

KIC 004350271

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})
004350271-01	OBS	No	36.559729	157.540996	1814.4	6.908	10.7	5.9	0.75	5219	3.31	10.05
004350271-02	OBS	No	68.468973	138.644992	2104.5	2.970	7.3	6.8	0.75	5219	4.15	4.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004350271-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
004350271-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—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.

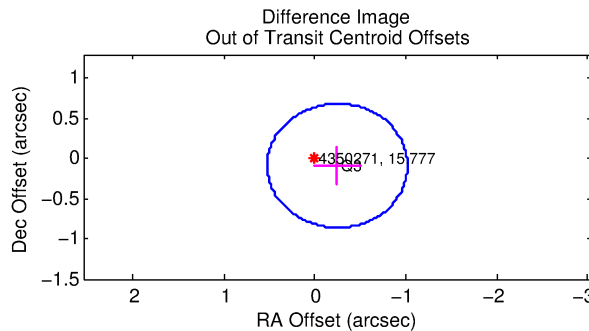
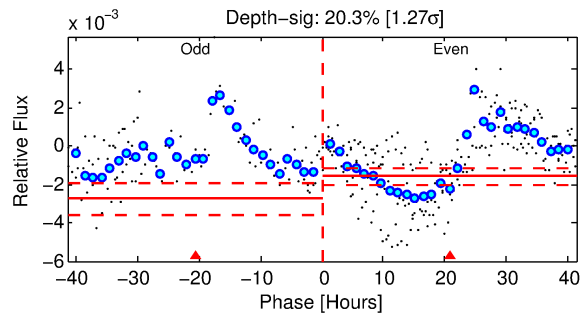
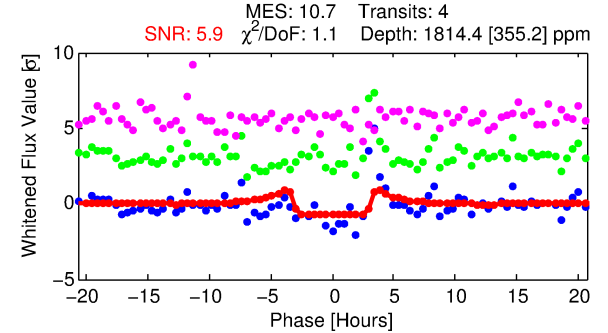
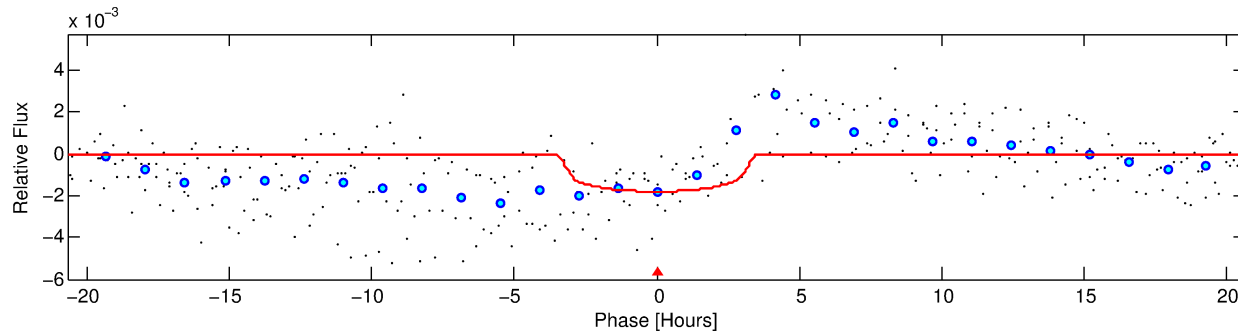
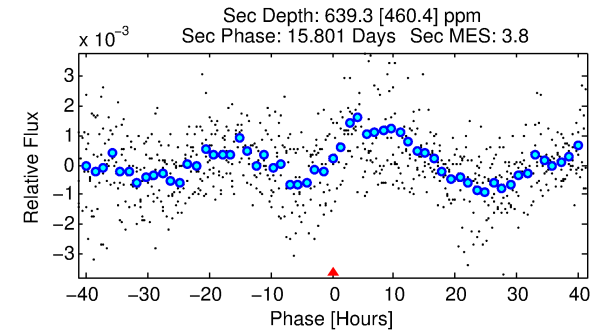
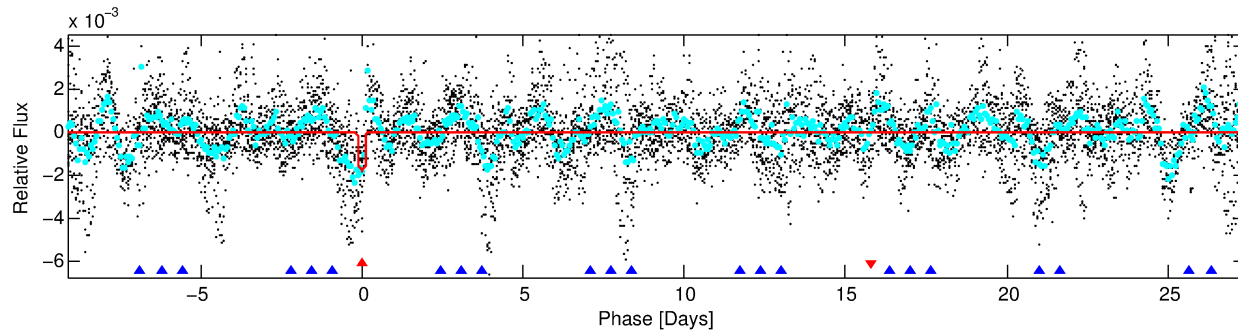
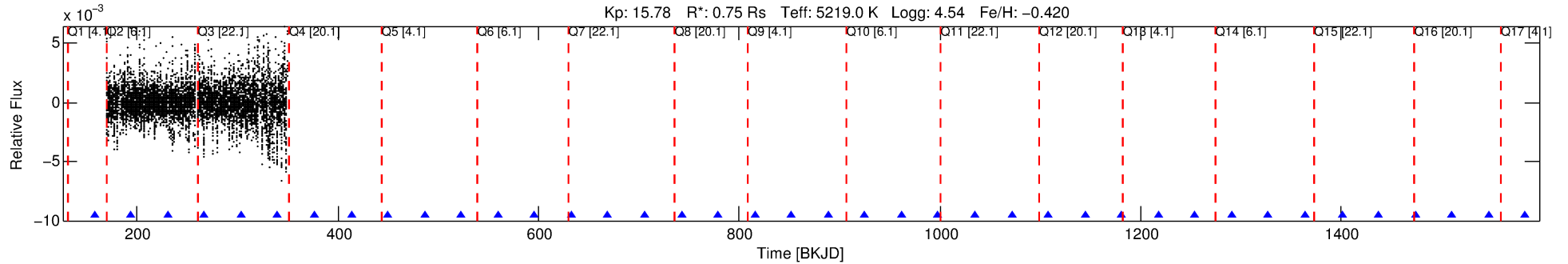
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004350271-01

No Significant Match Found

DV One-Page Summary

KIC: 4350271 Candidate: 1 of 2 Period: 36.560 d



DV Fit Results:

Period = 36.55973 [0.00447] d
Epoch = 157.5410 [0.0153] BKJD
Rp/R* = 0.0406 [0.0186]
a/R* = 33.94 [56.18]
b = 0.62 [1.69]
Seff = 10.06 [2.06]
Teq = 454 [23] K
Rp = 3.31 [1.57] Re
a = 0.1918 [0.0203] AU
Ag = 1184.41 [1392.15] [0.85σ]
Teffp = 4119 [1207] K [3.04σ]

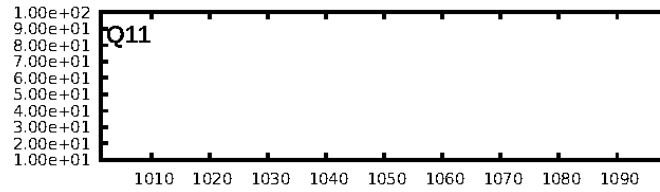
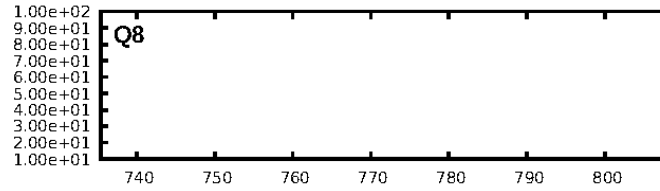
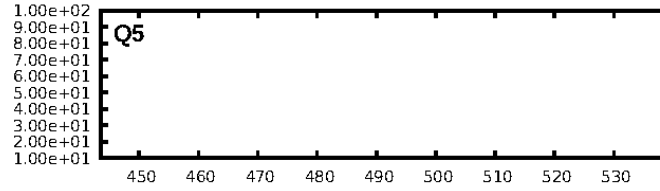
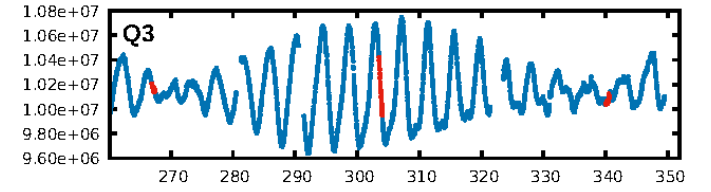
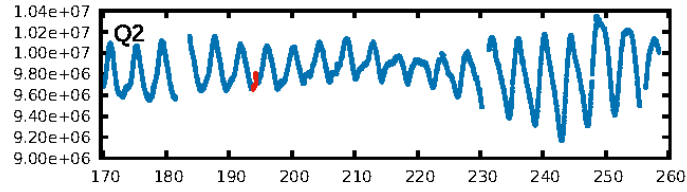
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [101.85σ]
ModelChiSquare2-sig: 5.4%
ModelChiSquareGof-sig: 96.5%
Bootstrap-pfa: 5.45e-19
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.4194
Centroid-sig: 30.0%
Centroid-so: 0.996 arcsec [0.91σ]
OotOffset-rm: 0.262 arcsec [1.02σ]
KicOffset-rm: 0.334 arcsec [1.39σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [2/2]

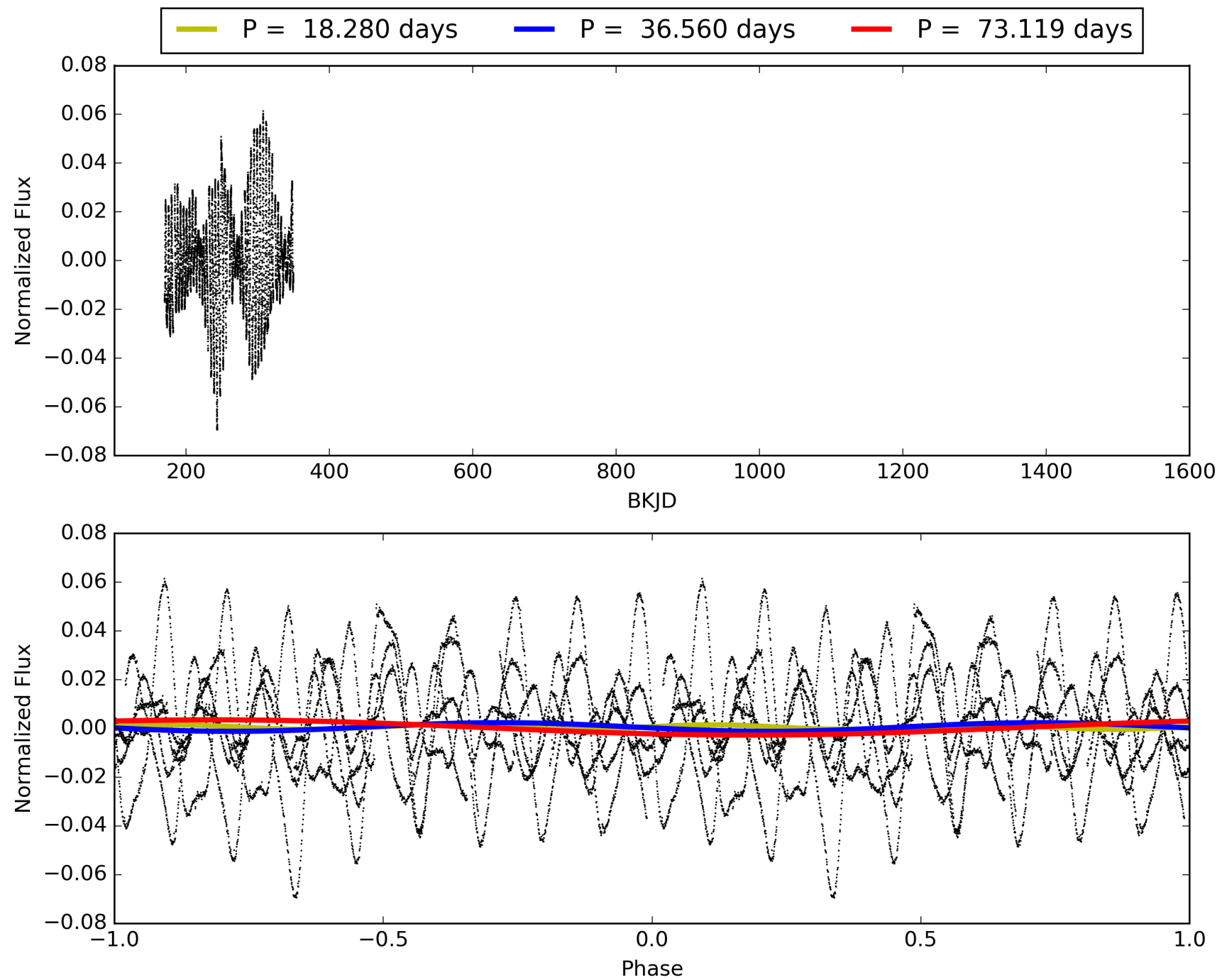
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:11:53 Z

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

TCE 004350271-01, PDC Light Curves

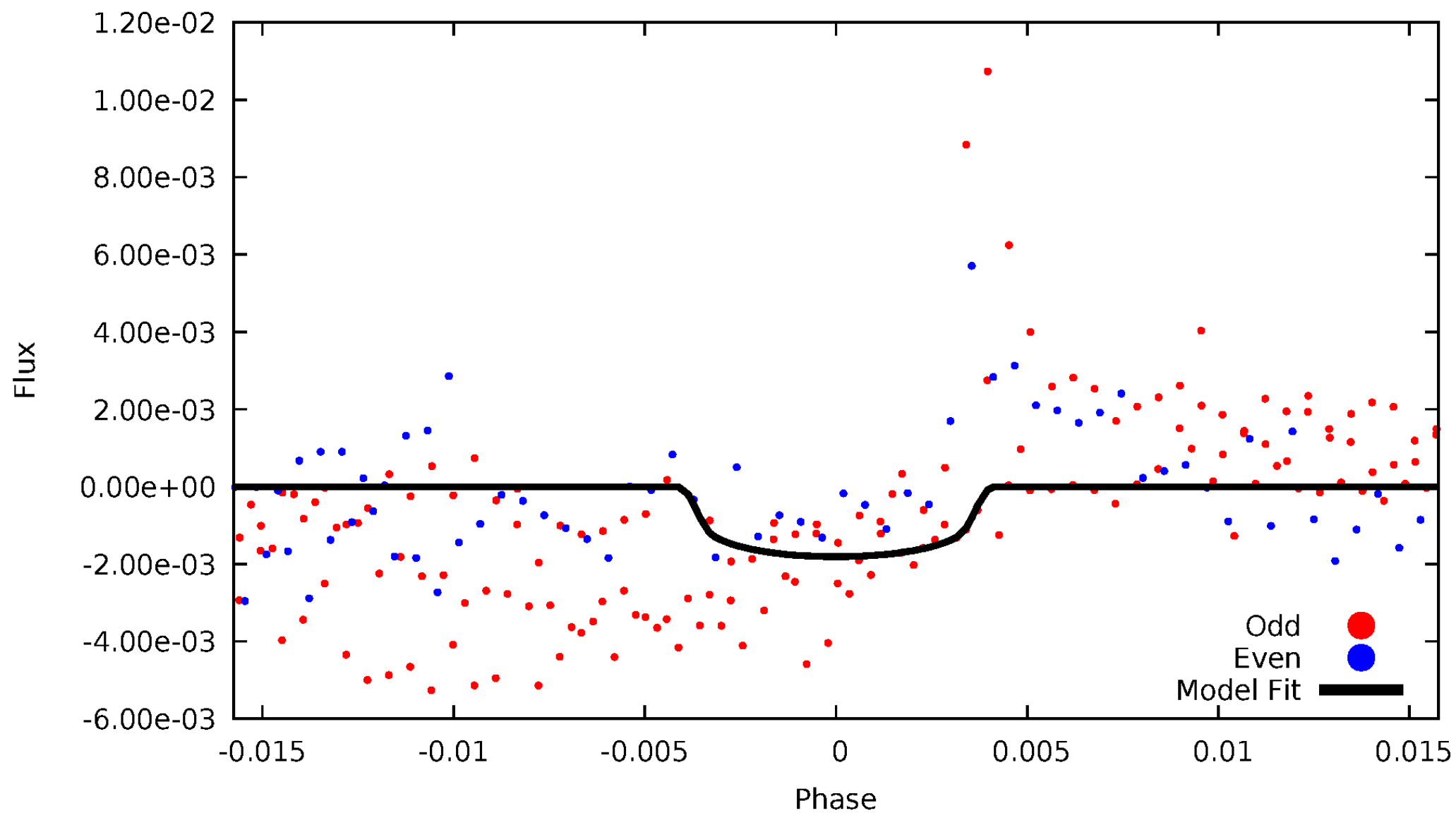


TCE 004350271-01



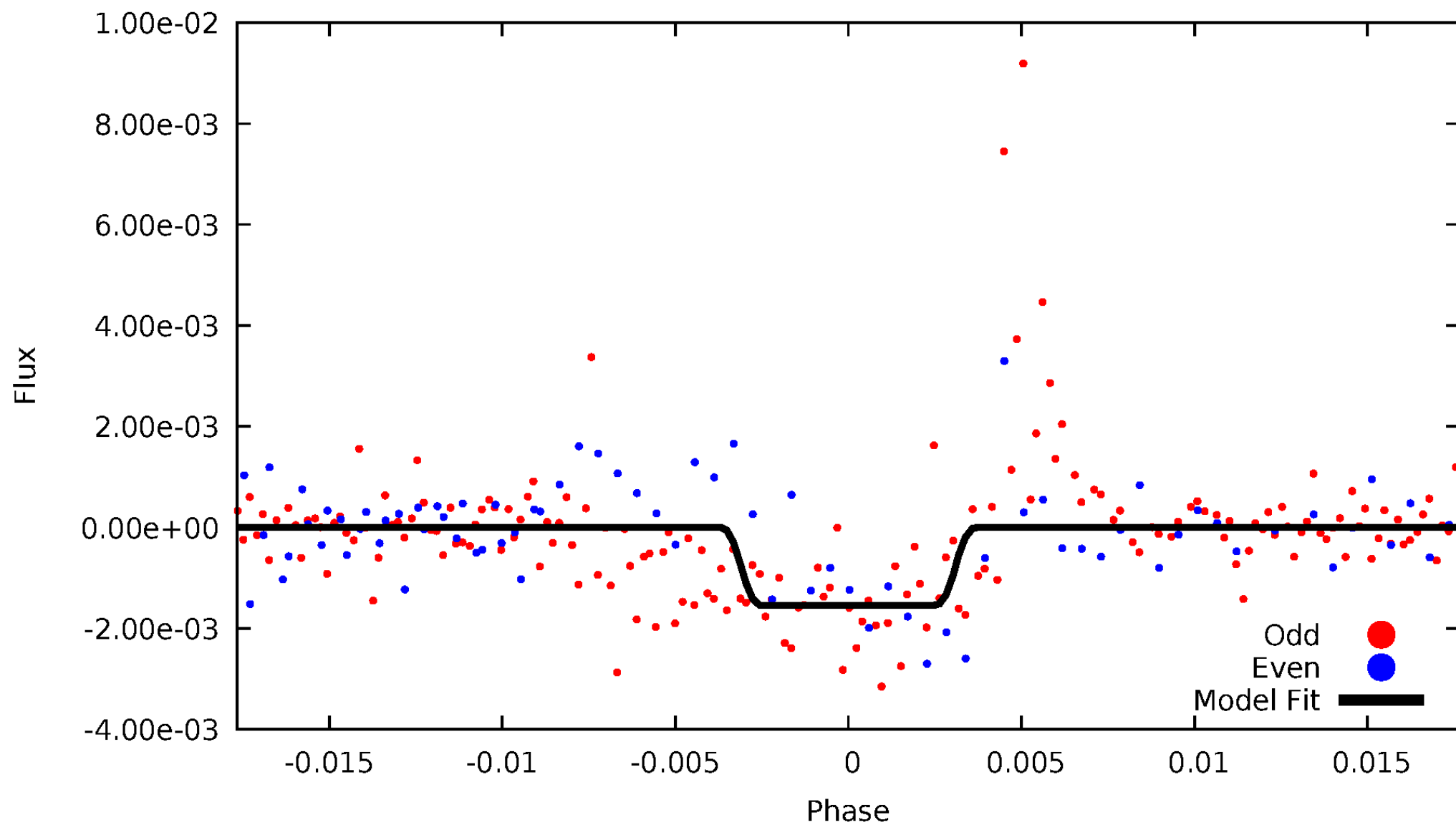
DV Odd/Even

TCE 004350271-01

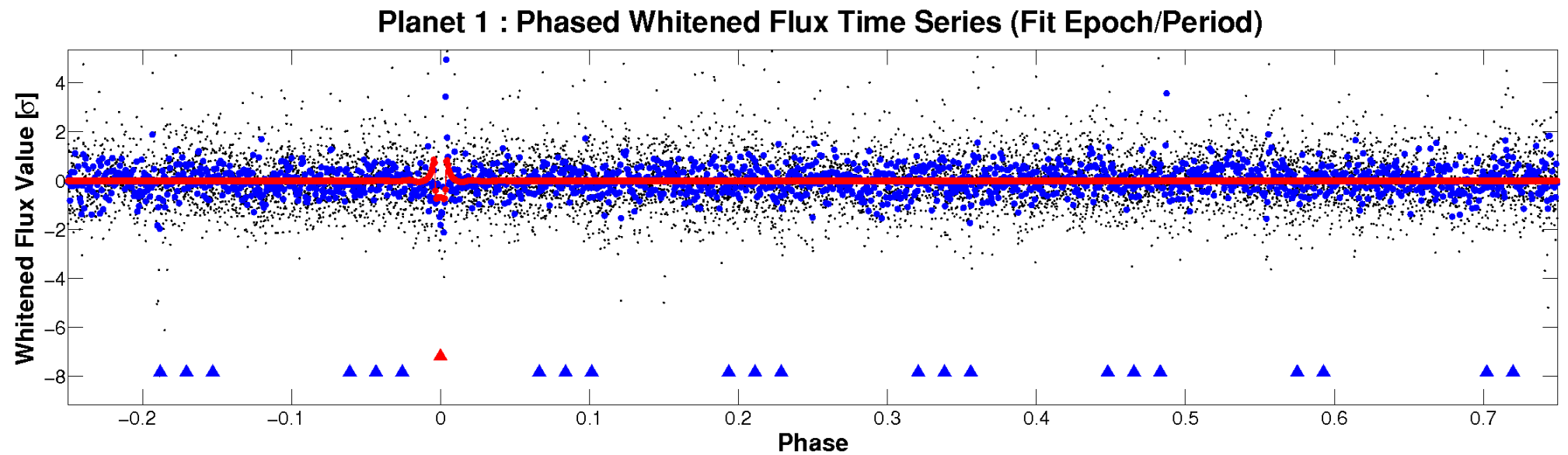
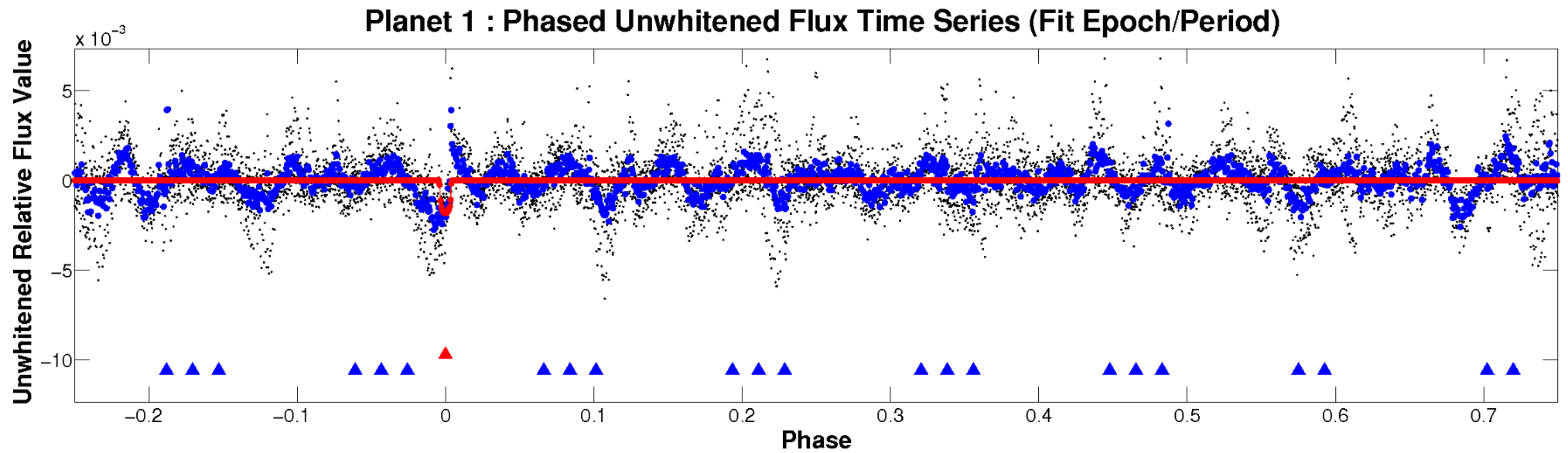


ALT Odd/Even

TCE 004350271-01

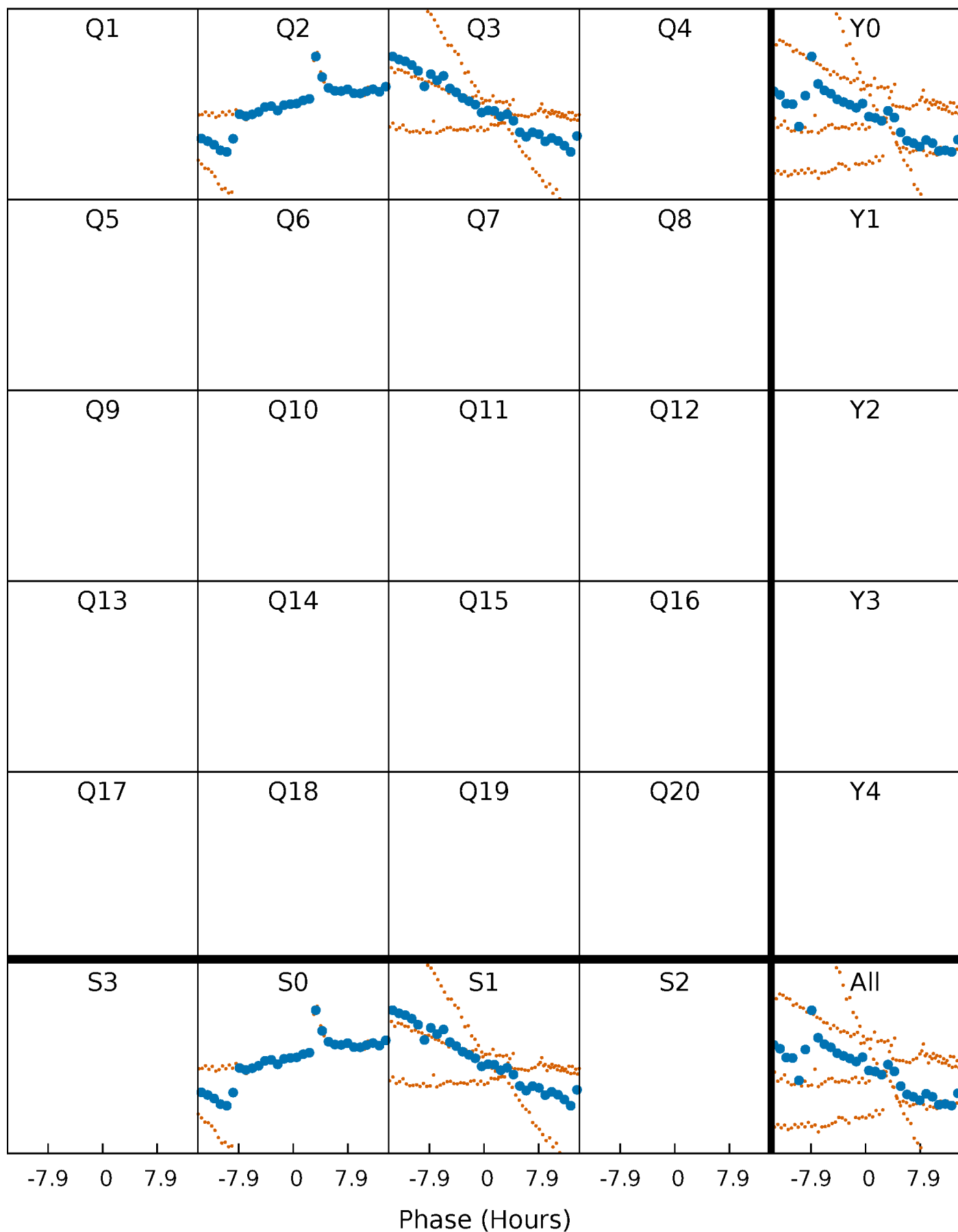


Non-Whitened Vs. Whitened Light Curve



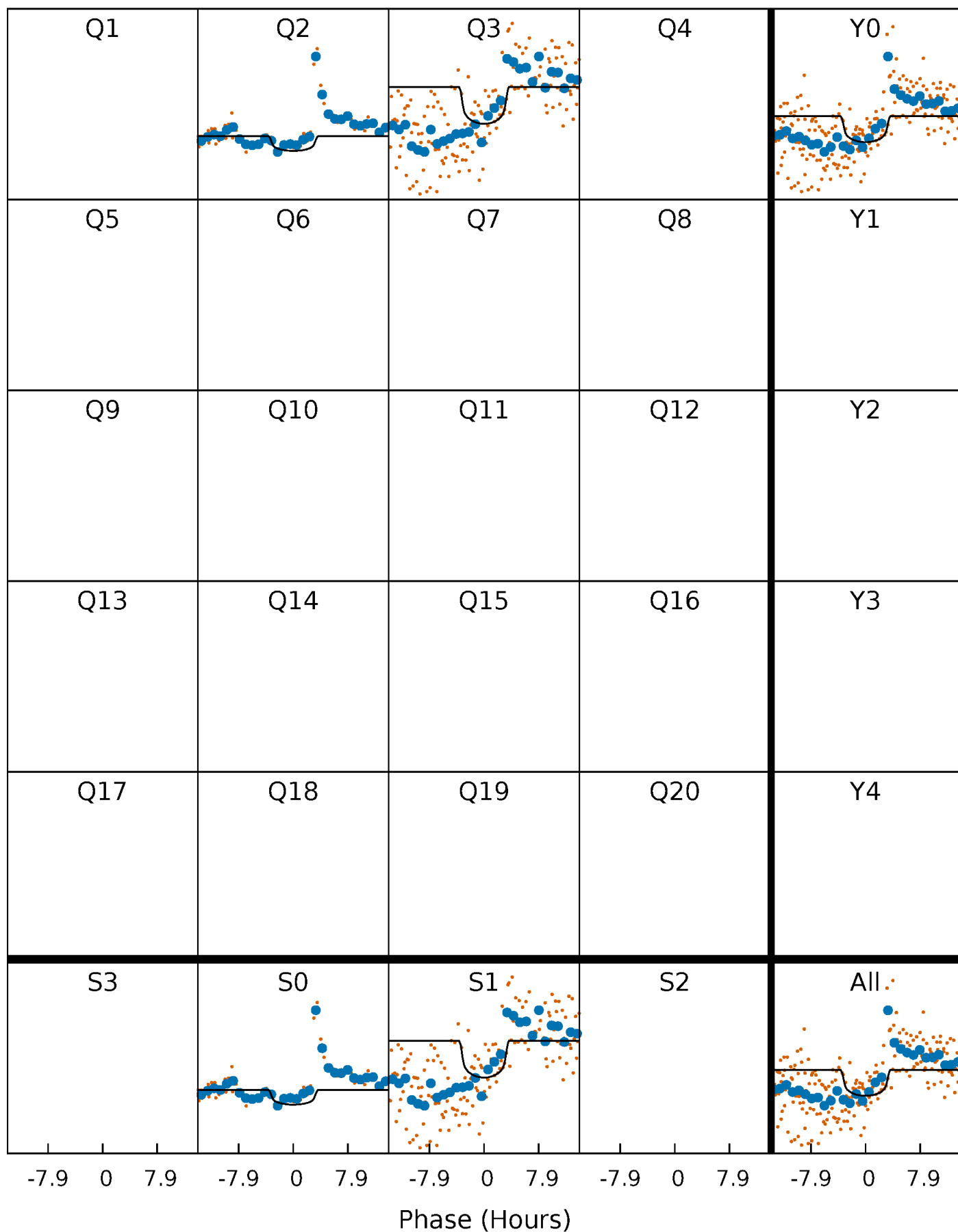
PDC Quarter-Phased Transit Curves

TCE 004350271-01 P= 36.559729 Days $T_0=157.540996$ (BKJD)



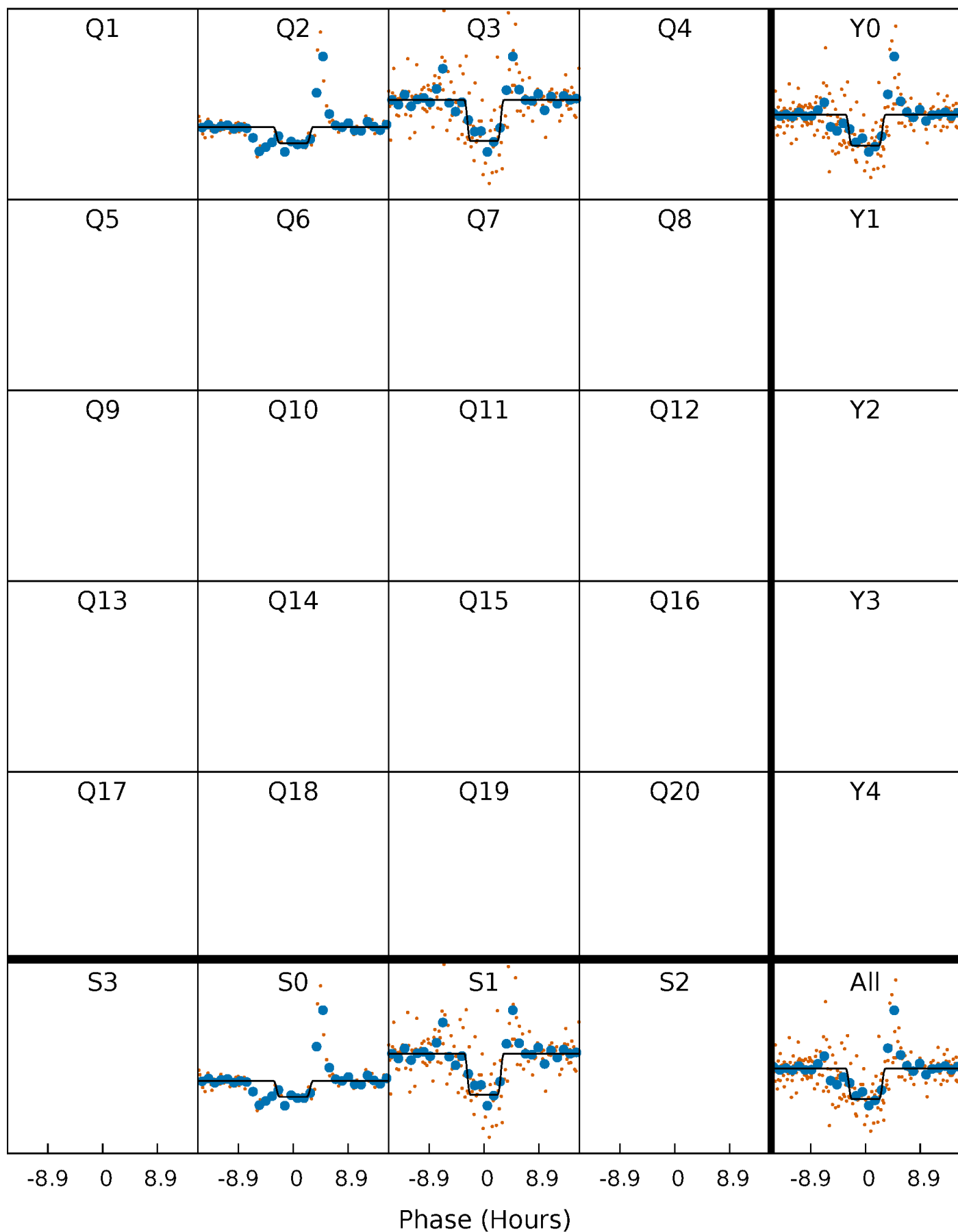
DV Quarter-Phased Transit Curves

TCE 004350271-01 P= 36.559729 Days $T_0=157.540996$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

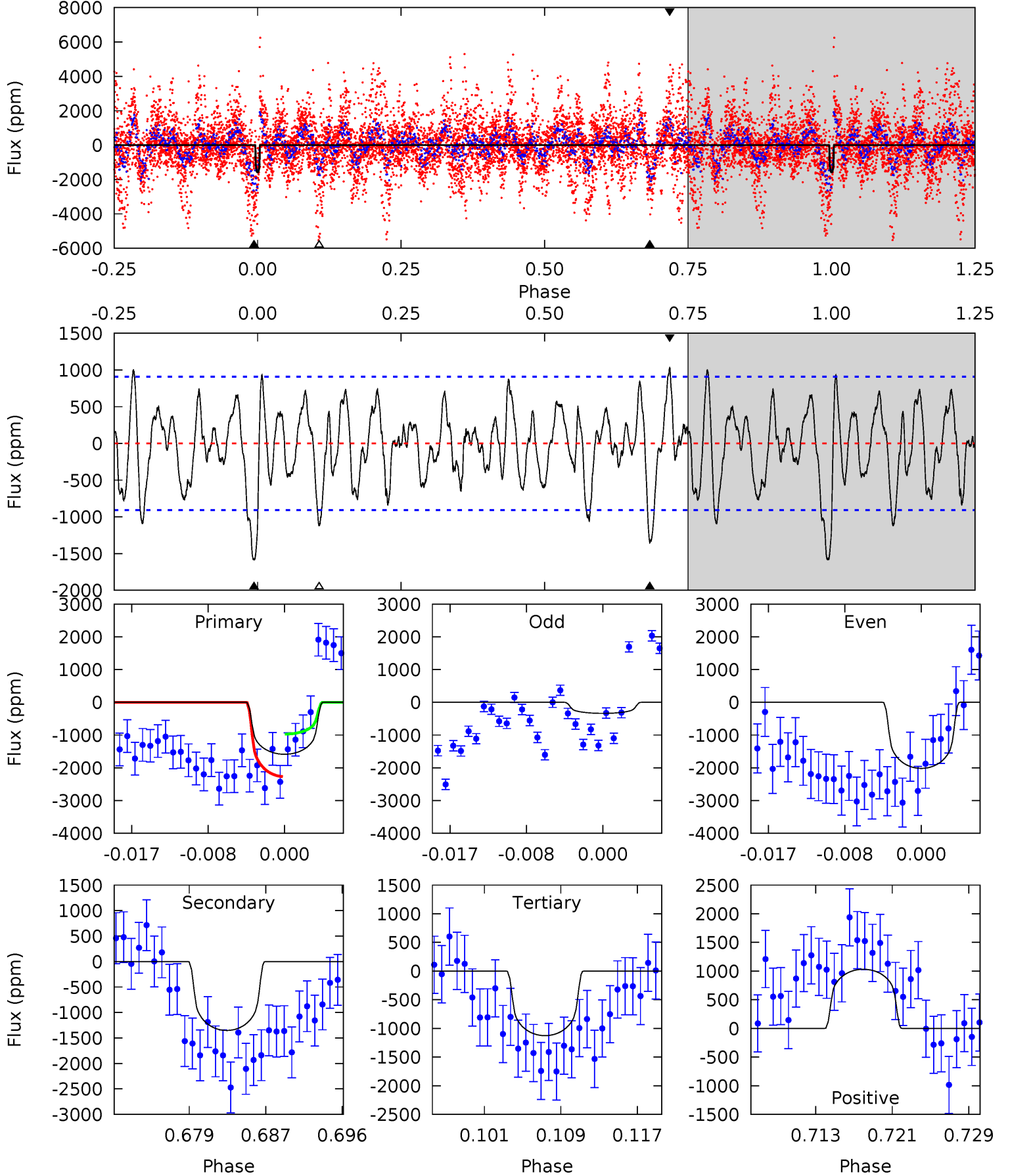
TCE 004350271-01 P= 36.561335 Days $T_0=157.499553$ (BKJD)



DV Model-Shift Uniqueness Test

004350271-01, P = 36.559729 Days, E = 157.540996 Days

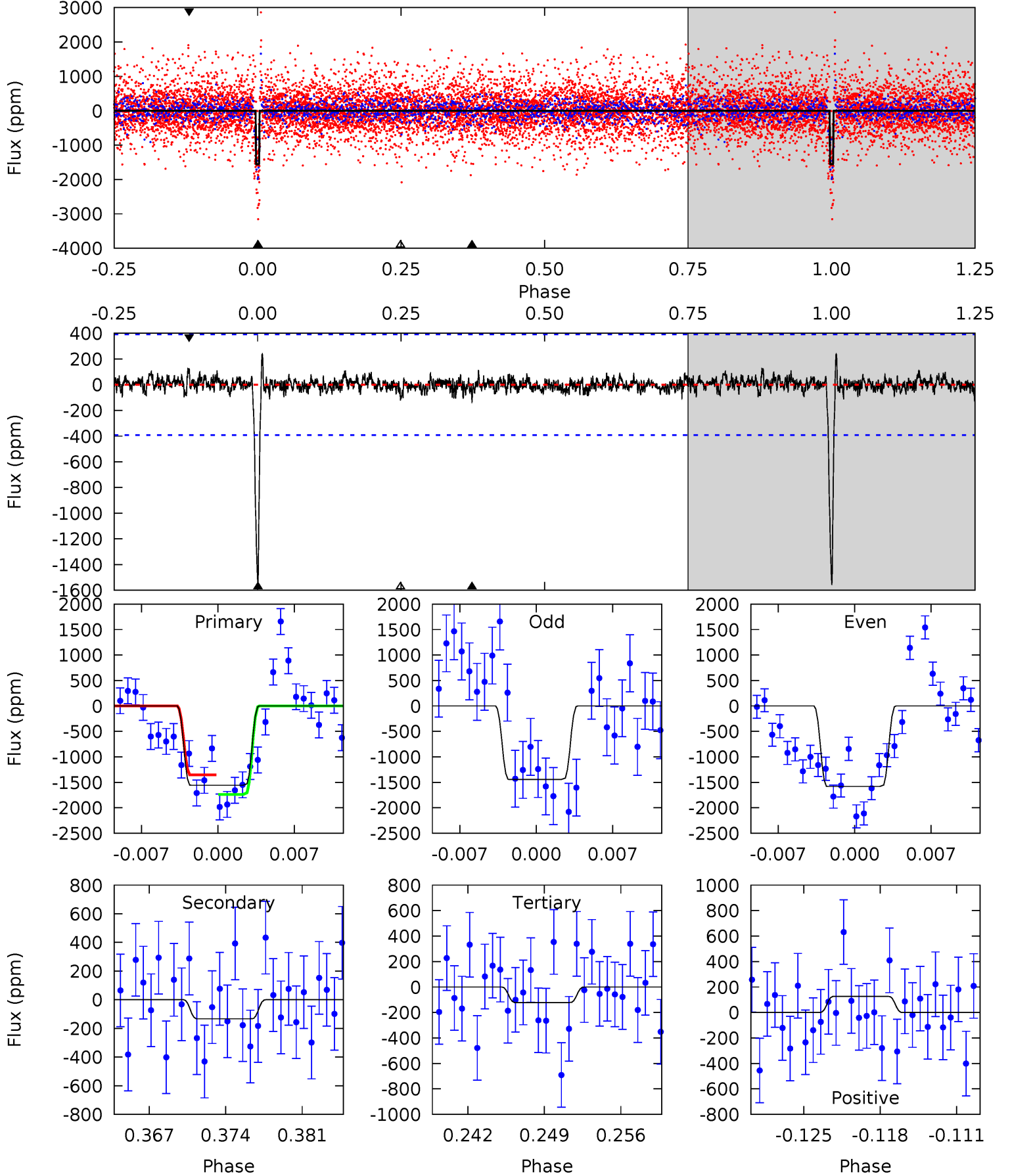
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.85	7.54	6.28	5.75	5.06	2.64	2.35	2.57	3.10	1.27	1.79	4.34	1.20	0.39	3.70



Alt Model-Shift Uniqueness Test

004350271-01, P = 36.561335 Days, E = 157.499553 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.3	1.73	1.59	1.65	5.10	2.70	0.50	18.7	18.6	0.14	0.08	0.81	1.02	0.13	2.52



Stellar Parameters For KIC 004350271

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5219^{+171}_{-155}	$4.540^{+0.088}_{-0.072}$	$-0.420^{+0.350}_{-0.300}$	$0.746^{+0.091}_{-0.083}$	$0.704^{+0.101}_{-0.043}$	$2.384^{+0.888}_{-0.544}$
	+3%/-3%	+2%/-2%	+83%/-71%	+12%/-11%	+14%/-6%	+37%/-23%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004350271-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1352 ± 179	$3.37^{+1.61}_{-1.65}$	634^{+27}_{-26}	5004^{+1833}_{-749}	2464^{+7155}_{-1379}
Alt.	-133 ± 77	$3.20^{+1.61}_{-1.47}$	633^{+27}_{-26}	3307^{+777}_{-493}	256^{+683}_{-175}

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

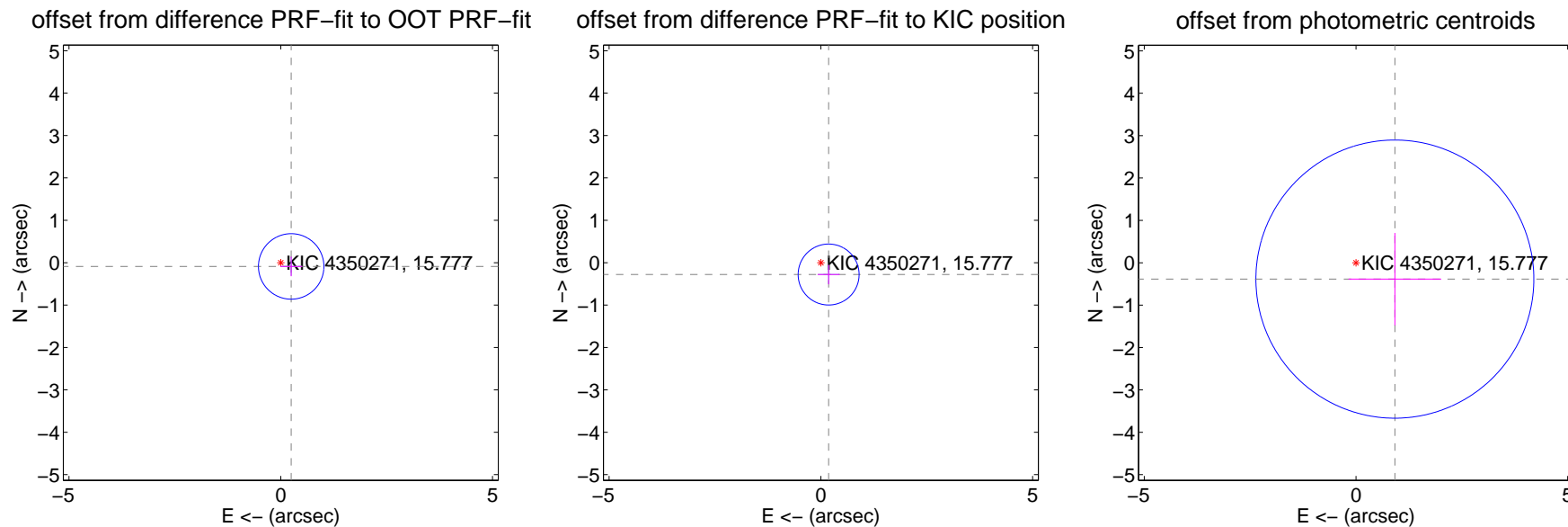
DV Centroid Data

Supplemental centroid analysis for 004350271-01. Kepler magnitude: 15.78. Transit SNR 5.90

There are 1 quarters with good PRF difference image offsets

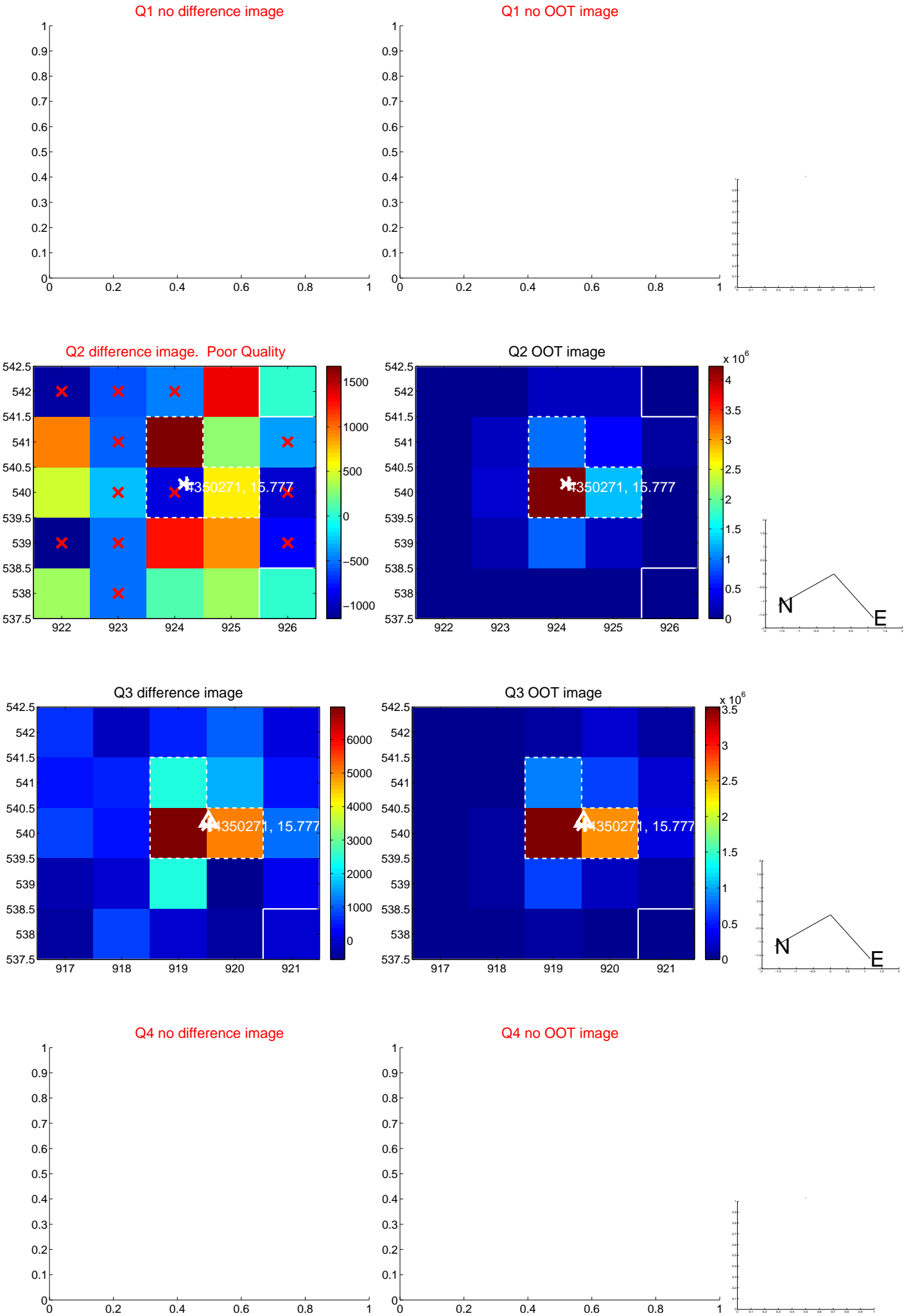
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.262 ± 0.257	1.02	-0.246 ± 0.261	-0.088 ± 0.230
PRF-fit source offset from KIC position	0.334 ± 0.240	1.39	-0.183 ± 0.261	-0.279 ± 0.230
photometric centroid source offset	1.00 ± 1.09	0.91	-0.92 ± 1.09	-0.39 ± 1.09



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.



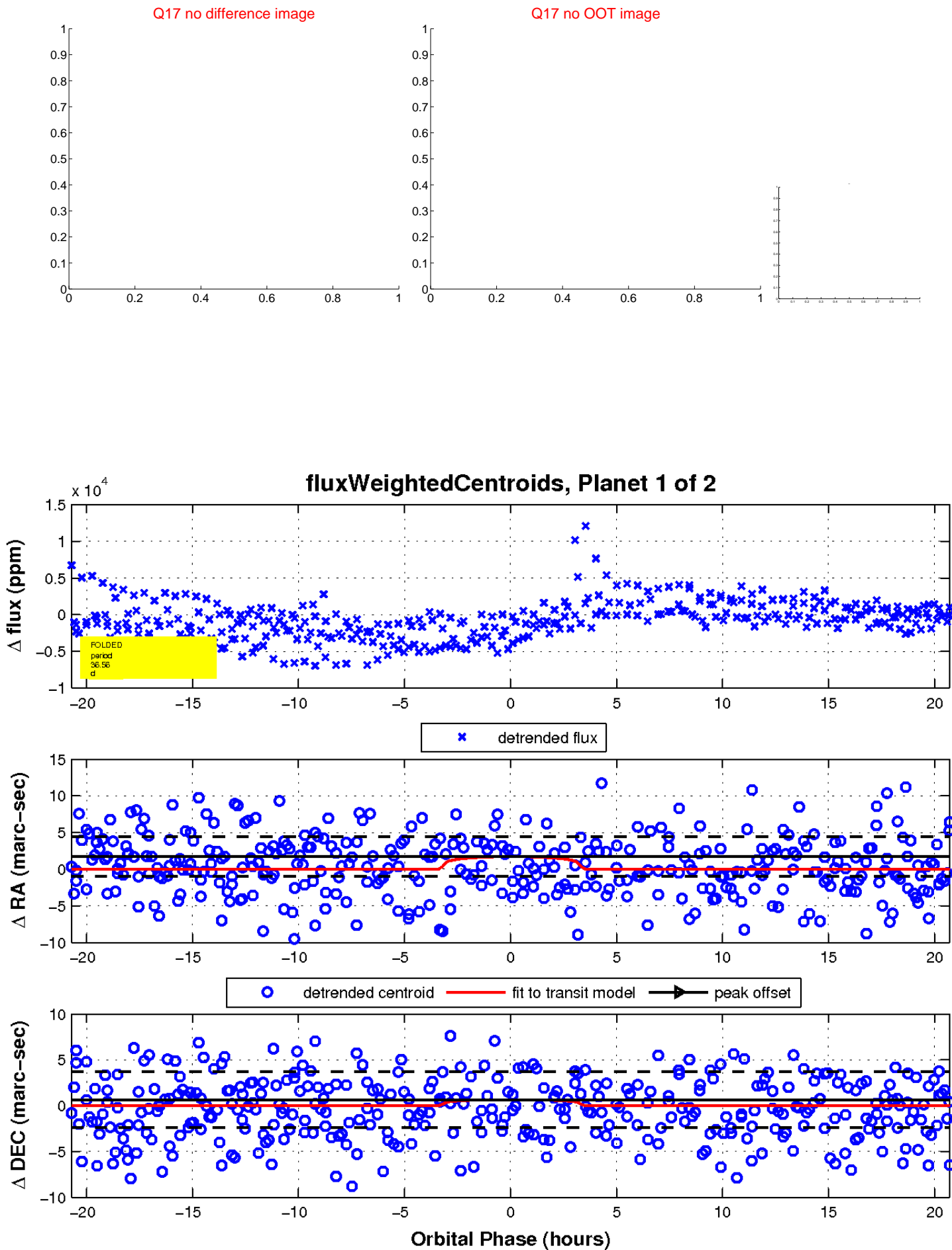
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

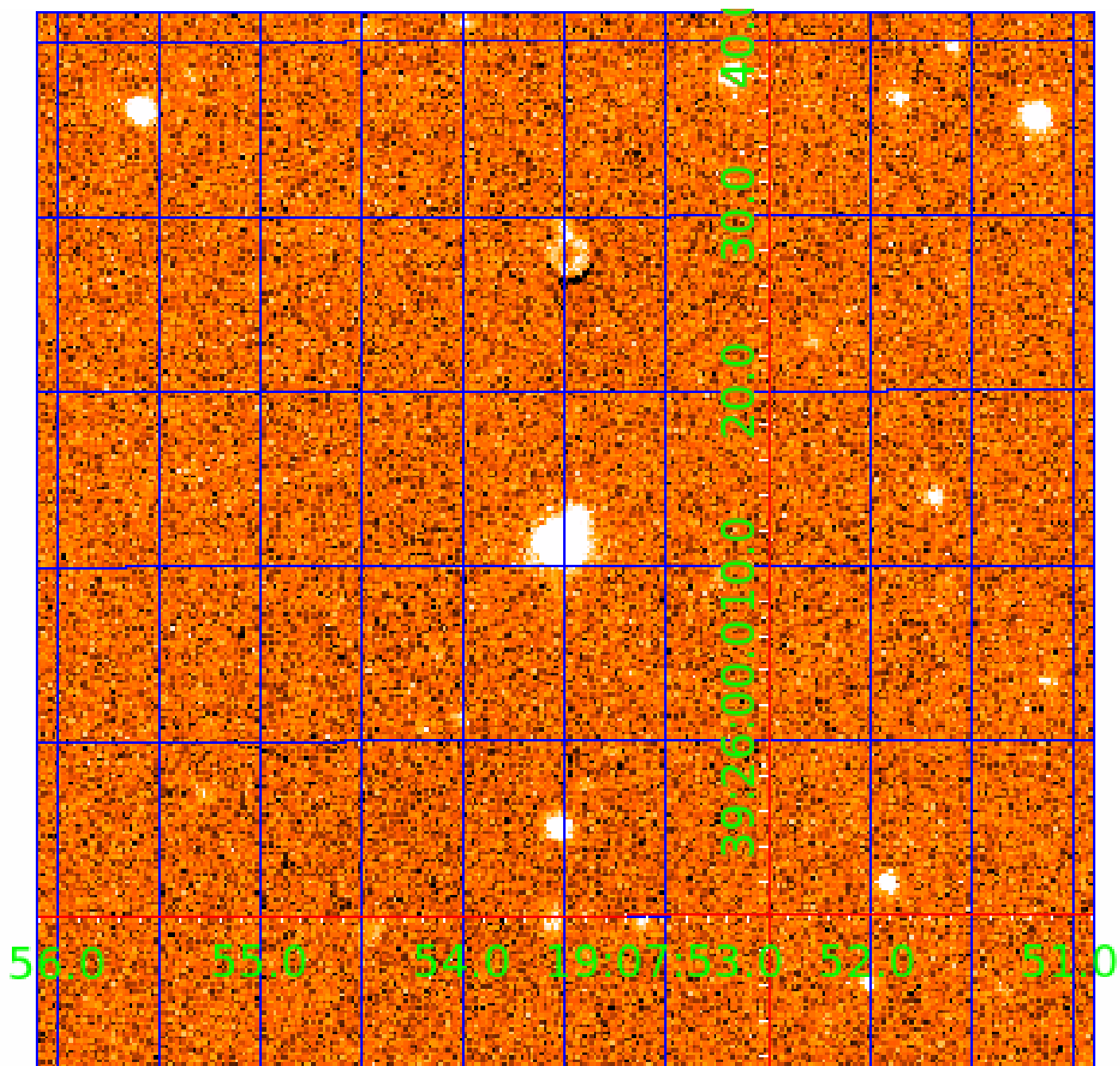


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004350271

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})
004350271-01	OBS	No	36.559729	157.540996	1814.4	6.908	10.7	5.9	0.75	5219	3.31	10.05
004350271-02	OBS	No	68.468973	138.644992	2104.5	2.970	7.3	6.8	0.75	5219	4.15	4.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004350271-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—CENT_FEW_DIFFS
004350271-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—ALL_TRANS_CHASES—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.

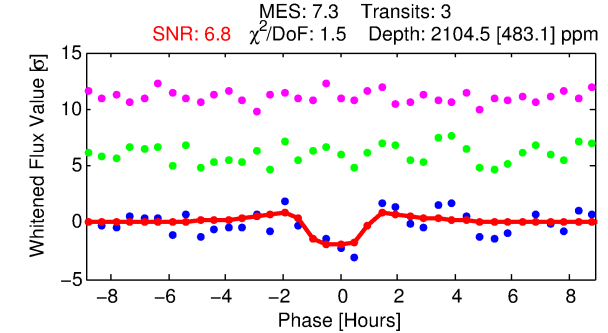
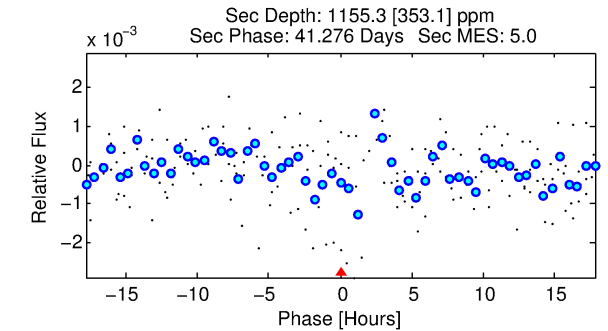
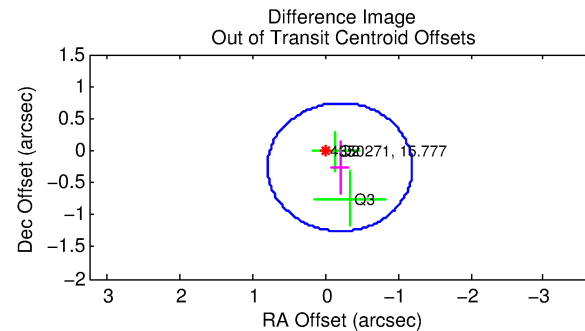
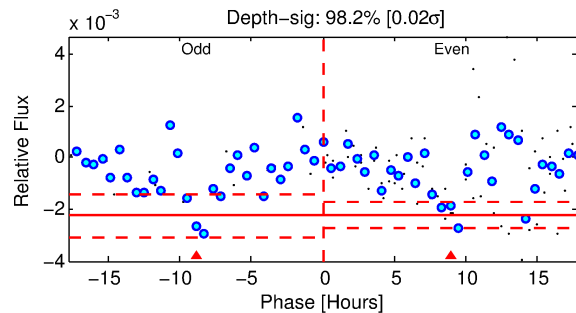
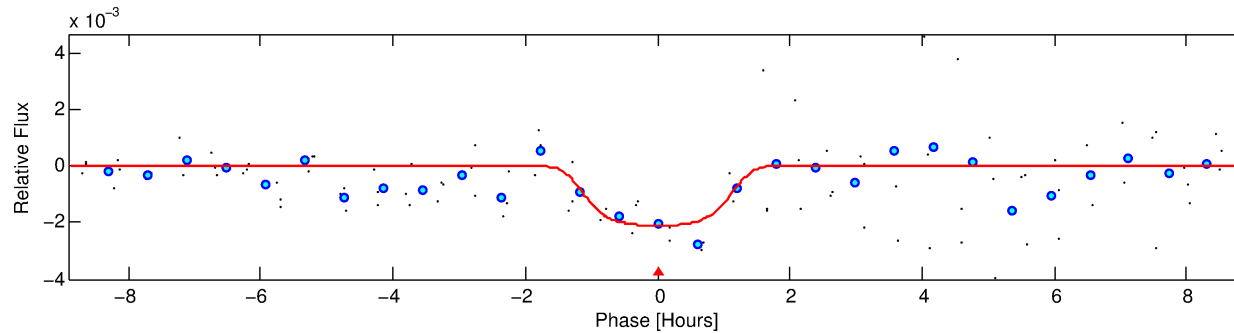
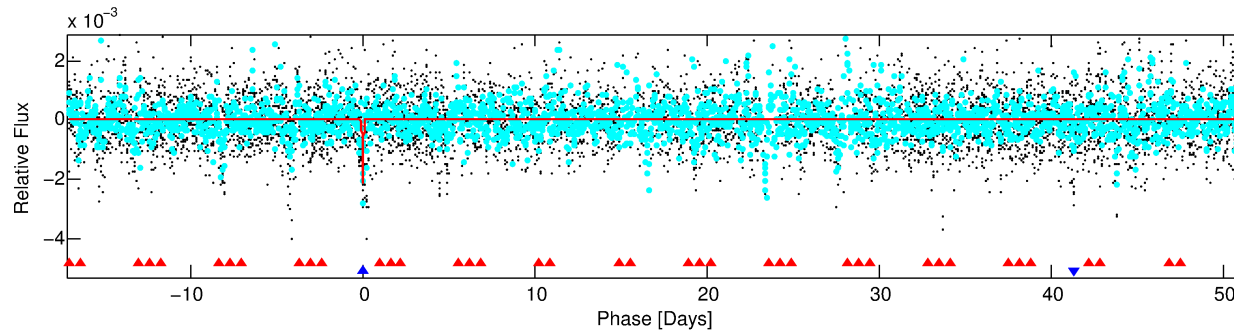
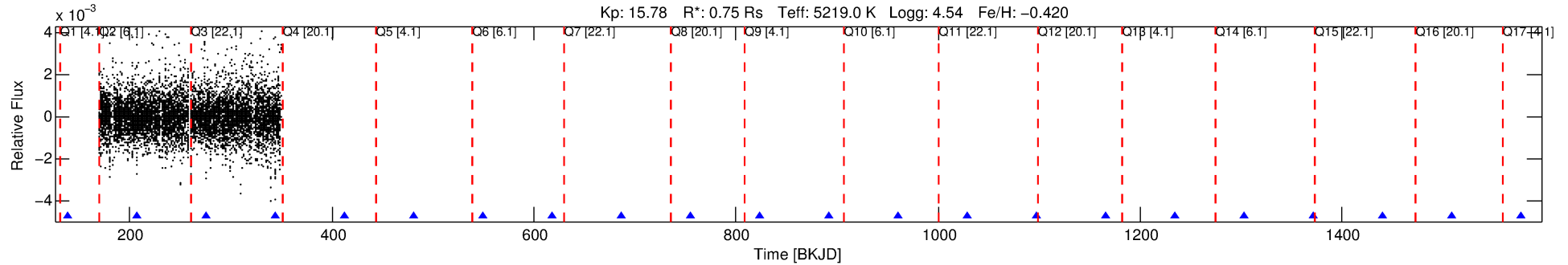
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004350271-02

No Significant Match Found

DV One-Page Summary

KIC: 4350271 Candidate: 2 of 2 Period: 68.469 d



DV Fit Results:

Period = 68.46897 [0.00653] d
Epoch = 138.6450 [0.0140] BKJD
Rp/R* = 0.0510 [0.0141]
a/R* = 94.31 [79.17]
b = 0.90 [0.18]
Seff = 4.36 [0.89]
Teq = 368 [19] K
Rp = 4.15 [1.26] Re
a = 0.2914 [0.0308] AU
Ag = 3134.93 [2044.30] [1.53σ]
Teffp = 4262 [688] K [5.65σ]

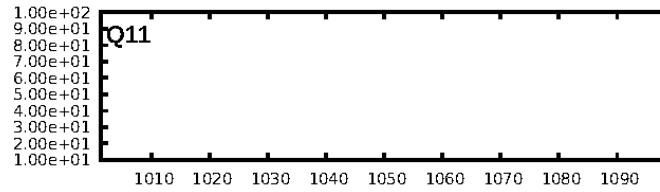
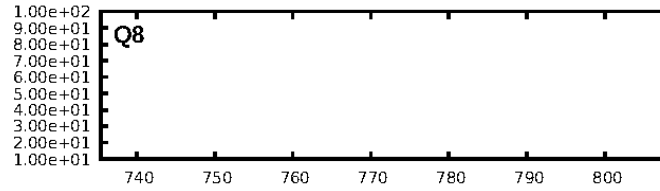
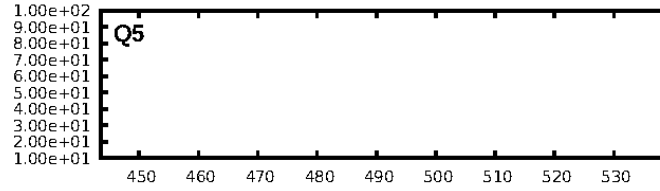
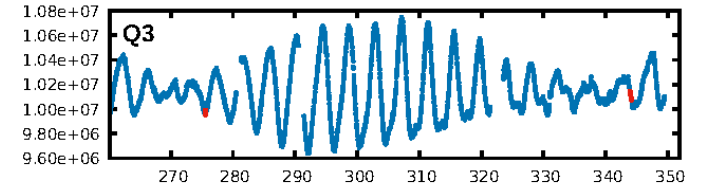
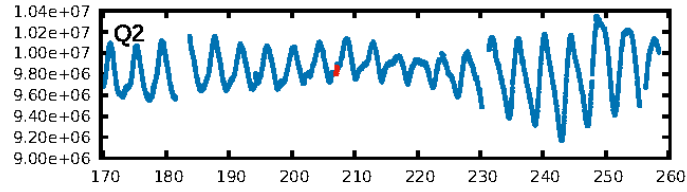
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [101.85σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 3.9%
ModelChiSquareGof-sig: 57.1%
Bootstrap-pfa: 2.73e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -3.65
Centroid-sig: 57.2%
Centroid-so: 0.873 arcsec [0.51σ]
OotOffset-rm: 0.326 arcsec [0.98σ]
KicOffset-rm: 0.478 arcsec [1.18σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-st: 1/1/0/0 [2]
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DiffImageOverlap-fno: 1.00 [2/2]

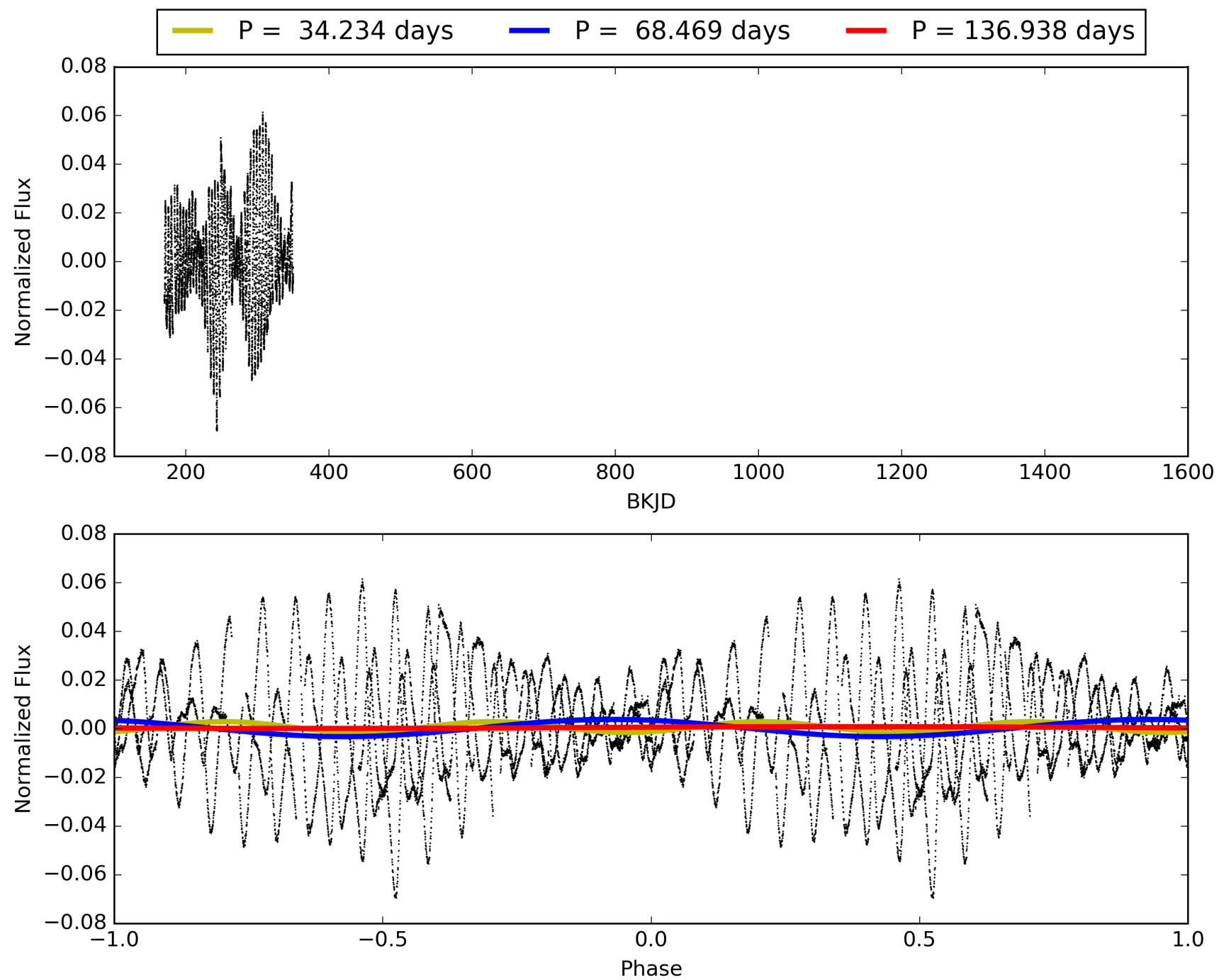
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:11:56 Z

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

TCE 004350271-02, PDC Light Curves

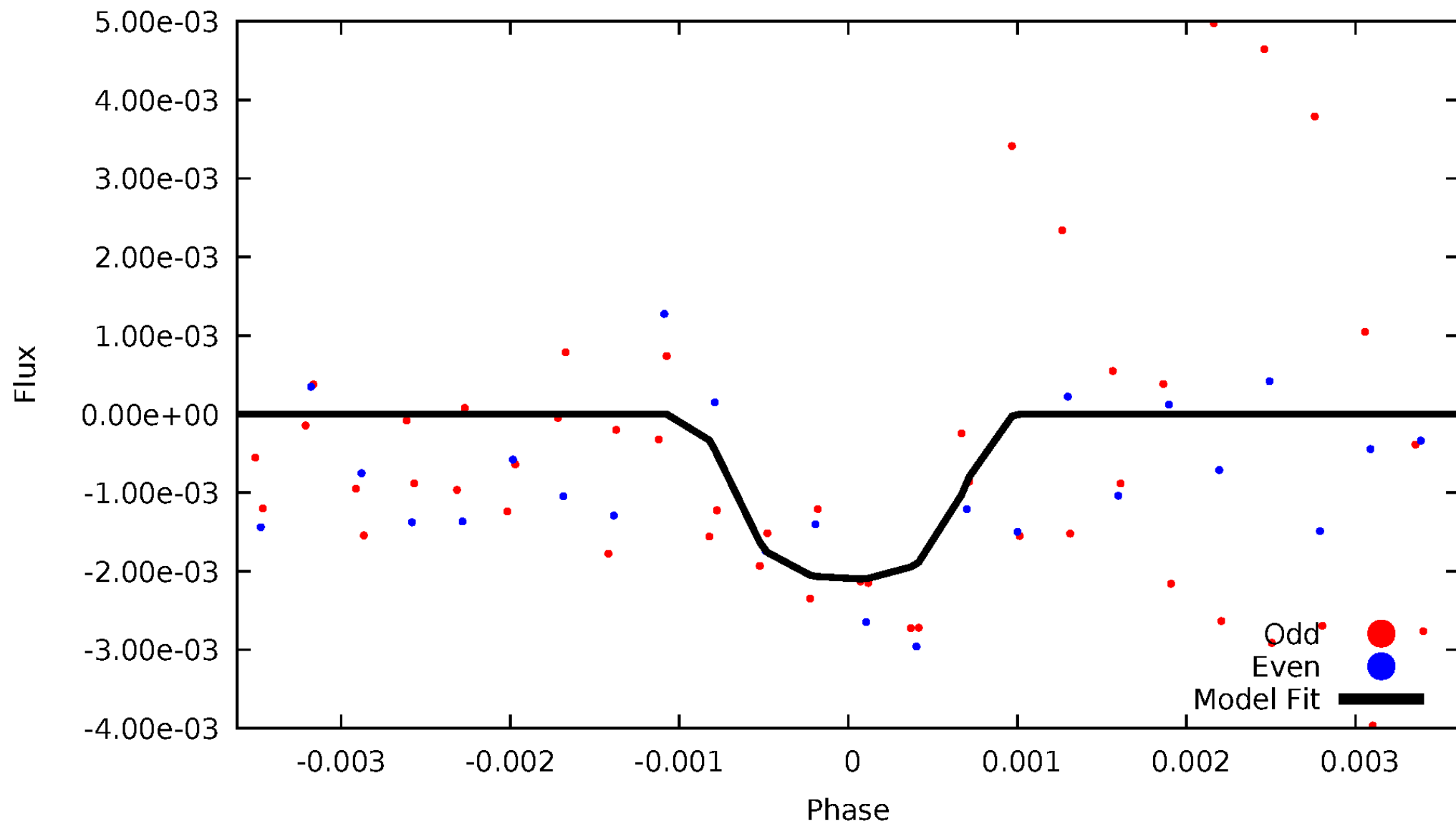


TCE 004350271-02



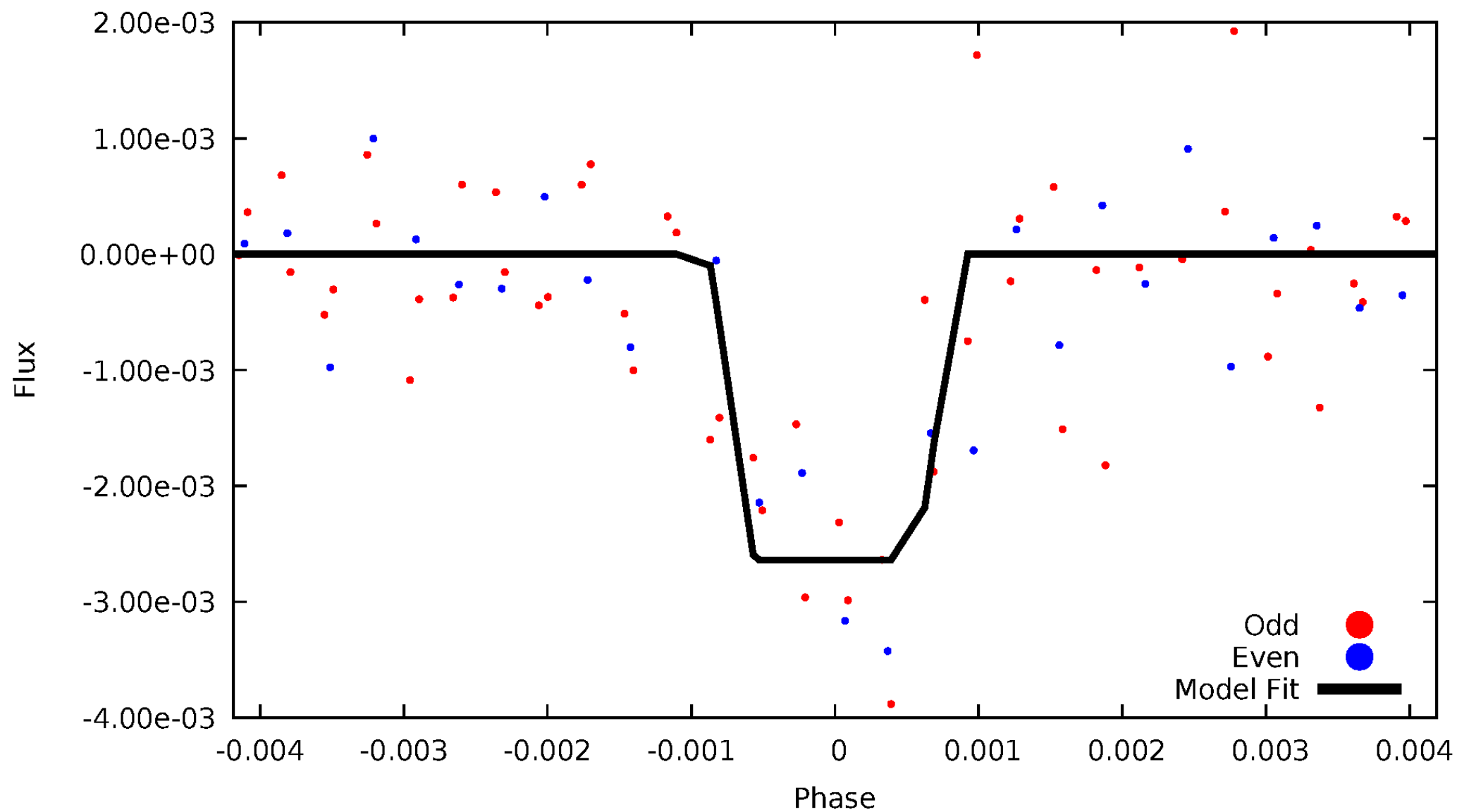
DV Odd/Even

TCE 004350271-02



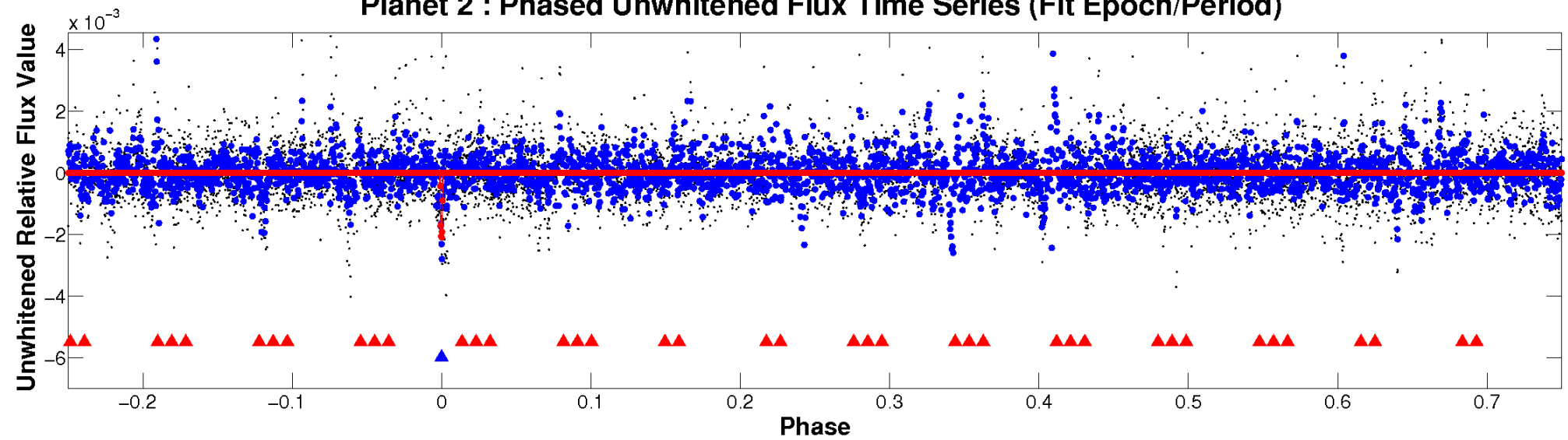
ALT Odd/Even

TCE 004350271-02

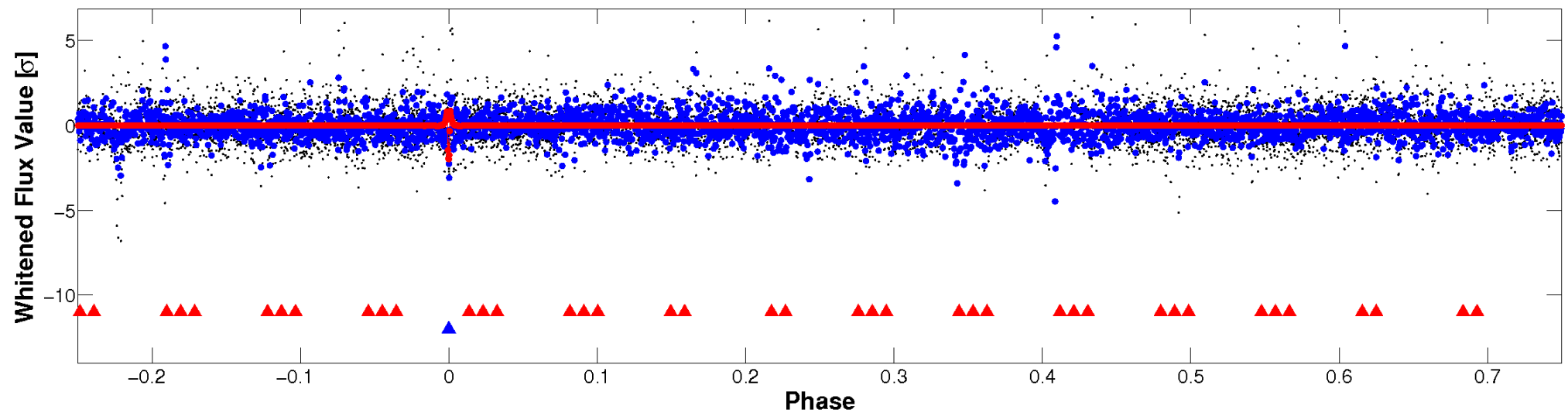


Non-Whitened Vs. Whitened Light Curve

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

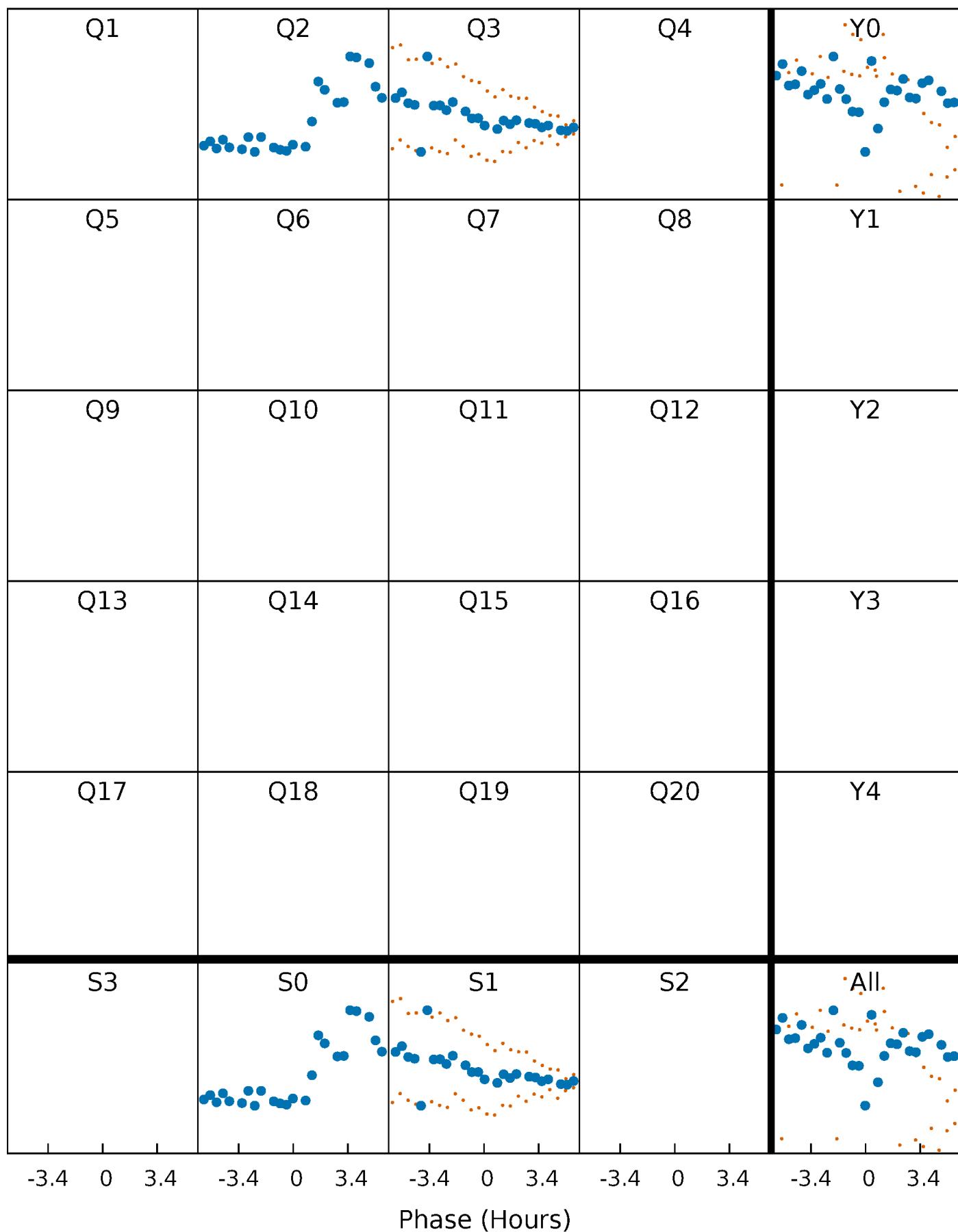


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



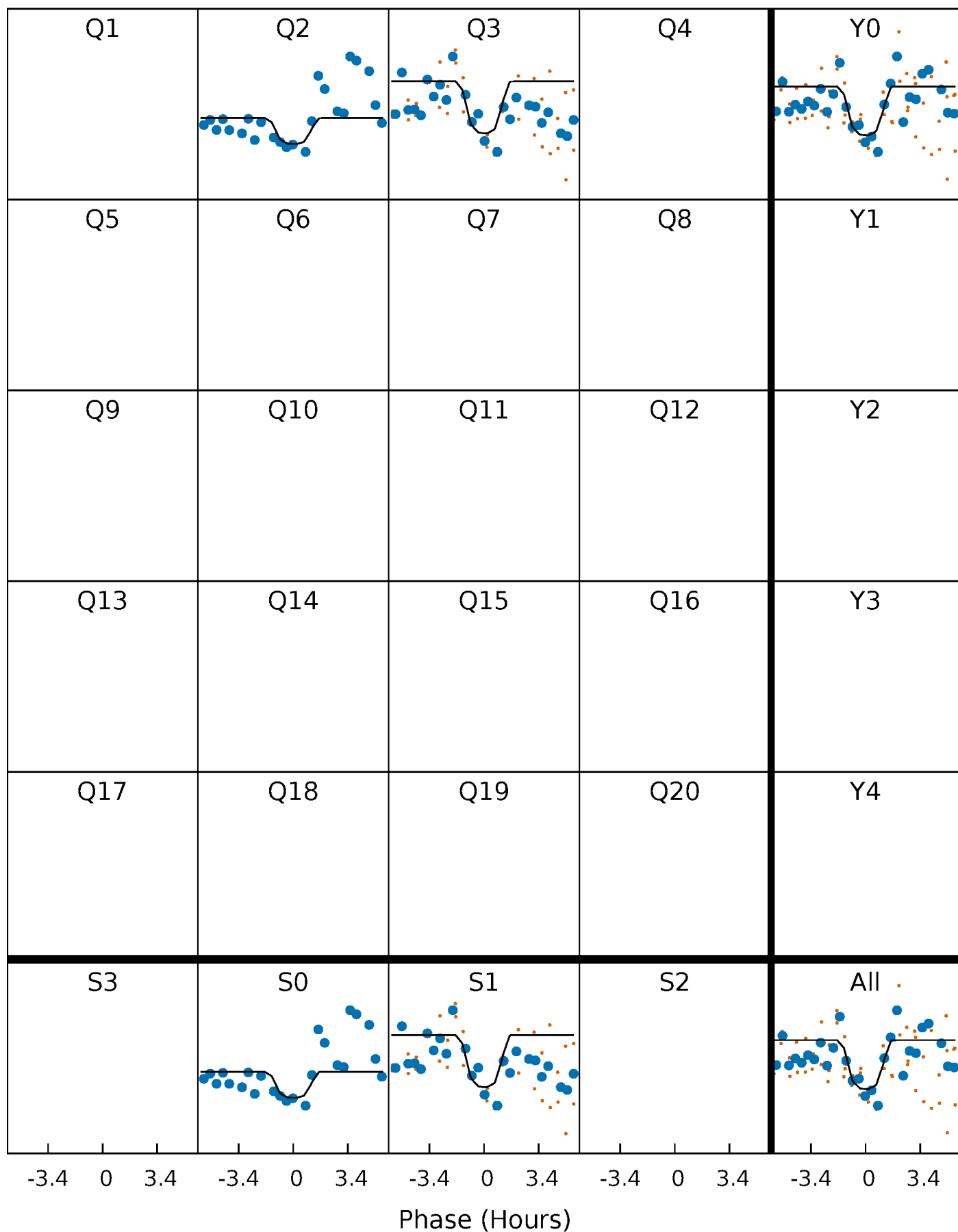
PDC Quarter-Phased Transit Curves

TCE 004350271-02 $P = 68.468973$ Days $T_0 = 138.644992$ (BKJD)



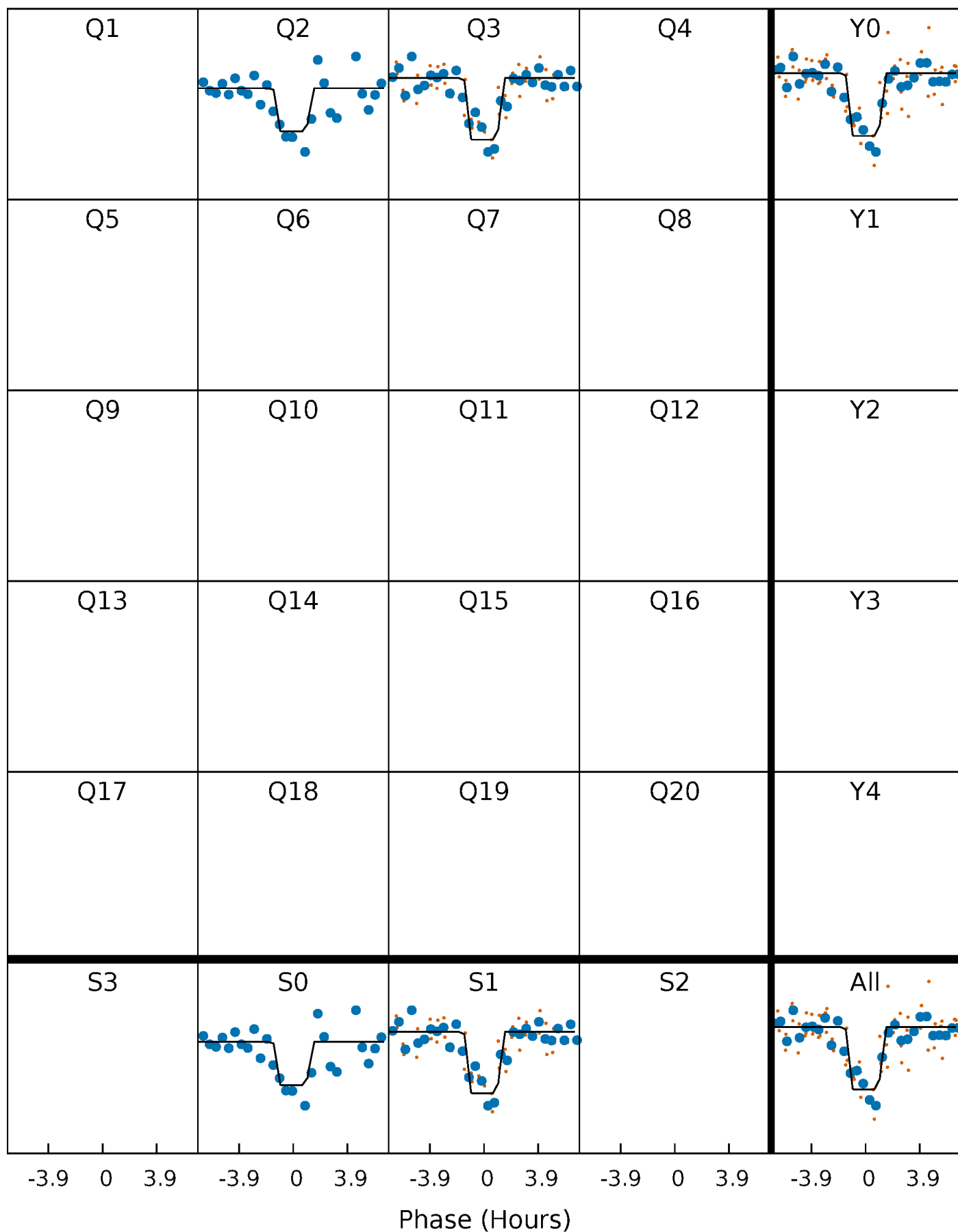
DV Quarter-Phased Transit Curves

TCE 004350271-02 P= 68.468973 Days $T_0=138.644992$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

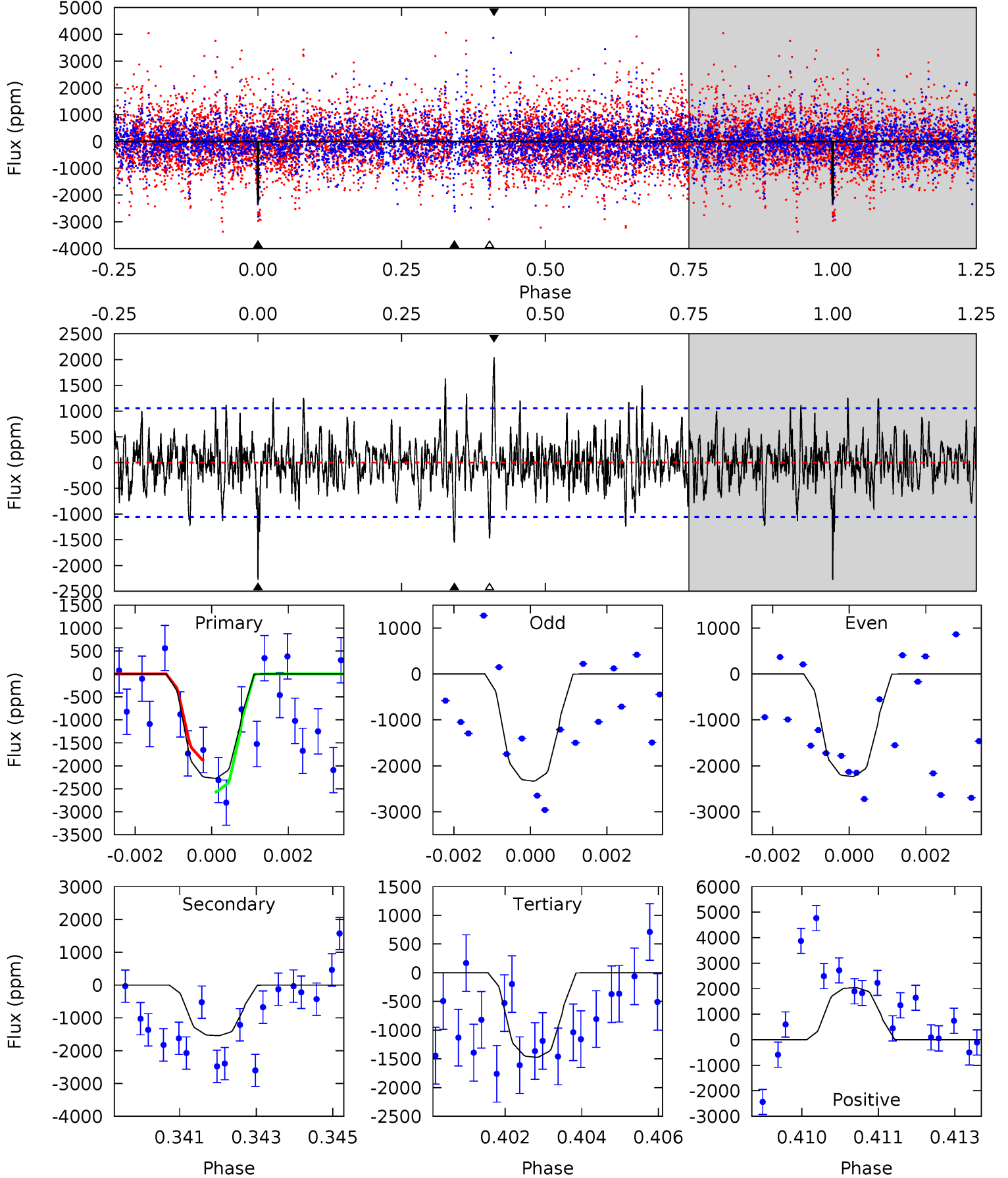
TCE 004350271-02 P= 68.472683 Days $T_0=138.640010$ (BKJD)



DV Model-Shift Uniqueness Test

004350271-02, P = 68.468973 Days, E = 138.644992 Days

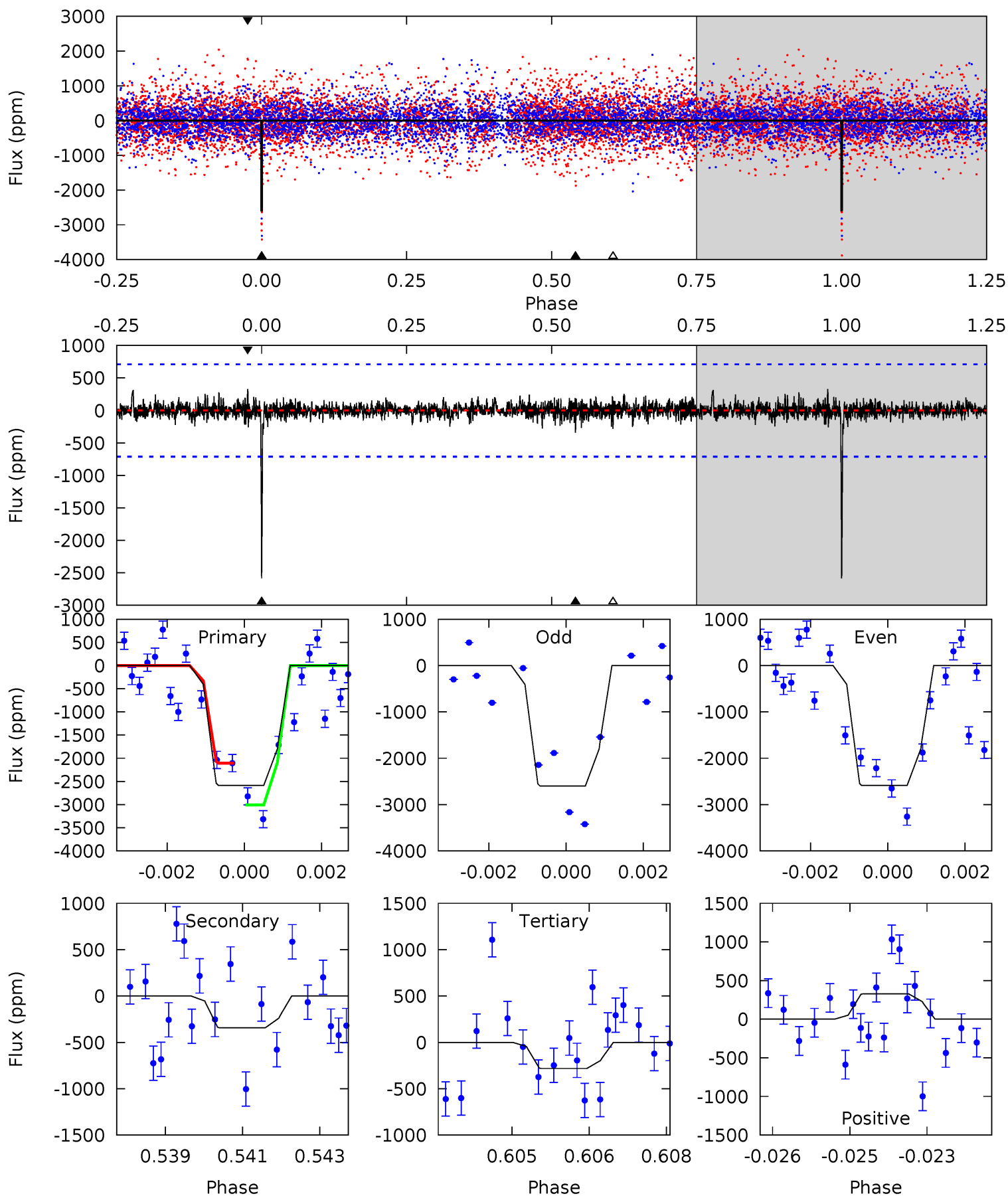
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	7.83	7.47	10.4	5.35	3.12	1.89	4.06	1.17	0.36	-2.53	0.22	0.97	0.47	1.72



Alt Model-Shift Uniqueness Test

004350271-02, P = 68.472683 Days, E = 138.640010 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.5	2.60	2.13	2.48	5.37	3.16	0.58	17.4	17.1	0.47	0.12	0.04	0.96	0.11	3.44



Stellar Parameters For KIC 004350271

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5219^{+171}_{-155}	$4.540^{+0.088}_{-0.072}$	$-0.420^{+0.350}_{-0.300}$	$0.746^{+0.091}_{-0.083}$	$0.704^{+0.101}_{-0.043}$	$2.384^{+0.888}_{-0.544}$
	+3%/-3%	+2%/-2%	+83%/-71%	+12%/-11%	+14%/-6%	+37%/-23%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 004350271-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1544 ± 197	$4.11^{+1.24}_{-1.18}$	515^{+23}_{-23}	4740^{+755}_{-486}	4421^{+4369}_{-1877}
Alt.	-343 ± 132	$4.11^{+1.34}_{-1.11}$	514^{+22}_{-22}	3566^{+483}_{-384}	890^{+980}_{-426}

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

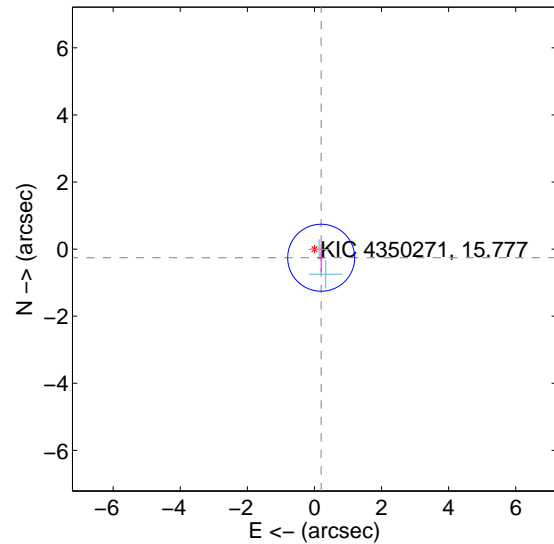
Supplemental centroid analysis for 004350271-02. Kepler magnitude: 15.78. Transit SNR 6.81

There are 2 quarters with good PRF difference image offsets

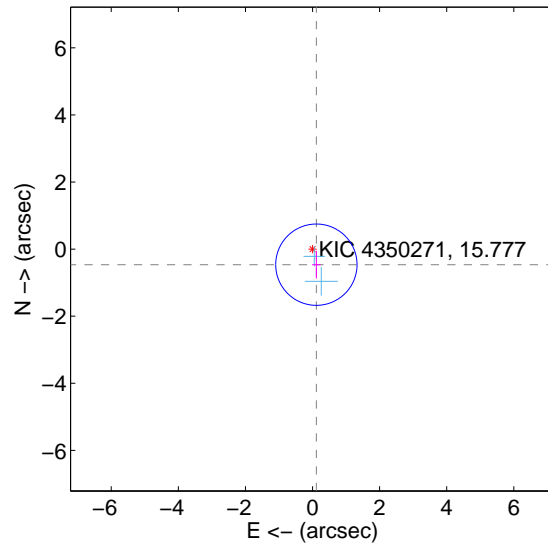
The direct PRF centroid is offset from the target star catalog position by about 0.22 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.326 ± 0.333	0.98	-0.201 ± 0.123	-0.257 ± 0.411
PRF-fit source offset from KIC position	0.478 ± 0.404	1.18	-0.115 ± 0.131	-0.464 ± 0.415
photometric centroid source offset	0.87 ± 1.71	0.51	-0.27 ± 1.67	-0.83 ± 1.72

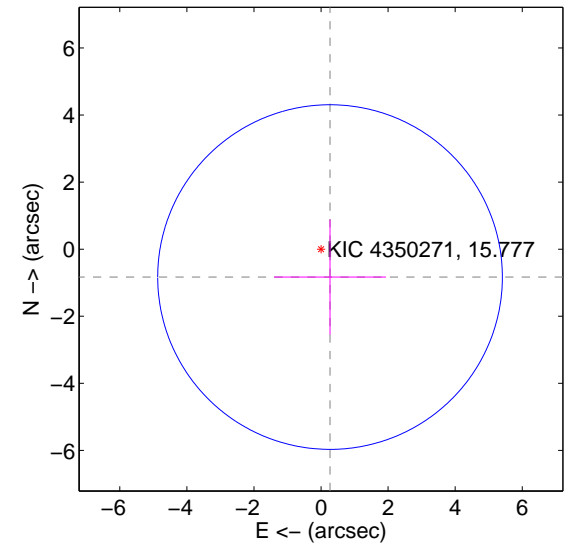
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



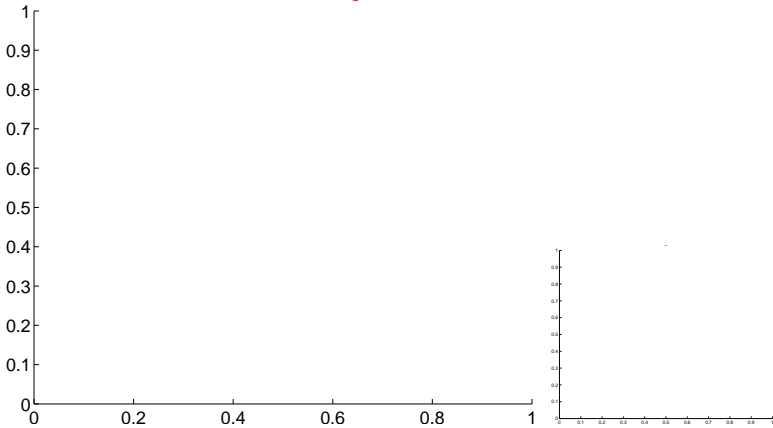
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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

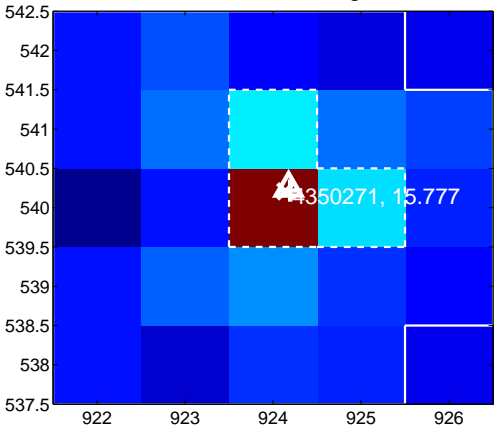
Q1 no difference image



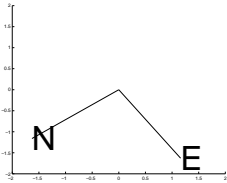
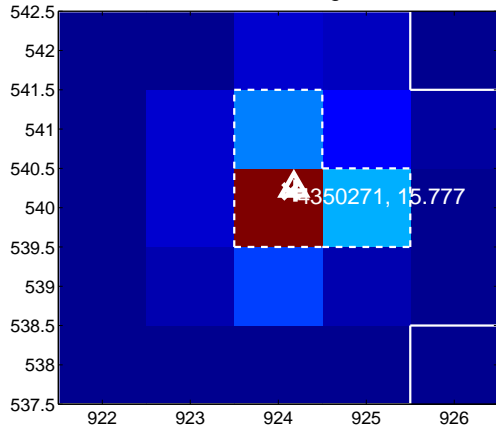
Q1 no OOT image



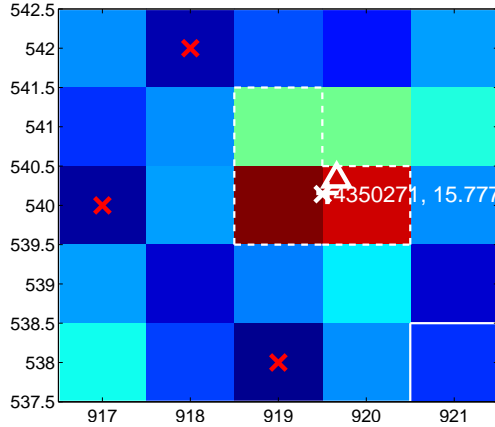
Q2 difference image



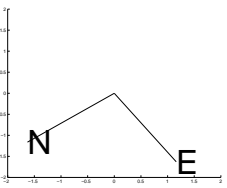
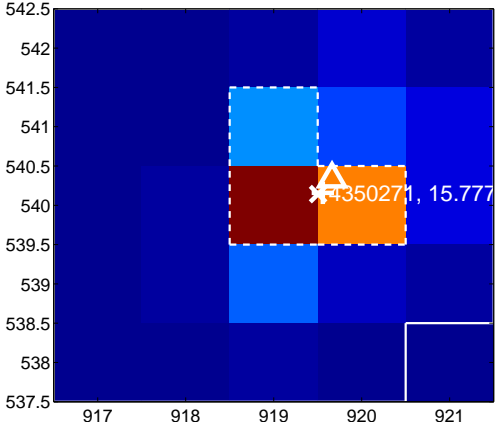
Q2 OOT image



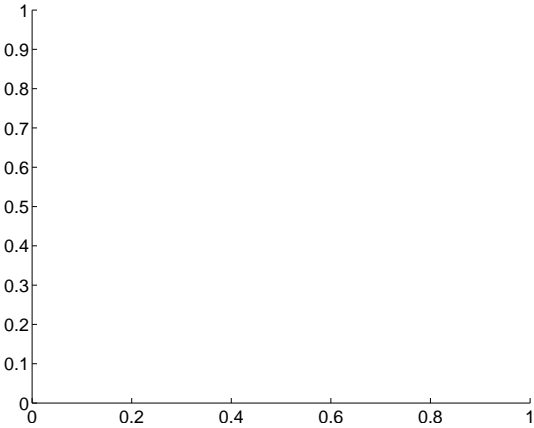
Q3 difference image



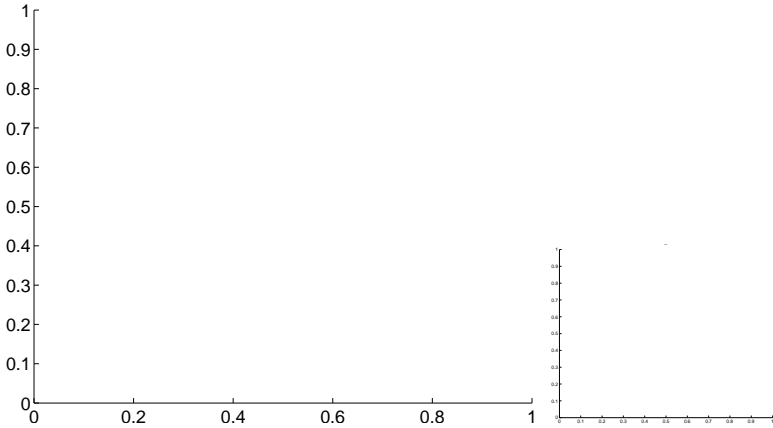
Q3 OOT image



Q4 no difference image



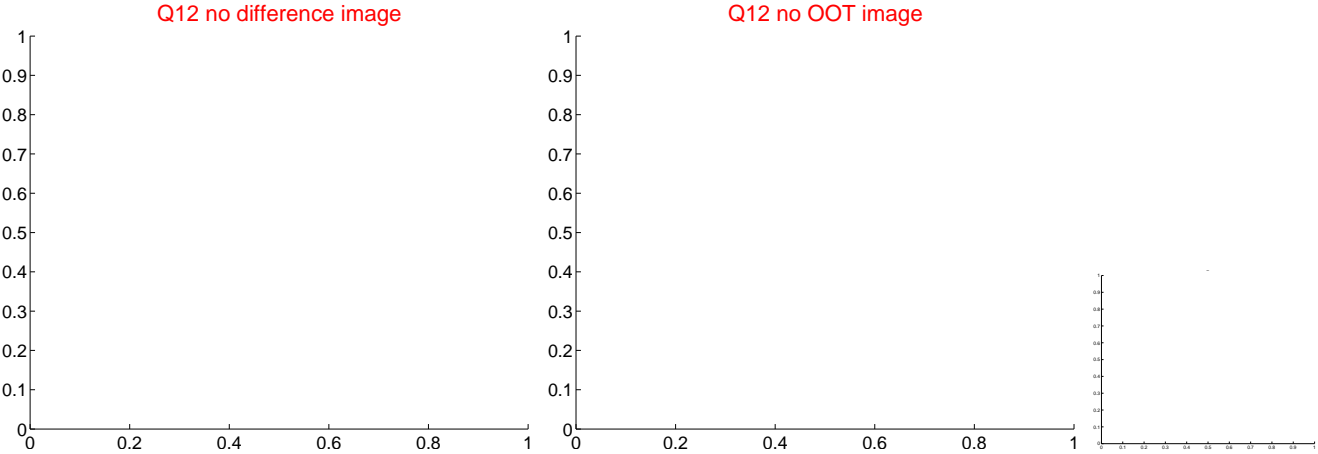
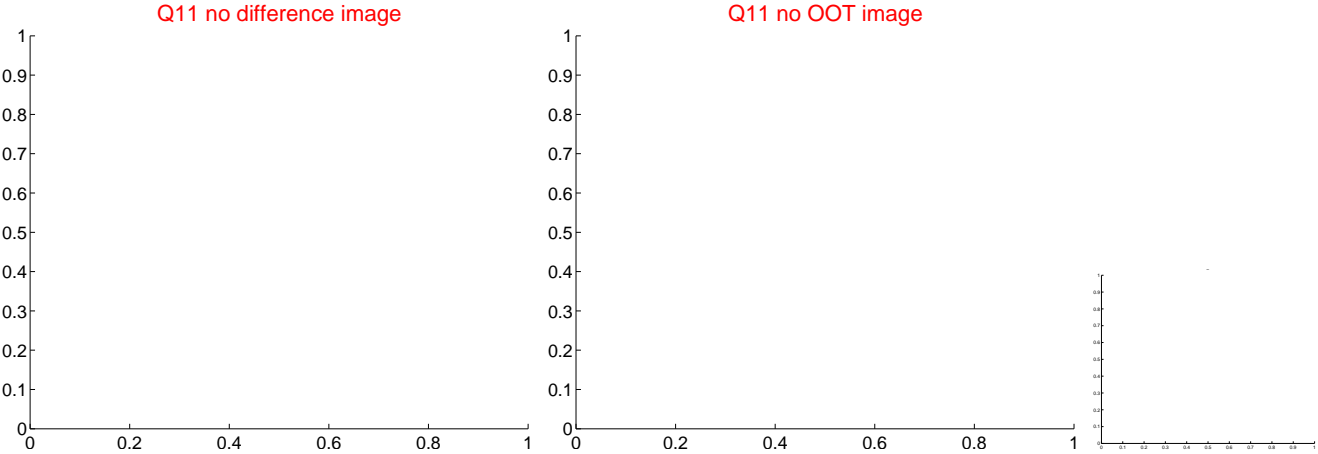
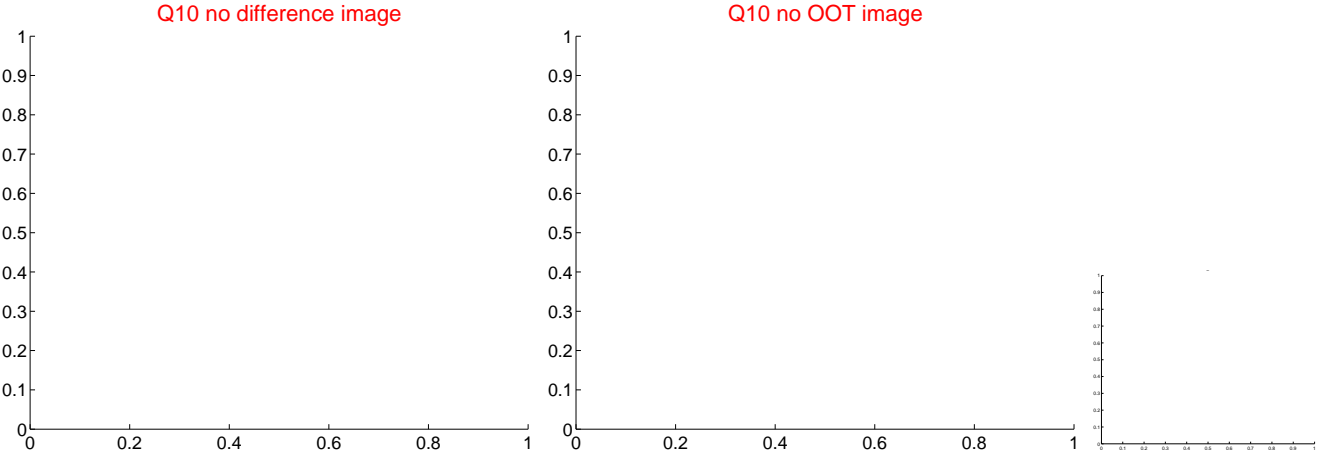
Q4 no OOT image



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



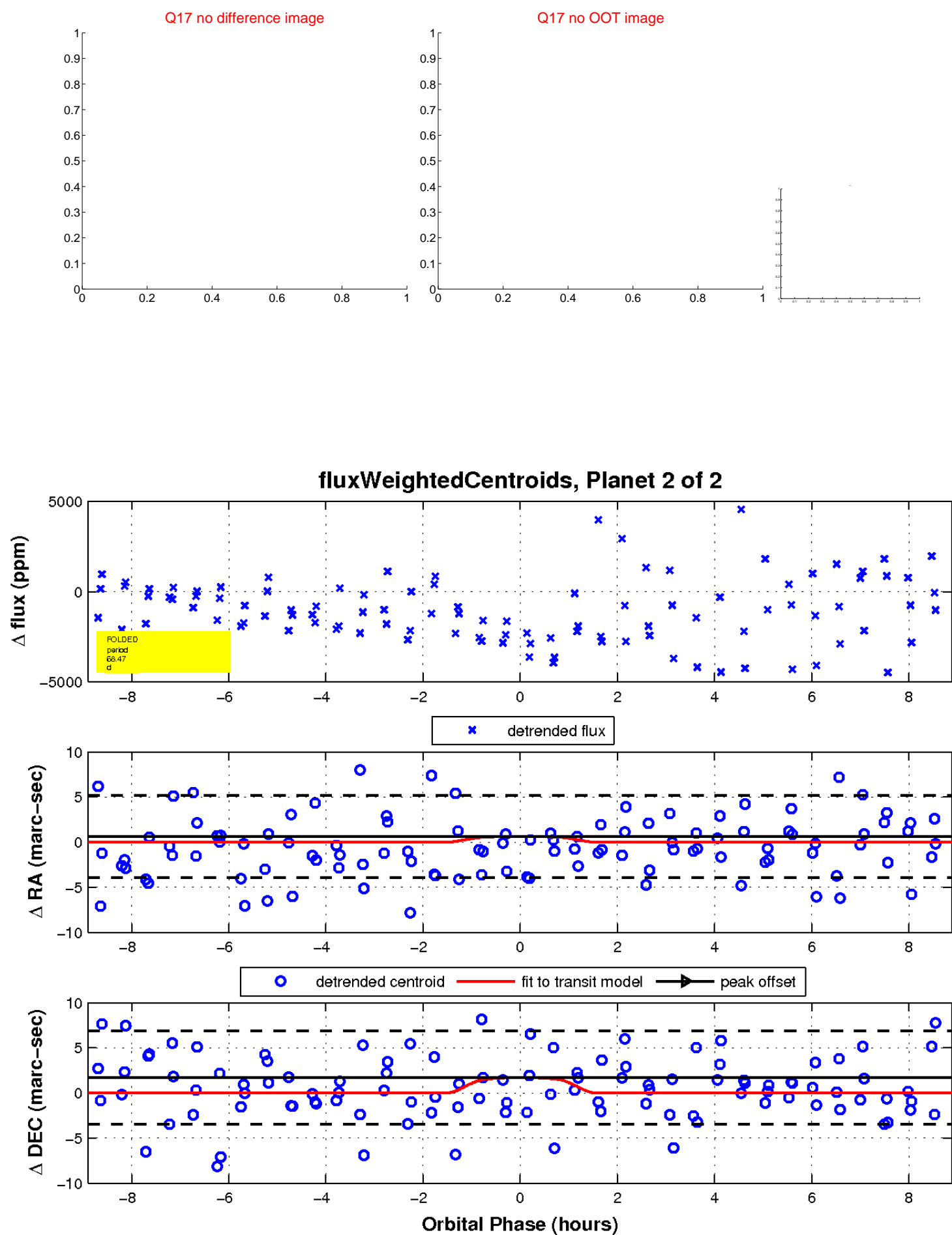
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

