

KIC 009340955

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})
009340955-01	OBS	No	0.536564	132.020021	39.0	2.821	7.4	8.3	0.99	6002	0.71	7131.27
009340955-02	OBS	No	203.208961	140.287850	1405.8	2.490	7.7	6.0	0.99	6002	3.99	2.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009340955-01	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—EPHEM_MATCH
009340955-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST

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.

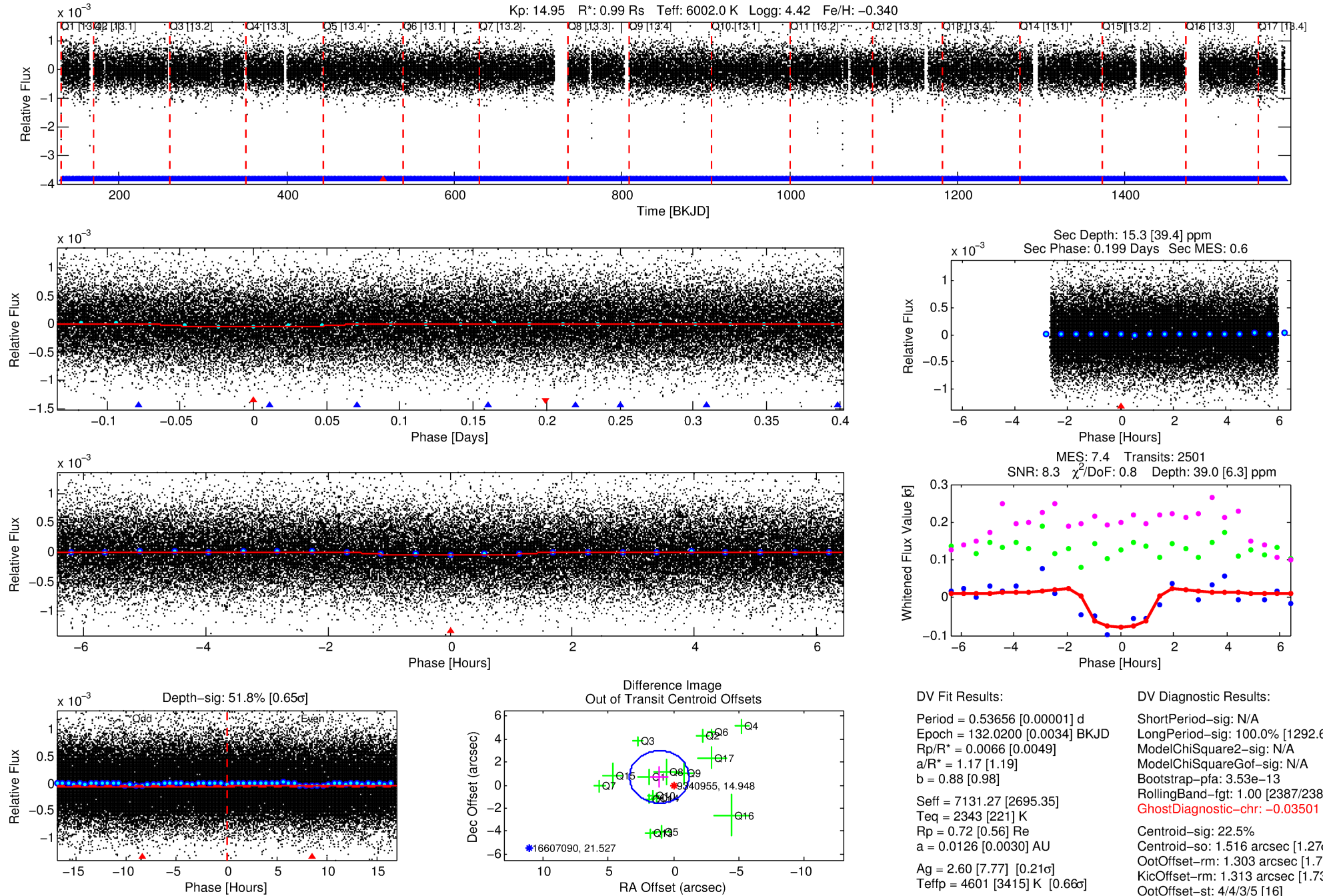
Ephemeris Match Information For 009340955-01

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist ($''$)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
009340955-01	9340955	V2281-Cyg-pri	9402652	1:2	240.8	38	48	11.82	14.94	9462.60	Direct-PRF	0	3.29	0.26

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 9340955 Candidate: 1 of 2 Period: 0.537 d



DV Fit Results:

Period = 0.53656 [0.00001] d
Epoch = 132.0200 [0.0034] BKJD
Rp/R* = 0.0066 [0.0049]
a/R* = 1.17 [1.19]
b = 0.88 [0.98]
Seff = 7131.27 [2695.35]
Teq = 2343 [221] K
Rp = 0.72 [0.56] Re
a = 0.0126 [0.0030] AU
Ag = 2.60 [7.77] [0.21 σ]
Teffp = 4601 [3415] K [0.66 σ]

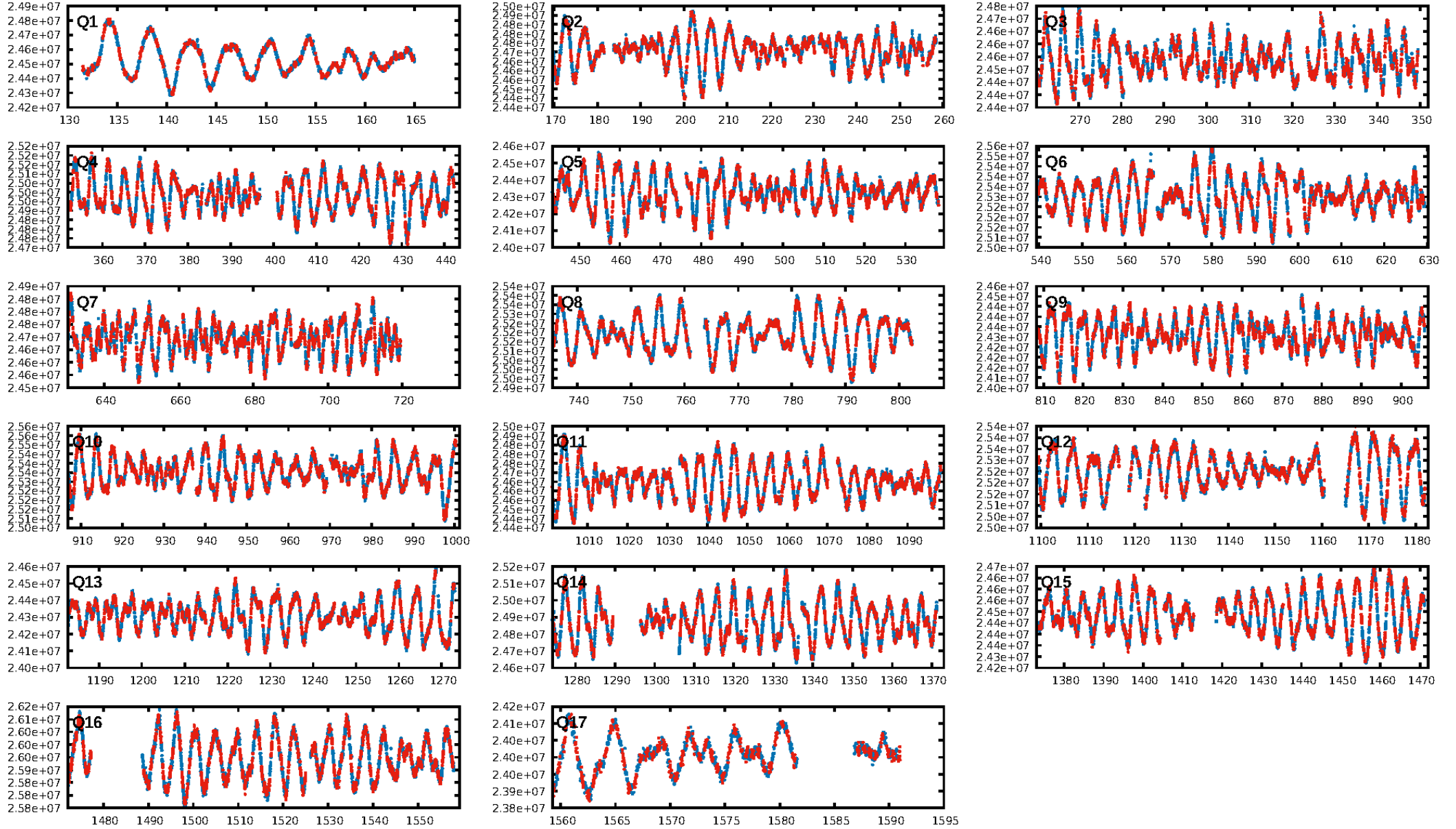
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1292.62 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.53e-13
RollingBand-fgt: 1.00 [2387/2388]
GhostDiagnostic-chr: -0.03501
Centroid-sig: 22.5%
Centroid-so: 1.516 arcsec [1.27 σ]
OotOffset-rm: 1.303 arcsec [1.72 σ]
KicOffset-rm: 1.313 arcsec [1.73 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
DiffImageQuality-fgm: 0.06 [1/16]
DiffImageOverlap-fno: 1.00 [17/17]

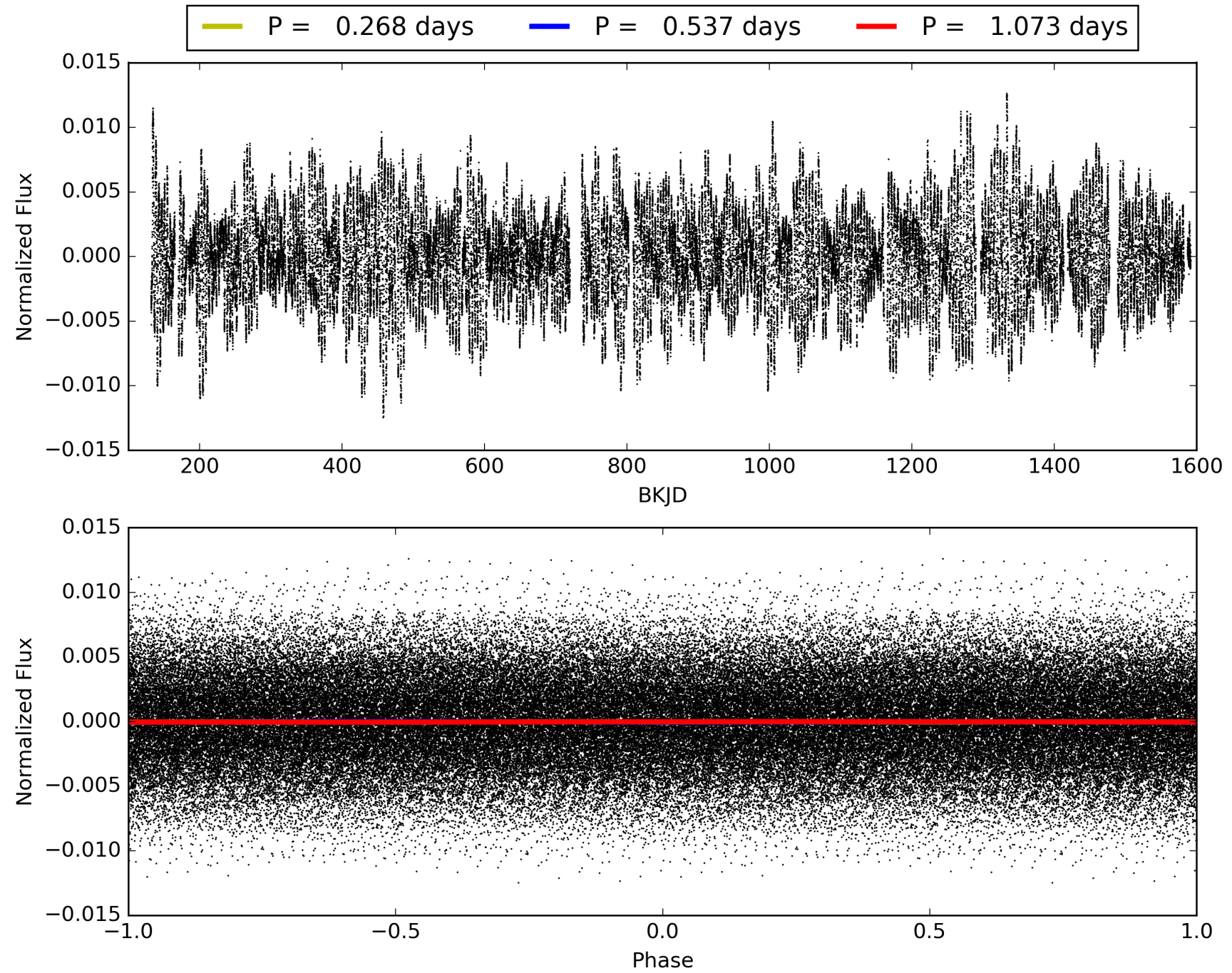
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:42:56 Z

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

TCE 009340955-01, PDC Light Curves

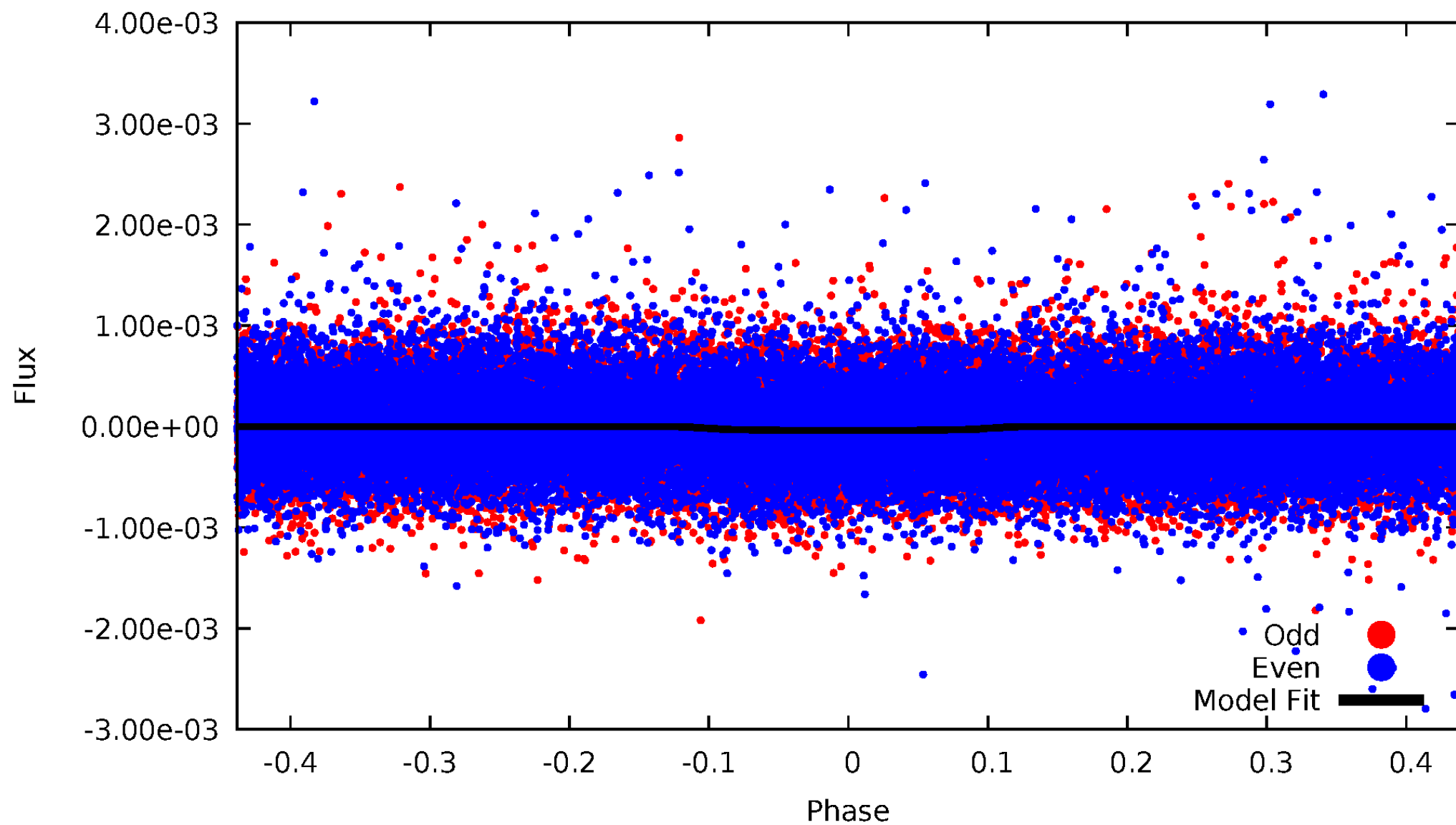


TCE 009340955-01



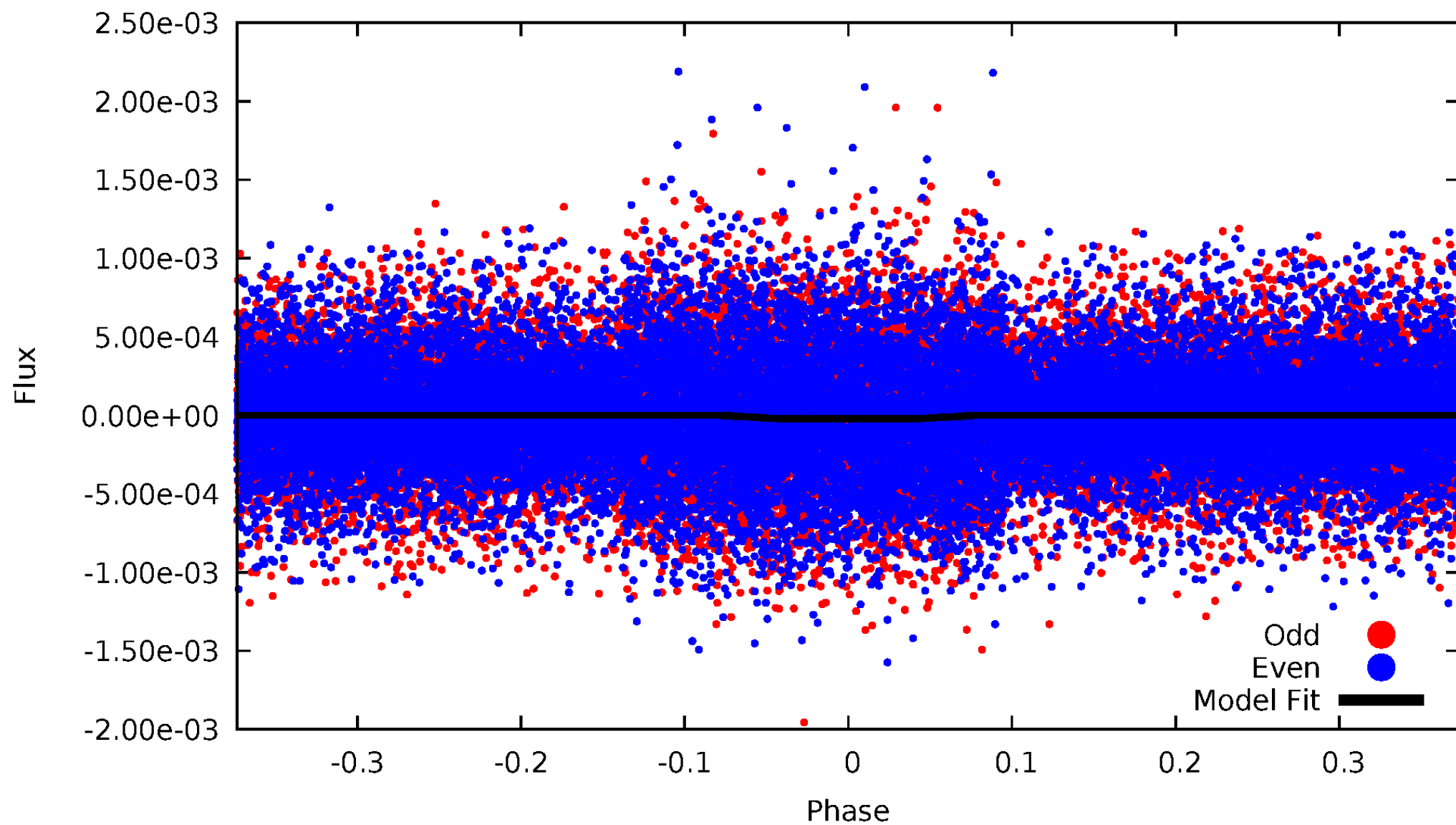
DV Odd/Even

TCE 009340955-01



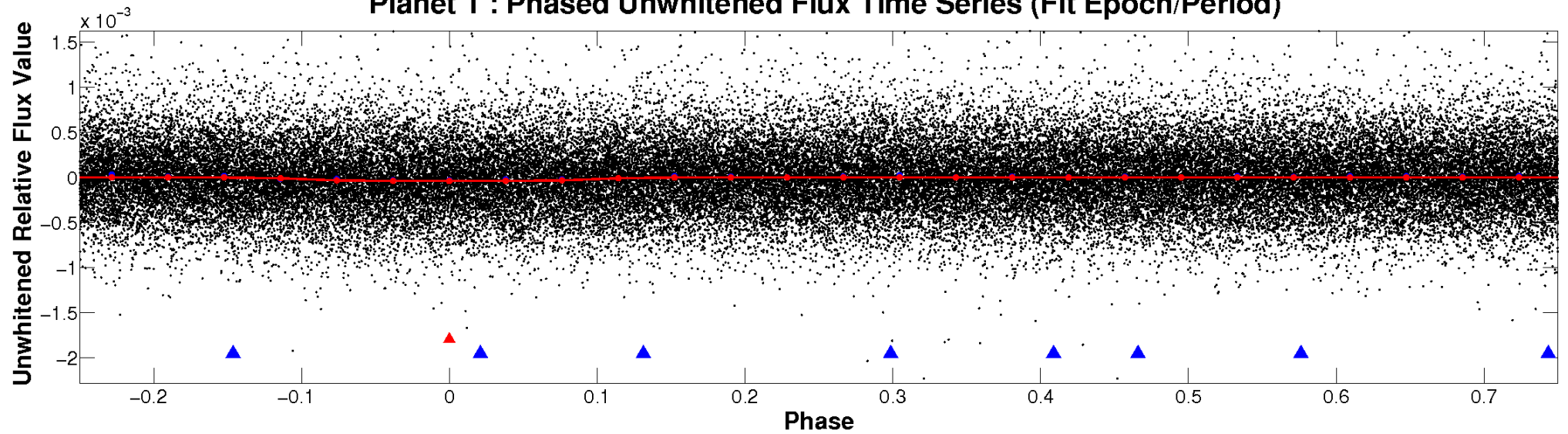
ALT Odd/Even

TCE 009340955-01

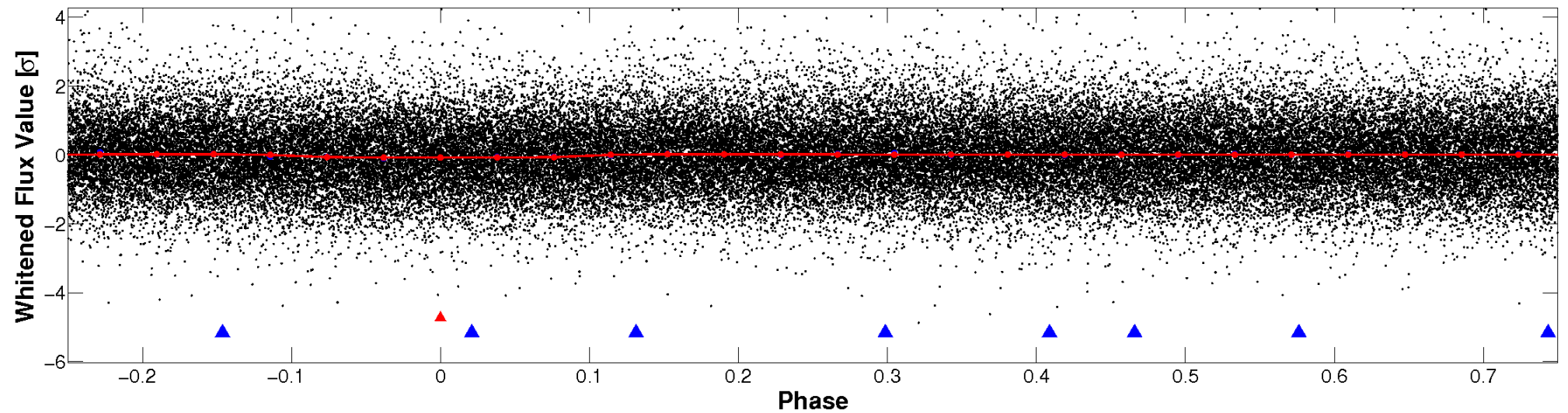


Non-Whitened Vs. Whitened Light Curve

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

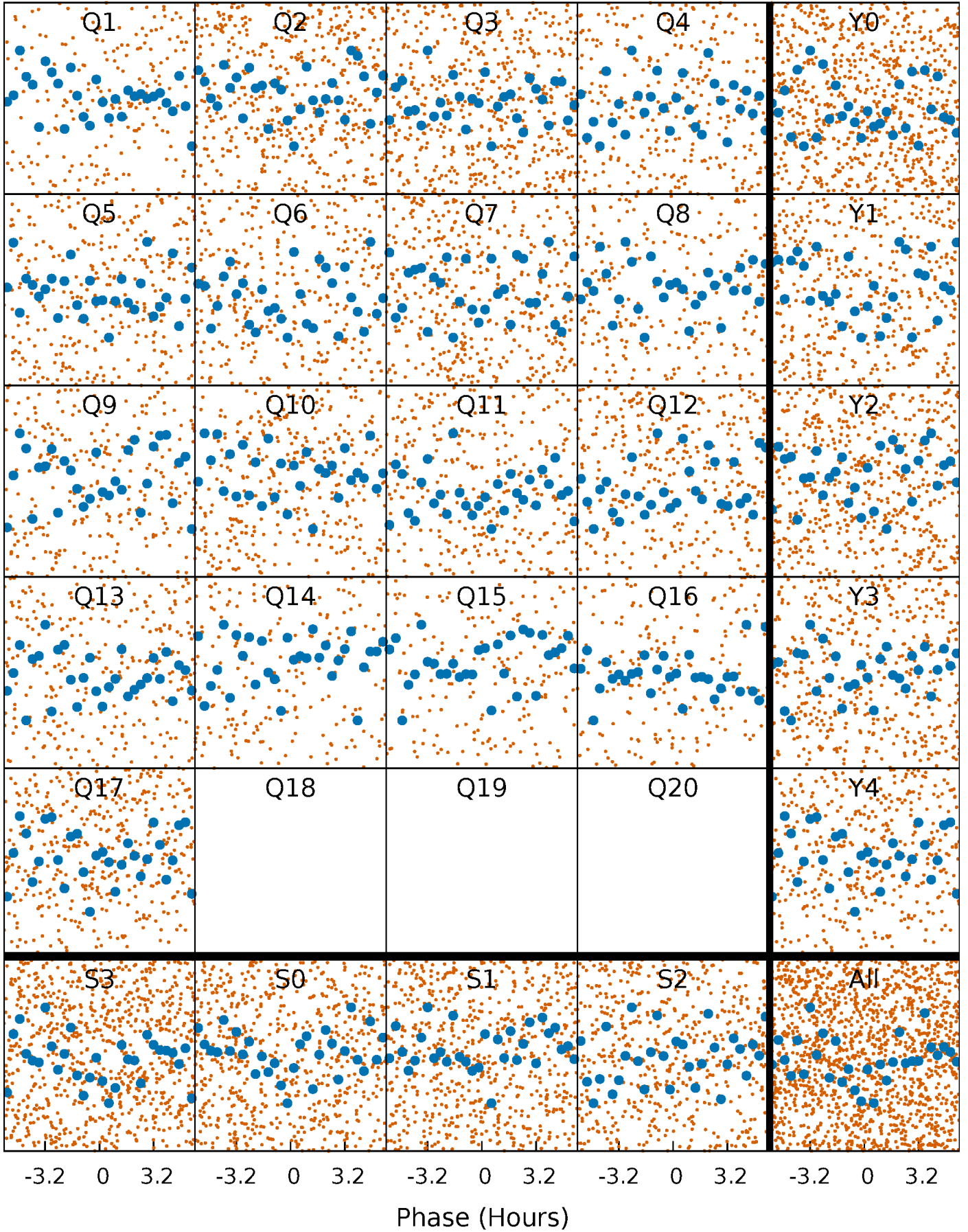


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



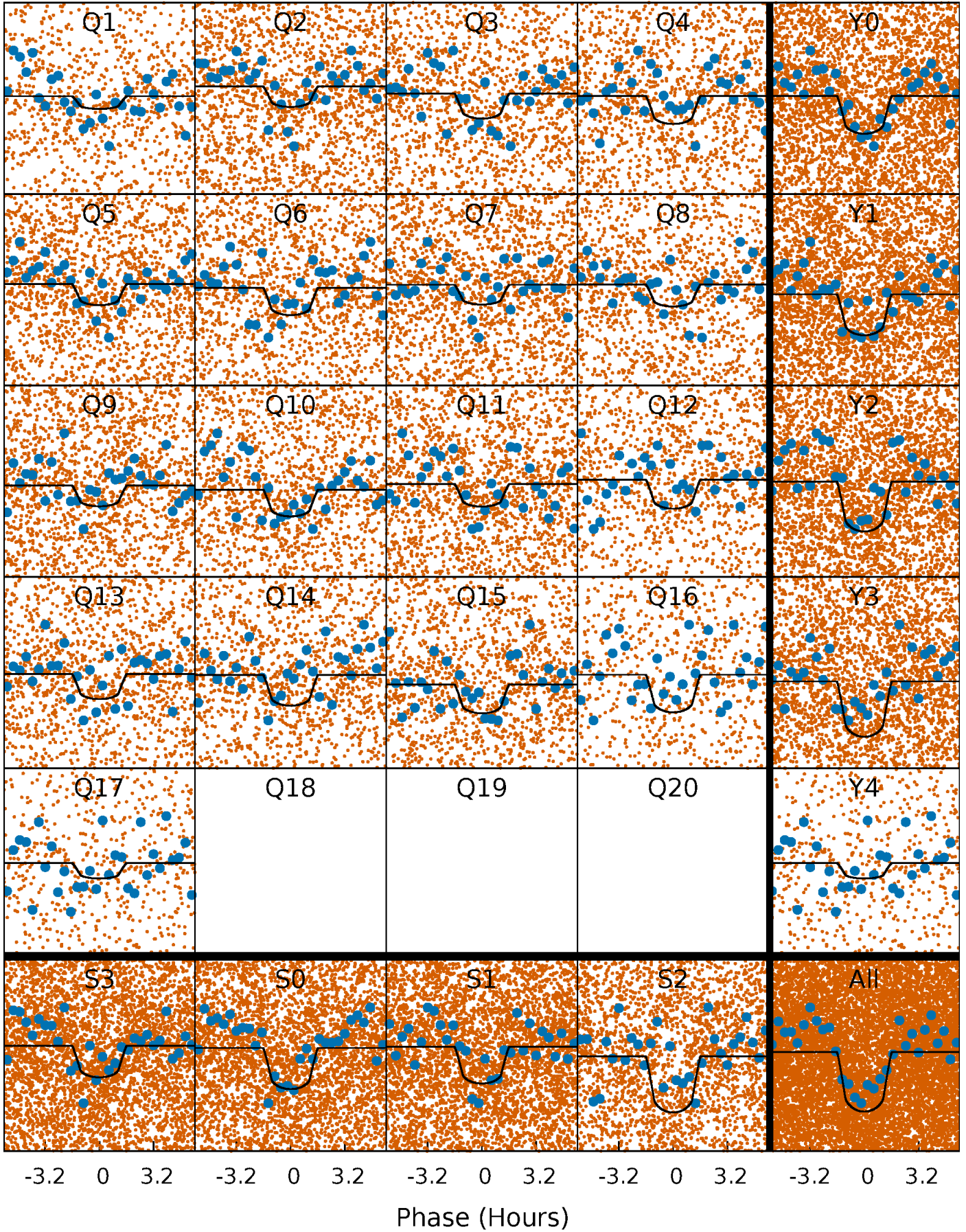
PDC Quarter-Phased Transit Curves

TCE 009340955-01 P= 0.536564 Days $T_0=132.020021$ (BKJD)



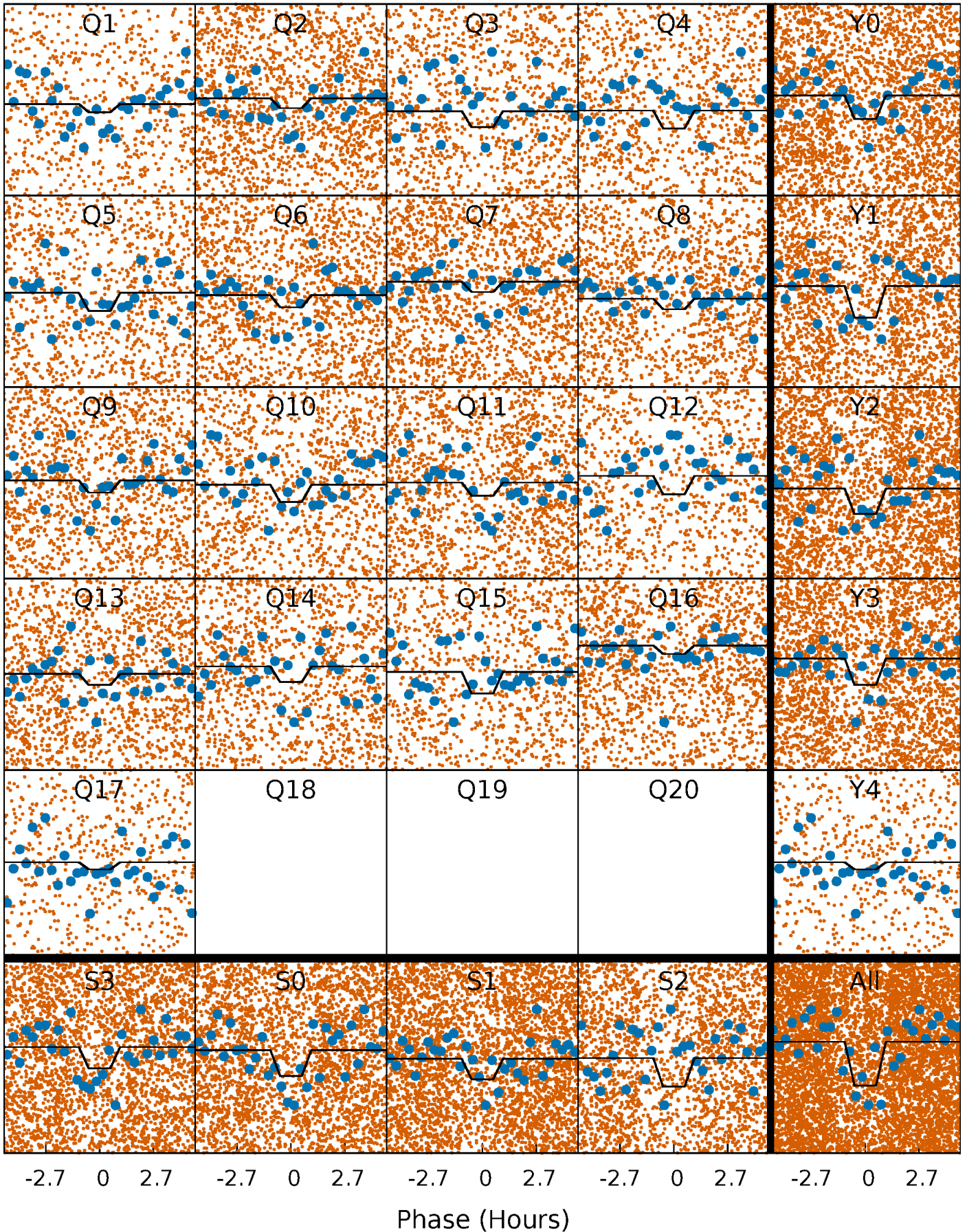
DV Quarter-Phased Transit Curves

TCE 009340955-01 P= 0.536564 Days $T_0=132.020021$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

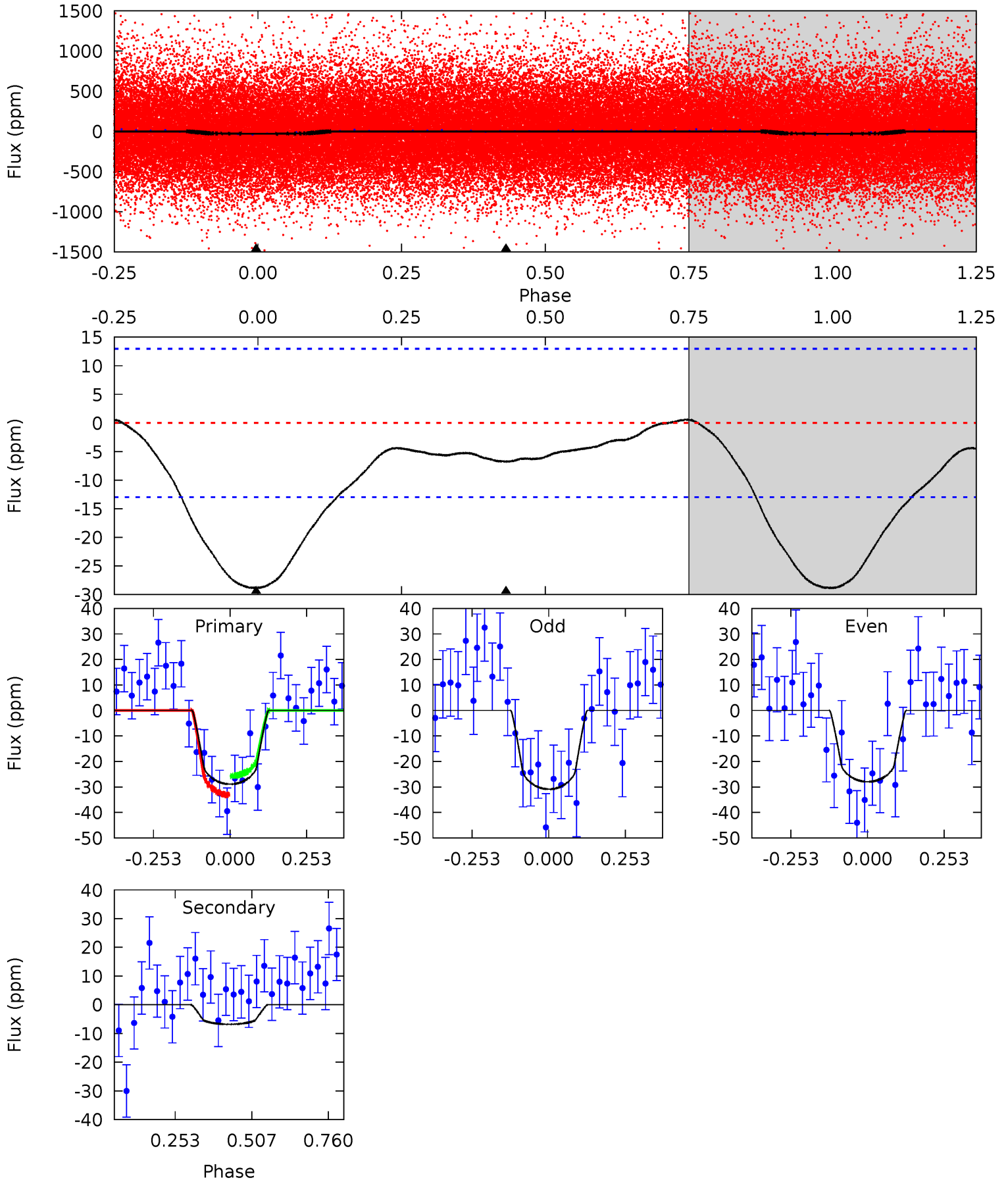
TCE 009340955-01 P= 0.536550 Days $T_0=132.013962$ (BKJD)



DV Model-Shift Uniqueness Test

009340955-01, P = 0.536564 Days, E = 131.483457 Days

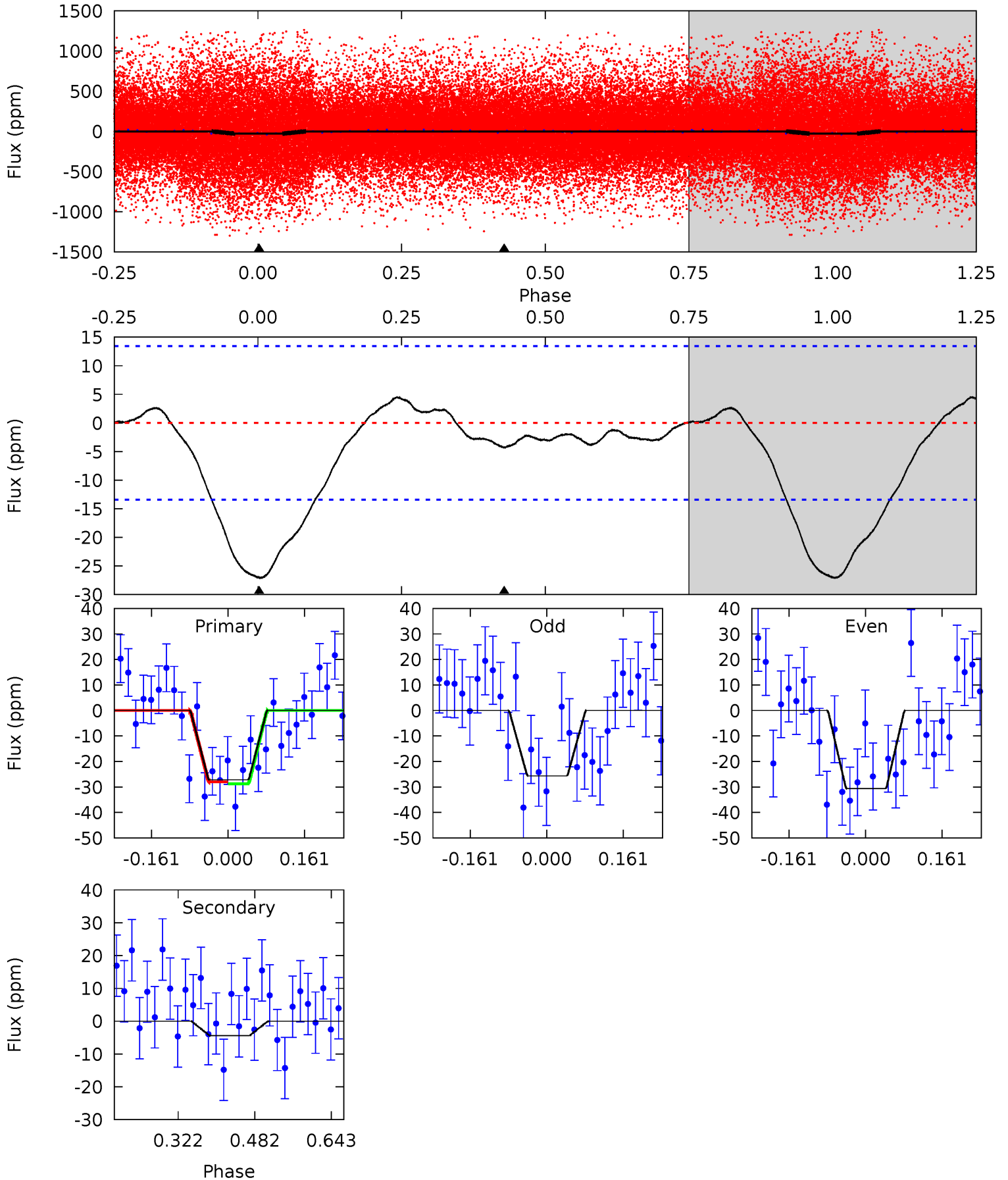
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.73	2.29	0	0	4.37	1.14	0.23	9.73	9.73	2.29	2.29	0.49	0.79	0.02	1.27



Alt Model-Shift Uniqueness Test

009340955-01, P = 0.536550 Days, E = 131.477412 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.04	1.46	0	0	4.46	1.40	0.77	9.04	9.04	1.46	1.46	0.83	0.68	0.14	0.12



Stellar Parameters For KIC 009340955

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6002^{+162}_{-198}	$4.416^{+0.105}_{-0.195}$	$-0.340^{+0.300}_{-0.300}$	$0.986^{+0.280}_{-0.151}$	$0.924^{+0.118}_{-0.107}$	$1.357^{+0.717}_{-0.669}$
	+3%/-3%	+2%/-4%	+88%/-88%	+28%/-15%	+13%/-12%	+53%/-49%
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 009340955-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-7 ± 3	$0.79^{+0.53}_{-0.46}$	3296^{+243}_{-175}	3653^{+1800}_{-5964}	$0.906^{+4.177}_{-0.626}$
Alt.	-4 ± 3	$0.63^{+0.50}_{-0.40}$	3319^{+238}_{-188}	3554^{+2148}_{-6520}	$0.797^{+5.207}_{-0.637}$

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

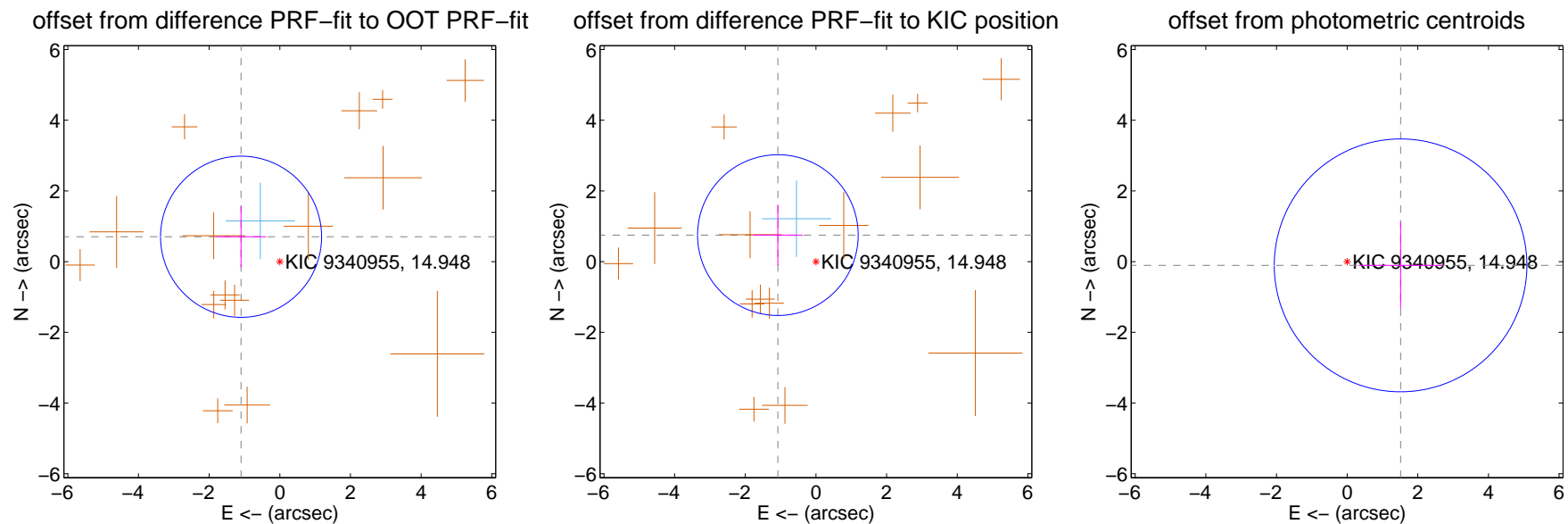
DV Centroid Data

Supplemental centroid analysis for 009340955-01. Kepler magnitude: 14.95. Transit SNR 8.27

There are 1 quarters with good PRF difference image offsets

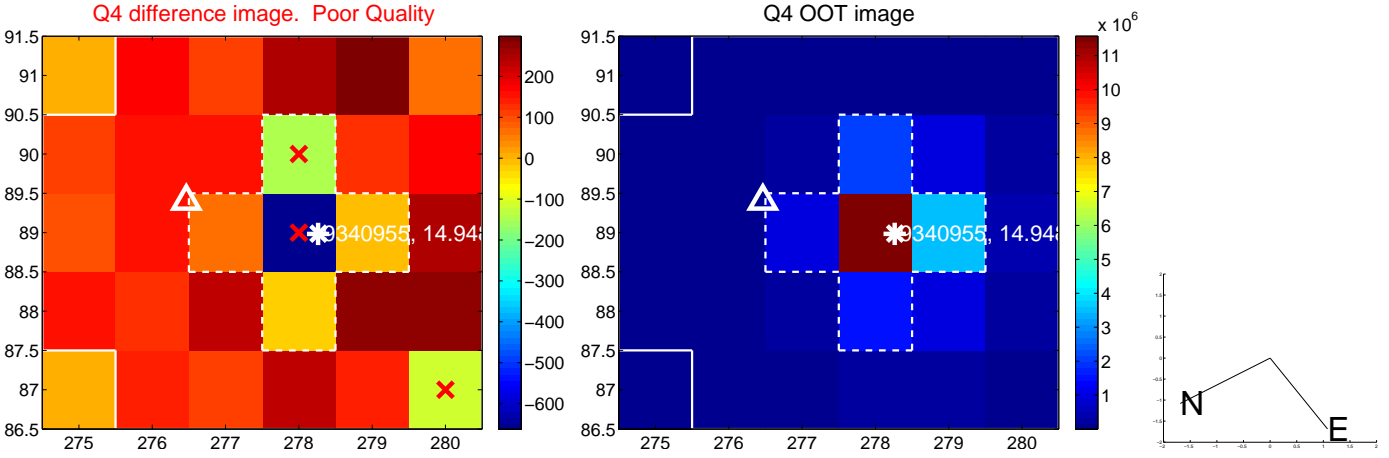
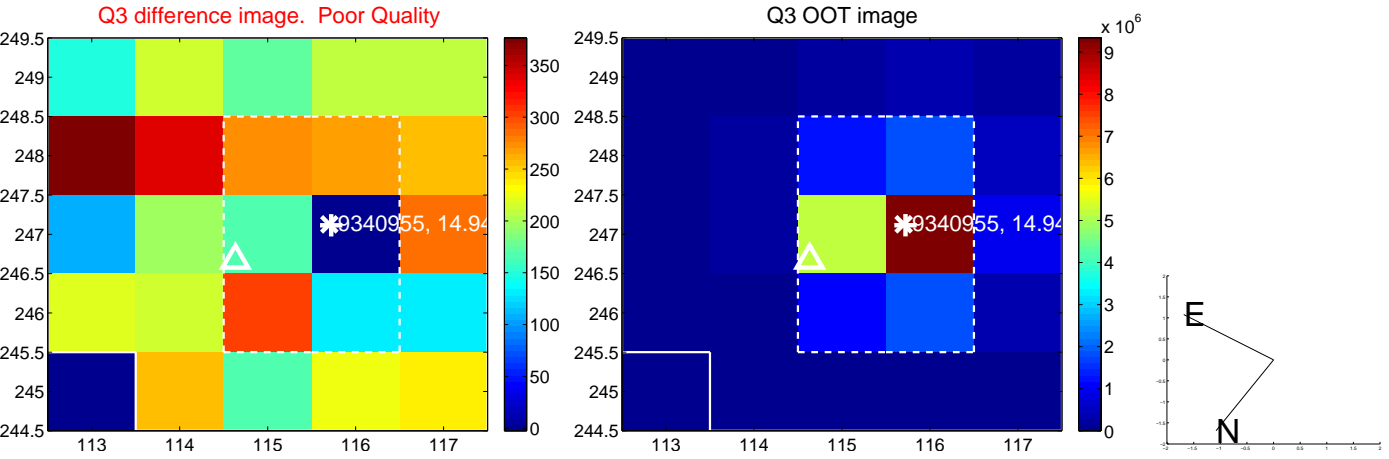
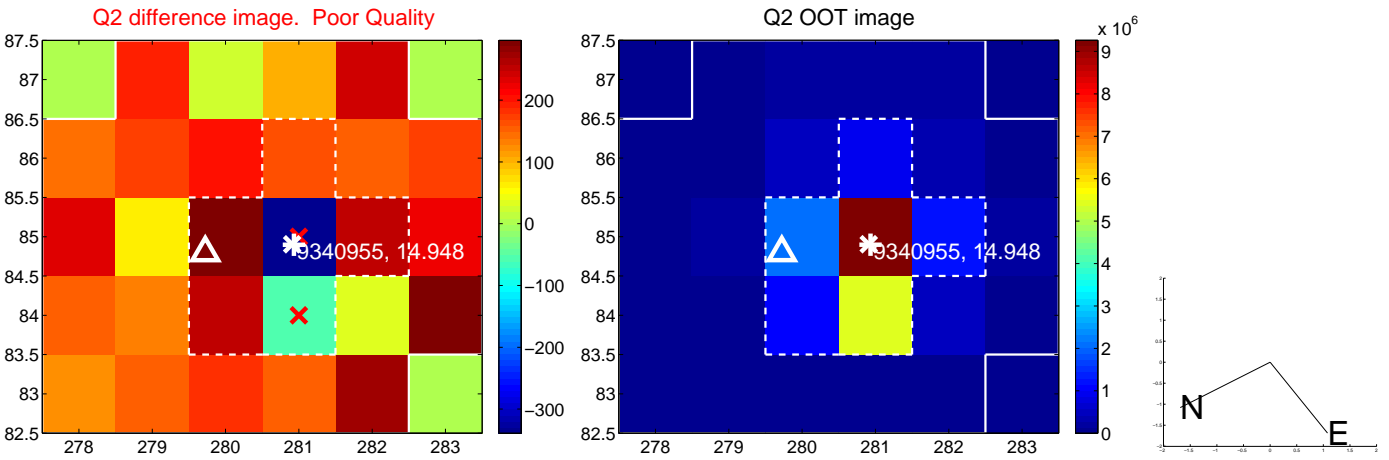
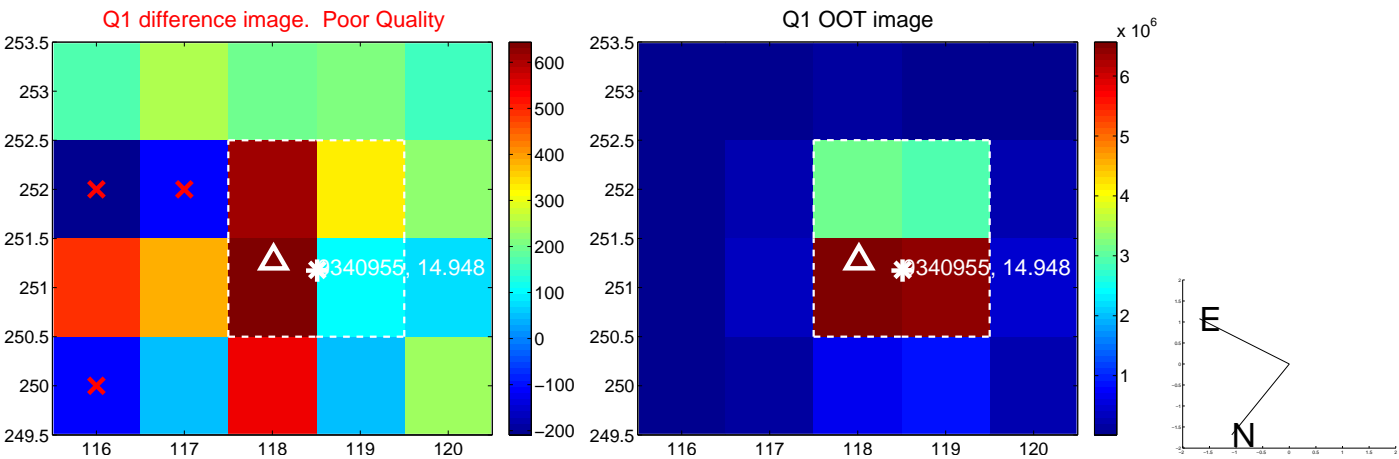
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.303 ± 0.760	1.72	1.096 ± 0.713	0.704 ± 0.863
PRF-fit source offset from KIC position	1.313 ± 0.758	1.73	1.077 ± 0.703	0.751 ± 0.859
photometric centroid source offset	1.52 ± 1.19	1.27	-1.51 ± 1.19	-0.11 ± 1.21

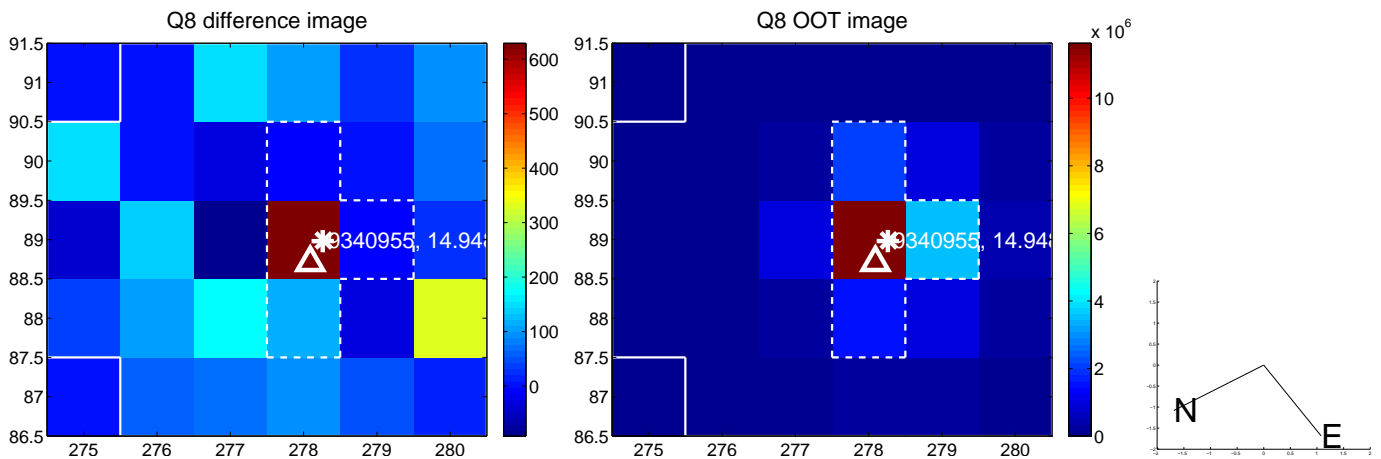
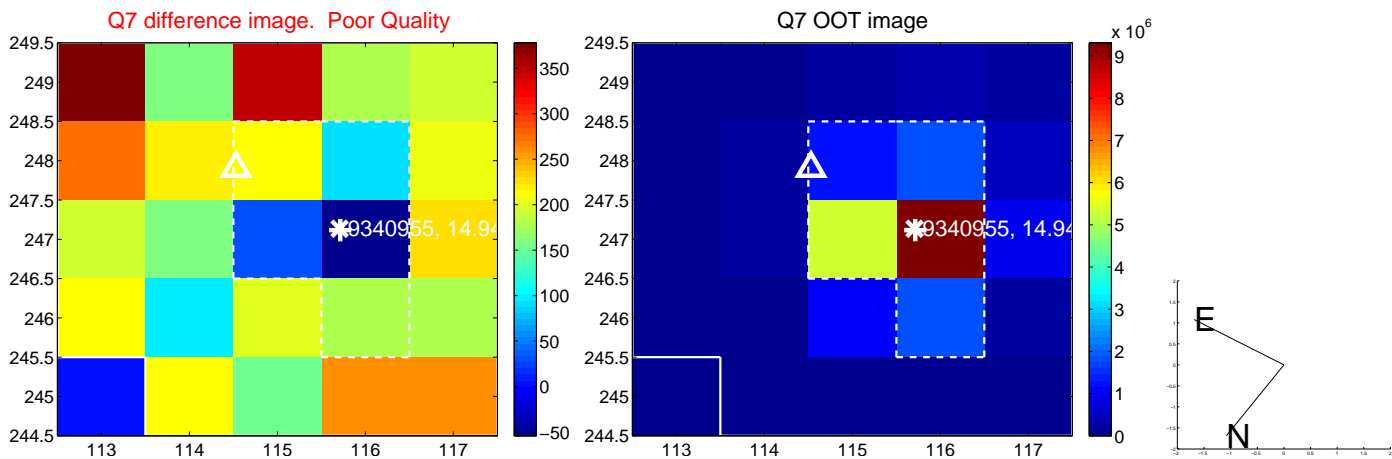
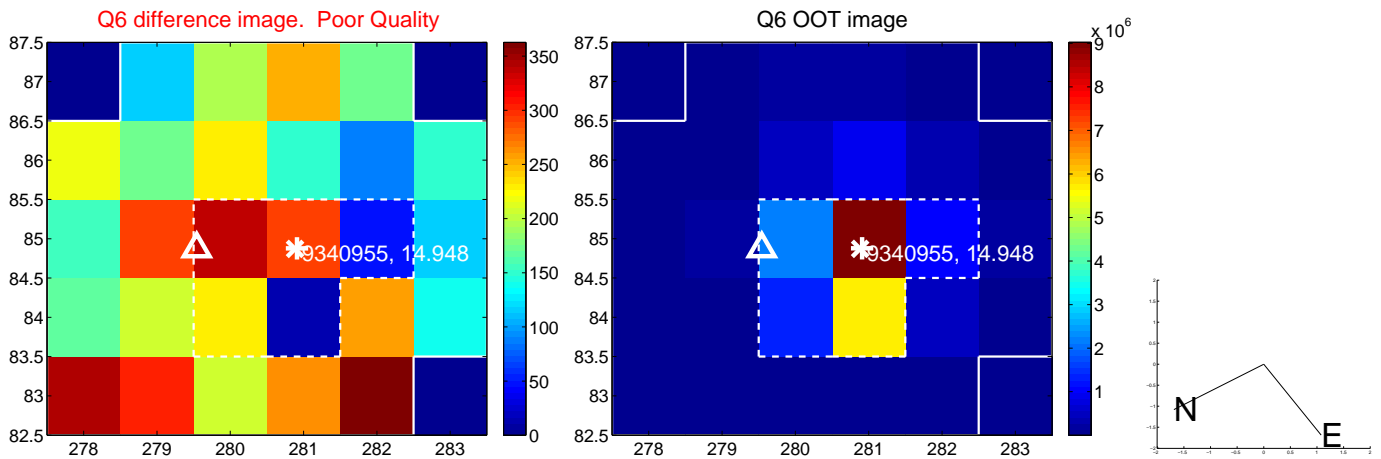
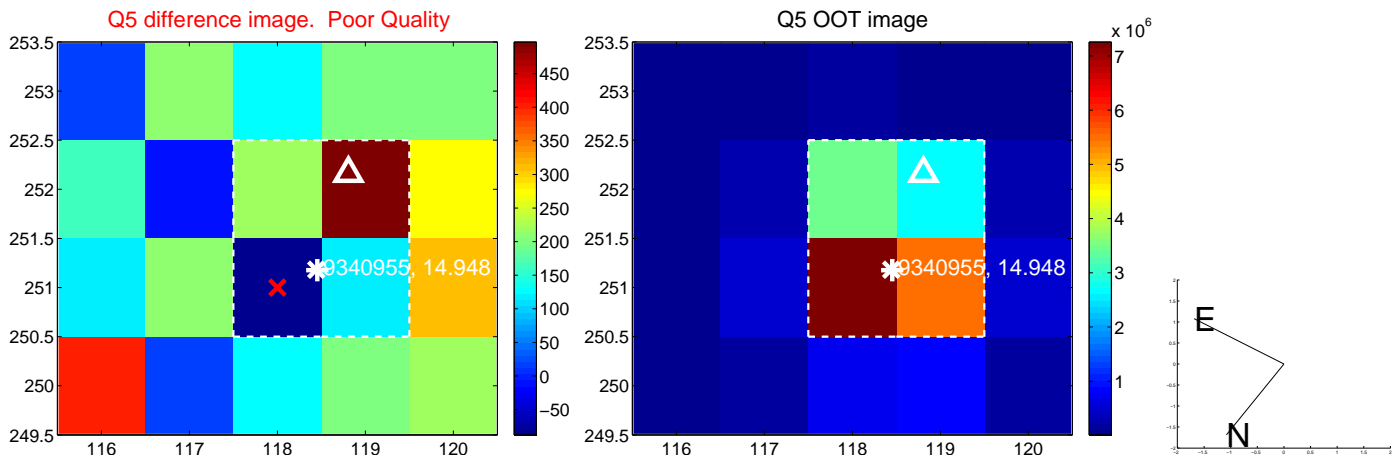


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

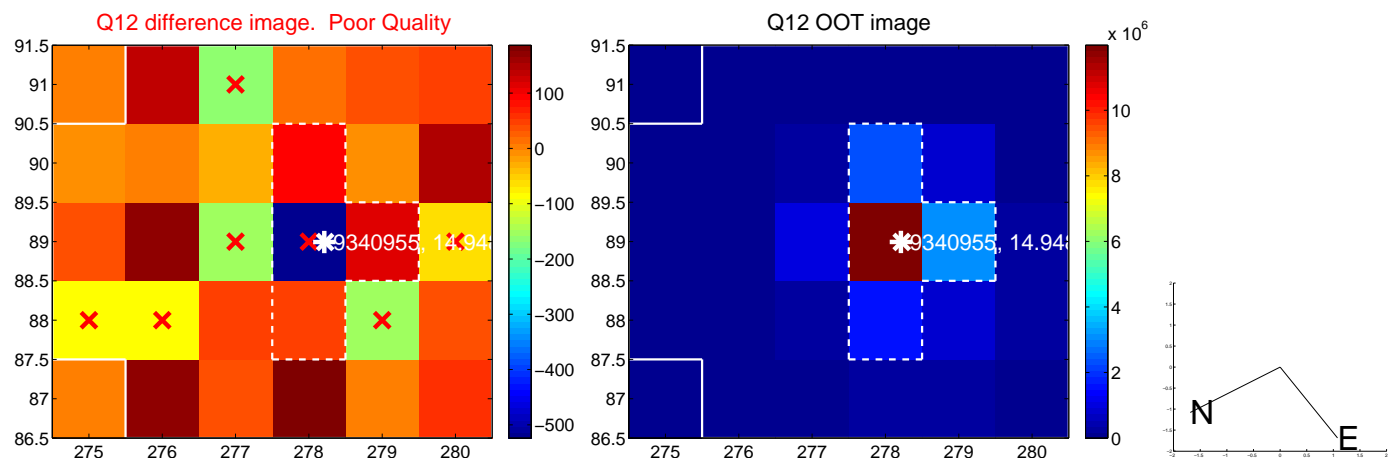
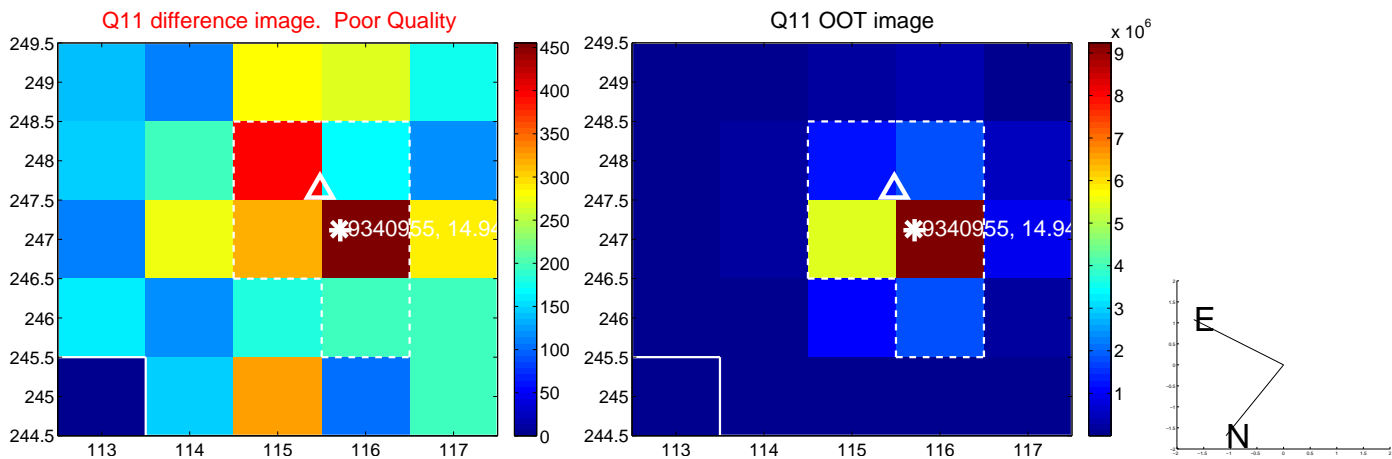
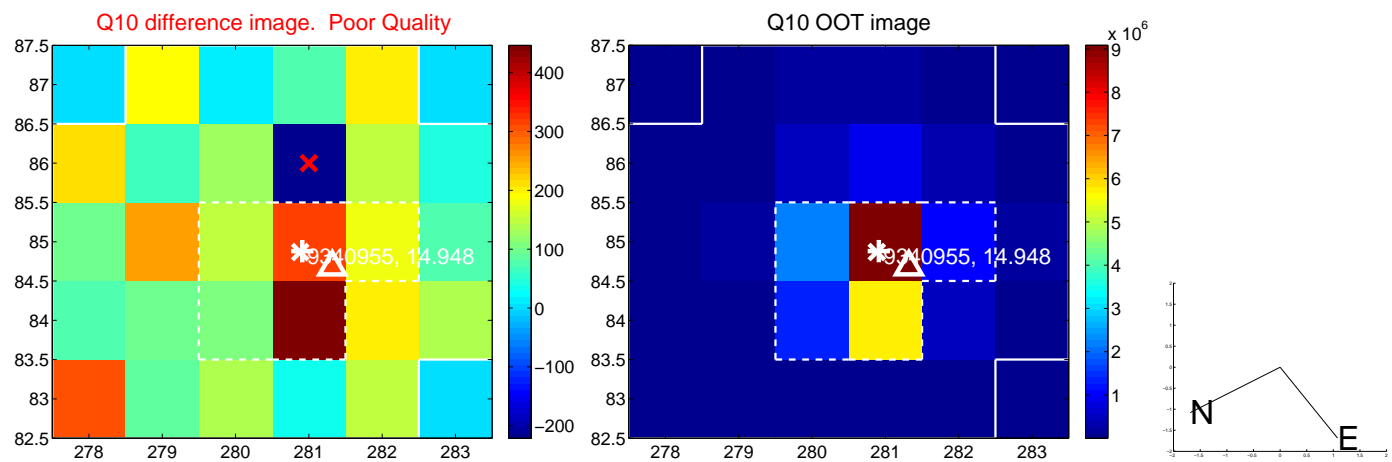
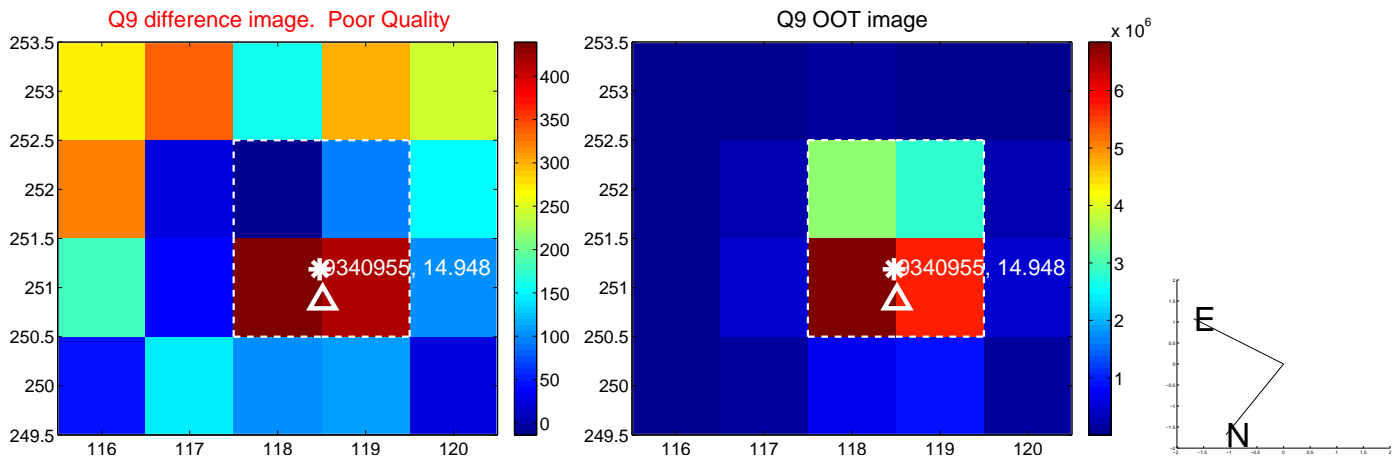
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



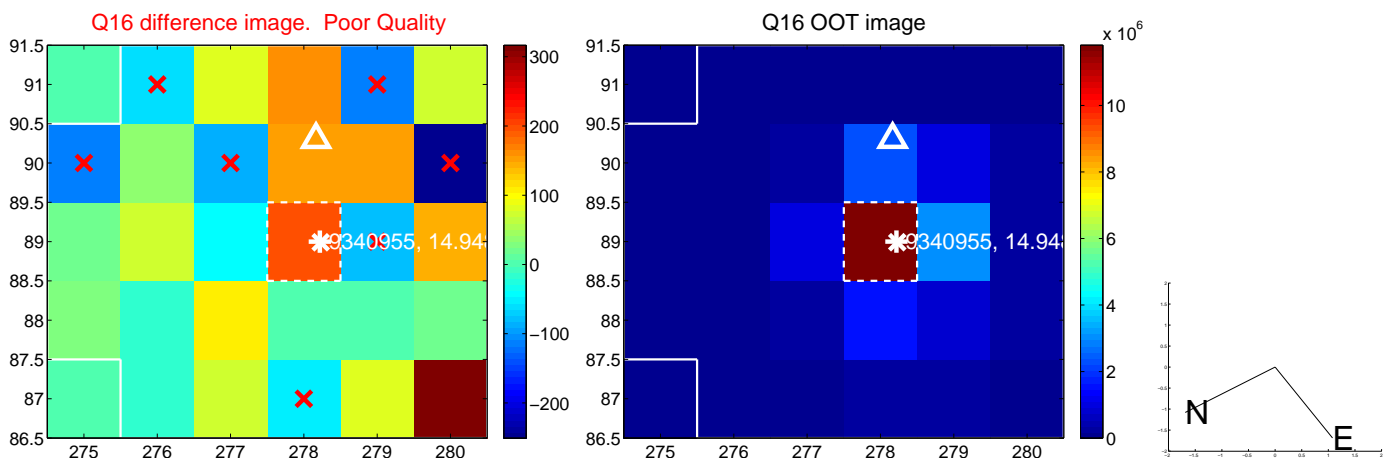
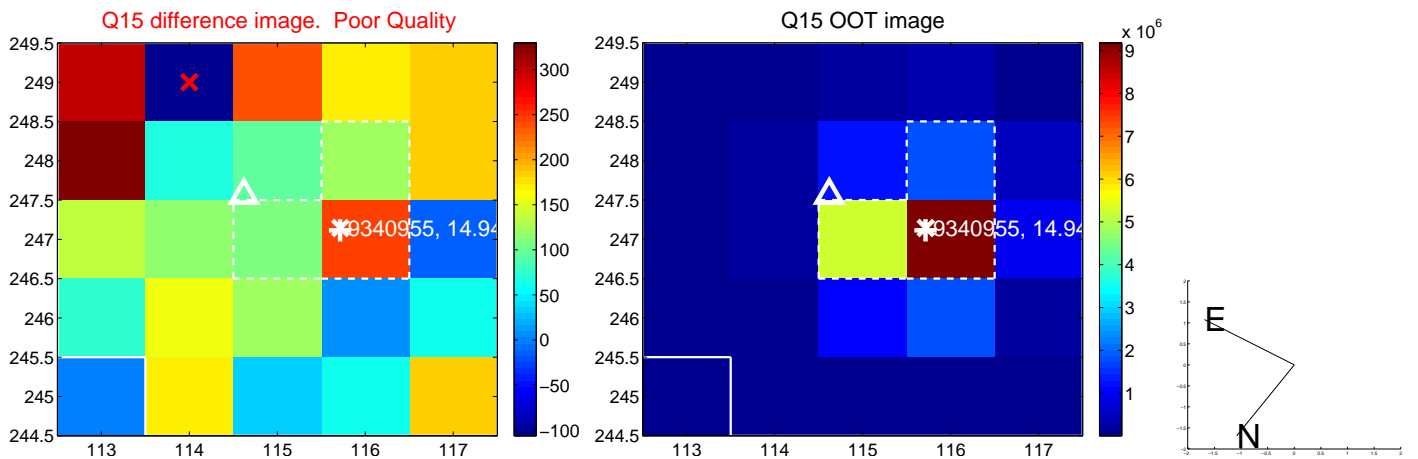
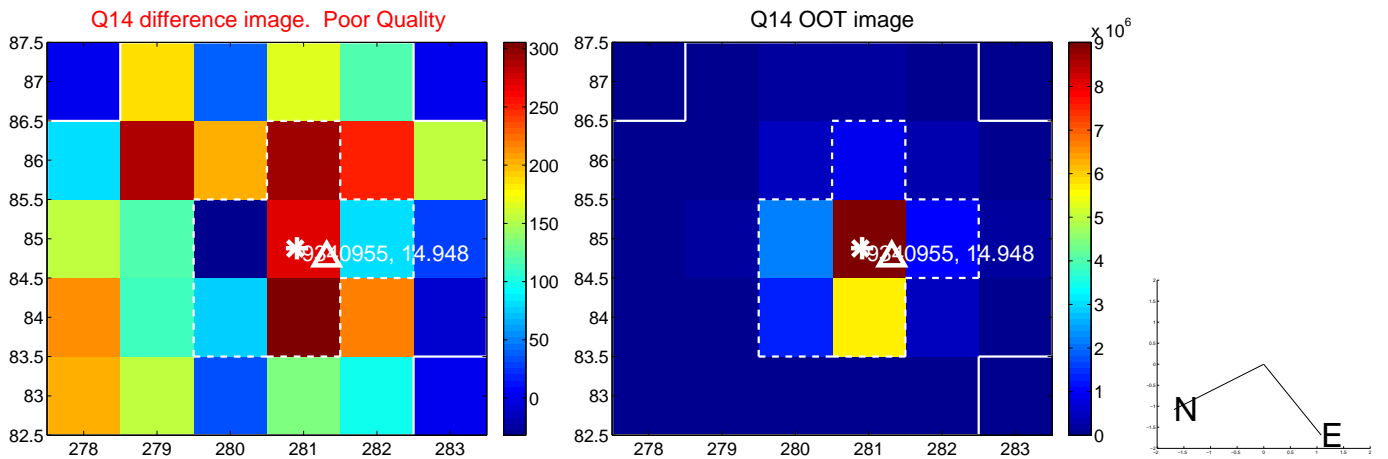
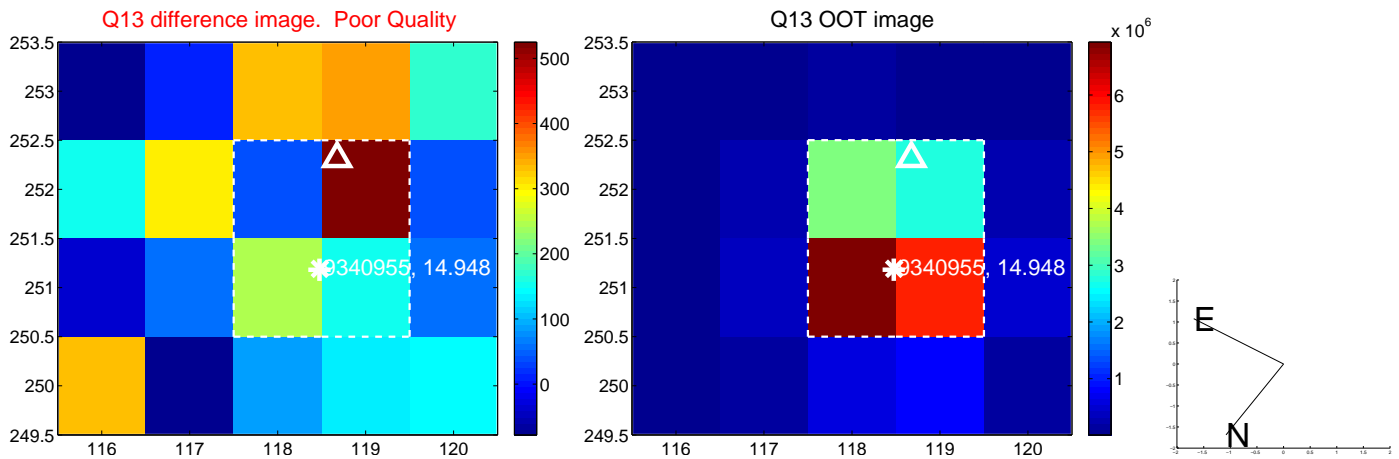
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



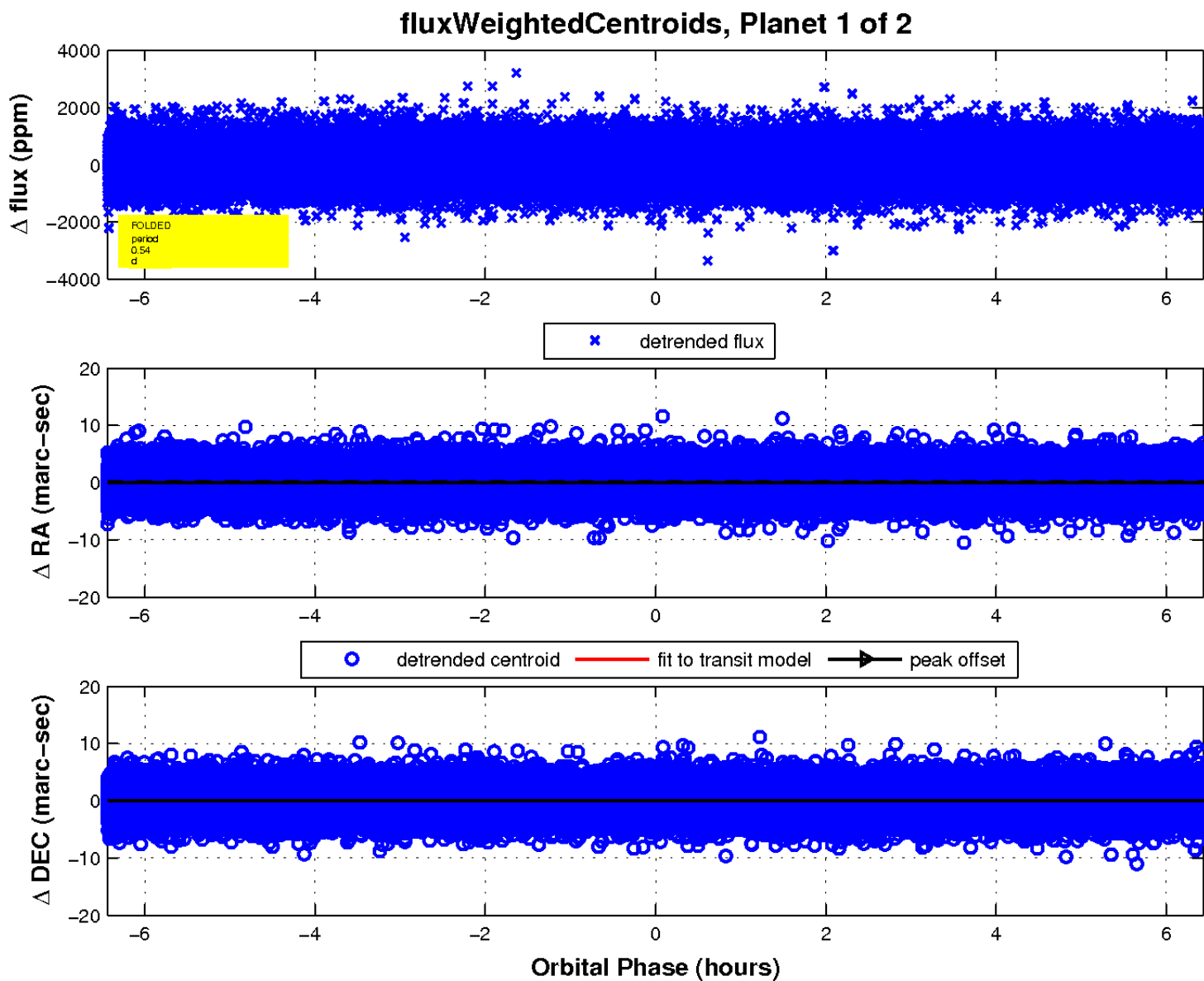
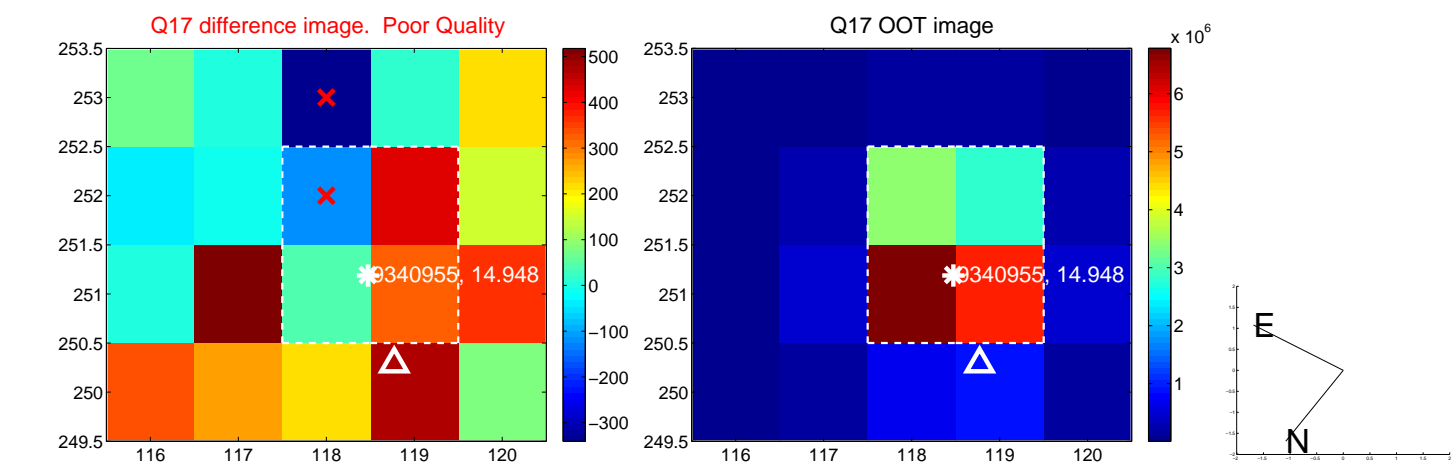
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

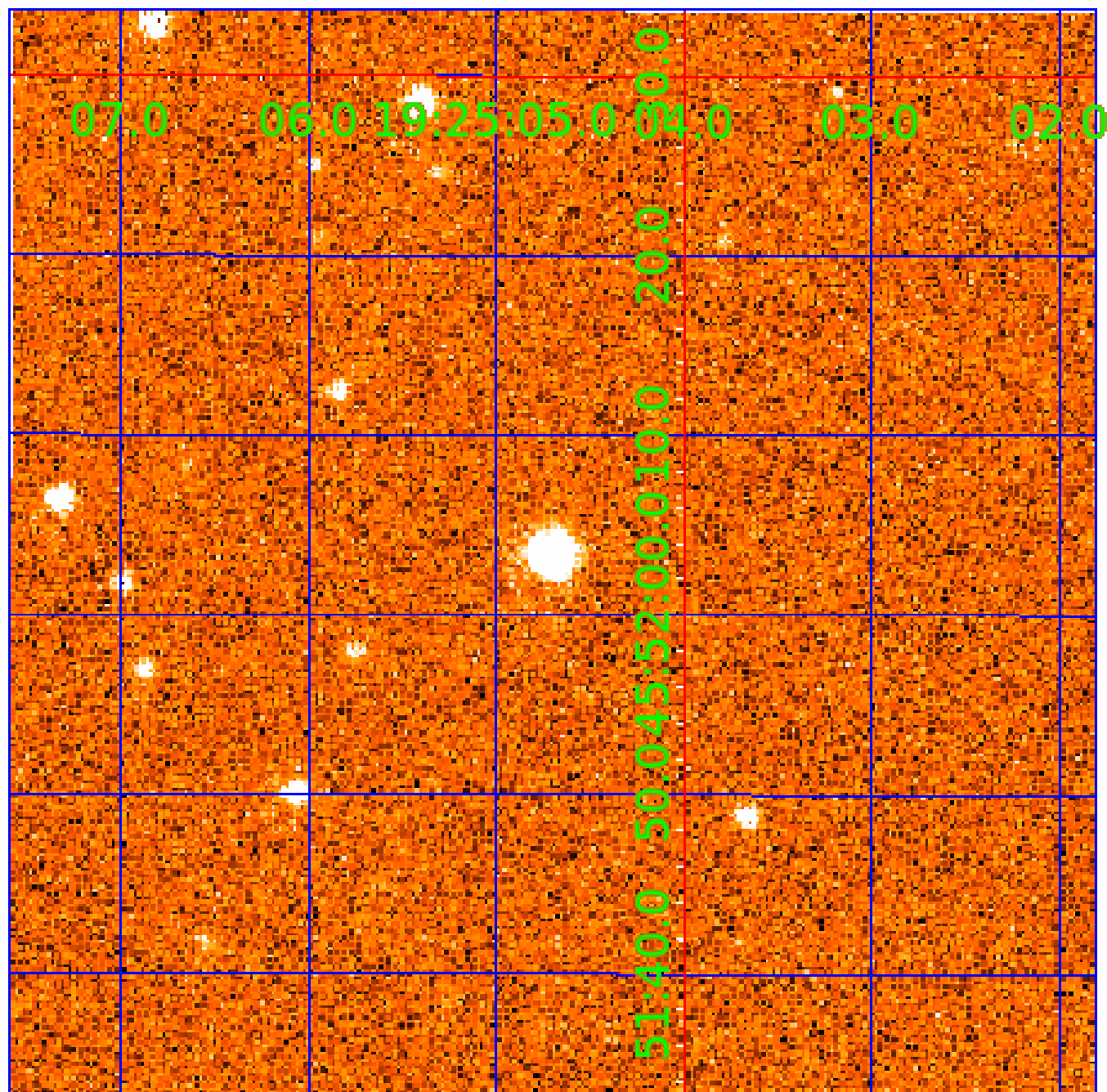


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009340955

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})
009340955-01	OBS	No	0.536564	132.020021	39.0	2.821	7.4	8.3	0.99	6002	0.71	7131.27
009340955-02	OBS	No	203.208961	140.287850	1405.8	2.490	7.7	6.0	0.99	6002	3.99	2.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009340955-01	OBS	FP	0.00	1	0	1	1	LPP_DV—HALO_GHOST—EPHEM_MATCH
009340955-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS—CENT_FEW_DIFFS— HALO_GHOST

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

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

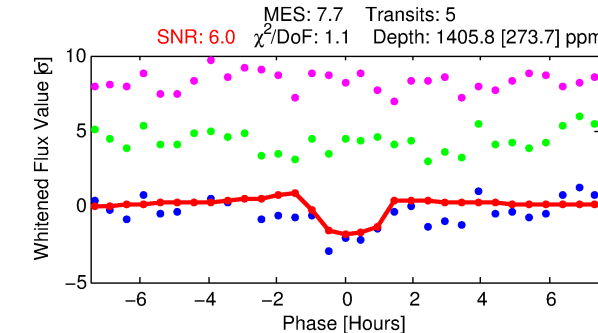
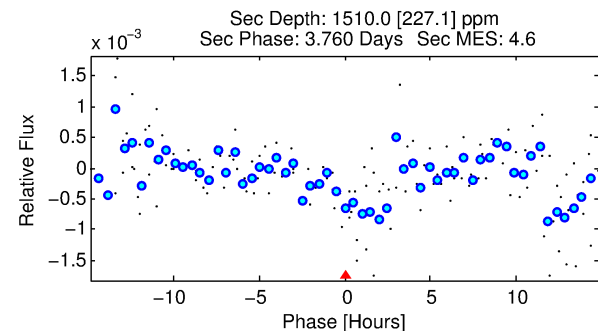
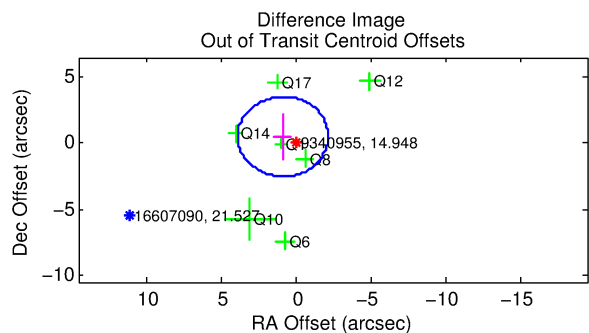
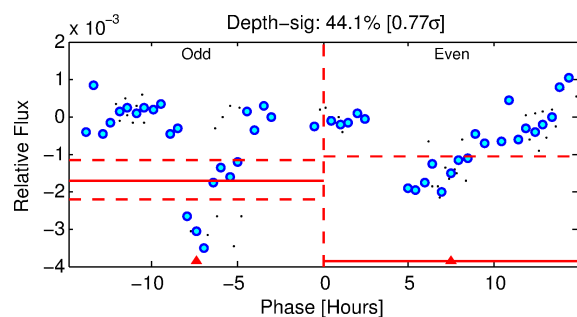
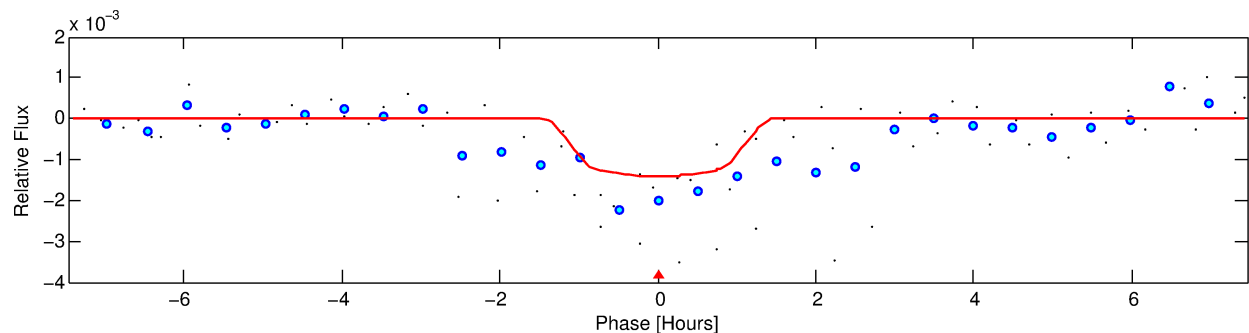
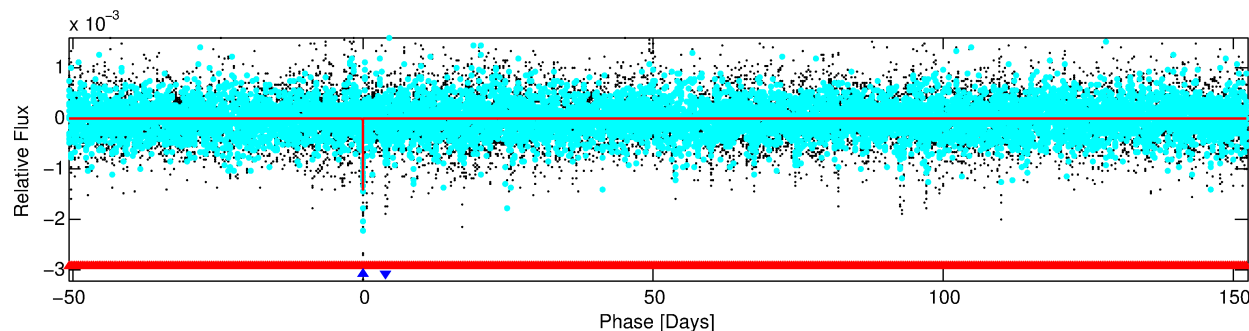
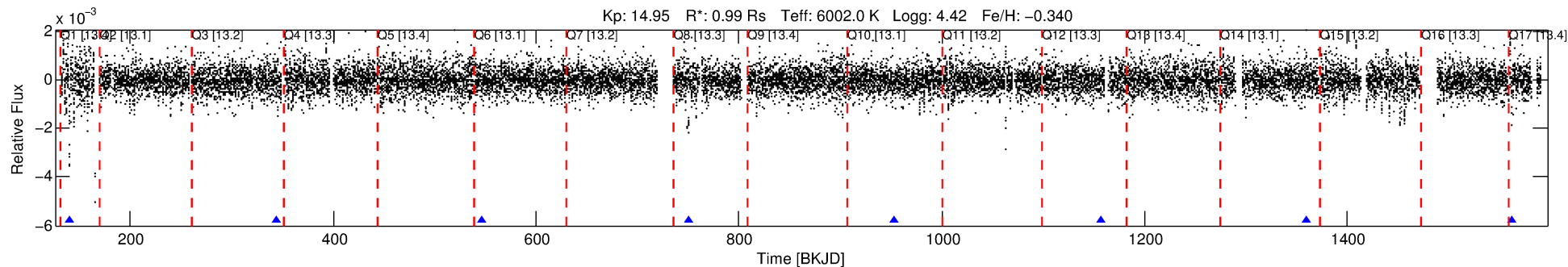
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009340955-02

No Significant Match Found

DV One-Page Summary

KIC: 9340955 Candidate: 2 of 2 Period: 203.209 d



DV Fit Results:

Period = 203.20896 [0.00194] d
Epoch = 140.2879 [0.0090] BKJD
Rp/R* = 0.0371 [0.0447]
a/R* = 460.00 [2721.54]
b = 0.73 [3.85]
Seff = 2.60 [0.98]
Teq = 324 [31] K
Rp = 3.99 [4.94] Re
a = 0.6590 [0.1590] AU
Ag = 22648.21 [55314.93] [0.41 σ]
Teff = 6143 [3717] K [1.57 σ]

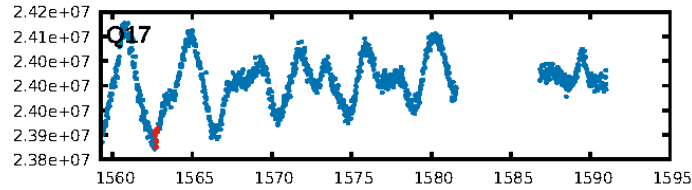
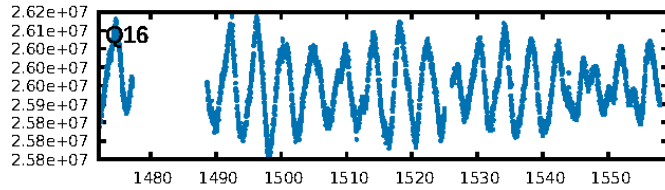
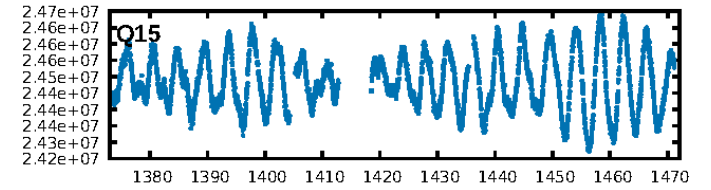
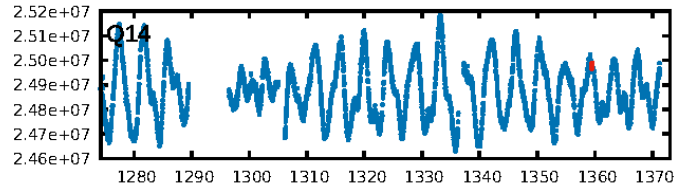
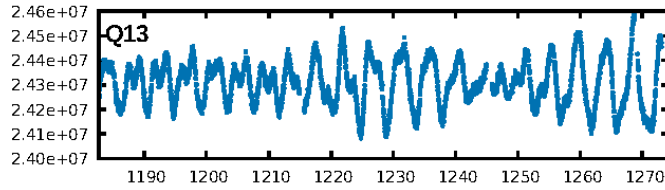
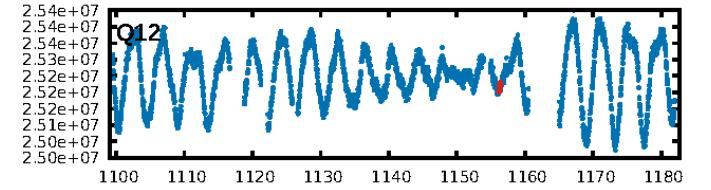
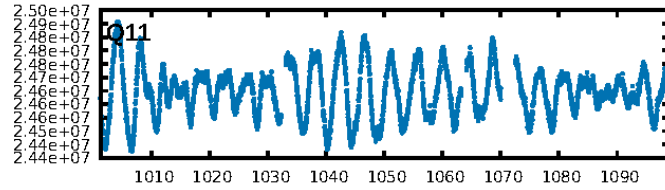
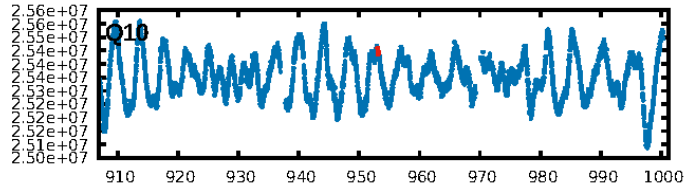
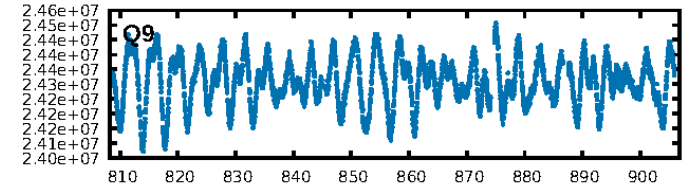
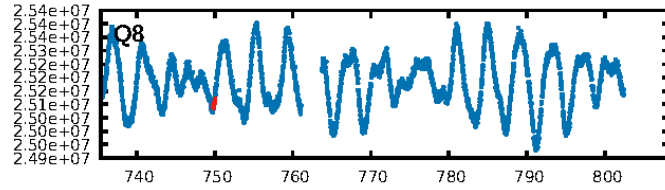
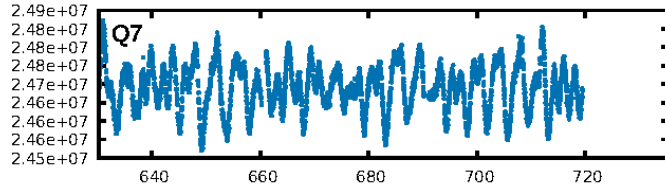
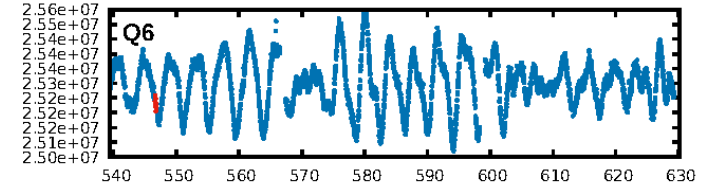
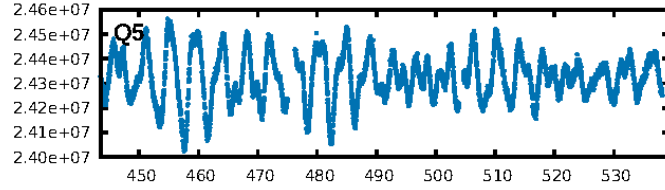
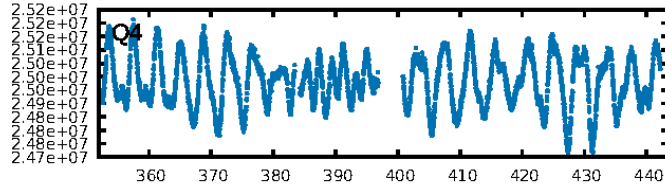
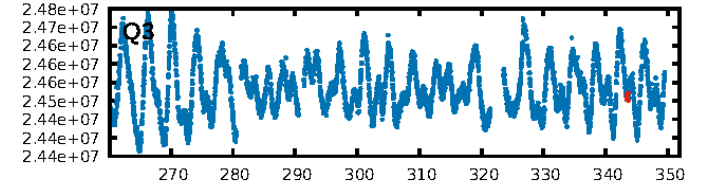
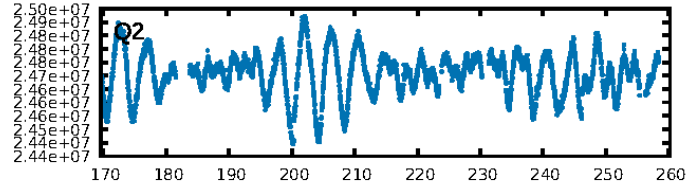
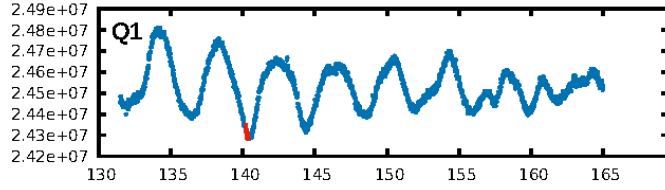
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1292.62 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 52.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.27e-10
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.05984
Centroid-sig: 48.5%
Centroid-so: 0.687 arcsec [0.97 σ]
OotOffset-rm: 0.969 arcsec [0.96 σ]
KicOffset-rm: 0.971 arcsec [0.96 σ]
OotOffset-st: 3/0/2/2 [7]
KicOffset-st: 3/0/2/2 [7]
DiffImageQuality-fgm: 0.29 [2/7]
DiffImageOverlap-fno: 0.00 [0/8]

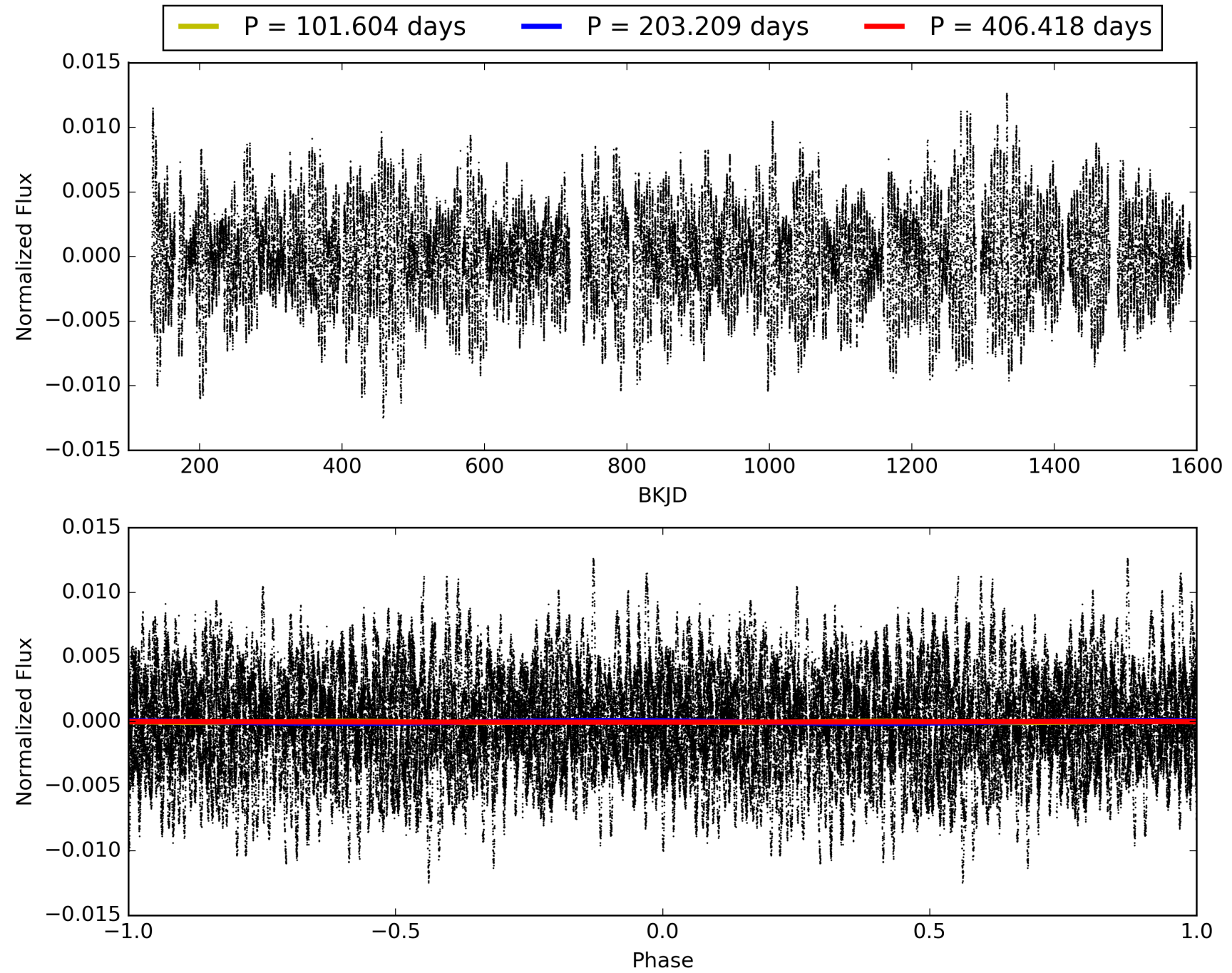
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 22:43:09 Z

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

TCE 009340955-02, PDC Light Curves

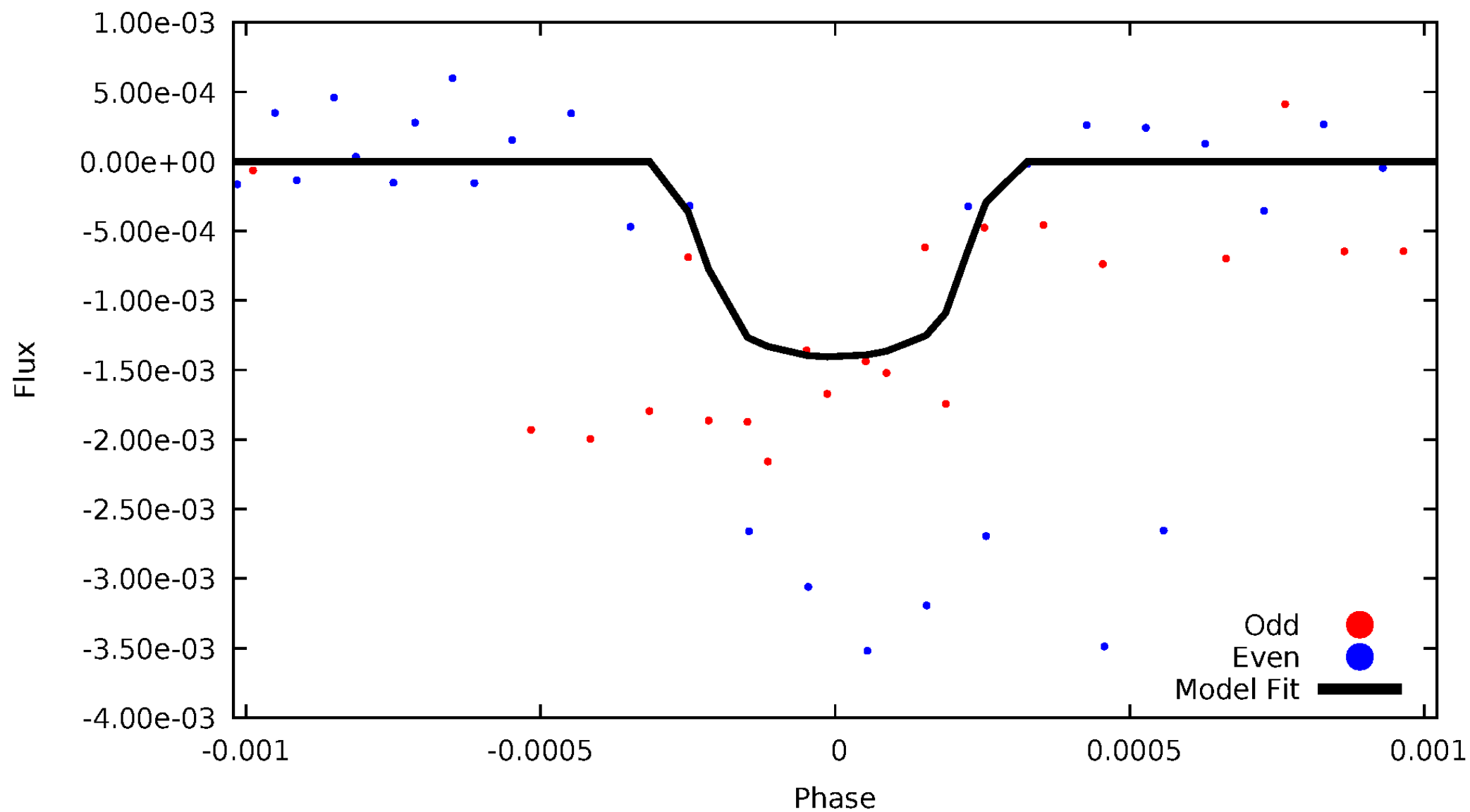


TCE 009340955-02



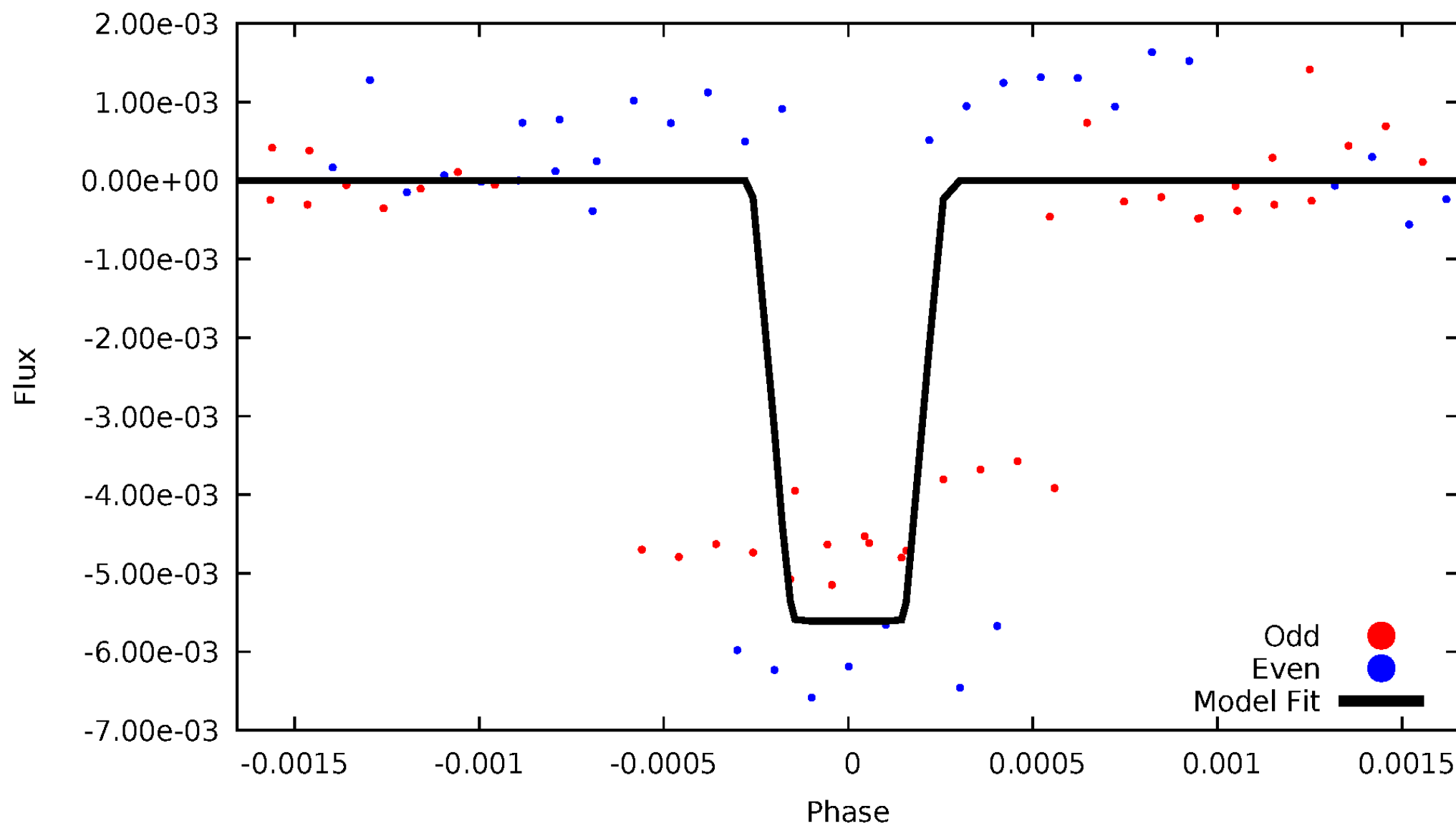
DV Odd/Even

TCE 009340955-02



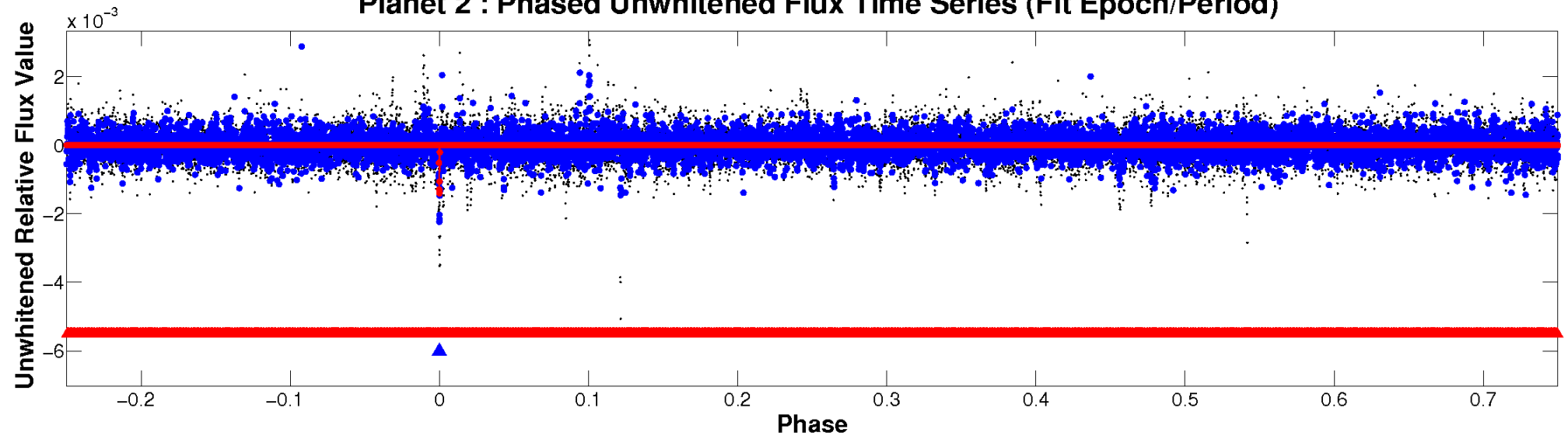
ALT Odd/Even

TCE 009340955-02

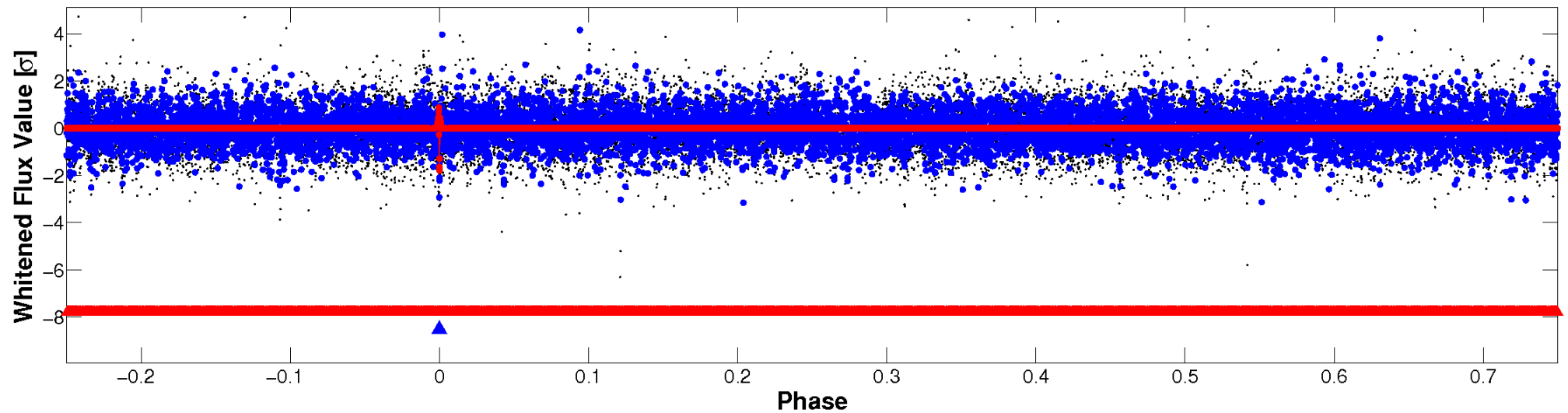


Non-Whitened Vs. Whitened Light Curve

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

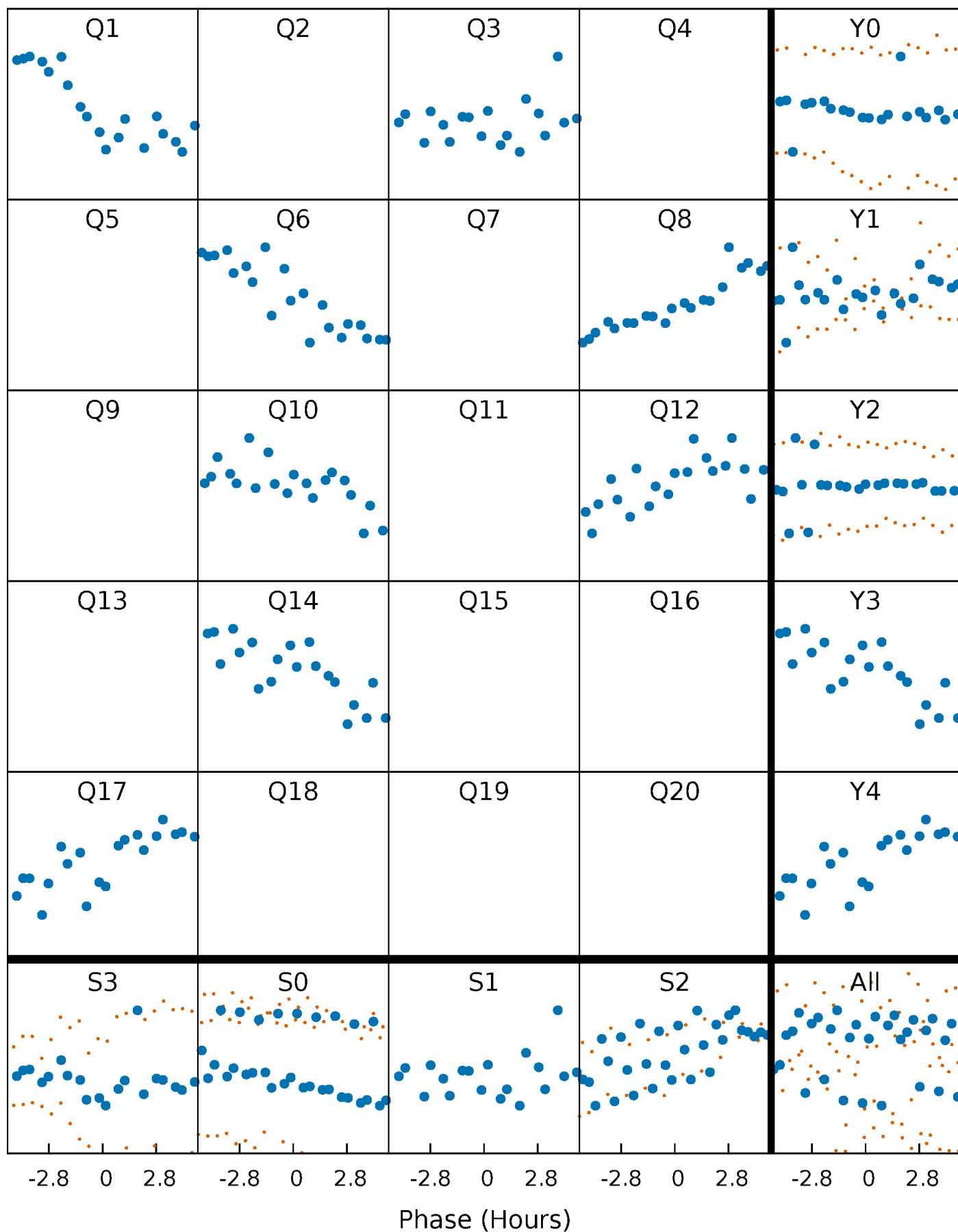


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



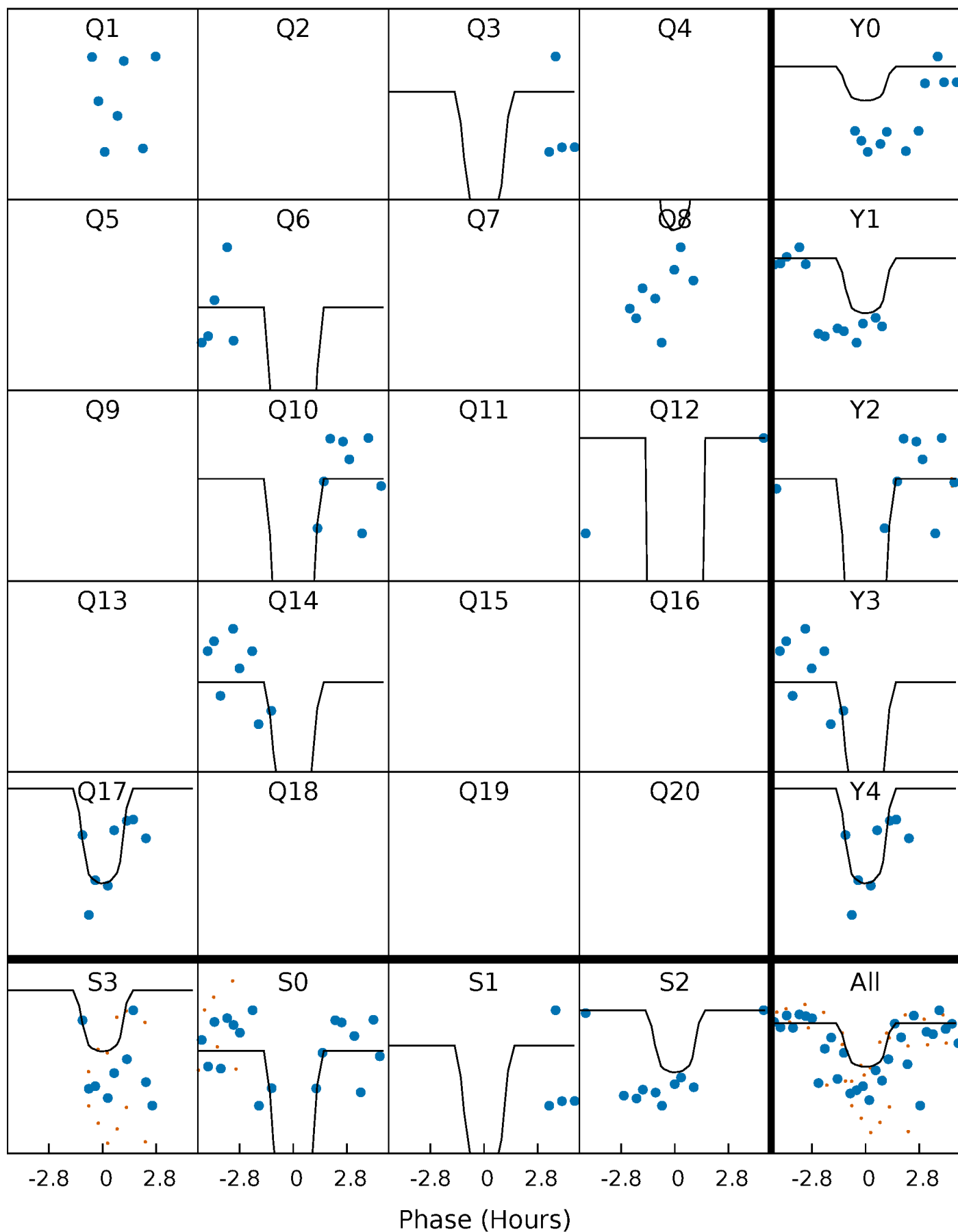
PDC Quarter-Phased Transit Curves

TCE 009340955-02 P=203.208961 Days $T_0=140.287850$ (BKJD)



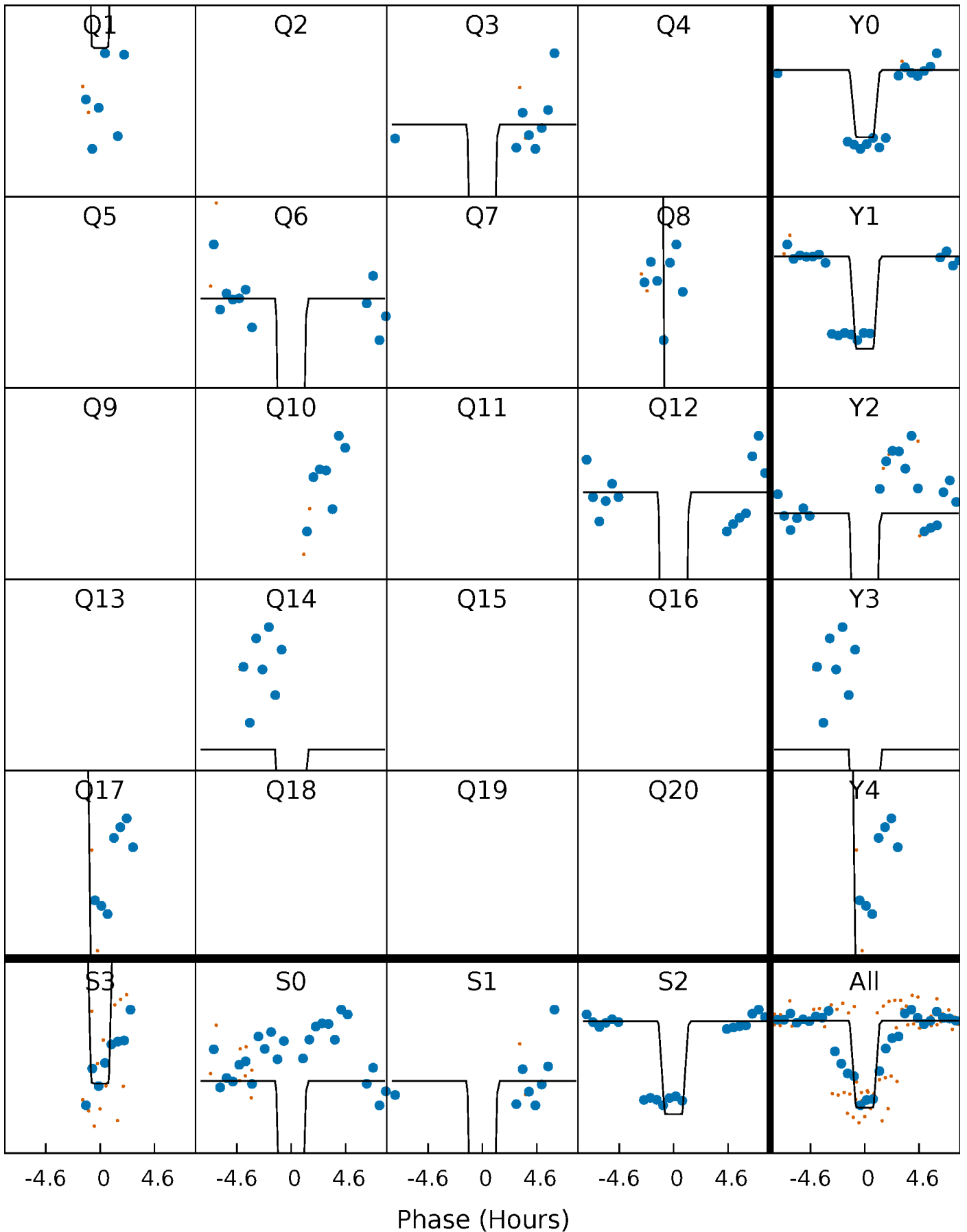
DV Quarter-Phased Transit Curves

TCE 009340955-02 P=203.208961 Days $T_0=140.287850$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

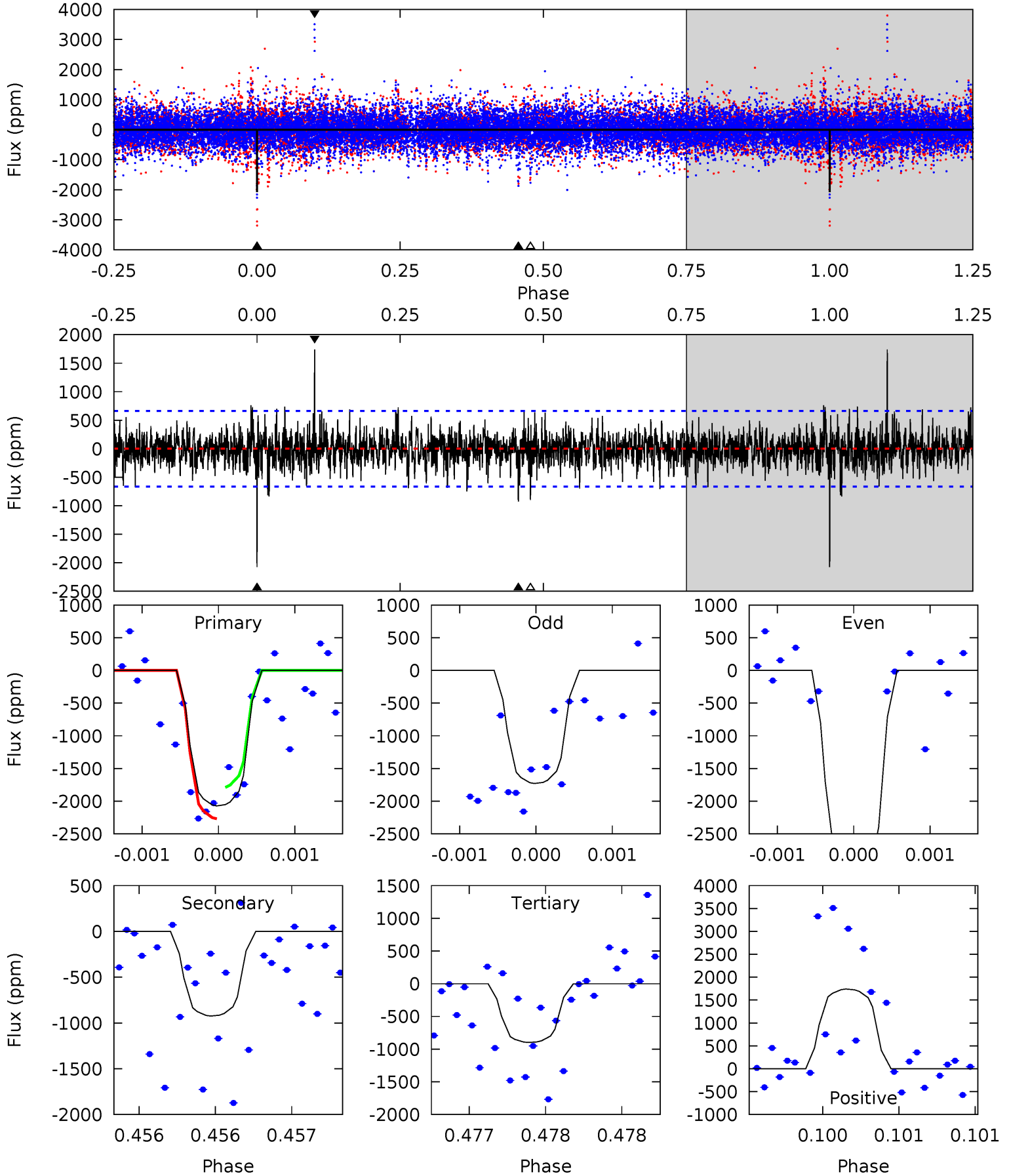
TCE 009340955-02 P=203.201436 Days $T_0=140.319234$ (BKJD)



DV Model-Shift Uniqueness Test

009340955-02, P = 203.208961 Days, E = 140.287850 Days

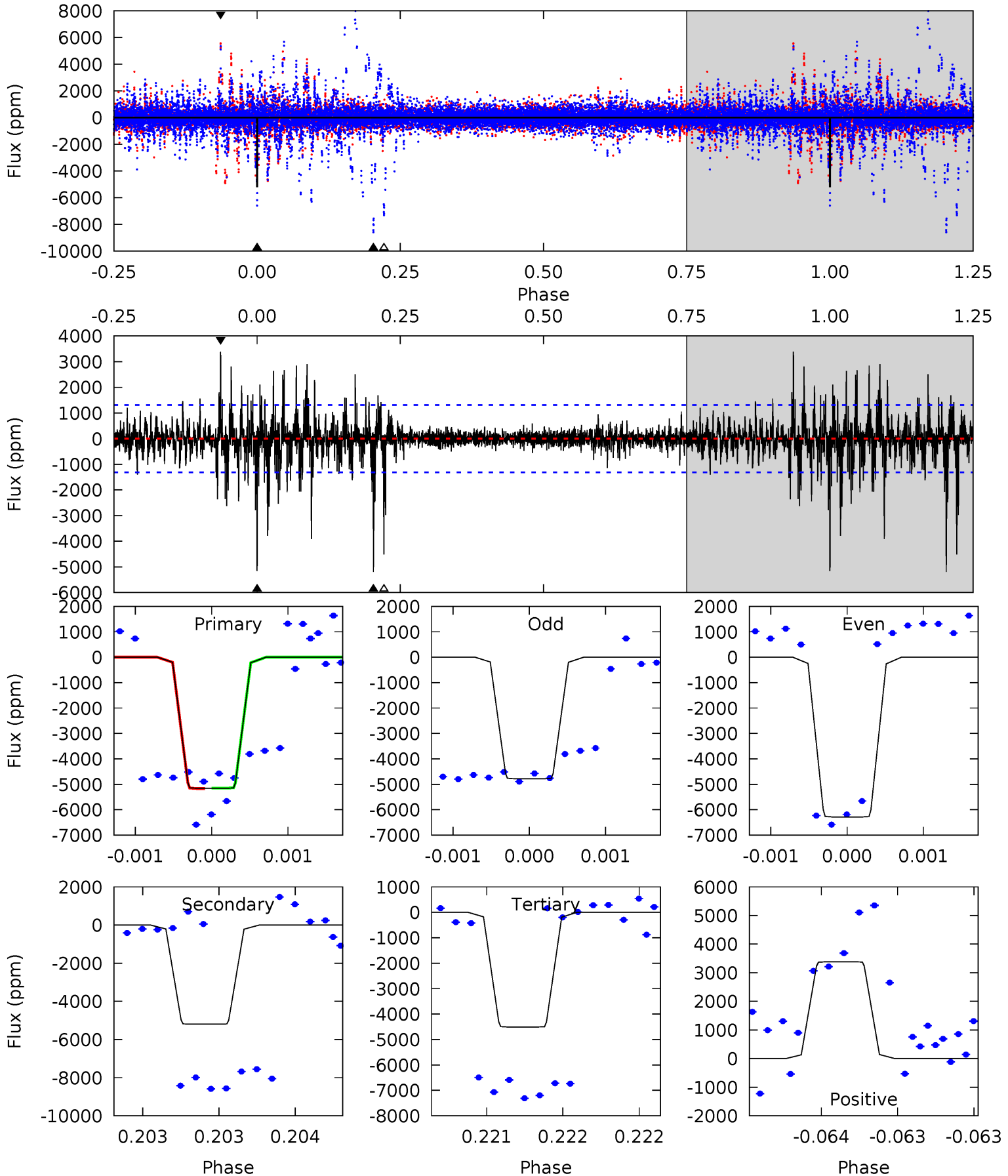
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.3	7.73	7.52	14.6	5.55	3.44	1.74	9.82	2.78	0.22	-6.82	5.43	1.13	0.46	2.01



Alt Model-Shift Uniqueness Test

009340955-02, P = 203.201436 Days, E = 140.319234 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.9	22.1	19.1	14.3	5.57	3.48	2.04	2.76	7.53	2.93	7.71	2.91	1.11	0.39	0.03



Stellar Parameters For KIC 009340955

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6002^{+162}_{-198}	$4.416^{+0.105}_{-0.195}$	$-0.340^{+0.300}_{-0.300}$	$0.986^{+0.280}_{-0.151}$	$0.924^{+0.118}_{-0.107}$	$1.357^{+0.717}_{-0.669}$
	+3%/-3%	+2%/-4%	+88%/-88%	+28%/-15%	+13%/-12%	+53%/-49%
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 009340955-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-925 ± 120	$5.18^{+4.58}_{-3.29}$	458^{+31}_{-25}	4902^{+3459}_{-1055}	8092^{+55691}_{-5810}
Alt.	-5199 ± 236	$8.65^{+5.15}_{-4.61}$	458^{+34}_{-26}	5830^{+2921}_{-1110}	16633^{+57257}_{-10145}

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

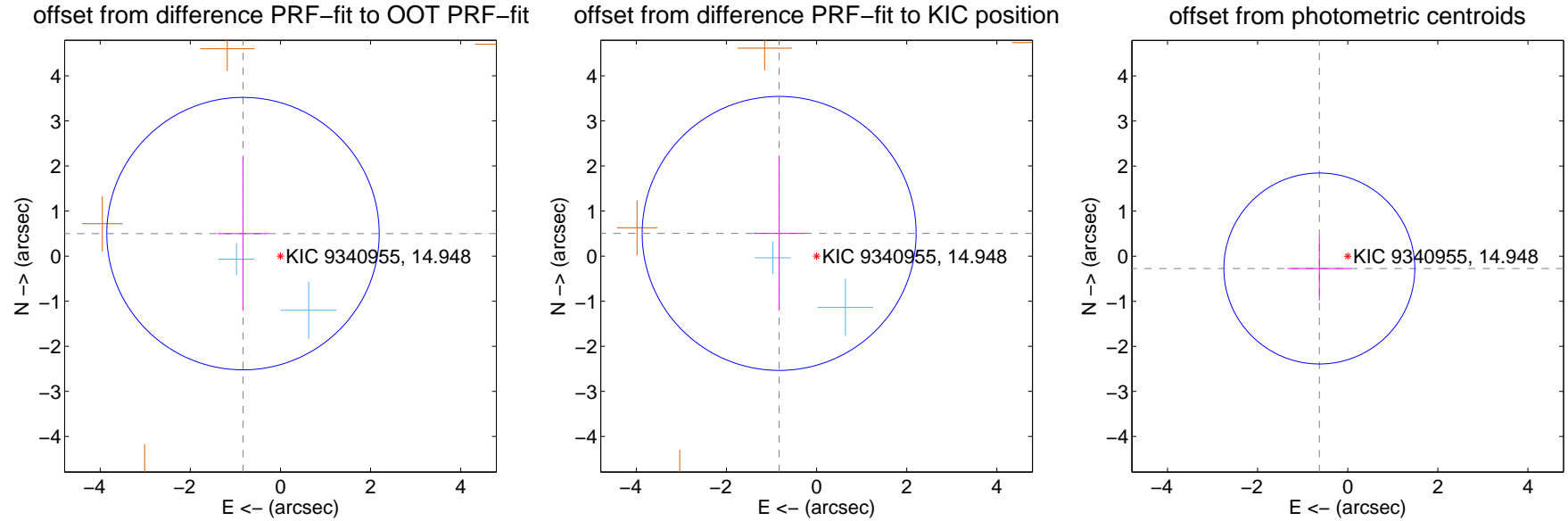
DV Centroid Data

Supplemental centroid analysis for 009340955-02. Kepler magnitude: 14.95. Transit SNR 5.97

There are 2 quarters with good PRF difference image offsets

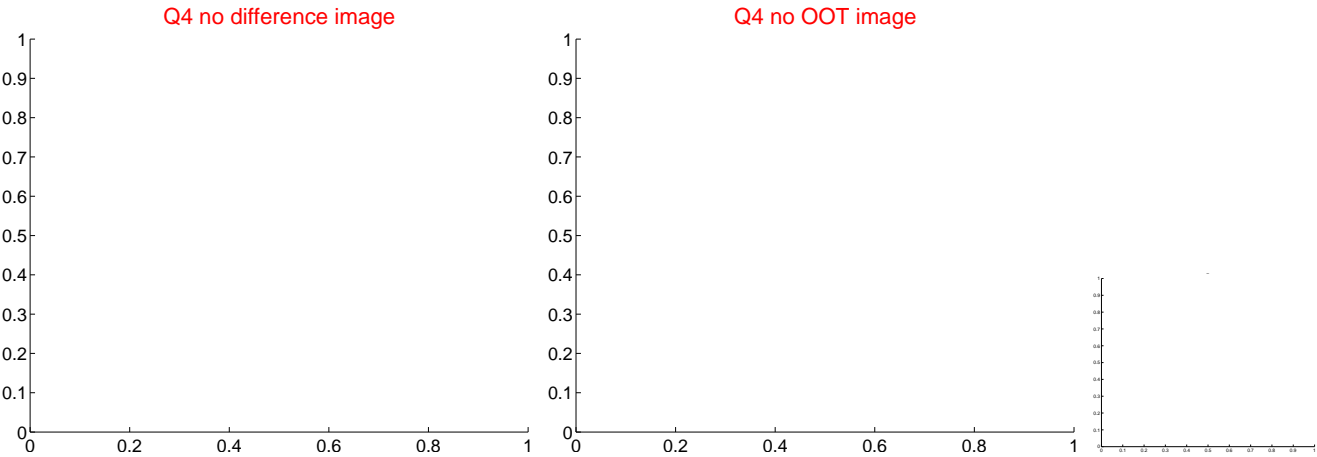
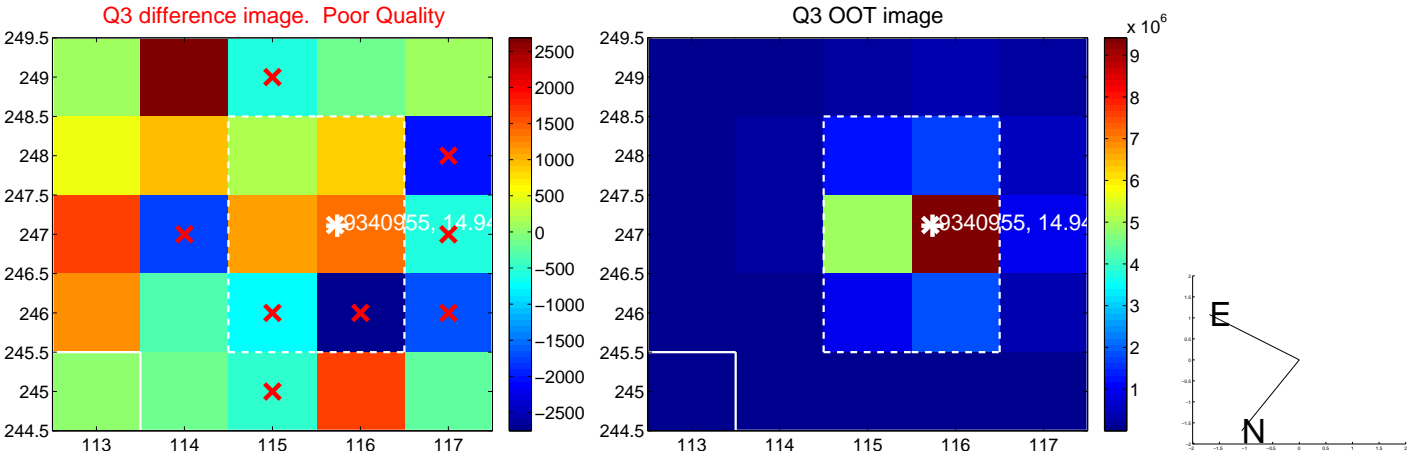
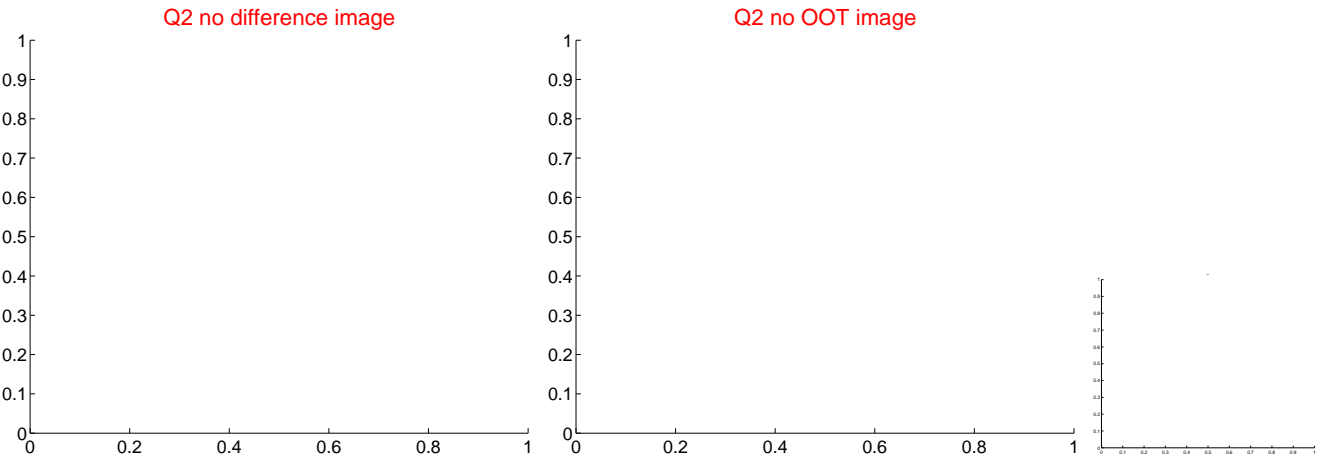
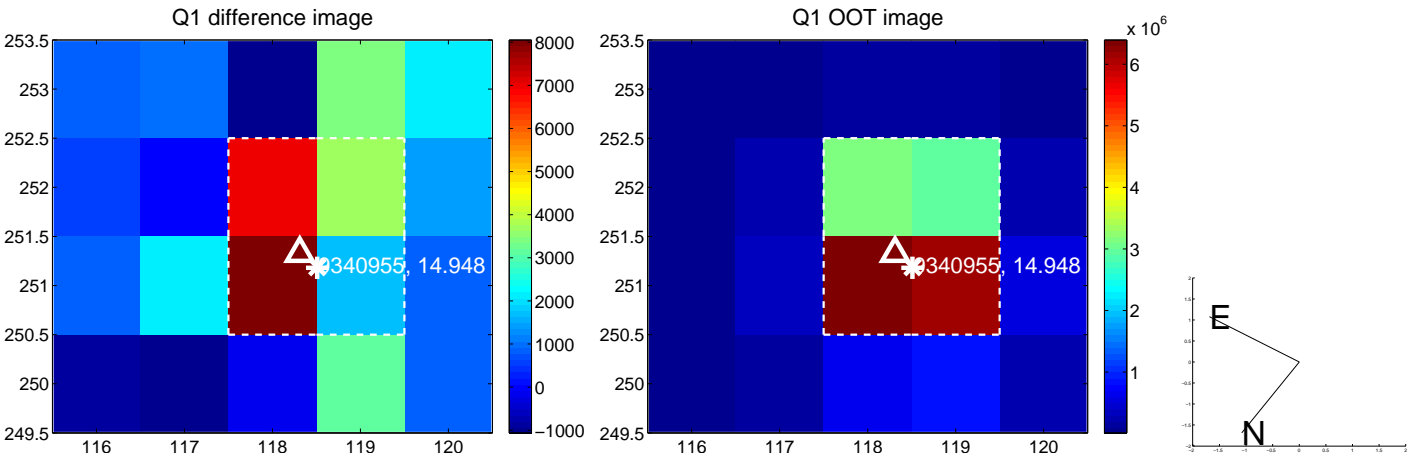
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.969 ± 1.007	0.96	0.831 ± 0.566	0.499 ± 1.713
PRF-fit source offset from KIC position	0.971 ± 1.013	0.96	0.830 ± 0.568	0.504 ± 1.713
photometric centroid source offset	0.69 ± 0.71	0.97	0.63 ± 0.71	-0.27 ± 0.71



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.

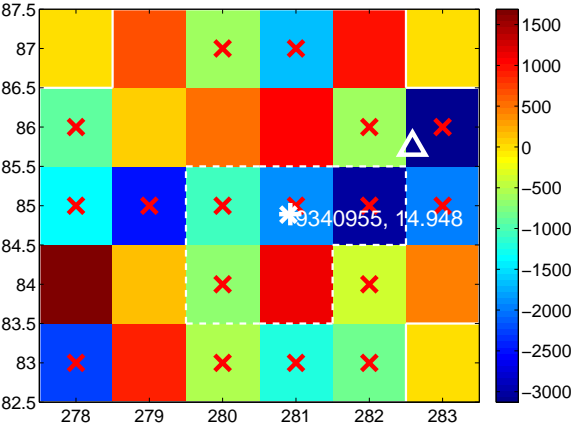
Q5 no difference image



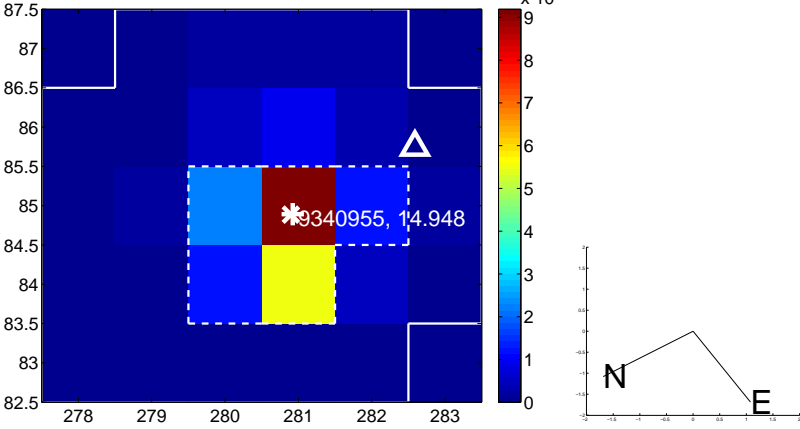
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



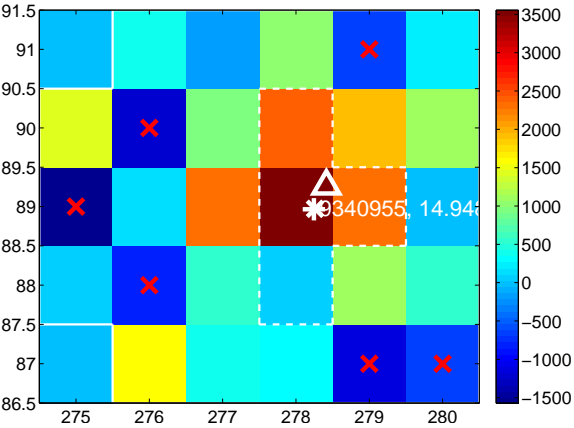
Q7 no difference image



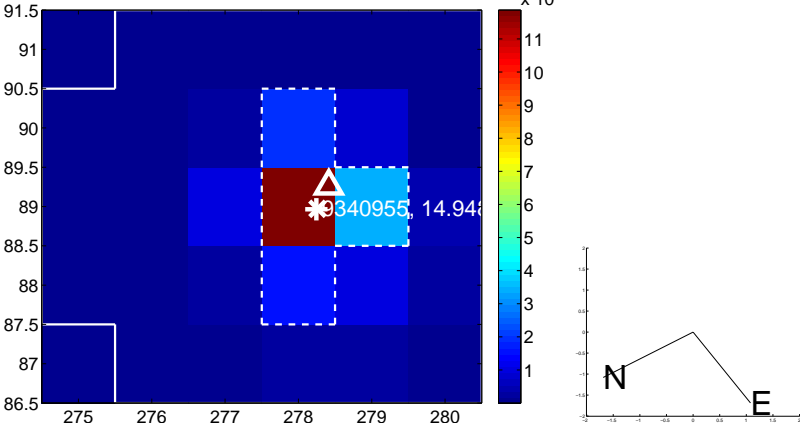
Q7 no OOT image



Q8 difference image



Q8 OOT image



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

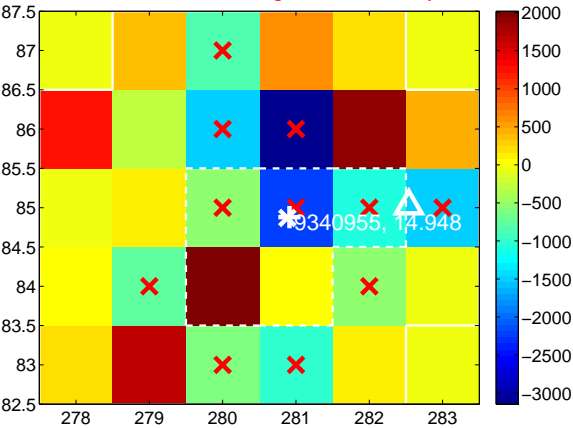
Q9 no difference image



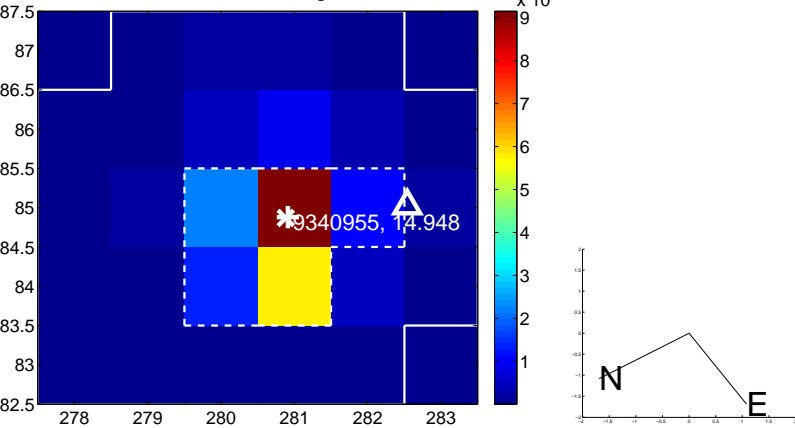
Q9 no OOT image



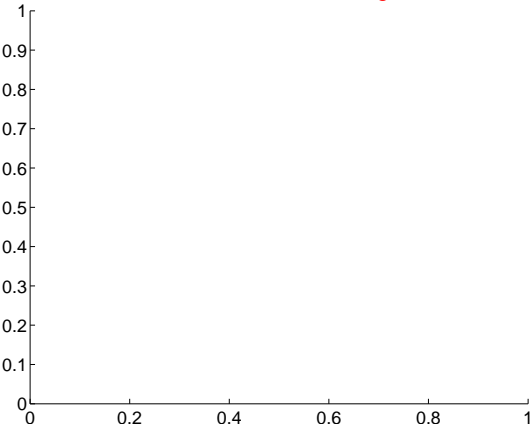
Q10 difference image. Poor Quality



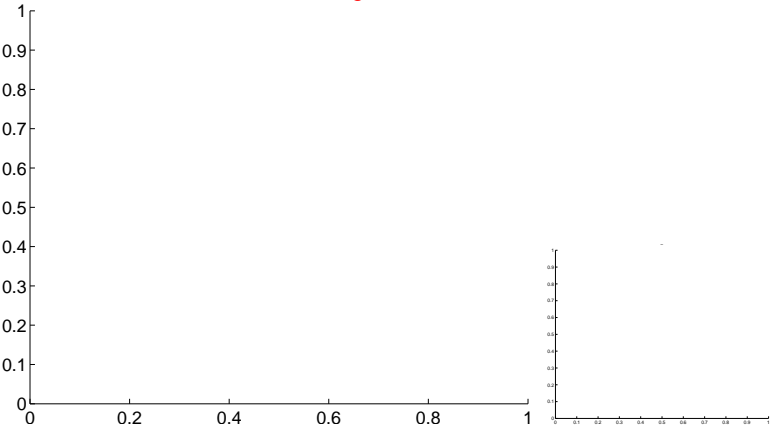
Q10 OOT image



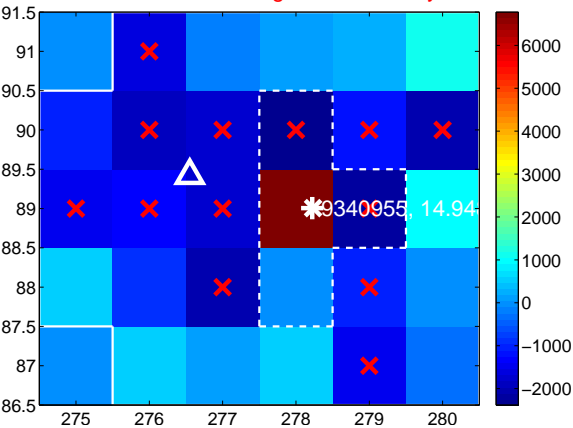
Q11 no difference image



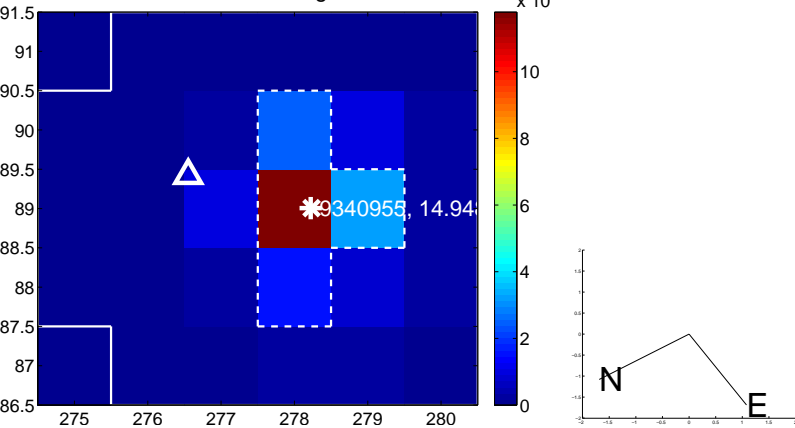
Q11 no OOT image



Q12 difference image. Poor Quality

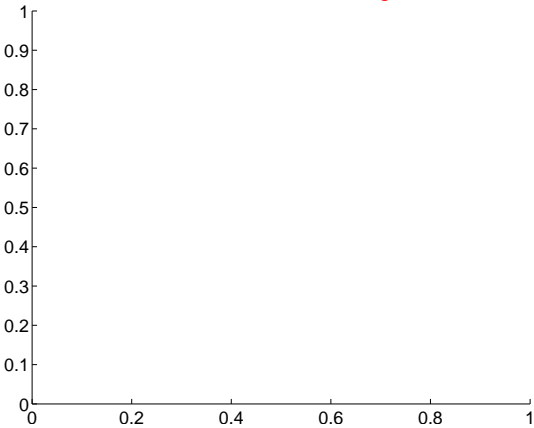


Q12 OOT image



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

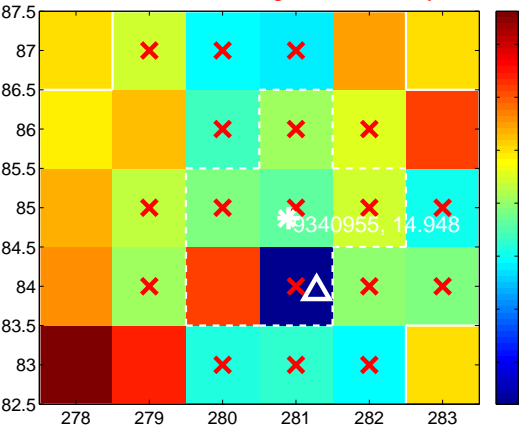
Q13 no difference image



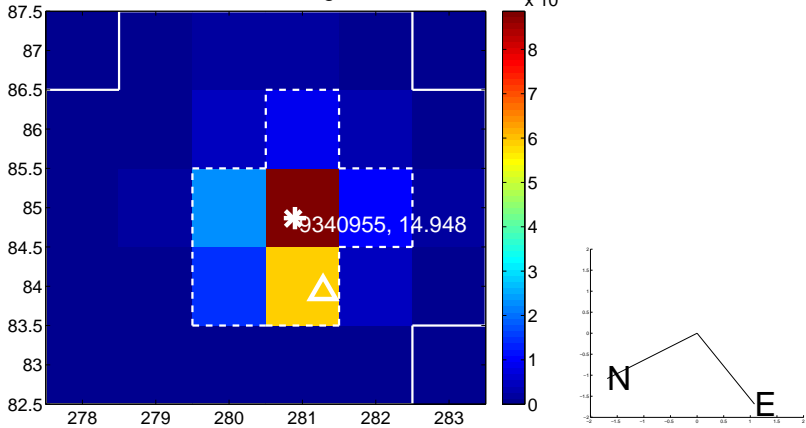
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



Q15 no difference image



Q15 no OOT image



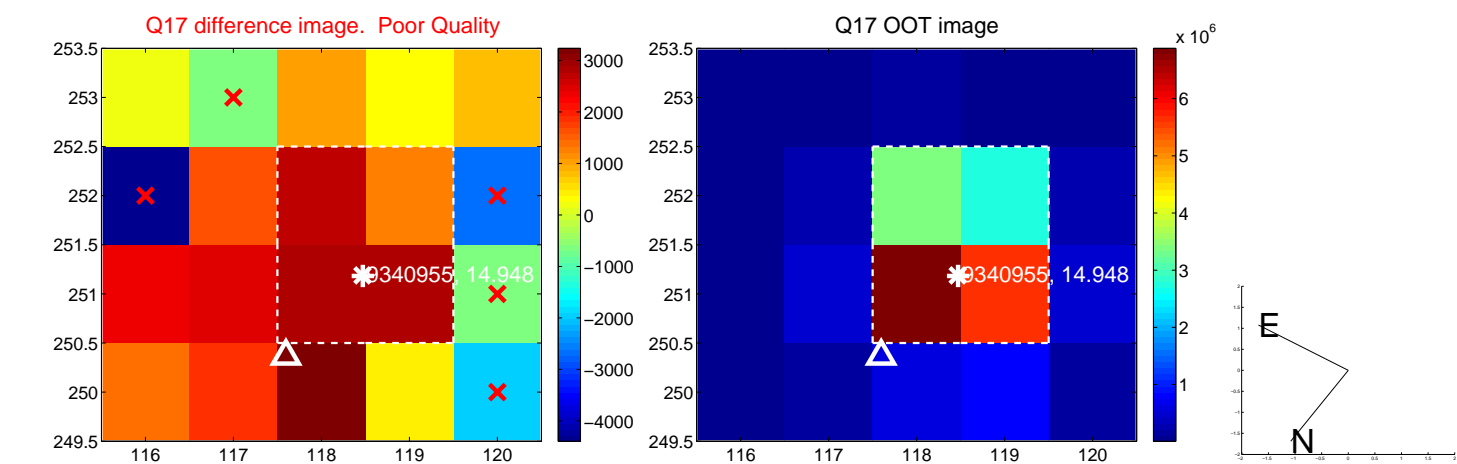
Q16 no difference image



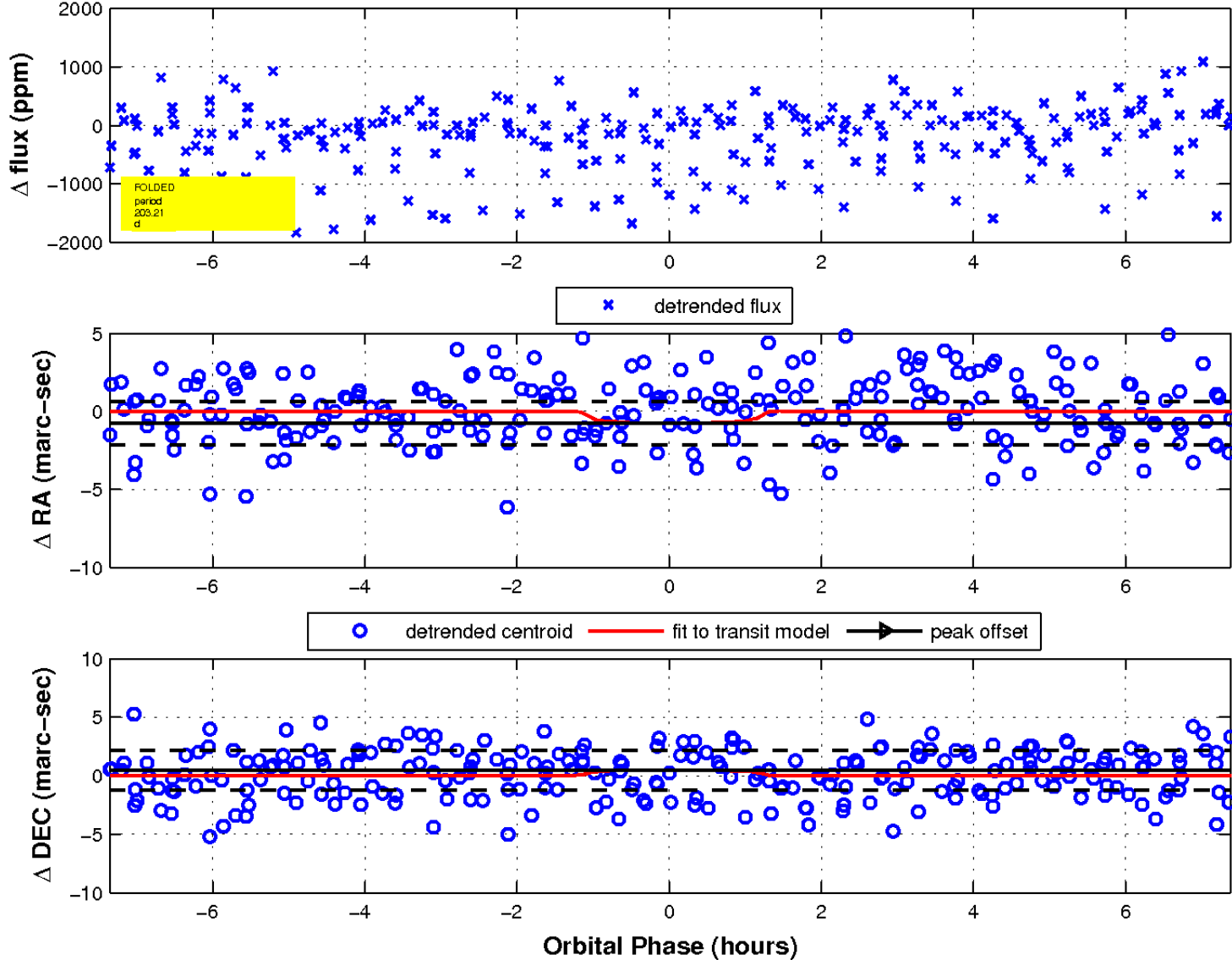
Q16 no OOT image



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

