

KIC 009650501

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})
009650501-01	OBS	No	0.598749	131.634453	146.3	0.510	11.2	5.9	3.81	7526	5.13	0.00
009650501-02	OBS	No	2.175355	132.706747	775.8	3.226	8.7	8.4	3.81	7526	13.24	23785.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650501-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009650501-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

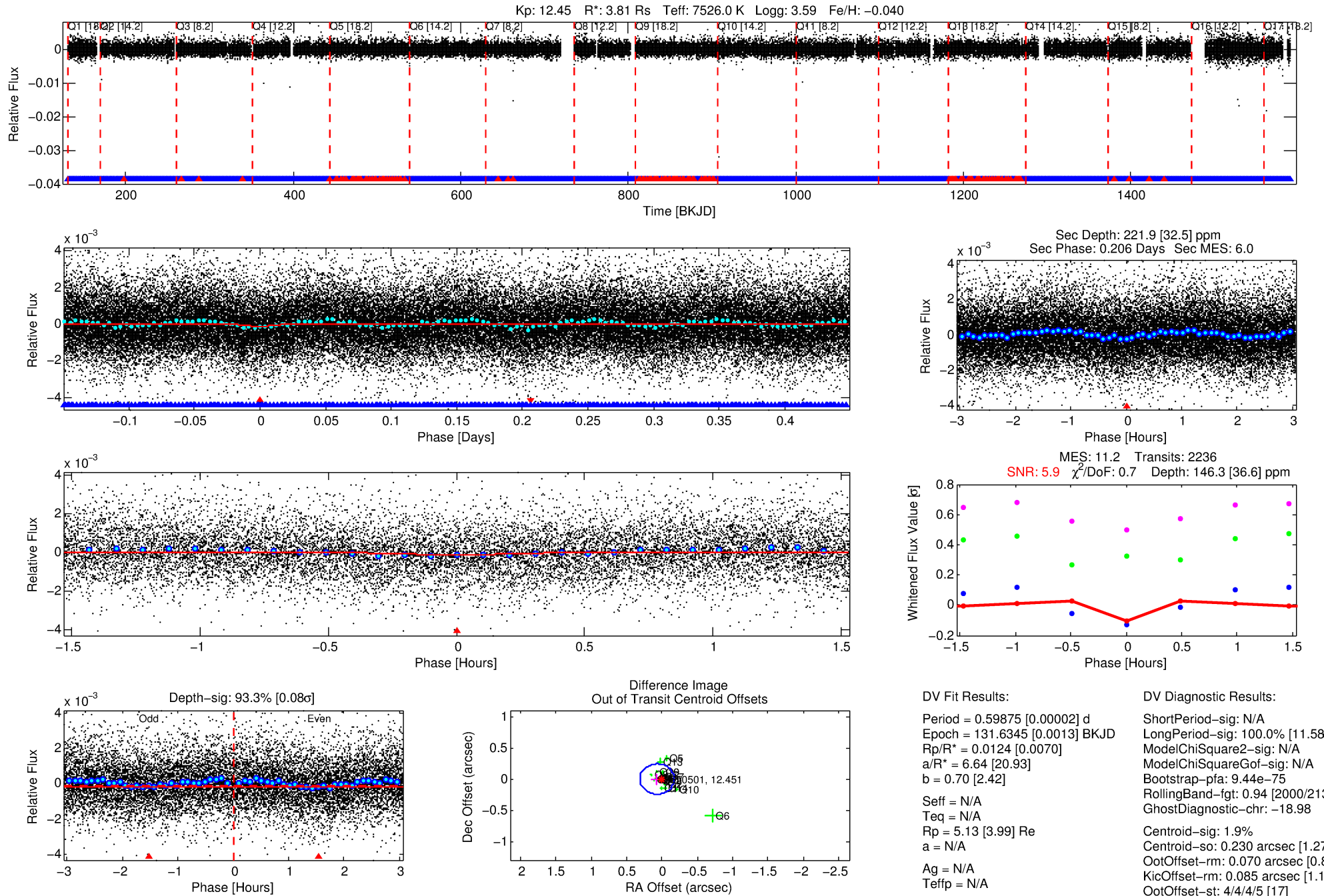
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009650501-01

No Significant Match Found

DV One-Page Summary

KIC: 9650501 Candidate: 1 of 2 Period: 0.599 d



DV Fit Results:

Period = 0.59875 [0.00002] d
Epoch = 131.6345 [0.0013] BKJD
Rp/R* = 0.0124 [0.0070]
a/R* = 6.64 [20.93]
b = 0.70 [2.42]
Seff = N/A
Teq = N/A
Rp = 5.13 [3.99] Re
a = N/A
Ag = N/A
Teffp = N/A

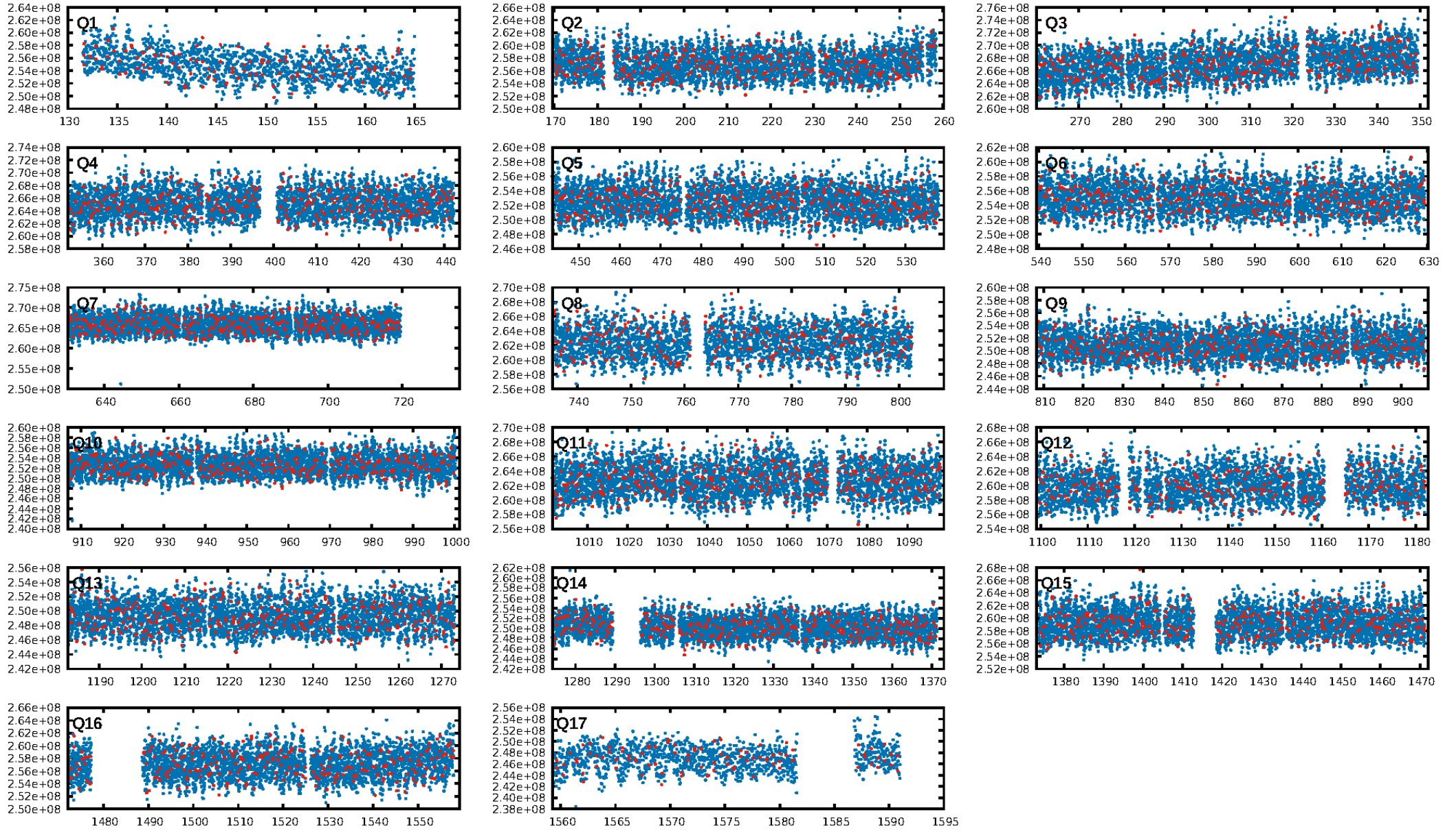
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [11.58 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 9.44e-75
RollingBand-fgt: 0.94 [2000/2136]
GhostDiagnostic-chr: -18.98
Centroid-sig: 1.9%
Centroid-so: 0.230 arcsec [1.27 σ]
OotOffset-rm: 0.070 arcsec [0.87 σ]
KicOffset-rm: 0.085 arcsec [1.11 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.47 [8/17]
DiffImageOverlap-fno: 1.00 [17/17]

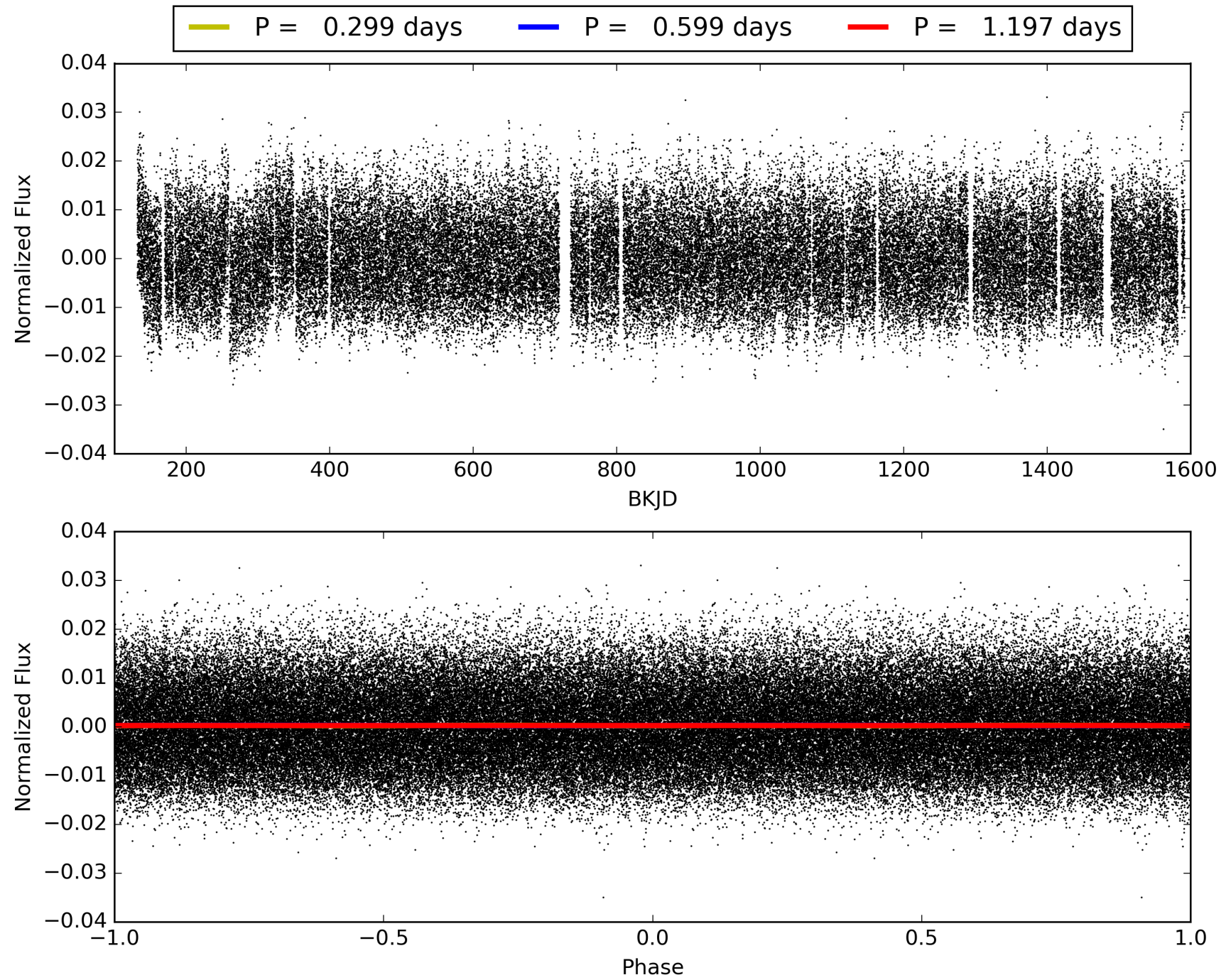
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 11:07:51 Z

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

TCE 009650501-01, PDC Light Curves

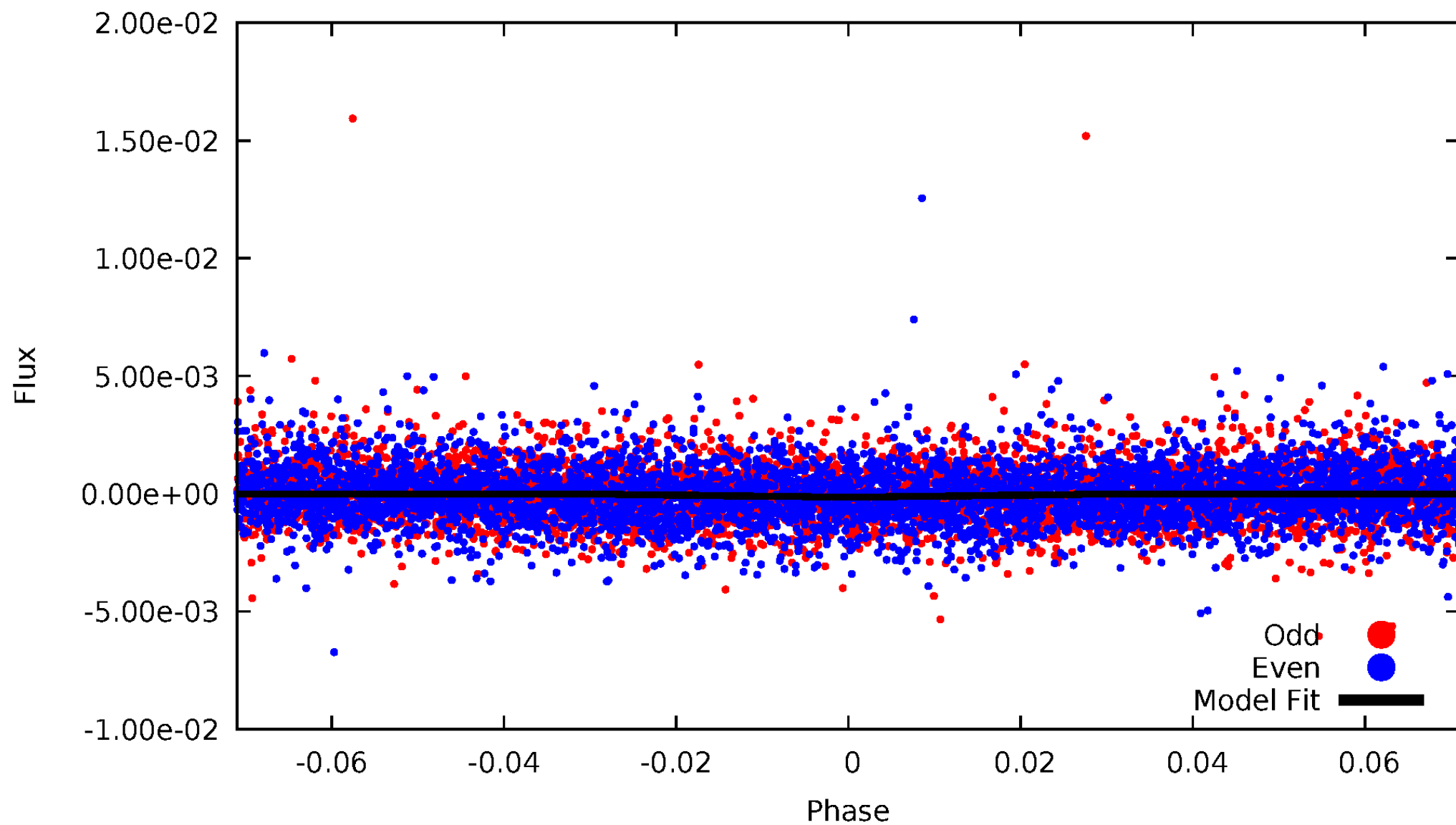


TCE 009650501-01



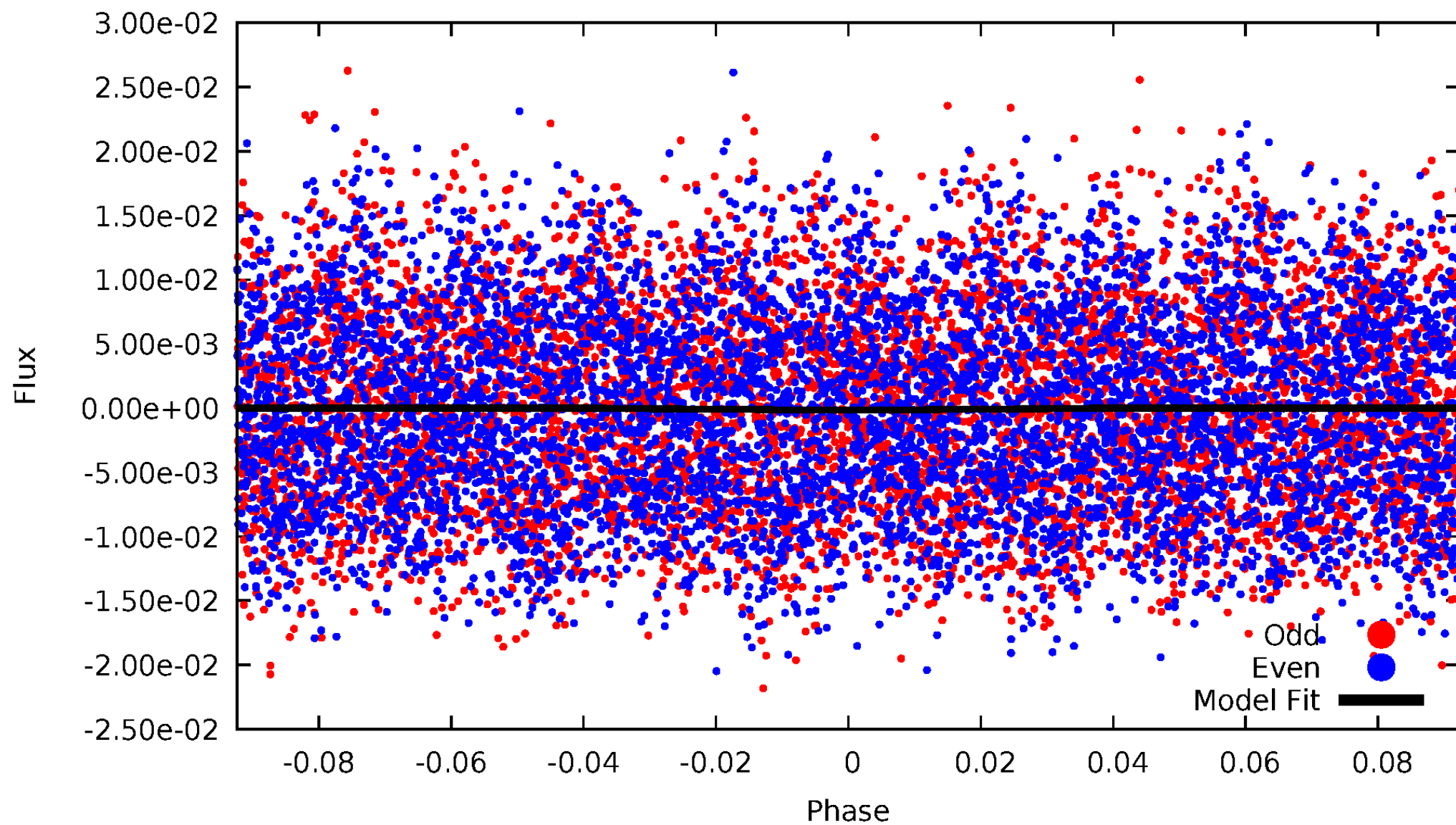
DV Odd/Even

TCE 009650501-01



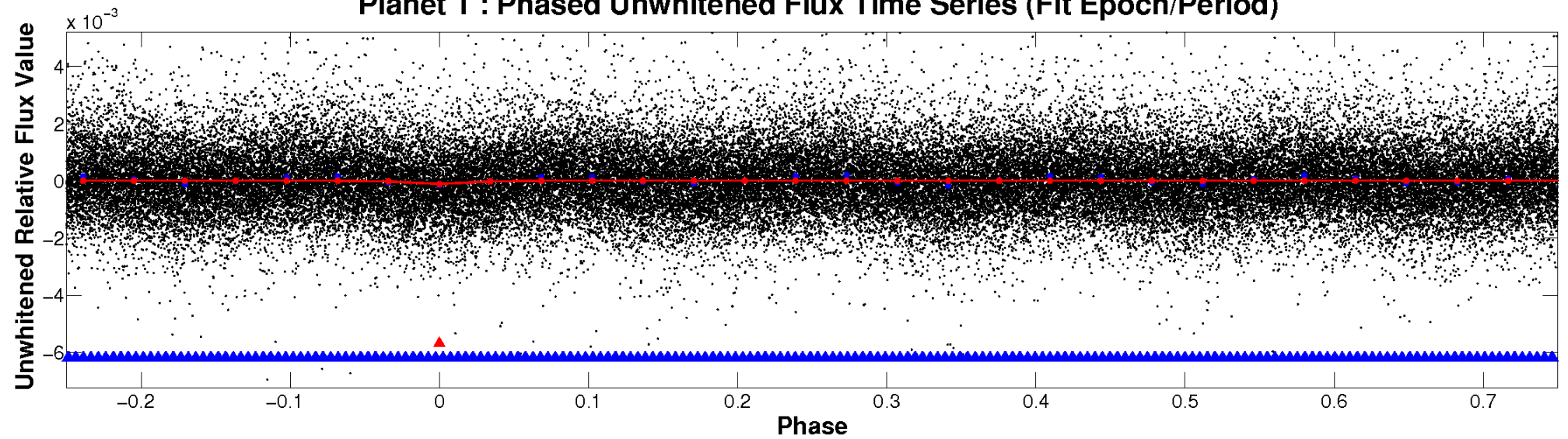
ALT Odd/Even

TCE 009650501-01

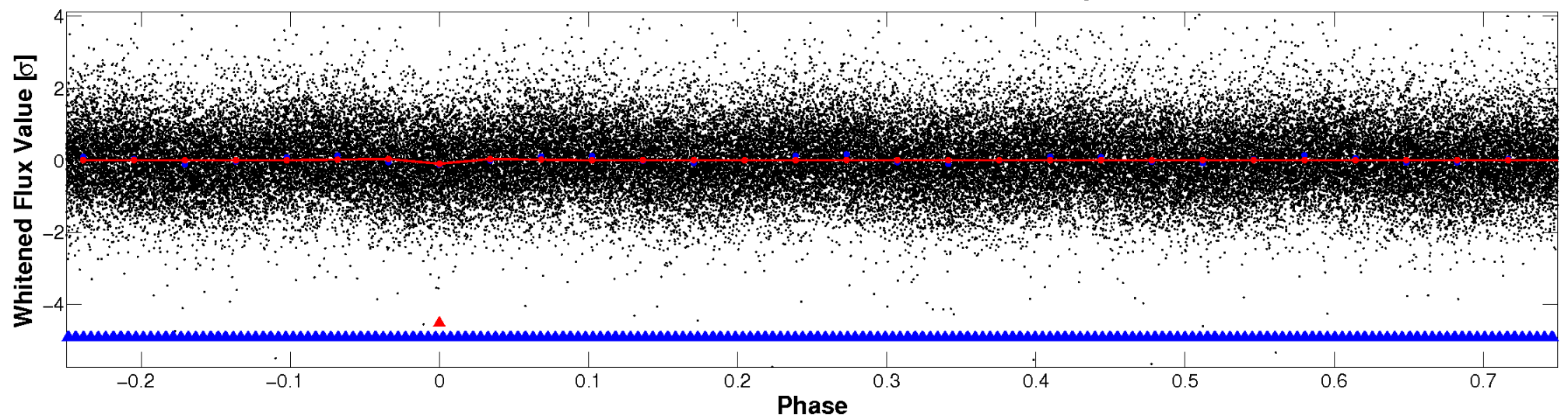


Non-Whitened Vs. Whitened Light Curve

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

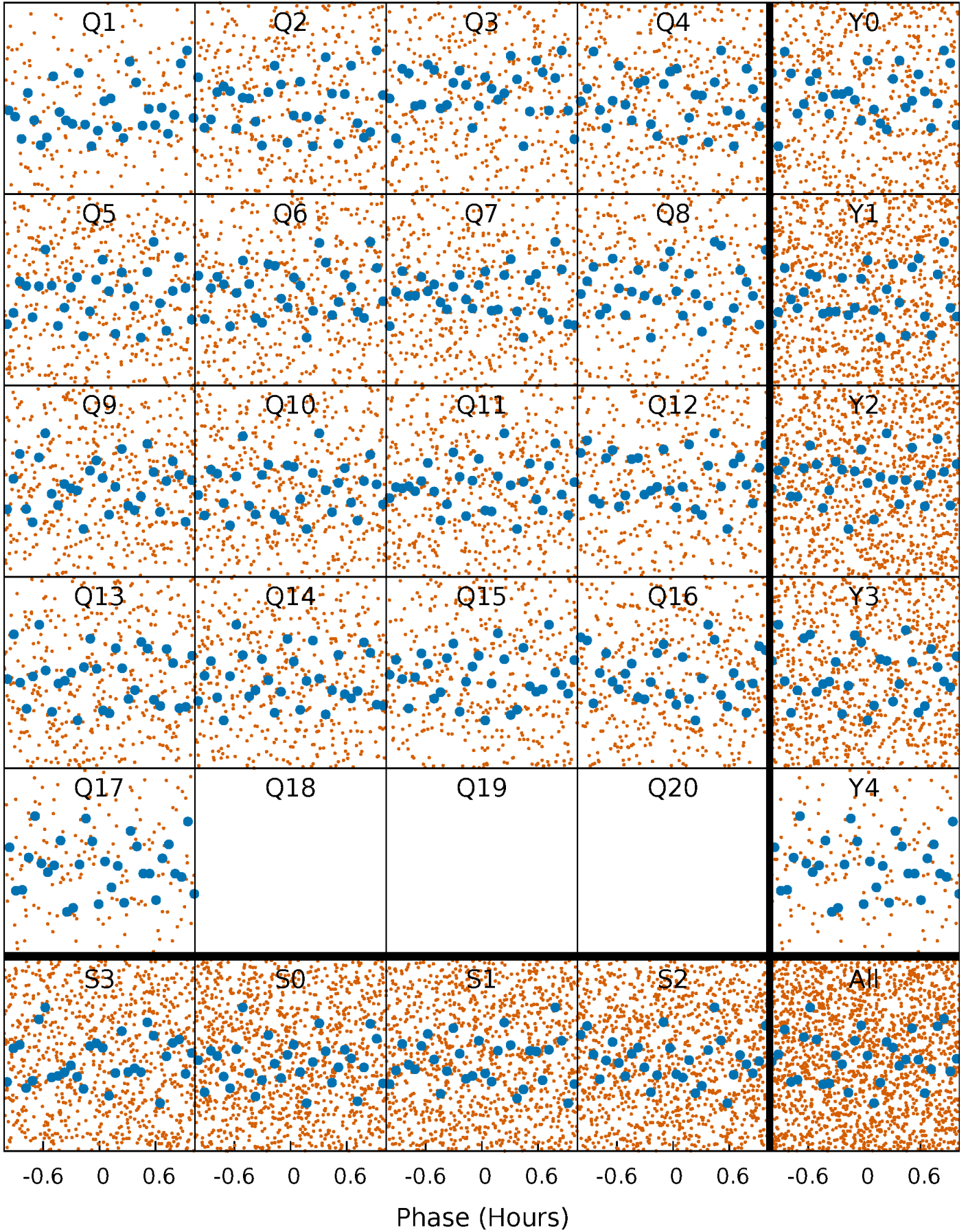


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



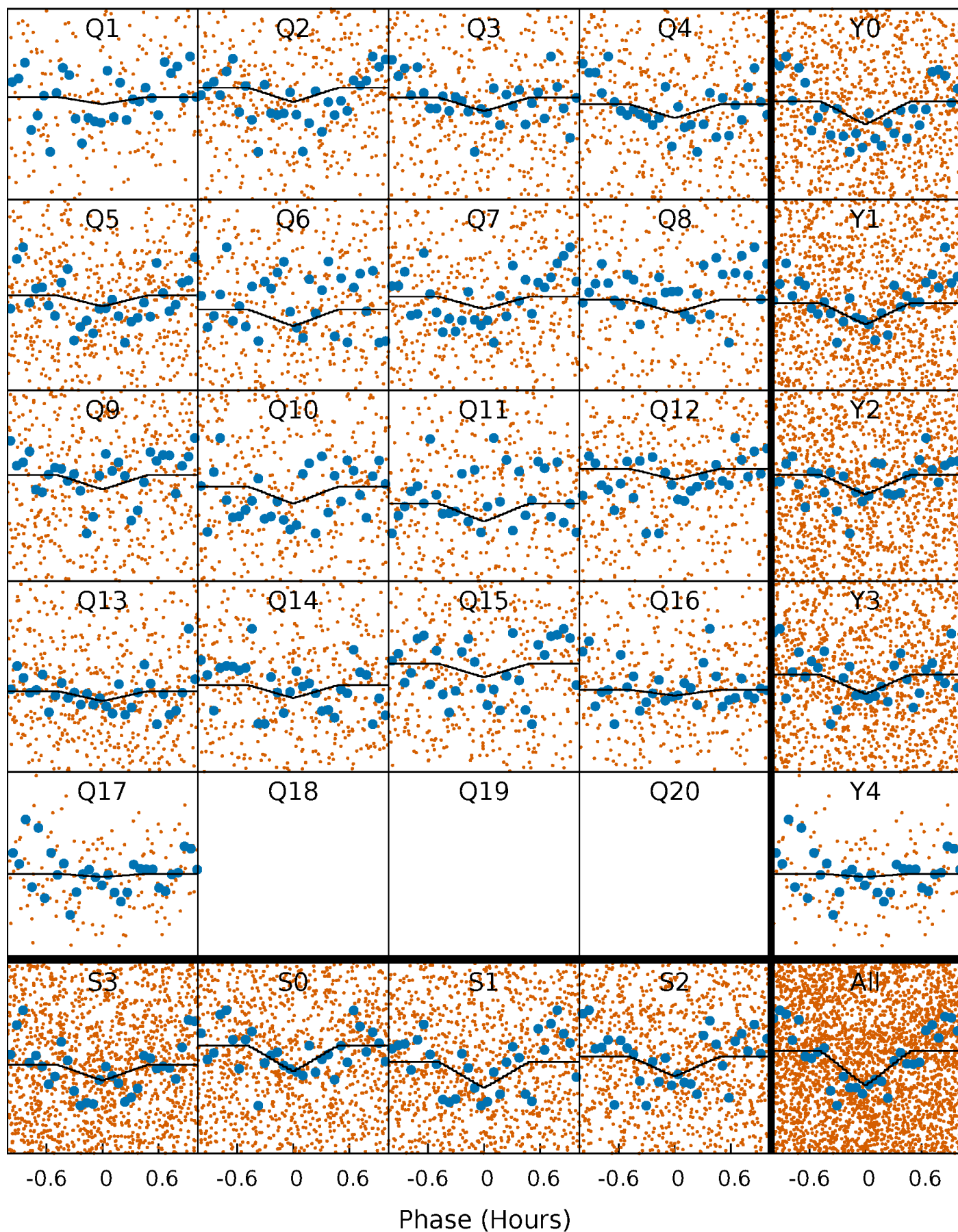
PDC Quarter-Phased Transit Curves

TCE 009650501-01 P= 0.598749 Days $T_0=131.634454$ (BKJD)



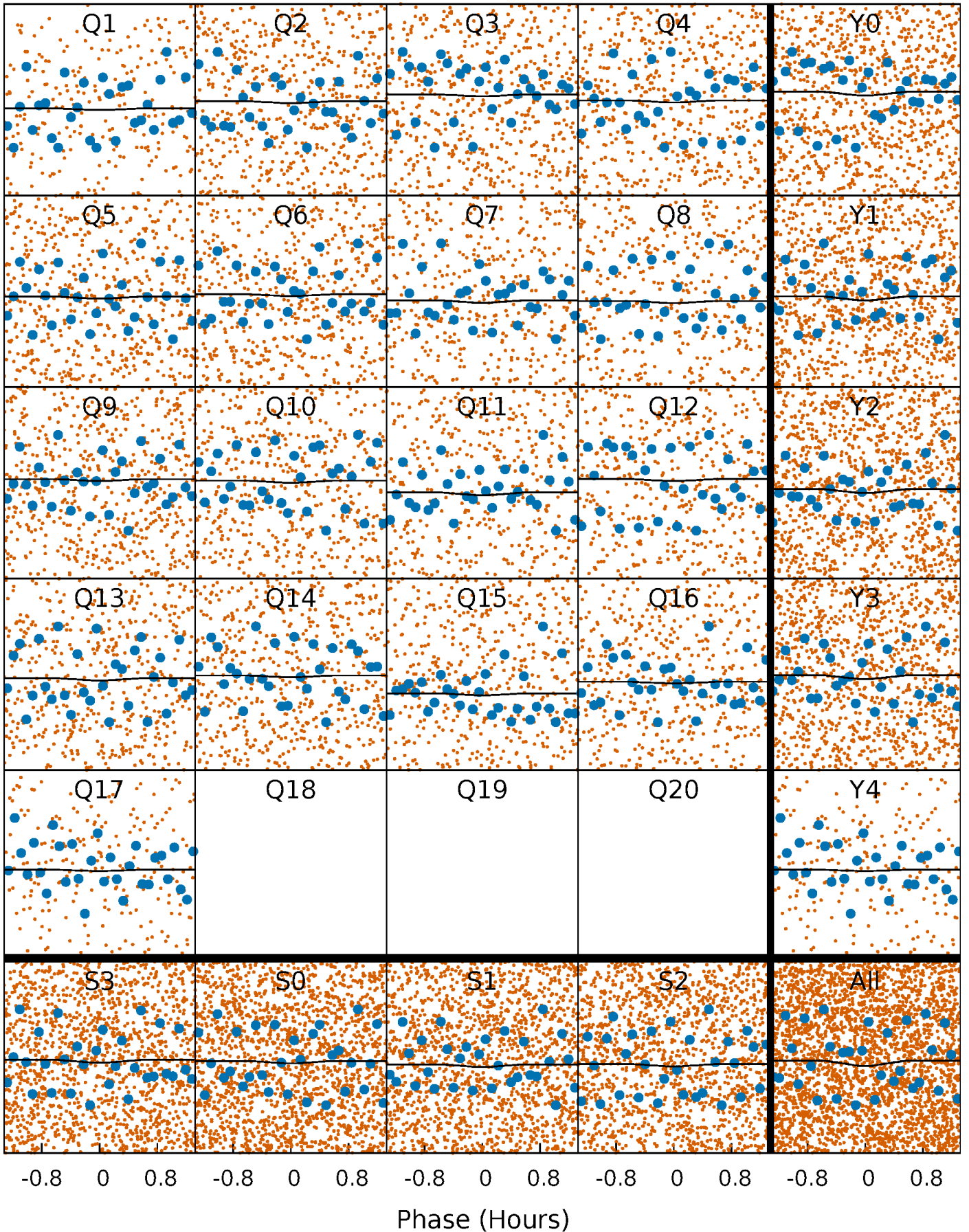
DV Quarter-Phased Transit Curves

TCE 009650501-01 P= 0.598749 Days $T_0=131.634454$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

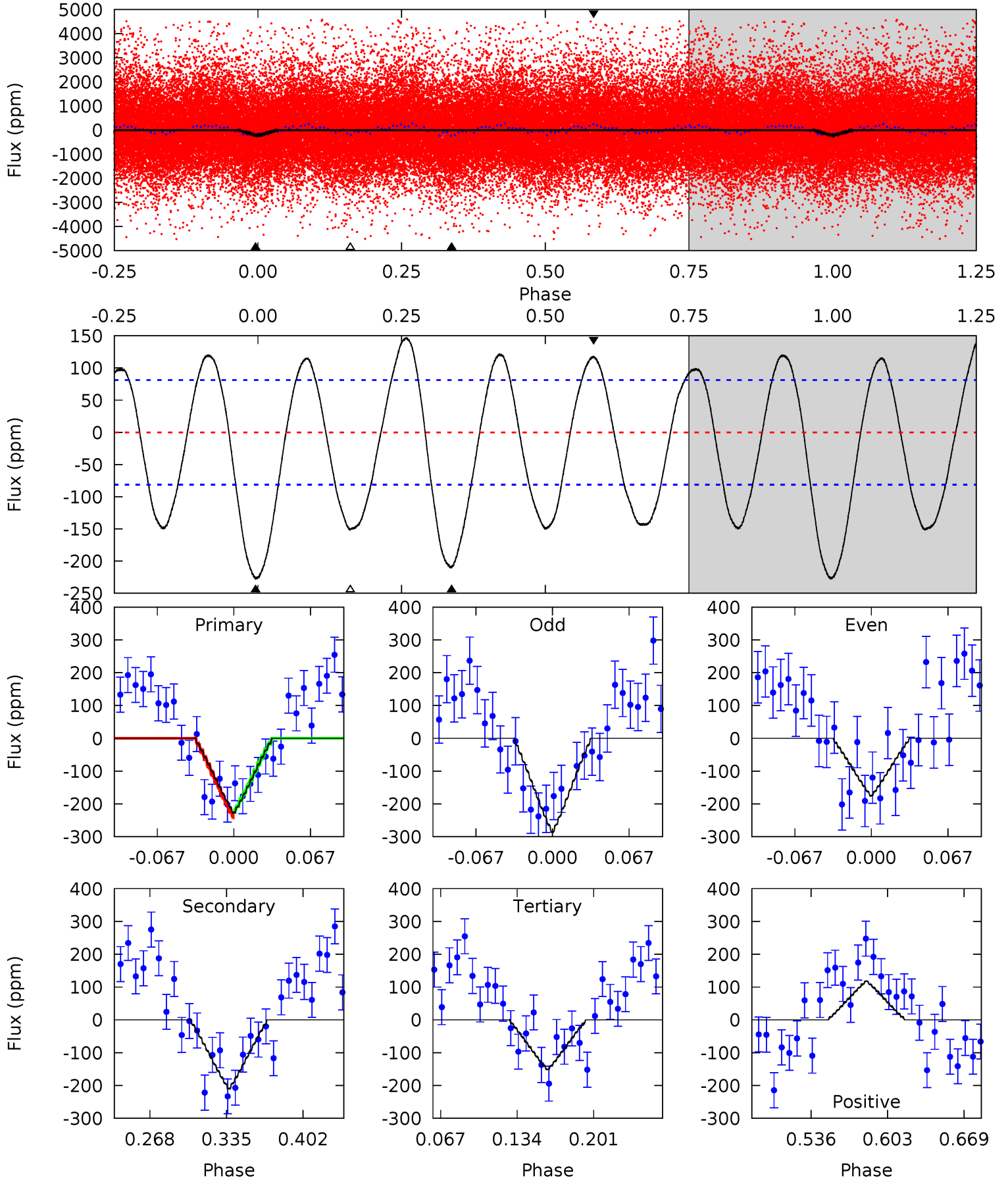
TCE 009650501-01 P= 0.598747 Days $T_0=131.634548$ (BKJD)



DV Model-Shift Uniqueness Test

009650501-01, P = 0.598749 Days, E = 131.035705 Days

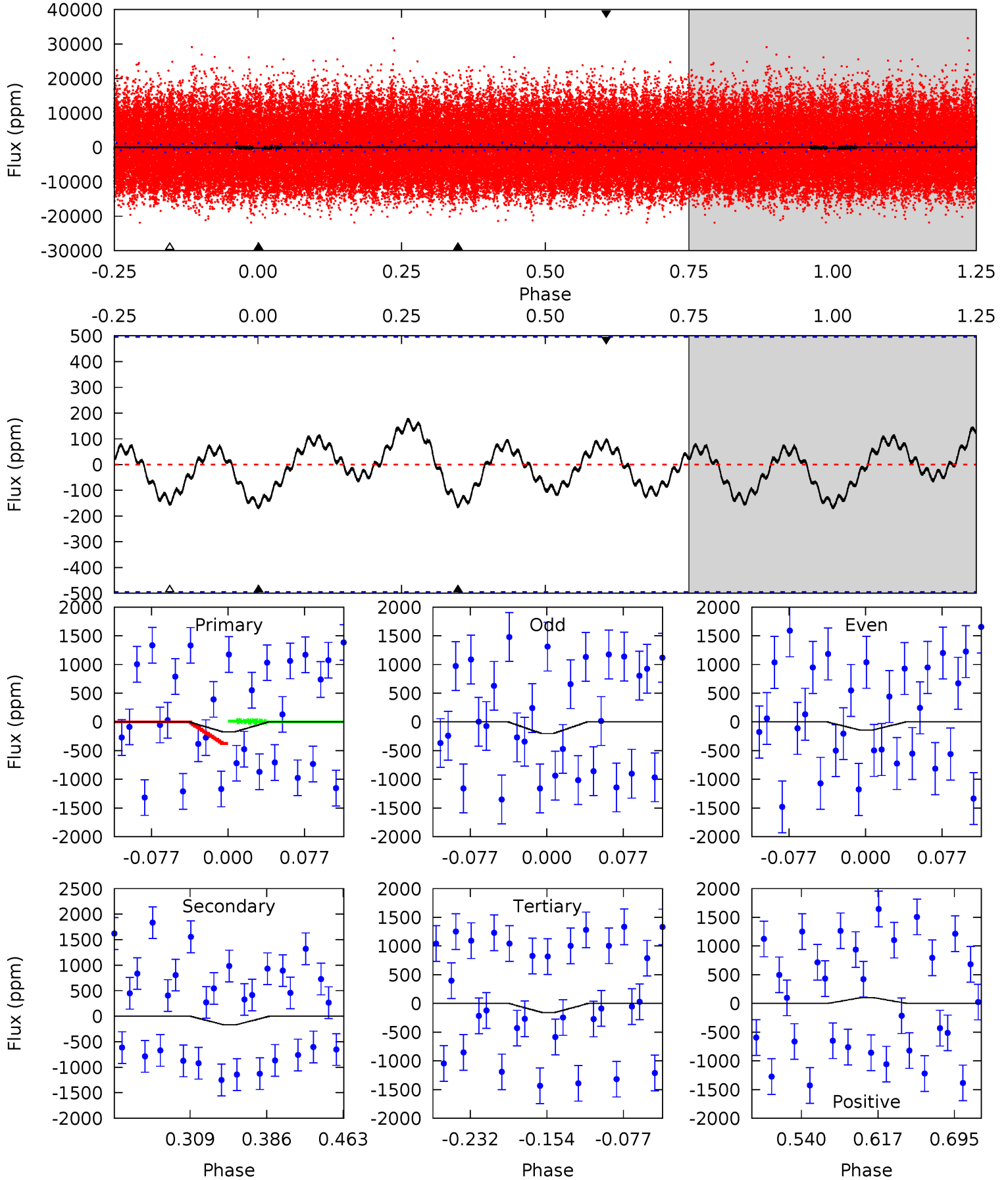
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.0	12.0	8.65	6.73	4.65	1.83	5.57	4.35	6.27	3.36	5.28	3.19	0.86	0.39	0.43



Alt Model-Shift Uniqueness Test

009650501-01, P = 0.598747 Days, E = 131.035801 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.61	1.58	1.49	0.95	4.62	1.77	0.68	0.13	0.66	0.09	0.63	0.27	0.34	0.51	1.71



Stellar Parameters For KIC 009650501

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7526^{+210}_{-315}	$3.592^{+0.531}_{-0.059}$	$-0.040^{+0.200}_{-0.300}$	$3.809^{+0.504}_{-2.015}$	$2.068^{+0.241}_{-0.562}$	$0.053^{+0.306}_{-0.016}$
	+3%/-4%	+15%/-2%	+500%/-750%	+13%/-53%	+12%/-27%	+581%/-30%
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 009650501-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-210 ± 17	$4.47^{+3.03}_{-2.39}$	6524^{+449}_{-865}	7610^{+6716}_{-2197}	$1.768^{+6.381}_{-1.108}$
Alt.	-170 ± 107	$4.55^{+2.82}_{-2.60}$	6507^{+469}_{-870}	6923^{+6164}_{-3973}	$1.280^{+5.254}_{-0.958}$

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 $A_{obs} \gg 1.0$

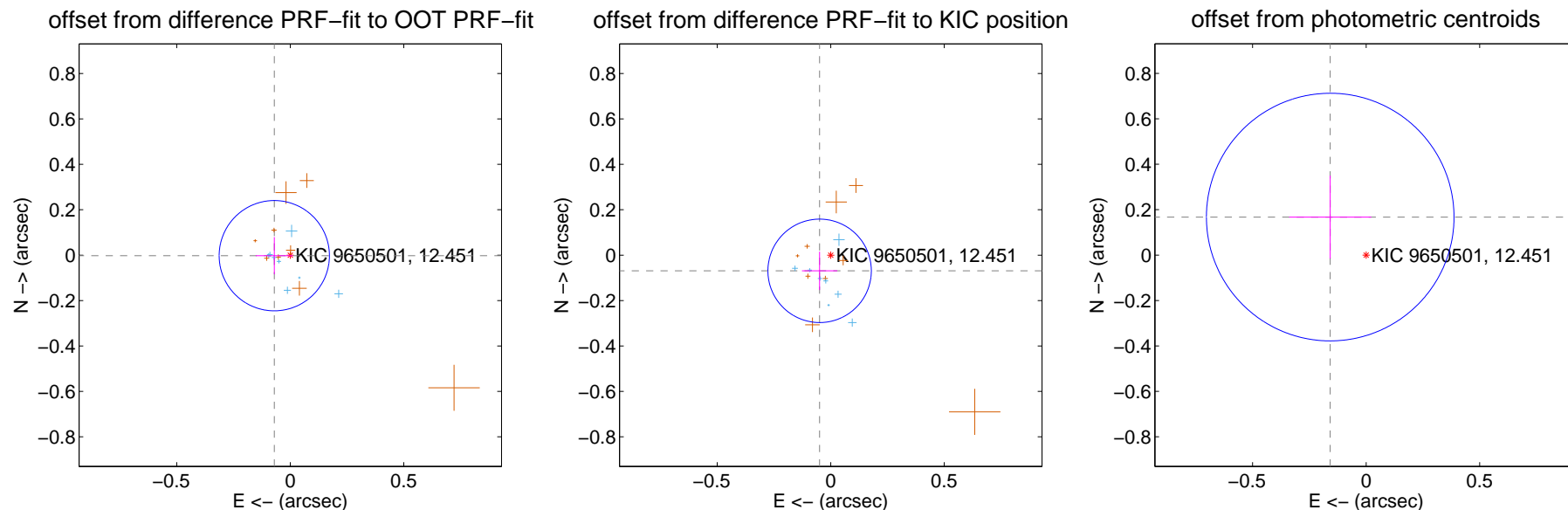
DV Centroid Data

Supplemental centroid analysis for 009650501-01. Kepler magnitude: 12.45. Transit SNR 5.89

There are 8 quarters with good PRF difference image offsets

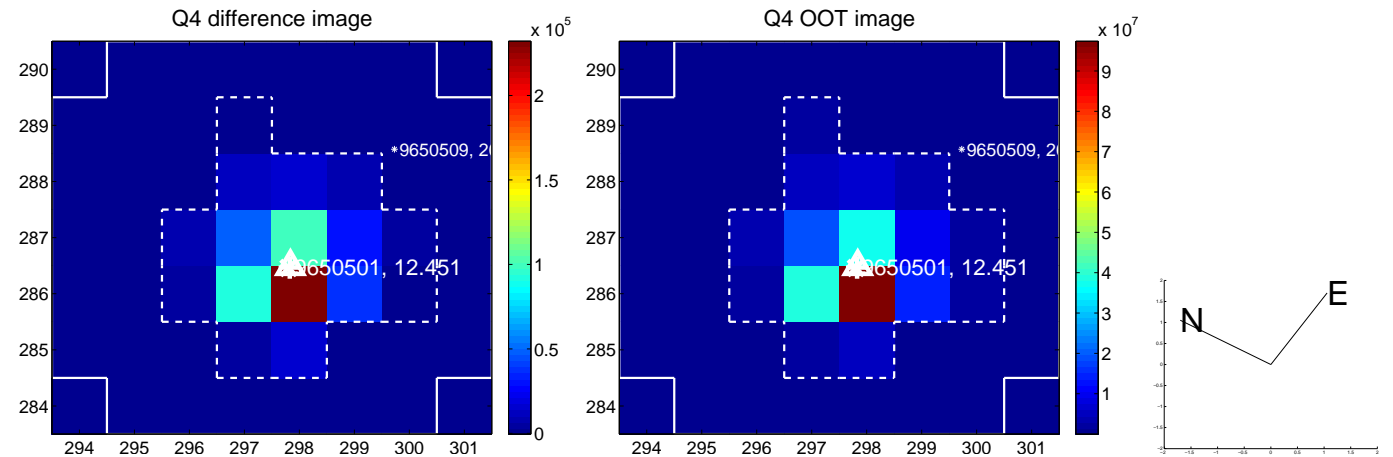
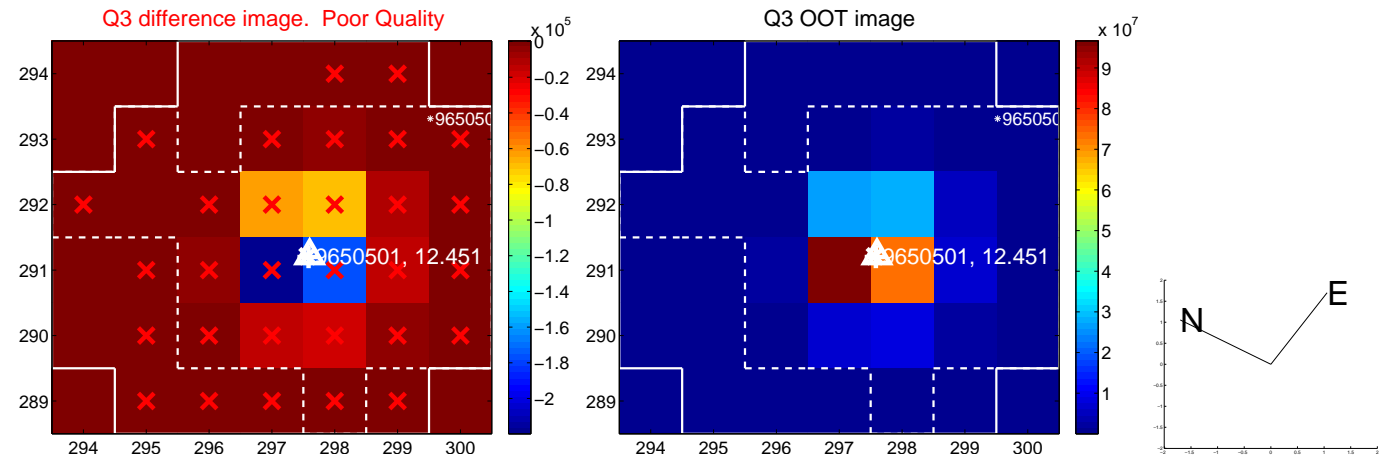
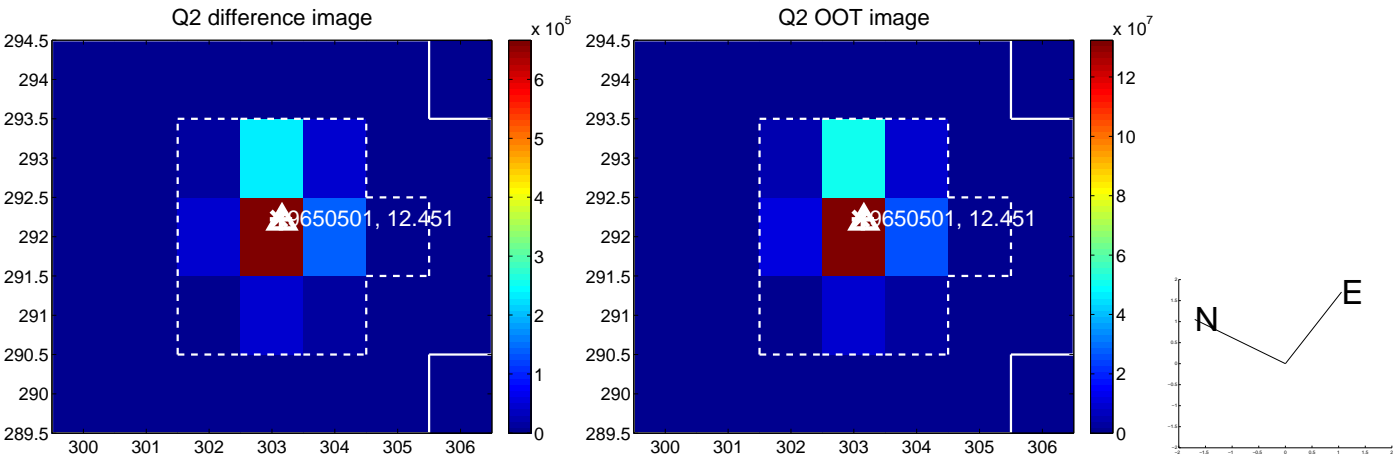
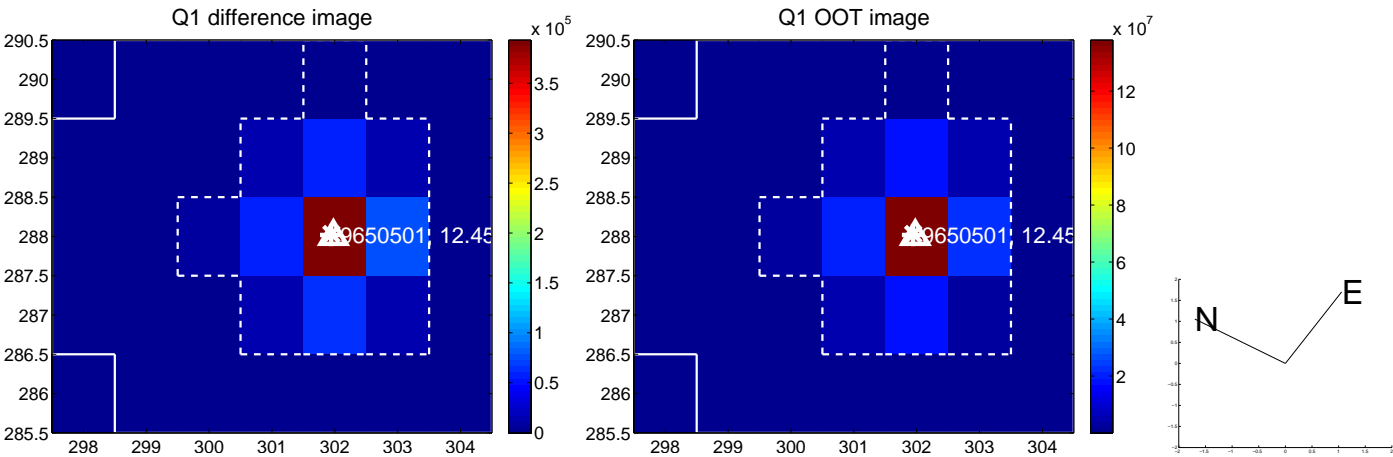
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.070 ± 0.081	0.87	0.070 ± 0.082	-0.002 ± 0.082
PRF-fit source offset from KIC position	0.085 ± 0.076	1.11	0.049 ± 0.078	-0.069 ± 0.084
photometric centroid source offset	0.23 ± 0.18	1.27	0.16 ± 0.18	0.17 ± 0.18

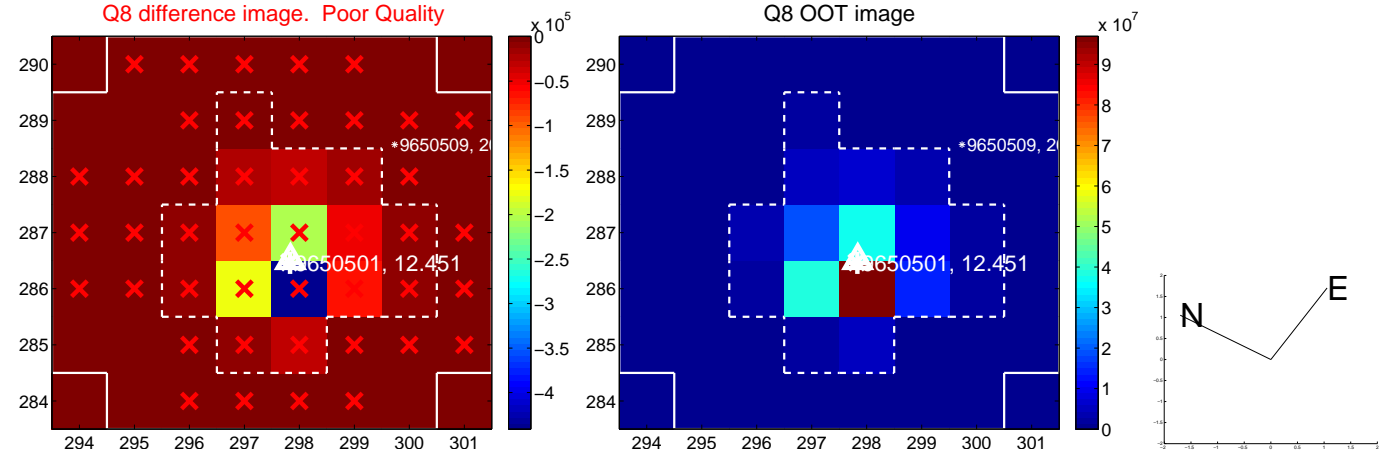
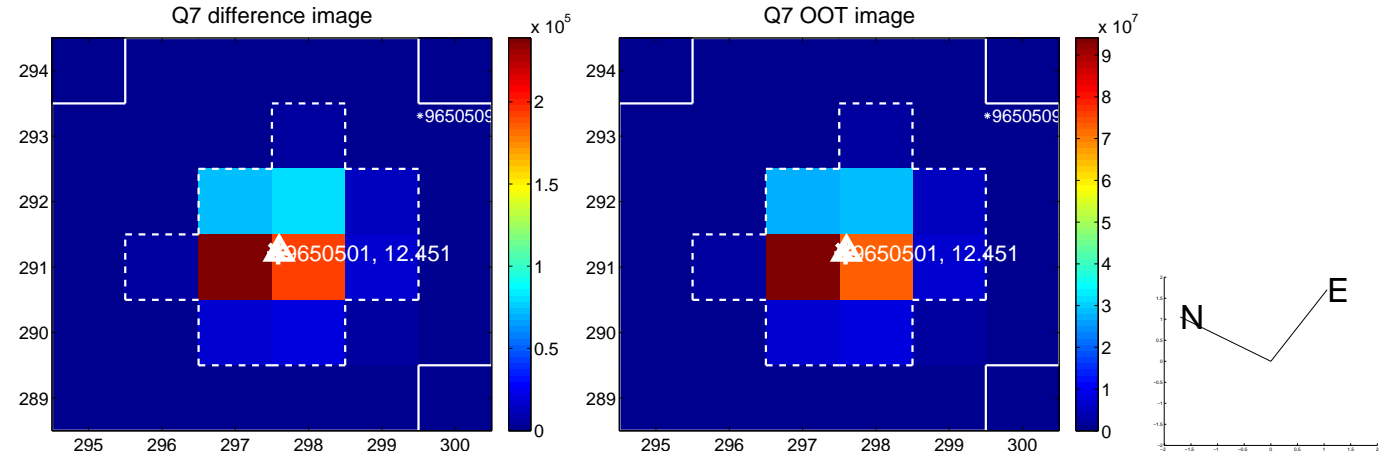
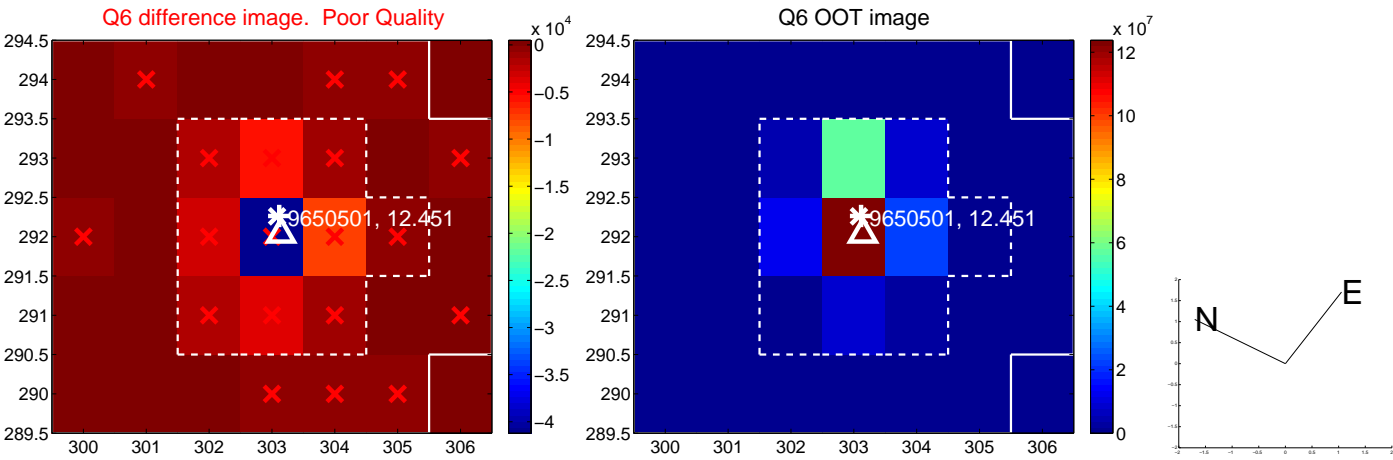
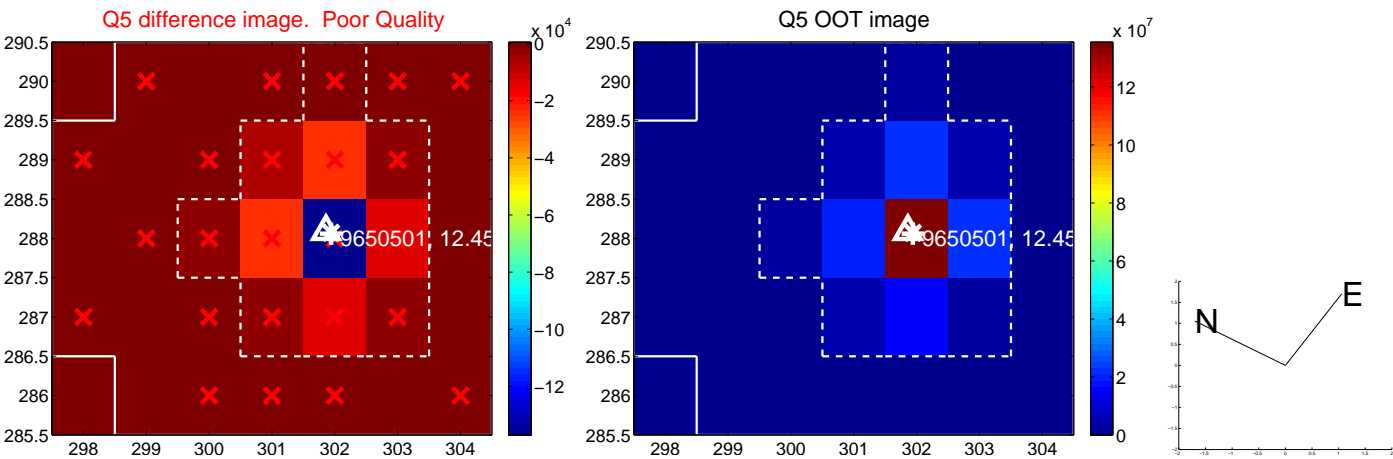


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

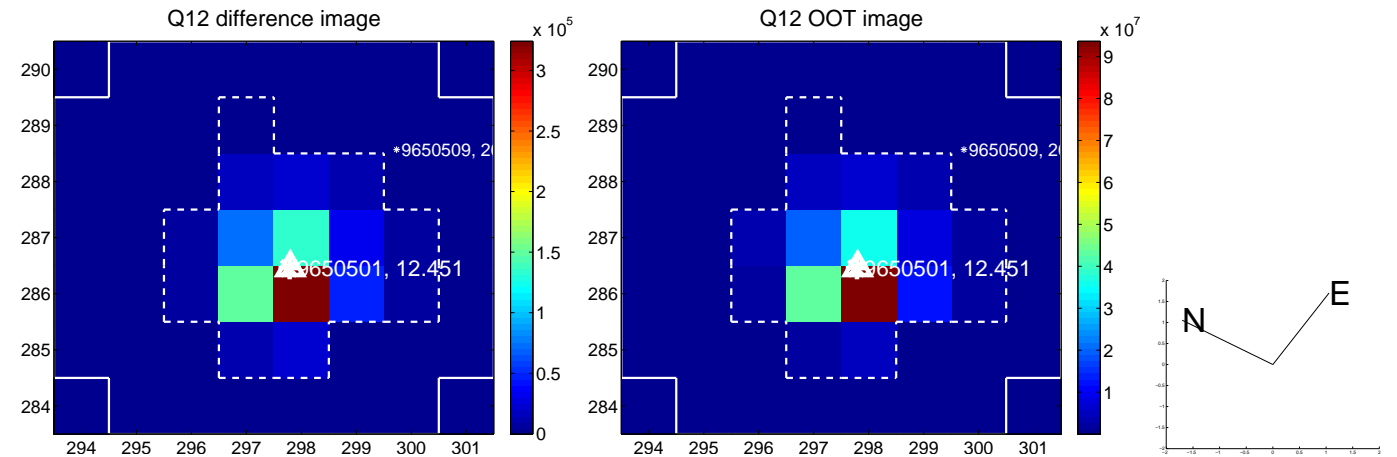
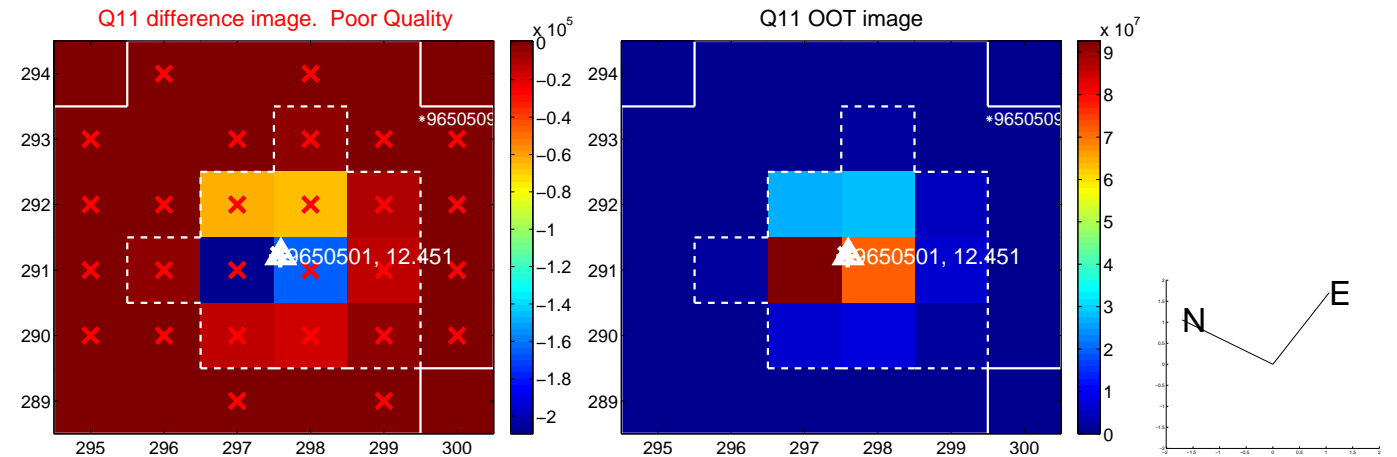
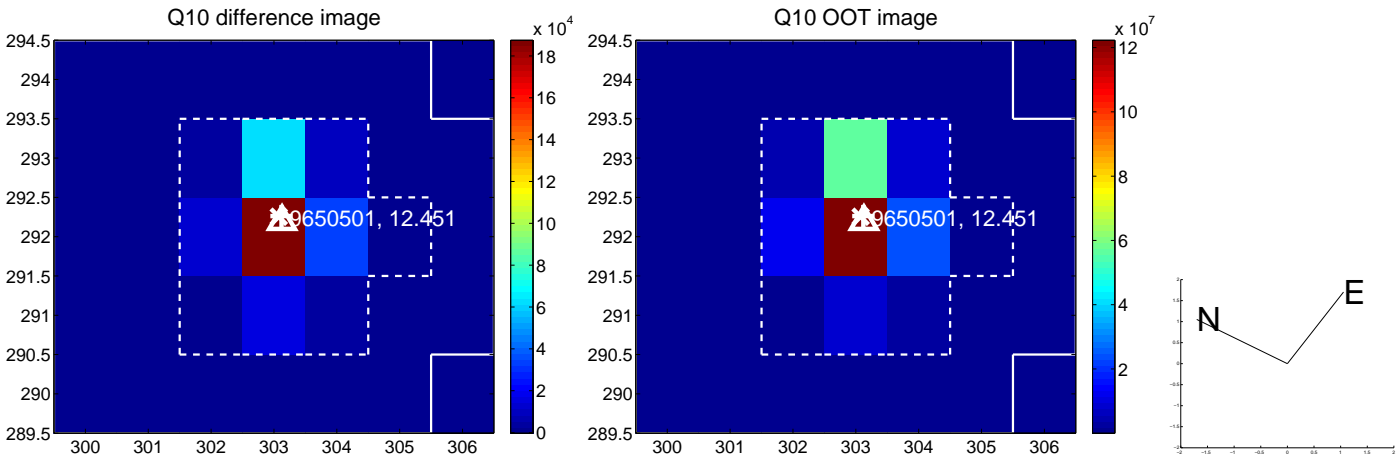
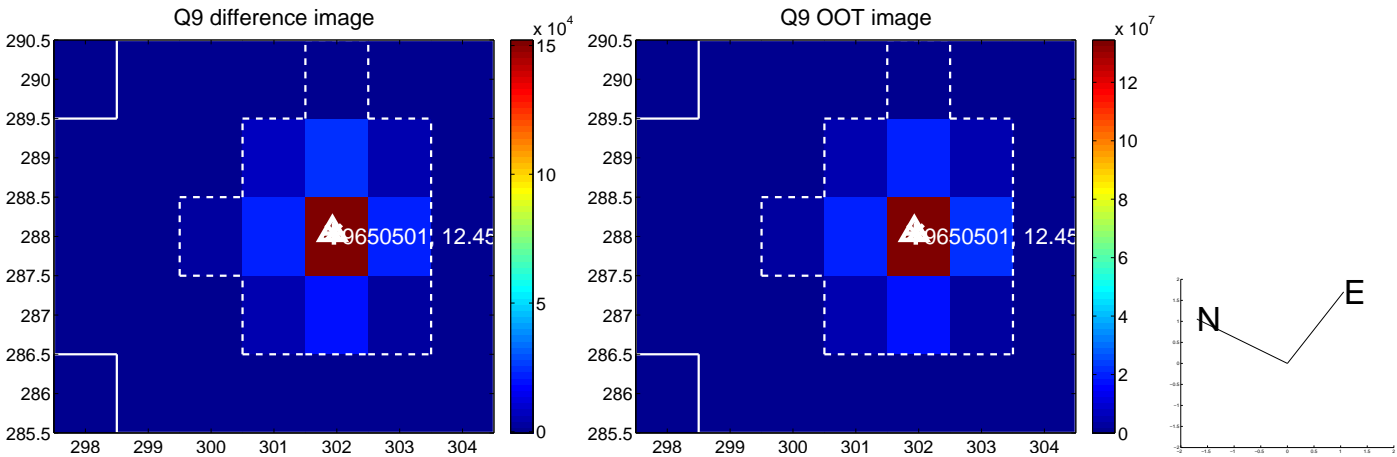
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



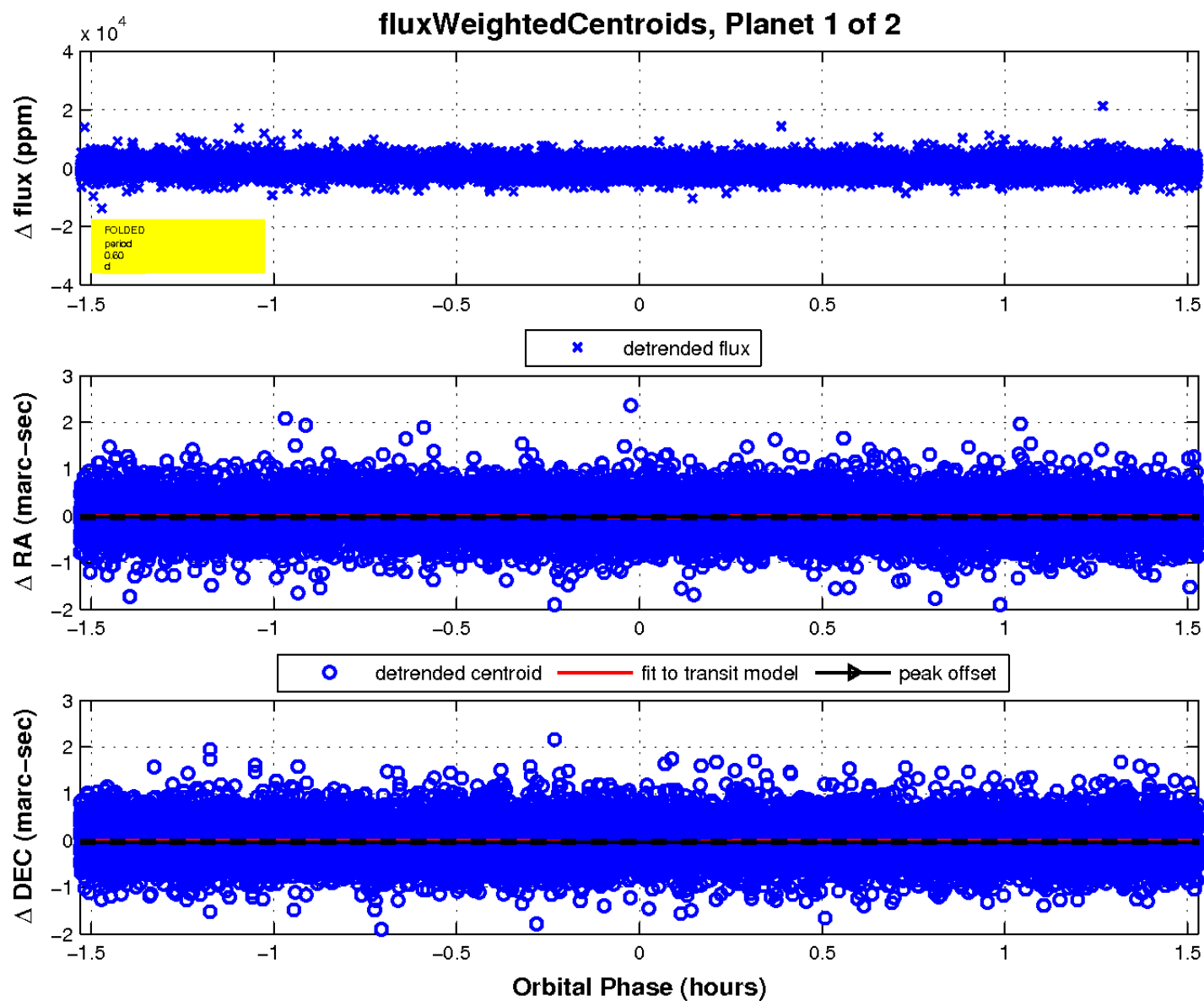
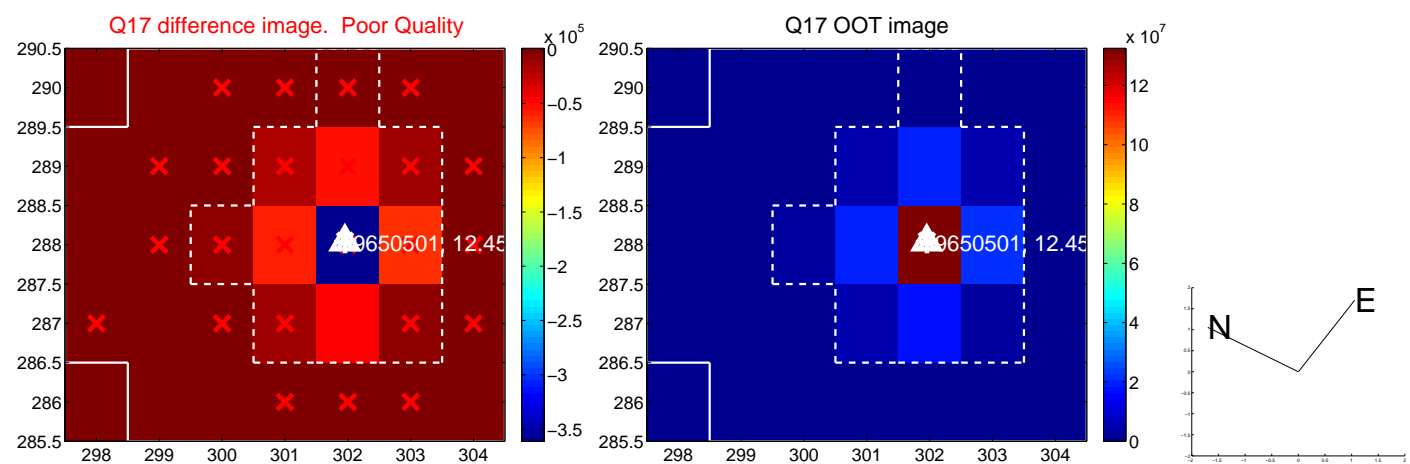
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

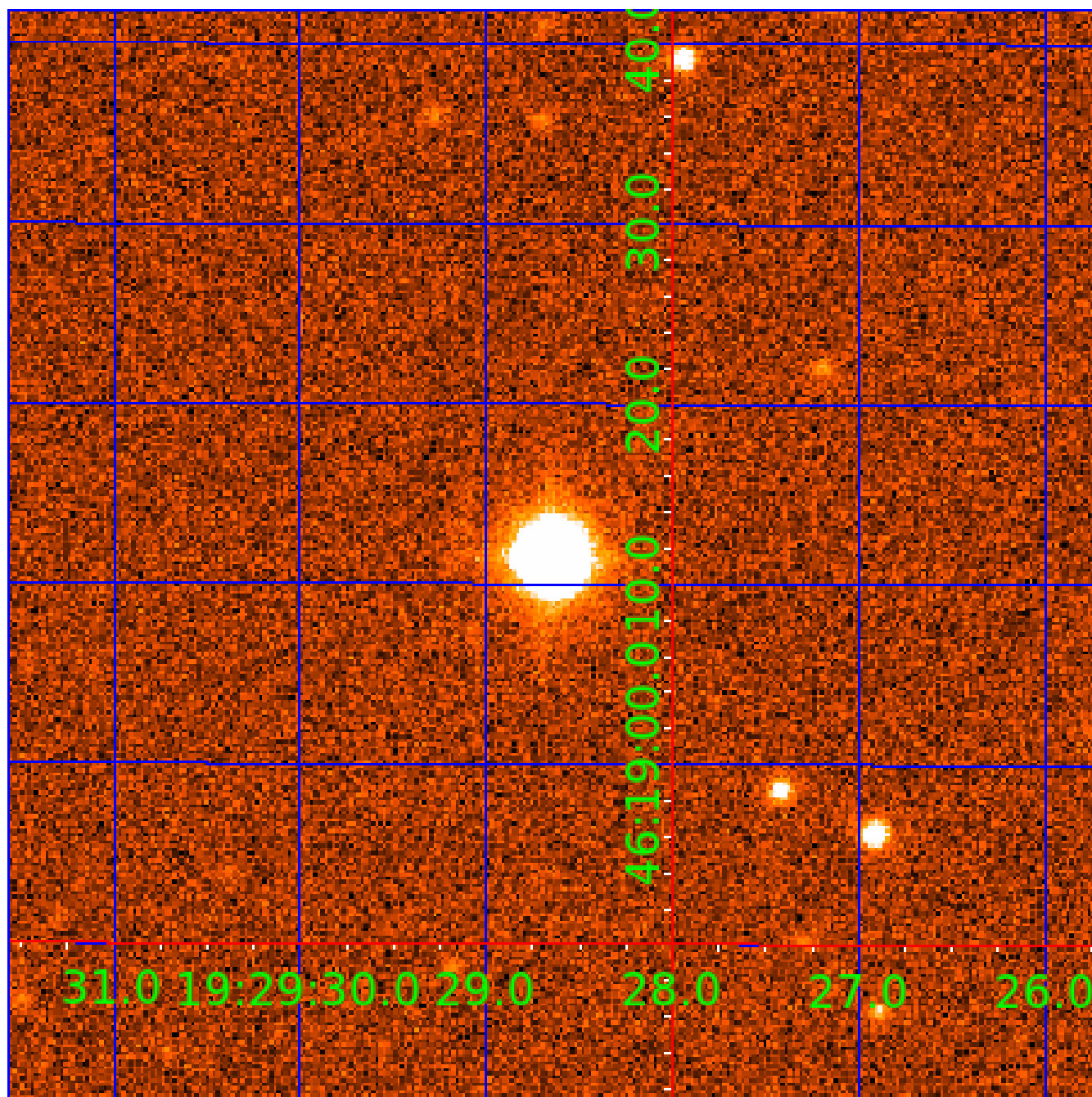


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009650501

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})
009650501-01	OBS	No	0.598749	131.634453	146.3	0.510	11.2	5.9	3.81	7526	5.13	0.00
009650501-02	OBS	No	2.175355	132.706747	775.8	3.226	8.7	8.4	3.81	7526	13.24	23785.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009650501-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009650501-02	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

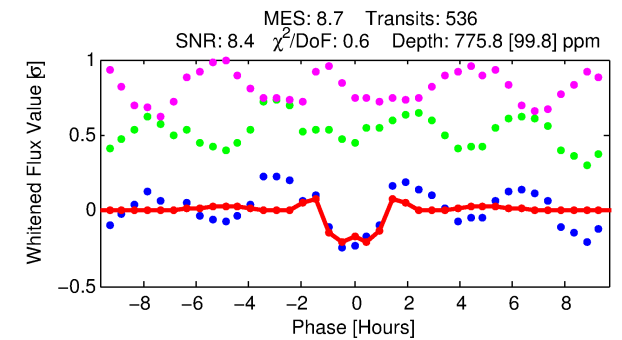
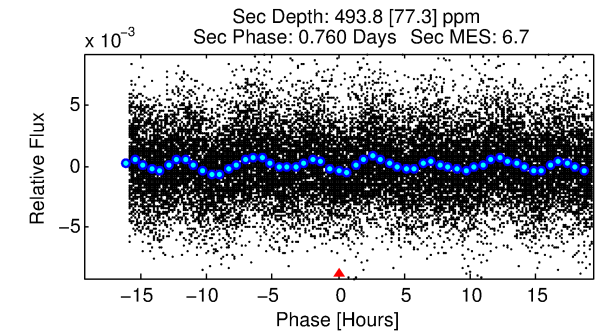
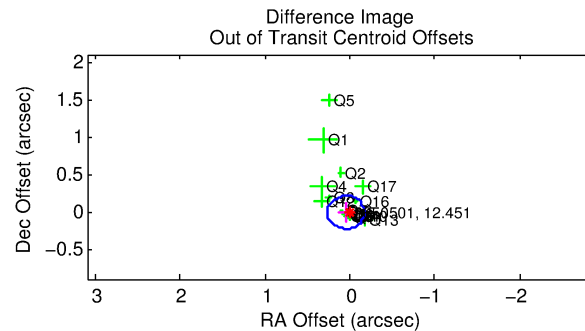
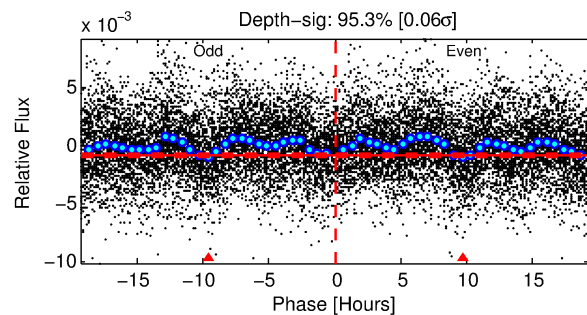
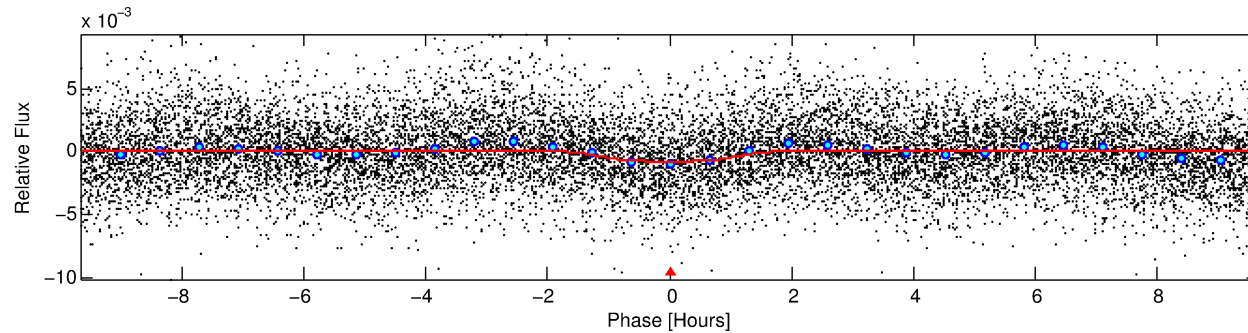
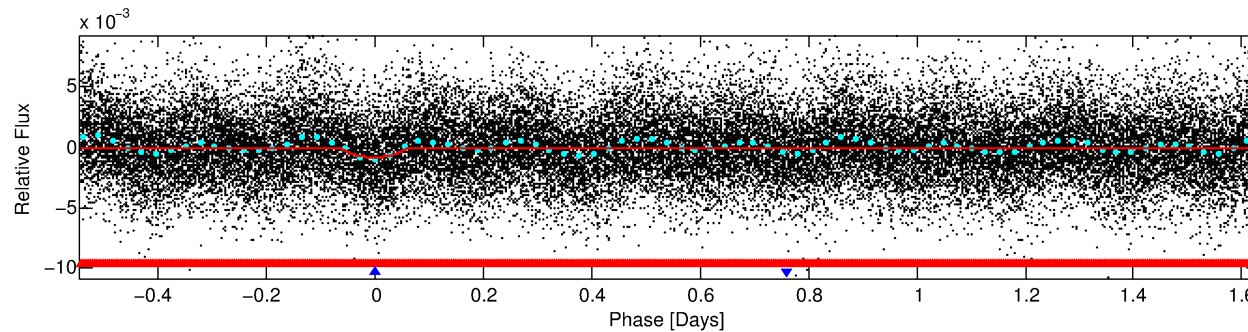
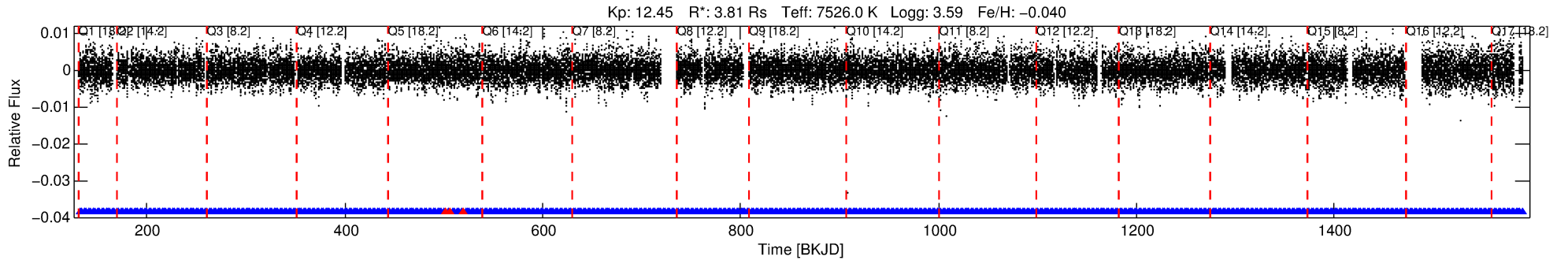
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009650501-02

No Significant Match Found

DV One-Page Summary

KIC: 9650501 Candidate: 2 of 2 Period: 2.175 d



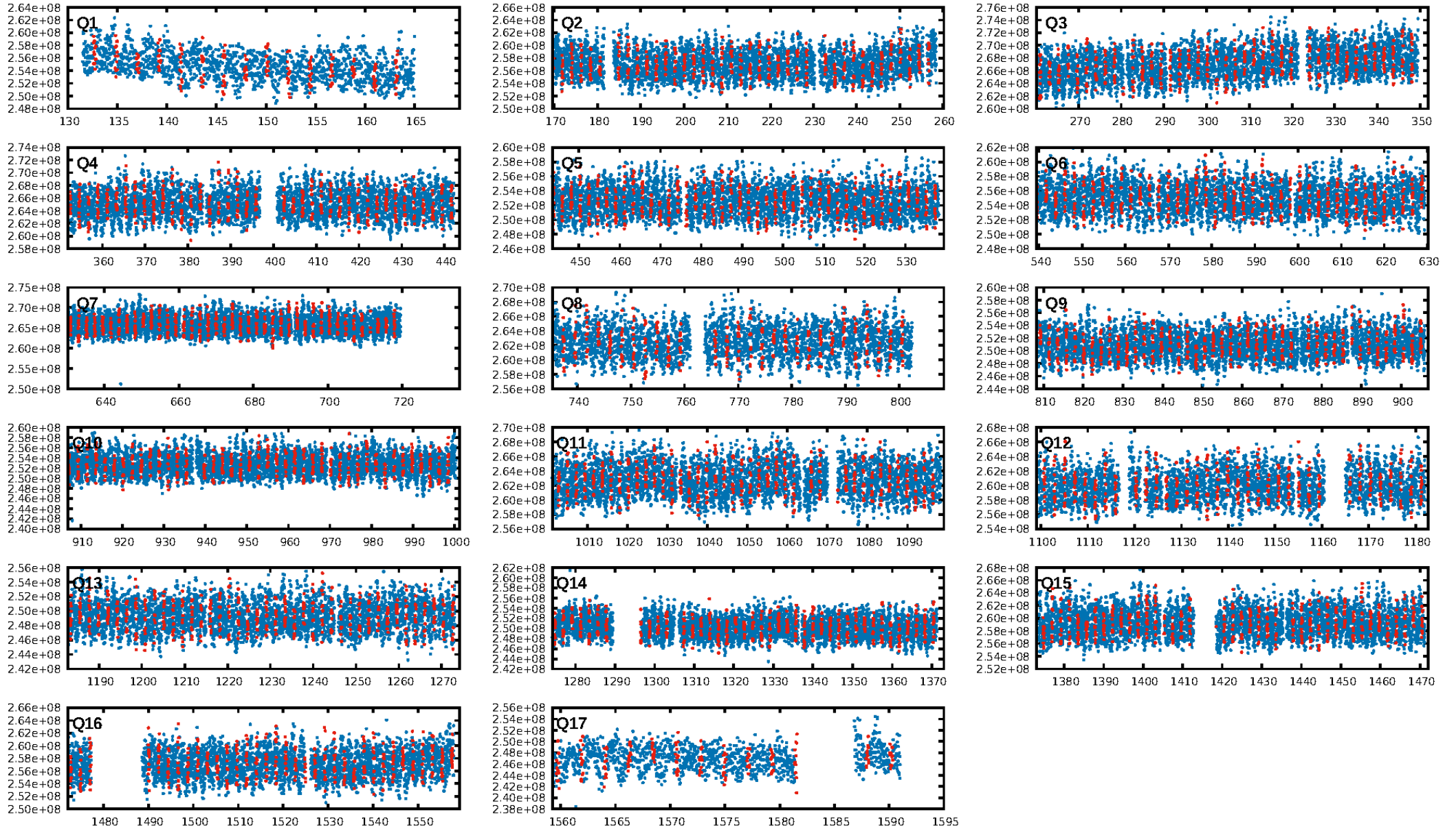
DV Fit Results:

Period = 2.17536 [0.00001] d
Epoch = 132.7067 [0.0025] BKJD
Rp/R* = 0.0319 [0.0022]
a/R* = 2.19 [0.16]
b = 0.96 [0.01]
Seff = 23785.83 [21497.19]
Teq = 3167 [715] K
Rp = 13.24 [7.07] Re
a = 0.0419 [0.0226] AU
Ag = 2.72 [2.48] [0.69 σ]
Teffp = 6285 [420] K [3.76 σ]

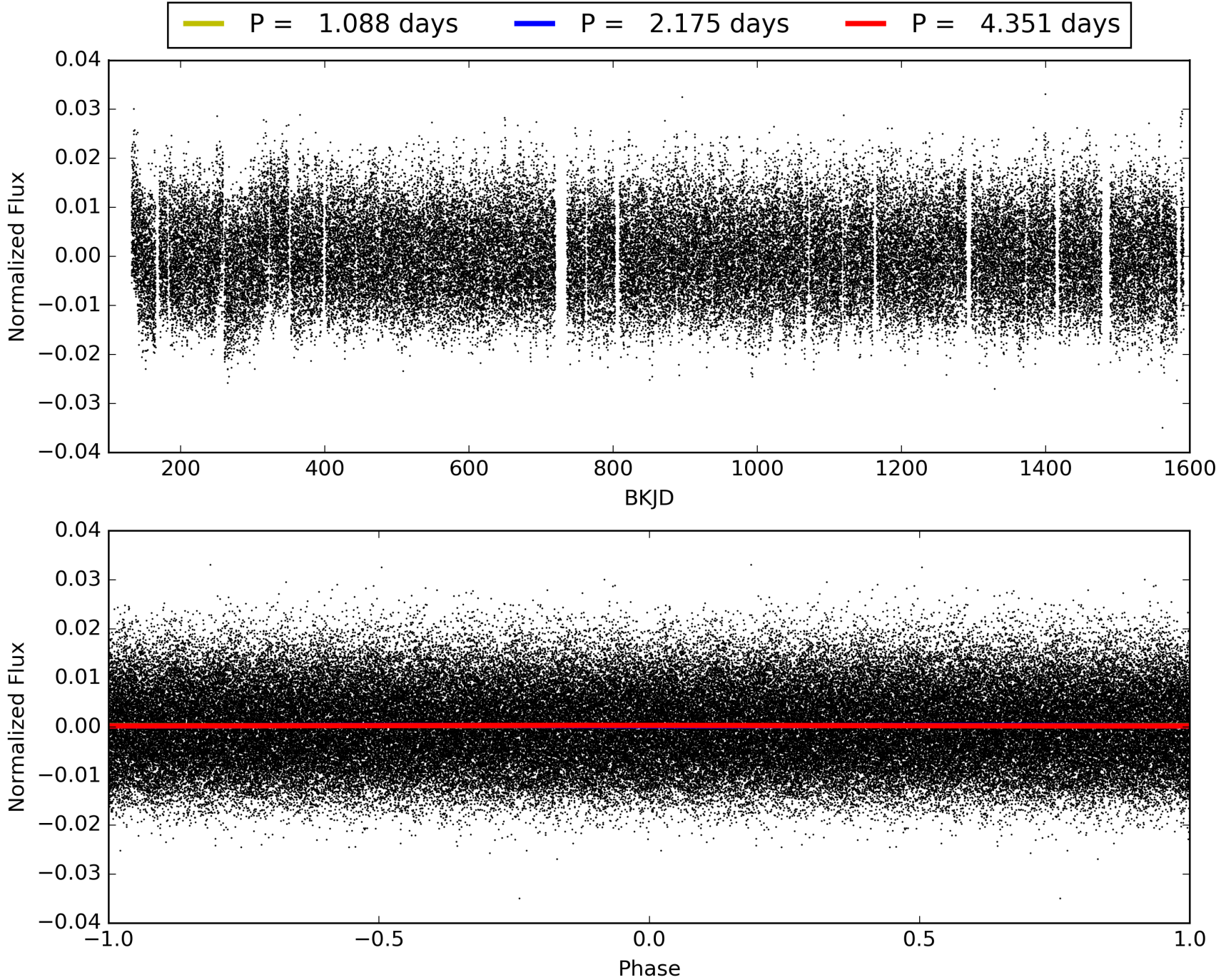
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.58 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.65e-15
RollingBand-fgt: 0.99 [510/513]
GhostDiagnostic-chr: 1.48
Centroid-sig: 23.9%
Centroid-so: 0.117 arcsec [3.89 σ]
OotOffset-rm: 0.049 arcsec [0.67 σ]
KicOffset-rm: 0.103 arcsec [0.90 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.76 [13/17]
DiffImageOverlap-fno: 0.00 [0/17]

TCE 009650501-02, PDC Light Curves

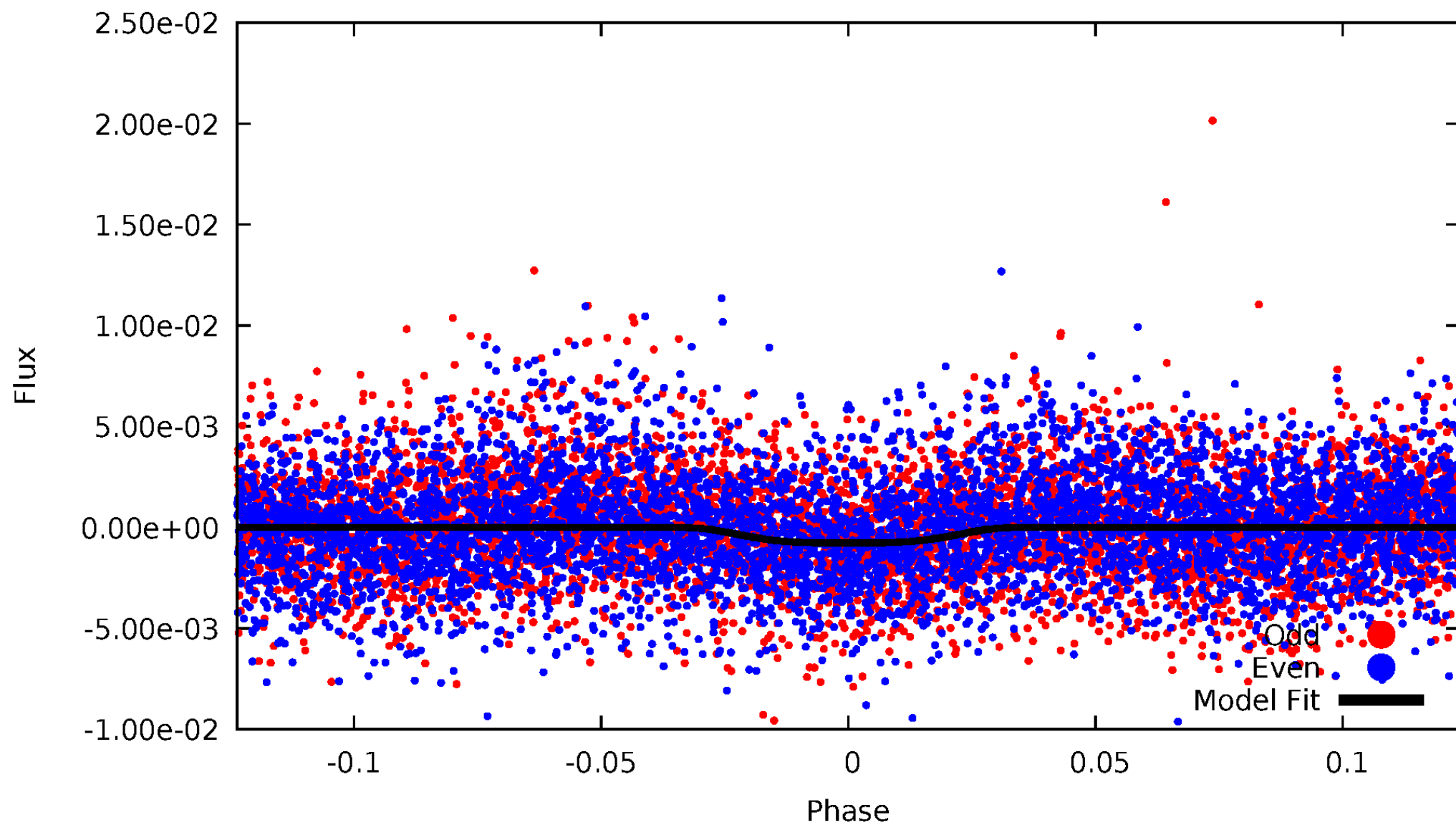


TCE 009650501-02



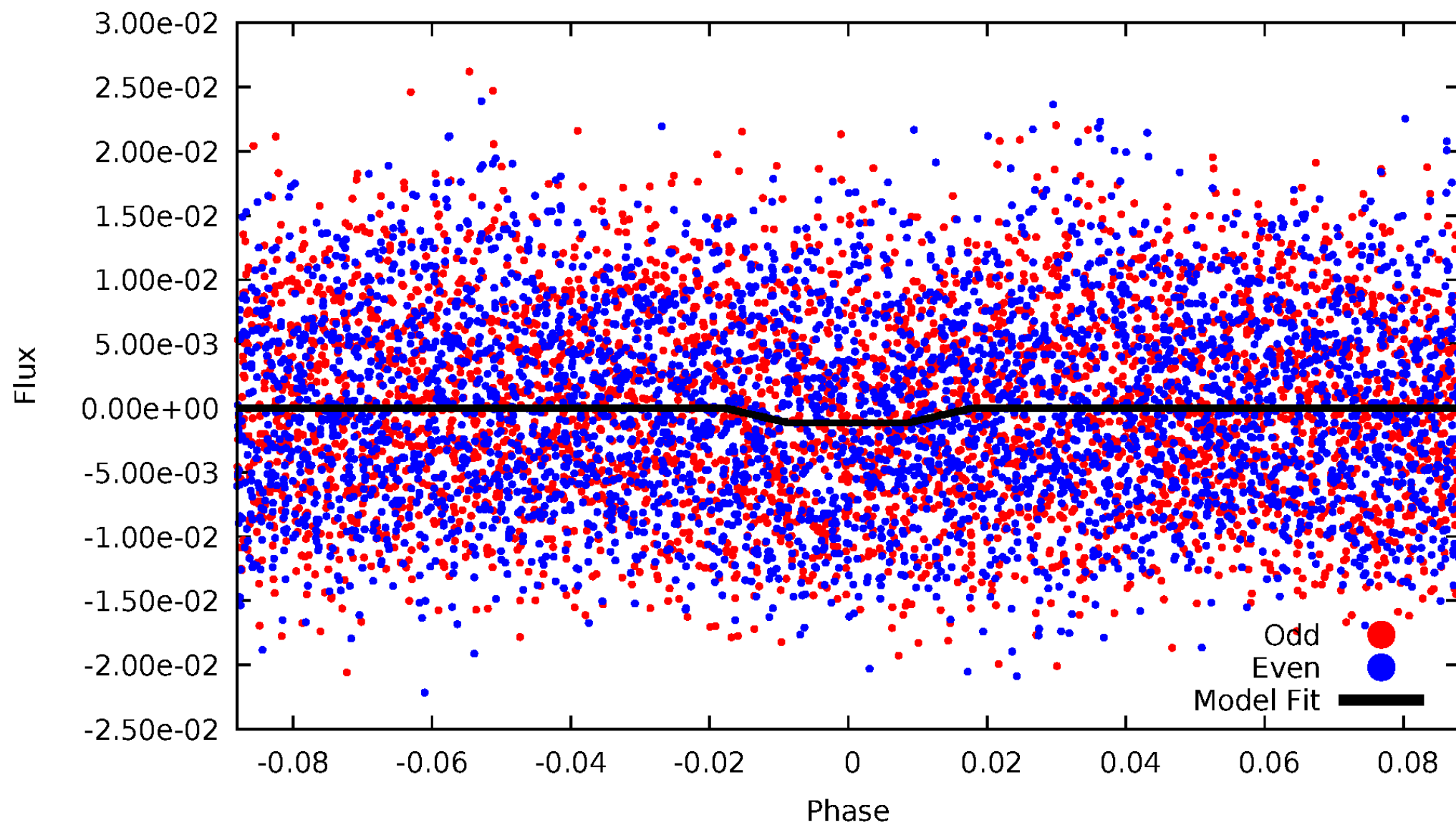
DV Odd/Even

TCE 009650501-02



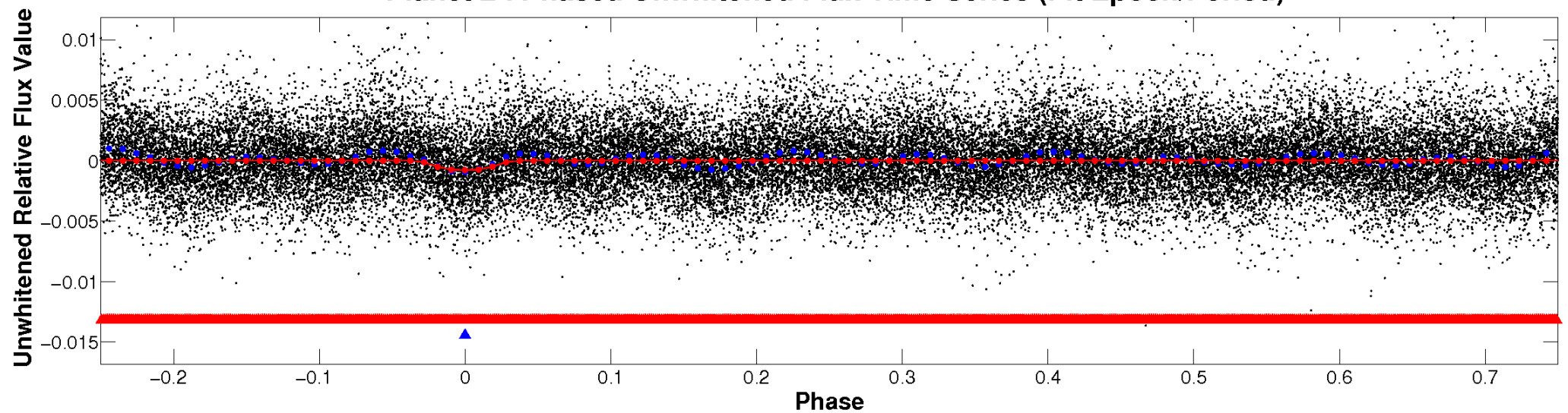
ALT Odd/Even

TCE 009650501-02

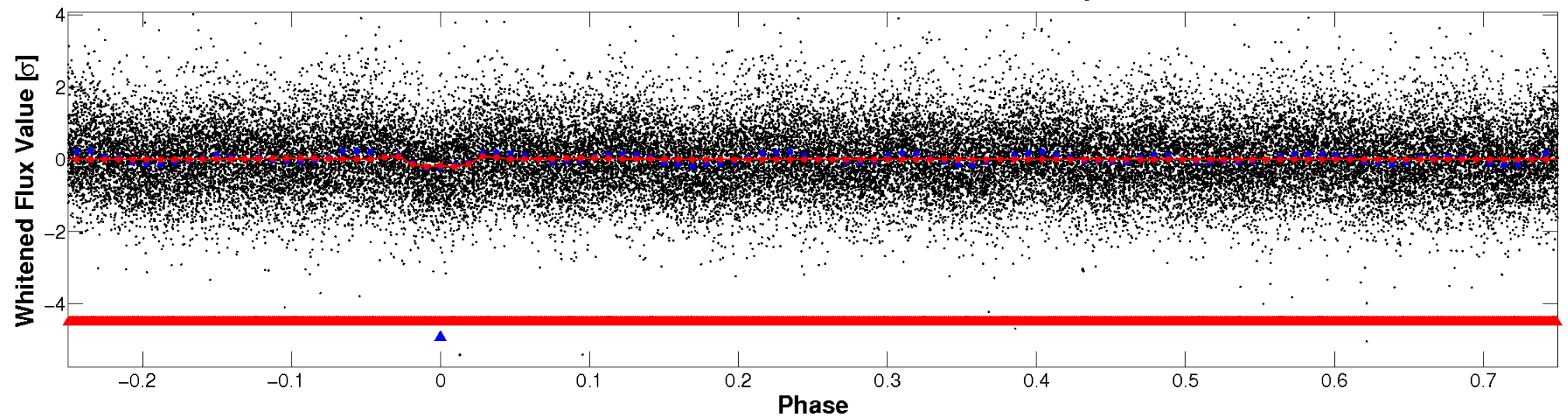


Non-Whitened Vs. Whitened Light Curve

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

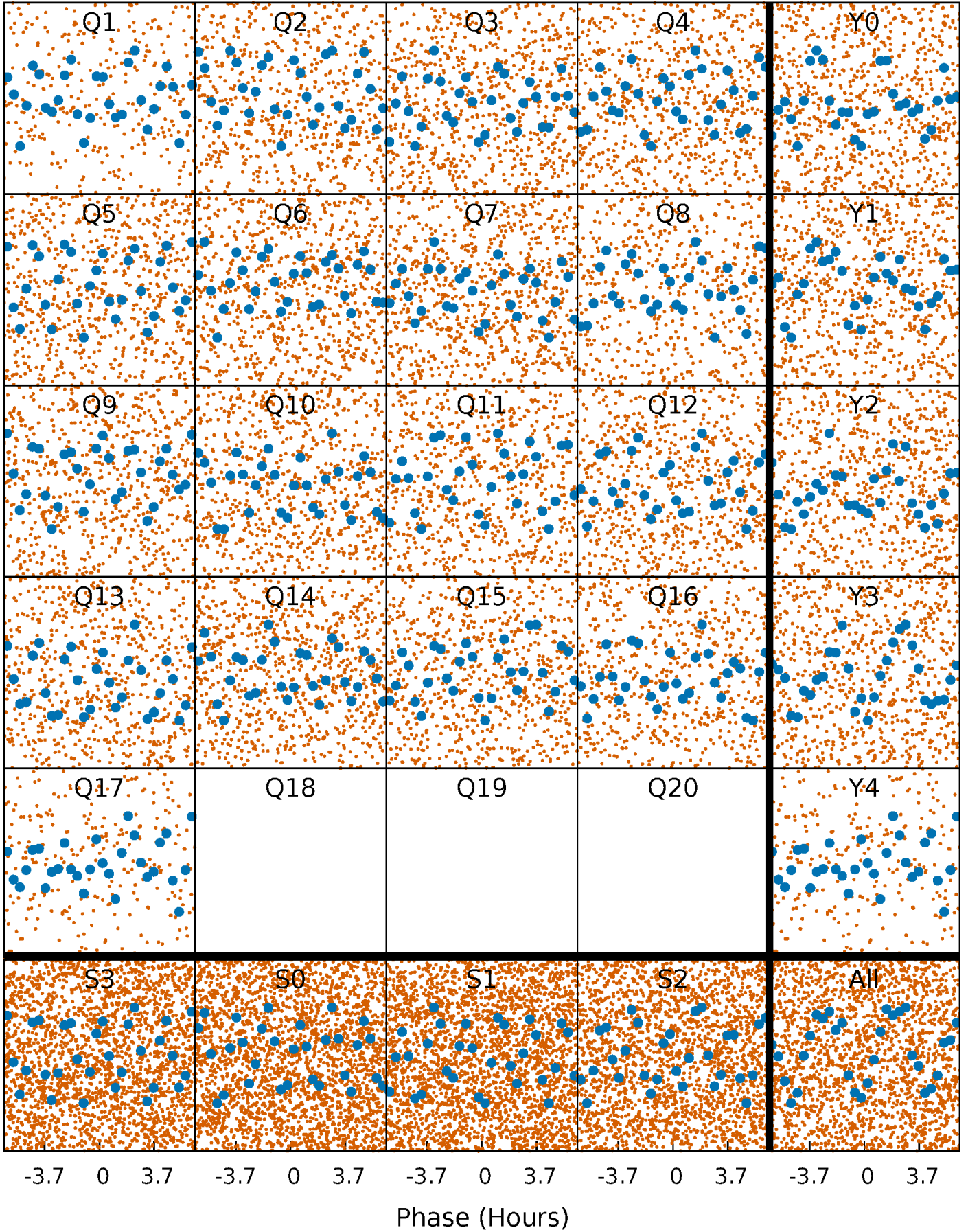


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



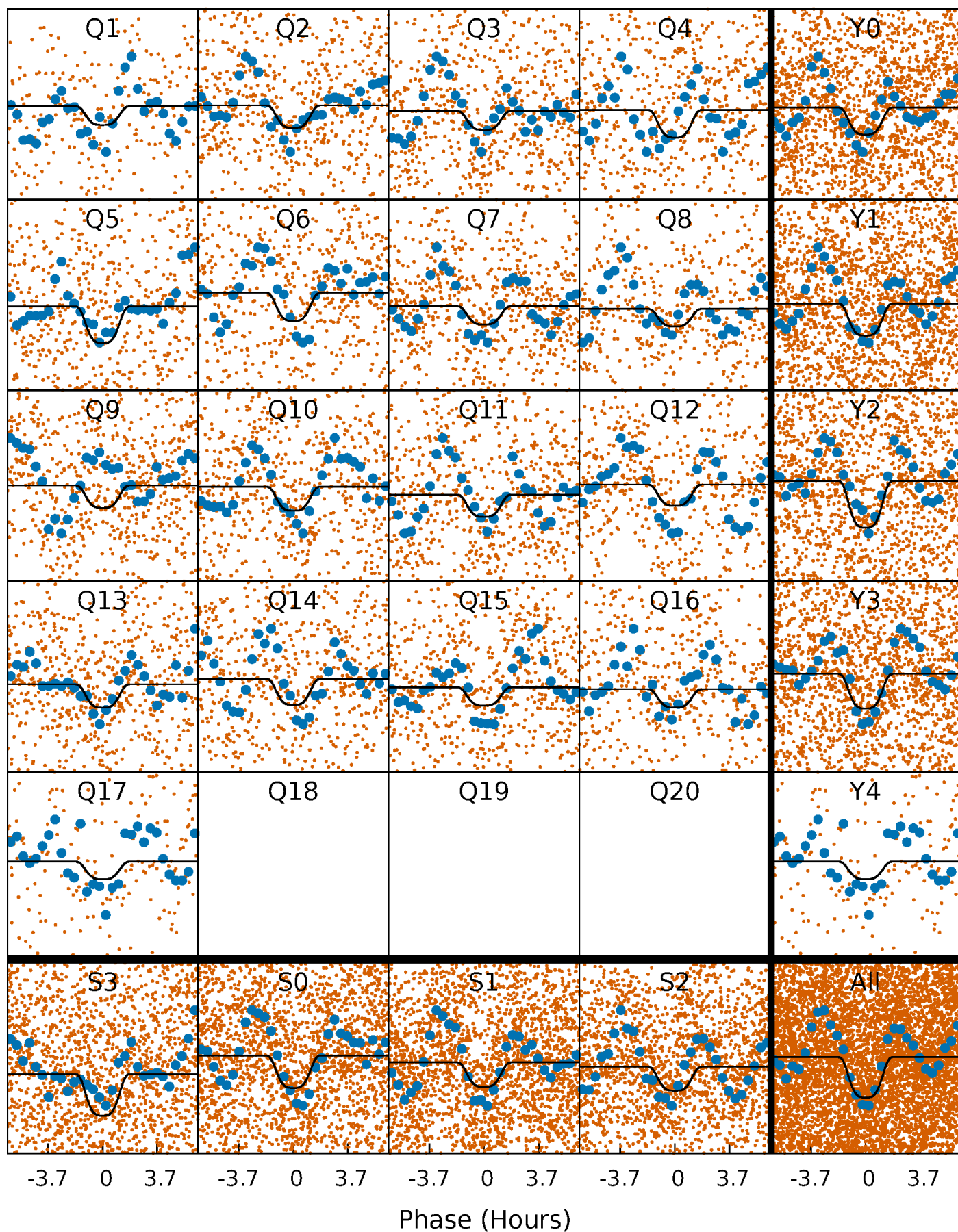
PDC Quarter-Phased Transit Curves

TCE 009650501-02 P= 2.175355 Days $T_0=132.706747$ (BKJD)



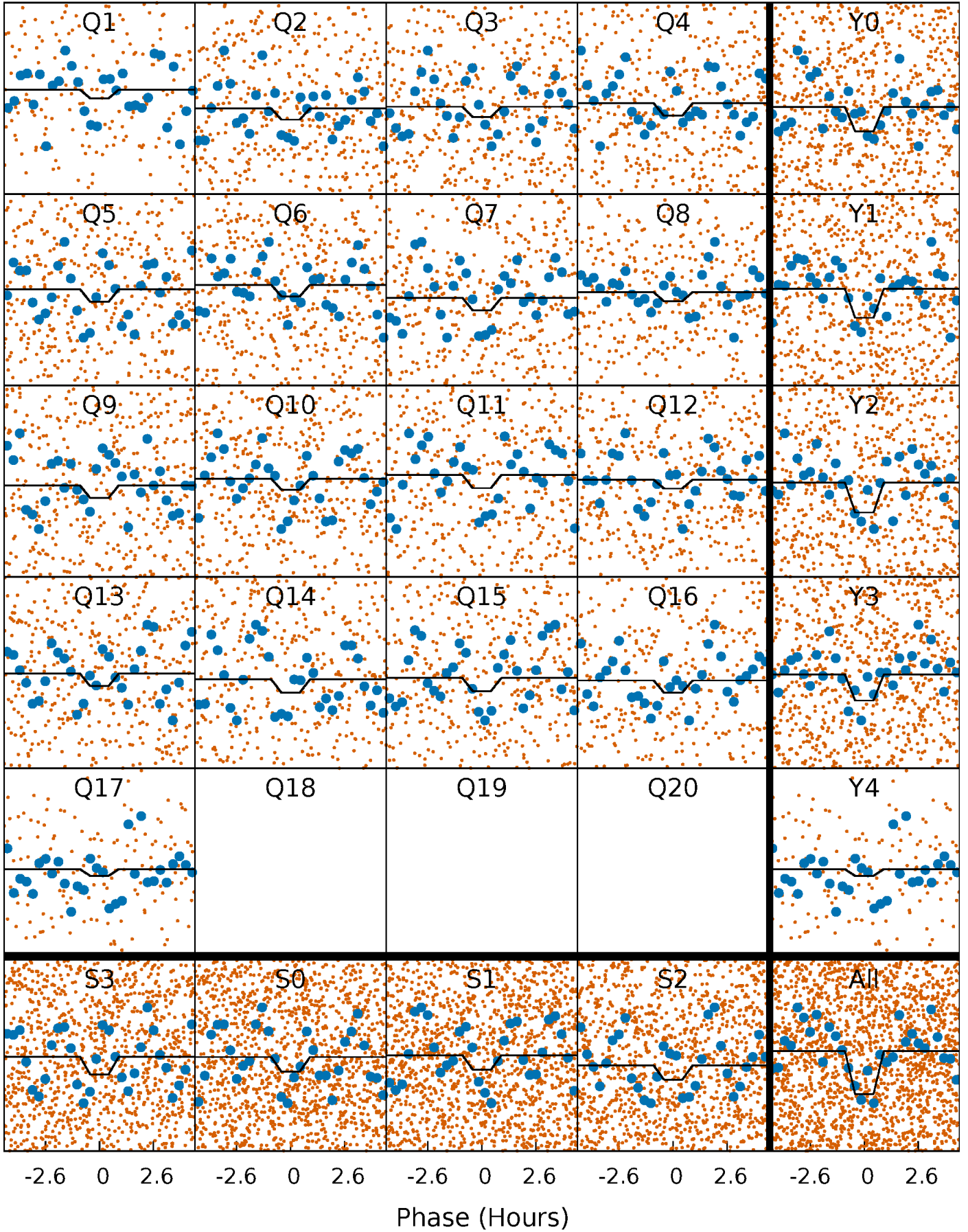
DV Quarter-Phased Transit Curves

TCE 009650501-02 $P = 2.175355$ Days $T_0 = 132.706747$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

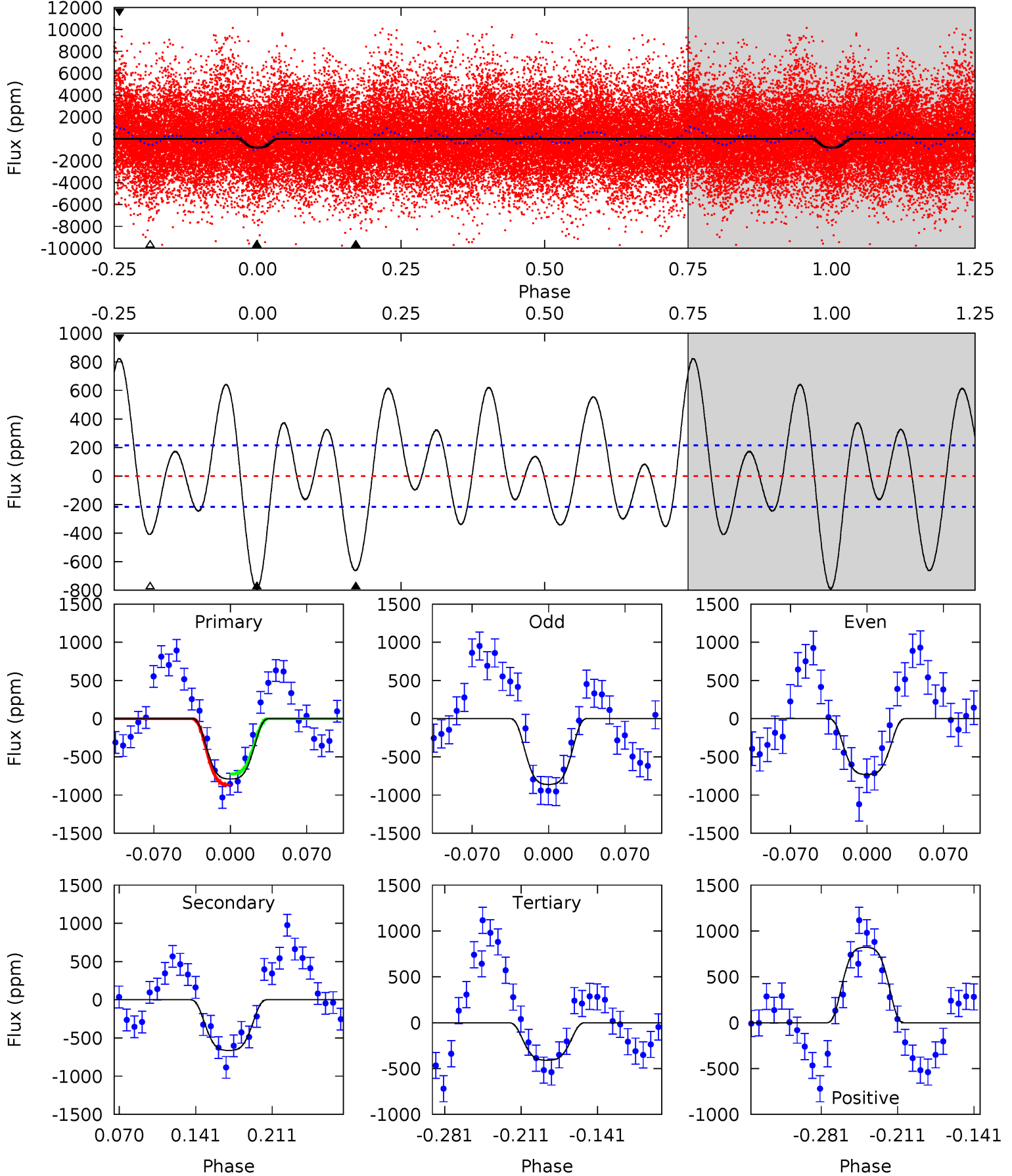
TCE 009650501-02 P= 2.175407 Days $T_0=132.681722$ (BKJD)



DV Model-Shift Uniqueness Test

009650501-02, P = 2.175355 Days, E = 130.531392 Days

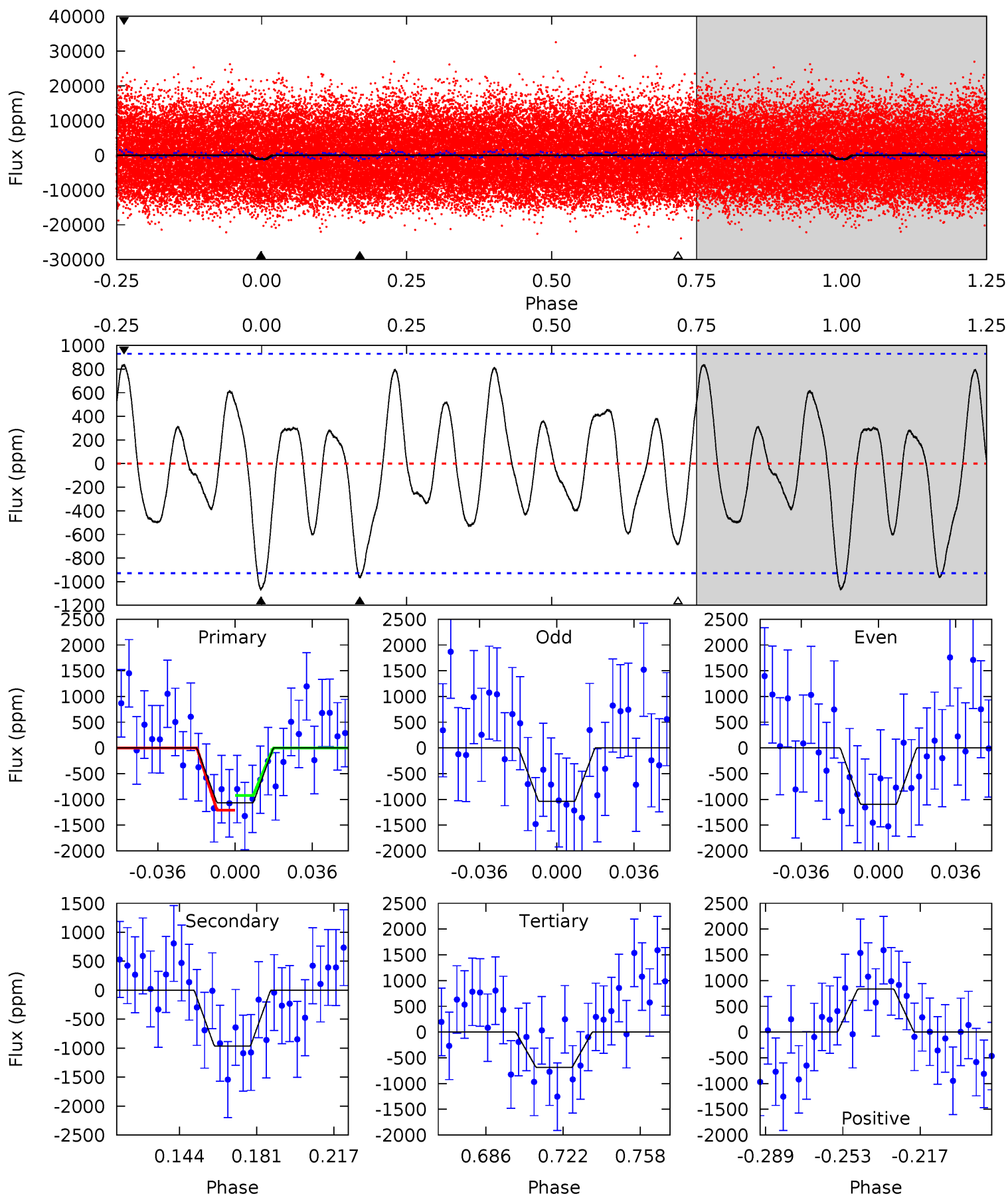
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.0	14.3	8.82	17.7	4.64	1.81	6.22	8.21	-0.70	5.47	-3.44	1.40	0.78	0.51	1.56



Alt Model-Shift Uniqueness Test

009650501-02, P = 2.175407 Days, E = 130.506315 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.48	4.95	3.52	4.29	4.77	2.10	1.95	1.97	1.19	1.43	0.66	0.14	0.70	0.44	0.74



Stellar Parameters For KIC 009650501

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7526^{+210}_{-315}	$3.592^{+0.531}_{-0.059}$	$-0.040^{+0.200}_{-0.300}$	$3.809^{+0.504}_{-2.015}$	$2.068^{+0.241}_{-0.562}$	$0.053^{+0.306}_{-0.016}$
	+3%/-4%	+15%/-2%	+500%/-750%	+13%/-53%	+12%/-27%	+581%/-30%
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 009650501-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-663 ± 46	$12.15^{+2.24}_{-3.16}$	4219^{+318}_{-550}	6514^{+387}_{-343}	$4.339^{+3.304}_{-1.140}$
Alt.	-963 ± 195	$13.23^{+2.22}_{-3.64}$	4227^{+293}_{-562}	6977^{+558}_{-552}	$5.579^{+4.044}_{-1.703}$

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

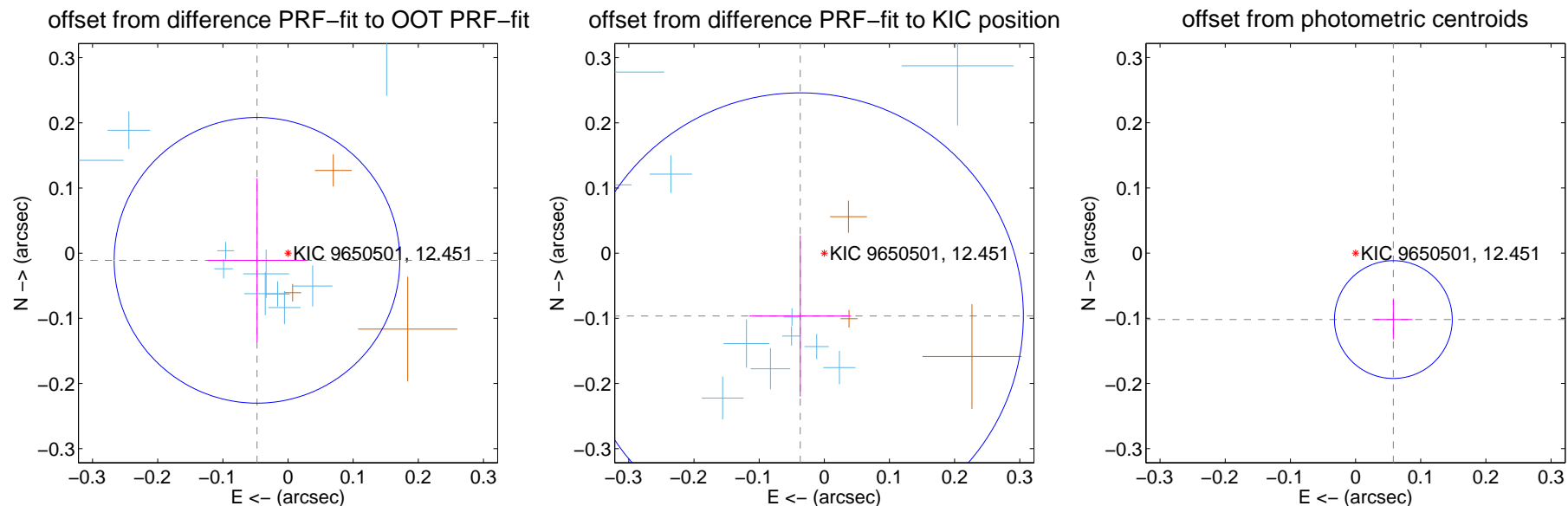
DV Centroid Data

Supplemental centroid analysis for 009650501-02. Kepler magnitude: 12.45. Transit SNR 8.38

There are 13 quarters with good PRF difference image offsets

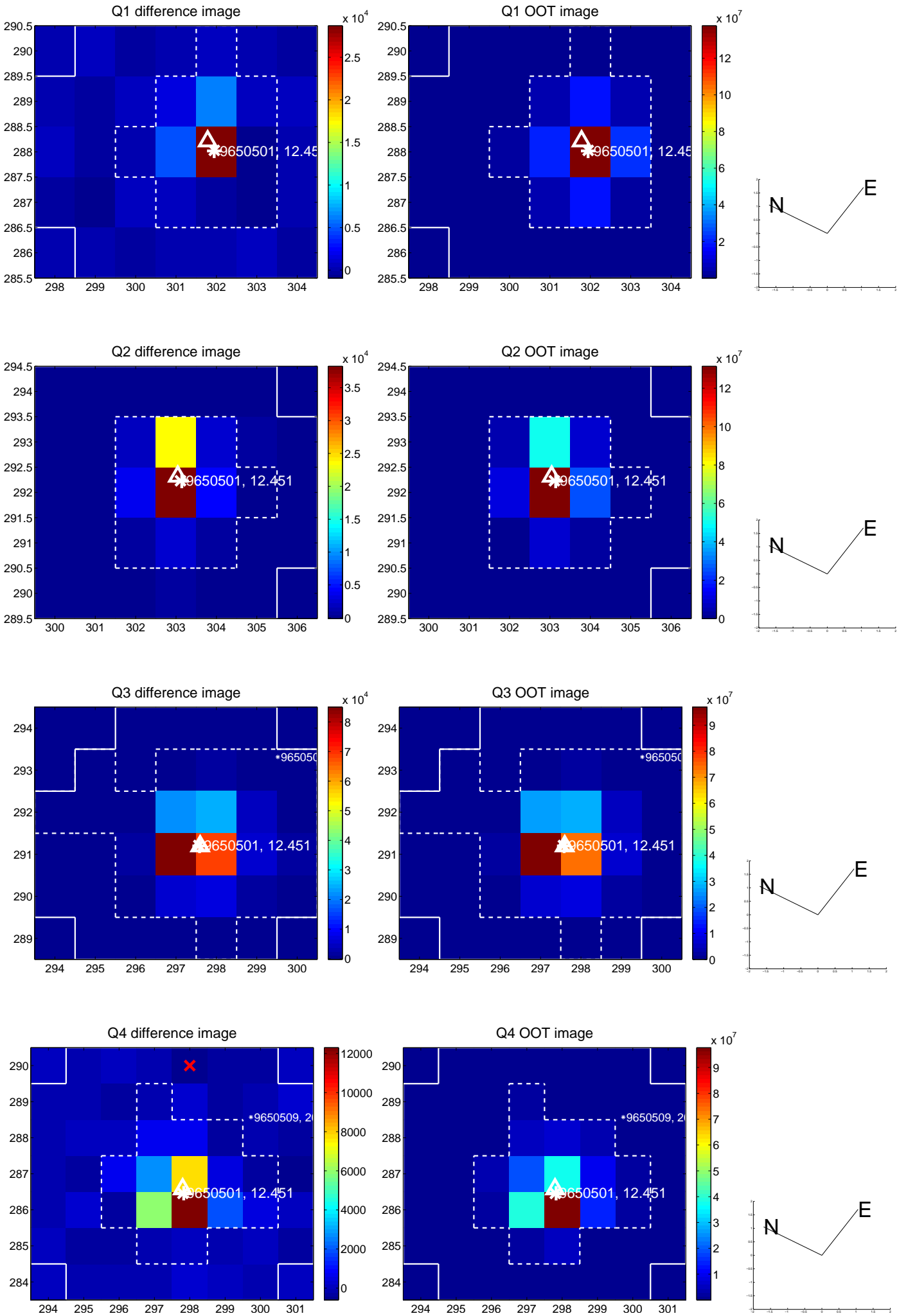
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.049 ± 0.073	0.67	0.048 ± 0.076	-0.011 ± 0.126
PRF-fit source offset from KIC position	0.103 ± 0.114	0.90	0.037 ± 0.078	-0.096 ± 0.124
photometric centroid source offset	0.12 ± 0.03	3.89	-0.06 ± 0.03	-0.10 ± 0.03

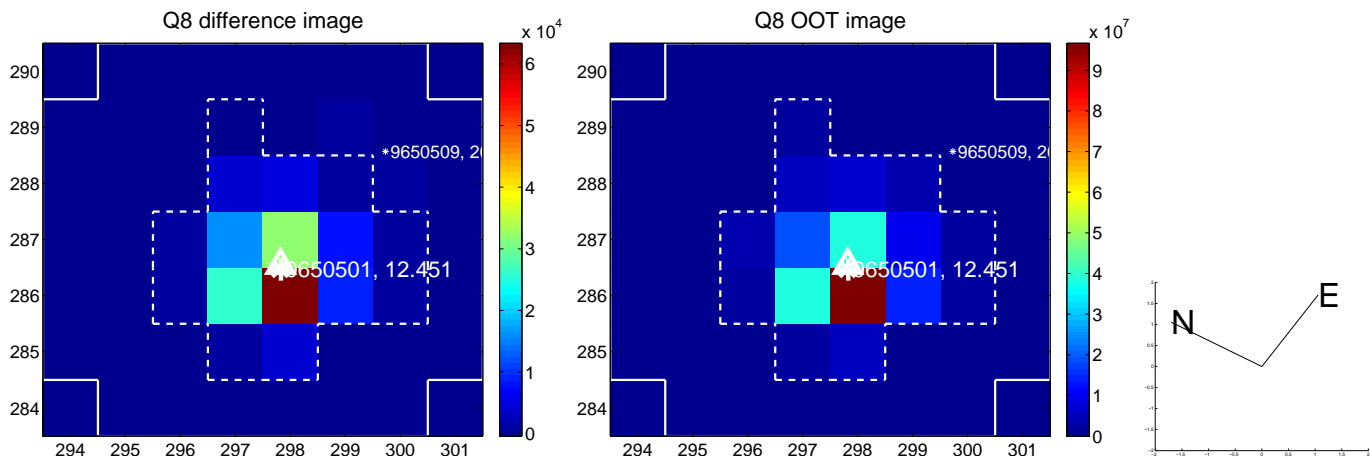
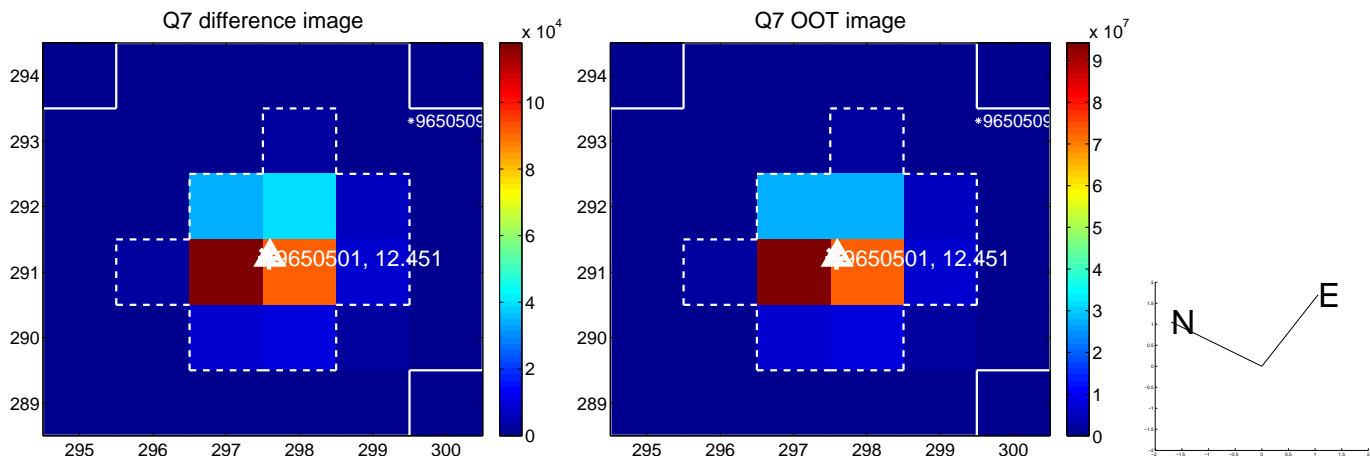
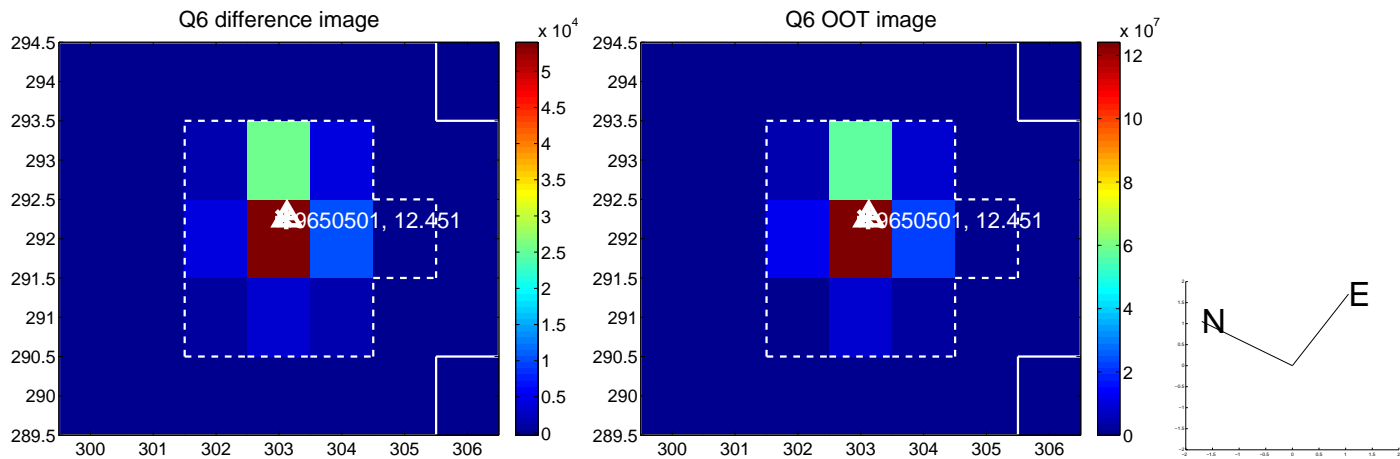
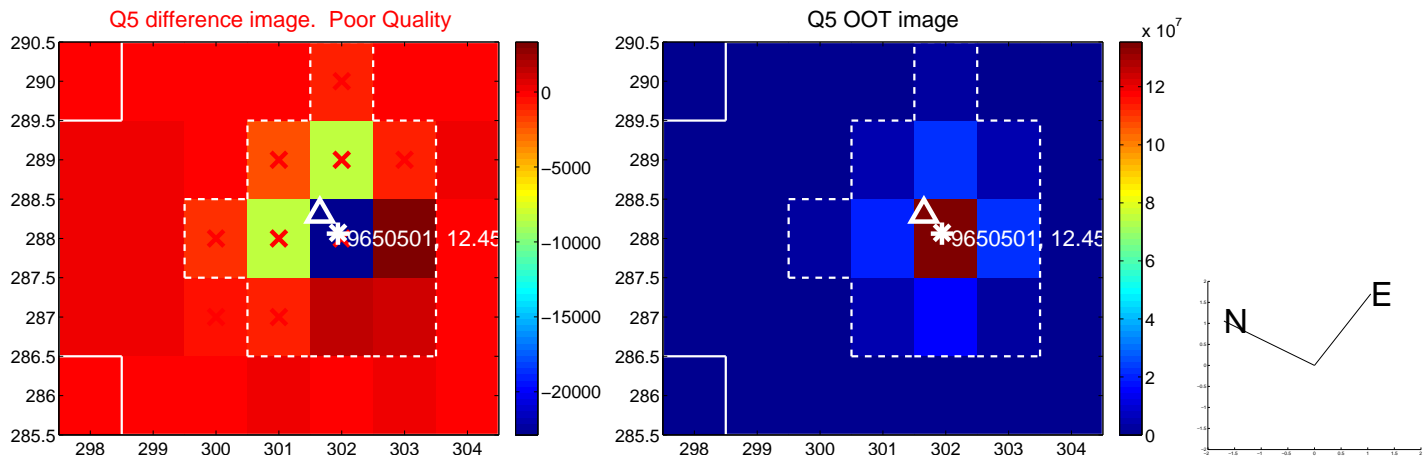


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

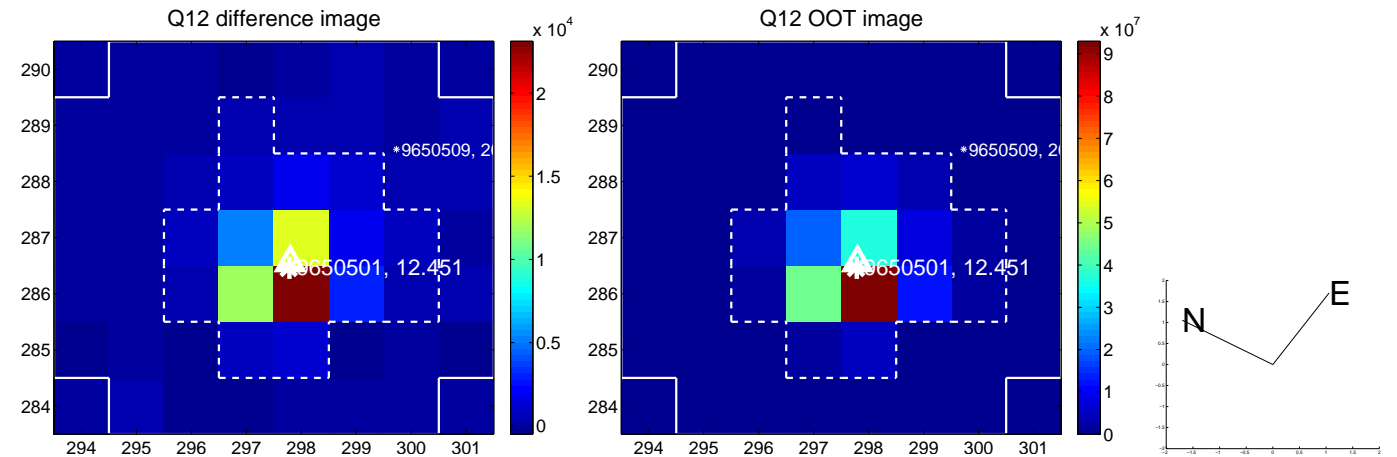
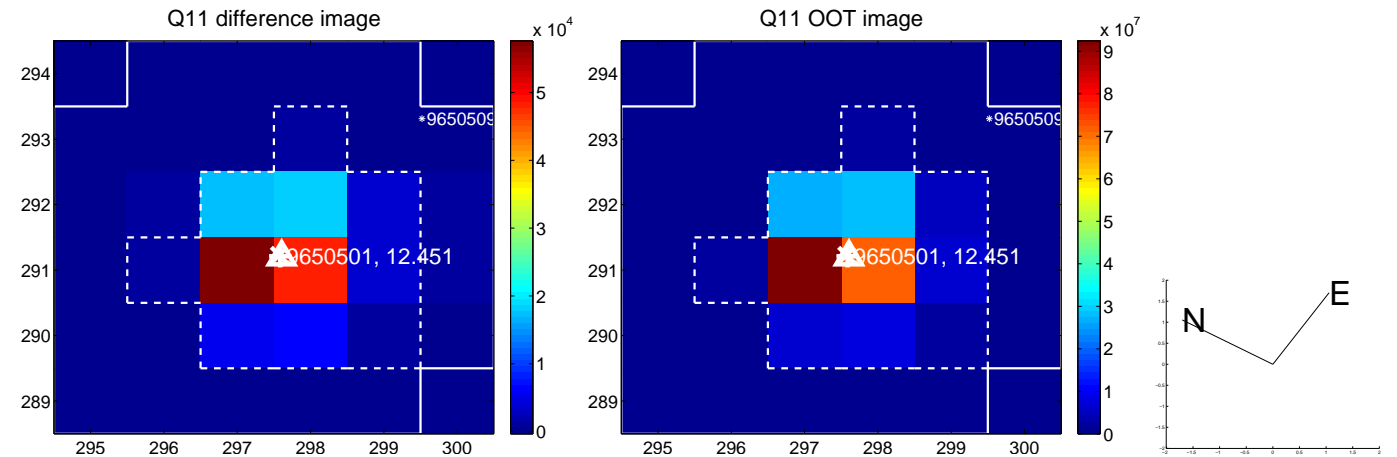
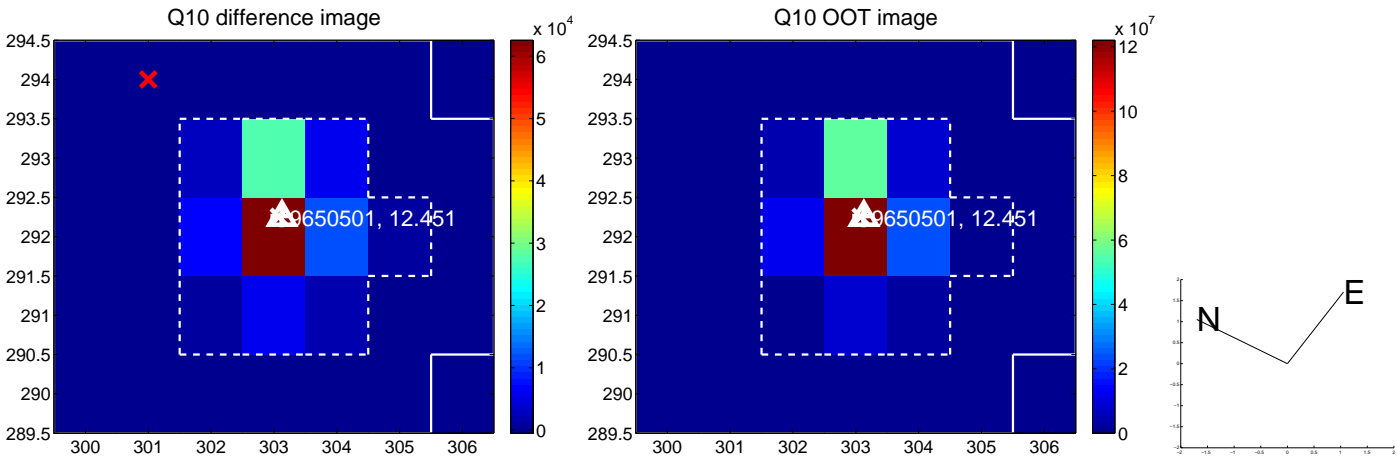
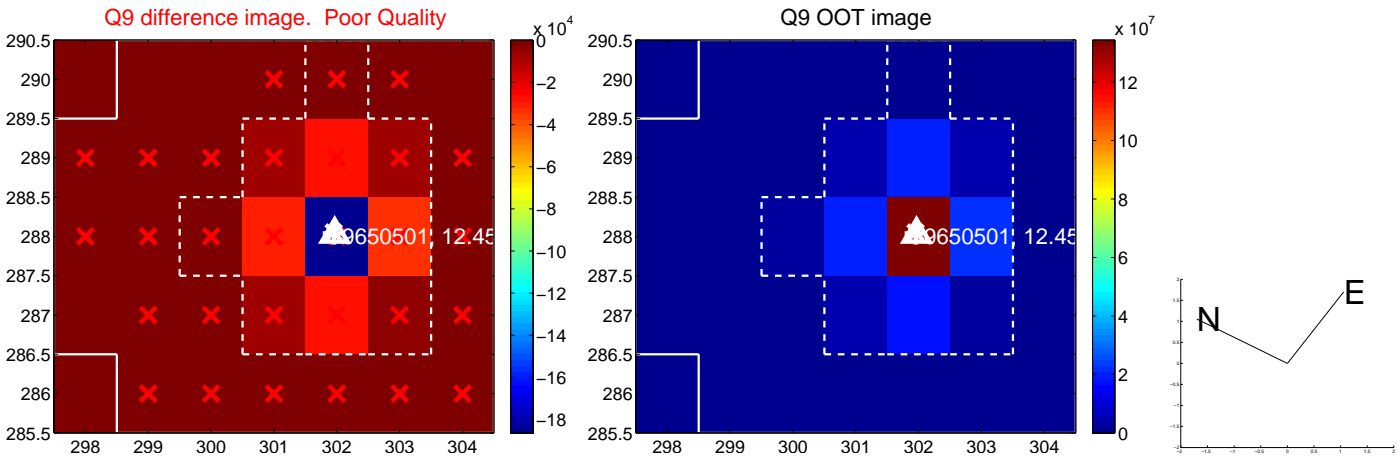
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



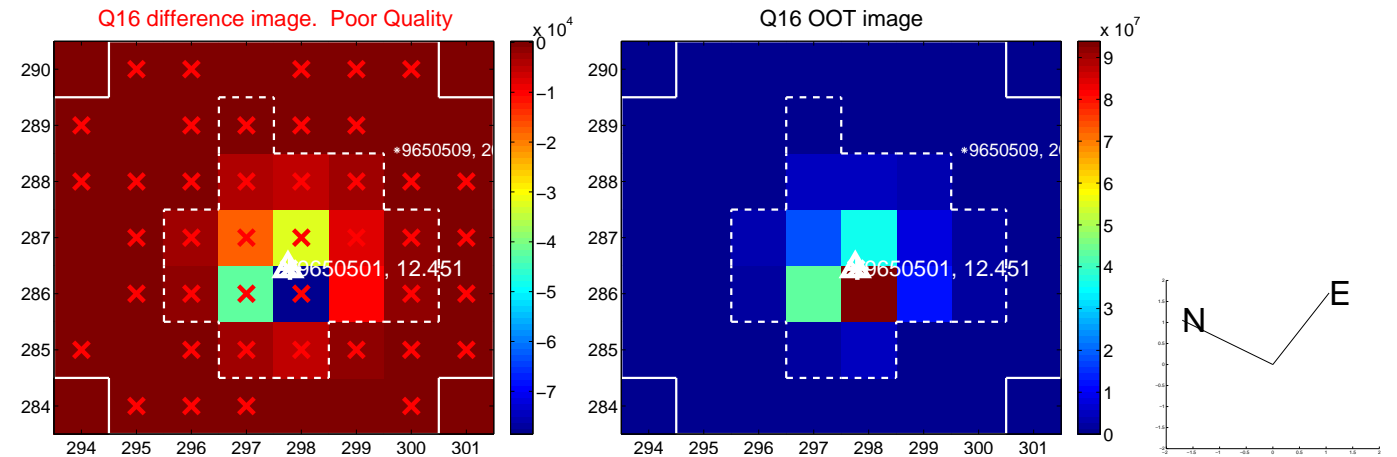
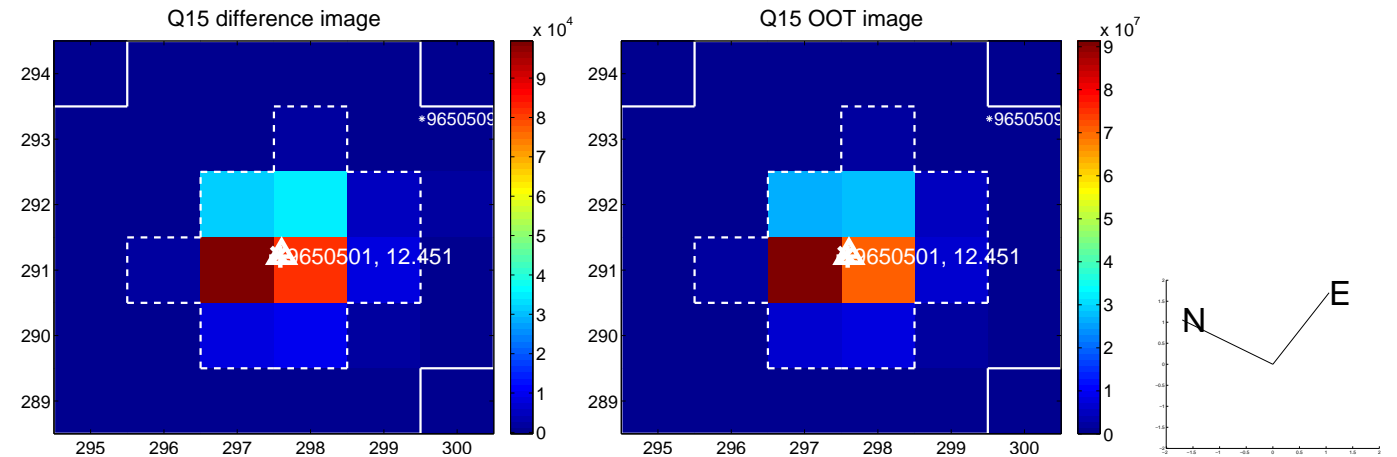
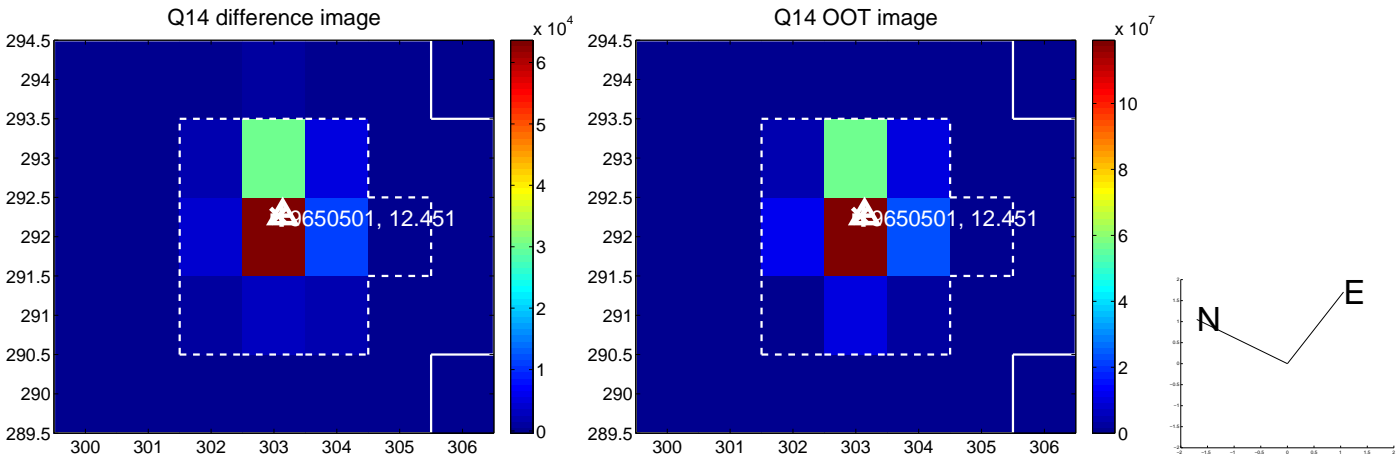
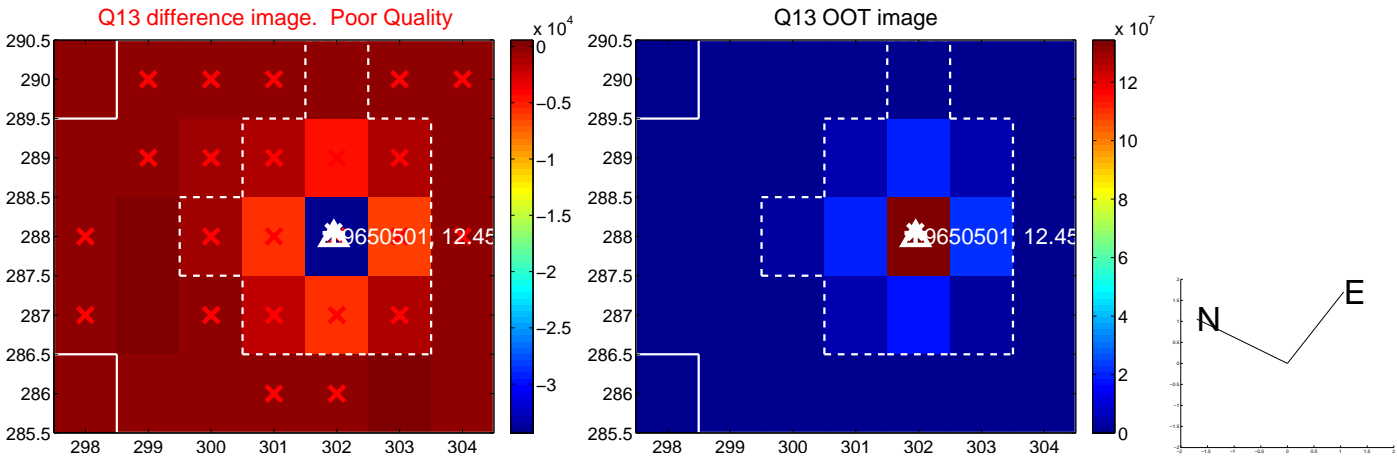
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



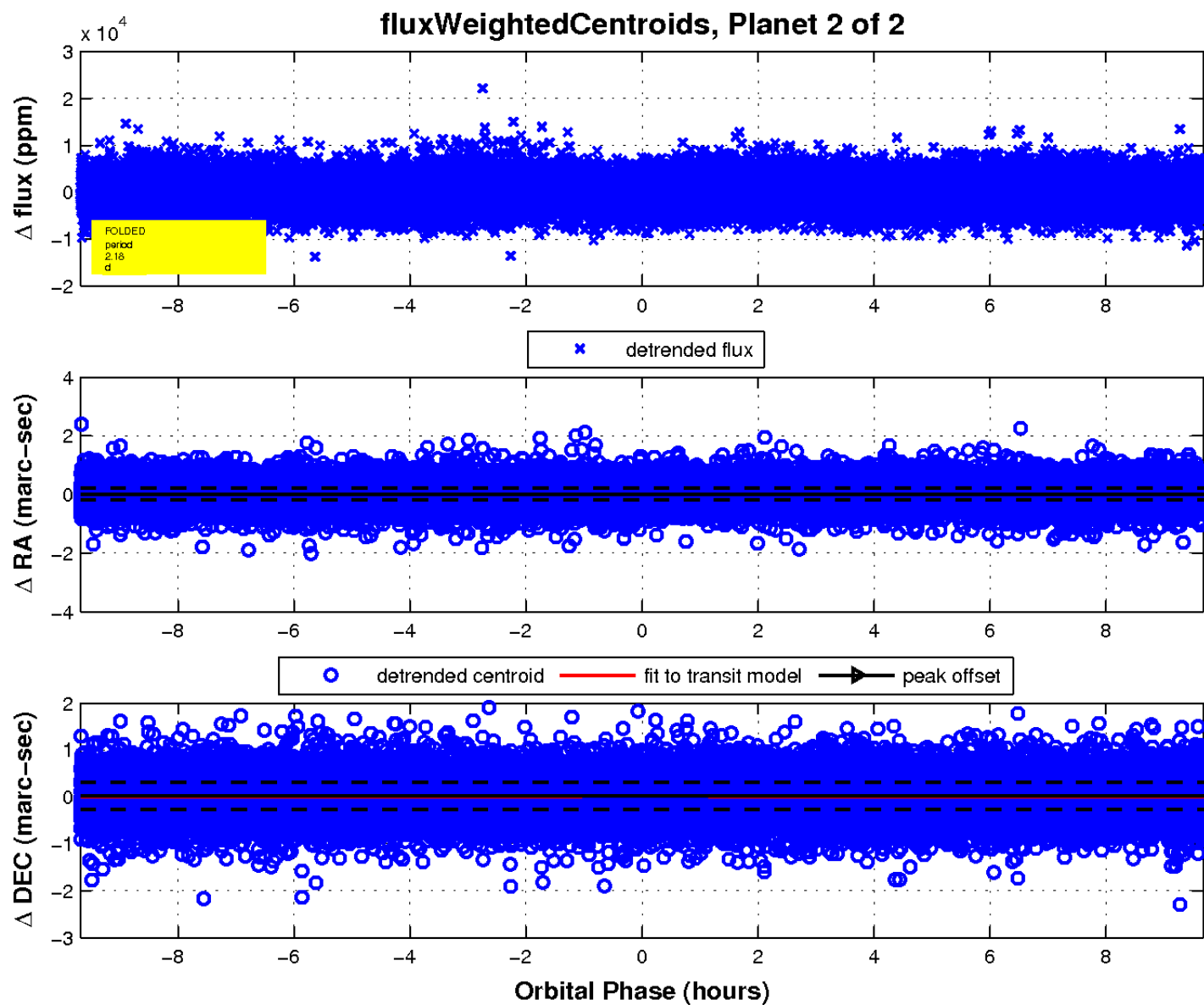
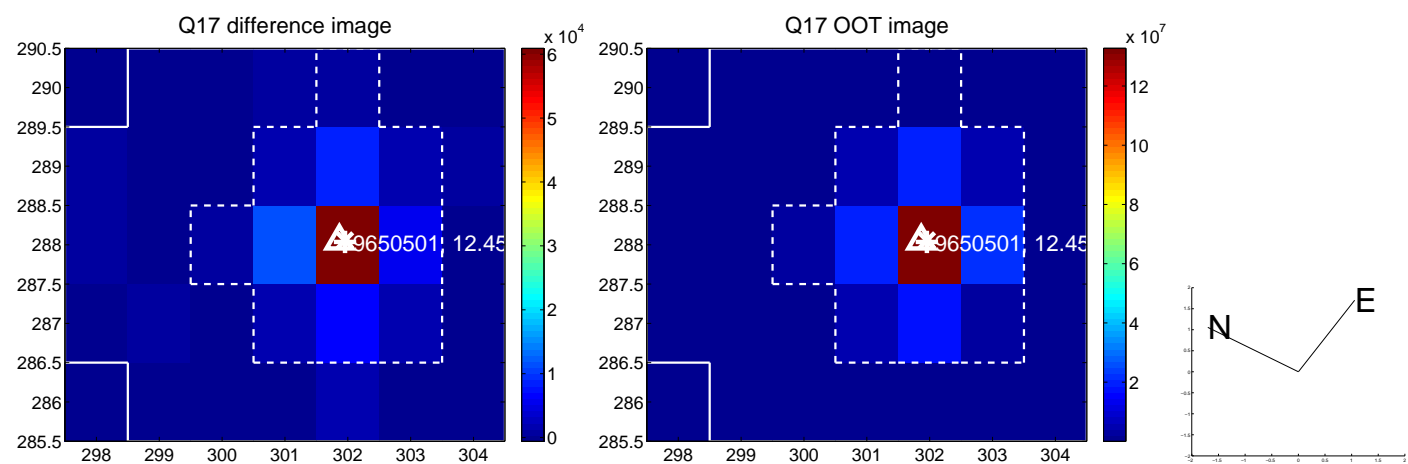
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

