

KIC 009137819

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})
009137819-01	OBS	No	30.341299	133.328554	12130.8	4.645	19.5	8.3	2.46	7819	37.86	388.20
009137819-02	OBS	No	28.562247	144.403057	7380.0	3.061	14.7	8.9	2.46	7819	22.85	420.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009137819-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
009137819-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

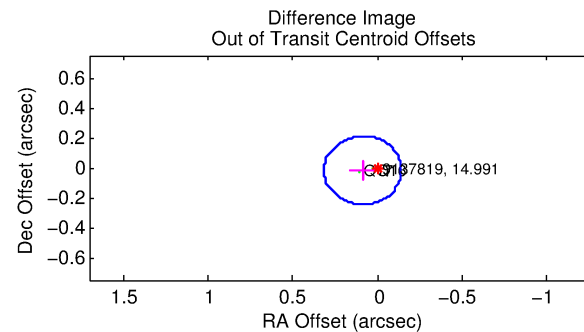
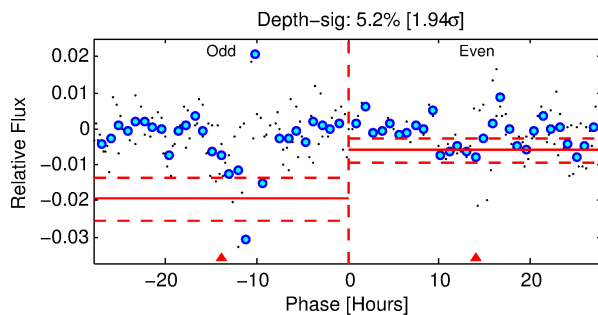
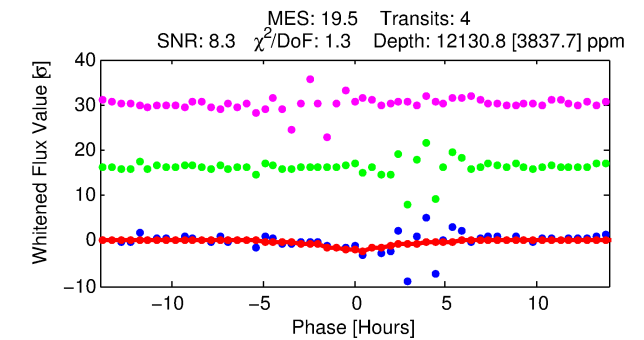
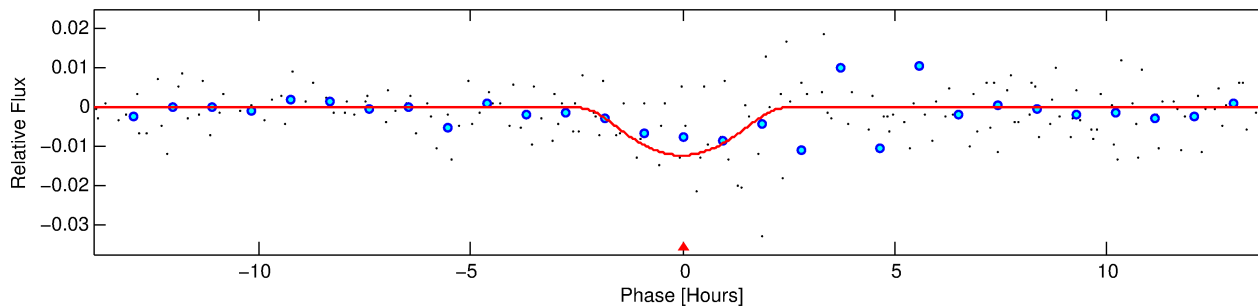
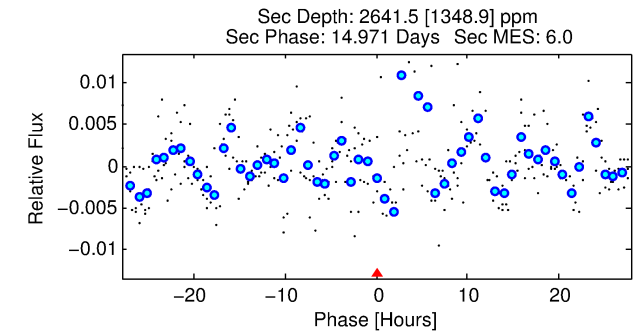
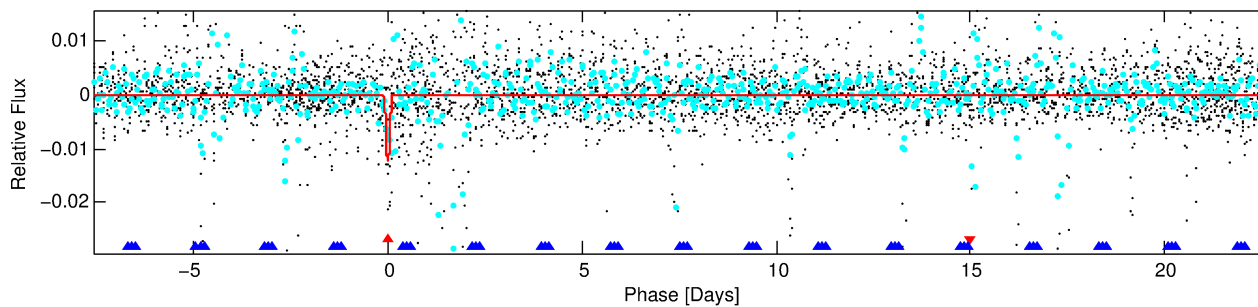
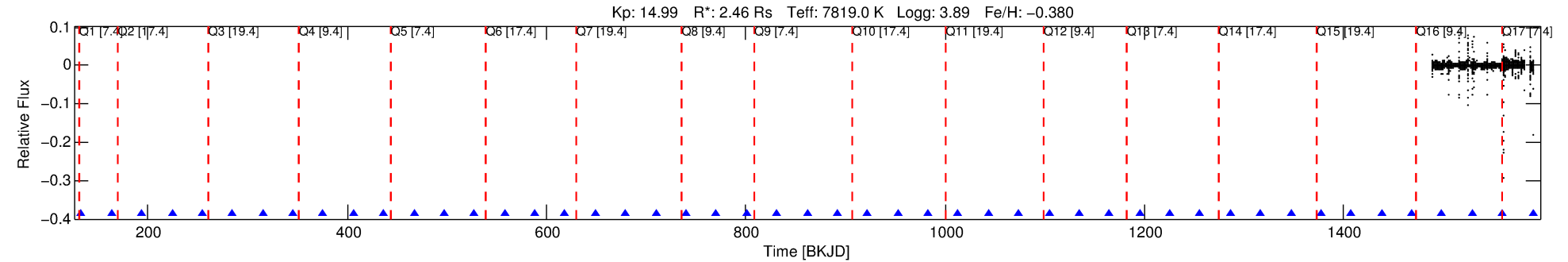
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009137819-01

No Significant Match Found

DV One-Page Summary

KIC: 9137819 Candidate: 1 of 2 Period: 30.341 d



DV Fit Results:

Period = 30.34130 [0.01205] d
Epoch = 133.3286 [0.5564] BKJD
Rp/R* = 0.1412 [0.4365]
a/R* = 32.04 [24.44]
b = 0.94 [0.78]
Seff = 388.20 [230.95]
Teq = 1132 [168] K
Rp = 37.86 [118.00] Re
a = 0.2282 [0.0835] AU
Ag = 52.81 [329.05] [0.16σ]
Teffp = 4717 [7320] K [0.49σ]

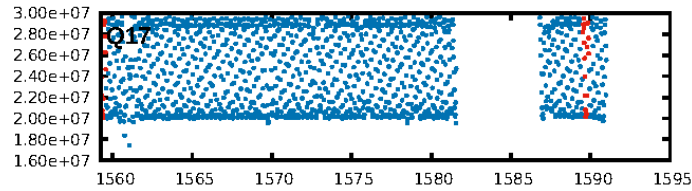
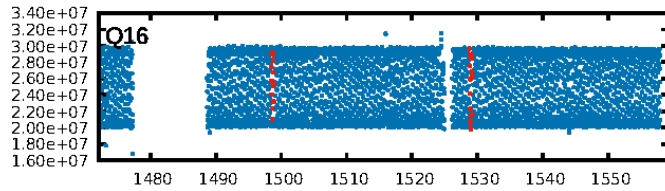
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.68σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 43.4%
Bootstrap-pfa: 9.07e-20
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.06135
Centroid-sig: N/A
Centroid-so: 0.121 arcsec [0.67σ]
OotOffset-rm: 0.089 arcsec [1.17σ]
KicOffset-rm: 0.049 arcsec [0.45σ]
OotOffset-st: 0/0/1/1 [2]
KicOffset-st: 0/0/1/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

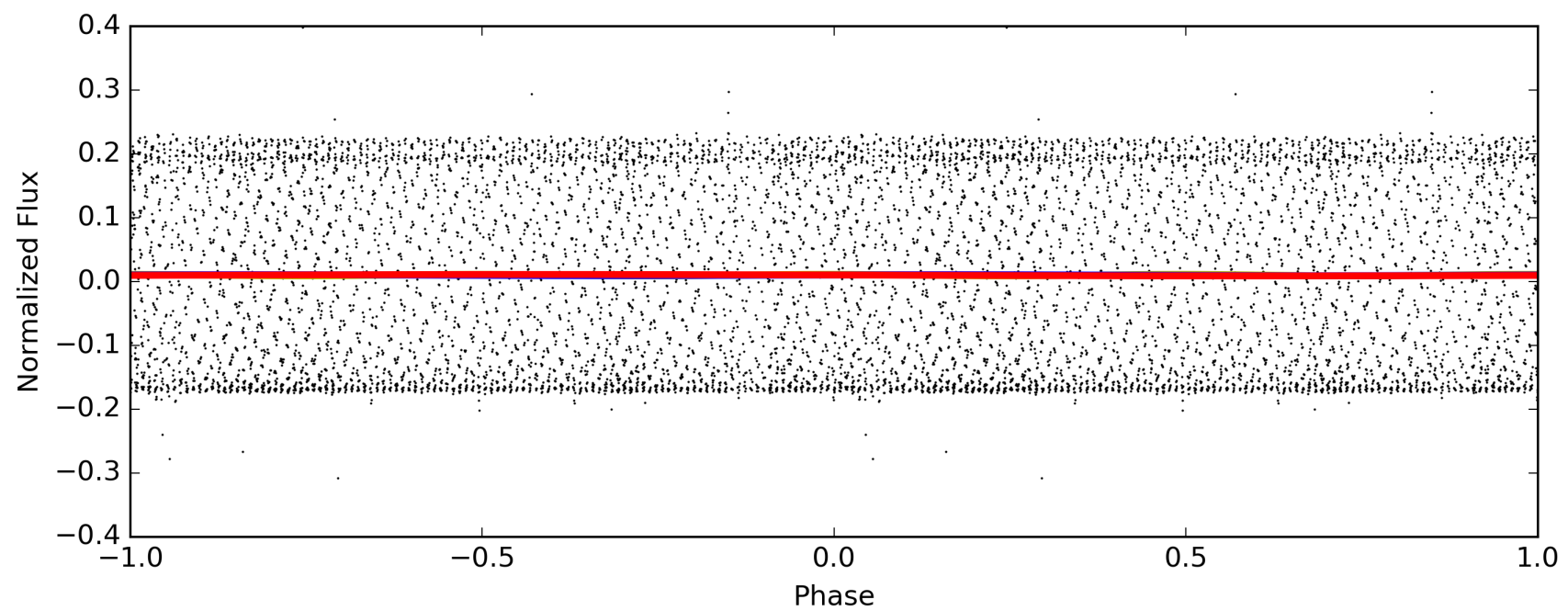
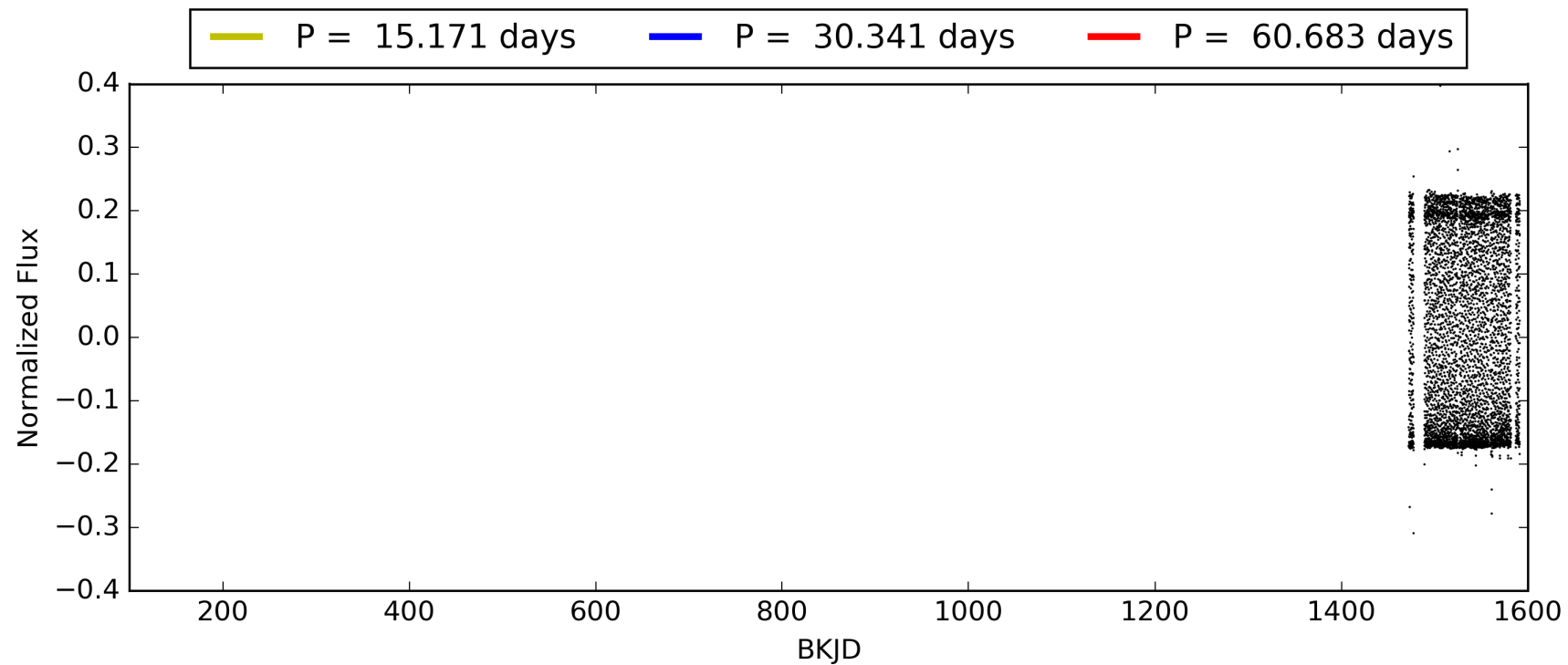
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:30:03 Z

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

TCE 009137819-01, PDC Light Curves

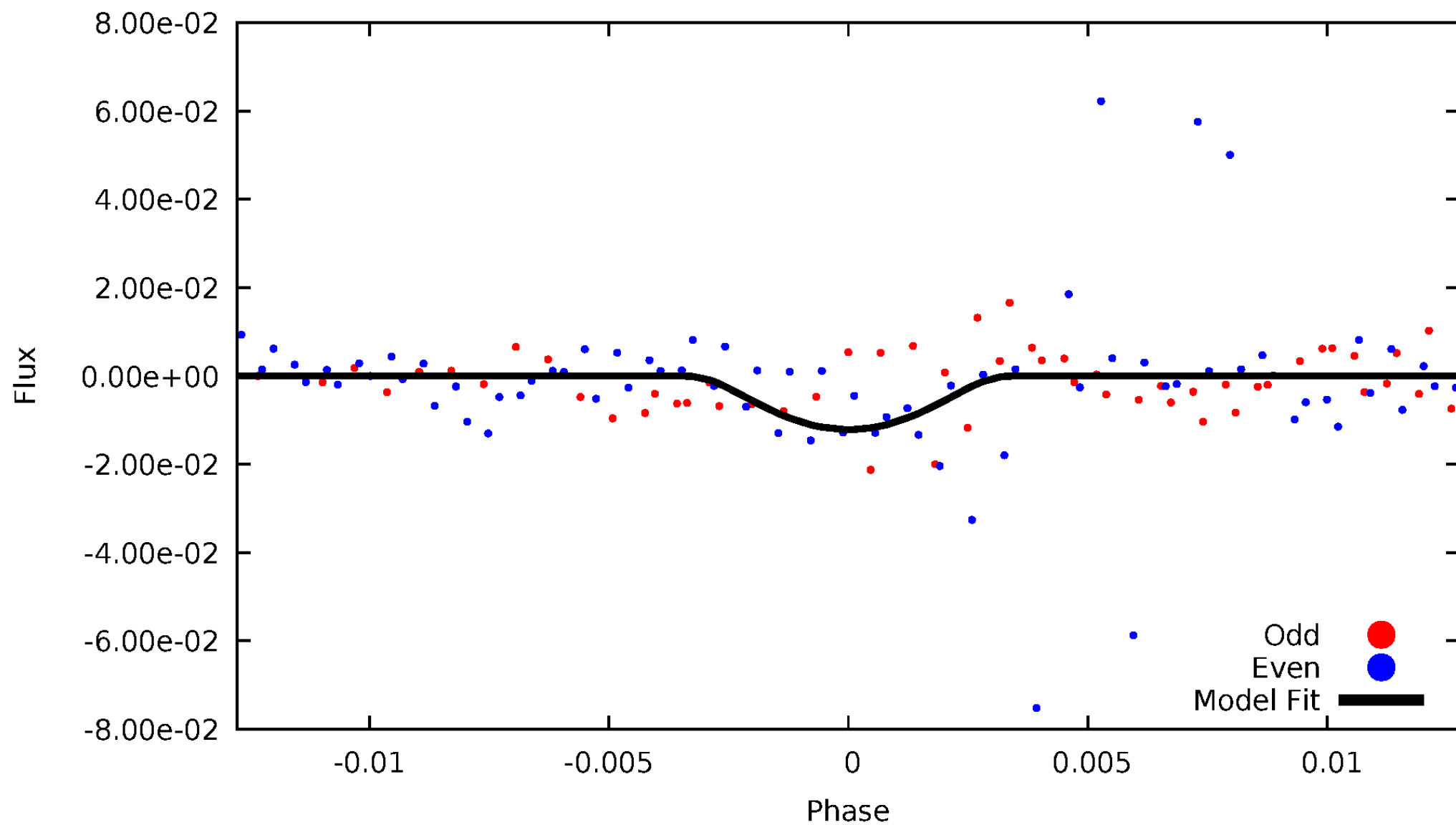


TCE 009137819-01



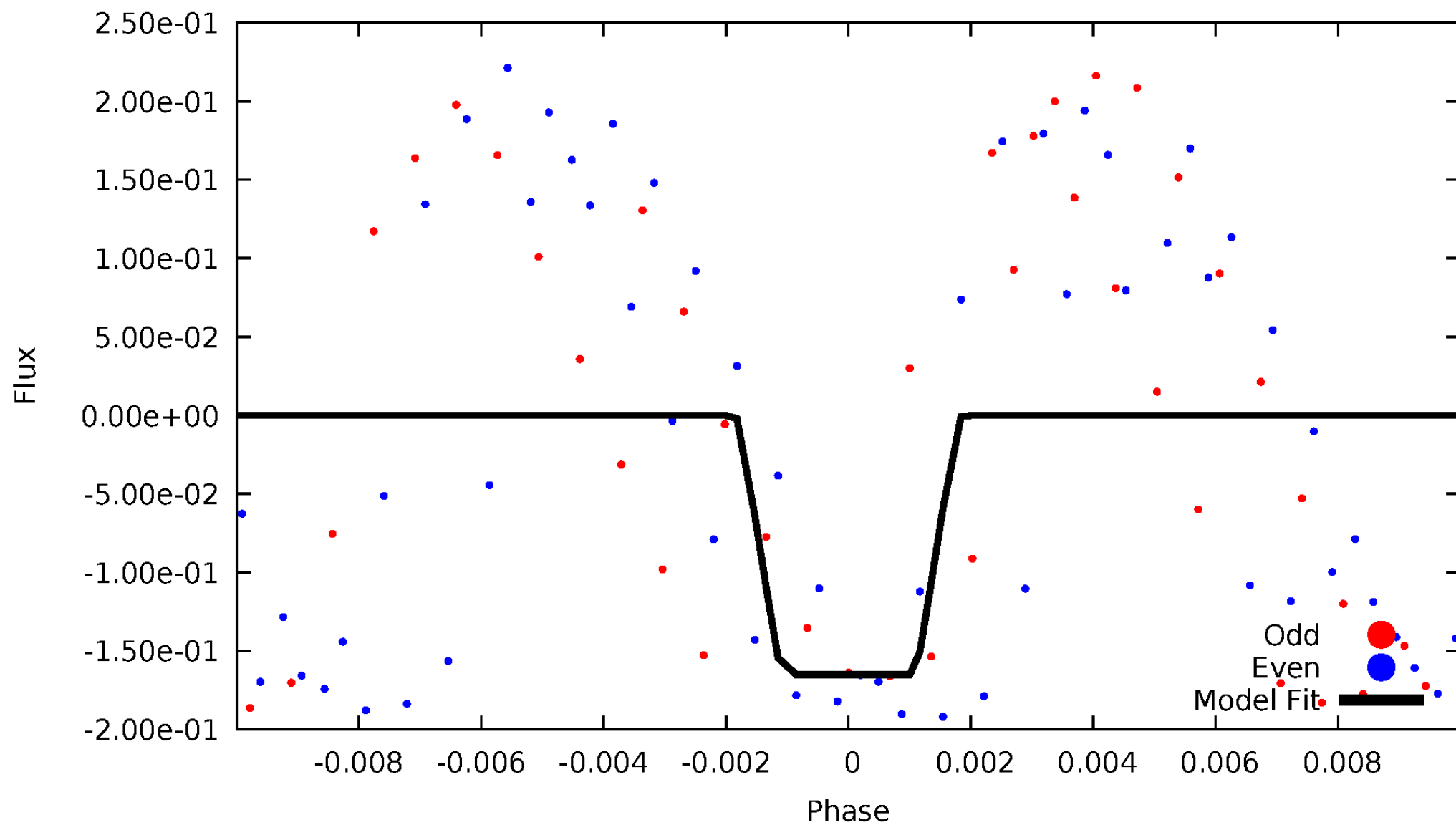
DV Odd/Even

TCE 009137819-01



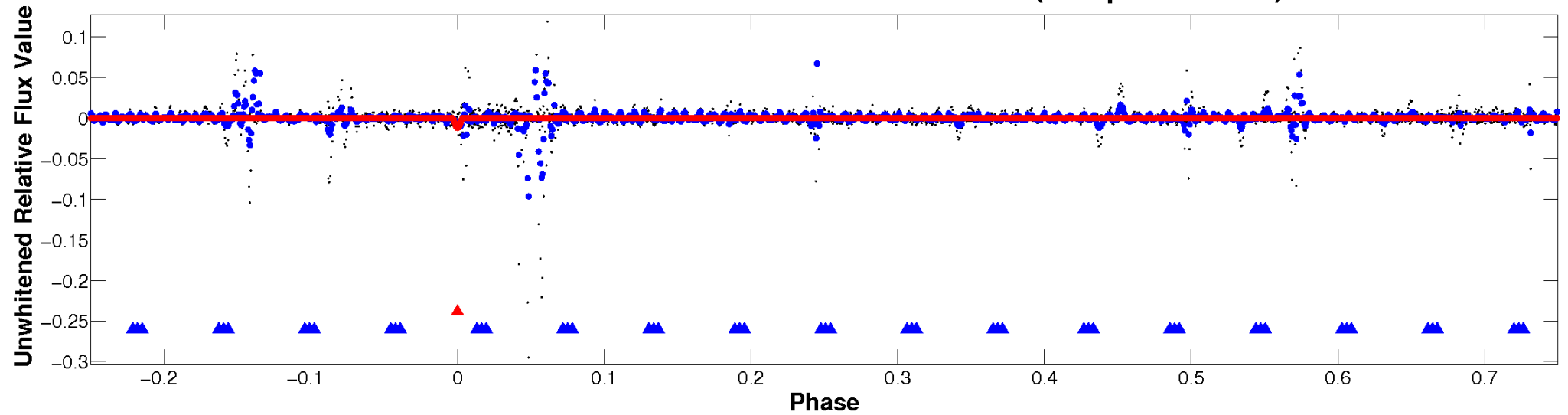
ALT Odd/Even

TCE 009137819-01

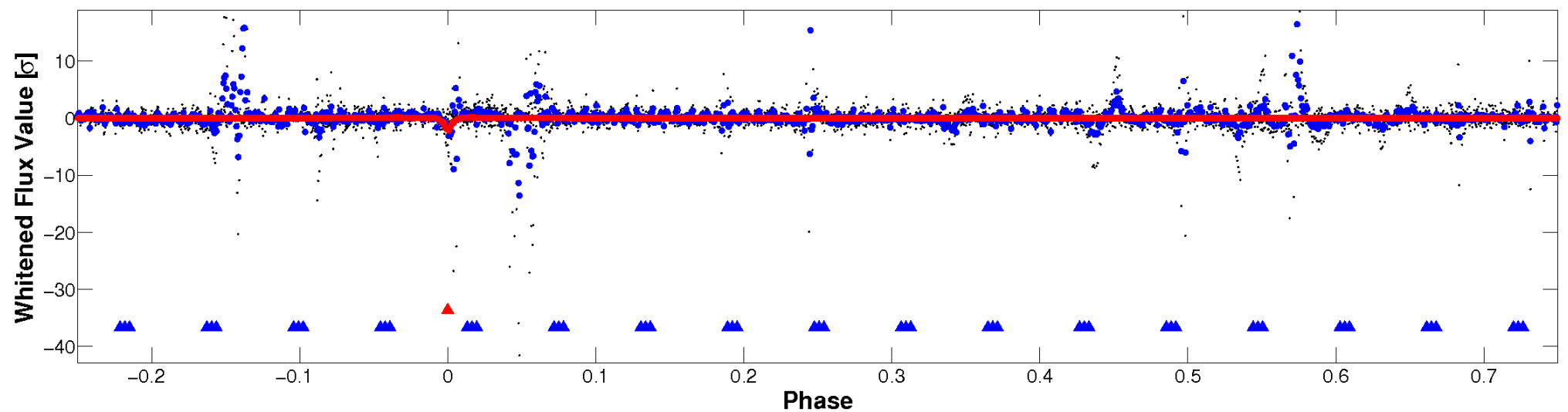


Non-Whitened Vs. Whitened Light Curve

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

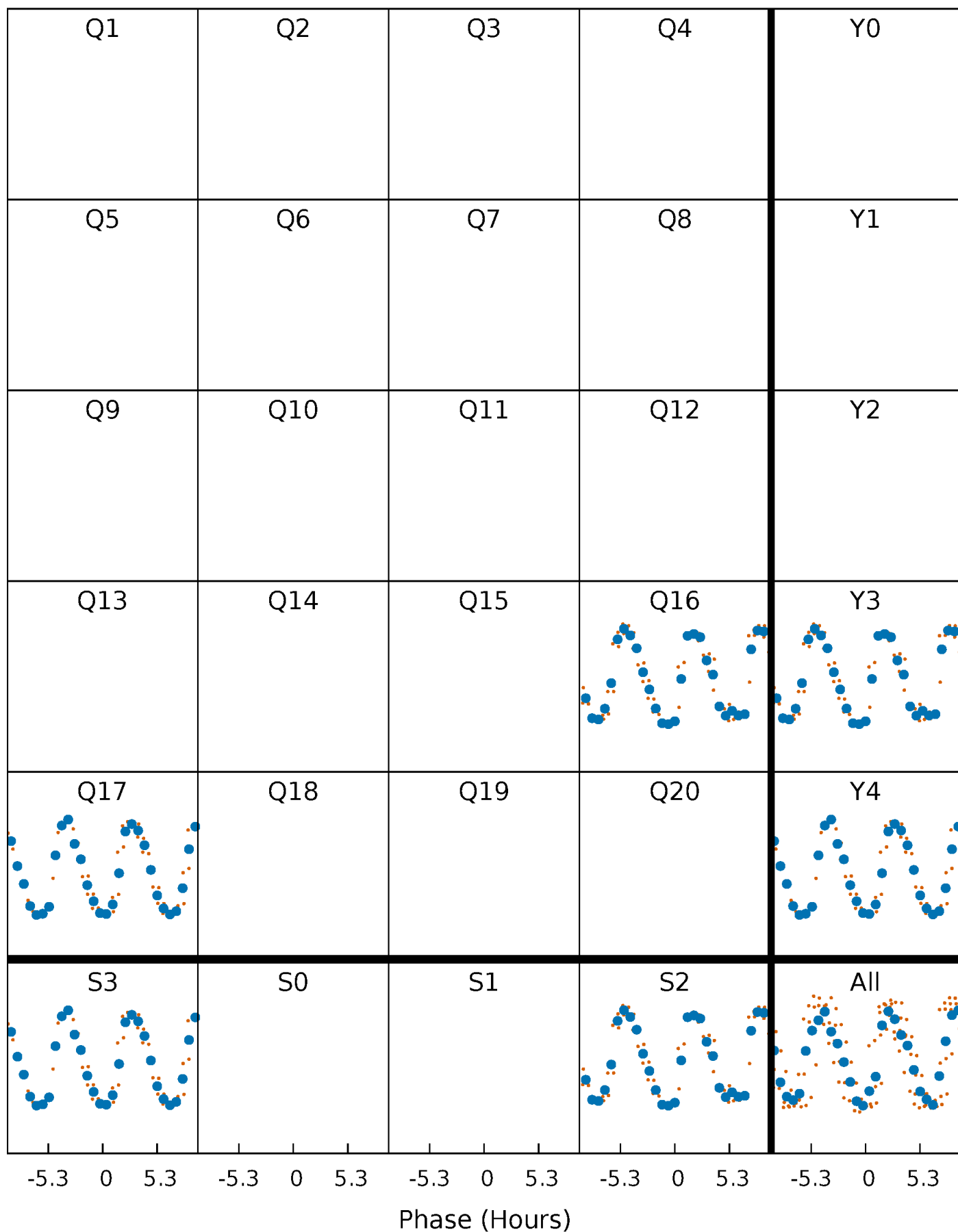


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



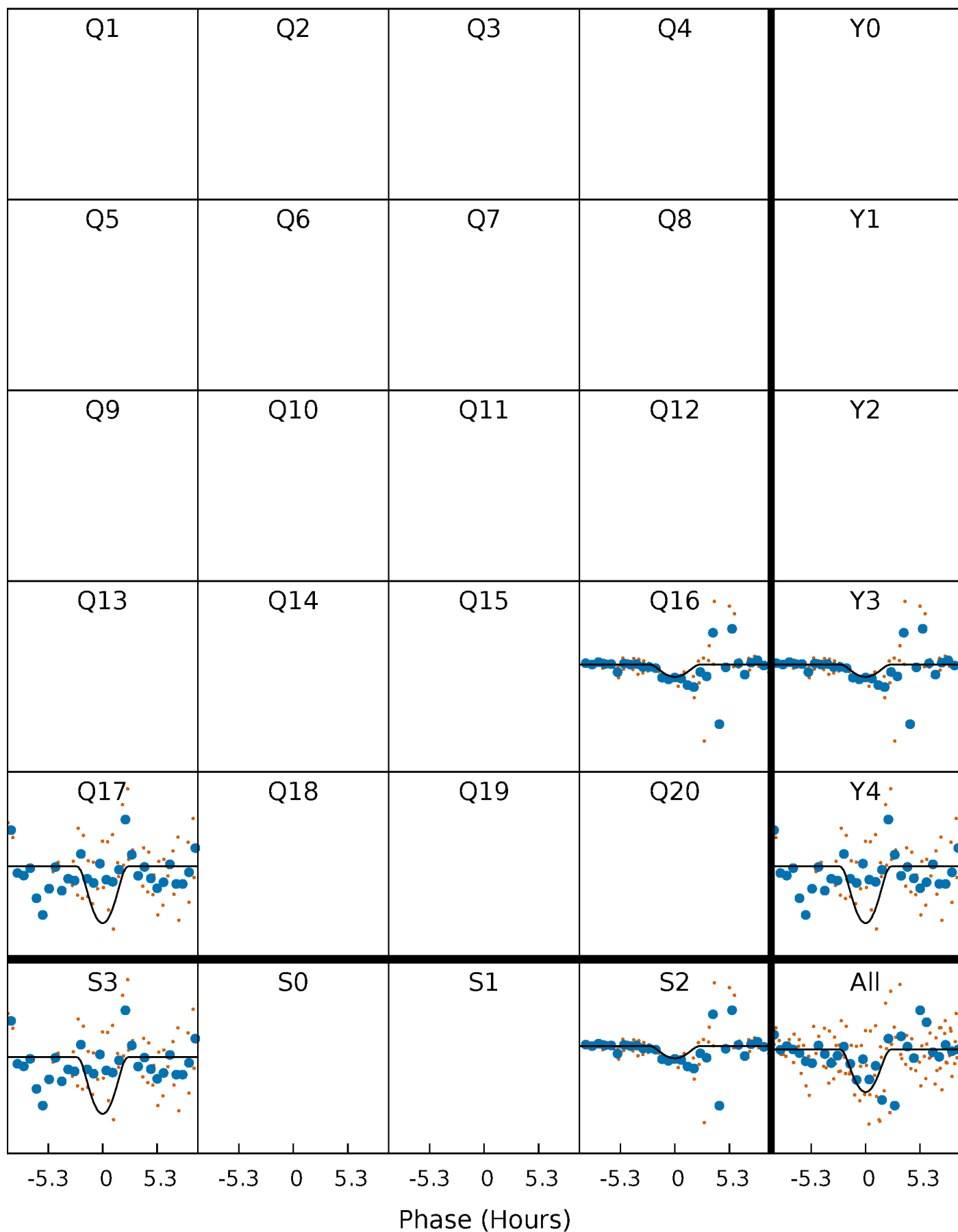
PDC Quarter-Phased Transit Curves

TCE 009137819-01 P= 30.341299 Days $T_0=133.328554$ (BKJD)



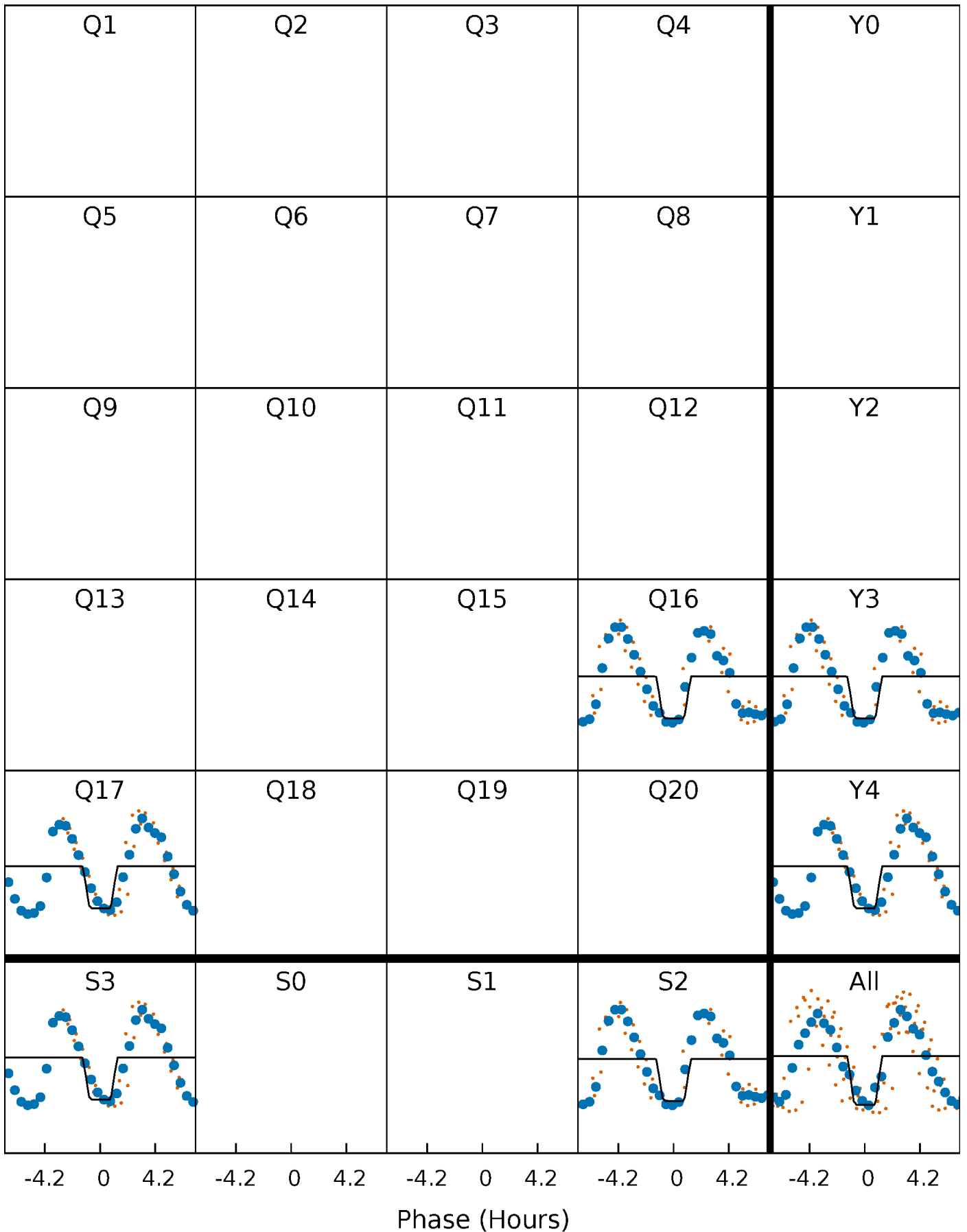
DV Quarter-Phased Transit Curves

TCE 009137819-01 P= 30.341299 Days $T_0=133.328554$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

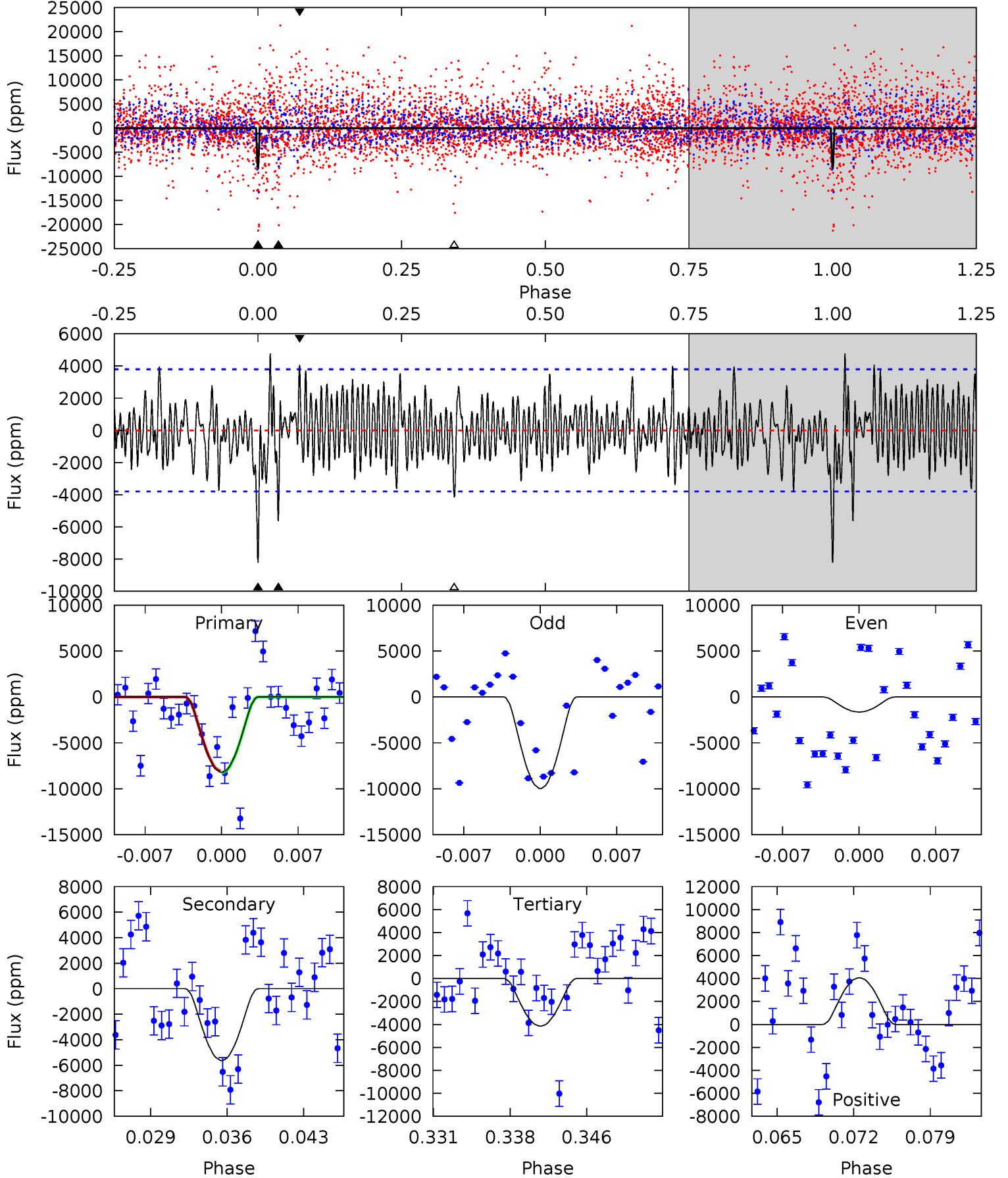
TCE 009137819-01 P= 30.339118 Days $T_0=133.410472$ (BKJD)



DV Model-Shift Uniqueness Test

009137819-01, P = 30.341299 Days, E = 133.328554 Days

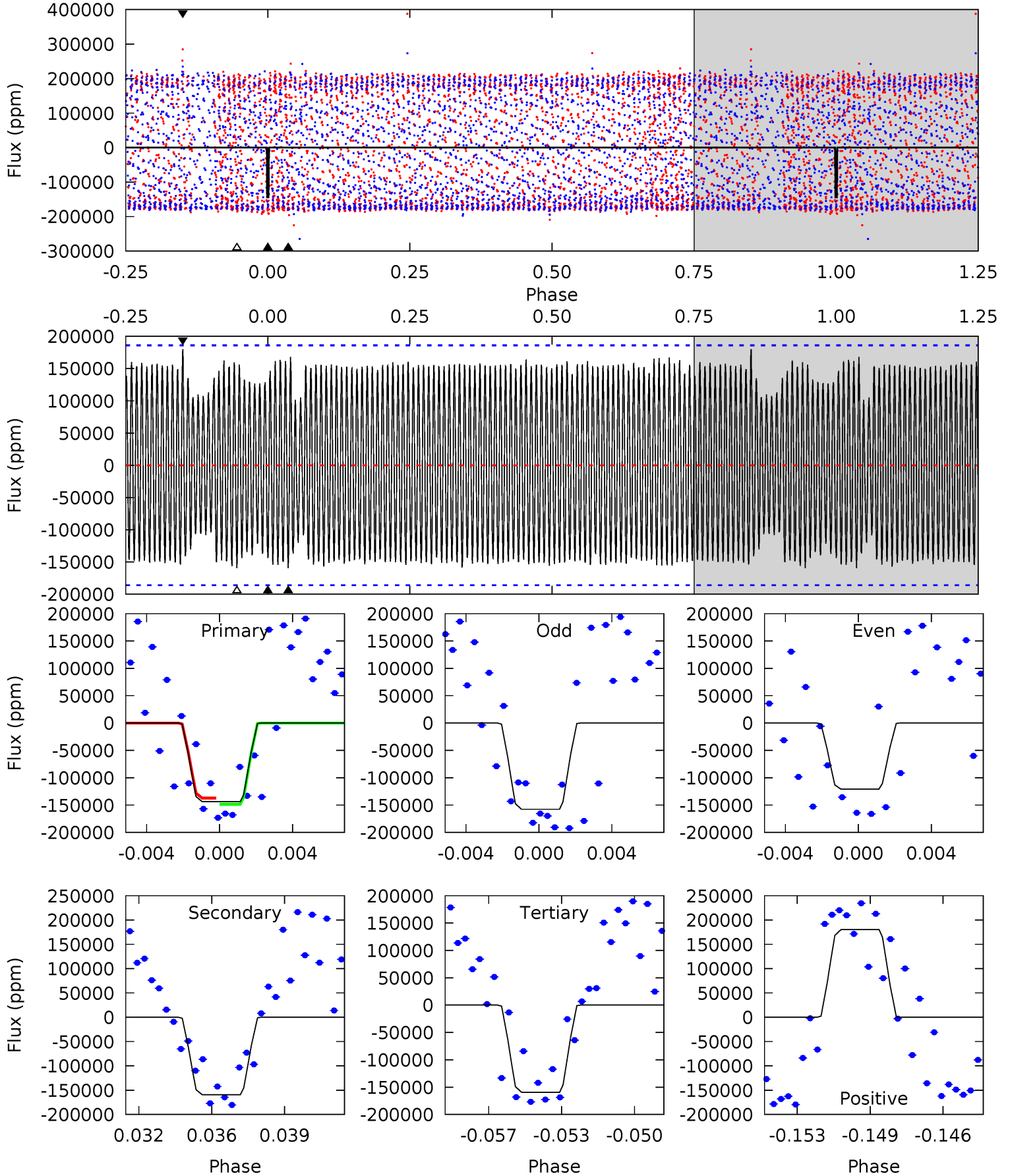
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	7.56	5.57	5.46	5.09	2.69	1.90	5.45	5.56	1.99	2.10	3.19	1.10	0.37	0.10



Alt Model-Shift Uniqueness Test

009137819-01, P = 30.339118 Days, E = 133.410472 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.03	4.47	4.47	5.05	5.22	2.92	2.95	-0.44	-1.02	0.00	-0.58	0.50	0.99	0.53	0.16



Stellar Parameters For KIC 009137819

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7819^{+243}_{-324}	$3.893^{+0.330}_{-0.110}$	$-0.380^{+0.250}_{-0.300}$	$2.457^{+0.418}_{-0.974}$	$1.723^{+0.166}_{-0.387}$	$0.164^{+0.421}_{-0.057}$
	+3%/-4%	+8%/-3%	+66%/-79%	+17%/-40%	+10%/-22%	+257%/-35%
Source	KIC0	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 009137819-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-5635 ± 745	$83.61^{+89.29}_{-56.72}$	1550^{+104}_{-148}	3936^{+2457}_{-821}	22^{+198}_{-17}
Alt.	-159343 ± 35633	$127.63^{+110.95}_{-81.06}$	1554^{+104}_{-148}	7033^{+7347}_{-1785}	320^{+2078}_{-230}

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

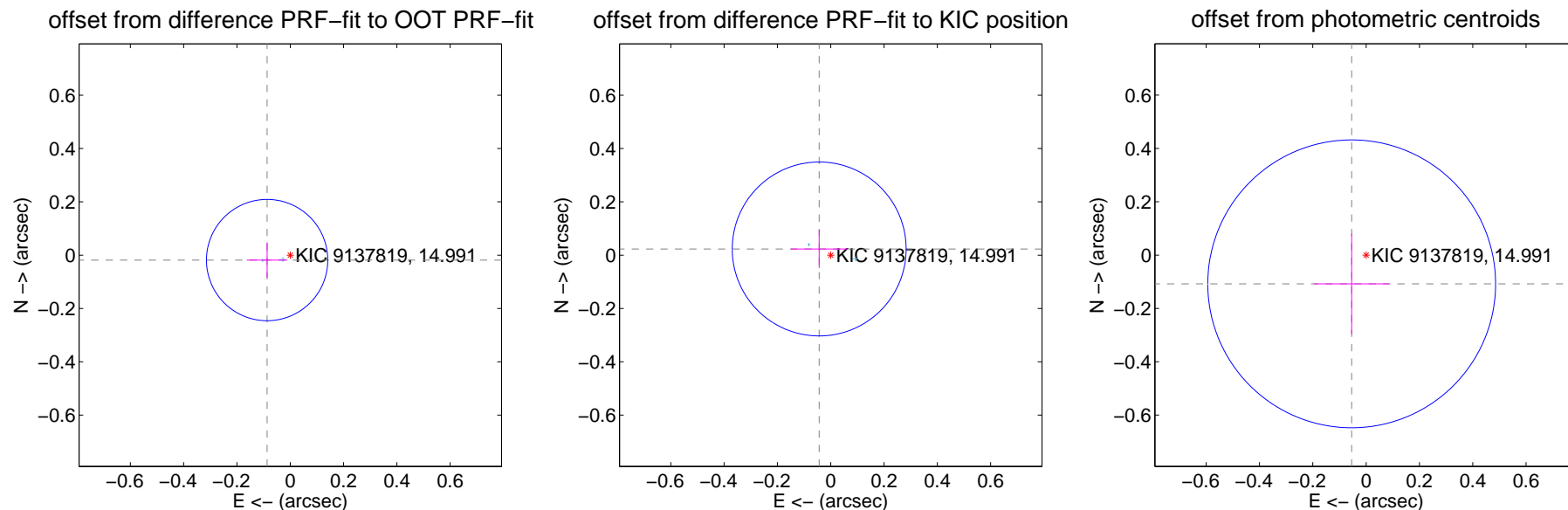
DV Centroid Data

Supplemental centroid analysis for 009137819-01. Kepler magnitude: 14.99. Transit SNR 8.31

There are 2 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.089 ± 0.076	1.17	0.087 ± 0.076	-0.018 ± 0.067
PRF-fit source offset from KIC position	0.049 ± 0.109	0.45	0.043 ± 0.107	0.023 ± 0.071
photometric centroid source offset	0.12 ± 0.18	0.67	0.05 ± 0.14	-0.11 ± 0.19



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

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



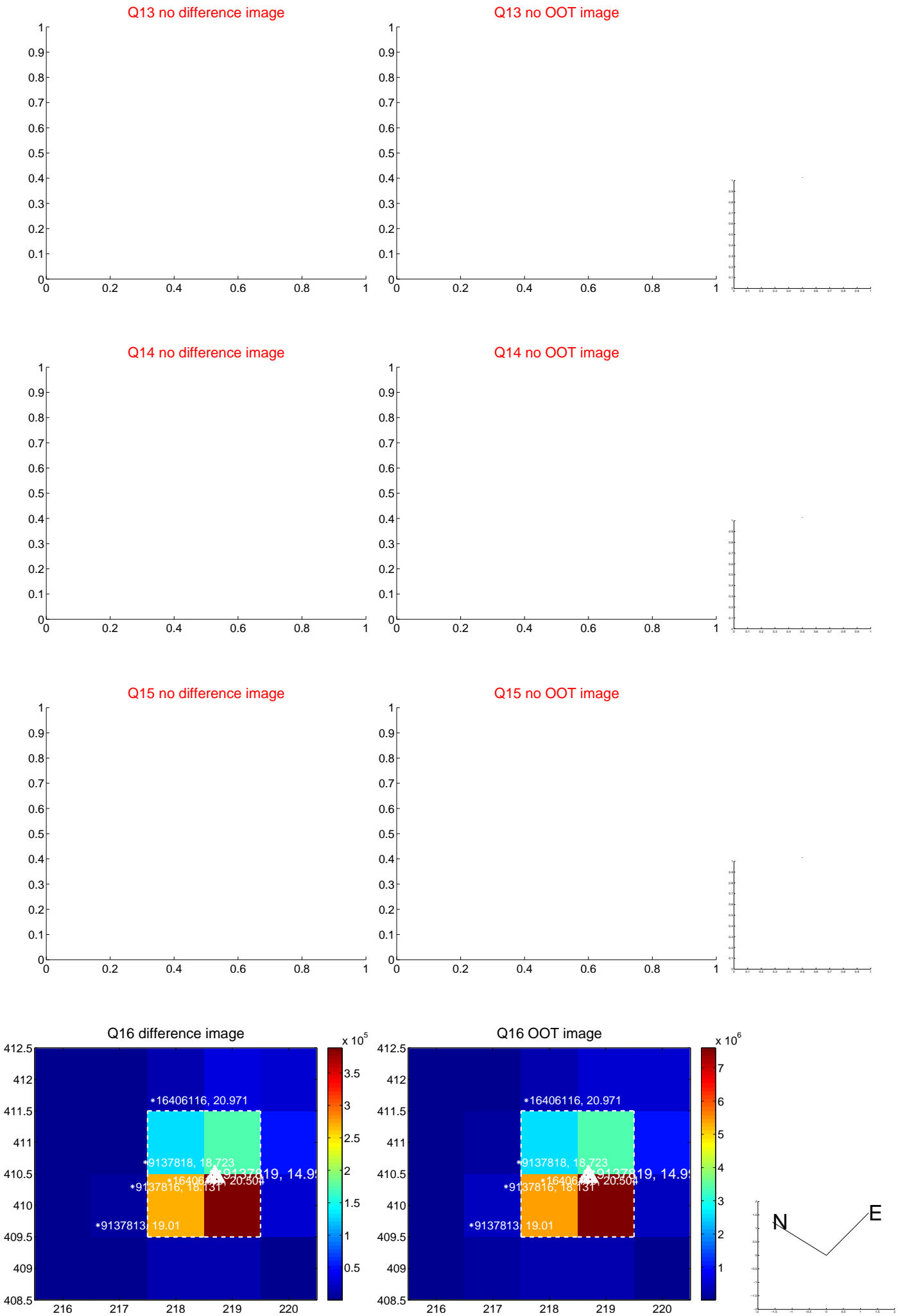
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



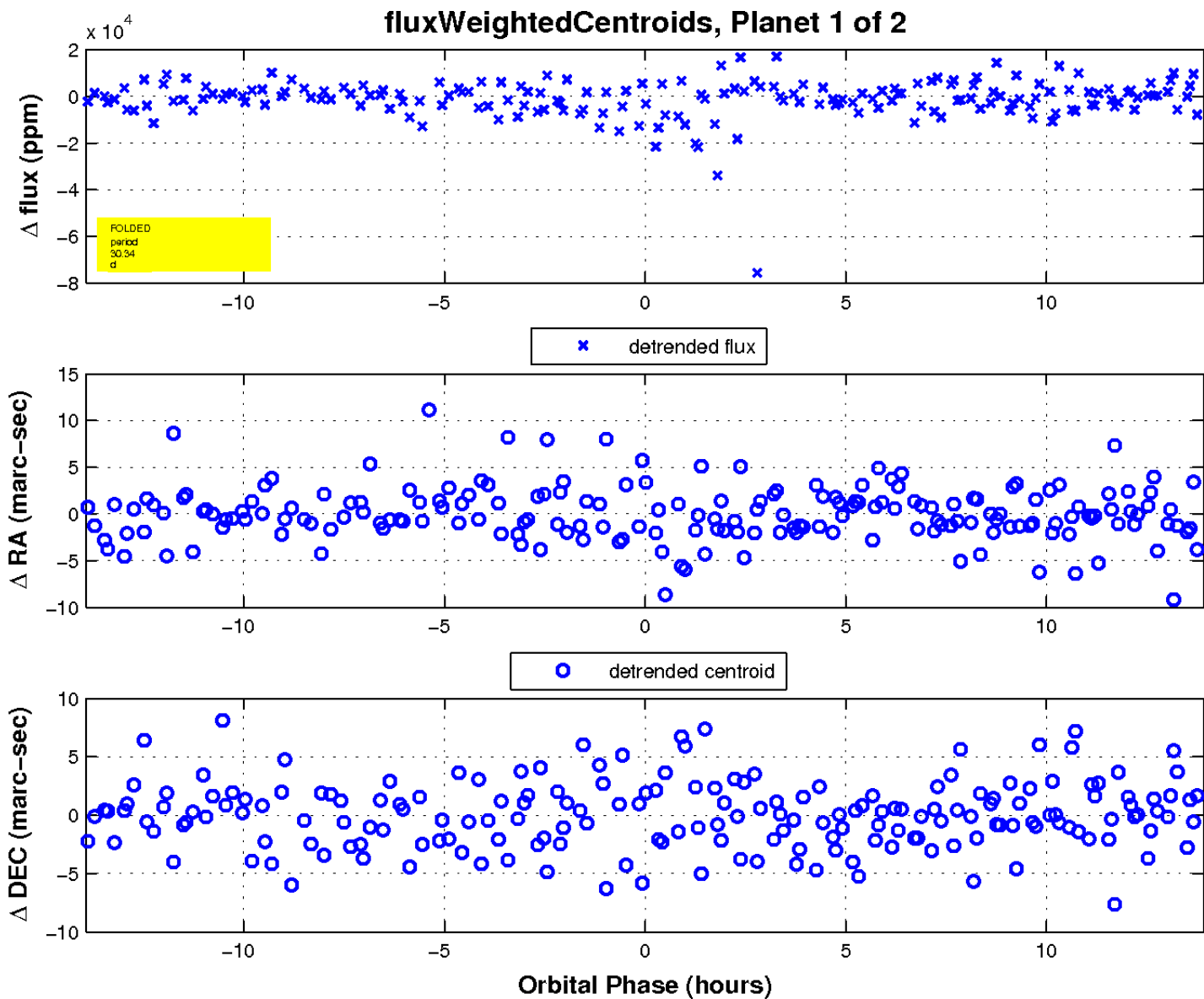
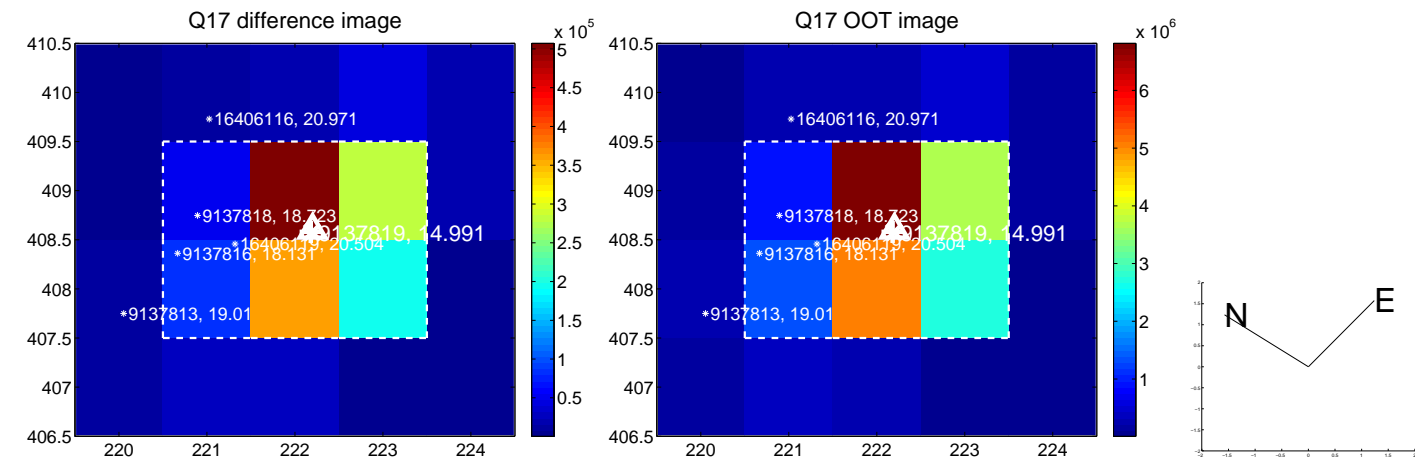
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

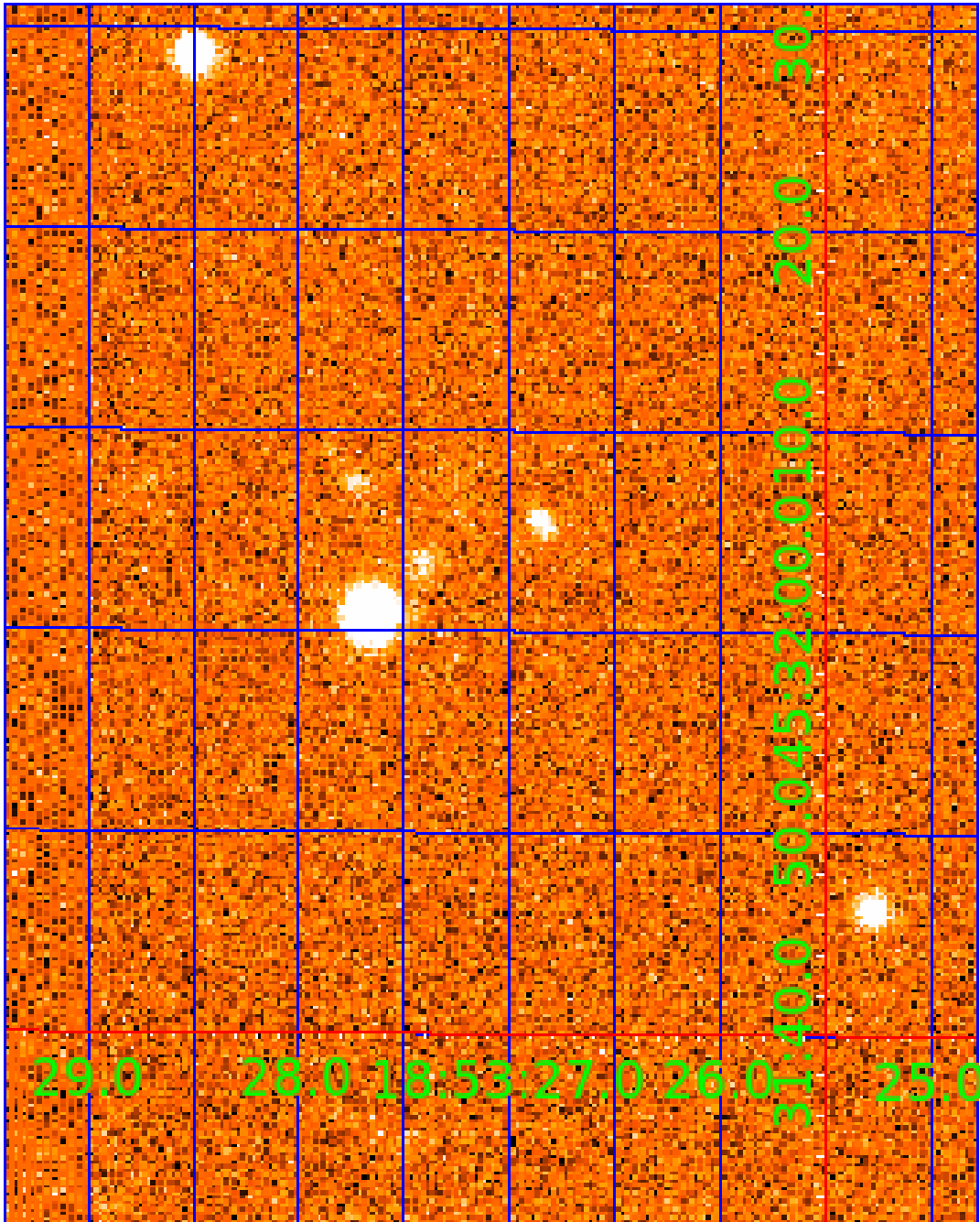


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009137819

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})
009137819-01	OBS	No	30.341299	133.328554	12130.8	4.645	19.5	8.3	2.46	7819	37.86	388.20
009137819-02	OBS	No	28.562247	144.403057	7380.0	3.061	14.7	8.9	2.46	7819	22.85	420.77

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009137819-01	OBS	FP	0.00	1	0	1	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_FEW_DIFFS—HALO_GHOST
009137819-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—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.

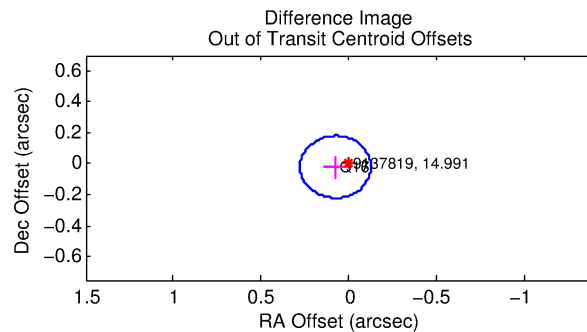
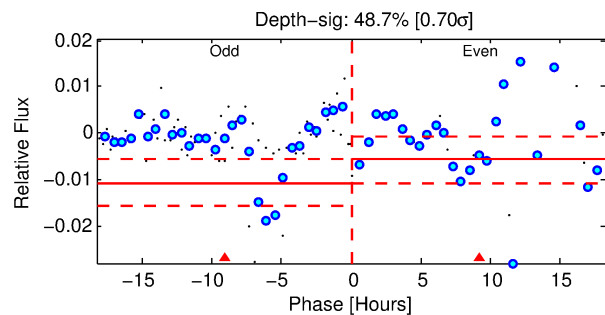
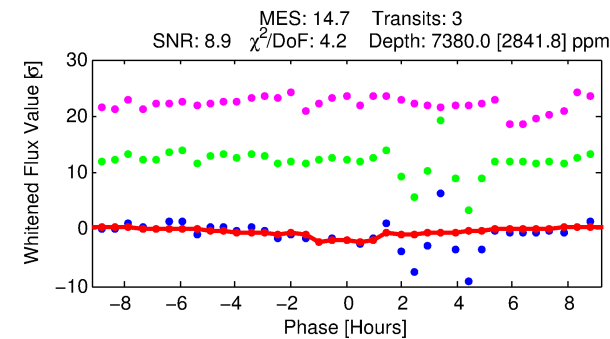
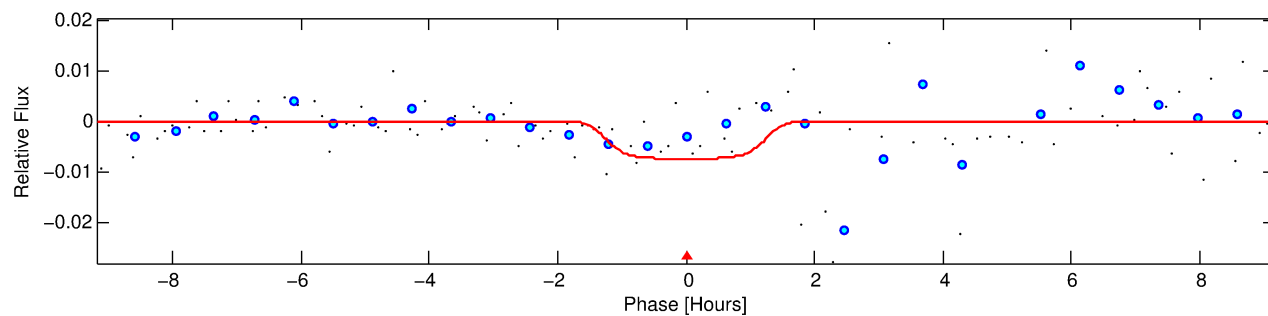
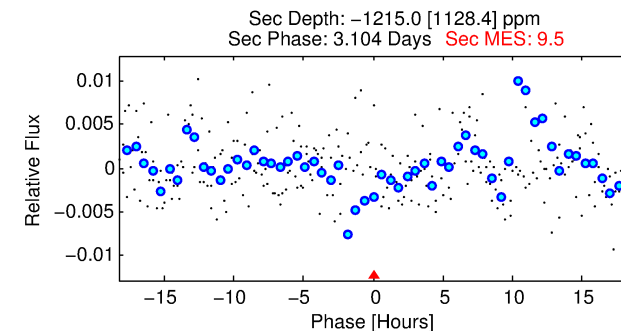
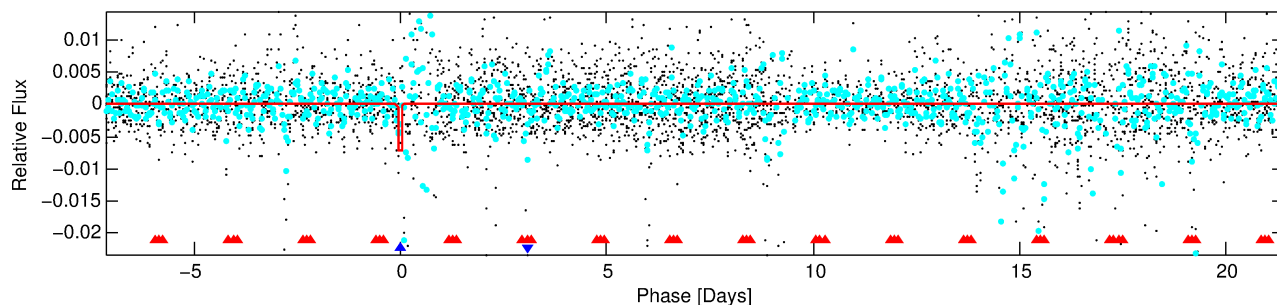
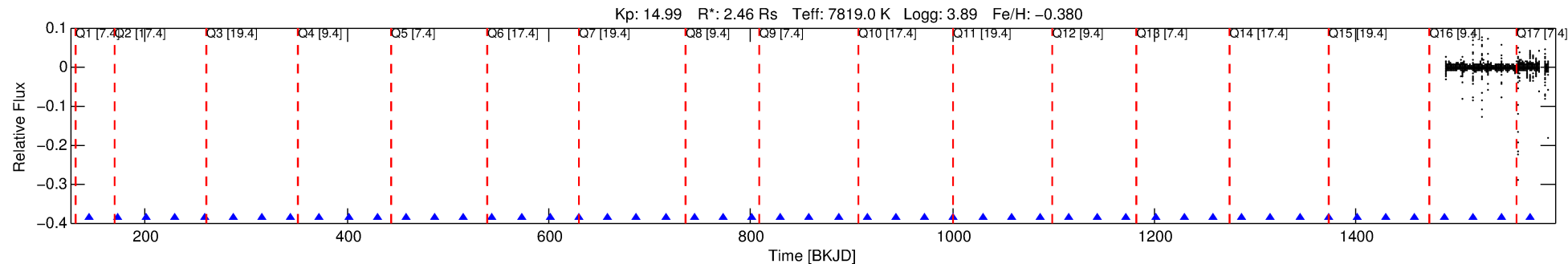
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009137819-02

No Significant Match Found

DV One-Page Summary

KIC: 9137819 Candidate: 2 of 2 Period: 28.562 d



DV Fit Results:

Period = 28.56225 [0.01558] d
Epoch = 144.4031 [0.7529] BKJD
Rp/R* = 0.0852 [0.0914]
a/R* = 57.01 [353.50]
b = 0.73 [3.86]
Seff = 420.77 [250.32]
Teff = 1155 [172] K
Rp = 22.85 [26.14] Re
a = 0.2192 [0.0802] AU
Ag = N/A
Teffp = N/A

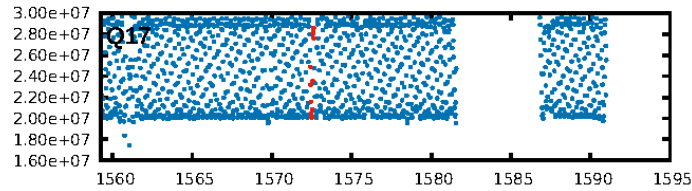
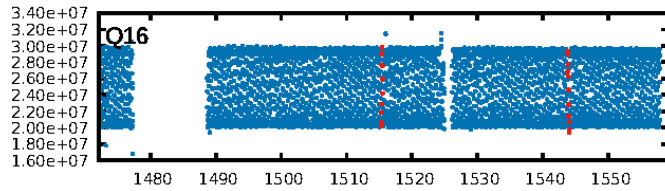
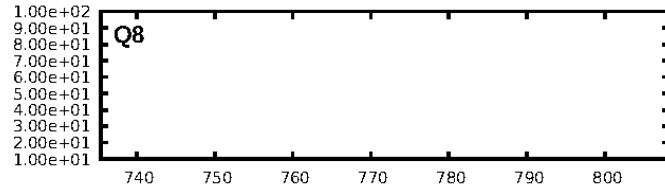
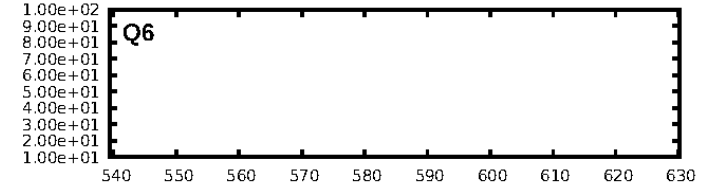
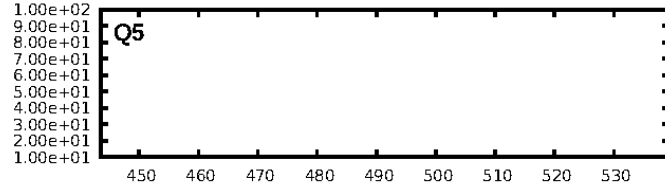
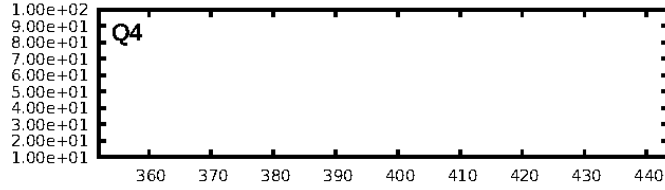
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [7.68σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 1.5%
Bootstrap-pfa: 4.60e-13
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.5381
Centroid-sig: N/A
Centroid-so: 0.324 arcsec [1.54σ]
OotOffset-rm: 0.080 arcsec [1.19σ]
KicOffset-rm: 0.072 arcsec [0.86σ]
OotOffset-st: 0/0/1/1 [2]
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DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

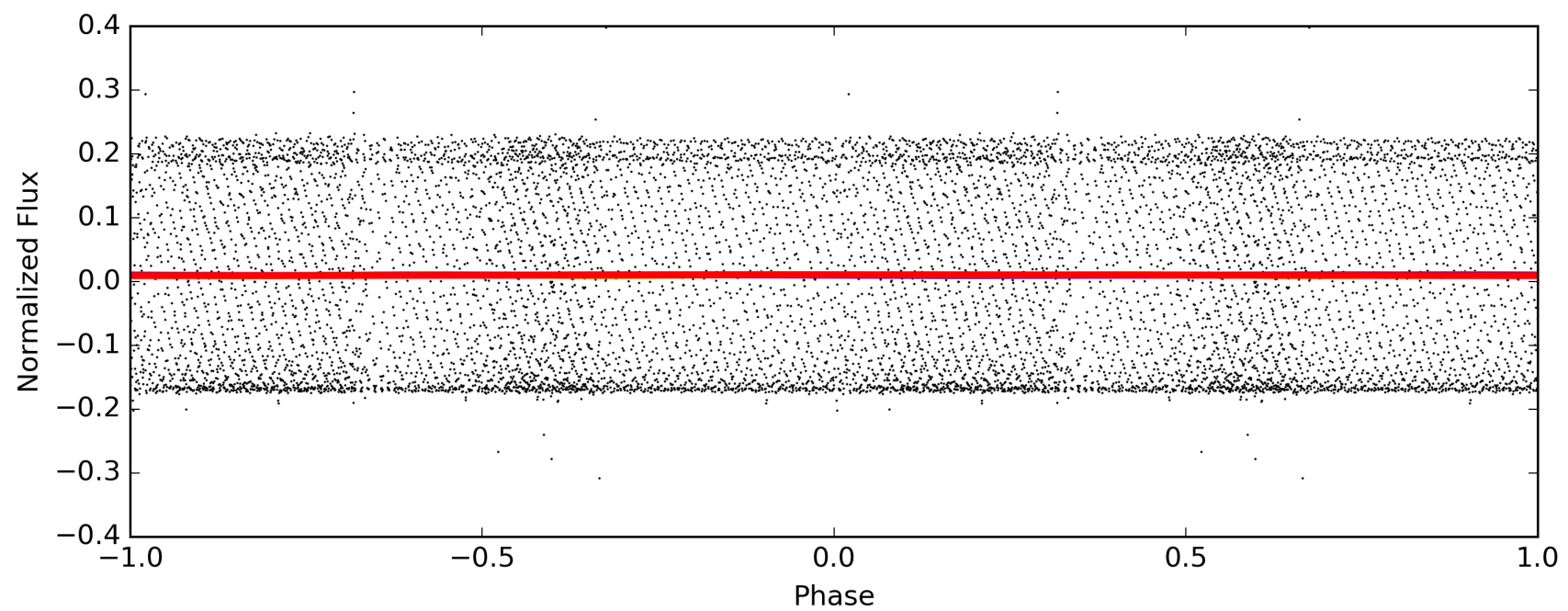
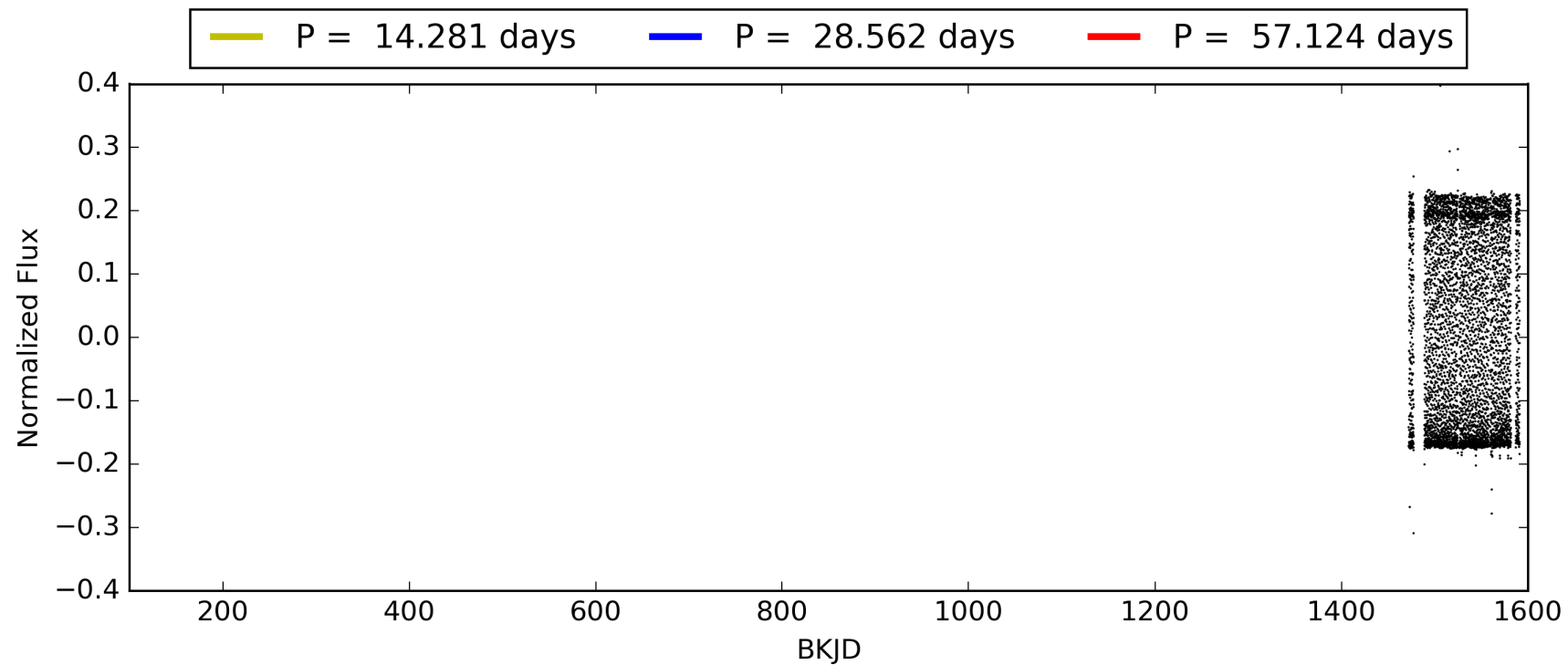
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:30:05 Z

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

TCE 009137819-02, PDC Light Curves

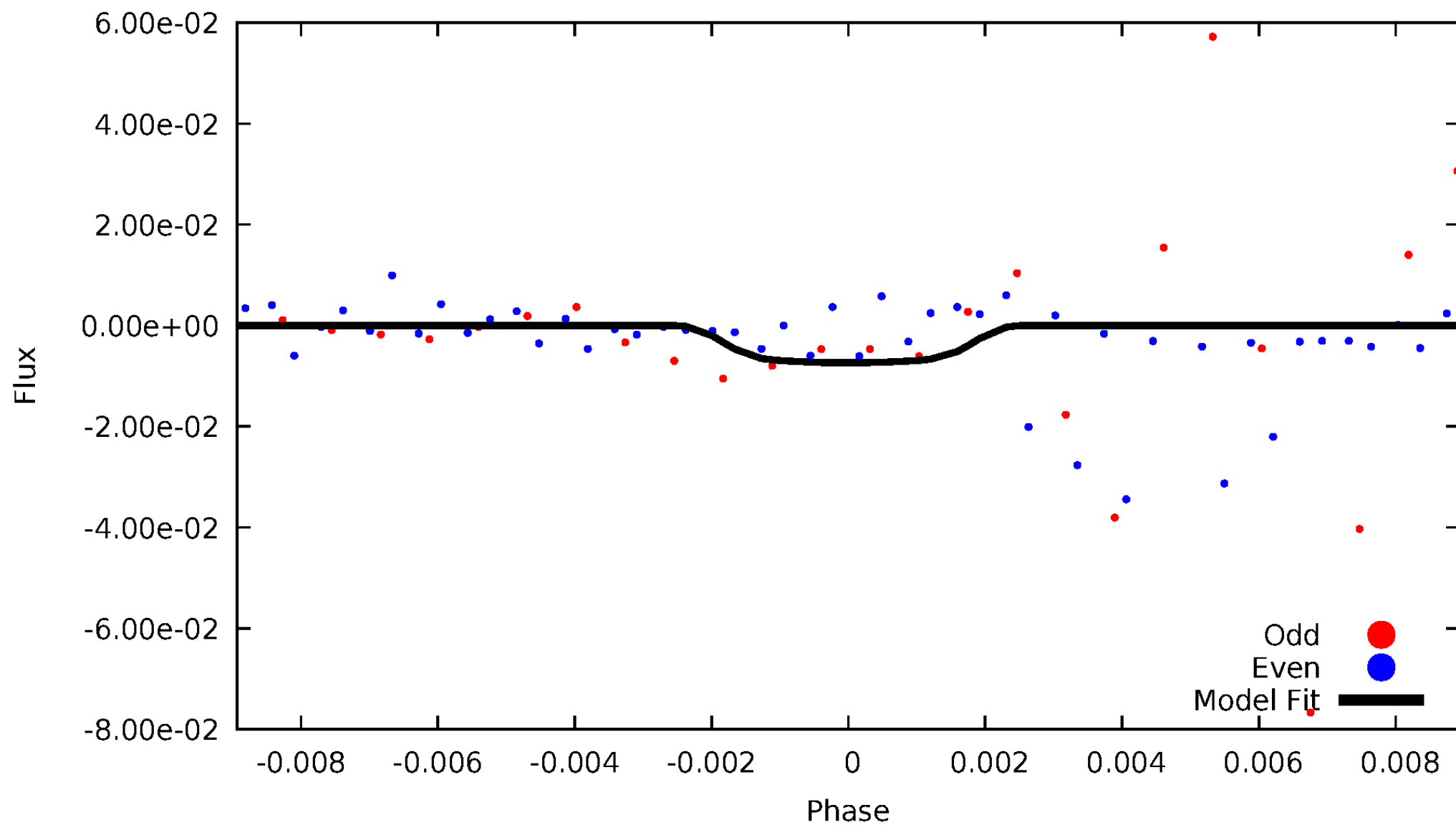


TCE 009137819-02



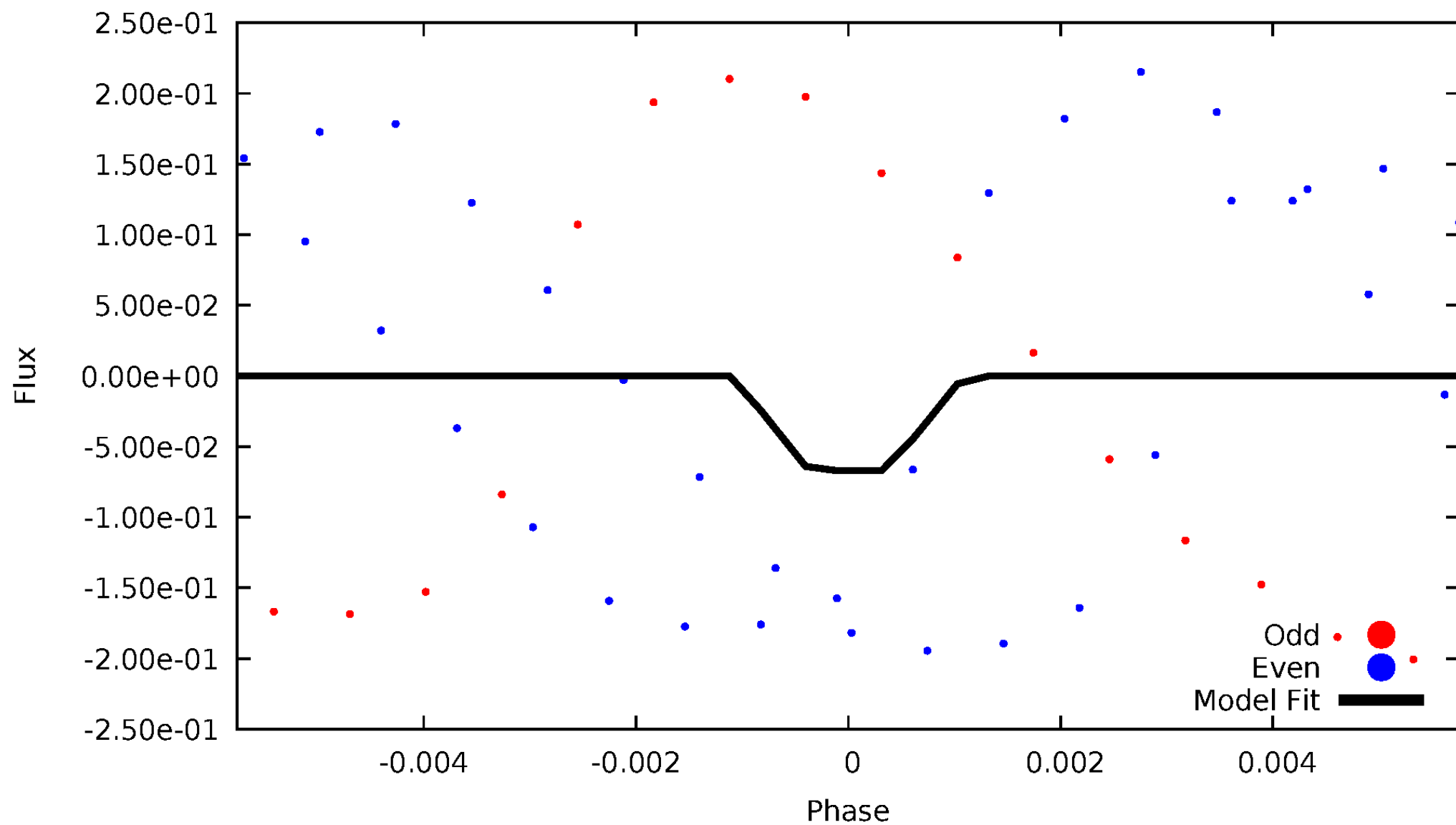
DV Odd/Even

TCE 009137819-02



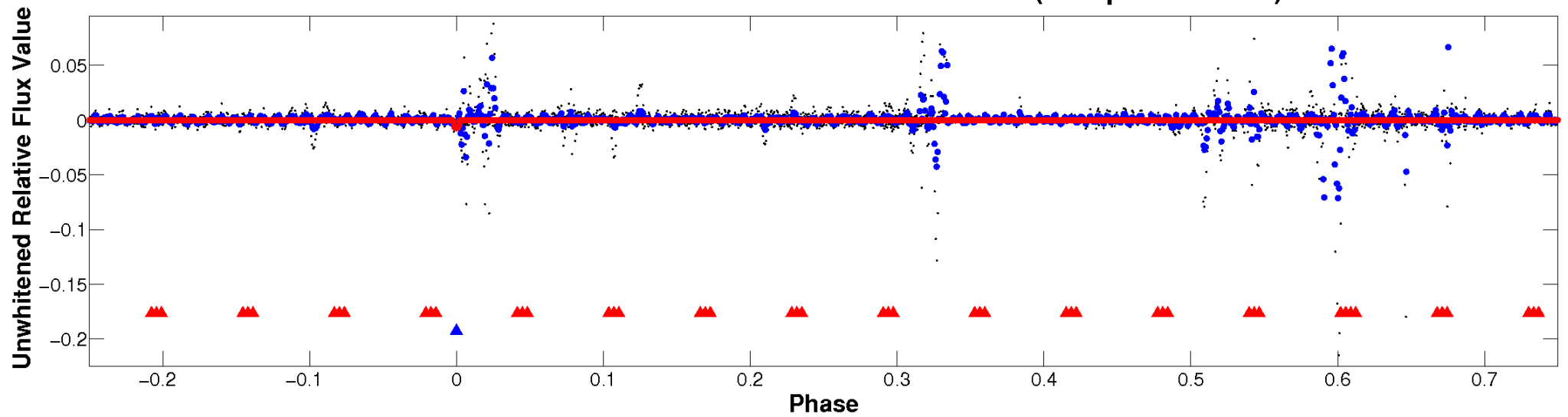
ALT Odd/Even

TCE 009137819-02

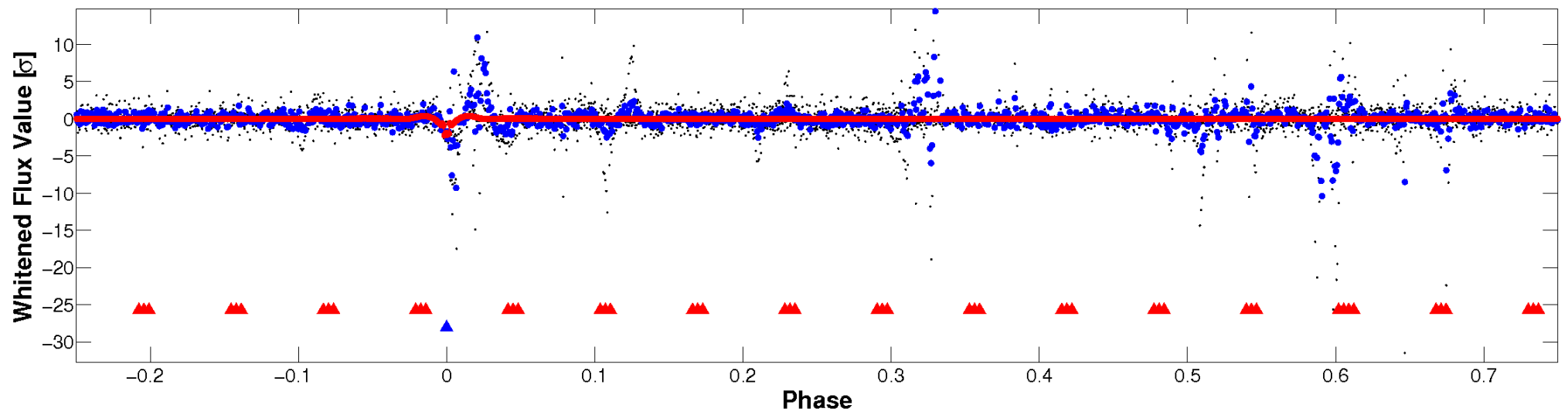


Non-Whitened Vs. Whitened Light Curve

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

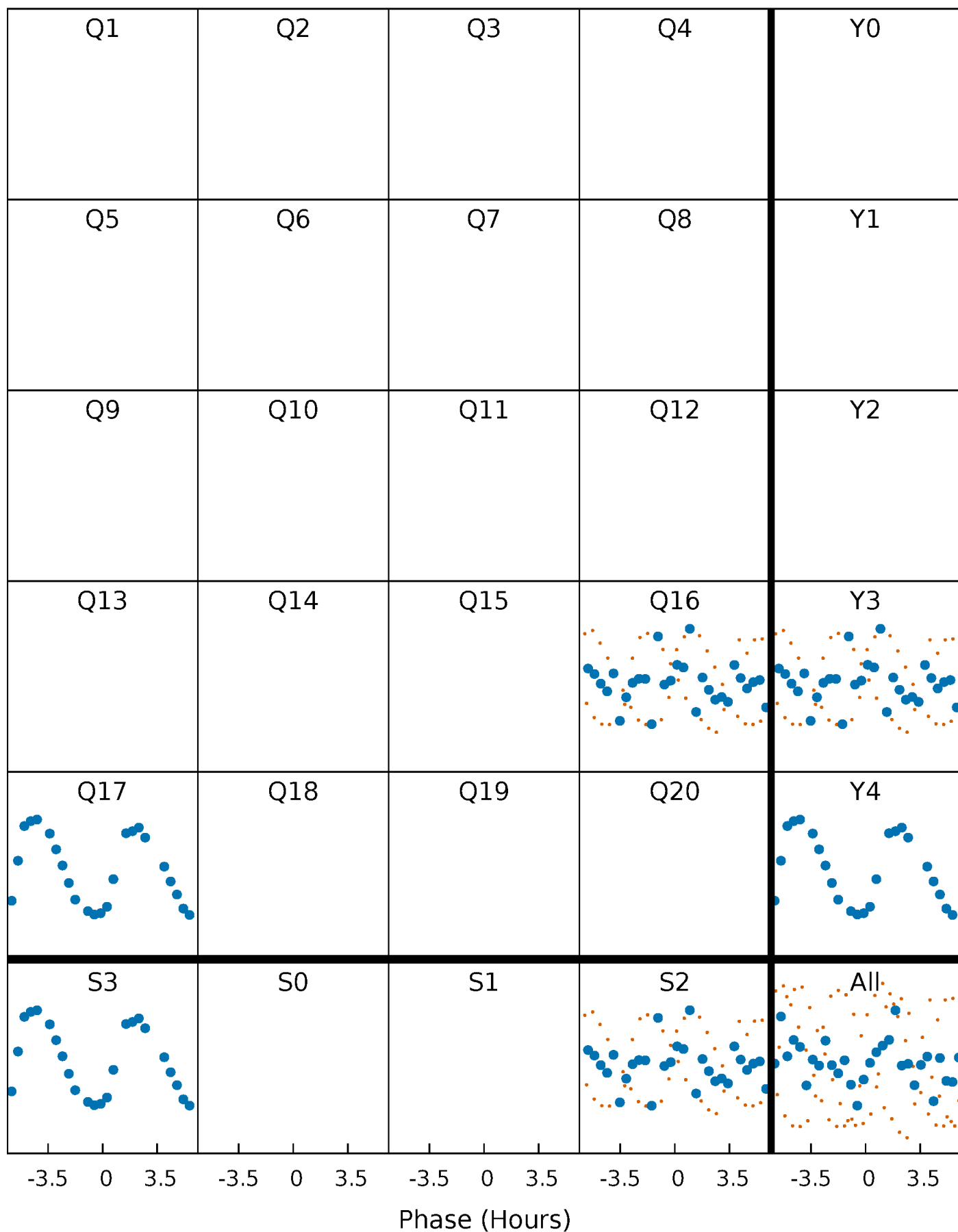


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



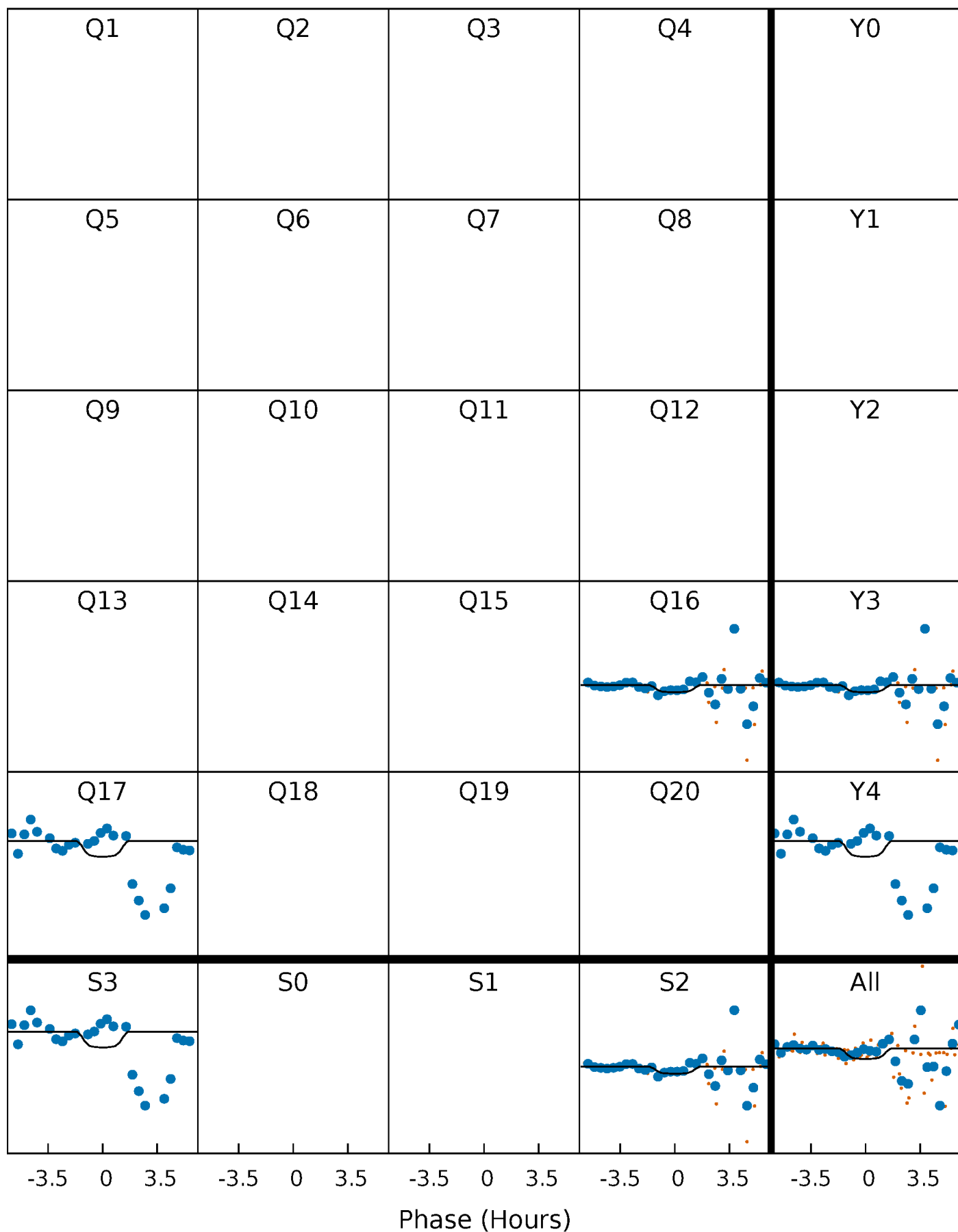
PDC Quarter-Phased Transit Curves

TCE 009137819-02 P= 28.562247 Days $T_0=144.403057$ (BKJD)



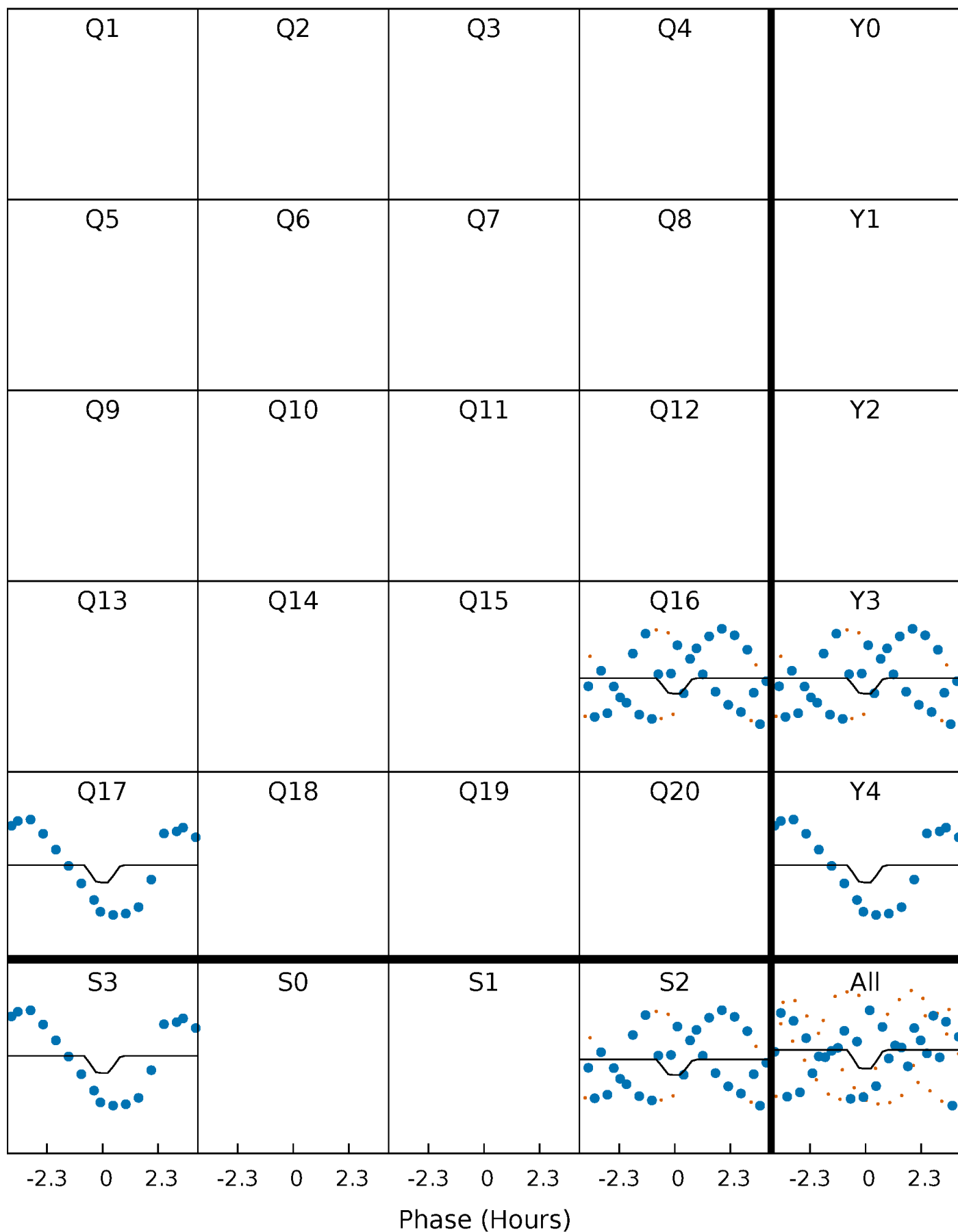
DV Quarter-Phased Transit Curves

TCE 009137819-02 P= 28.562247 Days $T_0=144.403057$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

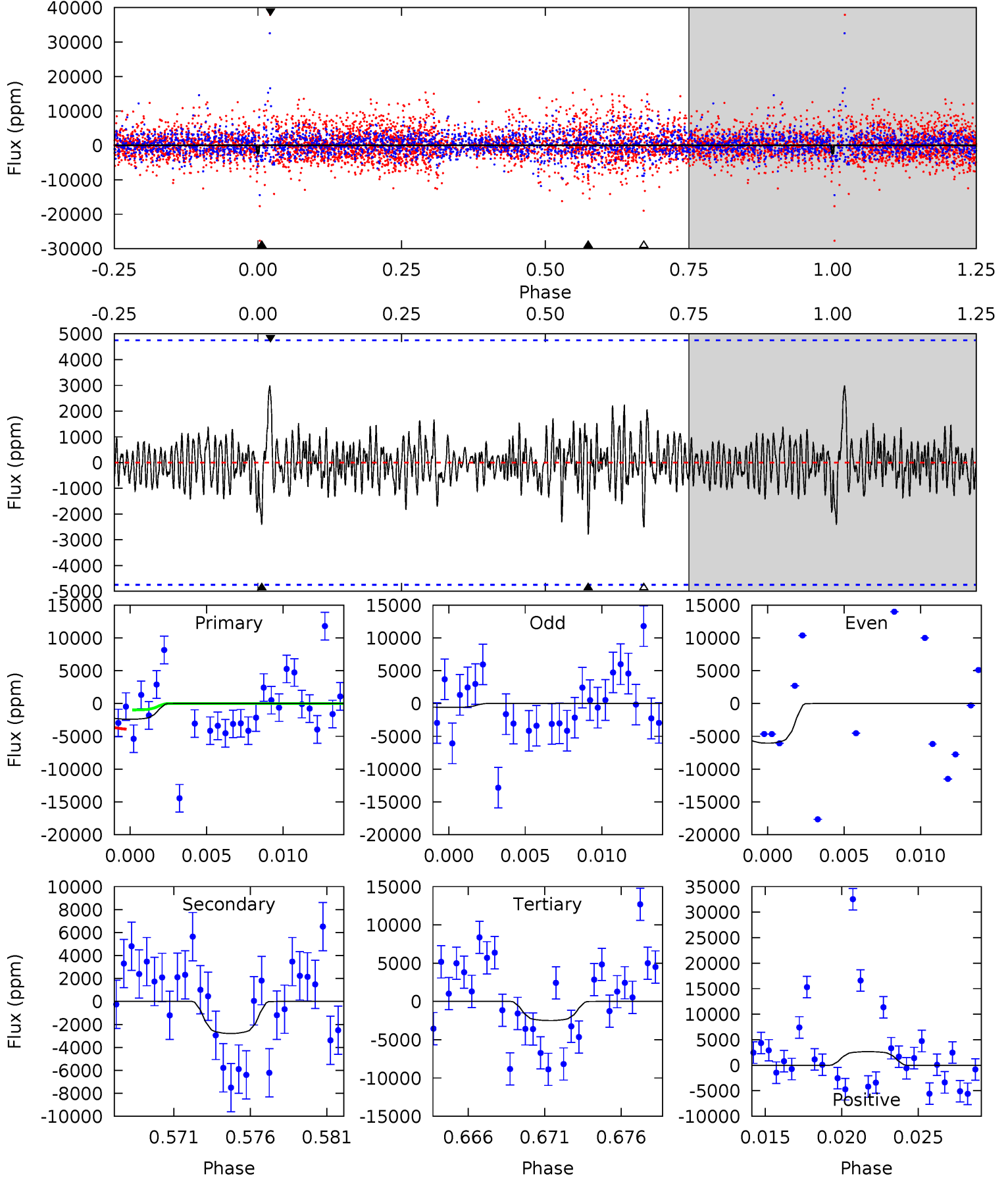
TCE 009137819-02 P= 28.554700 Days $T_0=144.732155$ (BKJD)



DV Model-Shift Uniqueness Test

009137819-02, P = 28.562247 Days, E = 144.403057 Days

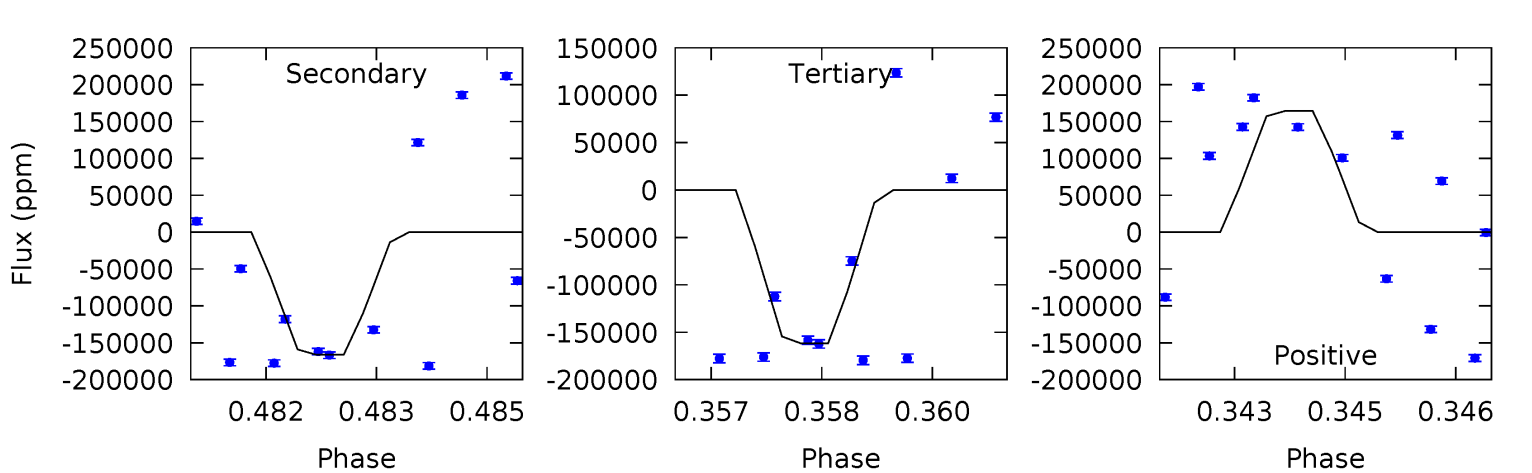
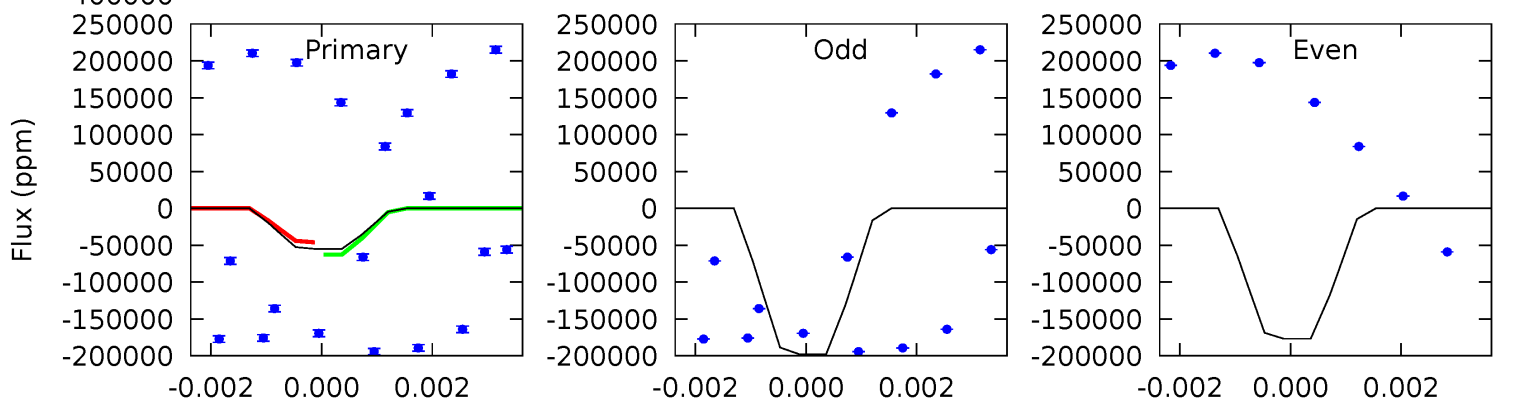
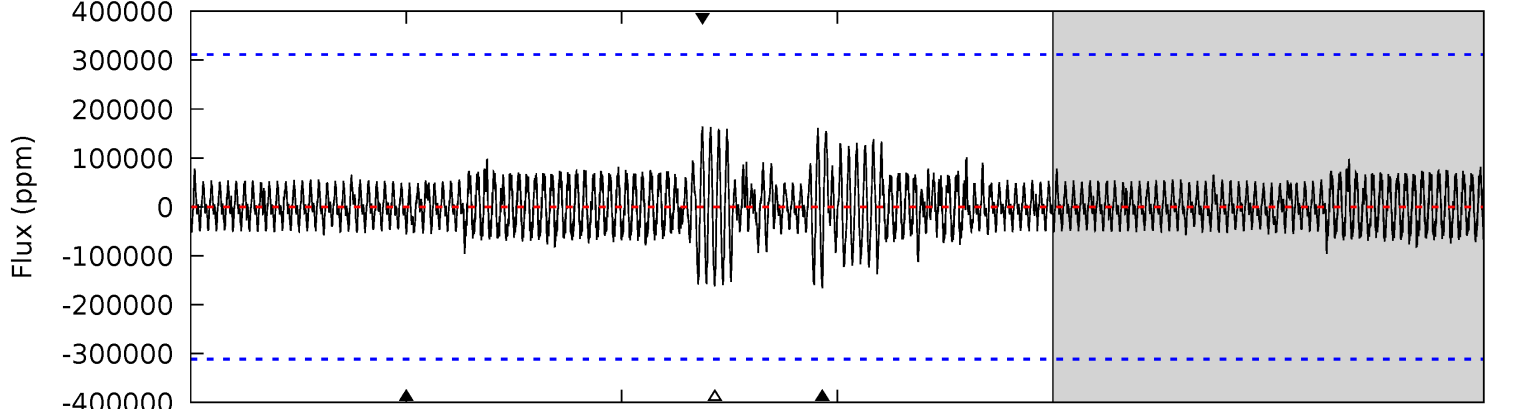
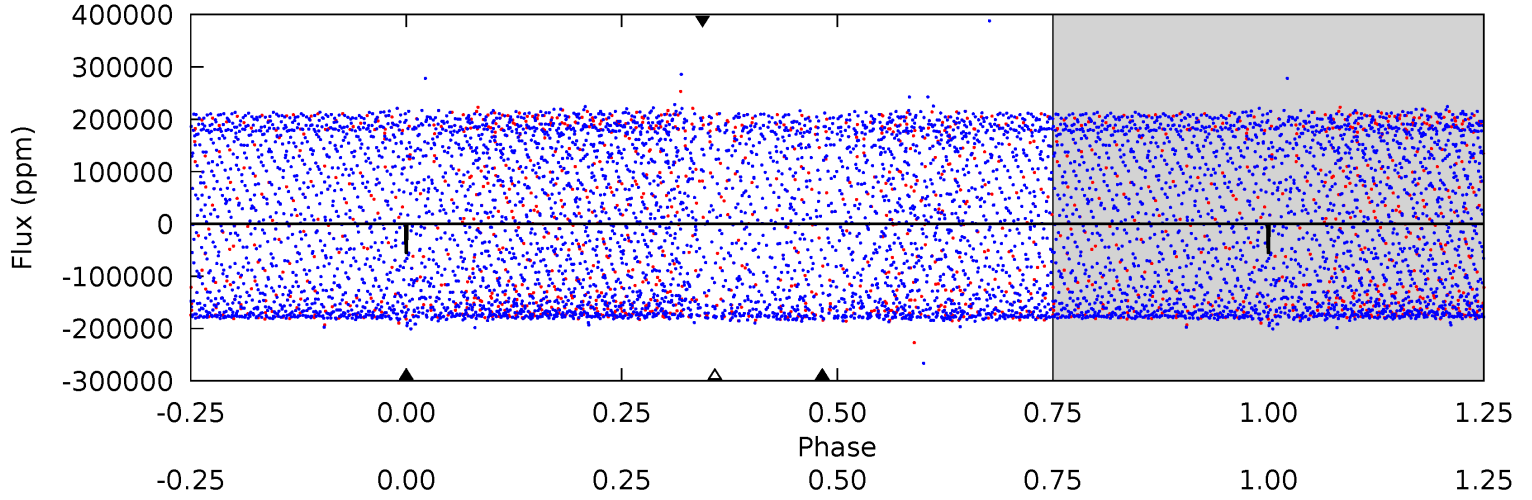
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.61	3.03	2.70	2.90	5.16	2.81	0.77	-0.09	-0.28	0.33	0.14	1.86	0.62	0.52	1.62



Alt Model-Shift Uniqueness Test

009137819-02, P = 28.554700 Days, E = 144.732155 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.94	2.86	2.78	2.83	5.35	3.14	0.75	-1.83	-1.88	0.08	0.03	0.17	0.43	0.50	0.14



Stellar Parameters For KIC 009137819

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7819^{+243}_{-324}	$3.893^{+0.330}_{-0.110}$	$-0.380^{+0.250}_{-0.300}$	$2.457^{+0.418}_{-0.974}$	$1.723^{+0.166}_{-0.387}$	$0.164^{+0.421}_{-0.057}$
	+3%/-4%	+8%/-3%	+66%/-79%	+17%/-40%	+10%/-22%	+257%/-35%
Source	KIC0	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 009137819-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2791 ± 921	$26.90^{+22.67}_{-16.43}$	1586^{+103}_{-146}	5303^{+3469}_{-1198}	96^{+524}_{-71}
Alt.	-166360 ± 58209	$62.52^{+29.39}_{-23.16}$	1581^{+107}_{-157}	11413^{+6352}_{-2759}	1287^{+2126}_{-736}

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 $A_{obs} \gg 1.0$

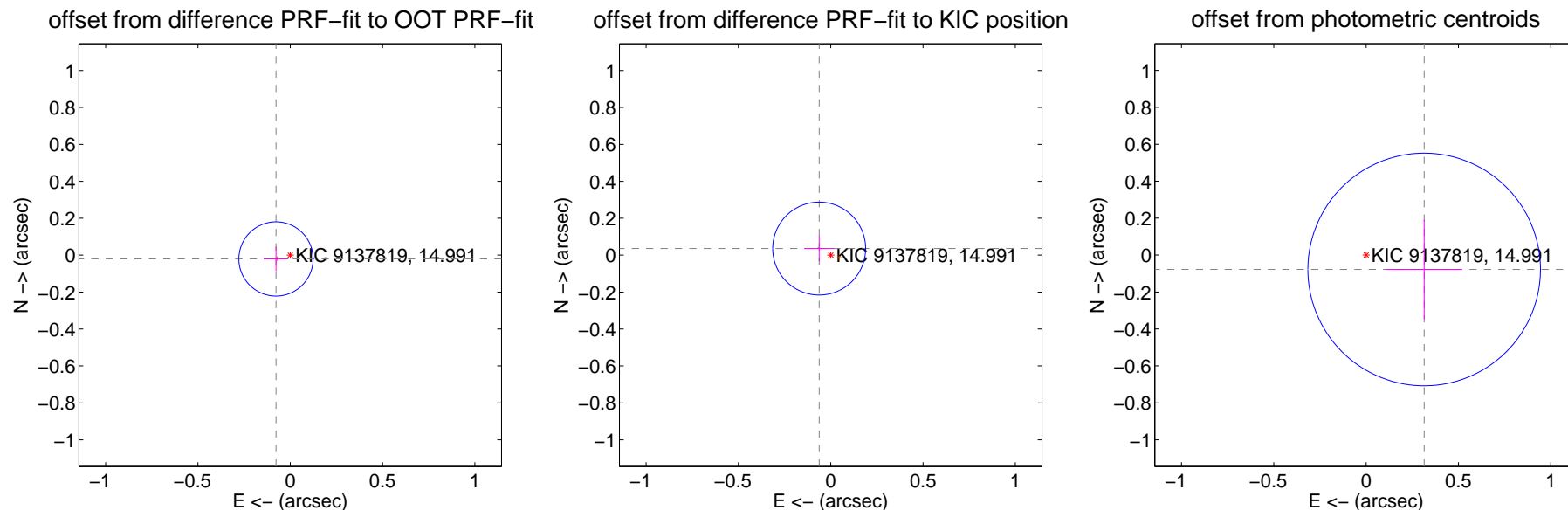
DV Centroid Data

Supplemental centroid analysis for 009137819-02. Kepler magnitude: 14.99. Transit SNR 8.87

There are 1 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.080 ± 0.067	1.19	0.077 ± 0.067	-0.020 ± 0.067
PRF-fit source offset from KIC position	0.072 ± 0.084	0.86	0.063 ± 0.081	0.036 ± 0.070
photometric centroid source offset	0.32 ± 0.21	1.54	-0.31 ± 0.21	-0.08 ± 0.27



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.



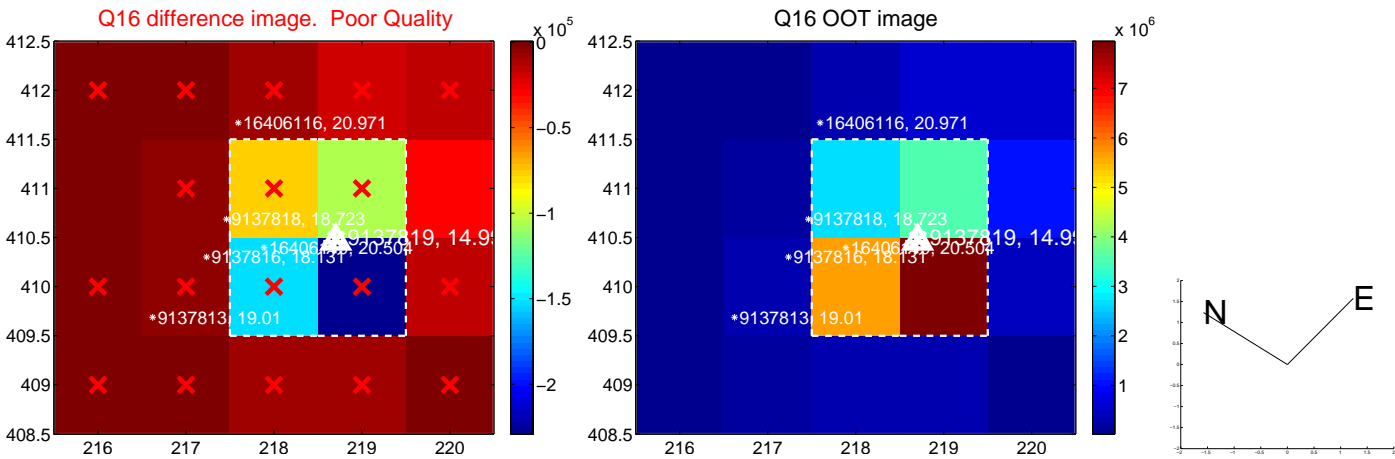
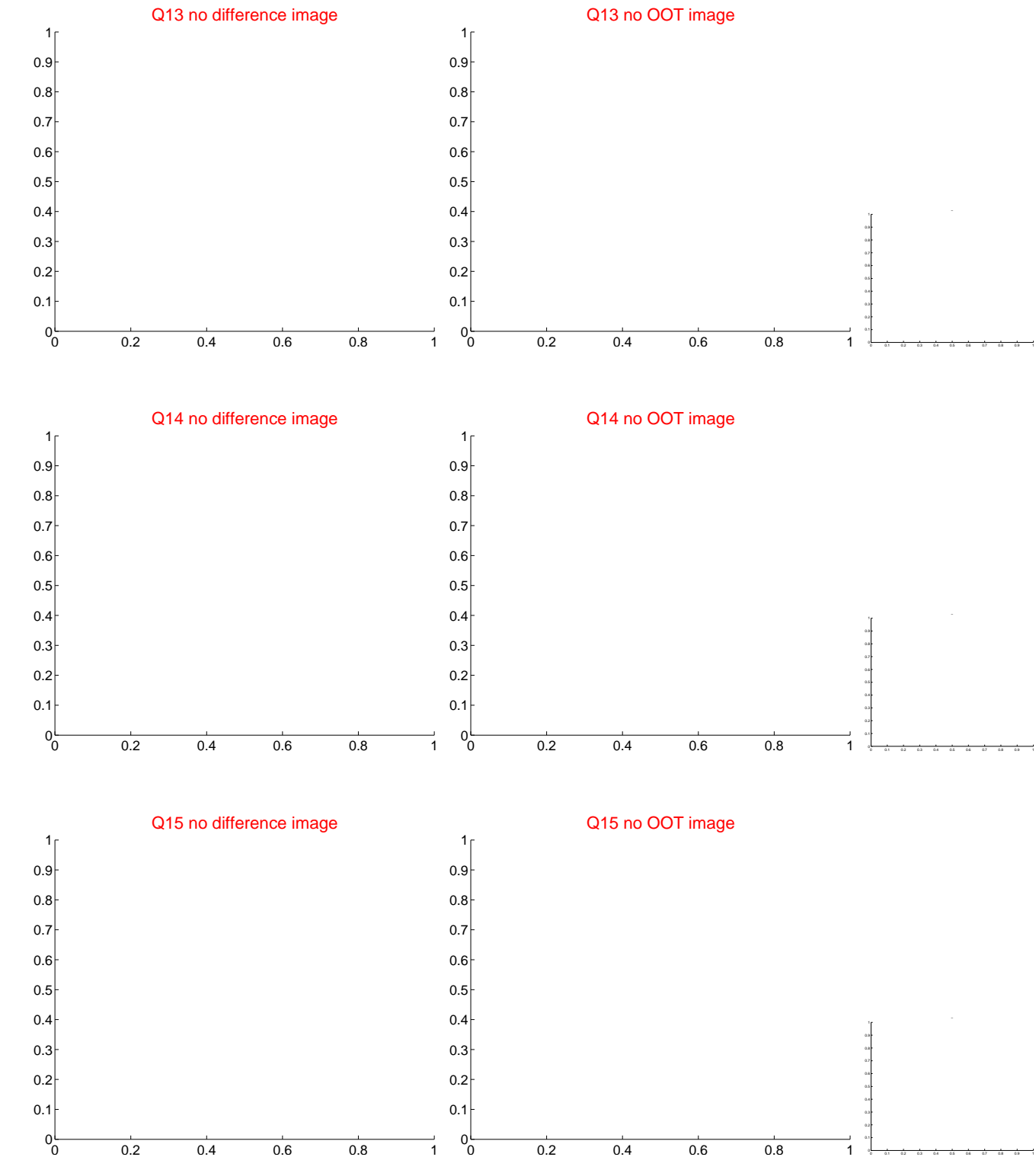
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



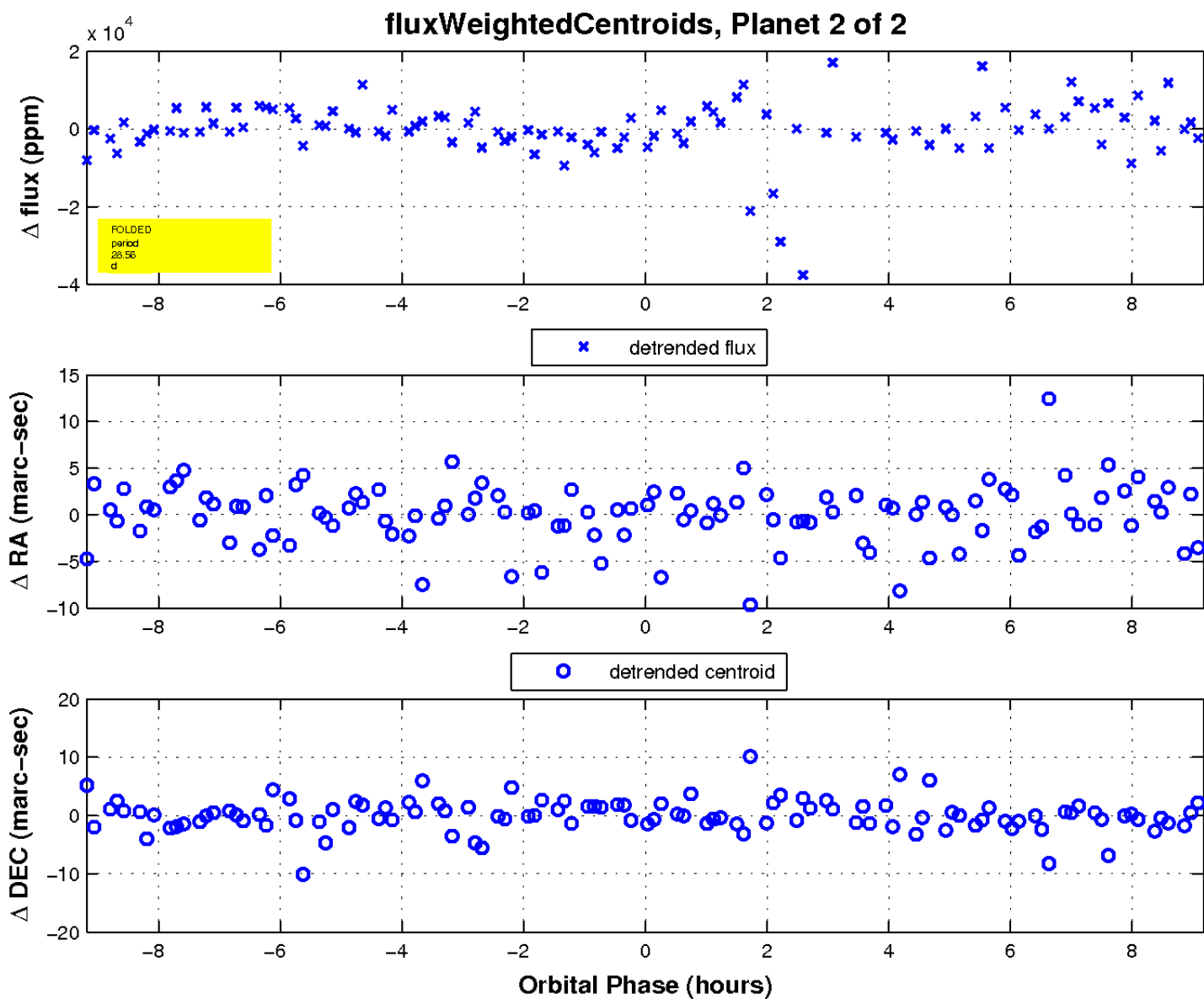
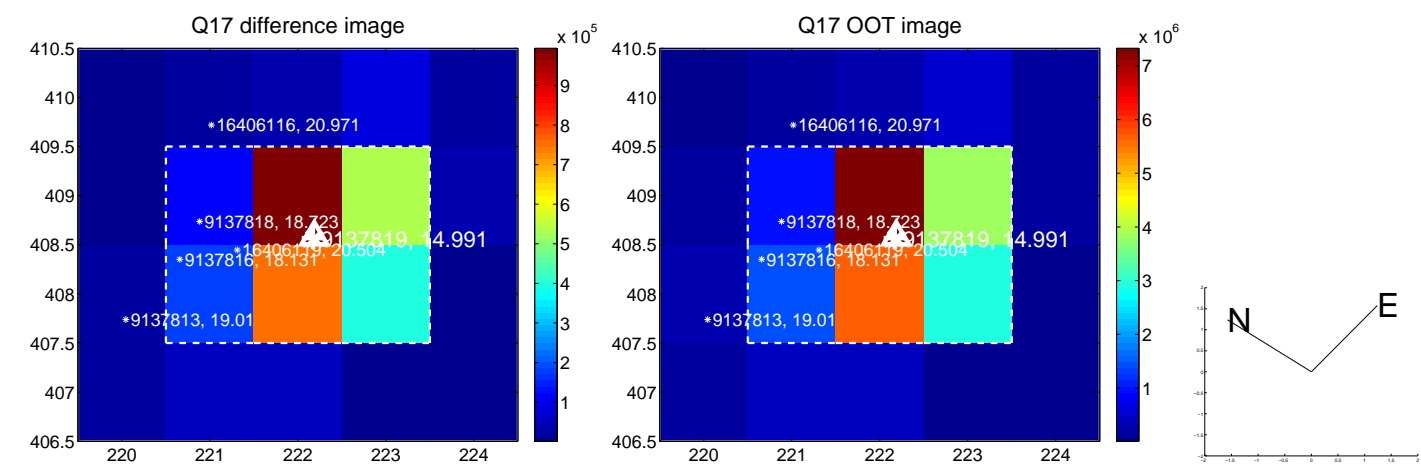
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

