

KIC 009655471

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})
009655471-01	OBS	No	2.624267	134.076030	135.8	12.043	8.7	11.4	2.21	6680	3.48	4697.40
009655471-02	OBS	No	2.624493	132.779115	63.1	11.177	14.9	10.1	2.21	6680	1.91	4696.86

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009655471-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009655471-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_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.

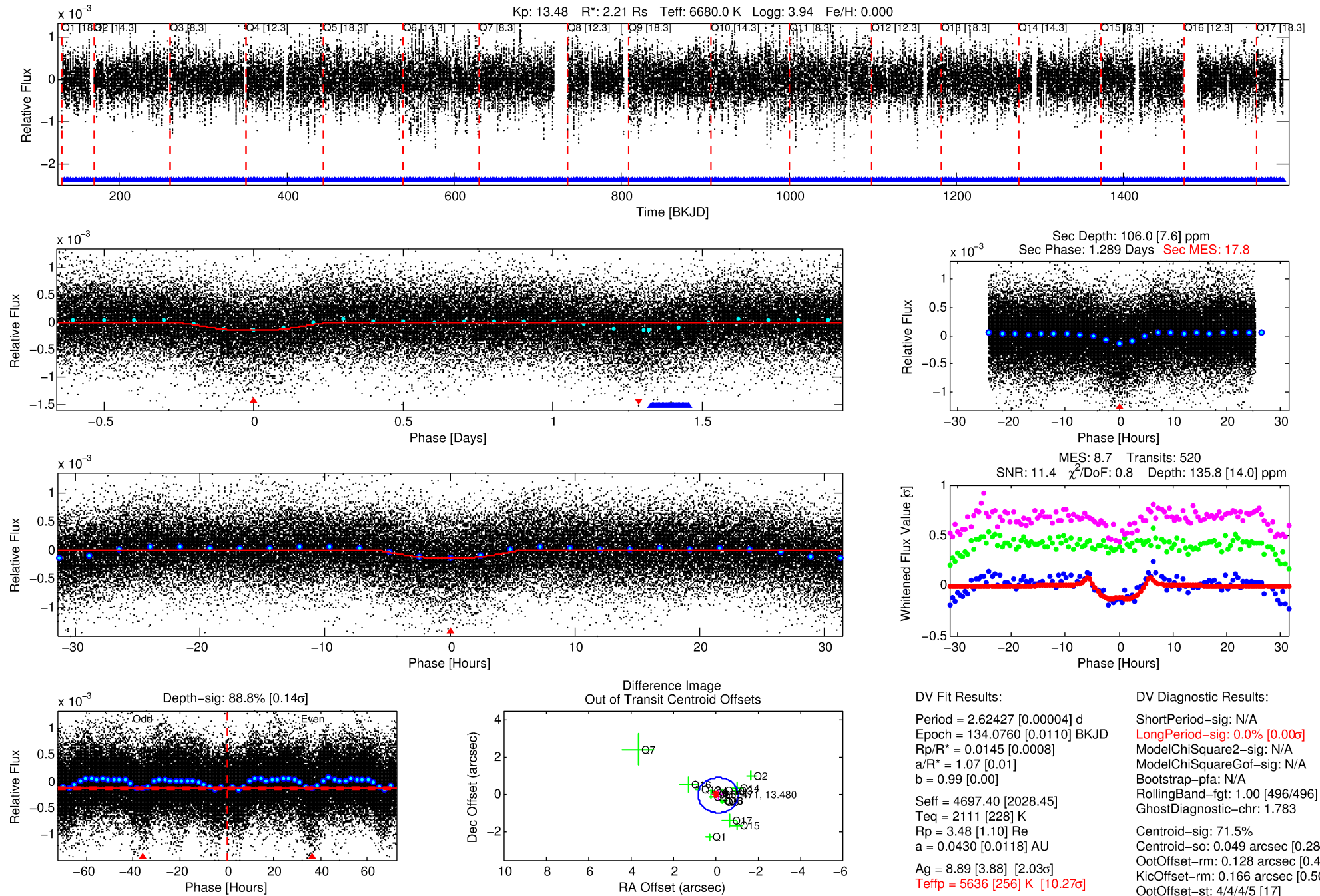
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009655471-01

No Significant Match Found

DV One-Page Summary

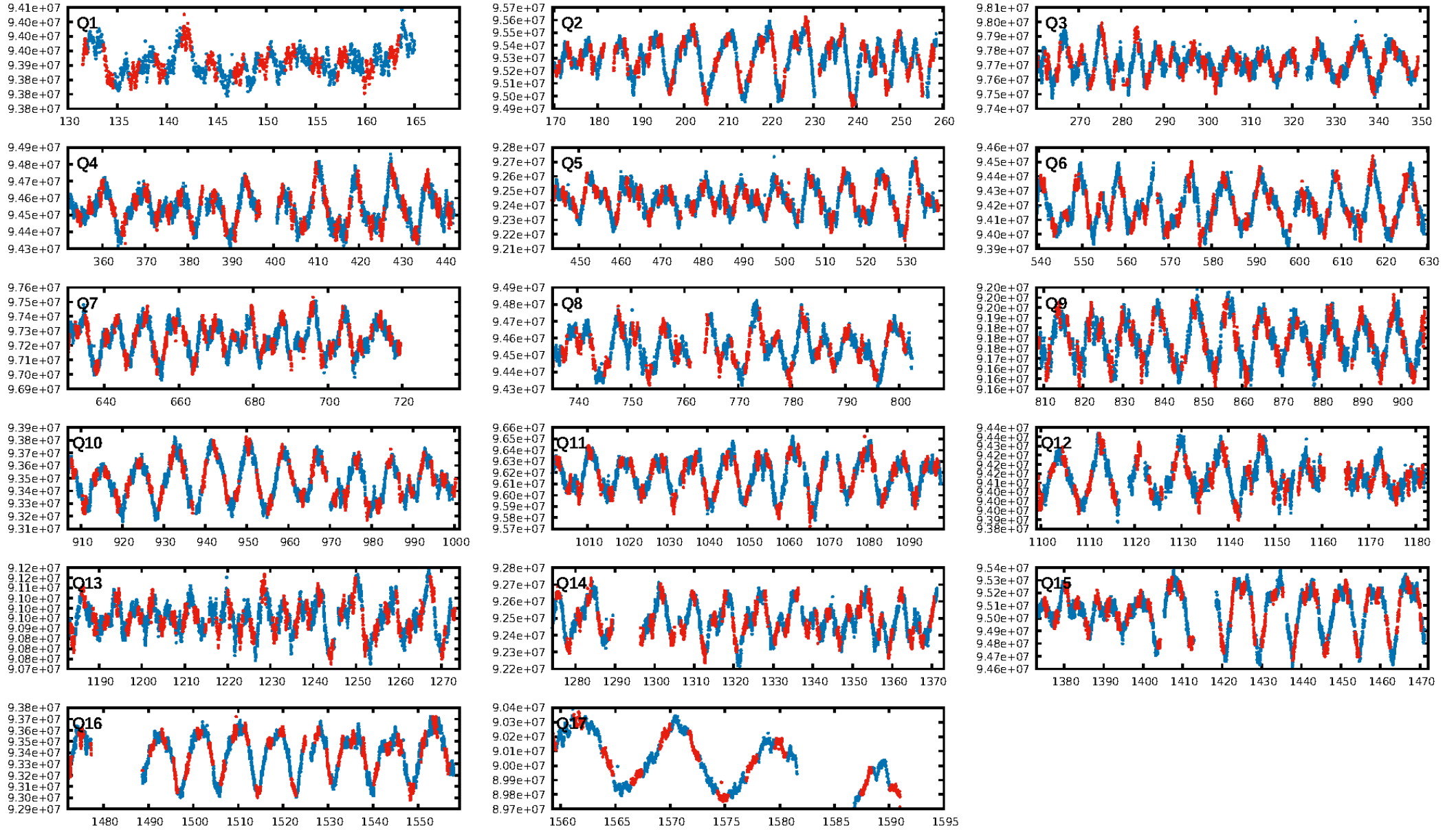
KIC: 9655471 Candidate: 1 of 2 Period: 2.624 d



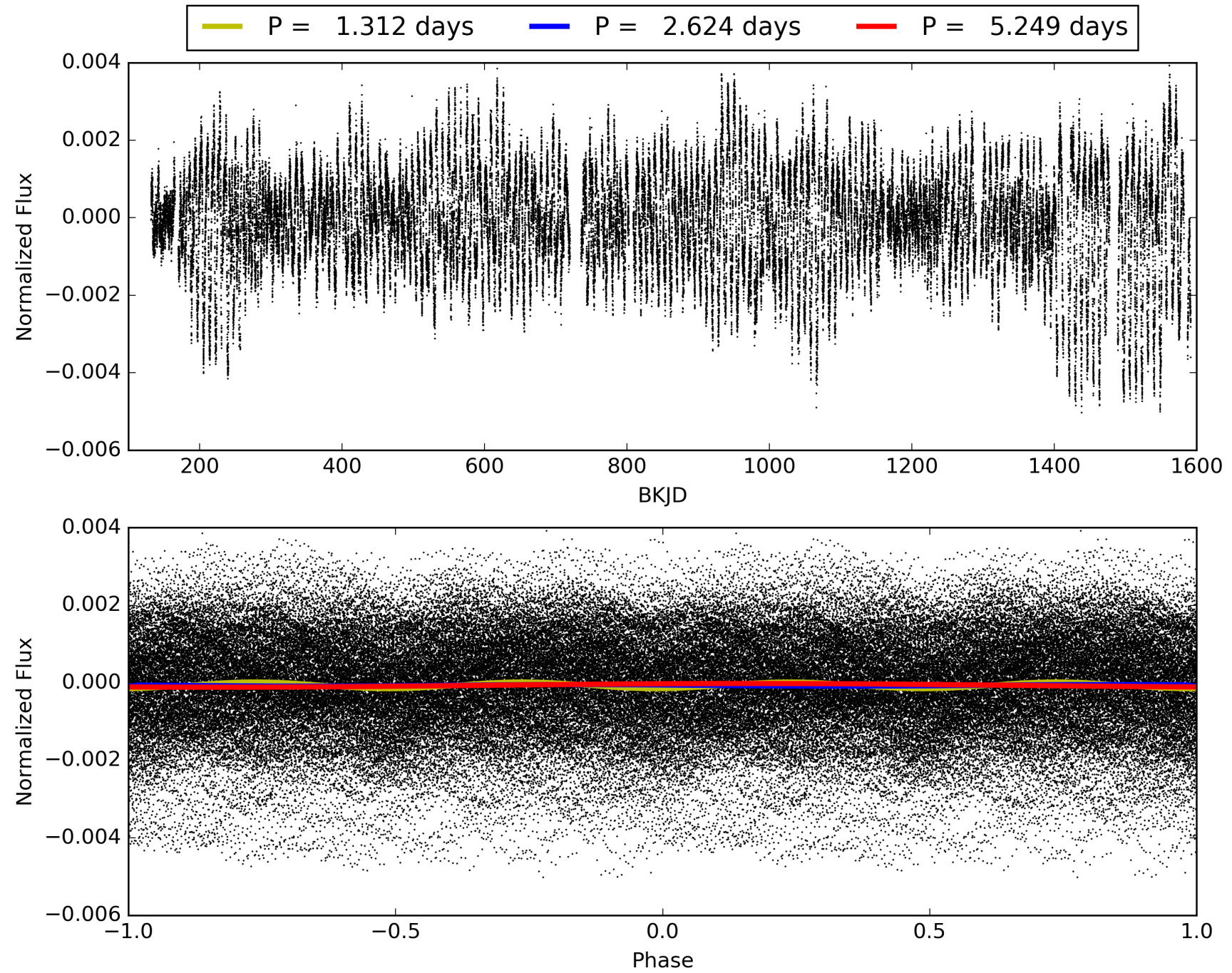
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:43:47 Z

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

TCE 009655471-01, PDC Light Curves

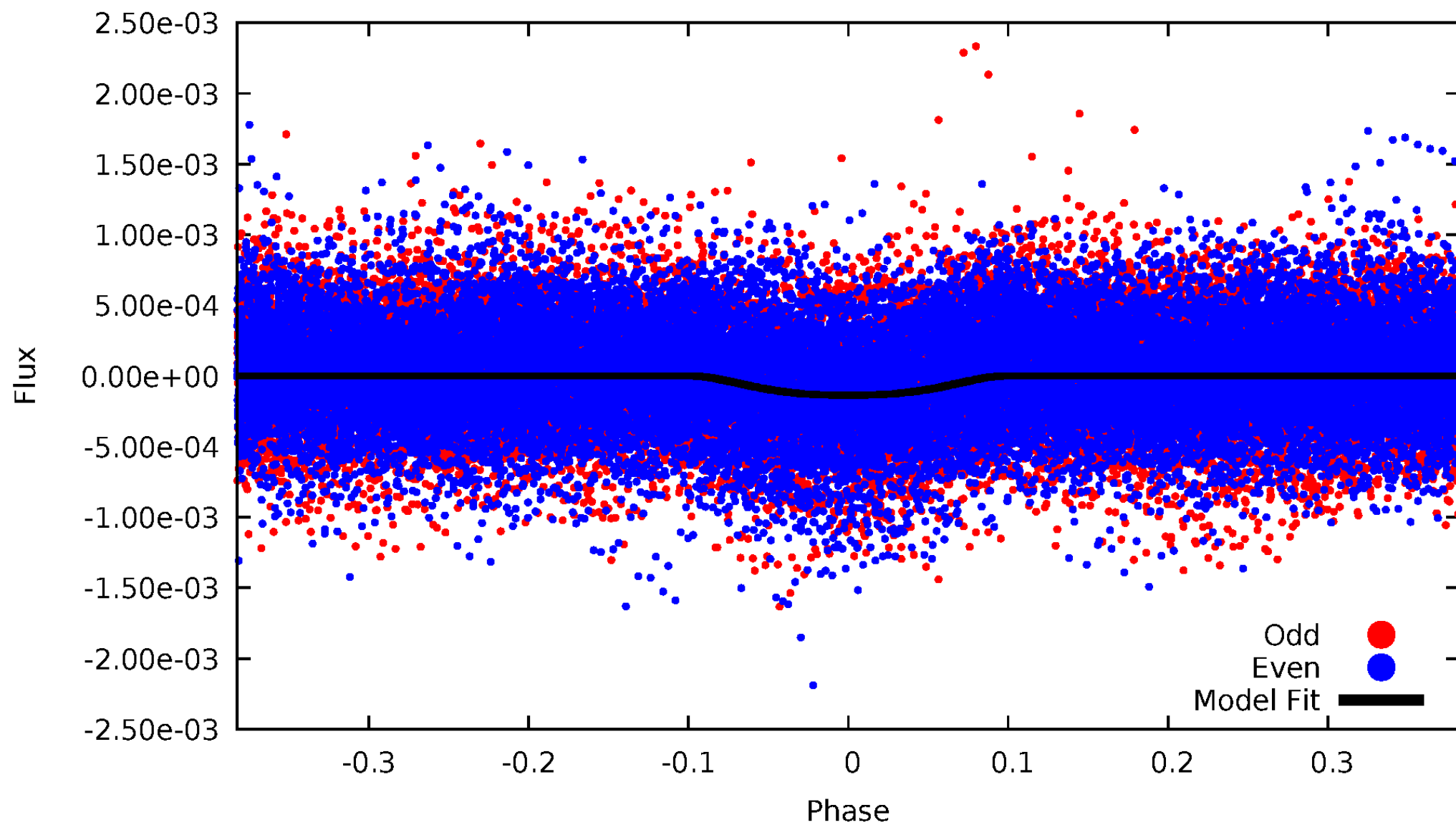


TCE 009655471-01



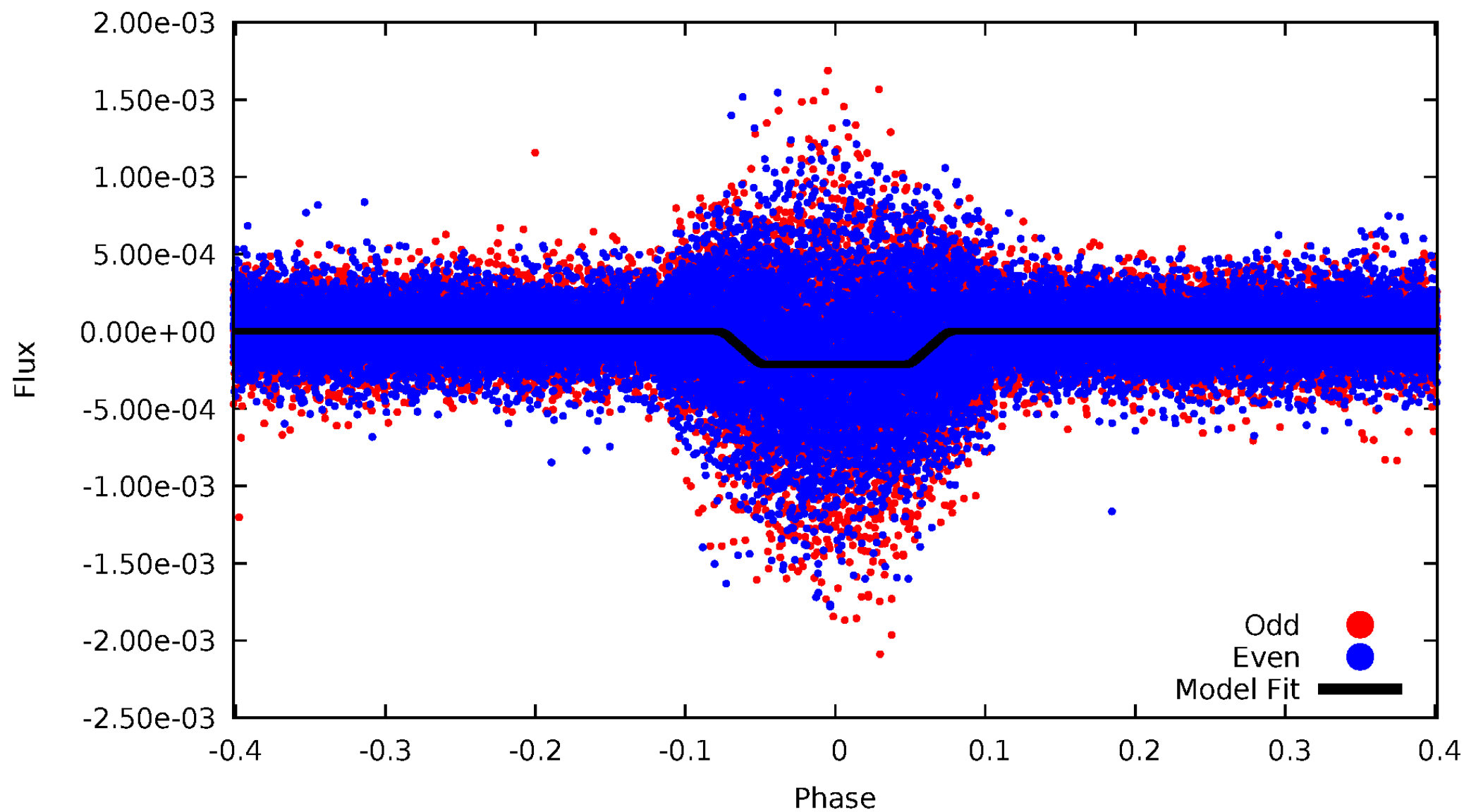
DV Odd/Even

TCE 009655471-01

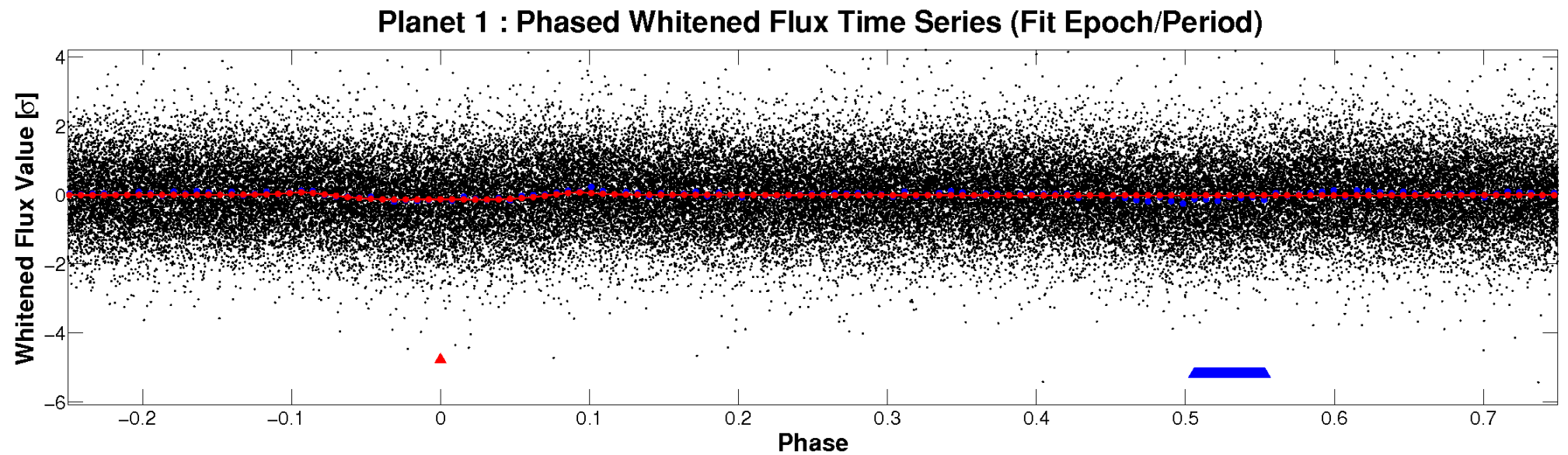
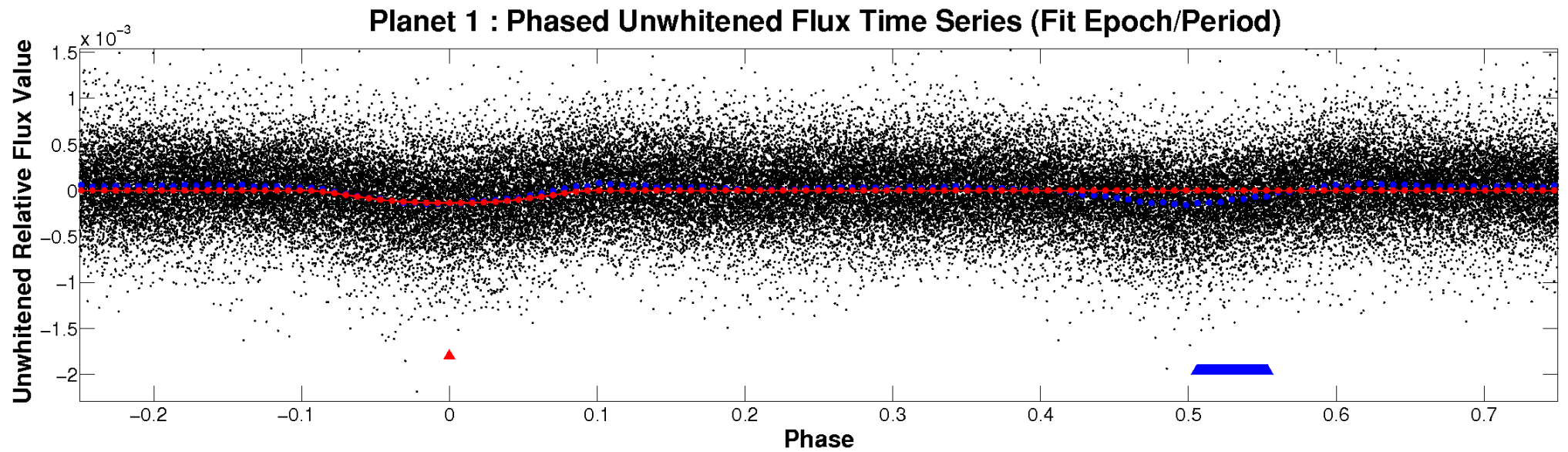


ALT Odd/Even

TCE 009655471-01

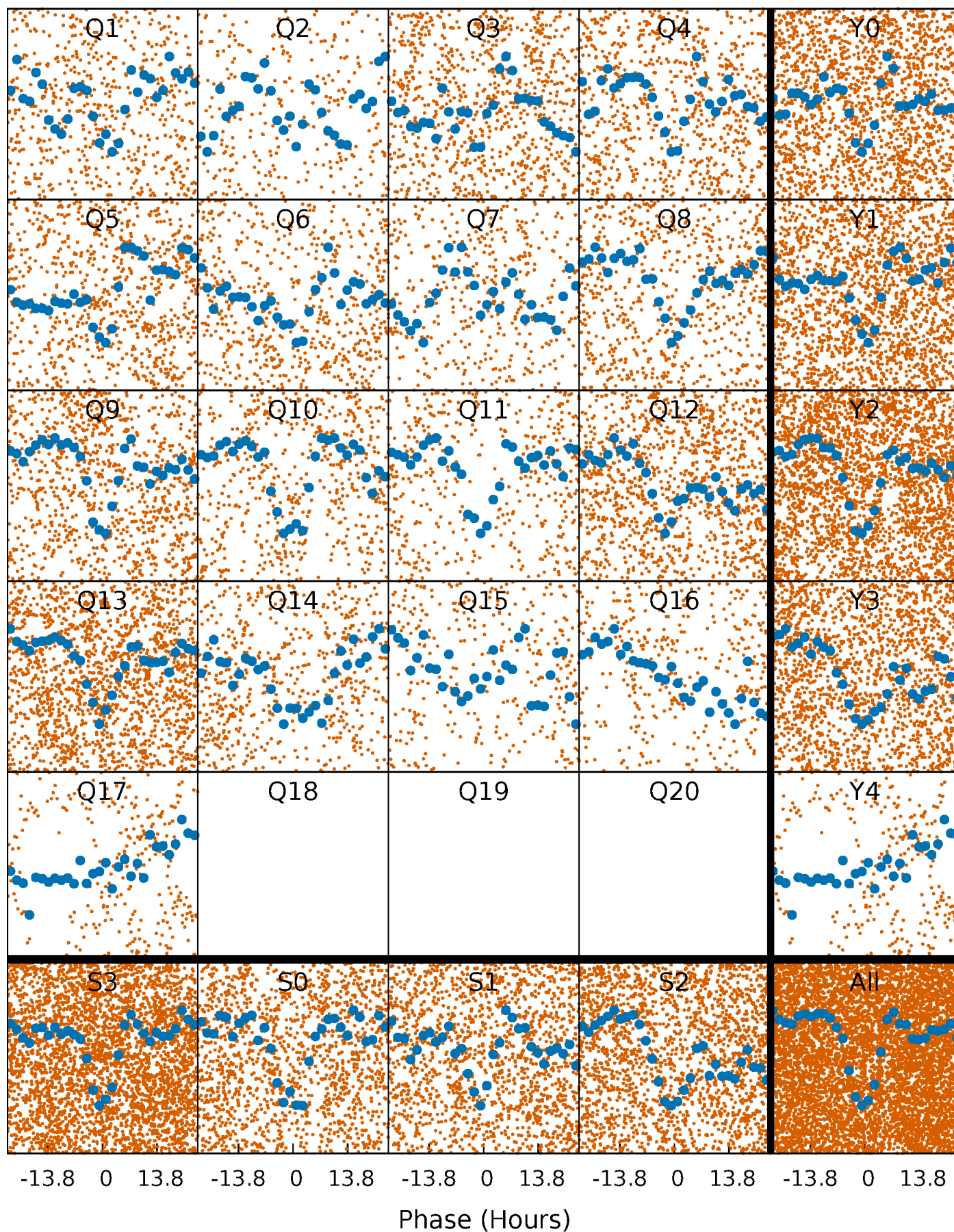


Non-Whitened Vs. Whitened Light Curve



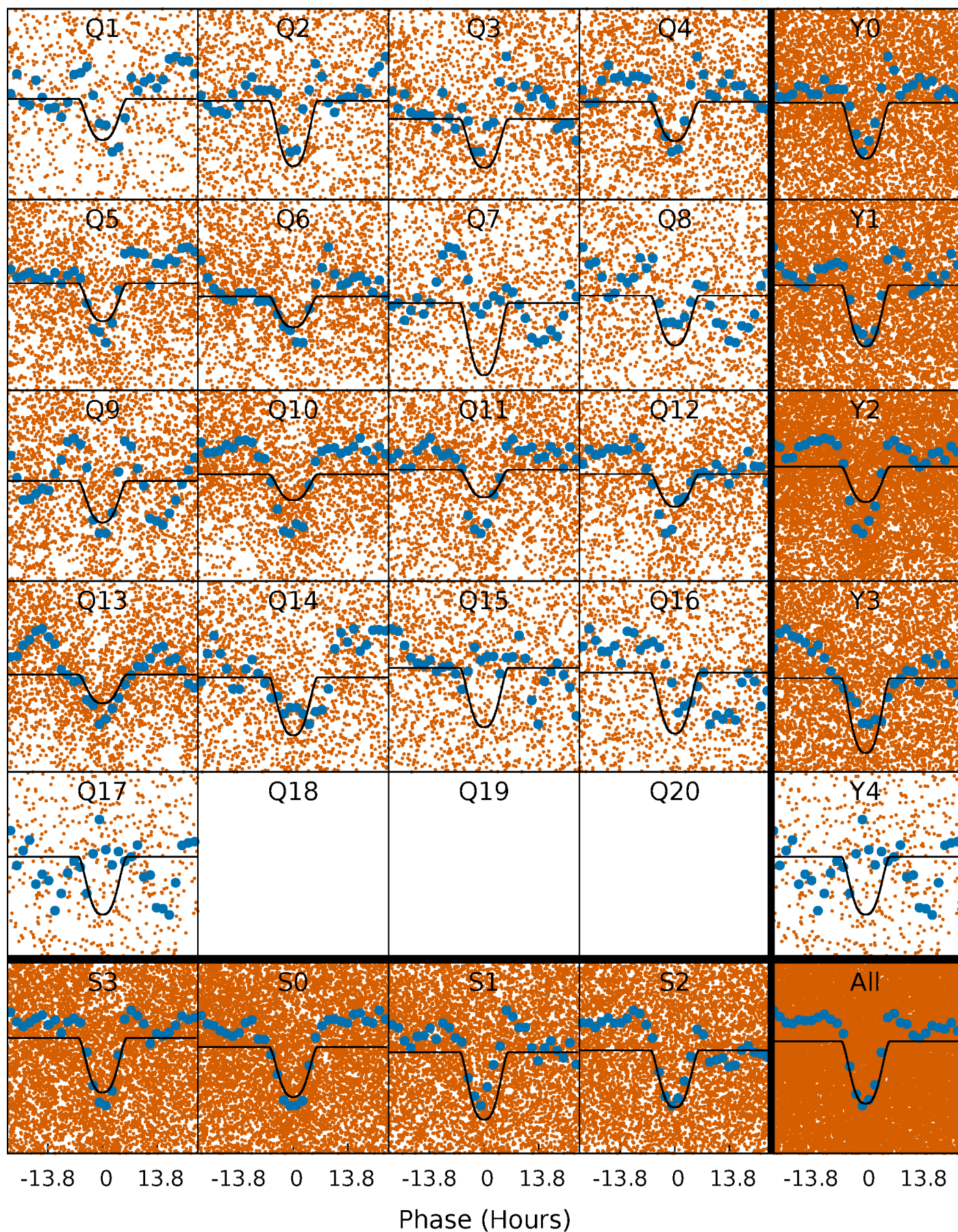
PDC Quarter-Phased Transit Curves

TCE 009655471-01 P= 2.624267 Days $T_0=134.076030$ (BKJD)



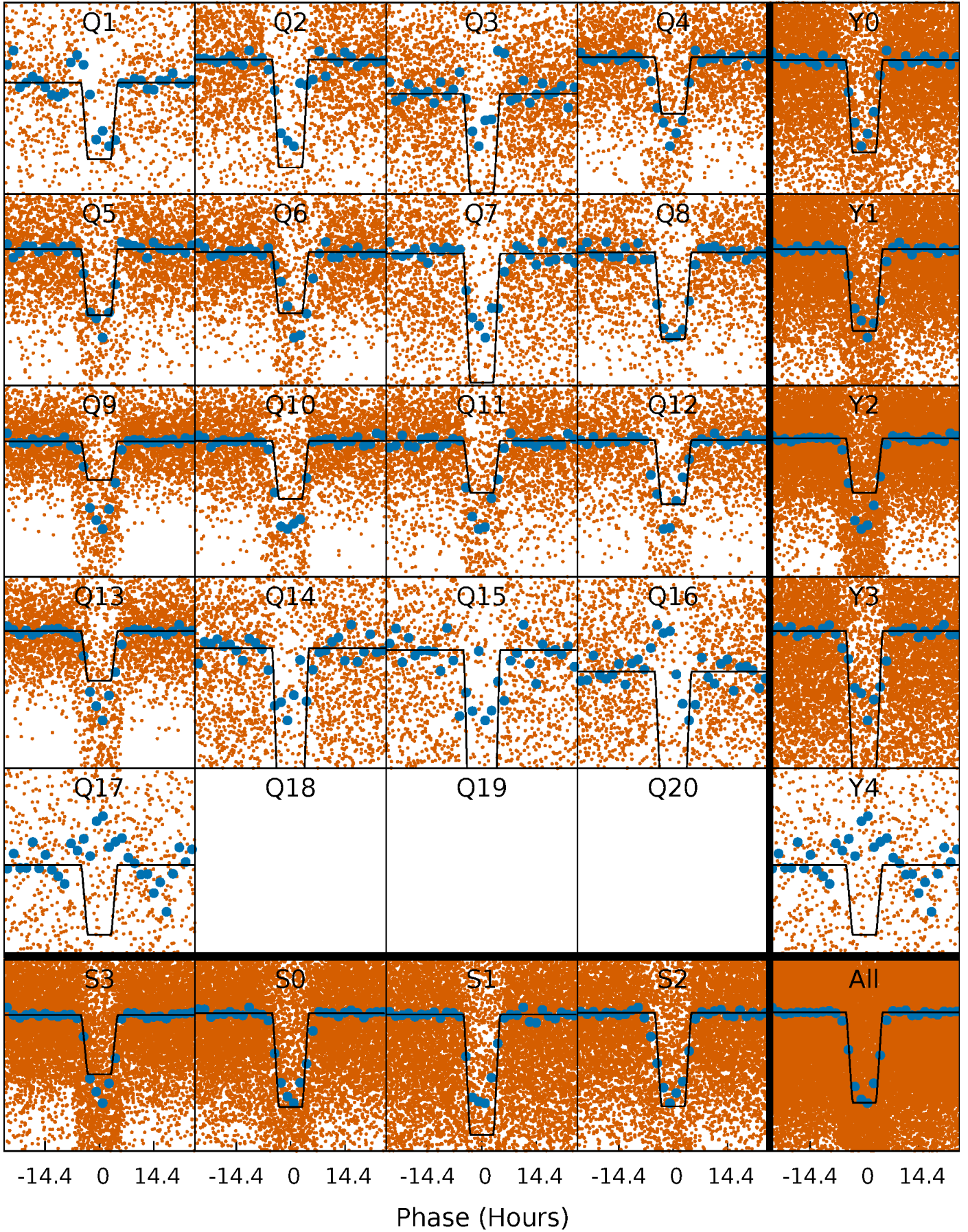
DV Quarter-Phased Transit Curves

TCE 009655471-01 P= 2.624267 Days $T_0=134.076030$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

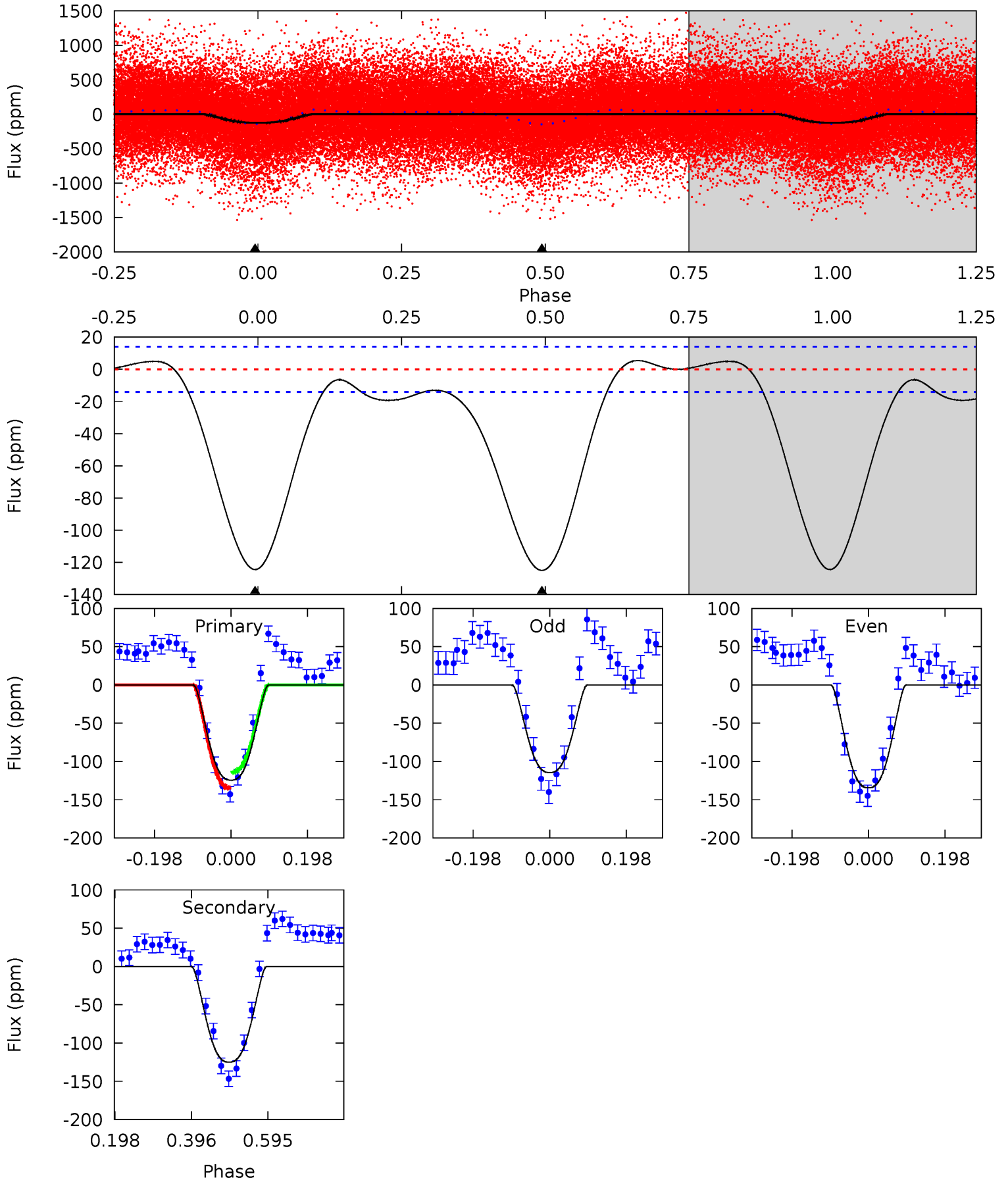
TCE 009655471-01 P= 2.624148 Days $T_0=134.094507$ (BKJD)



DV Model-Shift Uniqueness Test

009655471-01, P = 2.624267 Days, E = 131.451763 Days

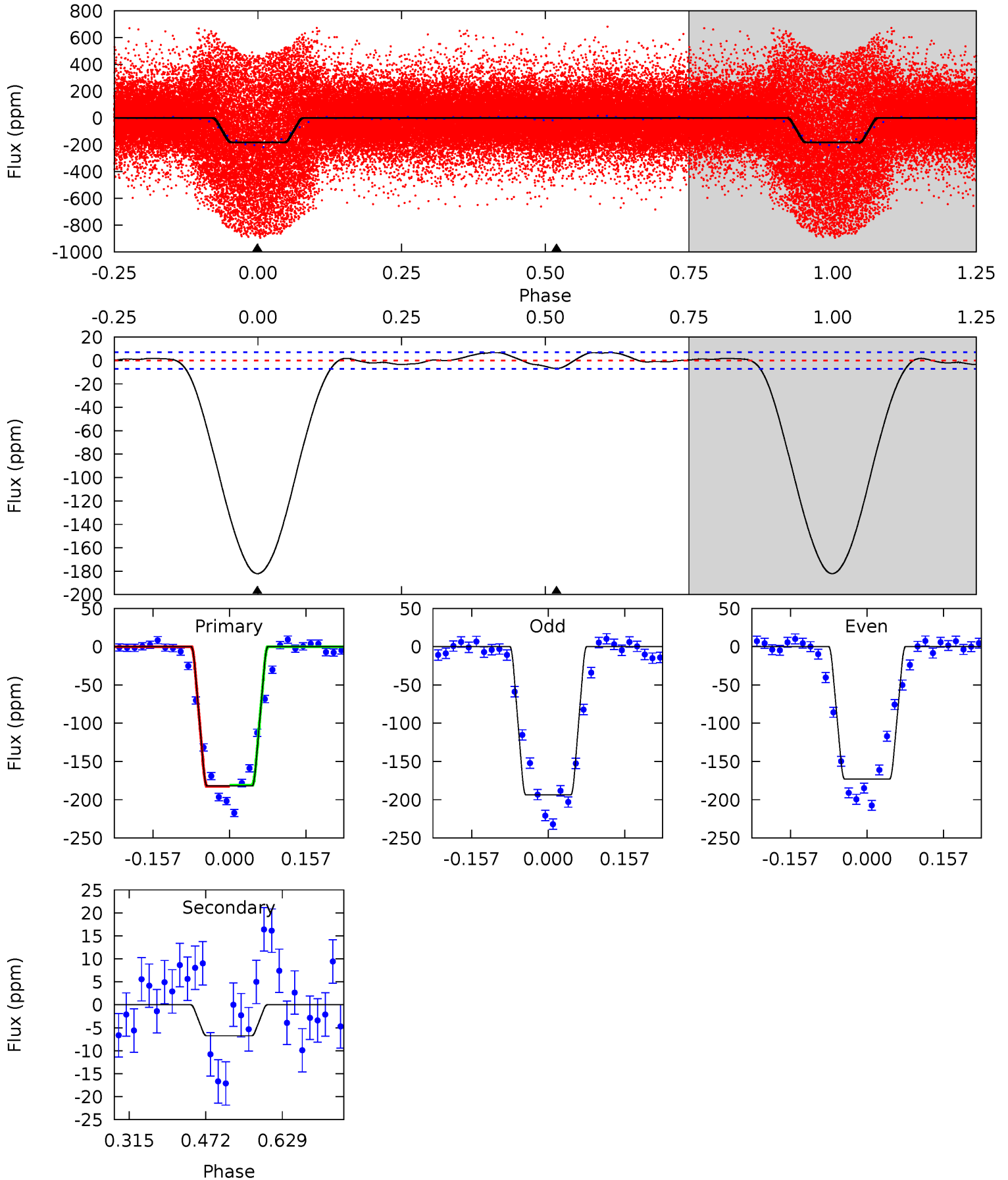
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
39.3	39.4	0	0	4.42	1.29	3.03	39.3	39.3	39.4	39.4	3.14	0.70	0.04	3.27



Alt Model-Shift Uniqueness Test

009655471-01, P = 2.624148 Days, E = 131.470359 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
114.5	4.25	0	0	4.47	1.41	1.00	114.5	114.5	4.25	4.25	6.49	0.96	0.04	0.48



Stellar Parameters For KIC 009655471

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6680^{+181}_{-202}	$3.938^{+0.234}_{-0.126}$	$0.000^{+0.250}_{-0.300}$	$2.207^{+0.514}_{-0.685}$	$1.539^{+0.186}_{-0.279}$	$0.202^{+0.293}_{-0.076}$
	+3%/-3%	+6%/-3%	+inf%/-inf%	+23%/-31%	+12%/-18%	+145%/-38%
Source	PHO1	FLK73	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 009655471-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-125 ± 3	$3.40^{+0.53}_{-0.51}$	2908^{+217}_{-210}	5815^{+243}_{-209}	11^{+4}_{-3}
Alt.	-7 ± 2	$3.48^{+0.50}_{-0.58}$	2934^{+180}_{-221}	3002^{+232}_{-365}	$0.570^{+0.257}_{-0.181}$

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 $A_{obs} \gg 1.0$

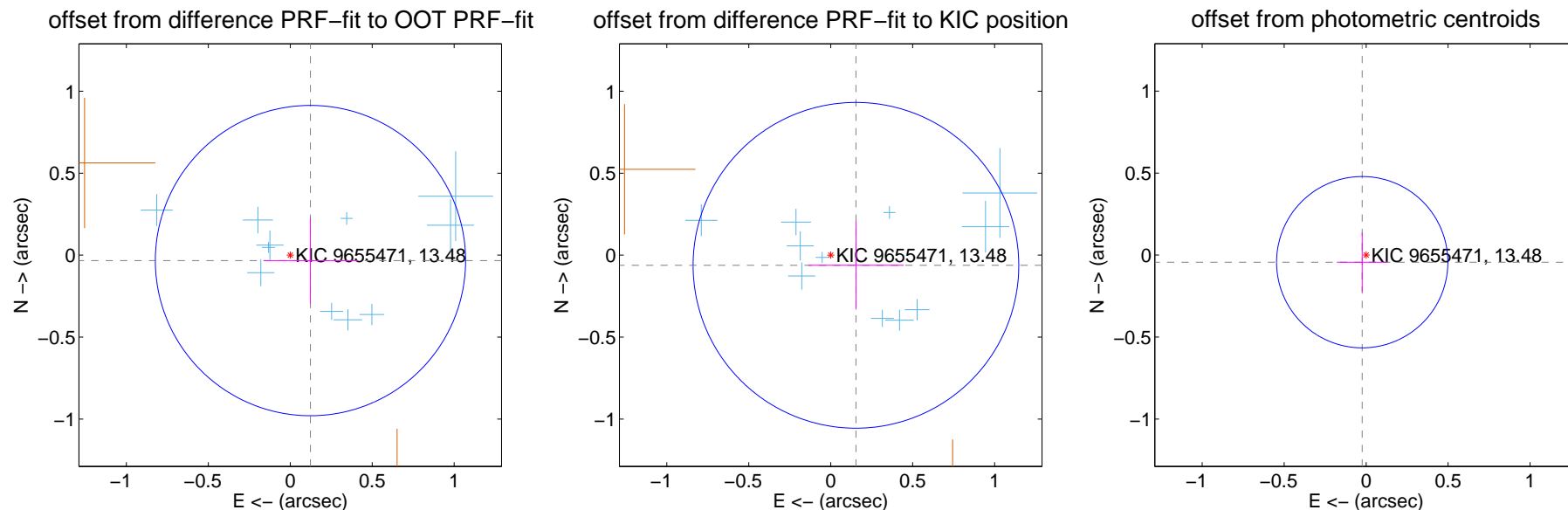
DV Centroid Data

Supplemental centroid analysis for 009655471-01. Kepler magnitude: 13.48. Transit SNR 11.37

There are 13 quarters with good PRF difference image offsets

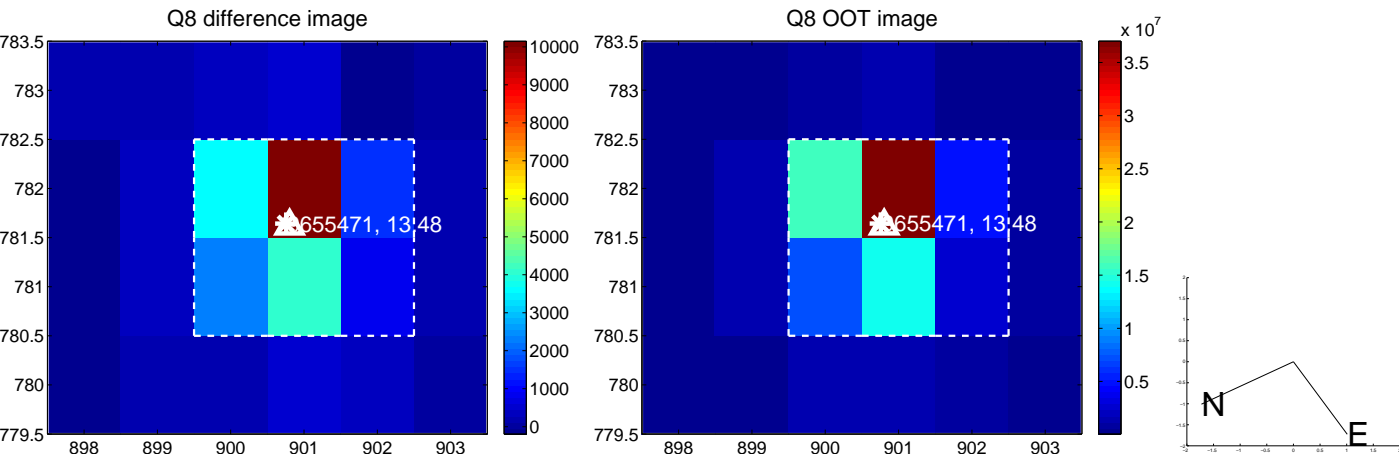
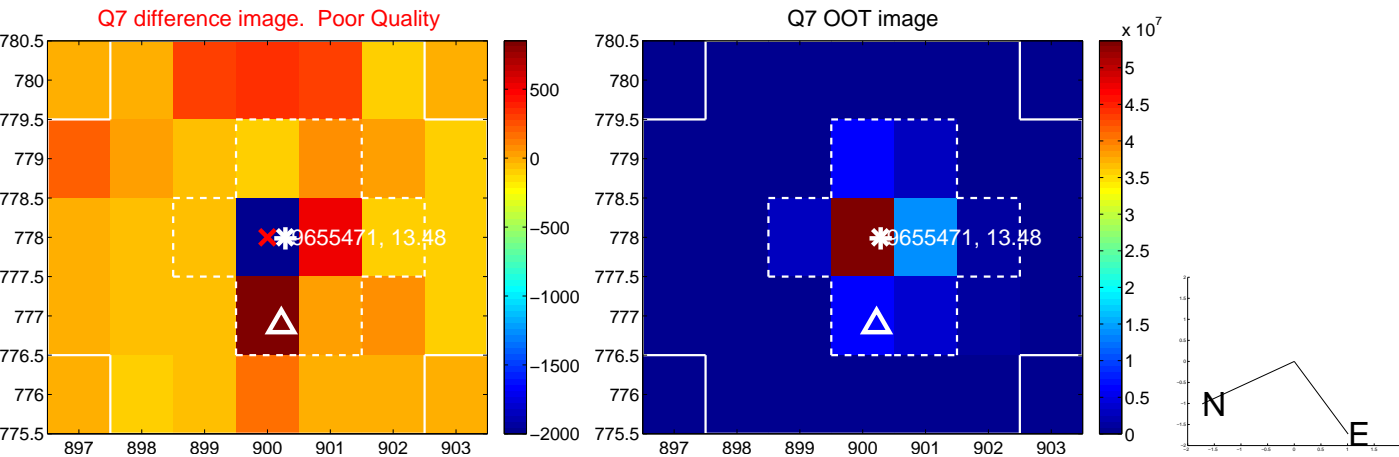
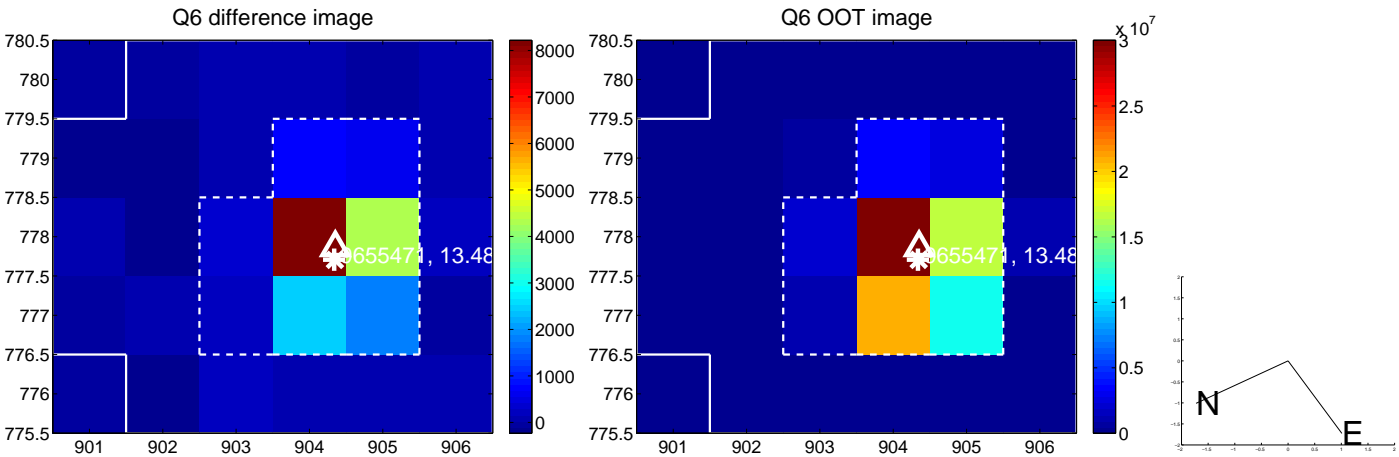
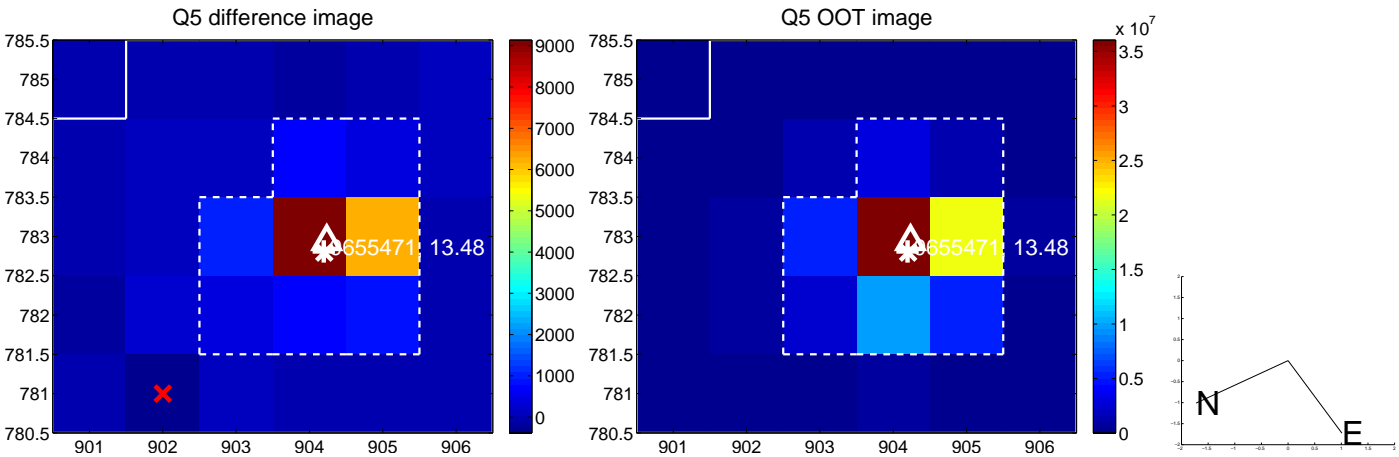
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.128 ± 0.315	0.40	-0.123 ± 0.287	-0.033 ± 0.261
PRF-fit source offset from KIC position	0.166 ± 0.331	0.50	-0.154 ± 0.291	-0.062 ± 0.270
photometric centroid source offset	0.05 ± 0.17	0.28	0.02 ± 0.15	-0.04 ± 0.18

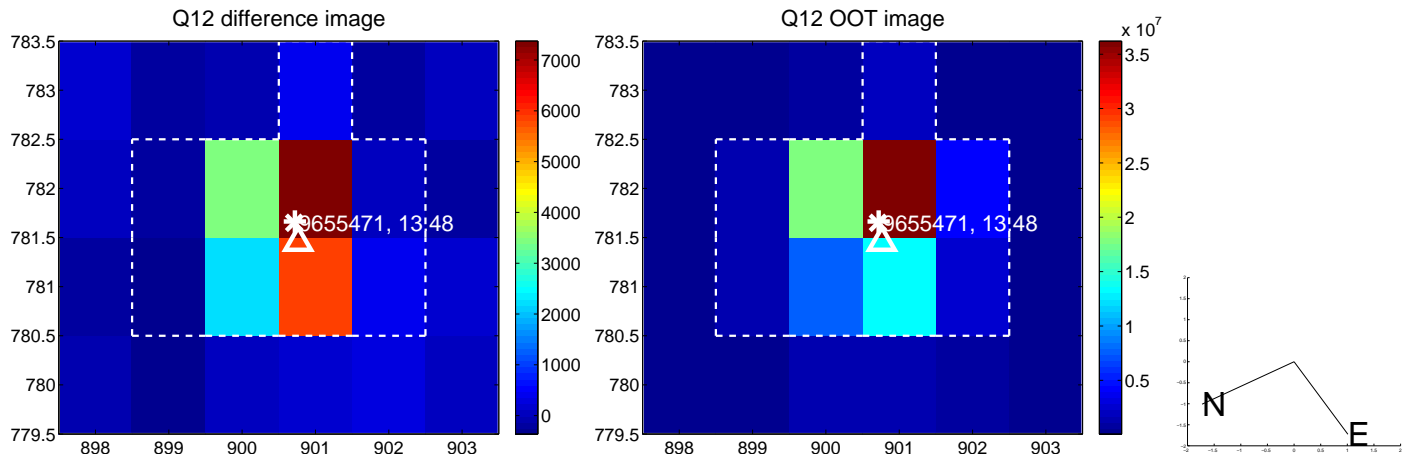
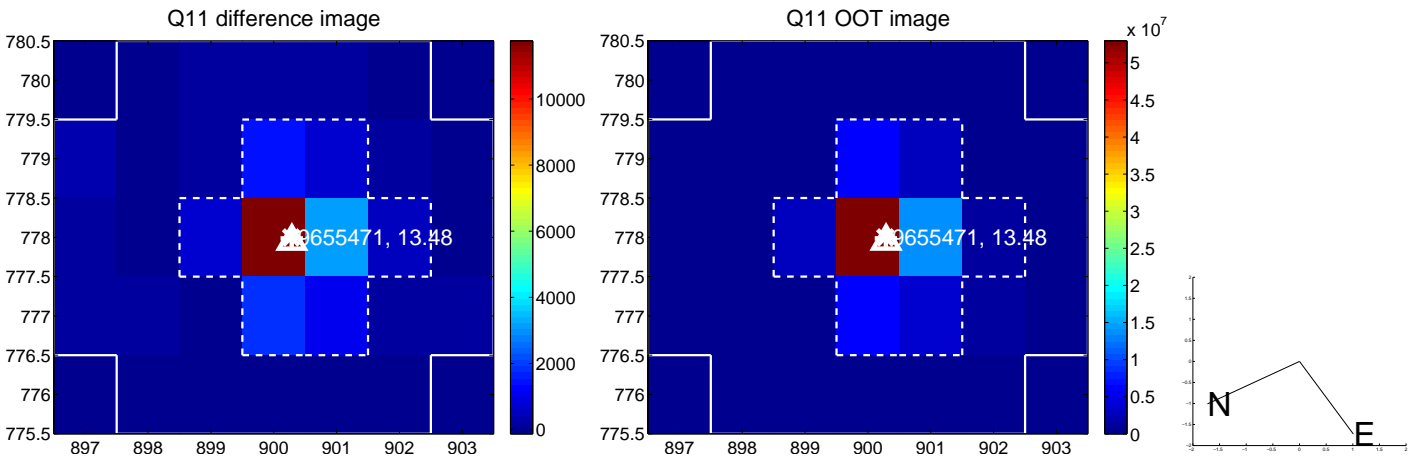
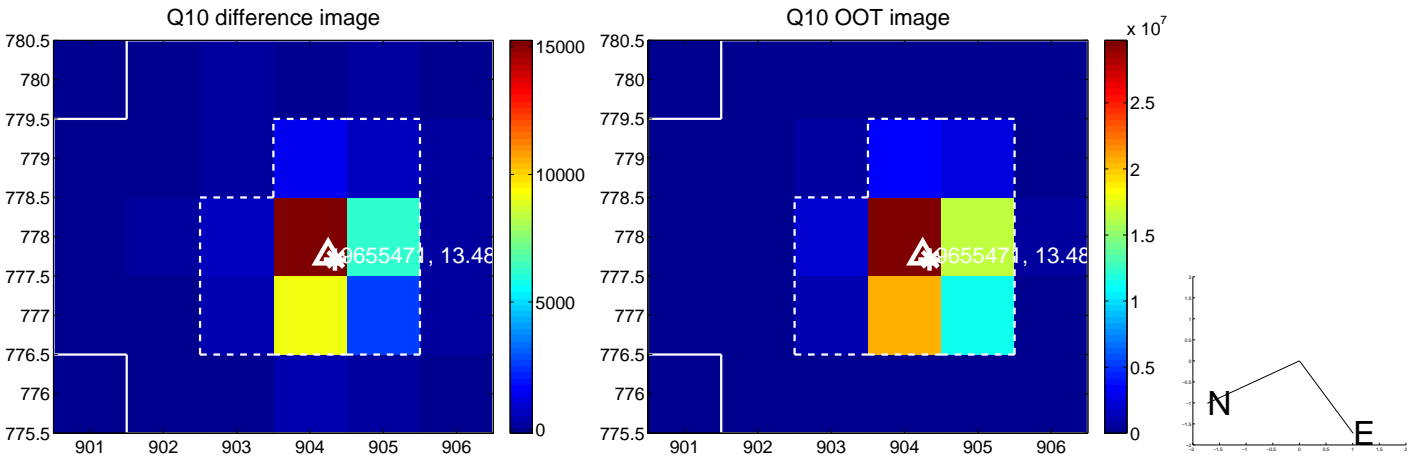
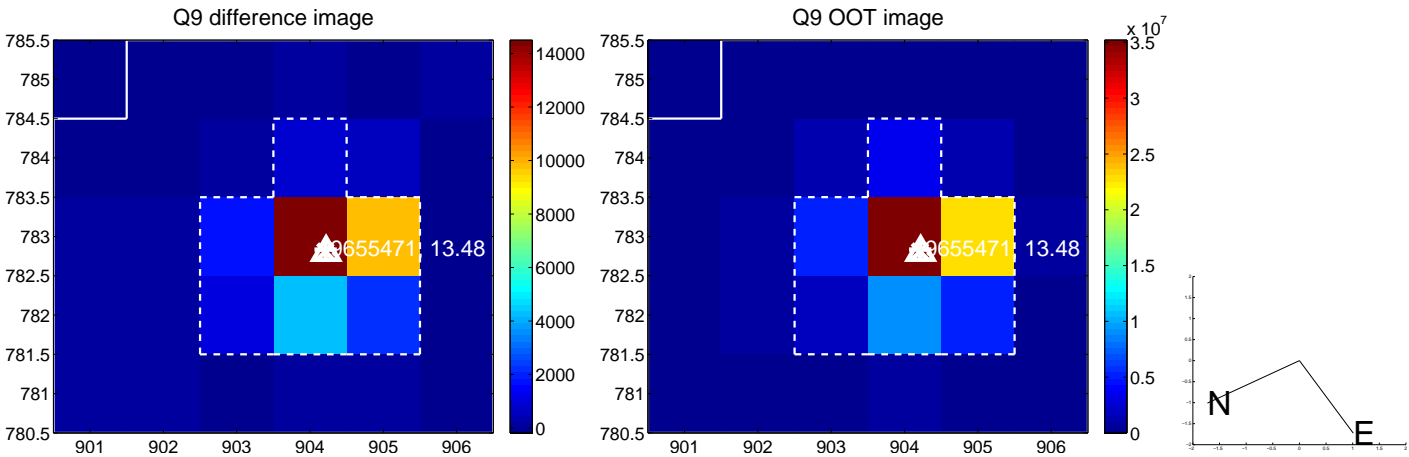


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

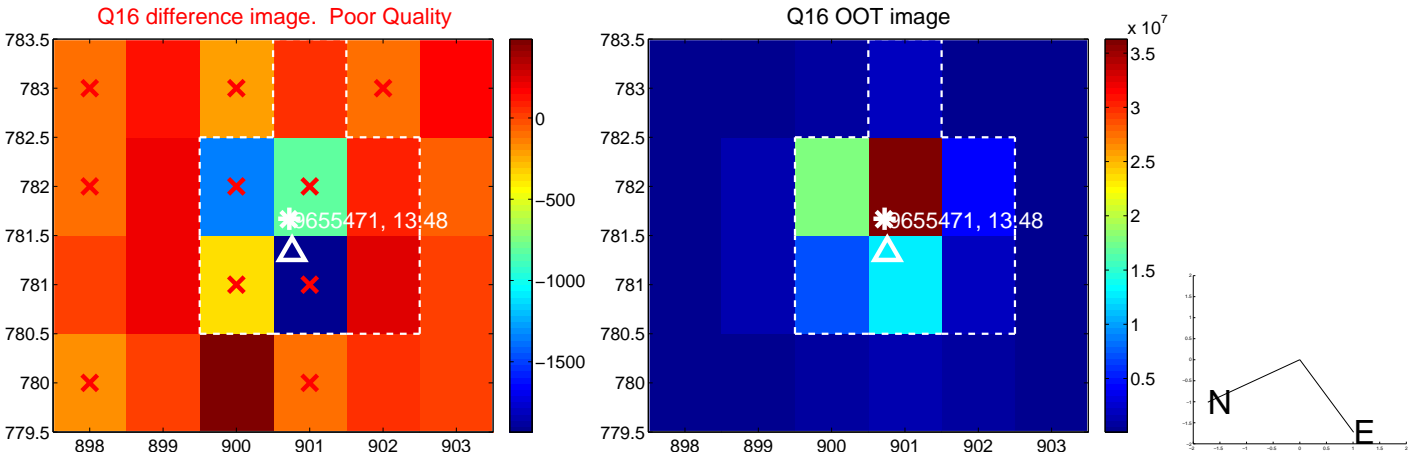
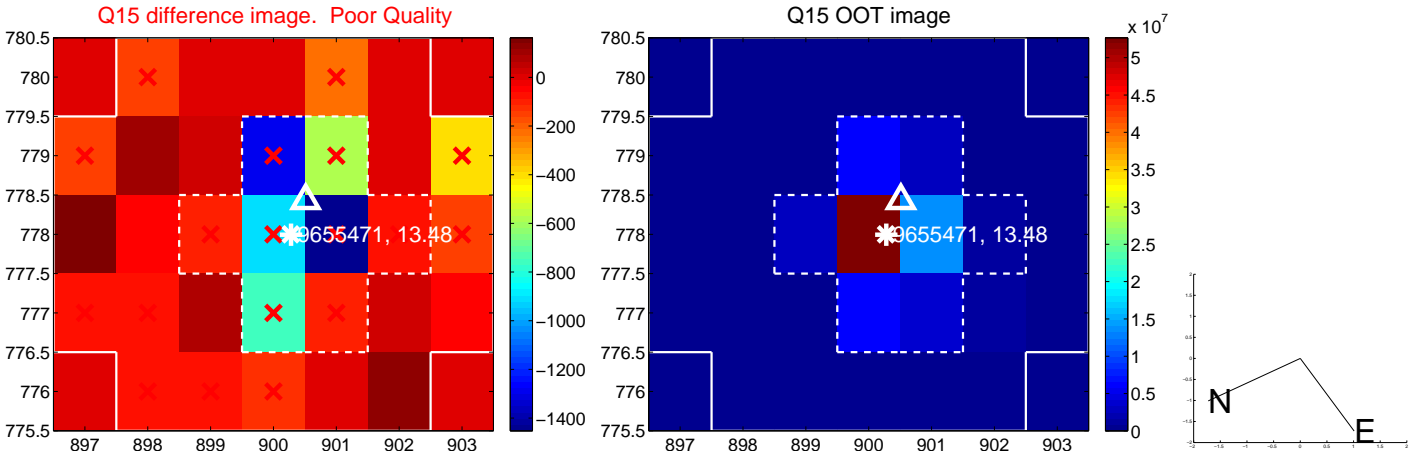
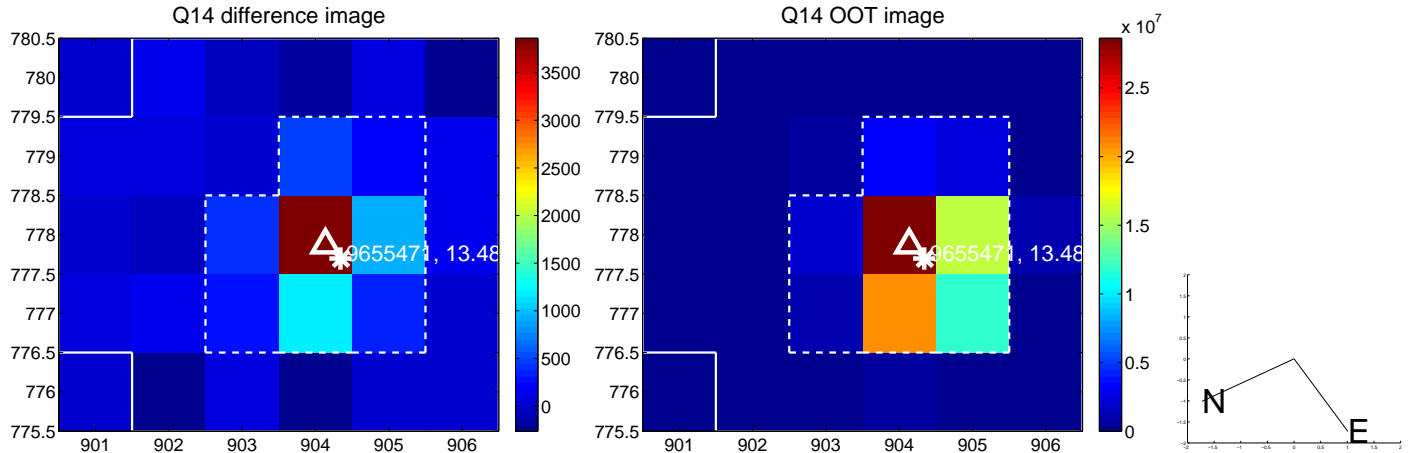
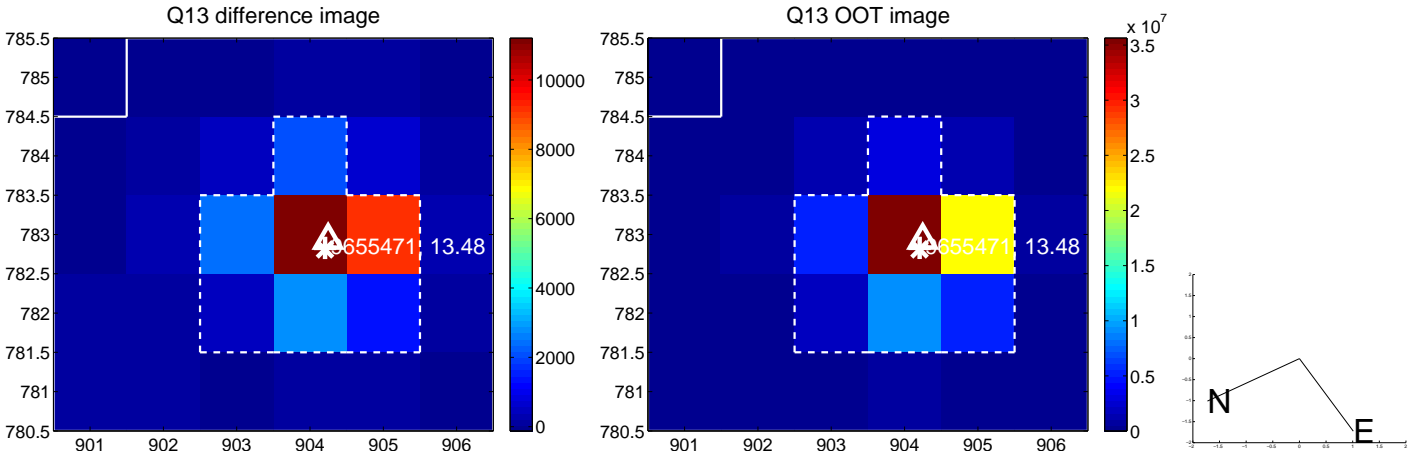
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



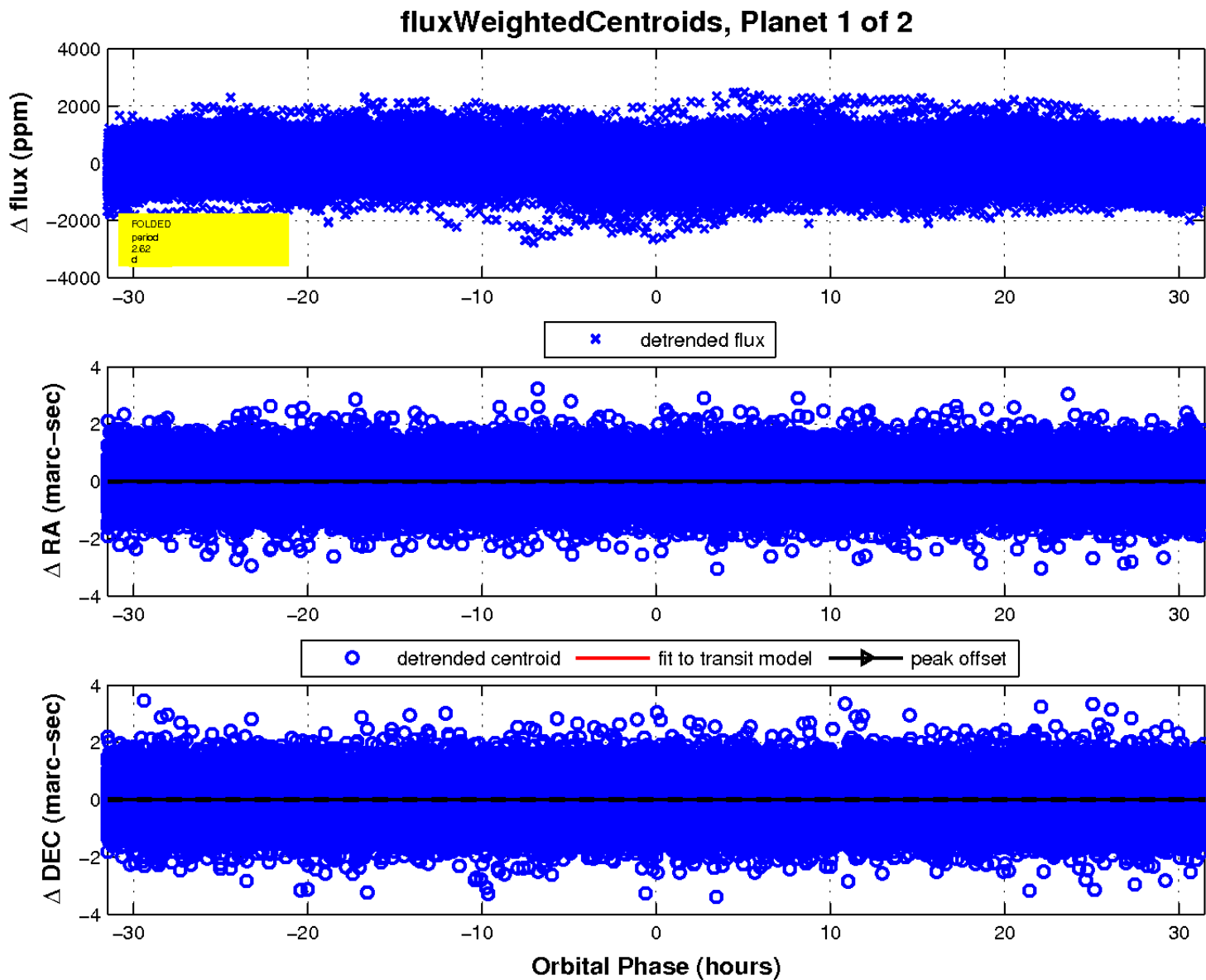
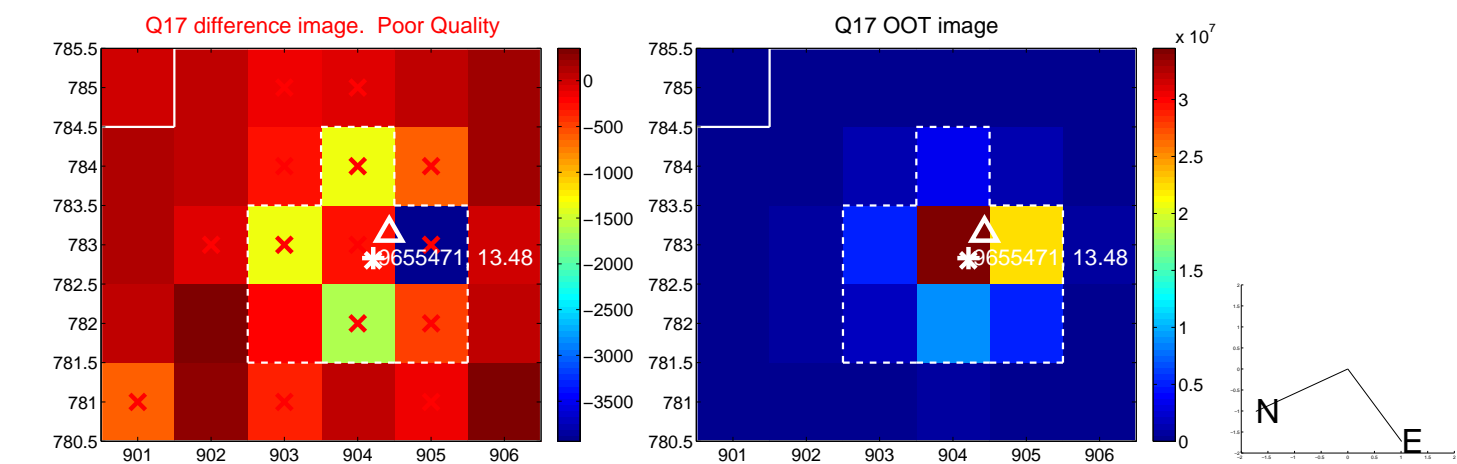
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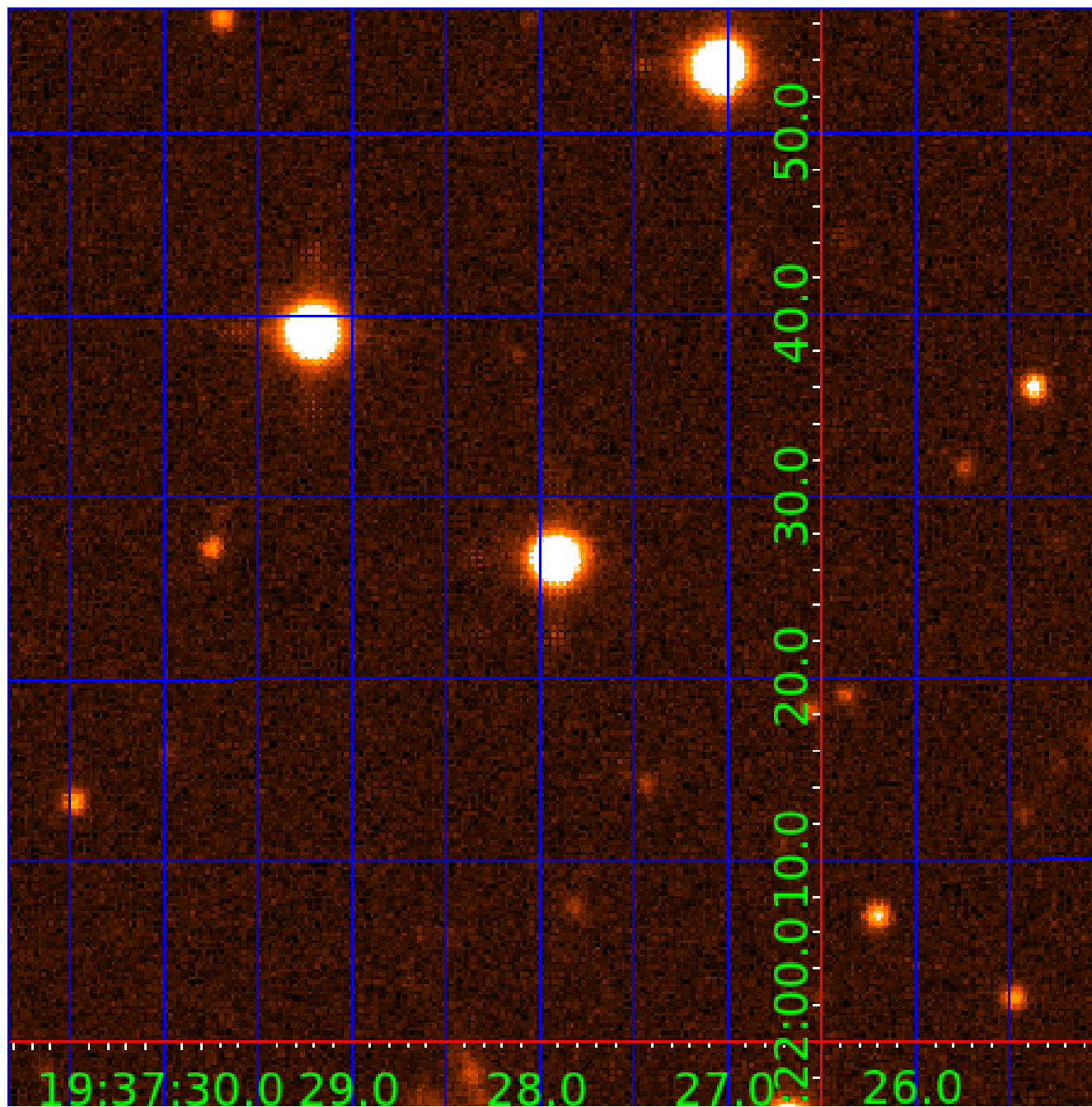


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009655471

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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009655471-02	OBS	No	2.624493	132.779115	63.1	11.177	14.9	10.1	2.21	6680	1.91	4696.86

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009655471-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009655471-02	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_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.

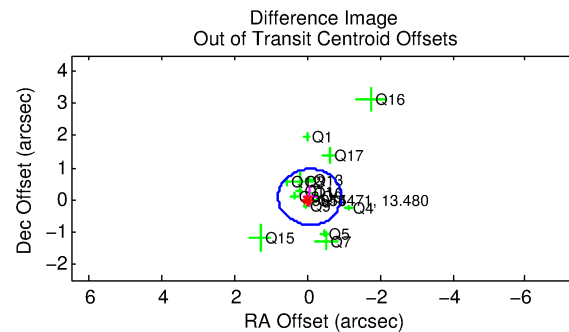
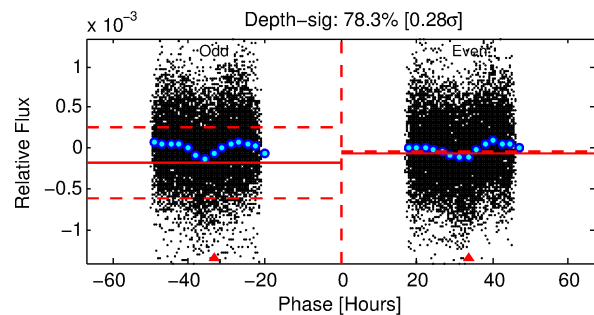
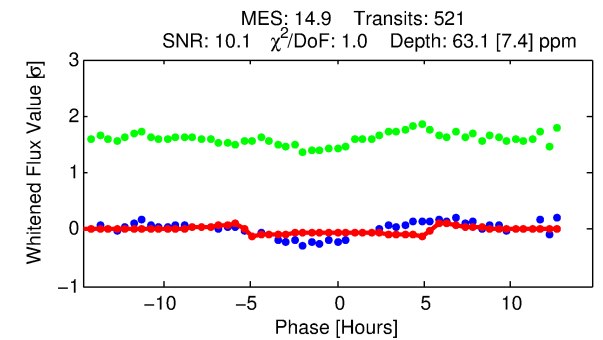
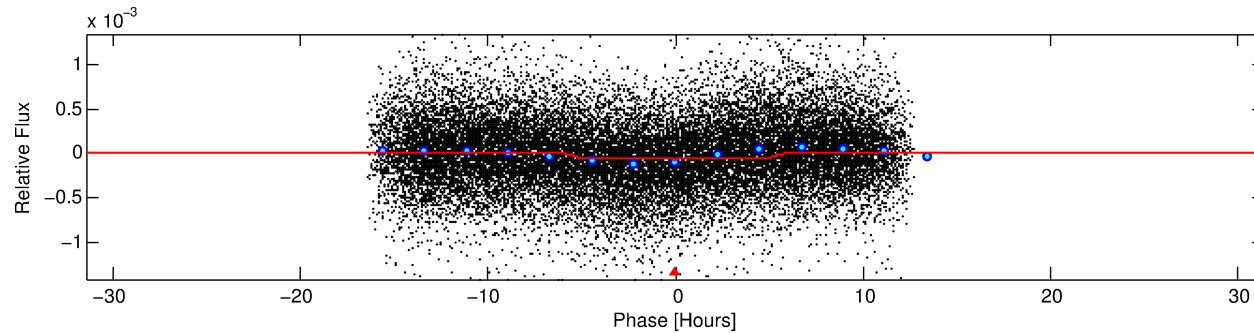
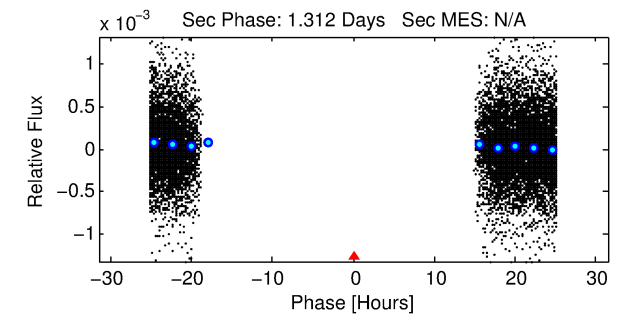
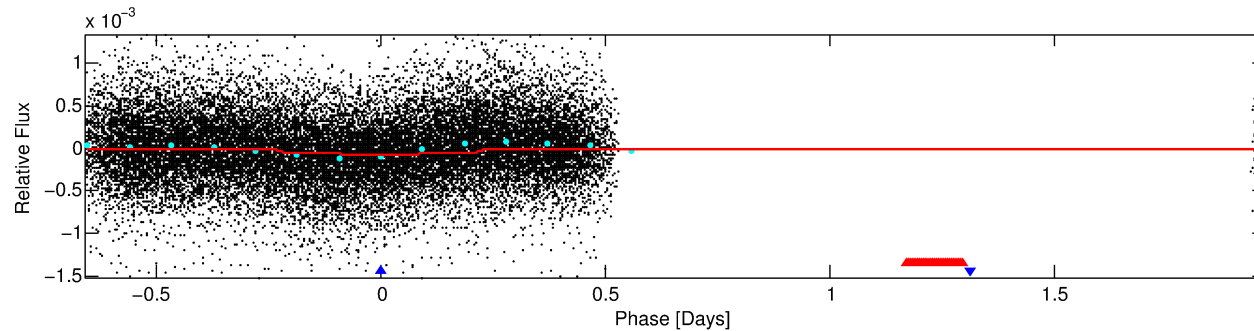
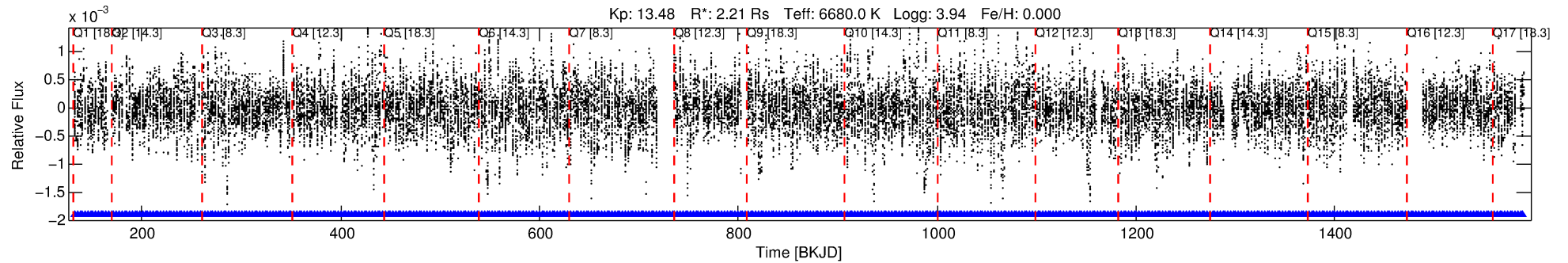
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009655471-02

No Significant Match Found

DV One-Page Summary

KIC: 9655471 Candidate: 2 of 2 Period: 2.624 d



DV Fit Results:

Period = 2.62449 [0.00002] d
Epoch = 132.7791 [0.0036] BKJD
Rp/R* = 0.0079 [0.0014]
a/R* = 1.47 [0.73]
b = 0.76 [0.53]
Seff = 4696.86 [2028.22]
Teff = 2111 [228] K
Rp = 1.91 [0.68] Re
a = 0.0430 [0.0118] AU

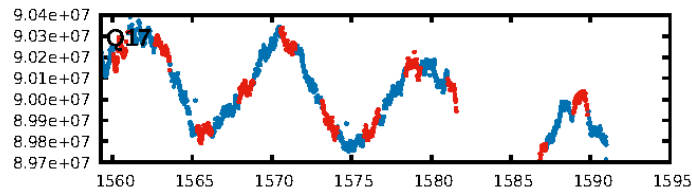
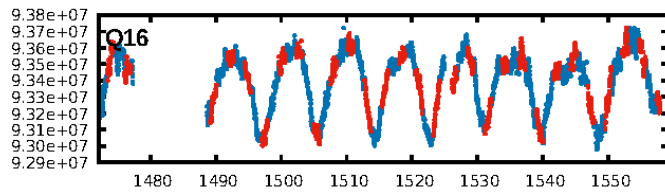
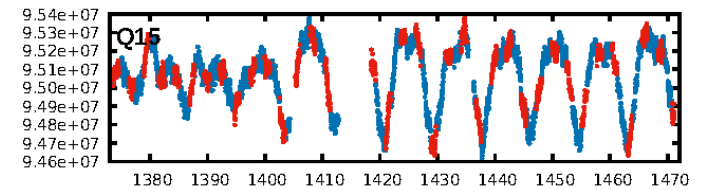
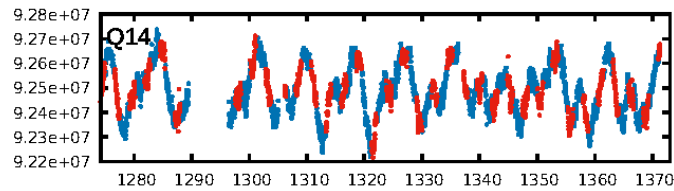
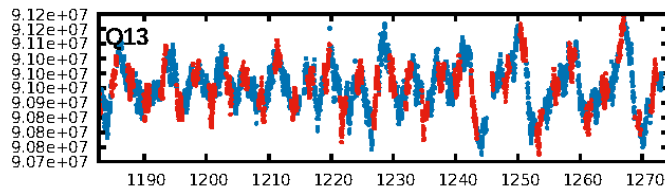
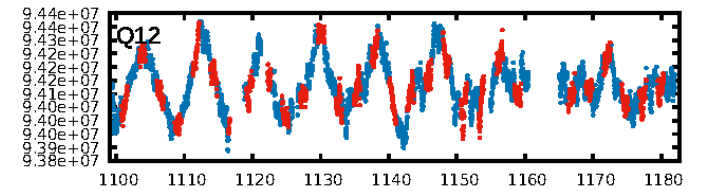
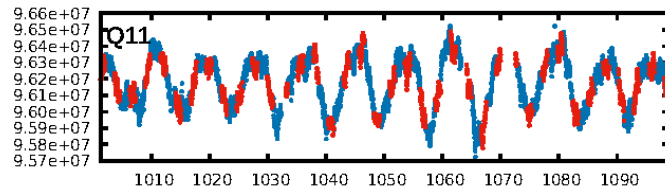
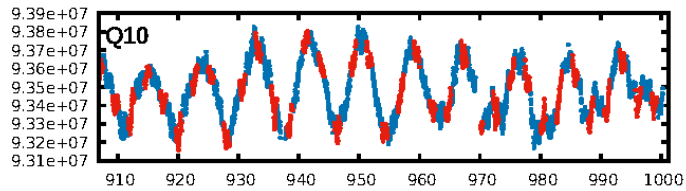
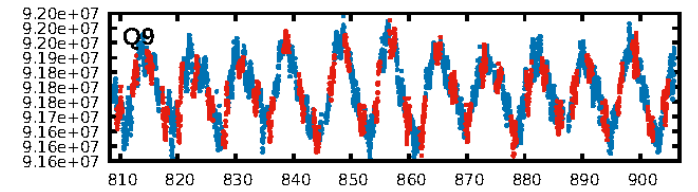
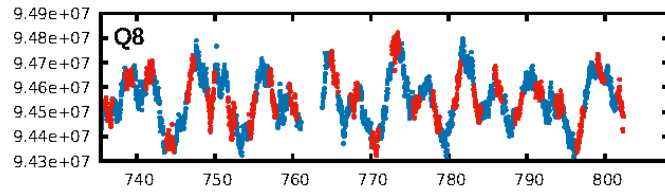
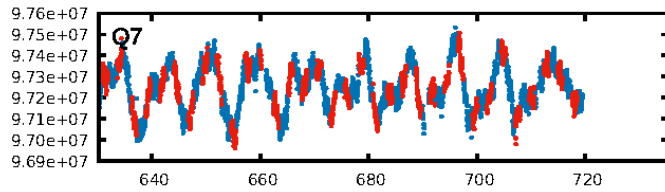
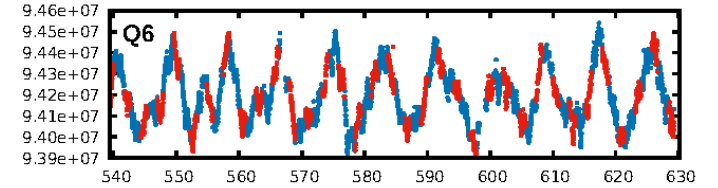
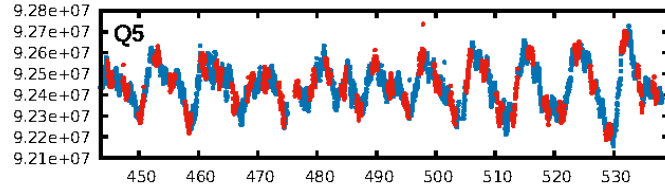
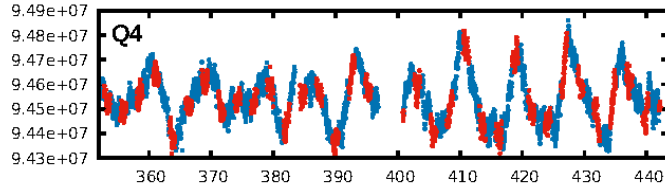
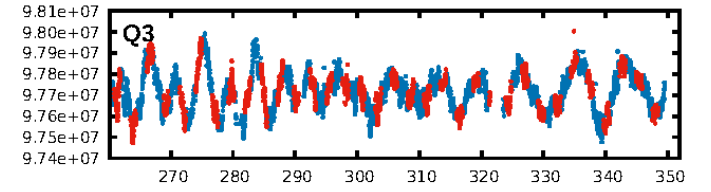
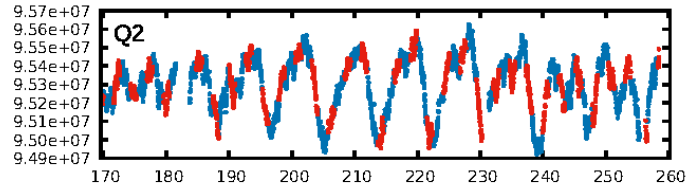
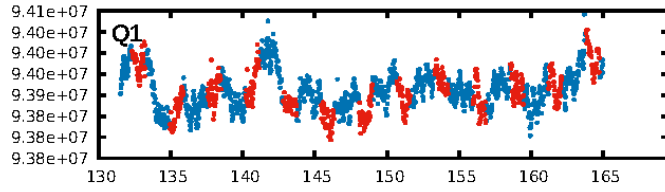
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [497/497]
GhostDiagnostic-chr: 1.741
Centroid-sig: 11.9%
Centroid-so: 0.362 arcsec [1.14 σ]
OotOffset-rm: 0.109 arcsec [0.38 σ]
KicOffset-rm: 0.129 arcsec [0.52 σ]
OotOffset-st: 3/4/4/5 [16]
KicOffset-st: 3/4/4/5 [16]
DiffImageQuality-fgm: 0.81 [13/16]
DiffImageOverlap-fno: 1.00 [17/17]

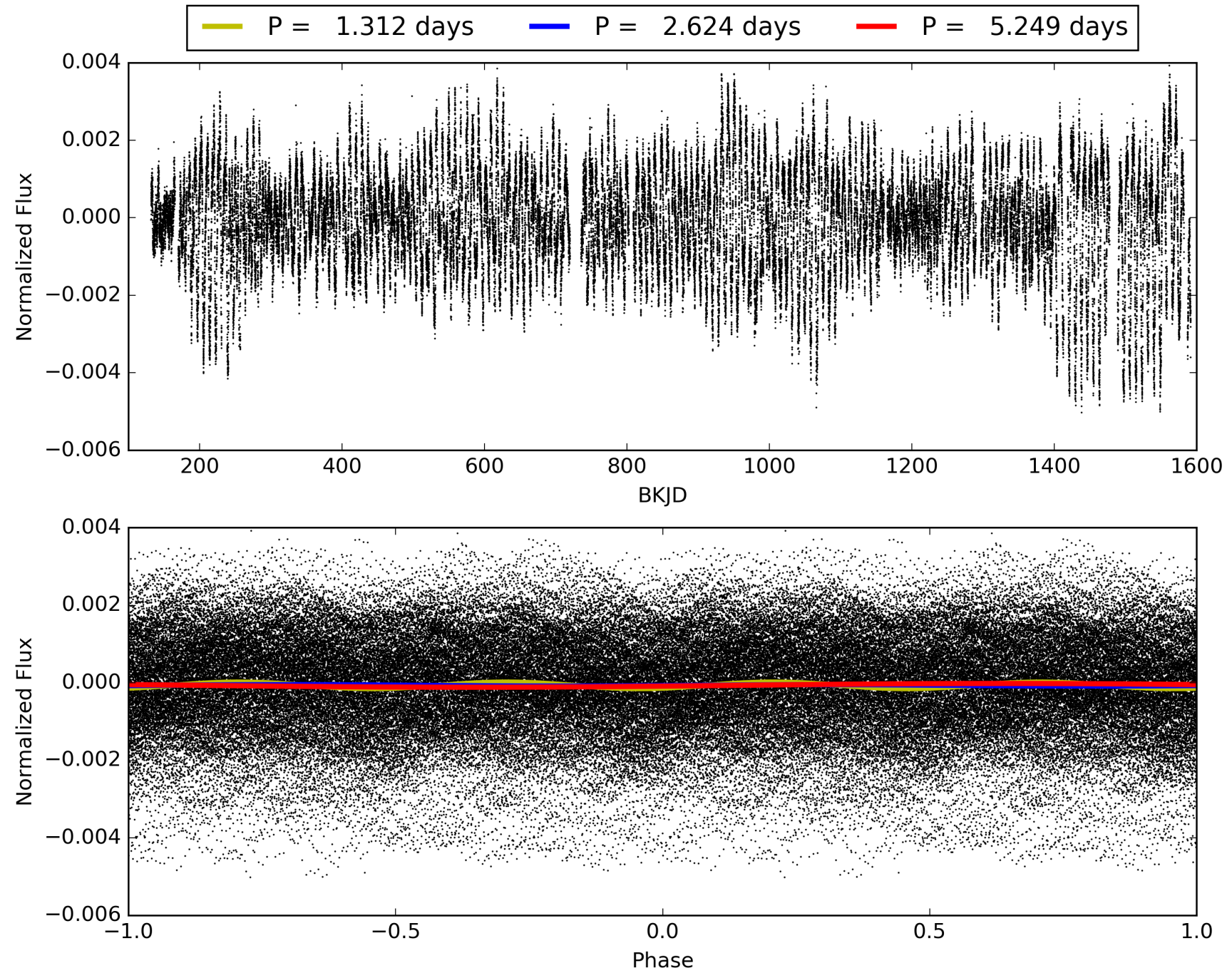
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 08:44:00 Z

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

TCE 009655471-02, PDC Light Curves

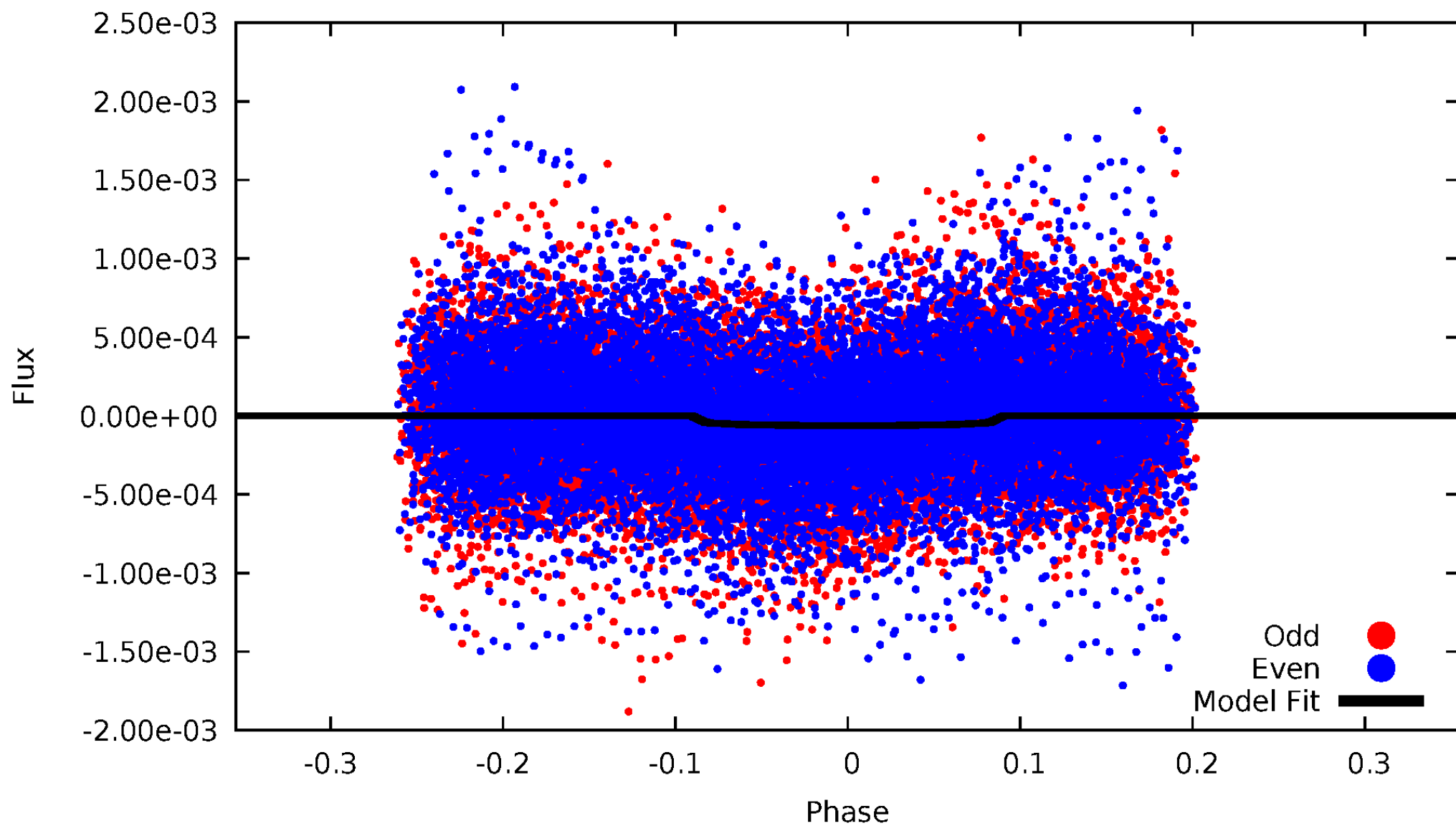


TCE 009655471-02



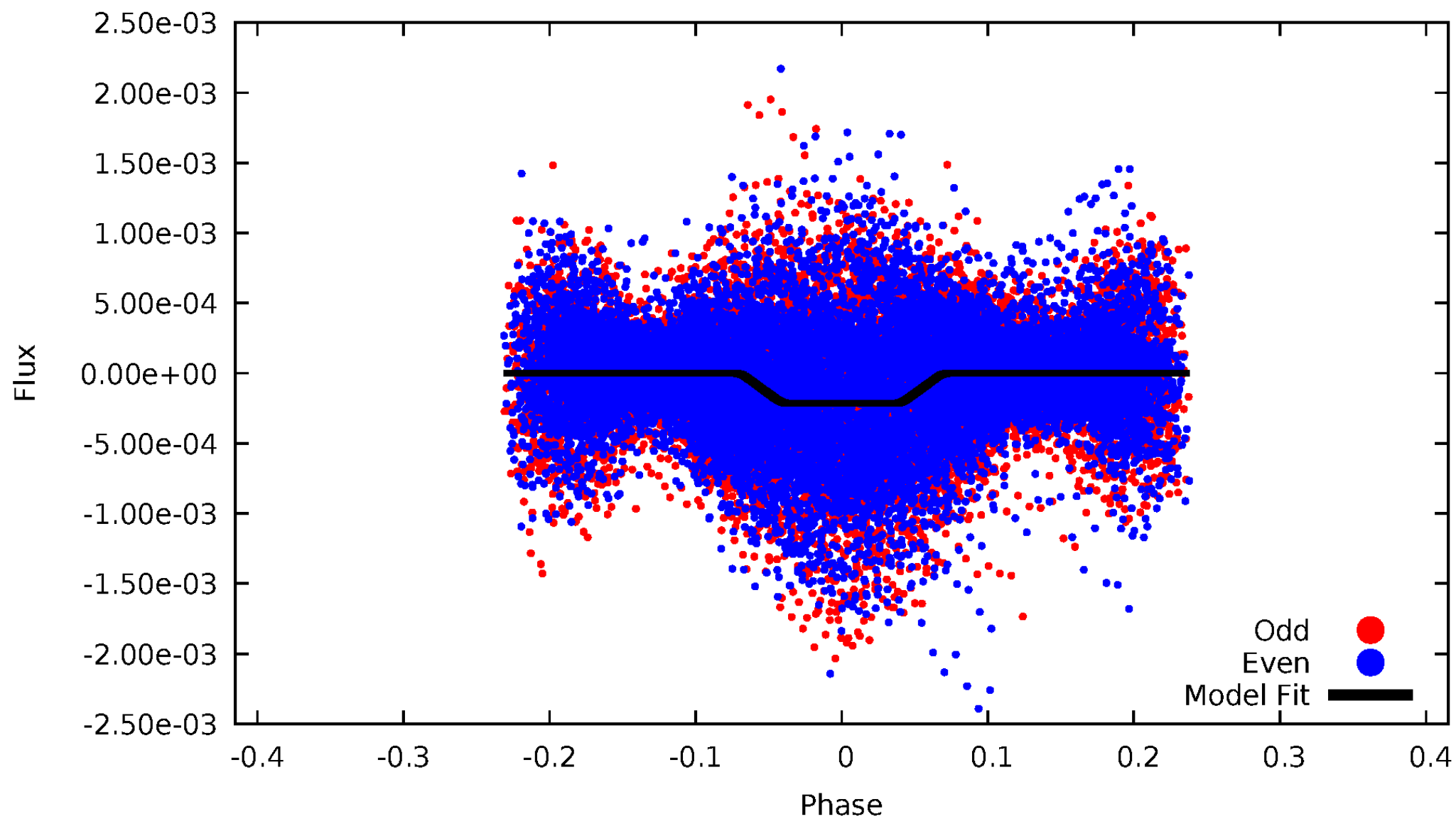
DV Odd/Even

TCE 009655471-02



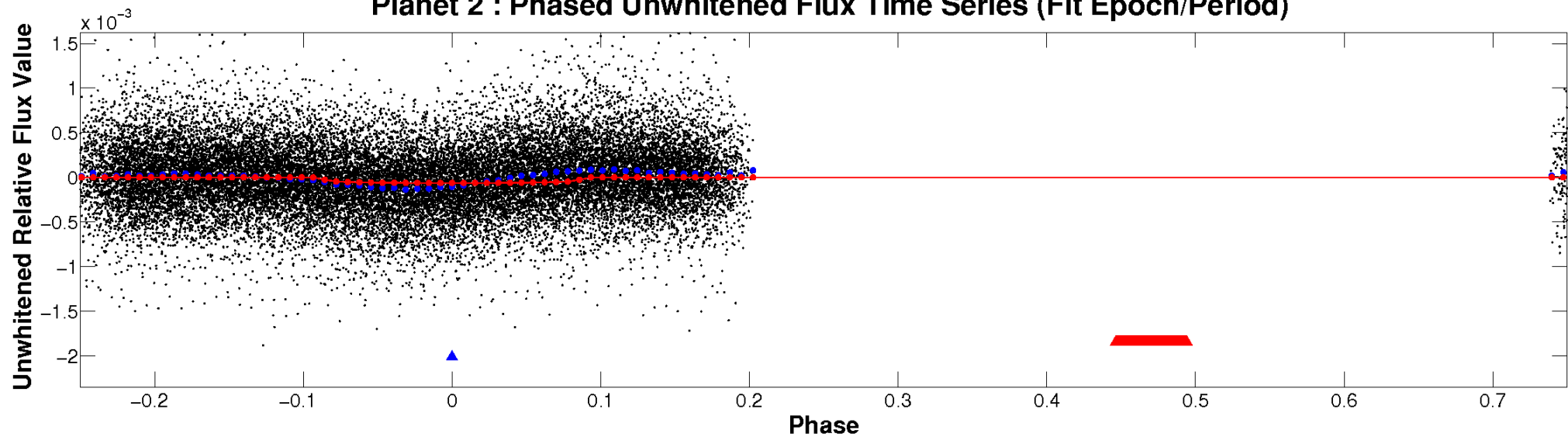
ALT Odd/Even

TCE 009655471-02

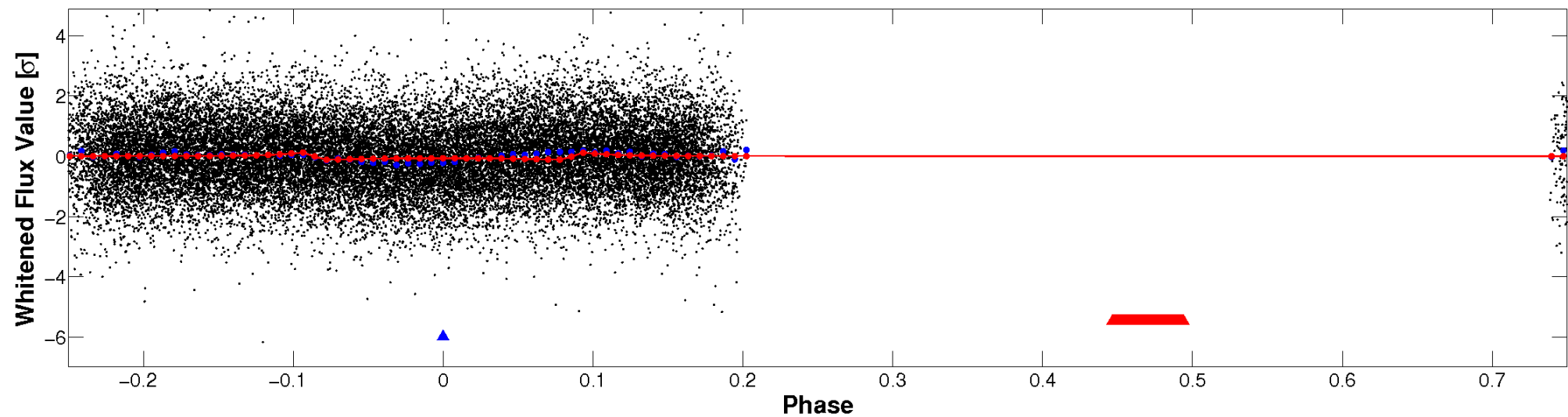


Non-Whitened Vs. Whitened Light Curve

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

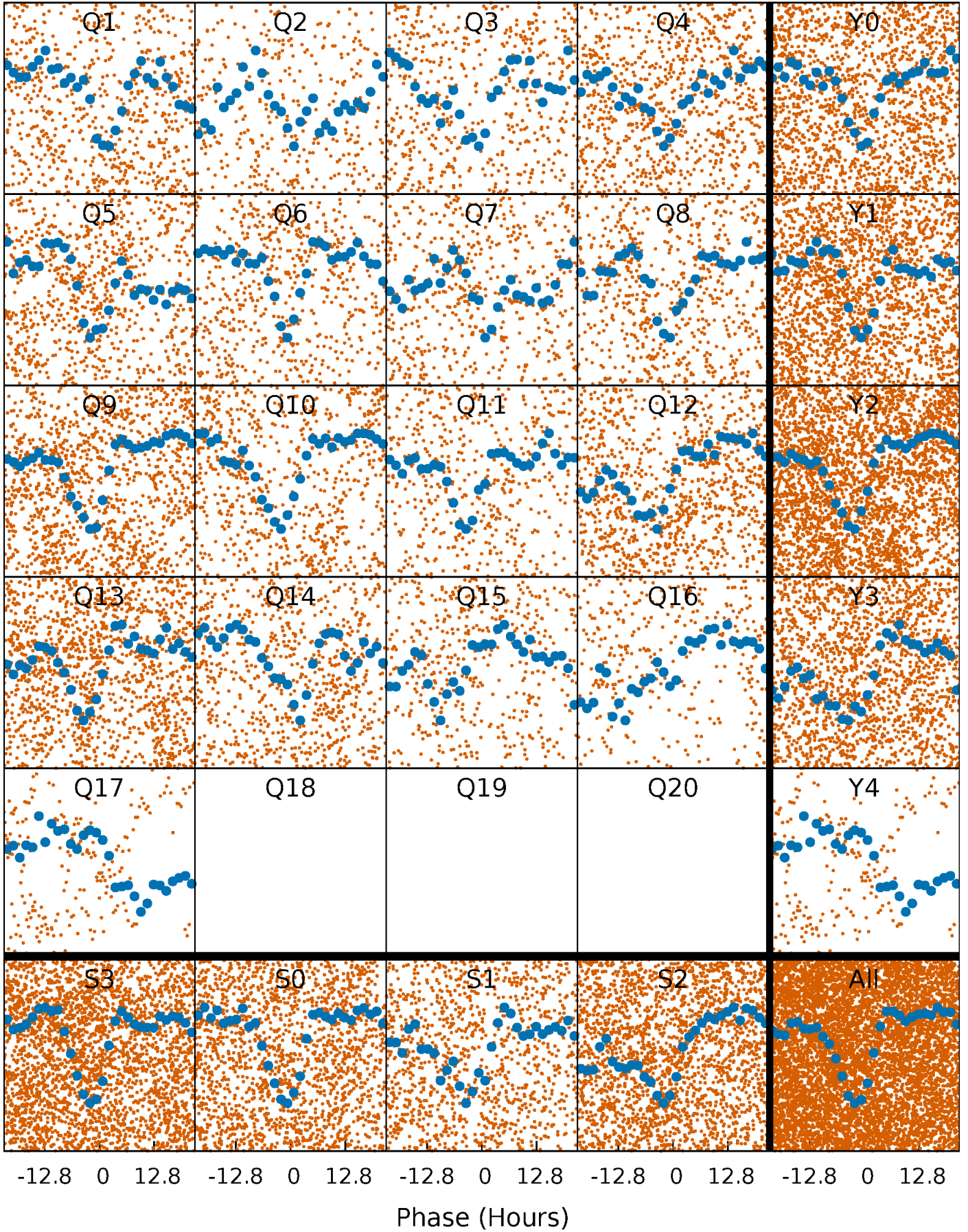


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



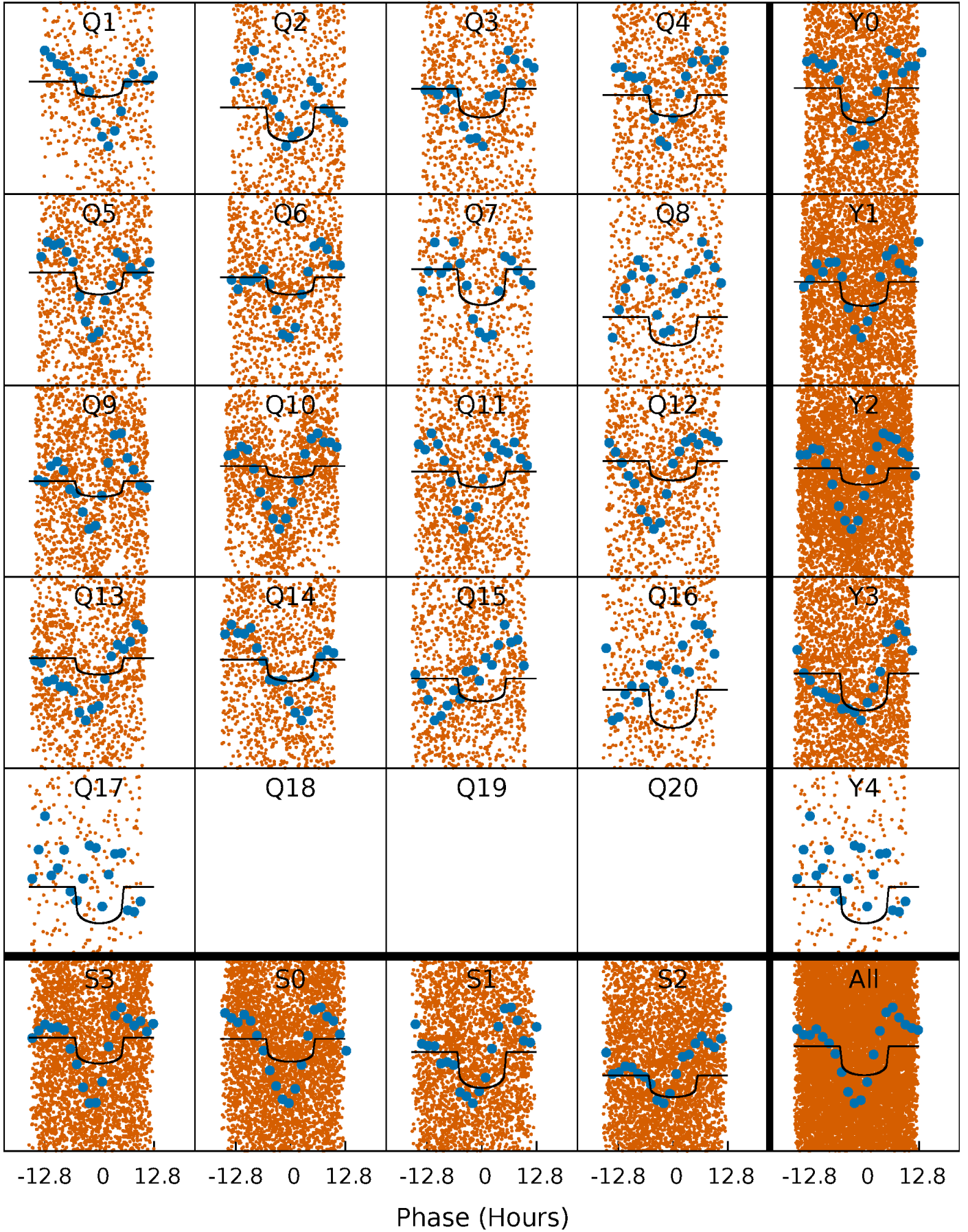
PDC Quarter-Phased Transit Curves

TCE 009655471-02 P= 2.624493 Days $T_0=132.779115$ (BKJD)



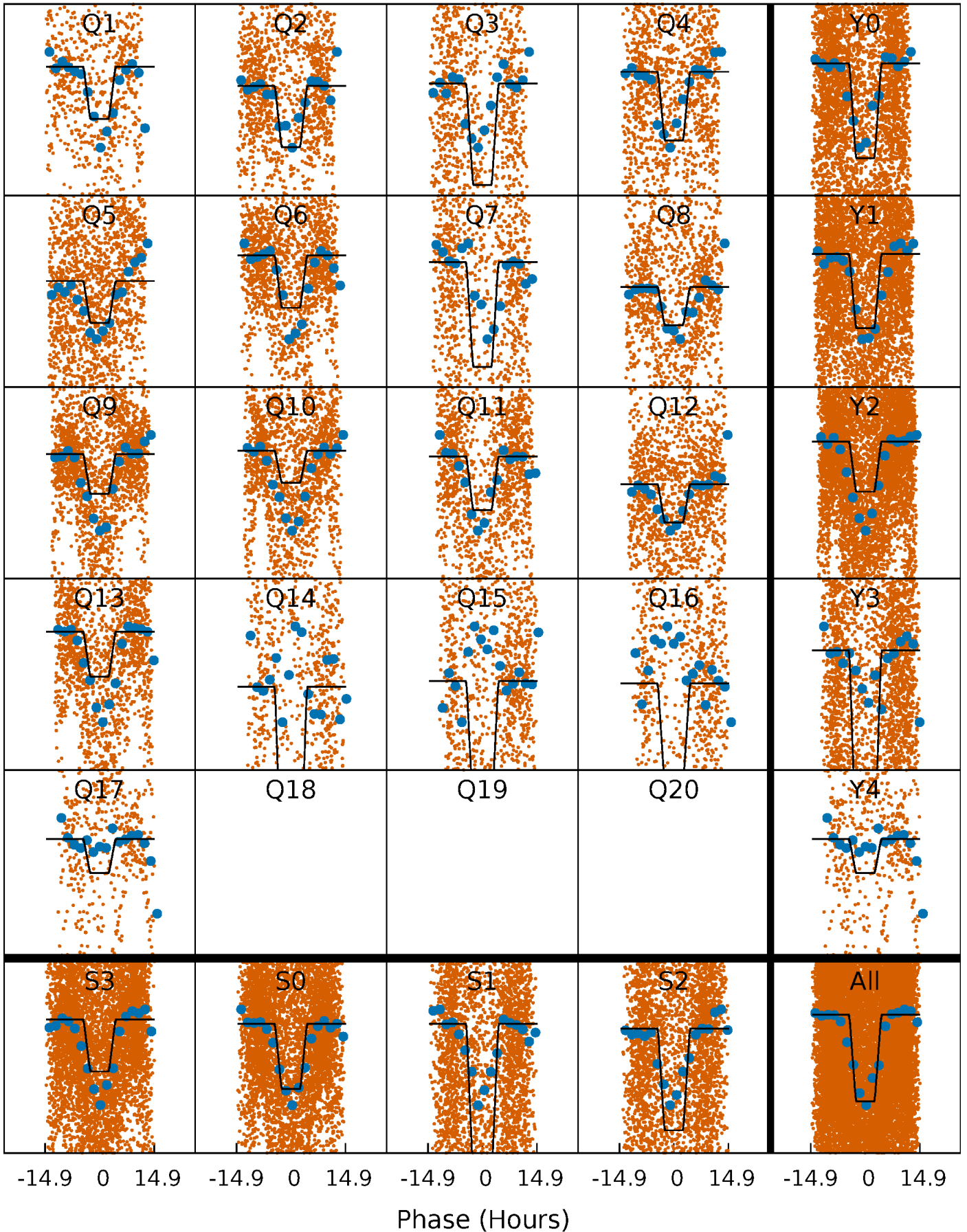
DV Quarter-Phased Transit Curves

TCE 009655471-02 P= 2.624493 Days $T_0=132.779115$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

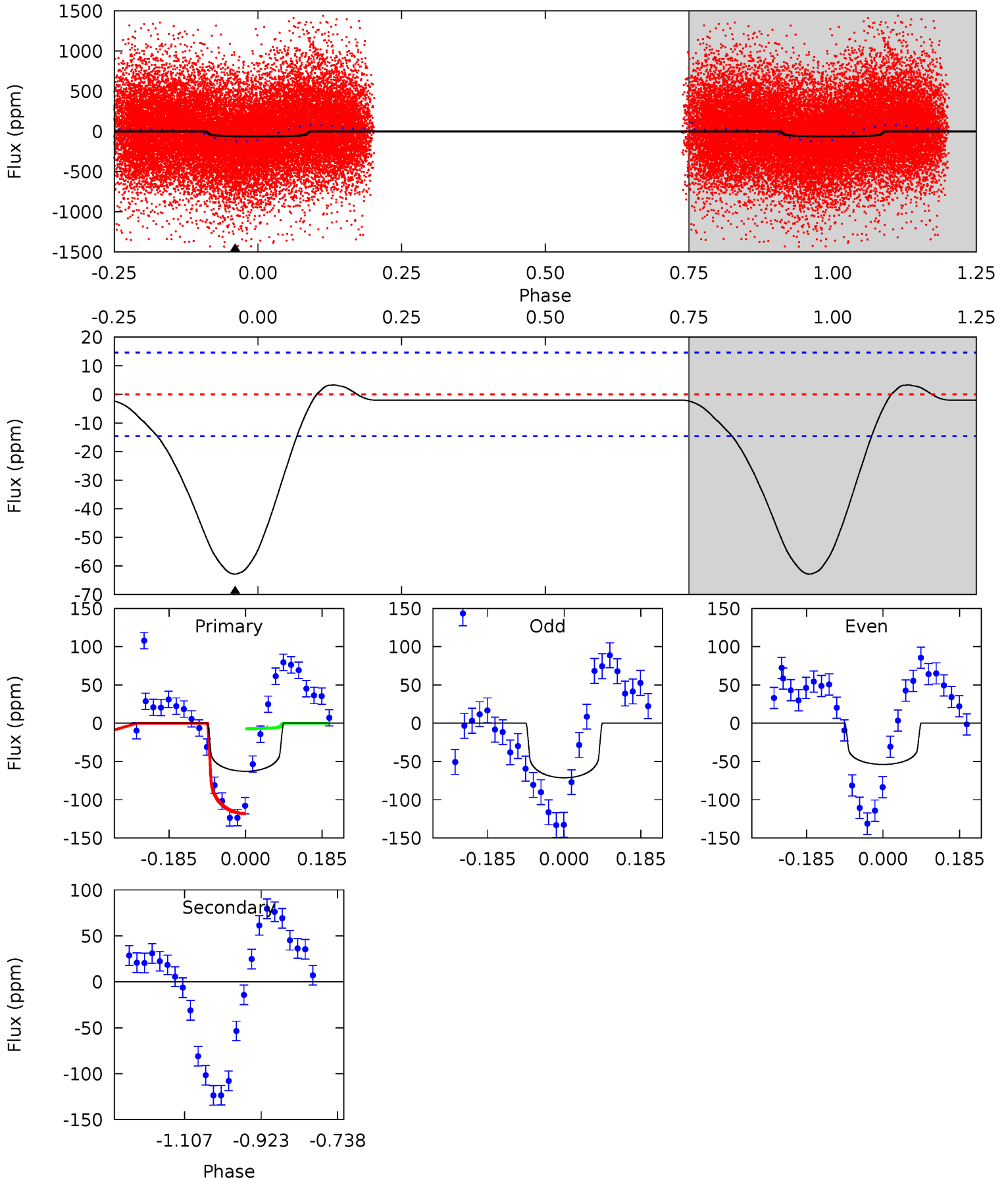
TCE 009655471-02 P= 2.624014 Days $T_0=132.824424$ (BKJD)



DV Model-Shift Uniqueness Test

009655471-02, P = 2.624493 Days, E = 130.154622 Days

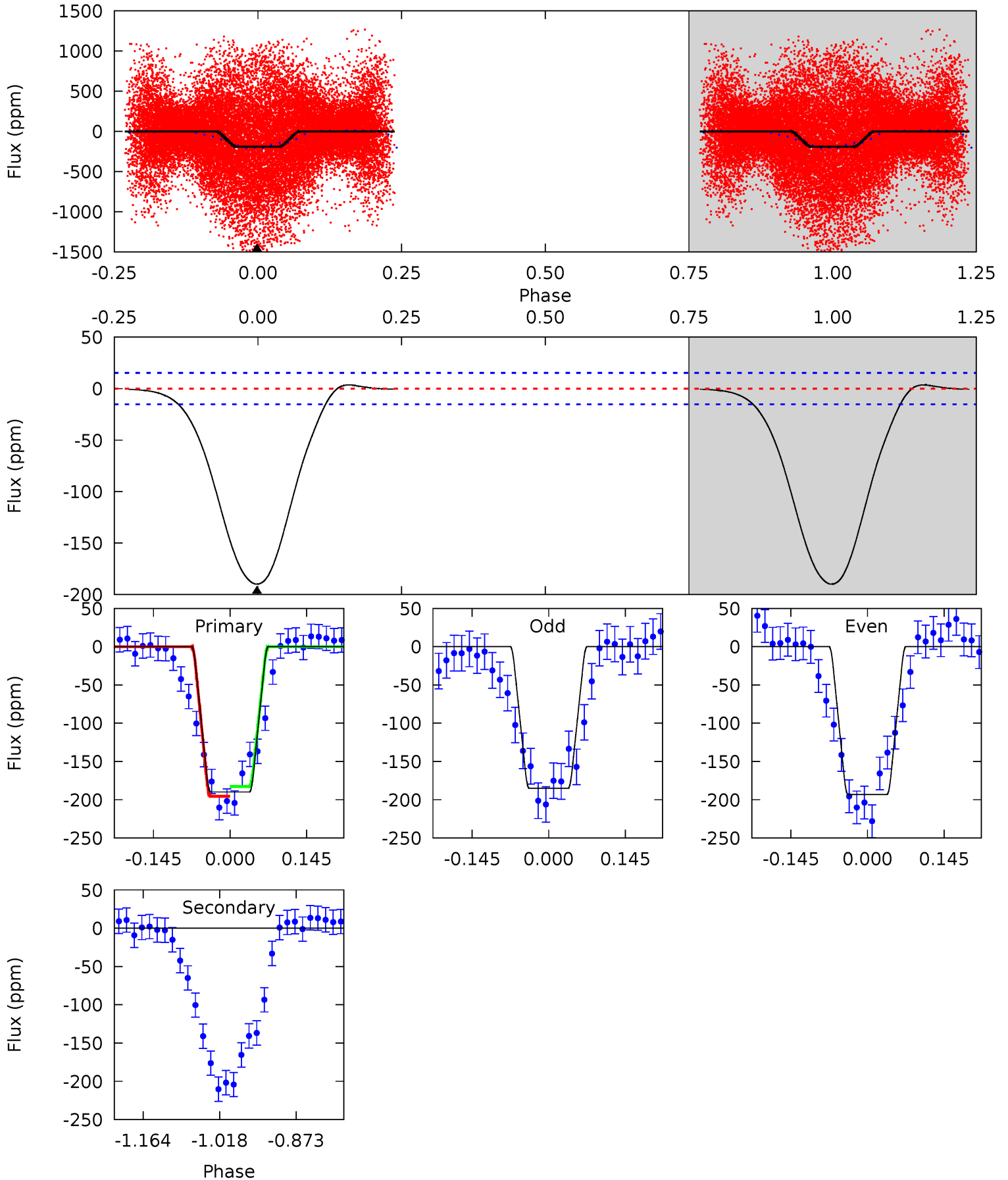
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.1	0	0	0	4.43	1.33	0.73	19.1	19.1	0	0	2.69	1.15	0.05	16.4



Alt Model-Shift Uniqueness Test

009655471-02, P = 2.624014 Days, E = 130.200410 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
55.7	0	0	0	4.49	1.46	1.16	55.7	55.7	0	0	1.18	1.02	0.02	1.37



Stellar Parameters For KIC 009655471

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6680^{+181}_{-202}	$3.938^{+0.234}_{-0.126}$	$0.000^{+0.250}_{-0.300}$	$2.207^{+0.514}_{-0.685}$	$1.539^{+0.186}_{-0.279}$	$0.202^{+0.293}_{-0.076}$
	+3%/-3%	+6%/-3%	+inf%/-inf%	+23%/-31%	+12%/-18%	+145%/-38%
Source	PHO1	FLK73	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 009655471-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 3	$1.83^{+0.48}_{-0.37}$	2931^{+190}_{-213}	-3112^{+6534}_{-733}	$-0.076^{+1.008}_{-0.961}$
Alt.	0 ± 3	$3.46^{+0.59}_{-0.59}$	2929^{+196}_{-224}	-3032^{+959}_{-347}	$0.015^{+0.270}_{-0.286}$

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 $A_{obs} \gg 1.0$

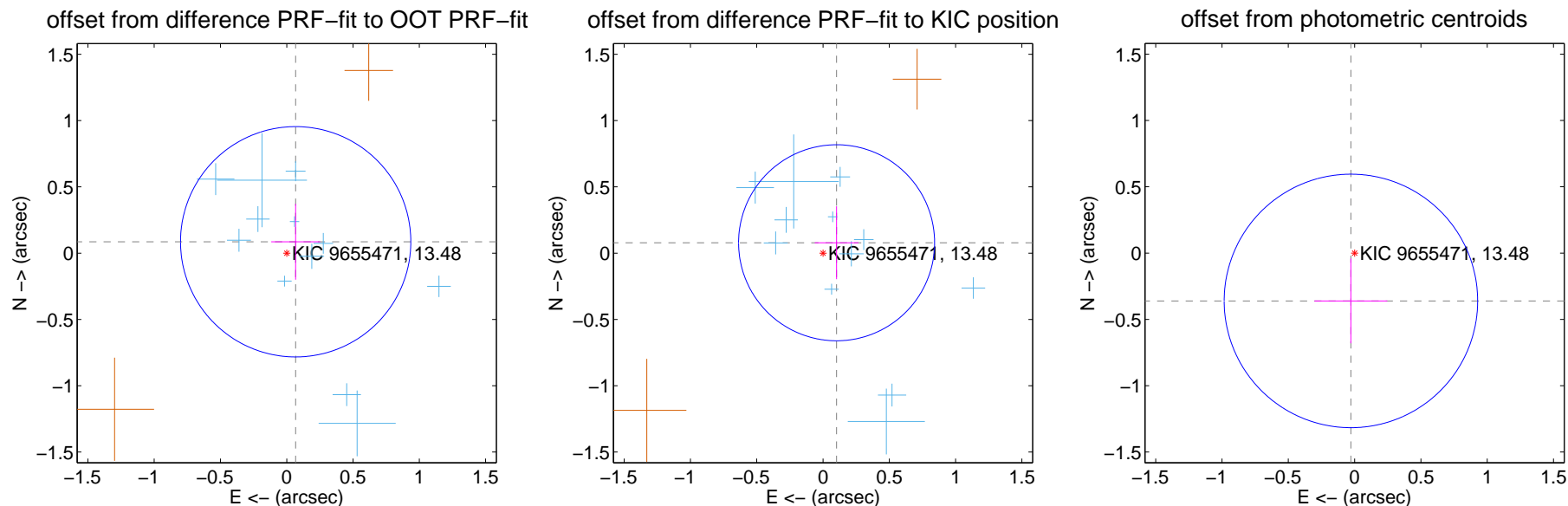
DV Centroid Data

Supplemental centroid analysis for 009655471-02. Kepler magnitude: 13.48. Transit SNR 10.08

There are 13 quarters with good PRF difference image offsets

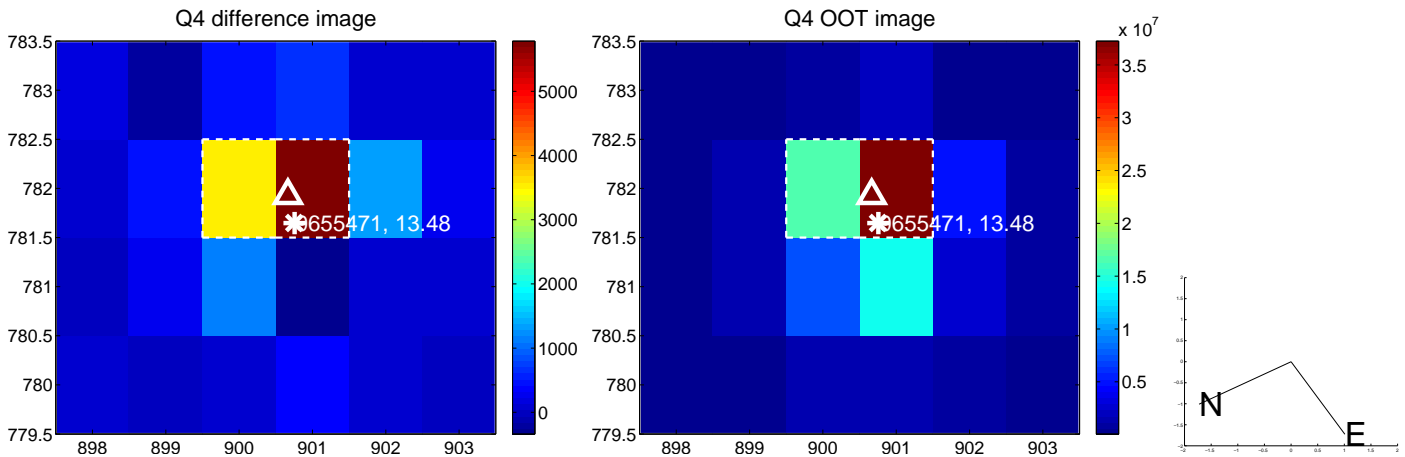
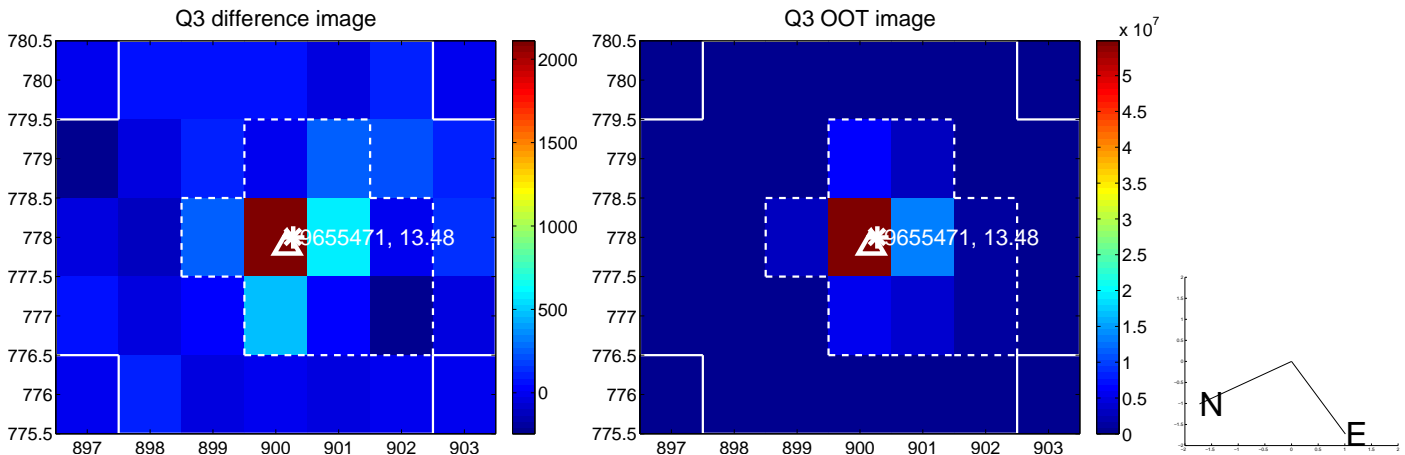
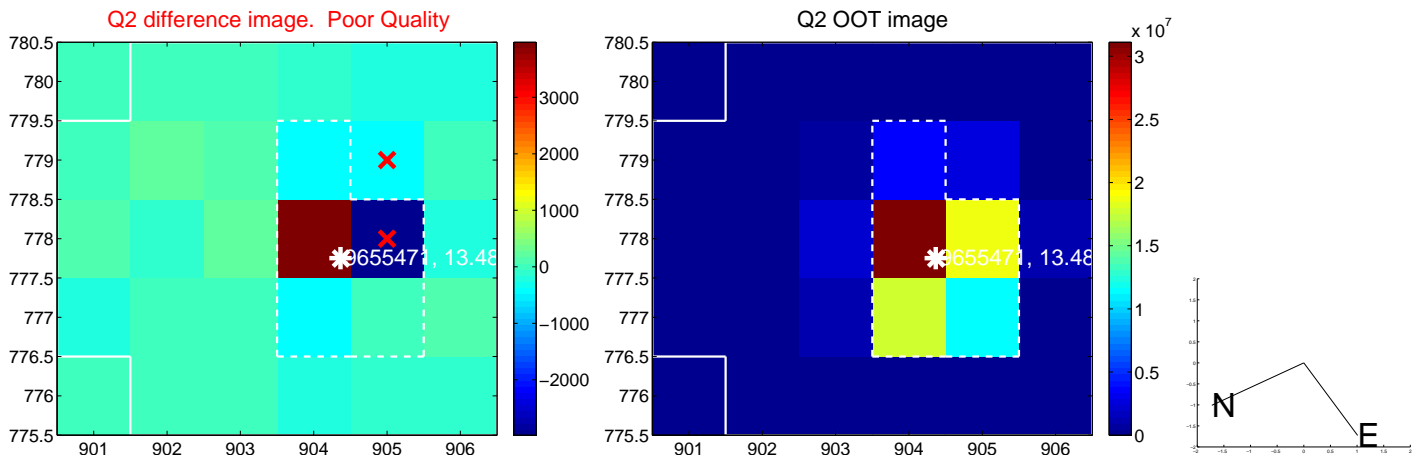
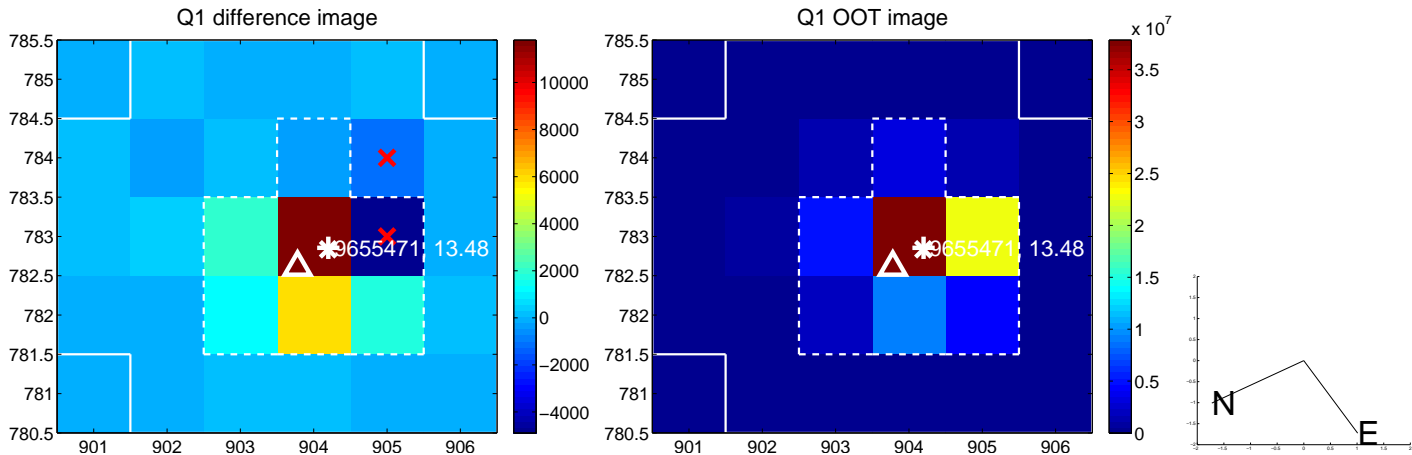
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.109 ± 0.290	0.38	-0.067 ± 0.185	0.086 ± 0.286
PRF-fit source offset from KIC position	0.129 ± 0.247	0.52	-0.102 ± 0.165	0.078 ± 0.275
photometric centroid source offset	0.36 ± 0.32	1.14	0.03 ± 0.27	-0.36 ± 0.32

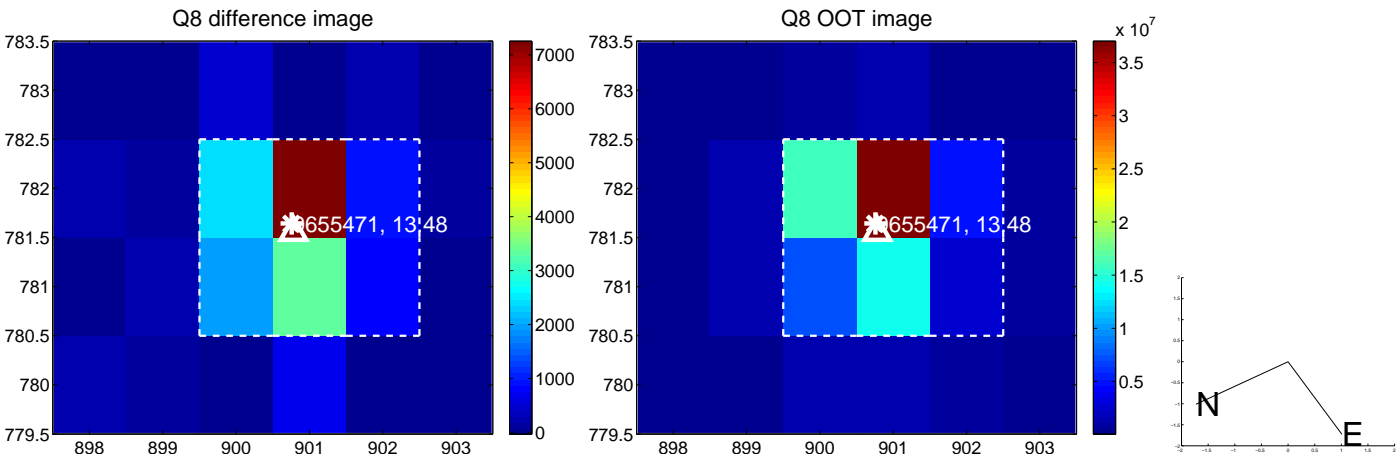
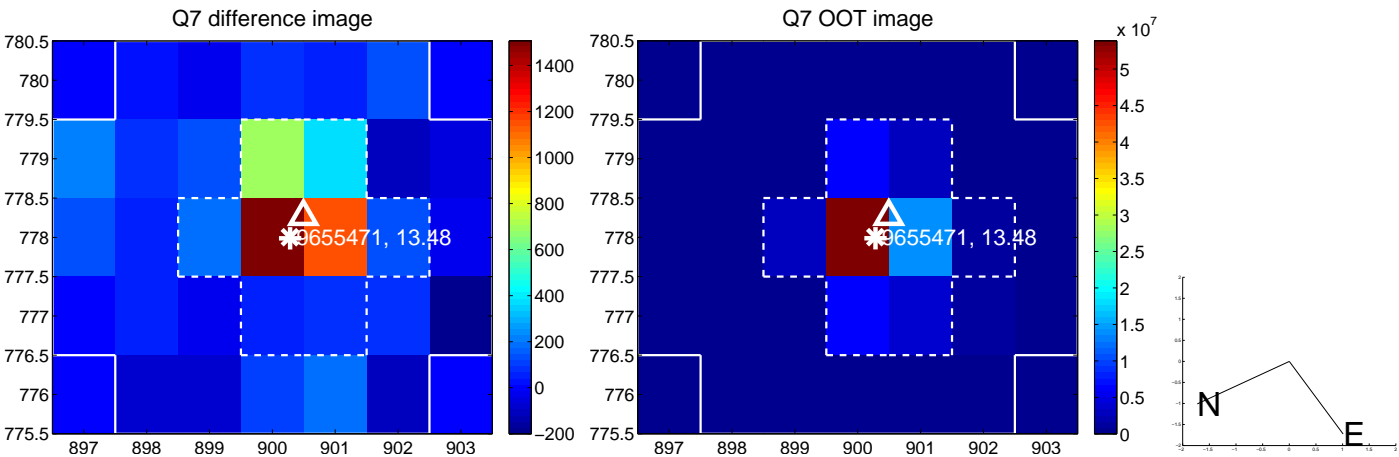
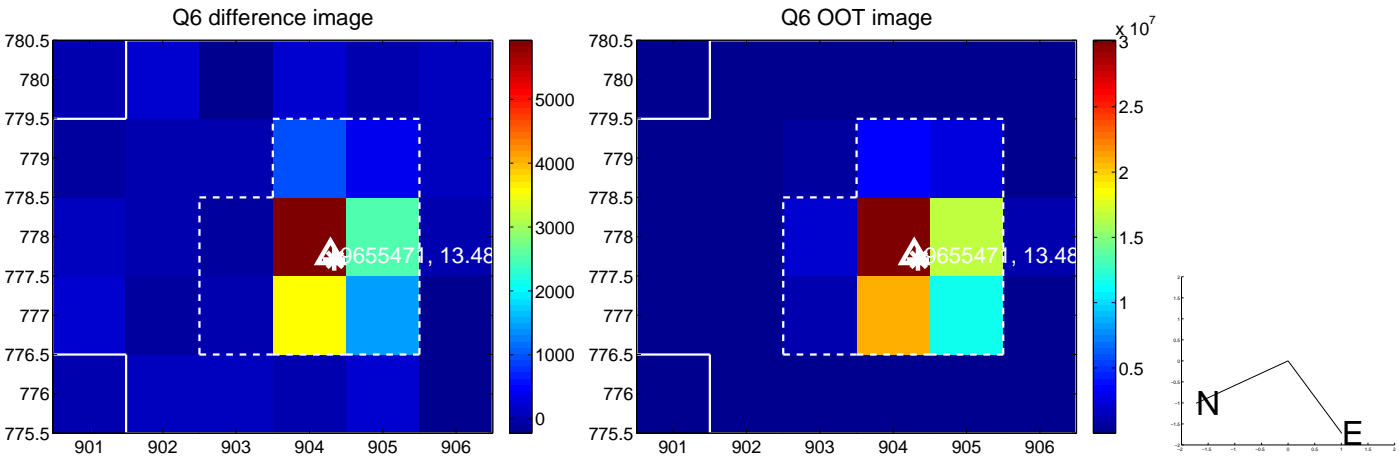
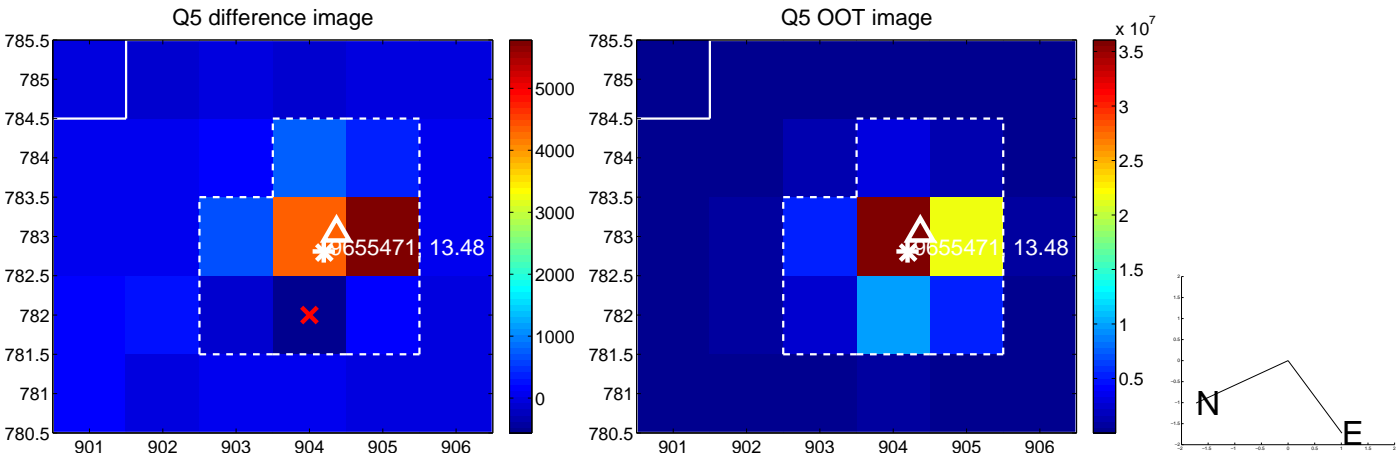


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

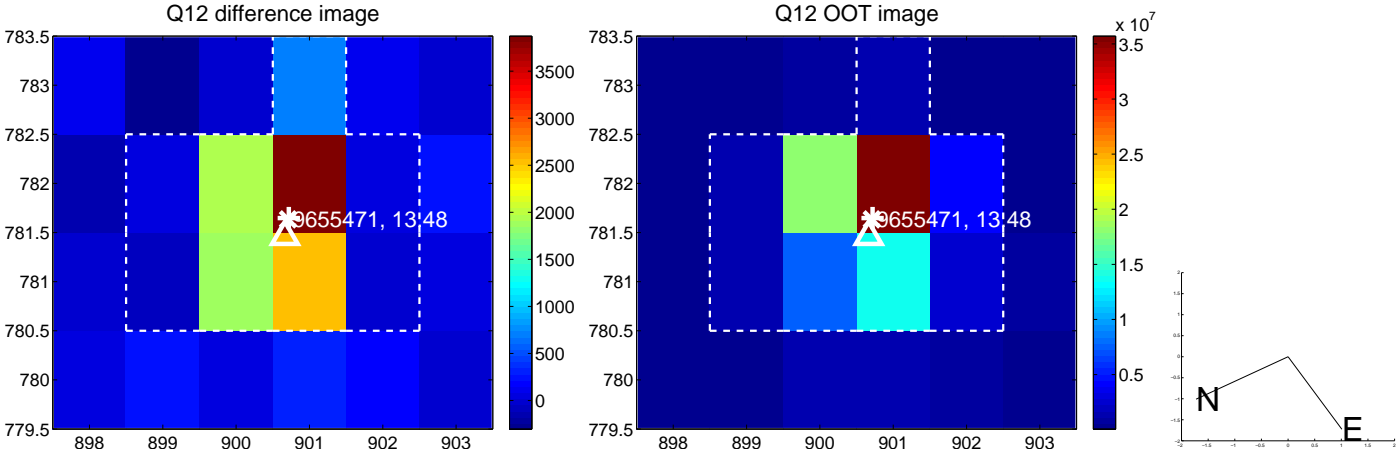
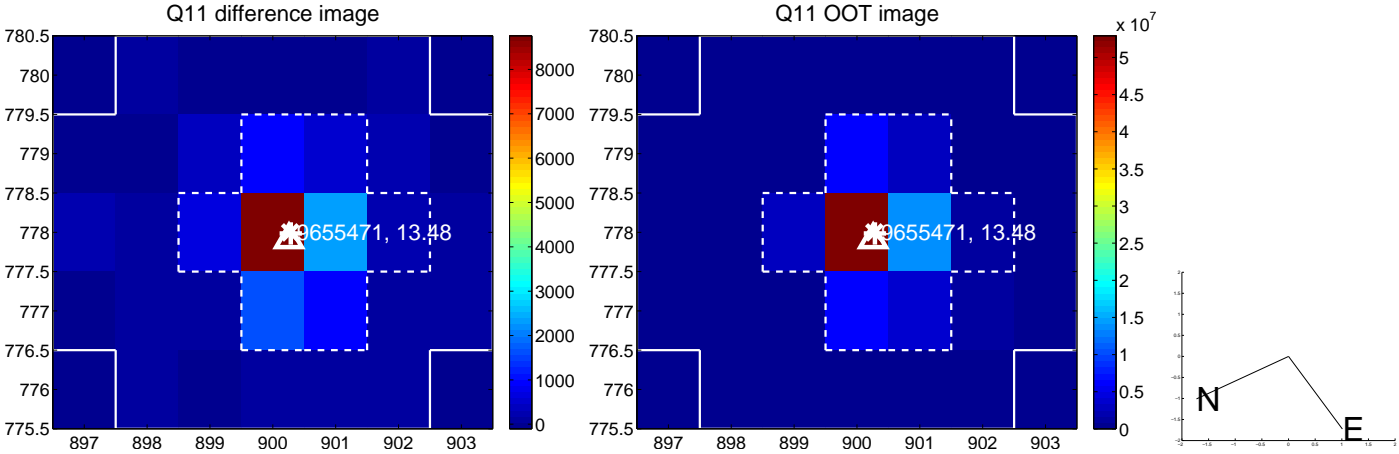
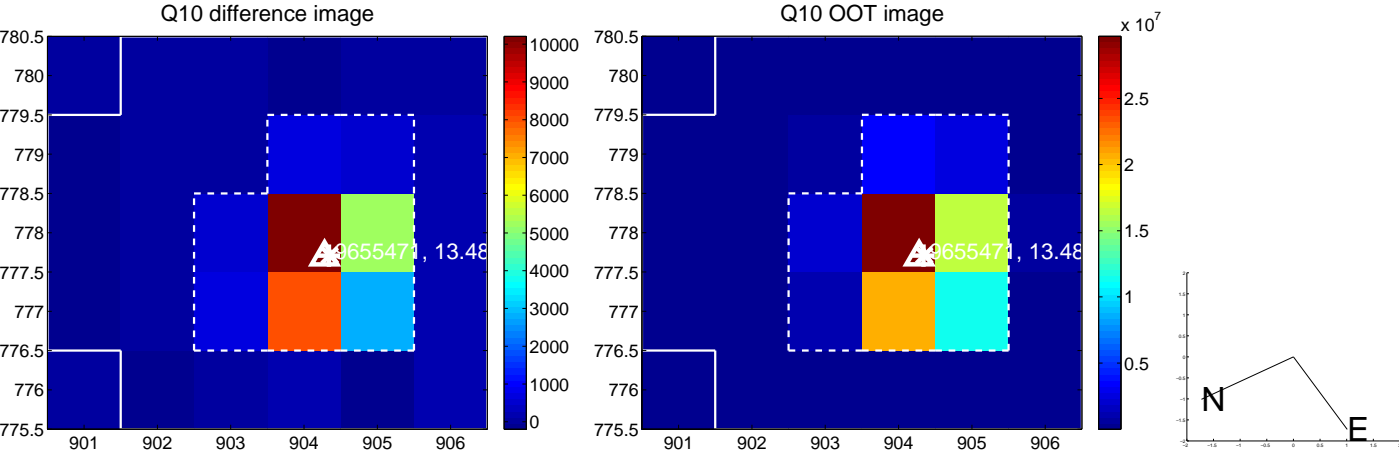
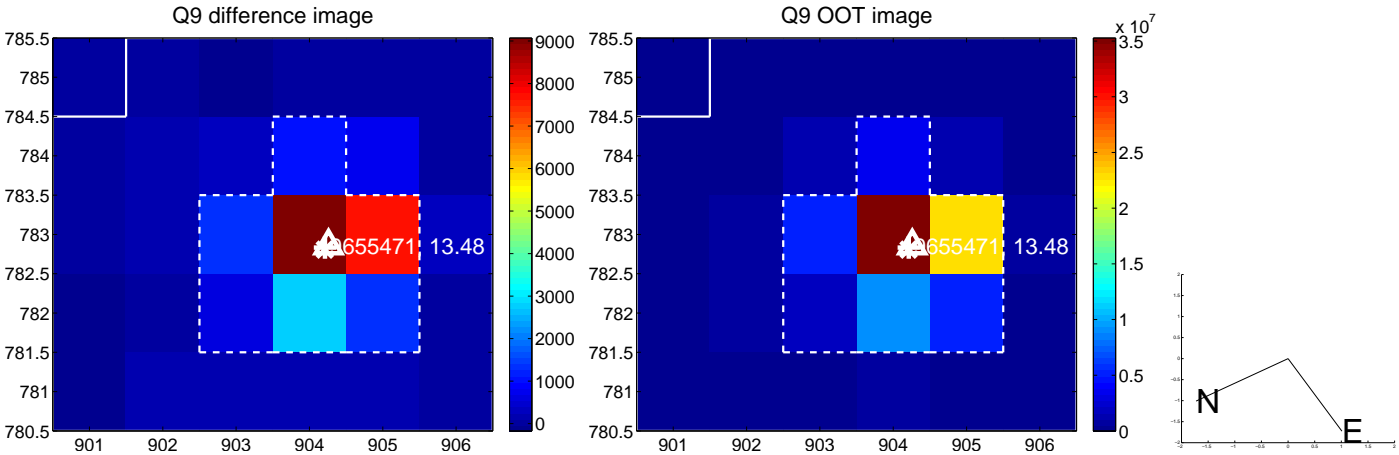
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



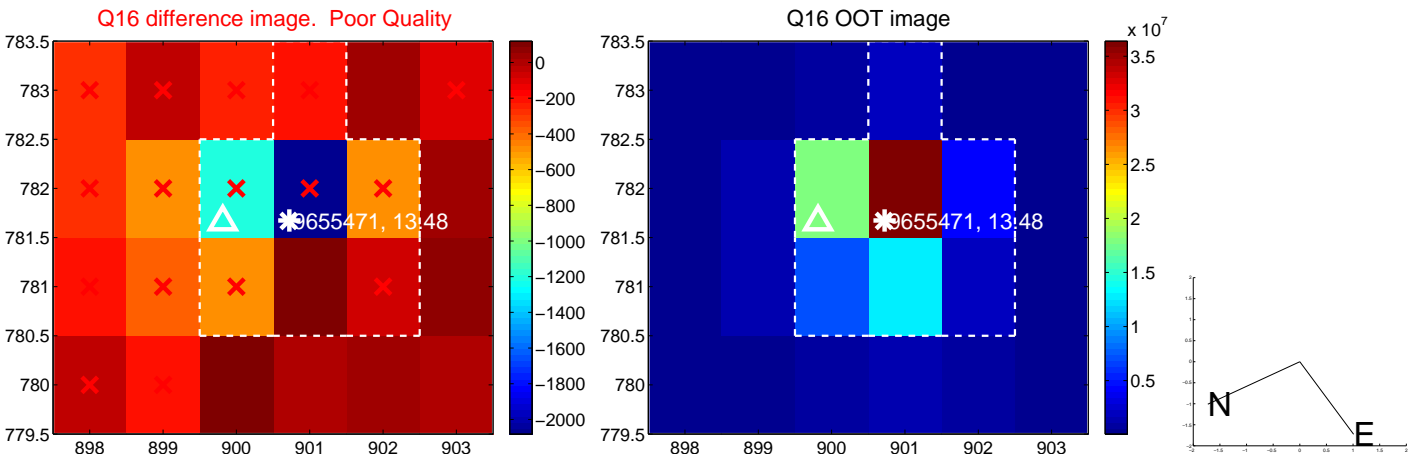
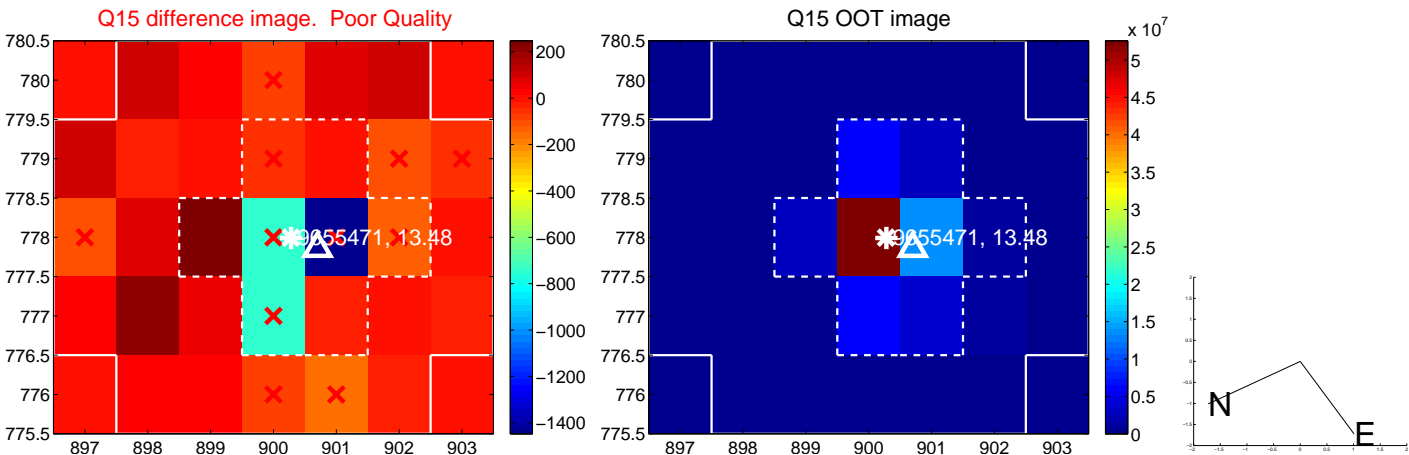
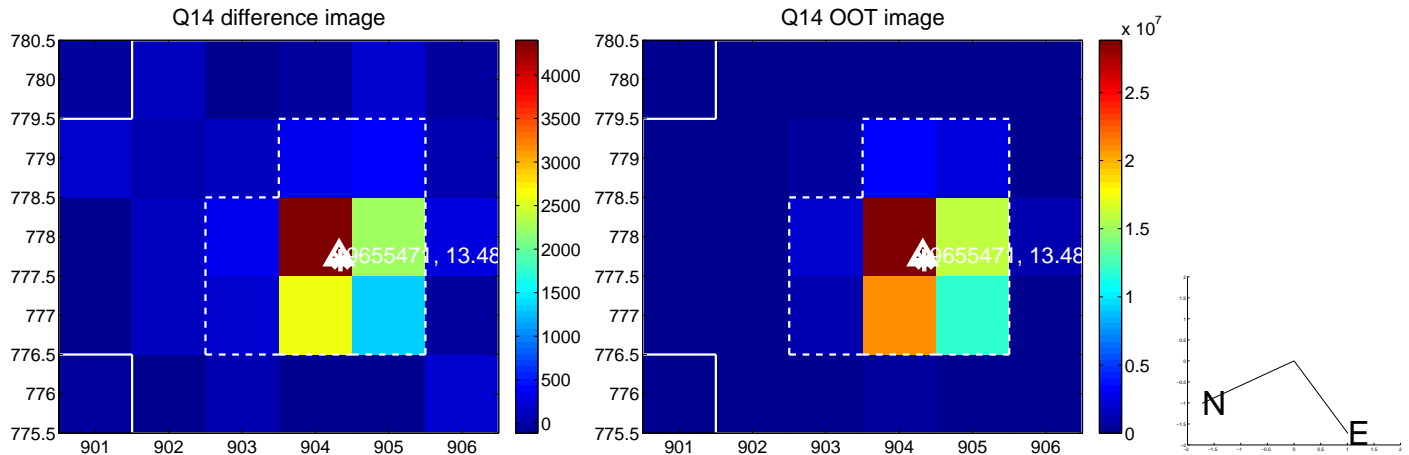
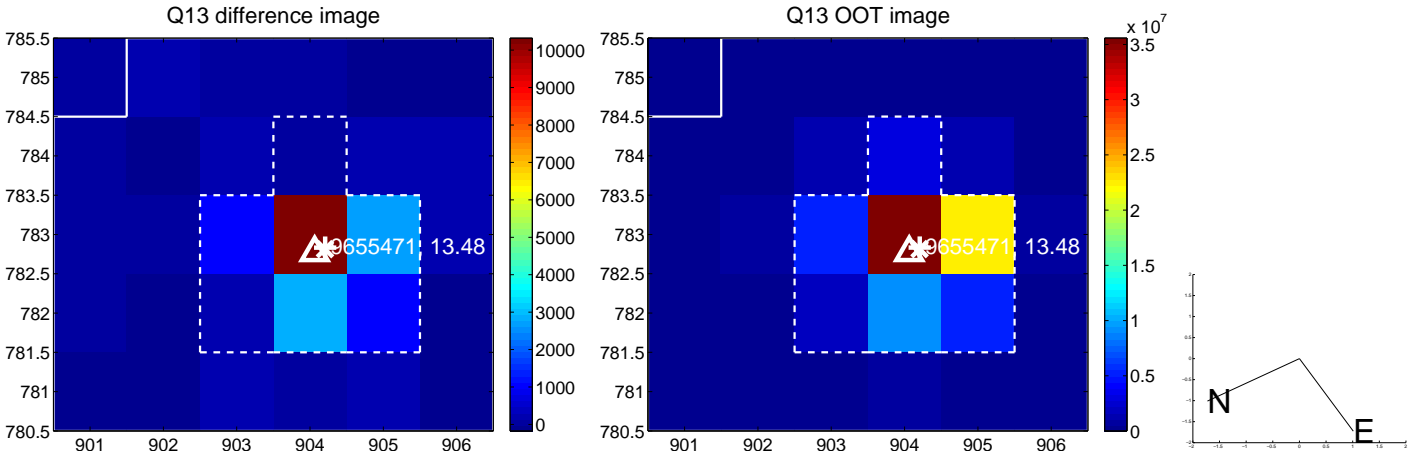
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



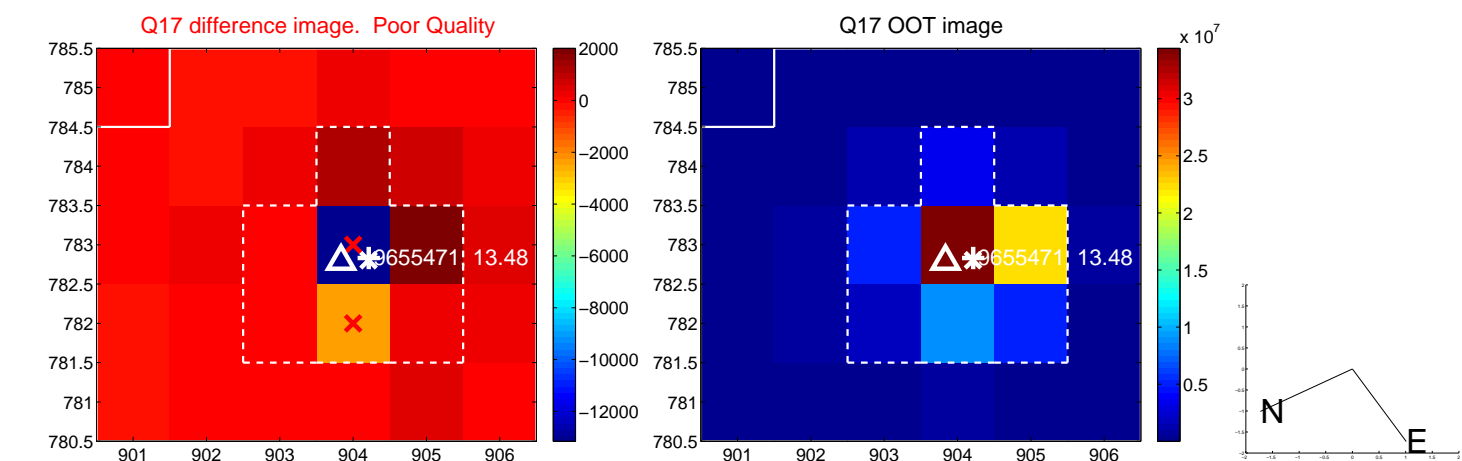
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



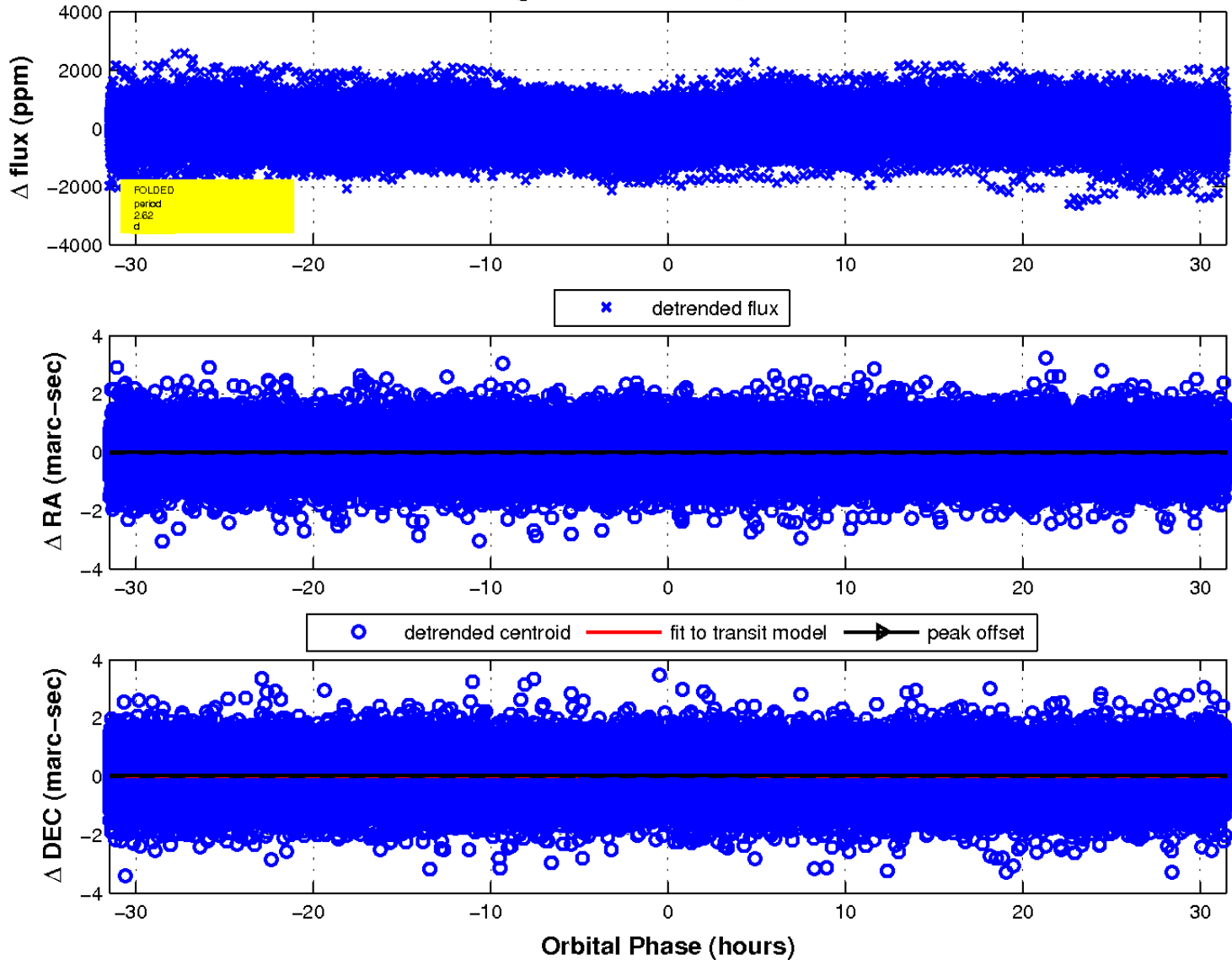
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

