

KIC 010415087

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})
010415087-01	OBS	No	0.623183	131.621702	317.6	3.649	17.5	20.5	2.23	7242	4.06	43235.53
010415087-02	OBS	No	0.683172	131.904744	183.0	1.500	10.9	-1.0	2.23	7242	3.07	38249.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010415087-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010415087-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

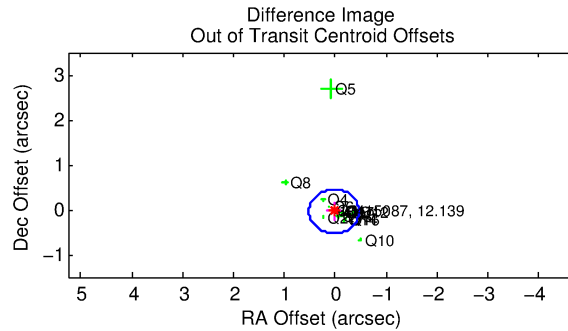
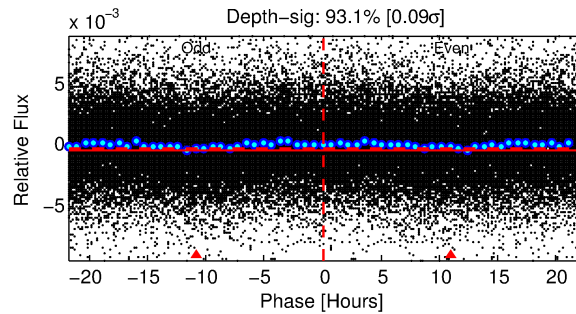
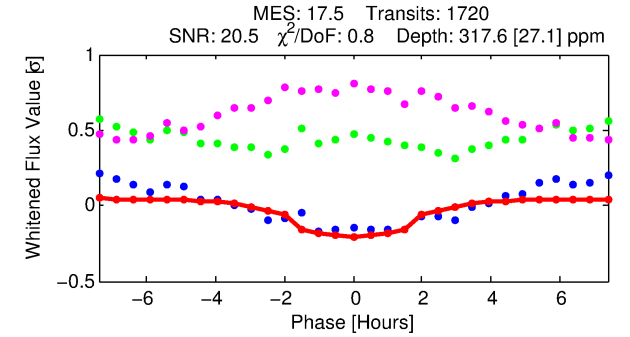
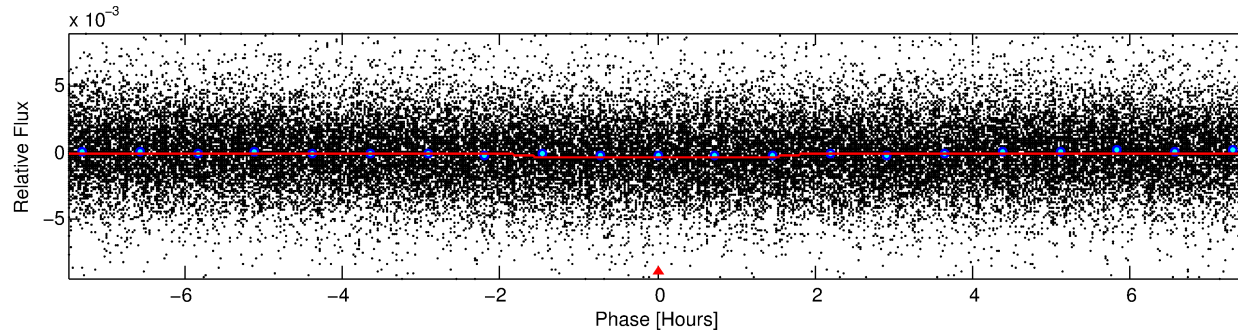
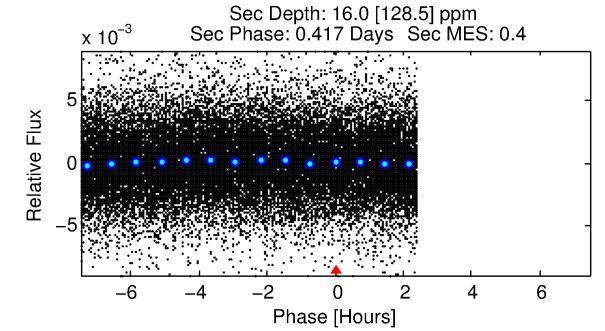
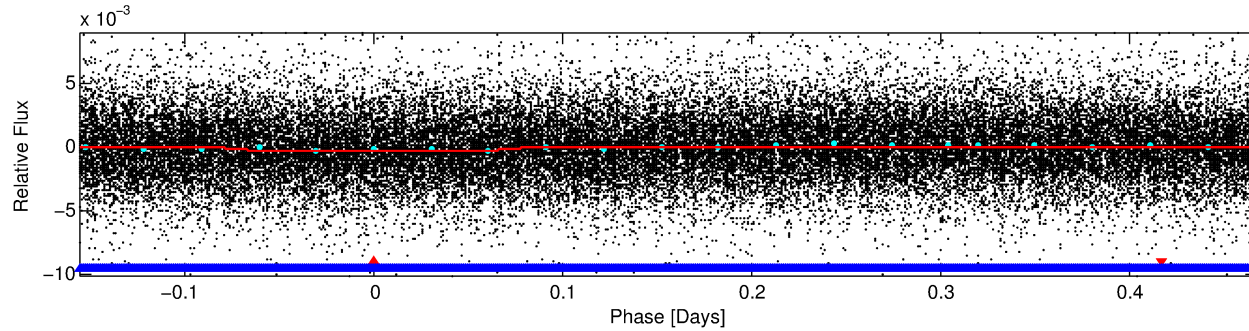
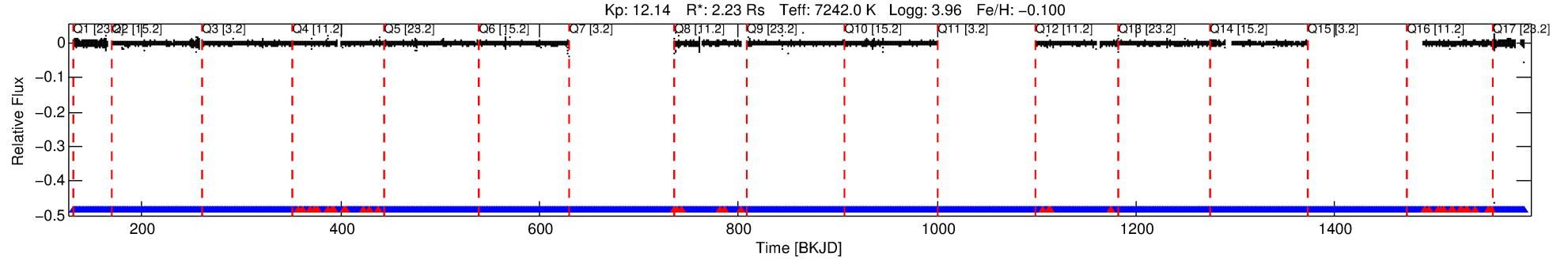
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010415087-01

No Significant Match Found

DV One-Page Summary

KIC: 10415087 Candidate: 1 of 2 Period: 0.623 d



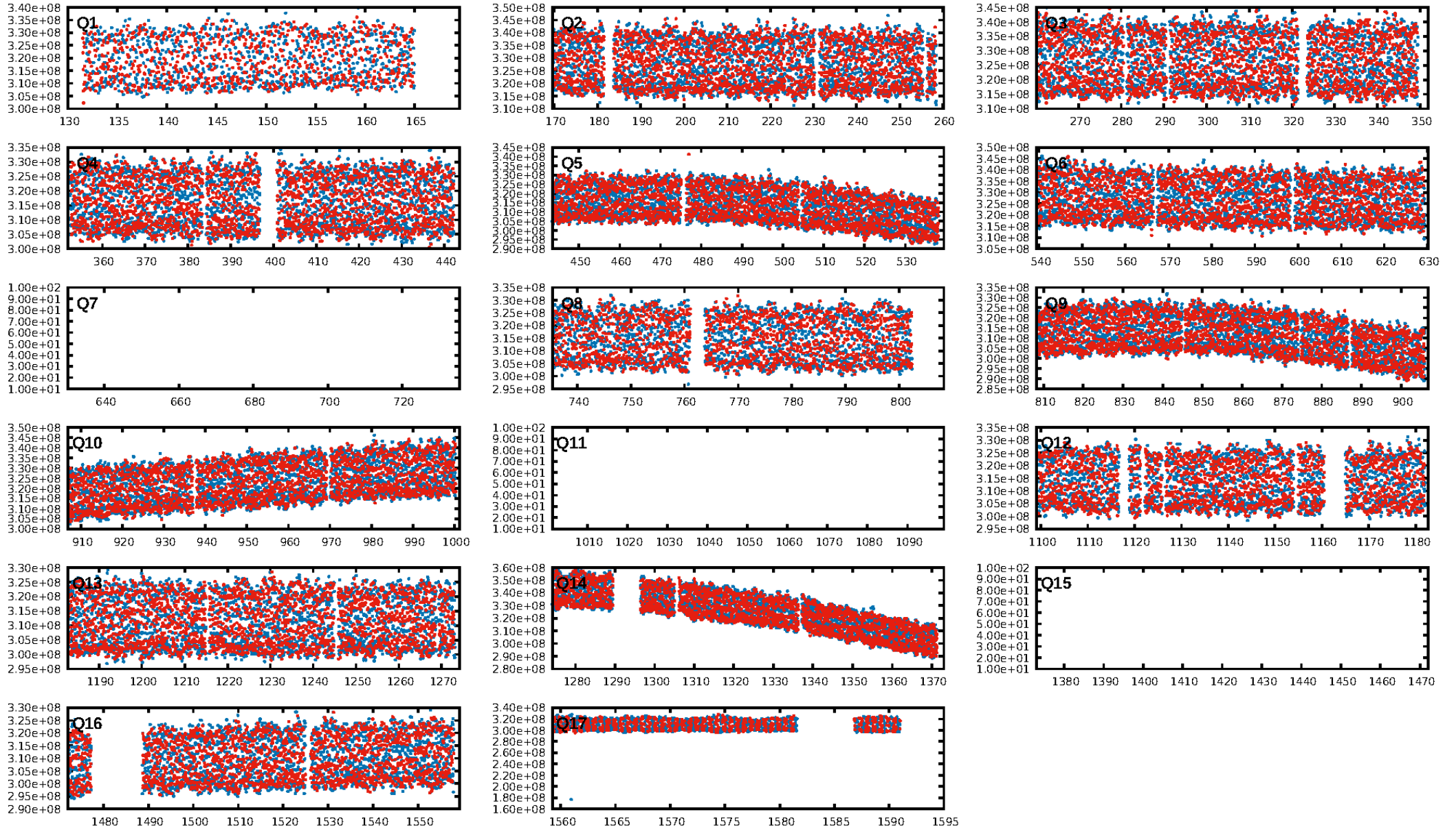
DV Fit Results:

Period = 0.62318 [0.00001] d
Epoch = 131.6217 [0.0027] BKJD
Rp/R* = 0.0167 [0.0166]
a/R* = 1.43 [4.31]
b = 0.31 [17.35]
Seff = 43235.53 [12625.38]
Teq = 3677 [268] K
Rp = 4.06 [4.15] Re
a = 0.0168 [0.0032] AU
Ag = 0.15 [1.25] [-0.68 σ]
Teffp = 3545 [7342] K [-0.02 σ]

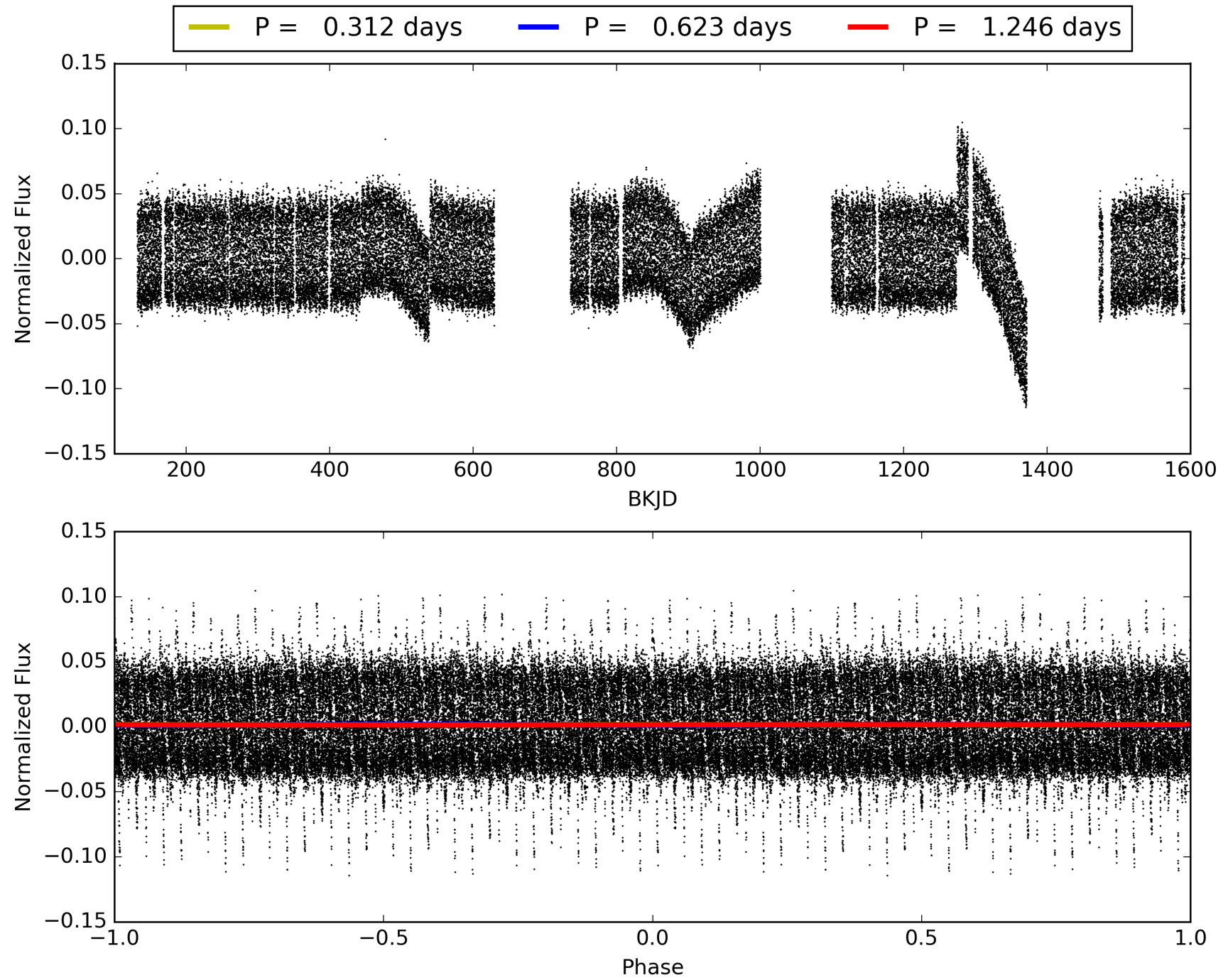
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 28.5% [0.36 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.98 [1583/1623]
GhostDiagnostic-chr: 1.011
Centroid-sig: 0.1%
Centroid-so: 0.126 arcsec [4.63 σ]
OotOffset-rm: 0.050 arcsec [0.30 σ]
KicOffset-rm: 0.198 arcsec [0.97 σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.64 [9/14]
DiffImageOverlap-fno: 0.00 [0/14]

TCE 010415087-01, PDC Light Curves

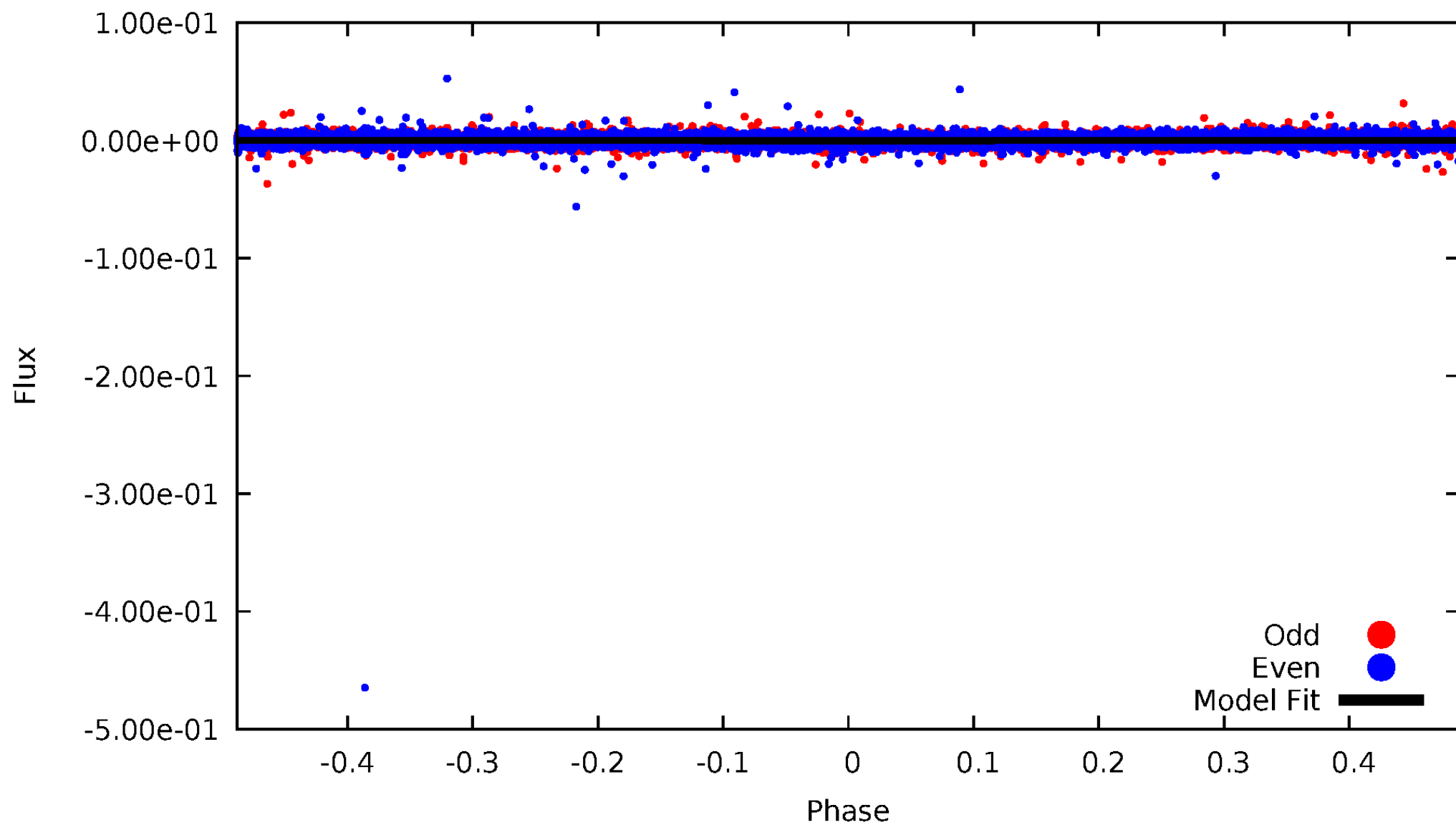


TCE 010415087-01



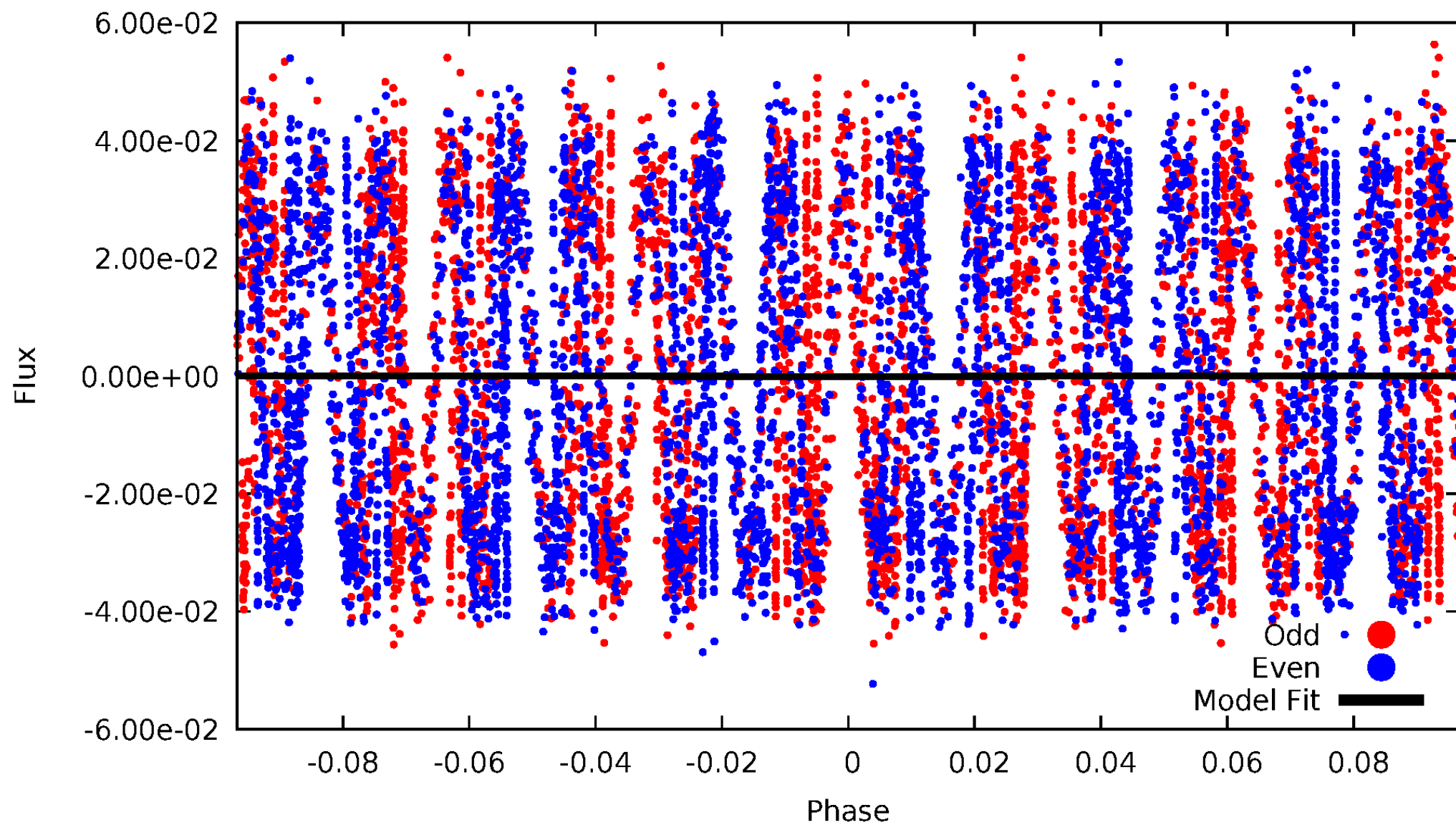
DV Odd/Even

TCE 010415087-01



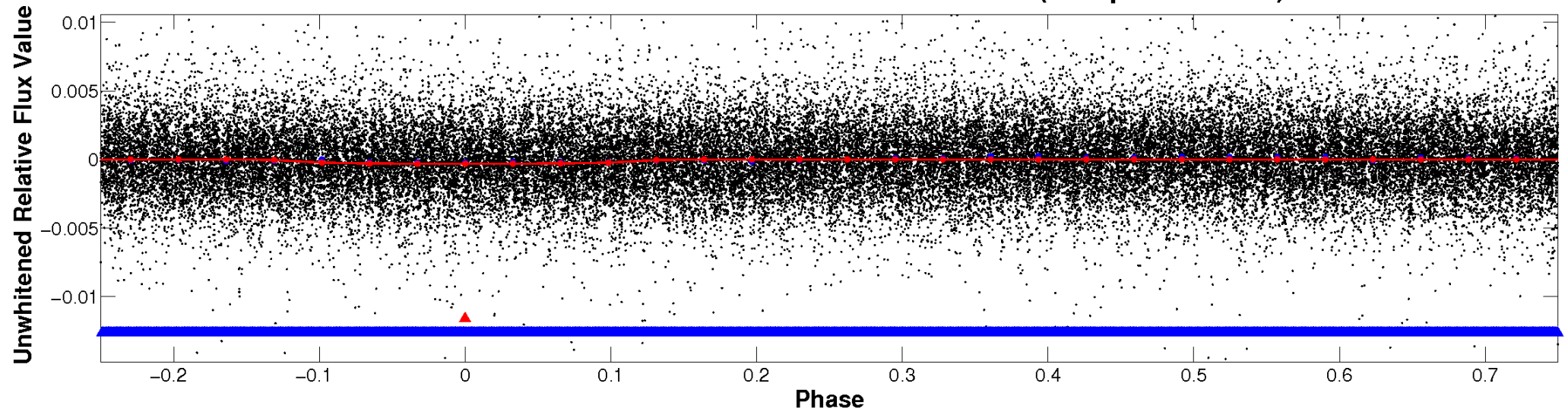
ALT Odd/Even

TCE 010415087-01

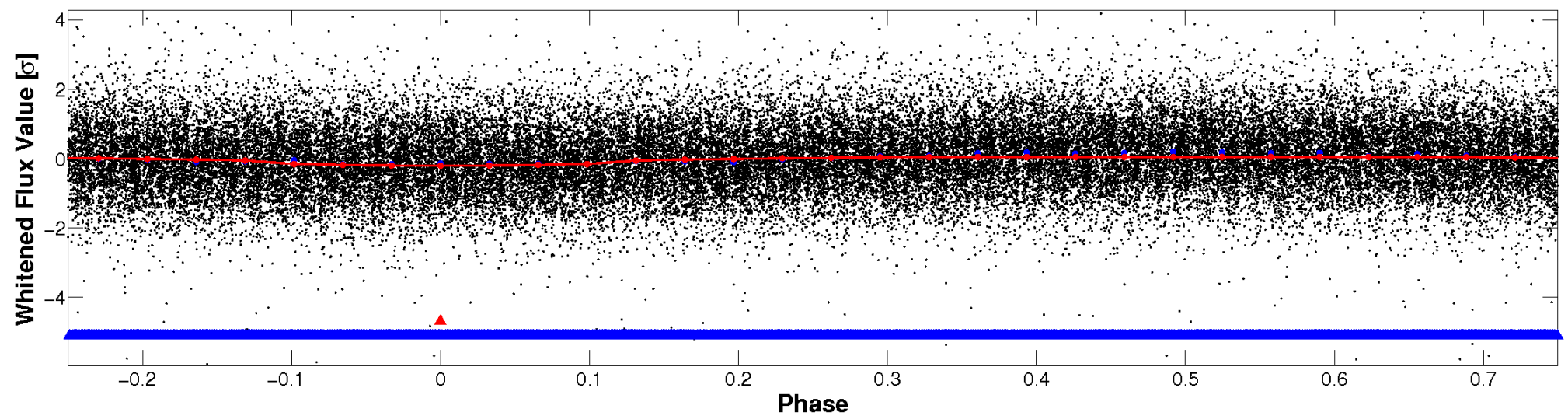


Non-Whitened Vs. Whitened Light Curve

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

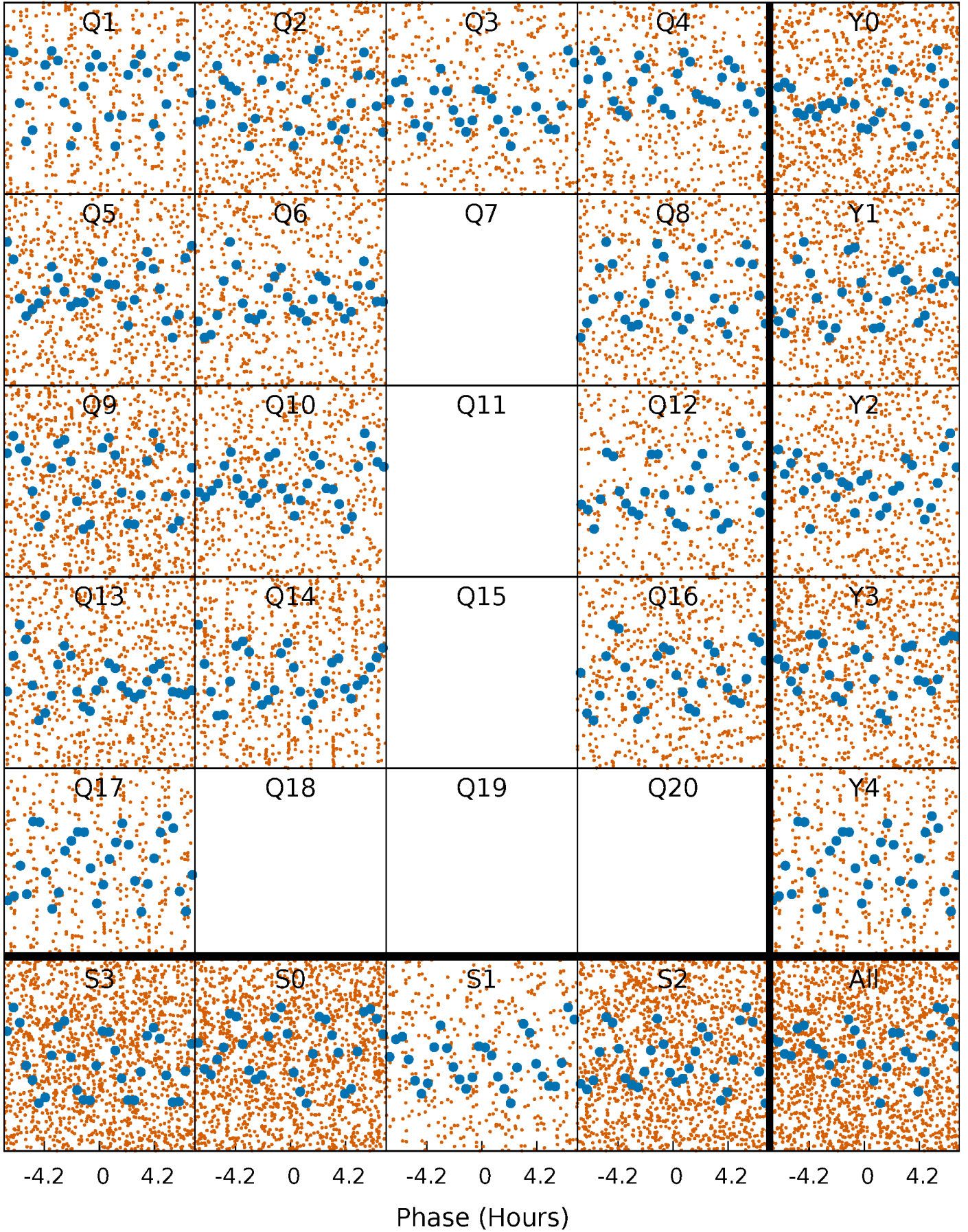


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



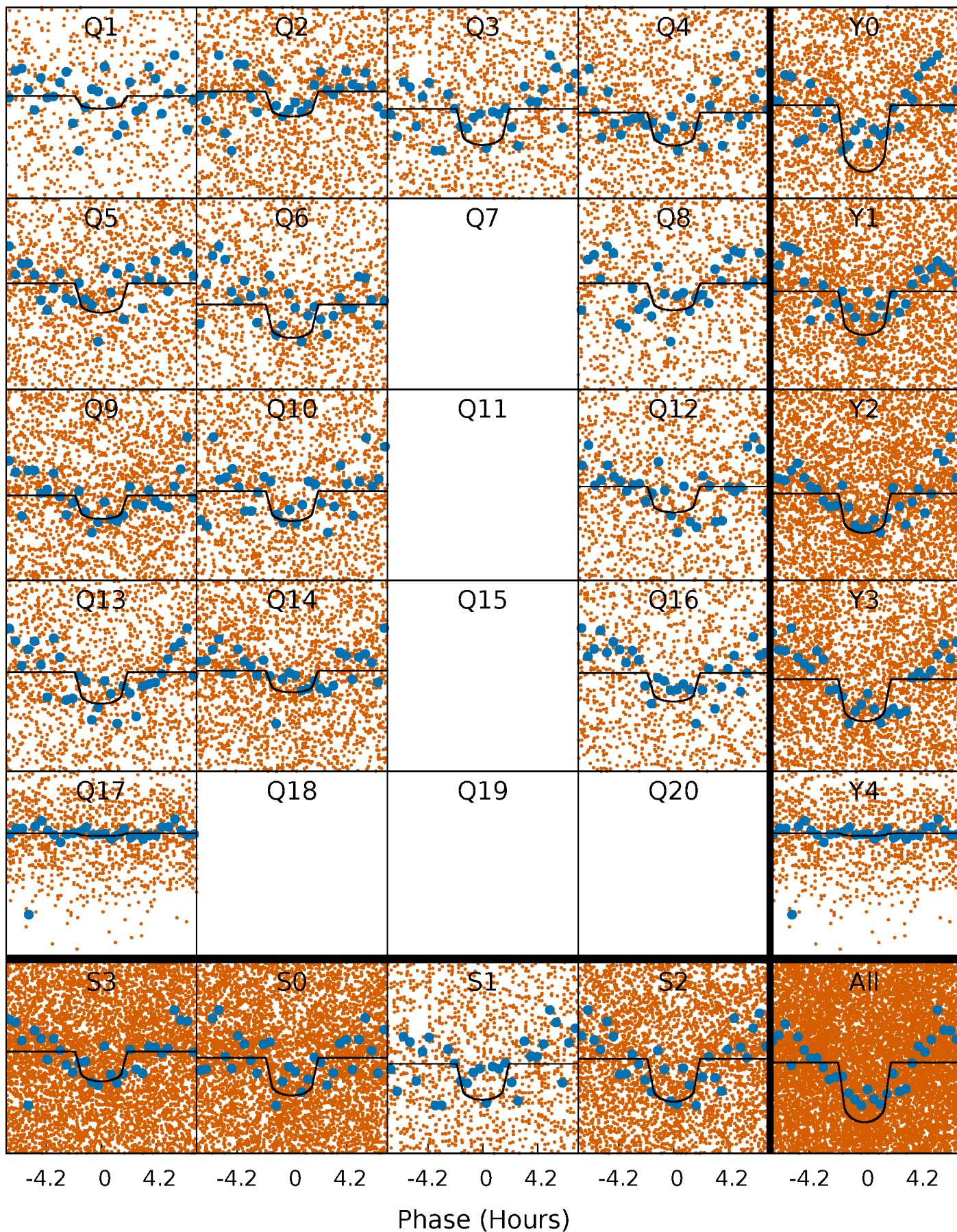
PDC Quarter-Phased Transit Curves

TCE 010415087-01 P= 0.623183 Days $T_0=131.621702$ (BKJD)



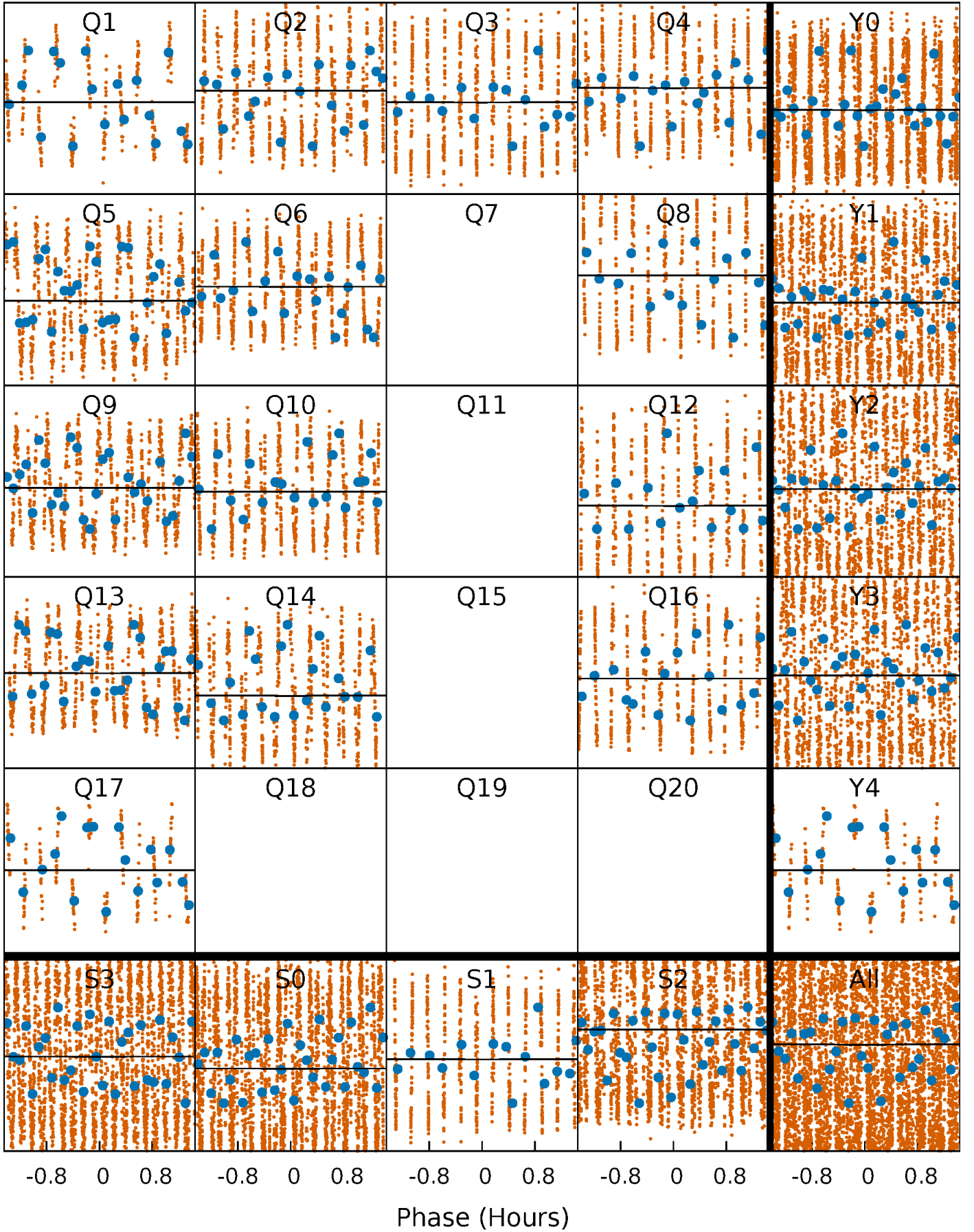
DV Quarter-Phased Transit Curves

TCE 010415087-01 P= 0.623183 Days $T_0=131.621702$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

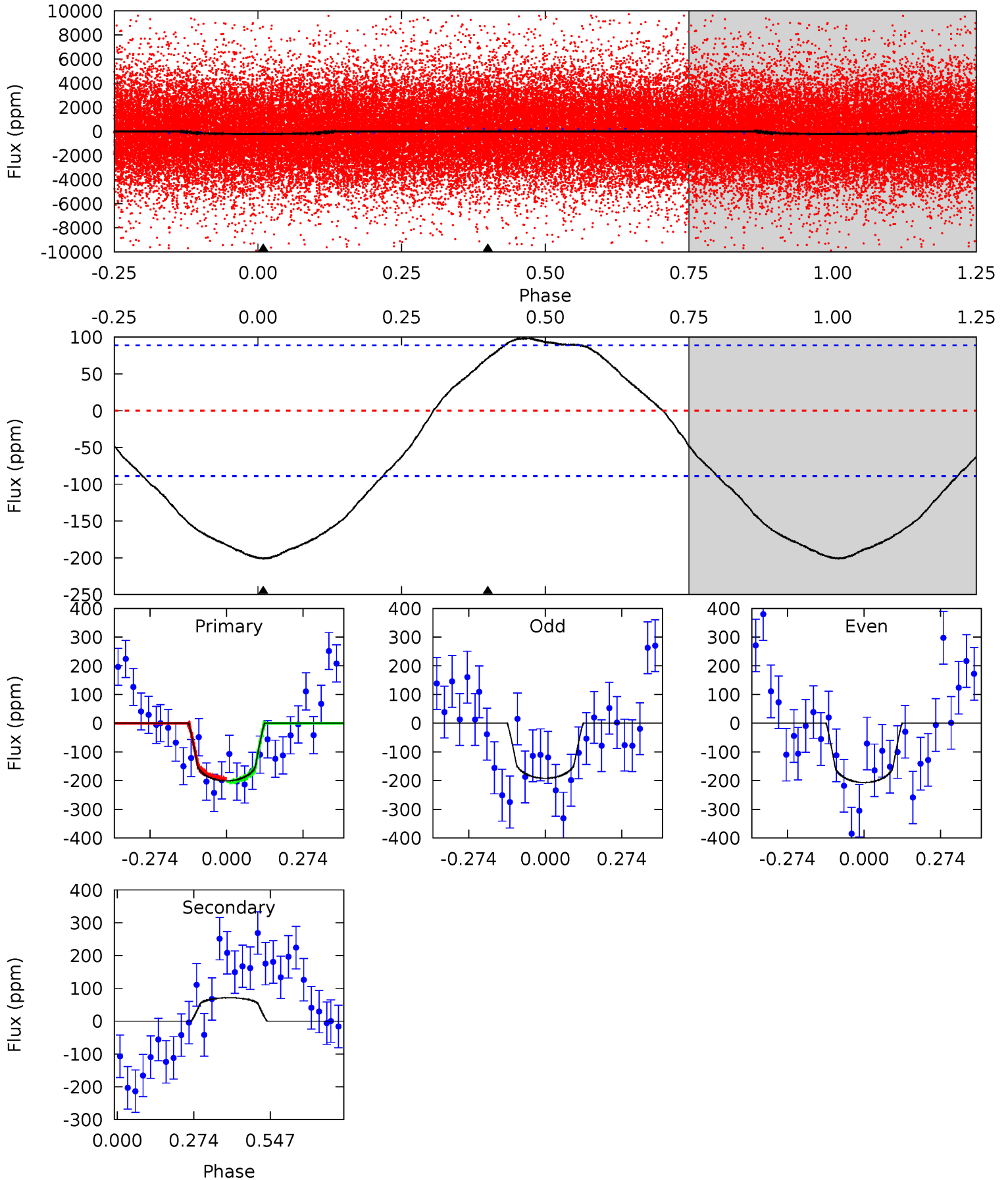
TCE 010415087-01 P= 0.623210 Days $T_0=131.591186$ (BKJD)



DV Model-Shift Uniqueness Test

010415087-01, P = 0.623183 Days, E = 130.998519 Days

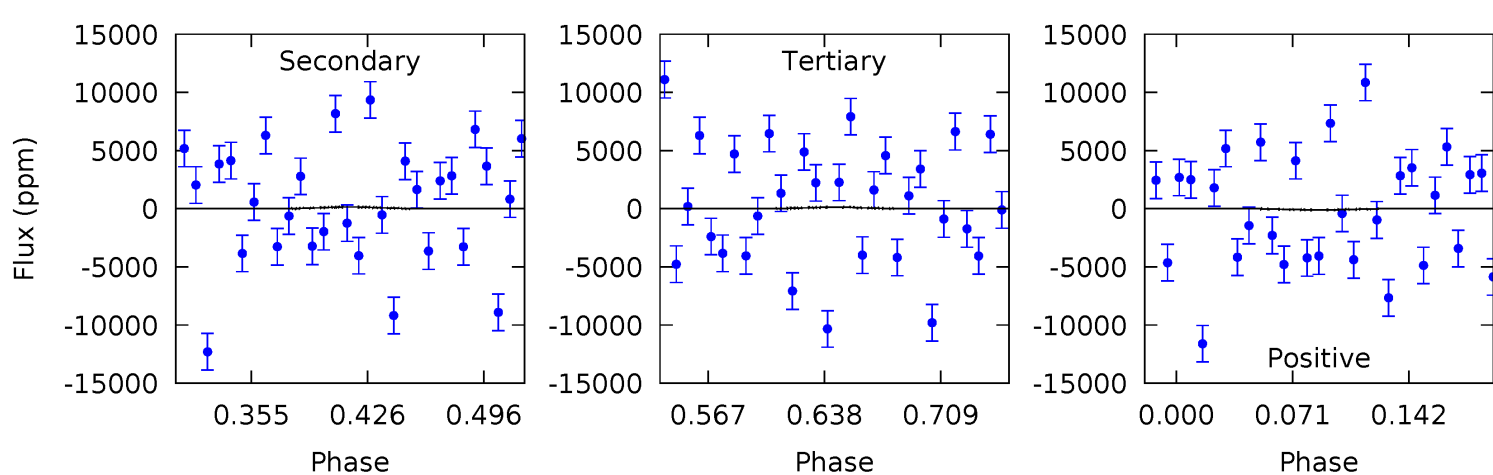
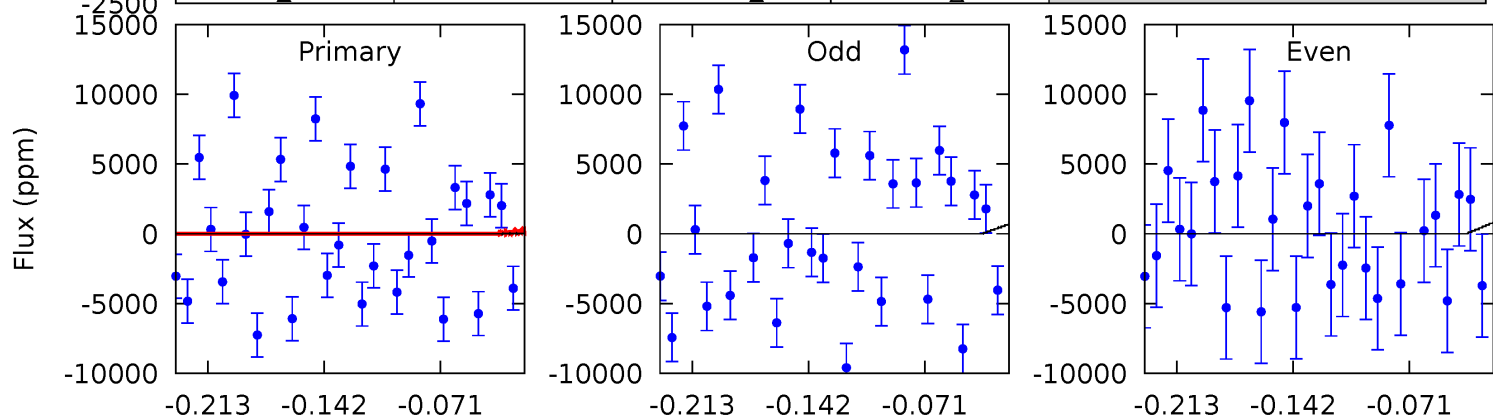
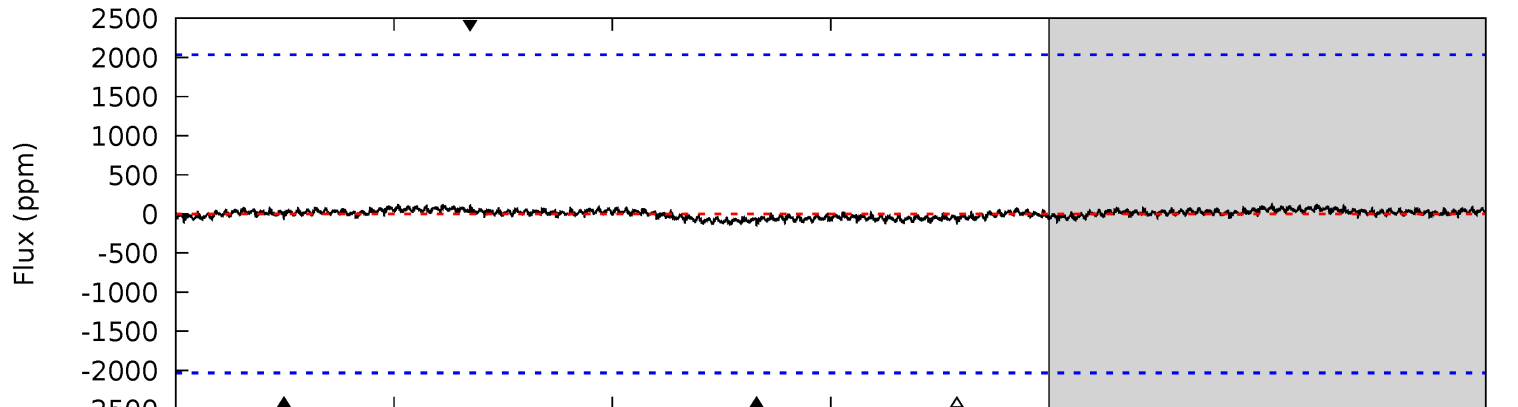
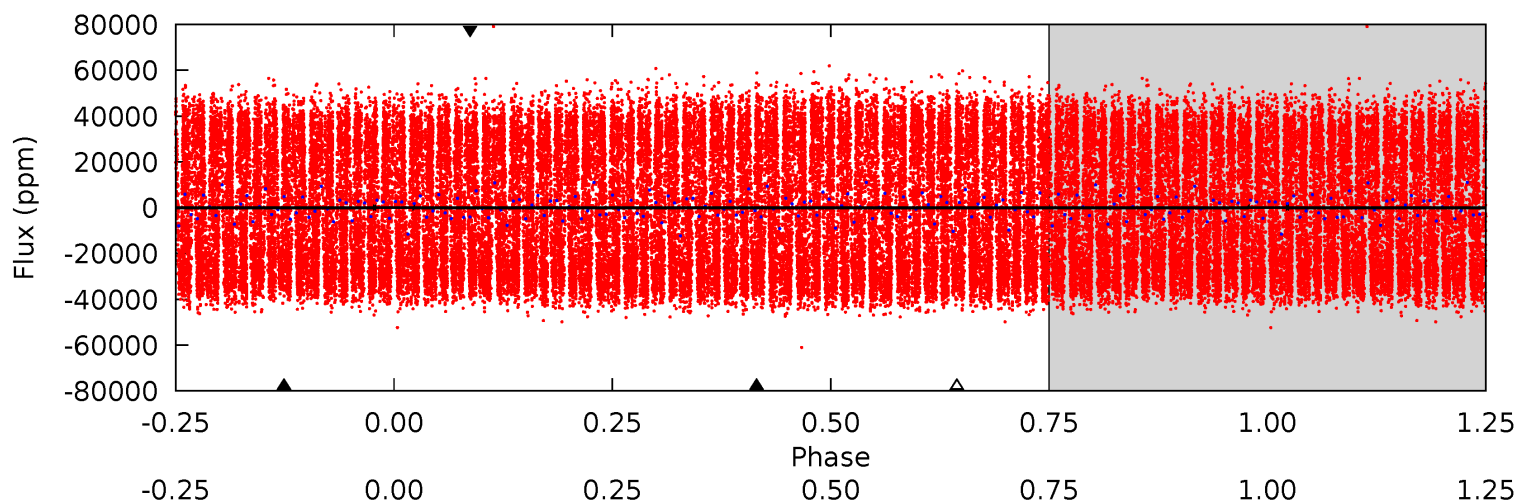
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.82	-3.50	0	0	4.35	1.09	1.25	9.82	9.82	-3.50	-3.50	0.35	0.88	0.33	0.25



Alt Model-Shift Uniqueness Test

010415087-01, P = 0.623210 Days, E = 130.967976 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.14	0.35	0.30	0.24	4.64	1.81	0.11	-0.16	-0.10	0.04	0.10	0.27	-0.38	0.45	0.17



Stellar Parameters For KIC 010415087

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7242^{+79}_{-79}	$3.956^{+0.162}_{-0.108}$	$-0.100^{+0.150}_{-0.150}$	$2.231^{+0.402}_{-0.491}$	$1.640^{+0.148}_{-0.164}$	$0.208^{+0.175}_{-0.070}$
	+1%/-1%	+4%/-3%	+150%/-150%	+18%/-22%	+9%/-10%	+84%/-33%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 010415087-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	71 ± 20	$4.88^{+3.80}_{-3.17}$	5127^{+233}_{-276}	-5281^{+581}_{-2906}	$-0.471^{+0.335}_{-3.760}$
Alt.	-152 ± 439	$3.67^{+3.41}_{-2.43}$	5132^{+243}_{-289}	5348^{+8416}_{-12965}	$1.153^{+16.875}_{-4.054}$

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 $A_{obs} \gg 1.0$

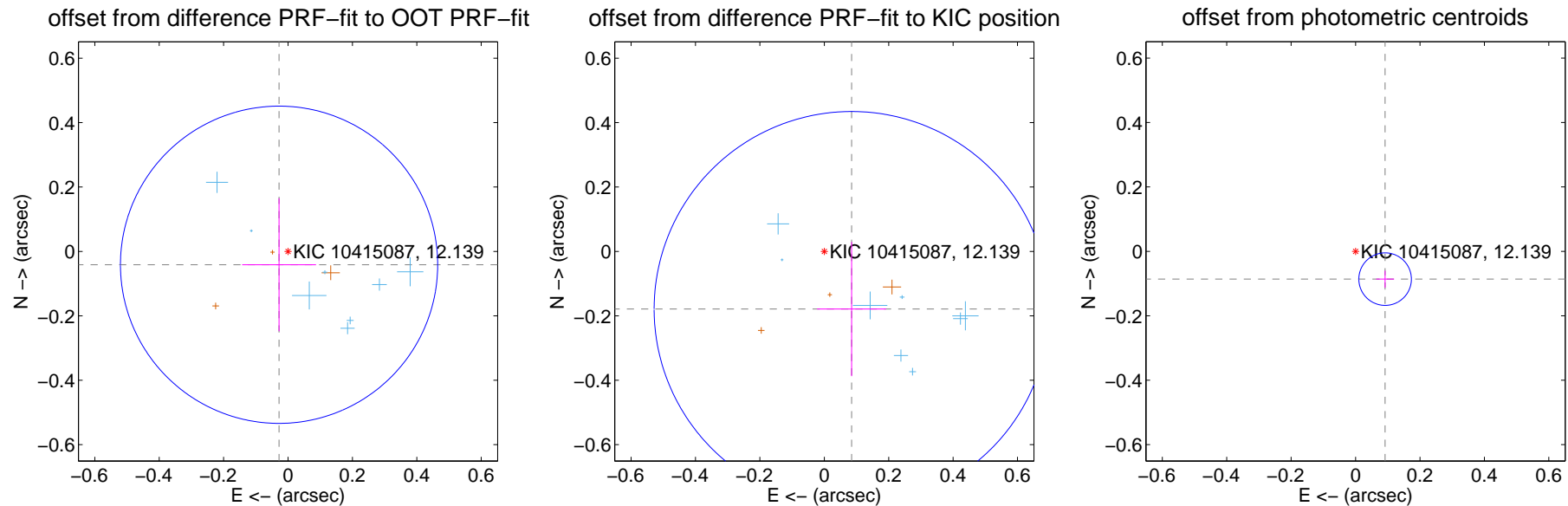
DV Centroid Data

Supplemental centroid analysis for 010415087-01. Kepler magnitude: 12.14. Transit SNR 20.46

There are 9 quarters with good PRF difference image offsets

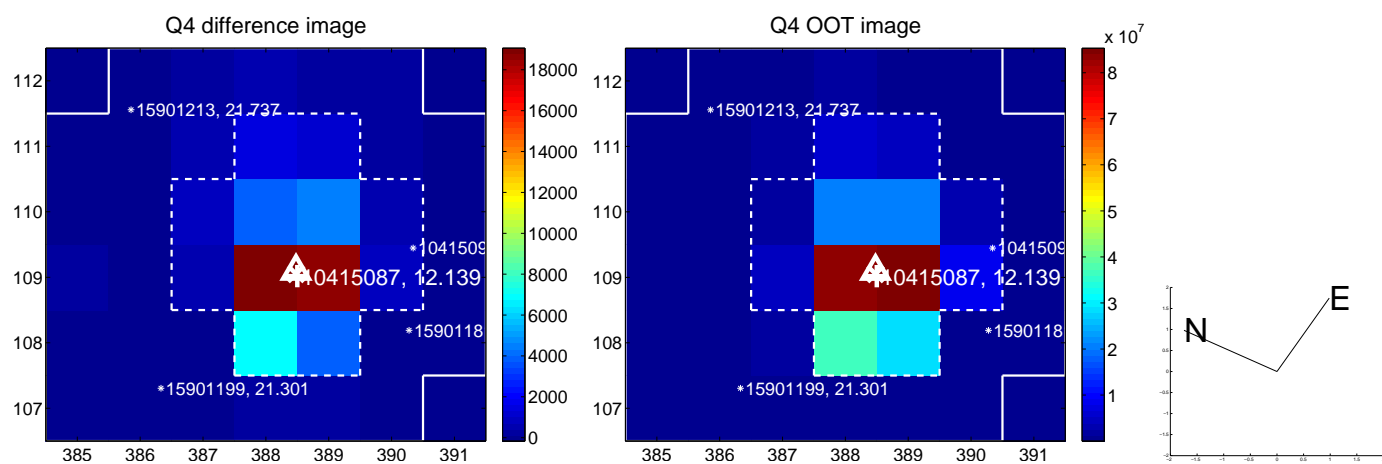
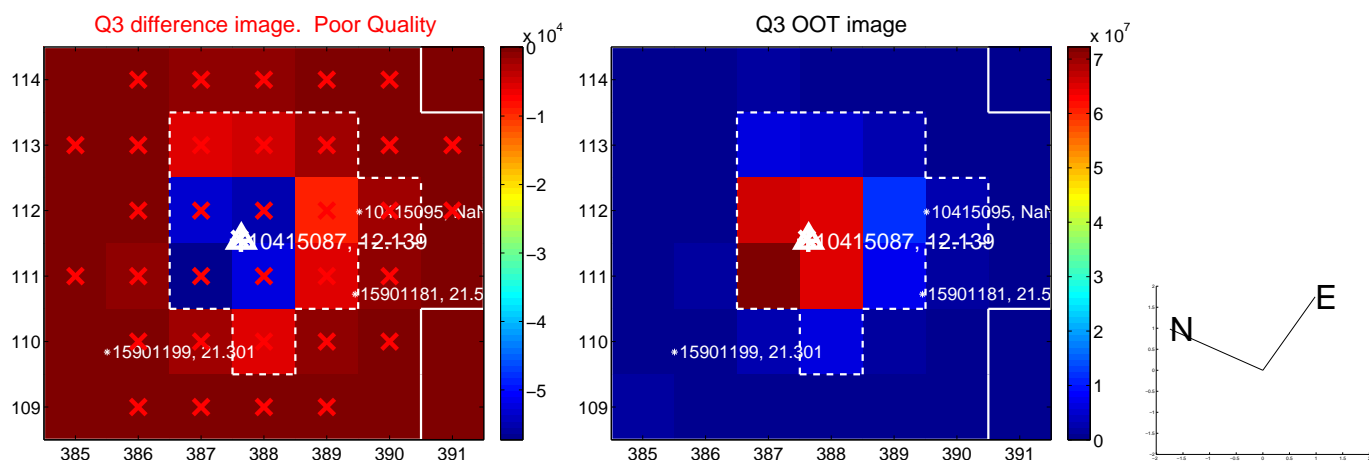
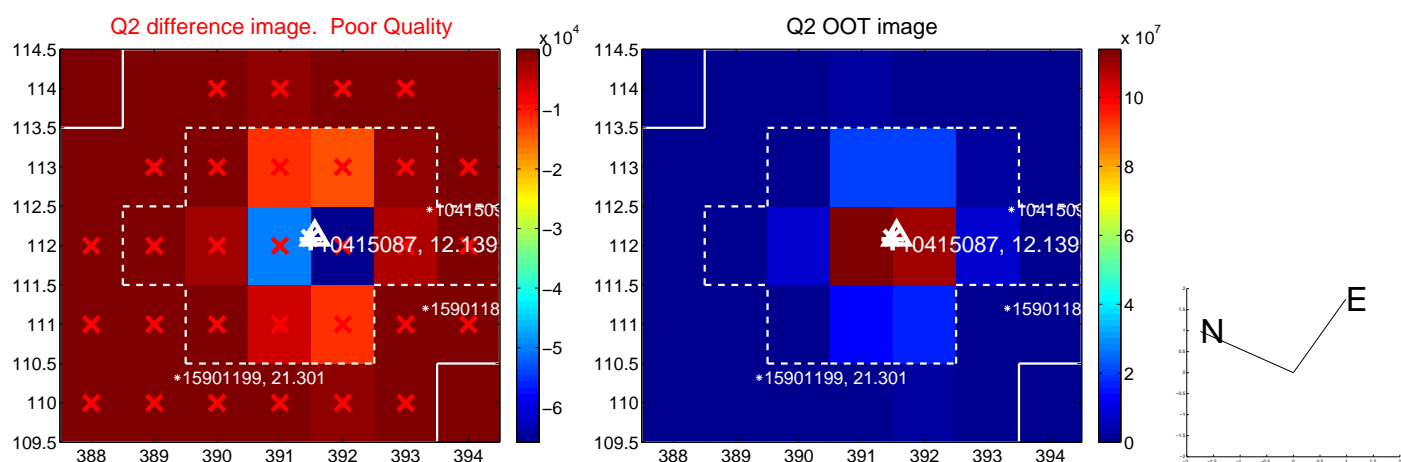
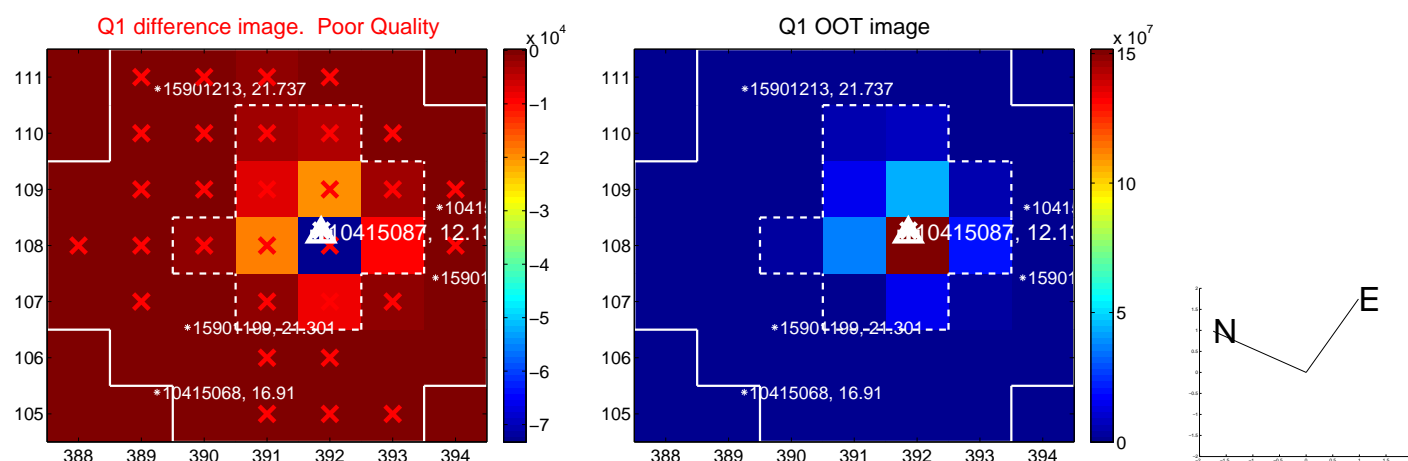
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.050 ± 0.164	0.30	0.028 ± 0.115	-0.041 ± 0.206
PRF-fit source offset from KIC position	0.198 ± 0.204	0.97	-0.085 ± 0.107	-0.179 ± 0.208
photometric centroid source offset	0.13 ± 0.03	4.63	-0.09 ± 0.03	-0.09 ± 0.03

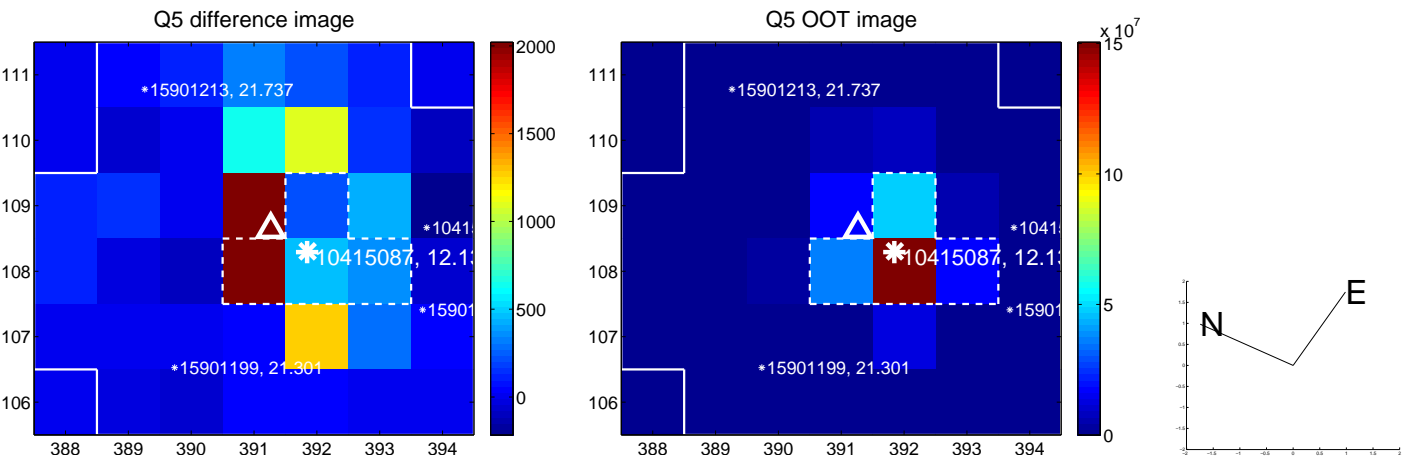


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

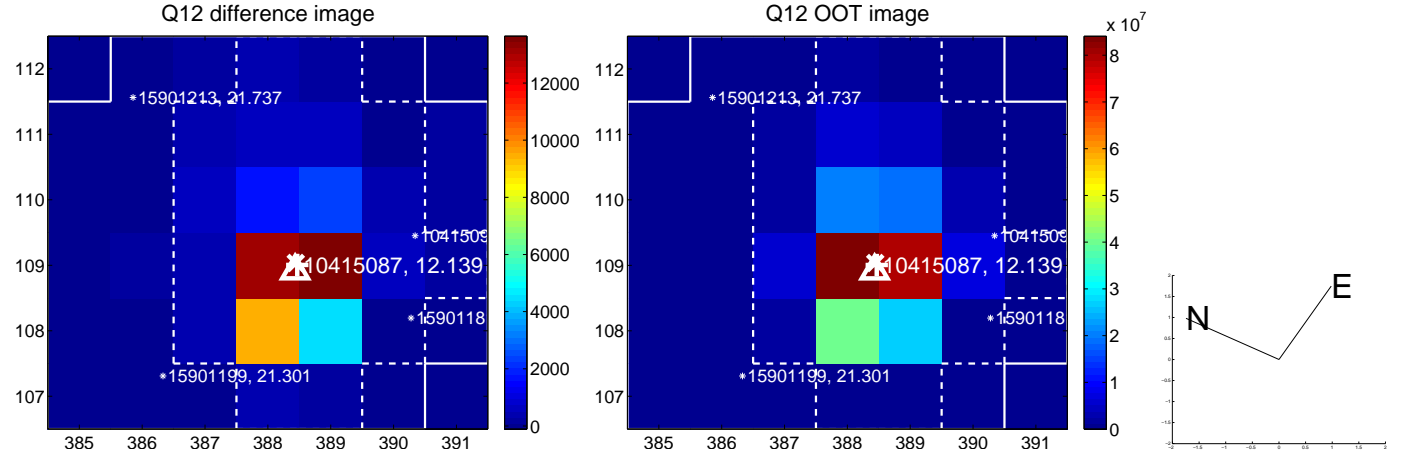
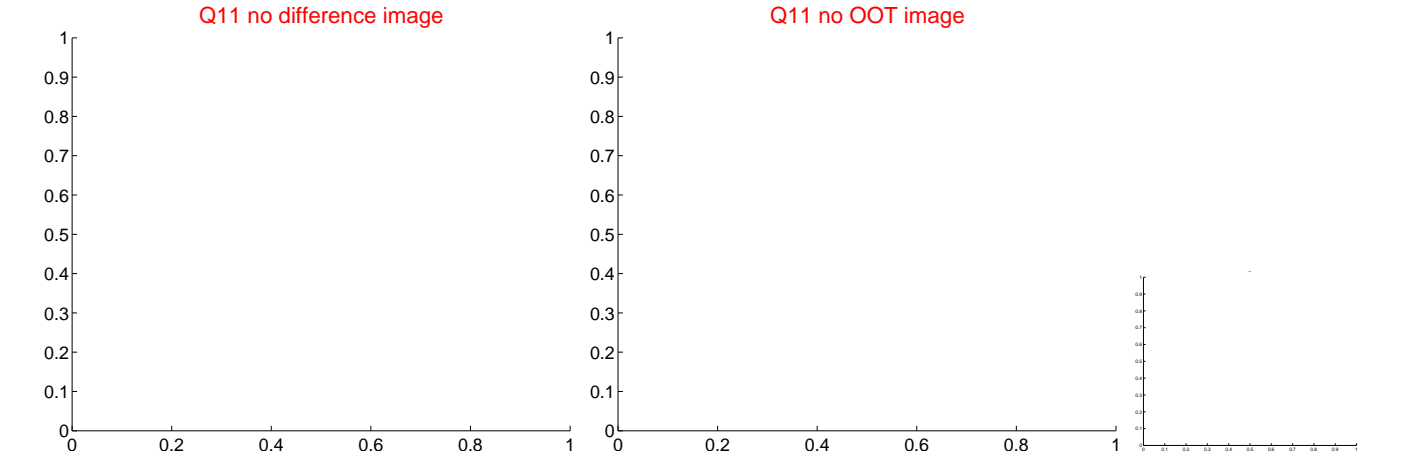
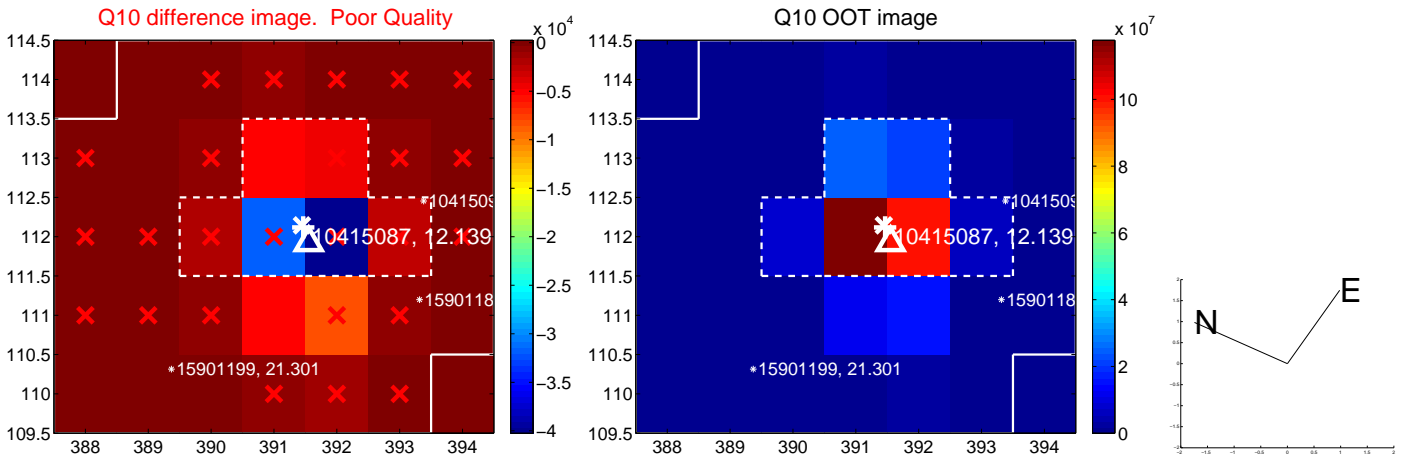
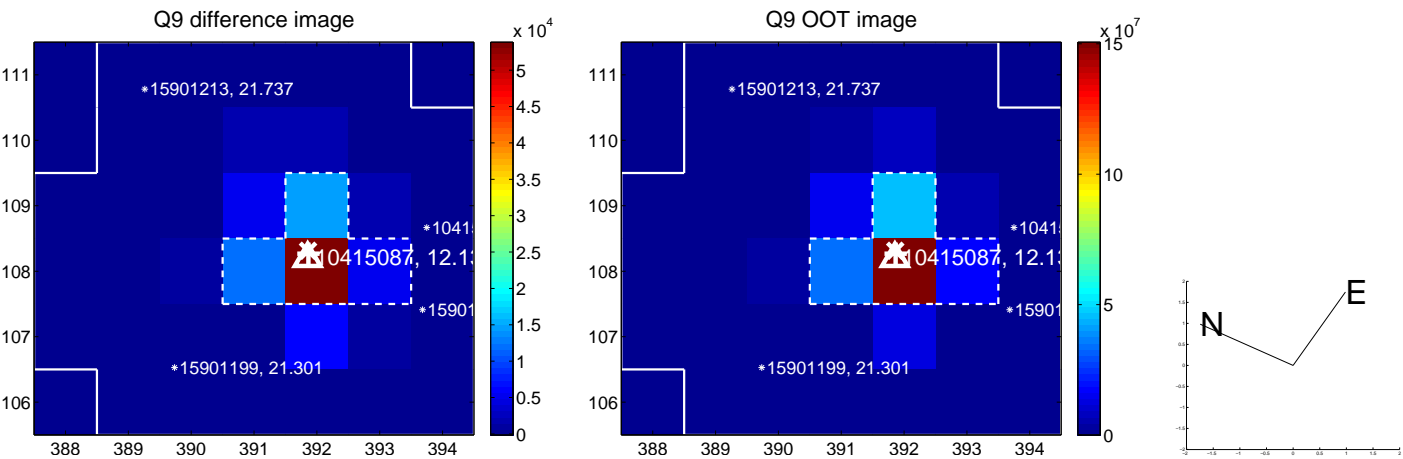
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



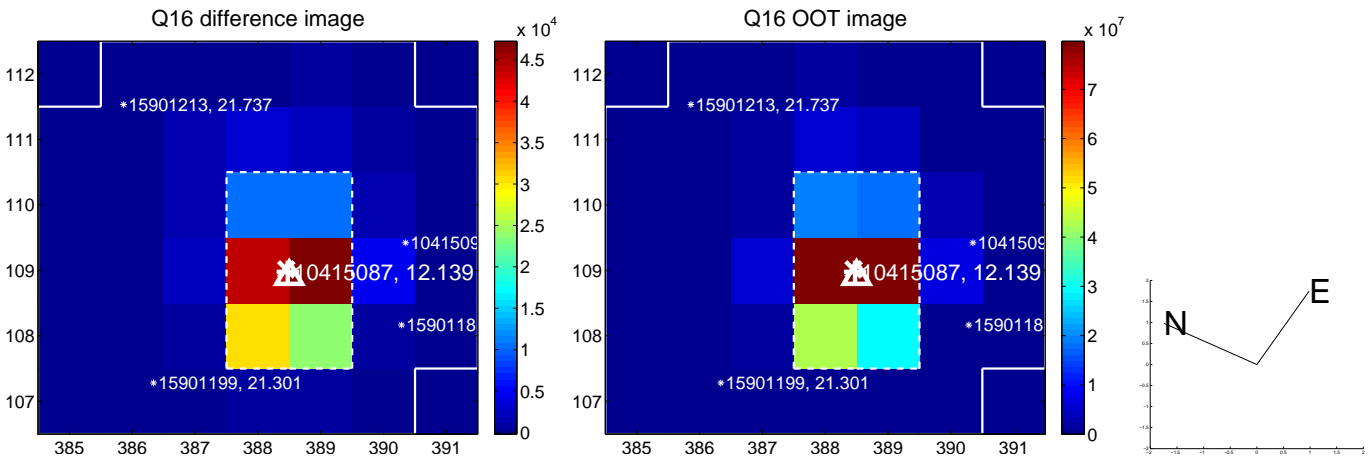
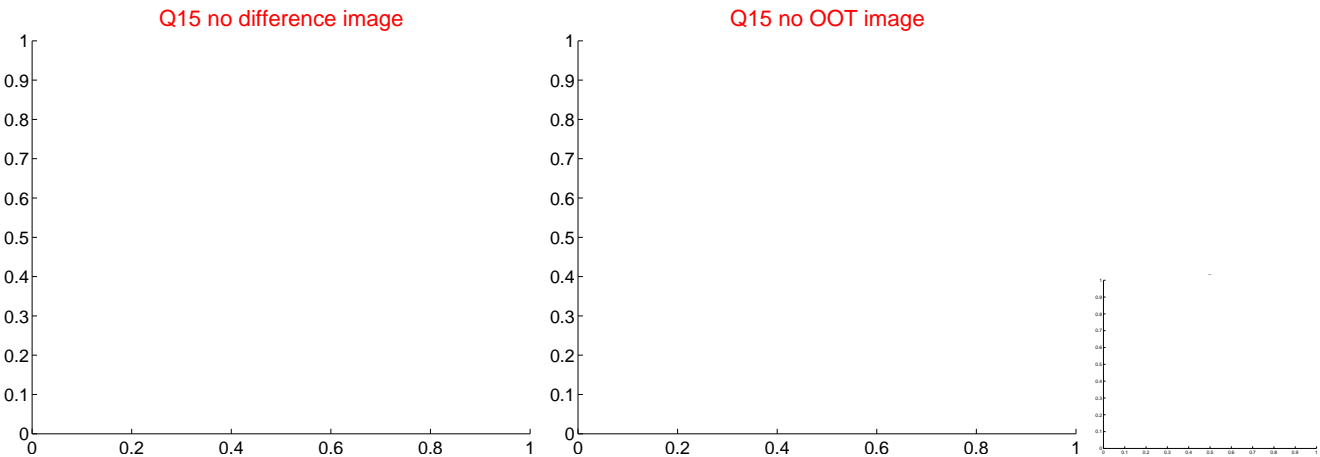
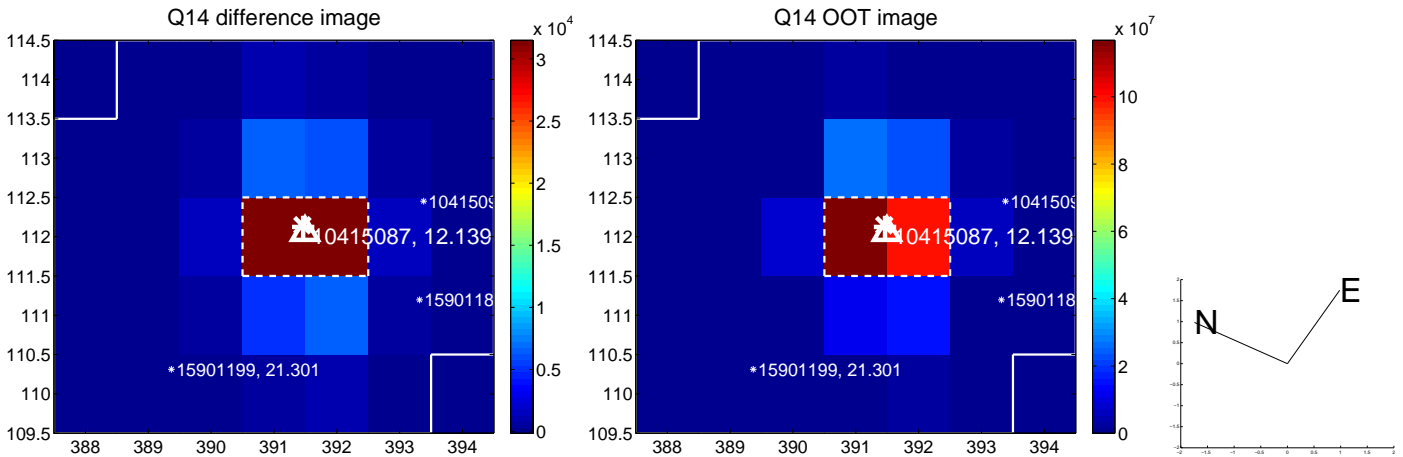
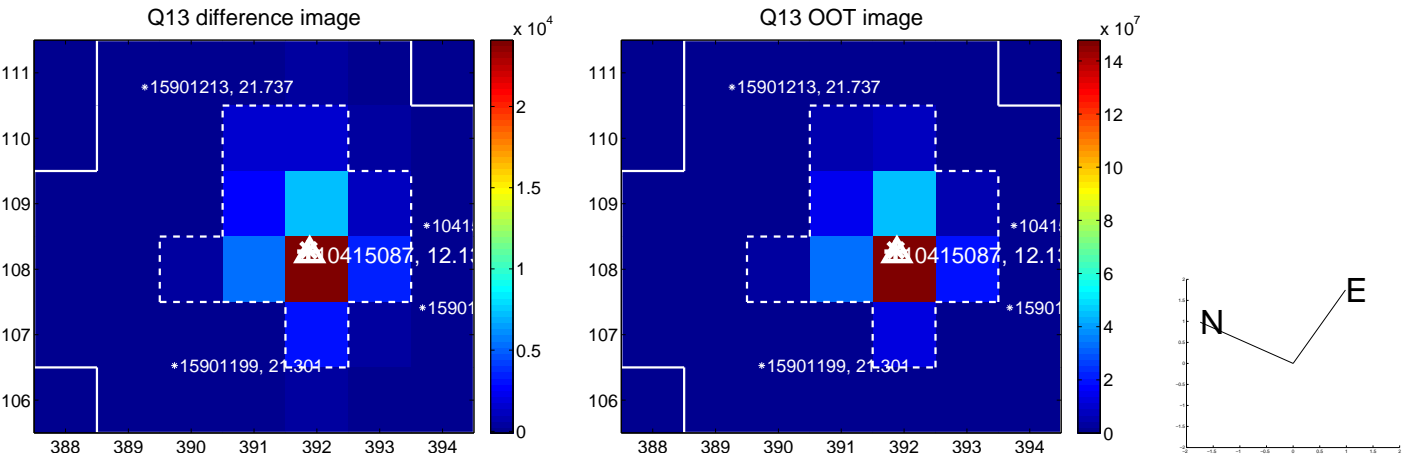
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



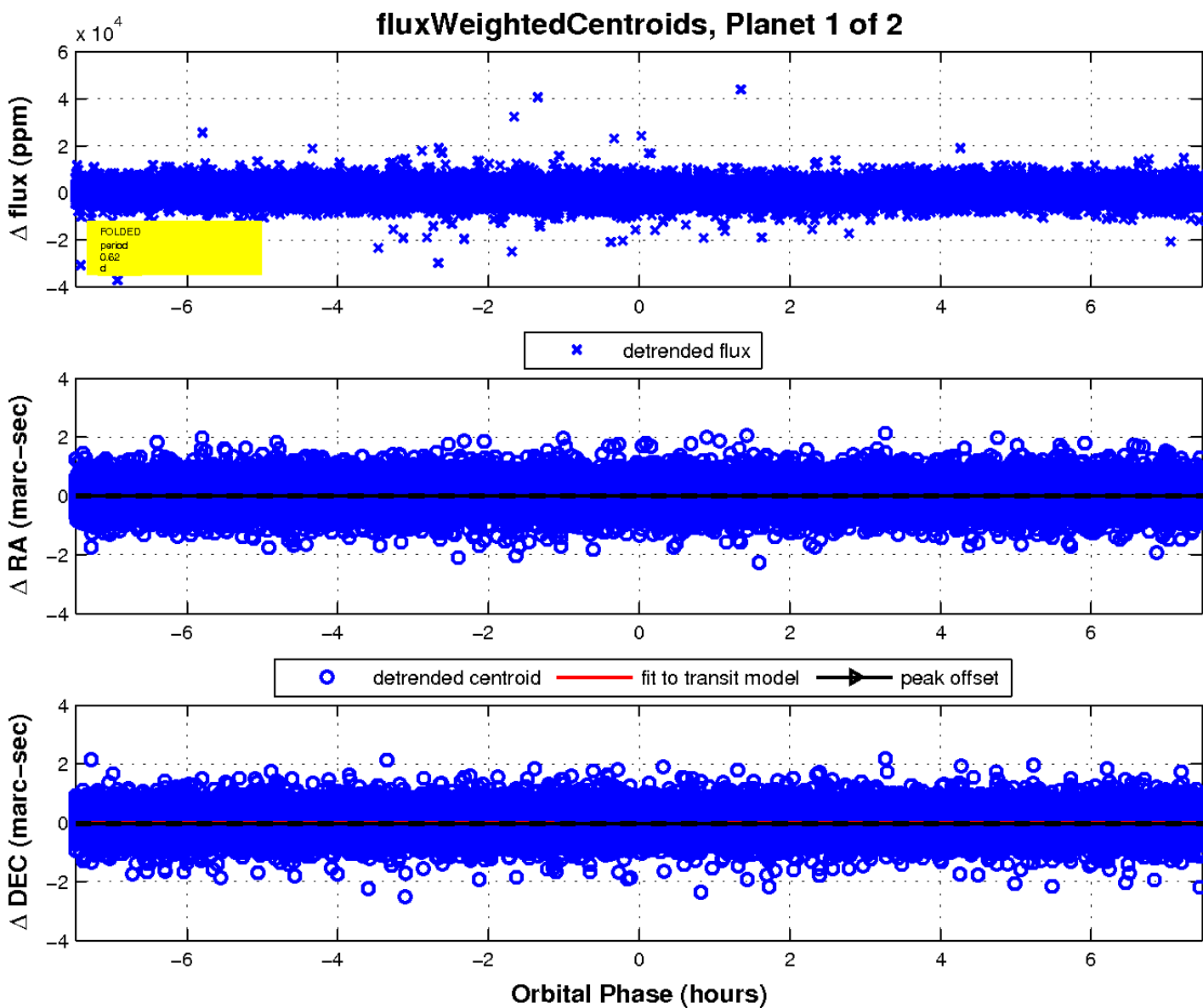
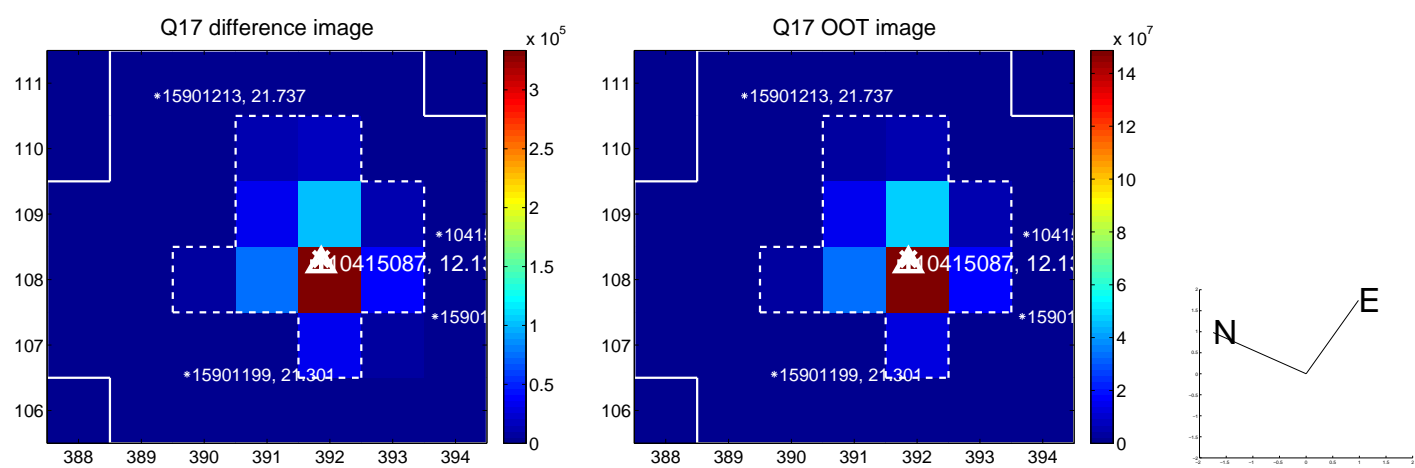
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

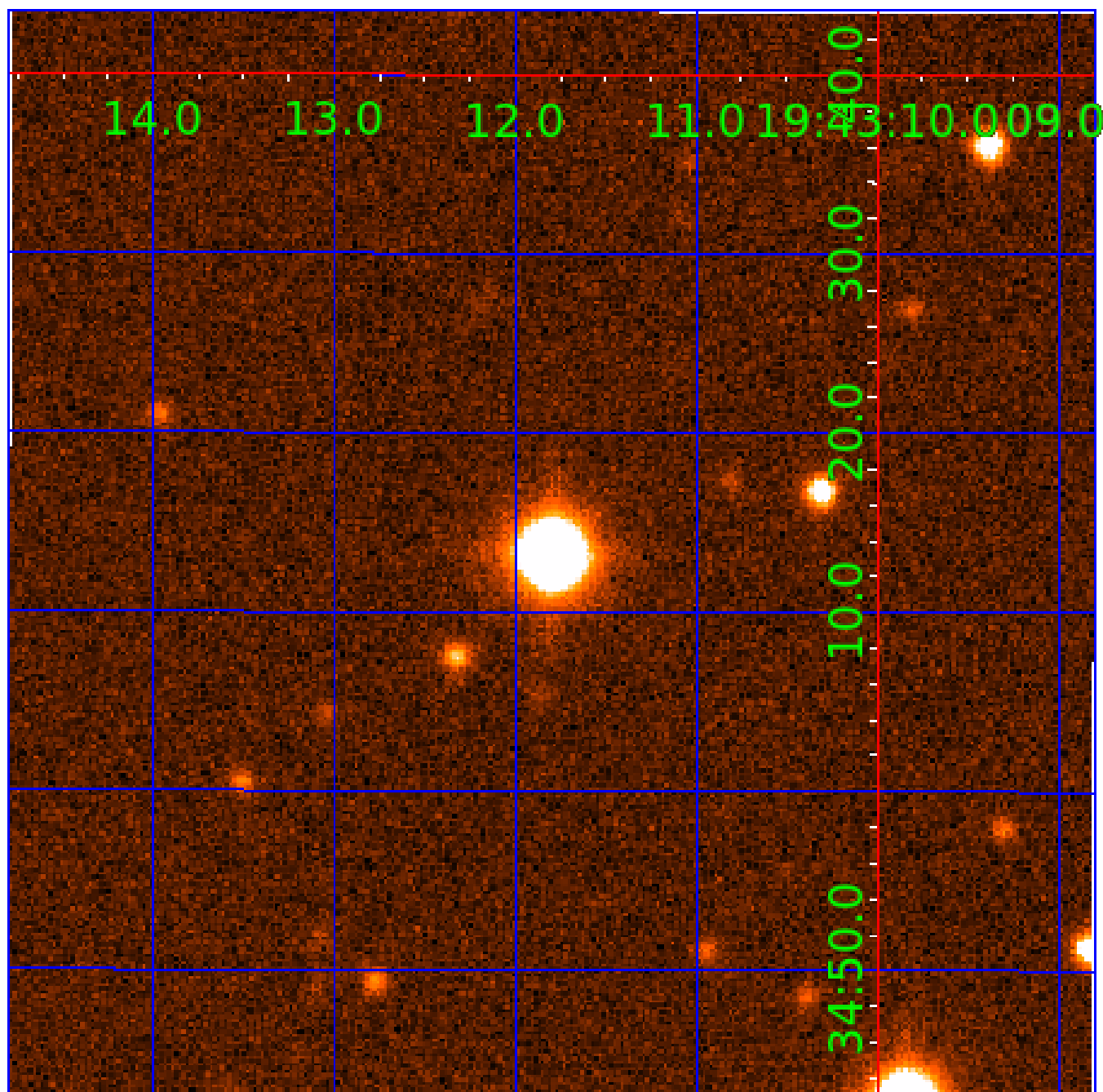


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010415087

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})
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010415087-02	OBS	No	0.683172	131.904744	183.0	1.500	10.9	-1.0	2.23	7242	3.07	38249.10

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010415087-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
010415087-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS

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

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

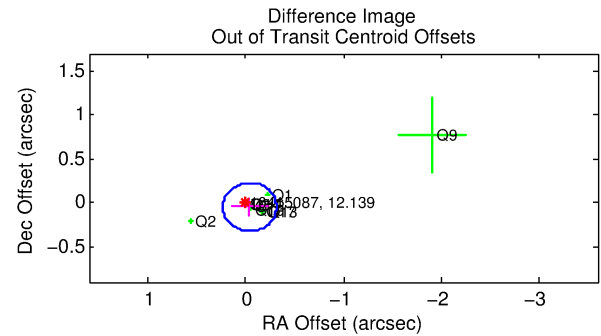
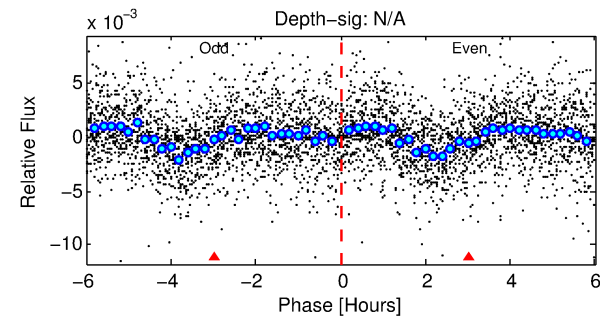
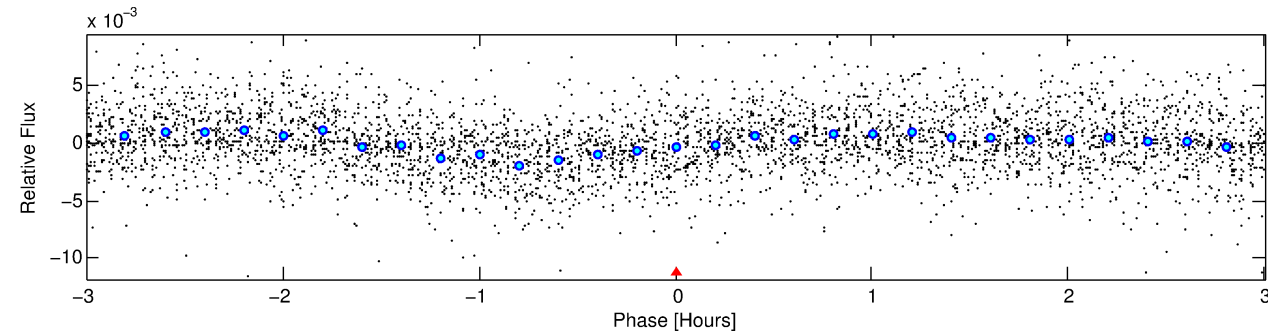
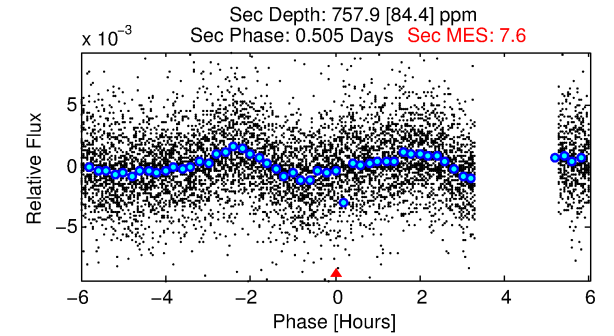
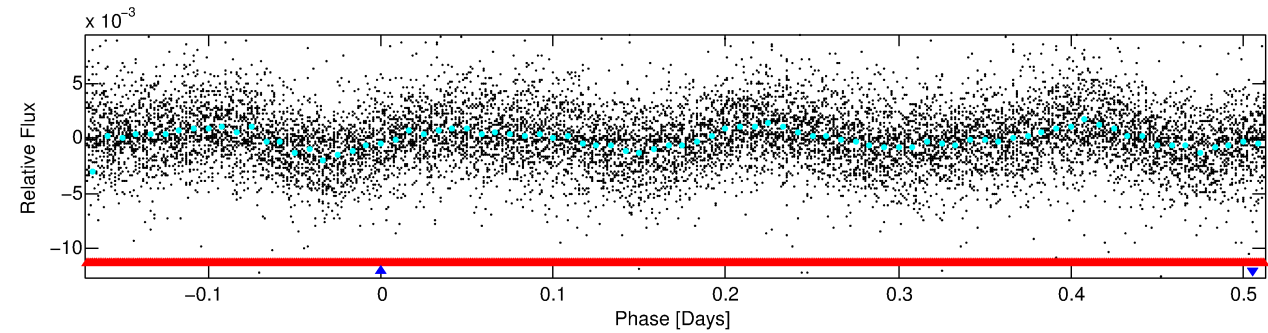
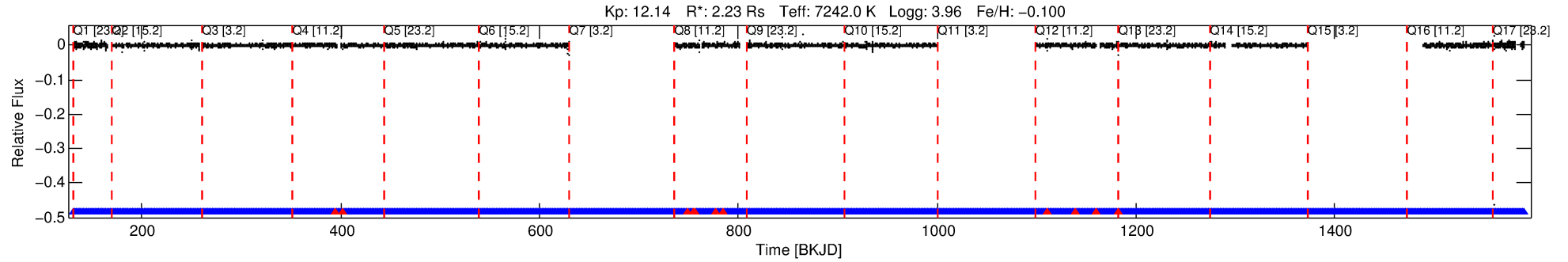
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010415087-02

No Significant Match Found

DV One-Page Summary

KIC: 10415087 Candidate: 2 of 2 Period: 0.683 d



TPS TCE Results:

Period = 0.68317 d
Epoch = 131.9047 BKJD

DV fit results are unavailable

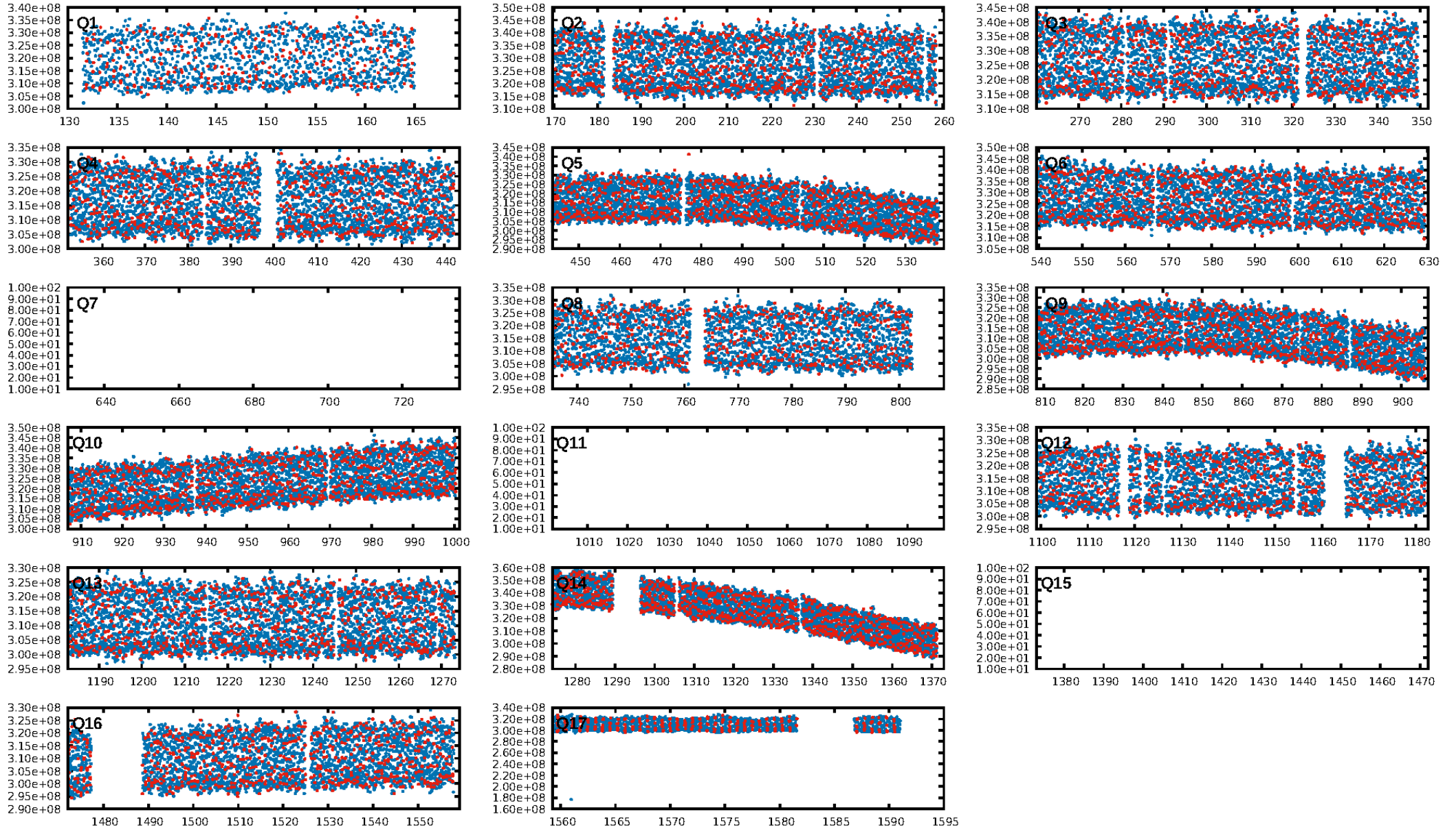
DV Diagnostic Results:

ShortPeriod-sig: 28.5% [0.36 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.98 [473/484]
GhostDiagnostic-chr: 0.3289
Centroid-sig: 19.3%
Centroid-so: 0.162 arcsec [14.97 σ]
OotOffset-rm: 0.061 arcsec [0.67 σ]
KicOffset-rm: 0.185 arcsec [2.30 σ]
OotOffset-st: 3/1/1/4 [9]
KicOffset-st: 3/1/1/4 [9]
DiffImageQuality-fgm: 0.78 [7/9]
DiffImageOverlap-fno: 0.89 [8/9]

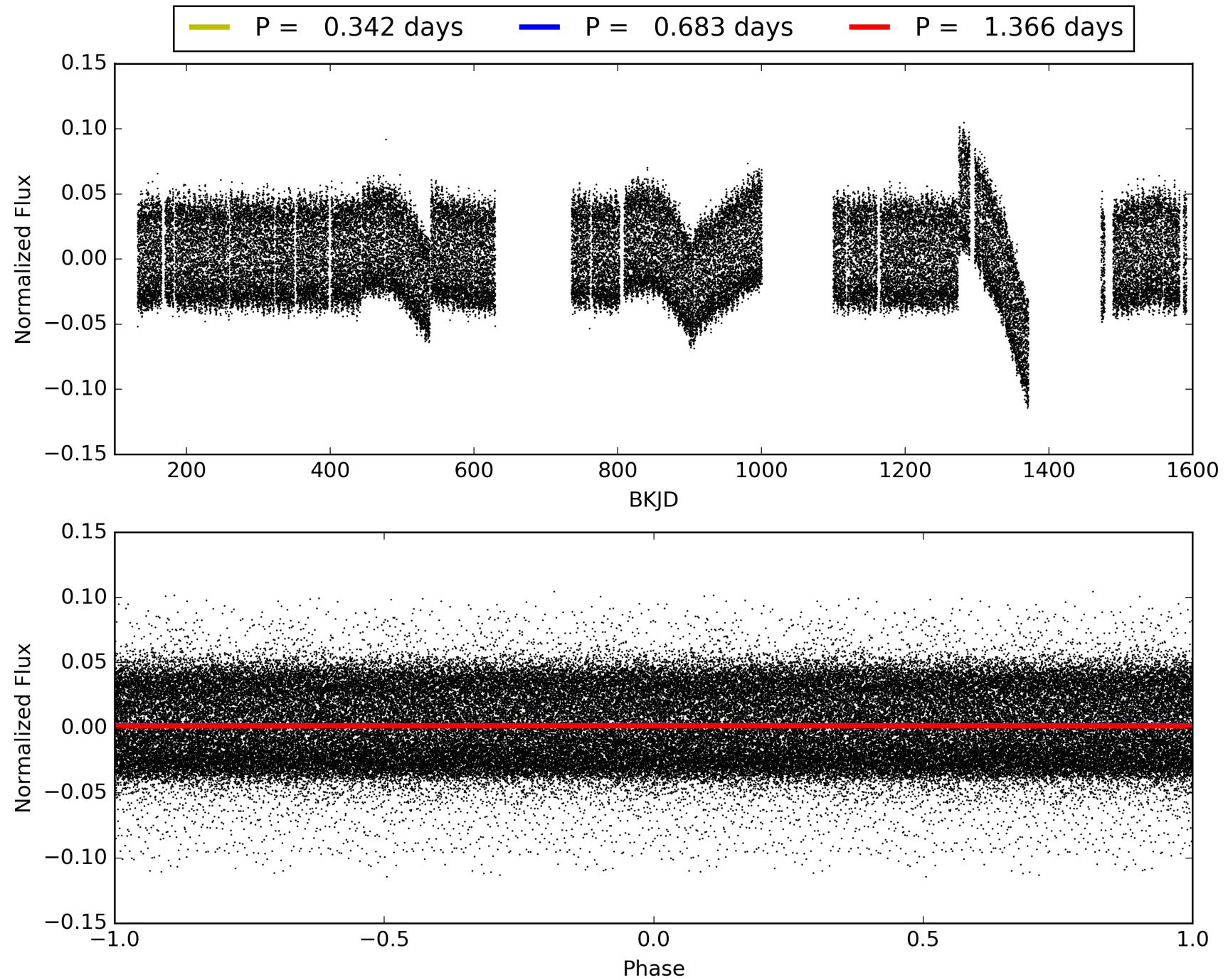
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 07:12:32 Z

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

TCE 010415087-02, PDC Light Curves

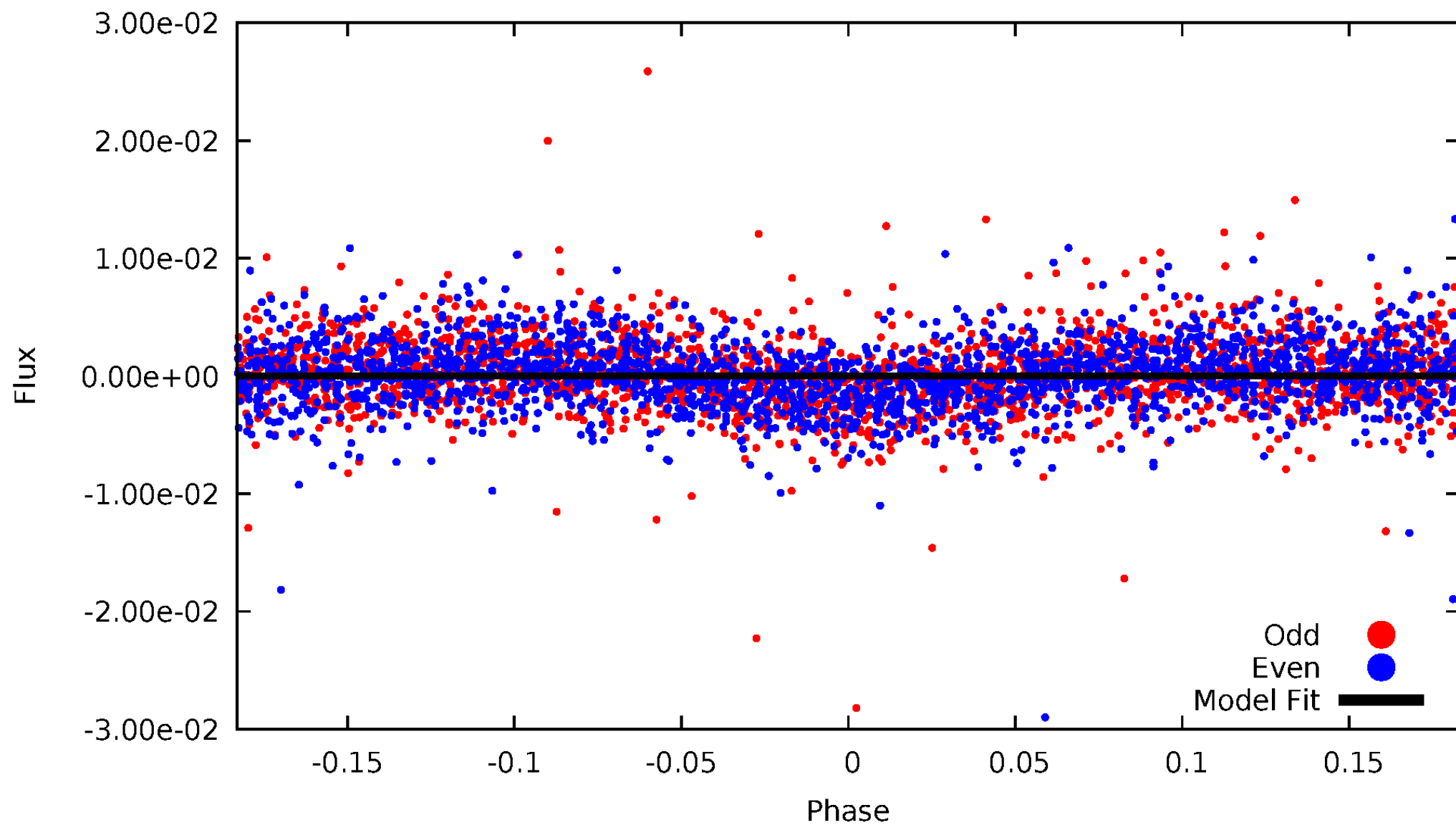


TCE 010415087-02



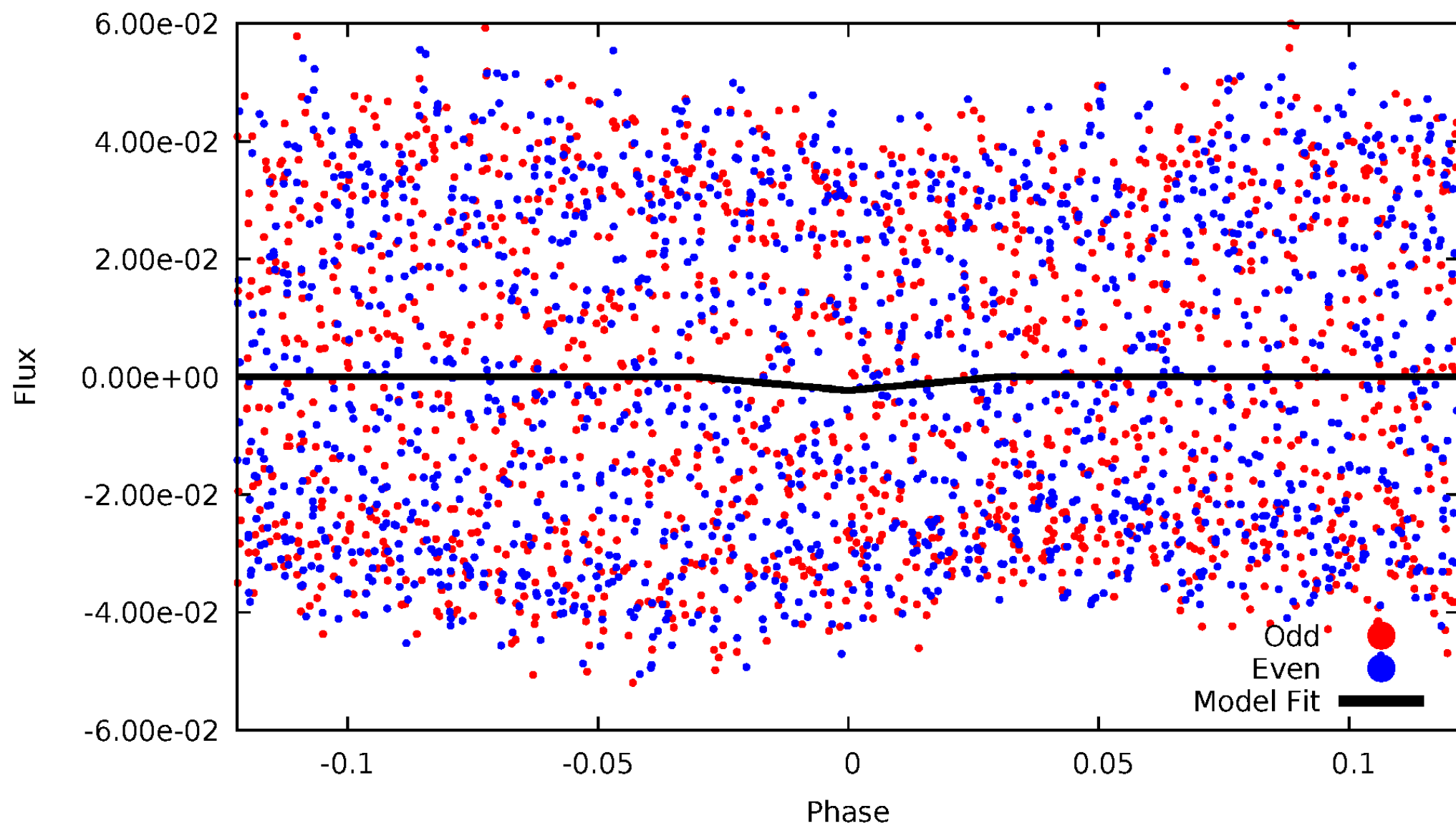
DV Odd/Even

TCE 010415087-02



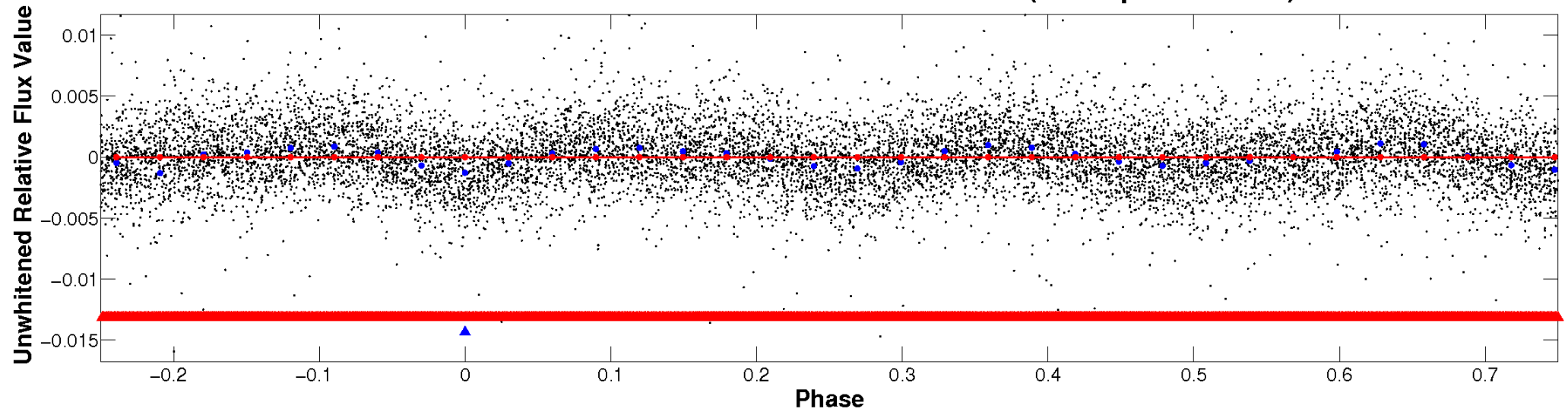
ALT Odd/Even

TCE 010415087-02

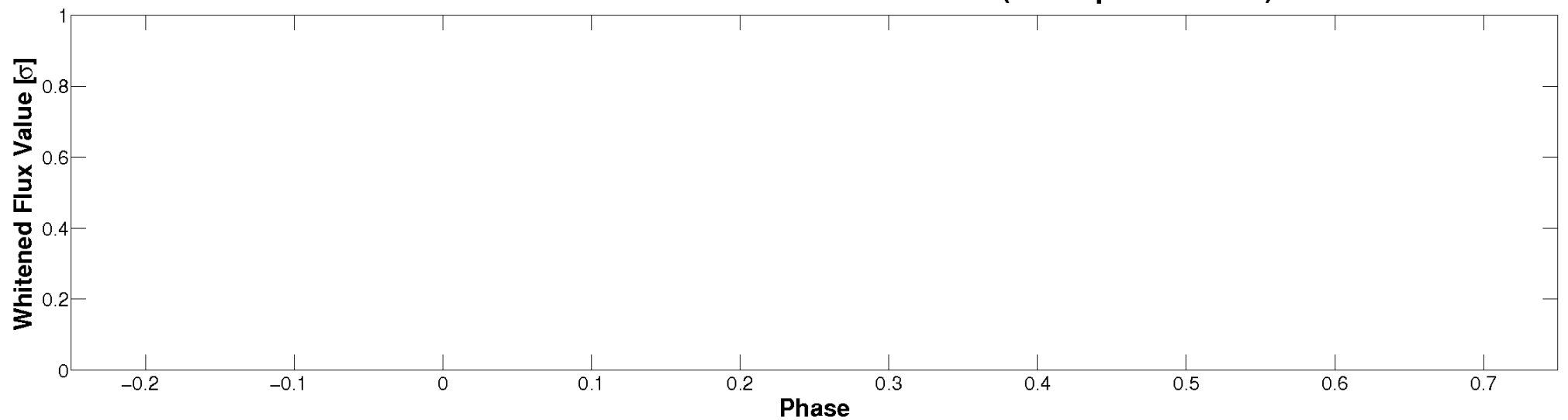


Non-Whitened Vs. Whitened Light Curve

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

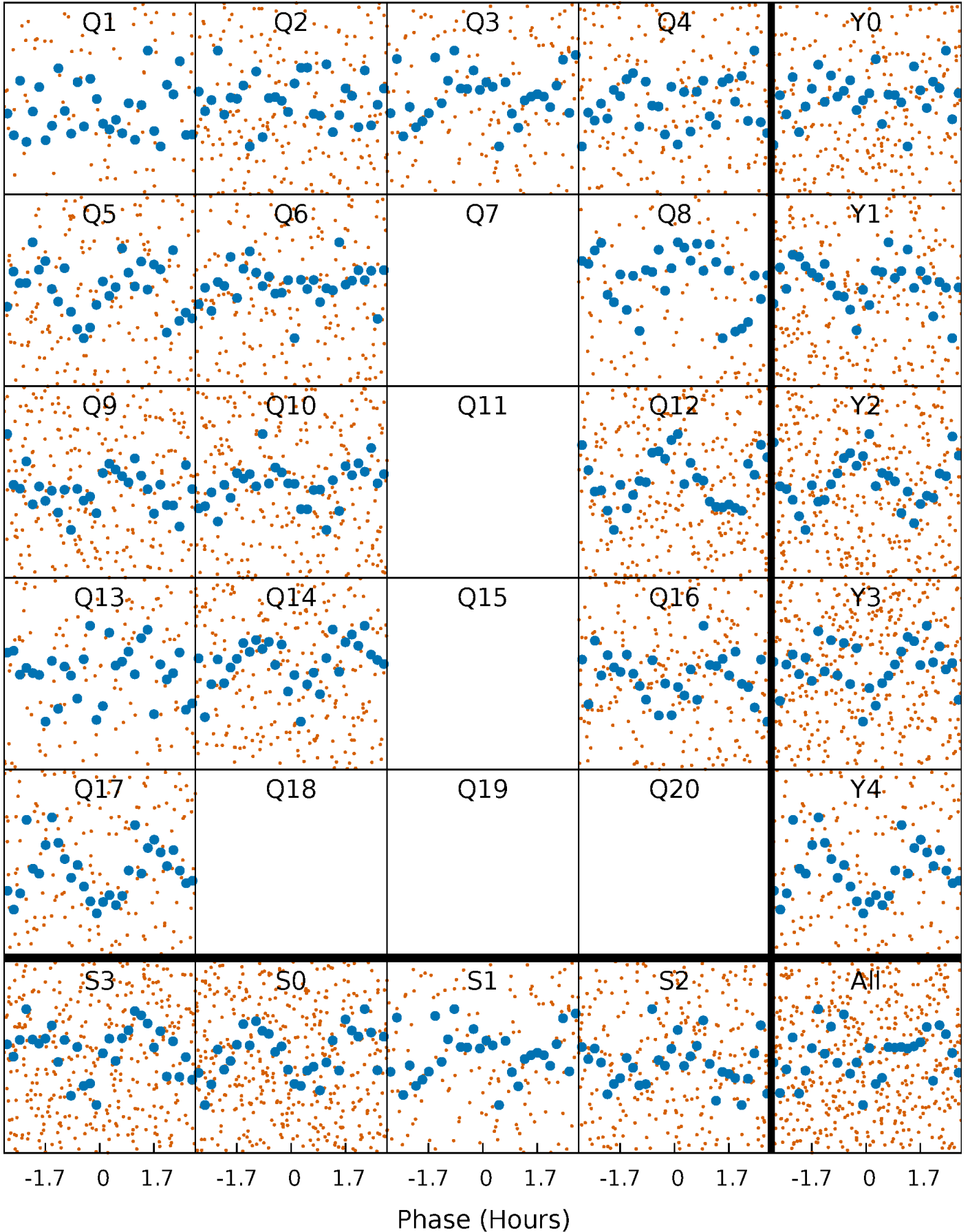


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



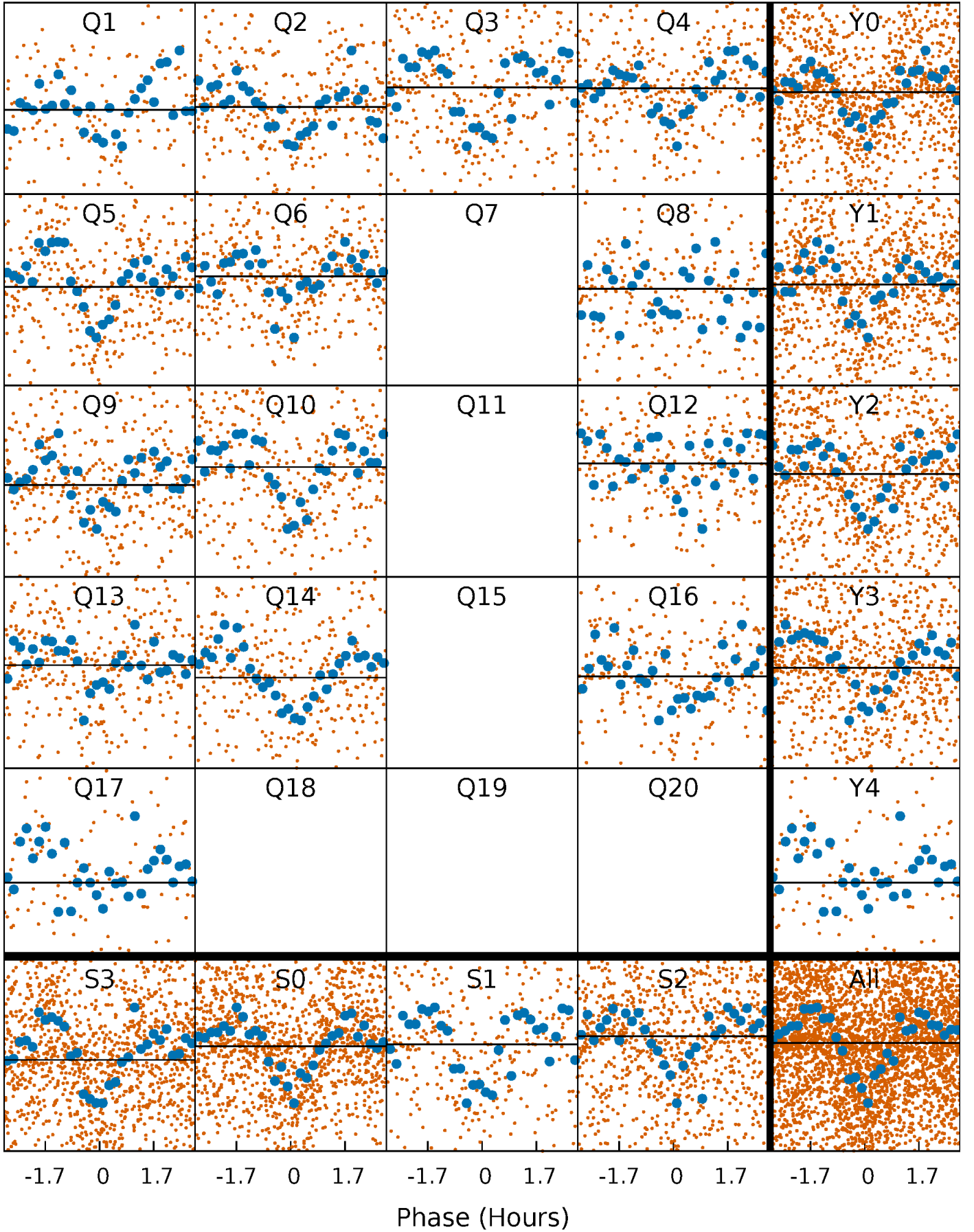
PDC Quarter-Phased Transit Curves

TCE 010415087-02 P= 0.683172 Days $T_0=131.904744$ (BKJD)



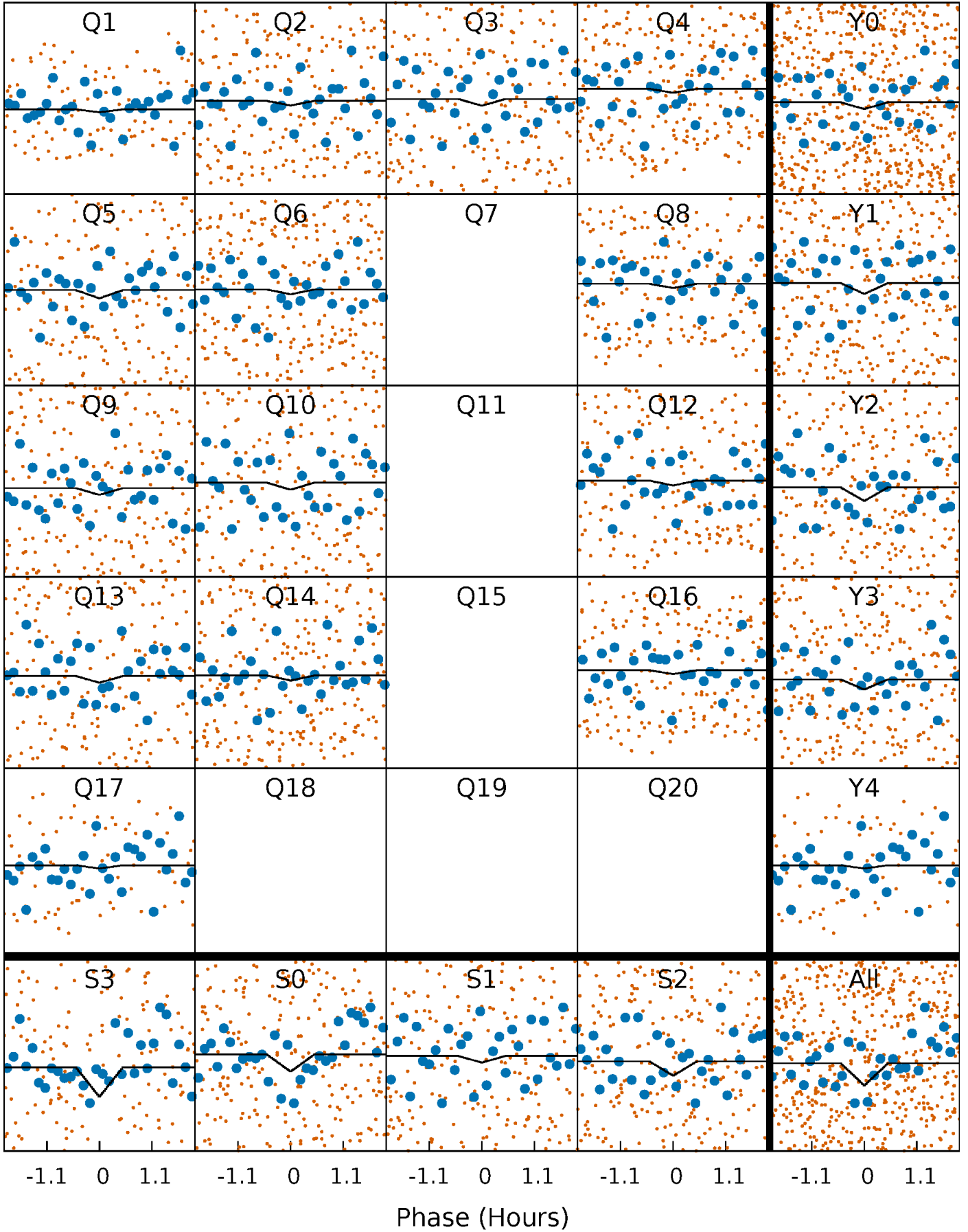
DV Quarter-Phased Transit Curves

TCE 010415087-02 P= 0.683172 Days $T_0=131.904744$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

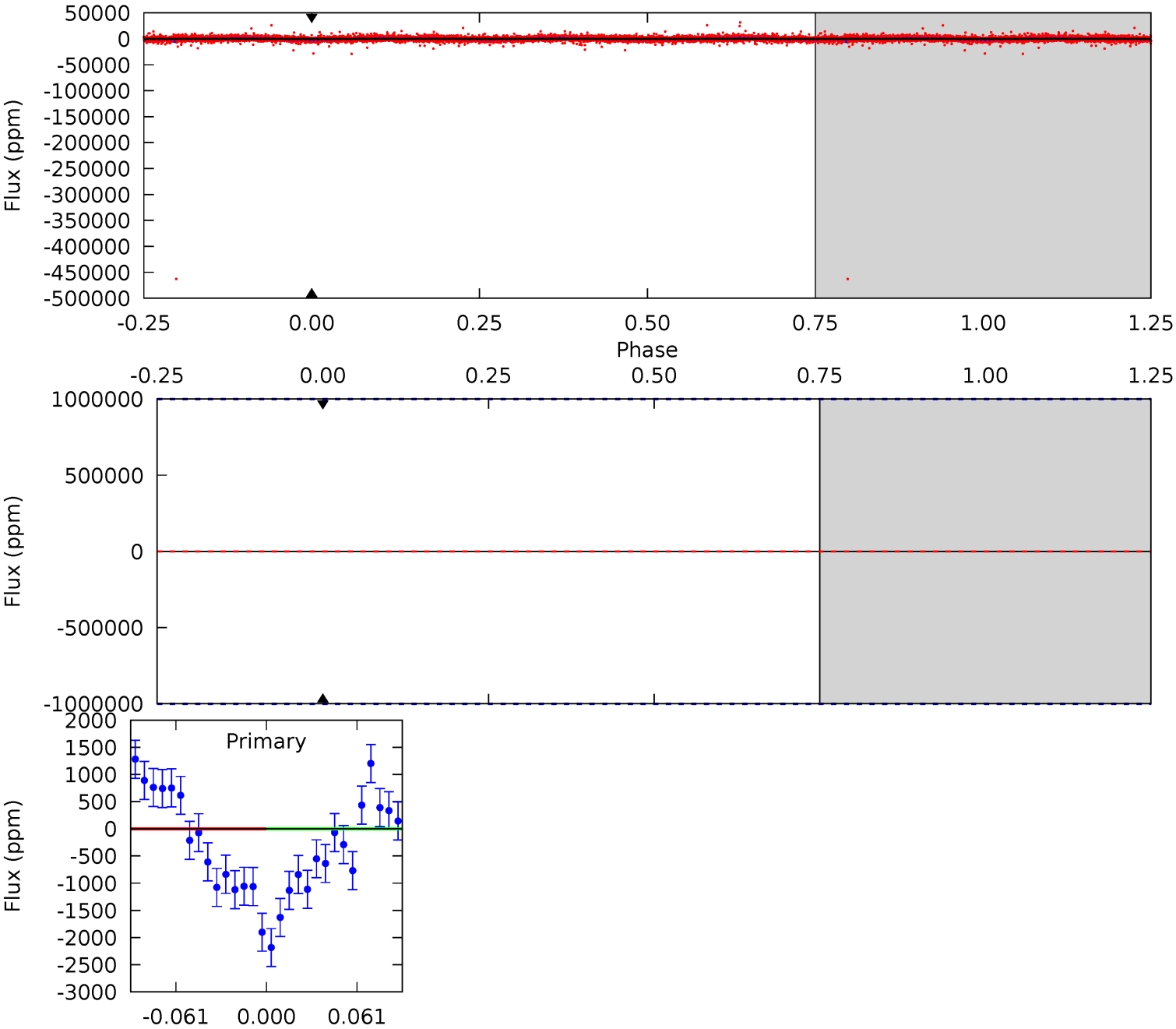
TCE 010415087-02 P= 0.683172 Days $T_0=131.935764$ (BKJD)



DV Model-Shift Uniqueness Test

010415087-02, P = 0.683172 Days, E = 131.221572 Days

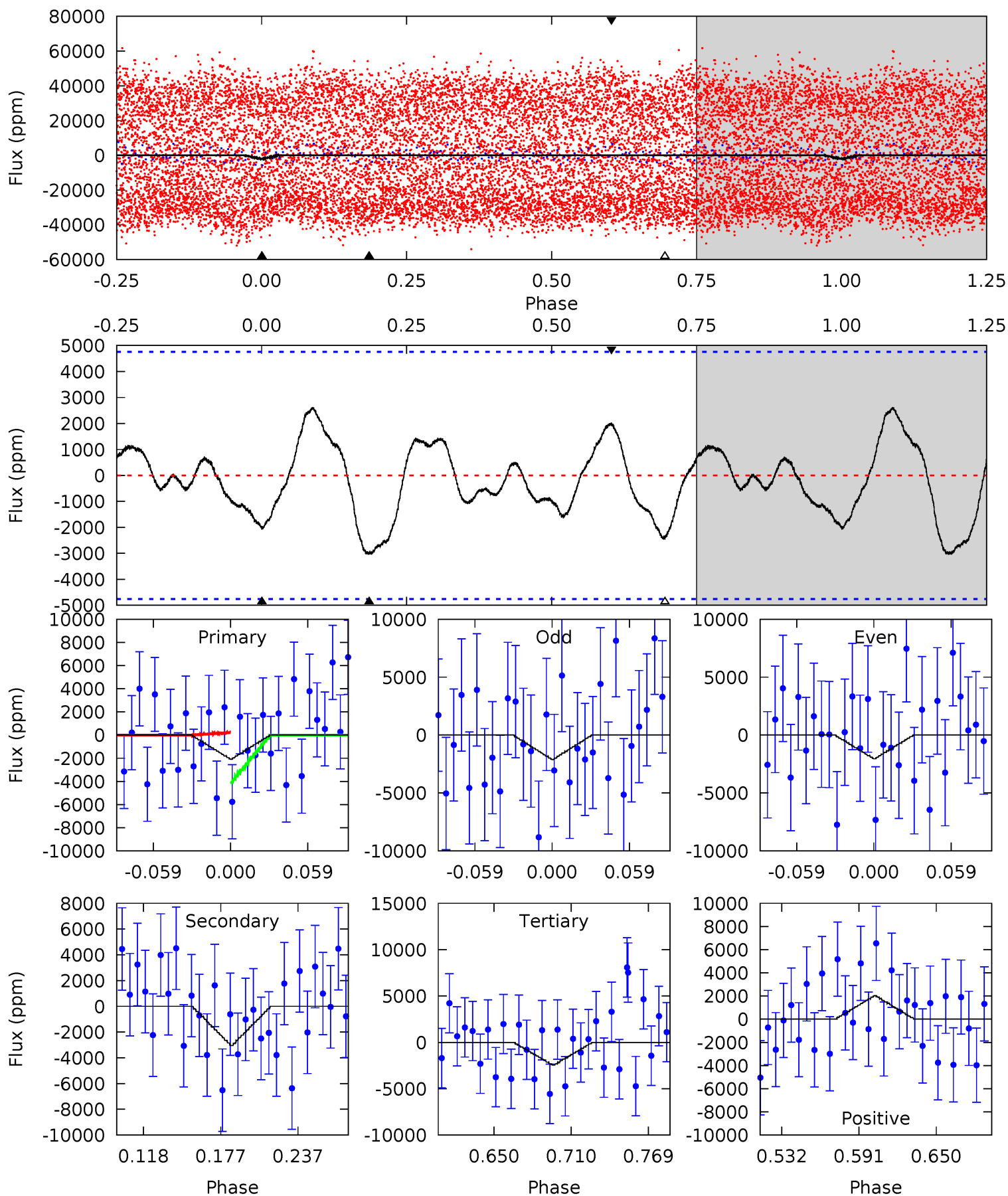
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

010415087-02, P = 0.683172 Days, E = 131.252592 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.05	3.00	2.42	1.99	4.67	1.89	1.09	-0.37	0.05	0.58	1.01	0.03	0.38	0.46	1.91



Stellar Parameters For KIC 010415087

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7242^{+79}_{-79}	$3.956^{+0.162}_{-0.108}$	$-0.100^{+0.150}_{-0.150}$	$2.231^{+0.402}_{-0.491}$	$1.640^{+0.148}_{-0.164}$	$0.208^{+0.175}_{-0.070}$
	+1%/-1%	+4%/-3%	+150%/-150%	+18%/-22%	+9%/-10%	+84%/-33%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 010415087-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$17.74^{+18.46}_{-12.04}$	4983^{+199}_{-268}	-4122^{+40339}_{-30163}	$0.047^{+91.729}_{-84.190}$
Alt.	-3052 ± 1017	$21.17^{+20.81}_{-13.55}$	4984^{+217}_{-301}	5235^{+5087}_{-8060}	$1.161^{+8.060}_{-0.883}$

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 $A_{obs} \gg 1.0$

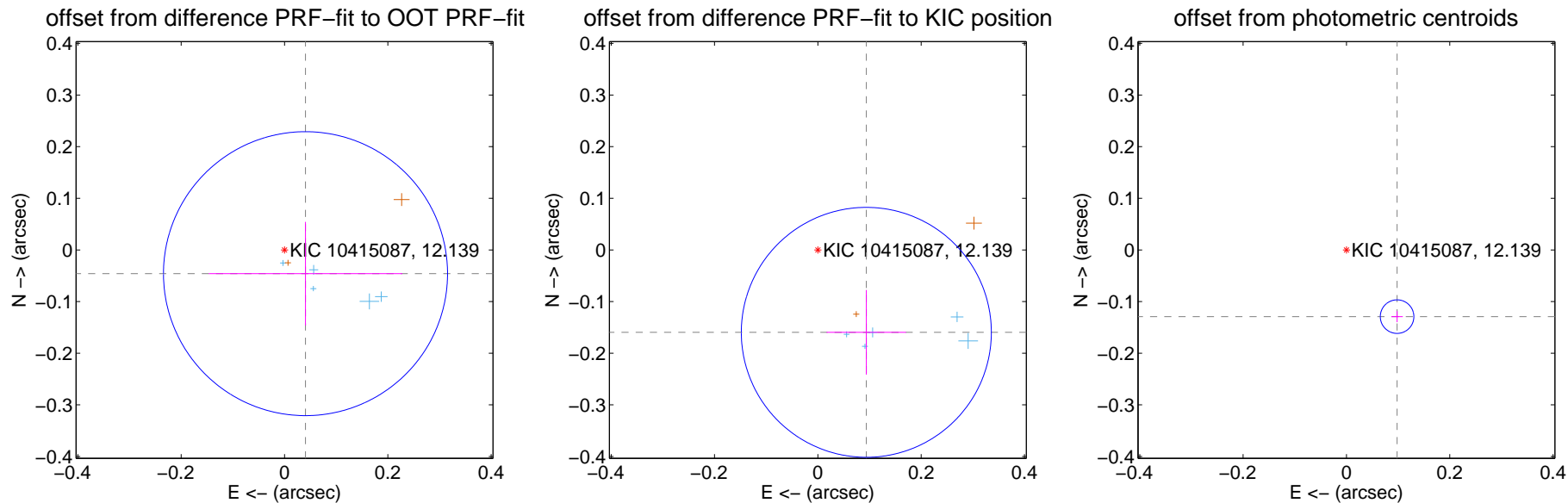
DV Centroid Data

Supplemental centroid analysis for 010415087-02. Kepler magnitude: 12.14. Transit SNR -1.00

There are 7 quarters with good PRF difference image offsets

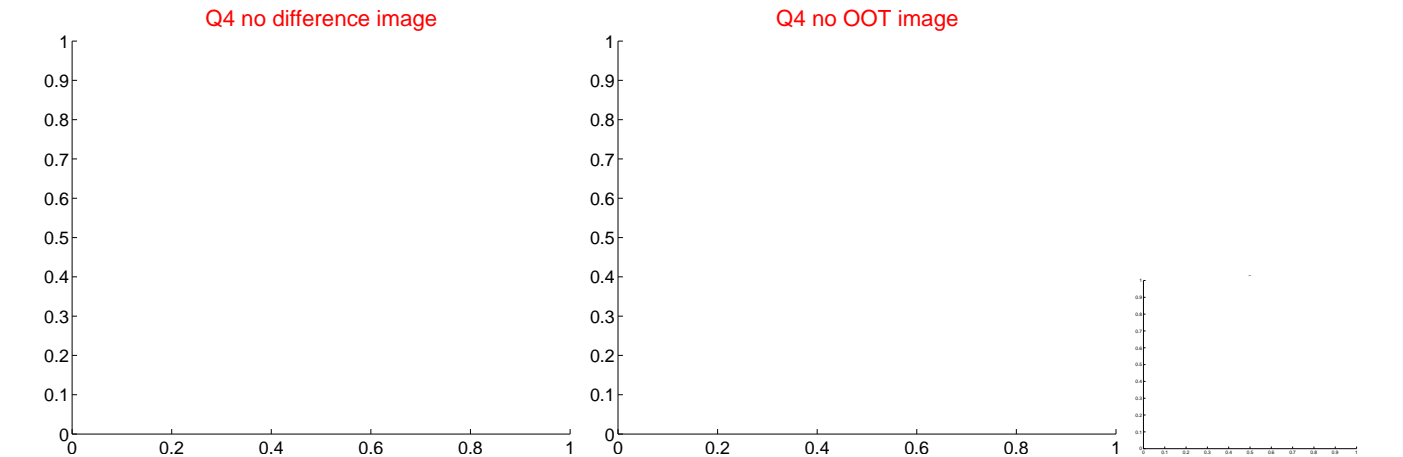
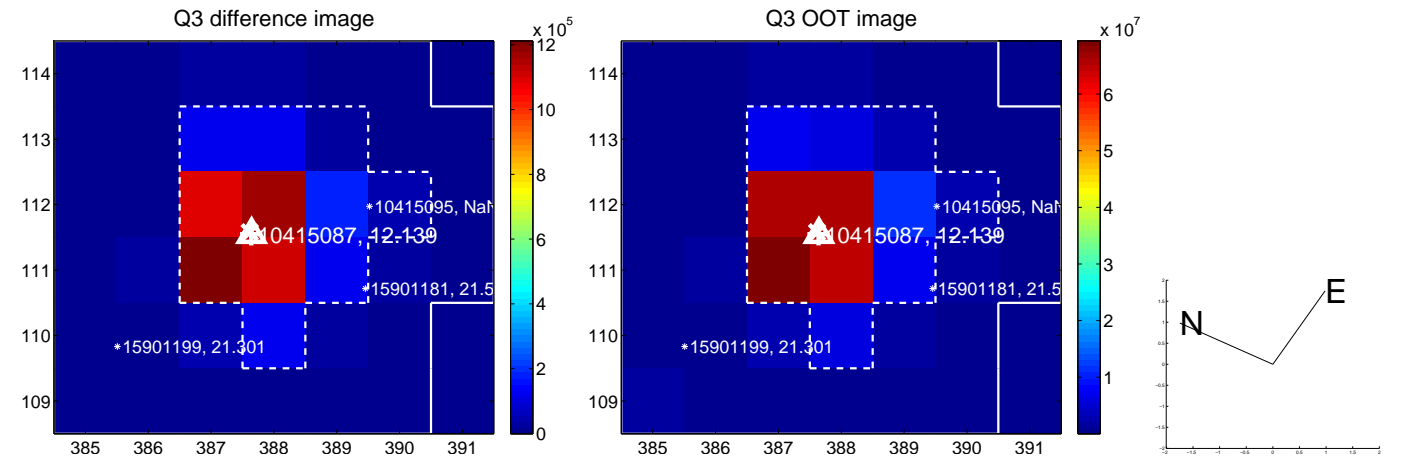
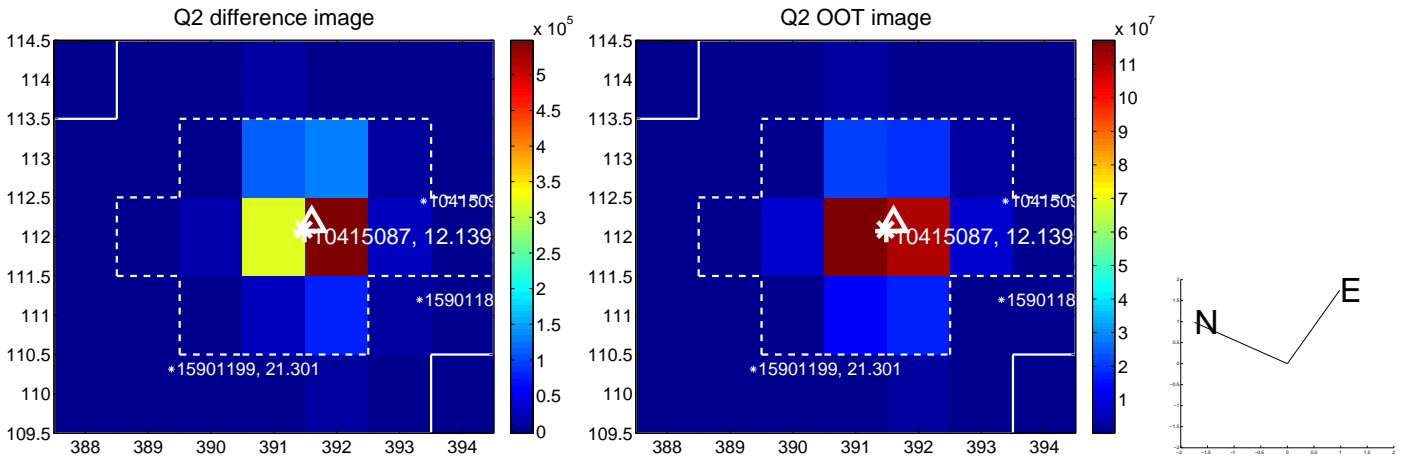
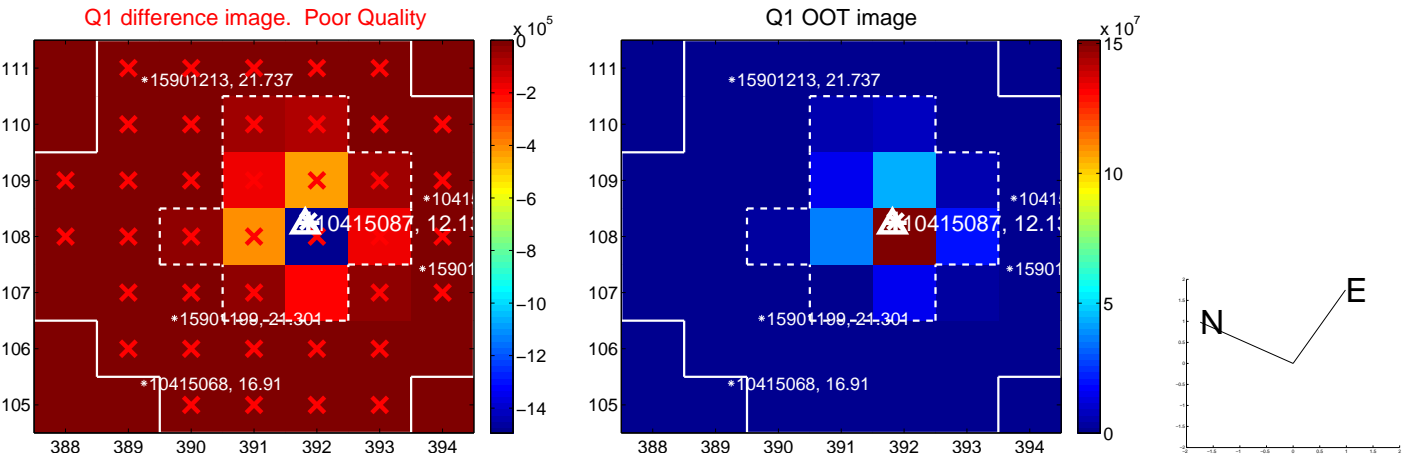
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.061 ± 0.092	0.67	-0.041 ± 0.187	-0.046 ± 0.100
PRF-fit source offset from KIC position	0.185 ± 0.081	2.30	-0.094 ± 0.077	-0.160 ± 0.082
photometric centroid source offset	0.16 ± 0.01	14.97	-0.10 ± 0.01	-0.13 ± 0.01

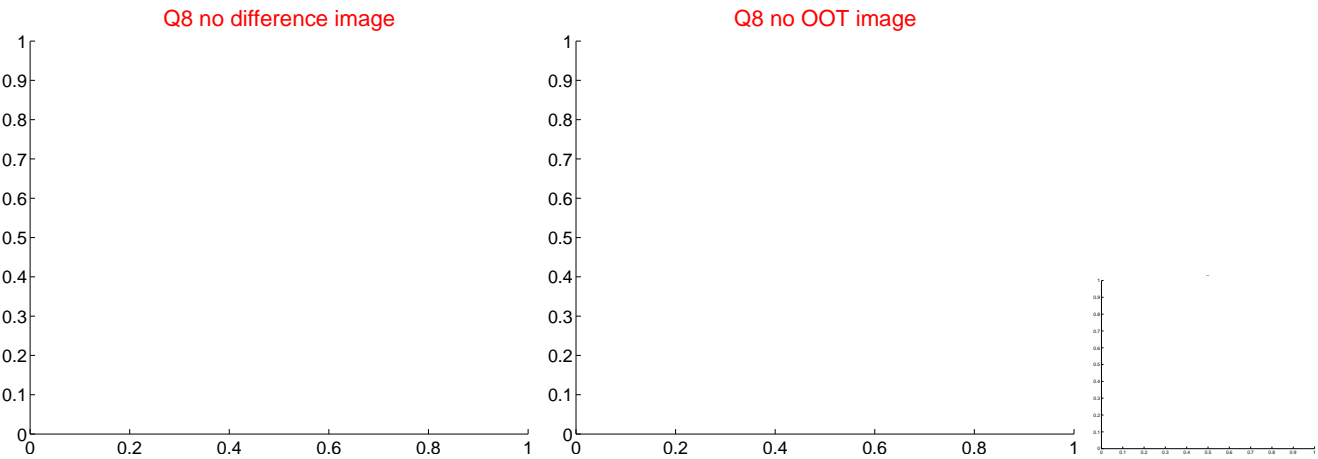
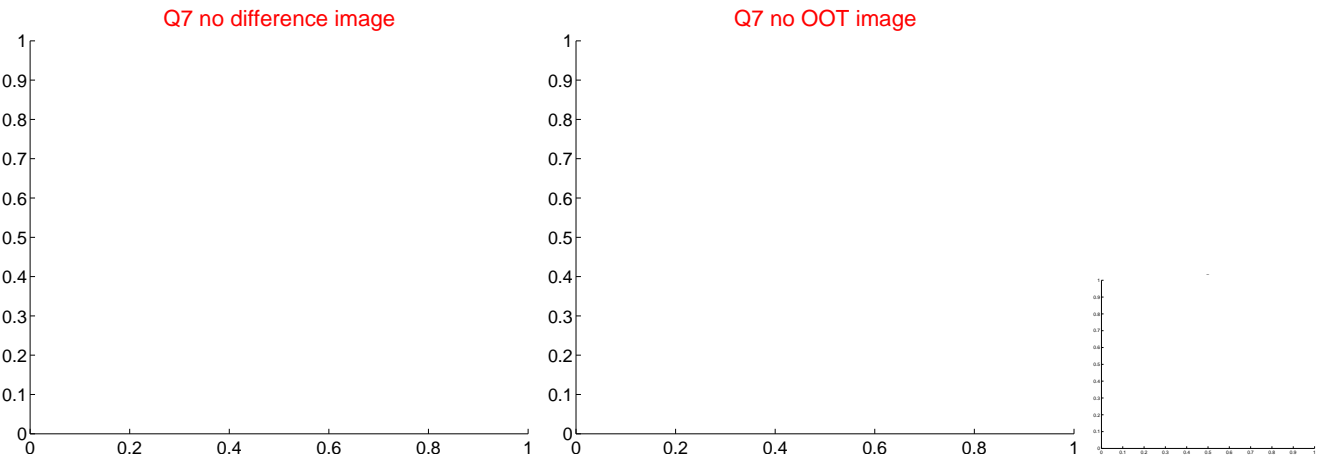
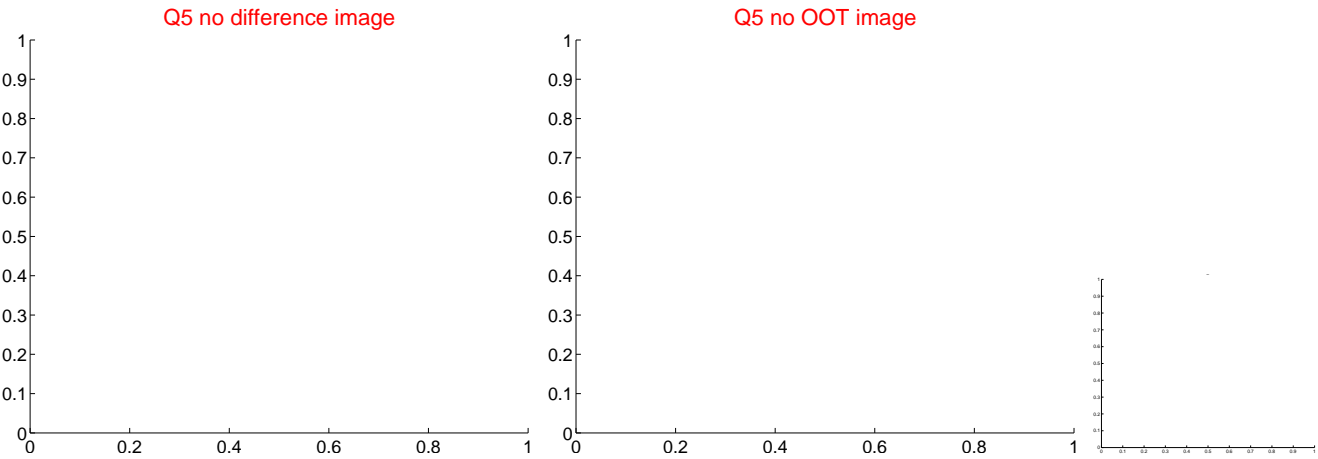


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

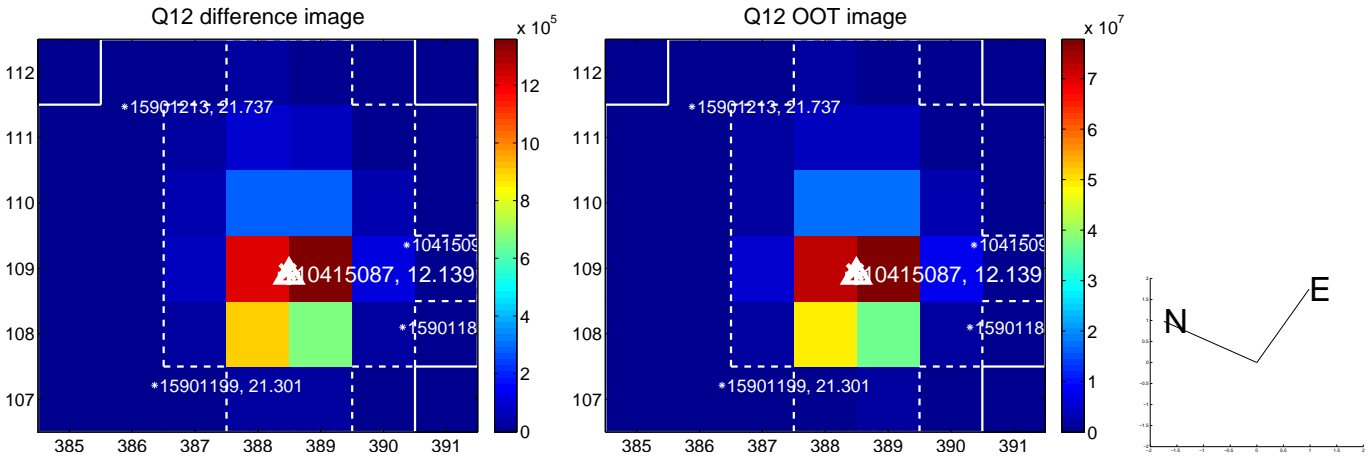
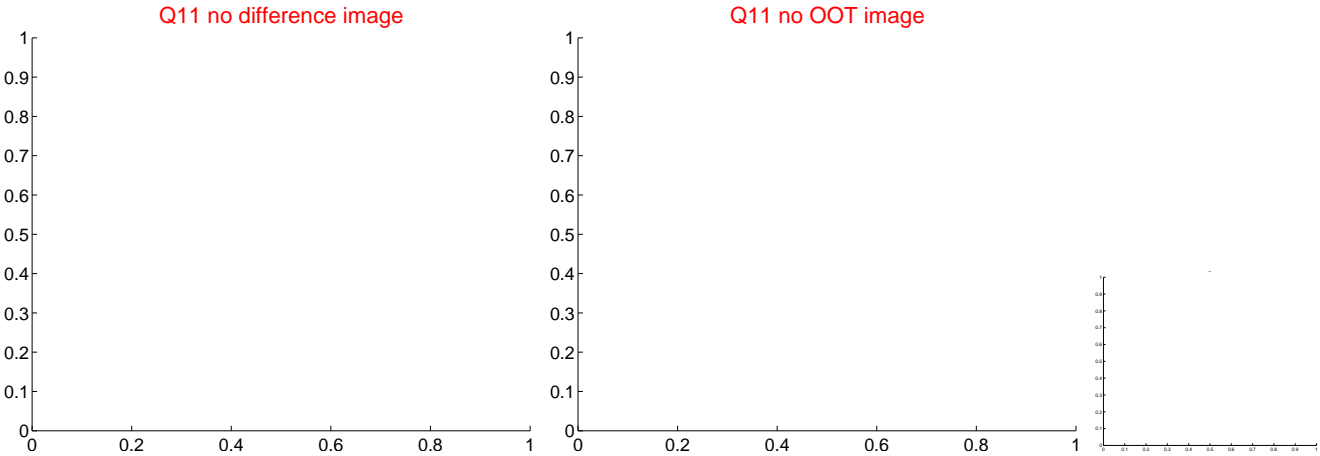
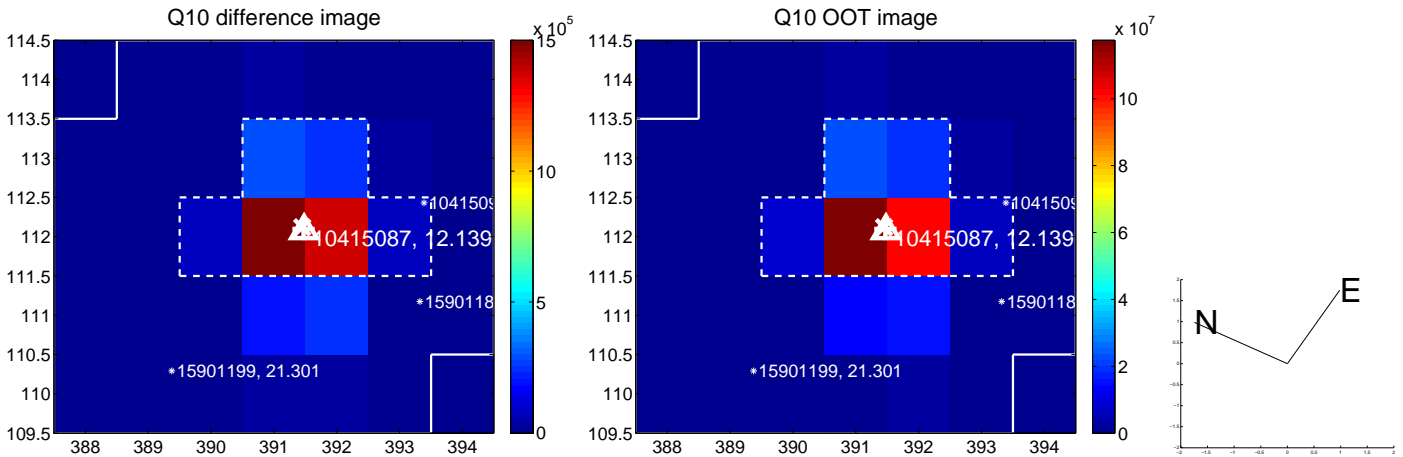
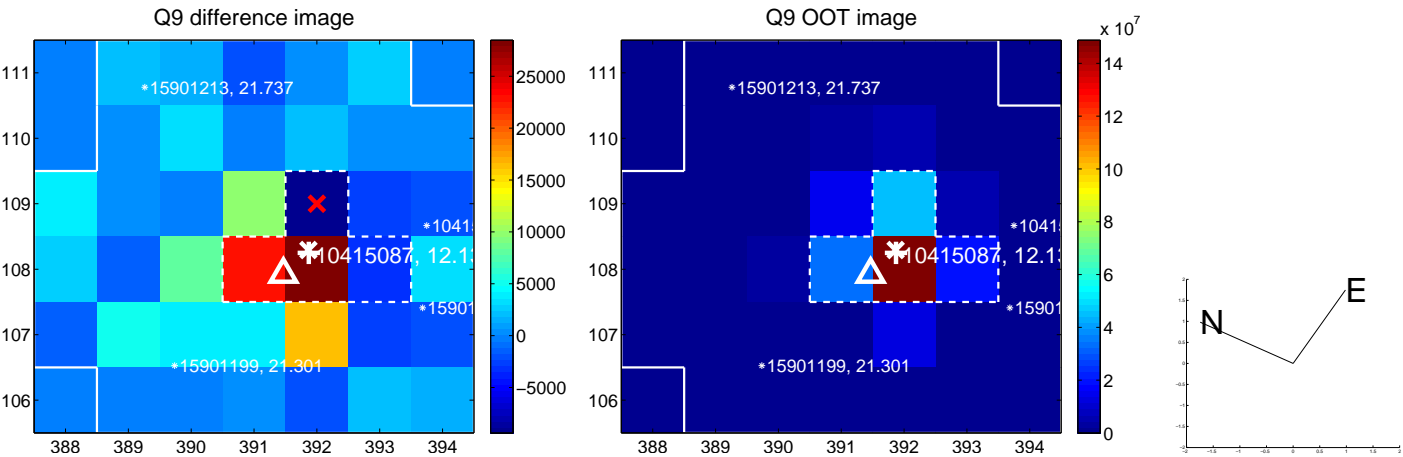
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



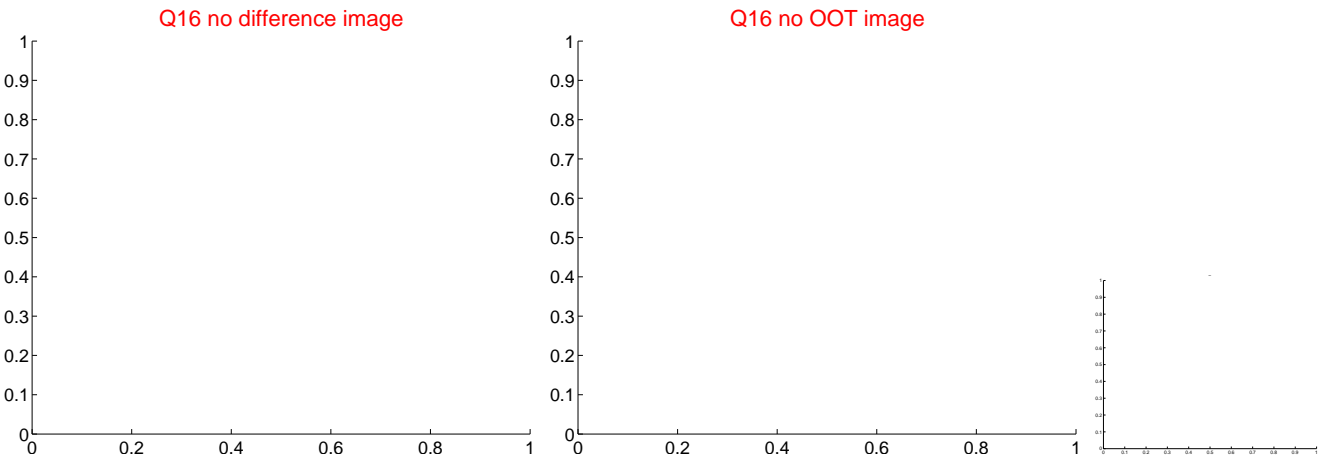
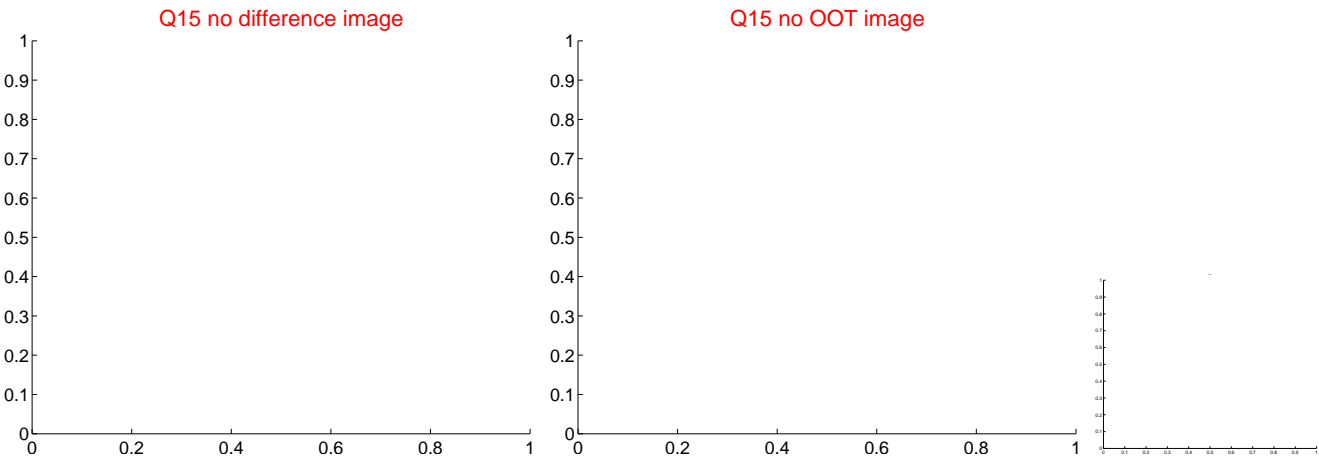
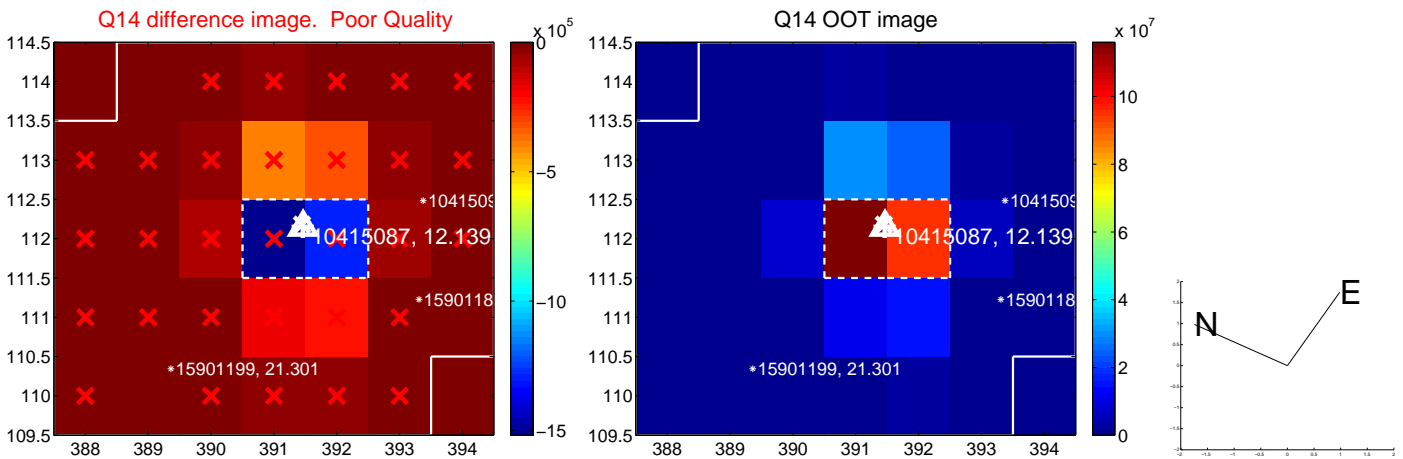
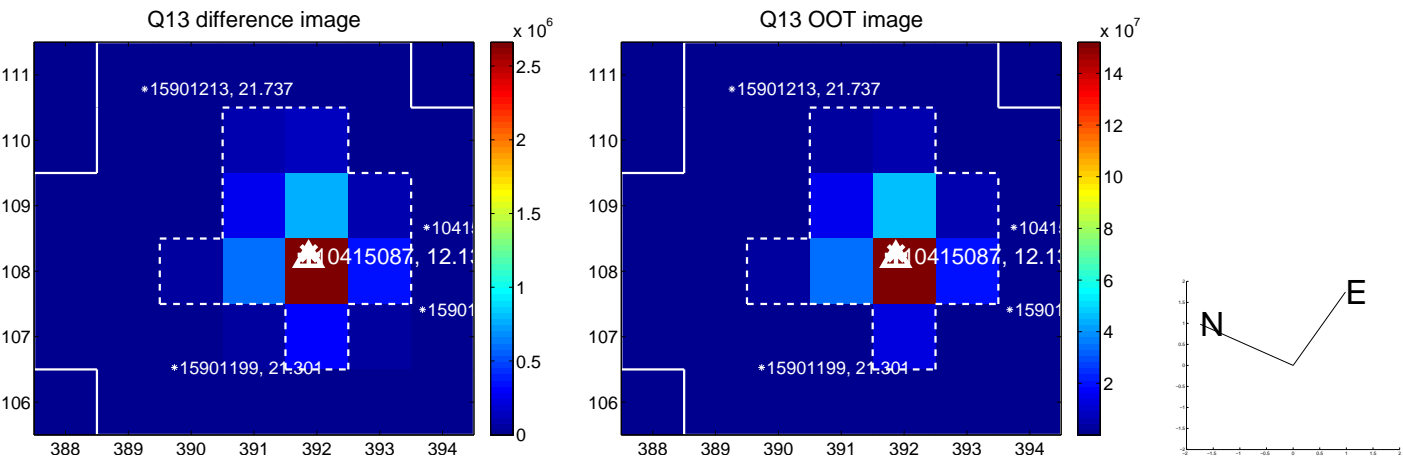
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



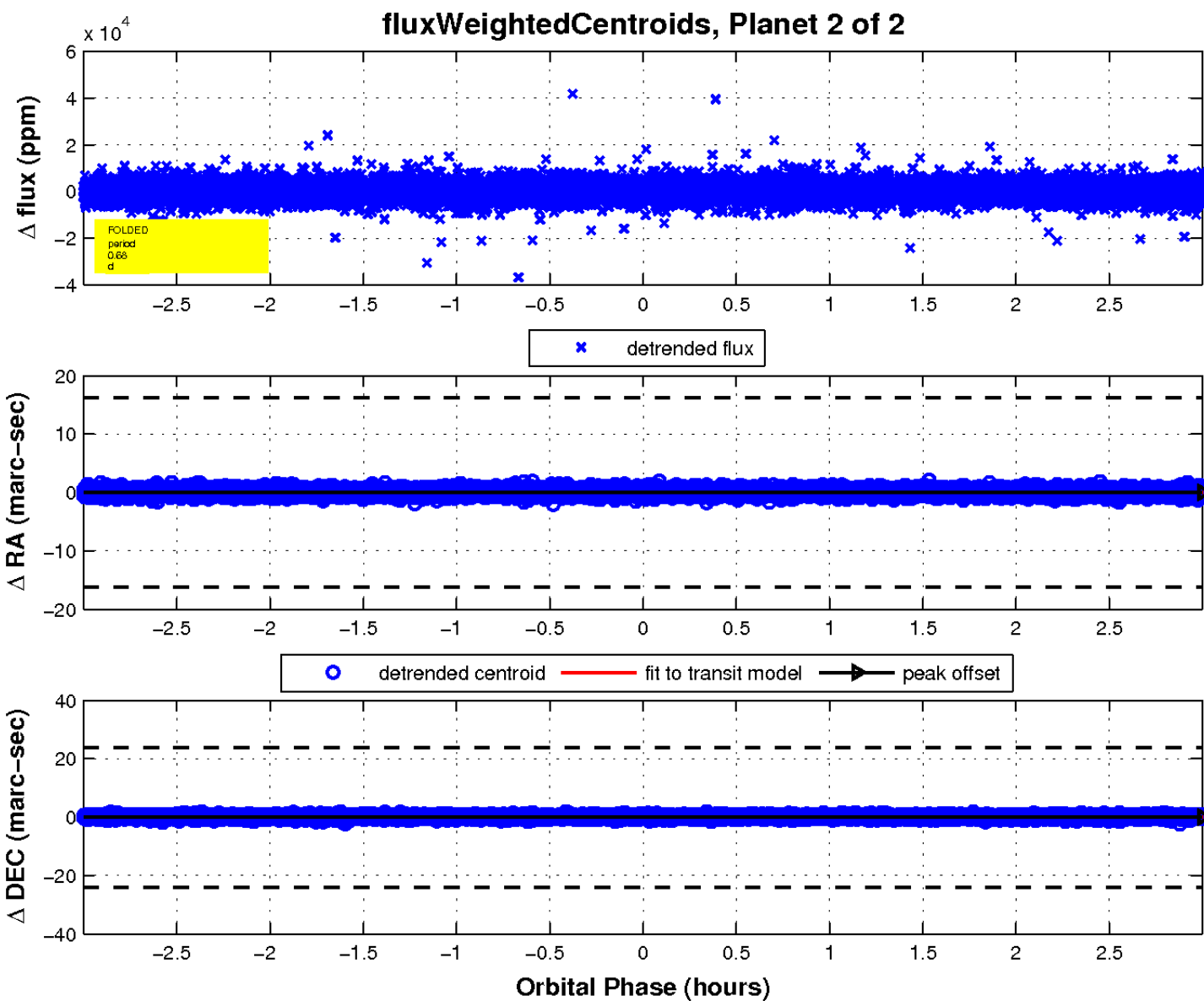
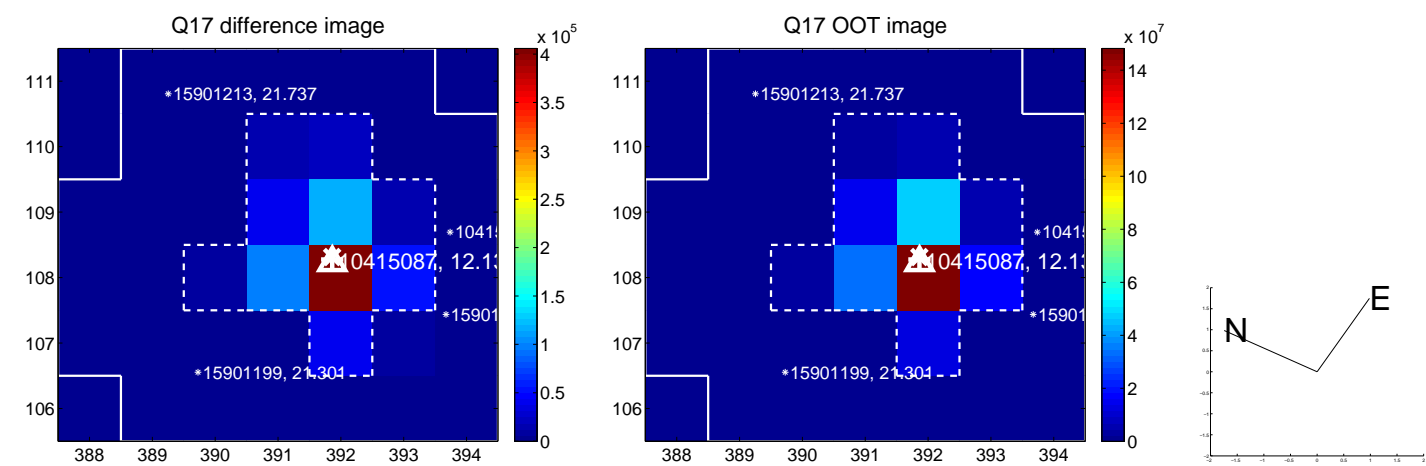
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image

Declination

