

KIC 010471960

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})
010471960-01	OBS	No	547.464223	155.030078	2769.0	8.017	19.6	8.6	0.39	3585	2.02	0.02
010471960-02	OBS	No	350.765409	336.318265	2665.0	6.180	13.7	9.1	0.39	3585	3.81	0.04
010471960-03	OBS	No	306.848558	404.857561	2035.5	13.858	13.1	7.3	0.39	3585	1.74	0.05
010471960-04	OBS	No	549.315132	329.013198	1856.2	6.120	11.8	6.5	0.39	3585	1.69	0.02
010471960-05	OBS	No	406.741390	372.243939	1663.9	4.424	11.6	6.2	0.39	3585	1.57	0.04
010471960-06	OBS	No	261.698175	172.863062	3108.5	34.221	10.0	7.4	0.39	3585	2.49	0.06
010471960-07	OBS	No	425.027354	270.884270	2661.0	5.762	12.9	9.4	0.39	3585	2.17	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010471960-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
010471960-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES
010471960-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

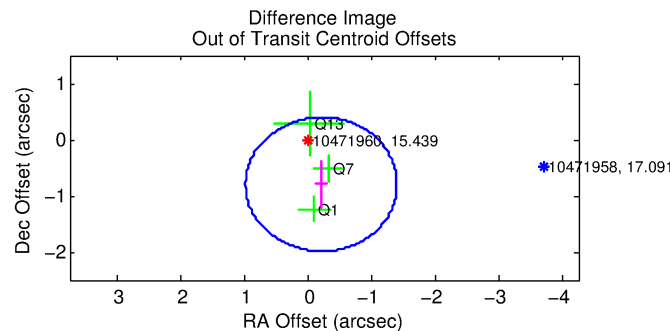
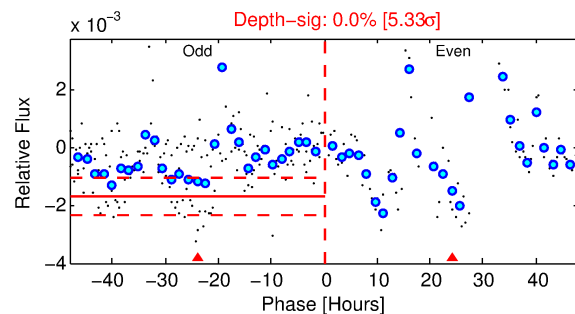
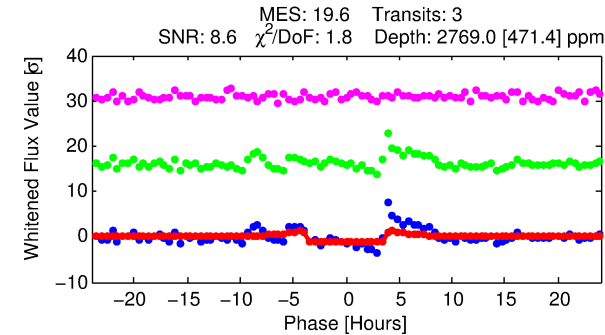
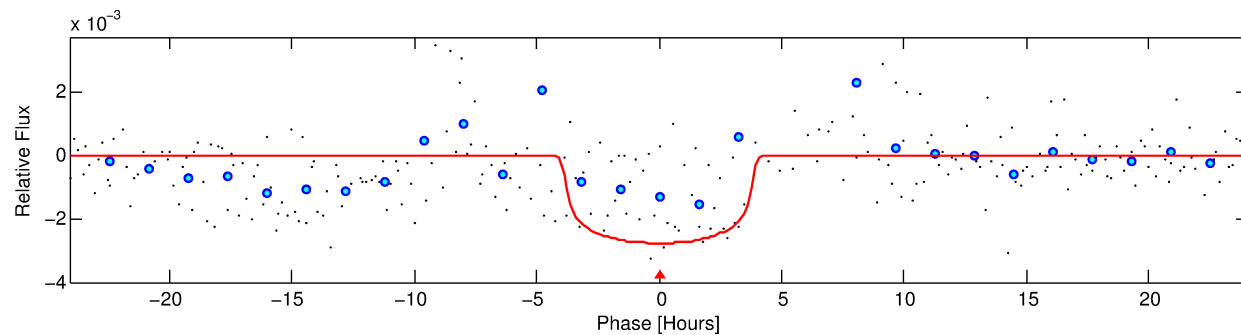
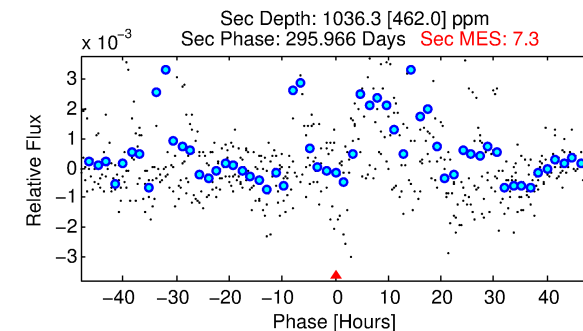
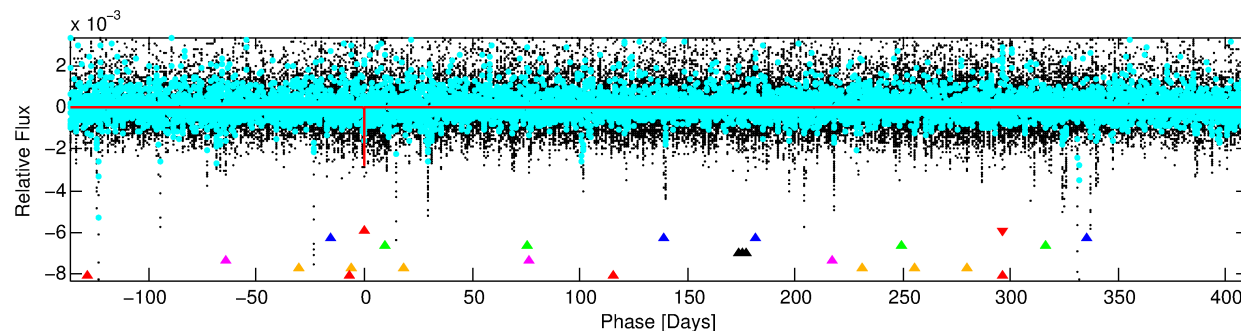
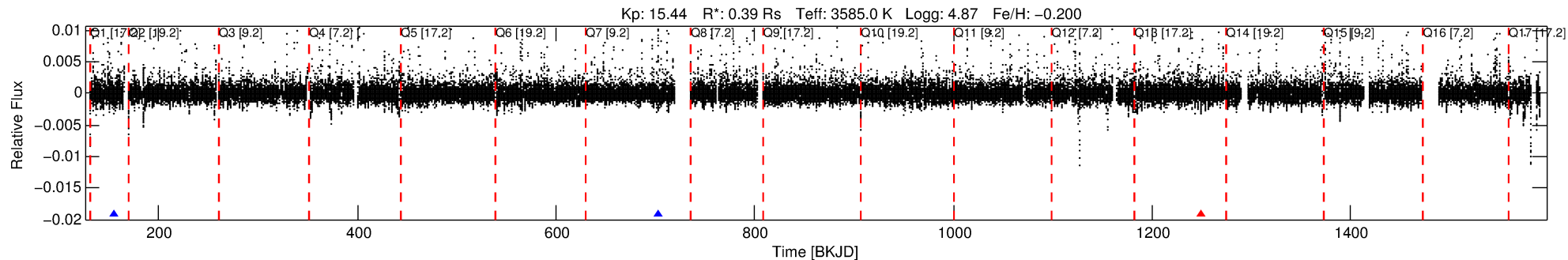
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010471960-01

No Significant Match Found

DV One-Page Summary

KIC: 10471960 Candidate: 1 of 7 Period: 547.464 d



DV Fit Results:

Period = 547.46422 [0.00725] d
Epoch = 155.0301 [0.0102] BKJD
Rp/R* = 0.0478 [0.0227]
a/R* = 546.50 [1132.91]
b = 0.02 [99.52]
Seff = 0.02 [0.00]
Teq = 100 [3] K
Rp = 2.02 [0.99] Re
a = 0.9694 [0.0806] AU
Ag = 130811.28 [137871.24] [0.95σ]
Teffp = 2942 [774] K [3.67σ]

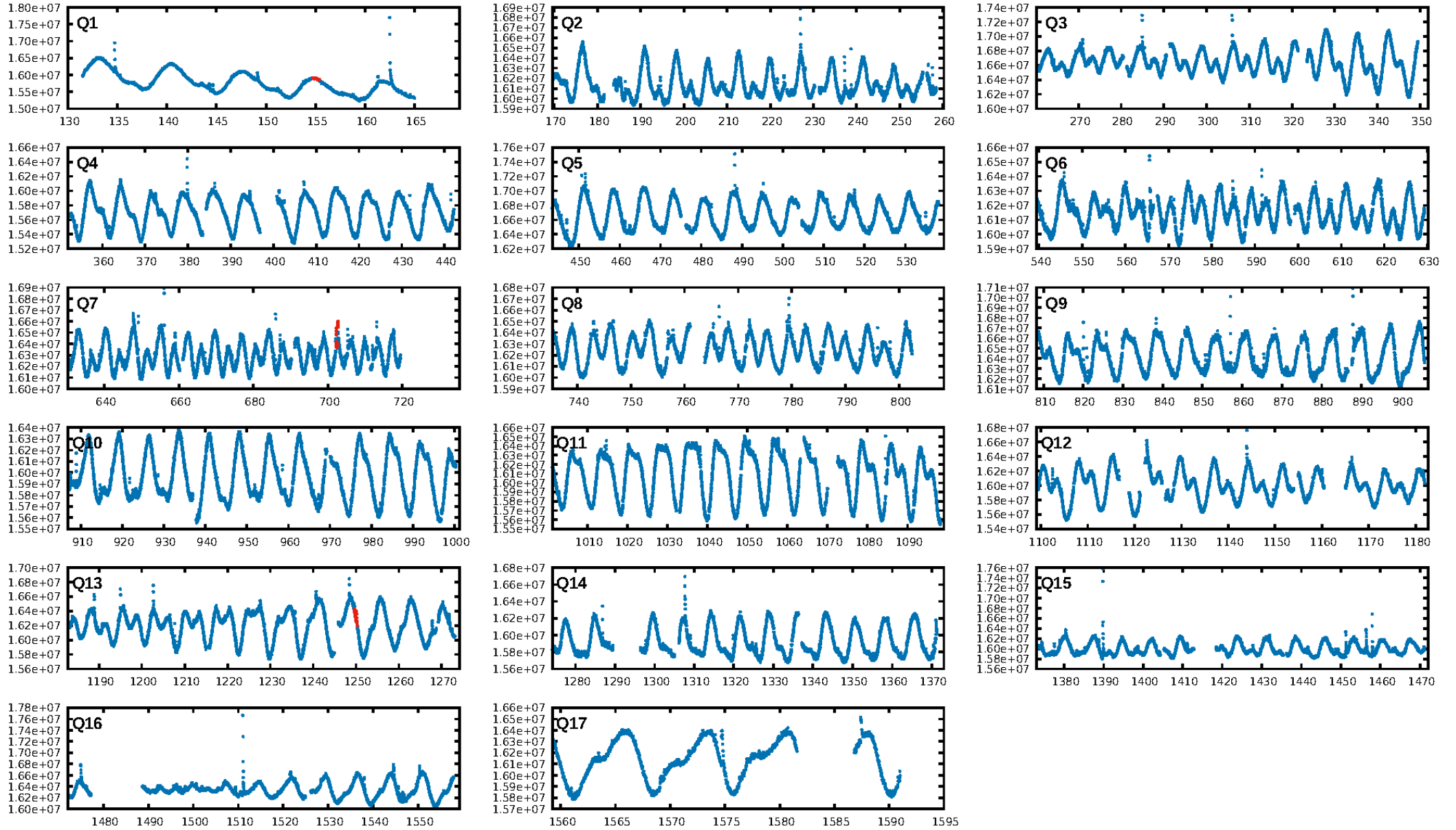
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [297.62σ]
LongPeriod-sig: 100.0% [4.40σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 7.3%
Bootstrap-pfa: 1.87e-15
RollingBand-fgt: 0.50 [1/2]
GhostDiagnostic-chr: 1.954
Centroid-sig: 13.2%
Centroid-so: 1.033 arcsec [1.43σ]
OotOffset-rm: 0.823 arcsec [2.07σ]
OotOffset-st: 0/1/0/2 [3]
KicOffset-rm: 0.649 arcsec [1.61σ]
KicOffset-st: 0/1/0/2 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

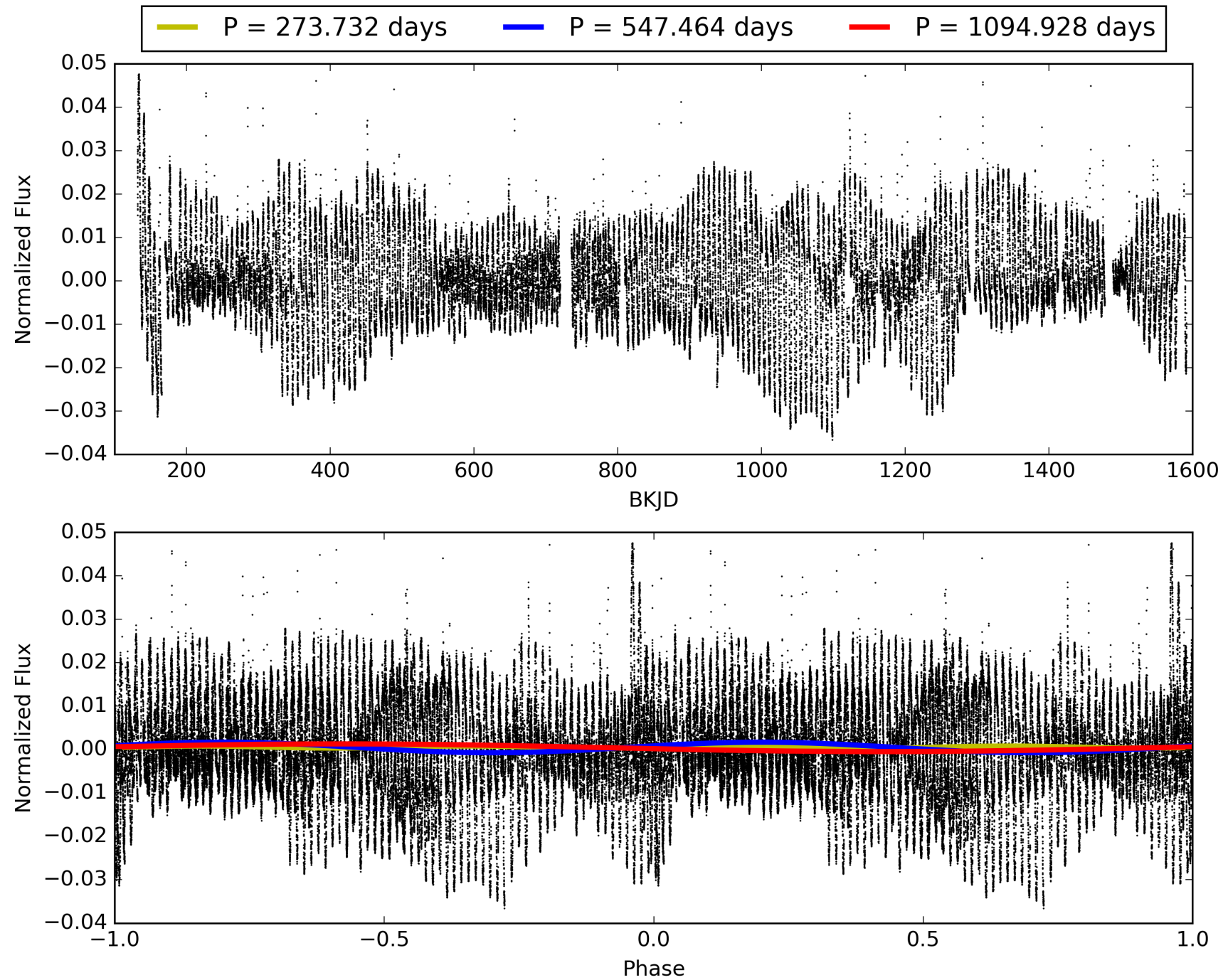
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010471960-01, PDC Light Curves

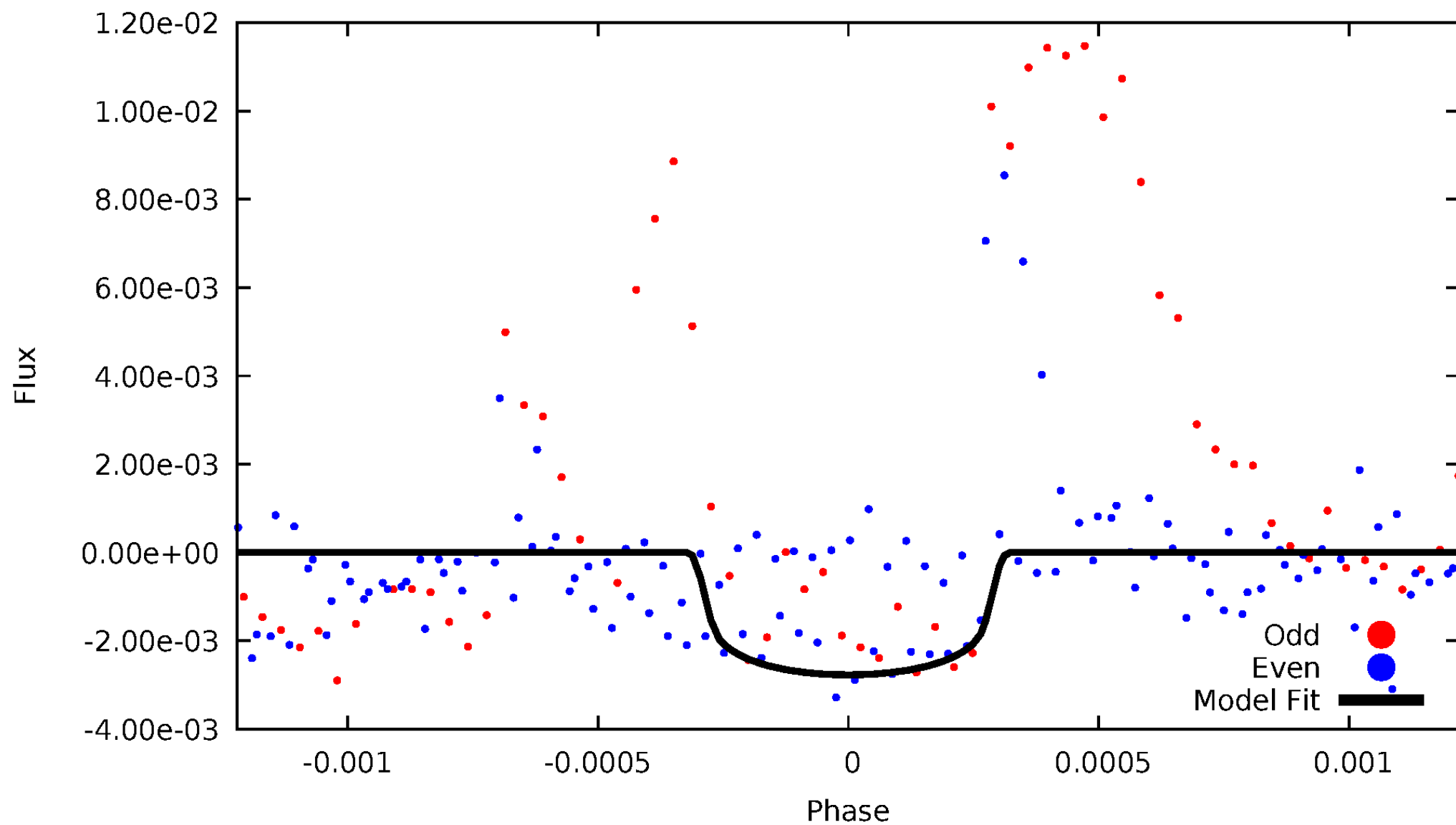


TCE 010471960-01



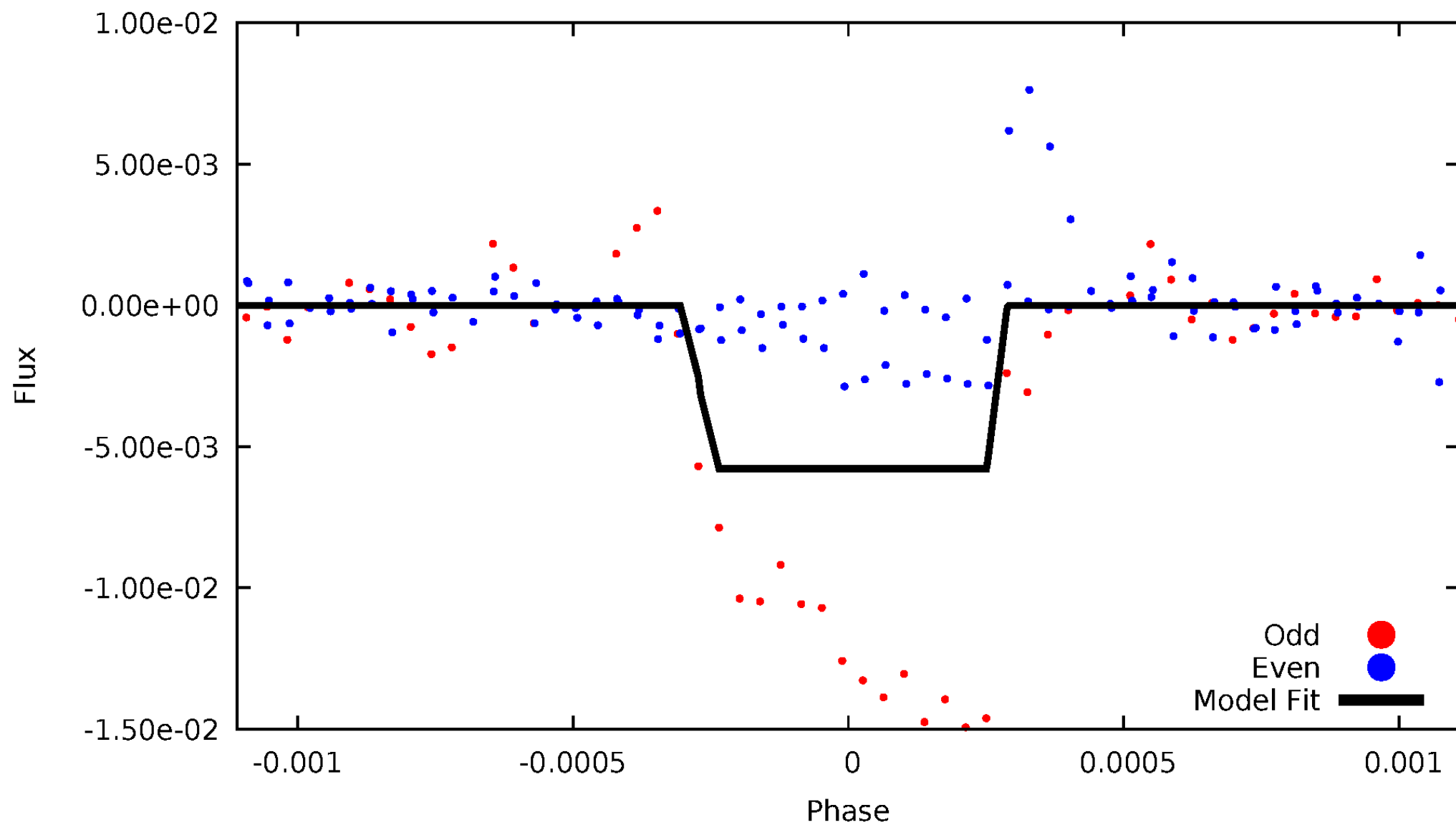
DV Odd/Even

TCE 010471960-01



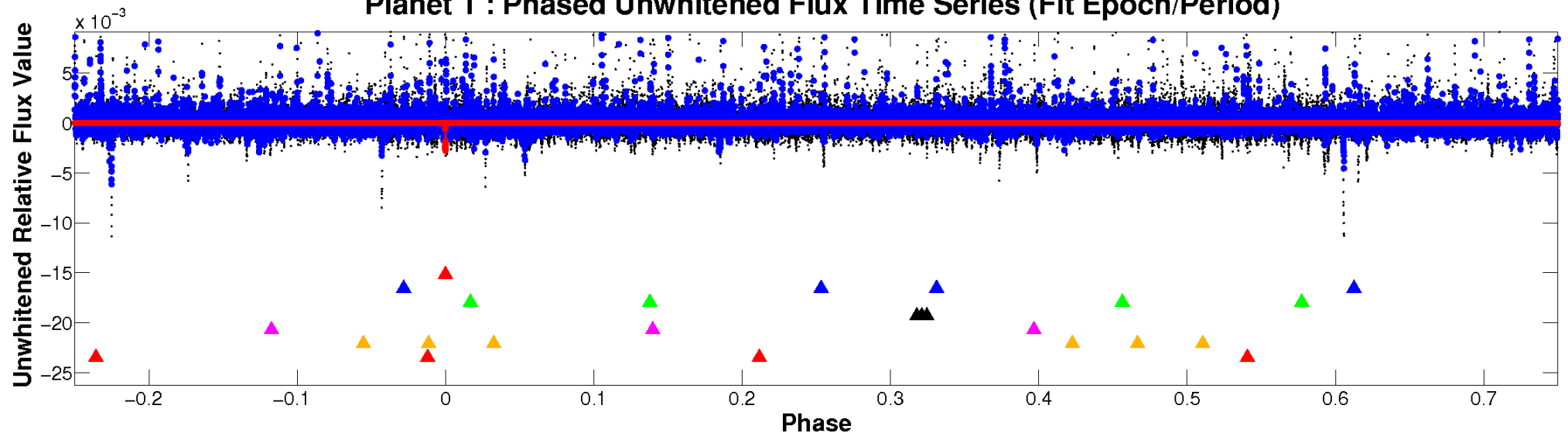
ALT Odd/Even

TCE 010471960-01

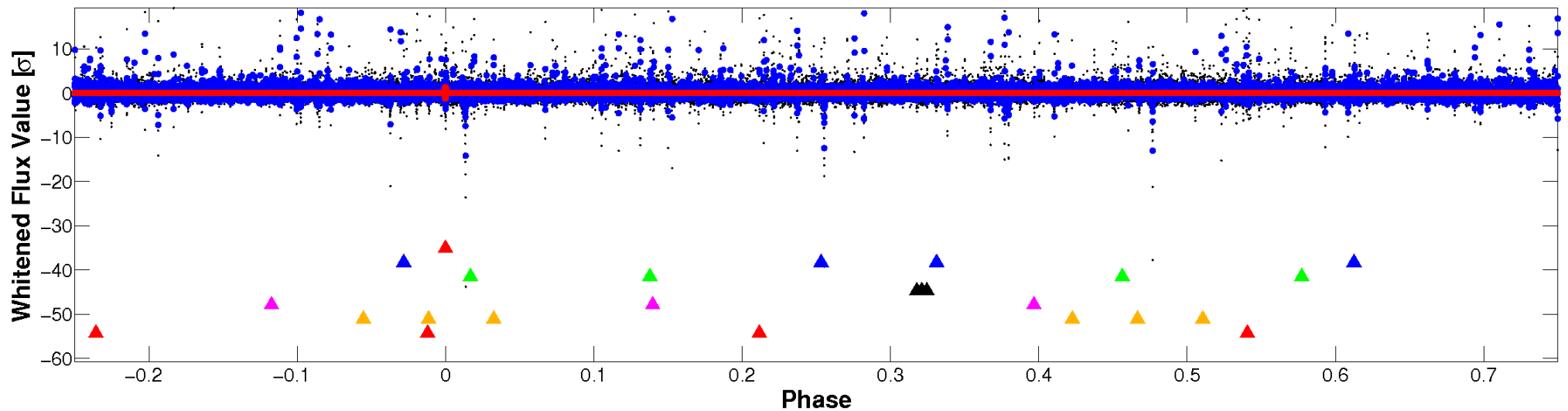


Non-Whitened Vs. Whitened Light Curve

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

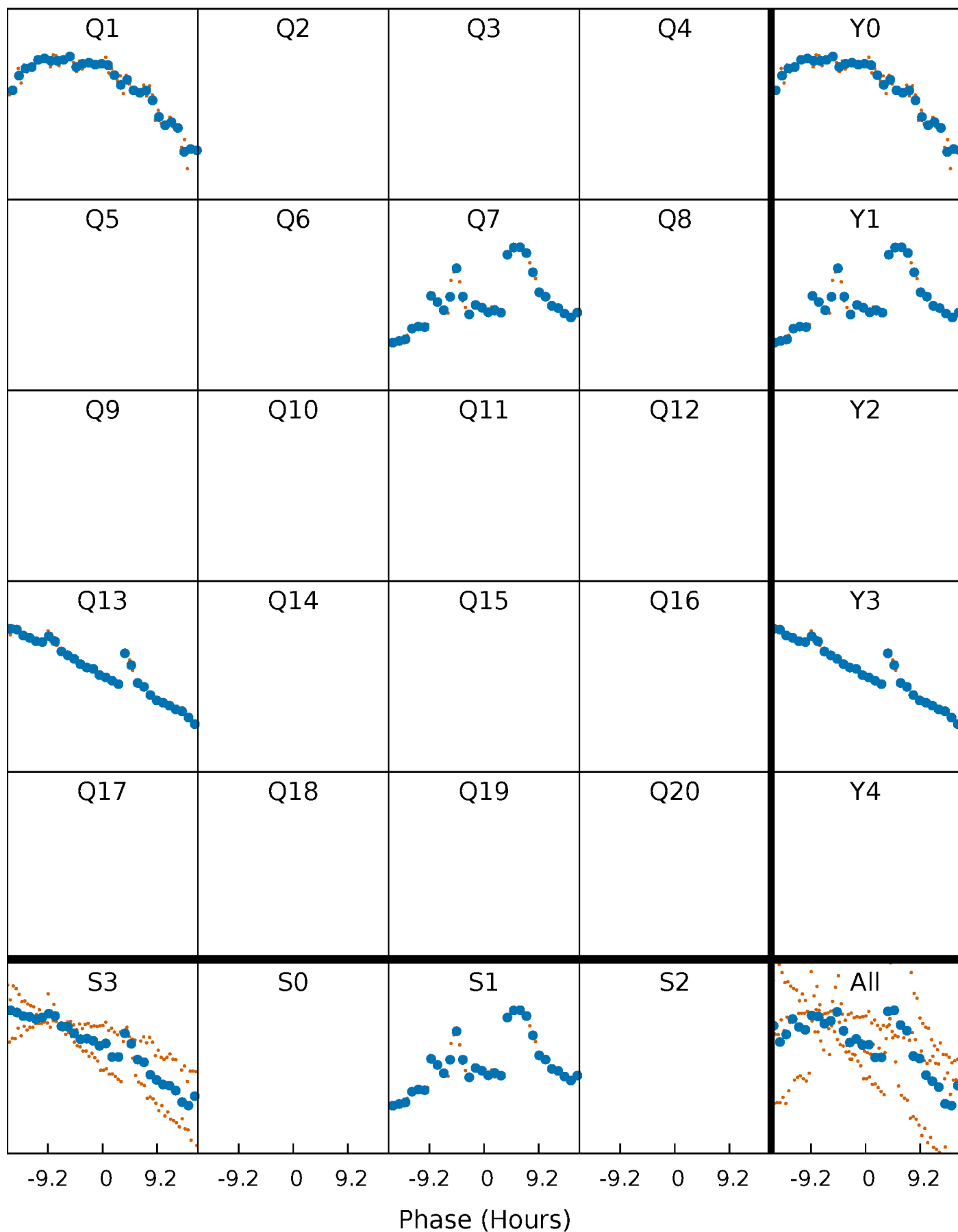


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



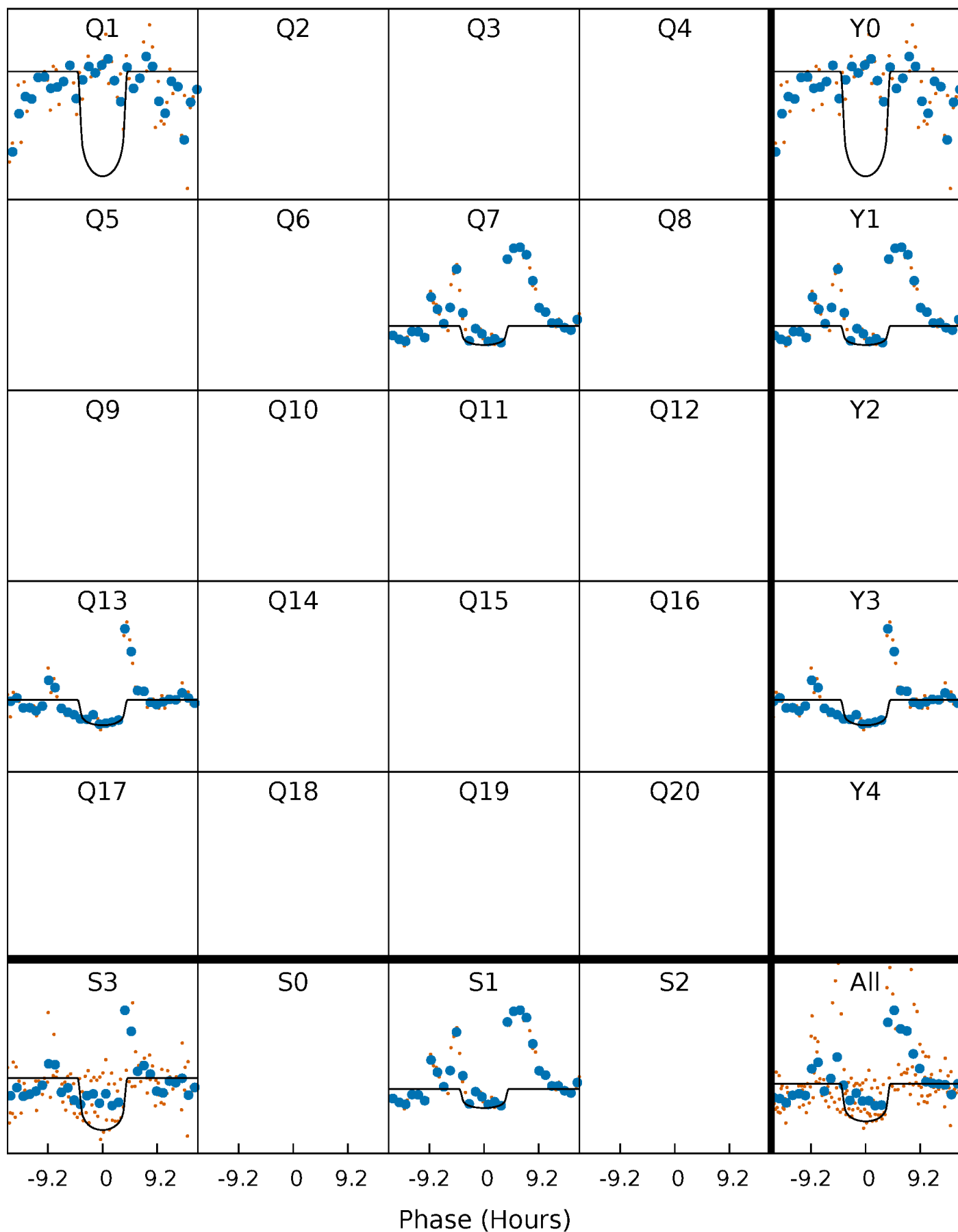
PDC Quarter-Phased Transit Curves

TCE 010471960-01 P=547.464223 Days $T_0=155.030078$ (BKJD)



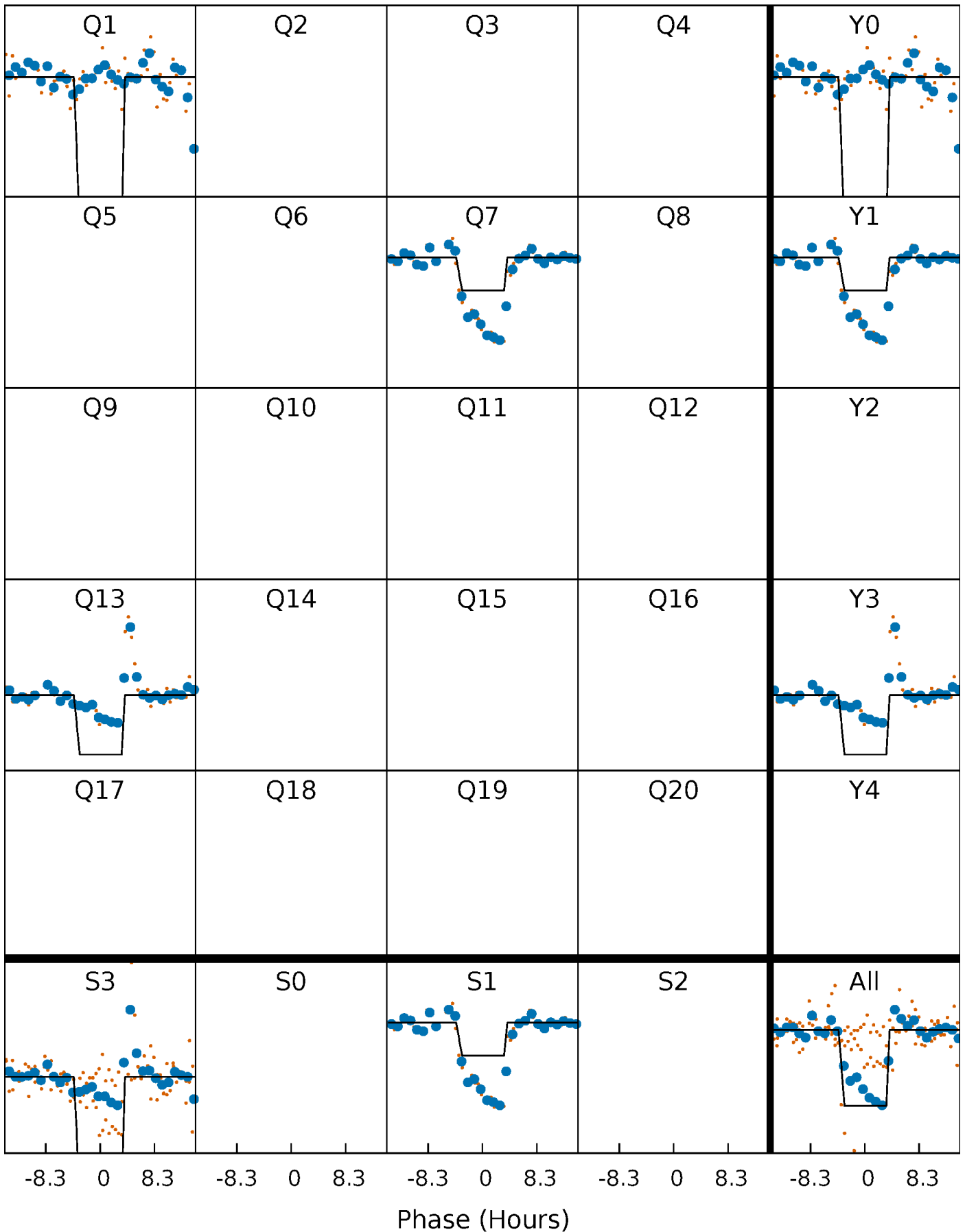
DV Quarter-Phased Transit Curves

TCE 010471960-01 P=547.464223 Days $T_0=155.030078$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

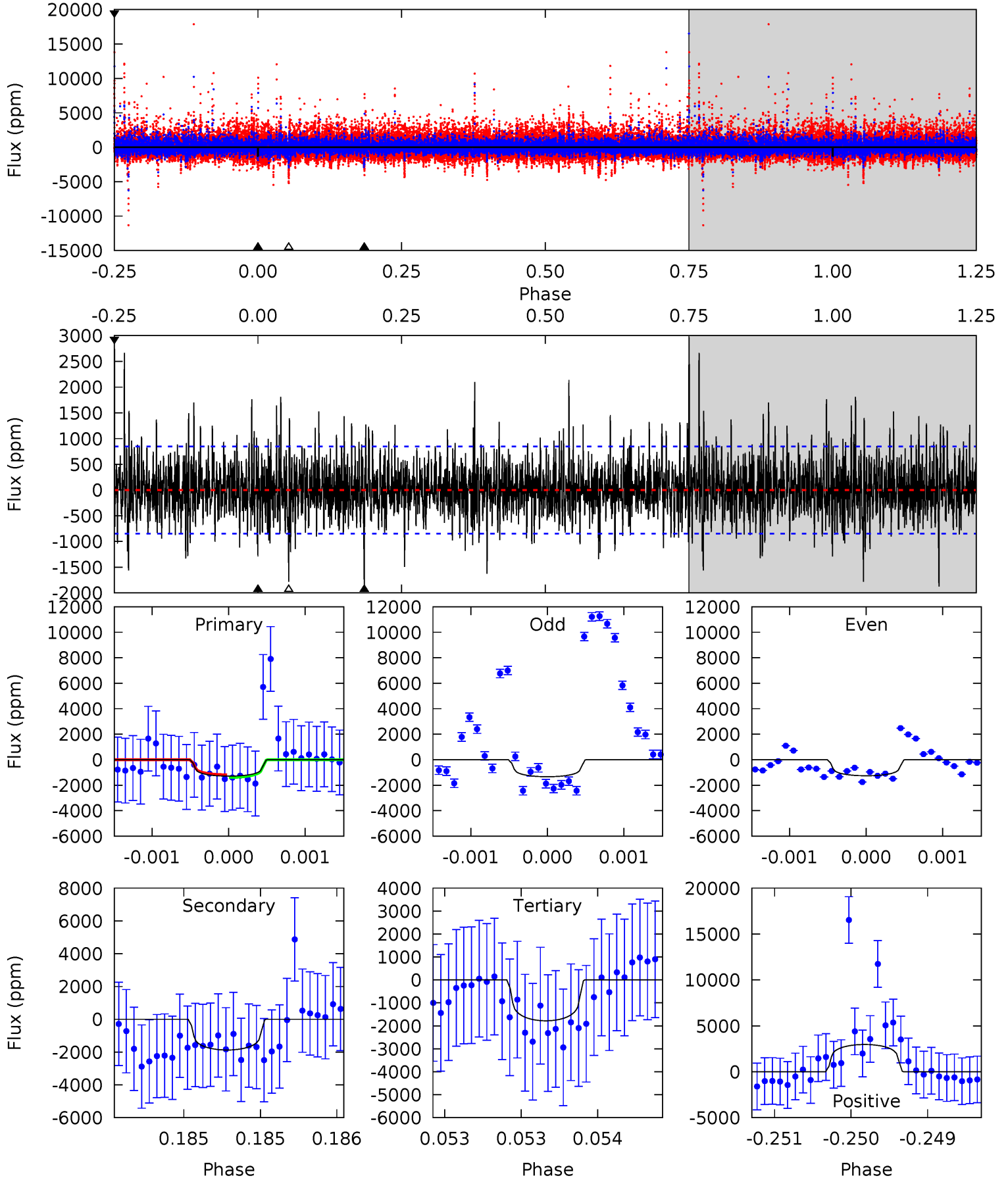
TCE 010471960-01 P=547.455939 Days $T_0=155.037157$ (BKJD)



DV Model-Shift Uniqueness Test

010471960-01, P = 547.464223 Days, E = 155.030078 Days

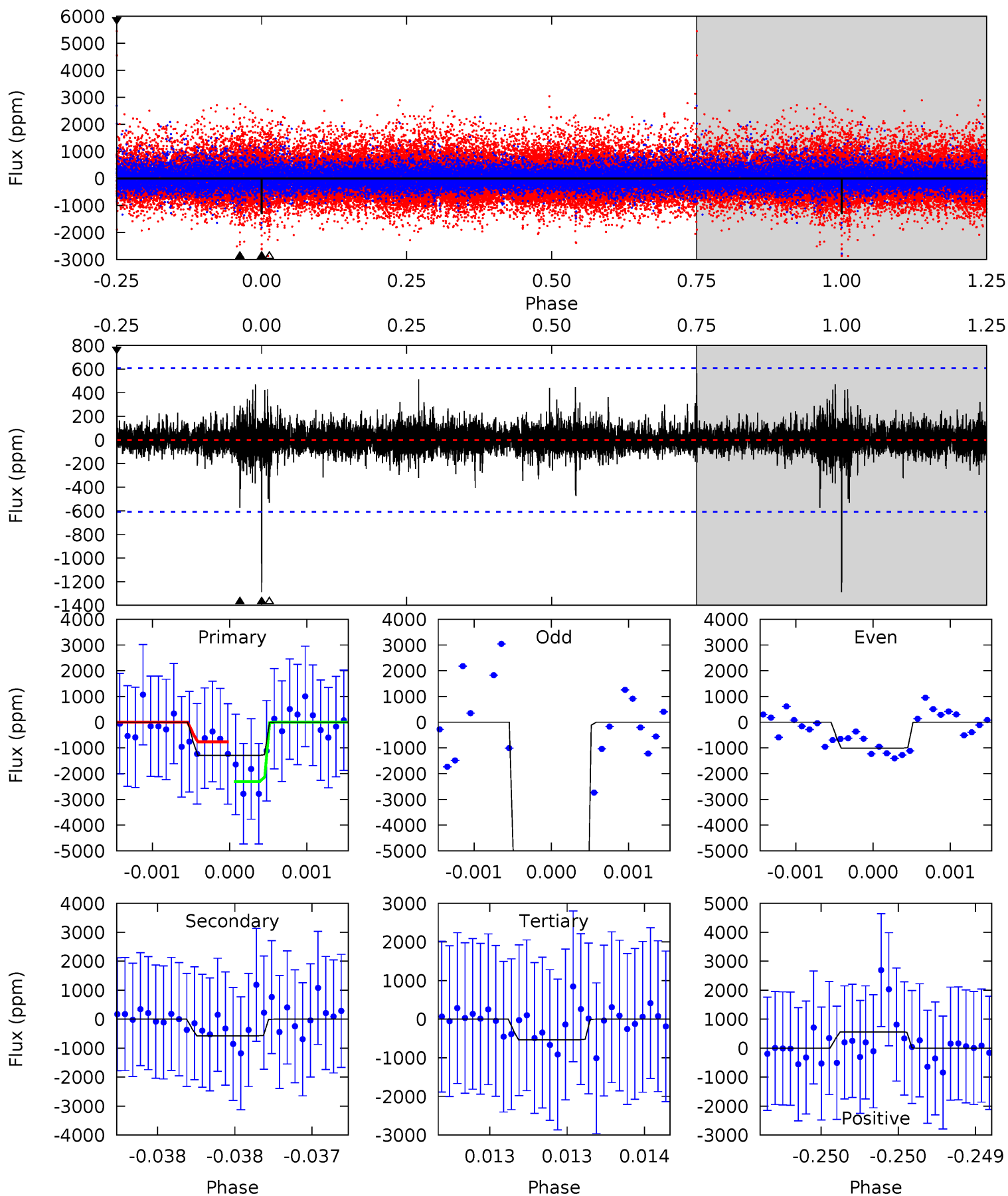
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.43	12.2	11.6	19.4	5.53	3.42	2.84	-3.20	-10.9	0.60	-7.13	0.19	0.88	0.61	0.70



Alt Model-Shift Uniqueness Test

010471960-01, P = 547.455939 Days, E = 155.037157 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	5.24	4.85	5.14	5.55	3.45	0.69	6.92	6.63	0.39	0.10	63.7	2.37	0.30	6.55



Stellar Parameters For KIC 010471960

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3585^{+65}_{-72}	$4.868^{+0.045}_{-0.041}$	$-0.200^{+0.100}_{-0.100}$	$0.388^{+0.039}_{-0.044}$	$0.406^{+0.037}_{-0.056}$	$9.786^{+2.503}_{-1.663}$
	+2%/-2%	+1%/-1%	+50%/-50%	+10%/-11%	+9%/-14%	+26%/-17%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010471960-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1873 ± 153	$2.09^{+0.91}_{-0.89}$	140^{+4}_{-4}	3433^{+717}_{-360}	$223323^{+439523}_{-116954}$
Alt.	-574 ± 109	$3.22^{+0.97}_{-1.05}$	140^{+4}_{-4}	2584^{+269}_{-179}	29143^{+33731}_{-13024}

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

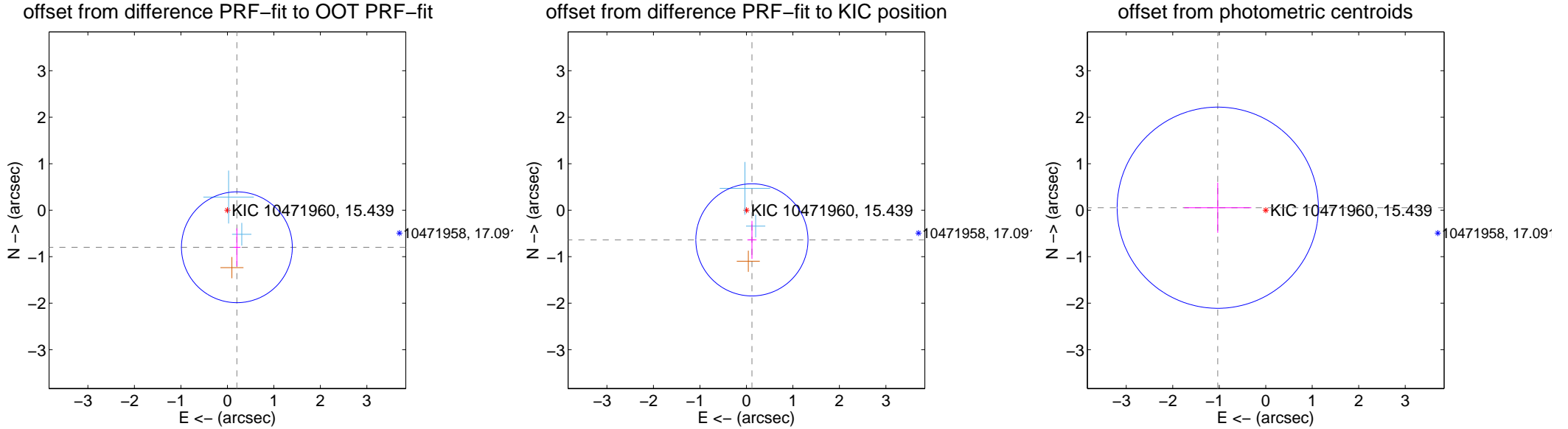
DV Centroid Data

Supplemental centroid analysis for 010471960-01. Kepler magnitude: 15.44. Transit SNR 8.57

There are 2 quarters with good PRF difference image offsets

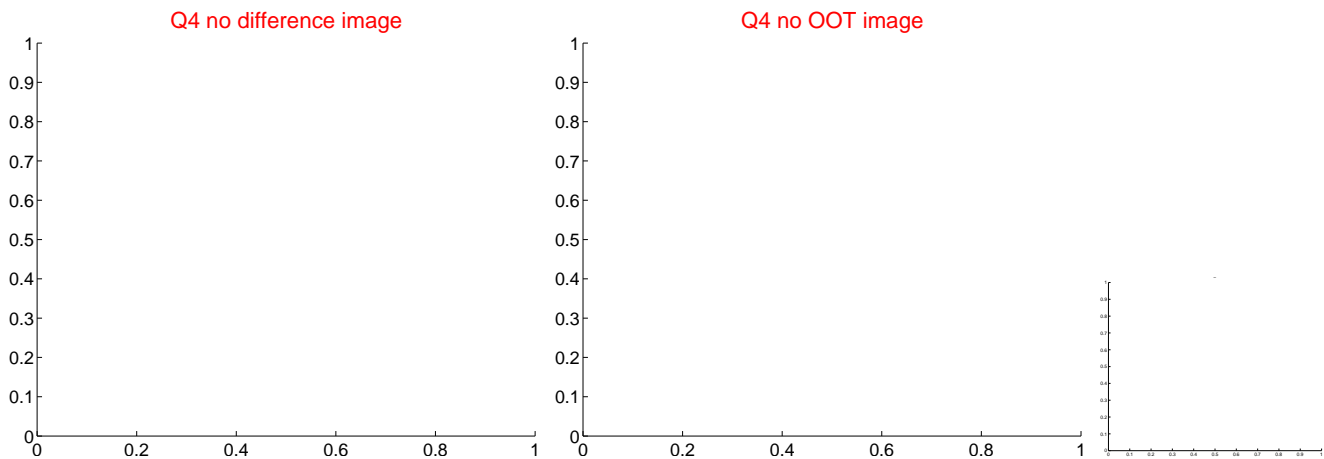
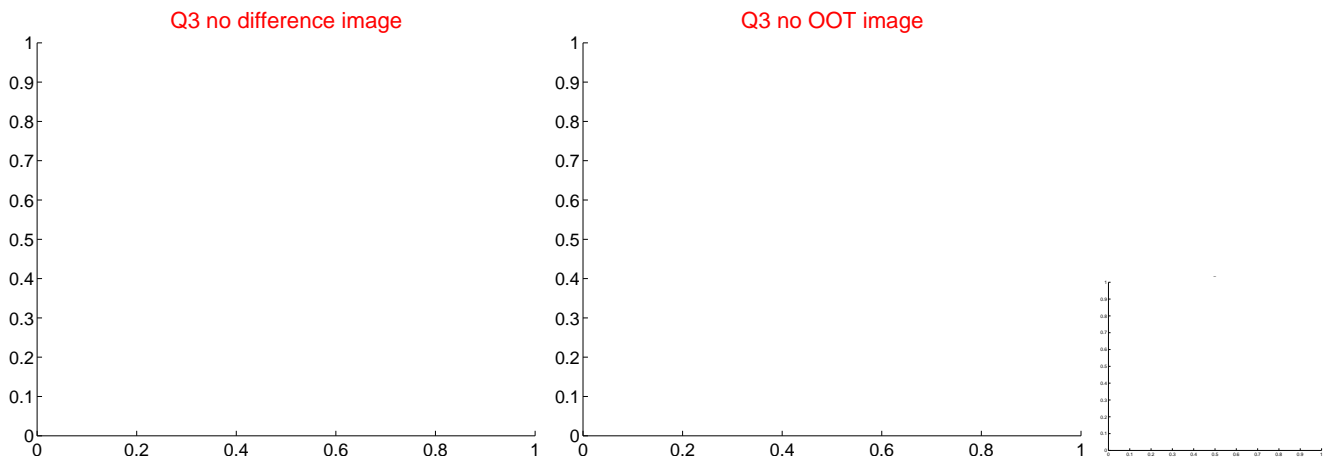
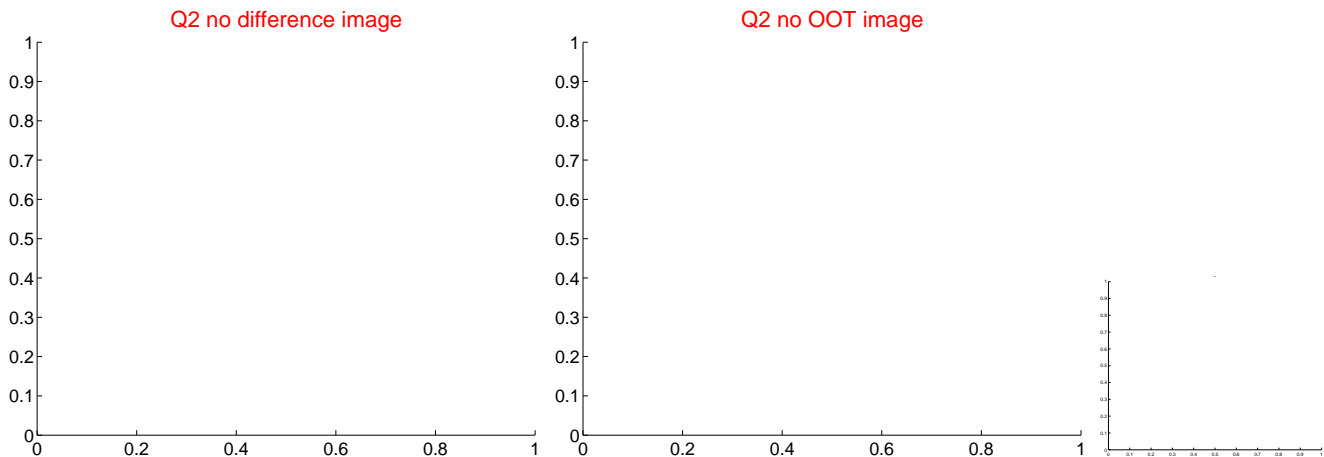
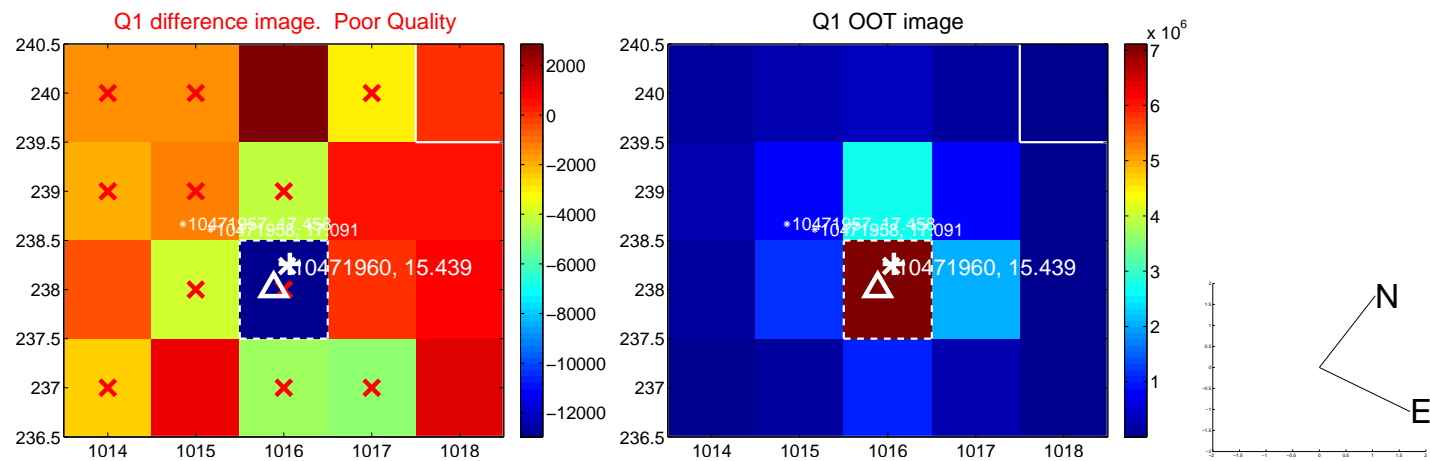
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.823 ± 0.397	2.07	-0.204 ± 0.076	-0.797 ± 0.407
PRF-fit source offset from KIC position	0.649 ± 0.402	1.61	-0.118 ± 0.098	-0.638 ± 0.408
photometric centroid source offset	1.03 ± 0.72	1.43	1.03 ± 0.72	0.05 ± 0.54

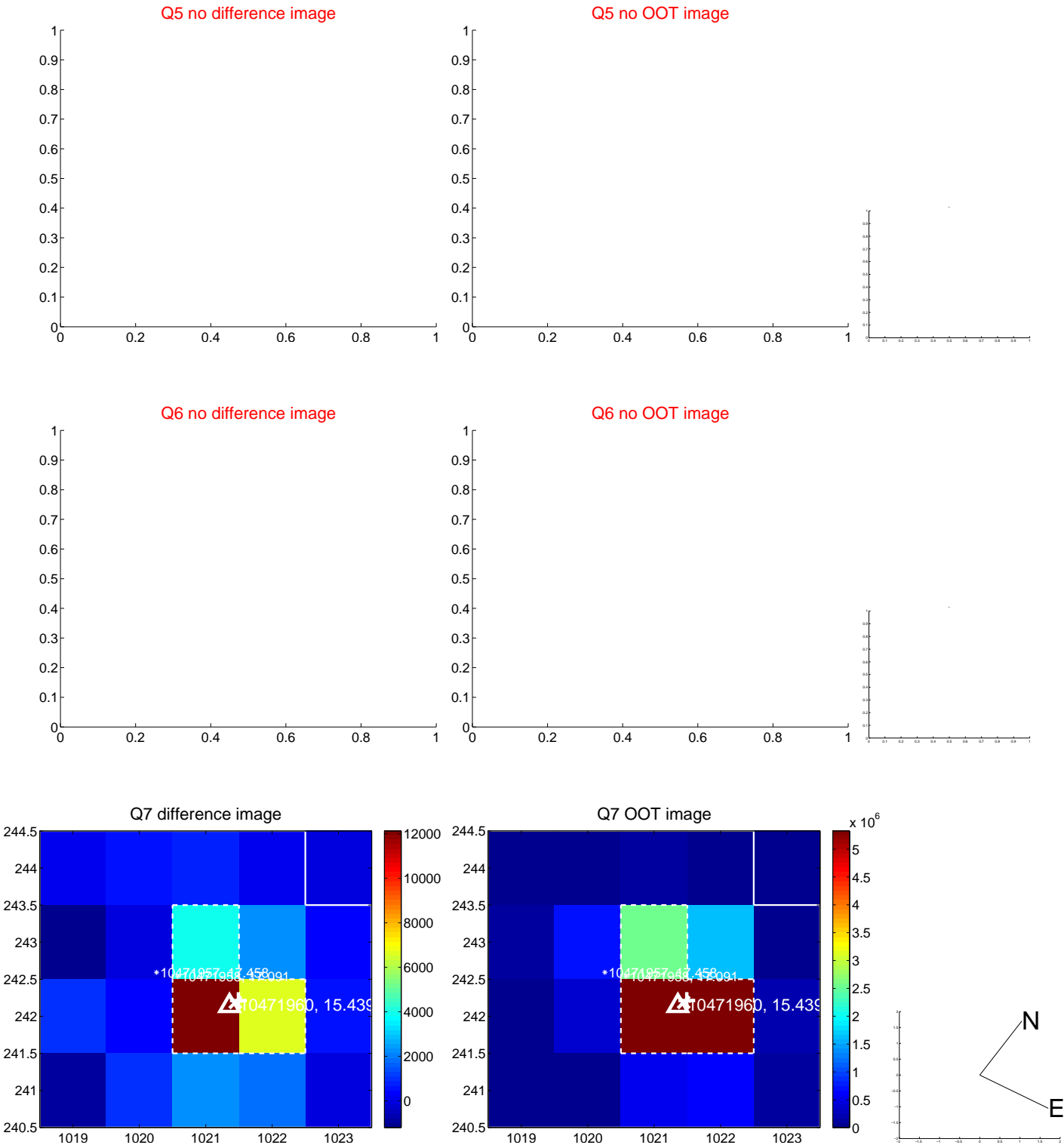


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



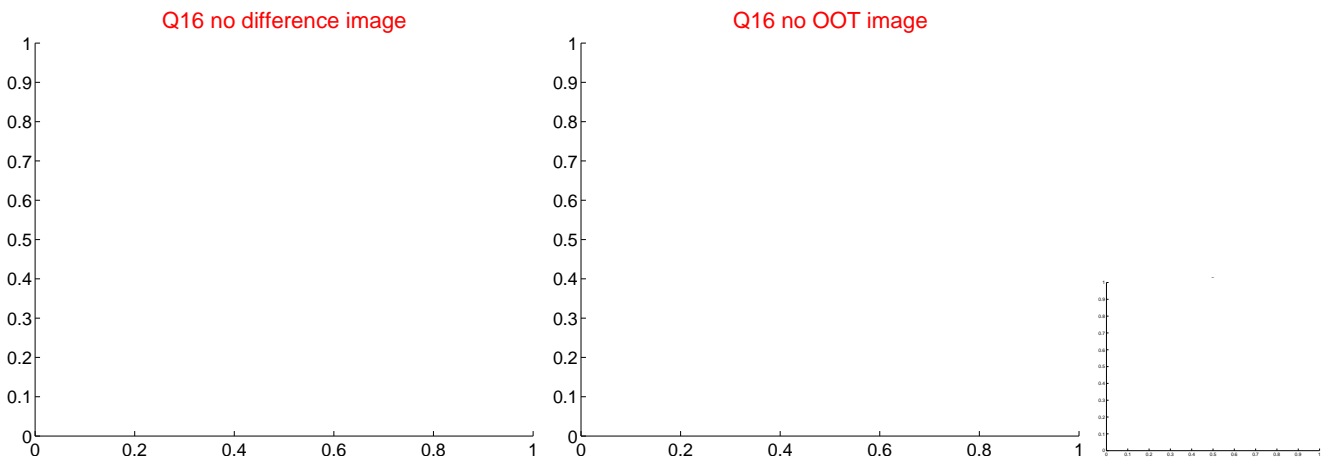
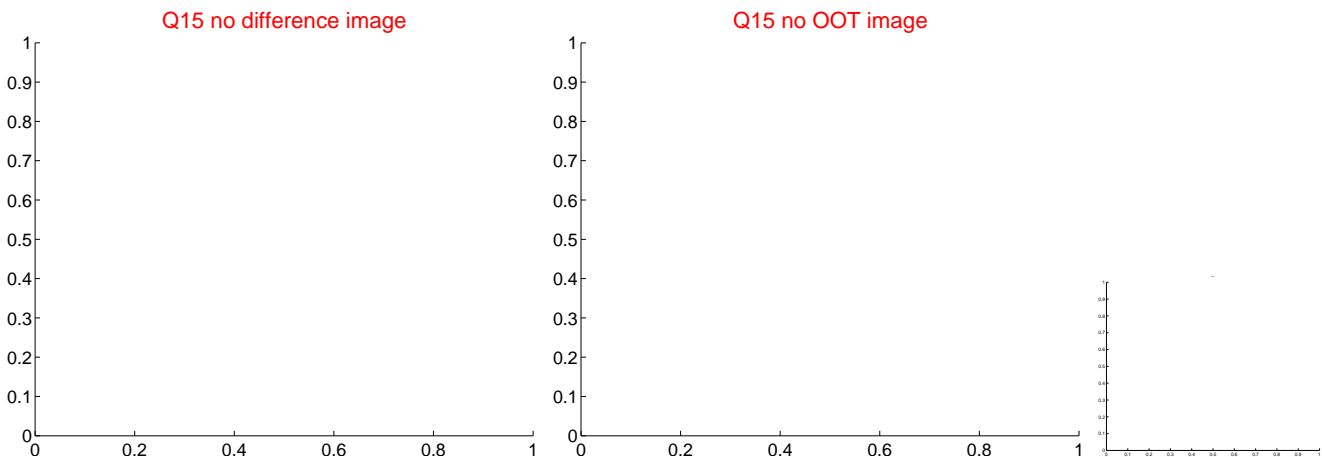
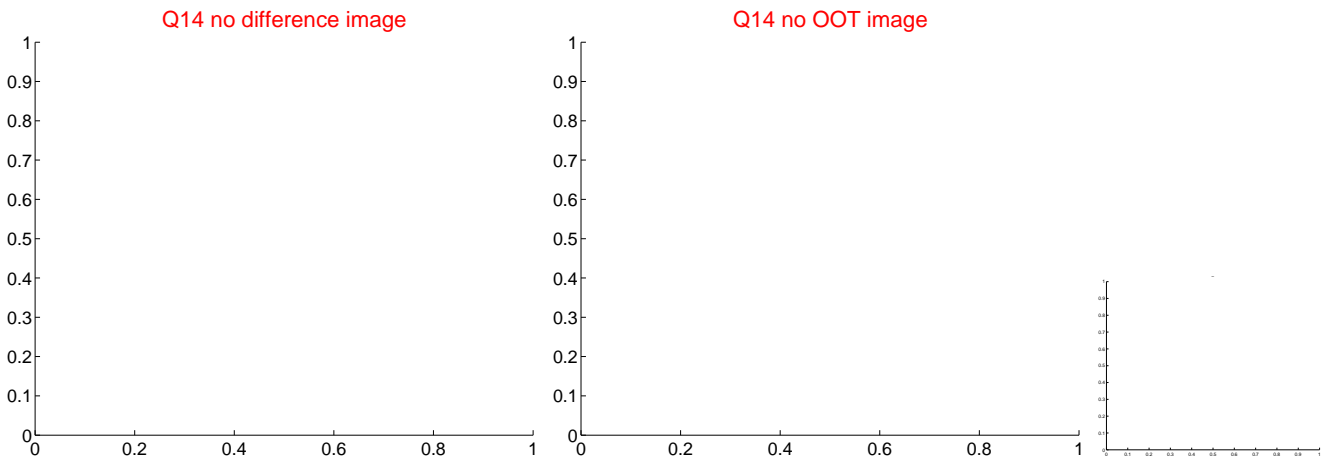
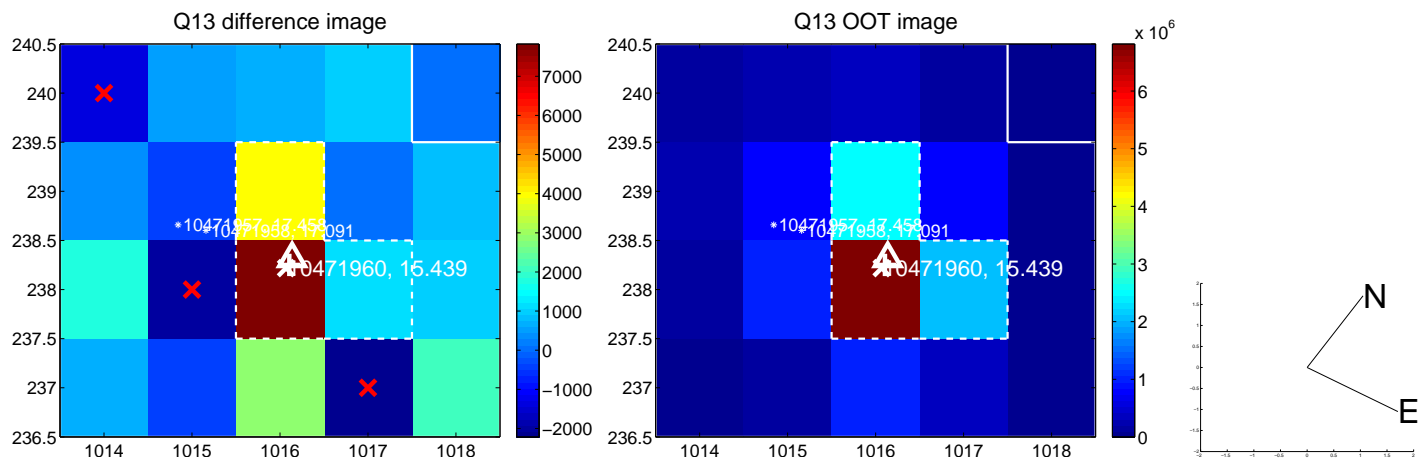
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



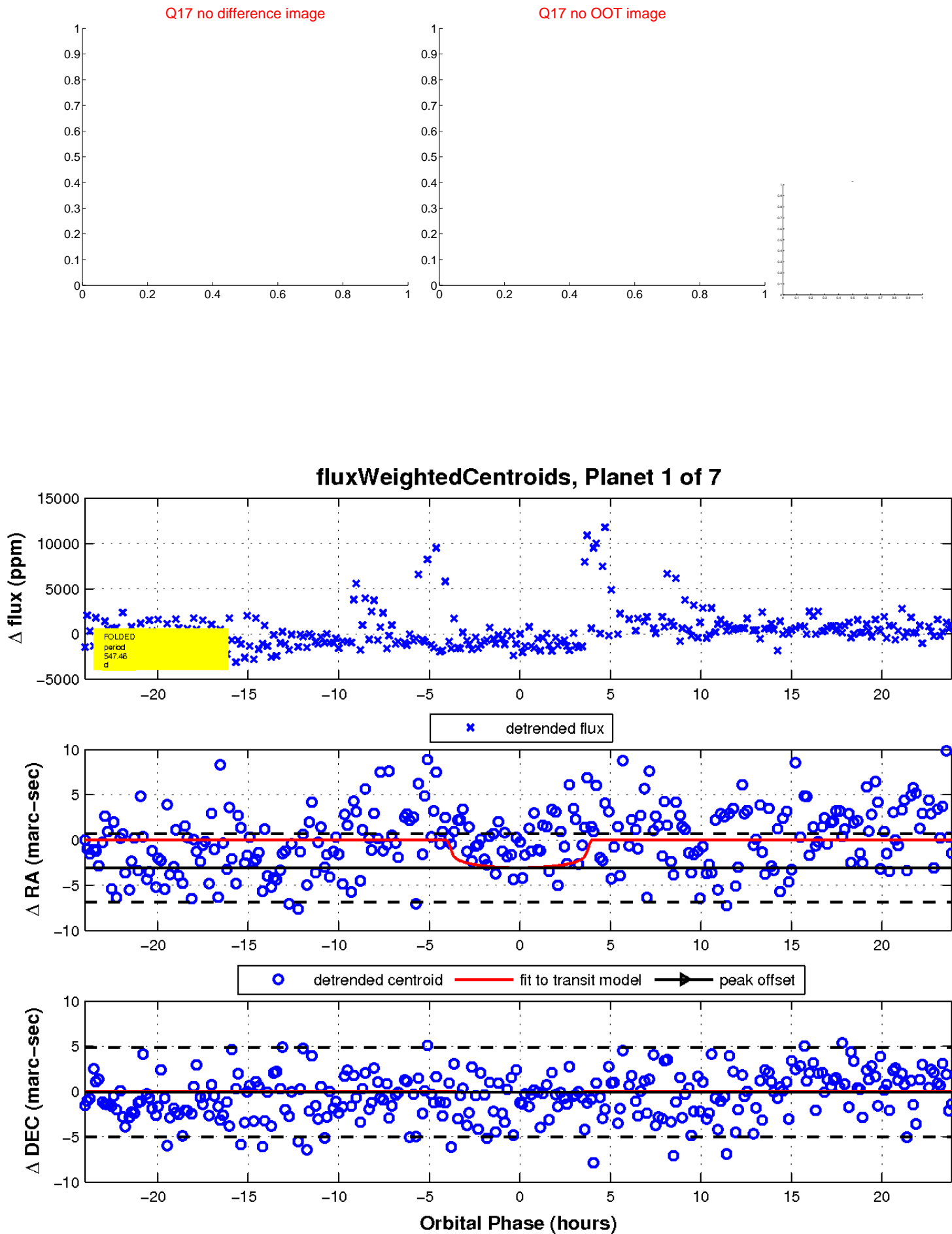
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

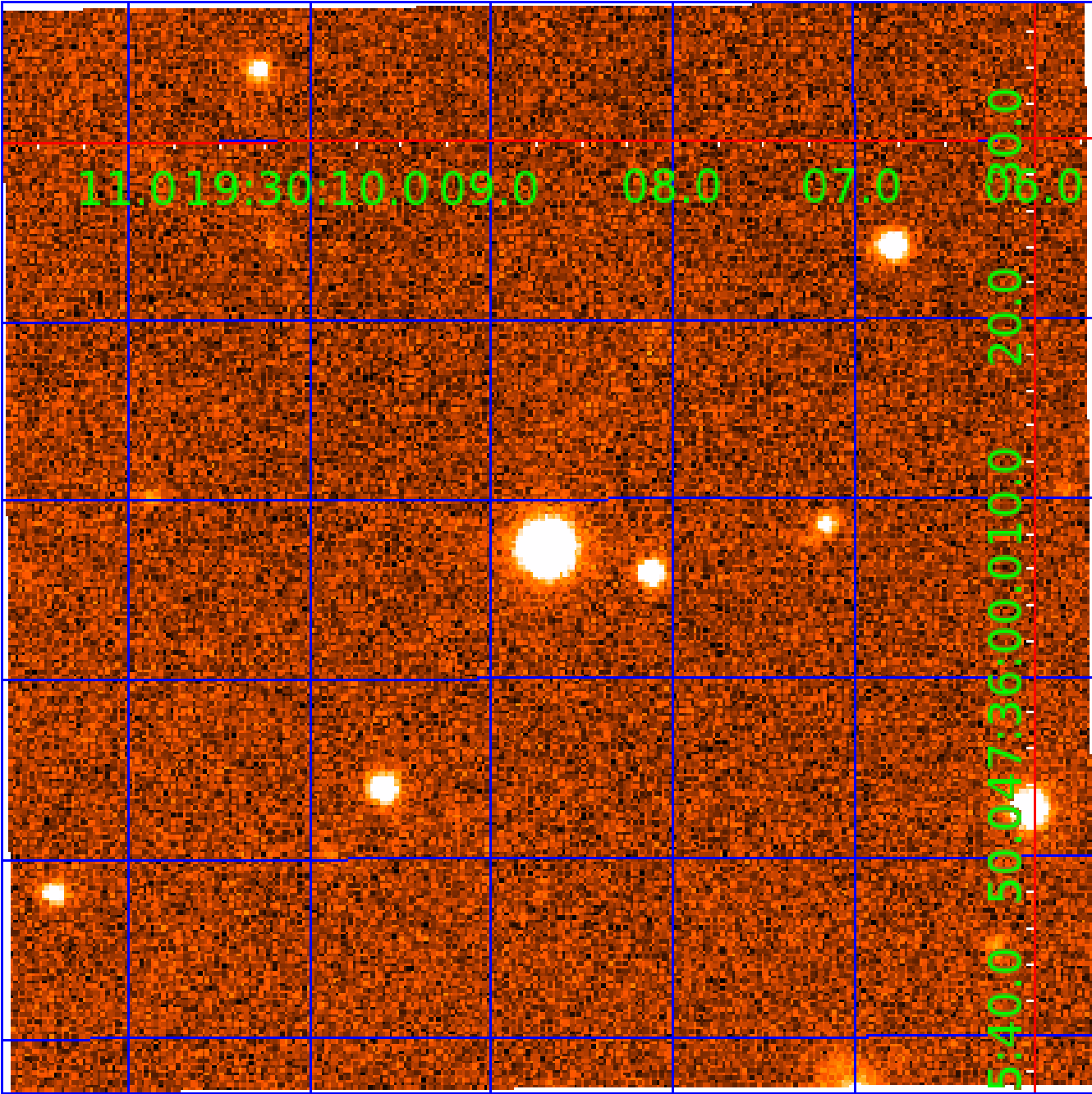


white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010471960

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})
010471960-01	OBS	No	547.464223	155.030078	2769.0	8.017	19.6	8.6	0.39	3585	2.02	0.02
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010471960-04	OBS	No	549.315132	329.013198	1856.2	6.120	11.8	6.5	0.39	3585	1.69	0.02
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010471960-07	OBS	No	425.027354	270.884270	2661.0	5.762	12.9	9.4	0.39	3585	2.17	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010471960-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
010471960-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES
010471960-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

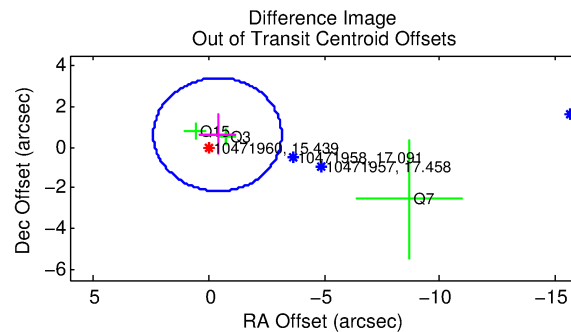
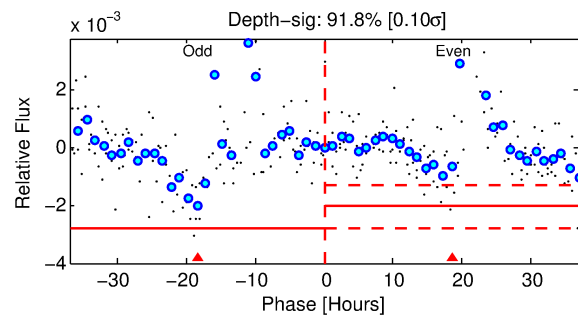
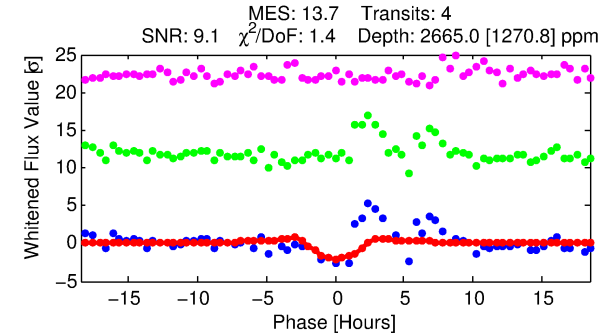
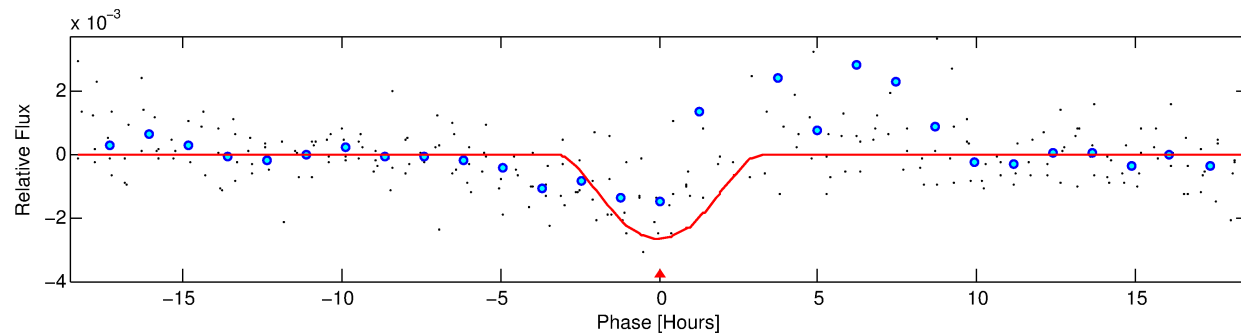
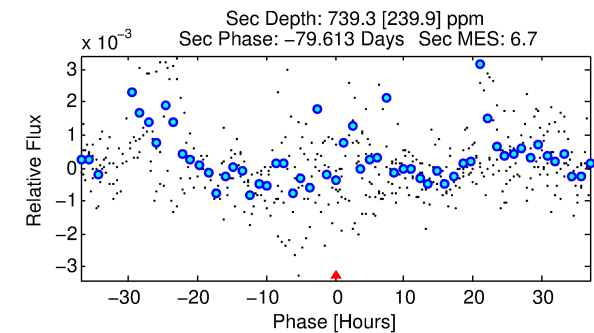
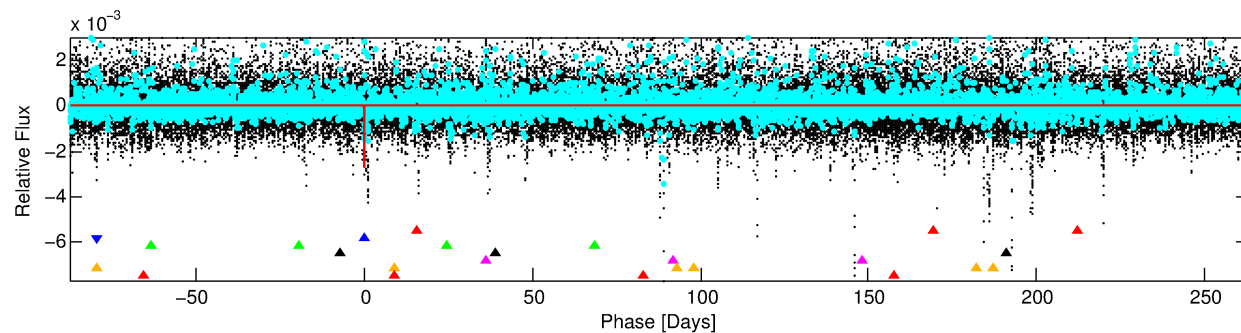
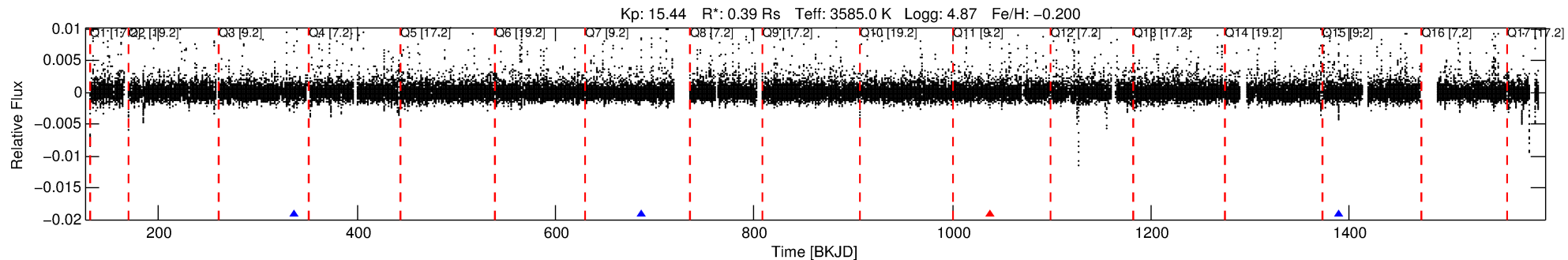
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010471960-02

No Significant Match Found

DV One-Page Summary

KIC: 10471960 Candidate: 2 of 7 Period: 350.765 d



DV Fit Results:

Period = 350.76541 [0.00801] d
Epoch = 336.3183 [0.0151] BKJD
Rp/R* = 0.0901 [0.4403]
a/R* = 188.24 [183.93]
b = 1.00 [0.59]
Seff = 0.04 [0.01]
Teq = 116 [4] K
Rp = 3.81 [18.65] Re
a = 0.7204 [0.0599] AU
Ag = 14507.86 [141877.99] [0.10σ]
Teff = 1969 [4815] K [0.38σ]

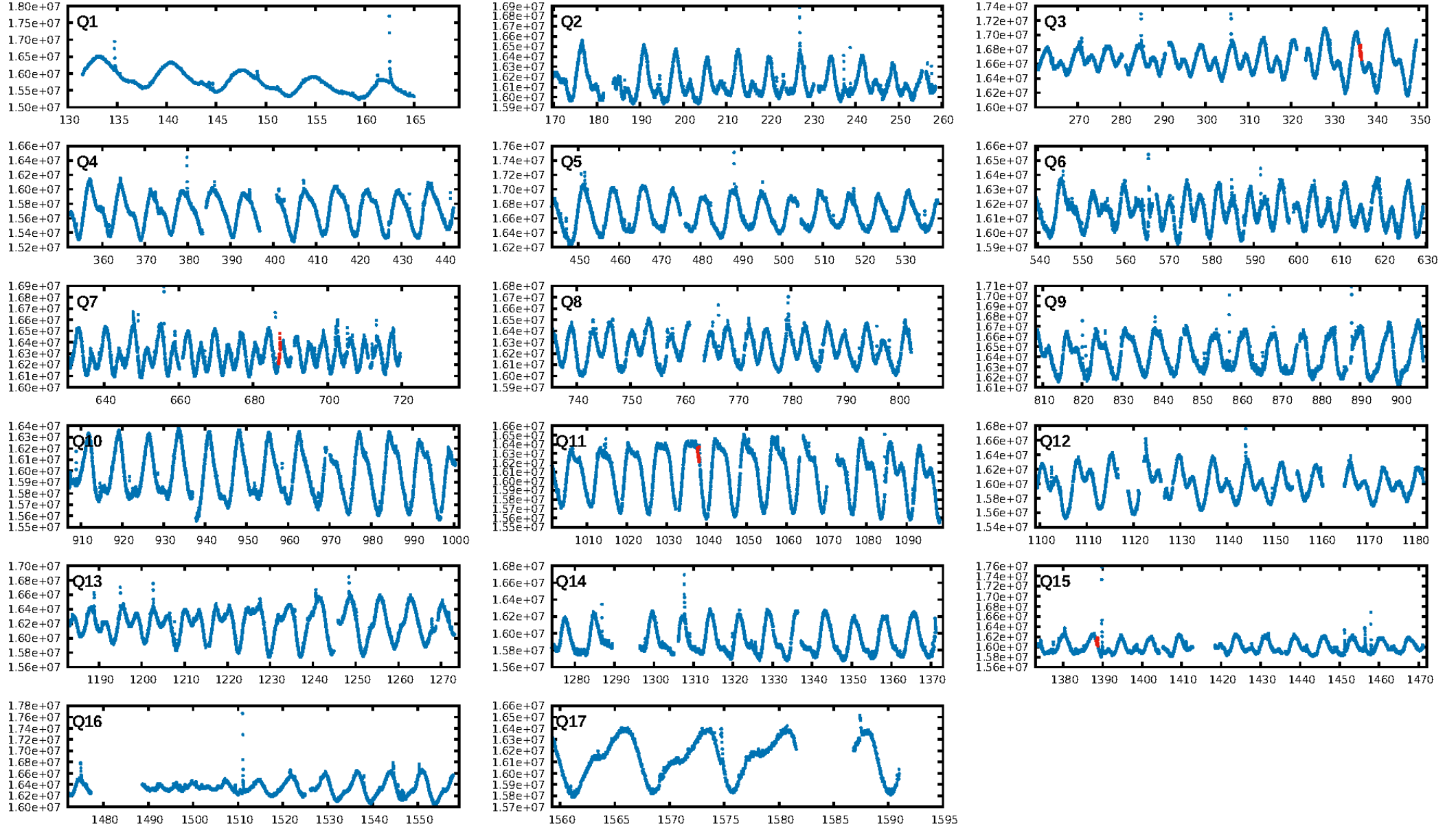
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [69.46σ]
LongPeriod-sig: 100.0% [176.75σ]
ModelChiSquare2-sig: 0.8%
ModelChiSquareGof-sig: 75.9%
Bootstrap-pfa: 6.60e-12
RollingBand-fgt: 0.75 [3/4]
GhostDiagnostic-chr: 1.83
Centroid-sig: 9.6%
Centroid-so: 1.187 arcsec [1.40σ]
OotOffset-rm: 0.734 arcsec [0.79σ]
KicOffset-rm: 0.808 arcsec [0.86σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-st: 0/3/0/0 [3]
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DiffImageOverlap-fno: 1.00 [3/3]

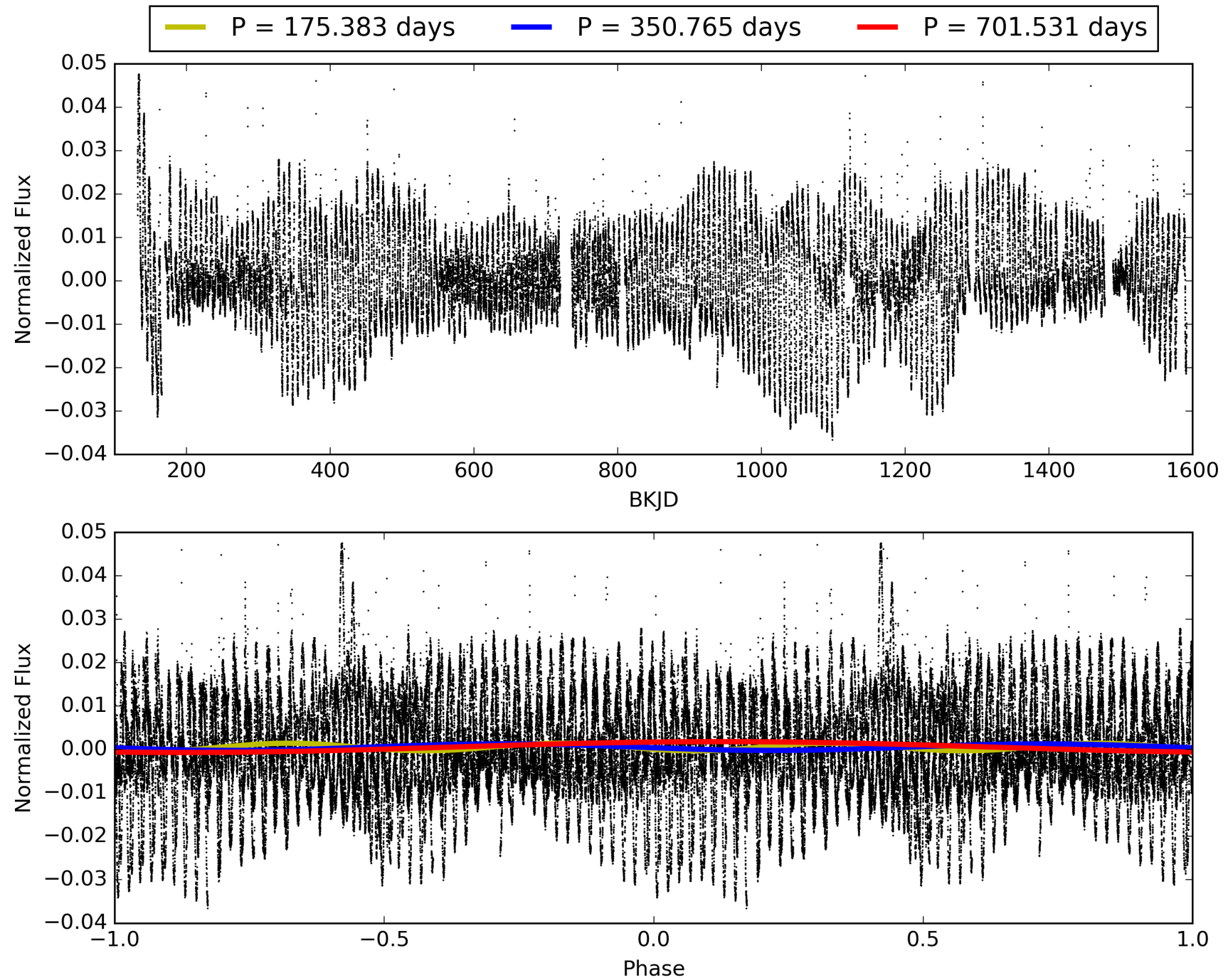
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010471960-02, PDC Light Curves

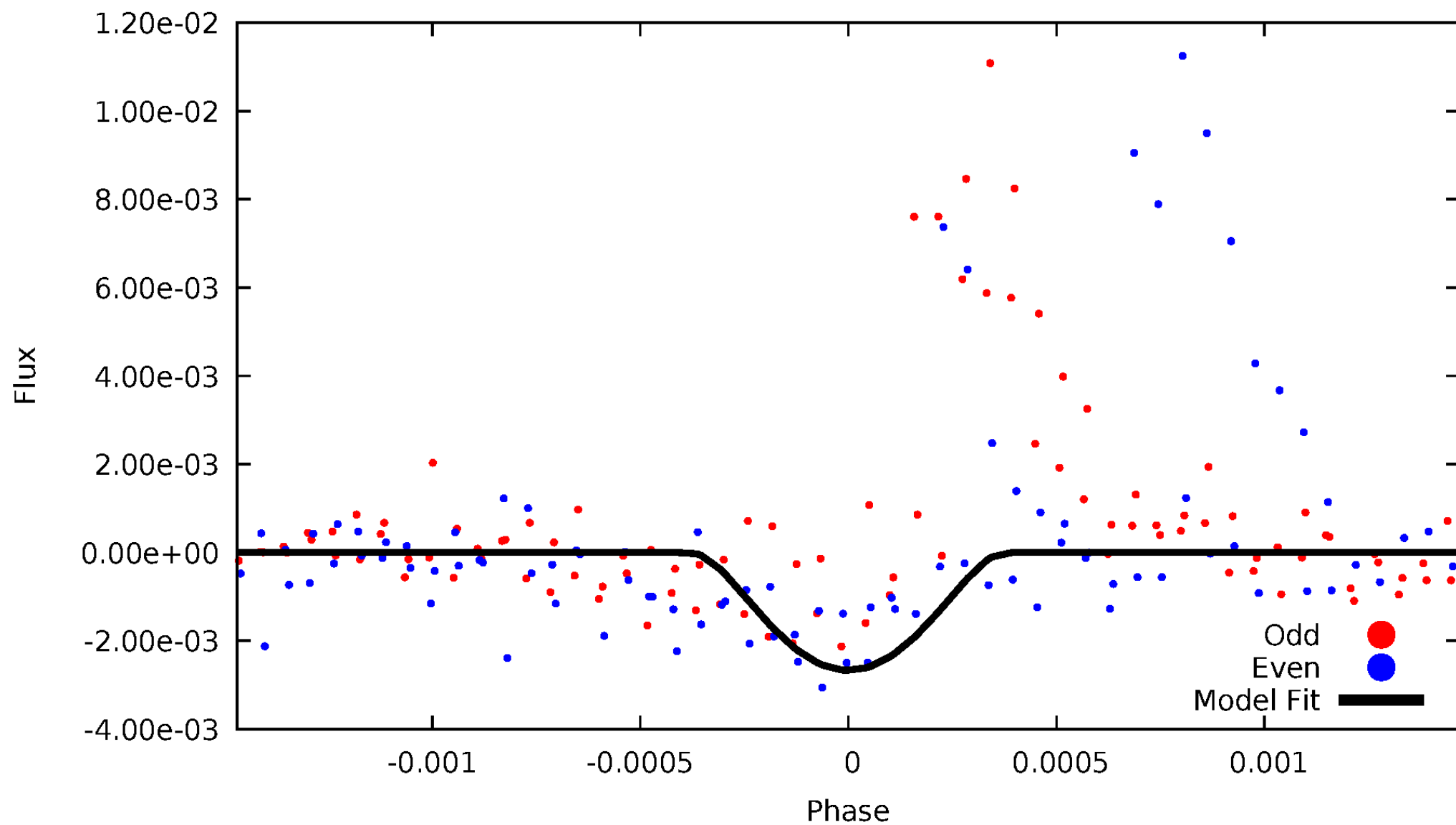


TCE 010471960-02



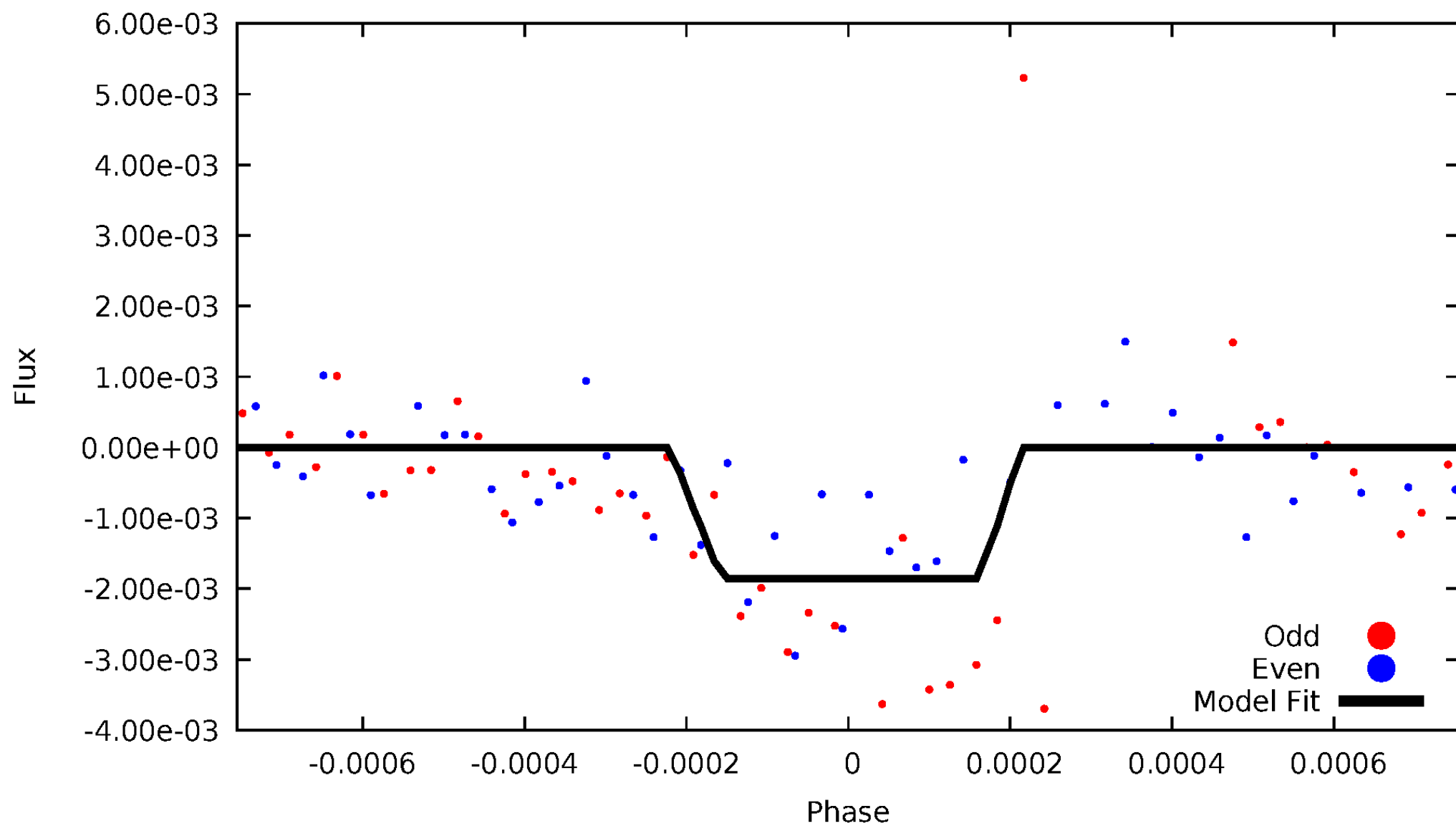
DV Odd/Even

TCE 010471960-02



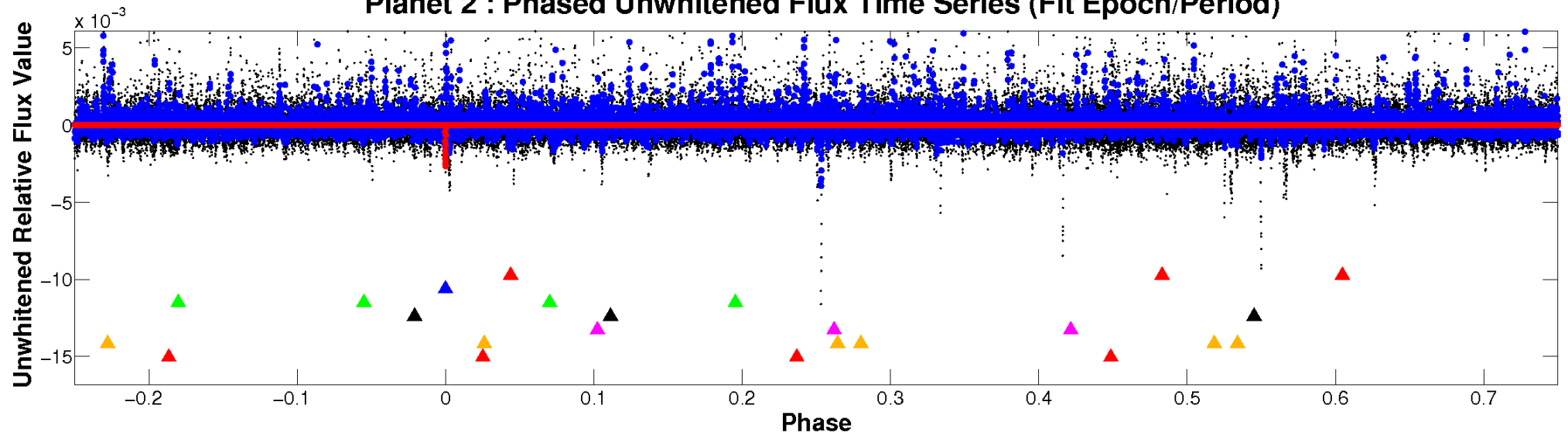
ALT Odd/Even

TCE 010471960-02

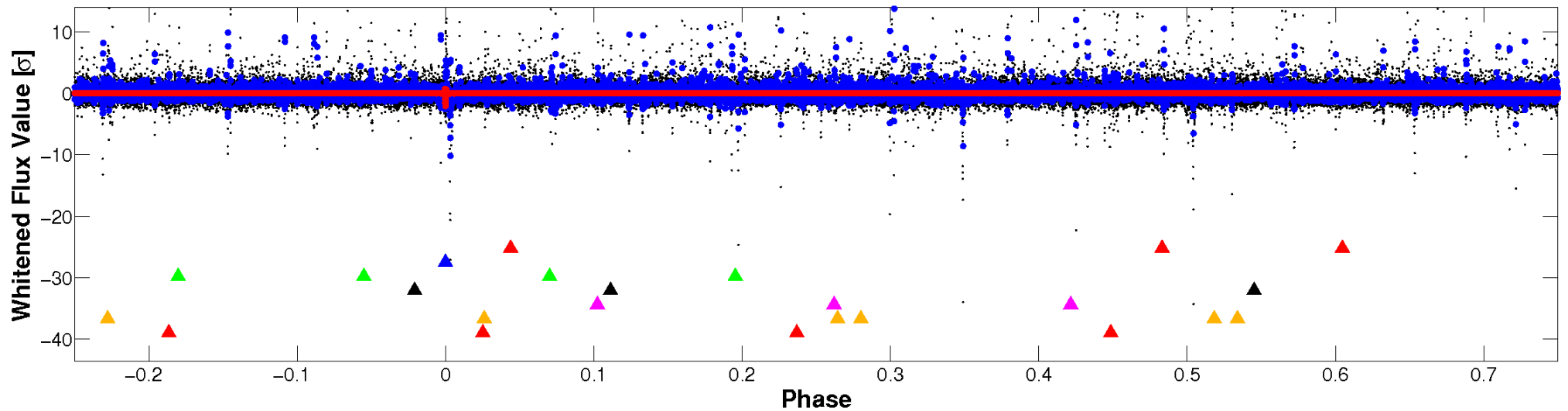


Non-Whitened Vs. Whitened Light Curve

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

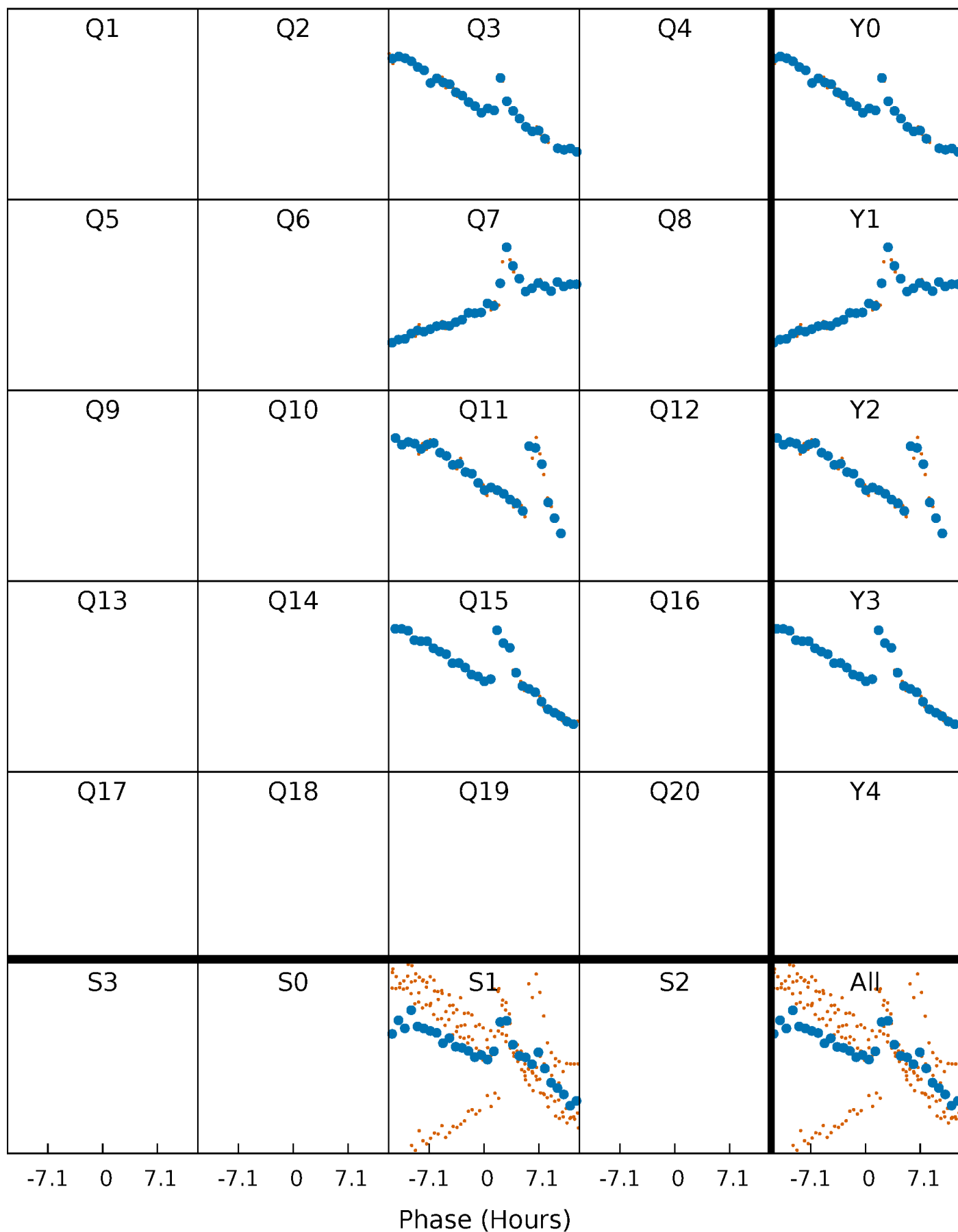


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



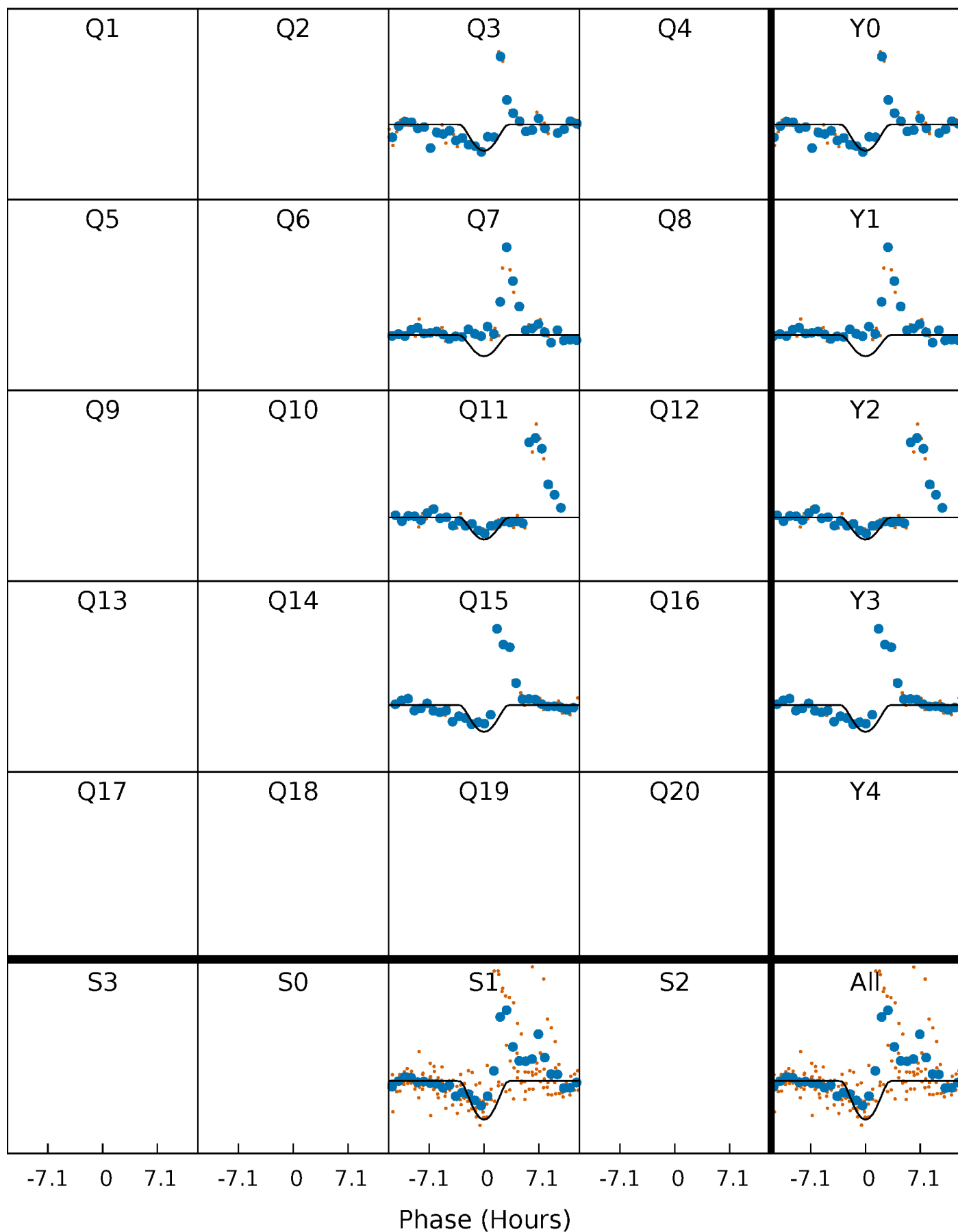
PDC Quarter-Phased Transit Curves

TCE 010471960-02 $P=350.765409$ Days $T_0=336.318265$ (BKJD)



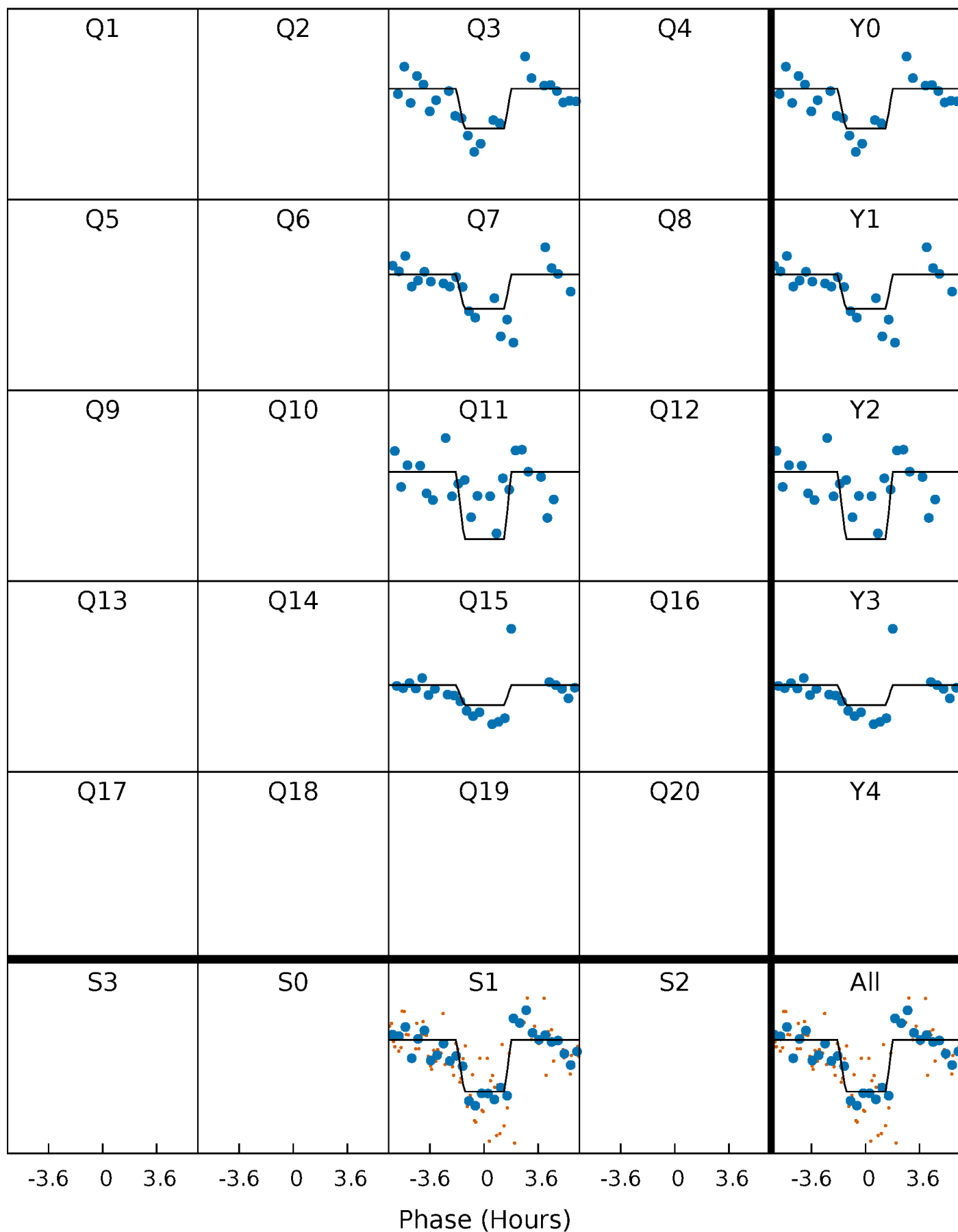
DV Quarter-Phased Transit Curves

TCE 010471960-02 $P=350.765409$ Days $T_0=336.318265$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

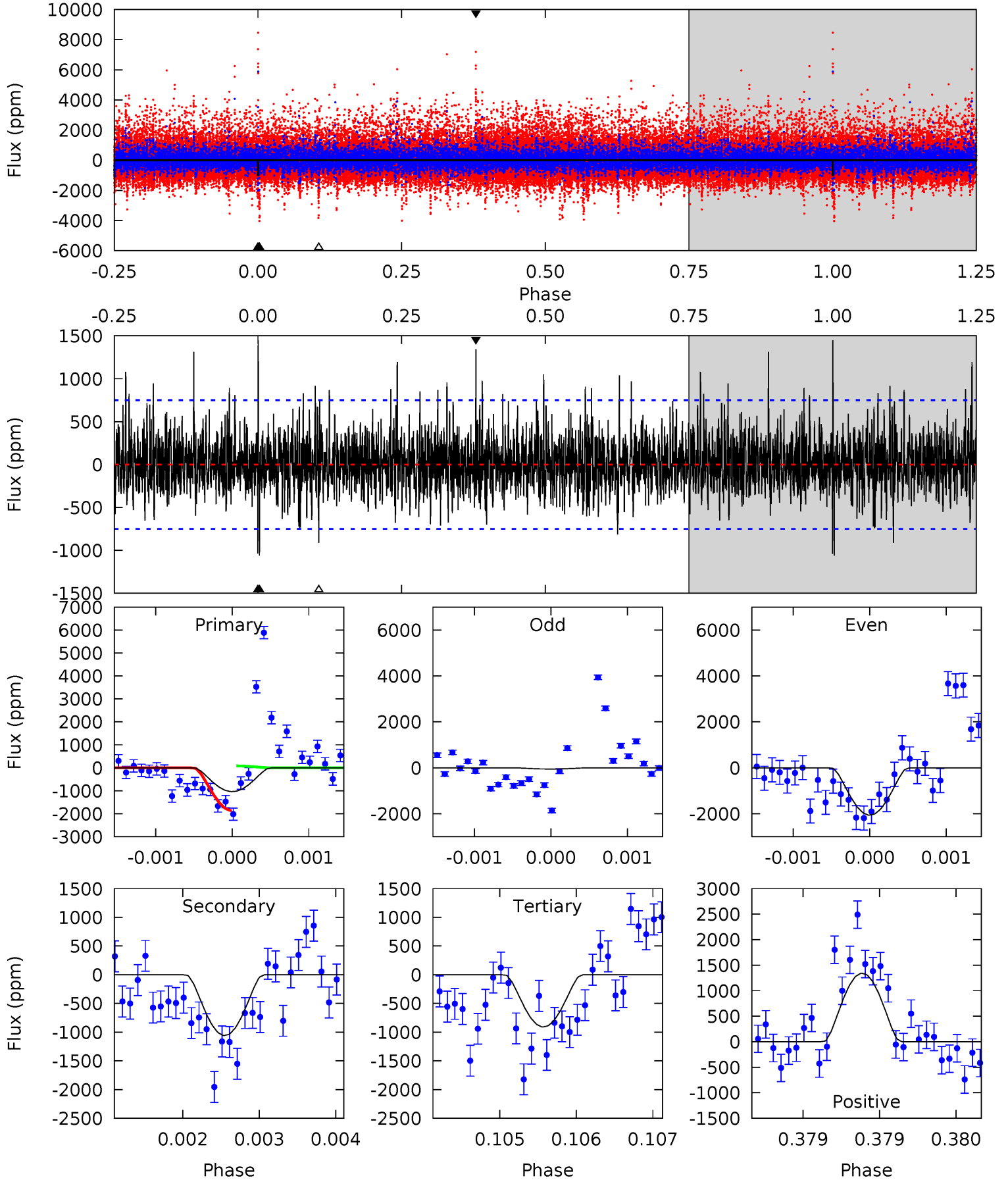
TCE 010471960-02 P=350.758183 Days $T_0=336.319390$ (BKJD)



DV Model-Shift Uniqueness Test

010471960-02, P = 350.765409 Days, E = 336.318265 Days

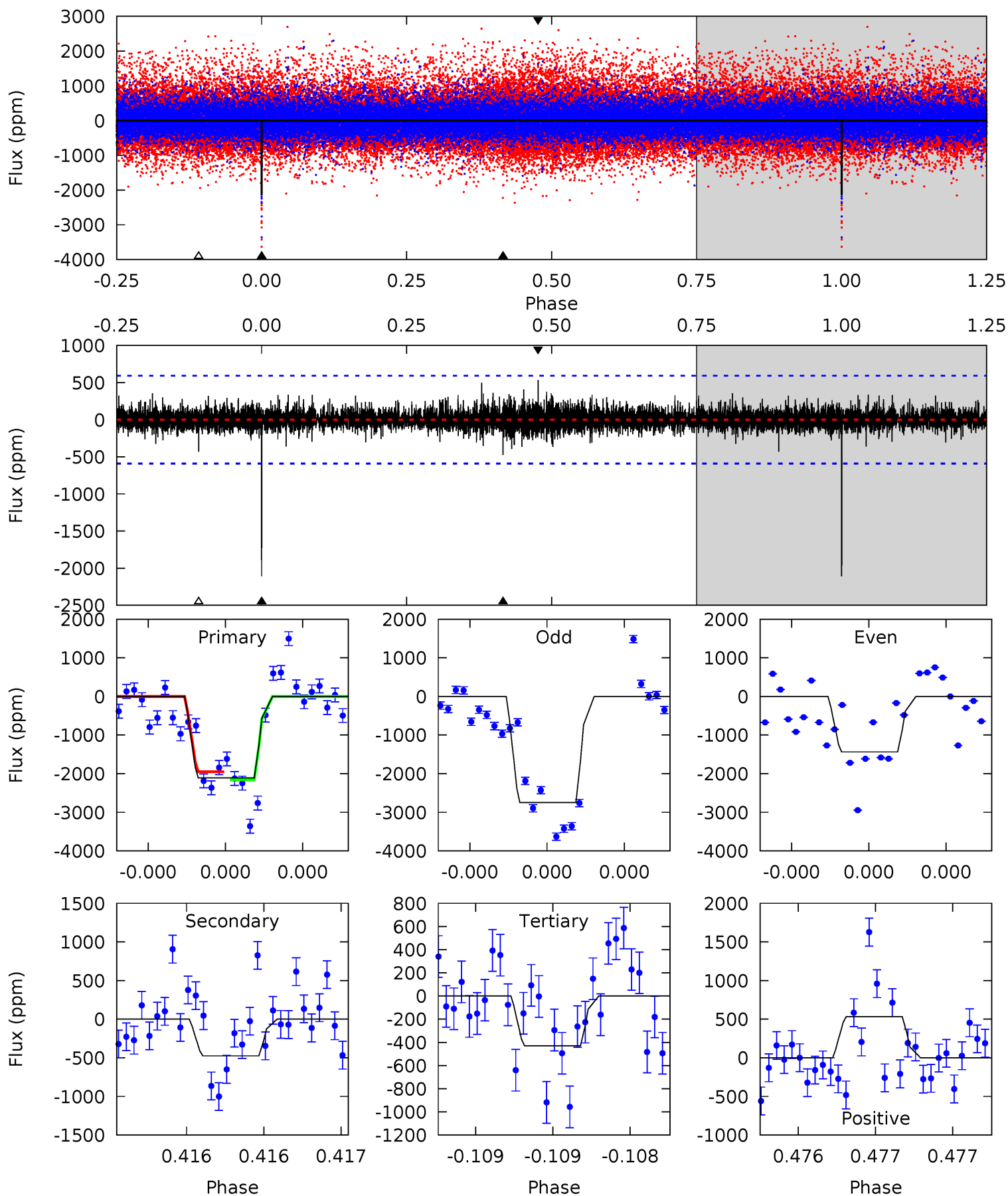
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.61	7.77	6.68	9.85	5.50	3.37	1.82	0.93	-2.24	1.09	-2.08	6.56	0.92	0.58	6.33



Alt Model-Shift Uniqueness Test

010471960-02, P = 350.758183 Days, E = 336.319390 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.0	4.50	4.07	5.04	5.60	3.52	0.83	15.9	14.9	0.43	-0.54	6.12	0.94	0.20	0.94



Stellar Parameters For KIC 010471960

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3585^{+65}_{-72}	$4.868^{+0.045}_{-0.041}$	$-0.200^{+0.100}_{-0.100}$	$0.388^{+0.039}_{-0.044}$	$0.406^{+0.037}_{-0.056}$	$9.786^{+2.503}_{-1.663}$
	+2%/-2%	+1%/-1%	+50%/-50%	+10%/-11%	+9%/-14%	+26%/-17%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010471960-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1059 ± 136	$13.15^{+14.86}_{-9.35}$	162^{+4}_{-5}	2006^{+629}_{-265}	1690^{+17423}_{-1308}
Alt.	-475 ± 106	$13.59^{+13.72}_{-9.32}$	162^{+4}_{-5}	1848^{+505}_{-226}	756^{+6589}_{-580}

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 $A_{obs} \gg 1.0$

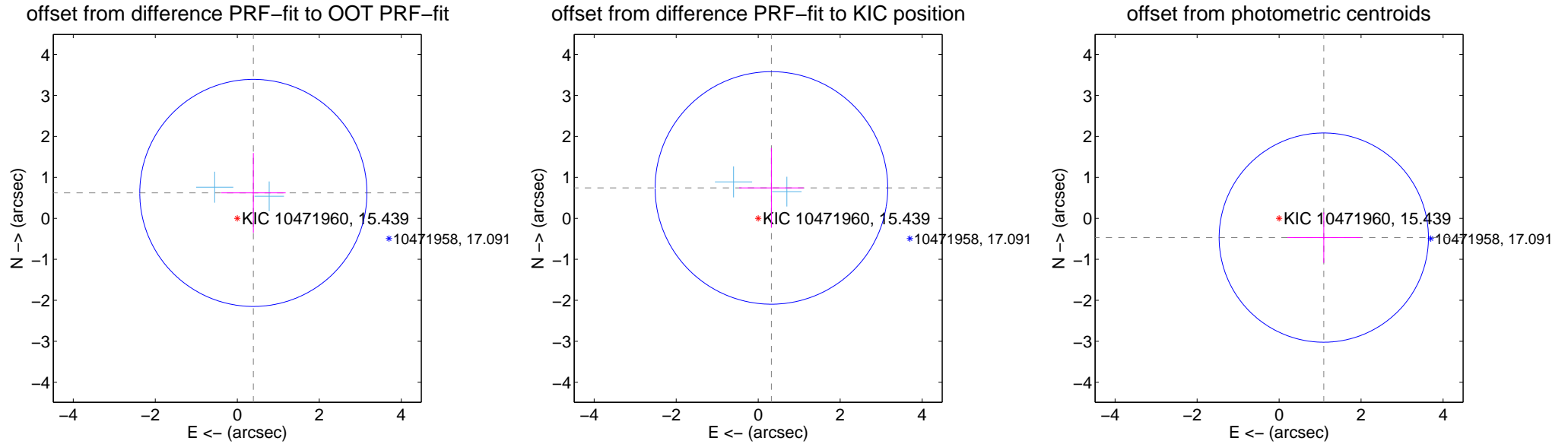
DV Centroid Data

Supplemental centroid analysis for 010471960-02. Kepler magnitude: 15.44. Transit SNR 9.09

There are 2 quarters with good PRF difference image offsets

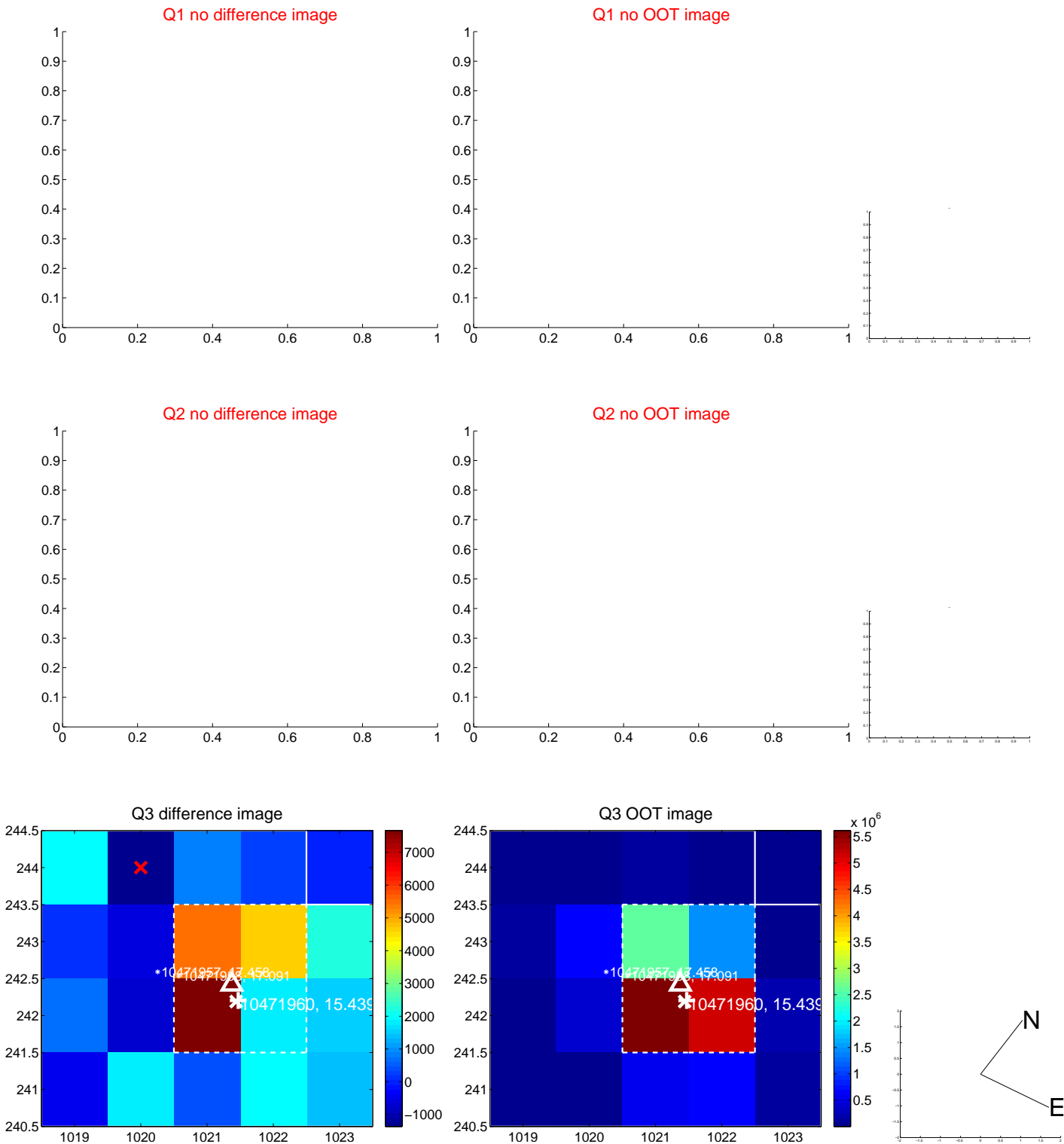
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.734 ± 0.923	0.79	-0.392 ± 0.787	0.620 ± 0.973
PRF-fit source offset from KIC position	0.808 ± 0.945	0.86	-0.323 ± 0.787	0.741 ± 0.973
photometric centroid source offset	1.19 ± 0.85	1.40	-1.09 ± 0.89	-0.47 ± 0.62

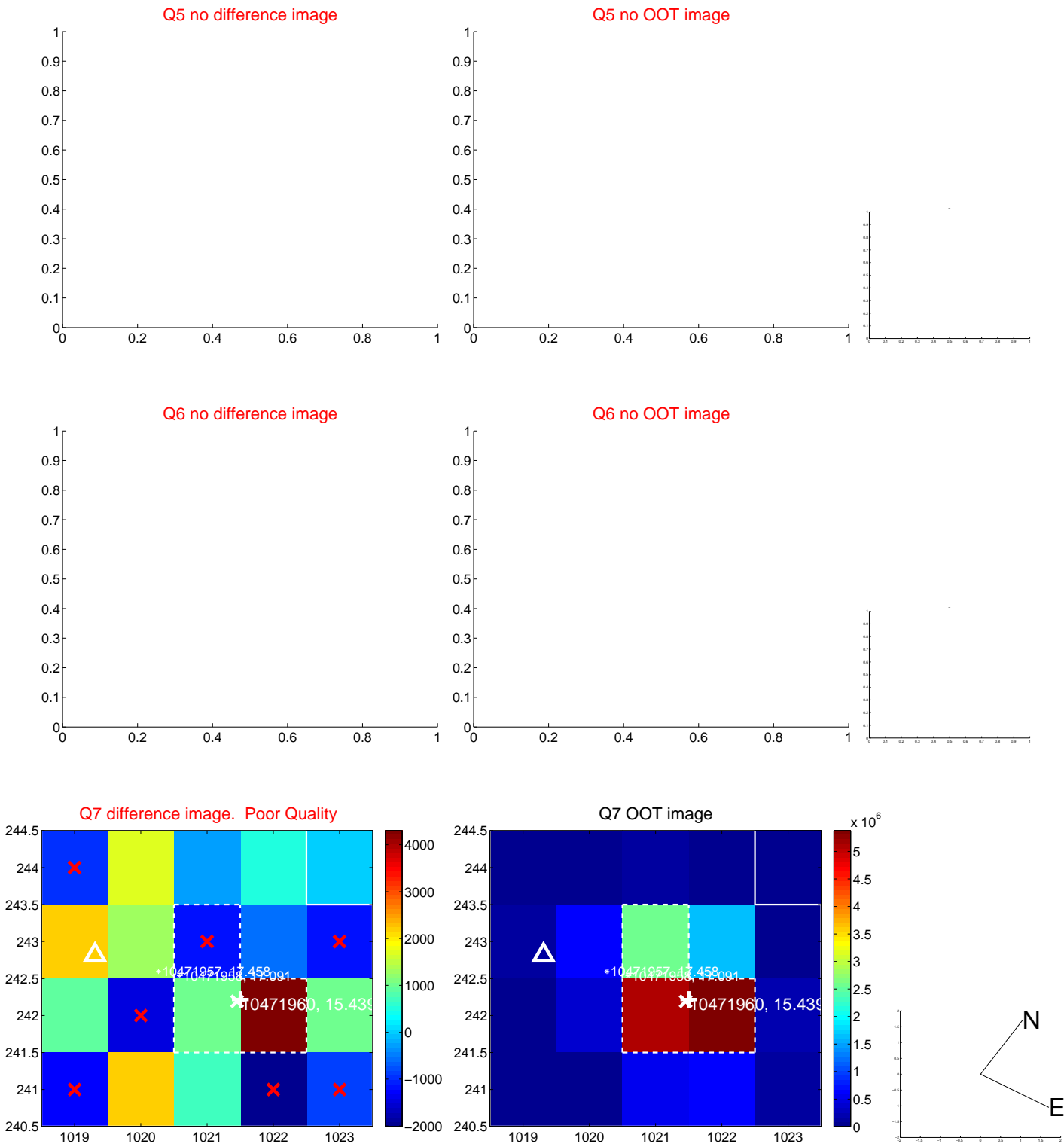


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



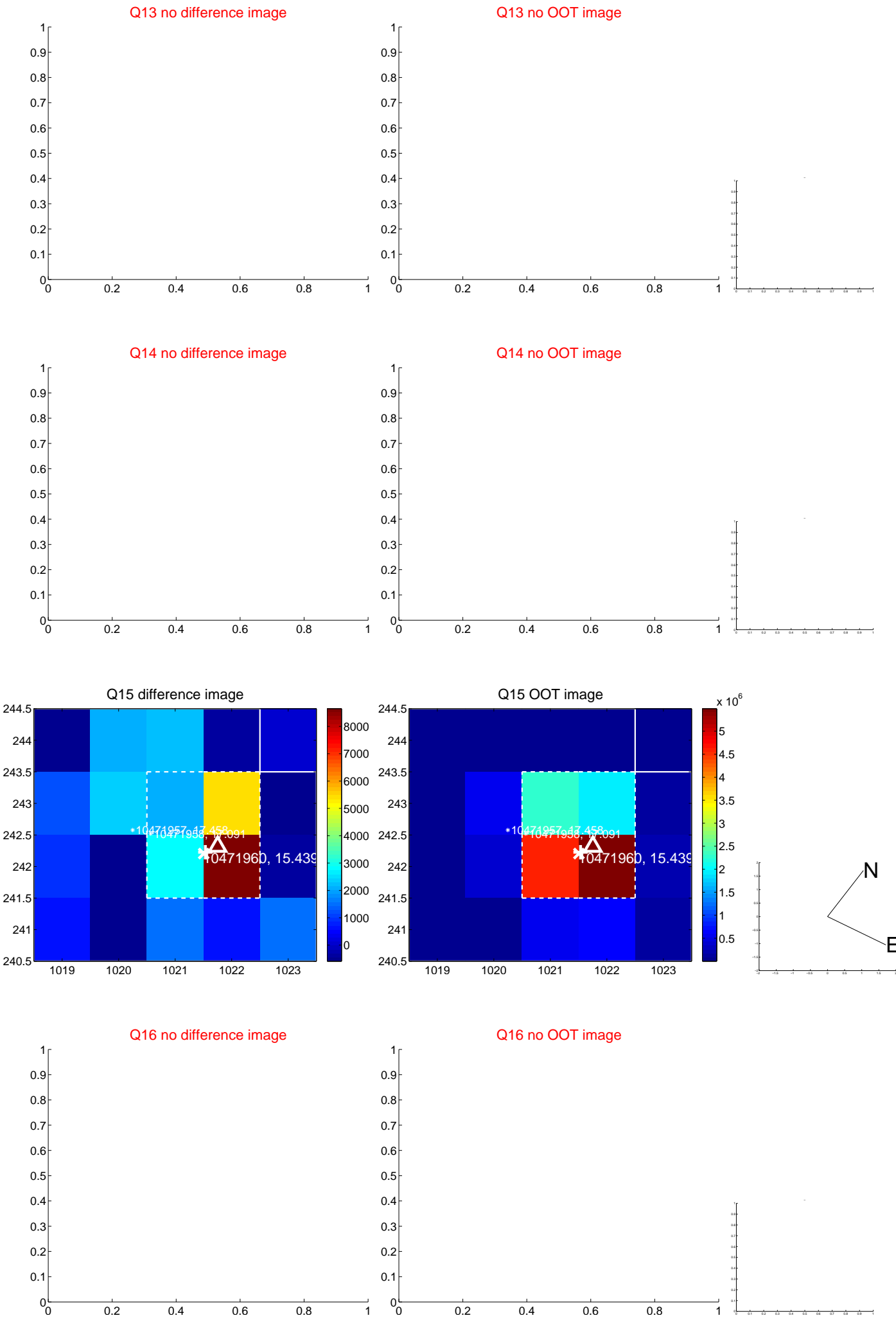
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



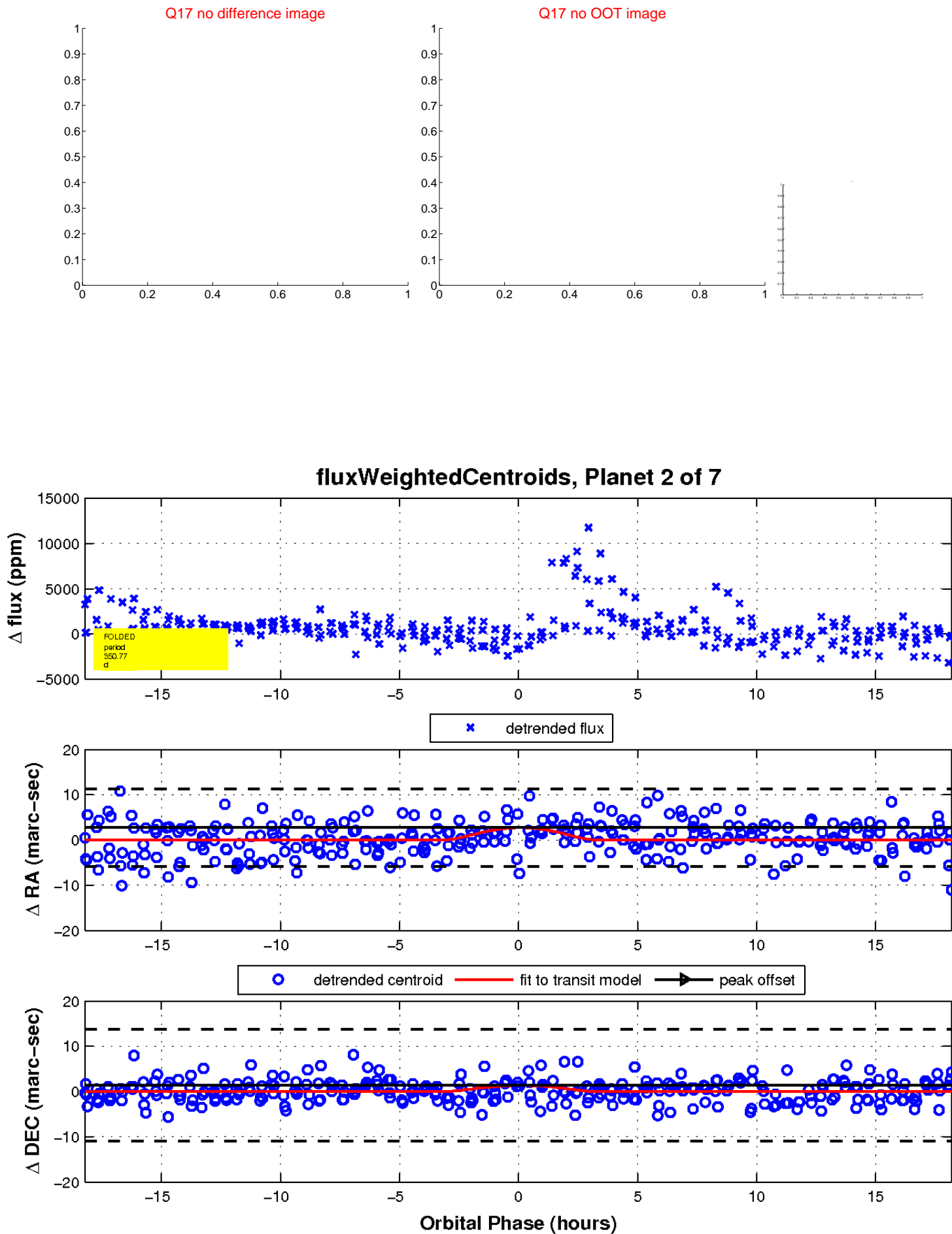
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

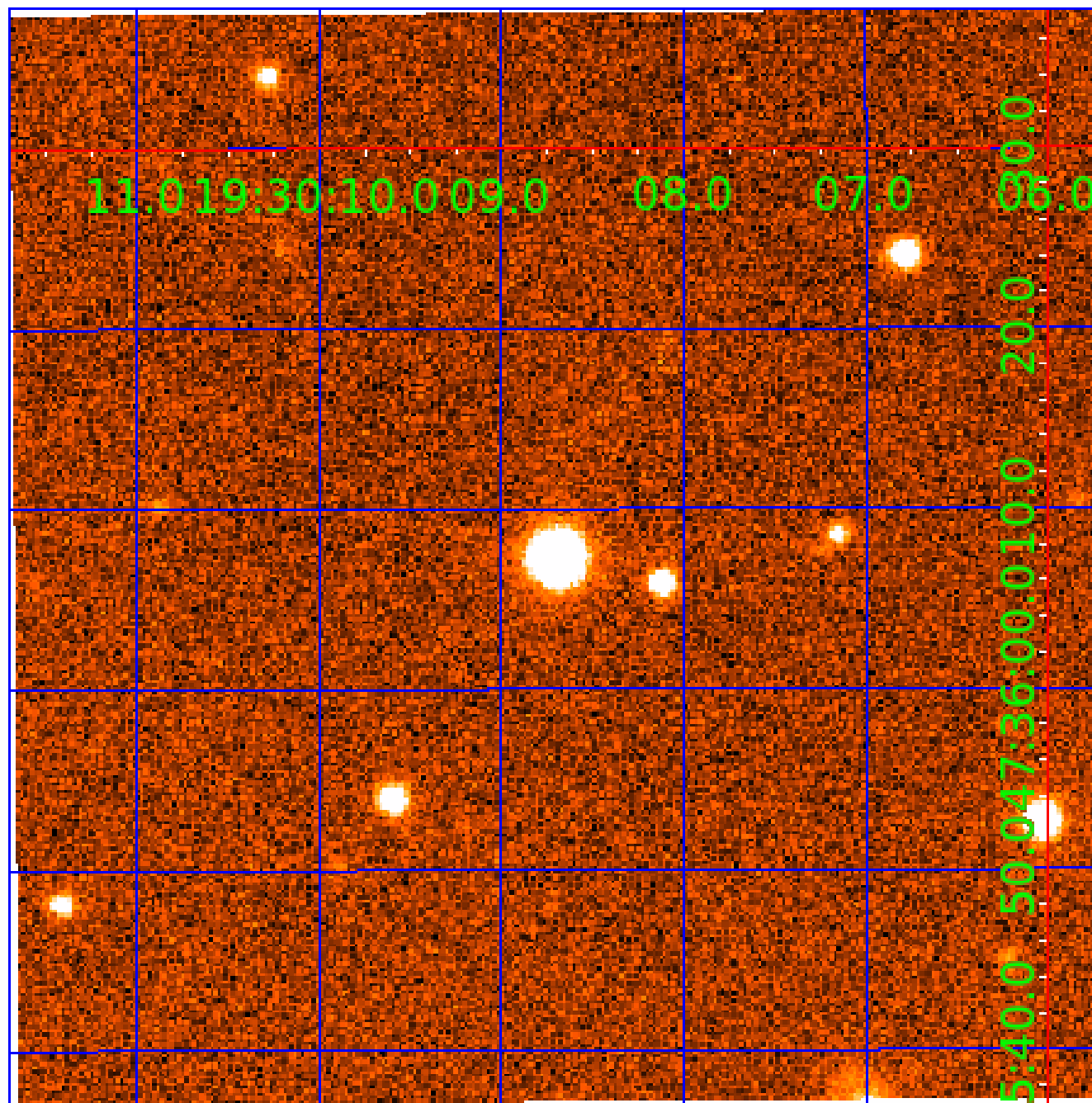


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010471960

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})
010471960-01	OBS	No	547.464223	155.030078	2769.0	8.017	19.6	8.6	0.39	3585	2.02	0.02
010471960-02	OBS	No	350.765409	336.318265	2665.0	6.180	13.7	9.1	0.39	3585	3.81	0.04
010471960-03	OBS	No	306.848558	404.857561	2035.5	13.858	13.1	7.3	0.39	3585	1.74	0.05
010471960-04	OBS	No	549.315132	329.013198	1856.2	6.120	11.8	6.5	0.39	3585	1.69	0.02
010471960-05	OBS	No	406.741390	372.243939	1663.9	4.424	11.6	6.2	0.39	3585	1.57	0.04
010471960-06	OBS	No	261.698175	172.863062	3108.5	34.221	10.0	7.4	0.39	3585	2.49	0.06
010471960-07	OBS	No	425.027354	270.884270	2661.0	5.762	12.9	9.4	0.39	3585	2.17	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010471960-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
010471960-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES
010471960-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

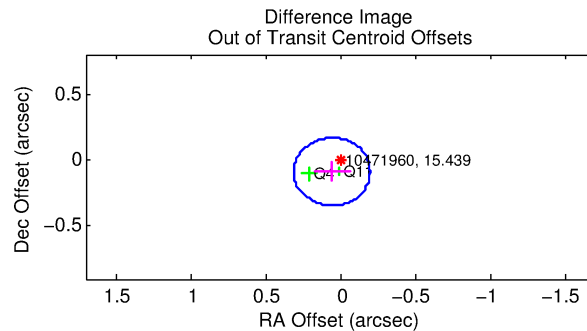
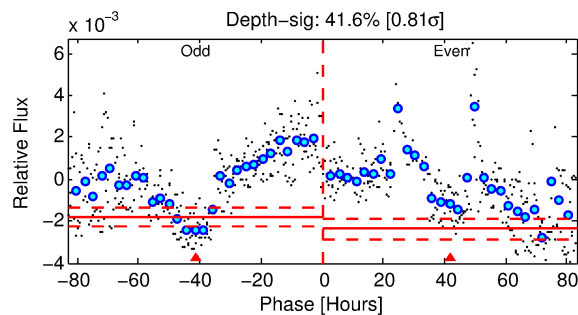
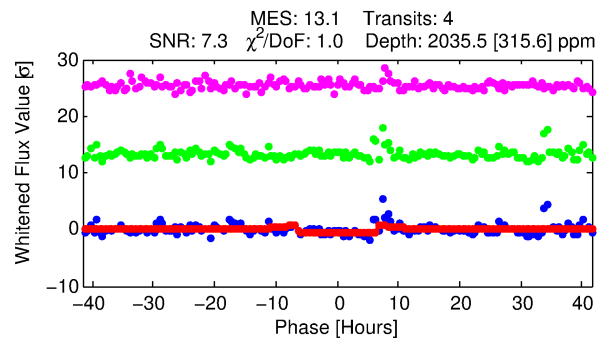
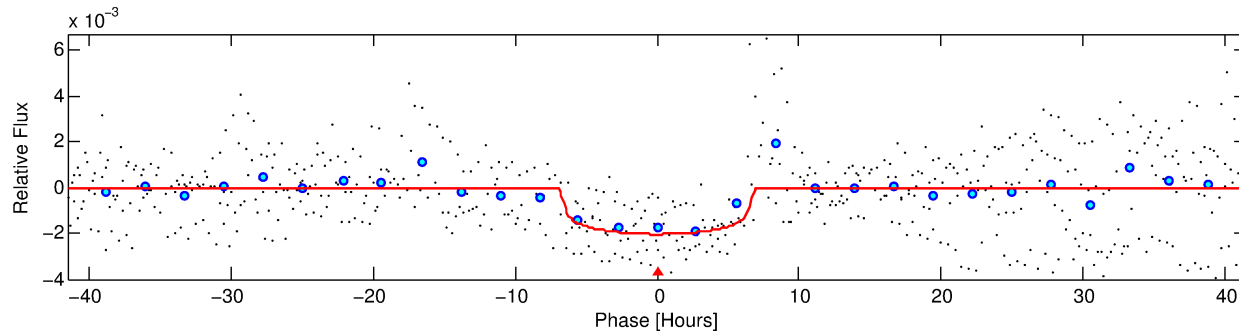
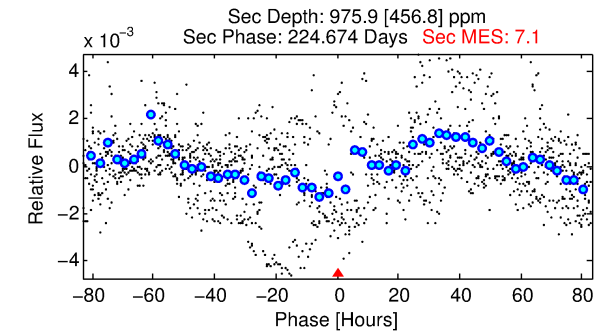
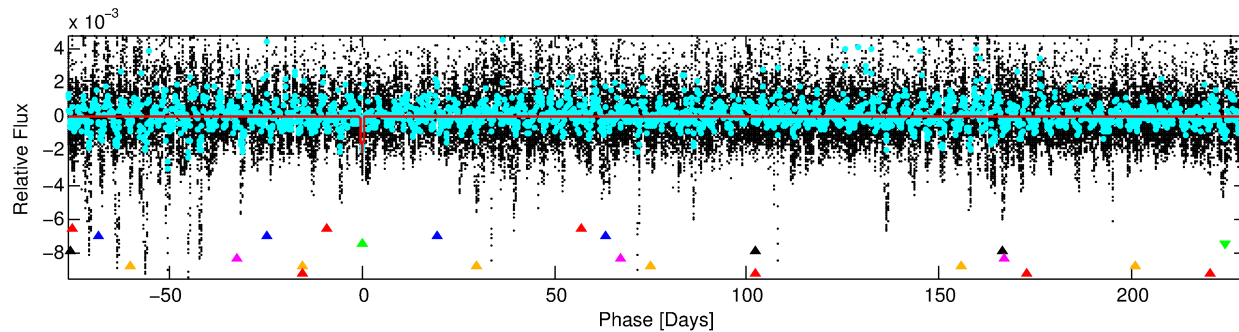
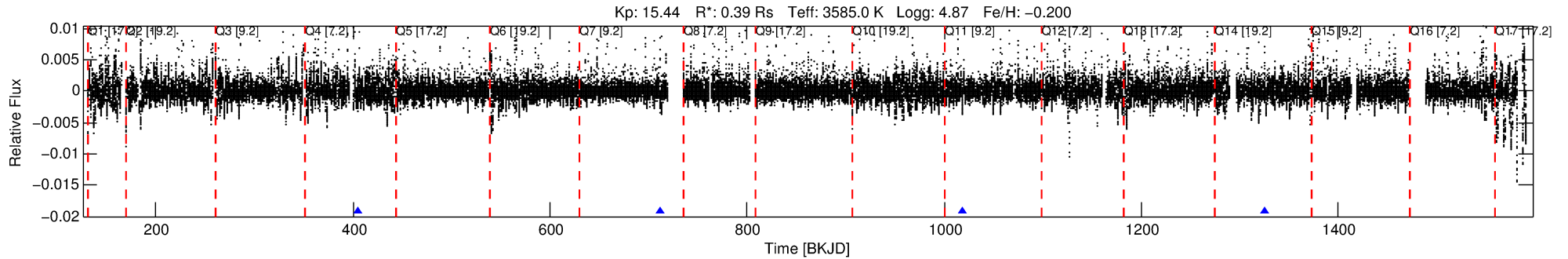
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010471960-03

No Significant Match Found

DV One-Page Summary

KIC: 10471960 Candidate: 3 of 7 Period: 306.849 d



DV Fit Results:

Period = 306.84856 [0.00537] d
Epoch = 404.8576 [0.0097] BKJD
Rp/R* = 0.0410 [0.0101]
a/R* = 175.15 [177.54]
b = 0.11 [9.30]
Seff = 0.05 [0.01]
Teq = 121 [4] K
Rp = 1.74 [0.47] Re
a = 0.6590 [0.0548] AU
Ag = 77273.14 [53001.77] [1.46σ]
Teff = 3128 [534] K [5.63σ]

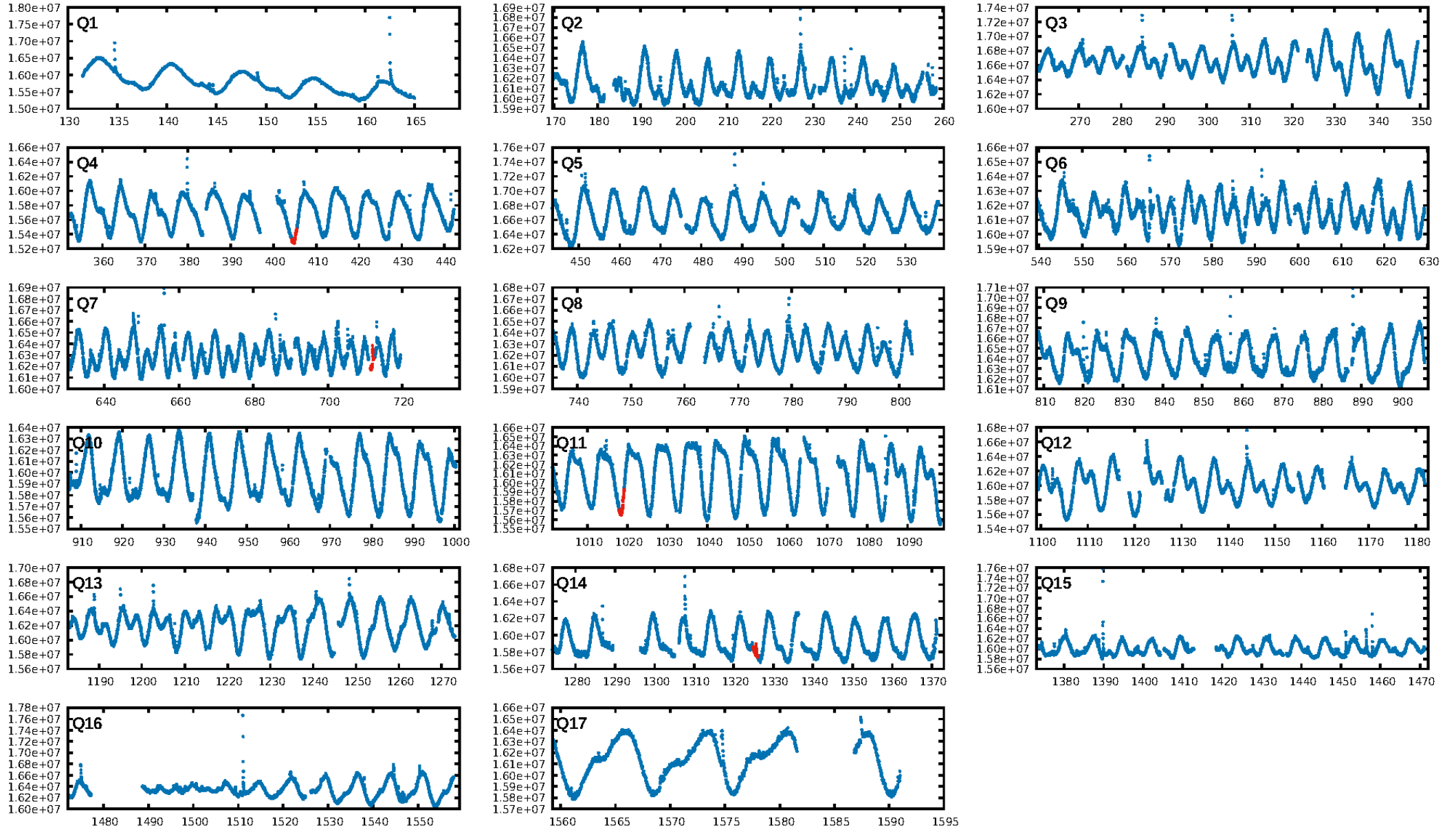
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [29.35σ]
LongPeriod-sig: 100.0% [69.46σ]
ModelChiSquare2-sig: 60.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.70e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 7.967
Centroid-sig: 47.1%
Centroid-so: 0.421 arcsec [0.62σ]
OotOffset-rm: 0.104 arcsec [1.22σ]
KicOffset-rm: 0.080 arcsec [1.11σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

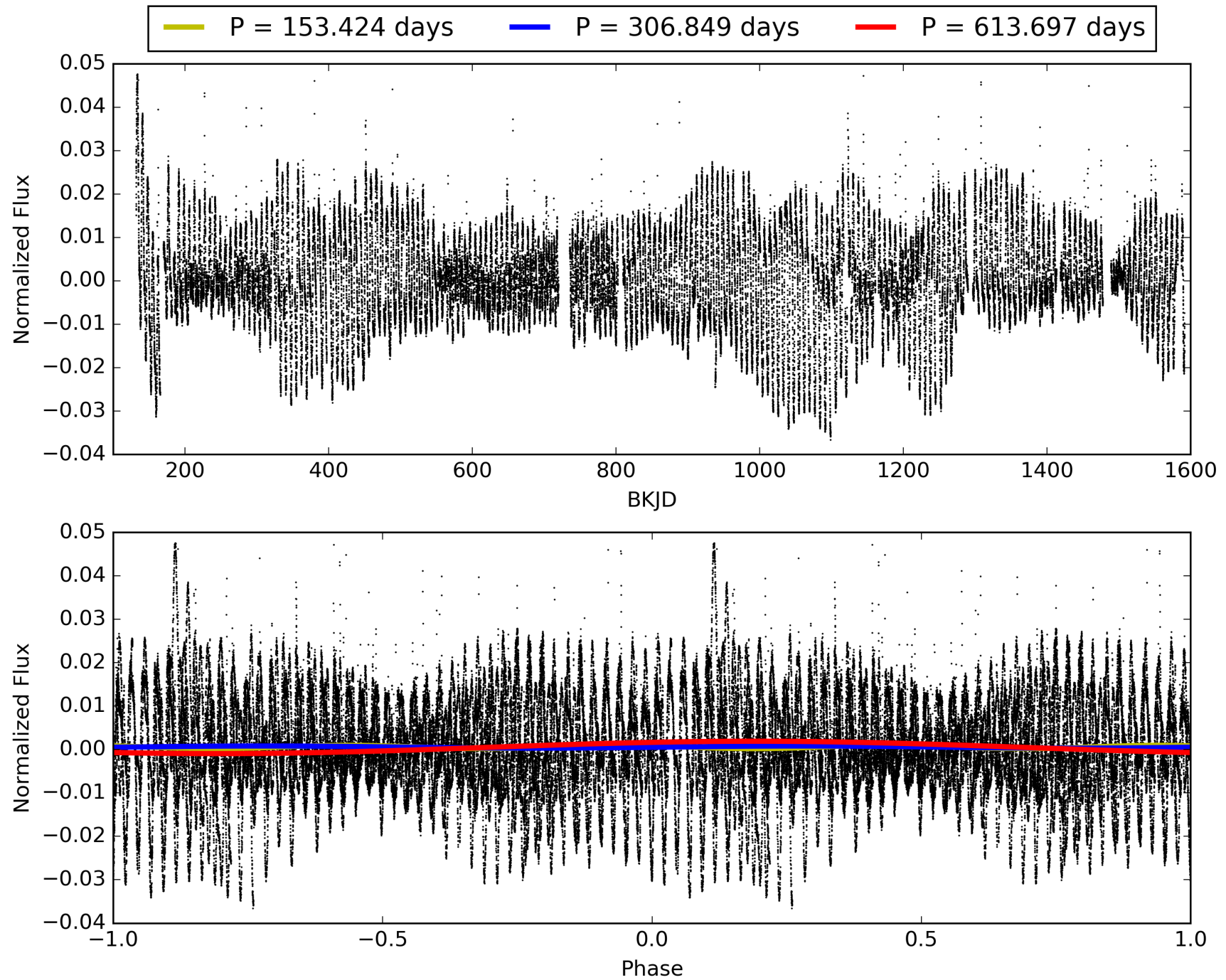
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:22:08 Z

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

TCE 010471960-03, PDC Light Curves

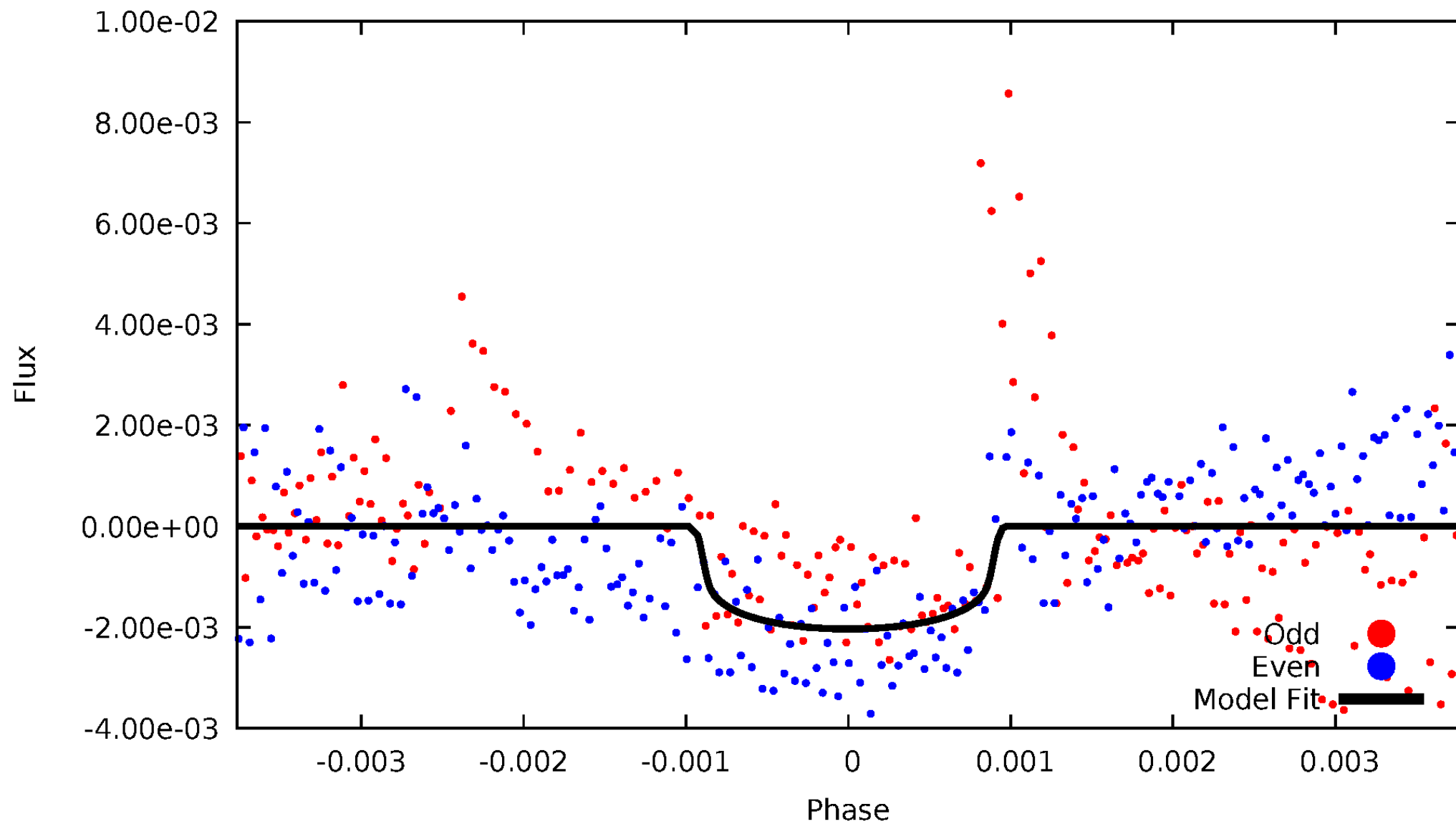


TCE 010471960-03



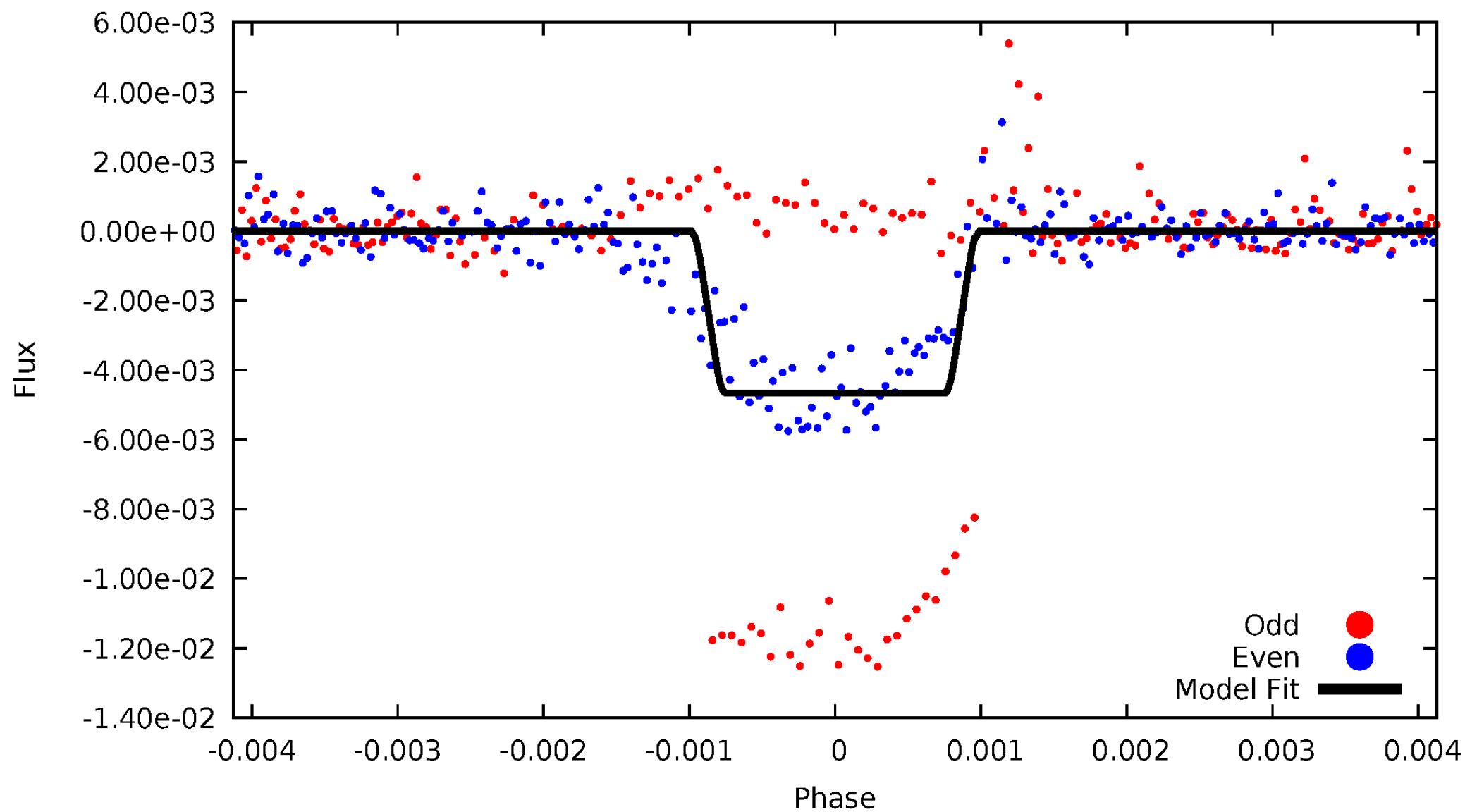
DV Odd/Even

TCE 010471960-03



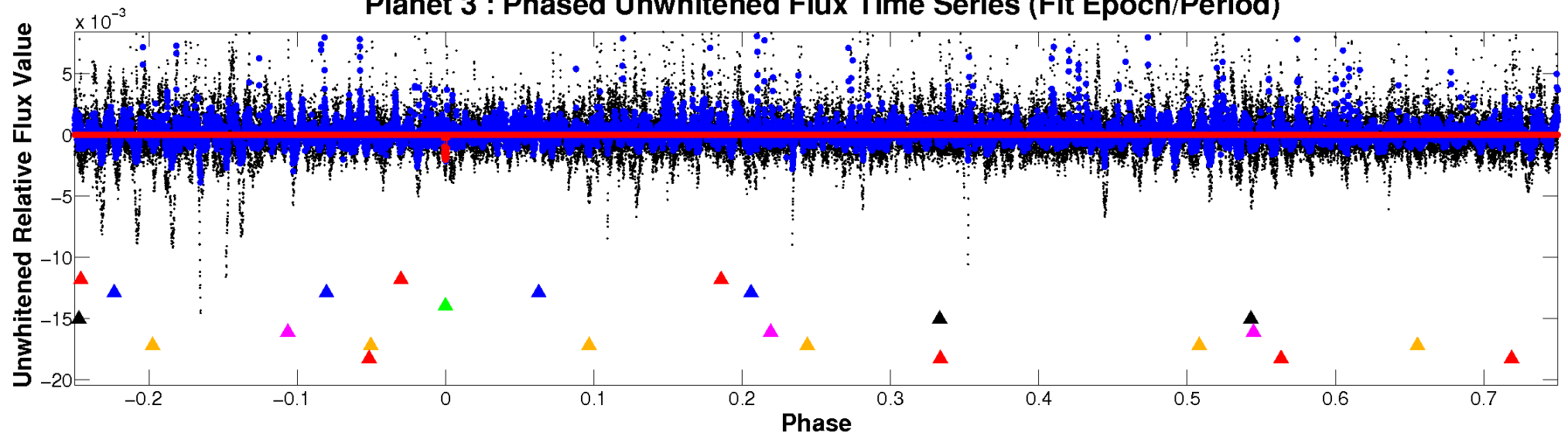
ALT Odd/Even

TCE 010471960-03

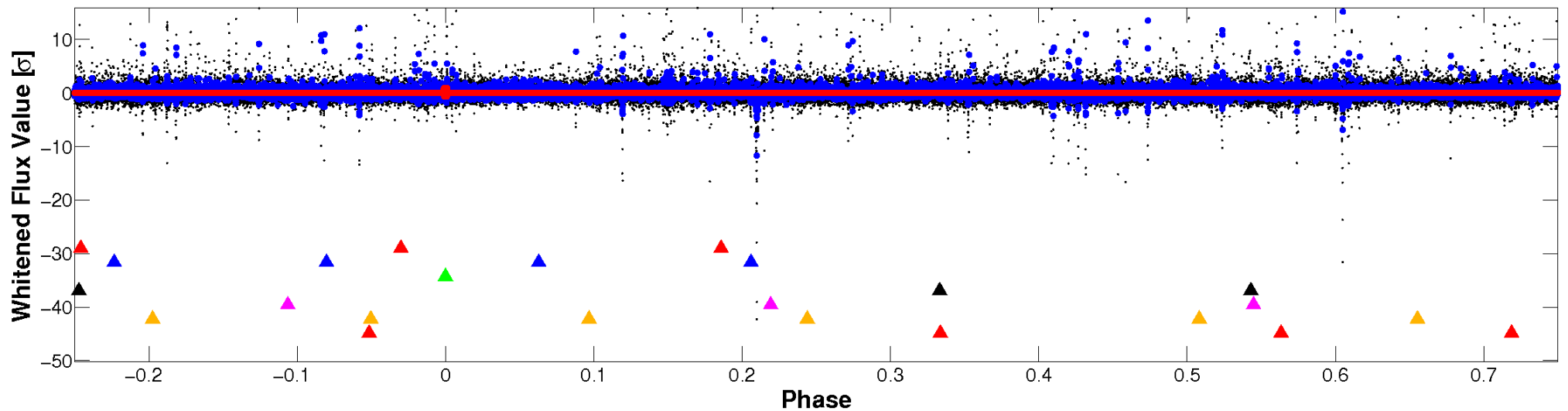


Non-Whitened Vs. Whitened Light Curve

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

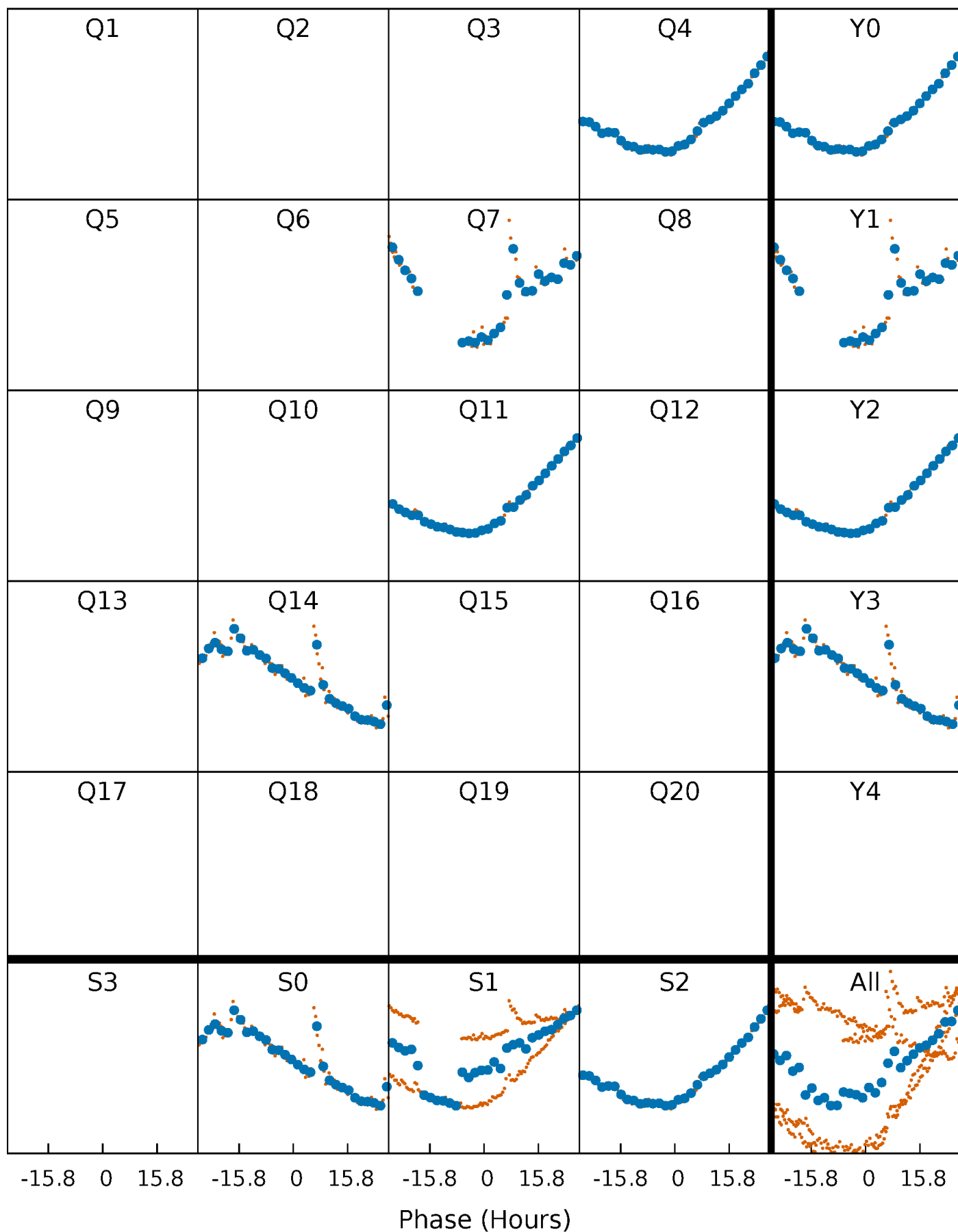


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



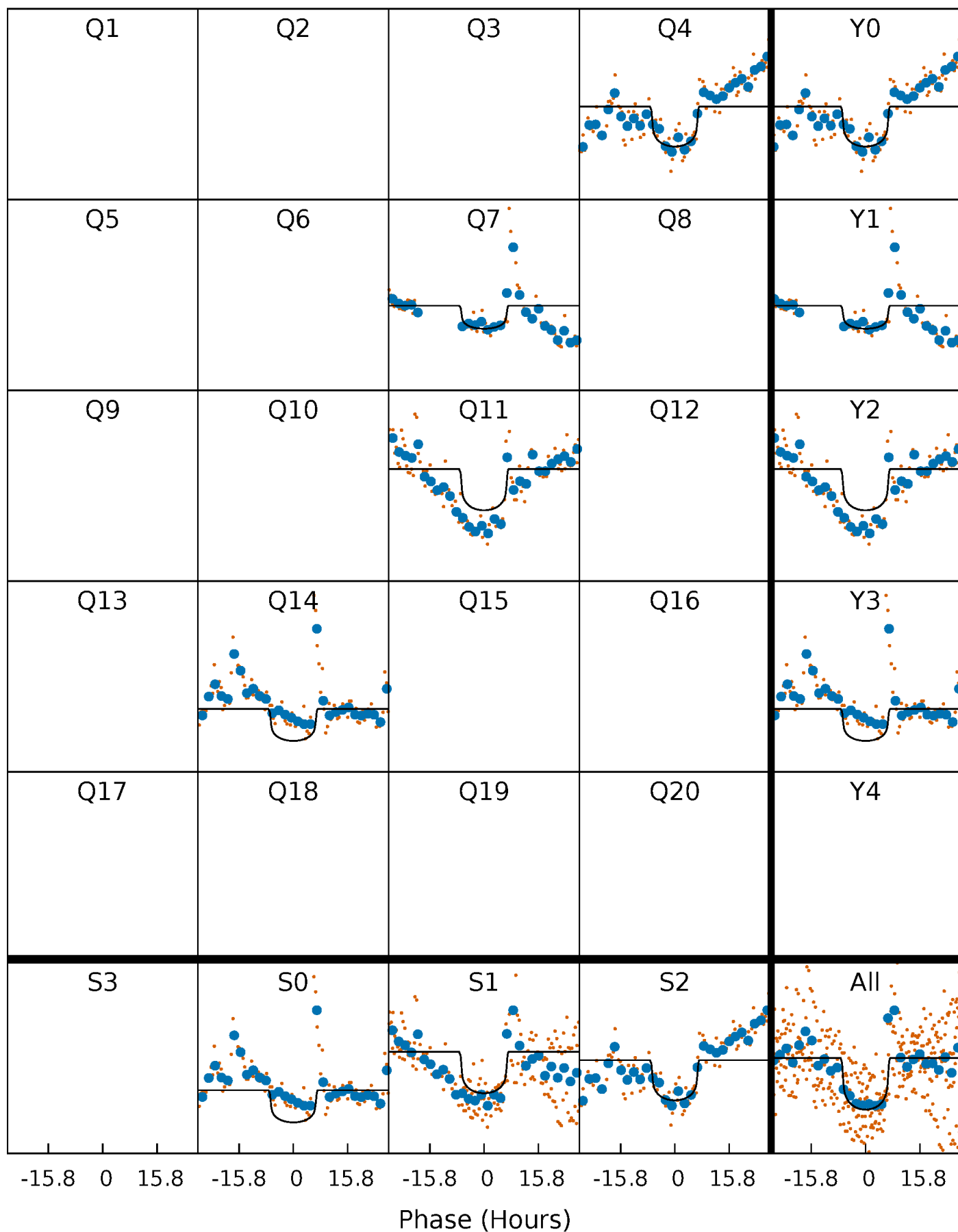
PDC Quarter-Phased Transit Curves

TCE 010471960-03 $P=306.848558$ Days $T_0=404.857561$ (BKJD)



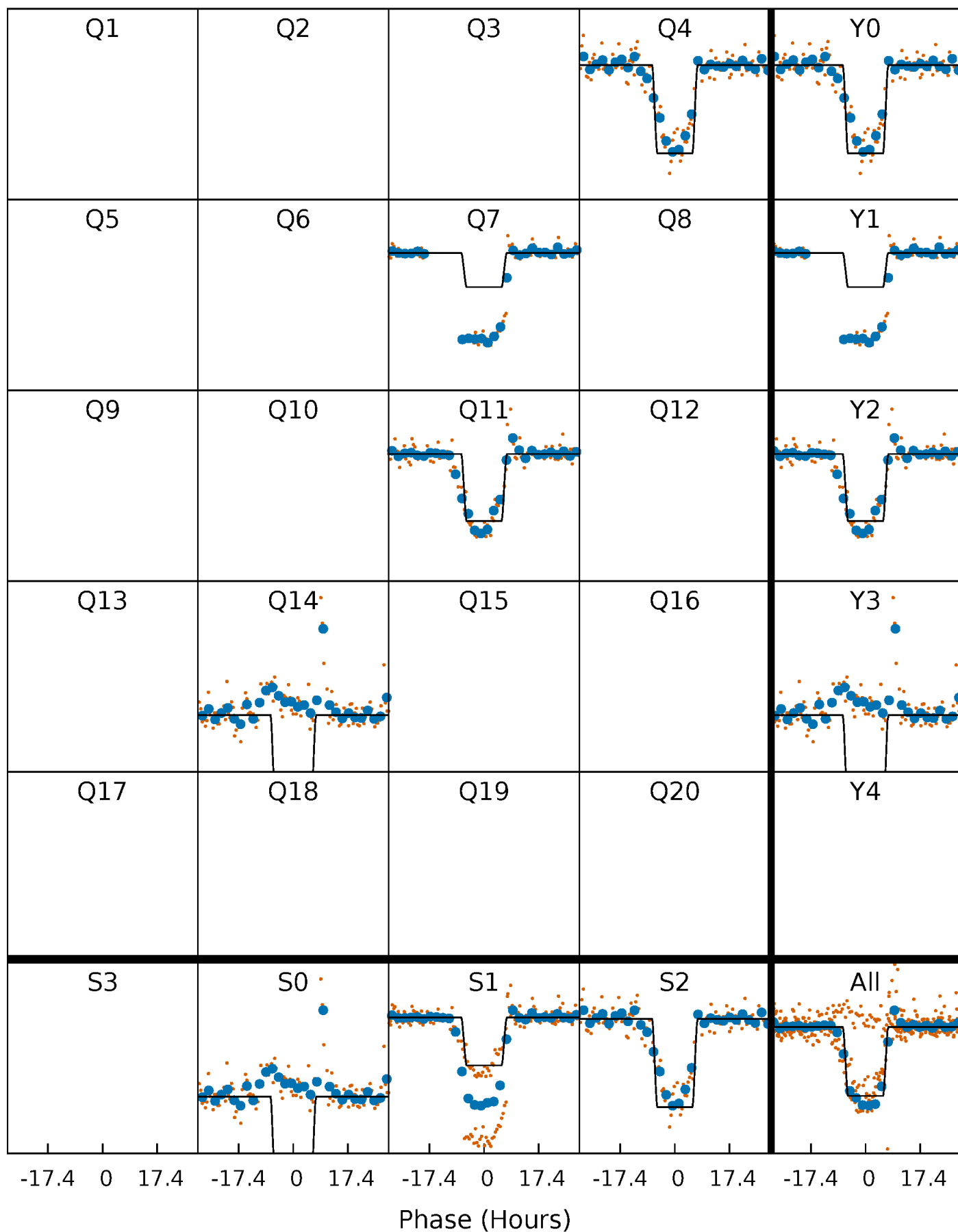
DV Quarter-Phased Transit Curves

TCE 010471960-03 $P=306.848558$ Days $T_0=404.857561$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

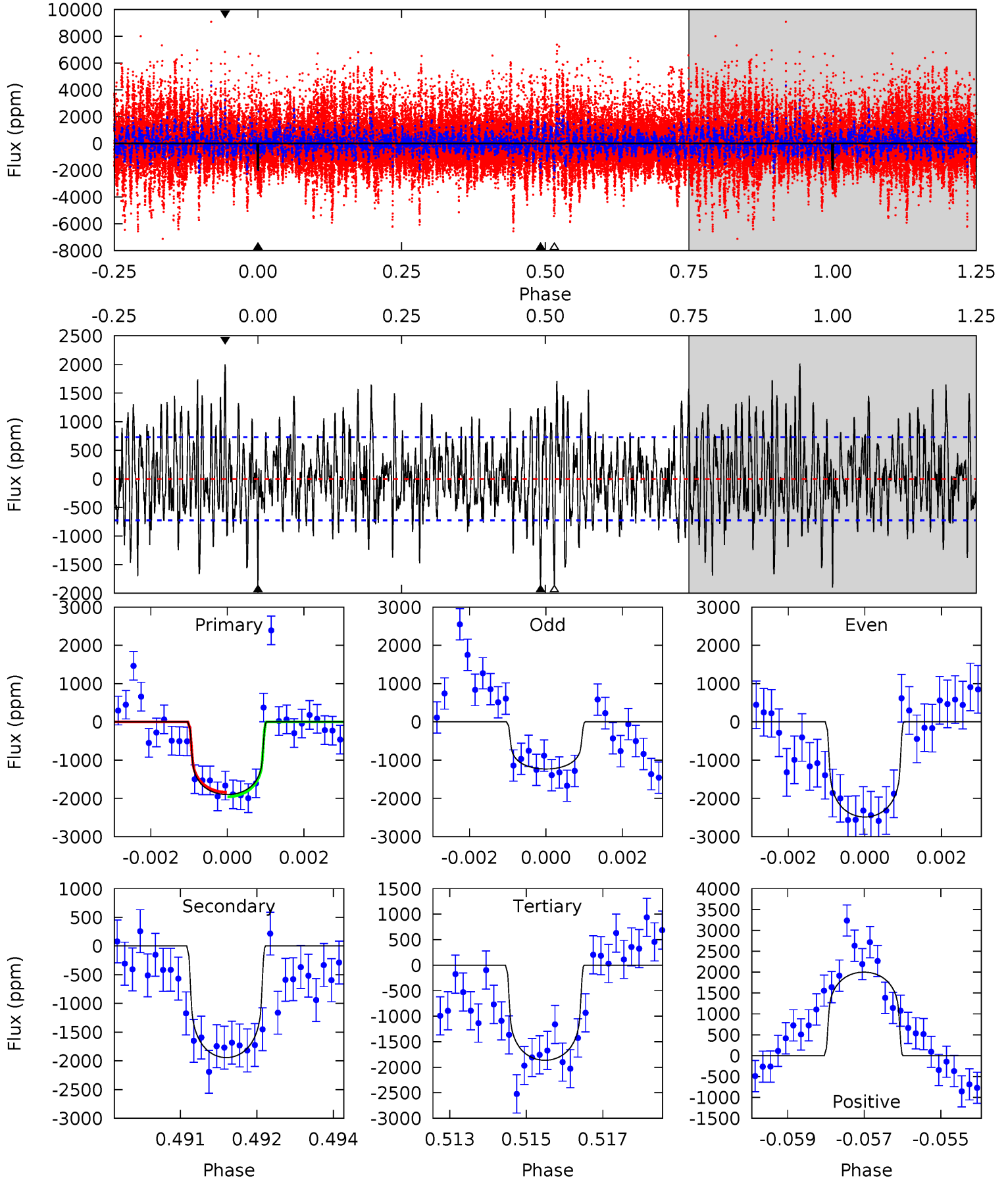
TCE 010471960-03 $P=306.816715$ Days $T_0=404.878095$ (BKJD)



DV Model-Shift Uniqueness Test

010471960-03, P = 306.848558 Days, E = 98.009003 Days

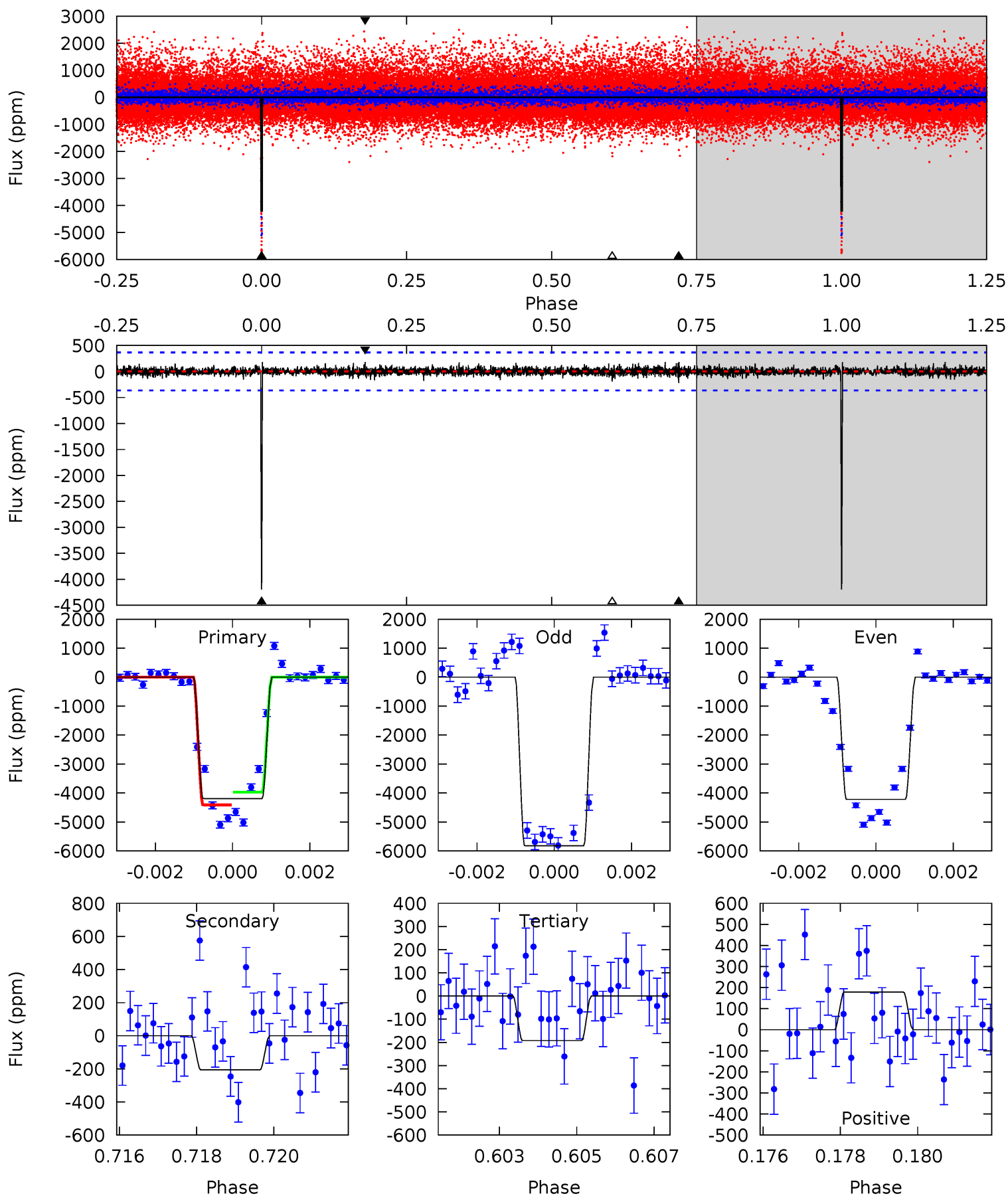
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.9	14.3	13.7	14.7	5.34	3.11	4.15	0.26	-0.75	0.58	-0.42	4.39	0.93	0.51	0.43



Alt Model-Shift Uniqueness Test

010471960-03, P = 306.816715 Days, E = 98.061380 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
61.1	3.01	2.80	2.61	5.33	3.10	0.59	58.3	58.5	0.21	0.40	15.8	1.16	0.04	0



Stellar Parameters For KIC 010471960

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3585^{+65}_{-72}	$4.868^{+0.045}_{-0.041}$	$-0.200^{+0.100}_{-0.100}$	$0.388^{+0.039}_{-0.044}$	$0.406^{+0.037}_{-0.056}$	$9.786^{+2.503}_{-1.663}$
	+2%/-2%	+1%/-1%	+50%/-50%	+10%/-11%	+9%/-14%	+26%/-17%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010471960-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1943 ± 136	$1.72^{+0.43}_{-0.43}$	169^{+4}_{-4}	3682^{+374}_{-268}	$156005^{+120060}_{-56078}$
Alt.	-207 ± 69	$2.90^{+0.45}_{-0.49}$	169^{+4}_{-5}	2344^{+123}_{-141}	5872^{+3176}_{-2315}

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

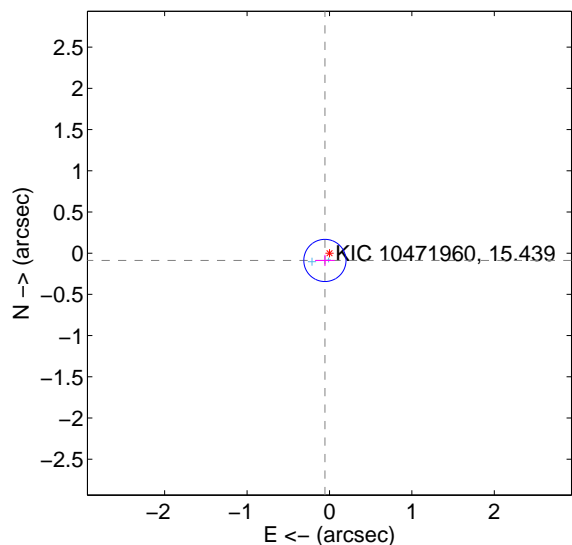
Supplemental centroid analysis for 010471960-03. Kepler magnitude: 15.44. Transit SNR 7.30

There are 2 quarters with good PRF difference image offsets

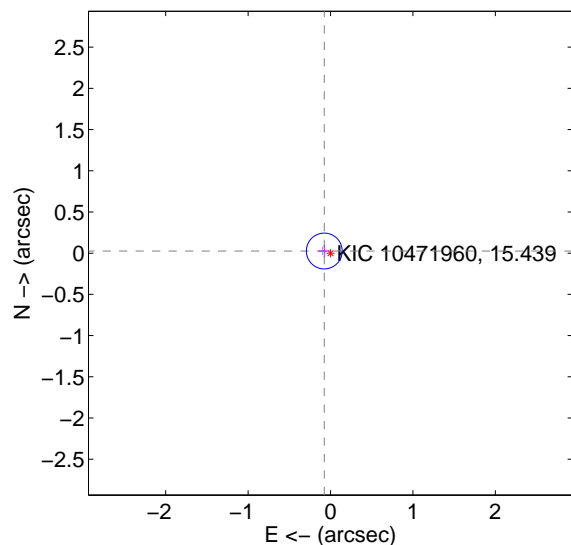
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.104 ± 0.085	1.22	0.055 ± 0.119	-0.088 ± 0.068
PRF-fit source offset from KIC position	0.080 ± 0.072	1.11	0.076 ± 0.072	0.026 ± 0.072
photometric centroid source offset	0.42 ± 0.67	0.62	-0.35 ± 0.75	-0.24 ± 0.46

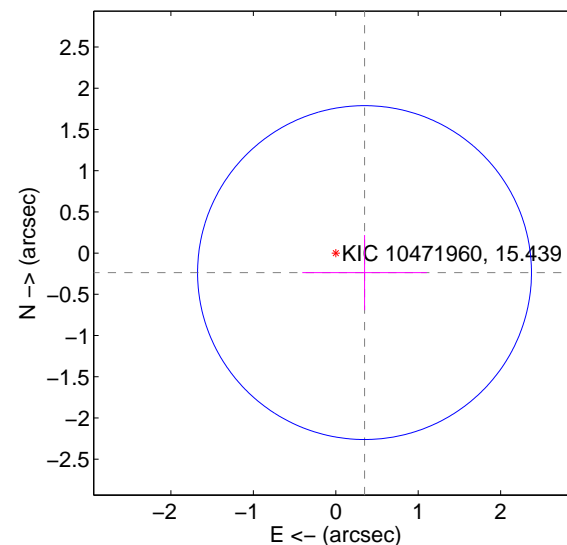
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

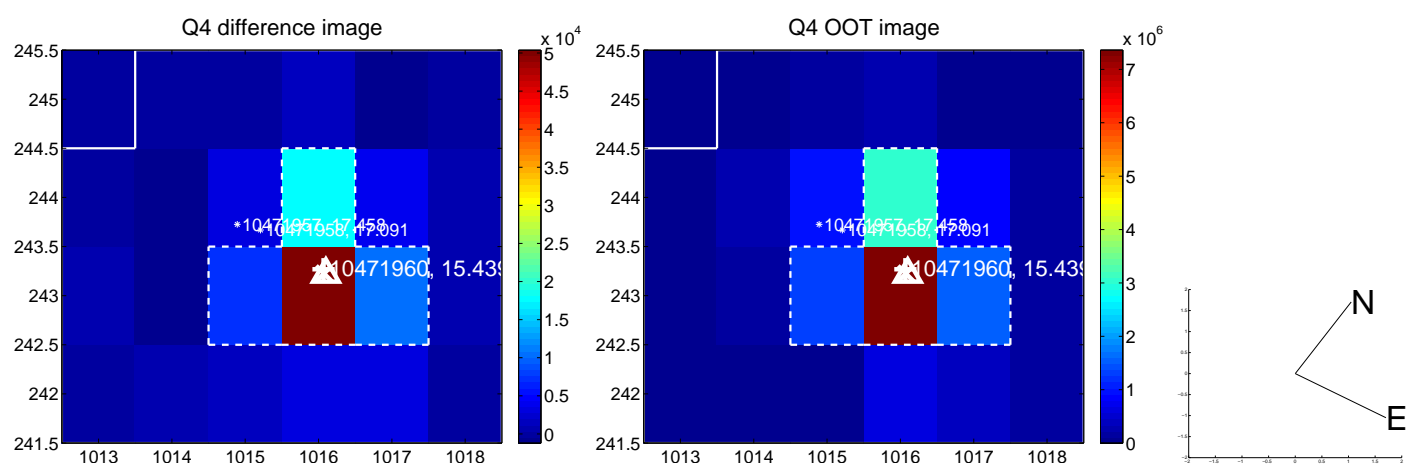
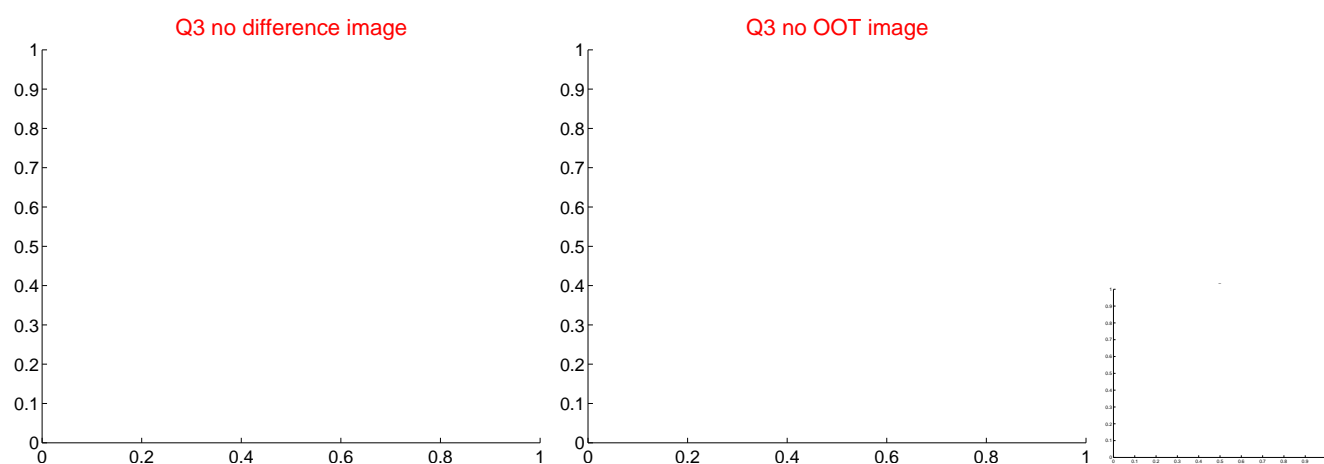
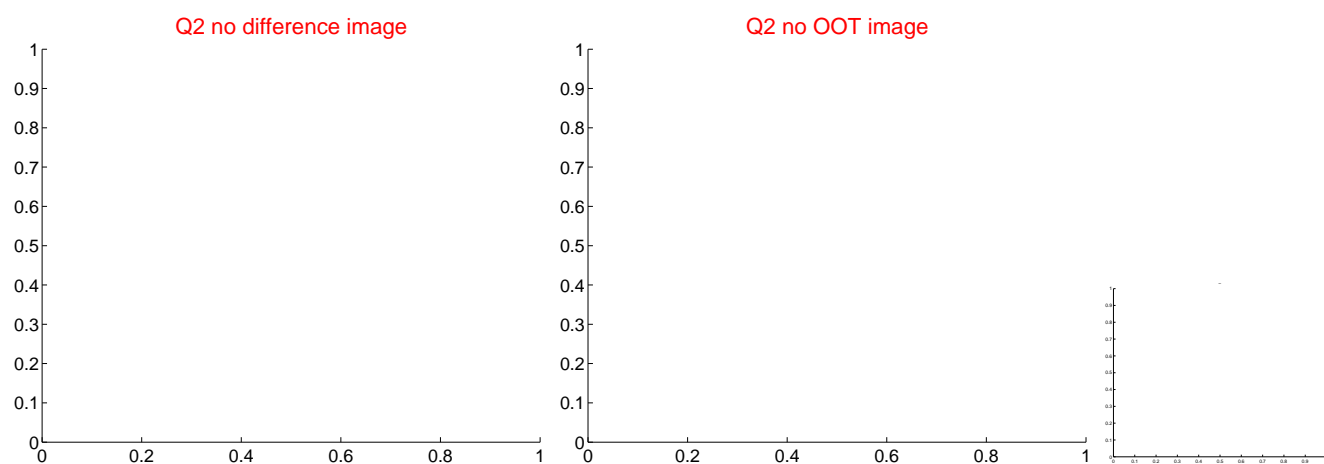
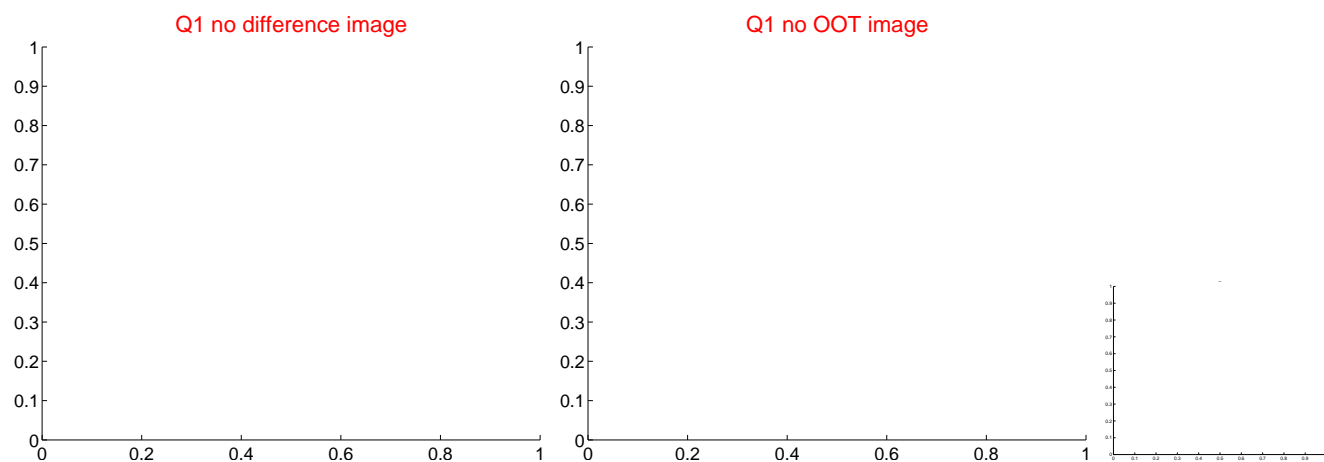


offset from photometric centroids



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

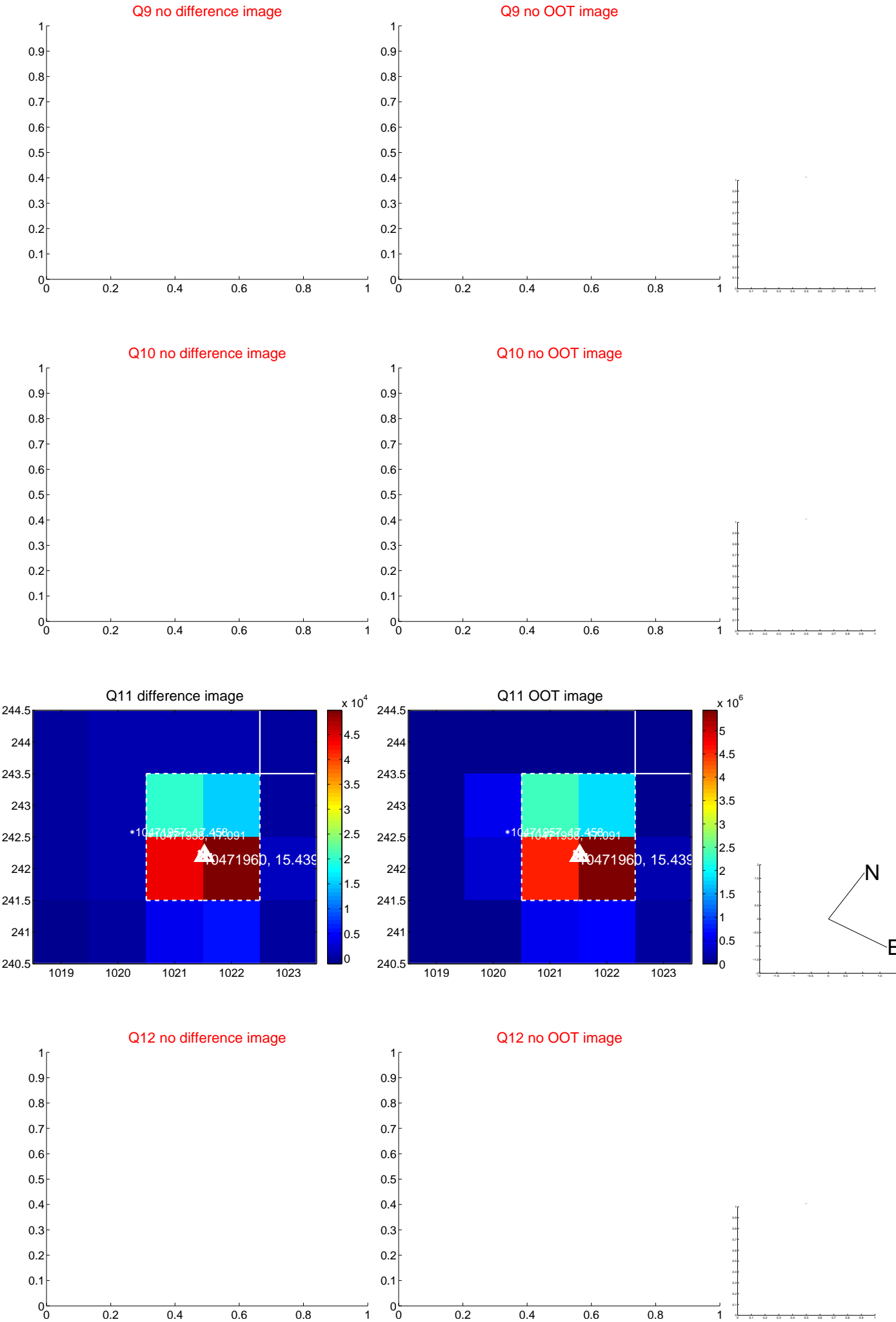
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



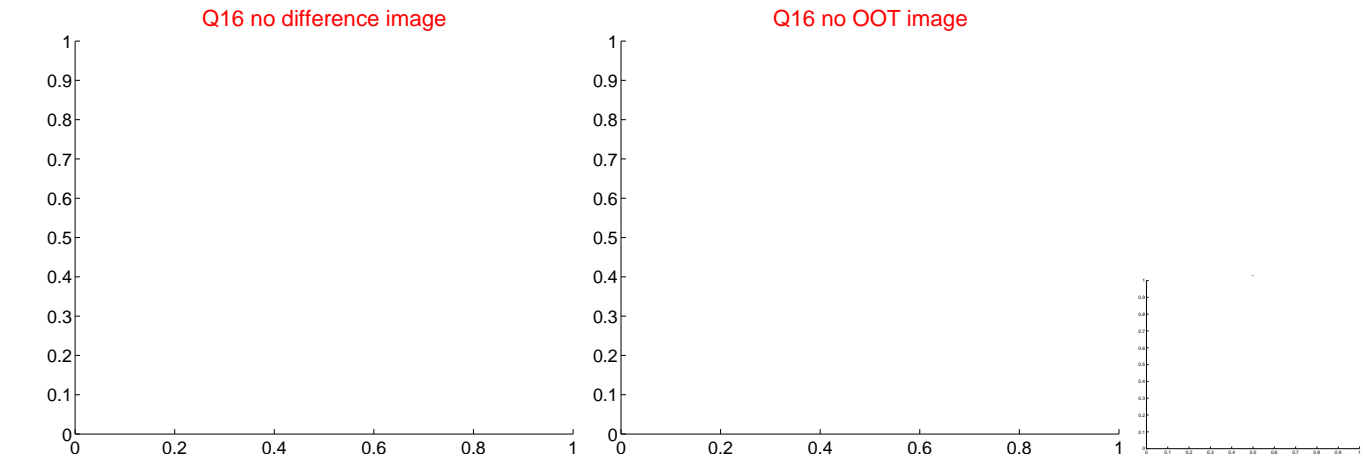
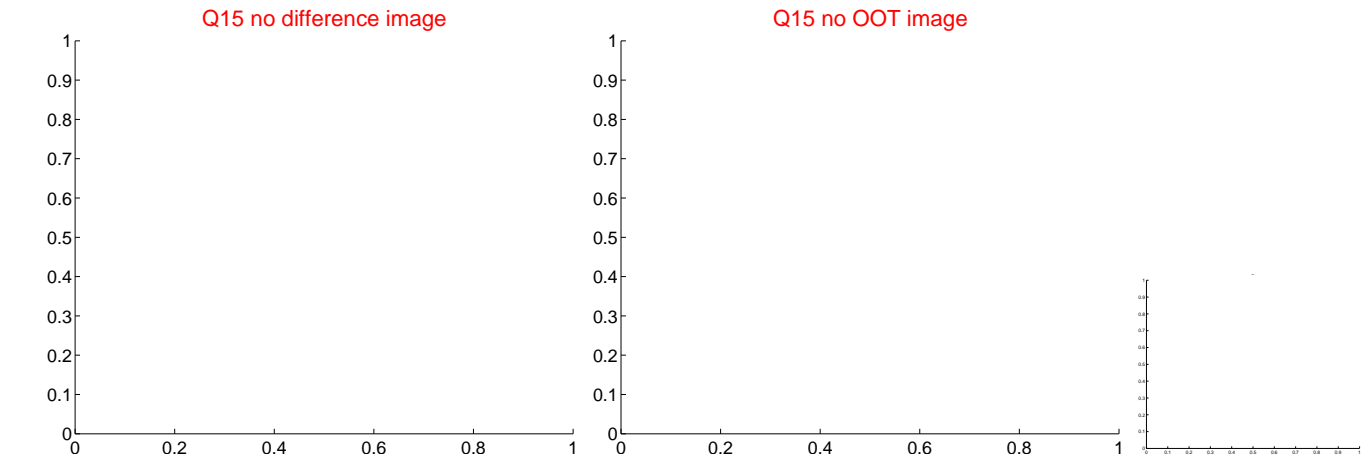
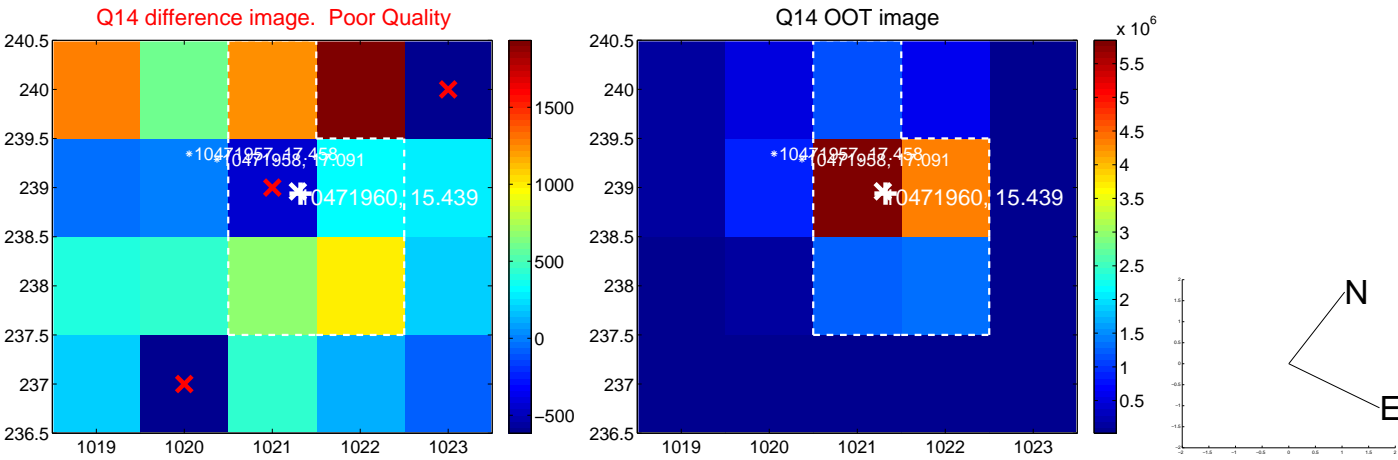
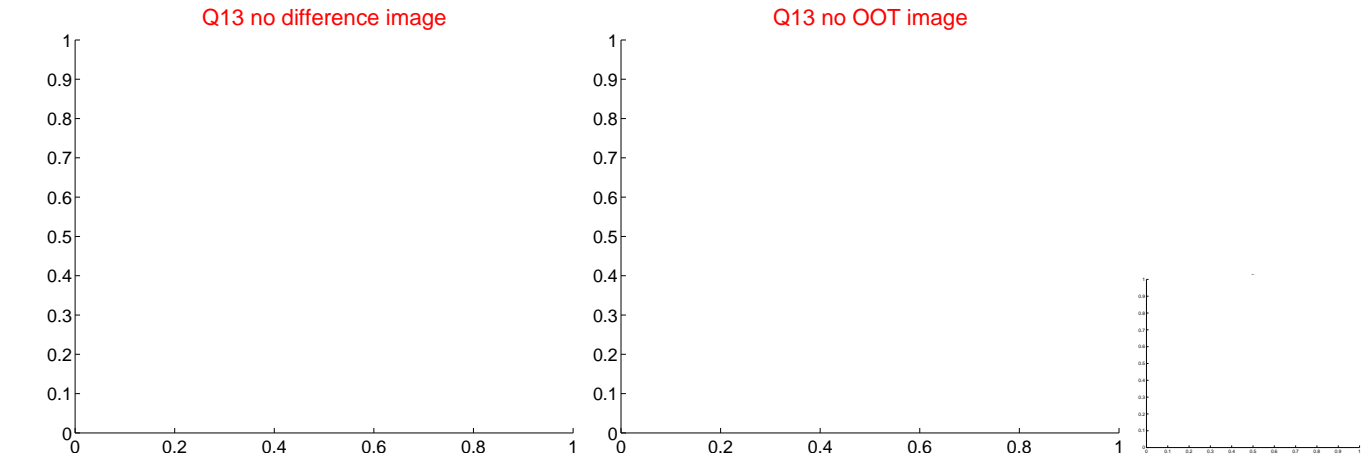
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



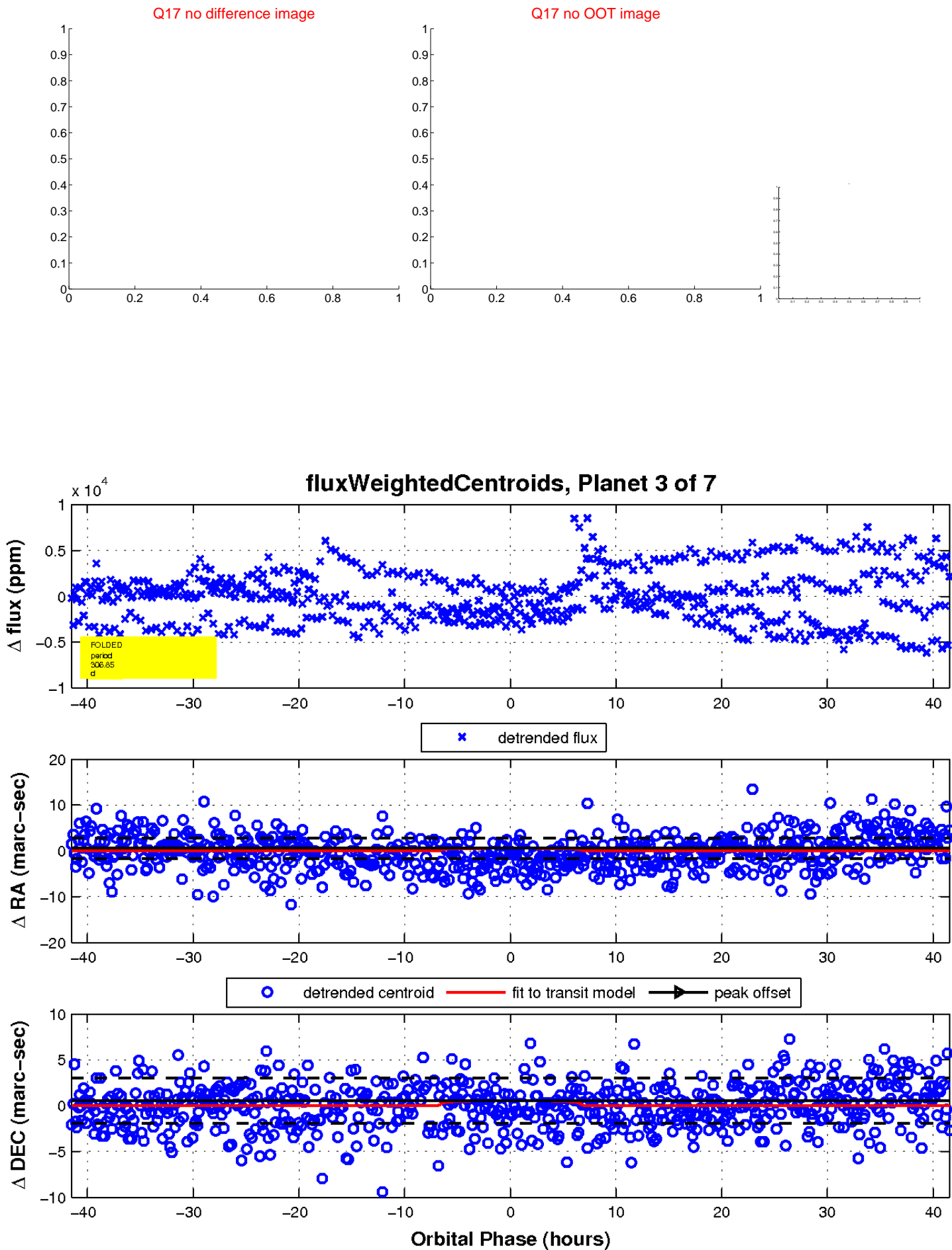
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

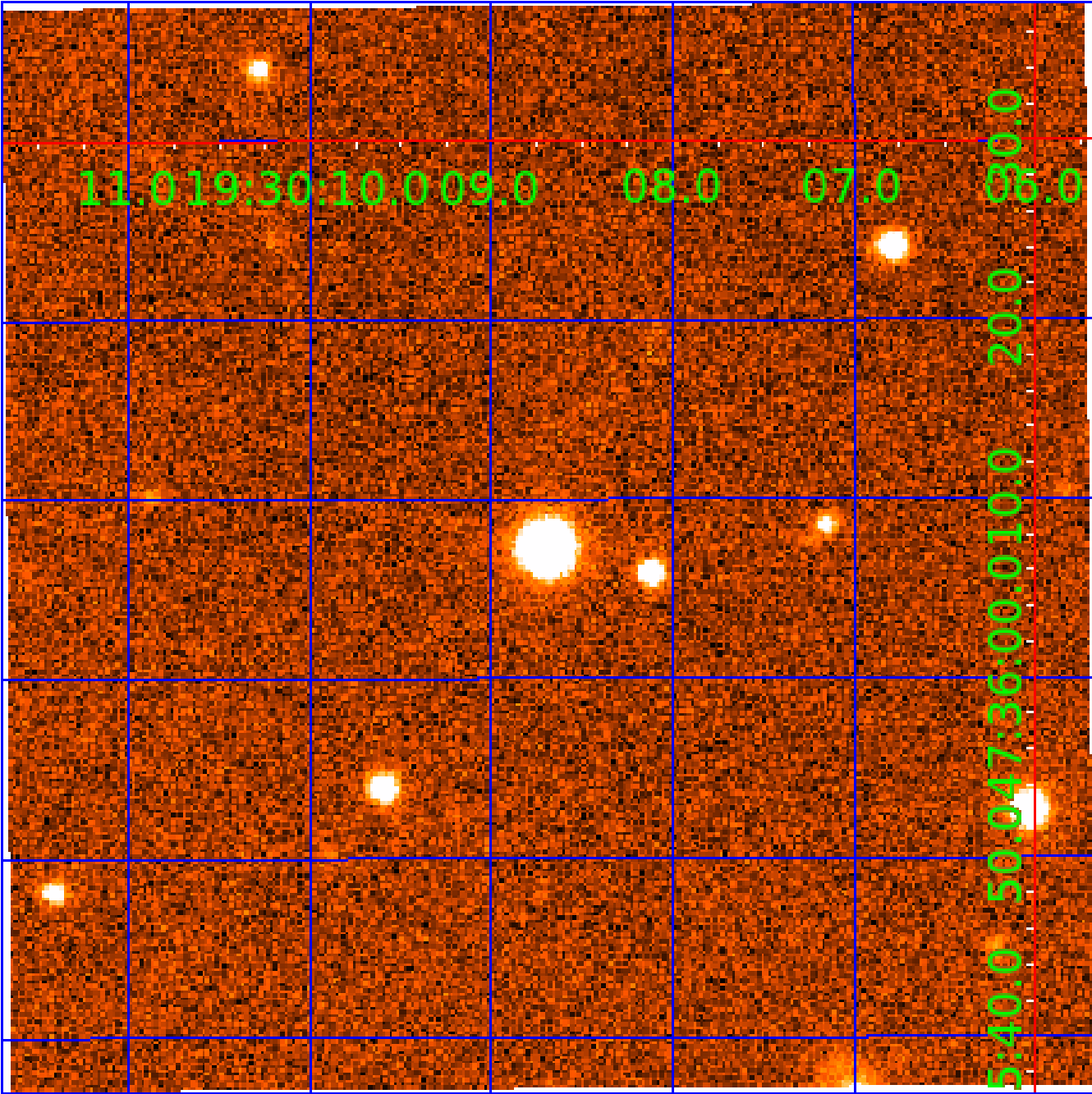


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010471960

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})
010471960-01	OBS	No	547.464223	155.030078	2769.0	8.017	19.6	8.6	0.39	3585	2.02	0.02
010471960-02	OBS	No	350.765409	336.318265	2665.0	6.180	13.7	9.1	0.39	3585	3.81	0.04
010471960-03	OBS	No	306.848558	404.857561	2035.5	13.858	13.1	7.3	0.39	3585	1.74	0.05
010471960-04	OBS	No	549.315132	329.013198	1856.2	6.120	11.8	6.5	0.39	3585	1.69	0.02
010471960-05	OBS	No	406.741390	372.243939	1663.9	4.424	11.6	6.2	0.39	3585	1.57	0.04
010471960-06	OBS	No	261.698175	172.863062	3108.5	34.221	10.0	7.4	0.39	3585	2.49	0.06
010471960-07	OBS	No	425.027354	270.884270	2661.0	5.762	12.9	9.4	0.39	3585	2.17	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010471960-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
010471960-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES
010471960-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

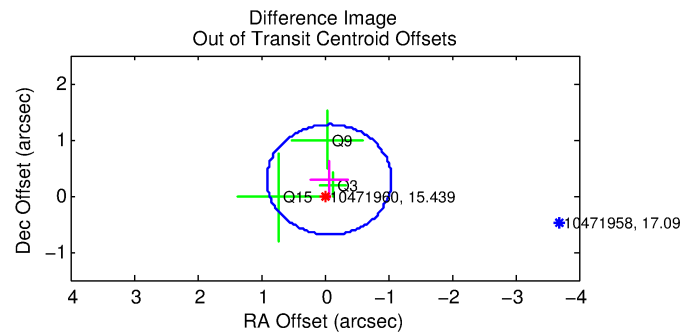
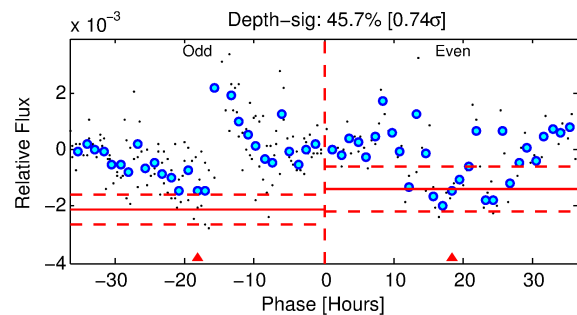
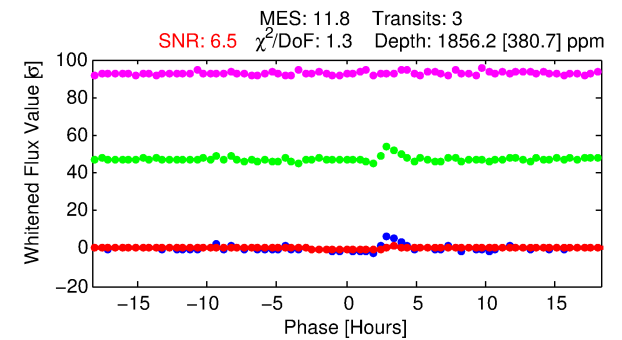
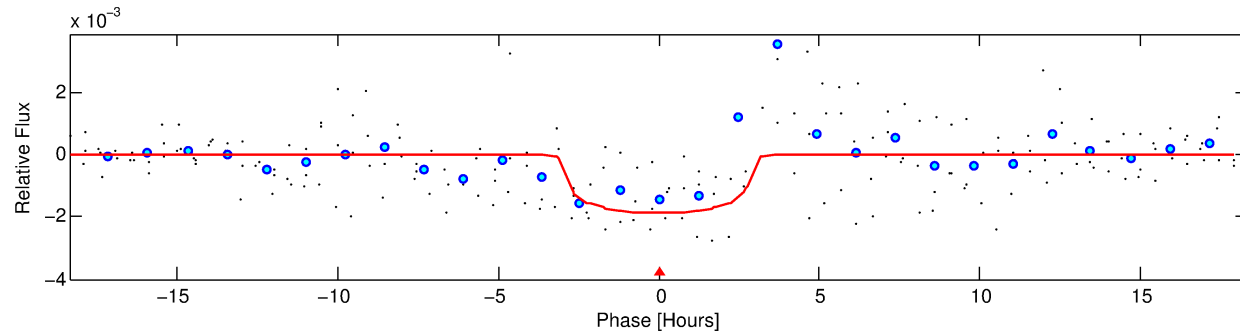
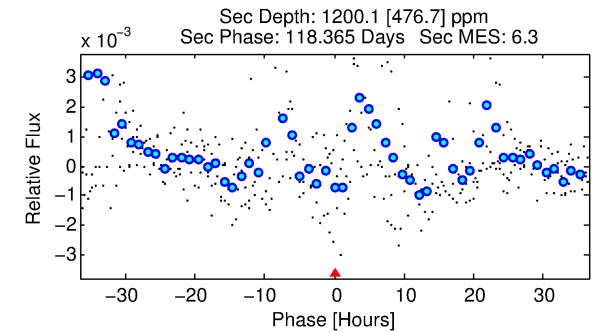
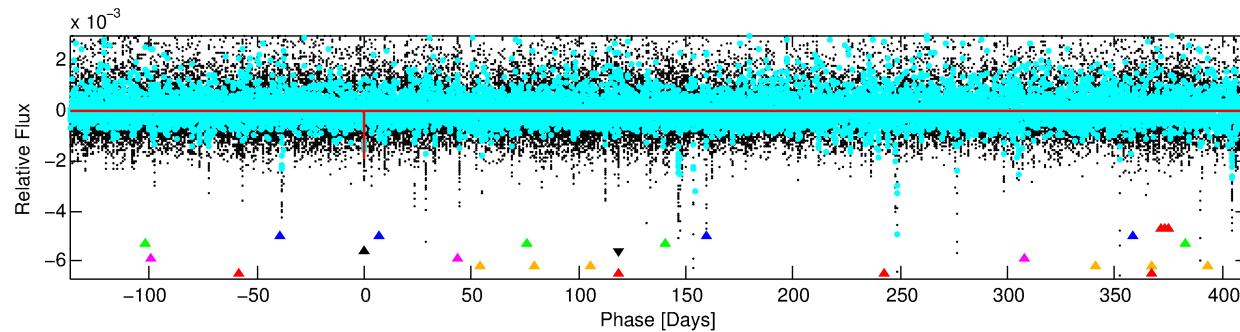
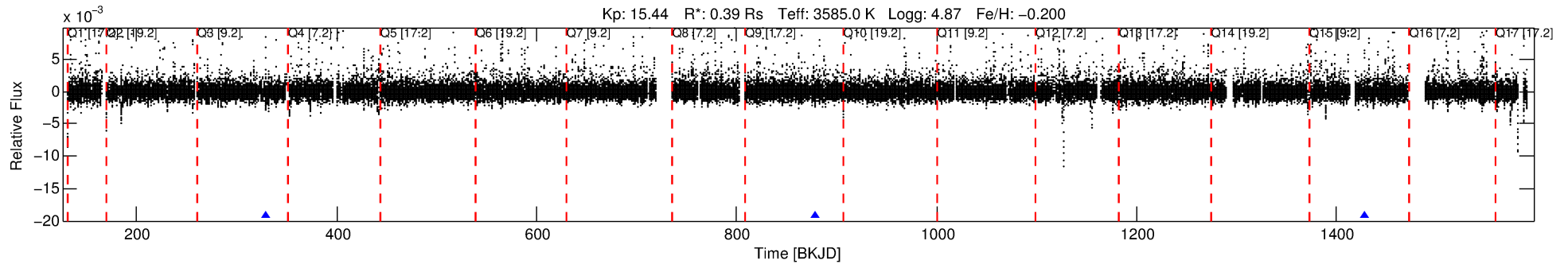
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010471960-04

No Significant Match Found

DV One-Page Summary

KIC: 10471960 Candidate: 4 of 7 Period: 549.315 d



DV Fit Results:

Period = 549.31513 [0.00868] d
Epoch = 329.0132 [0.0116] BKJD
Rp/R* = 0.0399 [0.0248]
a/R* = 660.40 [1801.09]
b = 0.39 [5.85]
Seff = 0.02 [0.00]
Teq = 100 [3] K
Rp = 1.69 [1.07] Re
a = 0.9716 [0.0808] AU
Ag = 218766.02 [286518.63] [0.76 σ]
Teffp = 3342 [1093] K [2.97 σ]

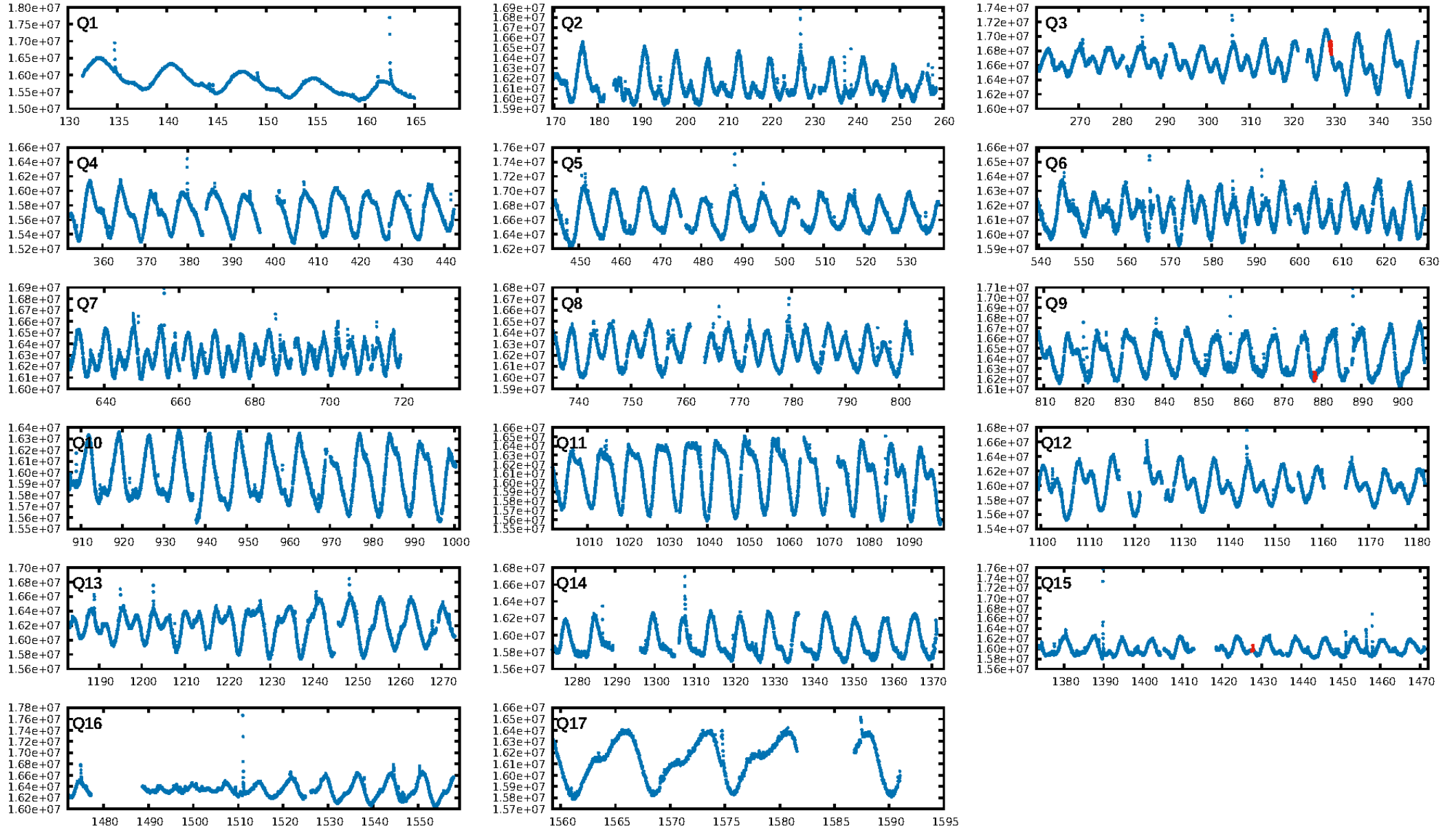
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [4.40 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 45.2%
ModelChiSquareGof-sig: 92.9%
Bootstrap-pfa: 5.57e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.8587
Centroid-sig: 9.3%
Centroid-so: 1.523 arcsec [1.38 σ]
OotOffset-rm: 0.295 arcsec [0.90 σ]
KicOffset-rm: 0.409 arcsec [0.96 σ]
OotOffset-st: 0/2/0/1 [3]
KicOffset-st: 0/2/0/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

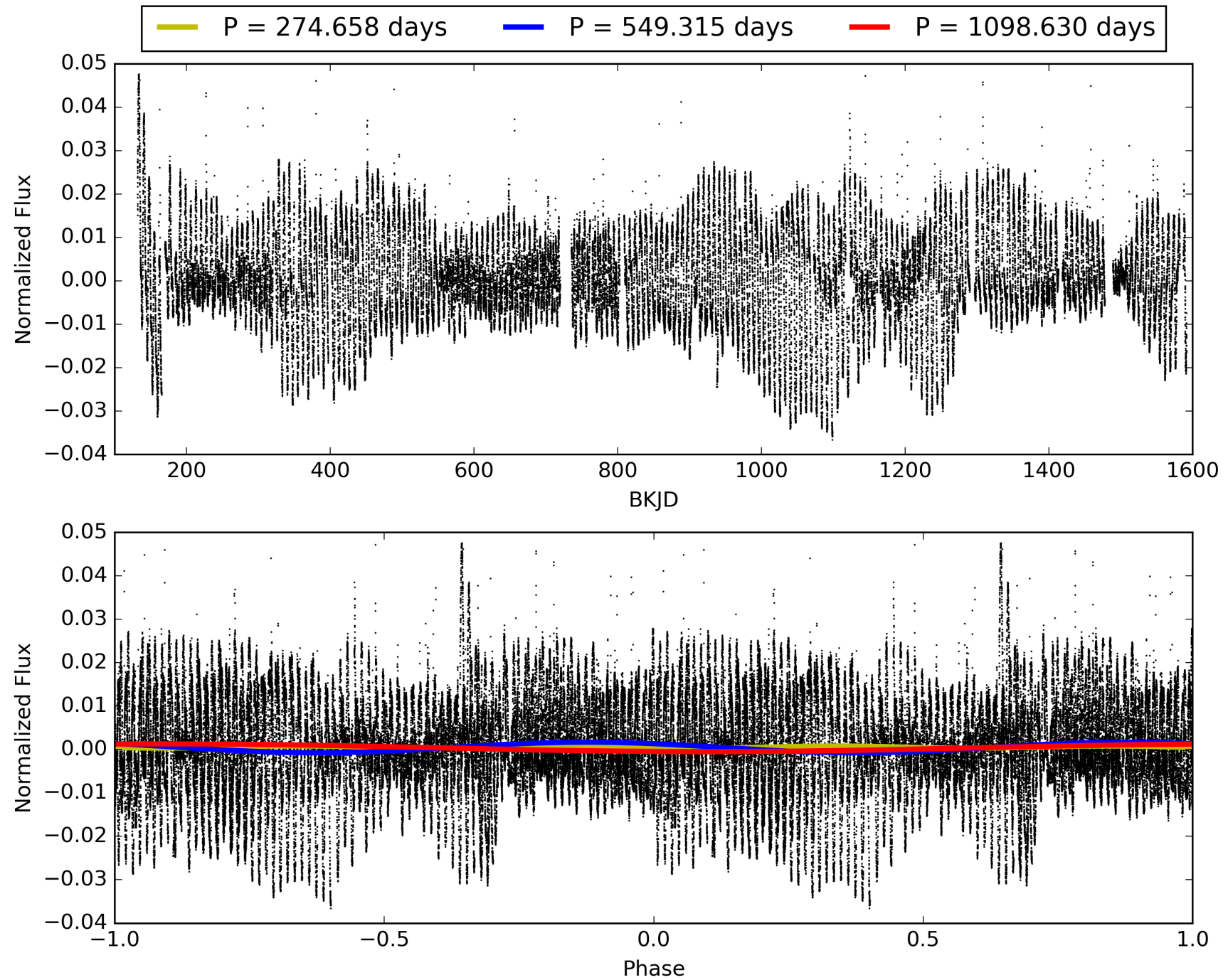
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:22:23 Z

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

TCE 010471960-04, PDC Light Curves

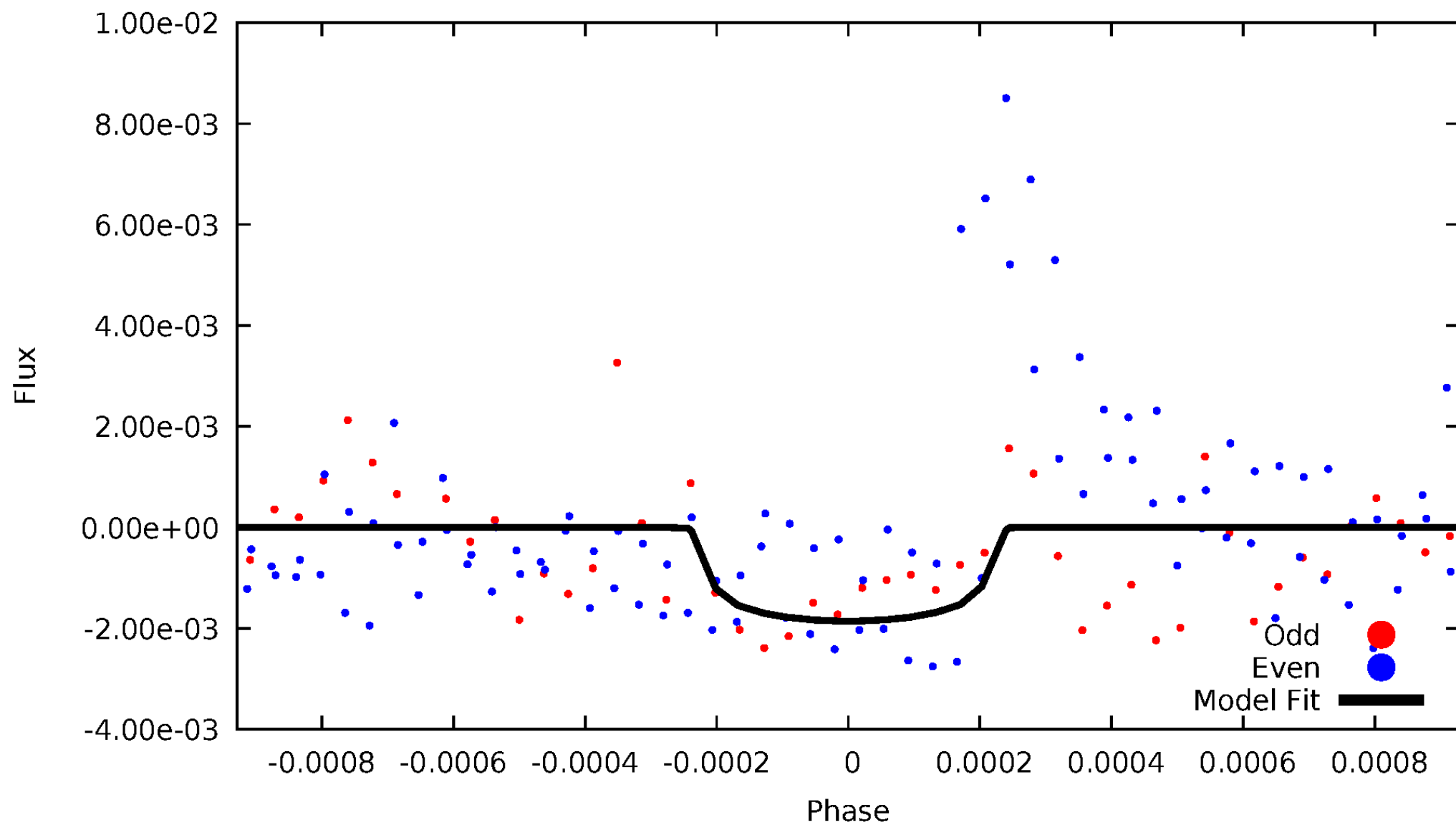


TCE 010471960-04



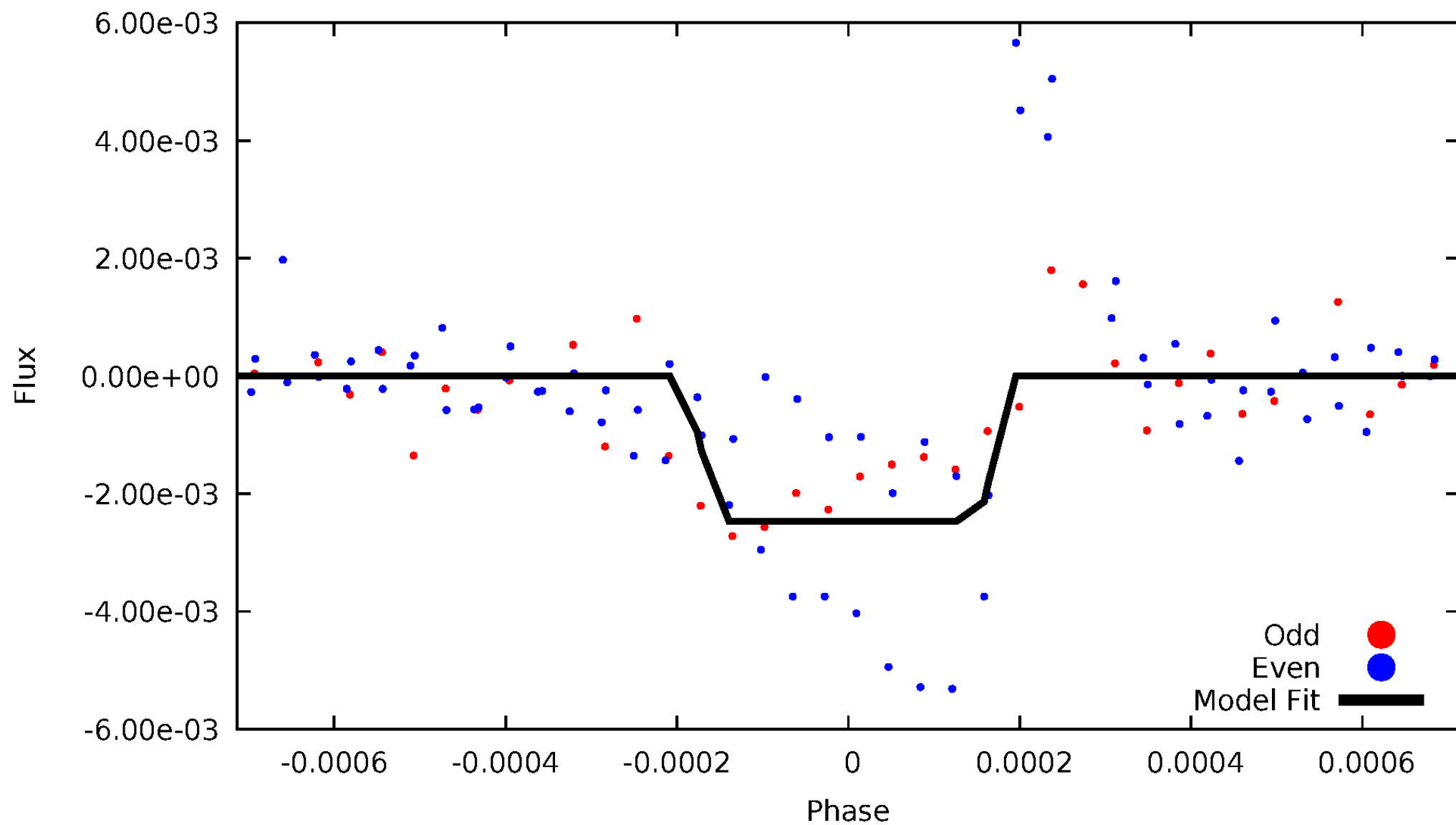
DV Odd/Even

TCE 010471960-04



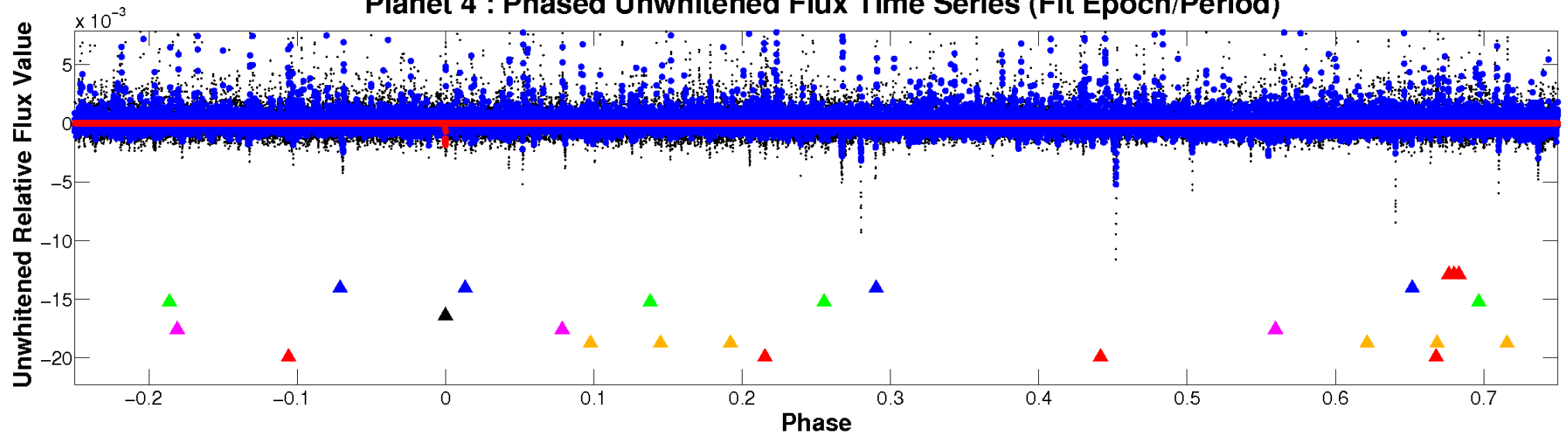
ALT Odd/Even

TCE 010471960-04

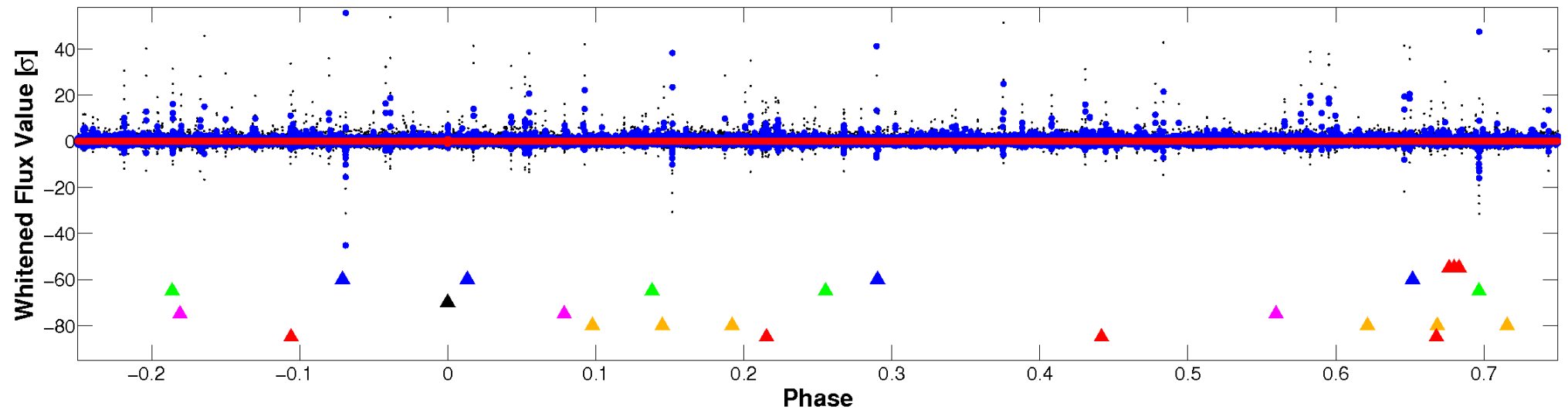


Non-Whitened Vs. Whitened Light Curve

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

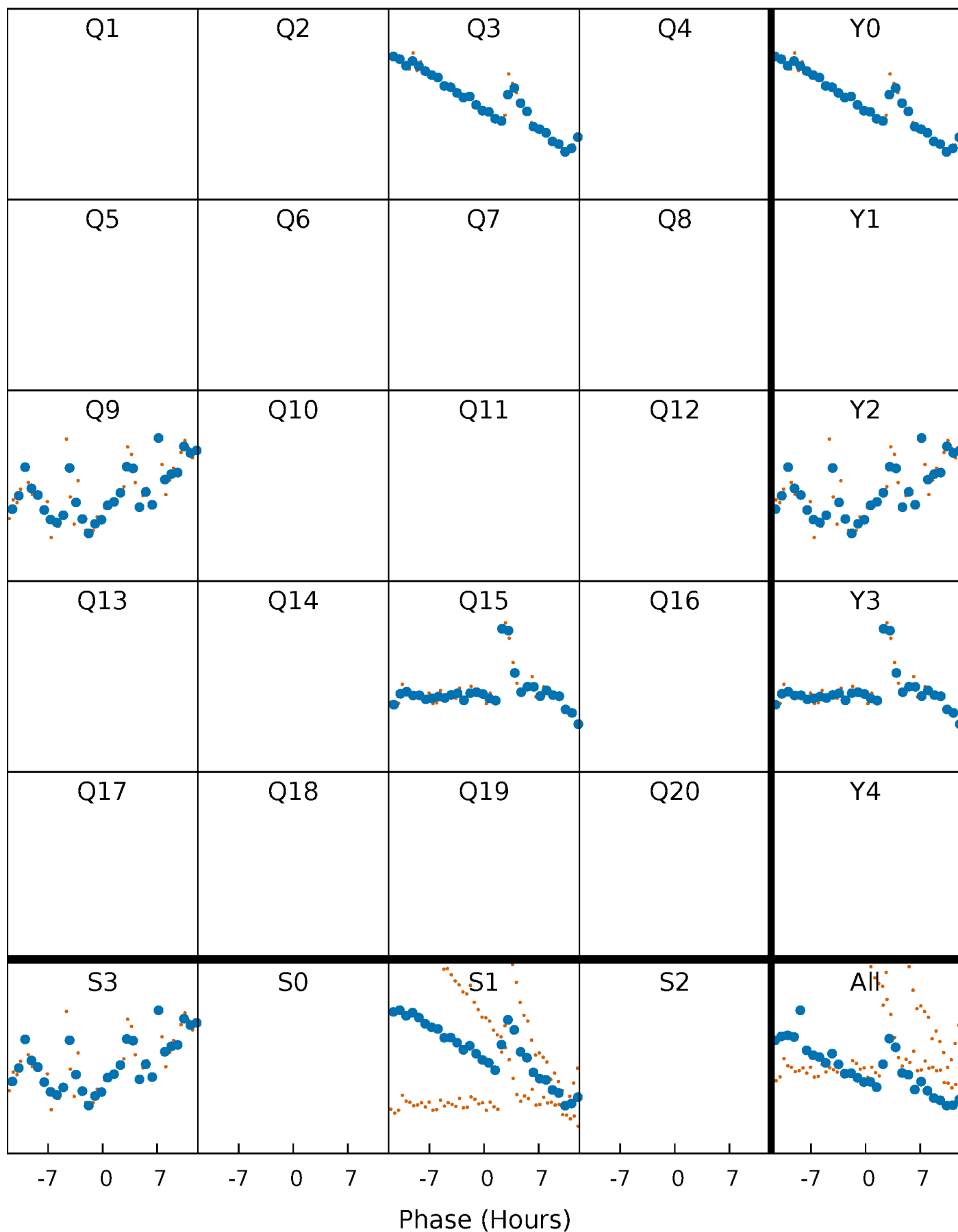


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 010471960-04 $P=549.315132$ Days $T_0=329.013198$ (BKJD)



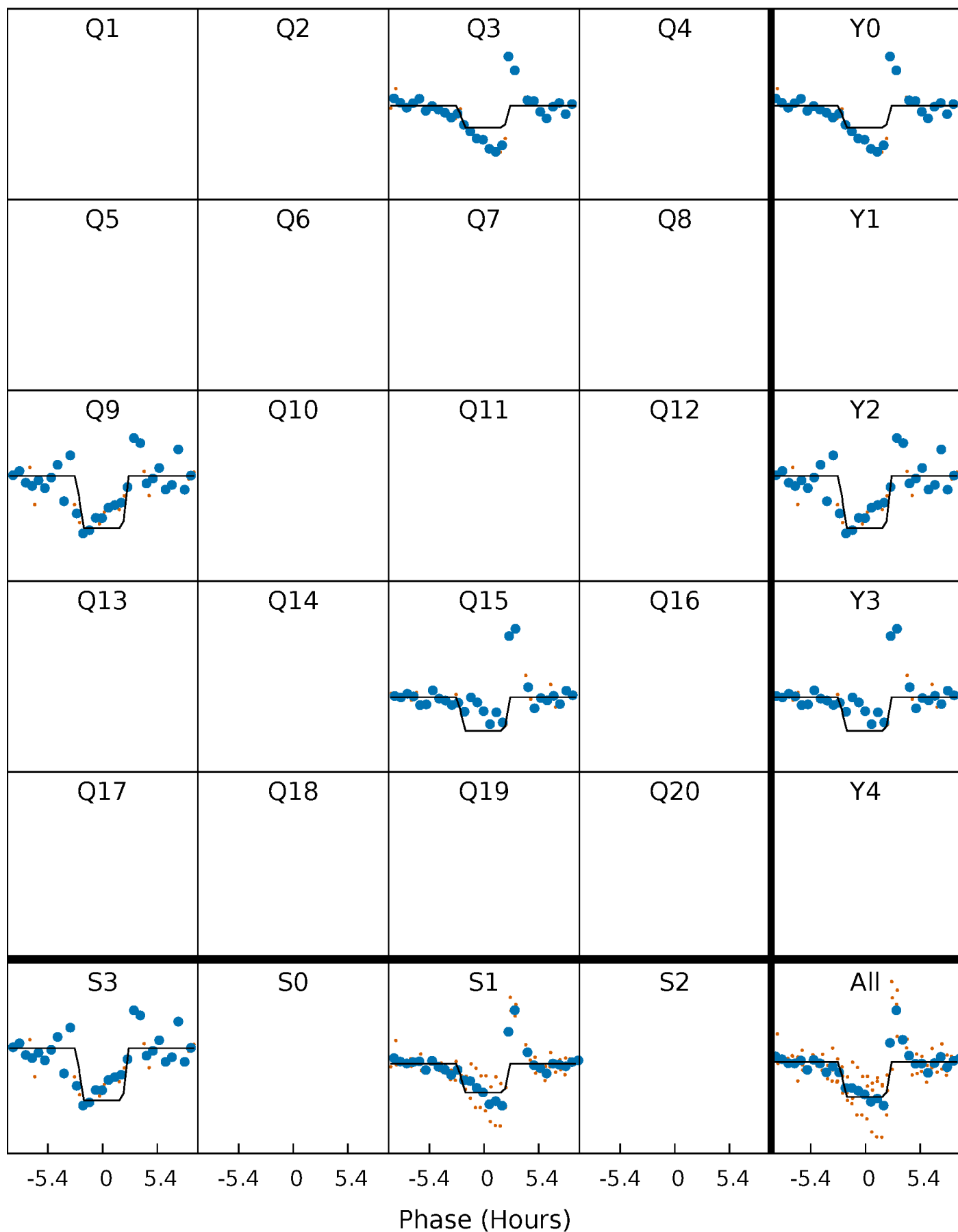
DV Quarter-Phased Transit Curves

TCE 010471960-04 $P=549.315132$ Days $T_0=329.013198$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

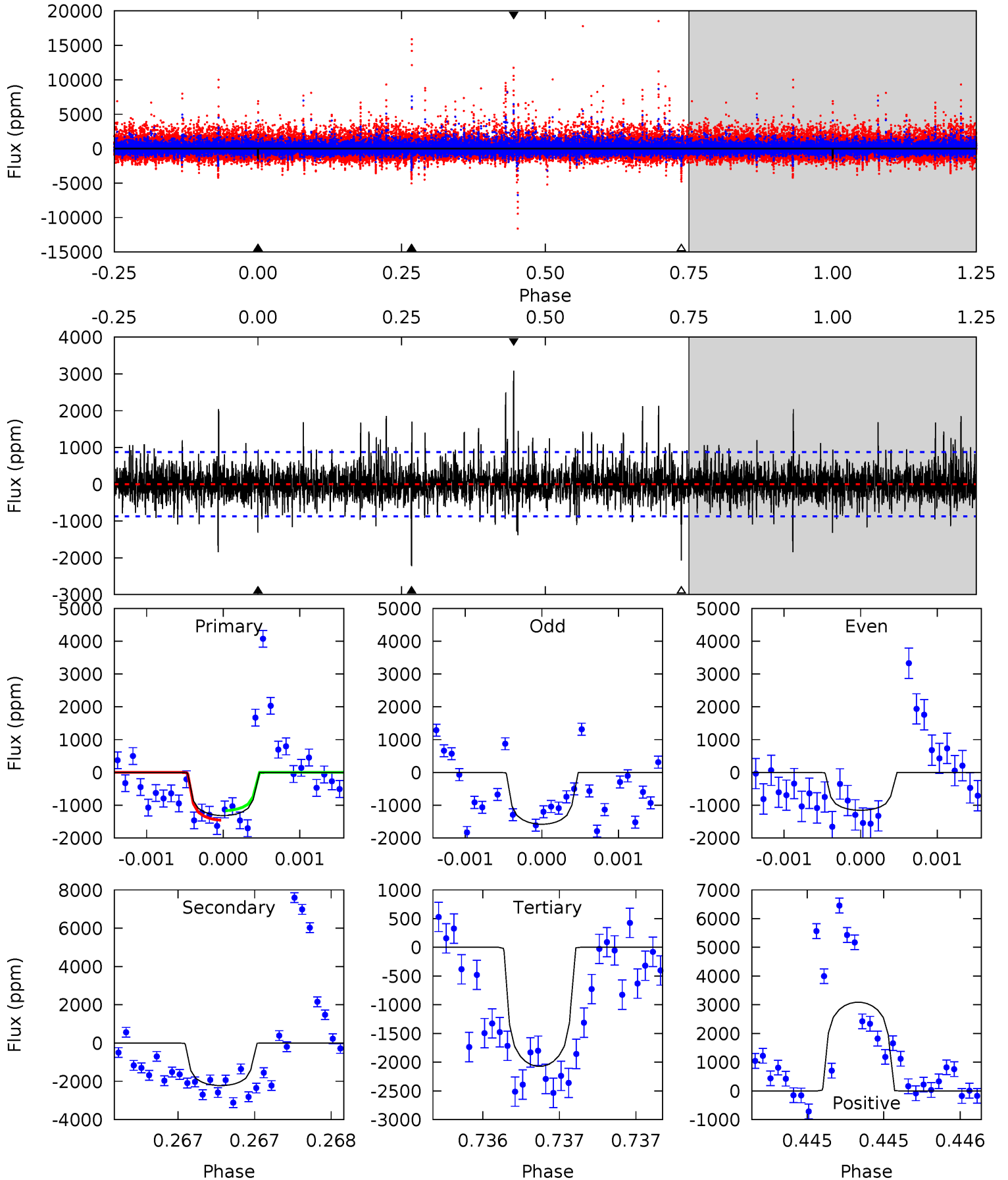
TCE 010471960-04 P=549.294960 Days $T_0=329.037393$ (BKJD)



DV Model-Shift Uniqueness Test

010471960-04, P = 549.315132 Days, E = 329.013198 Days

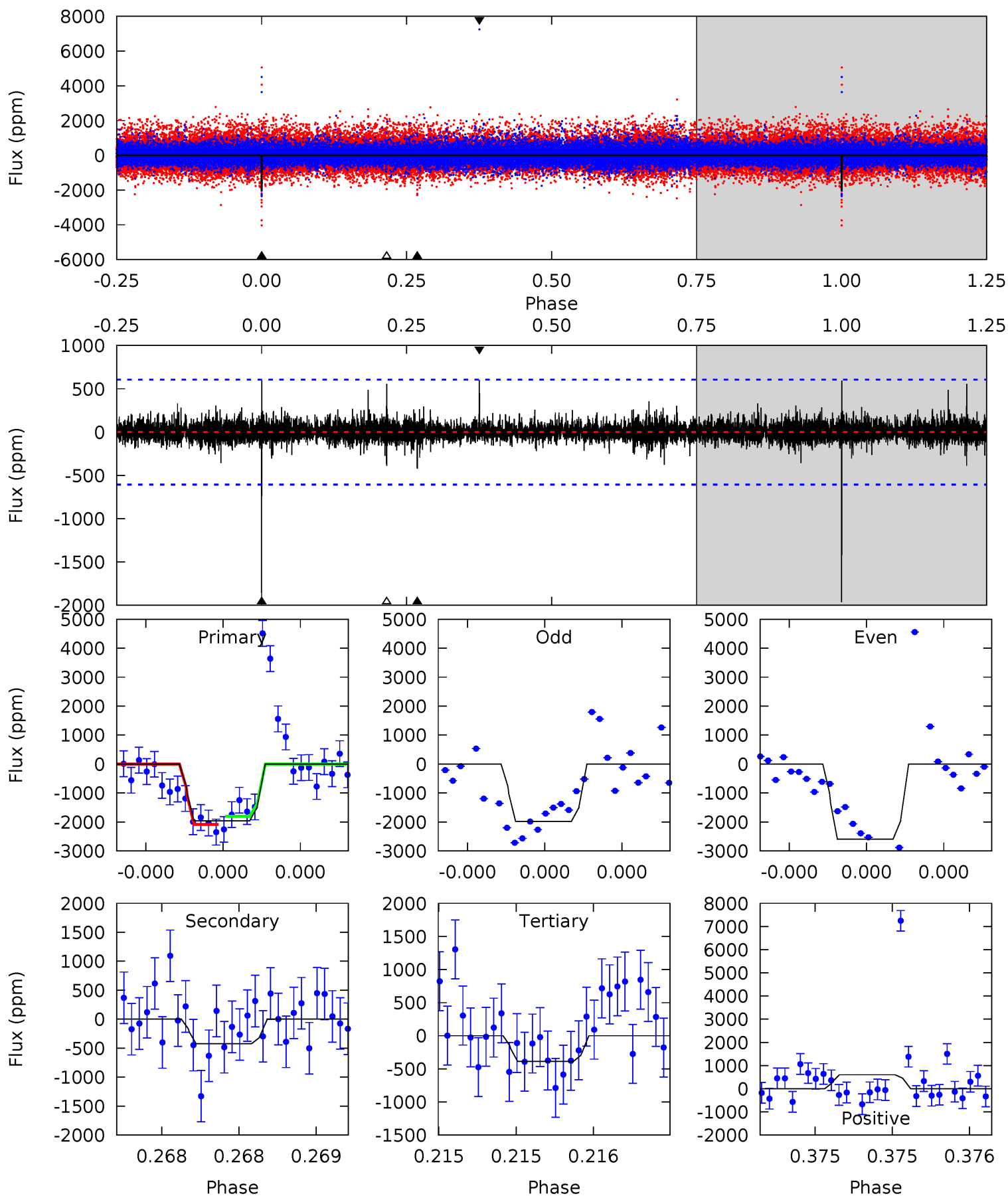
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.40	14.2	13.2	19.7	5.57	3.47	2.24	-4.82	-11.3	0.96	-5.53	0.97	0.70	0.58	0.93



Alt Model-Shift Uniqueness Test

010471960-04, P = 549.294960 Days, E = 329.037393 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.2	3.92	3.61	5.58	5.63	3.56	0.64	14.6	12.6	0.31	-1.66	2.86	1.20	0.23	1.32



Stellar Parameters For KIC 010471960

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3585^{+65}_{-72}	$4.868^{+0.045}_{-0.041}$	$-0.200^{+0.100}_{-0.100}$	$0.388^{+0.039}_{-0.044}$	$0.406^{+0.037}_{-0.056}$	$9.786^{+2.503}_{-1.663}$
	+2%/-2%	+1%/-1%	+50%/-50%	+10%/-11%	+9%/-14%	+26%/-17%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010471960-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2221 ± 157	$1.78^{+0.95}_{-0.94}$	140^{+4}_{-4}	3742^{+1124}_{-496}	$373777^{+1245021}_{-216436}$
Alt.	-422 ± 108	$2.10^{+1.08}_{-1.01}$	139^{+4}_{-4}	2758^{+581}_{-296}	$48596^{+133900}_{-28698}$

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

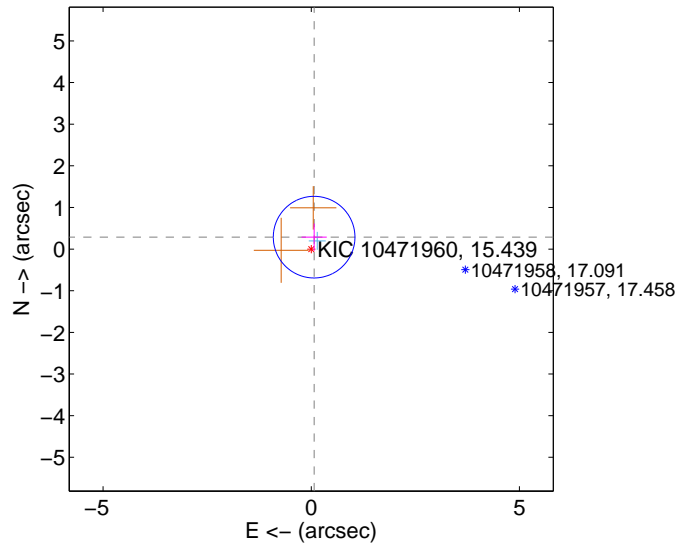
Supplemental centroid analysis for 010471960-04. Kepler magnitude: 15.44. Transit SNR 6.50

There are 1 quarters with good PRF difference image offsets

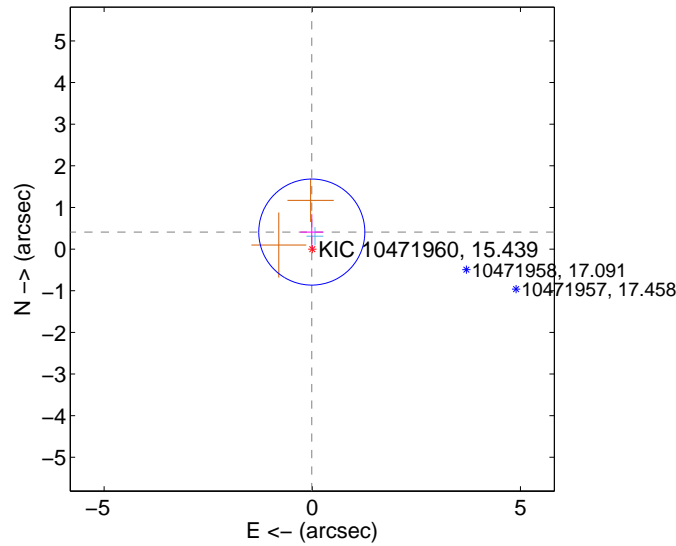
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.295 ± 0.327	0.90	-0.069 ± 0.303	0.287 ± 0.328
PRF-fit source offset from KIC position	0.409 ± 0.424	0.96	0.012 ± 0.274	0.409 ± 0.429
photometric centroid source offset	1.52 ± 1.11	1.38	-1.23 ± 1.23	0.90 ± 0.82

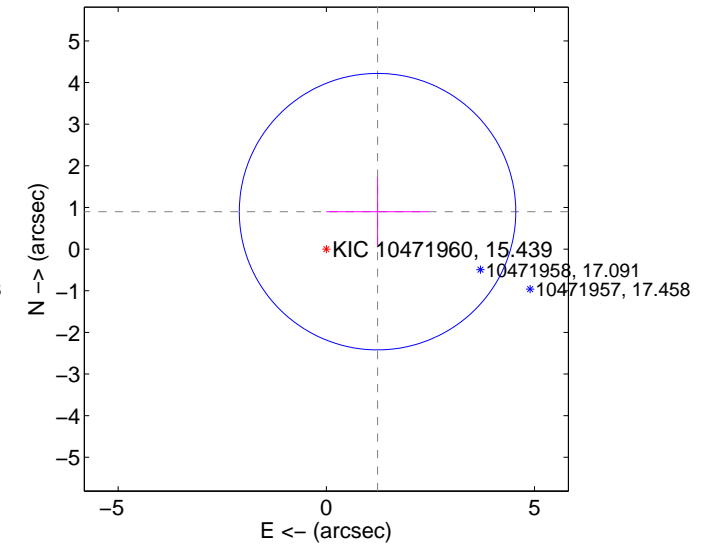
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

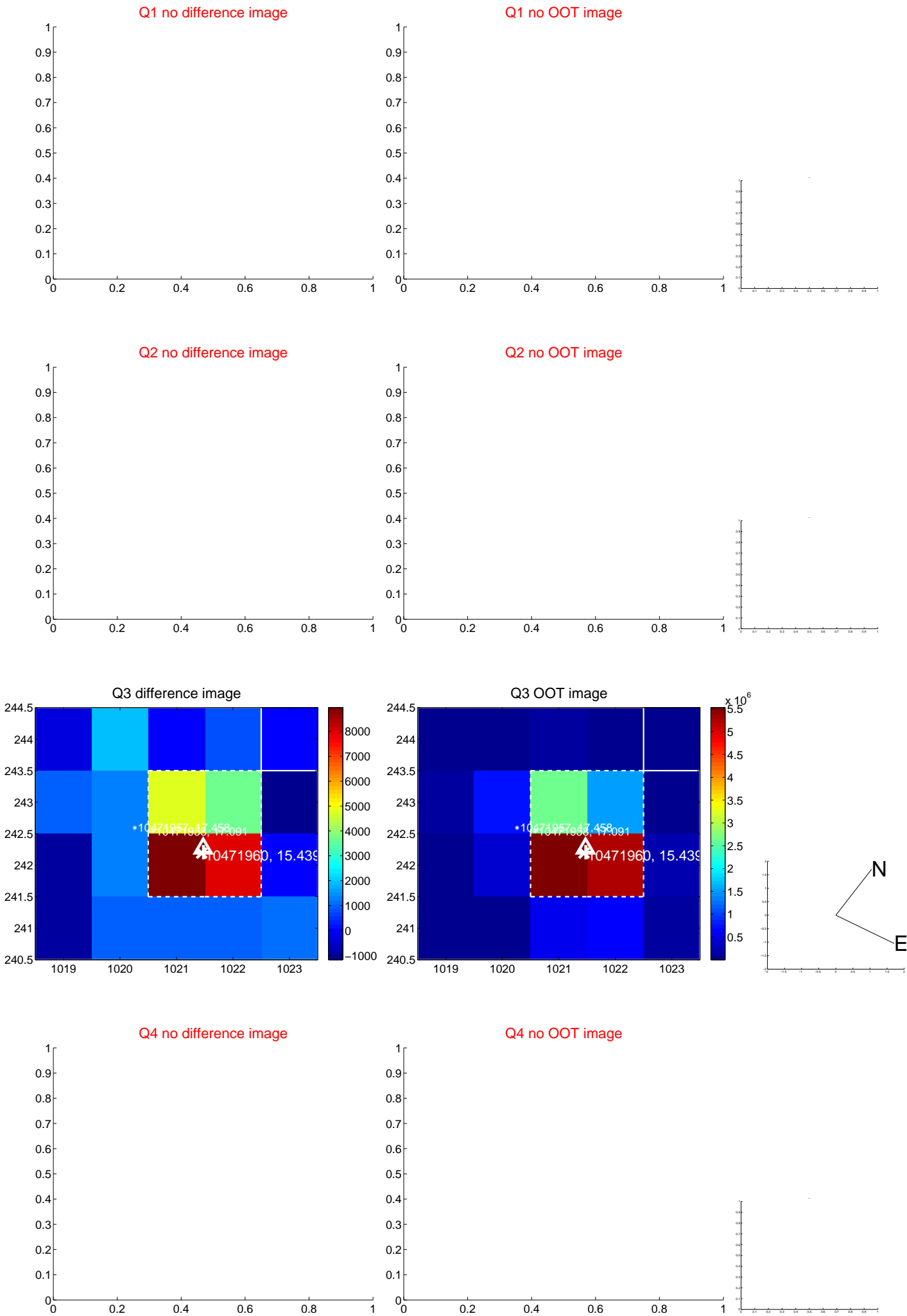


offset from photometric centroids



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

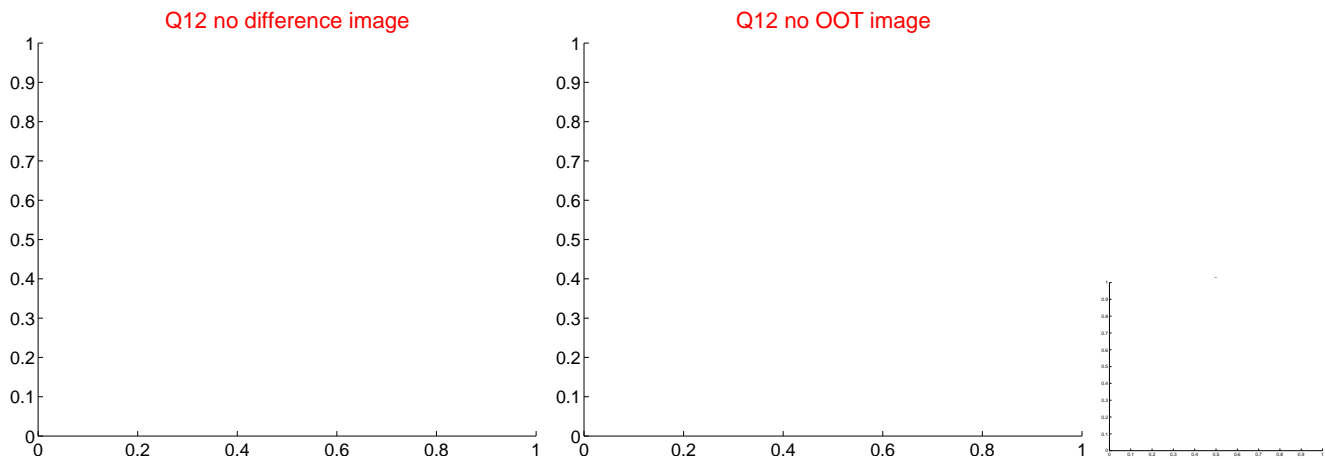
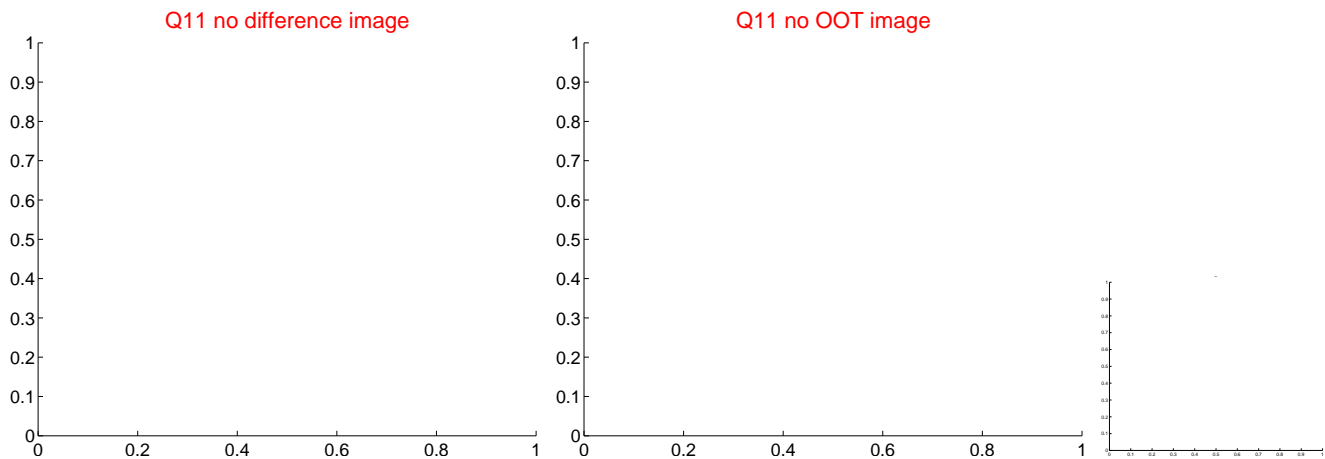
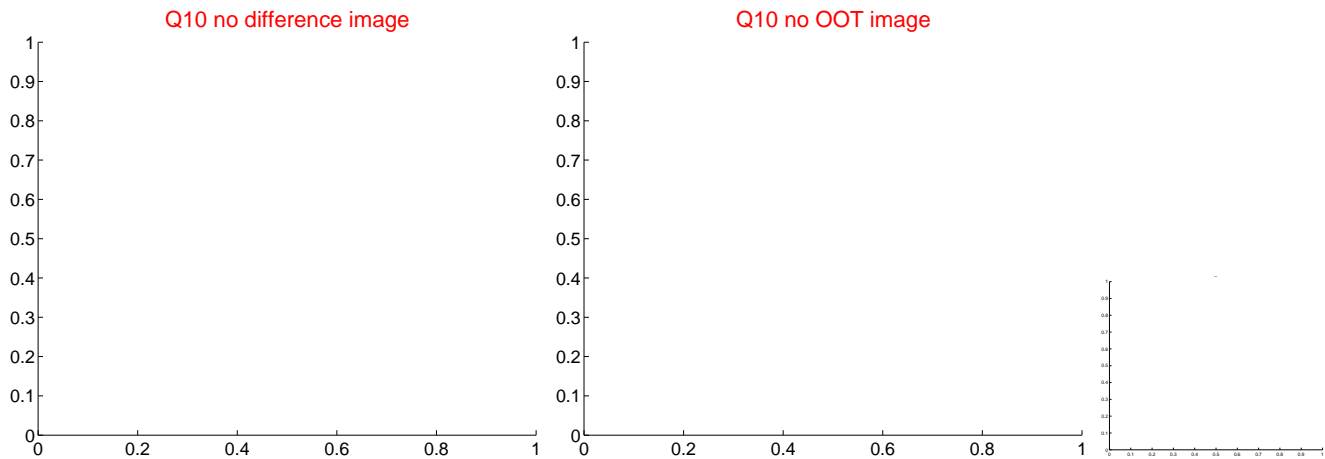
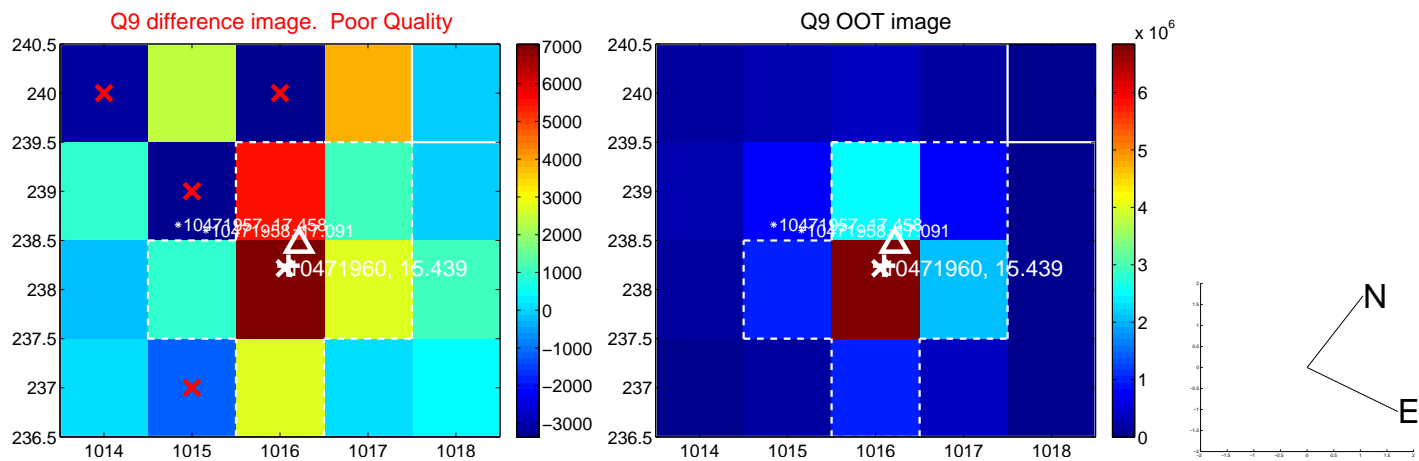
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



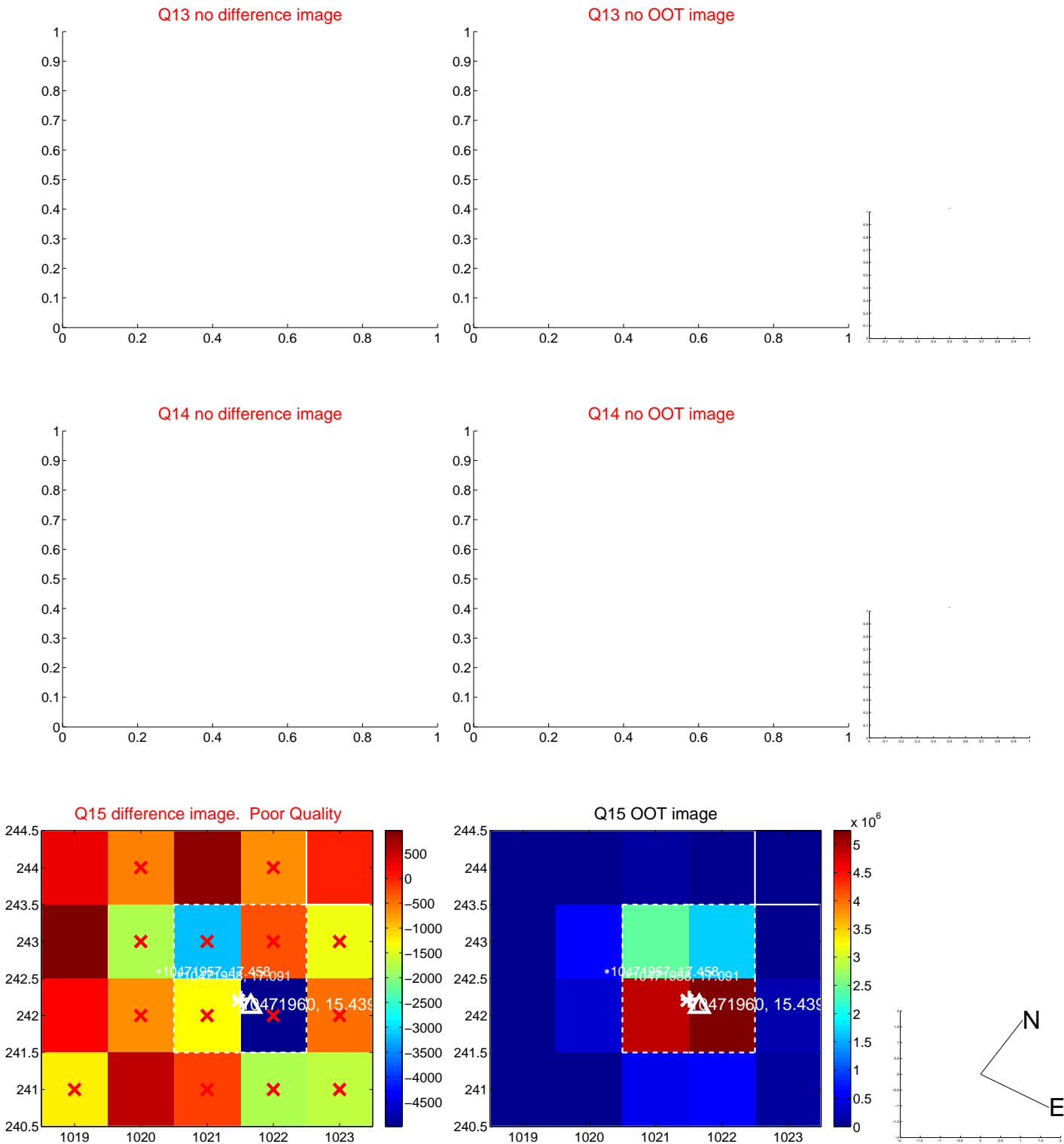
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



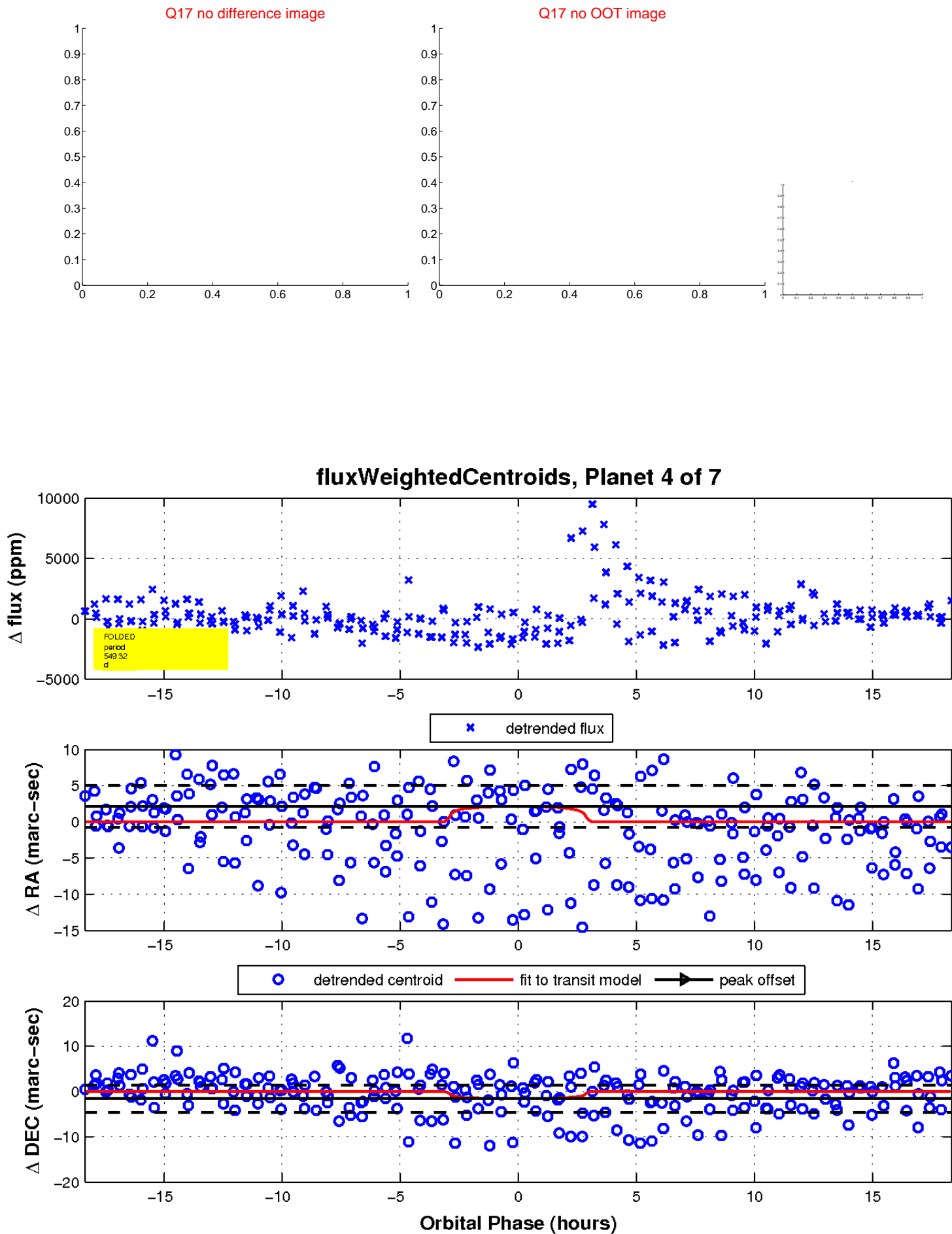
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

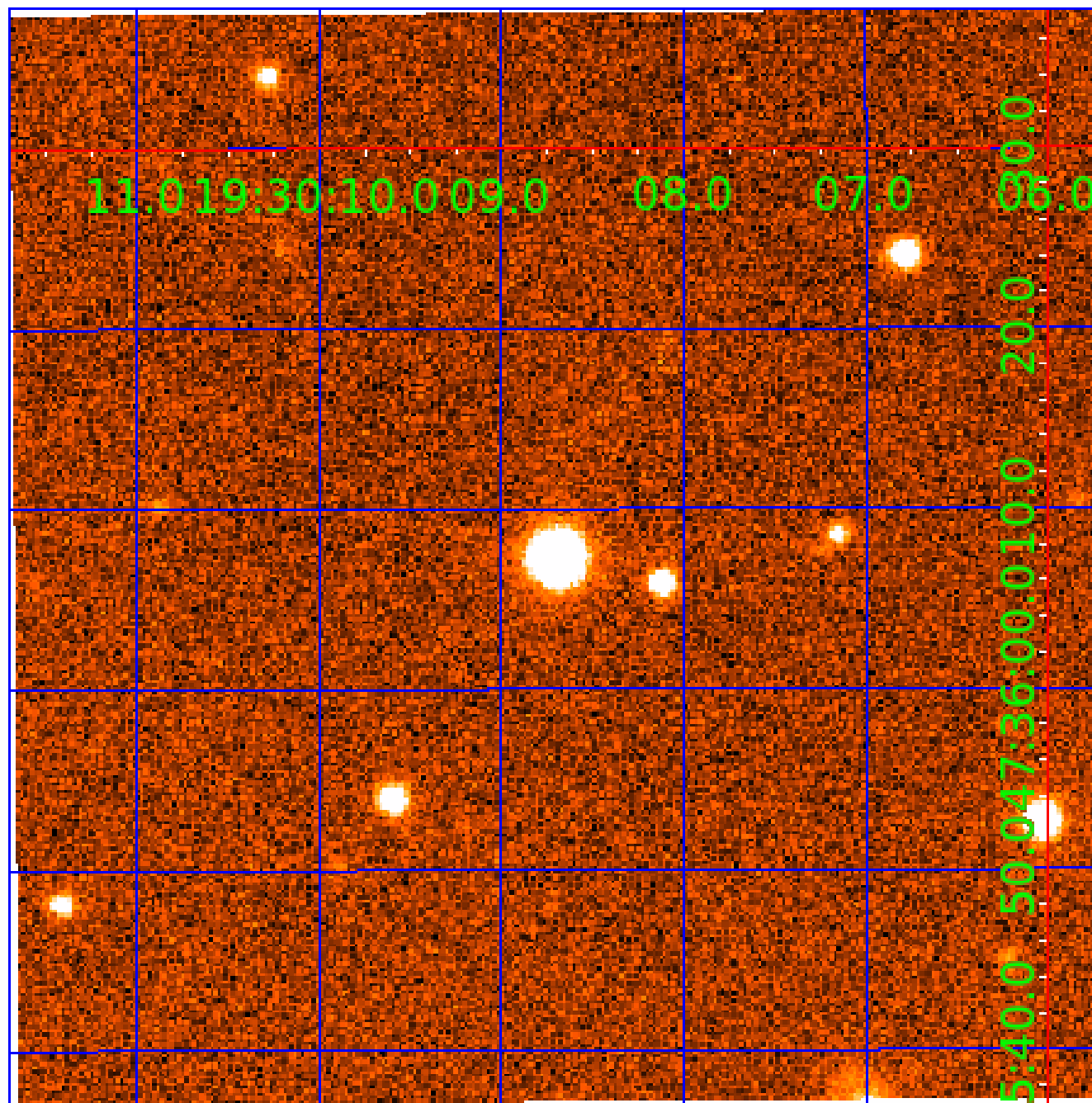


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010471960

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})
010471960-01	OBS	No	547.464223	155.030078	2769.0	8.017	19.6	8.6	0.39	3585	2.02	0.02
010471960-02	OBS	No	350.765409	336.318265	2665.0	6.180	13.7	9.1	0.39	3585	3.81	0.04
010471960-03	OBS	No	306.848558	404.857561	2035.5	13.858	13.1	7.3	0.39	3585	1.74	0.05
010471960-04	OBS	No	549.315132	329.013198	1856.2	6.120	11.8	6.5	0.39	3585	1.69	0.02
010471960-05	OBS	No	406.741390	372.243939	1663.9	4.424	11.6	6.2	0.39	3585	1.57	0.04
010471960-06	OBS	No	261.698175	172.863062	3108.5	34.221	10.0	7.4	0.39	3585	2.49	0.06
010471960-07	OBS	No	425.027354	270.884270	2661.0	5.762	12.9	9.4	0.39	3585	2.17	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010471960-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
010471960-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES
010471960-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

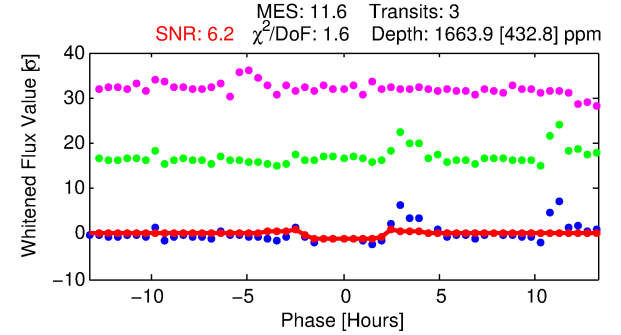
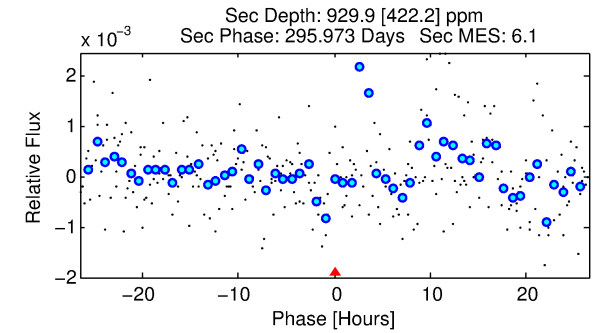
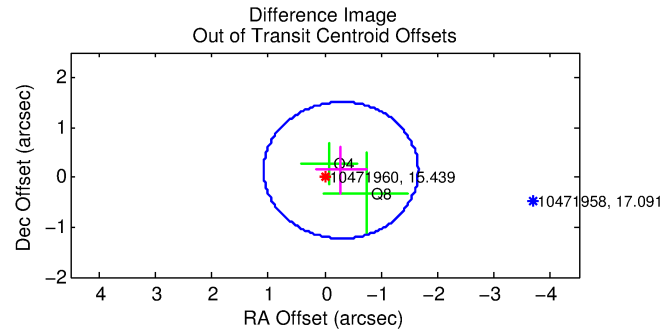
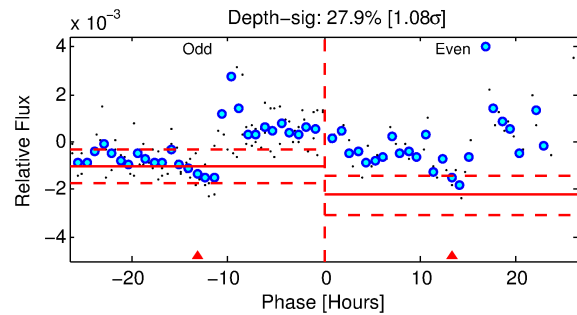
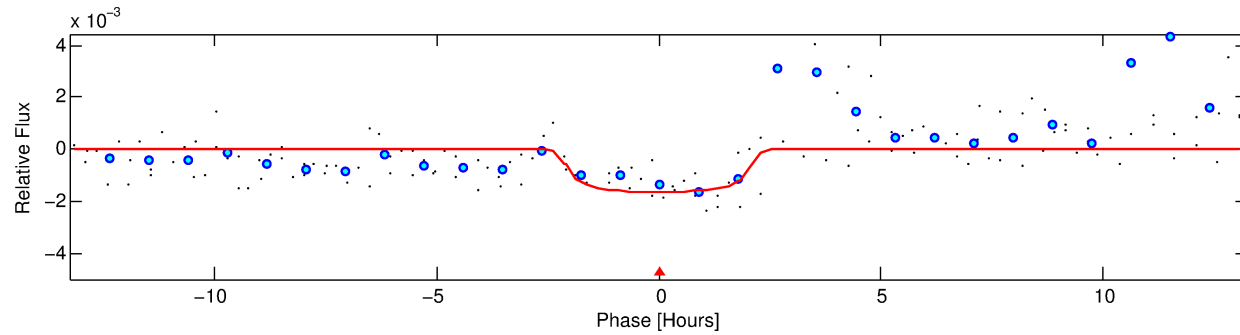
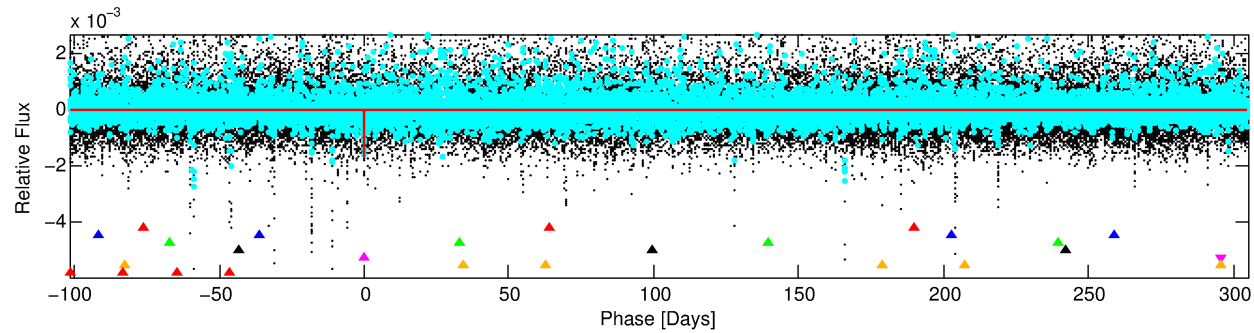
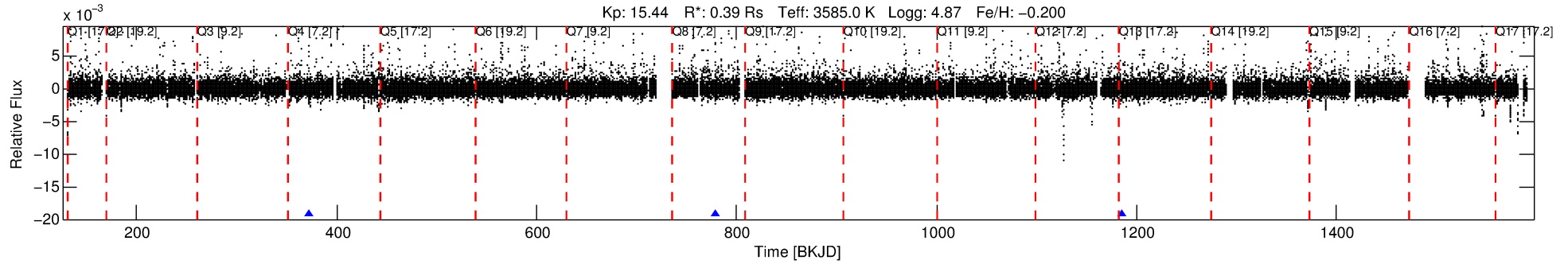
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010471960-05

No Significant Match Found

DV One-Page Summary

KIC: 10471960 Candidate: 5 of 7 Period: 406.741 d



DV Fit Results:

Period = 406.74139 [0.00916] d
Epoch = 372.2439 [0.0114] BKJD
Rp/R* = 0.0372 [0.0818]
a/R* = 720.82 [7219.95]
b = 0.15 [65.54]
Seff = 0.04 [0.00]
Teq = 110 [4] K
Rp = 1.57 [3.47] Re
a = 0.7952 [0.0661] AU
Ag = 130695.84 [578347.67] [0.23 σ]
Teffp = 3248 [3593] K [0.87 σ]

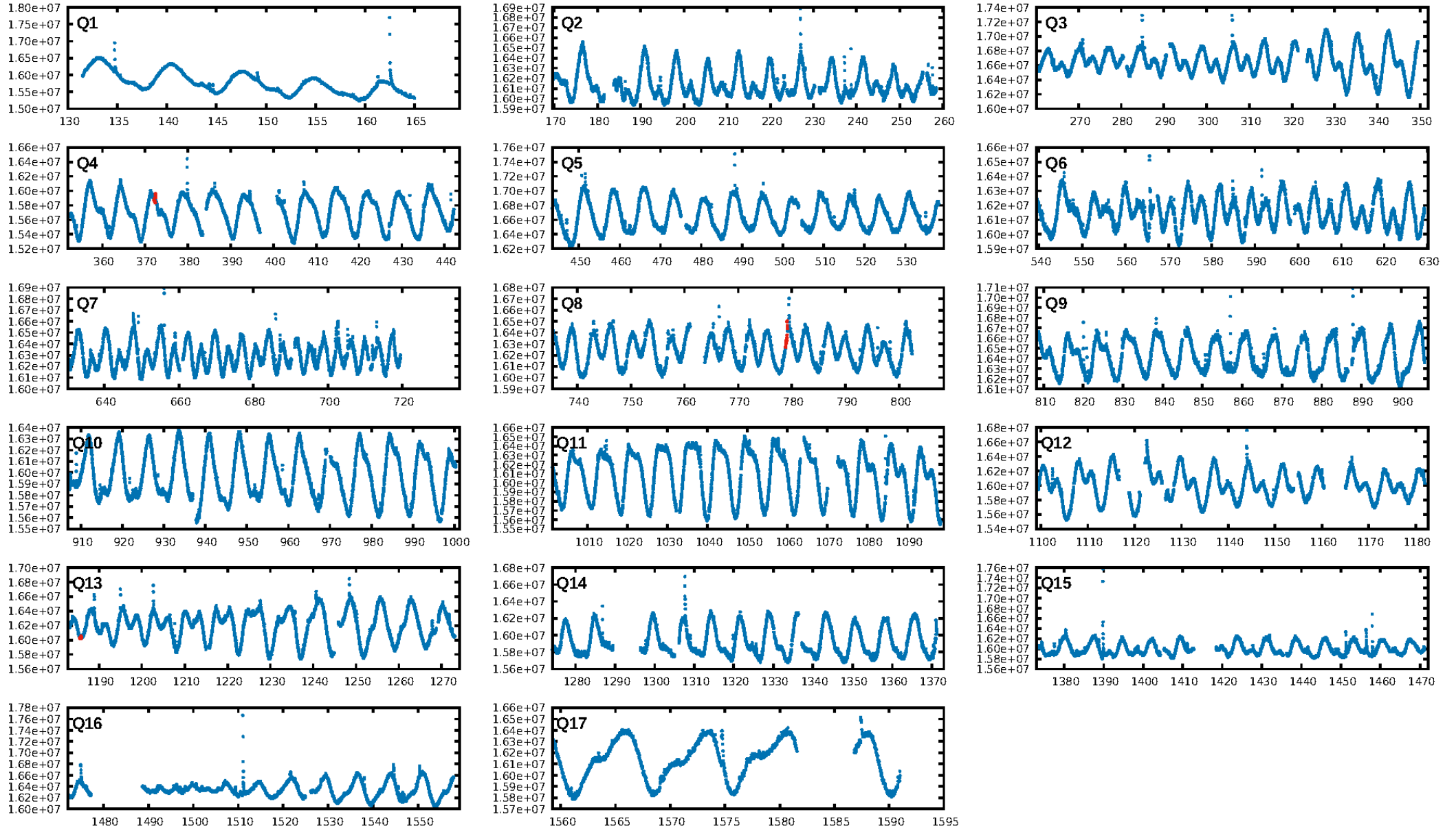
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [176.75 σ]
LongPeriod-sig: 100.0% [60.41 σ]
ModelChiSquare2-sig: 18.8%
ModelChiSquareGof-sig: 63.0%
Bootstrap-pfa: 1.42e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.9946
Centroid-sig: 7.2%
Centroid-so: 1.217 arcsec [1.13 σ]
OotOffset-rm: 0.321 arcsec [0.70 σ]
KicOffset-rm: 0.452 arcsec [0.99 σ]
OotOffset-st: 0/0/2/0 [2]
KicOffset-st: 0/0/2/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

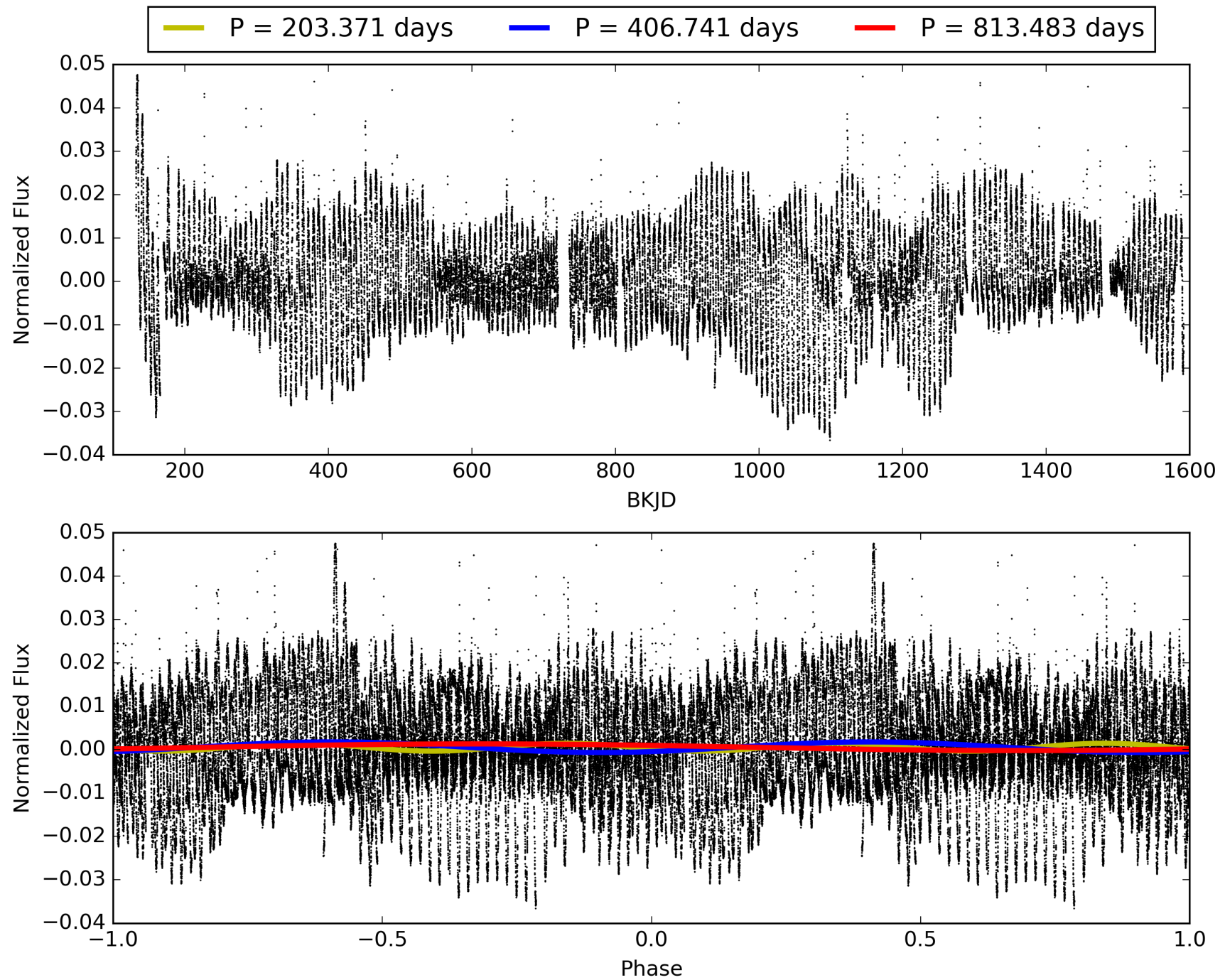
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:22:38 Z

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

TCE 010471960-05, PDC Light Curves

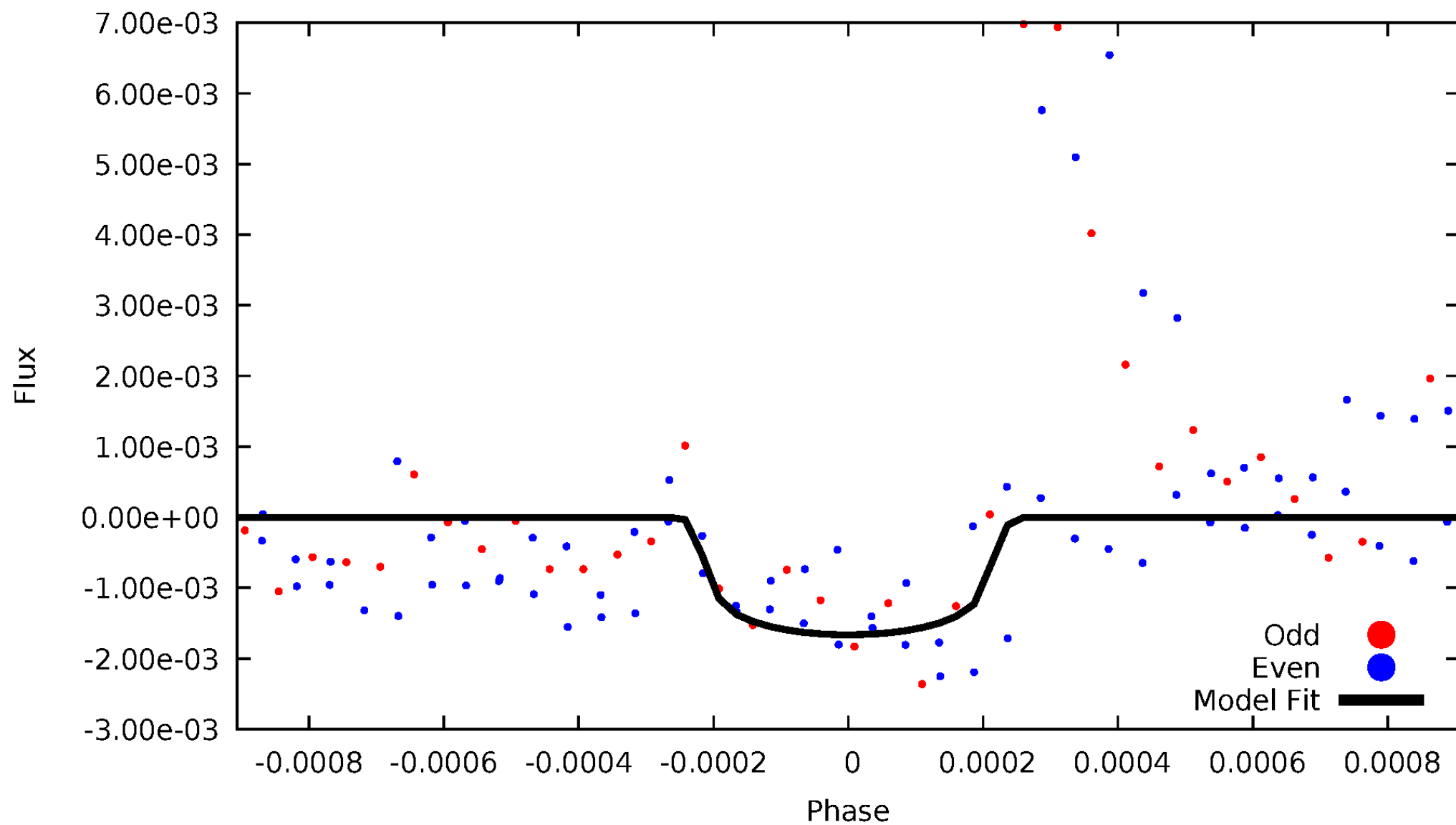


TCE 010471960-05



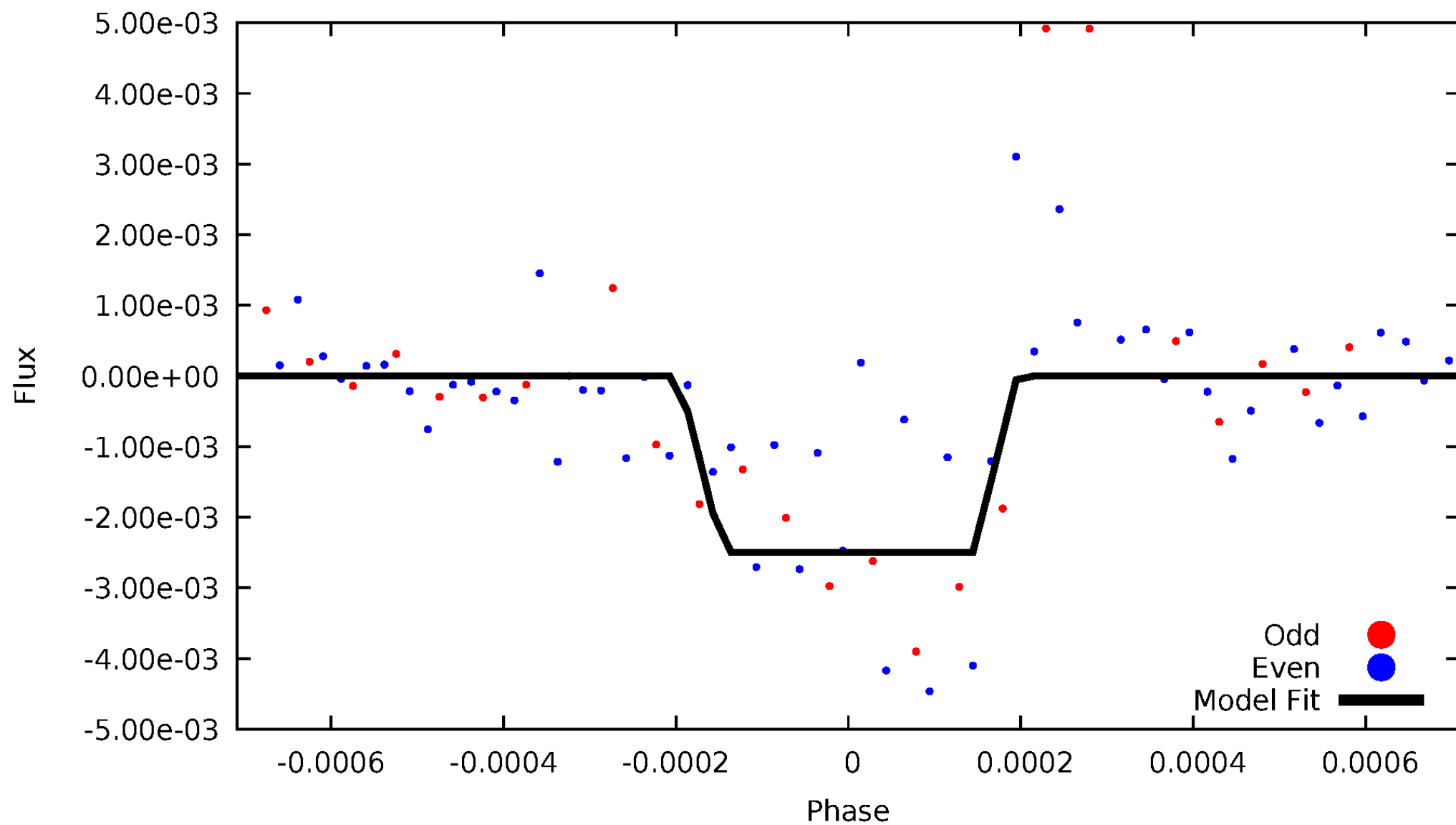
DV Odd/Even

TCE 010471960-05



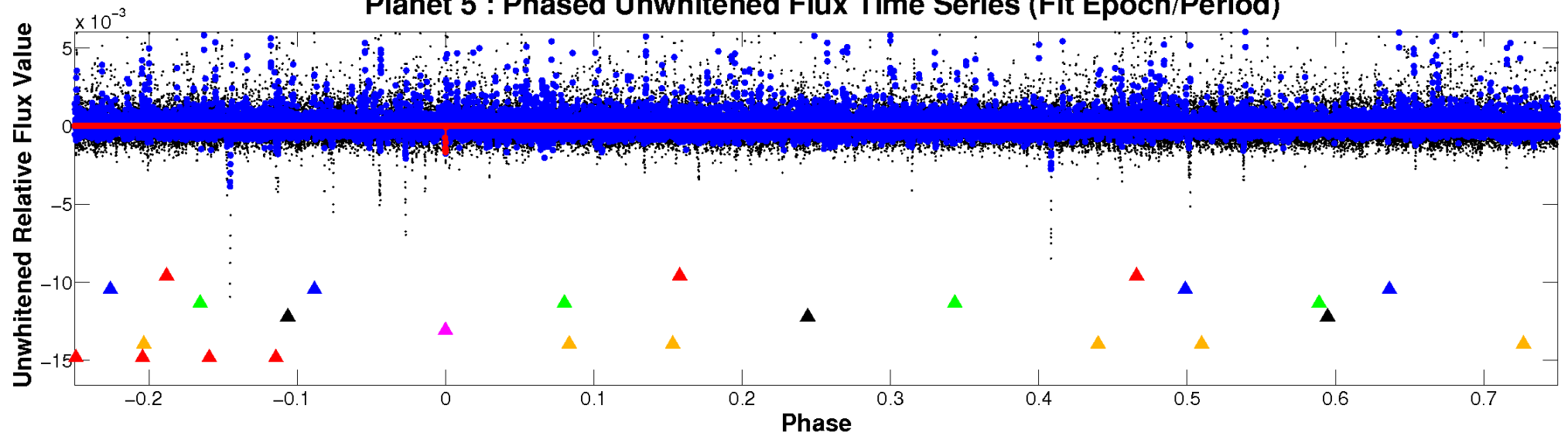
ALT Odd/Even

TCE 010471960-05

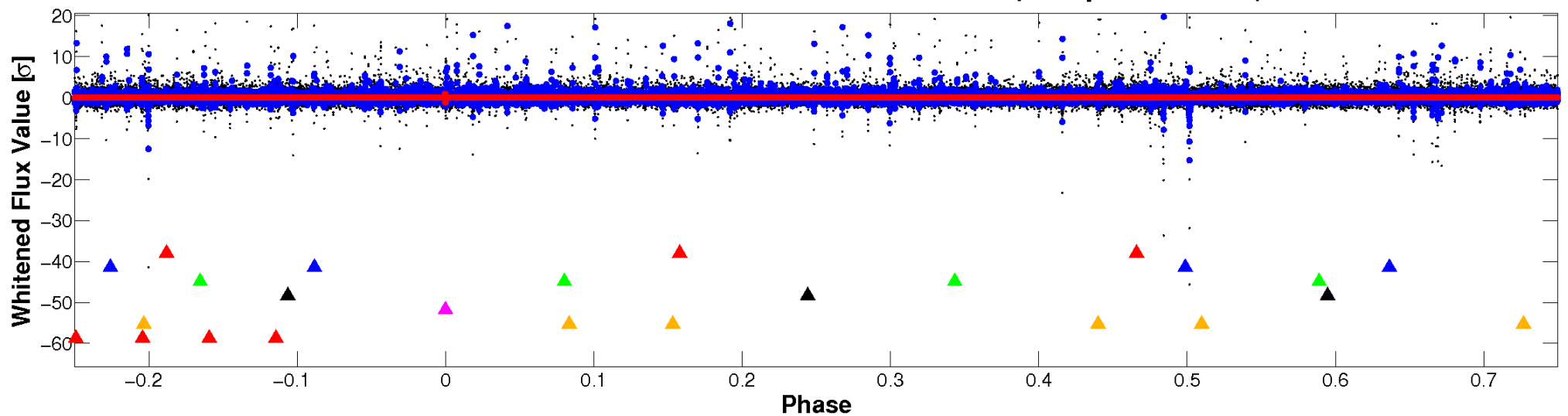


Non-Whitened Vs. Whitened Light Curve

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

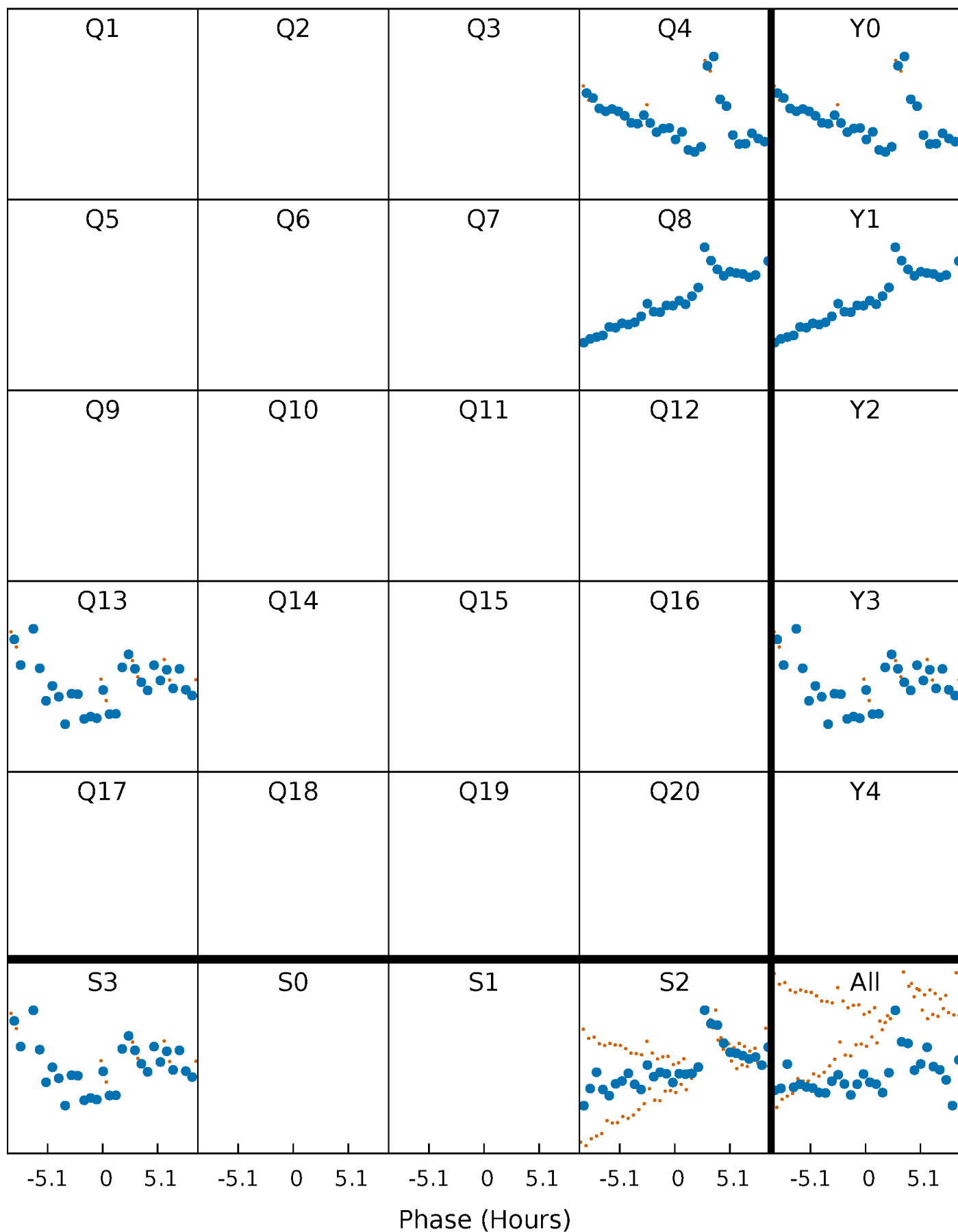


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



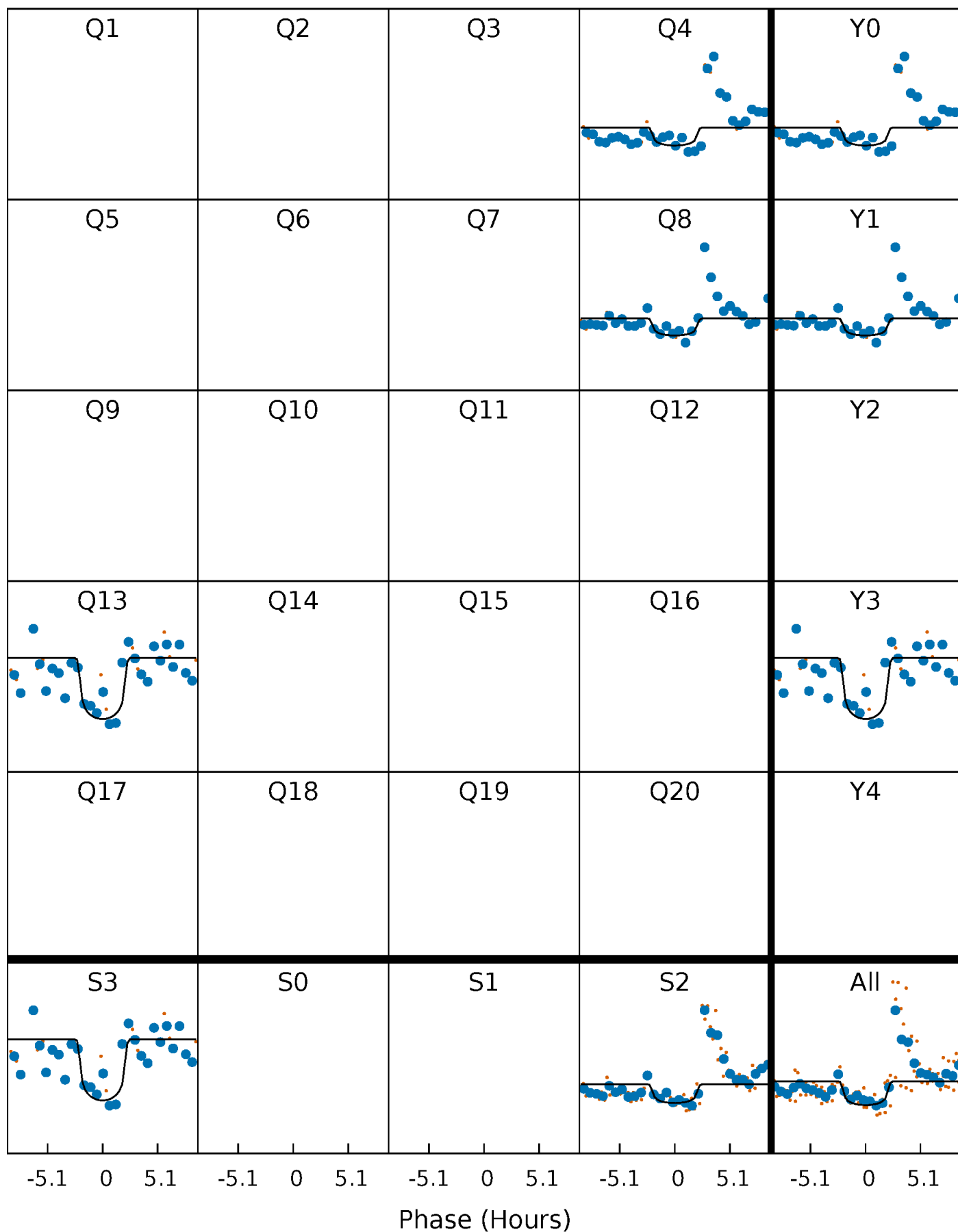
PDC Quarter-Phased Transit Curves

TCE 010471960-05 $P=406.741390$ Days $T_0=372.243939$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 010471960-05 $P=406.741390$ Days $T_0=372.243939$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

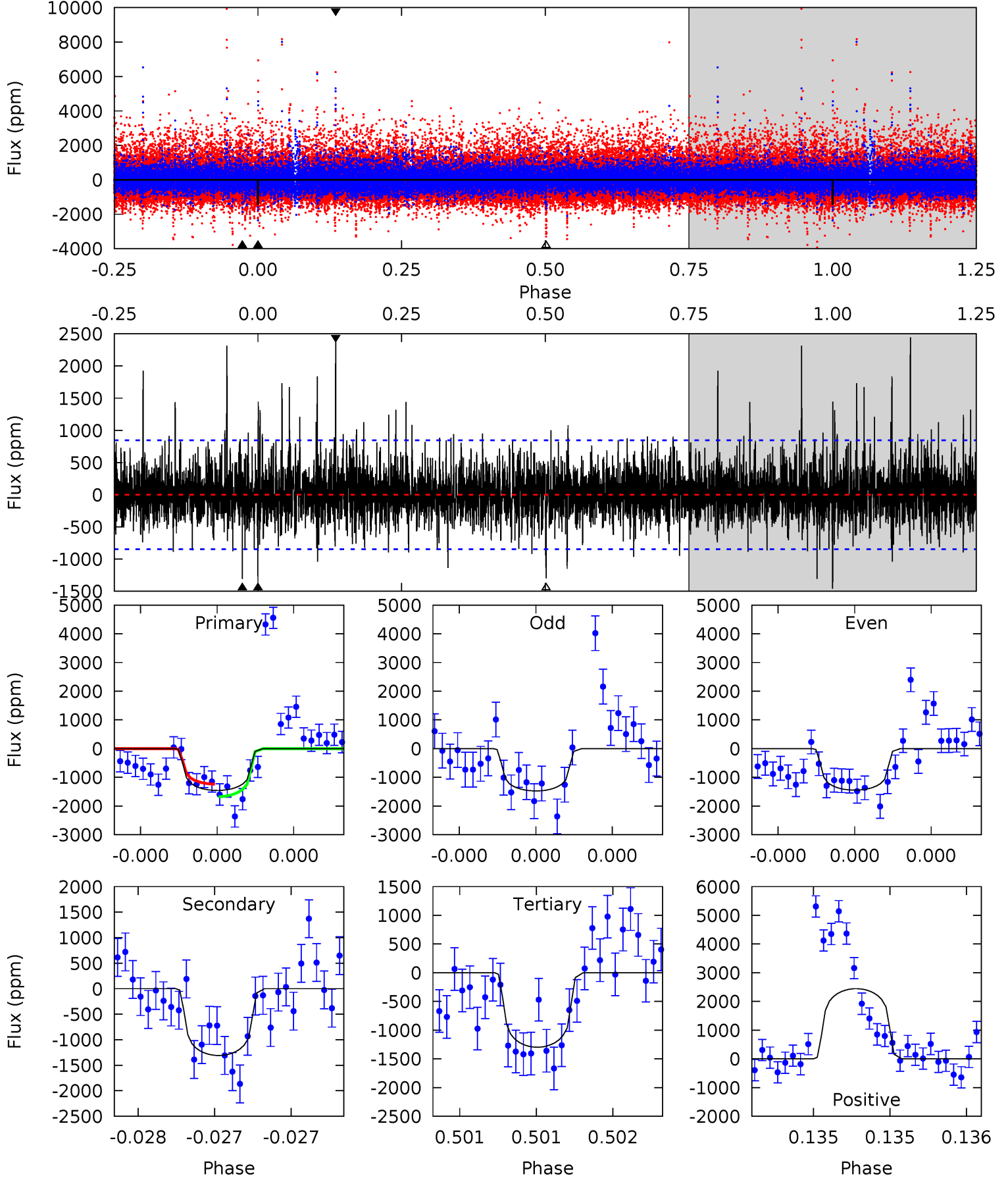
TCE 010471960-05 $P=406.716389$ Days $T_0=372.281524$ (BKJD)



DV Model-Shift Uniqueness Test

010471960-05, P = 406.741390 Days, E = 372.243939 Days

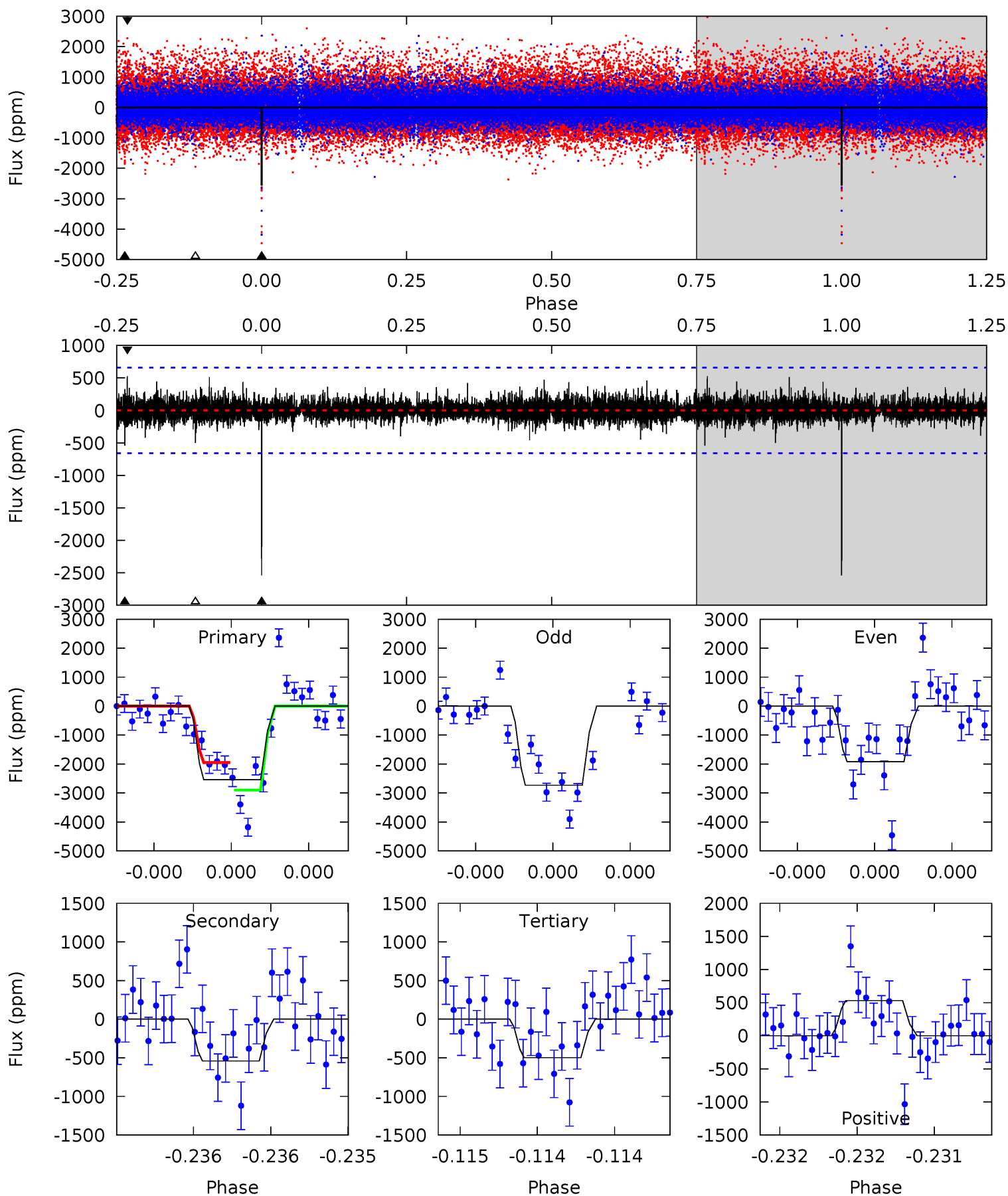
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.61	8.62	8.55	16.1	5.58	3.49	1.99	1.06	-6.51	0.07	-7.49	0.07	0.99	0.63	1.45



Alt Model-Shift Uniqueness Test

010471960-05, $P = 406.716389$ Days, $E = 372.281524$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.7	4.62	4.25	4.53	5.62	3.55	0.83	17.4	17.1	0.37	0.09	3.35	0.84	0.17	4.15



Stellar Parameters For KIC 010471960

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3585^{+65}_{-72}	$4.868^{+0.045}_{-0.041}$	$-0.200^{+0.100}_{-0.100}$	$0.388^{+0.039}_{-0.044}$	$0.406^{+0.037}_{-0.056}$	$9.786^{+2.503}_{-1.663}$
	+2%/-2%	+1%/-1%	+50%/-50%	+10%/-11%	+9%/-14%	+26%/-17%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010471960-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1308 ± 152	$3.07^{+2.93}_{-2.11}$	154^{+4}_{-4}	2932^{+1315}_{-488}	$49003^{+414713}_{-36495}$
Alt.	-541 ± 117	$3.22^{+3.16}_{-2.10}$	154^{+4}_{-4}	2550^{+884}_{-383}	$18555^{+131720}_{-14142}$

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 $A_{obs} \gg 1.0$

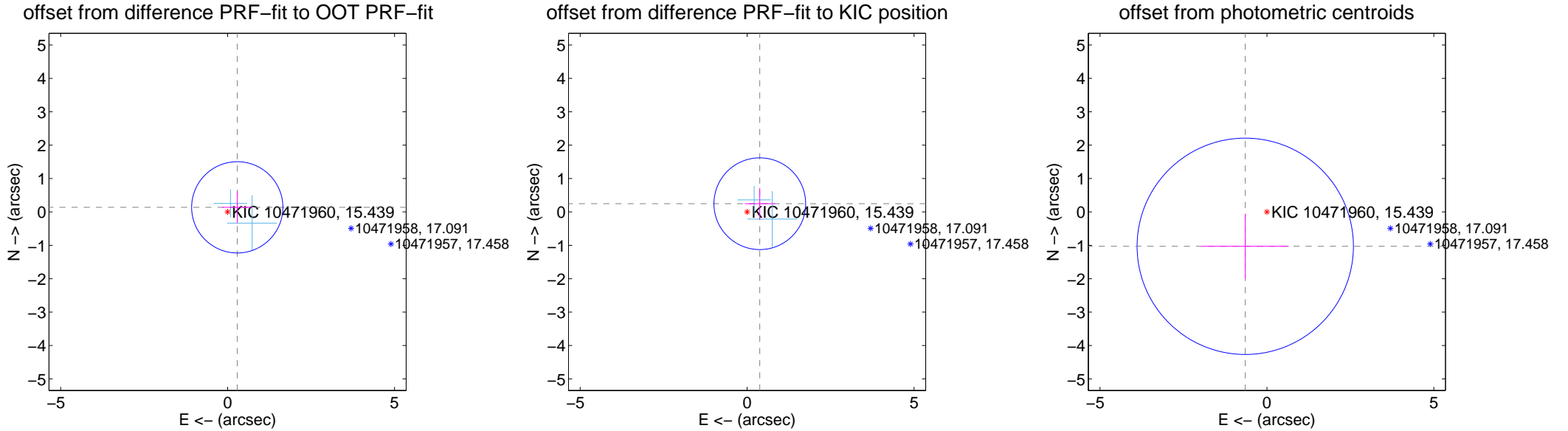
DV Centroid Data

Supplemental centroid analysis for 010471960-05. Kepler magnitude: 15.44. Transit SNR 6.21

There are 2 quarters with good PRF difference image offsets

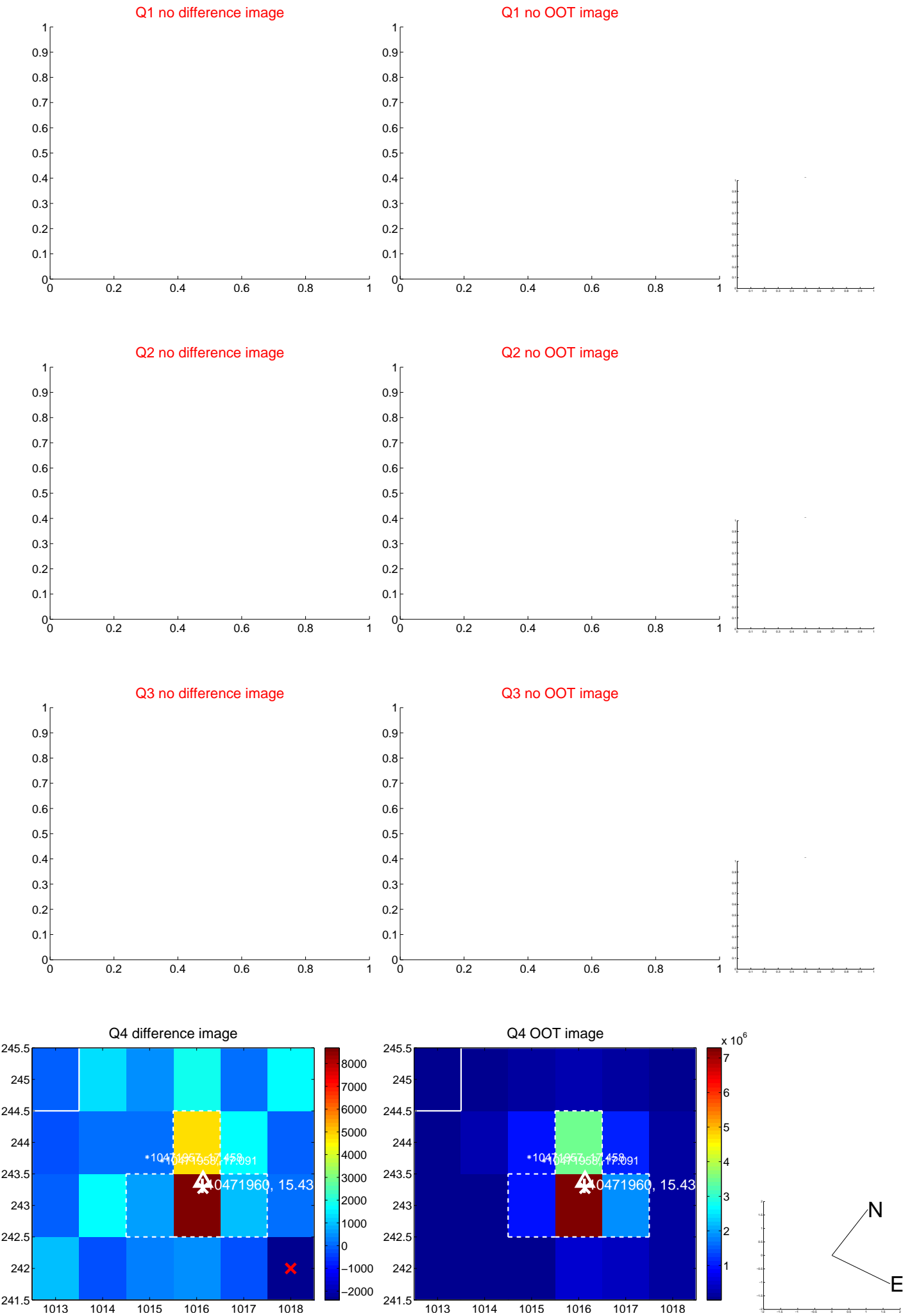
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.321 ± 0.456	0.70	-0.290 ± 0.452	0.138 ± 0.472
PRF-fit source offset from KIC position	0.452 ± 0.458	0.99	-0.379 ± 0.452	0.246 ± 0.472
photometric centroid source offset	1.22 ± 1.08	1.13	0.65 ± 1.30	-1.03 ± 0.98

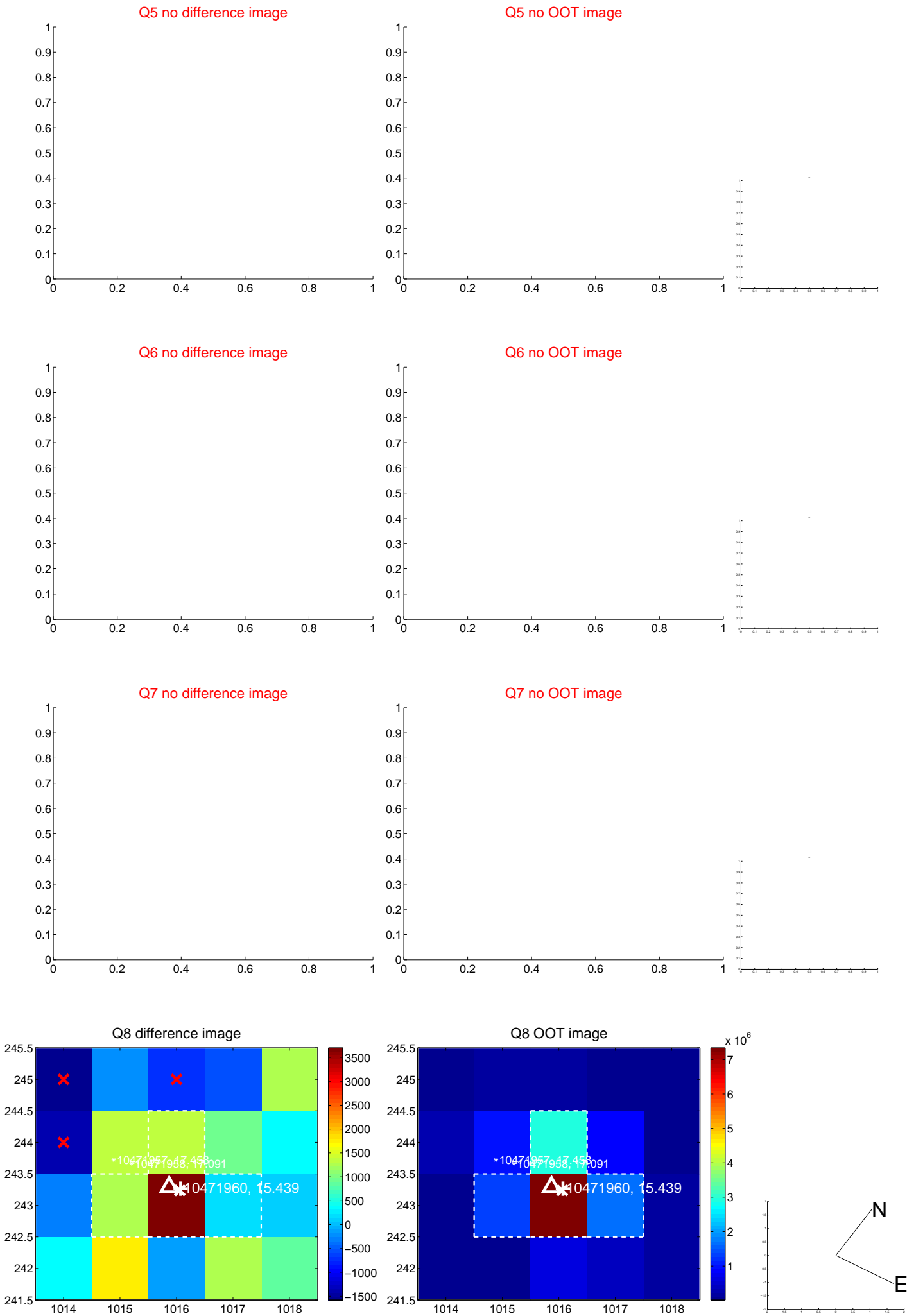


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



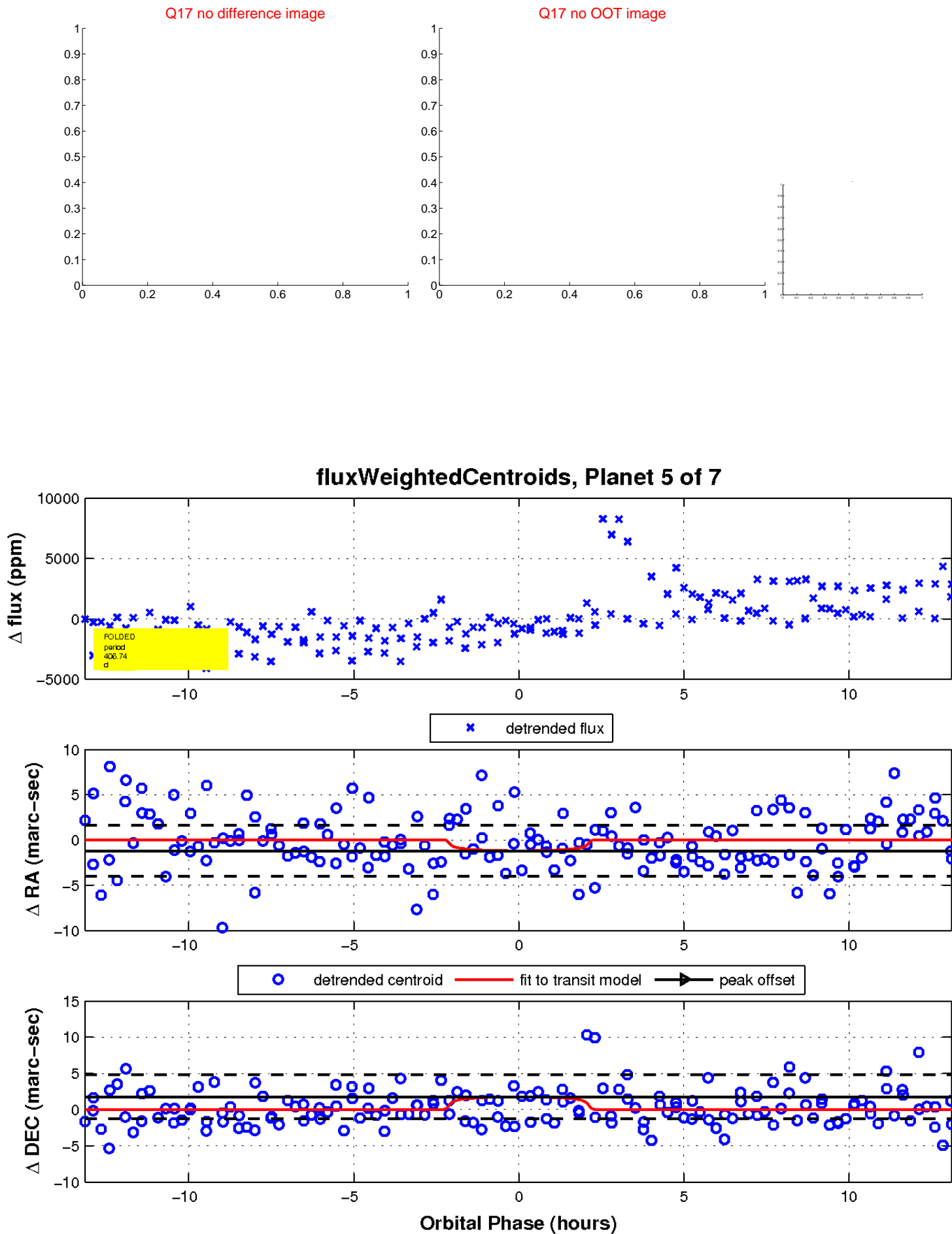
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

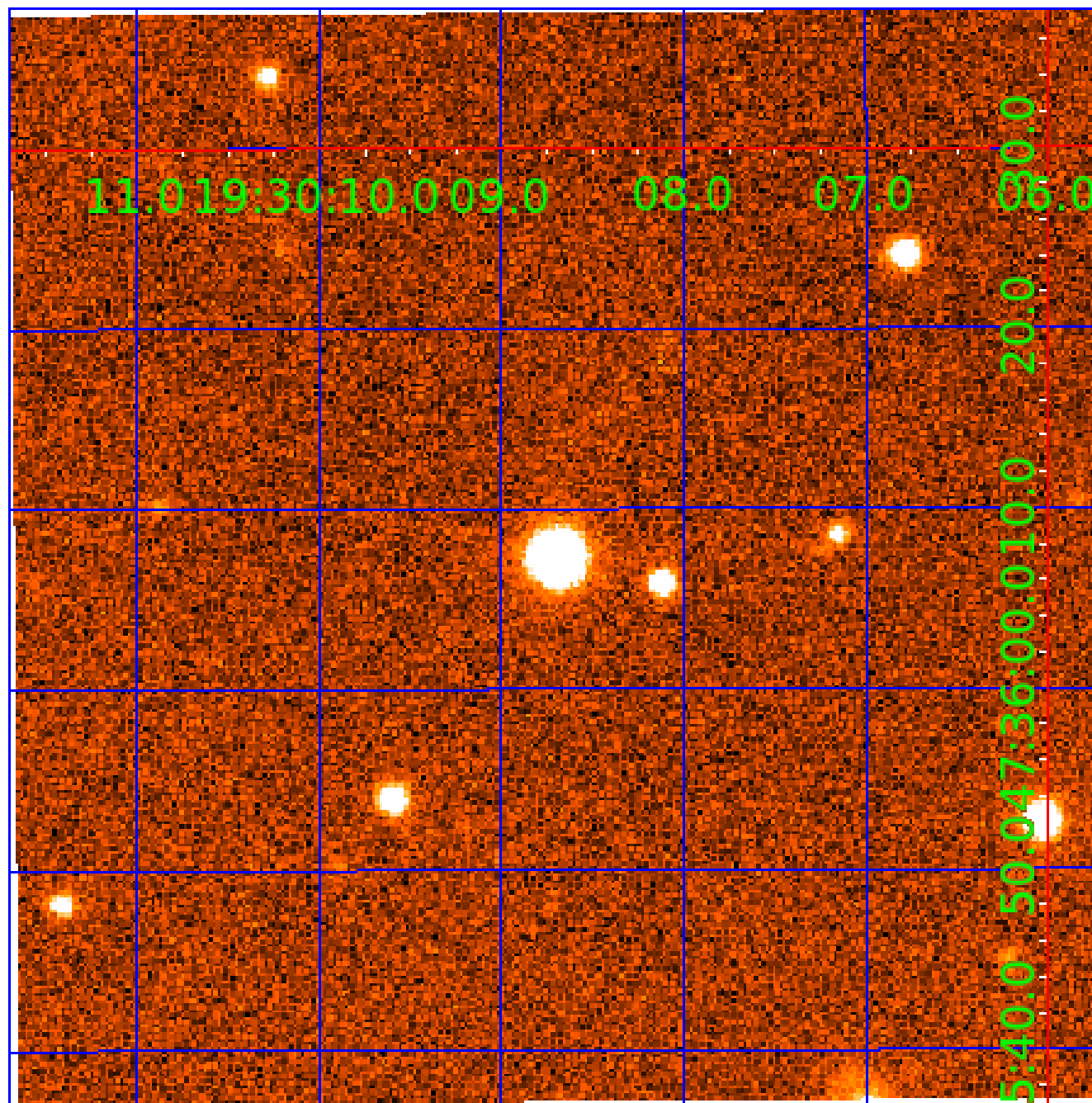


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010471960

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})
010471960-01	OBS	No	547.464223	155.030078	2769.0	8.017	19.6	8.6	0.39	3585	2.02	0.02
010471960-02	OBS	No	350.765409	336.318265	2665.0	6.180	13.7	9.1	0.39	3585	3.81	0.04
010471960-03	OBS	No	306.848558	404.857561	2035.5	13.858	13.1	7.3	0.39	3585	1.74	0.05
010471960-04	OBS	No	549.315132	329.013198	1856.2	6.120	11.8	6.5	0.39	3585	1.69	0.02
010471960-05	OBS	No	406.741390	372.243939	1663.9	4.424	11.6	6.2	0.39	3585	1.57	0.04
010471960-06	OBS	No	261.698175	172.863062	3108.5	34.221	10.0	7.4	0.39	3585	2.49	0.06
010471960-07	OBS	No	425.027354	270.884270	2661.0	5.762	12.9	9.4	0.39	3585	2.17	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010471960-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
010471960-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES
010471960-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

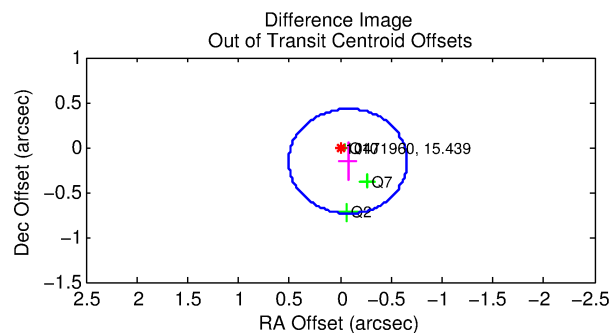
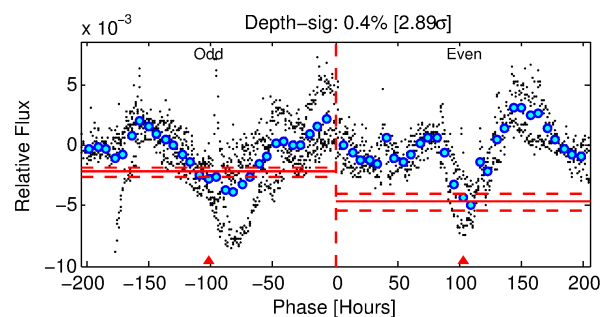
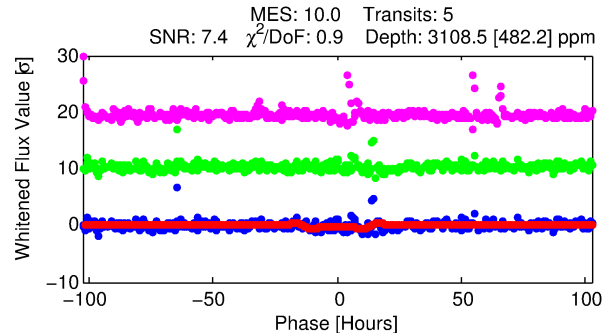
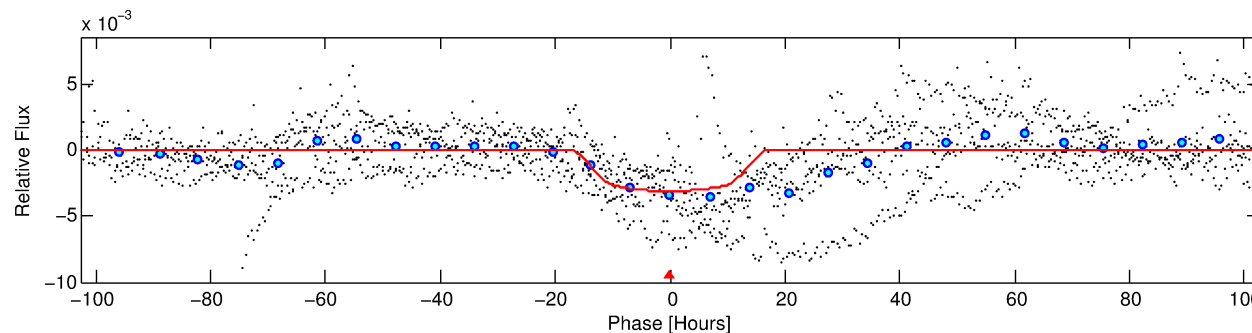
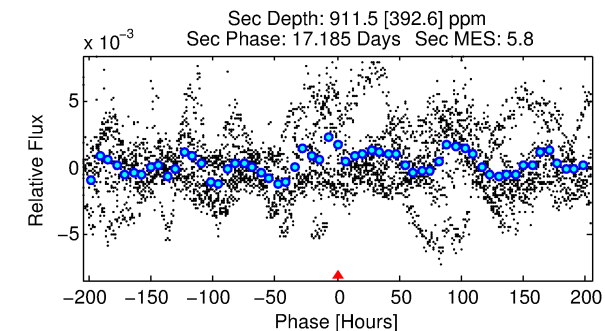
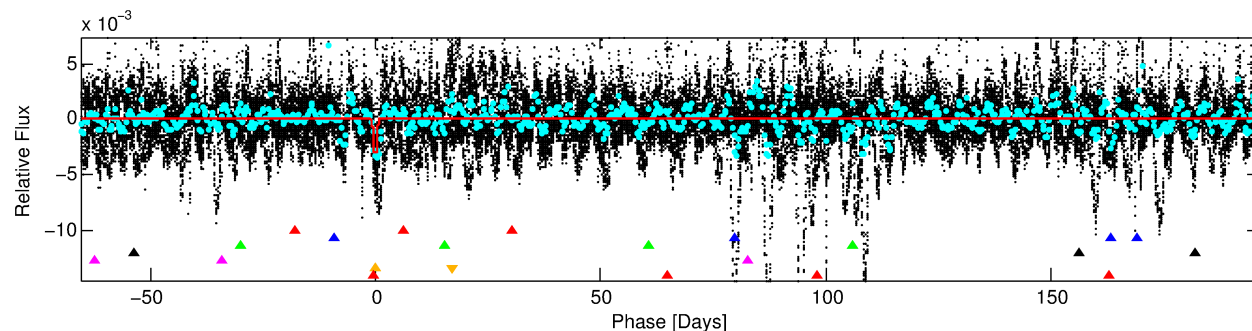
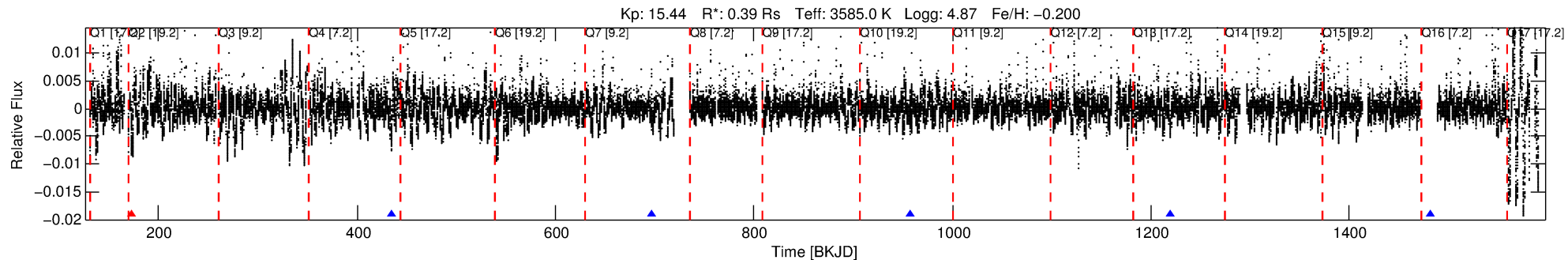
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010471960-06

No Significant Match Found

DV One-Page Summary

KIC: 10471960 Candidate: 6 of 7 Period: 261.698 d



DV Fit Results:

Period = 261.69818 [0.01322] d
Epoch = 172.8631 [0.0329] BKJD
Rp/R* = 0.0588 [0.0049]
a/R* = 35.77 [3.12]
b = 0.86 [0.03]
Seff = 0.06 [0.01]
Teq = 128 [4] K
Rp = 2.49 [0.35] Re
a = 0.5926 [0.0493] AU
Ag = 28407.52 [13431.58] [2.11σ]
Teff = 2569 [301] K [8.11σ]

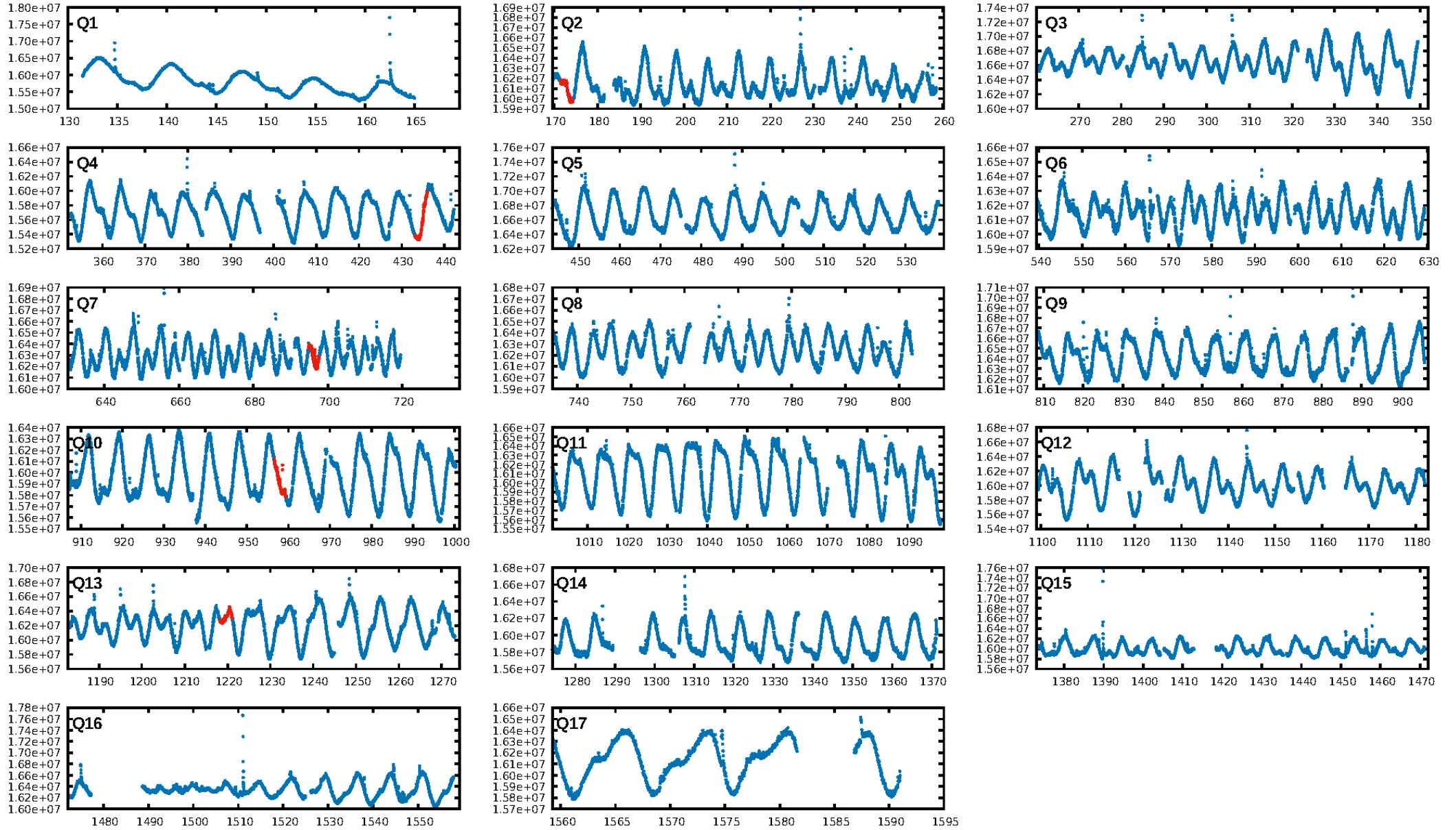
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [29.35σ]
ModelChiSquare2-sig: 40.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.42e-08
RollingBand-fgt: 0.80 [4/5]
GhostDiagnostic-chr: -0.321
Centroid-sig: 24.5%
Centroid-so: 0.203 arcsec [0.73σ]
OotOffset-rm: 0.174 arcsec [0.90σ]
KicOffset-rm: 0.089 arcsec [0.43σ]
OotOffset-st: 2/1/0/0 [3]
KicOffset-st: 2/1/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 0.67 [2/3]

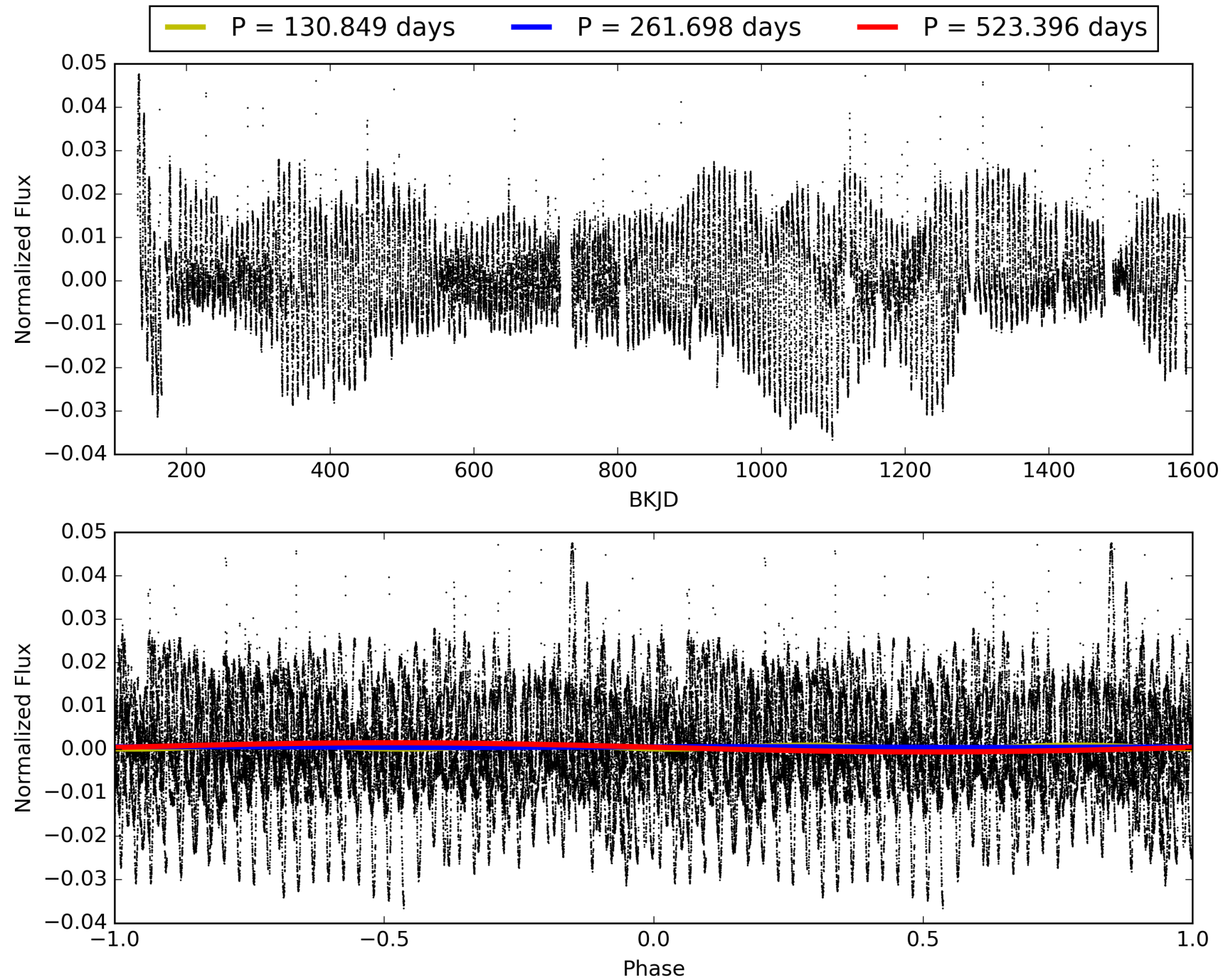
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:22:46 Z

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

TCE 010471960-06, PDC Light Curves

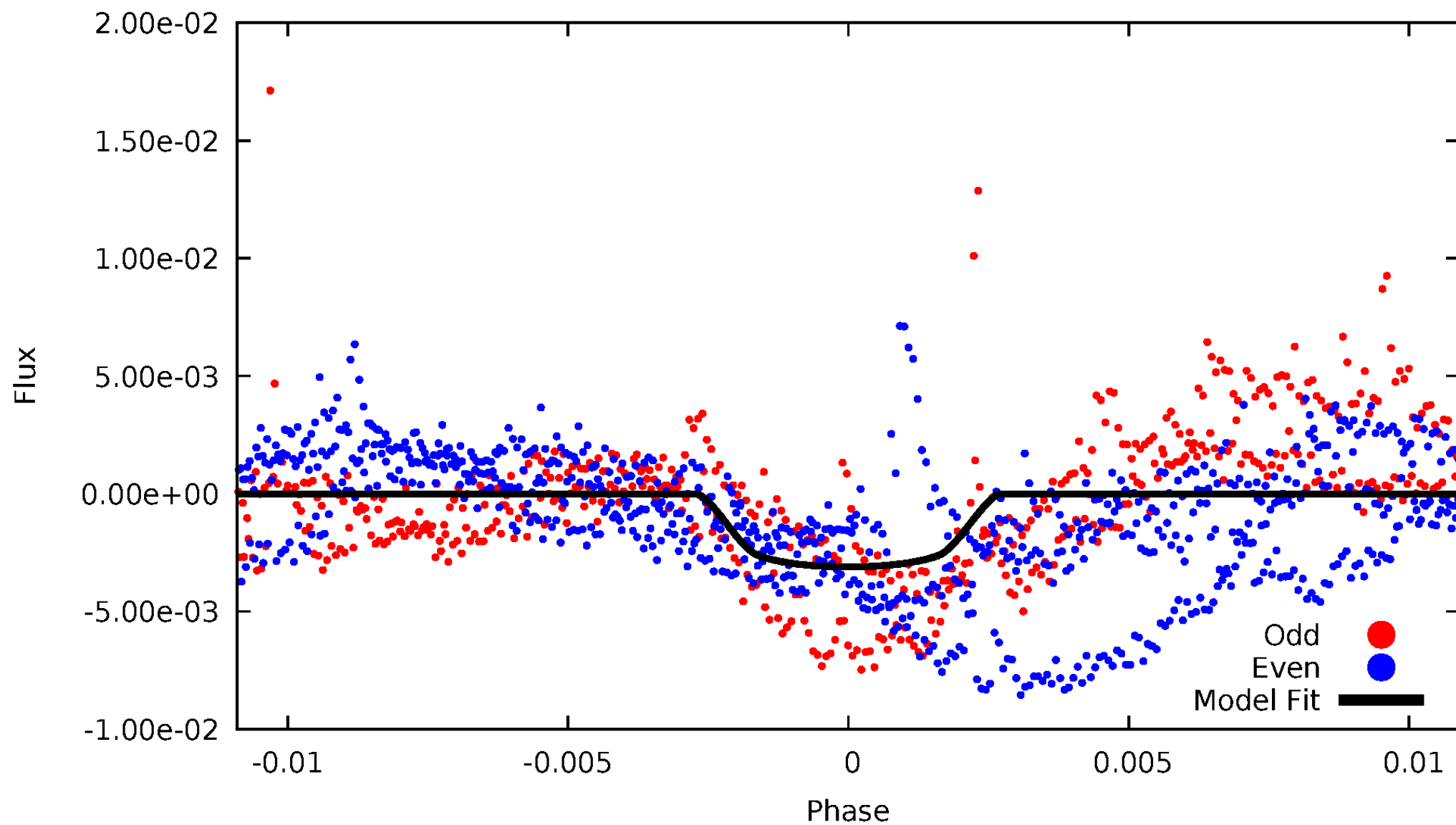


TCE 010471960-06



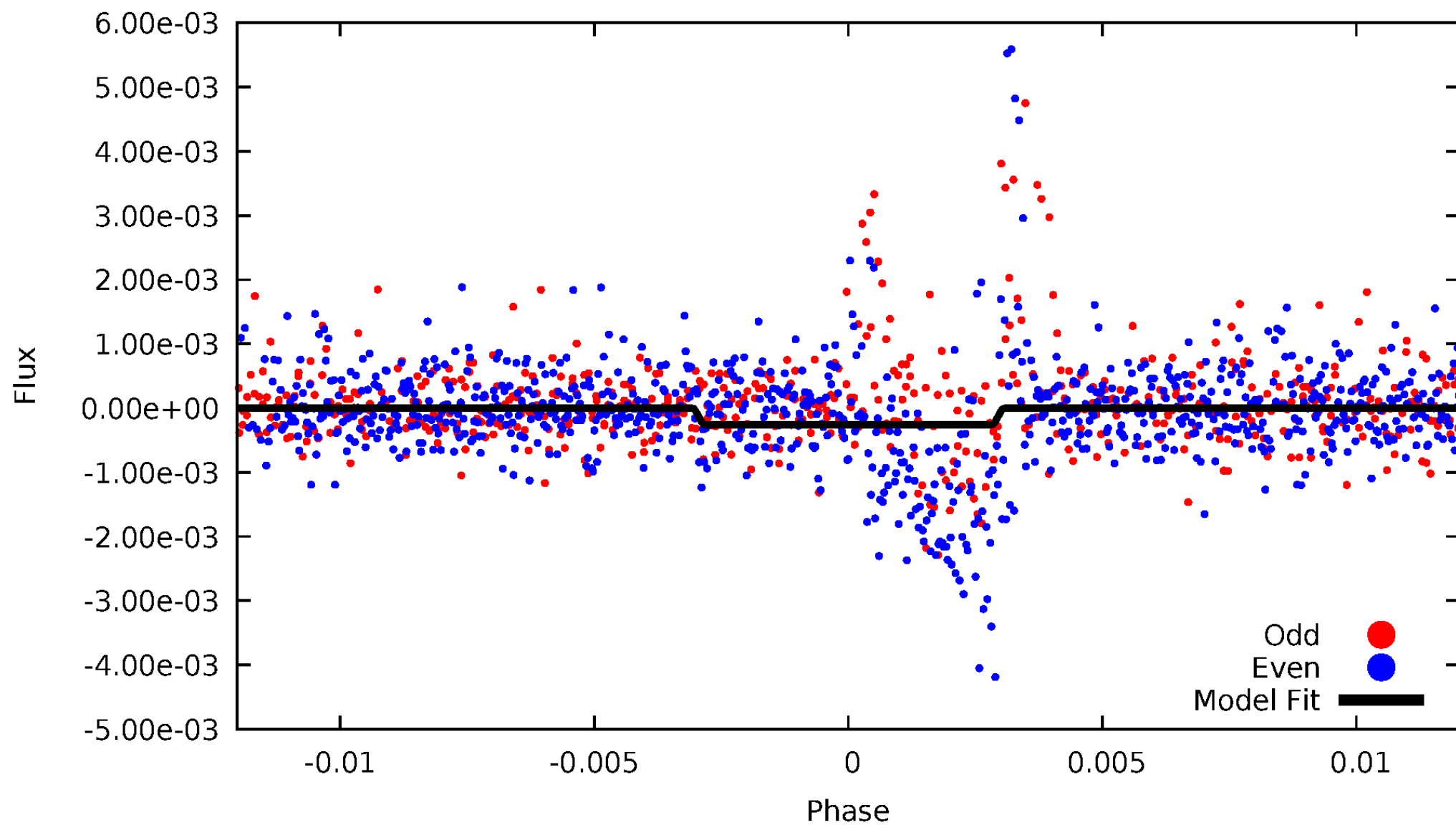
DV Odd/Even

TCE 010471960-06



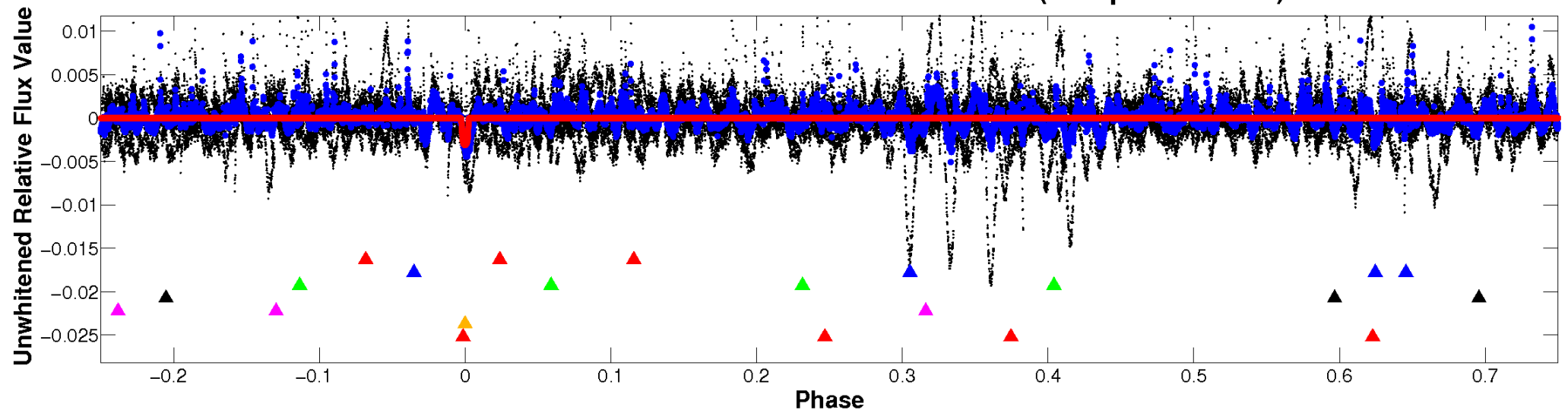
ALT Odd/Even

TCE 010471960-06

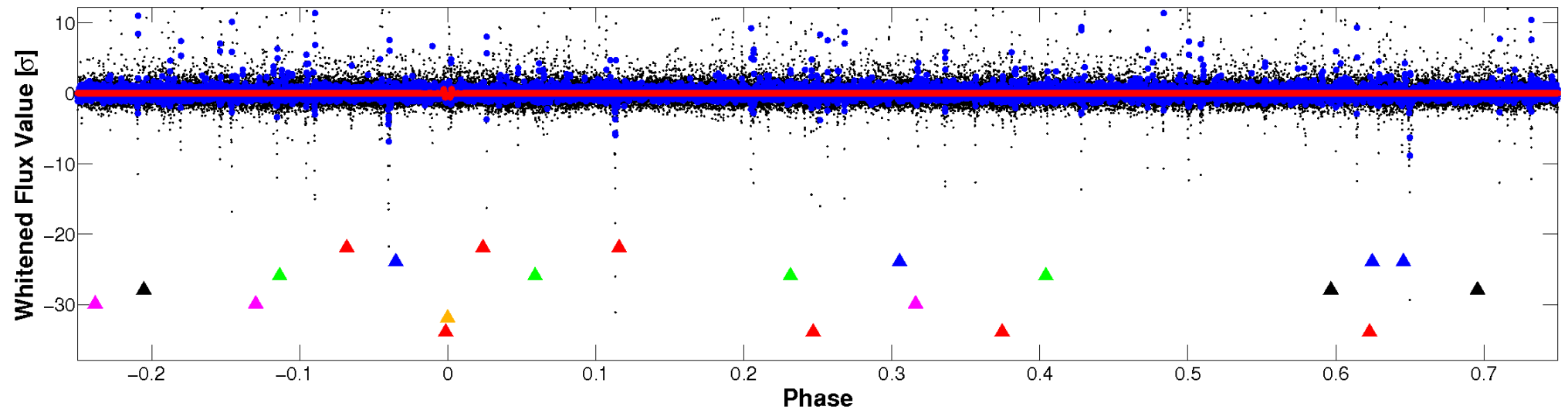


Non-Whitened Vs. Whitened Light Curve

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

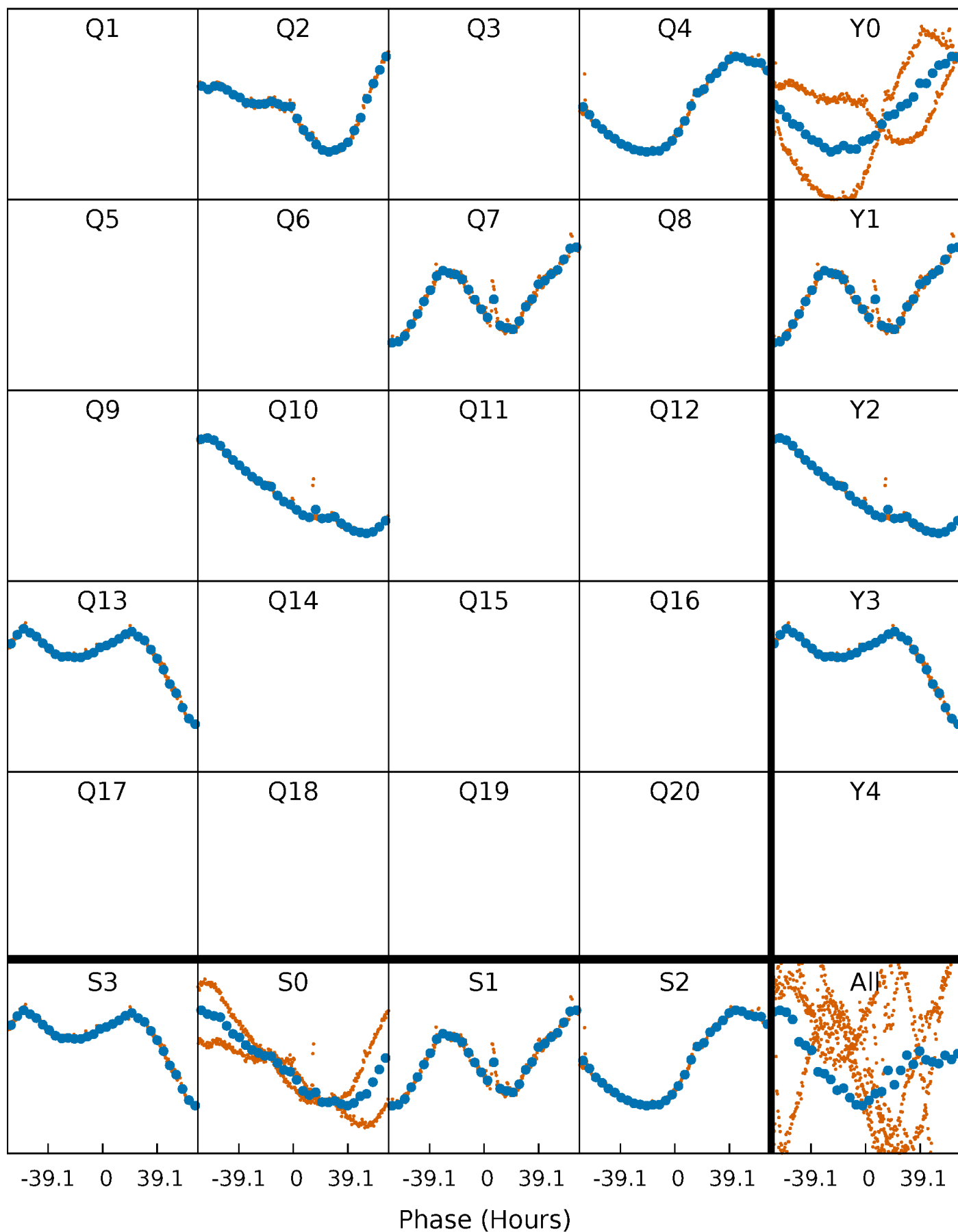


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



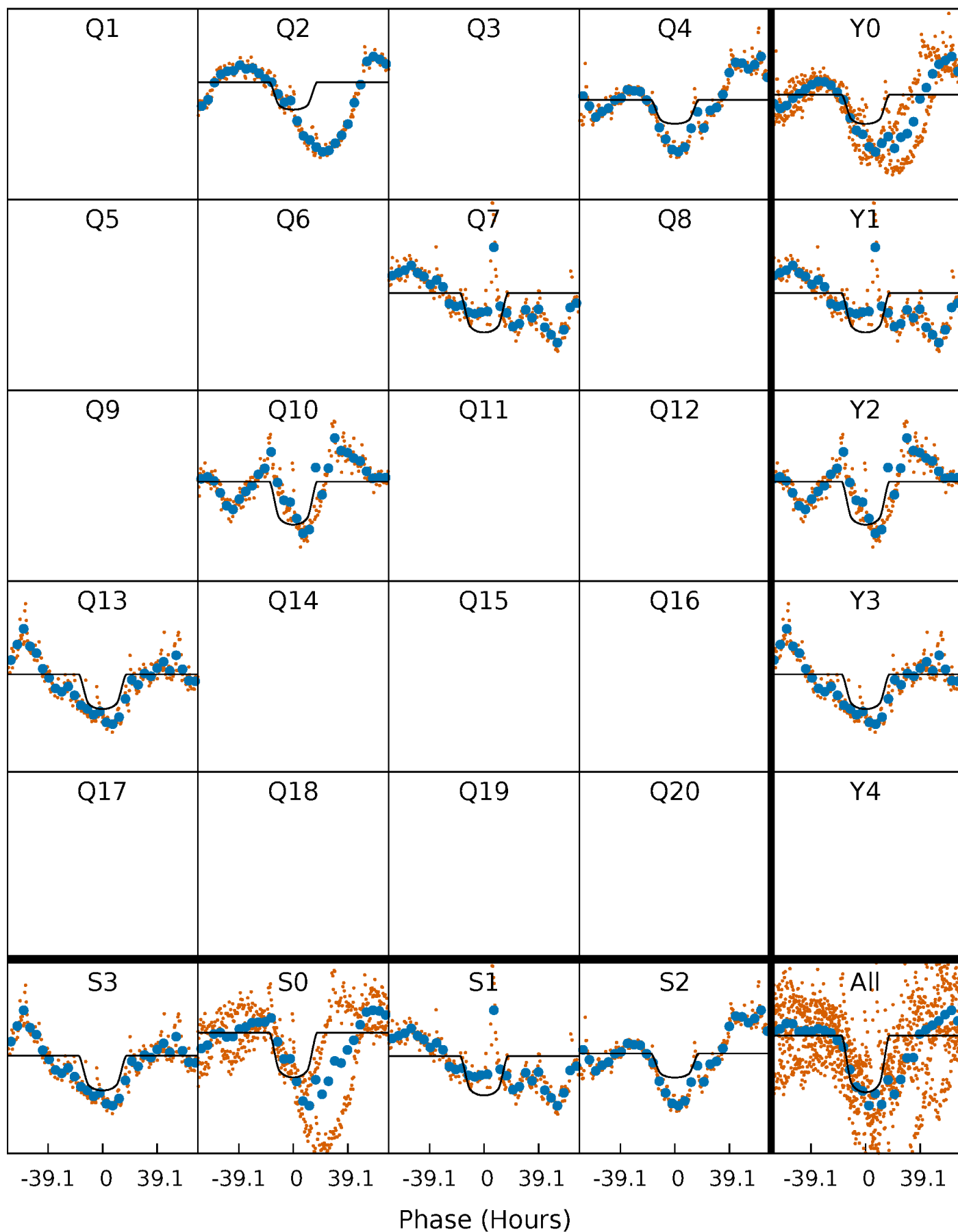
PDC Quarter-Phased Transit Curves

TCE 010471960-06 P=261.698175 Days $T_0=172.863062$ (BKJD)



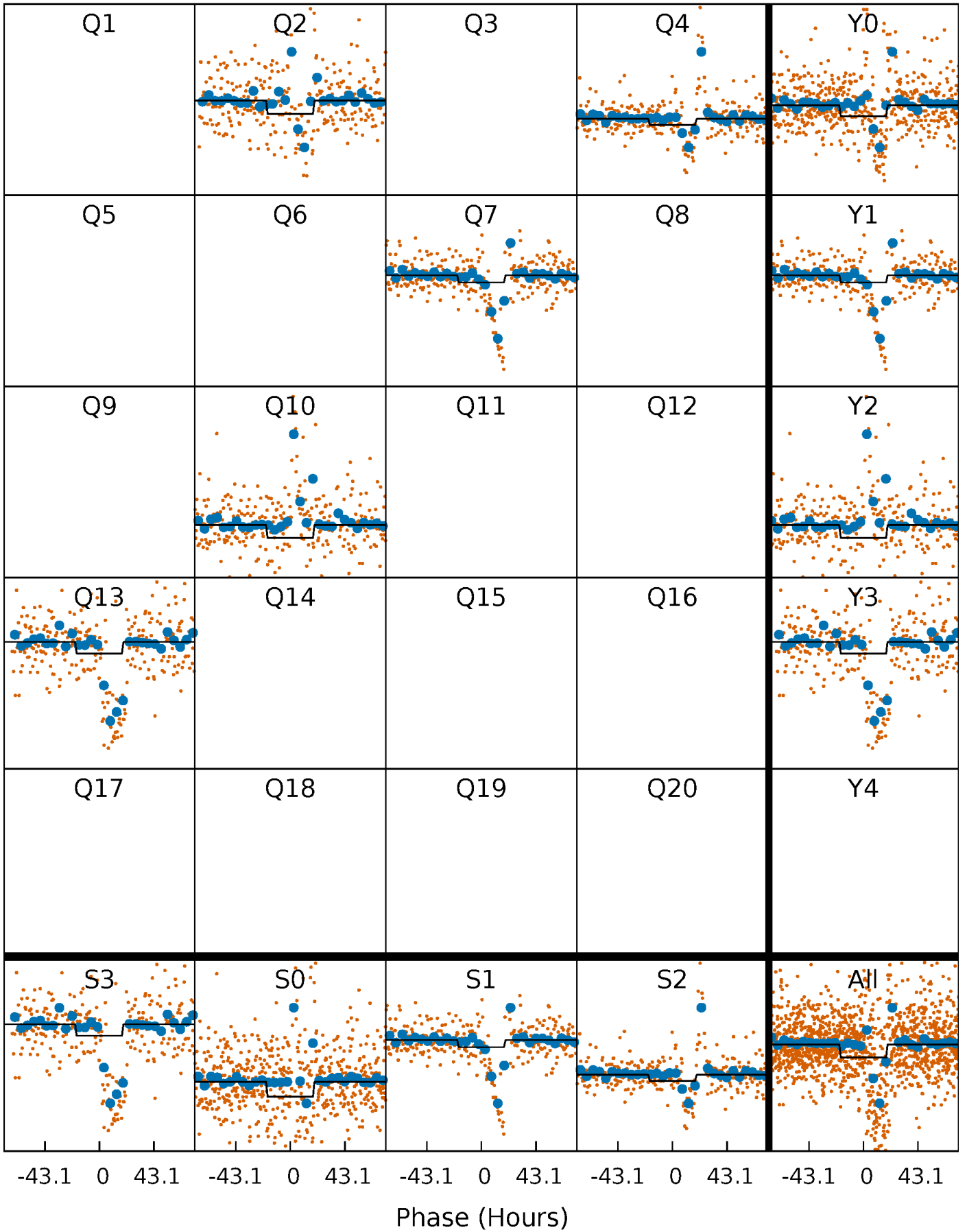
DV Quarter-Phased Transit Curves

TCE 010471960-06 P=261.698175 Days $T_0=172.863062$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

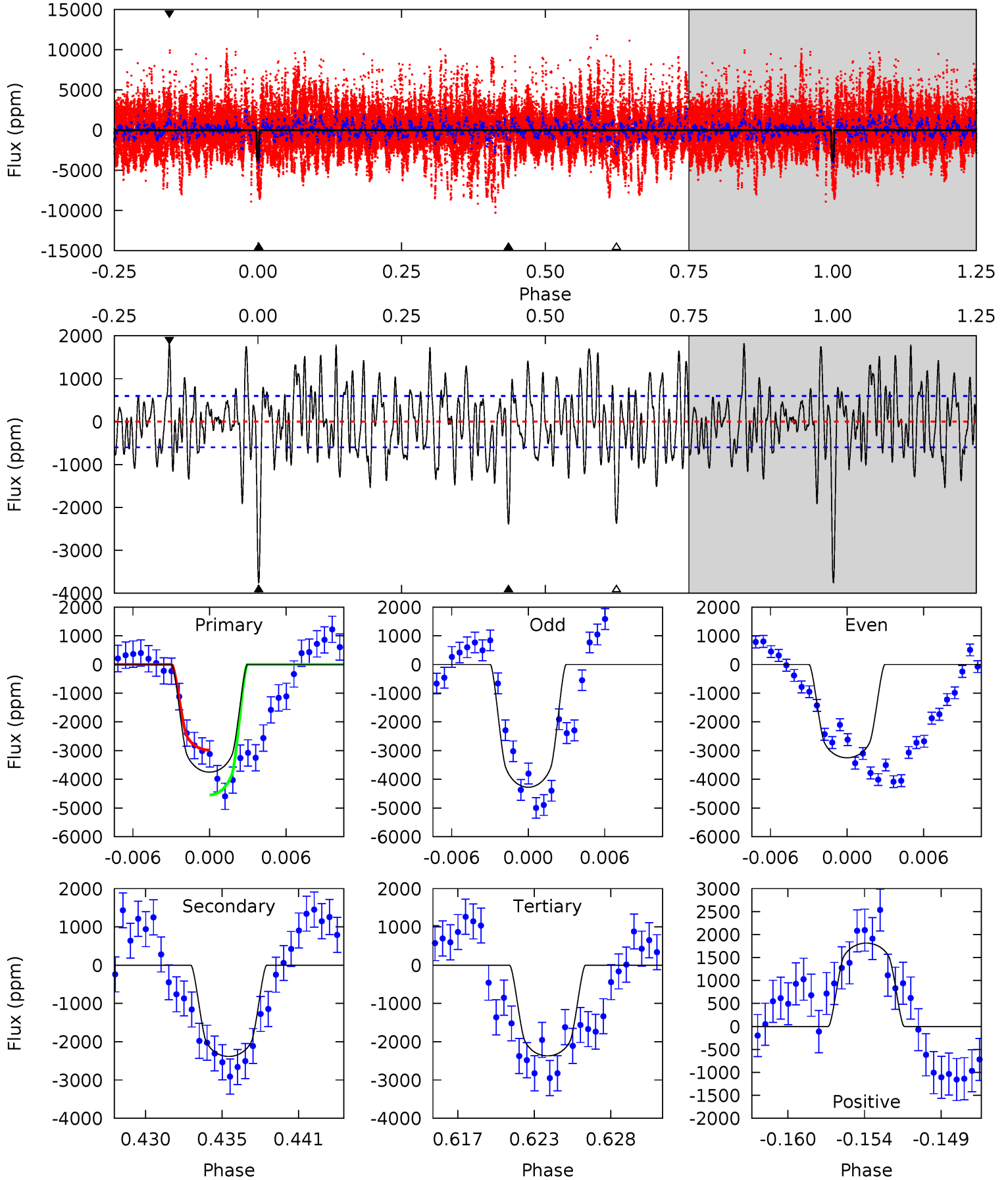
TCE 010471960-06 $P=261.461023$ Days $T_0=172.760566$ (BKJD)



DV Model-Shift Uniqueness Test

010471960-06, P = 261.698175 Days, E = 172.863062 Days

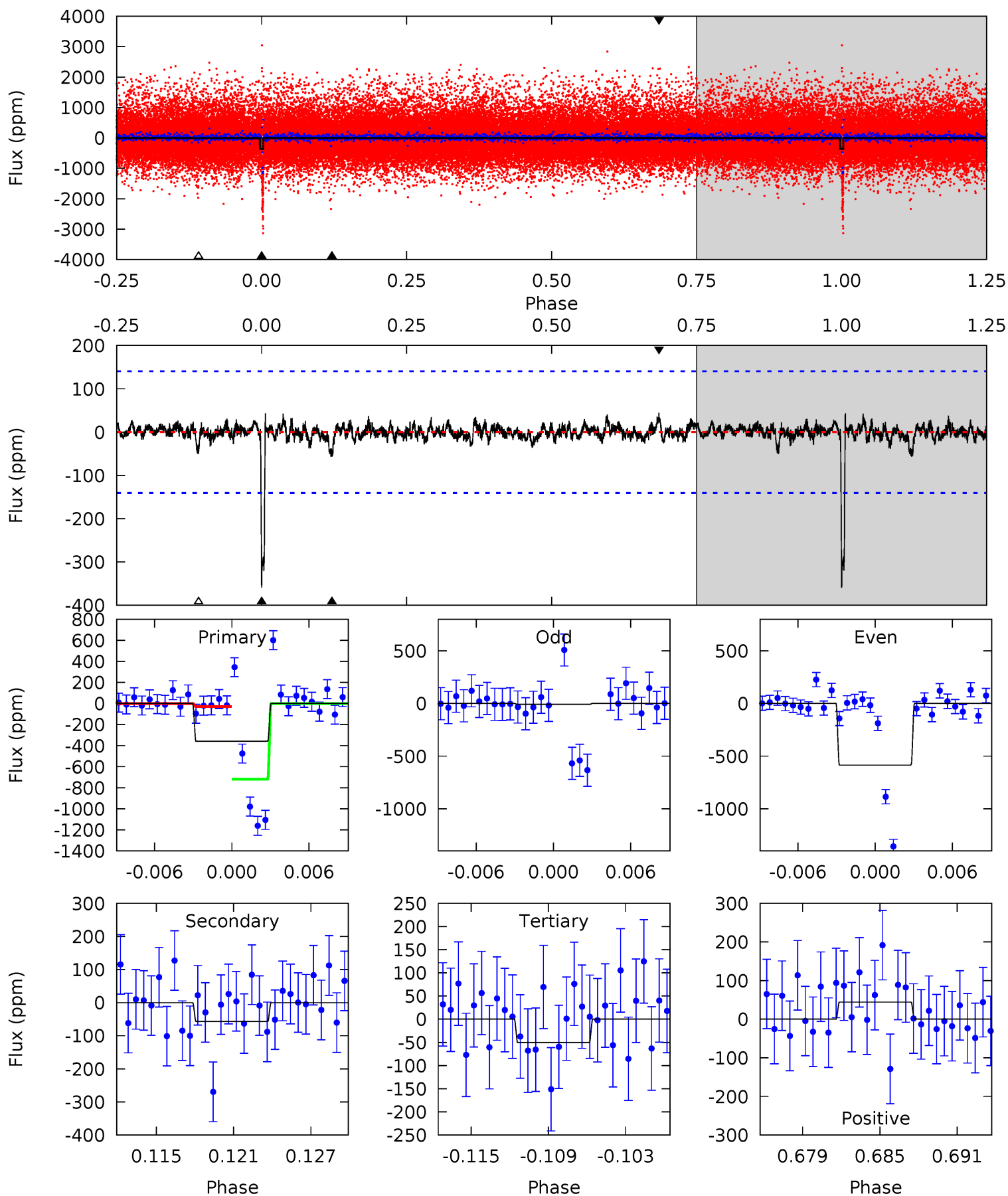
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
32.2	20.5	20.4	15.6	5.14	2.78	5.87	11.9	16.7	0.13	4.91	4.25	0.82	0.33	6.78



Alt Model-Shift Uniqueness Test

010471960-06, P = 261.461023 Days, E = 172.760566 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.1	2.07	1.83	1.62	5.12	2.74	0.43	11.3	11.5	0.24	0.46	10.3	1.01	0.11	12.6



Stellar Parameters For KIC 010471960

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3585^{+65}_{-72}	$4.868^{+0.045}_{-0.041}$	$-0.200^{+0.100}_{-0.100}$	$0.388^{+0.039}_{-0.044}$	$0.406^{+0.037}_{-0.056}$	$9.786^{+2.503}_{-1.663}$
	+2%/-2%	+1%/-1%	+50%/-50%	+10%/-11%	+9%/-14%	+26%/-17%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010471960-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2385 ± 116	$2.49^{+0.23}_{-0.23}$	179^{+5}_{-5}	3388^{+115}_{-108}	74824^{+15259}_{-13055}
Alt.	-57 ± 27	$0.68^{+0.22}_{-0.21}$	179^{+5}_{-5}	2851^{+358}_{-297}	23097^{+30046}_{-13282}

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

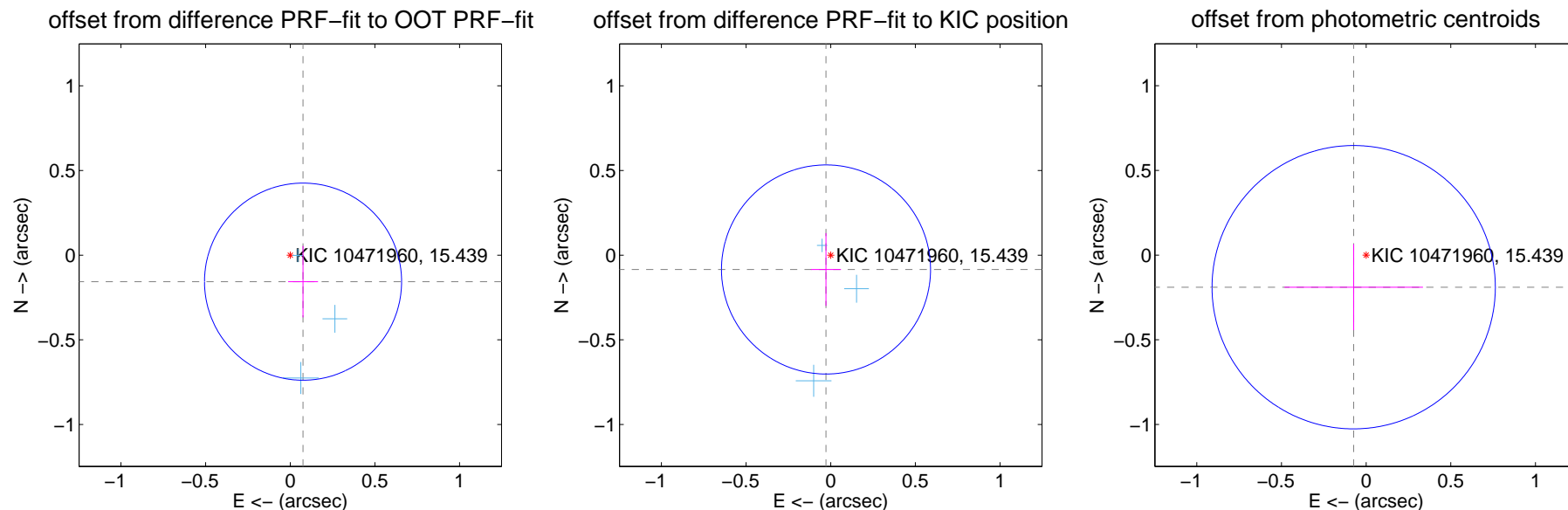
DV Centroid Data

Supplemental centroid analysis for 010471960-06. Kepler magnitude: 15.44. Transit SNR 7.41

There are 3 quarters with good PRF difference image offsets

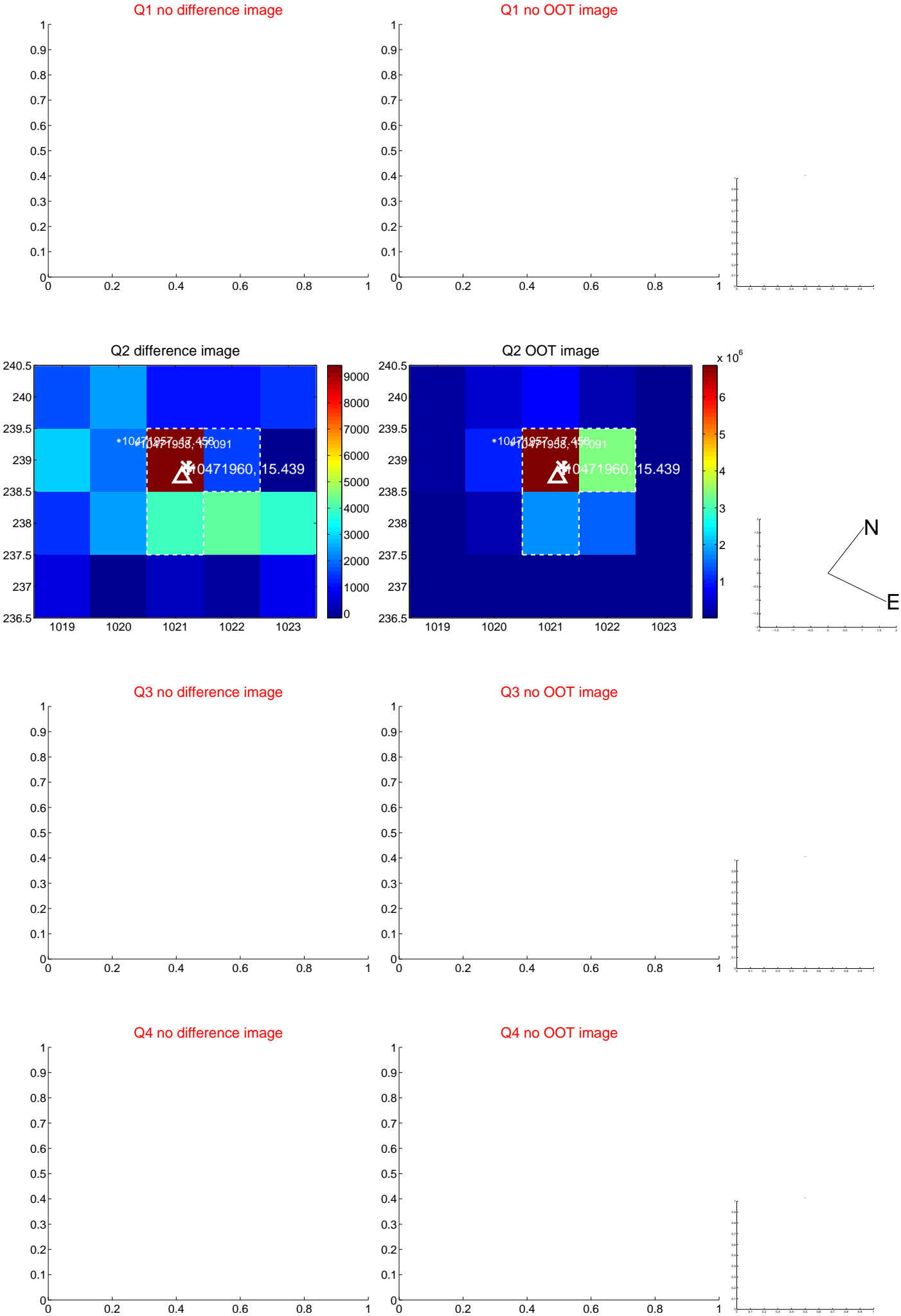
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.174 ± 0.194	0.90	-0.075 ± 0.088	-0.157 ± 0.211
PRF-fit source offset from KIC position	0.089 ± 0.206	0.43	0.028 ± 0.088	-0.085 ± 0.215
photometric centroid source offset	0.20 ± 0.28	0.73	0.07 ± 0.41	-0.19 ± 0.25

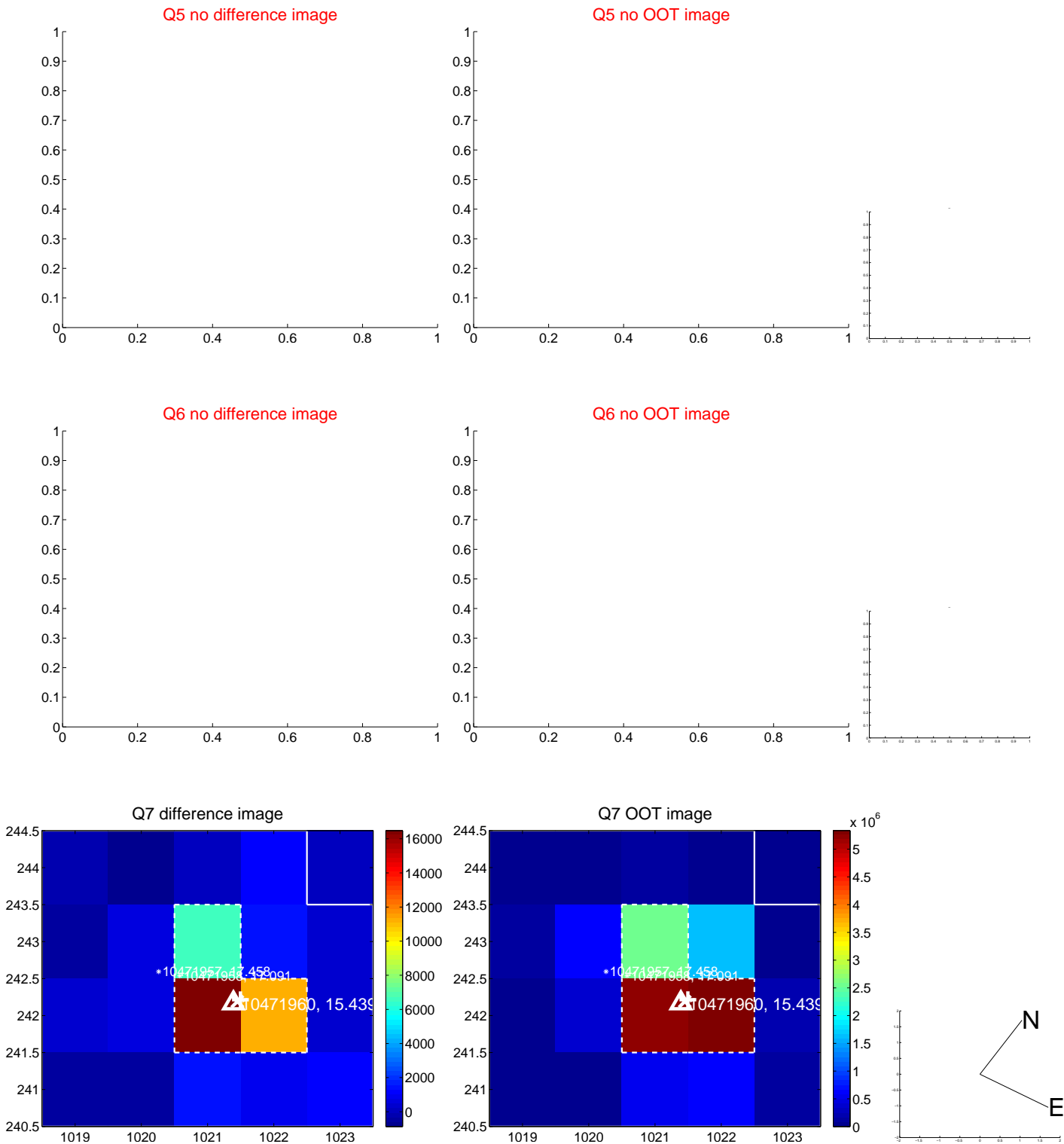


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

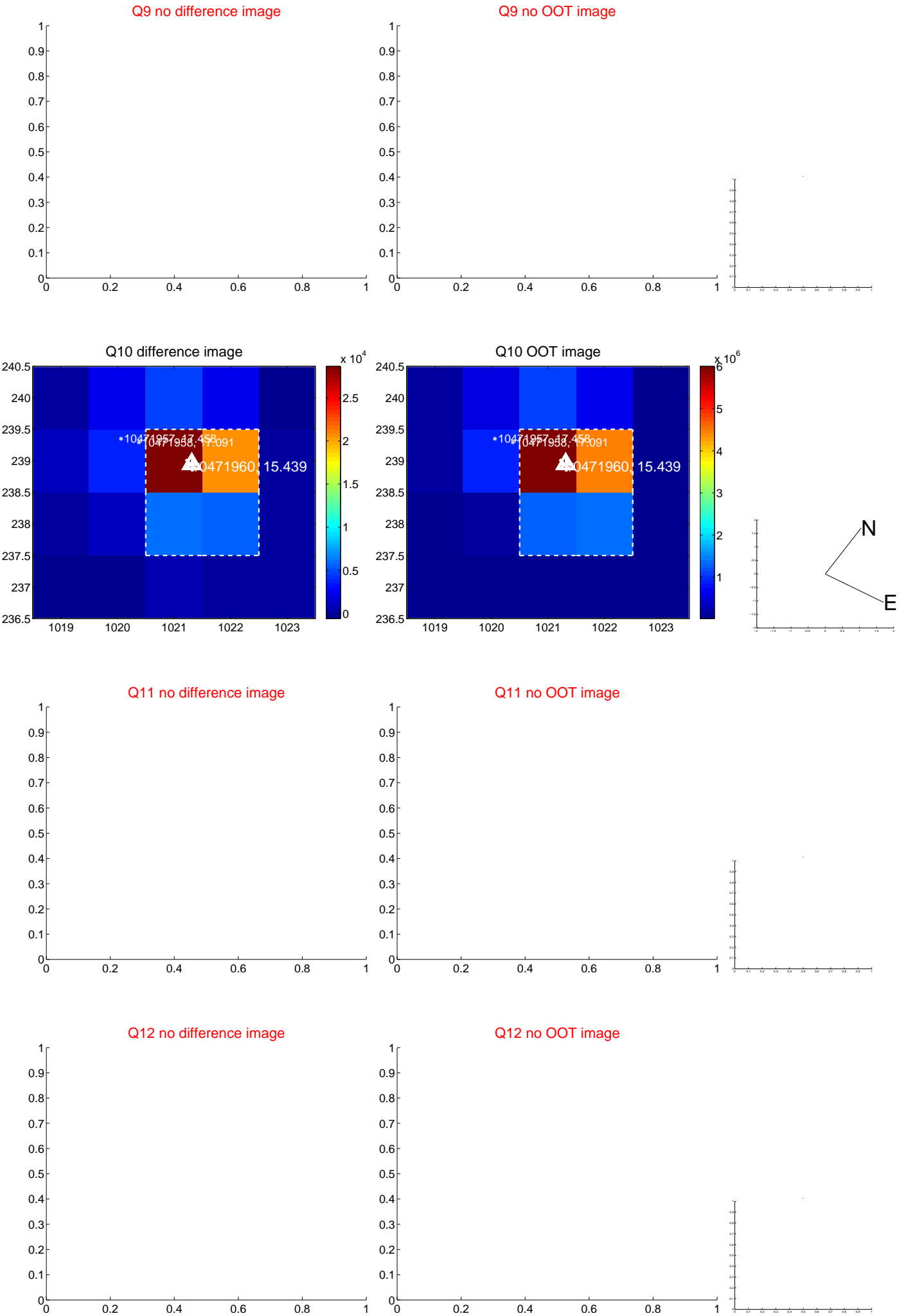
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



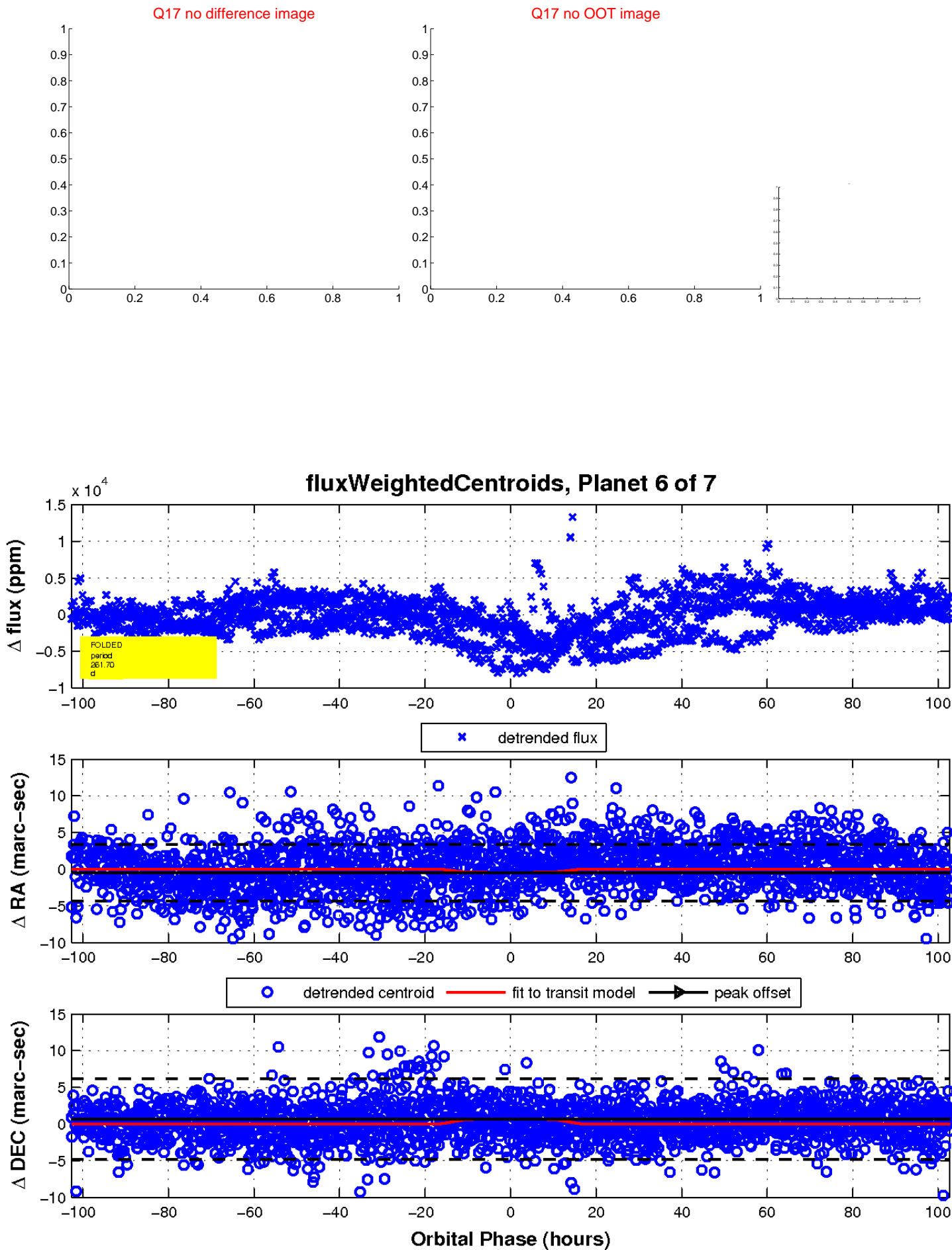
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

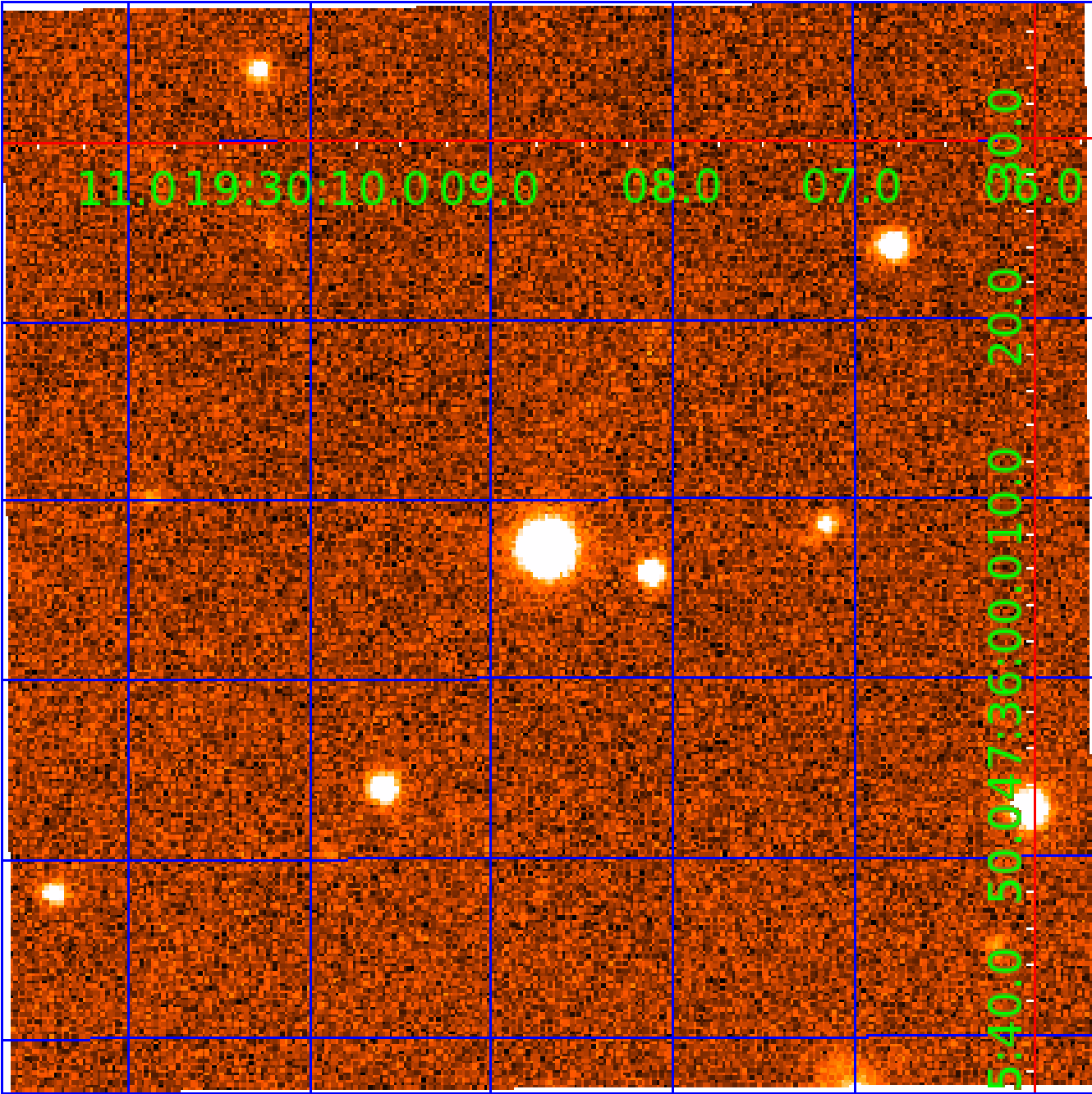


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010471960

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})
010471960-01	OBS	No	547.464223	155.030078	2769.0	8.017	19.6	8.6	0.39	3585	2.02	0.02
010471960-02	OBS	No	350.765409	336.318265	2665.0	6.180	13.7	9.1	0.39	3585	3.81	0.04
010471960-03	OBS	No	306.848558	404.857561	2035.5	13.858	13.1	7.3	0.39	3585	1.74	0.05
010471960-04	OBS	No	549.315132	329.013198	1856.2	6.120	11.8	6.5	0.39	3585	1.69	0.02
010471960-05	OBS	No	406.741390	372.243939	1663.9	4.424	11.6	6.2	0.39	3585	1.57	0.04
010471960-06	OBS	No	261.698175	172.863062	3108.5	34.221	10.0	7.4	0.39	3585	2.49	0.06
010471960-07	OBS	No	425.027354	270.884270	2661.0	5.762	12.9	9.4	0.39	3585	2.17	0.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010471960-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
010471960-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010471960-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—ALL_TRANS_CHASES
010471960-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

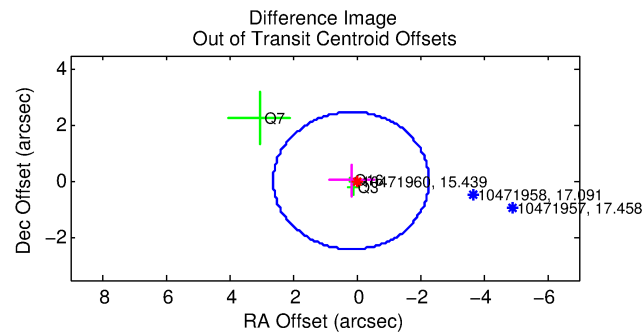
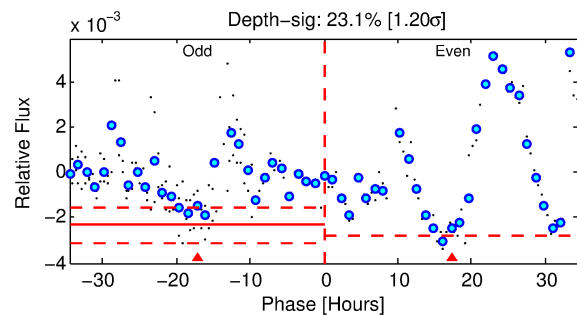
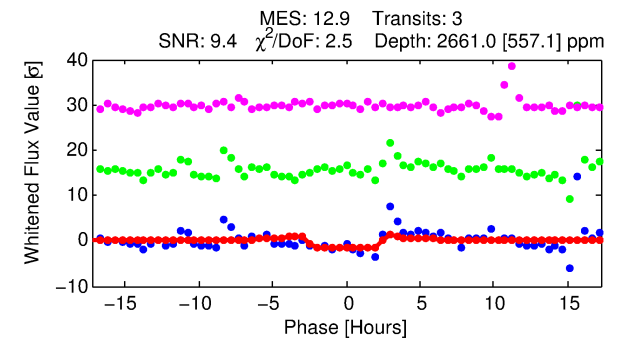
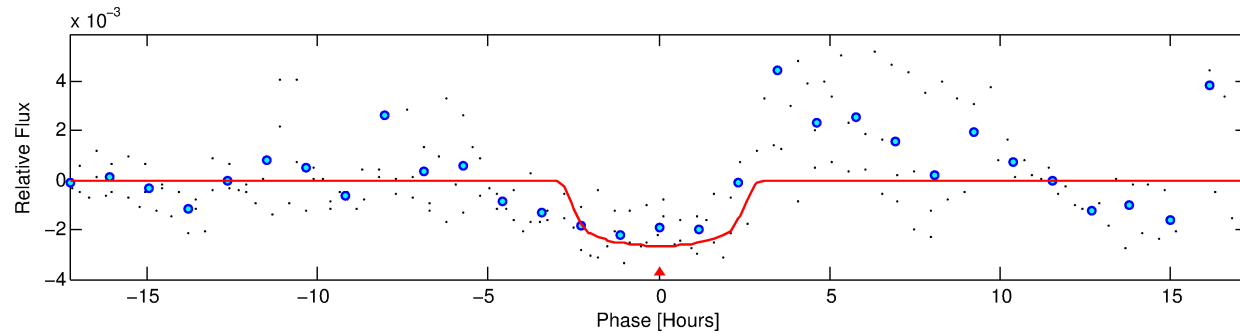
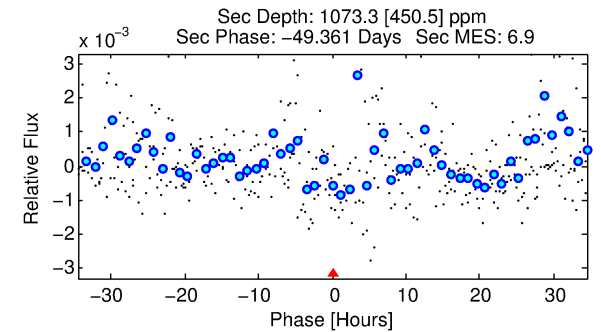
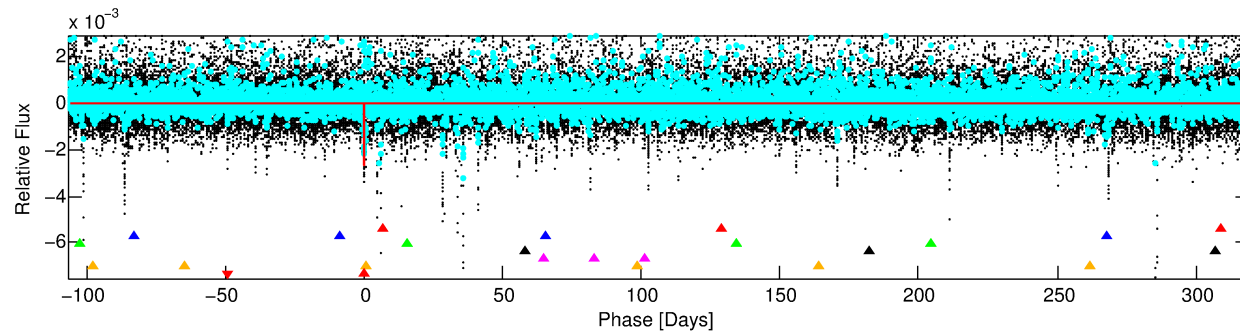
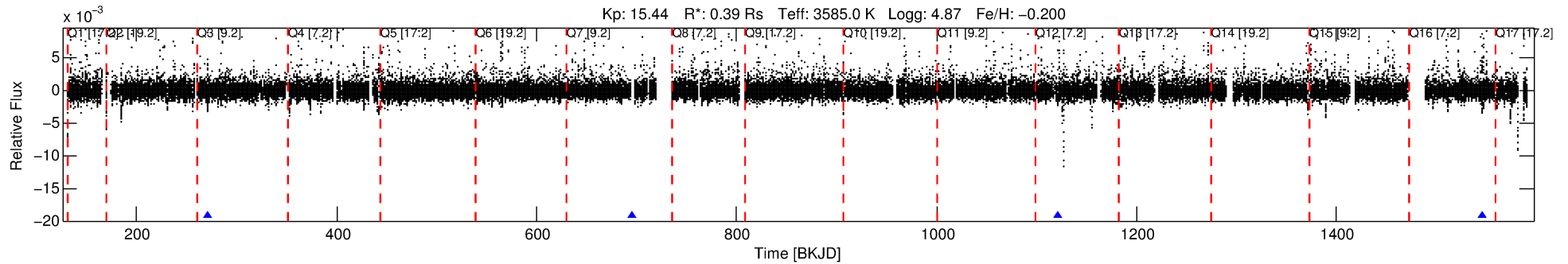
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010471960-07

No Significant Match Found

DV One-Page Summary

KIC: 10471960 Candidate: 7 of 7 Period: 425.027 d



DV Fit Results:

Period = 425.02735 [0.00559] d
Epoch = 270.8843 [0.0123] BKJD
Rp/R* = 0.0511 [0.0131]
a/R* = 418.31 [404.35]
b = 0.74 [0.58]
Seff = 0.03 [0.00]
Teq = 109 [4] K
Rp = 2.17 [0.61] Re
a = 0.8188 [0.0681] AU
Ag = 84457.04 [56614.64] [1.49σ]
Teffp = 2869 [479] K [5.77σ]

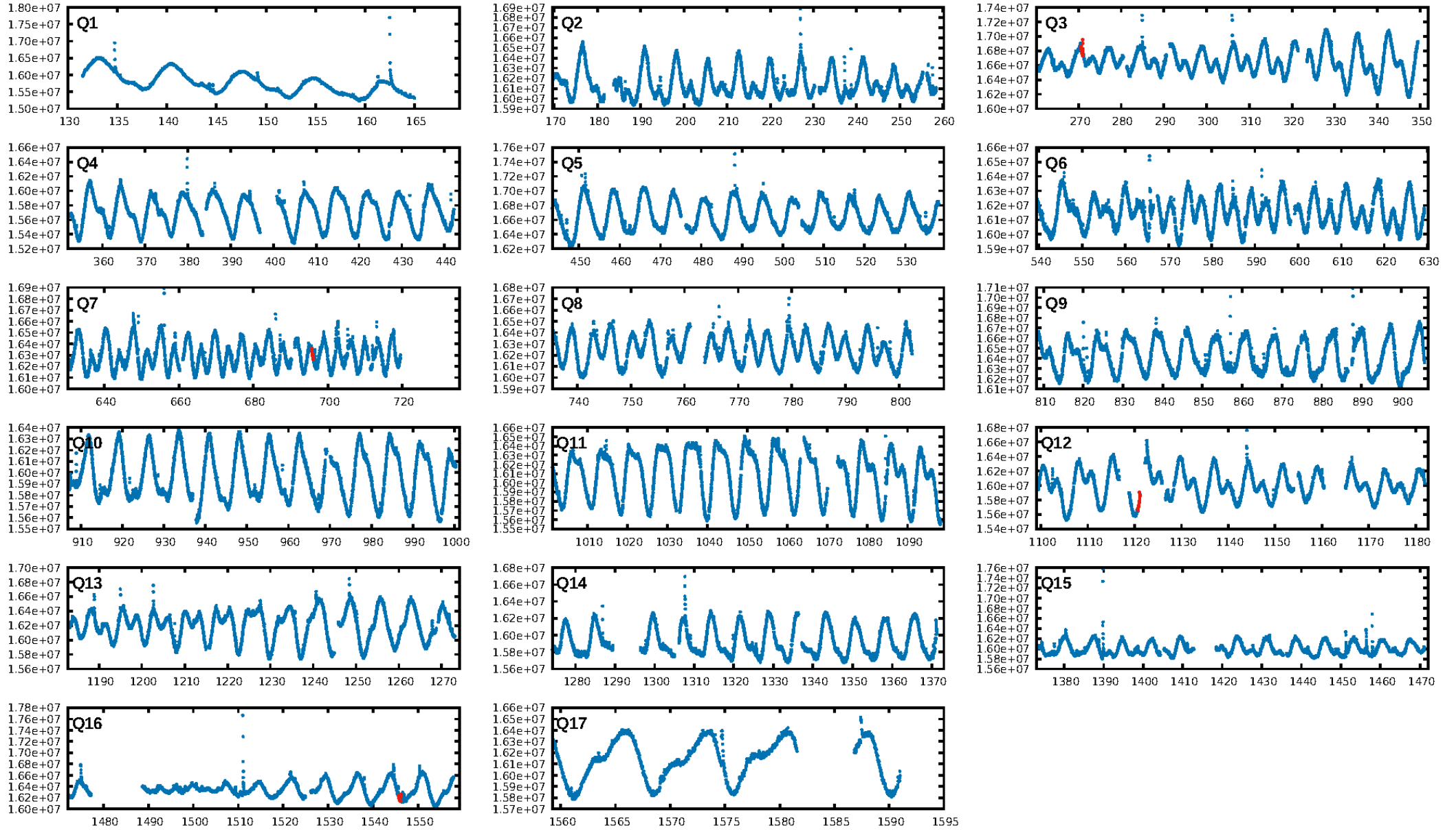
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [60.41σ]
LongPeriod-sig: 100.0% [297.62σ]
ModelChiSquare2-sig: 33.4%
ModelChiSquareGof-sig: 42.3%
Bootstrap-pfa: 7.33e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.3137
Centroid-sig: 13.4%
Centroid-so: 0.934 arcsec [1.53σ]
OotOffset-rm: 0.167 arcsec [0.21σ]
OotOffset-st: 0.2/1/0 [3]
KicOffset-rm: 0.227 arcsec [0.26σ]
KicOffset-st: 0.2/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.67 [2/3]

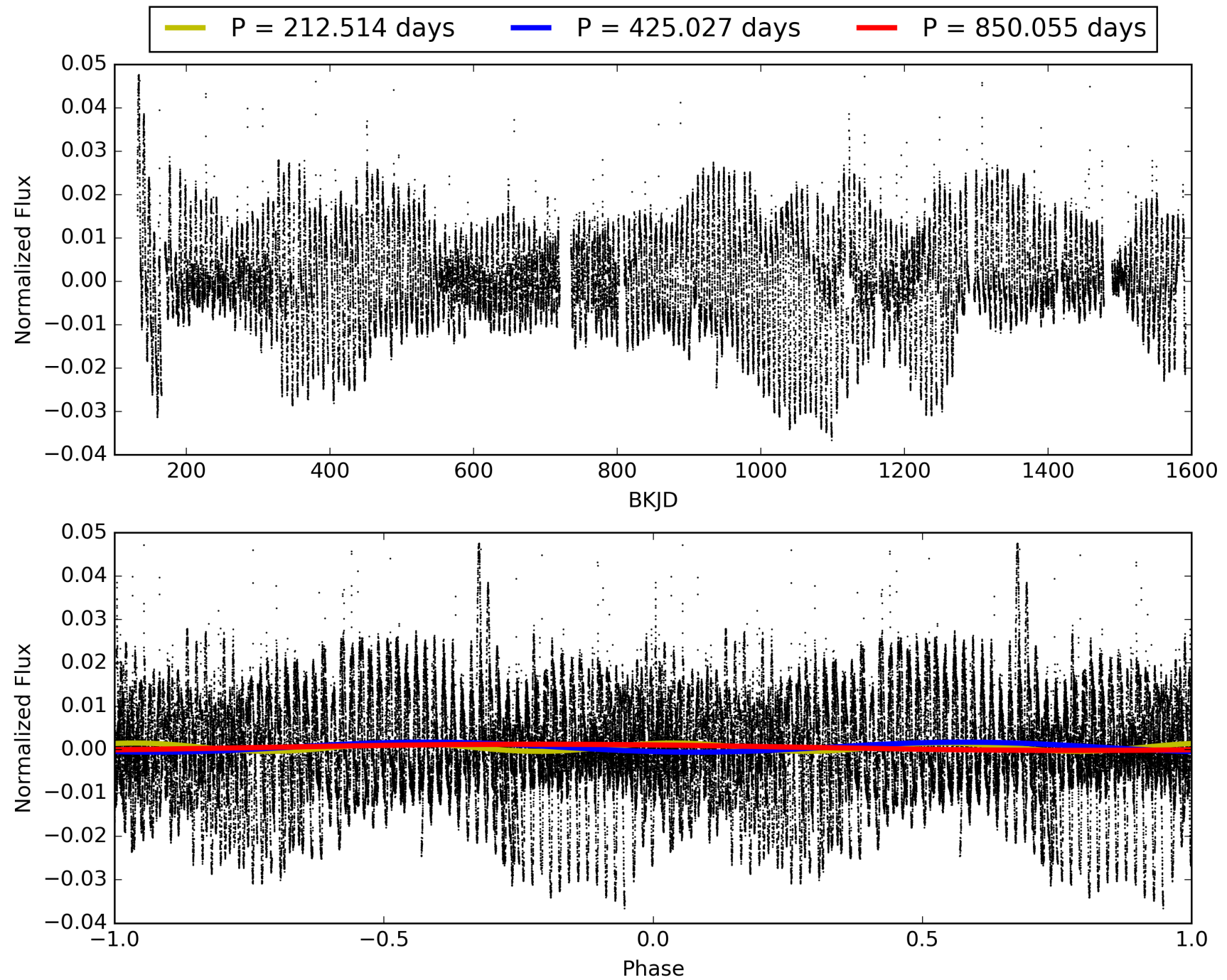
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:22:59 Z

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

TCE 010471960-07, PDC Light Curves

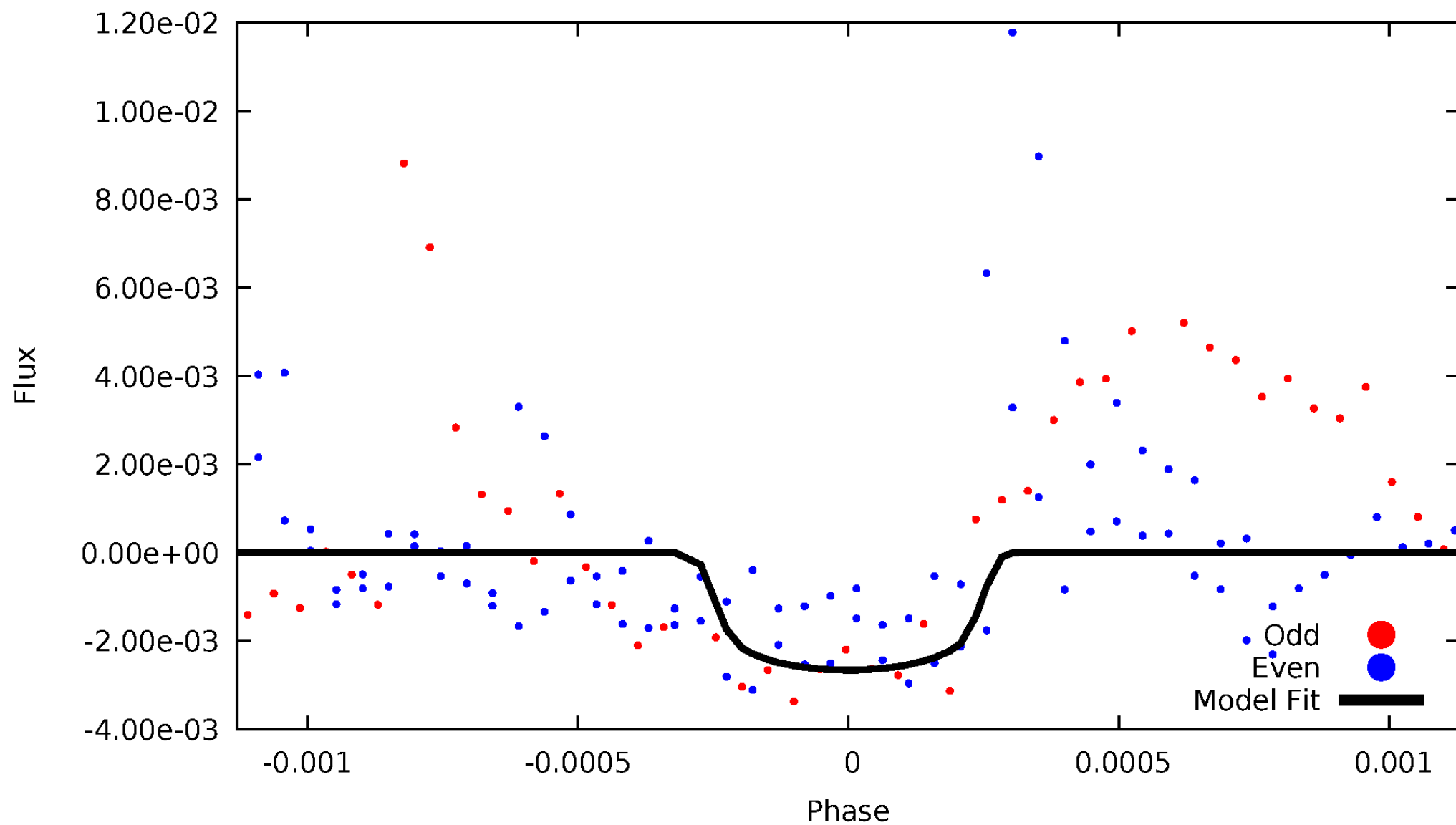


TCE 010471960-07



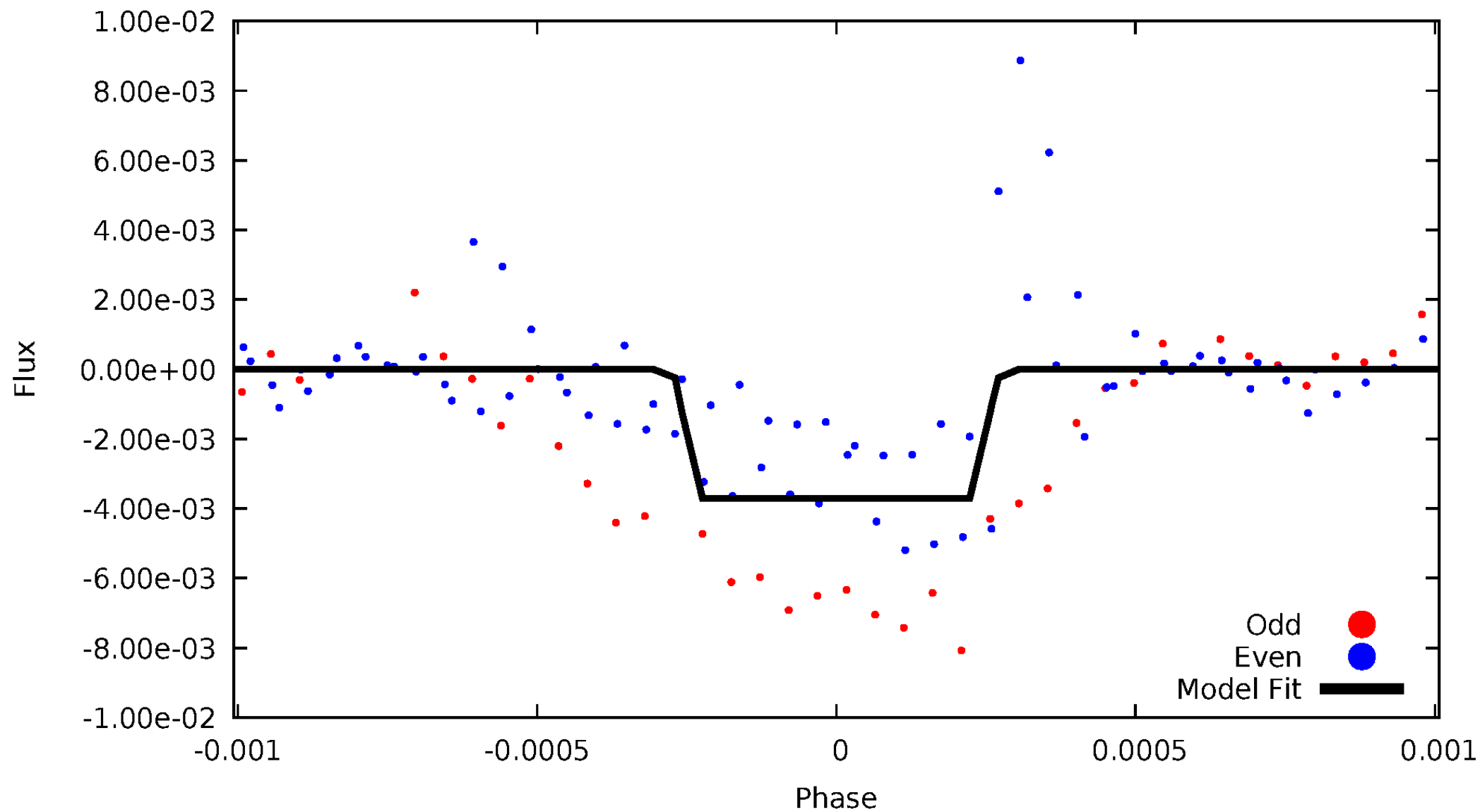
DV Odd/Even

TCE 010471960-07



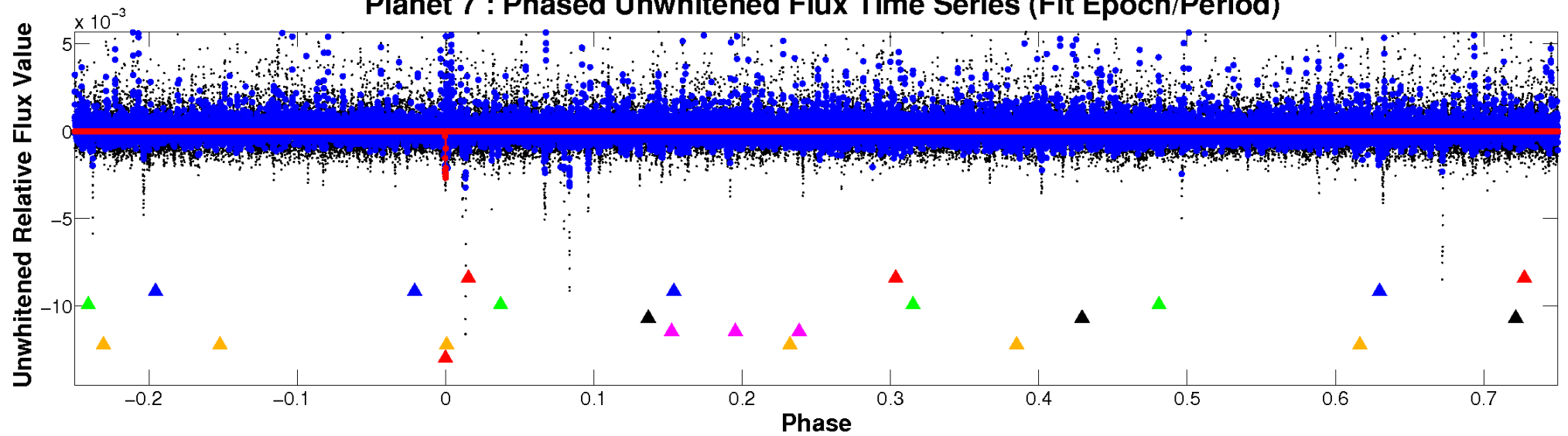
ALT Odd/Even

TCE 010471960-07

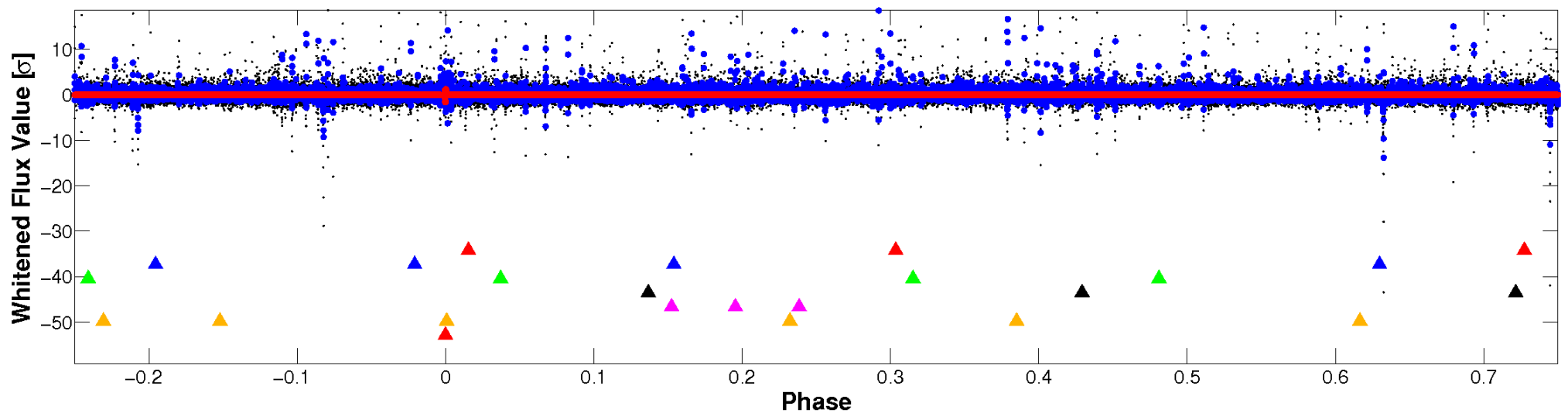


Non-Whitened Vs. Whitened Light Curve

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

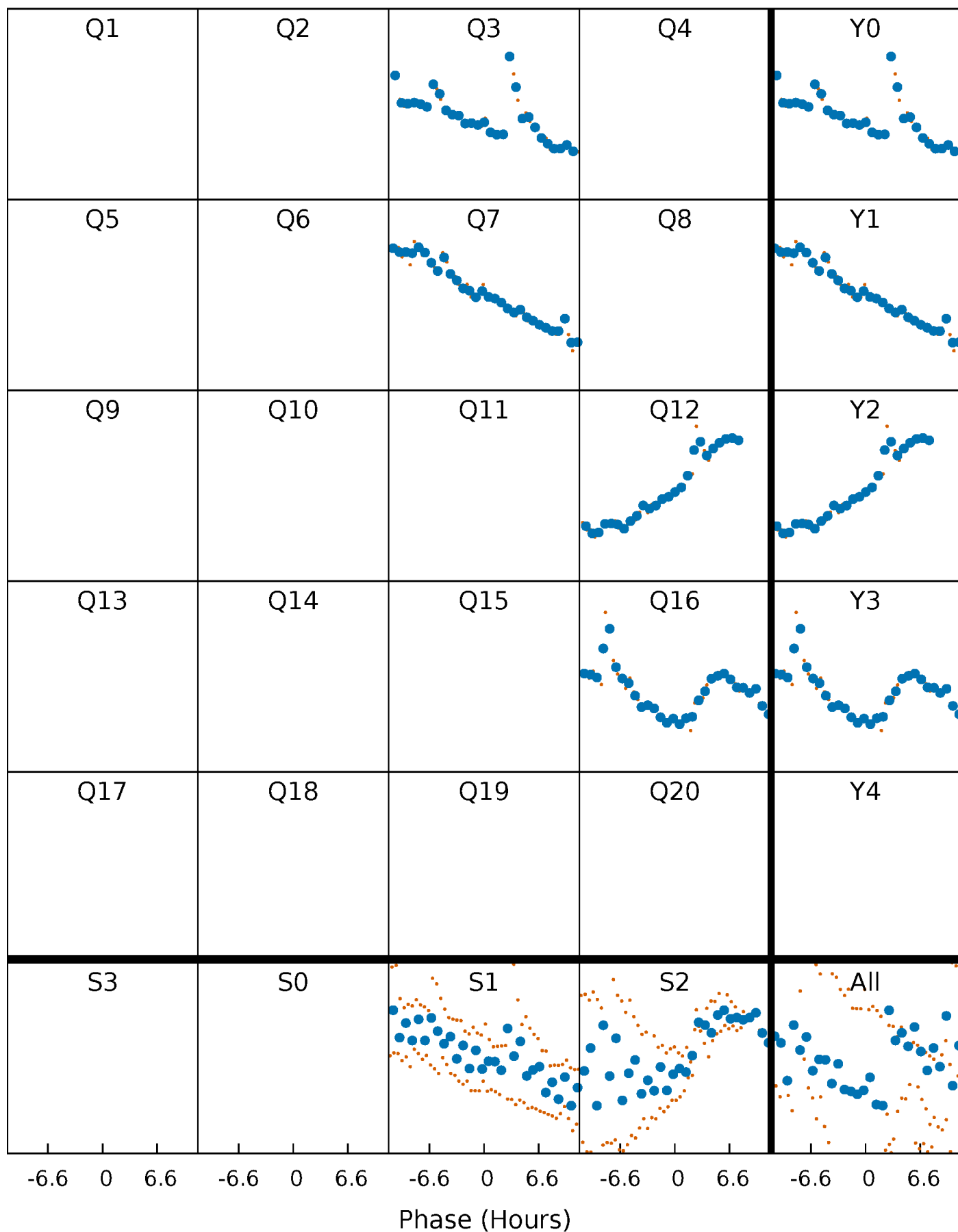


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



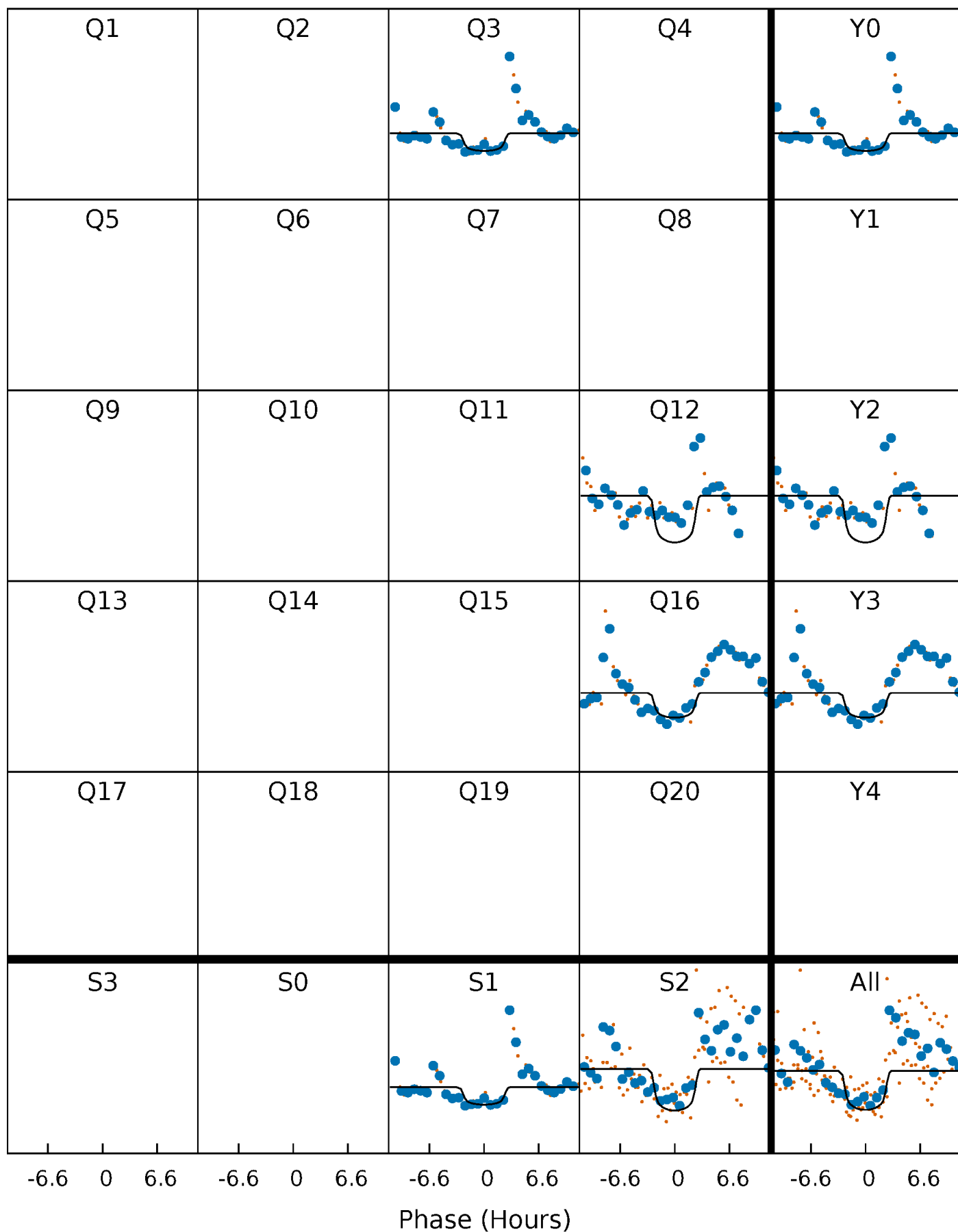
PDC Quarter-Phased Transit Curves

TCE 010471960-07 $P=425.027355$ Days $T_0=270.884270$ (BKJD)



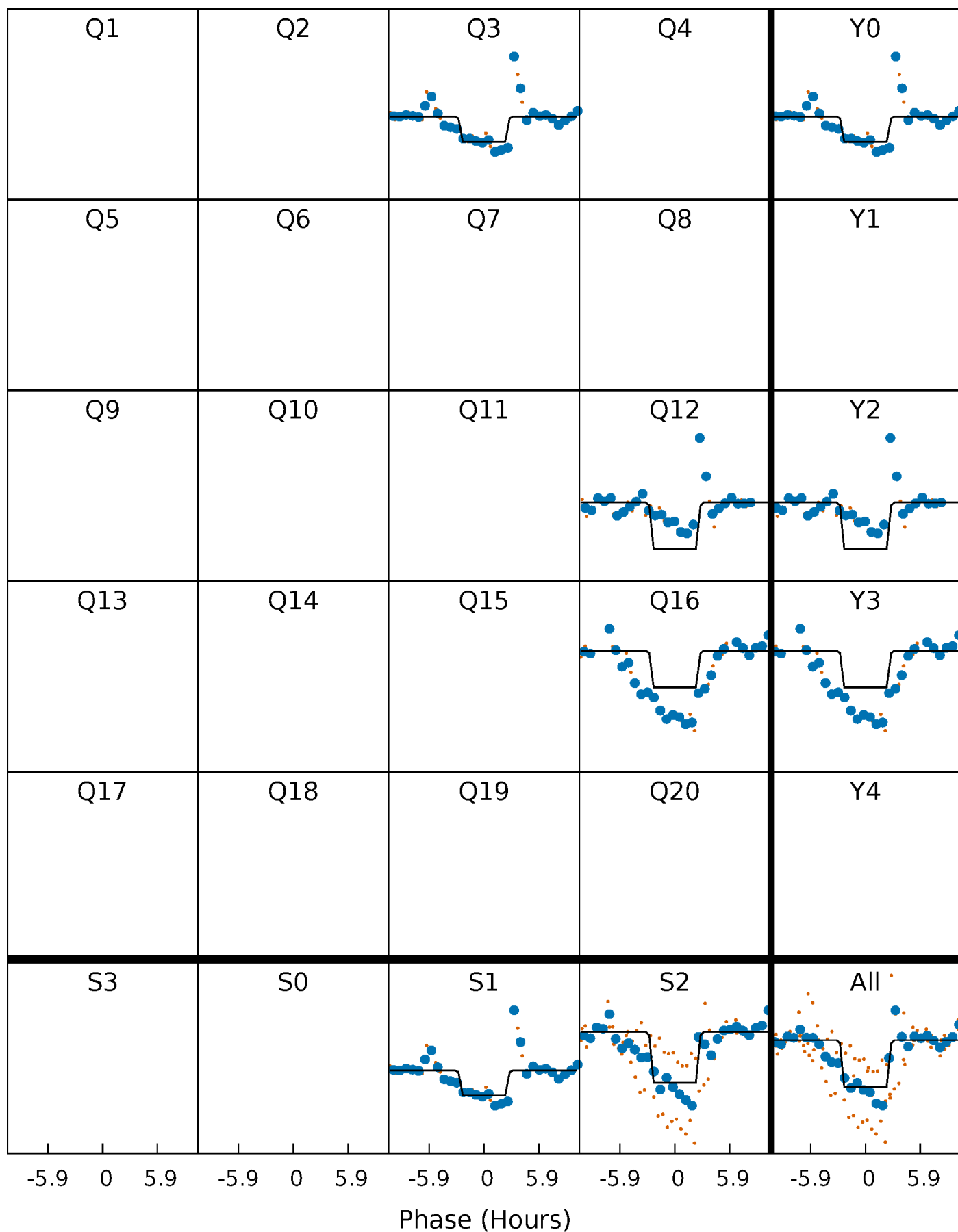
DV Quarter-Phased Transit Curves

TCE 010471960-07 $P=425.027355$ Days $T_0=270.884270$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

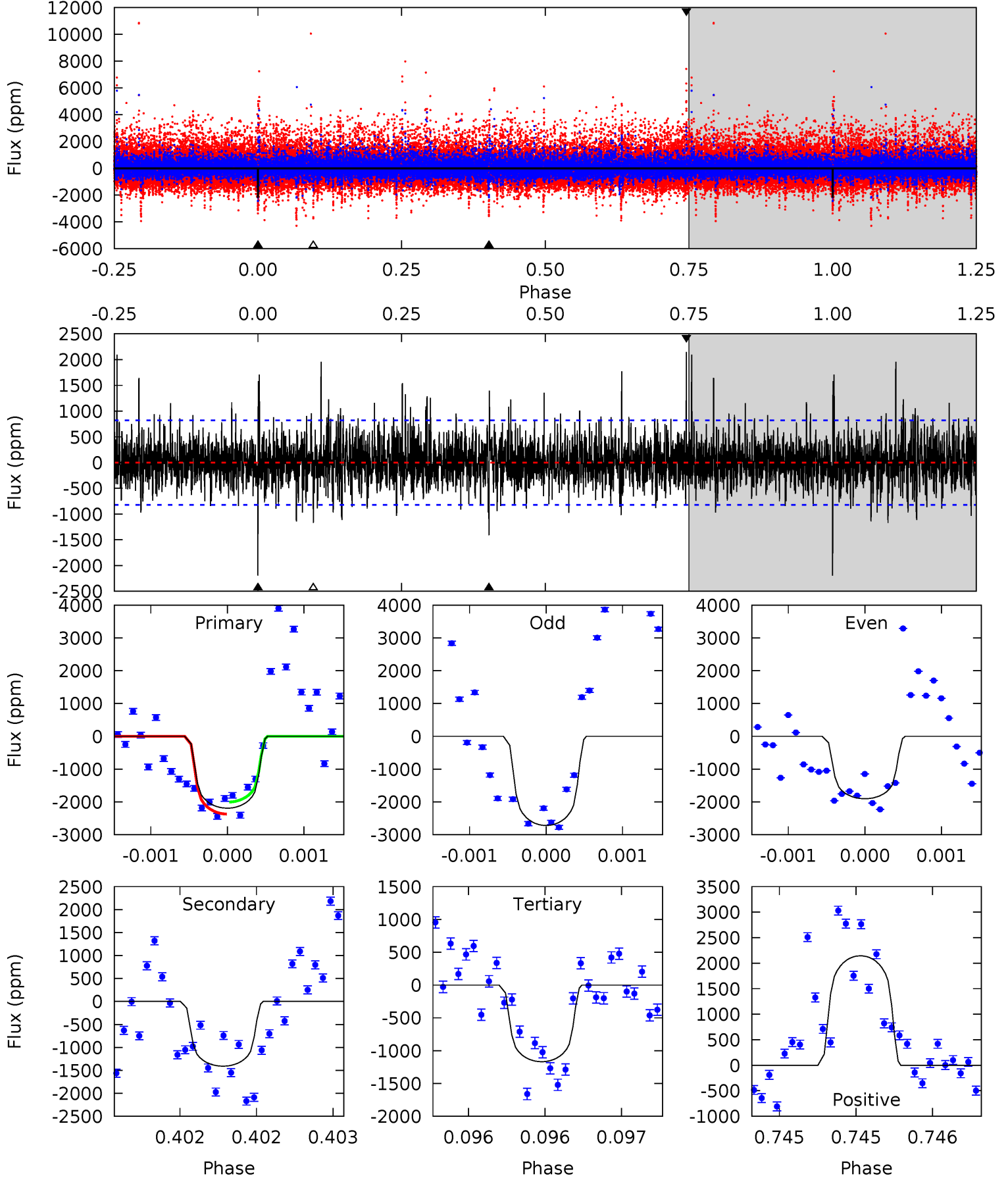
TCE 010471960-07 $P=425.024859$ Days $T_0=270.882778$ (BKJD)



DV Model-Shift Uniqueness Test

010471960-07, P = 425.027355 Days, E = 270.884270 Days

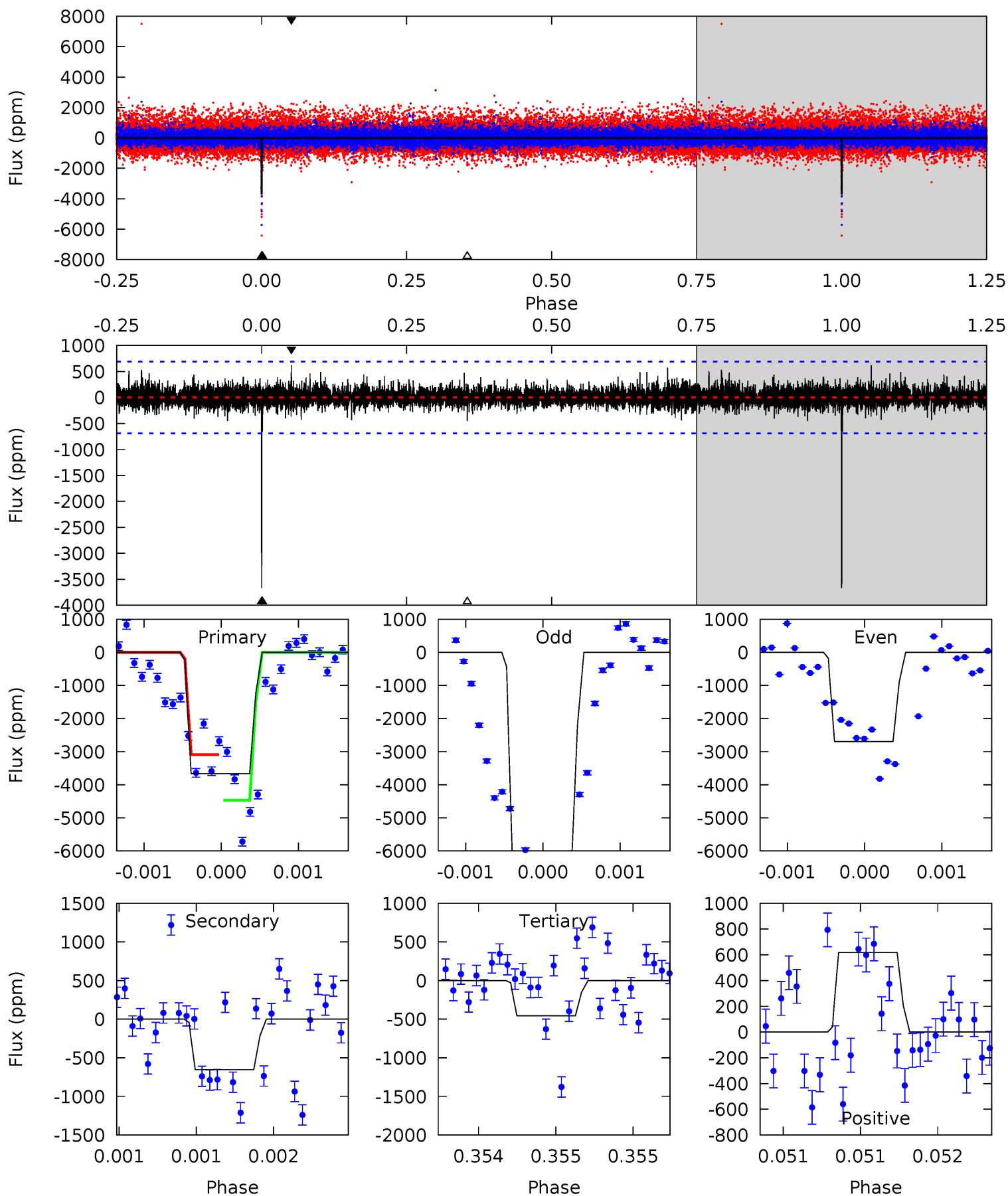
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.8	9.53	7.90	14.5	5.55	3.44	2.28	6.92	0.31	1.63	-4.98	1.95	0.80	0.49	1.24



Alt Model-Shift Uniqueness Test

010471960-07, $P = 425.024859$ Days, $E = 270.882778$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
29.5	5.25	3.65	4.96	5.55	3.44	0.83	25.8	24.5	1.60	0.29	19.1	1.02	0.14	5.71



Stellar Parameters For KIC 010471960

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3585^{+65}_{-72}	$4.868^{+0.045}_{-0.041}$	$-0.200^{+0.100}_{-0.100}$	$0.388^{+0.039}_{-0.044}$	$0.406^{+0.037}_{-0.056}$	$9.786^{+2.503}_{-1.663}$
	+2%/-2%	+1%/-1%	+50%/-50%	+10%/-11%	+9%/-14%	+26%/-17%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010471960-07 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1408 ± 148	$2.19^{+0.56}_{-0.58}$	152^{+4}_{-4}	3248^{+313}_{-223}	107367^{+92471}_{-39276}
Alt.	-653 ± 124	$2.55^{+0.59}_{-0.58}$	152^{+4}_{-4}	2791^{+190}_{-164}	37816^{+23017}_{-14245}

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 $A_{obs} \gg 1.0$

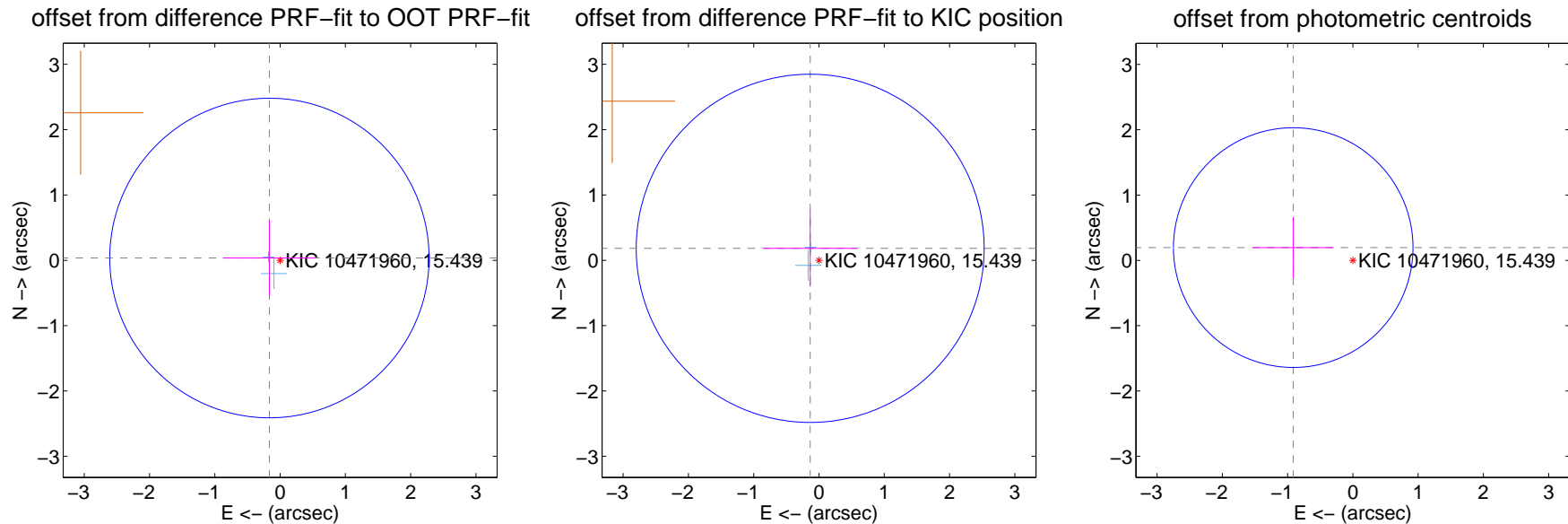
DV Centroid Data

Supplemental centroid analysis for 010471960-07. Kepler magnitude: 15.44. Transit SNR 9.39

There are 2 quarters with good PRF difference image offsets

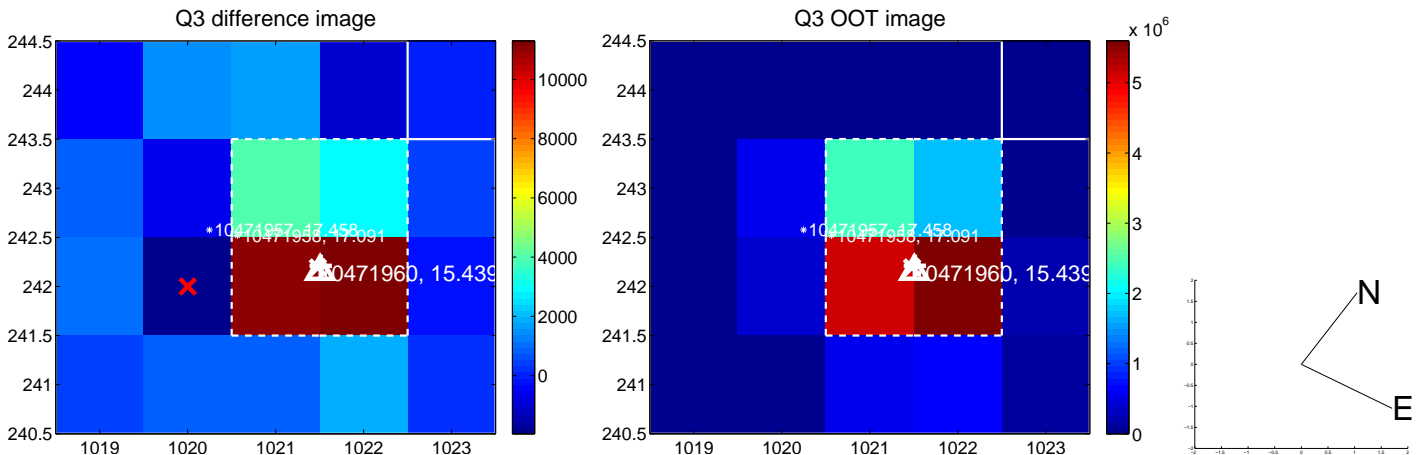
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.167 ± 0.815	0.21	0.164 ± 0.712	0.035 ± 0.576
PRF-fit source offset from KIC position	0.227 ± 0.888	0.26	0.135 ± 0.713	0.183 ± 0.583
photometric centroid source offset	0.93 ± 0.61	1.53	0.91 ± 0.62	0.20 ± 0.47



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



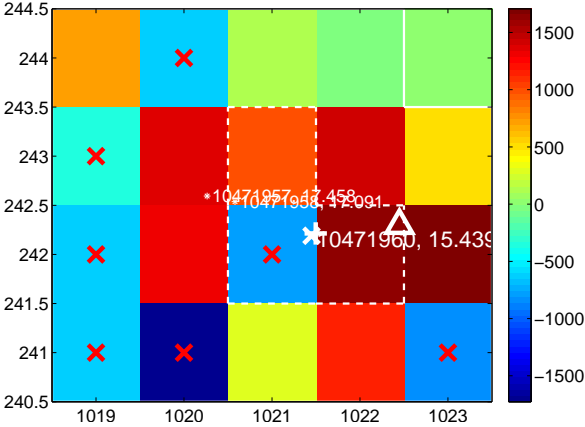
Q6 no difference image



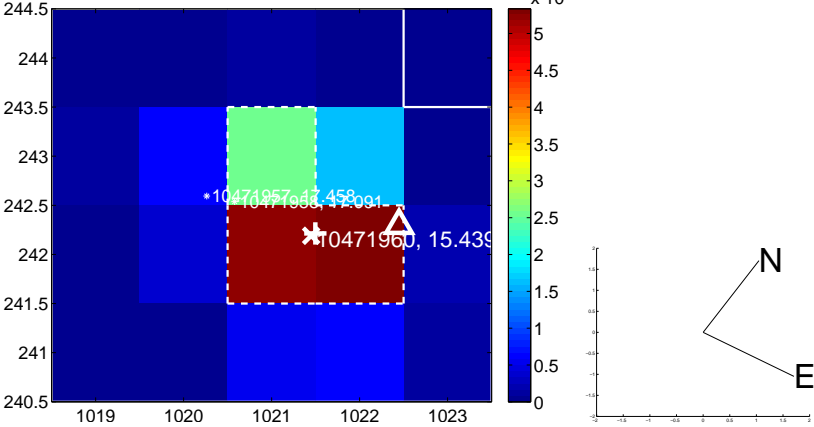
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



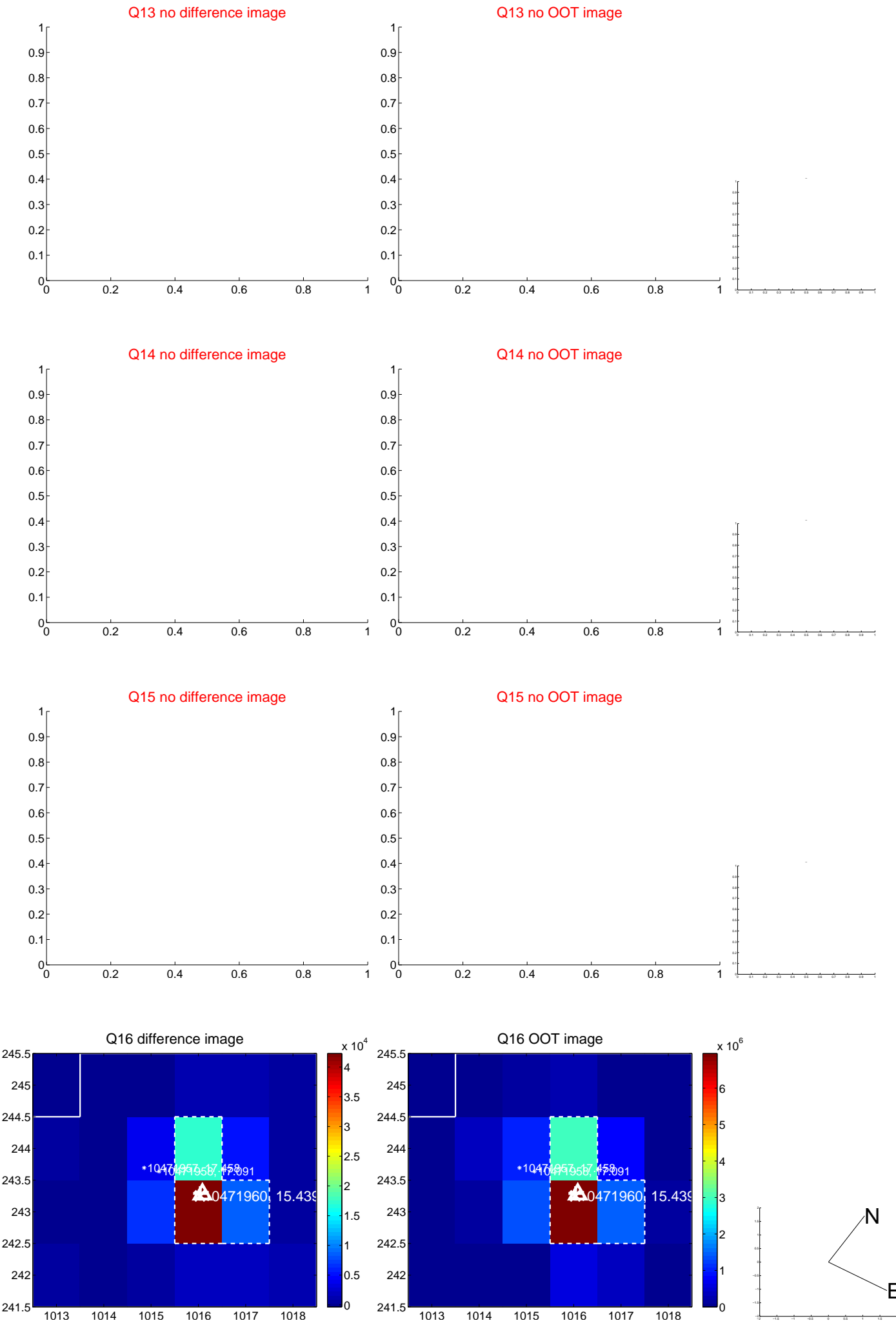
Q8 no OOT image



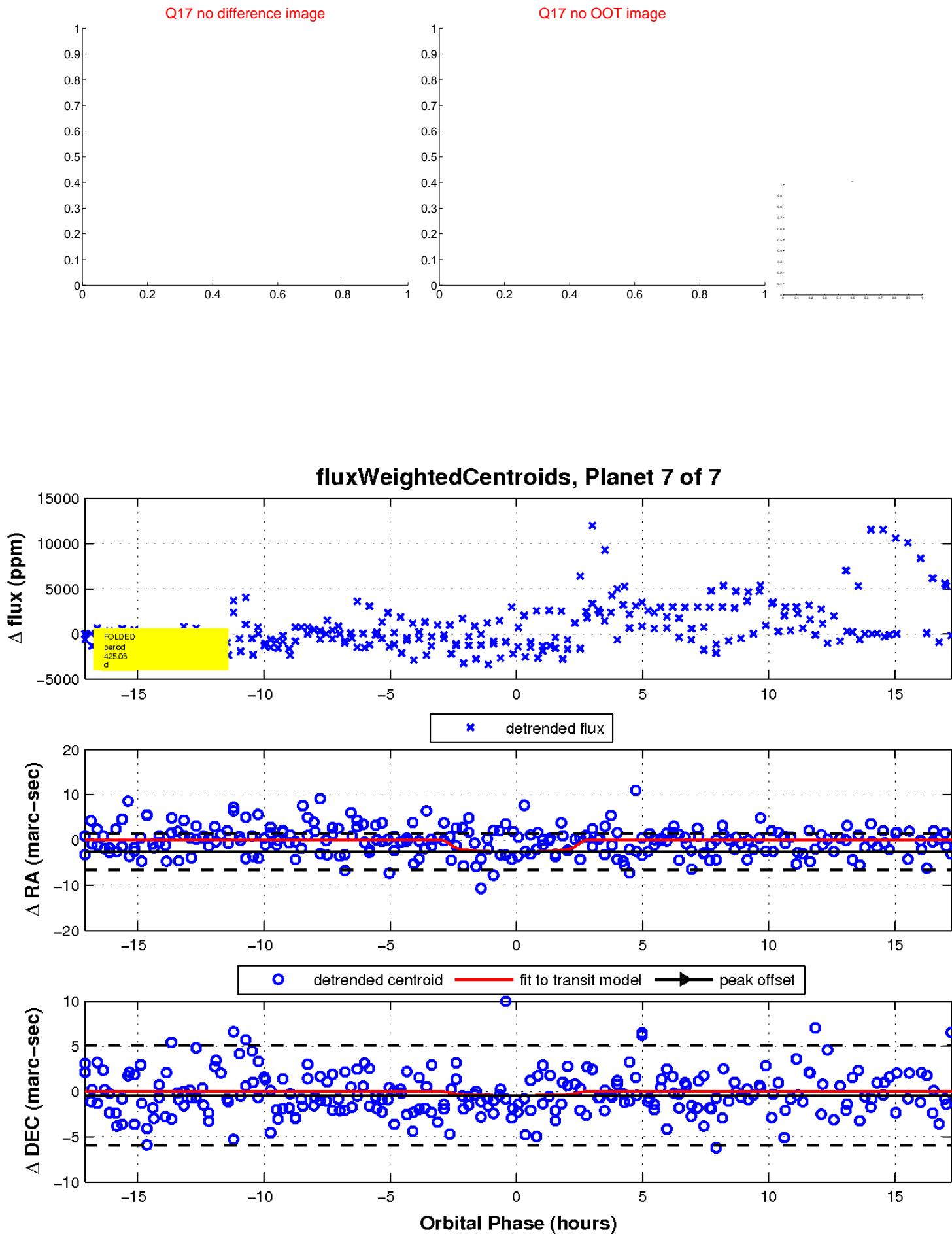
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

