

KIC 008418315

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})
008418315-01	OBS	No	508.099009	513.235702	392.1	14.790	7.2	7.8	0.77	5951	1.58	0.48
008418315-02	OBS	No	362.064223	403.530578	517.9	20.013	9.0	9.4	0.77	5951	1.76	0.75

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008418315-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
008418315-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_DV—MOD_TER_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.

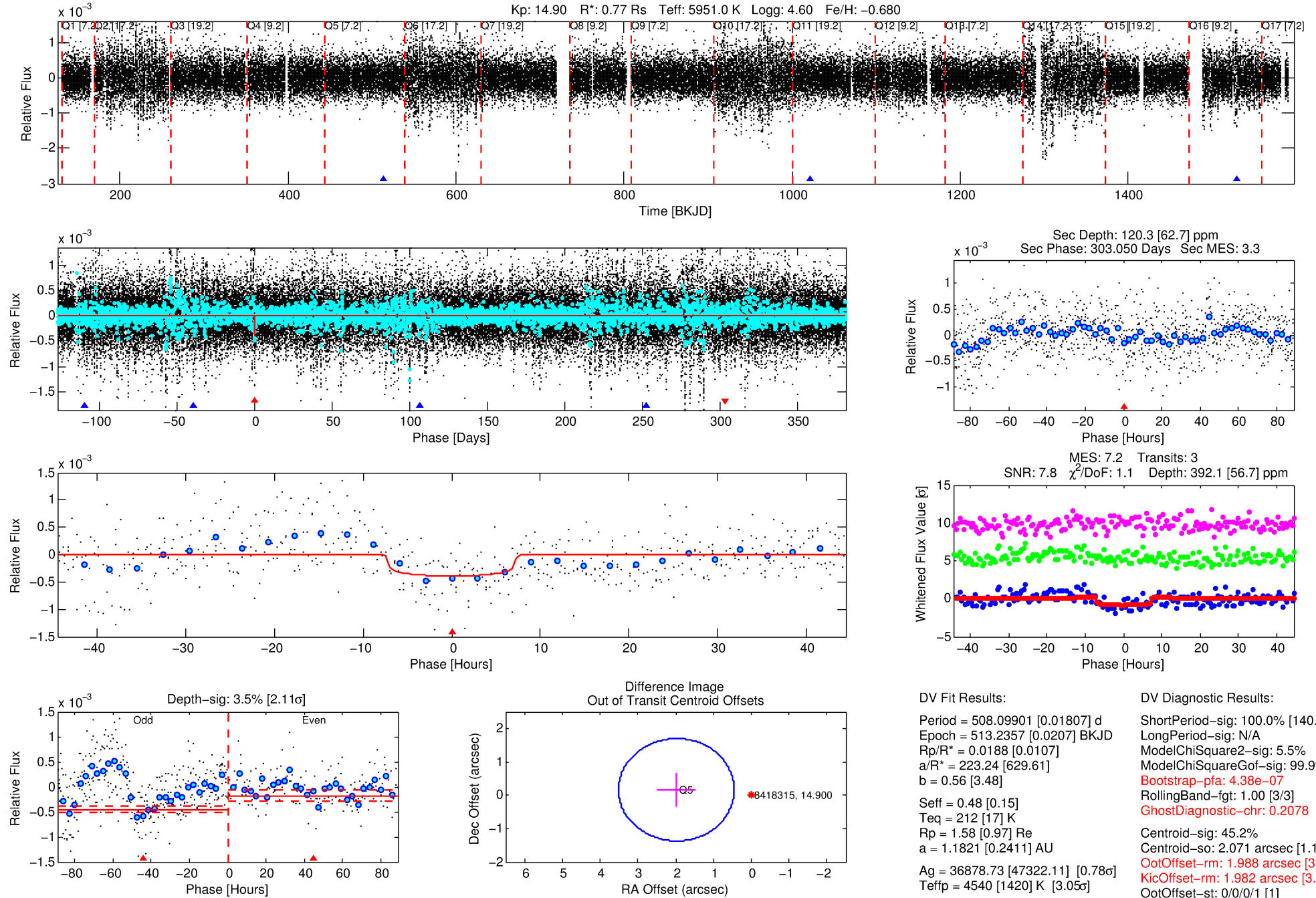
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008418315-01

No Significant Match Found

DV One-Page Summary

KIC: 8418315 Candidate: 1 of 2 Period: 508.099 d



DV Fit Results:

Period = 508.09901 [0.01807] d
Epoch = 513.2357 [0.0207] BKJD
Rp/R* = 0.0188 [0.0107]
a/R* = 223.24 [629.61]
b = 0.56 [3.48]
Seff = 0.48 [0.15]
Teff = 212 [17] K
Rp = 1.58 [0.97] Re
a = 1.1821 [0.2411] AU
Ag = 36878.73 [47322.11] [0.78 σ]
Teffp = 4540 [1420] K [3.05 σ]

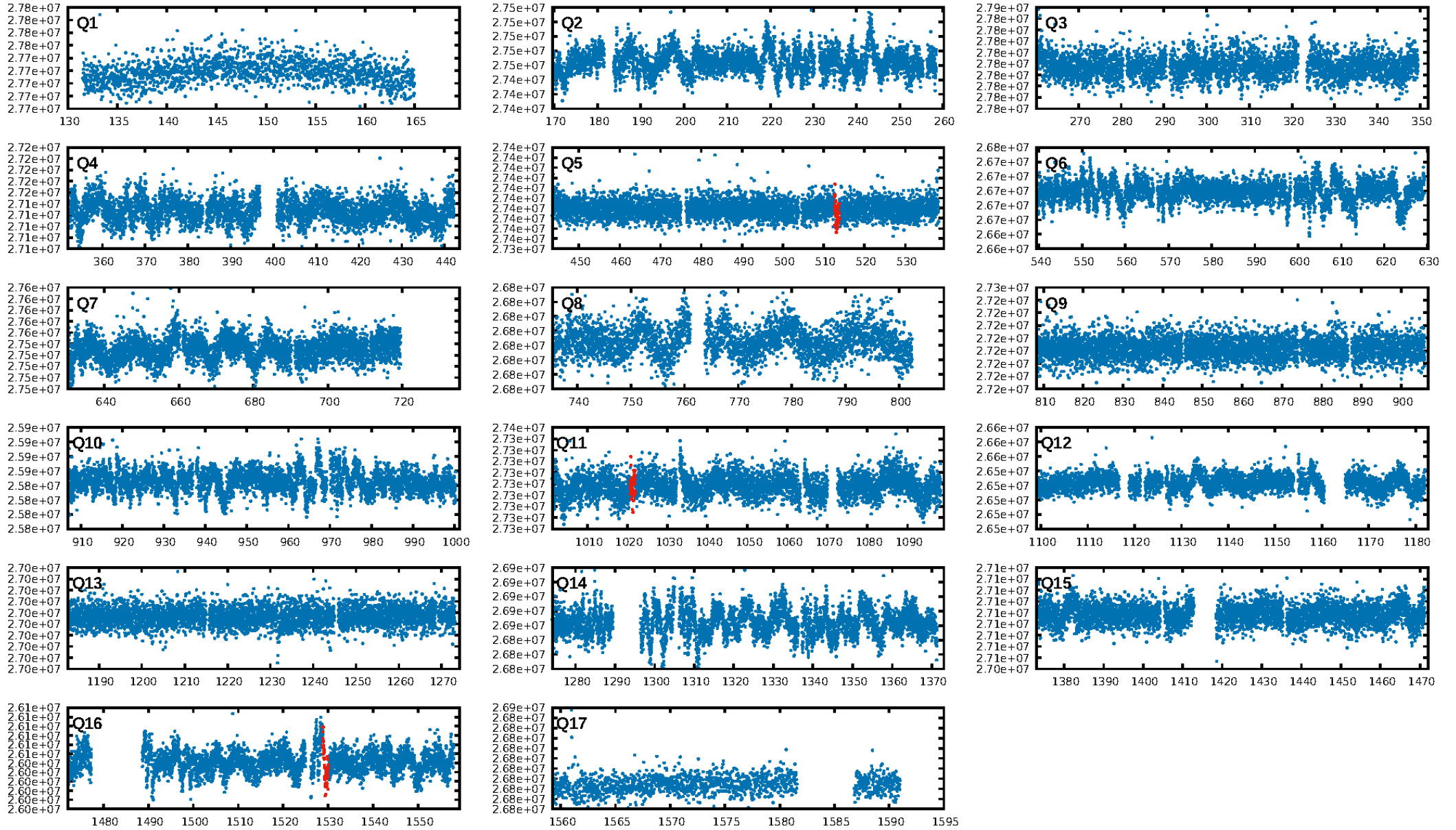
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [140.84 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 5.5%
ModelChiSquareGoF-sig: 99.9%
Bootstrap-pfa: 4.38e-07
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.2078
Centroid-sig: 45.2%
Centroid-so: 2.071 arcsec [1.19 σ]
OotOffset-rm: 1.988 arcsec [3.89 σ]
KicOffset-rm: 1.982 arcsec [3.88 σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [2/2]

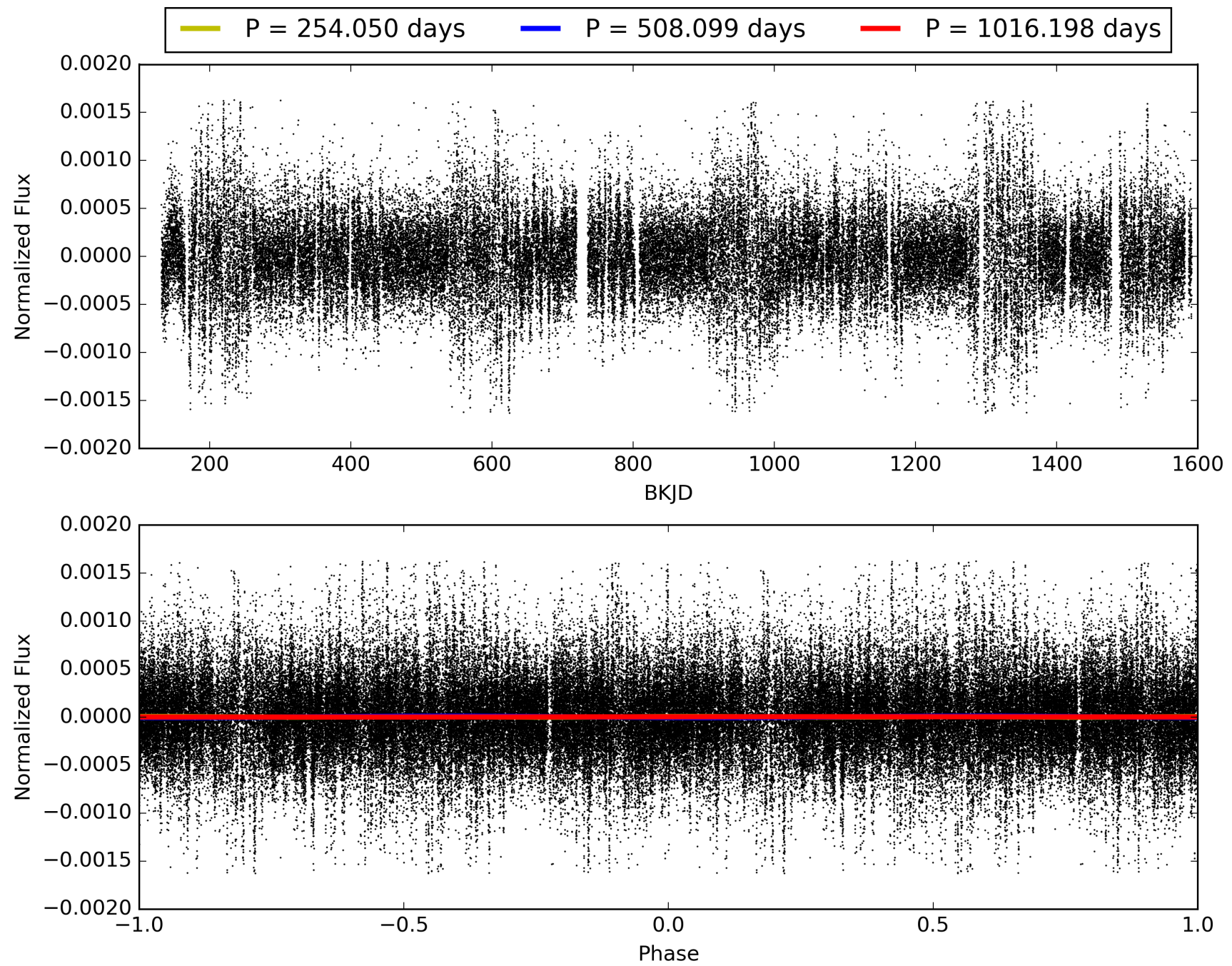
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 01:53:45 Z

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

TCE 008418315-01, PDC Light Curves

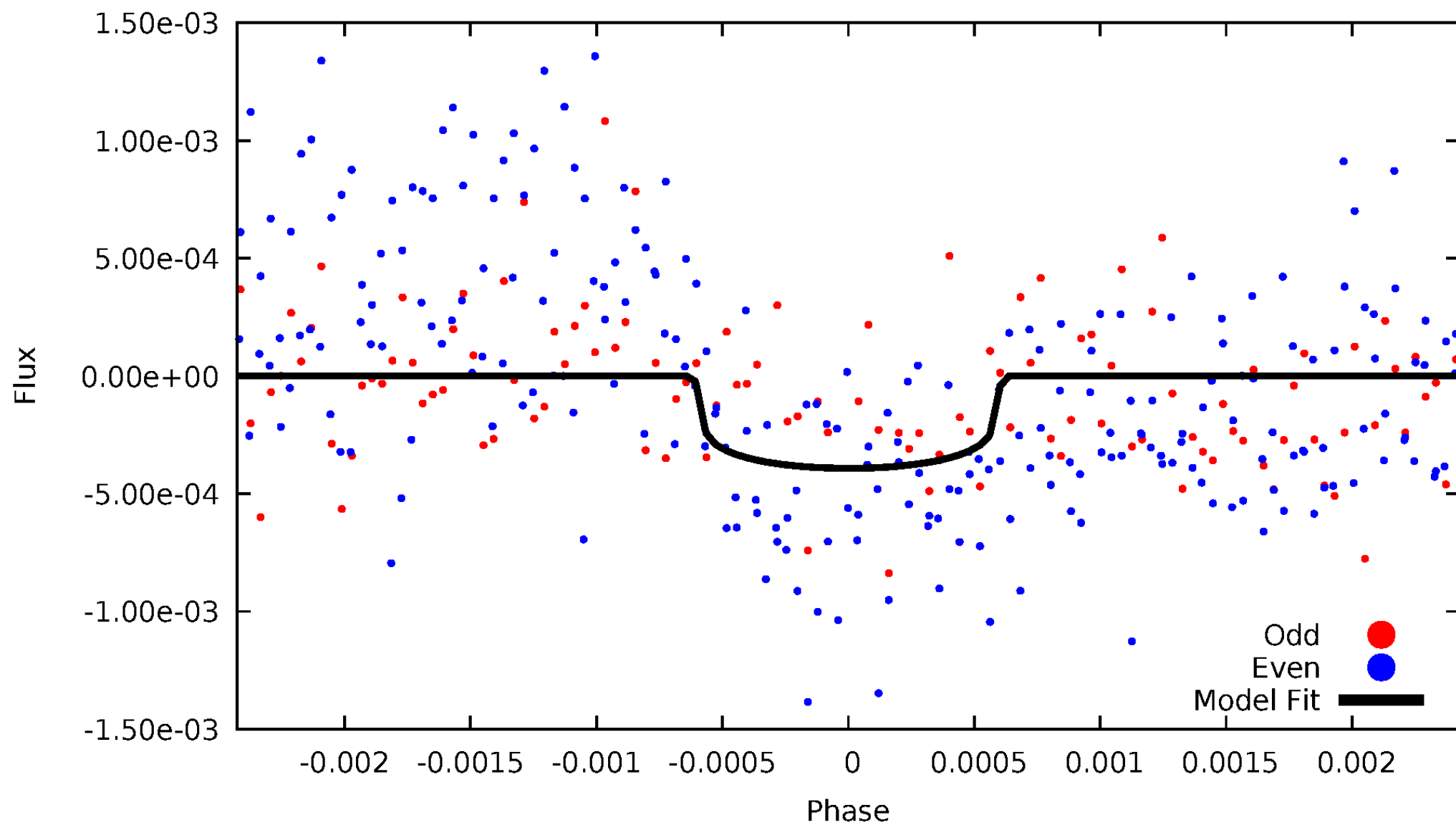


TCE 008418315-01



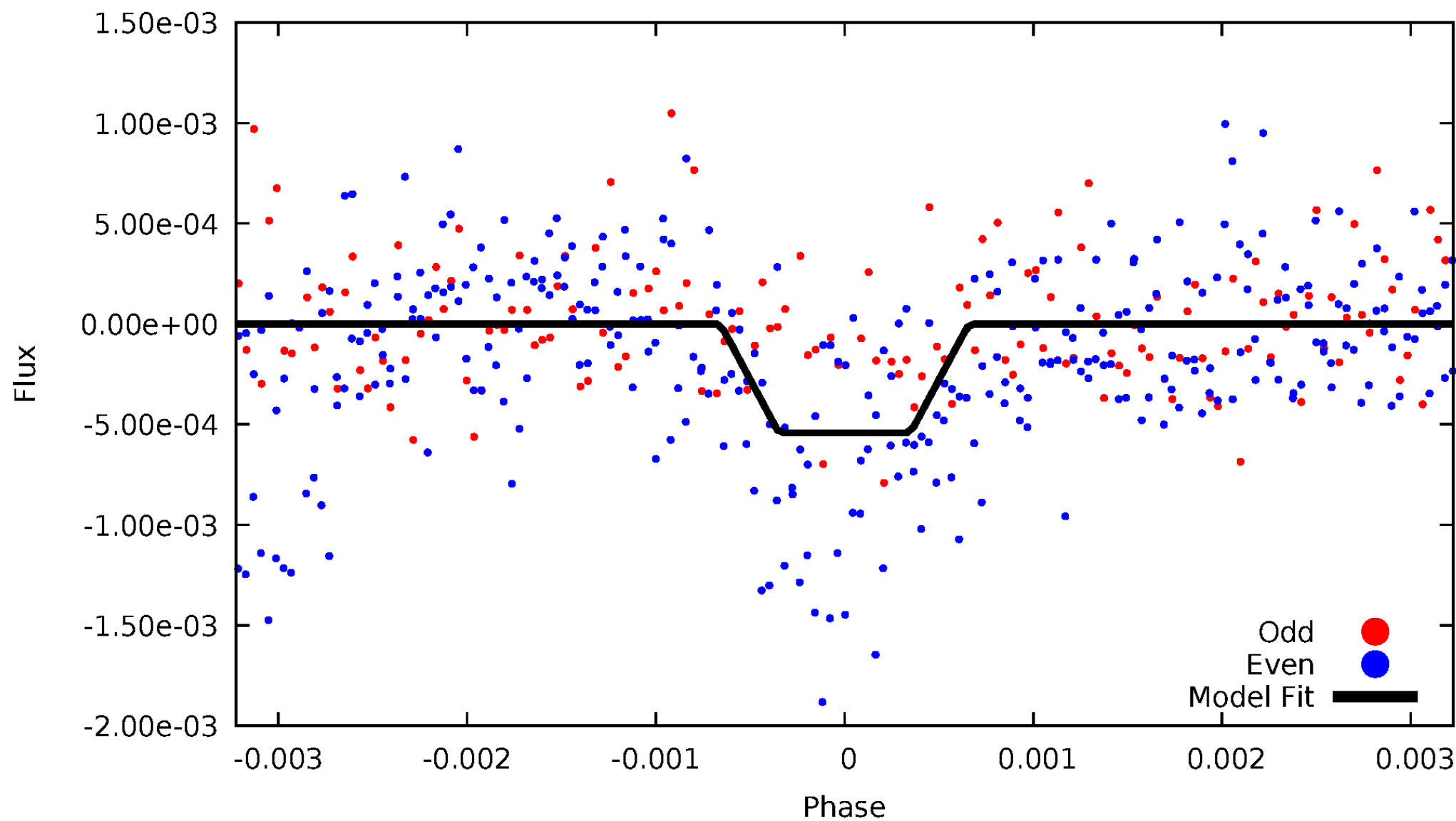
DV Odd/Even

TCE 008418315-01

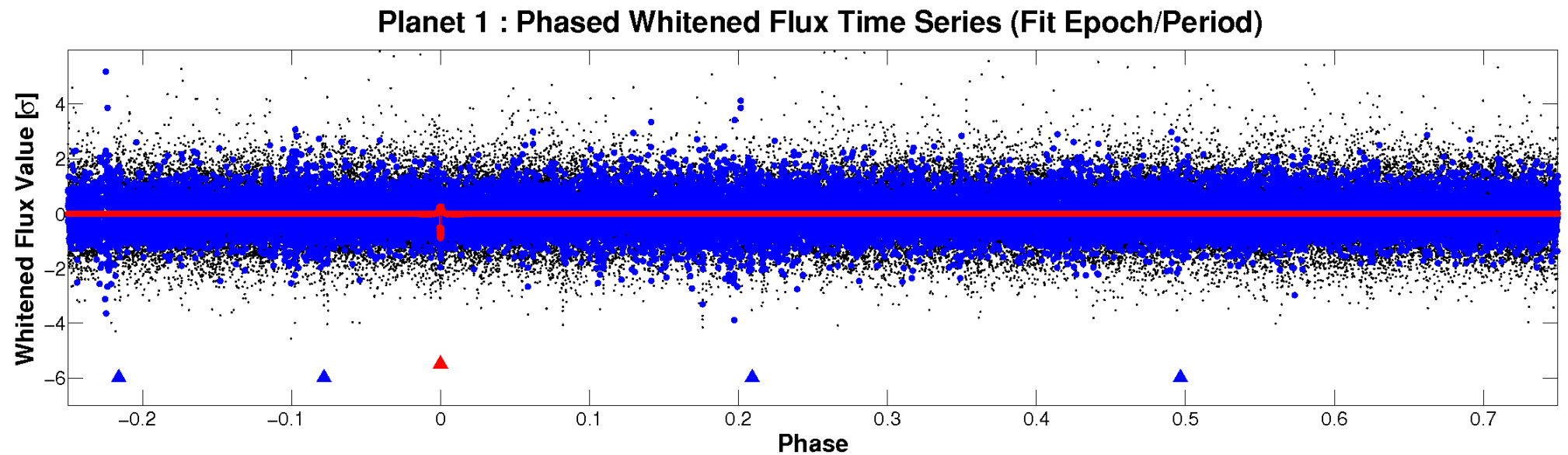
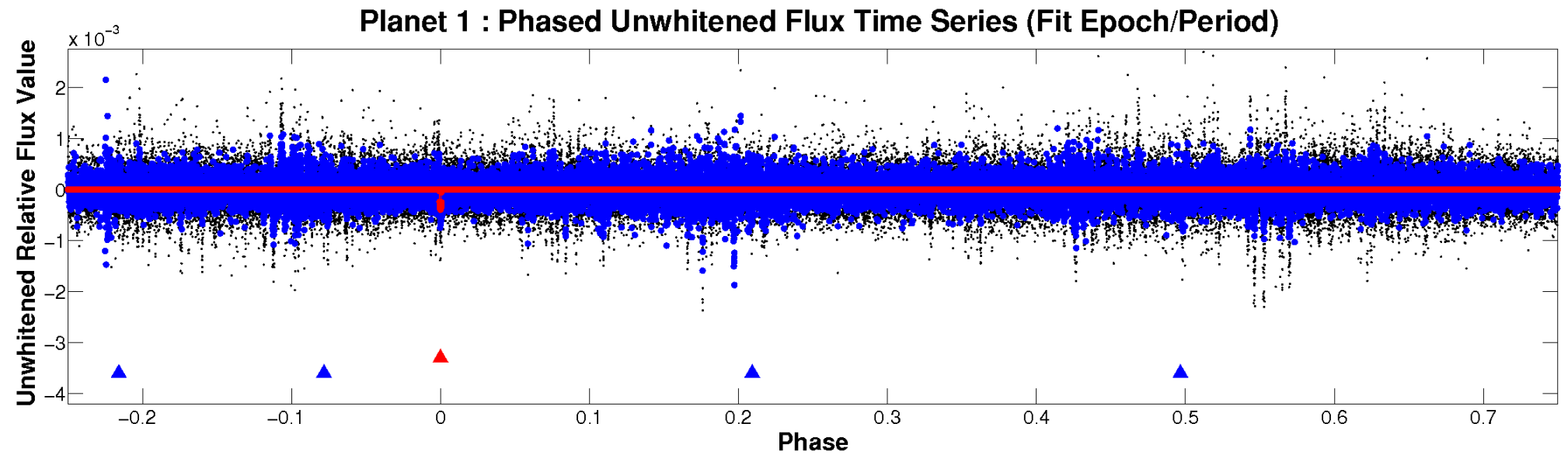


ALT Odd/Even

TCE 008418315-01

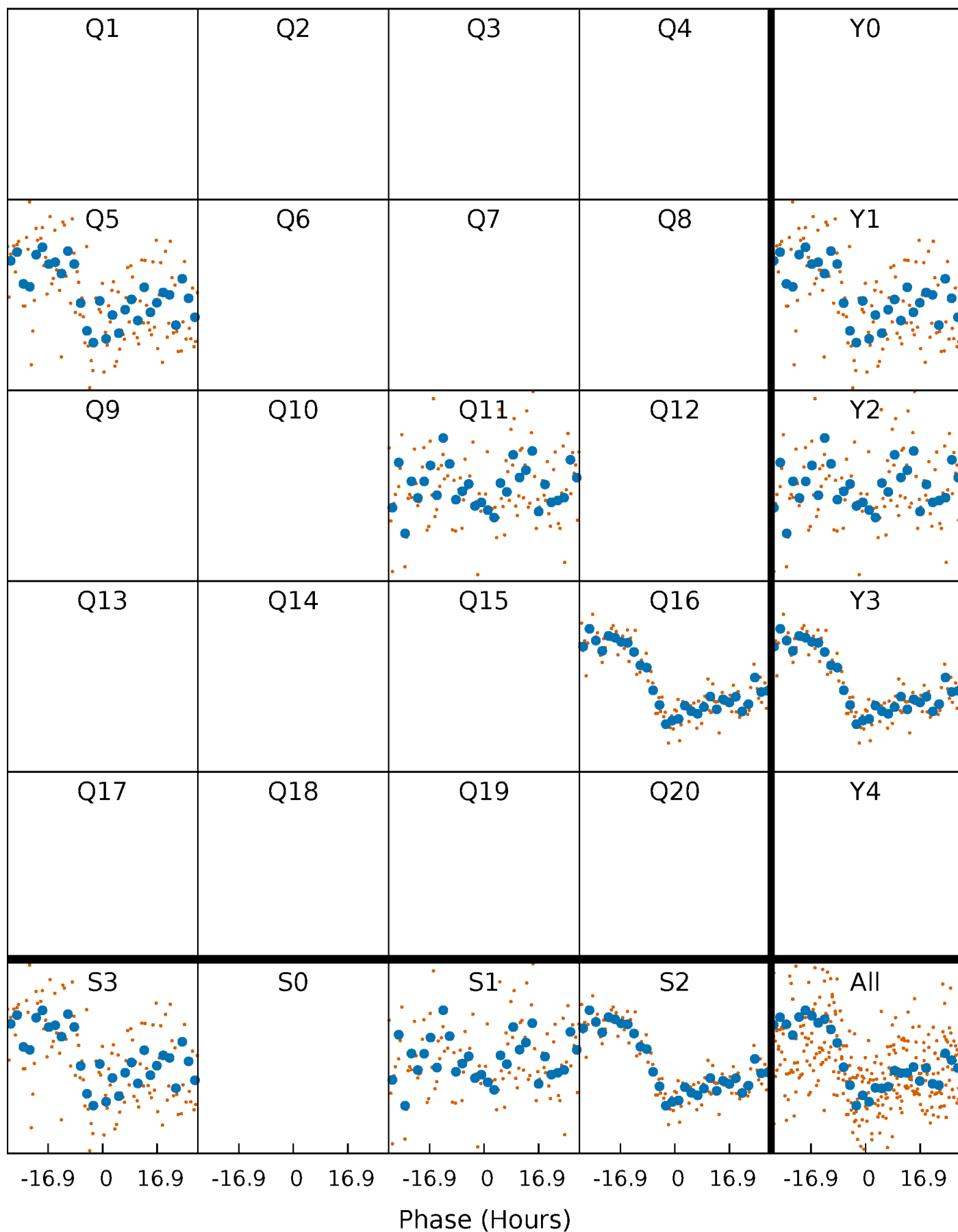


Non-Whitened Vs. Whitened Light Curve



PDC Quarter-Phased Transit Curves

TCE 008418315-01 P=508.099009 Days $T_0=513.235702$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 008418315-01 P=508.099009 Days $T_0=513.235702$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

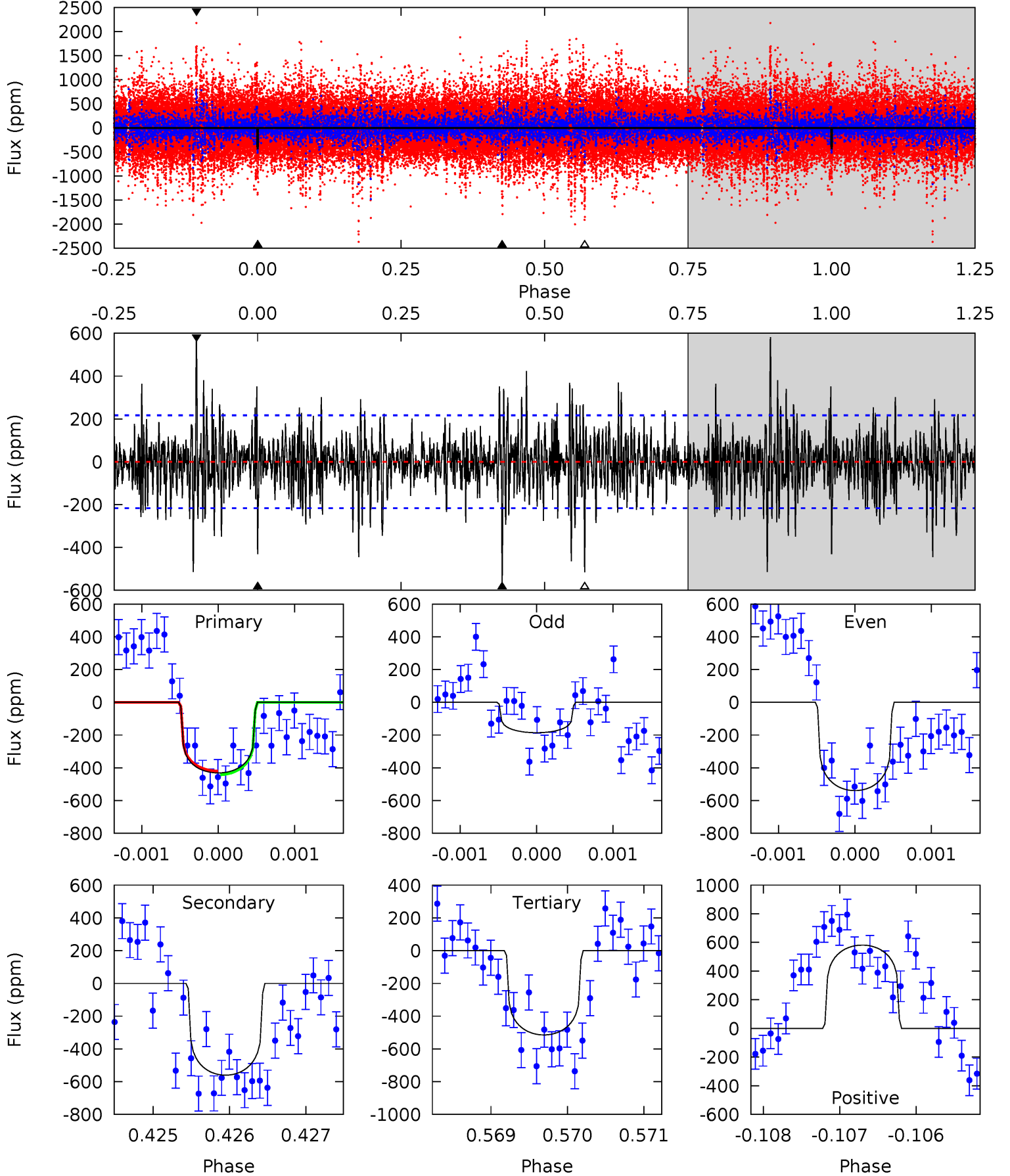
TCE 008418315-01 P=508.100903 Days $T_0=513.209631$ (BKJD)



DV Model-Shift Uniqueness Test

008418315-01, P = 508.099009 Days, E = 5.136693 Days

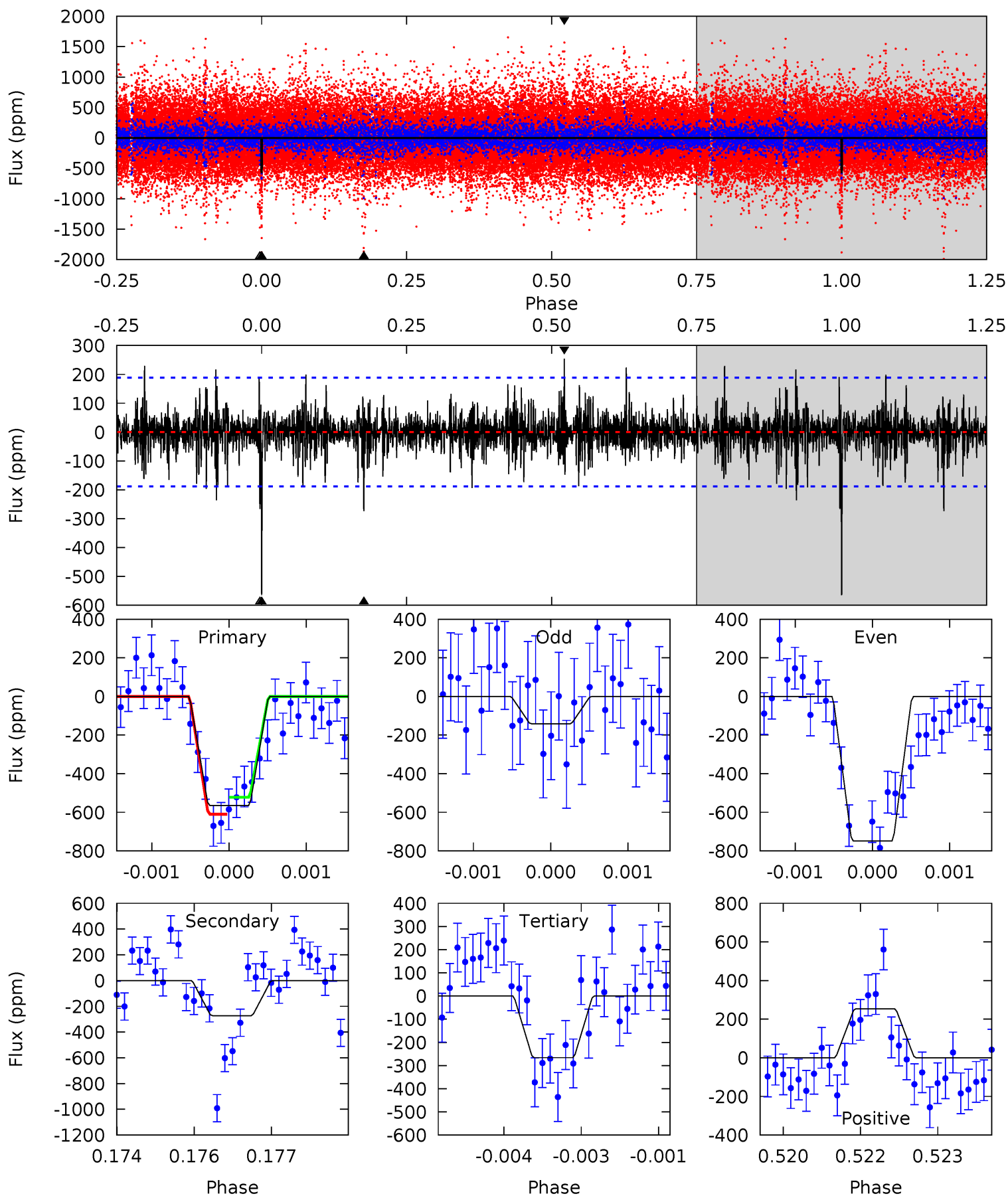
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	14.0	12.9	14.5	5.41	3.23	2.62	-2.08	-3.75	1.14	-0.52	4.10	1.15	0.51	0.28



Alt Model-Shift Uniqueness Test

008418315-01, P = 508.100903 Days, E = 5.108728 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.2	7.83	7.62	7.28	5.41	3.22	1.40	8.59	8.93	0.21	0.55	8.02	1.60	0.31	1.26



Stellar Parameters For KIC 008418315

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5951^{+159}_{-159}	$4.596^{+0.030}_{-0.170}$	$-0.680^{+0.300}_{-0.300}$	$0.770^{+0.181}_{-0.057}$	$0.858^{+0.079}_{-0.088}$	$2.648^{+0.423}_{-1.186}$
	+3%/-3%	+1%/-4%	+44%/-44%	+24%/-7%	+9%/-10%	+16%/-45%
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 008418315-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-561 ± 40	$1.69^{+0.85}_{-0.86}$	302^{+17}_{-11}	6620^{+3907}_{-1210}	$149488^{+484653}_{-84122}$
Alt.	-273 ± 35	$2.01^{+1.03}_{-0.85}$	302^{+17}_{-11}	5069^{+1662}_{-735}	$47889^{+115026}_{-25755}$

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

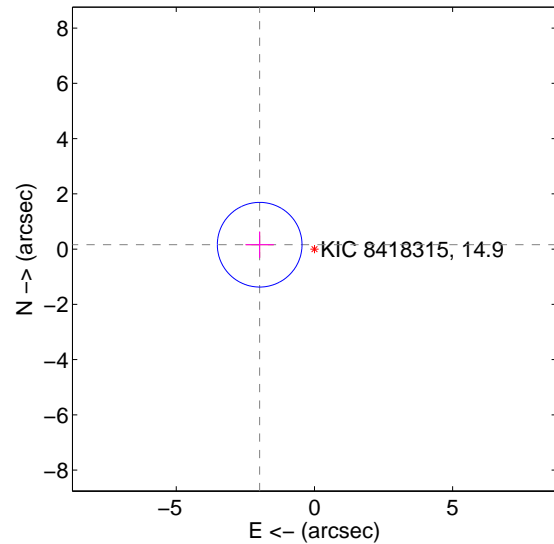
Supplemental centroid analysis for 008418315-01. Kepler magnitude: 14.90. Transit SNR 7.77

There are 0 quarters with good PRF difference image offsets

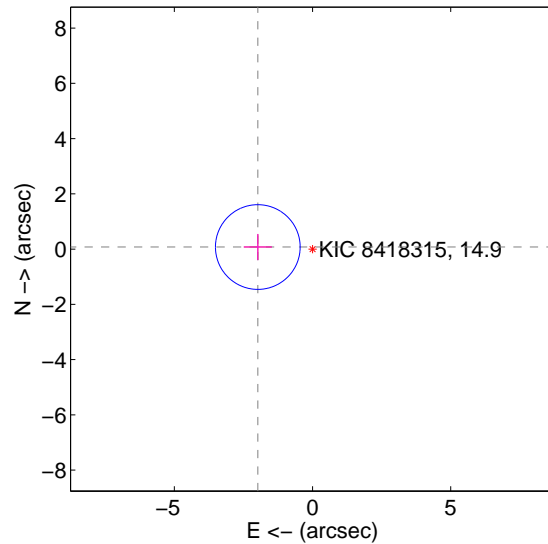
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.988 ± 0.511	3.89	1.982 ± 0.511	0.159 ± 0.475
PRF-fit source offset from KIC position	1.982 ± 0.511	3.88	1.980 ± 0.511	0.075 ± 0.475
photometric centroid source offset	2.07 ± 1.74	1.19	2.03 ± 1.74	-0.42 ± 1.77

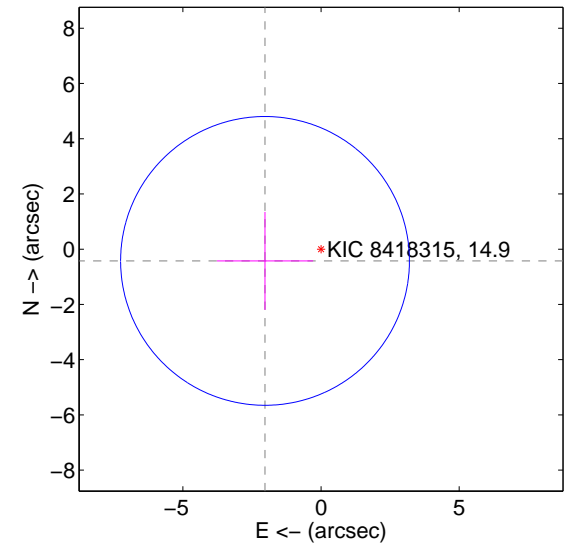
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

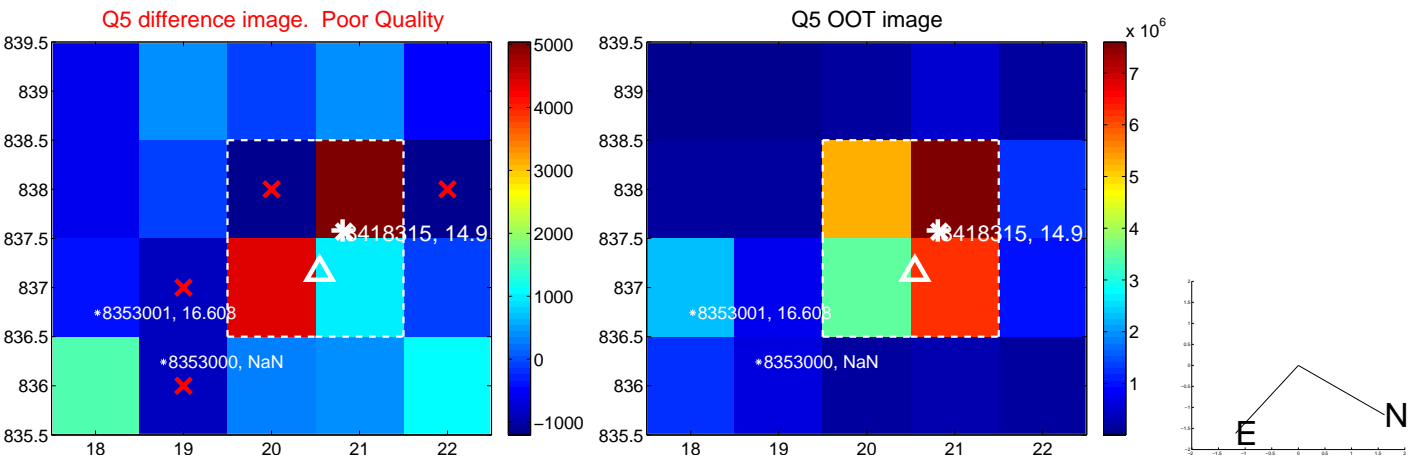


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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



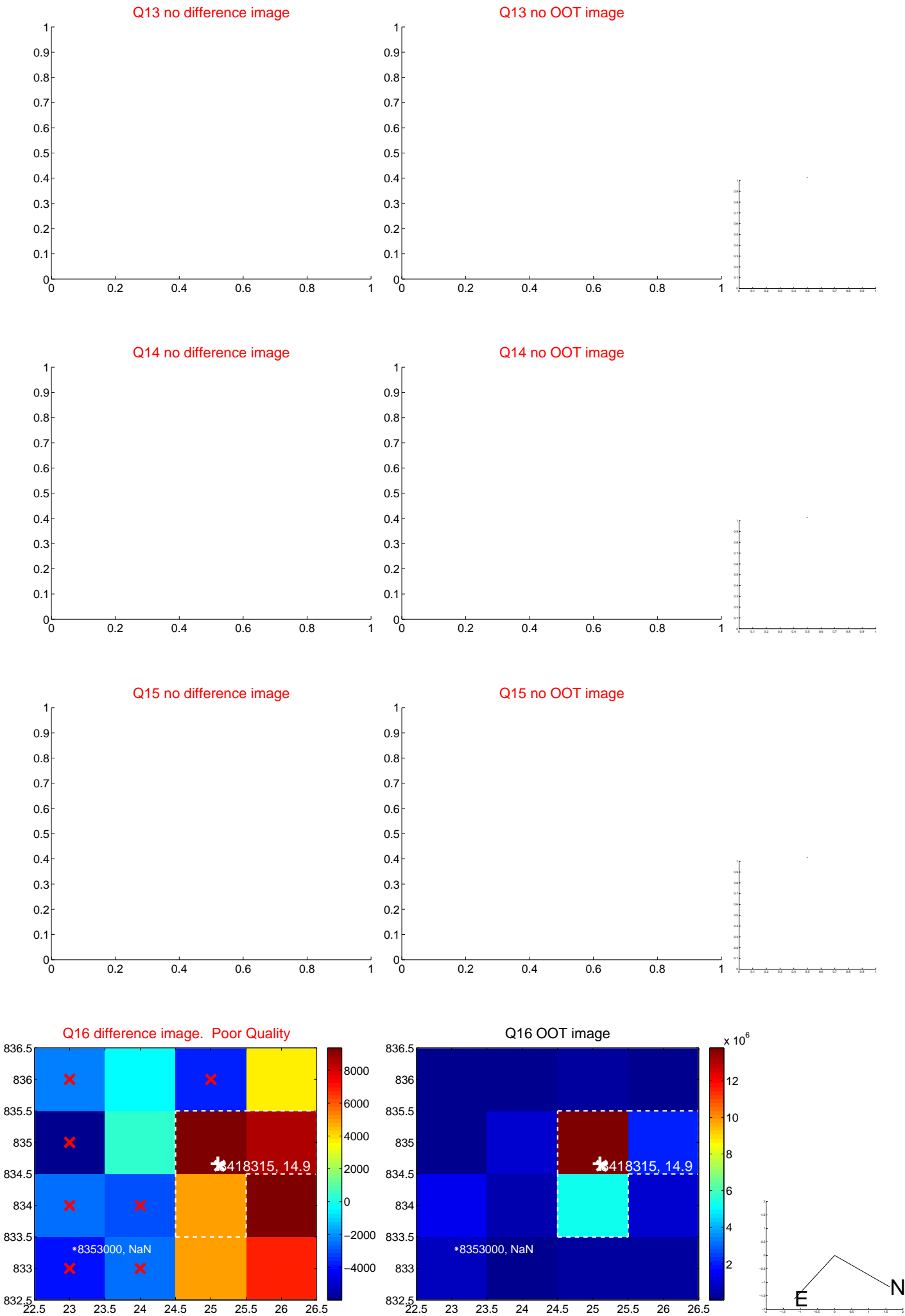
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



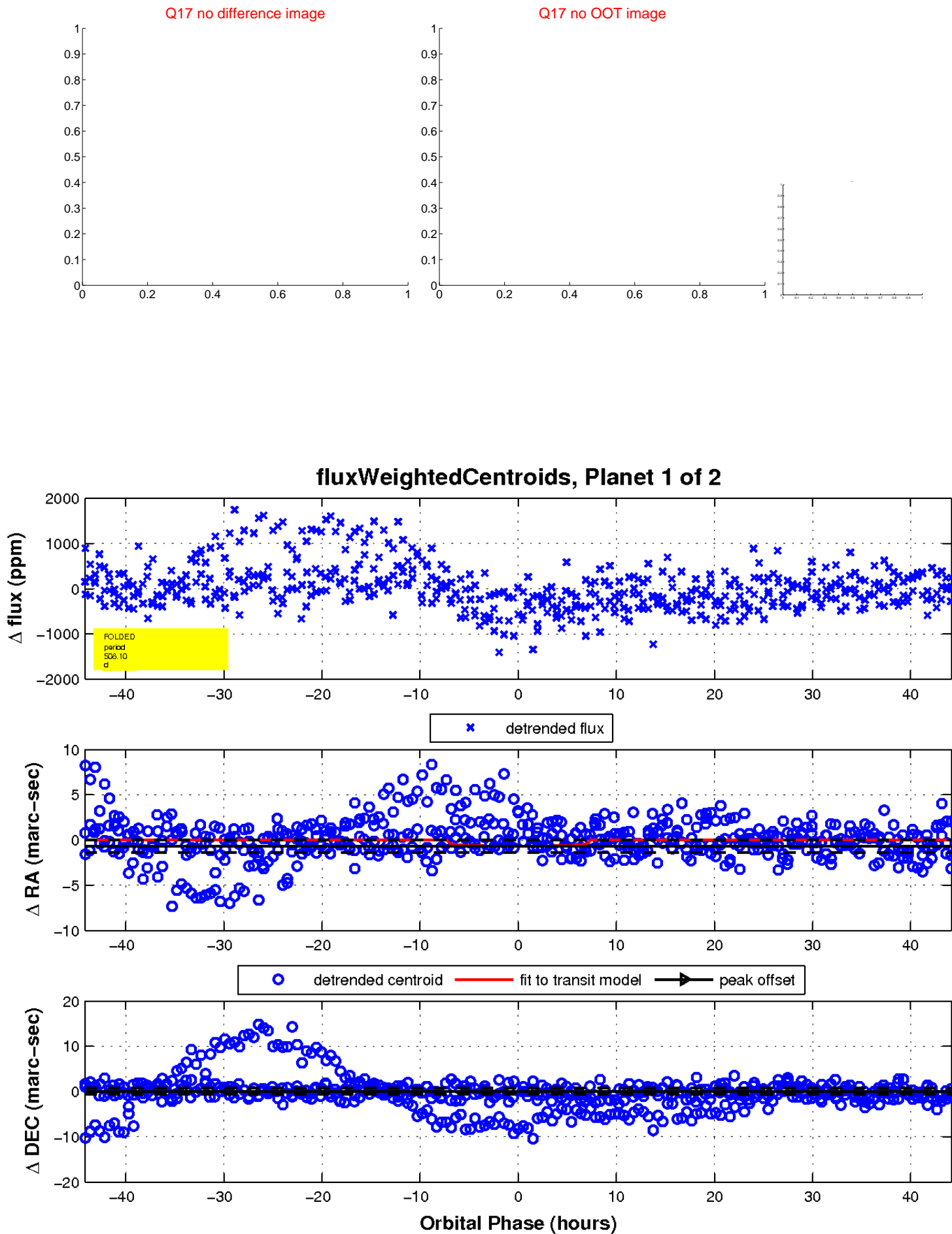
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

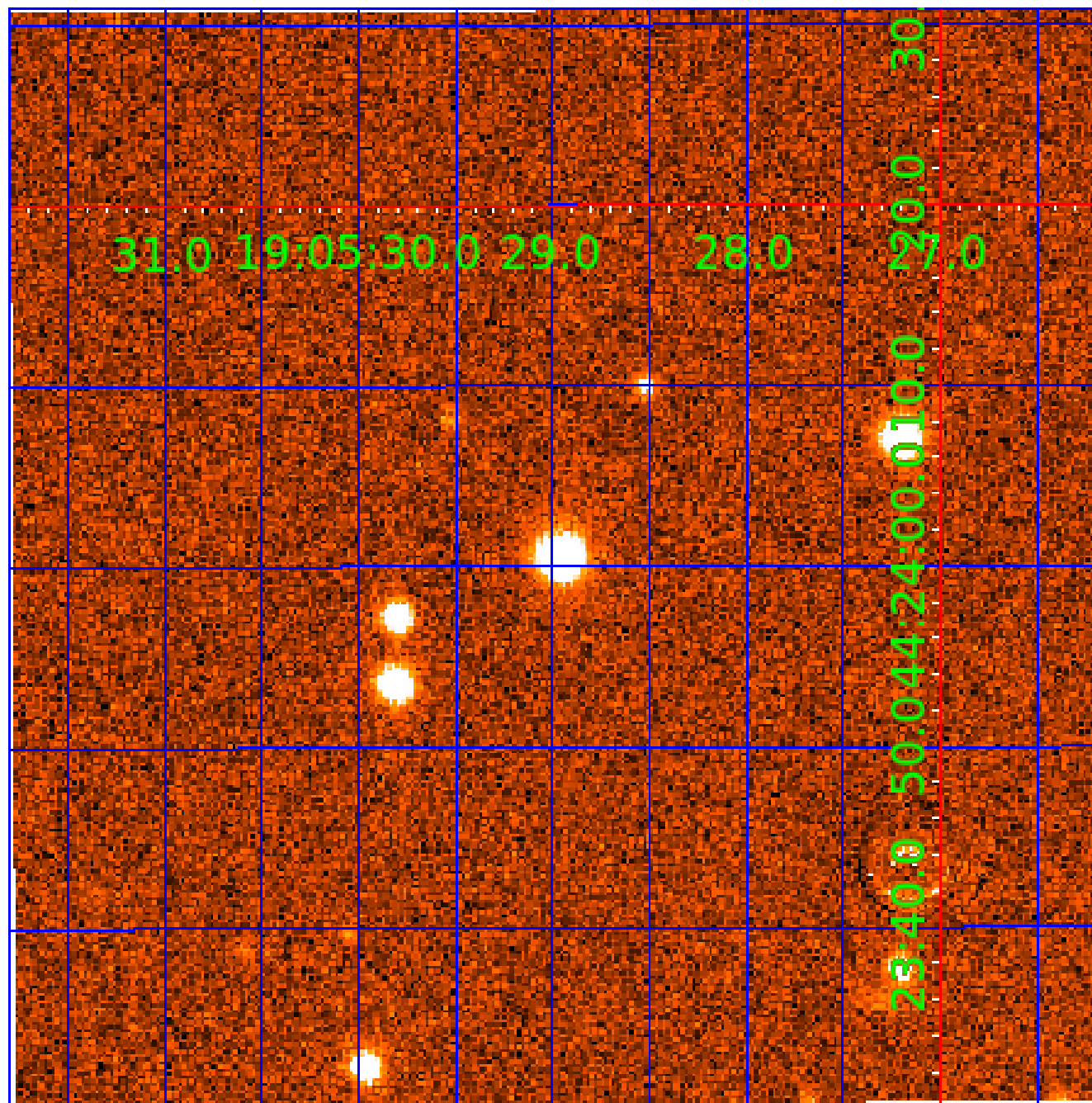


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 008418315

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})
008418315-01	OBS	No	508.099009	513.235702	392.1	14.790	7.2	7.8	0.77	5951	1.58	0.48
008418315-02	OBS	No	362.064223	403.530578	517.9	20.013	9.0	9.4	0.77	5951	1.76	0.75

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008418315-01	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS—HALO_GHOST
008418315-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—MOD_NONUNIQ_DV—MOD_TER_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.

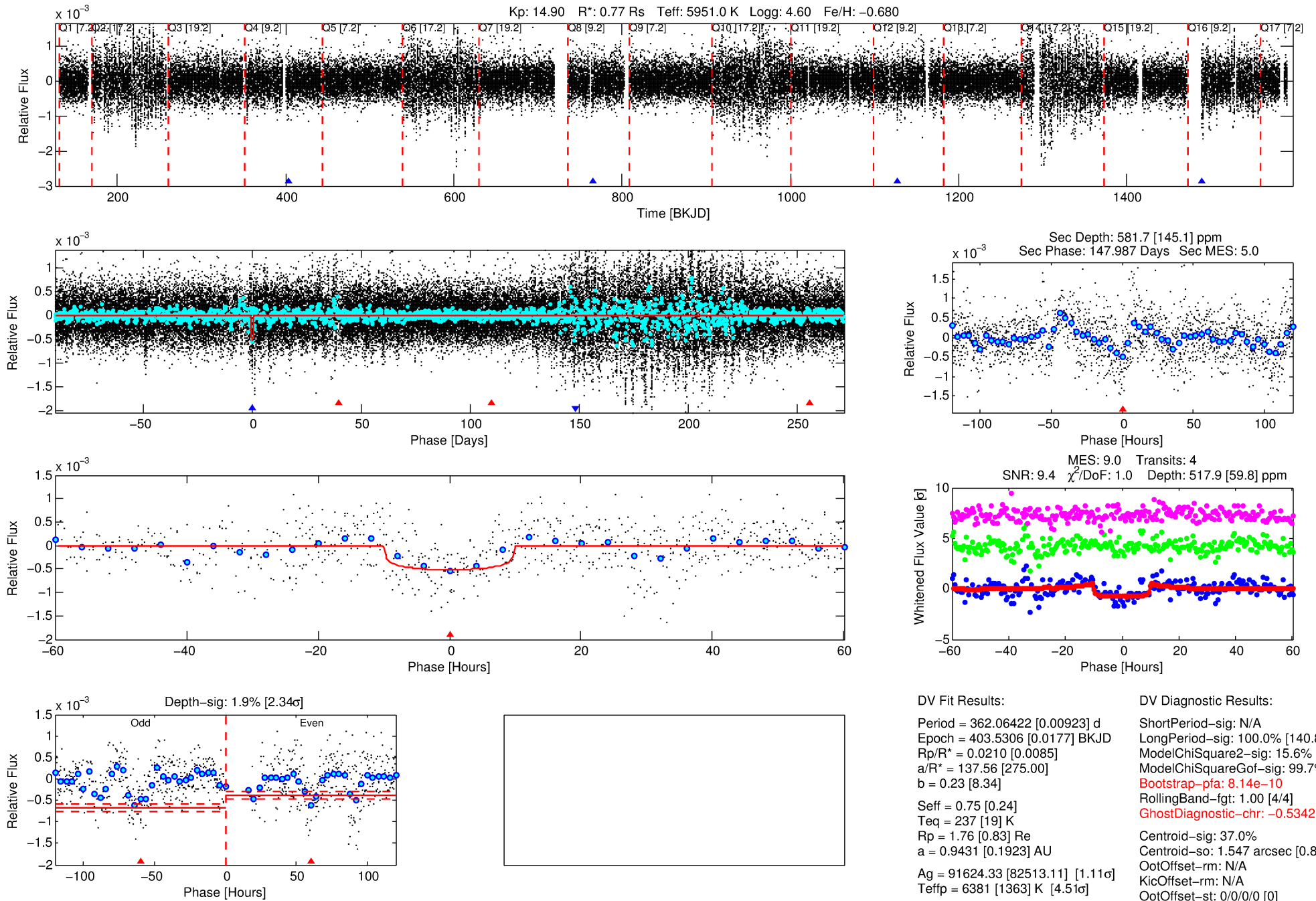
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008418315-02

No Significant Match Found

DV One-Page Summary

KIC: 8418315 Candidate: 2 of 2 Period: 362.064 d



DV Fit Results:

Period = 362.06422 [0.00923] d
 Epoch = 403.5306 [0.0177] BKJD
 Rp/R* = 0.0210 [0.0085]
 a/R* = 137.56 [275.00]
 b = 0.23 [8.34]
 Seff = 0.75 [0.24]
 Teq = 237 [19] K
 Rp = 1.76 [0.83] Re
 a = 0.9431 [0.1923] AU
 Ag = 91624.33 [82513.11] [1.11 σ]
 Tefp = 6381 [1363] K [4.51 σ]

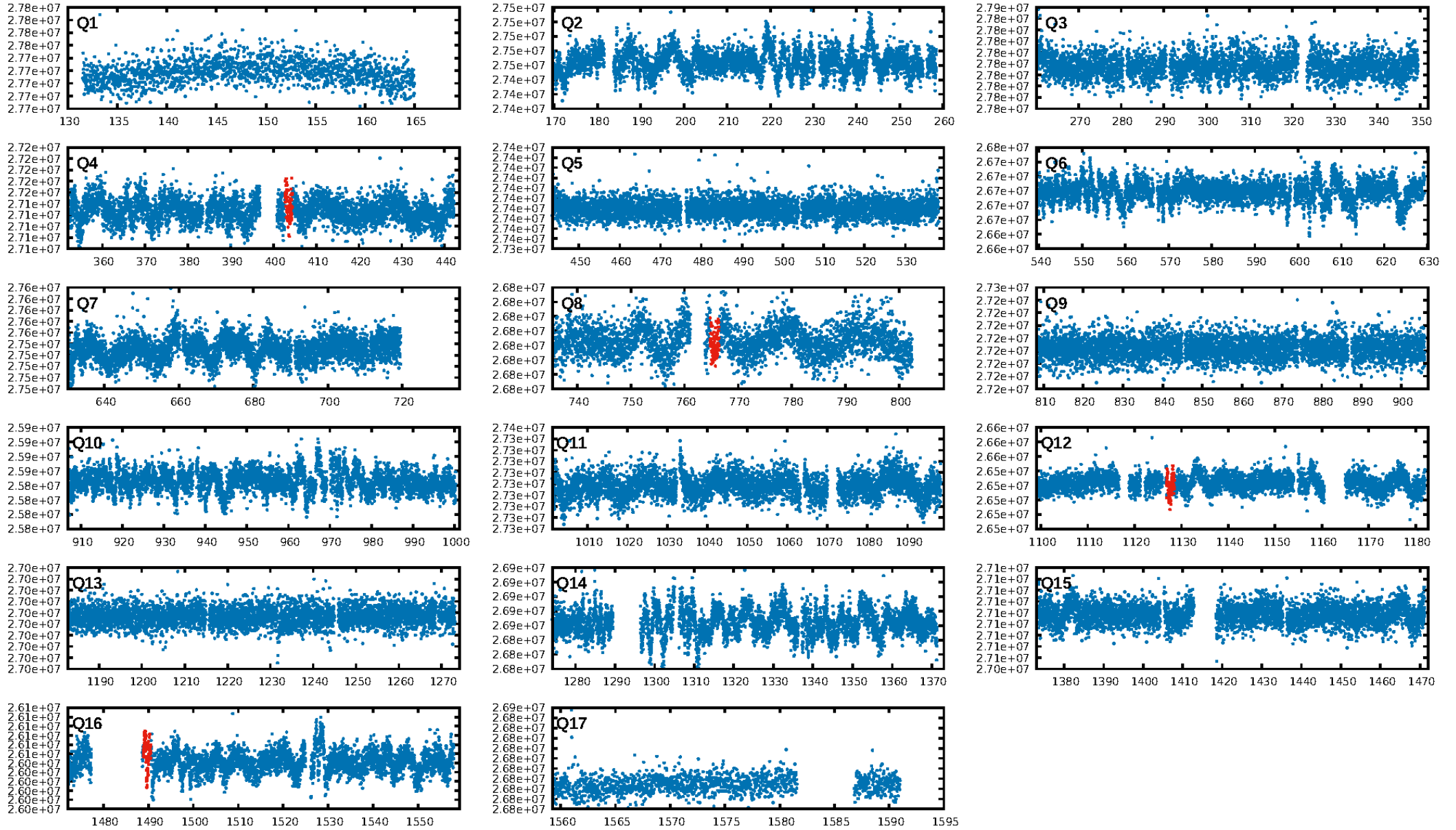
DV Diagnostic Results:

ShortPeriod-sig: N/A
 LongPeriod-sig: 100.0% [140.84 σ]
 ModelChiSquare2-sig: 15.6%
 ModelChiSquareGof-sig: 99.7%
 Bootstrap-pfa: 8.14e-10
 RollingBand-fgt: 1.00 [4/4]
 GhostDiagnostic-chr: -0.5342
 Centroid-sig: 37.0%
 Centroid-so: 1.547 arcsec [0.80 σ]
 OotOffset-rm: N/A
 OotOffset-st: 0/0/0 [0]
 KicOffset-rm: N/A
 KicOffset-st: 0/0/0 [0]
 DiffImageQuality-fgm: N/A
 DiffImageOverlap-fno: 1.00 [1/1]

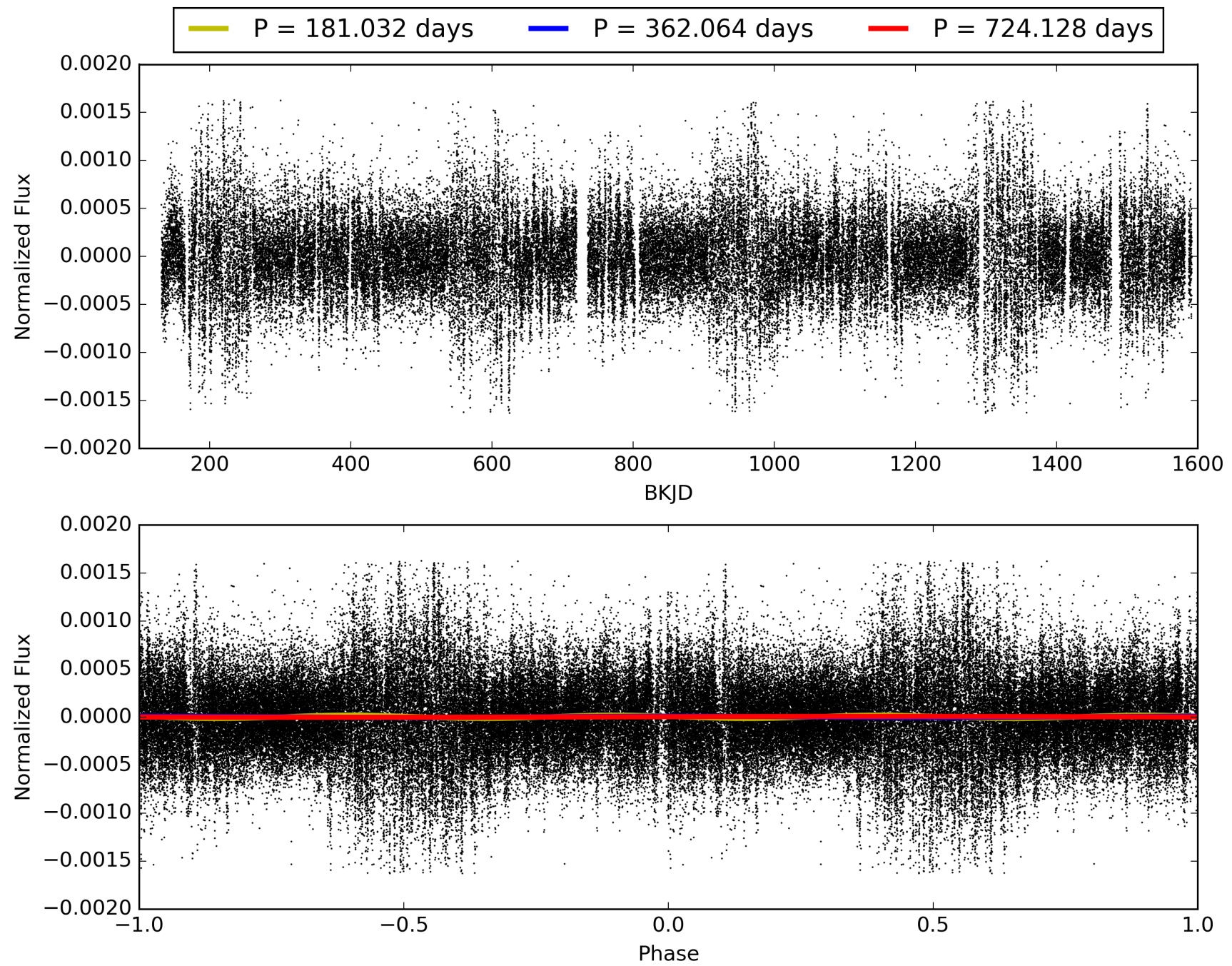
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 01:53:53 Z

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

TCE 008418315-02, PDC Light Curves

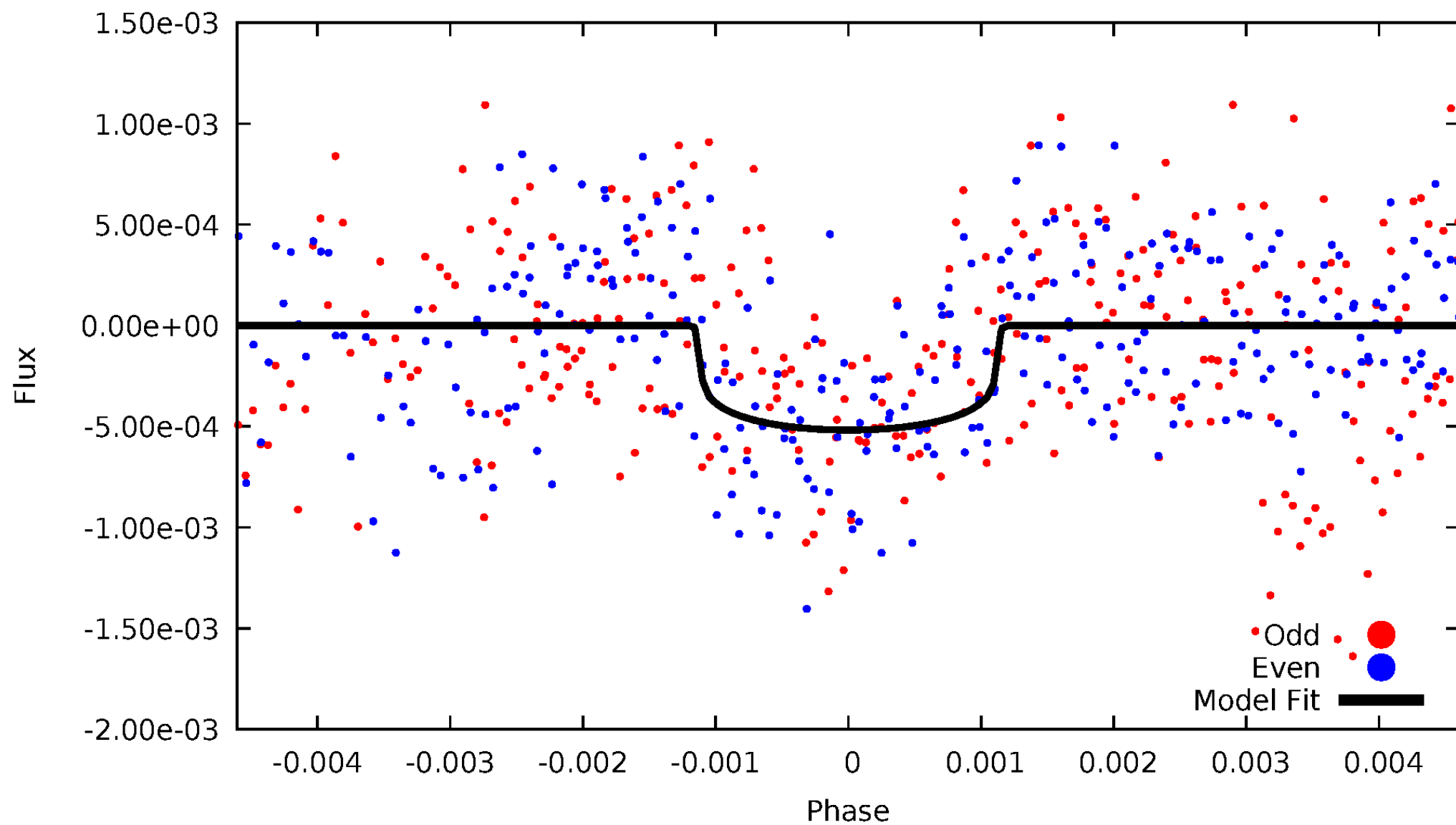


TCE 008418315-02



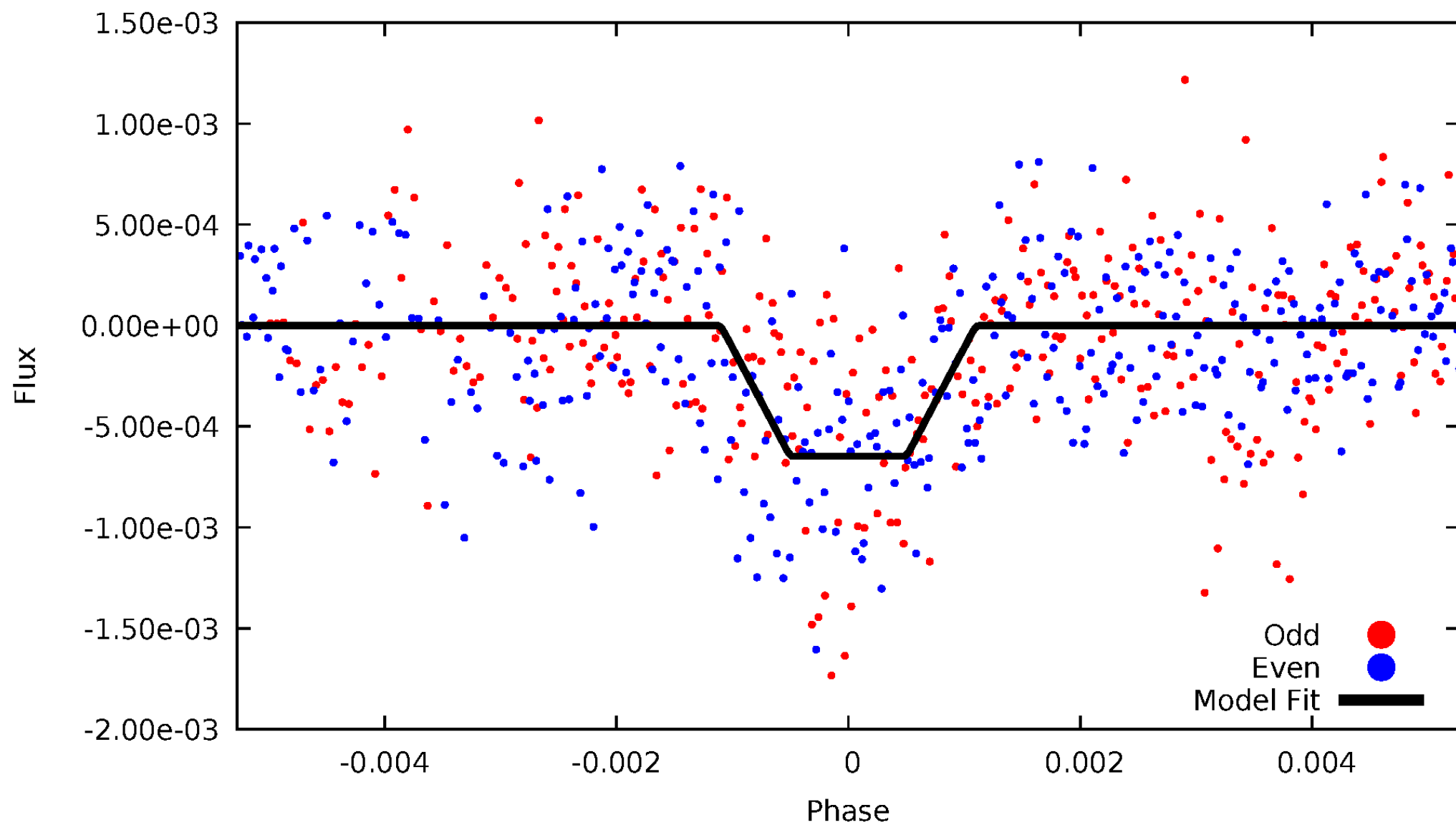
DV Odd/Even

TCE 008418315-02



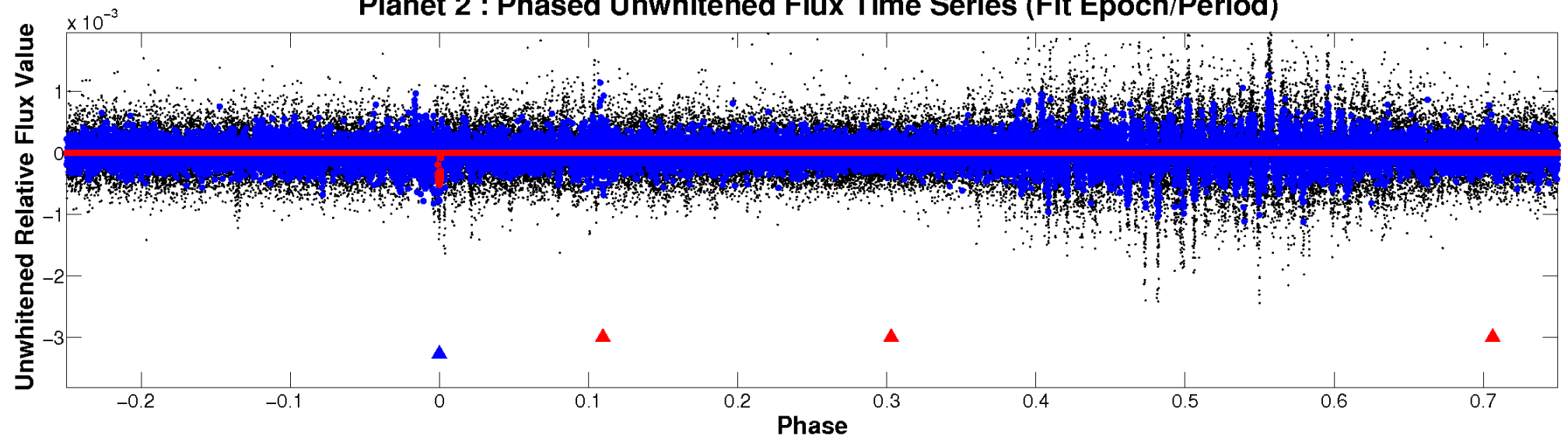
ALT Odd/Even

TCE 008418315-02

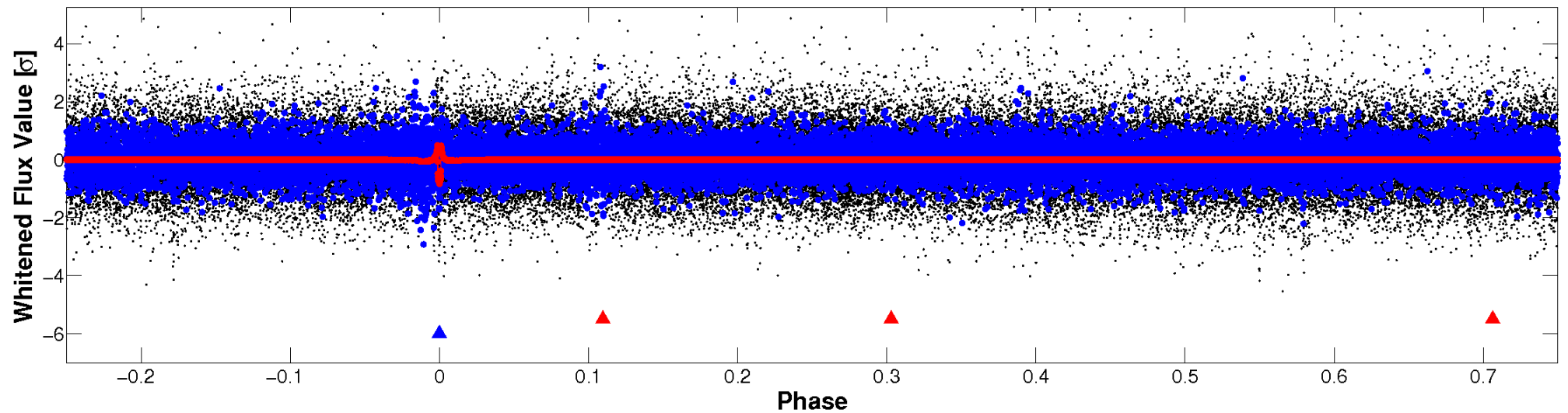


Non-Whitened Vs. Whitened Light Curve

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



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



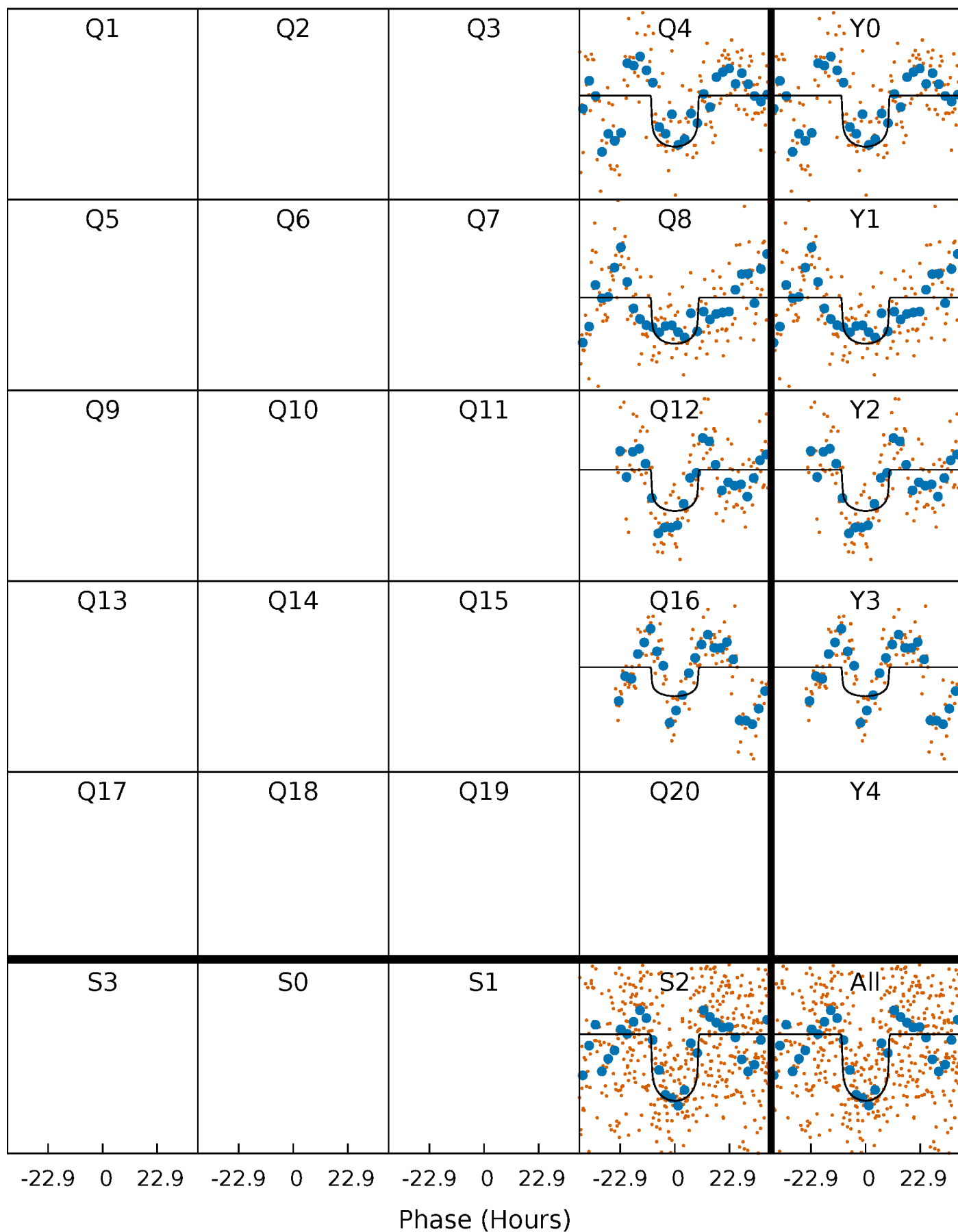
PDC Quarter-Phased Transit Curves

TCE 008418315-02 $P=362.064223$ Days $T_0=403.530578$ (BKJD)



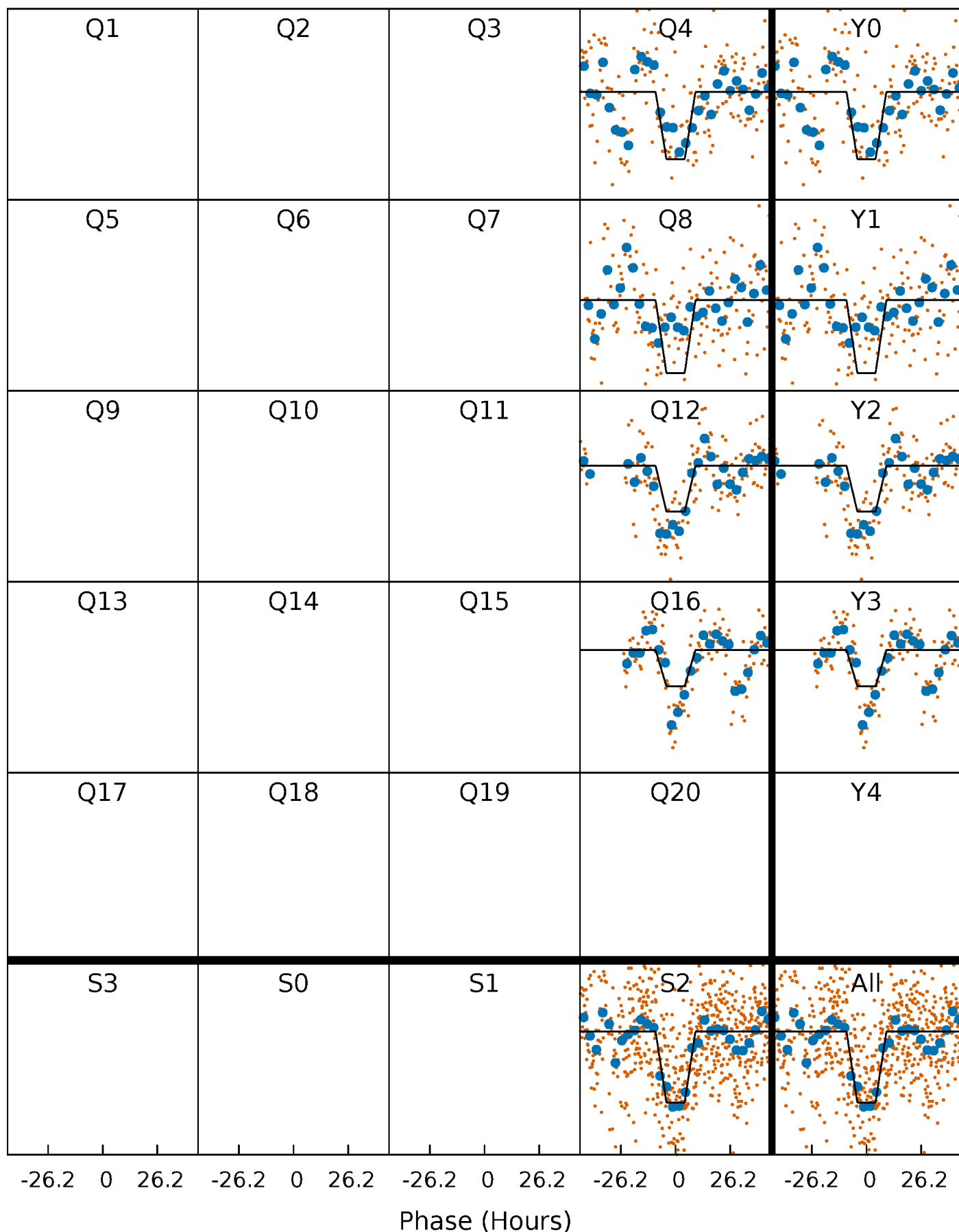
DV Quarter-Phased Transit Curves

TCE 008418315-02 P=362.064223 Days $T_0=403.530578$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

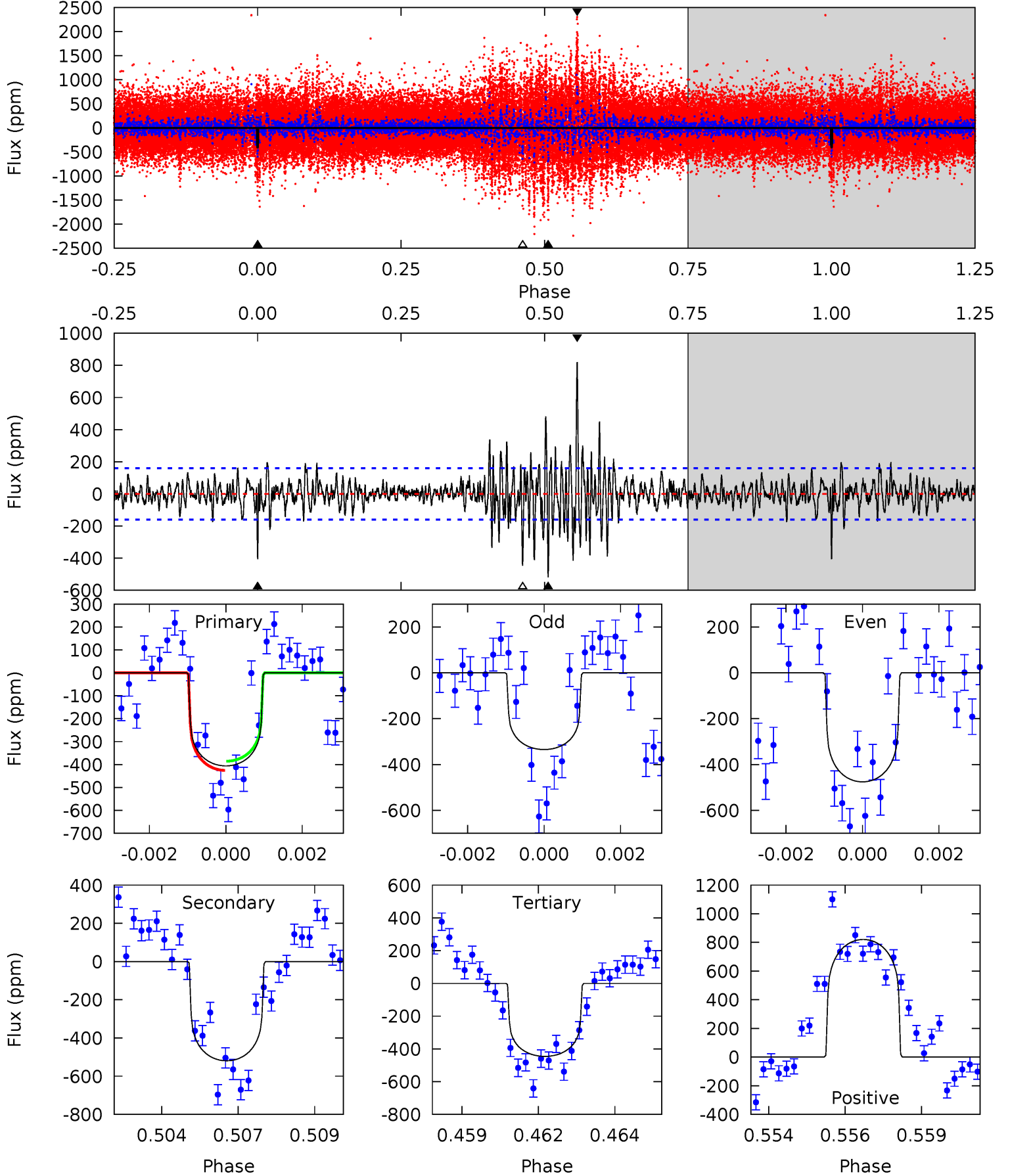
TCE 008418315-02 P=362.075872 Days $T_0=403.494124$ (BKJD)



DV Model-Shift Uniqueness Test

008418315-02, P = 362.064223 Days, E = 41.466355 Days

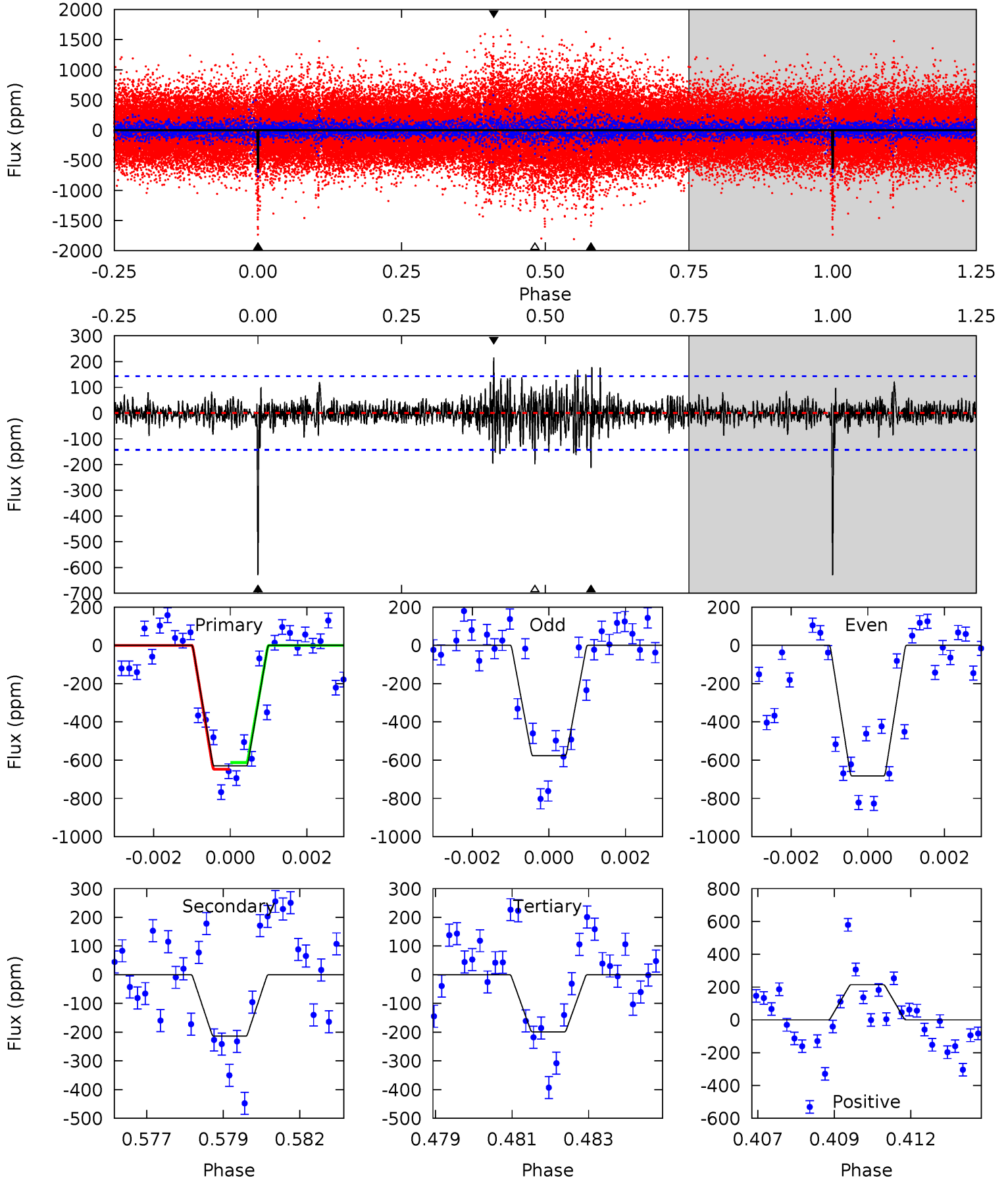
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.5	17.2	14.8	27.2	5.30	3.04	3.39	-1.31	-13.7	2.44	-9.98	2.32	1.08	0.61	0.67



Alt Model-Shift Uniqueness Test

008418315-02, P = 362.075872 Days, E = 41.418252 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.4	7.95	7.38	7.95	5.31	3.06	1.46	16.0	15.5	0.56	-0.00	1.95	0.93	0.25	0.65



Stellar Parameters For KIC 008418315

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5951^{+159}_{-159}	$4.596^{+0.030}_{-0.170}$	$-0.680^{+0.300}_{-0.300}$	$0.770^{+0.181}_{-0.057}$	$0.858^{+0.079}_{-0.088}$	$2.648^{+0.423}_{-1.186}$
	+3%/-3%	+1%/-4%	+44%/-44%	+24%/-7%	+9%/-10%	+16%/-45%
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 008418315-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-519 ± 30	$1.88^{+0.75}_{-0.76}$	338^{+19}_{-13}	6153^{+2153}_{-915}	$71037^{+128434}_{-35121}$
Alt.	-214 ± 27	$2.17^{+0.88}_{-0.70}$	338^{+20}_{-12}	4715^{+892}_{-566}	21691^{+26978}_{-10957}

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

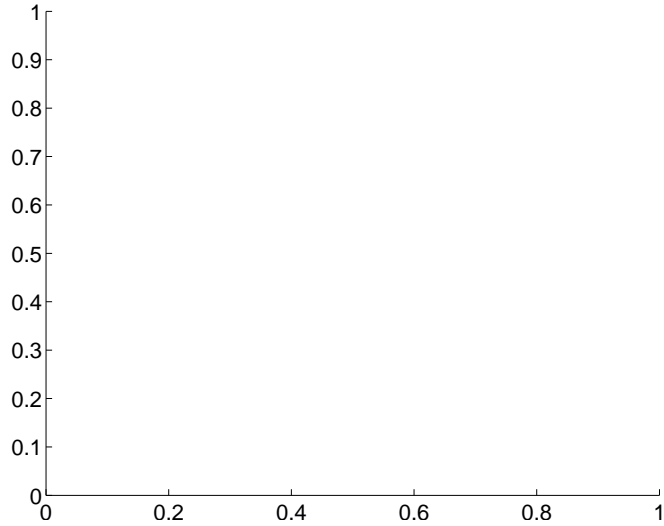
Supplemental centroid analysis for 008418315-02. Kepler magnitude: 14.90. Transit SNR 9.44

There are 0 quarters with good PRF difference image offsets

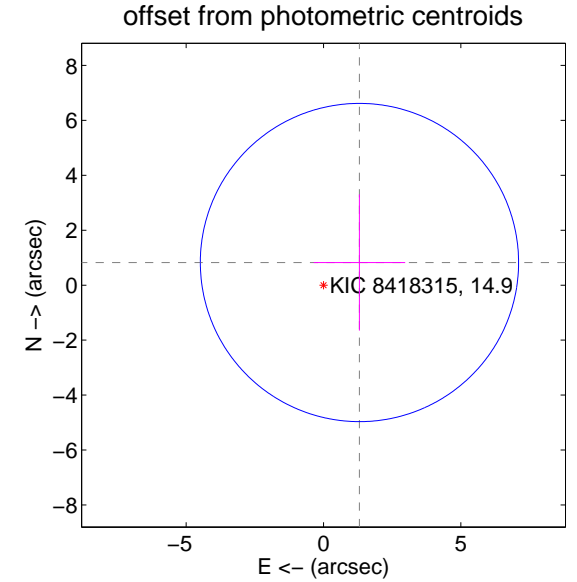
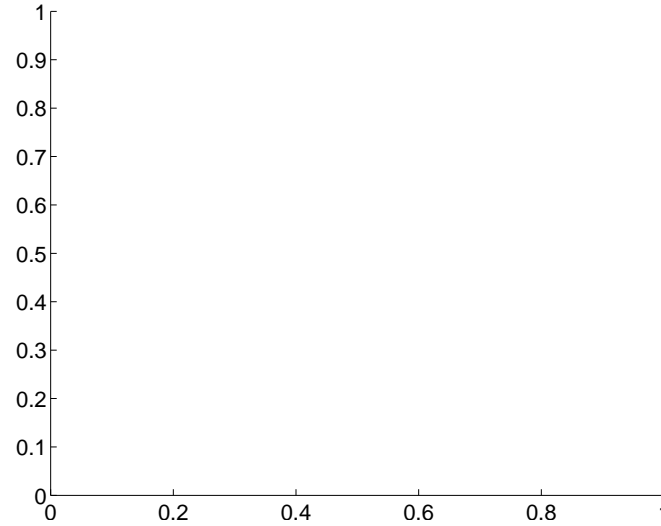
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	1.55 ± 1.93	0.80	-1.31 ± 1.66	0.82 ± 2.48

There is no PRF-fit offset from OOT-fit

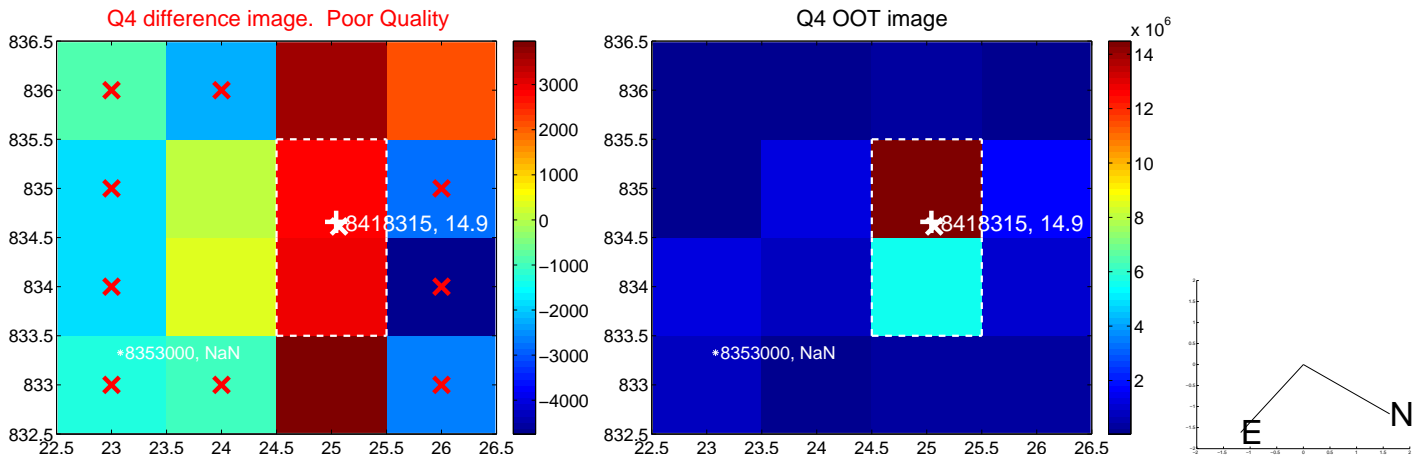
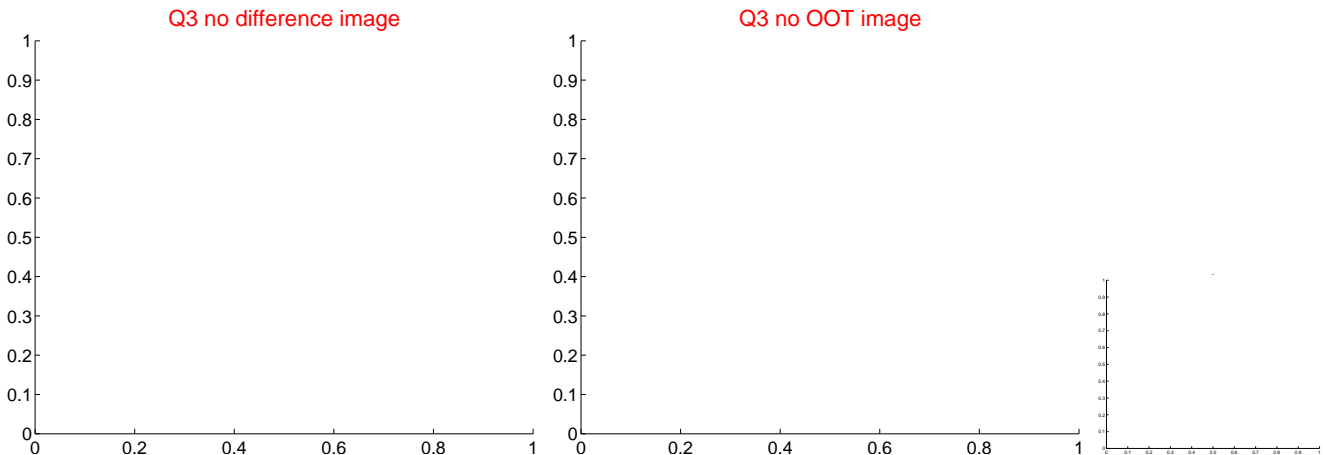
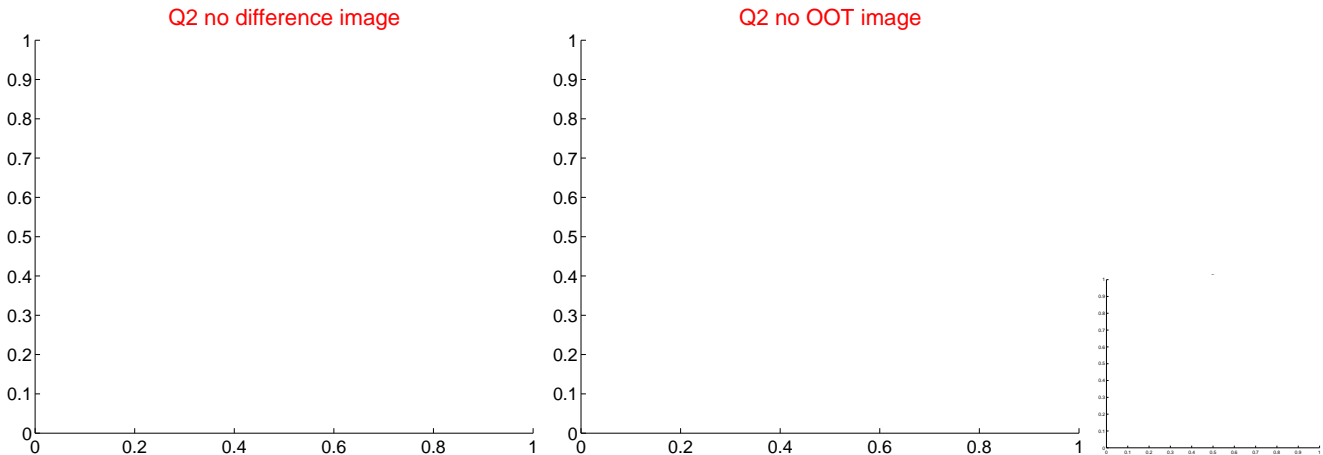
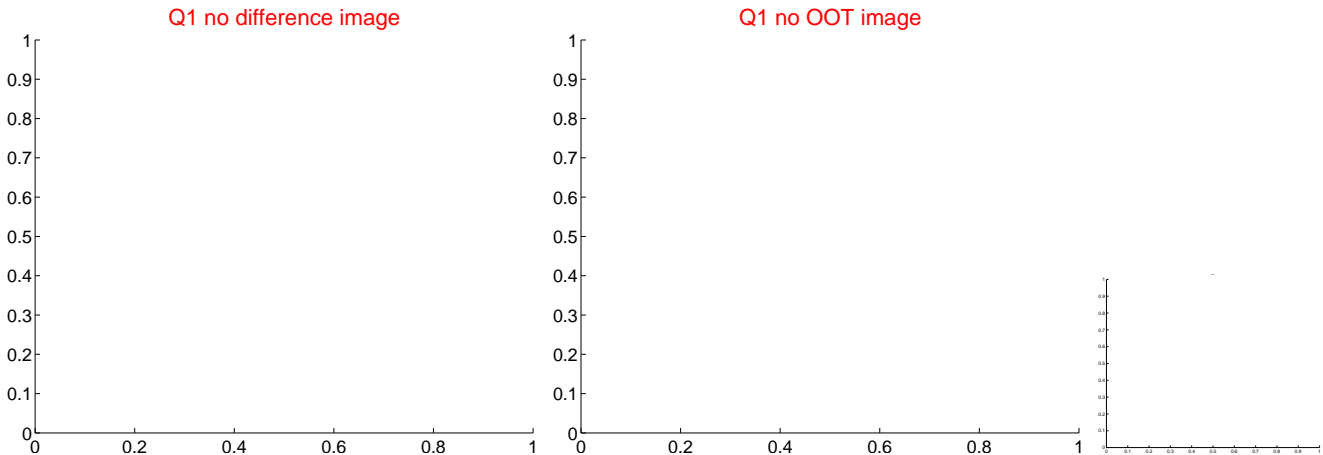


There is no PRF-fit offset from KIC



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

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



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



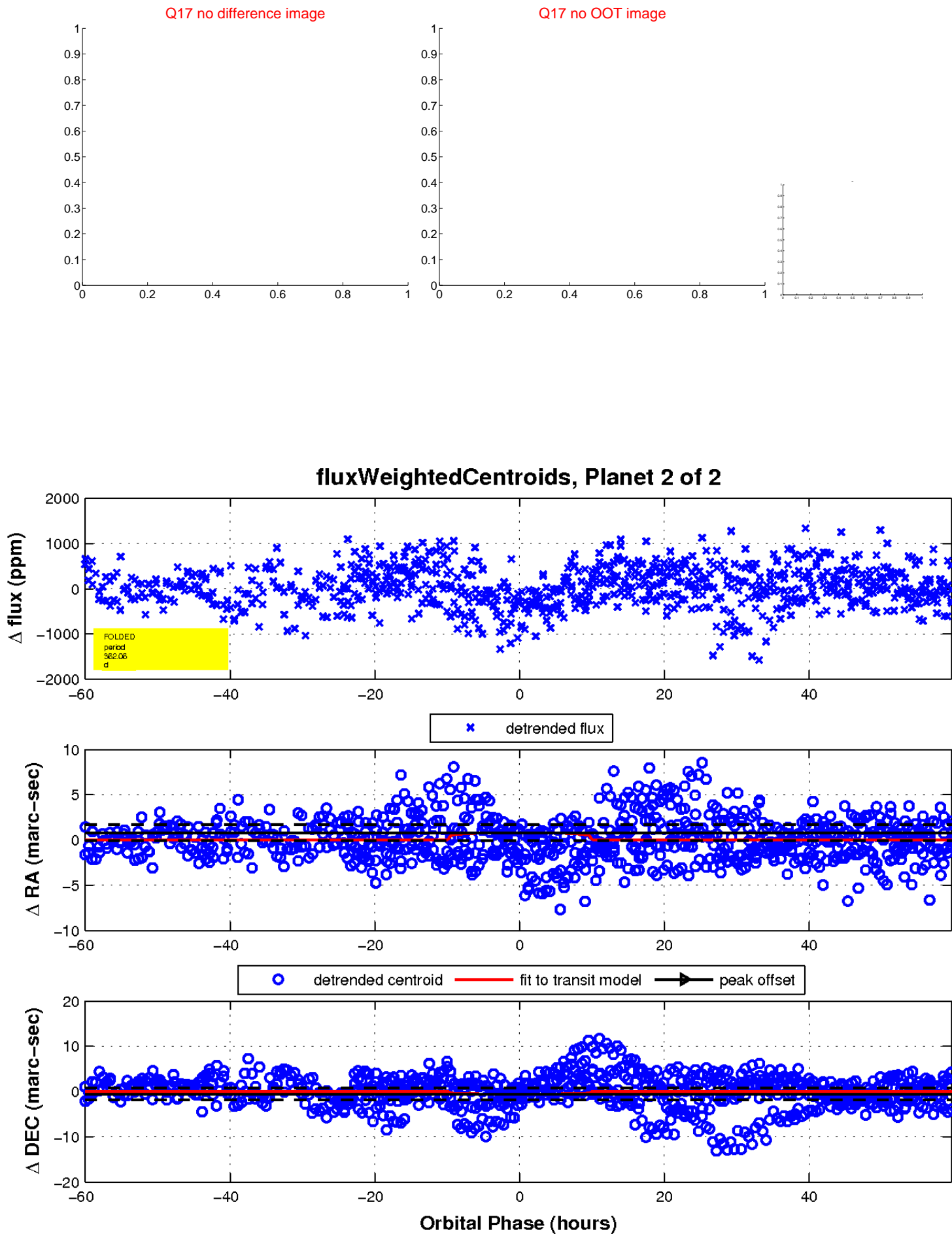
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

