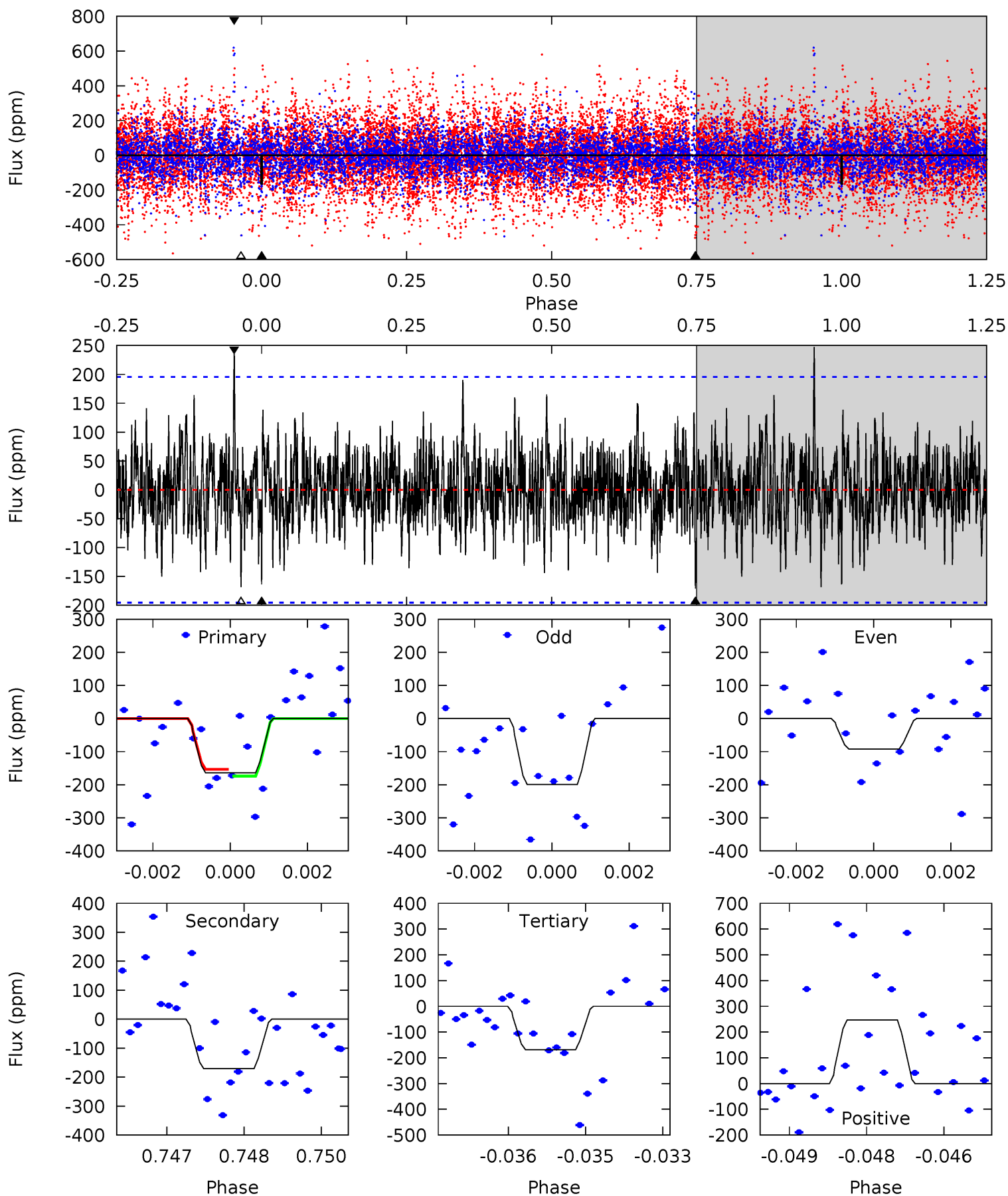
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.7	4.20	4.18	5.58	5.36	3.14	1.39	6.56	5.17	0.01	-1.38	2.53	1.32	0.34	0.68



Alt Model-Shift Uniqueness Test

012405950-07, P = 73.330825 Days, E = 182.652039 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.50	4.70	4.62	6.79	5.37	3.16	1.33	-0.12	-2.29	0.08	-2.09	1.39	1.78	0.59	0.28



Stellar Parameters For KIC 012405950

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7021^{+214}_{-262}	$3.759^{+0.304}_{-0.076}$	$-0.460^{+0.300}_{-0.250}$	$2.629^{+0.406}_{-0.947}$	$1.447^{+0.231}_{-0.282}$	$0.112^{+0.229}_{-0.035}$
	+3%/-4%	+8%/-2%	+65%/-54%	+15%/-36%	+16%/-19%	+204%/-31%
Source	KIC0	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 012405950-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-102 ± 24	$13.50^{+15.63}_{-9.37}$	1101^{+68}_{-98}	3550^{+2097}_{-697}	44^{+441}_{-34}
Alt.	-171 ± 36	$13.23^{+14.74}_{-9.03}$	1095^{+74}_{-90}	3892^{+2621}_{-804}	79^{+768}_{-61}

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 $A_{obs} \gg 1.0$

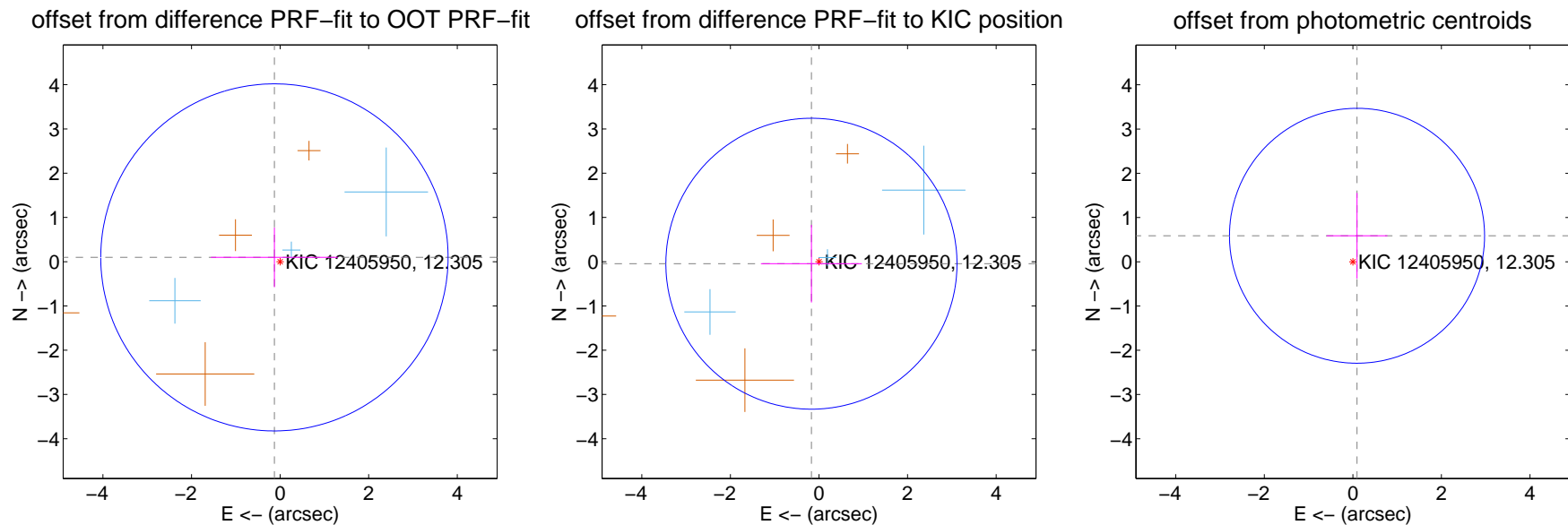
DV Centroid Data

Supplemental centroid analysis for 012405950-07. Kepler magnitude: 12.30. Transit SNR 7.36

There are 3 quarters with good PRF difference image offsets

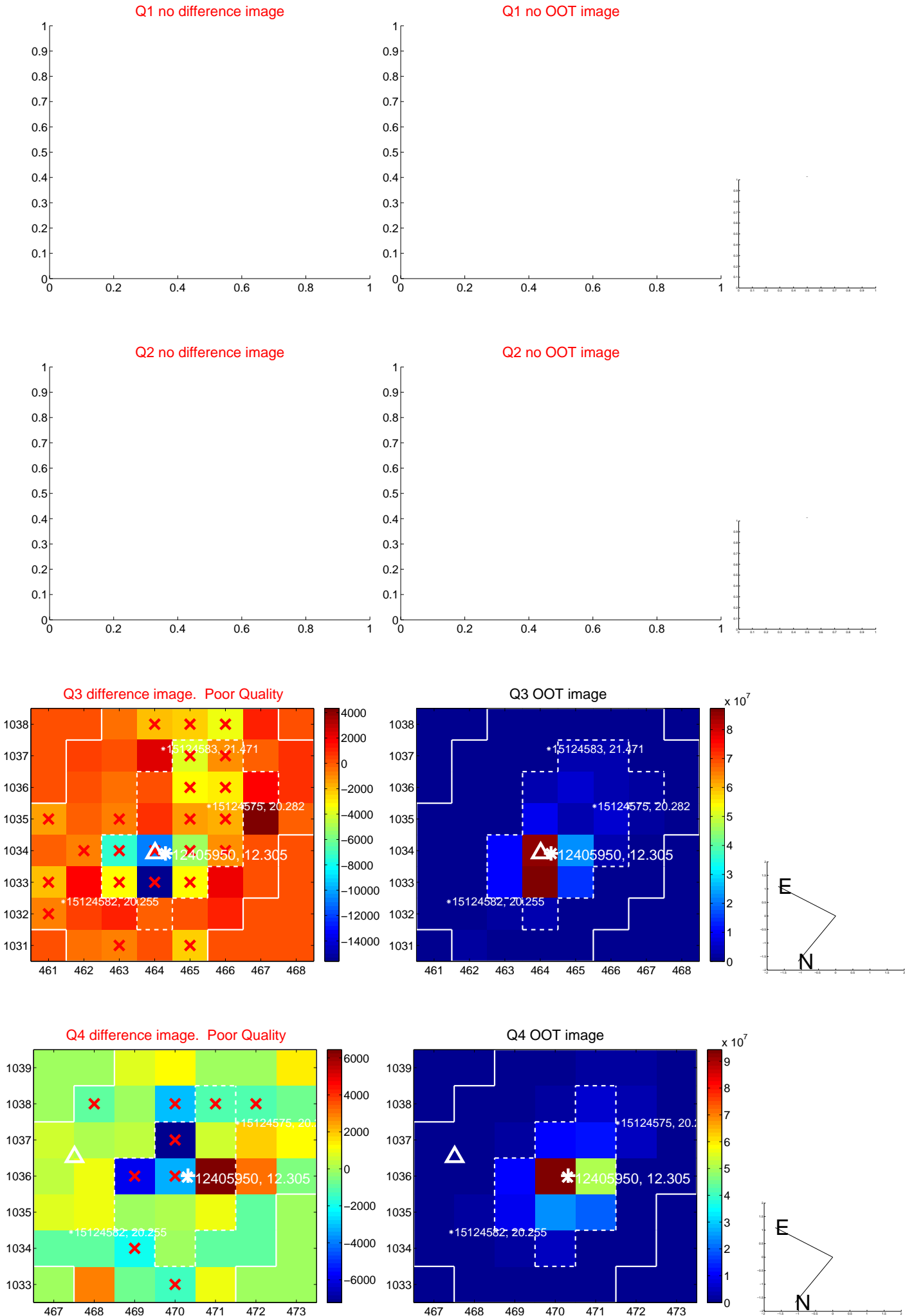
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.161 ± 1.307	0.12	0.129 ± 1.432	0.097 ± 0.674
PRF-fit source offset from KIC position	0.177 ± 1.096	0.16	0.171 ± 1.140	-0.046 ± 0.876
photometric centroid source offset	0.60 ± 0.96	0.62	-0.09 ± 0.69	0.59 ± 0.97



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



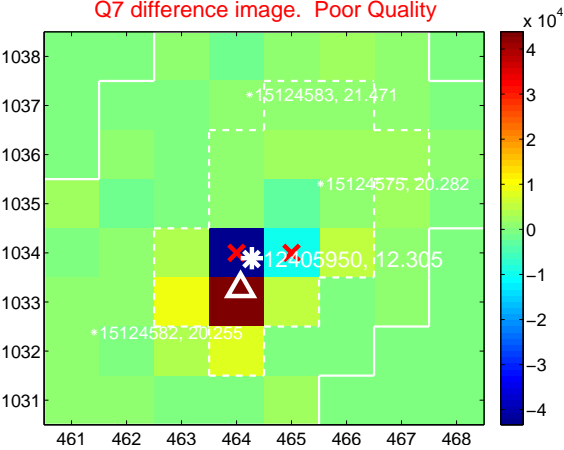
Q6 no difference image



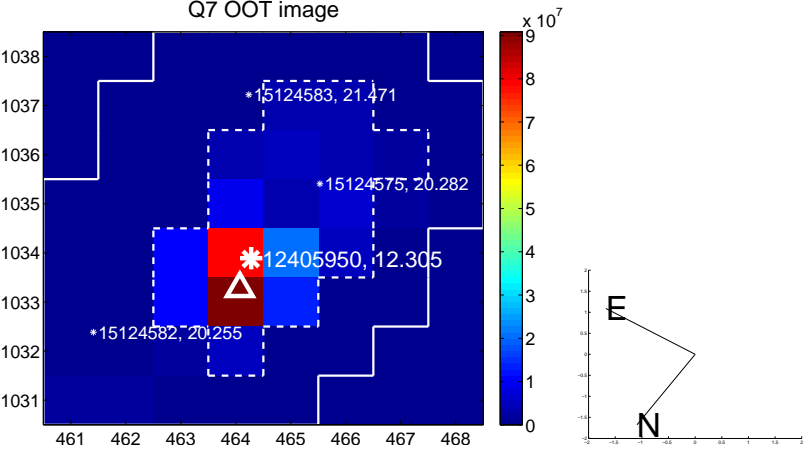
Q6 no OOT image



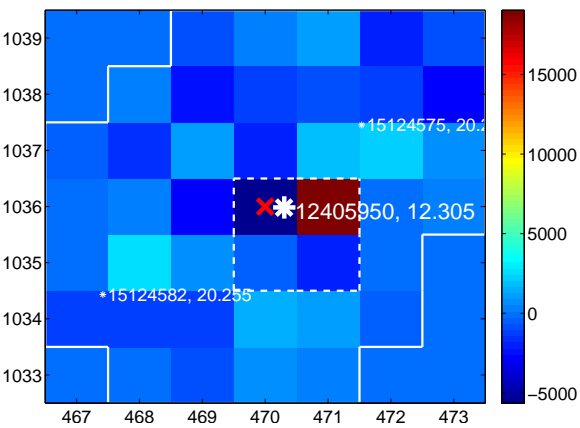
Q7 difference image. Poor Quality



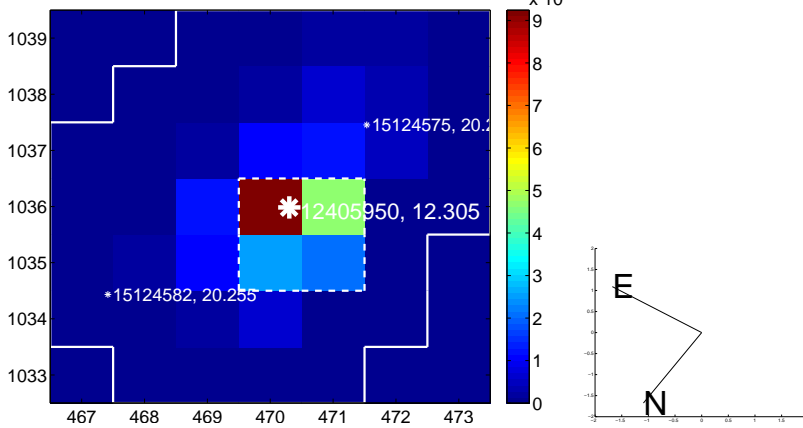
Q7 OOT image



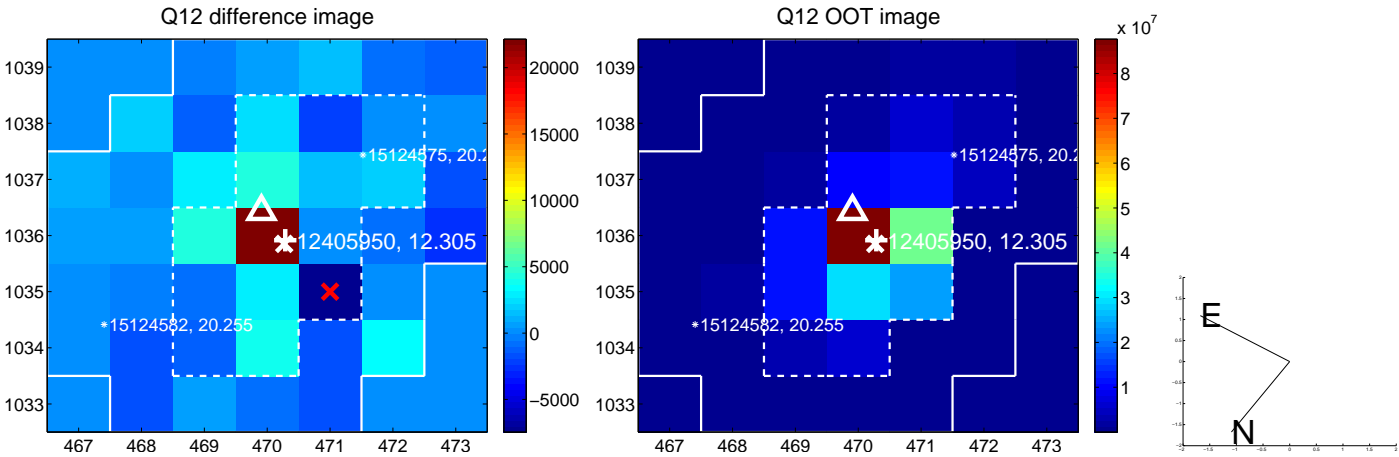
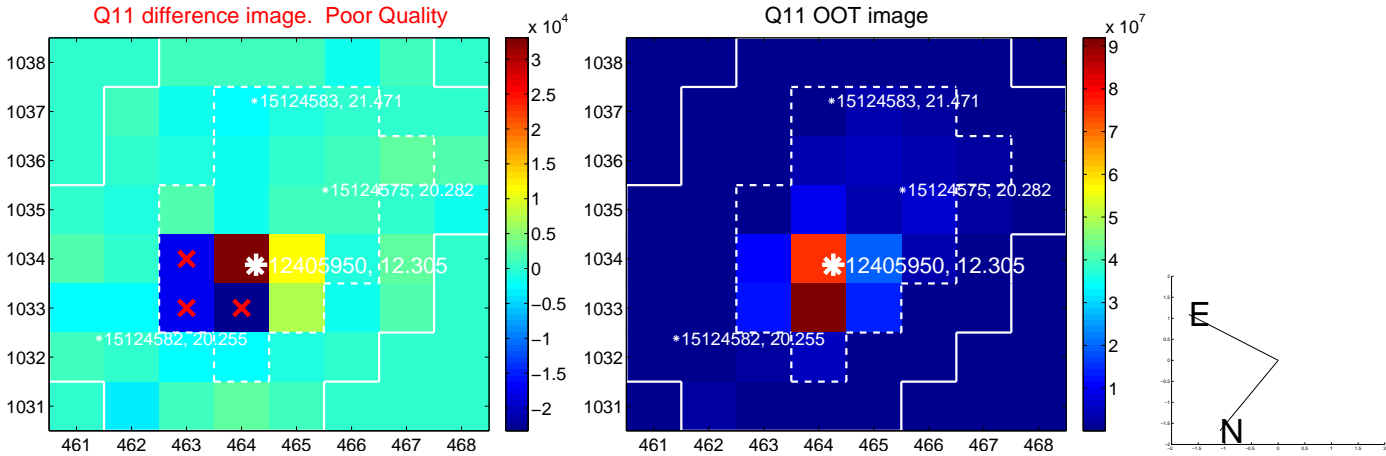
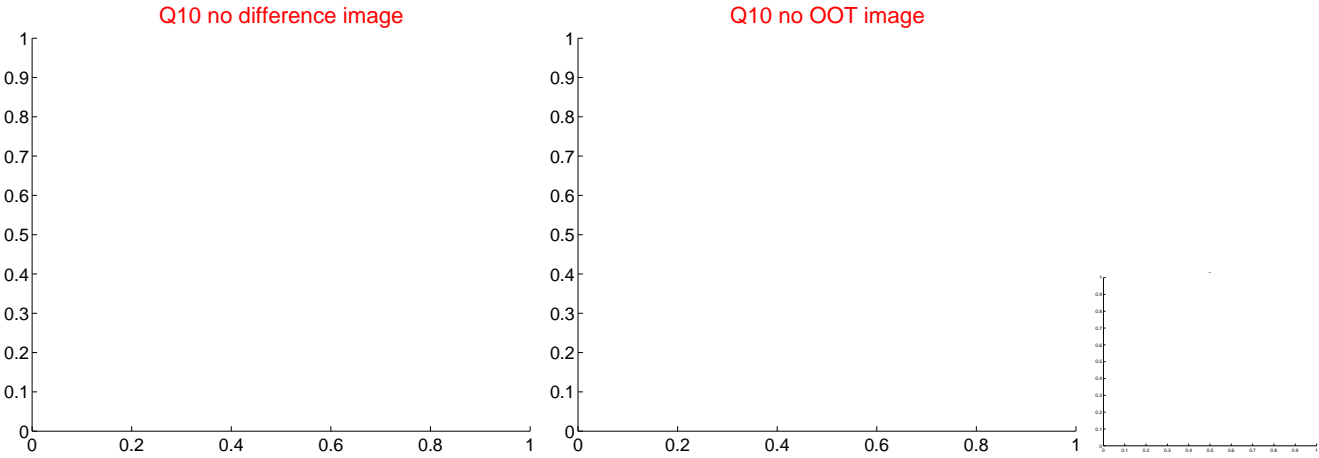
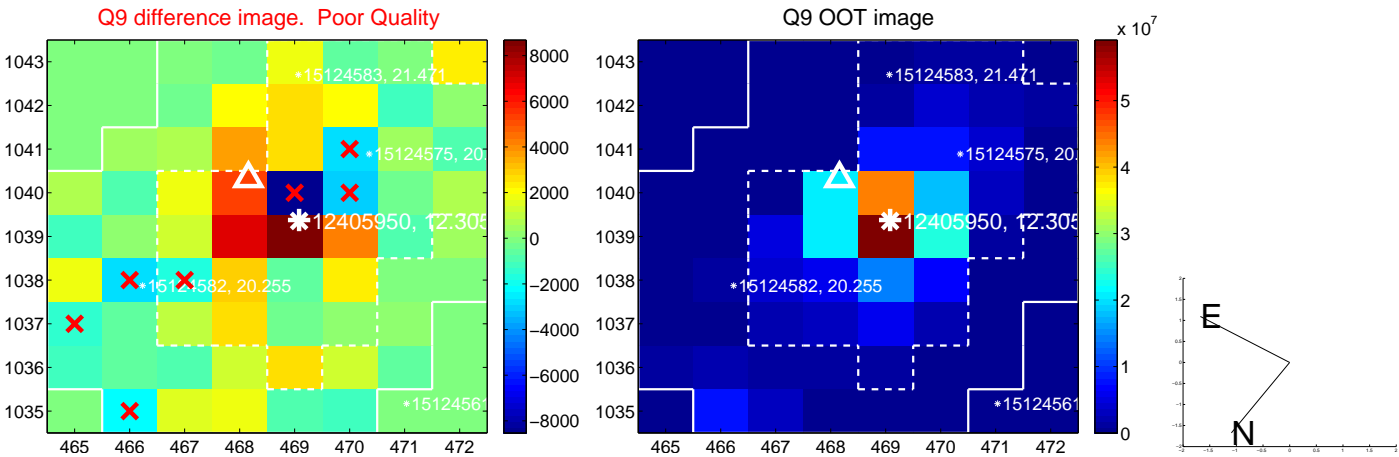
Q8 difference image. Poor Quality



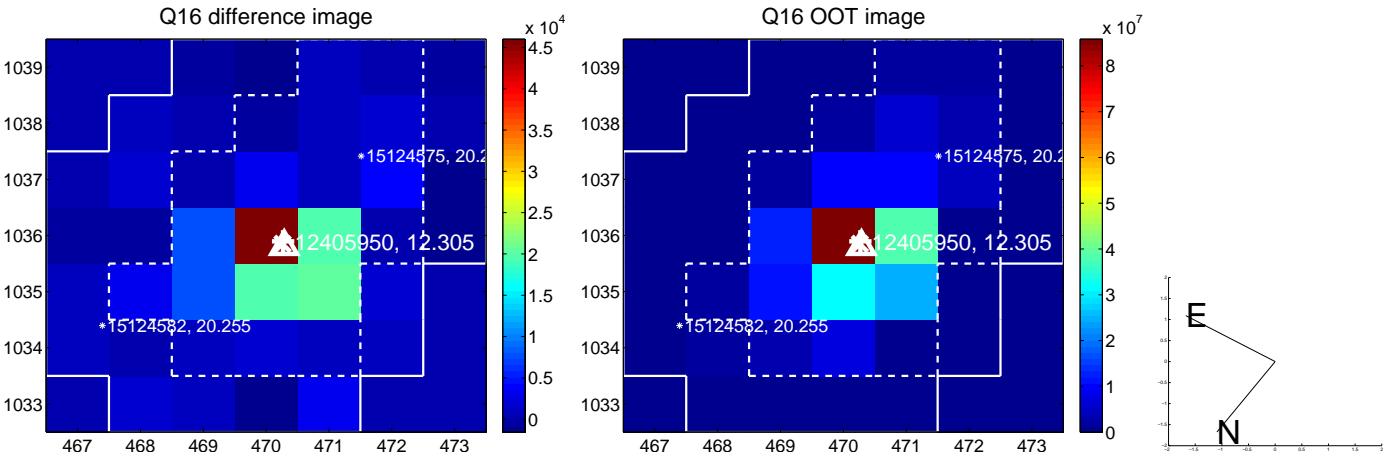
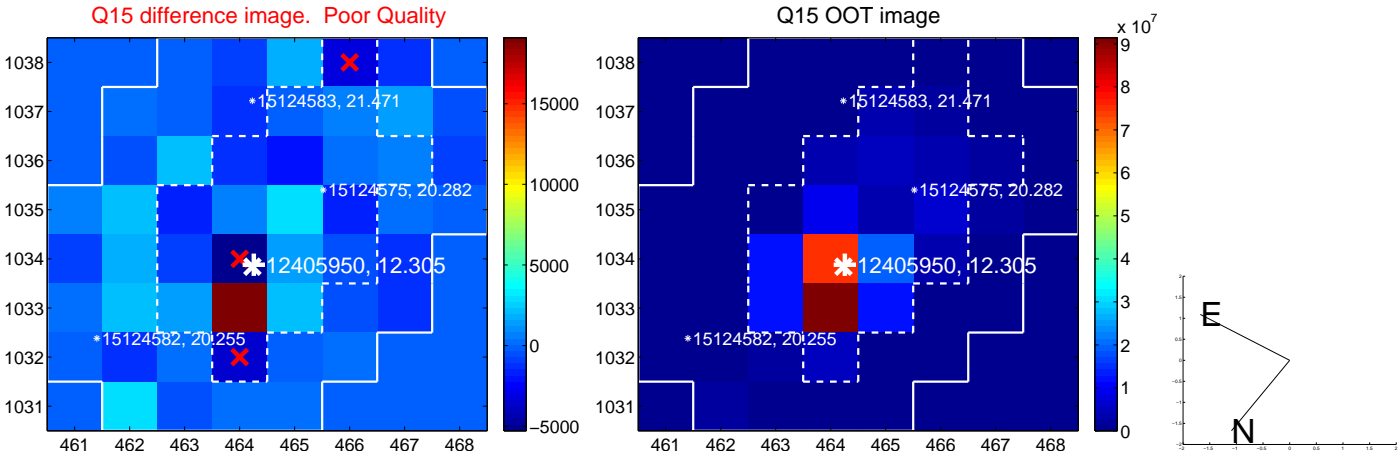
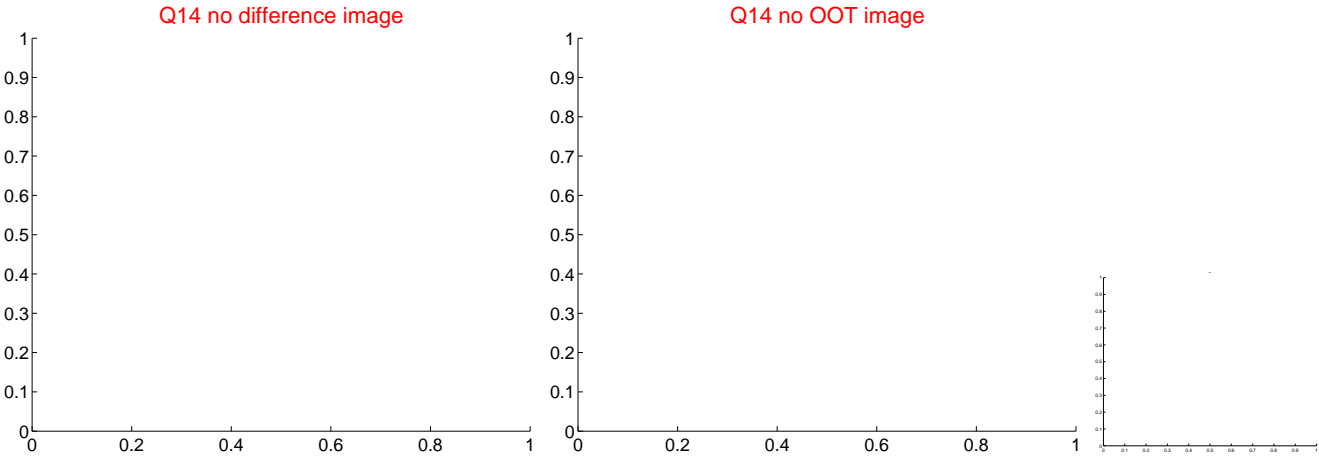
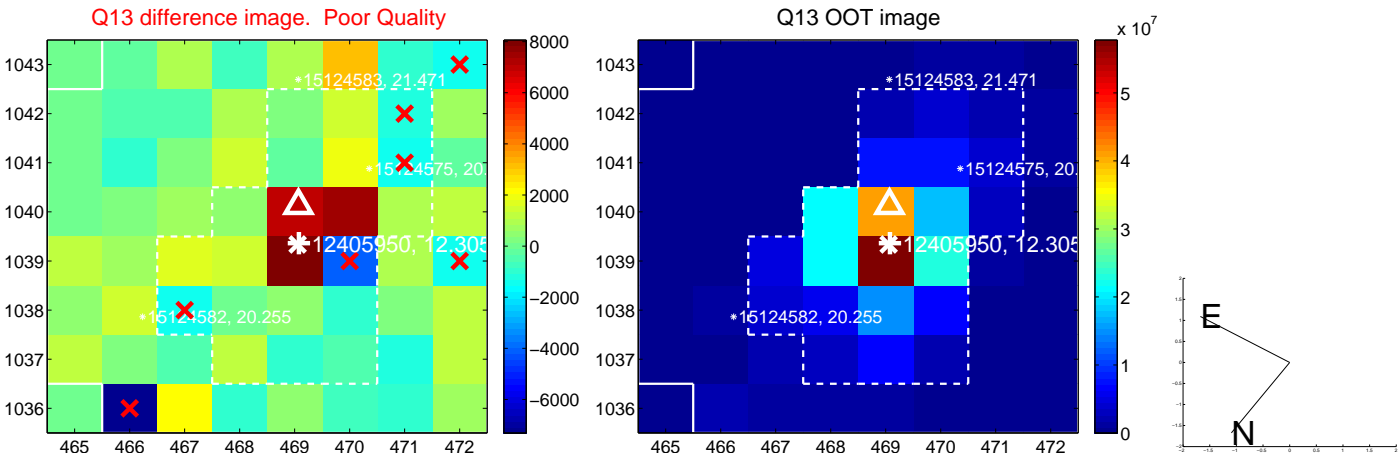
Q8 OOT image



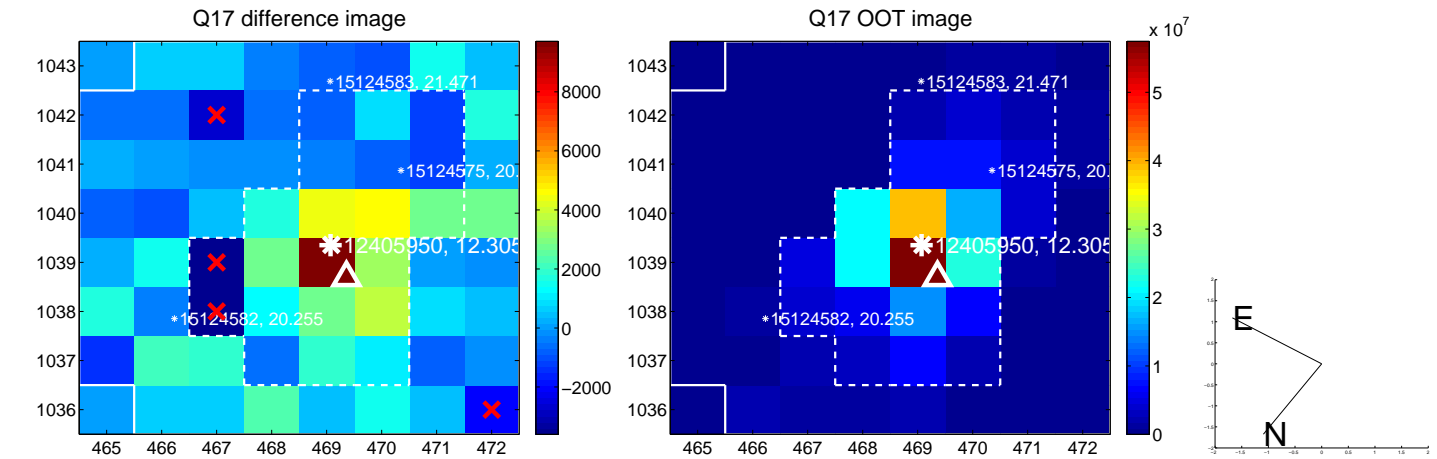
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



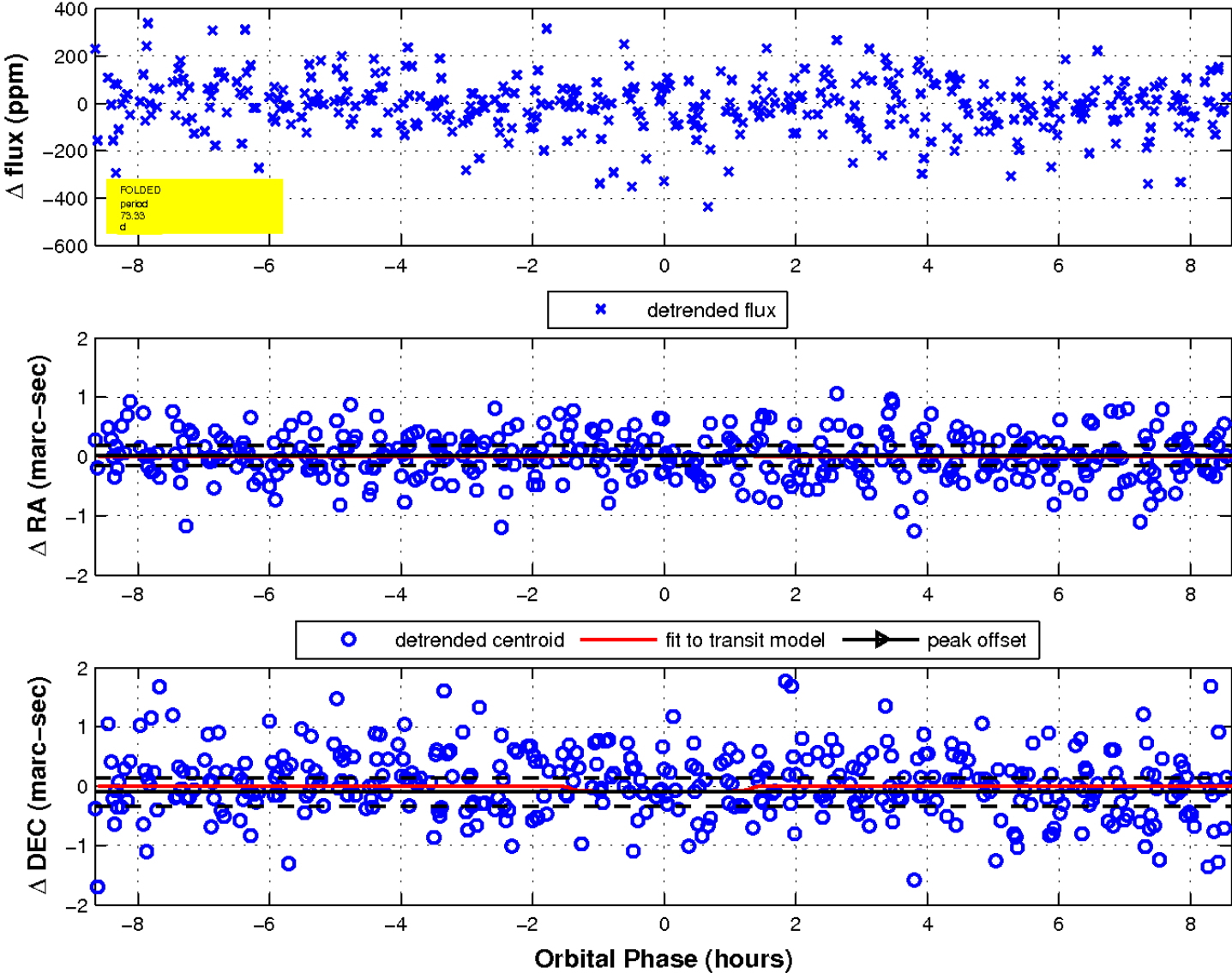
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 7 of 7



UKIRT Image

Declination

