

KIC 009215655

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})
009215655-01	OBS	No	6.062446	132.633539	75.5	18.301	13.5	14.5	1.66	7304	2.73	1310.61
009215655-02	OBS	No	3.031218	133.415660	47.5	14.887	10.8	11.3	1.66	7304	1.57	3302.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009215655-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009215655-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—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.

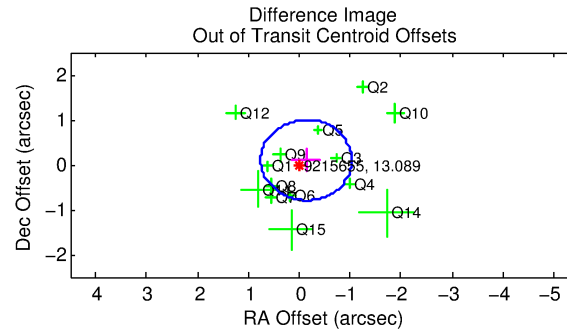
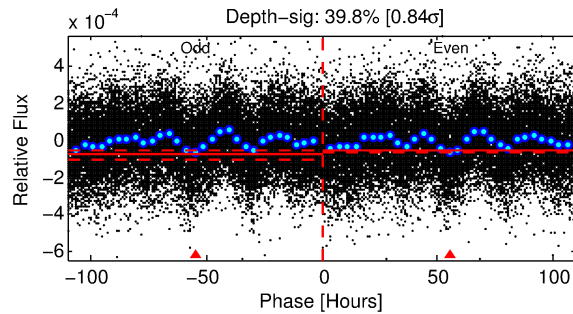
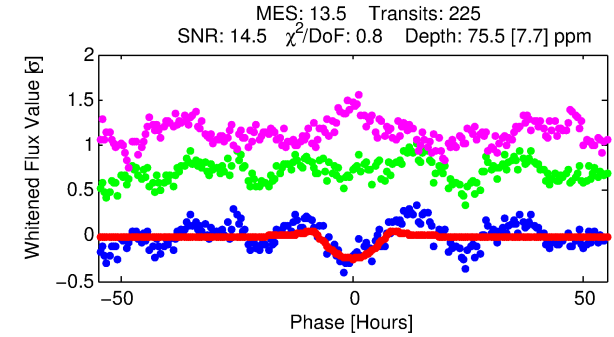
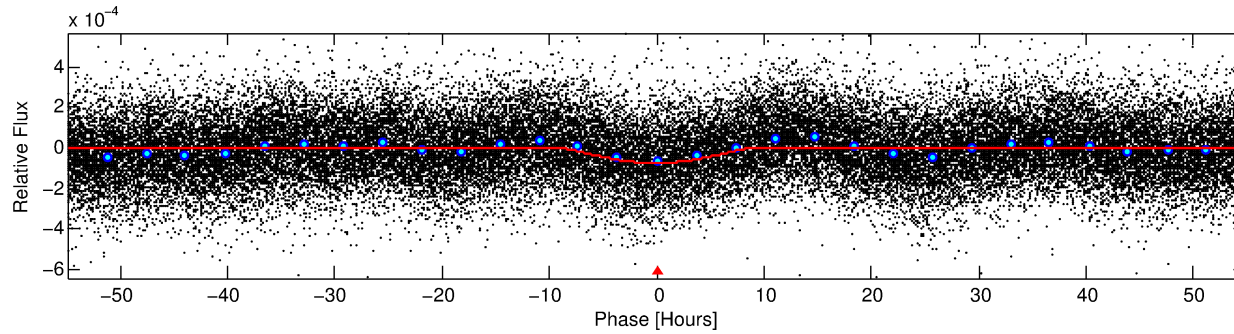
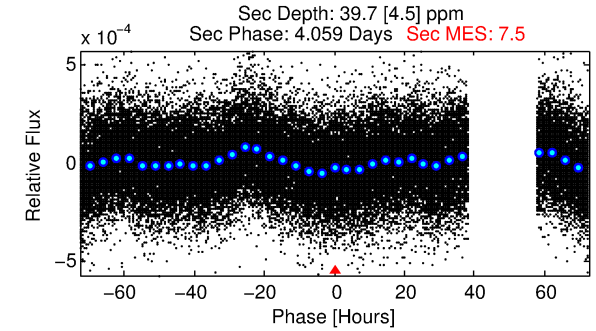
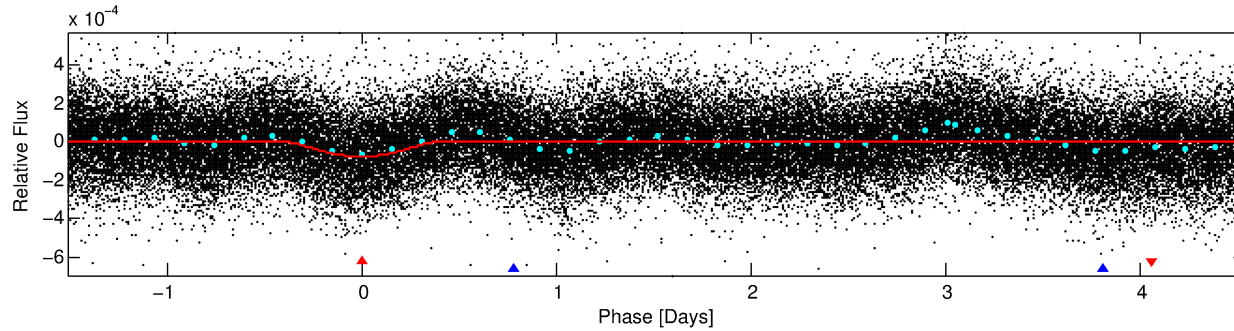
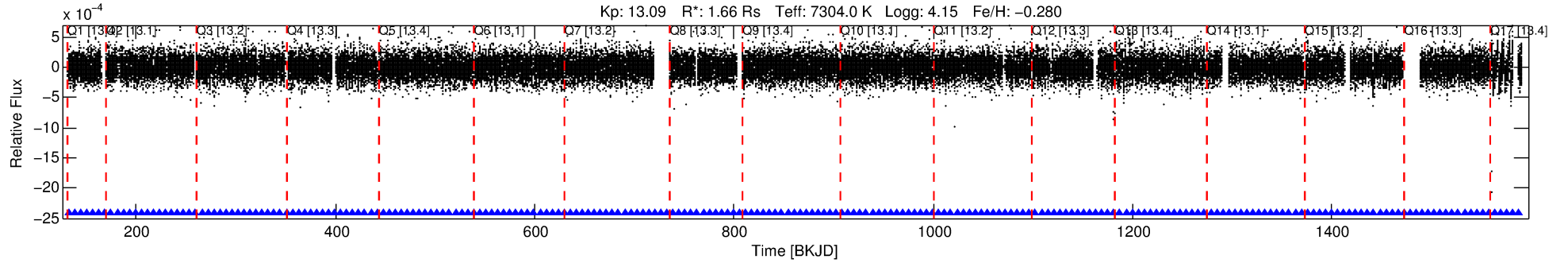
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009215655-01

No Significant Match Found

DV One-Page Summary

KIC: 9215655 Candidate: 1 of 2 Period: 6.062 d



DV Fit Results:

Period = 6.06245 [0.00017] d
Epoch = 132.6335 [0.0232] BKJD
Rp/R* = 0.0151 [0.0158]
a/R* = 1.10 [0.04]
b = 1.00 [0.02]
Seff = 1310.61 [514.59]
Teq = 1534 [151] K
Rp = 2.73 [2.98] Re
a = 0.0730 [0.0186] AU
Ag = 15.60 [33.10] [0.44σ]
Teffp = 4714 [2474] K [1.28σ]

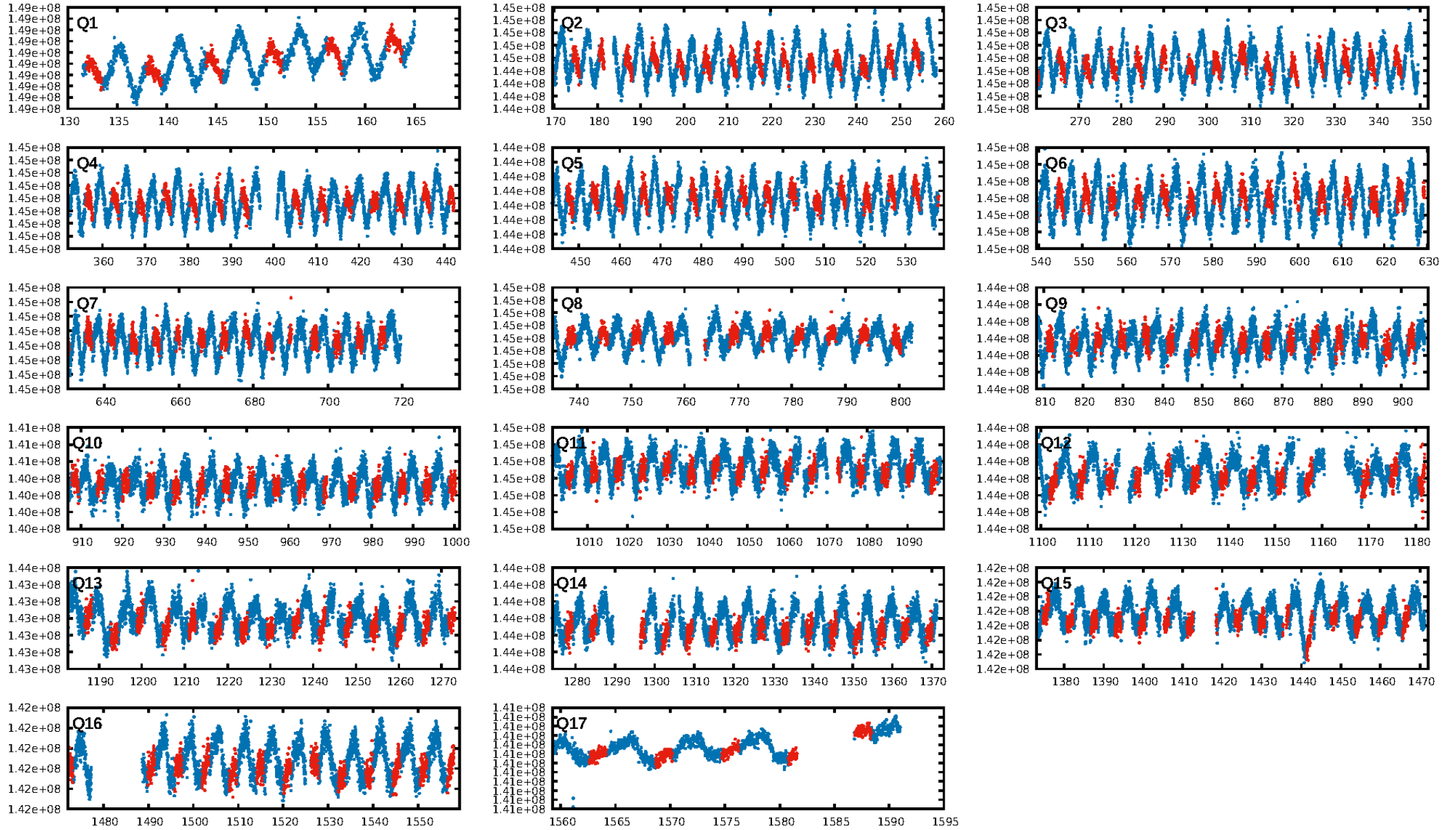
DV Diagnostic Results:

ShortPeriod-sig: 99.8% [3.08σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.41e-10
RollingBand-fgt: 1.00 [214/214]
GhostDiagnostic-chr: -5.382
Centroid-sig: 39.8%
Centroid-so: 0.626 arcsec [1.52σ]
OotOffset-rm: 0.170 arcsec [0.57σ]
OotOffset-st: 4/4/3/3 [14]
KicOffset-rm: 0.247 arcsec [0.89σ]
KicOffset-st: 4/4/3/3 [14]
DiffImageQuality-fgm: 0.14 [2/14]
DiffImageOverlap-fno: 0.00 [0/17]

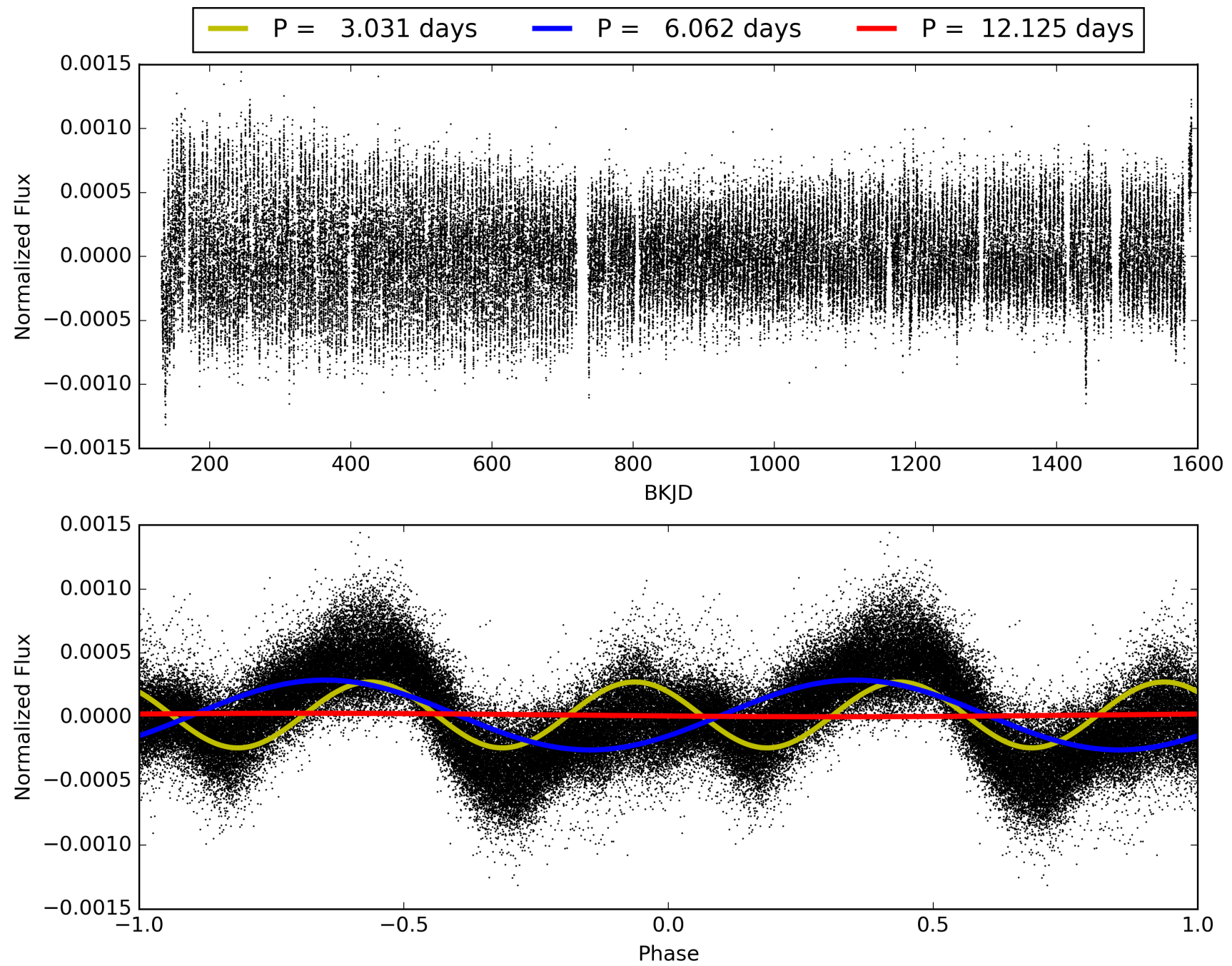
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:03:19 Z

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

TCE 009215655-01, PDC Light Curves

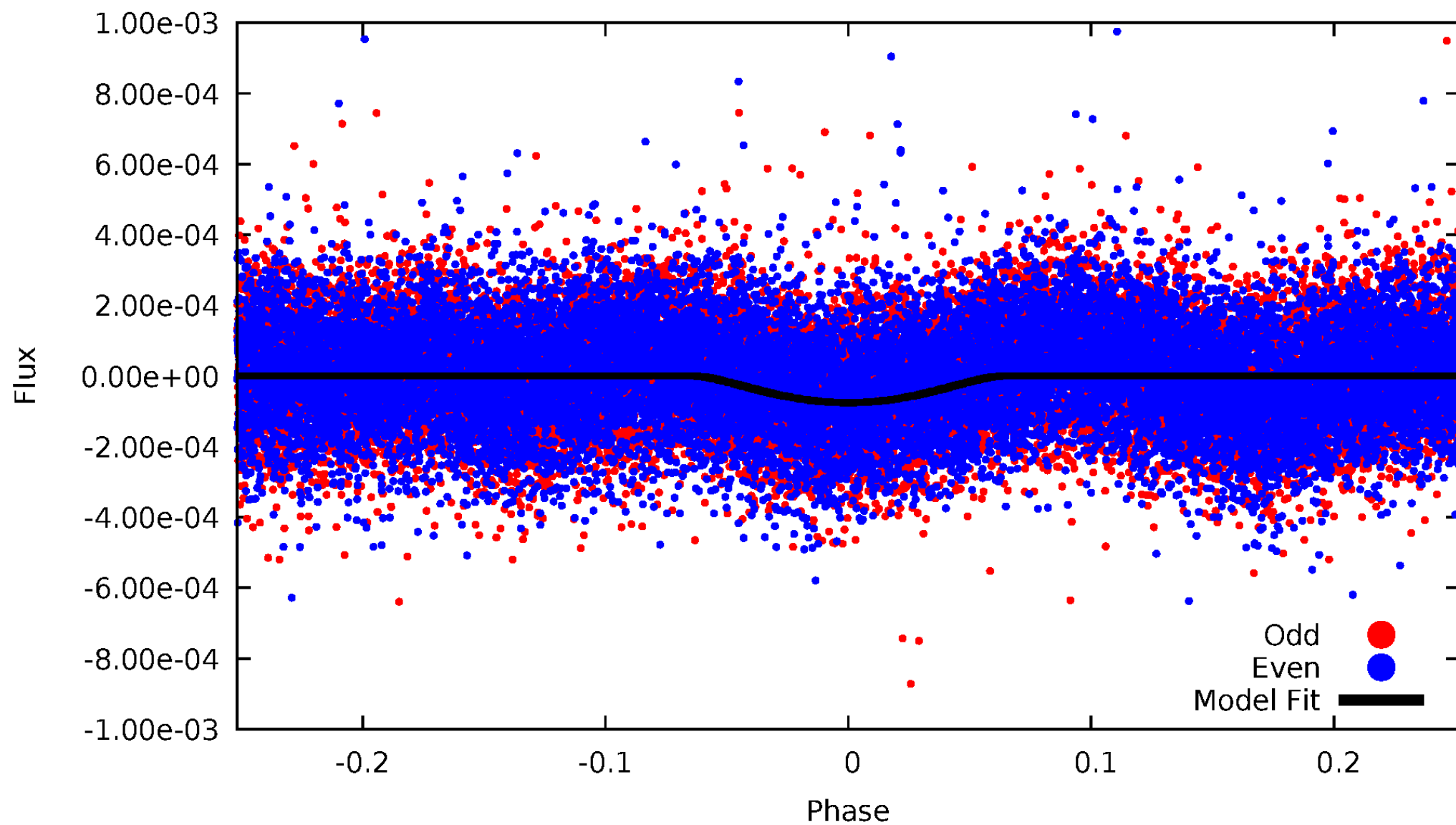


TCE 009215655-01



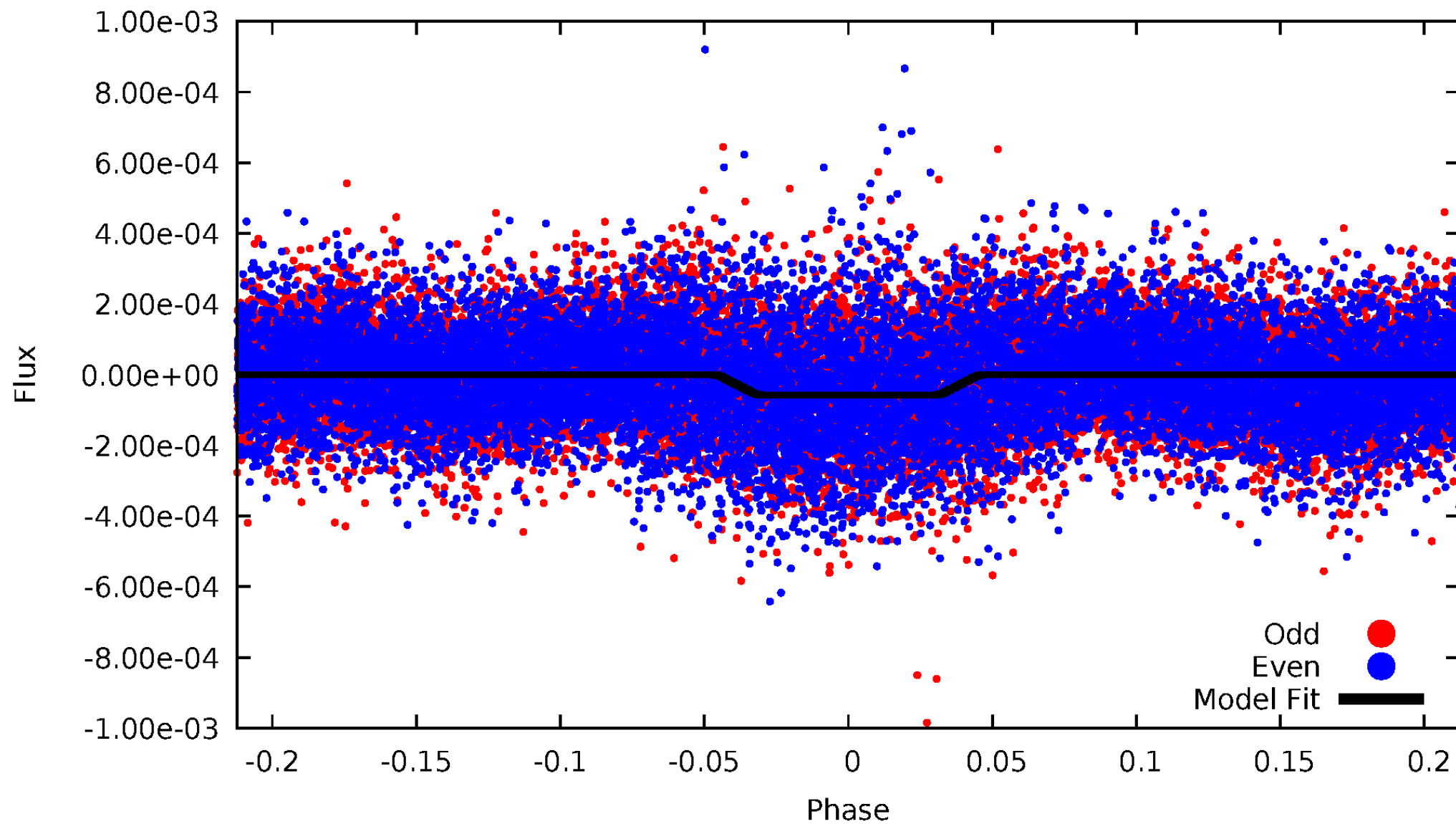
DV Odd/Even

TCE 009215655-01



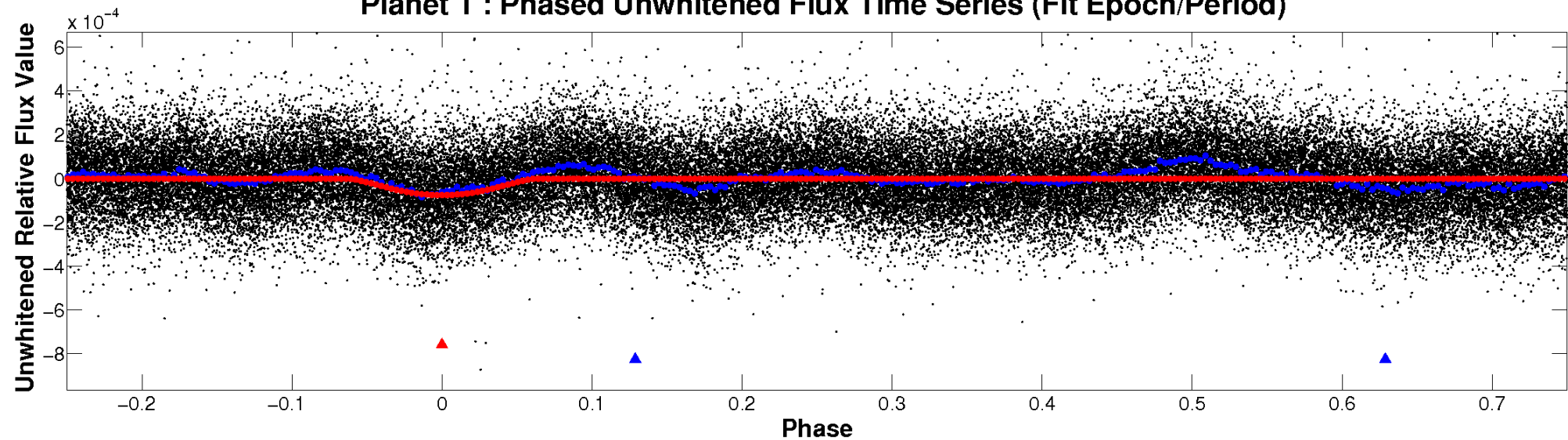
ALT Odd/Even

TCE 009215655-01

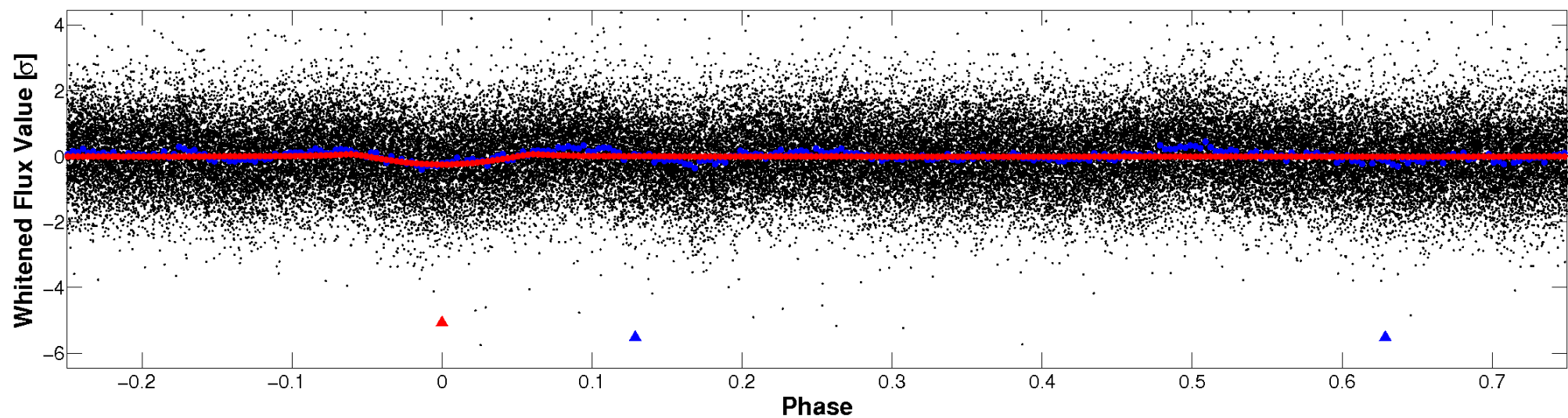


Non-Whitened Vs. Whitened Light Curve

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

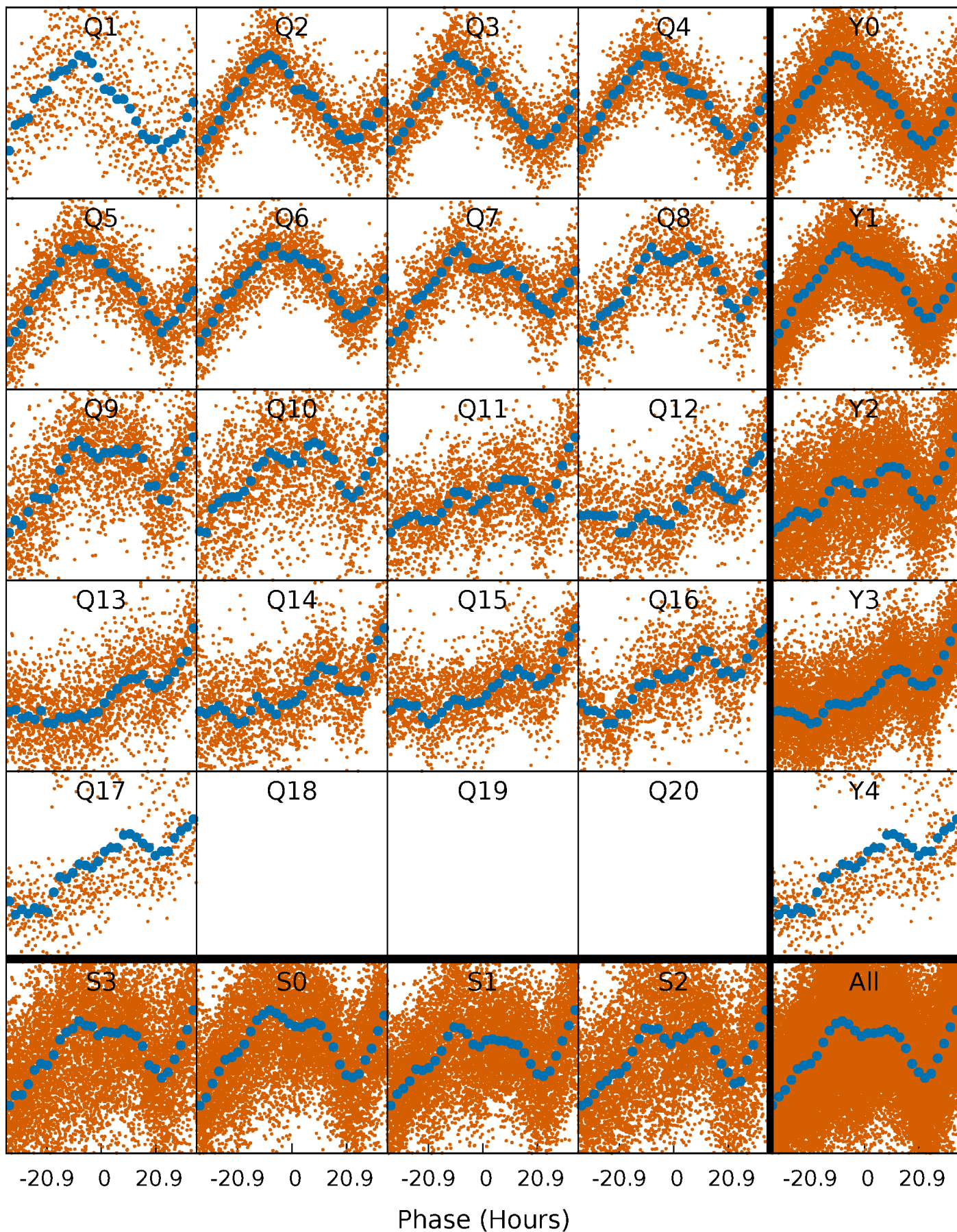


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



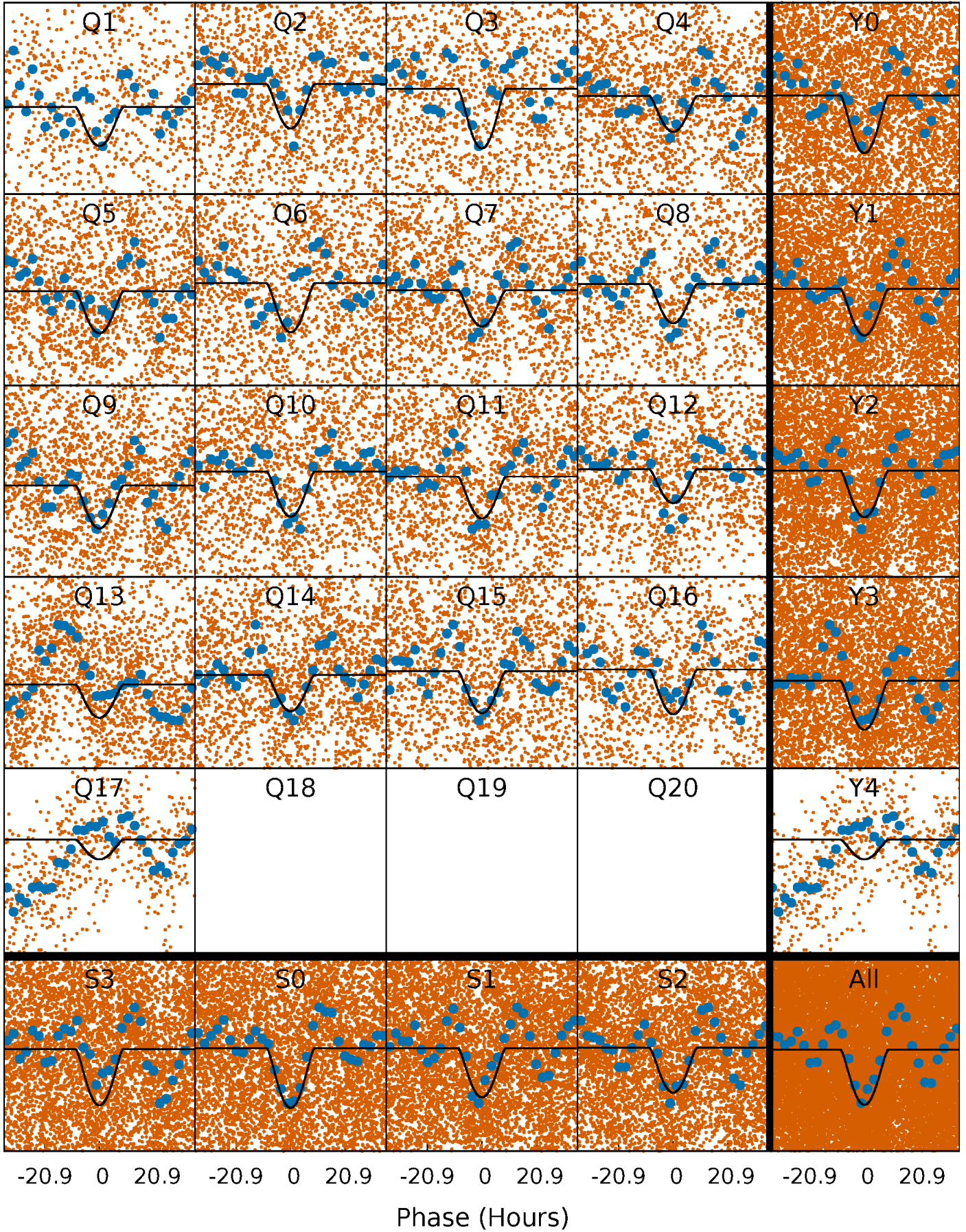
PDC Quarter-Phased Transit Curves

TCE 009215655-01 P= 6.062446 Days $T_0=132.633539$ (BKJD)



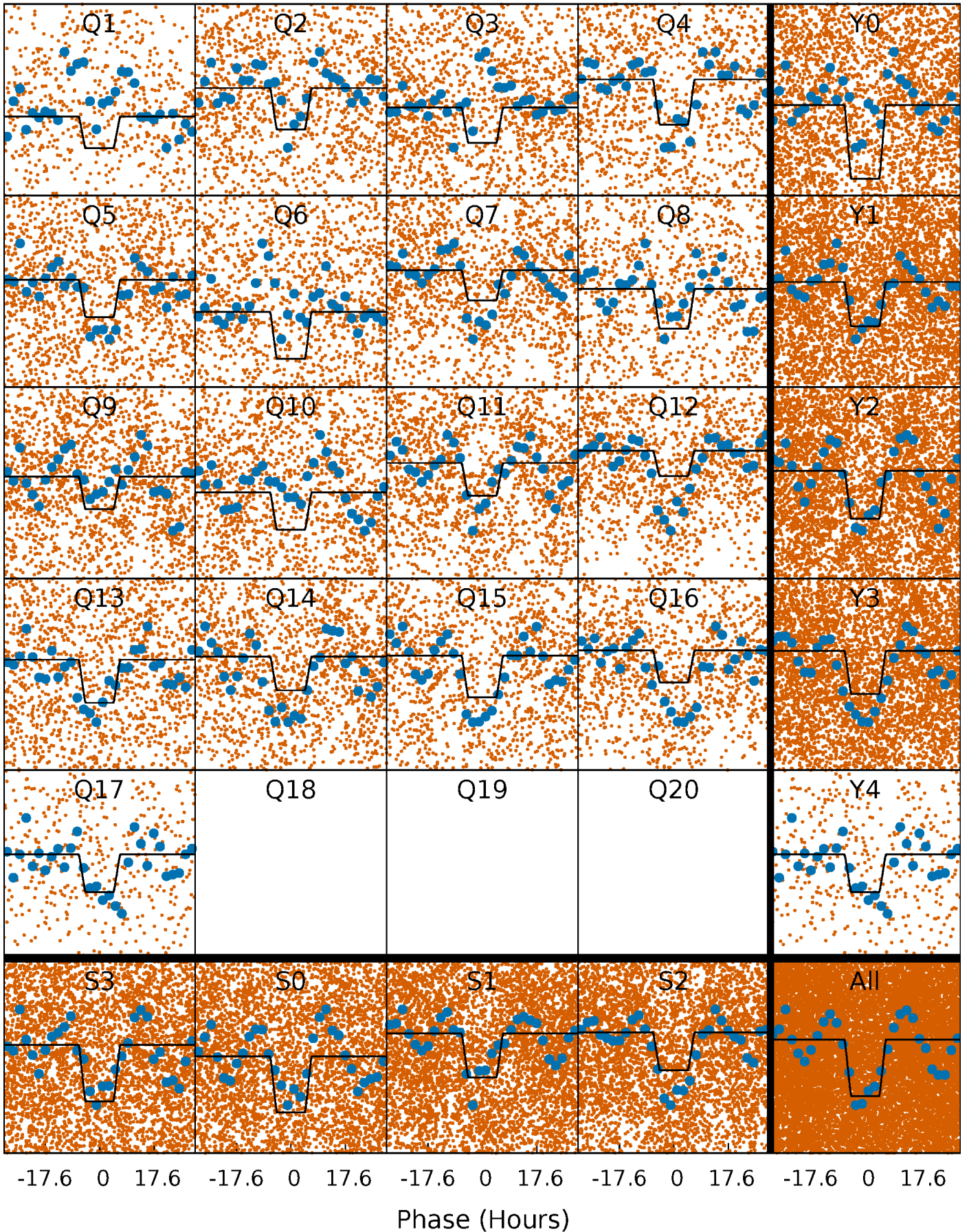
DV Quarter-Phased Transit Curves

TCE 009215655-01 P= 6.062446 Days $T_0=132.633539$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

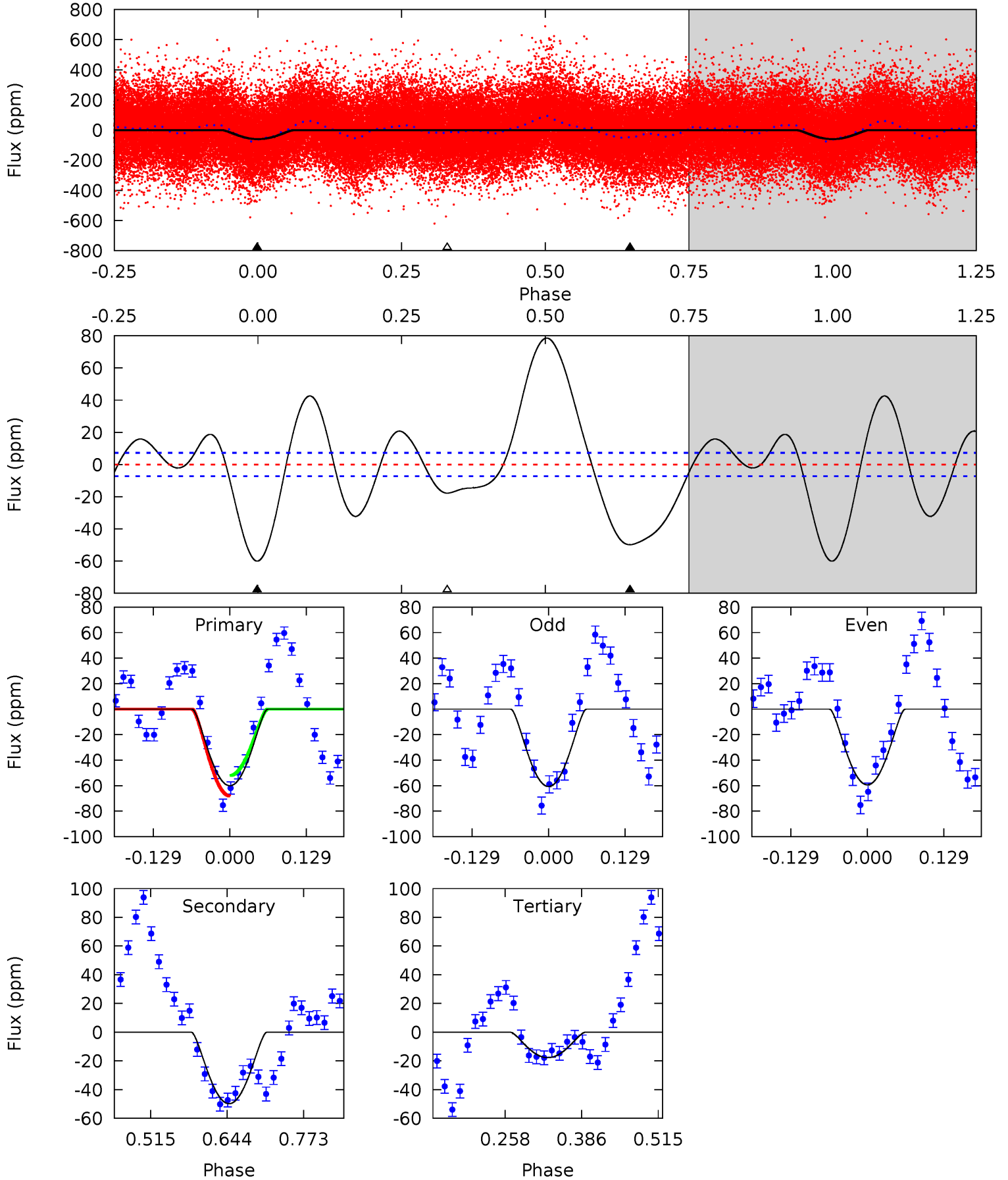
TCE 009215655-01 P= 6.061986 Days $T_0=132.703529$ (BKJD)



DV Model-Shift Uniqueness Test

009215655-01, P = 6.062446 Days, E = 126.571093 Days

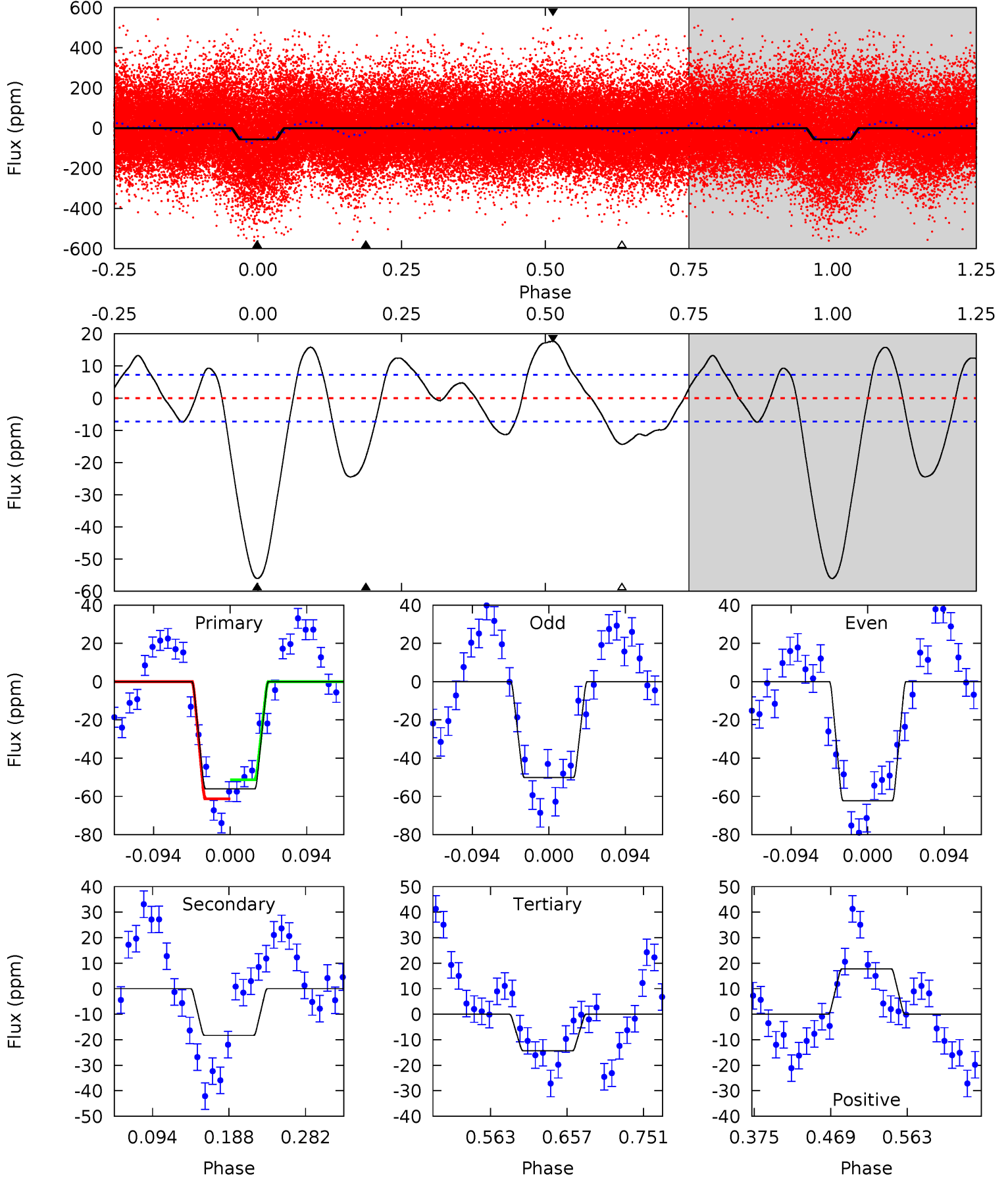
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
37.4	31.0	11.0	0	4.51	1.52	17.2	26.3	37.4	20.0	31.0	0.40	0.93	0.57	4.99



Alt Model-Shift Uniqueness Test

009215655-01, P = 6.061986 Days, E = 126.641543 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.4	11.6	9.06	11.2	4.58	1.68	5.51	26.3	24.2	2.50	0.32	3.81	0.87	0.24	3.16



Stellar Parameters For KIC 009215655

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7304^{+228}_{-304}	$4.150^{+0.153}_{-0.187}$	$-0.280^{+0.250}_{-0.350}$	$1.655^{+0.521}_{-0.347}$	$1.410^{+0.226}_{-0.226}$	$0.438^{+0.343}_{-0.221}$
	+3%/-4%	+4%/-5%	+89%/-125%	+31%/-21%	+16%/-16%	+78%/-51%
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 009215655-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-50 ± 2	$3.25^{+2.74}_{-1.98}$	2143^{+162}_{-152}	4693^{+2685}_{-989}	14^{+75}_{-10}
Alt.	-18 ± 2	$2.50^{+2.30}_{-1.72}$	2149^{+170}_{-151}	4244^{+3190}_{-884}	$8.331^{+82.834}_{-6.055}$

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 $A_{obs} \gg 1.0$

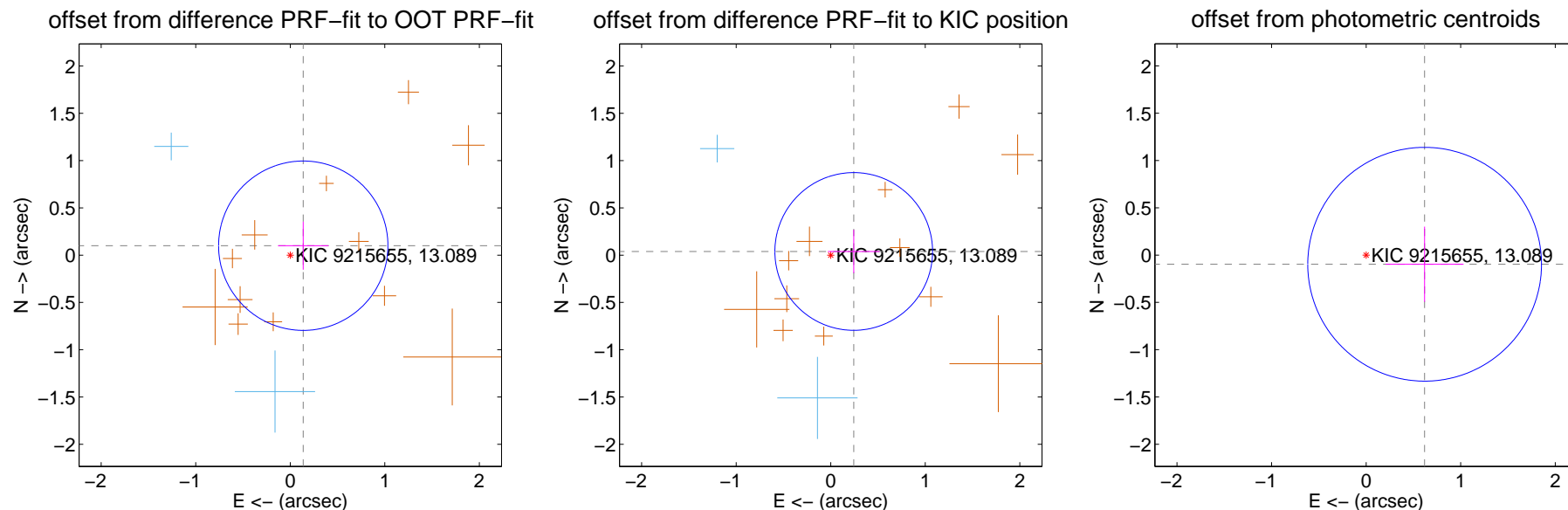
DV Centroid Data

Supplemental centroid analysis for 009215655-01. Kepler magnitude: 13.09. Transit SNR 14.46

There are 2 quarters with good PRF difference image offsets

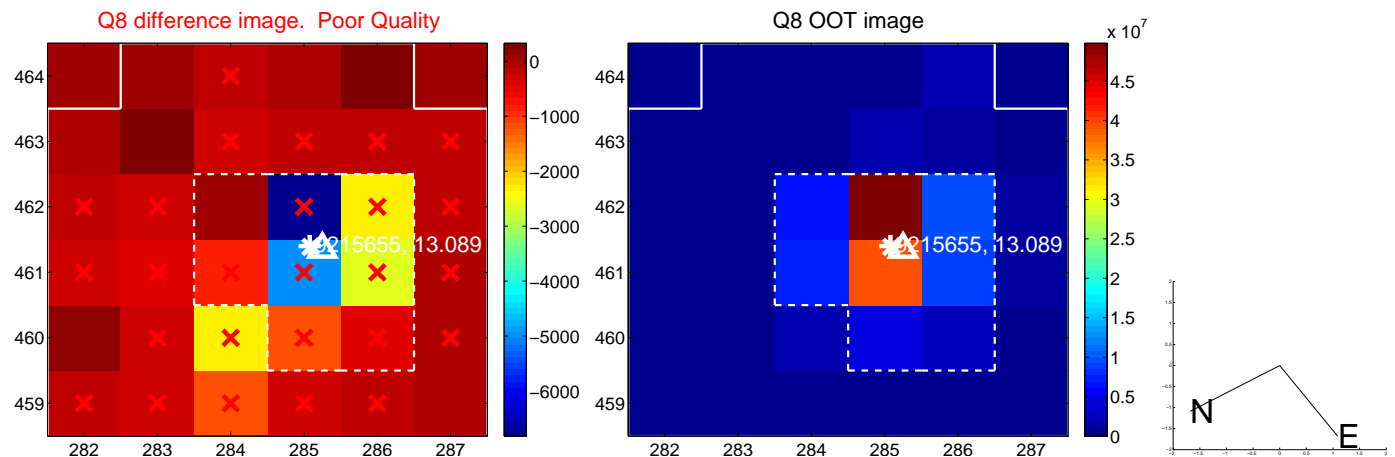
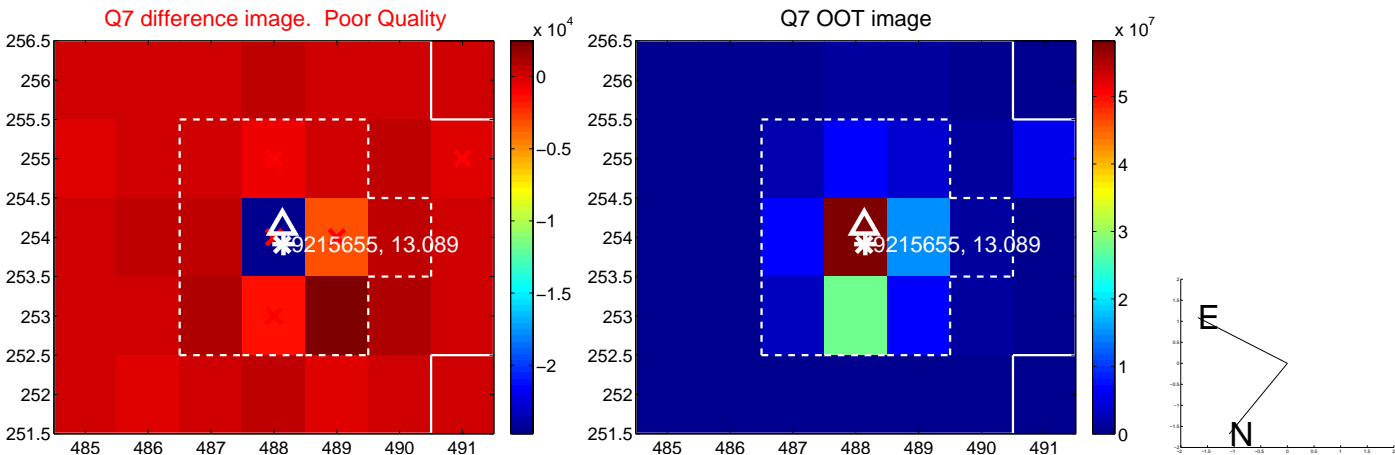
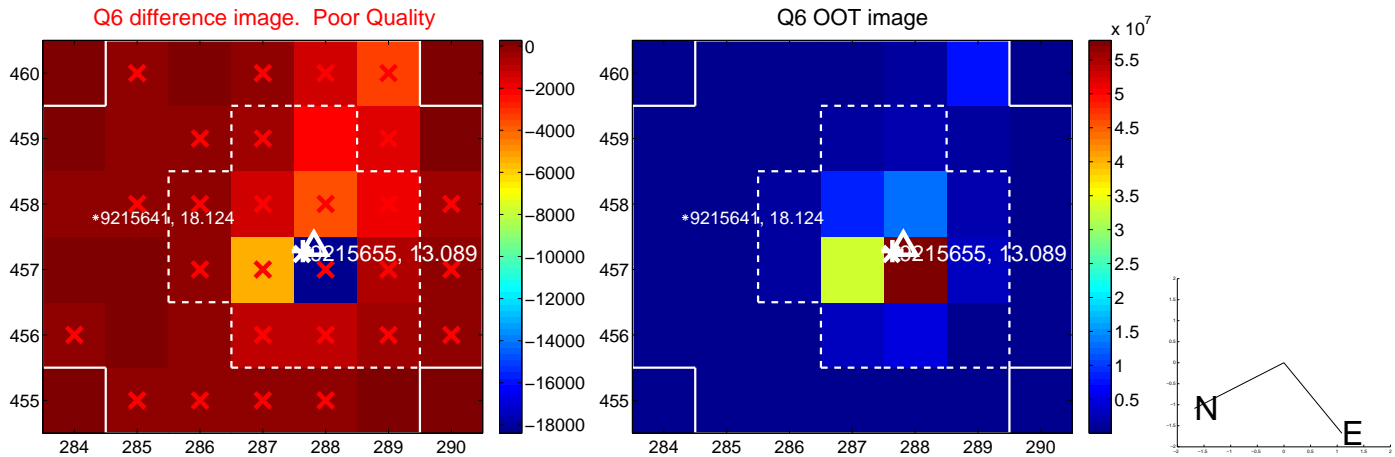
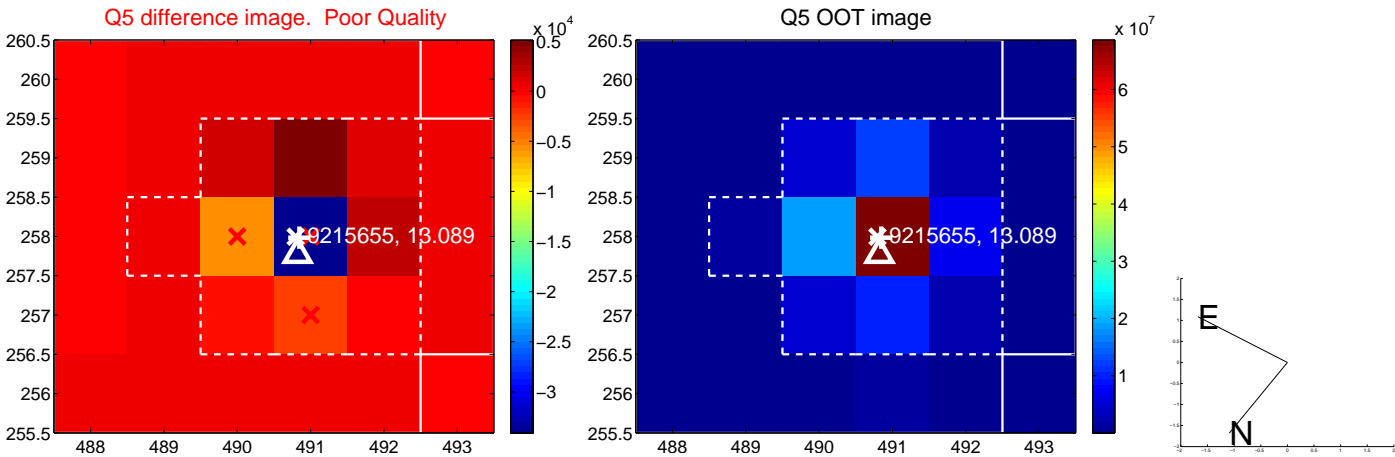
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.170 ± 0.299	0.57	-0.137 ± 0.267	0.100 ± 0.253
PRF-fit source offset from KIC position	0.247 ± 0.278	0.89	-0.243 ± 0.274	0.039 ± 0.229
photometric centroid source offset	0.63 ± 0.41	1.52	-0.62 ± 0.41	-0.10 ± 0.40

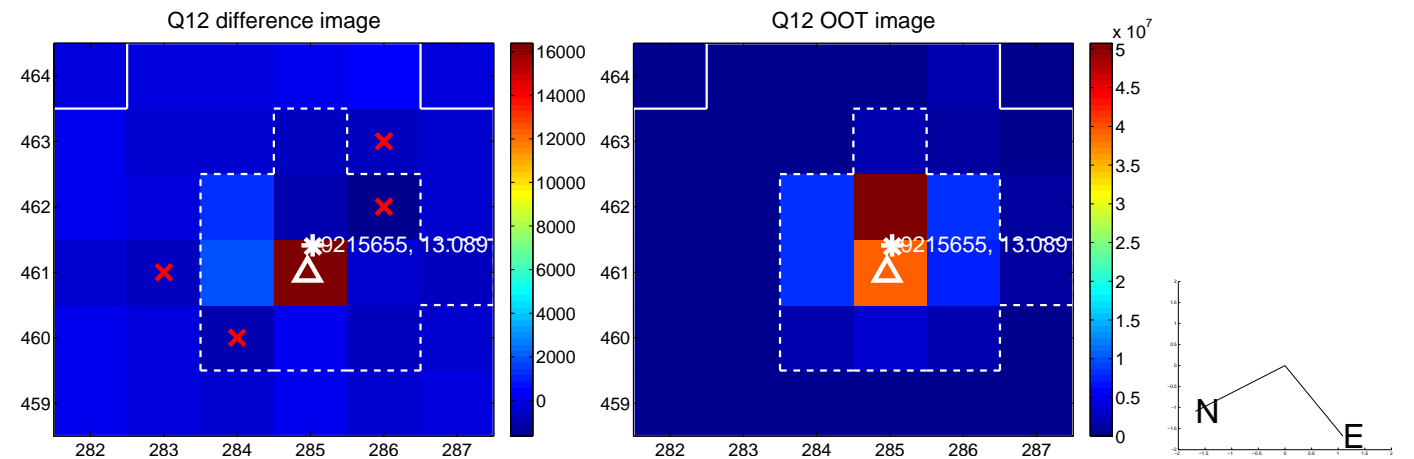
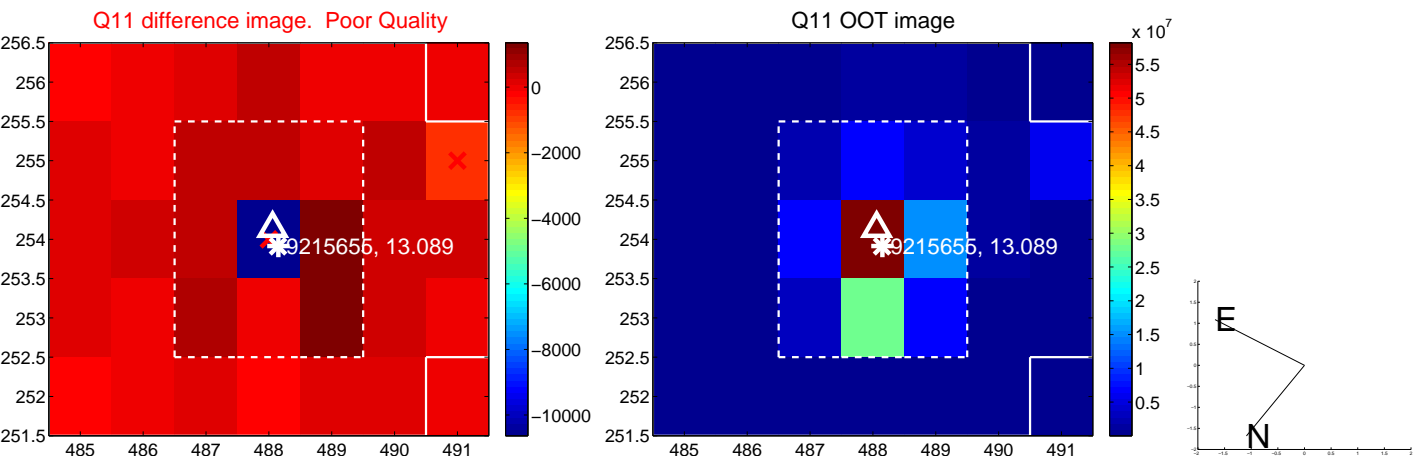
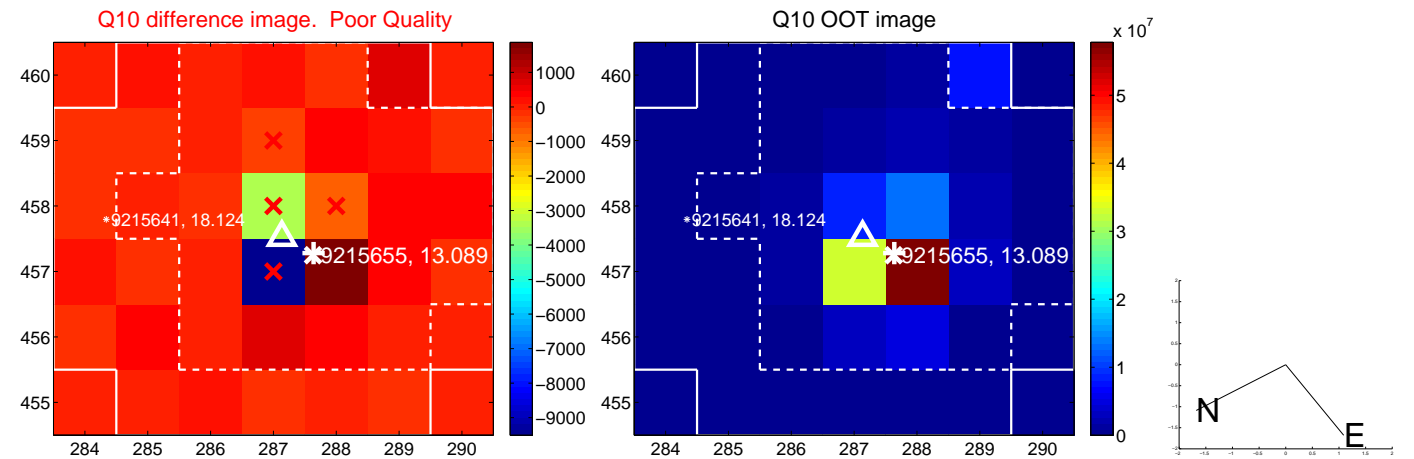
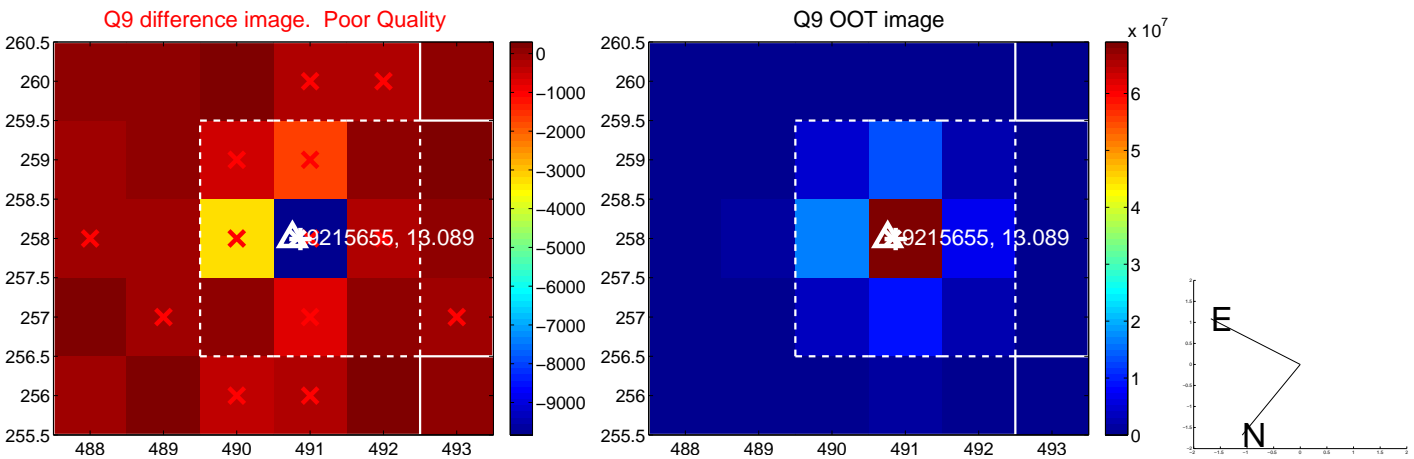


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

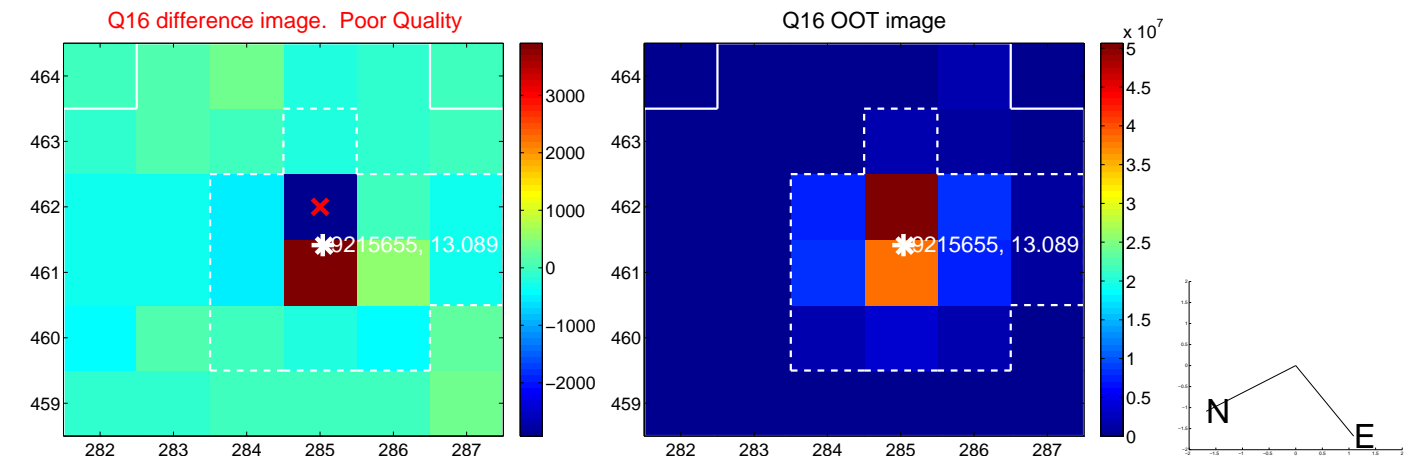
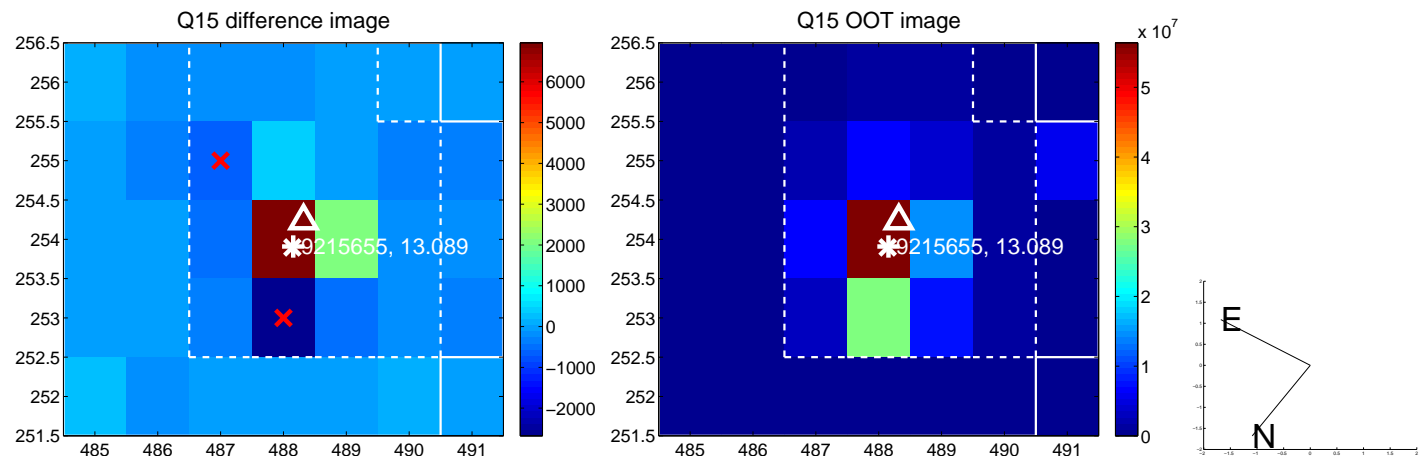
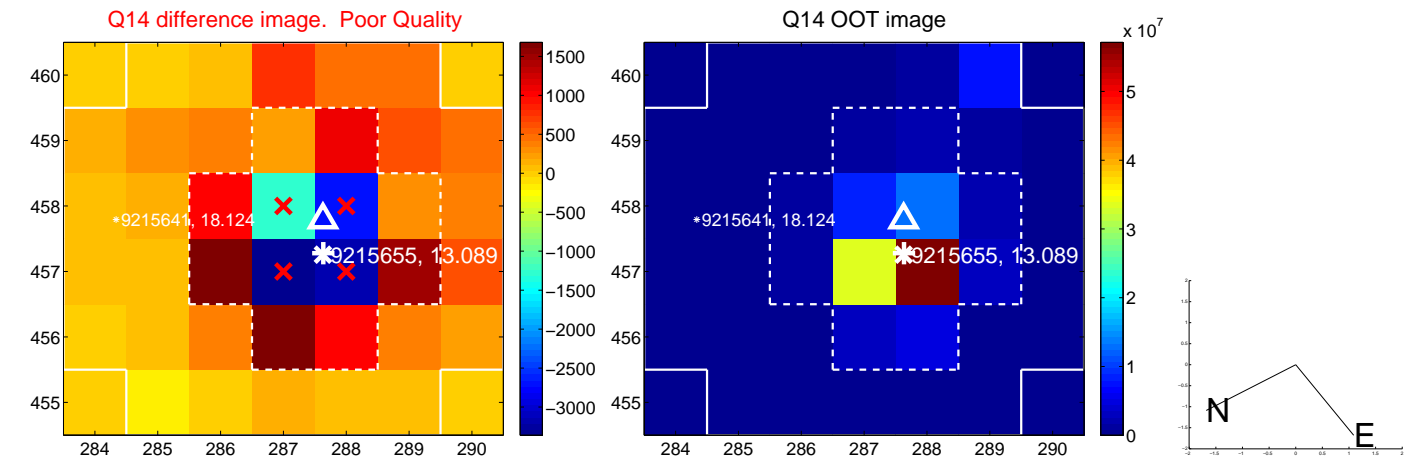
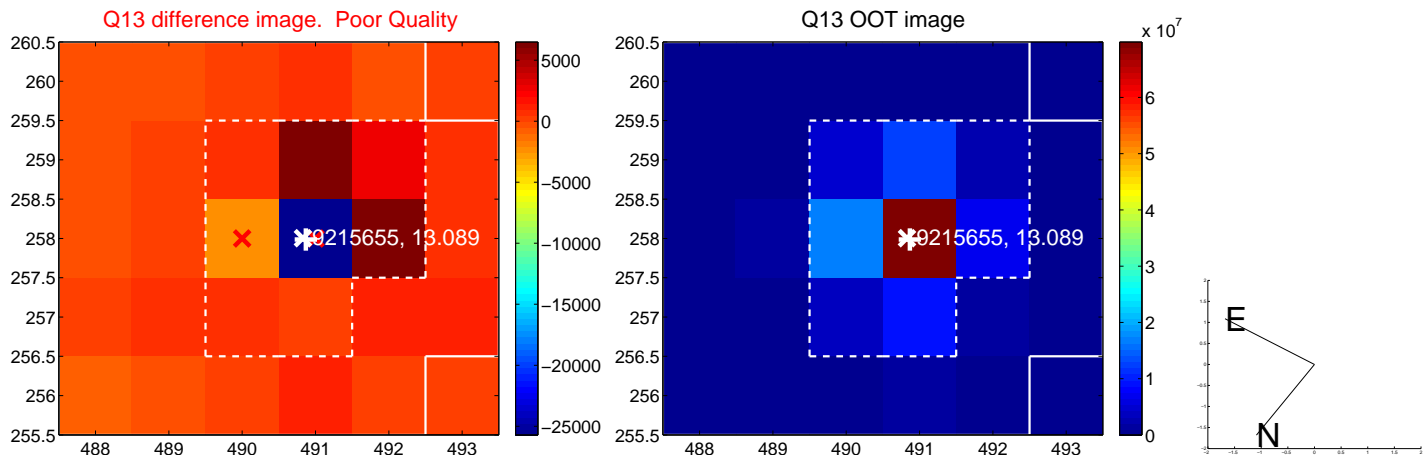
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



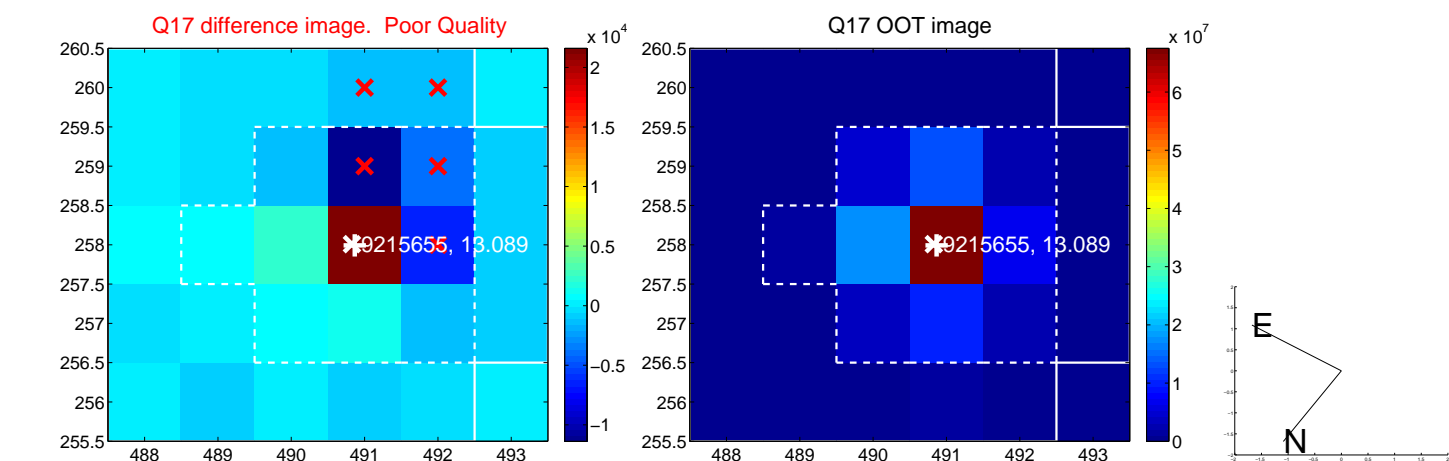
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



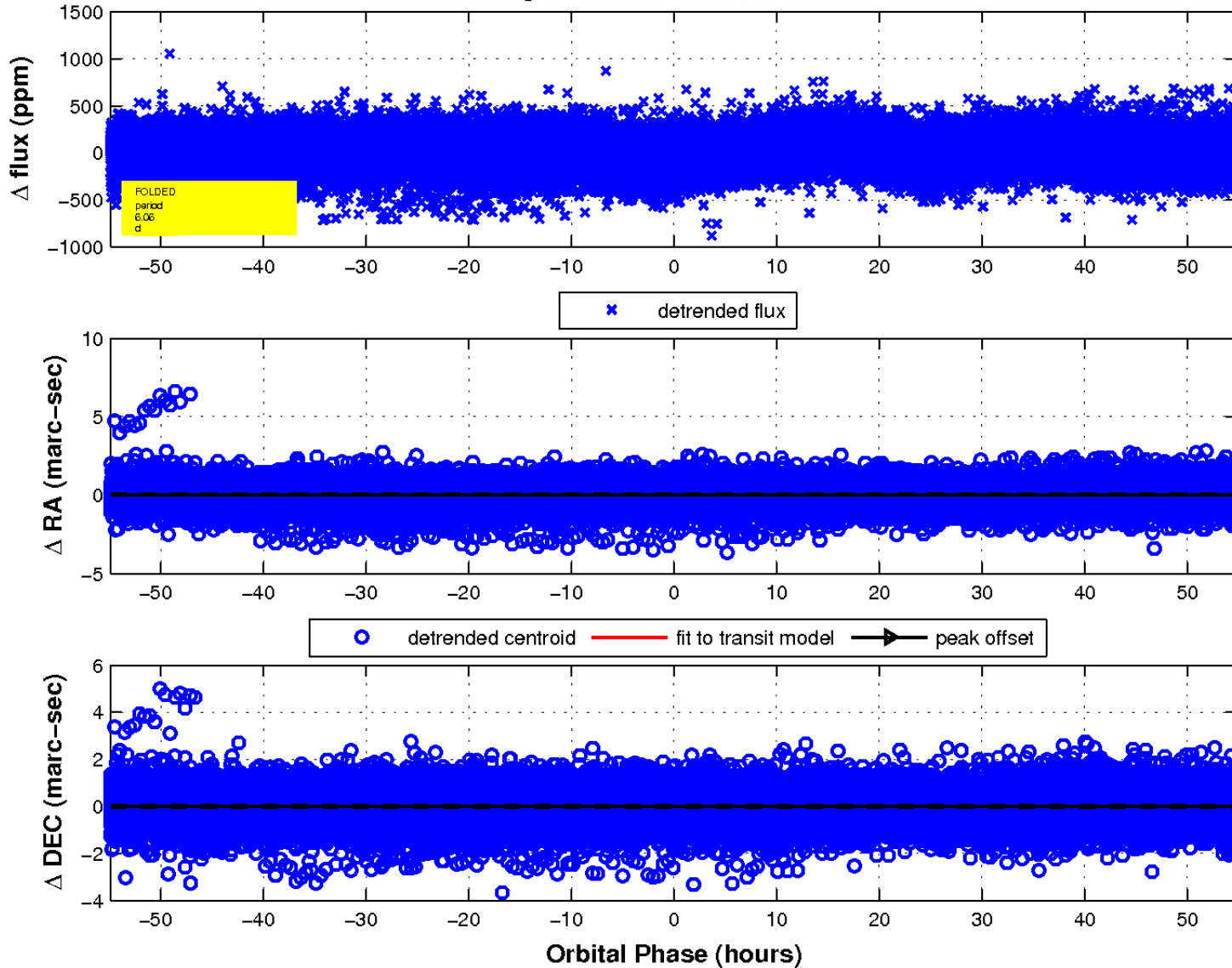
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

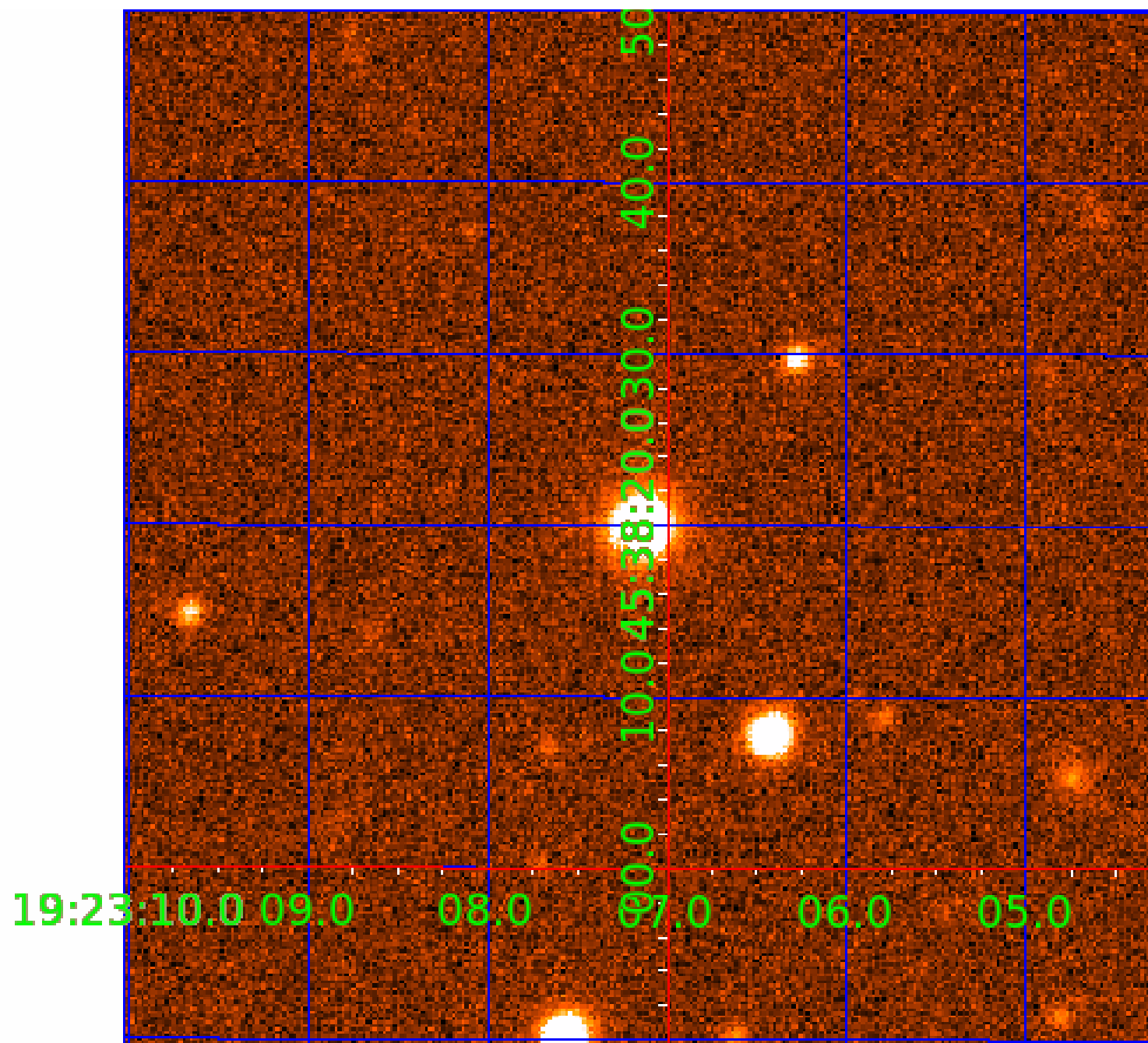


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009215655

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})
009215655-01	OBS	No	6.062446	132.633539	75.5	18.301	13.5	14.5	1.66	7304	2.73	1310.61
009215655-02	OBS	No	3.031218	133.415660	47.5	14.887	10.8	11.3	1.66	7304	1.57	3302.53

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009215655-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
009215655-02	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—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.

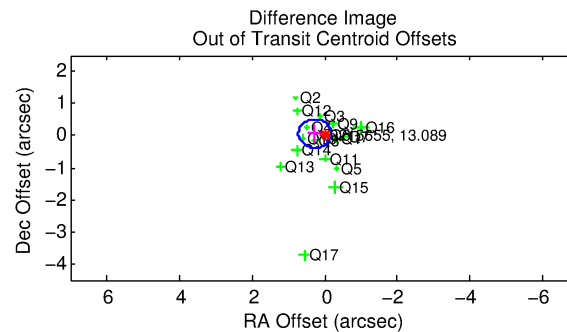
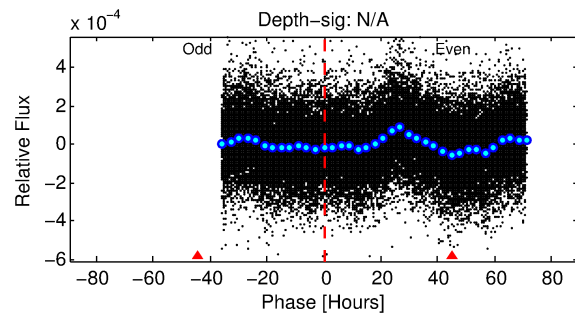
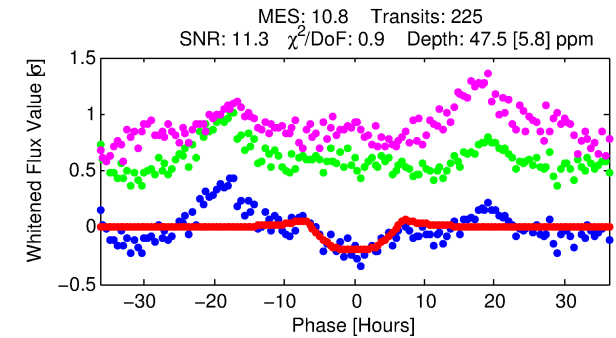
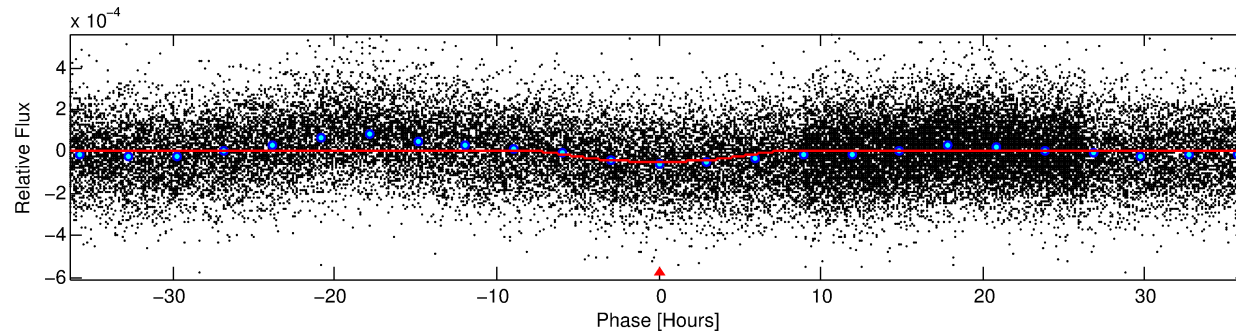
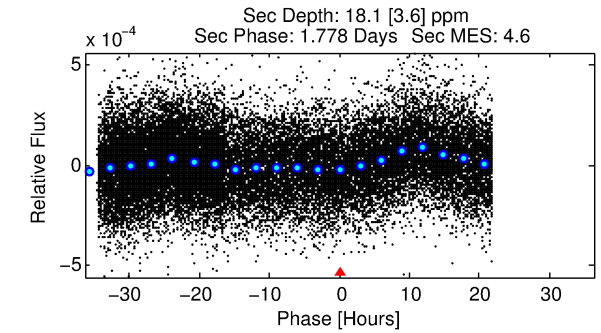
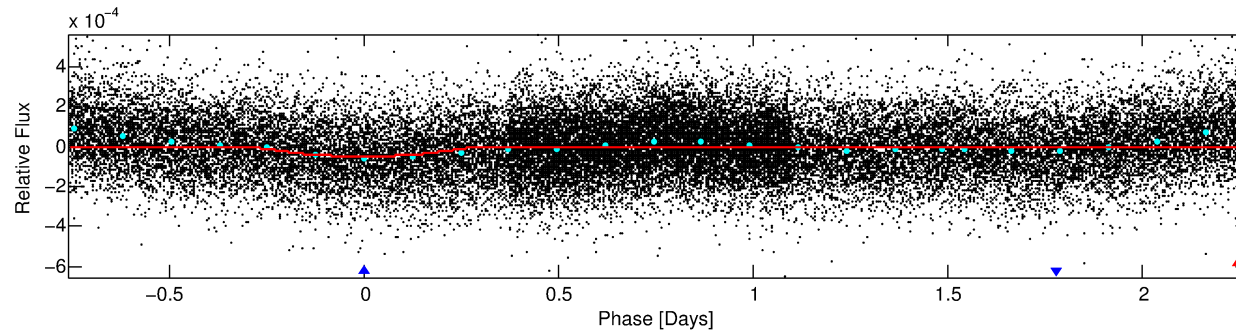
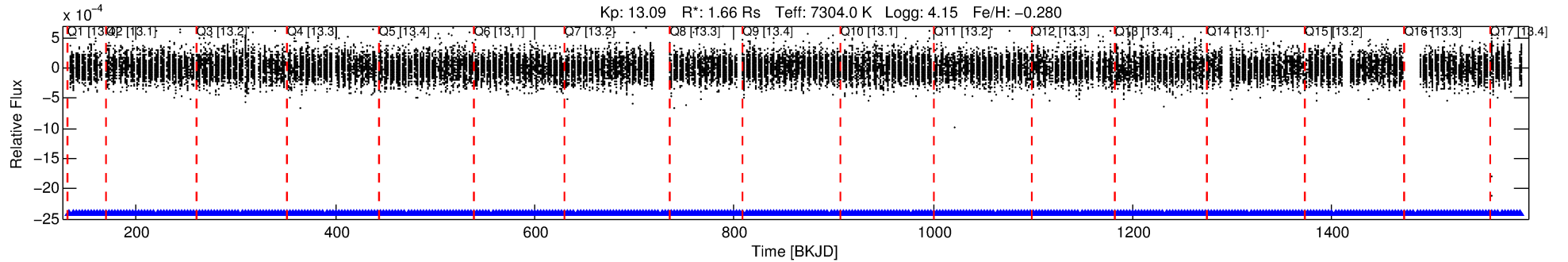
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009215655-02

No Significant Match Found

DV One-Page Summary

KIC: 9215655 Candidate: 2 of 2 Period: 3.031 d



DV Fit Results:

Period = 3.03122 [0.00009] d
Epoch = 133.4157 [0.0236] BKJD
Rp/R* = 0.0087 [0.0006]
a/R* = 1.04 [0.01]
b = 0.99 [0.00]
Seff = 3302.53 [1296.69]
Teq = 1933 [190] K
Rp = 1.57 [0.51] Re
a = 0.0460 [0.0117] AU
Ag = 8.60 [3.72] [2.04σ]
Teffp = 5117 [381] K [7.48σ]

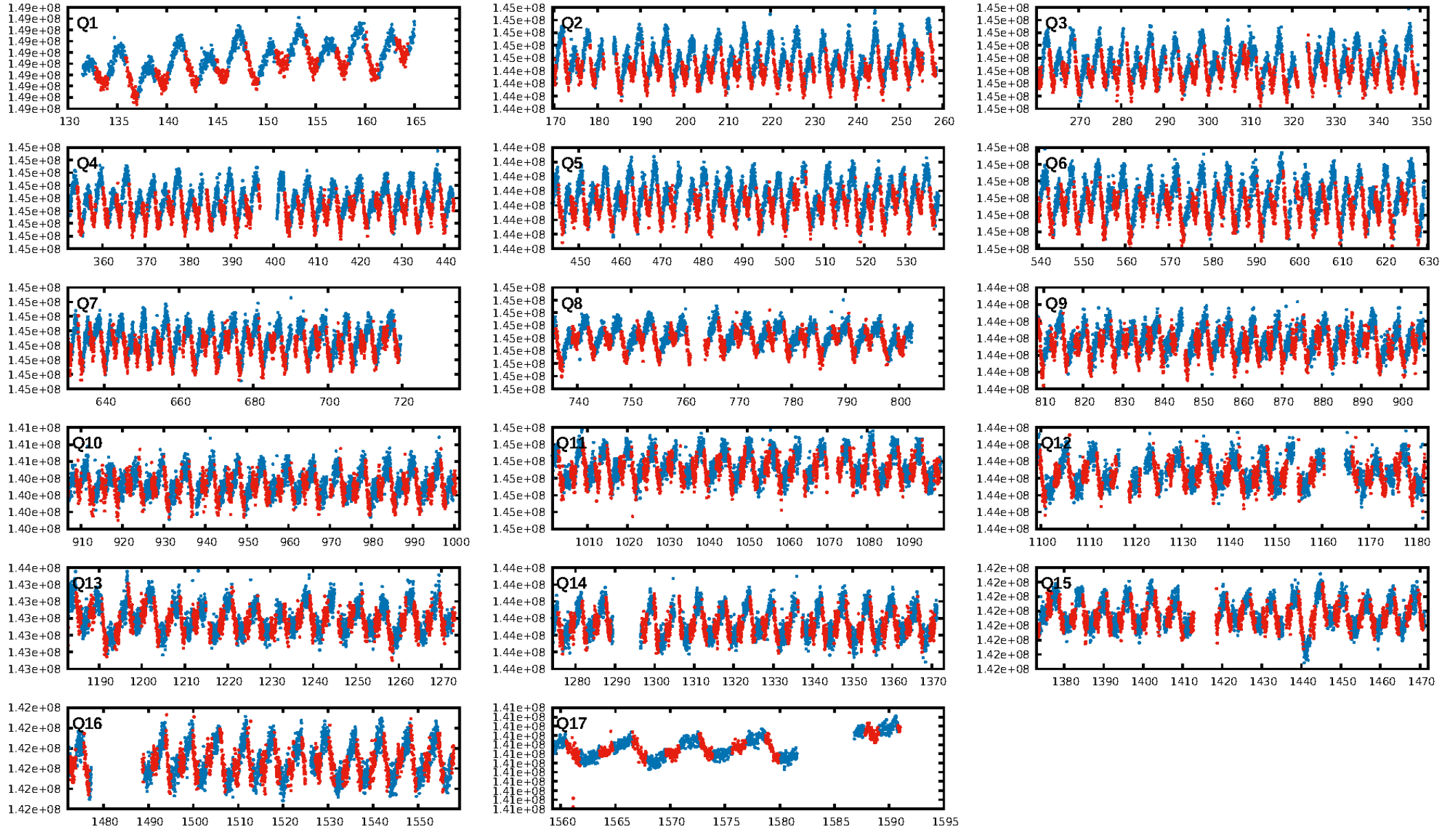
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 99.8% [3.08σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.43e-06
RollingBand-fgt: 1.00 [216/216]
GhostDiagnostic-chr: 1.488
Centroid-sig: 0.0%
Centroid-so: 0.871 arcsec [1.91σ]
OotOffset-rm: 0.283 arcsec [1.89σ]
KicOffset-rm: 0.219 arcsec [1.24σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 1.00 [17/17]

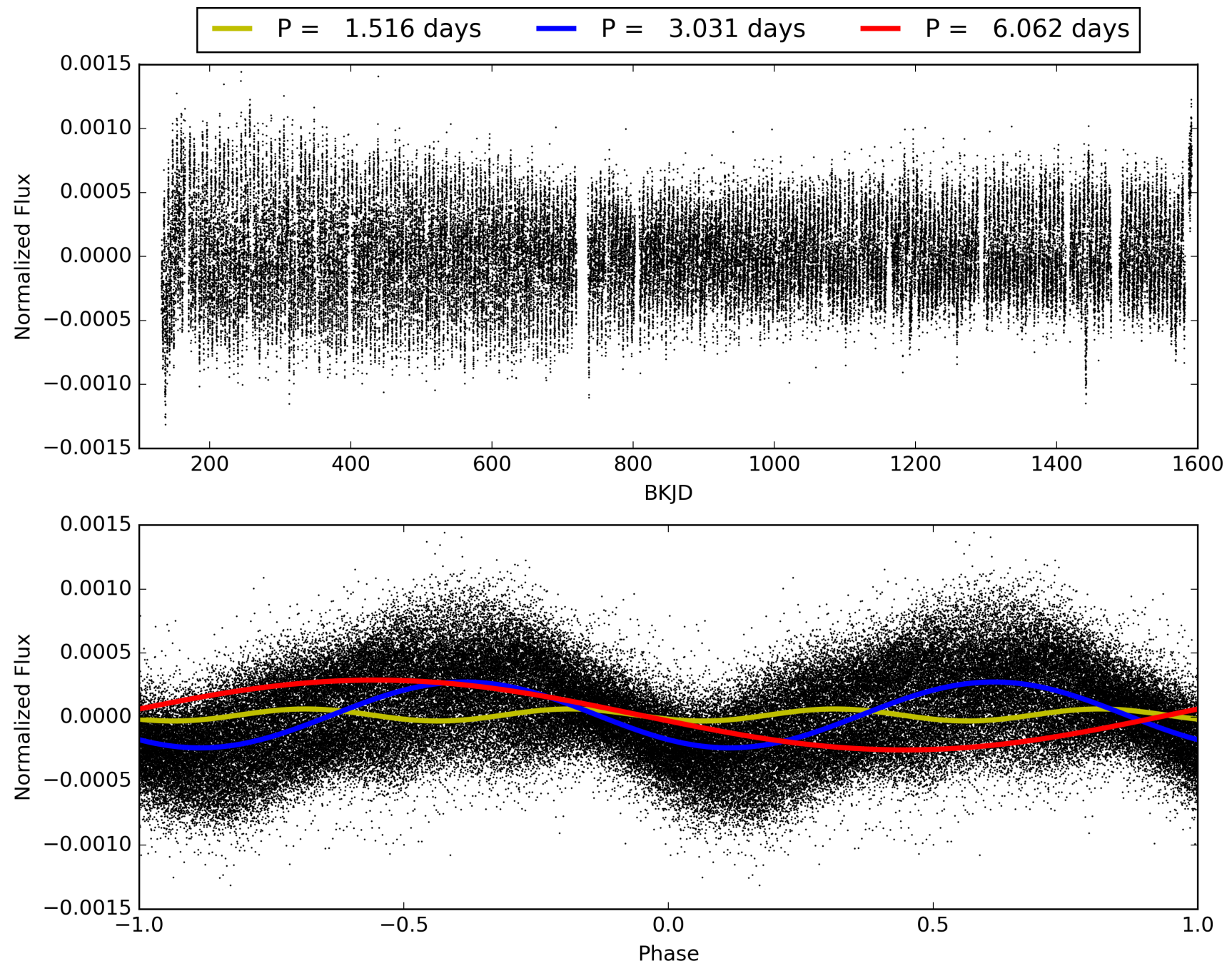
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 20:03:32 Z

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

TCE 009215655-02, PDC Light Curves

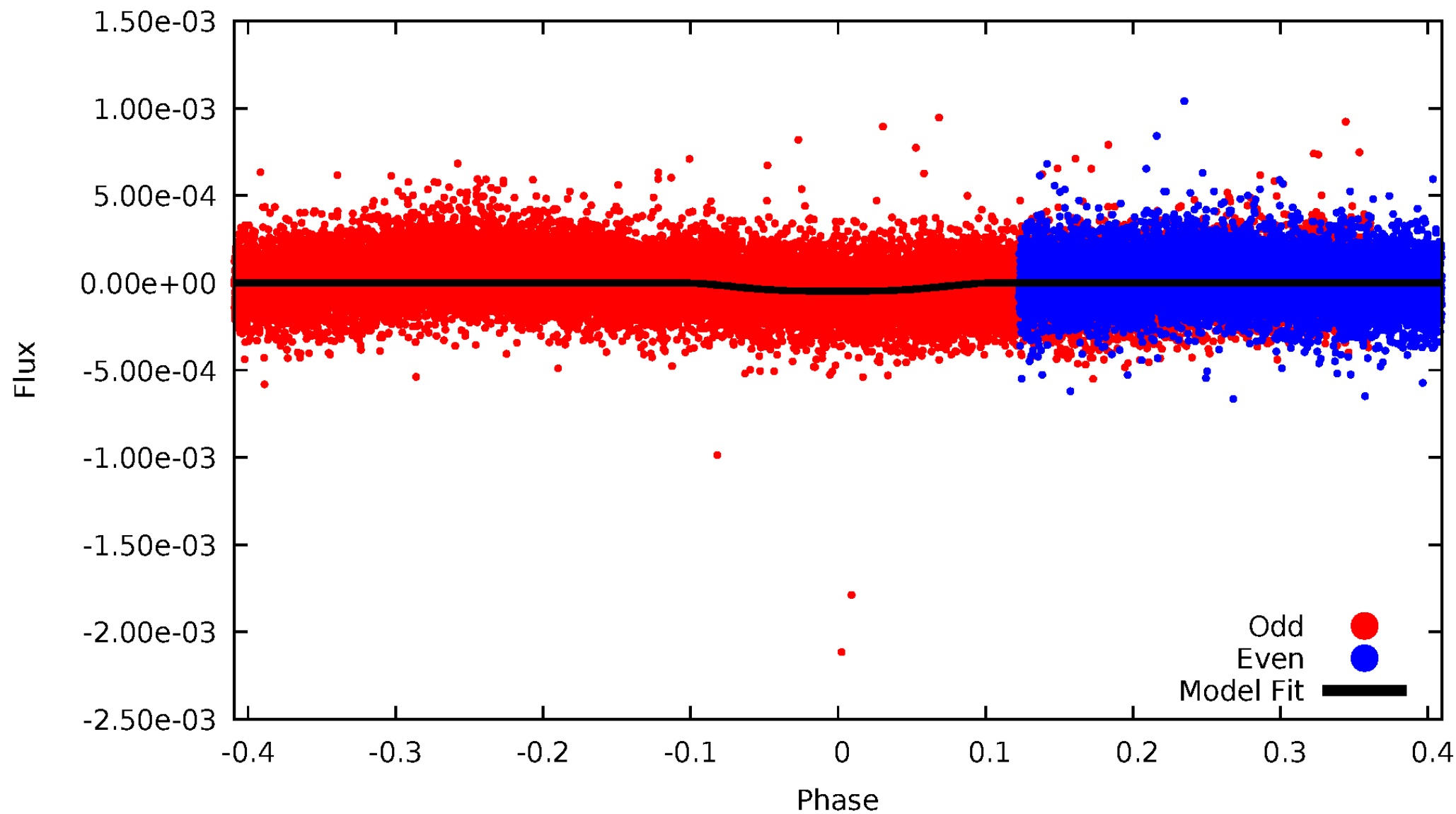


TCE 009215655-02



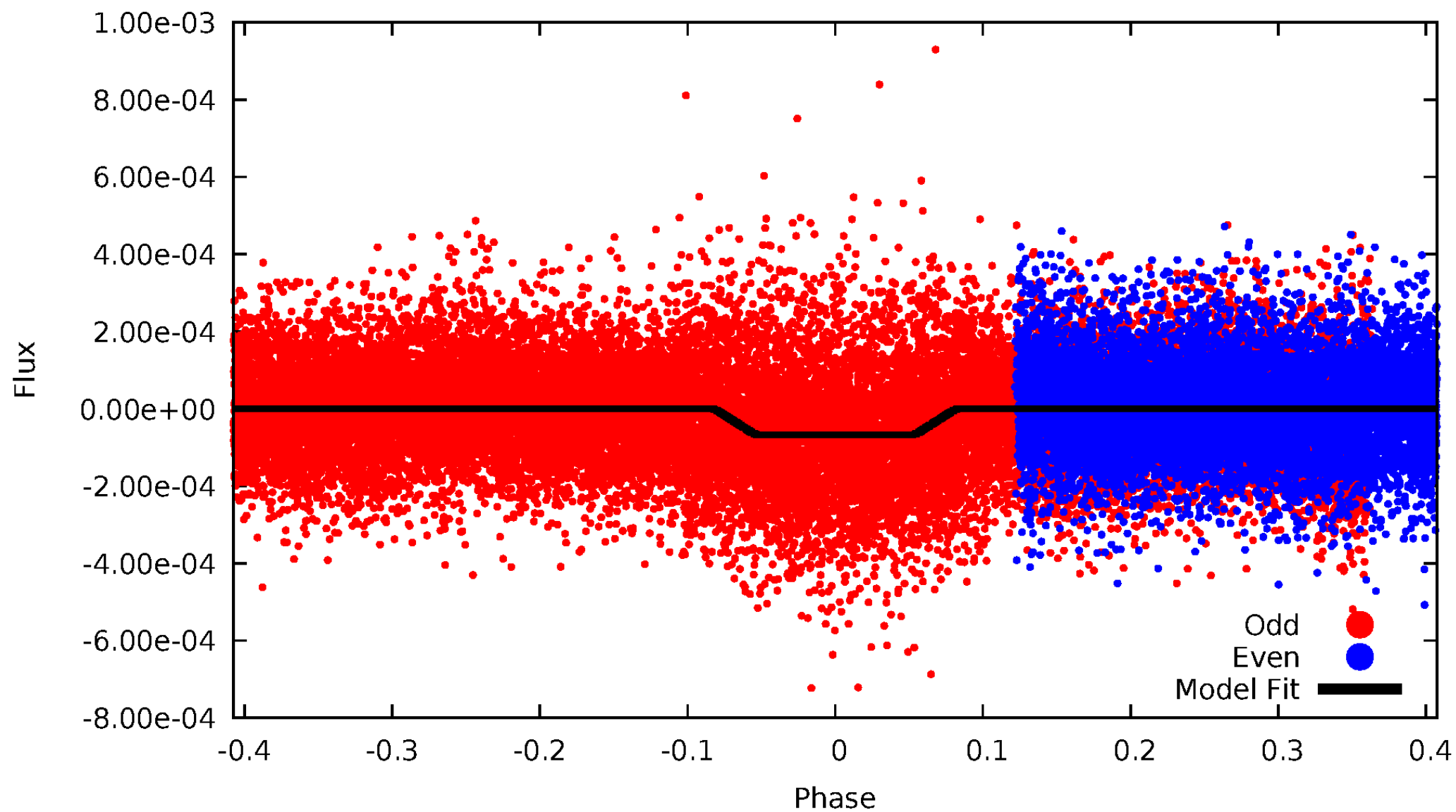
DV Odd/Even

TCE 009215655-02



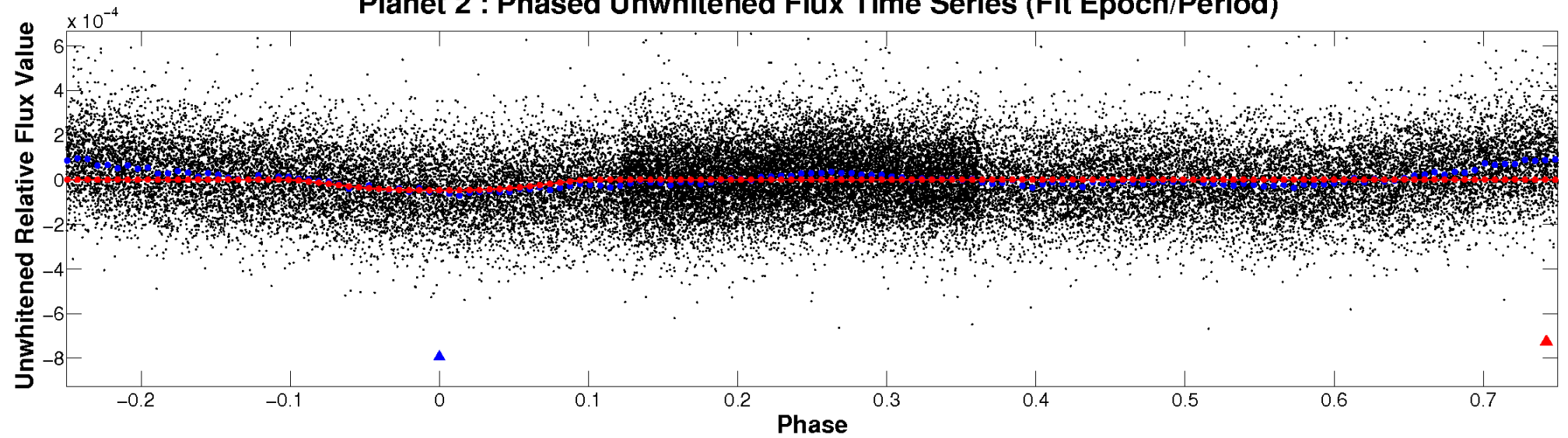
ALT Odd/Even

TCE 009215655-02

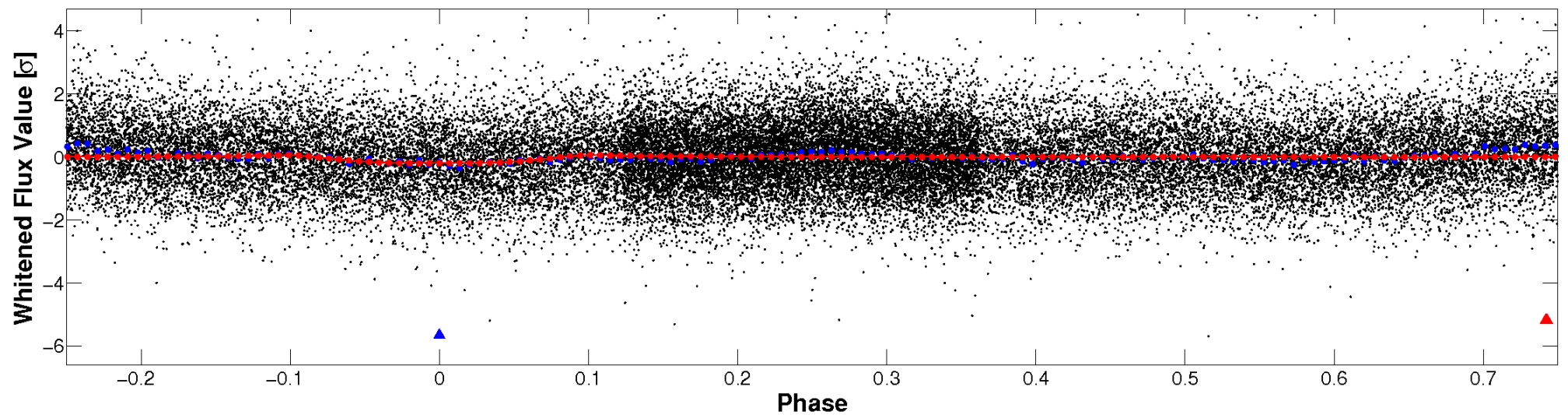


Non-Whitened Vs. Whitened Light Curve

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

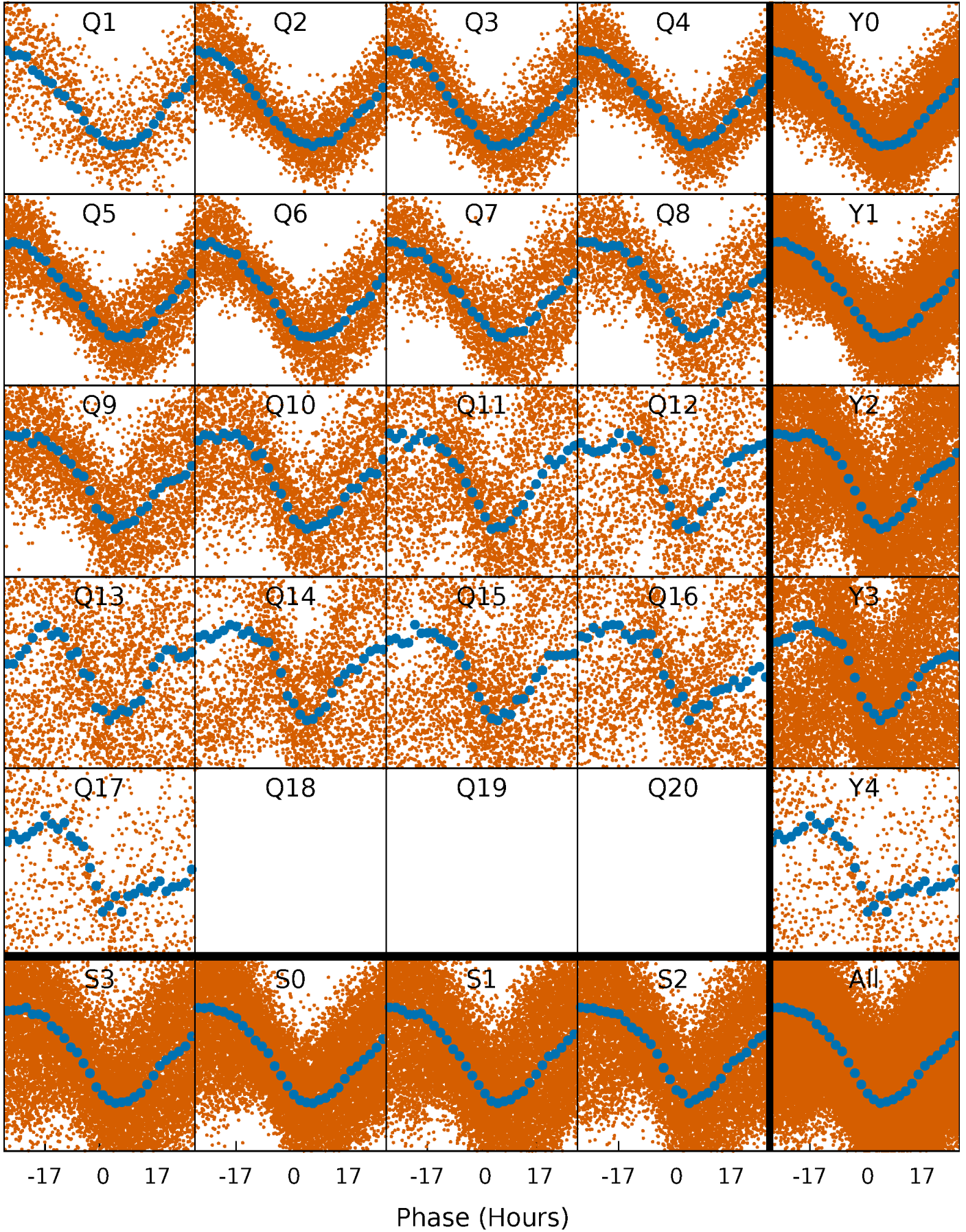


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



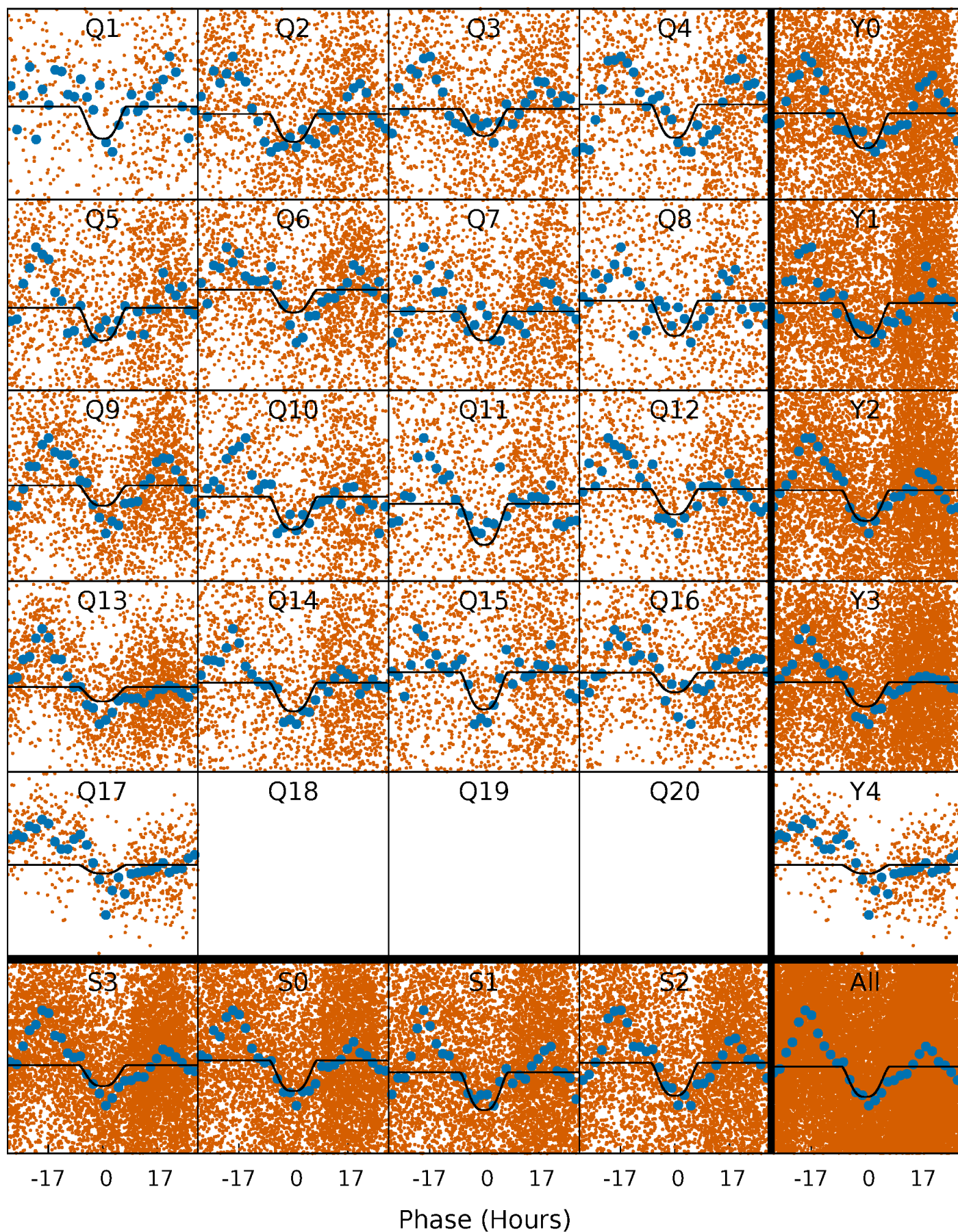
PDC Quarter-Phased Transit Curves

TCE 009215655-02 P= 3.031218 Days $T_0=133.415660$ (BKJD)



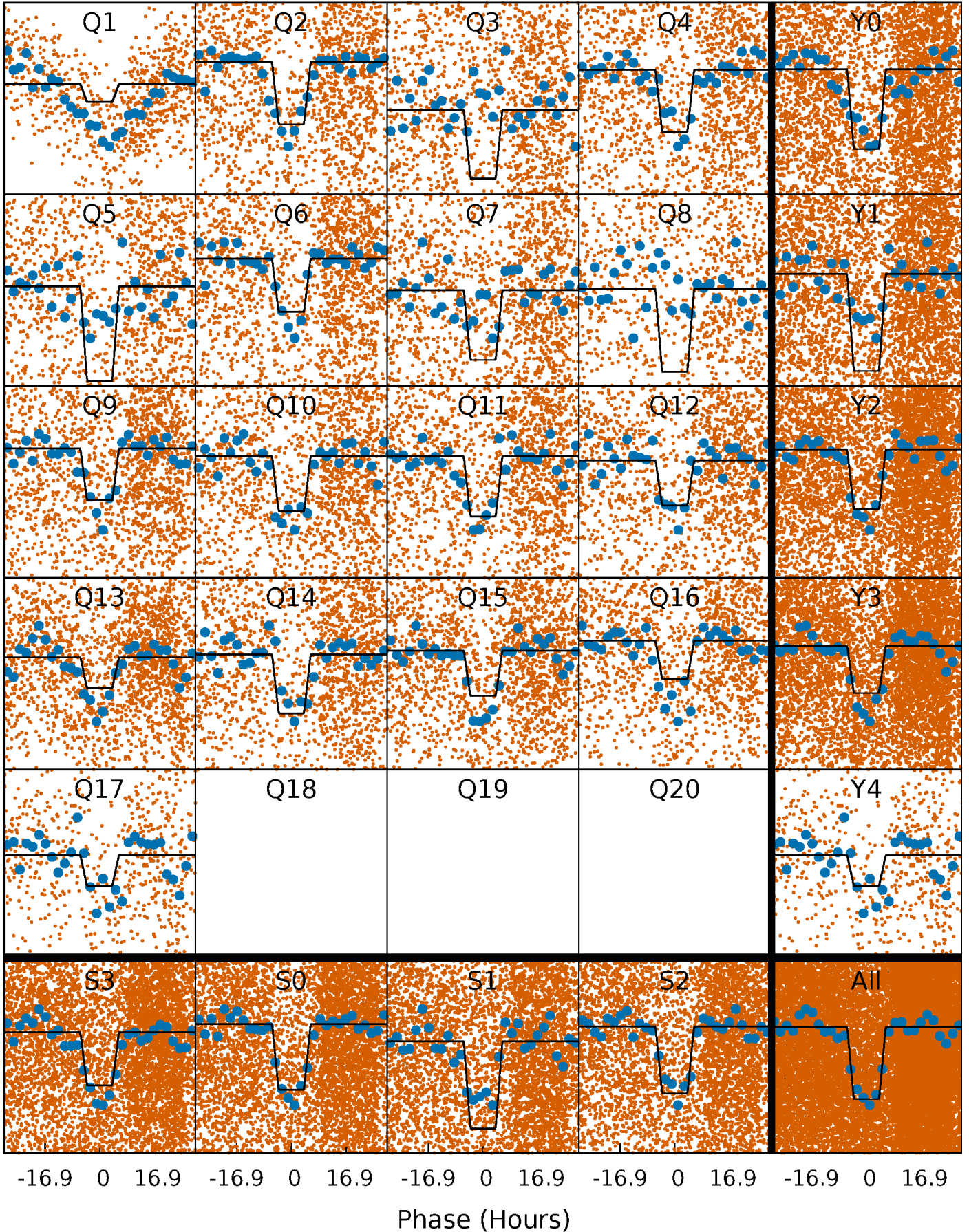
DV Quarter-Phased Transit Curves

TCE 009215655-02 P= 3.031218 Days $T_0=133.415660$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

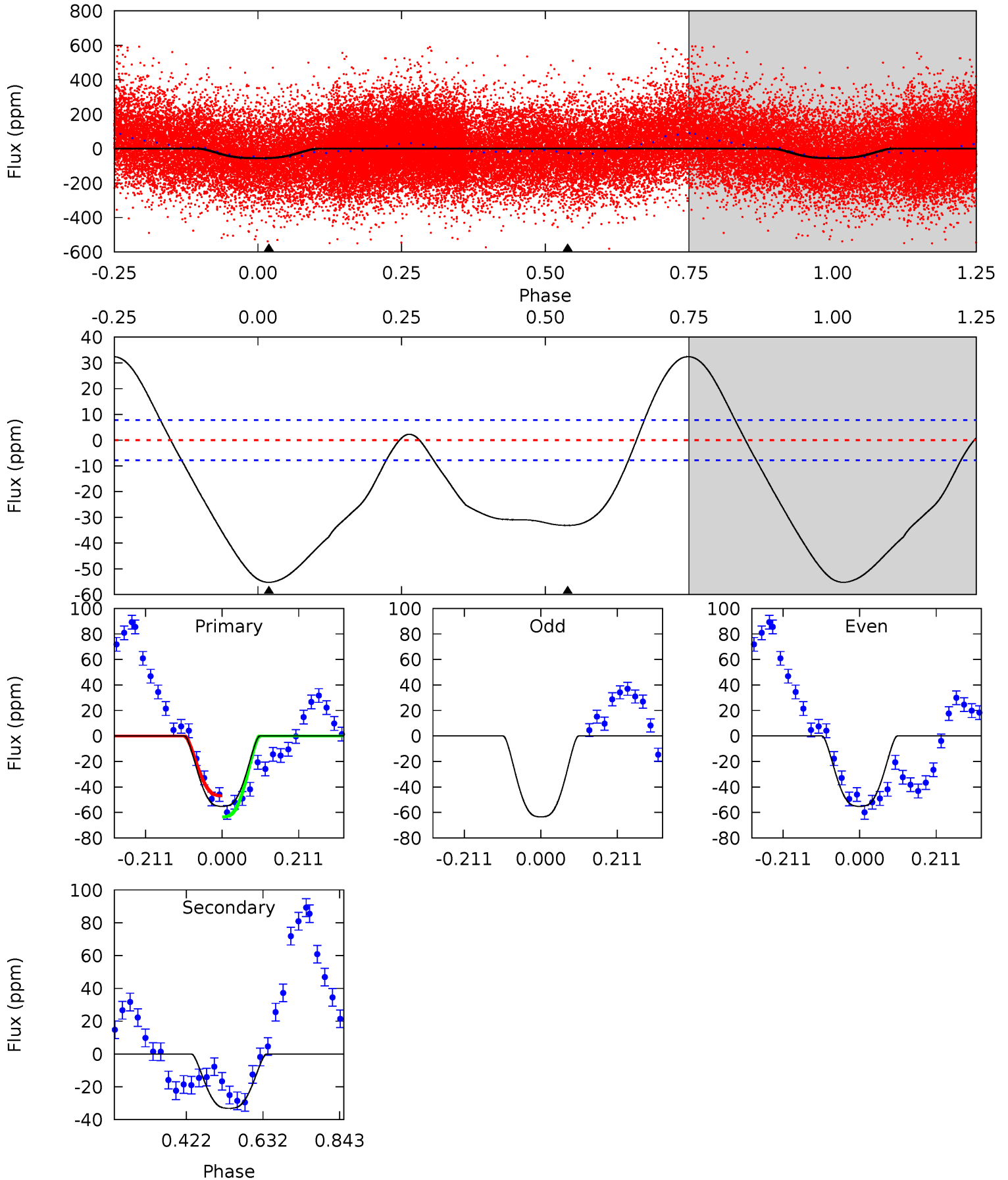
TCE 009215655-02 P= 3.031250 Days $T_0=133.406066$ (BKJD)



DV Model-Shift Uniqueness Test

009215655-02, P = 3.031218 Days, E = 133.415660 Days

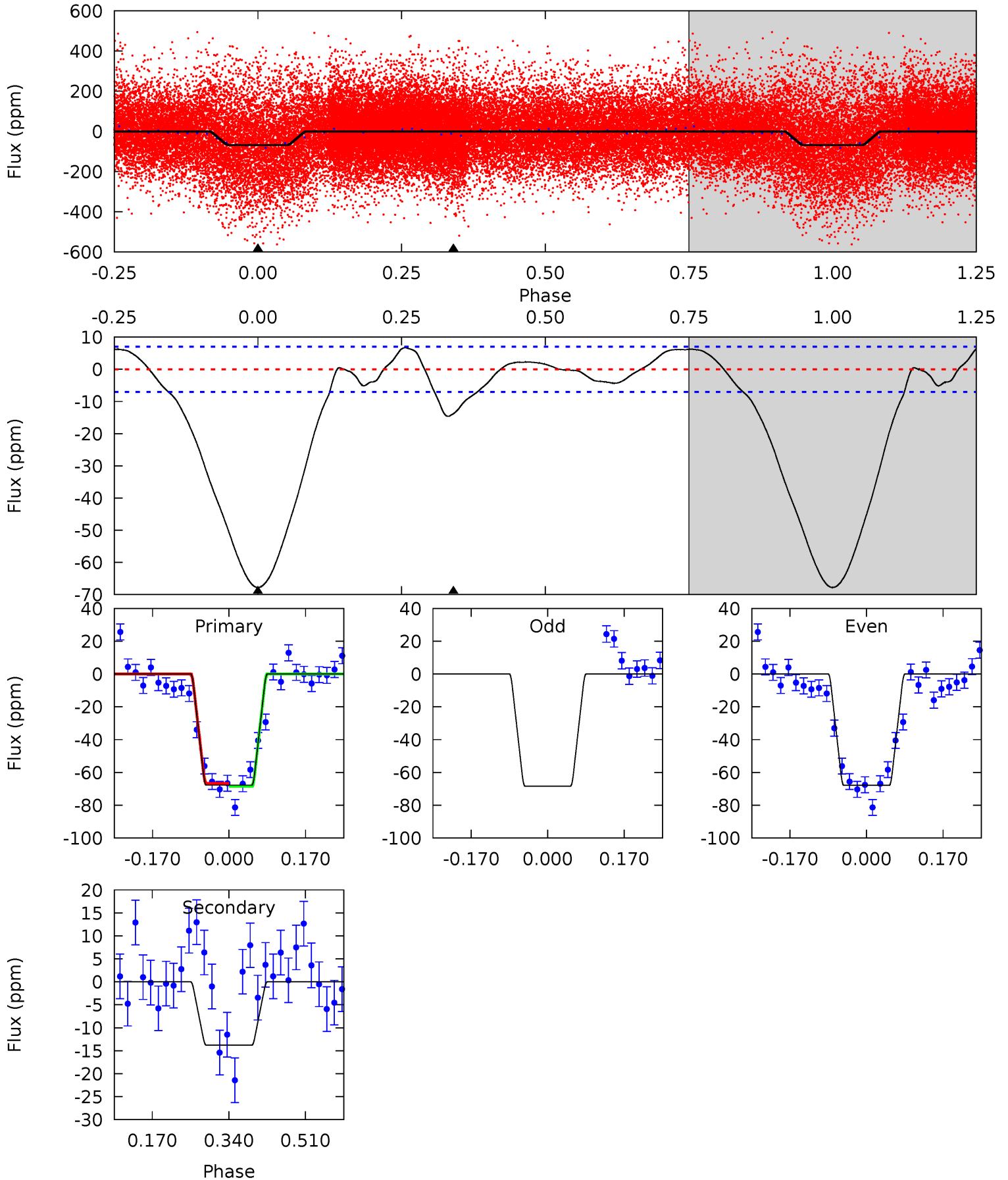
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
31.2	18.7	0	0	4.41	1.25	7.77	31.2	31.2	18.7	18.7	2.77	1.05	0.37	4.45



Alt Model-Shift Uniqueness Test

009215655-02, P = 3.031250 Days, E = 133.406066 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.8	8.71	0	0	4.45	1.37	2.29	42.8	42.8	8.71	8.71	0.17	0.95	0.09	0.50



Stellar Parameters For KIC 009215655

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7304^{+228}_{-304}	$4.150^{+0.153}_{-0.187}$	$-0.280^{+0.250}_{-0.350}$	$1.655^{+0.521}_{-0.347}$	$1.410^{+0.226}_{-0.226}$	$0.438^{+0.343}_{-0.221}$
	+3%/-4%	+4%/-5%	+89%/-125%	+31%/-21%	+16%/-16%	+78%/-51%
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 009215655-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-33 ± 2	$1.57^{+0.28}_{-0.23}$	2706^{+204}_{-200}	5839^{+295}_{-292}	15^{+5}_{-4}
Alt.	-14 ± 2	$1.50^{+0.28}_{-0.22}$	2710^{+211}_{-204}	4864^{+256}_{-208}	$7.119^{+2.613}_{-2.021}$

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

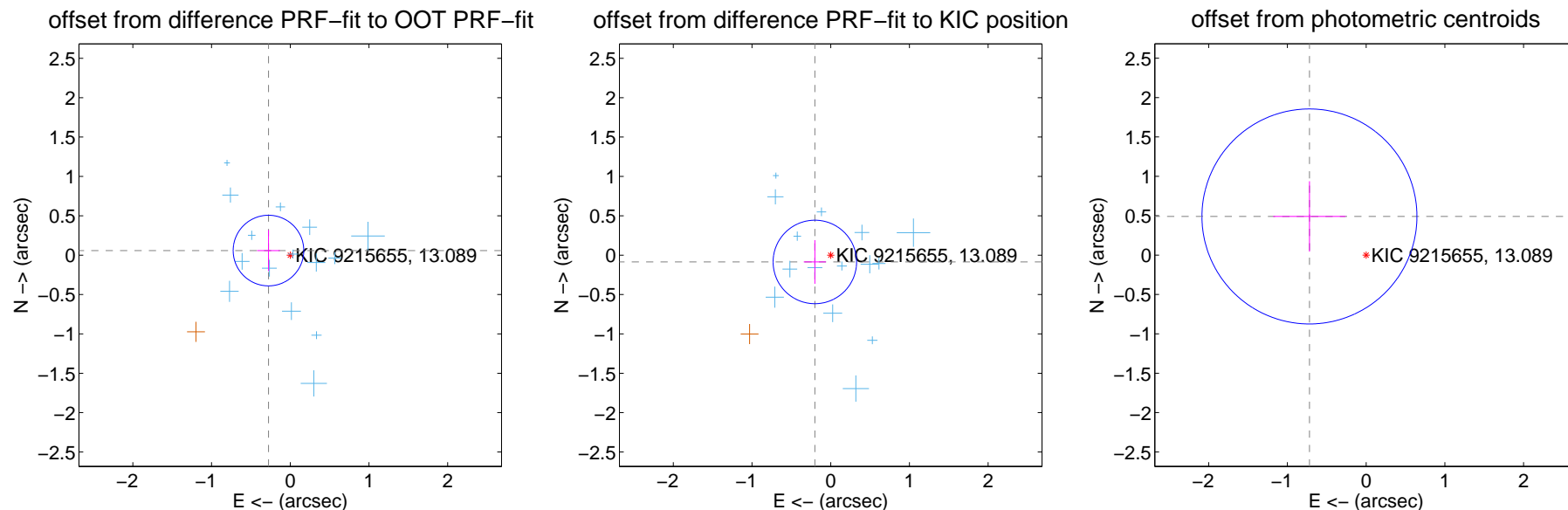
DV Centroid Data

Supplemental centroid analysis for 009215655-02. Kepler magnitude: 13.09. Transit SNR 11.29

There are 15 quarters with good PRF difference image offsets

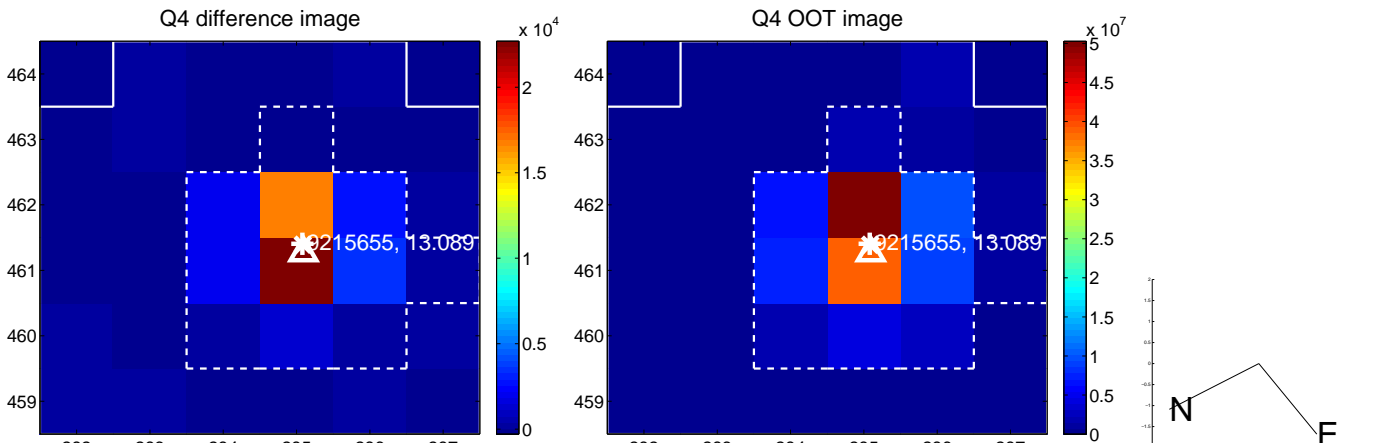
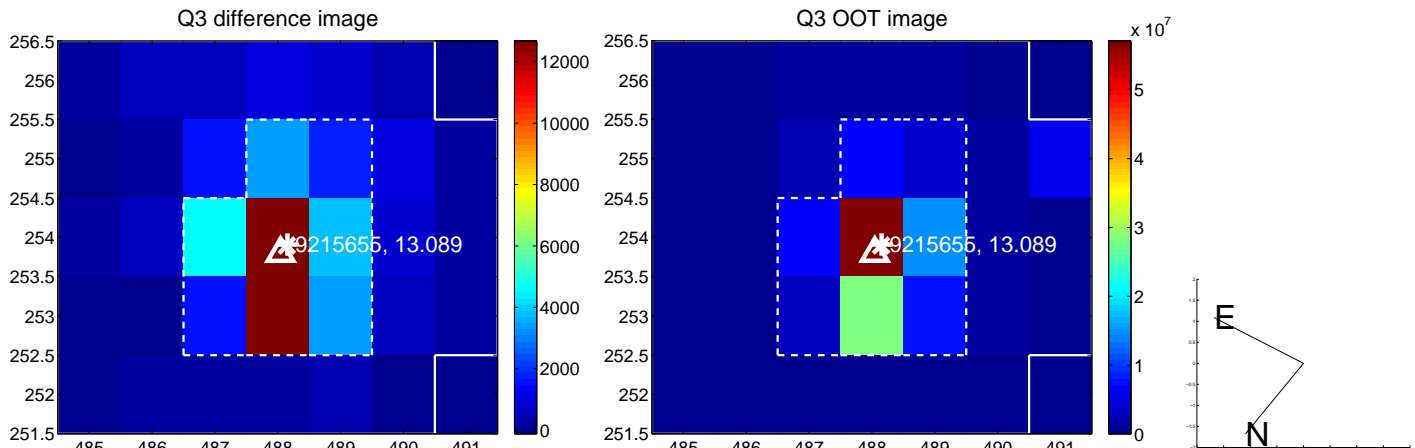
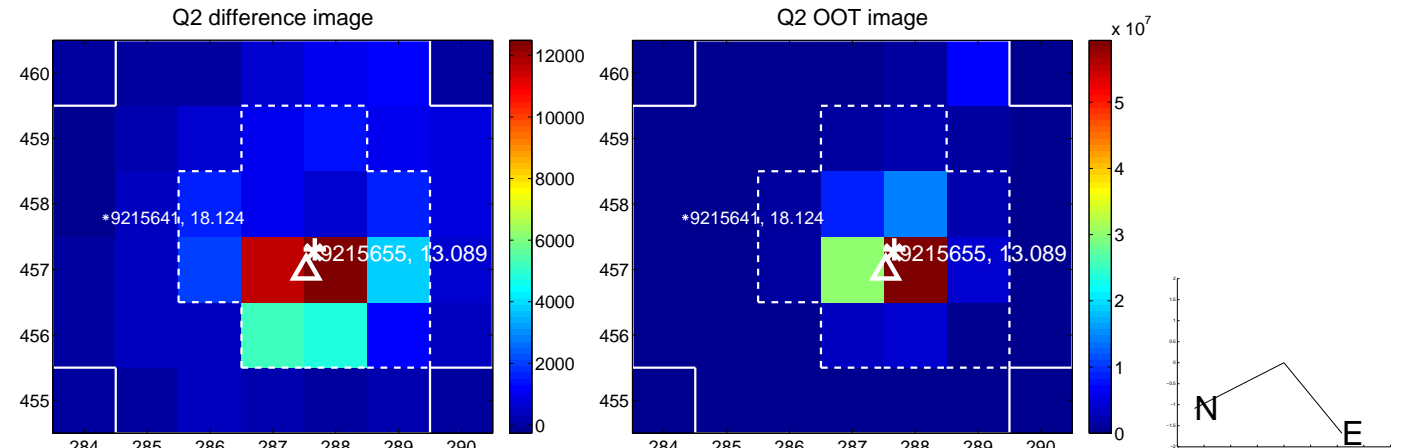
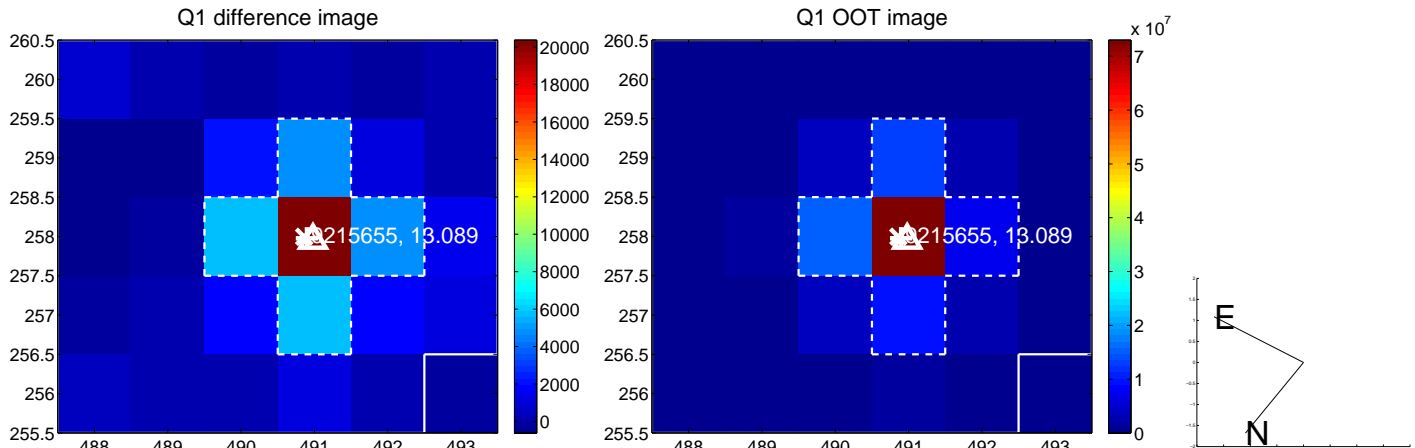
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.283 ± 0.149	1.89	0.277 ± 0.144	0.058 ± 0.260
PRF-fit source offset from KIC position	0.219 ± 0.177	1.24	0.202 ± 0.141	-0.086 ± 0.277
photometric centroid source offset	0.87 ± 0.46	1.91	0.72 ± 0.46	0.49 ± 0.45

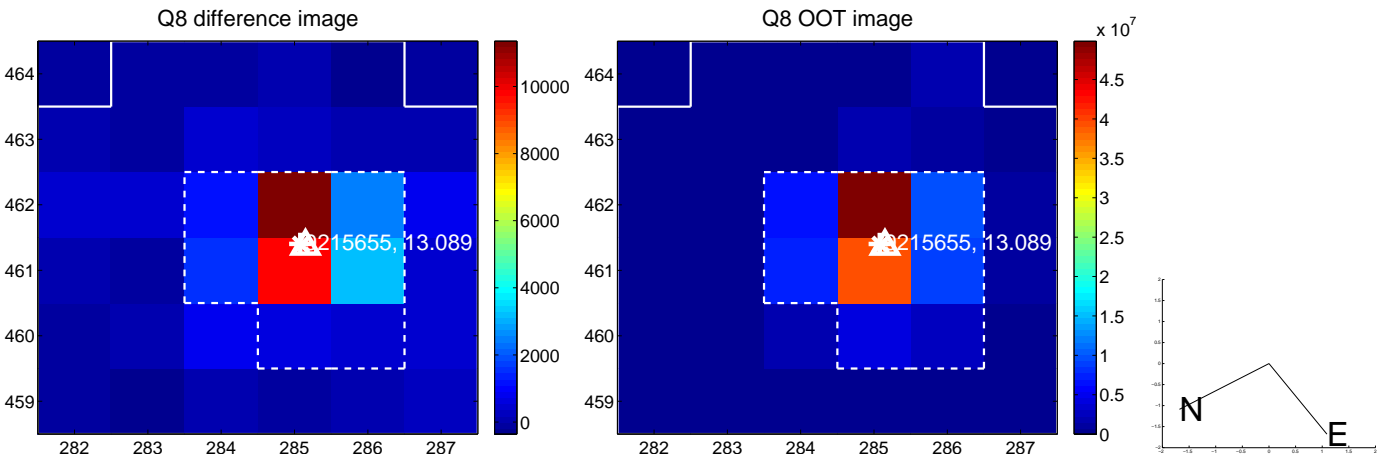
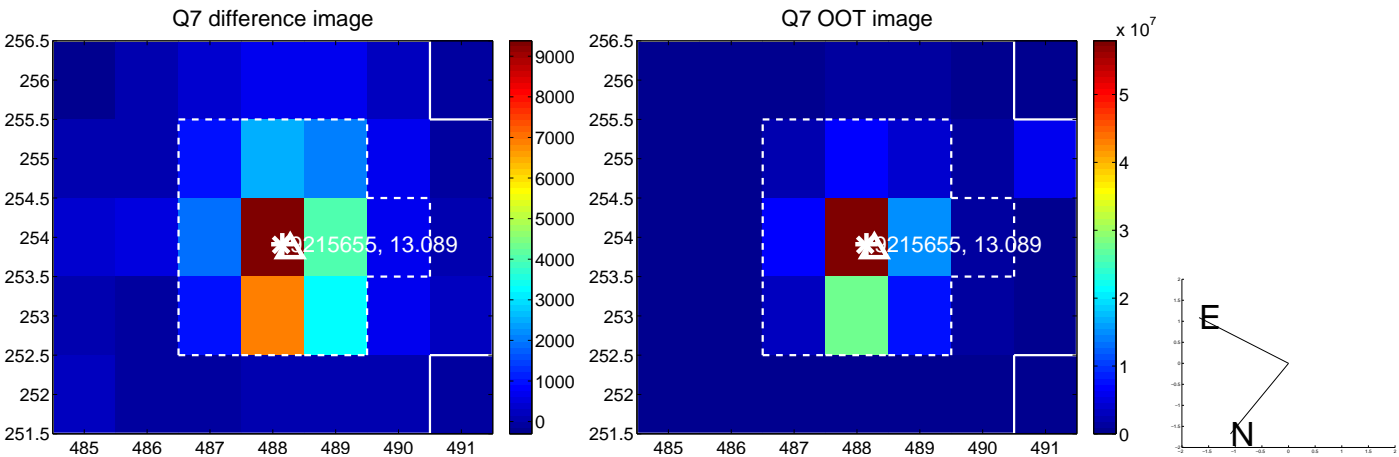
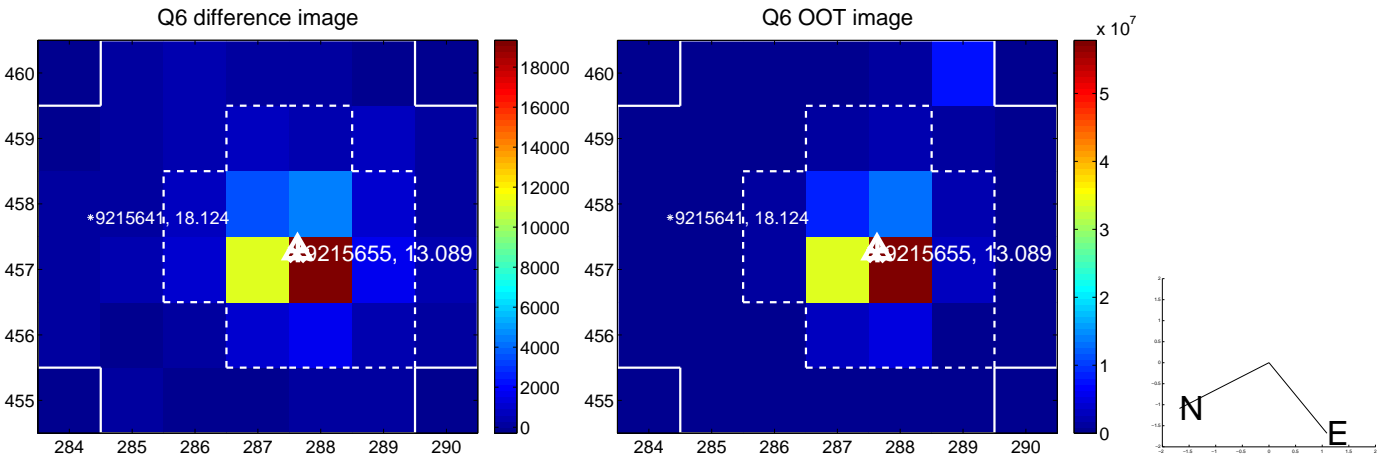
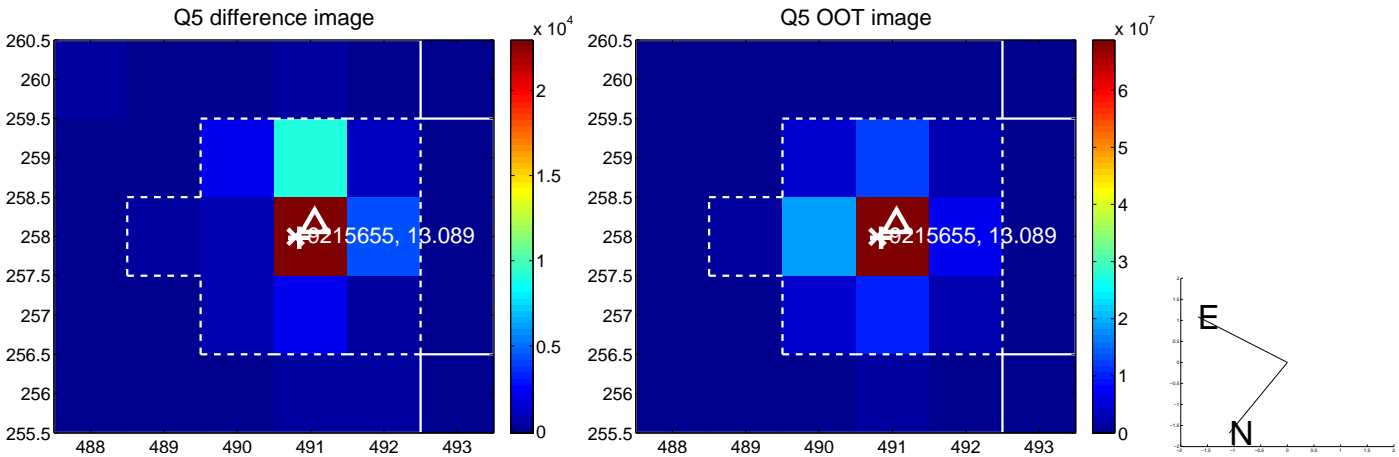


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

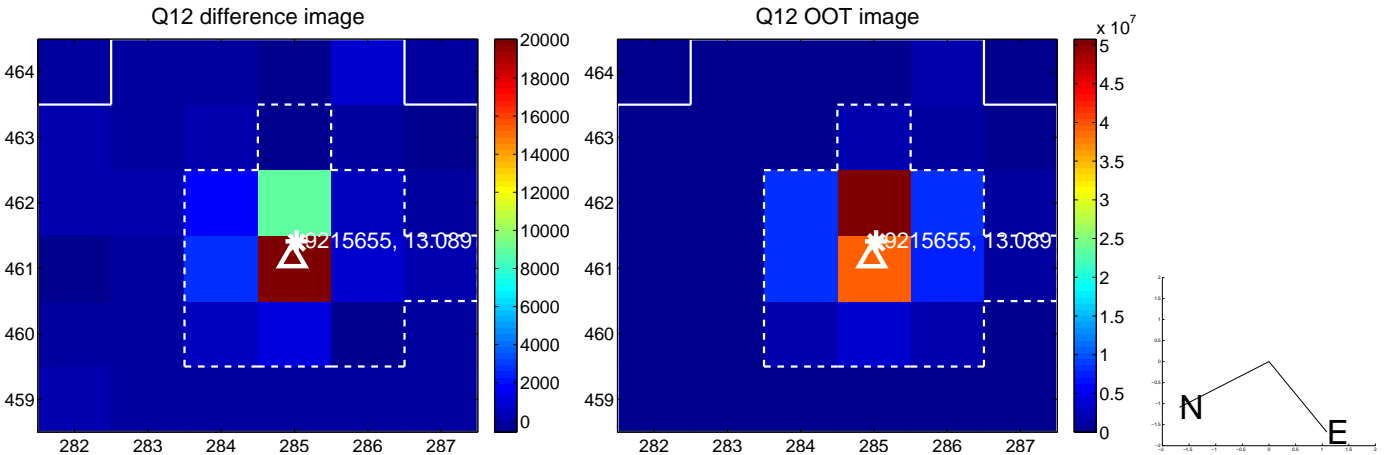
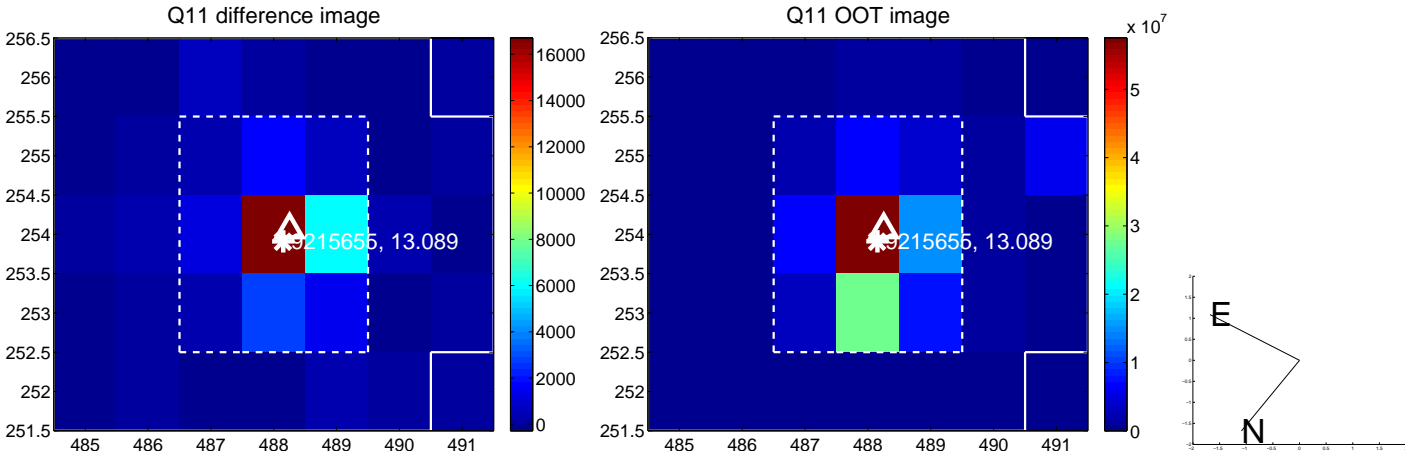
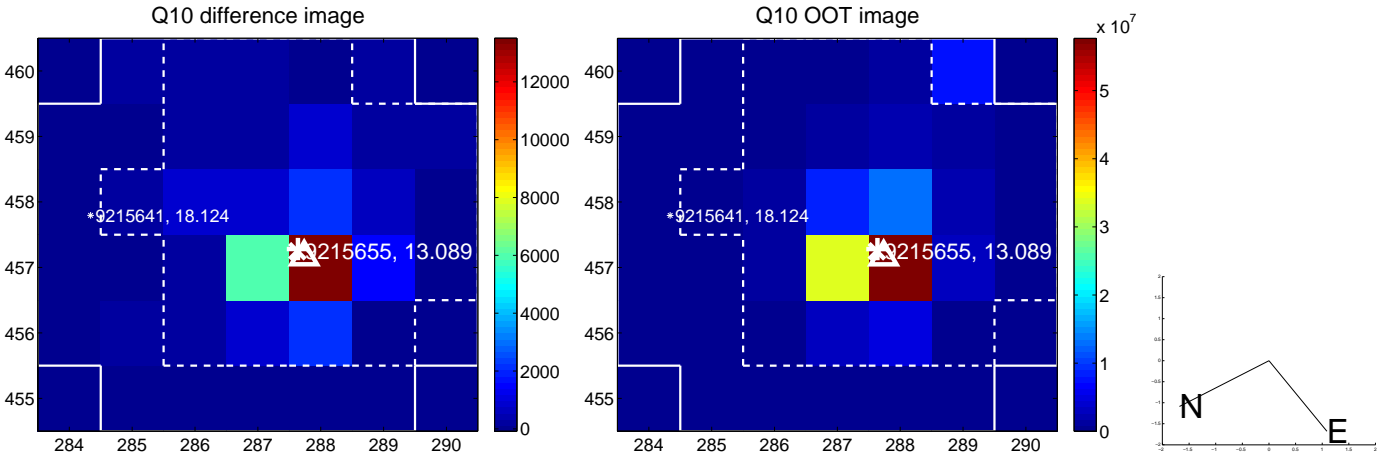
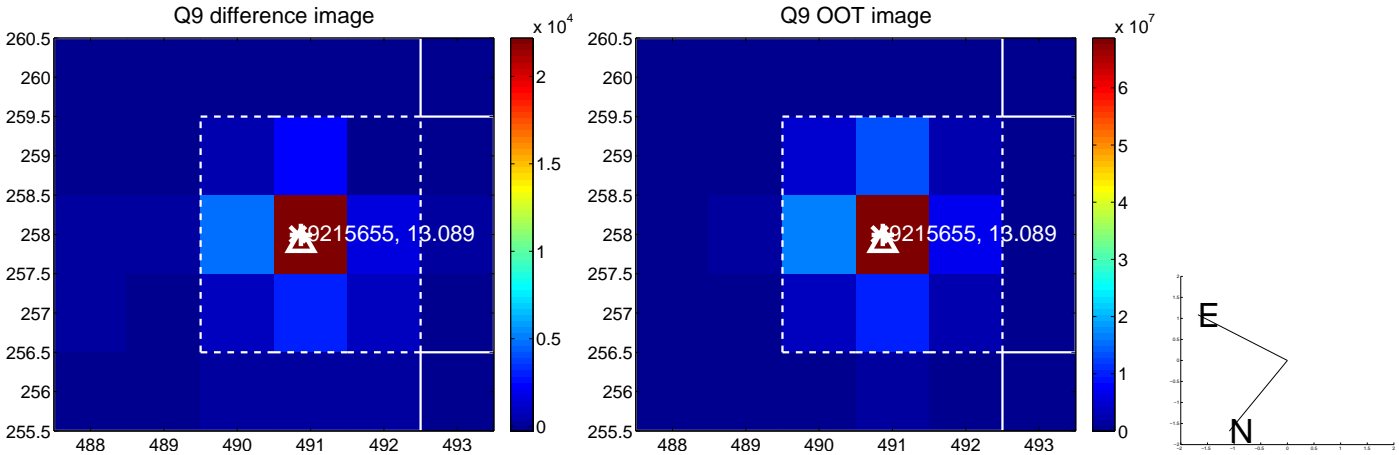
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



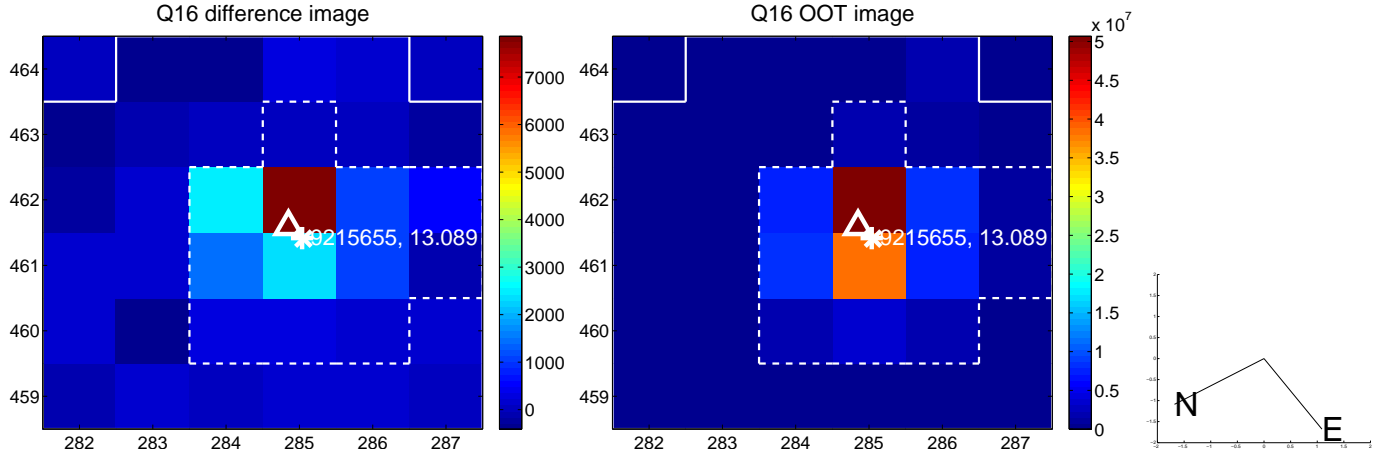
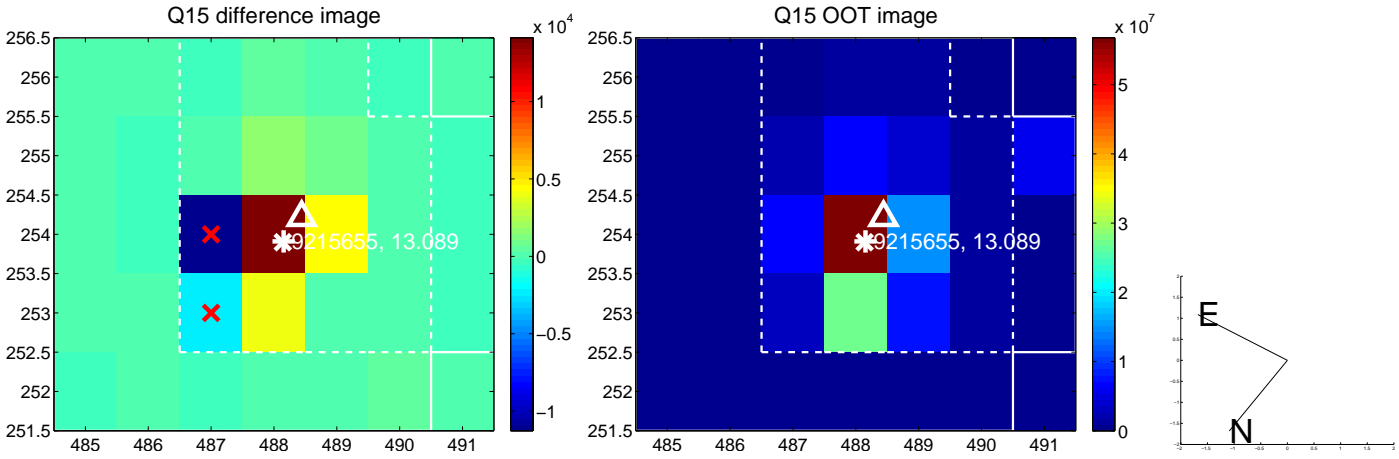
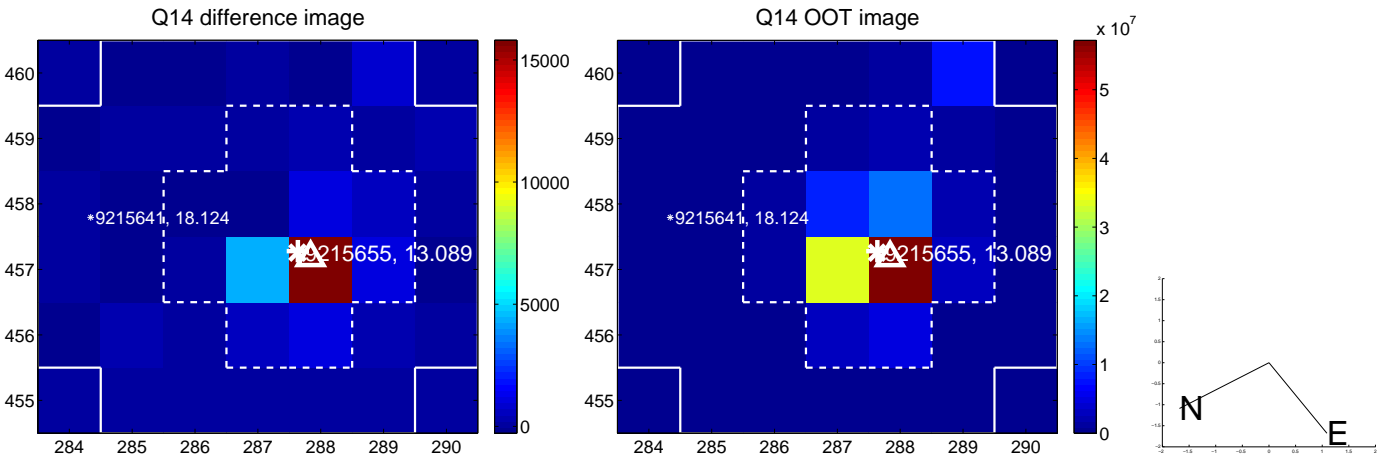
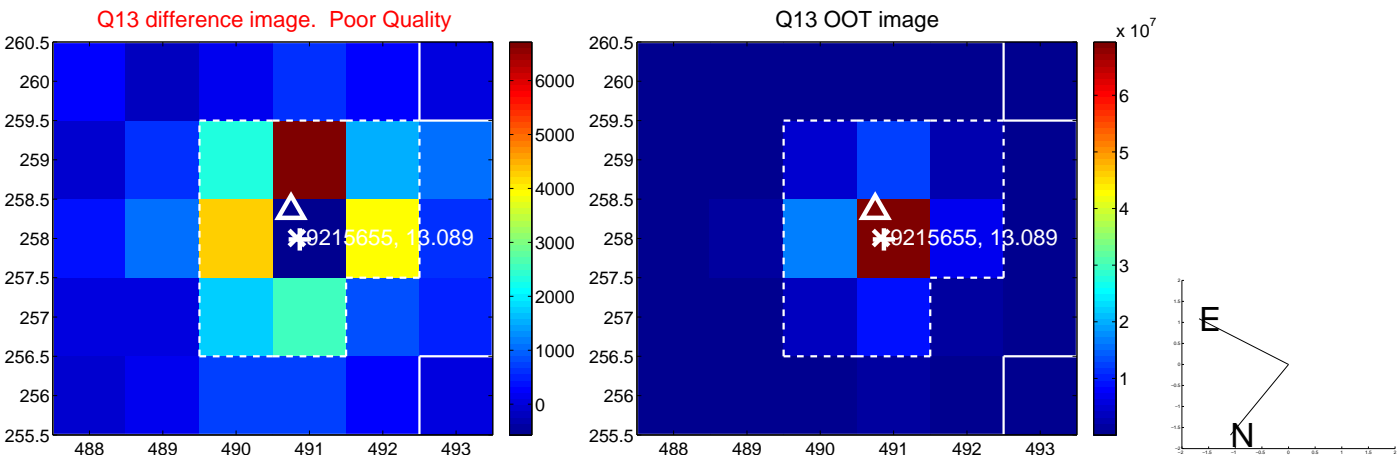
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



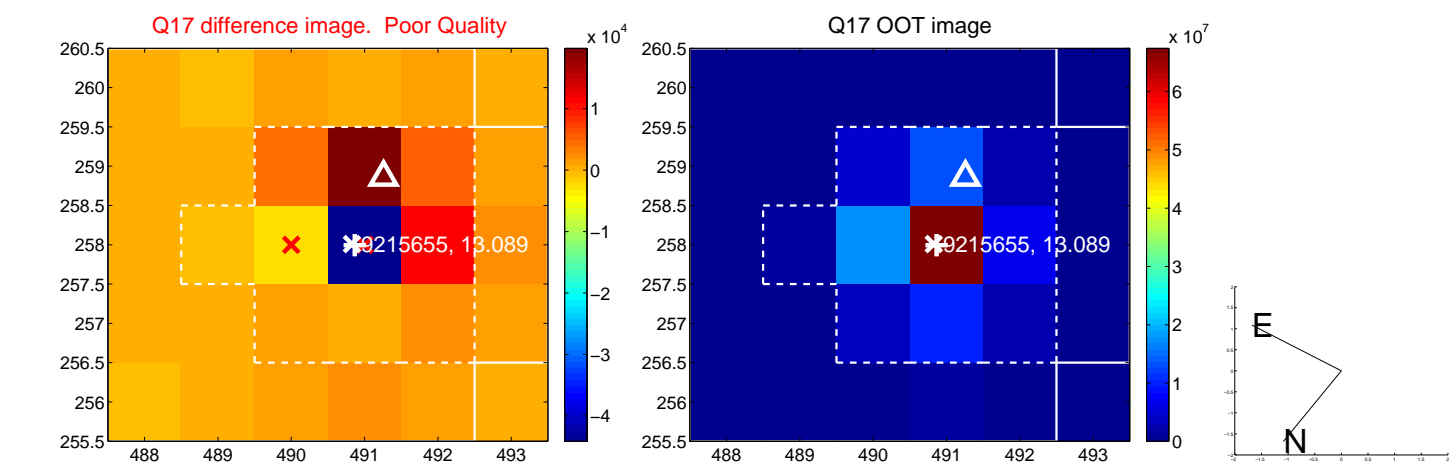
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



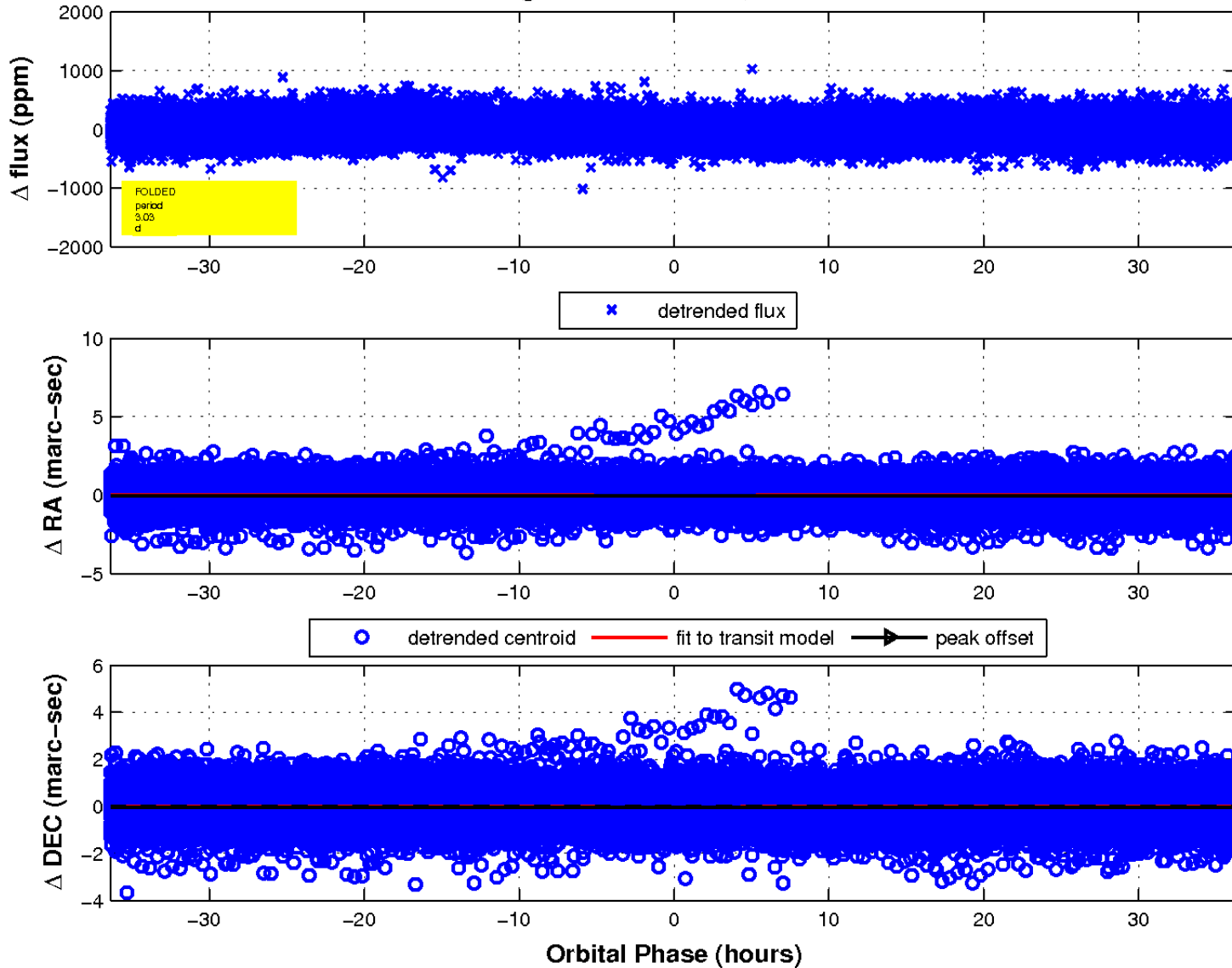
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

