

KIC 008976187

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})
008976187-01	OBS	No	0.966496	131.804382	80.6	3.943	9.2	10.8	3.11	9707	3.22	109585.61
008976187-02	OBS	No	0.966506	132.122242	39.6	2.764	8.5	4.9	3.11	9707	2.25	109584.21

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008976187-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008976187-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

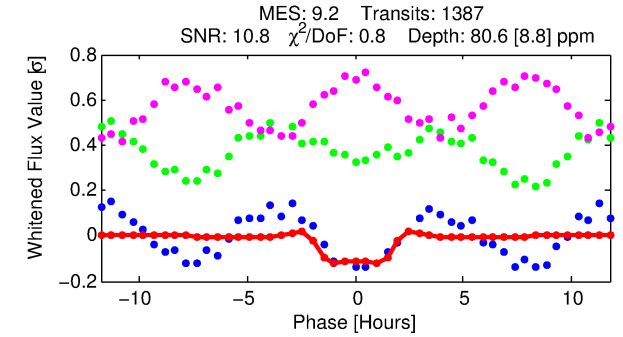
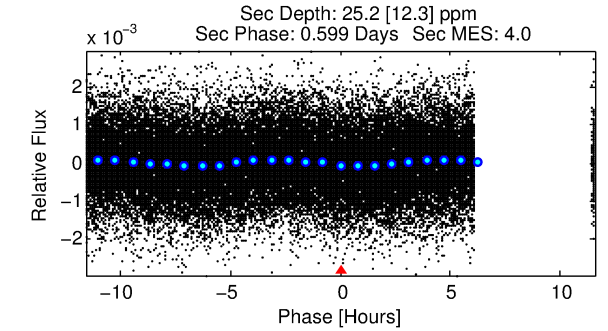
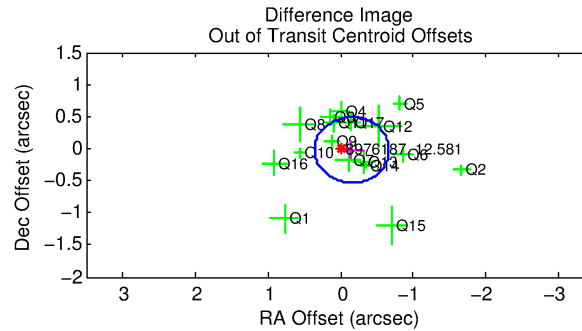
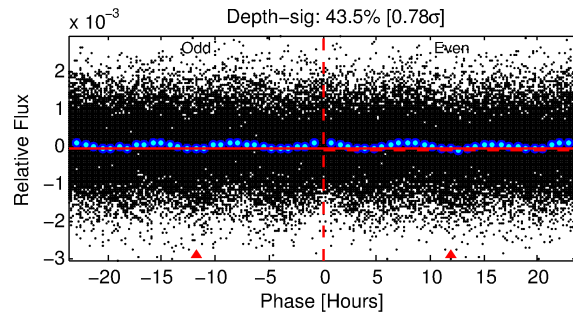
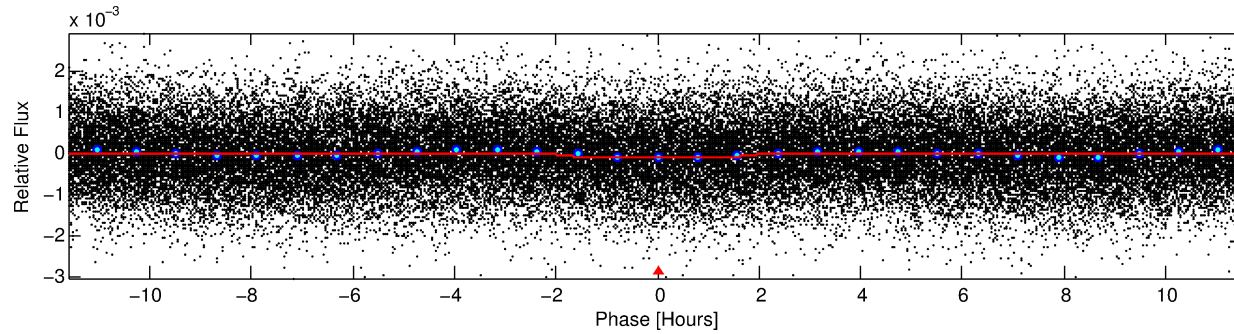
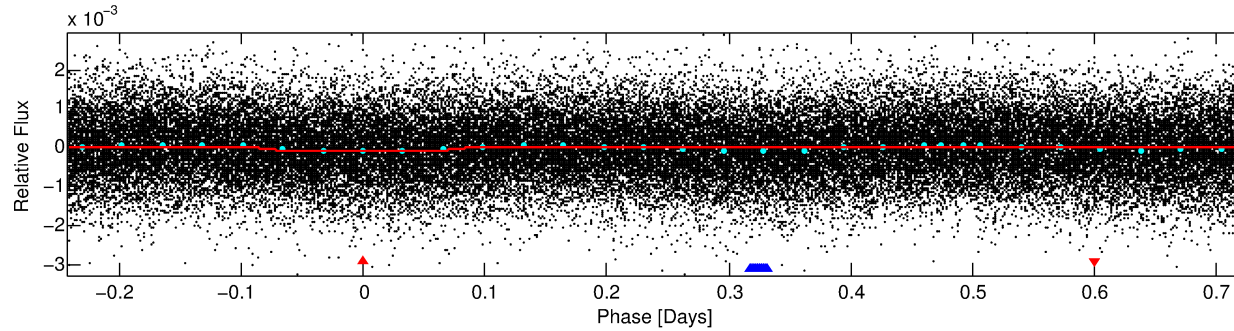
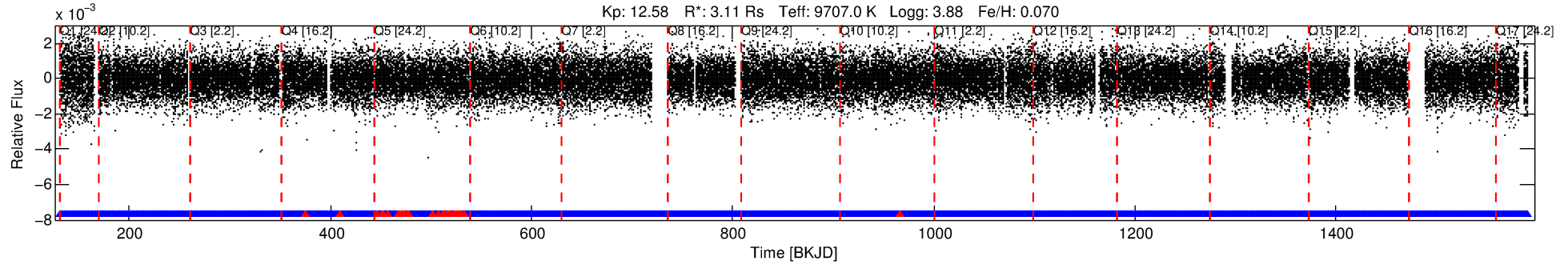
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008976187-01

No Significant Match Found

DV One-Page Summary

KIC: 8976187 Candidate: 1 of 2 Period: 0.966 d



DV Fit Results:

Period = 0.96650 [0.00001] d
Epoch = 131.8044 [0.0039] BKJD
Rp/R* = 0.0095 [0.0032]
a/R* = 1.26 [1.21]
b = 0.91 [0.52]
Seff = 109585.61 [51758.86]
Teq = 4639 [548] K
Rp = 3.22 [1.50] Re
a = 0.0265 [0.0076] AU
Ag = 0.94 [0.89] [-0.07 σ]
Teffp = 7062 [1503] K [1.51 σ]

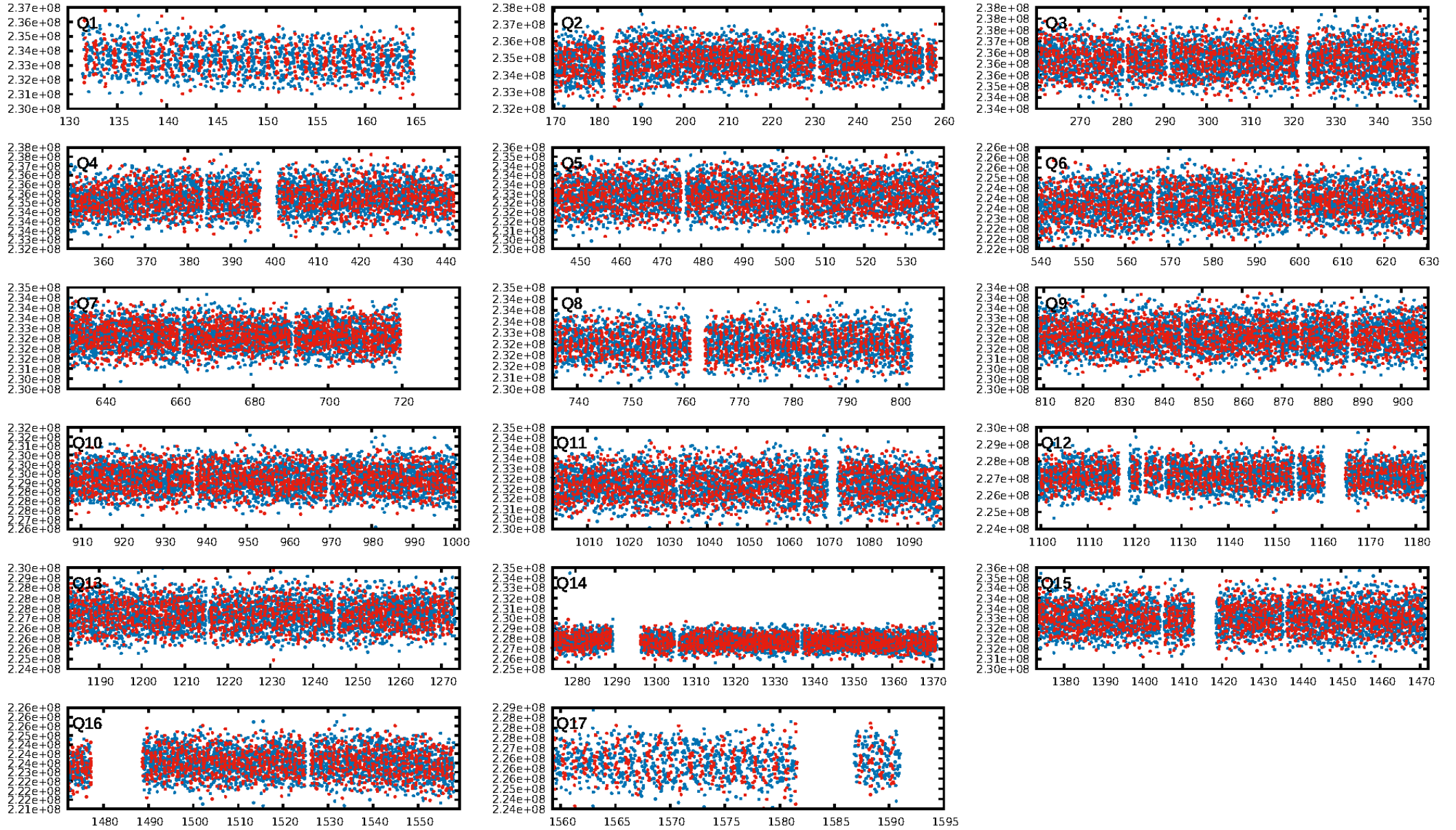
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.87e-10
RollingBand-fgt: 0.97 [1290/1324]
GhostDiagnostic-chr: 1.351
Centroid-sig: 0.0%
Centroid-so: 0.433 arcsec [2.49 σ]
OotOffset-rm: 0.154 arcsec [0.90 σ]
KicOffset-rm: 0.326 arcsec [1.77 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]

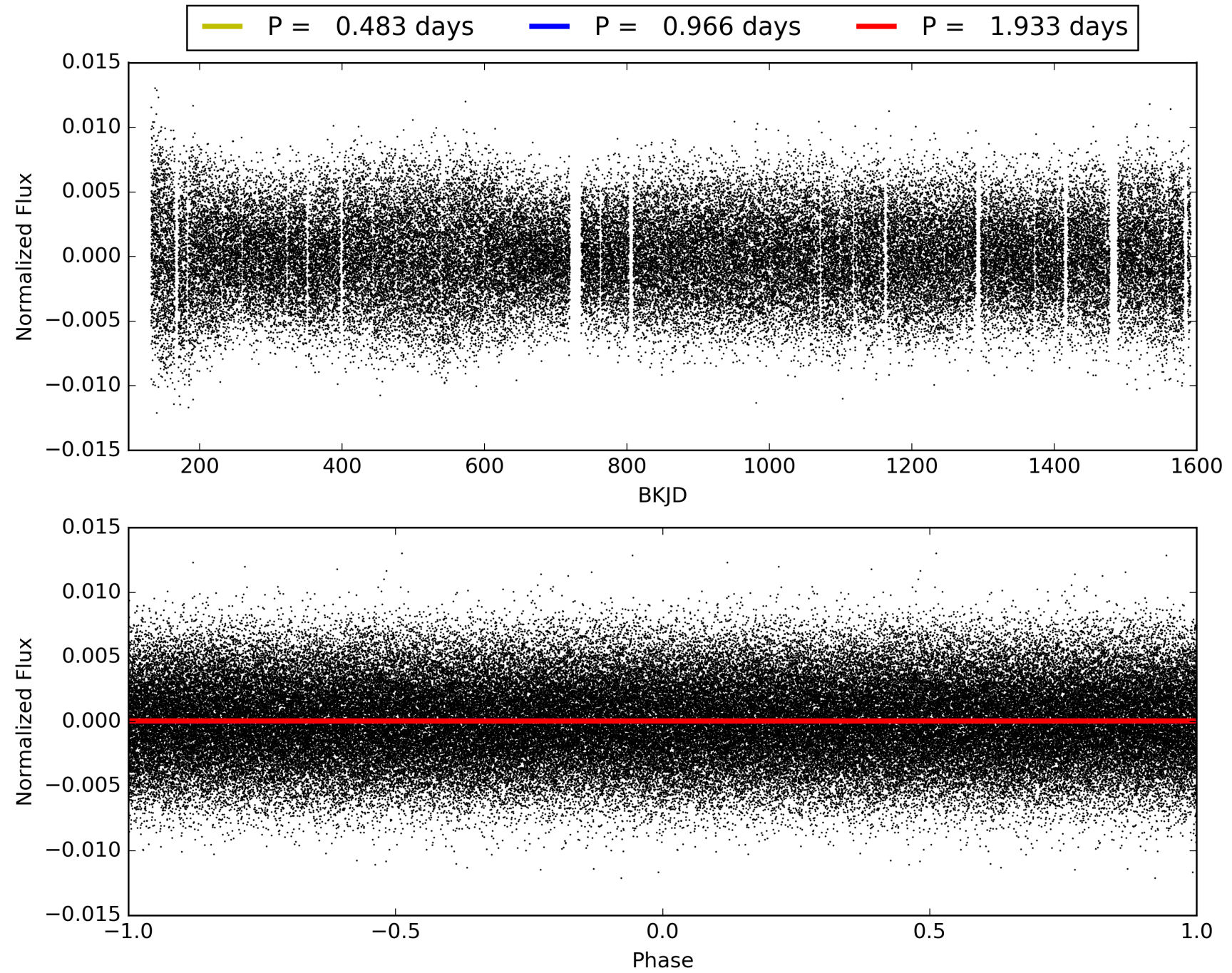
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:09:13 Z

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

TCE 008976187-01, PDC Light Curves

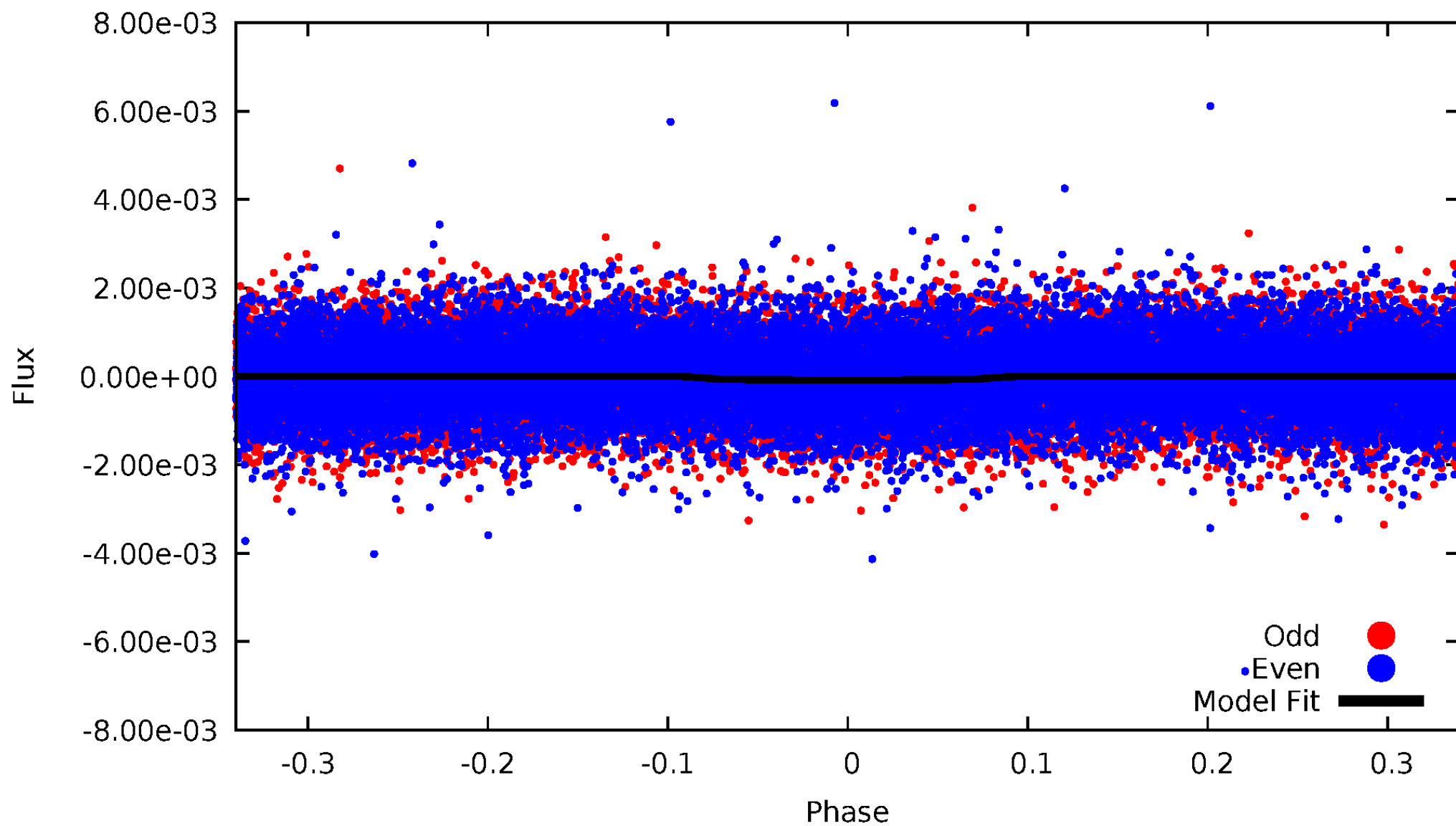


TCE 008976187-01



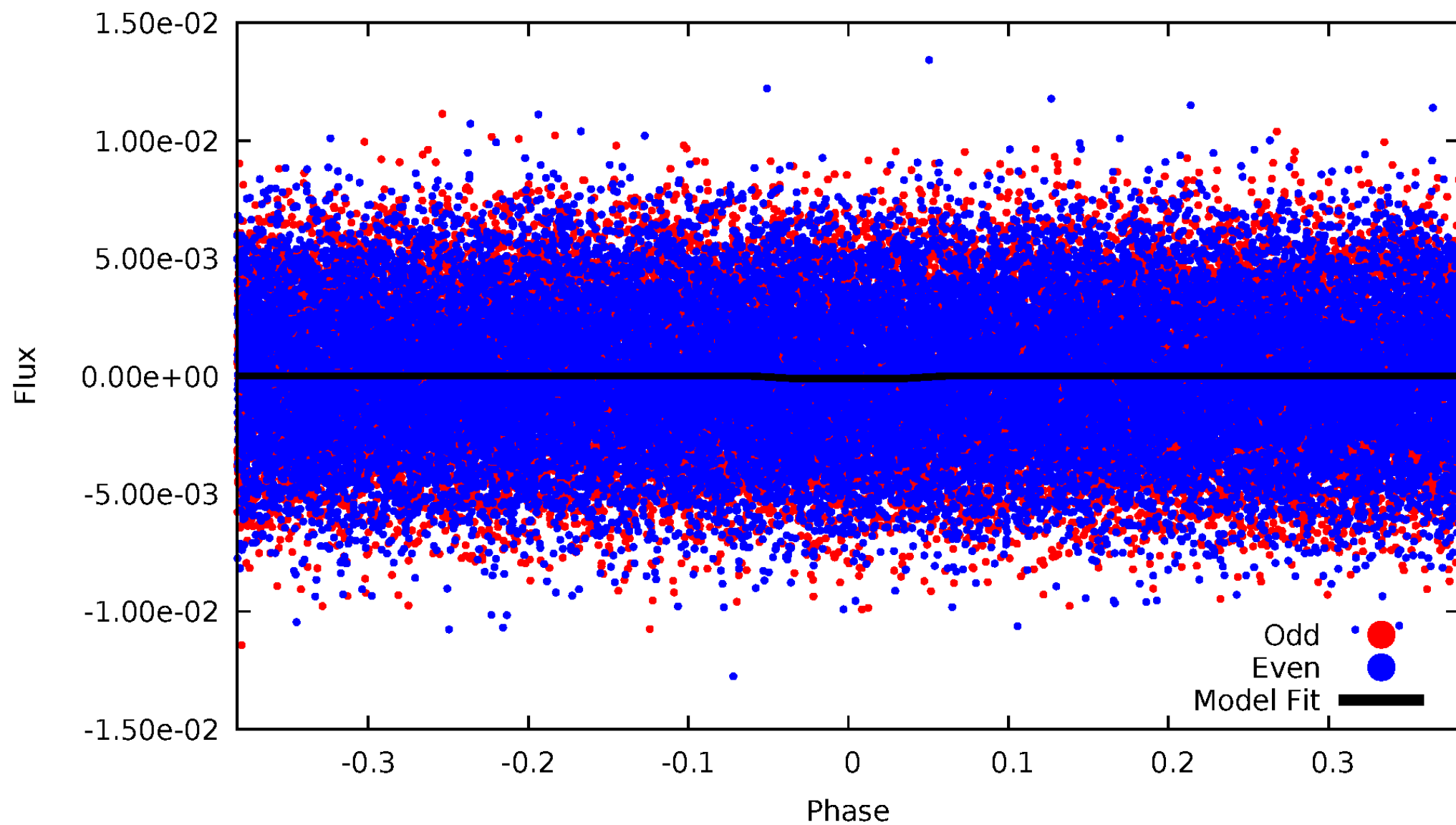
DV Odd/Even

TCE 008976187-01



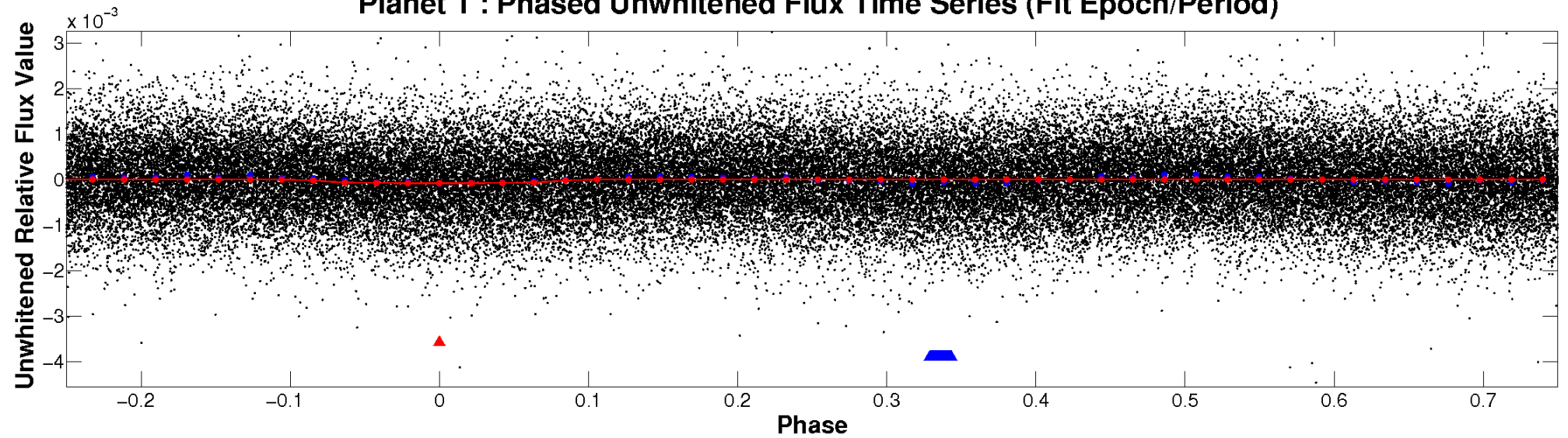
ALT Odd/Even

TCE 008976187-01

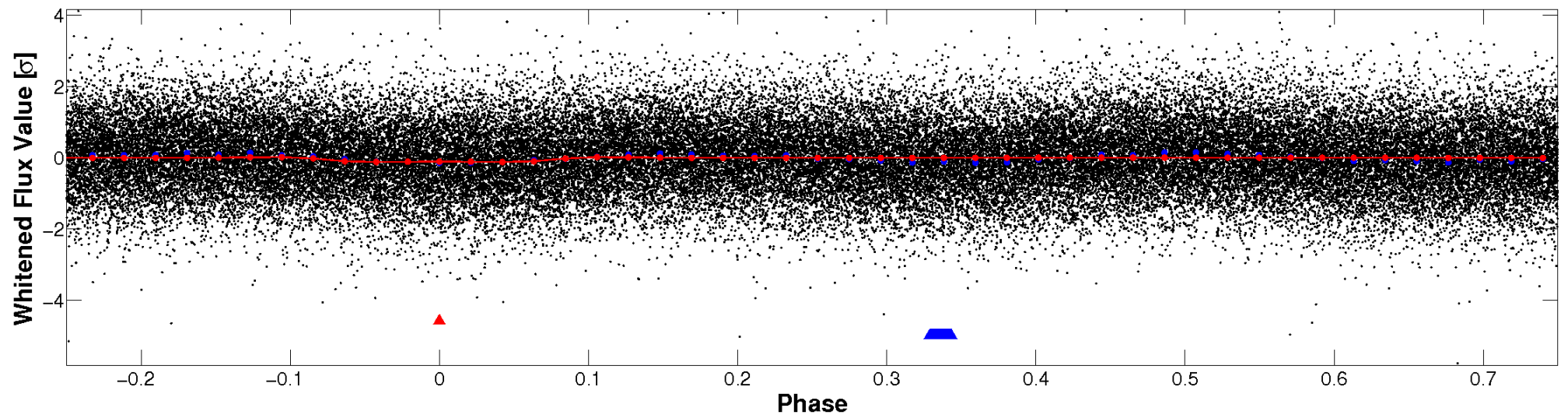


Non-Whitened Vs. Whitened Light Curve

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

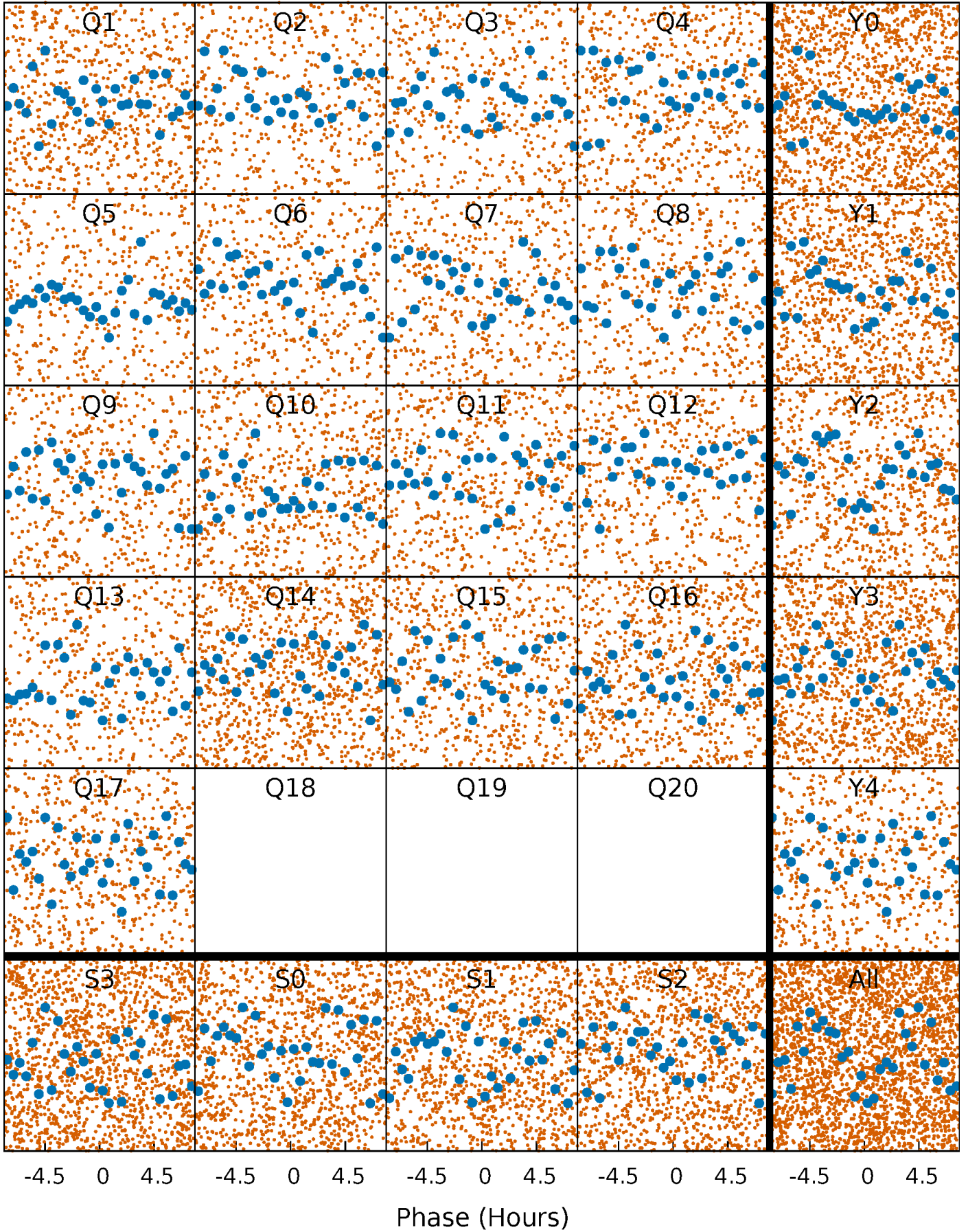


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



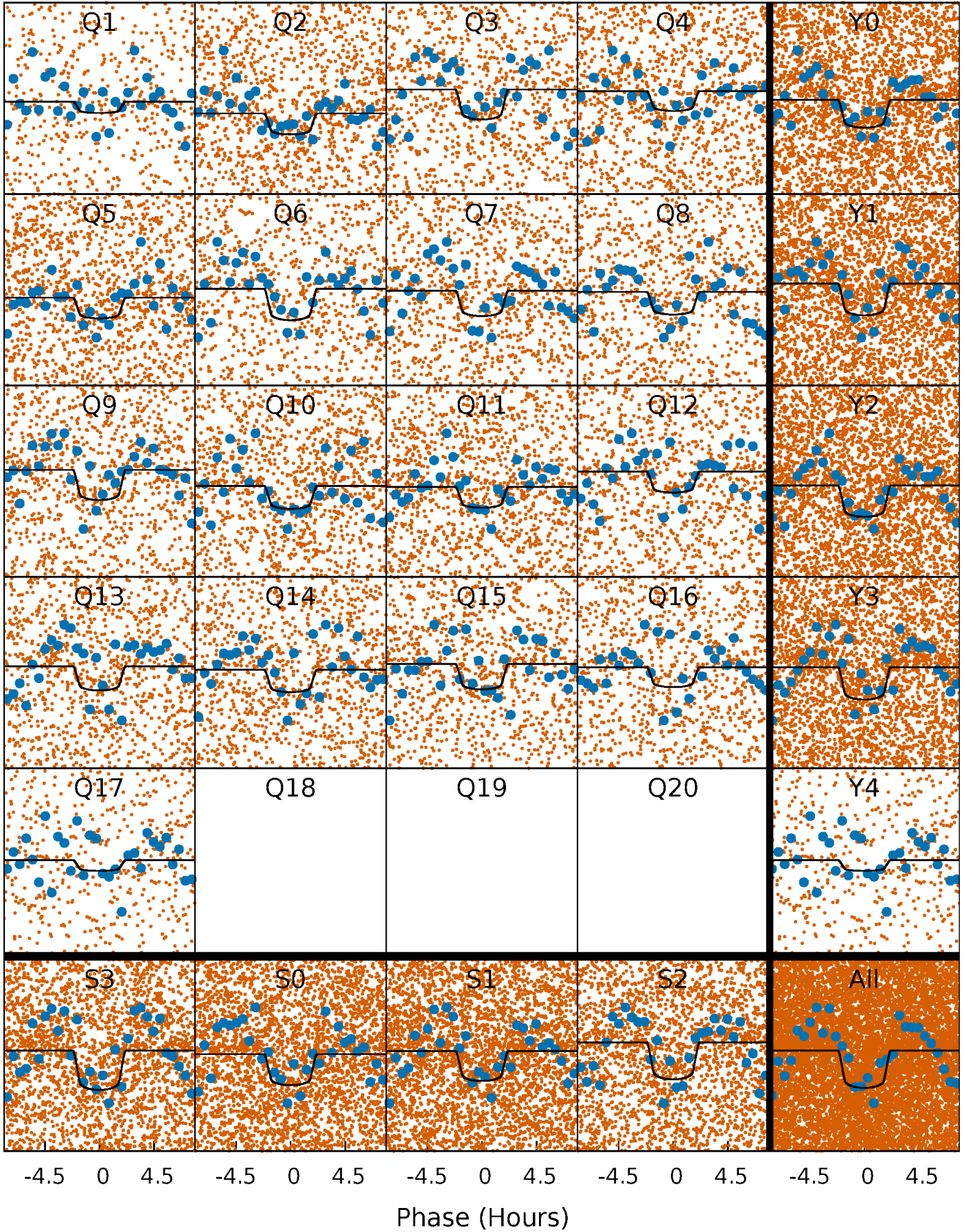
PDC Quarter-Phased Transit Curves

TCE 008976187-01 P= 0.966496 Days $T_0=131.804382$ (BKJD)



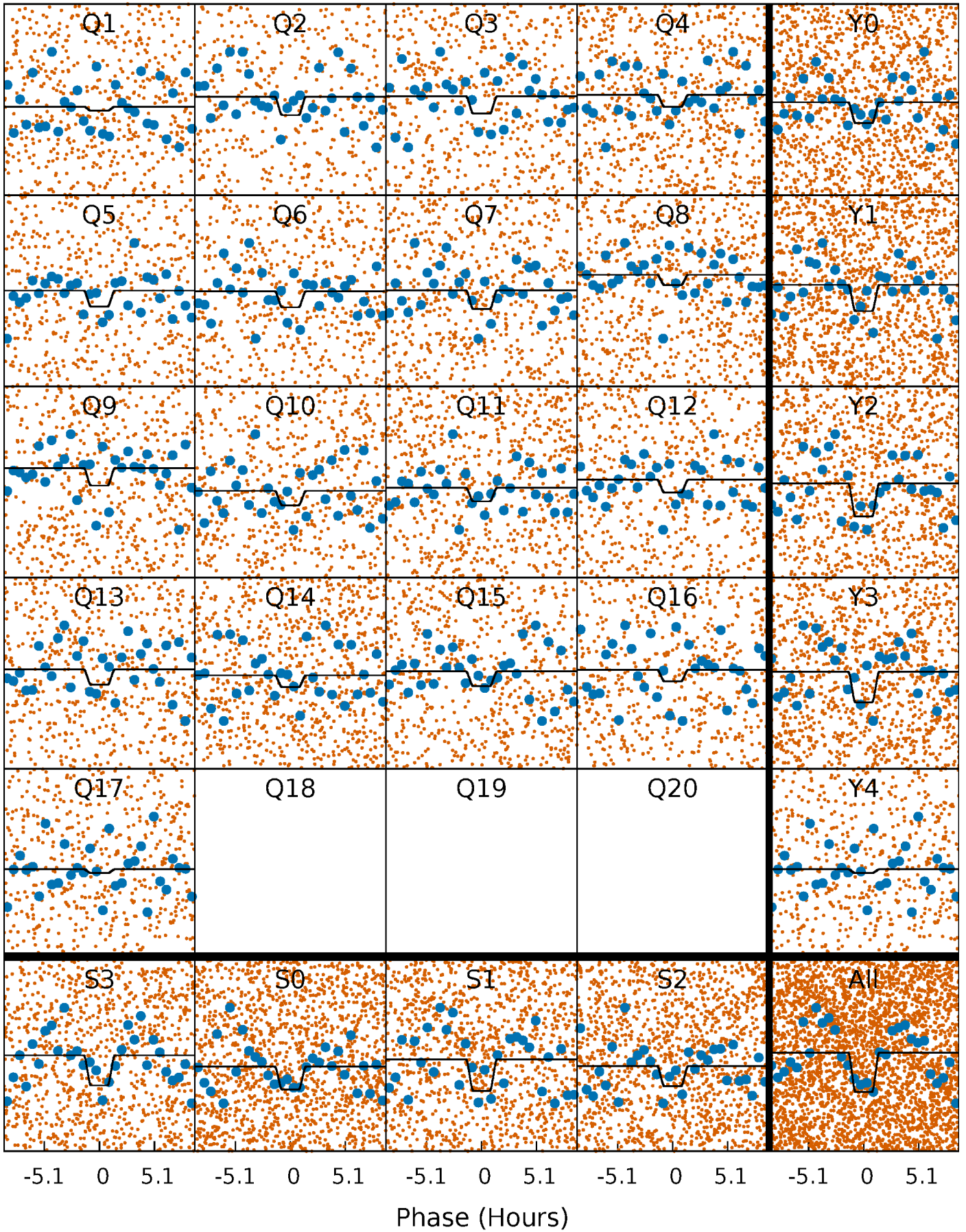
DV Quarter-Phased Transit Curves

TCE 008976187-01 P= 0.966496 Days $T_0=131.804382$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

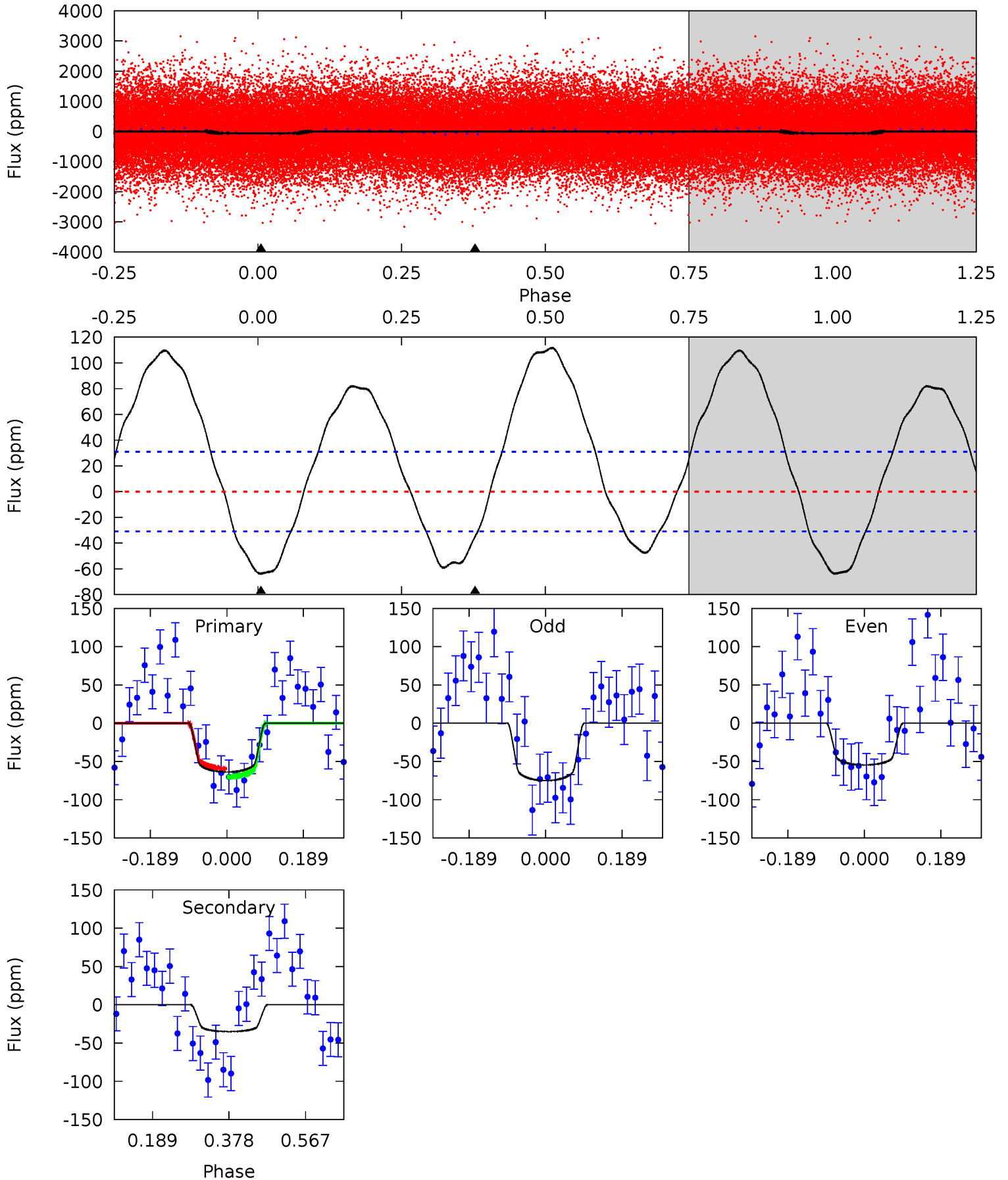
TCE 008976187-01 P= 0.966517 Days $T_0=131.798175$ (BKJD)



DV Model-Shift Uniqueness Test

008976187-01, P = 0.966496 Days, E = 130.837886 Days

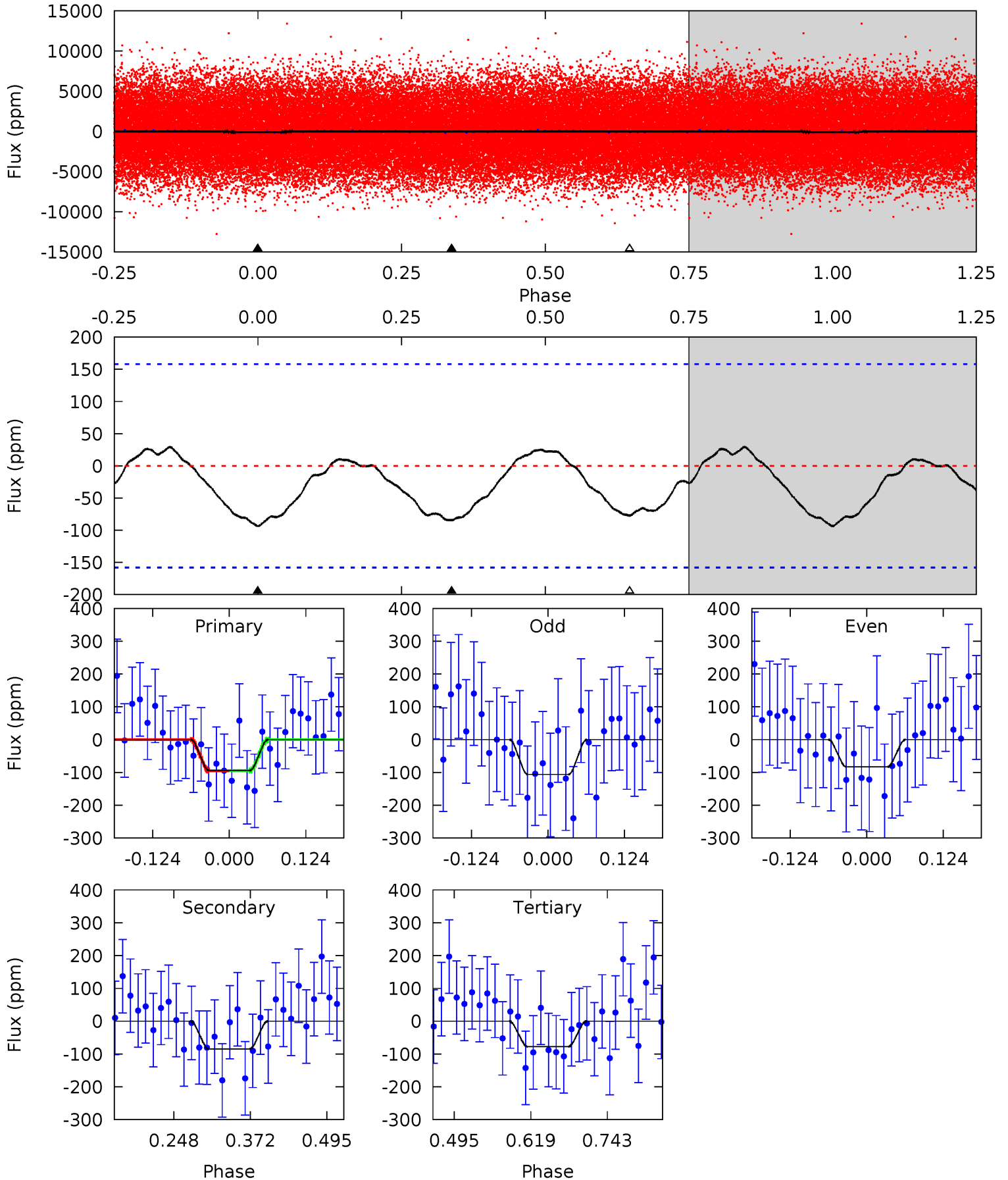
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.14	5.03	0	0	4.43	1.31	6.39	9.14	9.14	5.03	5.03	1.48	0.98	0.64	0.78



Alt Model-Shift Uniqueness Test

008976187-01, P = 0.966517 Days, E = 130.831658 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.68	2.42	2.22	0	4.52	1.54	0.98	0.47	2.68	0.21	2.42	0.32	0.96	0.24	0.01



Stellar Parameters For KIC 008976187

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9707^{+236}_{-405}	$3.877^{+0.252}_{-0.168}$	$0.070^{+0.150}_{-0.550}$	$3.113^{+0.906}_{-0.997}$	$2.661^{+0.317}_{-0.436}$	$0.124^{+0.203}_{-0.060}$
	+2%/-4%	+6%/-4%	+214%/-786%	+29%/-32%	+12%/-16%	+163%/-48%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 008976187-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-35 ± 7	$3.04^{+1.30}_{-1.08}$	6382^{+516}_{-577}	6698^{+2392}_{-1414}	$1.445^{+2.196}_{-0.776}$
Alt.	-85 ± 35	$3.34^{+1.29}_{-1.15}$	6412^{+466}_{-517}	8526^{+3688}_{-2036}	$2.680^{+4.740}_{-1.491}$

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

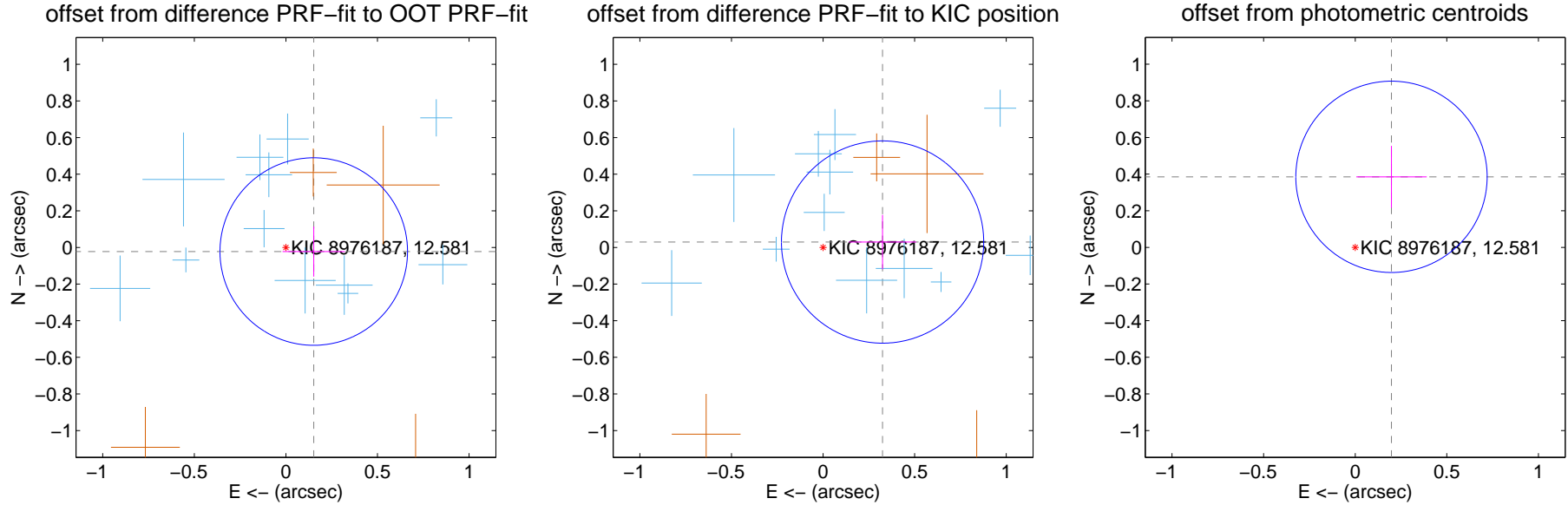
DV Centroid Data

Supplemental centroid analysis for 008976187-01. Kepler magnitude: 12.58. Transit SNR 10.77

There are 13 quarters with good PRF difference image offsets

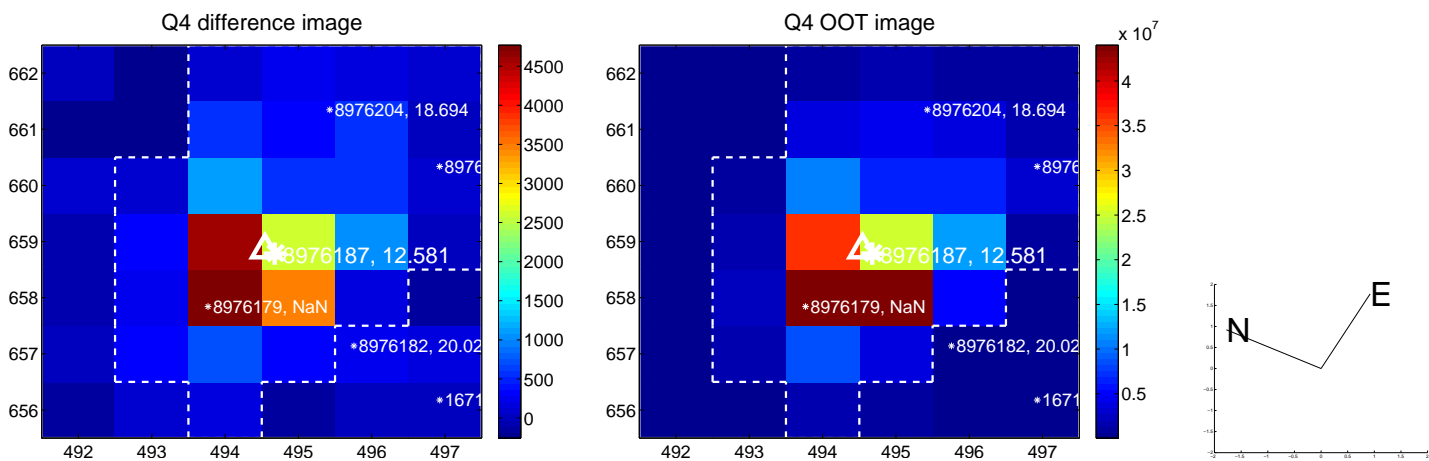
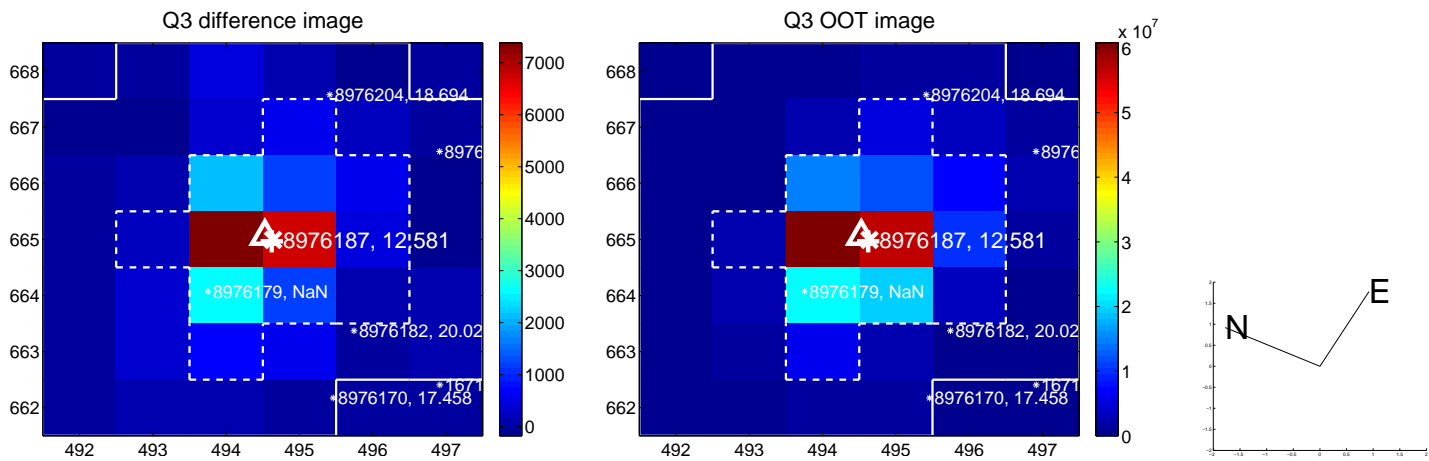
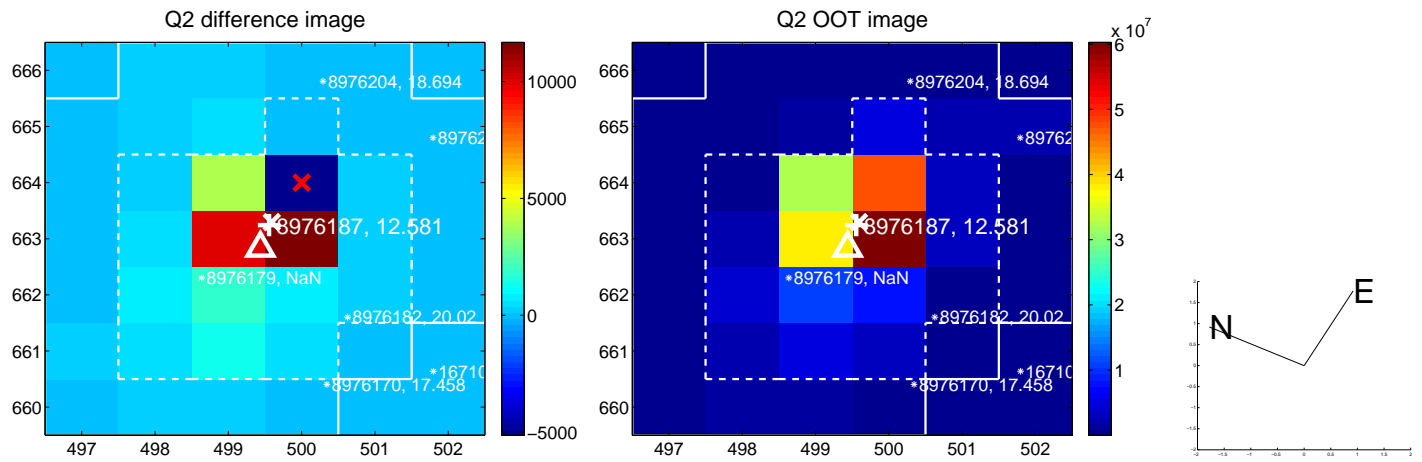
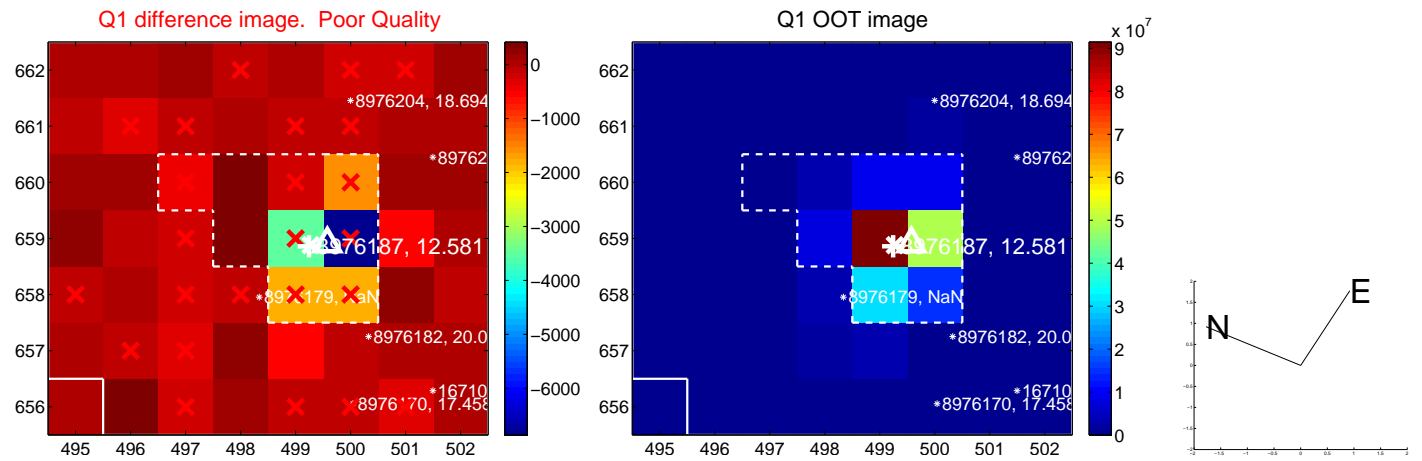
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.154 ± 0.171	0.90	-0.152 ± 0.170	-0.022 ± 0.137
PRF-fit source offset from KIC position	0.326 ± 0.184	1.77	-0.325 ± 0.184	0.030 ± 0.148
photometric centroid source offset	0.43 ± 0.17	2.49	-0.20 ± 0.19	0.39 ± 0.17

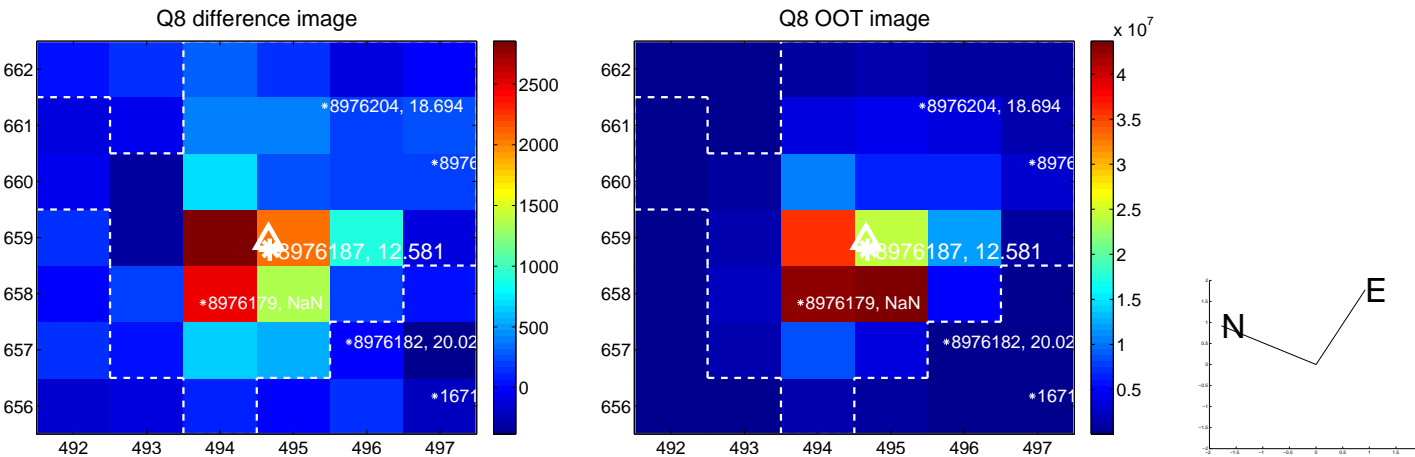
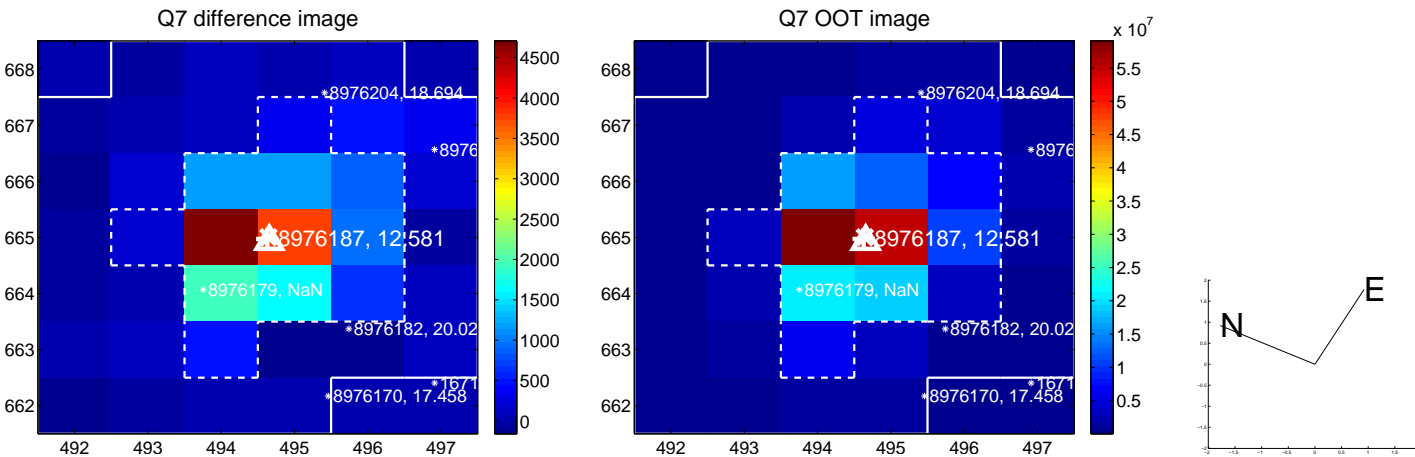
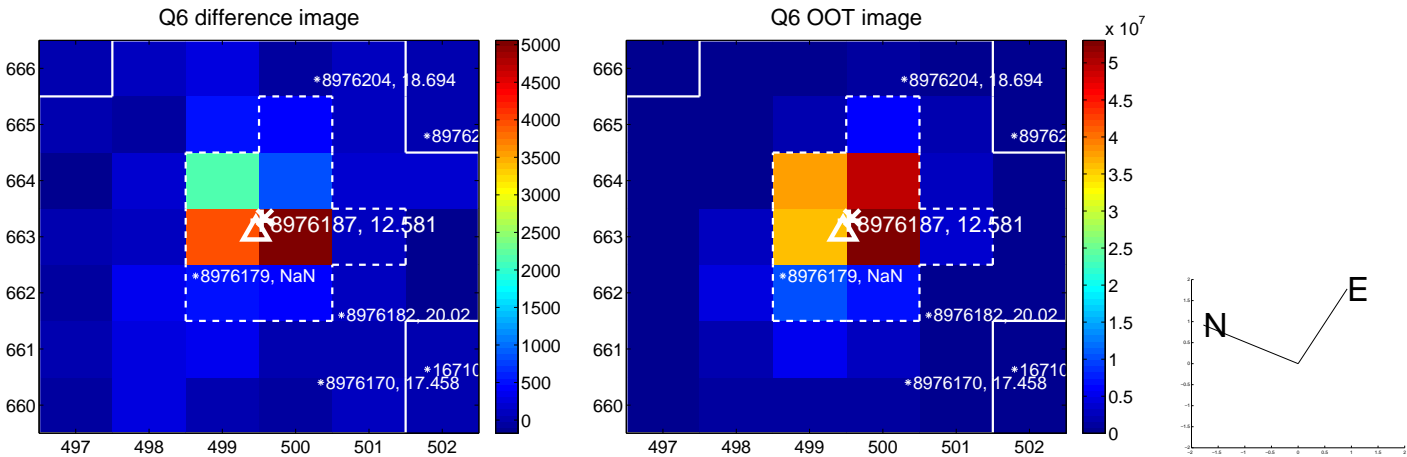
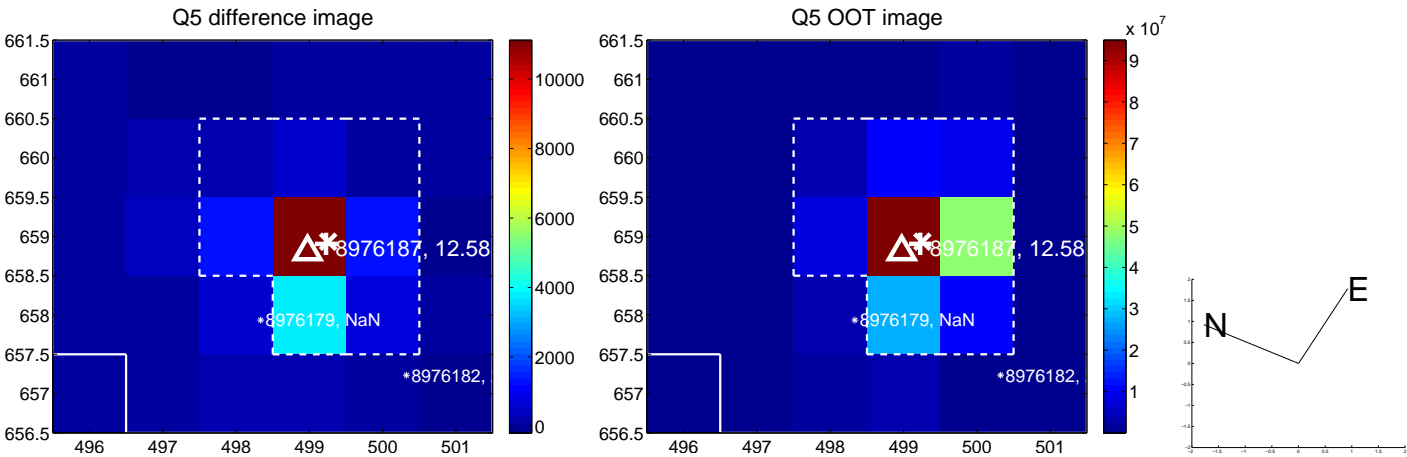


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

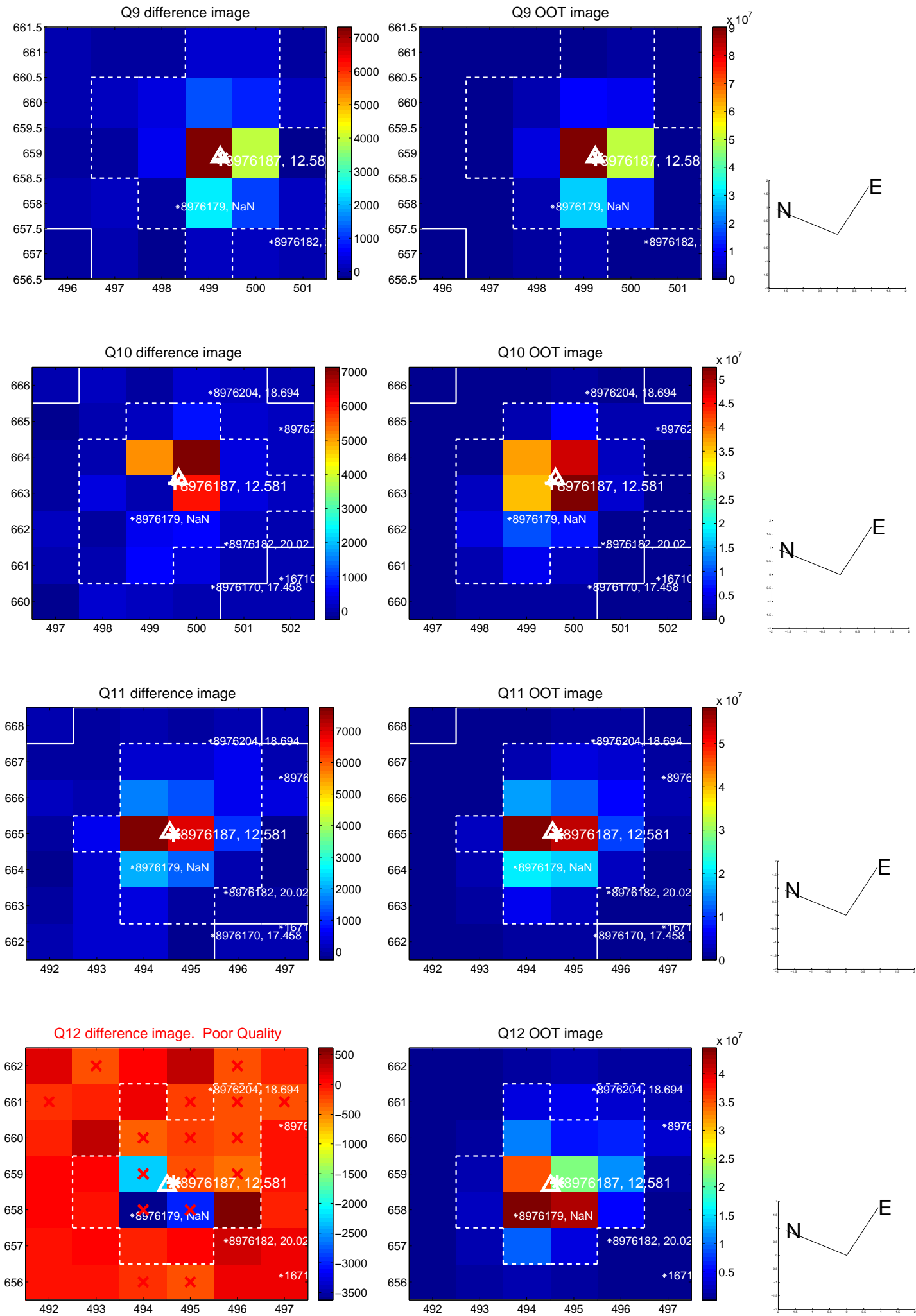
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



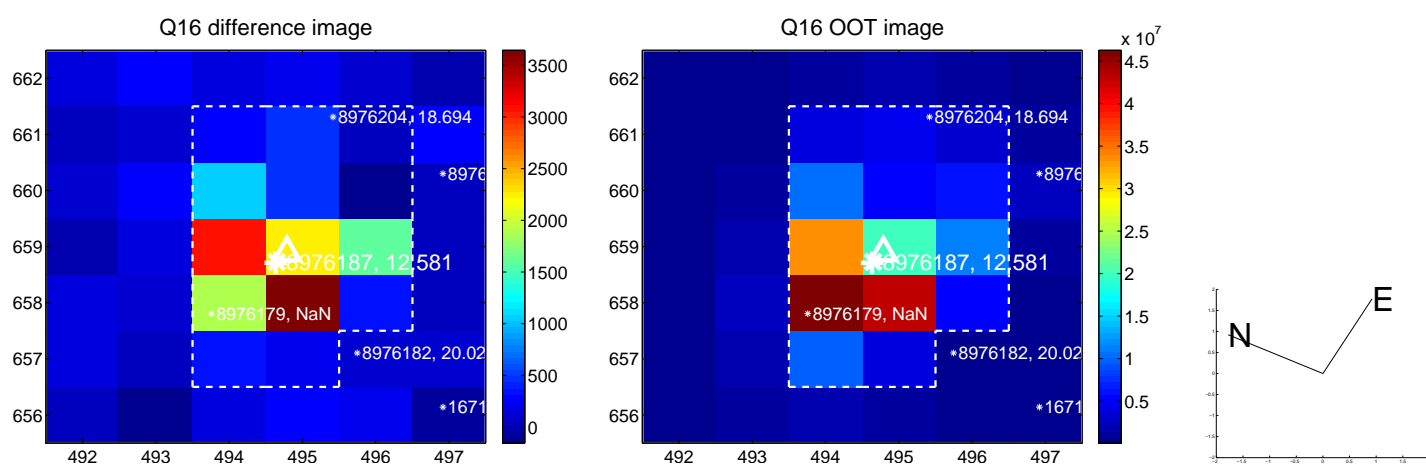
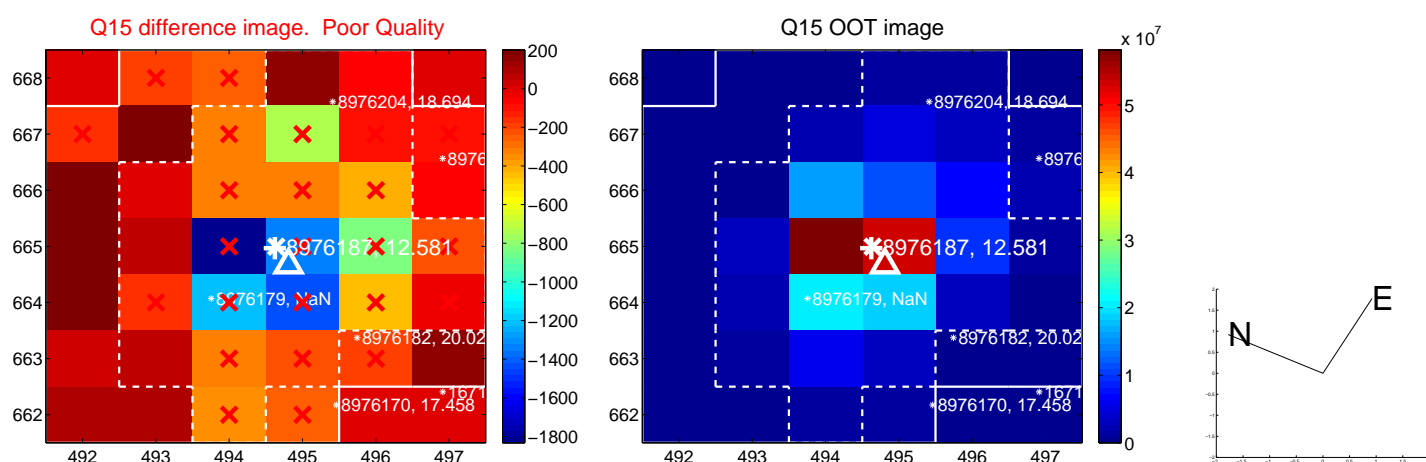
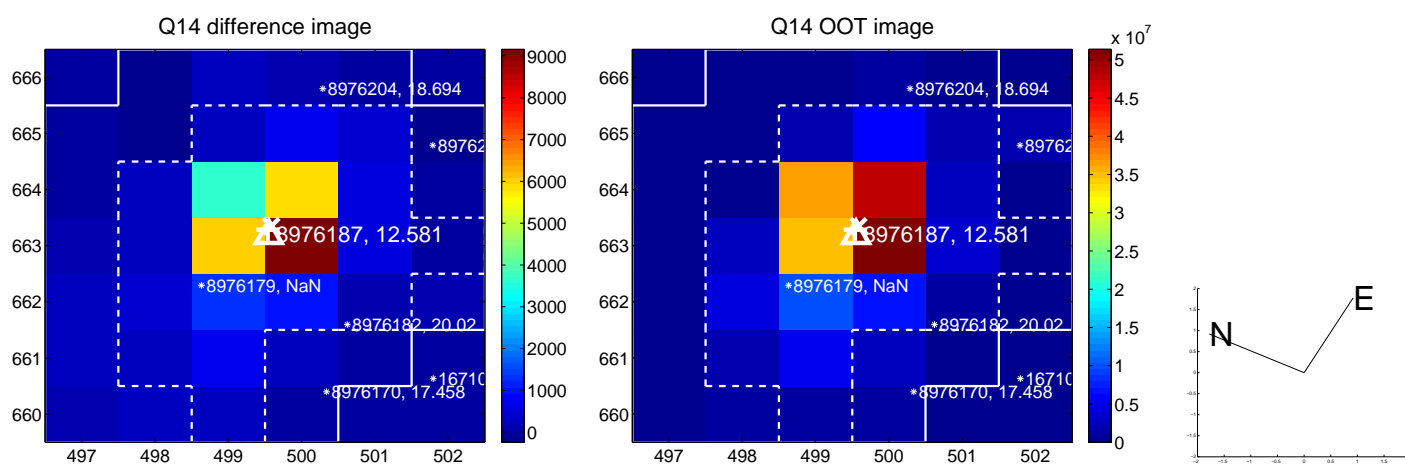
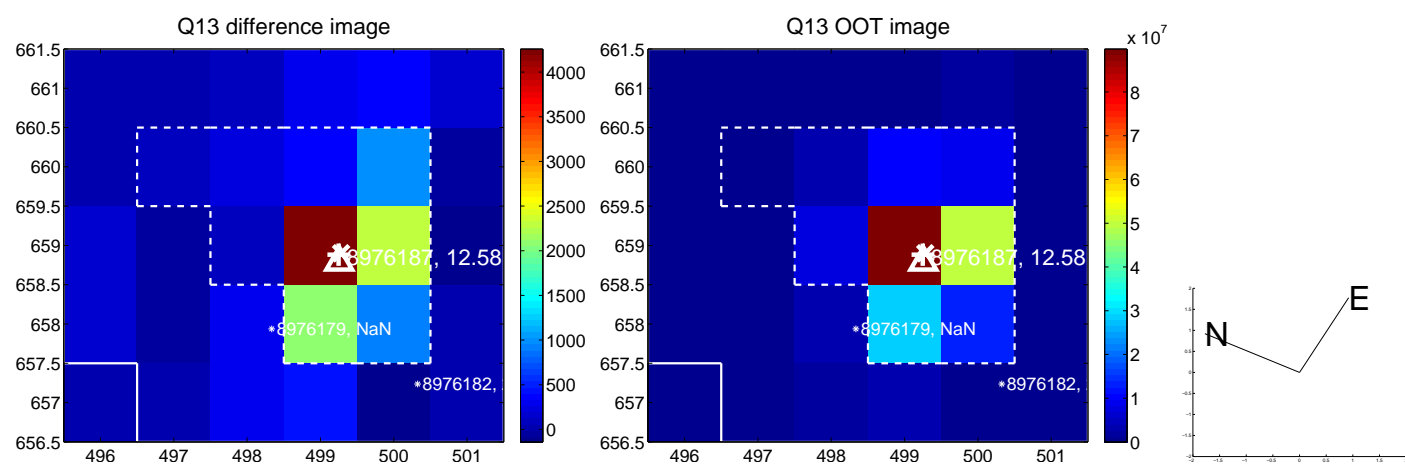
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



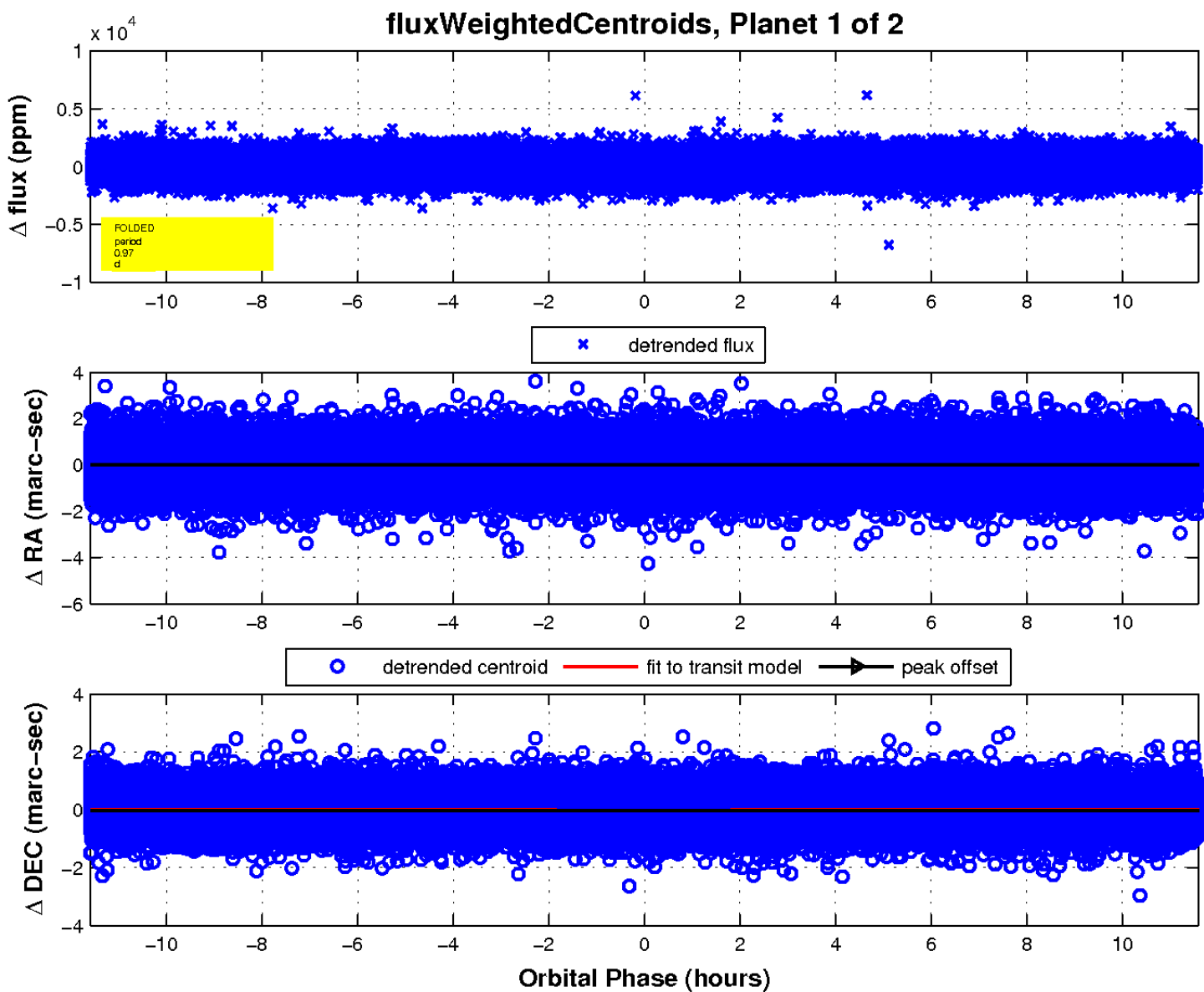
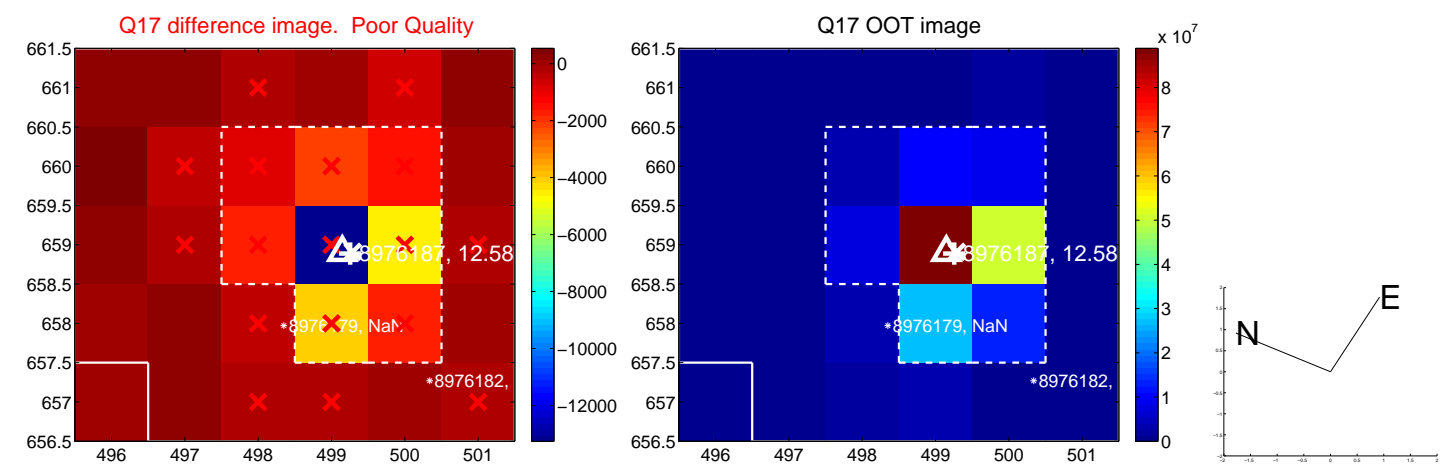
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



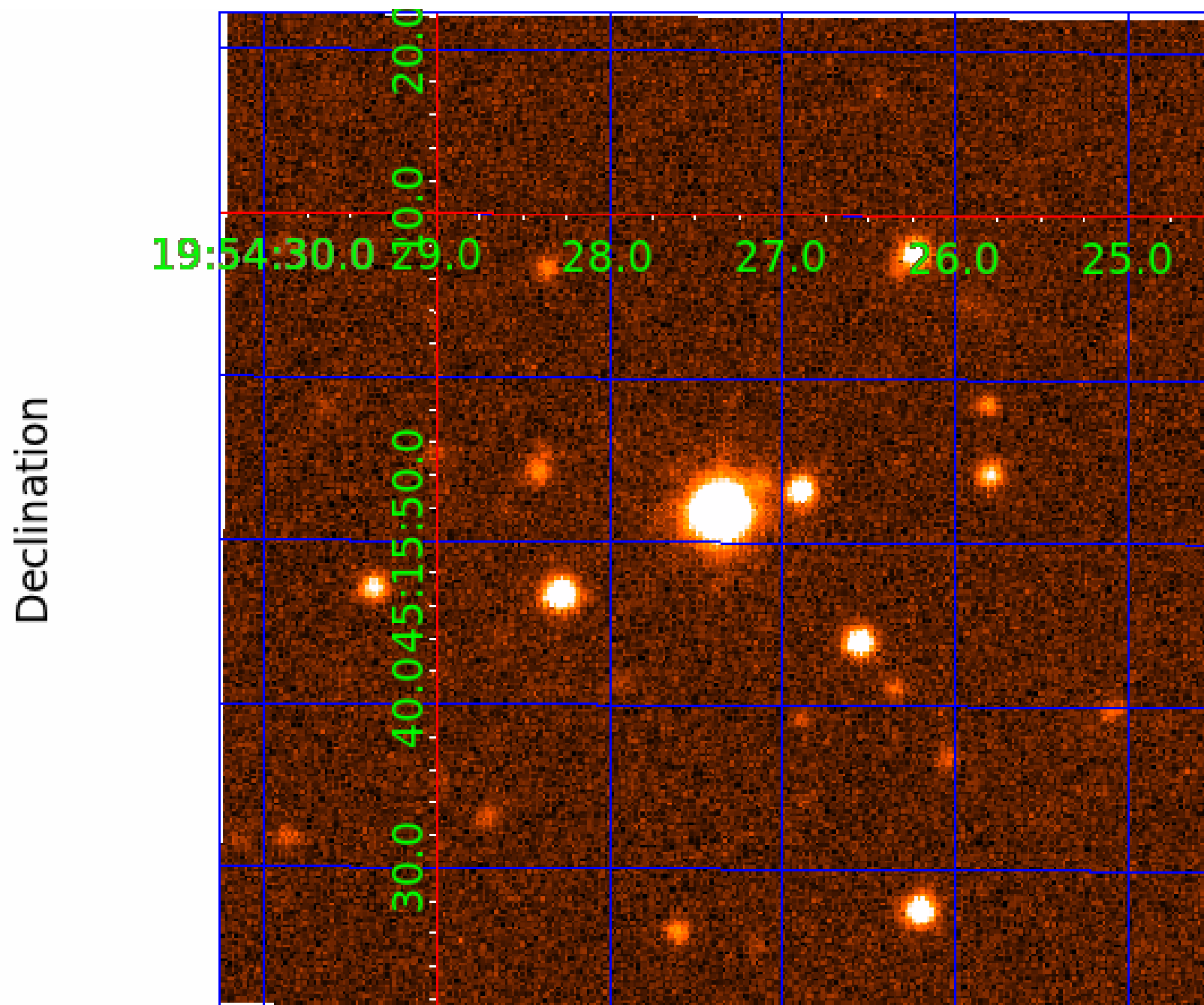
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008976187

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})
008976187-01	OBS	No	0.966496	131.804382	80.6	3.943	9.2	10.8	3.11	9707	3.22	109585.61
008976187-02	OBS	No	0.966506	132.122242	39.6	2.764	8.5	4.9	3.11	9707	2.25	109584.21

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008976187-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT
008976187-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD

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

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

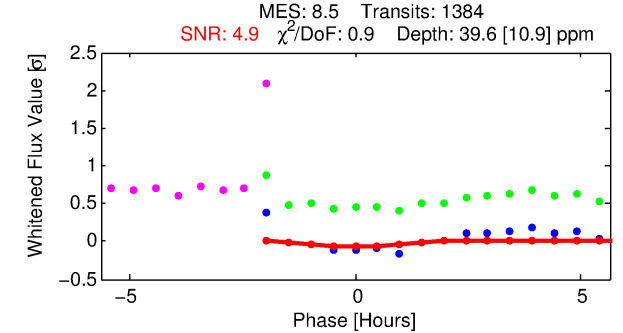
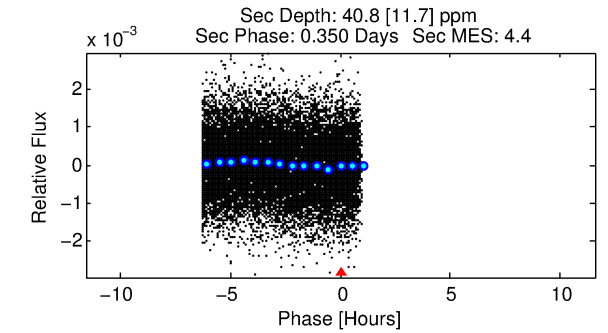
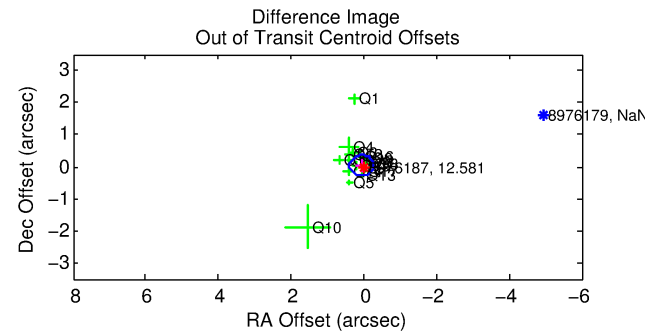
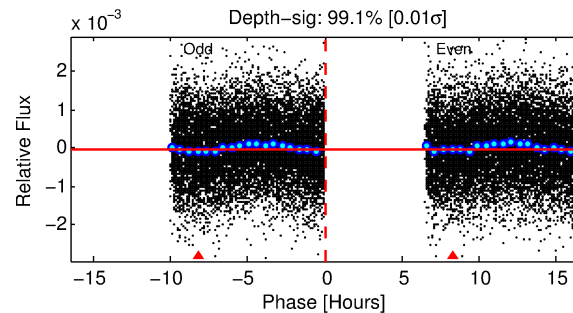
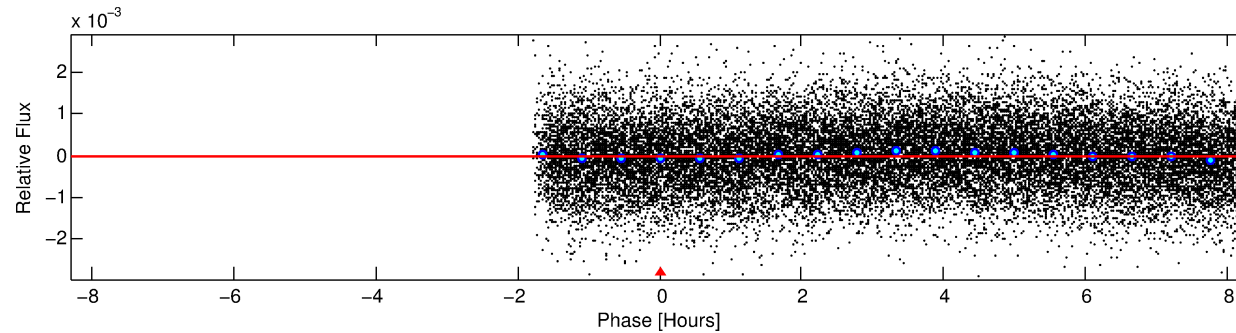
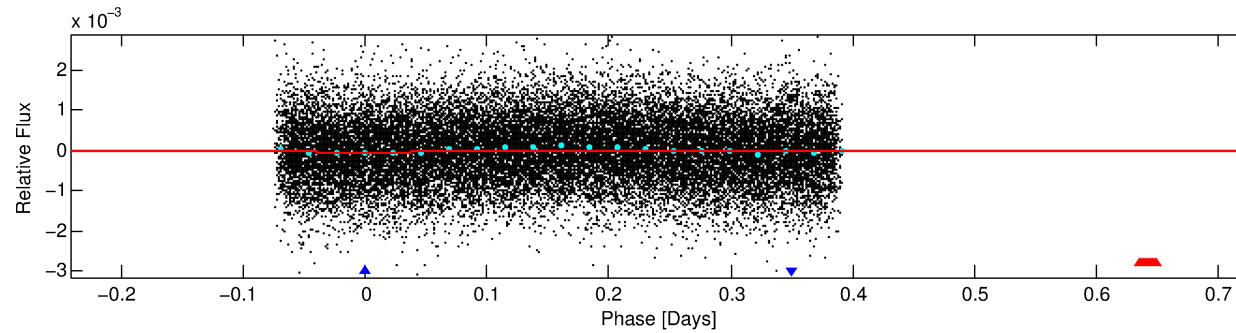
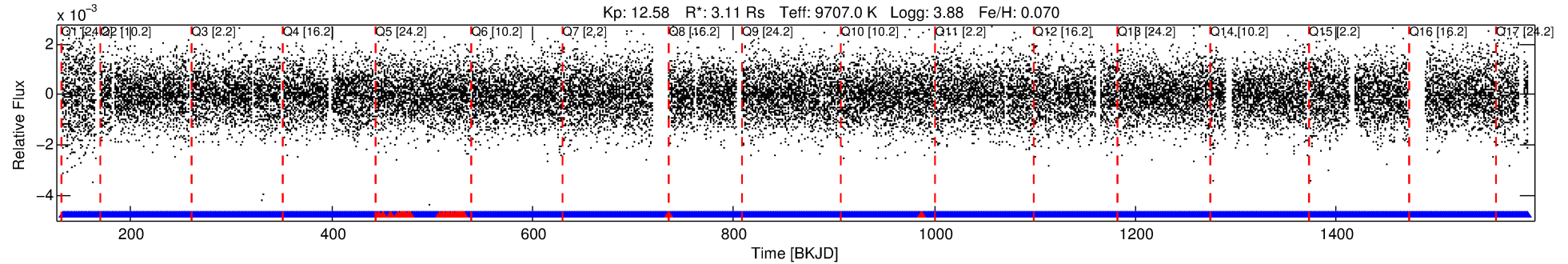
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 008976187-02

No Significant Match Found

DV One-Page Summary

KIC: 8976187 Candidate: 2 of 2 Period: 0.967 d



DV Fit Results:

Period = 0.96651 [0.00002] d
Epoch = 132.1222 [0.0079] BKJD
Rp/R* = 0.0066 [0.0058]
a/R* = 1.53 [5.98]
b = 0.90 [1.48]
Seff = 109584.21 [51758.20]
Teq = 4639 [548] K
Rp = 2.25 [2.09] Re
a = 0.0265 [0.0076] AU
Ag = 3.13 [5.72] [0.37σ]
Teffp = 9540 [4248] K [1.14σ]

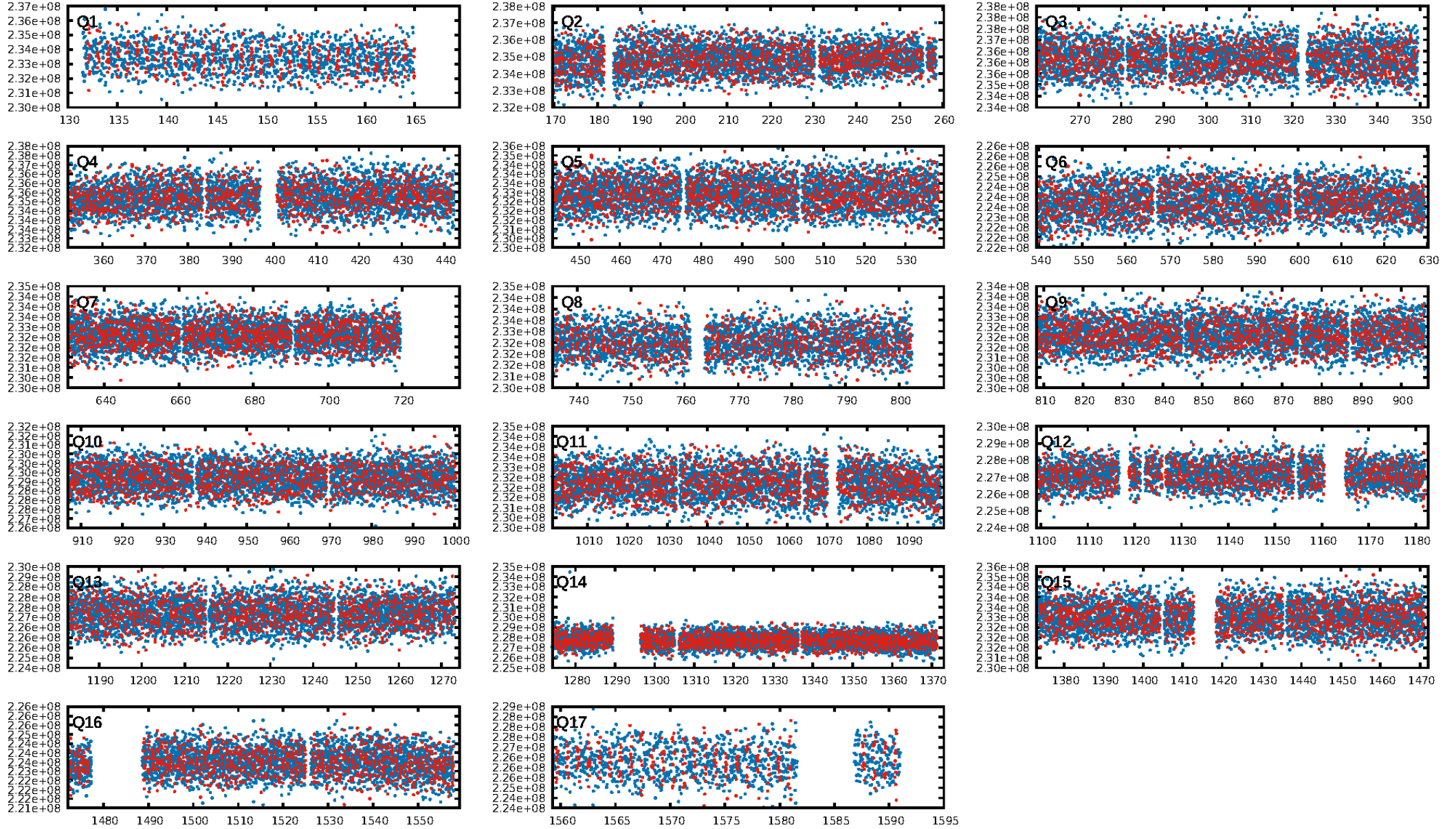
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 9.98e-11
RollingBand-fgt: 0.98 [1294/1322]
GhostDiagnostic-chr: 1.041
Centroid-sig: 1.7%
Centroid-so: 1.113 arcsec [2.44σ]
OotOffset-rm: 0.075 arcsec [0.69σ]
KicOffset-rm: 0.122 arcsec [0.68σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 0.00 [0/17]

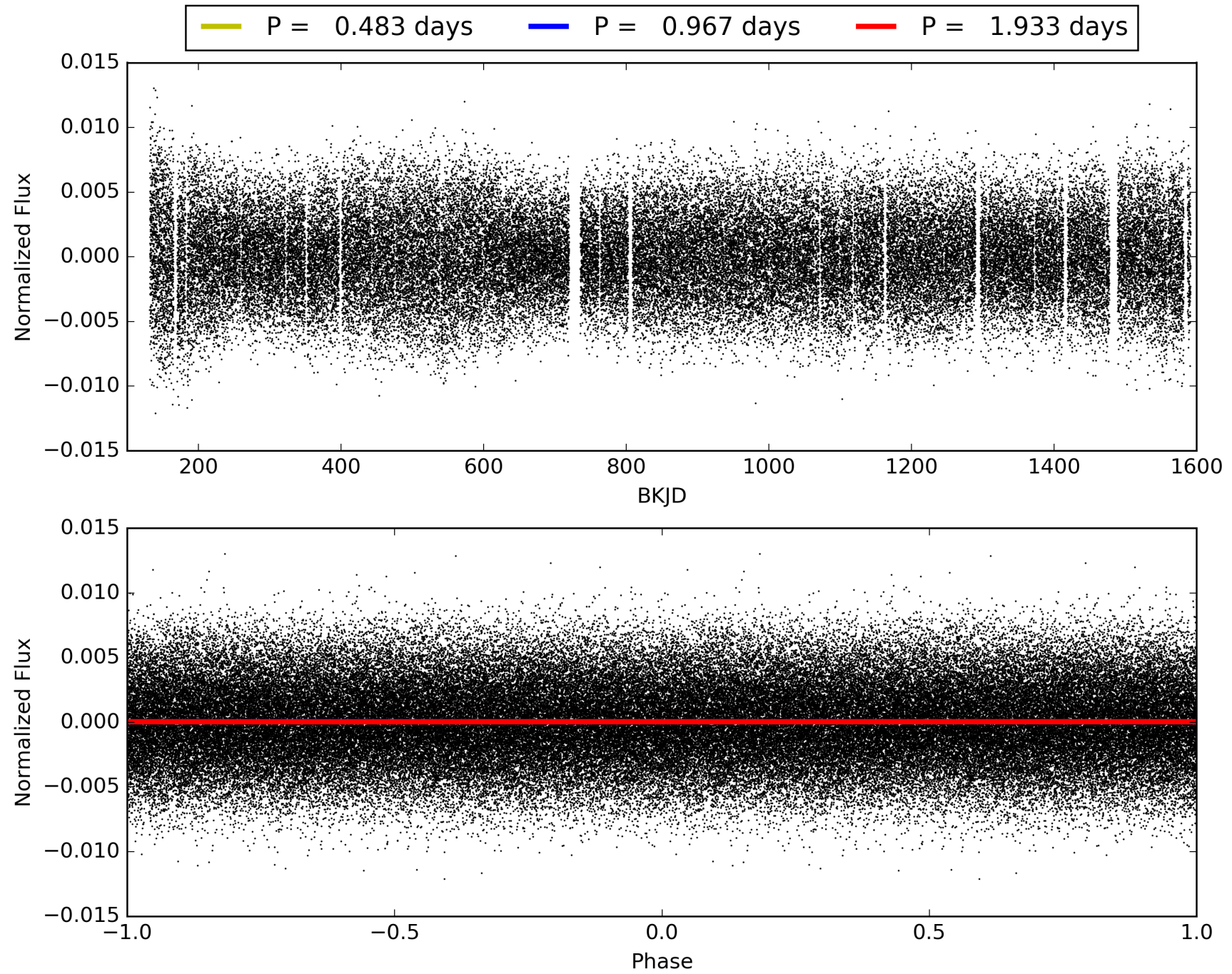
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:09:25 Z

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

TCE 008976187-02, PDC Light Curves

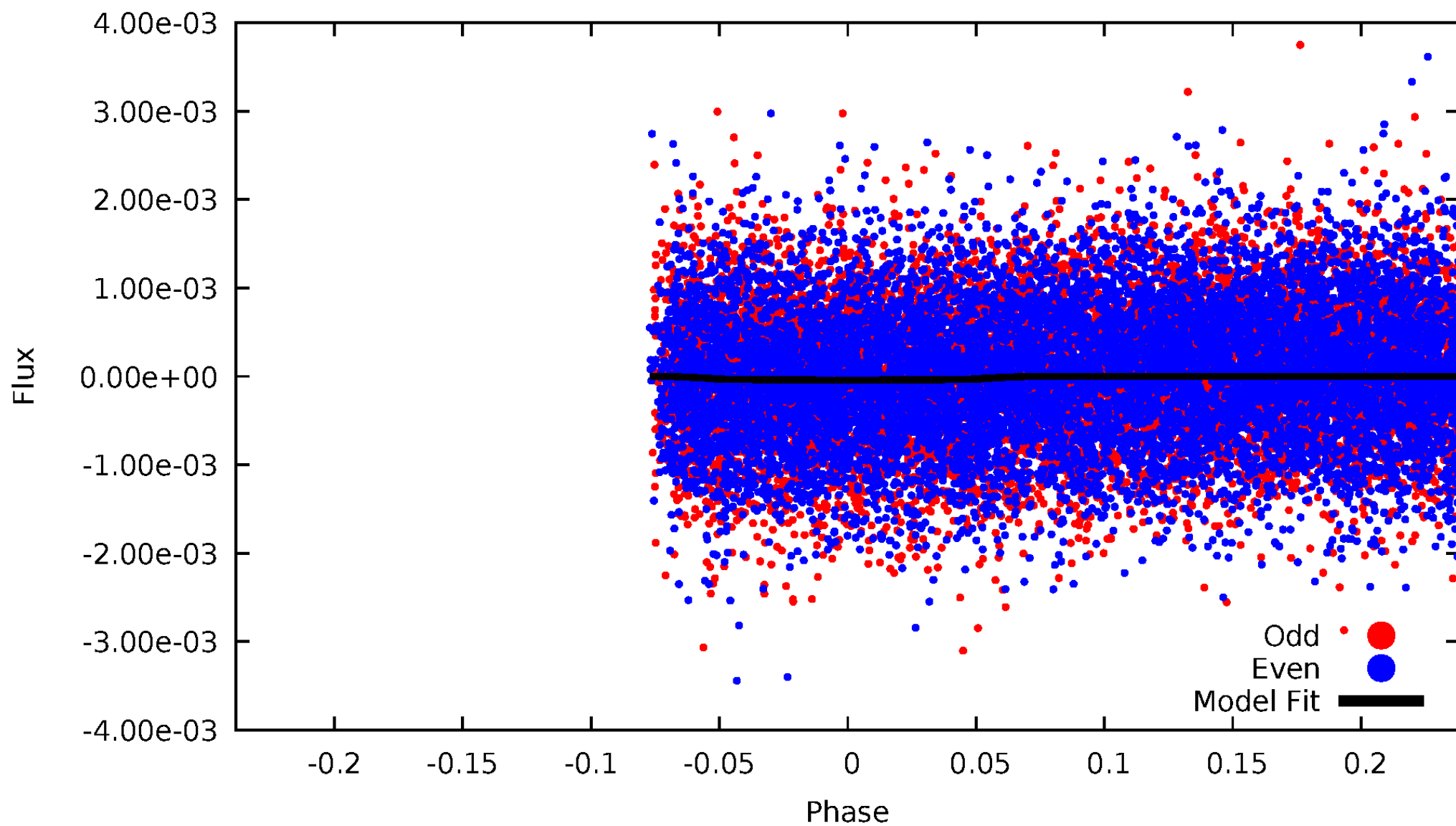


TCE 008976187-02



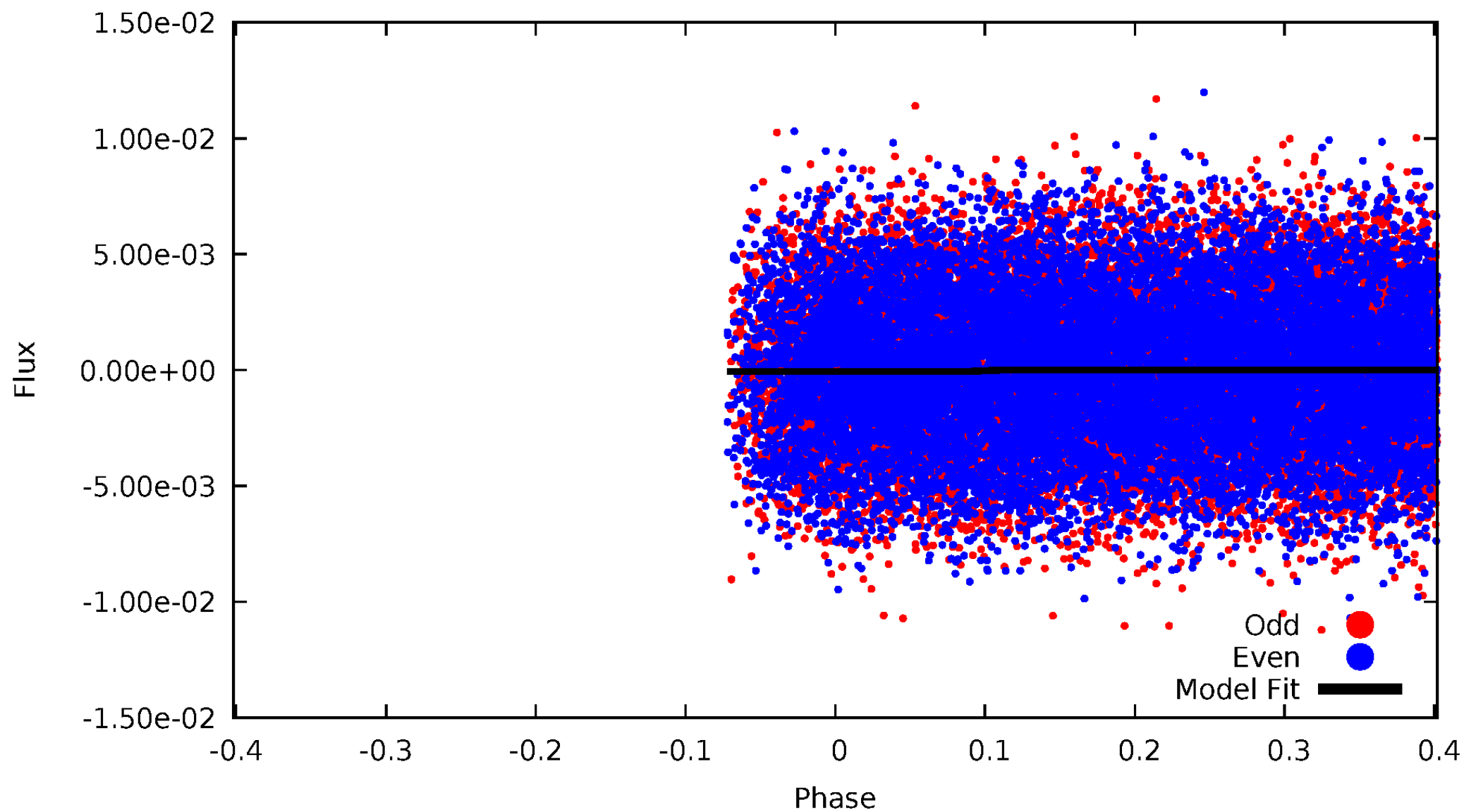
DV Odd/Even

TCE 008976187-02



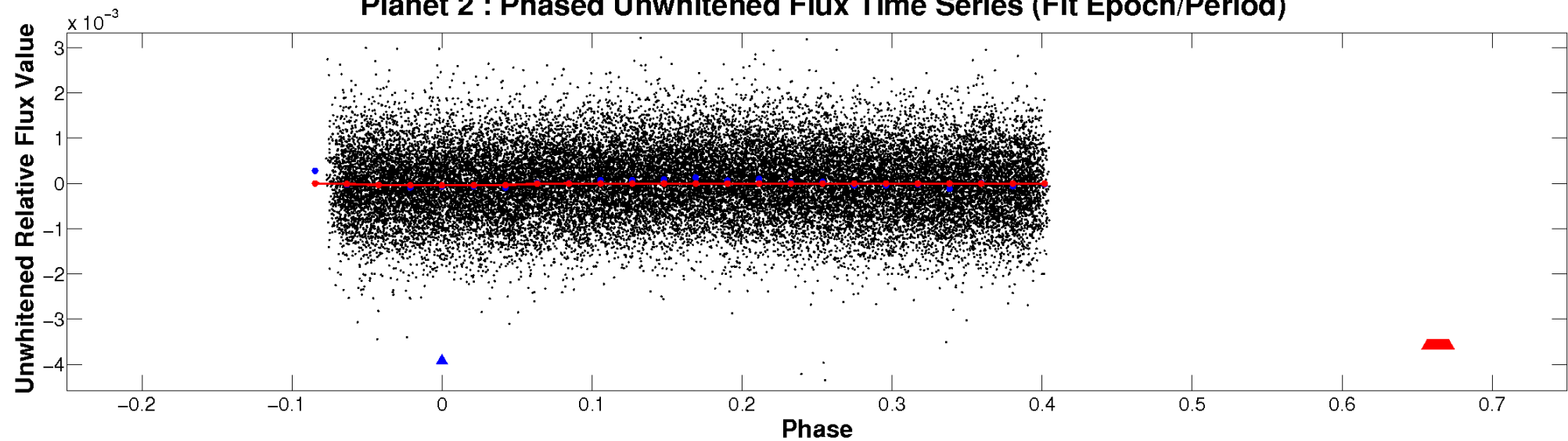
ALT Odd/Even

TCE 008976187-02

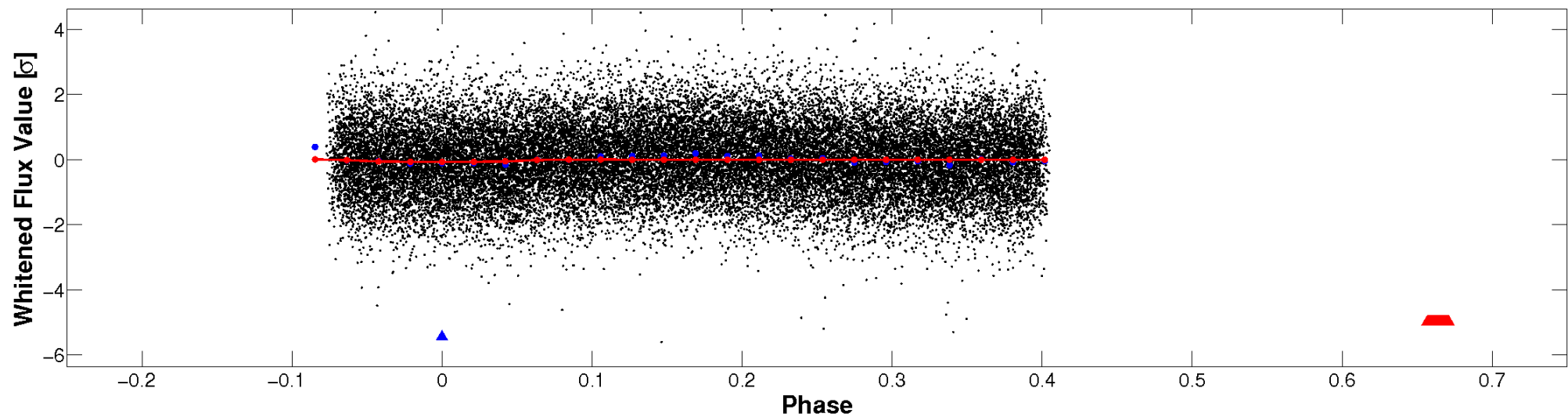


Non-Whitened Vs. Whitened Light Curve

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

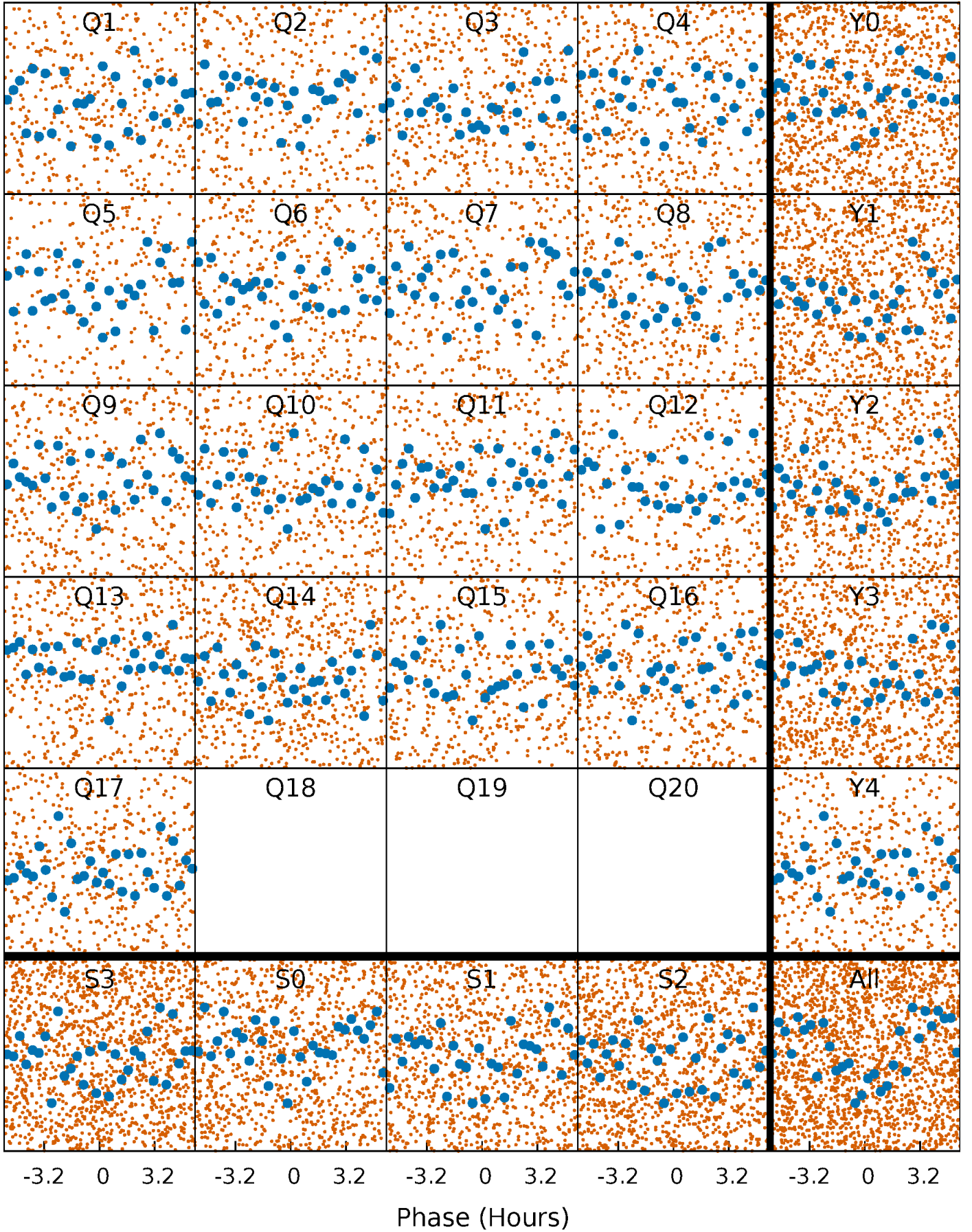


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



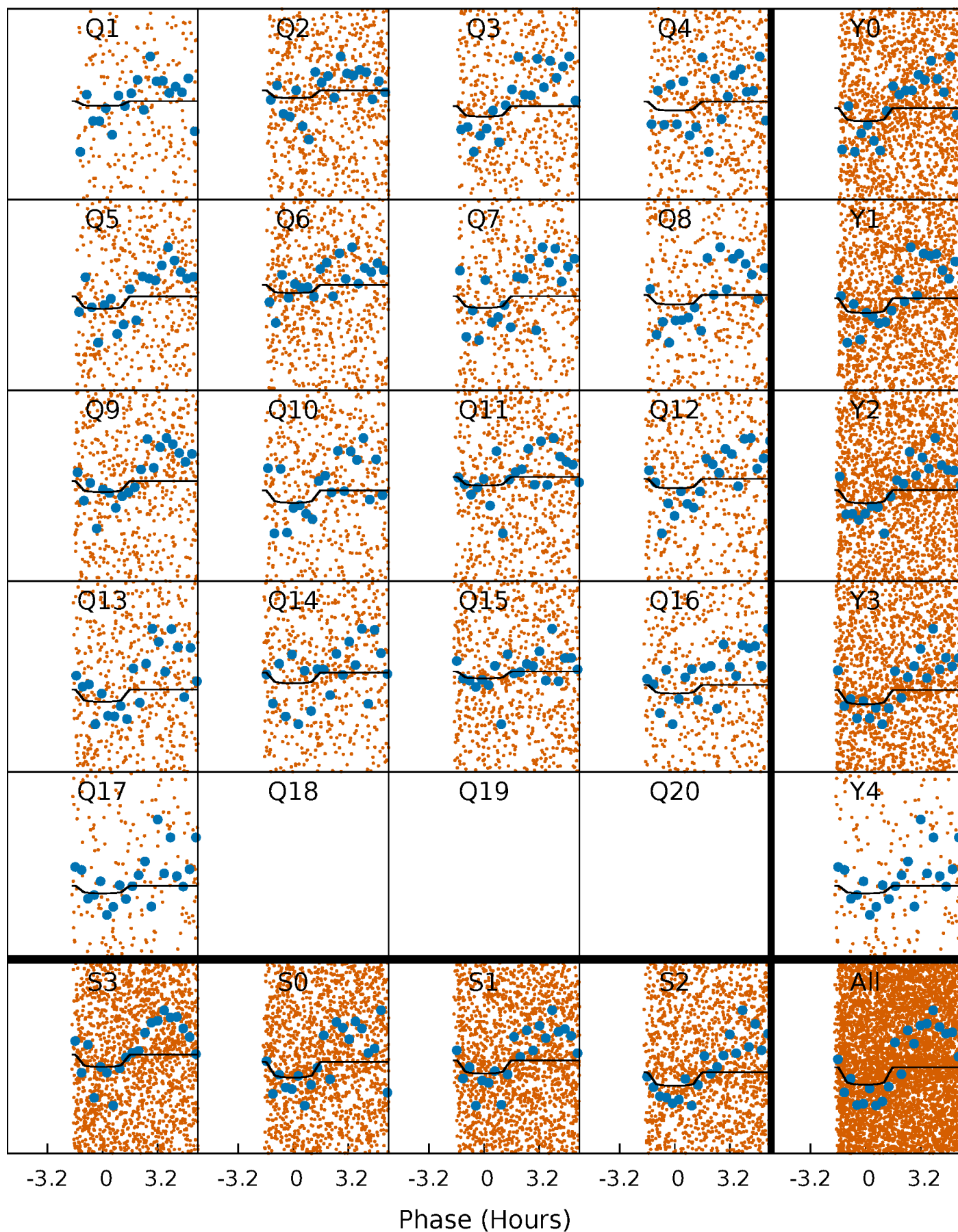
PDC Quarter-Phased Transit Curves

TCE 008976187-02 P= 0.966506 Days $T_0=132.122242$ (BKJD)



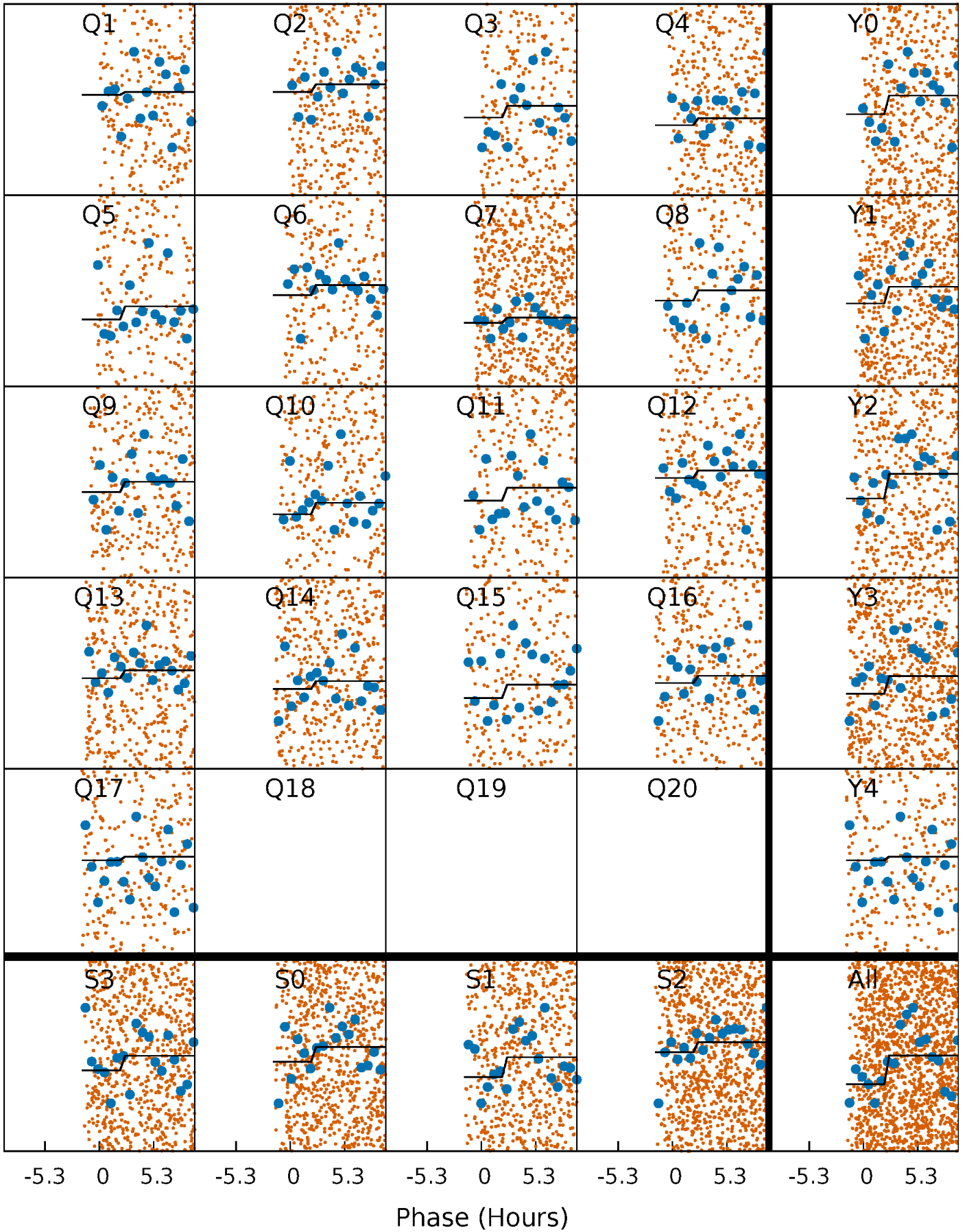
DV Quarter-Phased Transit Curves

TCE 008976187-02 P= 0.966506 Days $T_0=132.122242$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

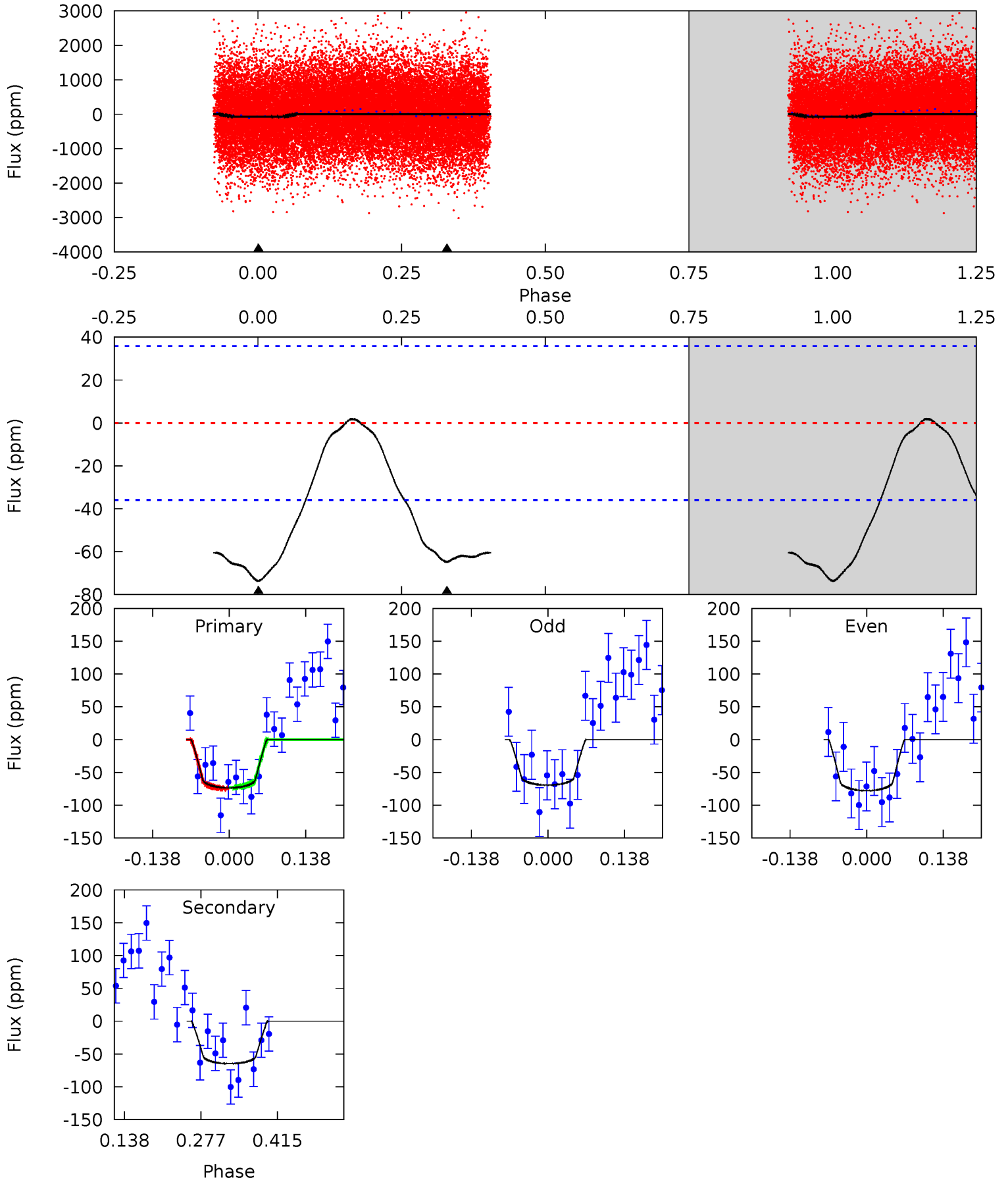
TCE 008976187-02 P= 0.966544 Days $T_0=132.060722$ (BKJD)



DV Model-Shift Uniqueness Test

008976187-02, P = 0.966506 Days, E = 131.155736 Days

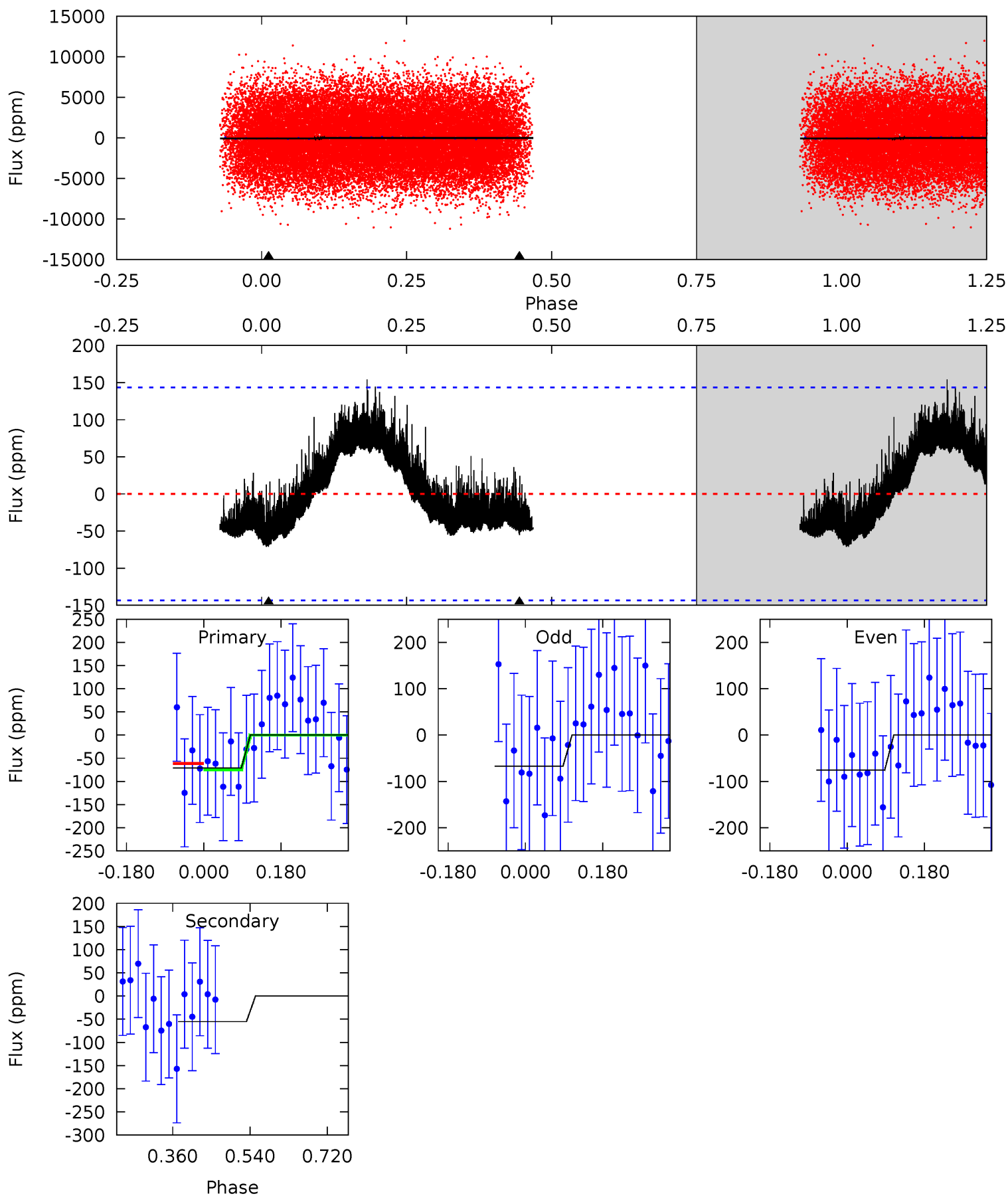
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.22	8.11	0	0	4.50	1.48	0.20	9.22	9.22	8.11	8.11	0.53	1.03	0.02	0.11



Alt Model-Shift Uniqueness Test

008976187-02, P = 0.966544 Days, E = 131.094178 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.21	1.71	0	0	4.44	1.34	0.81	2.21	2.21	1.71	1.71	0.13	1.27	0.68	0.19



Stellar Parameters For KIC 008976187

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9707^{+236}_{-405}	$3.877^{+0.252}_{-0.168}$	$0.070^{+0.150}_{-0.550}$	$3.113^{+0.906}_{-0.997}$	$2.661^{+0.317}_{-0.436}$	$0.124^{+0.203}_{-0.060}$
	+2%/-4%	+6%/-4%	+214%/-786%	+29%/-32%	+12%/-16%	+163%/-48%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 008976187-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-65 ± 8	$2.41^{+2.13}_{-1.43}$	6416^{+501}_{-530}	9877^{+14631}_{-3386}	$4.120^{+20.452}_{-2.939}$
Alt.	-55 ± 32	$2.82^{+2.02}_{-1.66}$	6397^{+536}_{-481}	8063^{+9018}_{-3251}	$2.389^{+11.711}_{-1.807}$

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

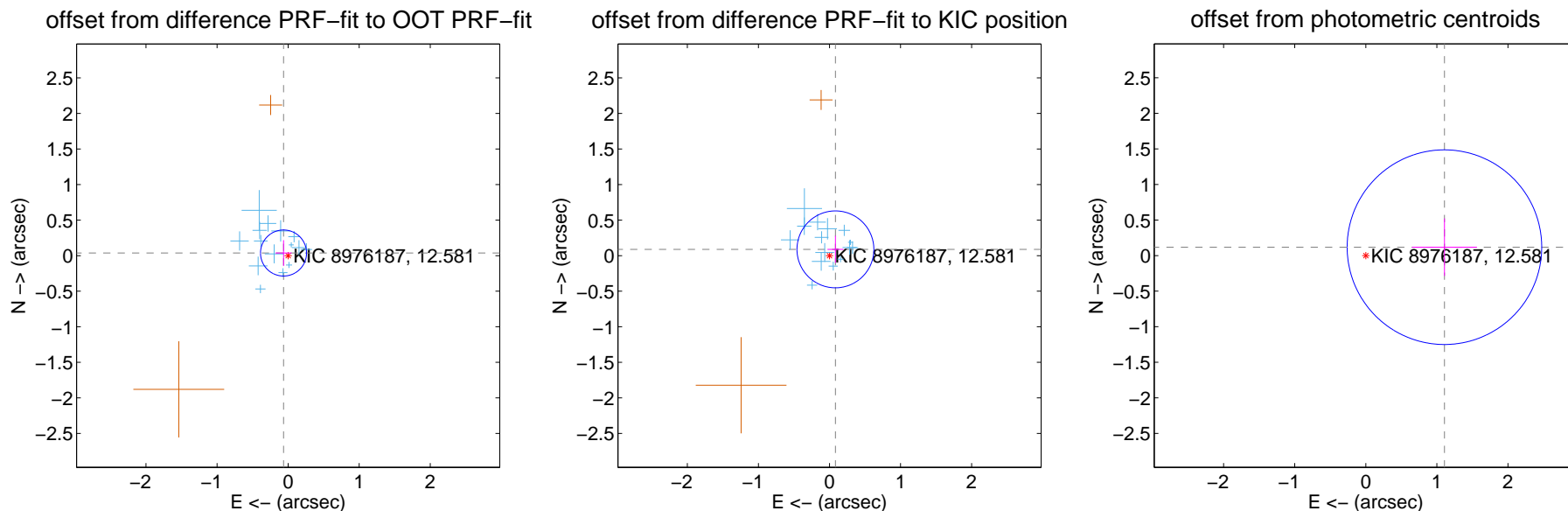
DV Centroid Data

Supplemental centroid analysis for 008976187-02. Kepler magnitude: 12.58. Transit SNR 4.87

There are 15 quarters with good PRF difference image offsets

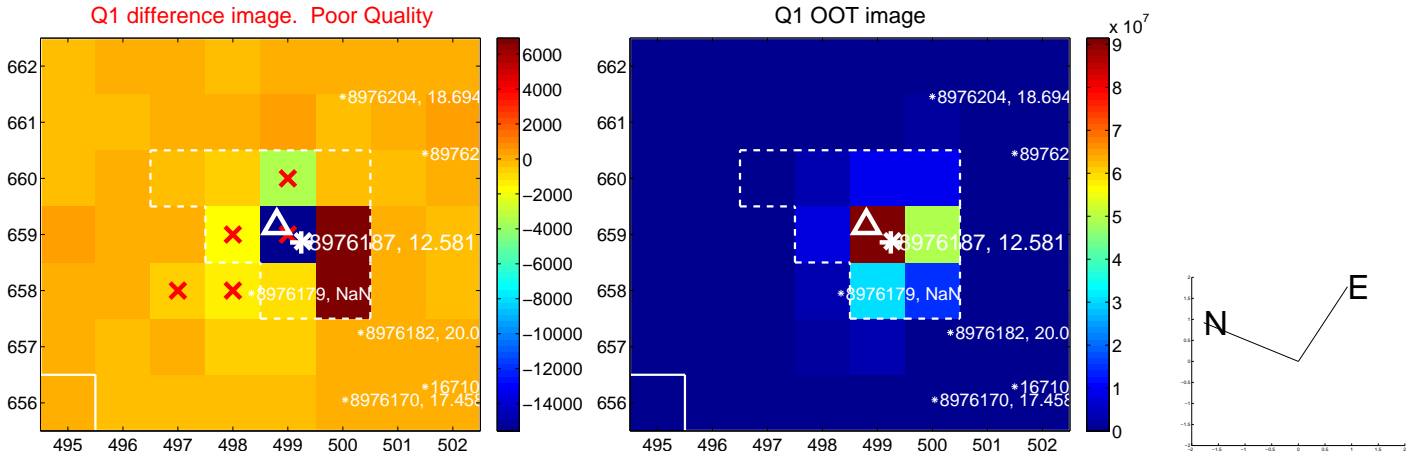
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.075 ± 0.108	0.69	0.065 ± 0.114	0.037 ± 0.181
PRF-fit source offset from KIC position	0.122 ± 0.180	0.68	-0.084 ± 0.113	0.088 ± 0.191
photometric centroid source offset	1.11 ± 0.46	2.44	-1.11 ± 0.46	0.12 ± 0.40

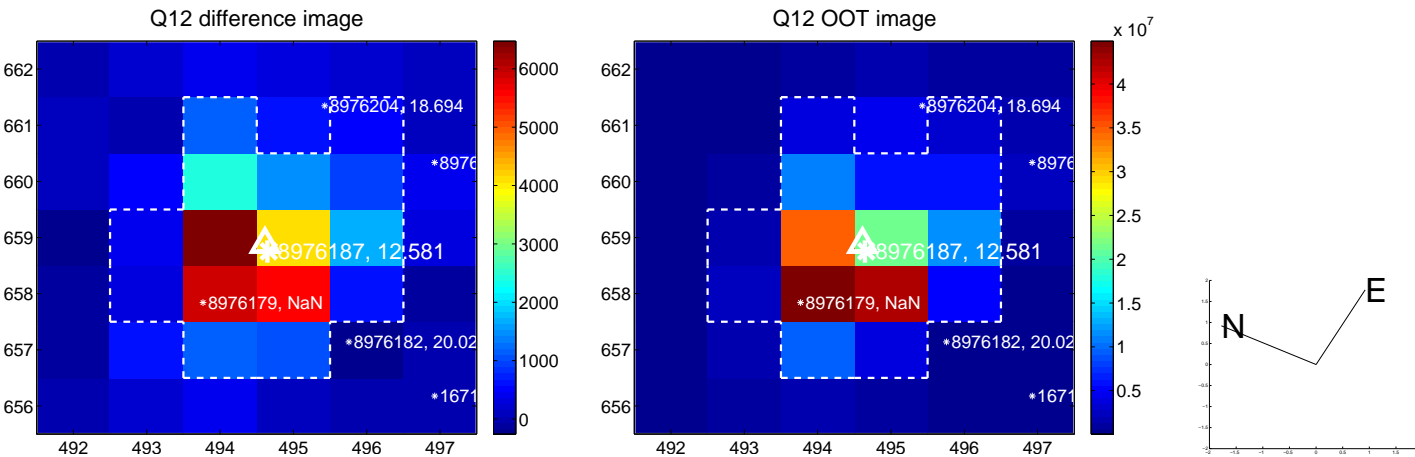
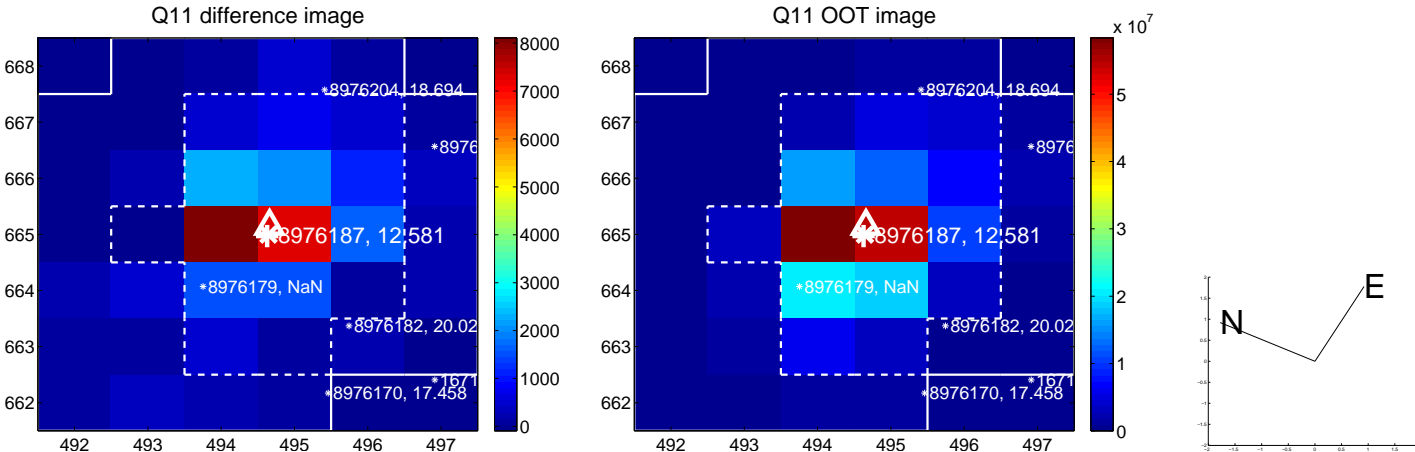
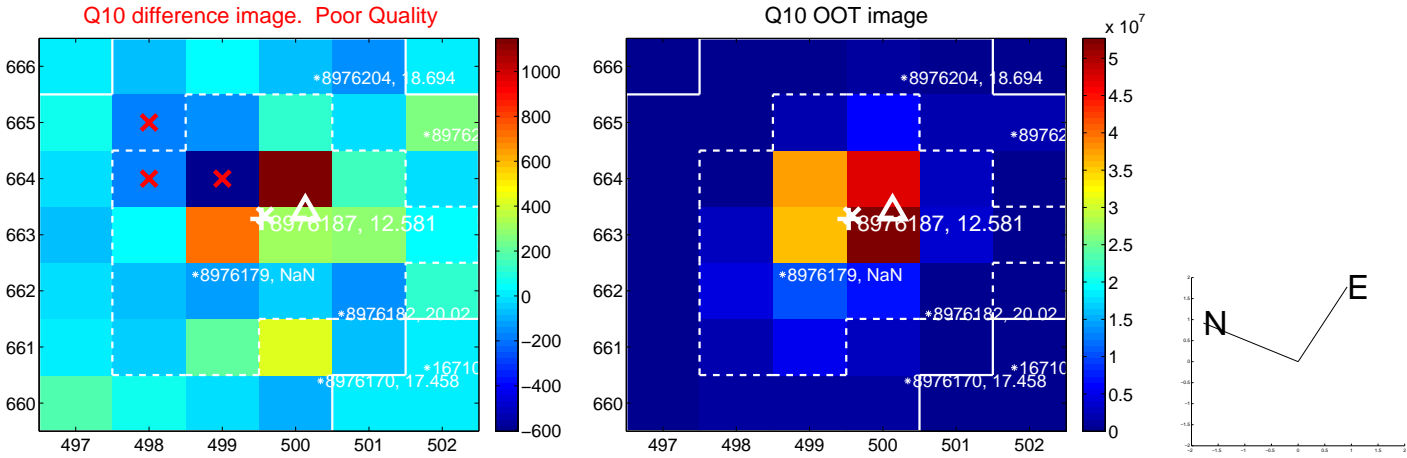
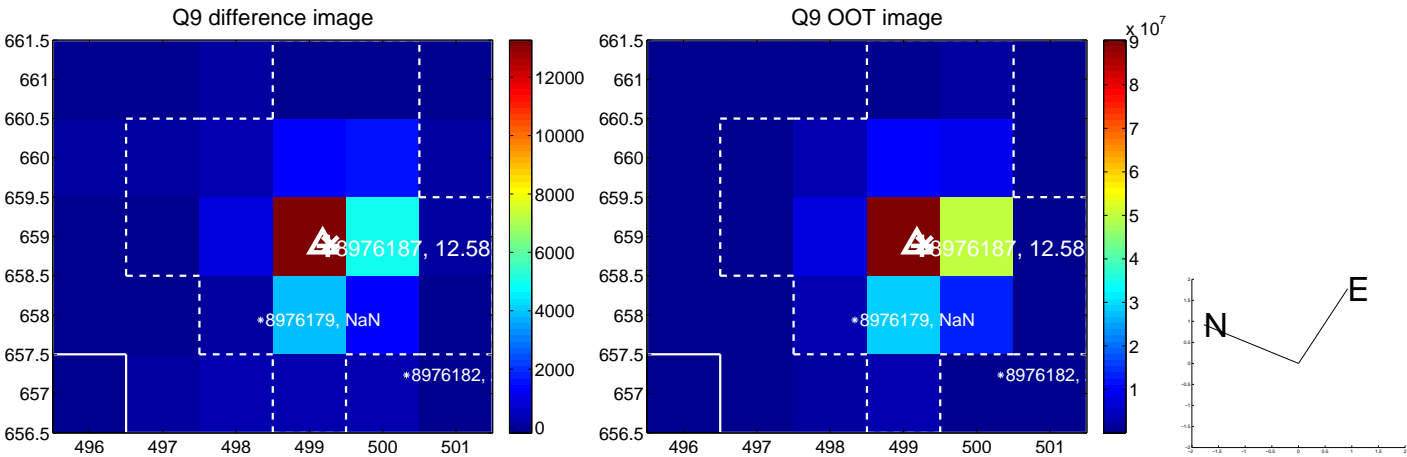


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

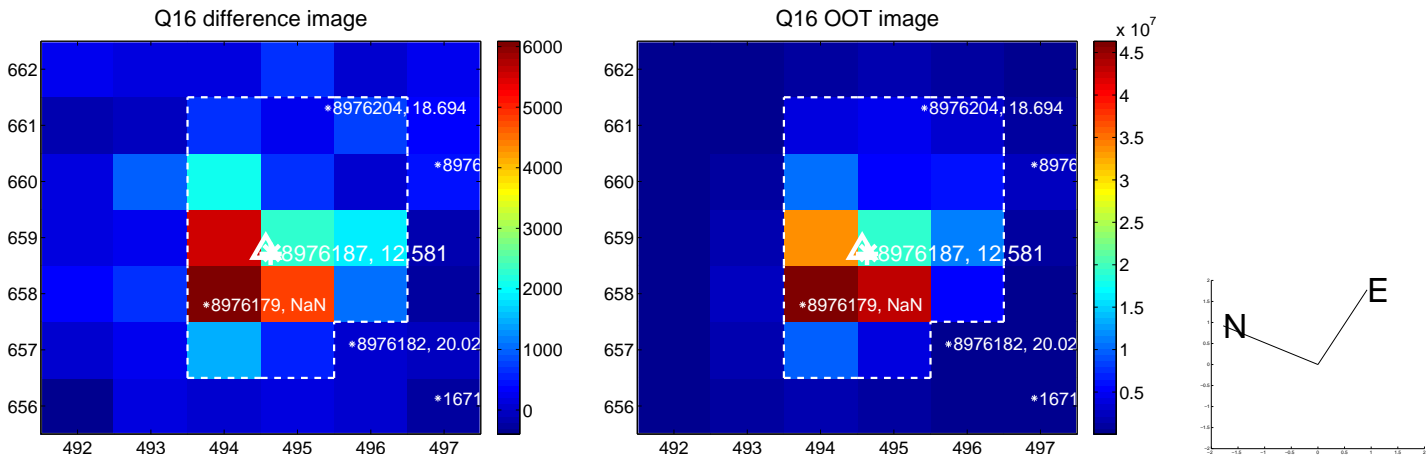
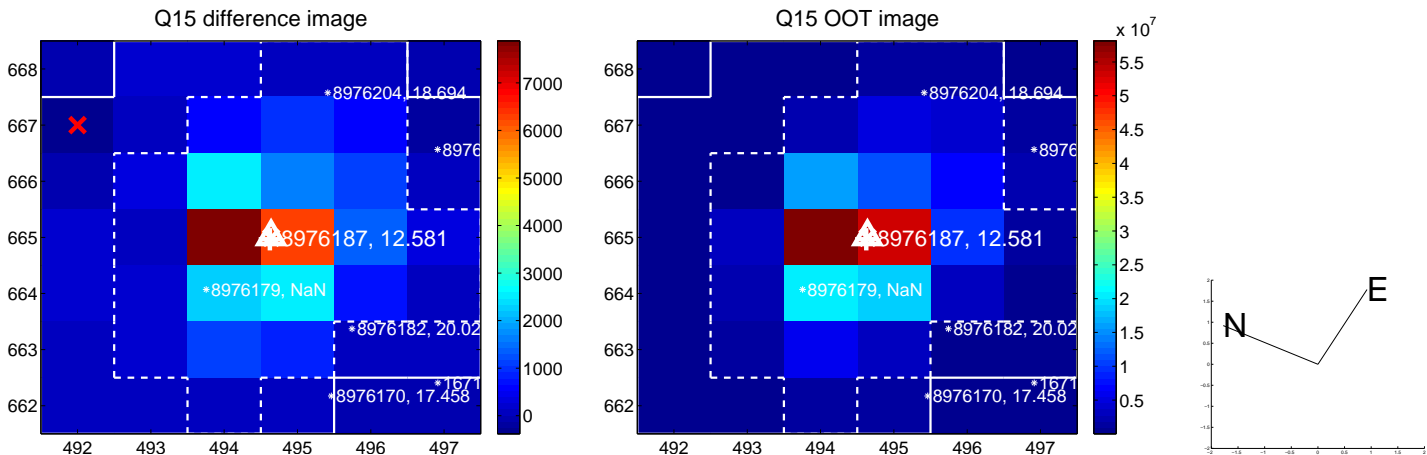
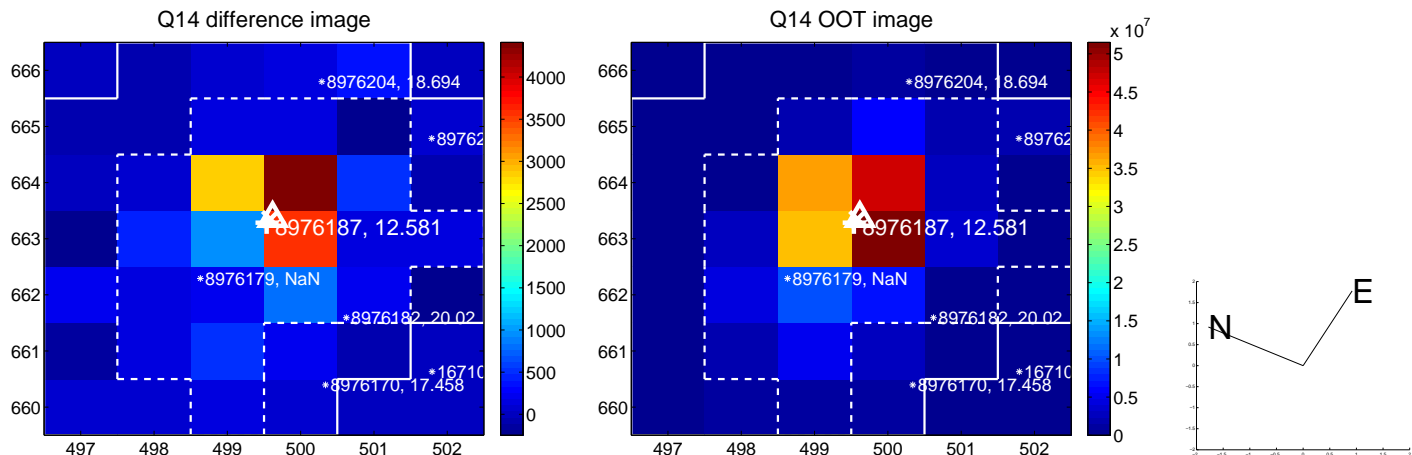
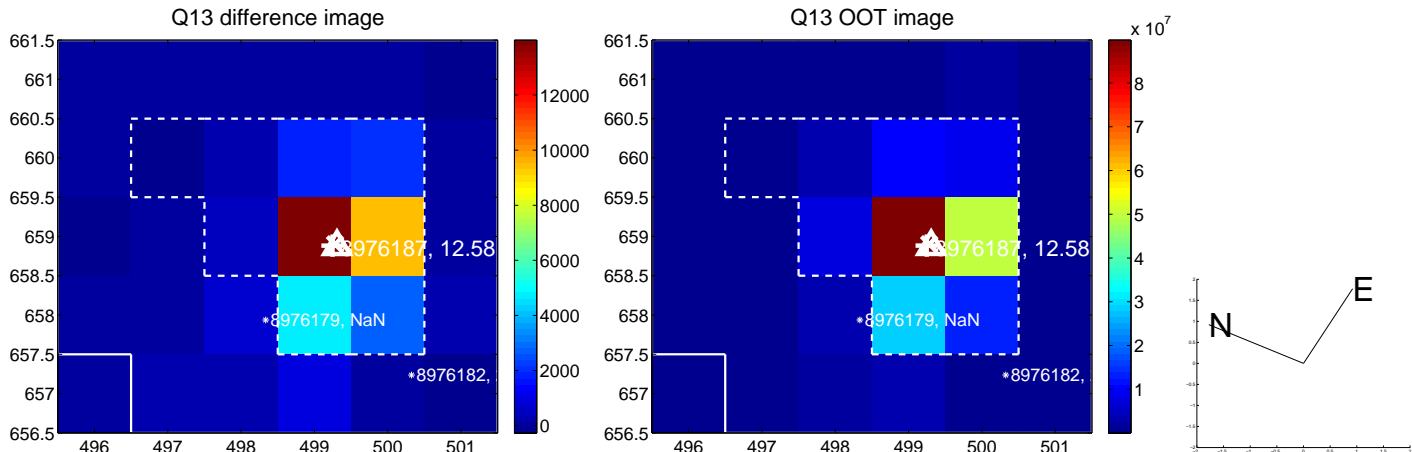
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



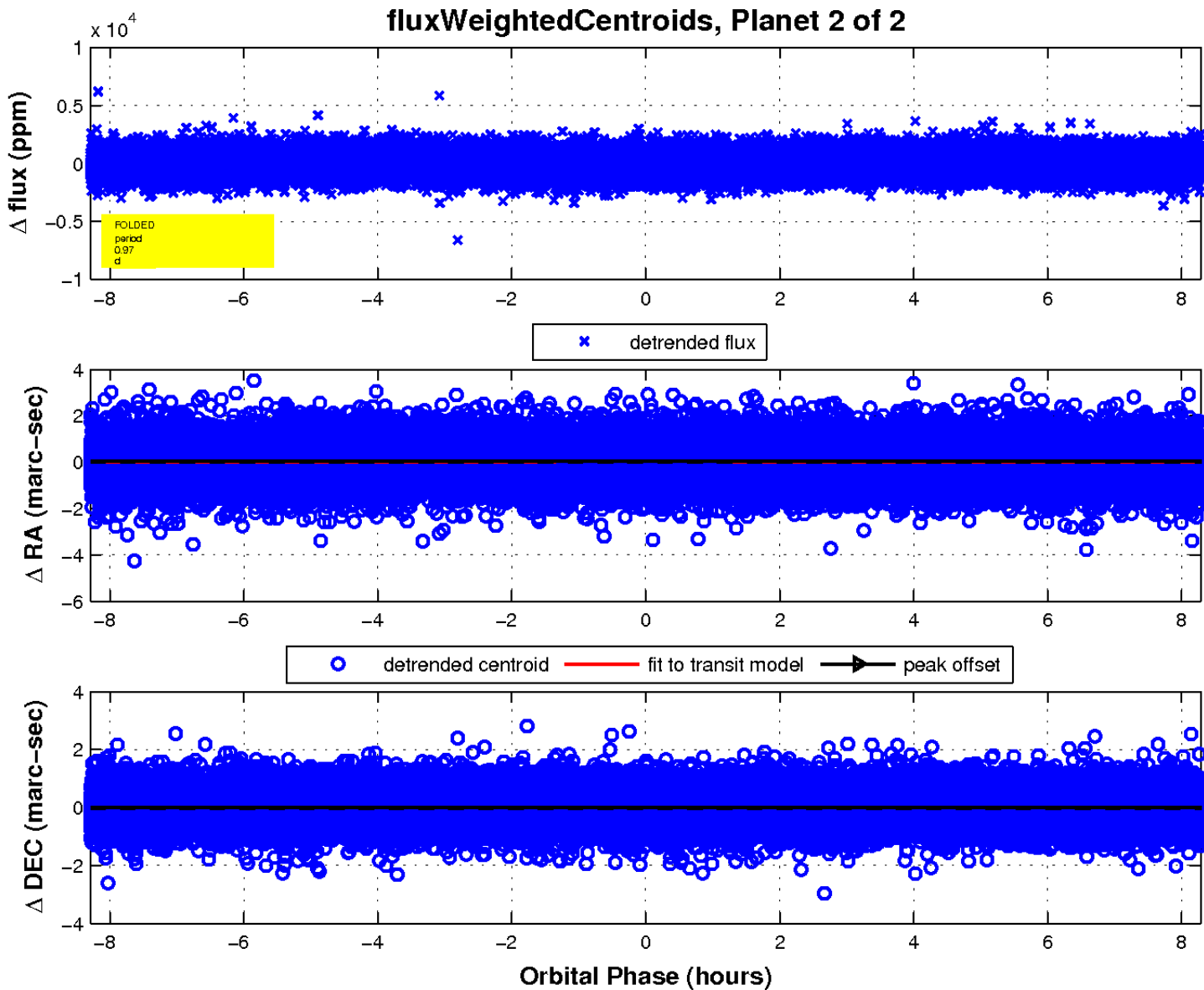
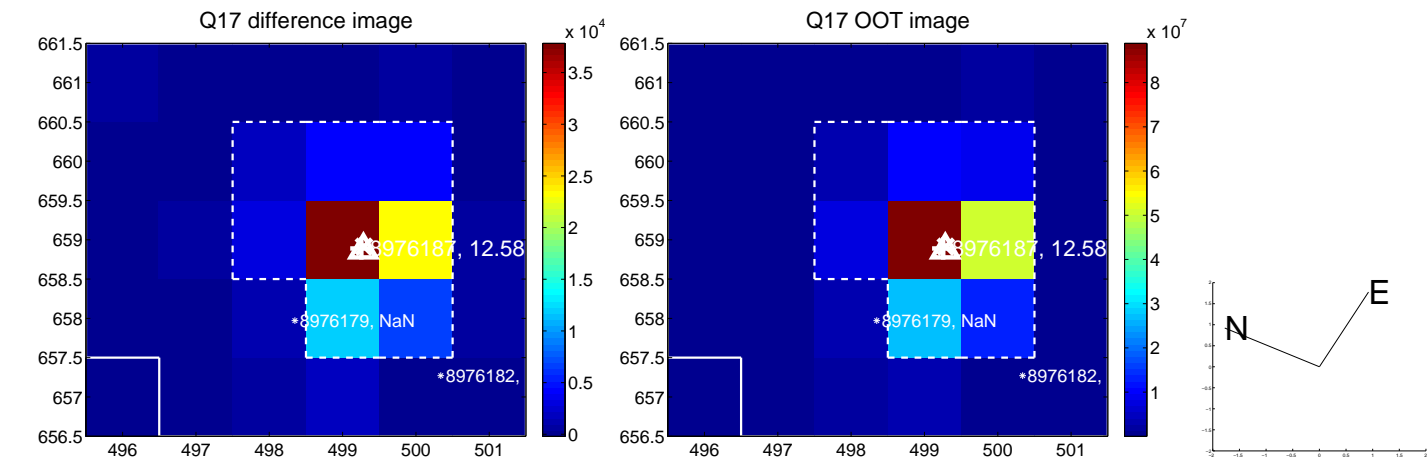
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

