

KIC 007033830

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})
007033830-01	OBS	No	498.558659	578.358673	3474.8	9.227	16.6	8.0	0.30	3384	1.98	0.02
007033830-02	OBS	No	675.305827	204.981968	3631.1	9.662	13.8	7.2	0.30	3384	2.24	0.01
007033830-03	OBS	No	324.521305	200.597642	3066.3	5.960	16.5	8.7	0.30	3384	1.67	0.03
007033830-04	OBS	No	590.146738	388.979965	2254.3	3.686	14.0	5.4	0.30	3384	1.43	0.01
007033830-05	OBS	No	328.199048	167.414247	3882.7	7.679	13.0	8.4	0.30	3384	2.22	0.03
007033830-06	OBS	No	424.992669	370.282661	3861.9	4.568	13.1	7.7	0.30	3384	1.91	0.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007033830-01	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—CENT_FEW_DIFFS
007033830-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007033830-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007033830-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST
007033830-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—HALO_GHOST
007033830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

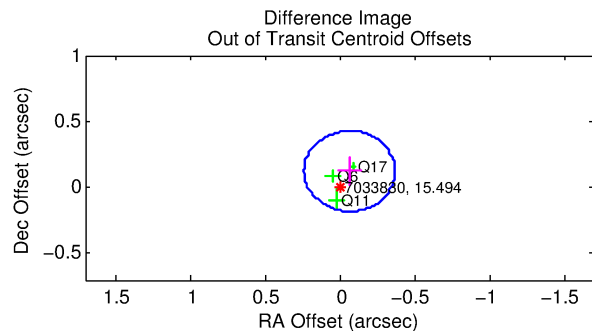
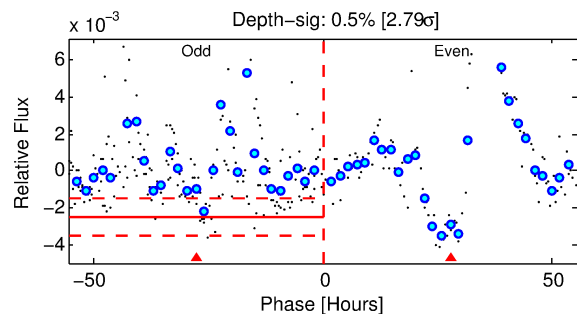
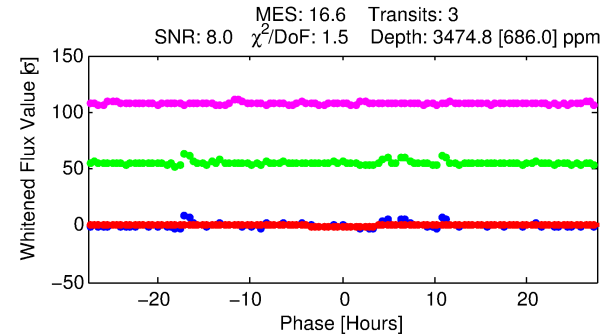
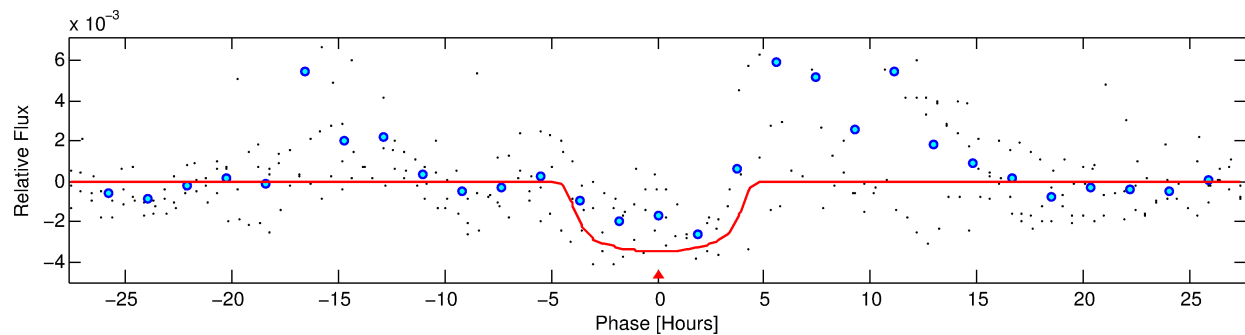
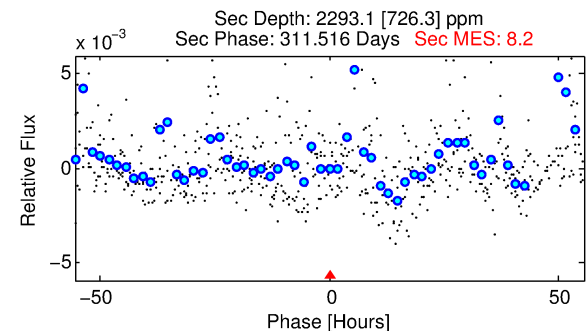
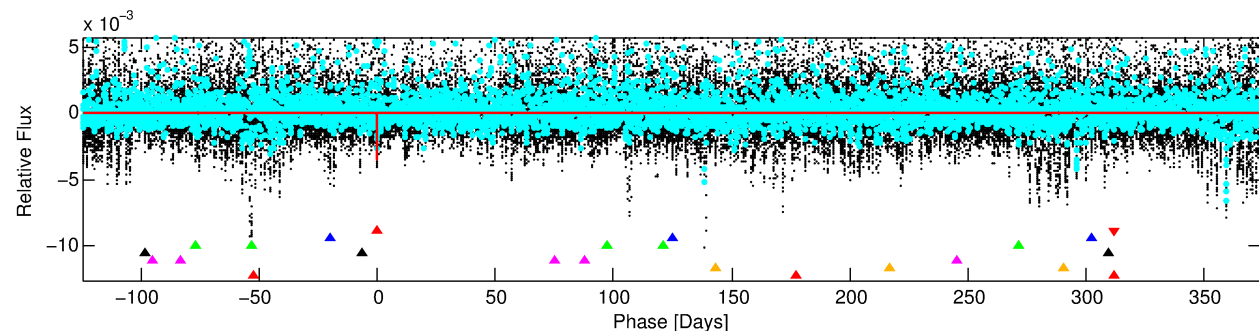
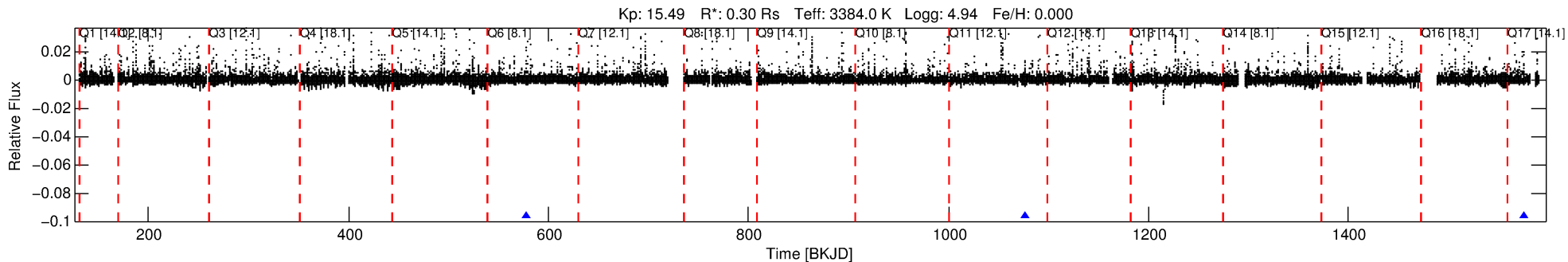
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007033830-01

No Significant Match Found

DV One-Page Summary

KIC: 7033830 Candidate: 1 of 7 Period: 498.559 d



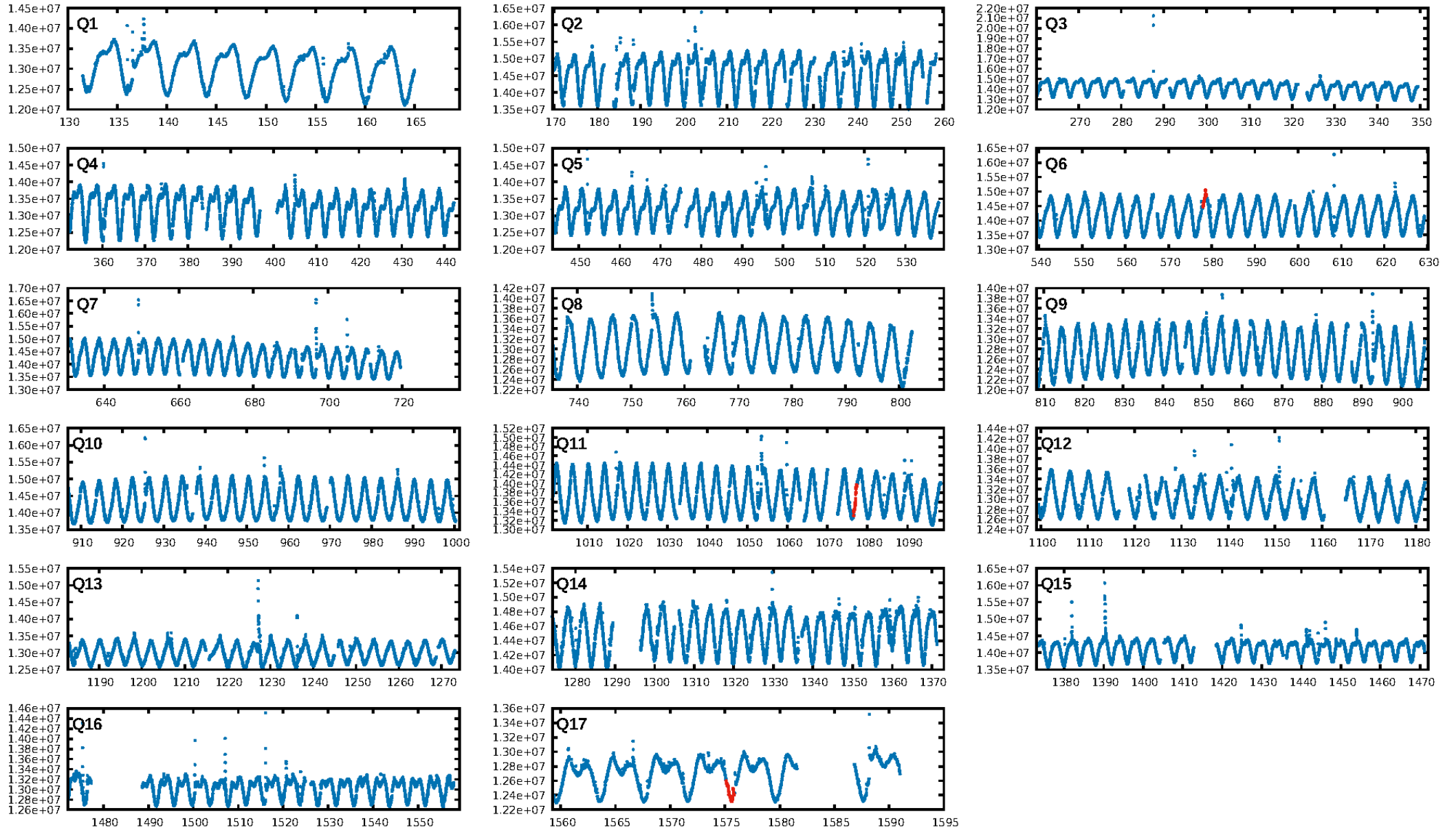
DV Fit Results:

Period = 498.55866 [0.01176] d
Epoch = 578.3587 [0.0136] BKJD
Rp/R* = 0.0593 [0.0087]
a/R* = 296.21 [109.31]
b = 0.78 [0.19]
Seff = 0.02 [0.00]
Teq = 91 [3] K
Rp = 1.97 [0.38] Re
a = 0.8211 [0.0739] AU
Ag = 218081.97 [97146.39] [2.24σ]
Teffp = 3040 [331] K [8.91σ]

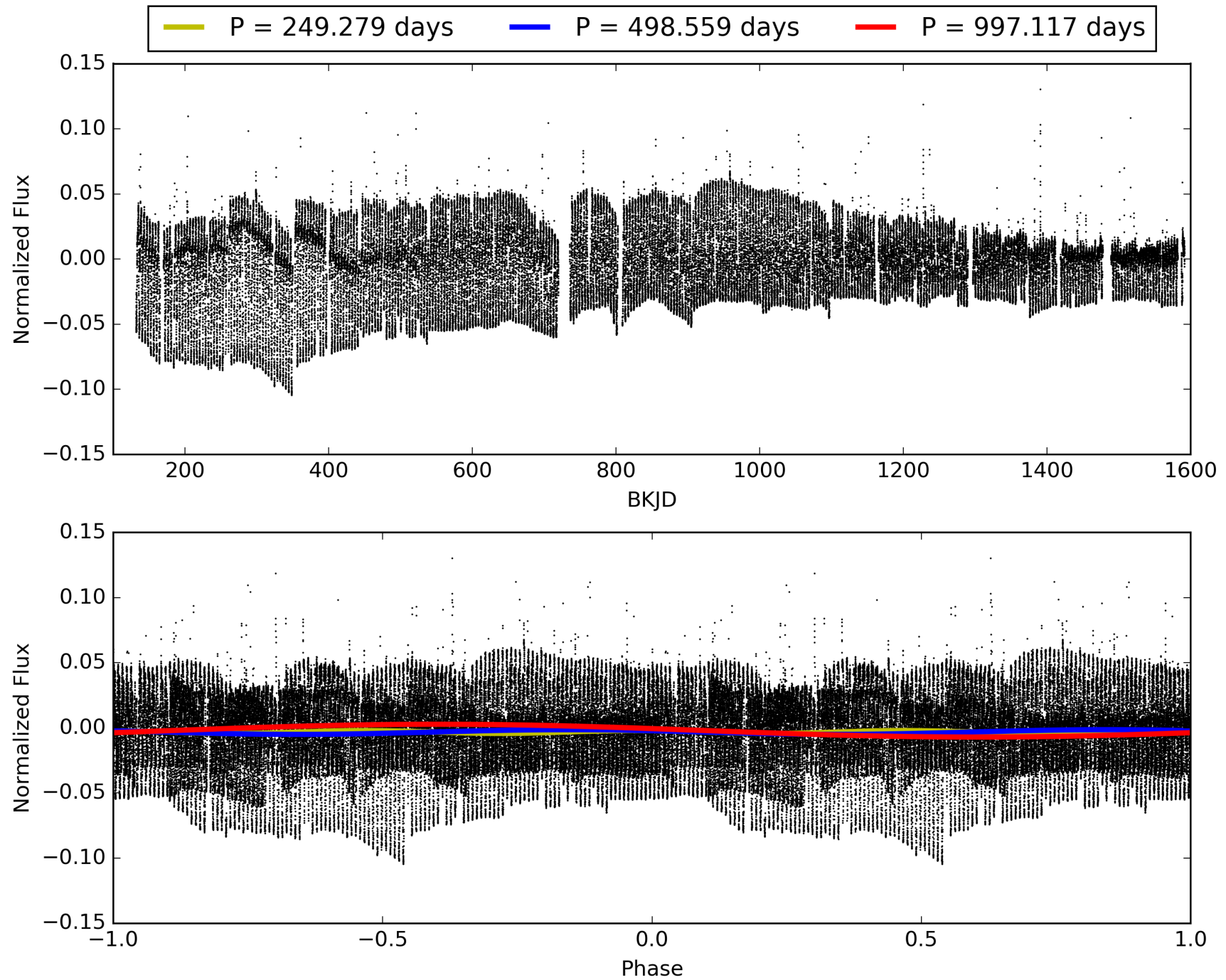
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [171.49σ]
LongPeriod-sig: 100.0% [221.23σ]
ModelChiSquare2-sig: 0.9%
ModelChiSquareGof-sig: 25.1%
Bootstrap-pfa: 2.19e-13
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: -1.267
Centroid-sig: 63.5%
Centroid-so: 0.057 arcsec [0.15σ]
OotOffset-rm: 0.140 arcsec [1.38σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.105 arcsec [1.36σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 007033830-01, PDC Light Curves

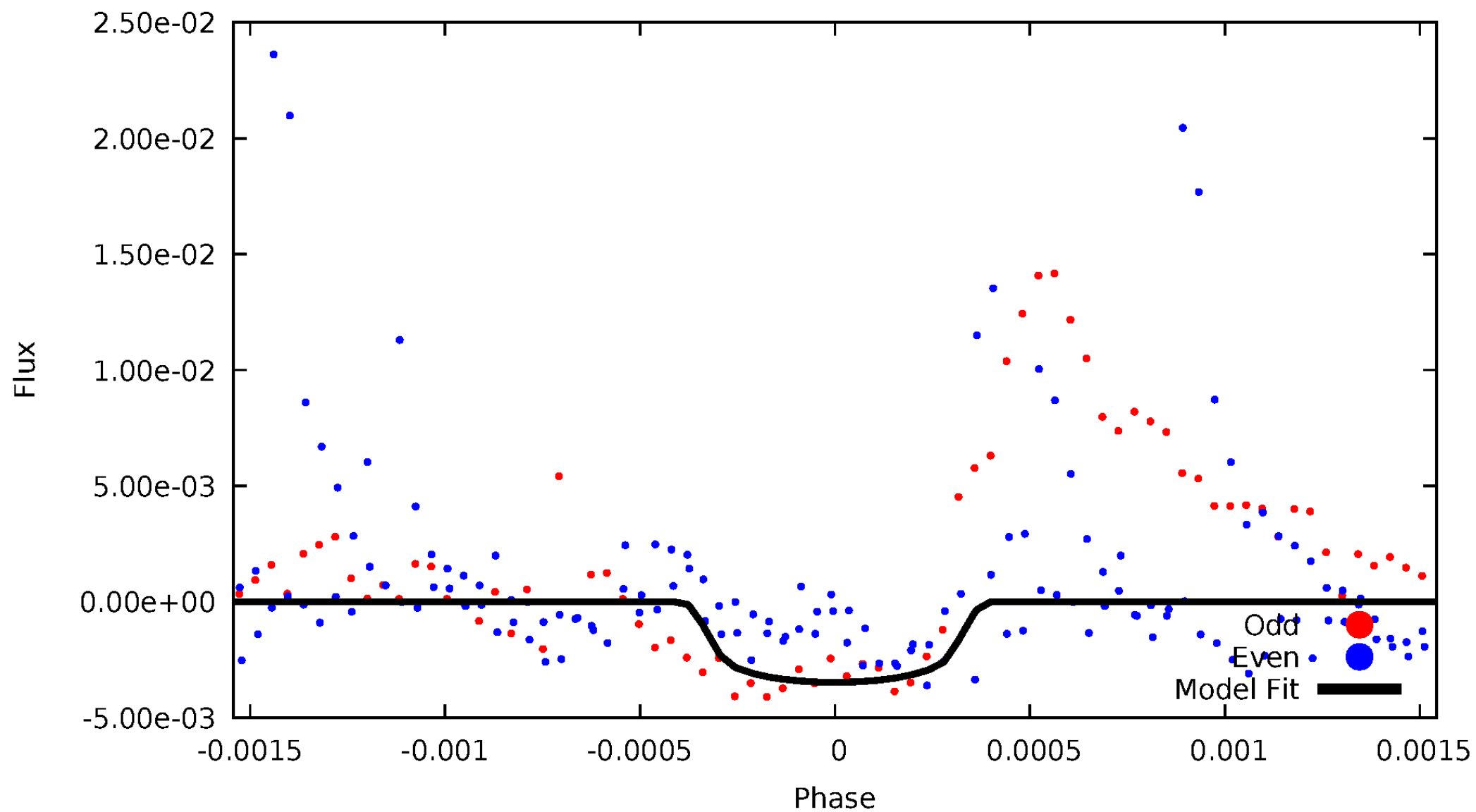


TCE 007033830-01



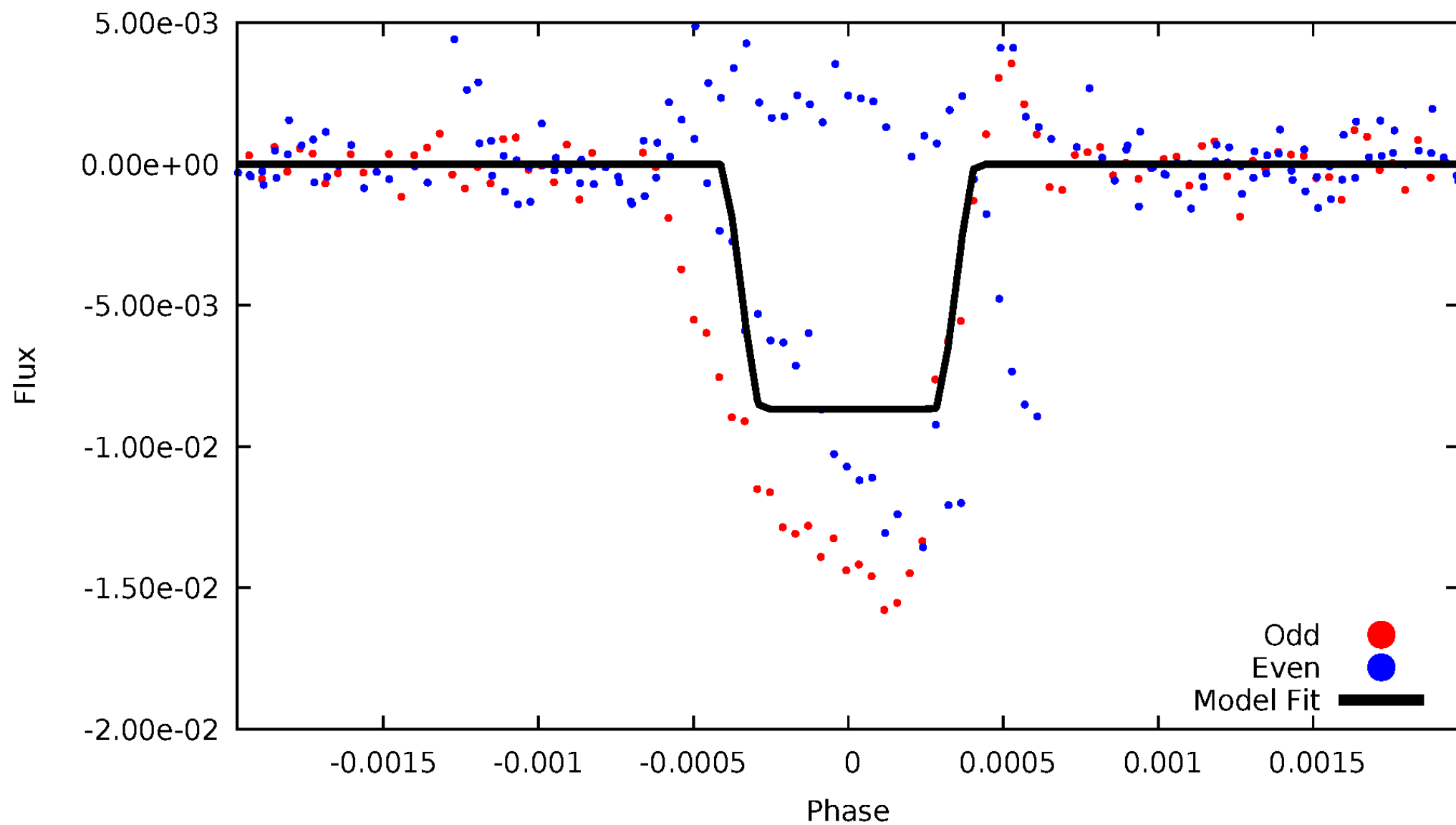
DV Odd/Even

TCE 007033830-01



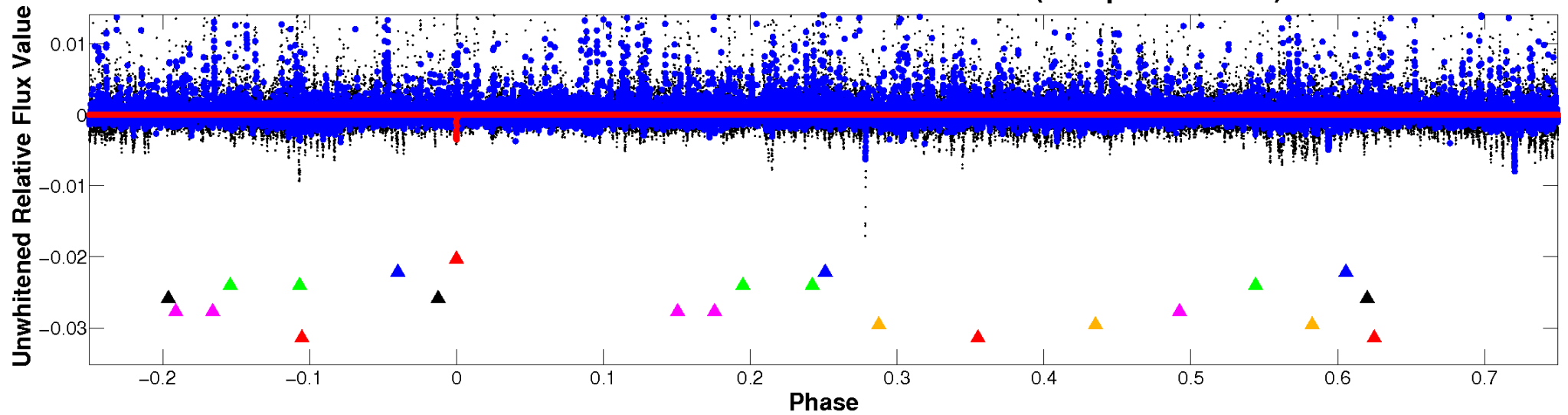
ALT Odd/Even

TCE 007033830-01

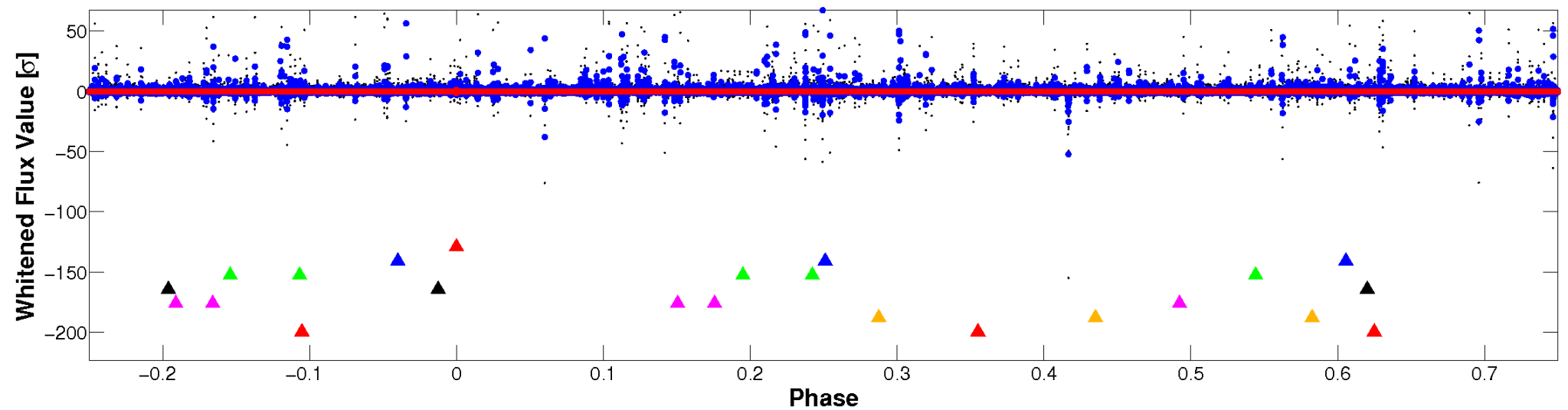


Non-Whitened Vs. Whitened Light Curve

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

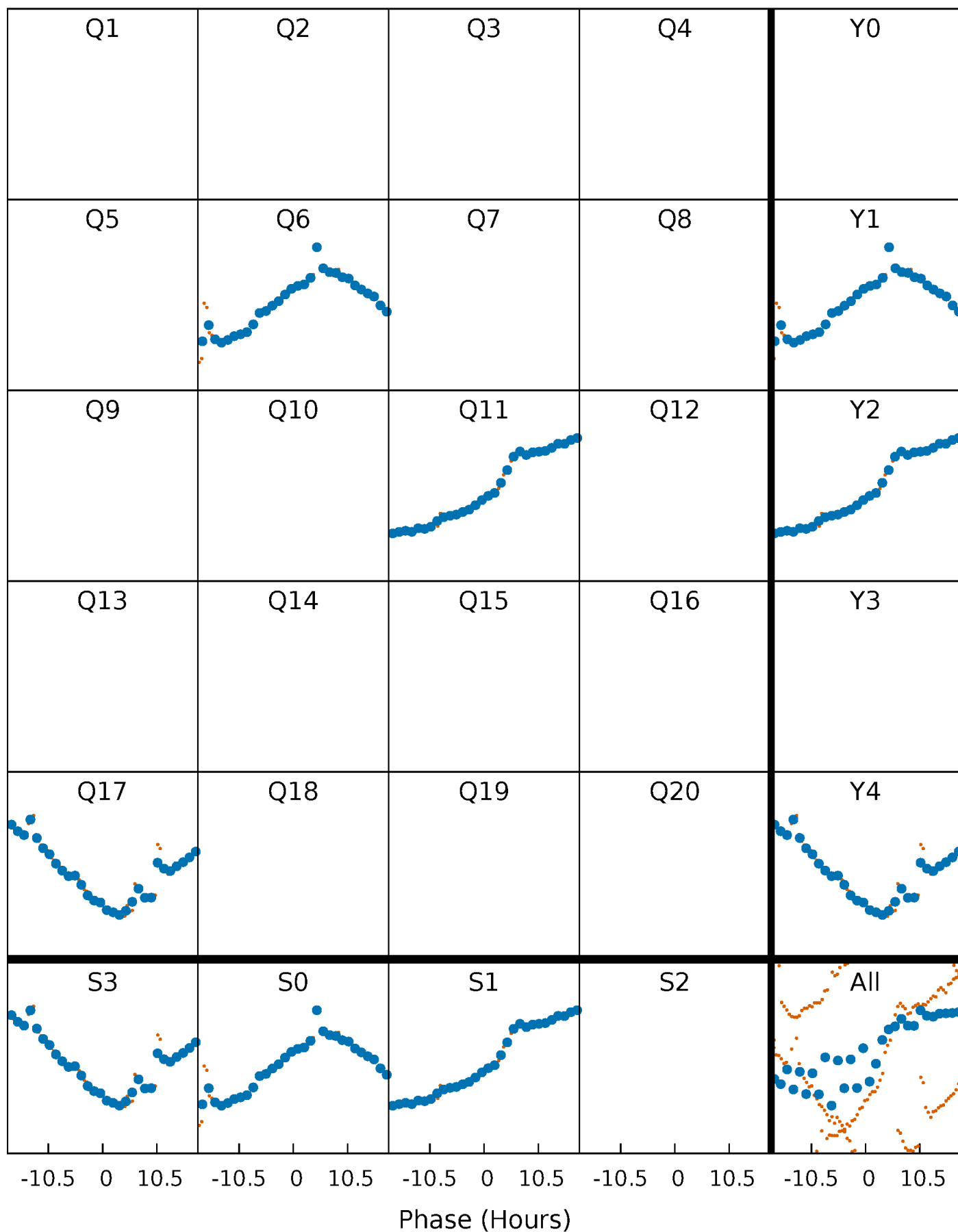


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



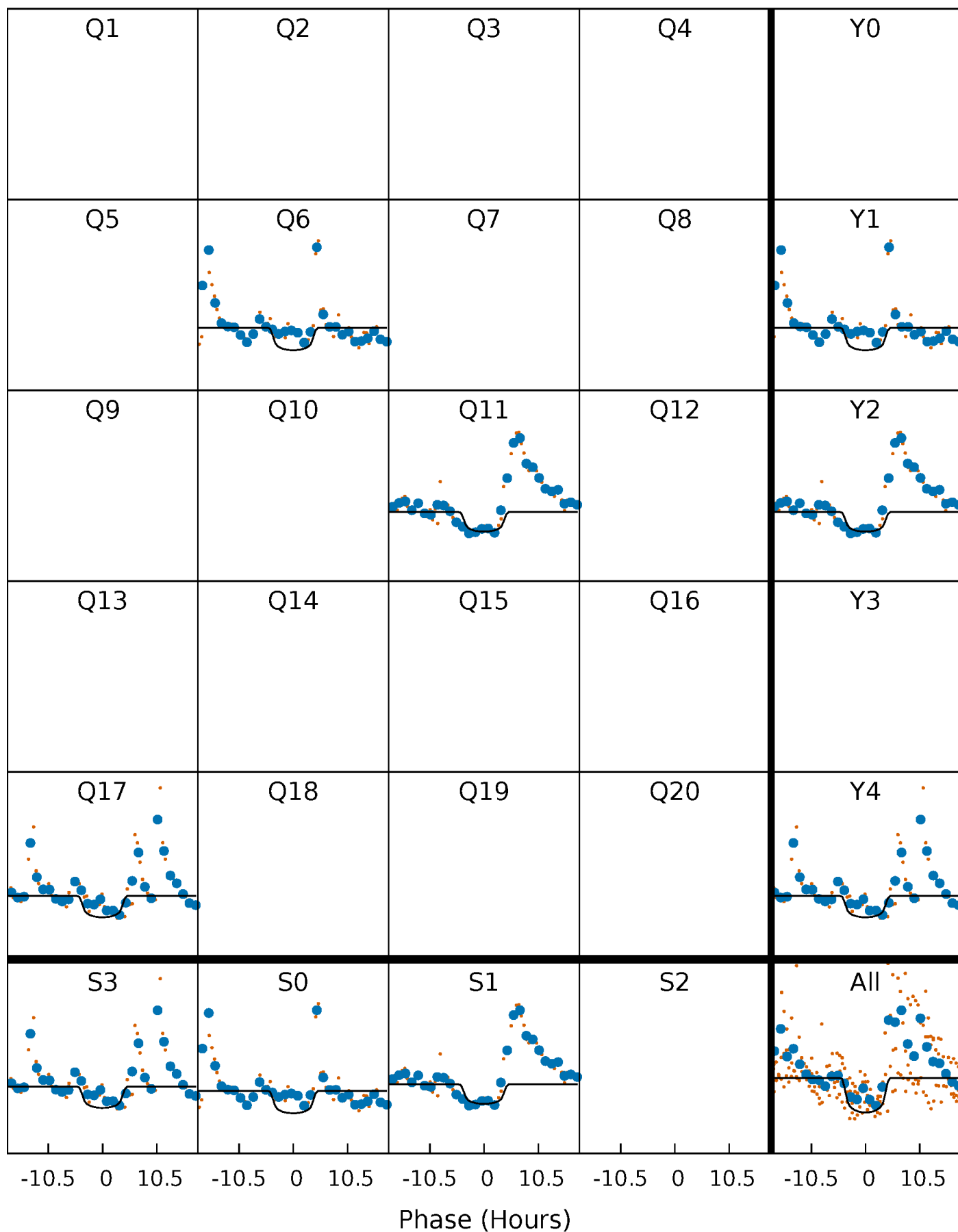
PDC Quarter-Phased Transit Curves

TCE 007033830-01 P=498.558659 Days $T_0=578.358674$ (BKJD)



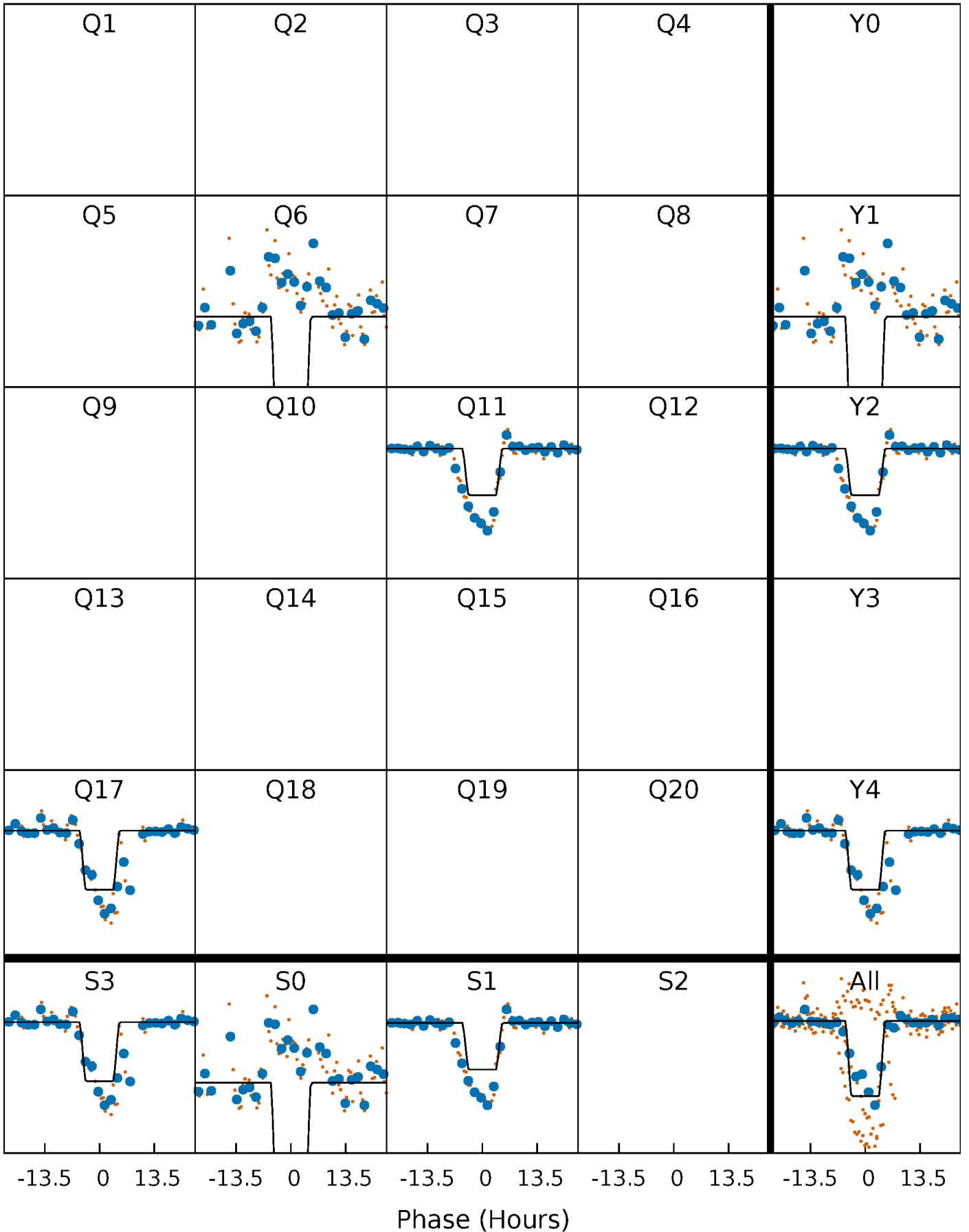
DV Quarter-Phased Transit Curves

TCE 007033830-01 P=498.558659 Days $T_0=578.358674$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

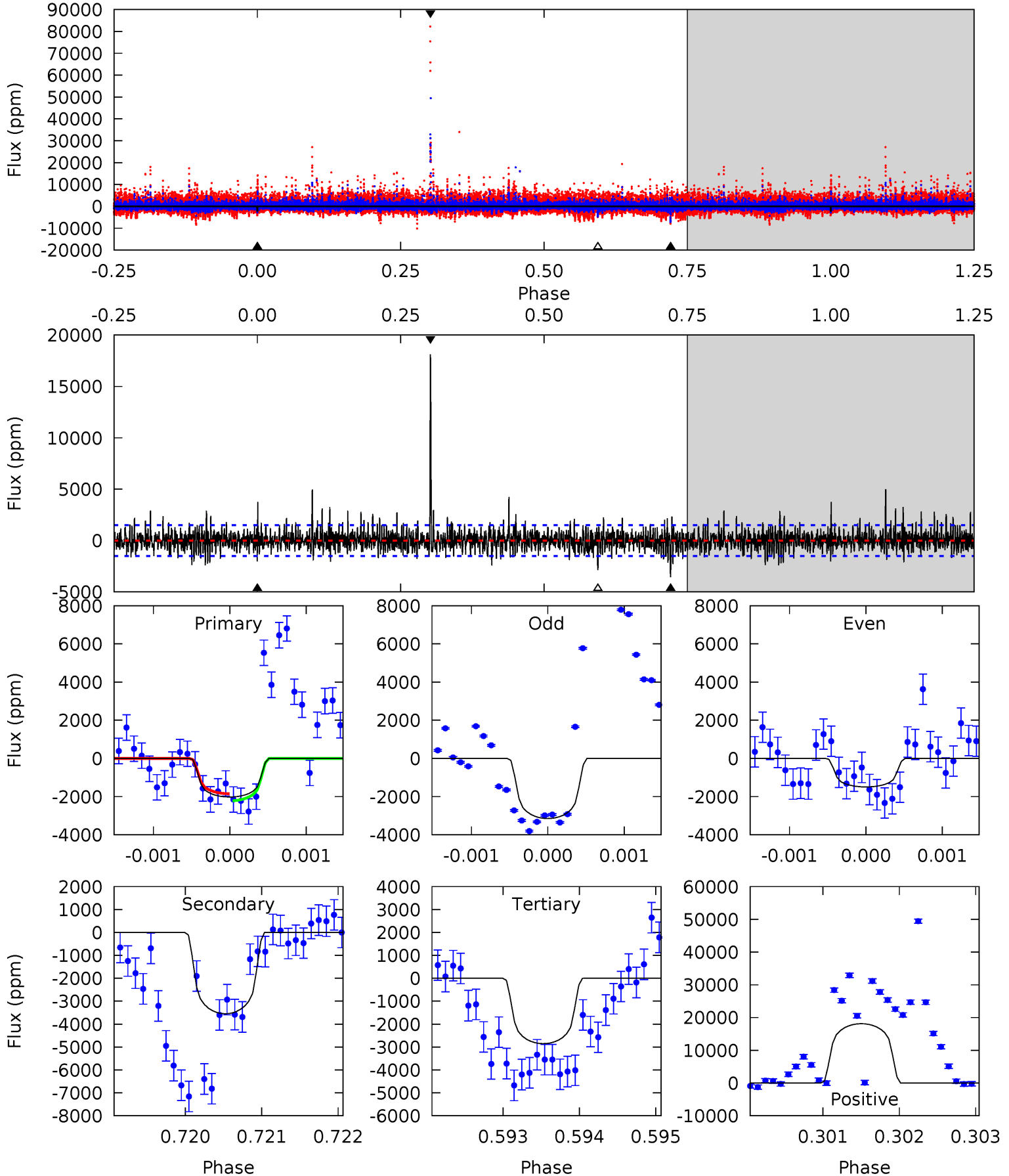
TCE 007033830-01 P=498.599297 Days $T_0=578.336418$ (BKJD)



DV Model-Shift Uniqueness Test

007033830-01, P = 498.558659 Days, E = 79.800015 Days

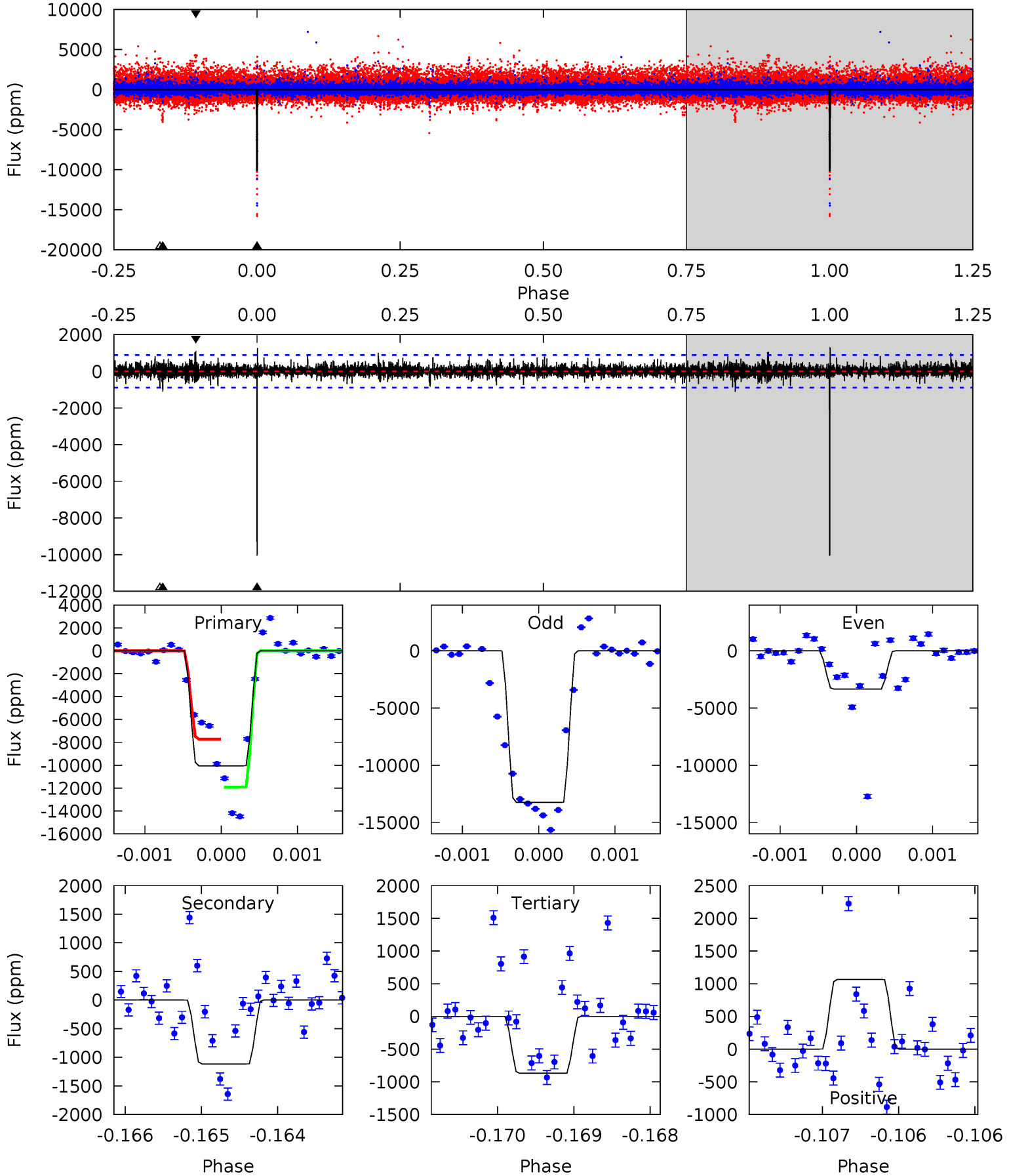
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.38	13.0	10.4	66.1	5.50	3.36	3.08	-3.03	-58.7	2.54	-53.2	1.71	1.06	0.84	0.66



Alt Model-Shift Uniqueness Test

007033830-01, P = 498.599297 Days, E = 79.737121 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
61.9	6.87	5.35	6.55	5.48	3.33	1.05	56.6	55.4	1.52	0.32	40.6	0.71	0.11	0



Stellar Parameters For KIC 007033830

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3384^{+44}_{-40}	$4.942^{+0.045}_{-0.036}$	$0.000^{+0.100}_{-0.100}$	$0.305^{+0.038}_{-0.035}$	$0.297^{+0.048}_{-0.039}$	$14.760^{+3.778}_{-2.762}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+12%/-11%	+16%/-13%	+26%/-19%
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 007033830-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-3550 ± 274	$1.96^{+0.31}_{-0.30}$	127^{+3}_{-3}	3401^{+185}_{-150}	$348357^{+124020}_{-89223}$
Alt.	-1117 ± 162	$3.10^{+0.35}_{-0.38}$	127^{+3}_{-3}	2554^{+80}_{-78}	43833^{+11734}_{-9662}

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

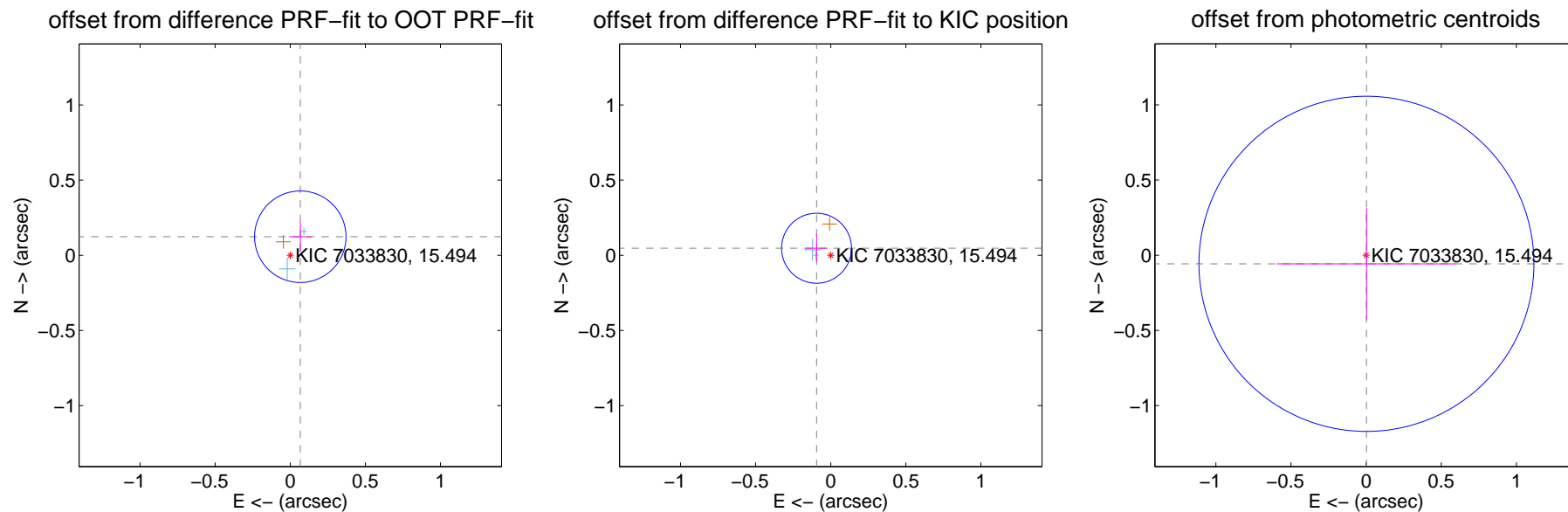
DV Centroid Data

Supplemental centroid analysis for 007033830-01. Kepler magnitude: 15.49. Transit SNR 7.98

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.140 ± 0.101	1.38	-0.067 ± 0.074	0.123 ± 0.102
PRF-fit source offset from KIC position	0.105 ± 0.078	1.36	0.094 ± 0.073	0.047 ± 0.093
photometric centroid source offset	0.06 ± 0.37	0.15	-0.00 ± 0.60	-0.06 ± 0.37

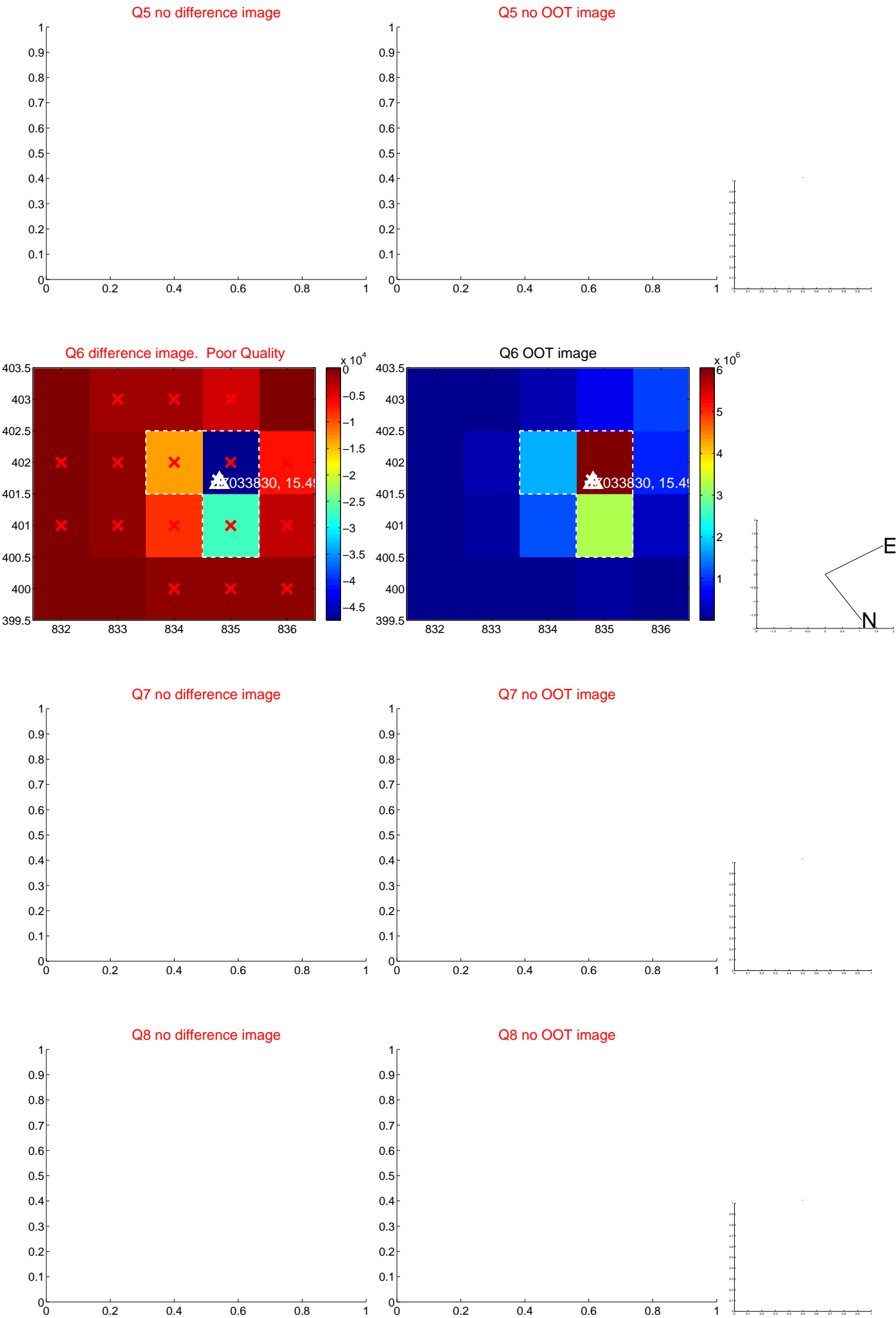


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

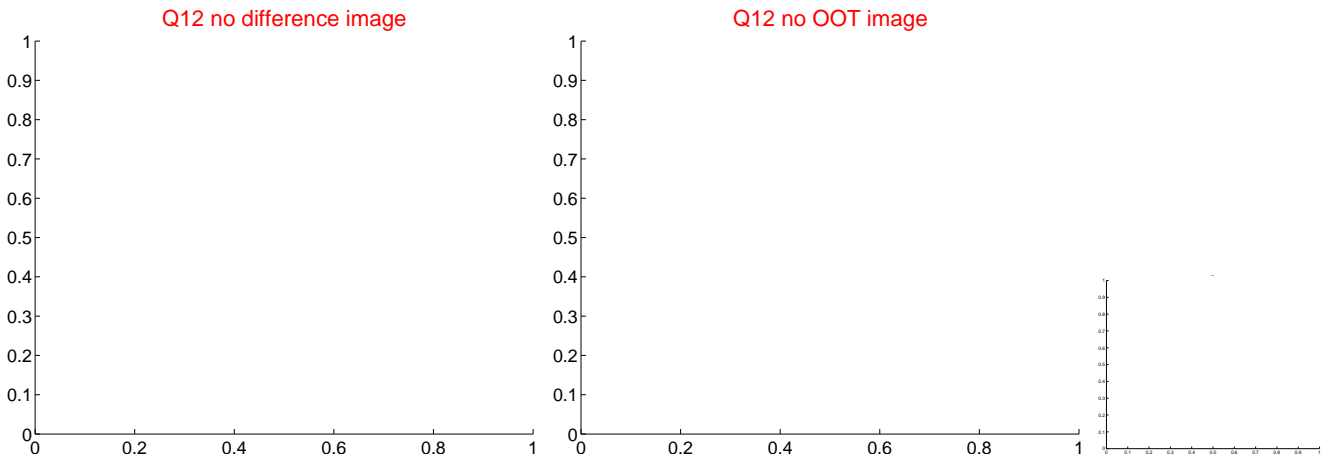
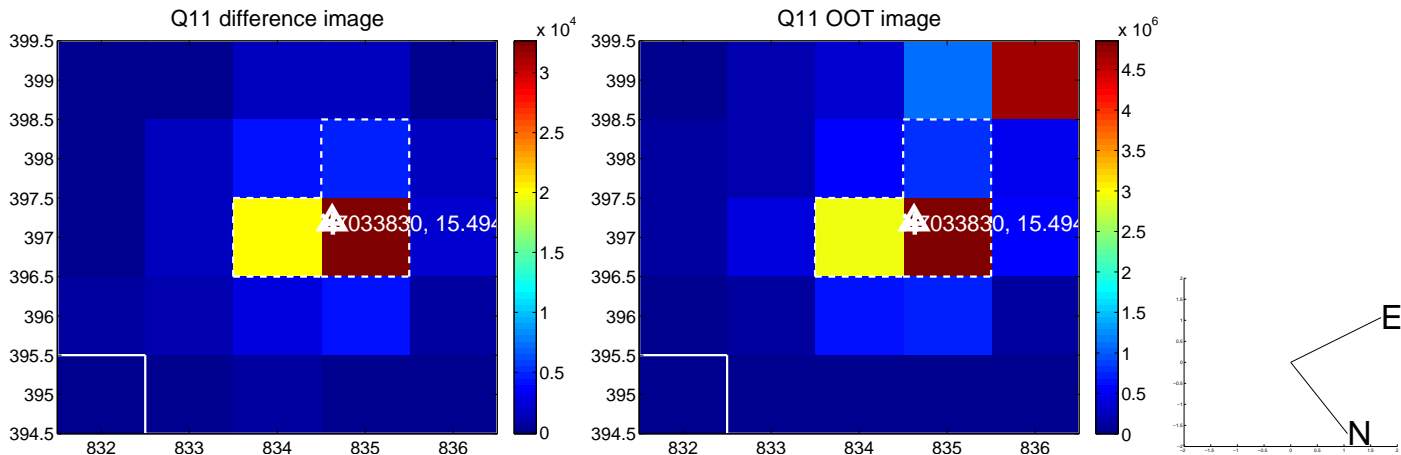
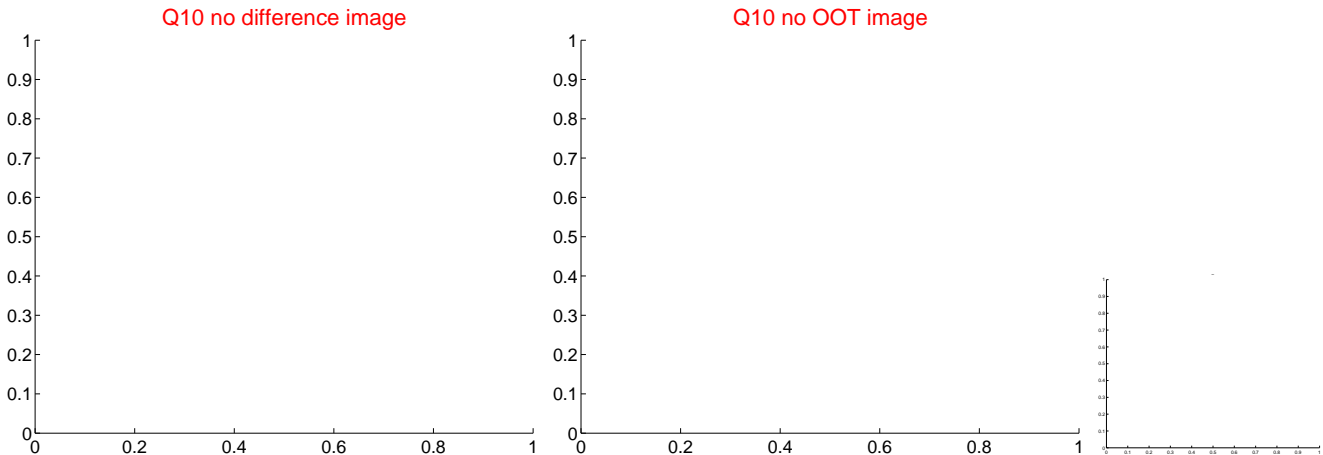
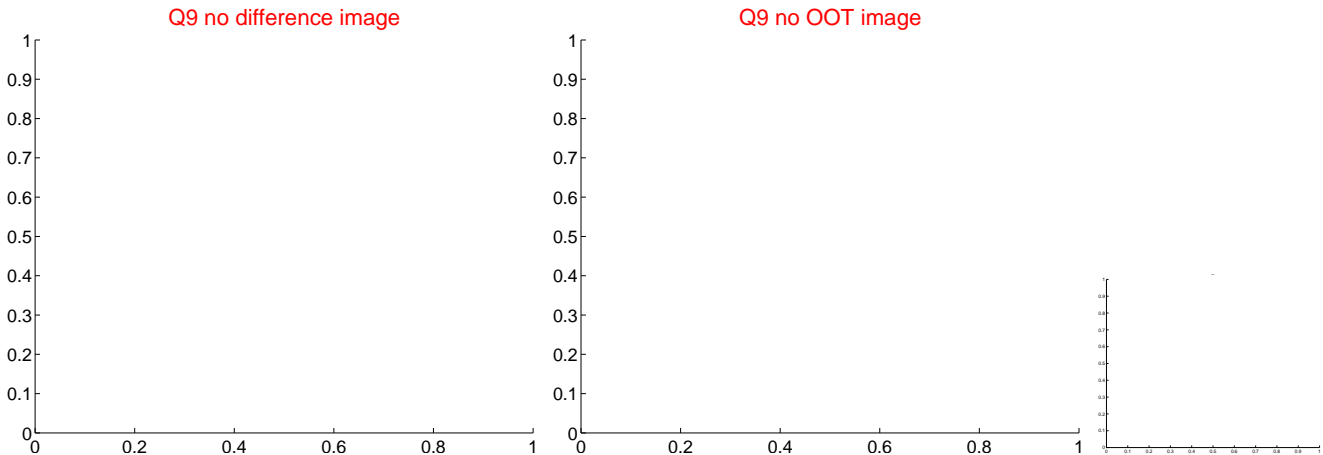
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



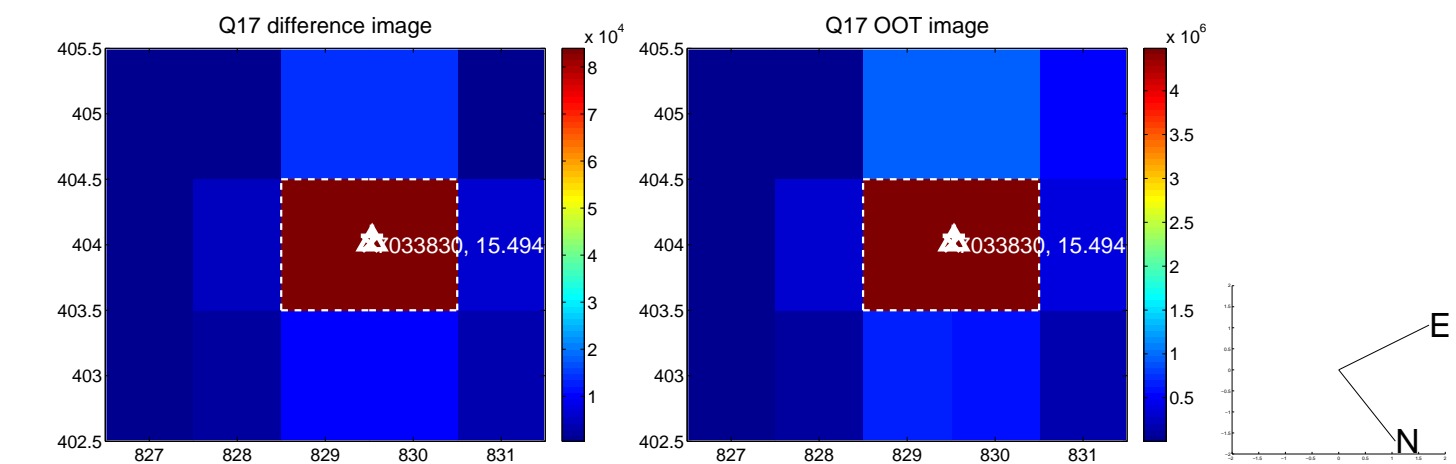
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



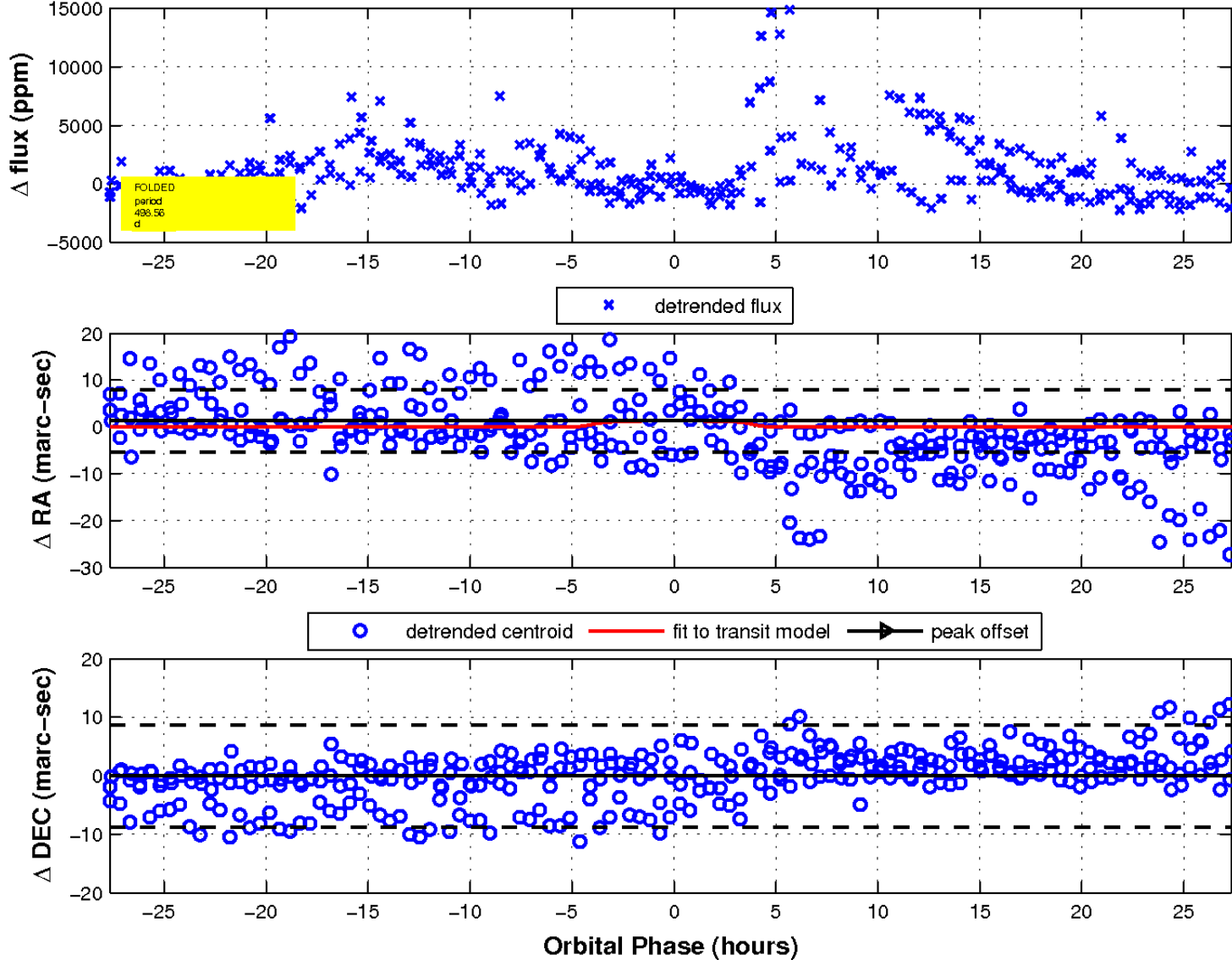
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



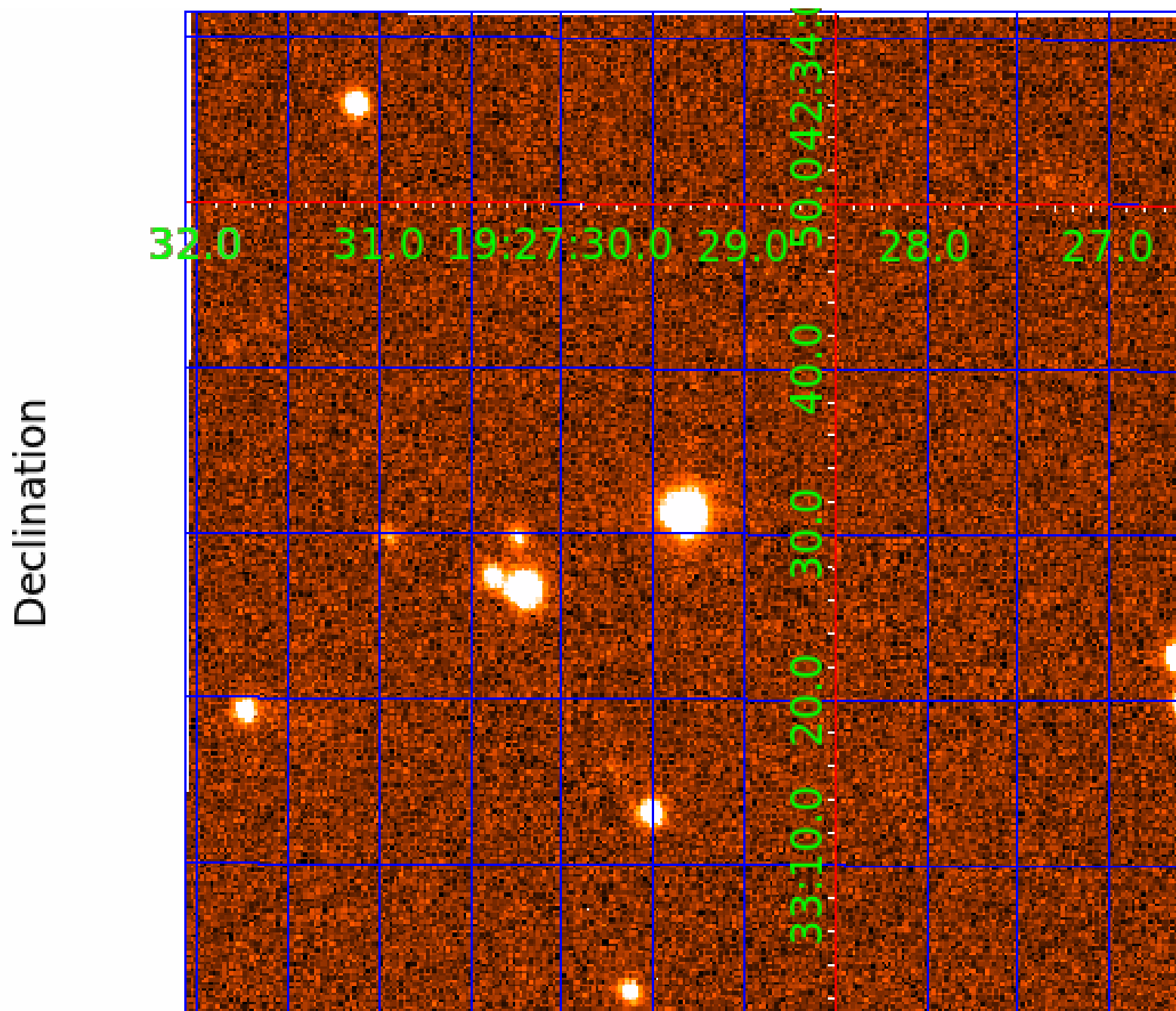
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 1 of 7



UKIRT Image



KIC 007033830

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})
007033830-01	OBS	No	498.558659	578.358673	3474.8	9.227	16.6	8.0	0.30	3384	1.98	0.02
007033830-02	OBS	No	675.305827	204.981968	3631.1	9.662	13.8	7.2	0.30	3384	2.24	0.01
007033830-03	OBS	No	324.521305	200.597642	3066.3	5.960	16.5	8.7	0.30	3384	1.67	0.03
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007033830-06	OBS	No	424.992669	370.282661	3861.9	4.568	13.1	7.7	0.30	3384	1.91	0.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007033830-01	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—CENT_FEW_DIFFS
007033830-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007033830-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007033830-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST
007033830-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—HALO_GHOST
007033830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

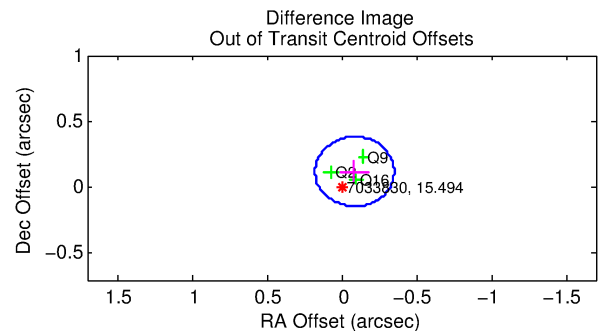
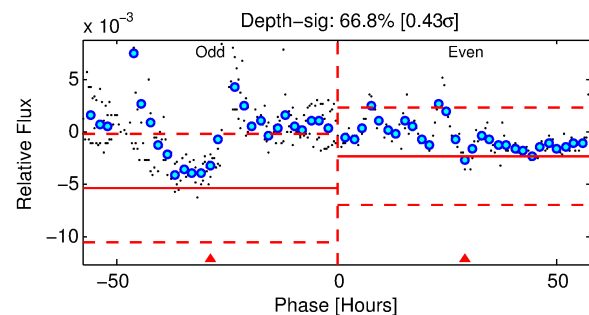
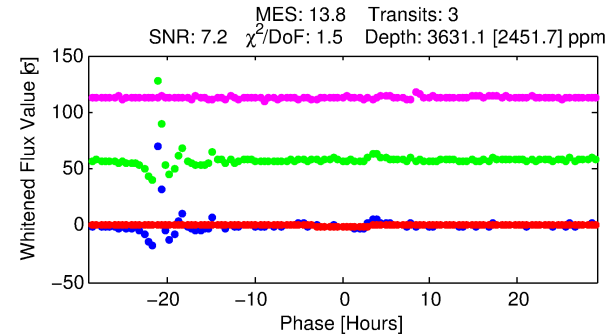
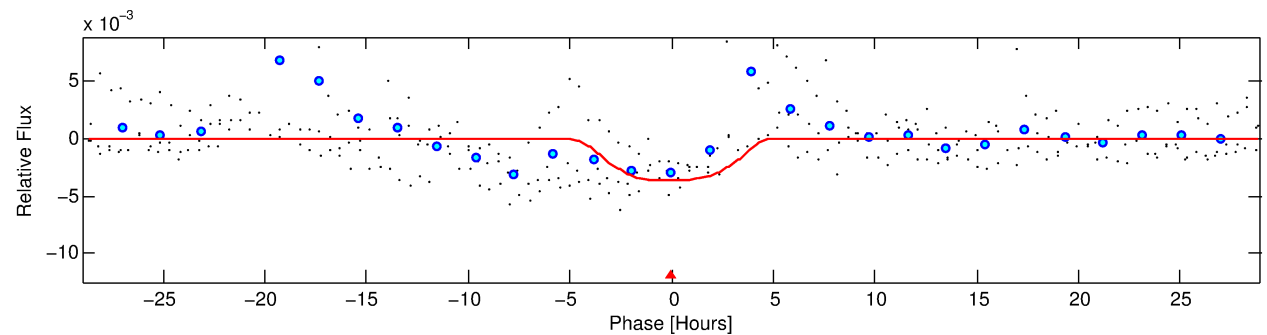
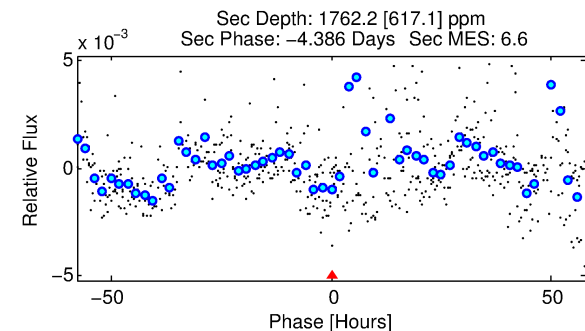
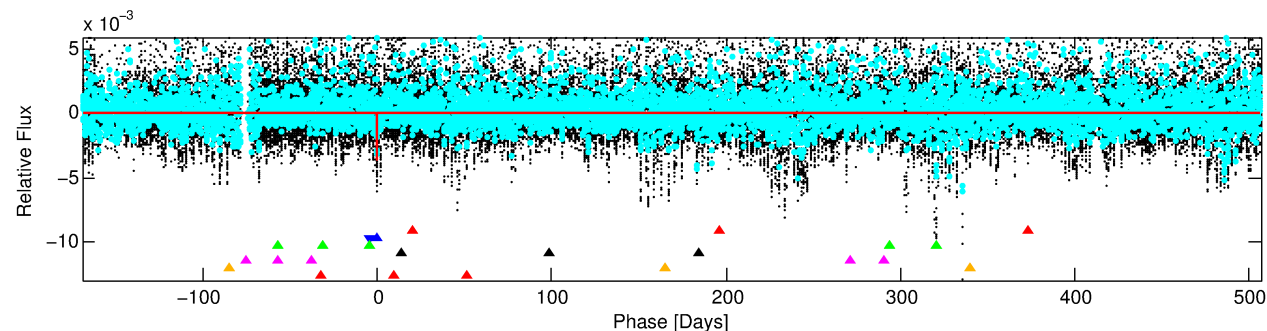
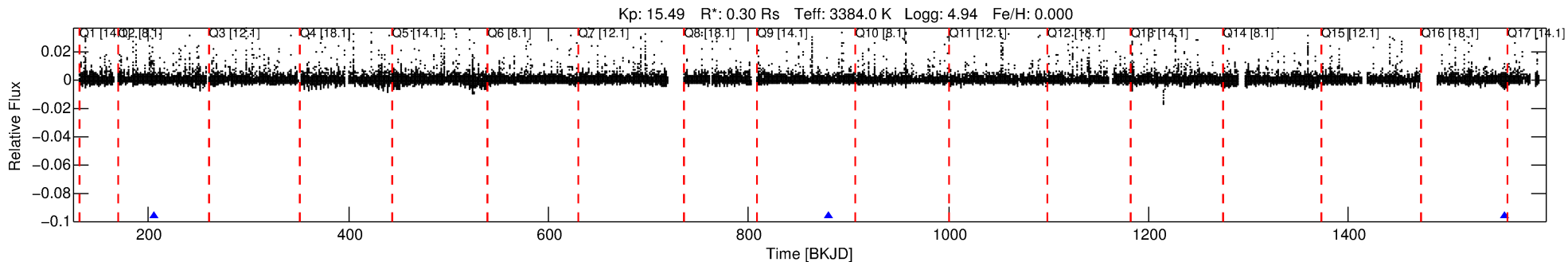
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007033830-02

No Significant Match Found

DV One-Page Summary

KIC: 7033830 Candidate: 2 of 7 Period: 675.306 d



DV Fit Results:

Period = 675.30583 [0.05784] d
Epoch = 204.9820 [0.0696] BKJD
Rp/R* = 0.0673 [0.0278]
a/R* = 295.52 [162.55]
b = 0.91 [0.12]
Seff = 0.01 [0.00]
Teq = 82 [2] K
Rp = 2.24 [0.97] Re
a = 1.0051 [0.0904] AU
Ag = 195152.07 [176228.10] [1.11σ]
Teffp = 2672 [600] K [4.32σ]

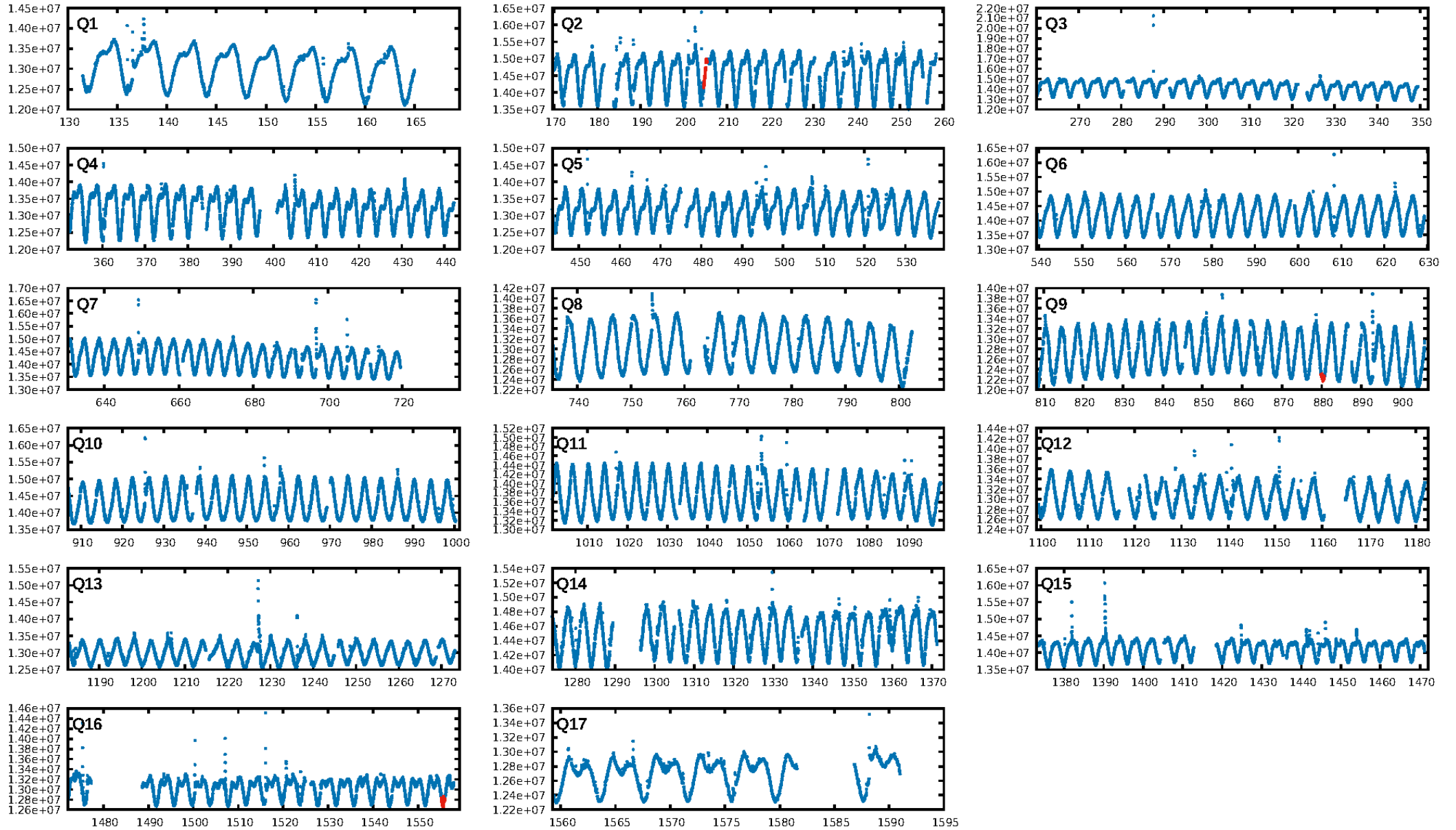
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [81.32σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 2.5%
ModelChiSquareGof-sig: 57.5%
Bootstrap-pfa: 4.10e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.02763
Centroid-sig: 6.4%
Centroid-so: 0.766 arcsec [1.23σ]
OotOffset-rm: 0.148 arcsec [1.69σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 0.046 arcsec [0.39σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

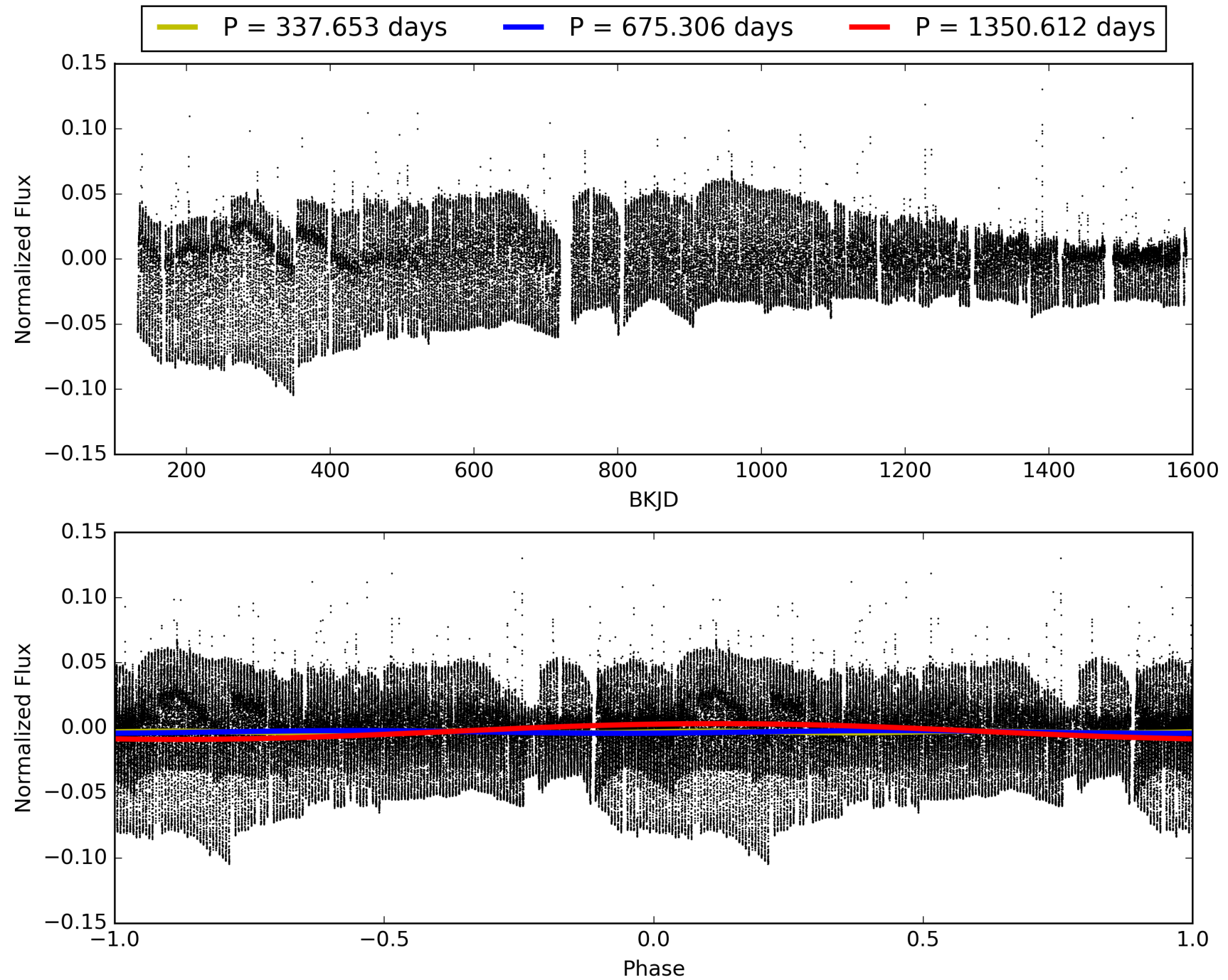
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 007033830-02, PDC Light Curves

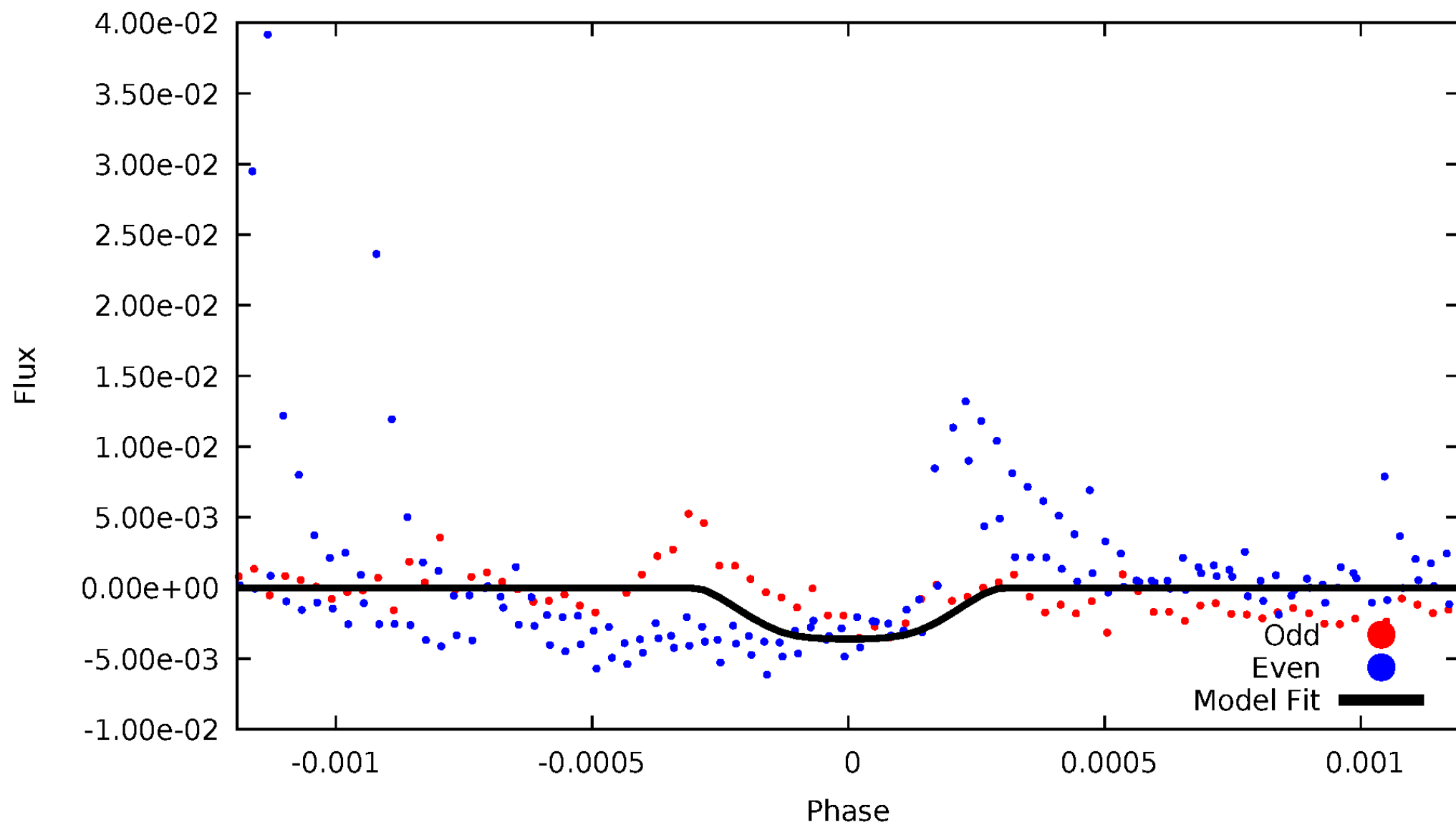


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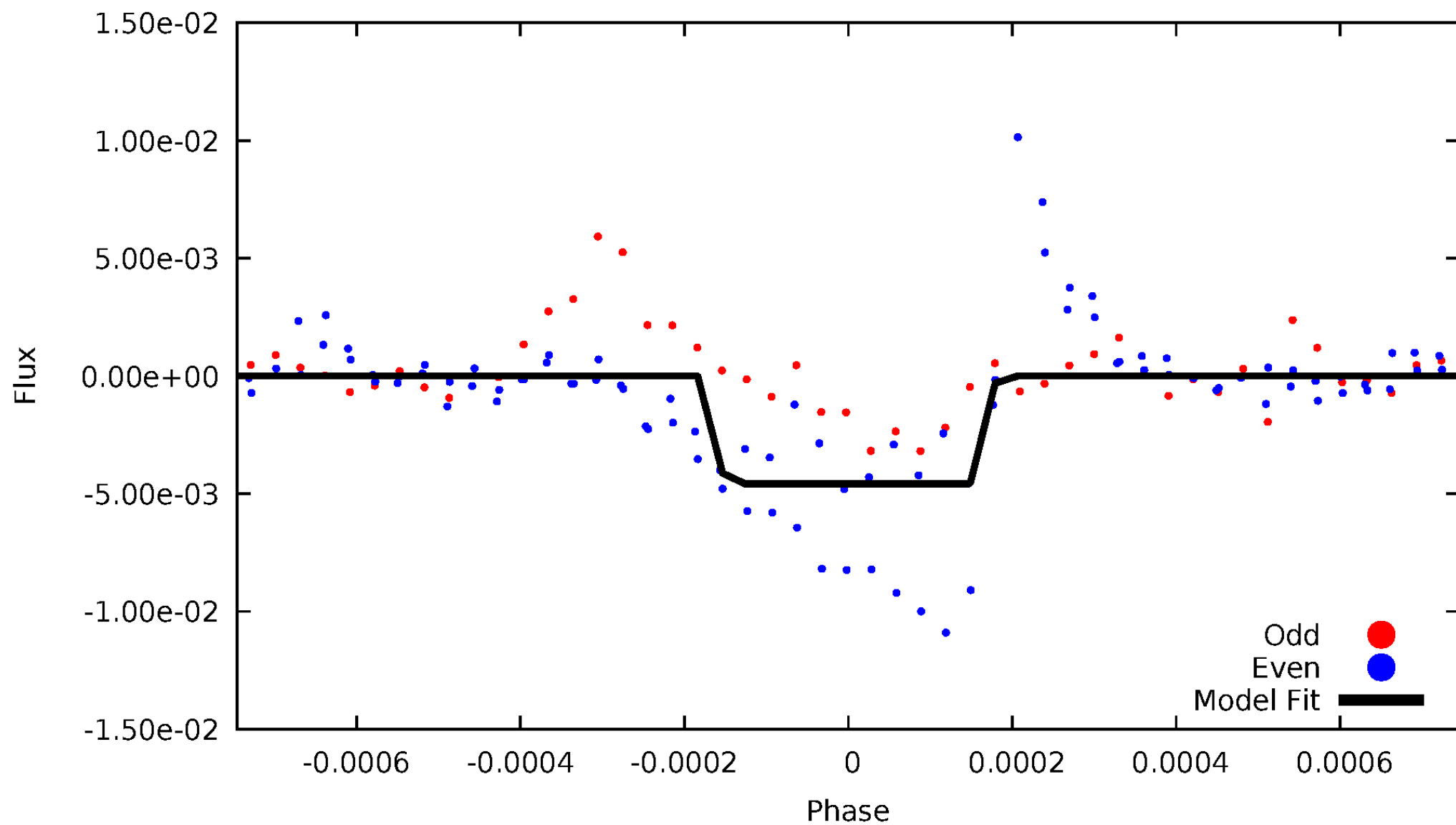
DV Odd/Even

TCE 007033830-02



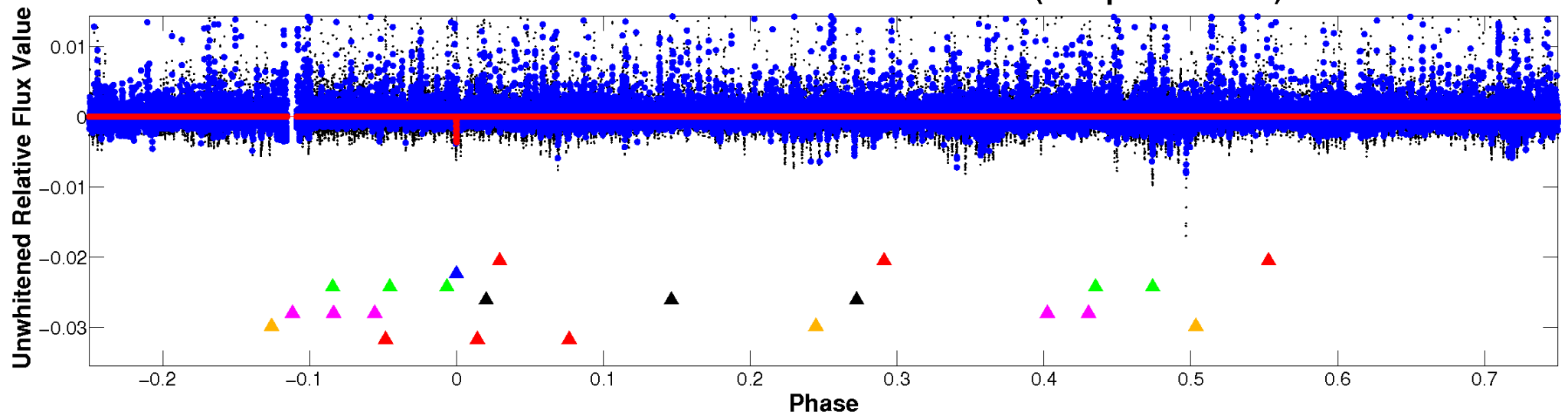
ALT Odd/Even

TCE 007033830-02

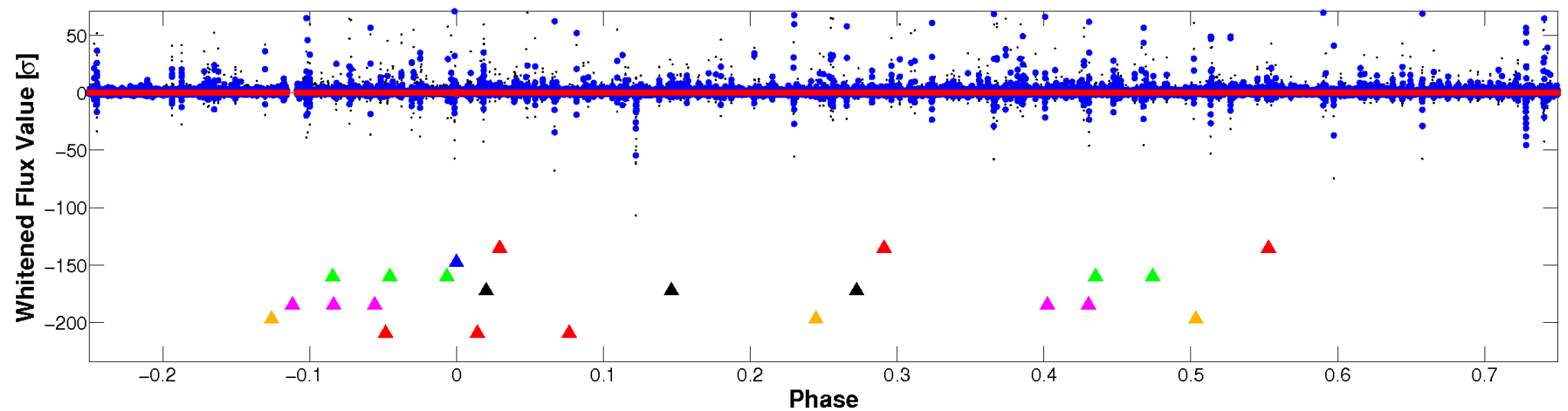


Non-Whitened Vs. Whitened Light Curve

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

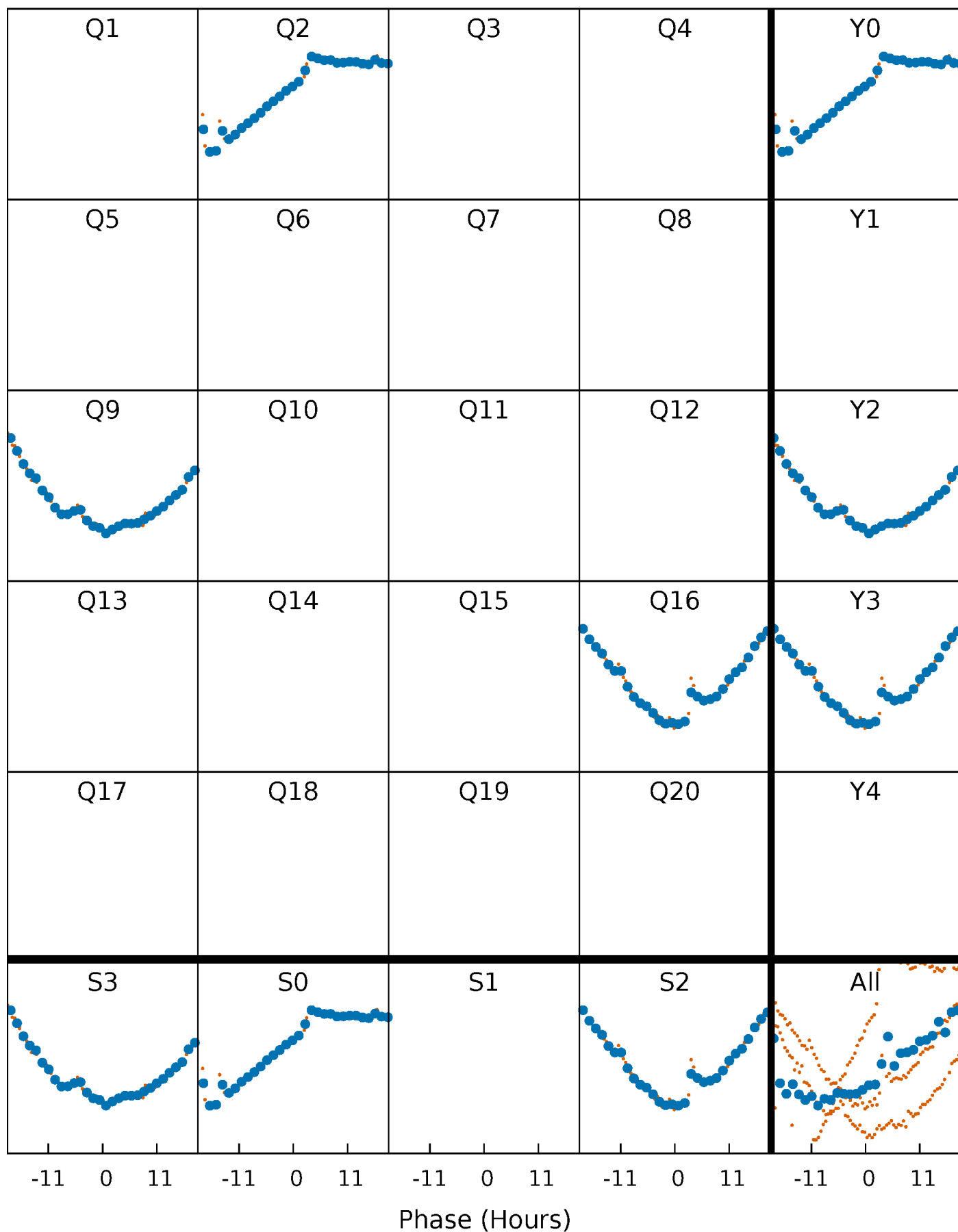


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



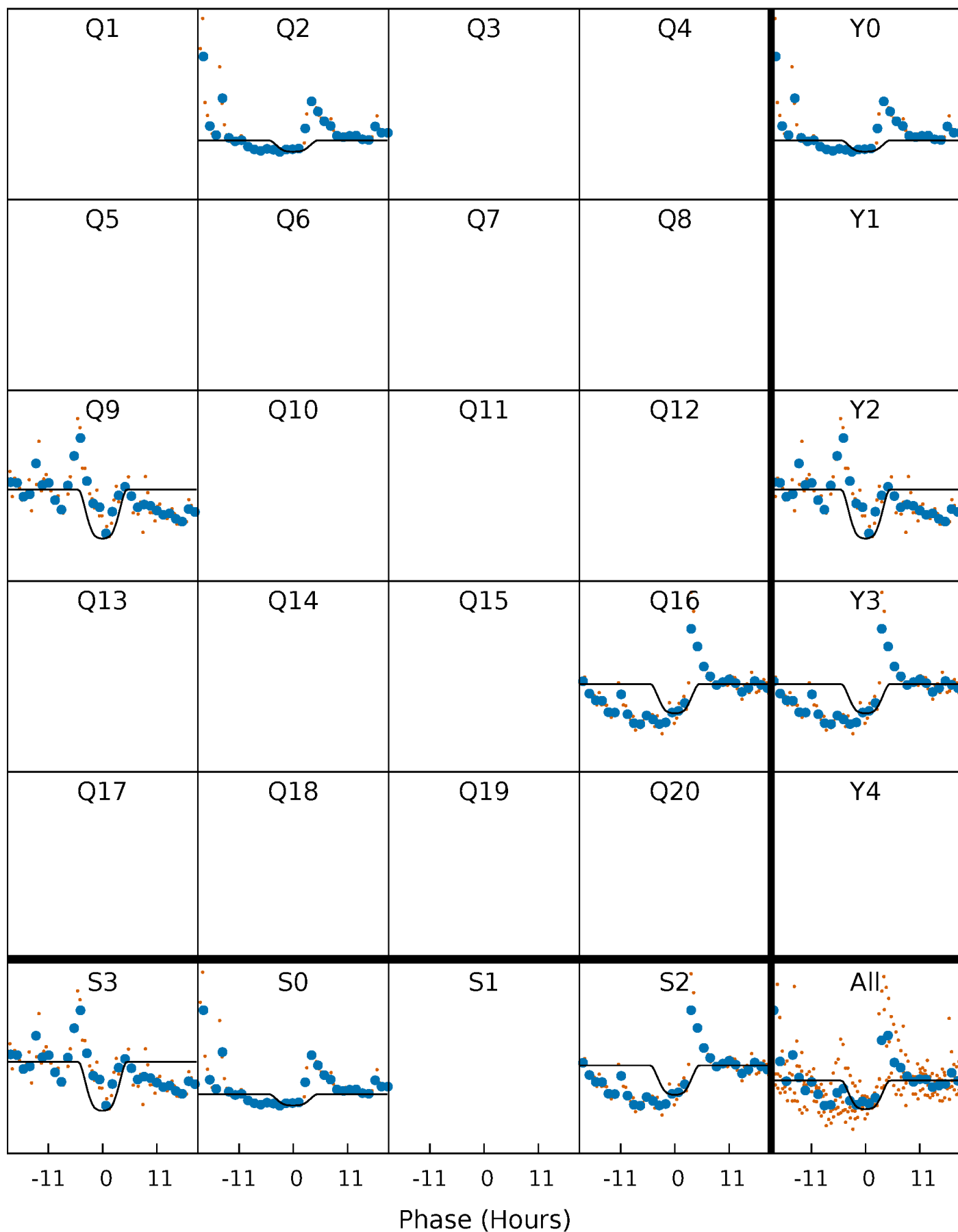
PDC Quarter-Phased Transit Curves

TCE 007033830-02 P=675.305827 Days $T_0=204.981968$ (BKJD)



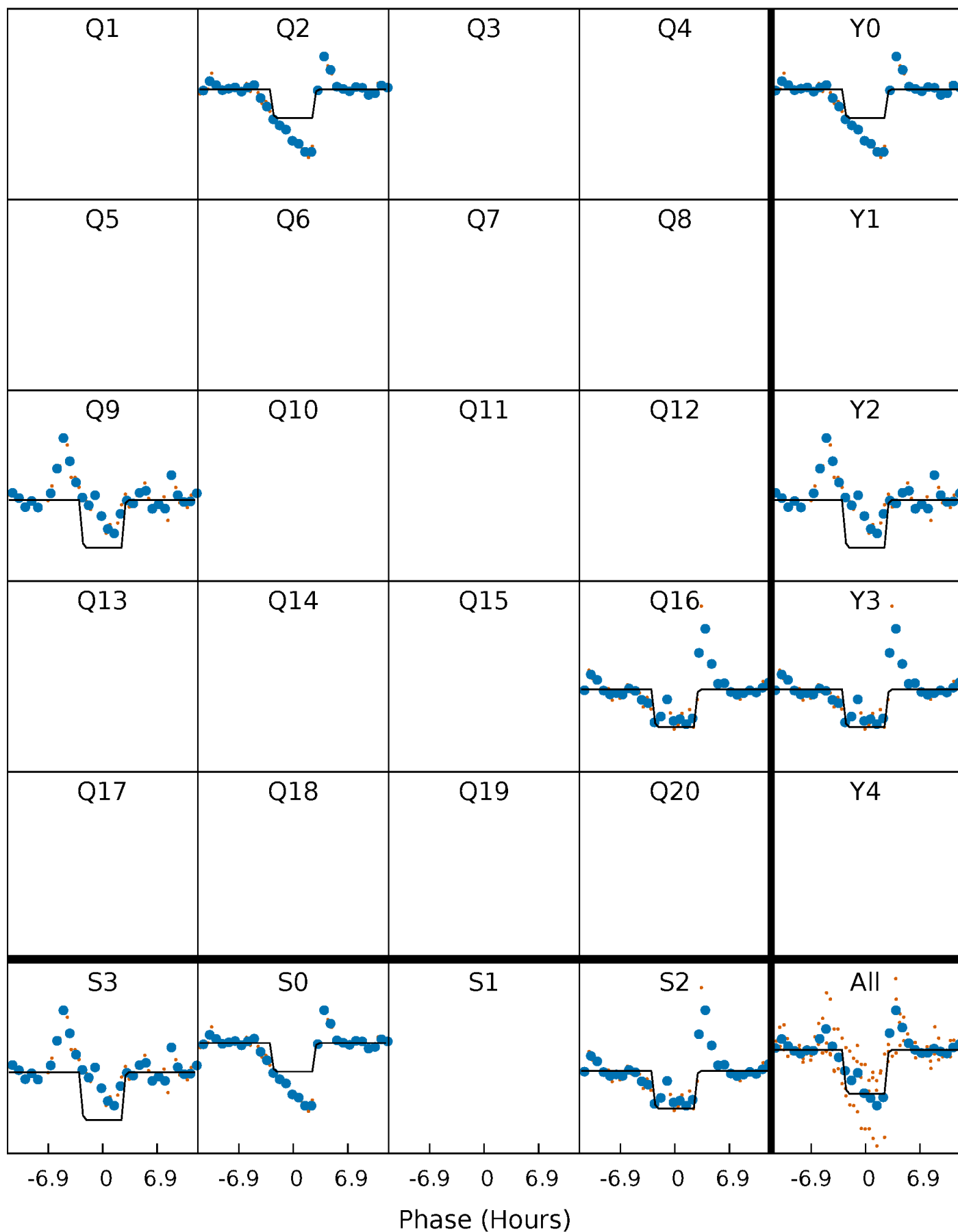
DV Quarter-Phased Transit Curves

TCE 007033830-02 P=675.305827 Days $T_0=204.981968$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

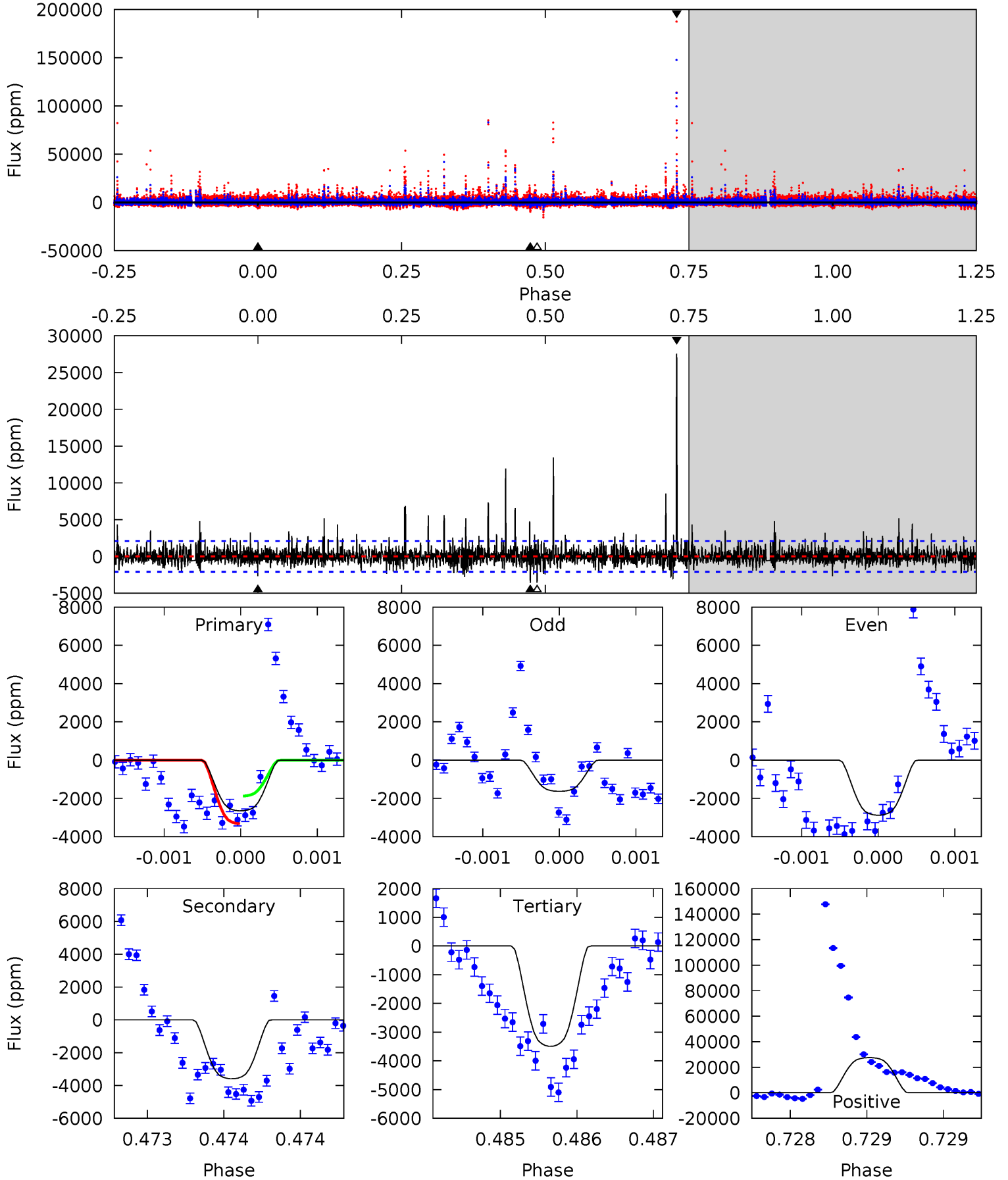
TCE 007033830-02 P=675.308724 Days $T_0=204.974615$ (BKJD)



DV Model-Shift Uniqueness Test

007033830-02, P = 675.305827 Days, E = 204.981968 Days

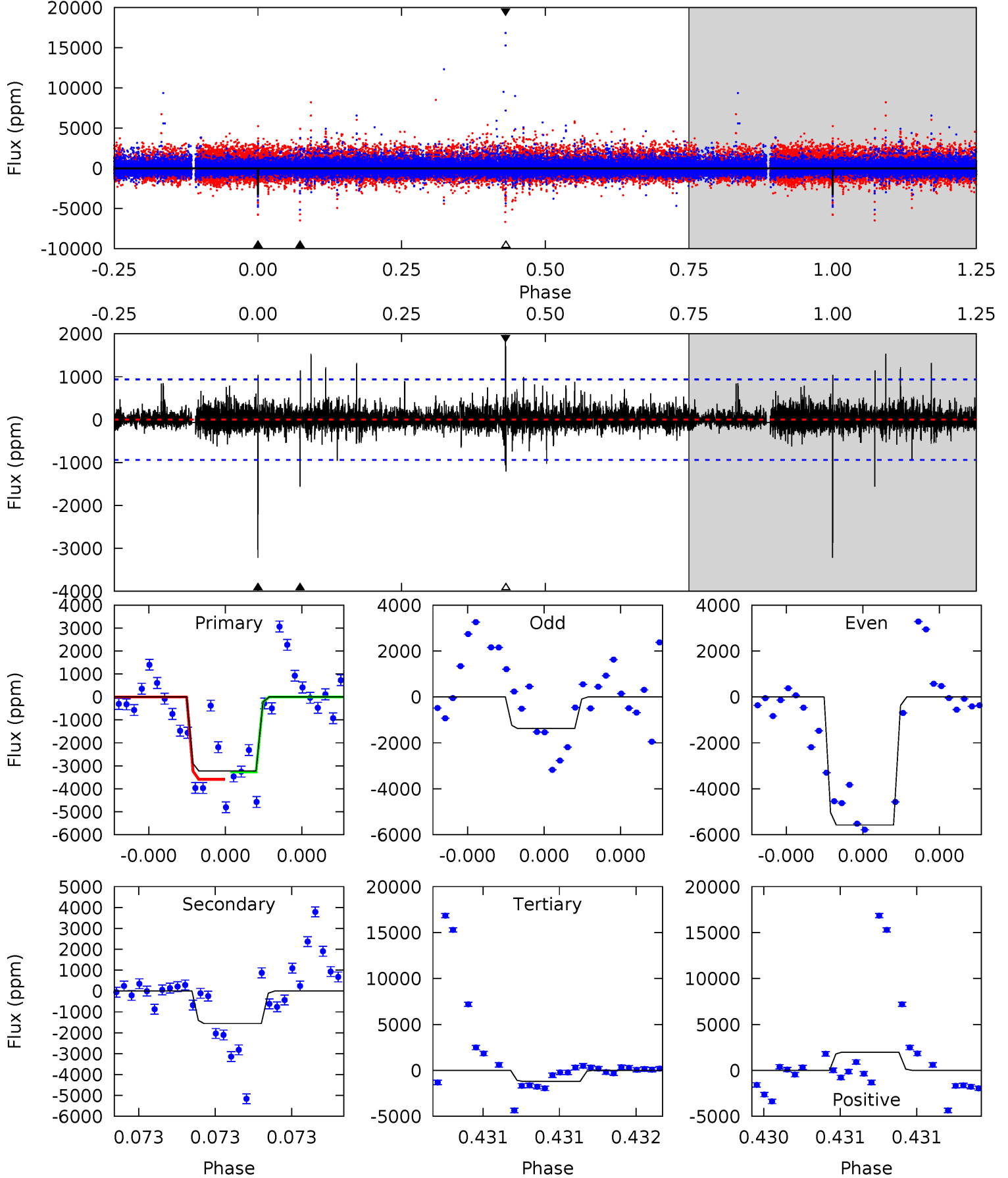
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.99	9.47	9.21	72.7	5.54	3.43	3.05	-2.22	-65.7	0.26	-63.3	1.00	1.18	0.88	1.91



Alt Model-Shift Uniqueness Test

007033830-02, P = 675.308724 Days, E = 204.974615 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	9.36	7.24	11.9	5.63	3.57	0.92	12.1	7.45	2.12	-2.52	13.1	1.23	0.38	0.98



Stellar Parameters For KIC 007033830

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3384^{+44}_{-40}	$4.942^{+0.045}_{-0.036}$	$0.000^{+0.100}_{-0.100}$	$0.305^{+0.038}_{-0.035}$	$0.297^{+0.048}_{-0.039}$	$14.760^{+3.778}_{-2.762}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+12%/-11%	+16%/-13%	+26%/-19%
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 007033830-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-3593 ± 379	$2.26^{+0.93}_{-0.95}$	115^{+3}_{-3}	3258^{+614}_{-312}	$396242^{+749370}_{-198430}$
Alt.	-1559 ± 167	$2.26^{+0.92}_{-0.90}$	115^{+3}_{-3}	2880^{+457}_{-239}	$169313^{+298660}_{-83251}$

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

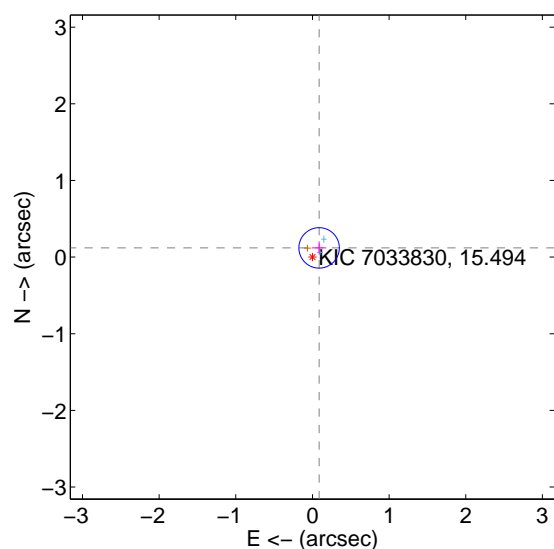
Supplemental centroid analysis for 007033830-02. Kepler magnitude: 15.49. Transit SNR 7.21

There are 2 quarters with good PRF difference image offsets

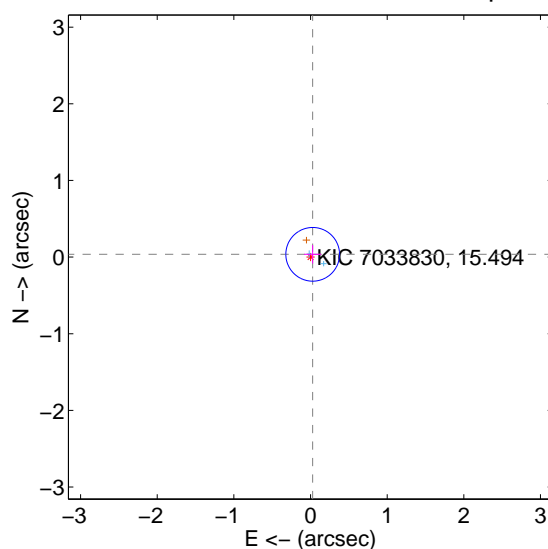
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.148 ± 0.088	1.69	-0.087 ± 0.093	0.120 ± 0.085
PRF-fit source offset from KIC position	0.046 ± 0.117	0.39	-0.028 ± 0.111	0.036 ± 0.120
photometric centroid source offset	0.77 ± 0.62	1.23	0.60 ± 0.71	0.48 ± 0.44

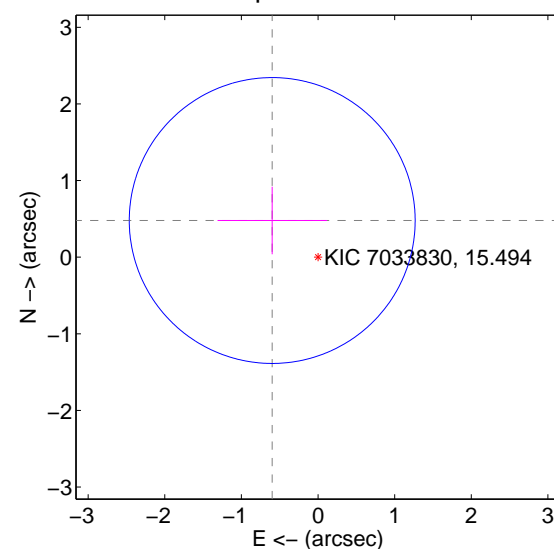
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

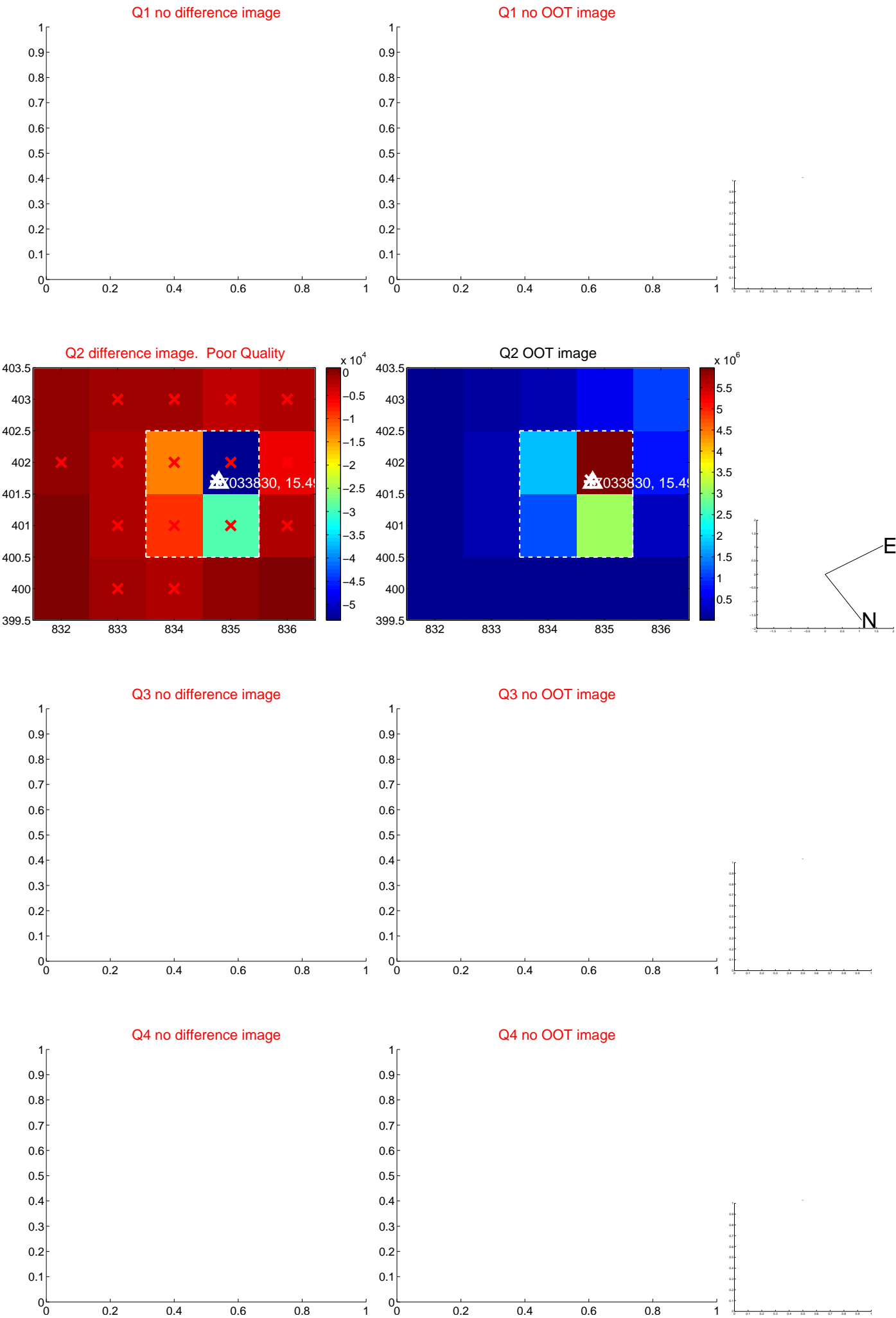


offset from photometric centroids



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

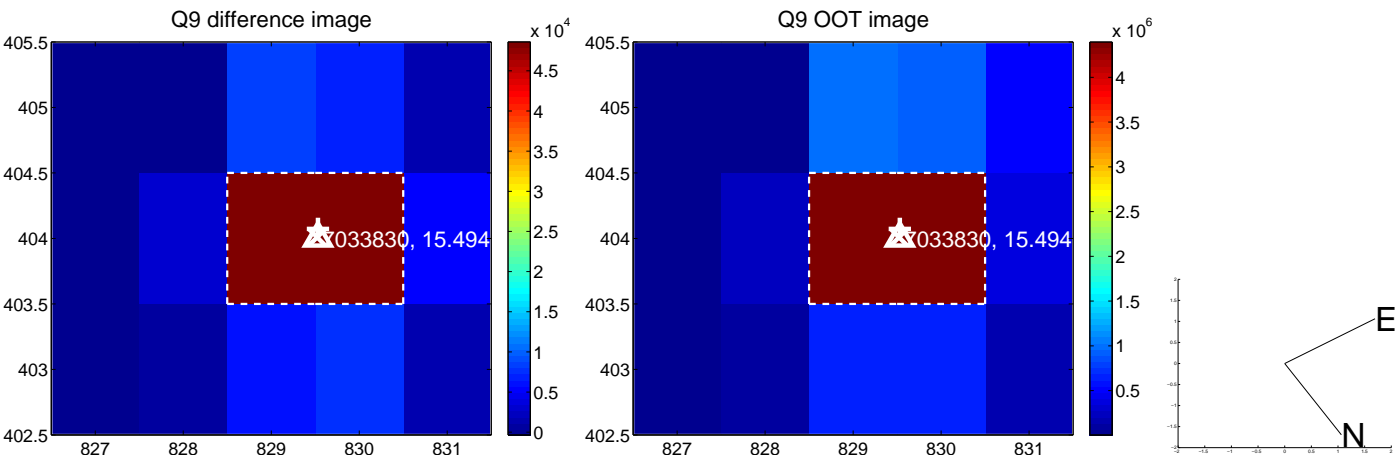
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



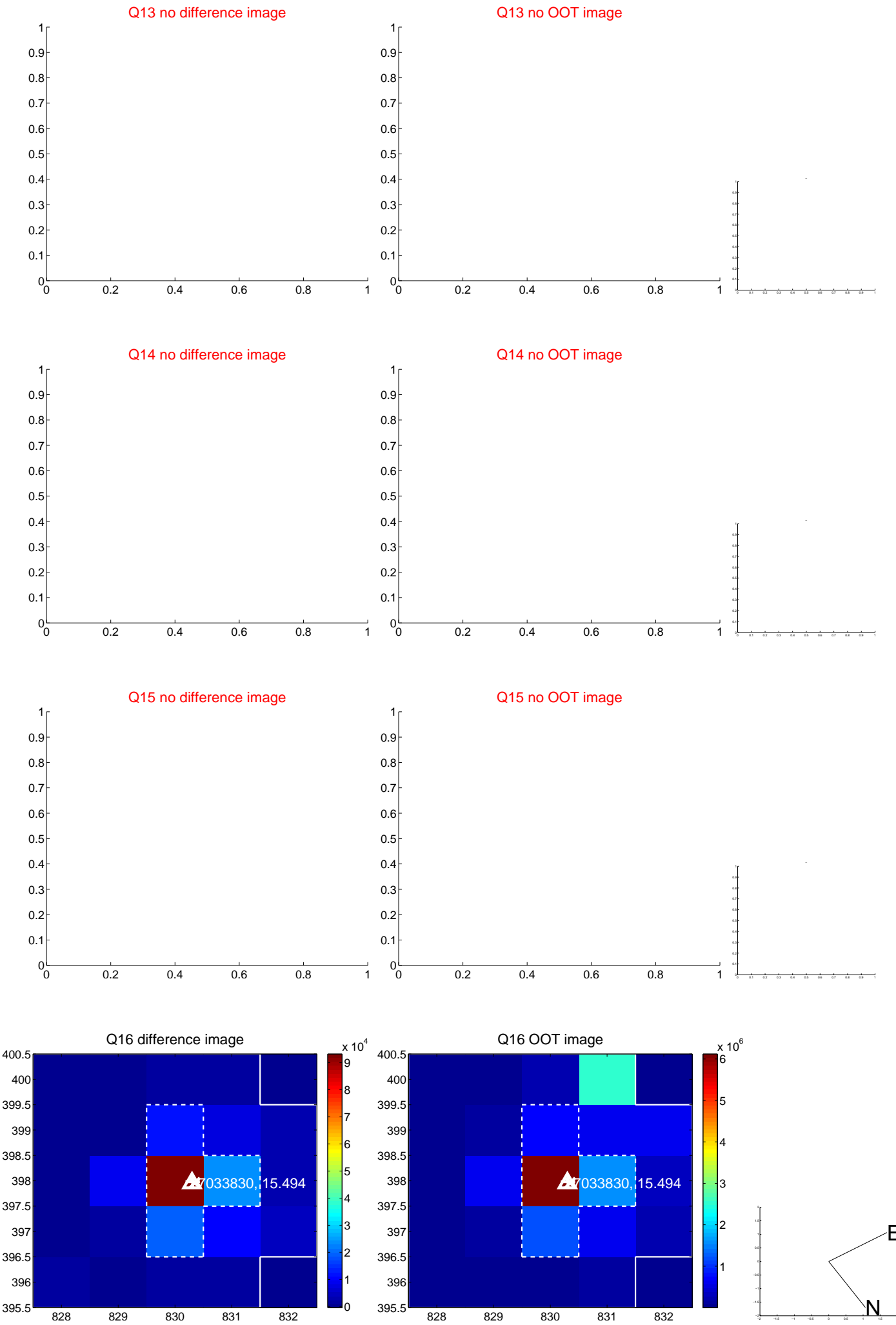
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



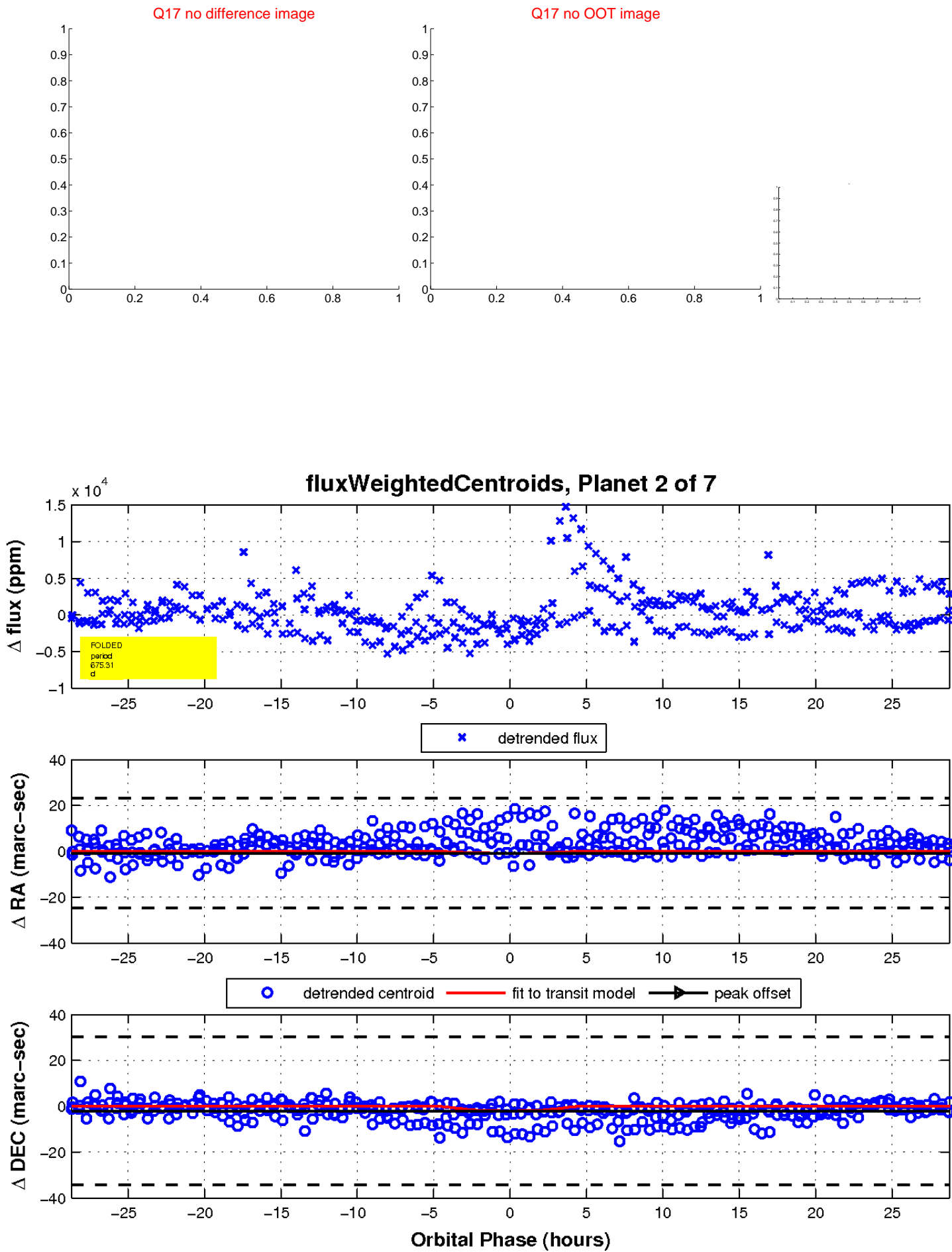
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



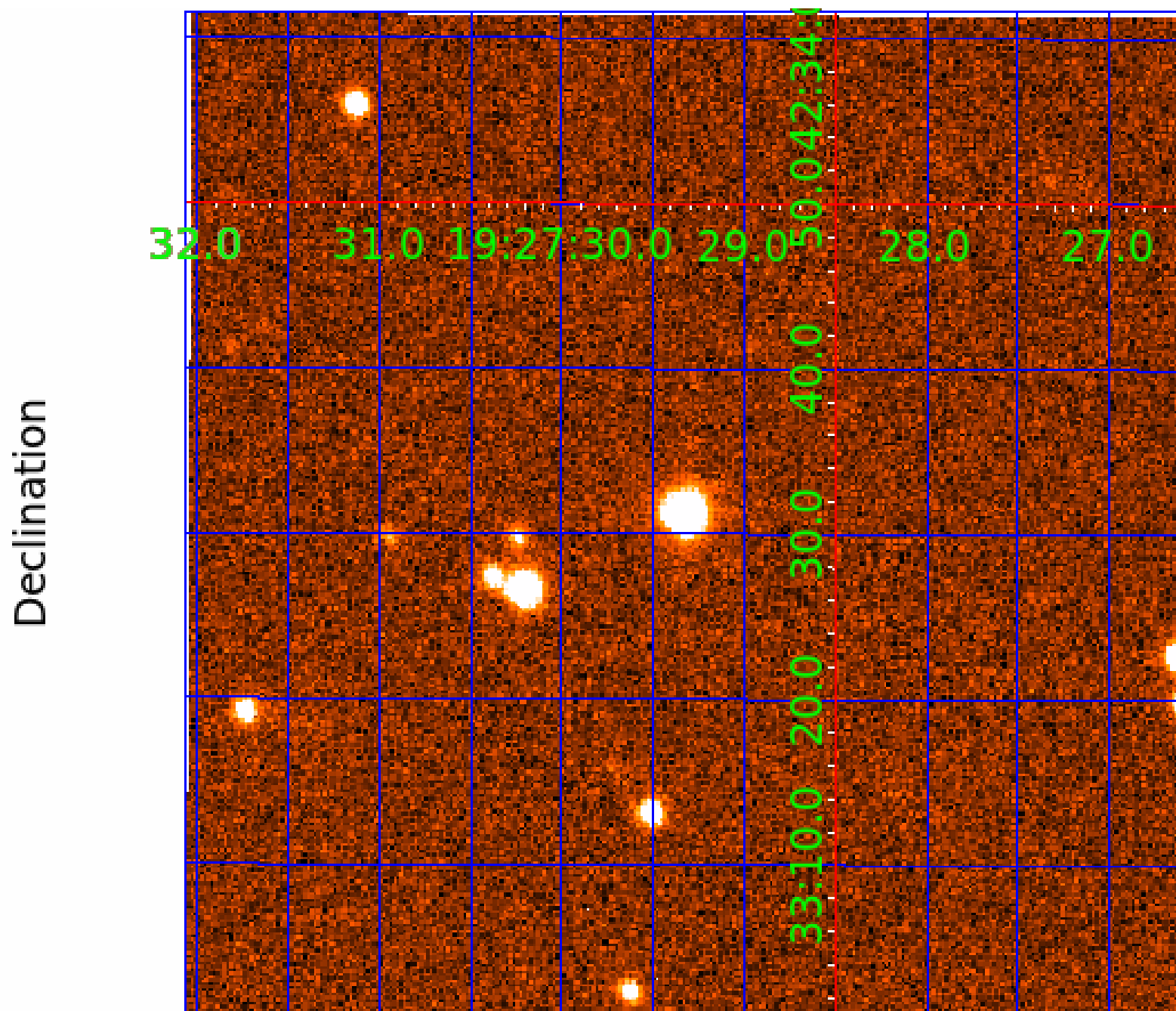
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 007033830

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})
007033830-01	OBS	No	498.558659	578.358673	3474.8	9.227	16.6	8.0	0.30	3384	1.98	0.02
007033830-02	OBS	No	675.305827	204.981968	3631.1	9.662	13.8	7.2	0.30	3384	2.24	0.01
007033830-03	OBS	No	324.521305	200.597642	3066.3	5.960	16.5	8.7	0.30	3384	1.67	0.03
007033830-04	OBS	No	590.146738	388.979965	2254.3	3.686	14.0	5.4	0.30	3384	1.43	0.01
007033830-05	OBS	No	328.199048	167.414247	3882.7	7.679	13.0	8.4	0.30	3384	2.22	0.03
007033830-06	OBS	No	424.992669	370.282661	3861.9	4.568	13.1	7.7	0.30	3384	1.91	0.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007033830-01	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—CENT_FEW_DIFFS
007033830-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007033830-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007033830-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST
007033830-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—HALO_GHOST
007033830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

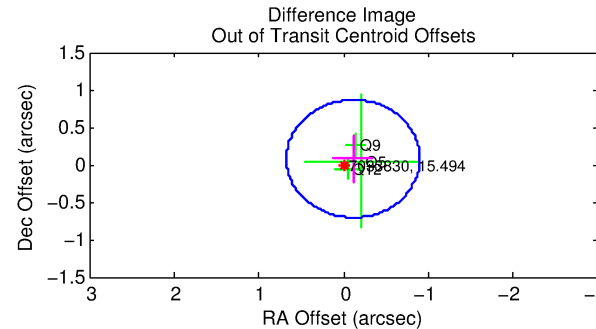
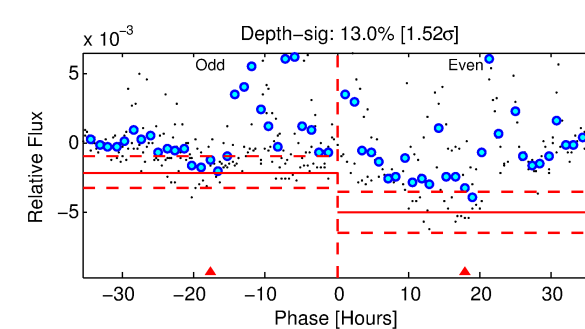
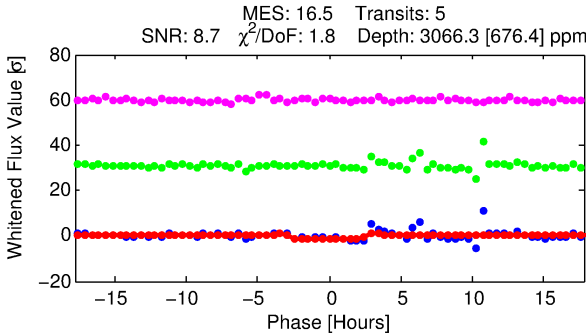
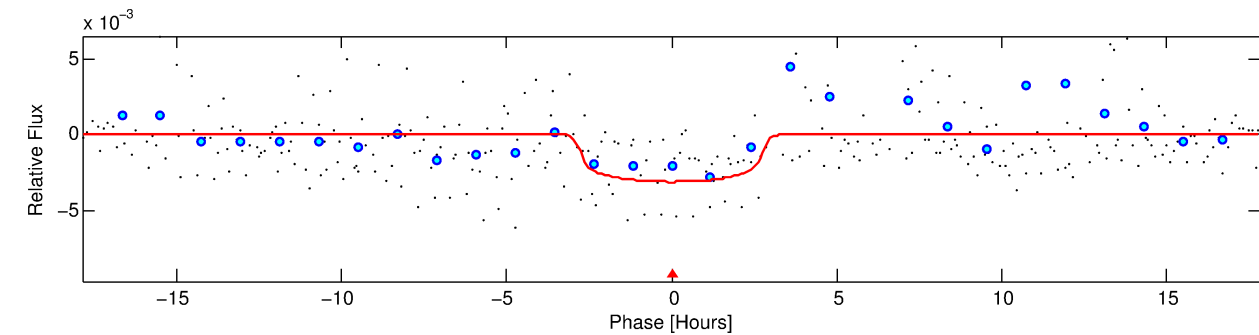
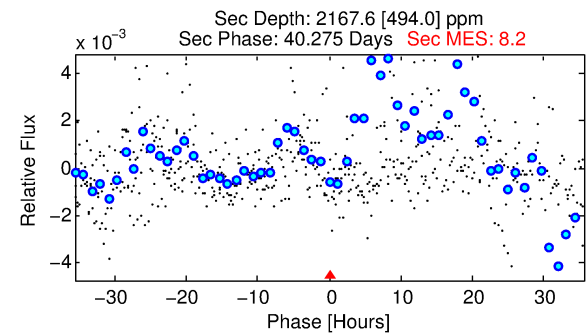
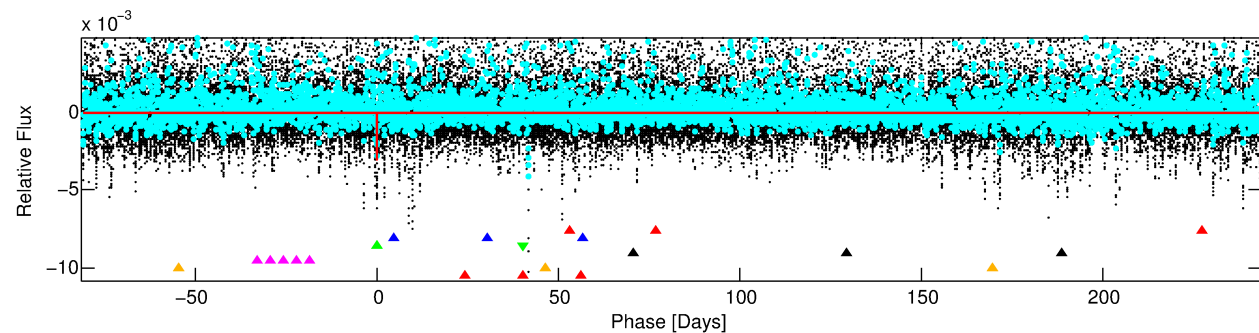
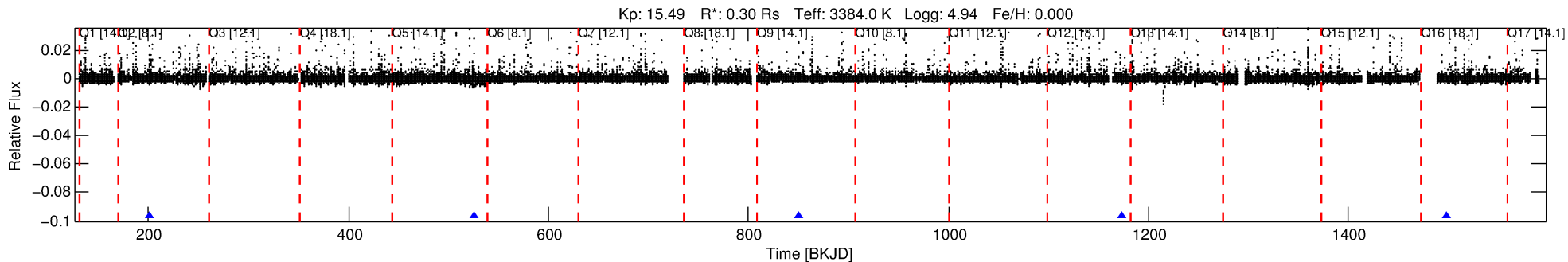
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007033830-03

No Significant Match Found

DV One-Page Summary

KIC: 7033830 Candidate: 3 of 7 Period: 324.521 d



DV Fit Results:

Period = 324.52131 [0.00444] d
Epoch = 200.5976 [0.0112] BKJD
Rp/R* = 0.0501 [0.0331]
a/R* = 433.66 [1162.28]
b = 0.13 [20.91]
Seff = 0.03 [0.00]
Teq = 105 [3] K
Rp = 1.67 [1.12] Re
a = 0.6167 [0.0555] AU
Ag = 163053.58 [219024.19] [0.74σ]
Teffp = 3262 [1093] K [2.89σ]

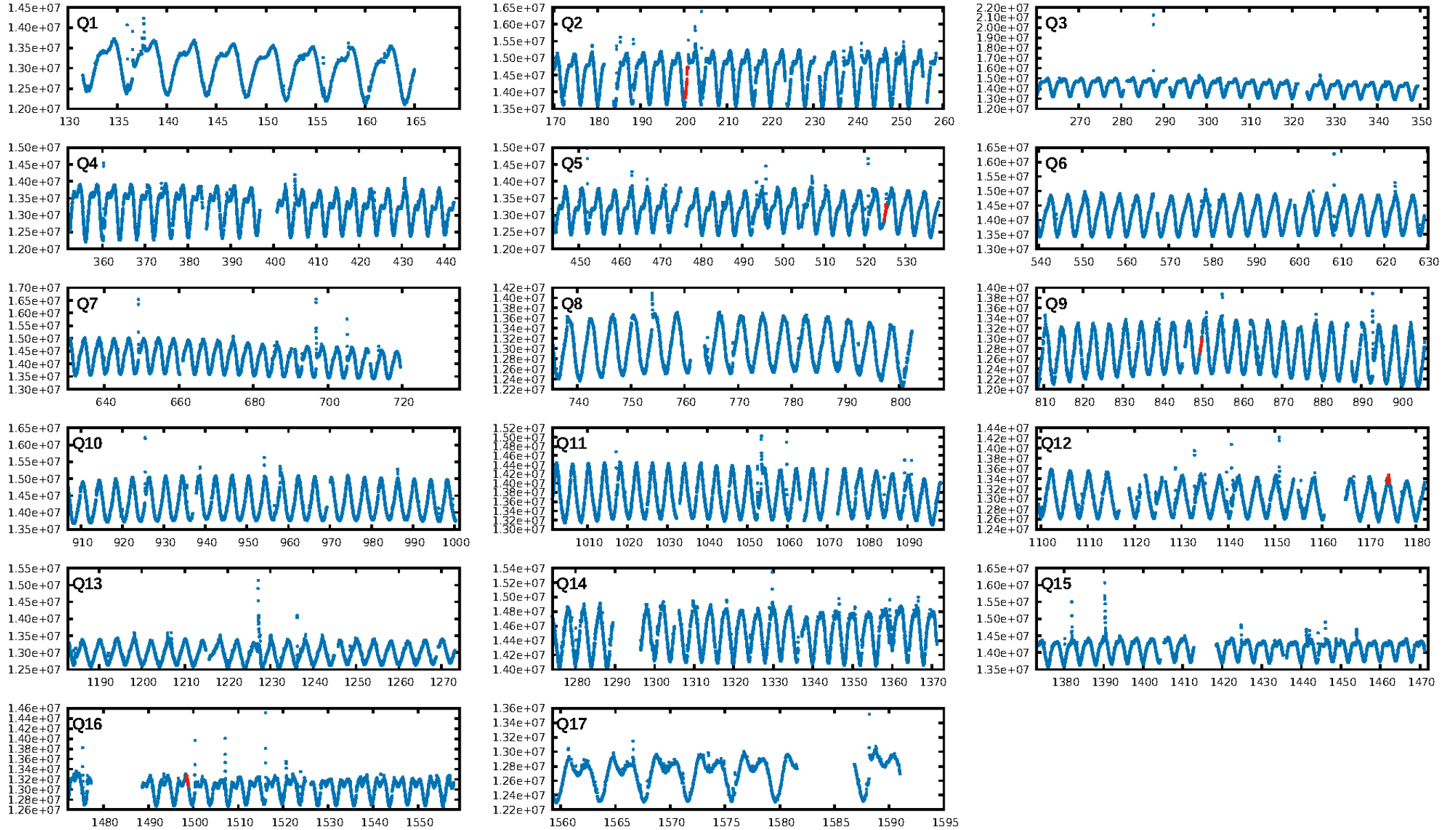
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [9.08σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 36.7%
Bootstrap-pfa: 5.31e-15
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 4.251
Centroid-sig: 26.8%
Centroid-so: 0.223 arcsec [0.49σ]
OotOffset-rm: 0.138 arcsec [0.53σ]
KicOffset-rm: 0.092 arcsec [0.31σ]
OotOffset-st: 0/0/1/2 [3]
KicOffset-st: 0/0/1/2 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

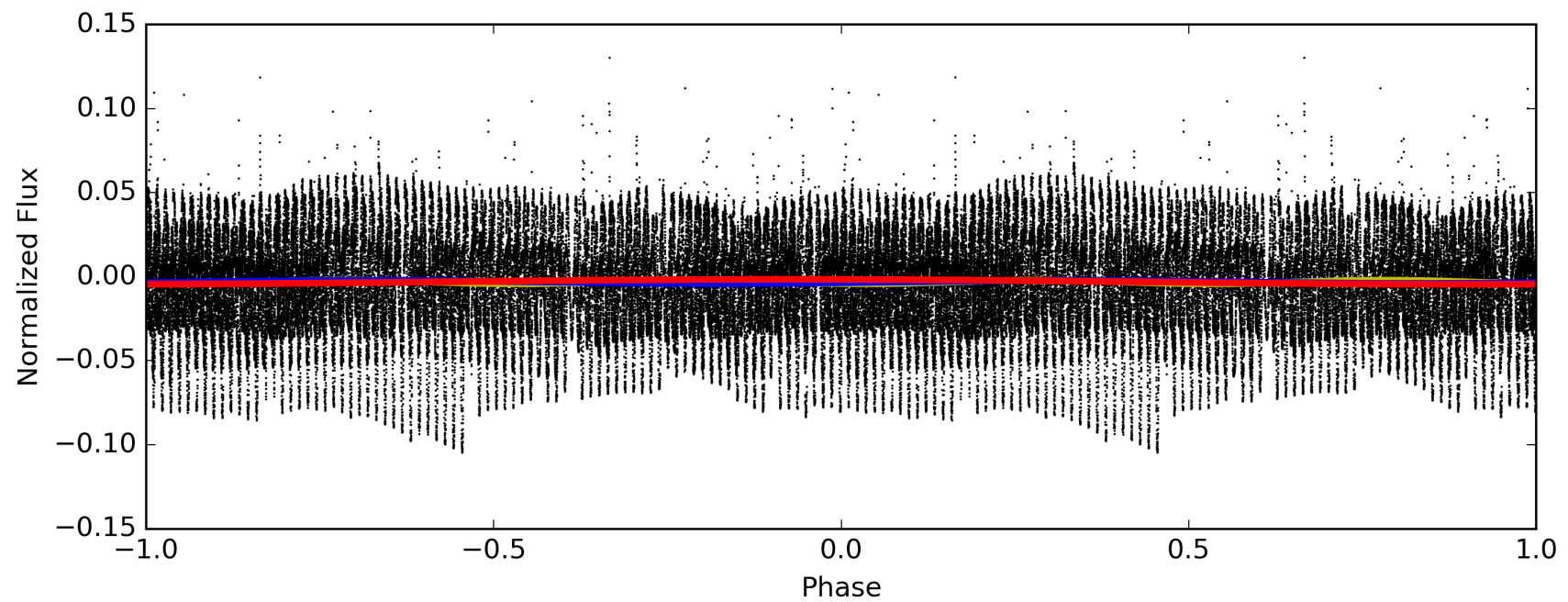
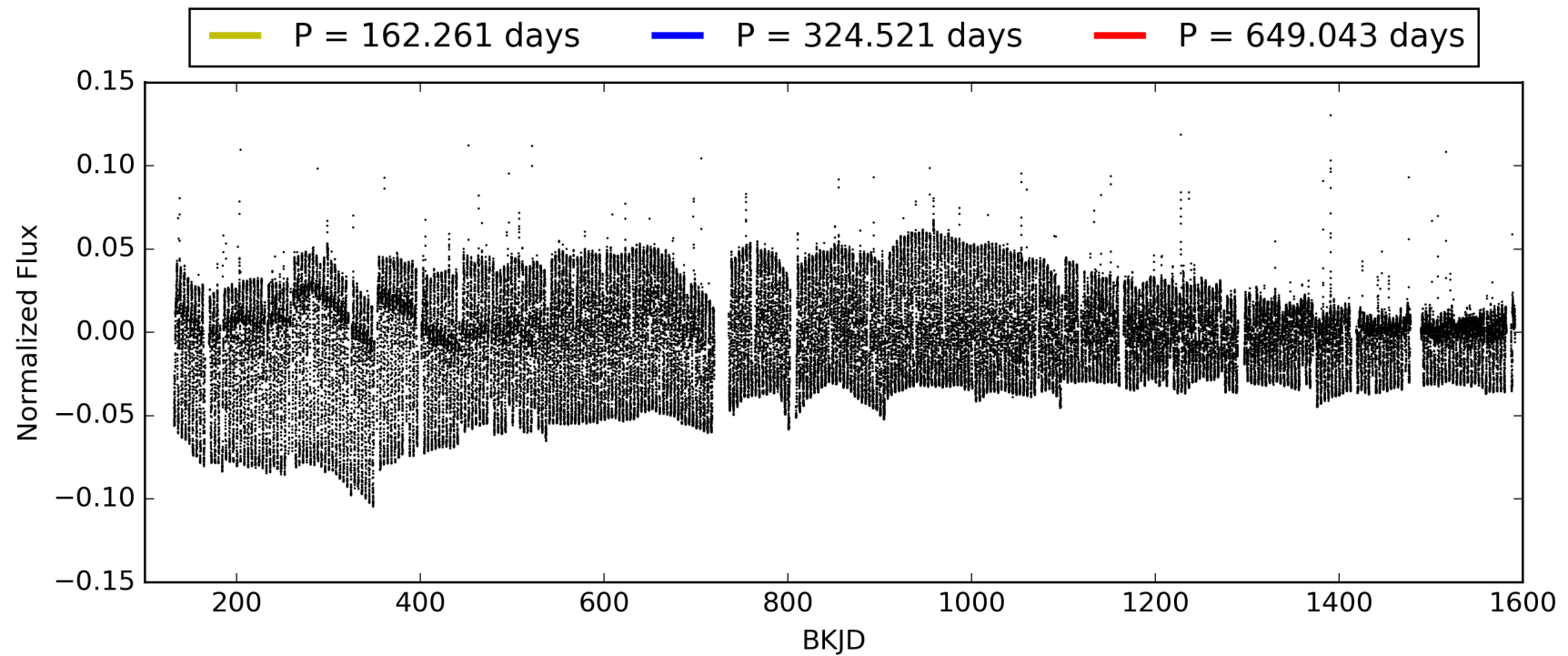
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 14:17:18 Z

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

TCE 007033830-03, PDC Light Curves

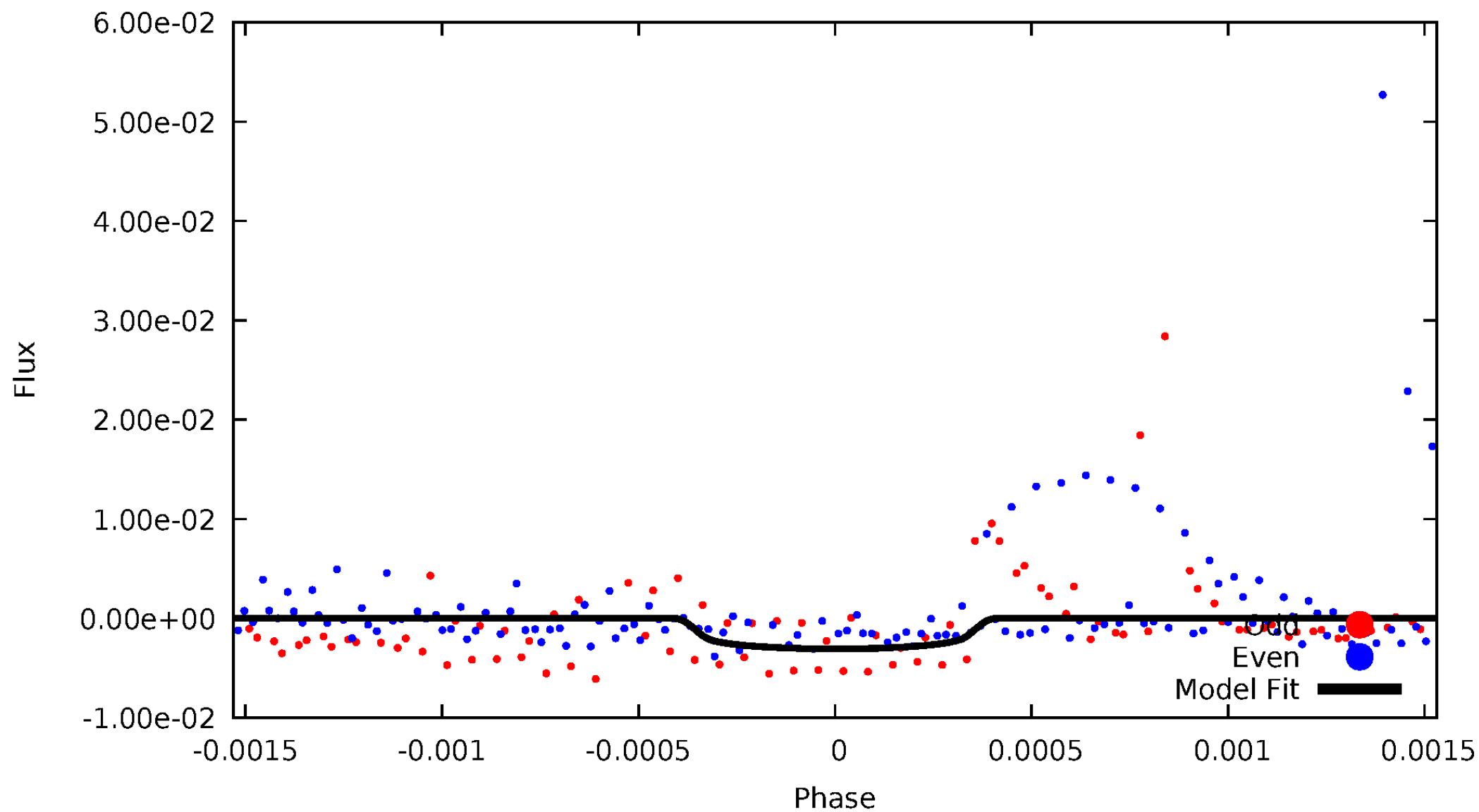


TCE 007033830-03



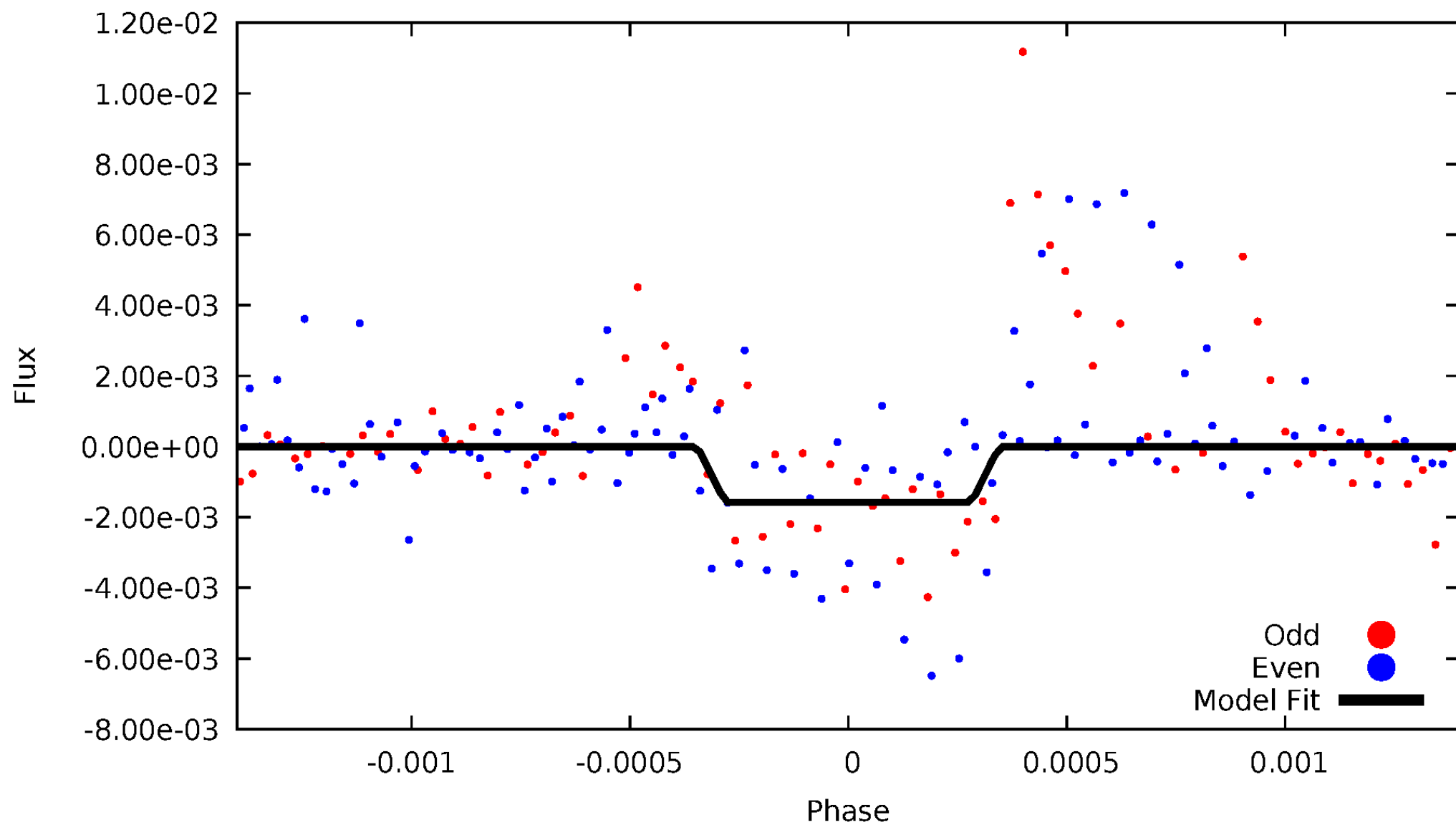
DV Odd/Even

TCE 007033830-03



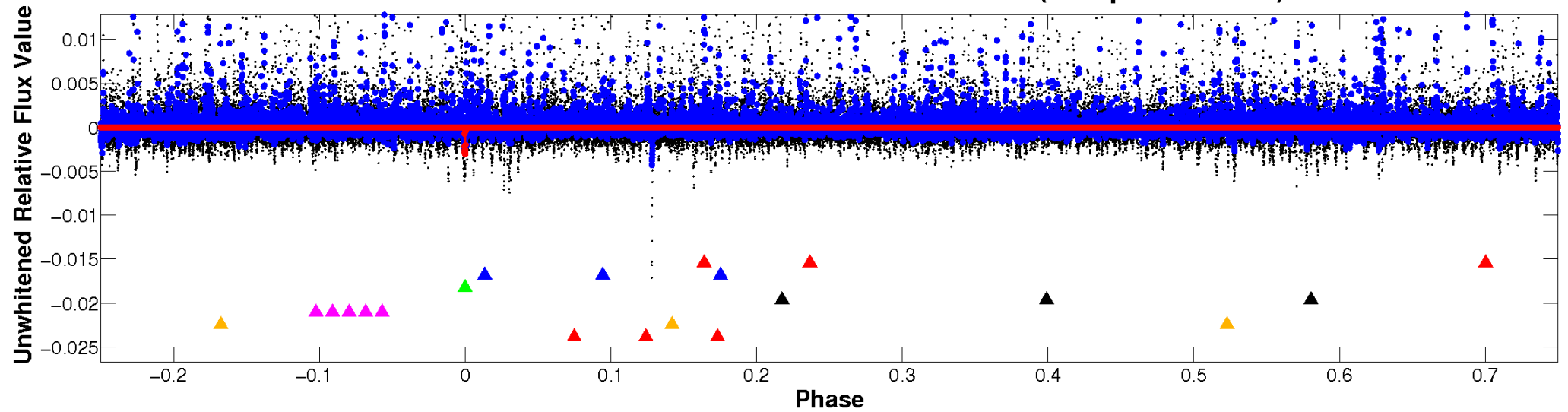
ALT Odd/Even

TCE 007033830-03

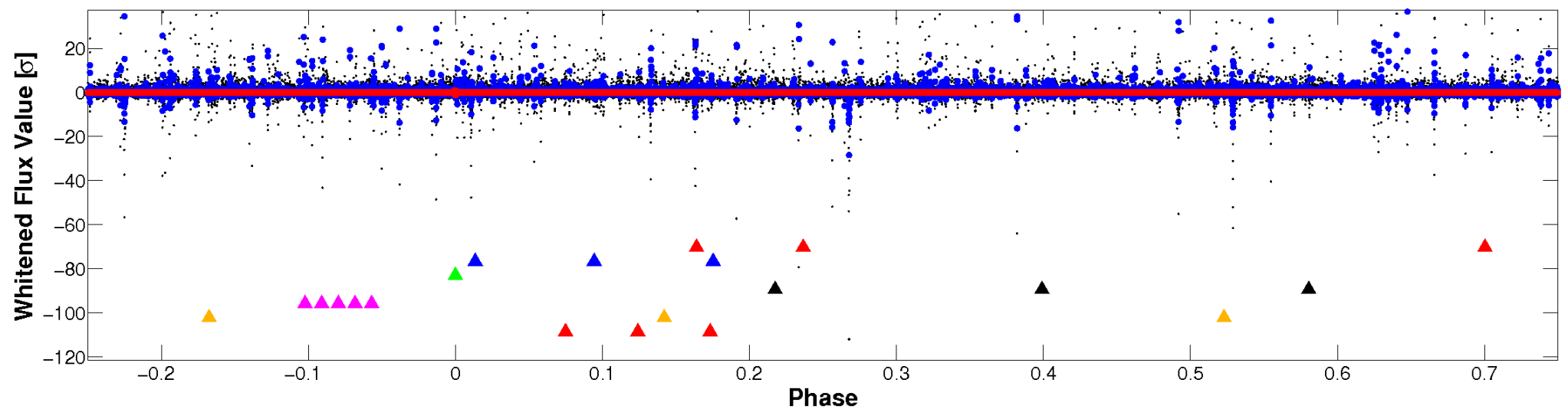


Non-Whitened Vs. Whitened Light Curve

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

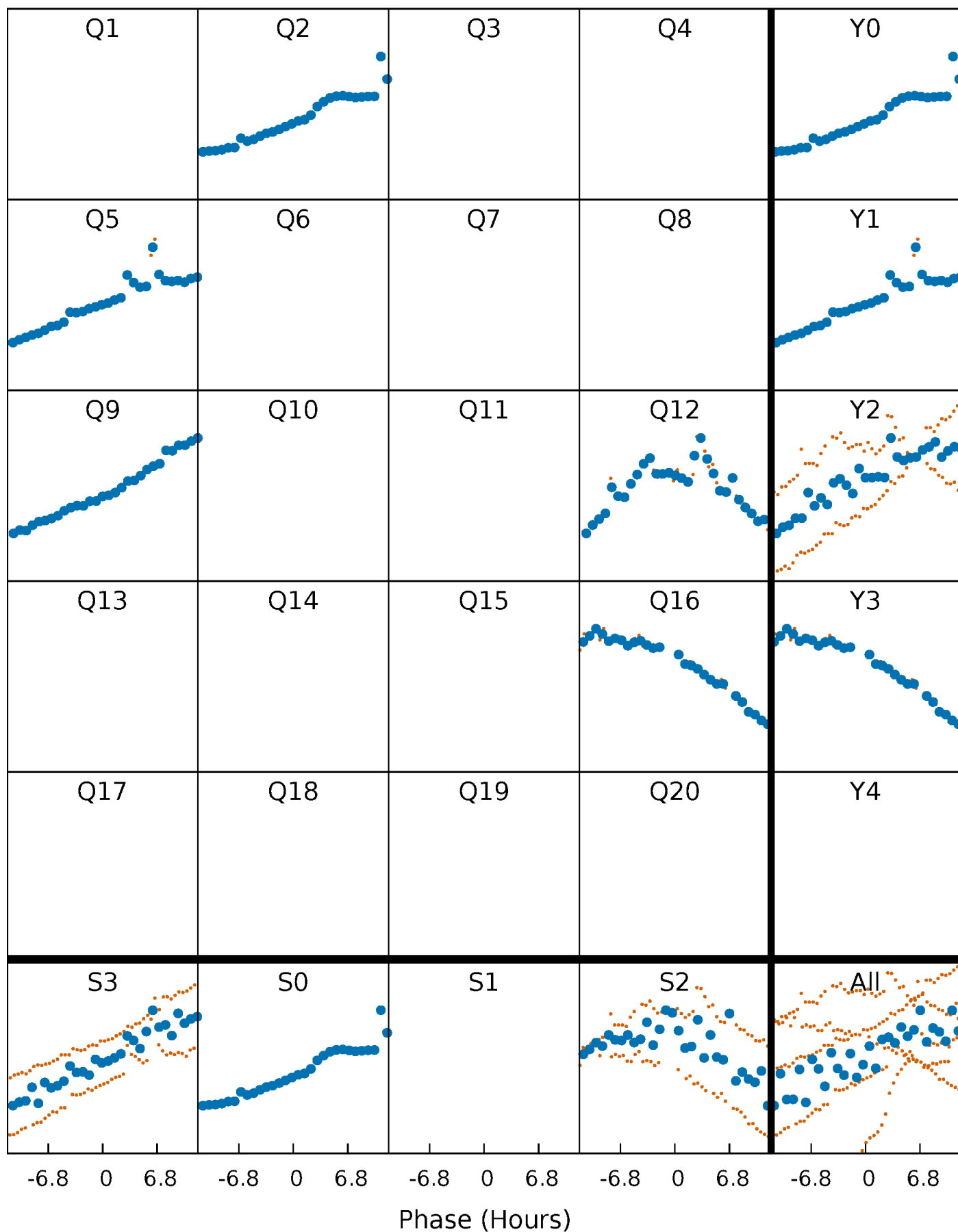


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



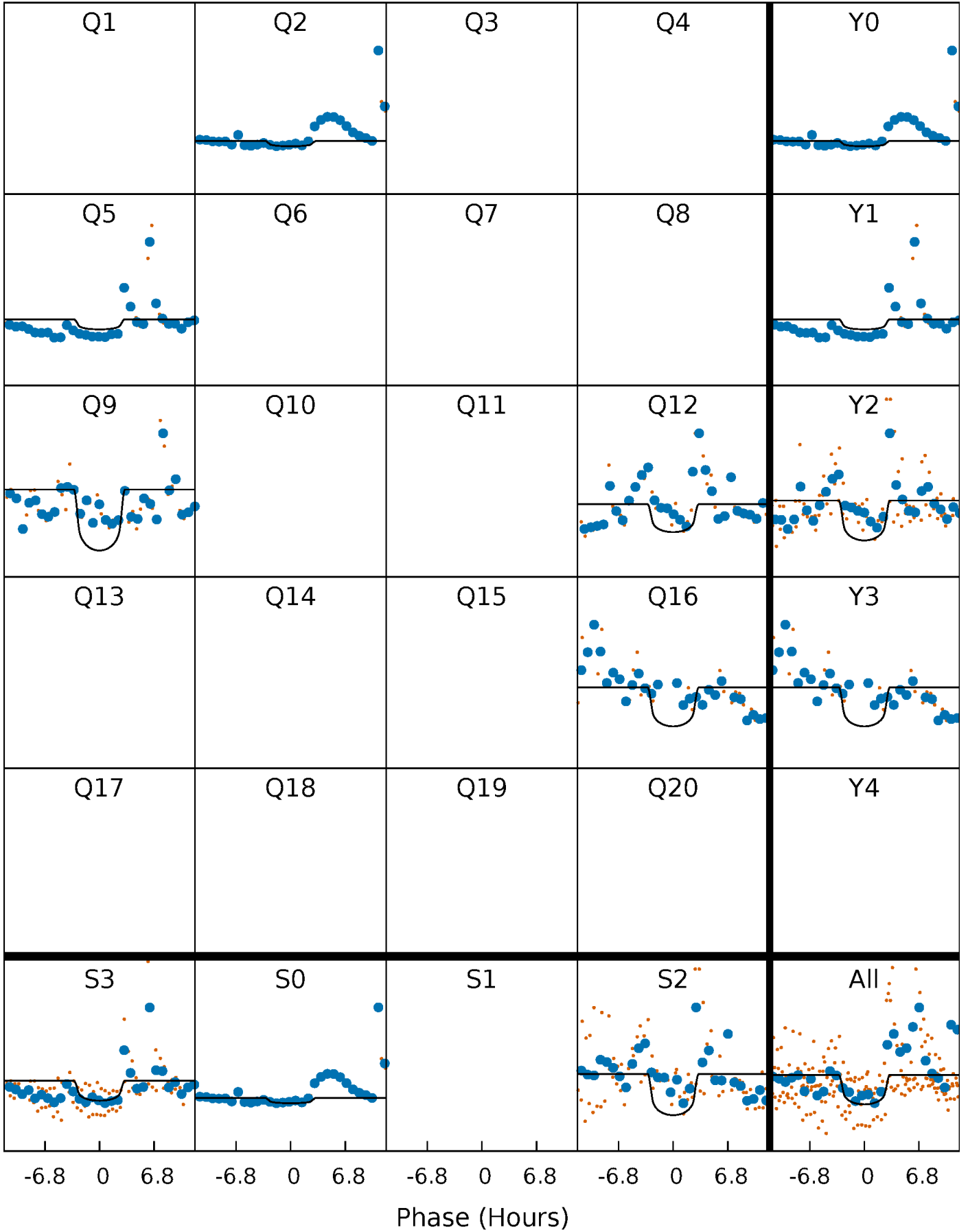
PDC Quarter-Phased Transit Curves

TCE 007033830-03 $P=324.521305$ Days $T_0=200.597642$ (BKJD)



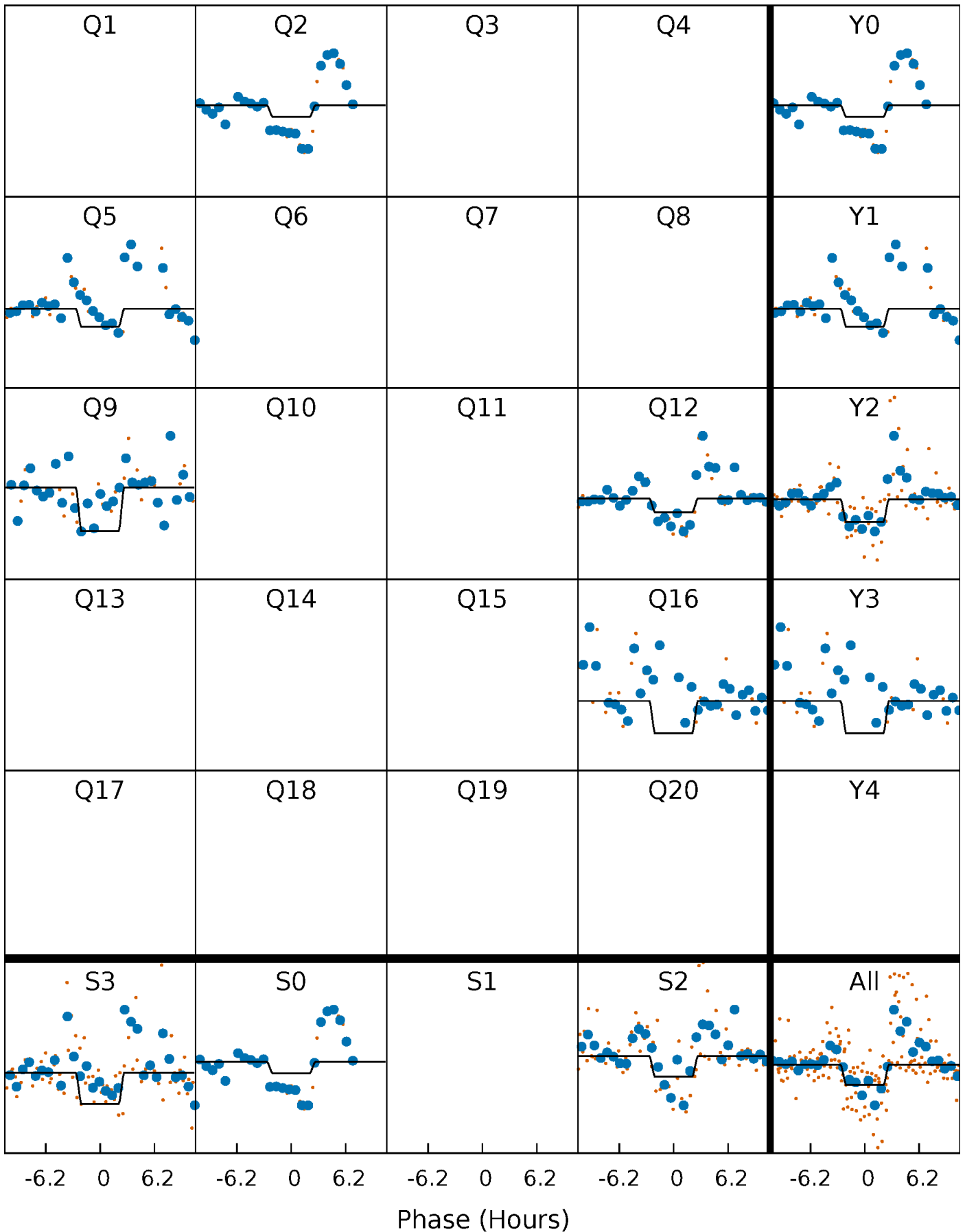
DV Quarter-Phased Transit Curves

TCE 007033830-03 $P=324.521305$ Days $T_0=200.597642$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

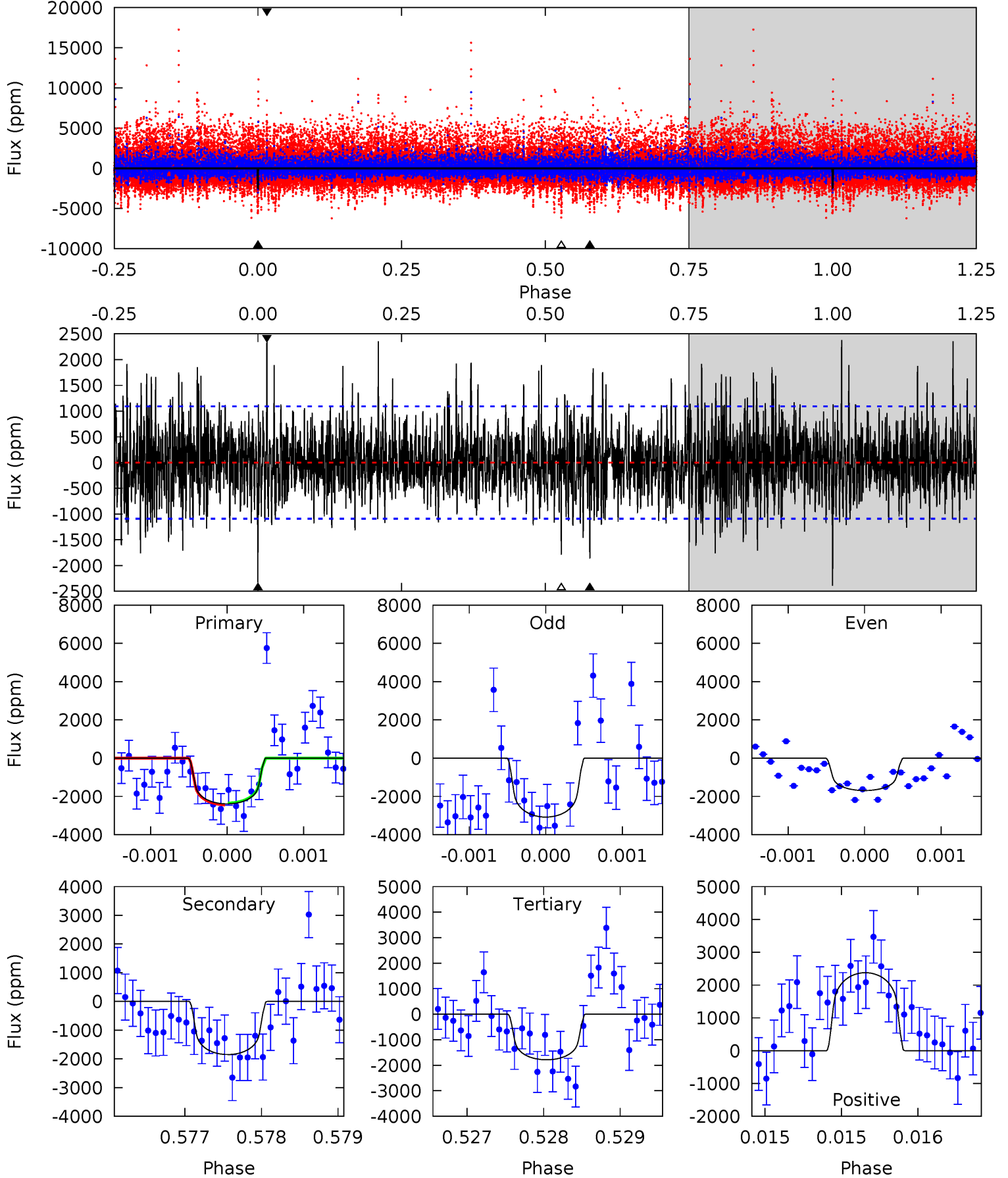
TCE 007033830-03 P=324.518989 Days $T_0=200.599739$ (BKJD)



DV Model-Shift Uniqueness Test

007033830-03, P = 324.521305 Days, E = 200.597642 Days

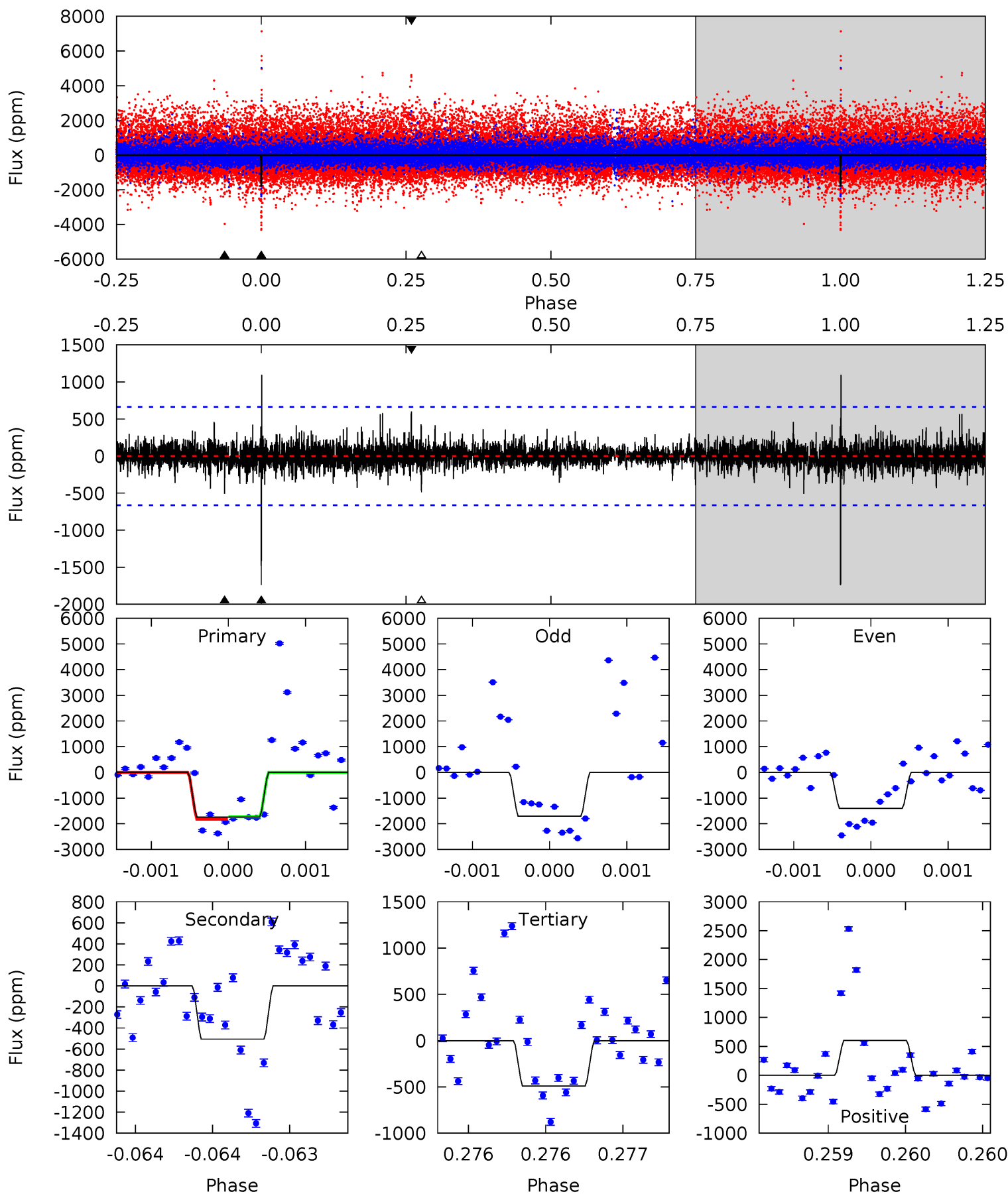
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	9.29	8.97	11.9	5.49	3.35	2.65	3.04	0.07	0.32	-2.65	2.08	1.55	0.50	0.25



Alt Model-Shift Uniqueness Test

007033830-03, P = 324.518989 Days, E = 200.599739 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	4.21	4.08	5.01	5.52	3.40	0.87	10.4	9.47	0.14	-0.79	1.15	2.35	0.39	0.40



Stellar Parameters For KIC 007033830

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3384^{+44}_{-40}	$4.942^{+0.045}_{-0.036}$	$0.000^{+0.100}_{-0.100}$	$0.305^{+0.038}_{-0.035}$	$0.297^{+0.048}_{-0.039}$	$14.760^{+3.778}_{-2.762}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+12%/-11%	+16%/-13%	+26%/-19%
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 007033830-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1849 ± 199	$1.78^{+1.12}_{-1.00}$	146^{+4}_{-3}	3170^{+928}_{-397}	$123736^{+552086}_{-76677}$
Alt.	-506 ± 120	$1.48^{+1.10}_{-0.92}$	146^{+3}_{-3}	2781^{+892}_{-357}	$48953^{+276804}_{-32869}$

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 $A_{obs} \gg 1.0$

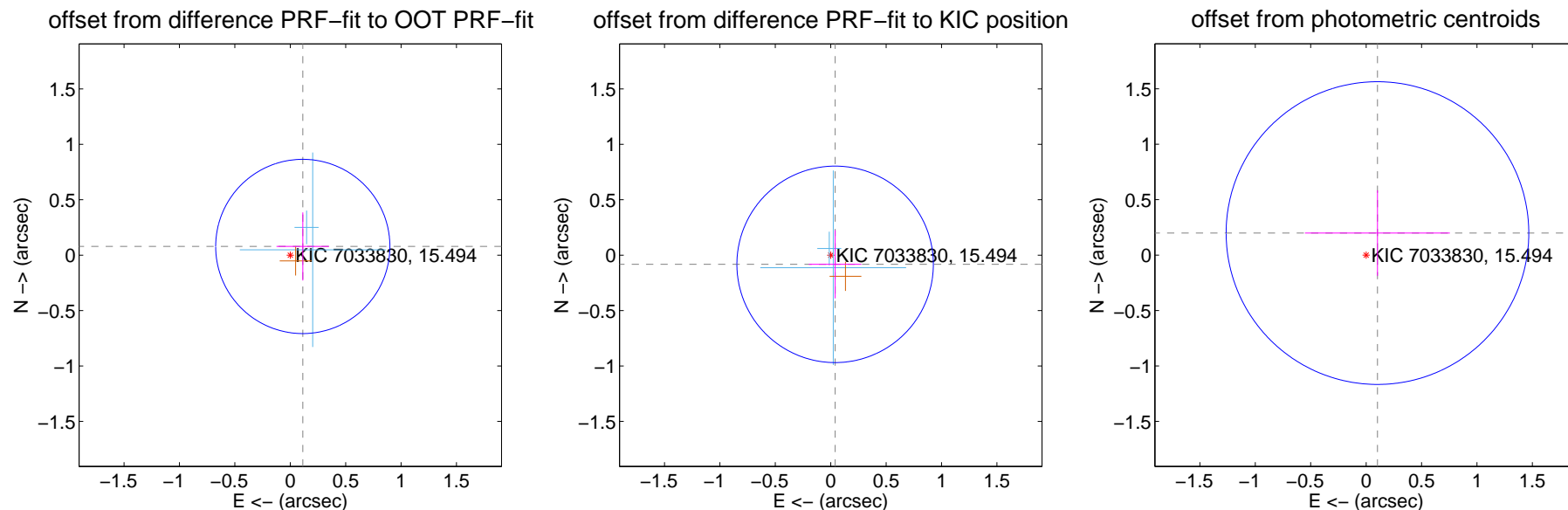
DV Centroid Data

Supplemental centroid analysis for 007033830-03. Kepler magnitude: 15.49. Transit SNR 8.70

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.138 ± 0.262	0.53	-0.113 ± 0.237	0.079 ± 0.307
PRF-fit source offset from KIC position	0.092 ± 0.295	0.31	-0.040 ± 0.237	-0.083 ± 0.307
photometric centroid source offset	0.22 ± 0.46	0.49	-0.10 ± 0.65	0.20 ± 0.39

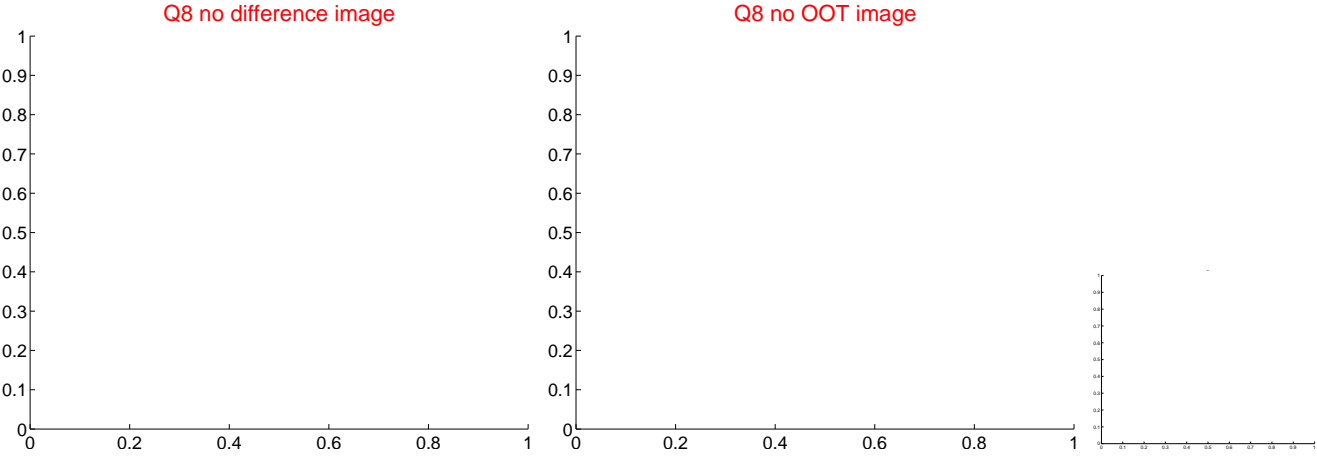
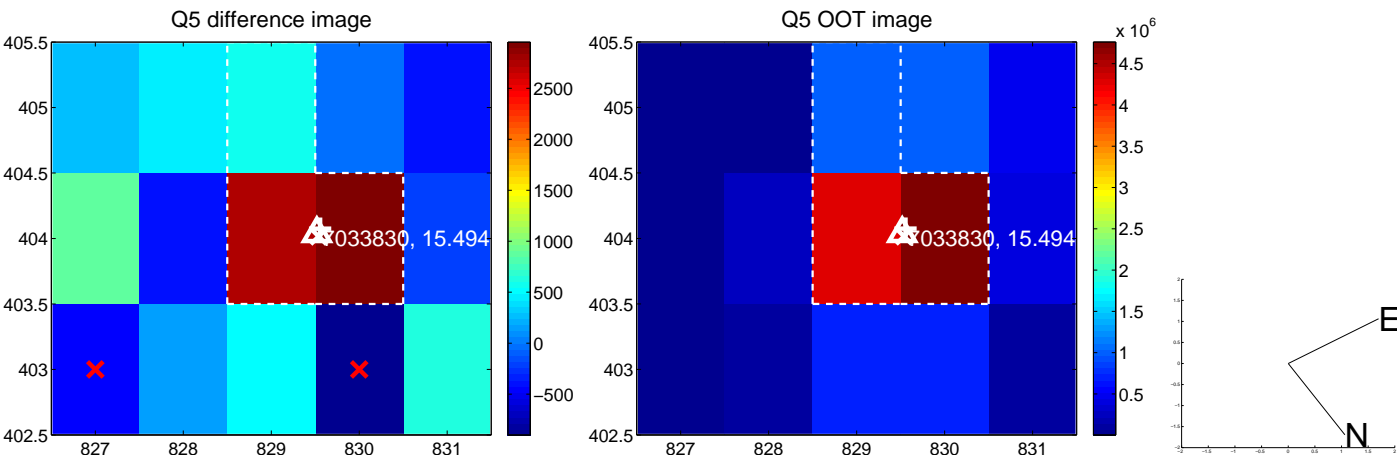


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

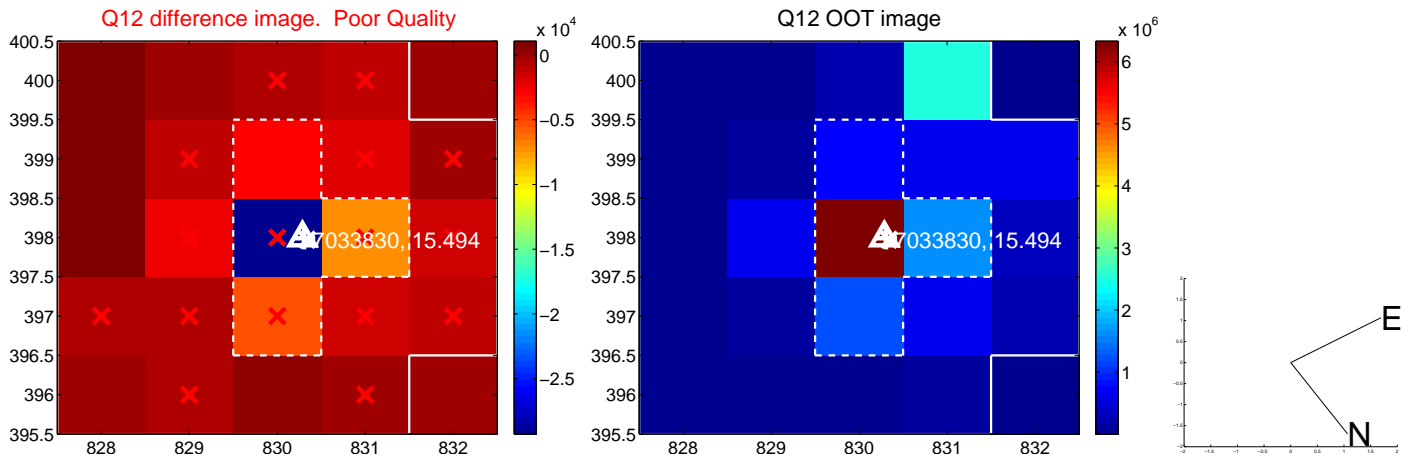
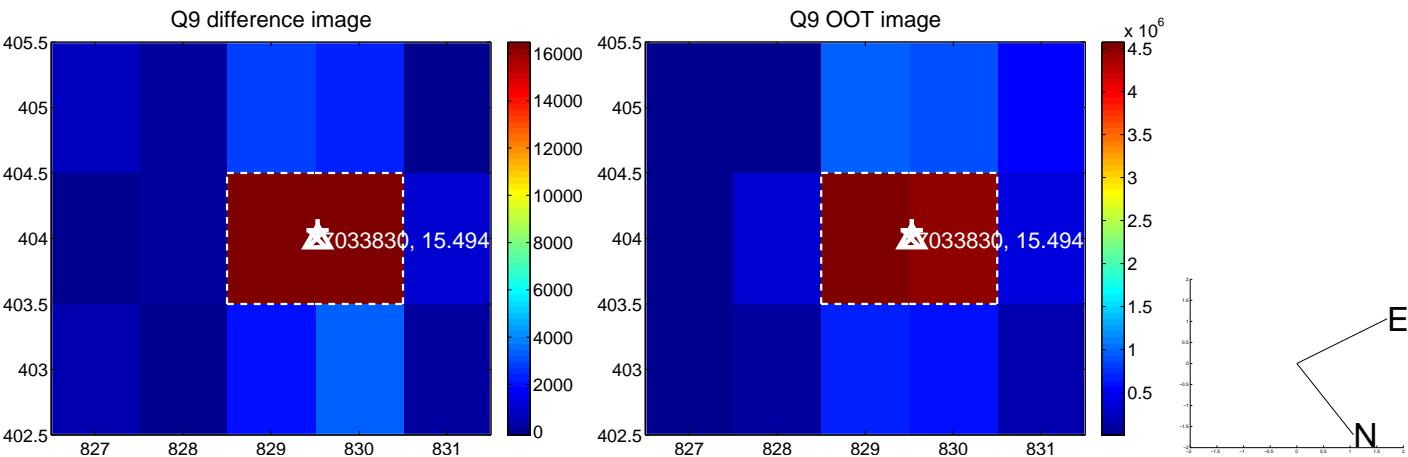
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



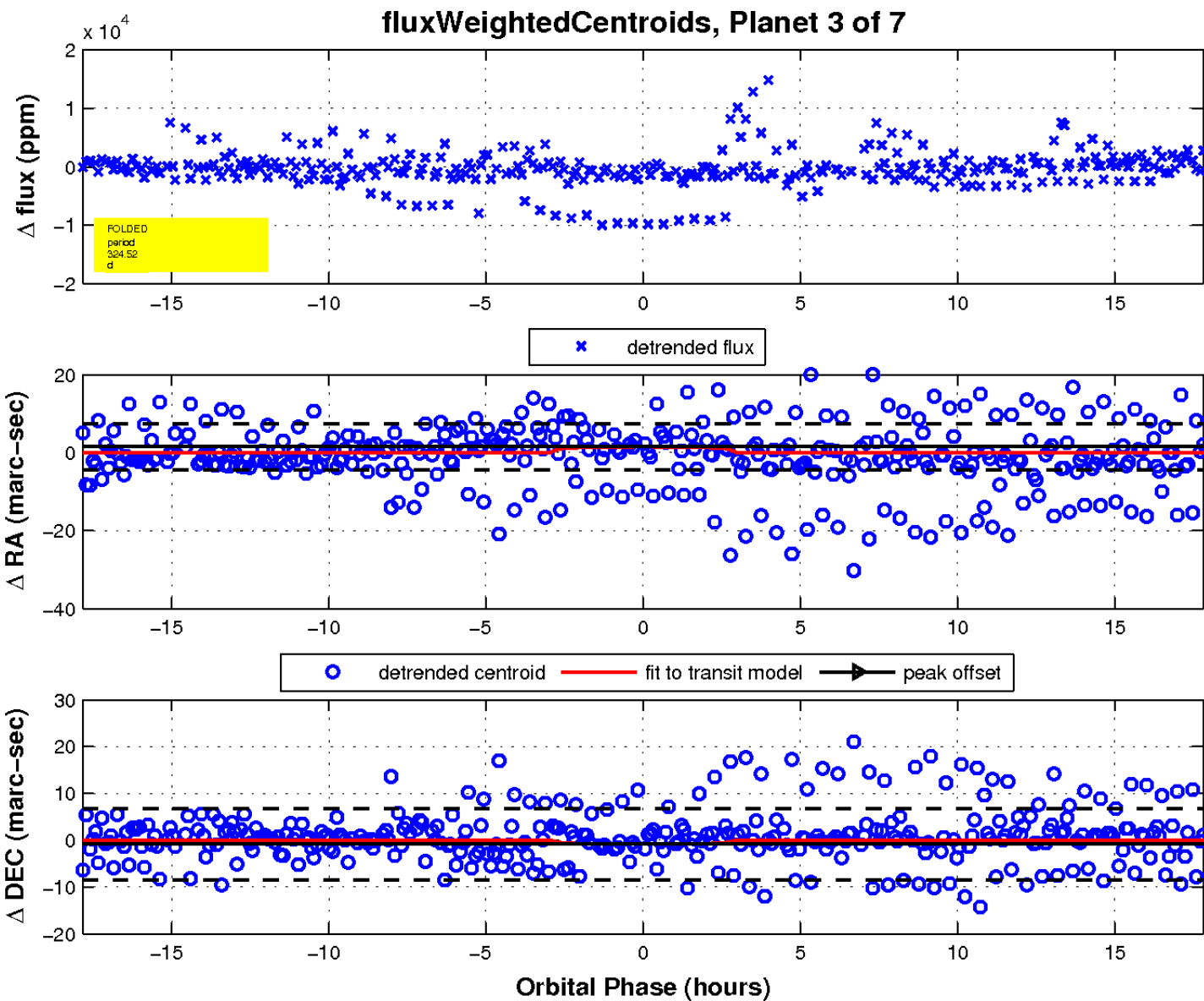
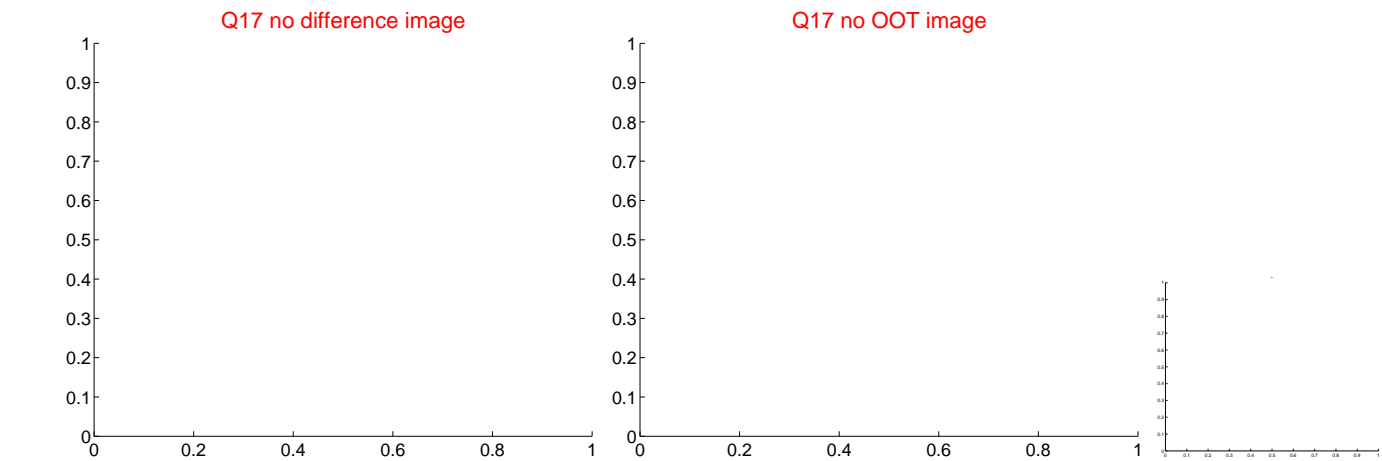
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



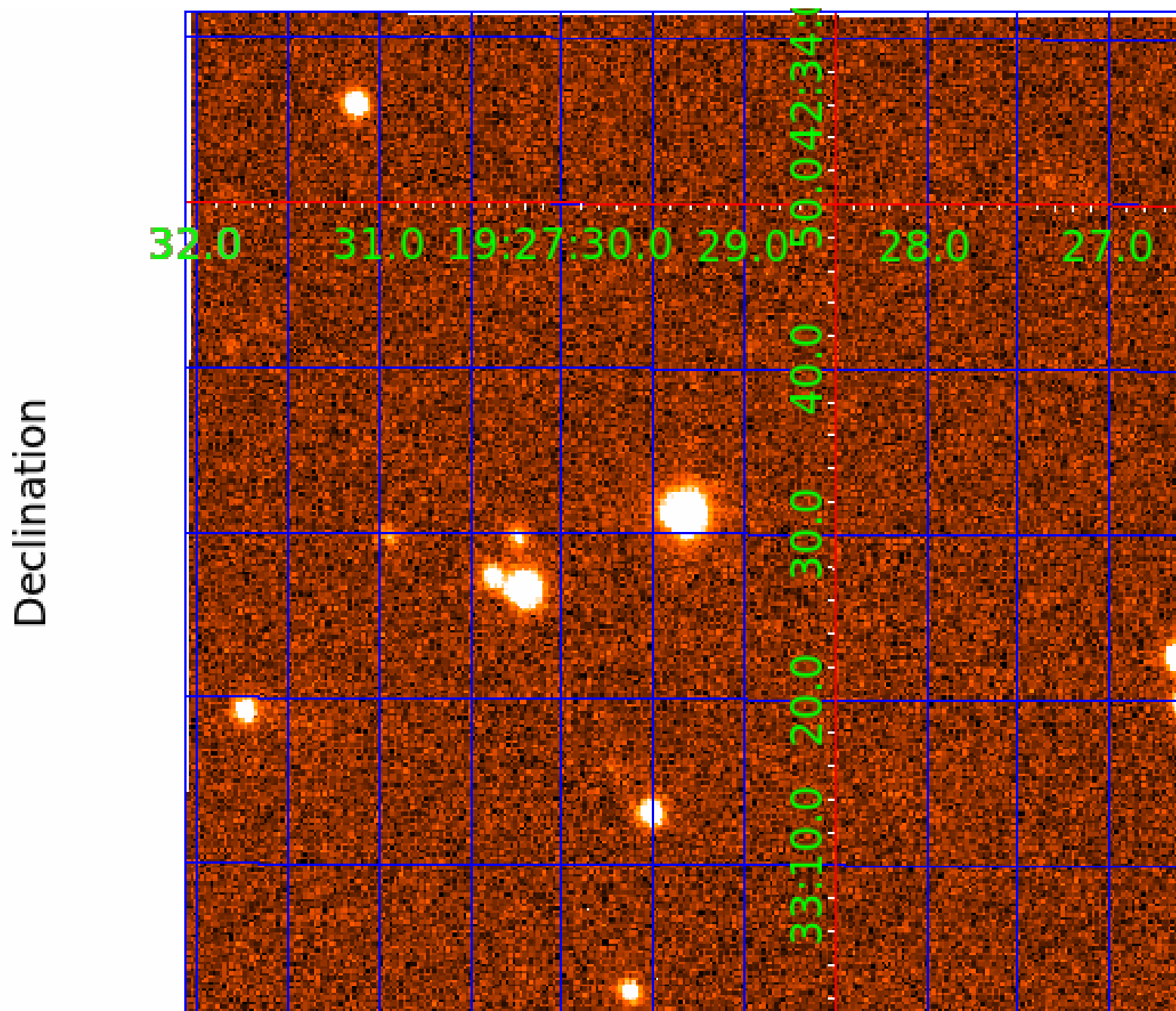
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 007033830

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})
007033830-01	OBS	No	498.558659	578.358673	3474.8	9.227	16.6	8.0	0.30	3384	1.98	0.02
007033830-02	OBS	No	675.305827	204.981968	3631.1	9.662	13.8	7.2	0.30	3384	2.24	0.01
007033830-03	OBS	No	324.521305	200.597642	3066.3	5.960	16.5	8.7	0.30	3384	1.67	0.03
007033830-04	OBS	No	590.146738	388.979965	2254.3	3.686	14.0	5.4	0.30	3384	1.43	0.01
007033830-05	OBS	No	328.199048	167.414247	3882.7	7.679	13.0	8.4	0.30	3384	2.22	0.03
007033830-06	OBS	No	424.992669	370.282661	3861.9	4.568	13.1	7.7	0.30	3384	1.91	0.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007033830-01	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—CENT_FEW_DIFFS
007033830-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007033830-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007033830-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST
007033830-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—HALO_GHOST
007033830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

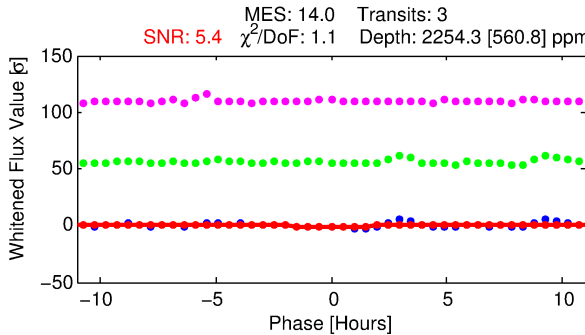
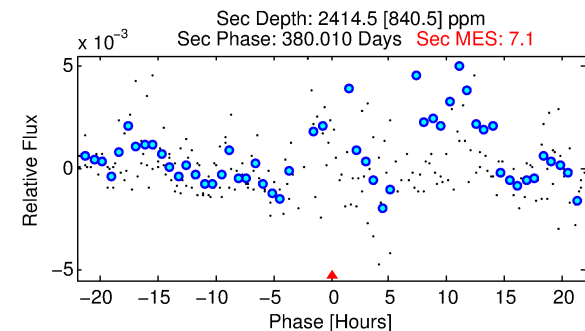
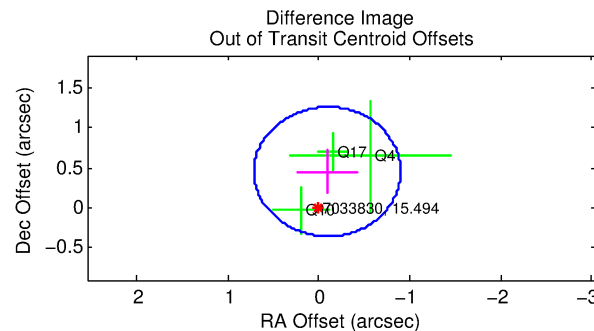
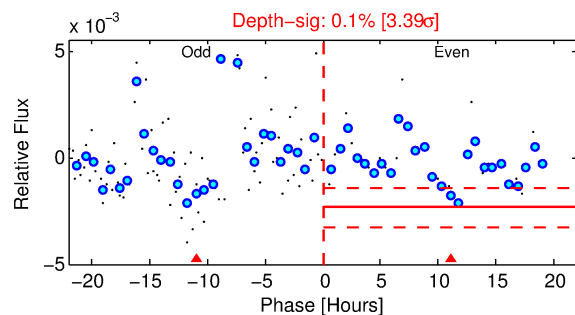
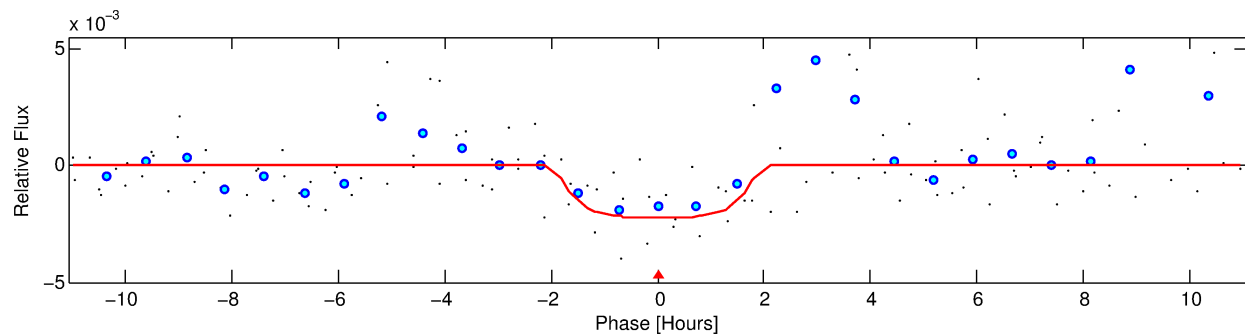
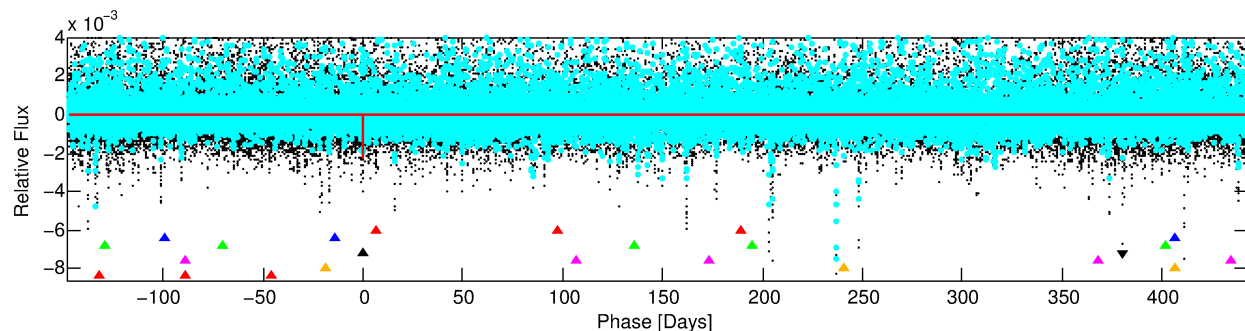
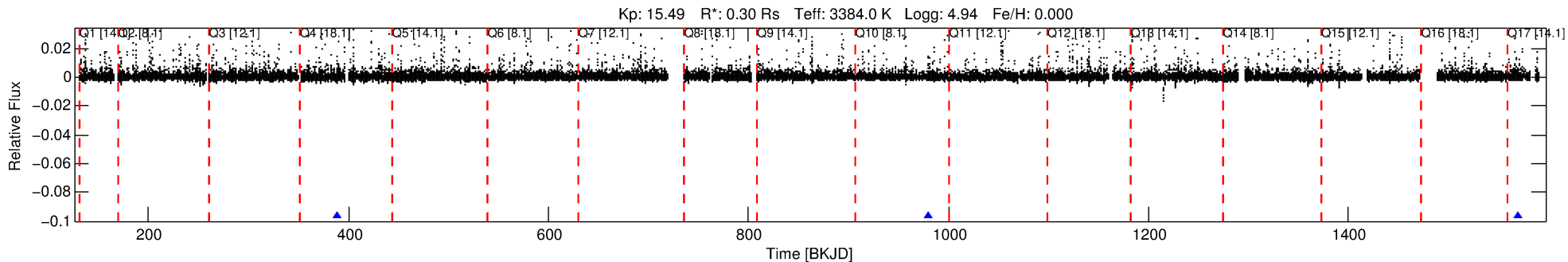
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007033830-04

No Significant Match Found

DV One-Page Summary

KIC: 7033830 Candidate: 4 of 7 Period: 590.147 d



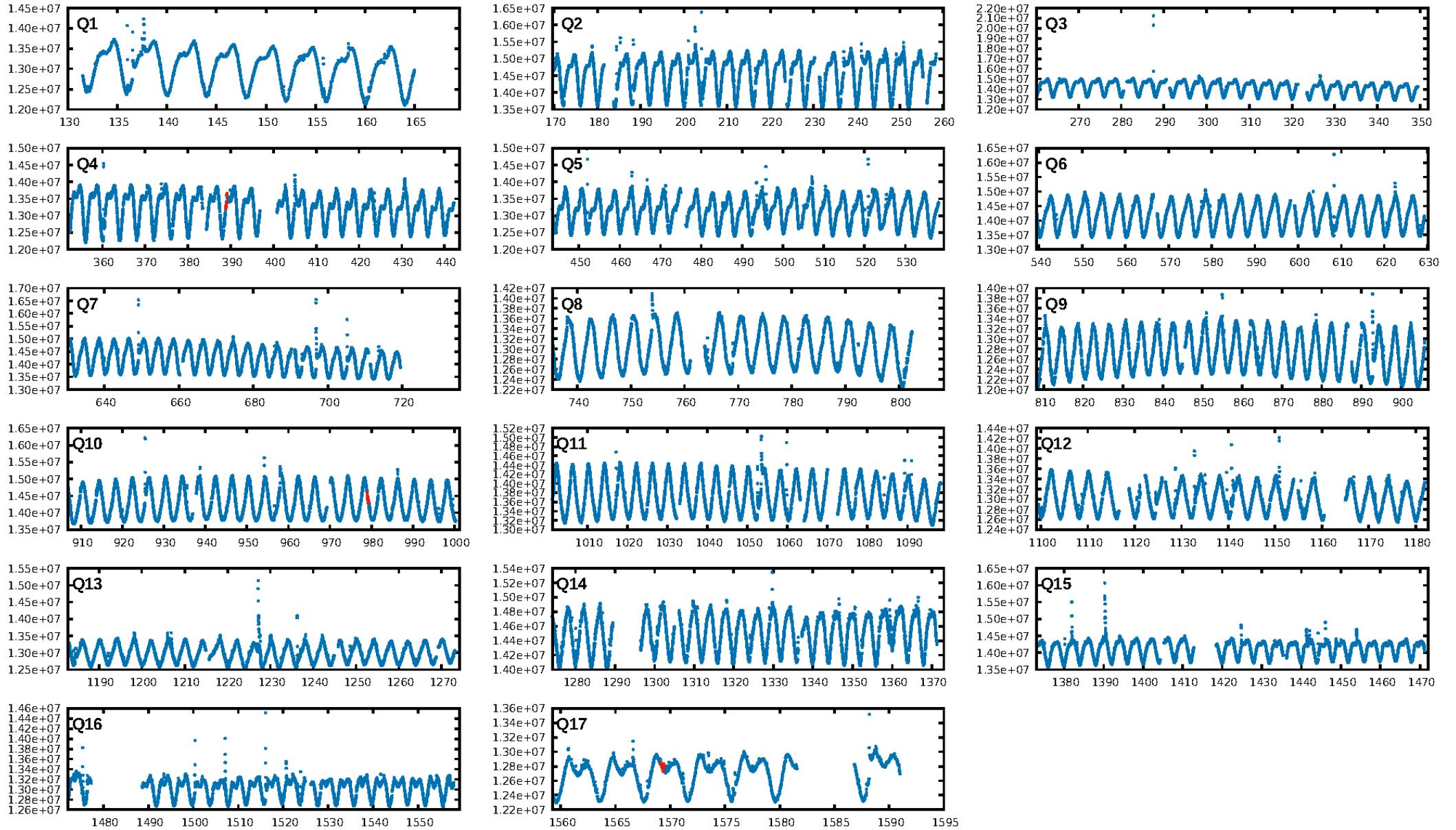
DV Fit Results:

Period = 590.14674 [0.00727] d
Epoch = 388.9800 [0.0093] BKJD
Rp/R* = 0.0429 [0.2252]
a/R* = 1275.76 [28896.23]
b = 0.00 [5893.89]
Seff = 0.01 [0.00]
Teq = 86 [3] K
Rp = 1.43 [7.50] Re
a = 0.9188 [0.0826] AU
Ag = 549076.26 [5762582.73] [0.10]
Teffp = 3620 [9498] K [0.37 σ]

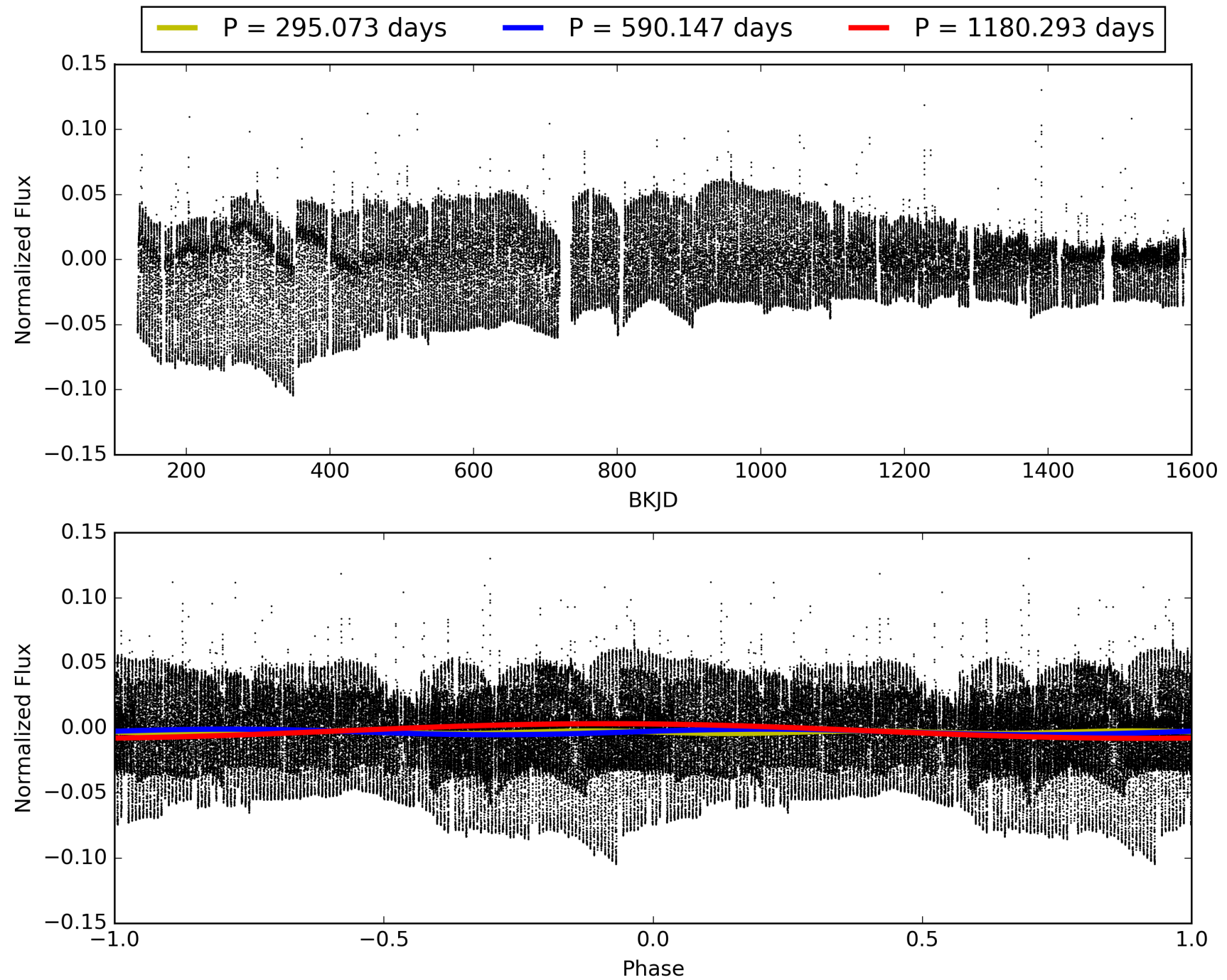
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [221.23 σ]
LongPeriod-sig: 100.0% [118.56 σ]
ModelChiSquare2-sig: 0.7%
ModelChiSquareGof-sig: 85.8%
Bootstrap-pfa: 4.47e-10
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: -0.06624
Centroid-sig: 21.0%
Centroid-so: 1.541 arcsec [1.54 σ]
OotOffset-rm: 0.460 arcsec [1.71 σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 0.390 arcsec [1.46 σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 007033830-04, PDC Light Curves

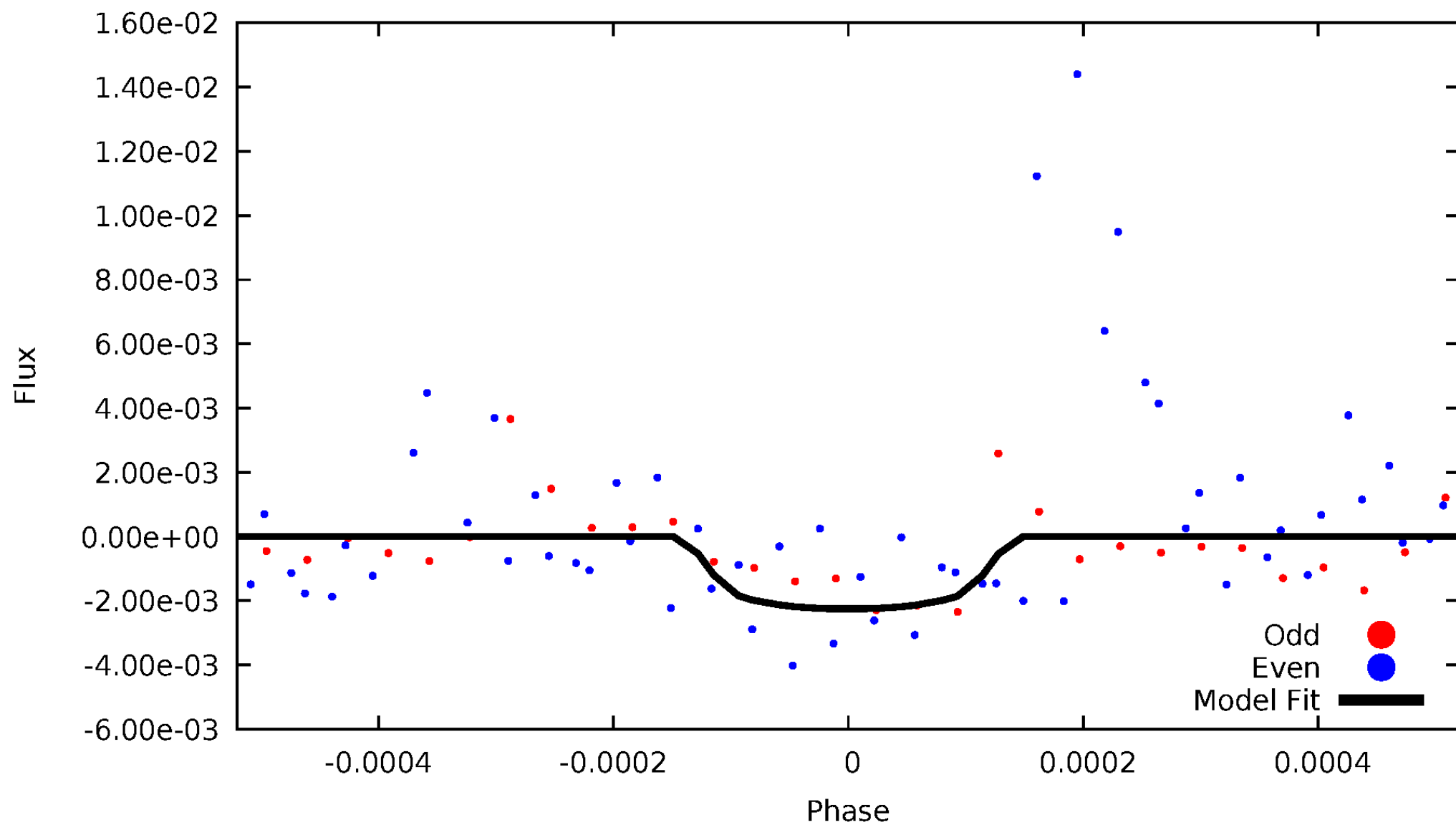


TCE 007033830-04



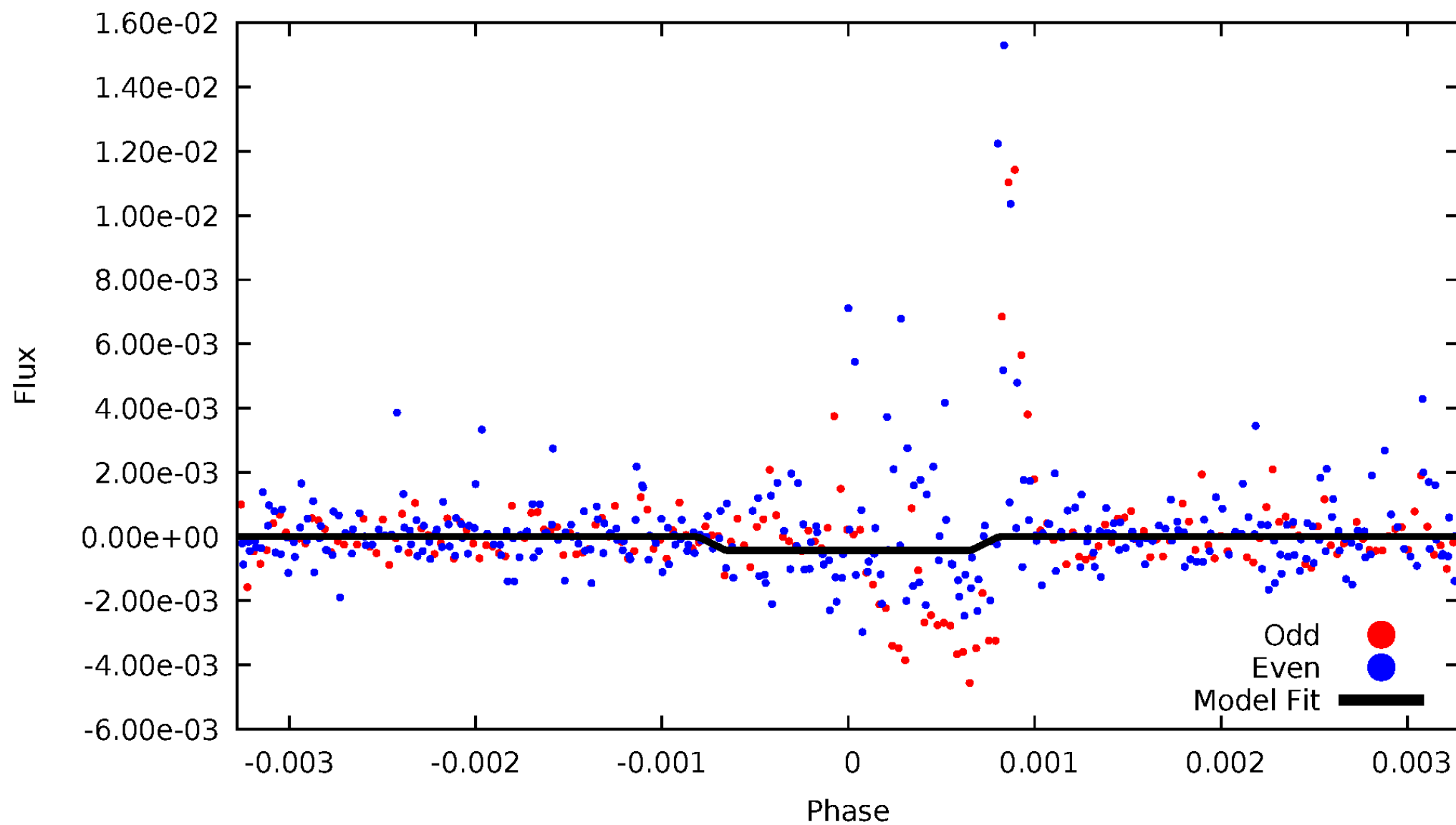
DV Odd/Even

TCE 007033830-04



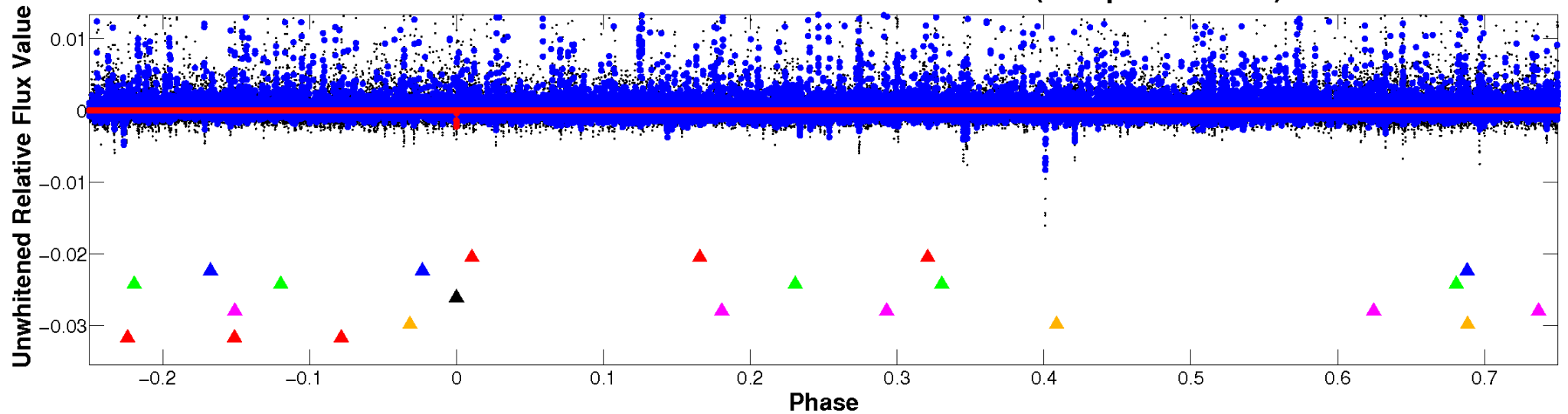
ALT Odd/Even

TCE 007033830-04

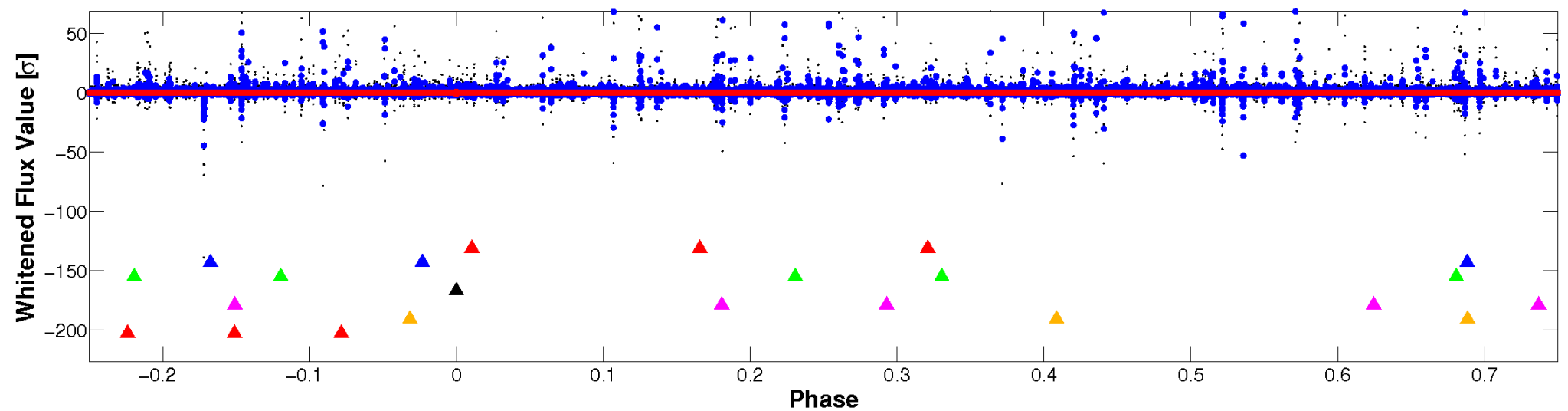


Non-Whitened Vs. Whitened Light Curve

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

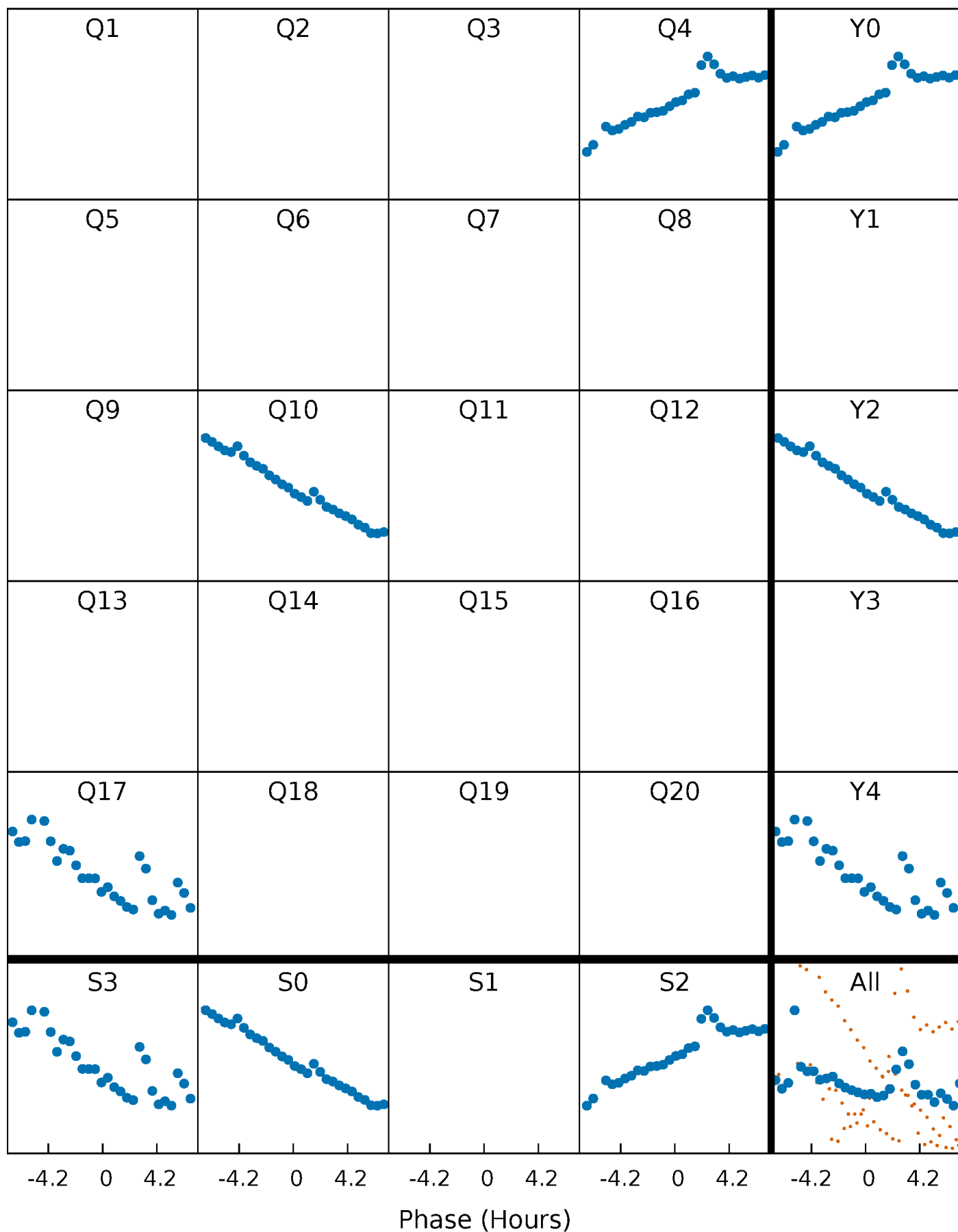


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



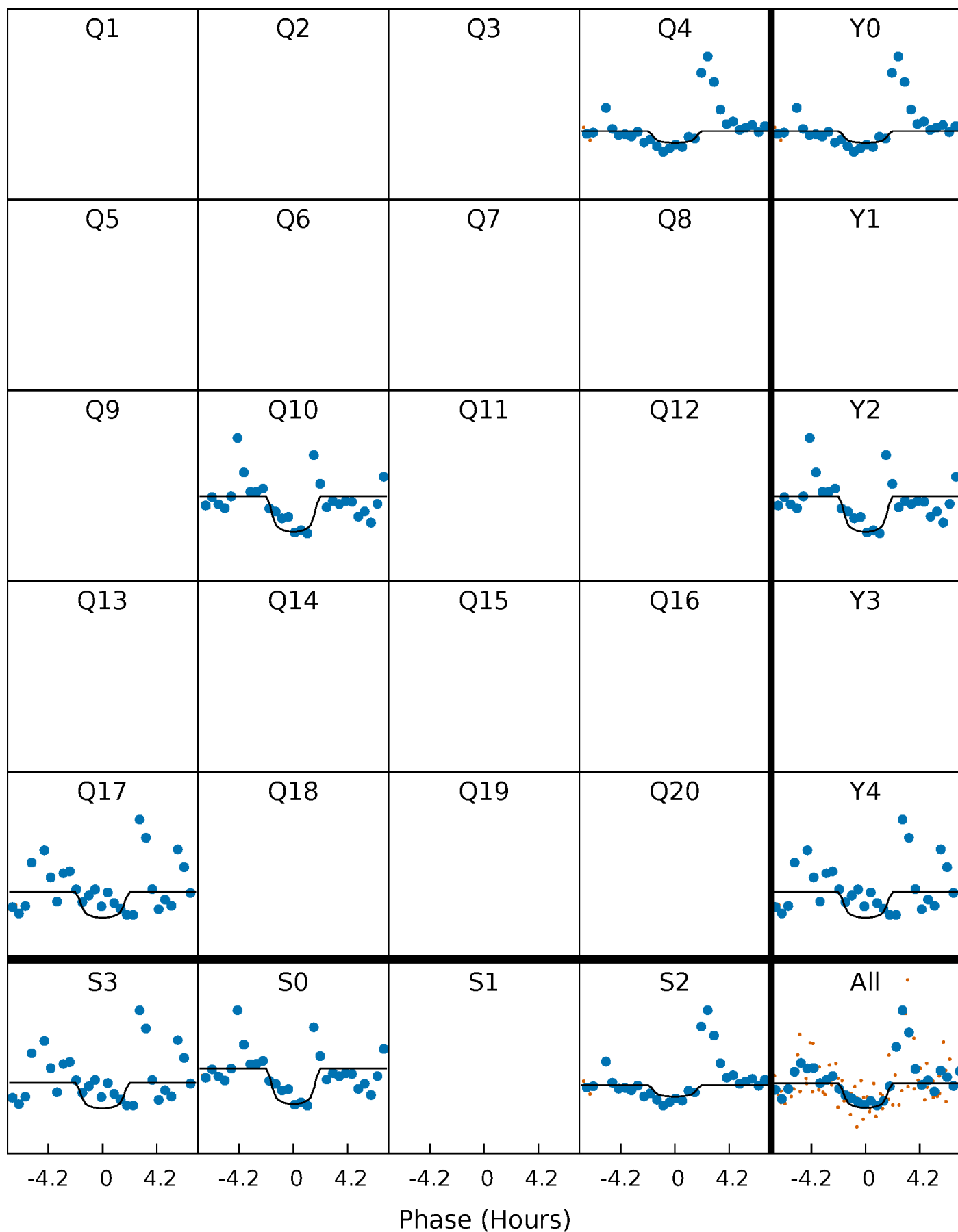
PDC Quarter-Phased Transit Curves

TCE 007033830-04 P=590.146738 Days $T_0=388.979965$ (BKJD)



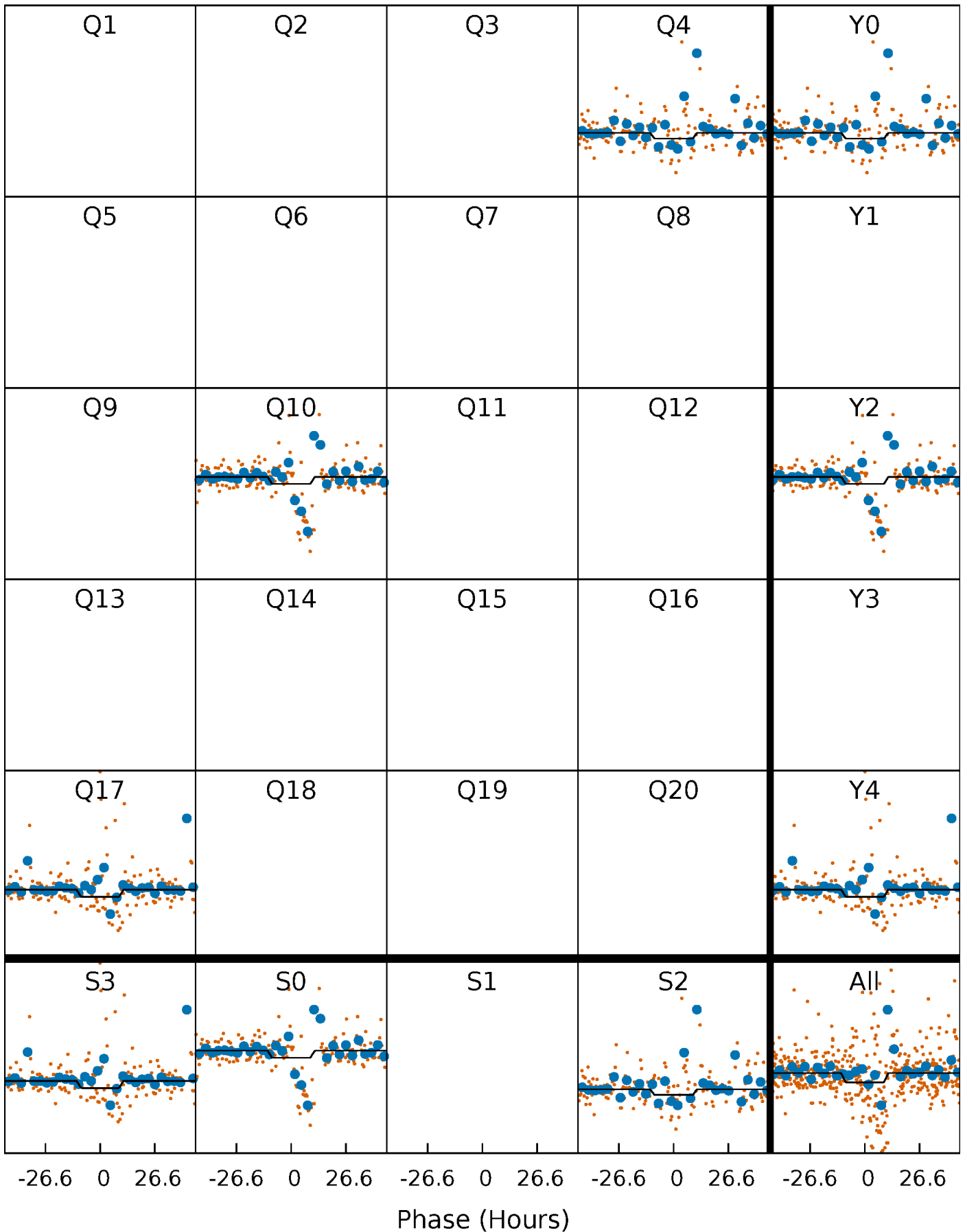
DV Quarter-Phased Transit Curves

TCE 007033830-04 P=590.146738 Days $T_0=388.979965$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

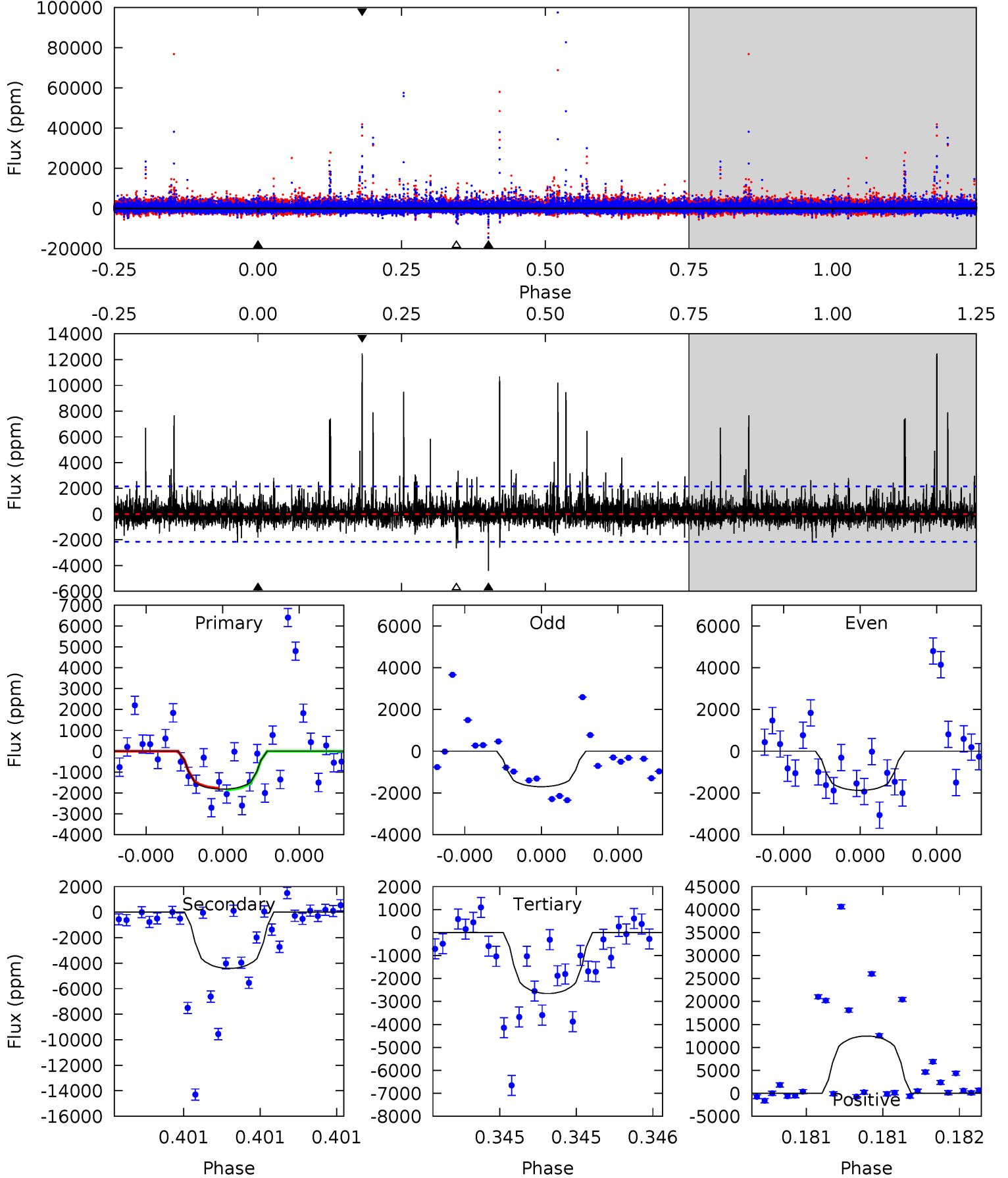
TCE 007033830-04 P=590.400471 Days $T_0=388.601073$ (BKJD)



DV Model-Shift Uniqueness Test

007033830-04, P = 590.146738 Days, E = 388.979965 Days

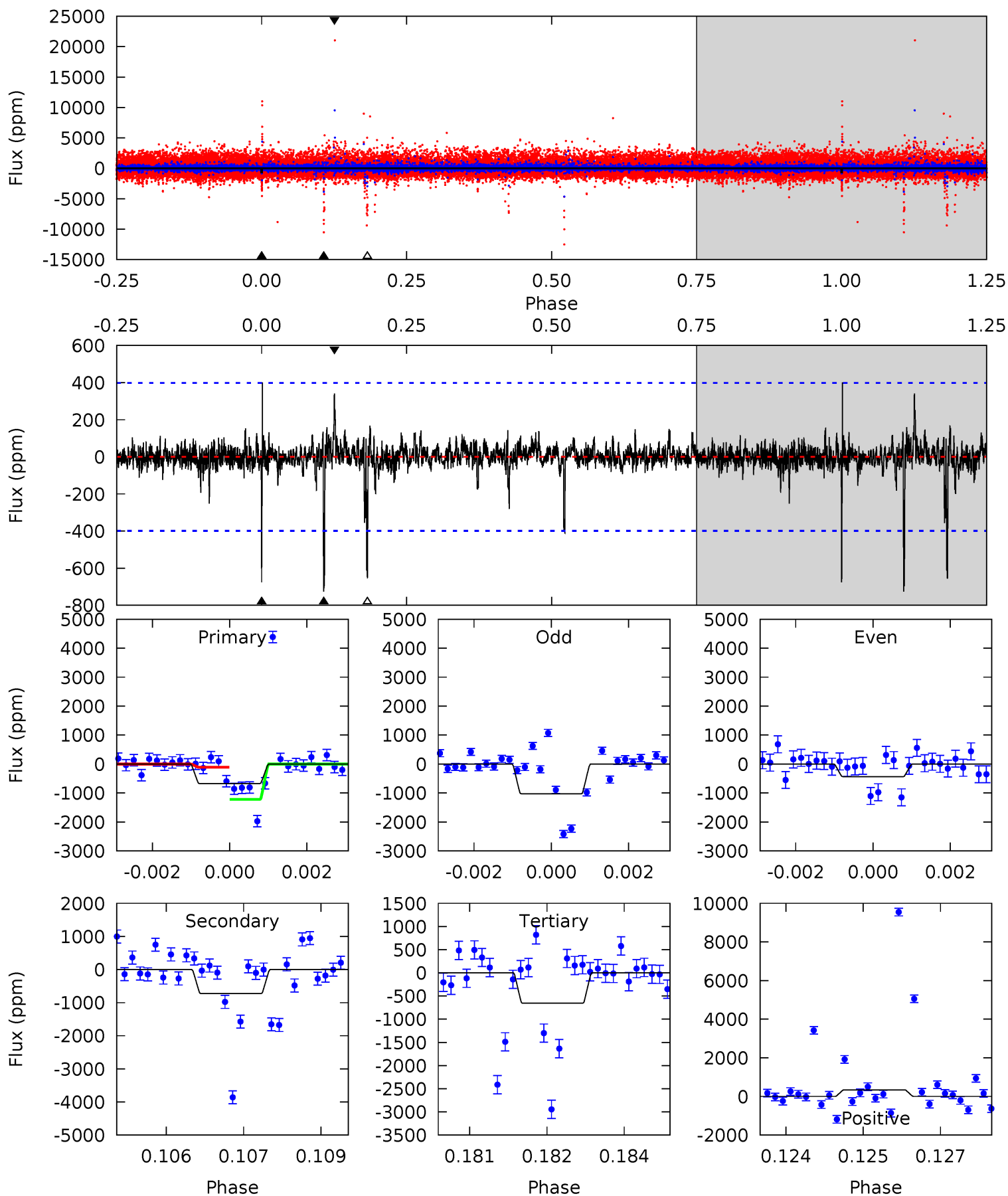
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.80	11.7	7.01	32.9	5.69	3.66	1.99	-2.21	-28.1	4.65	-21.3	0.10	1.07	0.74	0.10



Alt Model-Shift Uniqueness Test

007033830-04, P = 590.400471 Days, E = 388.601073 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.10	9.78	8.82	4.58	5.36	3.15	0.71	0.28	4.52	0.96	5.20	3.66	8.90	0.36	7.49



Stellar Parameters For KIC 007033830

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3384^{+44}_{-40}	$4.942^{+0.045}_{-0.036}$	$0.000^{+0.100}_{-0.100}$	$0.305^{+0.038}_{-0.035}$	$0.297^{+0.048}_{-0.039}$	$14.760^{+3.778}_{-2.762}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+12%/-11%	+16%/-13%	+26%/-19%
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 007033830-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-4410 ± 378	$5.80^{+6.27}_{-3.95}$	120^{+3}_{-3}	2580^{+1001}_{-403}	$60812^{+526918}_{-46642}$
Alt.	-726 ± 74	$5.22^{+5.51}_{-3.57}$	120^{+3}_{-3}	2160^{+710}_{-306}	$12656^{+118731}_{-9753}$

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 $A_{obs} \gg 1.0$

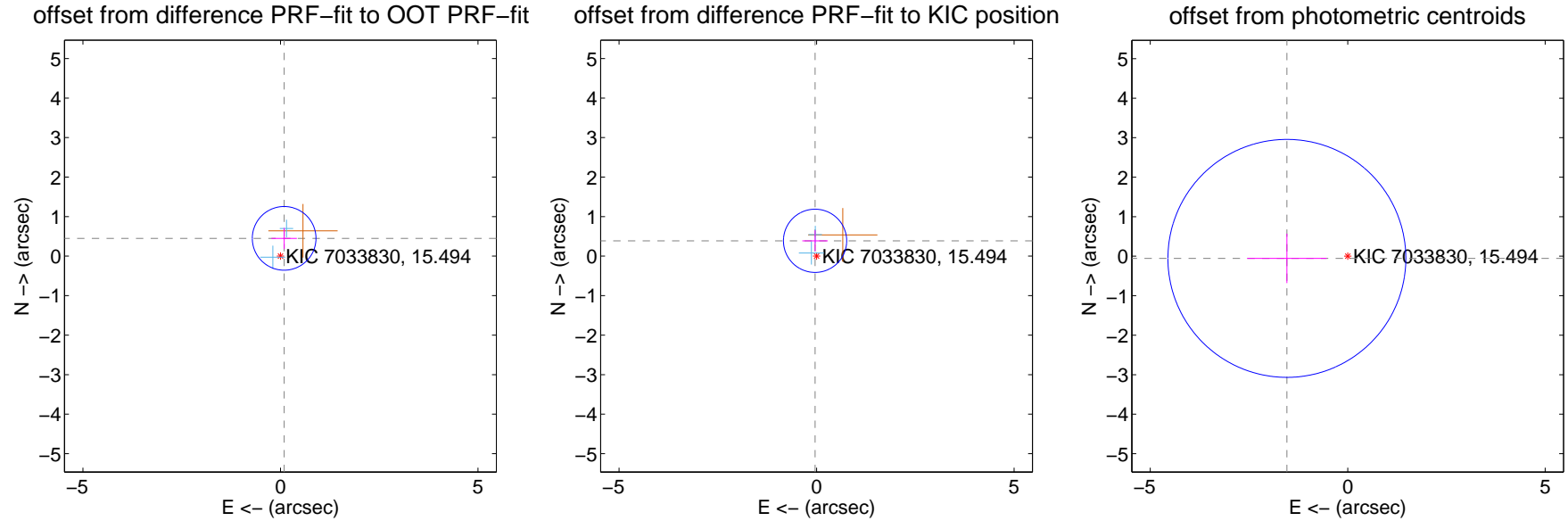
DV Centroid Data

Supplemental centroid analysis for 007033830-04. Kepler magnitude: 15.49. Transit SNR 5.36

There are 2 quarters with good PRF difference image offsets

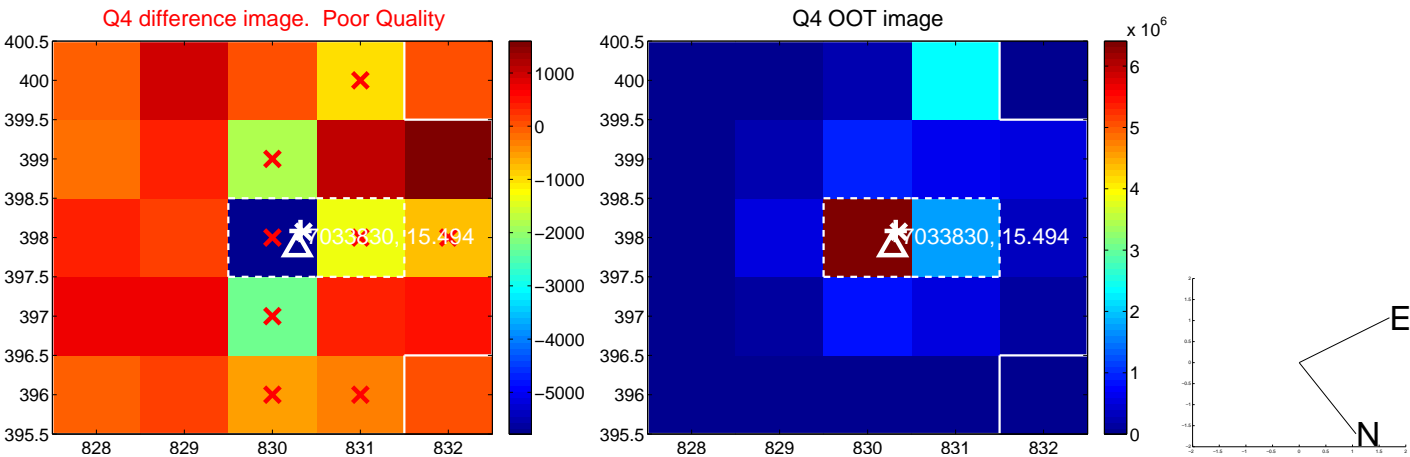
The direct PRF centroid is offset from the target star catalog position by about 0.24 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.460 ± 0.269	1.71	-0.093 ± 0.323	0.450 ± 0.266
PRF-fit source offset from KIC position	0.390 ± 0.267	1.46	0.038 ± 0.323	0.388 ± 0.266
photometric centroid source offset	1.54 ± 1.00	1.54	1.54 ± 1.00	-0.06 ± 0.63



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.

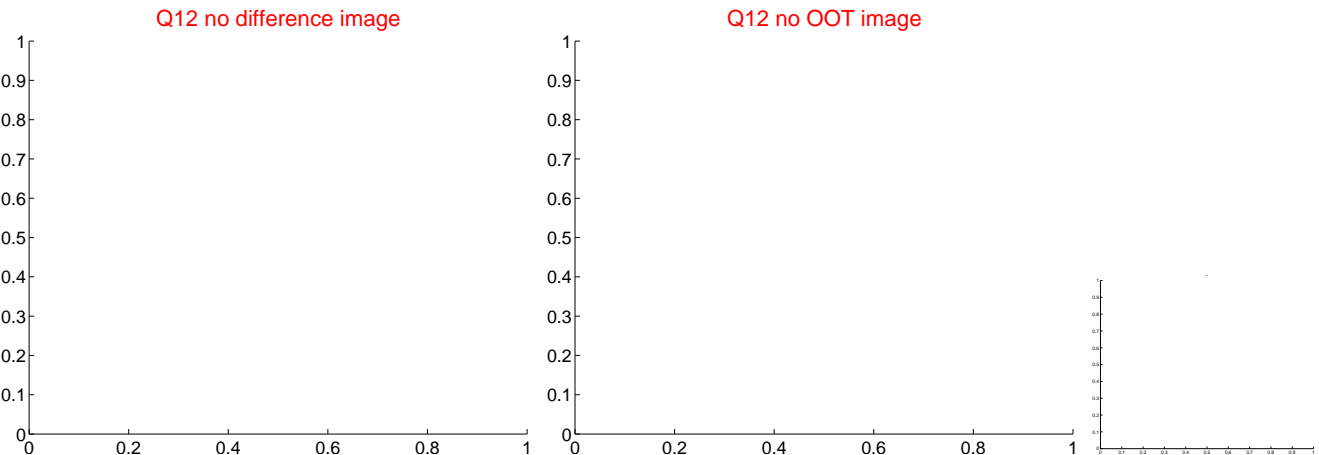
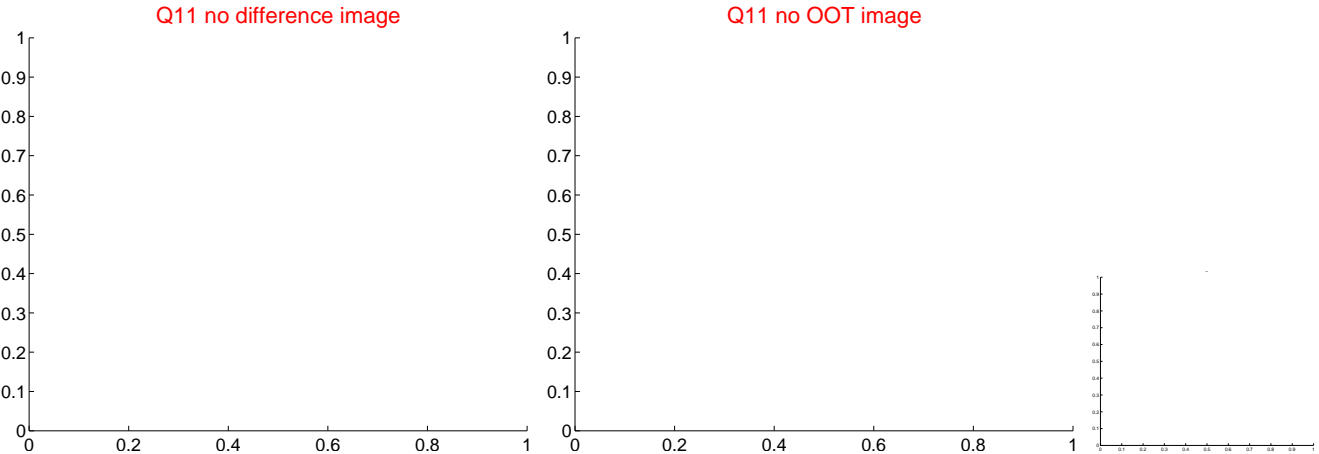
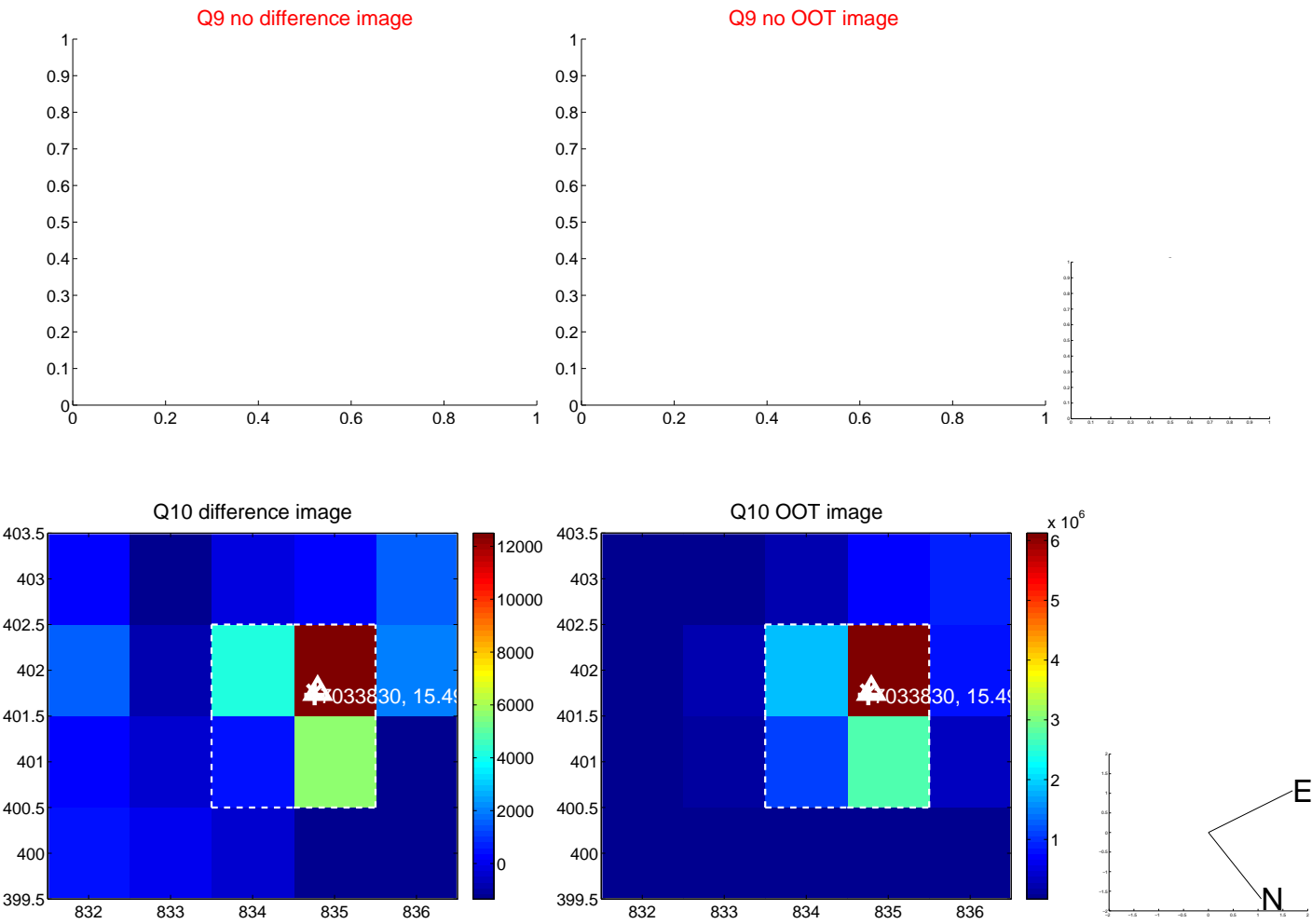
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



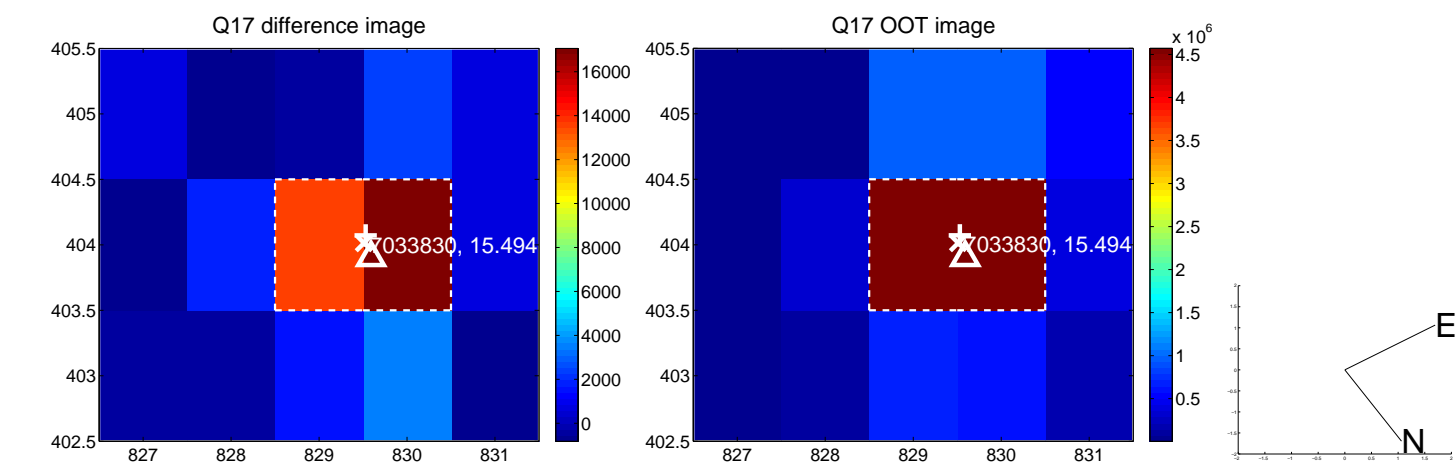
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



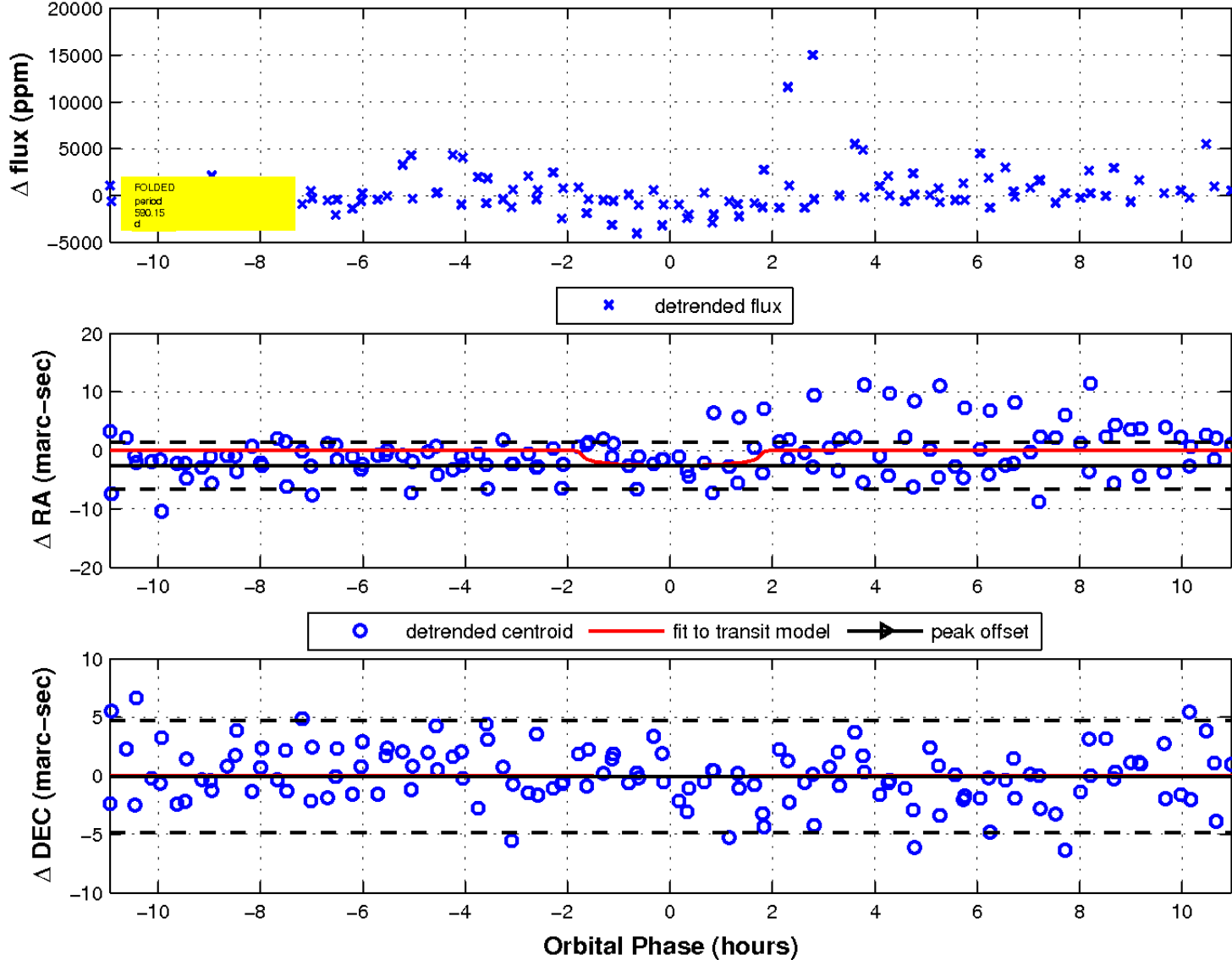
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



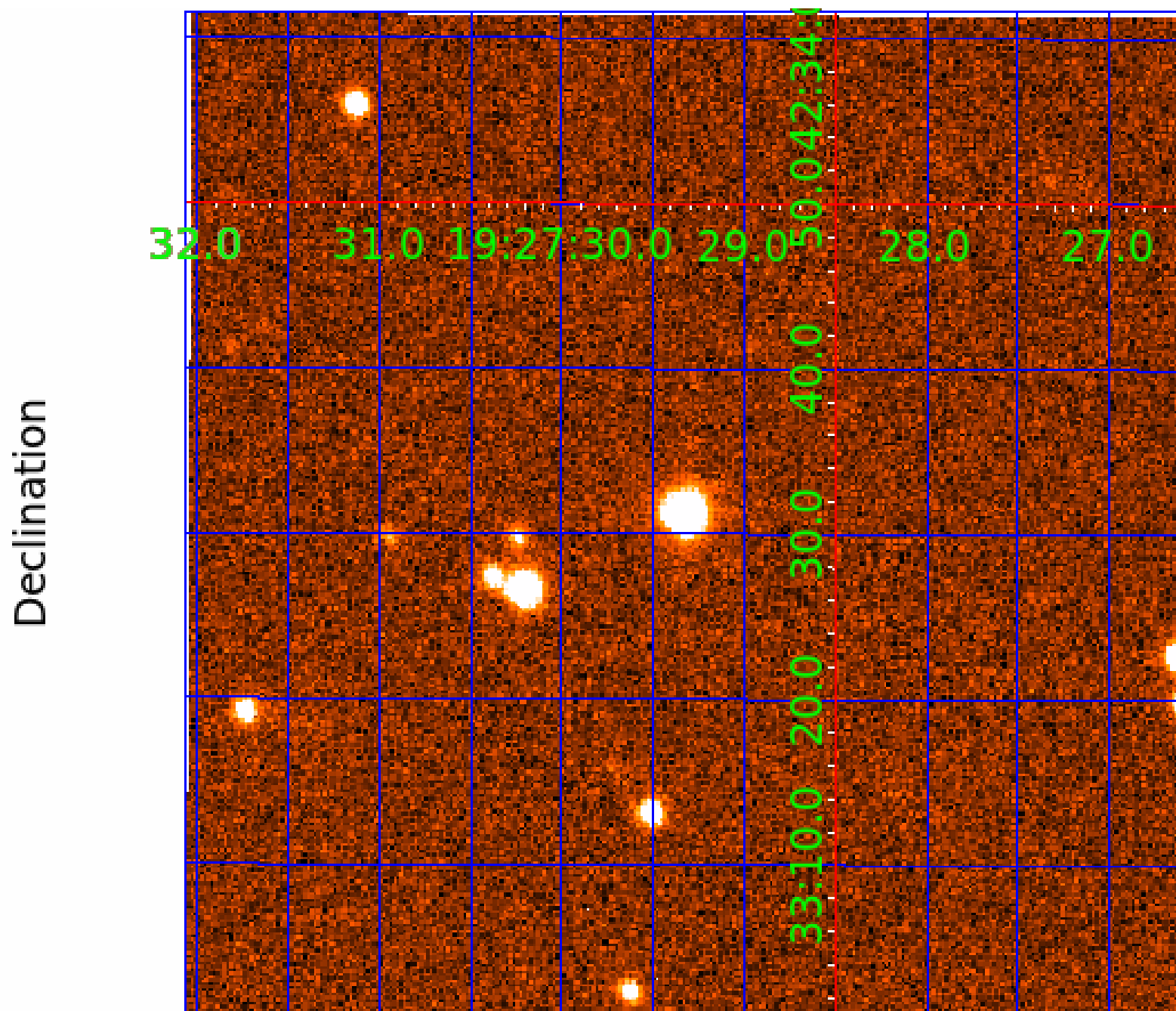
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 4 of 7



UKIRT Image



KIC 007033830

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})
007033830-01	OBS	No	498.558659	578.358673	3474.8	9.227	16.6	8.0	0.30	3384	1.98	0.02
007033830-02	OBS	No	675.305827	204.981968	3631.1	9.662	13.8	7.2	0.30	3384	2.24	0.01
007033830-03	OBS	No	324.521305	200.597642	3066.3	5.960	16.5	8.7	0.30	3384	1.67	0.03
007033830-04	OBS	No	590.146738	388.979965	2254.3	3.686	14.0	5.4	0.30	3384	1.43	0.01
007033830-05	OBS	No	328.199048	167.414247	3882.7	7.679	13.0	8.4	0.30	3384	2.22	0.03
007033830-06	OBS	No	424.992669	370.282661	3861.9	4.568	13.1	7.7	0.30	3384	1.91	0.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007033830-01	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—CENT_FEW_DIFFS
007033830-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007033830-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007033830-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST
007033830-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—HALO_GHOST
007033830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

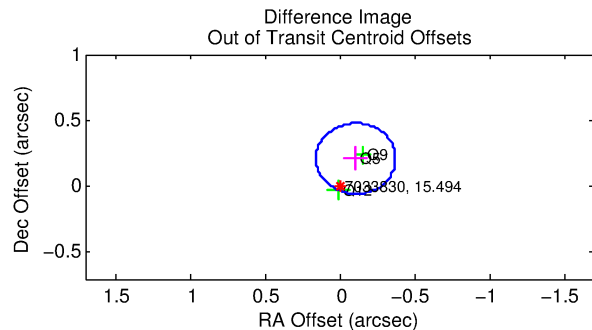
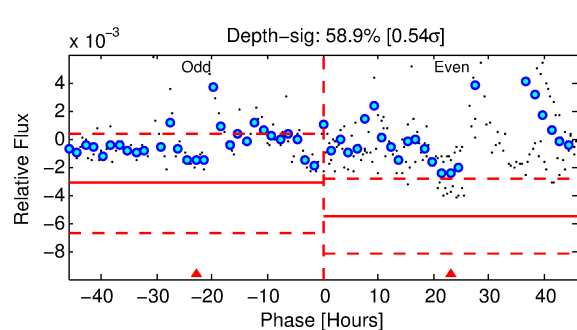
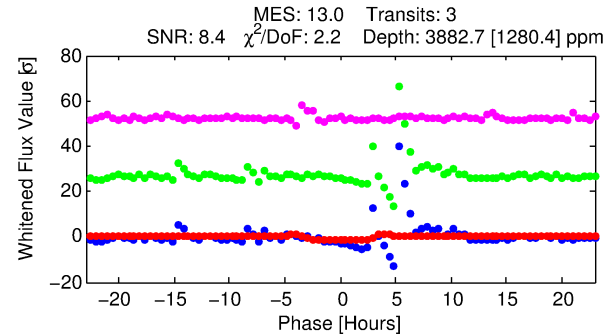
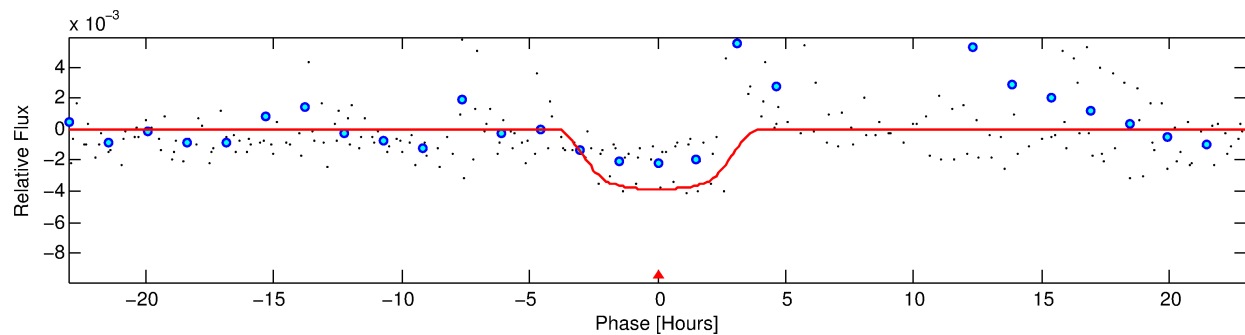
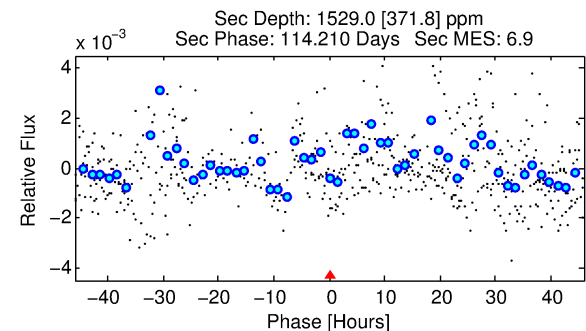
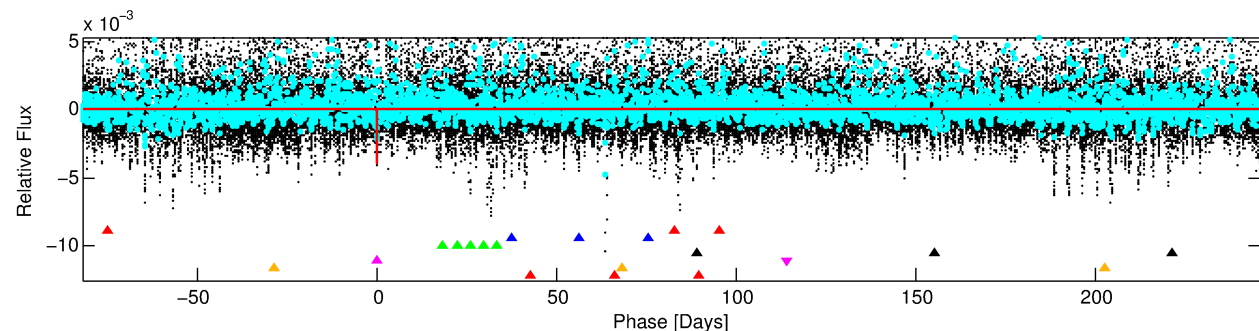
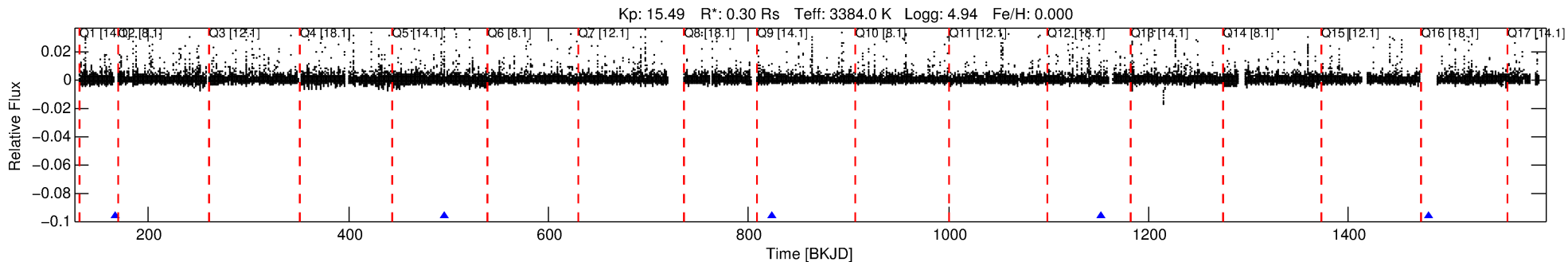
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007033830-05

No Significant Match Found

DV One-Page Summary

KIC: 7033830 Candidate: 5 of 7 Period: 328.199 d



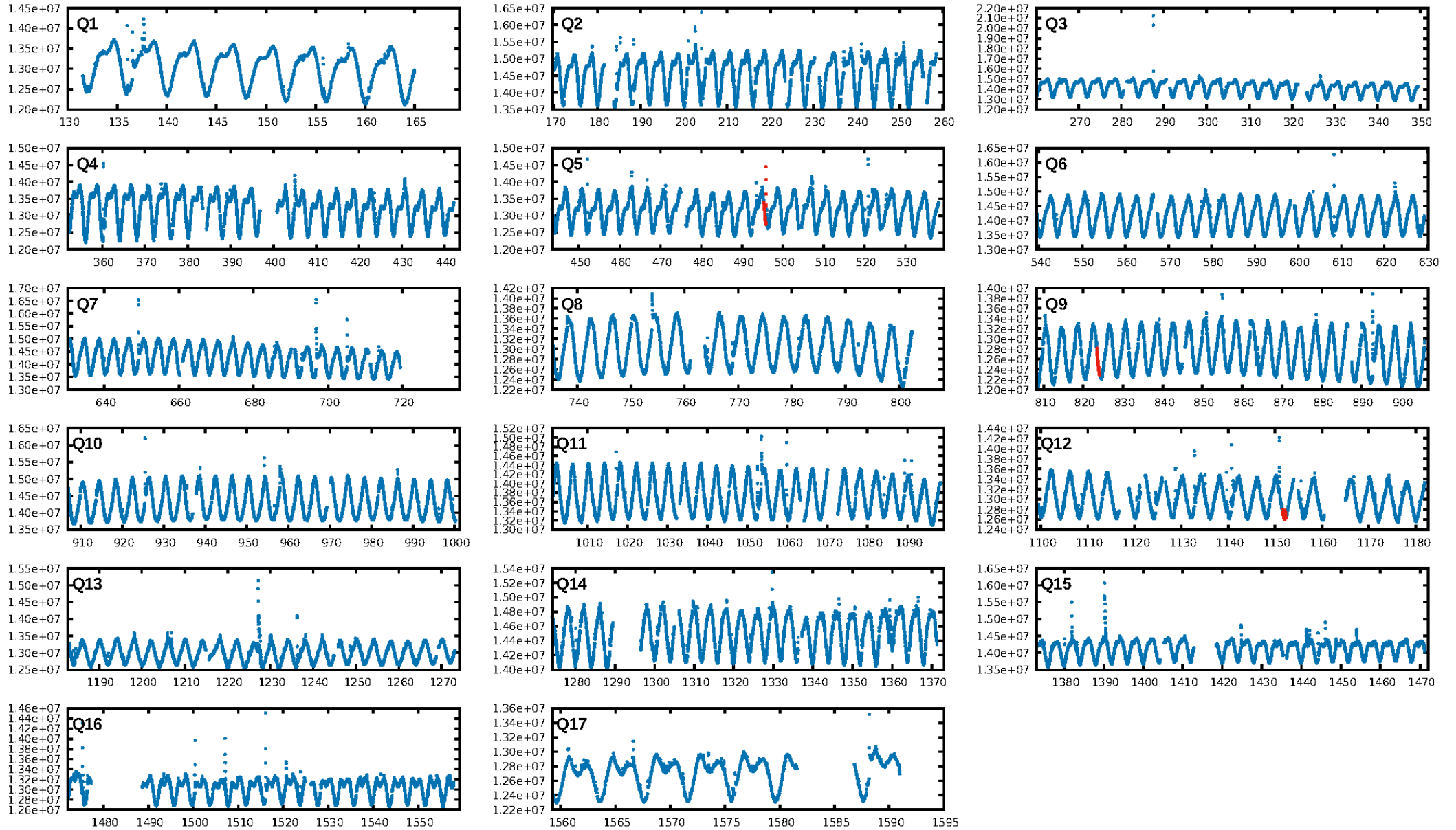
DV Fit Results:

Period = 328.19905 [0.02113] d
Epoch = 167.4142 [0.0480] BKJD
Rp/R* = 0.0666 [0.0148]
a/R* = 199.85 [92.92]
b = 0.87 [0.13]
Seff = 0.03 [0.00]
Teq = 105 [3] K
Rp = 2.22 [0.56] Re
a = 0.6213 [0.0559] AU
Ag = 66012.85 [34155.09] [1.93σ]
Teffp = 2592 [330] K [7.55σ]

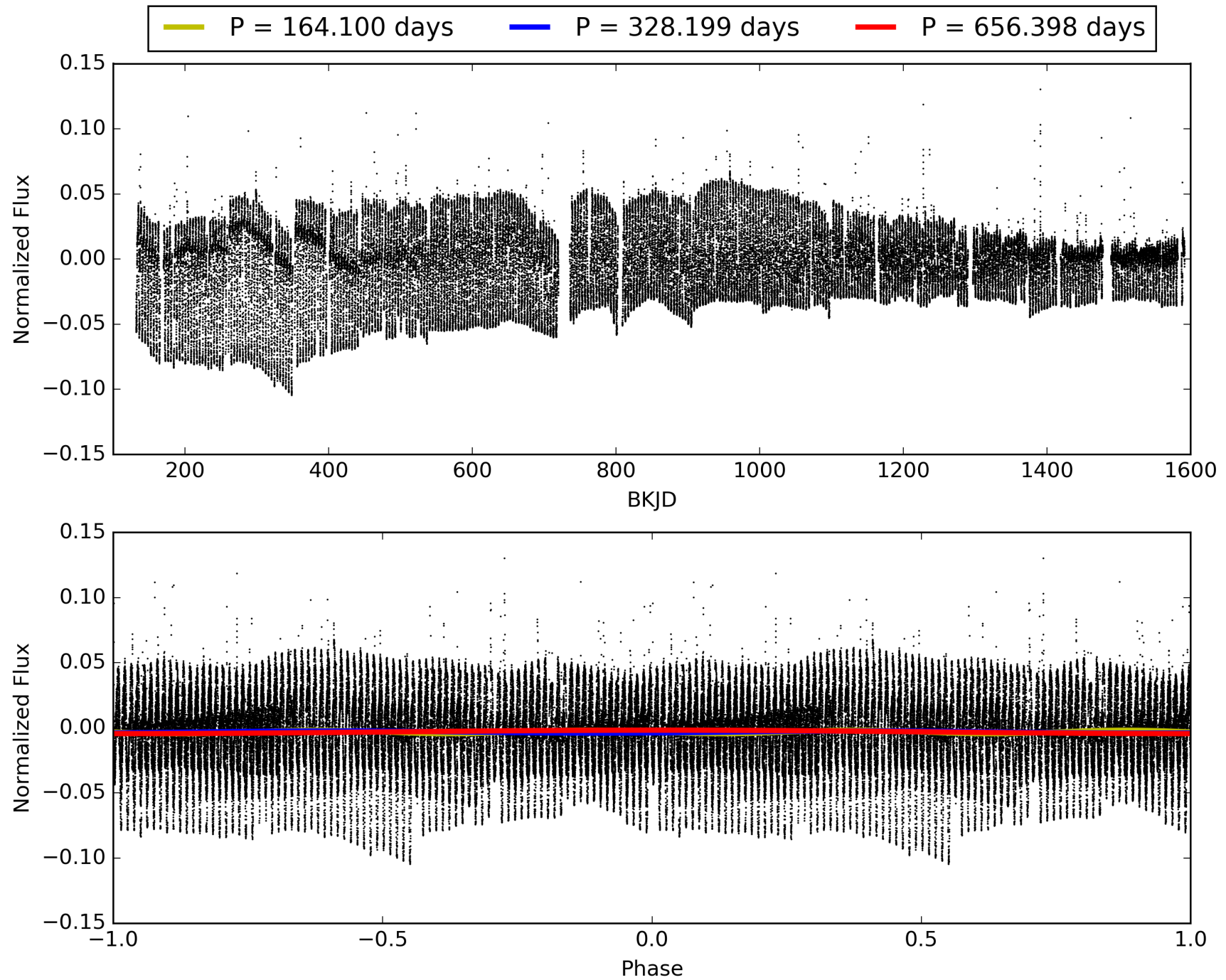
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [9.08σ]
LongPeriod-sig: 100.0% [260.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 62.9%
Bootstrap-pfa: 2.45e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.04369
Centroid-sig: 6.3%
Centroid-so: 0.364 arcsec [0.77σ]
OotOffset-rm: 0.237 arcsec [2.67σ]
KicOffset-rm: 0.071 arcsec [0.68σ]
OotOffset-st: 0/0/1/2 [3]
KicOffset-st: 0/0/1/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 007033830-05, PDC Light Curves

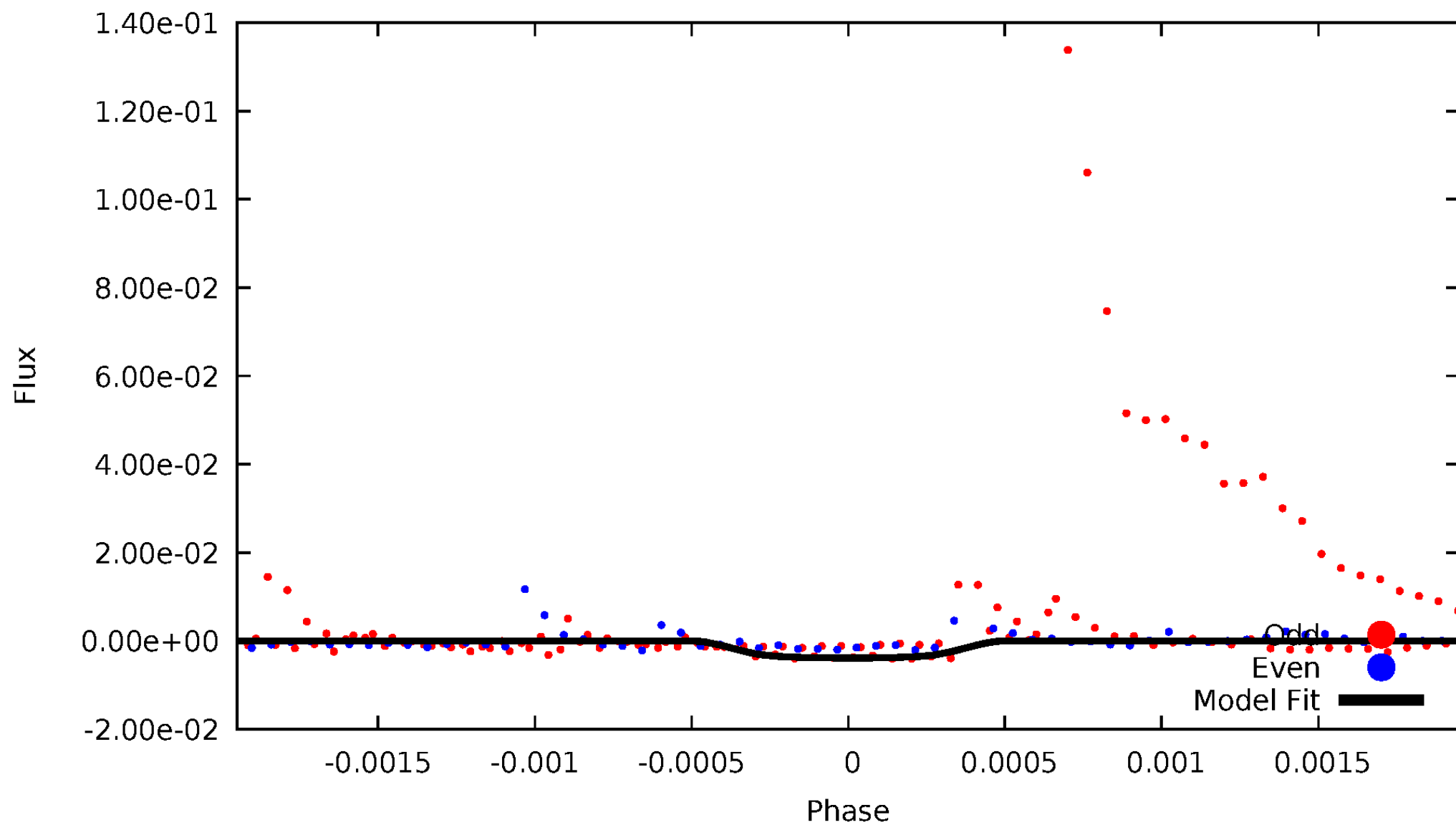


TCE 007033830-05



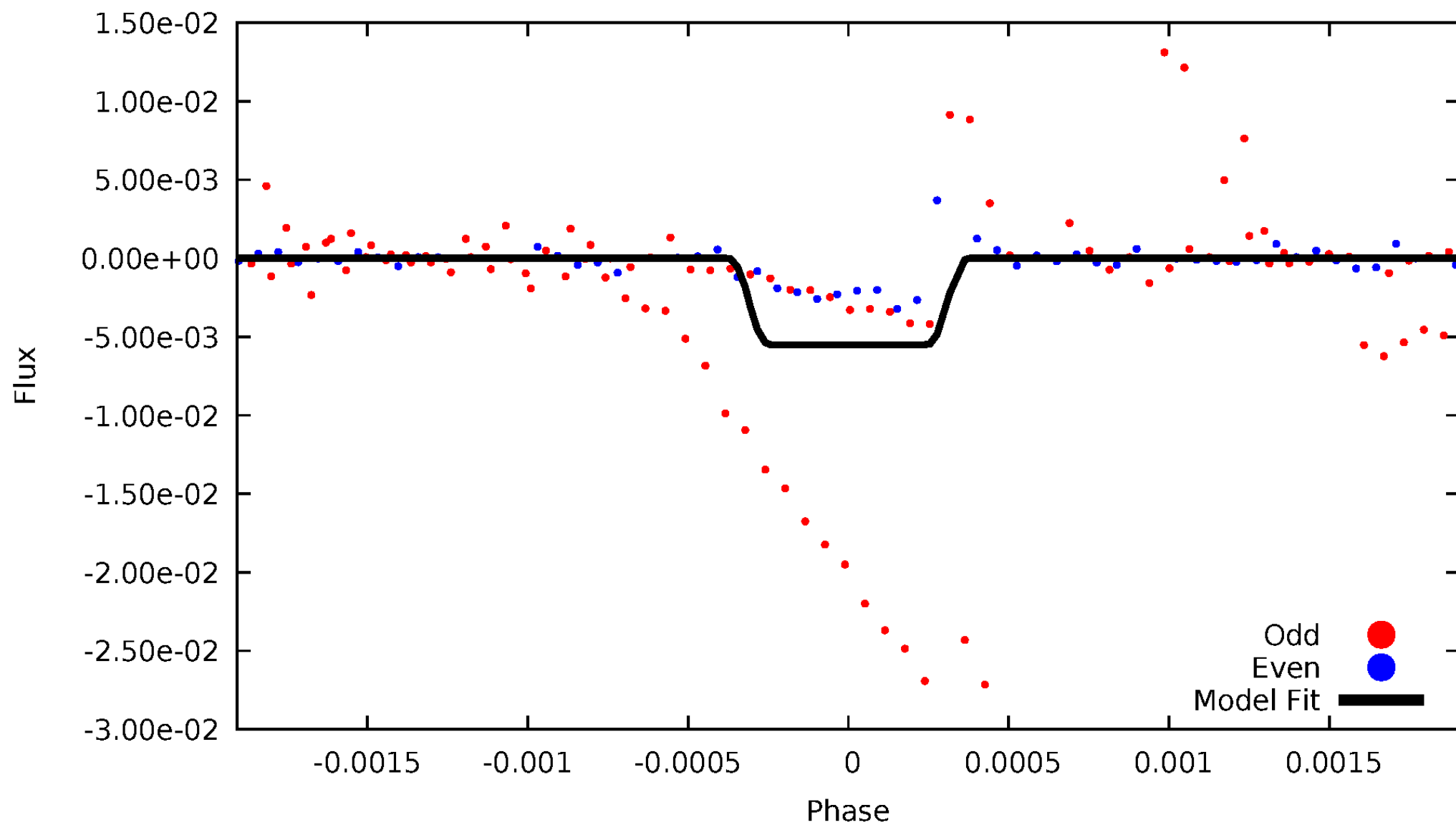
DV Odd/Even

TCE 007033830-05



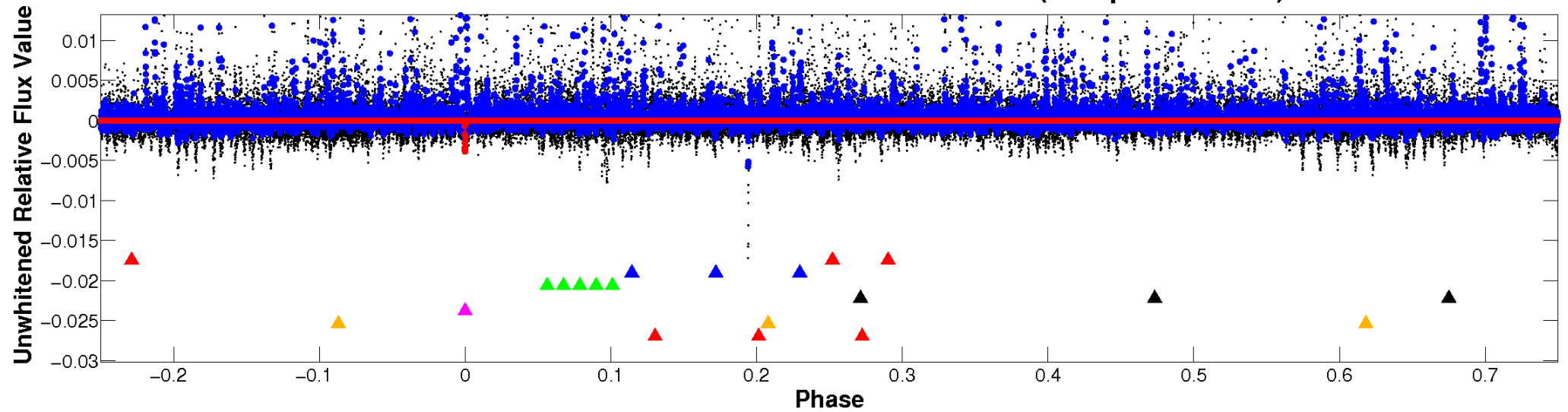
ALT Odd/Even

TCE 007033830-05

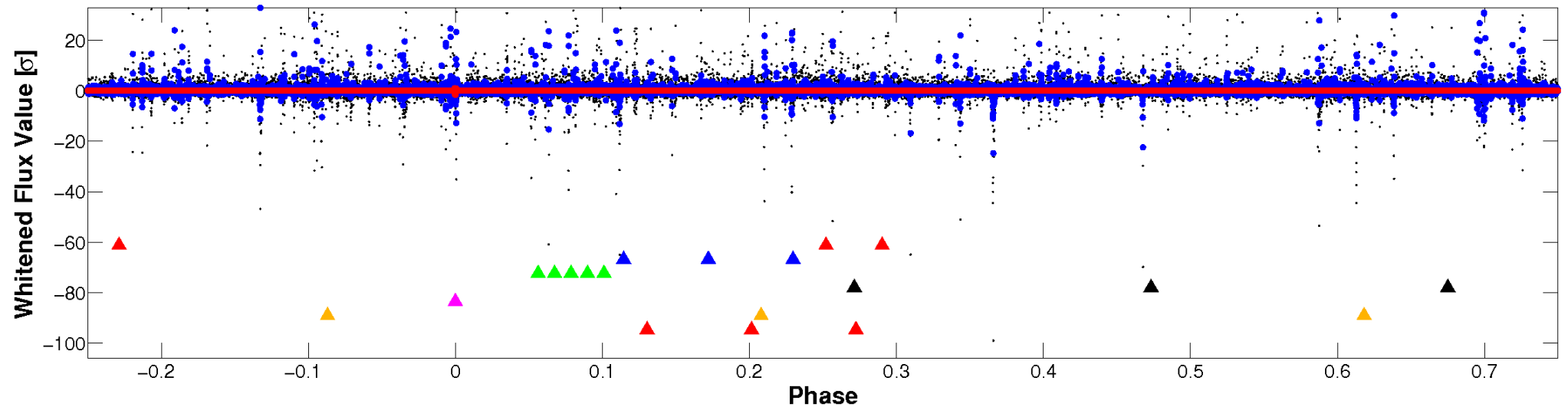


Non-Whitened Vs. Whitened Light Curve

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

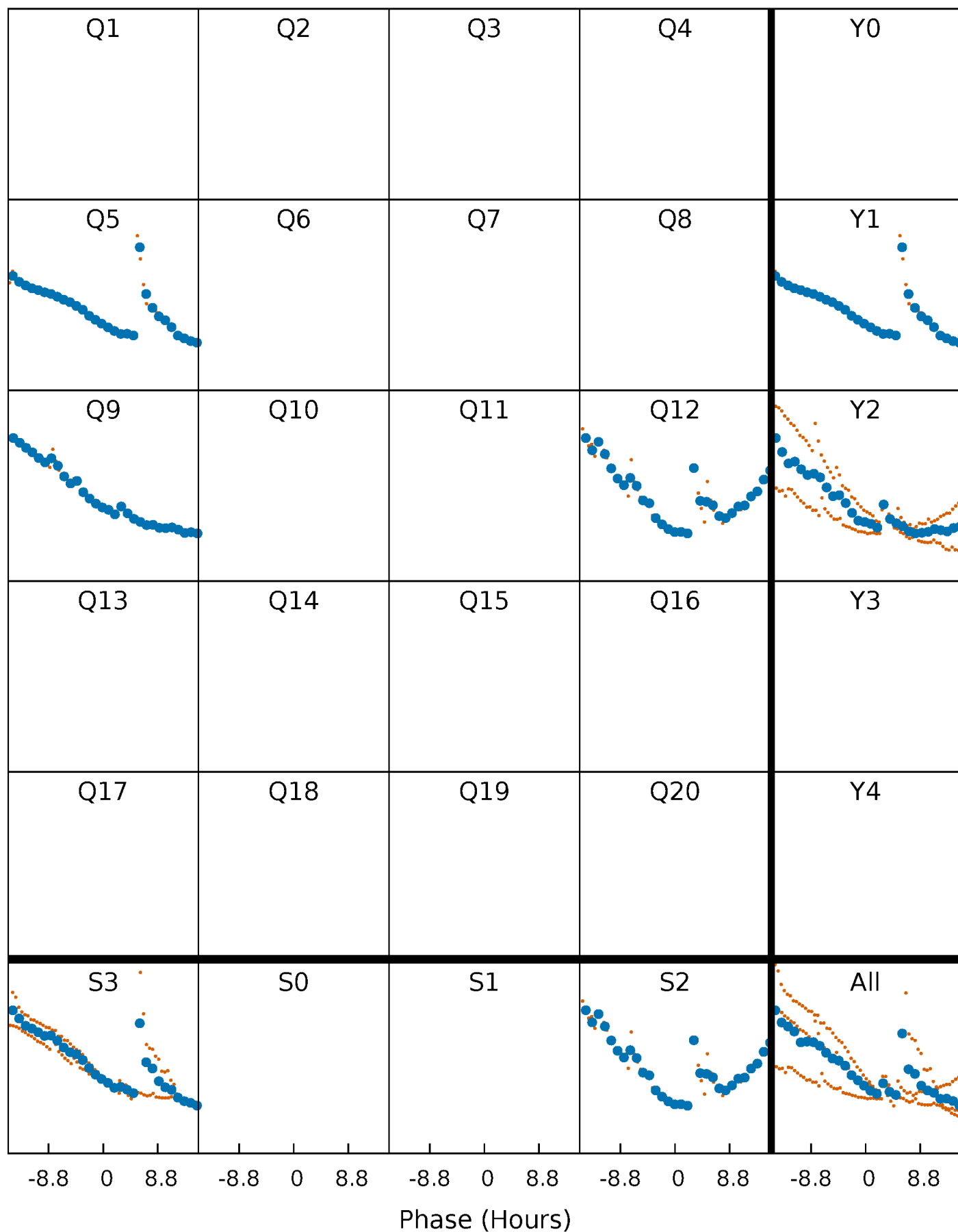


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



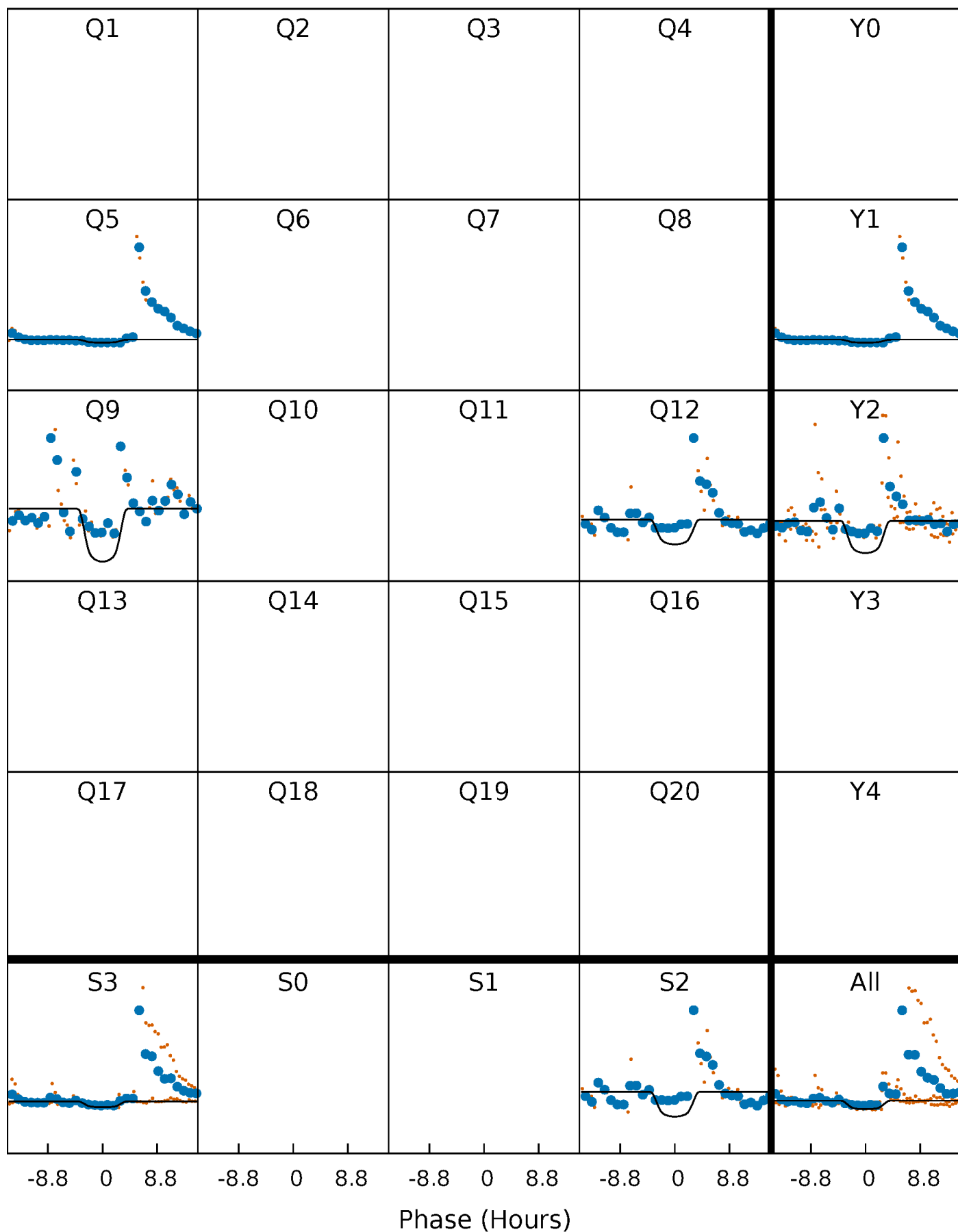
PDC Quarter-Phased Transit Curves

TCE 007033830-05 $P=328.199048$ Days $T_0=167.414247$ (BKJD)



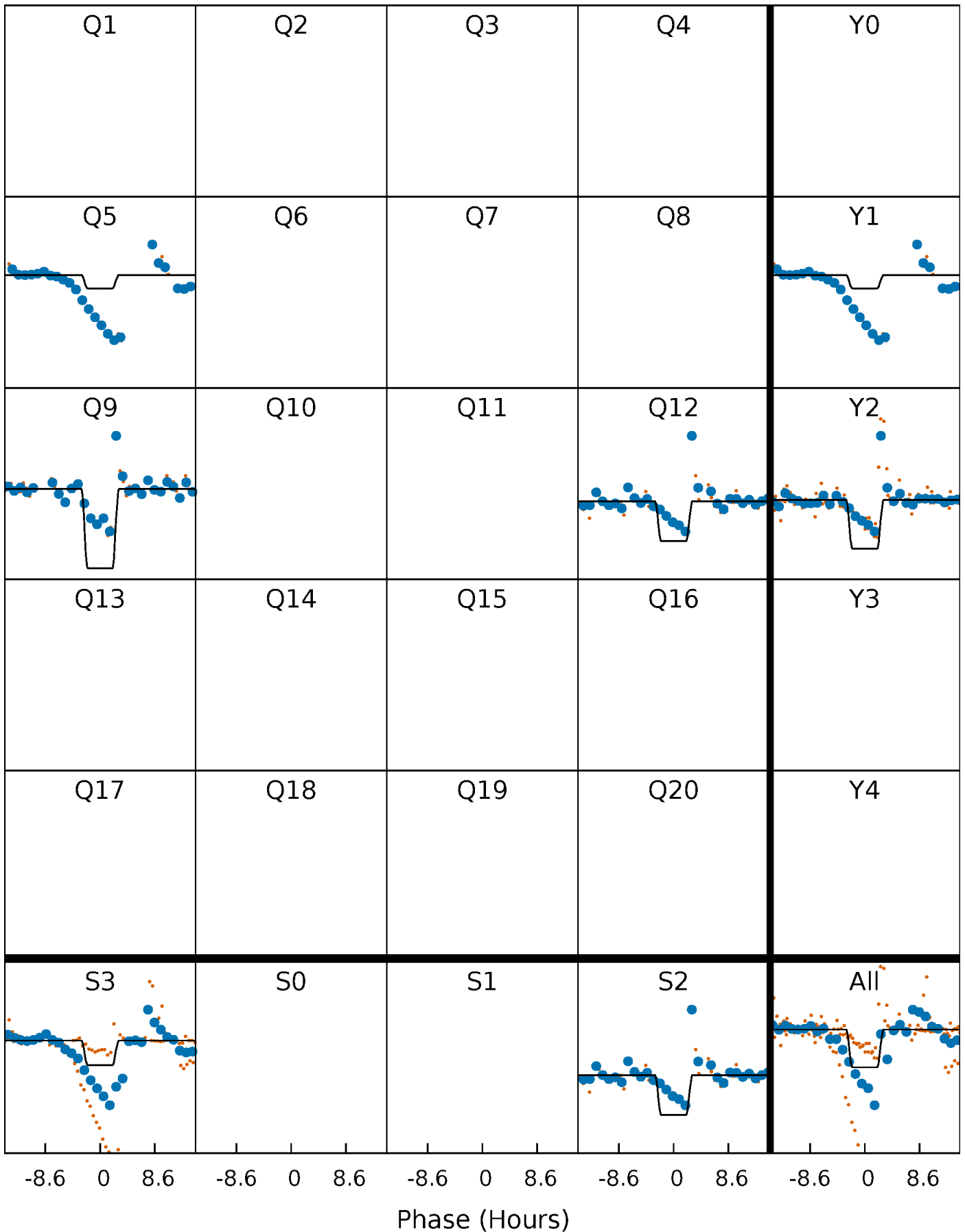
DV Quarter-Phased Transit Curves

TCE 007033830-05 $P=328.199048$ Days $T_0=167.414247$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

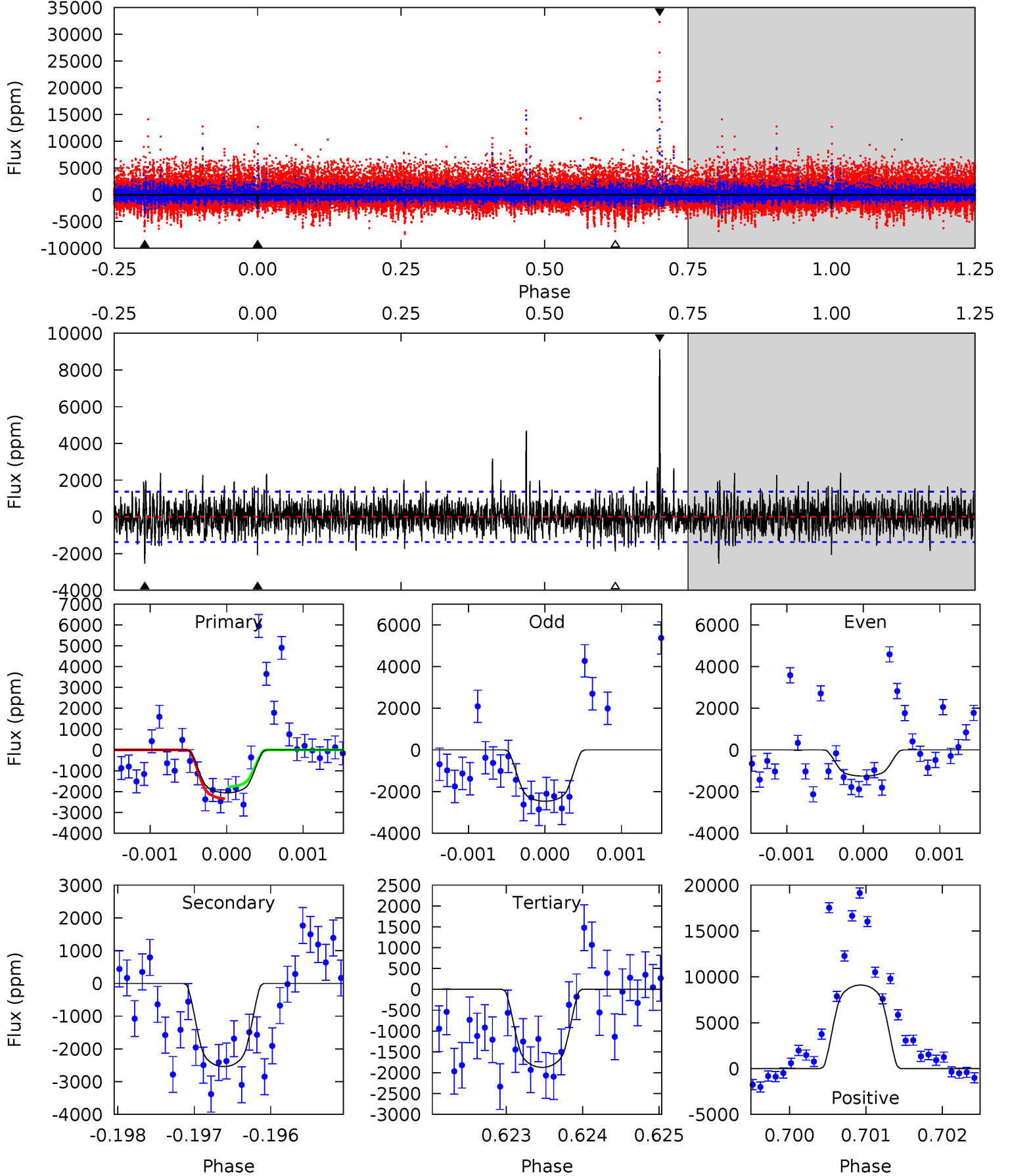
TCE 007033830-05 $P=328.190218$ Days $T_0=167.451967$ (BKJD)



DV Model-Shift Uniqueness Test

007033830-05, P = 328.199048 Days, E = 167.414247 Days

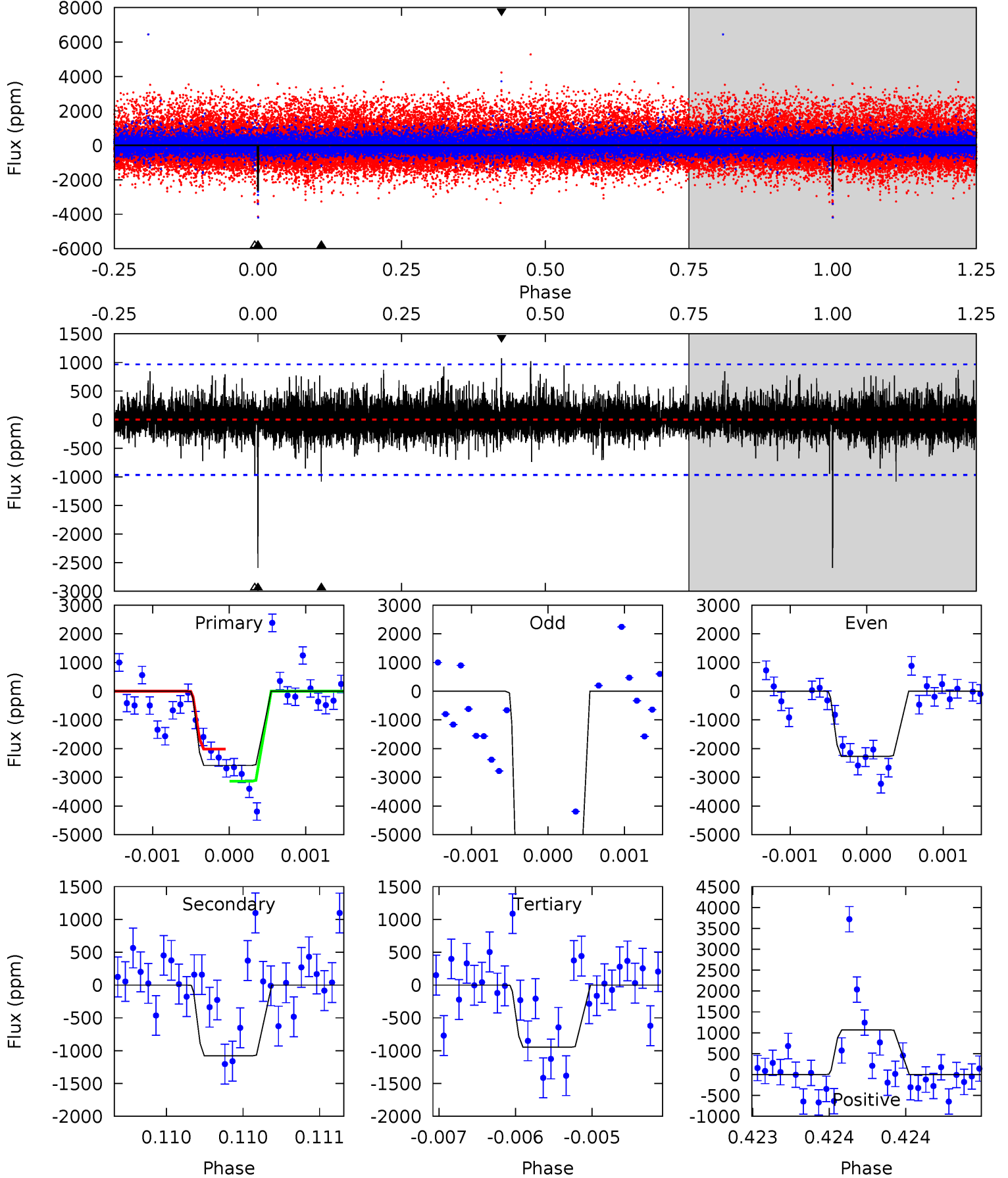
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.18	10.1	7.44	36.2	5.45	3.29	2.45	0.74	-28.0	2.66	-26.1	1.49	1.44	0.78	1.13



Alt Model-Shift Uniqueness Test

007033830-05, P = 328.190218 Days, E = 167.451967 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.8	6.15	5.40	6.11	5.51	3.38	1.08	9.35	8.65	0.75	0.05	27.2	3.36	0.29	0



Stellar Parameters For KIC 007033830

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3384^{+44}_{-40}	$4.942^{+0.045}_{-0.036}$	$0.000^{+0.100}_{-0.100}$	$0.305^{+0.038}_{-0.035}$	$0.297^{+0.048}_{-0.039}$	$14.760^{+3.778}_{-2.762}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+12%/-11%	+16%/-13%	+26%/-19%
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 007033830-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2540 ± 252	$2.23^{+0.50}_{-0.52}$	146^{+3}_{-3}	3116^{+251}_{-182}	108805^{+80712}_{-36281}
Alt.	-1079 ± 175	$2.44^{+0.51}_{-0.50}$	146^{+3}_{-3}	2694^{+179}_{-136}	38530^{+23241}_{-13388}

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

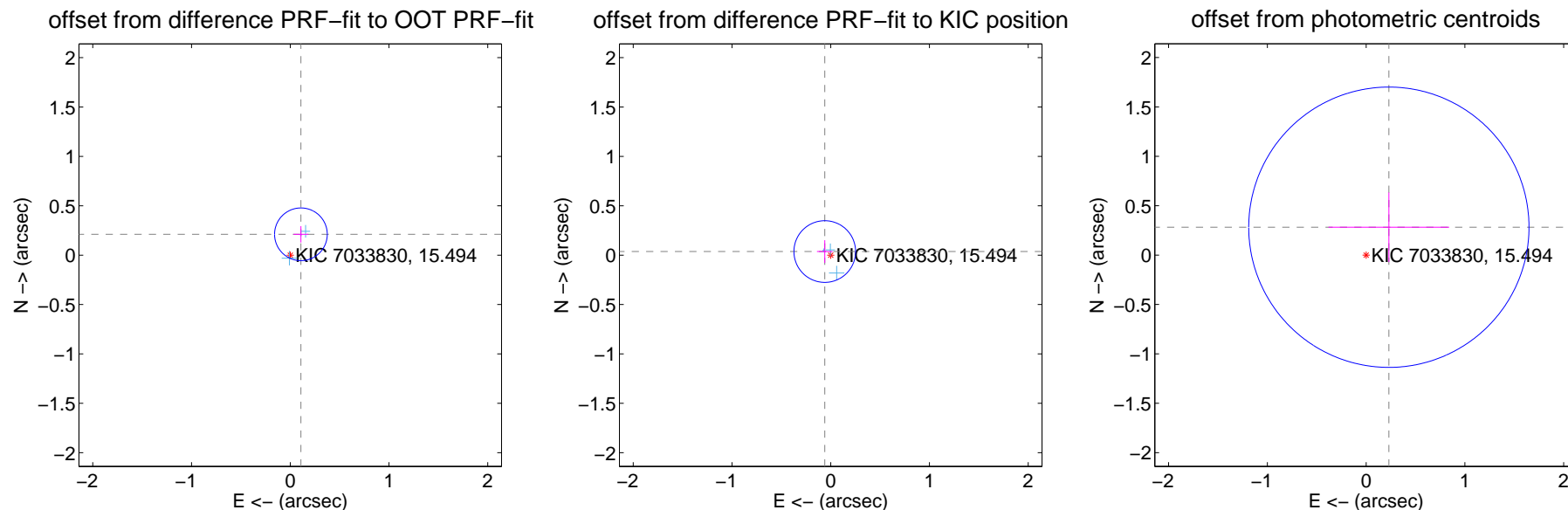
DV Centroid Data

Supplemental centroid analysis for 007033830-05. Kepler magnitude: 15.49. Transit SNR 8.37

There are 3 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.237 ± 0.089	2.67	-0.108 ± 0.075	0.211 ± 0.083
PRF-fit source offset from KIC position	0.071 ± 0.104	0.68	0.060 ± 0.079	0.037 ± 0.115
photometric centroid source offset	0.36 ± 0.47	0.77	-0.23 ± 0.61	0.28 ± 0.35

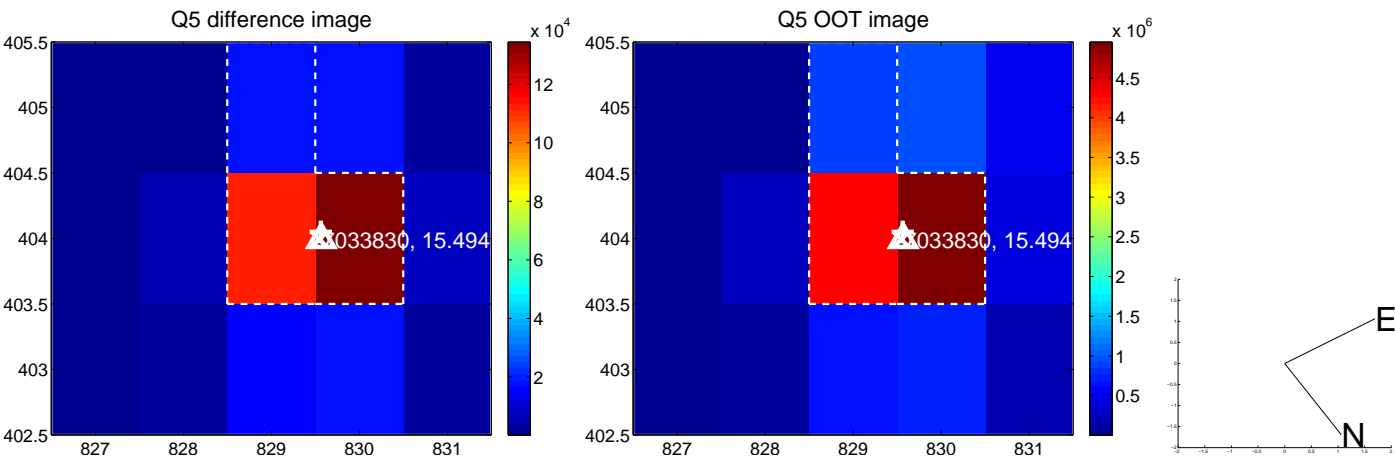


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

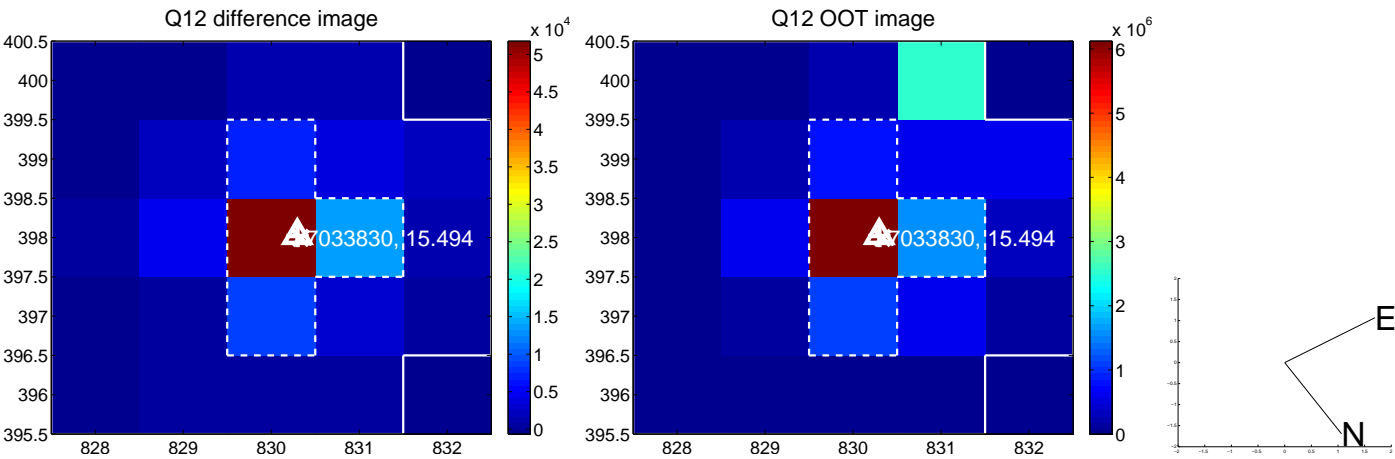
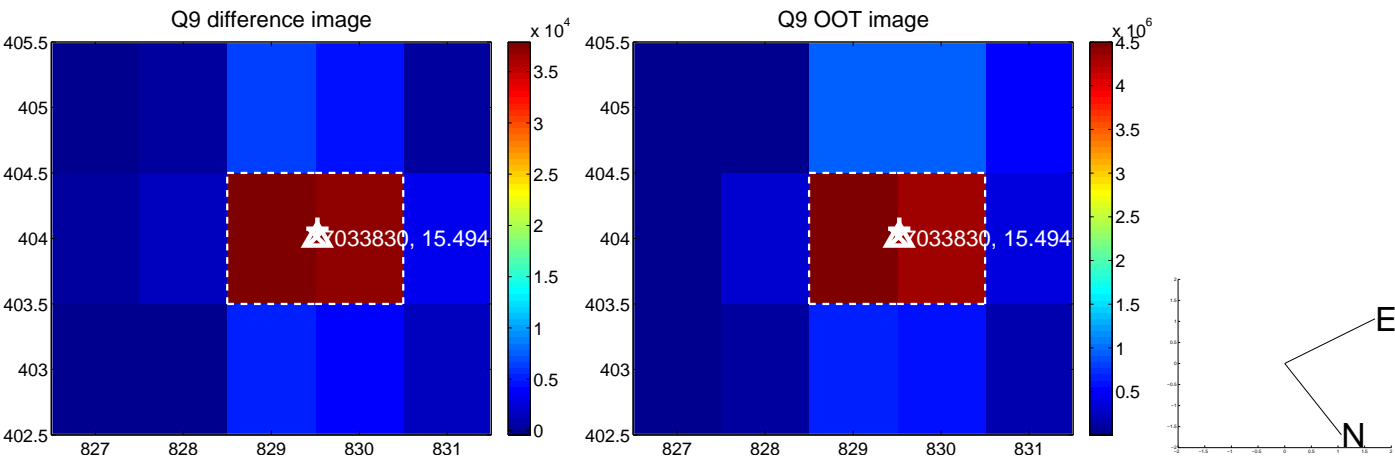
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



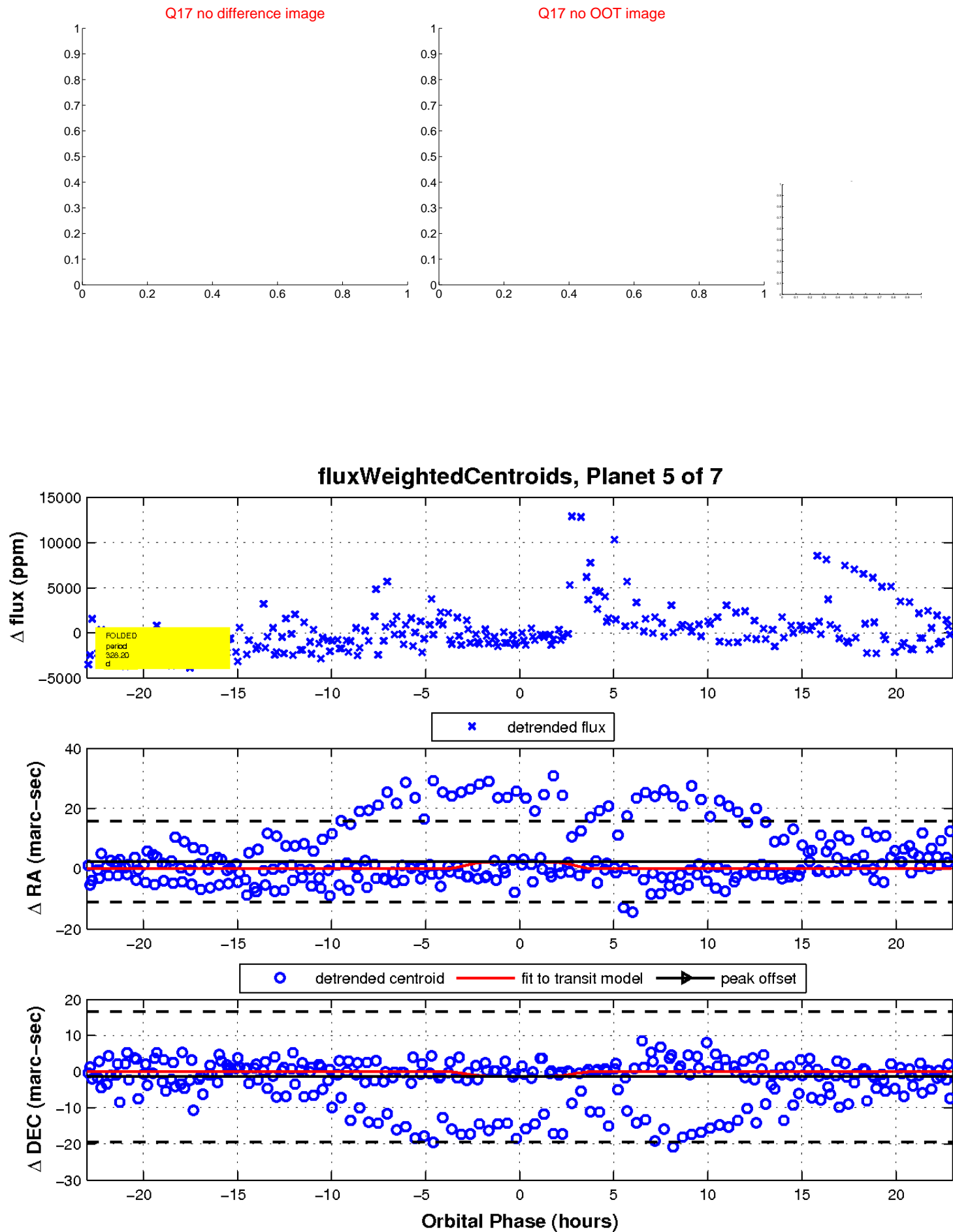
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



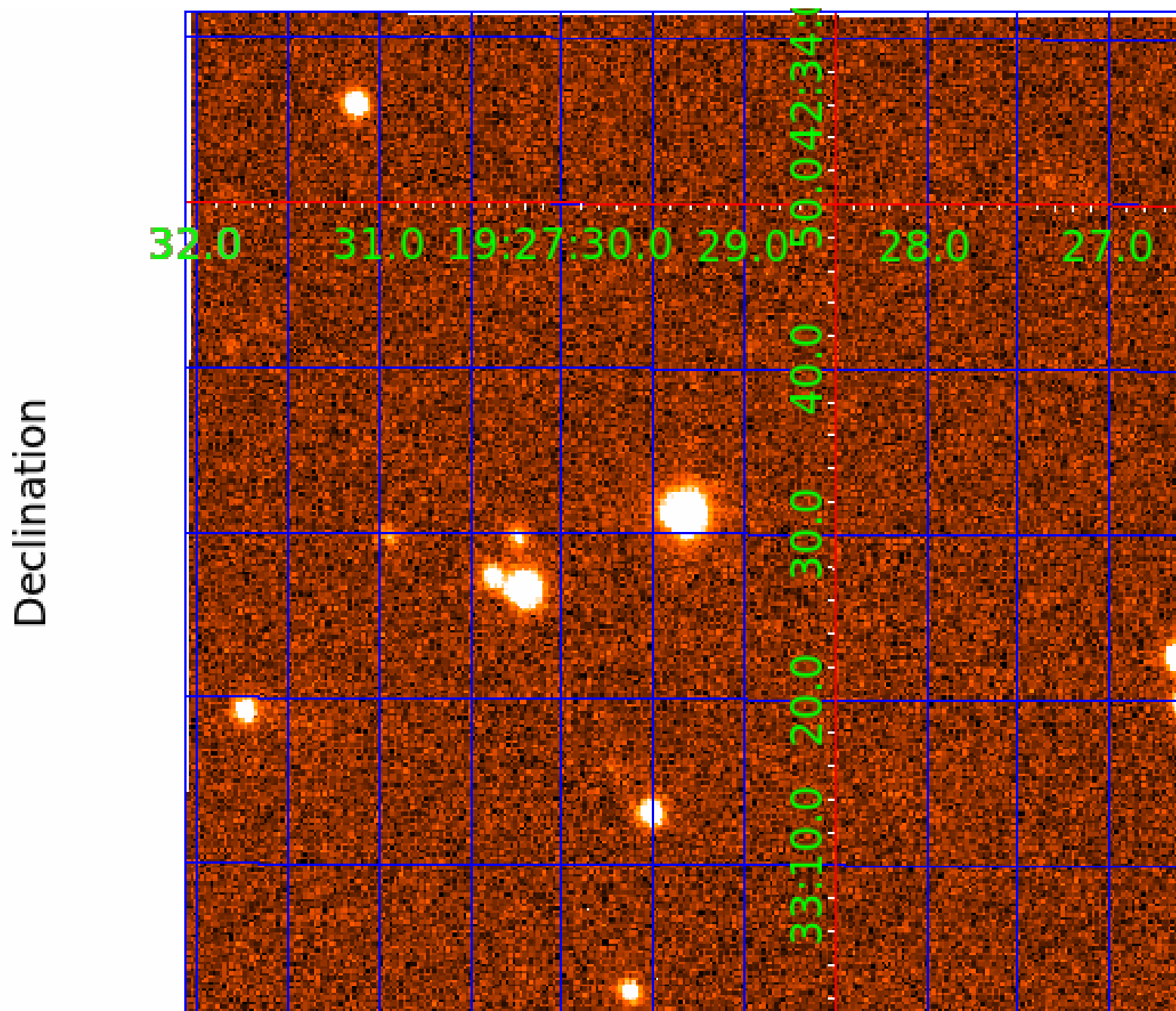
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 007033830

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})
007033830-01	OBS	No	498.558659	578.358673	3474.8	9.227	16.6	8.0	0.30	3384	1.98	0.02
007033830-02	OBS	No	675.305827	204.981968	3631.1	9.662	13.8	7.2	0.30	3384	2.24	0.01
007033830-03	OBS	No	324.521305	200.597642	3066.3	5.960	16.5	8.7	0.30	3384	1.67	0.03
007033830-04	OBS	No	590.146738	388.979965	2254.3	3.686	14.0	5.4	0.30	3384	1.43	0.01
007033830-05	OBS	No	328.199048	167.414247	3882.7	7.679	13.0	8.4	0.30	3384	2.22	0.03
007033830-06	OBS	No	424.992669	370.282661	3861.9	4.568	13.1	7.7	0.30	3384	1.91	0.02

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007033830-01	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—CENT_FEW_DIFFS
007033830-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
007033830-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
007033830-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_TER_ALT—CENT_FEW_DIFFS—HALO_GHOST
007033830-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—HALO_GHOST
007033830-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—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.

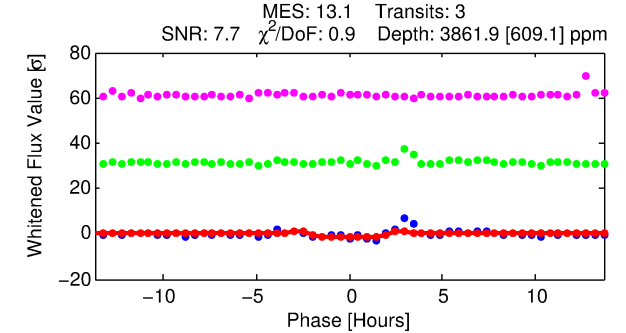
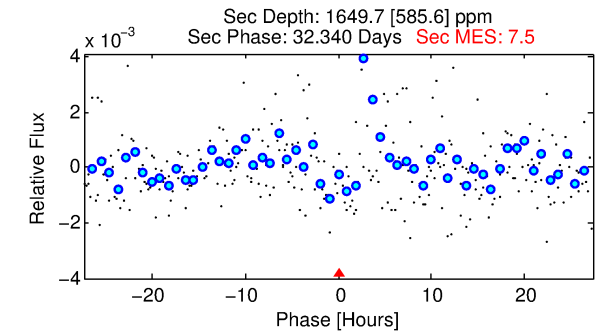
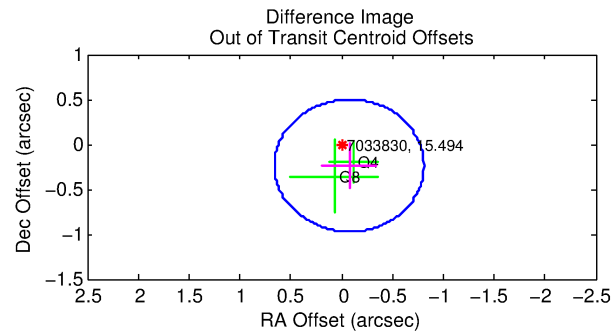
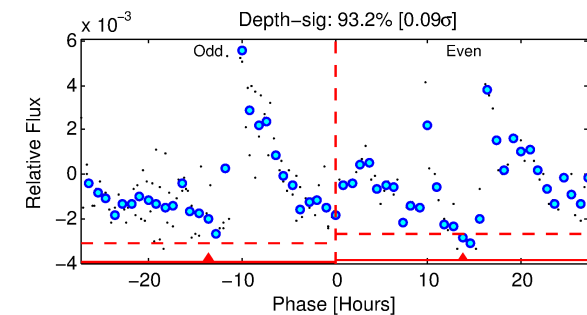
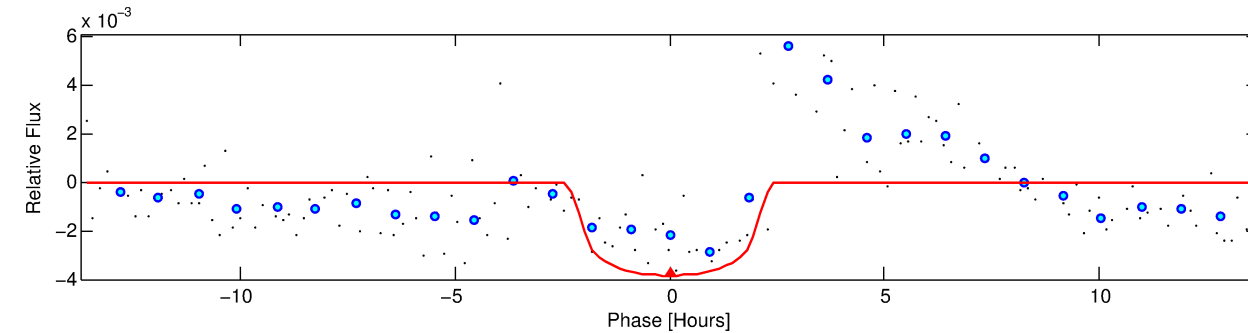
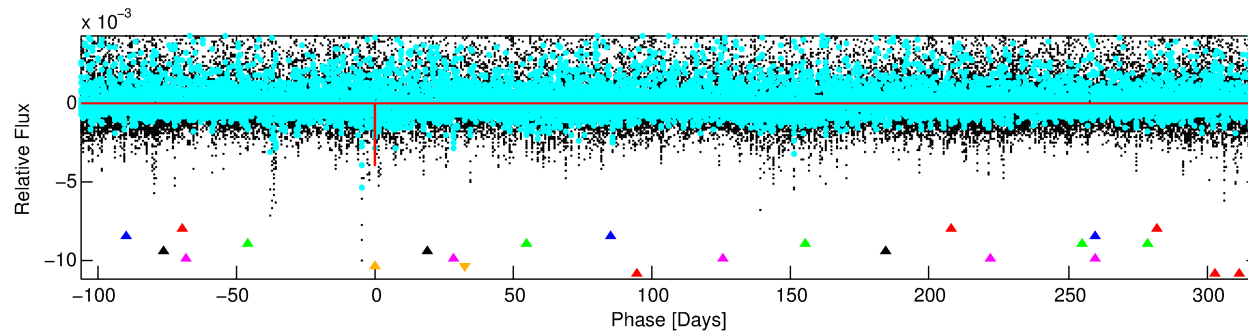
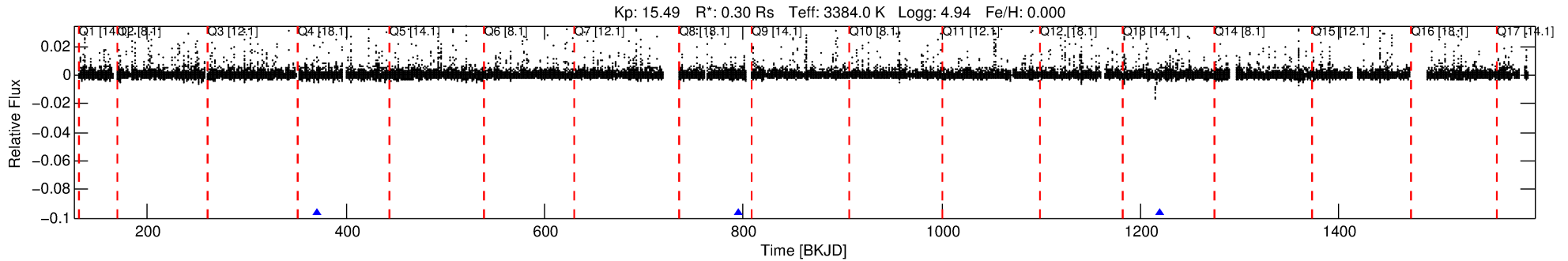
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007033830-06

No Significant Match Found

DV One-Page Summary

KIC: 7033830 Candidate: 6 of 7 Period: 424.993 d



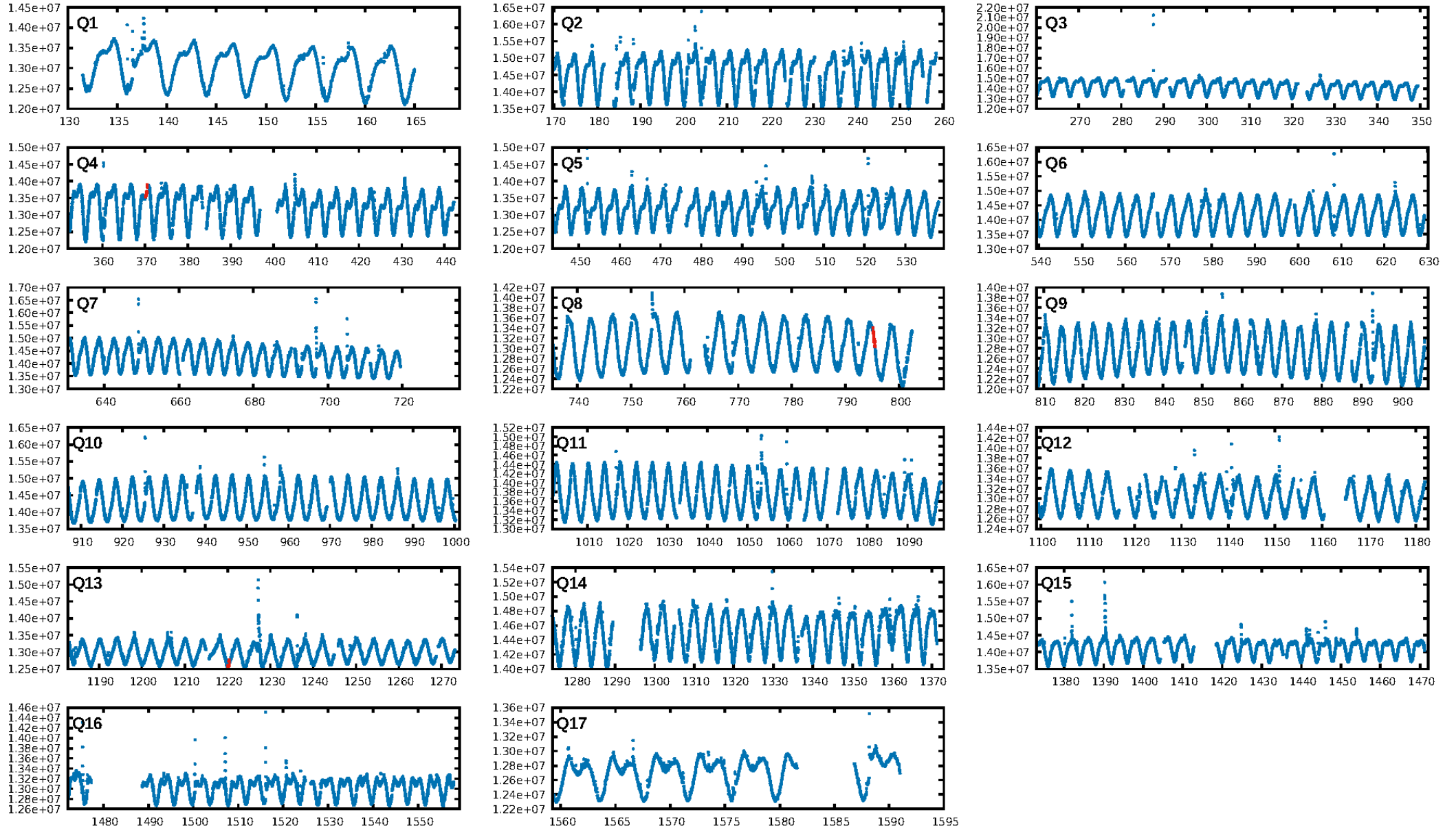
DV Fit Results:

Period = 424.99267 [0.00457] d
Epoch = 370.2827 [0.0059] BKJD
Rp/R* = 0.0573 [0.0244]
a/R* = 694.66 [1169.74]
b = 0.40 [3.51]
Seff = 0.02 [0.00]
Teq = 96 [3] K
Rp = 1.91 [0.85] Re
a = 0.7382 [0.0664] AU
Ag = 135972.17 [126193.94] [1.08 σ]
Teffp = 2849 [658] K [4.19 σ]

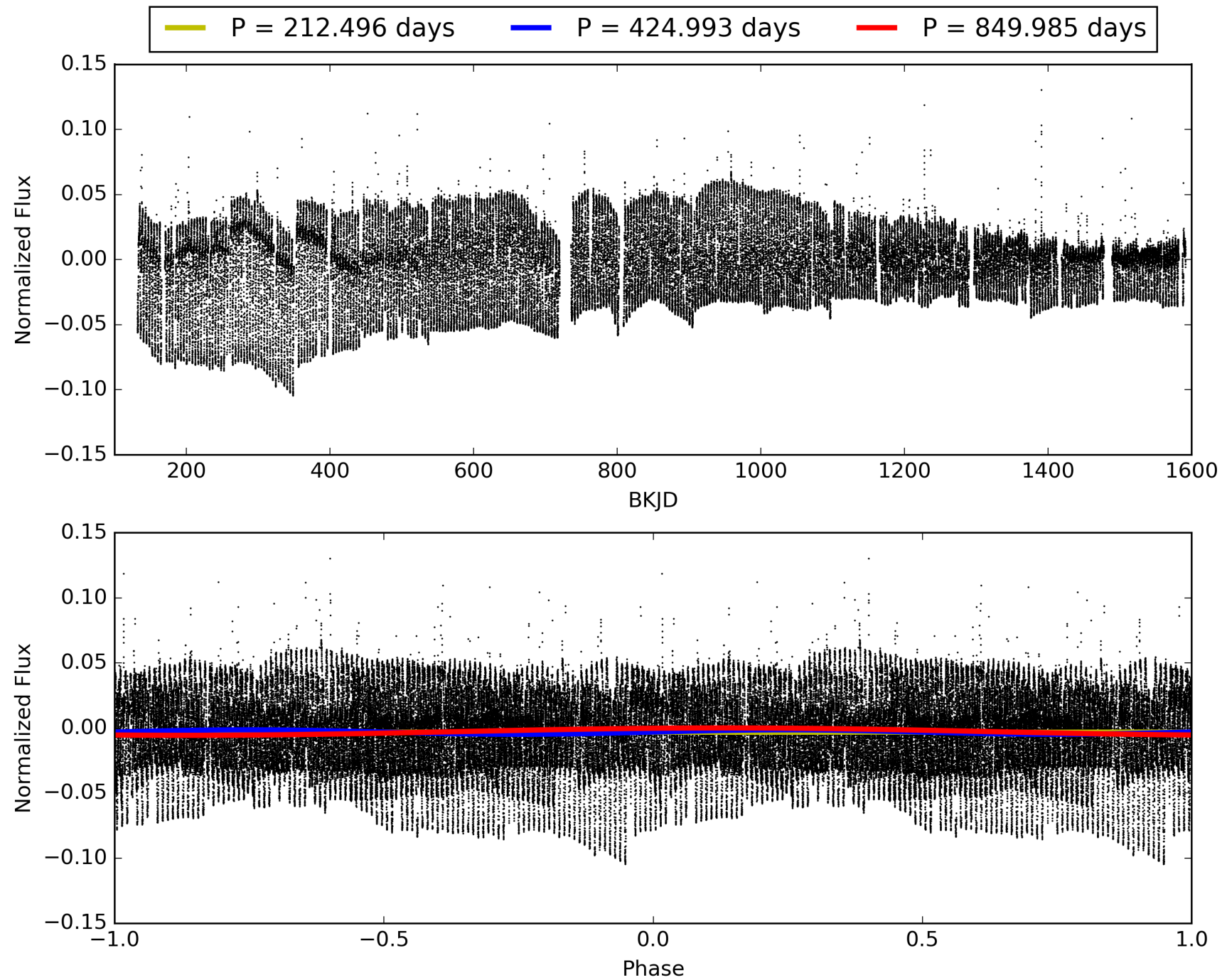
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [260.00 σ]
LongPeriod-sig: 100.0% [171.49 σ]
ModelChiSquare2-sig: 84.3%
ModelChiSquareGof-sig: 97.2%
Bootstrap-pfa: 1.47e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 7.231
Centroid-sig: 56.4%
Centroid-so: 0.111 arcsec [0.23 σ]
OotOffset-rm: 0.249 arcsec [1.02 σ]
OotOffset-st: 0/0/2/0 [2]
KicOffset-rm: 0.385 arcsec [1.56 σ]
KicOffset-st: 0/0/2/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

TCE 007033830-06, PDC Light Curves

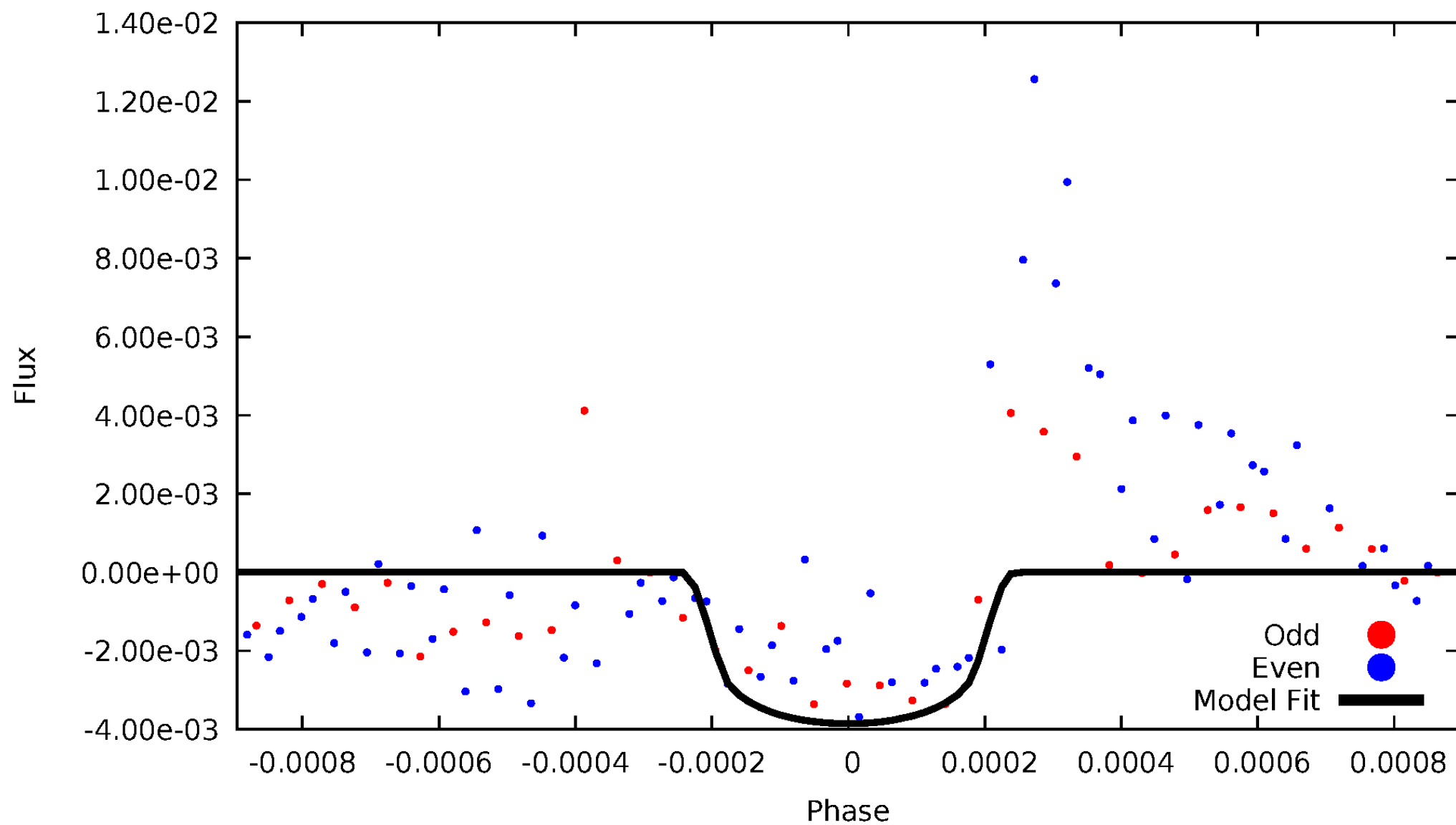


TCE 007033830-06



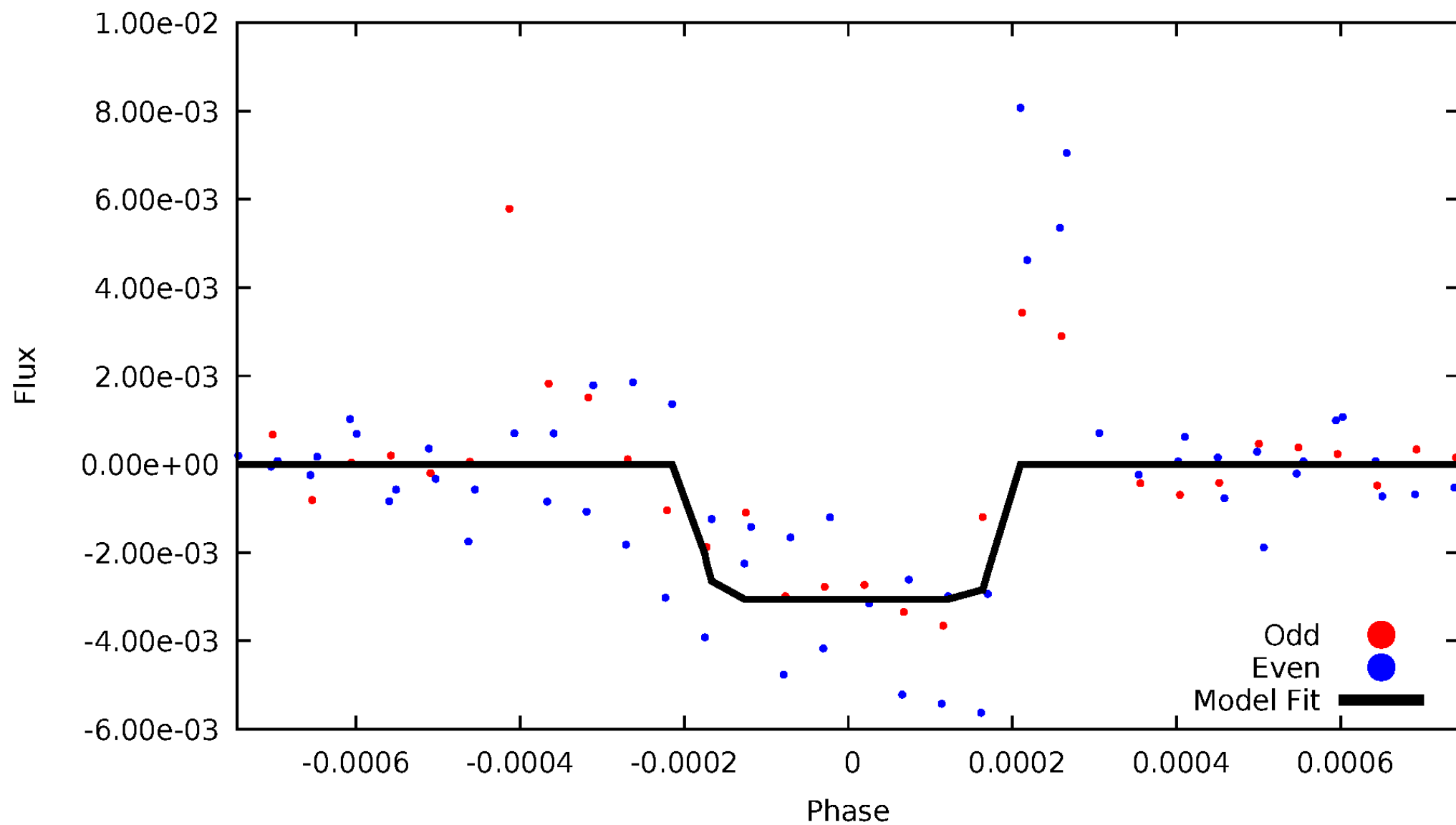
DV Odd/Even

TCE 007033830-06



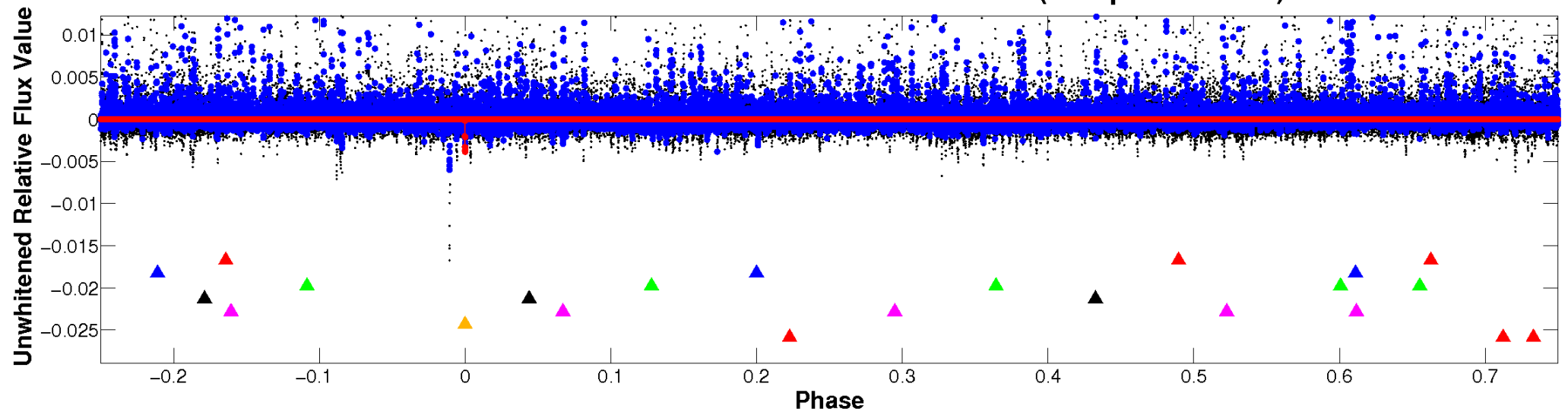
ALT Odd/Even

TCE 007033830-06

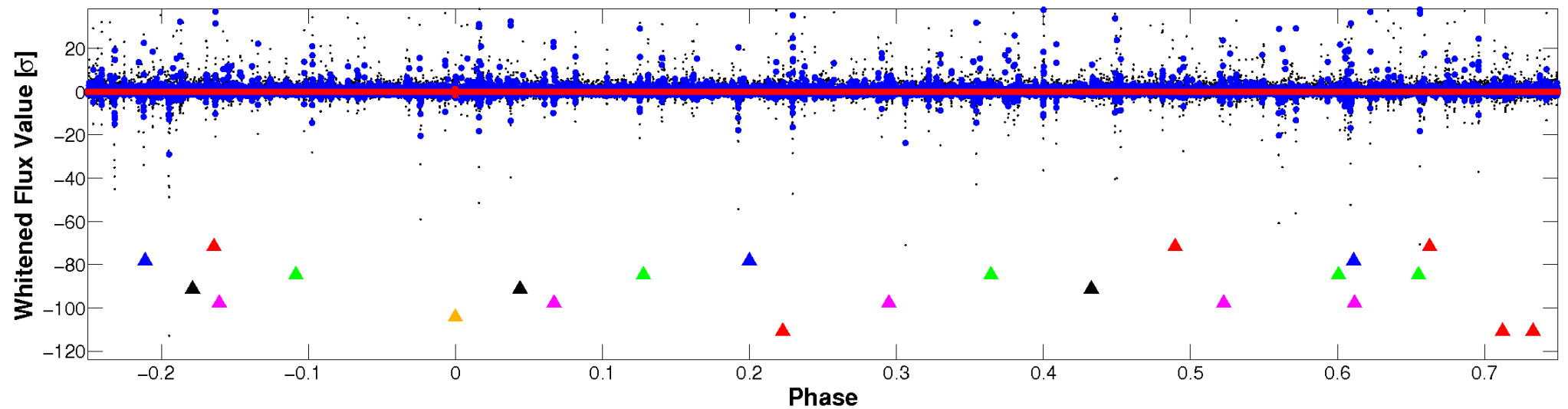


Non-Whitened Vs. Whitened Light Curve

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

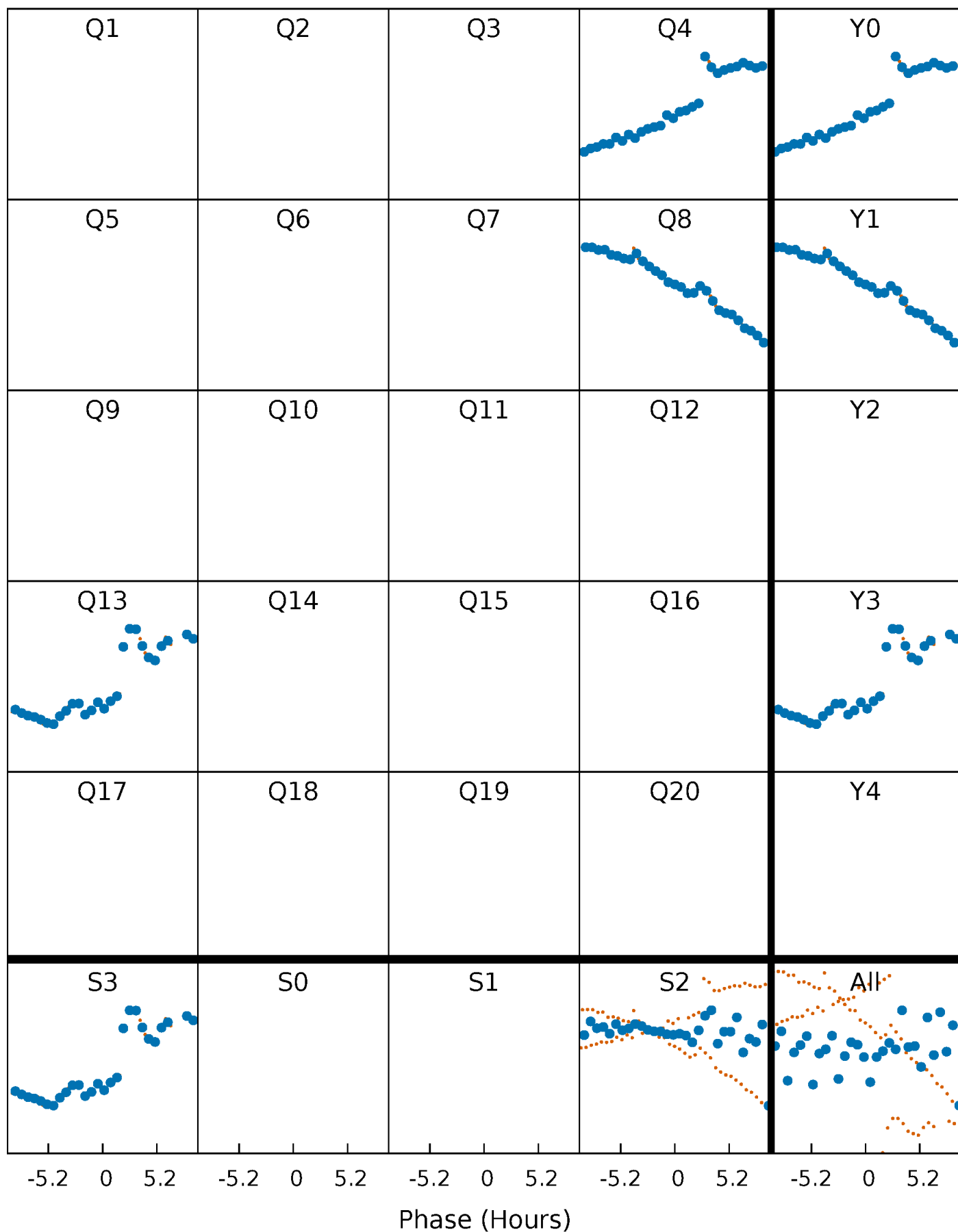


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



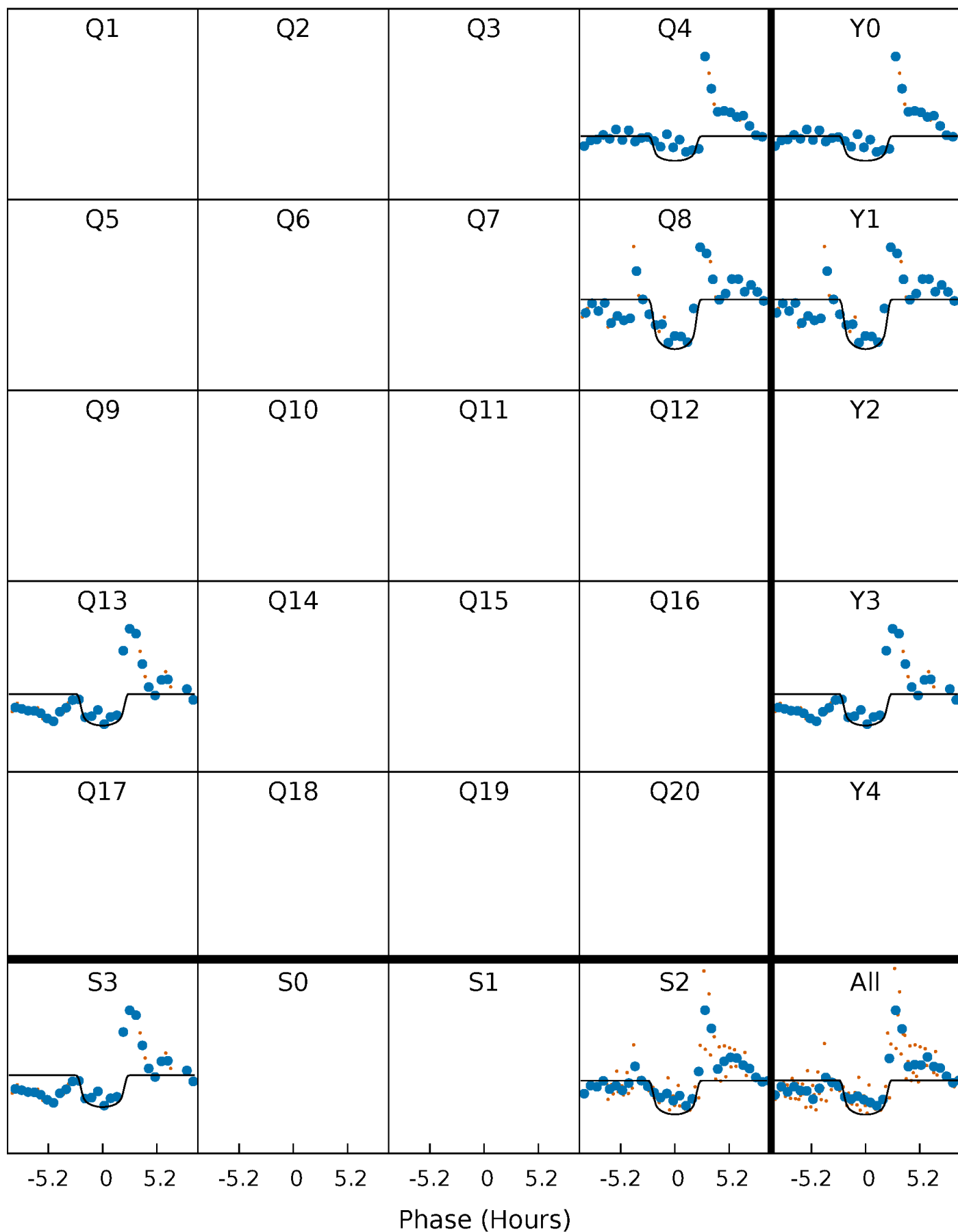
PDC Quarter-Phased Transit Curves

TCE 007033830-06 $P=424.992669$ Days $T_0=370.282661$ (BKJD)



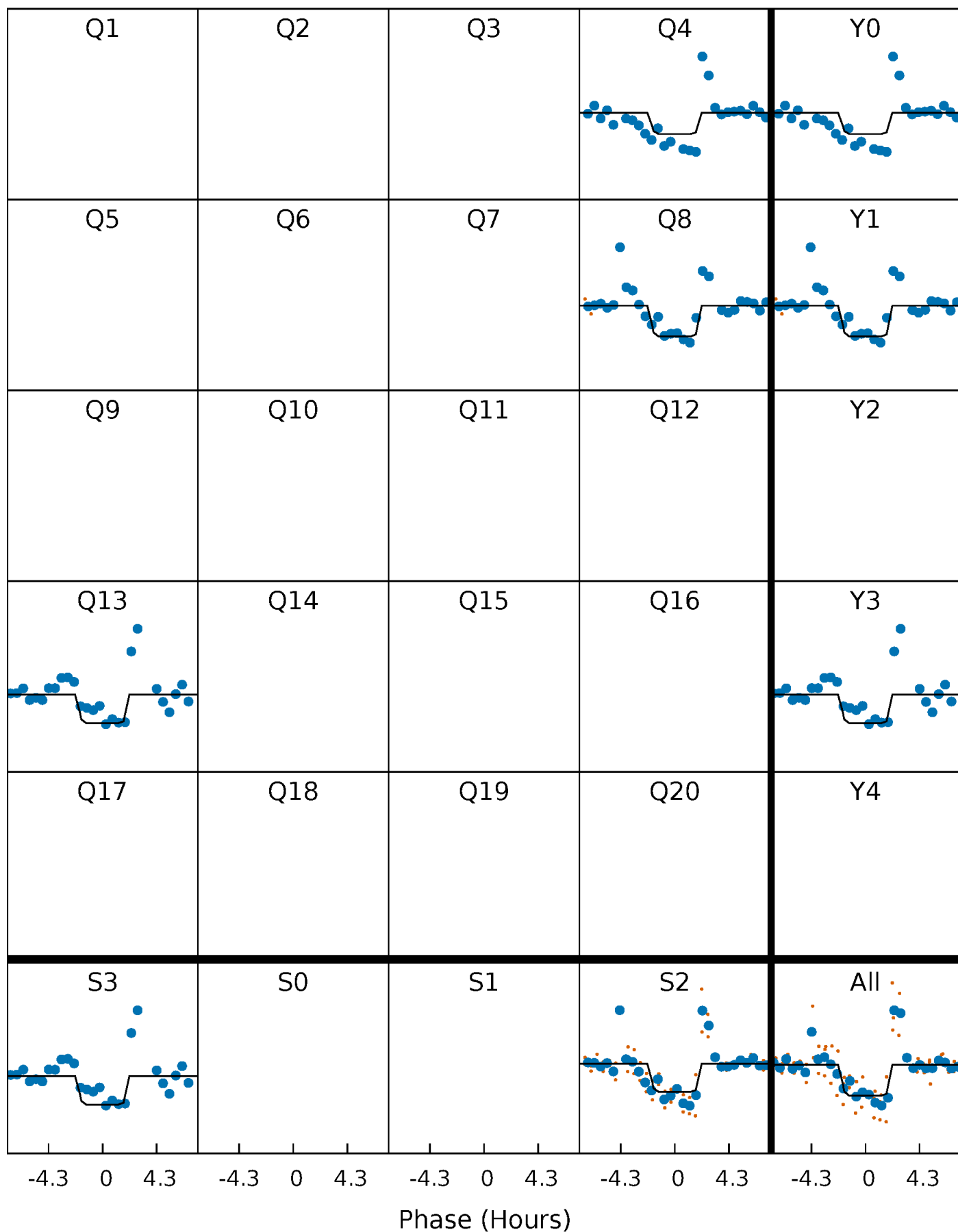
DV Quarter-Phased Transit Curves

TCE 007033830-06 $P=424.992669$ Days $T_0=370.282661$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

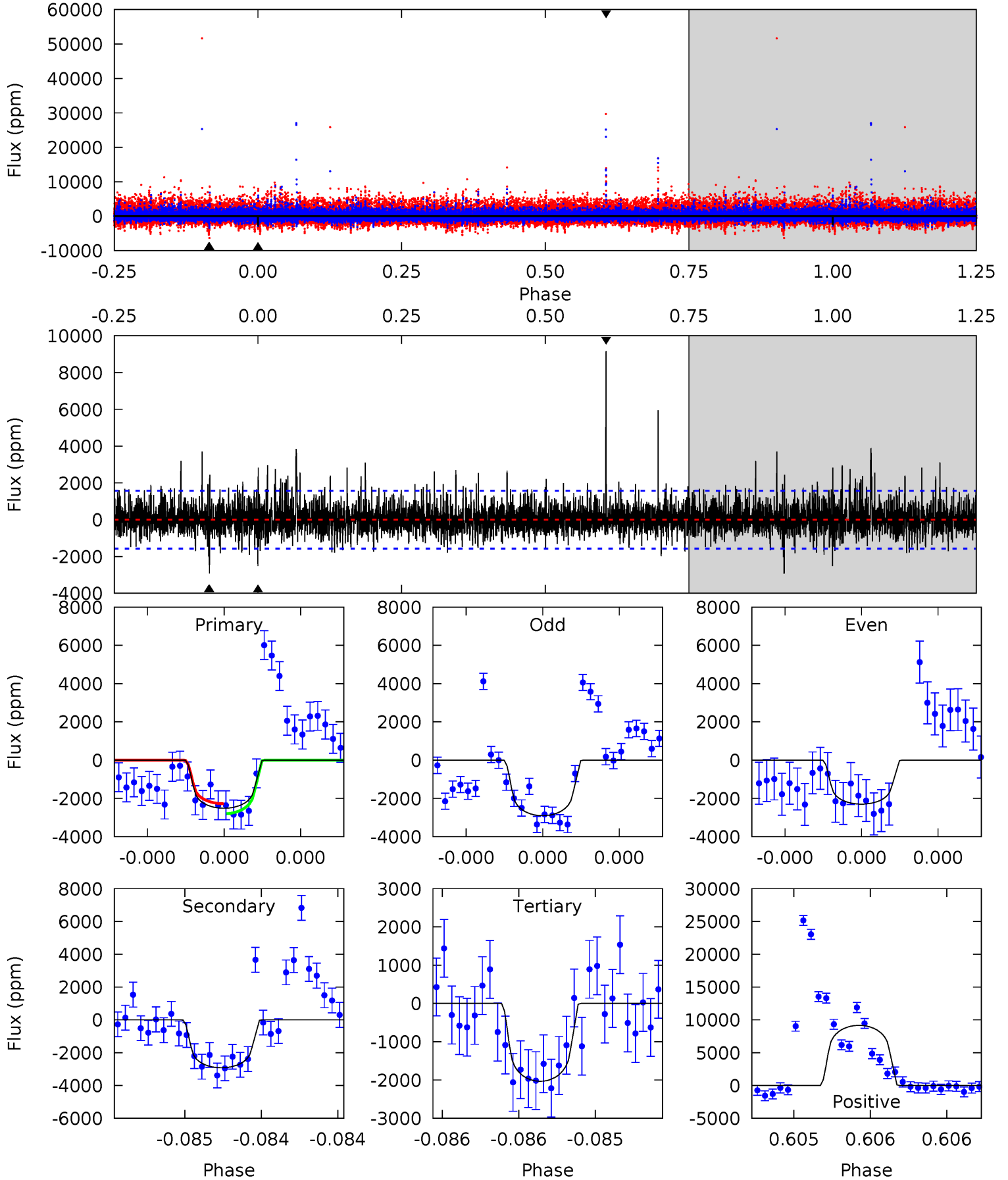
TCE 007033830-06 P=424.977181 Days $T_0=370.309423$ (BKJD)



DV Model-Shift Uniqueness Test

007033830-06, P = 424.992669 Days, E = 370.282661 Days

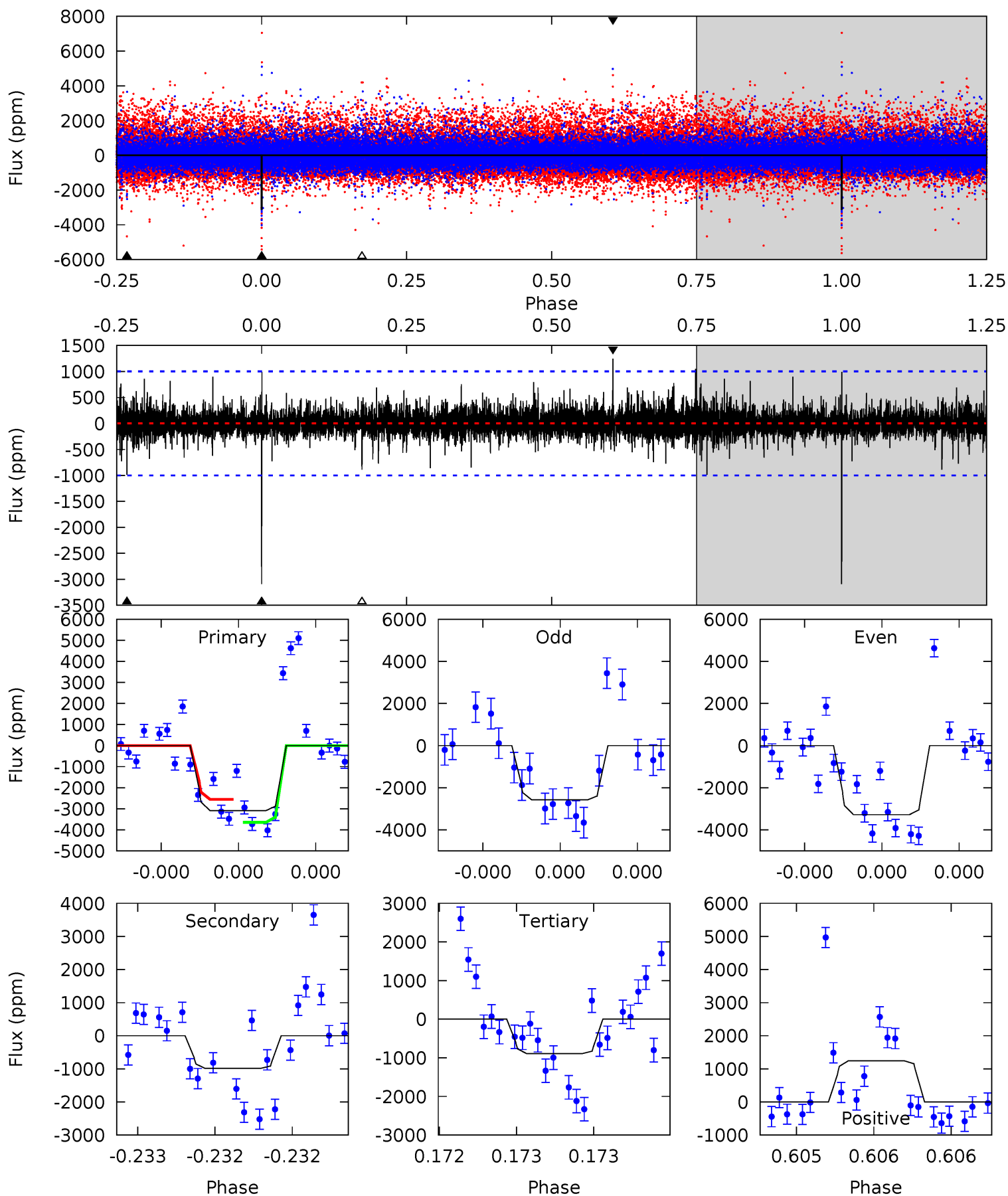
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.92	10.4	7.21	32.5	5.58	3.49	2.21	1.70	-23.6	3.15	-22.1	0.57	0.88	0.76	0.94



Alt Model-Shift Uniqueness Test

007033830-06, P = 424.977181 Days, E = 370.309423 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.4	5.55	5.02	7.01	5.64	3.58	0.95	12.4	10.4	0.53	-1.46	1.76	1.23	0.29	3.11



Stellar Parameters For KIC 007033830

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3384^{+44}_{-40}	$4.942^{+0.045}_{-0.036}$	$0.000^{+0.100}_{-0.100}$	$0.305^{+0.038}_{-0.035}$	$0.297^{+0.048}_{-0.039}$	$14.760^{+3.778}_{-2.762}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+12%/-11%	+16%/-13%	+26%/-19%
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 007033830-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2921 ± 282	$1.91^{+0.86}_{-0.80}$	134^{+3}_{-3}	3309^{+619}_{-323}	$240895^{+453328}_{-122116}$
Alt.	-983 ± 177	$1.91^{+0.83}_{-0.83}$	134^{+3}_{-3}	2835^{+523}_{-257}	$81999^{+180714}_{-43596}$

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 $A_{obs} \gg 1.0$

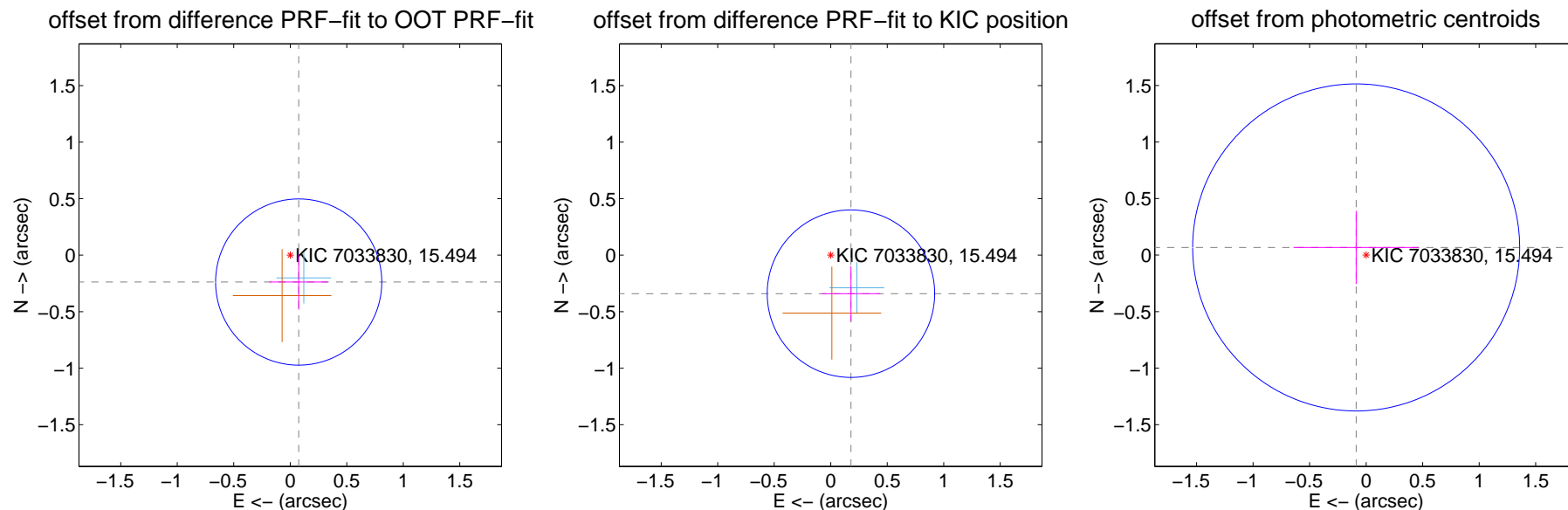
DV Centroid Data

Supplemental centroid analysis for 007033830-06. Kepler magnitude: 15.49. Transit SNR 7.75

There are 1 quarters with good PRF difference image offsets

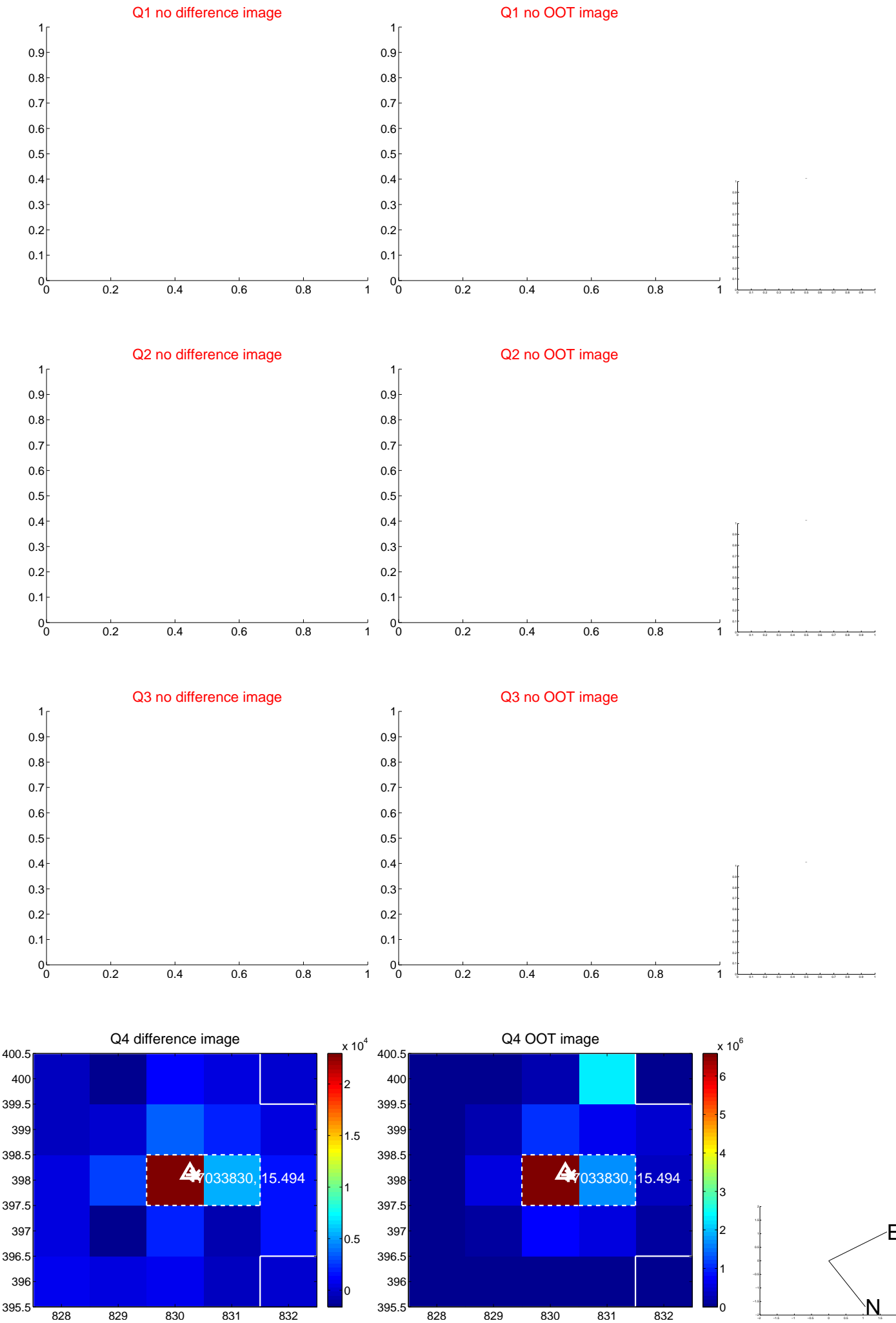
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.249 ± 0.245	1.02	-0.074 ± 0.258	-0.238 ± 0.244
PRF-fit source offset from KIC position	0.385 ± 0.247	1.56	-0.179 ± 0.258	-0.341 ± 0.244
photometric centroid source offset	0.11 ± 0.48	0.23	0.09 ± 0.55	0.07 ± 0.32

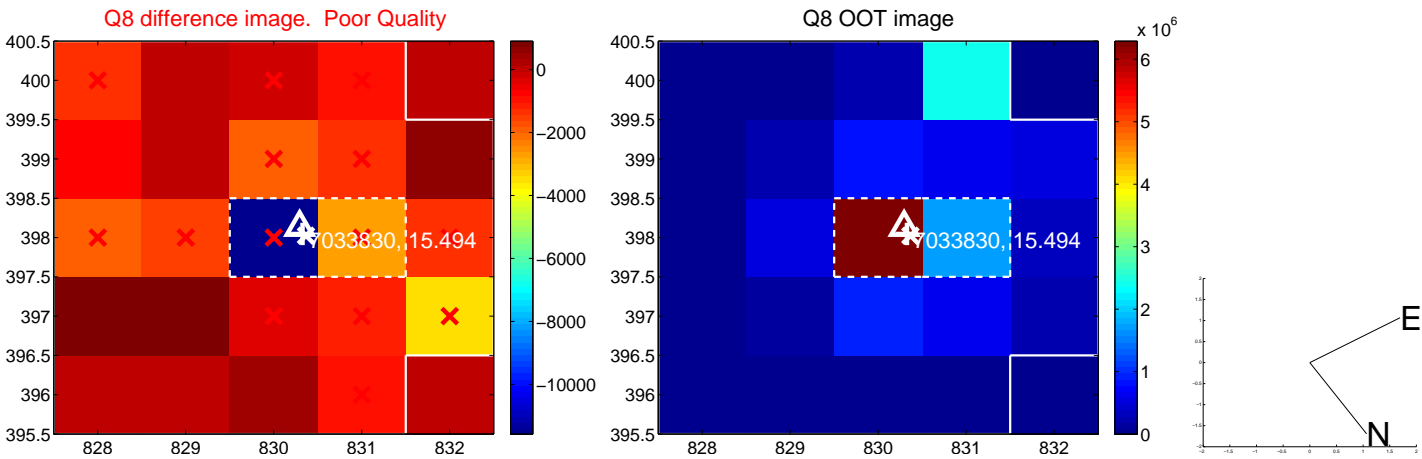


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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



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



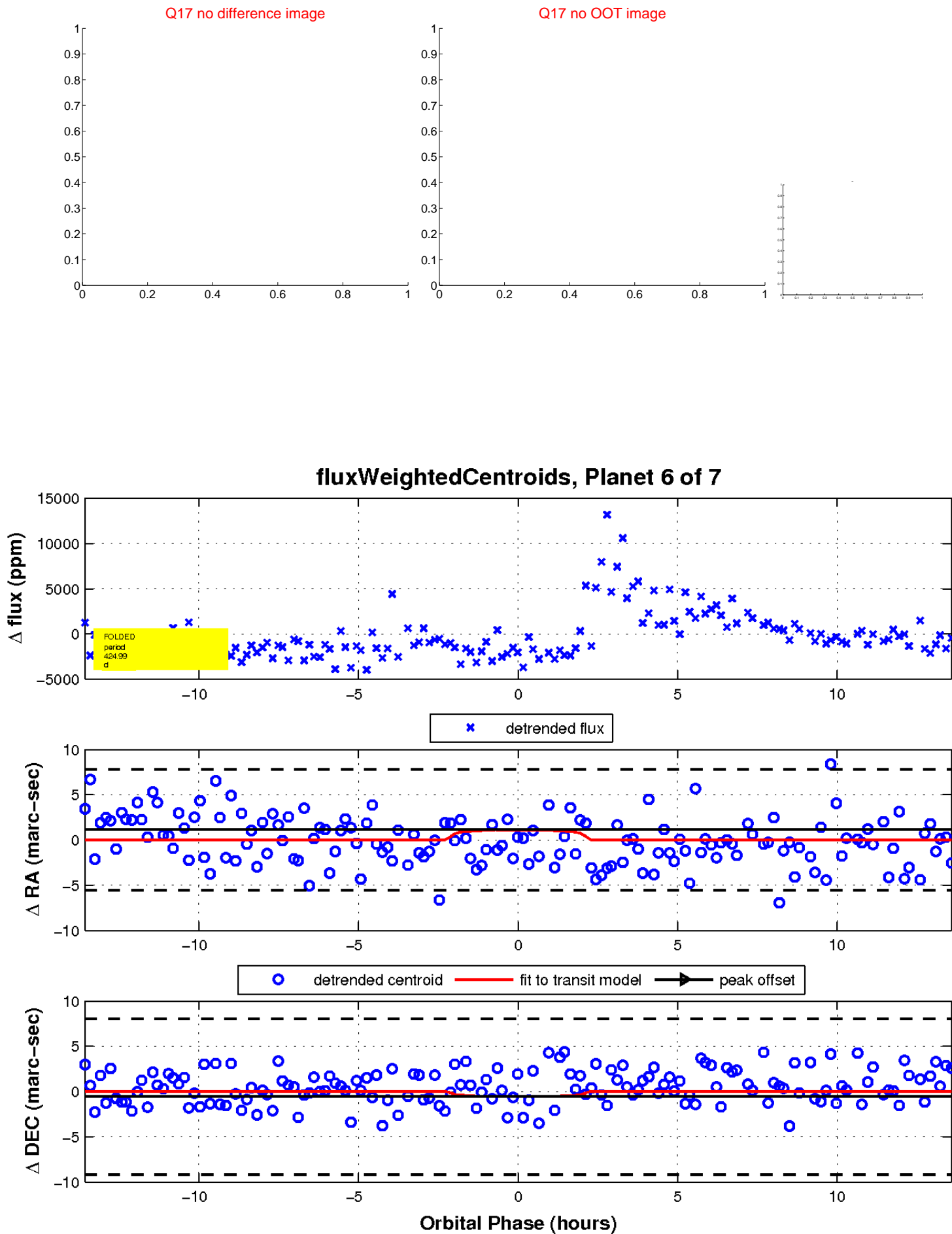
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

