

KIC 010275409

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})
010275409-01	OBS	No	373.878830	259.419356	444.0	3.278	15.9	14.4	1.13	5883	2.71	1.40
010275409-02	OBS	No	414.401791	222.709461	503.9	6.981	19.5	19.7	1.13	5883	5.00	1.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010275409-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
010275409-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

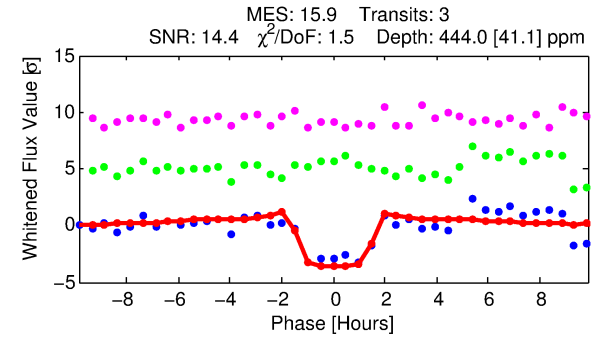
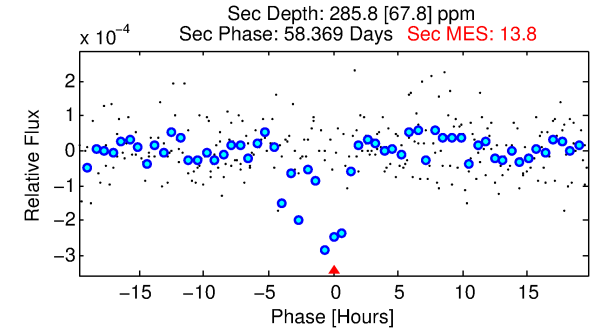
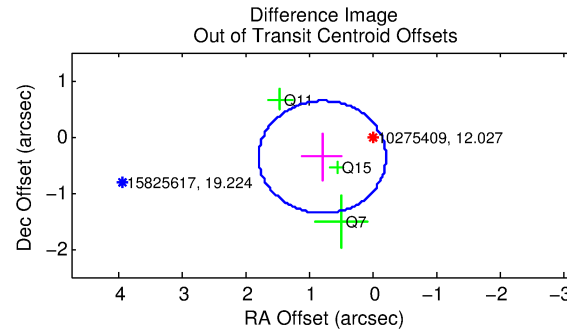
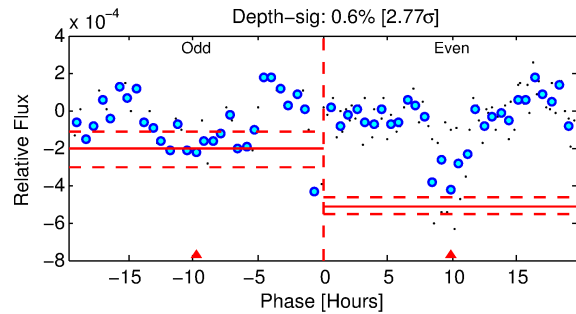
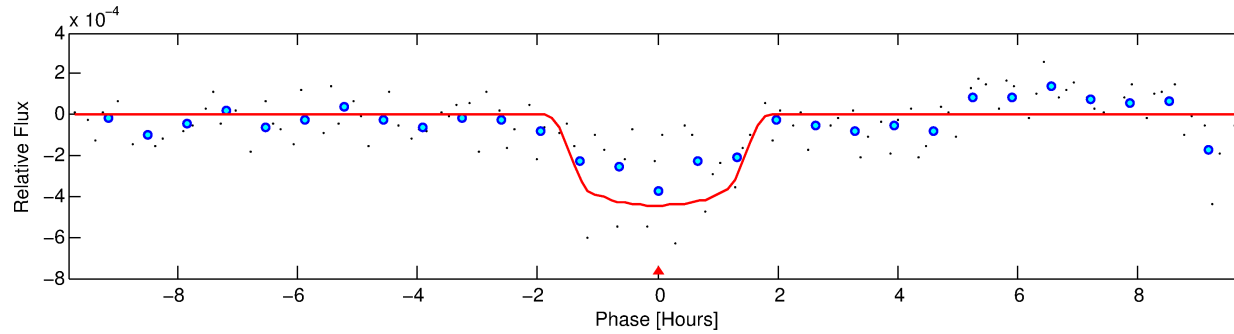
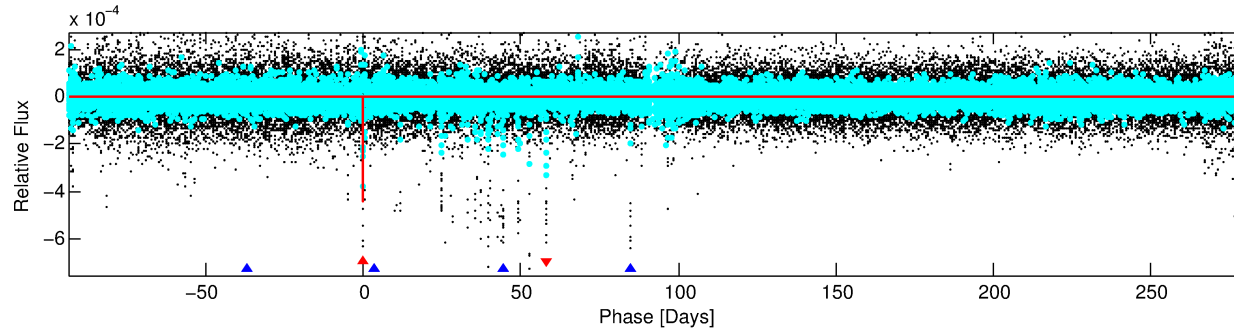
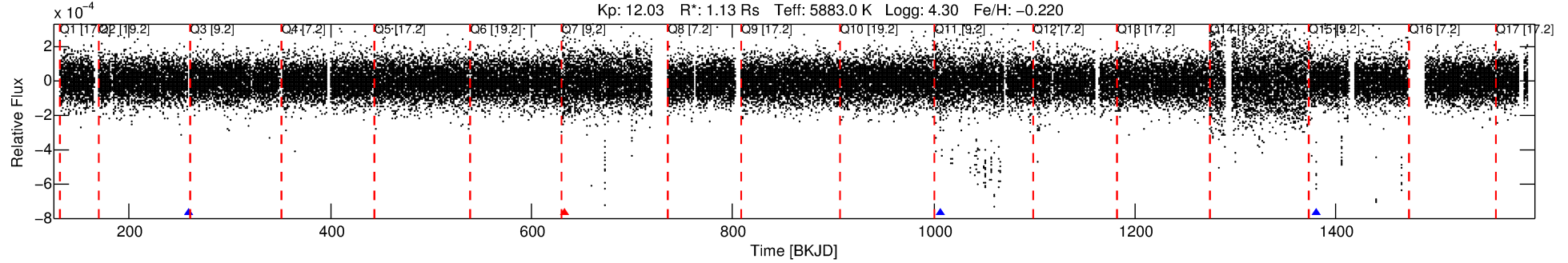
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010275409-01

No Significant Match Found

DV One-Page Summary

KIC: 10275409 Candidate: 1 of 2 Period: 373.879 d



DV Fit Results:

Period = 373.87883 [0.00330] d
Epoch = 259.4194 [0.0078] BKJD
Rp/R* = 0.0221 [0.0125]
a/R* = 488.65 [1355.58]
b = 0.85 [0.89]
Seff = 1.40 [0.46]
Teq = 277 [23] K
Rp = 2.71 [1.64] Re
a = 0.9887 [0.1908] AU
Ag = 20860.40 [25041.79] [0.83 σ]
Teffp = 5151 [1501] K [3.25 σ]

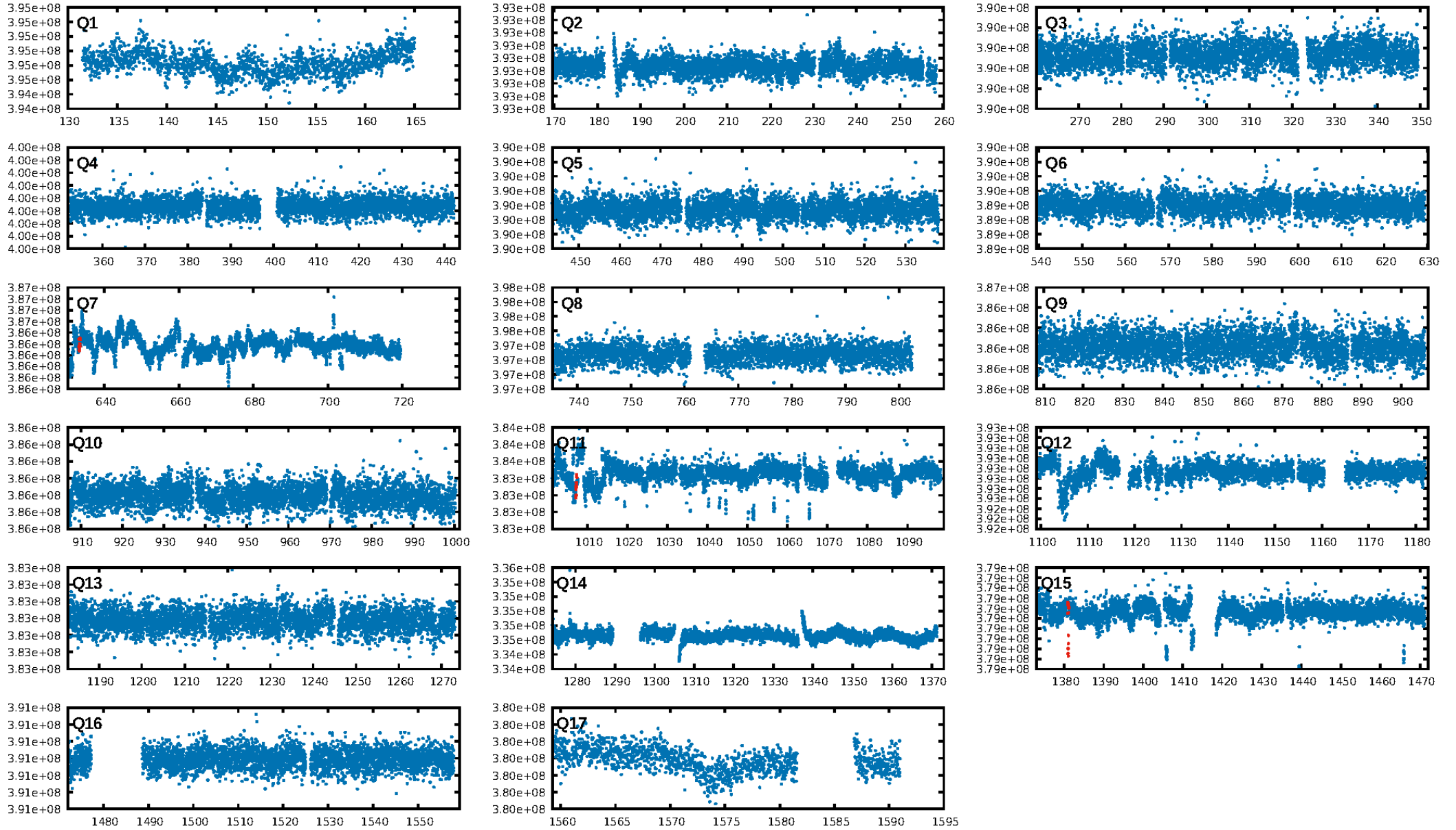
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [126.10 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 11.7%
Bootstrap-pfa: 5.12e-12
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: -2.901
Centroid-sig: 6.5%
Centroid-so: 0.829 arcsec [1.49 σ]
OotOffset-rm: 0.879 arcsec [2.63 σ]
OotOffset-st: 0/3/0/0 [3]
KicOffset-rm: **1.487 arcsec [3.59 σ]**
KicOffset-st: 0/3/0/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

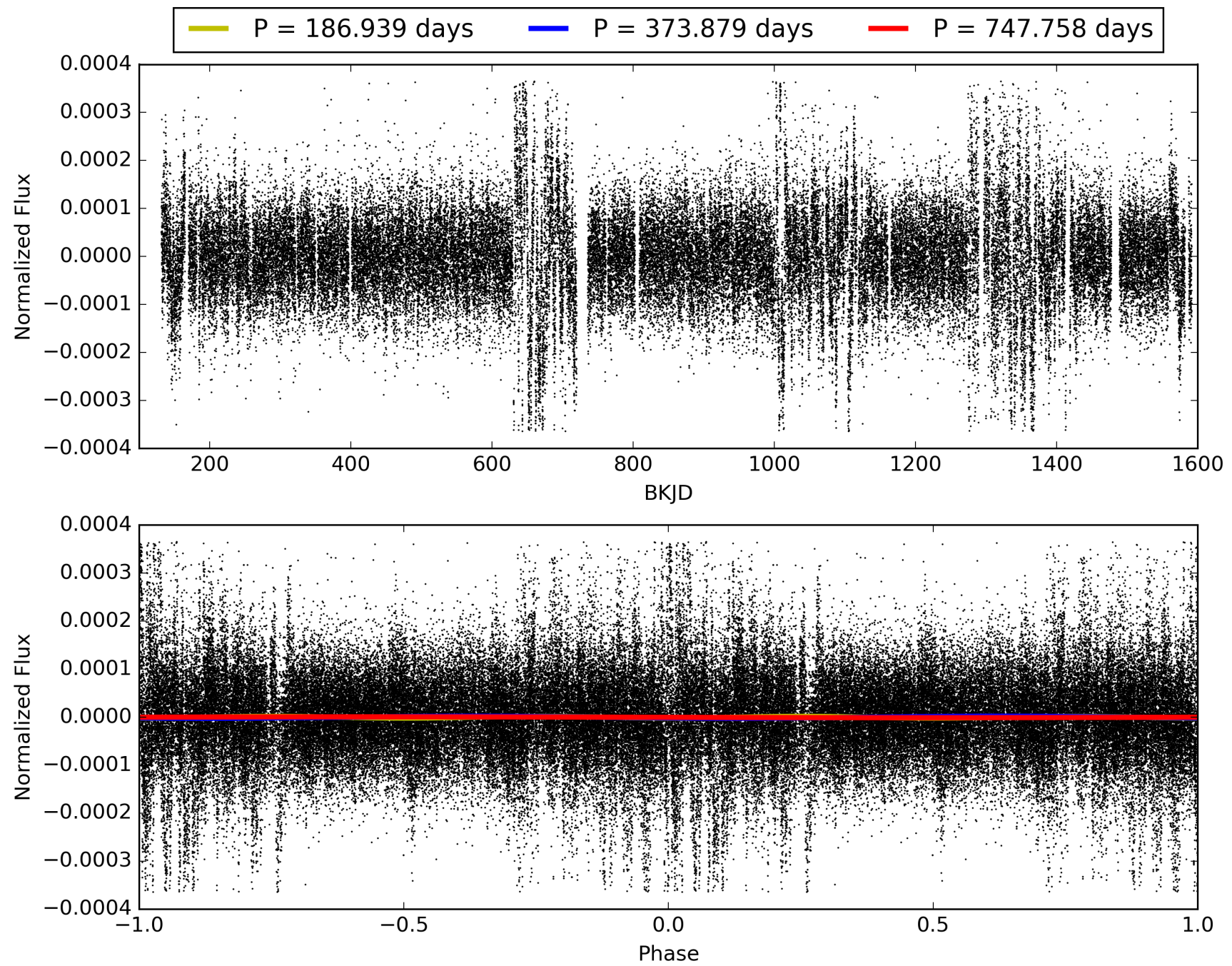
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:07:34 Z

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

TCE 010275409-01, PDC Light Curves

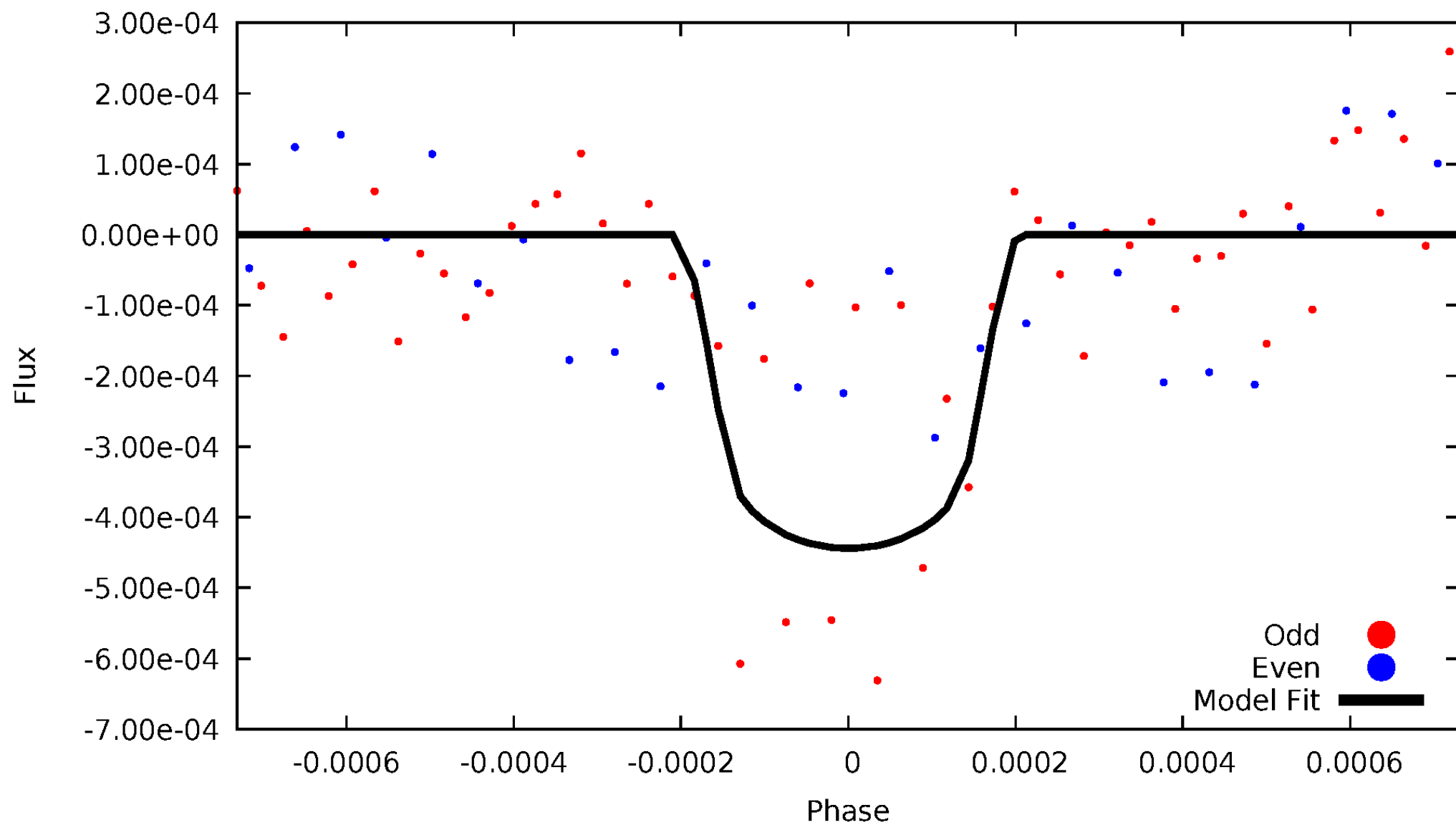


TCE 010275409-01



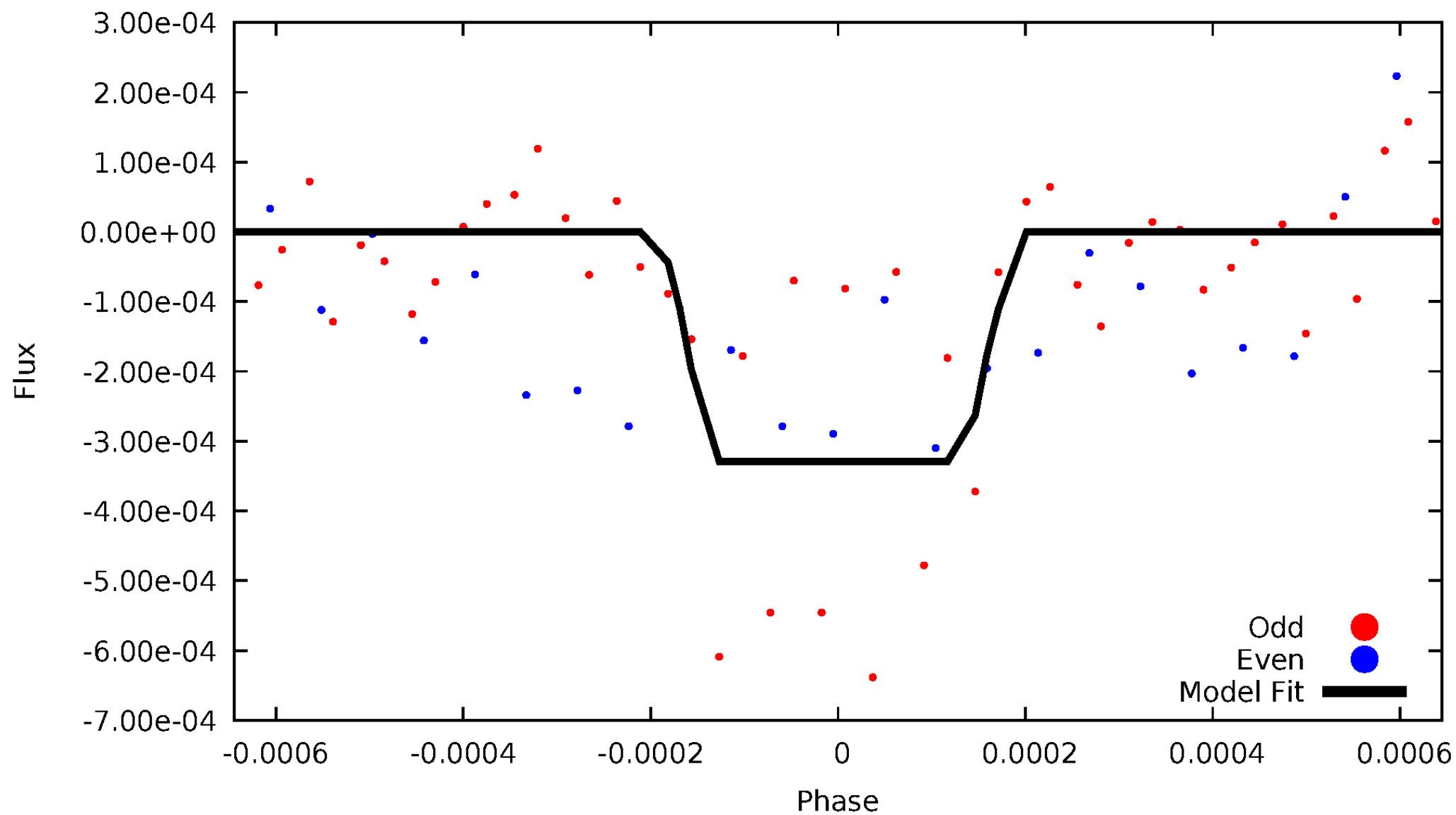
DV Odd/Even

TCE 010275409-01

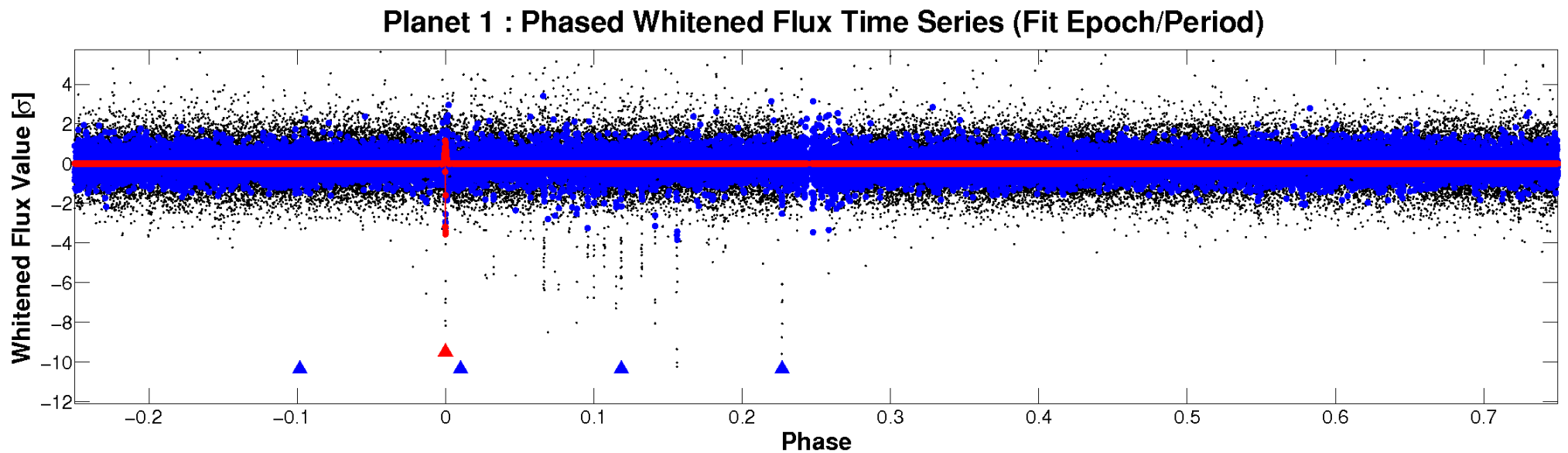
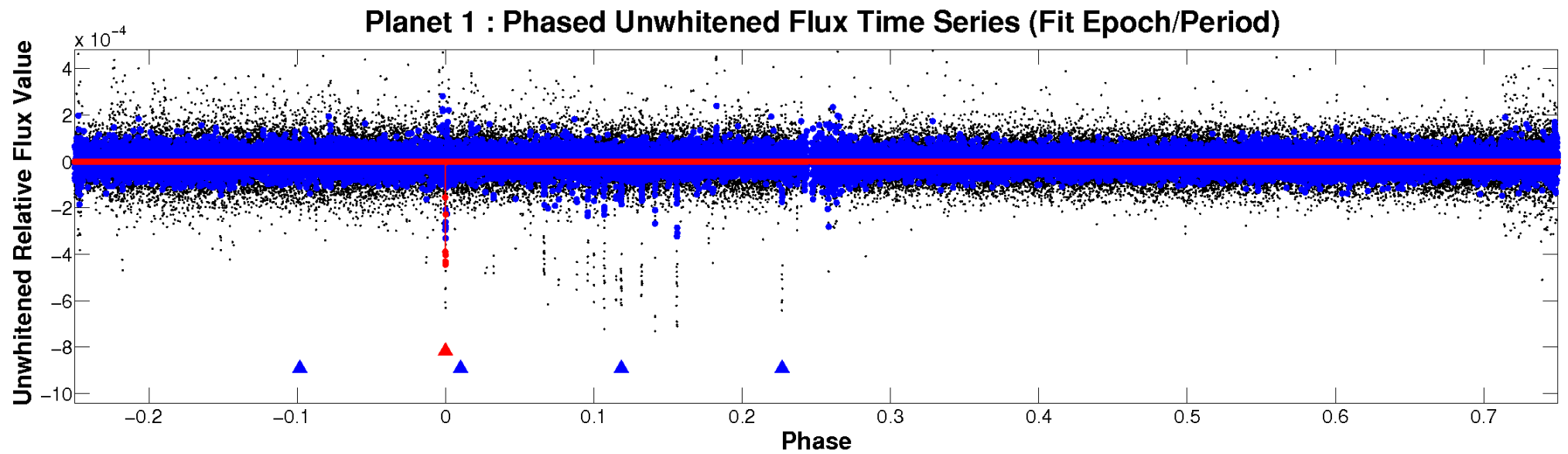


ALT Odd/Even

TCE 010275409-01

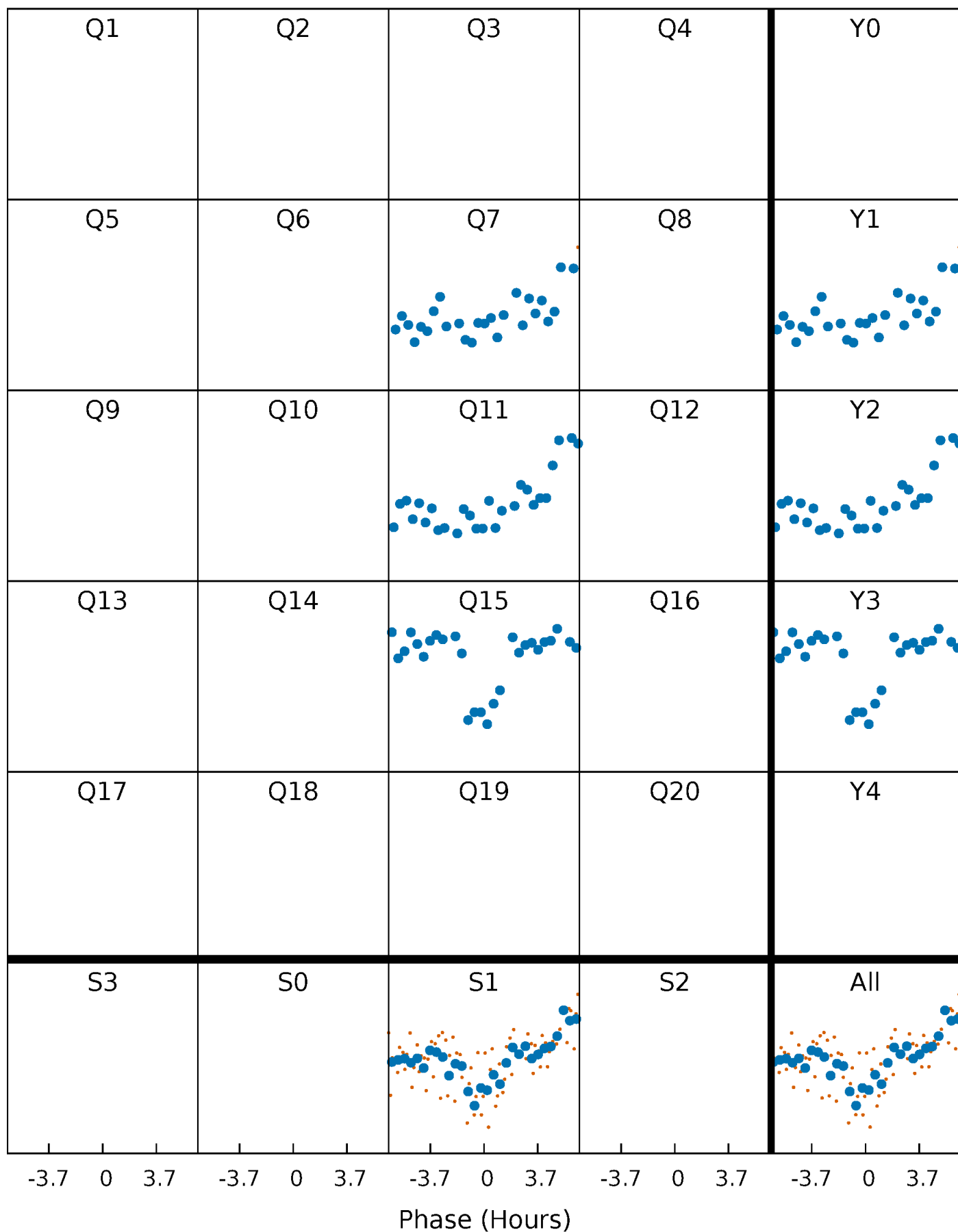


Non-Whitened Vs. Whitened Light Curve



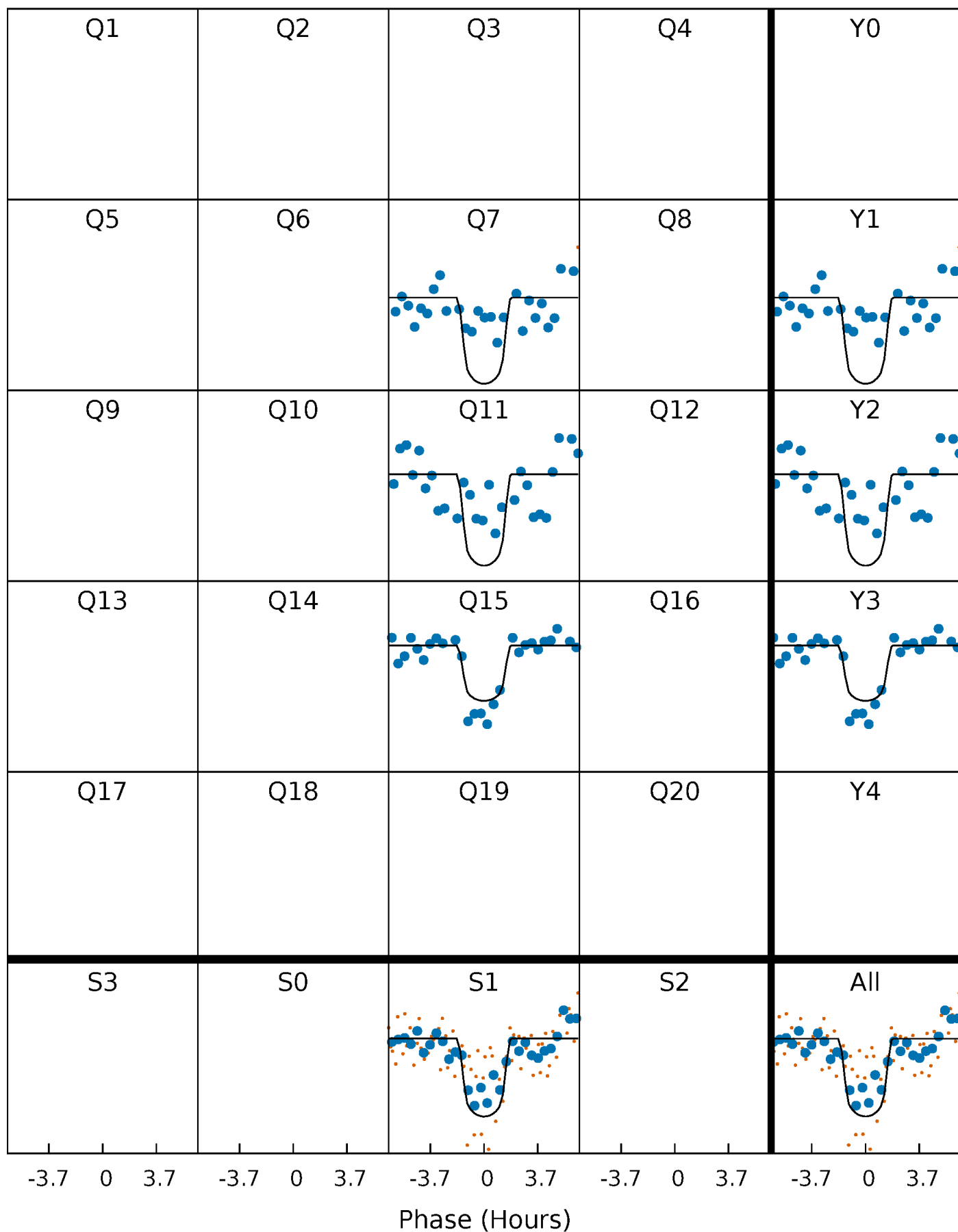
PDC Quarter-Phased Transit Curves

TCE 010275409-01 P=373.878830 Days $T_0=259.419356$ (BKJD)



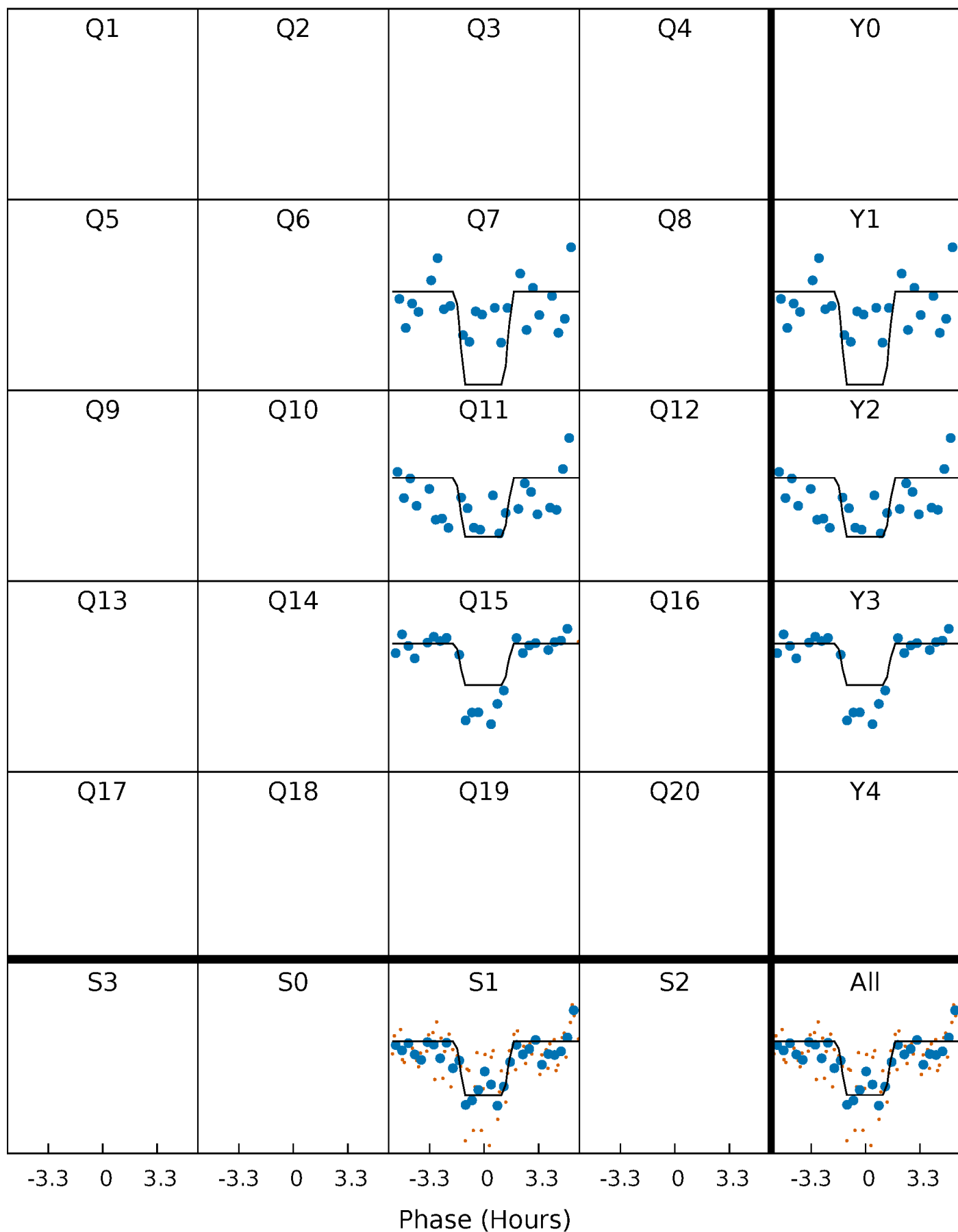
DV Quarter-Phased Transit Curves

TCE 010275409-01 P=373.878830 Days $T_0=259.419356$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

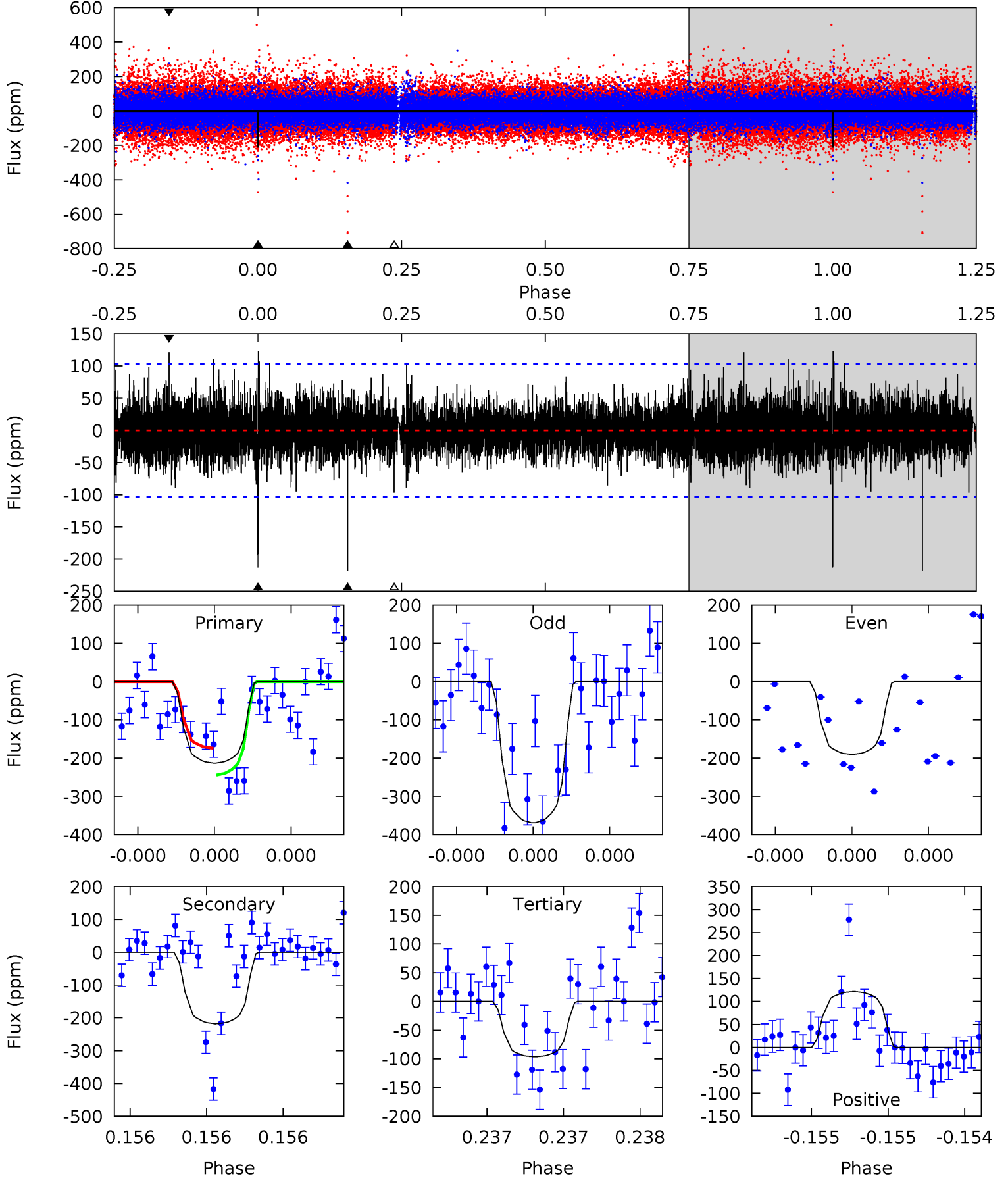
TCE 010275409-01 P=373.878189 Days $T_0=259.420338$ (BKJD)



DV Model-Shift Uniqueness Test

010275409-01, P = 373.878830 Days, E = 259.419356 Days

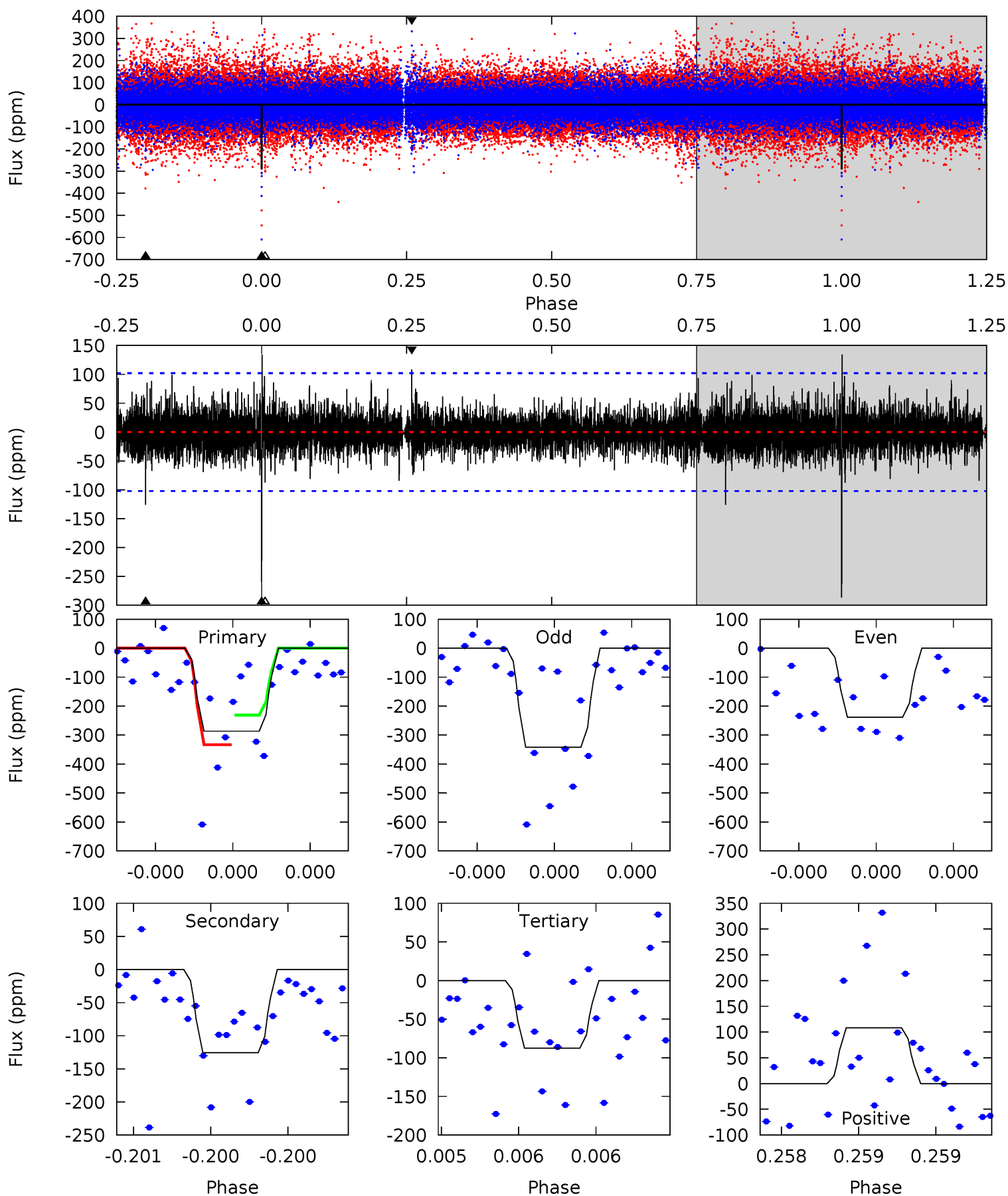
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	11.8	5.23	6.59	5.62	3.55	1.31	6.34	4.97	6.61	5.25	4.90	1.62	0.36	1.83



Alt Model-Shift Uniqueness Test

010275409-01, P = 373.878189 Days, E = 259.420338 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.8	6.93	4.83	5.97	5.64	3.58	1.22	11.0	9.86	2.10	0.97	2.76	1.28	0.32	2.82



Stellar Parameters For KIC 010275409

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5883^{+132}_{-162}	$4.298^{+0.180}_{-0.135}$	$-0.220^{+0.300}_{-0.300}$	$1.128^{+0.228}_{-0.228}$	$0.921^{+0.130}_{-0.090}$	$0.904^{+0.744}_{-0.352}$
	+2%/-3%	+4%/-3%	+136%/-136%	+20%/-20%	+14%/-10%	+82%/-39%
Source	PHO1	FLK73	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 010275409-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-218 ± 18	$2.72^{+1.80}_{-1.38}$	386^{+23}_{-25}	4863^{+2026}_{-833}	15662^{+51222}_{-9846}
Alt.	-126 ± 18	$2.31^{+1.56}_{-1.30}$	385^{+23}_{-22}	4674^{+2121}_{-786}	12743^{+48537}_{-8167}

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

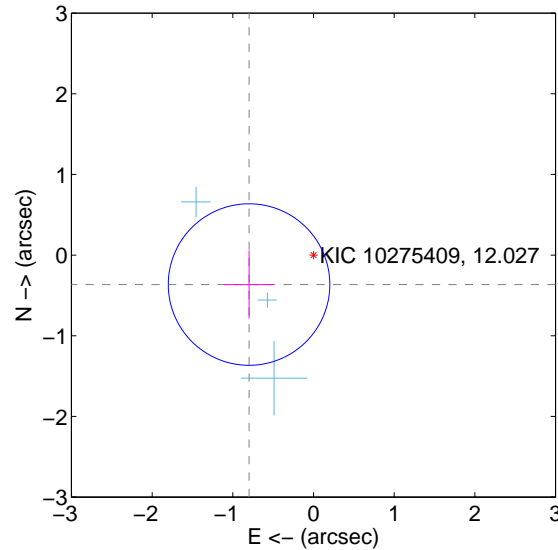
Supplemental centroid analysis for 010275409-01. Kepler magnitude: 12.03. Transit SNR 14.41

There are 3 quarters with good PRF difference image offsets

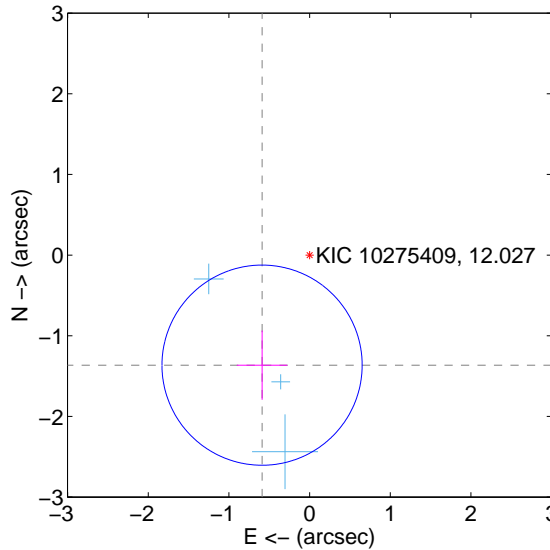
The direct PRF centroid is offset from the target star catalog position by about 1.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.879 ± 0.334	2.63	0.799 ± 0.312	-0.365 ± 0.422
PRF-fit source offset from KIC position	1.487 ± 0.414	3.59	0.589 ± 0.313	-1.365 ± 0.430
photometric centroid source offset	0.83 ± 0.56	1.49	0.82 ± 0.56	0.12 ± 0.52

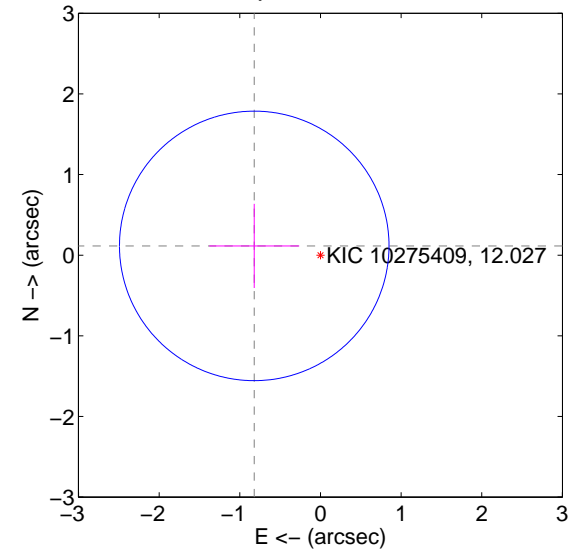
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

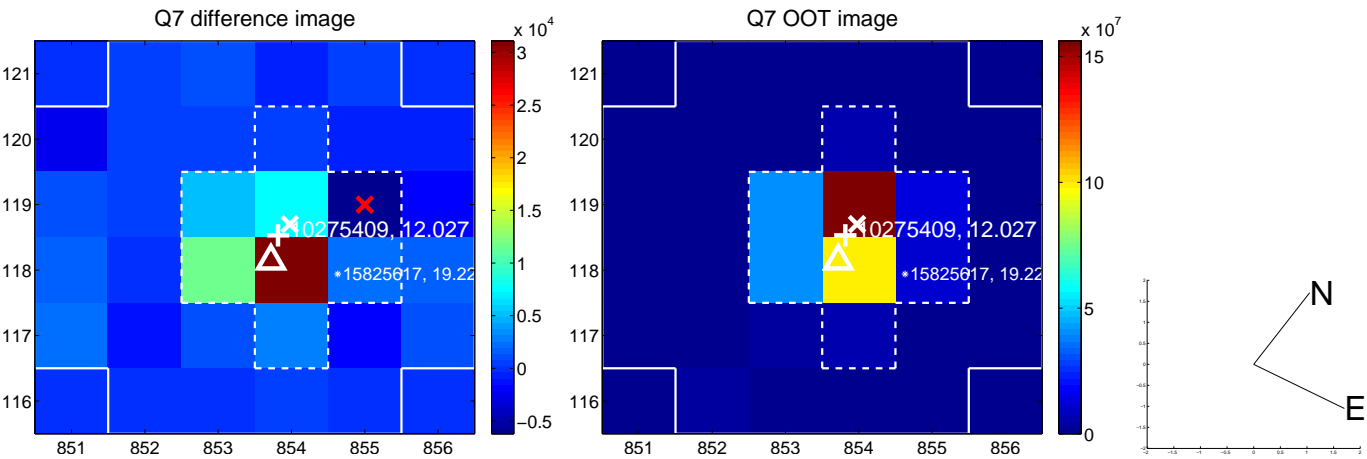


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

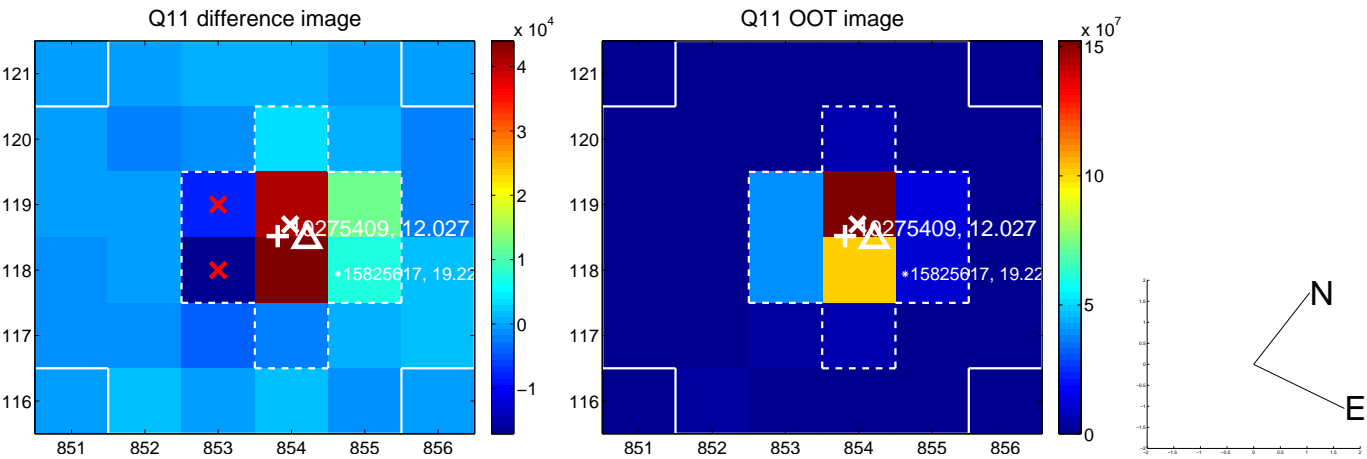
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



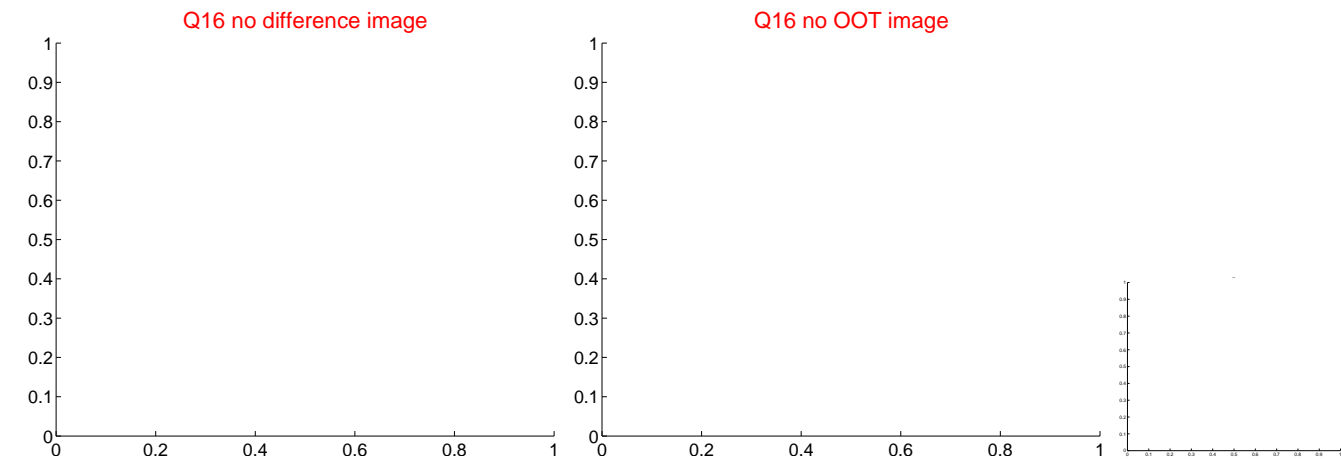
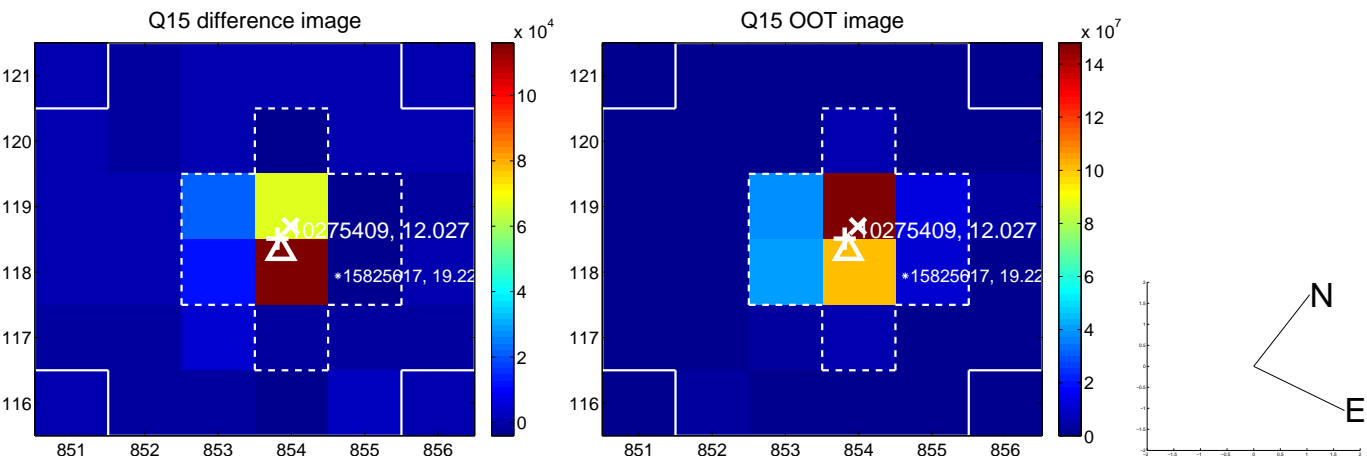
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



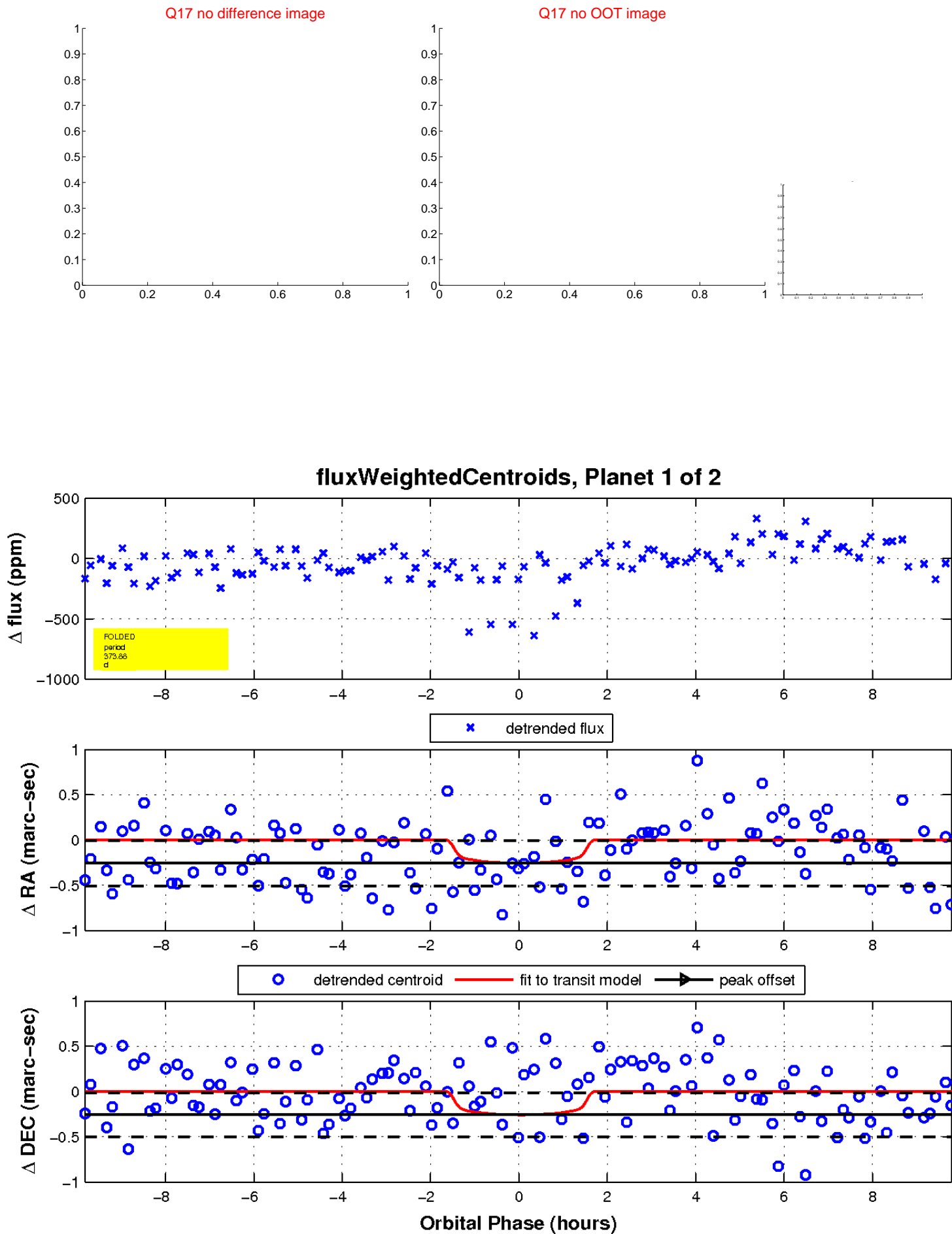
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



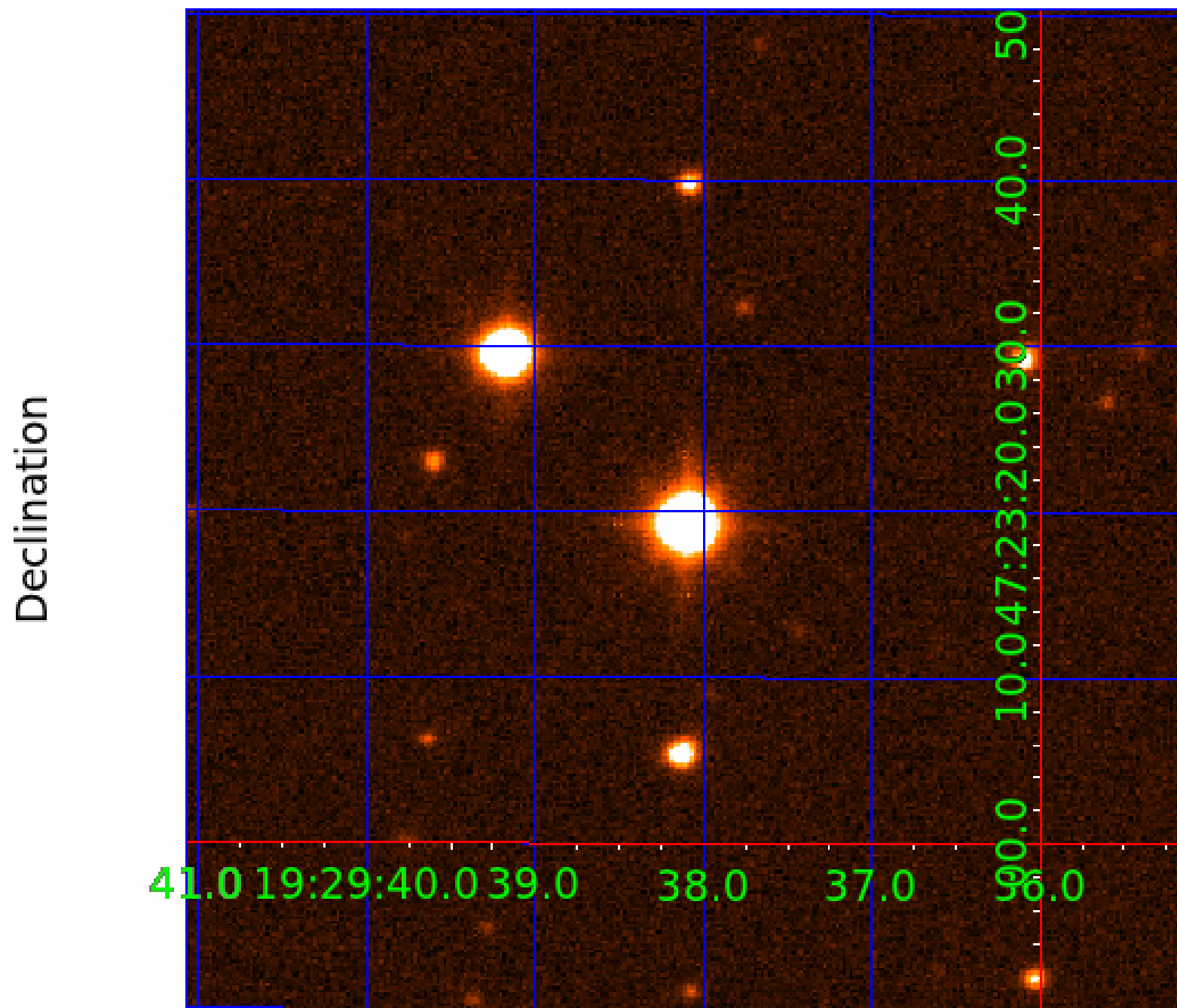
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 010275409

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})
010275409-01	OBS	No	373.878830	259.419356	444.0	3.278	15.9	14.4	1.13	5883	2.71	1.40
010275409-02	OBS	No	414.401791	222.709461	503.9	6.981	19.5	19.7	1.13	5883	5.00	1.22

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010275409-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_KIC_POS
010275409-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—INCONSISTENT_TRANS—CENT_KIC_POS

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

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

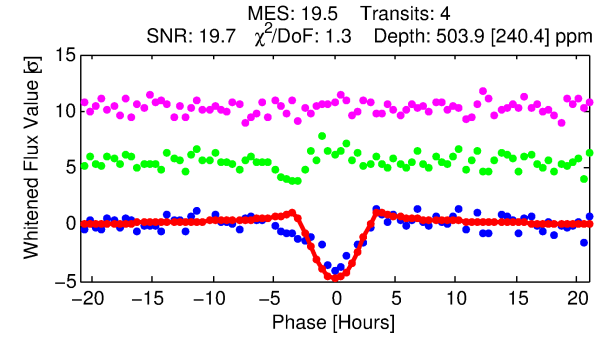
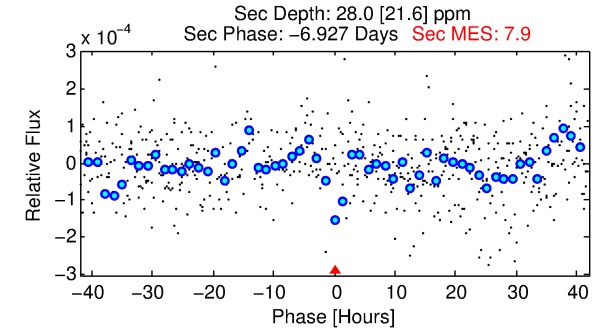
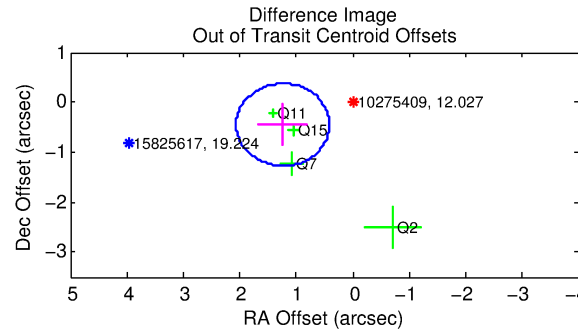
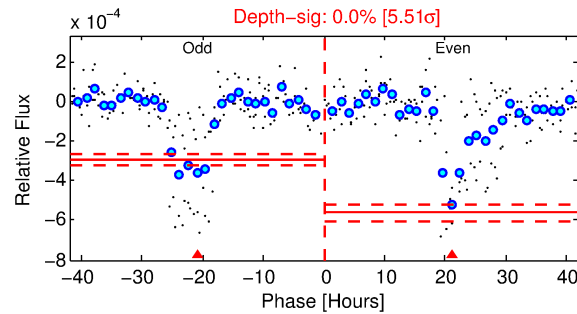
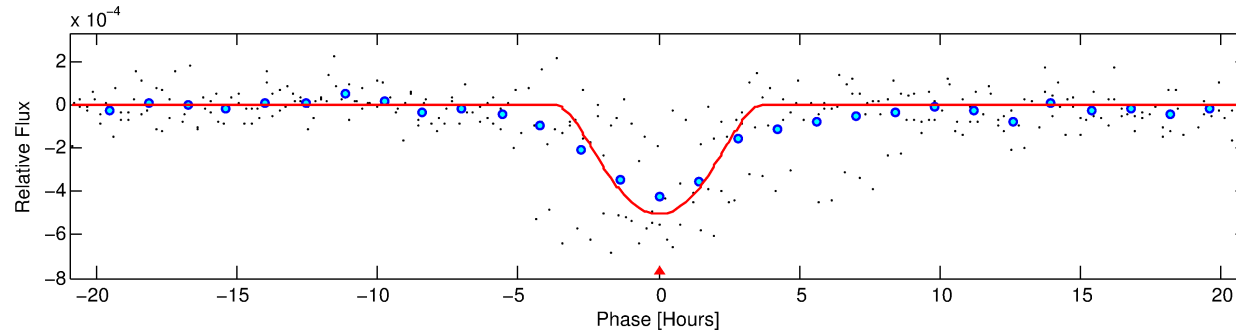
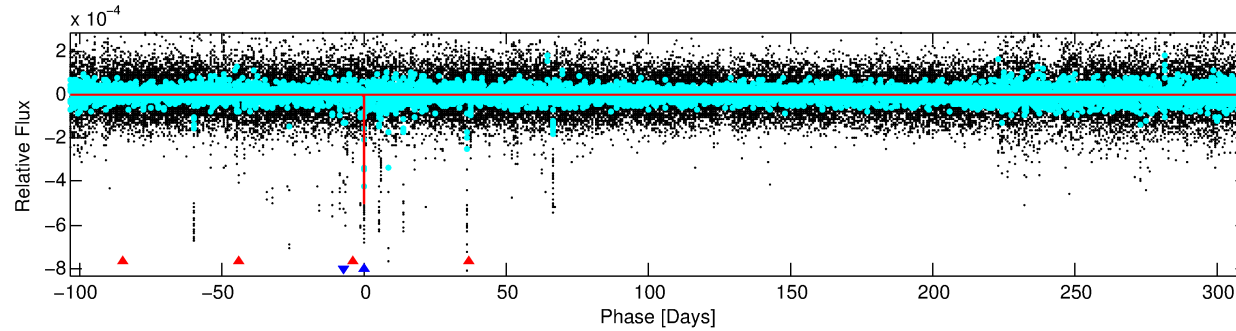
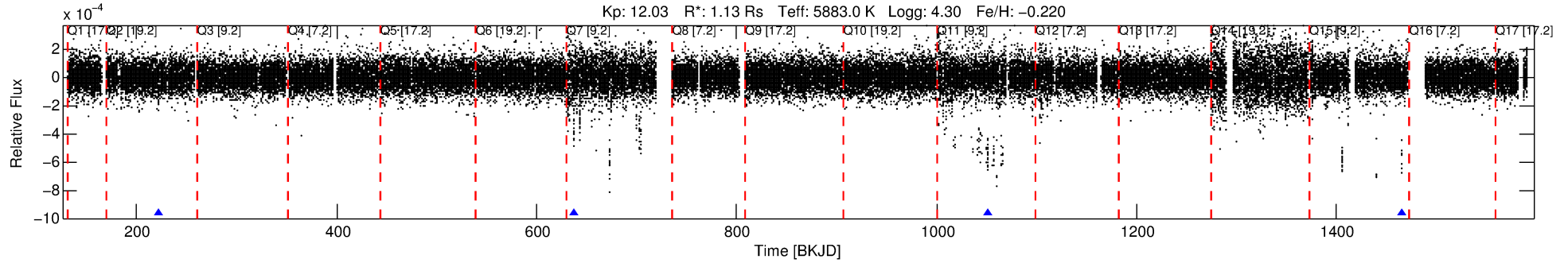
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010275409-02

No Significant Match Found

DV One-Page Summary

KIC: 10275409 Candidate: 2 of 2 Period: 414.402 d



DV Fit Results:

Period = 414.40179 [0.00311] d
Epoch = 222.7095 [0.0062] BKJD
Rp/R* = 0.0406 [0.0665]
a/R* = 130.57 [53.90]
b = 1.00 [0.08]
Seff = 1.22 [0.40]
Teq = 268 [22] K
Rp = 5.00 [8.24] Re
a = 1.0589 [0.2044] AU
Ag = 689.98 [2329.63] [0.30 σ]
Teffp = 2123 [1785] K [1.04 σ]

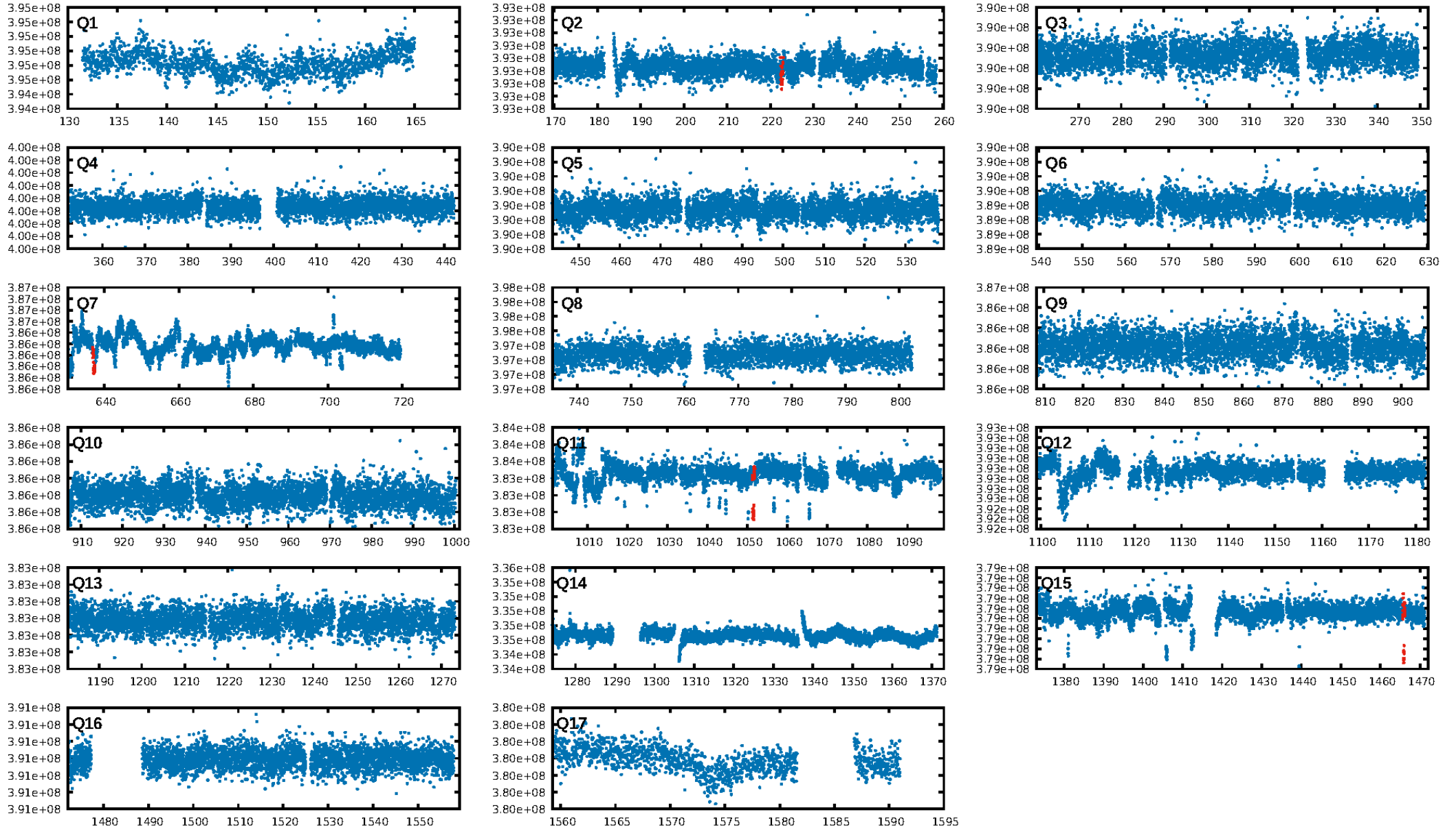
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [126.10 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 34.8%
Bootstrap-pfa: 7.01e-14
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 7.562
Centroid-sig: 3.9%
Centroid-so: 1.132 arcsec [2.69 σ]
OotOffset-rm: 1.321 arcsec [4.80 σ]
KicOffset-rm: 1.750 arcsec [7.75 σ]
OotOffset-st: 1/3/0/0 [4]
KicOffset-st: 1/3/0/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [4/4]

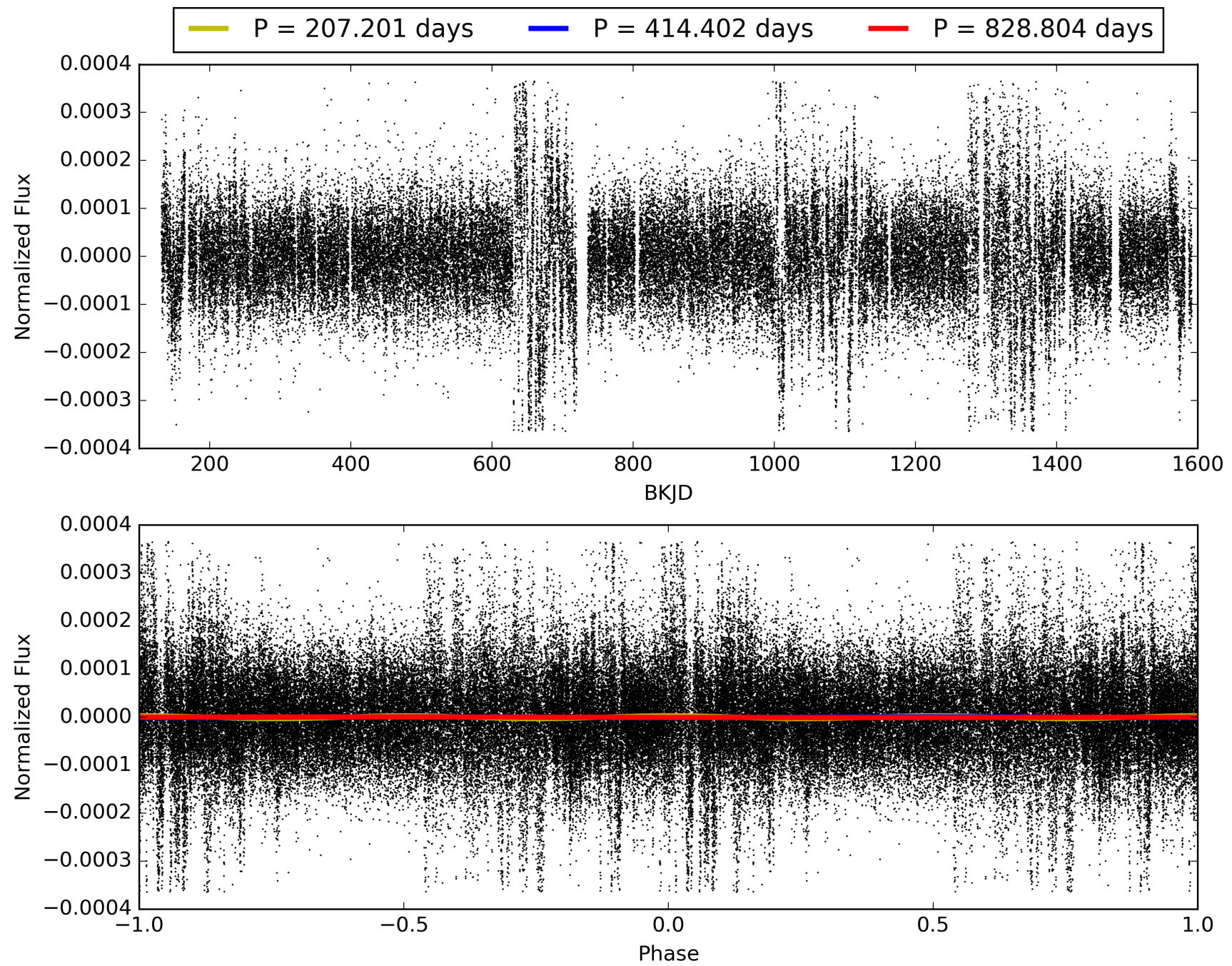
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 18:07:46 Z

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

TCE 010275409-02, PDC Light Curves

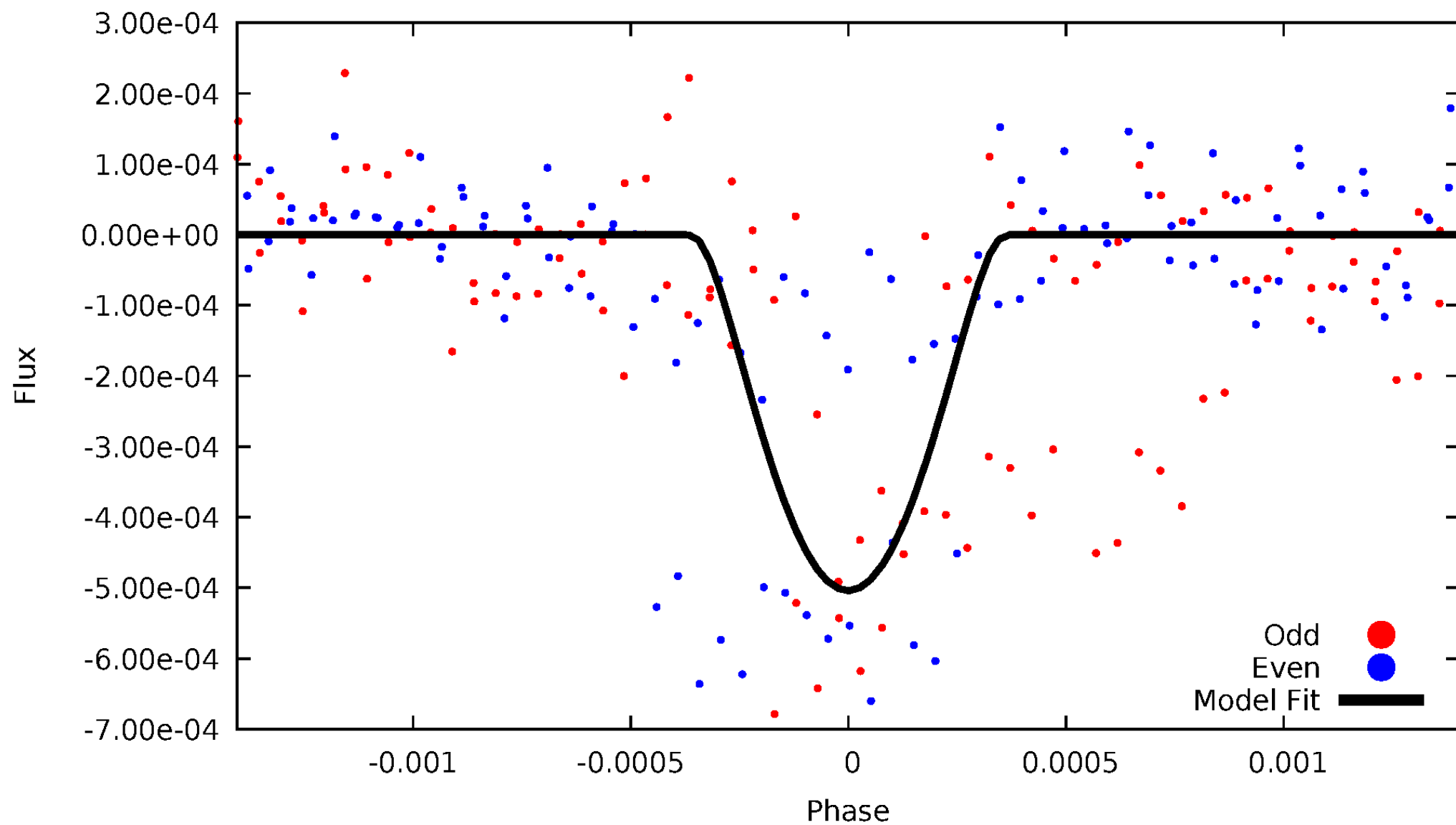


TCE 010275409-02



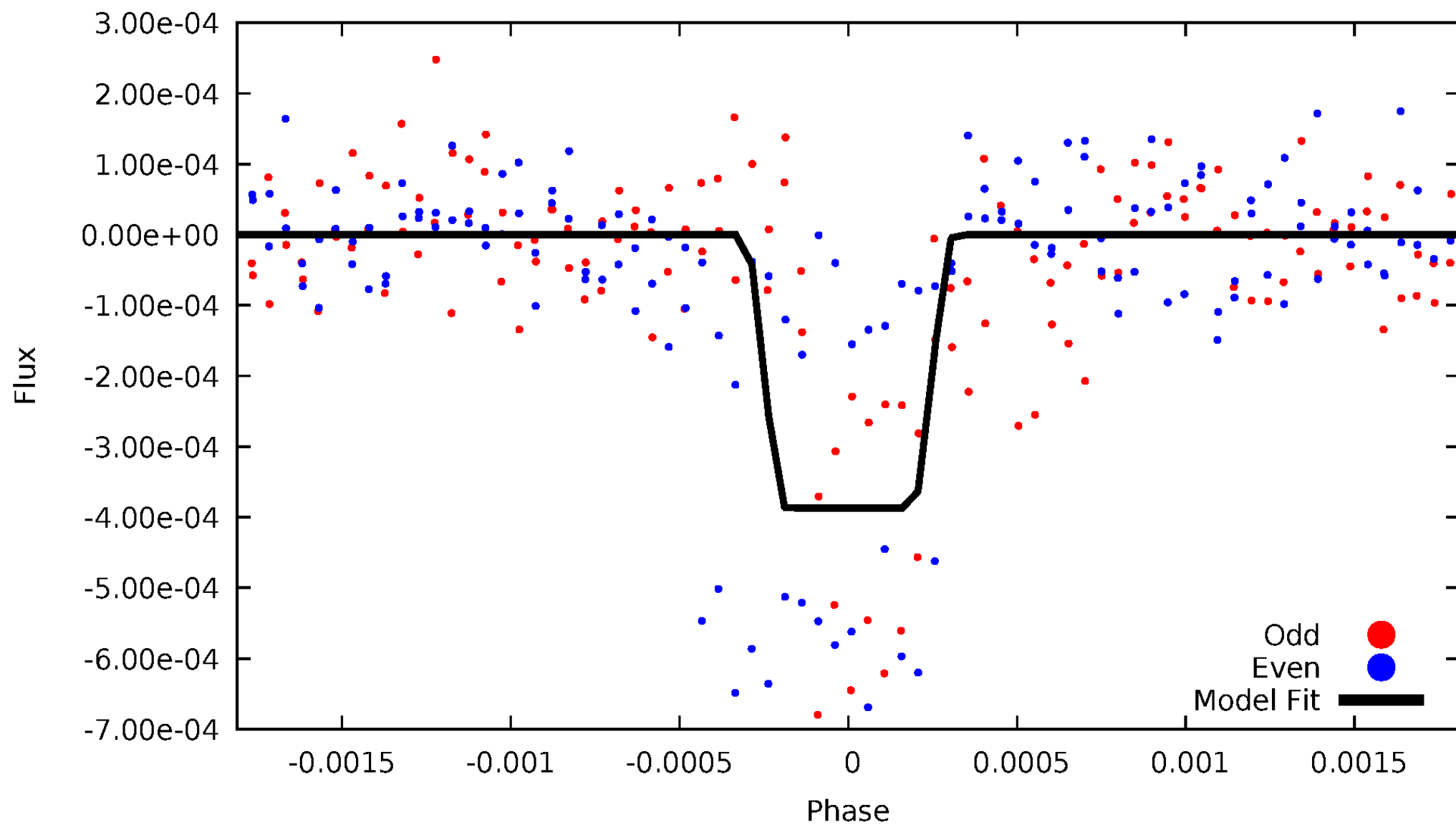
DV Odd/Even

TCE 010275409-02



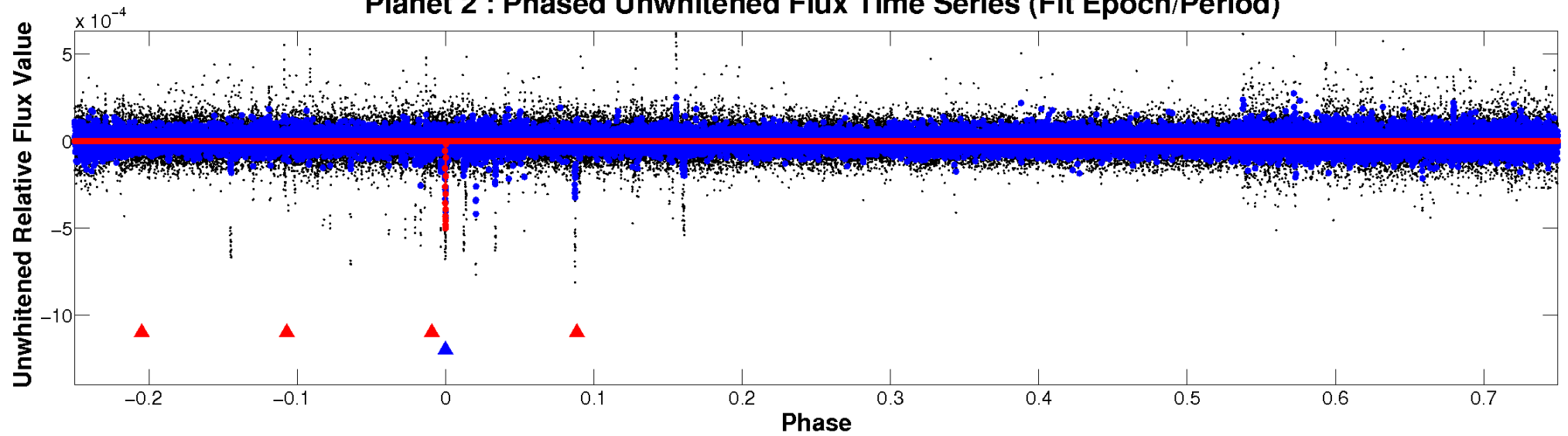
ALT Odd/Even

TCE 010275409-02

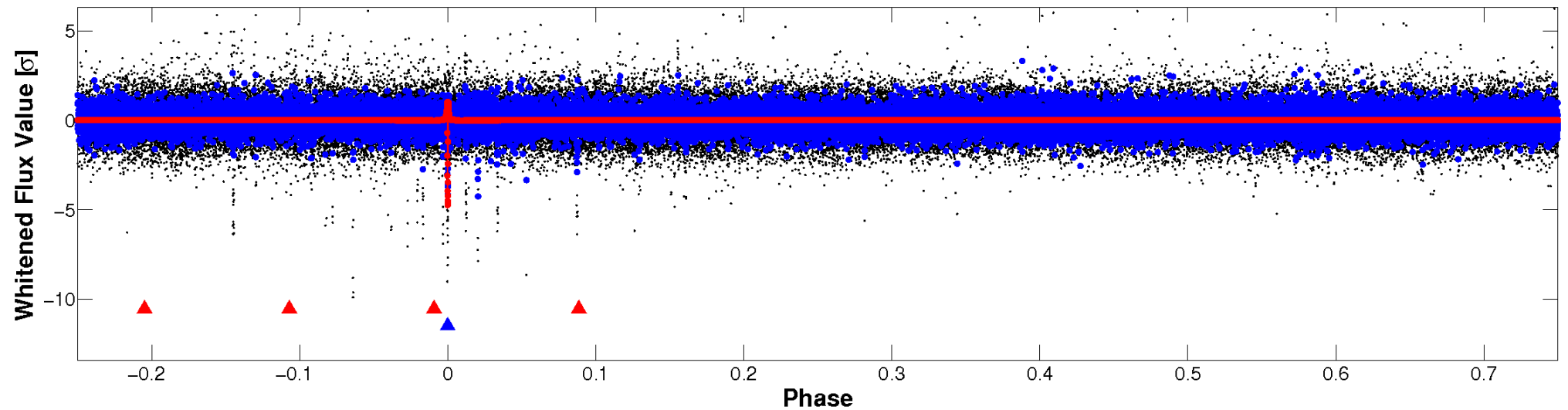


Non-Whitened Vs. Whitened Light Curve

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

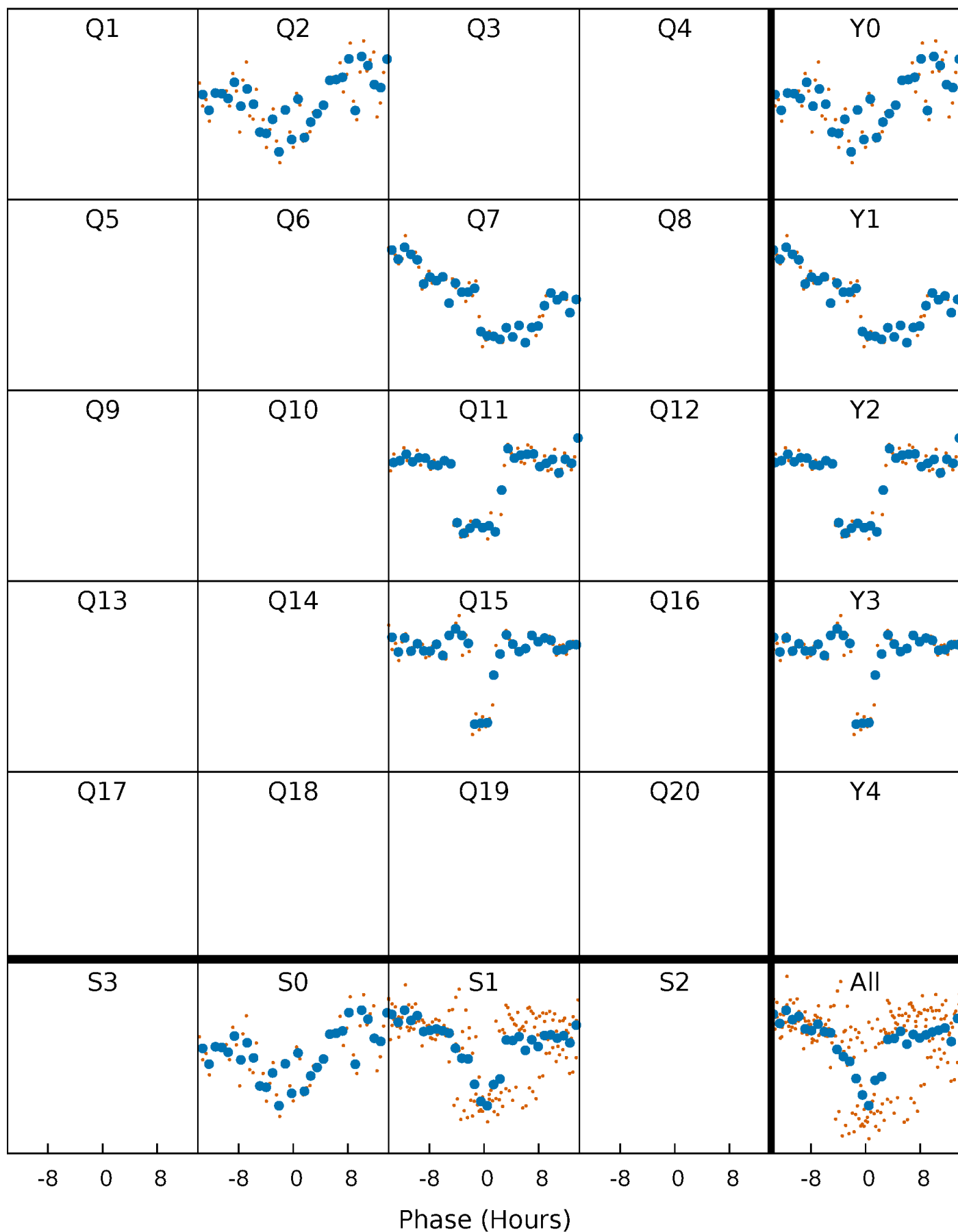


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



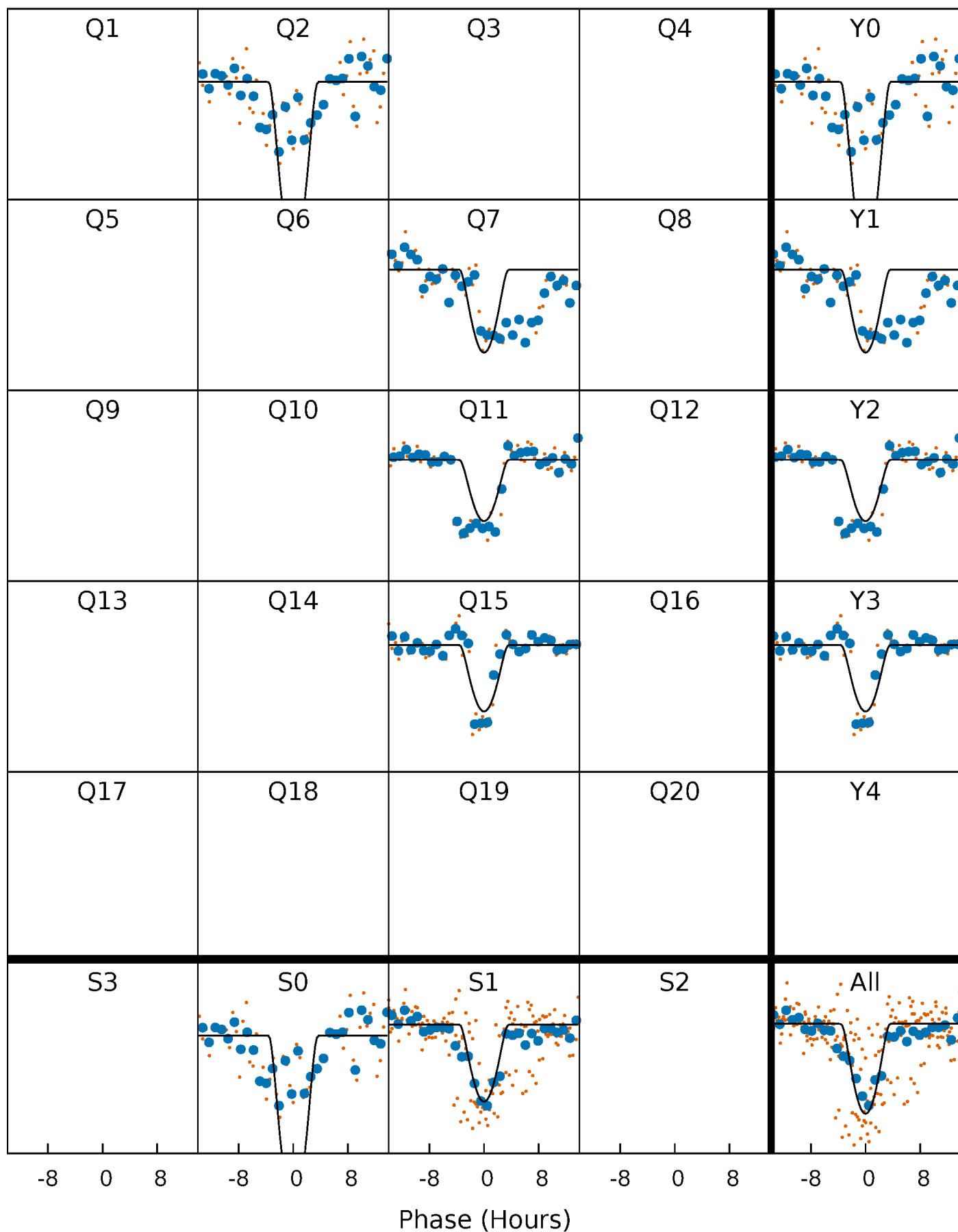
PDC Quarter-Phased Transit Curves

TCE 010275409-02 $P=414.401791$ Days $T_0=222.709461$ (BKJD)



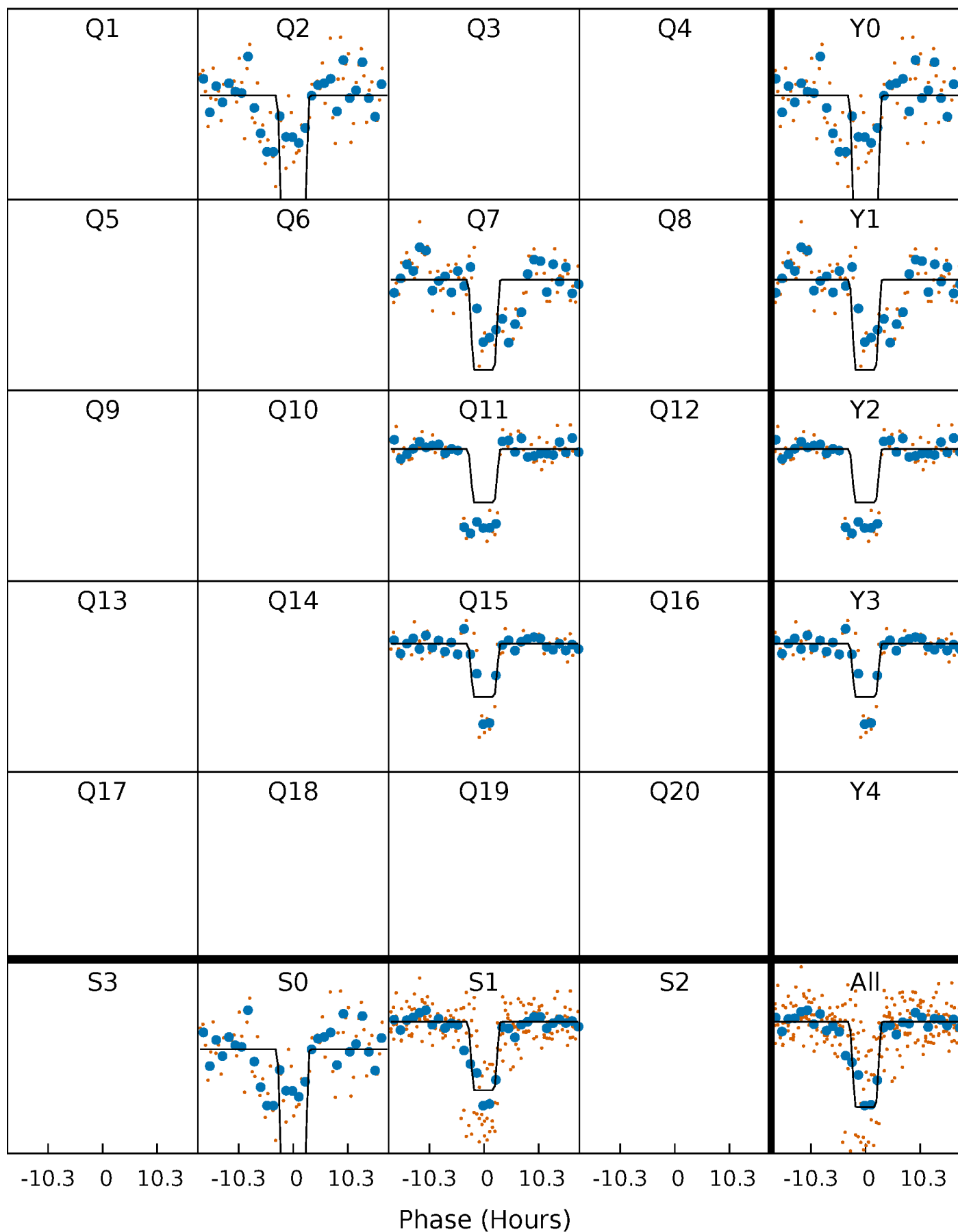
DV Quarter-Phased Transit Curves

TCE 010275409-02 $P=414.401791$ Days $T_0=222.709461$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

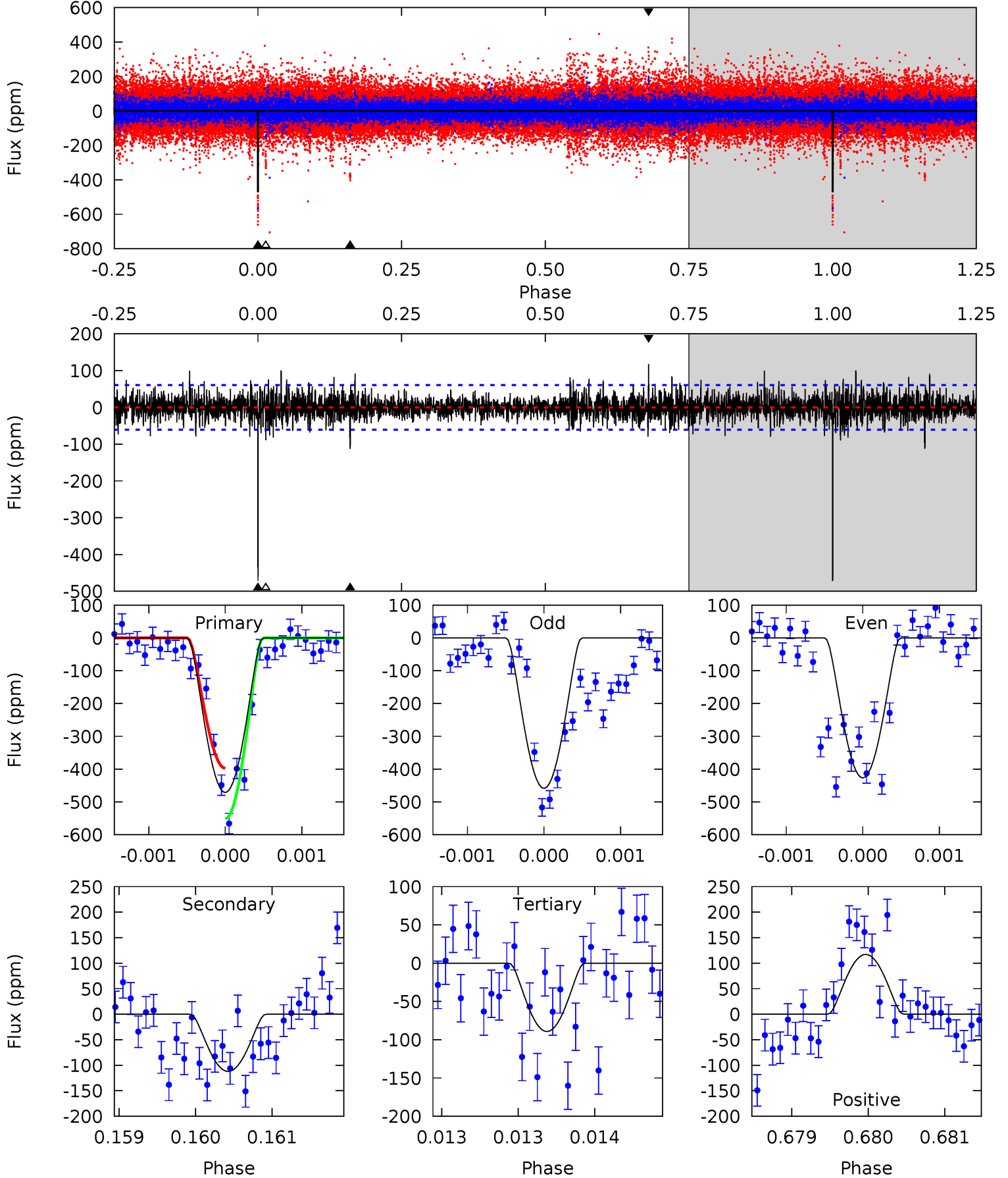
TCE 010275409-02 $P=414.372163$ Days $T_0=222.766017$ (BKJD)



DV Model-Shift Uniqueness Test

010275409-02, P = 414.401791 Days, E = 222.709461 Days

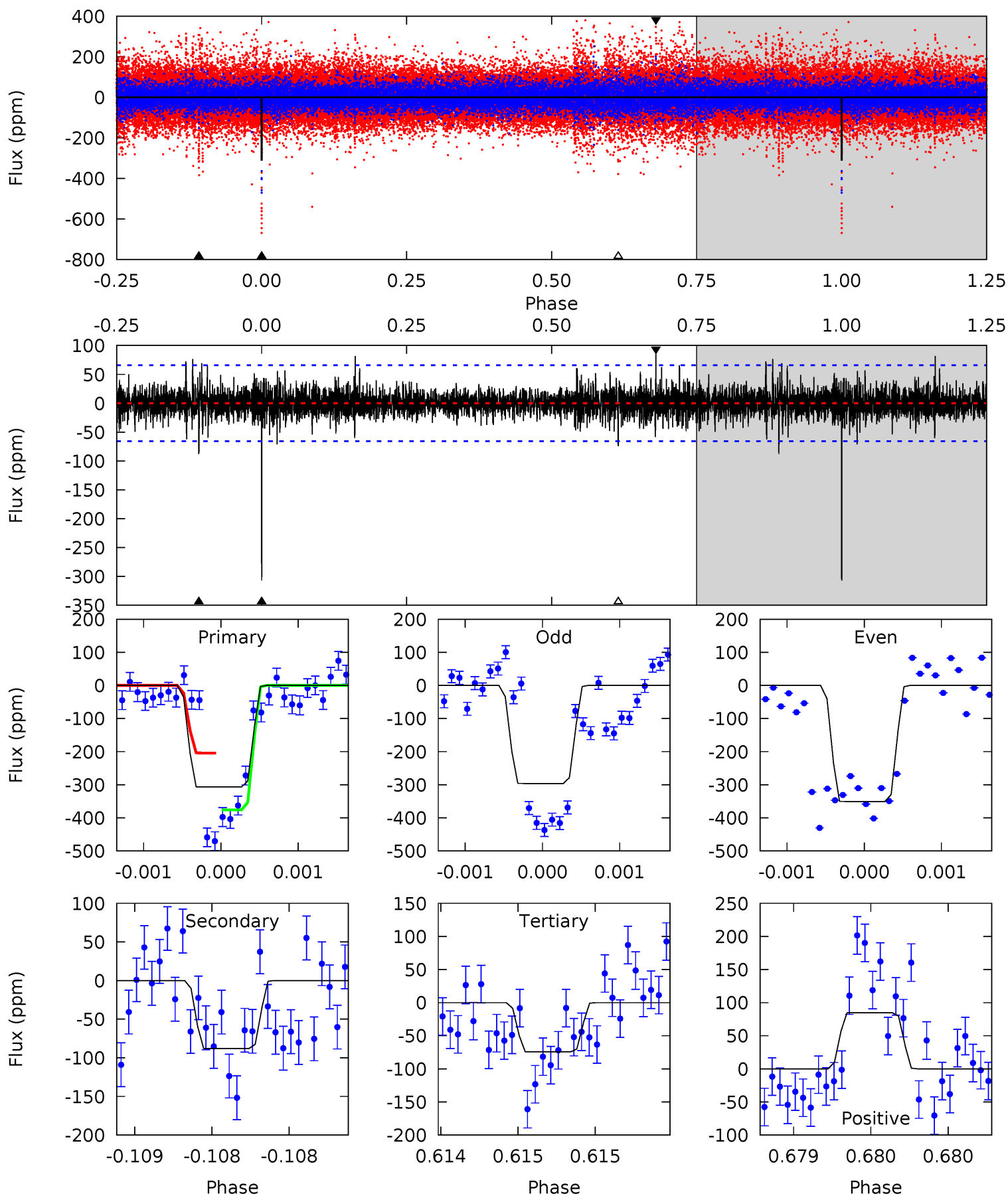
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.9	10.2	8.12	10.7	5.51	3.38	1.98	34.8	32.2	2.08	-0.46	1.49	0.96	0.20	7.01



Alt Model-Shift Uniqueness Test

010275409-02, P = 414.372163 Days, E = 222.766017 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.9	7.42	6.28	7.15	5.54	3.44	1.32	19.6	18.8	1.14	0.27	2.44	1.05	0.22	7.01



Stellar Parameters For KIC 010275409

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5883^{+132}_{-162}	$4.298^{+0.180}_{-0.135}$	$-0.220^{+0.300}_{-0.300}$	$1.128^{+0.228}_{-0.228}$	$0.921^{+0.130}_{-0.090}$	$0.904^{+0.744}_{-0.352}$
	+2%/-3%	+4%/-3%	+136%/-136%	+20%/-20%	+14%/-10%	+82%/-39%
Source	PHO1	FLK73	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 010275409-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-112 ± 11	$7.59^{+7.09}_{-4.94}$	373^{+22}_{-23}	3072^{+1188}_{-503}	1237^{+8715}_{-905}
Alt.	-88 ± 12	$6.36^{+6.52}_{-4.44}$	372^{+22}_{-20}	3131^{+1512}_{-548}	1402^{+13439}_{-1065}

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 $A_{obs} \gg 1.0$

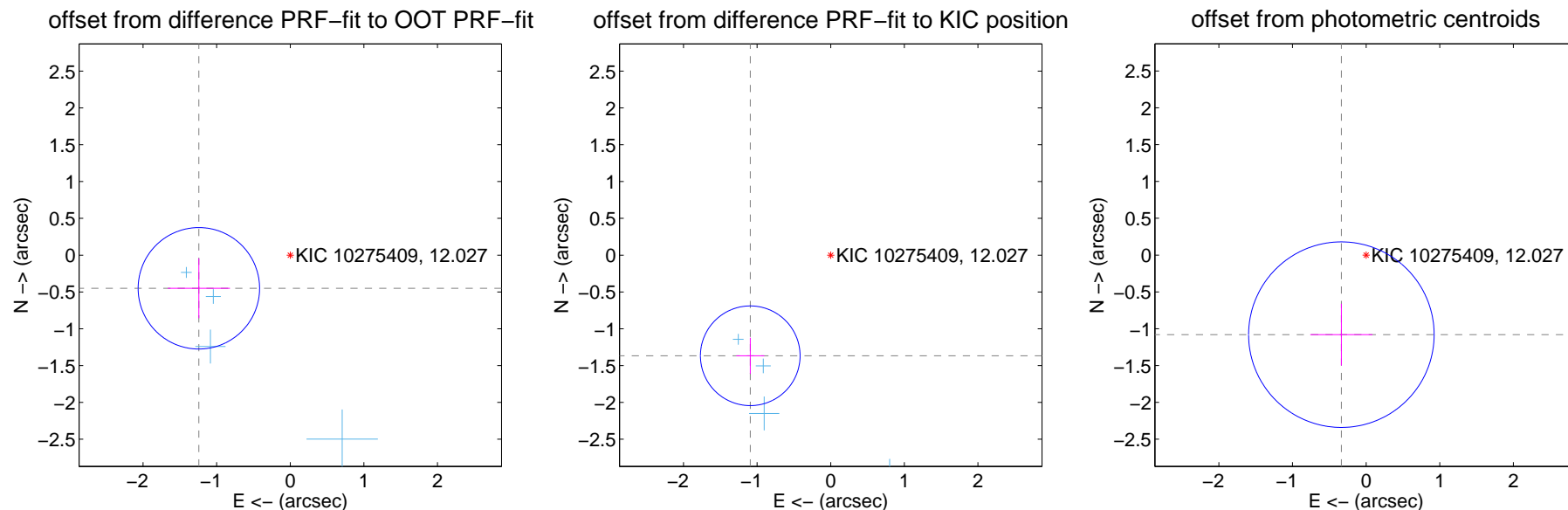
DV Centroid Data

Supplemental centroid analysis for 010275409-02. Kepler magnitude: 12.03. Transit SNR 19.65

There are 4 quarters with good PRF difference image offsets

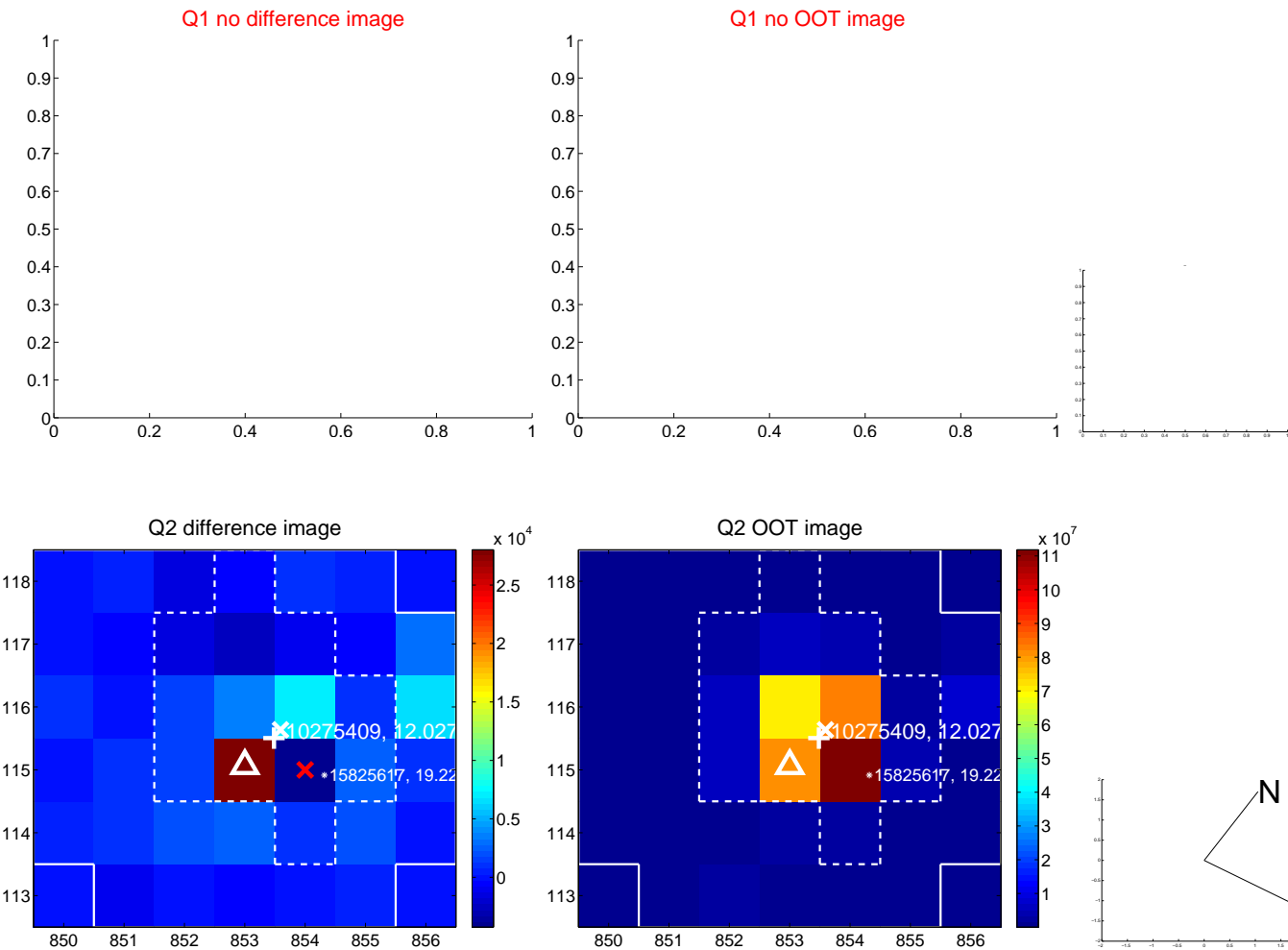
The direct PRF centroid is offset from the target star catalog position by about 0.95 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.321 ± 0.275	4.80	1.242 ± 0.422	-0.450 ± 0.407
PRF-fit source offset from KIC position	1.750 ± 0.226	7.75	1.093 ± 0.190	-1.367 ± 0.246
photometric centroid source offset	1.13 ± 0.42	2.69	0.34 ± 0.42	-1.08 ± 0.42

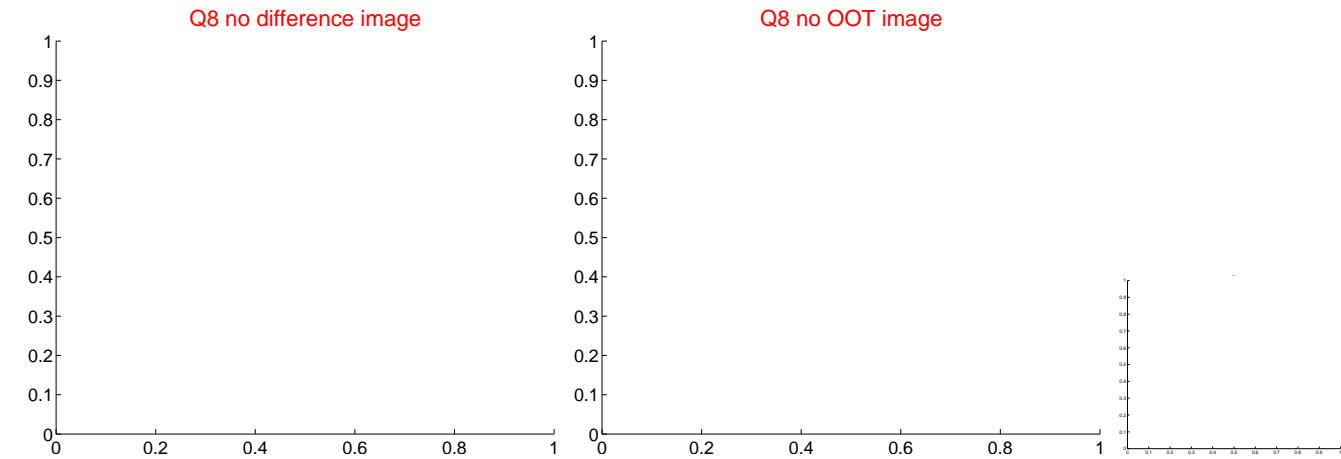
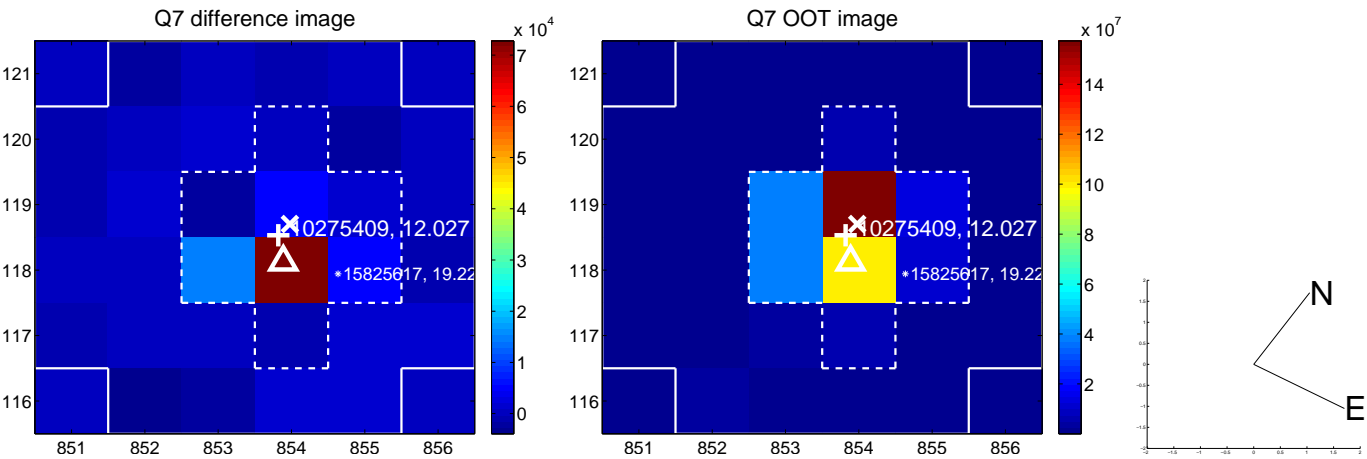
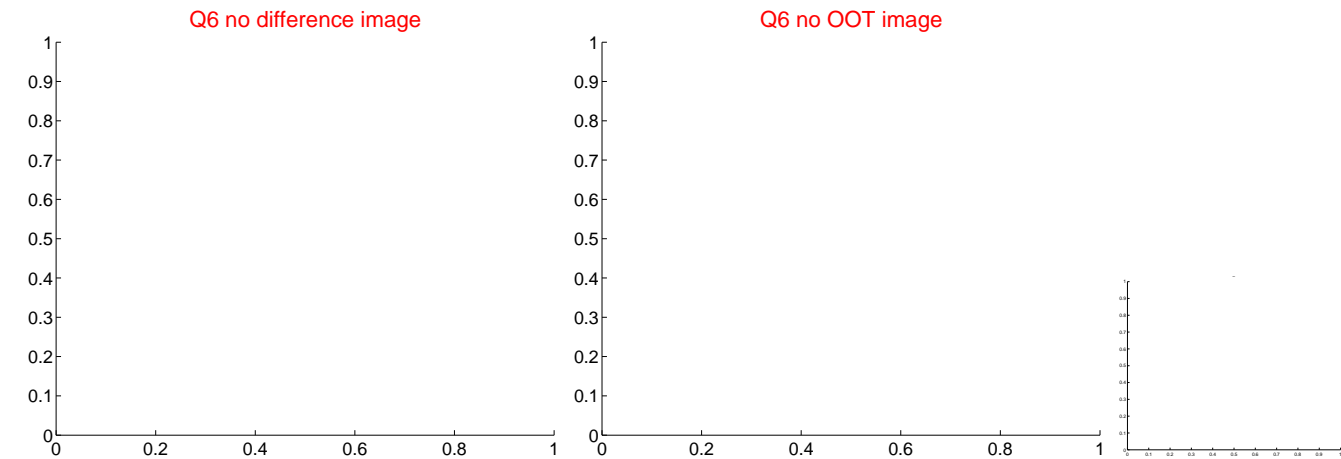
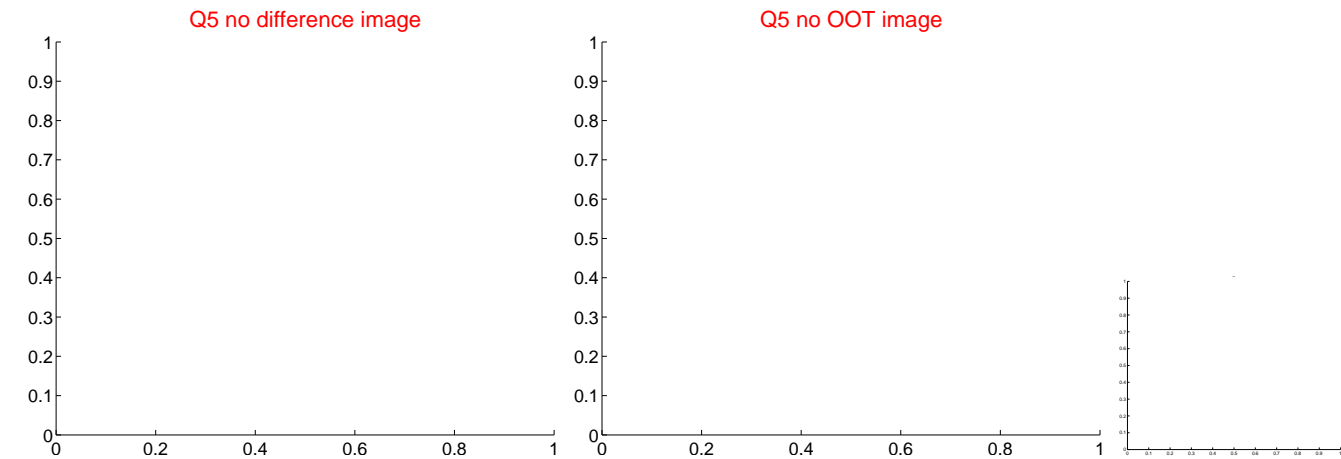


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

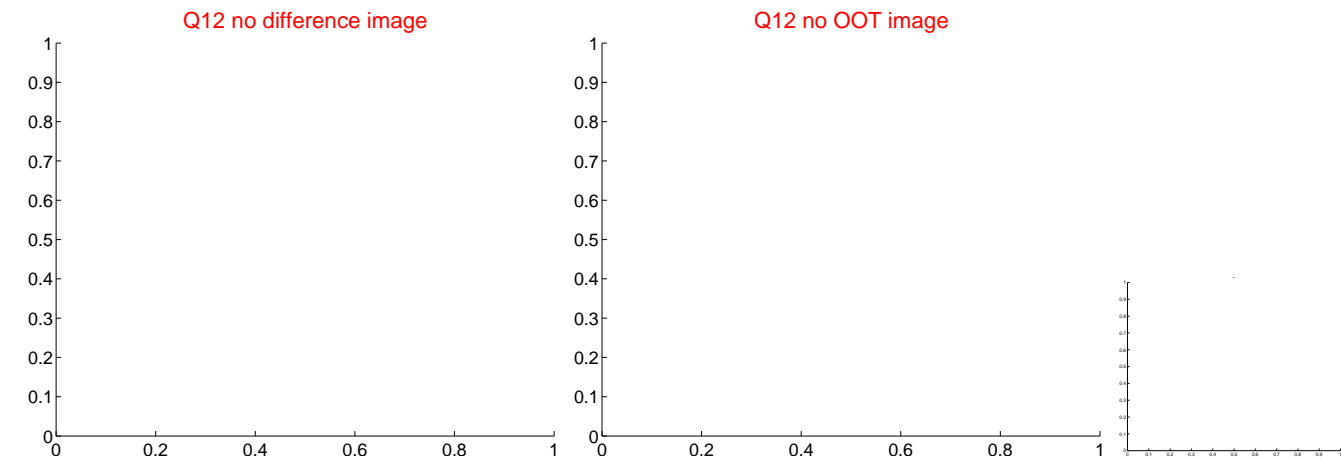
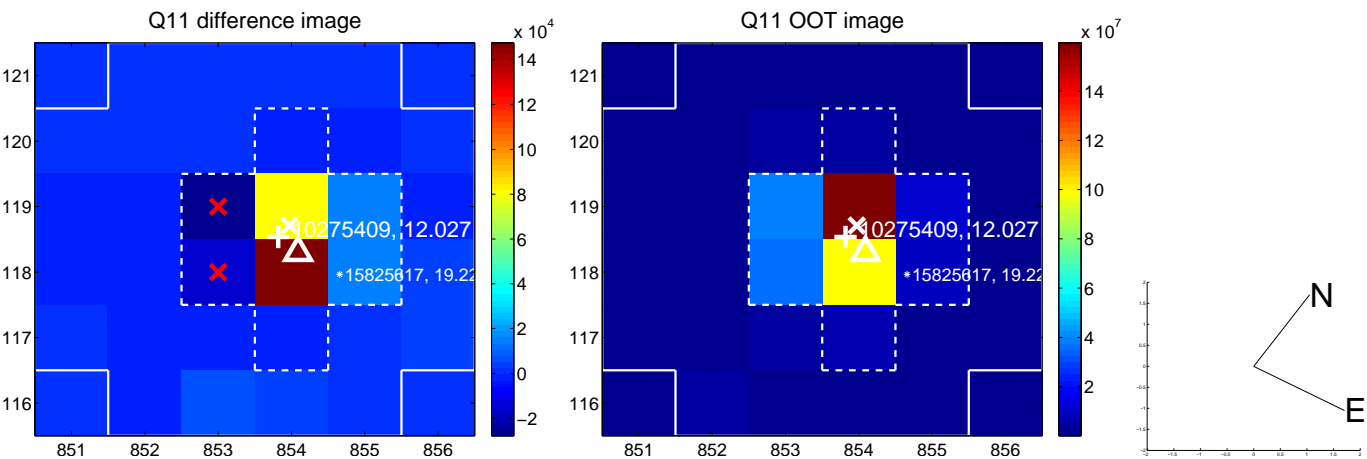
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



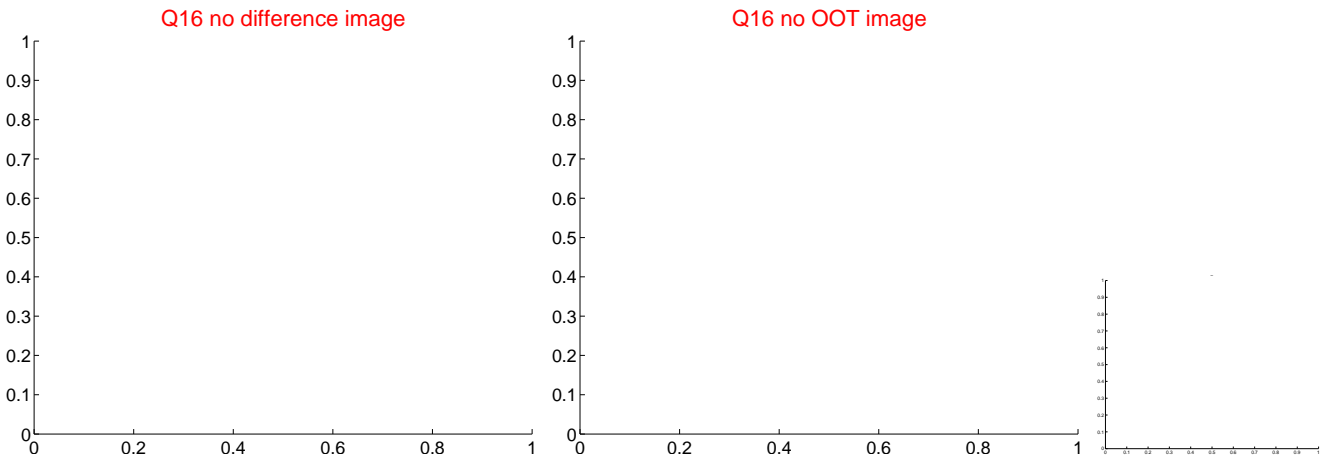
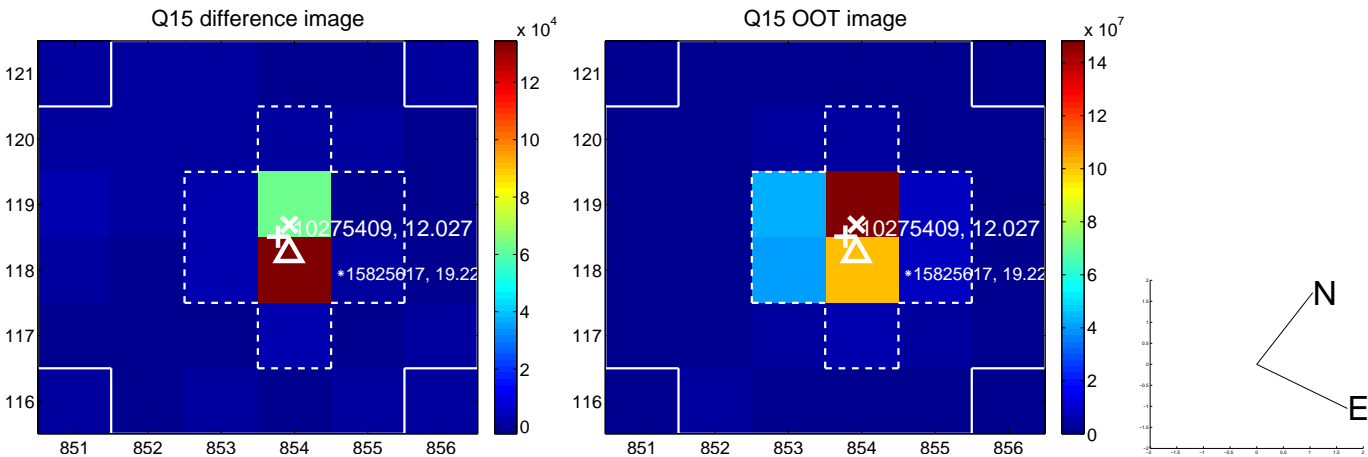
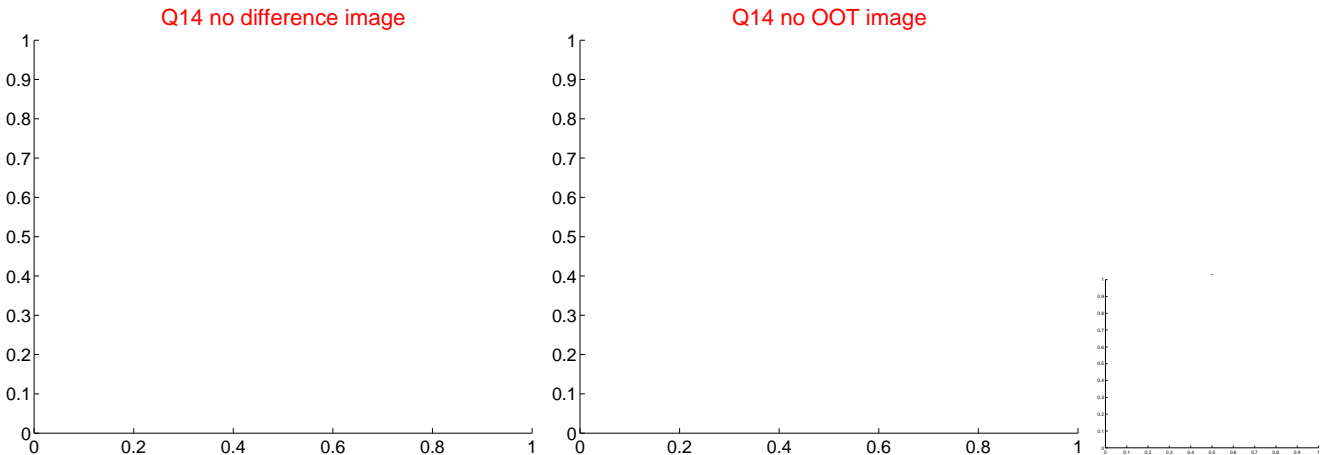
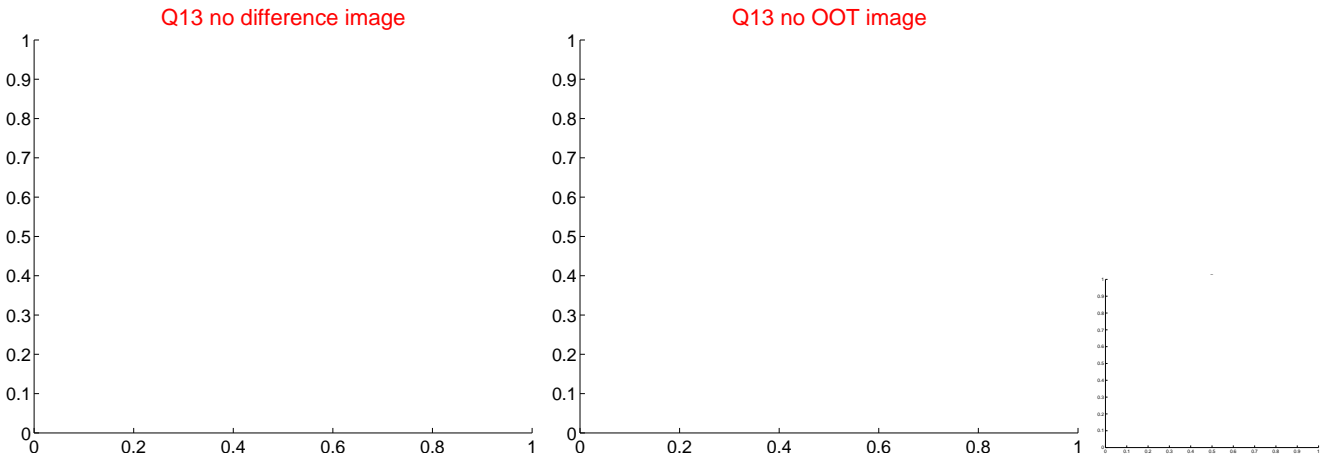
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



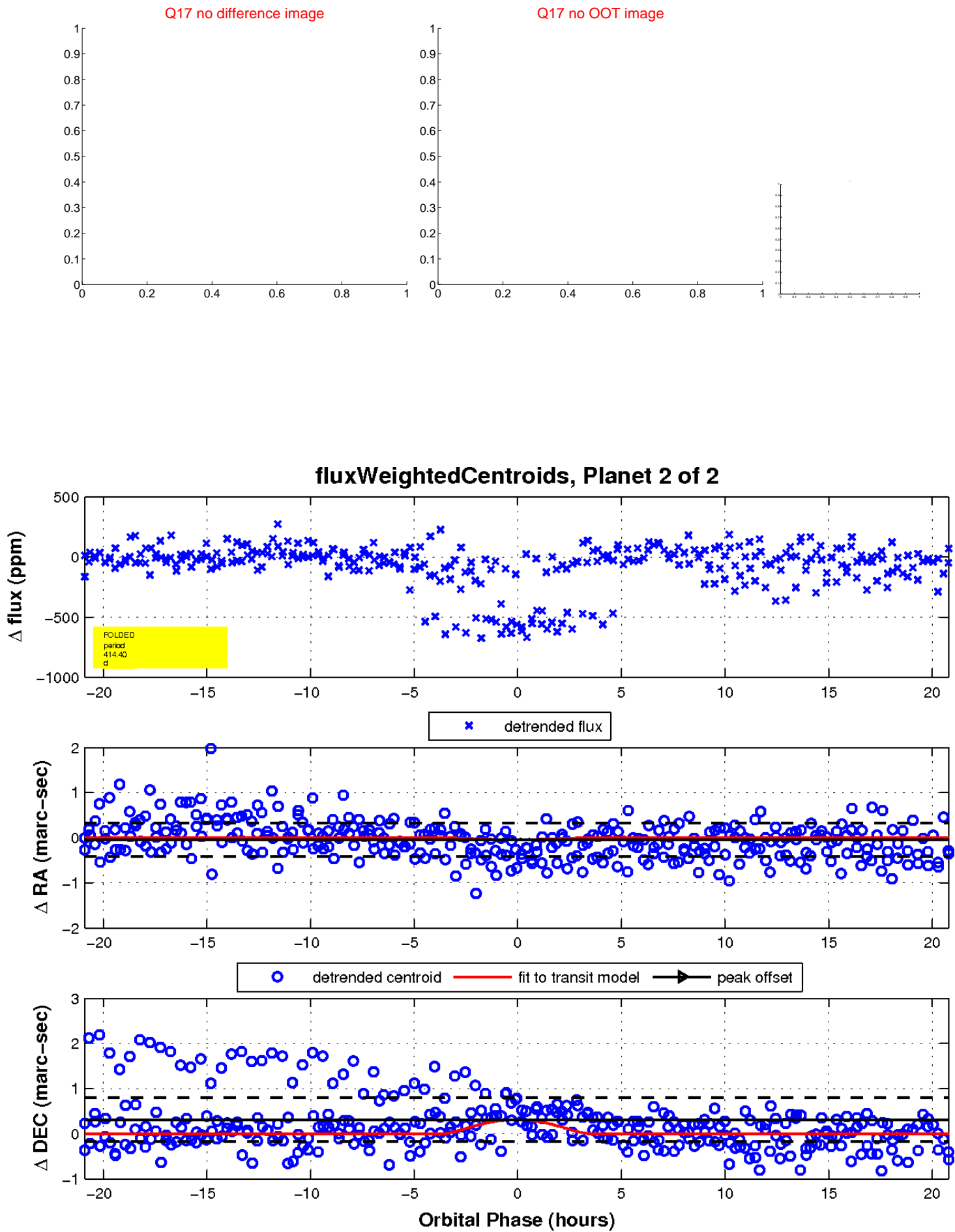
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

