

KIC 009214942

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})
009214942-01	OBS	1403.01	18.754632	141.718802	971.7	3.164	26.4	28.8	0.54	3976	1.82	5.04
009214942-02	OBS	No	561.074554	227.560009	1198.7	12.862	11.1	10.0	0.54	3976	1.96	0.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009214942-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009214942-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—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 009214942-01

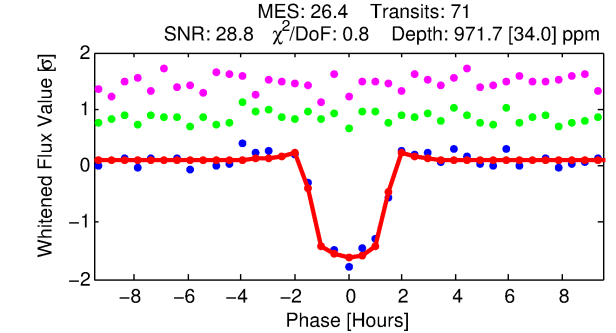
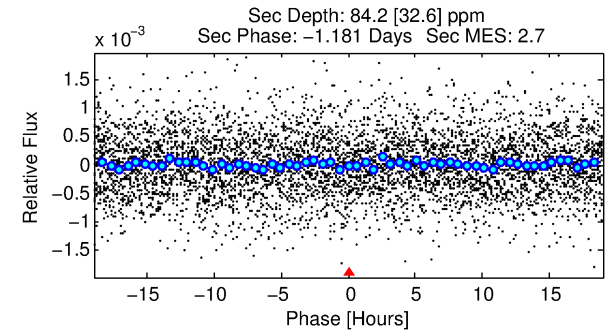
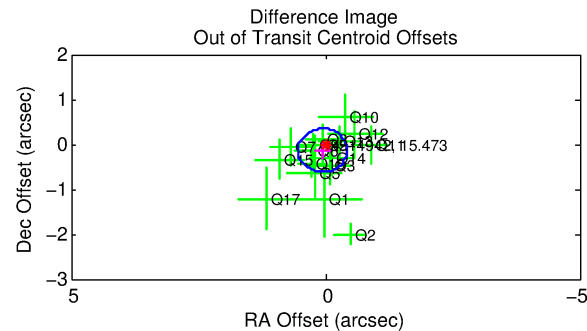
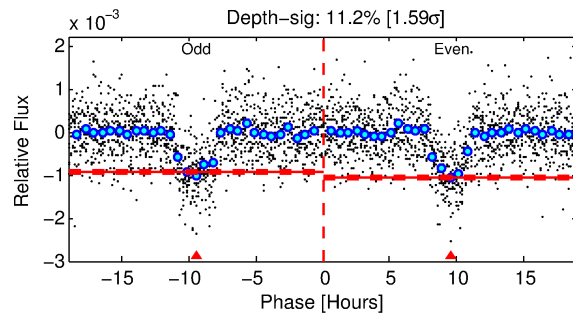
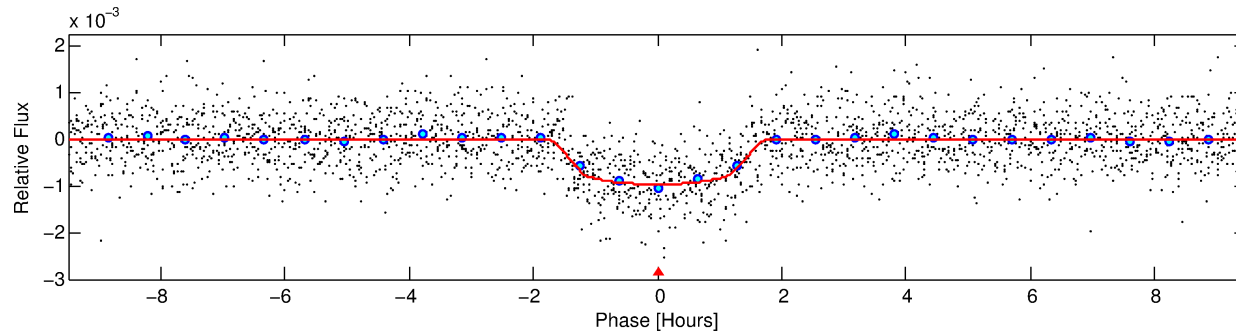
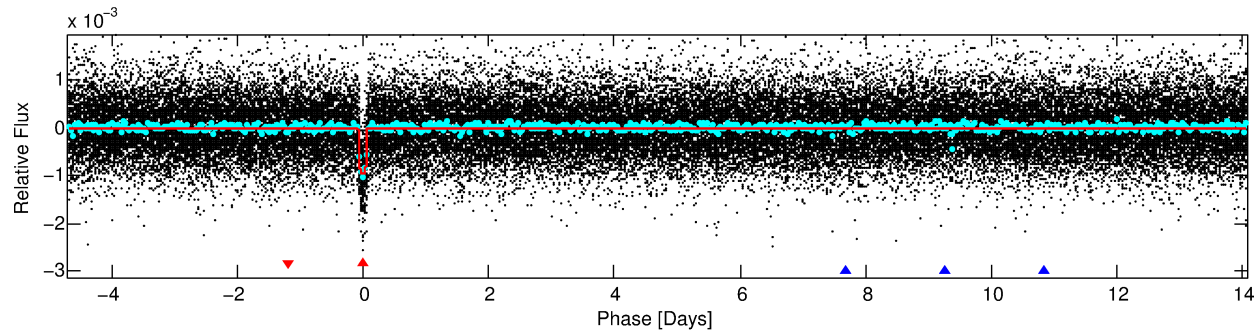
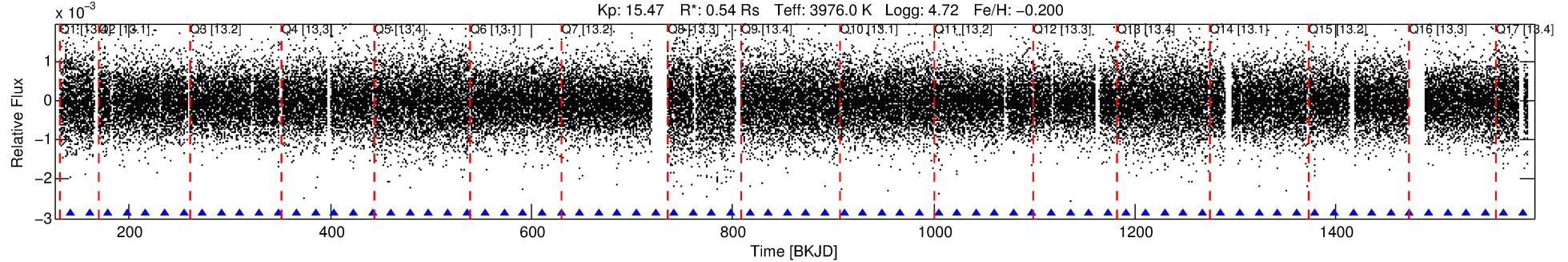
No Significant Match Found

DV One-Page Summary

KIC: 9214942 Candidate: 1 of 2 Period: 18.755 d

KOI: K01403.01 Corr: 0.983

Kp: 15.47 R*: 0.54 Rs Teff: 3976.0 K Logg: 4.72 Fe/H: -0.200



DV Fit Results:

Period = 18.75463 [0.00005] d
Epoch = 141.7188 [0.0022] BKJD
Rp/R* = 0.0309 [0.0082]
a/R* = 32.66 [37.27]
b = 0.74 [0.72]
Seff = 5.04 [1.05]
Teq = 382 [20] K
Rp = 1.82 [0.52] Re
a = 0.1139 [0.0094] AU
Ag = 181.17 [120.96] [1.49σ]
Teffp = 2167 [370] K [4.82σ]

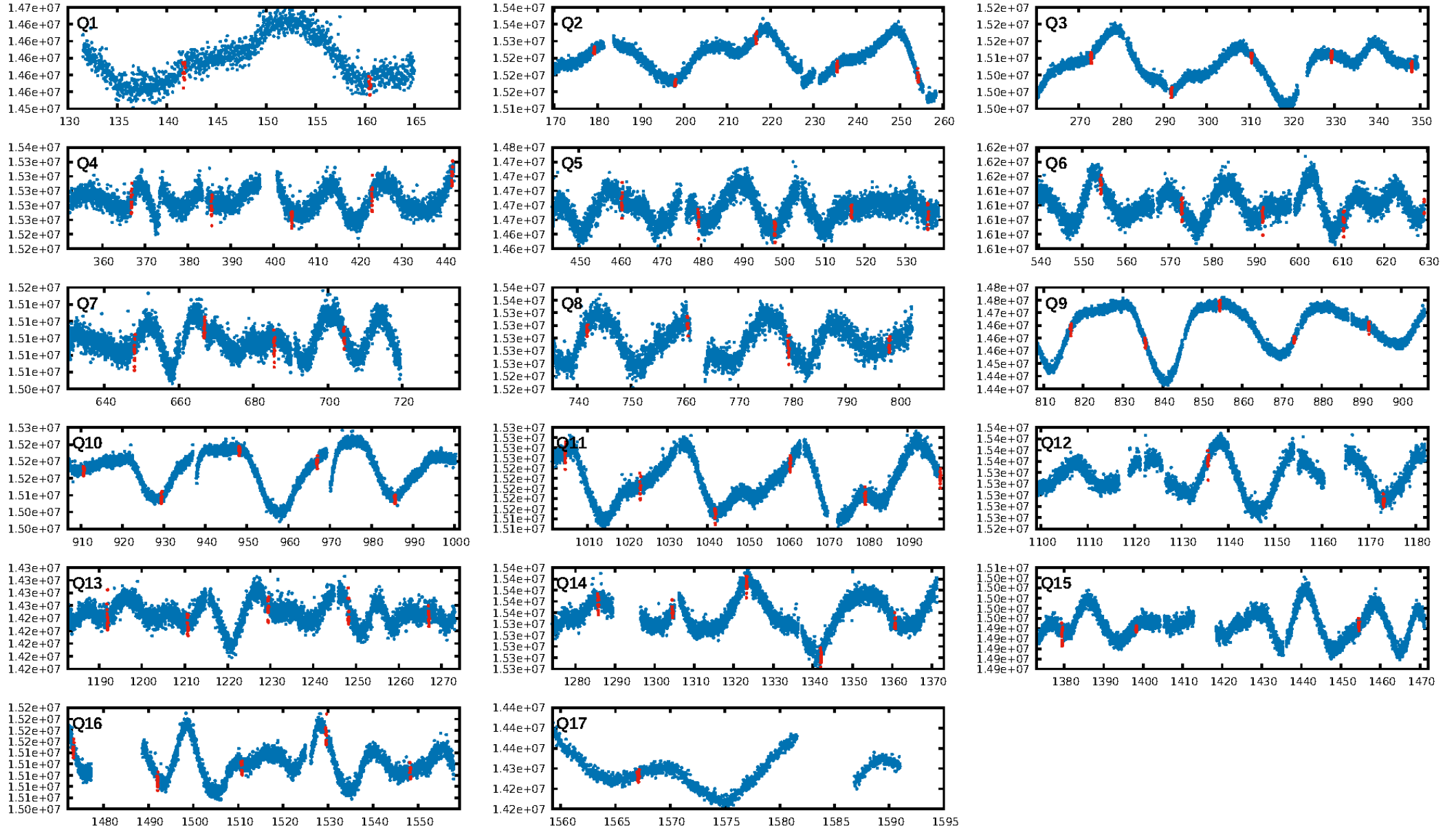
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [982.67σ]
ModelChiSquare2-sig: 94.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.48e-148
RollingBand-fgt: 1.00 [68/68]
GhostDiagnostic-chr: 3.605
Centroid-sig: 0.0%
Centroid-so: 1.768 arcsec [4.11σ]
OotOffset-rm: 0.150 arcsec [0.93σ]
KicOffset-rm: 0.369 arcsec [2.24σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

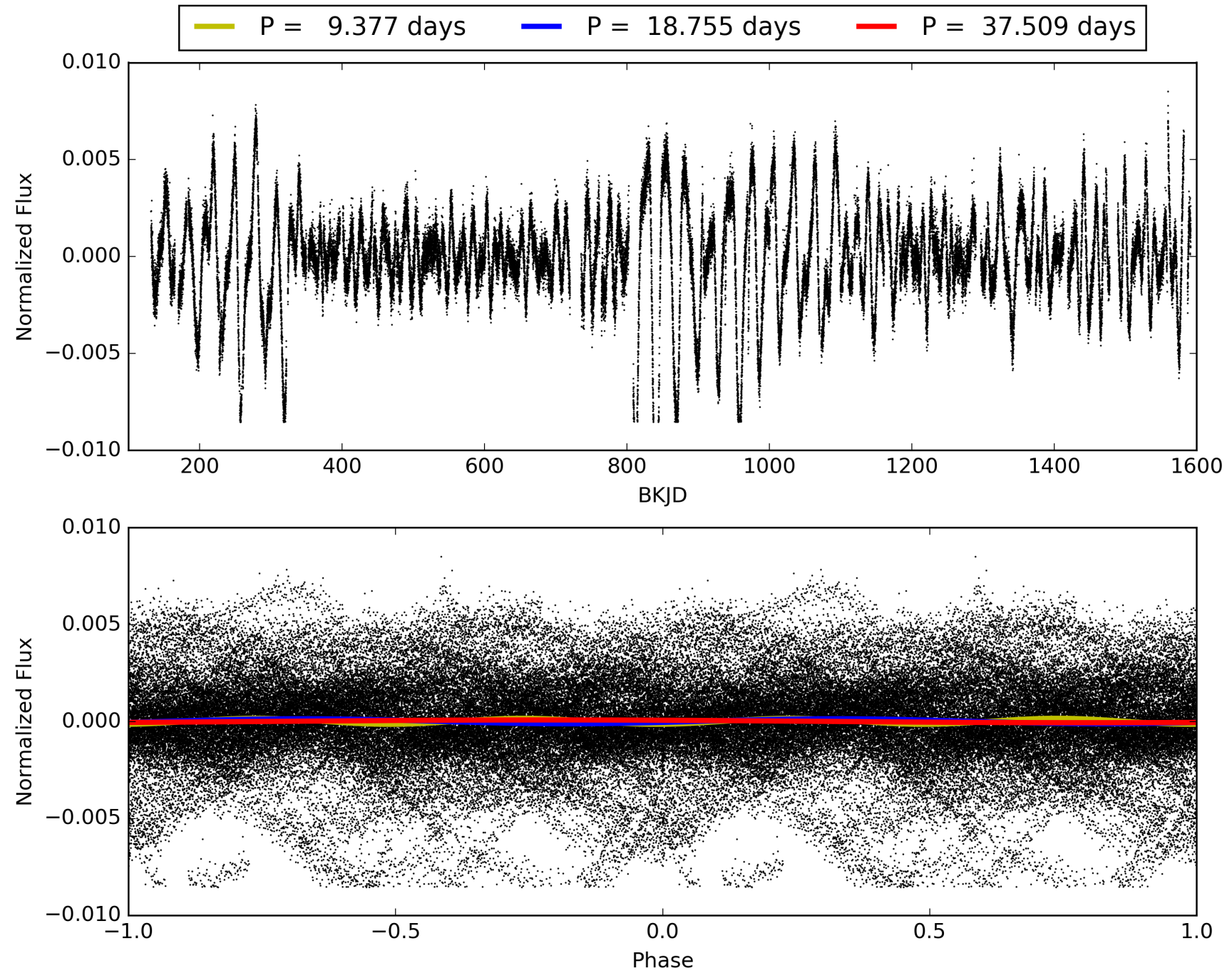
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 17:24:04 Z

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

TCE 009214942-01, PDC Light Curves

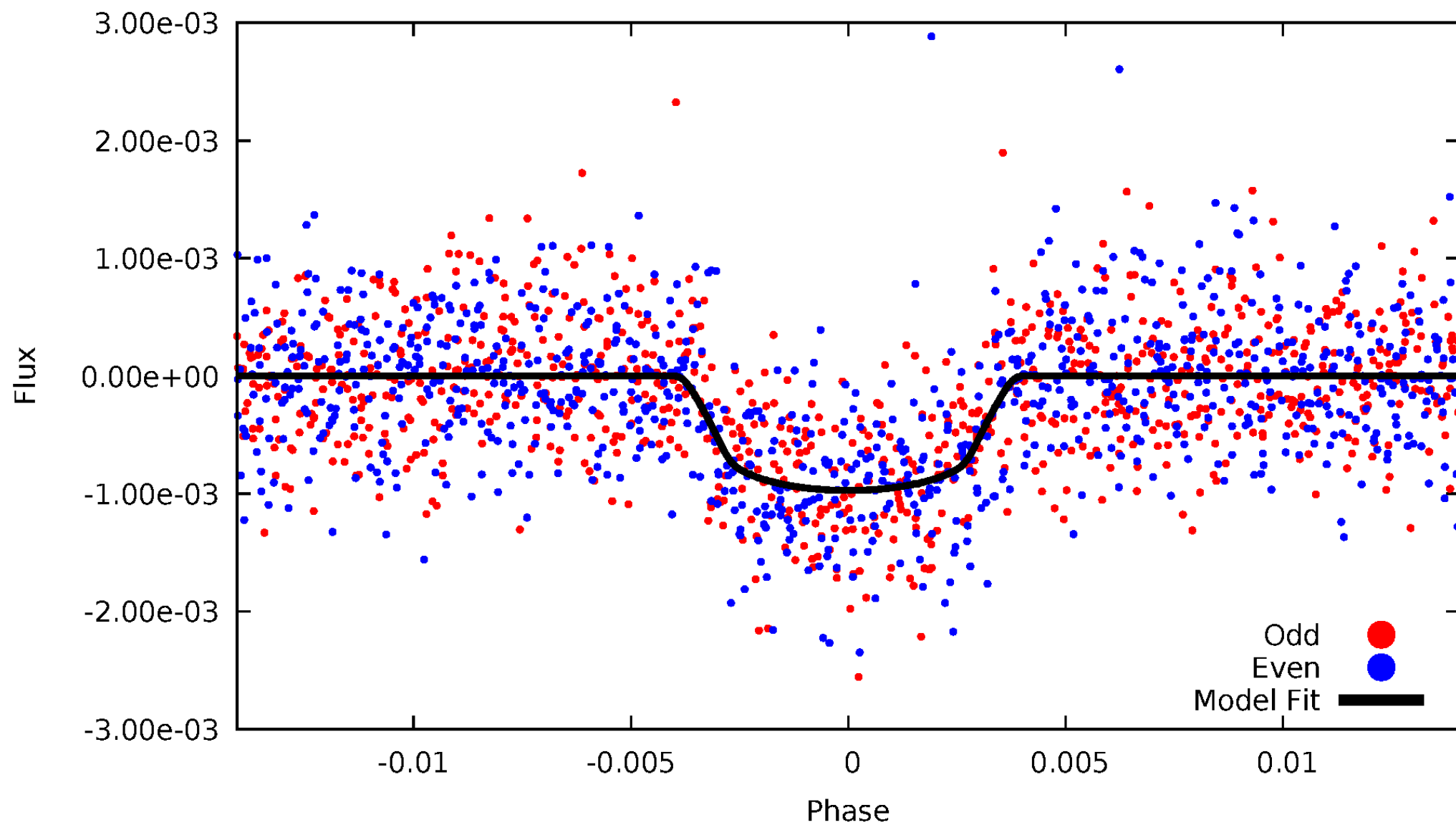


TCE 009214942-01



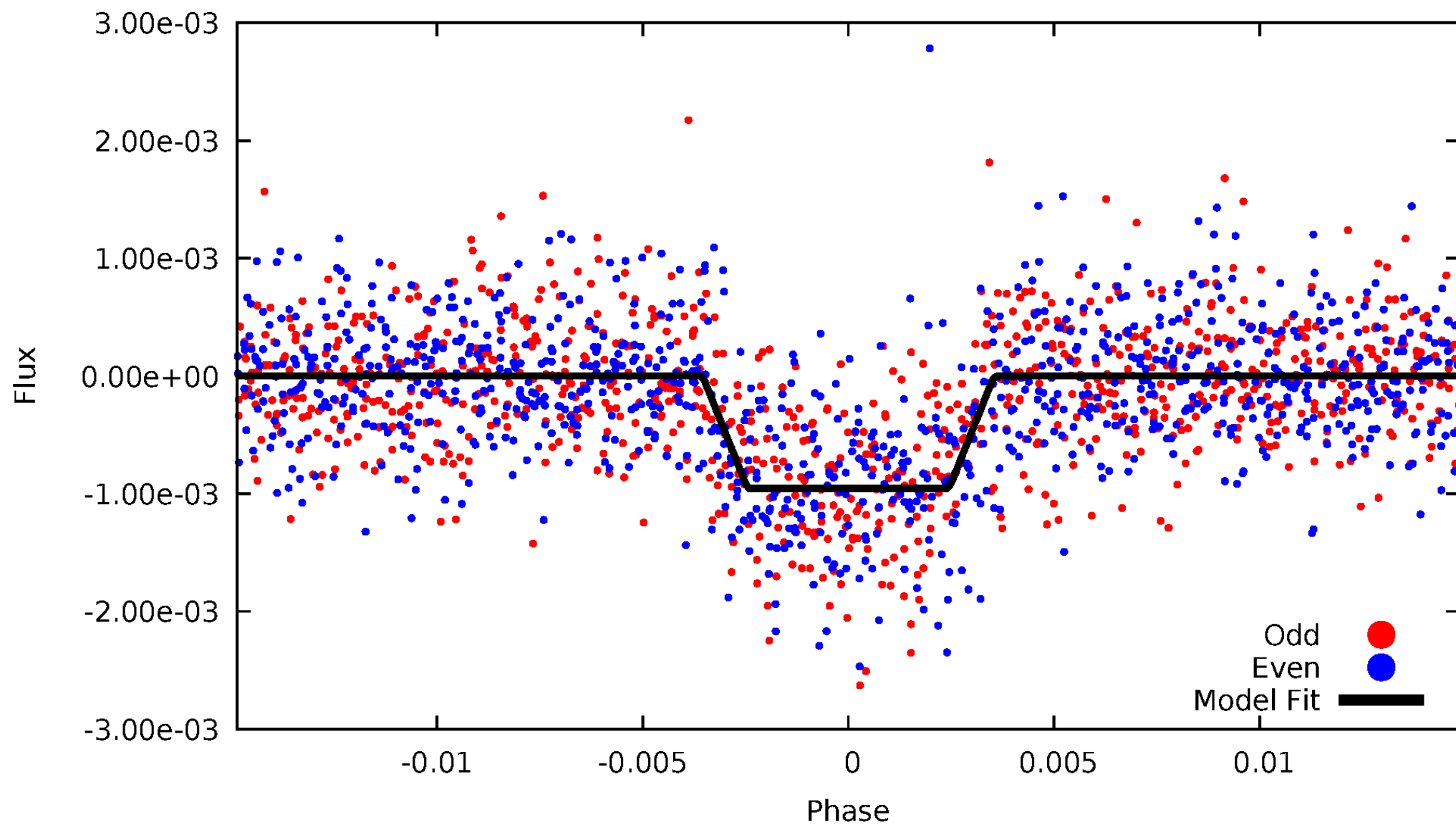
DV Odd/Even

TCE 009214942-01

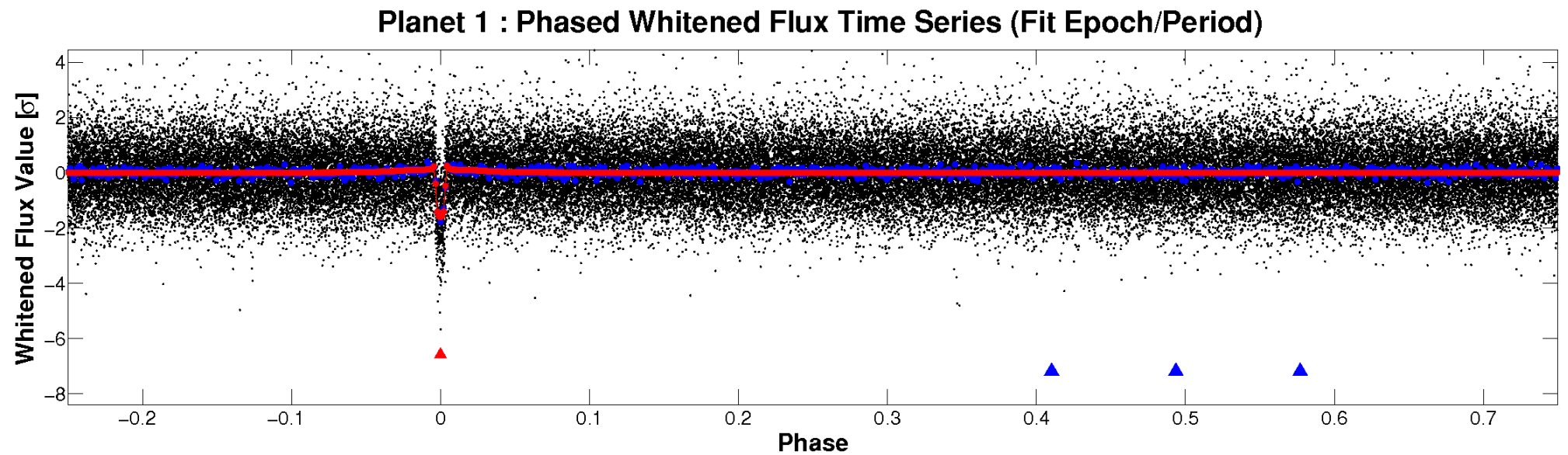
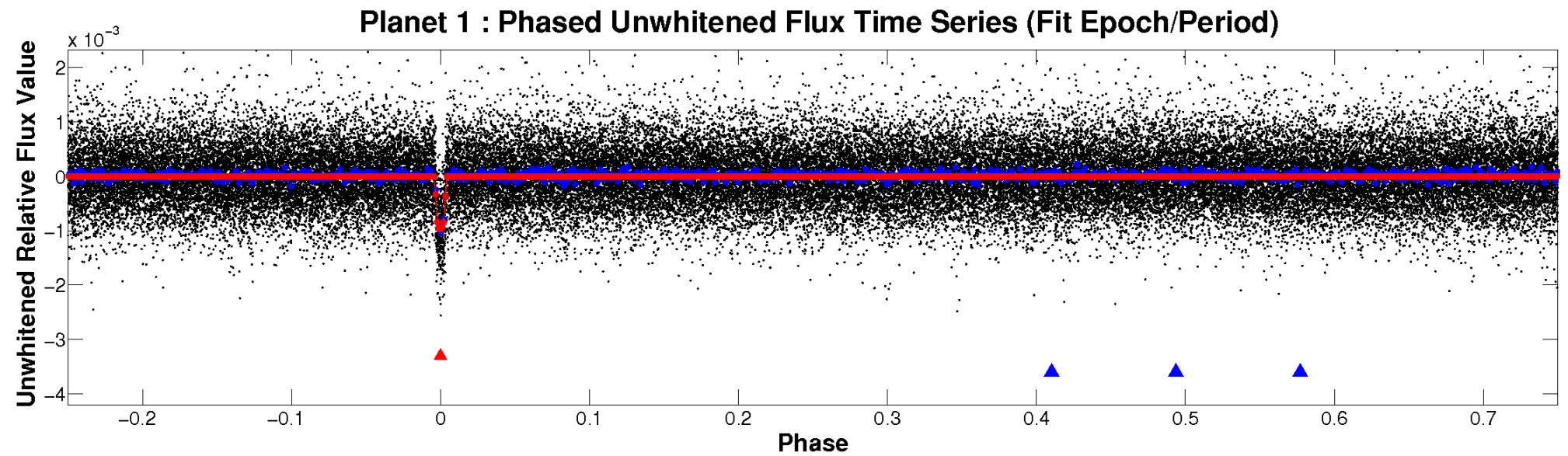


ALT Odd/Even

TCE 009214942-01

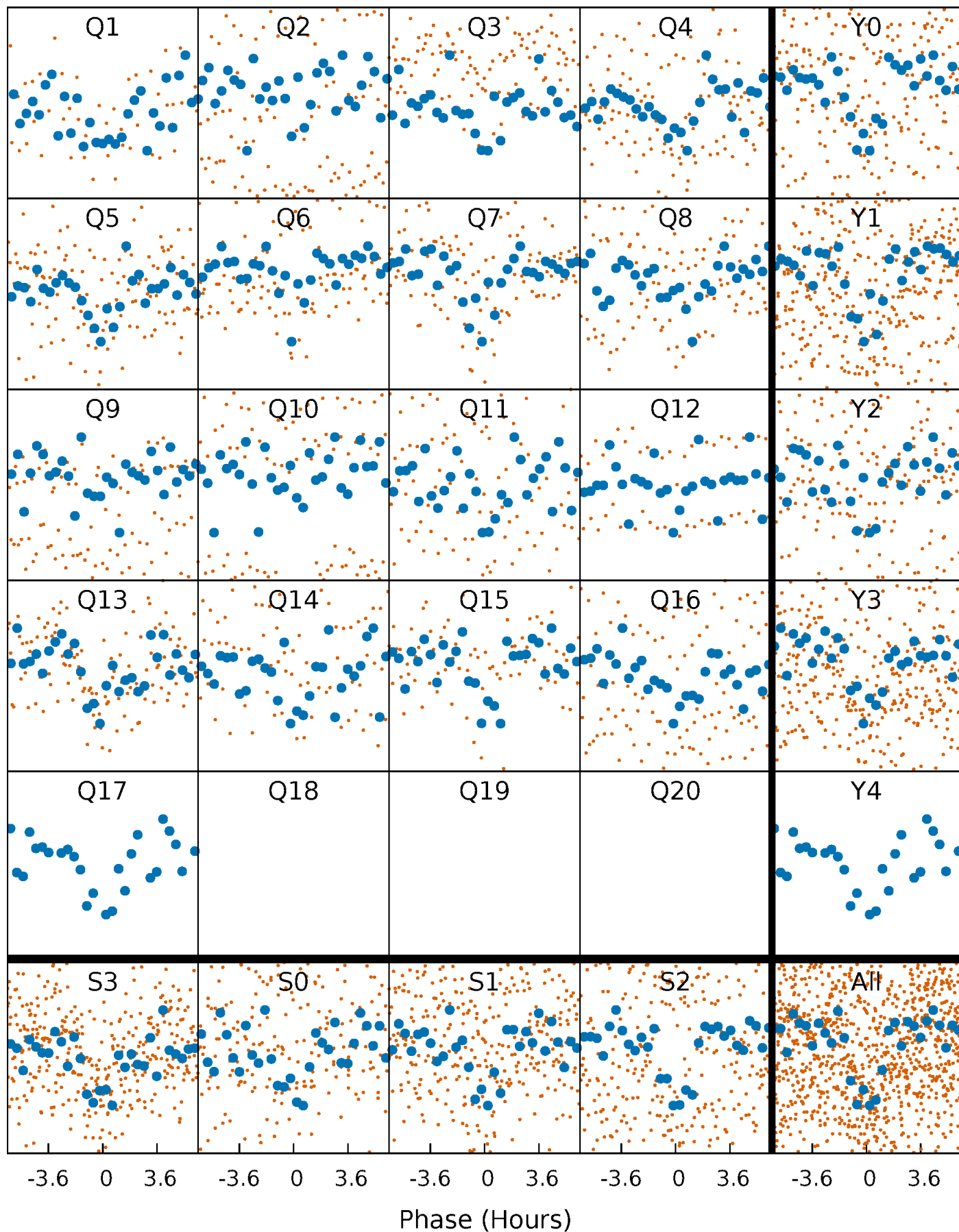


Non-Whitened Vs. Whitened Light Curve



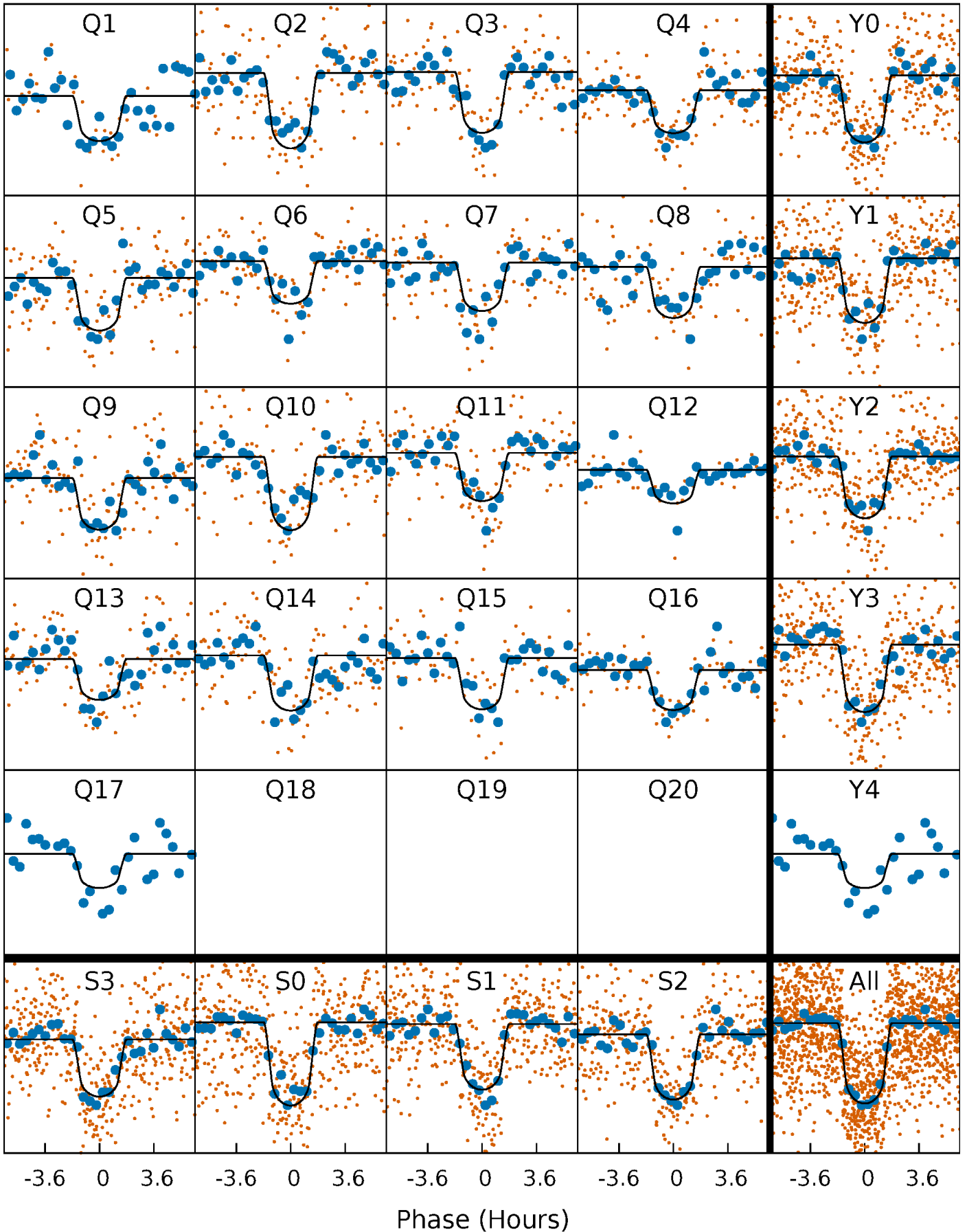
PDC Quarter-Phased Transit Curves

TCE 009214942-01 P= 18.754632 Days $T_0=141.718802$ (BKJD)



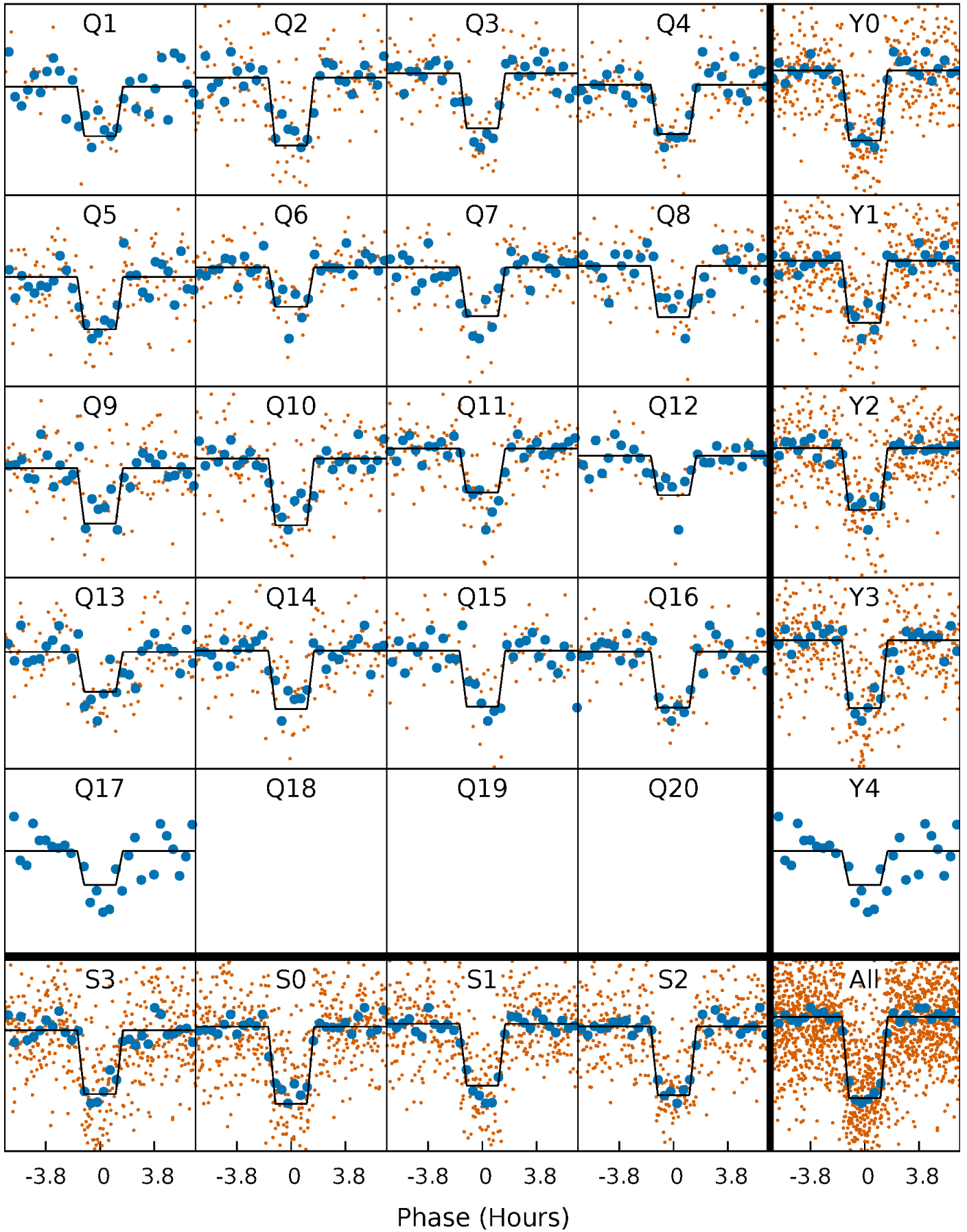
DV Quarter-Phased Transit Curves

TCE 009214942-01 P= 18.754632 Days $T_0=141.718802$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

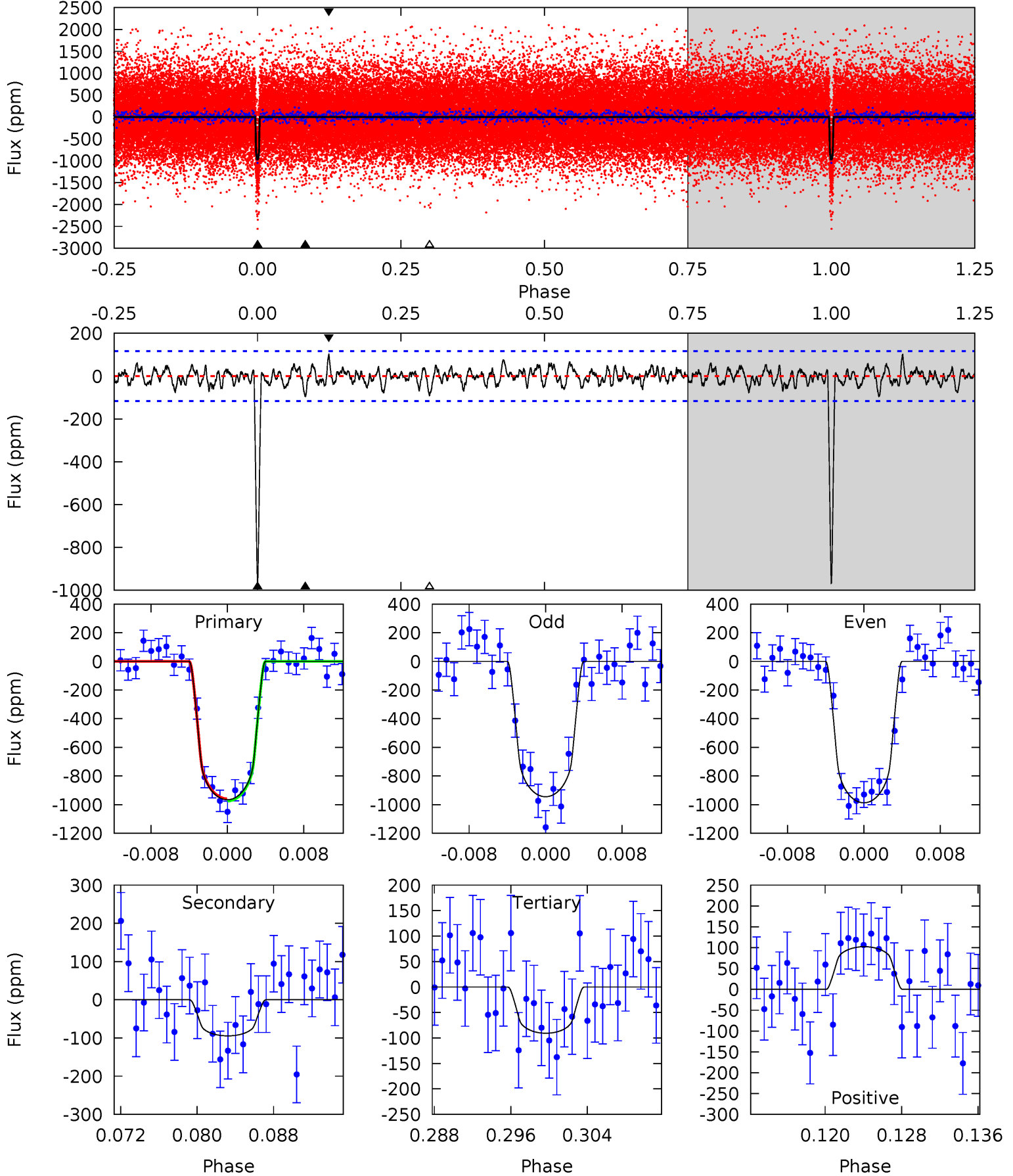
TCE 009214942-01 P= 18.754538 Days $T_0=141.722817$ (BKJD)



DV Model-Shift Uniqueness Test

009214942-01, $P = 18.754632$ Days, $E = 122.964170$ Days

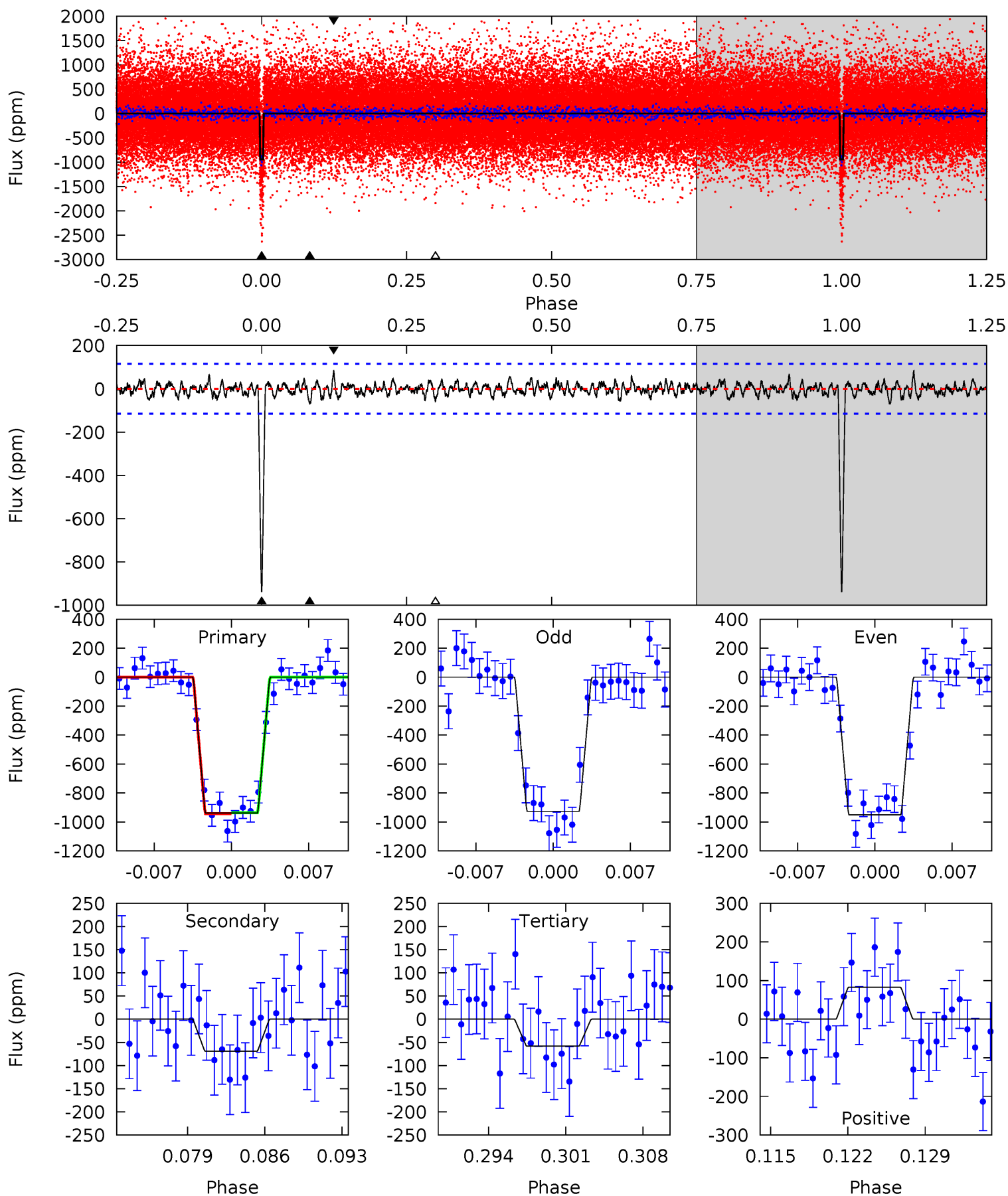
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.1	4.12	3.95	4.46	5.07	2.65	1.27	38.2	37.7	0.17	-0.34	0.93	0.97	0.10	0.32



Alt Model-Shift Uniqueness Test

009214942-01, P = 18.754538 Days, E = 122.968279 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
41.6	3.06	2.59	3.66	5.09	2.69	0.96	39.0	37.9	0.47	-0.60	0.52	0.96	0.08	0.14



Stellar Parameters For KIC 009214942

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3976^{+159}_{-177}	$4.721^{+0.054}_{-0.041}$	$-0.200^{+0.100}_{-0.100}$	$0.540^{+0.042}_{-0.058}$	$0.559^{+0.040}_{-0.055}$	$5.002^{+1.327}_{-0.809}$
	+4%/-4%	+1%/-1%	+50%/-50%	+8%/-11%	+7%/-10%	+27%/-16%
Source	SPE5	SPE5	SPE5	DSEP		

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

Secondary Eclipse Parameters for KIC 009214942-01 / KOI 1403.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-95 ± 23	$1.80^{+0.51}_{-0.50}$	530^{+25}_{-25}	2792^{+268}_{-225}	205^{+194}_{-89}
Alt.	-69 ± 23	$1.83^{+0.50}_{-0.49}$	530^{+25}_{-25}	2661^{+261}_{-213}	142^{+140}_{-63}

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 $A_{obs} \gg 1.0$

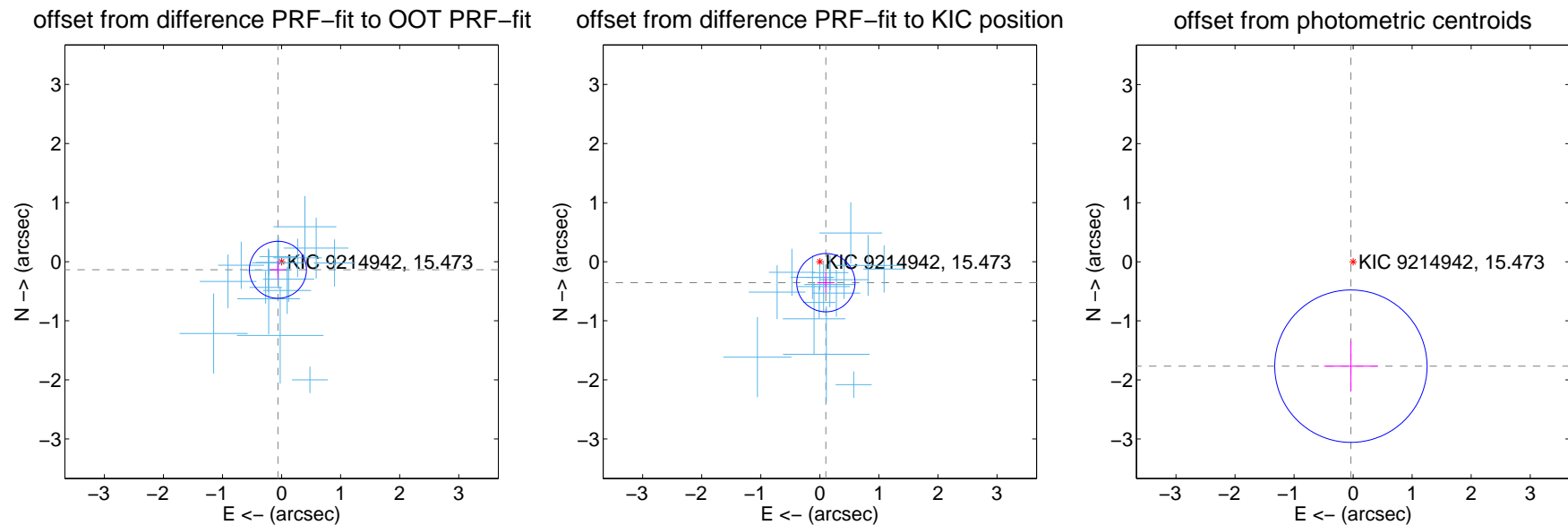
DV Centroid Data

Supplemental centroid analysis for 009214942-01. Kepler magnitude: 15.47. Transit SNR 28.81

There are 17 quarters with good PRF difference image offsets

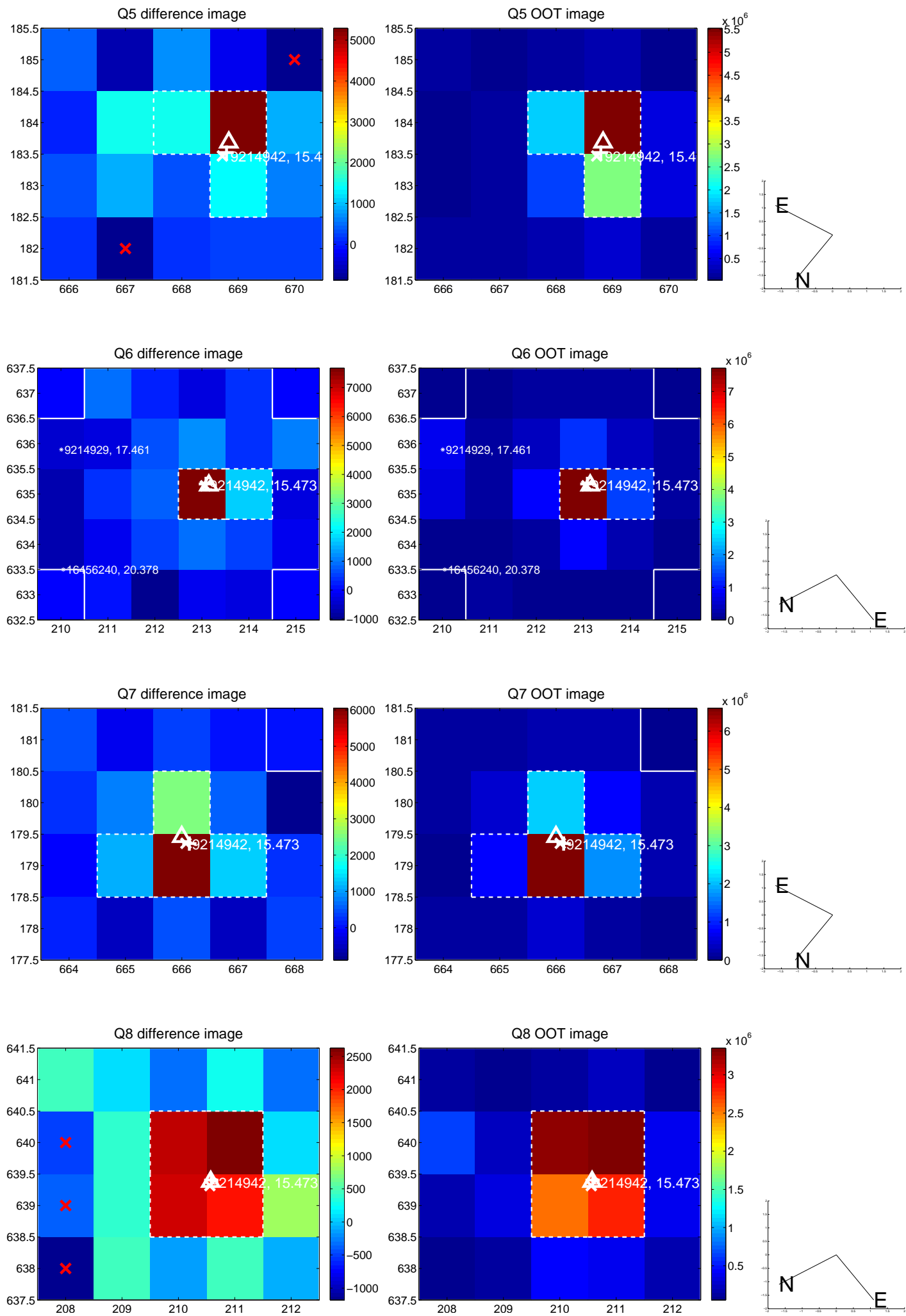
The direct PRF centroid is offset from the target star catalog position by about 0.41 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.150 ± 0.161	0.93	0.062 ± 0.138	-0.137 ± 0.158
PRF-fit source offset from KIC position	0.369 ± 0.164	2.24	-0.102 ± 0.146	-0.355 ± 0.176
photometric centroid source offset	1.77 ± 0.43	4.11	0.04 ± 0.46	-1.77 ± 0.43

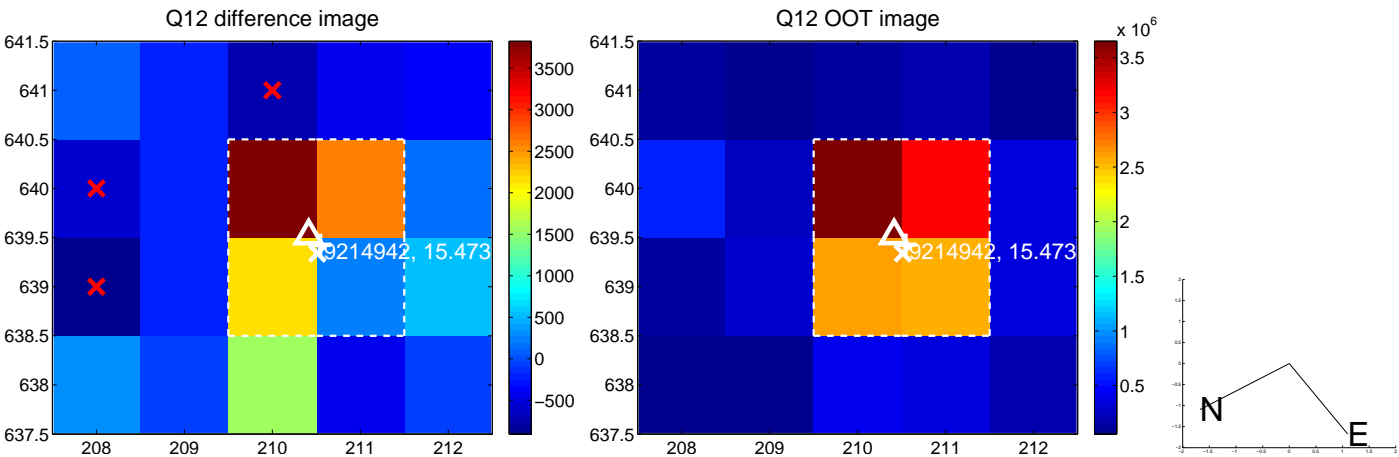
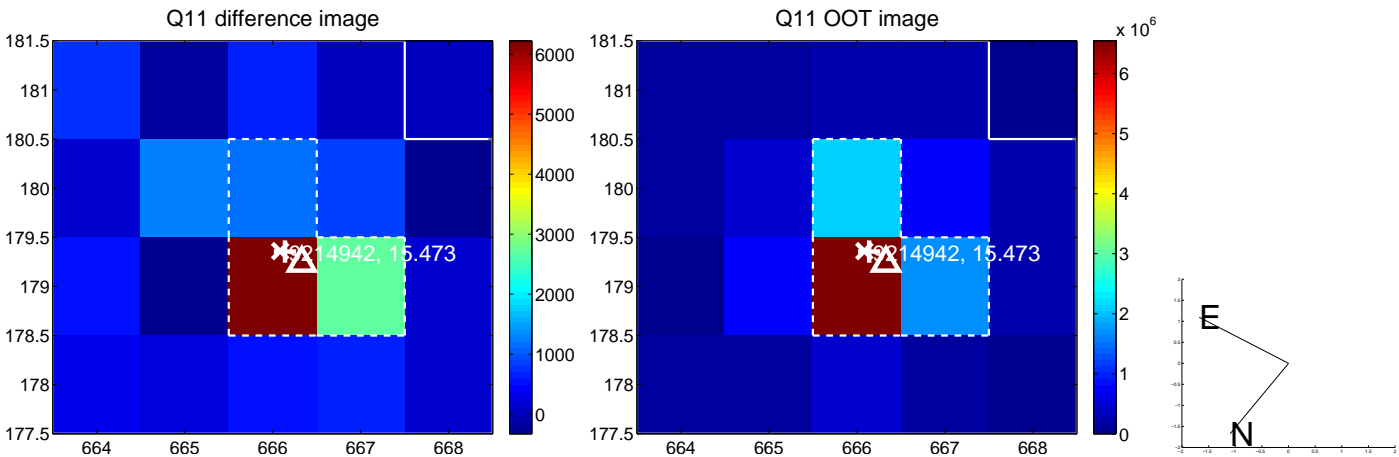
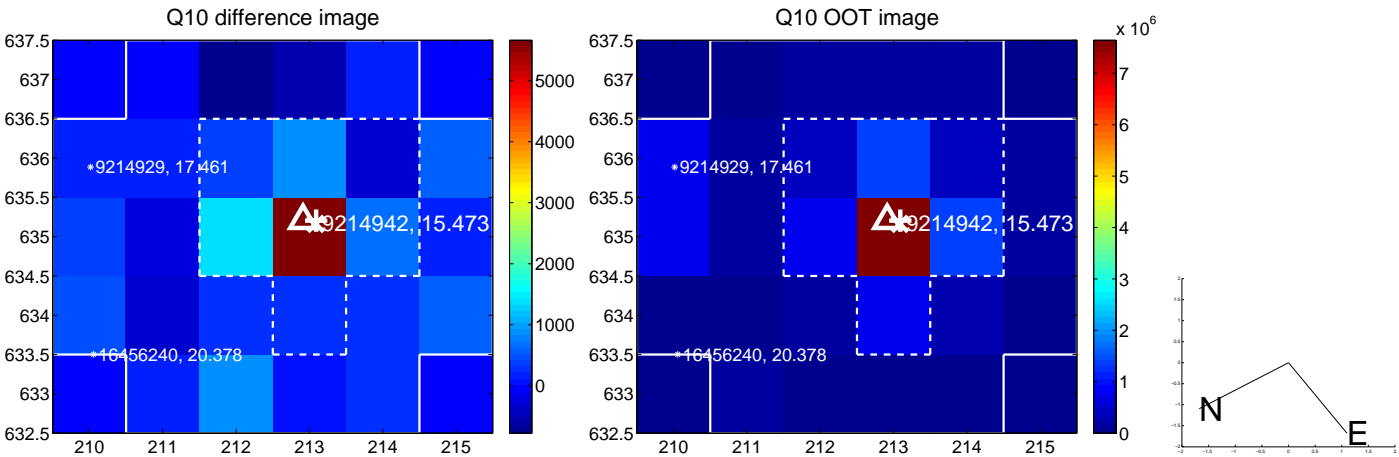
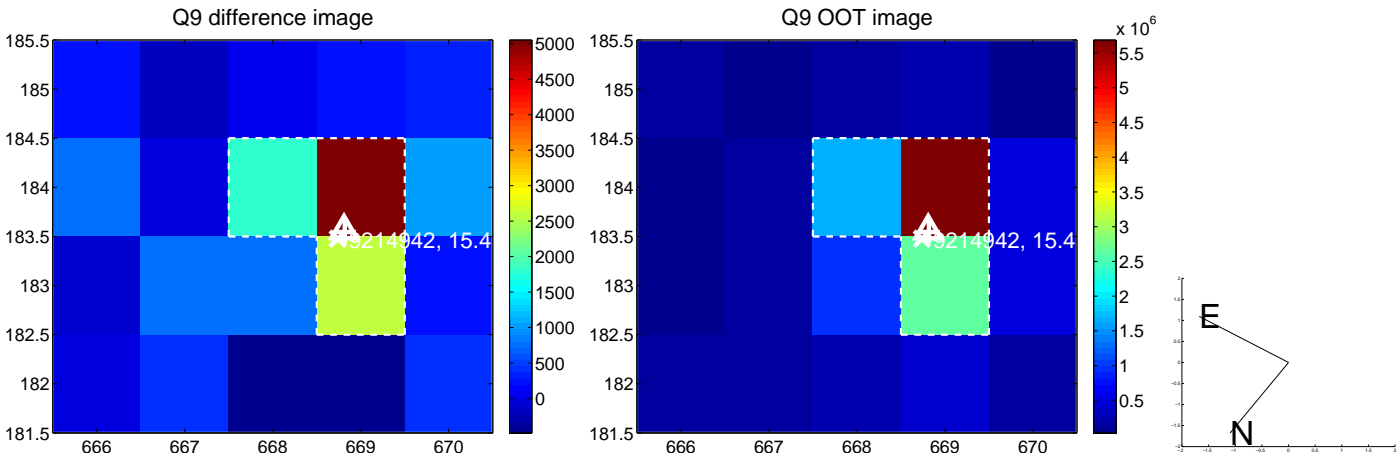


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

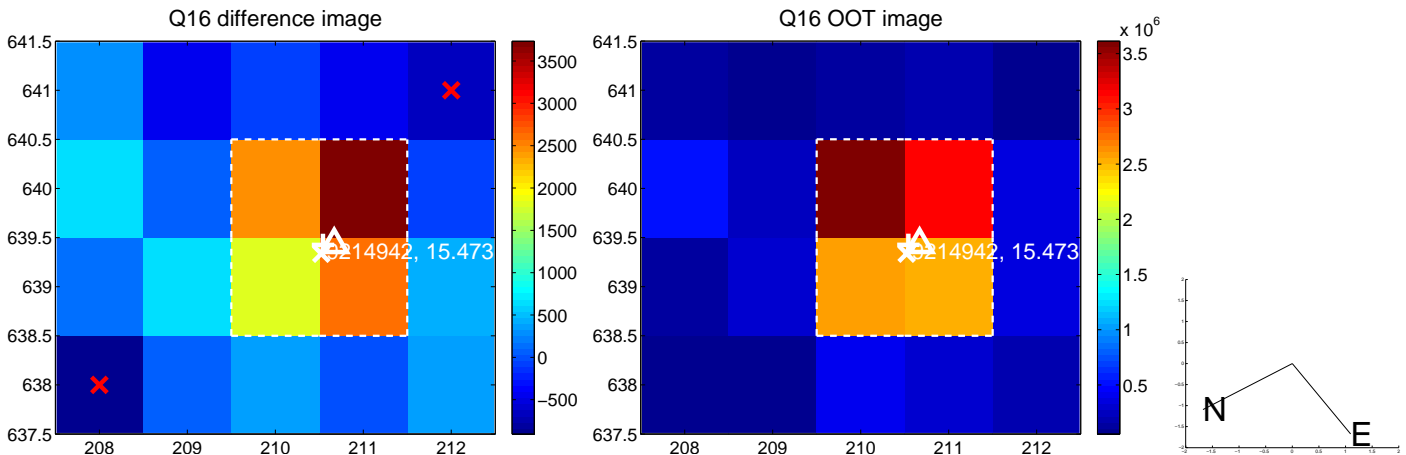
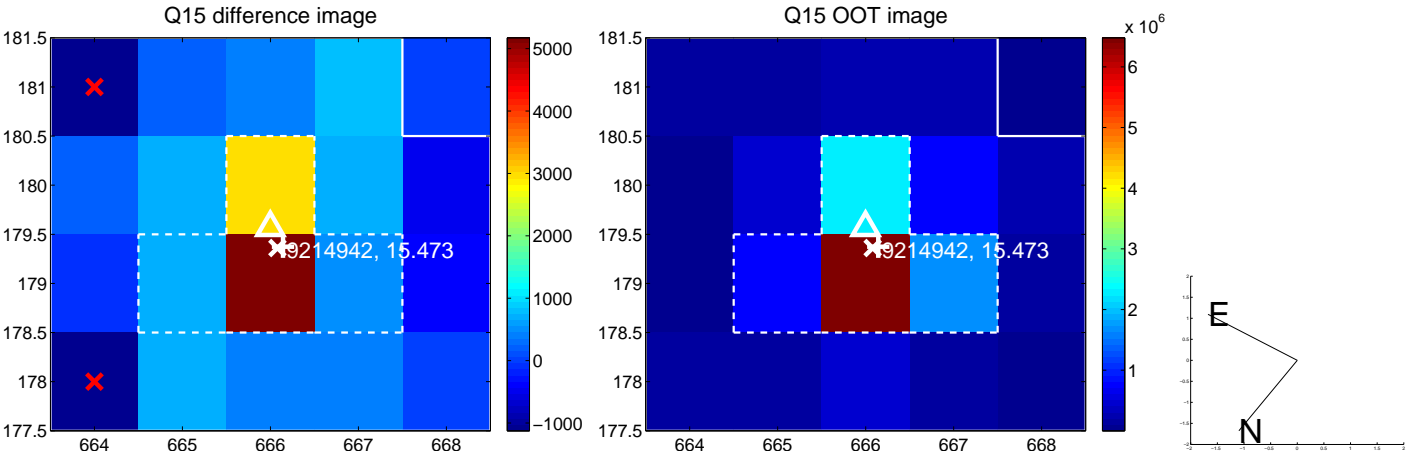
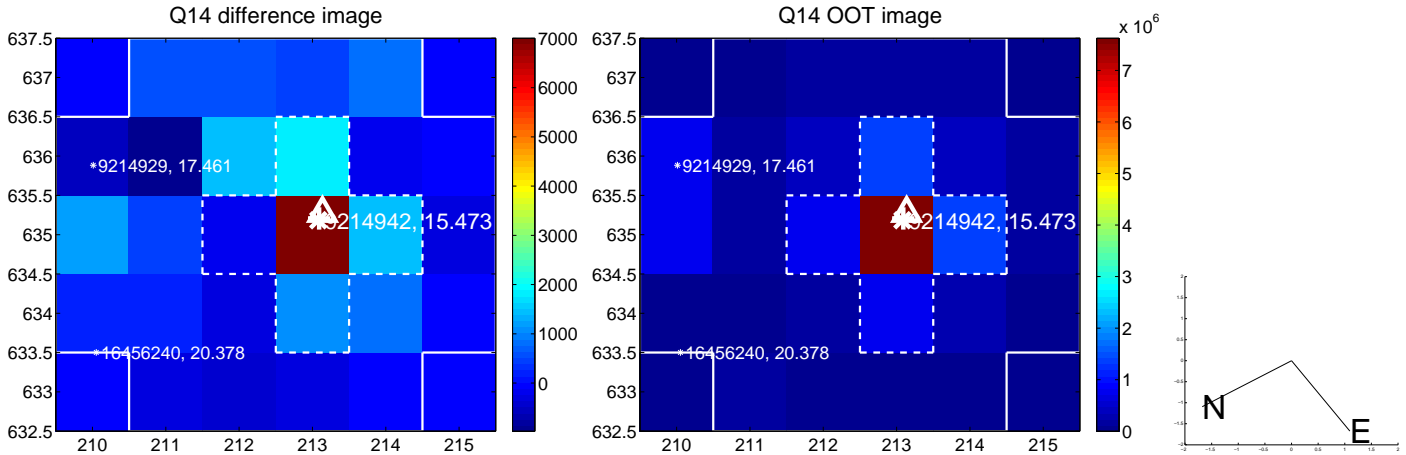
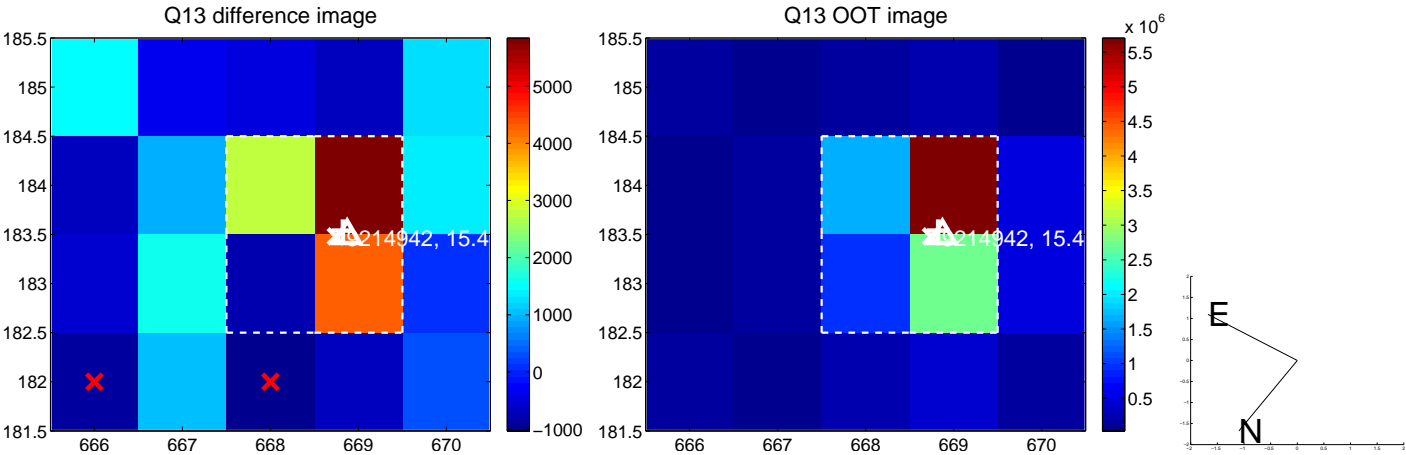
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



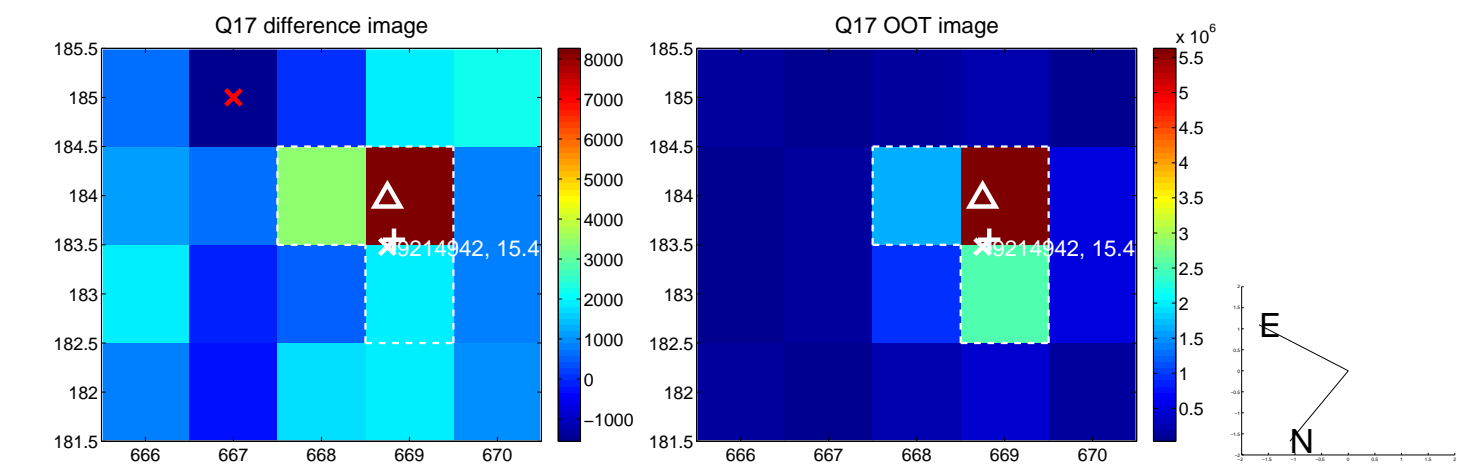
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



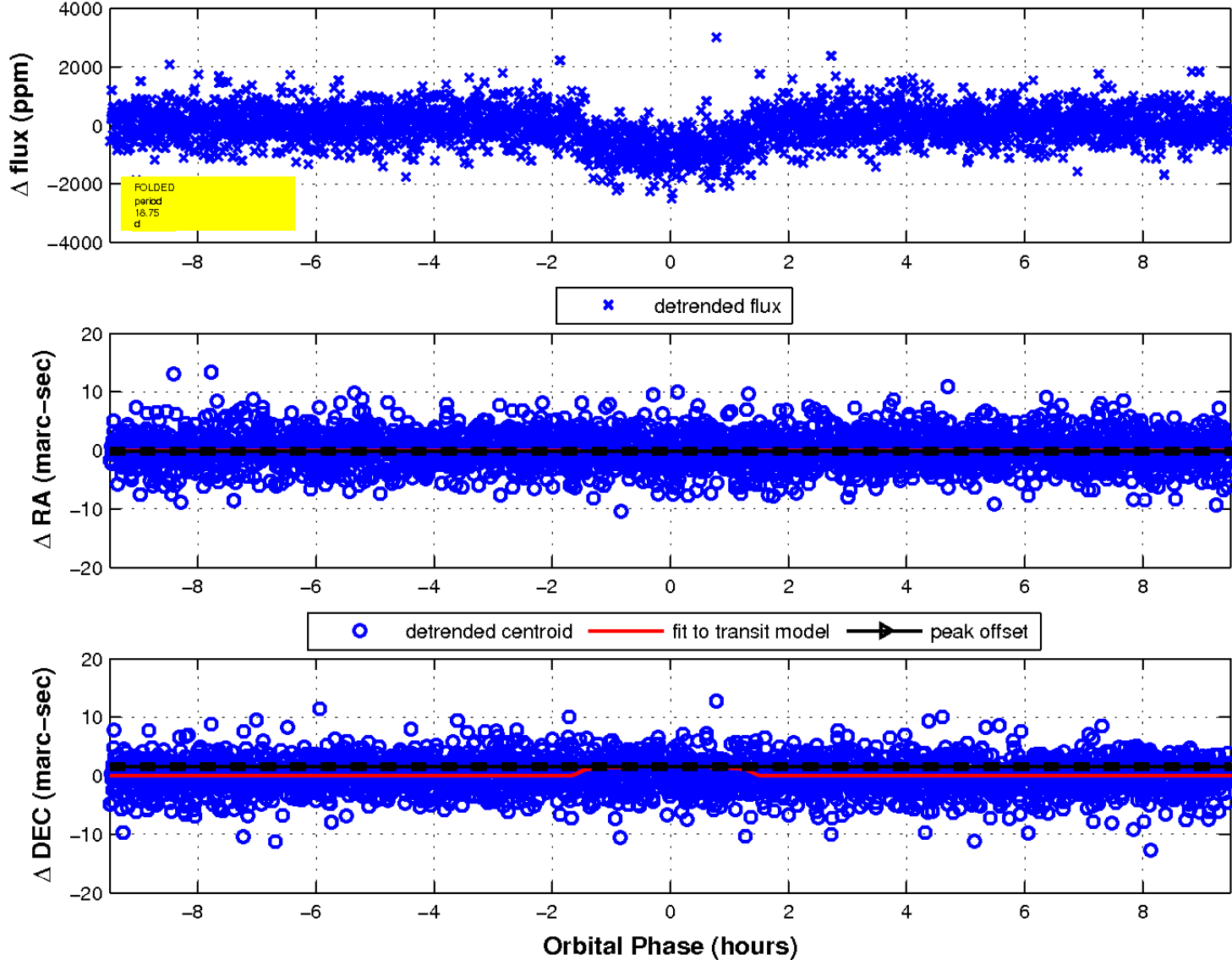
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

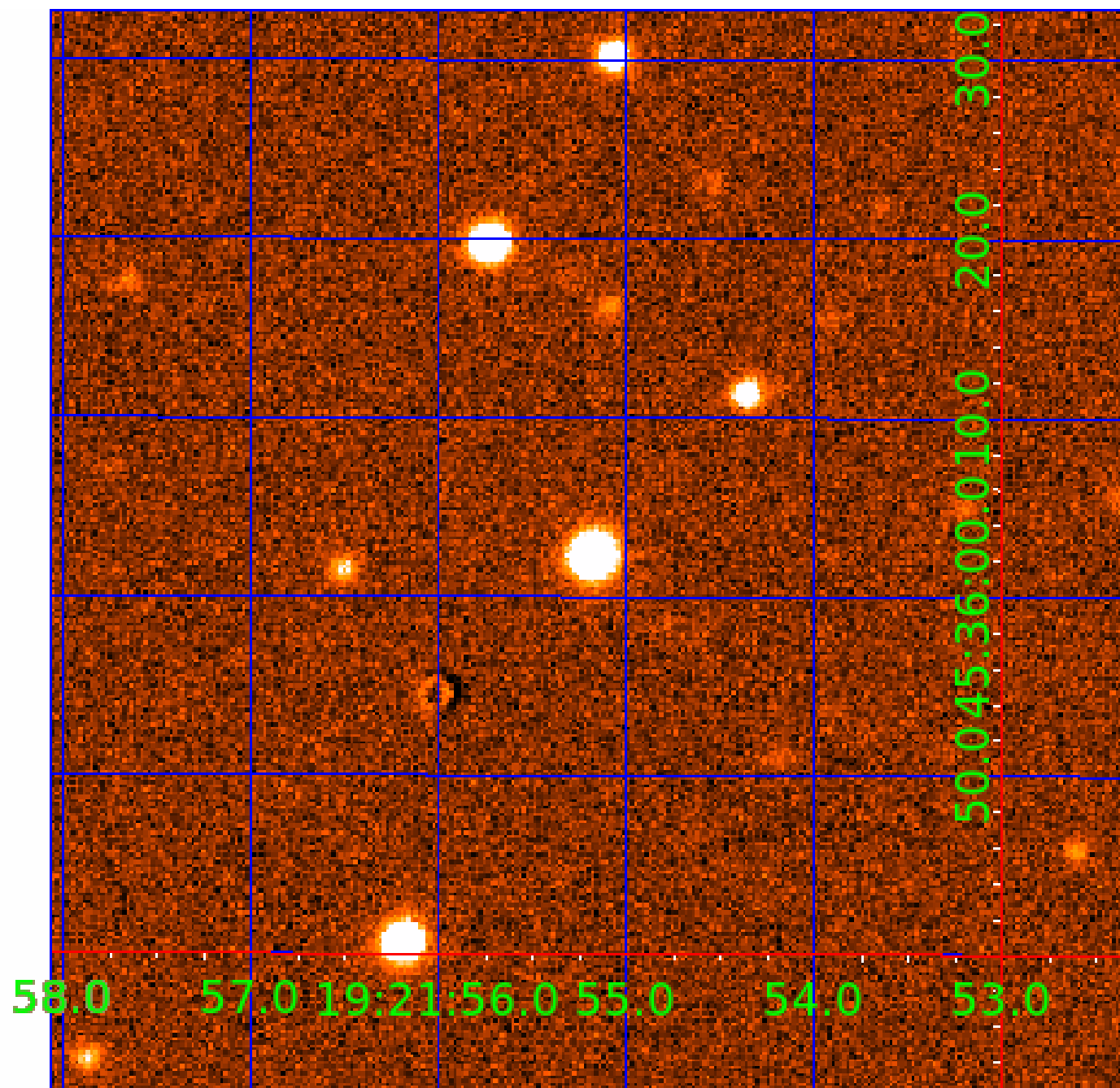


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009214942

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})
009214942-01	OBS	1403.01	18.754632	141.718802	971.7	3.164	26.4	28.8	0.54	3976	1.82	5.04
009214942-02	OBS	No	561.074554	227.560009	1198.7	12.862	11.1	10.0	0.54	3976	1.96	0.05

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009214942-01	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009214942-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—ALL_TRANS_CHASES—INCONSISTENT_TRANS—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 009214942-02

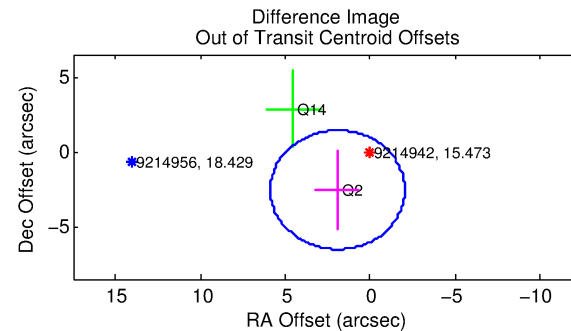
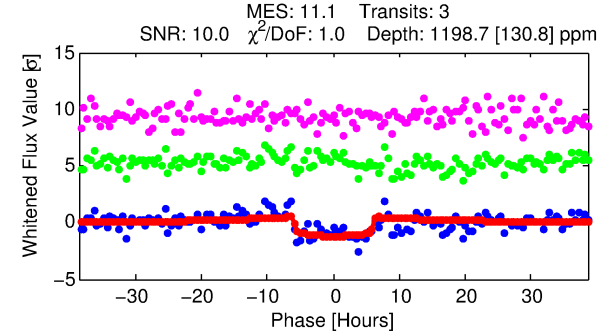
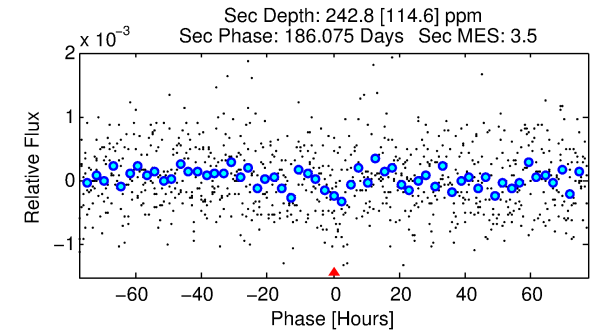
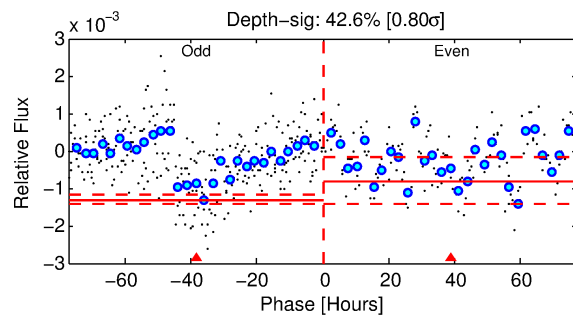
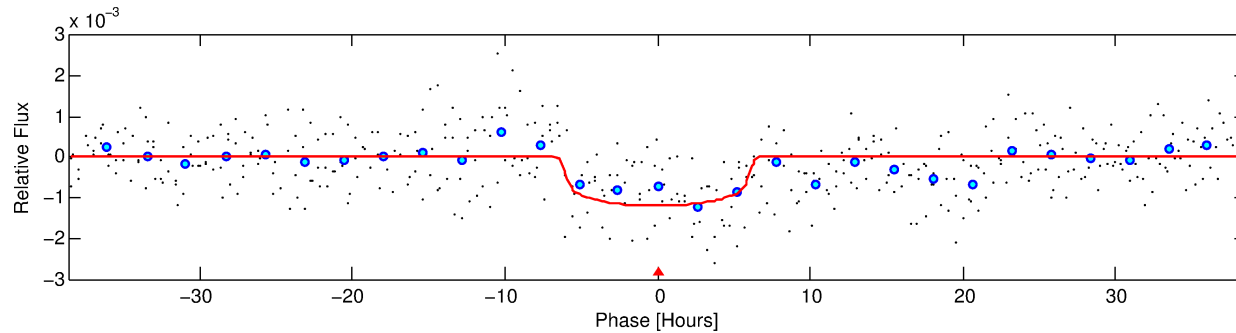
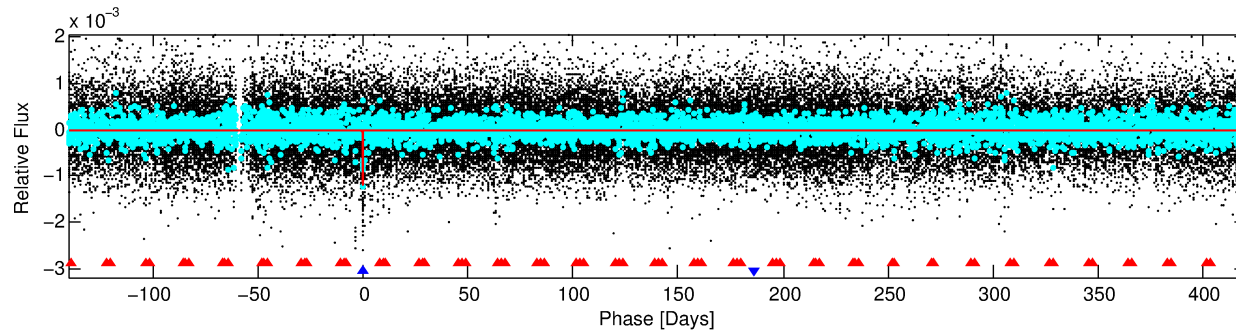
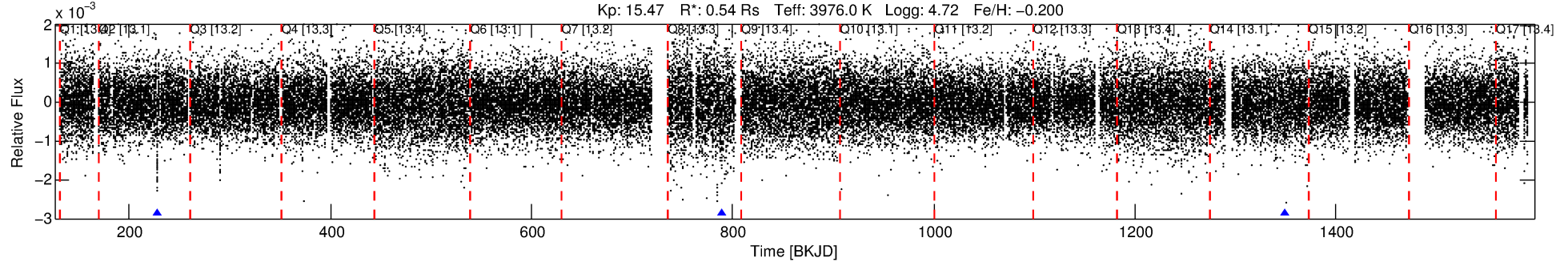
No Significant Match Found

DV One-Page Summary

KIC: 9214942 Candidate: 2 of 2 Period: 561.075 d

KOI: K01403 Corr: No Ephemeris Match

Kp: 15.47 R*: 0.54 Rs Teff: 3976.0 K Logg: 4.72 Fe/H: -0.200



DV Fit Results:

Period = 561.07455 [0.01041] d
Epoch = 227.5600 [0.0132] BKJD
Rp/R* = 0.0333 [0.0084]
a/R* = 269.88 [280.44]
b = 0.64 [0.96]
Seff = 0.05 [0.01]
Teq = 123 [6] K
Rp = 1.96 [0.54] Re
a = 1.0973 [0.0908] AU
Ag = 41775.69 [29306.01] [1.43σ]
Teffp = 2720 [486] K [5.34σ]

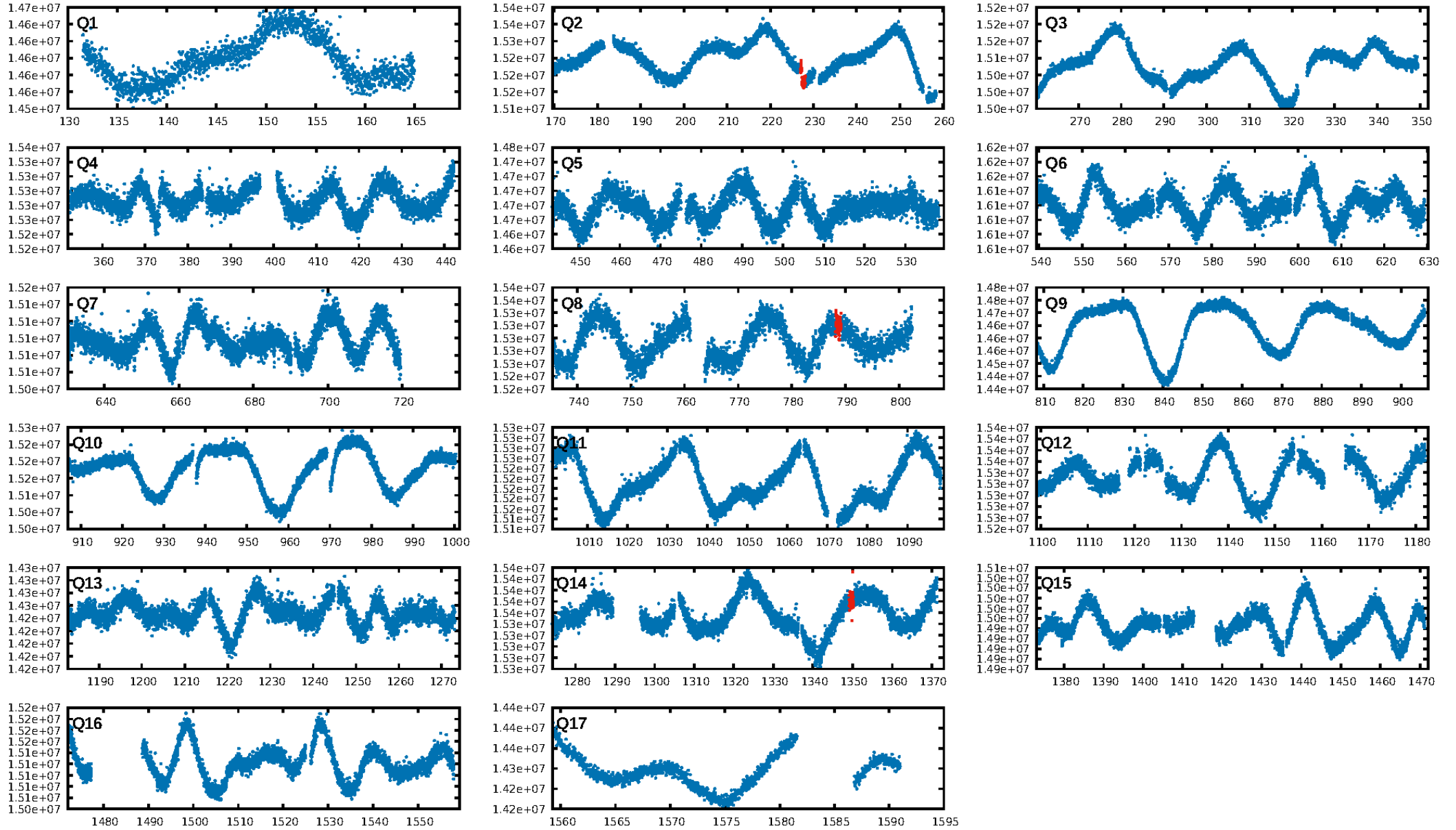
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [982.67σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 91.6%
Bootstrap-pfa: 2.49e-21
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.625
Centroid-sig: 77.7%
Centroid-so: 0.506 arcsec [0.54σ]
OotOffset-rm: 3.184 arcsec [2.41σ]
OotOffset-st: 2/0/0/0 [2]
KicOffset-rm: 3.183 arcsec [2.73σ]
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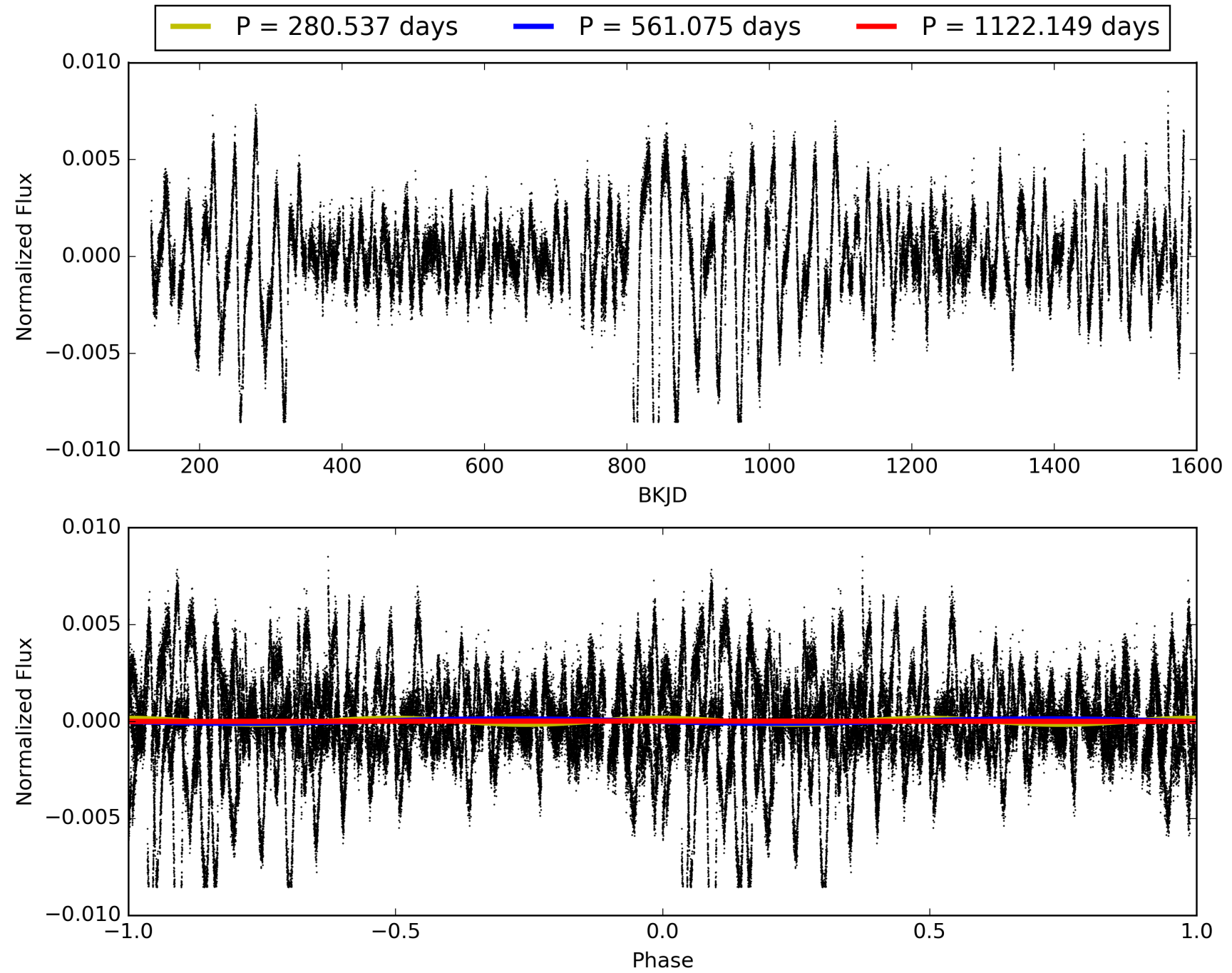
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 17:24:15 Z

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

TCE 009214942-02, PDC Light Curves

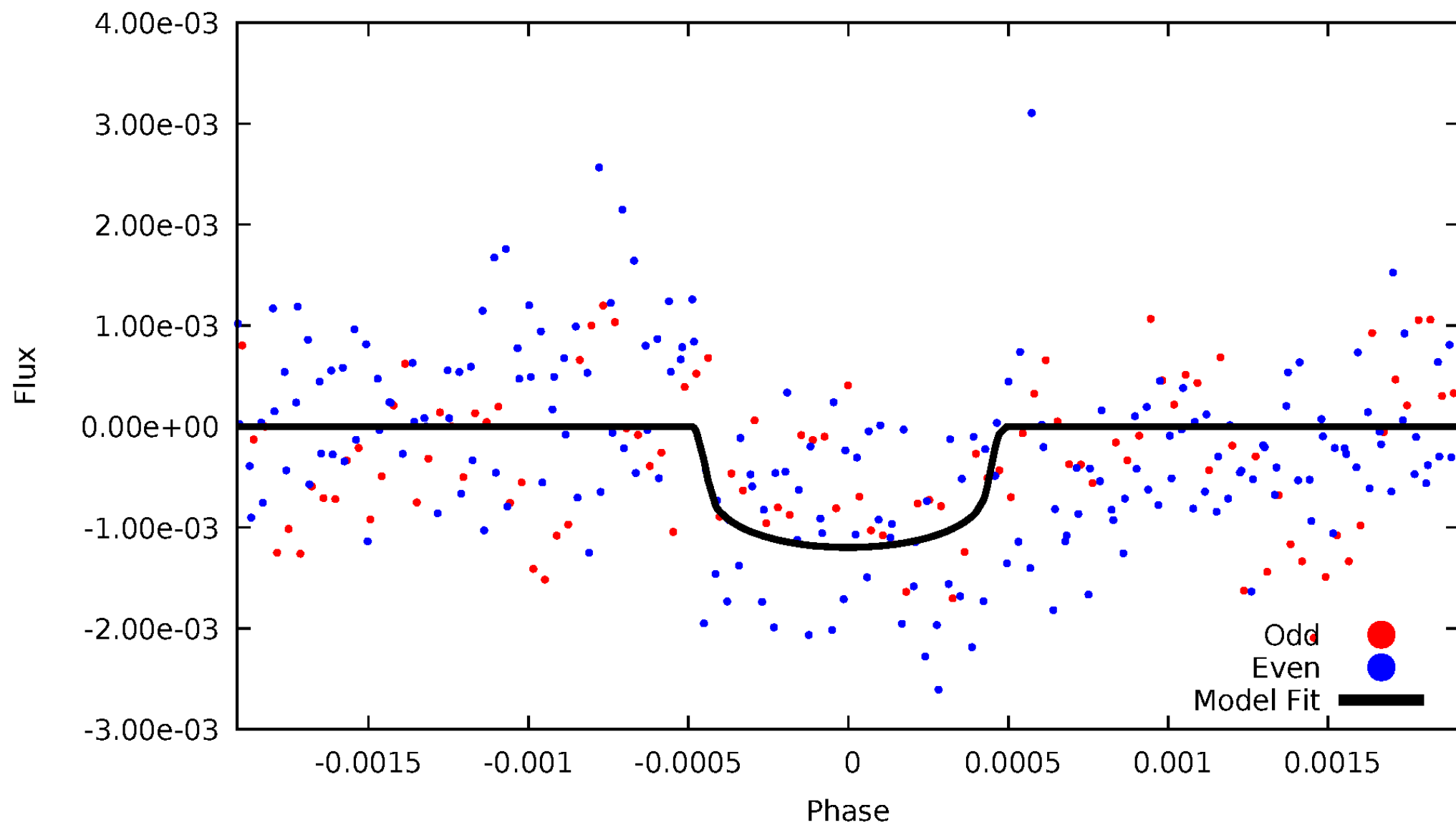


TCE 009214942-02



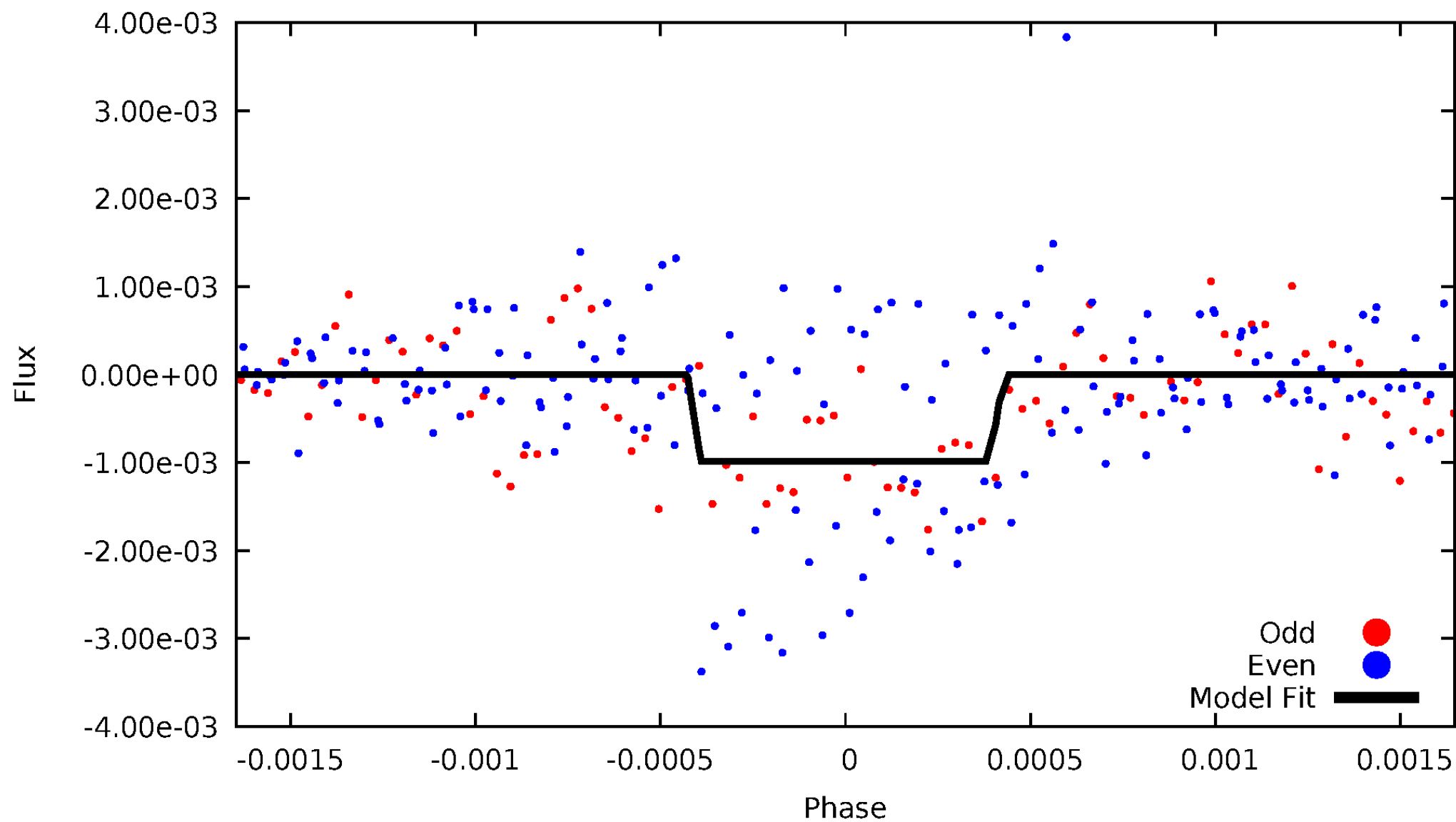
DV Odd/Even

TCE 009214942-02



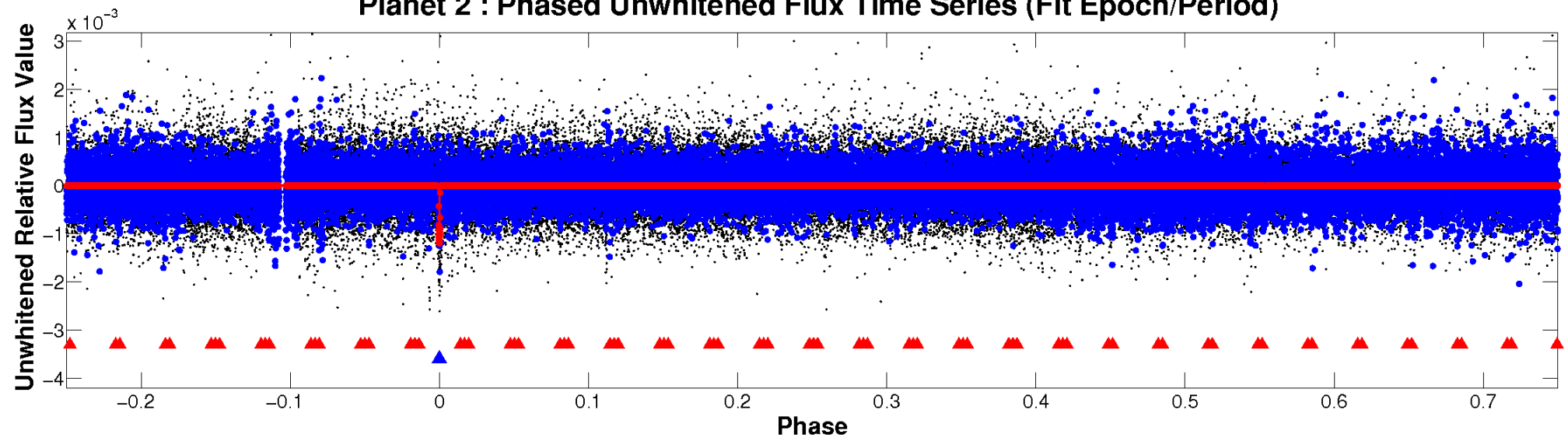
ALT Odd/Even

TCE 009214942-02

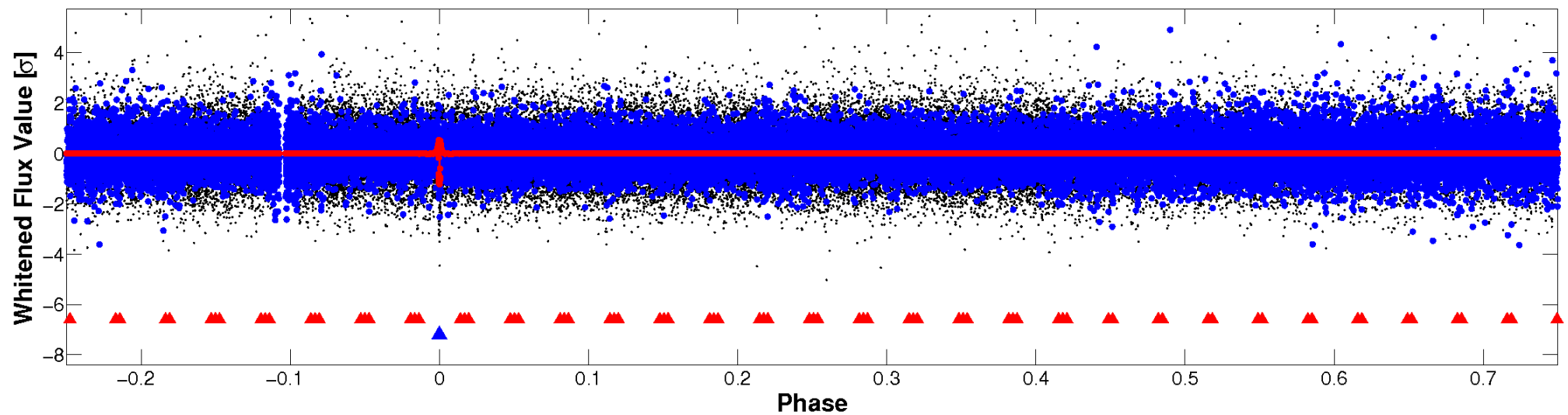


Non-Whitened Vs. Whitened Light Curve

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 009214942-02 P=561.074554 Days $T_0=227.560009$ (BKJD)



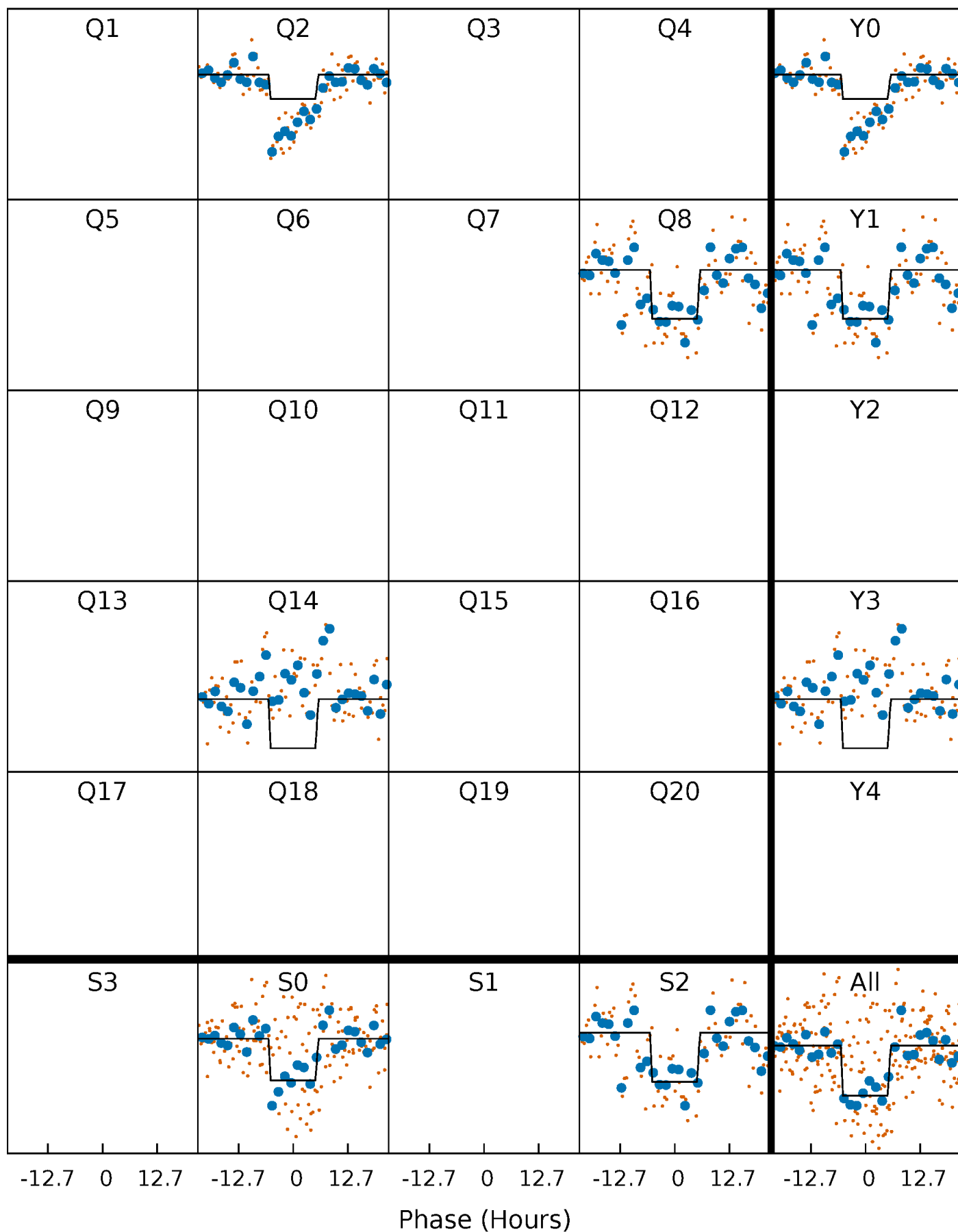
DV Quarter-Phased Transit Curves

TCE 009214942-02 P=561.074554 Days $T_0=227.560009$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

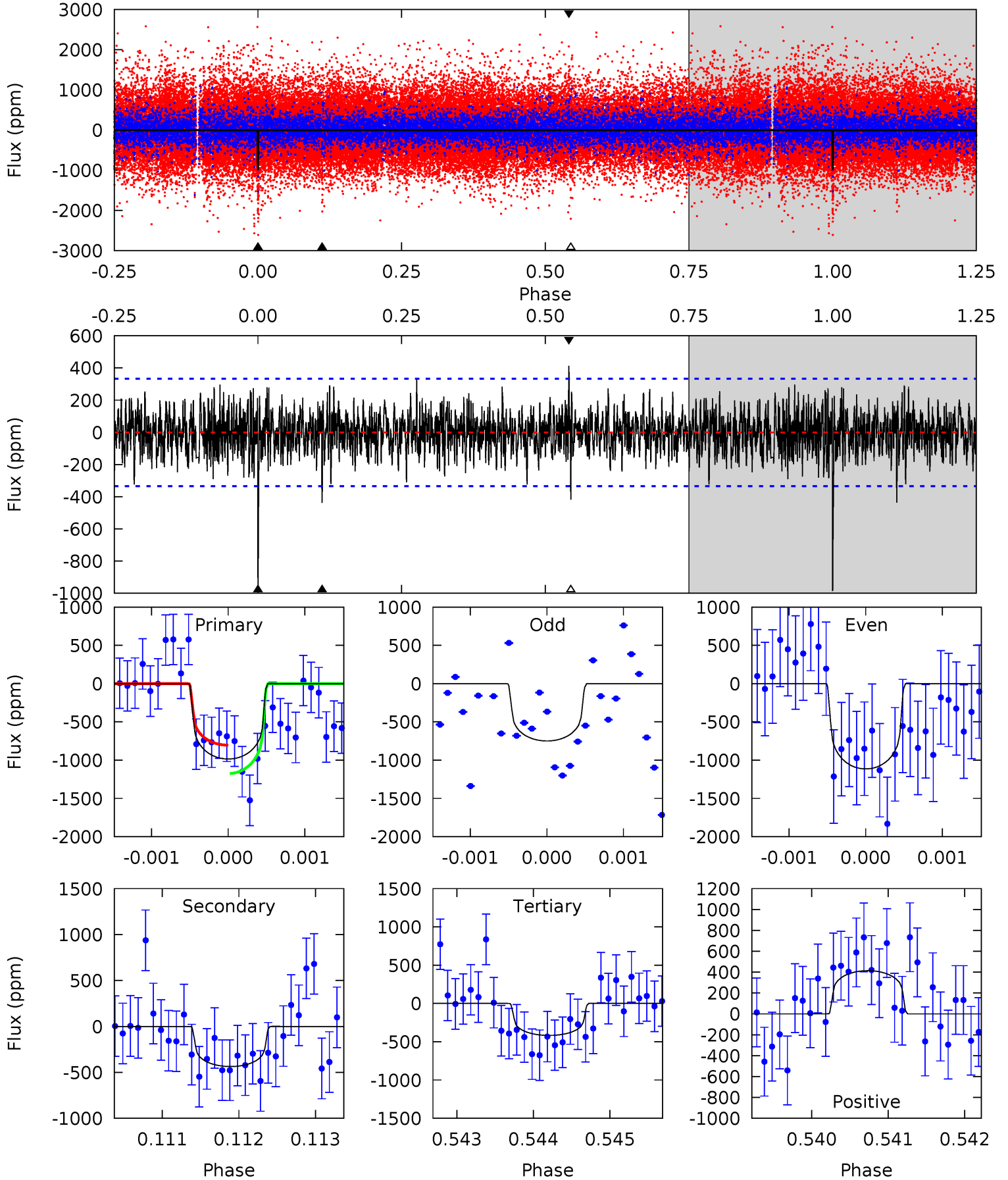
TCE 009214942-02 P=561.085124 Days $T_0=227.525162$ (BKJD)



DV Model-Shift Uniqueness Test

009214942-02, $P = 561.074554$ Days, $E = 227.560009$ Days

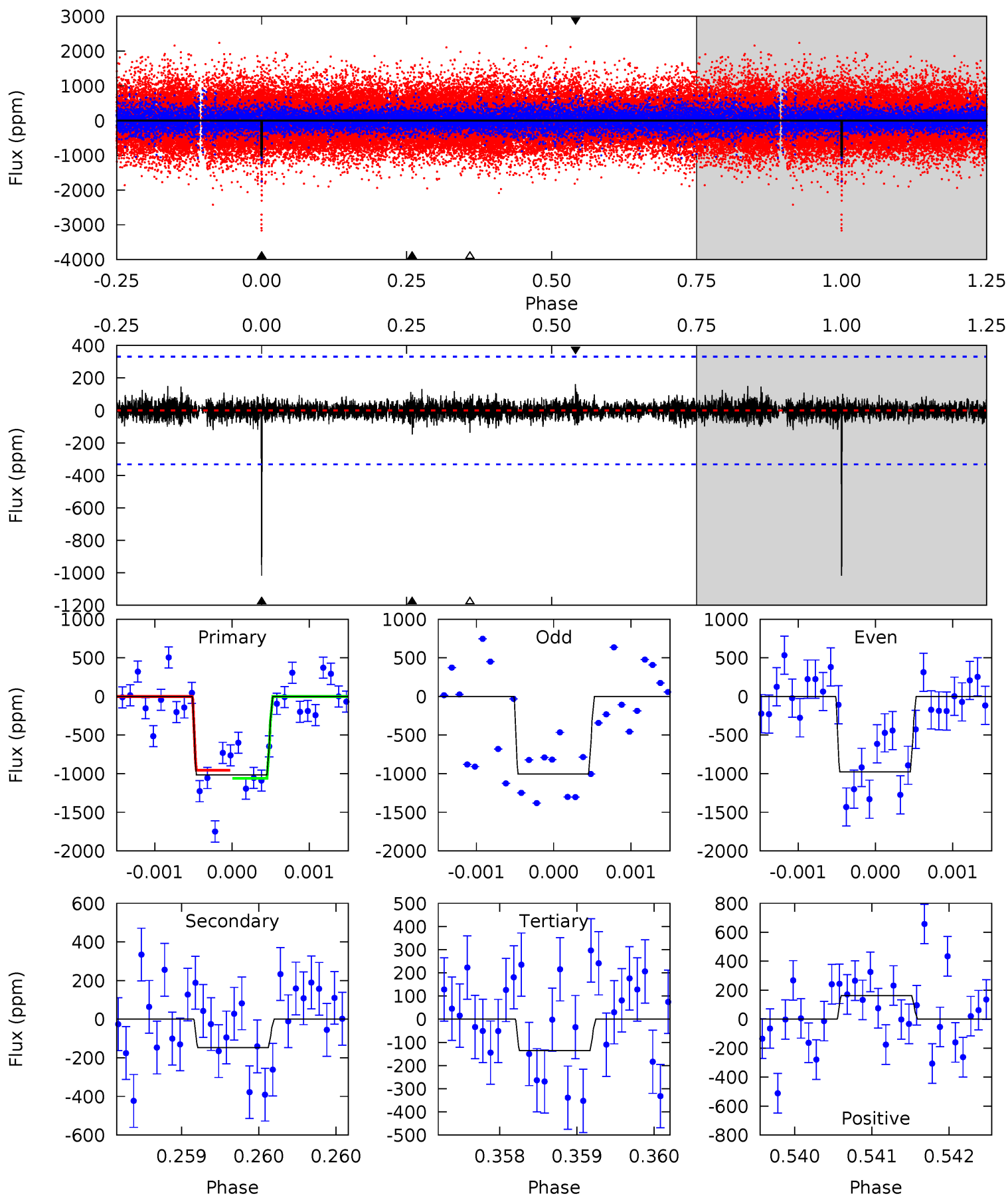
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.1	7.14	6.82	6.76	5.46	3.30	1.64	9.28	9.34	0.31	0.38	2.80	1.32	0.30	3.02



Alt Model-Shift Uniqueness Test

009214942-02, P = 561.085124 Days, E = 227.525162 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.8	2.43	2.25	2.67	5.48	3.34	0.49	14.6	14.1	0.18	-0.25	0.23	0.99	0.14	0.84



Stellar Parameters For KIC 009214942

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	3976^{+159}_{-177}	$4.721^{+0.054}_{-0.041}$	$-0.200^{+0.100}_{-0.100}$	$0.540^{+0.042}_{-0.058}$	$0.559^{+0.040}_{-0.055}$	$5.002^{+1.327}_{-0.809}$
	+4%/-4%	+1%/-1%	+50%/-50%	+8%/-11%	+7%/-10%	+27%/-16%
Source	SPE5	SPE5	SPE5	DSEP		

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

Secondary Eclipse Parameters for KIC 009214942-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-437 ± 61	$1.97^{+0.49}_{-0.51}$	171^{+8}_{-8}	3405^{+403}_{-253}	77085^{+63874}_{-29246}
Alt.	-147 ± 60	$1.84^{+0.49}_{-0.53}$	171^{+8}_{-8}	2941^{+349}_{-295}	27989^{+31514}_{-14213}

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

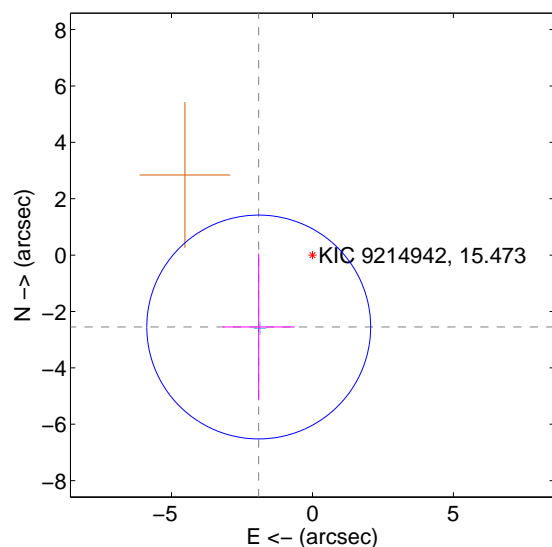
Supplemental centroid analysis for 009214942-02. Kepler magnitude: 15.47. Transit SNR 10.01

There are 1 quarters with good PRF difference image offsets

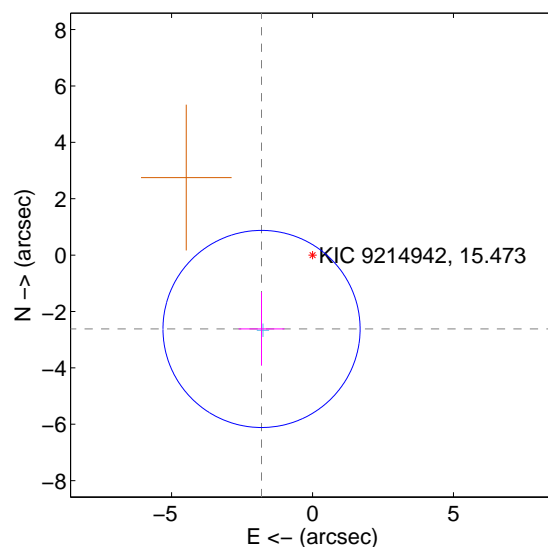
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.184 ± 1.323	2.41	1.905 ± 1.279	-2.551 ± 2.605
PRF-fit source offset from KIC position	3.183 ± 1.165	2.73	1.808 ± 0.813	-2.620 ± 1.300
photometric centroid source offset	0.51 ± 0.94	0.54	-0.04 ± 0.86	-0.50 ± 0.94

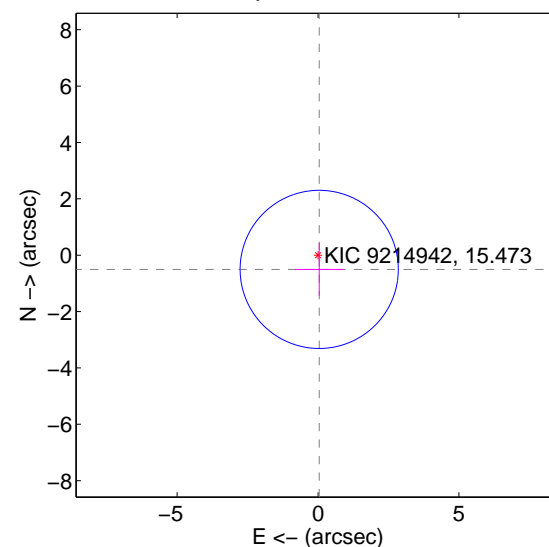
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

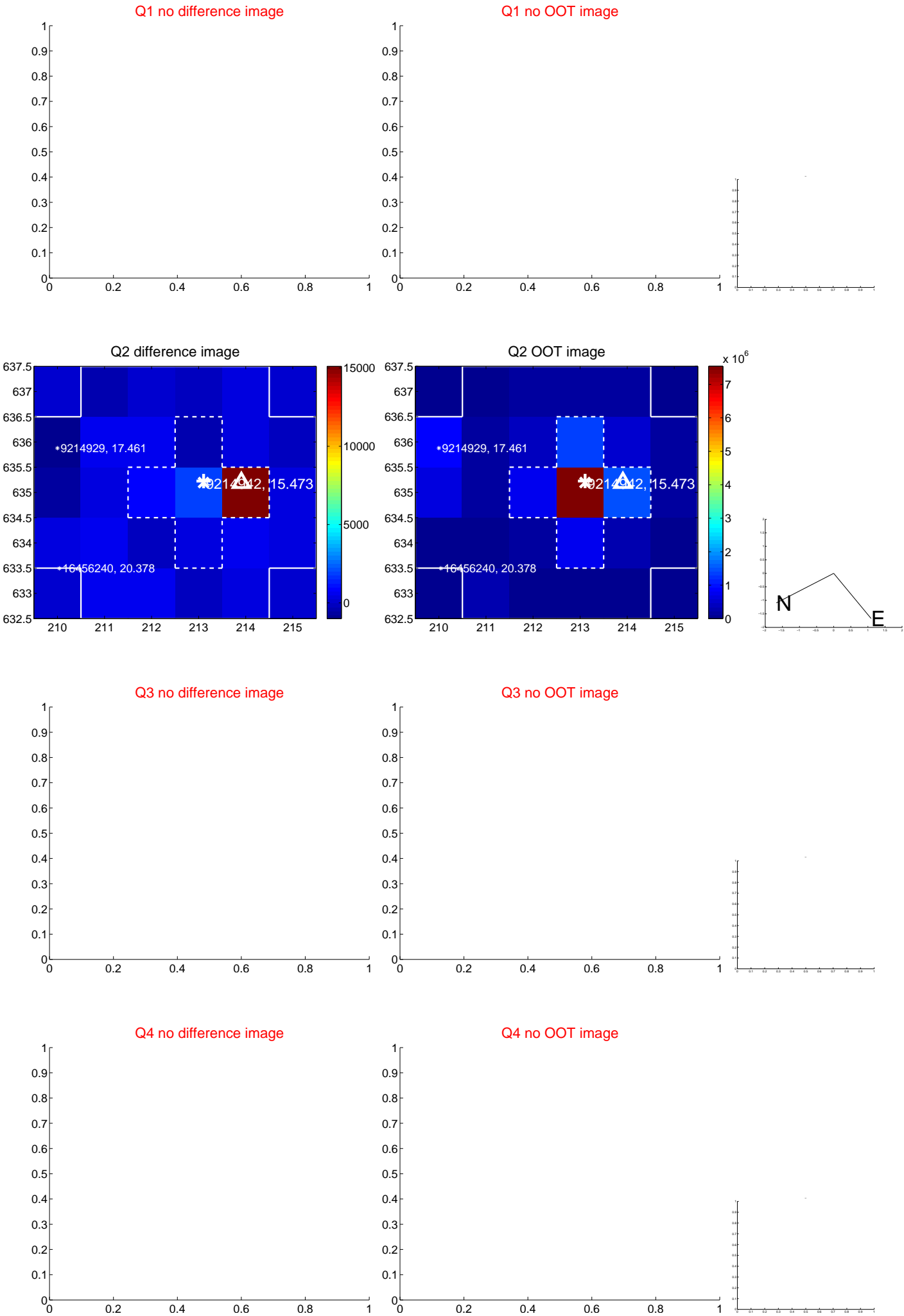


offset from photometric centroids

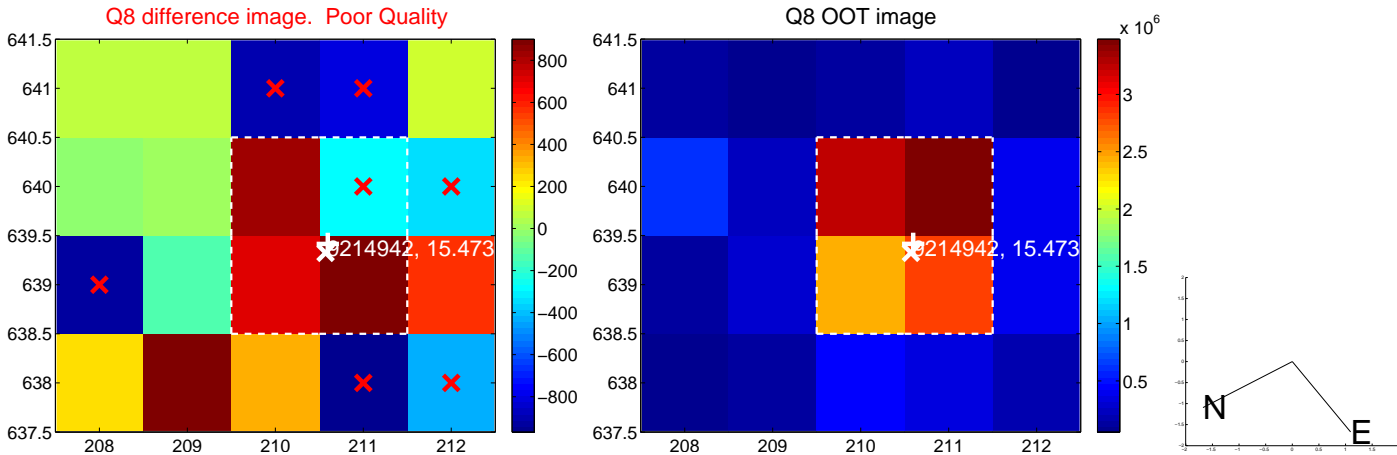
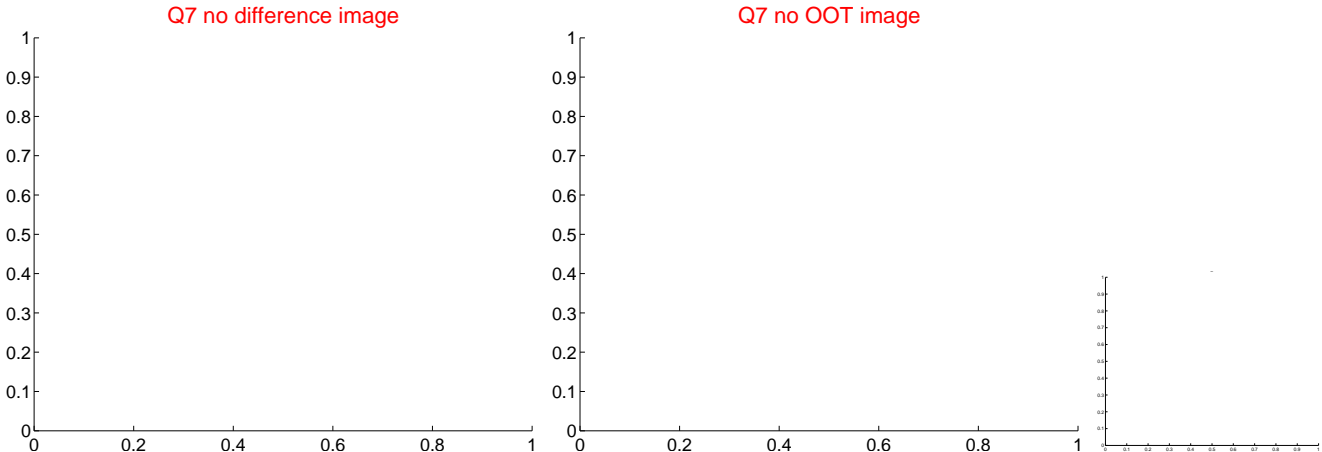
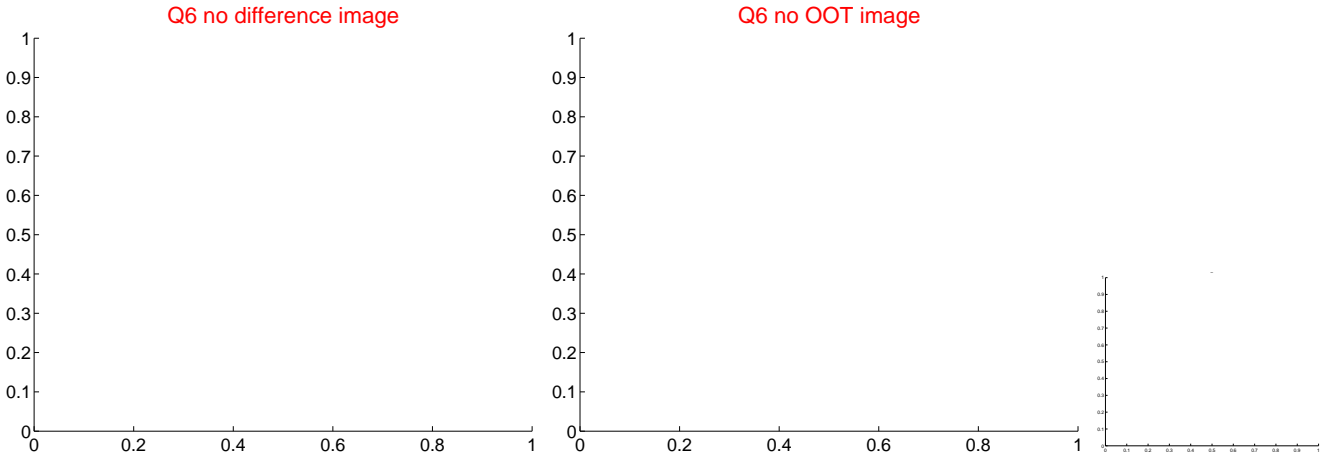
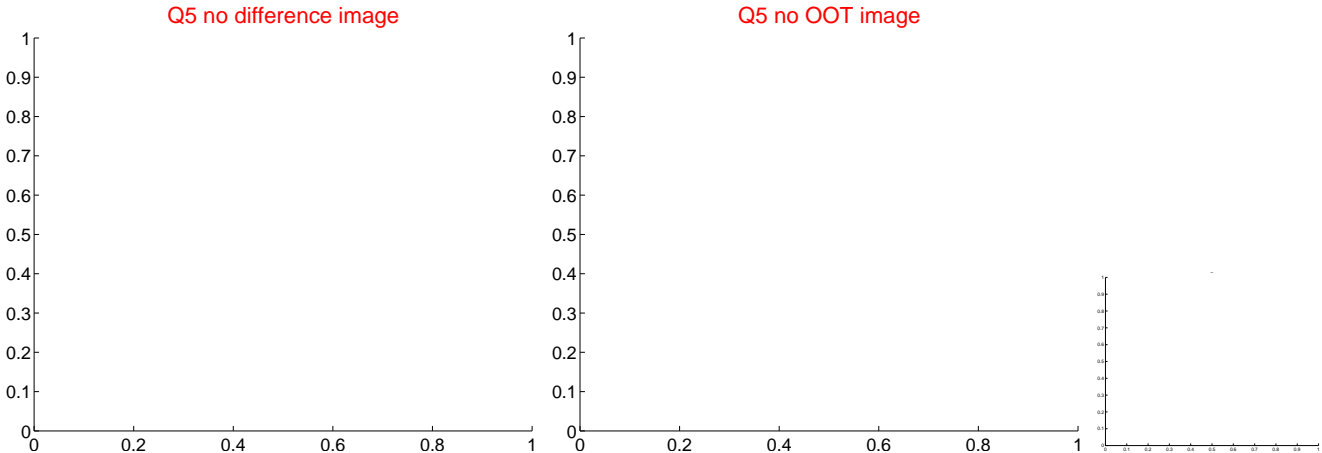


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



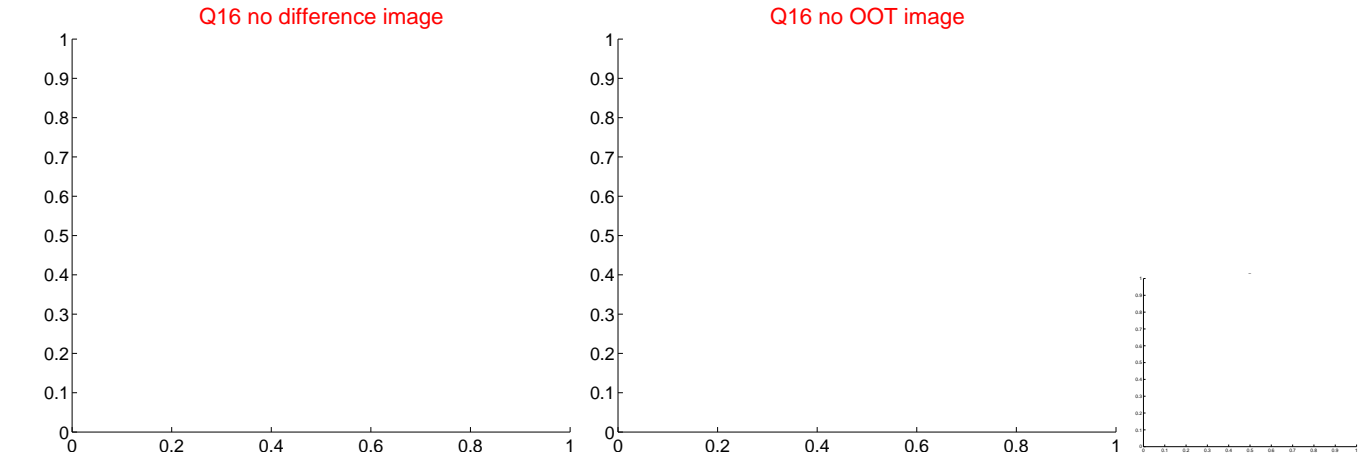
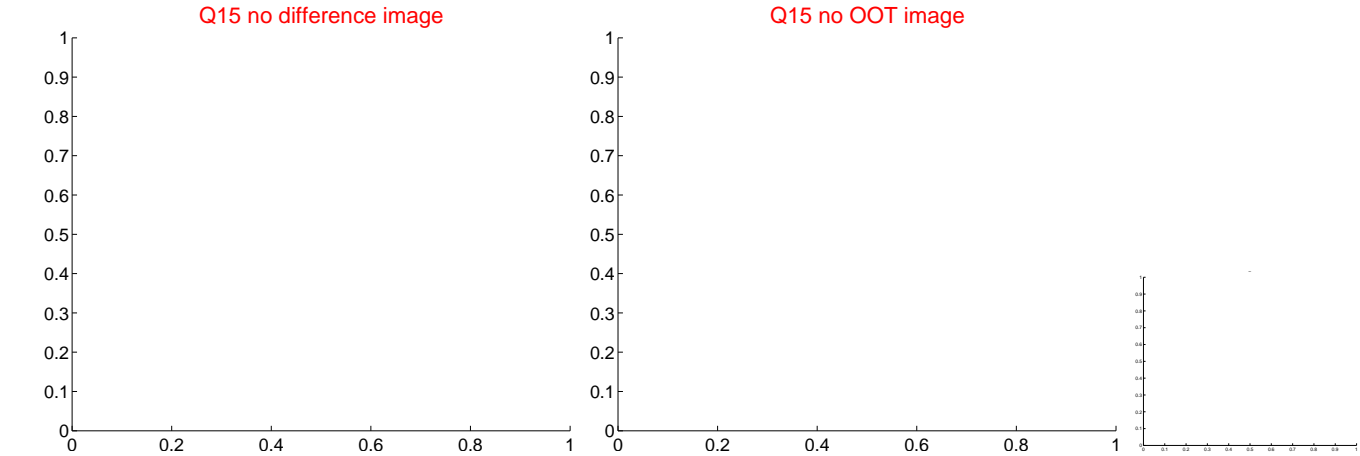
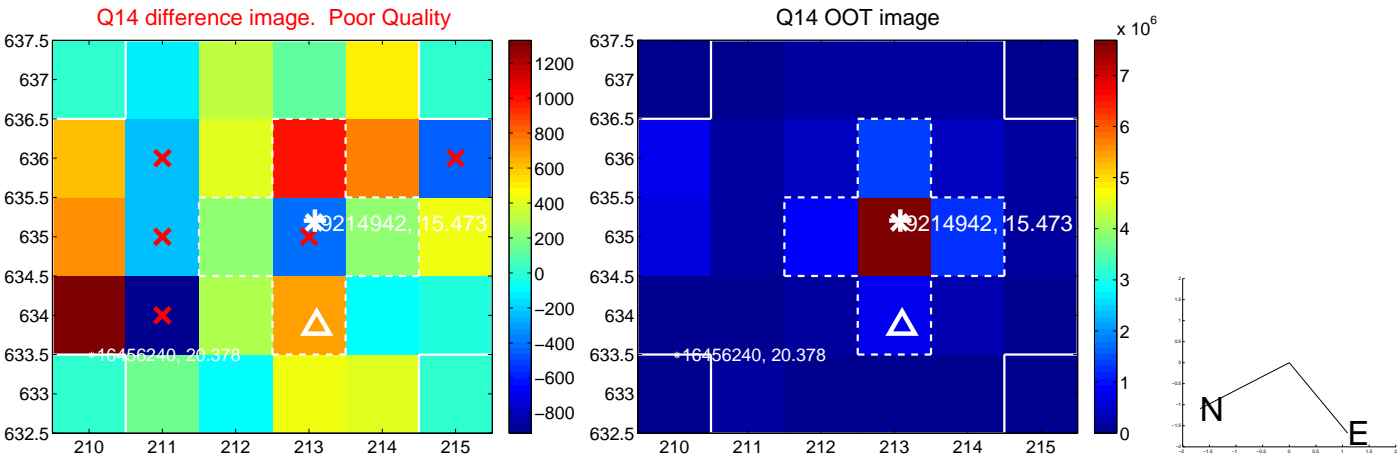
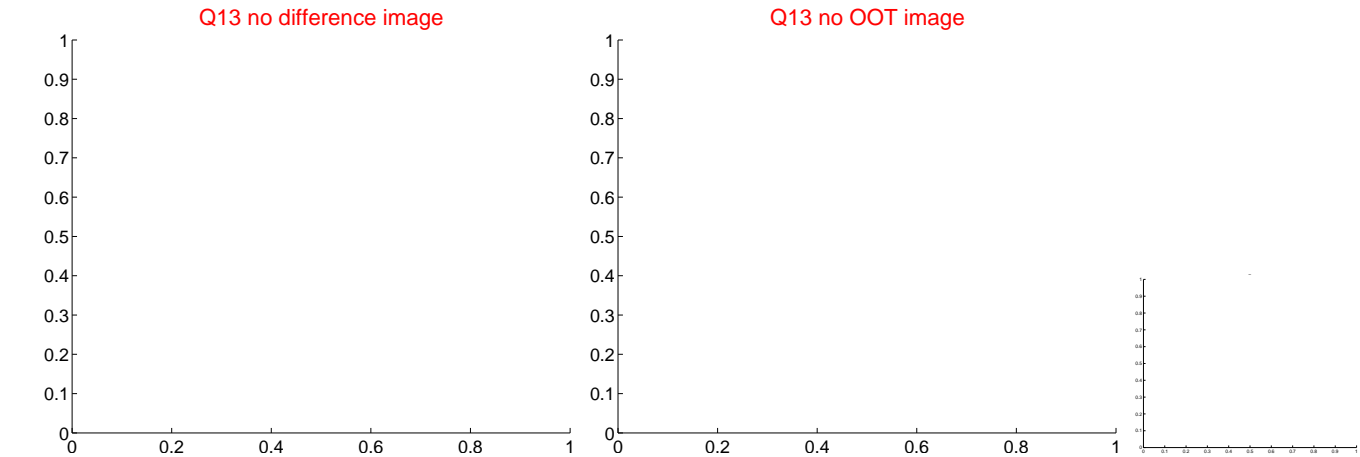
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



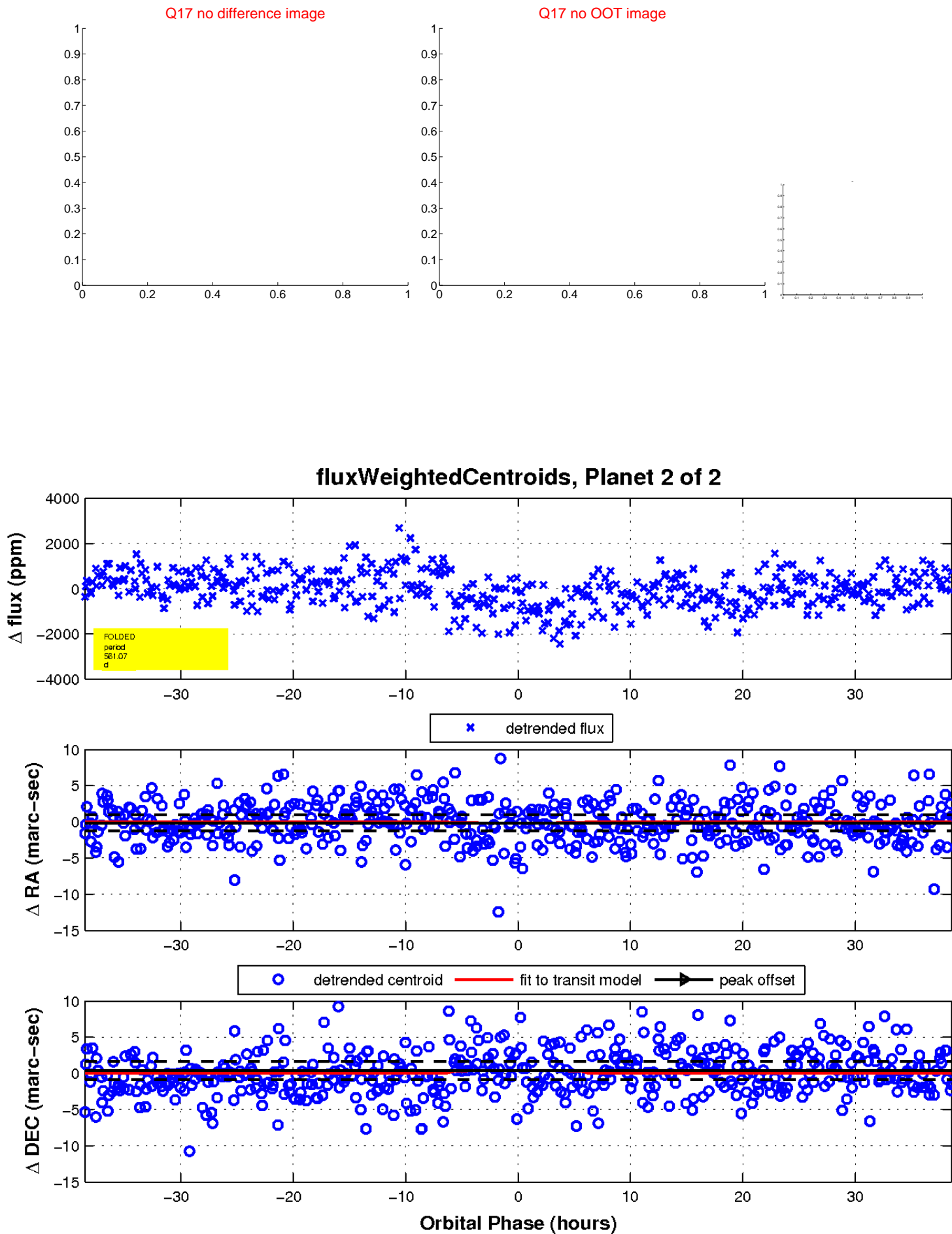
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

