

KIC 009828292

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})
009828292-01	OBS	No	456.395440	226.630135	2292.6	3.184	15.1	8.8	0.50	3770	2.48	0.05
009828292-02	OBS	No	394.580557	331.360225	1732.9	5.037	12.8	6.1	0.50	3770	4.03	0.06
009828292-03	OBS	No	451.812350	303.232715	2699.1	12.717	13.8	10.5	0.50	3770	2.56	0.05
009828292-04	OBS	No	355.949501	311.554031	1178.2	5.951	12.5	5.3	0.50	3770	1.74	0.07
009828292-05	OBS	No	443.072993	198.285203	1281.8	9.717	12.4	6.3	0.50	3770	1.83	0.06
009828292-06	OBS	No	584.317830	297.477088	1996.9	4.724	11.7	7.2	0.50	3770	2.26	0.04
009828292-07	OBS	No	464.236807	438.505716	1411.1	14.883	10.3	5.5	0.50	3770	1.89	0.05
009828292-08	OBS	No	362.205290	492.439911	1650.1	6.408	10.5	7.0	0.50	3770	3.95	0.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009828292-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009828292-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-04	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
009828292-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009828292-06	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
009828292-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

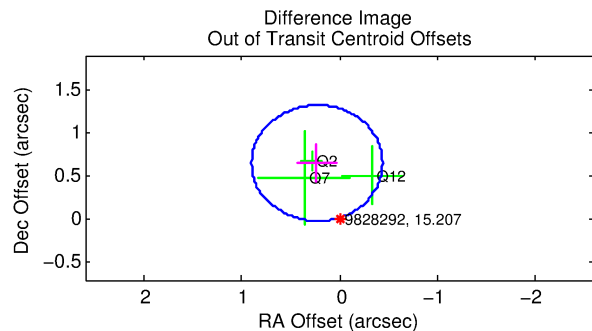
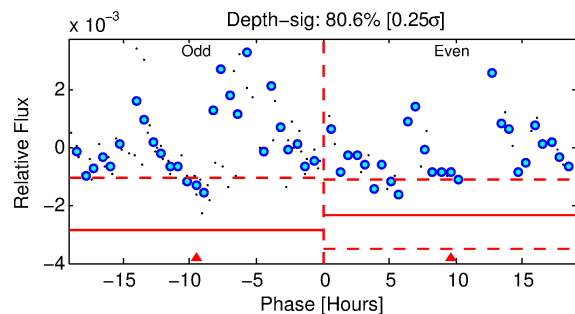
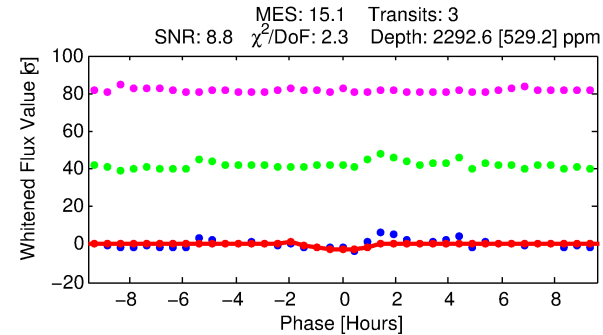
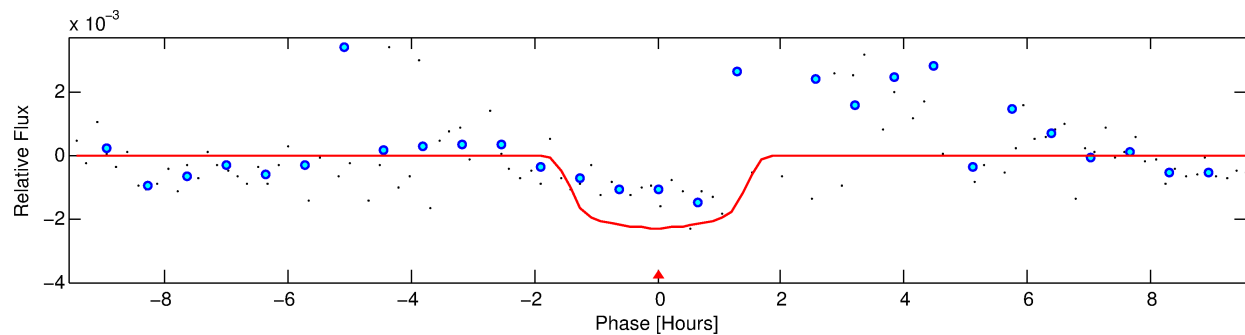
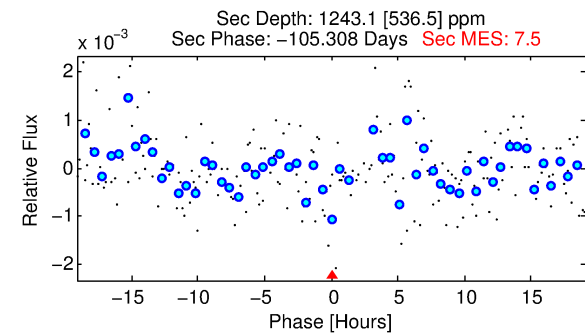
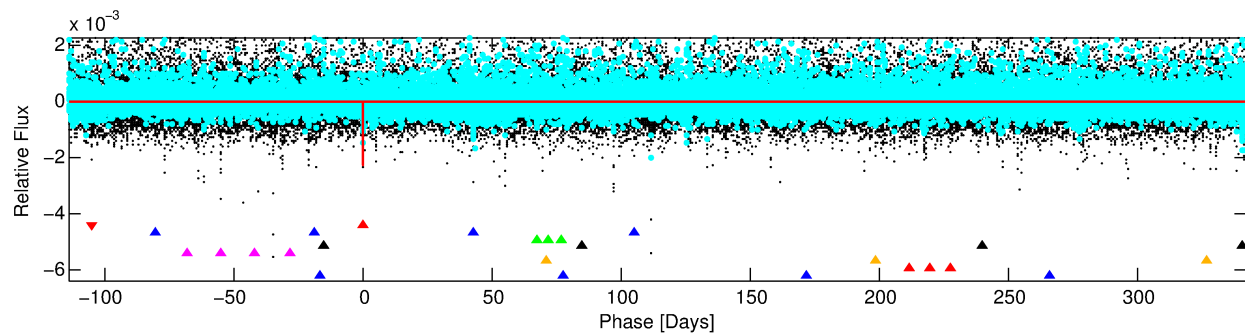
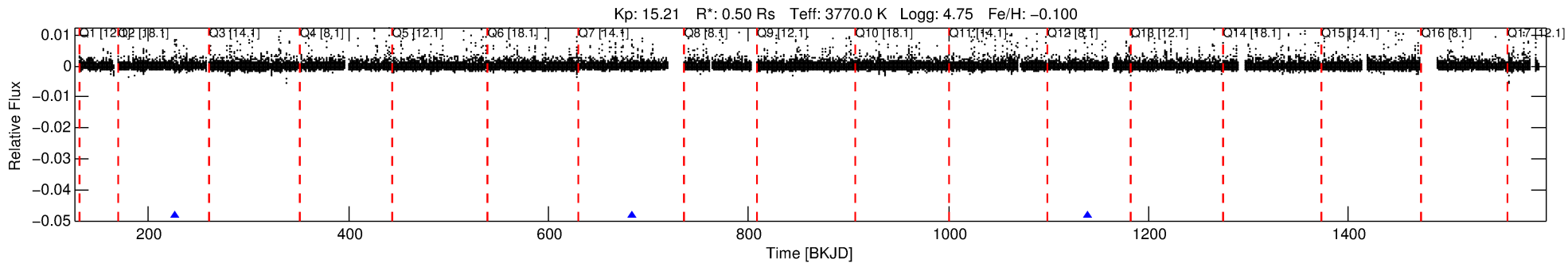
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009828292-01

No Significant Match Found

DV One-Page Summary

KIC: 9828292 Candidate: 1 of 8 Period: 456.395 d



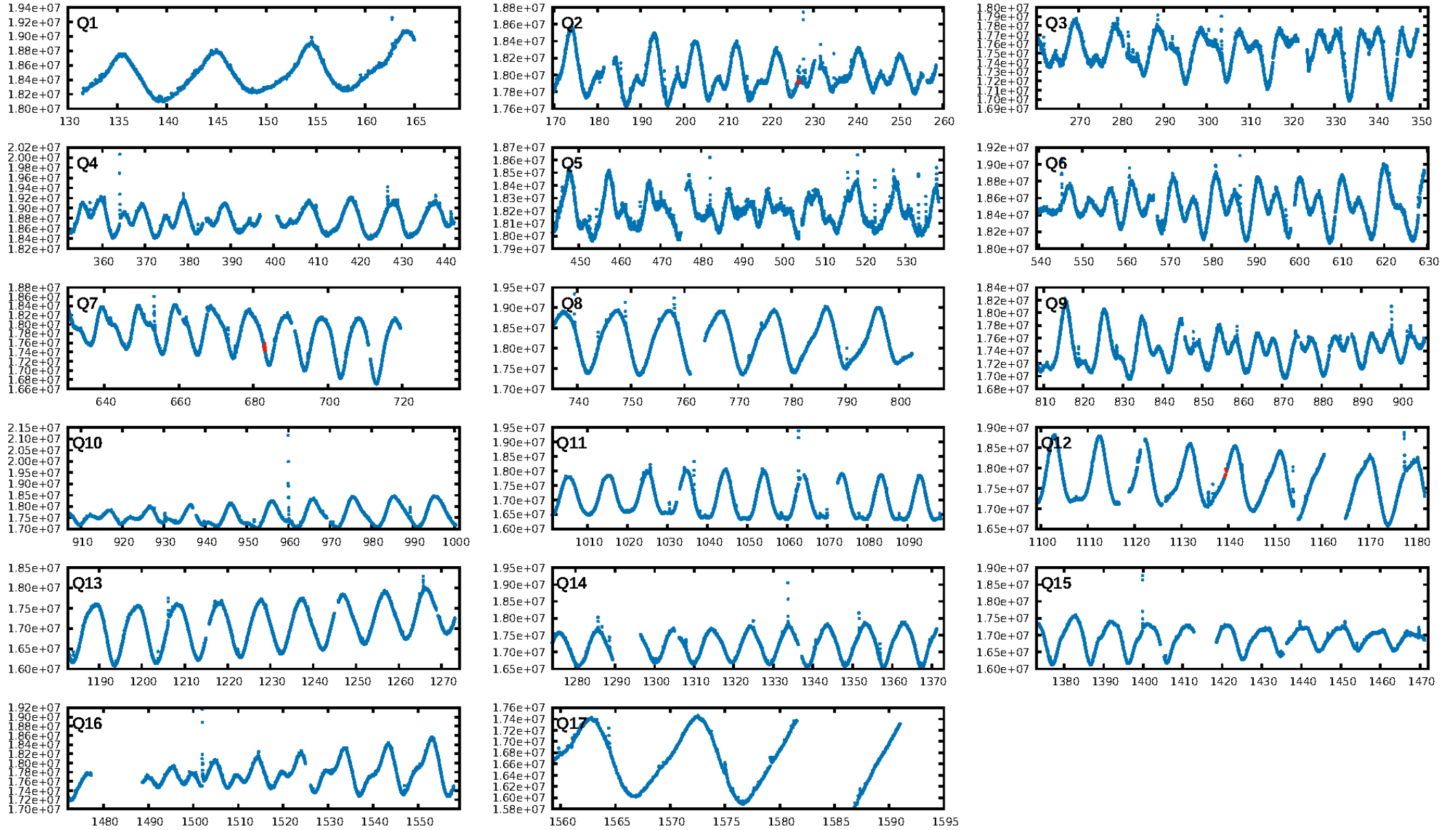
DV Fit Results:

Period = 456.39544 [0.00696] d
Epoch = 226.6301 [0.0094] BKJD
Rp/R* = 0.0455 [0.0544]
a/R* = 948.94 [4947.84]
b = 0.58 [5.90]
Seff = 0.05 [0.01]
Teq = 122 [4] K
Rp = 2.48 [2.97] Re
a = 0.9254 [0.0731] AU
Ag = 95284.59 [231684.74] [0.41σ]
Teffp = 3318 [2016] K [1.58σ]

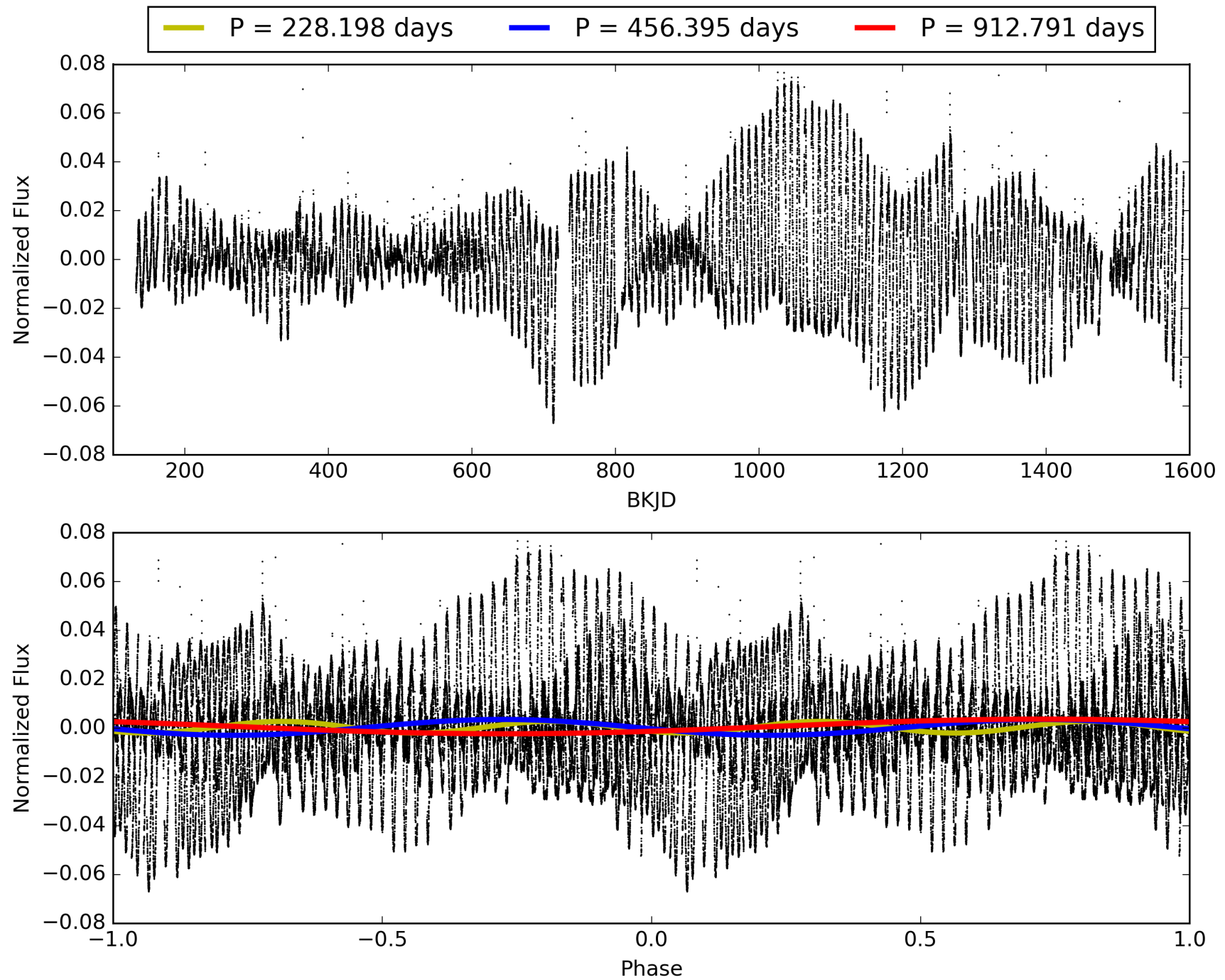
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.39σ]
LongPeriod-sig: 100.0% [12.37σ]
ModelChiSquare2-sig: 94.8%
ModelChiSquareGof-sig: 96.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -2.136
Centroid-sig: 2.5%
Centroid-so: 0.273 arcsec [0.30σ]
OotOffset-rm: 0.692 arcsec [3.10σ]
KicOffset-rm: 0.744 arcsec [3.32σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009828292-01, PDC Light Curves

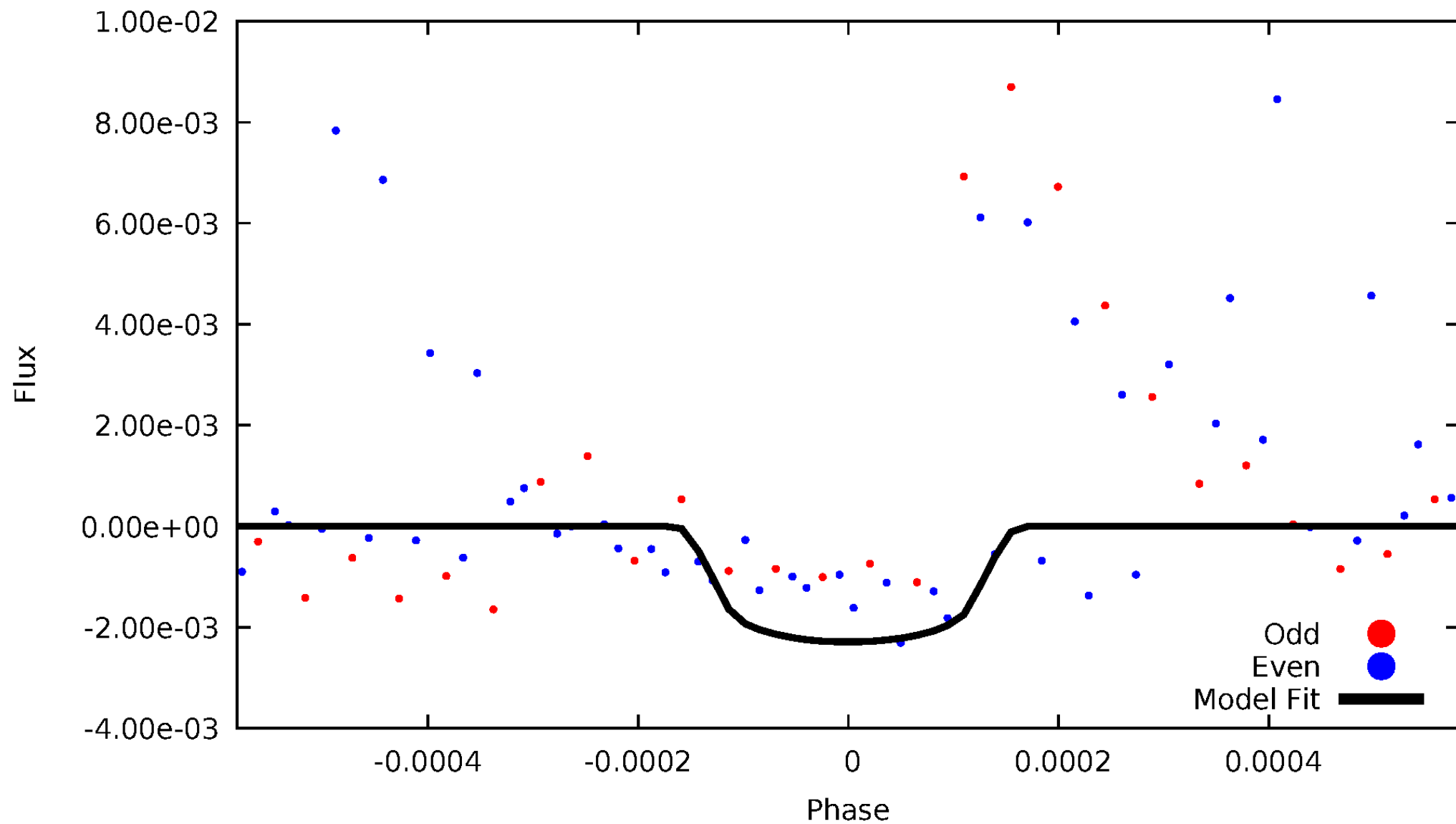


TCE 009828292-01



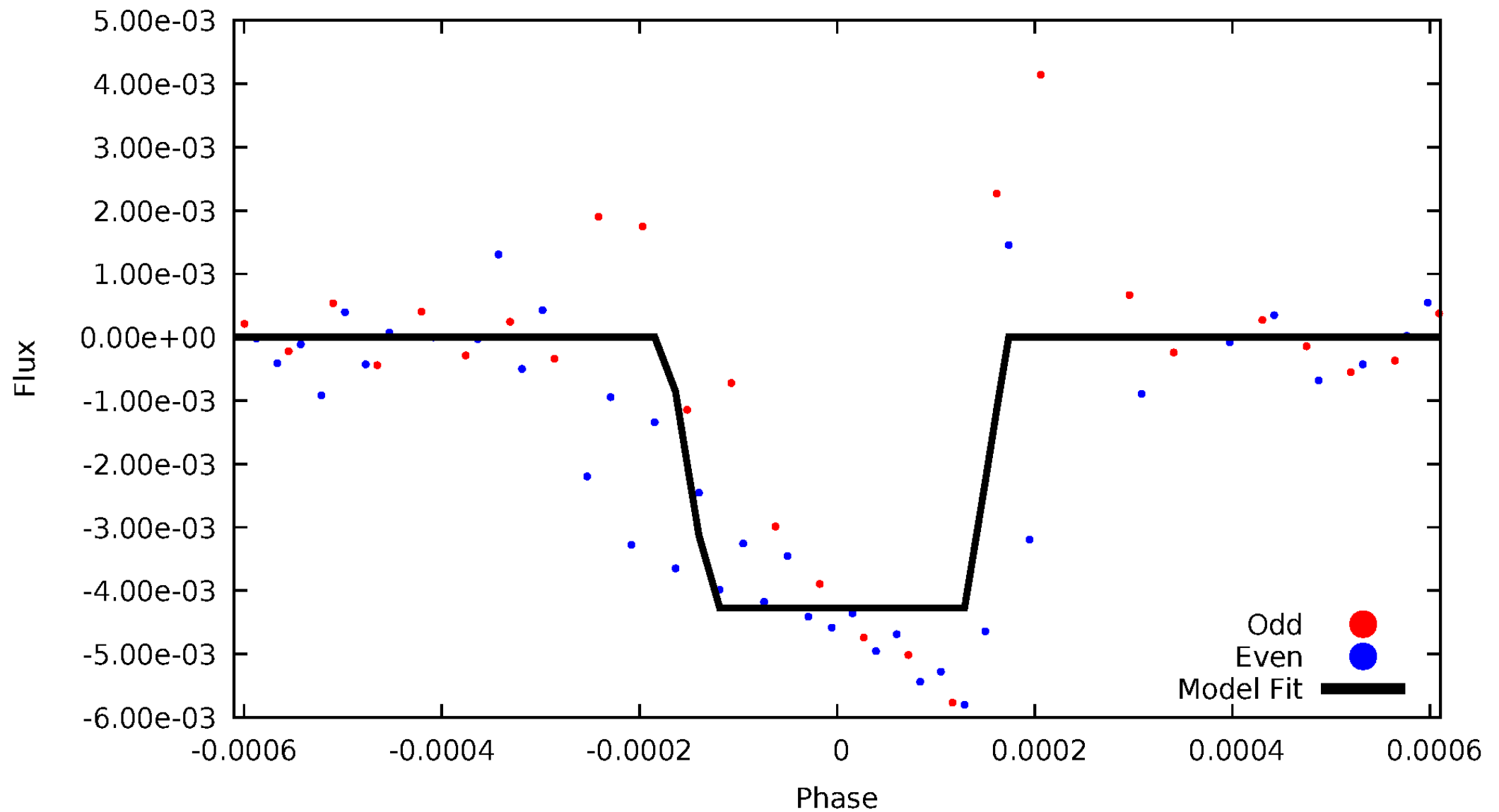
DV Odd/Even

TCE 009828292-01



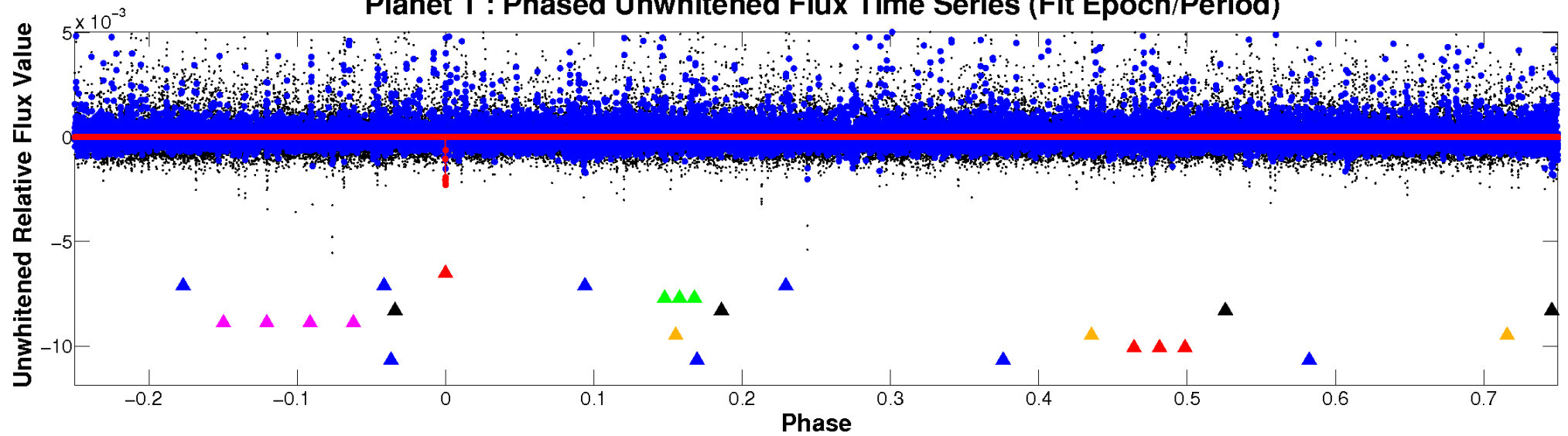
ALT Odd/Even

TCE 009828292-01

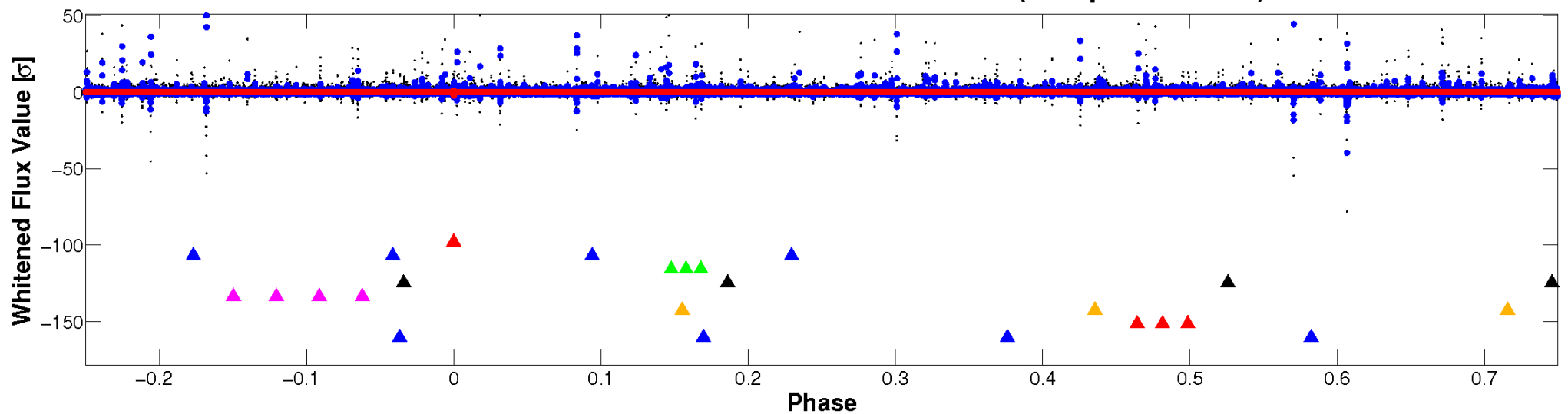


Non-Whitened Vs. Whitened Light Curve

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



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



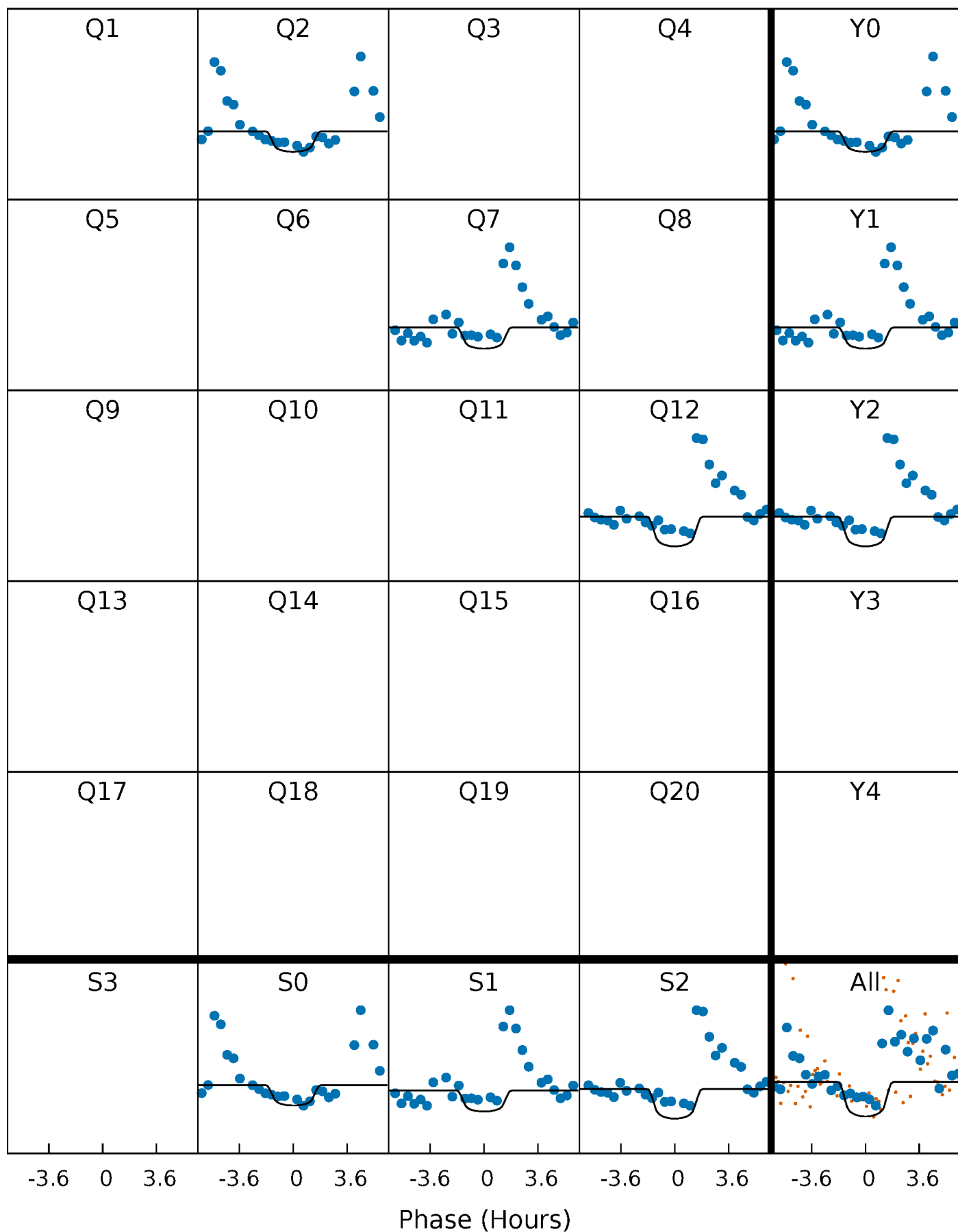
PDC Quarter-Phased Transit Curves

TCE 009828292-01 P=456.395440 Days $T_0=226.630135$ (BKJD)



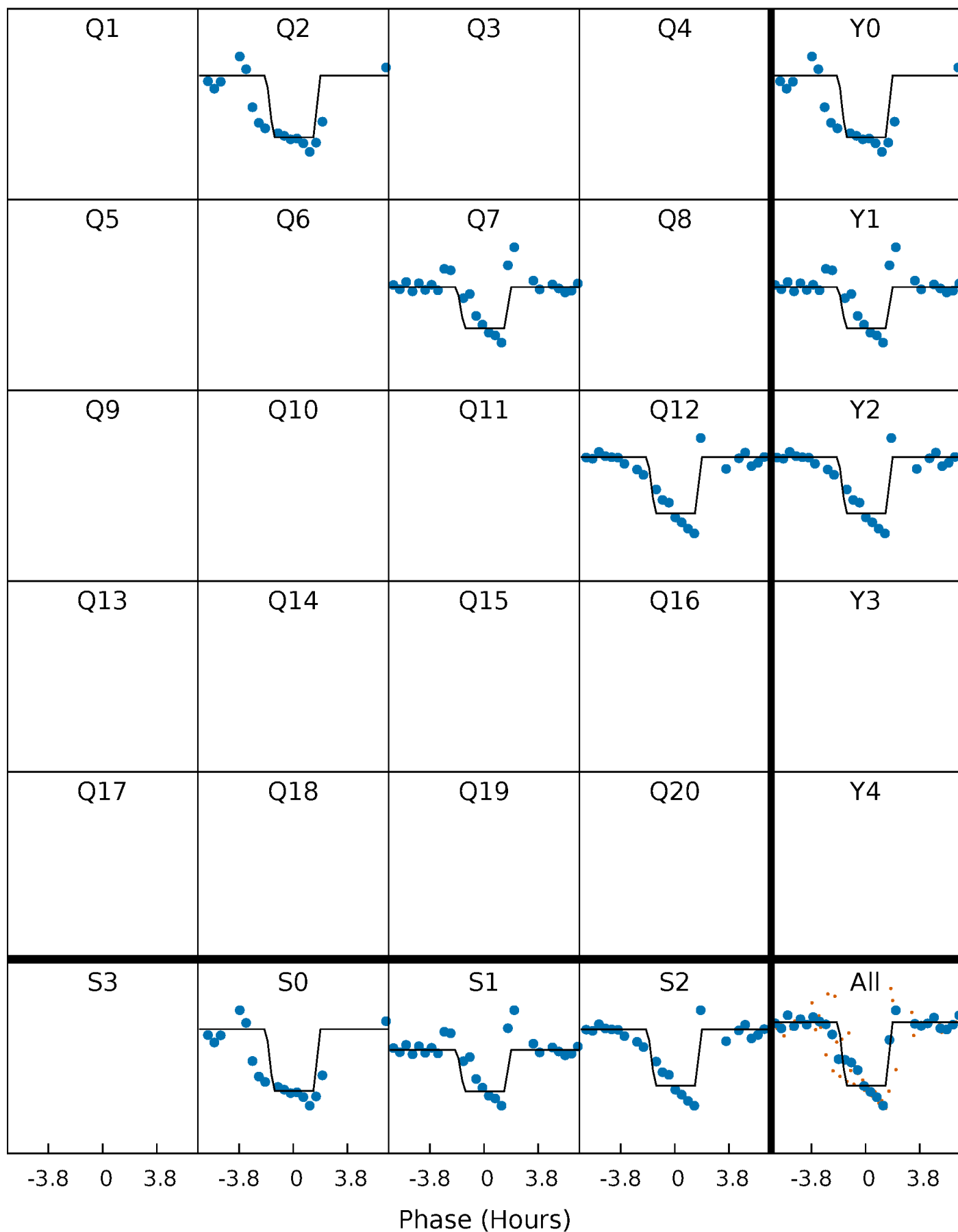
DV Quarter-Phased Transit Curves

TCE 009828292-01 $P=456.395440$ Days $T_0=226.630135$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

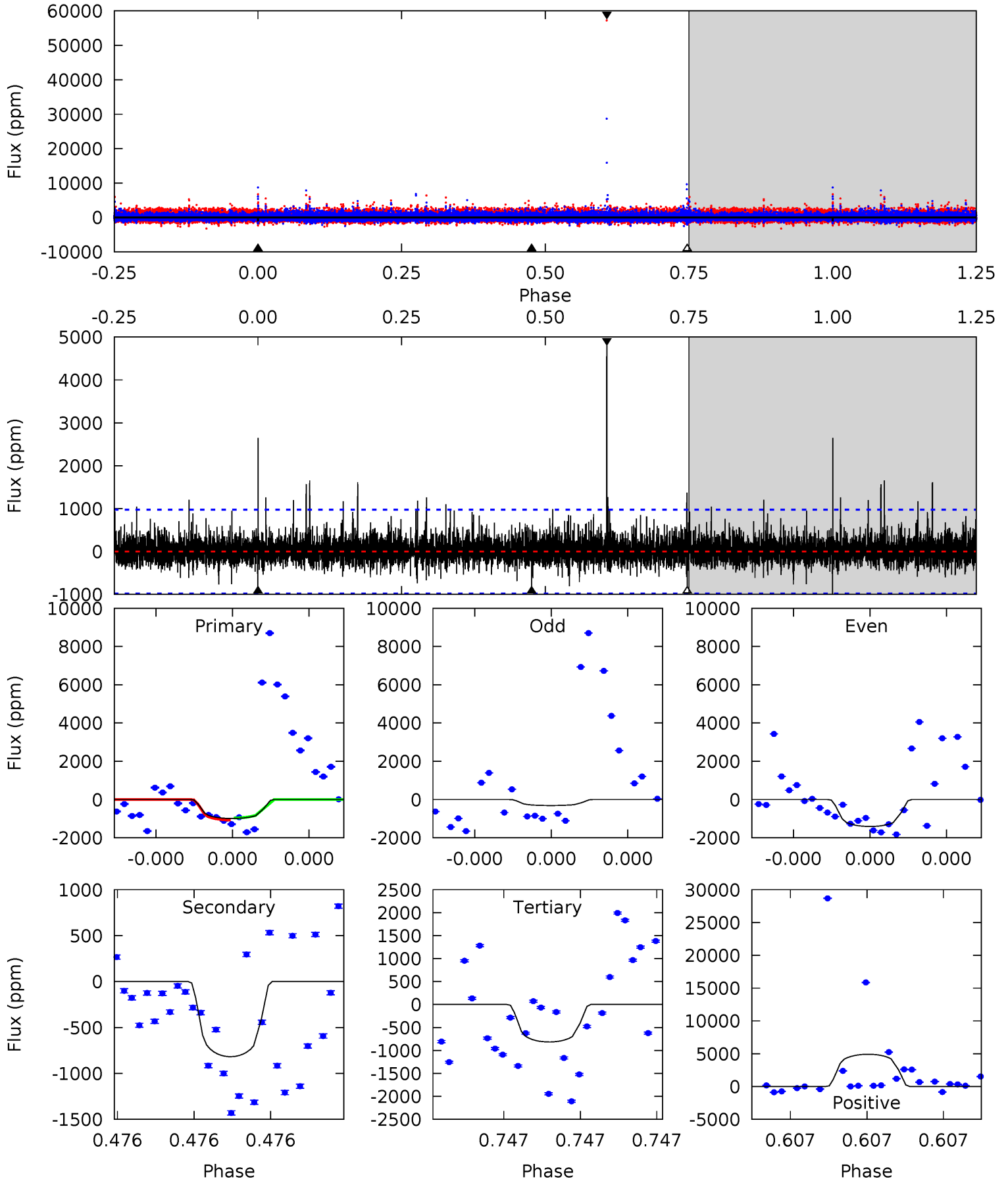
TCE 009828292-01 P=456.397185 Days $T_0=226.604882$ (BKJD)



DV Model-Shift Uniqueness Test

009828292-01, P = 456.395440 Days, E = 226.630135 Days

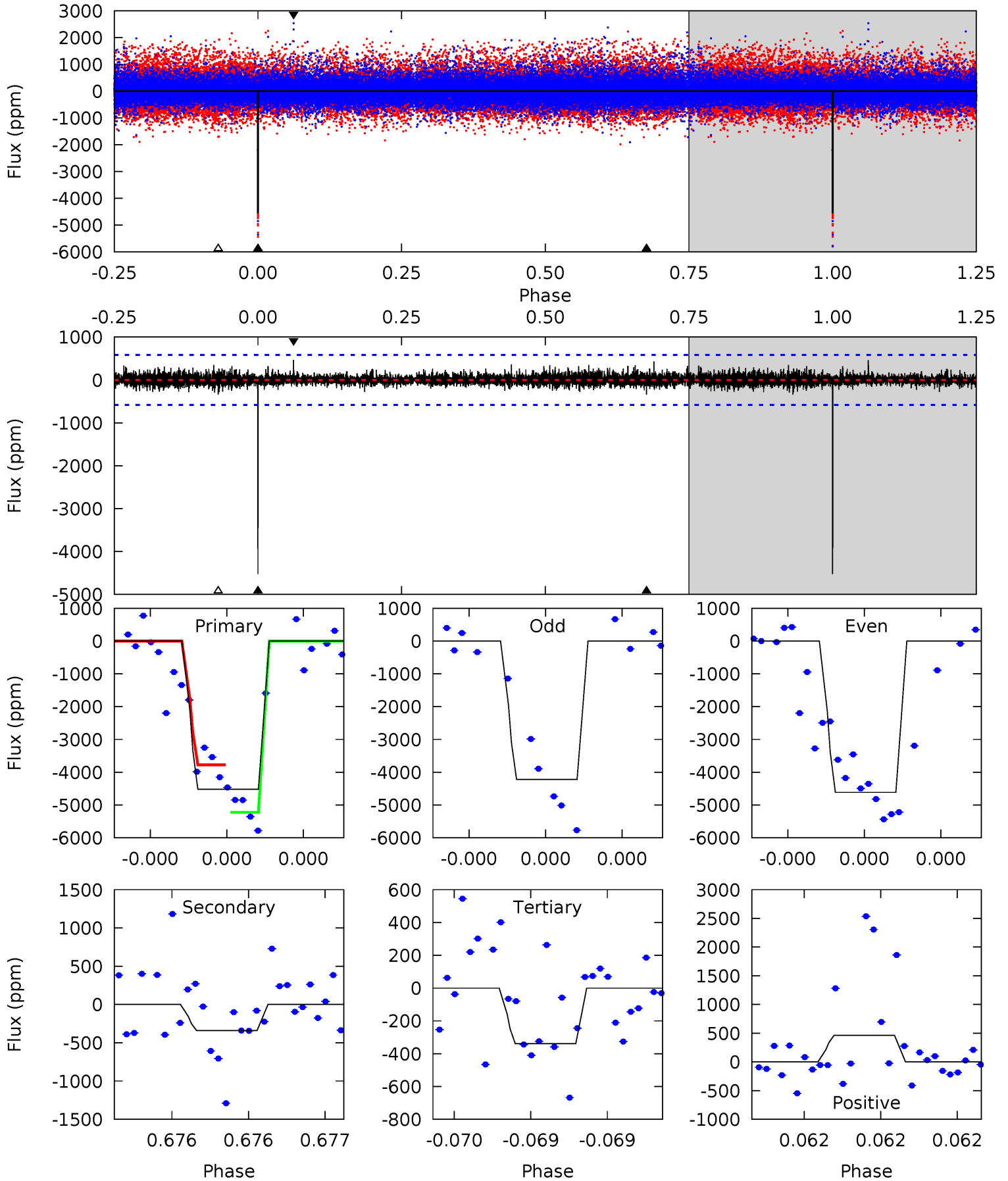
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.72	4.73	4.72	28.4	5.65	3.60	1.32	1.00	-22.7	0.01	-23.7	1.99	1.90	0.83	0.31



Alt Model-Shift Uniqueness Test

009828292-01, P = 456.397185 Days, E = 226.604882 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
43.8	3.30	3.29	4.47	5.65	3.60	0.73	40.6	39.4	0.01	-1.17	1.61	0.96	0.09	7.05



Stellar Parameters For KIC 009828292

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	3770^{+76}_{-83}	$4.747^{+0.052}_{-0.032}$	$-0.100^{+0.200}_{-0.200}$	$0.499^{+0.037}_{-0.051}$	$0.508^{+0.043}_{-0.043}$	$5.743^{+1.418}_{-0.785}$
	+2%/-2%	+1%/-1%	+200%/-200%	+7%/-10%	+8%/-8%	+25%/-14%
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 009828292-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-818 ± 173	$3.21^{+2.75}_{-1.92}$	170^{+4}_{-5}	2978^{+1073}_{-438}	$35767^{+203347}_{-25337}$
Alt.	-341 ± 103	$4.06^{+2.74}_{-2.34}$	170^{+5}_{-5}	2530^{+618}_{-327}	9716^{+42710}_{-6711}

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 $A_{obs} \gg 1.0$

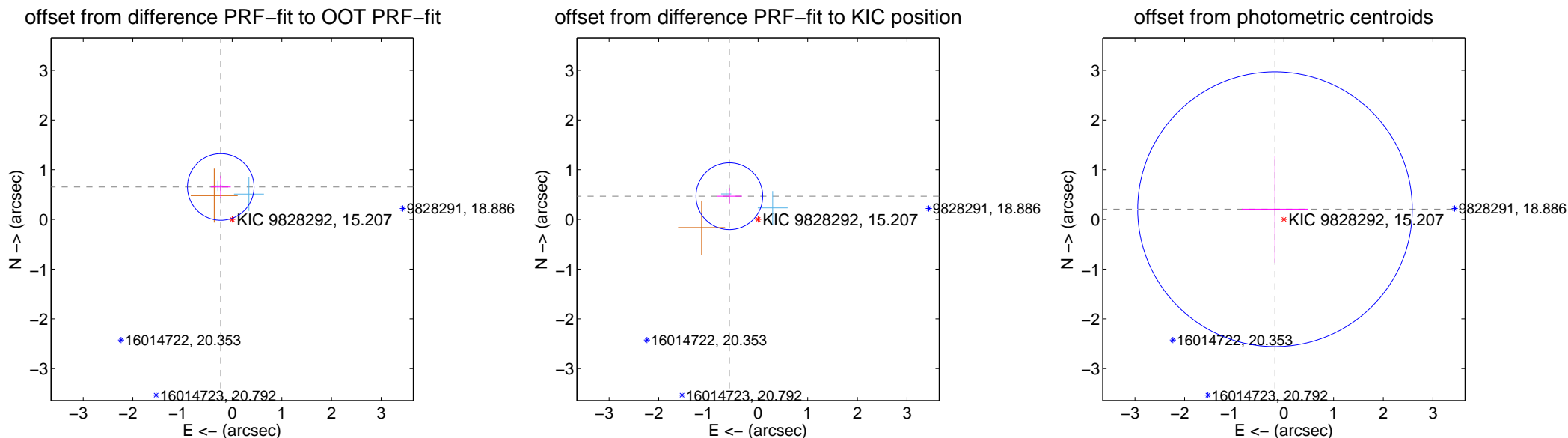
DV Centroid Data

Supplemental centroid analysis for 009828292-01. Kepler magnitude: 15.21. Transit SNR 8.82

There are 2 quarters with good PRF difference image offsets

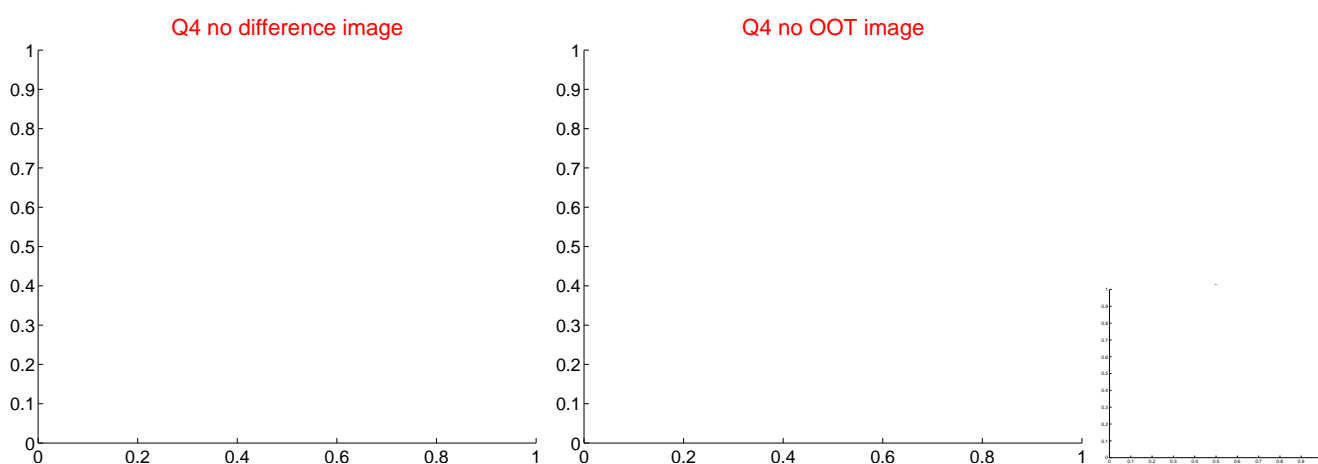
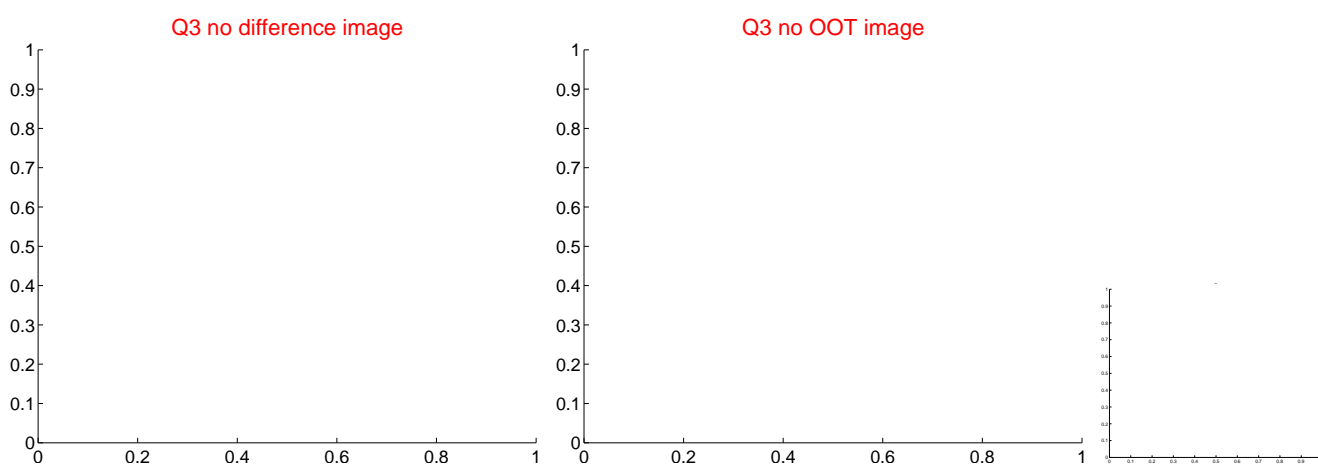
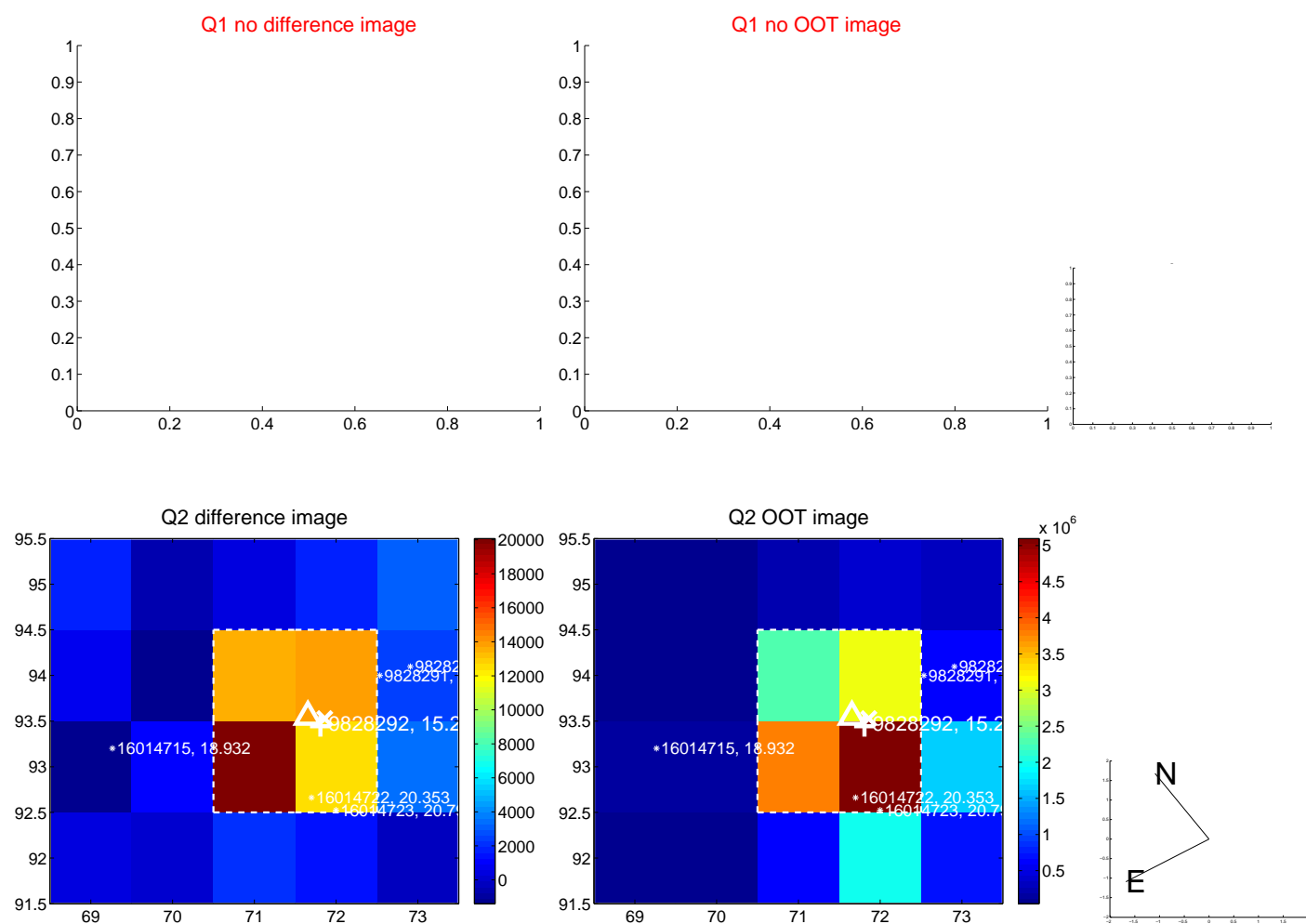
The direct PRF centroid is offset from the target star catalog position by about 0.28 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.692 \pm 0.223	3.10	0.230 \pm 0.201	0.653 \pm 0.226
PRF-fit source offset from KIC position	0.744 \pm 0.224	3.32	0.578 \pm 0.251	0.468 \pm 0.165
photometric centroid source offset	0.27 \pm 0.92	0.30	0.18 \pm 0.67	0.21 \pm 1.08

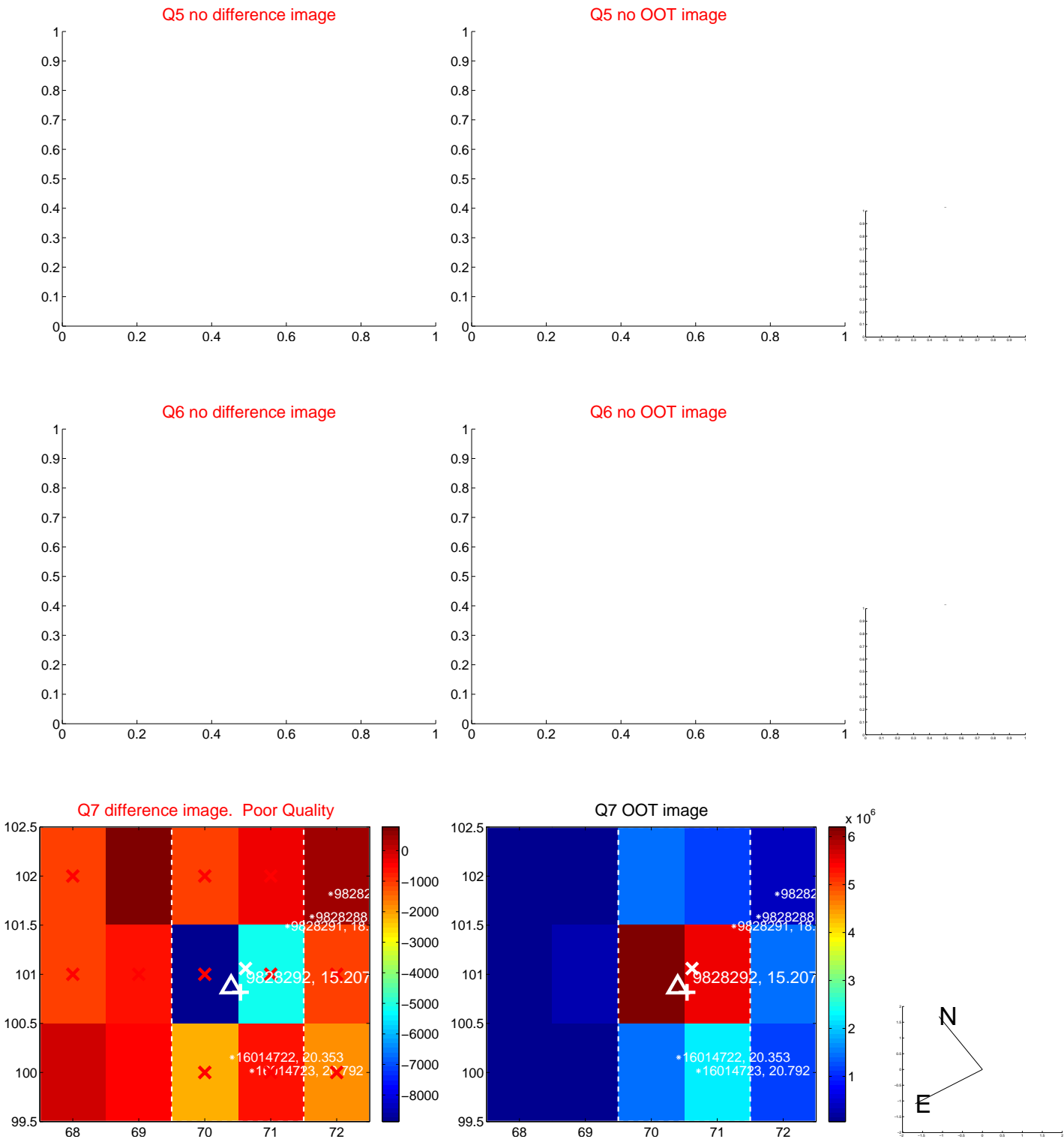


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

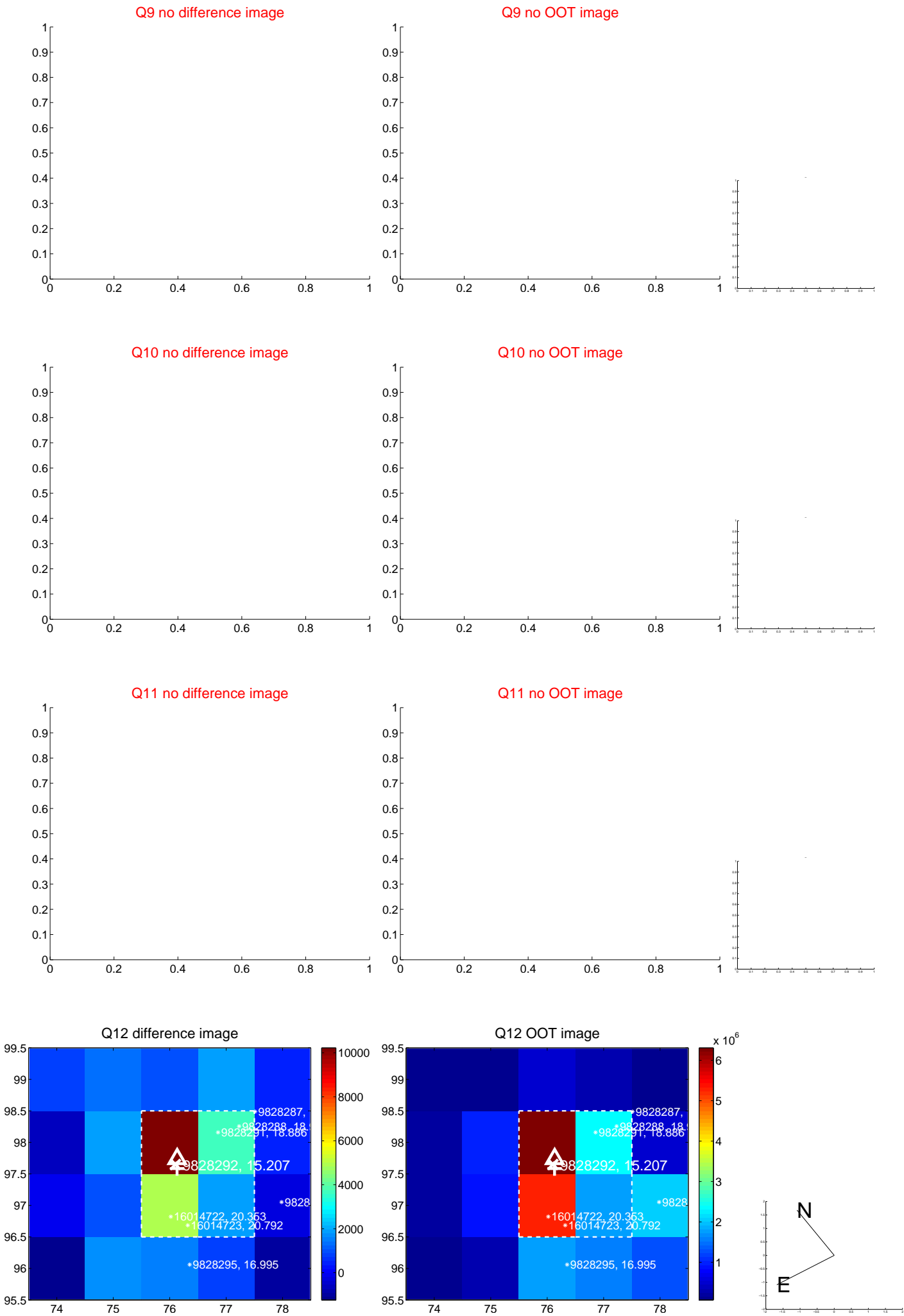
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



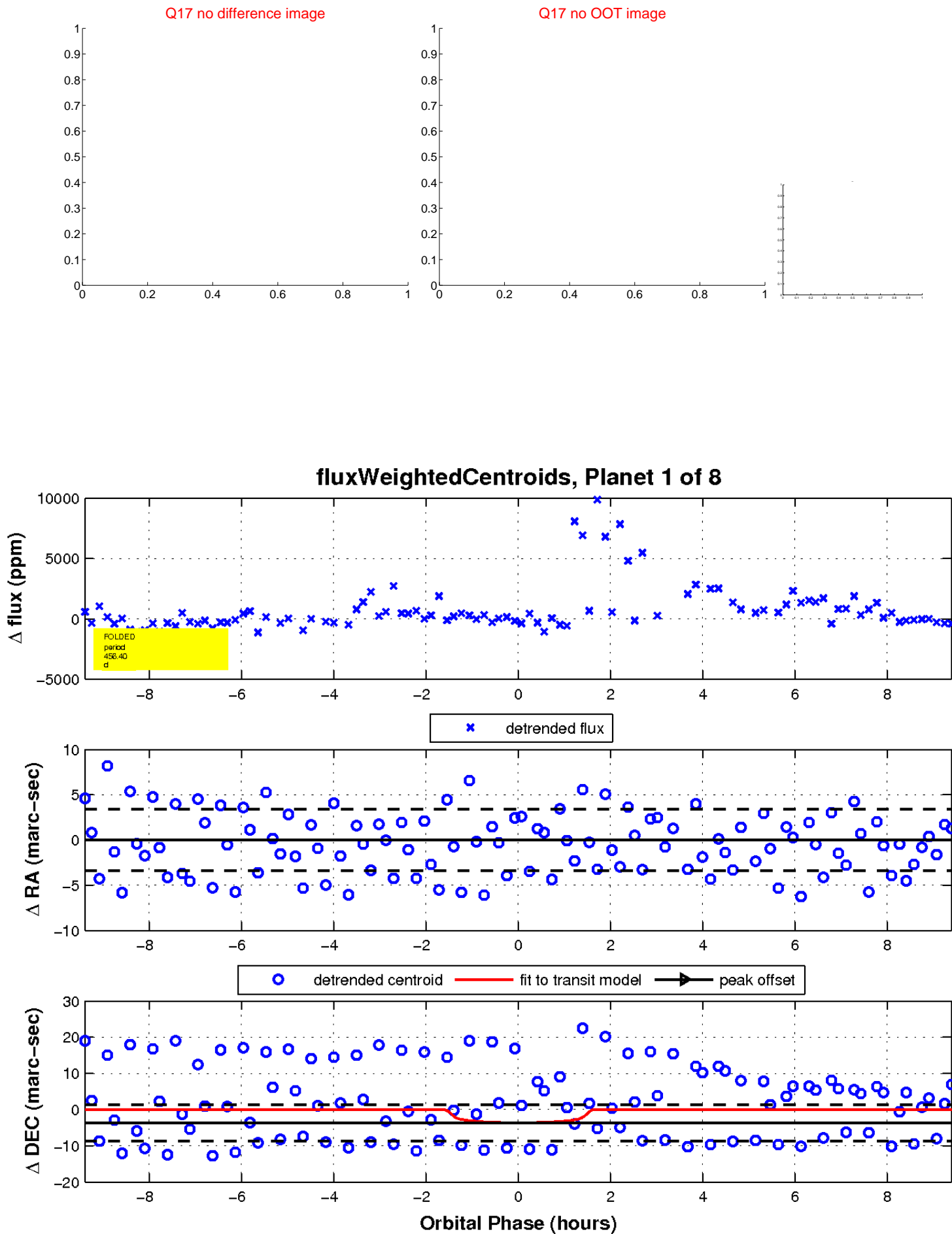
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

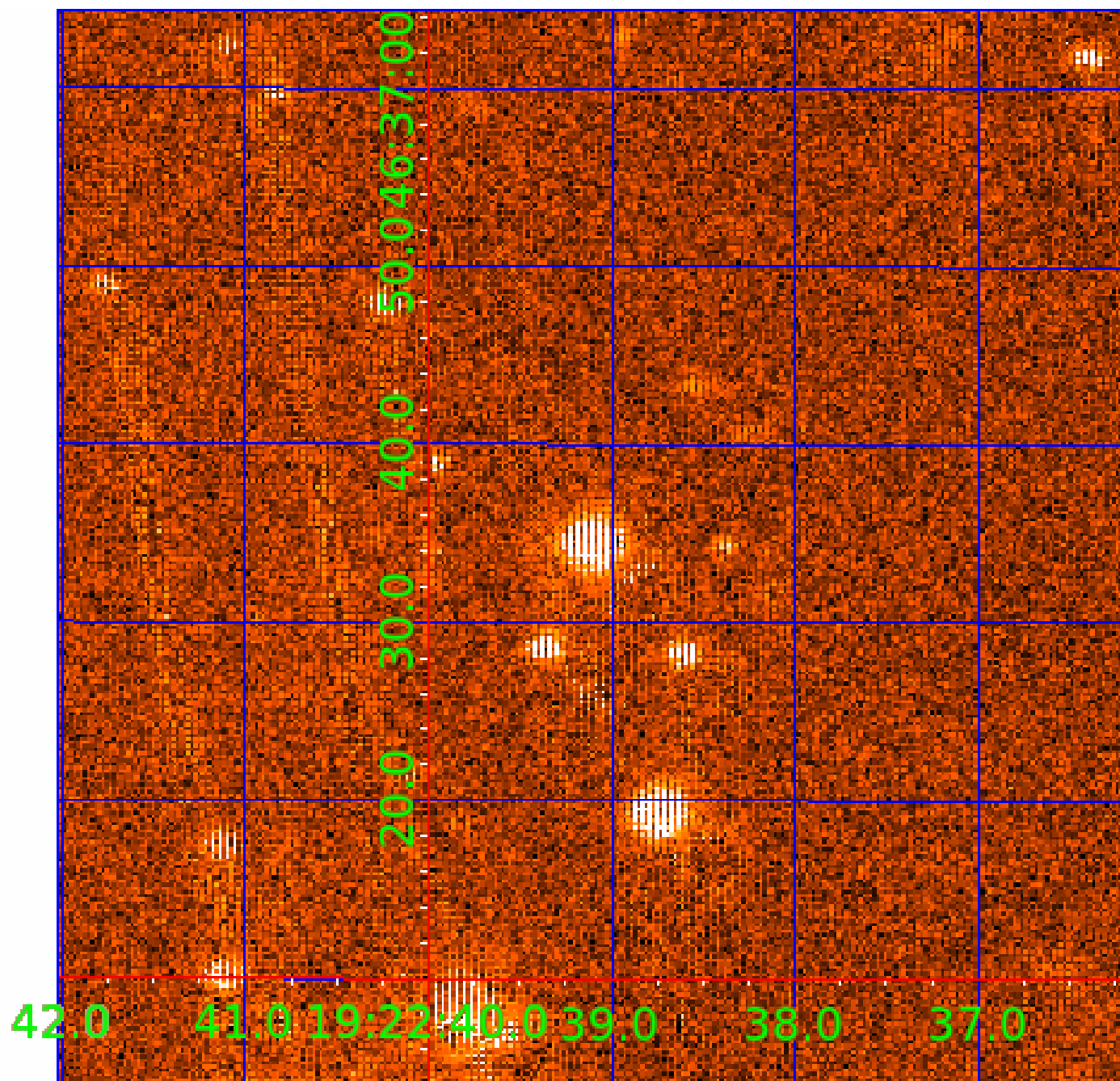


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009828292

Q1-17 DR25 TCE Parameters

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Robovetter Results

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009828292-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009828292-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-04	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
009828292-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009828292-06	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
009828292-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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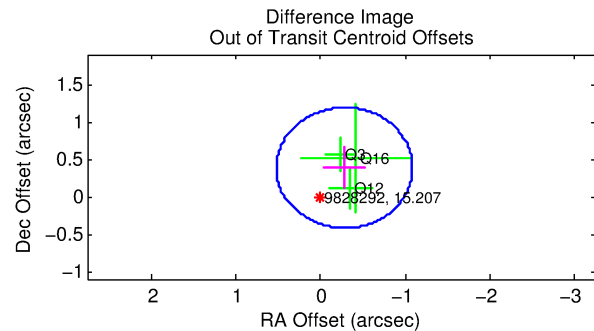
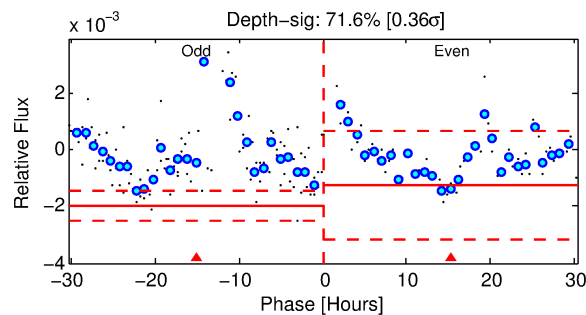
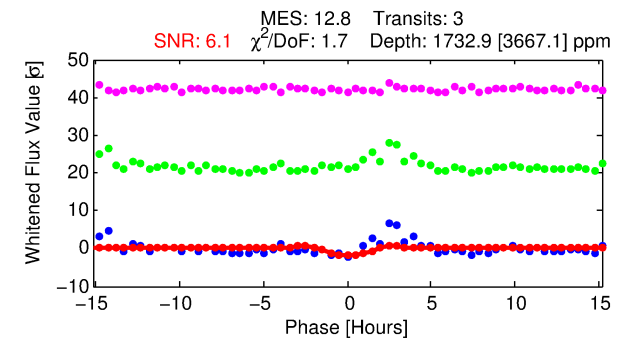
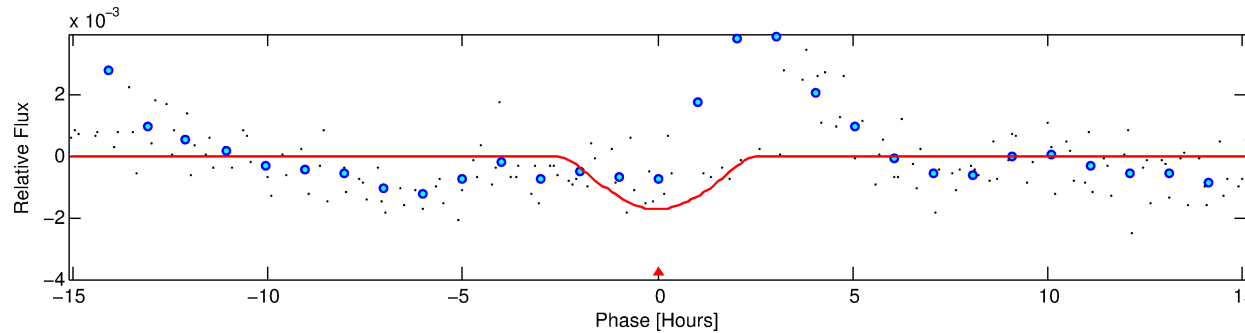
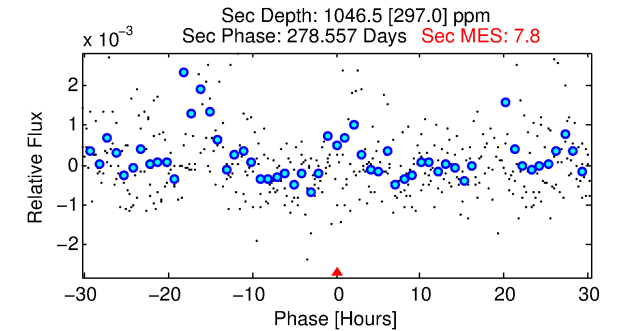
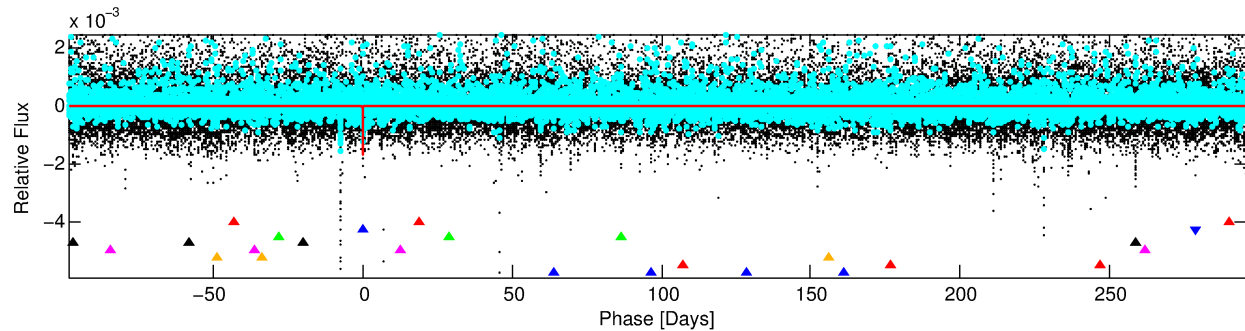
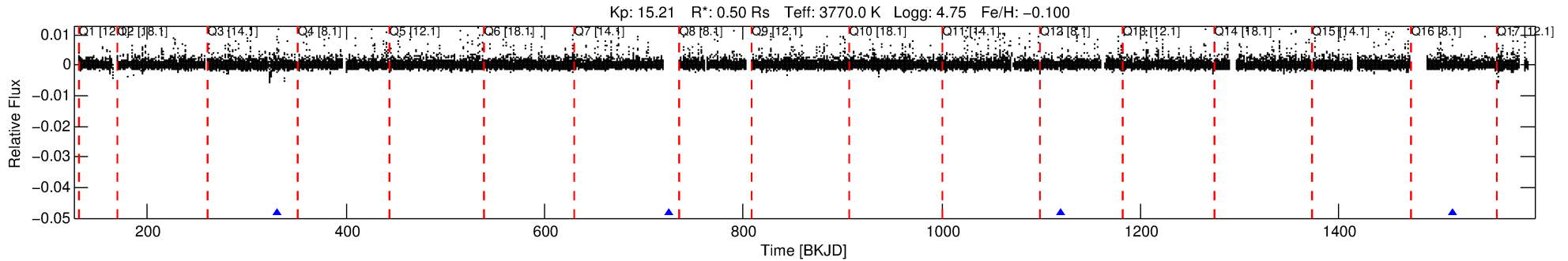
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009828292-02

No Significant Match Found

DV One-Page Summary

KIC: 9828292 Candidate: 2 of 8 Period: 394.581 d



DV Fit Results:

Period = 394.58056 [0.00986] d
Epoch = 331.3602 [0.0215] BKJD
Rp/R* = 0.0741 [0.5455]
a/R* = 234.57 [369.15]
b = 1.00 [0.67]
Seff = 0.06 [0.01]
Teq = 128 [4] K
Rp = 4.03 [29.71] Re
a = 0.8398 [0.0663] AU
Ag = 24964.66 [367792.22] [0.07σ]
Teffp = 2492 [9177] K [0.26σ]

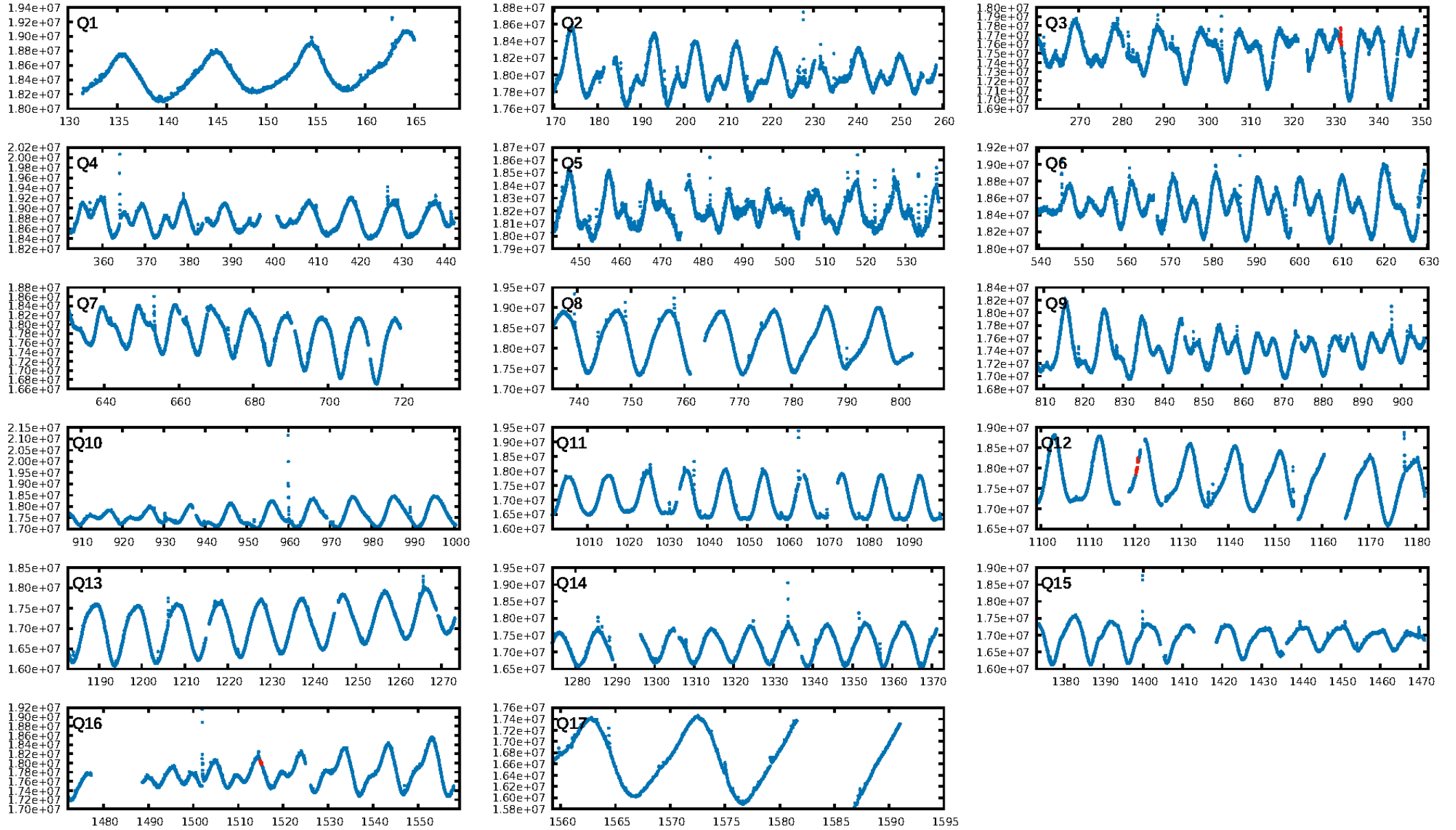
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [95.33σ]
LongPeriod-sig: 100.0% [106.34σ]
ModelChiSquare2-sig: 10.3%
ModelChiSquareGof-sig: 65.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -15.86
Centroid-sig: 27.8%
Centroid-so: 0.753 arcsec [0.67σ]
OotOffset-rm: 0.478 arcsec [1.79σ]
KicOffset-rm: 0.156 arcsec [0.59σ]
OotOffset-st: 0.1/2/0 [3]
KicOffset-st: 0.1/2/0 [3]
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DiffImageOverlap-fno: 1.00 [3/3]

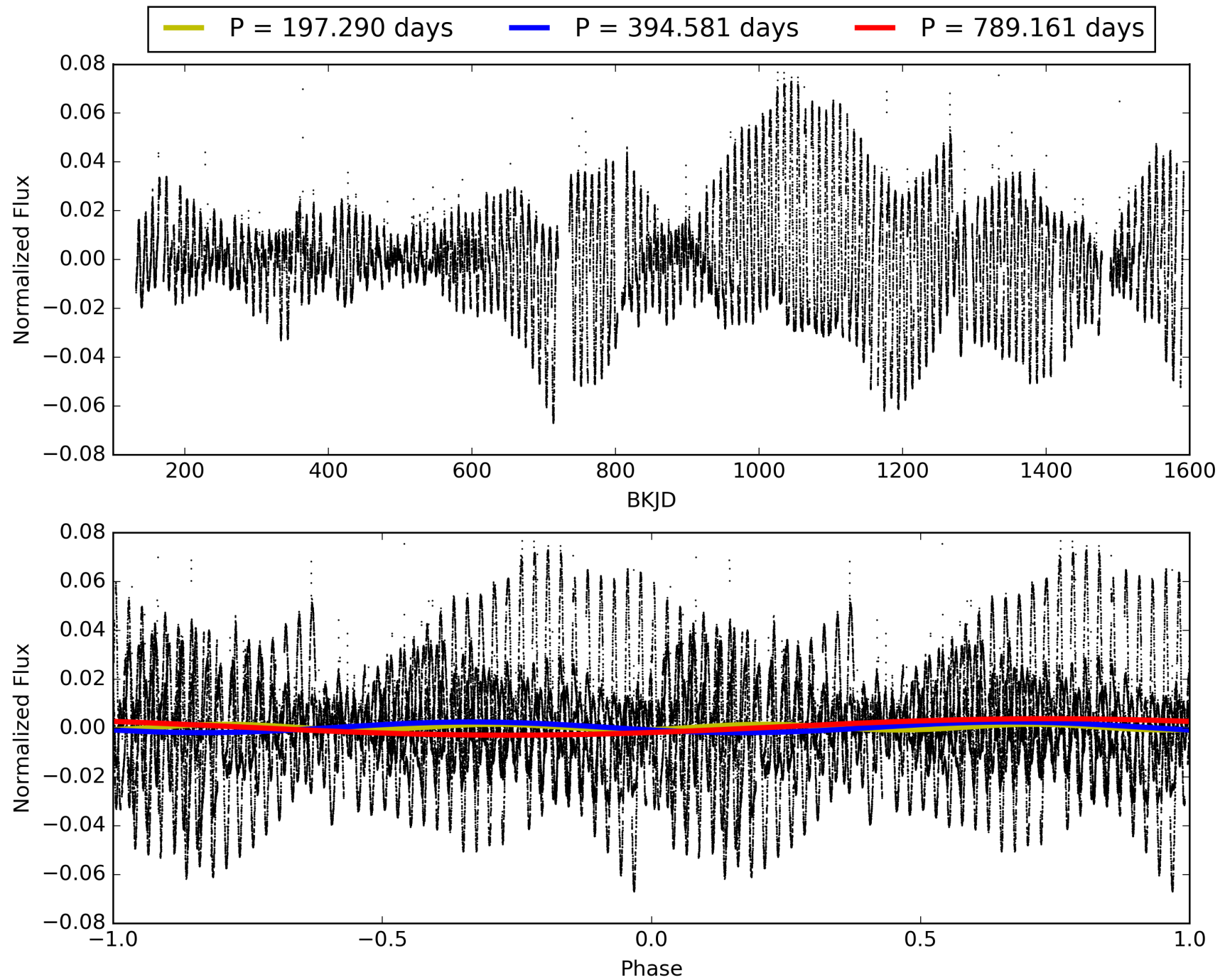
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009828292-02, PDC Light Curves

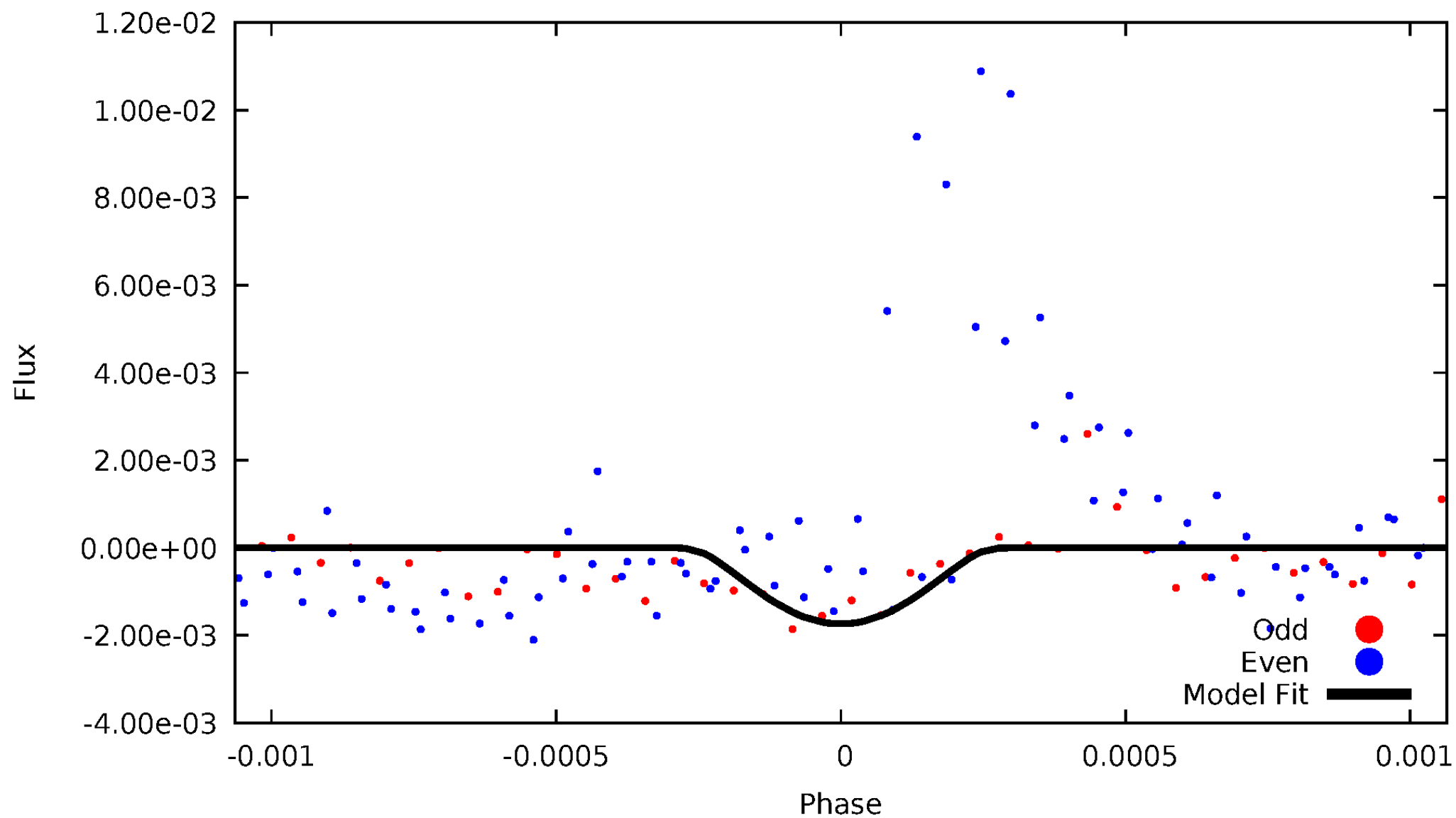


TCE 009828292-02



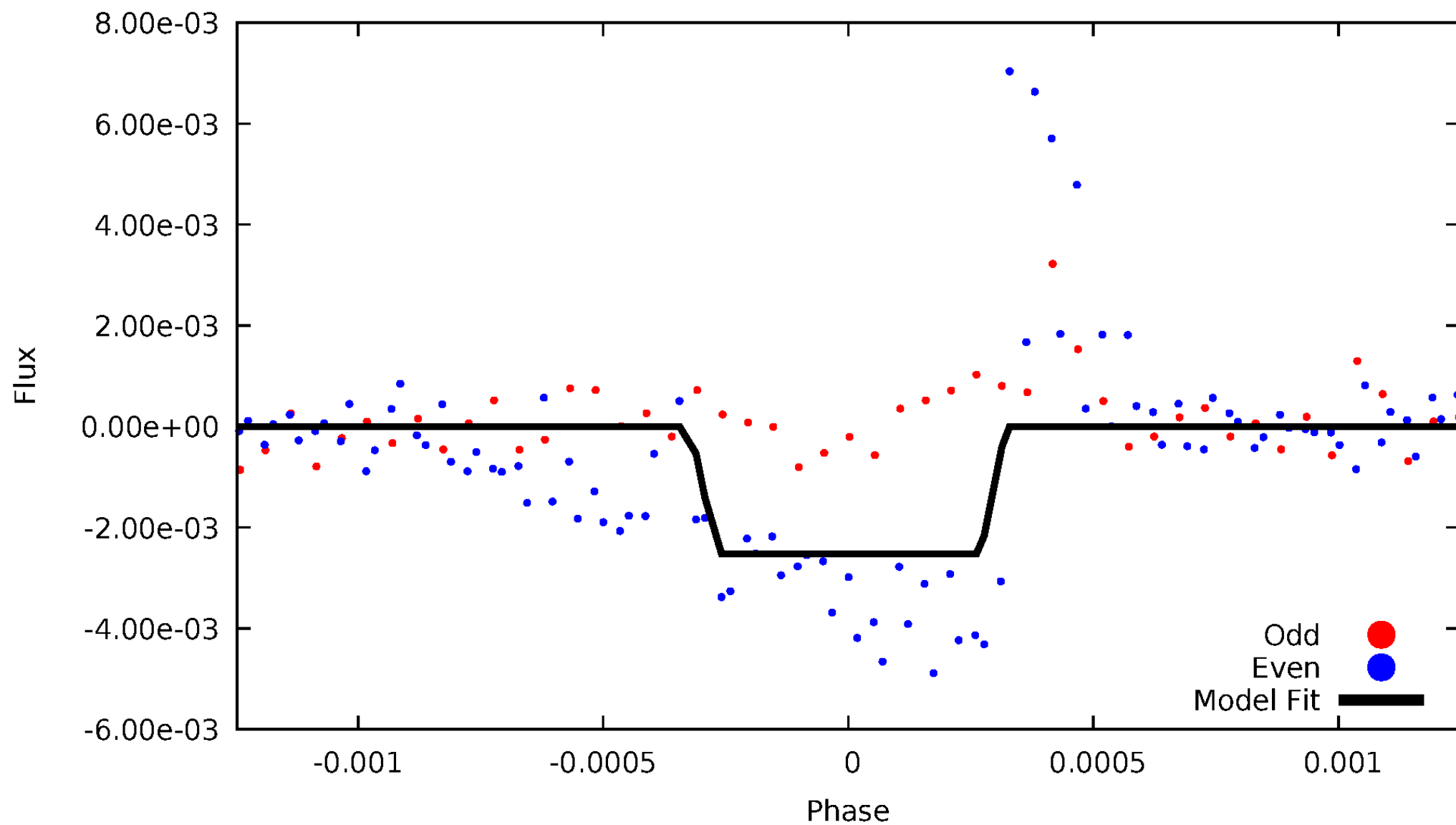
DV Odd/Even

TCE 009828292-02



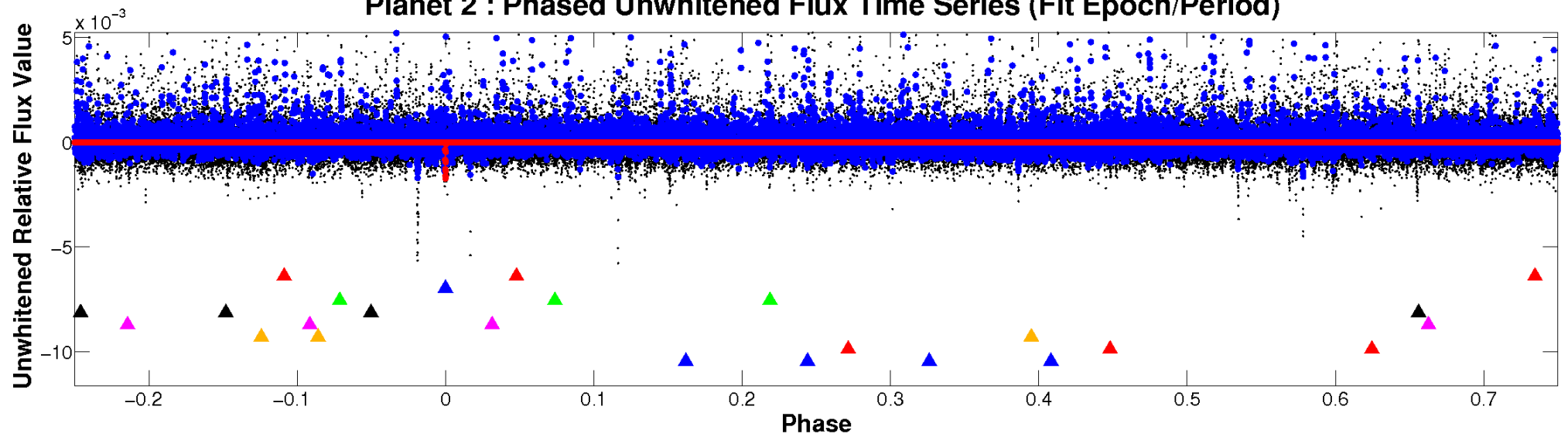
ALT Odd/Even

TCE 009828292-02

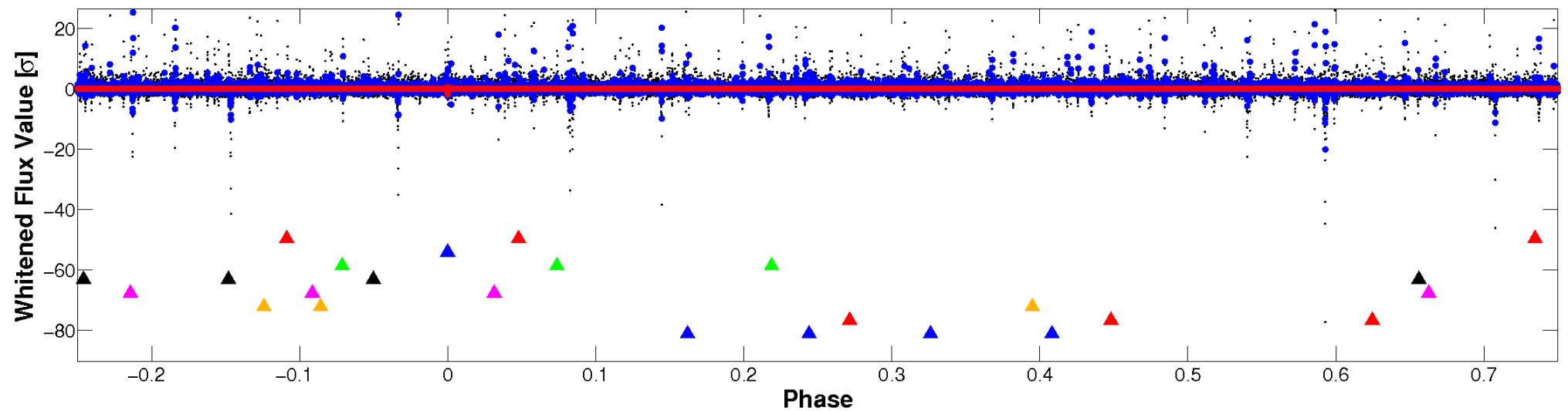


Non-Whitened Vs. Whitened Light Curve

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

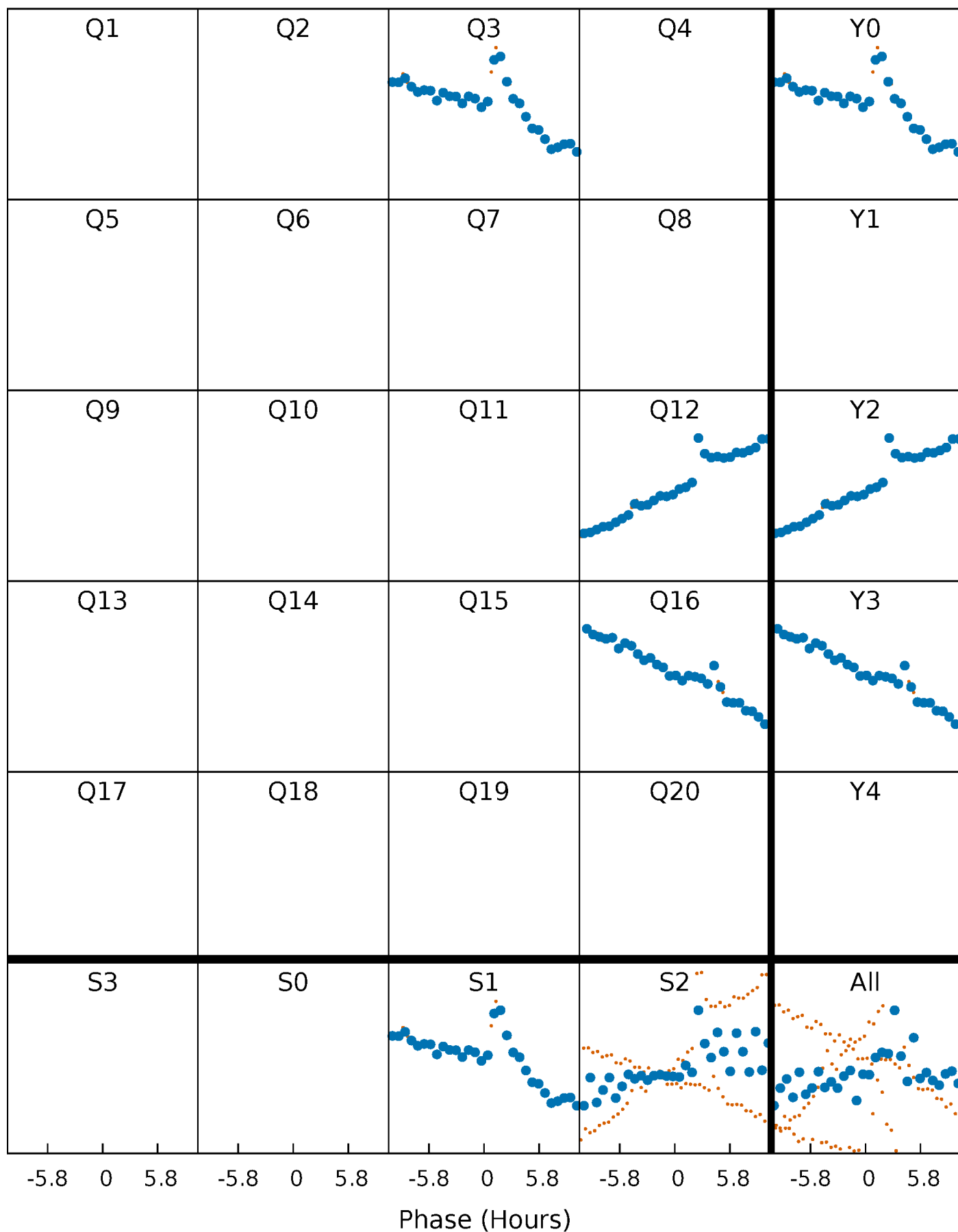


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



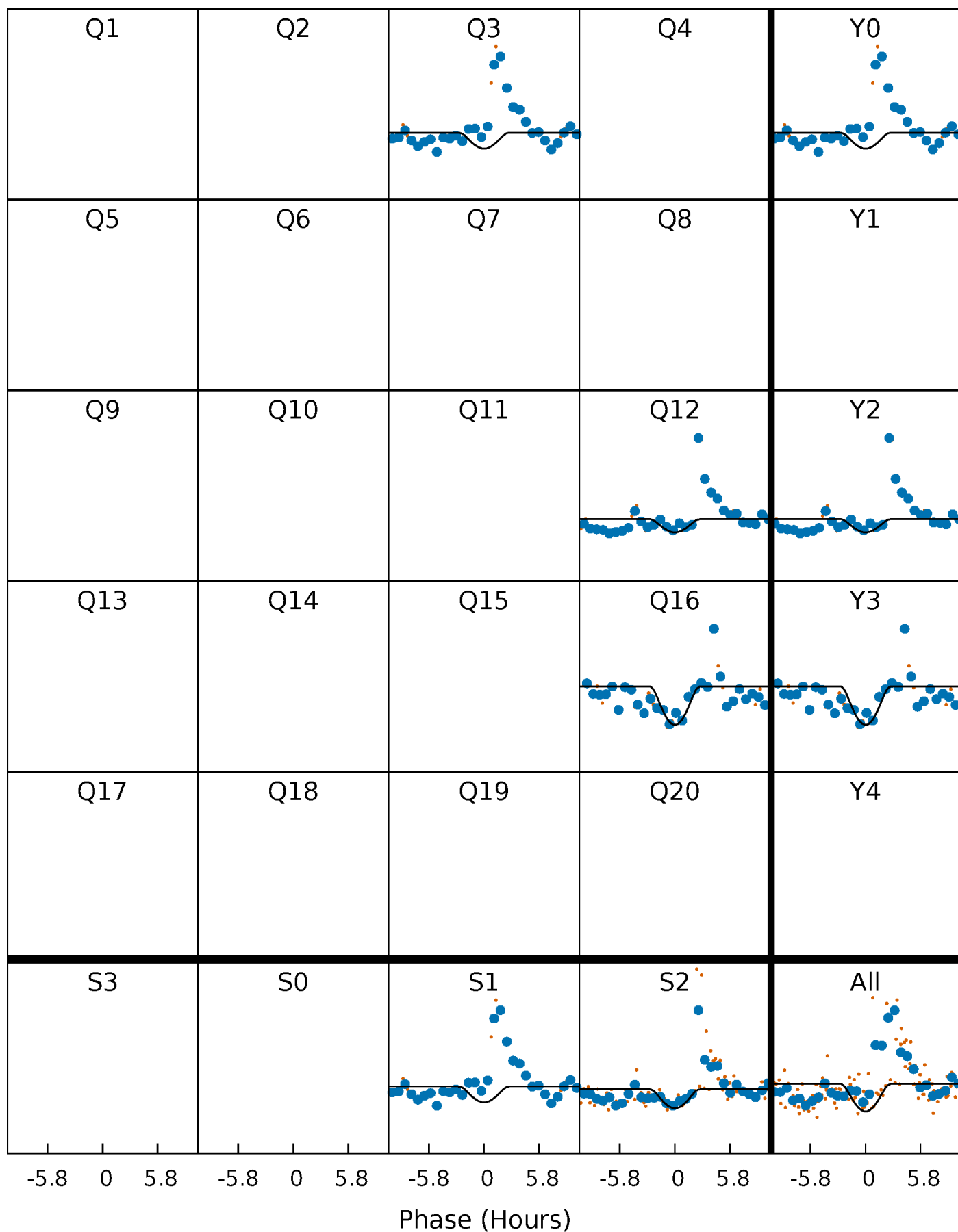
PDC Quarter-Phased Transit Curves

TCE 009828292-02 $P=394.580557$ Days $T_0=331.360225$ (BKJD)



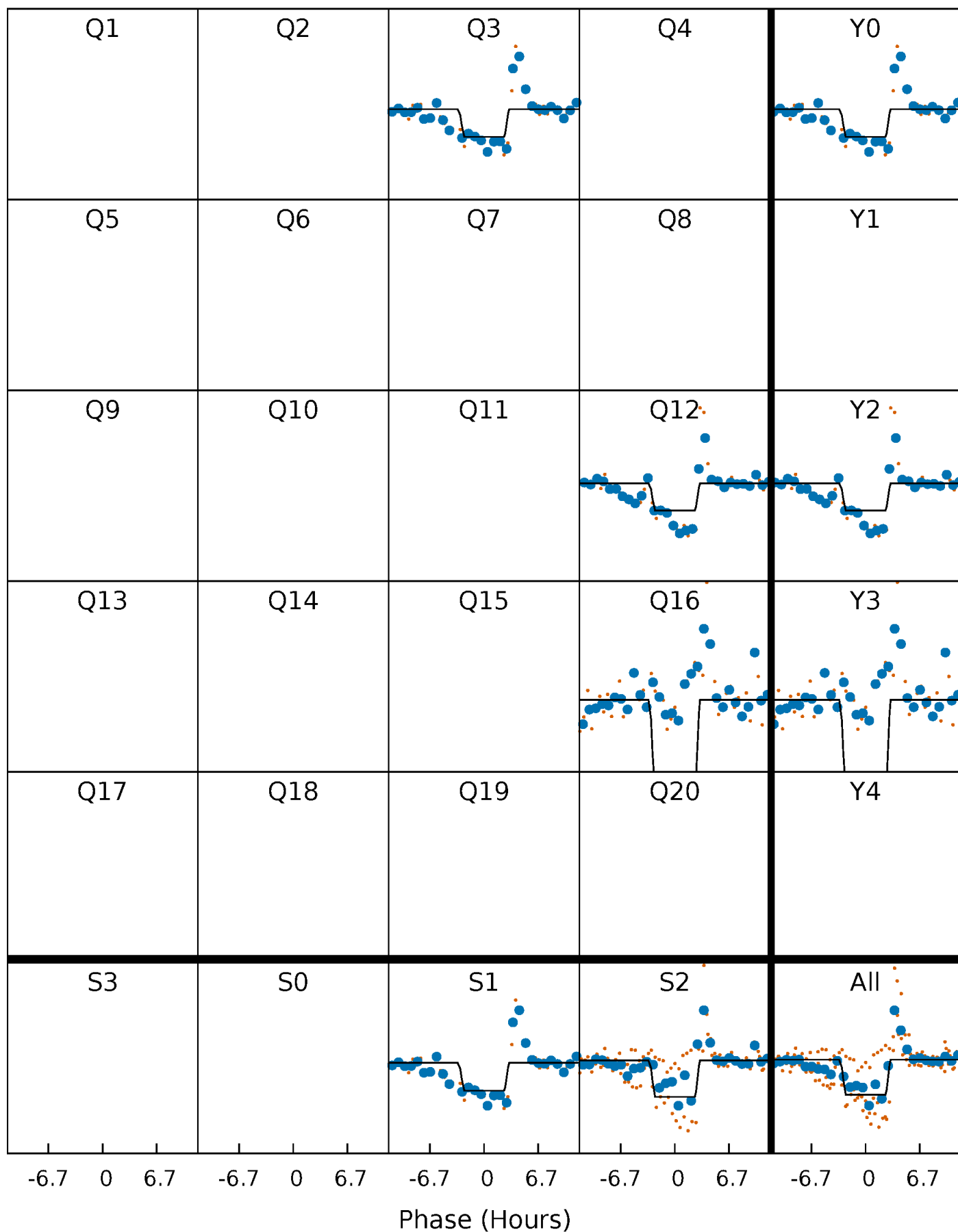
DV Quarter-Phased Transit Curves

TCE 009828292-02 $P=394.580557$ Days $T_0=331.360225$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

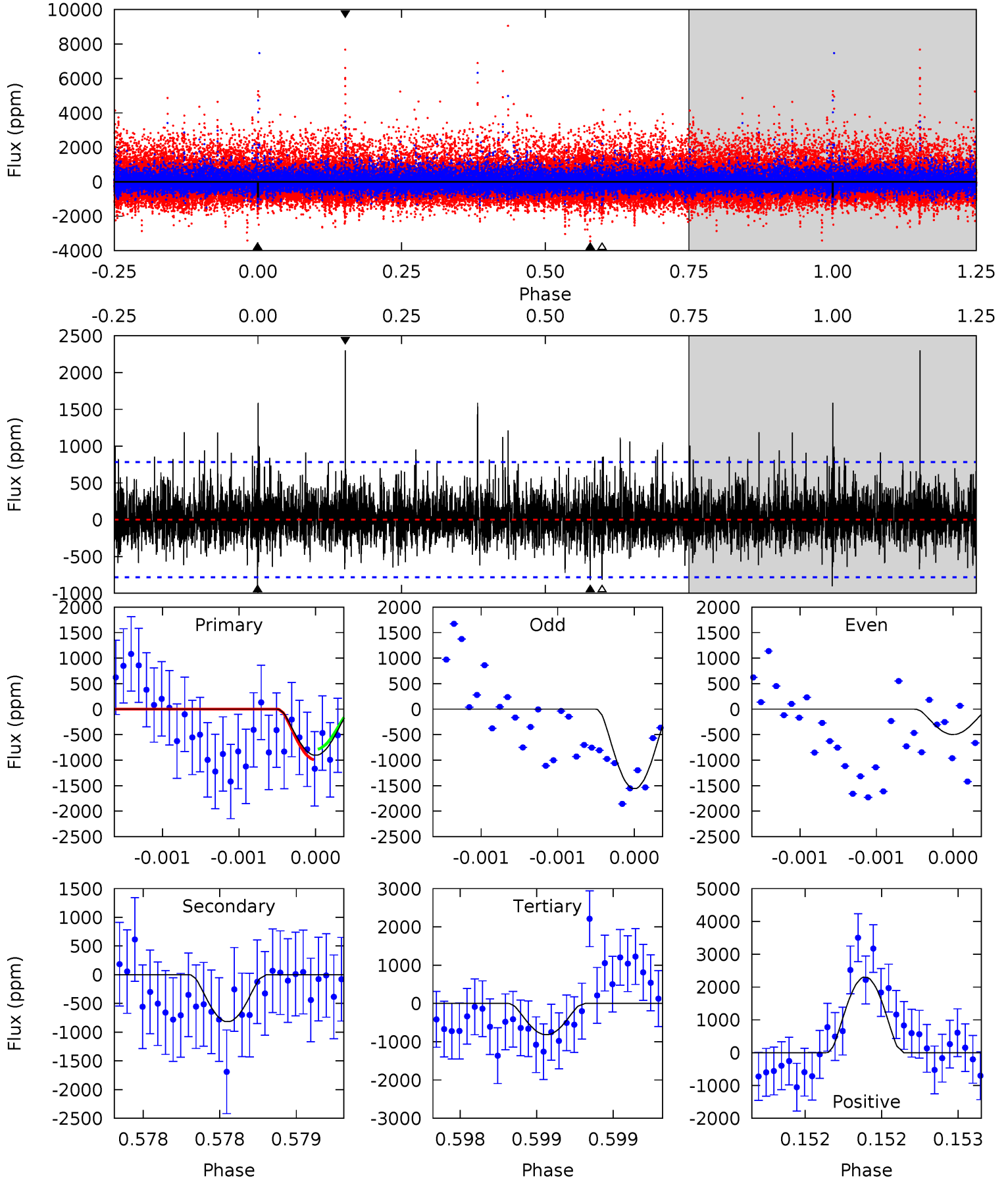
TCE 009828292-02 $P=394.619722$ Days $T_0=331.249212$ (BKJD)



DV Model-Shift Uniqueness Test

009828292-02, P = 394.580557 Days, E = 331.360225 Days

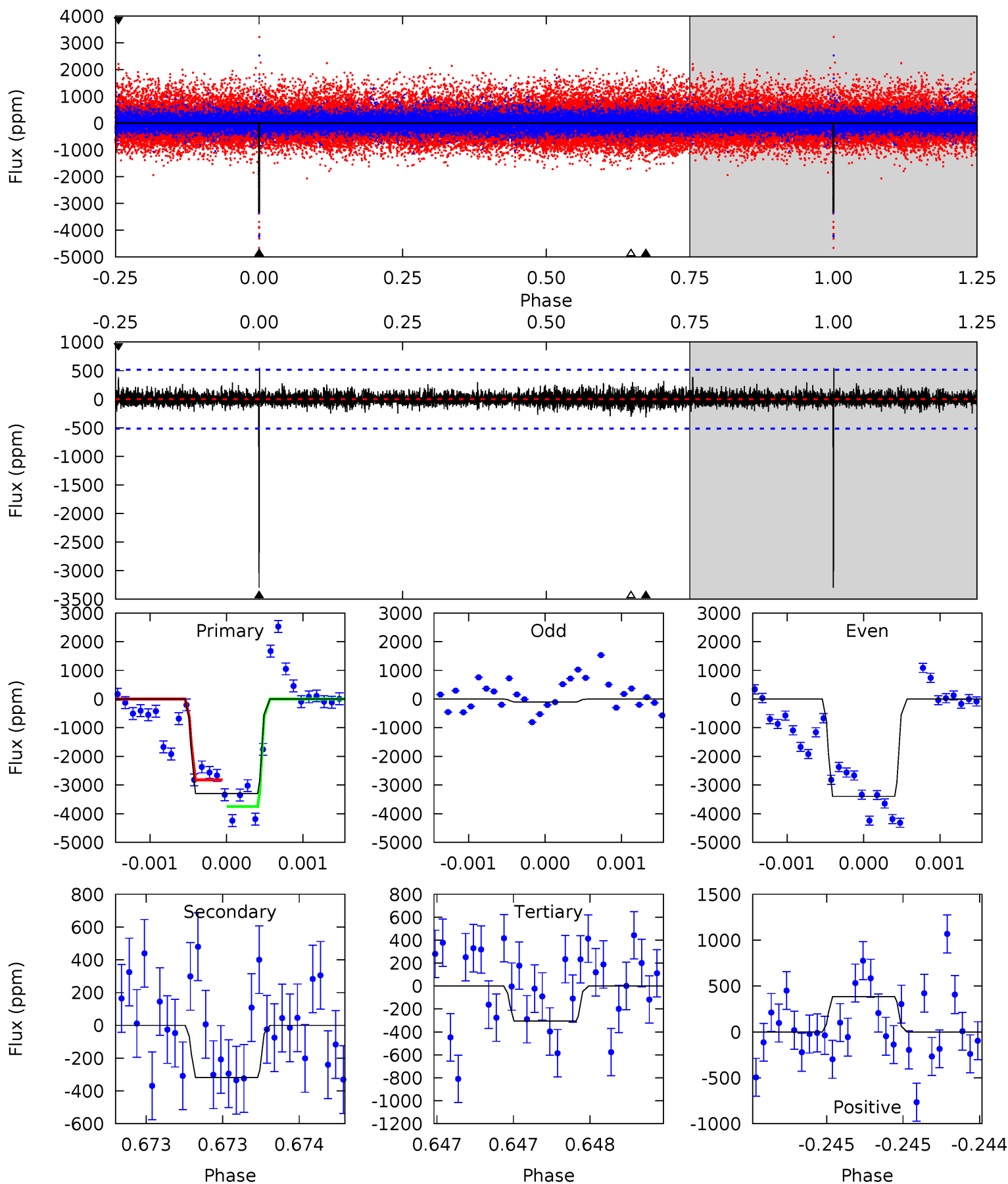
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.40	5.79	5.78	16.3	5.55	3.45	1.60	0.62	-9.90	0.00	-10.5	2.99	-0.18	0.72	0.72



Alt Model-Shift Uniqueness Test

009828292-02, P = 394.619722 Days, E = 331.249212 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.4	3.42	3.28	4.12	5.53	3.42	0.72	32.1	31.3	0.14	-0.70	20.4	0.73	0.14	5.04



Stellar Parameters For KIC 009828292

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3770^{+76}_{-83}	$4.747^{+0.052}_{-0.032}$	$-0.100^{+0.200}_{-0.200}$	$0.499^{+0.037}_{-0.051}$	$0.508^{+0.043}_{-0.043}$	$5.743^{+1.418}_{-0.785}$
	+2%/-2%	+1%/-1%	+200%/-200%	+7%/-10%	+8%/-8%	+25%/-14%
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 009828292-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-816 ± 141	$22.78^{+23.04}_{-15.55}$	178^{+5}_{-5}	1901^{+540}_{-234}	610^{+5368}_{-466}
Alt.	-318 ± 93	$21.28^{+21.81}_{-14.66}$	178^{+5}_{-5}	1756^{+477}_{-212}	264^{+2860}_{-202}

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 $A_{obs} \gg 1.0$

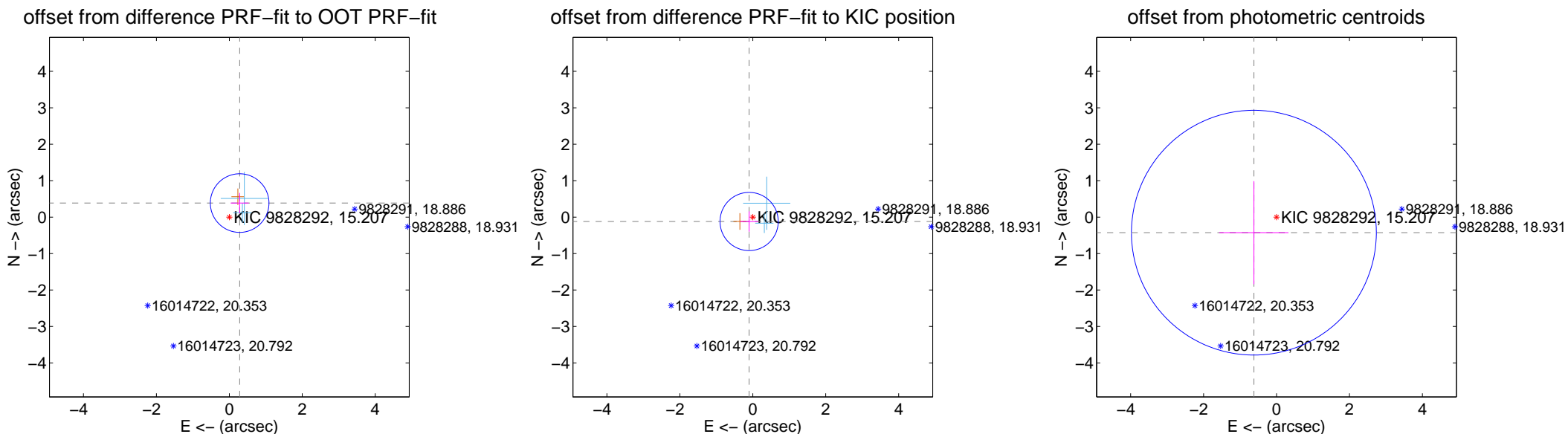
DV Centroid Data

Supplemental centroid analysis for 009828292-02. Kepler magnitude: 15.21. Transit SNR 6.12

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.478 ± 0.268	1.79	-0.283 ± 0.248	0.386 ± 0.278
PRF-fit source offset from KIC position	0.156 ± 0.266	0.59	0.101 ± 0.248	-0.120 ± 0.278
photometric centroid source offset	0.75 ± 1.12	0.67	0.62 ± 0.95	-0.43 ± 1.41



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



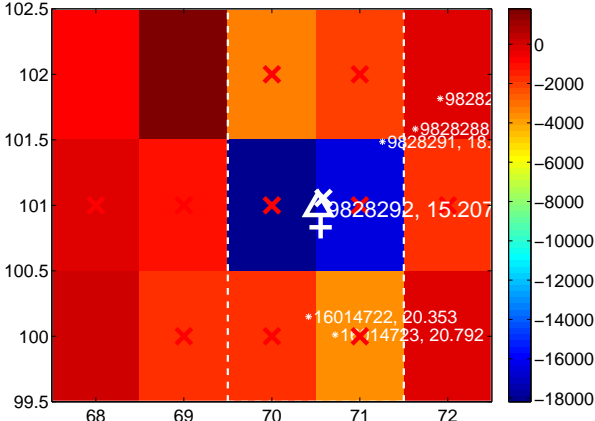
Q2 no difference image



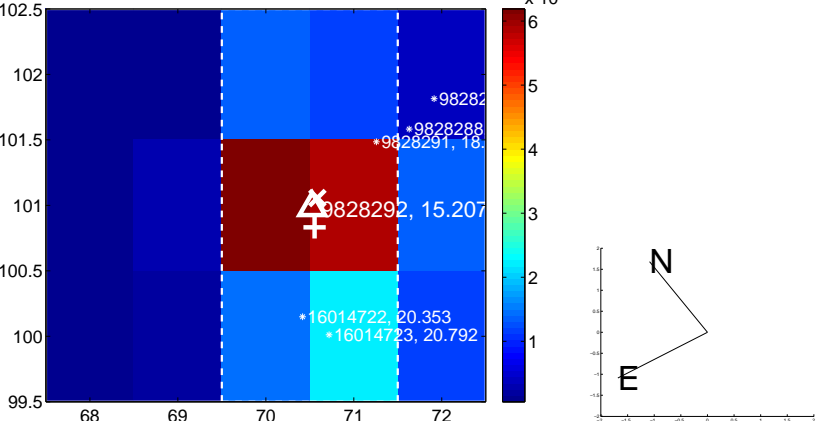
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



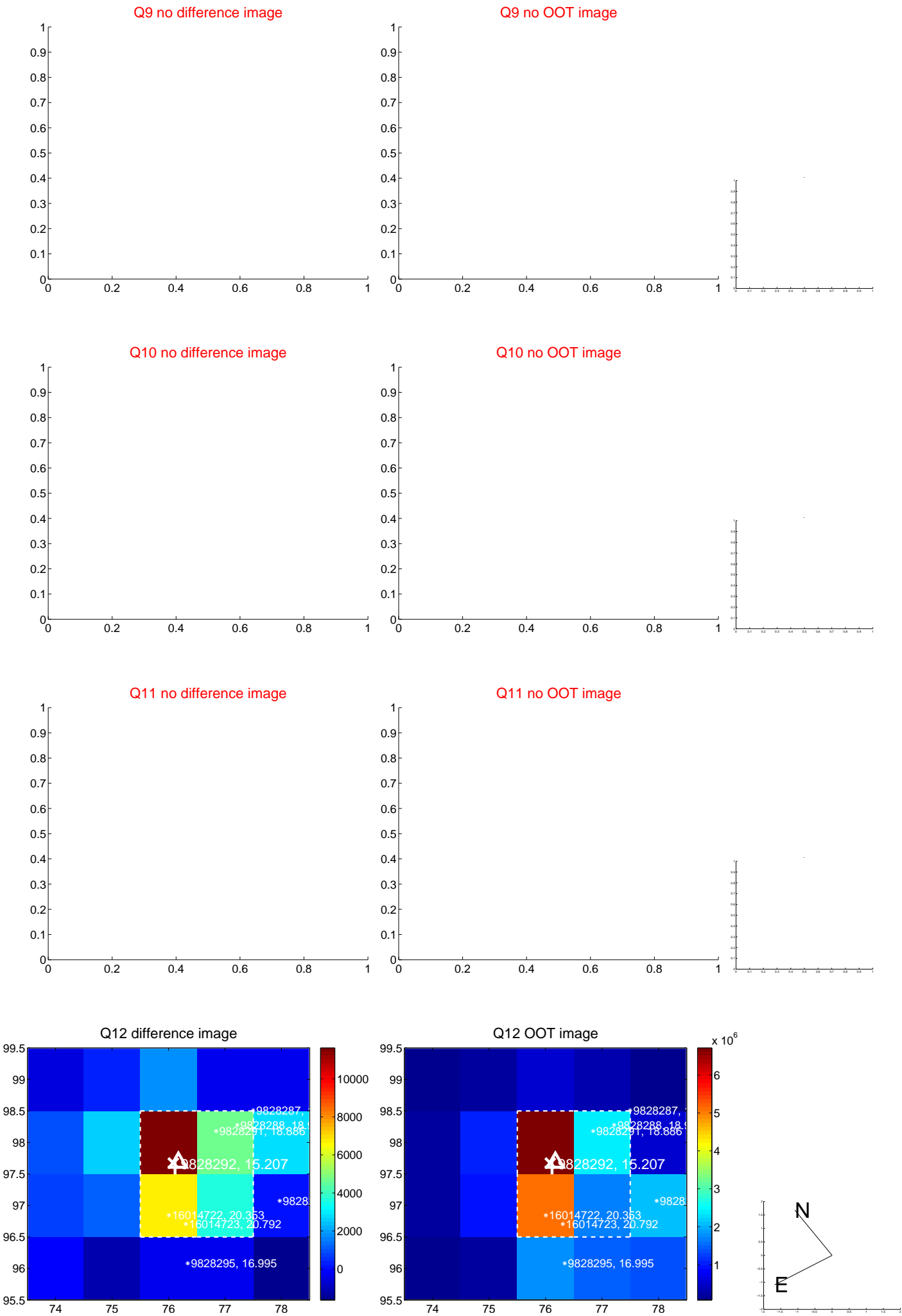
Q4 no OOT image



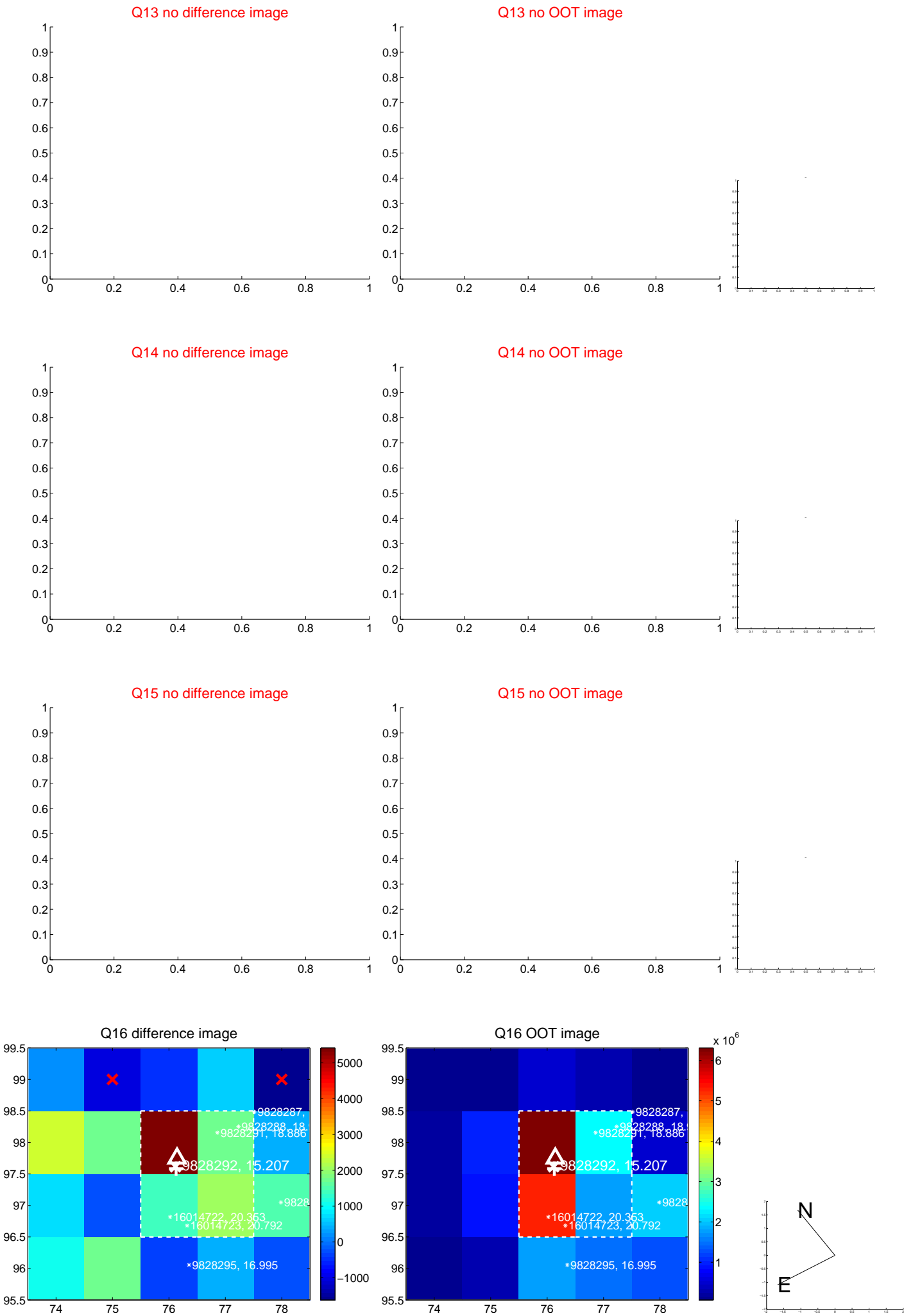
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



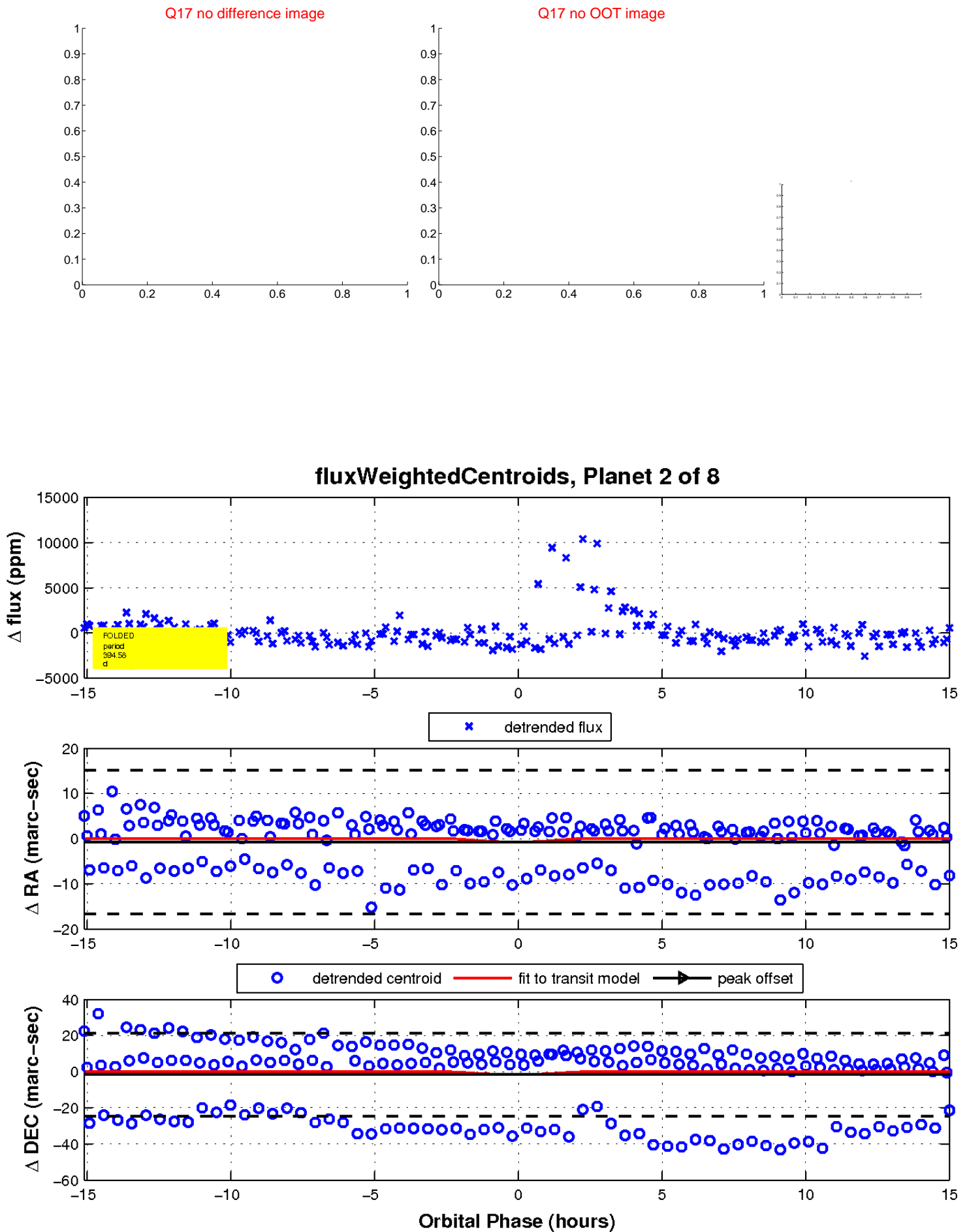
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

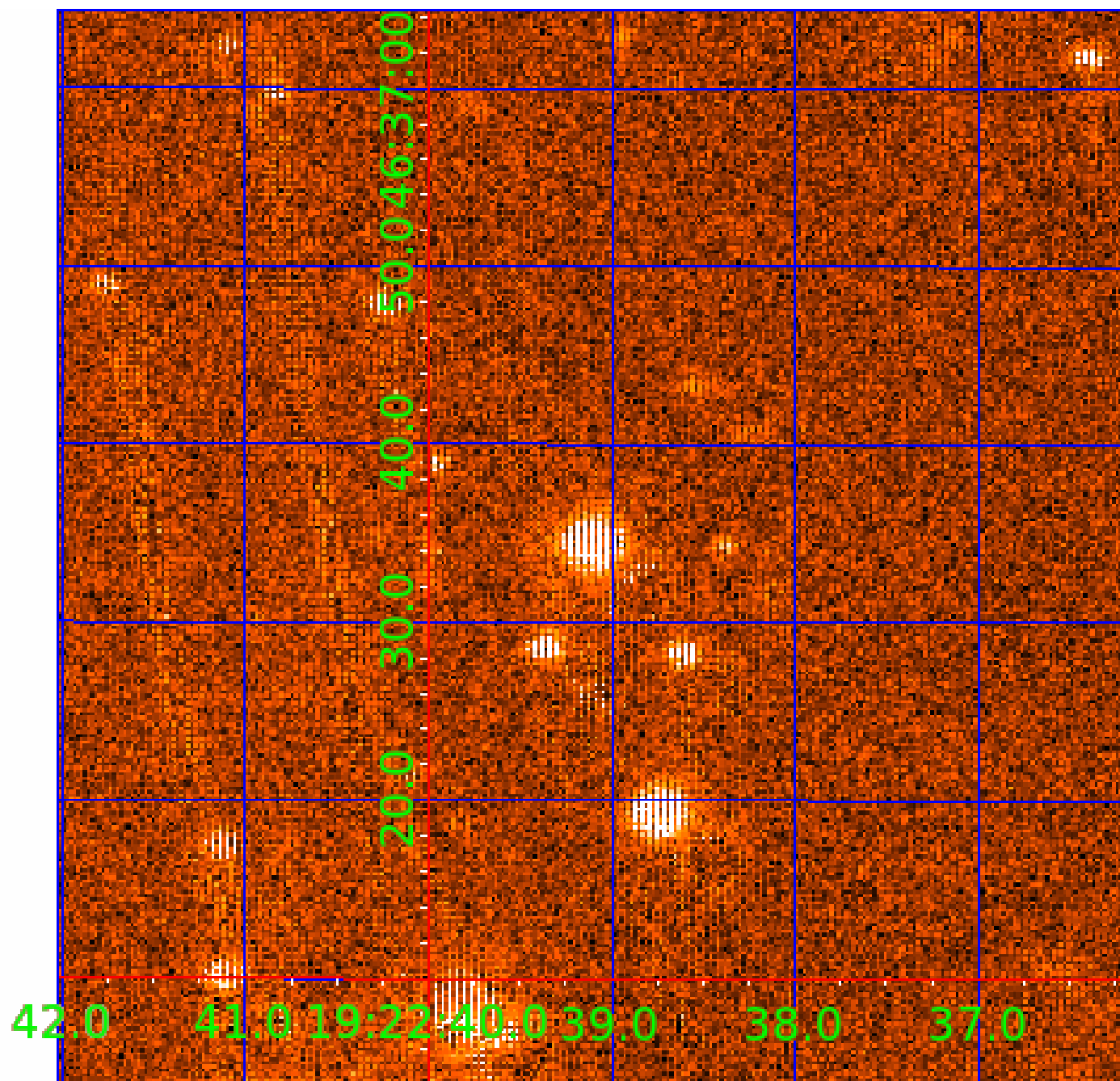


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009828292

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})
009828292-01	OBS	No	456.395440	226.630135	2292.6	3.184	15.1	8.8	0.50	3770	2.48	0.05
009828292-02	OBS	No	394.580557	331.360225	1732.9	5.037	12.8	6.1	0.50	3770	4.03	0.06
009828292-03	OBS	No	451.812350	303.232715	2699.1	12.717	13.8	10.5	0.50	3770	2.56	0.05
009828292-04	OBS	No	355.949501	311.554031	1178.2	5.951	12.5	5.3	0.50	3770	1.74	0.07
009828292-05	OBS	No	443.072993	198.285203	1281.8	9.717	12.4	6.3	0.50	3770	1.83	0.06
009828292-06	OBS	No	584.317830	297.477088	1996.9	4.724	11.7	7.2	0.50	3770	2.26	0.04
009828292-07	OBS	No	464.236807	438.505716	1411.1	14.883	10.3	5.5	0.50	3770	1.89	0.05
009828292-08	OBS	No	362.205290	492.439911	1650.1	6.408	10.5	7.0	0.50	3770	3.95	0.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009828292-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009828292-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-04	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
009828292-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009828292-06	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
009828292-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

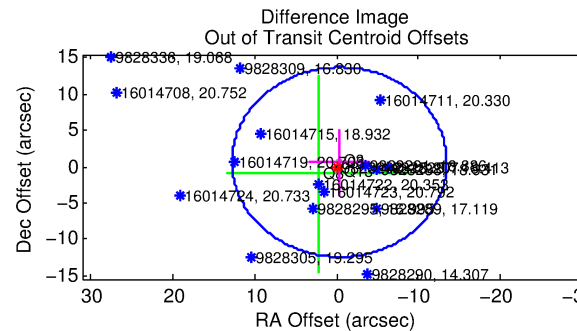
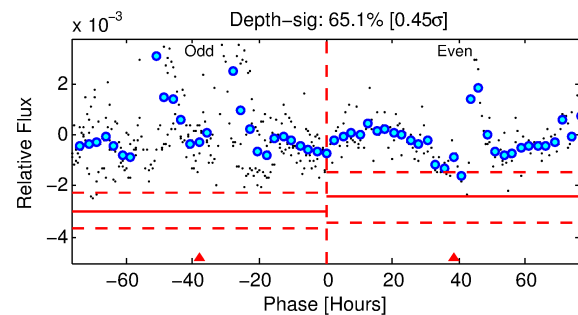
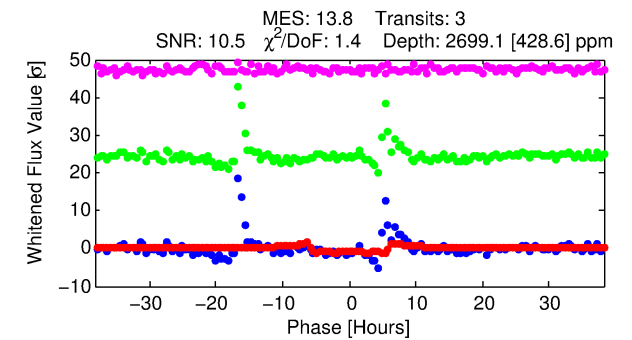
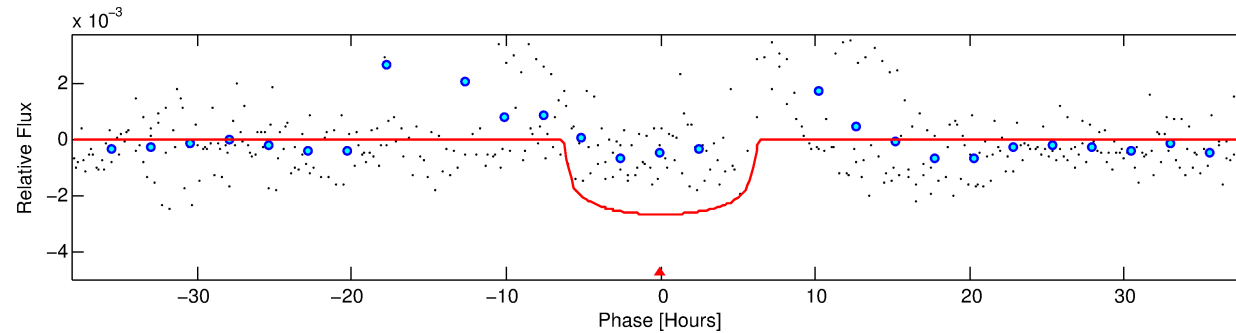
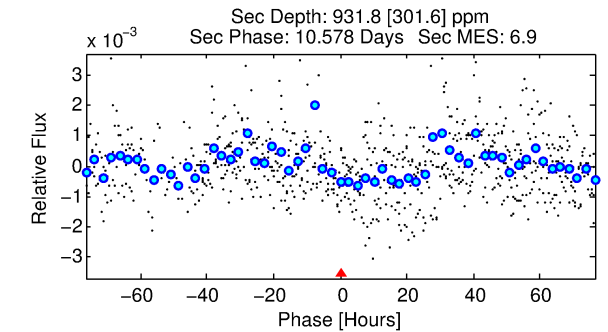
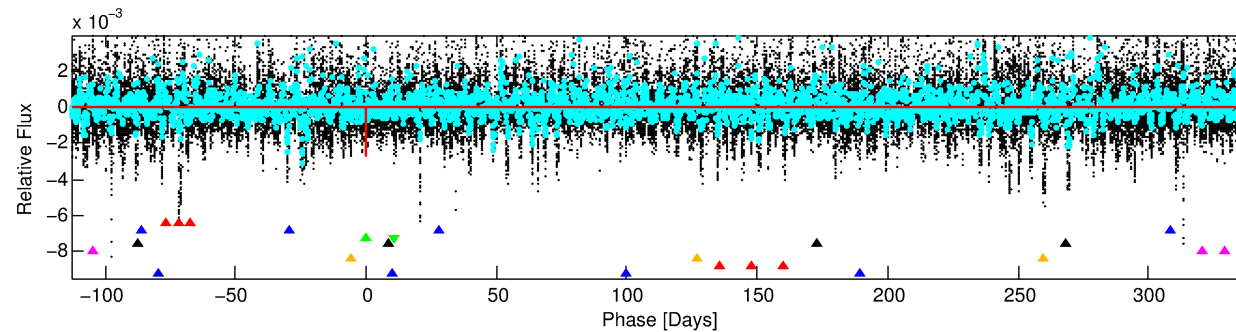
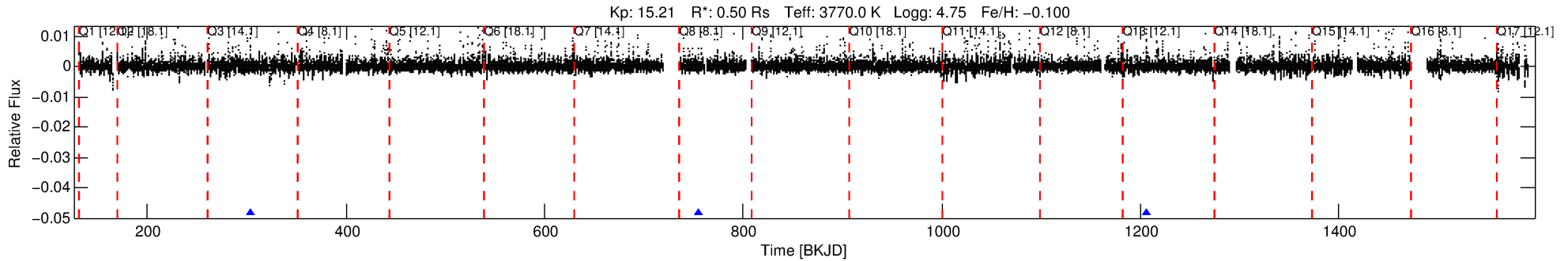
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009828292-03

No Significant Match Found

DV One-Page Summary

KIC: 9828292 Candidate: 3 of 8 Period: 451.812 d



DV Fit Results:

Period = 451.81235 [0.00864] d
Epoch = 303.2327 [0.0118] BKJD
Rp/R* = 0.0471 [0.0124]
a/R* = 284.12 [300.01]
b = 0.02 [44.30]
Seff = 0.05 [0.01]
Teq = 123 [4] K
Rp = 2.56 [0.73] Re
a = 0.9192 [0.0726] AU
Ag = 65850.87 [41356.00] [1.59σ]
Teffp = 3035 [475] K [6.14σ]

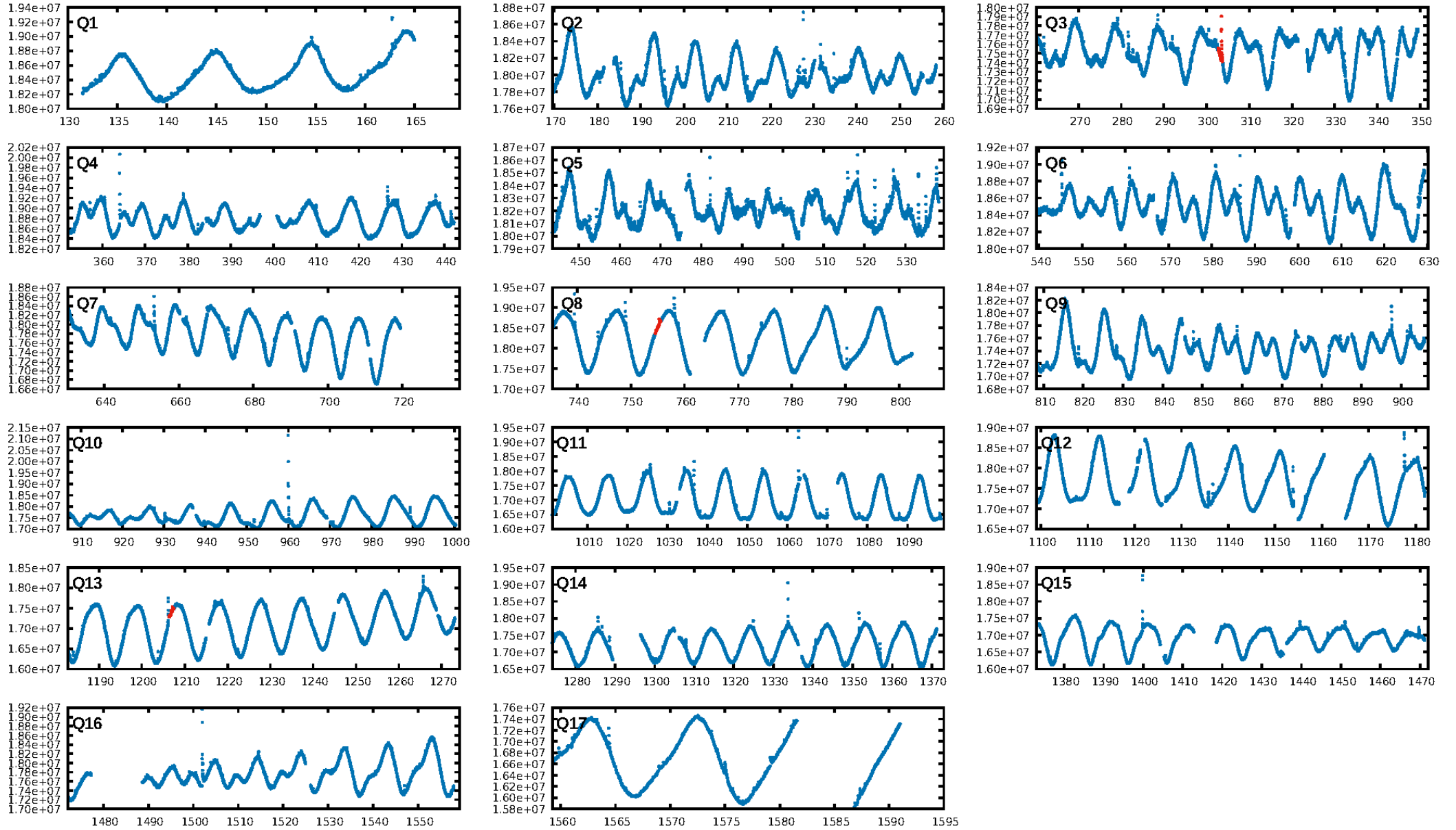
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [13.11σ]
LongPeriod-sig: 100.0% [8.39σ]
ModelChiSquare2-sig: 1.2%
ModelChiSquareGof-sig: 92.3%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.7408
Centroid-sig: 67.8%
Centroid-so: 0.962 arcsec [1.04σ]
OotOffset-rm: 0.711 arcsec [0.16σ]
KicOffset-rm: 0.268 arcsec [0.07σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

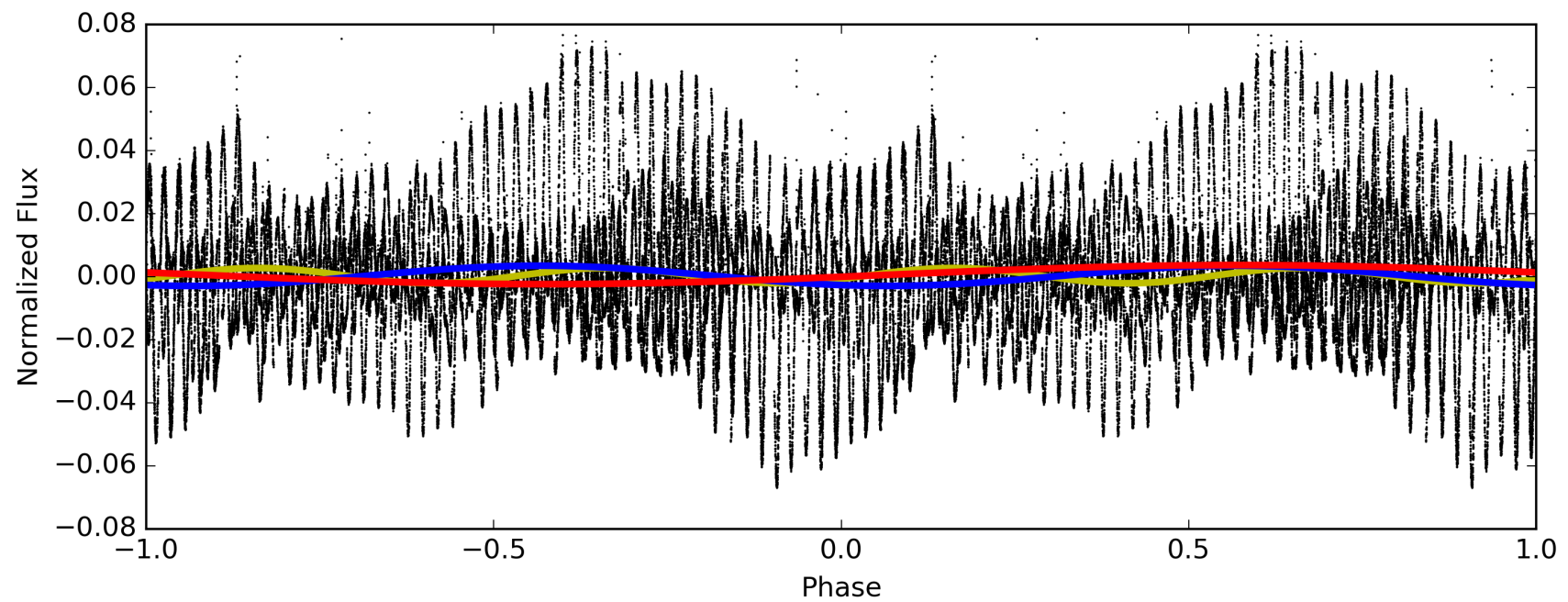
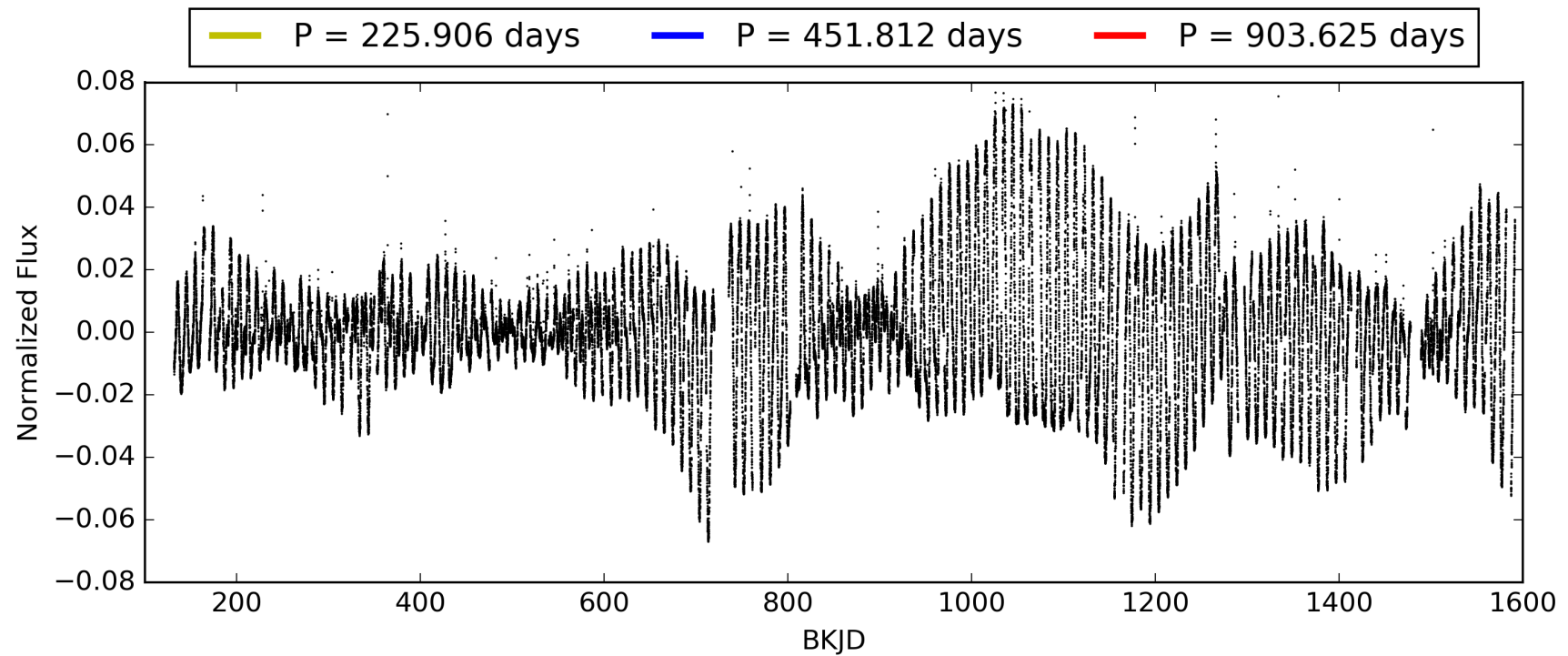
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:26:30 Z

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

TCE 009828292-03, PDC Light Curves

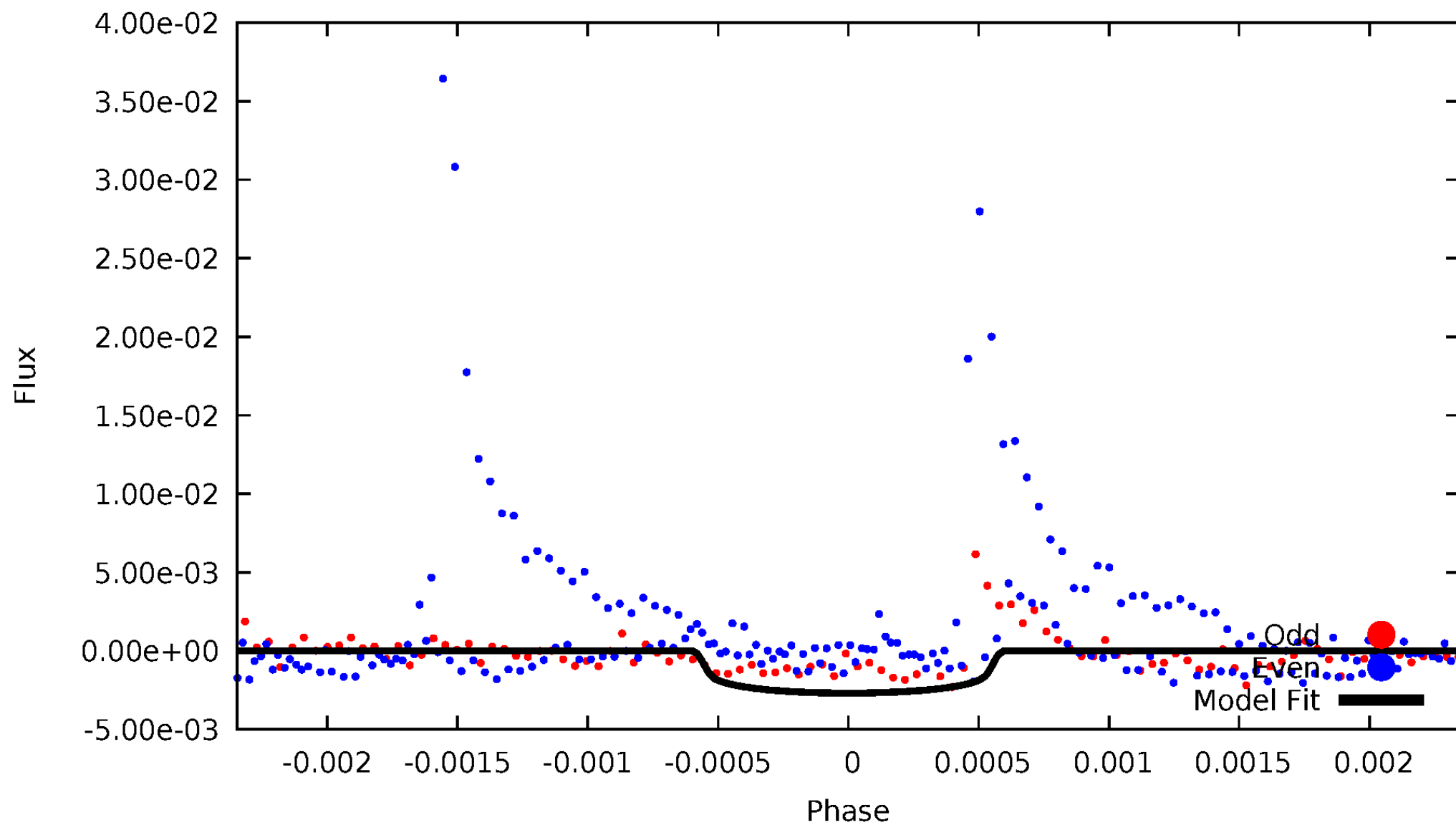


TCE 009828292-03



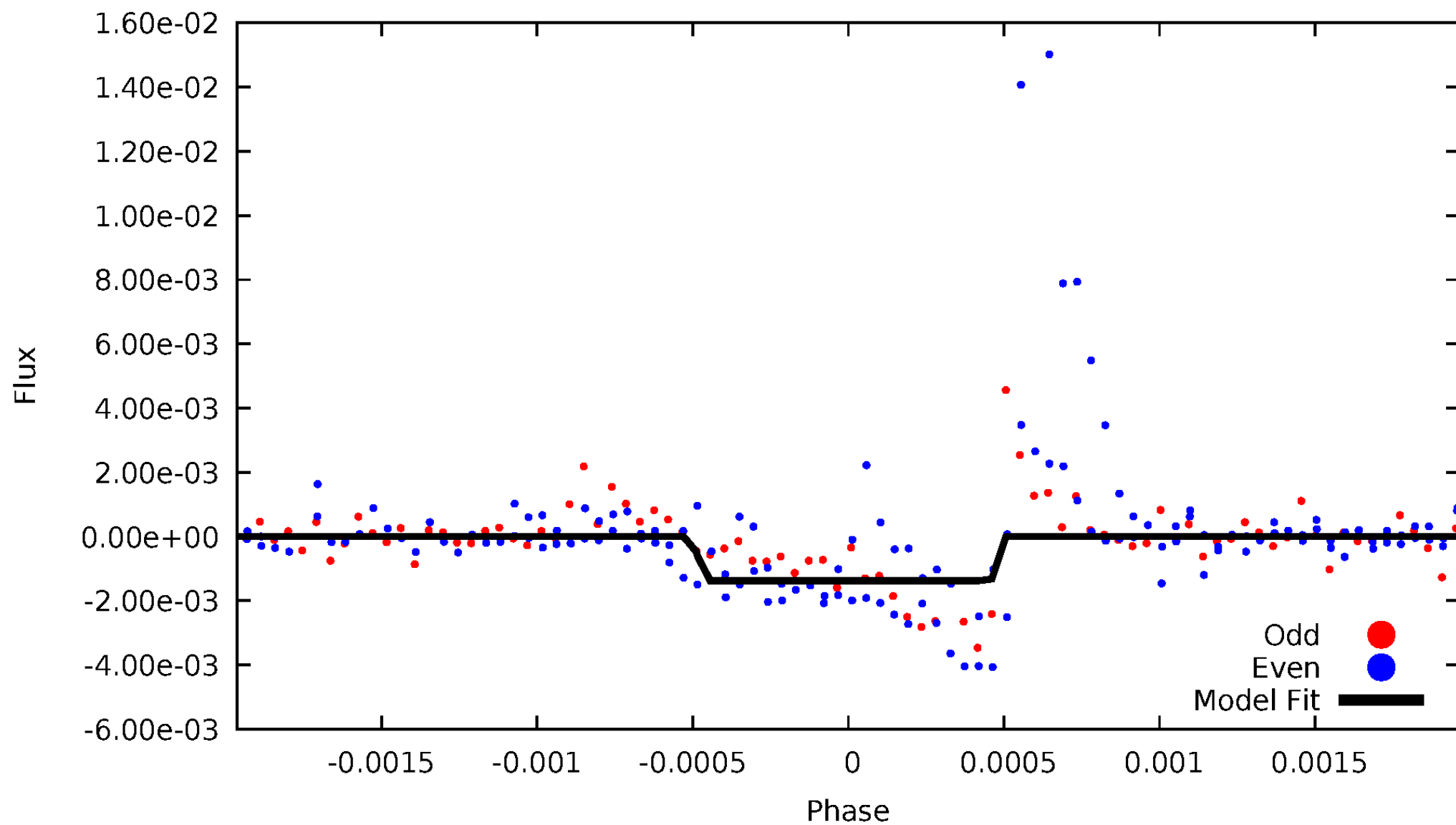
DV Odd/Even

TCE 009828292-03



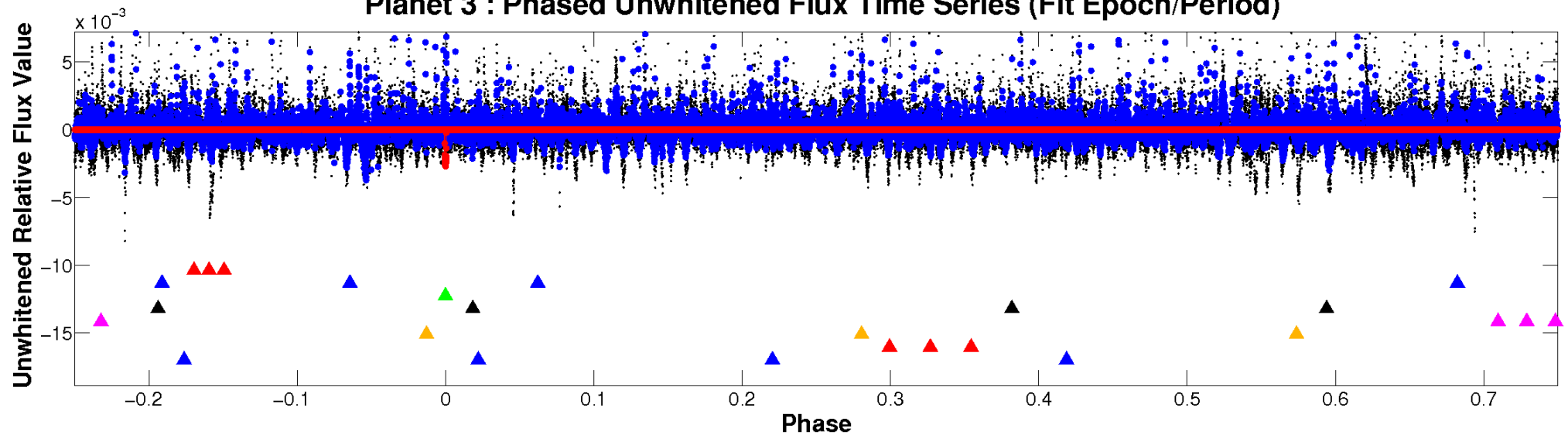
ALT Odd/Even

TCE 009828292-03

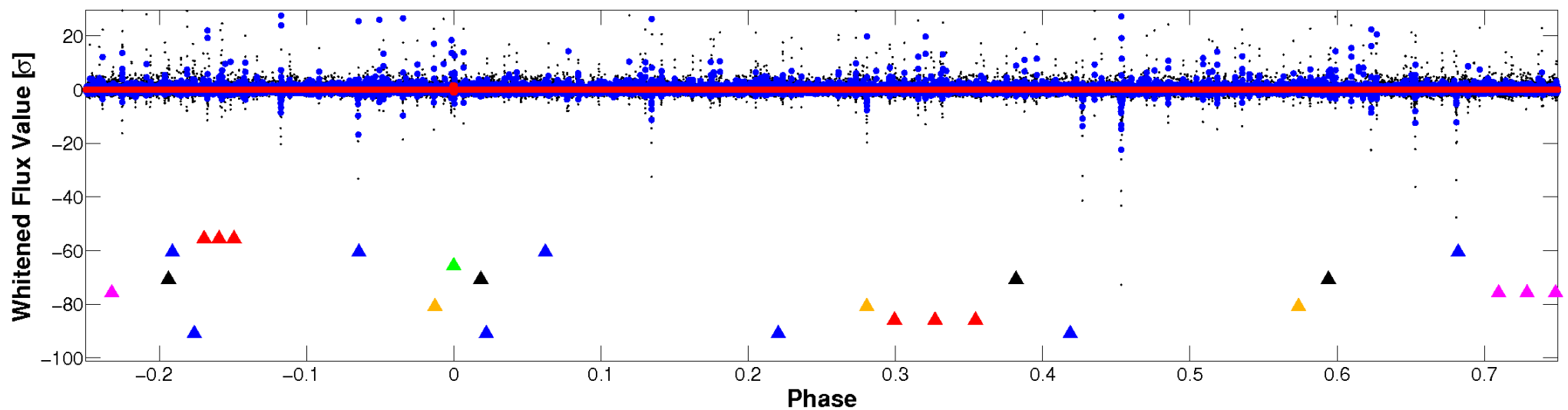


Non-Whitened Vs. Whitened Light Curve

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

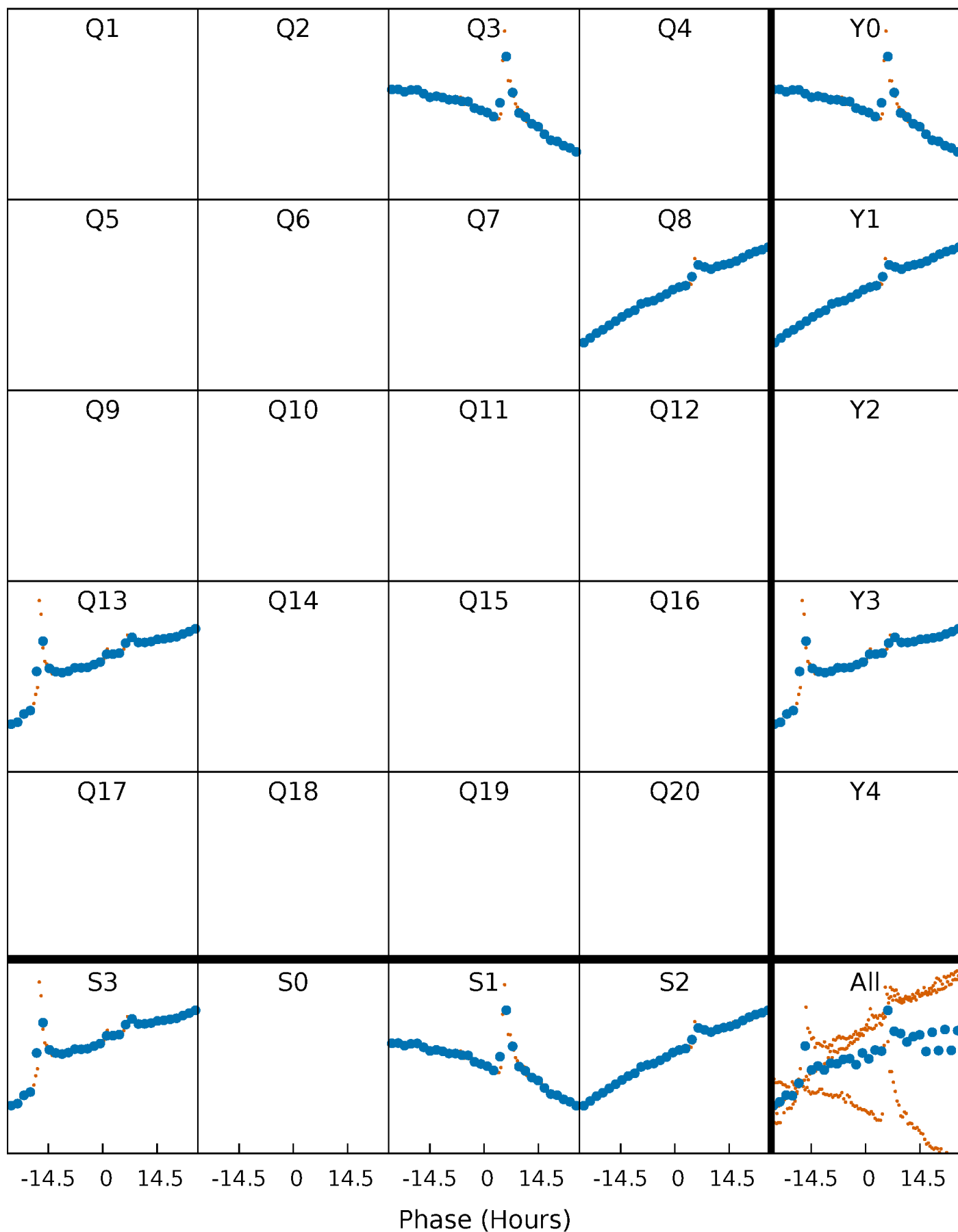


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



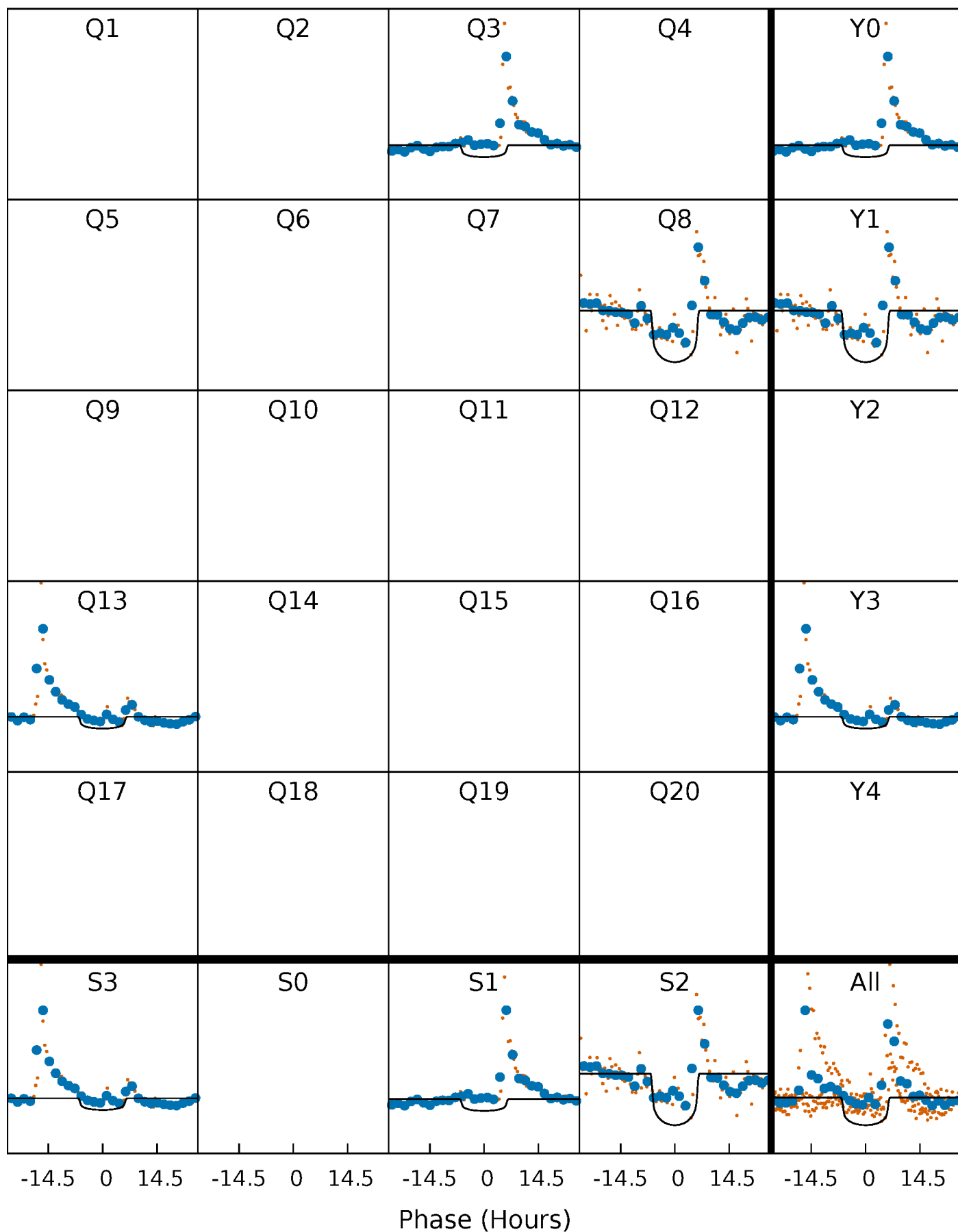
PDC Quarter-Phased Transit Curves

TCE 009828292-03 $P=451.812350$ Days $T_0=303.232715$ (BKJD)



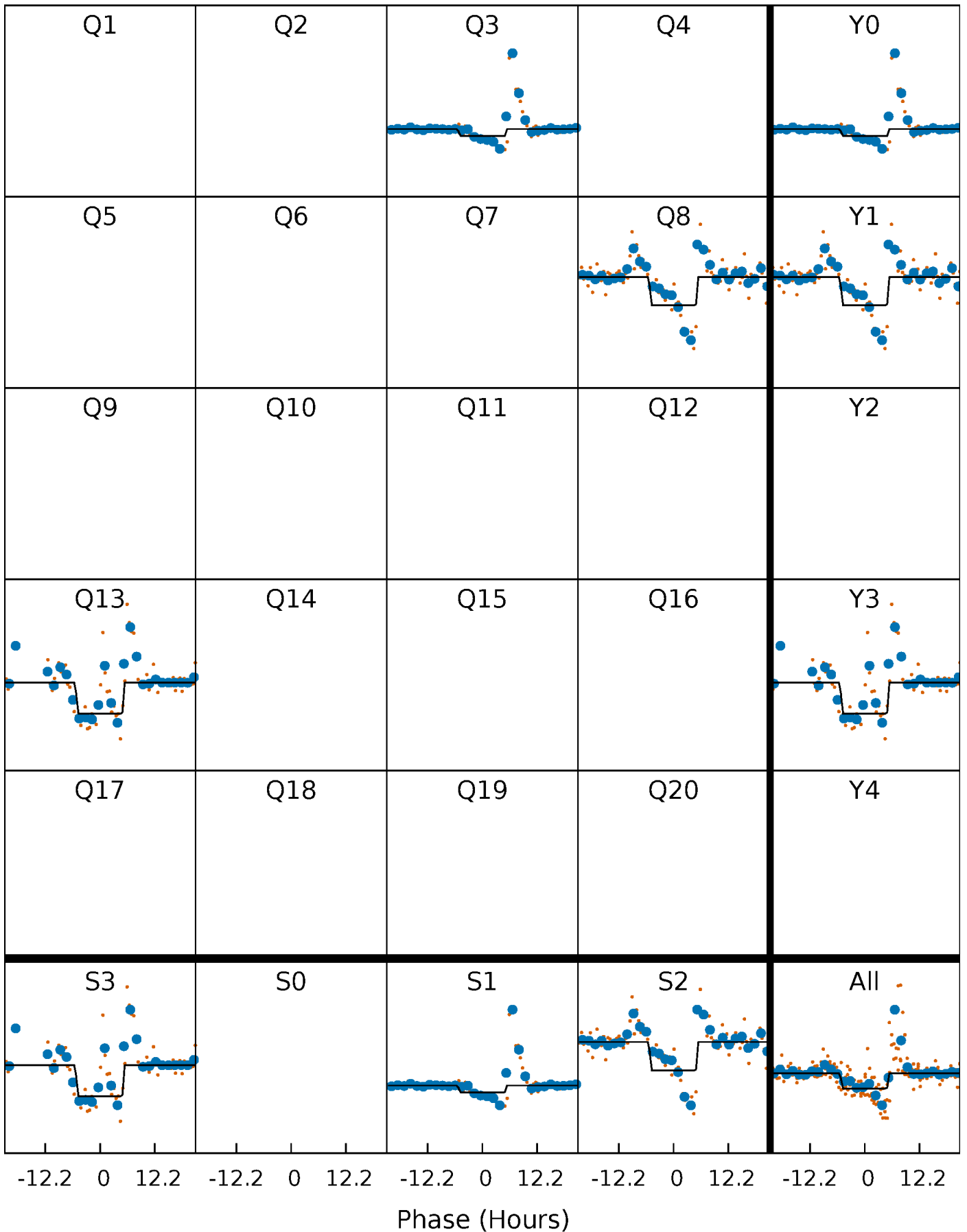
DV Quarter-Phased Transit Curves

TCE 009828292-03 $P=451.812350$ Days $T_0=303.232715$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

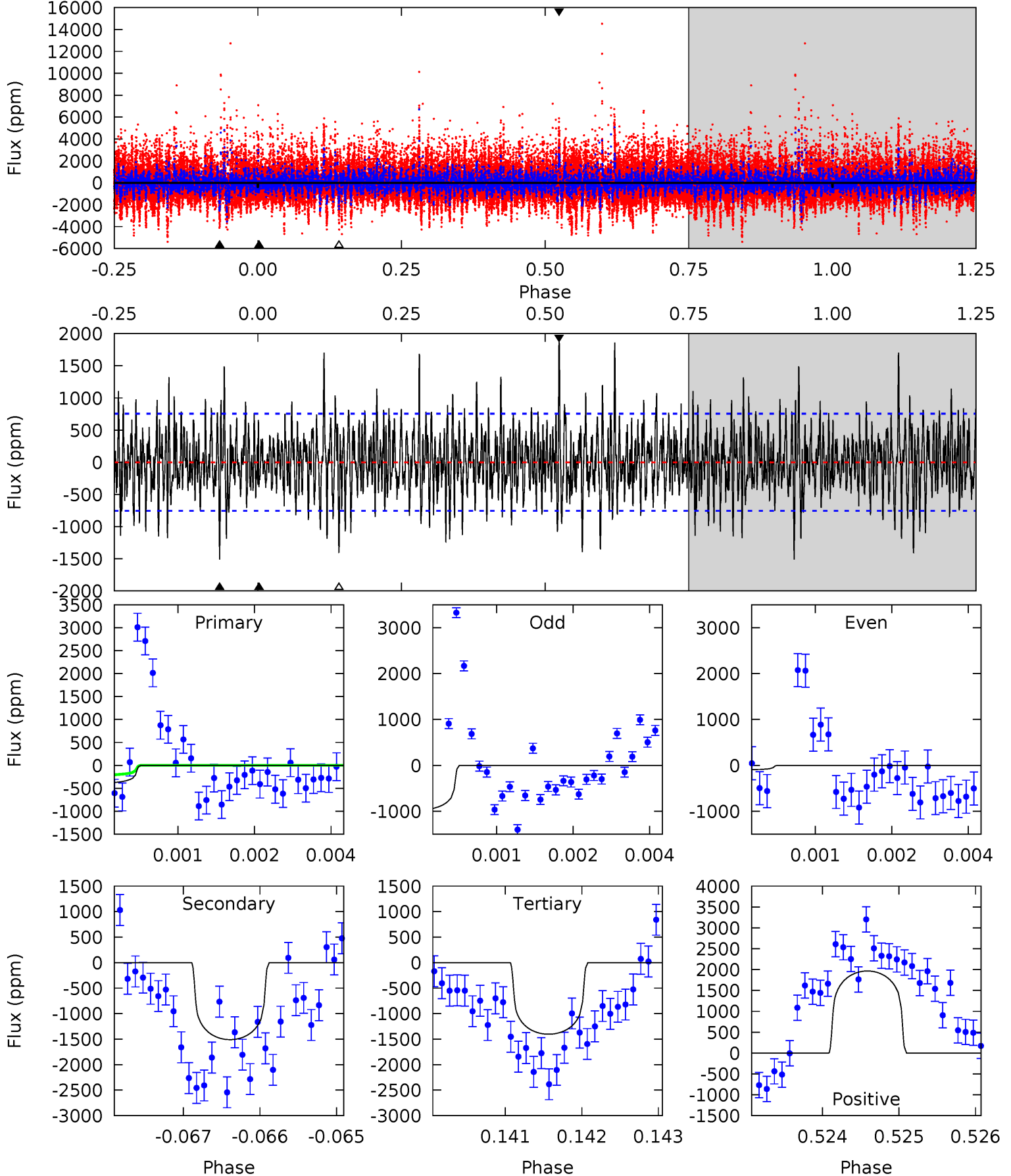
TCE 009828292-03 $P=451.847312$ Days $T_0=303.189652$ (BKJD)



DV Model-Shift Uniqueness Test

009828292-03, P = 451.812350 Days, E = 303.232715 Days

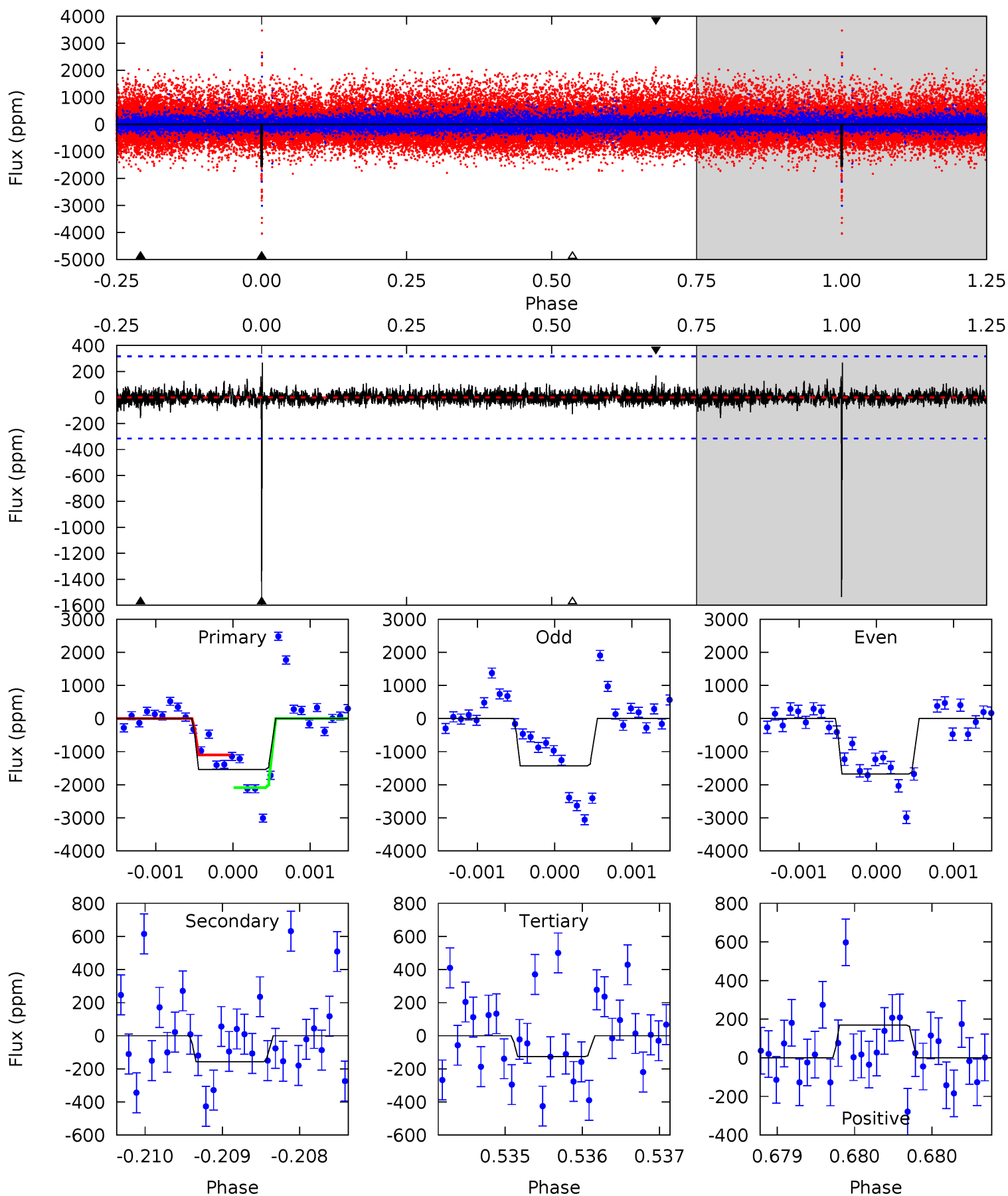
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.77	10.8	10.1	14.1	5.42	3.24	3.07	-7.30	-11.3	0.77	-3.27	1.97	-0.58	0.57	1.22



Alt Model-Shift Uniqueness Test

009828292-03, P = 451.847312 Days, E = 303.189652 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.5	2.70	2.18	2.92	5.45	3.29	0.50	24.3	23.6	0.52	-0.21	1.93	1.05	0.15	8.46



Stellar Parameters For KIC 009828292

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	3770^{+76}_{-83}	$4.747^{+0.052}_{-0.032}$	$-0.100^{+0.200}_{-0.200}$	$0.499^{+0.037}_{-0.051}$	$0.508^{+0.043}_{-0.043}$	$5.743^{+1.418}_{-0.785}$
	+2%/-2%	+1%/-1%	+200%/-200%	+7%/-10%	+8%/-8%	+25%/-14%
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 009828292-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1510 ± 139	$2.54^{+0.66}_{-0.63}$	171^{+5}_{-4}	3543^{+361}_{-256}	109330^{+84457}_{-41789}
Alt.	-157 ± 58	$1.98^{+0.75}_{-0.69}$	170^{+5}_{-5}	2722^{+361}_{-243}	17615^{+26832}_{-9311}

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

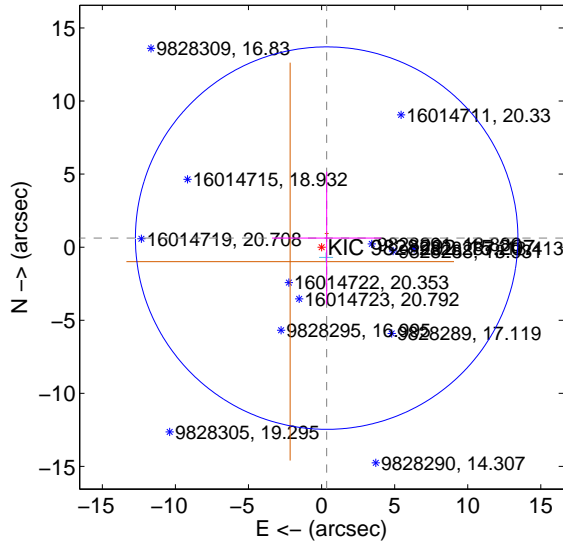
Supplemental centroid analysis for 009828292-03. Kepler magnitude: 15.21. Transit SNR 10.49

There are 1 quarters with good PRF difference image offsets

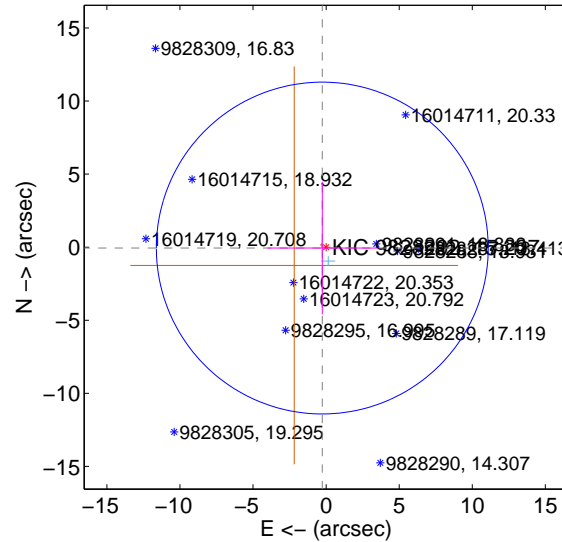
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.711 ± 4.361	0.16	-0.349 ± 3.740	0.620 ± 4.540
PRF-fit source offset from KIC position	0.268 ± 3.784	0.07	0.261 ± 3.740	-0.060 ± 4.540
photometric centroid source offset	0.96 ± 0.93	1.04	0.13 ± 0.51	-0.95 ± 0.93

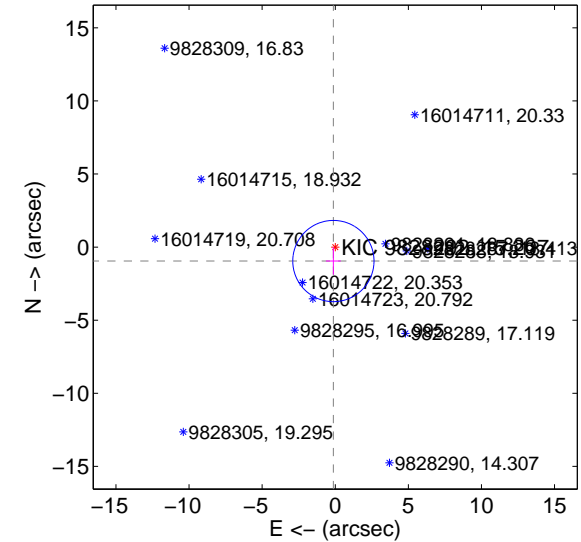
offset from difference PRF-fit to OOT PRF-fit



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

Q1 no difference image



Q1 no OOT image



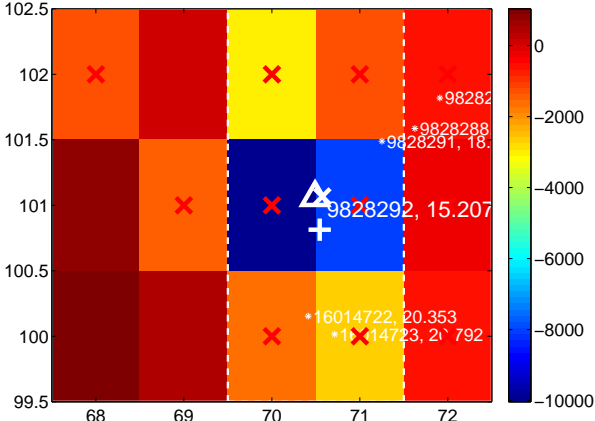
Q2 no difference image



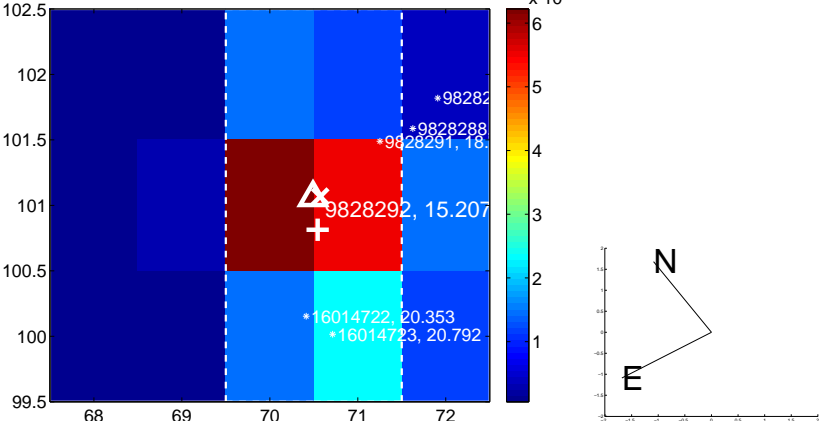
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



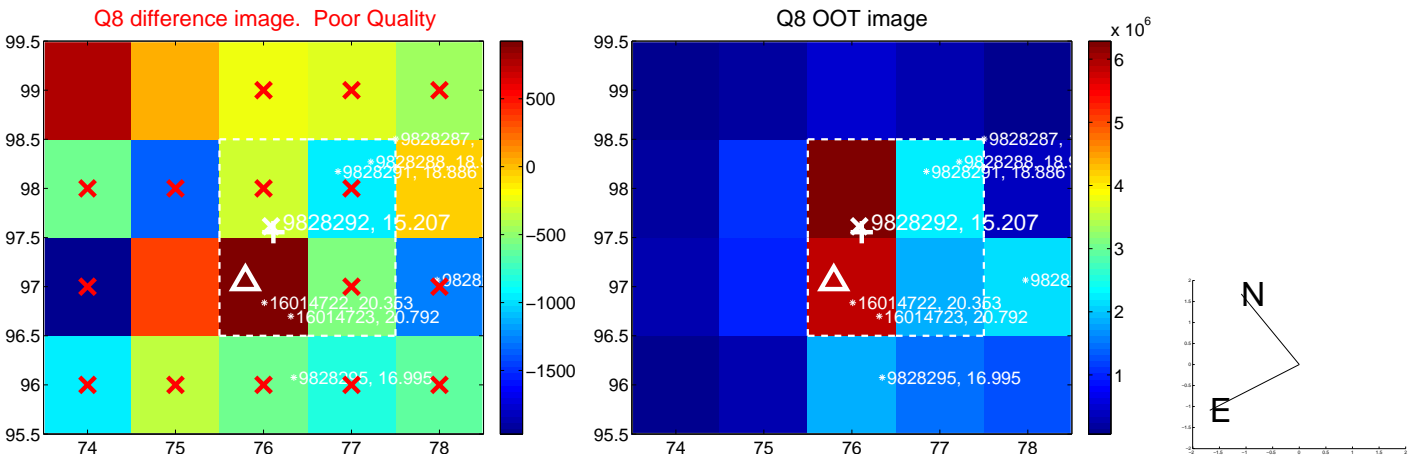
Q4 no difference image



Q4 no OOT image



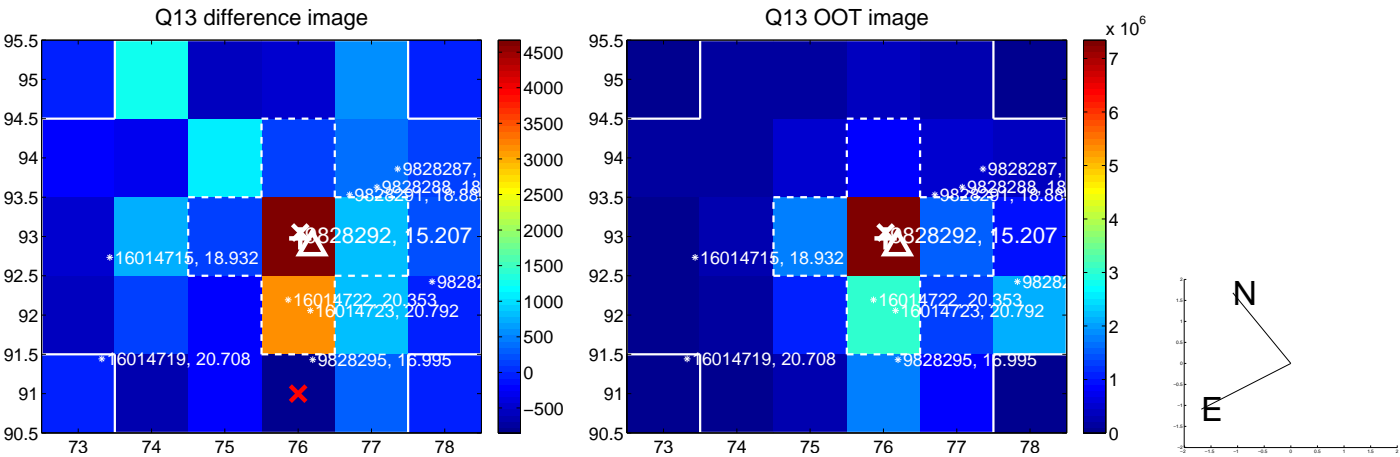
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



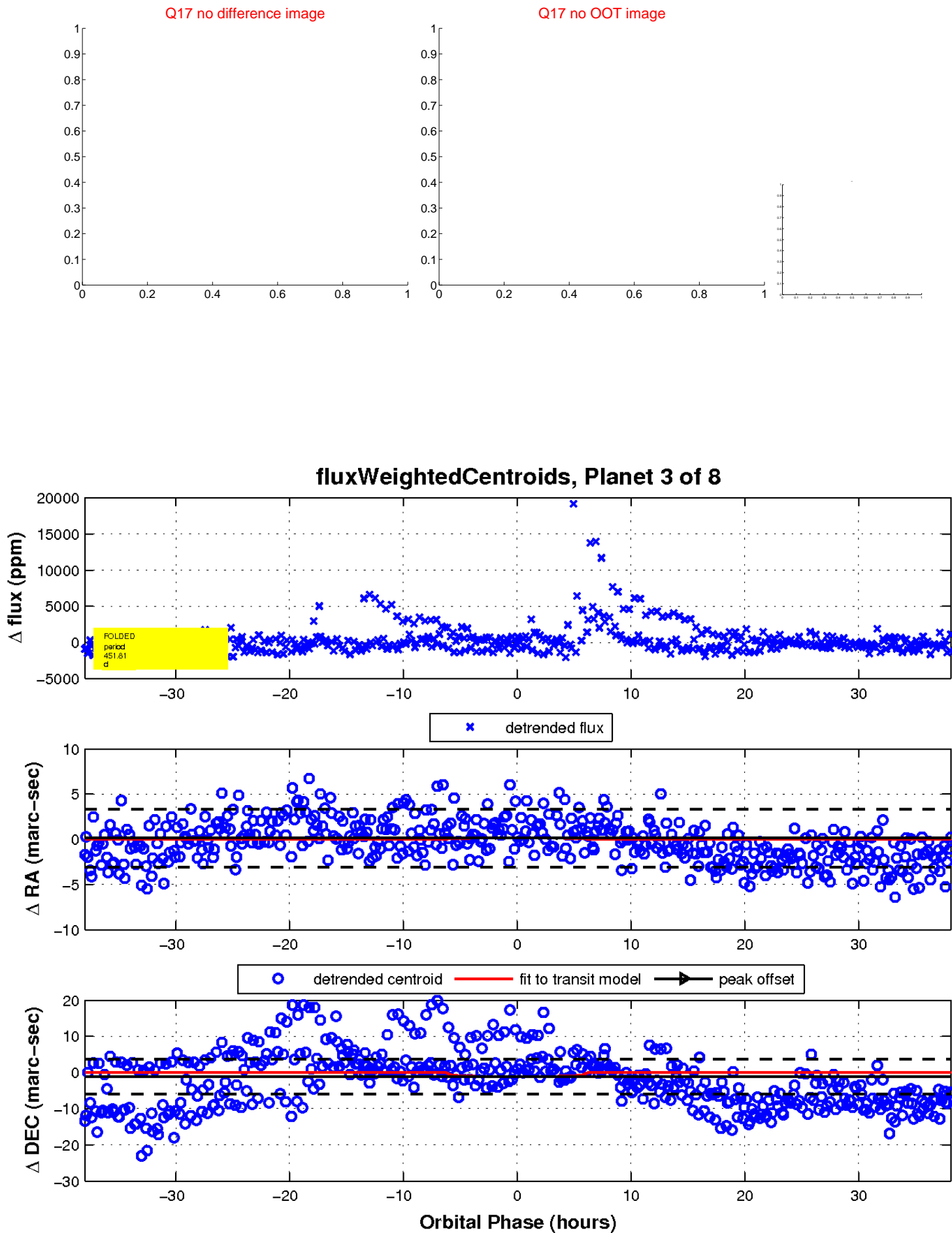
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

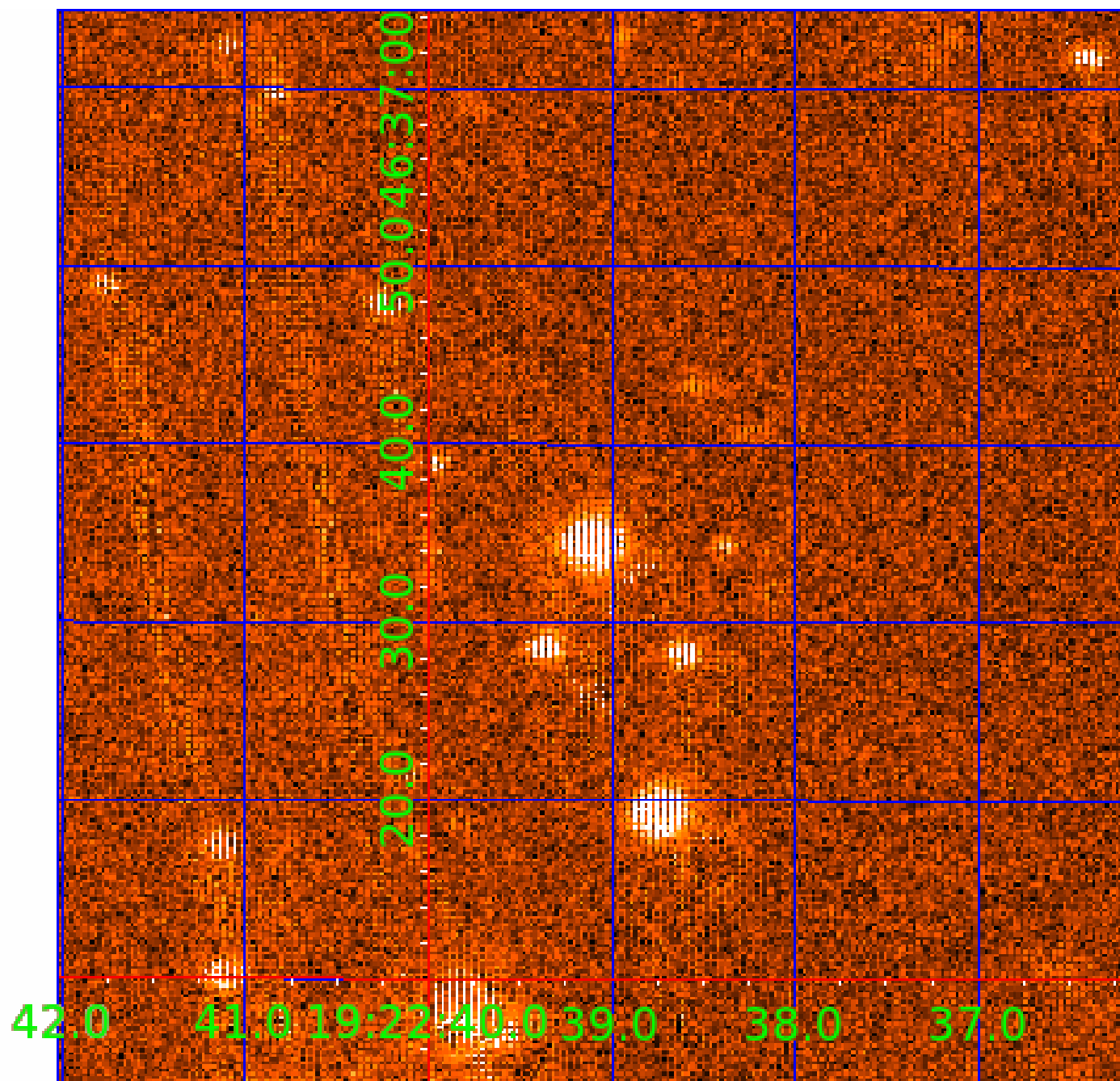


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009828292

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})
009828292-01	OBS	No	456.395440	226.630135	2292.6	3.184	15.1	8.8	0.50	3770	2.48	0.05
009828292-02	OBS	No	394.580557	331.360225	1732.9	5.037	12.8	6.1	0.50	3770	4.03	0.06
009828292-03	OBS	No	451.812350	303.232715	2699.1	12.717	13.8	10.5	0.50	3770	2.56	0.05
009828292-04	OBS	No	355.949501	311.554031	1178.2	5.951	12.5	5.3	0.50	3770	1.74	0.07
009828292-05	OBS	No	443.072993	198.285203	1281.8	9.717	12.4	6.3	0.50	3770	1.83	0.06
009828292-06	OBS	No	584.317830	297.477088	1996.9	4.724	11.7	7.2	0.50	3770	2.26	0.04
009828292-07	OBS	No	464.236807	438.505716	1411.1	14.883	10.3	5.5	0.50	3770	1.89	0.05
009828292-08	OBS	No	362.205290	492.439911	1650.1	6.408	10.5	7.0	0.50	3770	3.95	0.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009828292-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009828292-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-04	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
009828292-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009828292-06	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
009828292-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

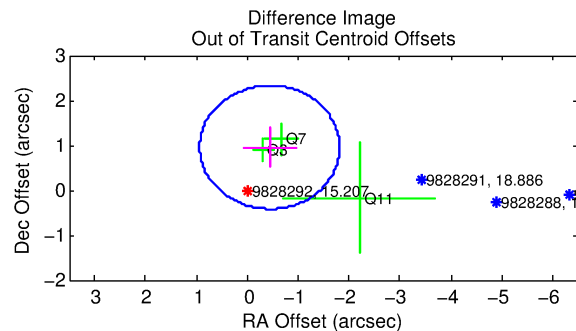
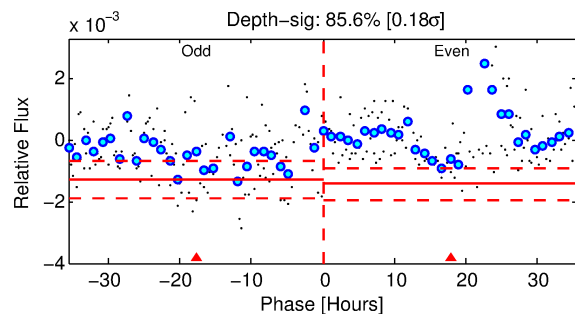
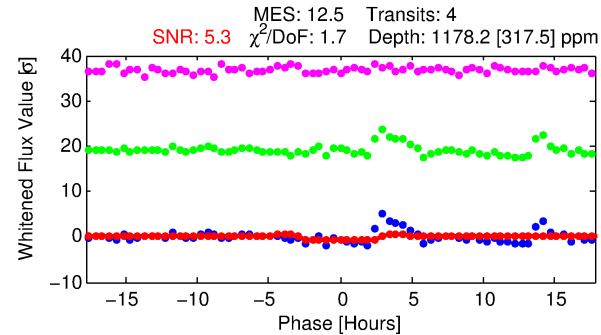
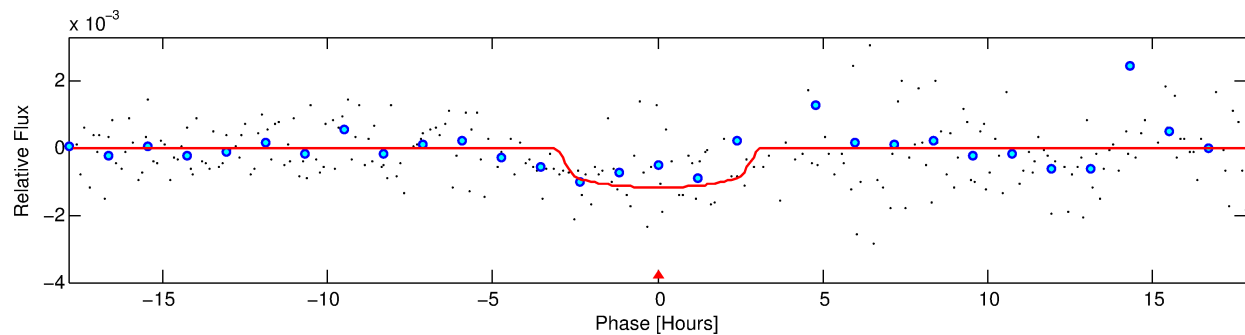
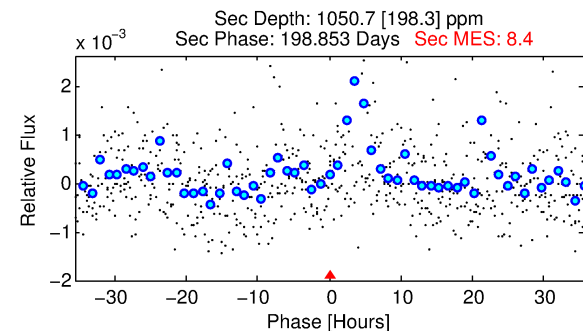
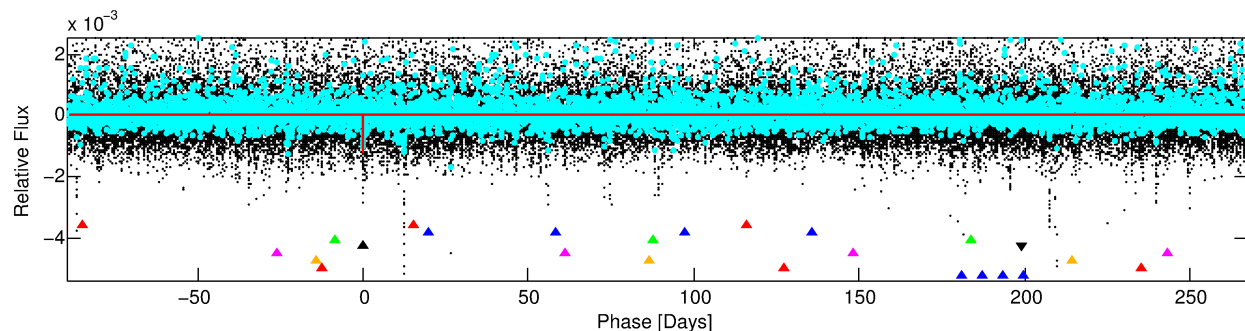
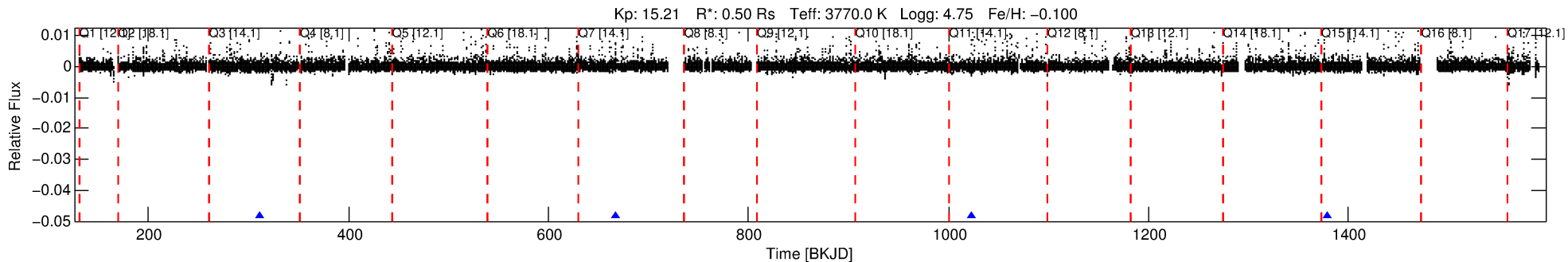
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009828292-04

No Significant Match Found

DV One-Page Summary

KIC: 9828292 Candidate: 4 of 8 Period: 355.950 d



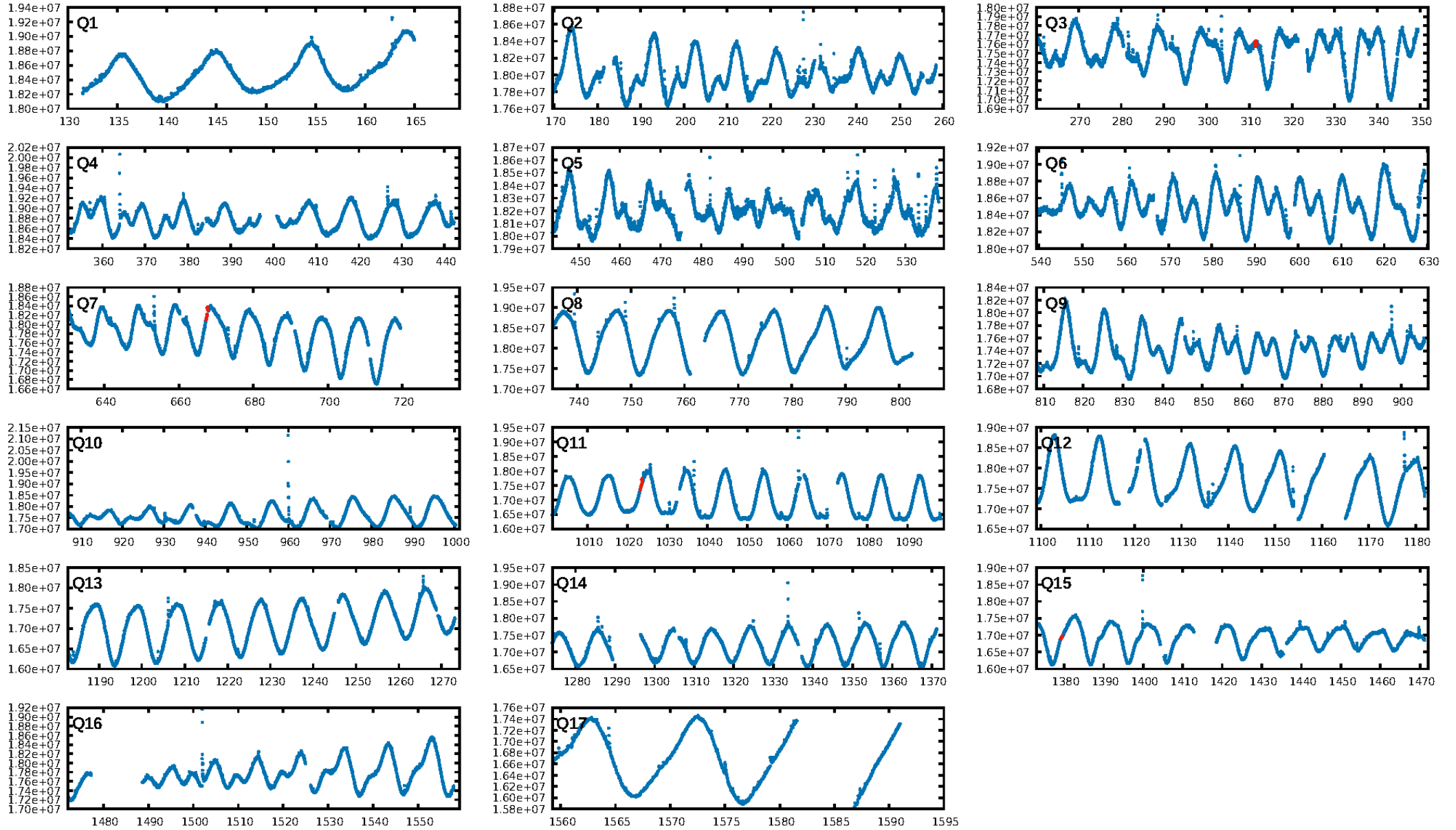
DV Fit Results:

Period = 355.94950 [0.00770] d
Epoch = 311.5540 [0.0151] BKJD
Rp/R* = 0.0320 [0.0483]
a/R* = 420.05 [2789.49]
b = 0.47 [11.09]
Seff = 0.07 [0.01]
Teq = 133 [5] K
Rp = 1.74 [2.63] Re
a = 0.7841 [0.0619] AU
Ag = 117067.80 [354078.65] [0.33σ]
Teffp = 3795 [2869] K [1.28σ]

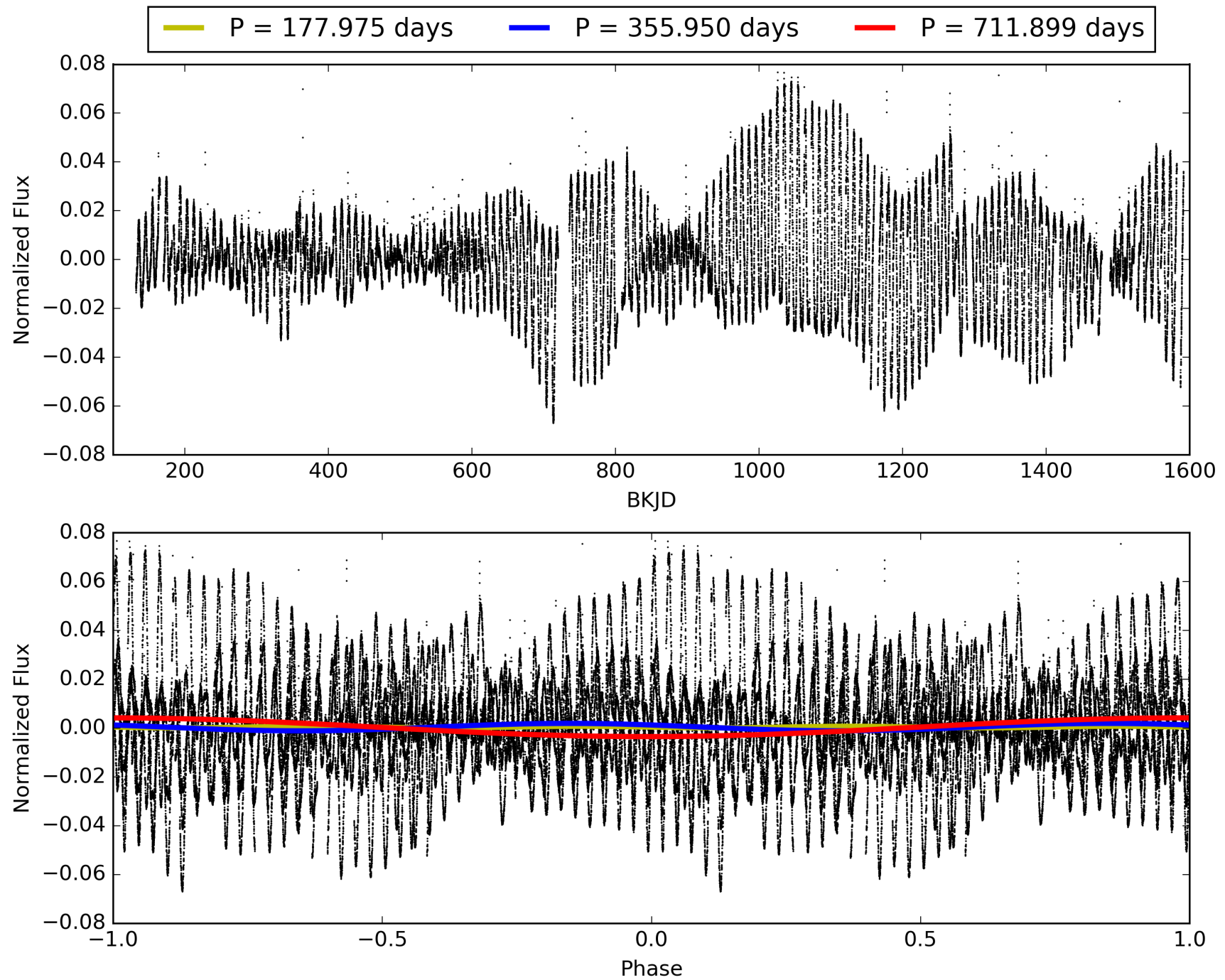
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [17.17σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 28.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.287
Centroid-sig: 54.3%
Centroid-so: 1.653 arcsec [1.30σ]
OotOffset-rm: 1.049 arcsec [2.29σ]
KicOffset-rm: 0.351 arcsec [0.73σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [4/4]

TCE 009828292-04, PDC Light Curves

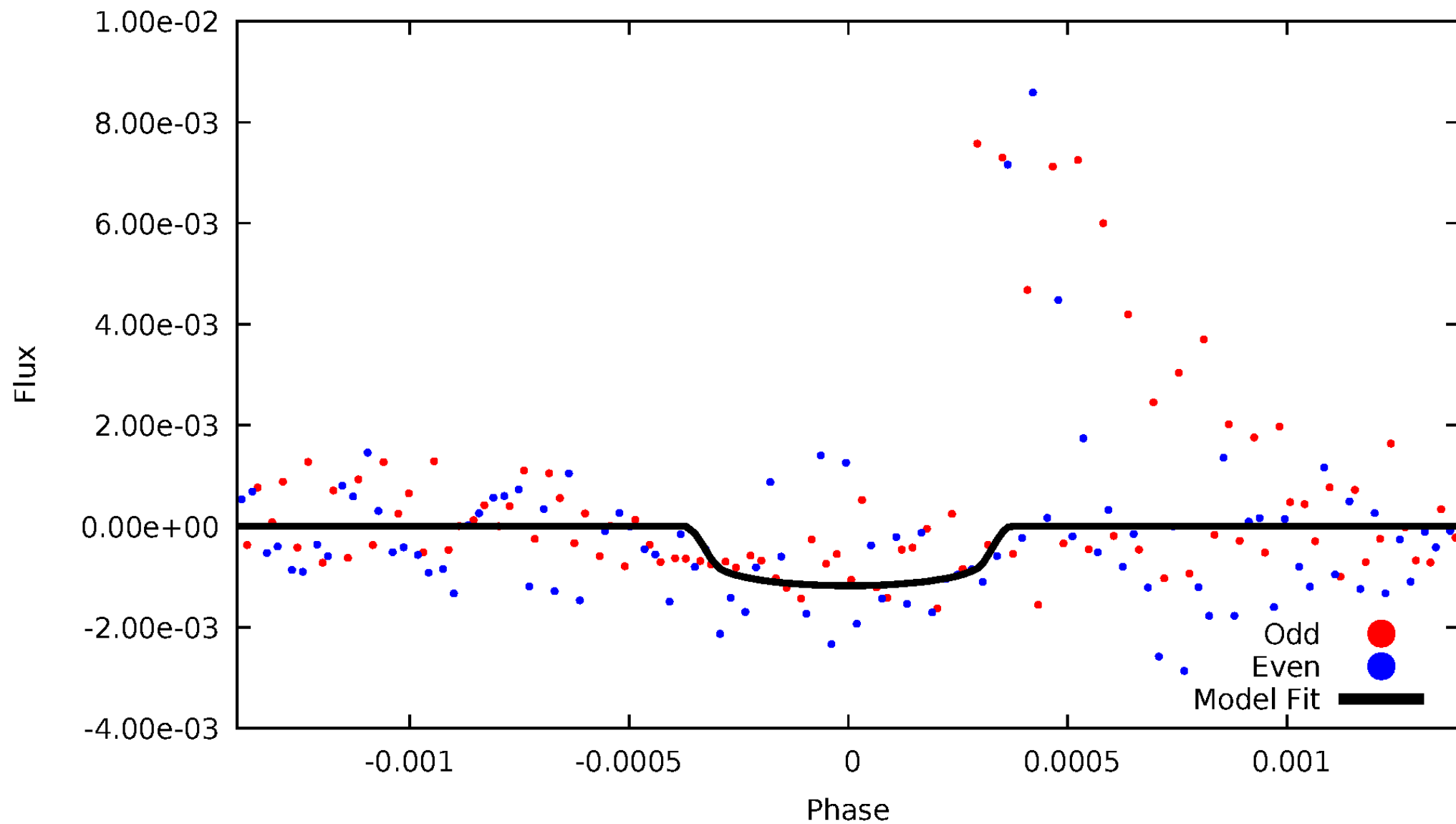


TCE 009828292-04



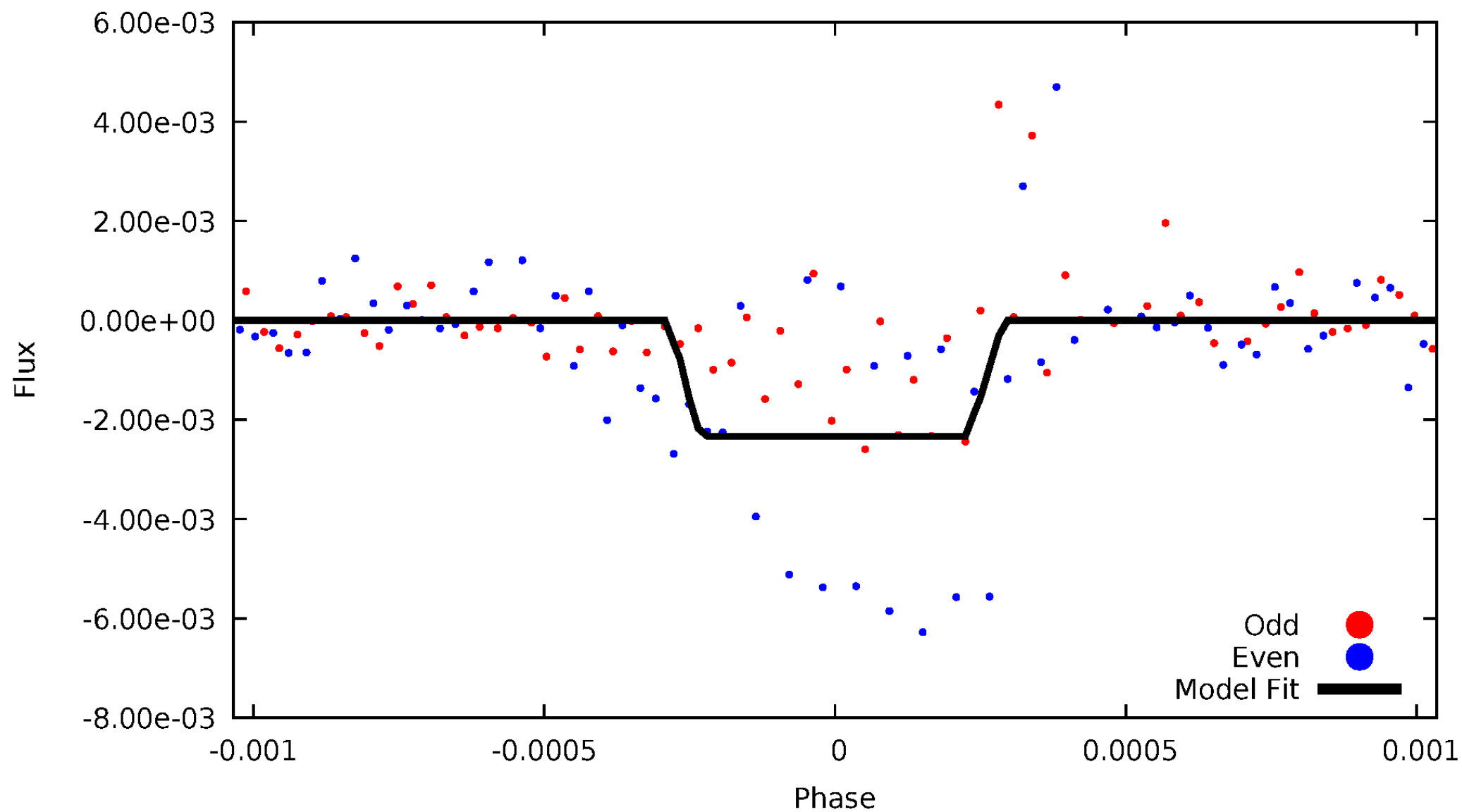
DV Odd/Even

TCE 009828292-04



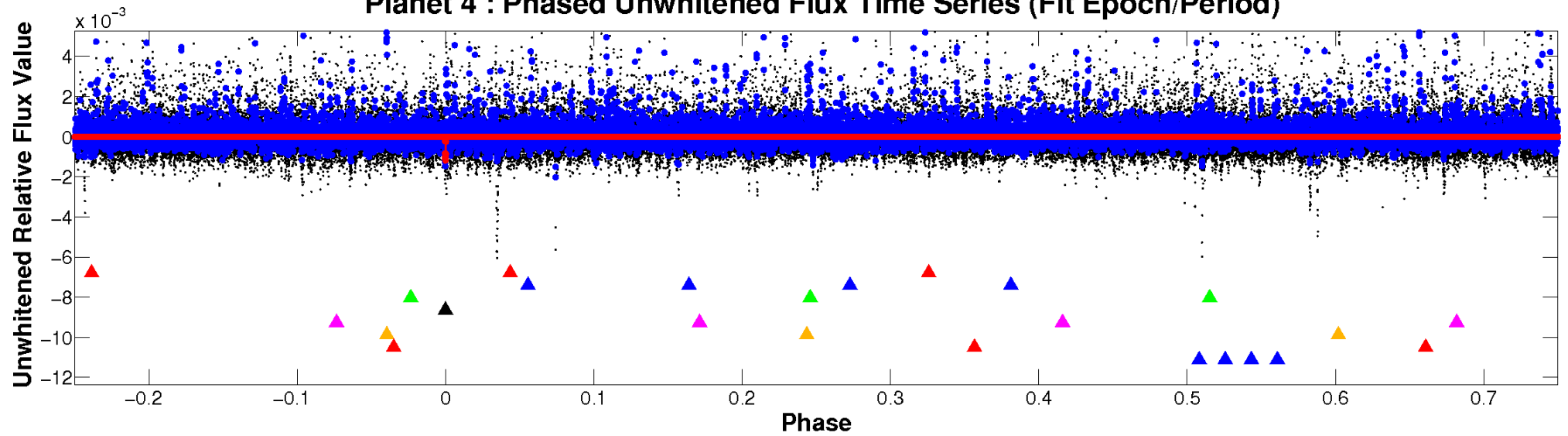
ALT Odd/Even

TCE 009828292-04

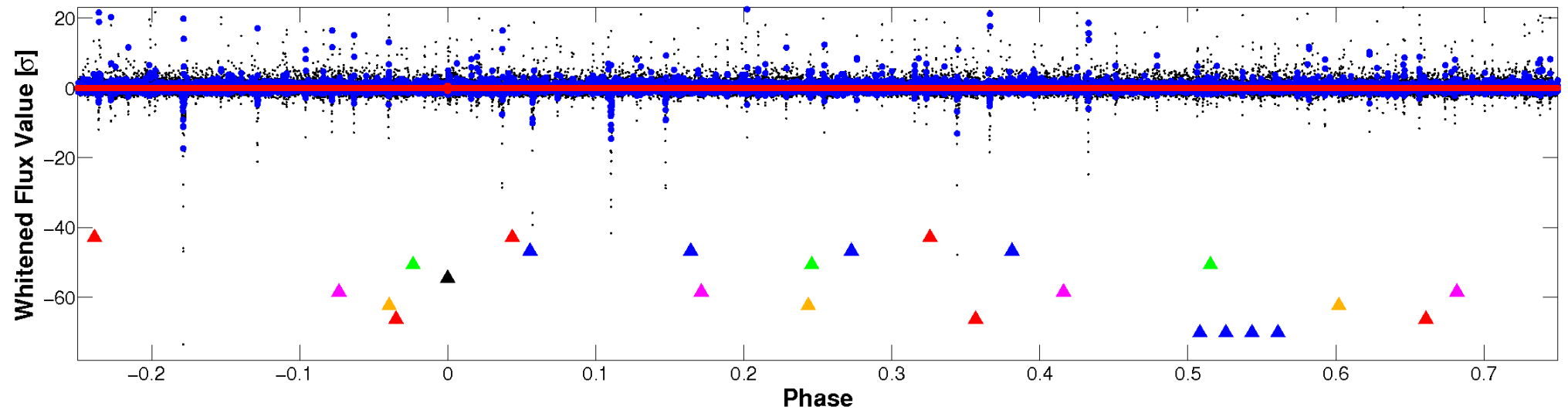


Non-Whitened Vs. Whitened Light Curve

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

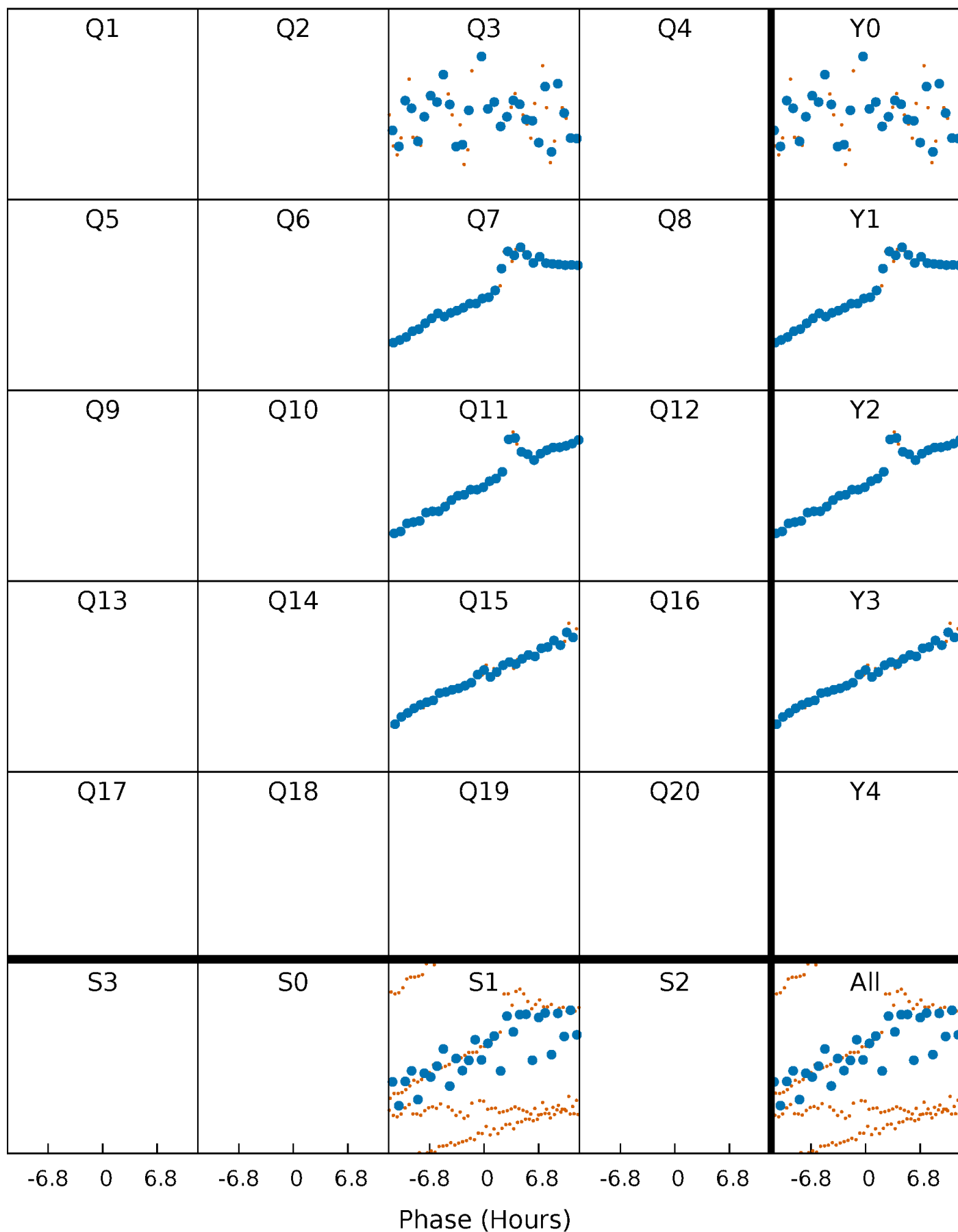


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



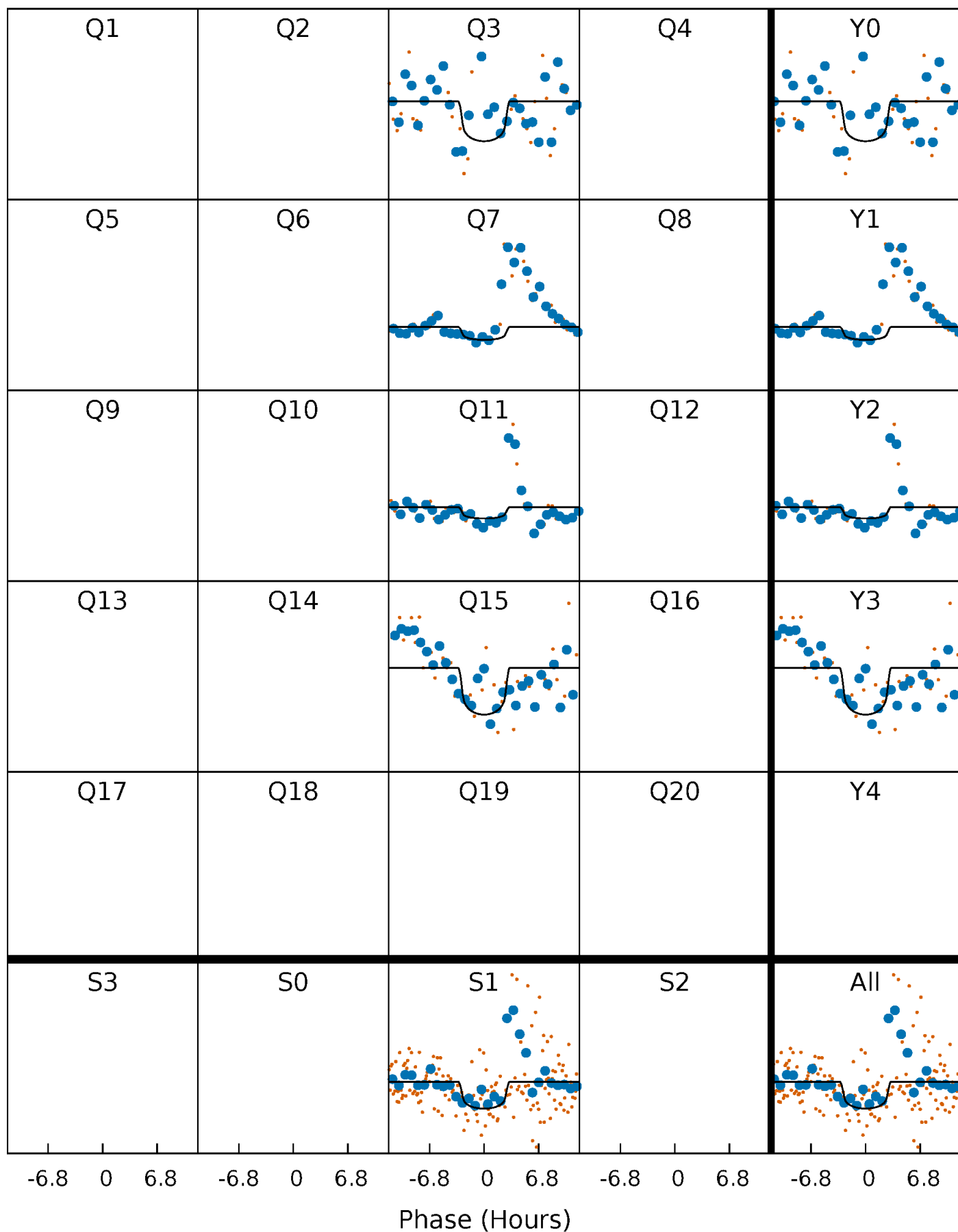
PDC Quarter-Phased Transit Curves

TCE 009828292-04 $P=355.949501$ Days $T_0=311.554031$ (BKJD)



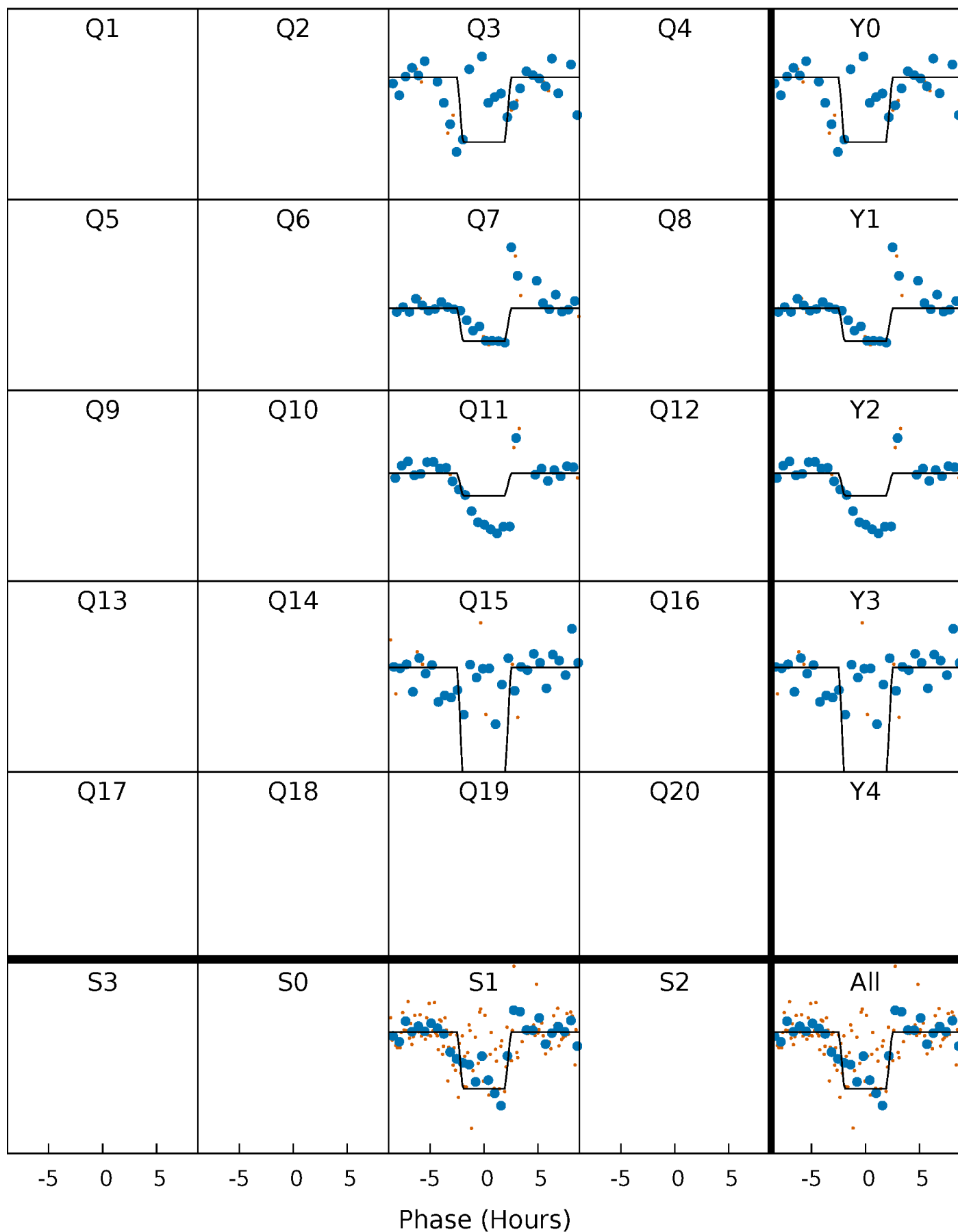
DV Quarter-Phased Transit Curves

TCE 009828292-04 $P=355.949501$ Days $T_0=311.554031$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

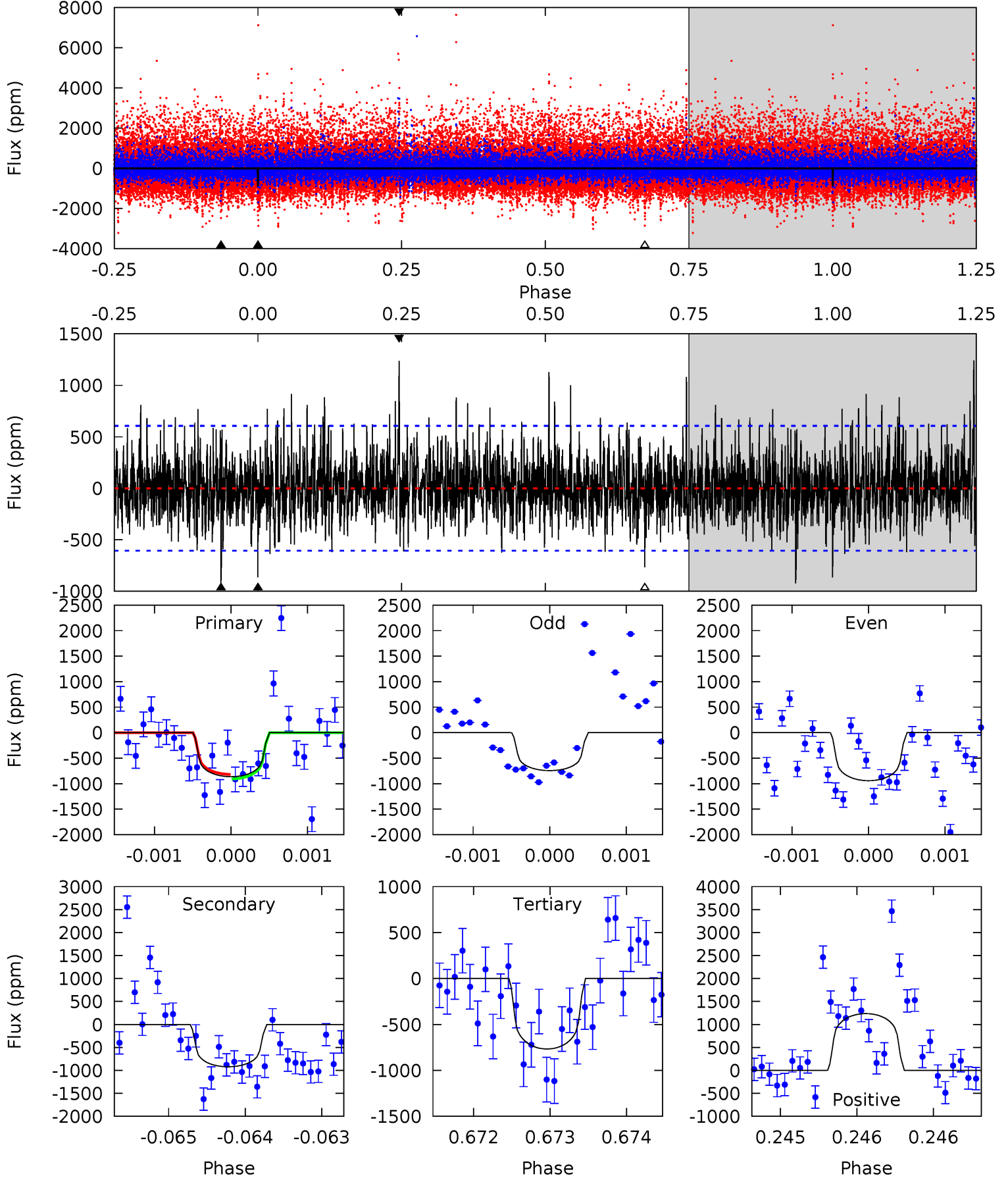
TCE 009828292-04 $P=355.959426$ Days $T_0=311.548531$ (BKJD)



DV Model-Shift Uniqueness Test

009828292-04, P = 355.949501 Days, E = 311.554031 Days

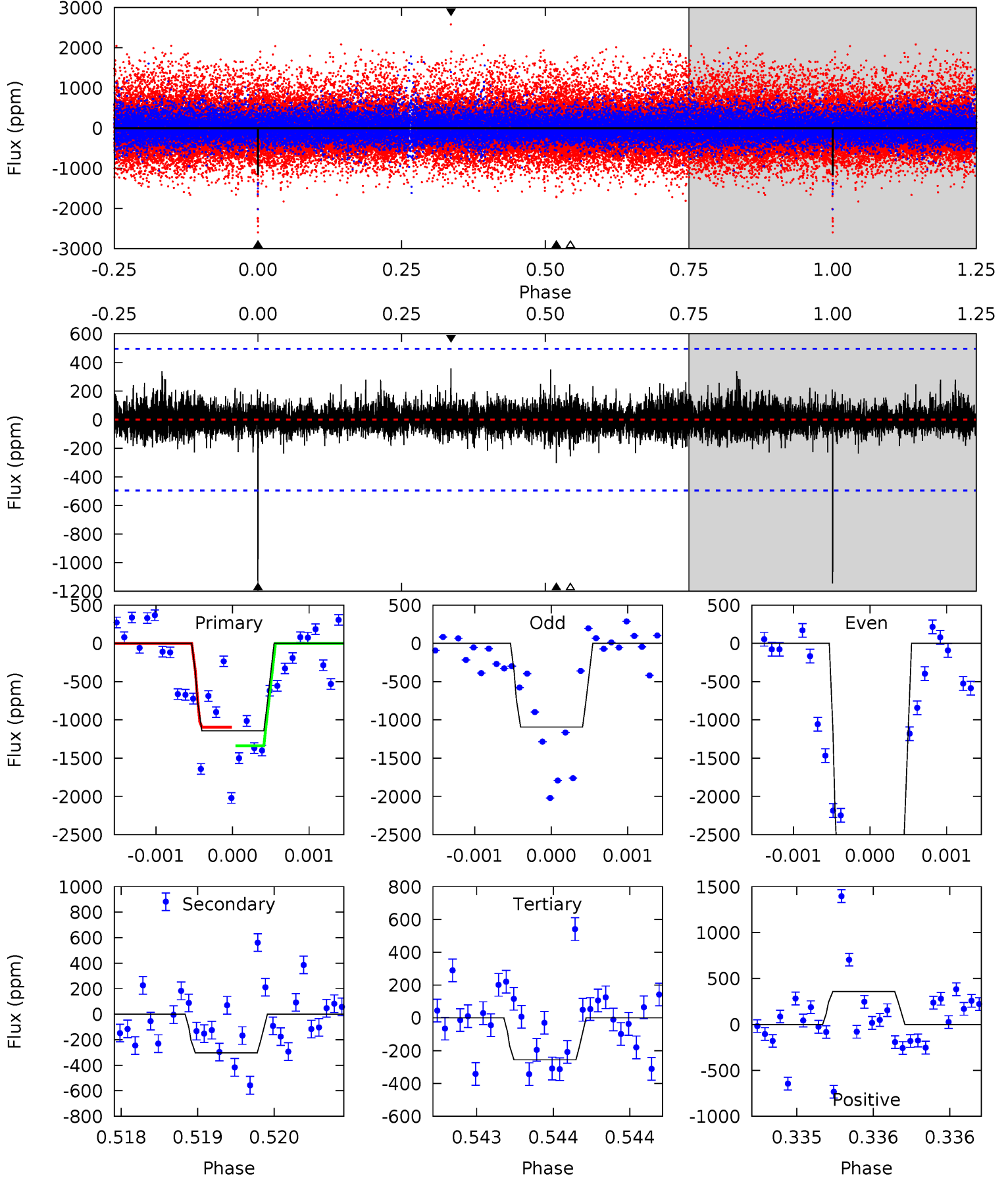
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.84	8.37	6.96	11.2	5.50	3.37	2.09	0.87	-3.38	1.40	-2.84	0.68	1.29	0.57	0.41



Alt Model-Shift Uniqueness Test

009828292-04, P = 355.959426 Days, E = 311.548531 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	3.40	2.87	4.01	5.56	3.46	0.70	9.97	8.83	0.53	-0.61	13.5	1.69	0.24	1.36



Stellar Parameters For KIC 009828292

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	3770^{+76}_{-83}	$4.747^{+0.052}_{-0.032}$	$-0.100^{+0.200}_{-0.200}$	$0.499^{+0.037}_{-0.051}$	$0.508^{+0.043}_{-0.043}$	$5.743^{+1.418}_{-0.785}$
	+2%/-2%	+1%/-1%	+200%/-200%	+7%/-10%	+8%/-8%	+25%/-14%
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 009828292-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-922 ± 110	$2.63^{+2.20}_{-1.80}$	185^{+5}_{-5}	3262^{+1589}_{-537}	$47080^{+409662}_{-33704}$
Alt.	-303 ± 89	$3.12^{+2.54}_{-1.99}$	184^{+5}_{-5}	2670^{+858}_{-393}	11067^{+66399}_{-7987}

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 $A_{obs} \gg 1.0$

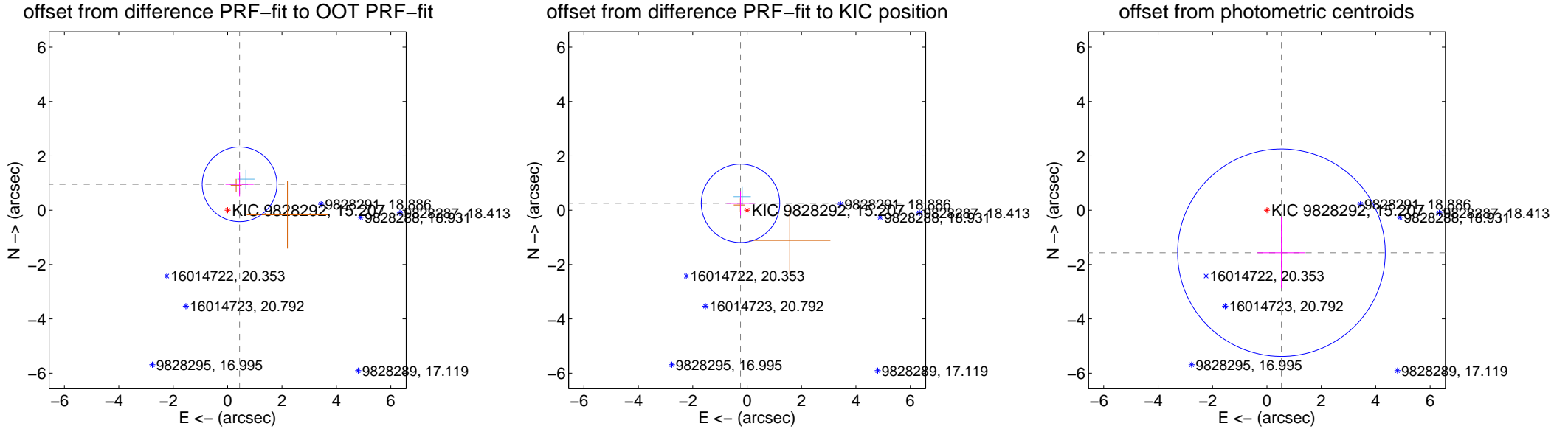
DV Centroid Data

Supplemental centroid analysis for 009828292-04. Kepler magnitude: 15.21. Transit SNR 5.32

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.049 ± 0.458	2.29	-0.440 ± 0.518	0.953 ± 0.444
PRF-fit source offset from KIC position	0.351 ± 0.481	0.73	0.243 ± 0.518	0.253 ± 0.444
photometric centroid source offset	1.65 ± 1.27	1.30	-0.53 ± 0.88	-1.56 ± 1.31



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



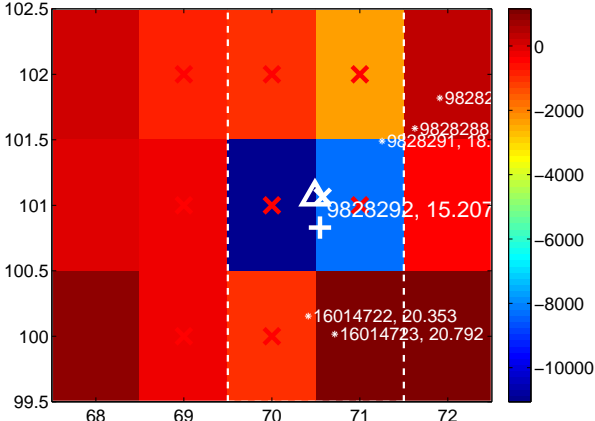
Q2 no difference image



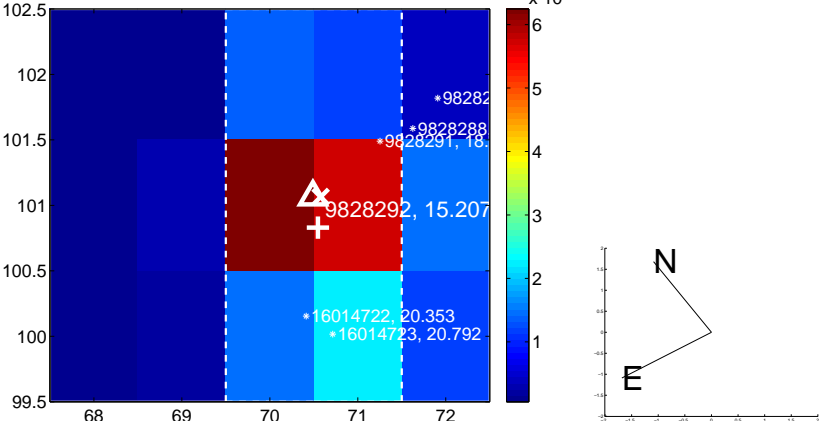
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



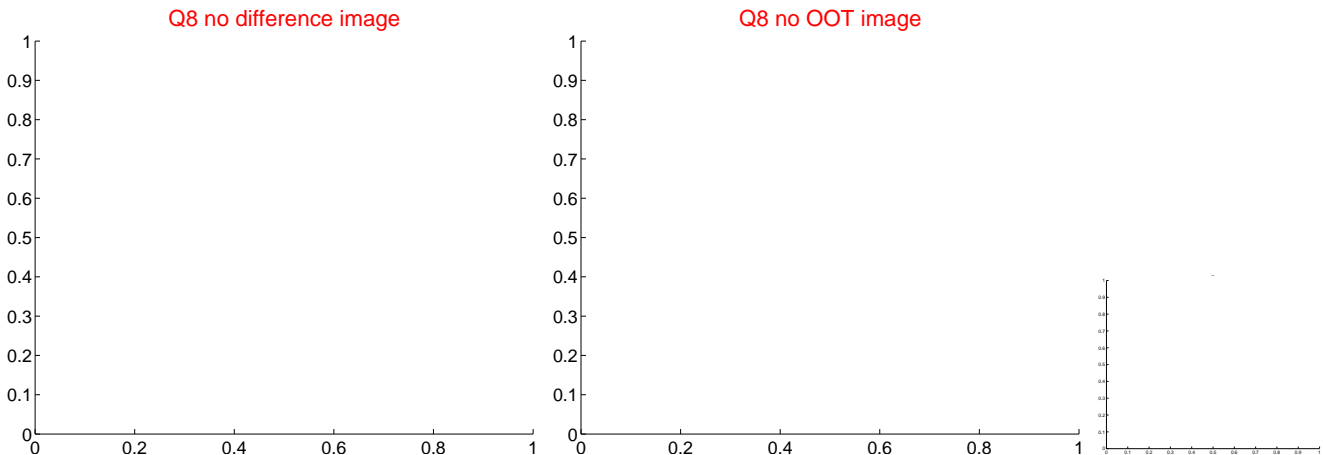
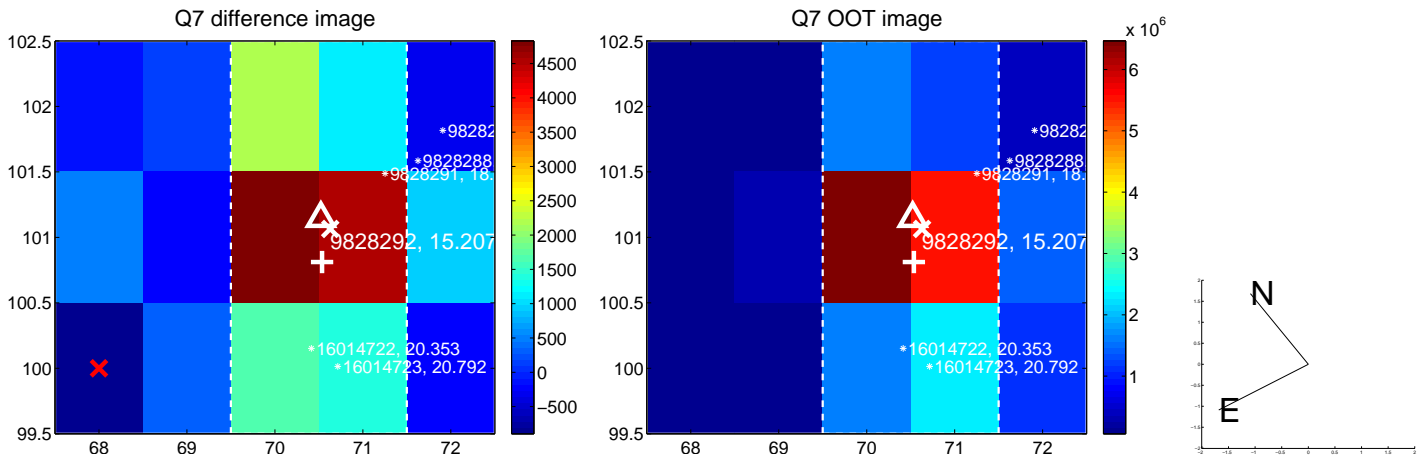
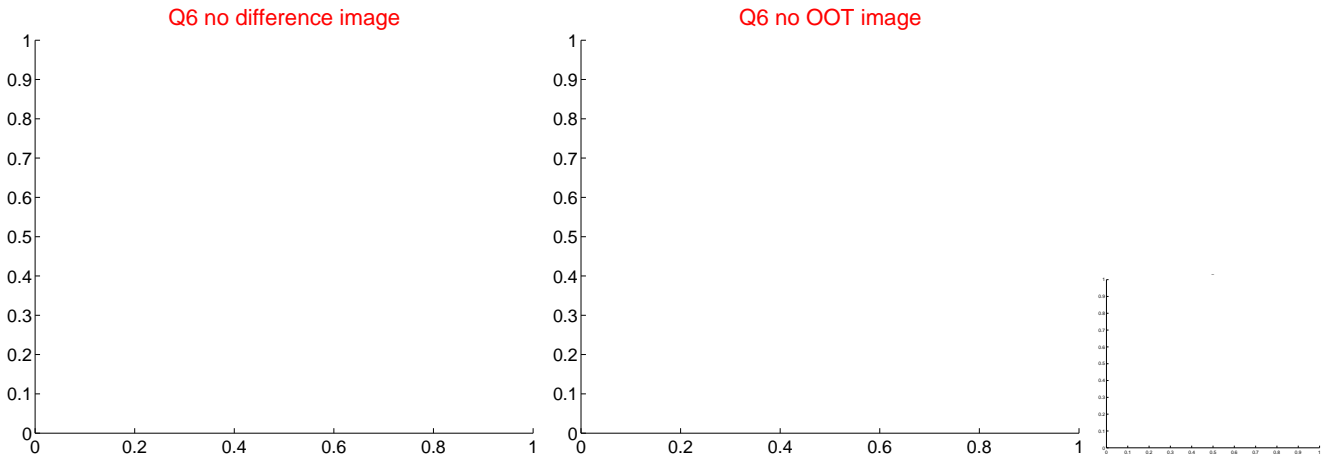
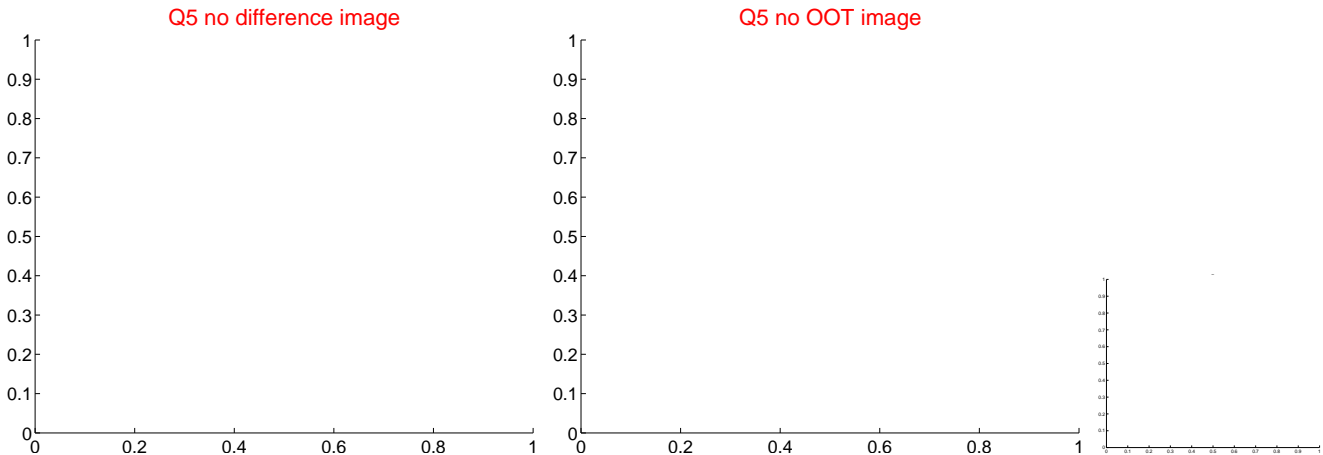
Q4 no difference image



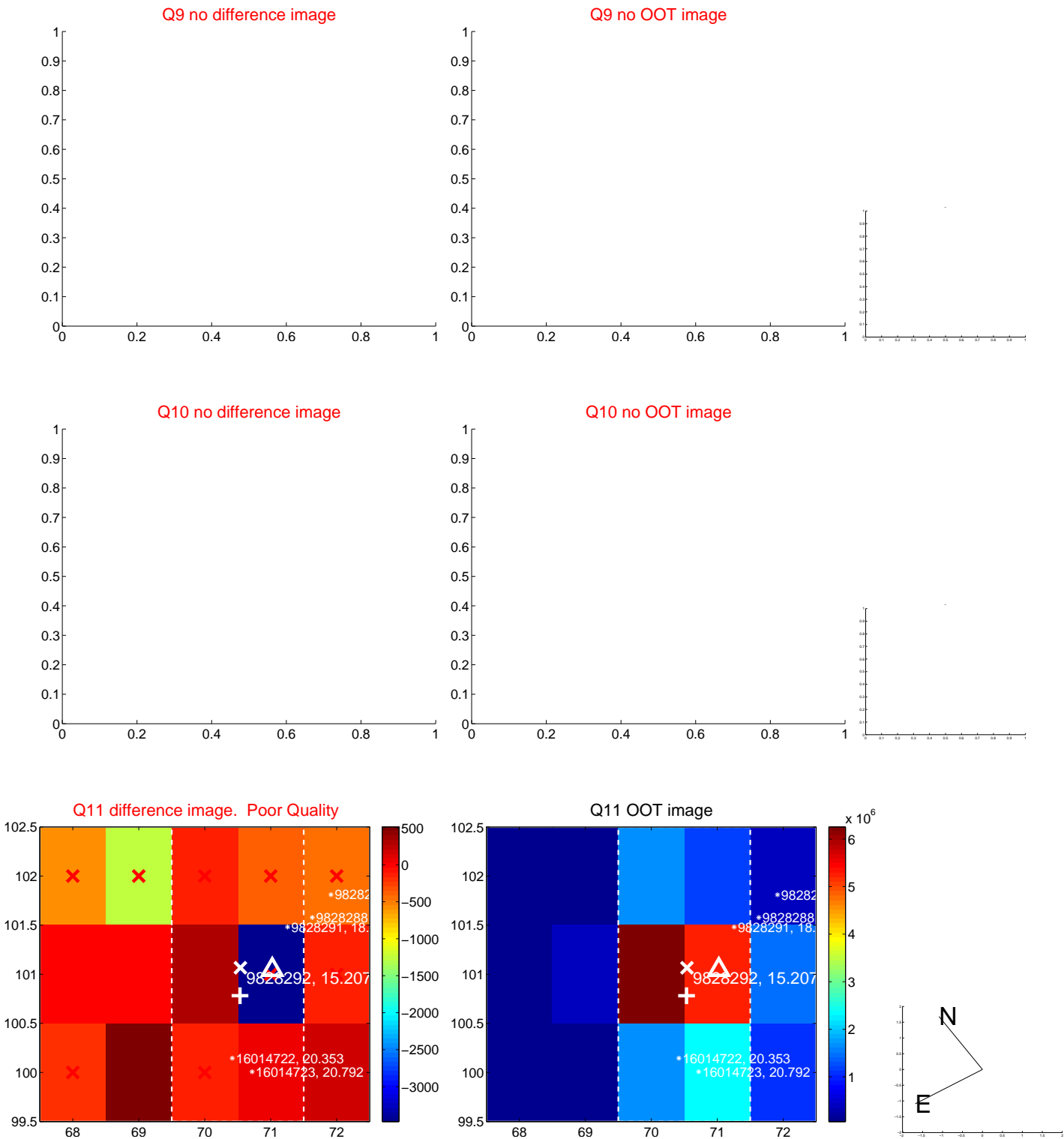
Q4 no OOT image



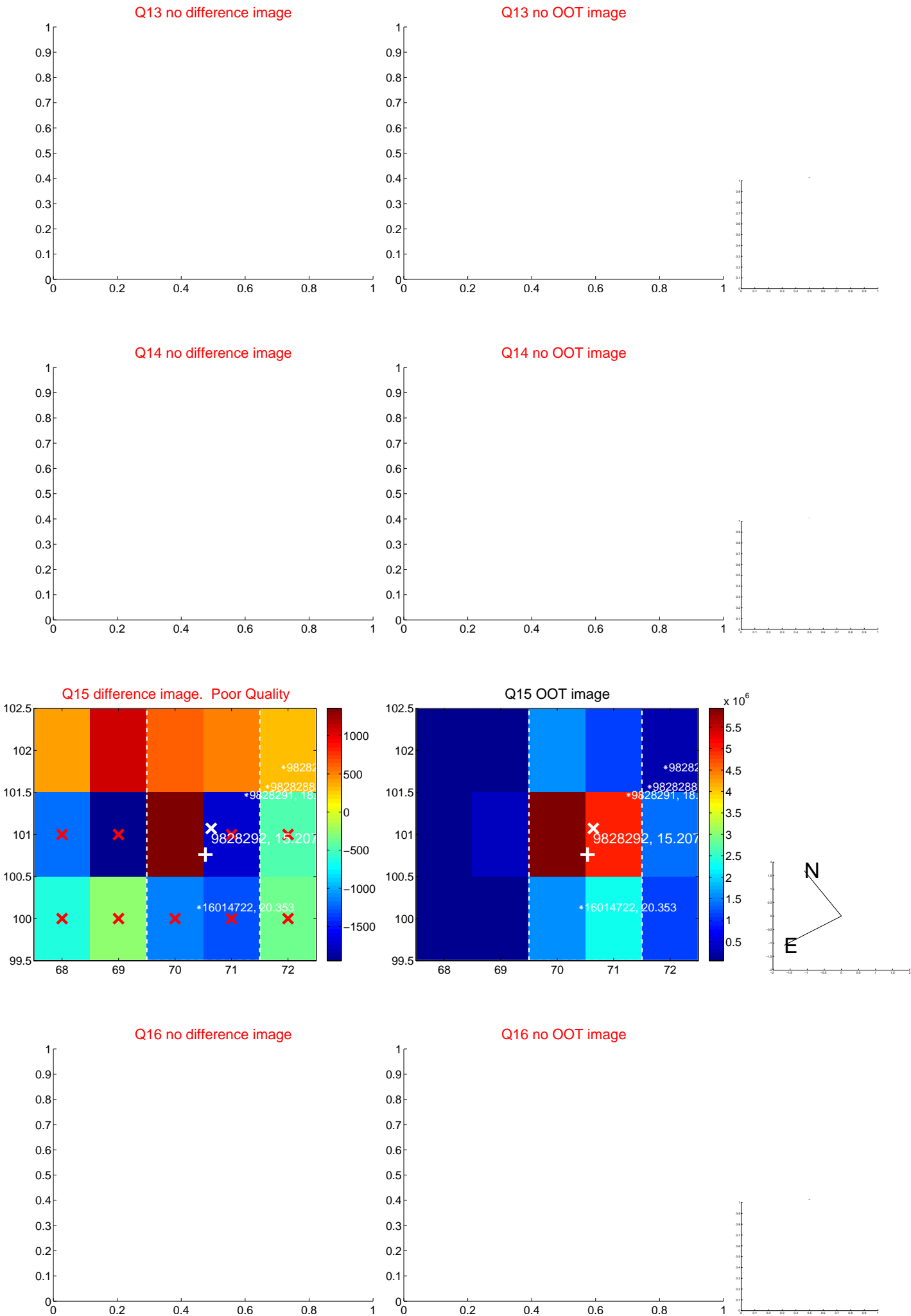
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



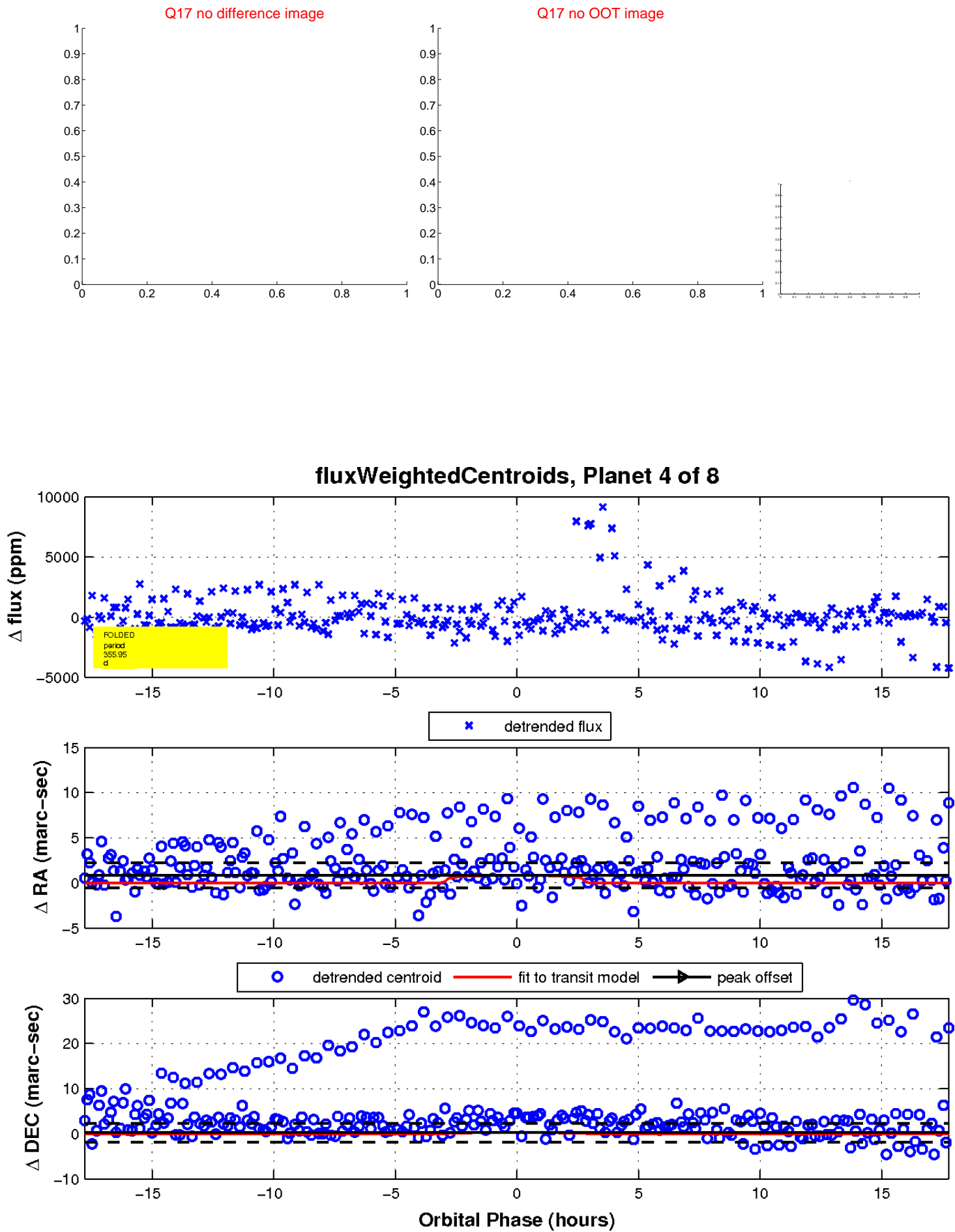
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

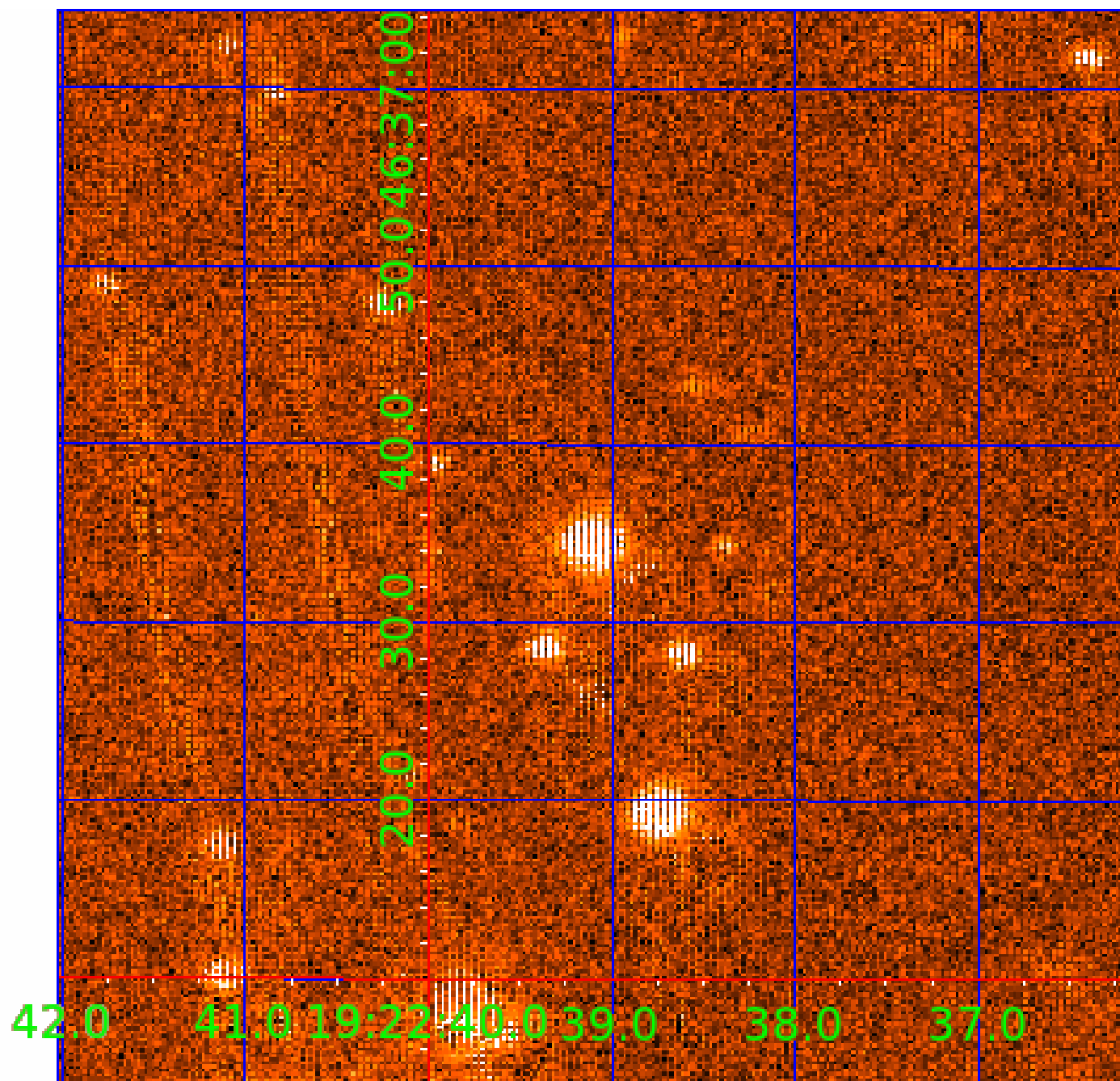


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009828292

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})
009828292-01	OBS	No	456.395440	226.630135	2292.6	3.184	15.1	8.8	0.50	3770	2.48	0.05
009828292-02	OBS	No	394.580557	331.360225	1732.9	5.037	12.8	6.1	0.50	3770	4.03	0.06
009828292-03	OBS	No	451.812350	303.232715	2699.1	12.717	13.8	10.5	0.50	3770	2.56	0.05
009828292-04	OBS	No	355.949501	311.554031	1178.2	5.951	12.5	5.3	0.50	3770	1.74	0.07
009828292-05	OBS	No	443.072993	198.285203	1281.8	9.717	12.4	6.3	0.50	3770	1.83	0.06
009828292-06	OBS	No	584.317830	297.477088	1996.9	4.724	11.7	7.2	0.50	3770	2.26	0.04
009828292-07	OBS	No	464.236807	438.505716	1411.1	14.883	10.3	5.5	0.50	3770	1.89	0.05
009828292-08	OBS	No	362.205290	492.439911	1650.1	6.408	10.5	7.0	0.50	3770	3.95	0.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009828292-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009828292-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-04	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
009828292-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009828292-06	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
009828292-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

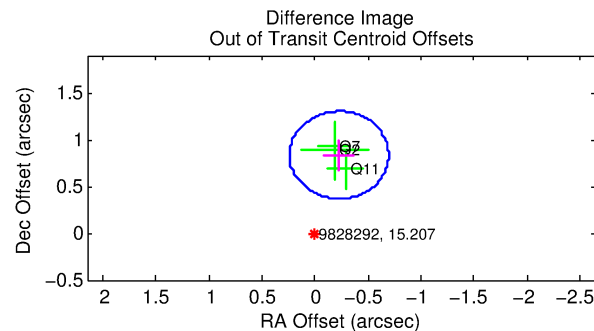
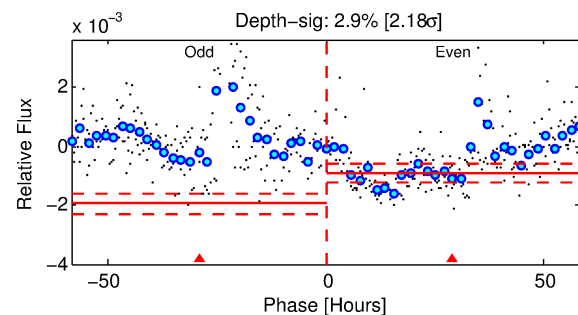
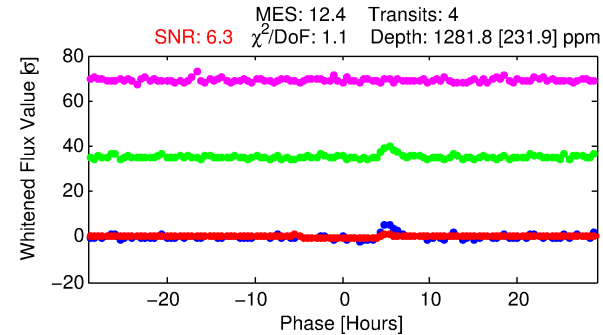
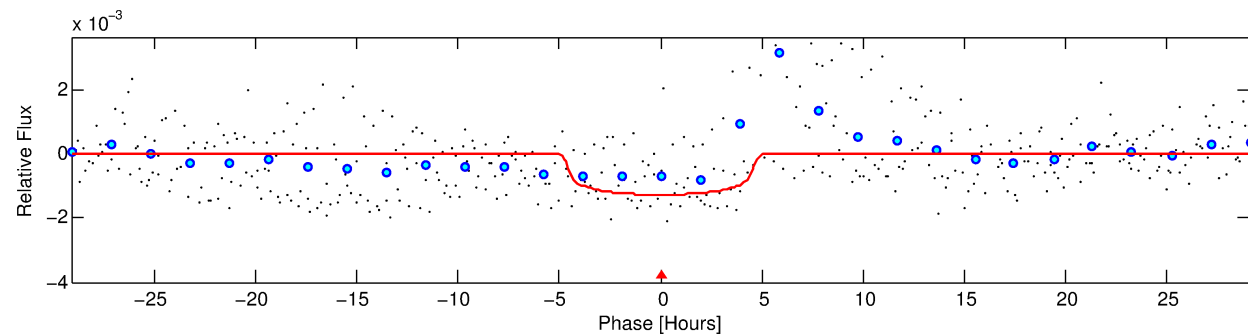
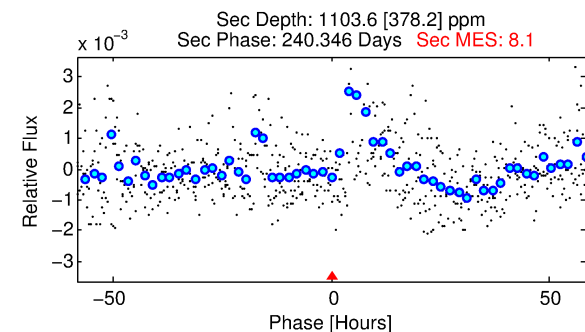
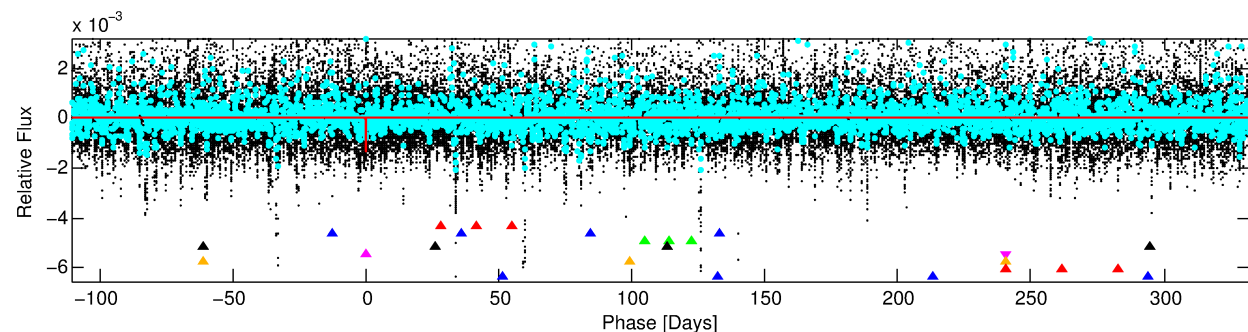
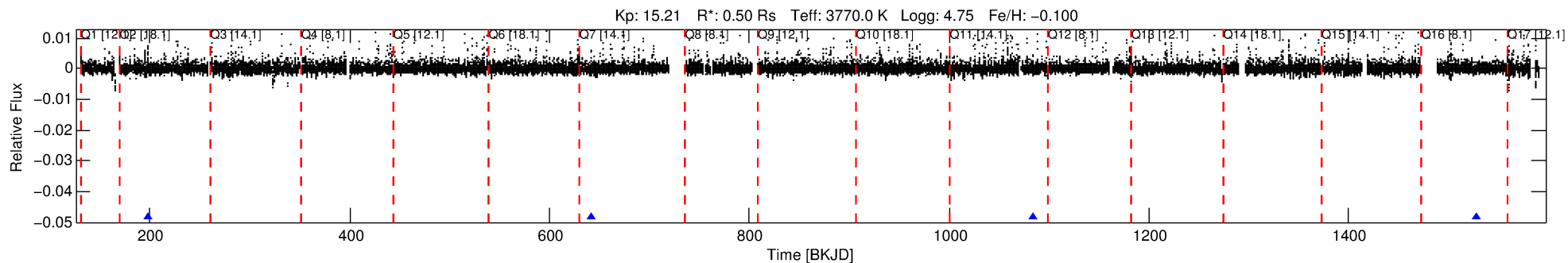
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009828292-05

No Significant Match Found

DV One-Page Summary

KIC: 9828292 Candidate: 5 of 8 Period: 443.073 d



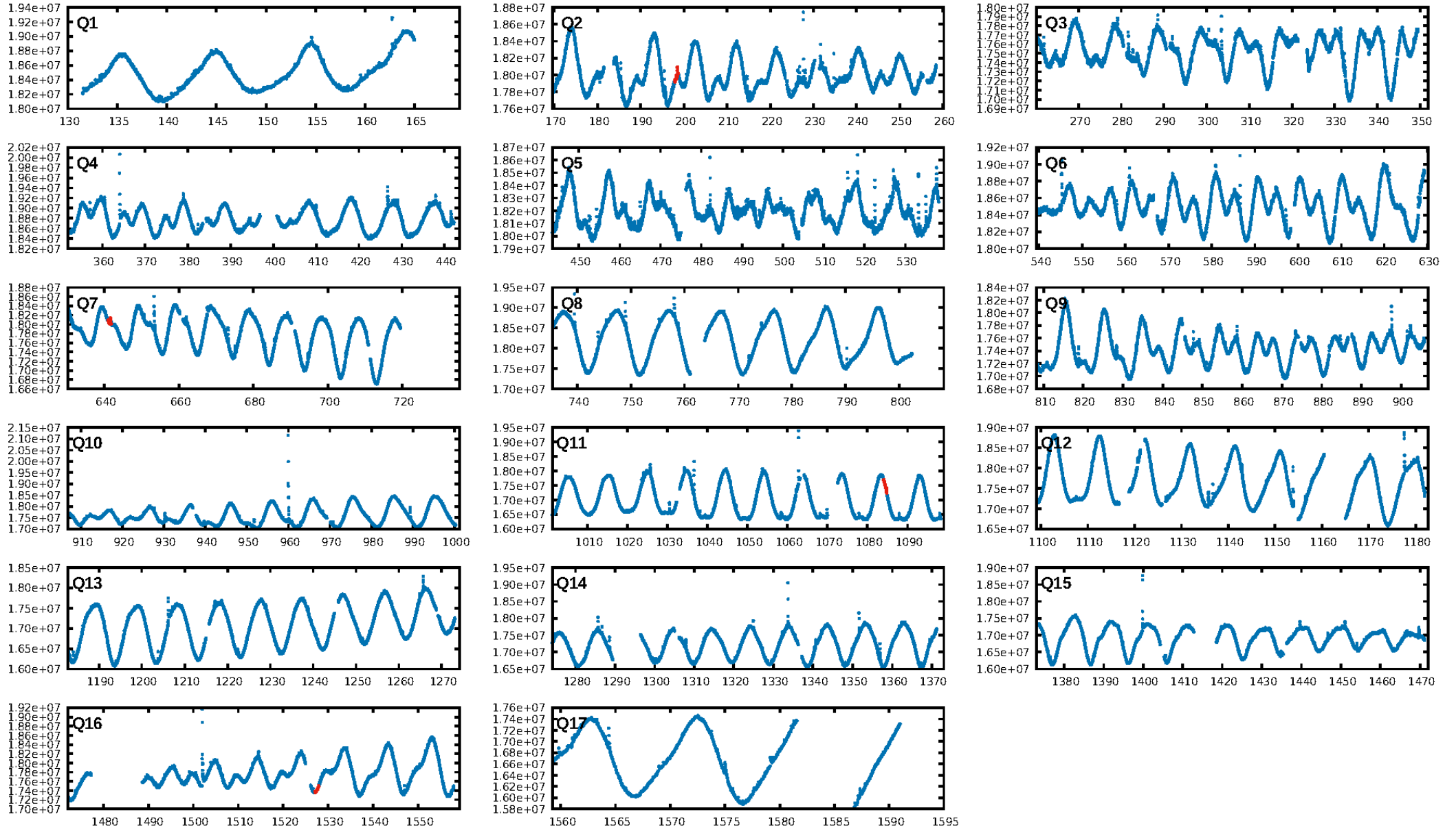
DV Fit Results:

Period = 443.07299 [0.00573] d
Epoch = 198.2852 [0.0118] BKJD
Rp/R* = 0.0336 [0.0146]
a/R* = 310.53 [565.22]
b = 0.52 [2.54]
Seff = 0.05 [0.01]
Teq = 123 [4] K
Rp = 1.83 [0.81] Re
a = 0.9073 [0.0716] AU
Ag = 149025.89 [139675.26] [1.07σ]
Teffp = 3747 [876] K [4.13σ]

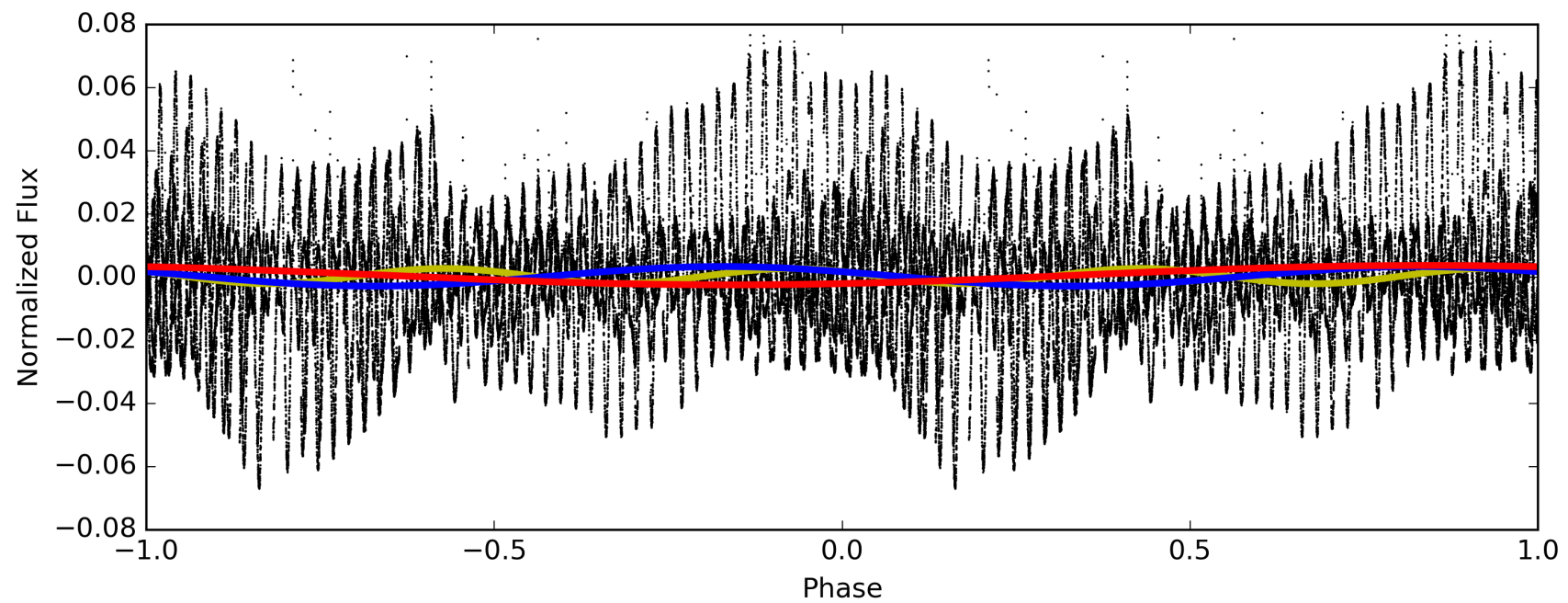
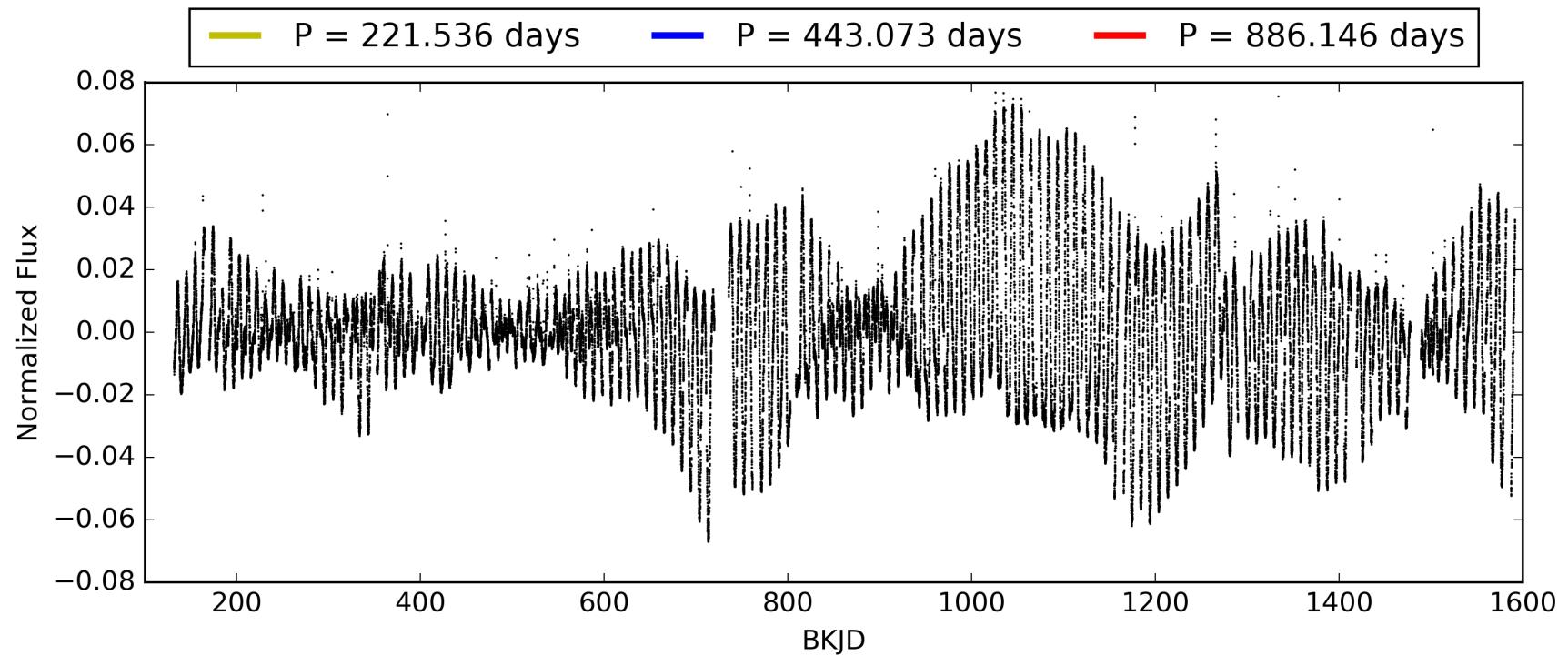
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [106.34σ]
LongPeriod-sig: 100.0% [13.11σ]
ModelChiSquare2-sig: 0.8%
ModelChiSquareGof-sig: 89.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.2143
Centroid-sig: 0.0%
Centroid-so: 4.068 arcsec [2.50σ]
OotOffset-rm: 0.865 arcsec [5.55σ]
KicOffset-rm: 0.488 arcsec [2.20σ]
OotOffset-st: 1/2/0/0 [3]
KicOffset-st: 1/2/0/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009828292-05, PDC Light Curves

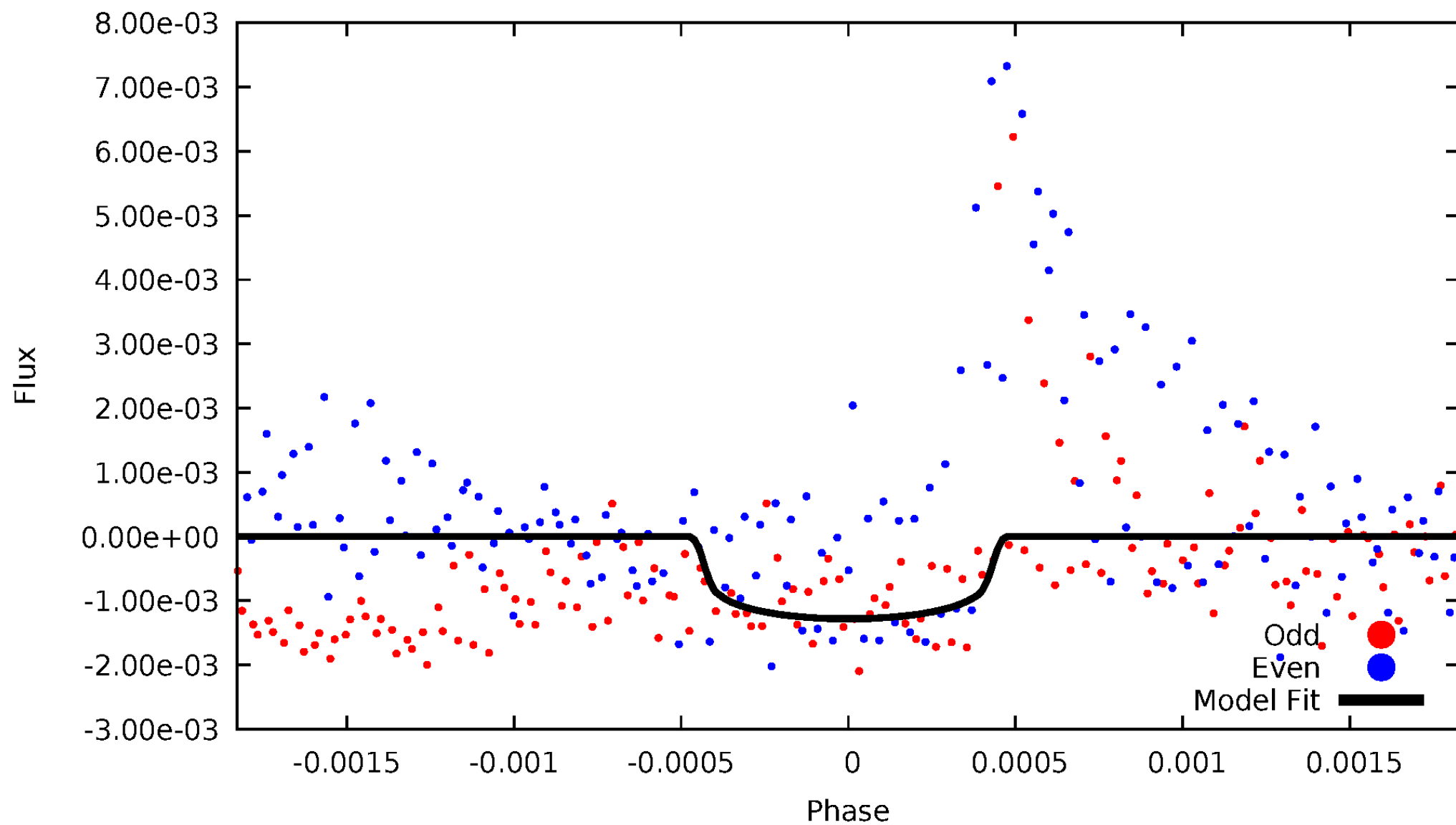


TCE 009828292-05



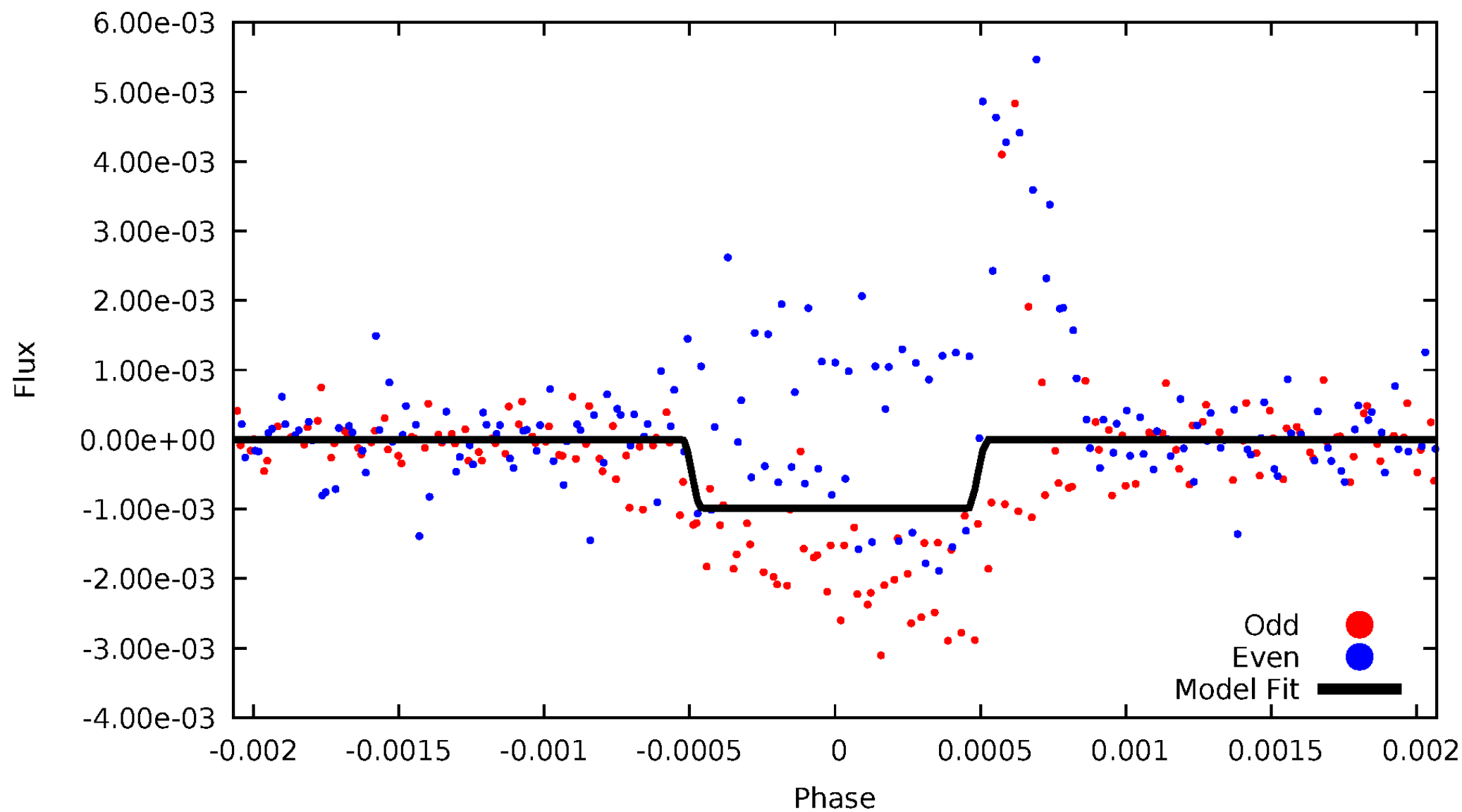
DV Odd/Even

TCE 009828292-05

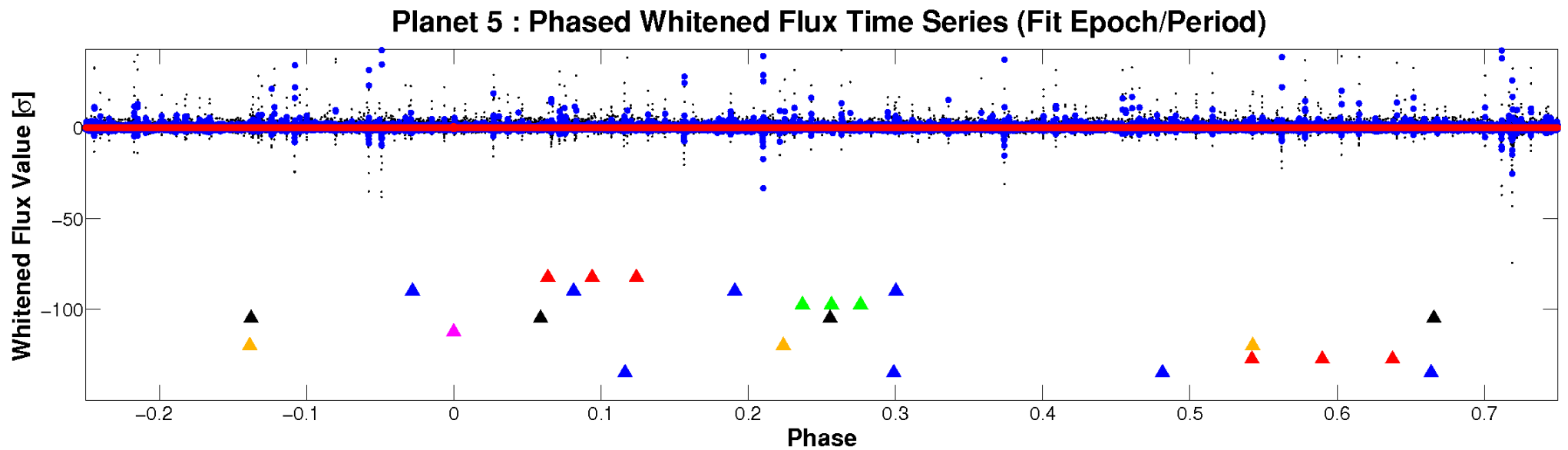
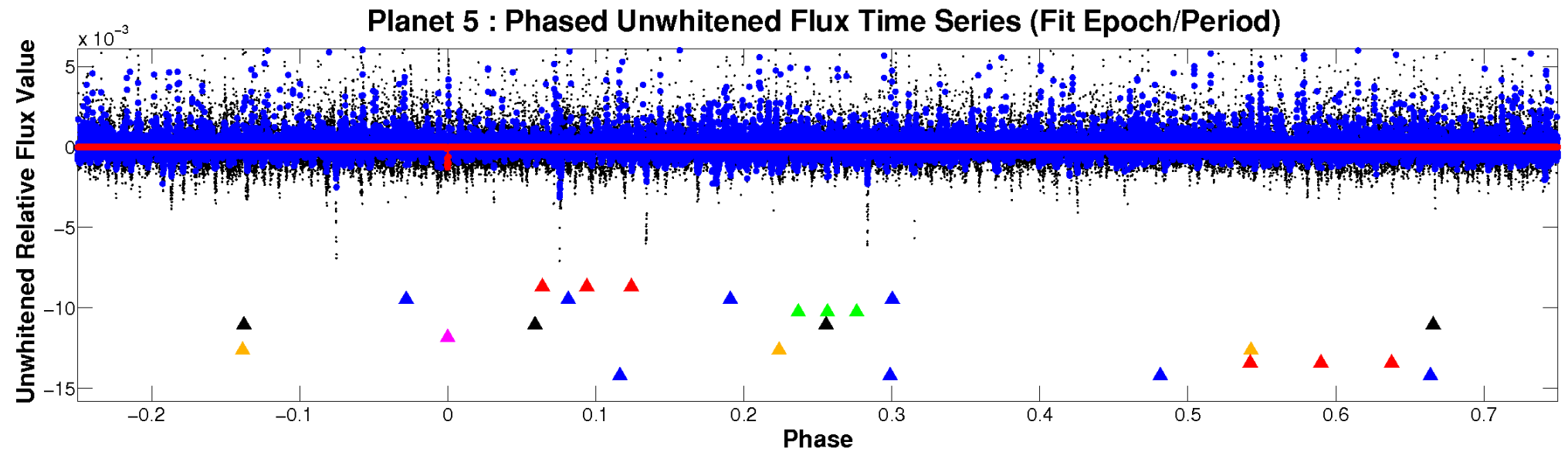


ALT Odd/Even

TCE 009828292-05

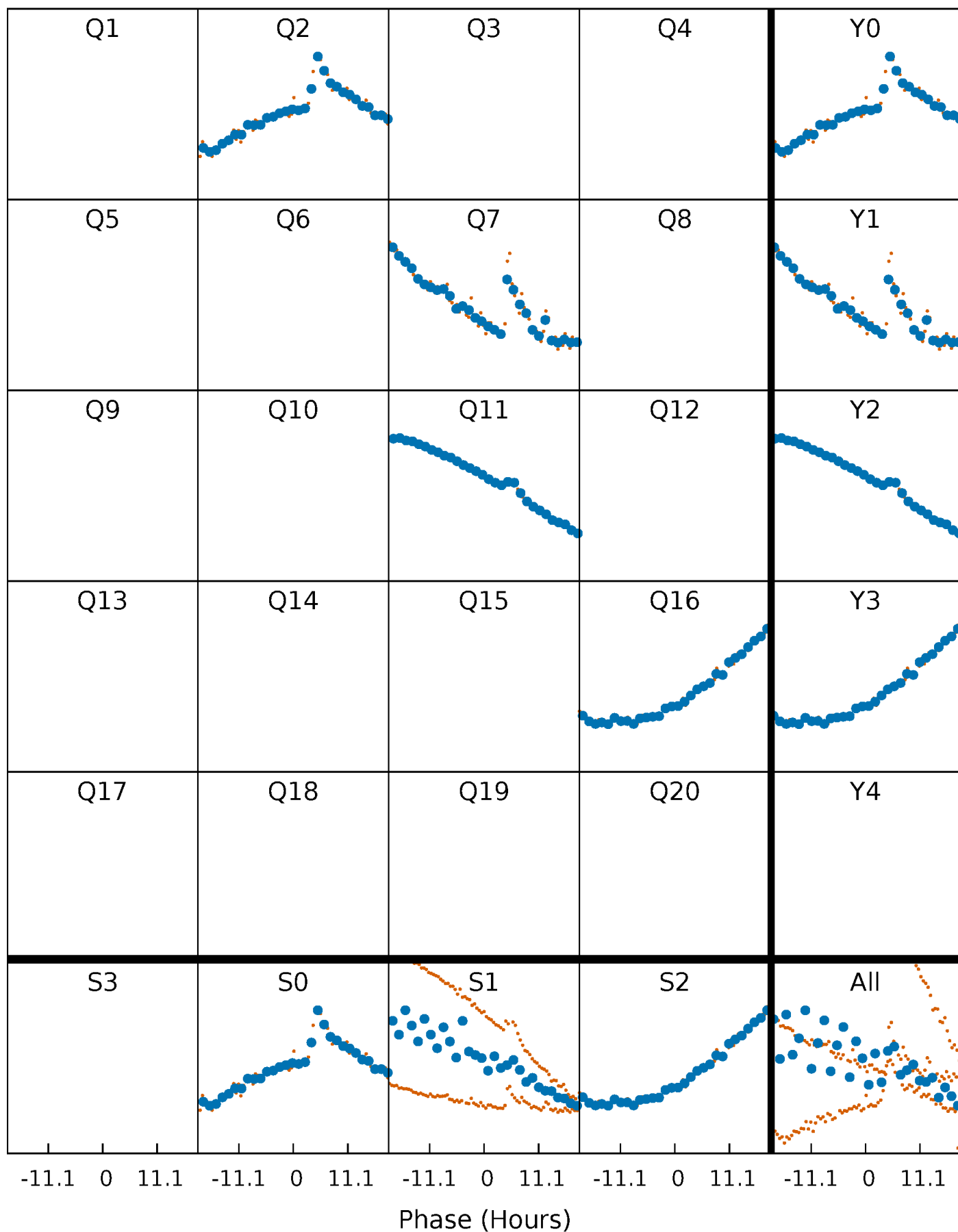


Non-Whitened Vs. Whitened Light Curve



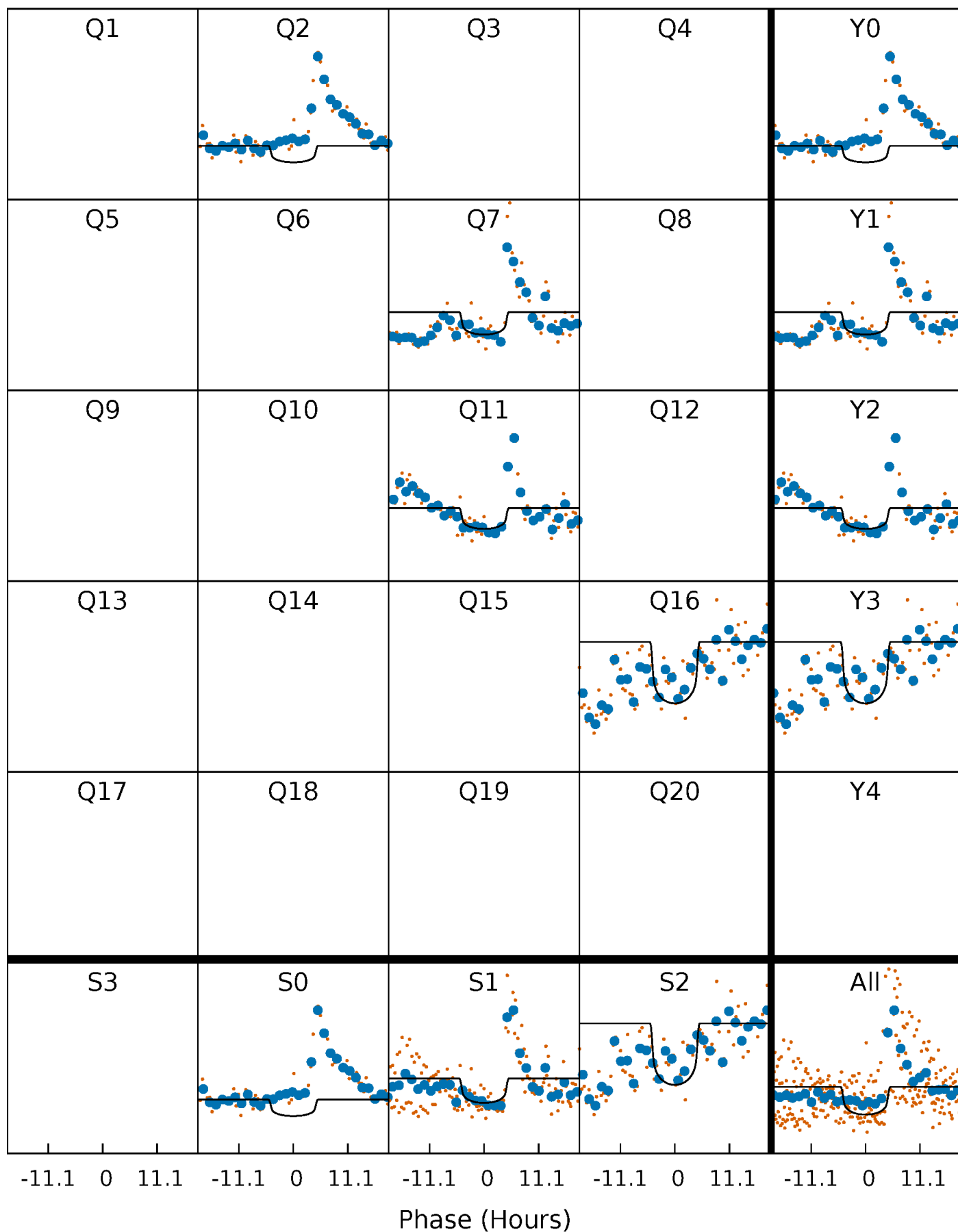
PDC Quarter-Phased Transit Curves

TCE 009828292-05 $P=443.072993$ Days $T_0=198.285203$ (BKJD)



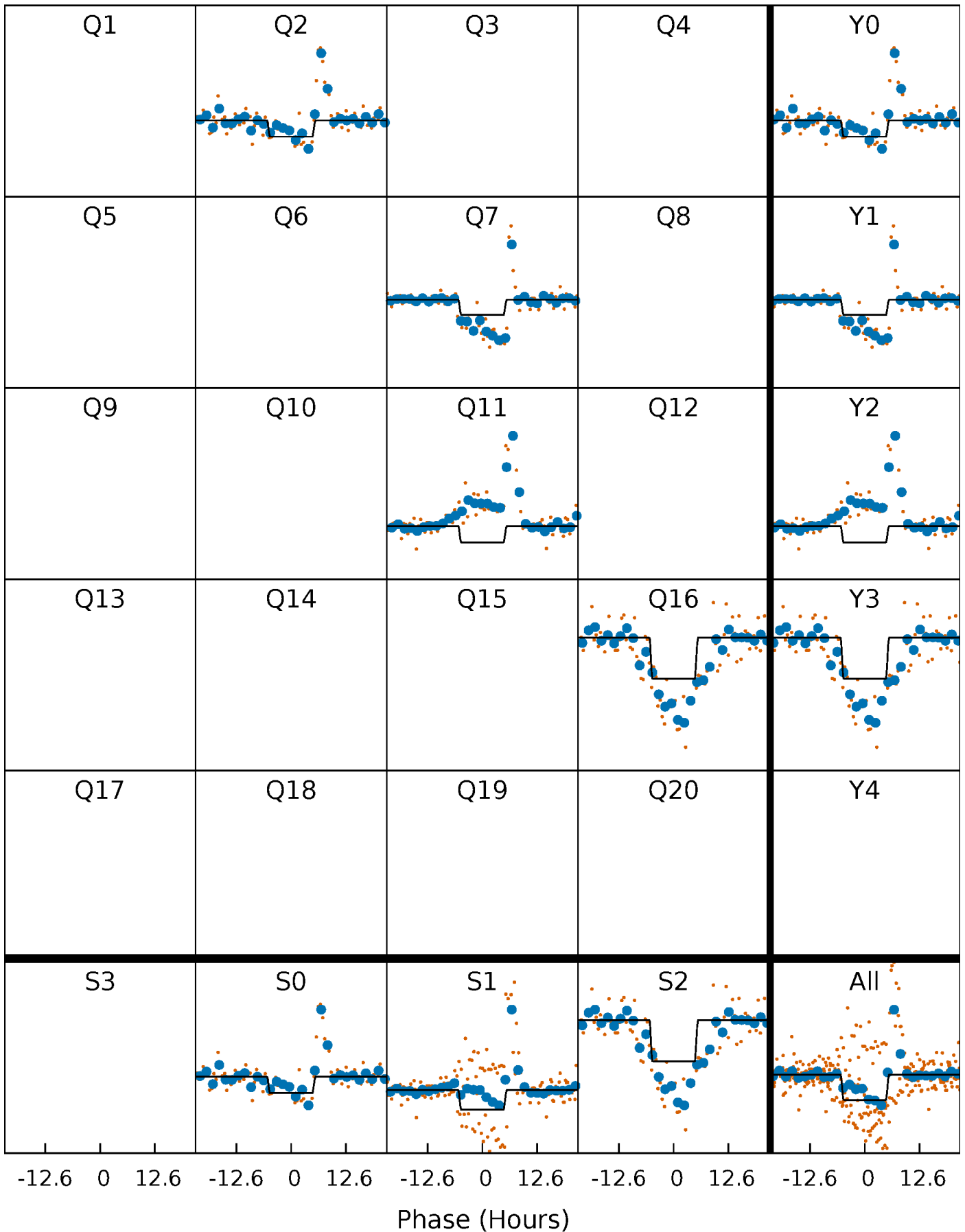
DV Quarter-Phased Transit Curves

TCE 009828292-05 $P=443.072993$ Days $T_0=198.285203$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

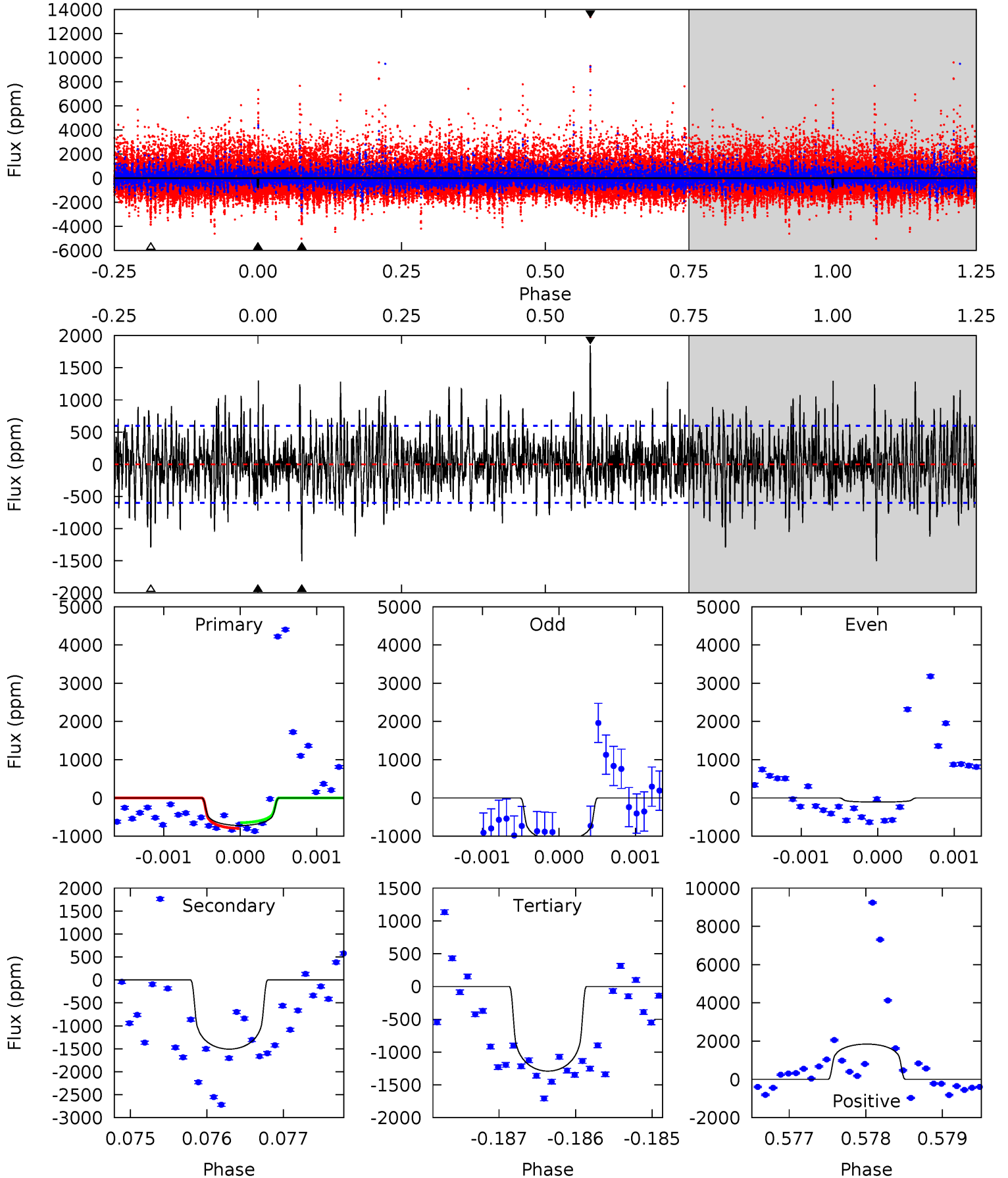
TCE 009828292-05 $P=443.088126$ Days $T_0=198.214038$ (BKJD)



DV Model-Shift Uniqueness Test

009828292-05, P = 443.072993 Days, E = 198.285203 Days

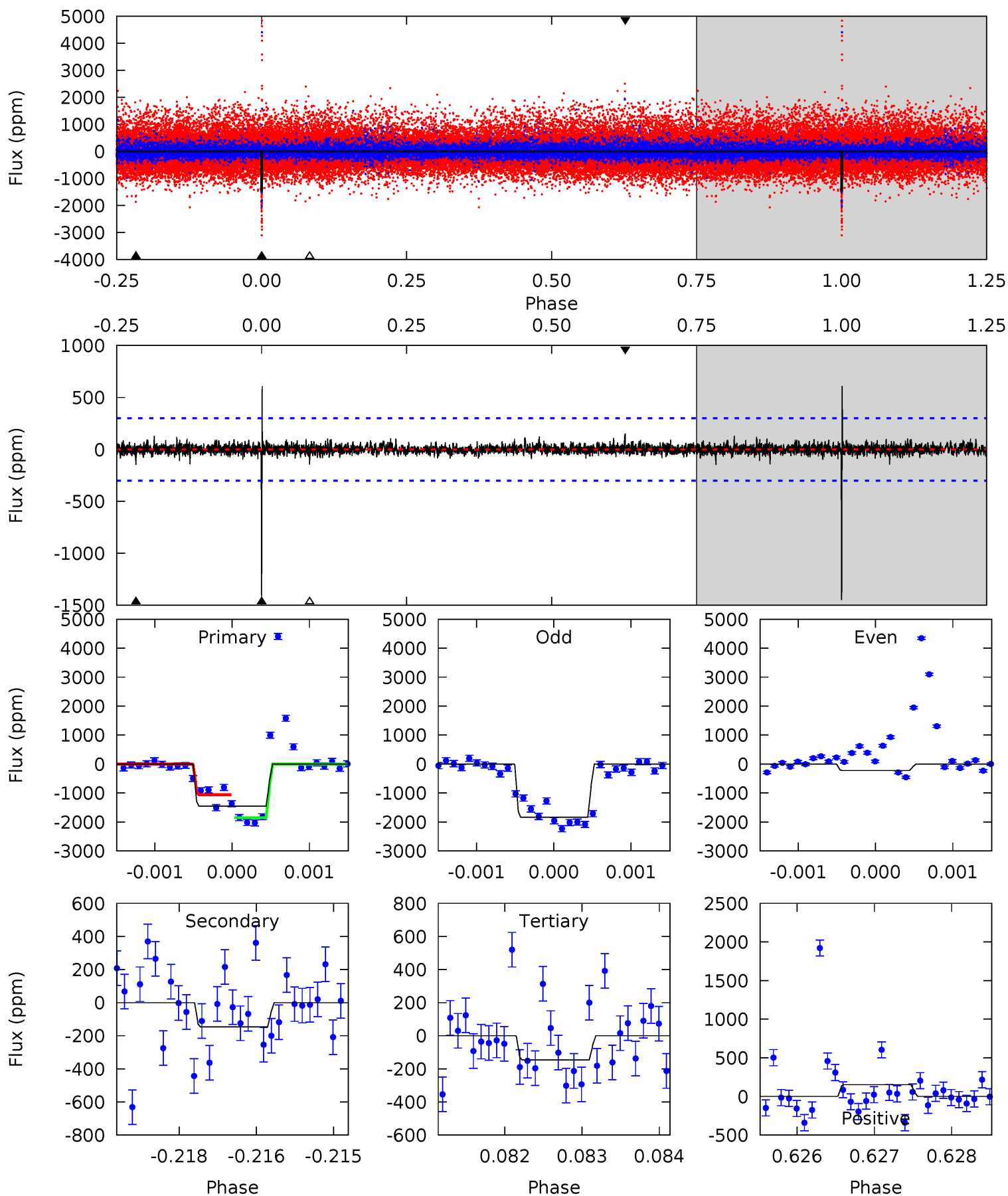
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.56	13.7	11.8	16.8	5.46	3.31	3.16	-5.20	-10.3	1.98	-3.09	3.11	0.56	0.55	0.69



Alt Model-Shift Uniqueness Test

009828292-05, P = 443.088126 Days, E = 198.214038 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.2	2.65	2.64	2.76	5.45	3.28	0.50	23.6	23.5	0.01	-0.10	16.4	0.65	0.30	7.20



Stellar Parameters For KIC 009828292

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	3770^{+76}_{-83}	$4.747^{+0.052}_{-0.032}$	$-0.100^{+0.200}_{-0.200}$	$0.499^{+0.037}_{-0.051}$	$0.508^{+0.043}_{-0.043}$	$5.743^{+1.418}_{-0.785}$
	+2%/-2%	+1%/-1%	+200%/-200%	+7%/-10%	+8%/-8%	+25%/-14%
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 009828292-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1507 ± 110	$1.84^{+0.82}_{-0.73}$	172^{+4}_{-5}	3939^{+829}_{-443}	$201871^{+356665}_{-104186}$
Alt.	-146 ± 55	$1.68^{+0.74}_{-0.74}$	172^{+4}_{-5}	2815^{+519}_{-286}	22286^{+51477}_{-12824}

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

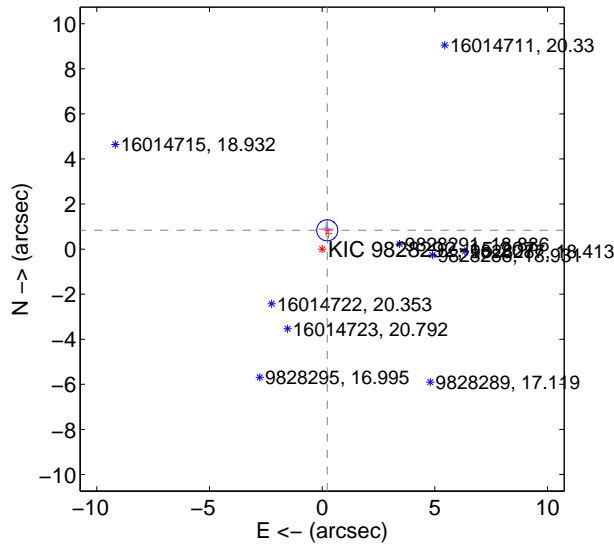
Supplemental centroid analysis for 009828292-05. Kepler magnitude: 15.21. Transit SNR 6.29

There are 1 quarters with good PRF difference image offsets

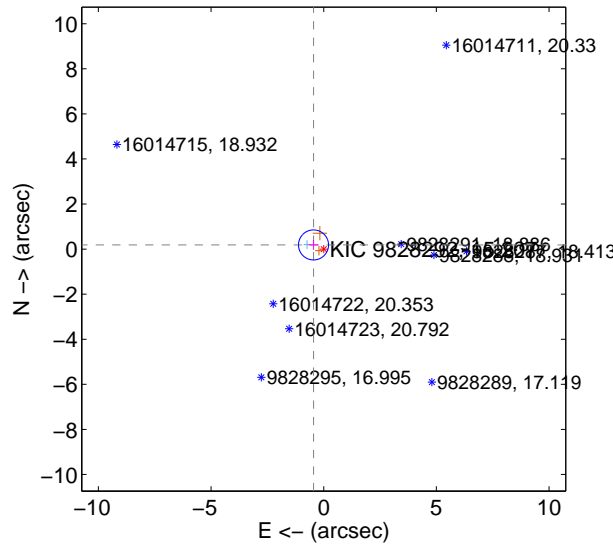
The direct PRF centroid is offset from the target star catalog position by about 0.91 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.865 \pm 0.156	5.55	-0.226 \pm 0.146	0.835 \pm 0.156
PRF-fit source offset from KIC position	0.488 \pm 0.222	2.20	0.452 \pm 0.223	0.185 \pm 0.217
photometric centroid source offset	4.07 \pm 1.63	2.50	-1.19 \pm 0.77	3.89 \pm 1.69

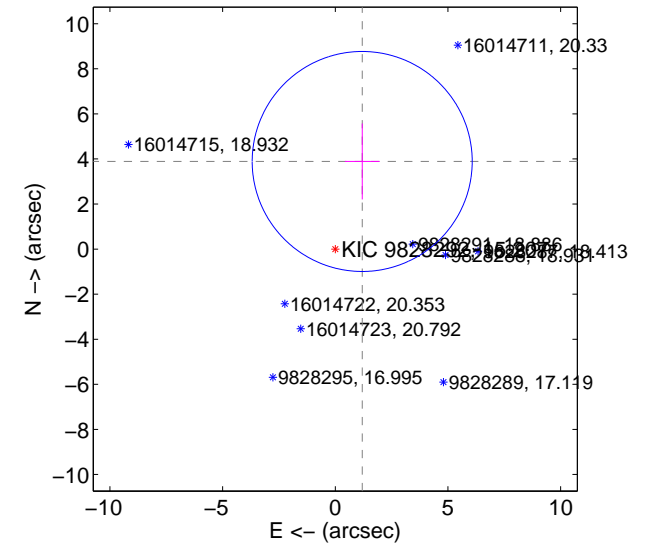
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

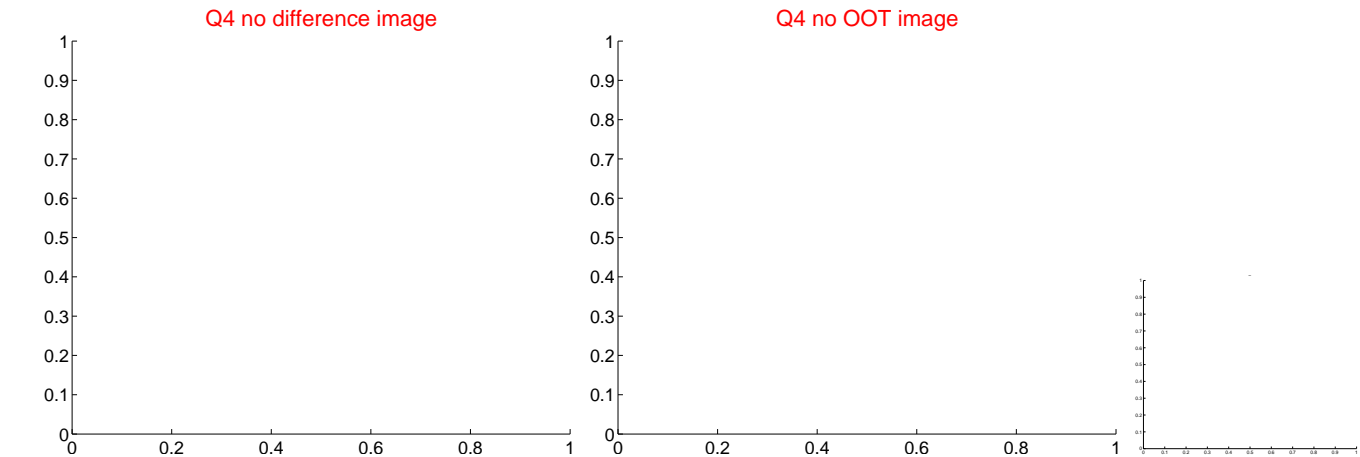
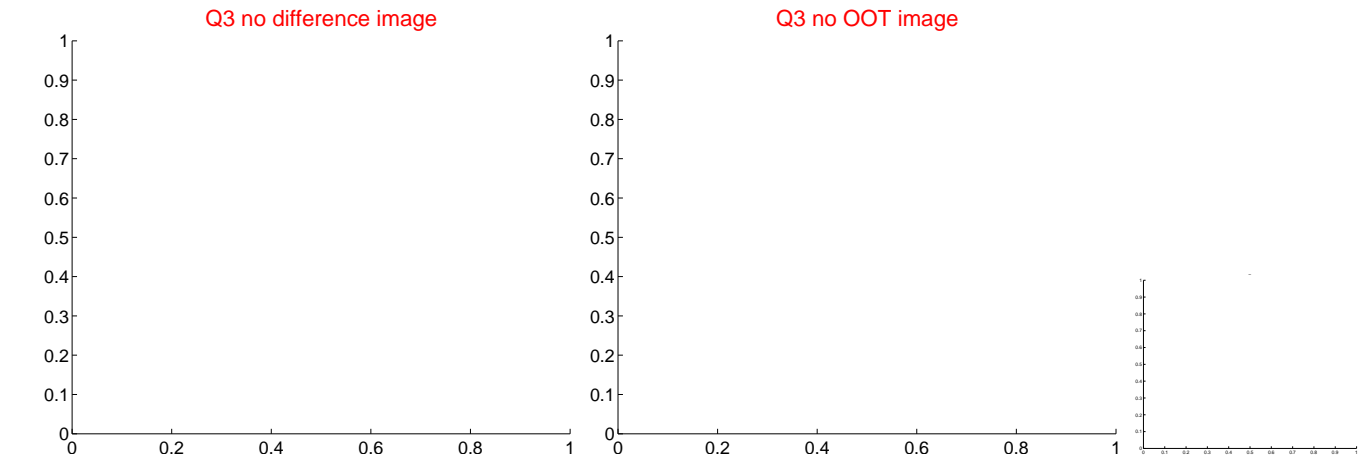
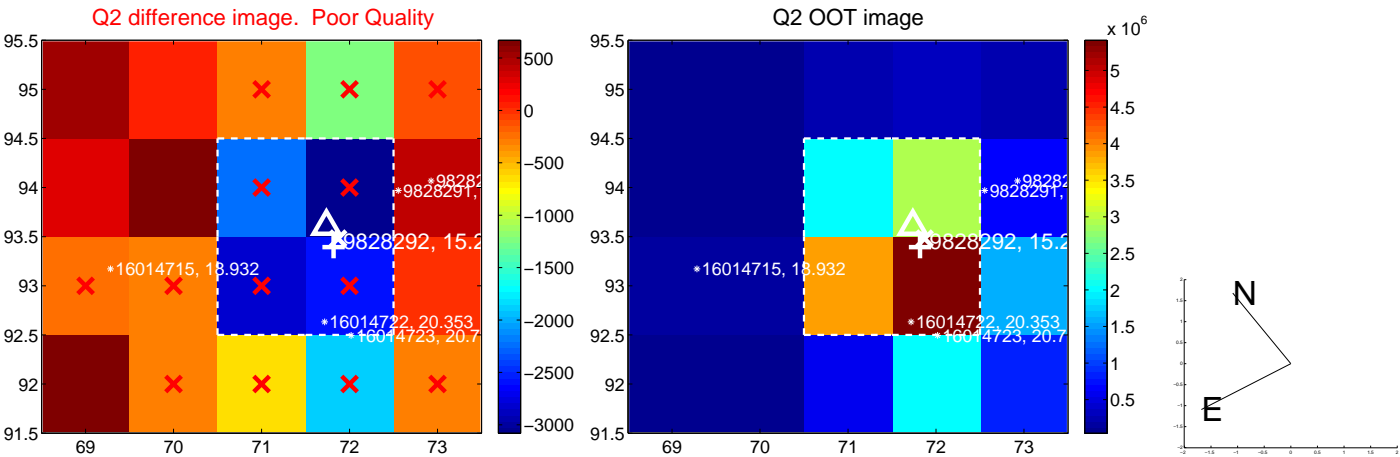
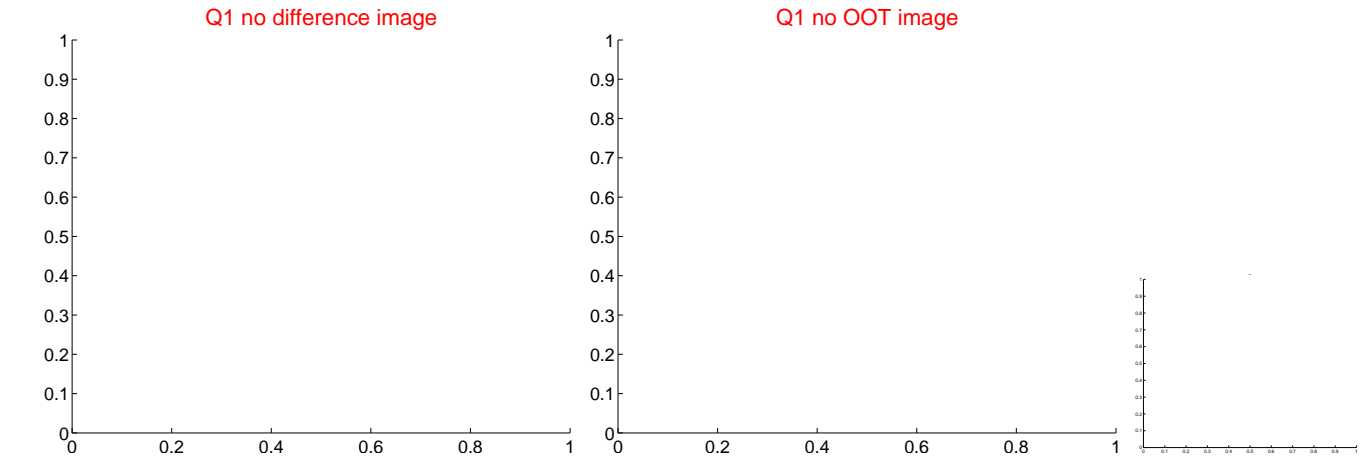


offset from photometric centroids

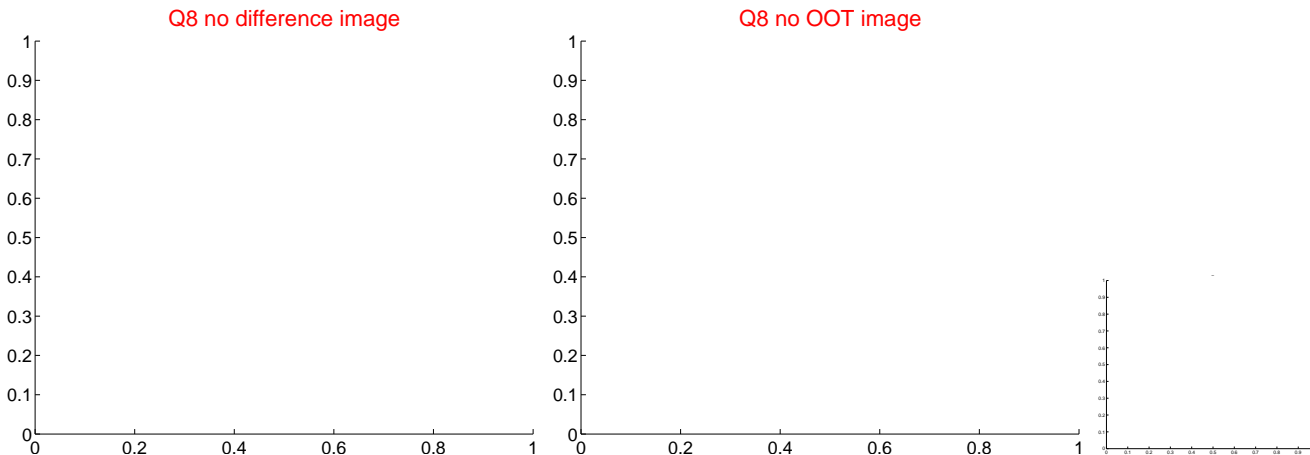
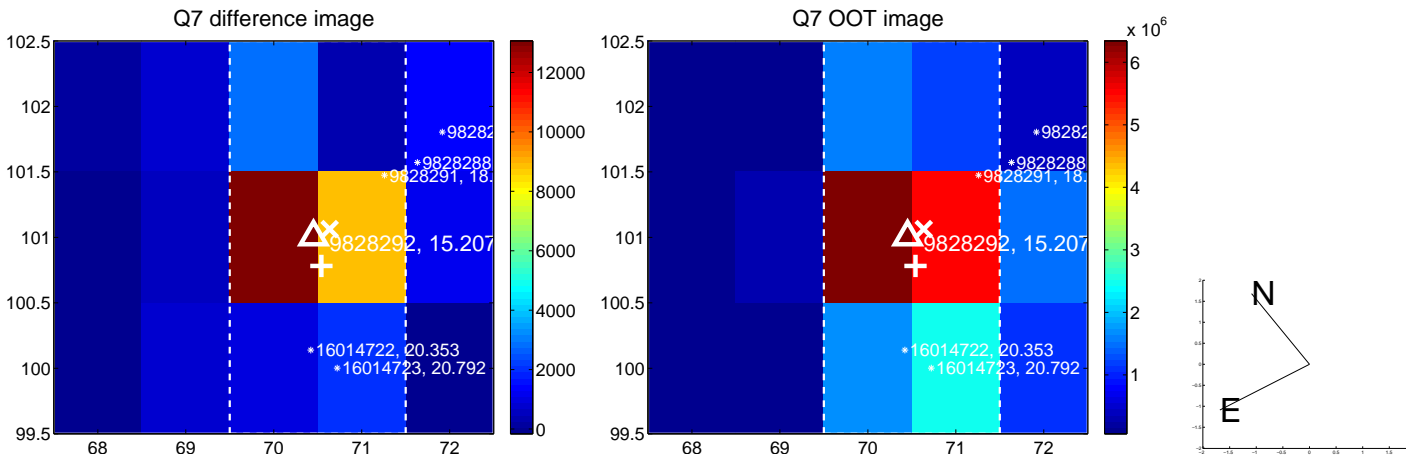
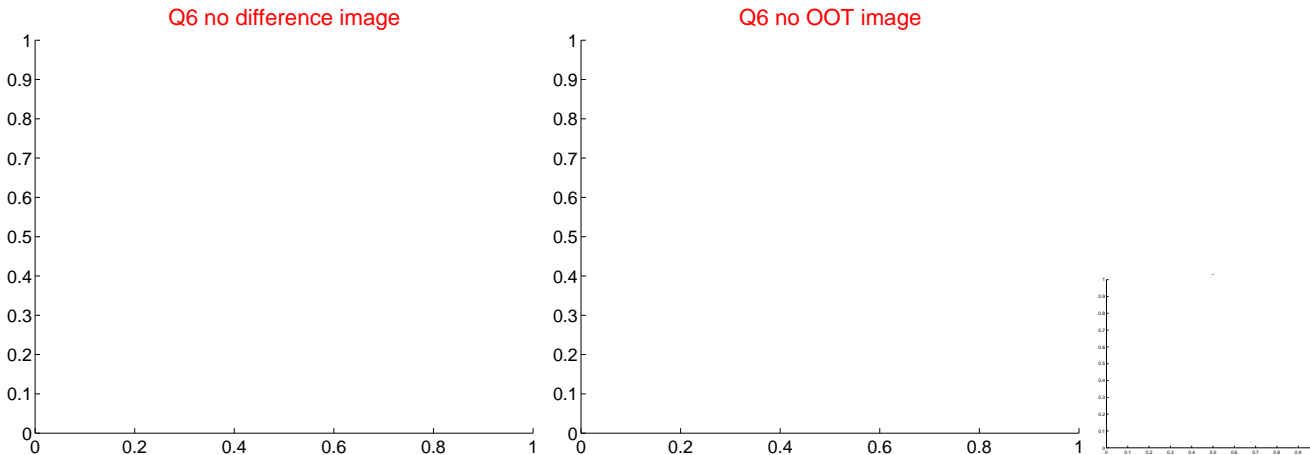
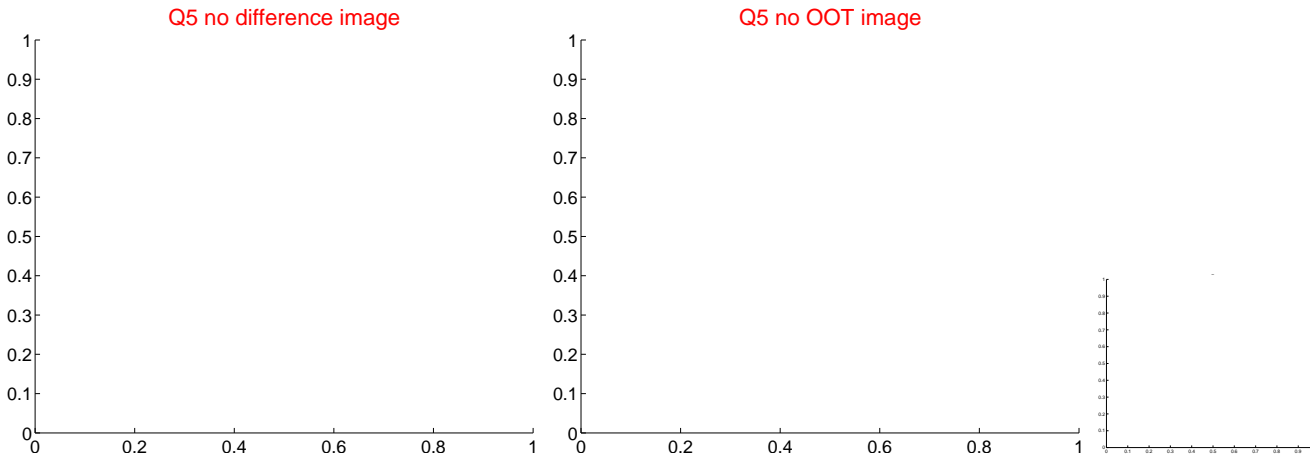


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

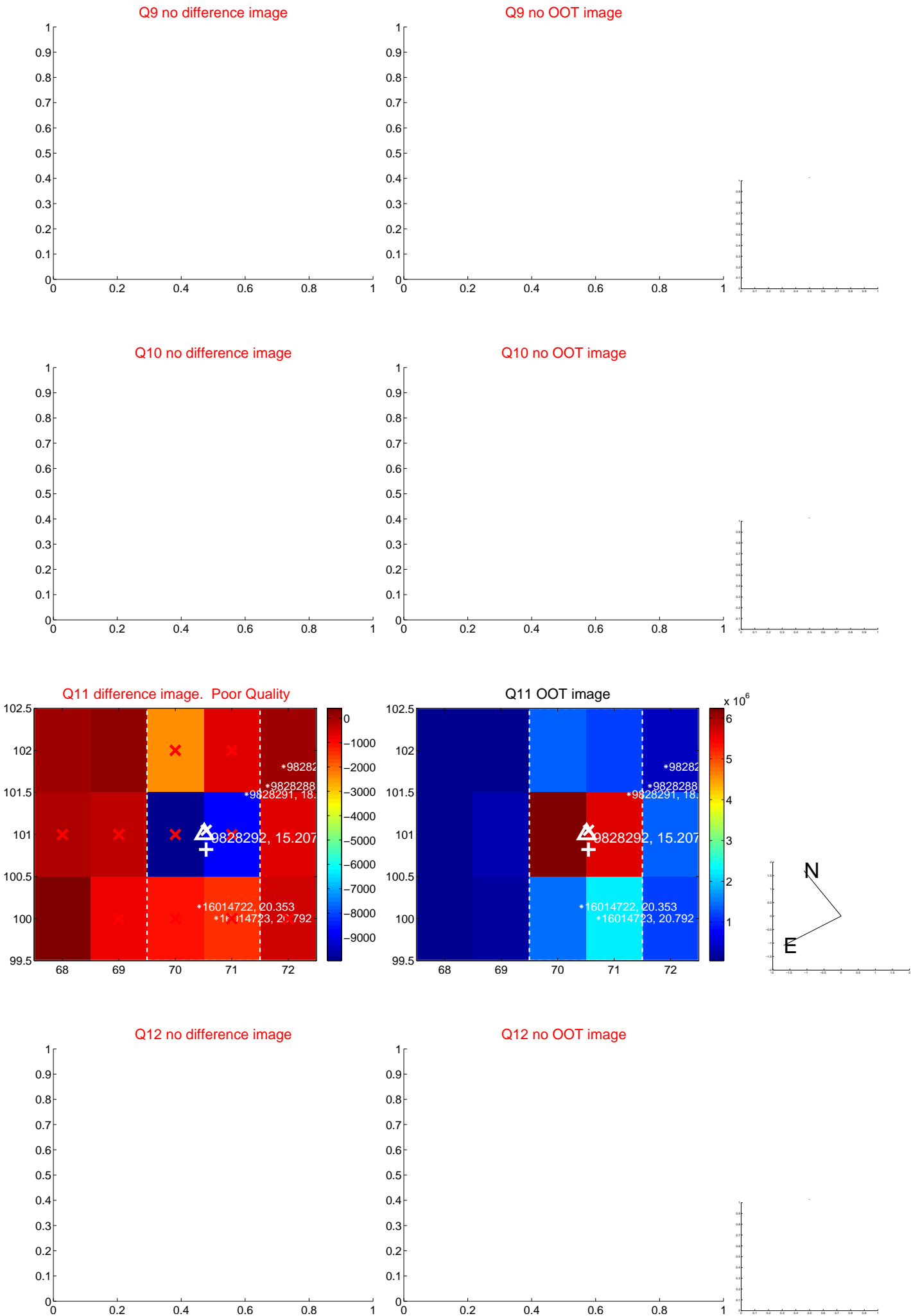
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



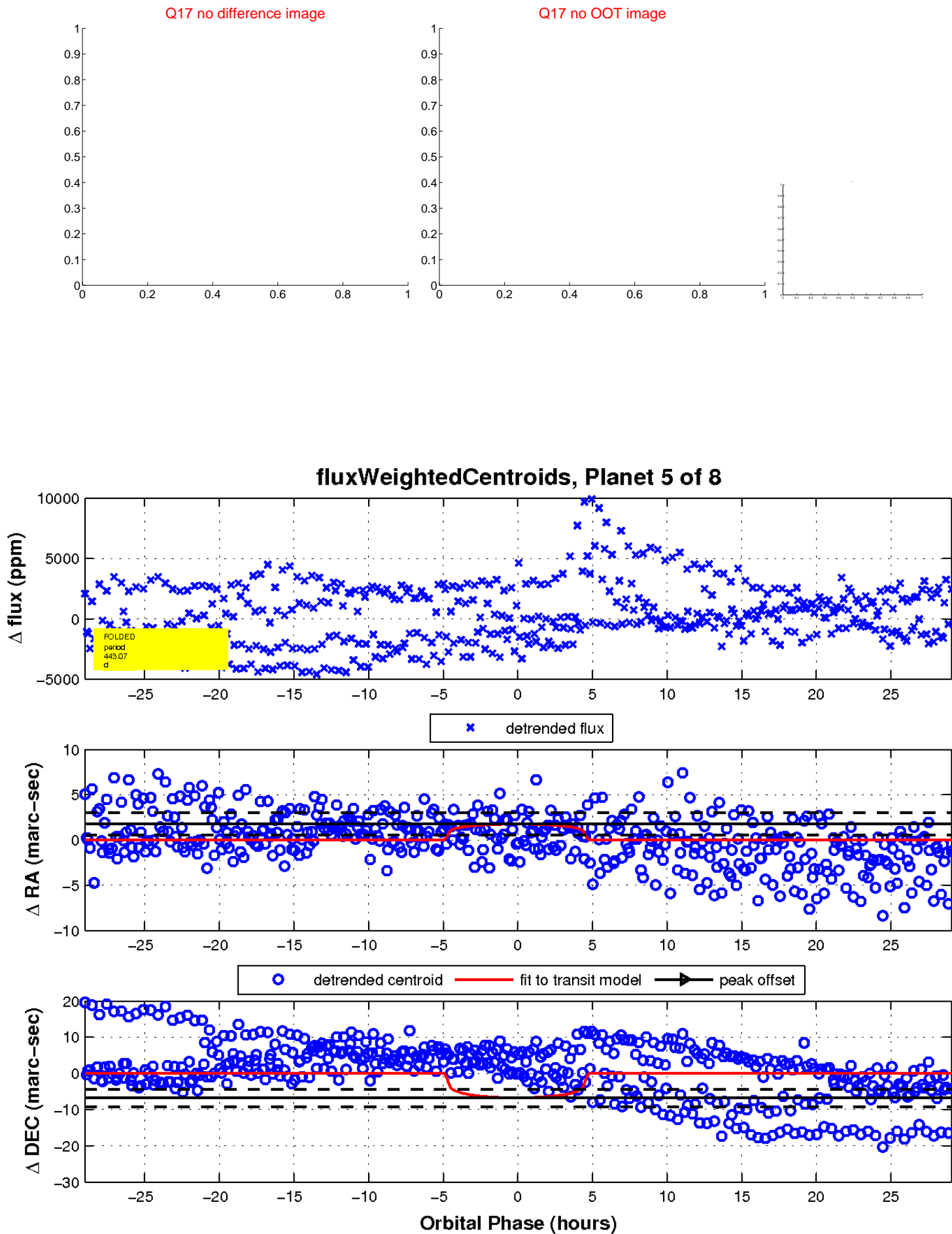
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

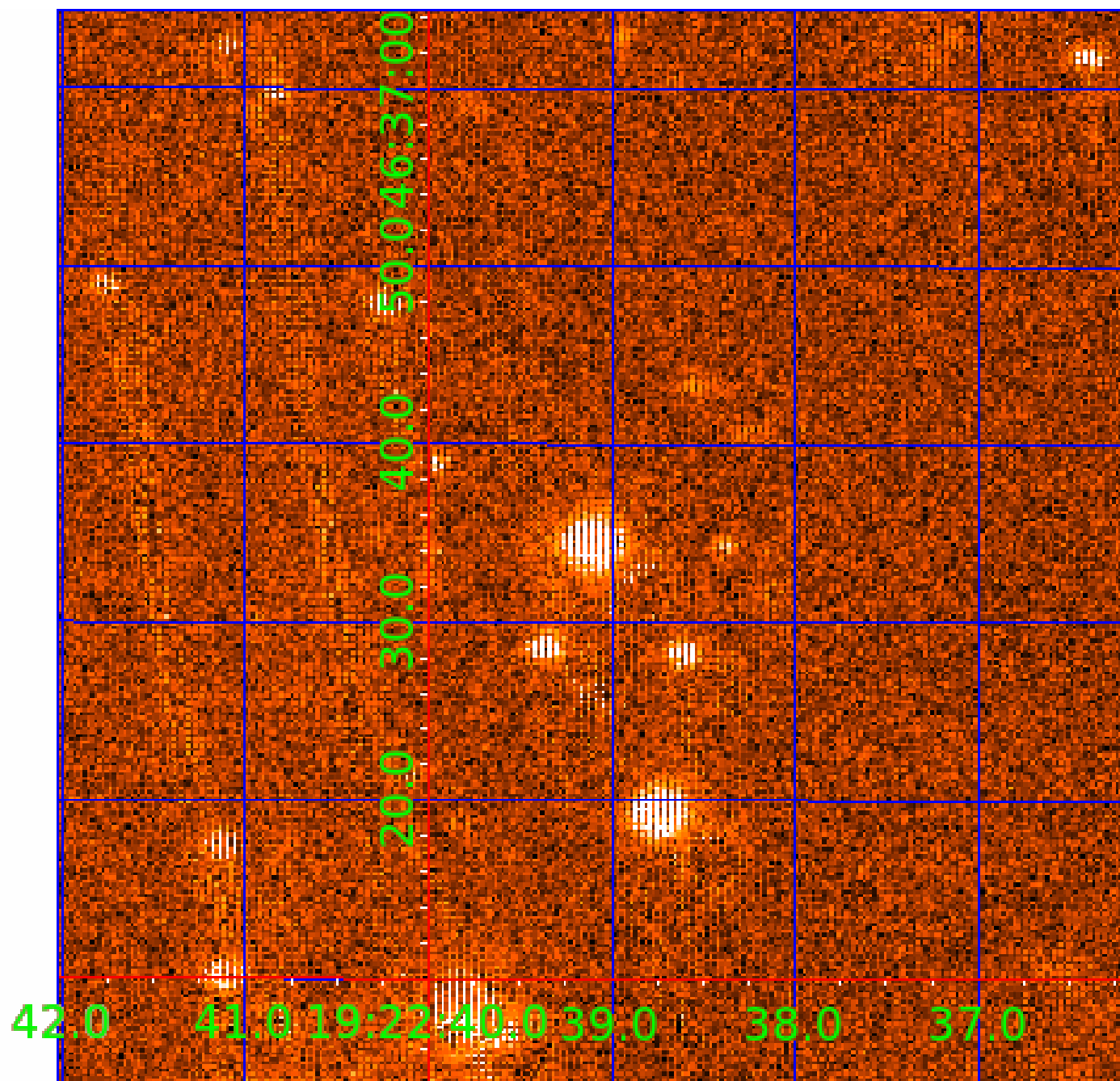


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009828292

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})
009828292-01	OBS	No	456.395440	226.630135	2292.6	3.184	15.1	8.8	0.50	3770	2.48	0.05
009828292-02	OBS	No	394.580557	331.360225	1732.9	5.037	12.8	6.1	0.50	3770	4.03	0.06
009828292-03	OBS	No	451.812350	303.232715	2699.1	12.717	13.8	10.5	0.50	3770	2.56	0.05
009828292-04	OBS	No	355.949501	311.554031	1178.2	5.951	12.5	5.3	0.50	3770	1.74	0.07
009828292-05	OBS	No	443.072993	198.285203	1281.8	9.717	12.4	6.3	0.50	3770	1.83	0.06
009828292-06	OBS	No	584.317830	297.477088	1996.9	4.724	11.7	7.2	0.50	3770	2.26	0.04
009828292-07	OBS	No	464.236807	438.505716	1411.1	14.883	10.3	5.5	0.50	3770	1.89	0.05
009828292-08	OBS	No	362.205290	492.439911	1650.1	6.408	10.5	7.0	0.50	3770	3.95	0.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009828292-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009828292-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-04	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
009828292-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009828292-06	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
009828292-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

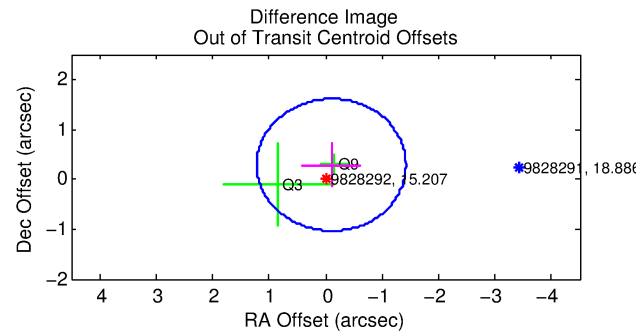
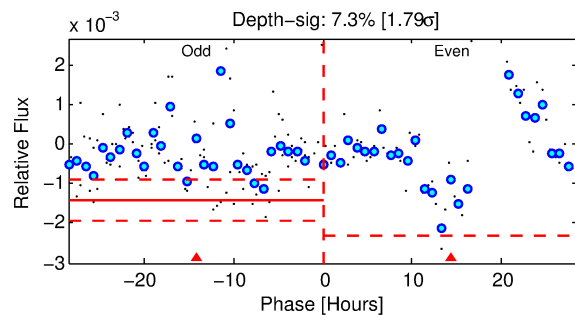
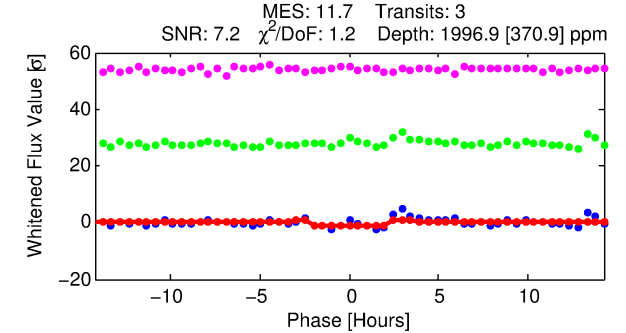
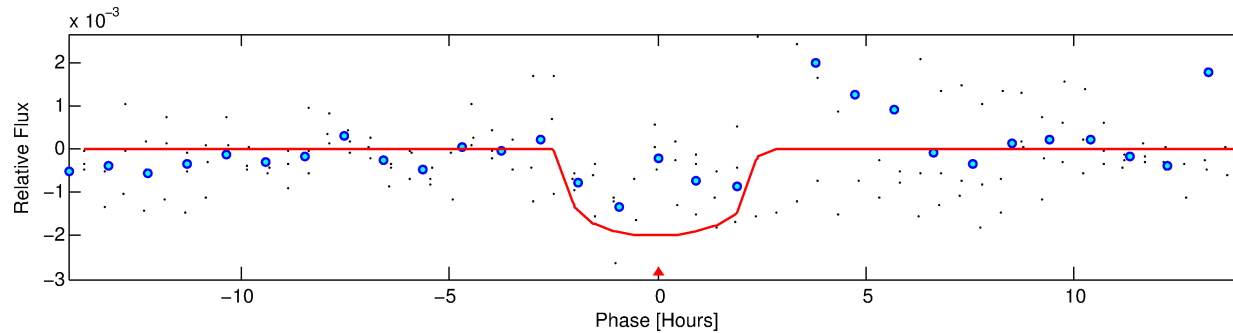
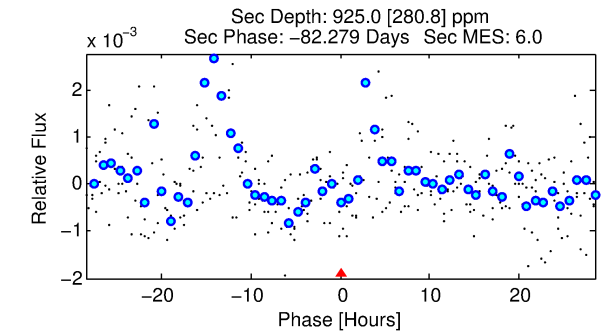
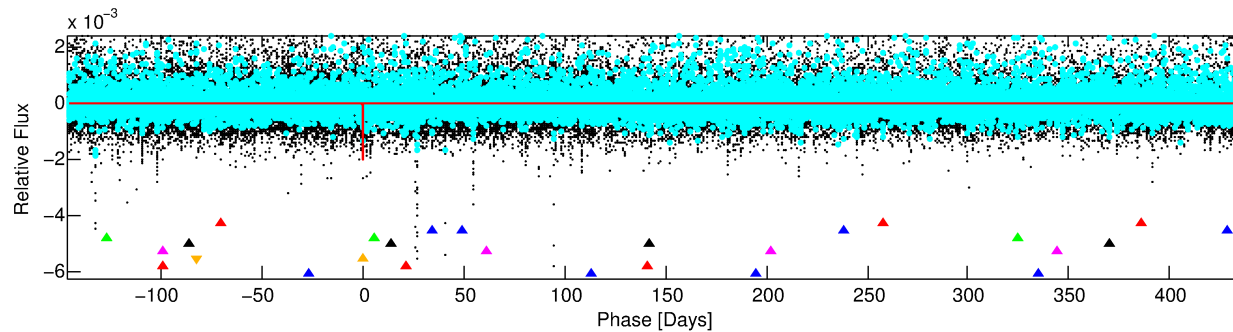
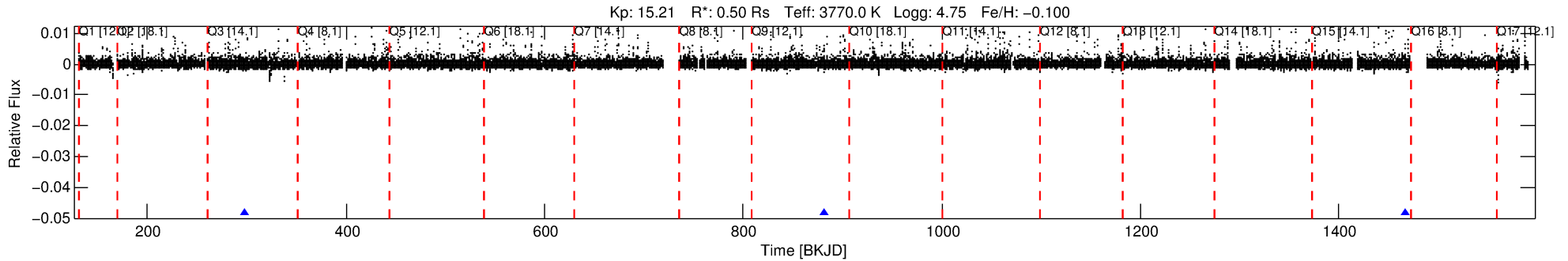
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009828292-06

No Significant Match Found

DV One-Page Summary

KIC: 9828292 Candidate: 6 of 8 Period: 584.318 d



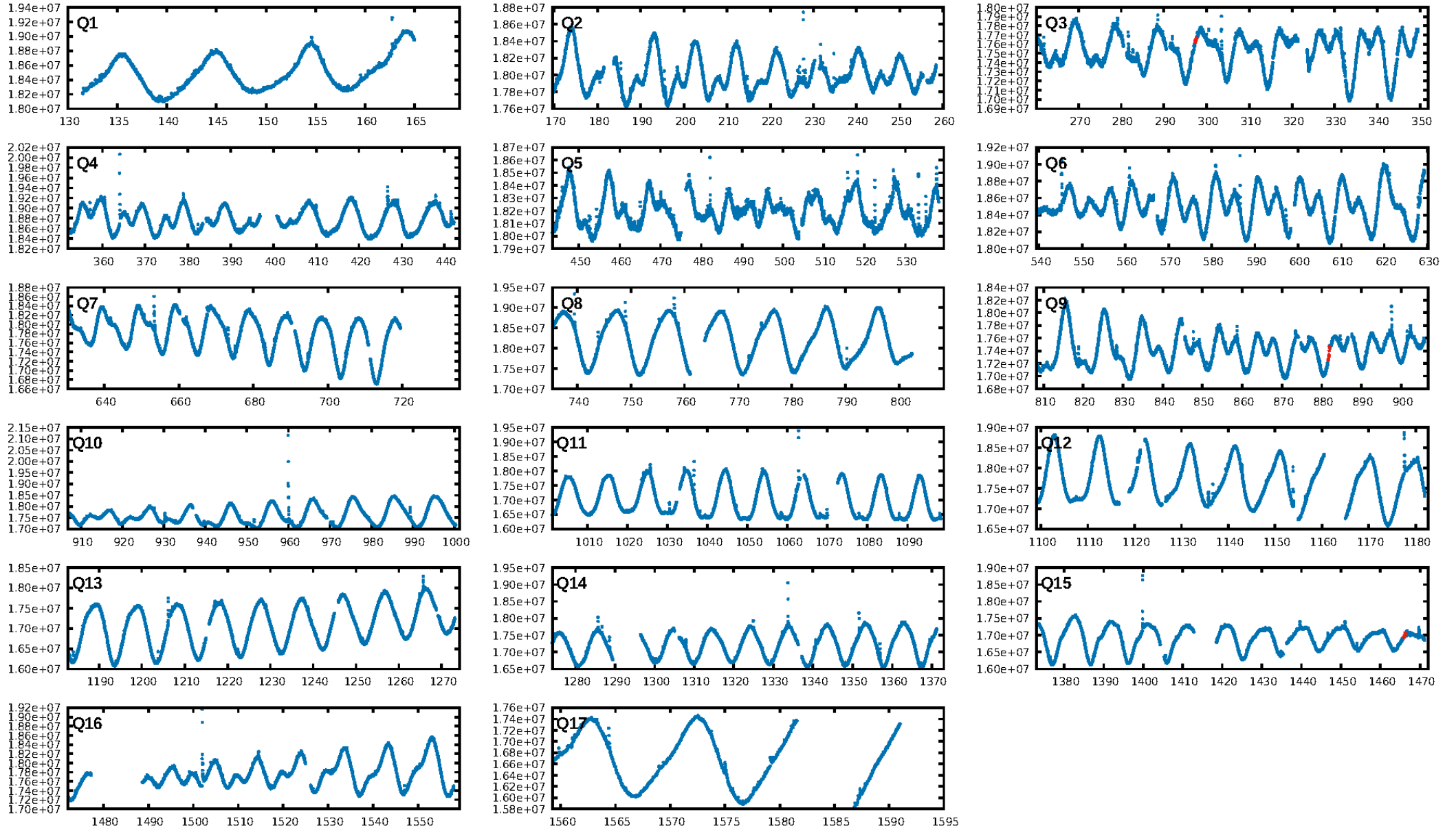
DV Fit Results:

Period = 584.31783 [0.00633] d
Epoch = 297.4771 [0.0092] BKJD
Rp/R* = 0.0415 [0.0304]
a/R* = 891.03 [2805.94]
b = 0.44 [5.73]
Seff = 0.04 [0.01]
Teq = 112 [4] K
Rp = 2.26 [1.67] Re
a = 1.0911 [0.0862] AU
Ag = 118524.78 [177842.37] [0.67σ]
Teffp = 3227 [1209] K [2.57σ]

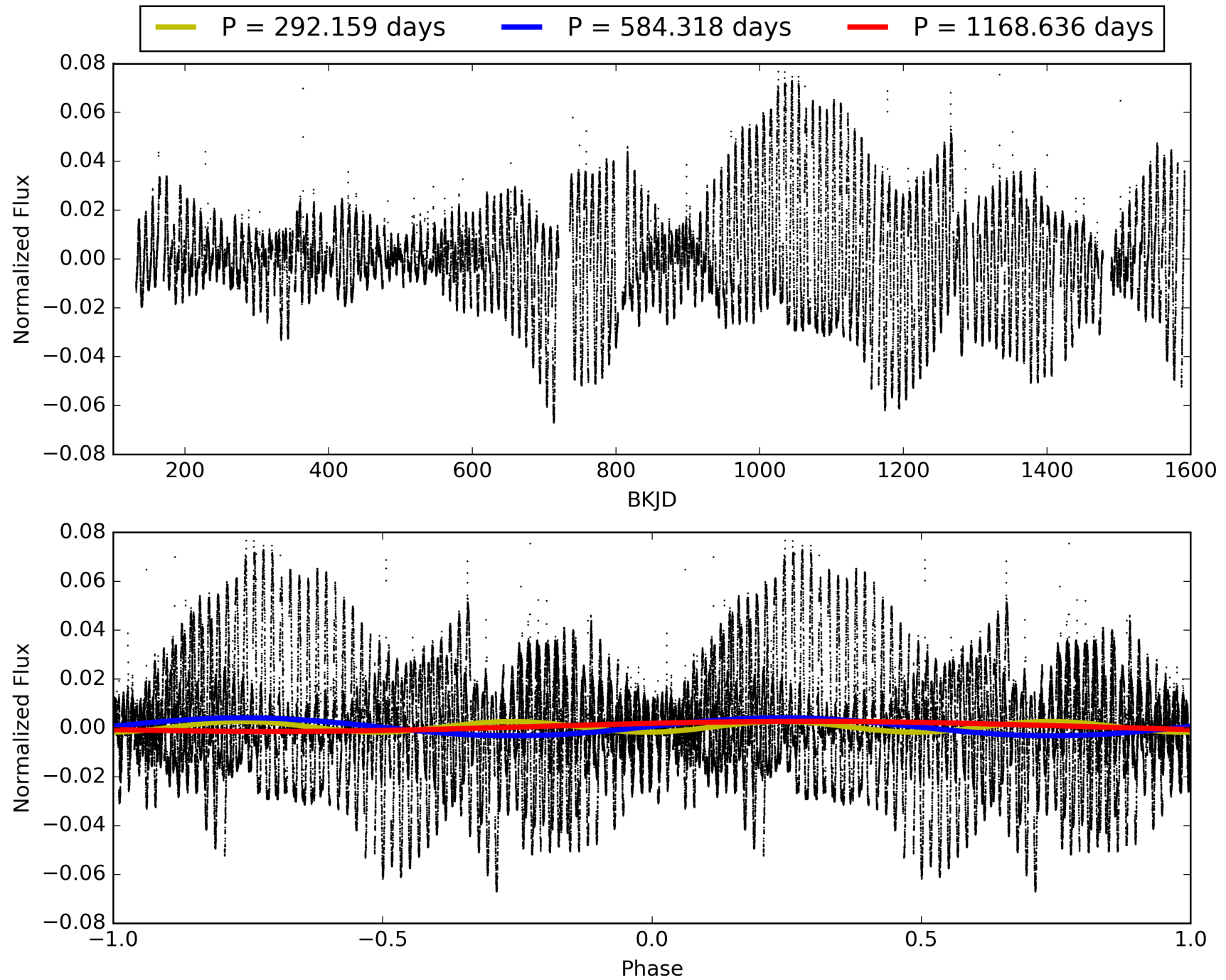
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [184.57σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 7.2%
ModelChiSquareGof-sig: 68.7%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.232
Centroid-sig: 15.1%
Centroid-so: 1.696 arcsec [2.25σ]
OotOffset-rm: 0.302 arcsec [0.69σ]
KicOffset-rm: 0.134 arcsec [0.28σ]
OotOffset-st: 0/1/0/1 [2]
KicOffset-st: 0/1/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009828292-06, PDC Light Curves

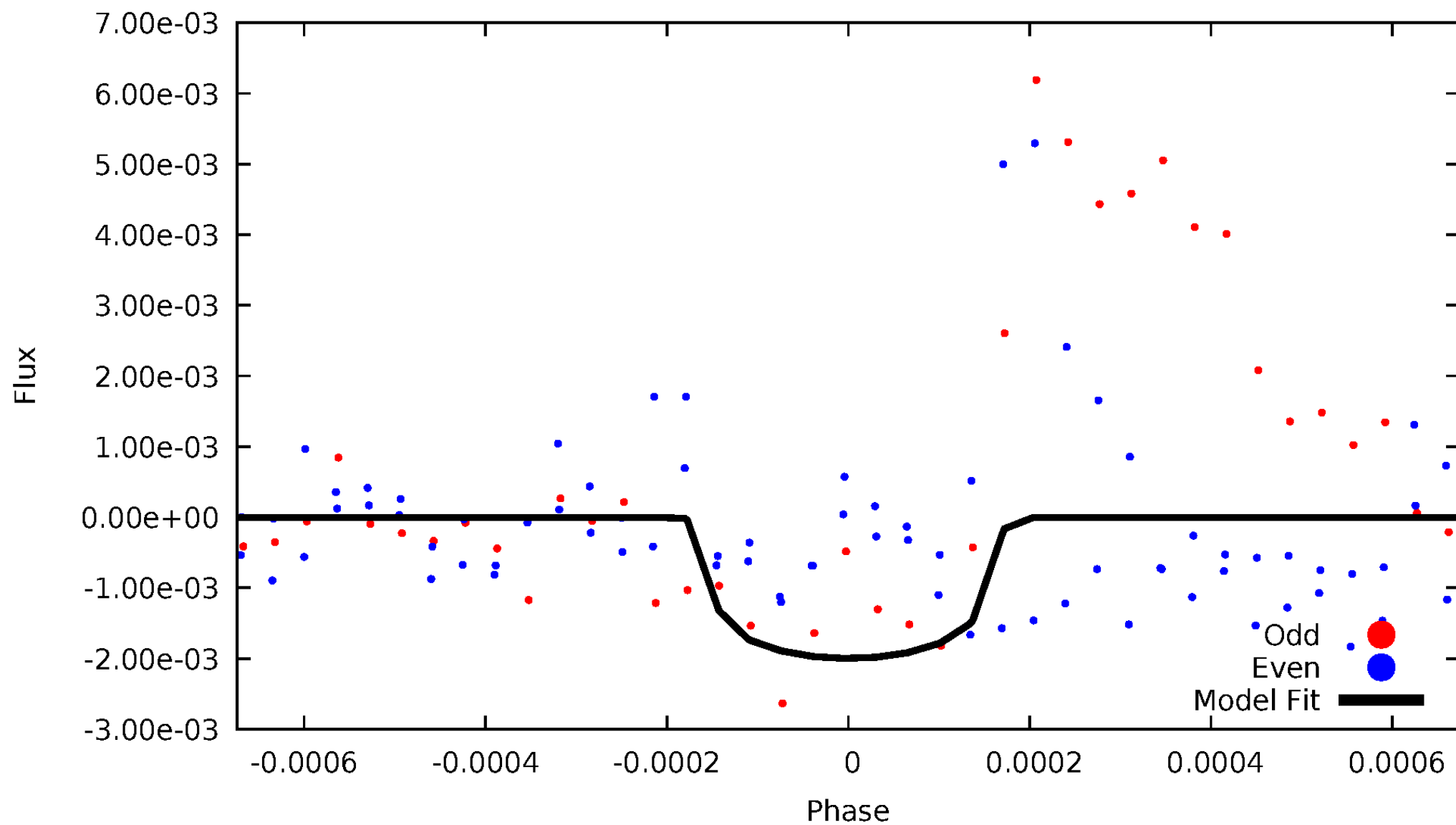


TCE 009828292-06



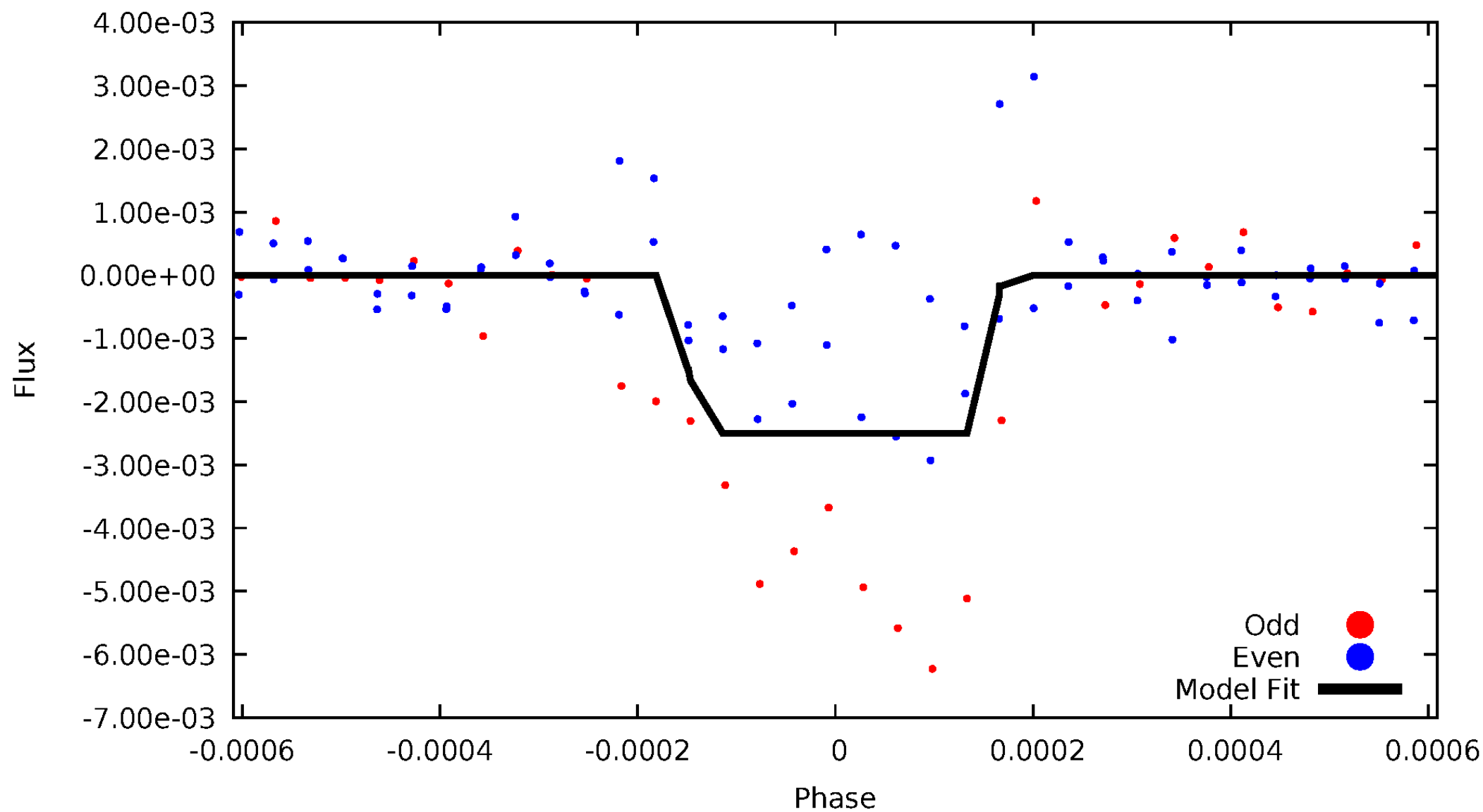
DV Odd/Even

TCE 009828292-06



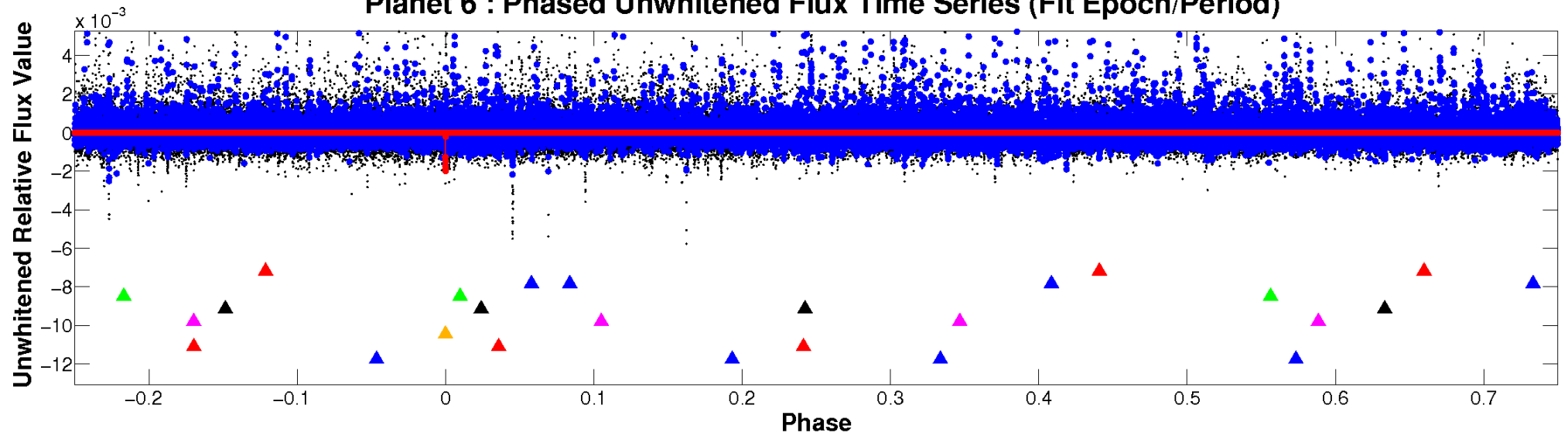
ALT Odd/Even

TCE 009828292-06

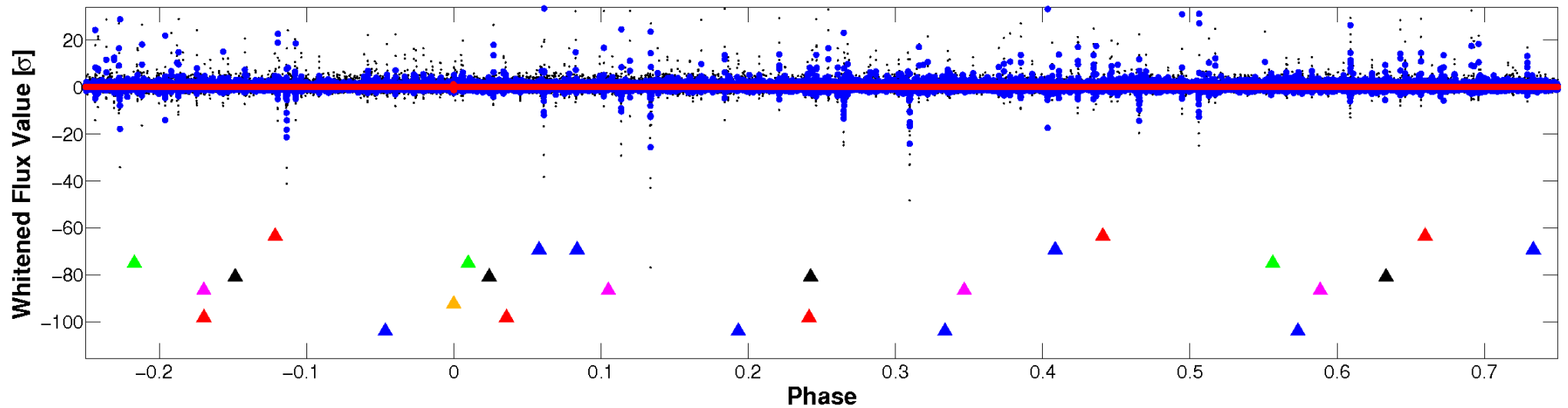


Non-Whitened Vs. Whitened Light Curve

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

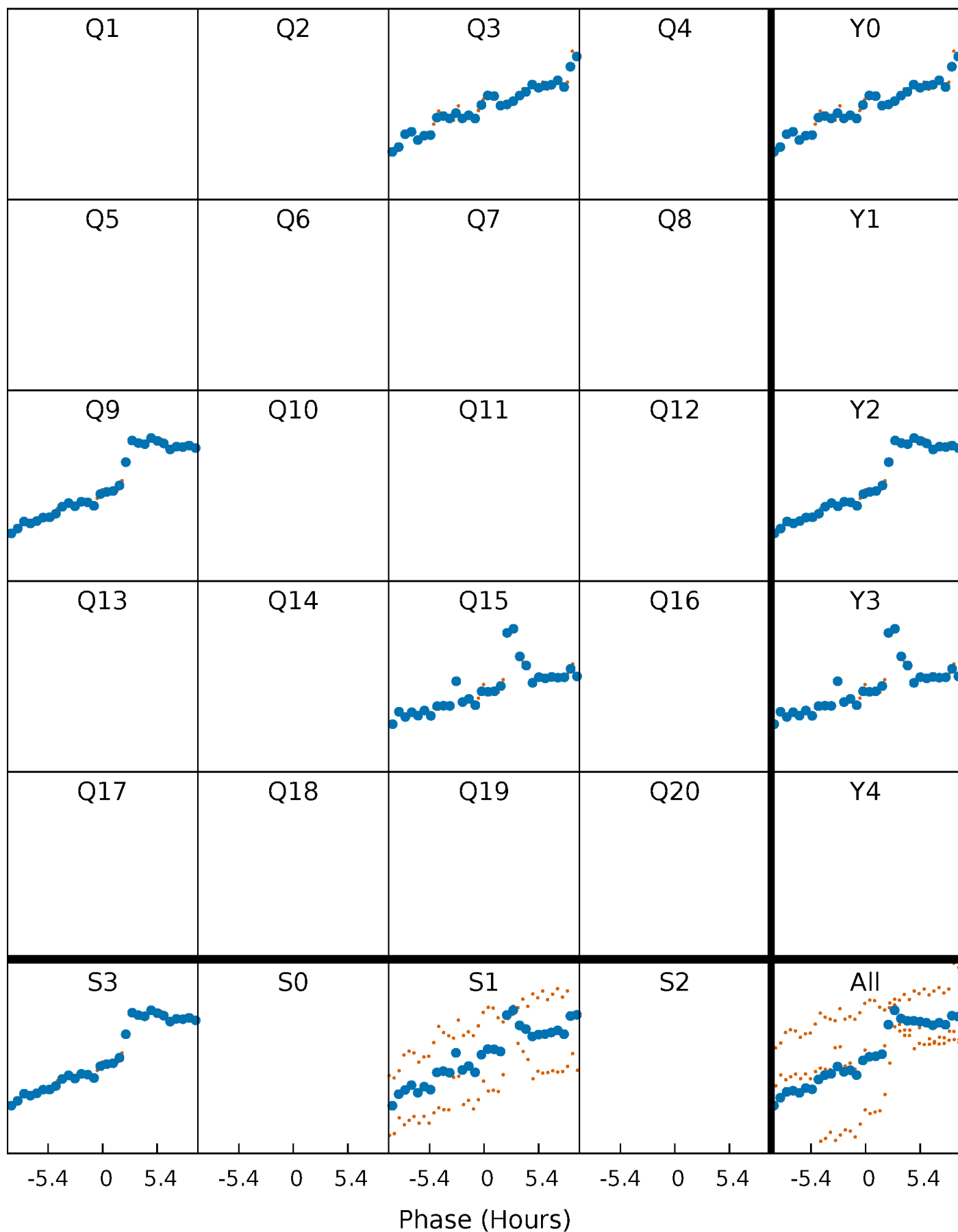


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



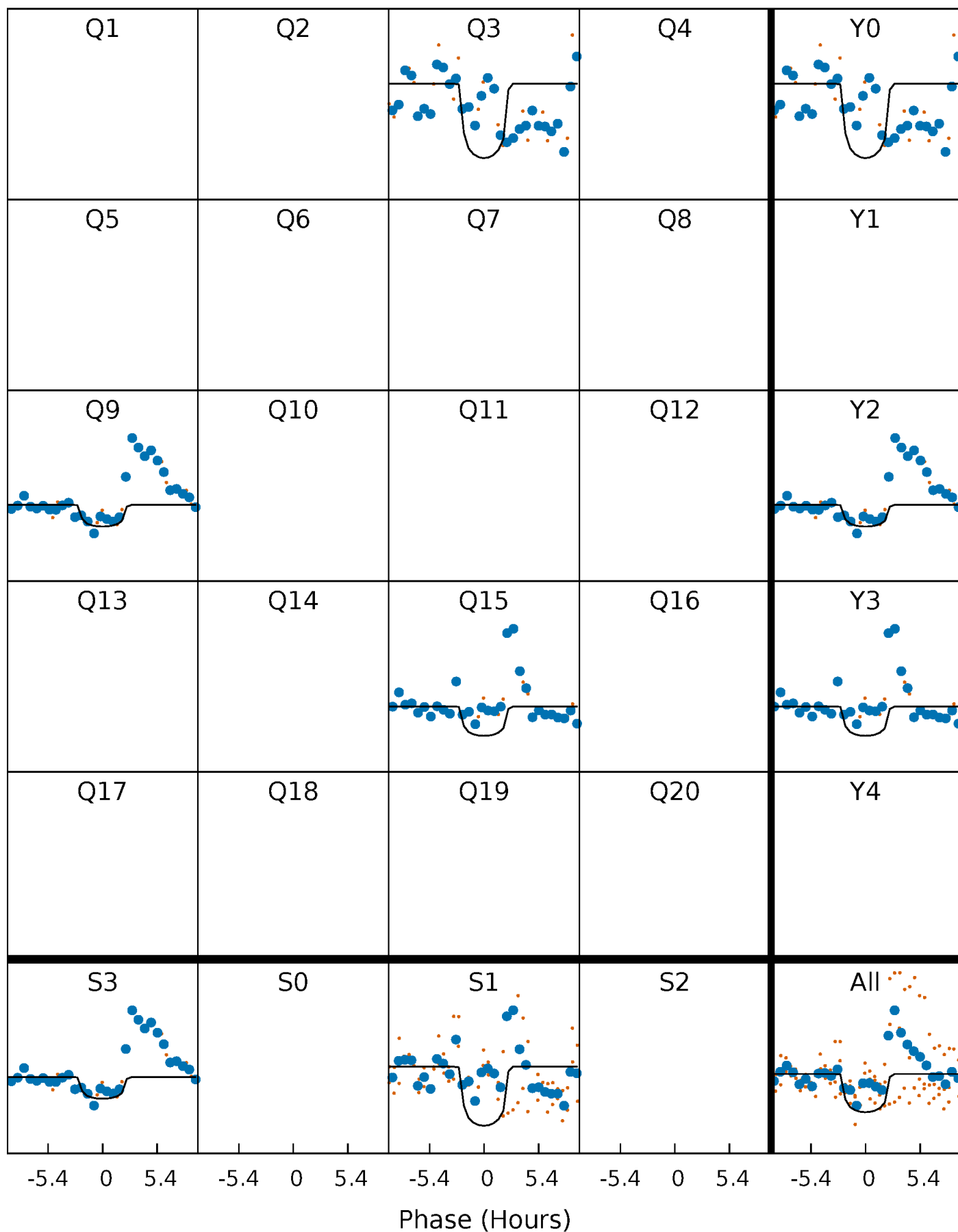
PDC Quarter-Phased Transit Curves

TCE 009828292-06 $P=584.317830$ Days $T_0=297.477088$ (BKJD)



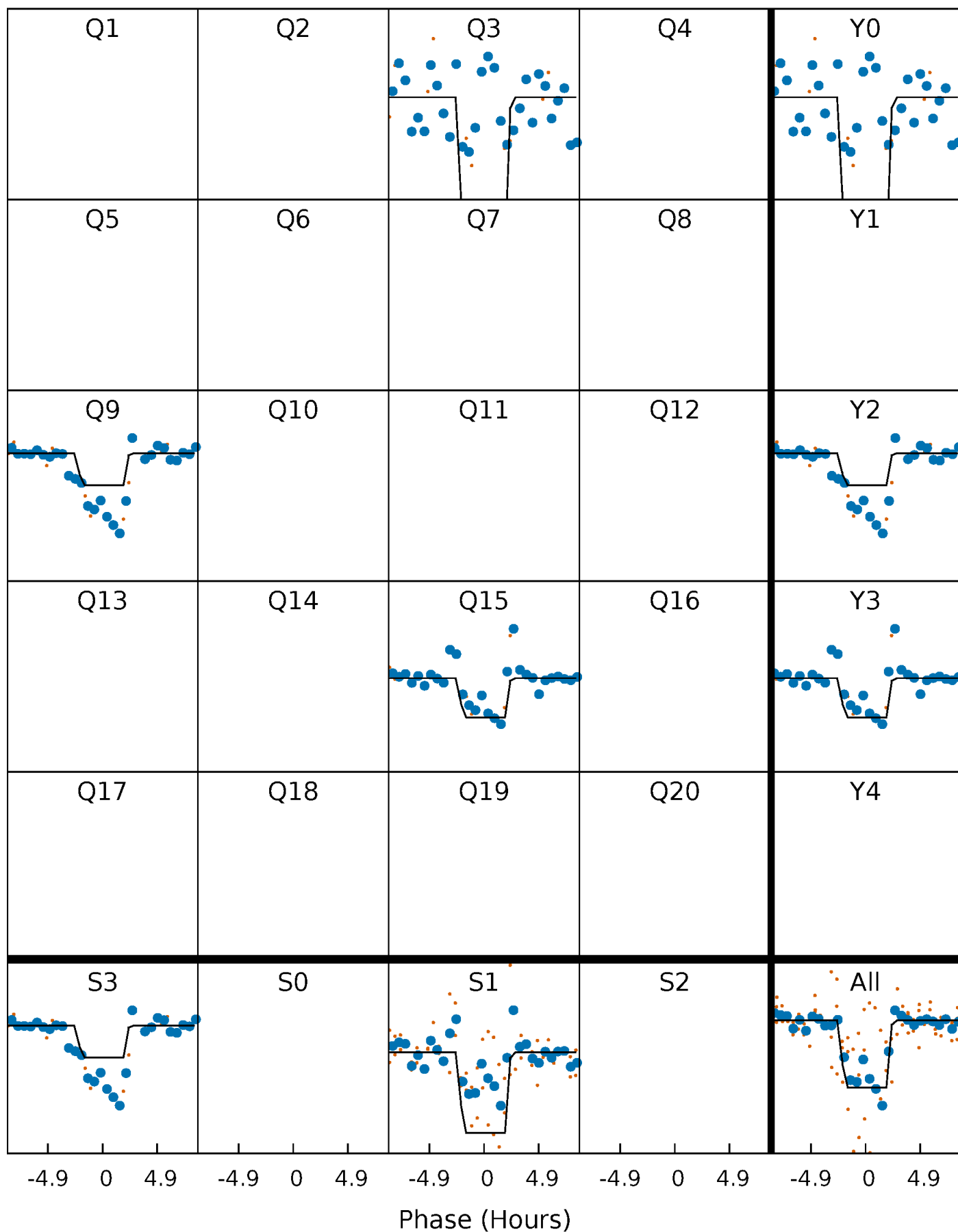
DV Quarter-Phased Transit Curves

TCE 009828292-06 $P=584.317830$ Days $T_0=297.477088$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

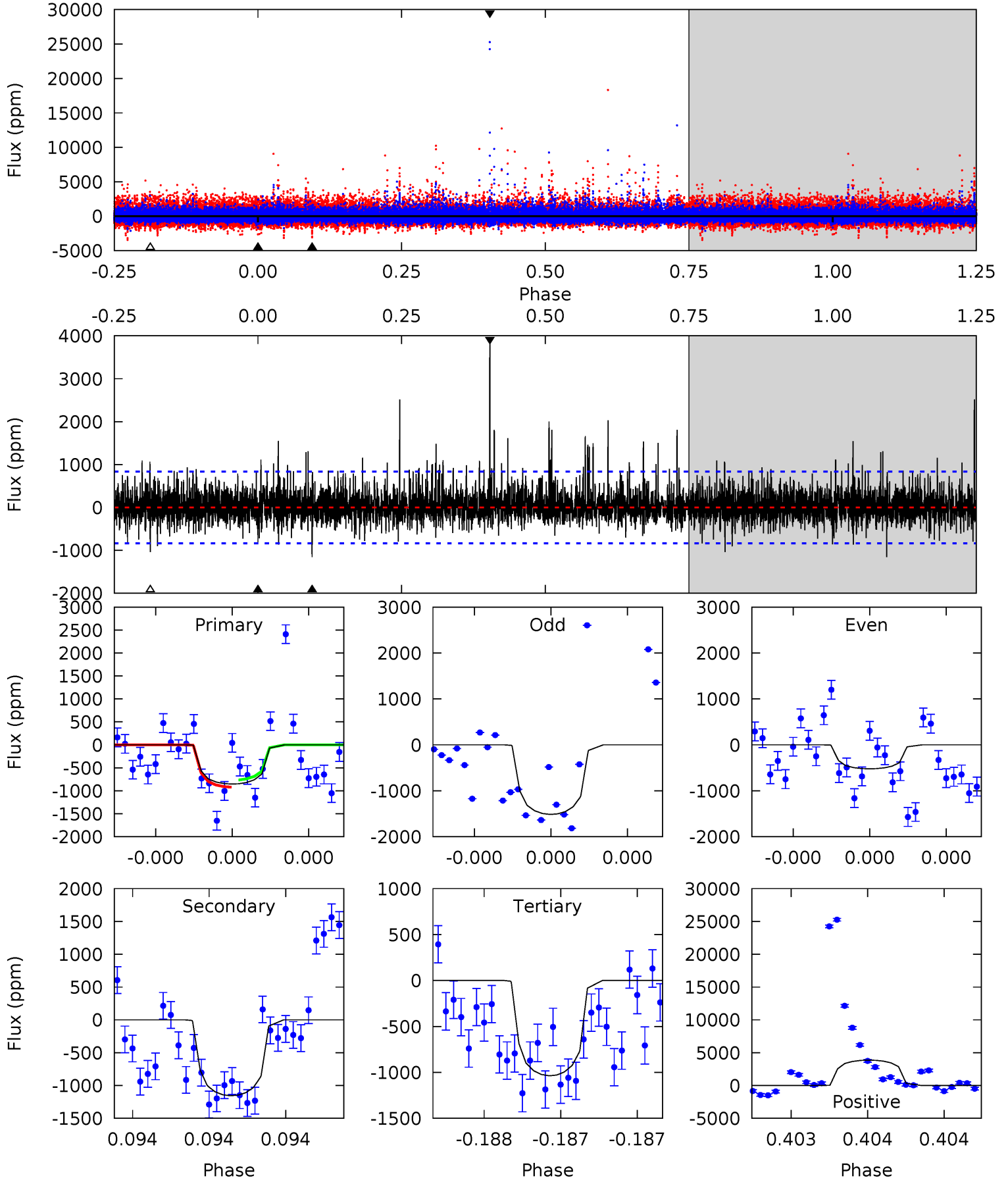
TCE 009828292-06 P=584.318082 Days $T_0=297.479175$ (BKJD)



DV Model-Shift Uniqueness Test

009828292-06, P = 584.317830 Days, E = 297.477088 Days

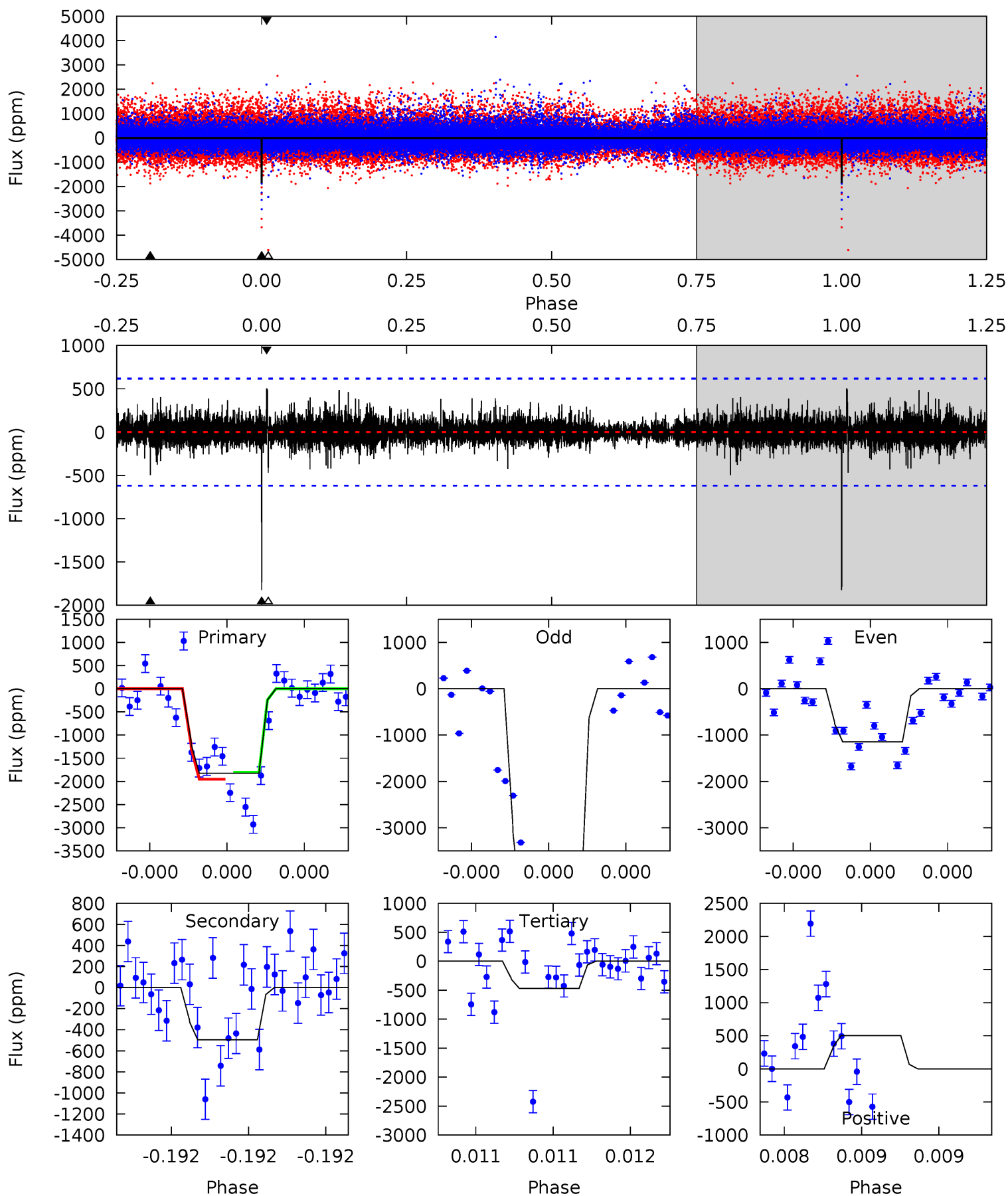
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.75	7.79	6.98	26.0	5.63	3.57	1.94	-1.23	-20.3	0.80	-18.2	1.46	1.19	0.77	0.53



Alt Model-Shift Uniqueness Test

009828292-06, P = 584.318082 Days, E = 297.479175 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.7	4.52	4.28	4.59	5.65	3.60	0.74	12.4	12.1	0.24	-0.06	15.7	1.17	0.22	0.65



Stellar Parameters For KIC 009828292

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	3770^{+76}_{-83}	$4.747^{+0.052}_{-0.032}$	$-0.100^{+0.200}_{-0.200}$	$0.499^{+0.037}_{-0.051}$	$0.508^{+0.043}_{-0.043}$	$5.743^{+1.418}_{-0.785}$
	+2%/-2%	+1%/-1%	+200%/-200%	+7%/-10%	+8%/-8%	+25%/-14%
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 009828292-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1157 ± 149	$2.42^{+1.43}_{-1.42}$	156^{+4}_{-4}	3462^{+1246}_{-476}	$131411^{+650216}_{-80477}$
Alt.	-495 ± 109	$2.78^{+1.54}_{-1.49}$	157^{+4}_{-4}	2910^{+733}_{-353}	$41138^{+148439}_{-25540}$

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

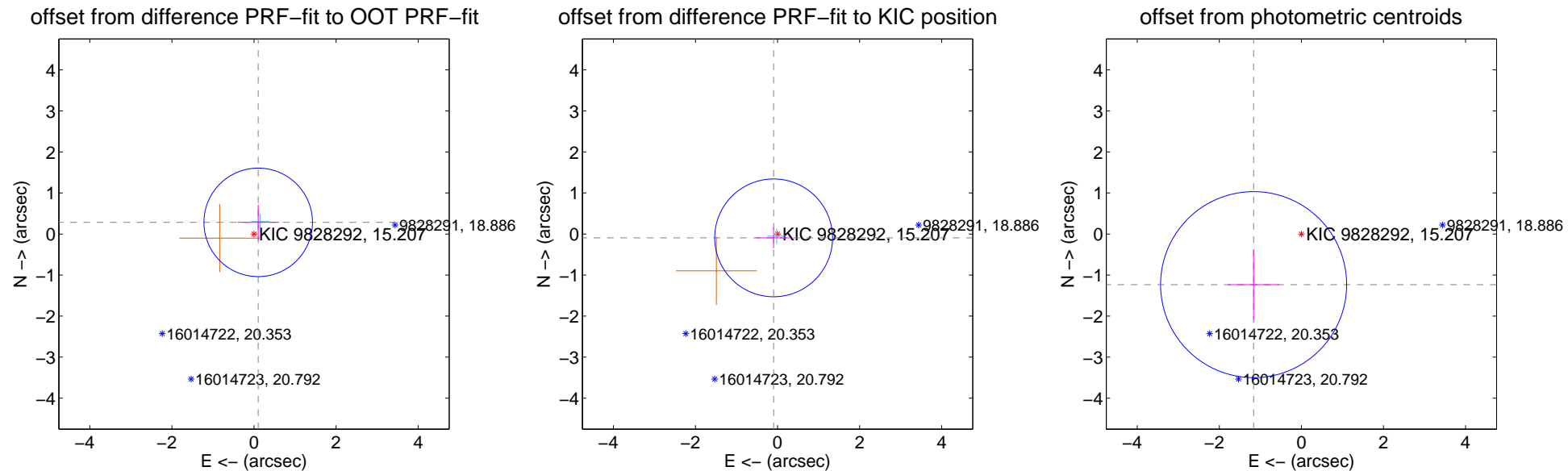
DV Centroid Data

Supplemental centroid analysis for 009828292-06. Kepler magnitude: 15.21. Transit SNR 7.22

There are 1 quarters with good PRF difference image offsets

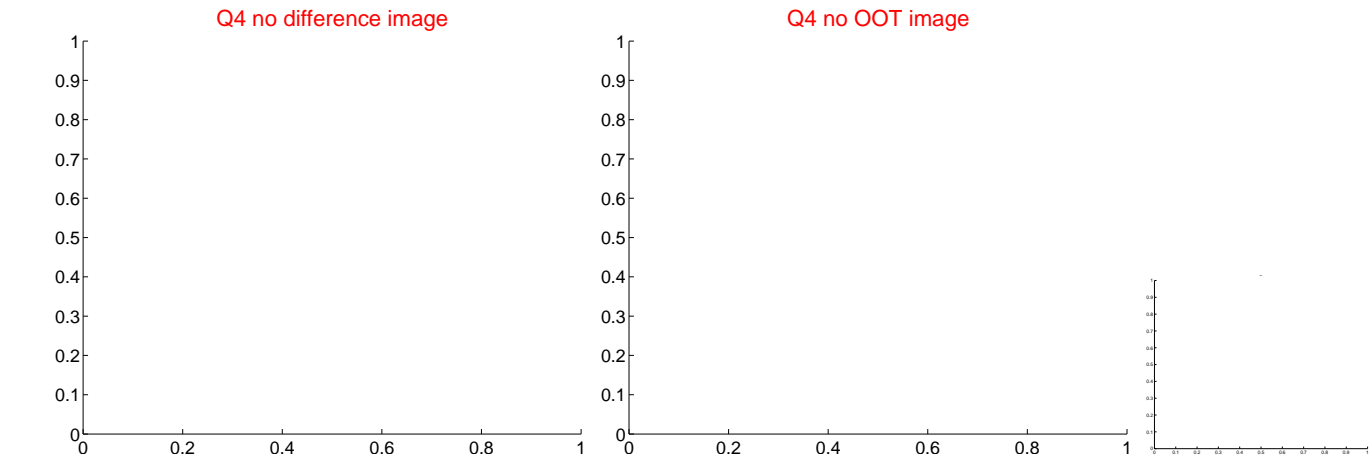
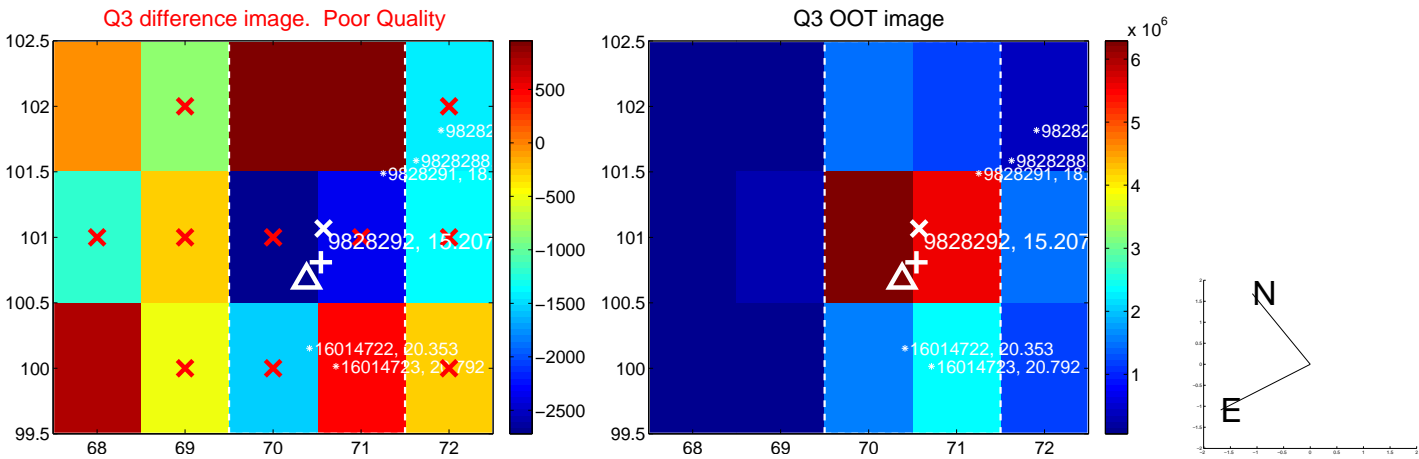
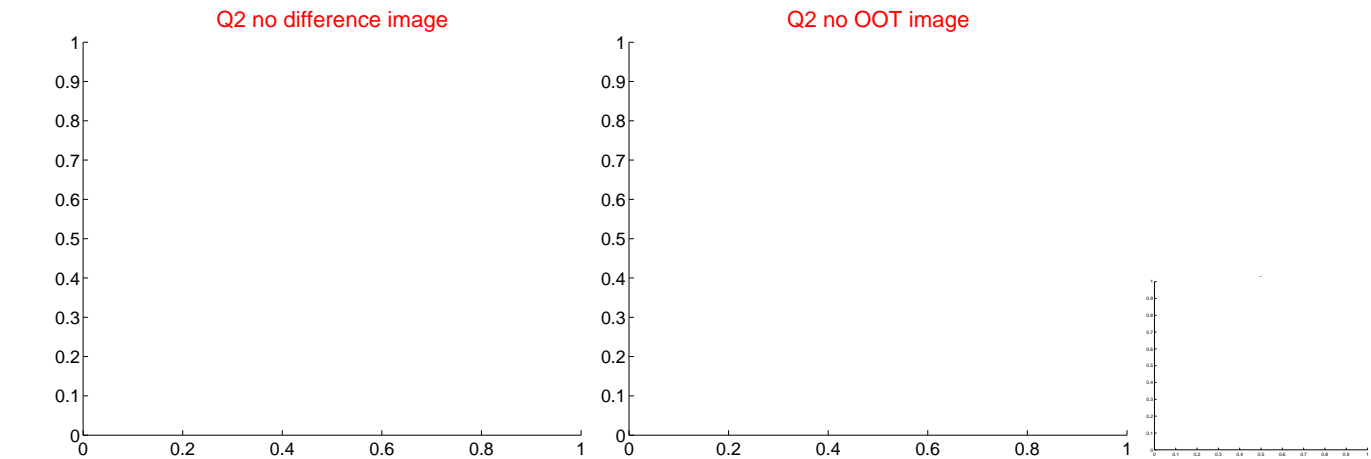
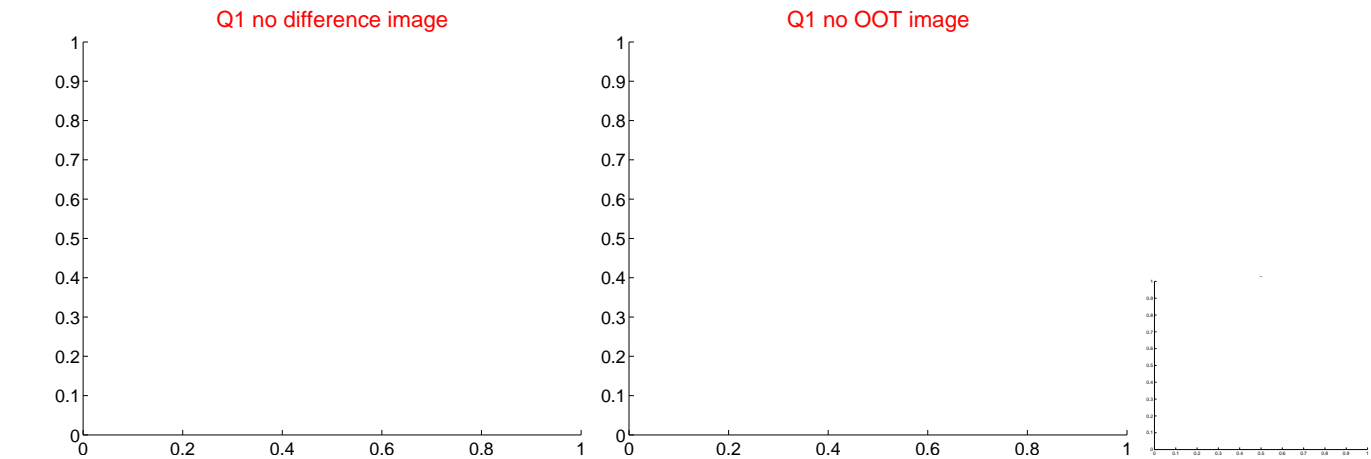
The direct PRF centroid is offset from the target star catalog position by about 0.40 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.302 ± 0.441	0.69	-0.103 ± 0.508	0.284 ± 0.431
PRF-fit source offset from KIC position	0.134 ± 0.478	0.28	0.096 ± 0.429	-0.093 ± 0.253
photometric centroid source offset	1.70 ± 0.76	2.25	1.16 ± 0.63	-1.23 ± 0.85



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.

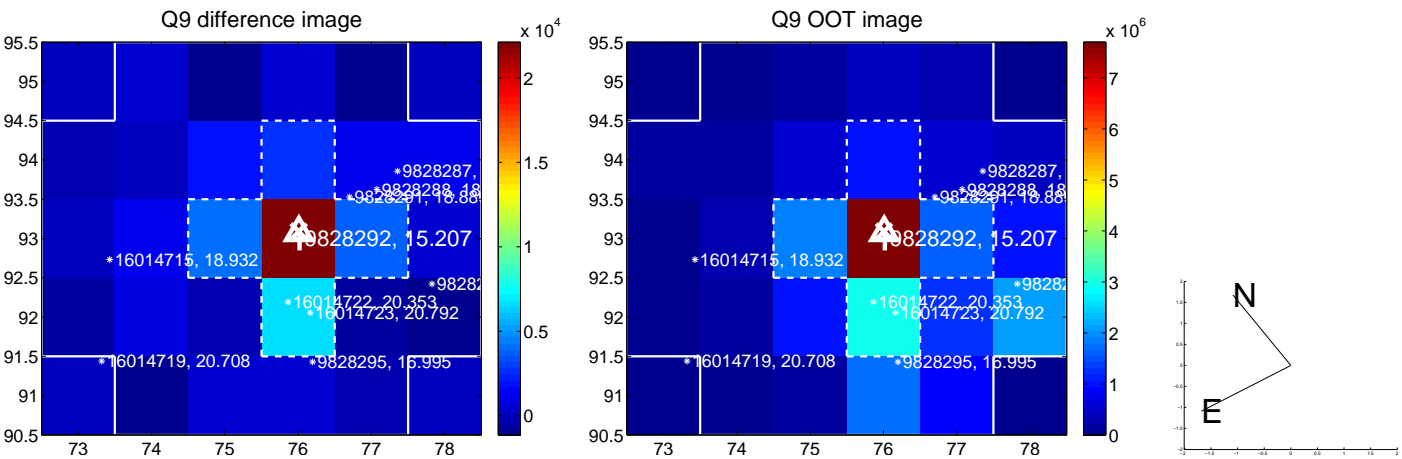
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



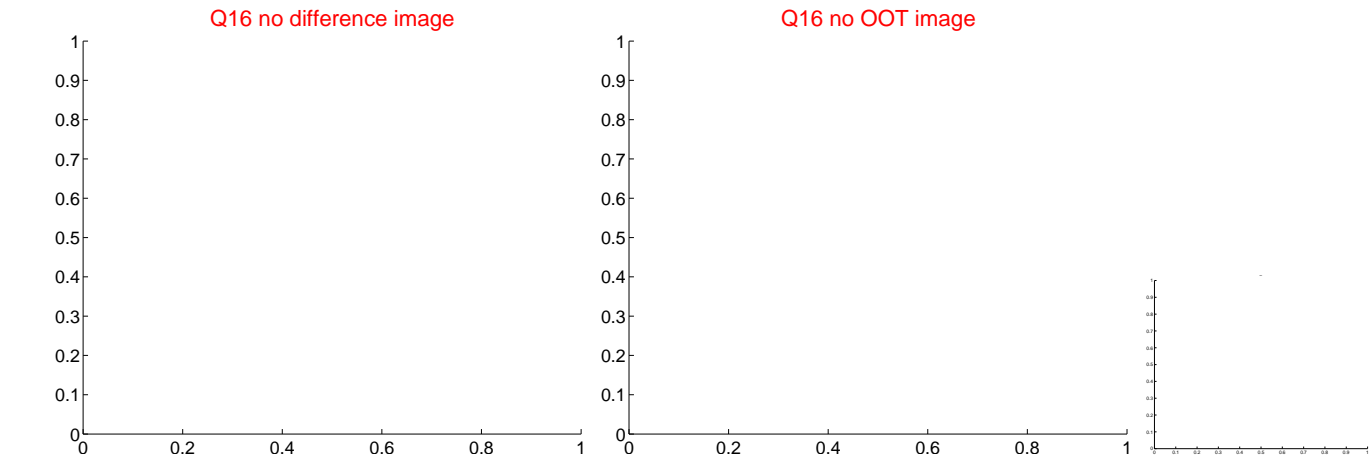
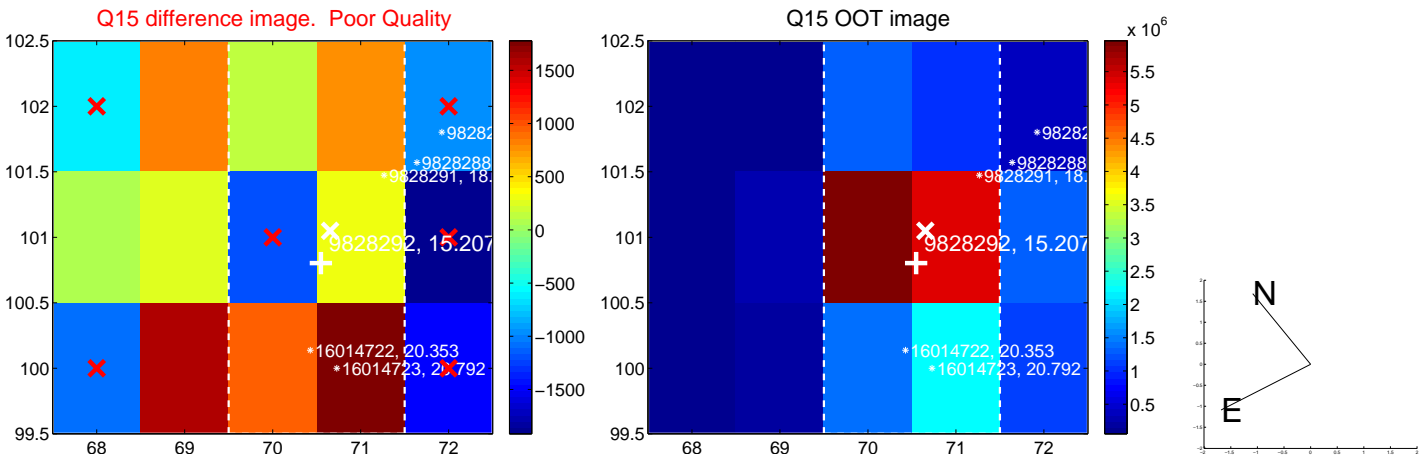
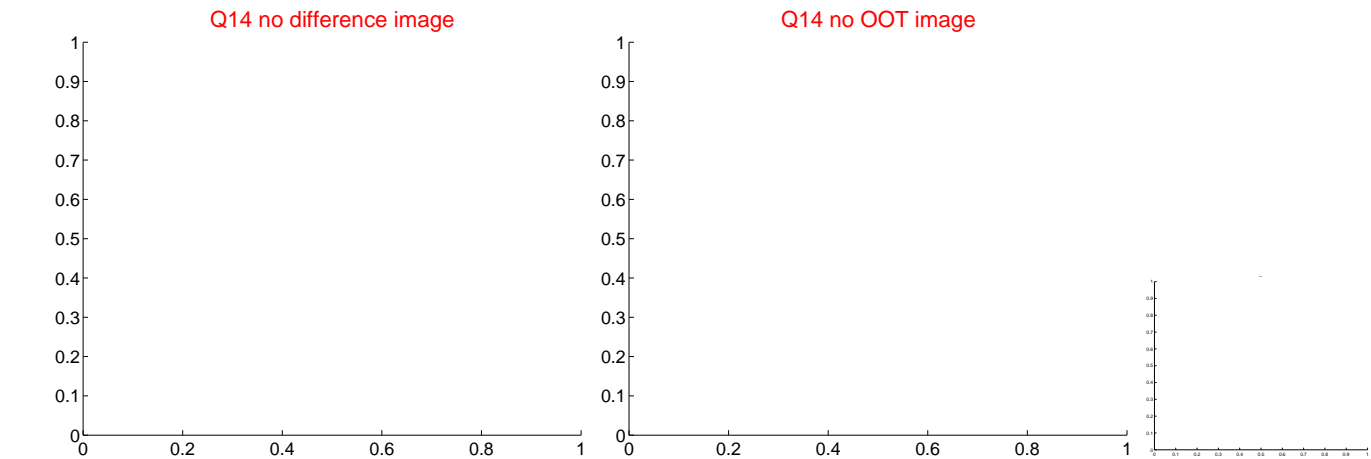
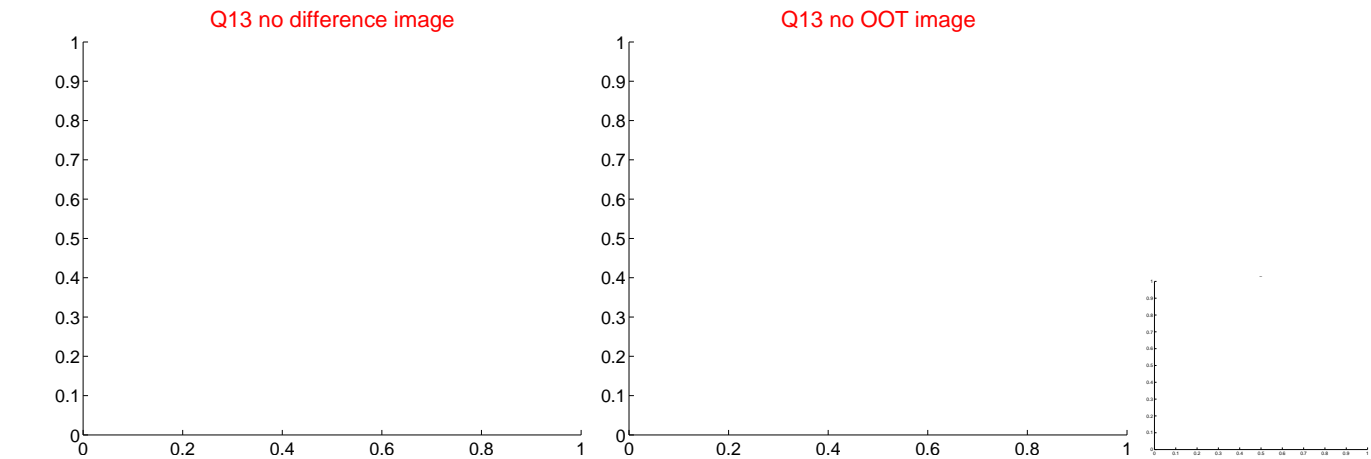
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



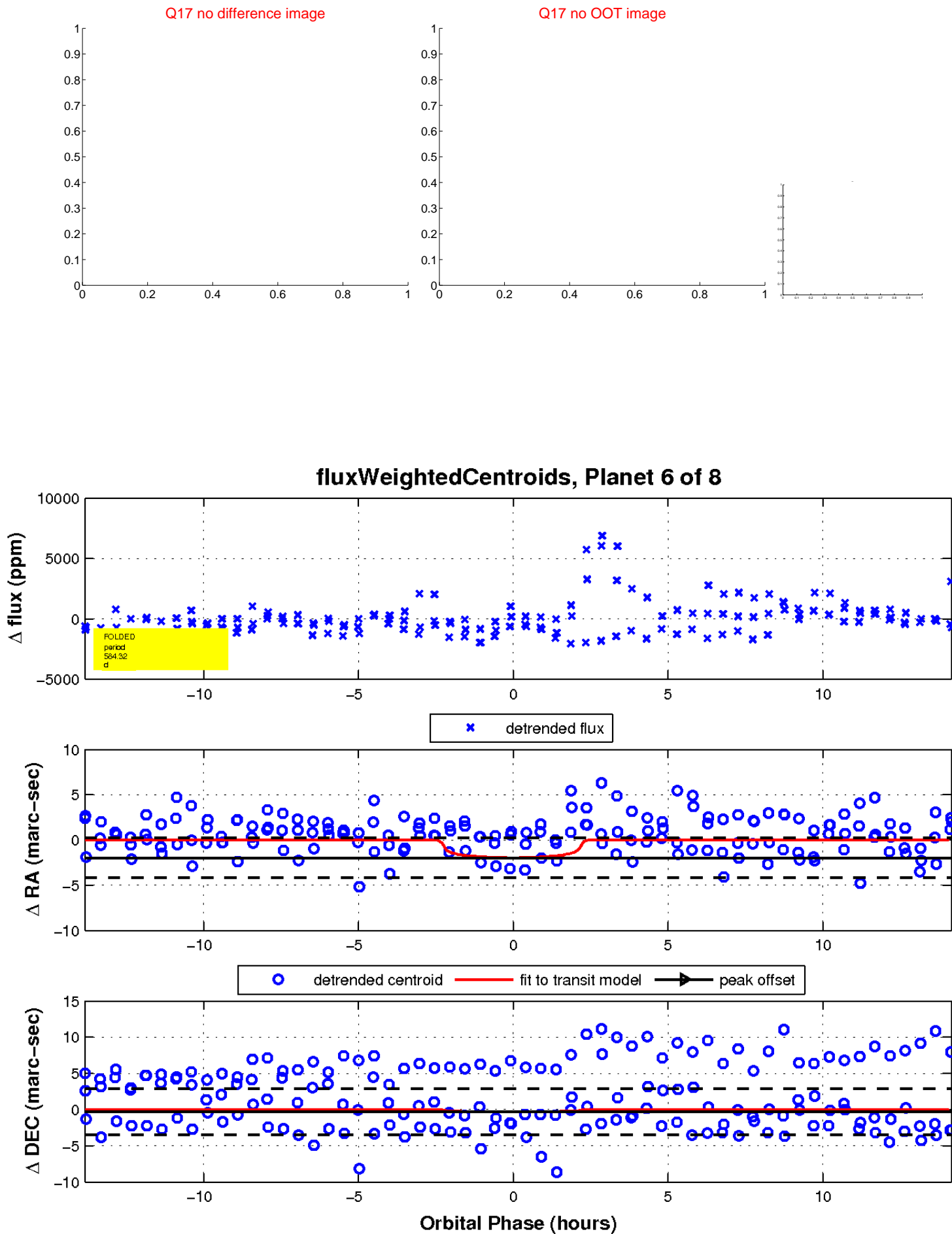
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

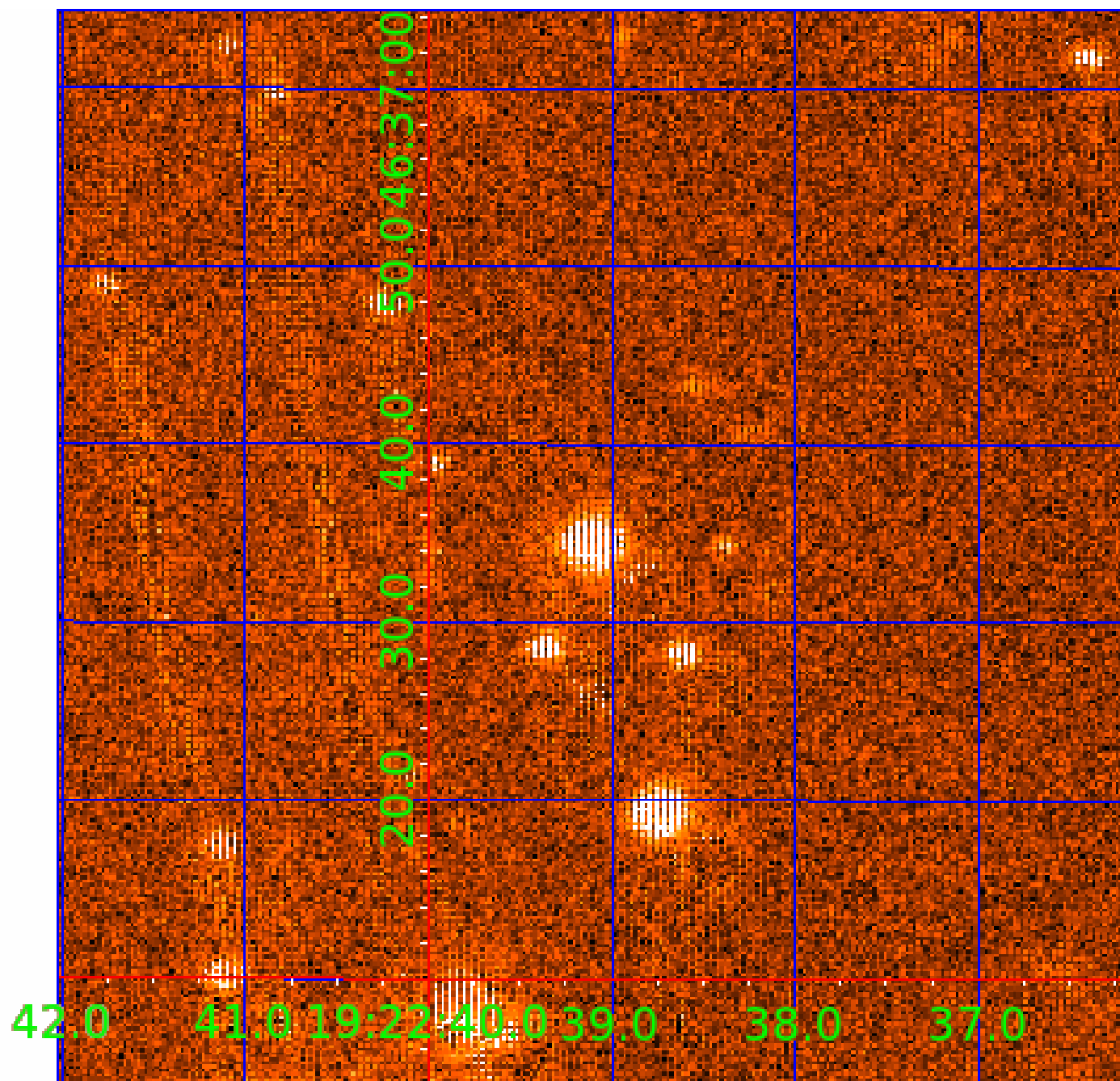


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009828292

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})
009828292-01	OBS	No	456.395440	226.630135	2292.6	3.184	15.1	8.8	0.50	3770	2.48	0.05
009828292-02	OBS	No	394.580557	331.360225	1732.9	5.037	12.8	6.1	0.50	3770	4.03	0.06
009828292-03	OBS	No	451.812350	303.232715	2699.1	12.717	13.8	10.5	0.50	3770	2.56	0.05
009828292-04	OBS	No	355.949501	311.554031	1178.2	5.951	12.5	5.3	0.50	3770	1.74	0.07
009828292-05	OBS	No	443.072993	198.285203	1281.8	9.717	12.4	6.3	0.50	3770	1.83	0.06
009828292-06	OBS	No	584.317830	297.477088	1996.9	4.724	11.7	7.2	0.50	3770	2.26	0.04
009828292-07	OBS	No	464.236807	438.505716	1411.1	14.883	10.3	5.5	0.50	3770	1.89	0.05
009828292-08	OBS	No	362.205290	492.439911	1650.1	6.408	10.5	7.0	0.50	3770	3.95	0.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009828292-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009828292-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-04	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
009828292-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009828292-06	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
009828292-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

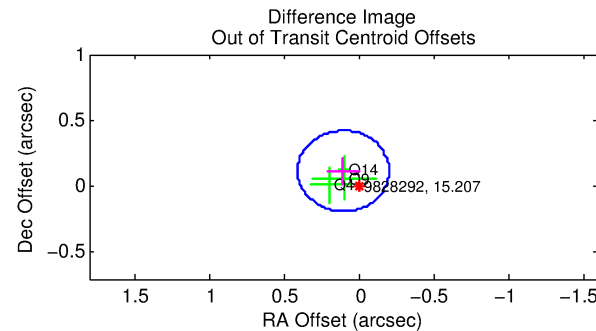
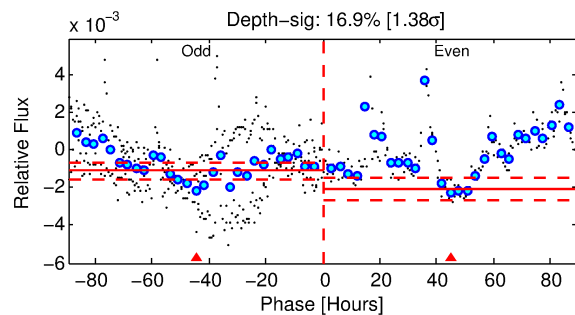
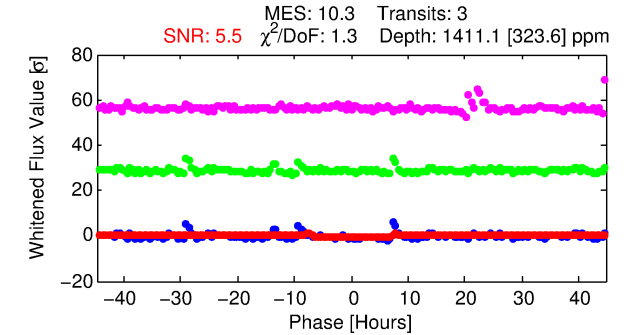
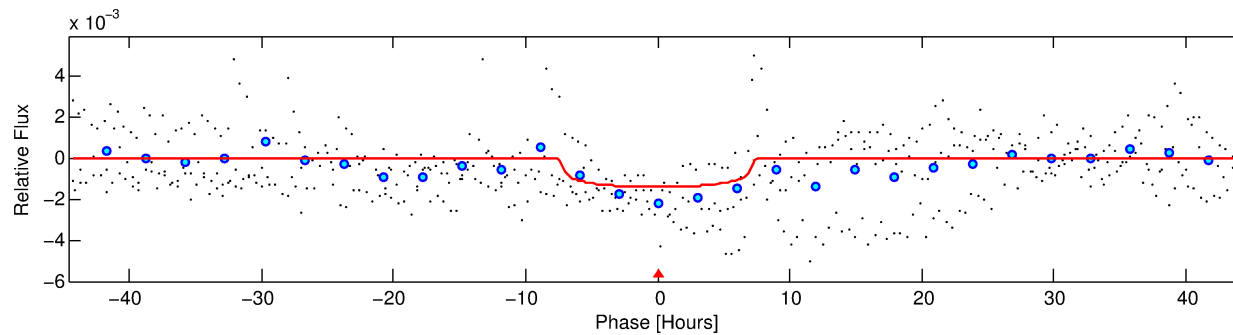
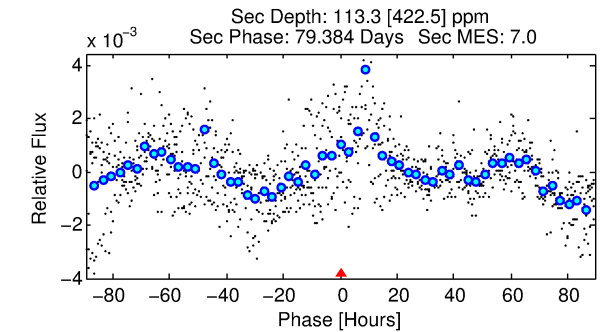
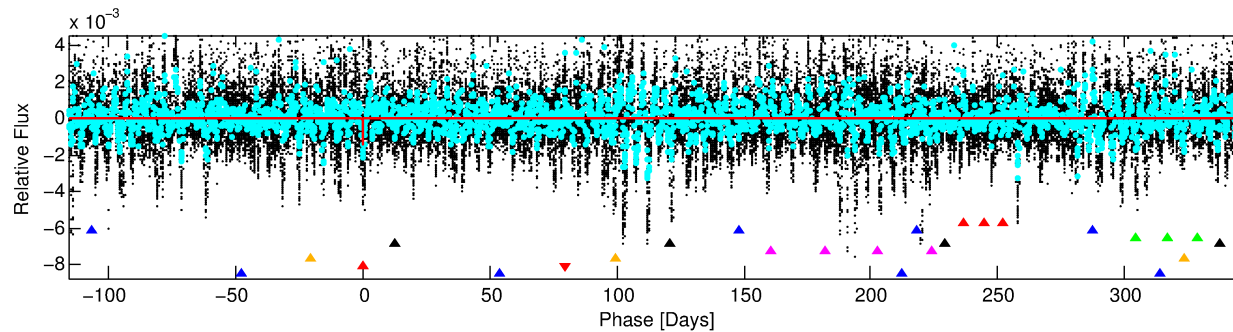
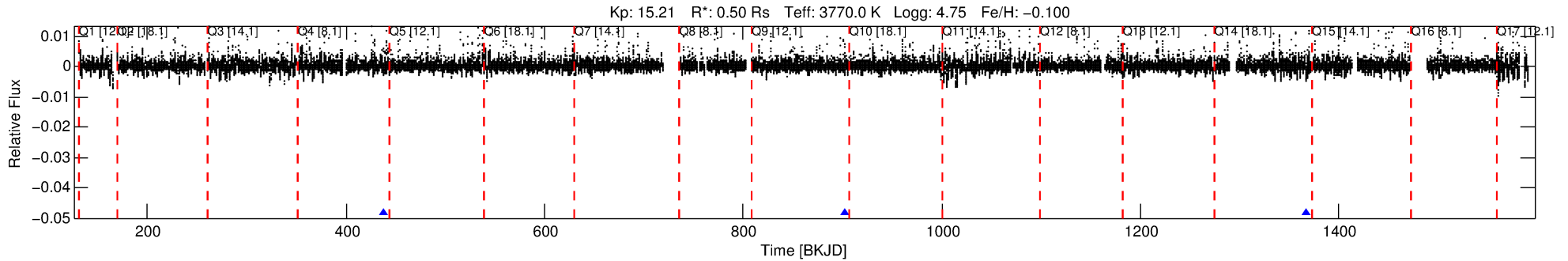
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009828292-07

No Significant Match Found

DV One-Page Summary

KIC: 9828292 Candidate: 7 of 8 Period: 464.237 d



DV Fit Results:

Period = 464.23681 [0.01250] d
Epoch = 438.5057 [0.0174] BKJD
Rp/R* = 0.0346 [0.0122]
a/R* = 230.39 [323.38]
b = 0.37 [3.30]
Seff = 0.05 [0.01]
Teq = 121 [4] K
Rp = 1.88 [0.69] Re
a = 0.9360 [0.0739] AU
Ag = 15376.57 [58368.74] [0.26σ]
Teffp = 2091 [1984] K [0.99σ]

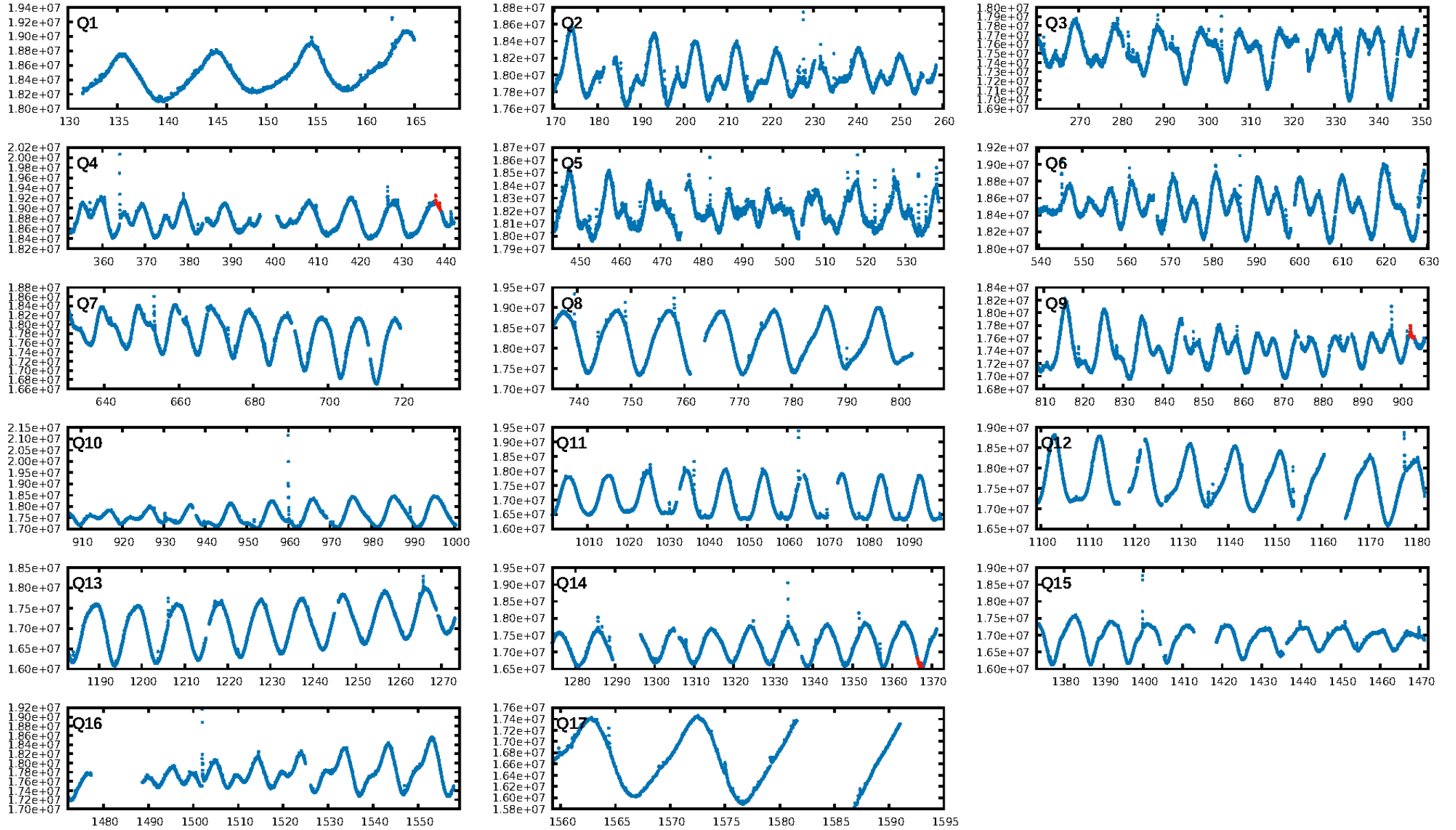
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.37σ]
LongPeriod-sig: 100.0% [184.57σ]
ModelChiSquare2-sig: 18.1%
ModelChiSquareGof-sig: 95.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.8449
Centroid-sig: 4.8%
Centroid-so: 1.086 arcsec [0.56σ]
OotOffset-rm: 0.155 arcsec [1.52σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 0.398 arcsec [3.70σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 1.00 [3/3]

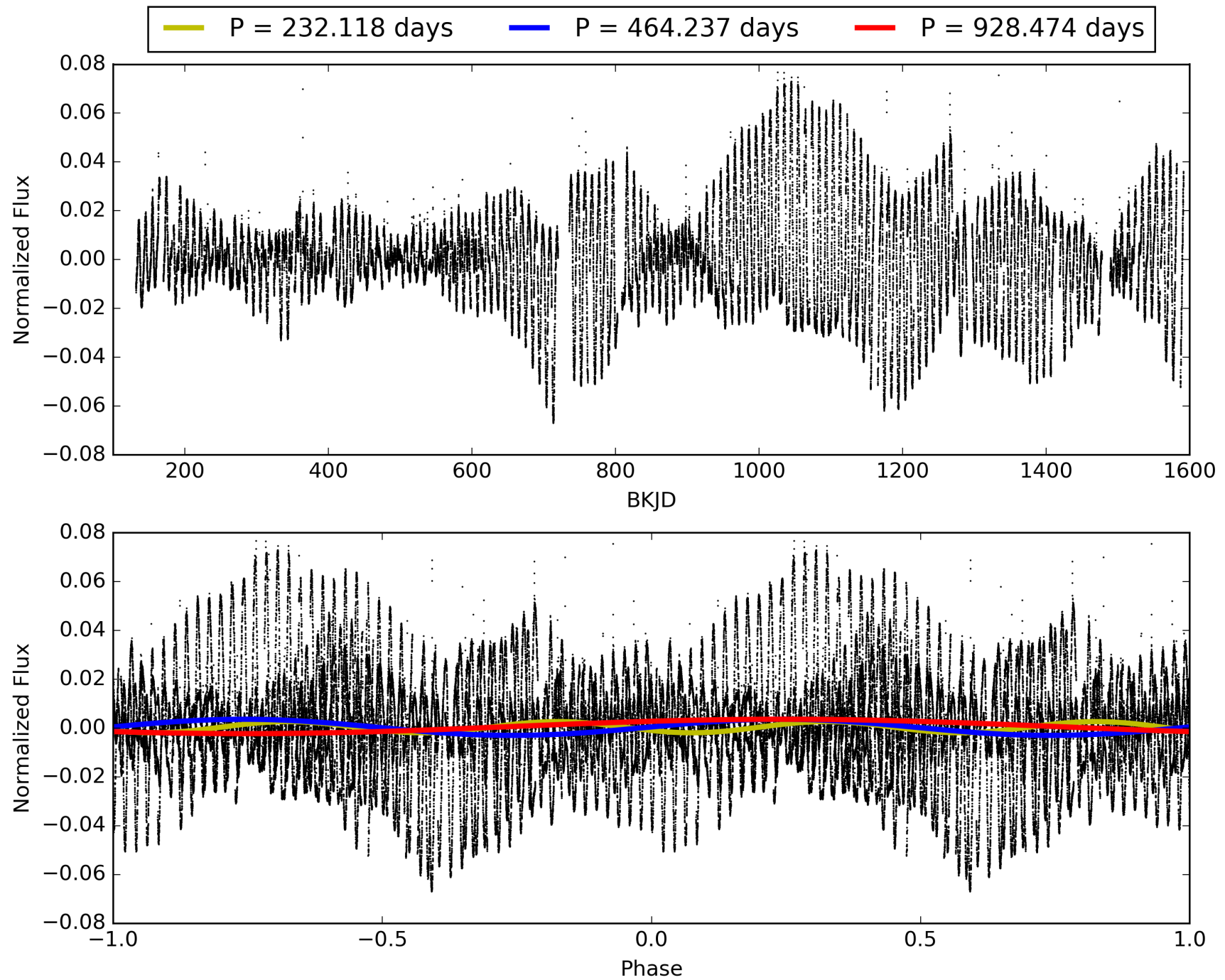
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 06:27:18 Z

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

TCE 009828292-07, PDC Light Curves

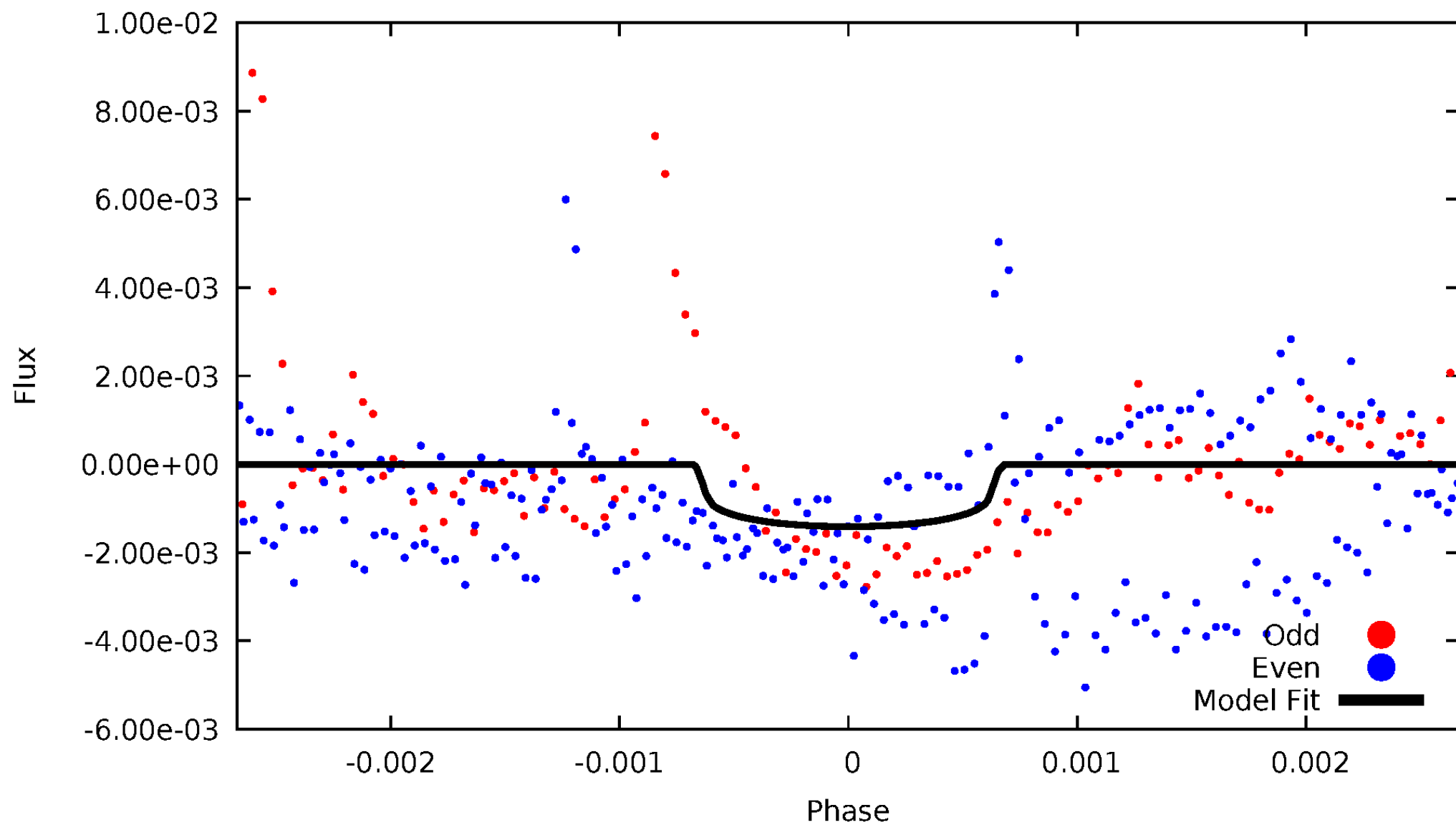


TCE 009828292-07



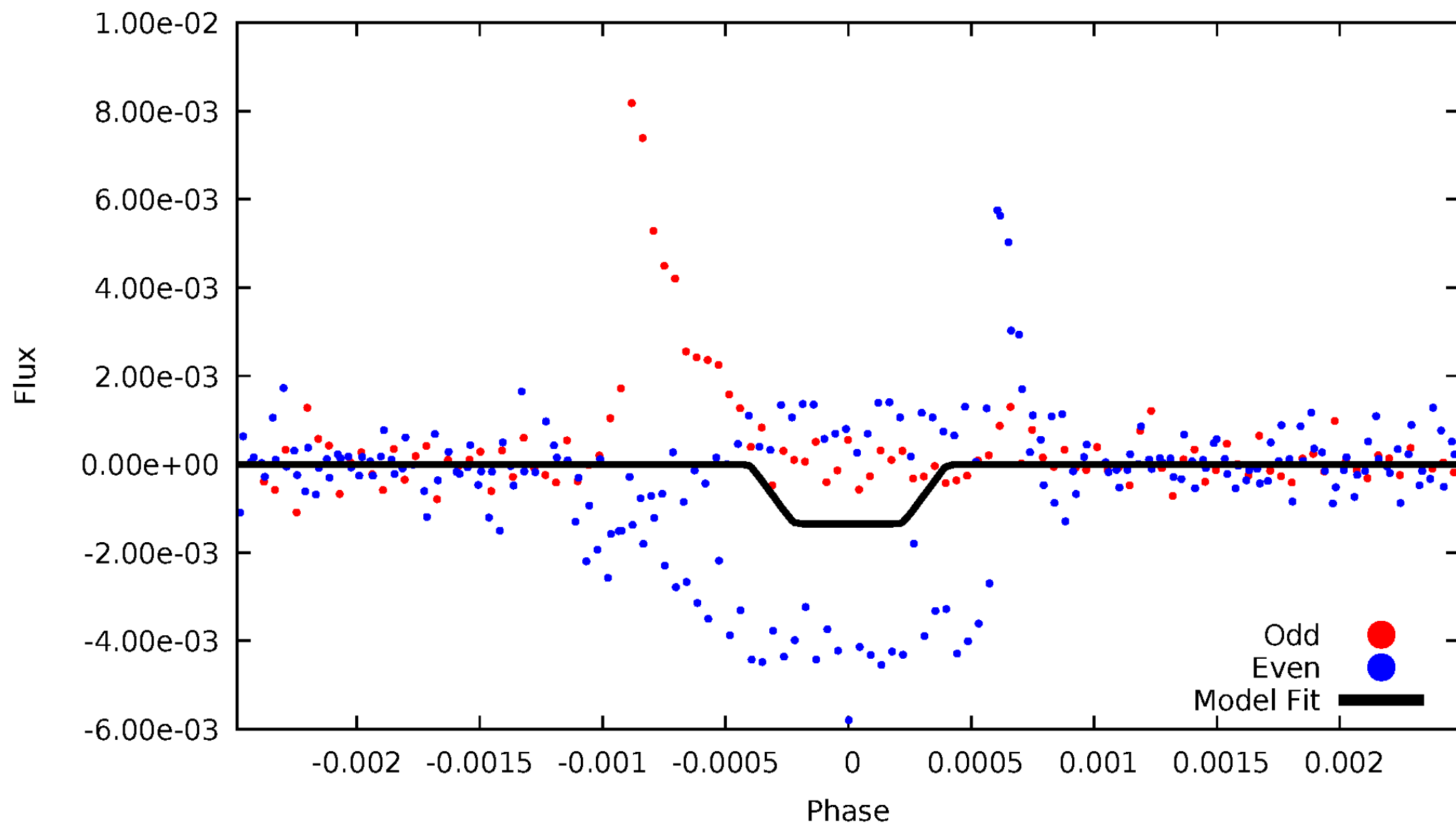
DV Odd/Even

TCE 009828292-07



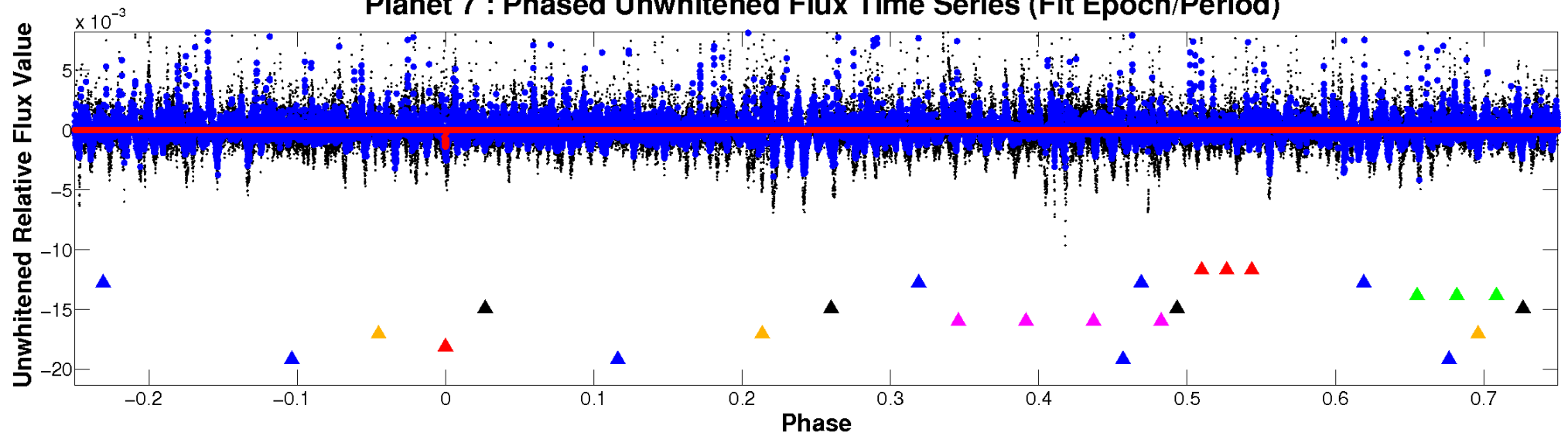
ALT Odd/Even

TCE 009828292-07

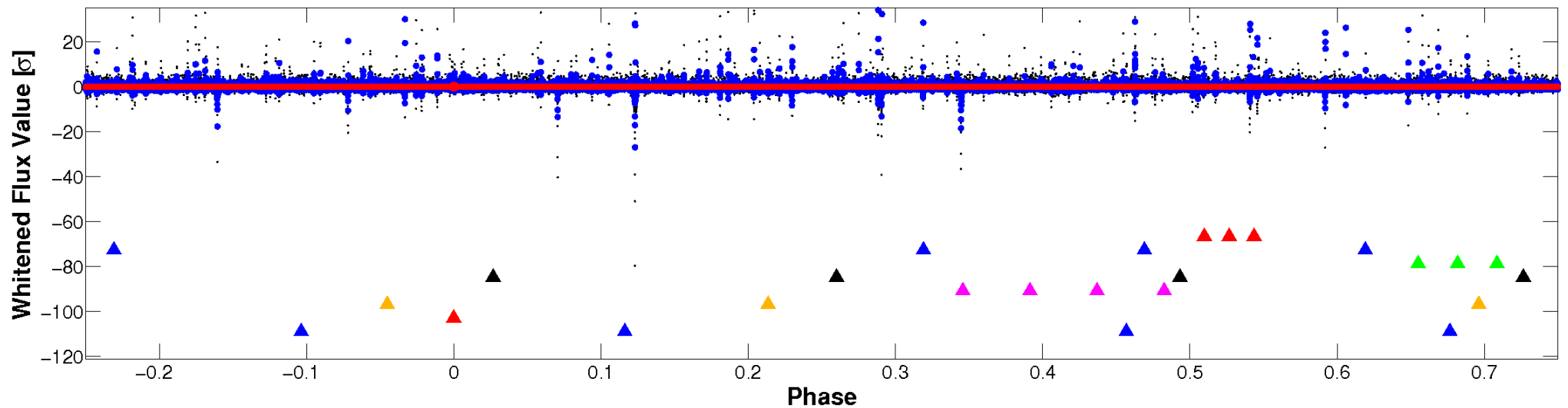


Non-Whitened Vs. Whitened Light Curve

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

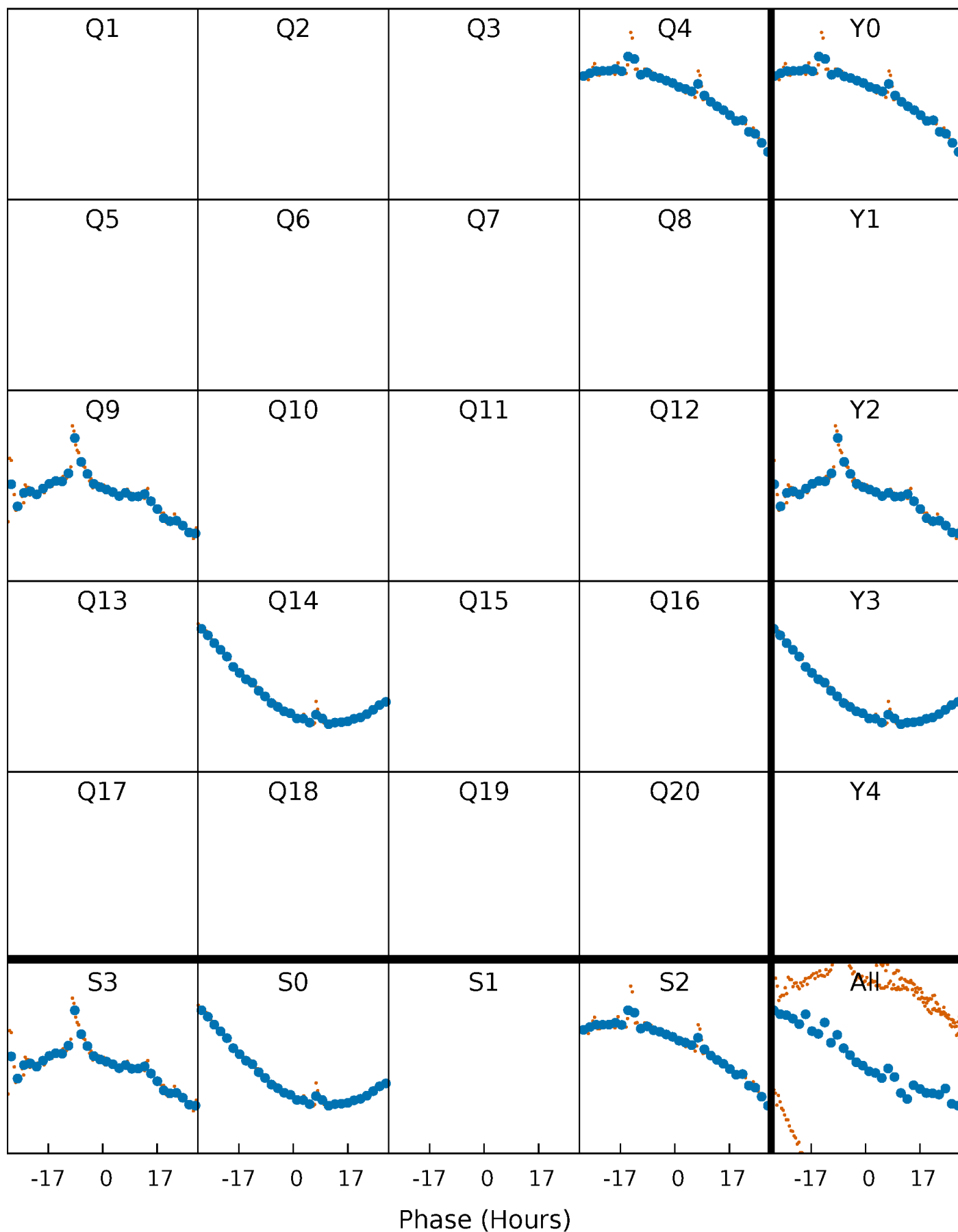


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



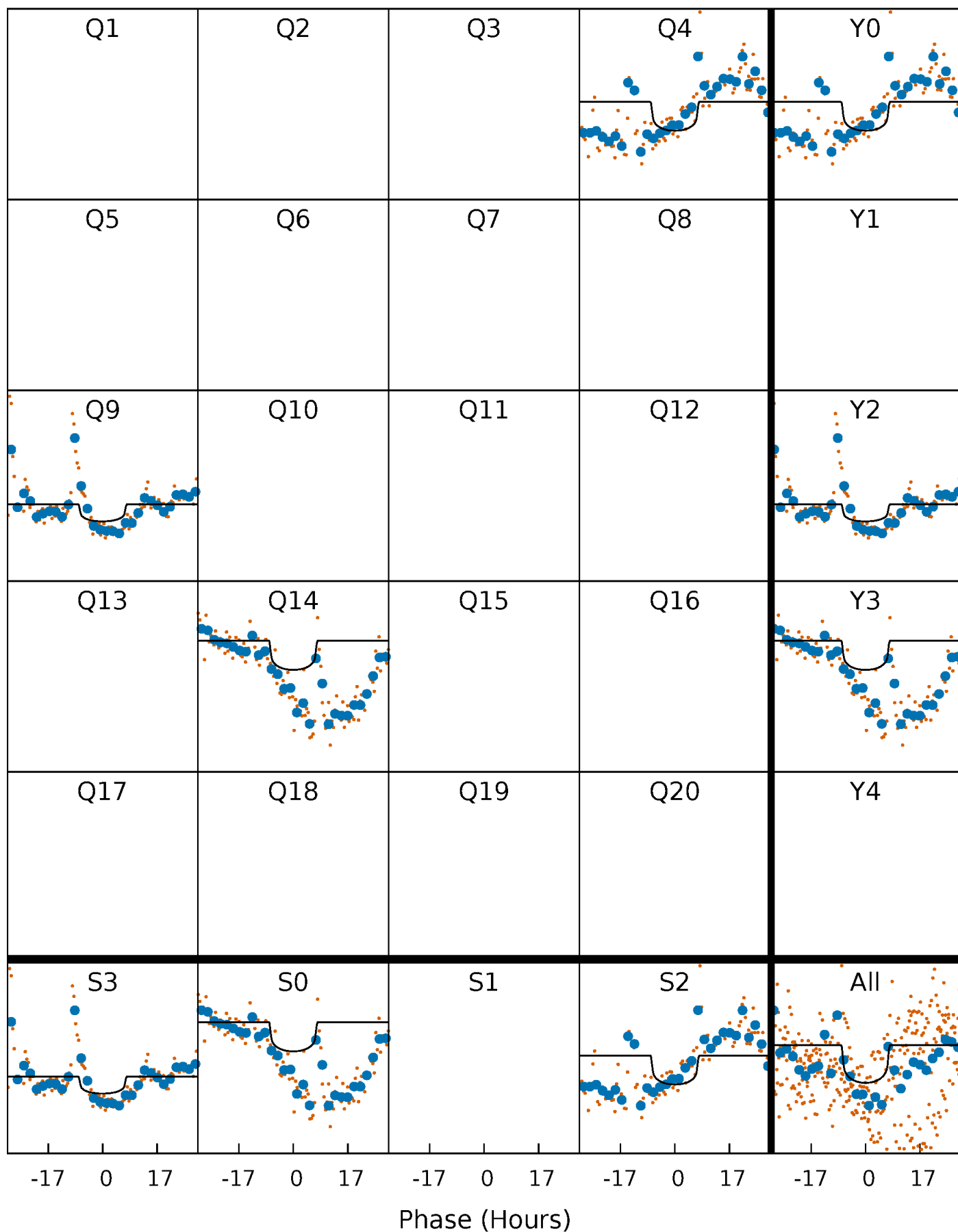
PDC Quarter-Phased Transit Curves

TCE 009828292-07 $P=464.236807$ Days $T_0=438.505716$ (BKJD)



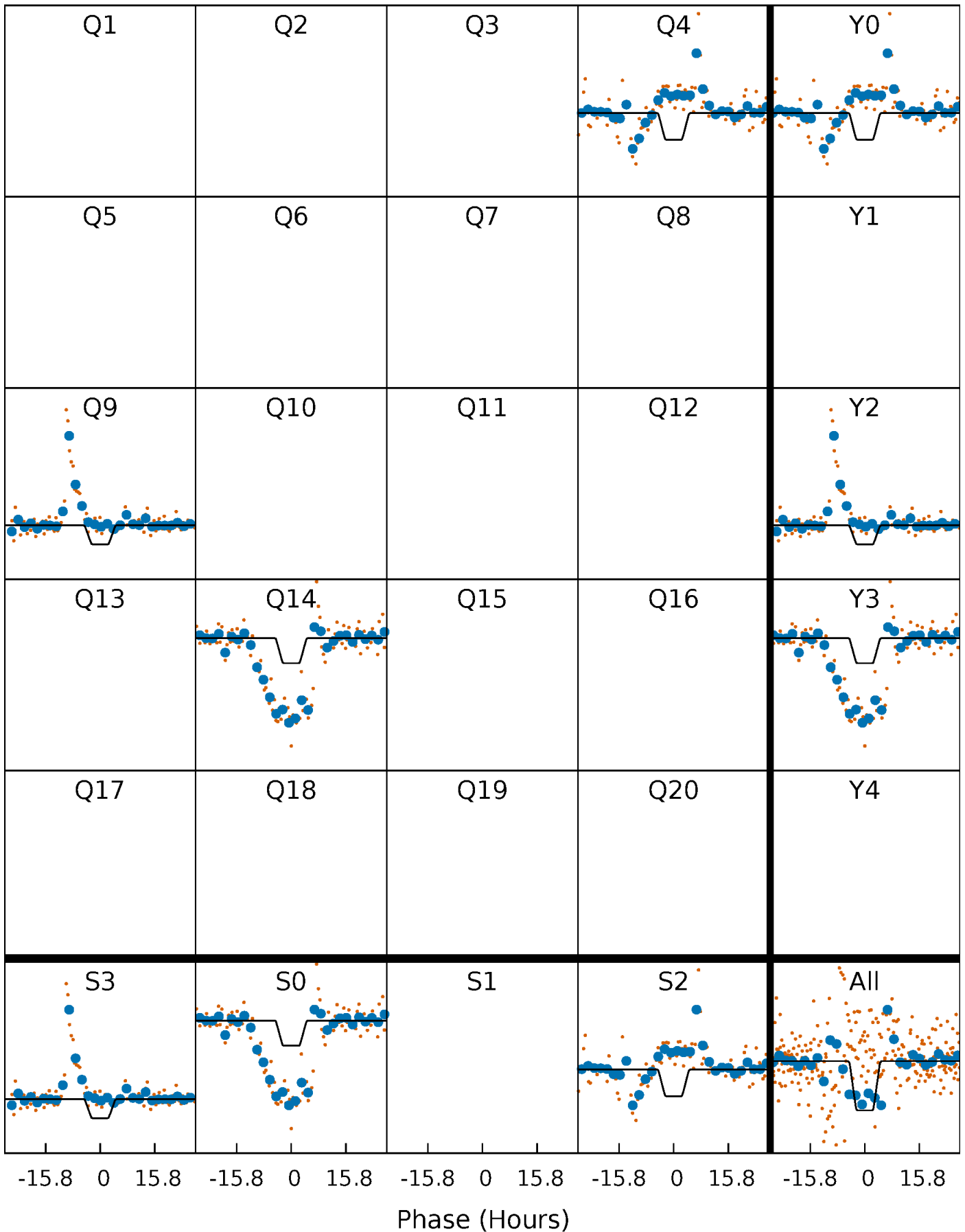
DV Quarter-Phased Transit Curves

TCE 009828292-07 $P=464.236807$ Days $T_0=438.505716$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

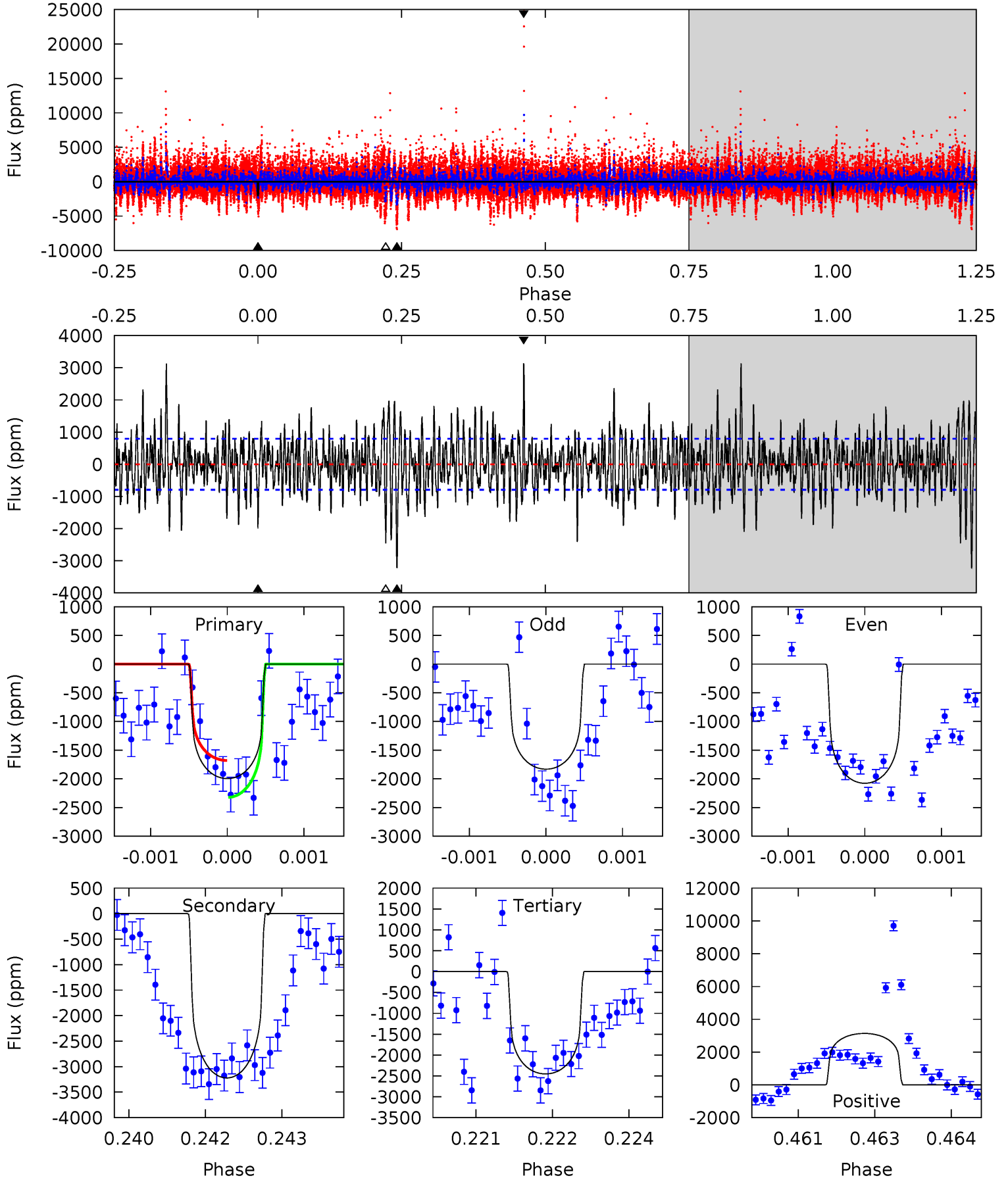
TCE 009828292-07 P=464.230050 Days $T_0=438.529176$ (BKJD)



DV Model-Shift Uniqueness Test

009828292-07, P = 464.236807 Days, E = 438.505716 Days

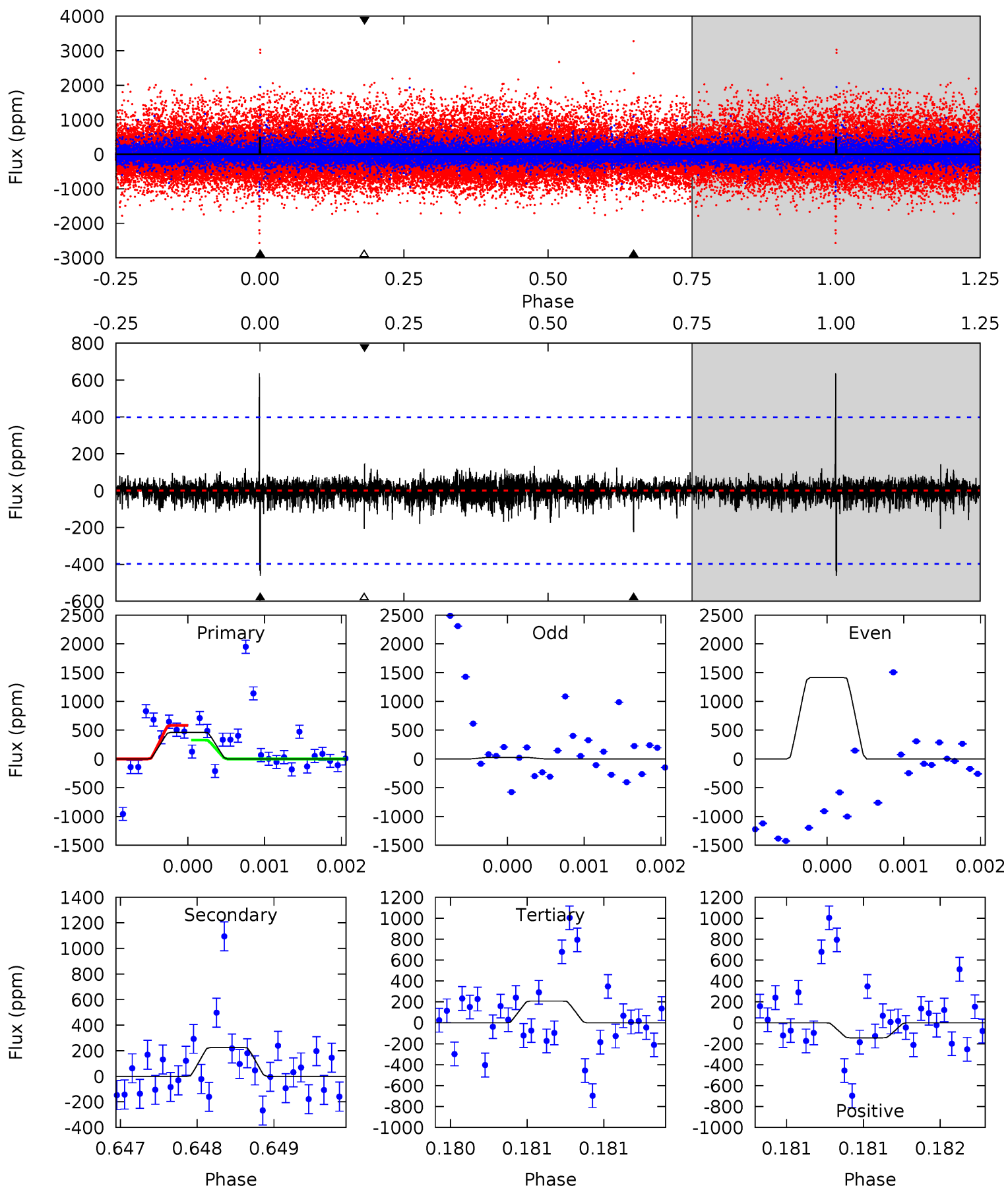
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	21.9	16.6	21.3	5.40	3.20	4.71	-3.10	-7.74	5.22	0.58	0.54	1.09	0.49	2.20



Alt Model-Shift Uniqueness Test

009828292-07, P = 464.230050 Days, E = 438.529176 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.36	3.11	2.86	1.97	5.48	3.34	0.52	3.50	4.39	0.25	1.14	10.8	-44.4	0.58	1.80



Stellar Parameters For KIC 009828292

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	3770^{+76}_{-83}	$4.747^{+0.052}_{-0.032}$	$-0.100^{+0.200}_{-0.200}$	$0.499^{+0.037}_{-0.051}$	$0.508^{+0.043}_{-0.043}$	$5.743^{+1.418}_{-0.785}$
	+2%/-2%	+1%/-1%	+200%/-200%	+7%/-10%	+8%/-8%	+25%/-14%
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 009828292-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-3222 ± 147	$1.89^{+0.65}_{-0.68}$	169^{+4}_{-5}	4484^{+916}_{-481}	$432435^{+624516}_{-193473}$
Alt.	-225 ± 72	$1.99^{+0.68}_{-0.67}$	169^{+5}_{-5}	2877^{+348}_{-251}	27198^{+34547}_{-13307}

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 $A_{obs} \gg 1.0$

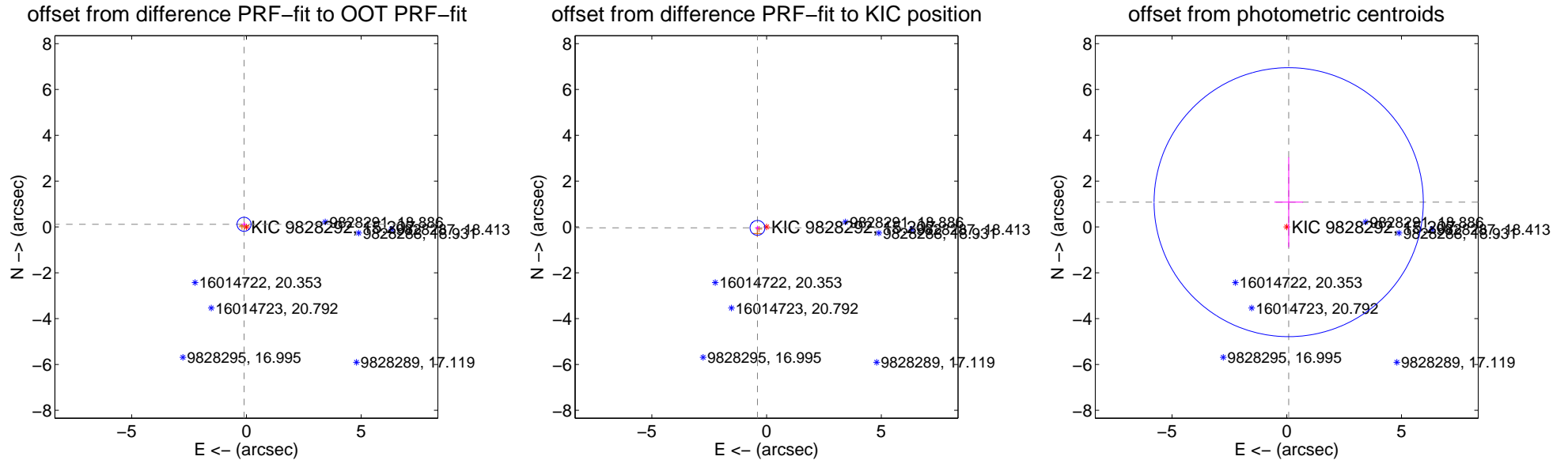
DV Centroid Data

Supplemental centroid analysis for 009828292-07. Kepler magnitude: 15.21. Transit SNR 5.47

There are 1 quarters with good PRF difference image offsets

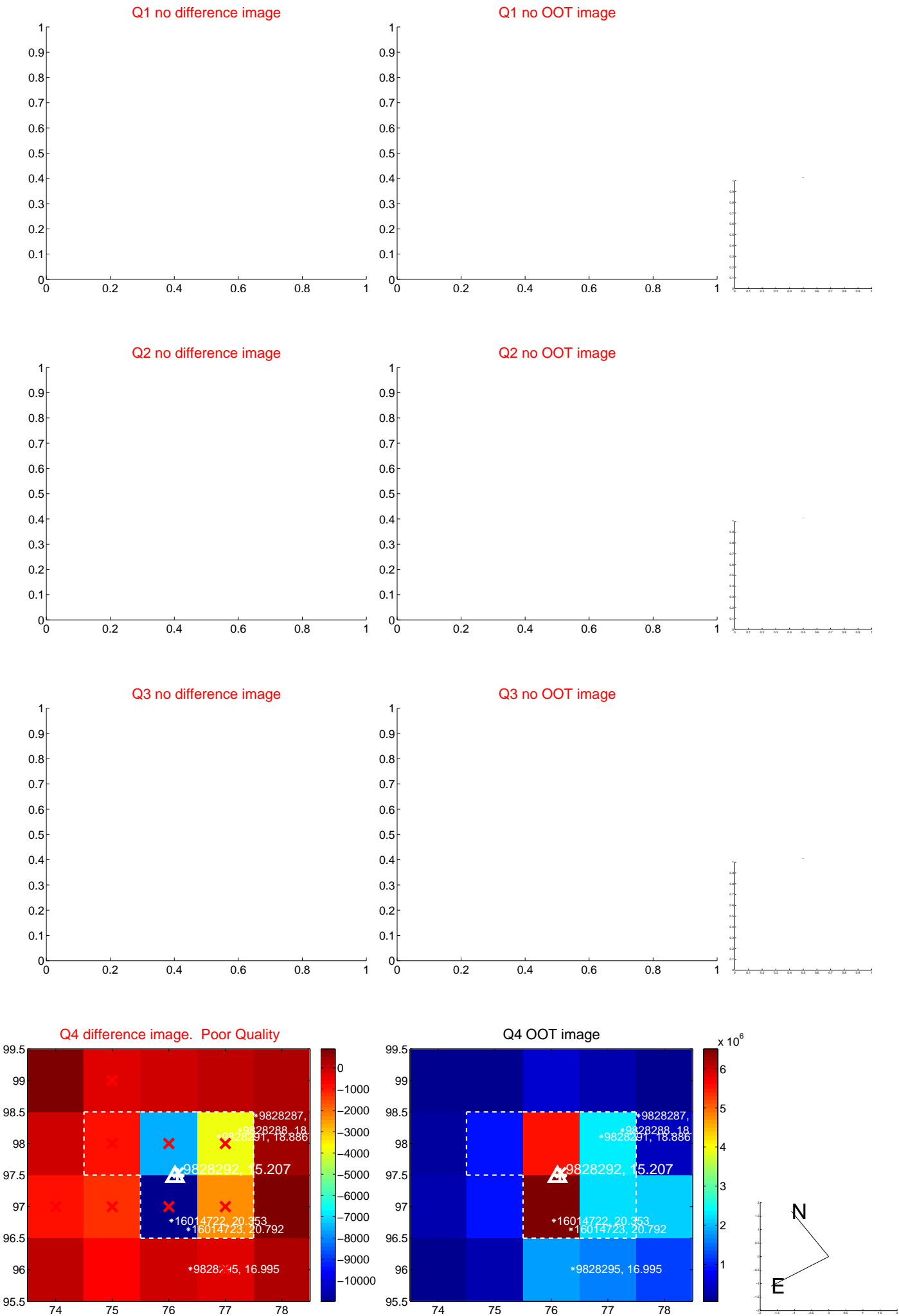
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.155 ± 0.102	1.52	0.102 ± 0.108	0.117 ± 0.097
PRF-fit source offset from KIC position	0.398 ± 0.108	3.70	0.397 ± 0.108	-0.038 ± 0.097
photometric centroid source offset	1.09 ± 1.96	0.56	-0.08 ± 0.62	1.08 ± 1.96



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

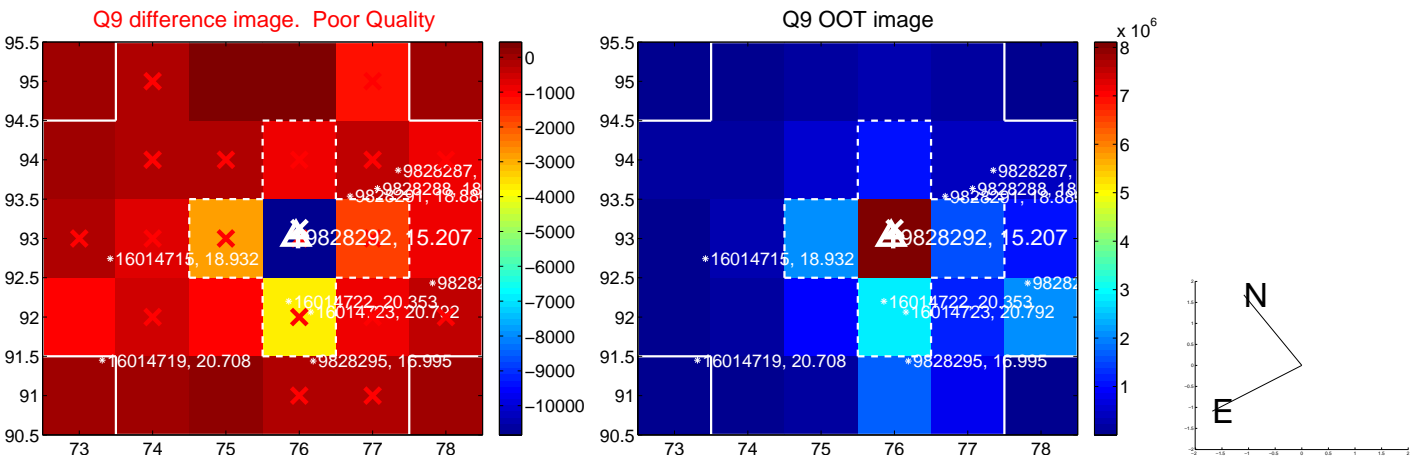
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



white ×: 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.

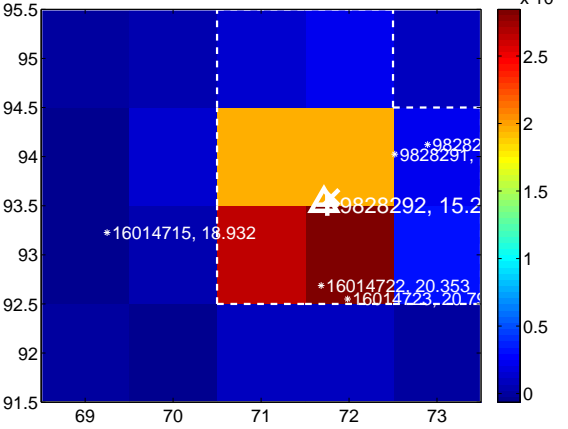
Q13 no difference image



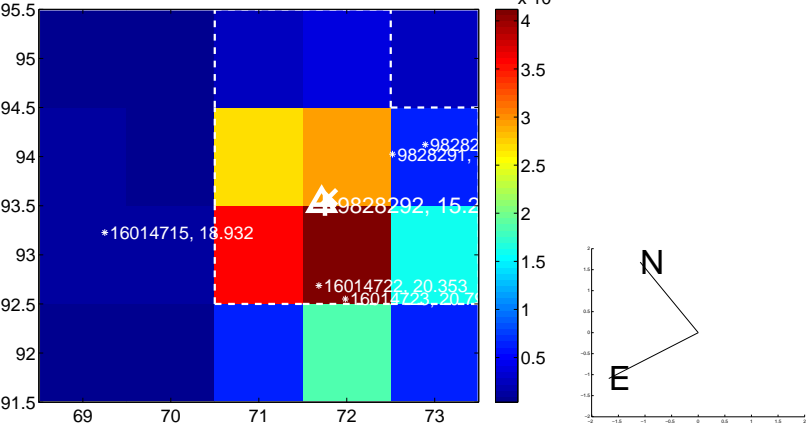
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



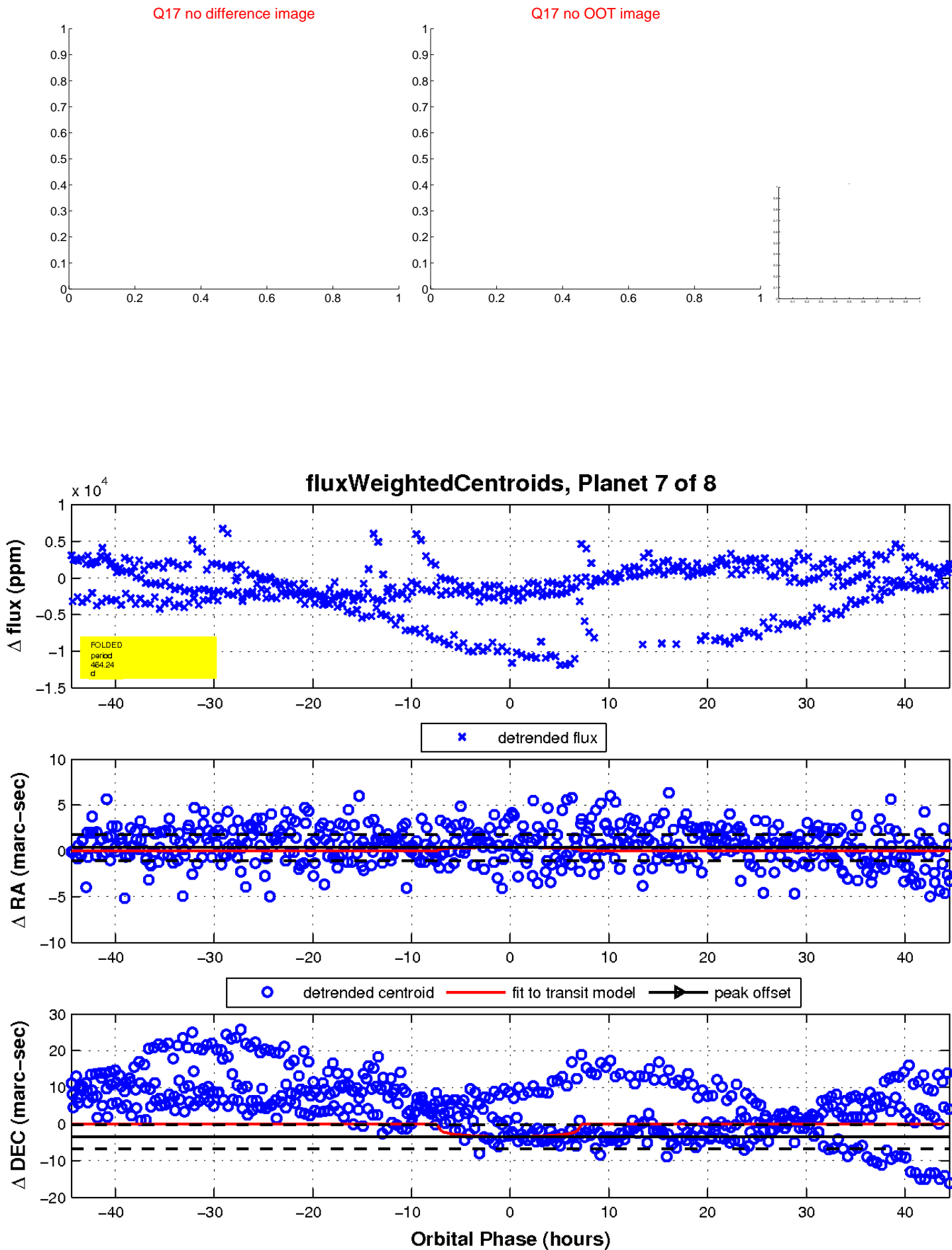
Q16 no difference image



Q16 no OOT image

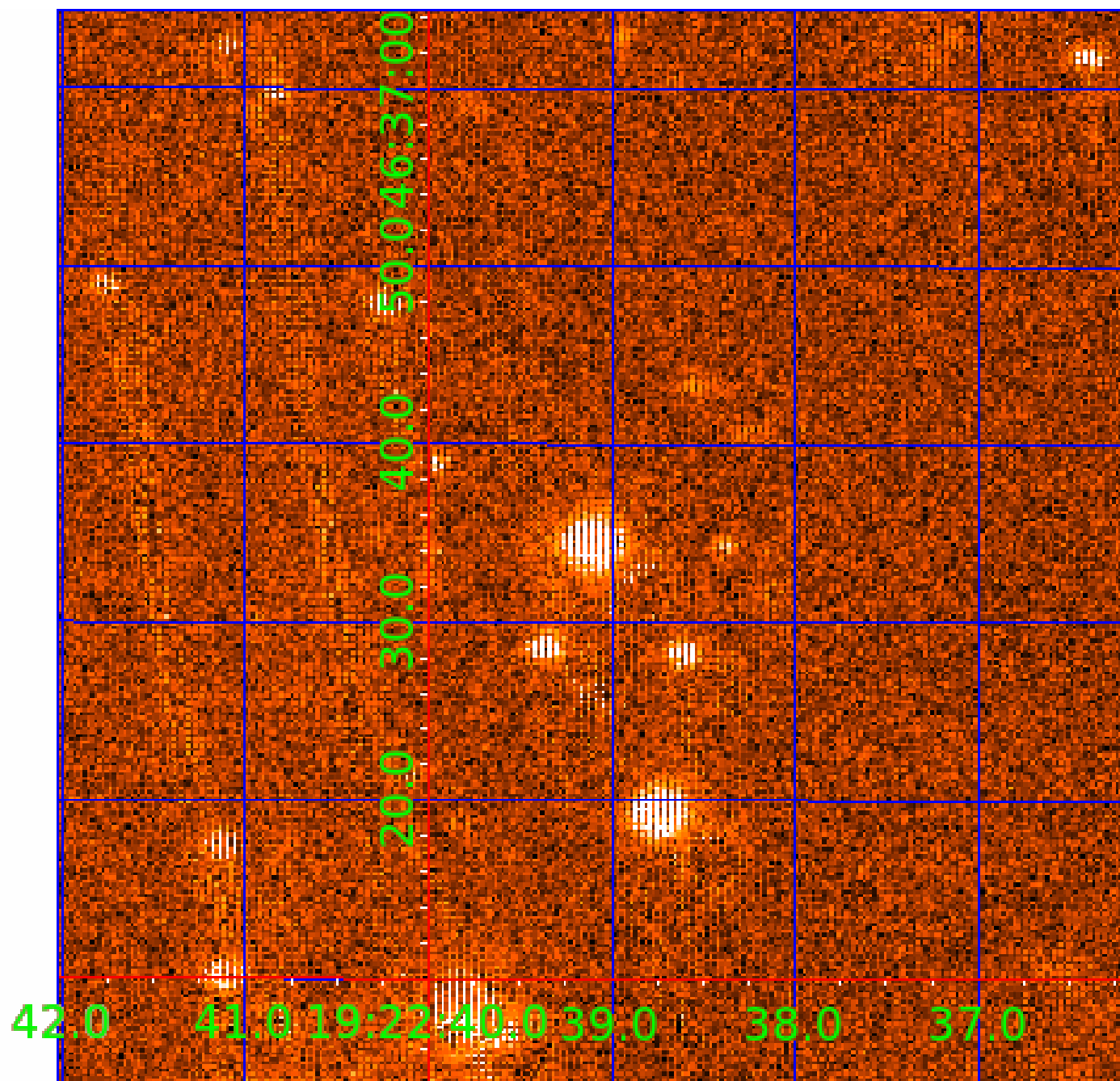


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009828292

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})
009828292-01	OBS	No	456.395440	226.630135	2292.6	3.184	15.1	8.8	0.50	3770	2.48	0.05
009828292-02	OBS	No	394.580557	331.360225	1732.9	5.037	12.8	6.1	0.50	3770	4.03	0.06
009828292-03	OBS	No	451.812350	303.232715	2699.1	12.717	13.8	10.5	0.50	3770	2.56	0.05
009828292-04	OBS	No	355.949501	311.554031	1178.2	5.951	12.5	5.3	0.50	3770	1.74	0.07
009828292-05	OBS	No	443.072993	198.285203	1281.8	9.717	12.4	6.3	0.50	3770	1.83	0.06
009828292-06	OBS	No	584.317830	297.477088	1996.9	4.724	11.7	7.2	0.50	3770	2.26	0.04
009828292-07	OBS	No	464.236807	438.505716	1411.1	14.883	10.3	5.5	0.50	3770	1.89	0.05
009828292-08	OBS	No	362.205290	492.439911	1650.1	6.408	10.5	7.0	0.50	3770	3.95	0.07

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009828292-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009828292-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-04	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
009828292-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009828292-06	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
009828292-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
009828292-08	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

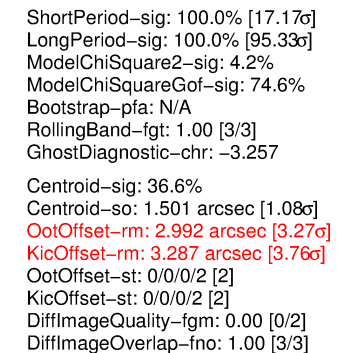
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 009828292-08

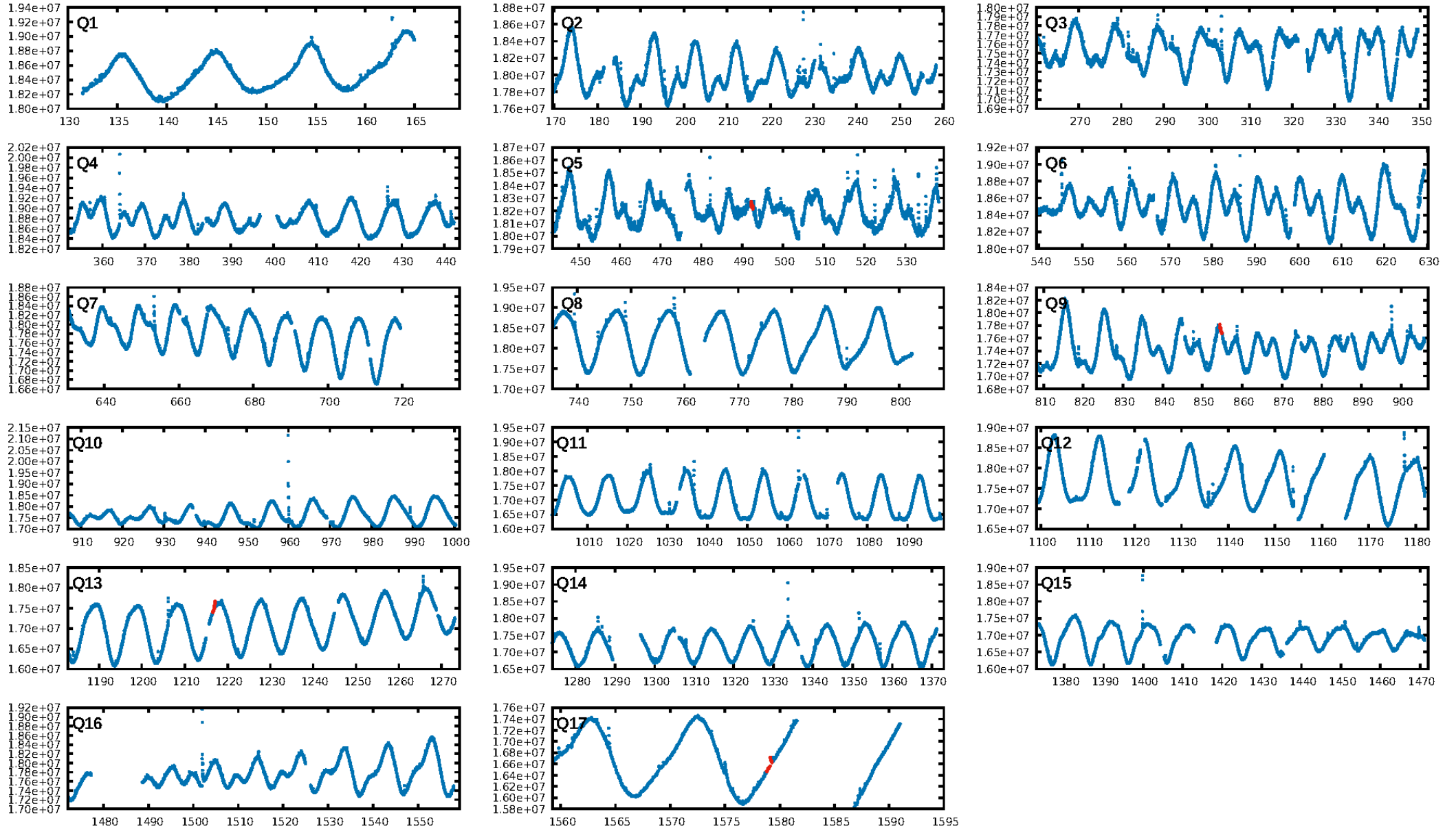
No Significant Match Found

KIC: 9828292 Candidate: 8 of 8 Period: 362.205 d

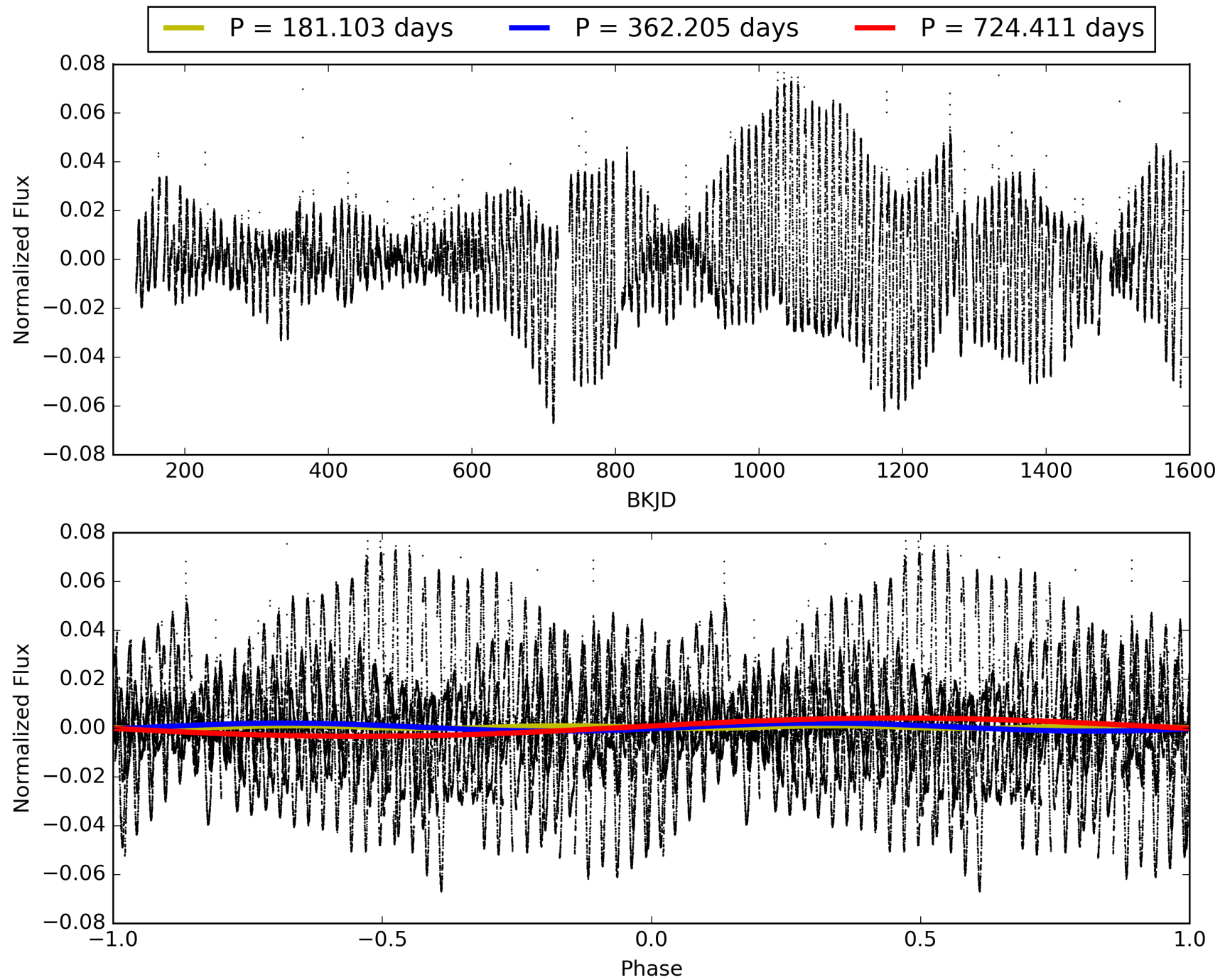


This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009828292-08, PDC Light Curves

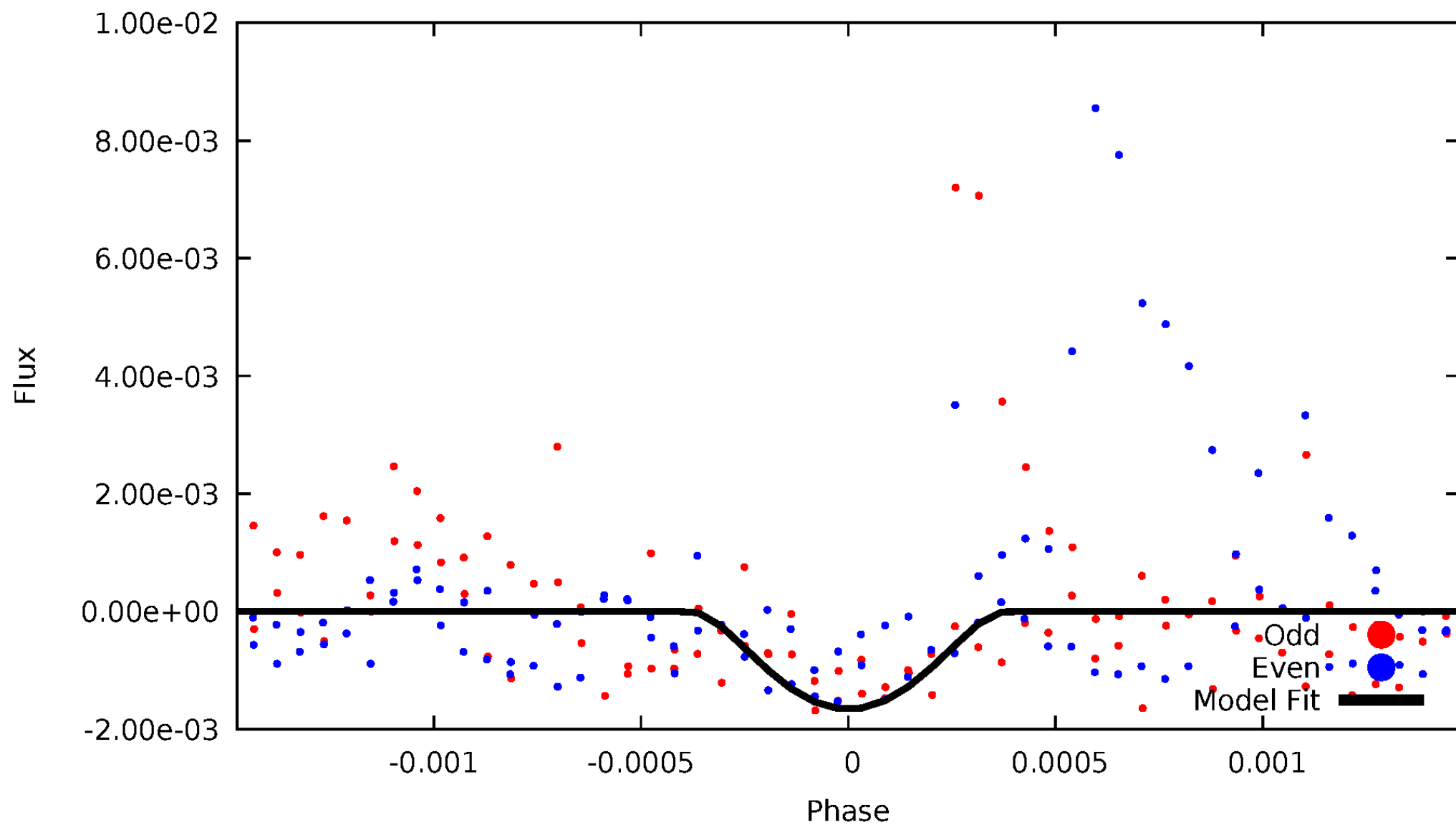


TCE 009828292-08



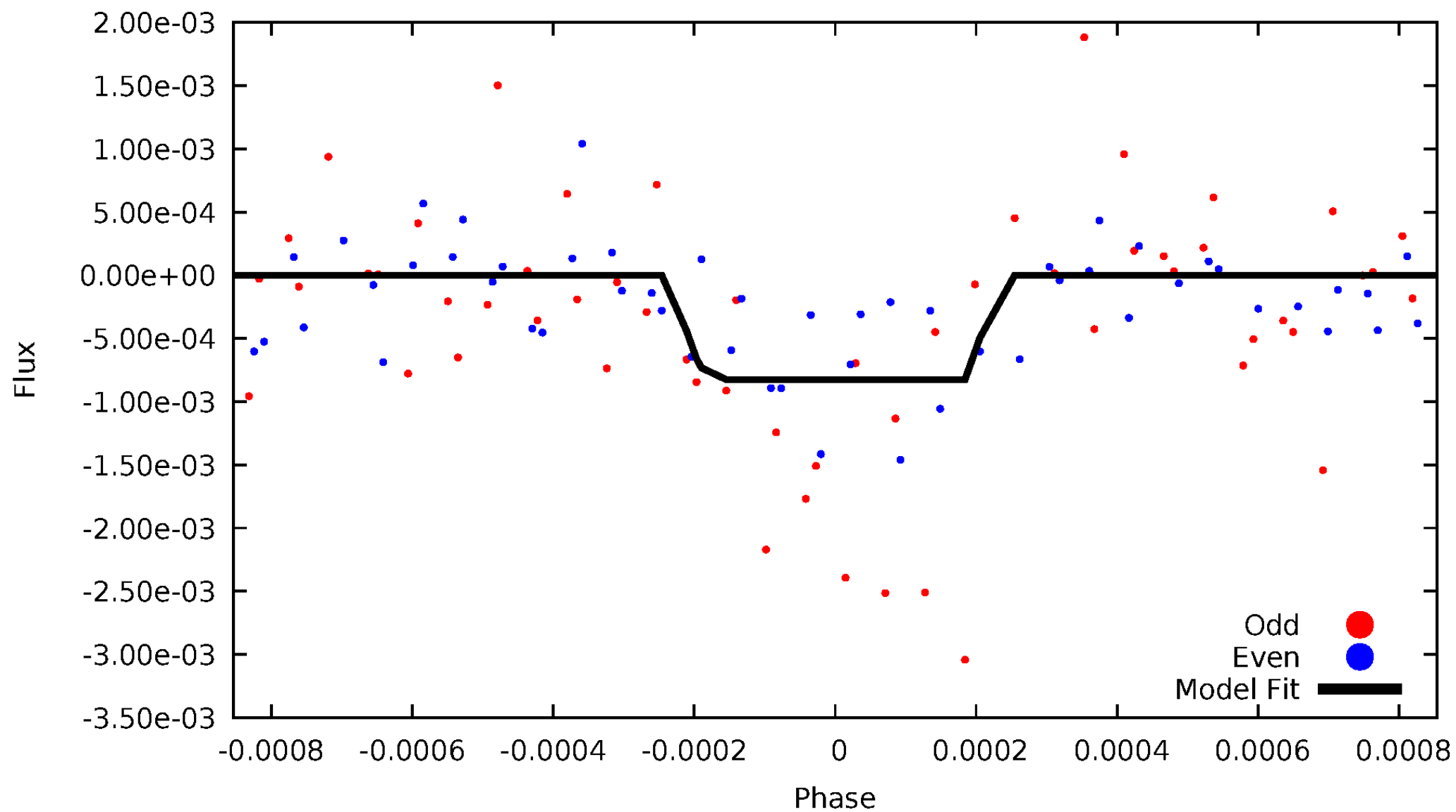
DV Odd/Even

TCE 009828292-08



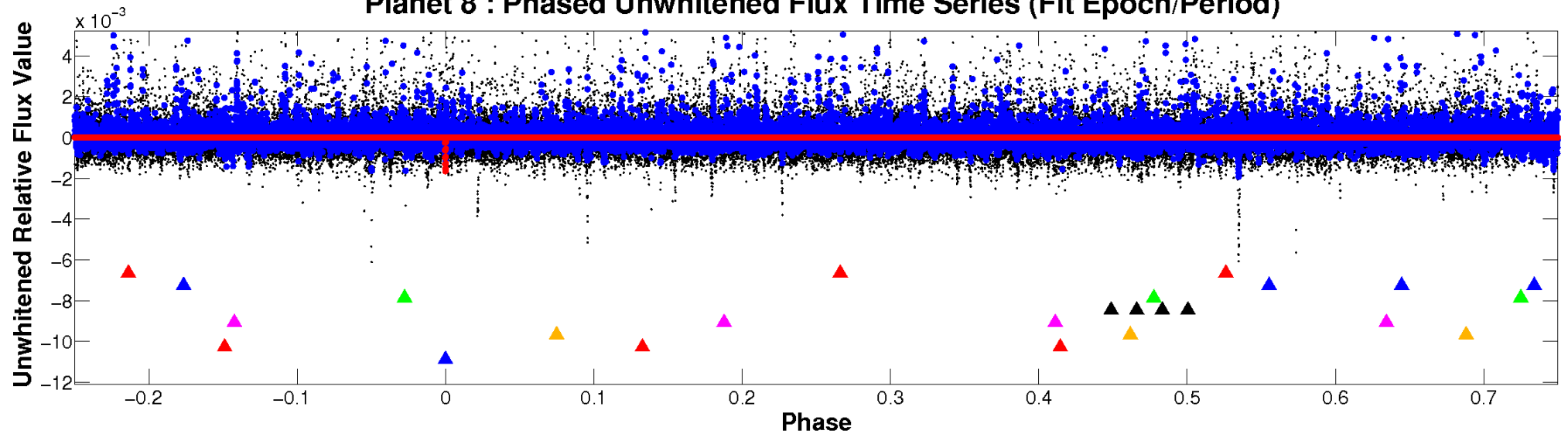
ALT Odd/Even

TCE 009828292-08

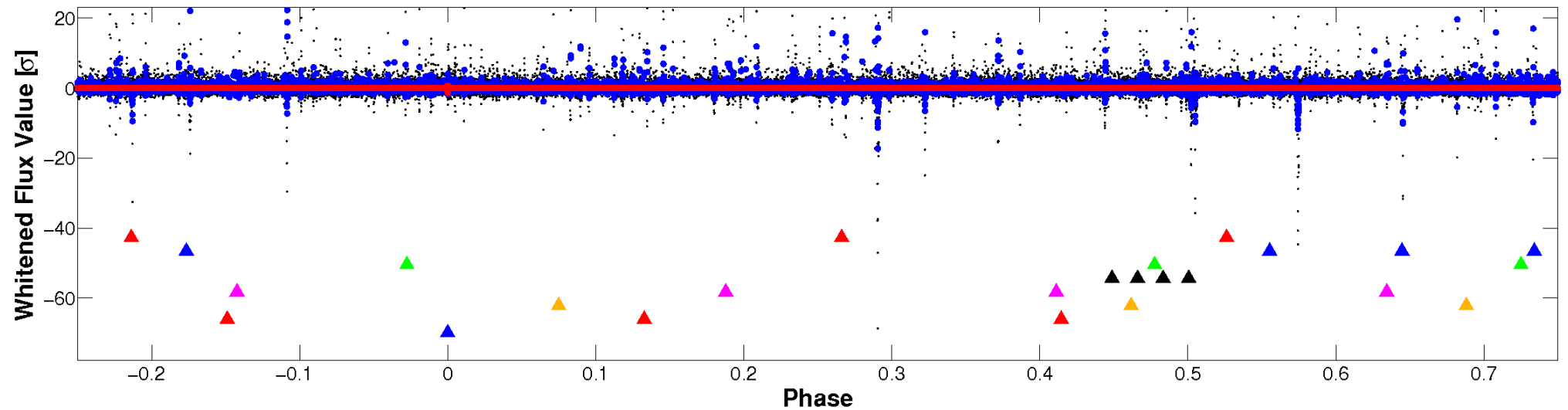


Non-Whitened Vs. Whitened Light Curve

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

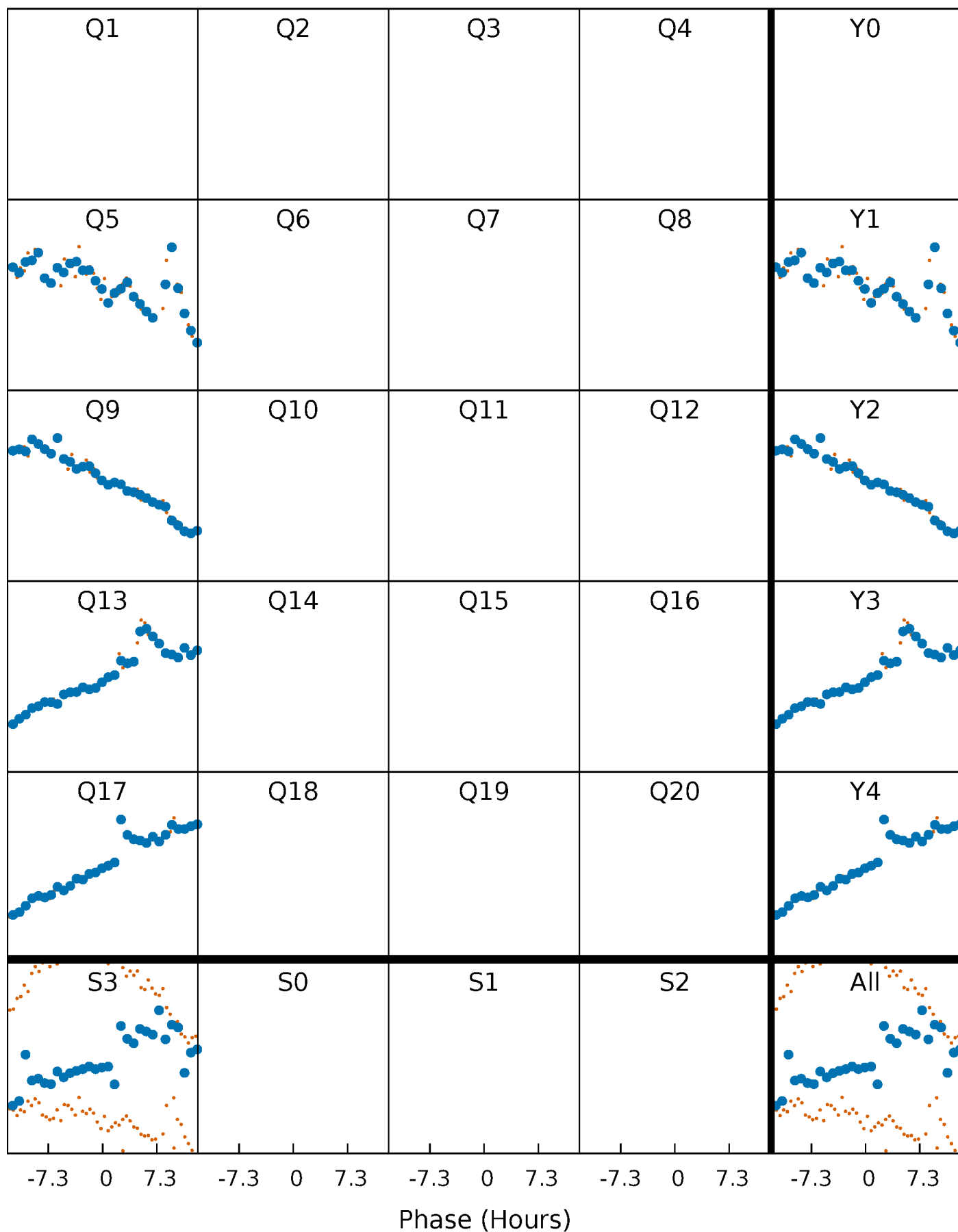


Planet 8 : Phased Whitened Flux Time Series (Fit Epoch/Period)



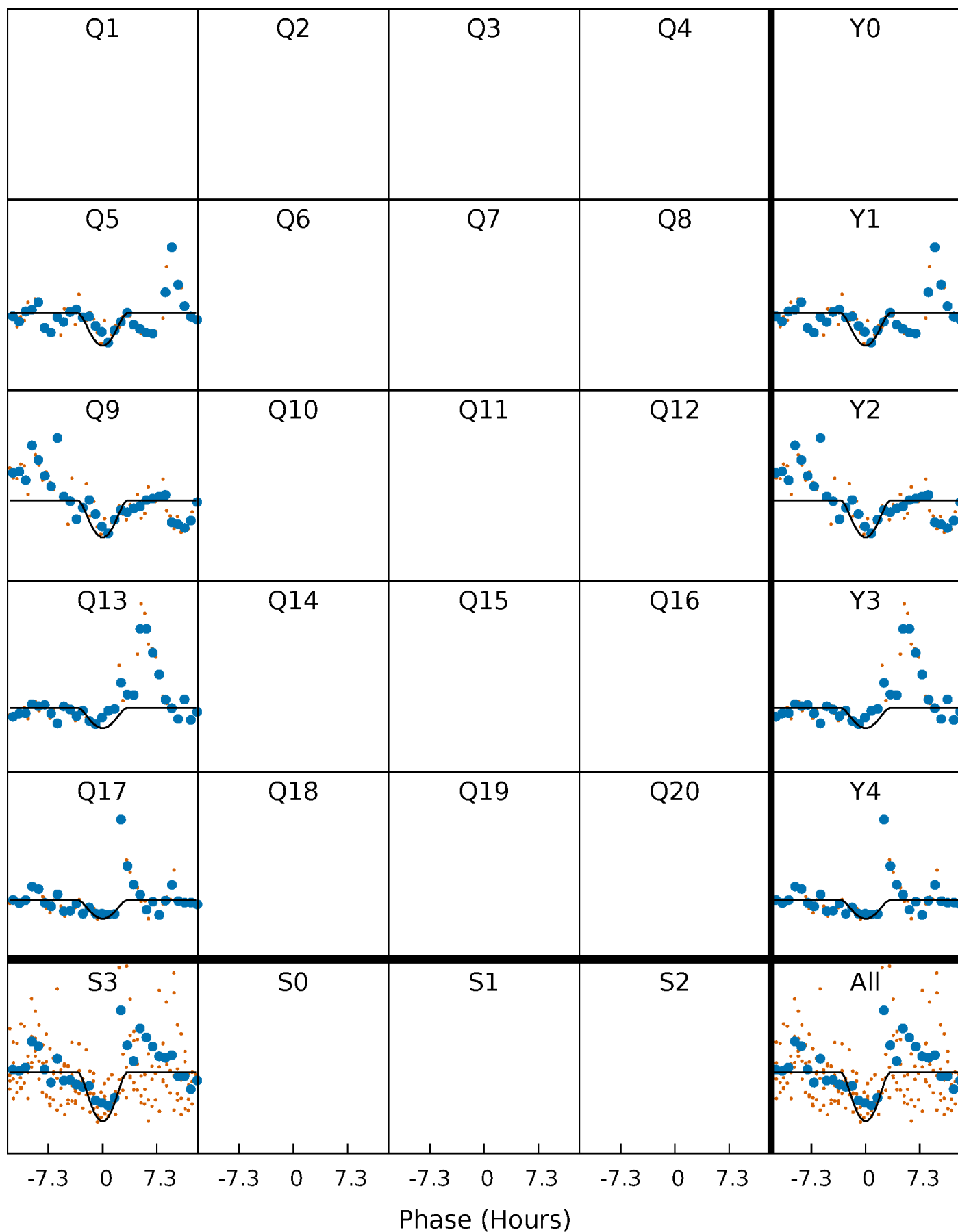
PDC Quarter-Phased Transit Curves

TCE 009828292-08 $P=362.205290$ Days $T_0=492.439911$ (BKJD)



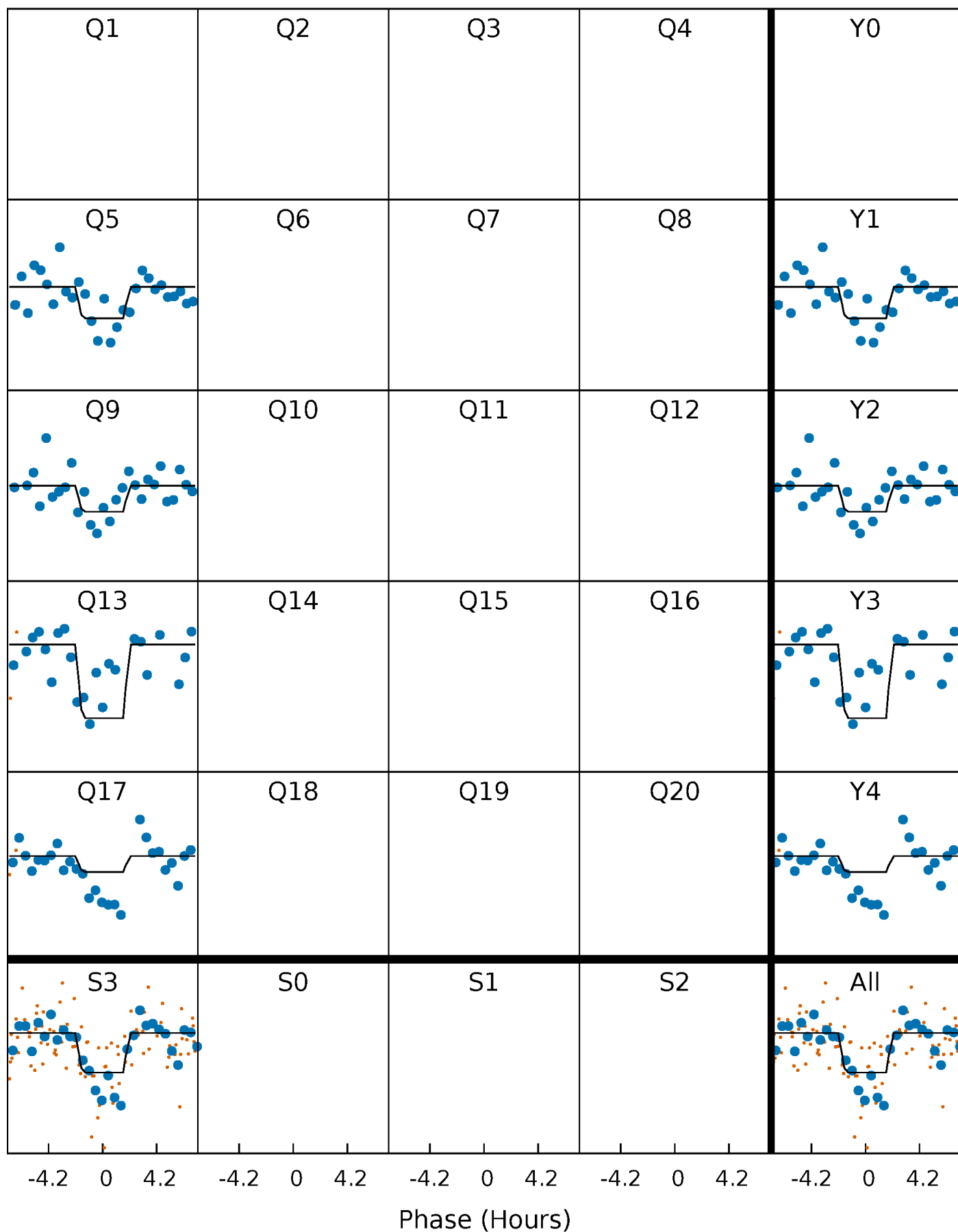
DV Quarter-Phased Transit Curves

TCE 009828292-08 $P=362.205290$ Days $T_0=492.439911$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

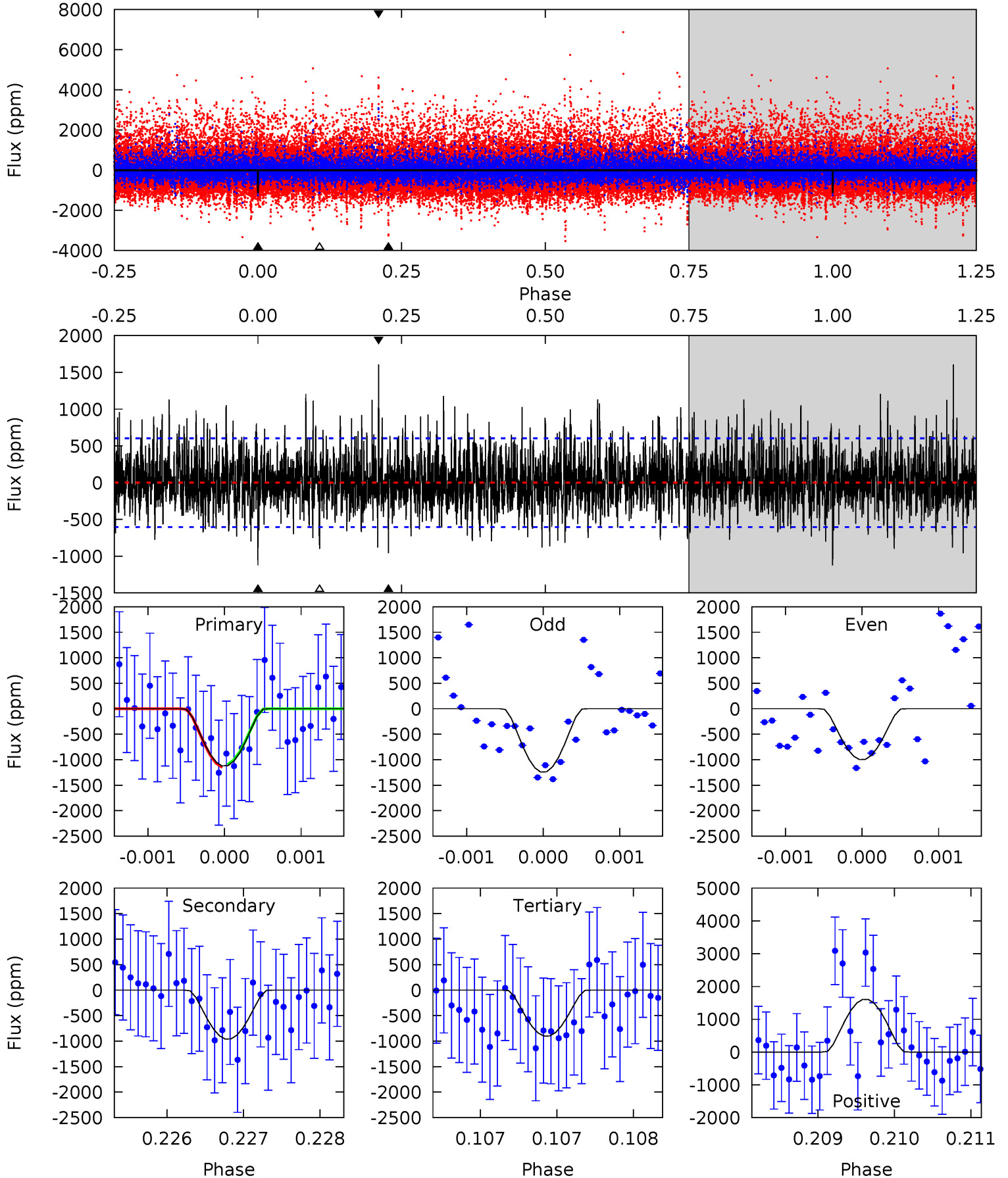
TCE 009828292-08 $P=362.208186$ Days $T_0=492.437857$ (BKJD)



DV Model-Shift Uniqueness Test

009828292-08, P = 362.205290 Days, E = 130.234621 Days

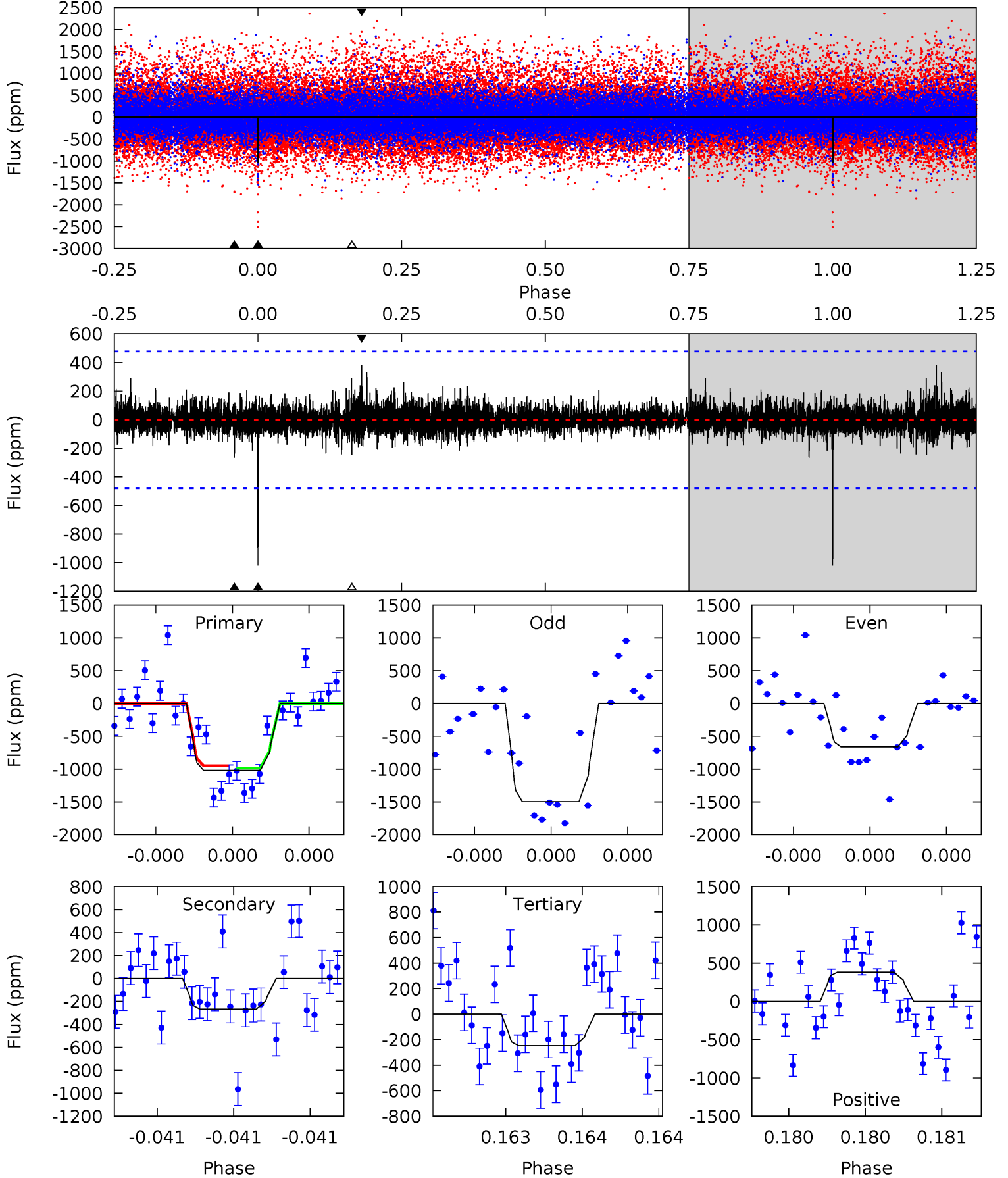
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	8.75	8.22	14.7	5.51	3.38	2.66	2.01	-4.43	0.53	-5.91	0.90	0.99	0.59	0.24



Alt Model-Shift Uniqueness Test

009828292-08, P = 362.208186 Days, E = 130.229671 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	3.11	2.89	4.46	5.61	3.53	0.65	9.06	7.49	0.22	-1.35	4.91	1.33	0.27	0.21



Stellar Parameters For KIC 009828292

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	3770^{+76}_{-83}	$4.747^{+0.052}_{-0.032}$	$-0.100^{+0.200}_{-0.200}$	$0.499^{+0.037}_{-0.051}$	$0.508^{+0.043}_{-0.043}$	$5.743^{+1.418}_{-0.785}$
	+2%/-2%	+1%/-1%	+200%/-200%	+7%/-10%	+8%/-8%	+25%/-14%
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 009828292-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-959 ± 110	$14.02^{+13.79}_{-9.33}$	183^{+5}_{-5}	2139^{+636}_{-288}	1664^{+12980}_{-1234}
Alt.	-266 ± 85	$11.74^{+13.23}_{-8.57}$	184^{+5}_{-5}	1943^{+641}_{-276}	675^{+7716}_{-533}

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

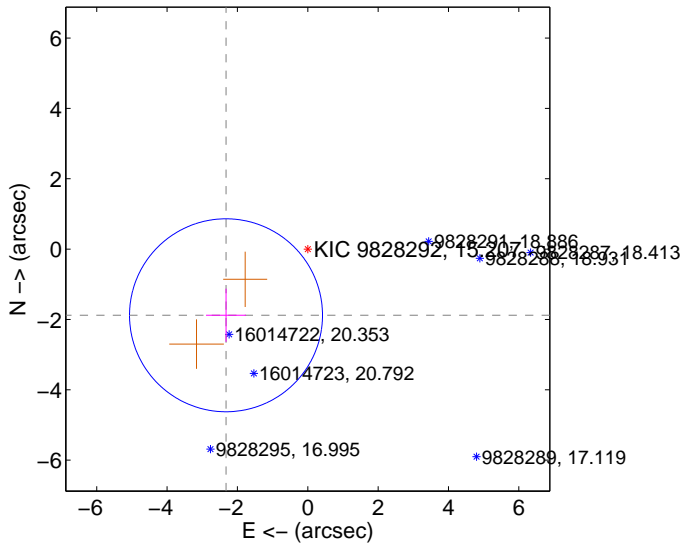
Supplemental centroid analysis for 009828292-08. Kepler magnitude: 15.21. Transit SNR 7.03

There are 0 quarters with good PRF difference image offsets

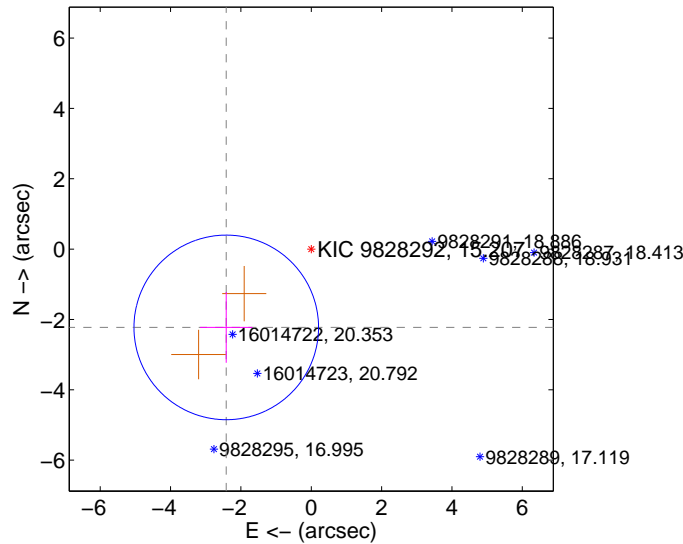
The direct PRF centroid is offset from the target star catalog position by about 0.43 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.992 ± 0.915	3.27	2.325 ± 0.568	-1.882 ± 0.755
PRF-fit source offset from KIC position	3.287 ± 0.875	3.76	2.417 ± 0.745	-2.227 ± 1.007
photometric centroid source offset	1.50 ± 1.39	1.08	0.95 ± 0.80	-1.16 ± 1.67

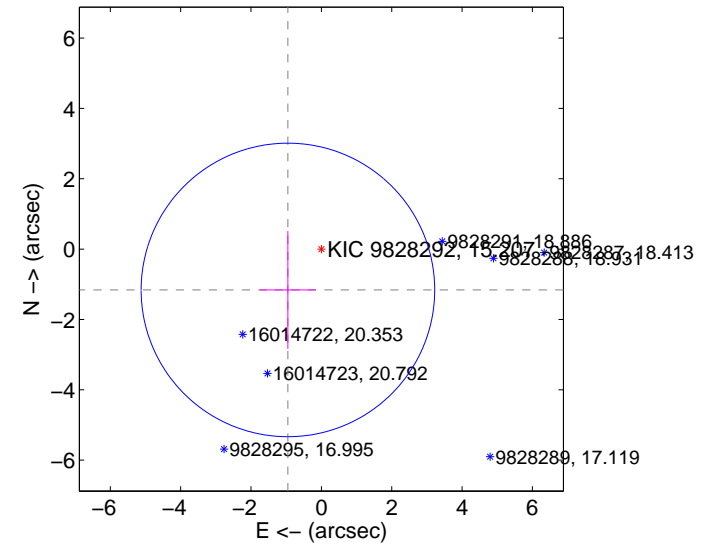
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

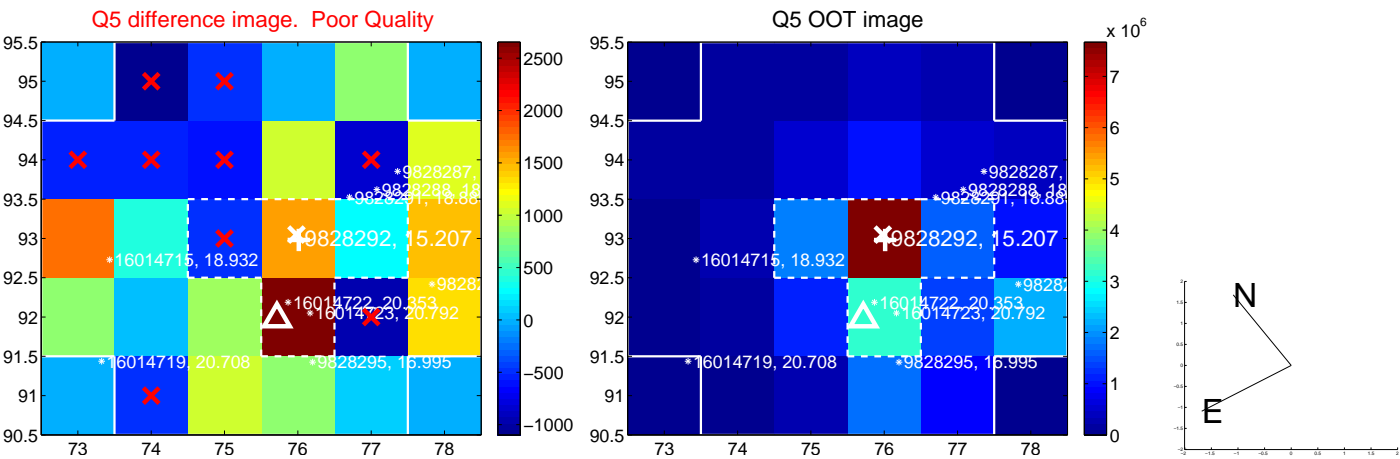


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

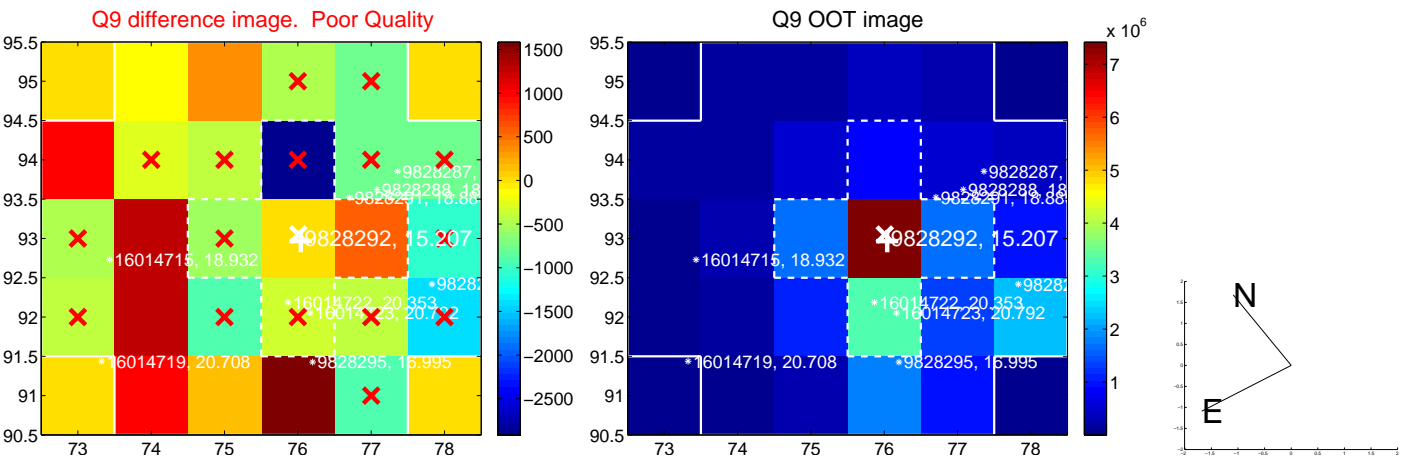
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



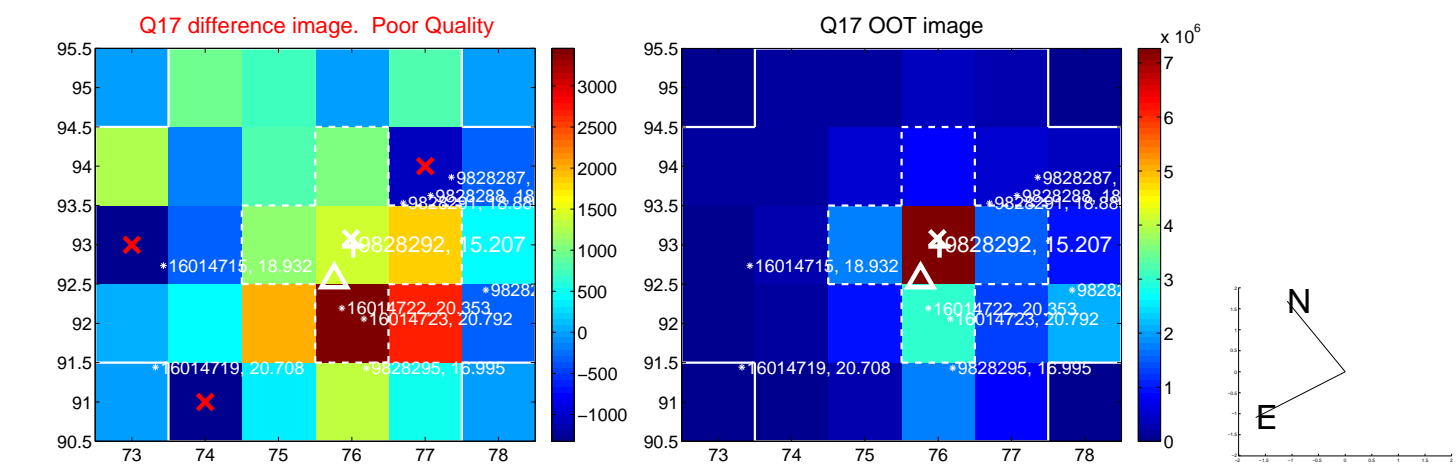
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



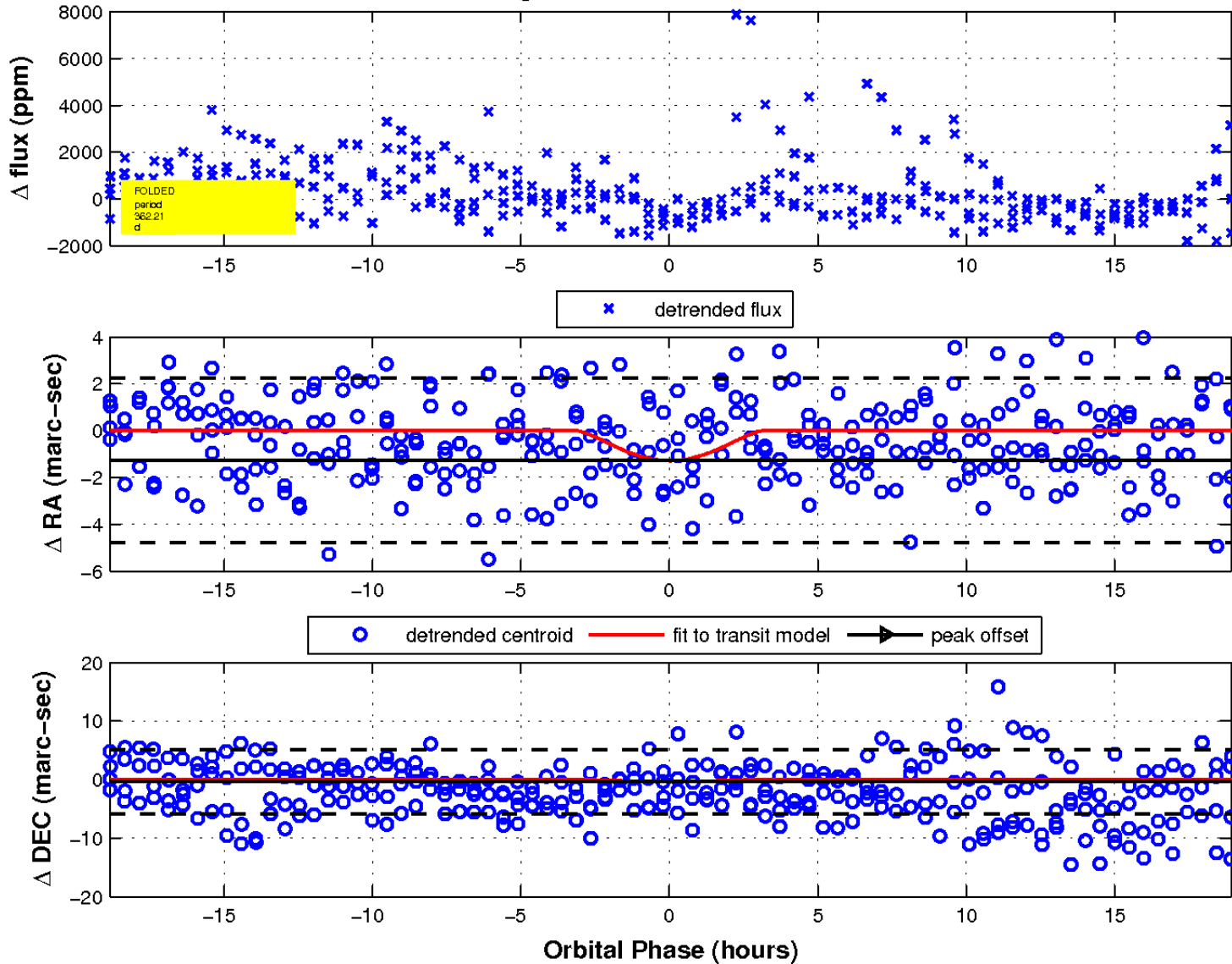
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 8 of 8



UKIRT Image

Declination

