

KIC 010842687

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})
010842687-01	OBS	No	0.965114	131.831240	19.4	2.192	9.5	8.6	3.13	6074	1.62	25091.89
010842687-02	OBS	No	0.965102	132.316039	18.6	2.022	8.6	8.3	3.13	6074	1.59	25092.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010842687-01	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—EPHEM_MATCH
010842687-02	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET—EPHEM_MATCH

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.

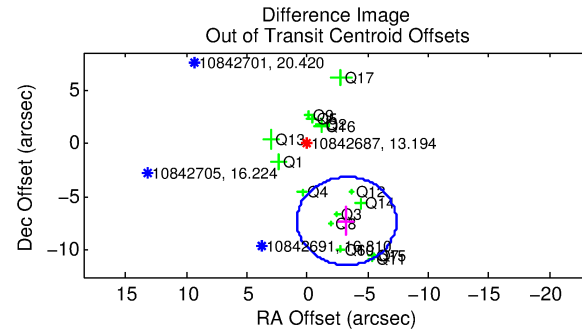
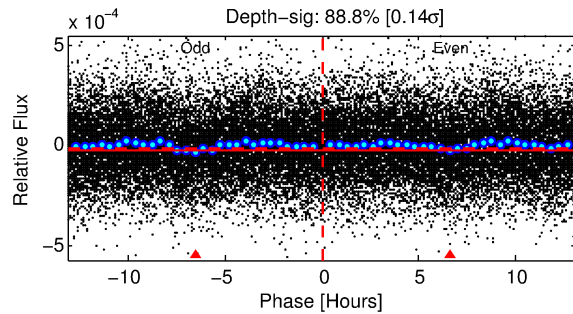
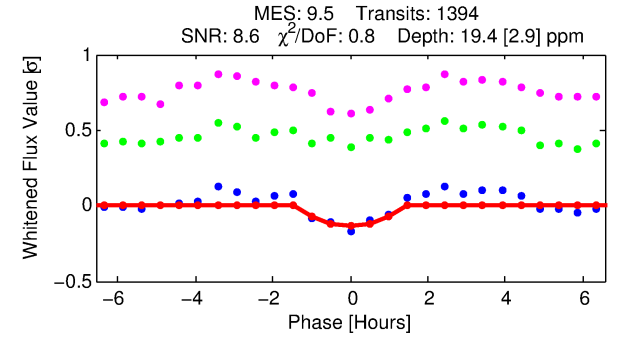
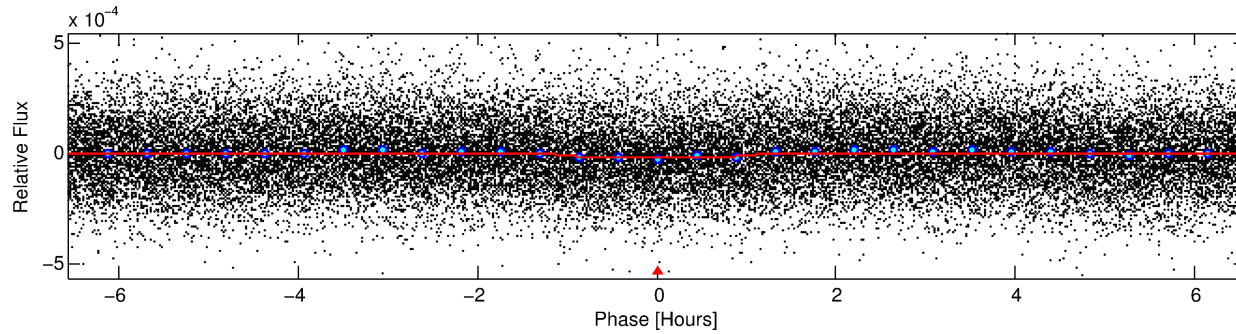
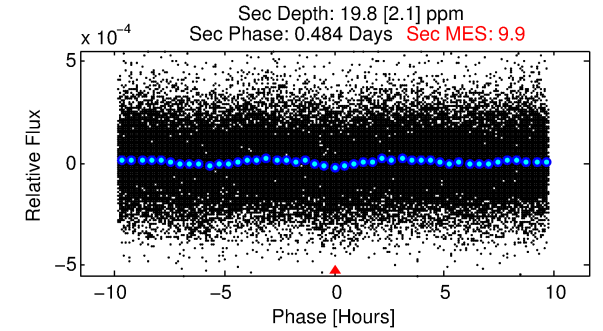
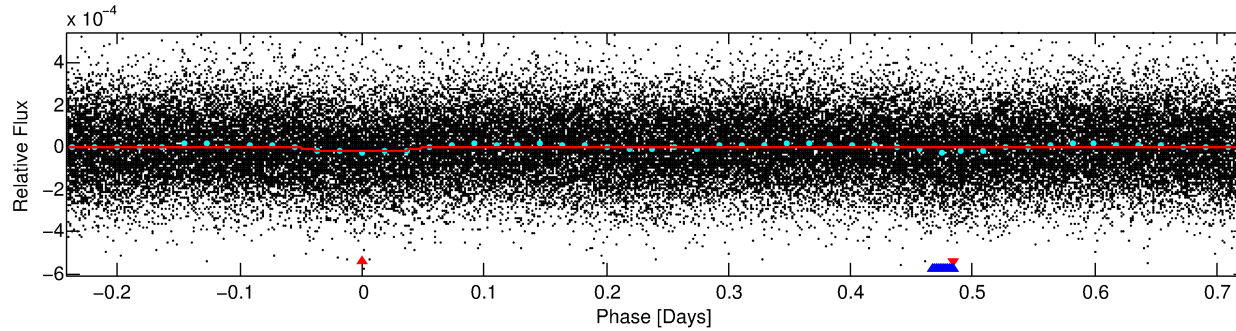
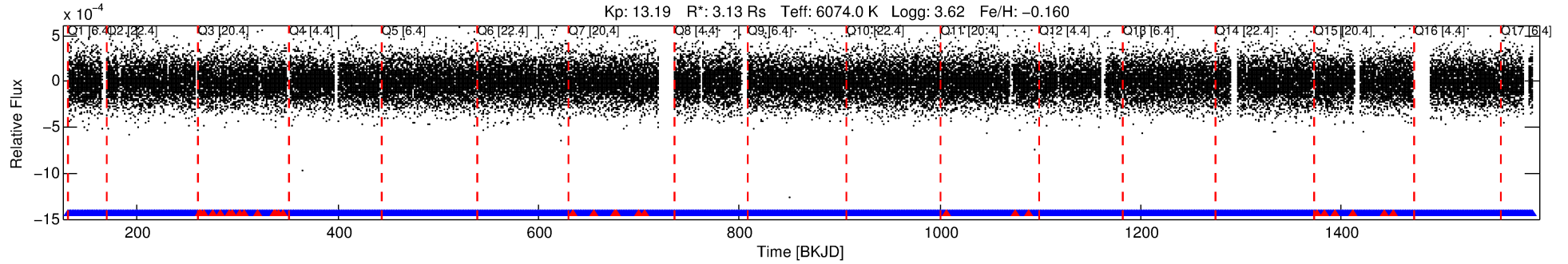
Ephemeris Match Information For 010842687-01

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (μ)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
010842687-01	10842687	010777060-02	10777060	1:1	51.5	-11	-5	11.16	13.20	0.89	Direct-PRF	1	4.51	2.67

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 10842687 Candidate: 1 of 2 Period: 0.965 d



DV Fit Results:

Period = 0.96511 [0.00001] d
Epoch = 131.8312 [0.0035] BKJD
Rp/R* = 0.0048 [0.0023]
a/R* = 1.77 [3.09]
b = 0.90 [0.55]
Seff = 25091.89 [15324.30]
Teq = 3209 [490] K
Rp = 1.62 [1.03] Re
a = 0.0218 [0.0084] AU
Ag = 1.97 [2.23] [0.44σ]
Teffp = 5879 [1421] K [1.78σ]

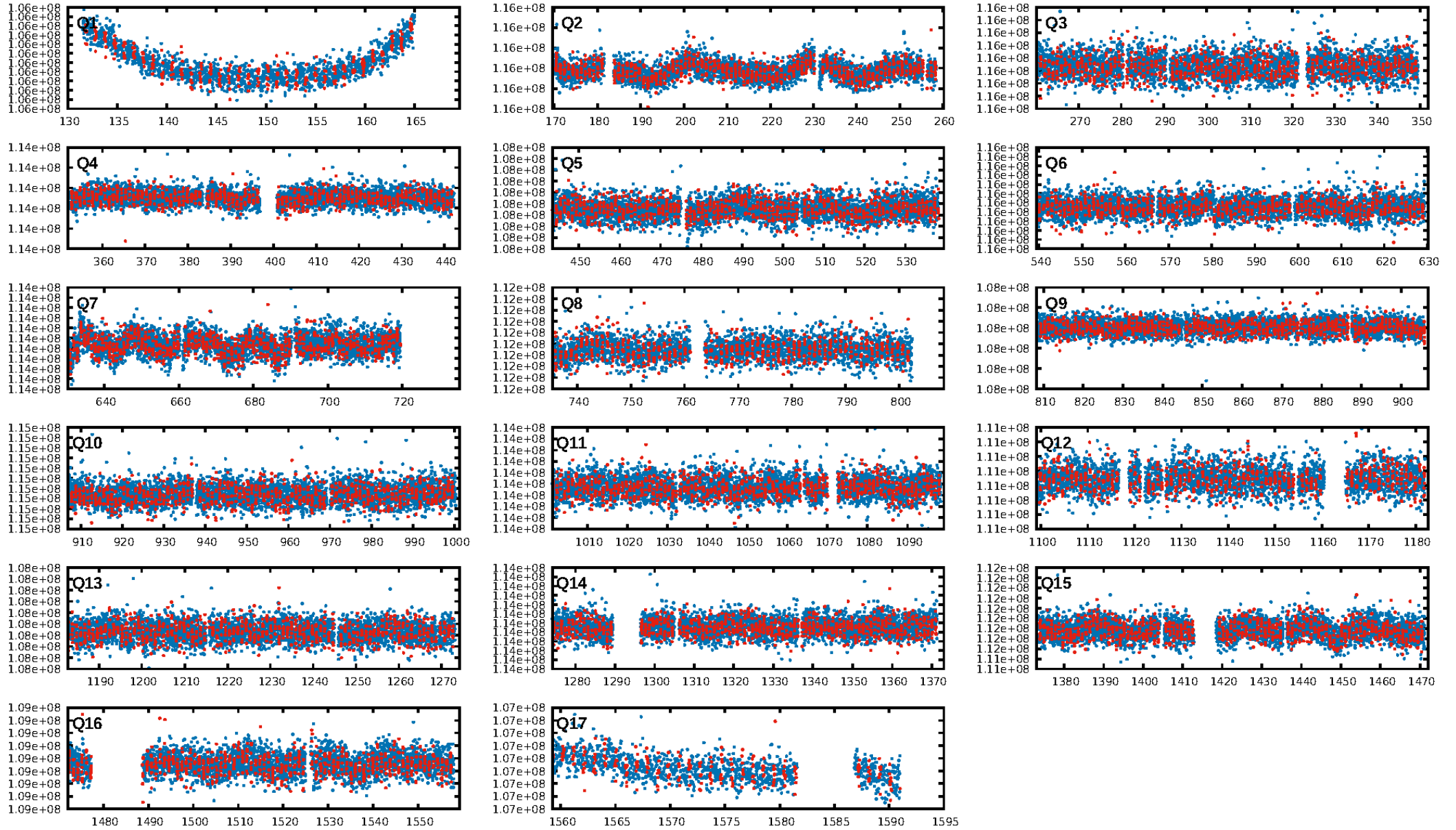
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.74e-19
RollingBand-fgt: 0.98 [1301/1331]
GhostDiagnostic-chr: -0.2609
Centroid-sig: 0.0%
Centroid-so: 8.930 arcsec [5.38σ]
OotOffset-rm: 7.960 arcsec [5.81σ]
KicOffset-rm: 7.754 arcsec [5.86σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.18 [3/17]
DiffImageOverlap-fno: 1.00 [17/17]

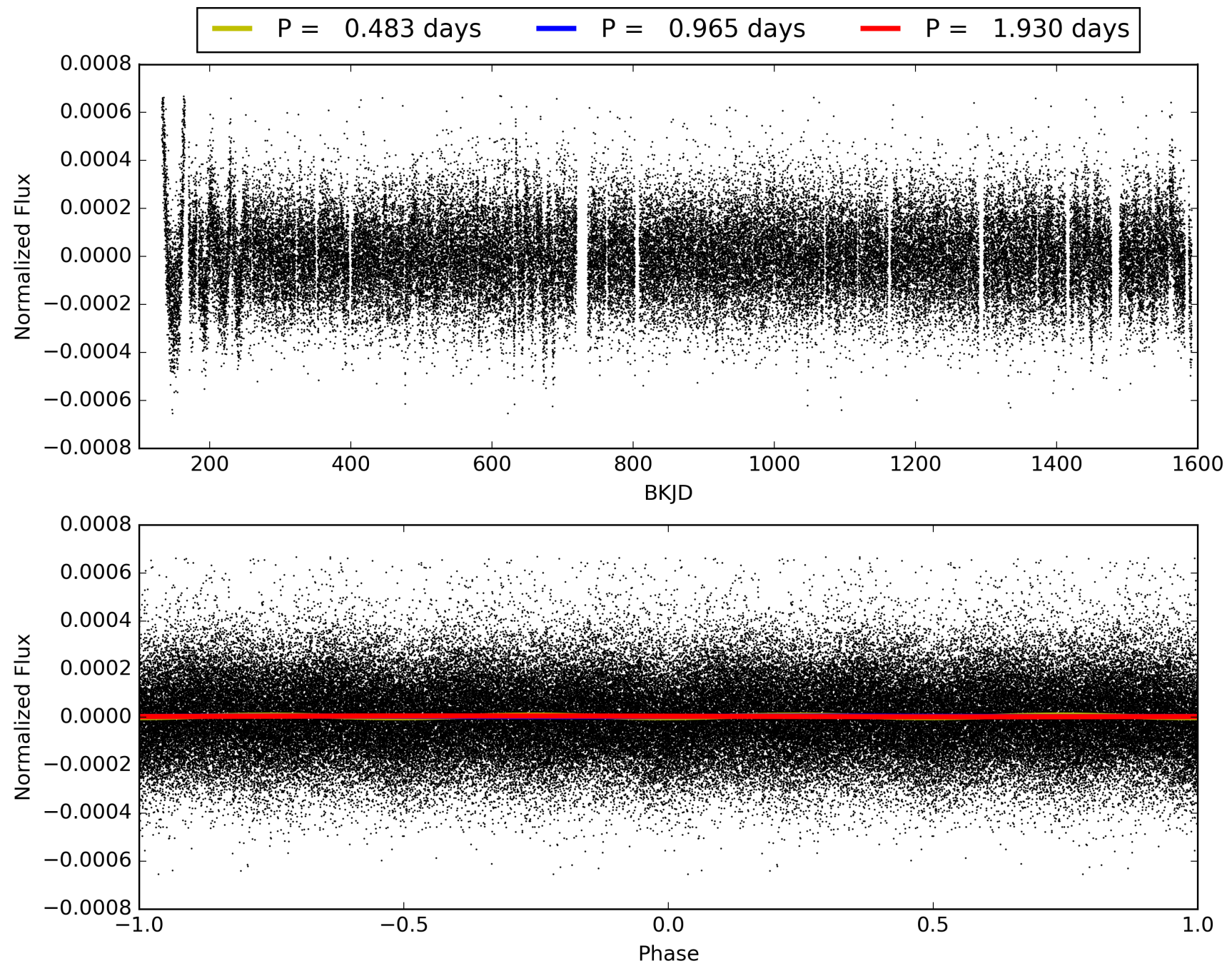
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 11:14:08 Z

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

TCE 010842687-01, PDC Light Curves

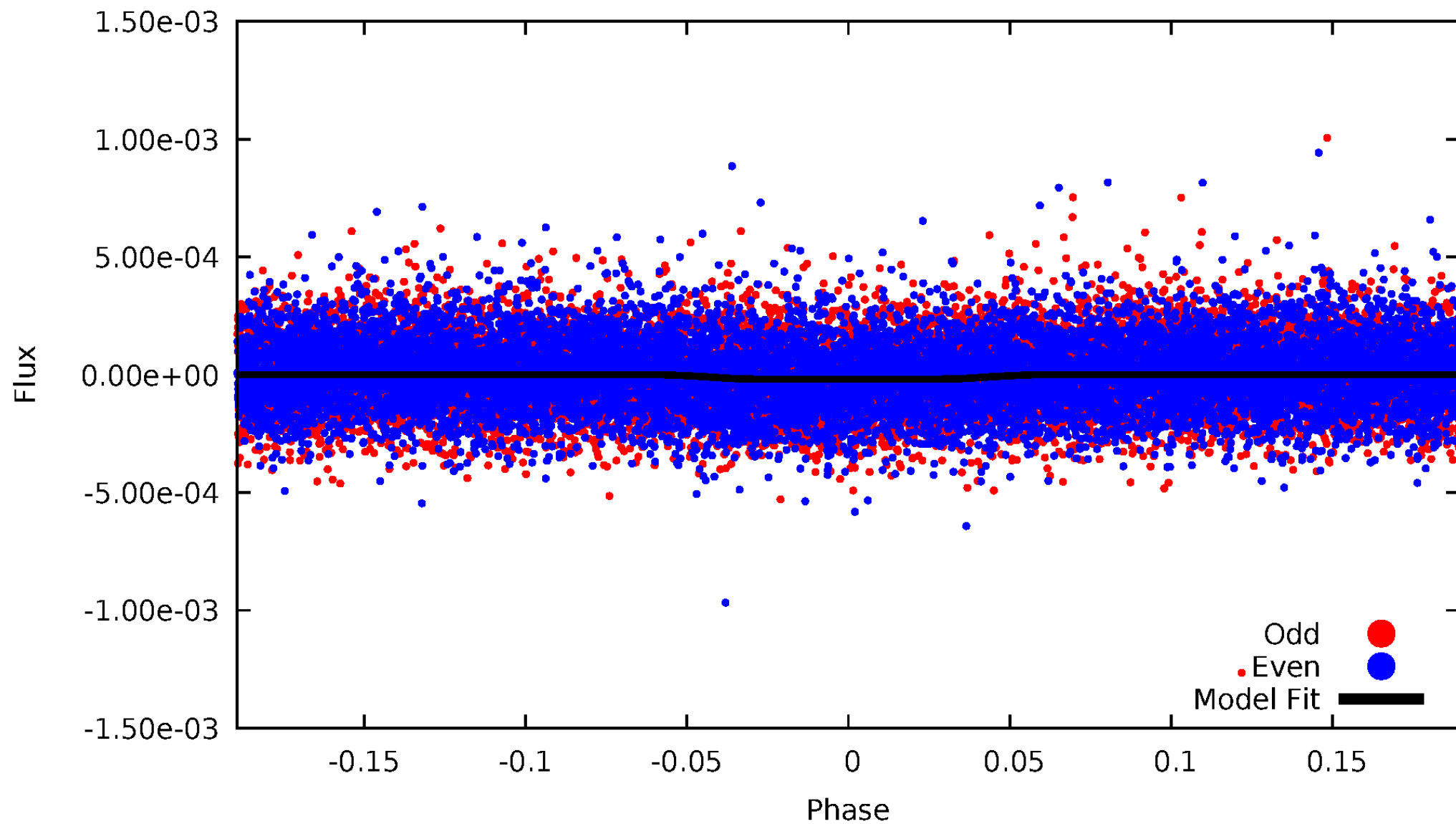


TCE 010842687-01



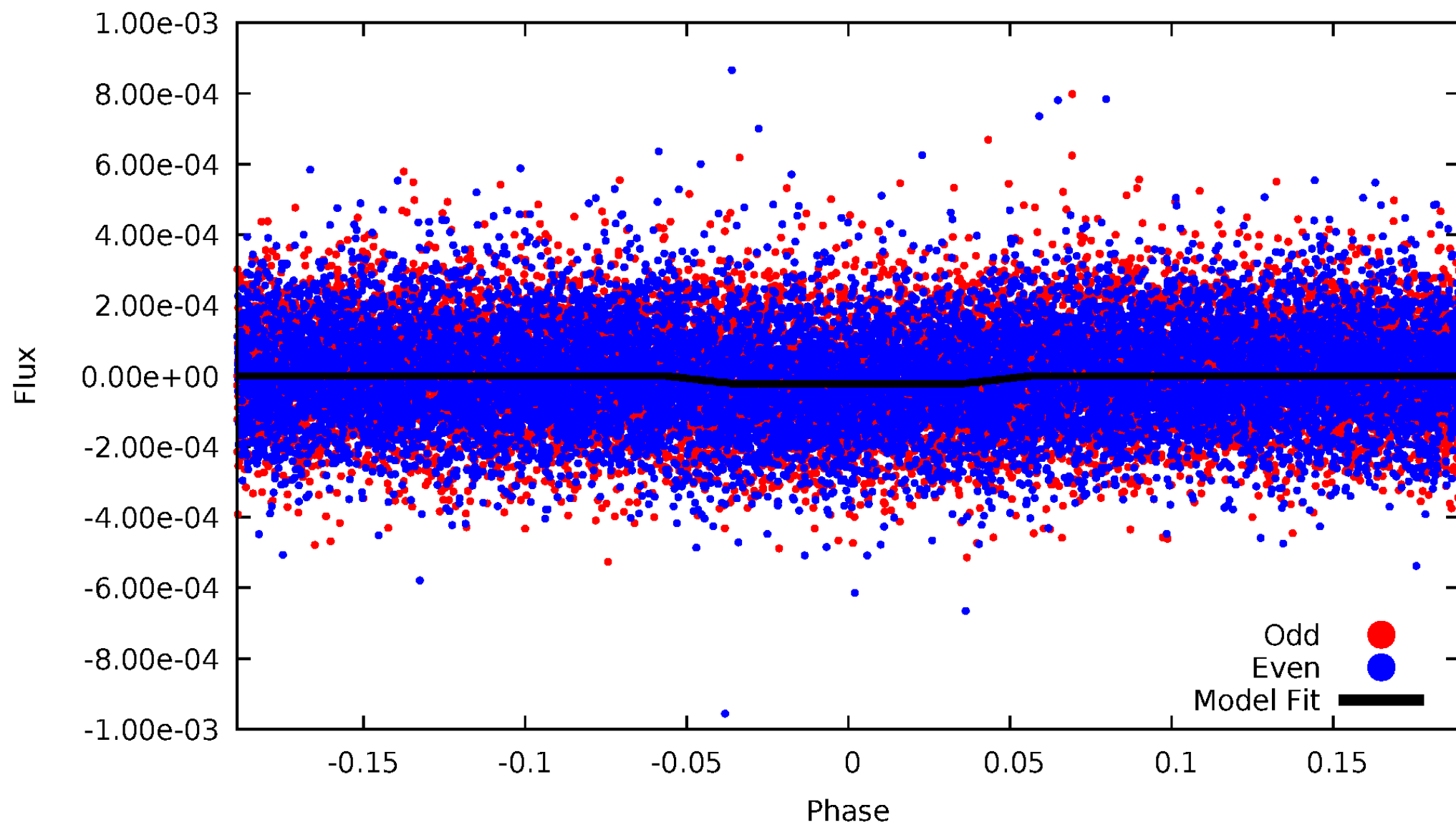
DV Odd/Even

TCE 010842687-01



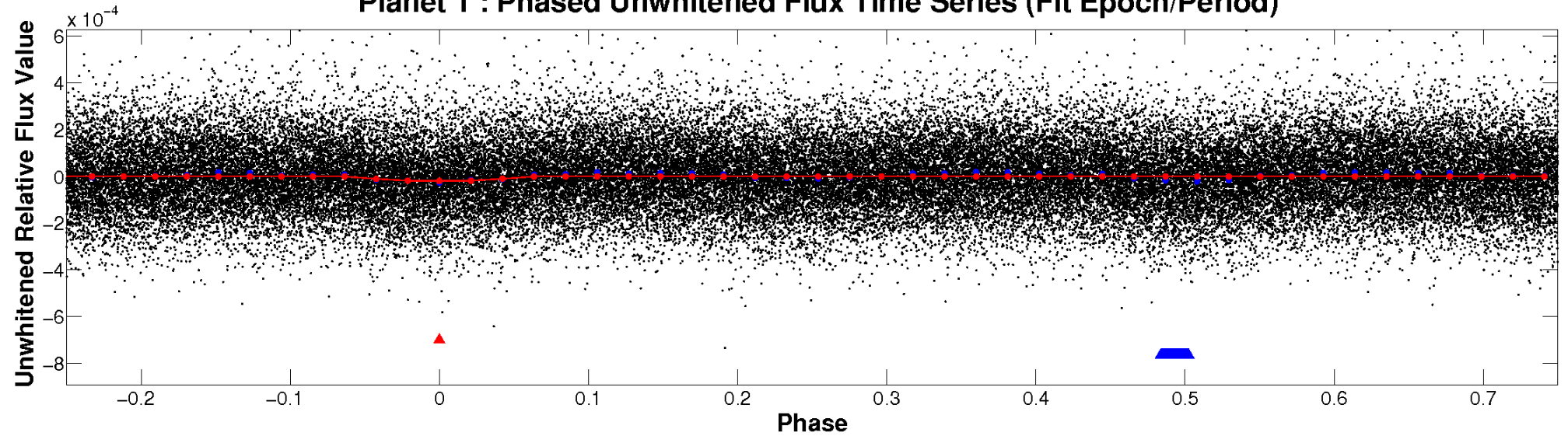
ALT Odd/Even

TCE 010842687-01

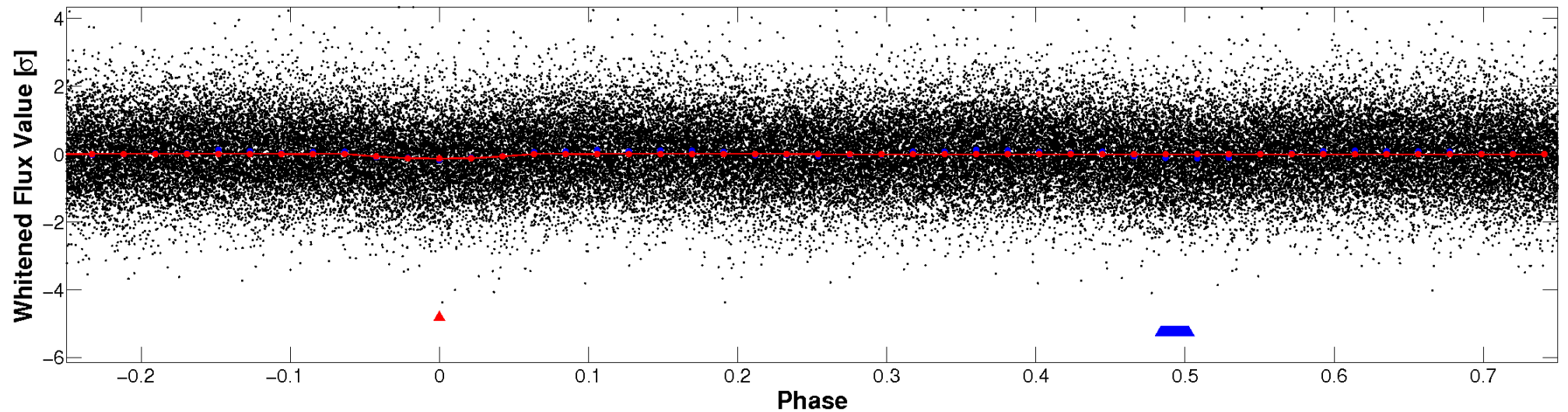


Non-Whitened Vs. Whitened Light Curve

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

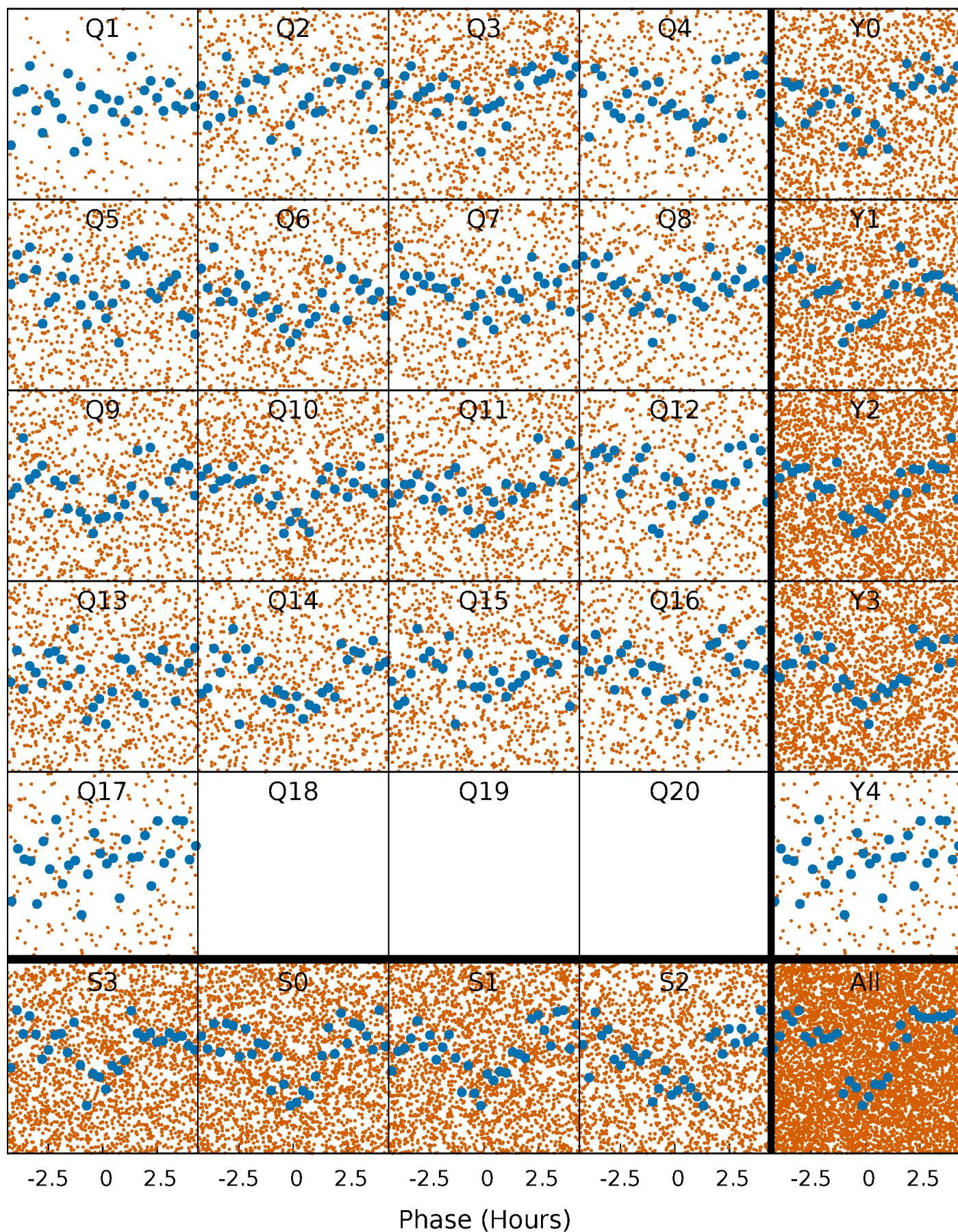


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



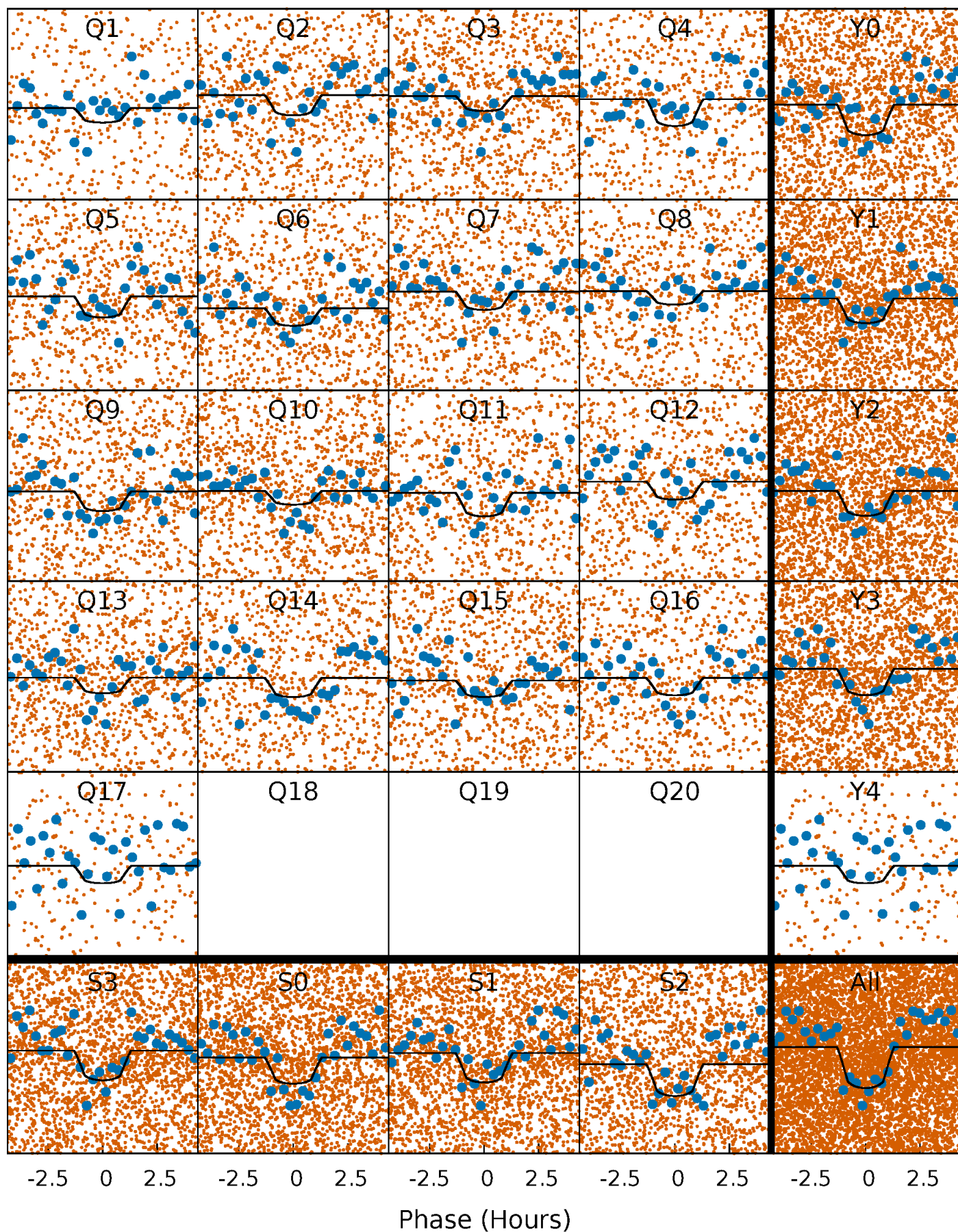
PDC Quarter-Phased Transit Curves

TCE 010842687-01 P= 0.965114 Days $T_0=131.831240$ (BKJD)



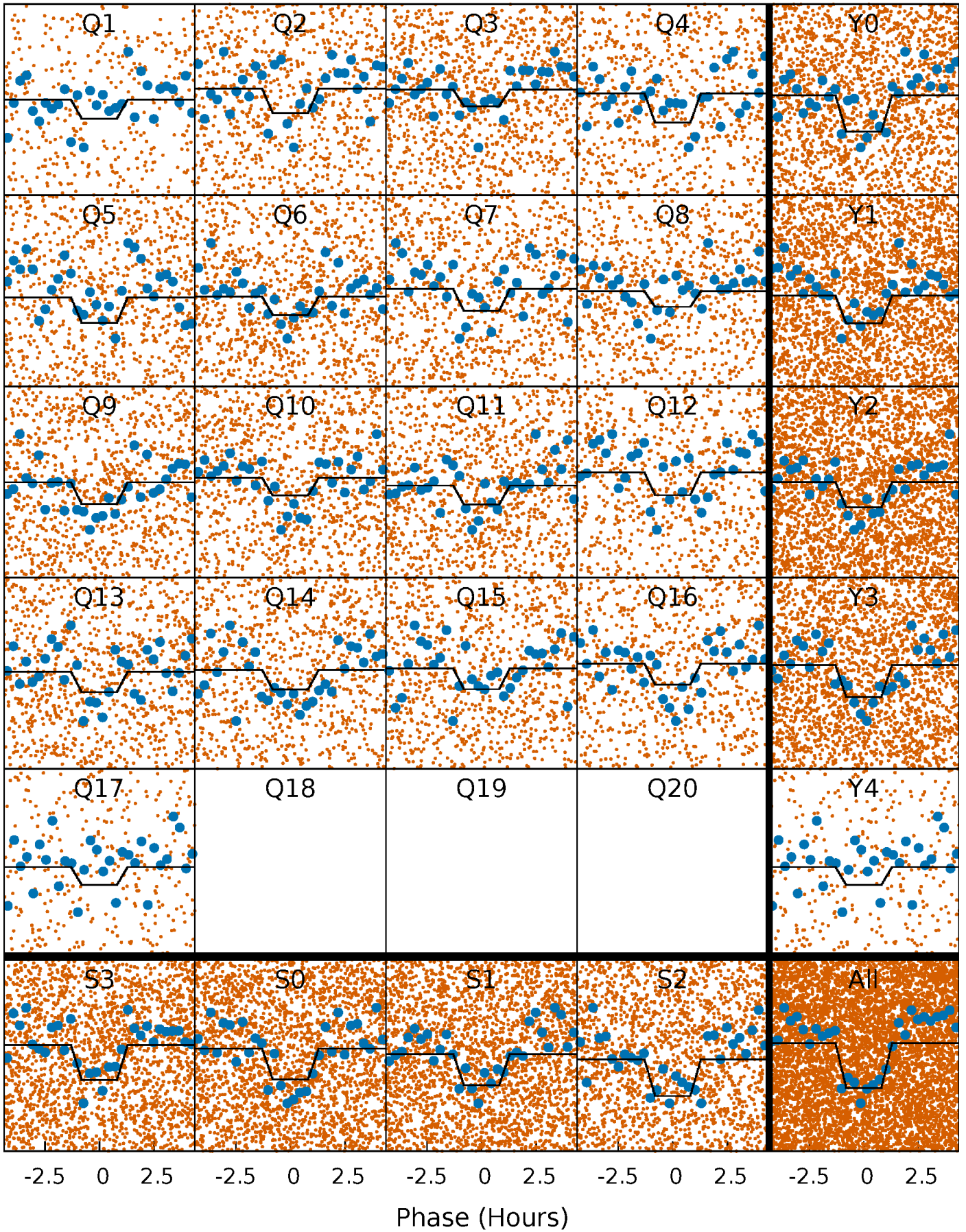
DV Quarter-Phased Transit Curves

TCE 010842687-01 P= 0.965114 Days $T_0=131.831240$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

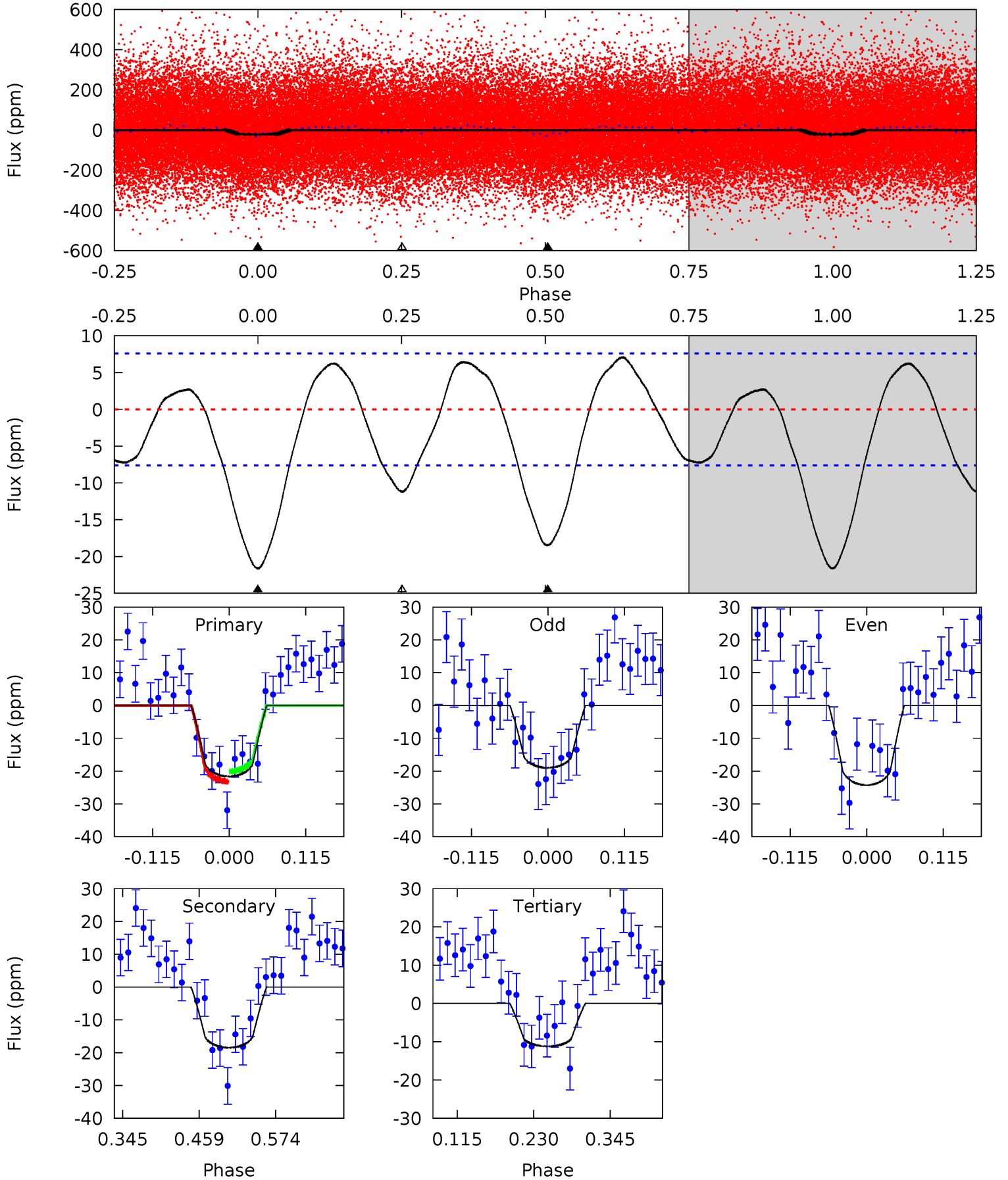
TCE 010842687-01 P= 0.965114 Days $T_0=131.831247$ (BKJD)



DV Model-Shift Uniqueness Test

010842687-01, P = 0.965114 Days, E = 130.866126 Days

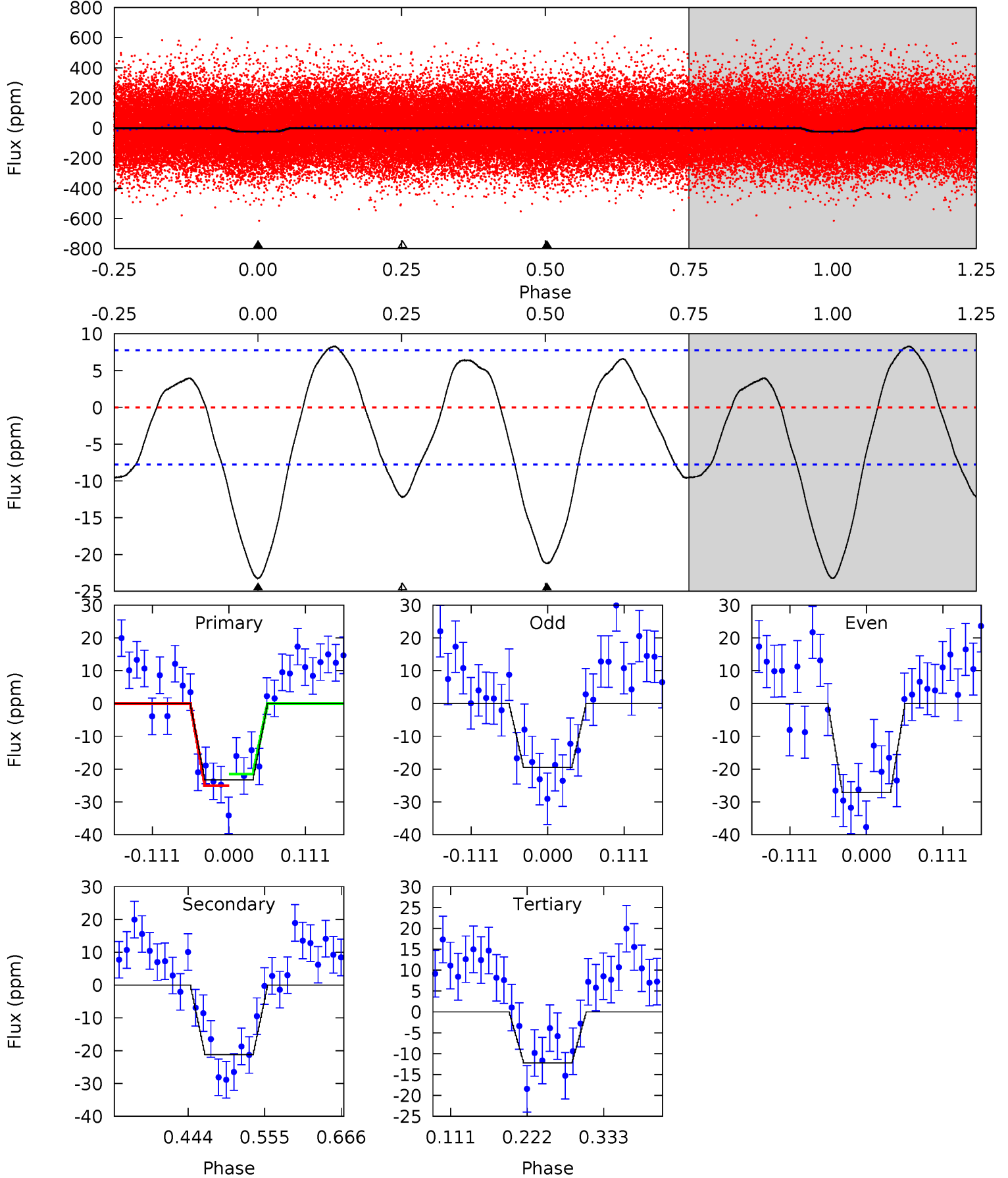
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	11.0	6.67	0	4.54	1.58	3.28	6.21	12.9	4.33	11.0	1.58	1.05	0.25	0.92



Alt Model-Shift Uniqueness Test

010842687-01, P = 0.965114 Days, E = 130.866133 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.6	12.4	7.14	0	4.54	1.59	3.66	6.46	13.6	5.28	12.4	2.23	0.94	0.26	1.03



Stellar Parameters For KIC 010842687

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6074^{+181}_{-181}	$3.619^{+0.345}_{-0.115}$	$-0.160^{+0.350}_{-0.300}$	$3.128^{+0.563}_{-1.313}$	$1.485^{+0.202}_{-0.376}$	$0.068^{+0.190}_{-0.025}$
	+3%/-3%	+10%/-3%	+219%/-188%	+18%/-42%	+14%/-25%	+278%/-36%
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 010842687-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-18 ± 2	$1.52^{+0.81}_{-0.74}$	4401^{+285}_{-387}	5548^{+2322}_{-1039}	$2.092^{+5.661}_{-1.192}$
Alt.	-21 ± 2	$1.48^{+0.85}_{-0.71}$	4414^{+295}_{-446}	5801^{+2921}_{-1154}	$2.604^{+6.494}_{-1.595}$

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

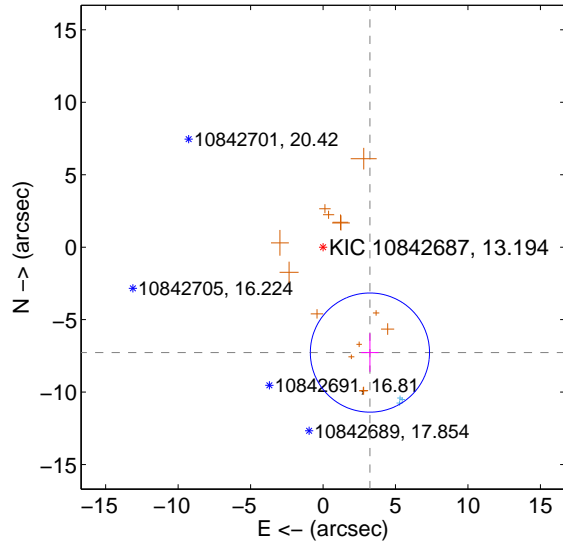
Supplemental centroid analysis for 010842687-01. Kepler magnitude: 13.19. Transit SNR 8.61

There are 3 quarters with good PRF difference image offsets

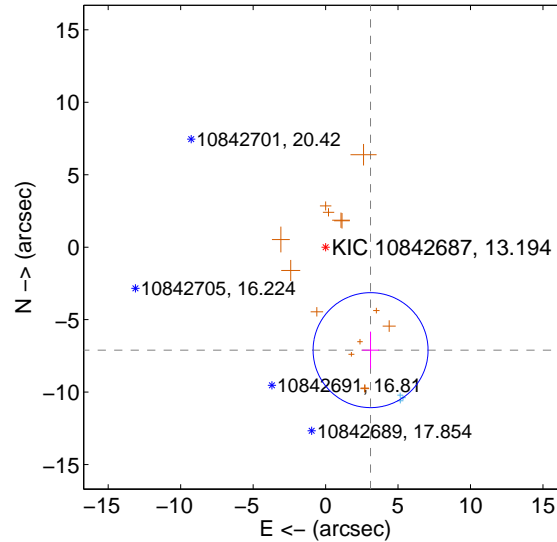
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	7.960 ± 1.370	5.81	-3.235 ± 0.604	-7.273 ± 1.330
PRF-fit source offset from KIC position	7.754 ± 1.322	5.86	-3.105 ± 0.585	-7.105 ± 1.276
photometric centroid source offset	8.93 ± 1.66	5.38	-7.76 ± 1.72	-4.43 ± 1.45

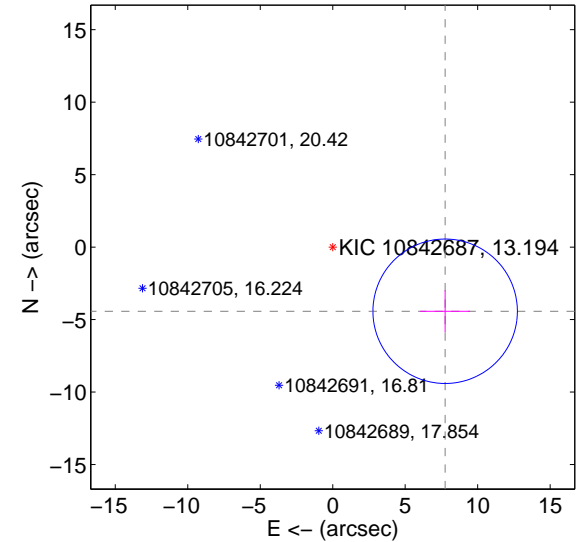
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

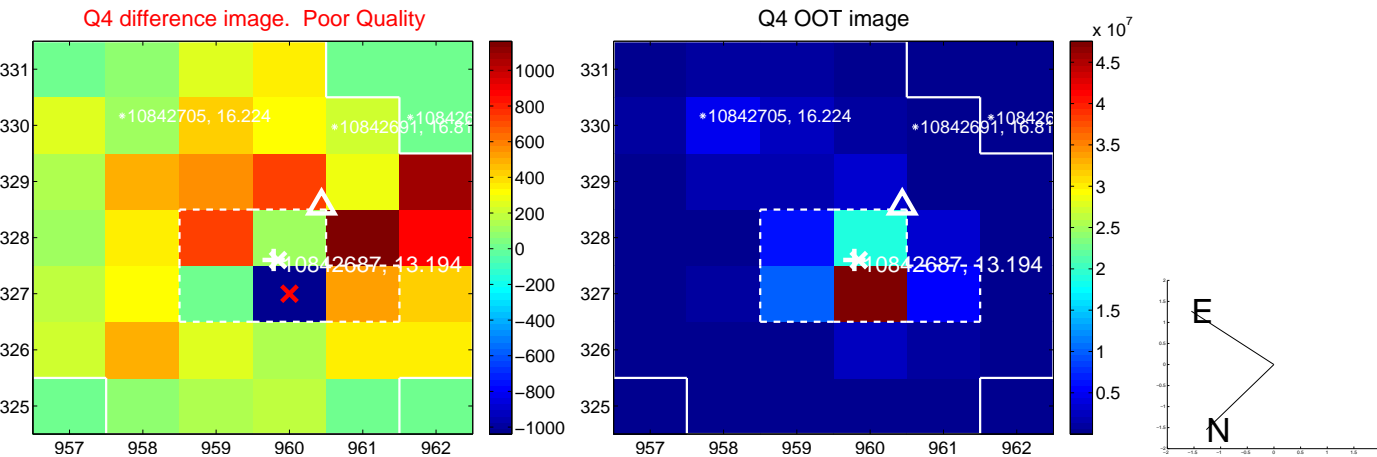
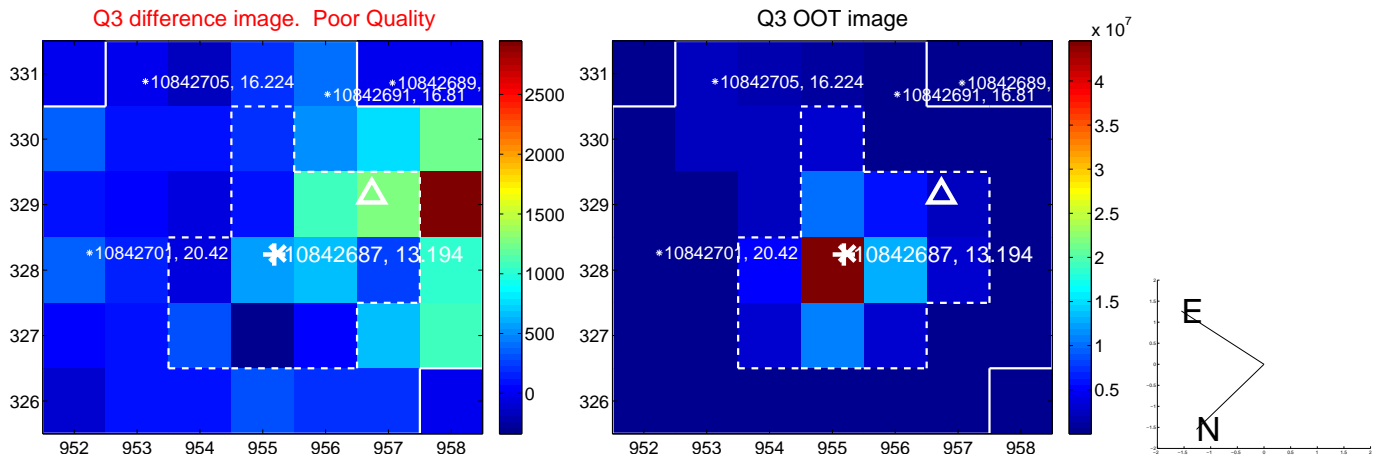
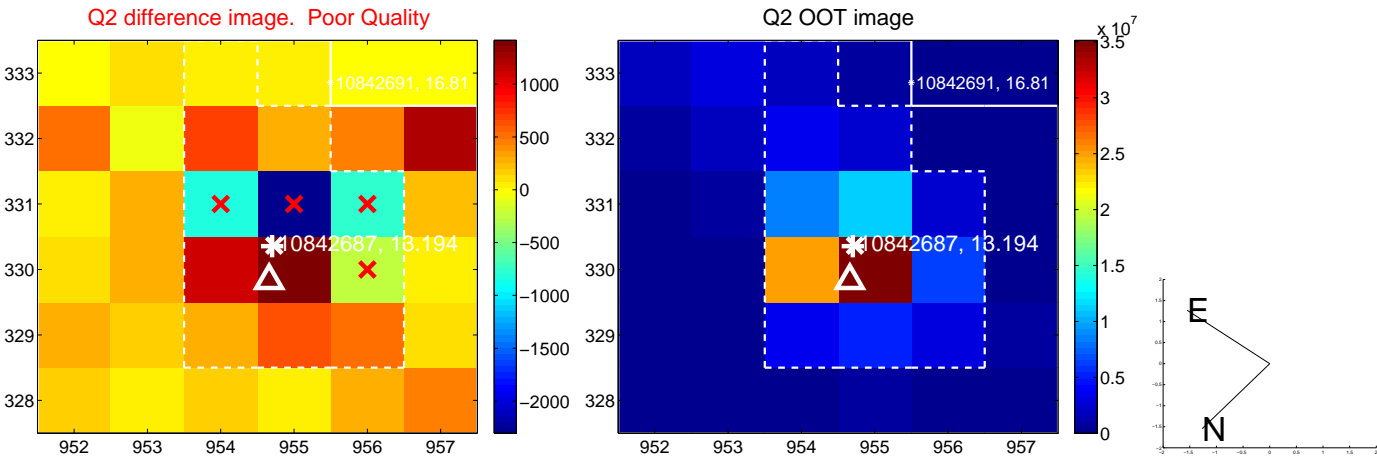
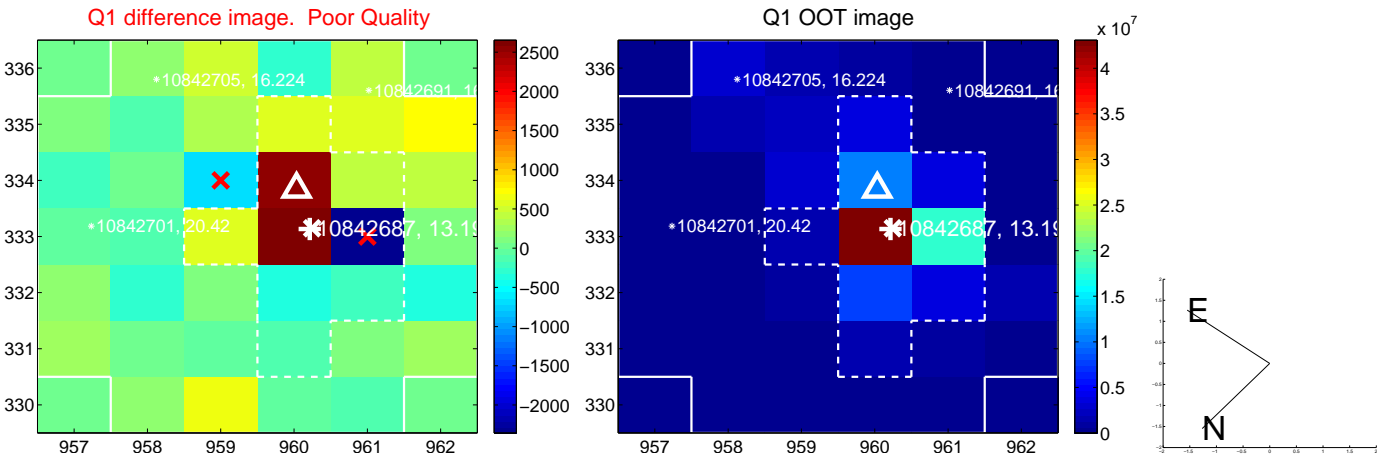


offset from photometric centroids

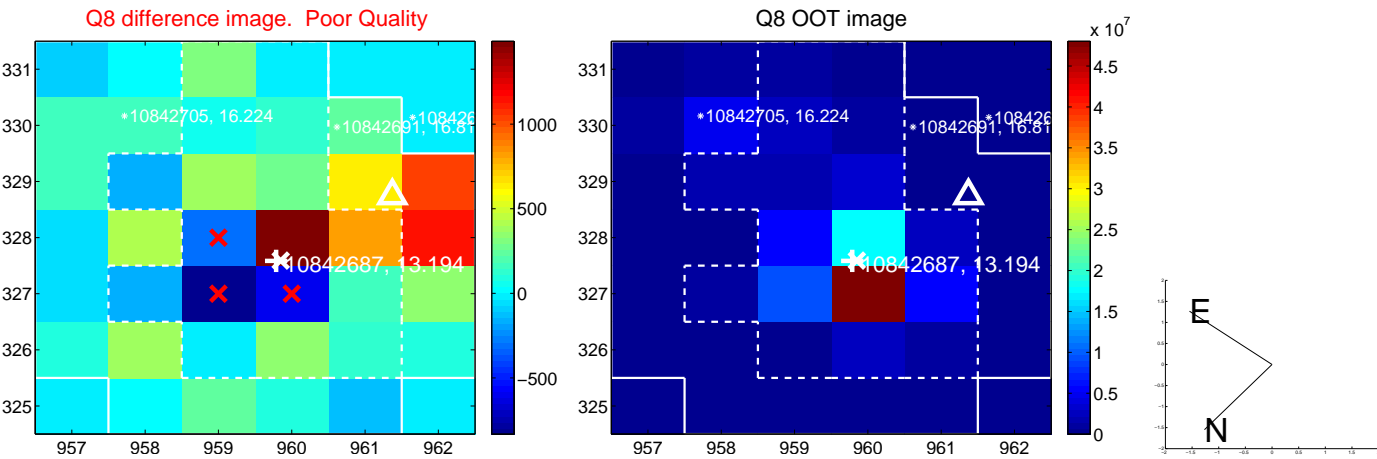
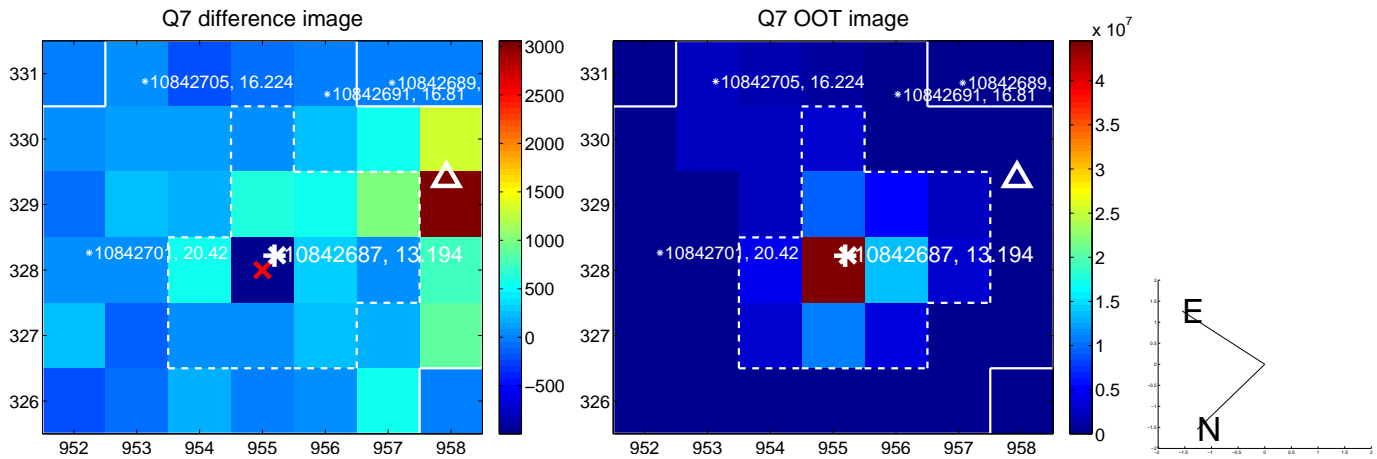
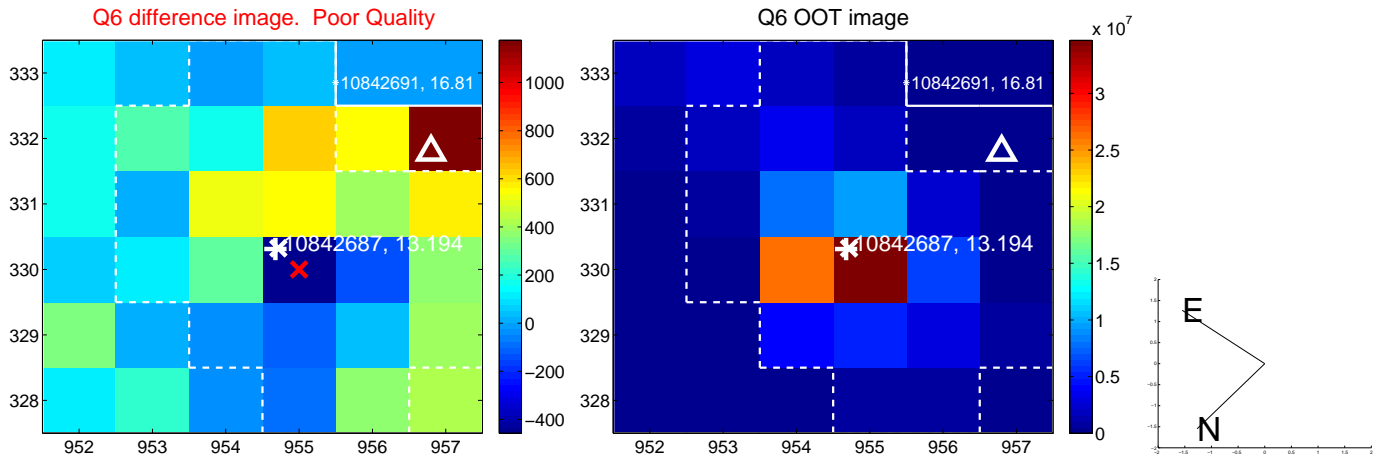
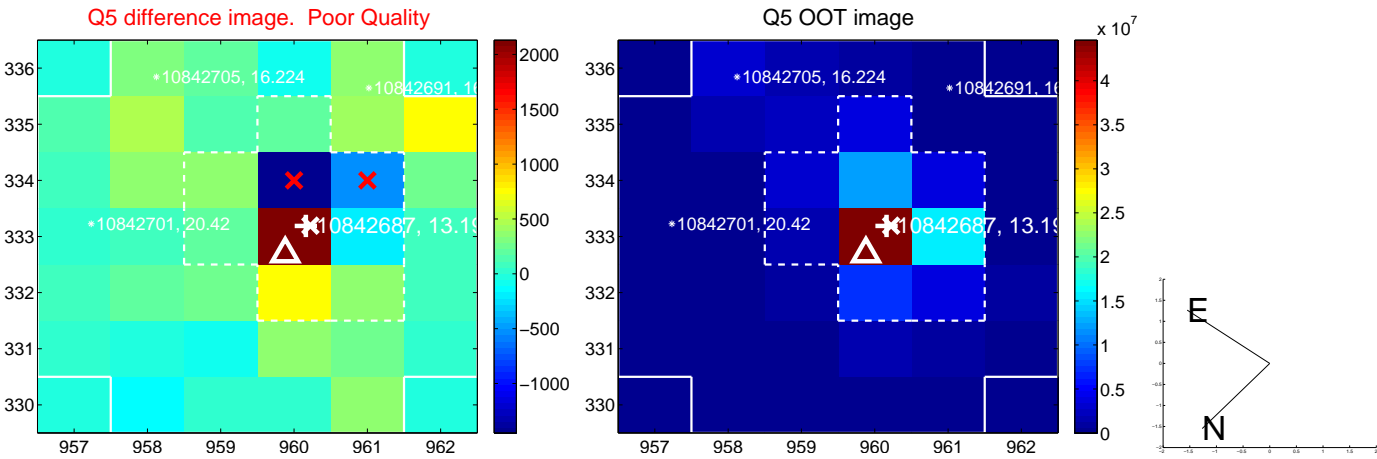


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

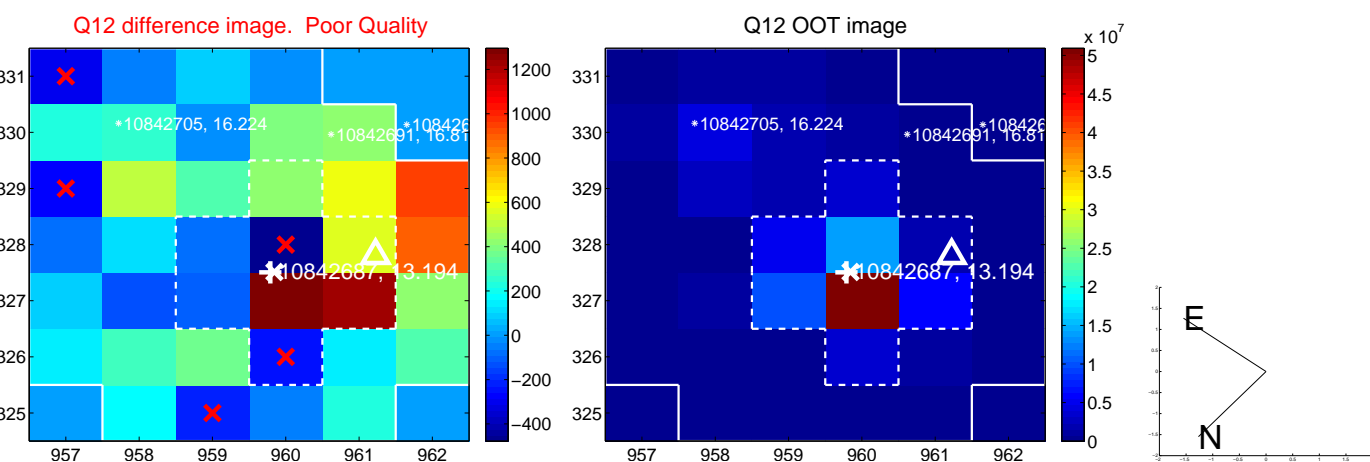
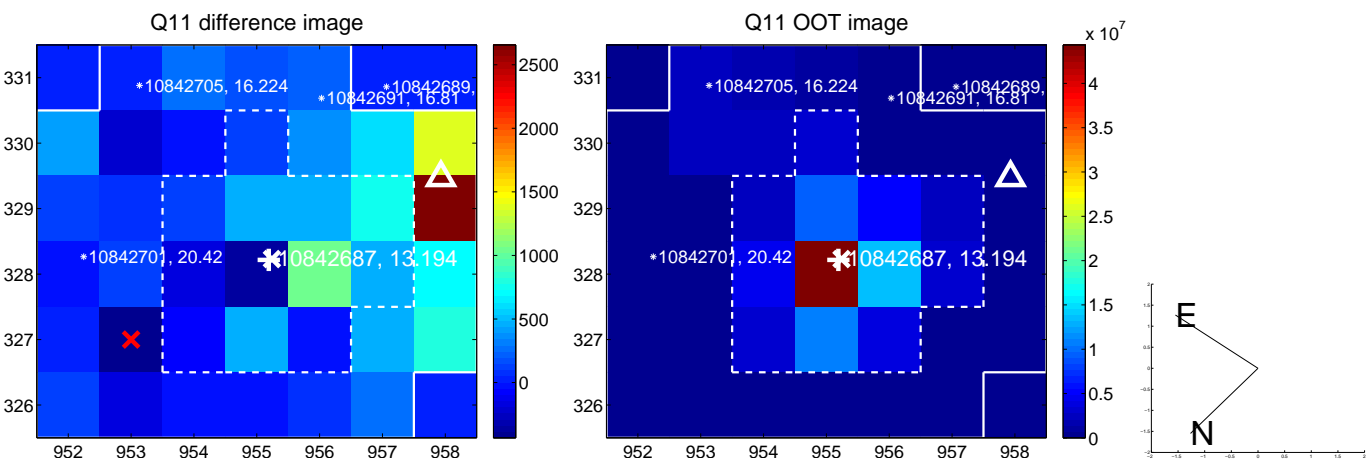
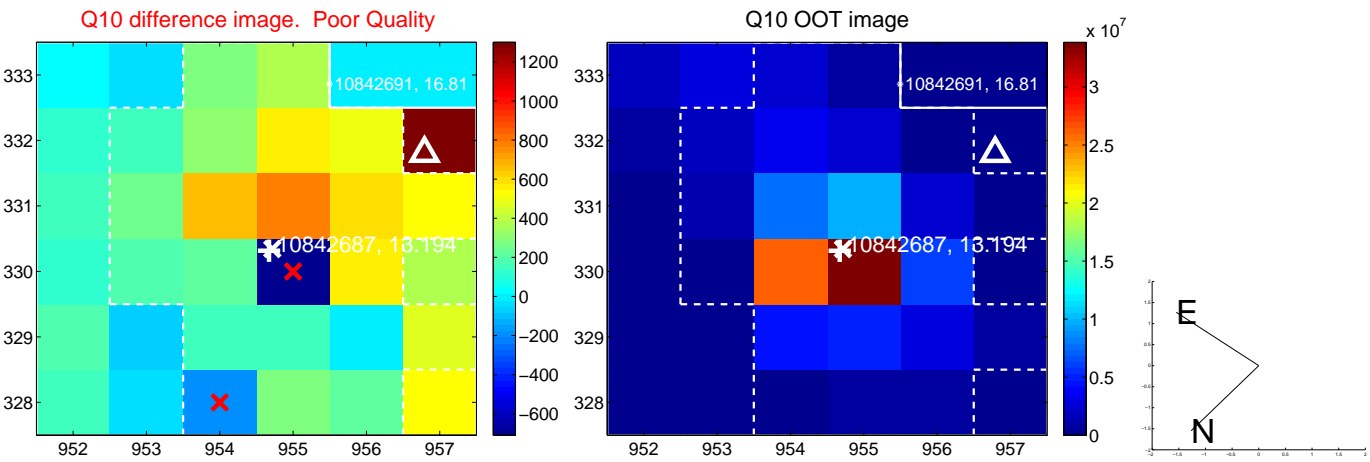
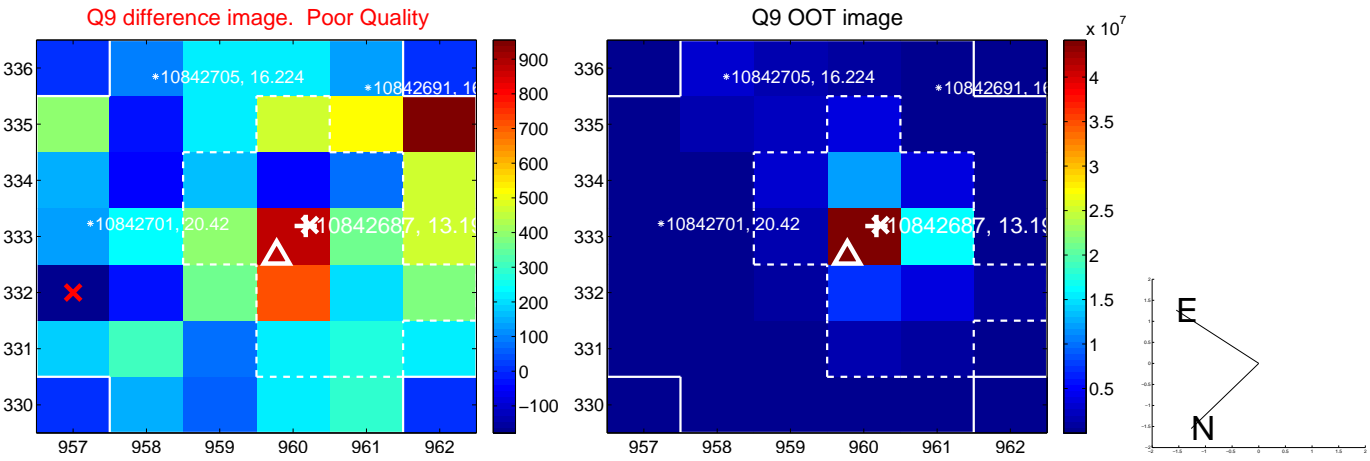
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



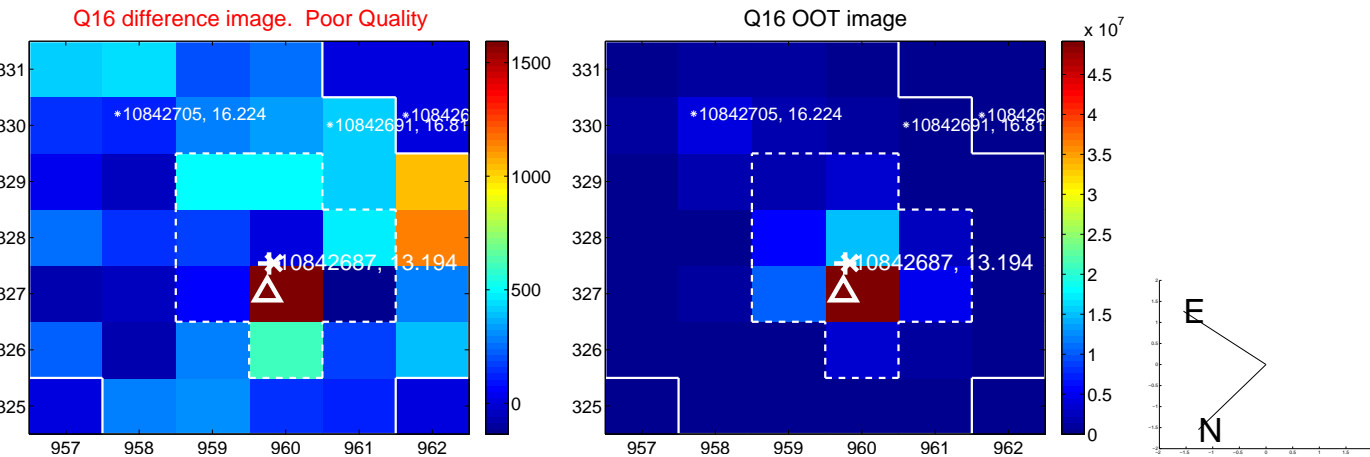
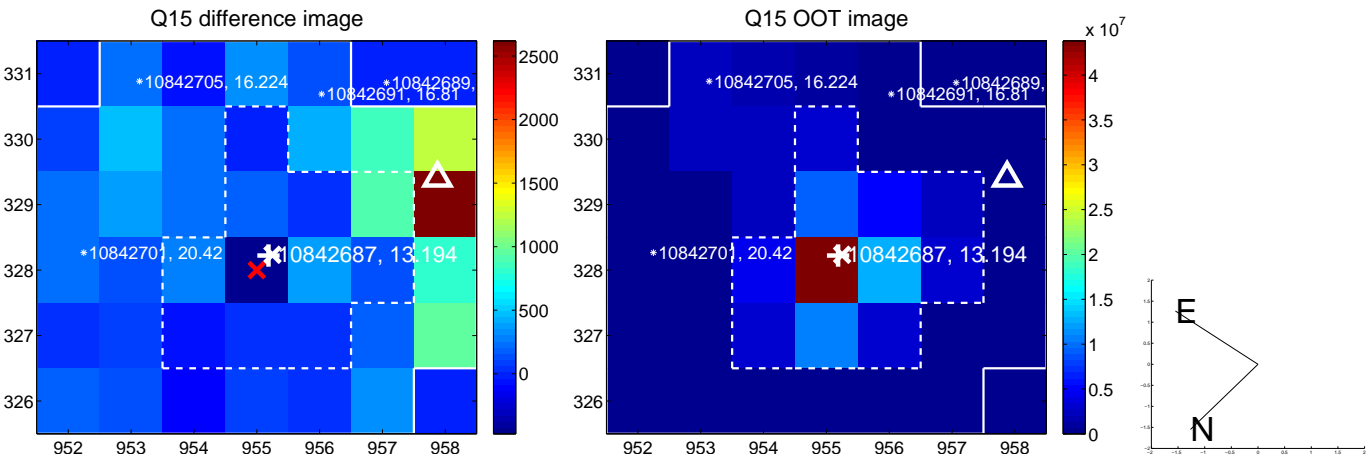
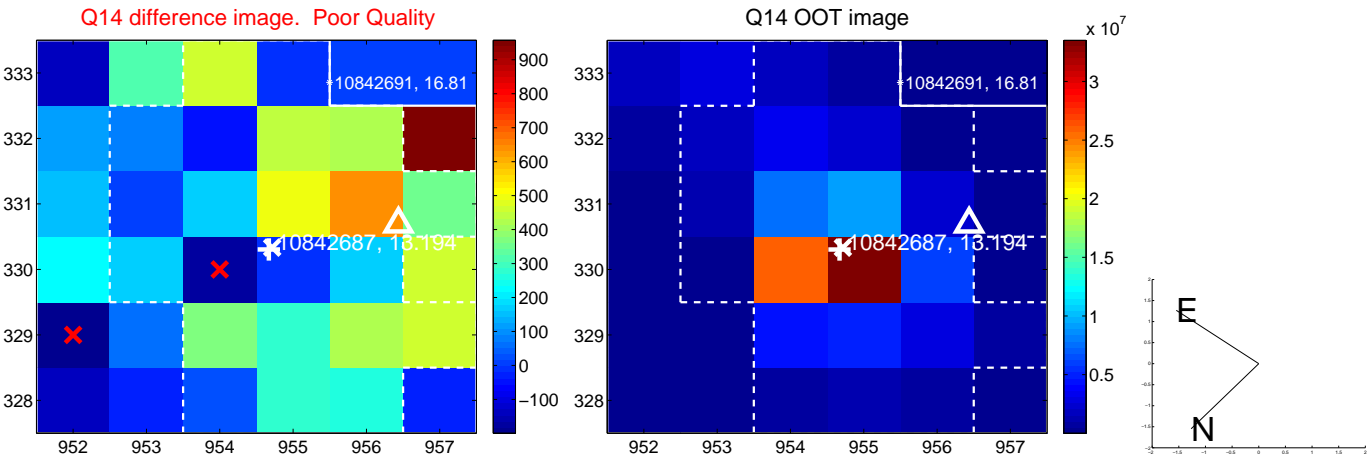
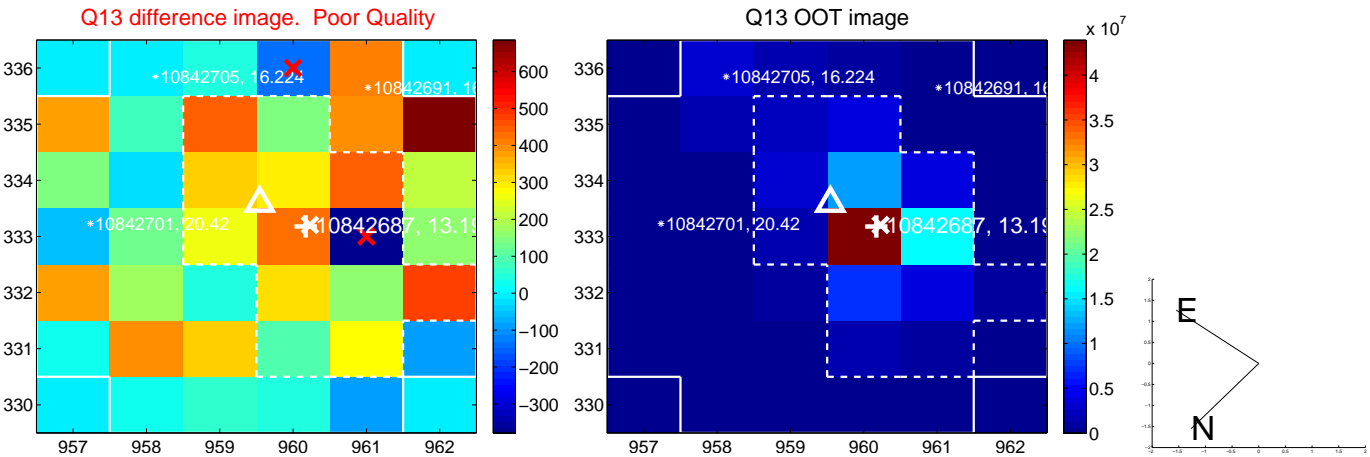
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



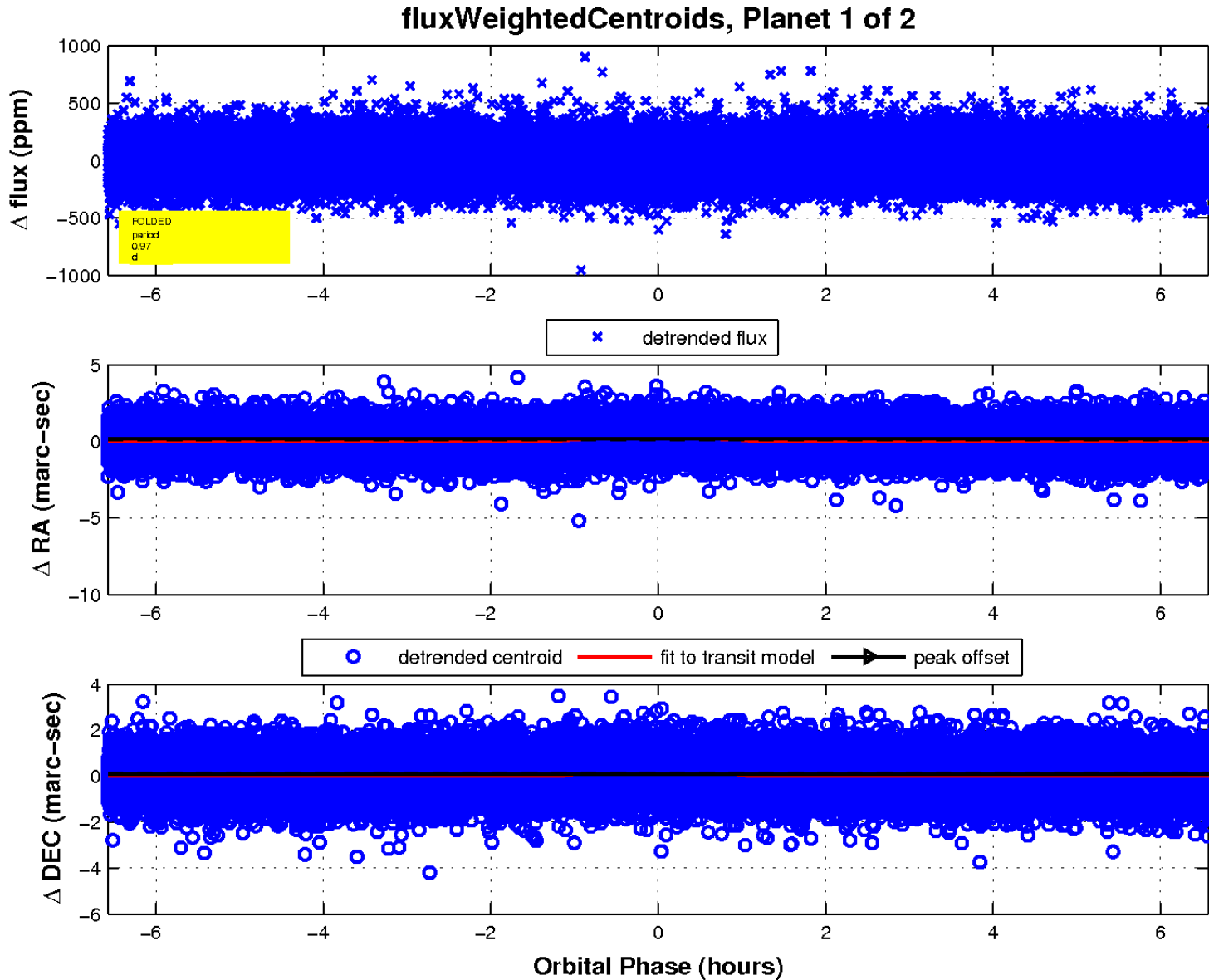
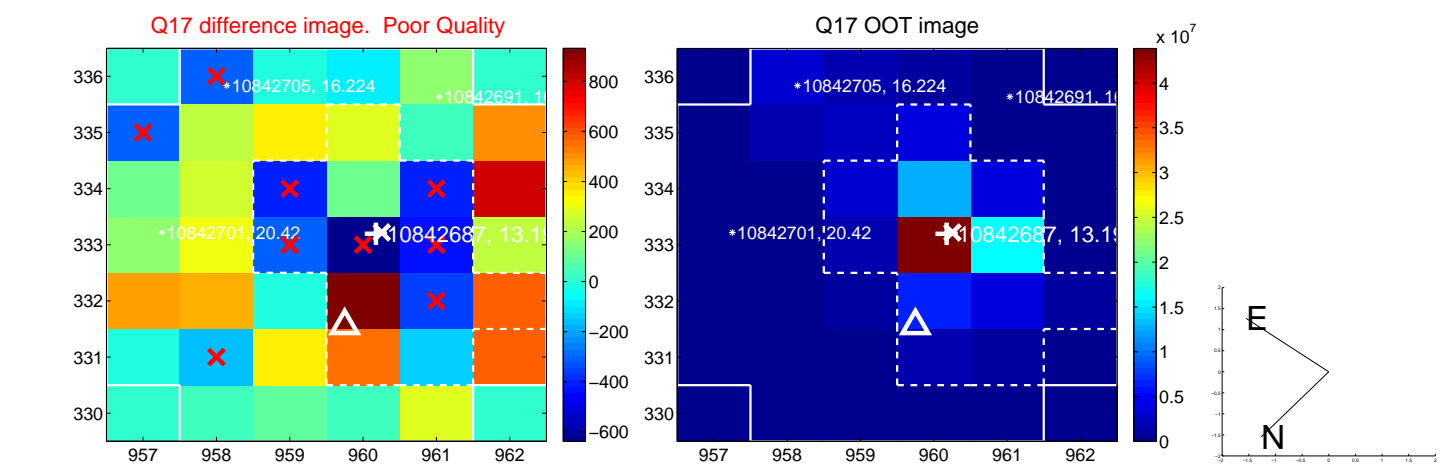
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

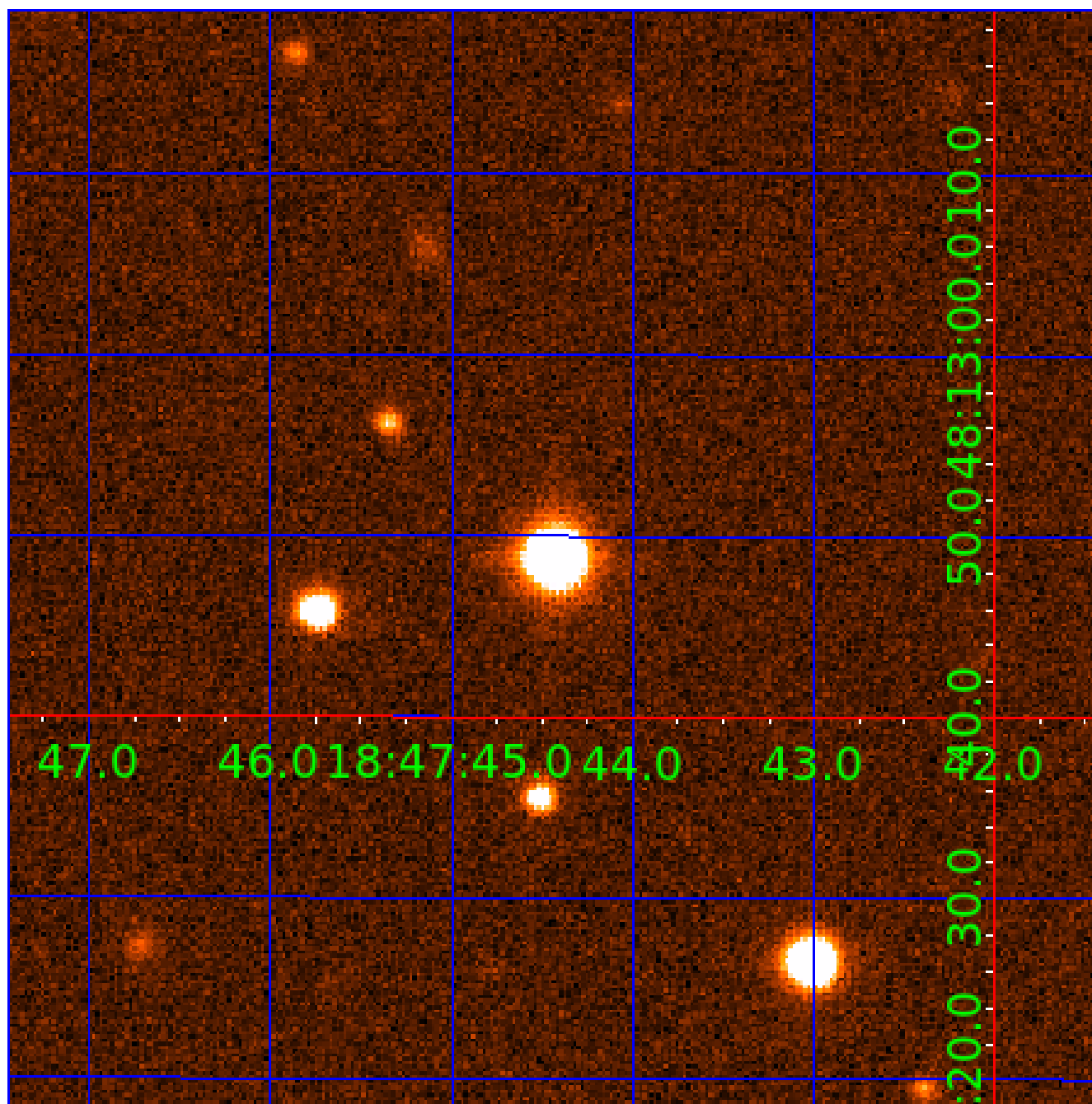


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010842687

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})
010842687-01	OBS	No	0.965114	131.831240	19.4	2.192	9.5	8.6	3.13	6074	1.62	25091.89
010842687-02	OBS	No	0.965102	132.316039	18.6	2.022	8.6	8.3	3.13	6074	1.59	25092.30

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010842687-01	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET—EPHEM_MATCH
010842687-02	OBS	FP	0.00	1	0	1	1	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—CENT_RESOLVED_OFFSET—EPHEM_MATCH

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.

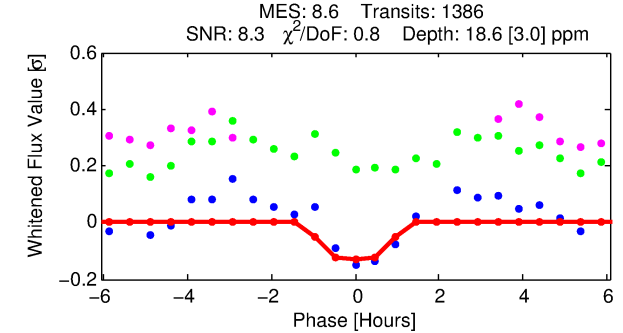
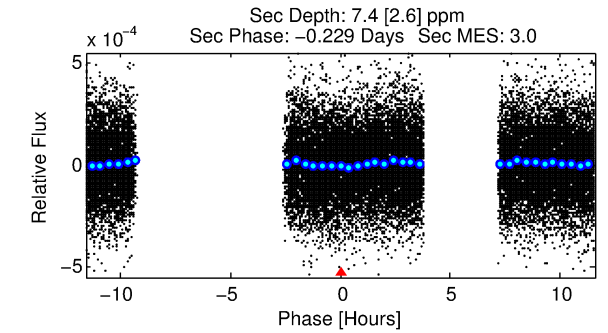
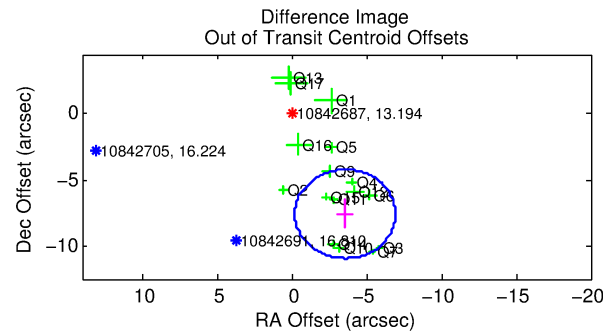
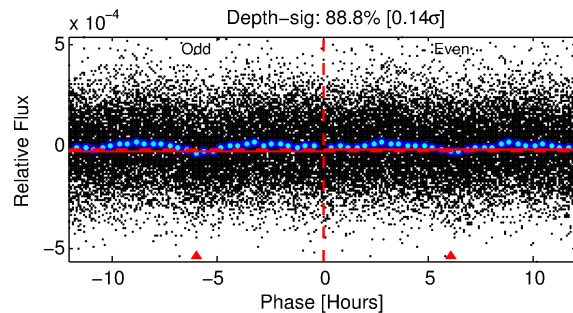
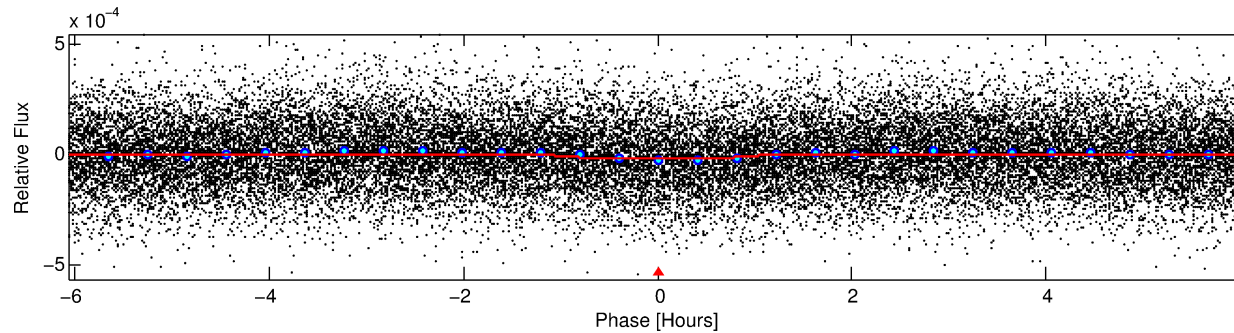
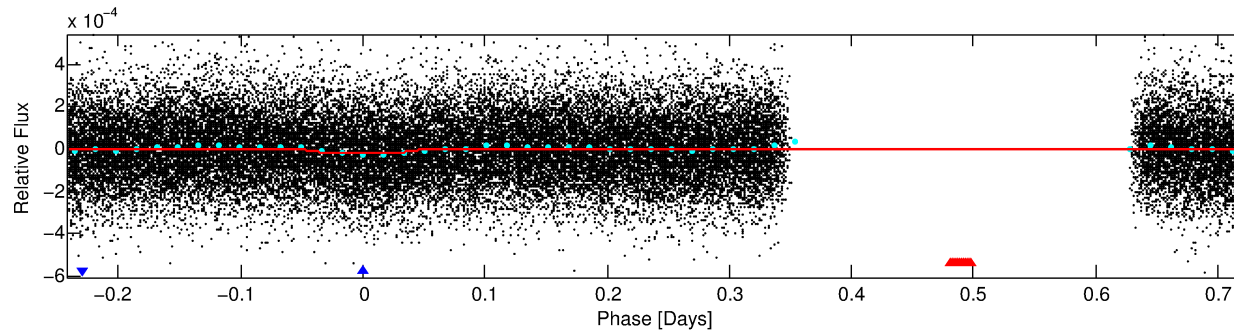
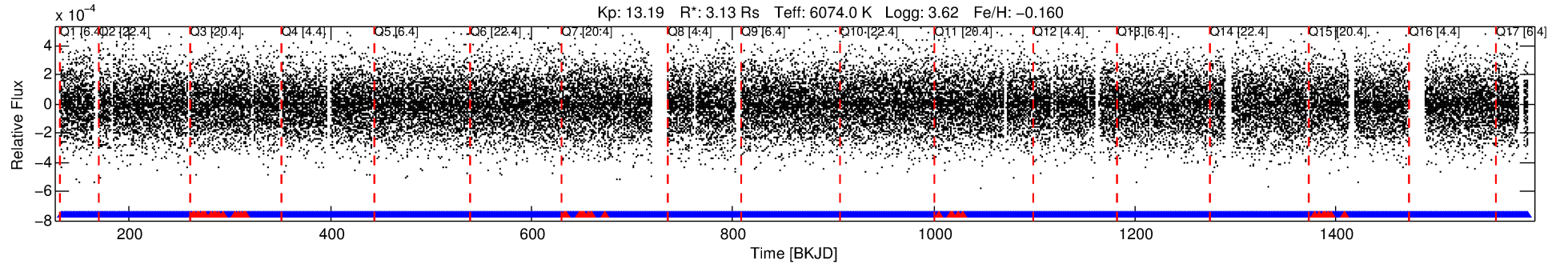
Ephemeris Match Information For 010842687-02

TCE (1)	KIC	Parent (2)	Parent KIC	$P_1:P_2$	Dist (μ)	Δ Row	Δ Col	m_2	m_1	D_2/D_1	Mechanism	Flag	σ_P	σ_T
010842687-02	10842687	010777060-01	10777060	1:1	51.5	-11	-5	11.16	13.20	1.42	Direct-PRF	1	0.83	0.42

Notes: $P_1:P_2$ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m_2 and m_1 are the magnitudes of the parent and child. D_2/D_1 is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 10842687 Candidate: 2 of 2 Period: 0.965 d



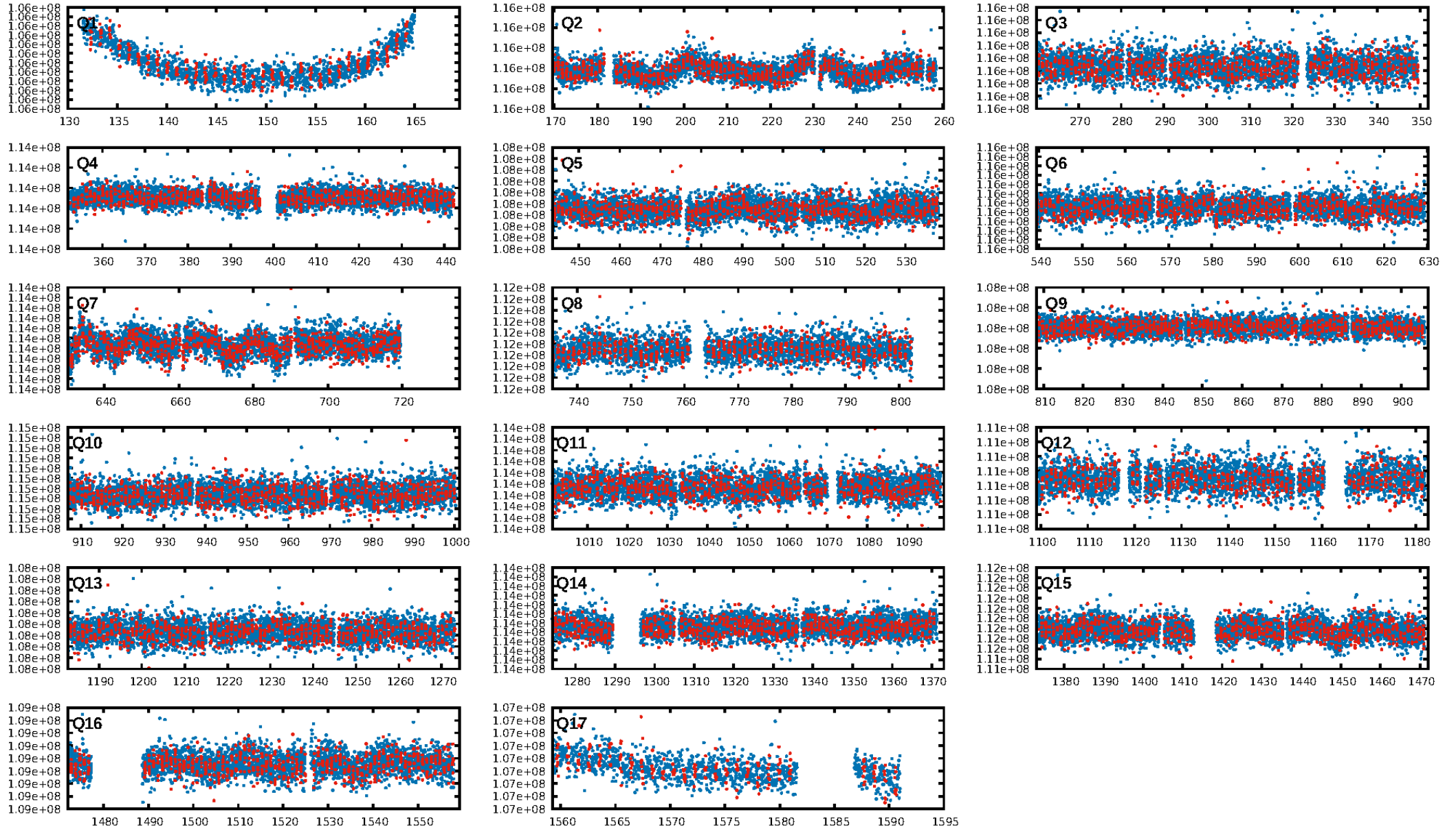
DV Fit Results:

Period = 0.96510 [0.00001] d
Epoch = 132.3160 [0.0036] BKJD
Rp/R* = 0.0047 [0.0022]
a/R* = 1.86 [3.28]
b = 0.90 [0.52]
Seff = 25092.30 [15324.55]
Teq = 3209 [490] K
Rp = 1.59 [1.00] Re
a = 0.0218 [0.0084] AU
Ag = 0.76 [0.88] [-0.27 σ]
Teffp = 4638 [1155] K [1.14 σ]

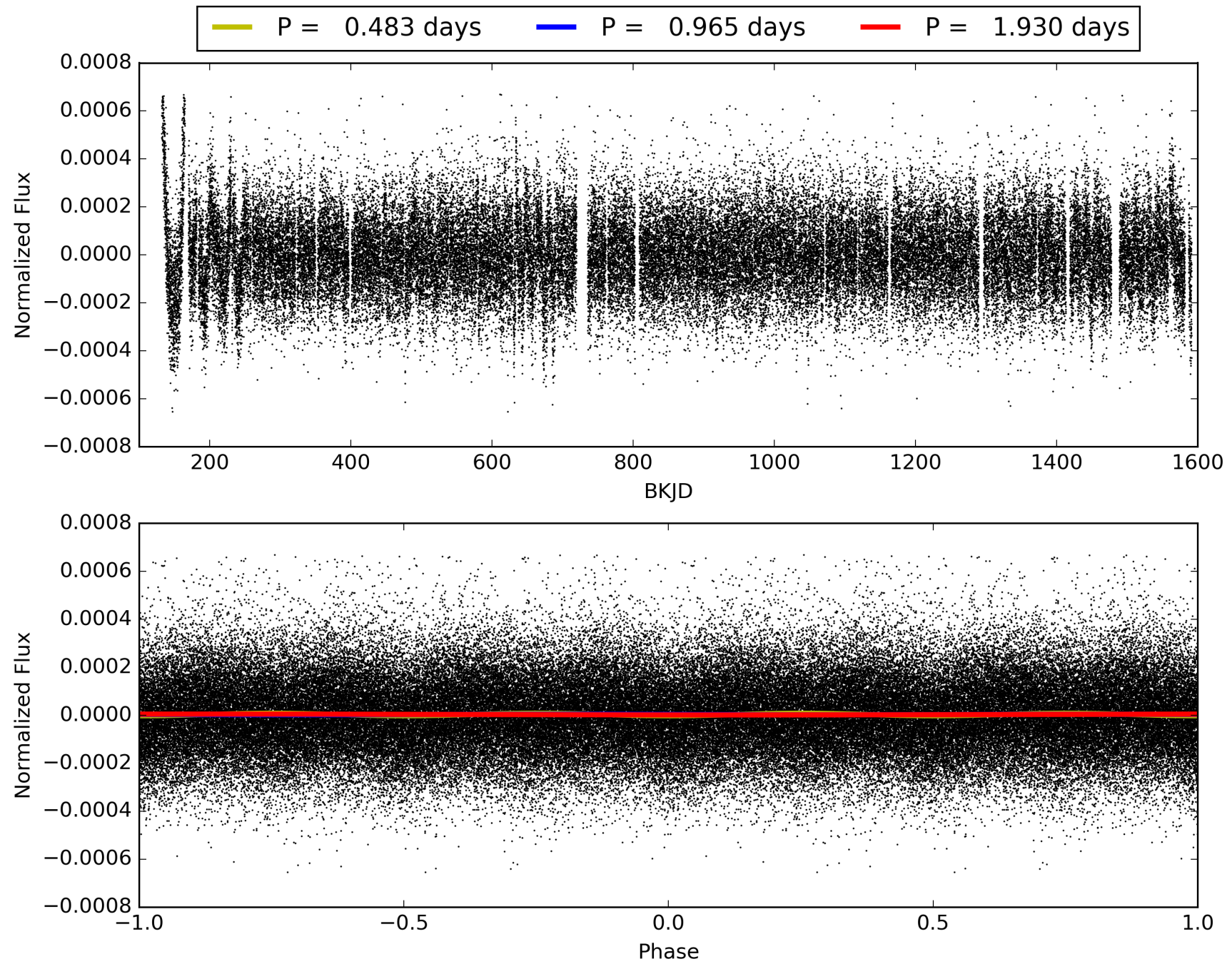
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.59e-16
RollingBand-fgt: 0.97 [1284/1325]
GhostDiagnostic-chr: -0.414
Centroid-sig: 0.0%
Centroid-so: 10.189 arcsec [5.81 σ]
OotOffset-rm: 8.384 arcsec [7.49 σ]
KicOffset-rm: 8.166 arcsec [7.73 σ]
OotOffset-st: 4/4/3/5 [16]
KicOffset-st: 4/4/3/5 [16]
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TCE 010842687-02, PDC Light Curves

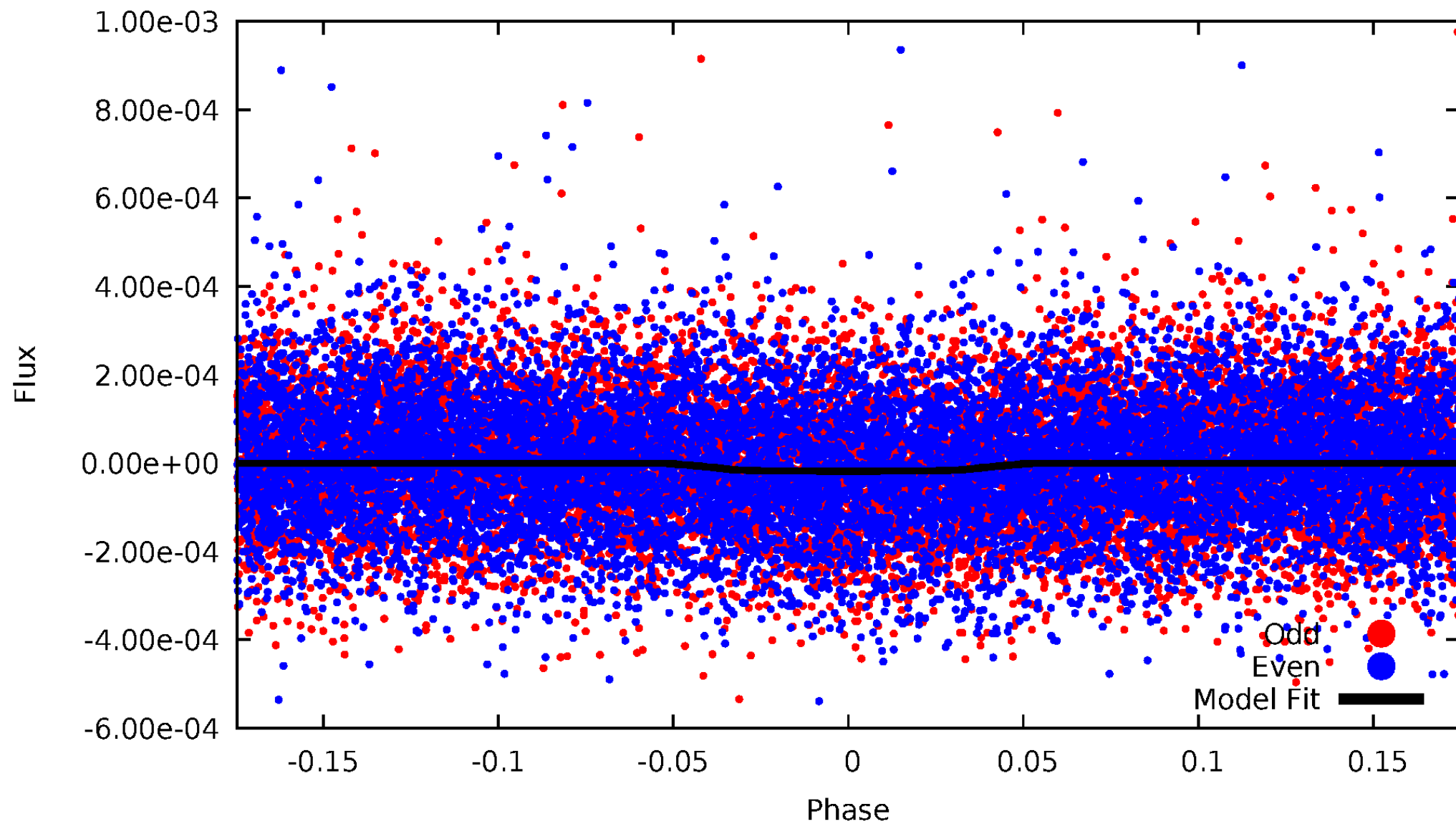


TCE 010842687-02



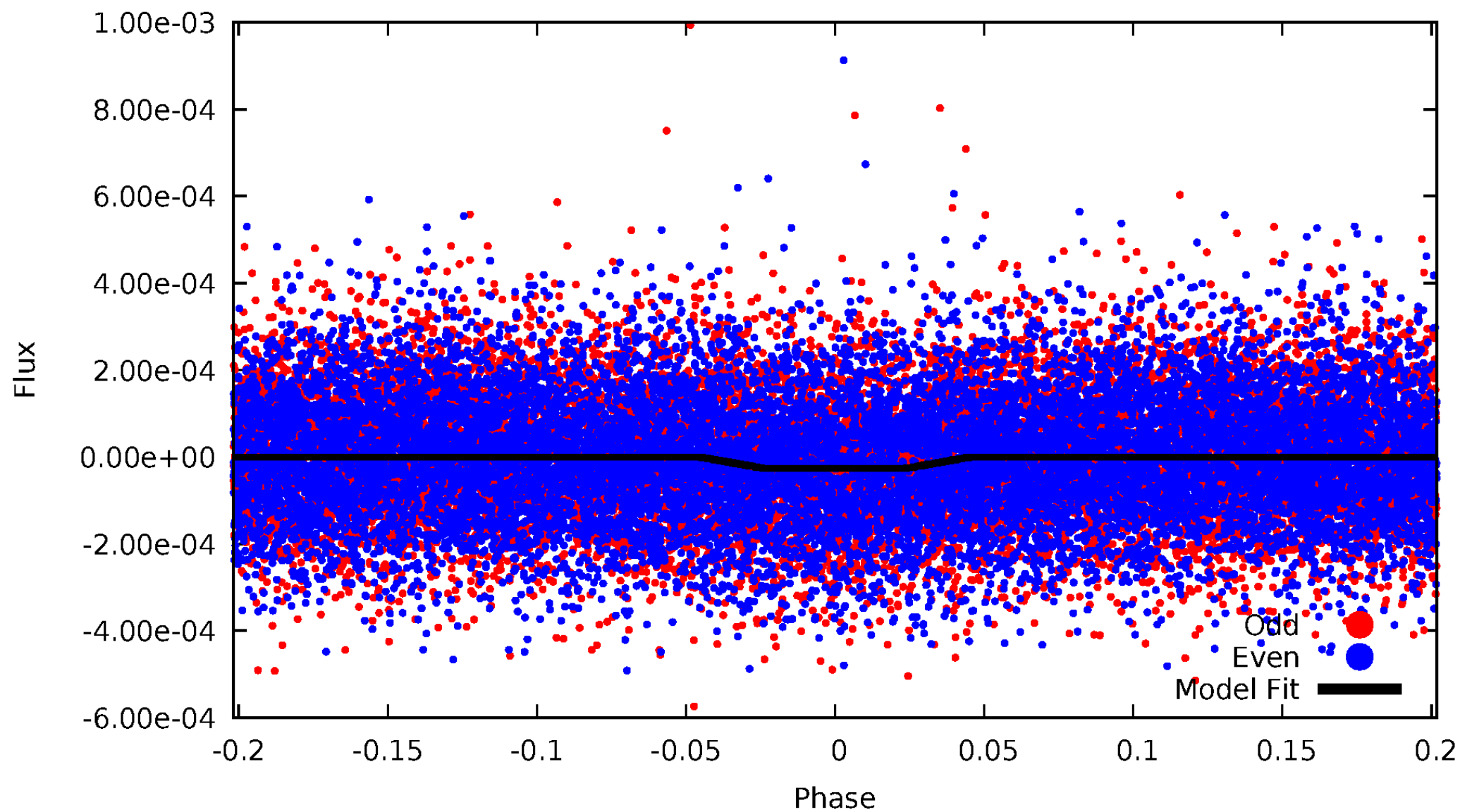
DV Odd/Even

TCE 010842687-02



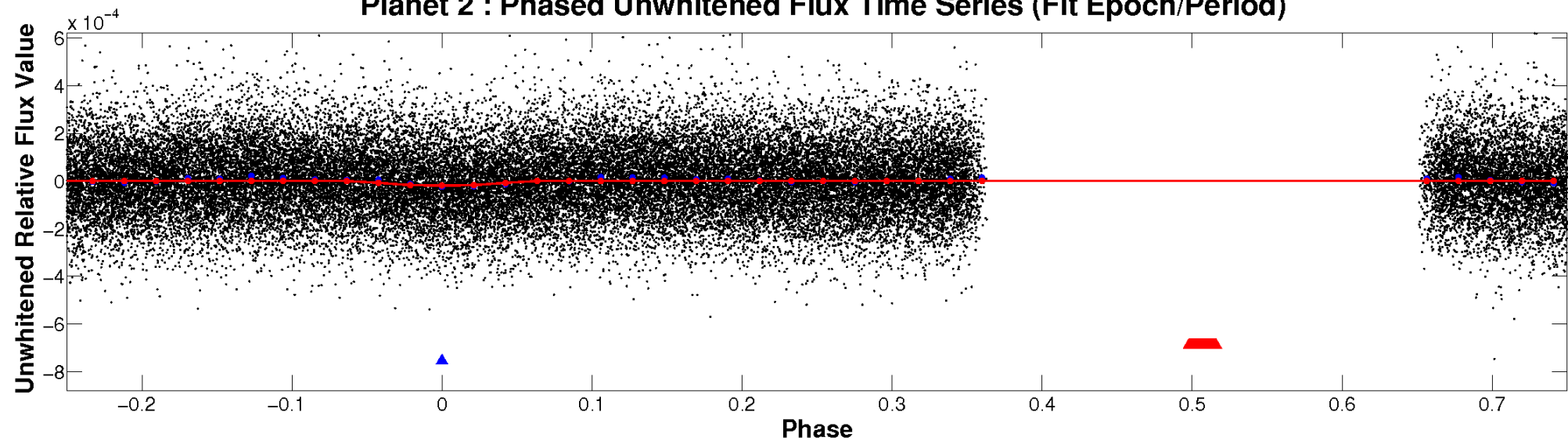
ALT Odd/Even

TCE 010842687-02

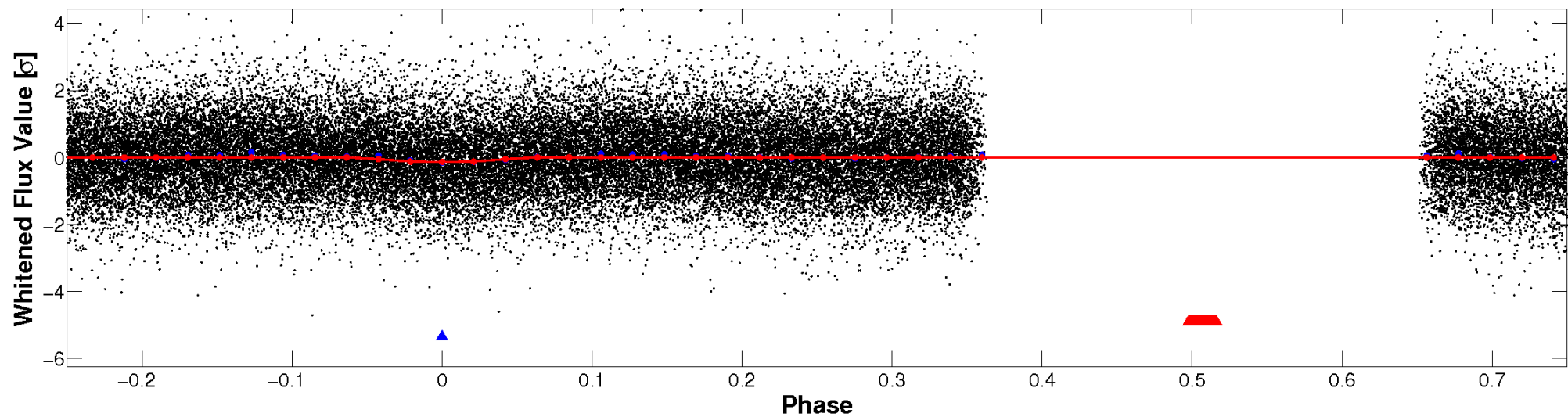


Non-Whitened Vs. Whitened Light Curve

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

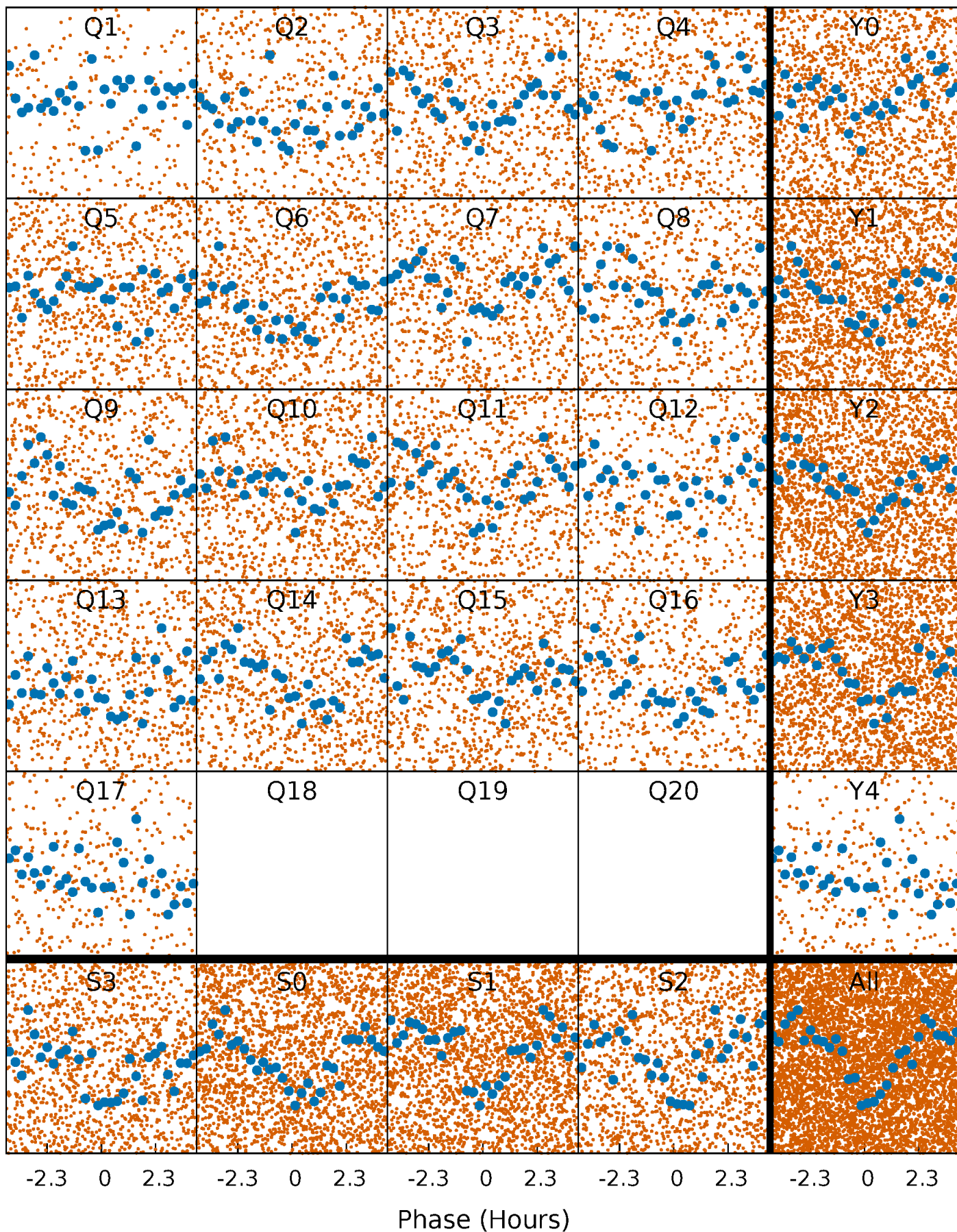


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



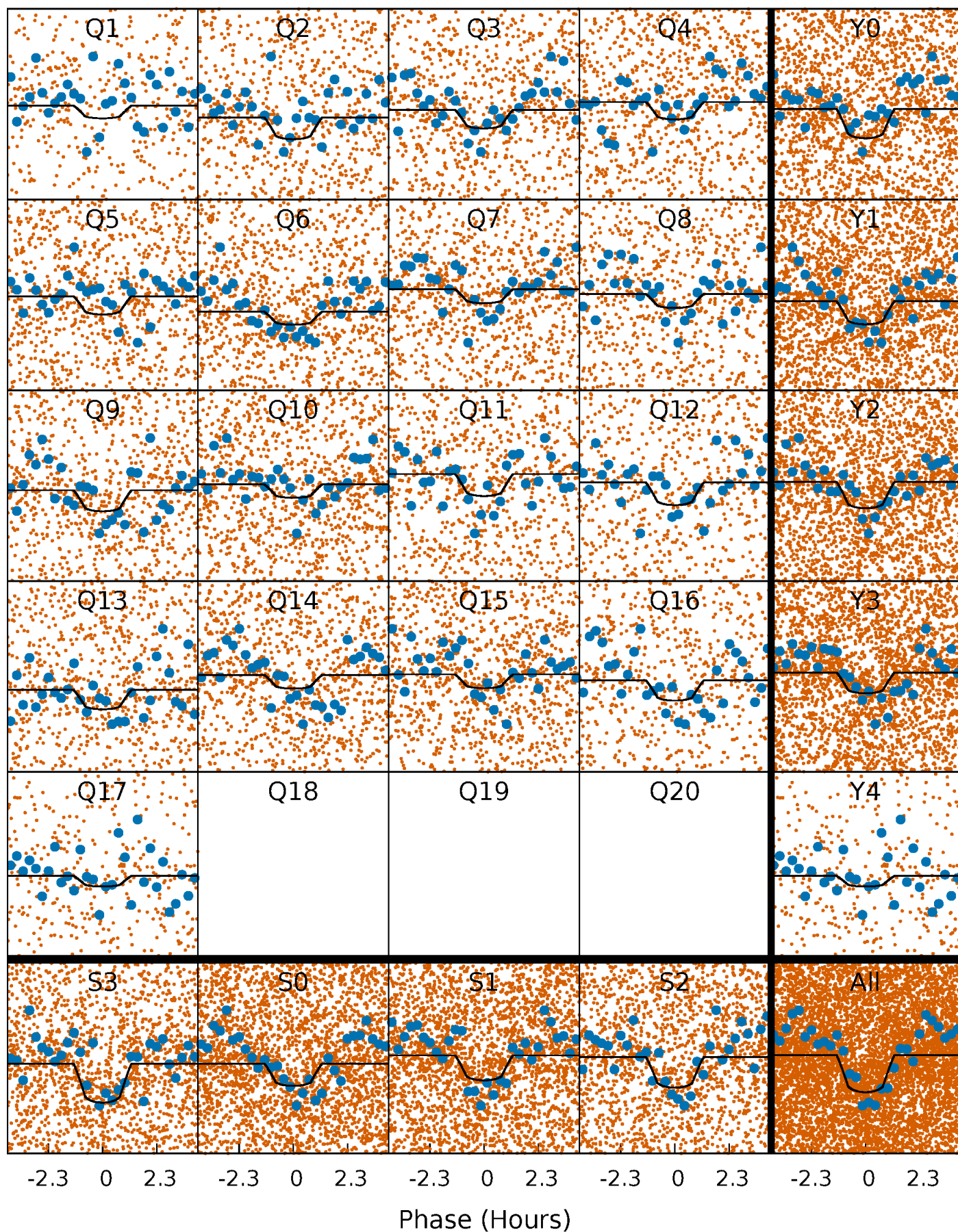
PDC Quarter-Phased Transit Curves

TCE 010842687-02 P= 0.965102 Days $T_0=132.316039$ (BKJD)



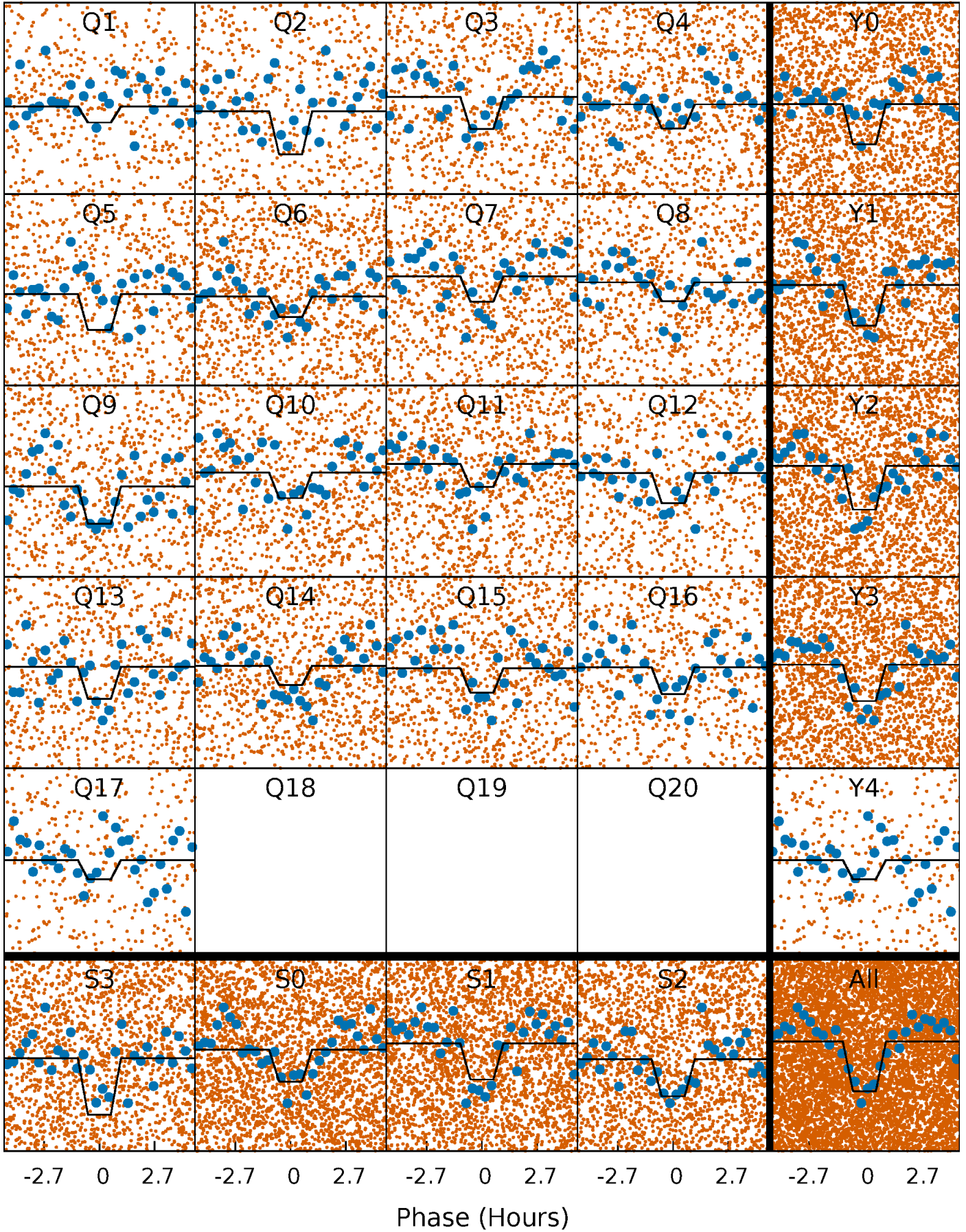
DV Quarter-Phased Transit Curves

TCE 010842687-02 P= 0.965102 Days $T_0=132.316039$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

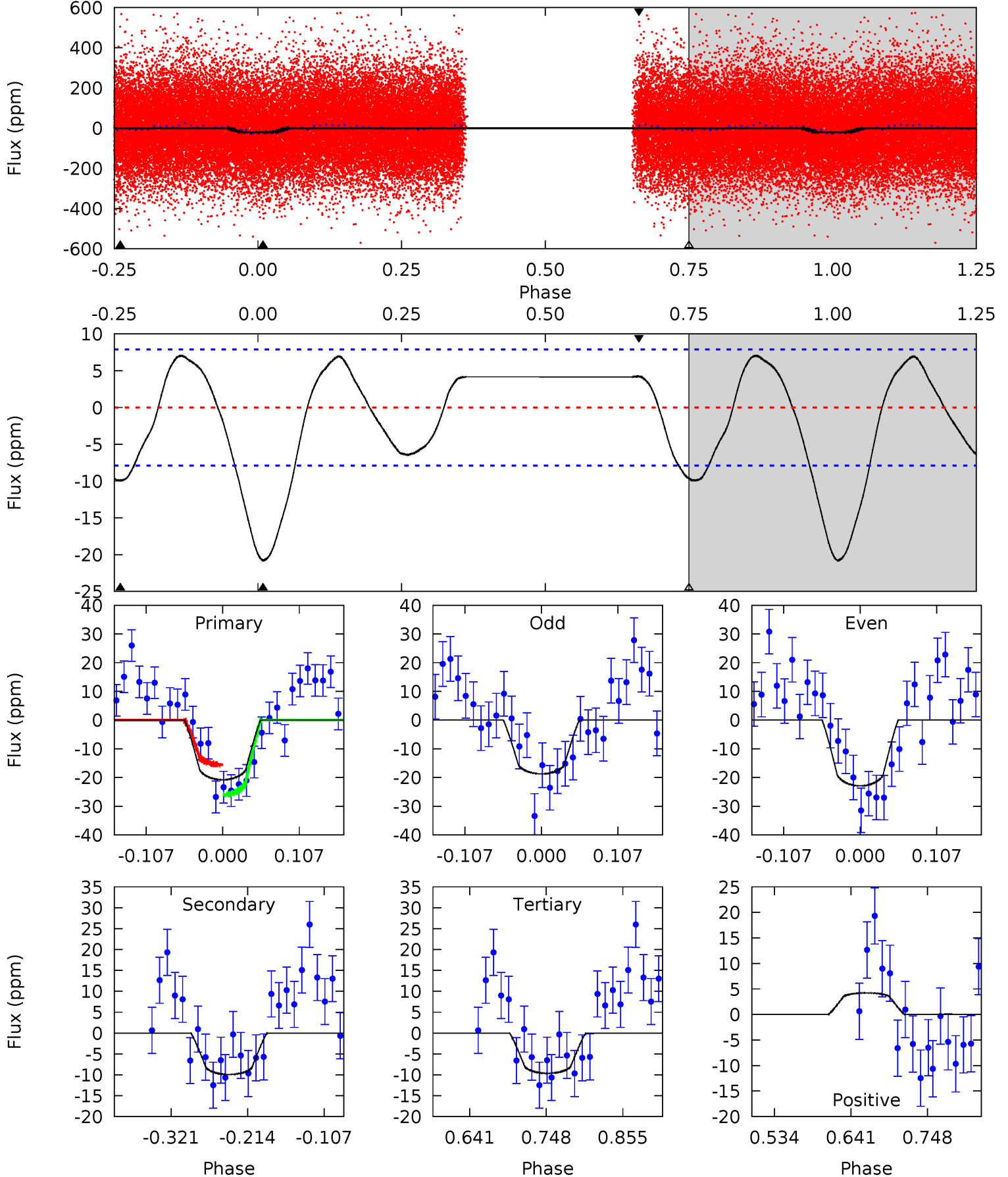
TCE 010842687-02 P= 0.965120 Days $T_0=132.312000$ (BKJD)



DV Model-Shift Uniqueness Test

010842687-02, P = 0.965102 Days, E = 131.350937 Days

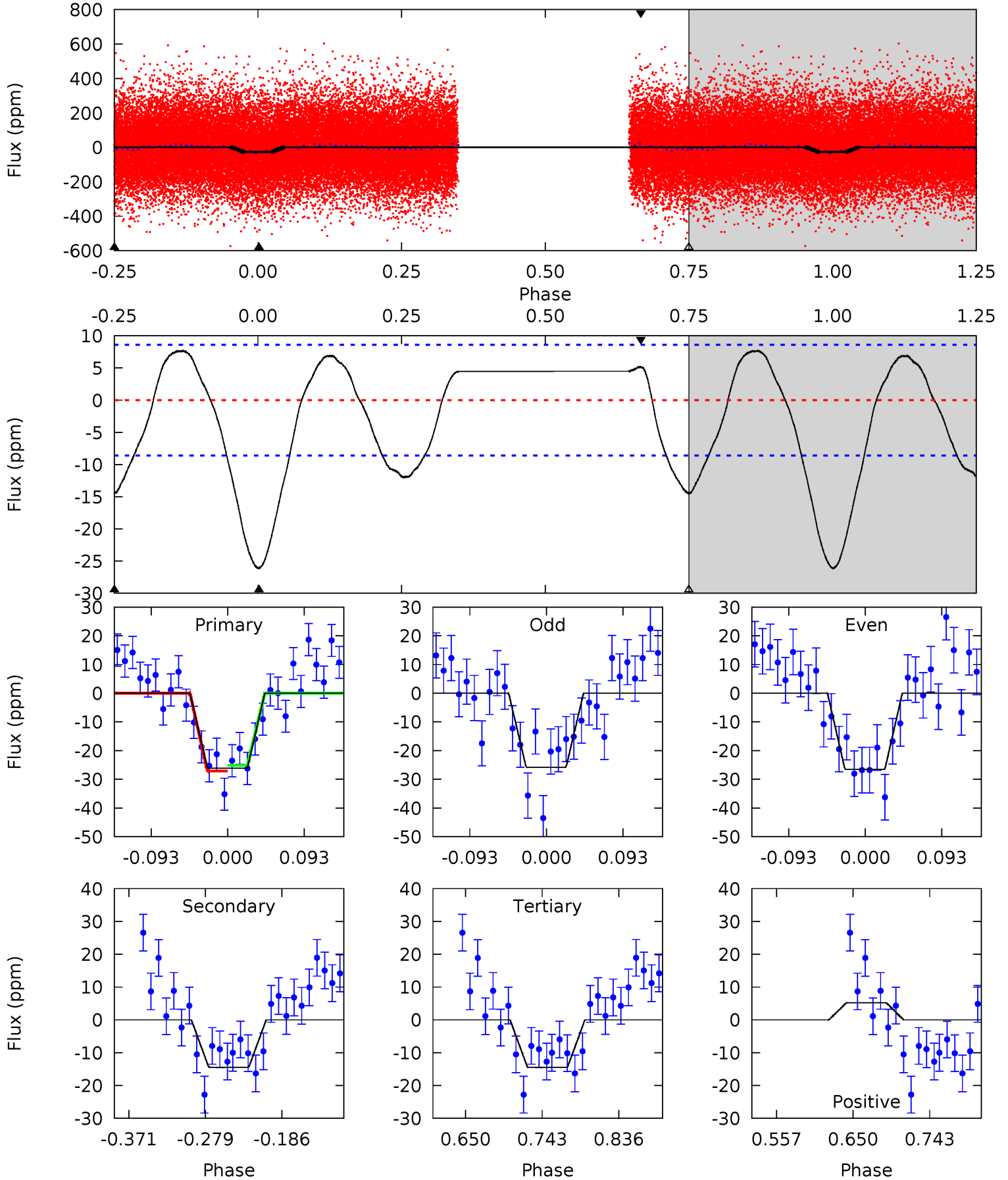
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	5.72	5.56	2.44	4.55	1.61	2.87	6.43	9.55	0.16	3.28	1.20	1.05	0.25	3.06



Alt Model-Shift Uniqueness Test

010842687-02, P = 0.965120 Days, E = 131.346880 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.9	7.73	7.73	2.77	4.58	1.68	3.87	6.19	11.2	0.00	4.97	0.19	0.98	0.23	0.52



Stellar Parameters For KIC 010842687

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6074^{+181}_{-181}	$3.619^{+0.345}_{-0.115}$	$-0.160^{+0.350}_{-0.300}$	$3.128^{+0.563}_{-1.313}$	$1.485^{+0.202}_{-0.376}$	$0.068^{+0.190}_{-0.025}$
	+3%/-3%	+10%/-3%	+219%/-188%	+18%/-42%	+14%/-25%	+278%/-36%
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 010842687-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-10 ± 2	$1.47^{+0.81}_{-0.75}$	4422^{+300}_{-423}	4791^{+2052}_{-1147}	$1.196^{+3.681}_{-0.713}$
Alt.	-15 ± 2	$1.62^{+0.80}_{-0.74}$	4411^{+299}_{-450}	5016^{+1789}_{-938}	$1.486^{+3.348}_{-0.818}$

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

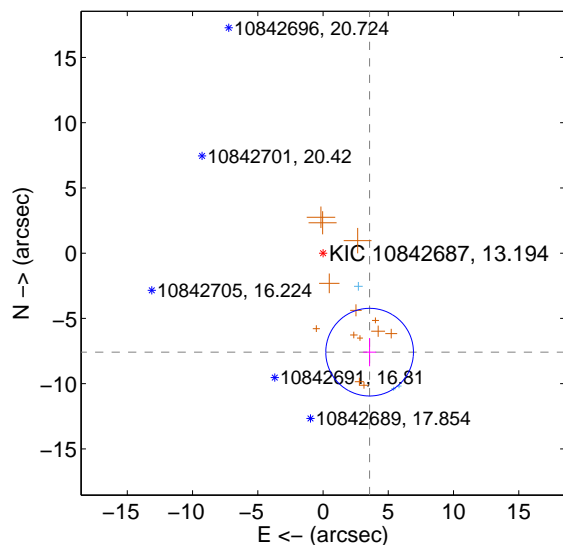
Supplemental centroid analysis for 010842687-02. Kepler magnitude: 13.19. Transit SNR 8.31

There are 3 quarters with good PRF difference image offsets

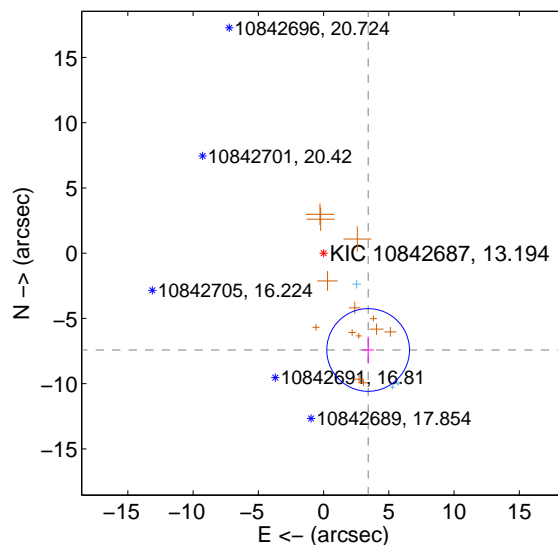
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	8.384 ± 1.120	7.49	-3.570 ± 0.496	-7.586 ± 1.078
PRF-fit source offset from KIC position	8.166 ± 1.056	7.73	-3.414 ± 0.445	-7.418 ± 1.016
photometric centroid source offset	10.19 ± 1.75	5.81	-7.64 ± 1.88	-6.74 ± 1.58

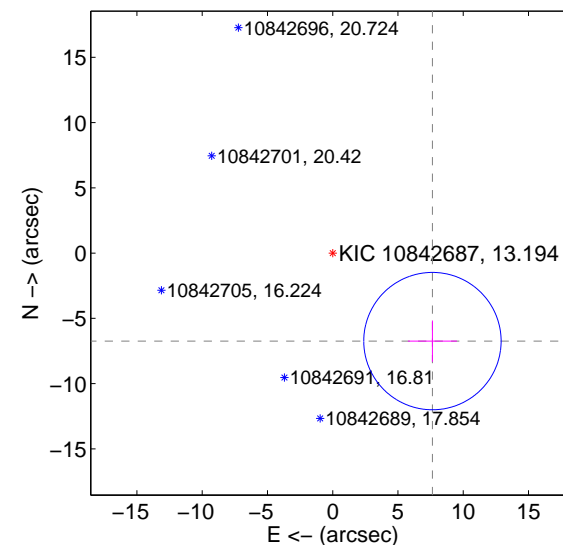
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

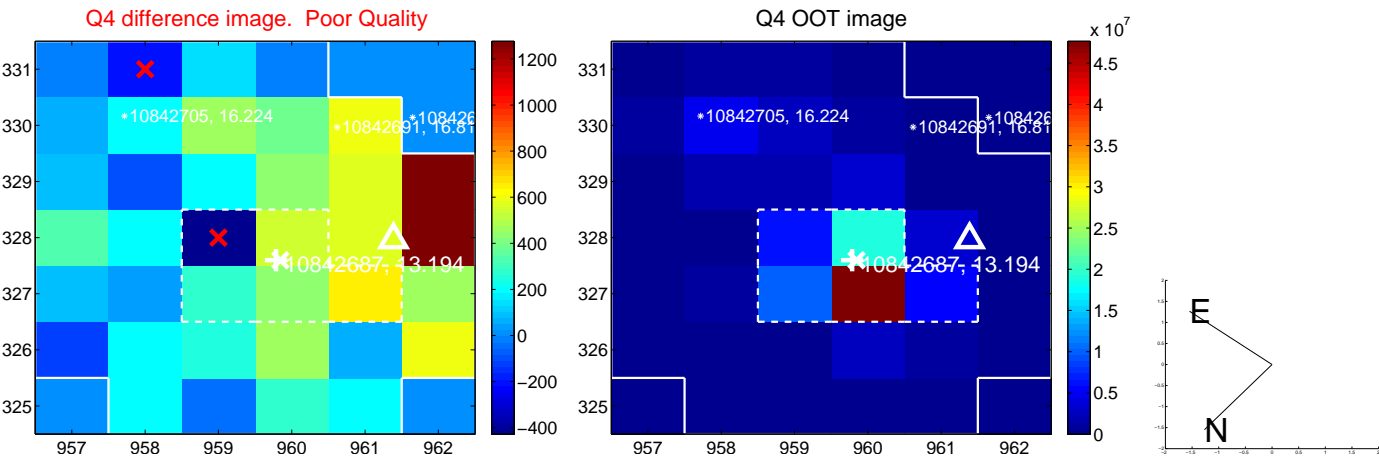
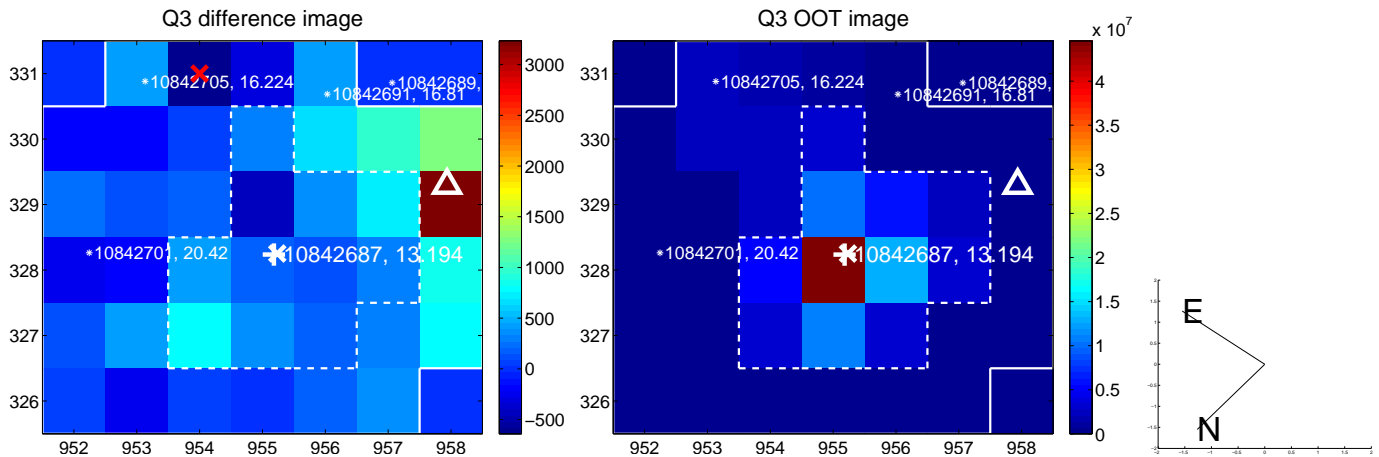
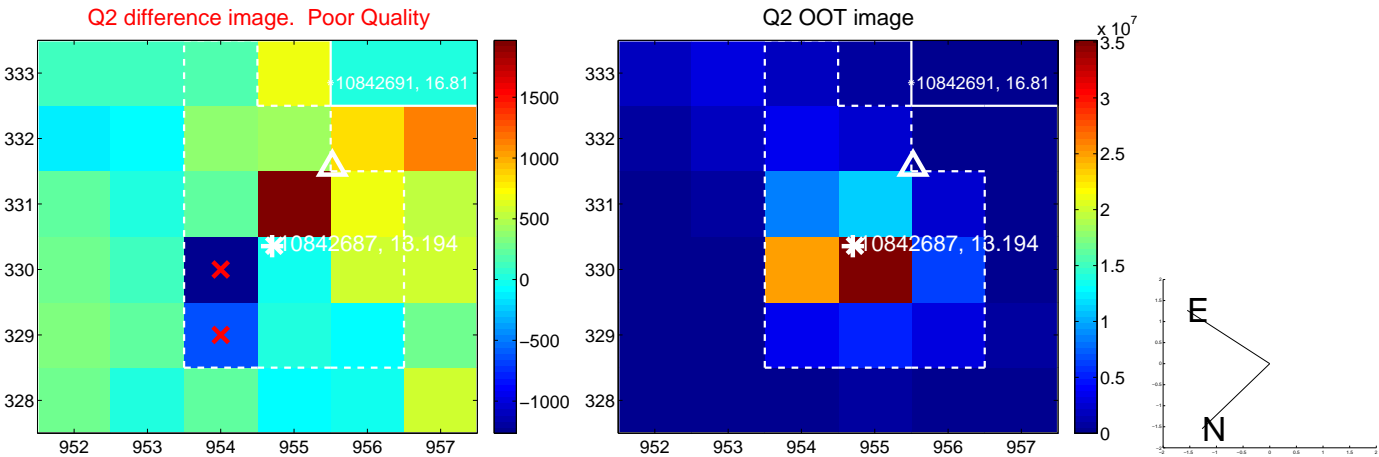
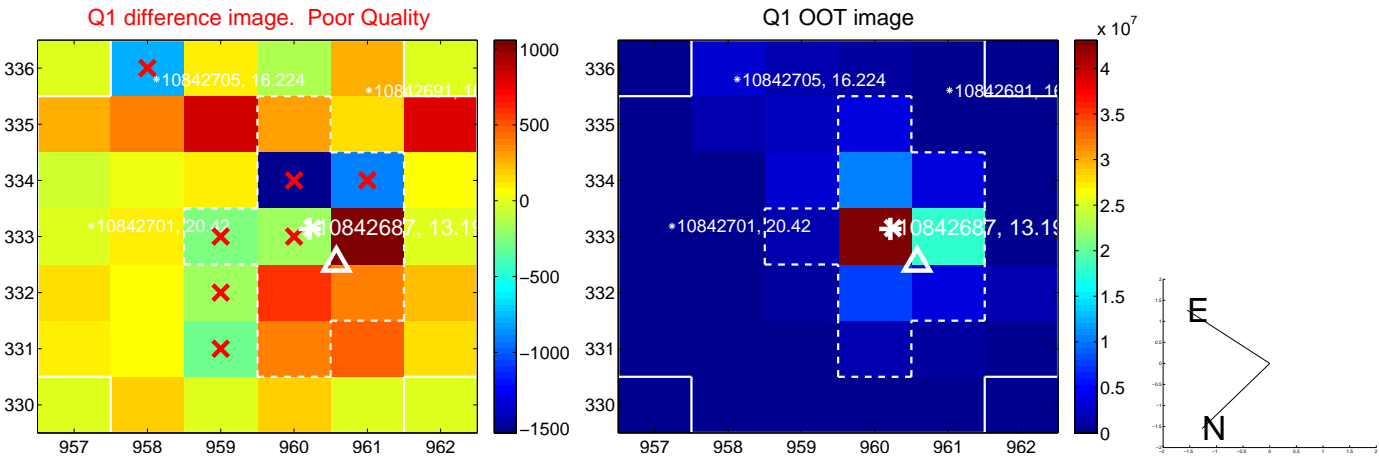


offset from photometric centroids

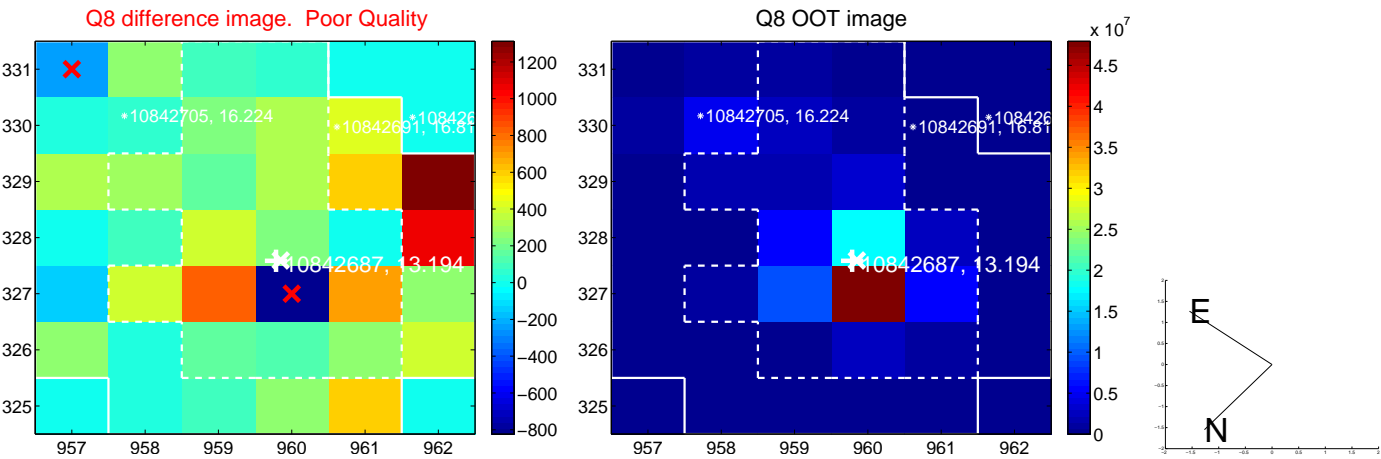
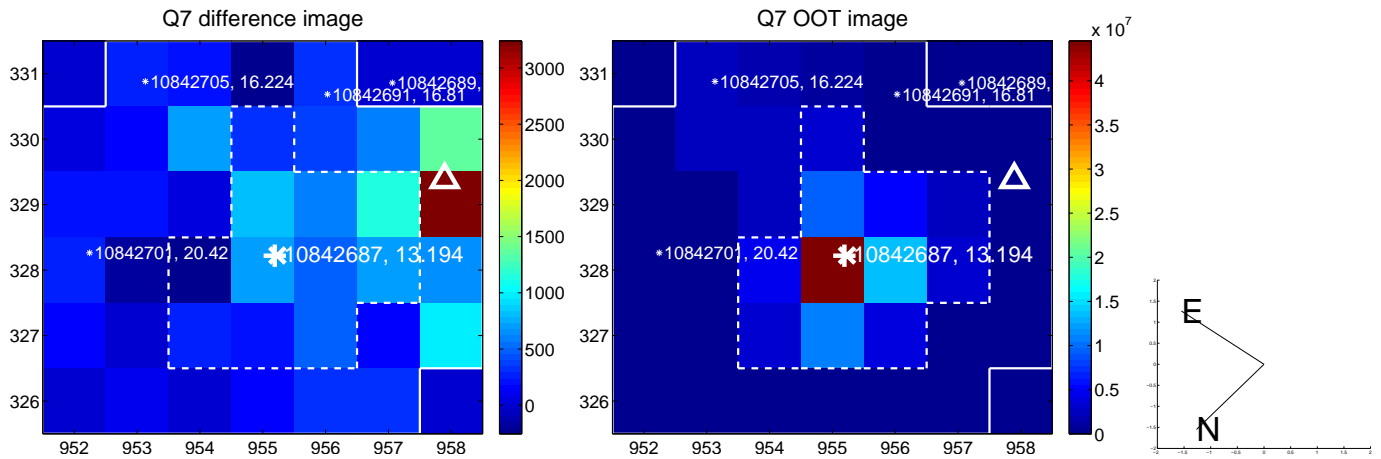
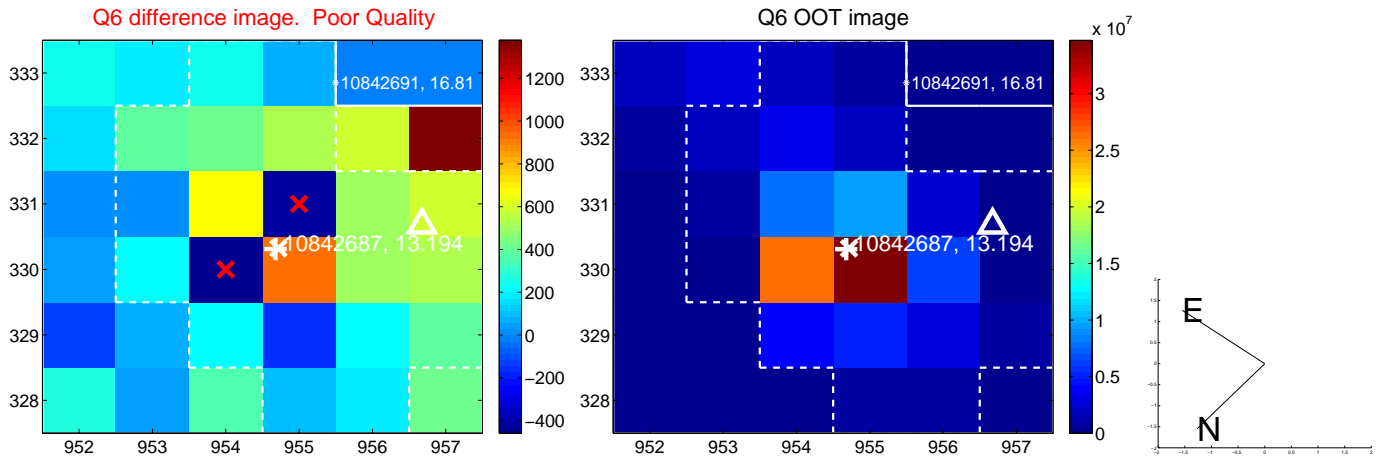
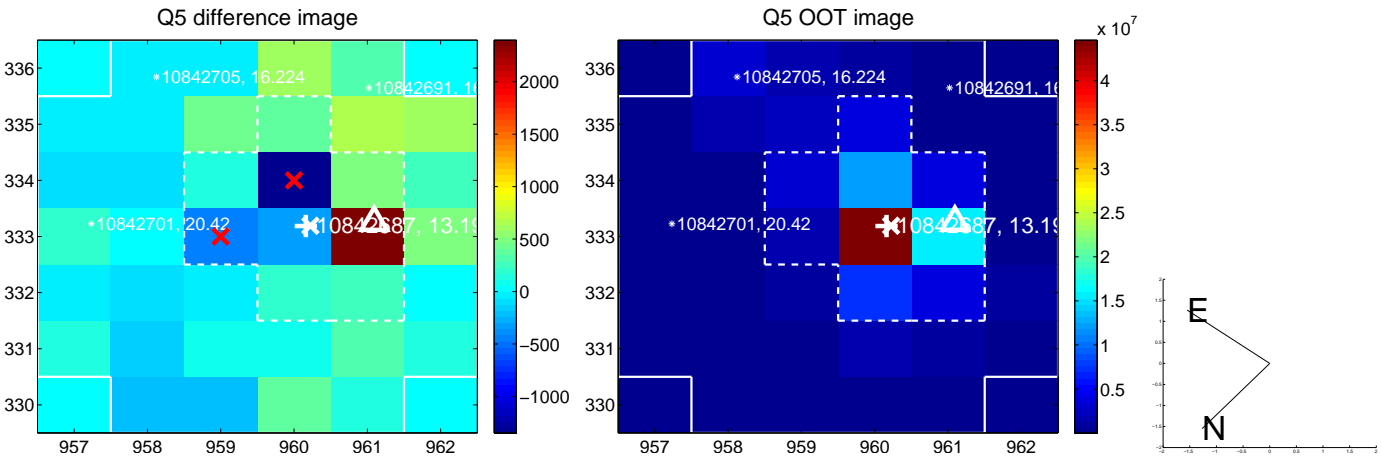


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

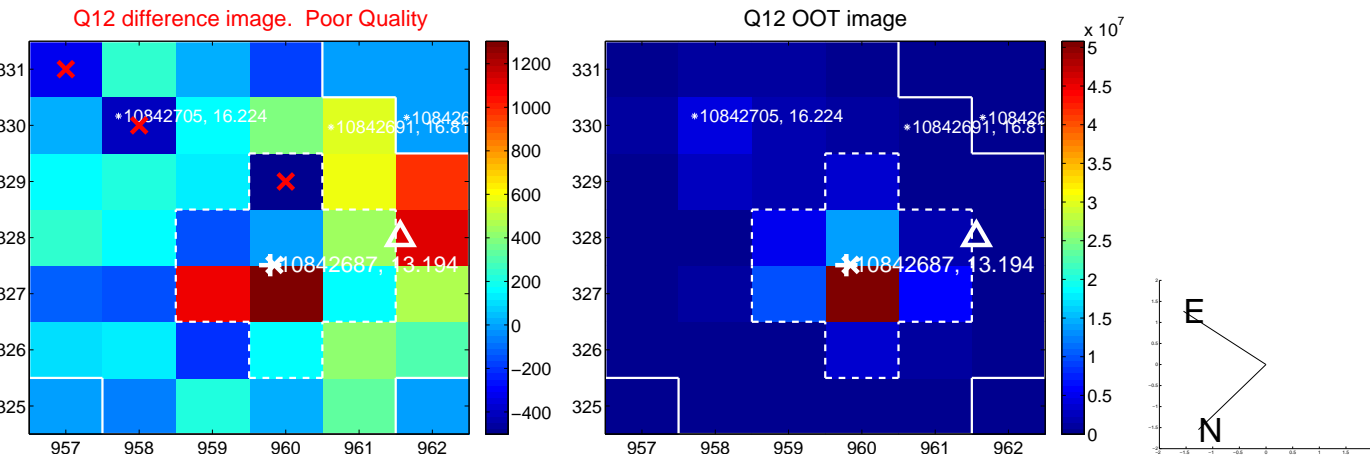
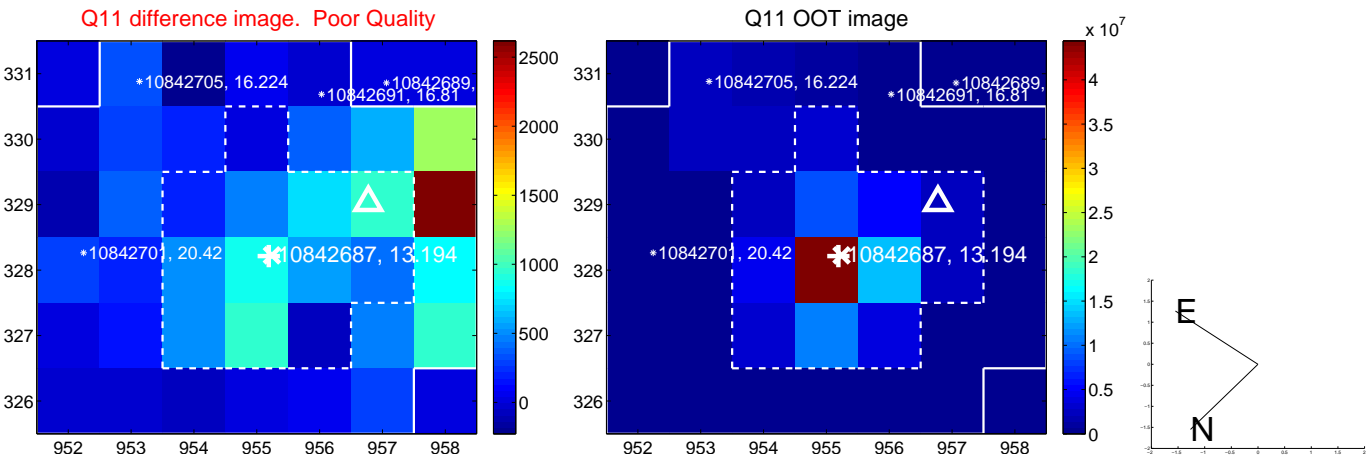
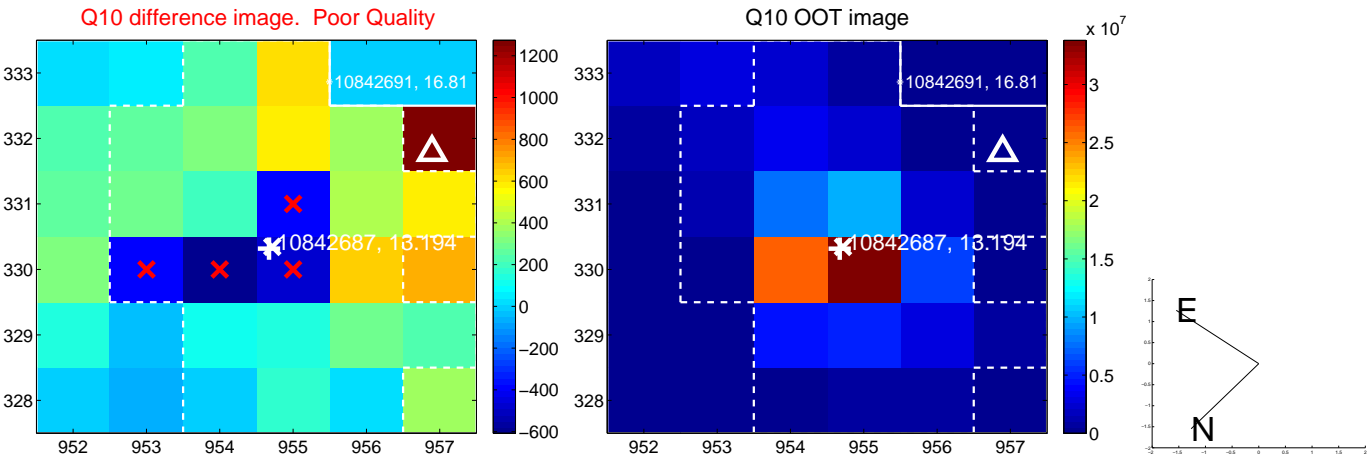
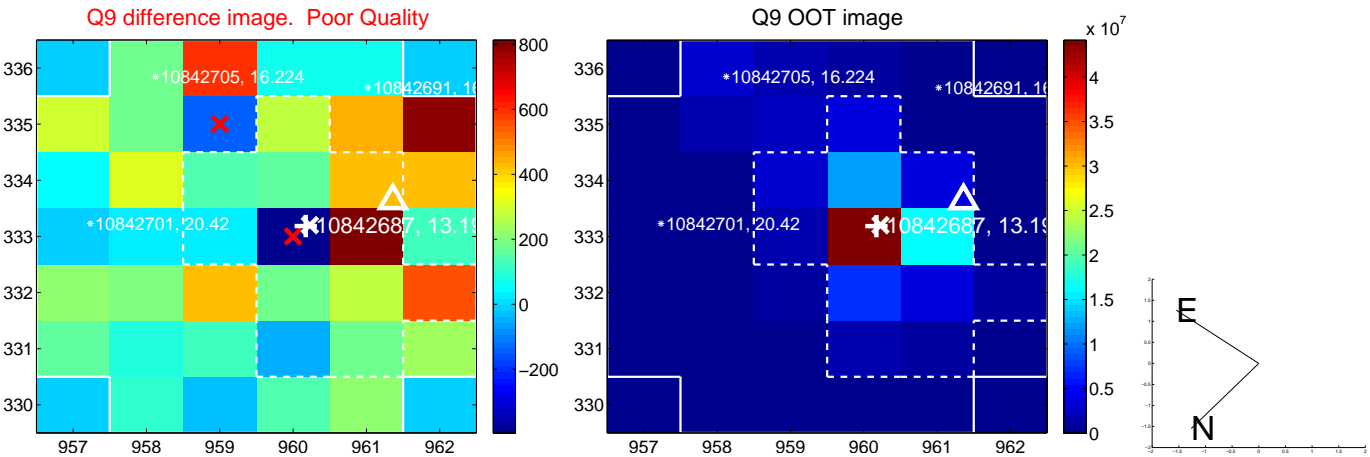
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



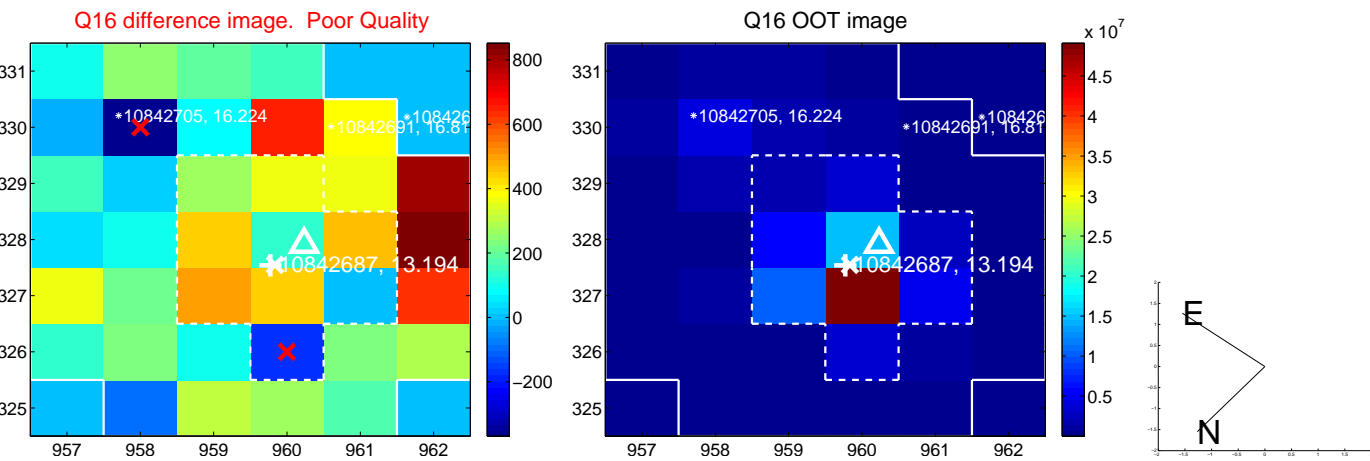
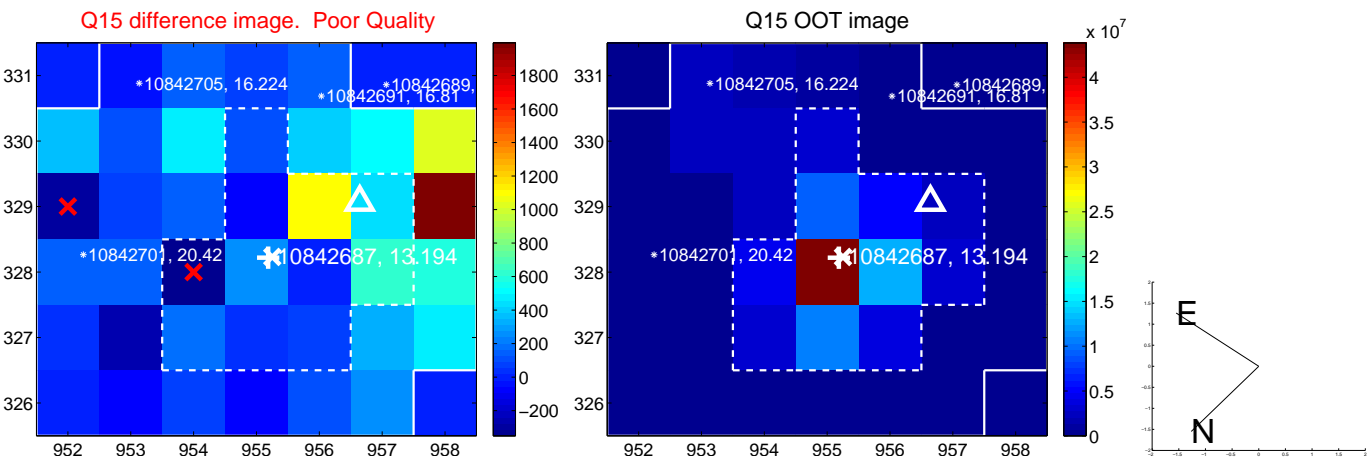
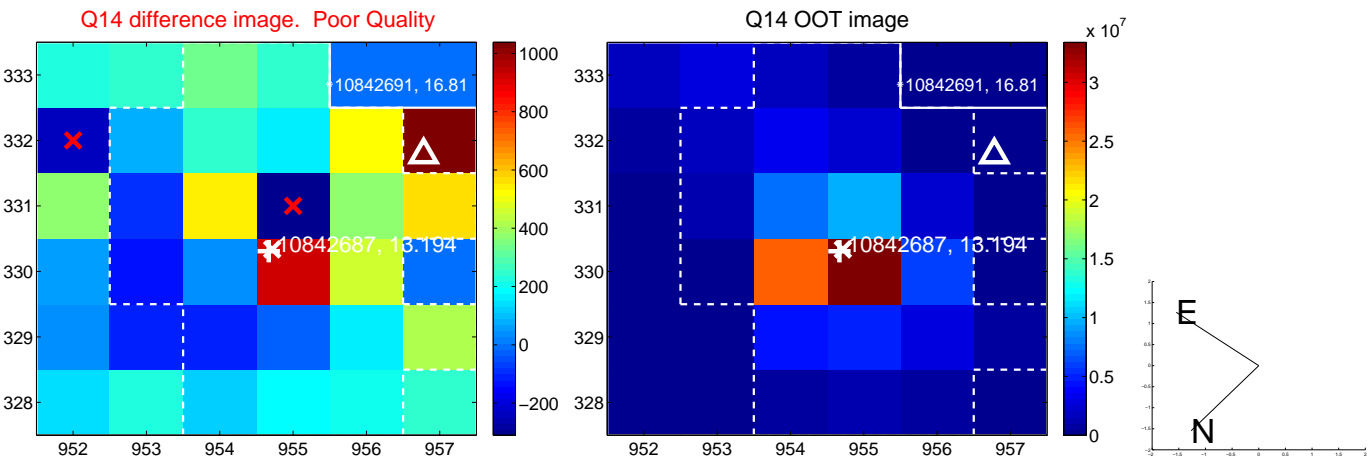
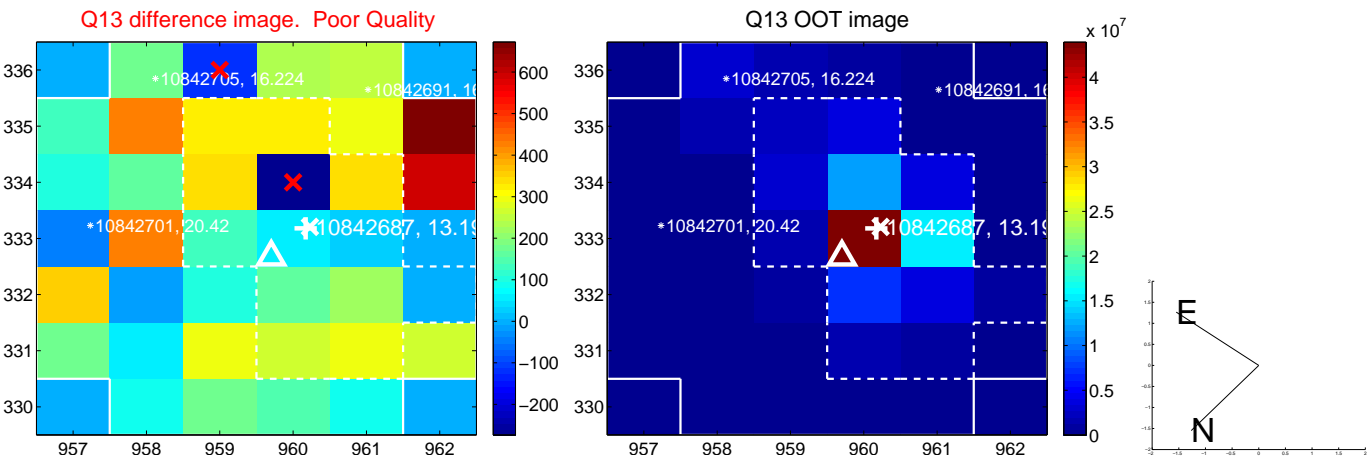
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



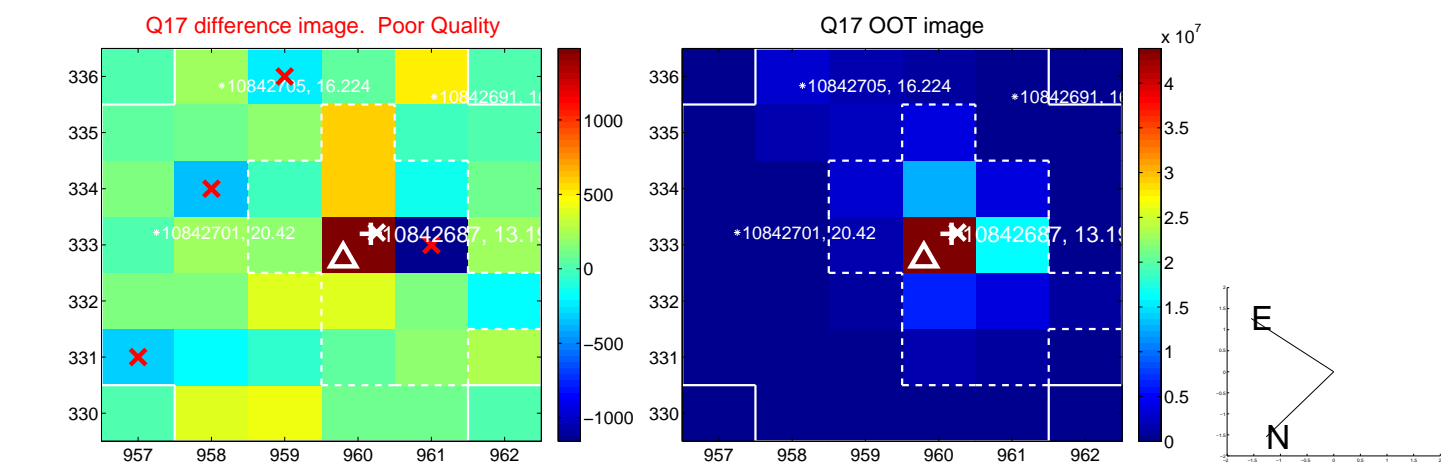
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



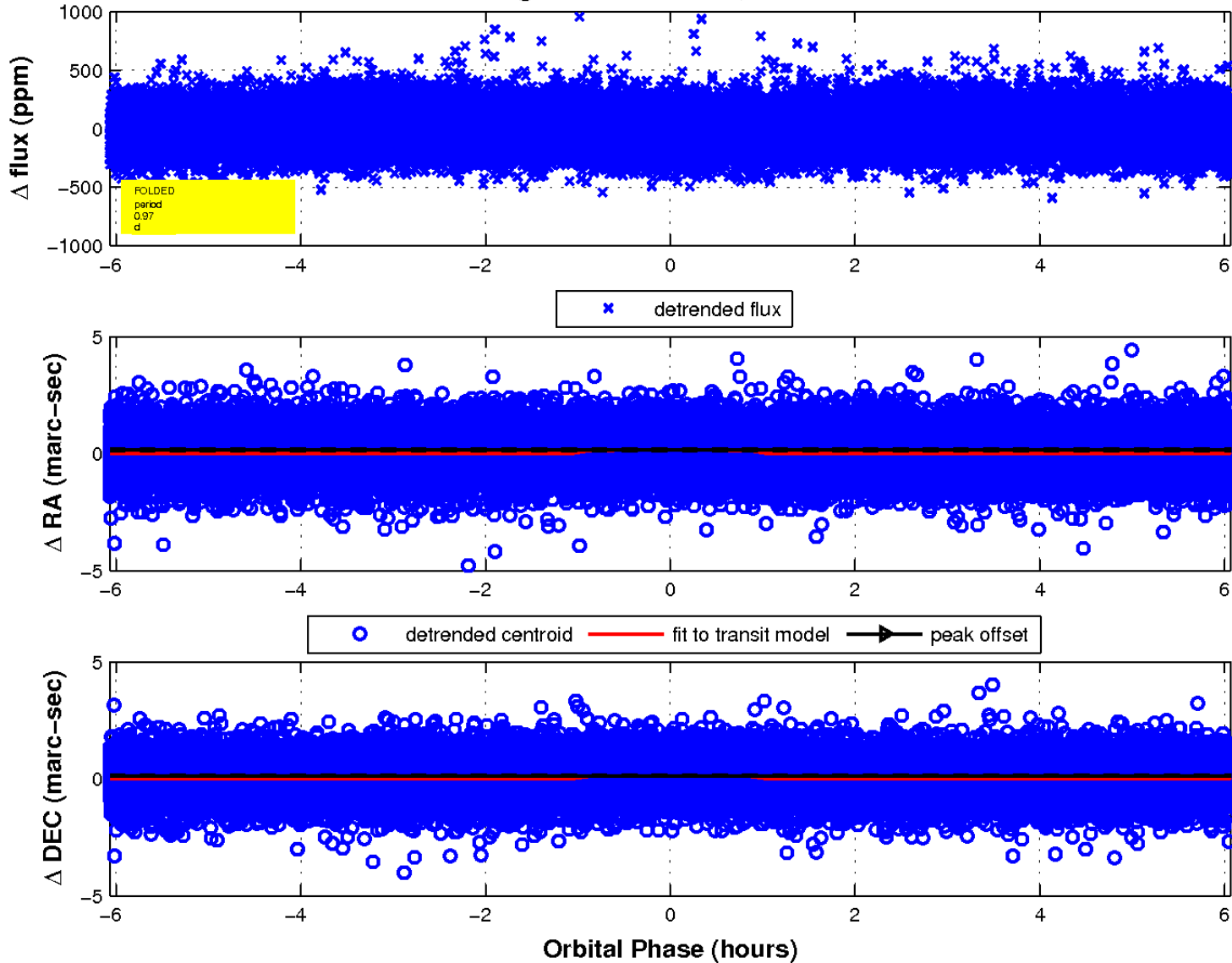
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

