

KIC 009395222

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})
009395222-01	OBS	No	1.487375	131.618000	11.9	1.792	9.1	4.2	1.68	7351	0.59	8572.09
009395222-02	OBS	No	1.487318	132.310208	8.7	2.207	8.9	3.4	1.68	7351	0.57	8572.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009395222-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009395222-02	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST

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

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

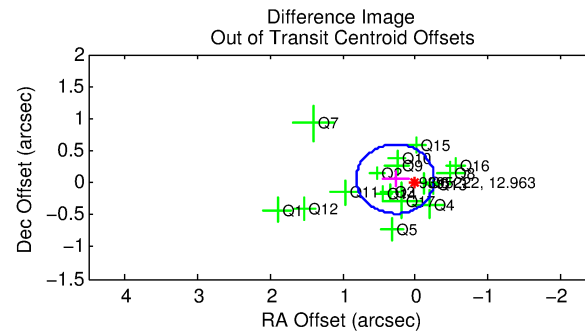
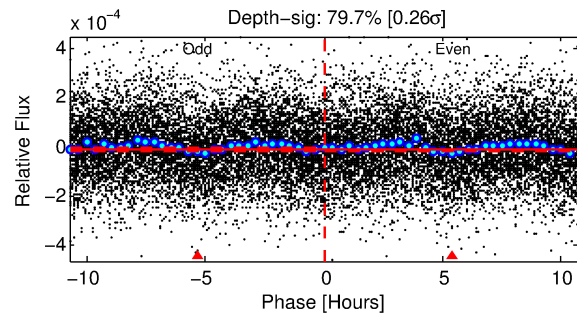
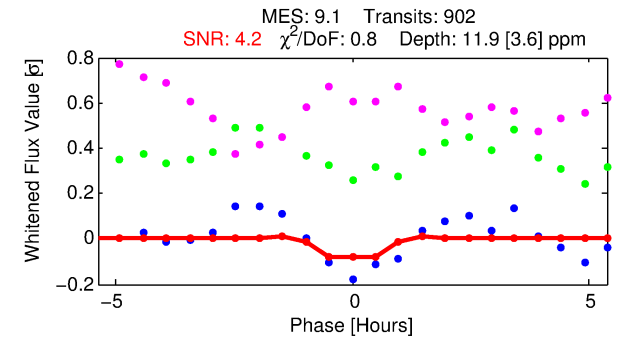
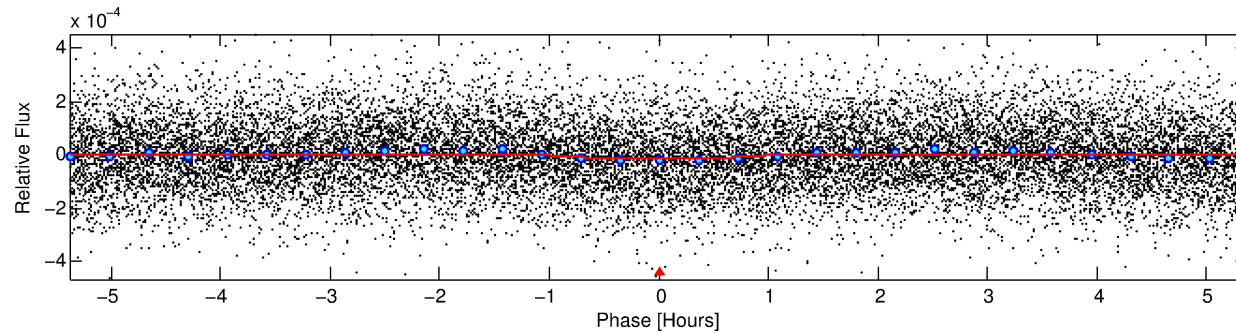
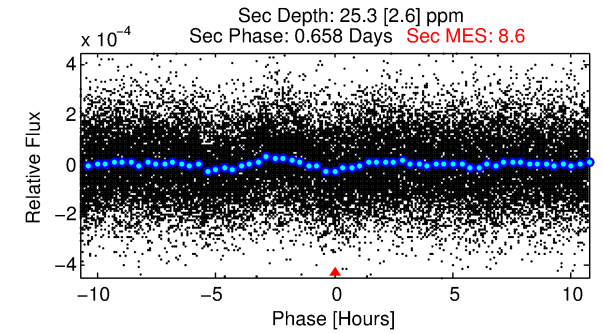
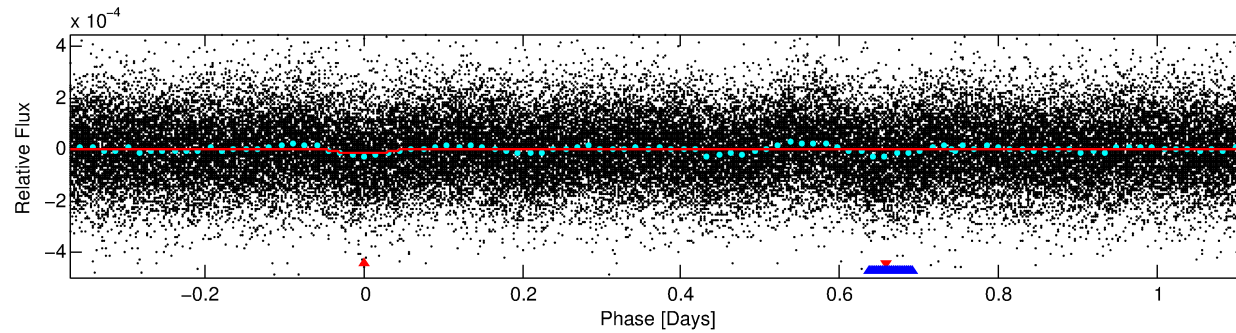
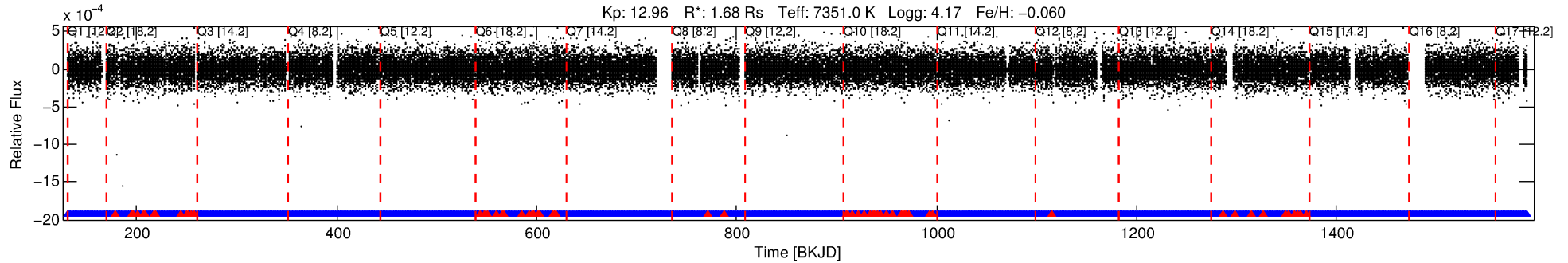
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009395222-01

No Significant Match Found

DV One-Page Summary

KIC: 9395222 Candidate: 1 of 2 Period: 1.487 d



DV Fit Results:

Period = 1.48737 [0.00003] d
Epoch = 131.6180 [0.0058] BKJD
Rp/R* = 0.0032 [0.0043]
a/R* = 6.26 [49.43]
b = 0.20 [38.57]
Seff = 8572.09 [3430.83]
Teff = 2454 [245] K
Rp = 0.59 [0.82] Re
a = 0.0293 [0.0075] AU
Ag = 34.41 [93.86] [0.36σ]
Teffp = 9188 [6225] K [1.08σ]

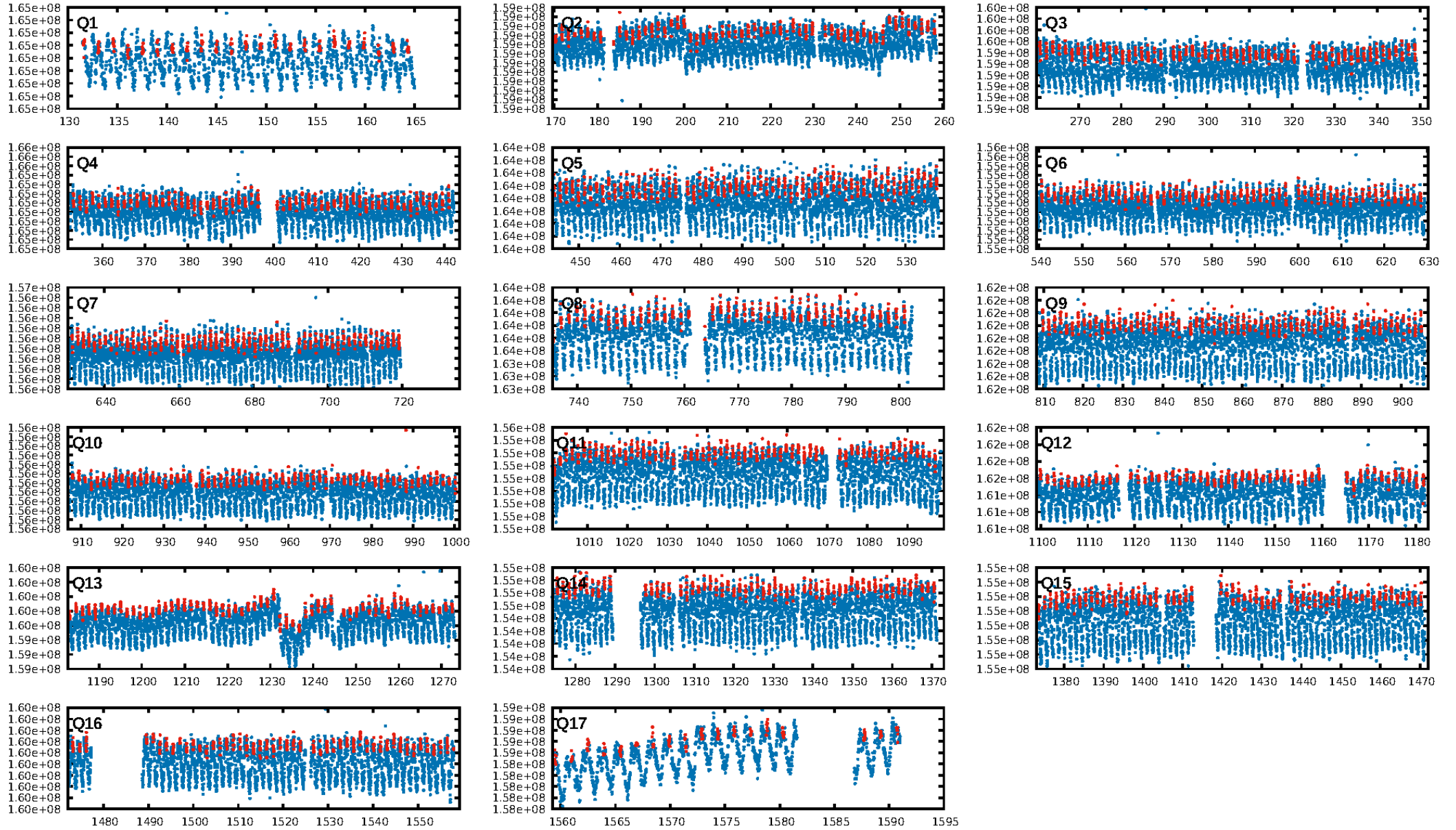
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.92e-17
RollingBand-fgt: 0.93 [801/861]
GhostDiagnostic-chr: -1.261
Centroid-sig: 0.0%
Centroid-so: 5.231 arcsec [2.38σ]
OotOffset-rm: 0.283 arcsec [1.57σ]
KicOffset-rm: 0.309 arcsec [1.69σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.00 [0/17]
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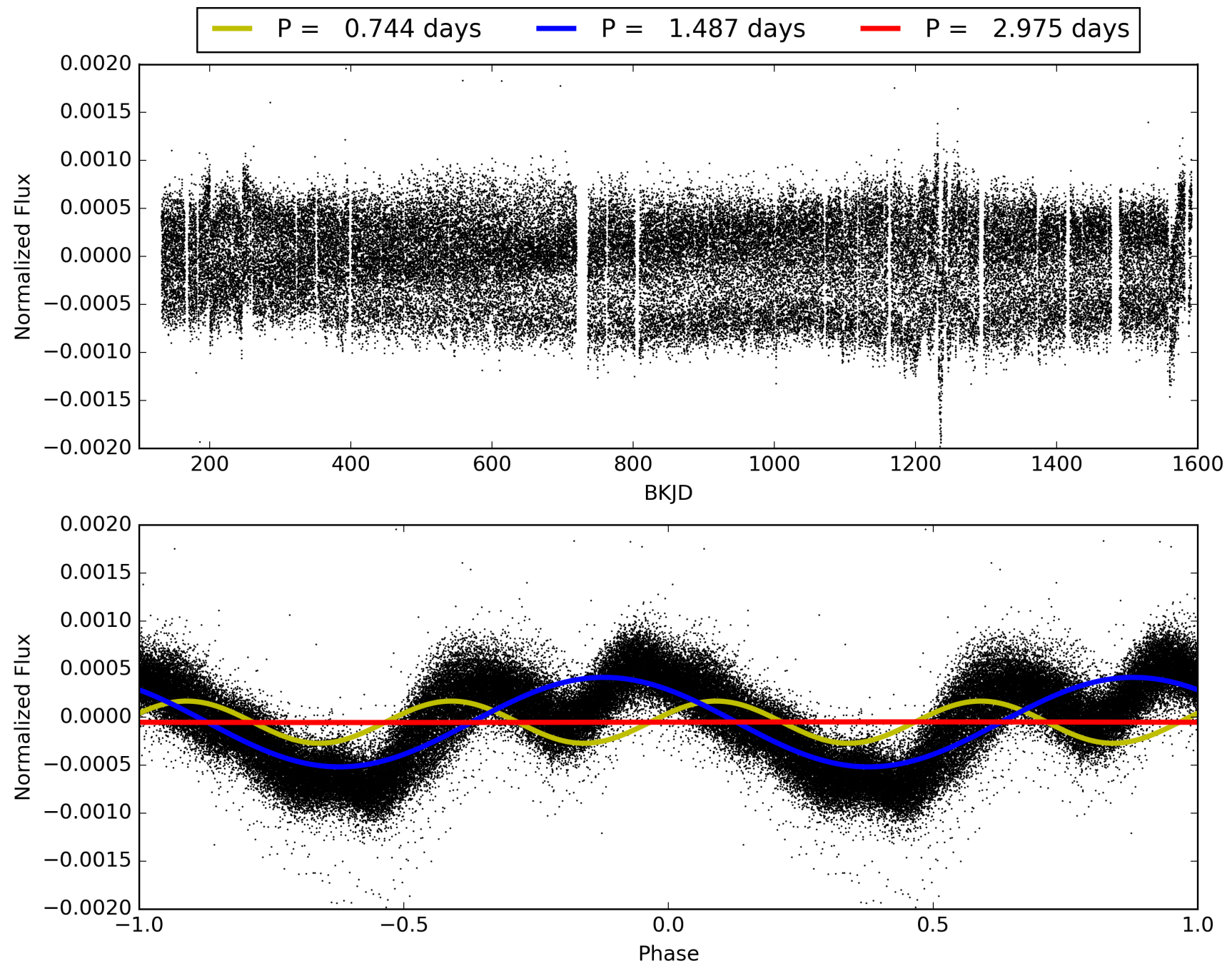
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 07:35:52 Z

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

TCE 009395222-01, PDC Light Curves

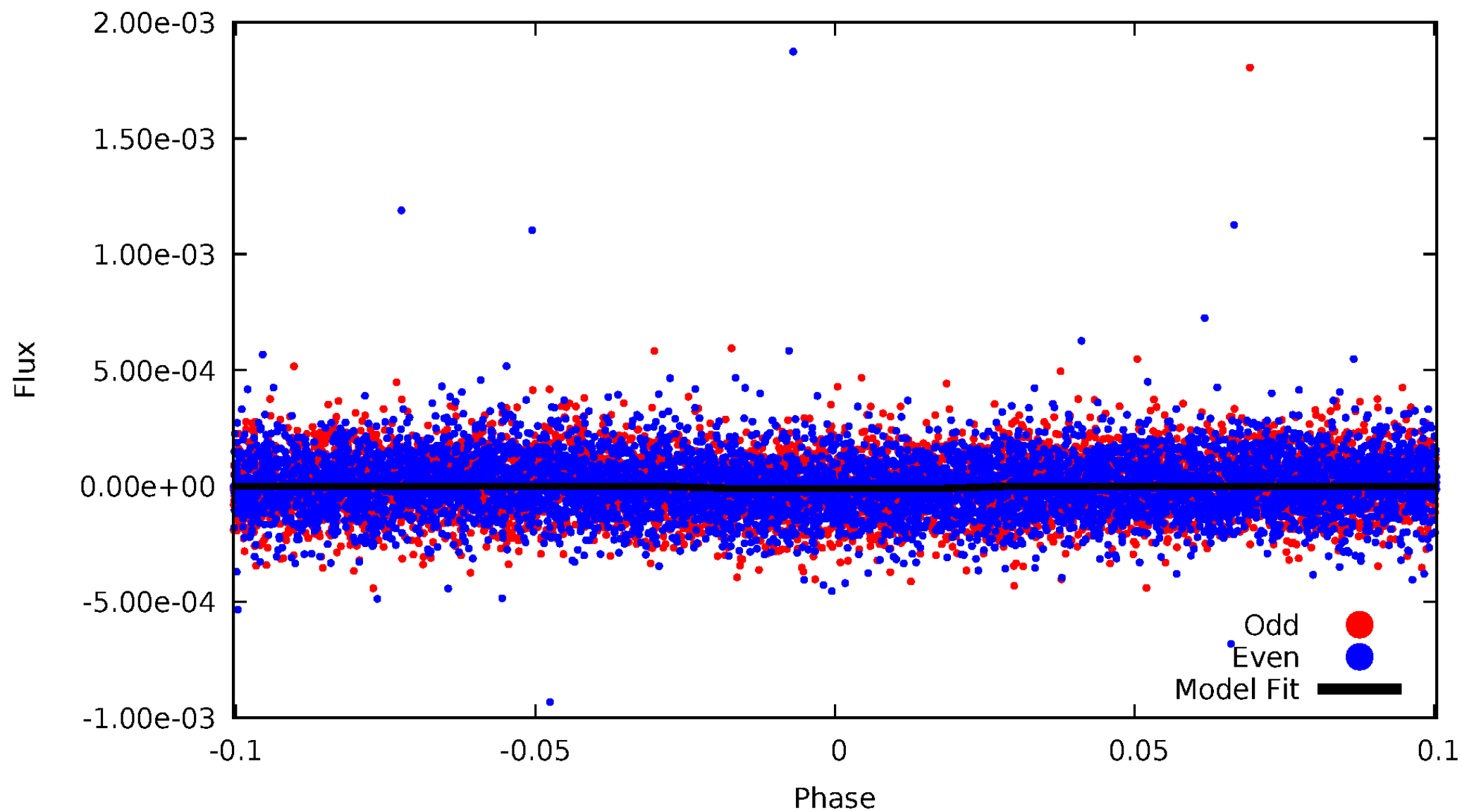


TCE 009395222-01



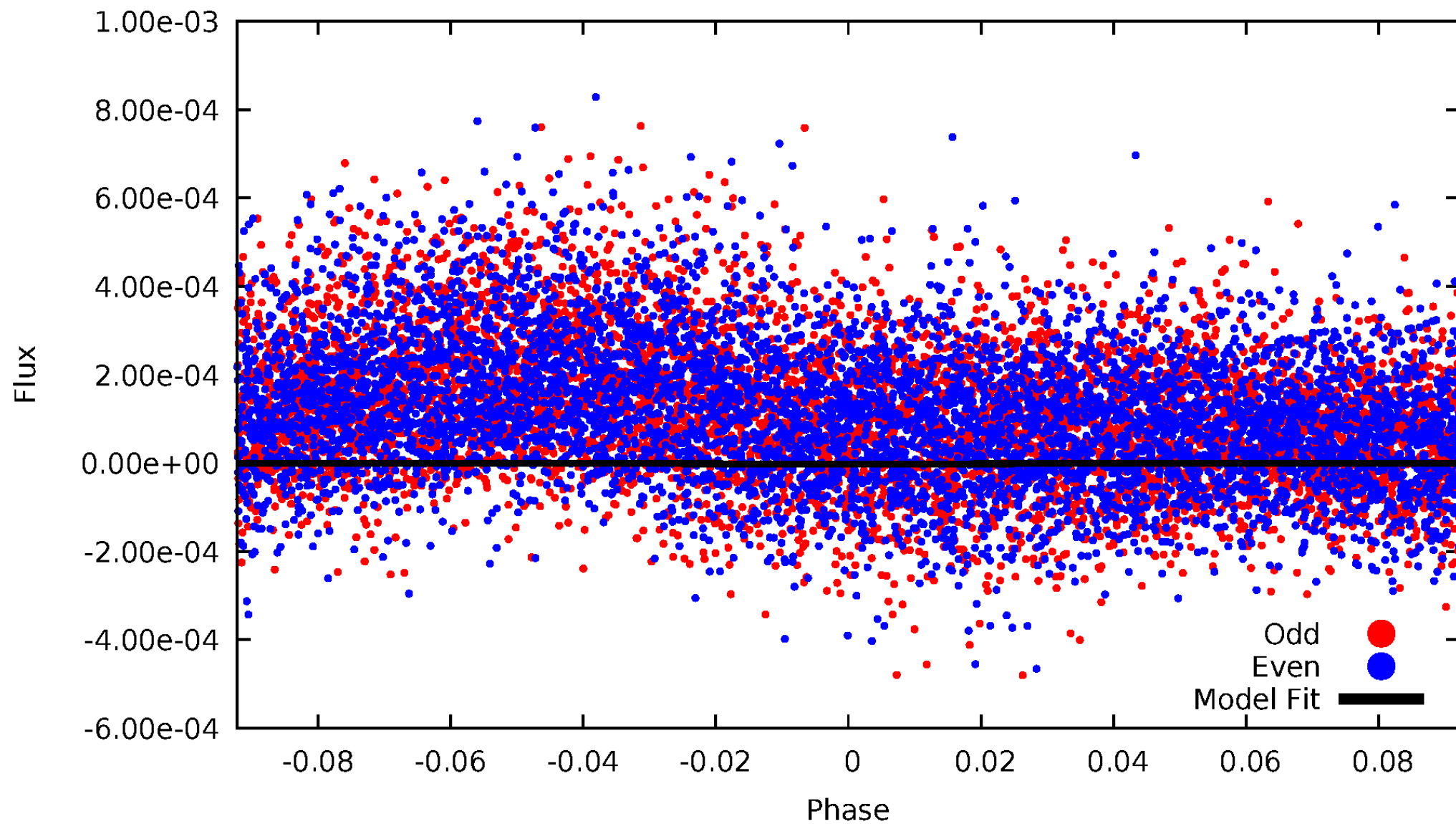
DV Odd/Even

TCE 009395222-01



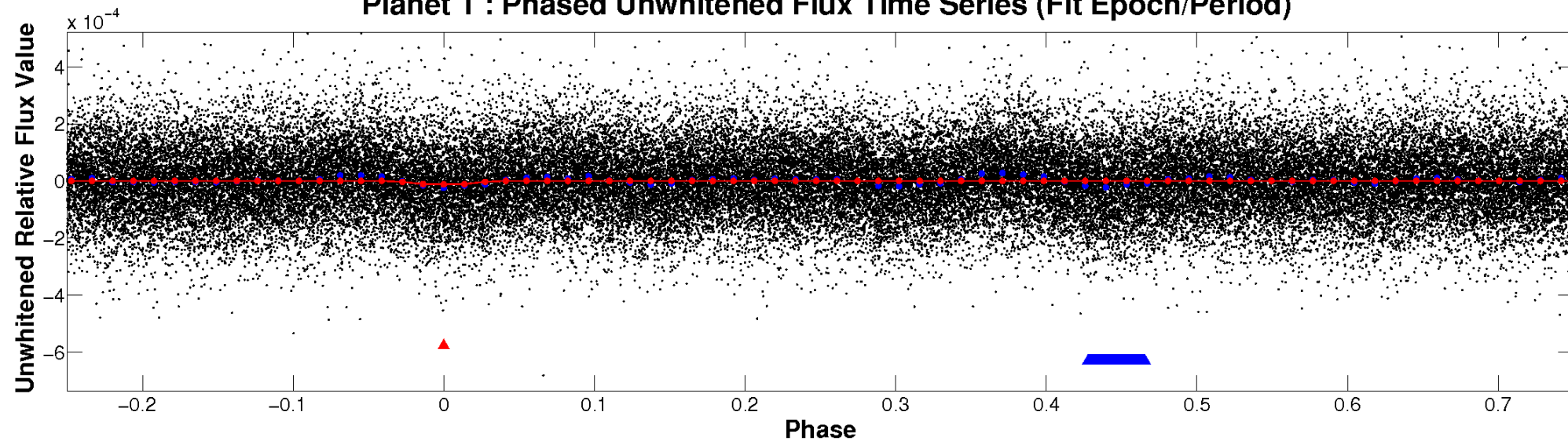
ALT Odd/Even

TCE 009395222-01

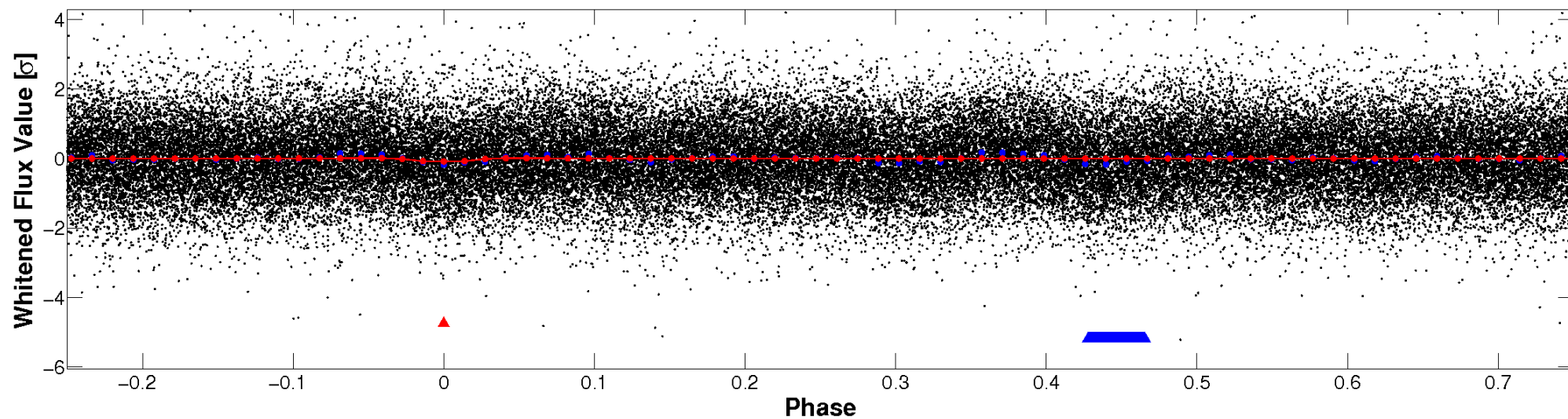


Non-Whitened Vs. Whitened Light Curve

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

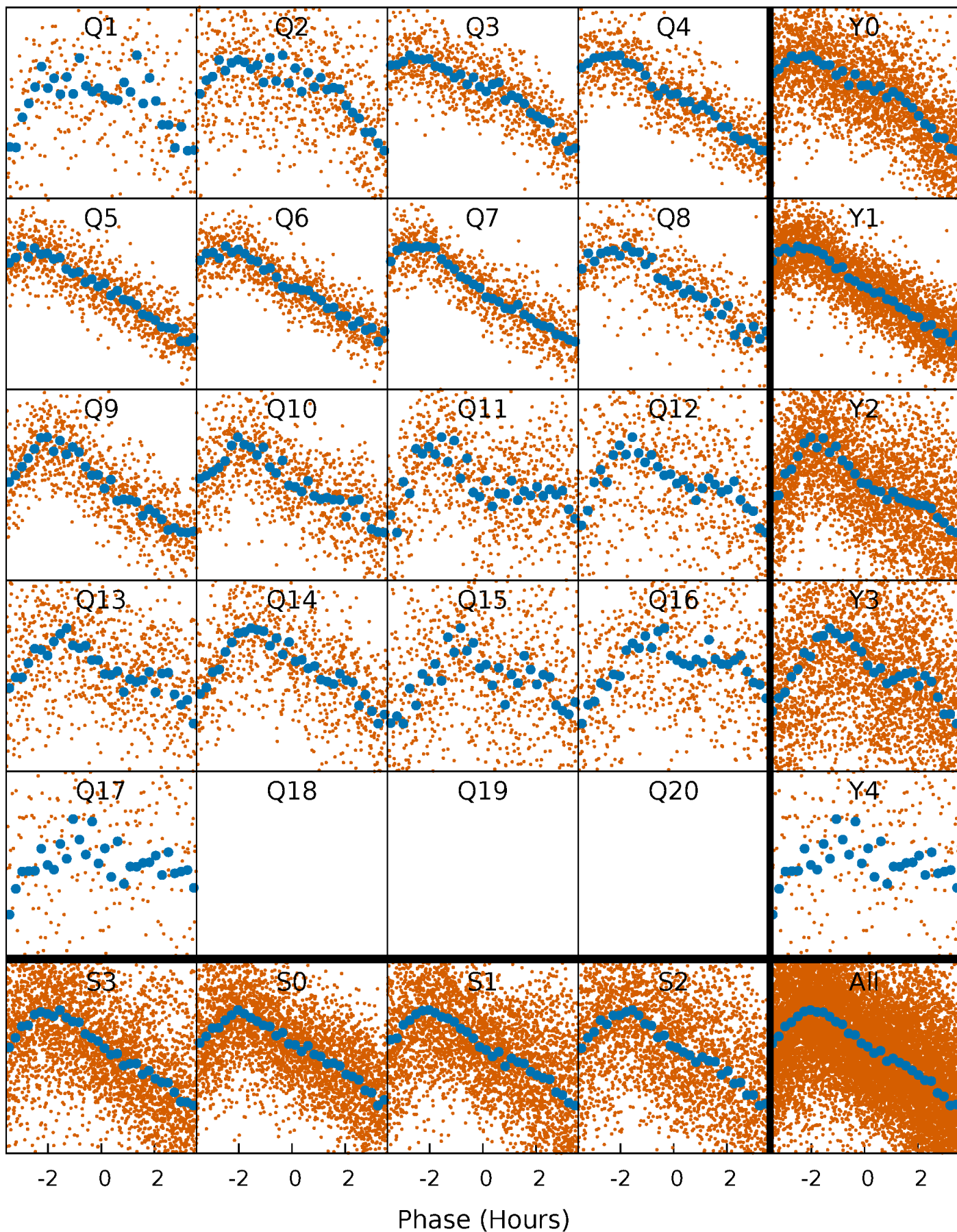


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



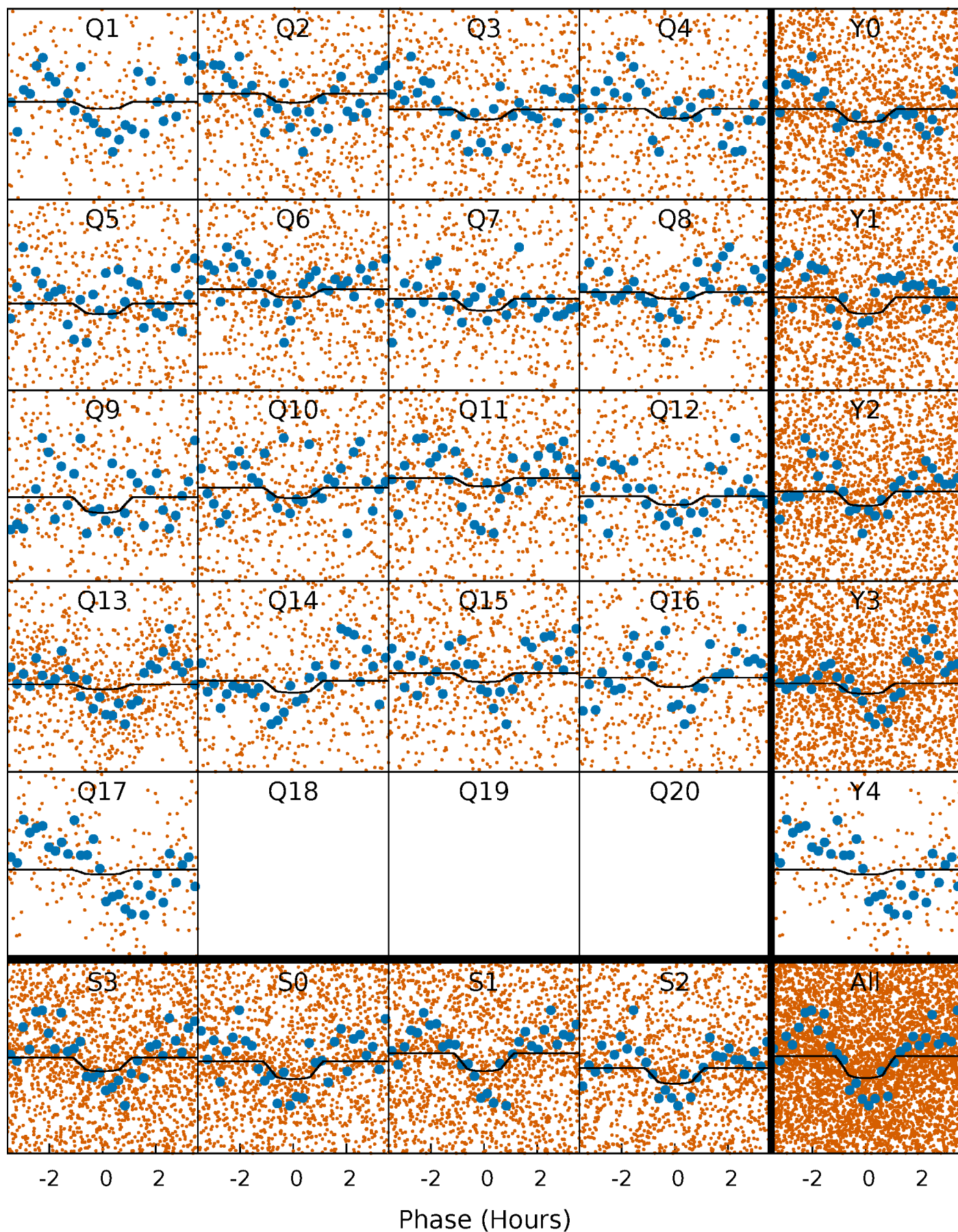
PDC Quarter-Phased Transit Curves

TCE 009395222-01 P= 1.487374 Days $T_0=131.618000$ (BKJD)



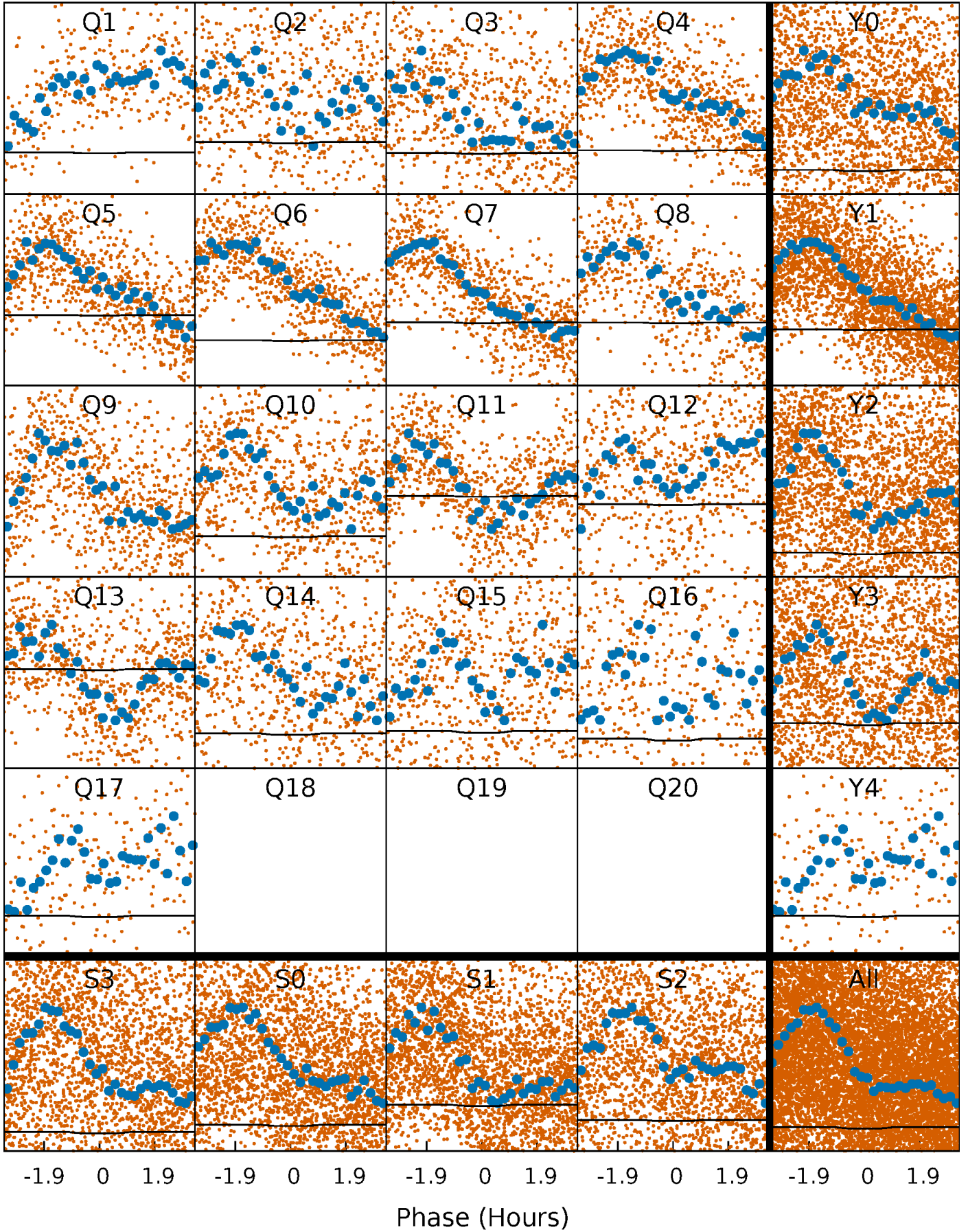
DV Quarter-Phased Transit Curves

TCE 009395222-01 P= 1.487374 Days $T_0=131.618000$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

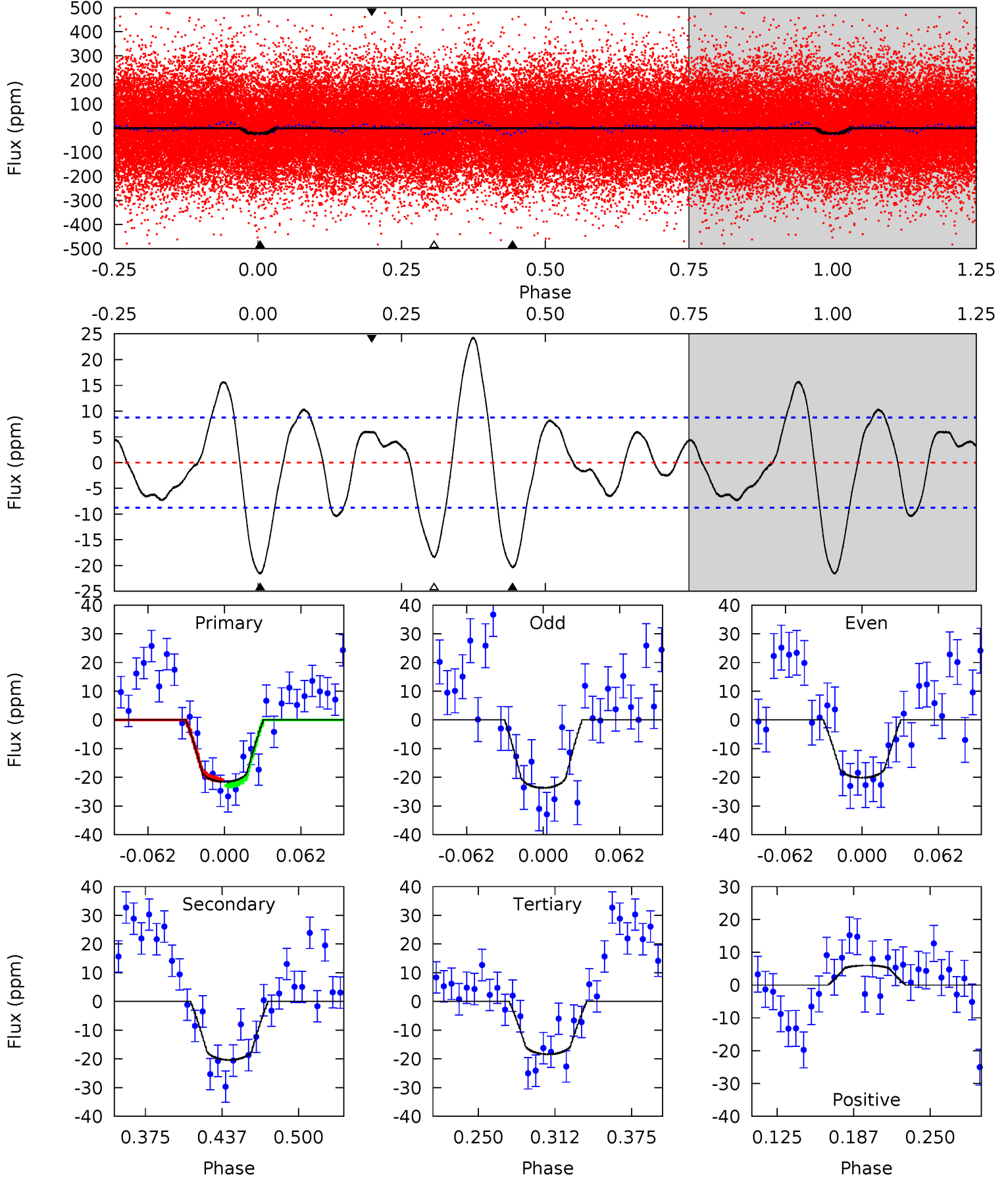
TCE 009395222-01 P= 1.487434 Days $T_0=131.581079$ (BKJD)



DV Model-Shift Uniqueness Test

009395222-01, P = 1.487374 Days, E = 130.130626 Days

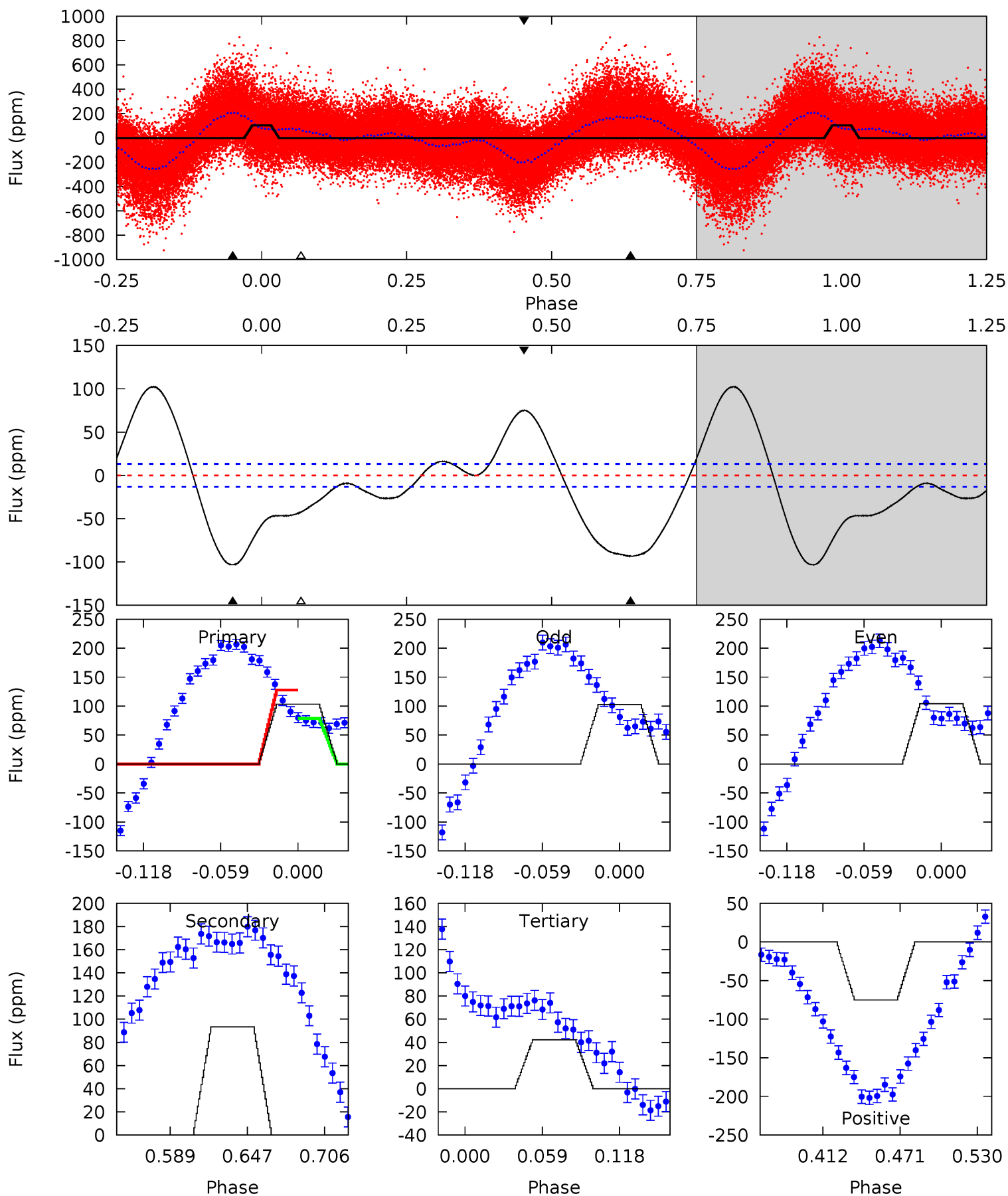
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	10.9	9.80	3.18	4.66	1.86	4.10	1.70	8.32	1.06	7.68	0.95	0.99	0.53	0.53



Alt Model-Shift Uniqueness Test

009395222-01, P = 1.487434 Days, E = 130.093645 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.3	32.8	14.9	26.4	4.67	1.89	15.2	21.4	9.91	18.0	6.45	0.30	1.03	0.50	8.35



Stellar Parameters For KIC 009395222

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7351^{+231}_{-334}	$4.170^{+0.108}_{-0.186}$	$-0.060^{+0.200}_{-0.350}$	$1.679^{+0.538}_{-0.290}$	$1.517^{+0.234}_{-0.234}$	$0.452^{+0.239}_{-0.236}$
	+3%/-5%	+3%/-4%	+333%/-583%	+32%/-17%	+15%/-15%	+53%/-52%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009395222-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-20 ± 2	$0.81^{+0.73}_{-0.52}$	3447^{+256}_{-211}	7402^{+9238}_{-2138}	14^{+101}_{-10}
Alt.	-93 ± 3	$0.70^{+0.65}_{-0.51}$	3451^{+256}_{-211}	15188^{+68225}_{-6486}	89^{+1103}_{-65}

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

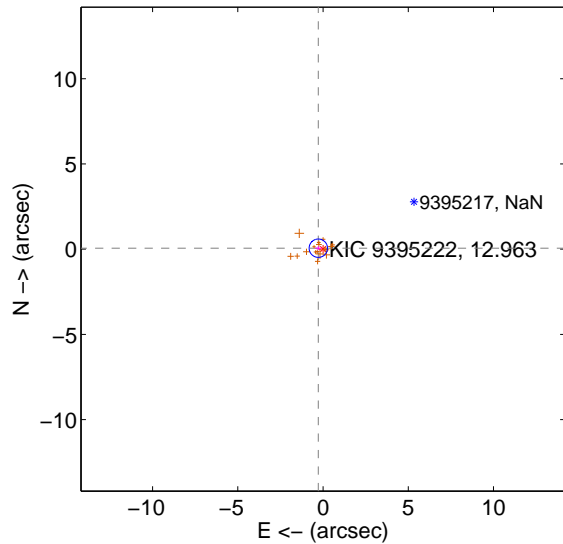
Supplemental centroid analysis for 009395222-01. Kepler magnitude: 12.96. Transit SNR 4.17

There are 0 quarters with good PRF difference image offsets

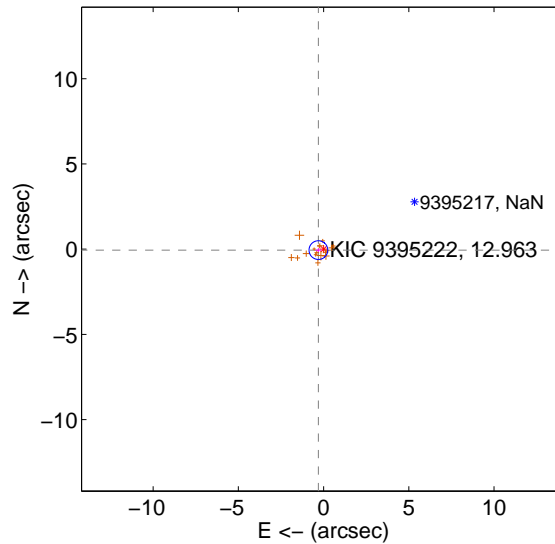
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.283 ± 0.180	1.57	0.277 ± 0.183	0.057 ± 0.118
PRF-fit source offset from KIC position	0.309 ± 0.183	1.69	0.304 ± 0.182	-0.055 ± 0.116
photometric centroid source offset	5.23 ± 2.20	2.38	-3.75 ± 2.15	3.65 ± 2.25

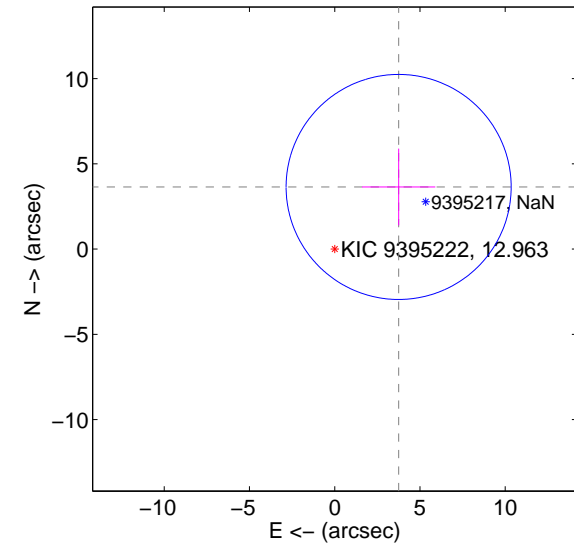
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

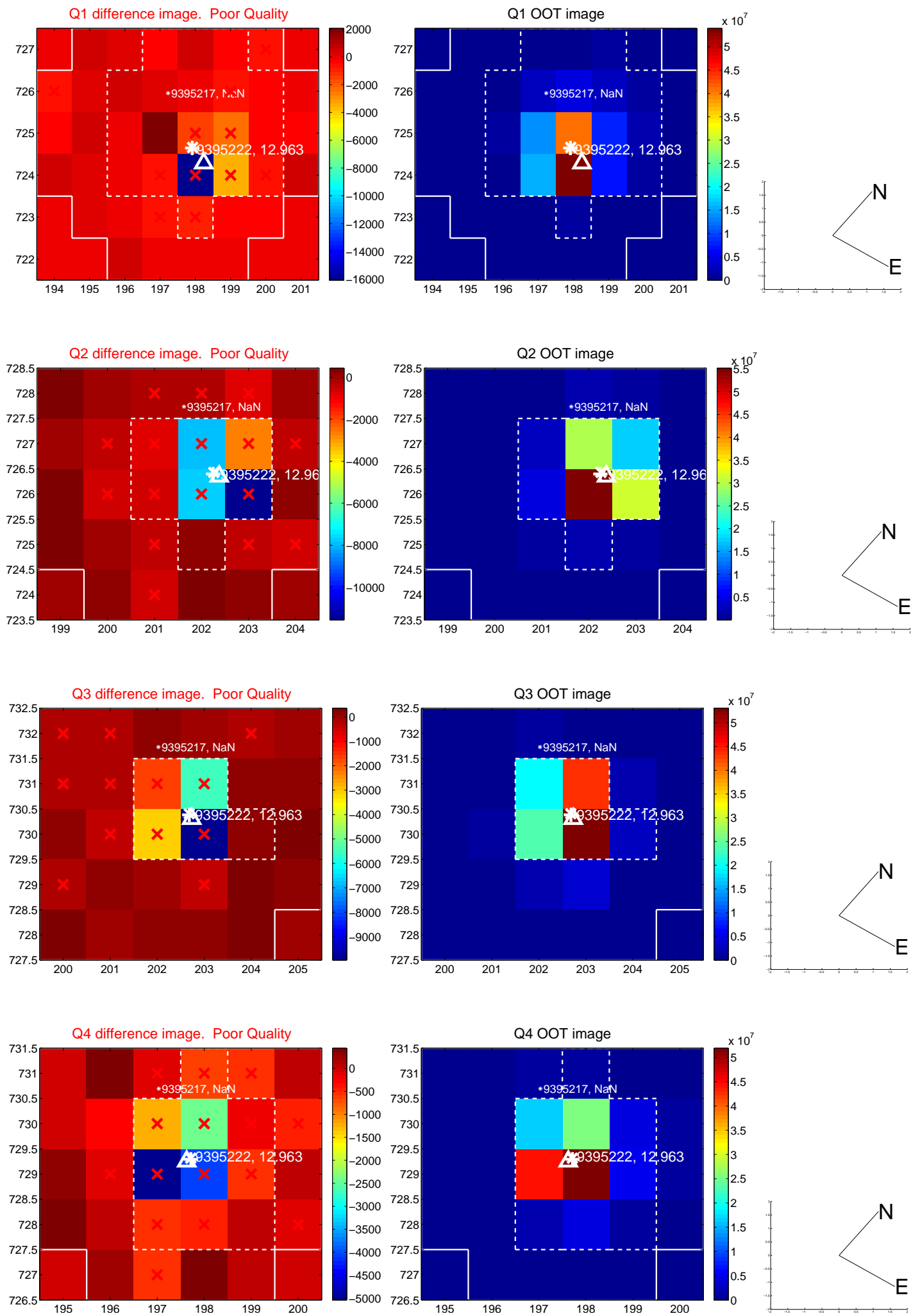


offset from photometric centroids

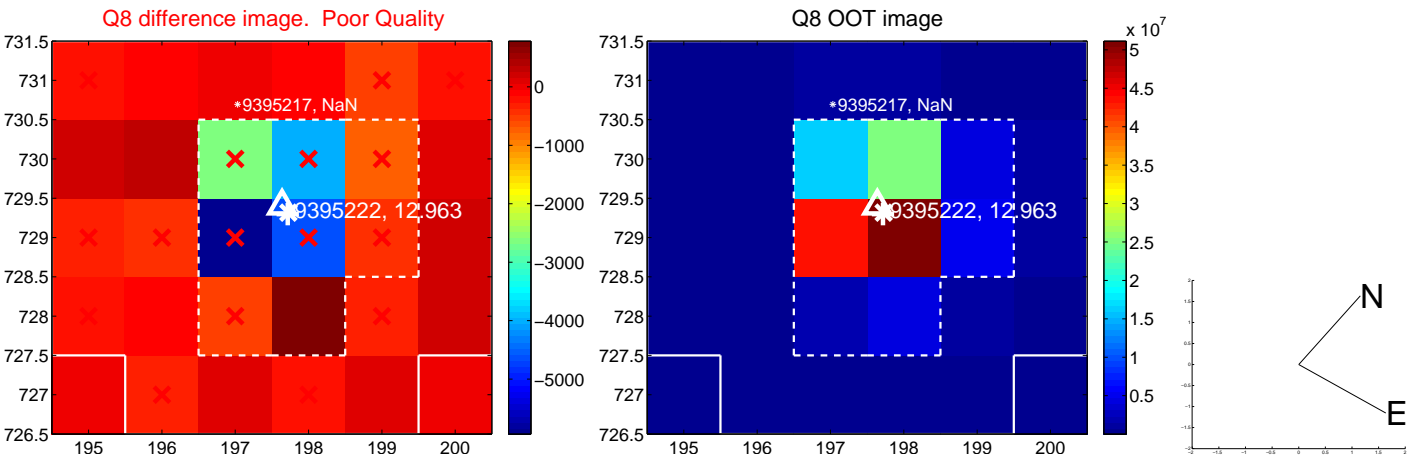
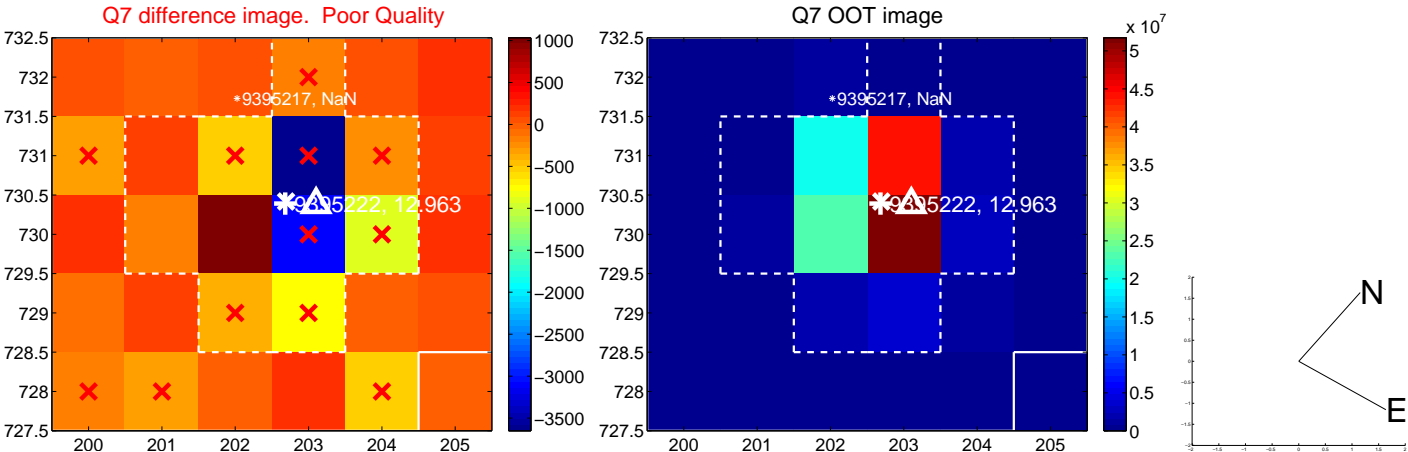
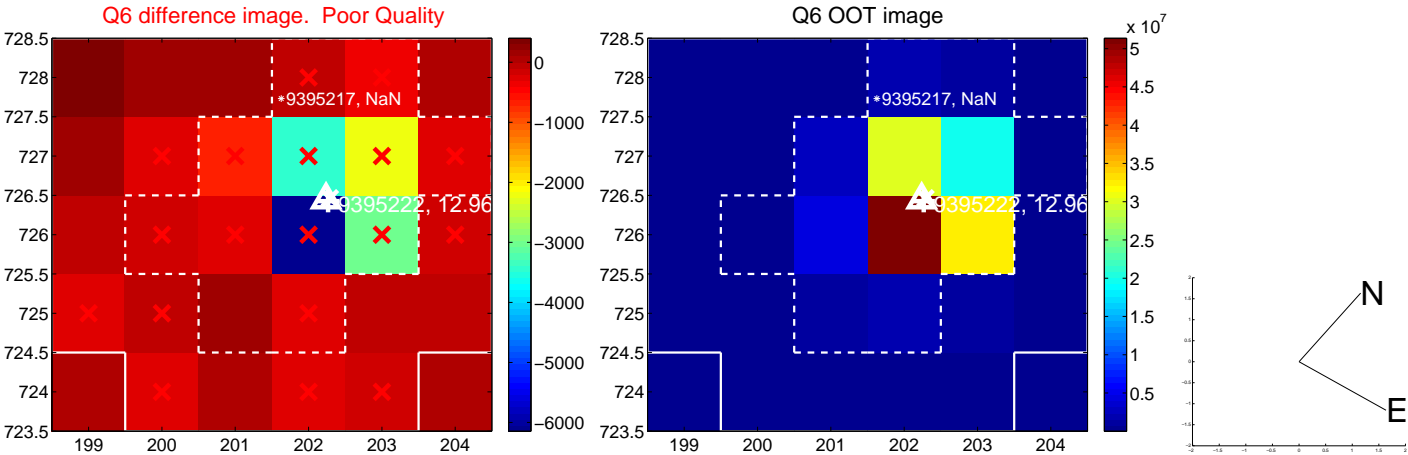
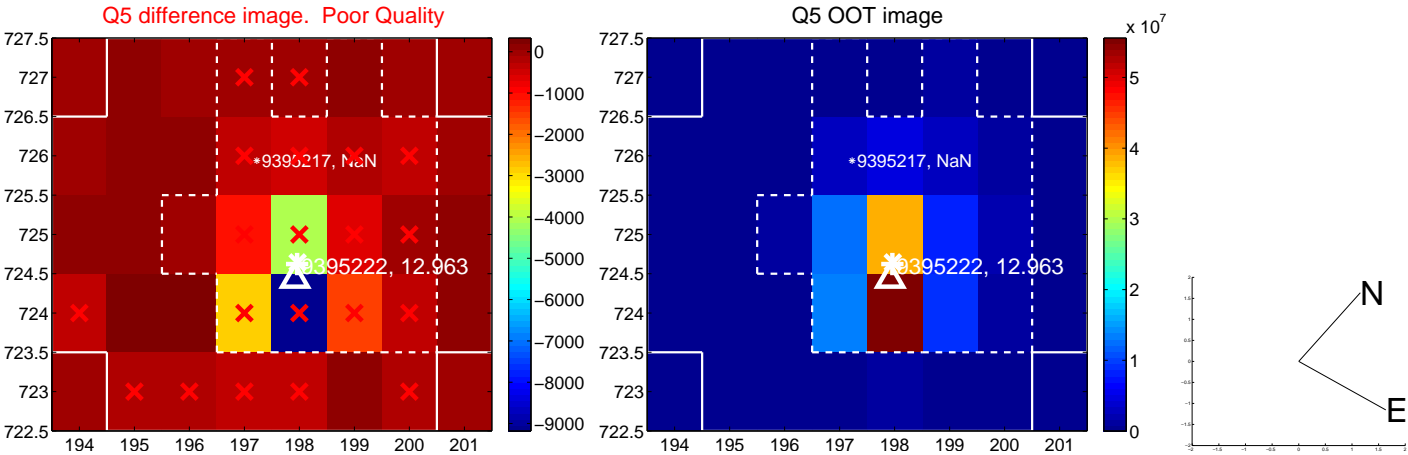


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

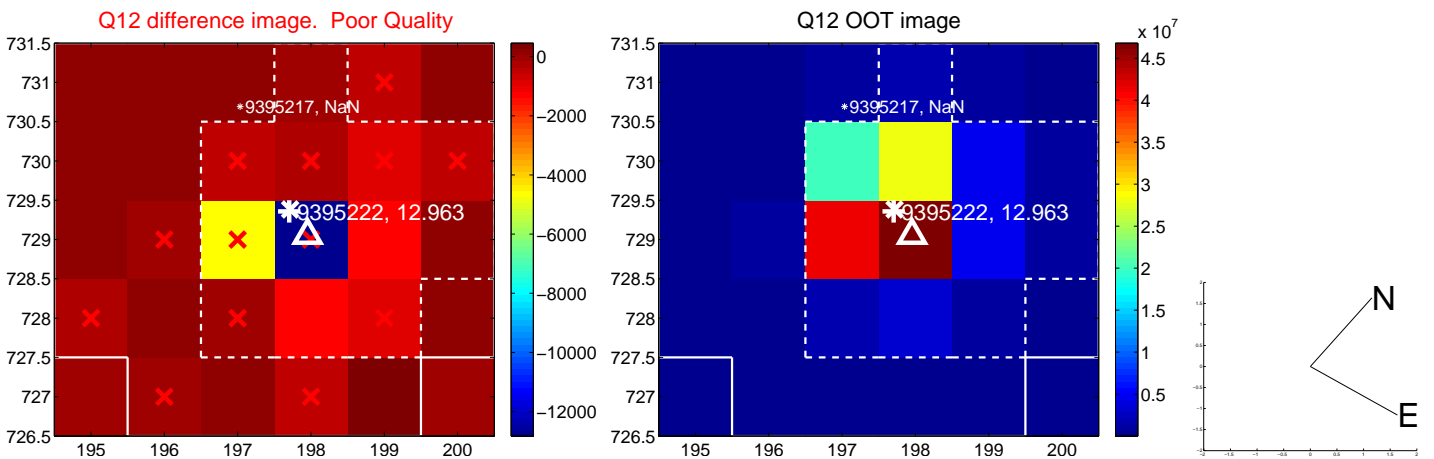
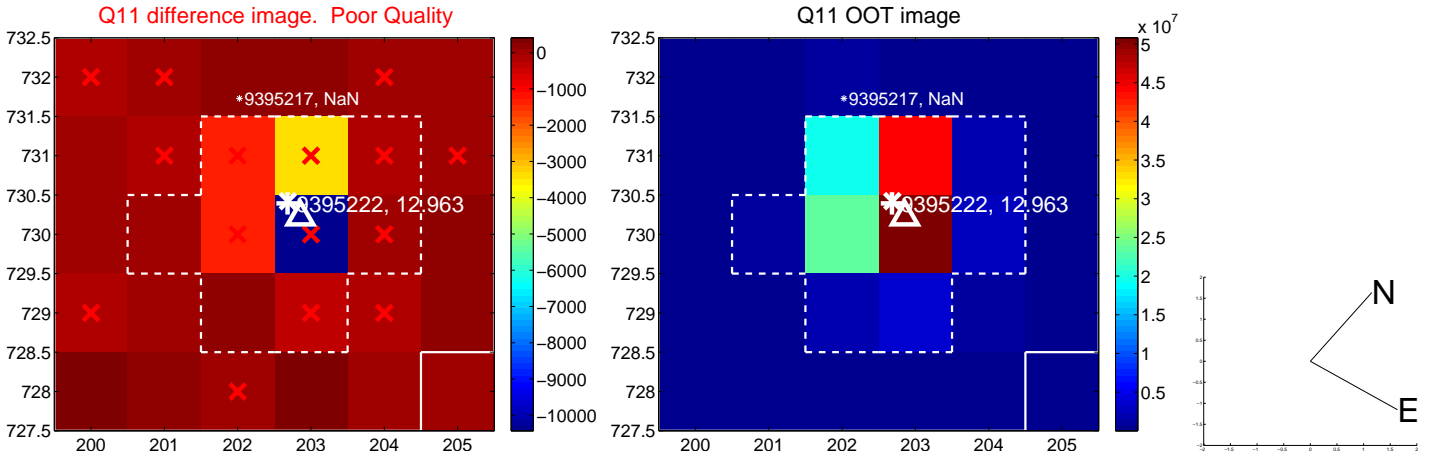
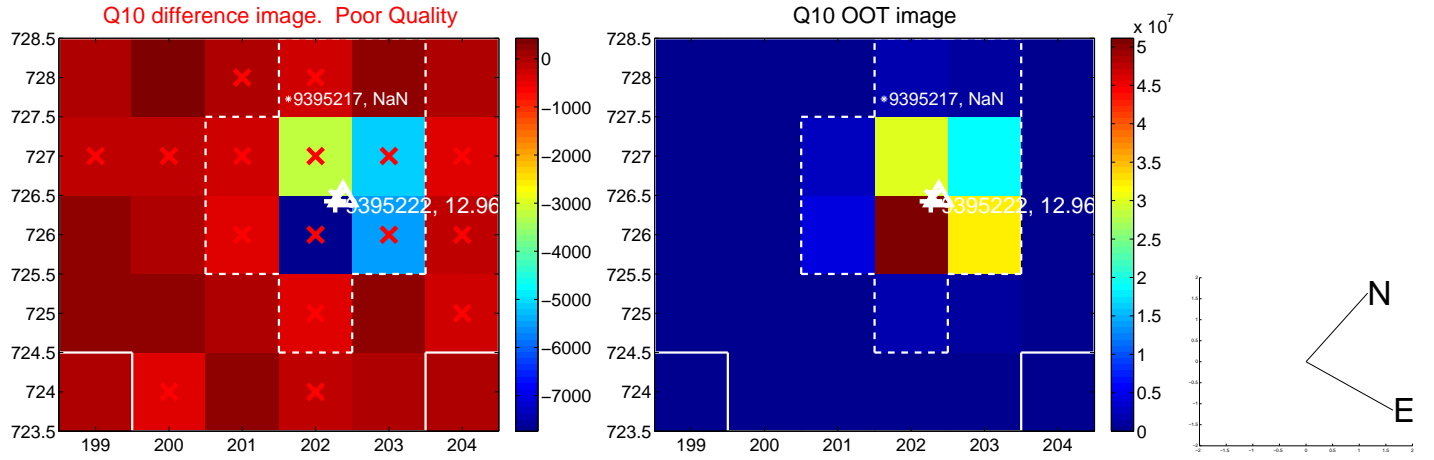
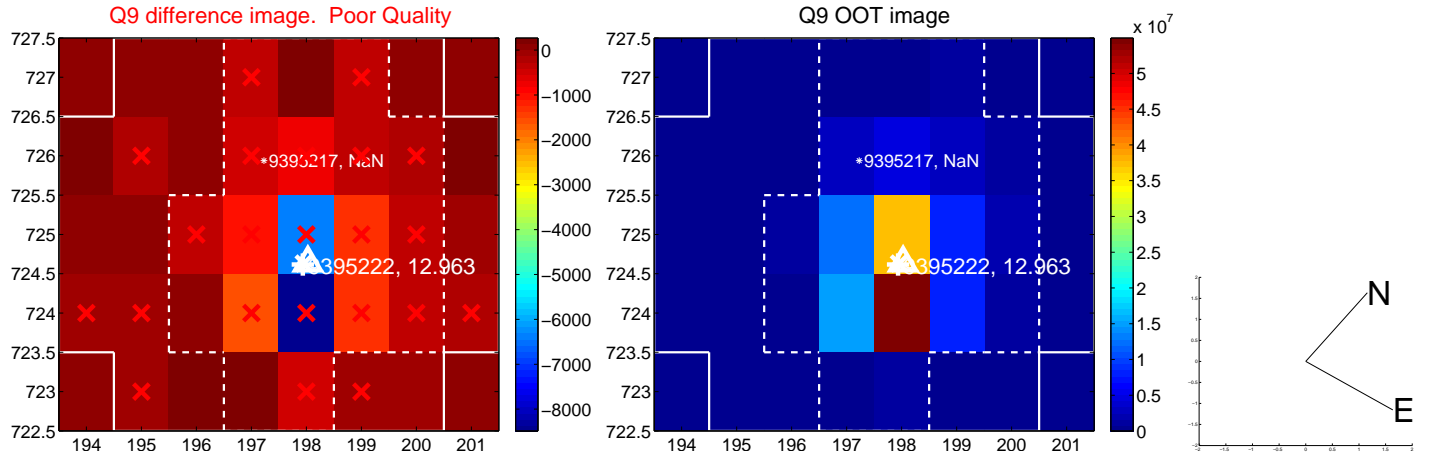
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



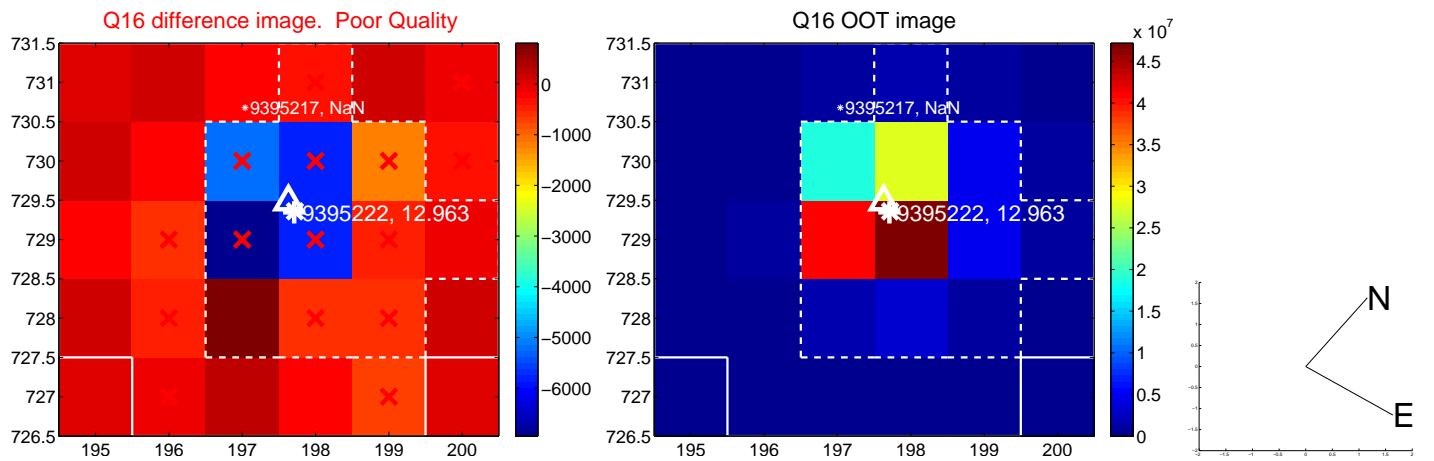
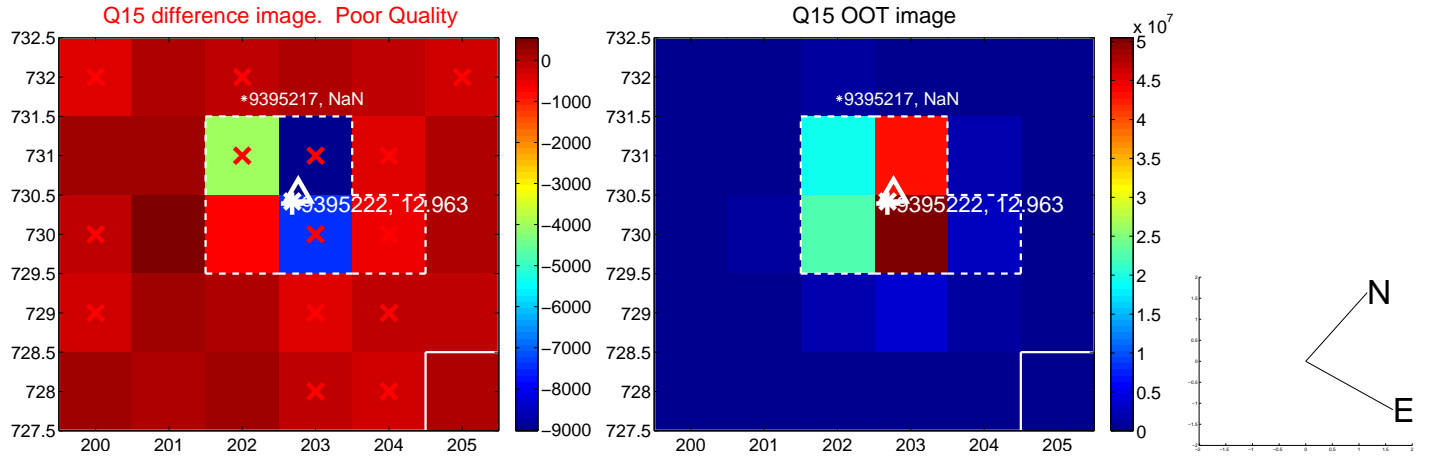
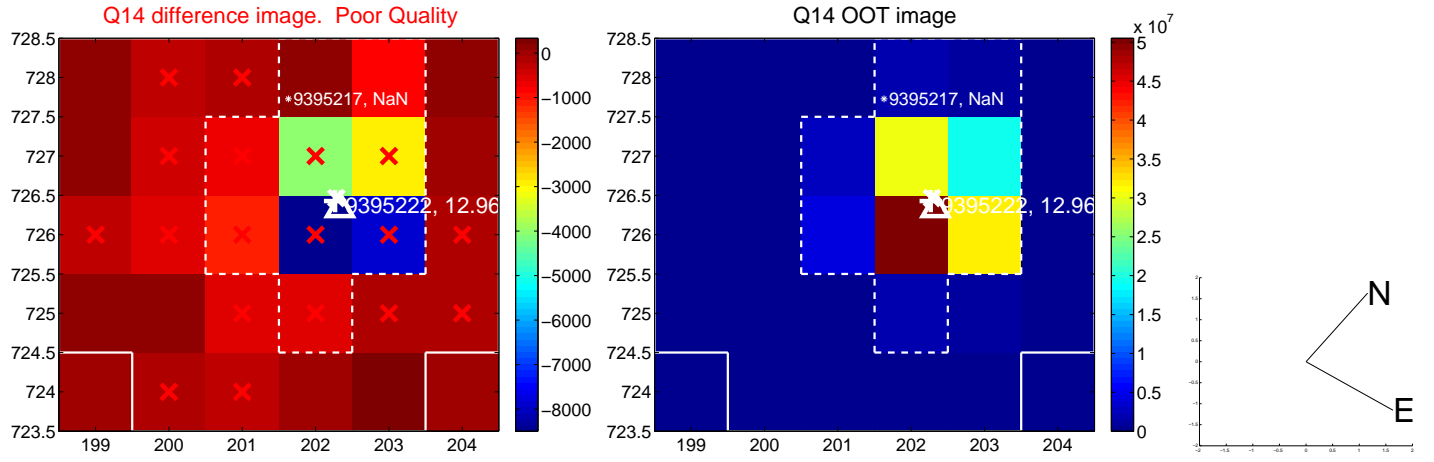
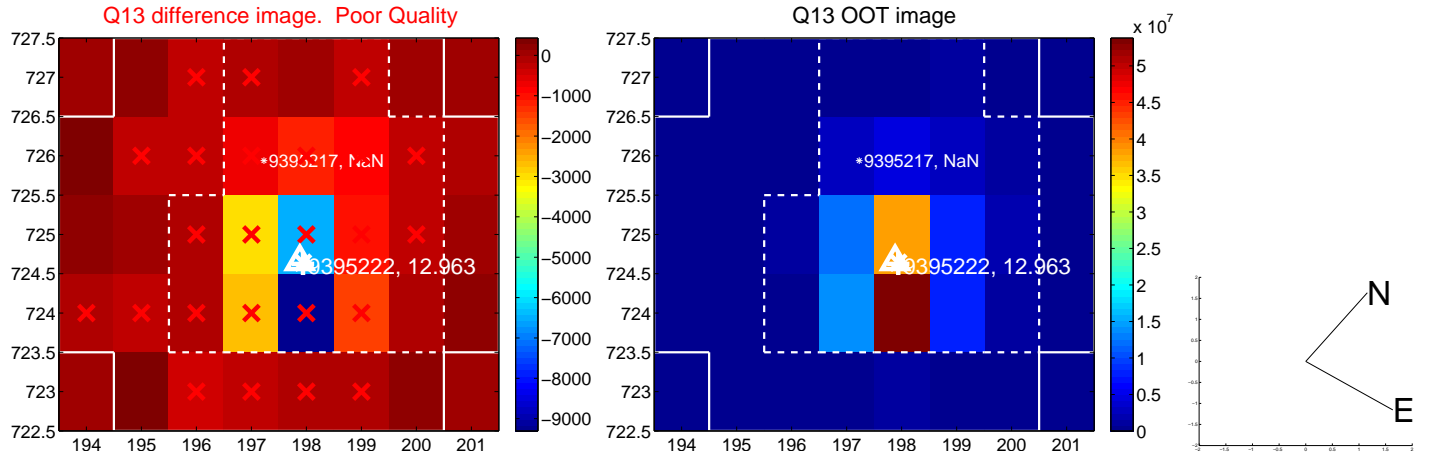
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



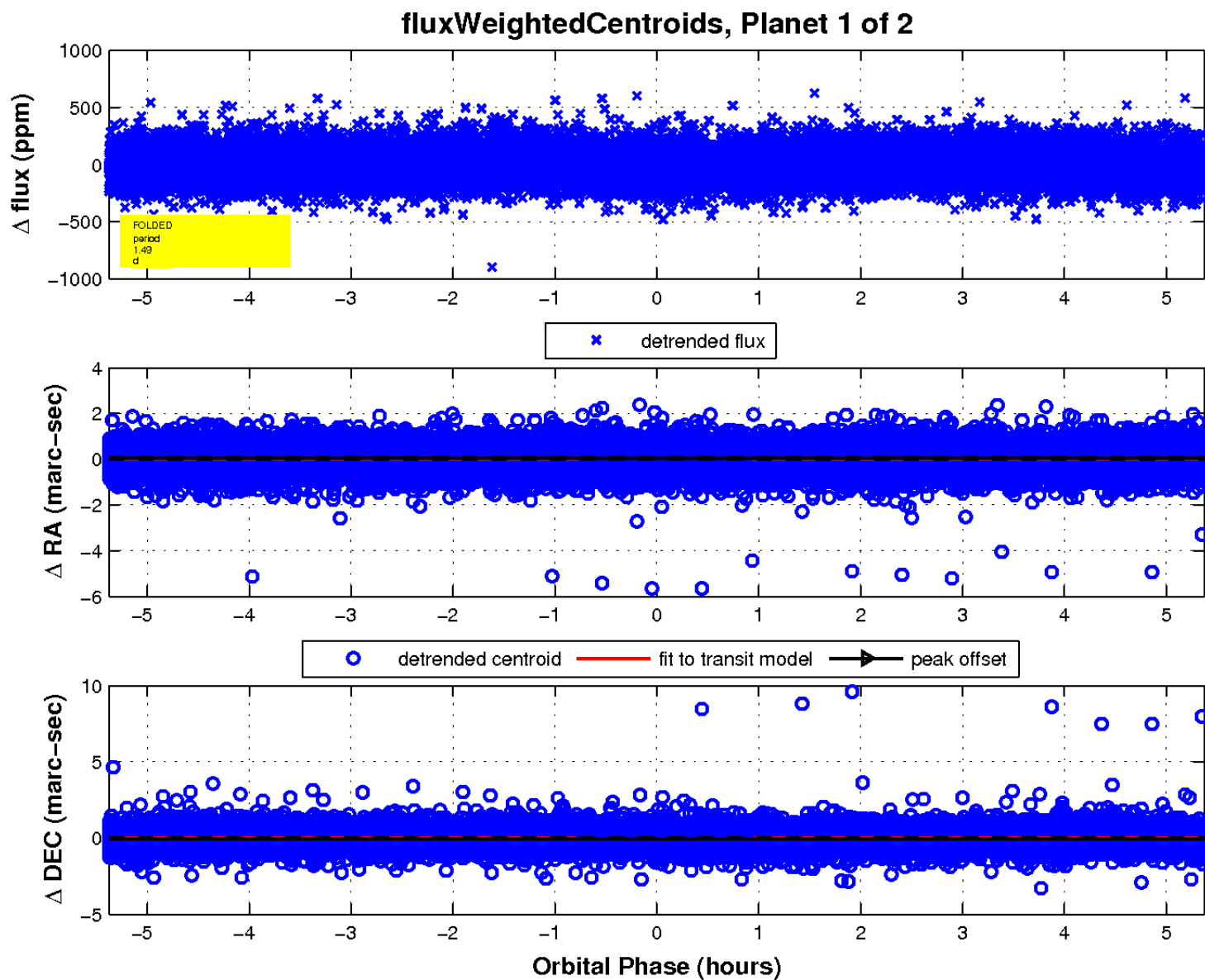
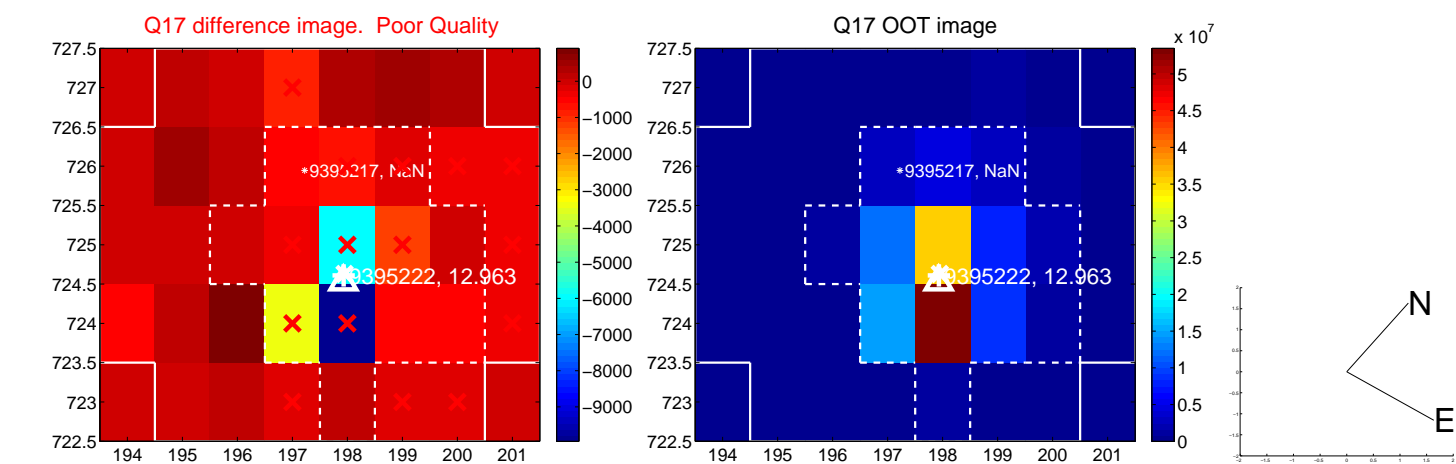
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

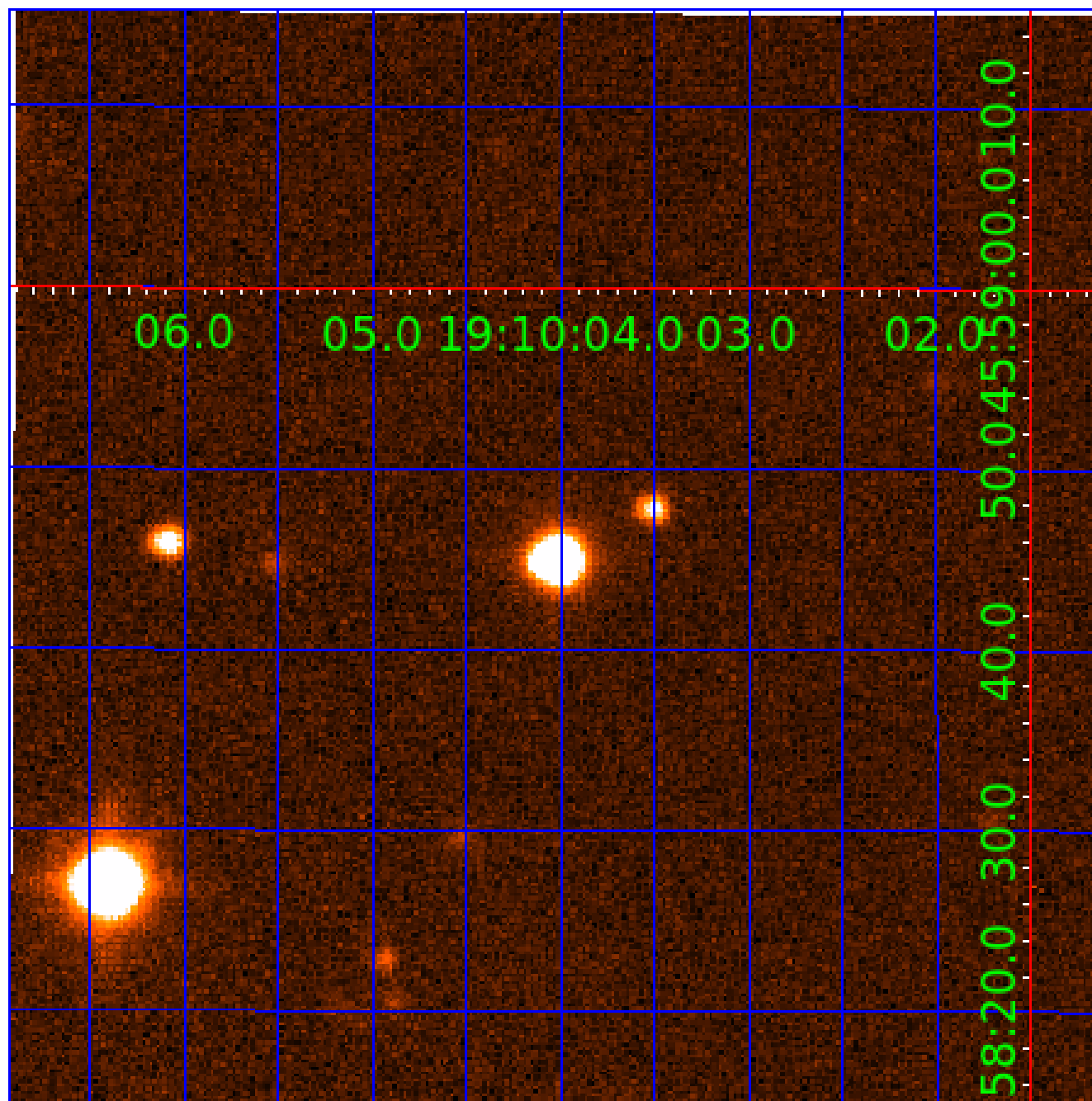


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009395222

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})
009395222-01	OBS	No	1.487375	131.618000	11.9	1.792	9.1	4.2	1.68	7351	0.59	8572.09
009395222-02	OBS	No	1.487318	132.310208	8.7	2.207	8.9	3.4	1.68	7351	0.57	8572.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009395222-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009395222-02	OBS	FP	0.00	1	0	1	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST

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

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

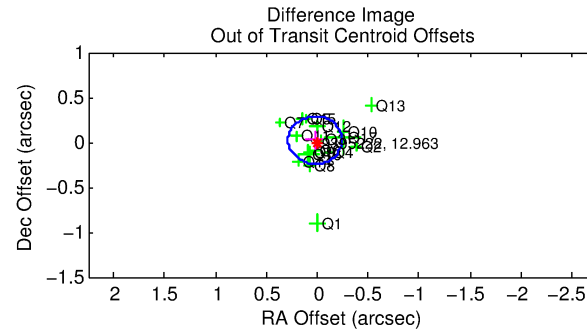
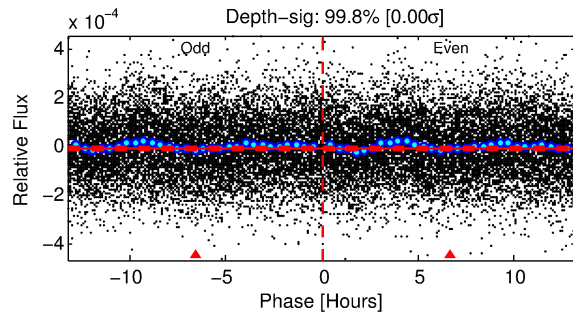
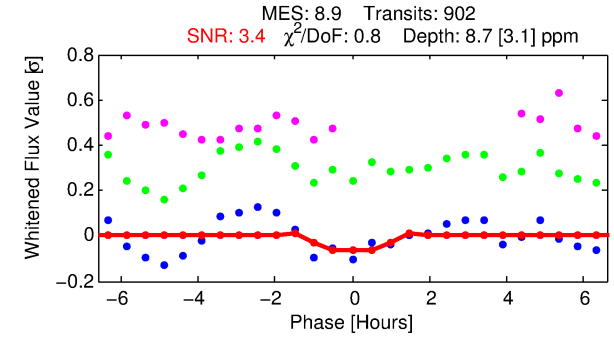
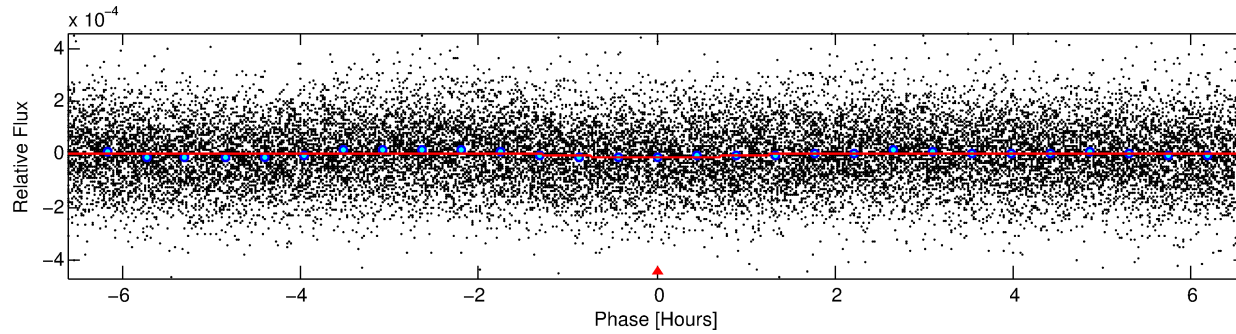
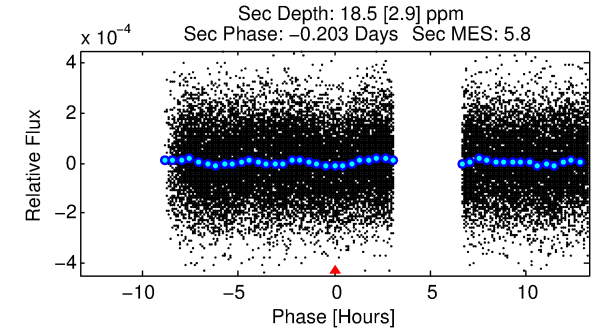
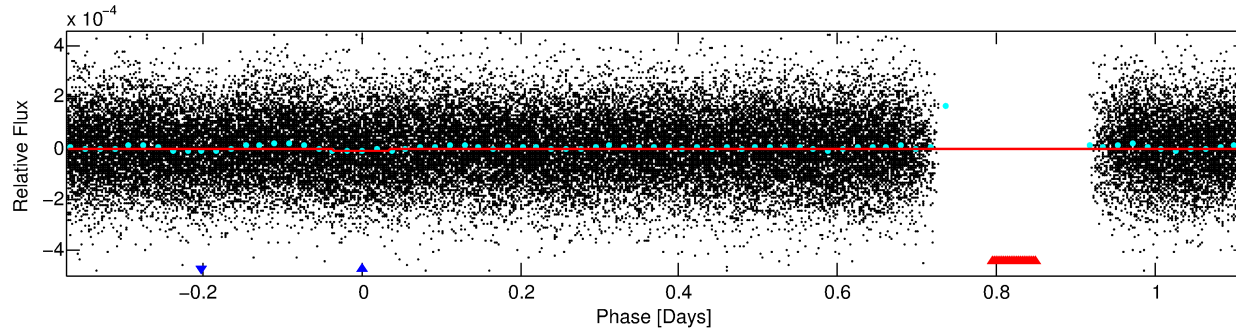
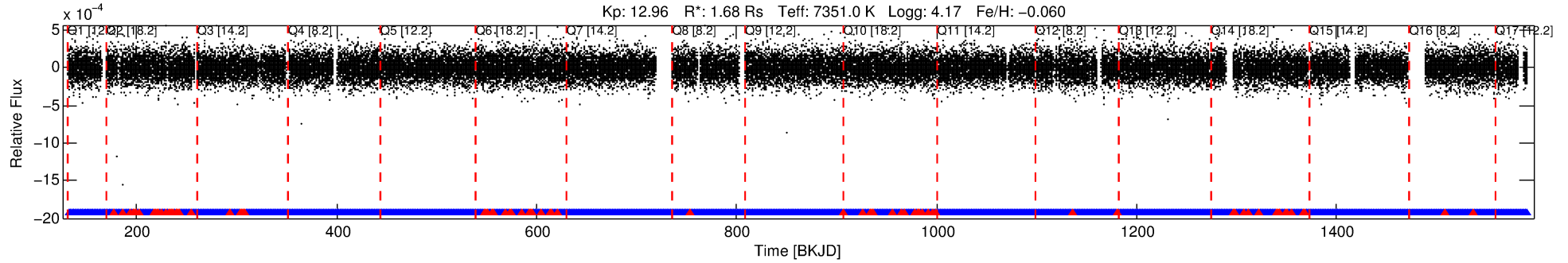
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009395222-02

No Significant Match Found

DV One-Page Summary

KIC: 9395222 Candidate: 2 of 2 Period: 1.487 d



DV Fit Results:

Period = 1.48732 [0.00003] d
Epoch = 132.3102 [0.0079] BKJD
Rp/R* = 0.0031 [0.0010]
a/R* = 2.47 [3.68]
b = 0.90 [0.38]
Seff = 8572.53 [3431.00]
Teff = 2454 [246] K
Rp = 0.57 [0.26] Re
a = 0.0293 [0.0075] AU
Ag = 26.61 [20.24] [1.27σ]
Teffp = 8616 [1499] K [4.06σ]

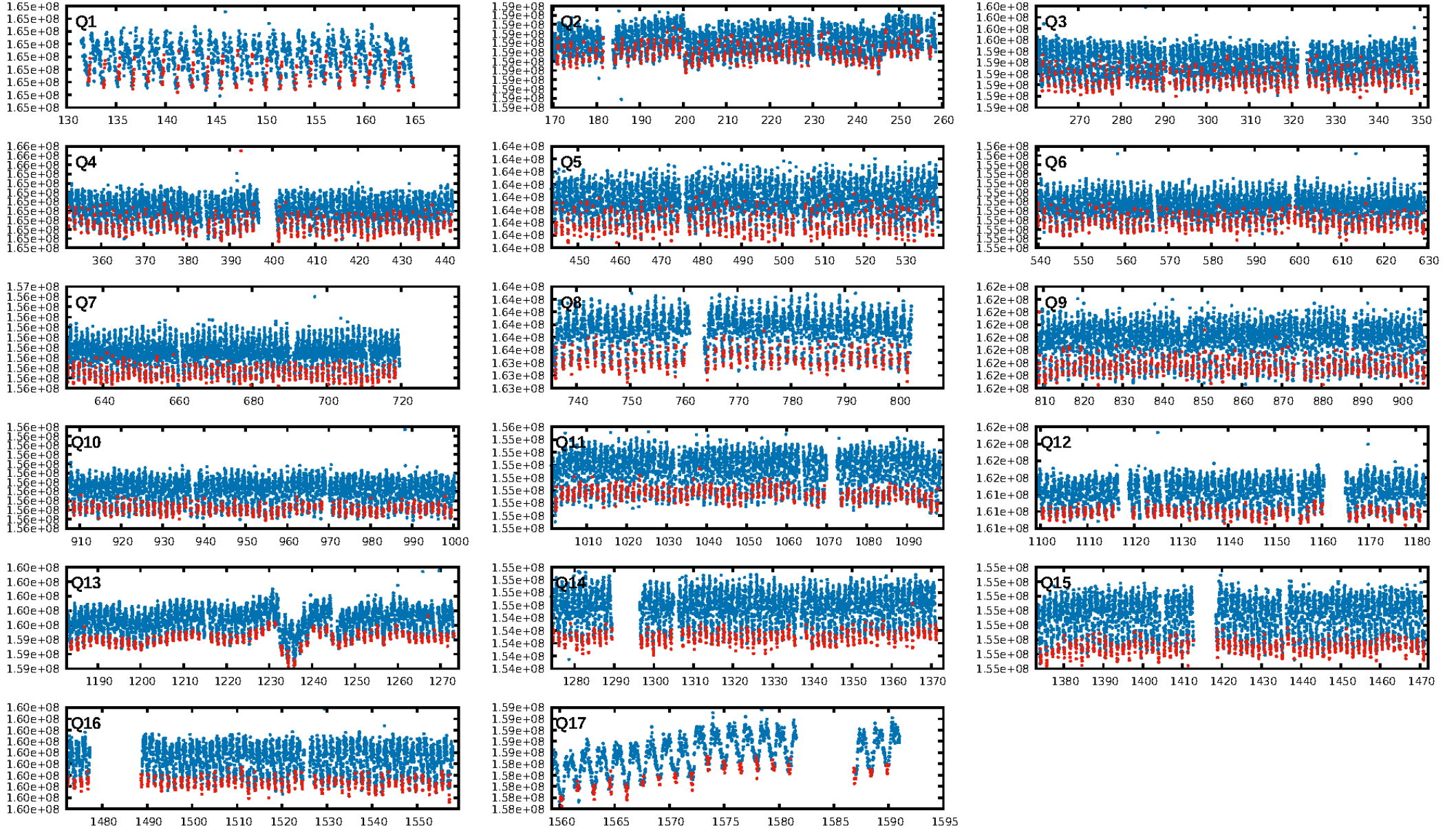
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.91e-17
RollingBand-fgt: 0.91 [786/861]
GhostDiagnostic-chr: 0.06589
Centroid-sig: 96.0%
Centroid-so: 0.374 arcsec [0.14σ]
OotOffset-rm: 0.032 arcsec [0.36σ]
KicOffset-rm: 0.098 arcsec [1.00σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
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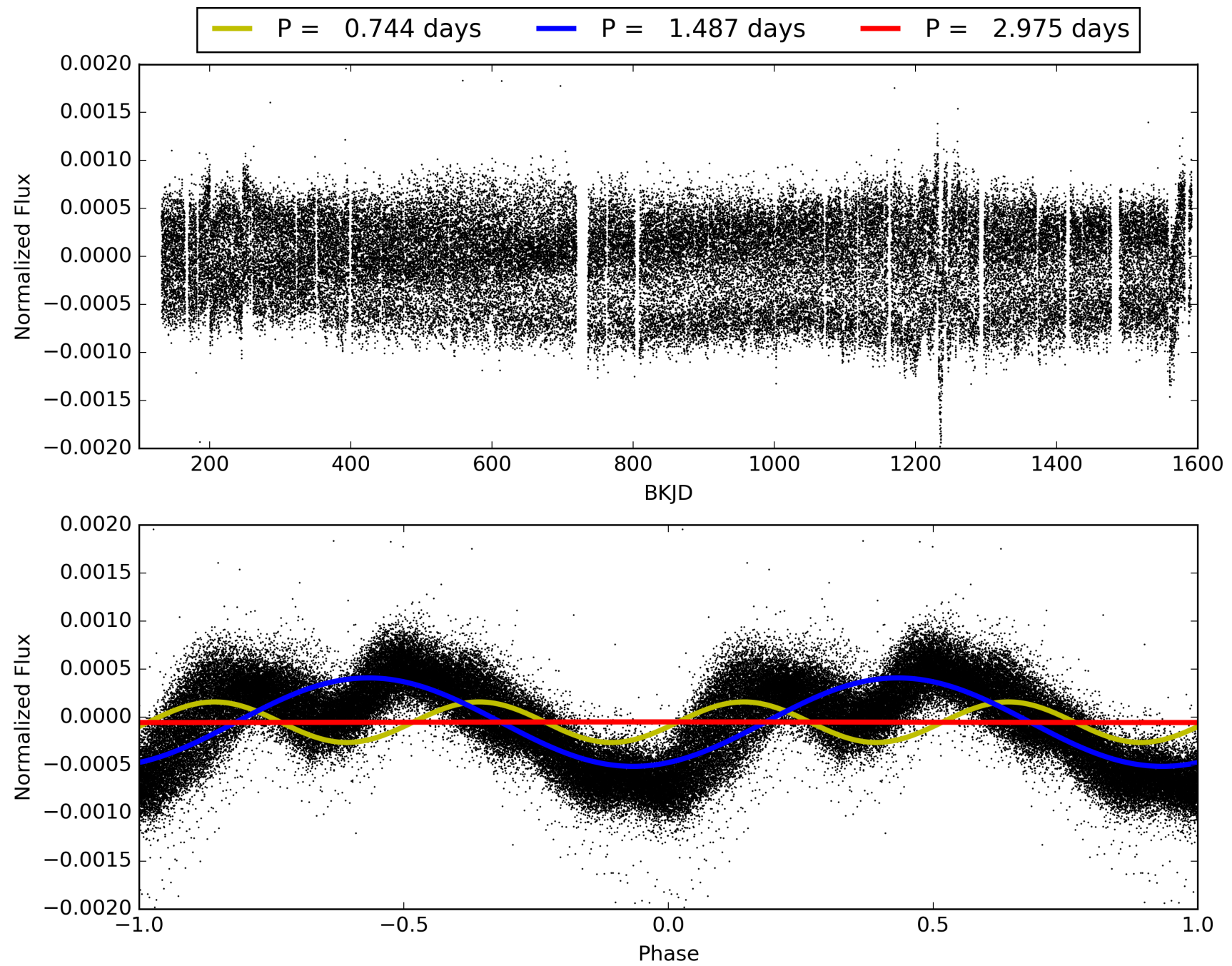
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 07:36:01 Z

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

TCE 009395222-02, PDC Light Curves

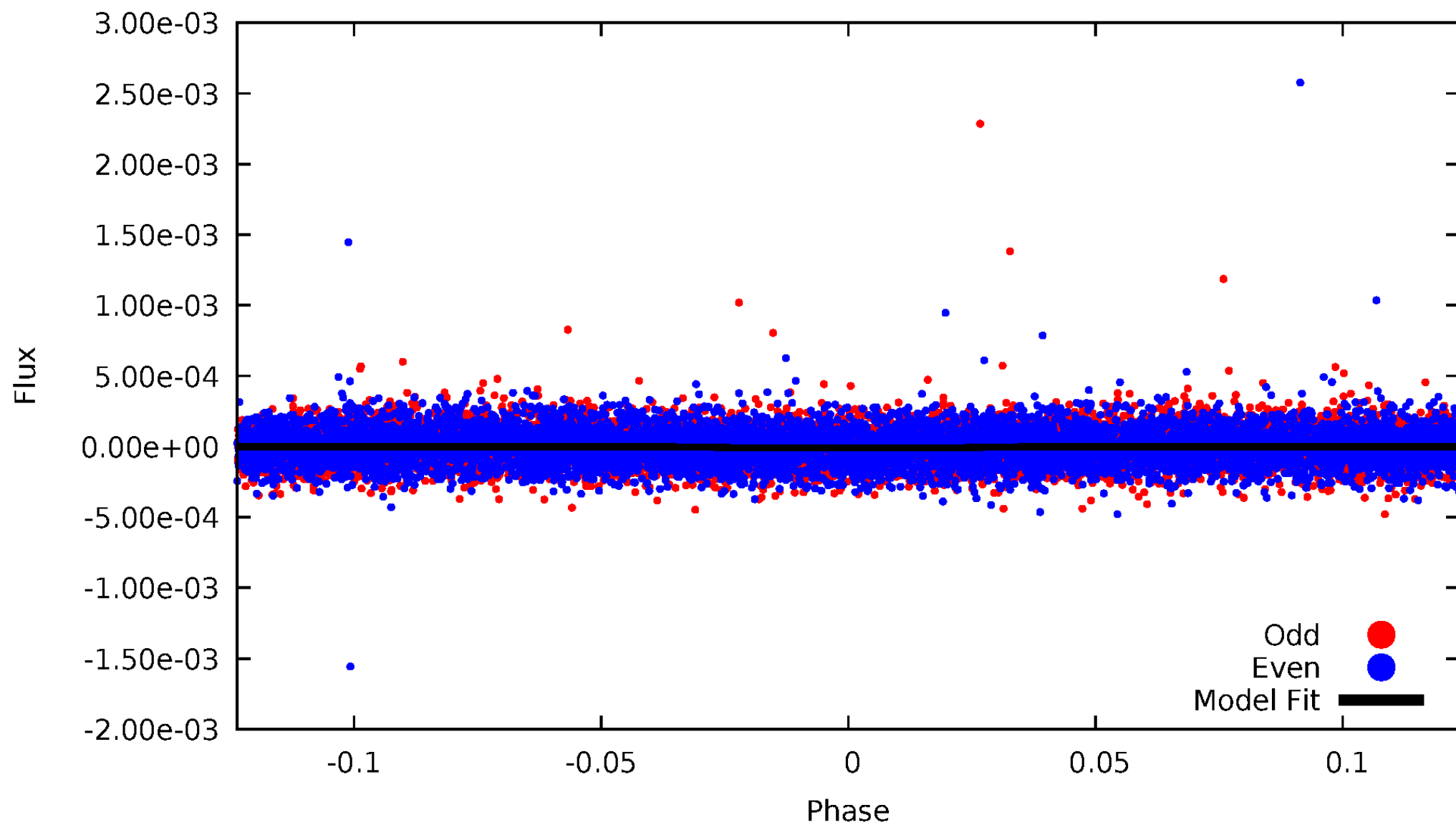


TCE 009395222-02



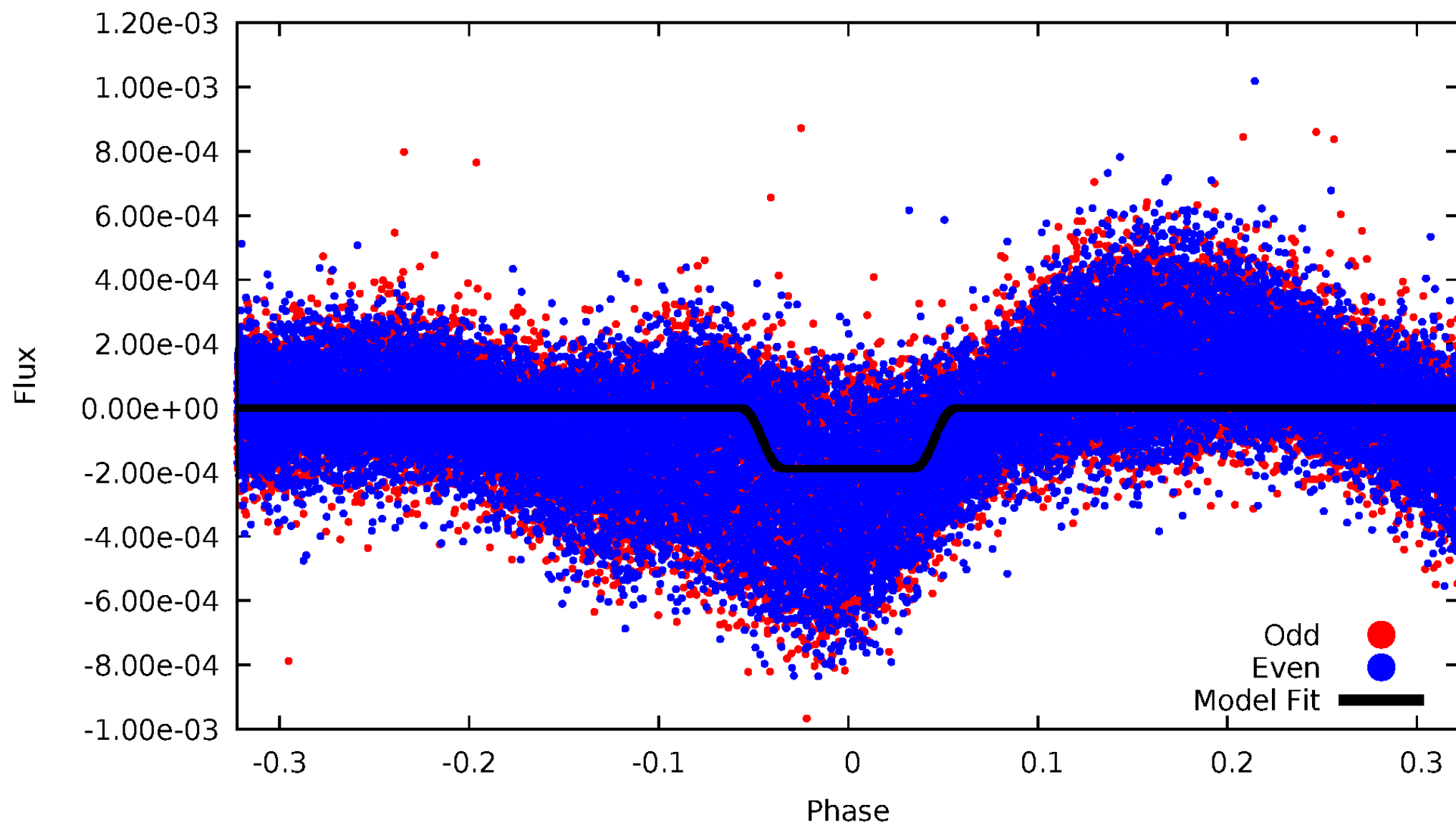
DV Odd/Even

TCE 009395222-02



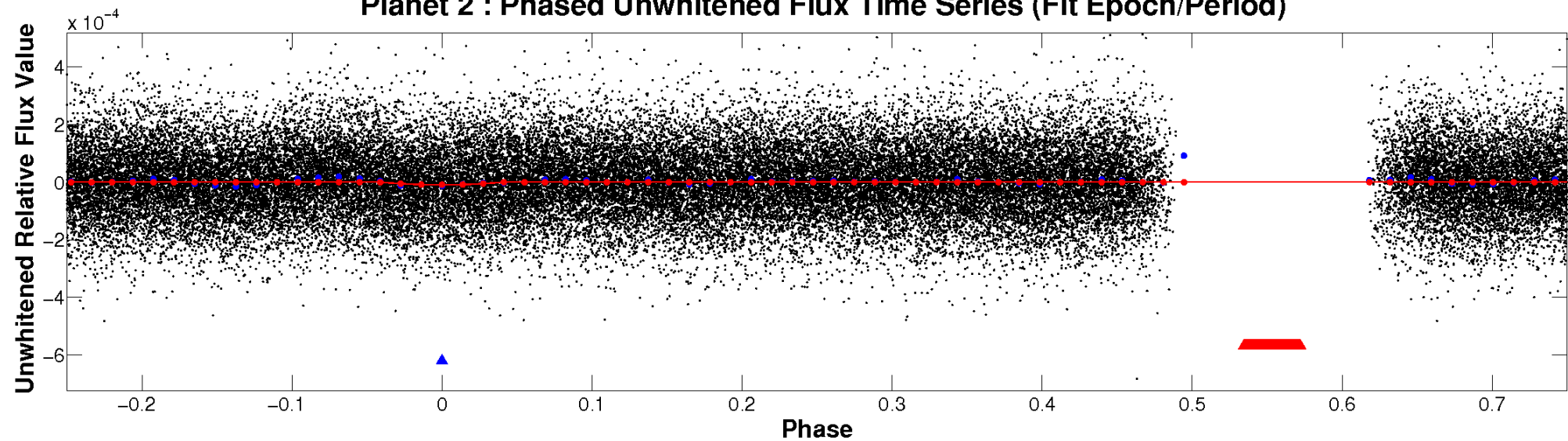
ALT Odd/Even

TCE 009395222-02

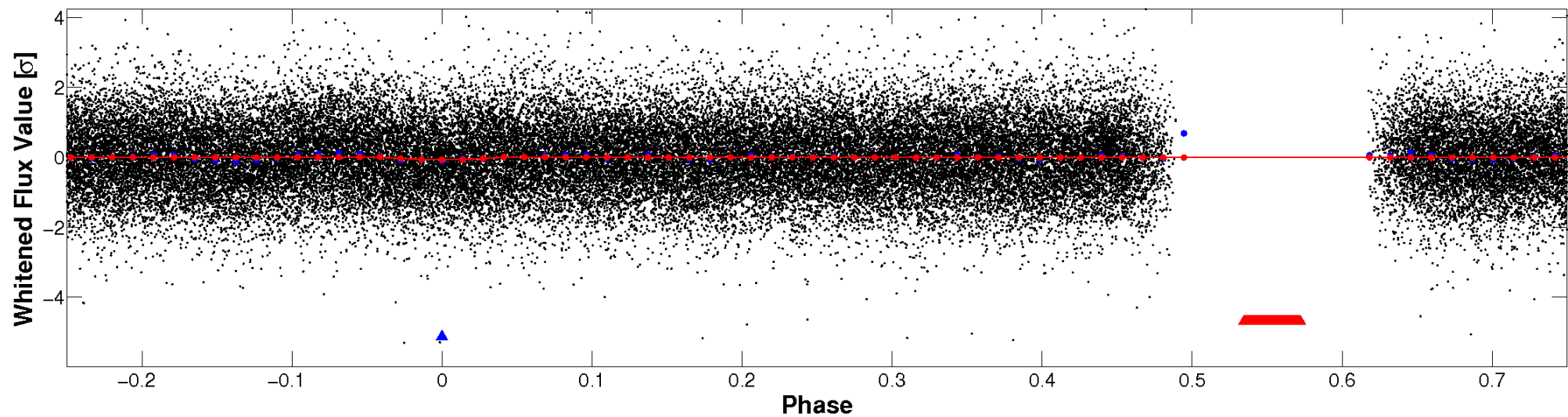


Non-Whitened Vs. Whitened Light Curve

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

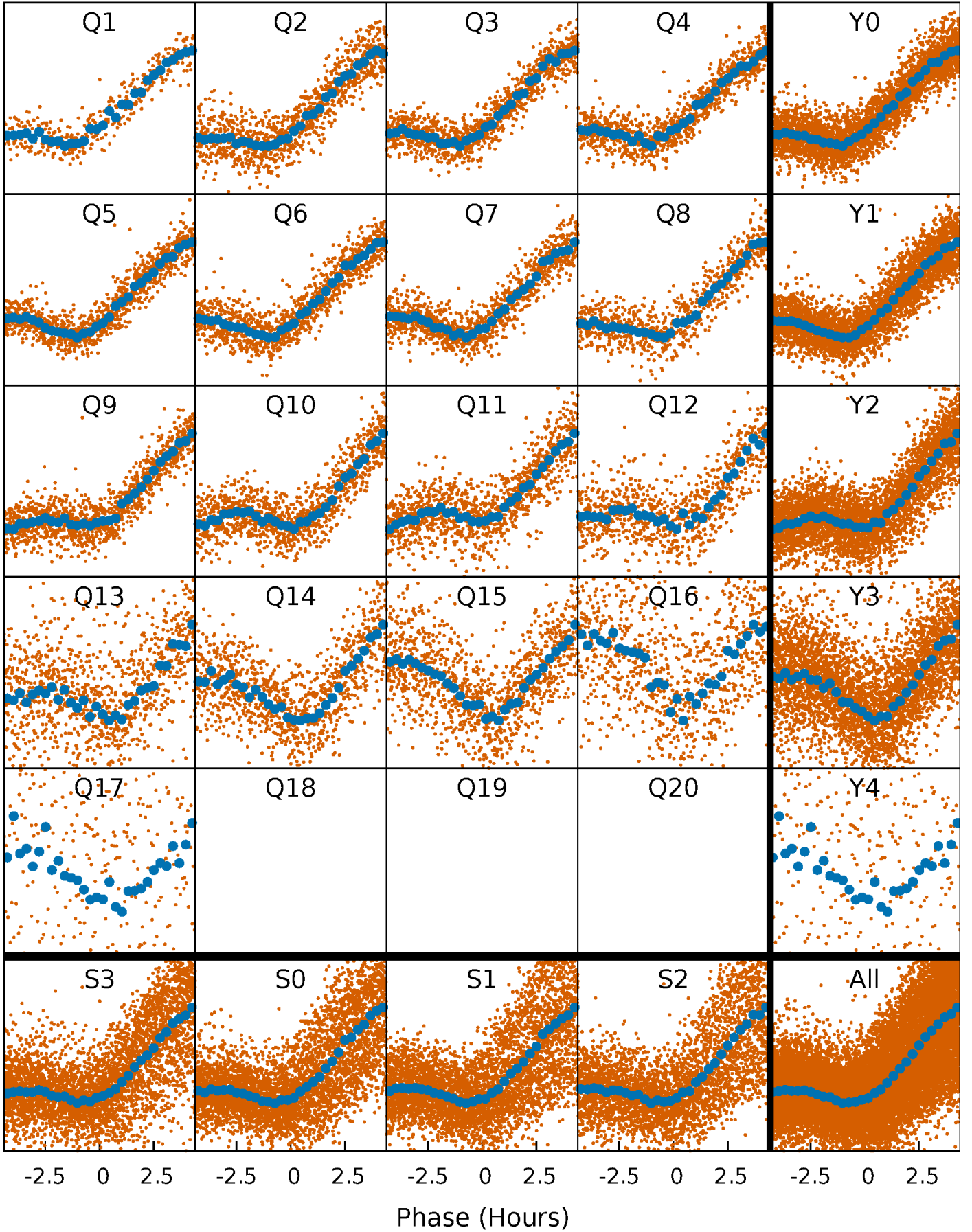


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



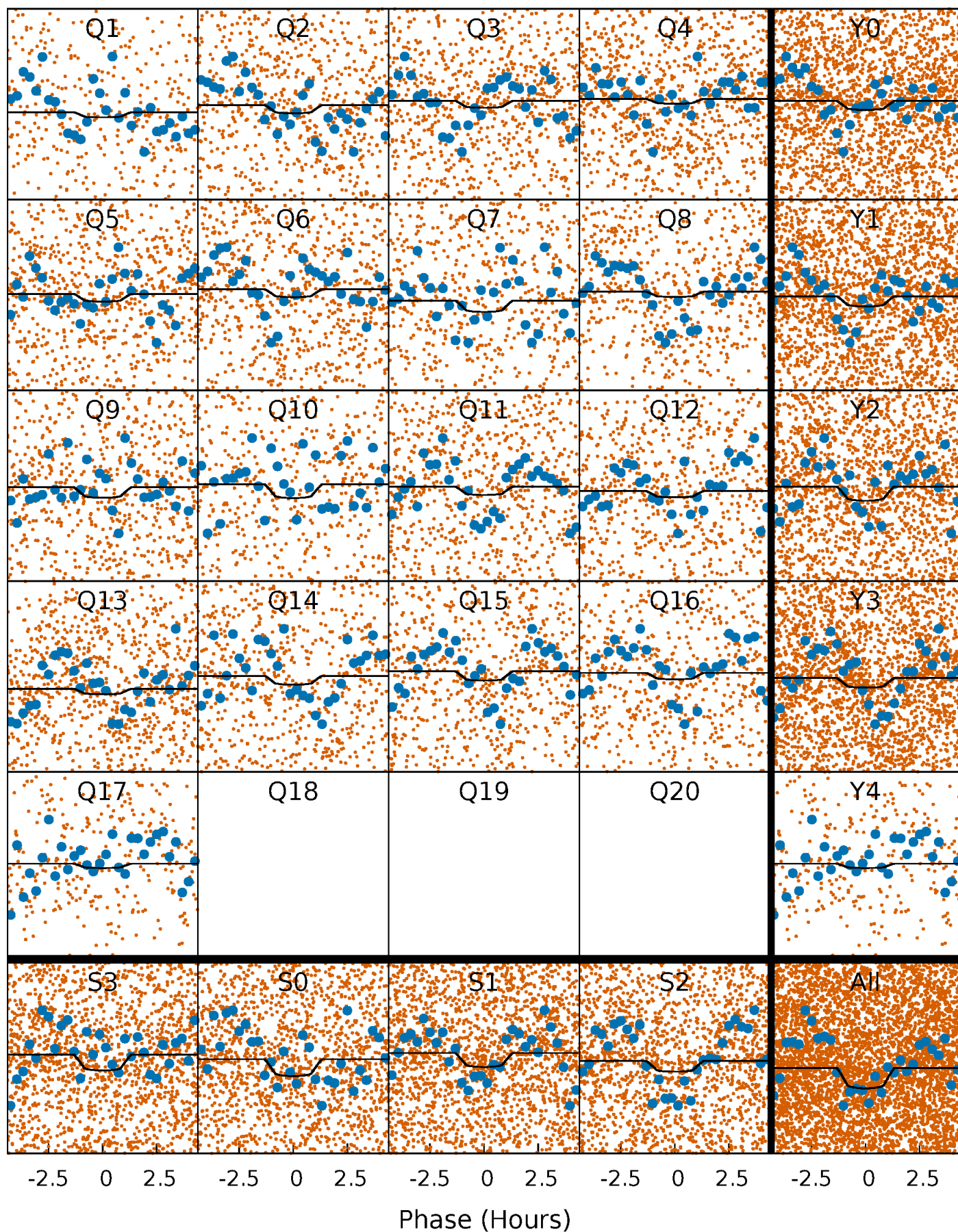
PDC Quarter-Phased Transit Curves

TCE 009395222-02 P= 1.487318 Days $T_0=132.310208$ (BKJD)



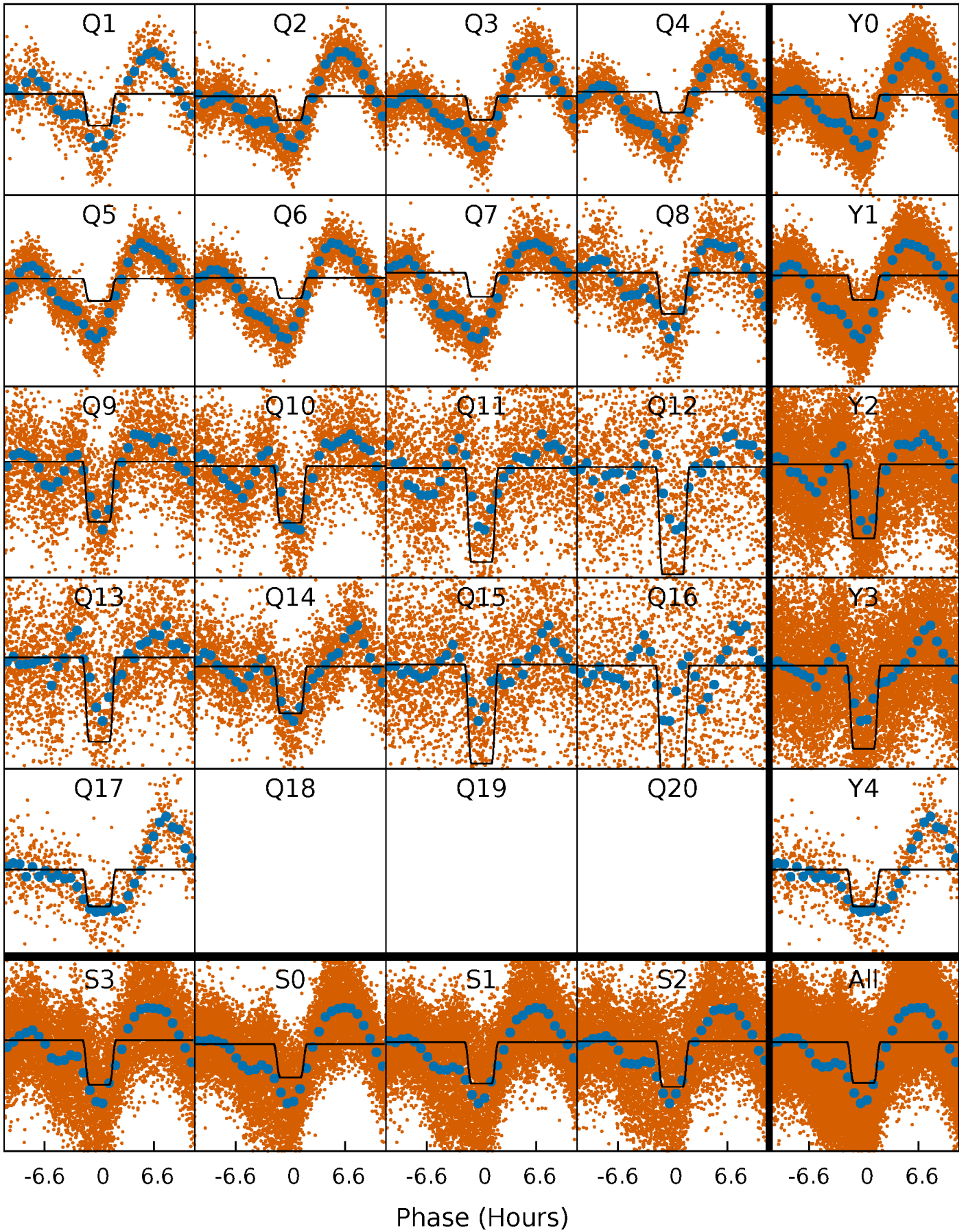
DV Quarter-Phased Transit Curves

TCE 009395222-02 P= 1.487318 Days $T_0=132.310208$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

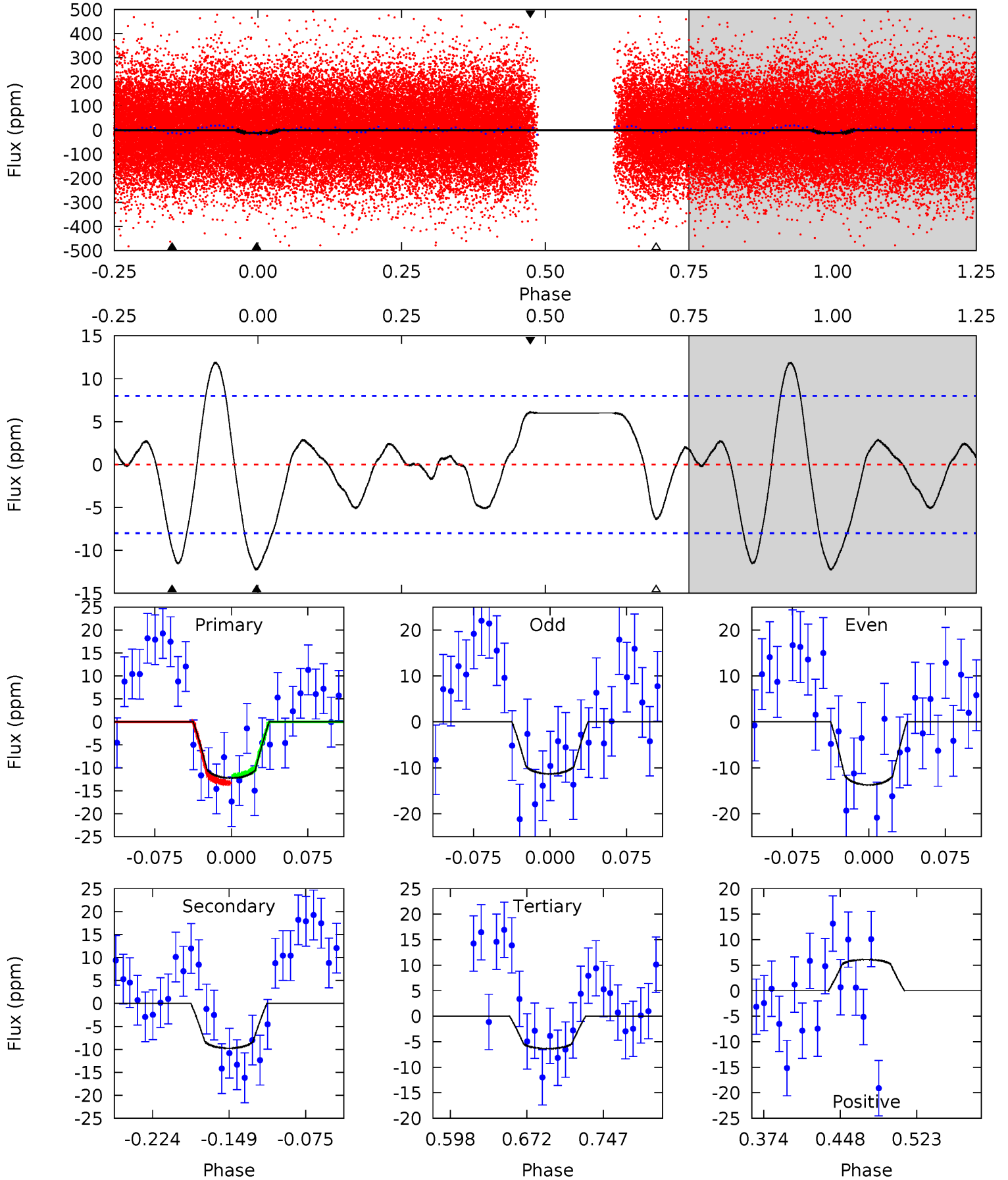
TCE 009395222-02 P= 1.487416 Days $T_0=132.266859$ (BKJD)



DV Model-Shift Uniqueness Test

009395222-02, P = 1.487318 Days, E = 130.822890 Days

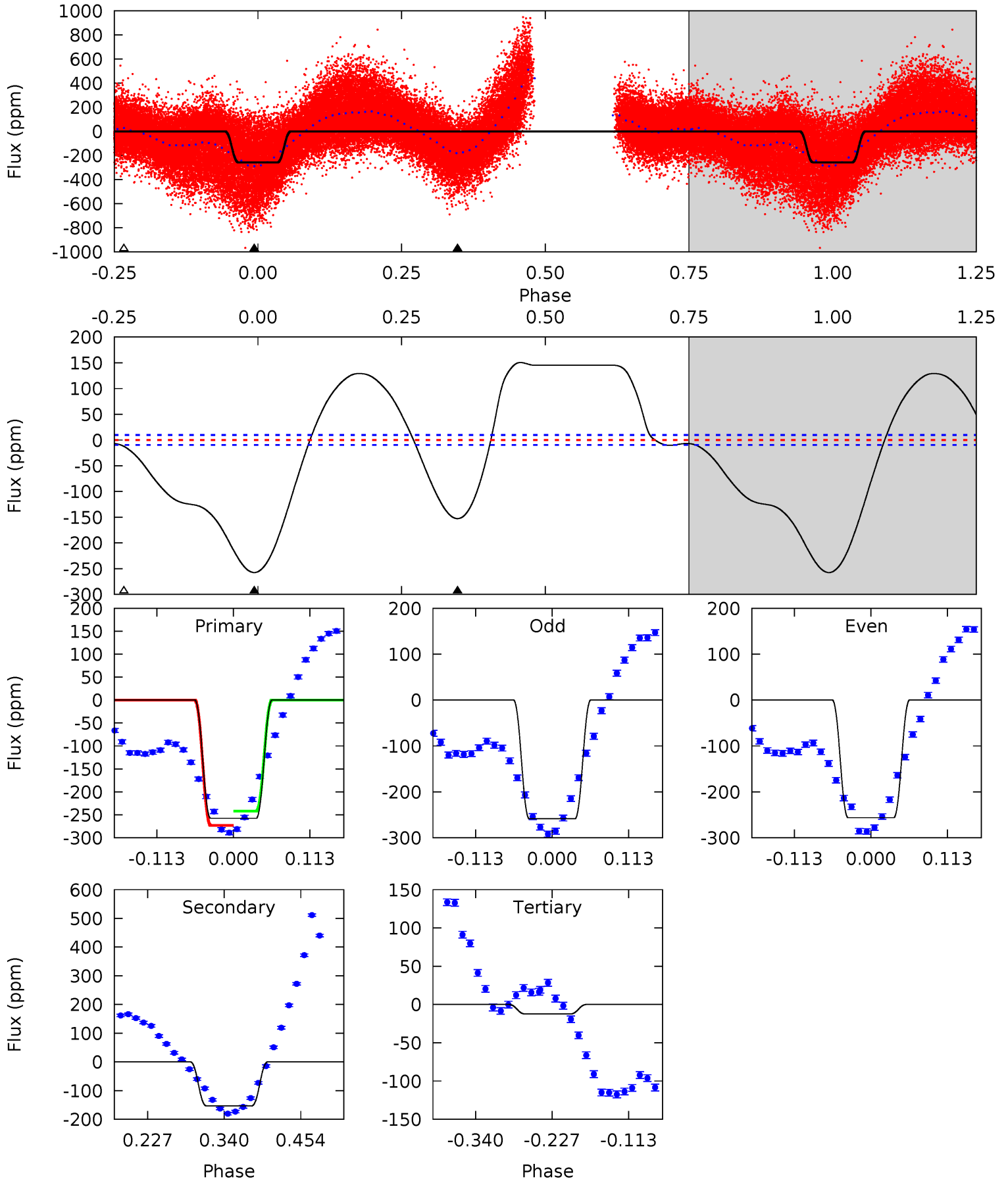
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.07	5.63	3.67	3.53	4.63	1.78	1.62	3.39	3.54	1.96	2.10	0.69	1.21	0.49	0.46



Alt Model-Shift Uniqueness Test

009395222-02, P = 1.487416 Days, E = 130.779443 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
119.5	70.9	5.73	0	4.54	1.58	39.0	113.8	119.5	65.2	70.9	0.57	1.16	0.37	7.53



Stellar Parameters For KIC 009395222

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7351^{+231}_{-334}	$4.170^{+0.108}_{-0.186}$	$-0.060^{+0.200}_{-0.350}$	$1.679^{+0.538}_{-0.290}$	$1.517^{+0.234}_{-0.234}$	$0.452^{+0.239}_{-0.236}$
	+3%/-5%	+3%/-4%	+333%/-583%	+32%/-17%	+15%/-15%	+53%/-52%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009395222-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-10 ± 2	$0.58^{+0.19}_{-0.19}$	3464^{+248}_{-222}	7263^{+2071}_{-1097}	13^{+16}_{-6}
Alt.	-153 ± 2	$2.55^{+0.43}_{-0.31}$	3454^{+235}_{-215}	6832^{+367}_{-354}	11^{+3}_{-2}

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

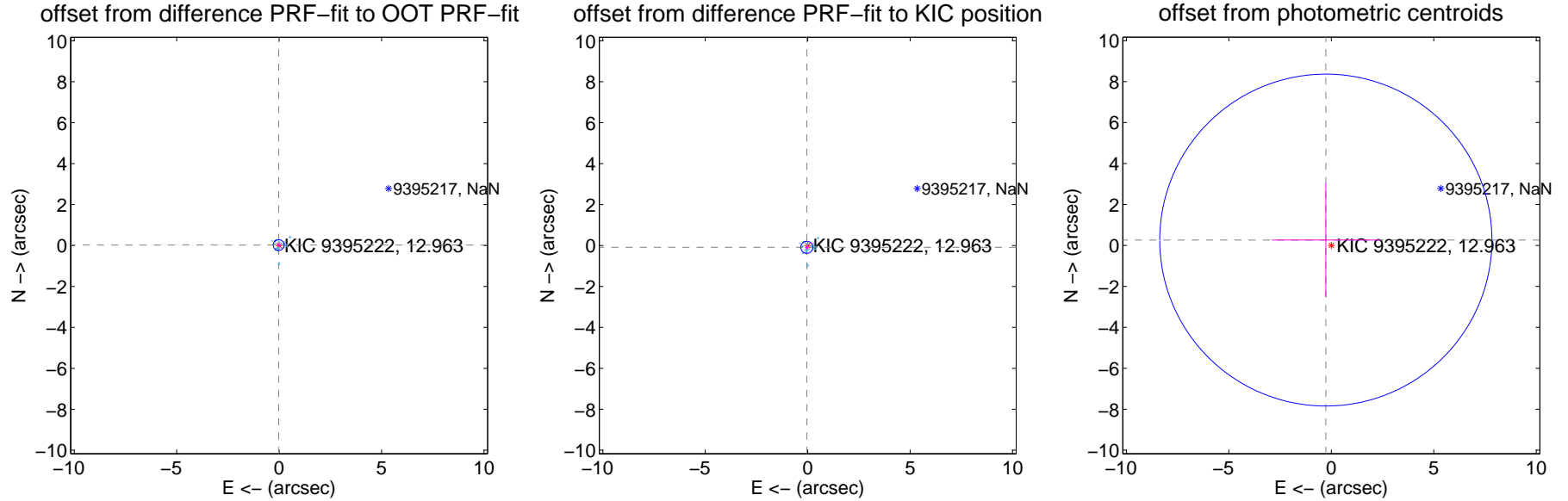
DV Centroid Data

Supplemental centroid analysis for 009395222-02. Kepler magnitude: 12.96. Transit SNR 3.43

There are 17 quarters with good PRF difference image offsets

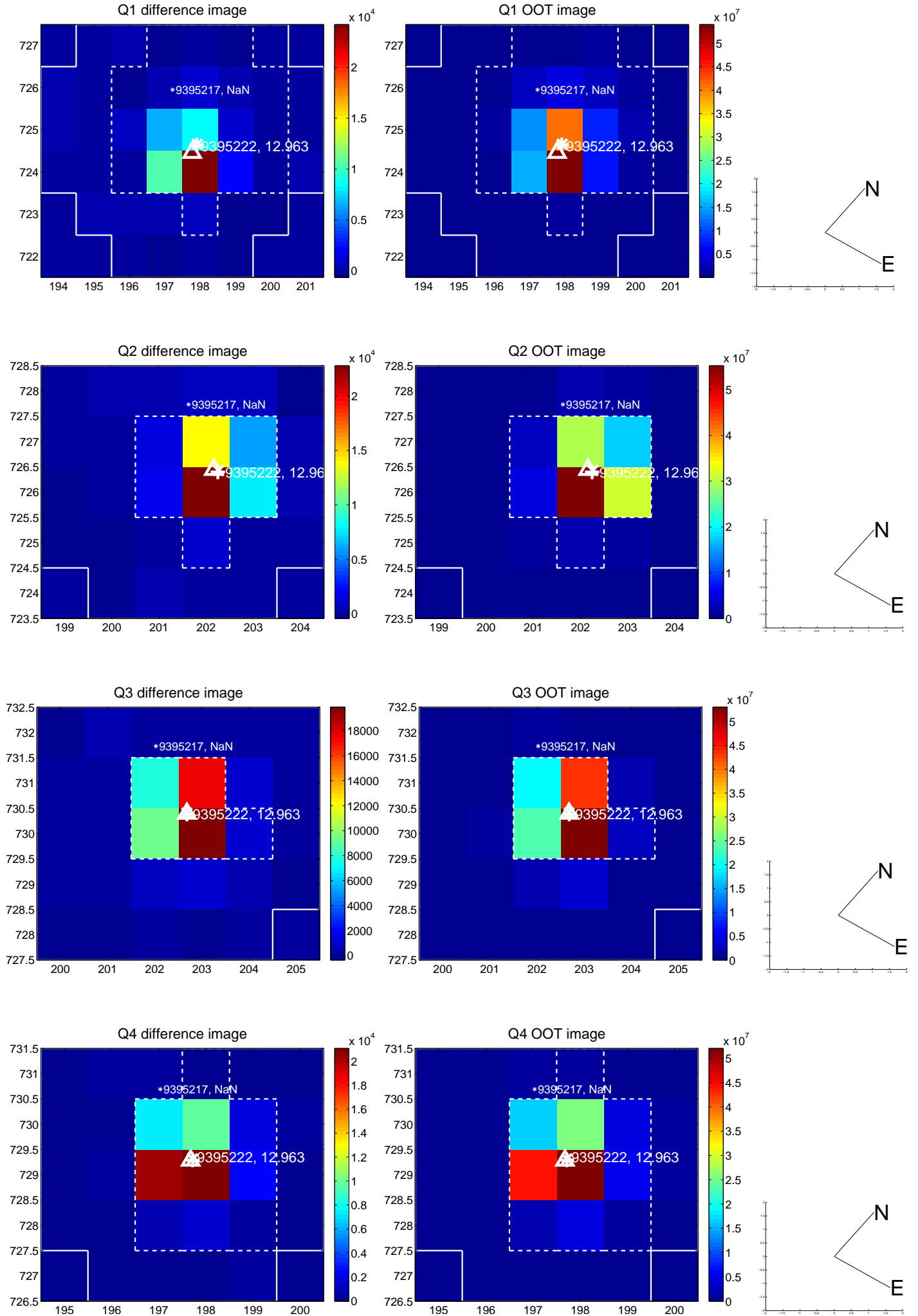
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.032 ± 0.088	0.36	0.022 ± 0.086	0.023 ± 0.095
PRF-fit source offset from KIC position	0.098 ± 0.098	1.00	0.043 ± 0.084	-0.088 ± 0.100
photometric centroid source offset	0.37 ± 2.70	0.14	0.27 ± 2.64	0.26 ± 2.77

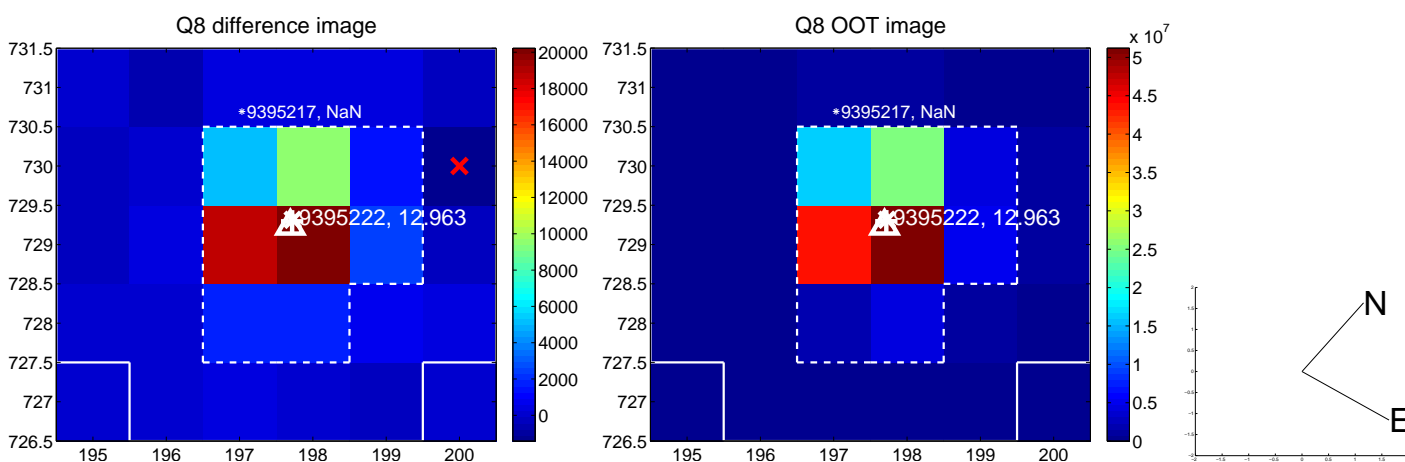
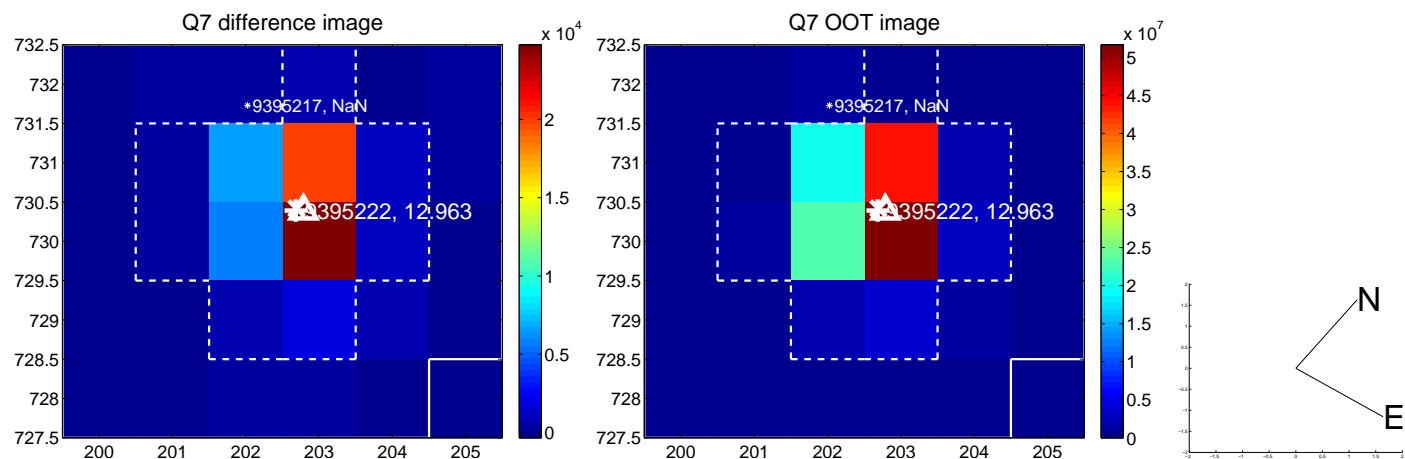
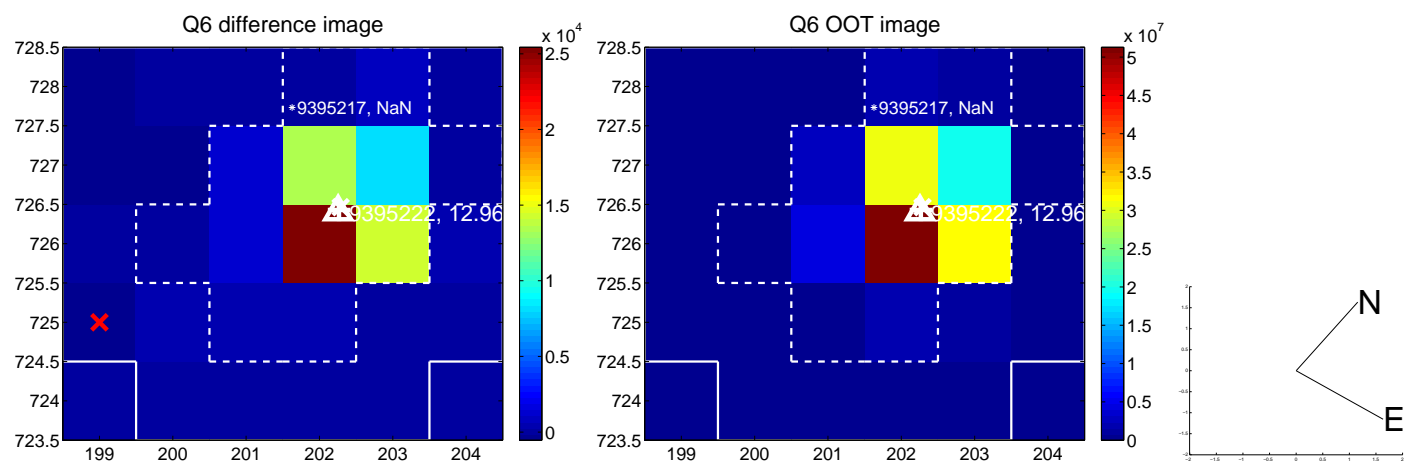
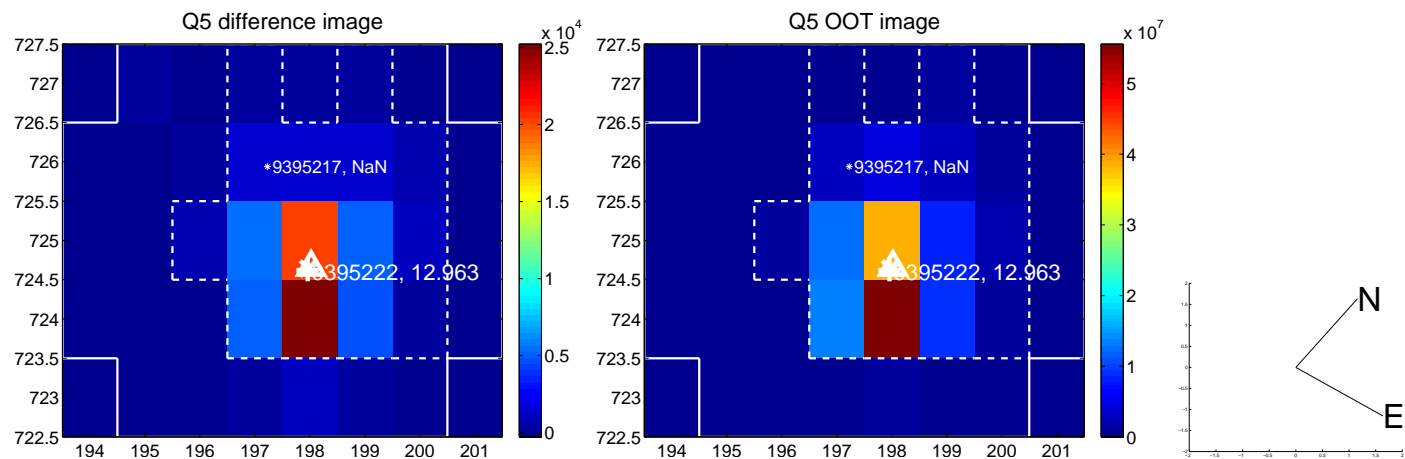


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

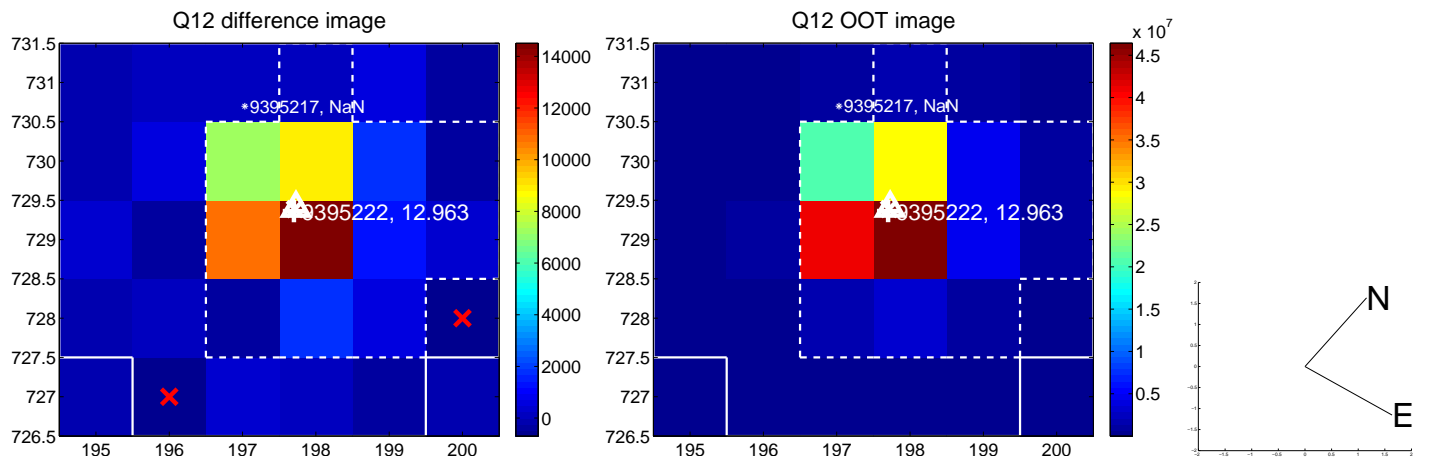
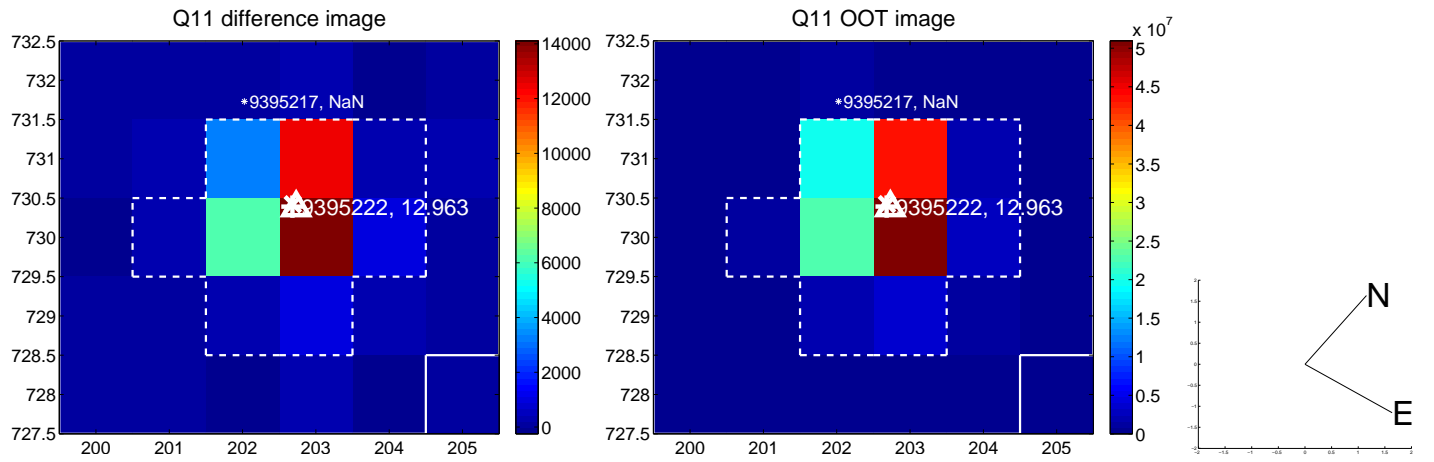
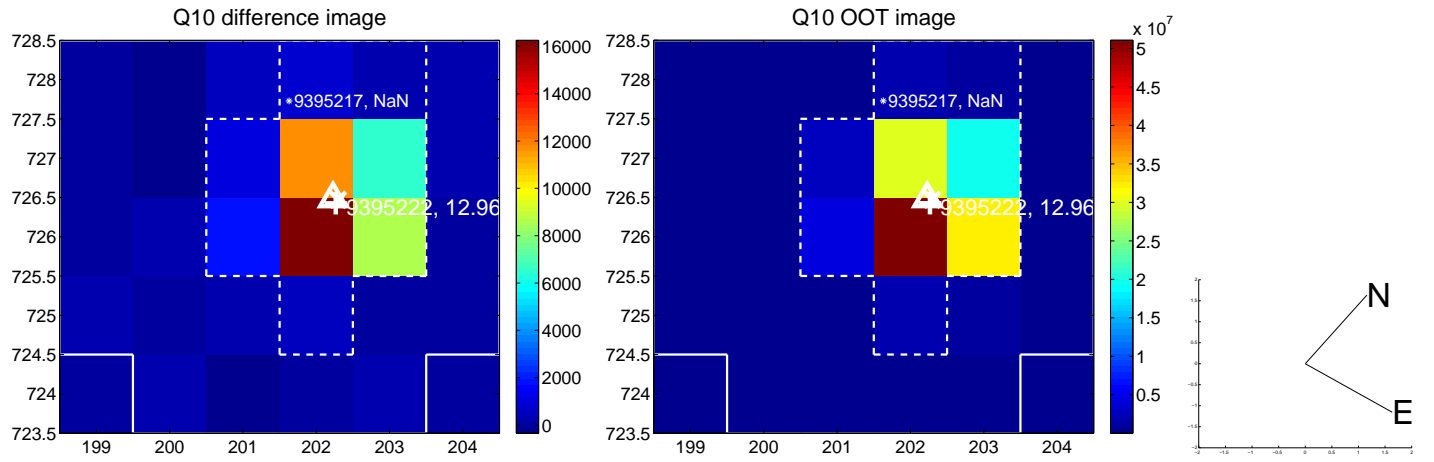
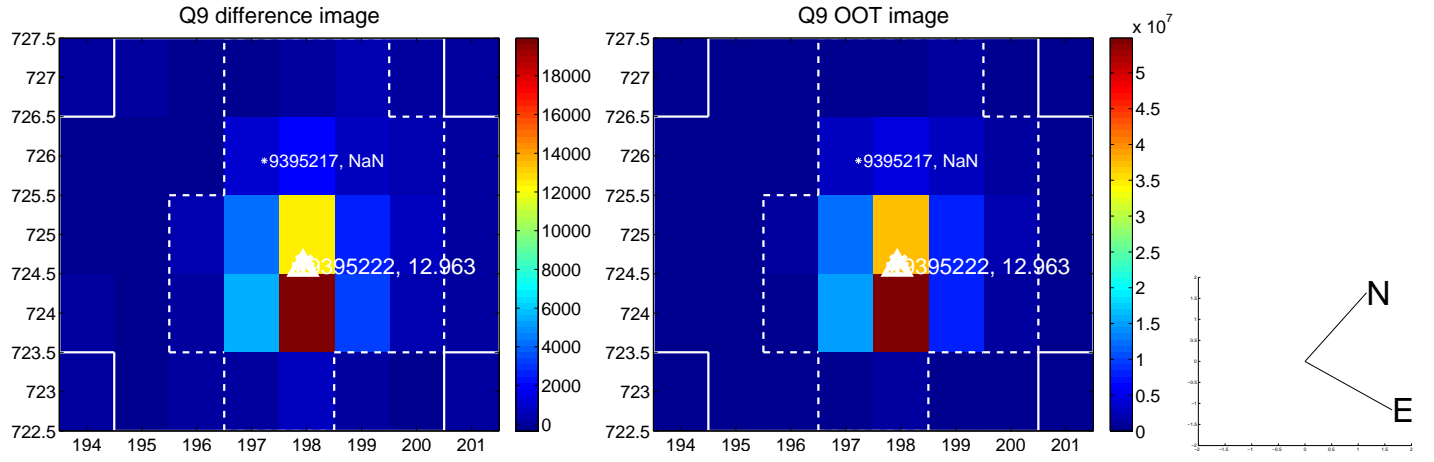
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



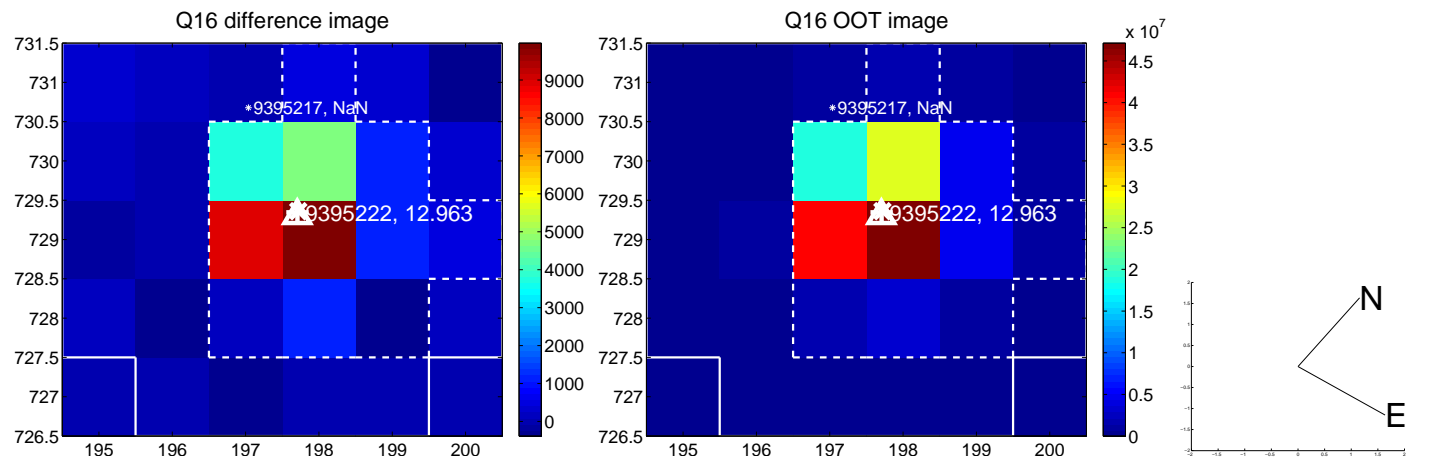
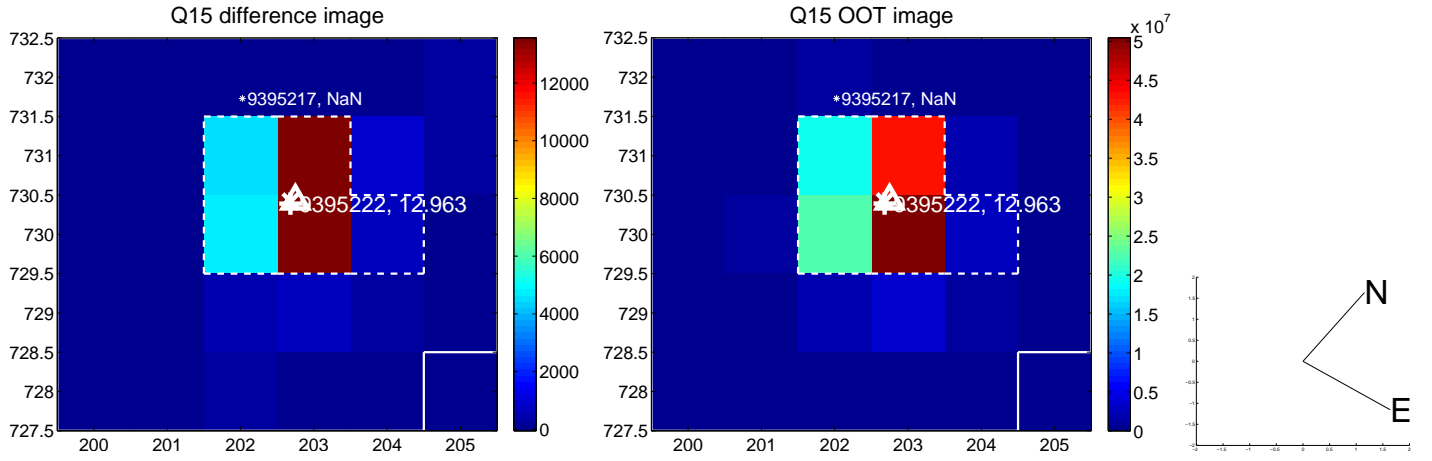
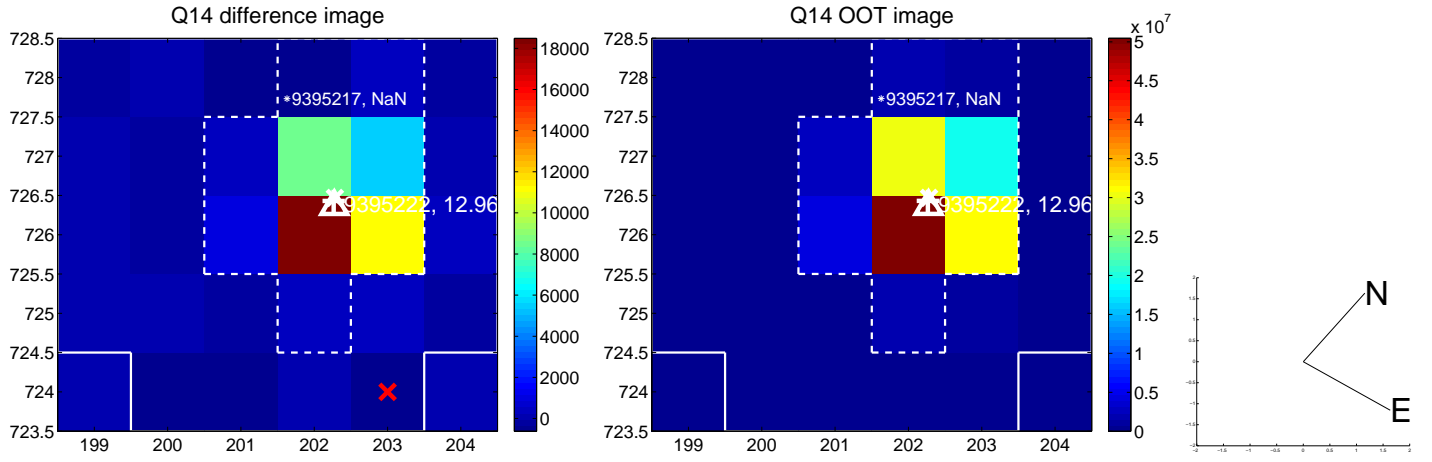
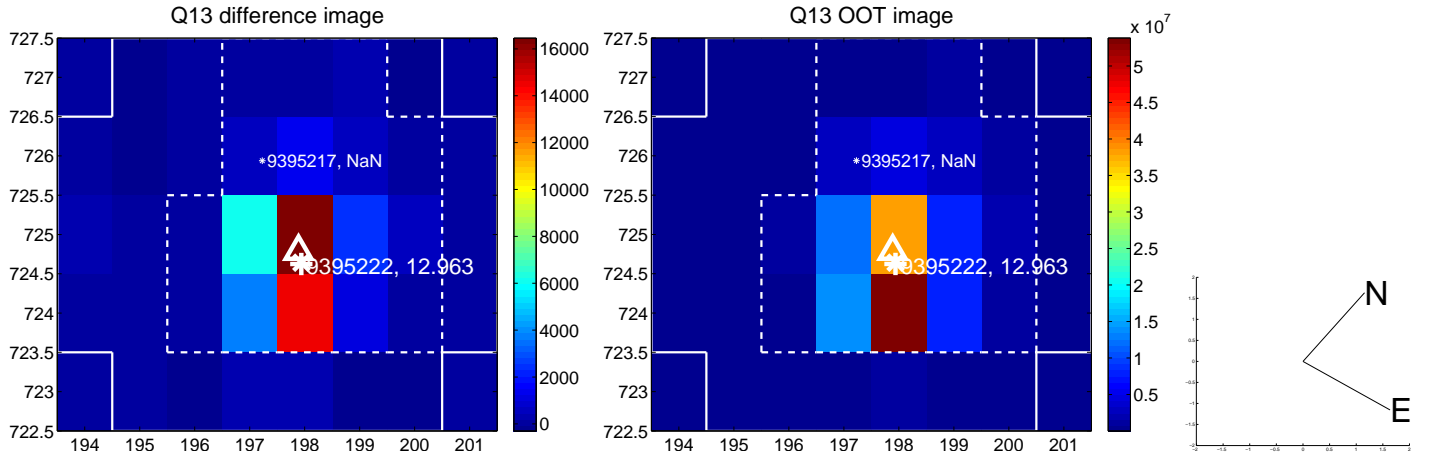
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



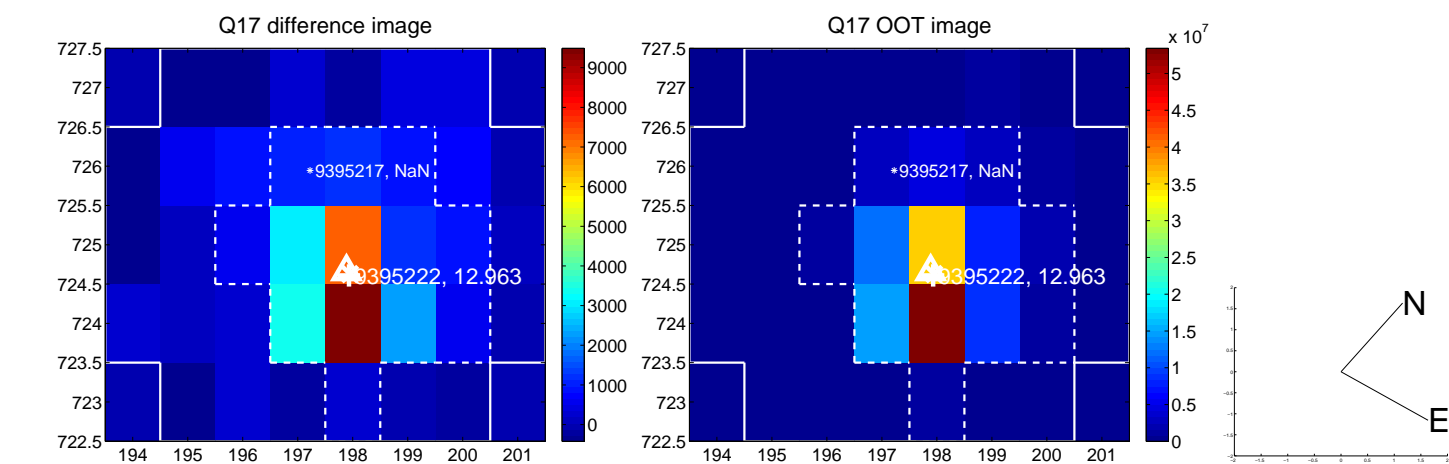
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



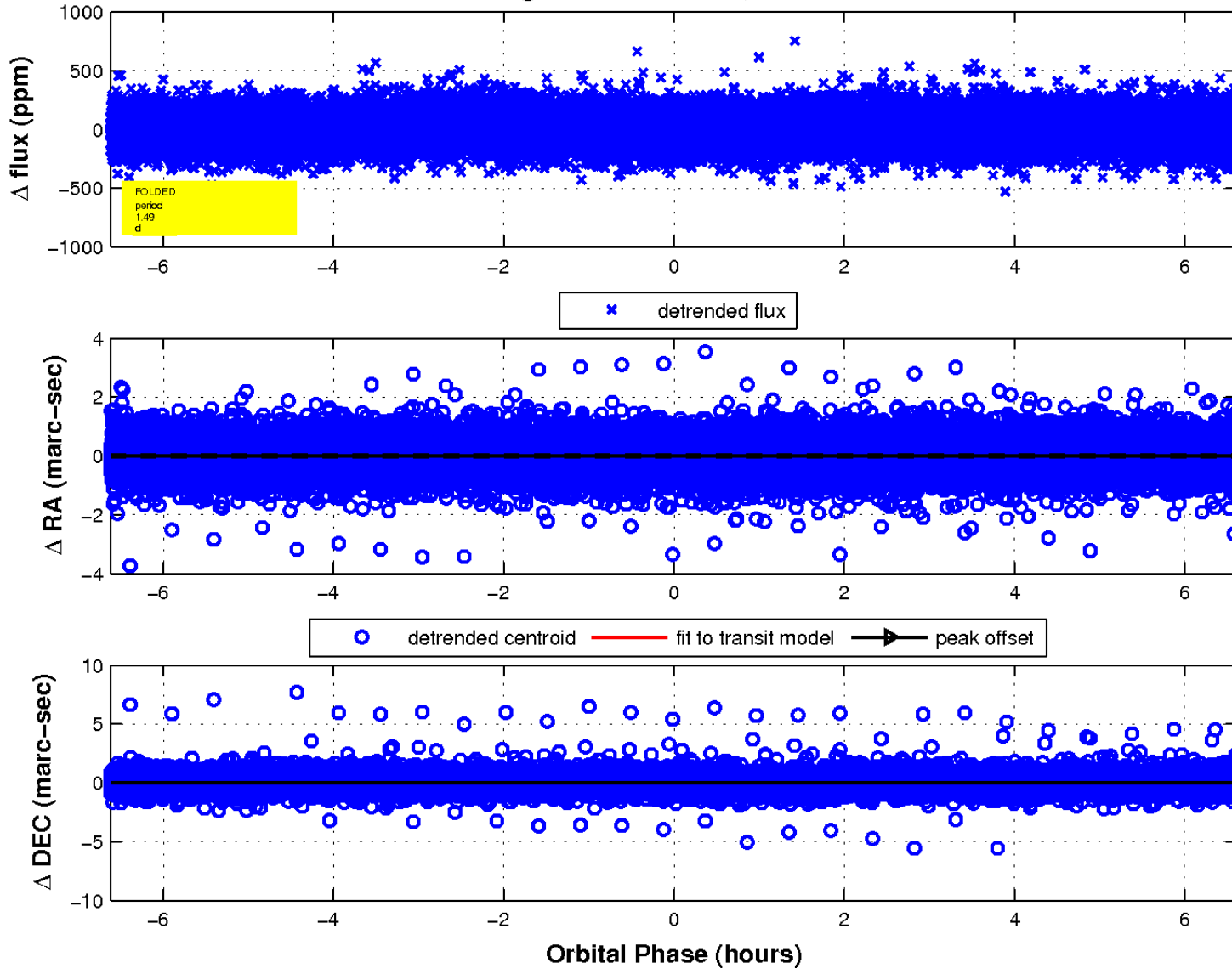
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

