

KIC 009846419

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})
009846419-01	OBS	No	0.530643	131.975498	25.4	1.520	10.2	7.0	1.19	6702	0.64	13649.64
009846419-02	OBS	No	0.530641	131.635867	18.7	3.137	10.4	6.0	1.19	6702	0.53	13649.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009846419-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009846419-02	OBS	FP	0.00	1	0	0	0	LPP_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.

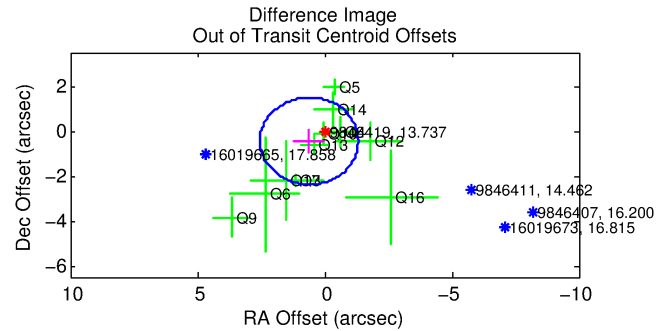
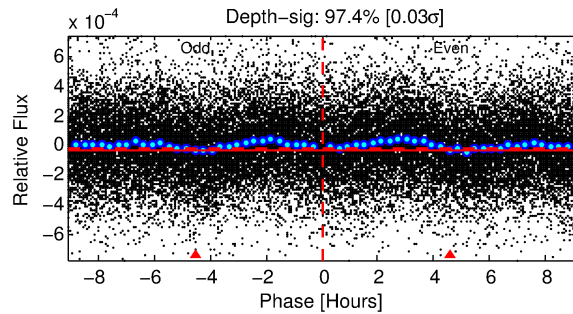
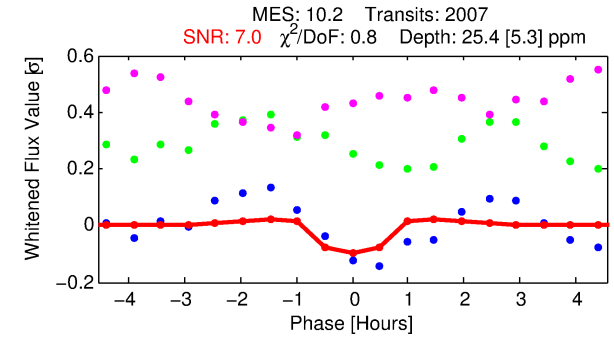
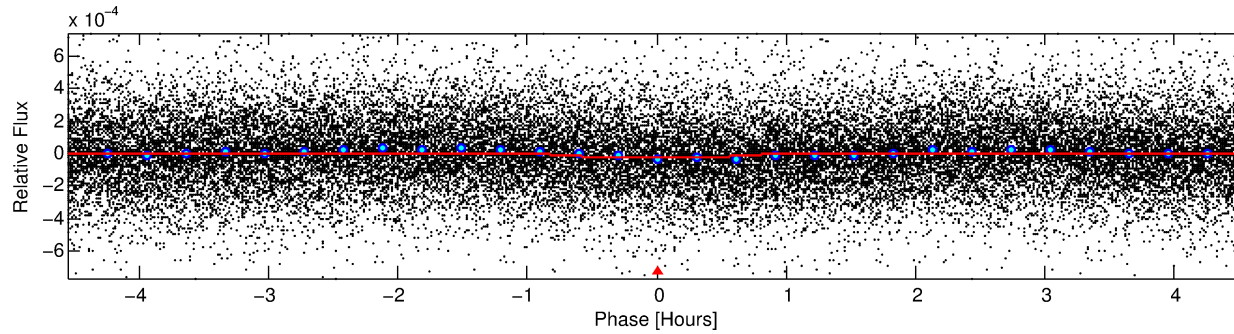
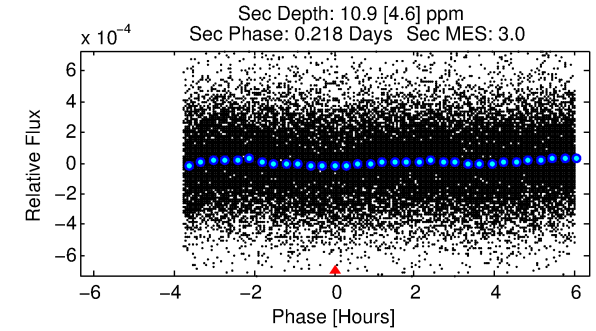
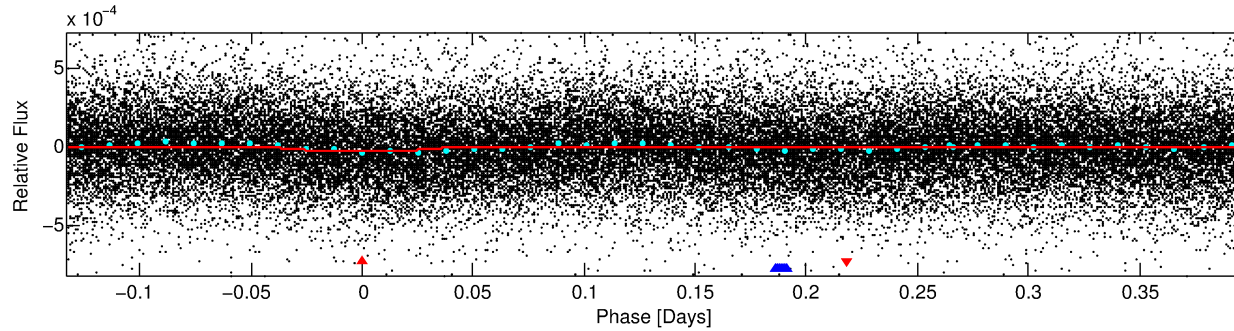
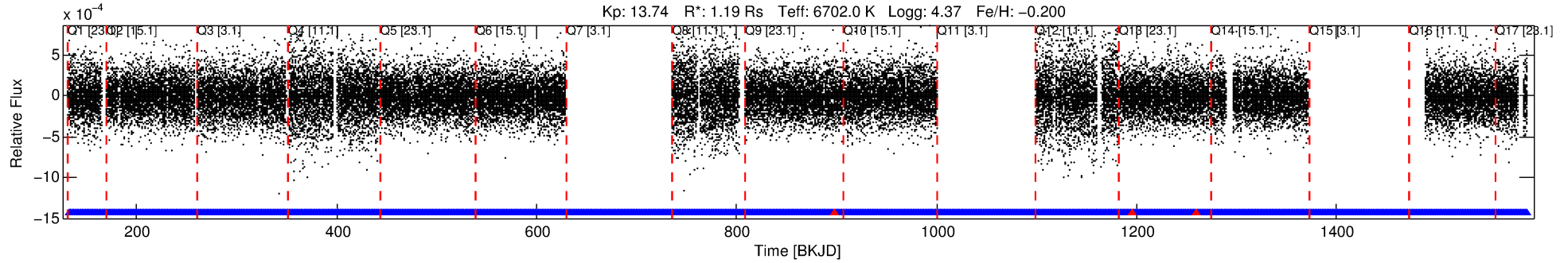
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009846419-01

No Significant Match Found

DV One-Page Summary

KIC: 9846419 Candidate: 1 of 2 Period: 0.531 d



DV Fit Results:

Period = 0.53064 [0.00002] d
Epoch = 131.9755 [0.0027] BKJD
Rp/R* = 0.0050 [0.0014]
a/R* = 2.09 [2.47]
b = 0.70 [1.12]
Seff = 13649.64 [4908.56]
Teff = 2756 [248] K
Rp = 0.64 [0.26] Re
a = 0.0136 [0.0032] AU
Ag = 2.70 [2.13] [0.80σ]
Teffp = 5462 [991] K [2.65σ]

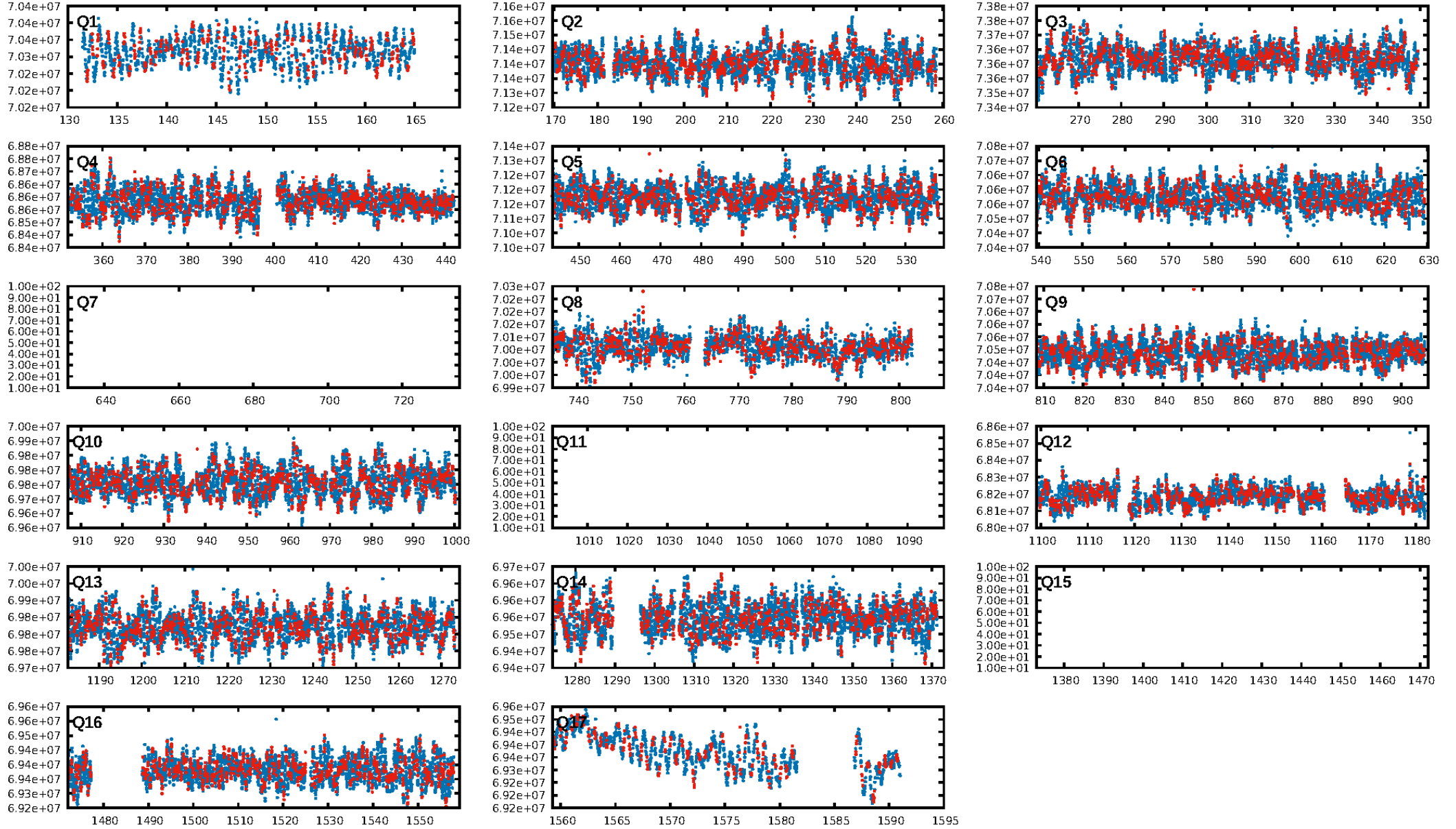
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.14e-22
RollingBand-fgt: 1.00 [1891/1894]
GhostDiagnostic-chr: 1.446
Centroid-sig: 18.4%
Centroid-so: 2.000 arcsec [1.78σ]
OotOffset-rm: 0.759 arcsec [1.18σ]
OotOffset-st: 3/1/3/4 [11]
KicOffset-rm: 0.766 arcsec [1.19σ]
KicOffset-st: 3/1/3/4 [11]
DiffImageQuality-fgm: 0.64 [7/11]
DiffImageOverlap-fno: 0.00 [0/14]

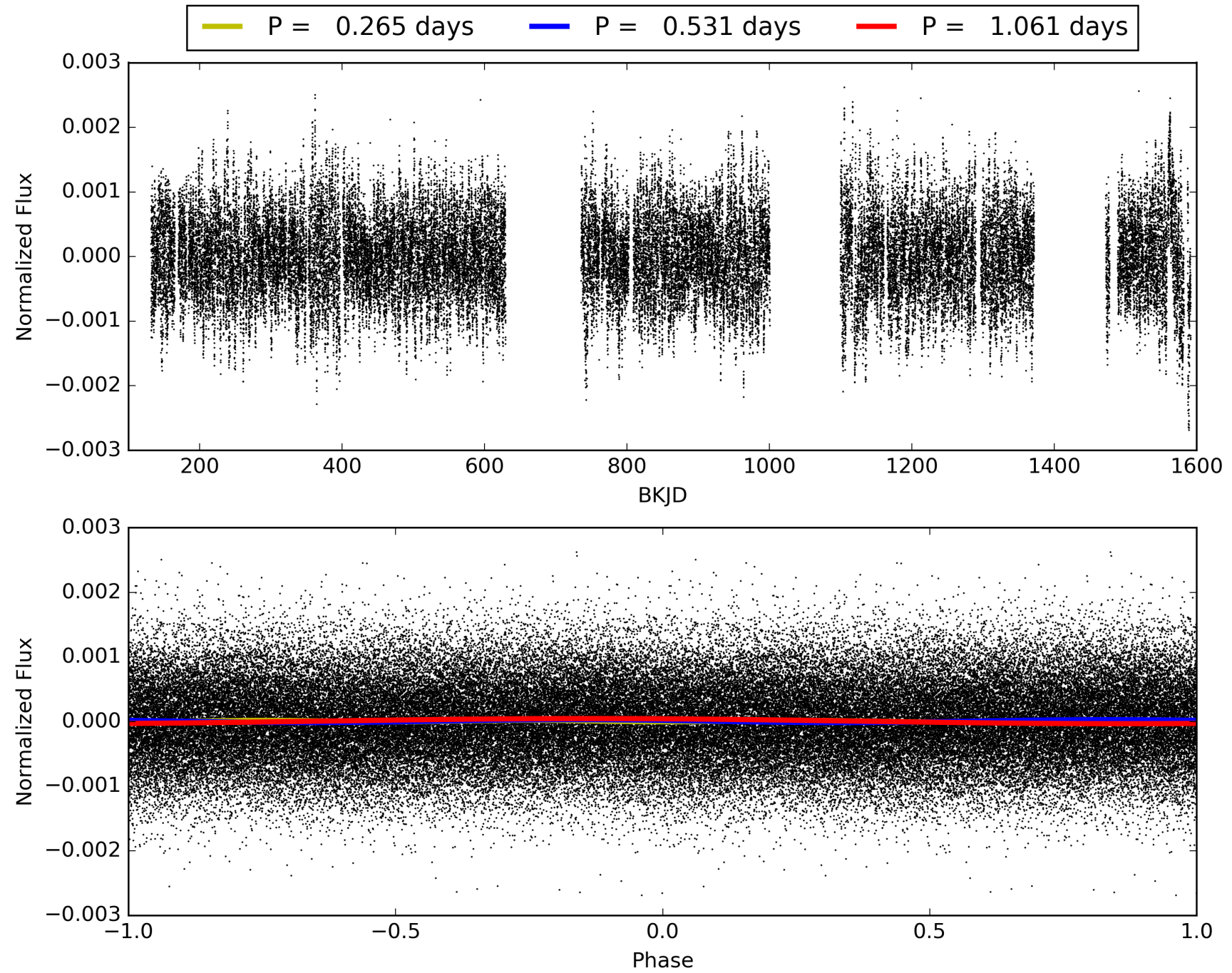
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:46:17 Z

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

TCE 009846419-01, PDC Light Curves

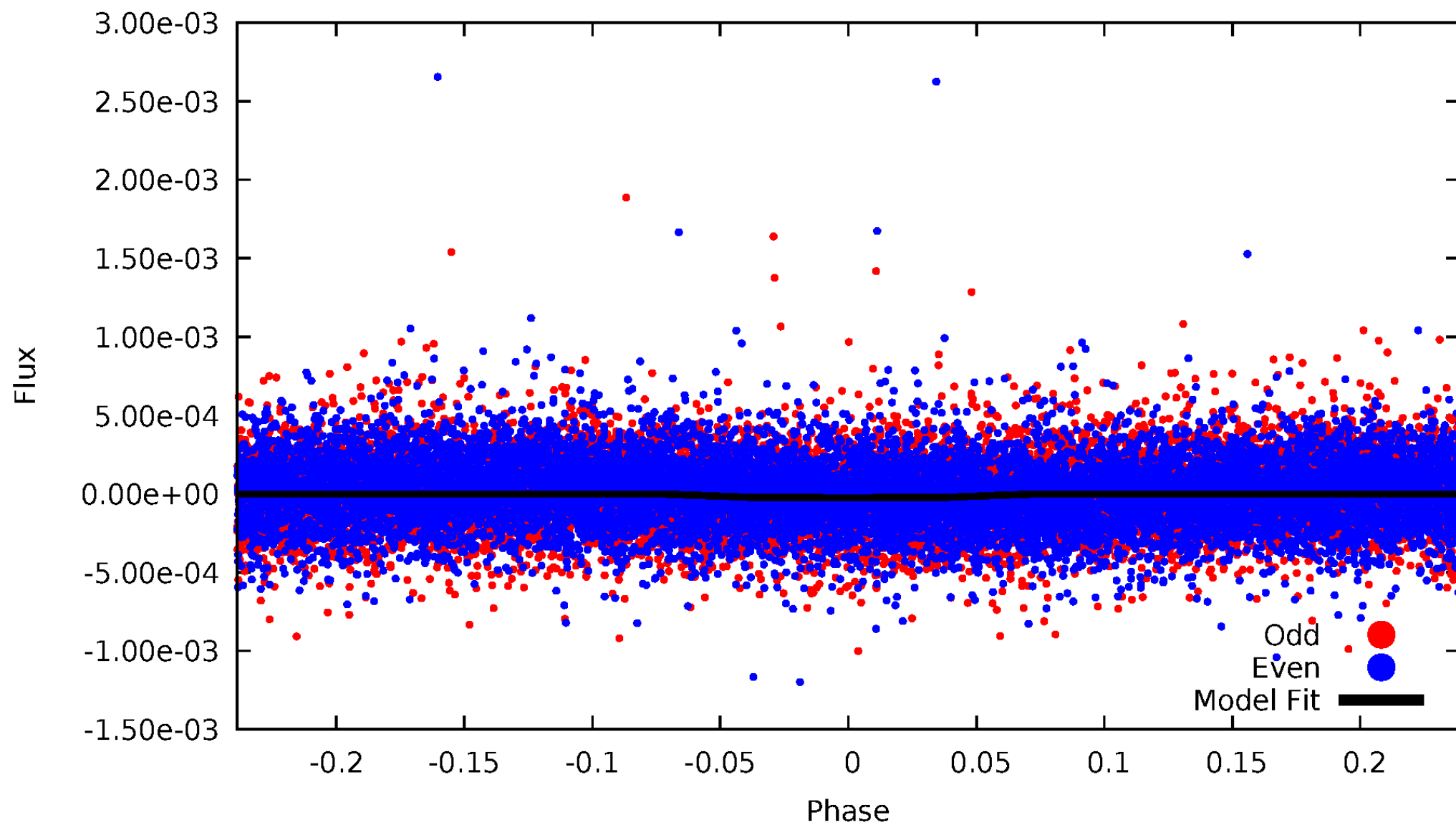


TCE 009846419-01



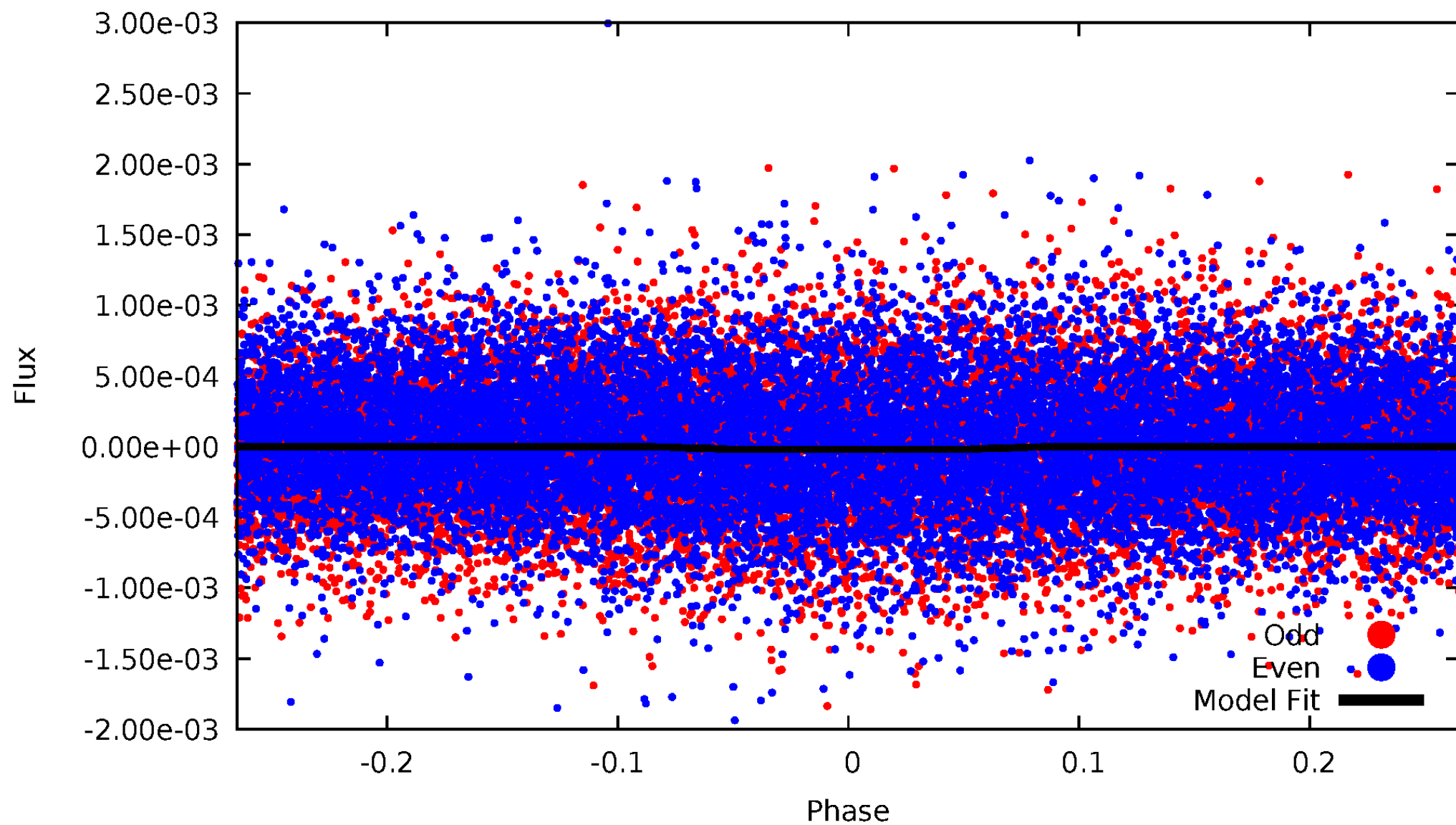
DV Odd/Even

TCE 009846419-01



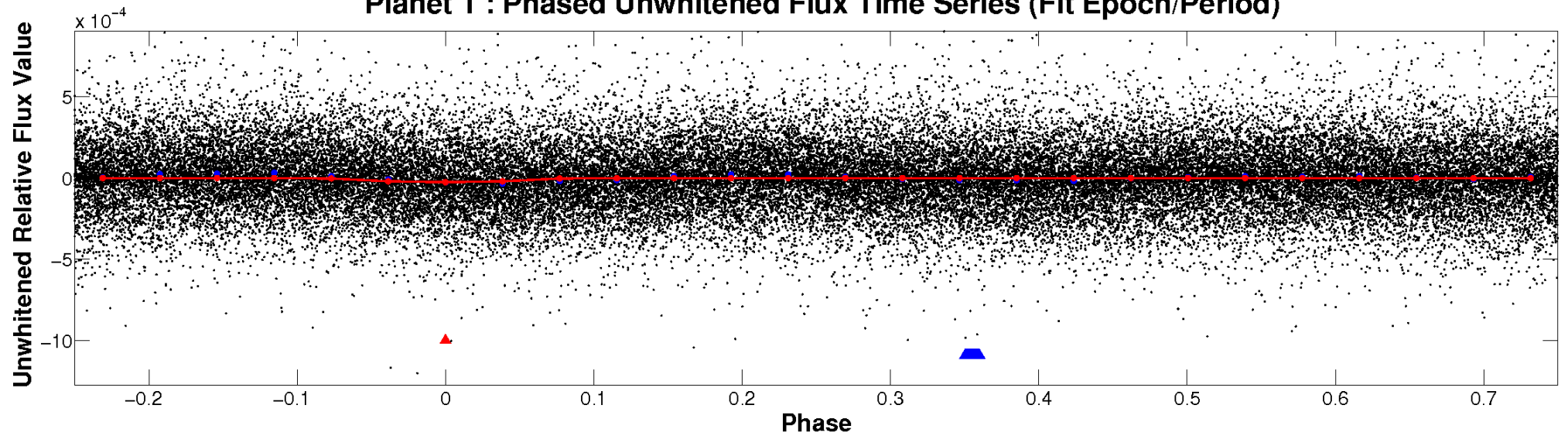
ALT Odd/Even

TCE 009846419-01

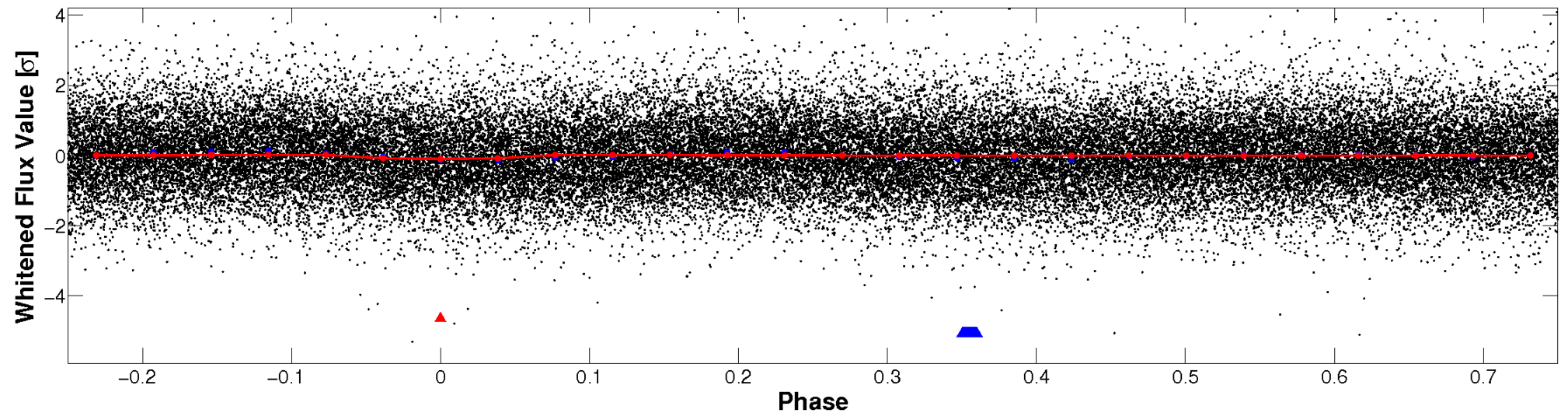


Non-Whitened Vs. Whitened Light Curve

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

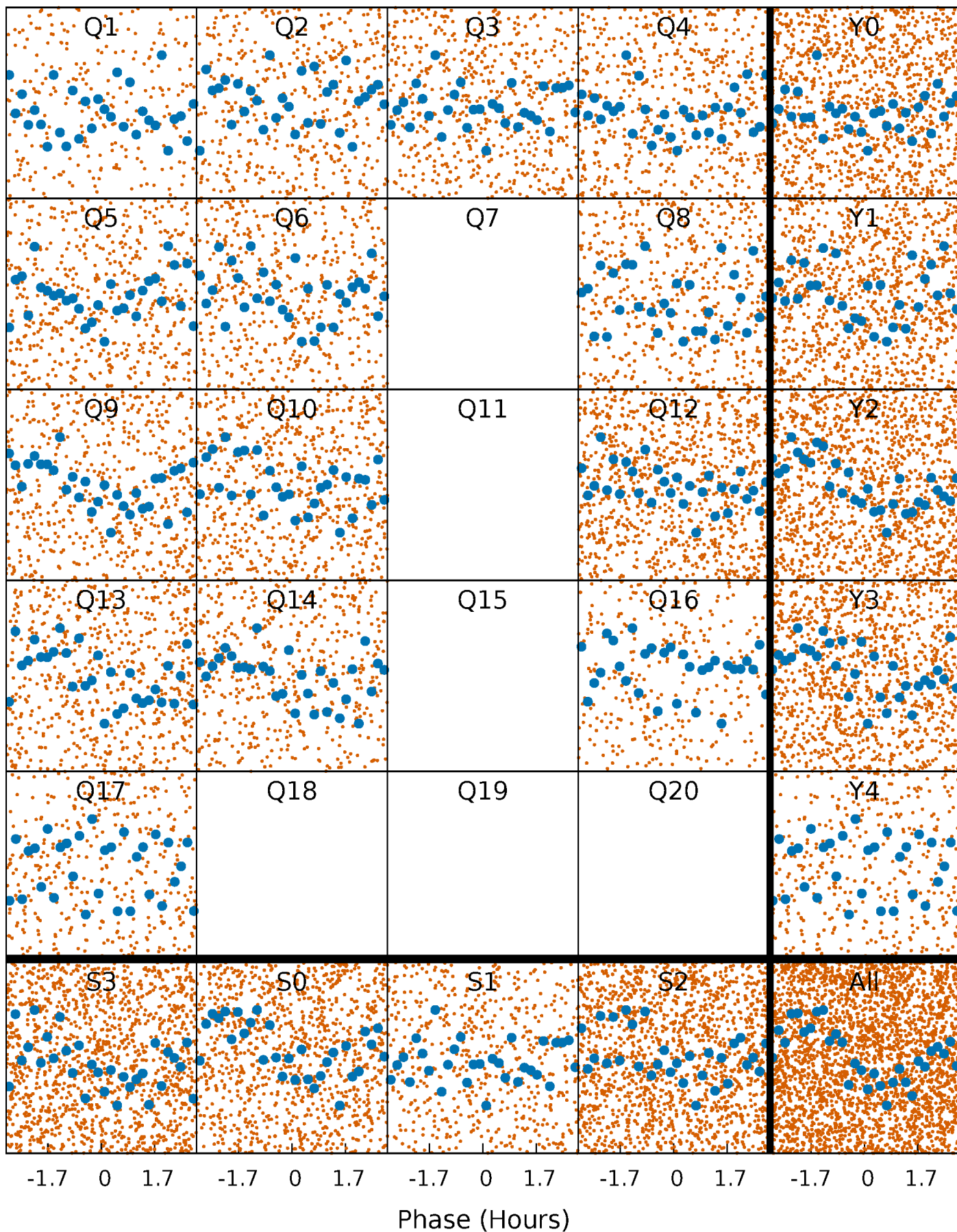


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



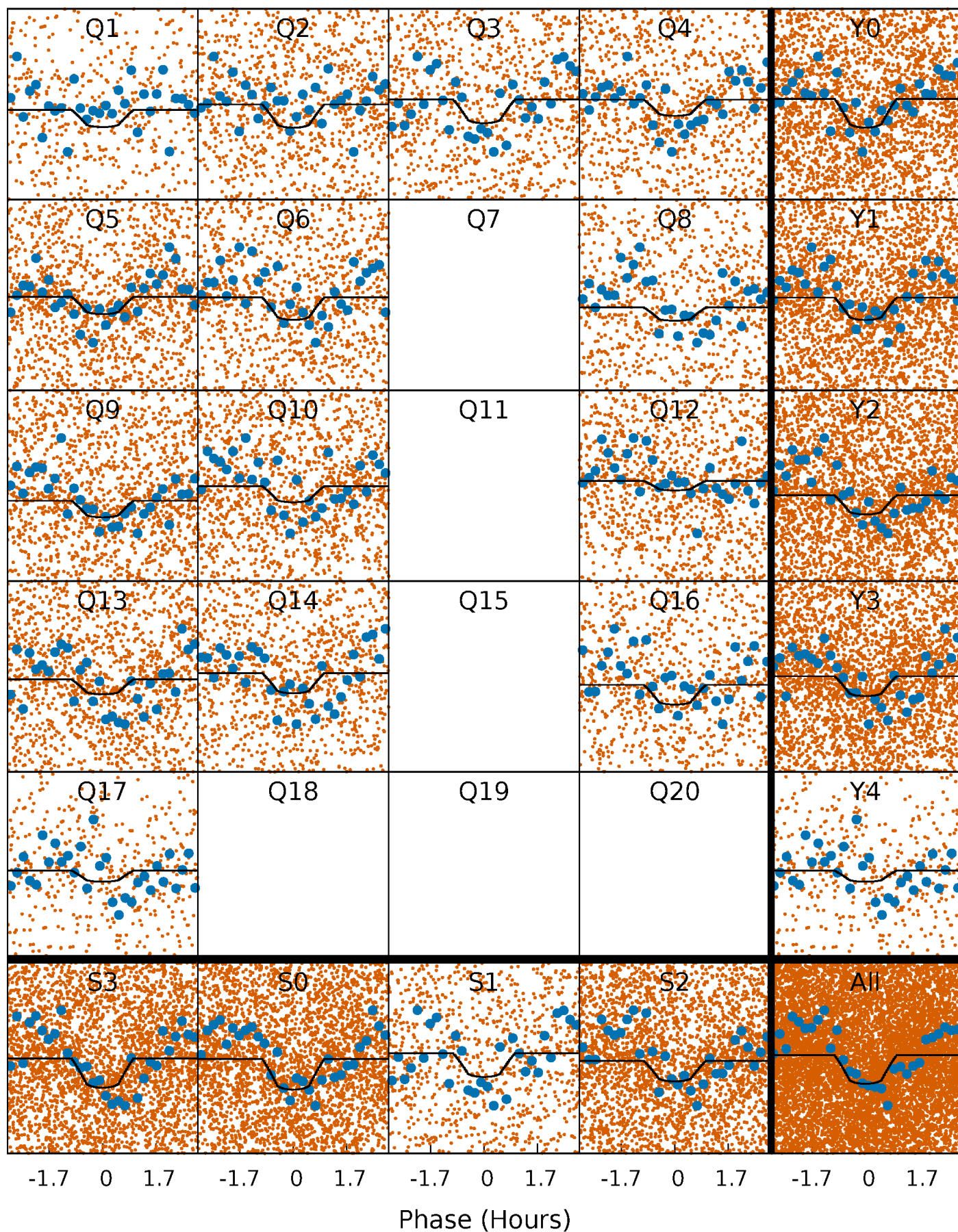
PDC Quarter-Phased Transit Curves

TCE 009846419-01 P= 0.530643 Days $T_0=131.975498$ (BKJD)



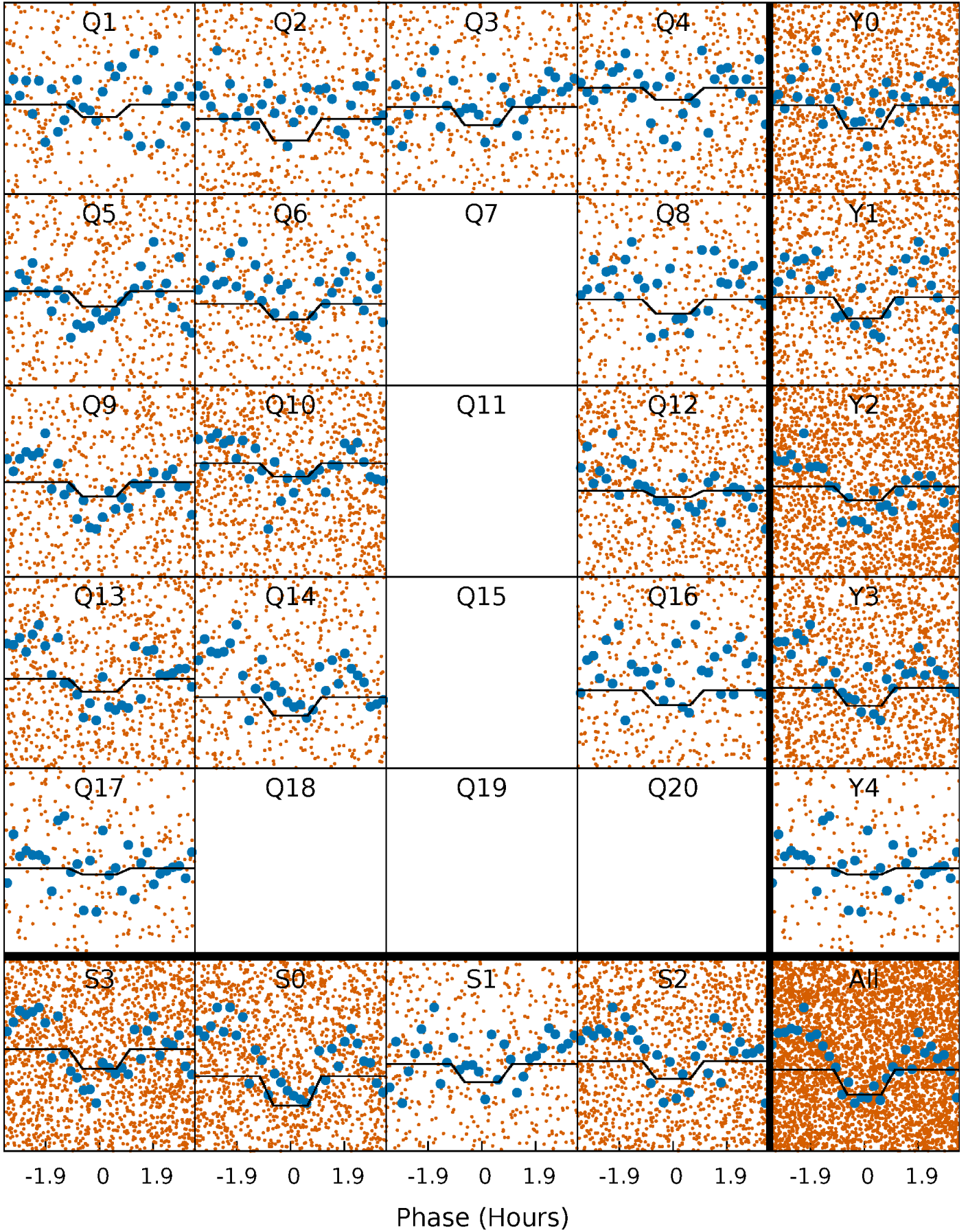
DV Quarter-Phased Transit Curves

TCE 009846419-01 P= 0.530643 Days $T_0=131.975498$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

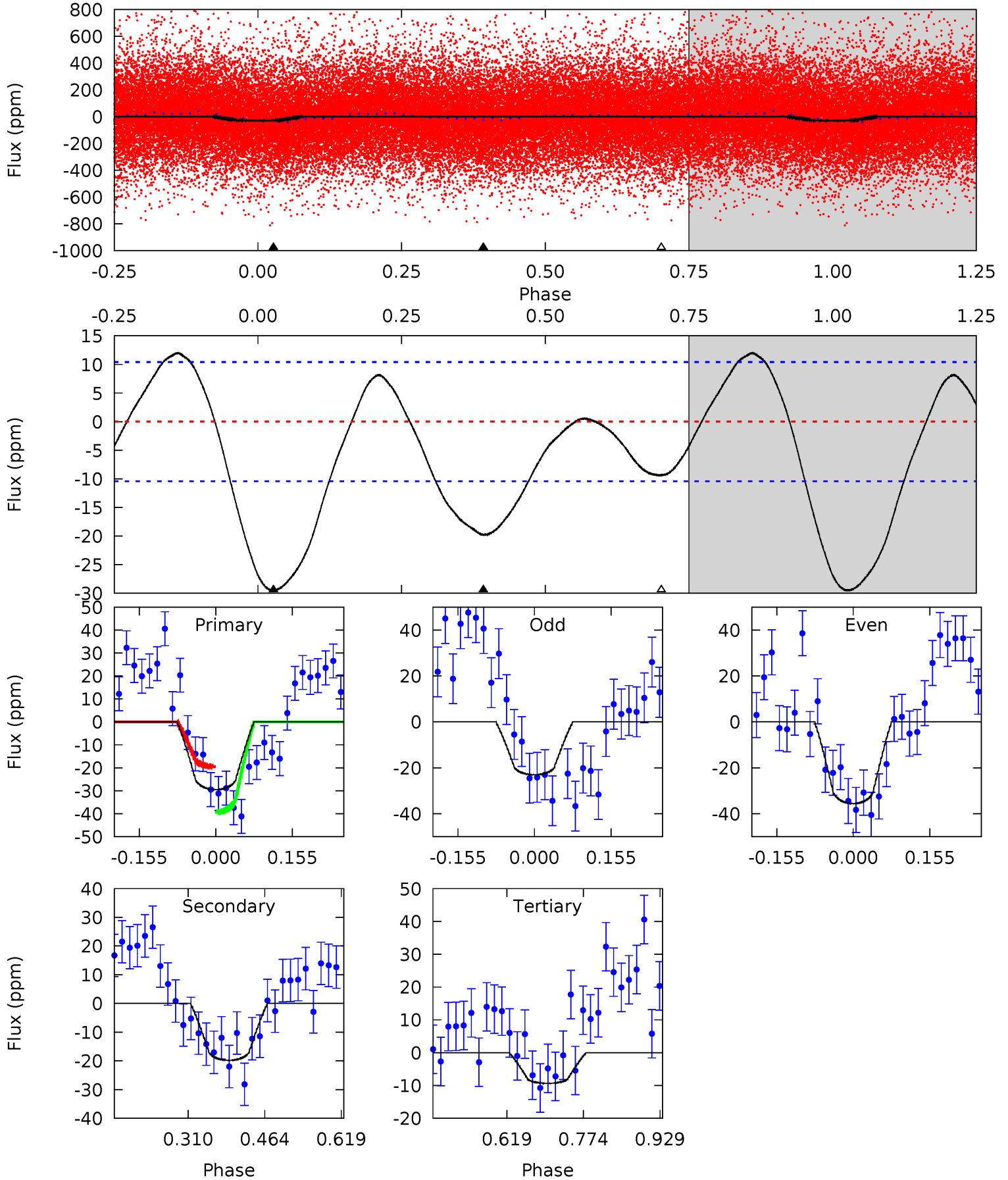
TCE 009846419-01 P= 0.530659 Days $T_0=131.976512$ (BKJD)



DV Model-Shift Uniqueness Test

009846419-01, P = 0.530643 Days, E = 131.444855 Days

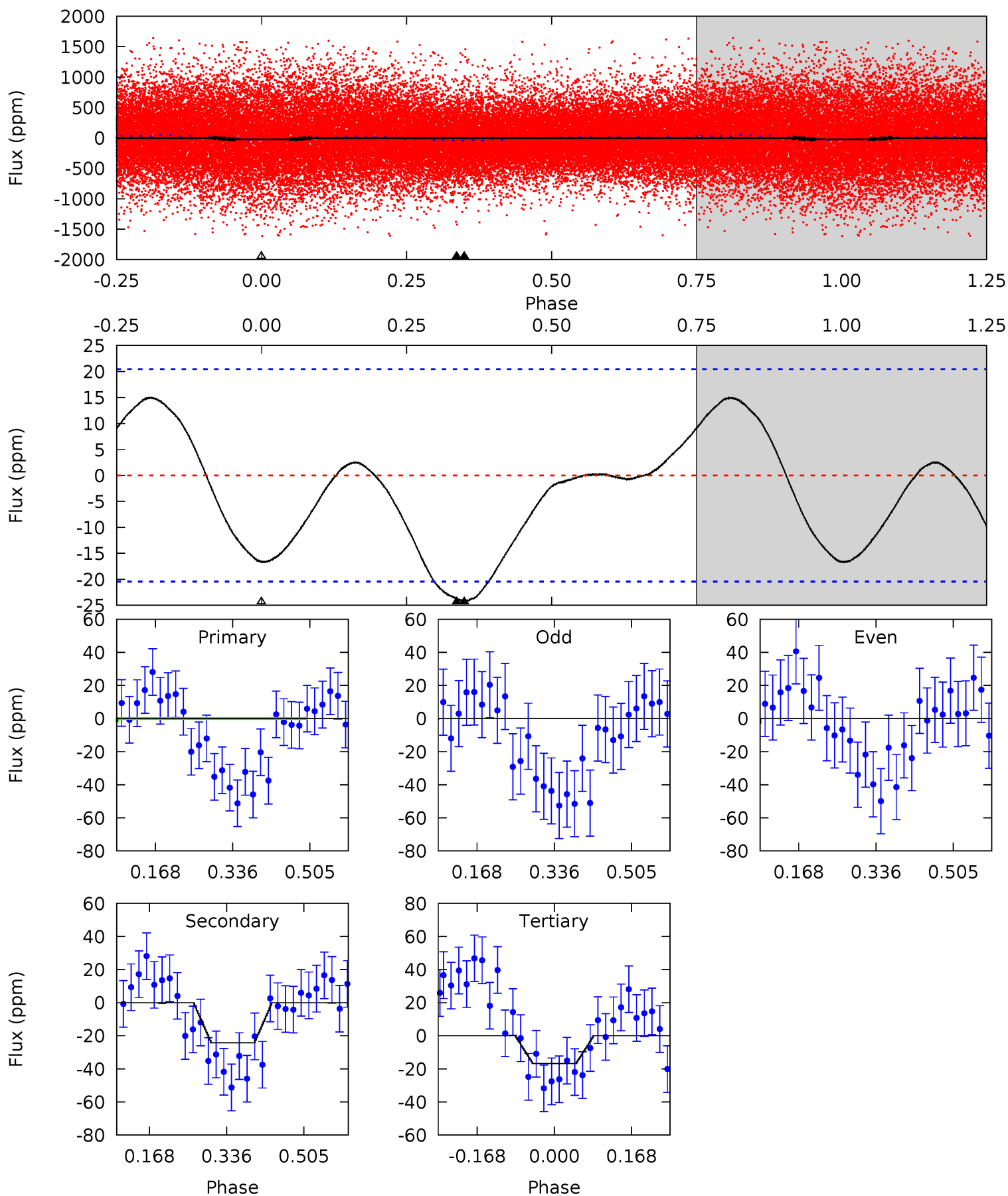
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	8.51	4.02	0	4.47	1.42	2.89	8.65	12.7	4.49	8.51	2.71	0.94	0.29	4.28



Alt Model-Shift Uniqueness Test

009846419-01, P = 0.530659 Days, E = 131.445853 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.19	5.30	3.66	0	4.45	1.38	1.94	1.53	5.19	1.64	5.30	4.31	0.67	0.38	0.03



Stellar Parameters For KIC 009846419

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6702^{+160}_{-220}	$4.370^{+0.060}_{-0.180}$	$-0.200^{+0.250}_{-0.300}$	$1.185^{+0.336}_{-0.144}$	$1.209^{+0.168}_{-0.168}$	$1.023^{+0.327}_{-0.488}$
	+2%/-3%	+1%/-4%	+125%/-150%	+28%/-12%	+14%/-14%	+32%/-48%
Source	PHO1	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 009846419-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-20 ± 2	$0.66^{+0.20}_{-0.19}$	3926^{+255}_{-189}	6230^{+1227}_{-787}	$4.555^{+4.380}_{-1.988}$
Alt.	-24 ± 5	$0.62^{+0.21}_{-0.20}$	3917^{+248}_{-181}	6872^{+1754}_{-1064}	$6.517^{+7.185}_{-3.082}$

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 $A_{obs} \gg 1.0$

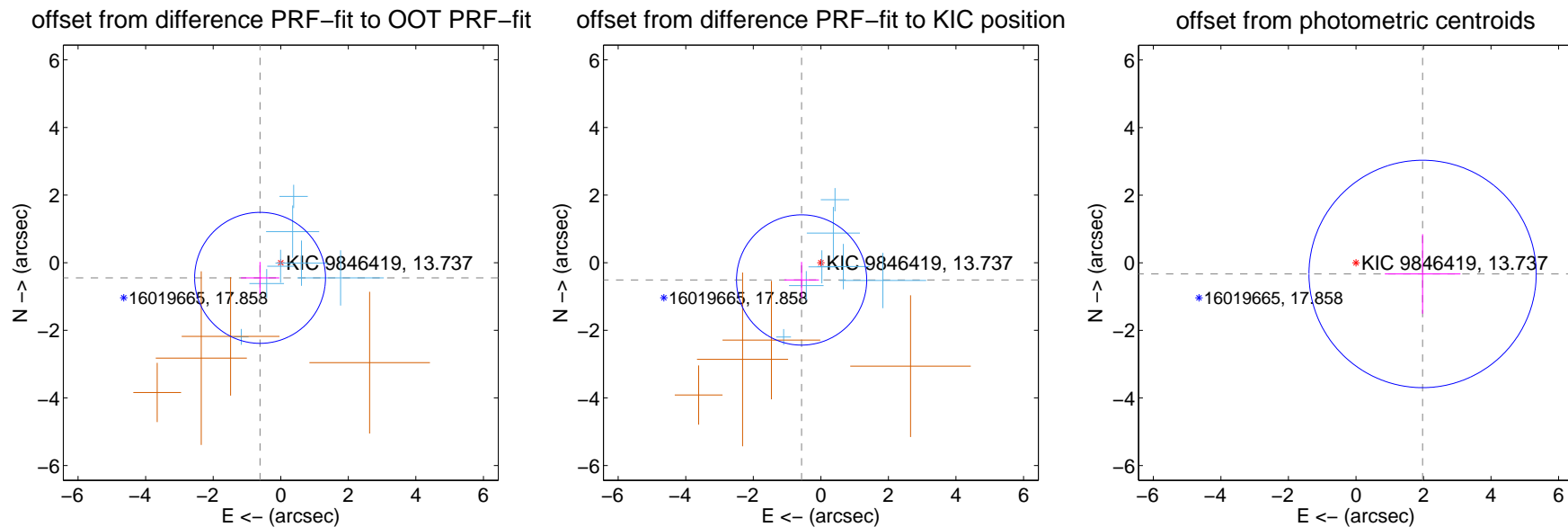
DV Centroid Data

Supplemental centroid analysis for 009846419-01. Kepler magnitude: 13.74. Transit SNR 6.96

There are 7 quarters with good PRF difference image offsets

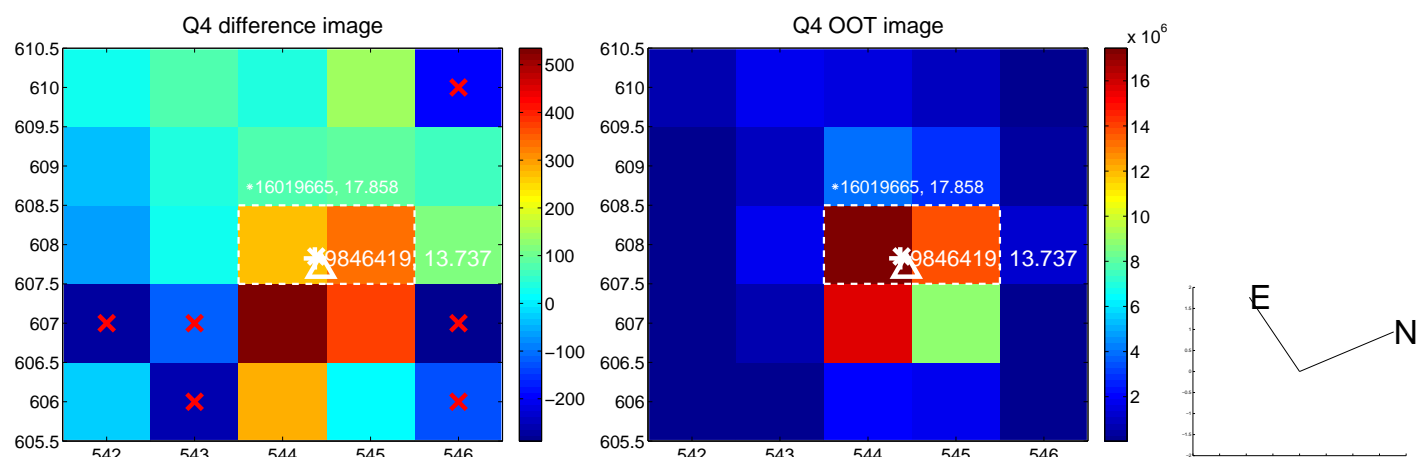
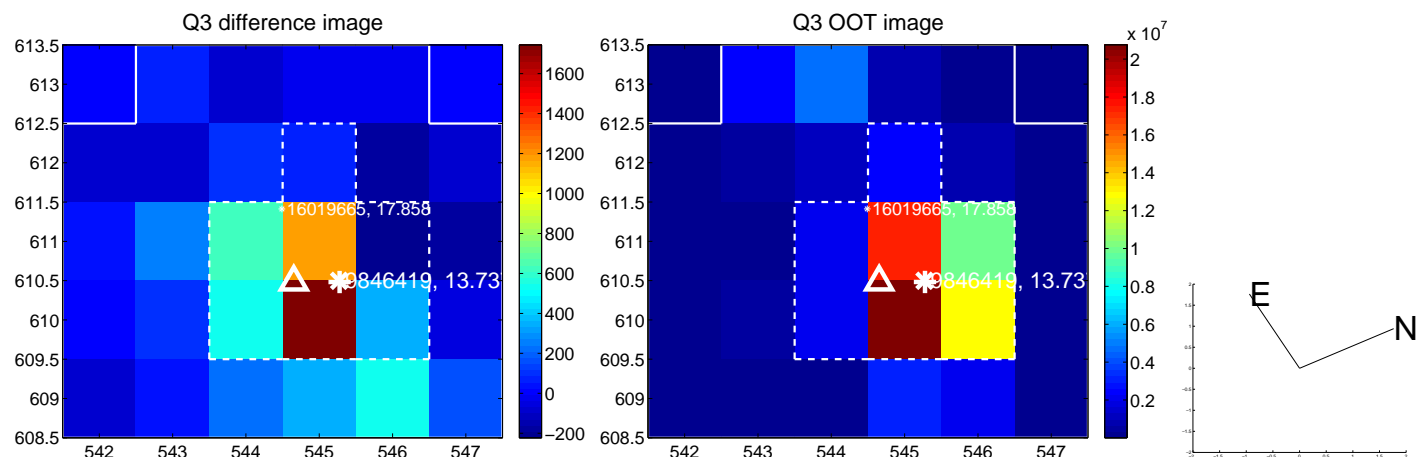
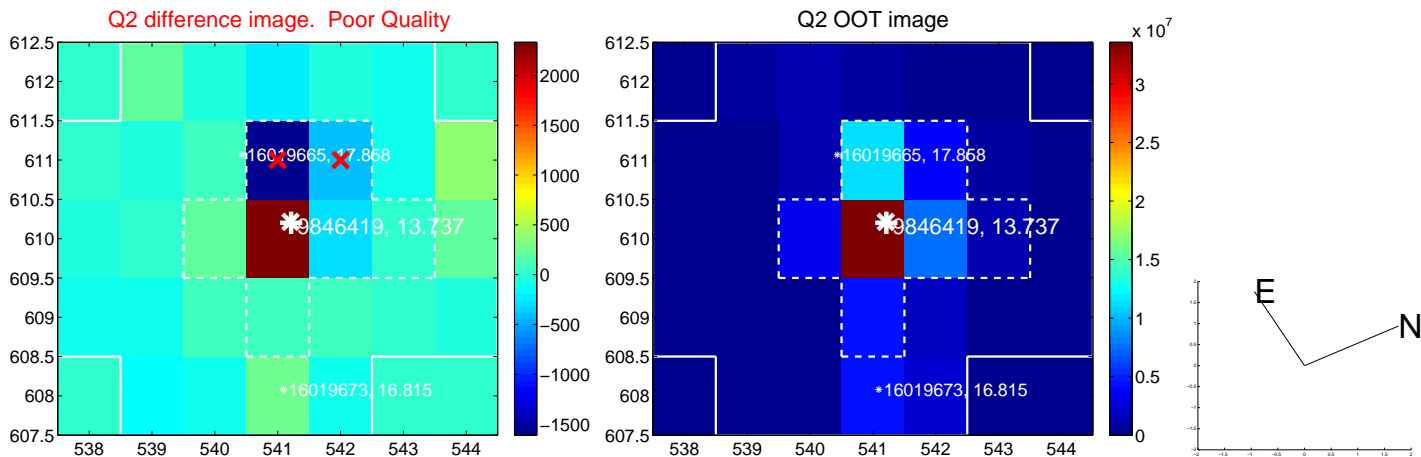
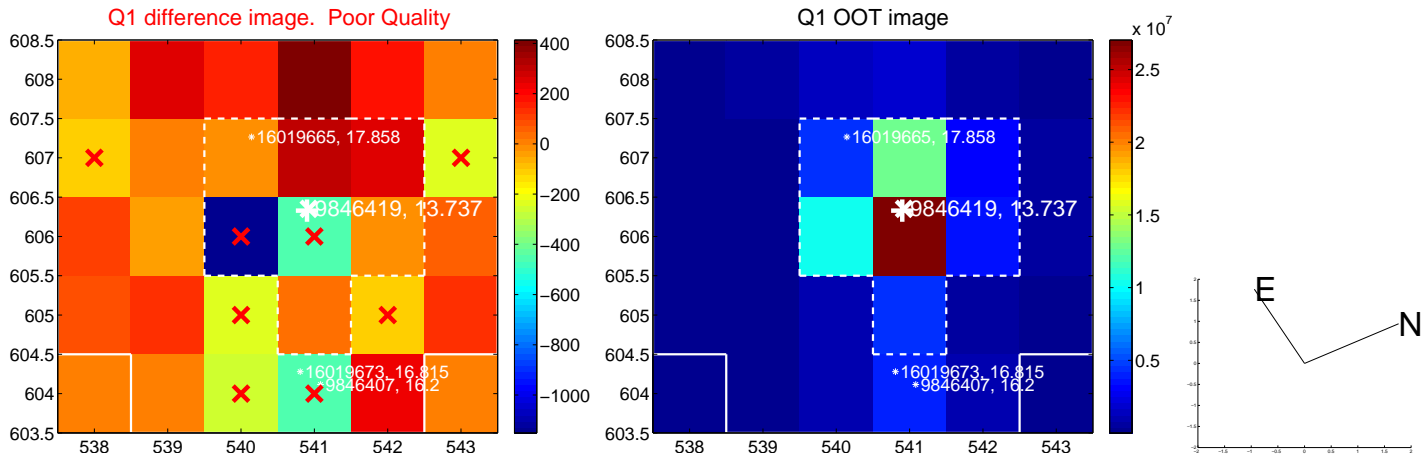
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.759 ± 0.646	1.18	0.613 ± 0.568	-0.448 ± 0.471
PRF-fit source offset from KIC position	0.766 ± 0.642	1.19	0.570 ± 0.514	-0.511 ± 0.534
photometric centroid source offset	2.00 ± 1.12	1.78	-1.97 ± 1.12	-0.33 ± 1.18

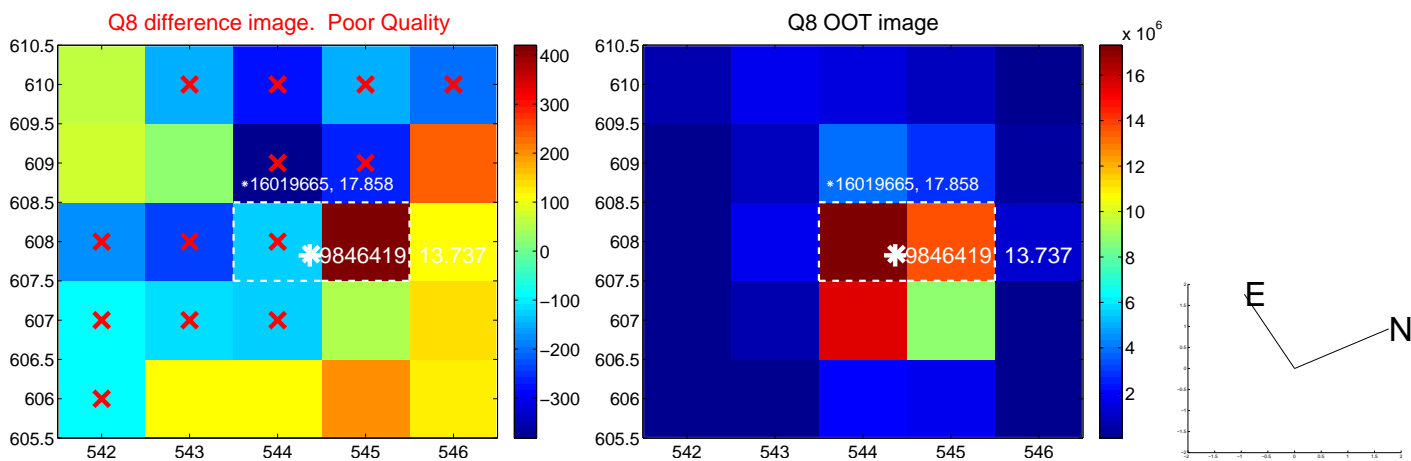
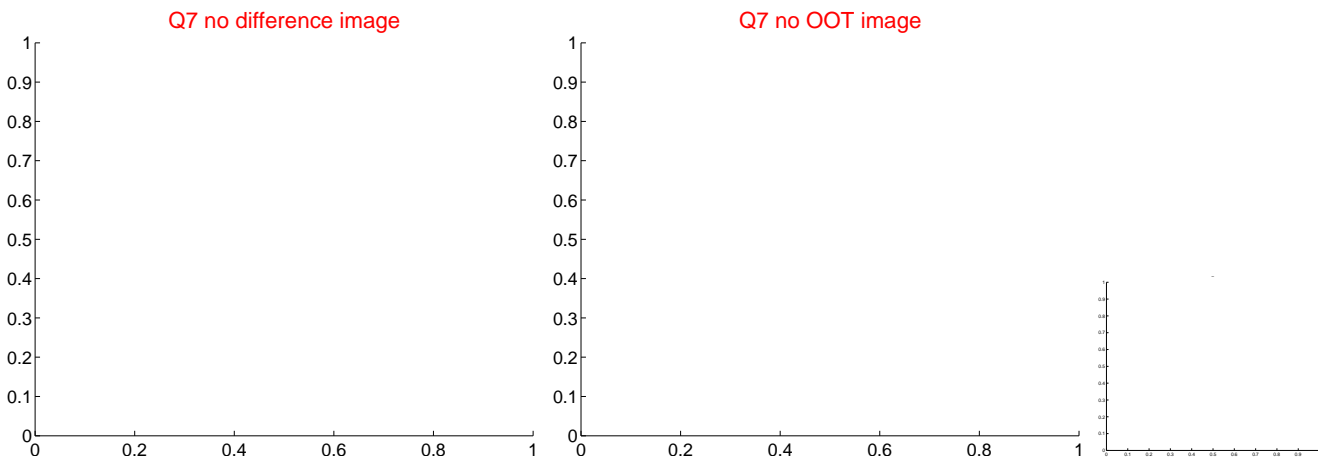
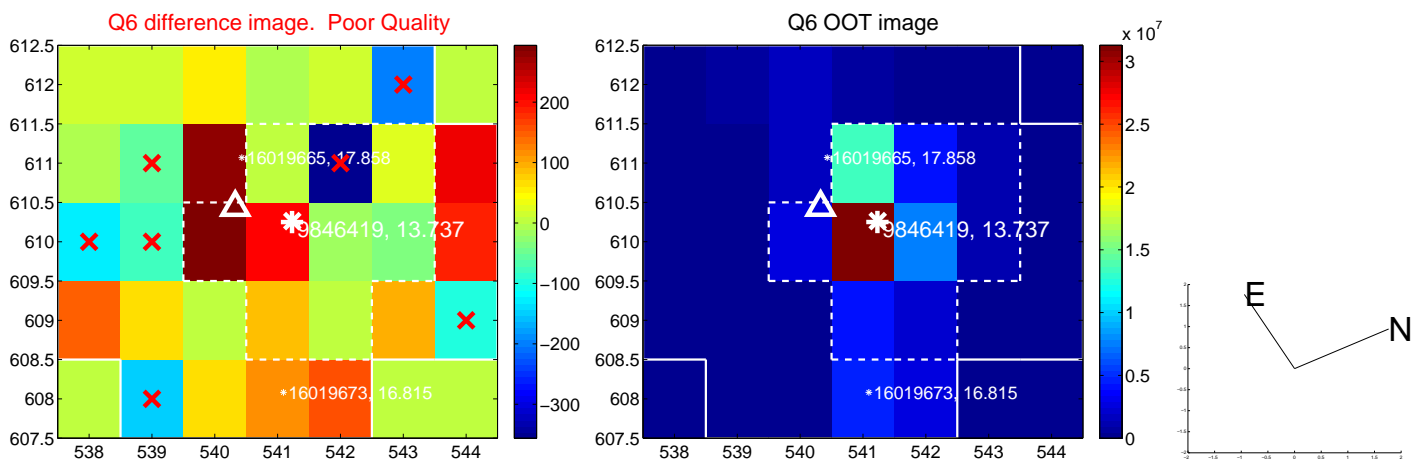
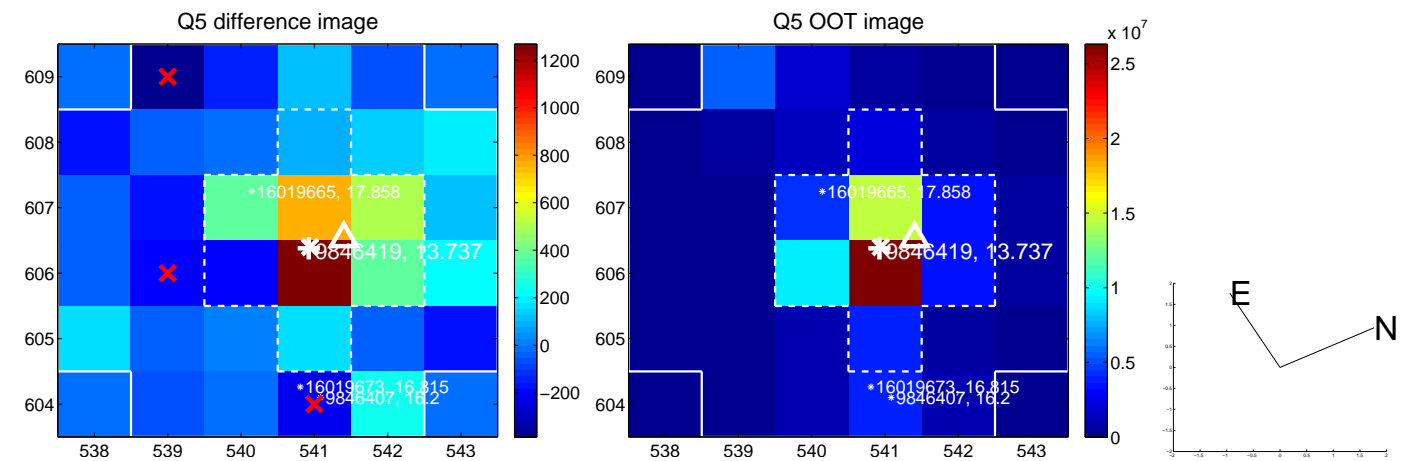


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

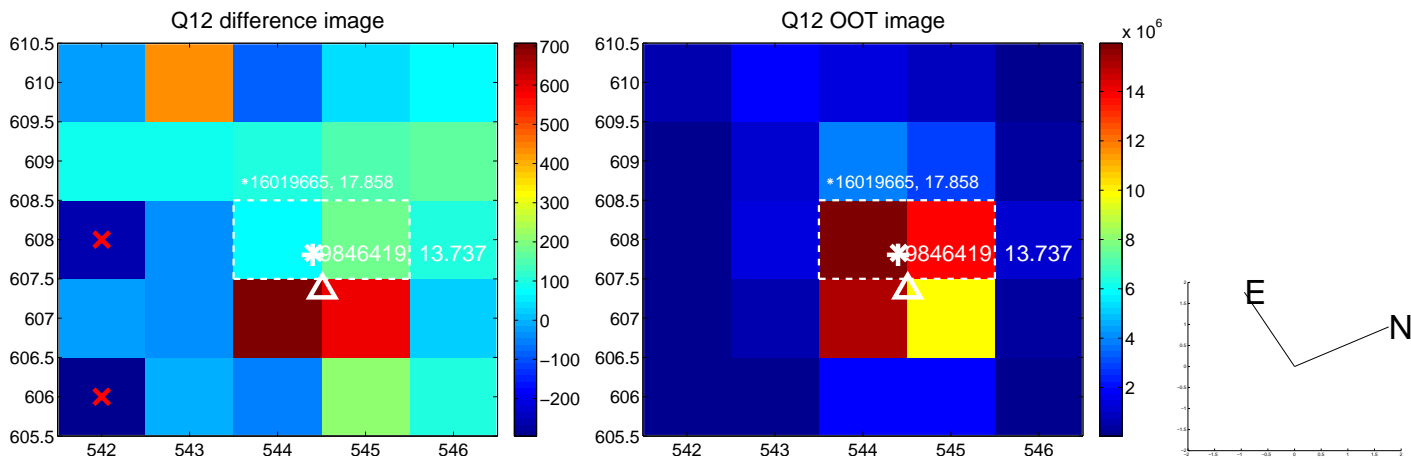
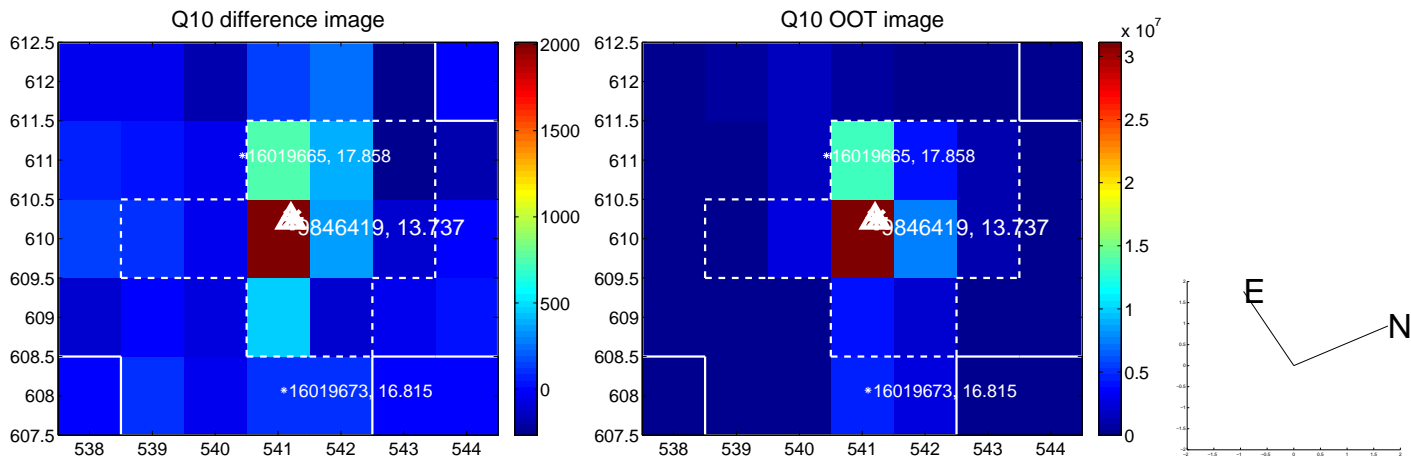
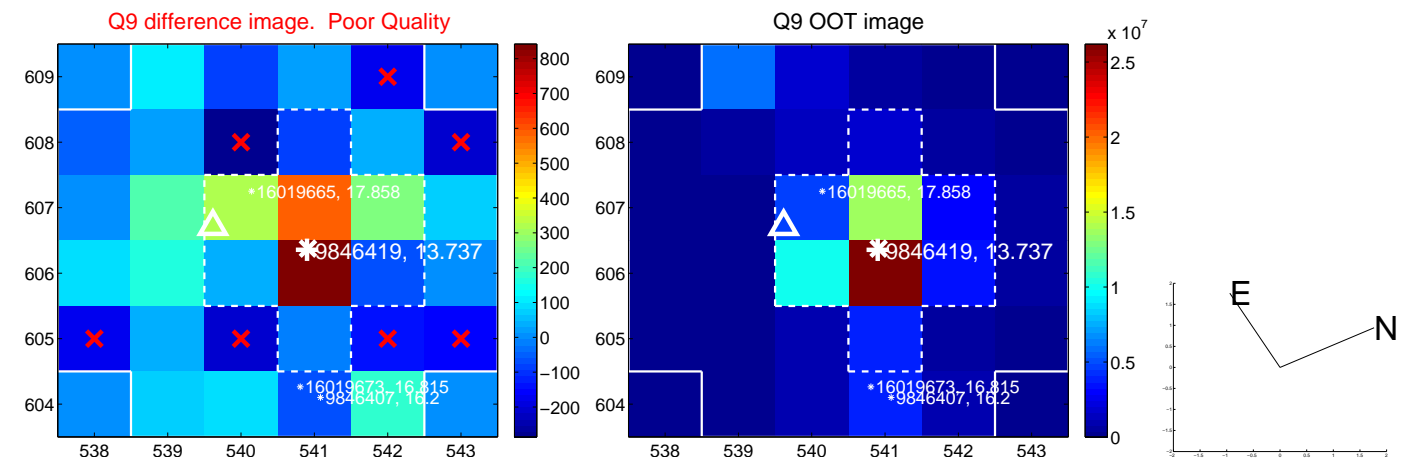
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



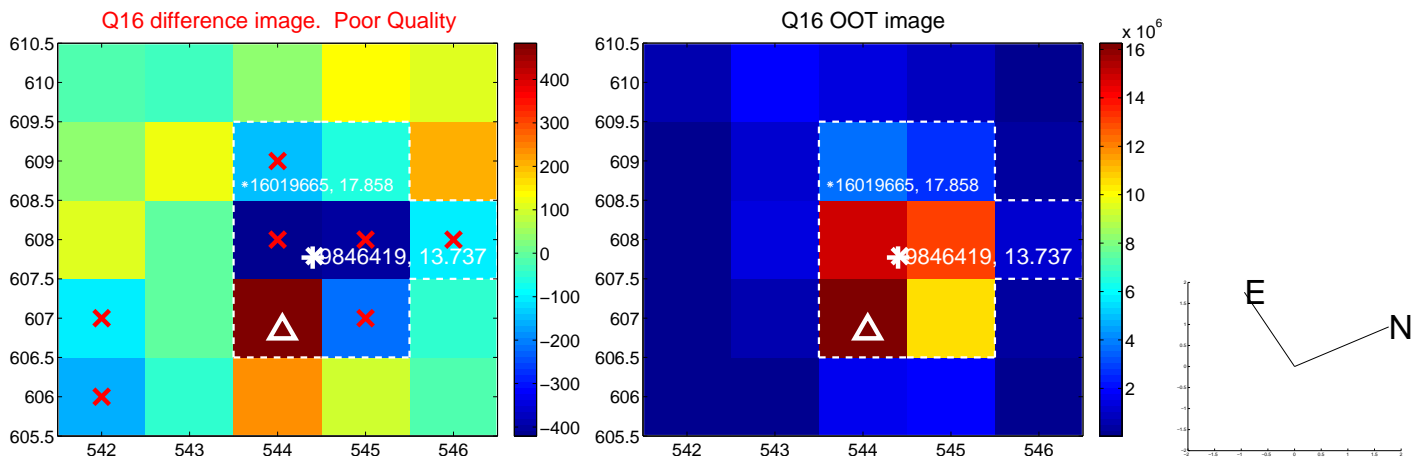
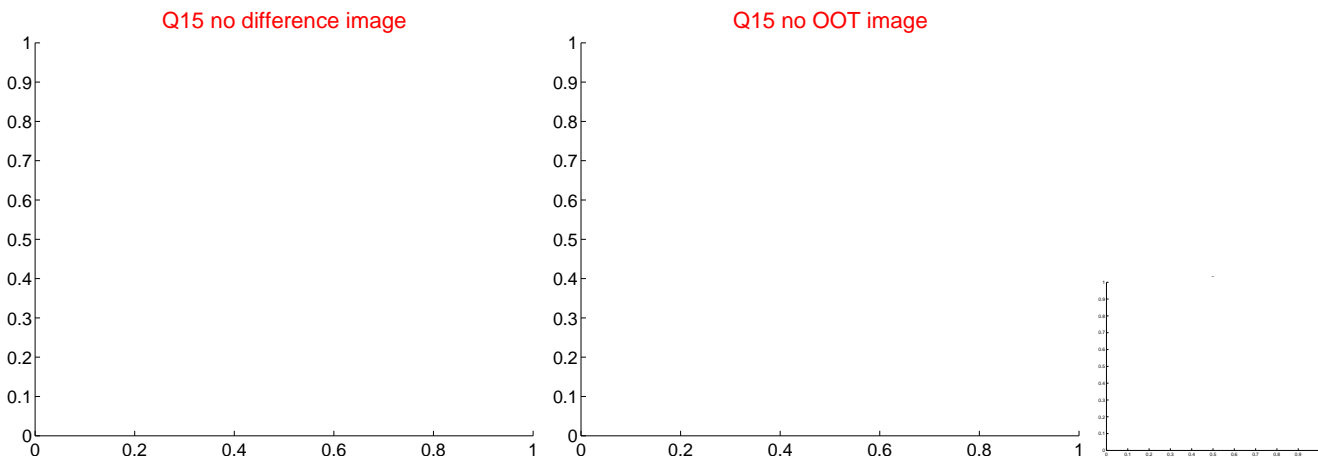
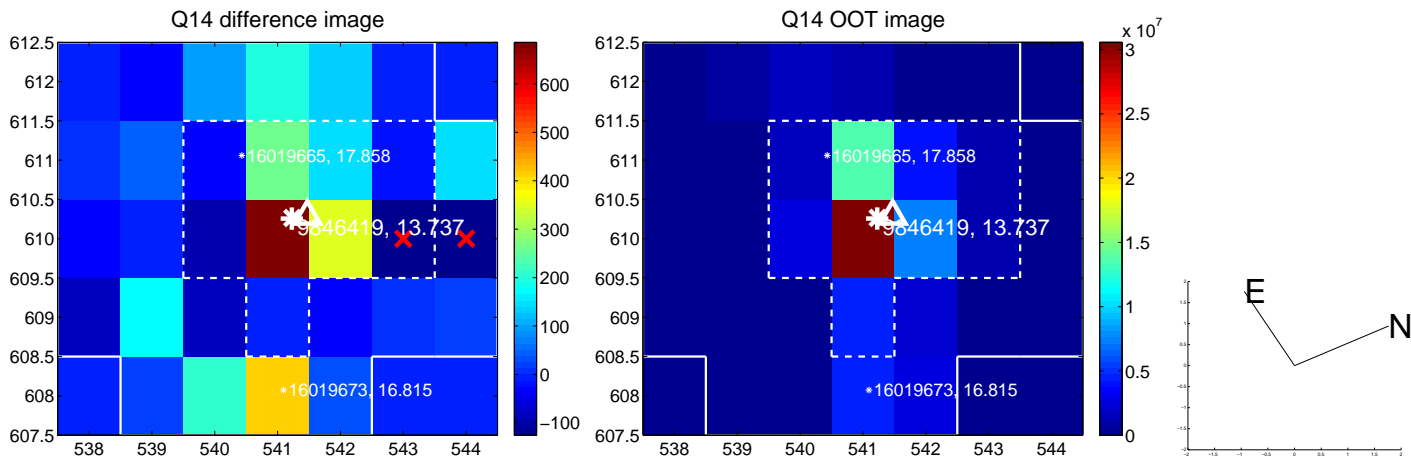
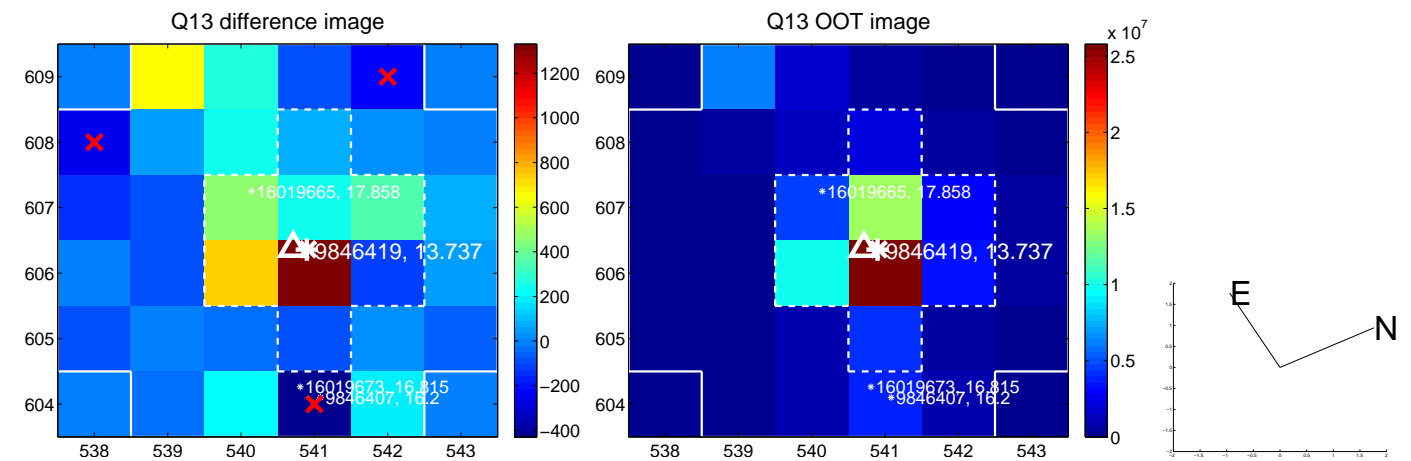
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



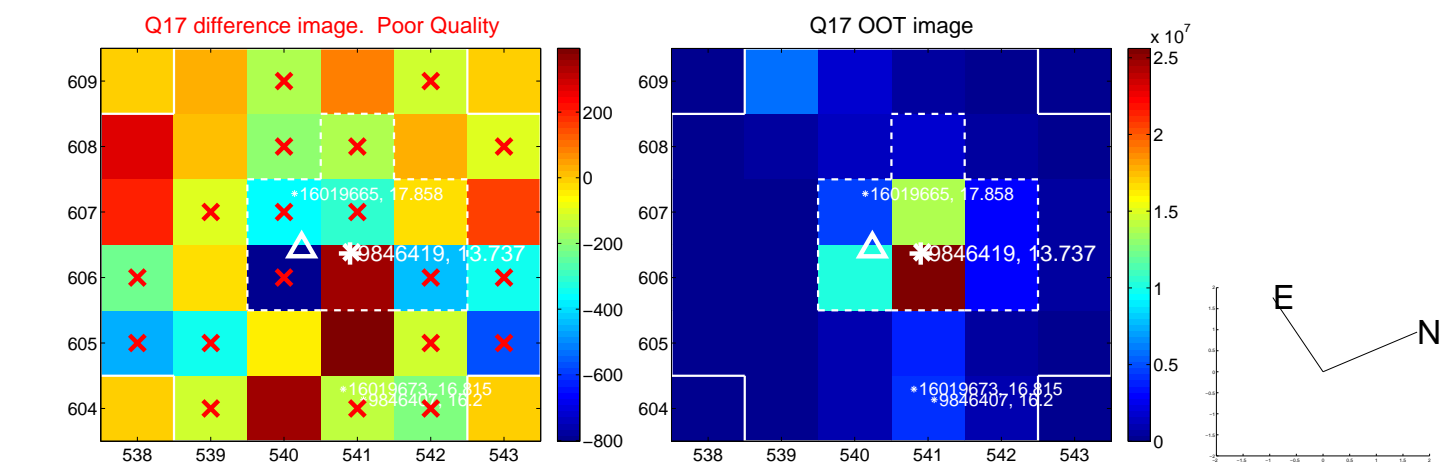
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



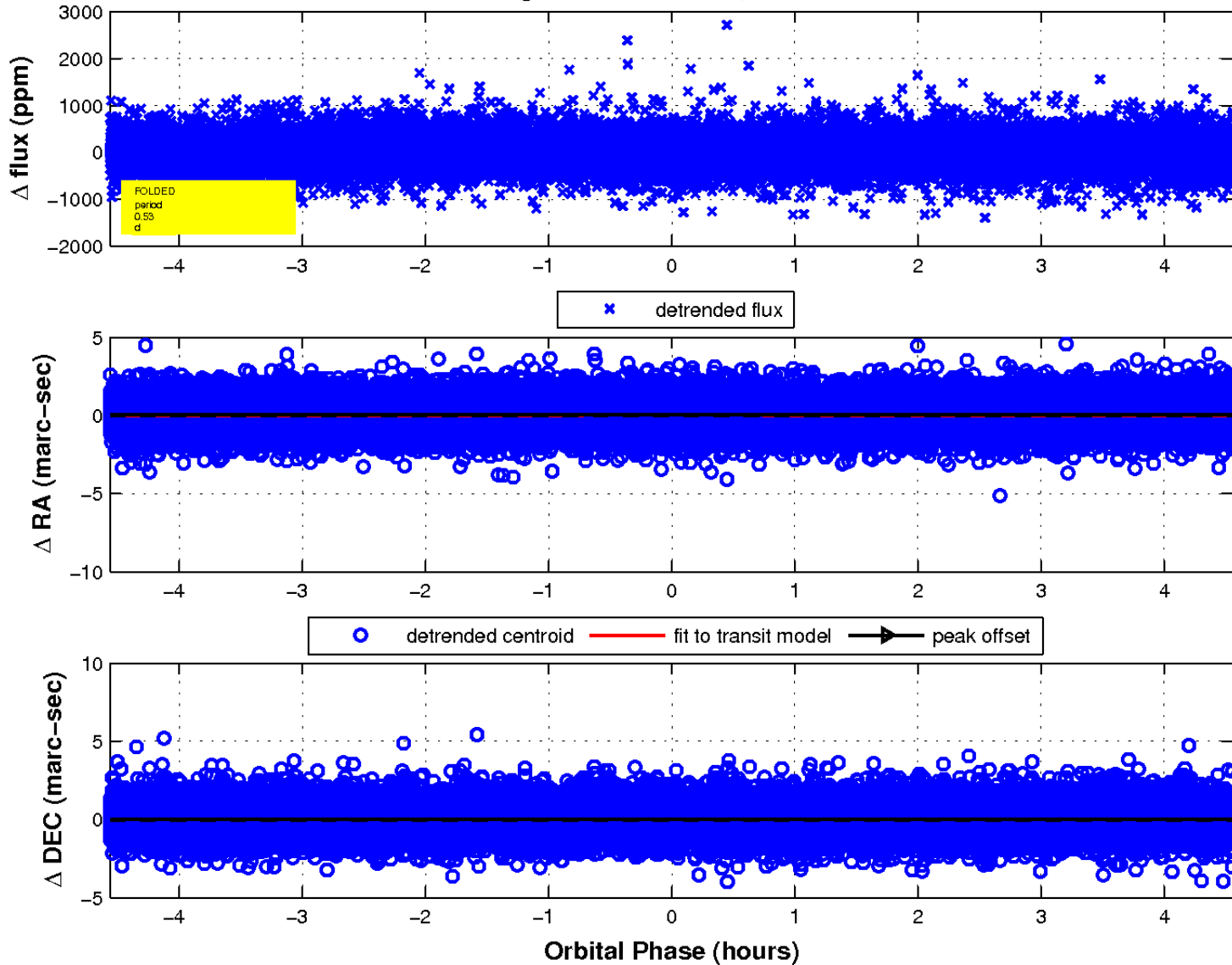
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

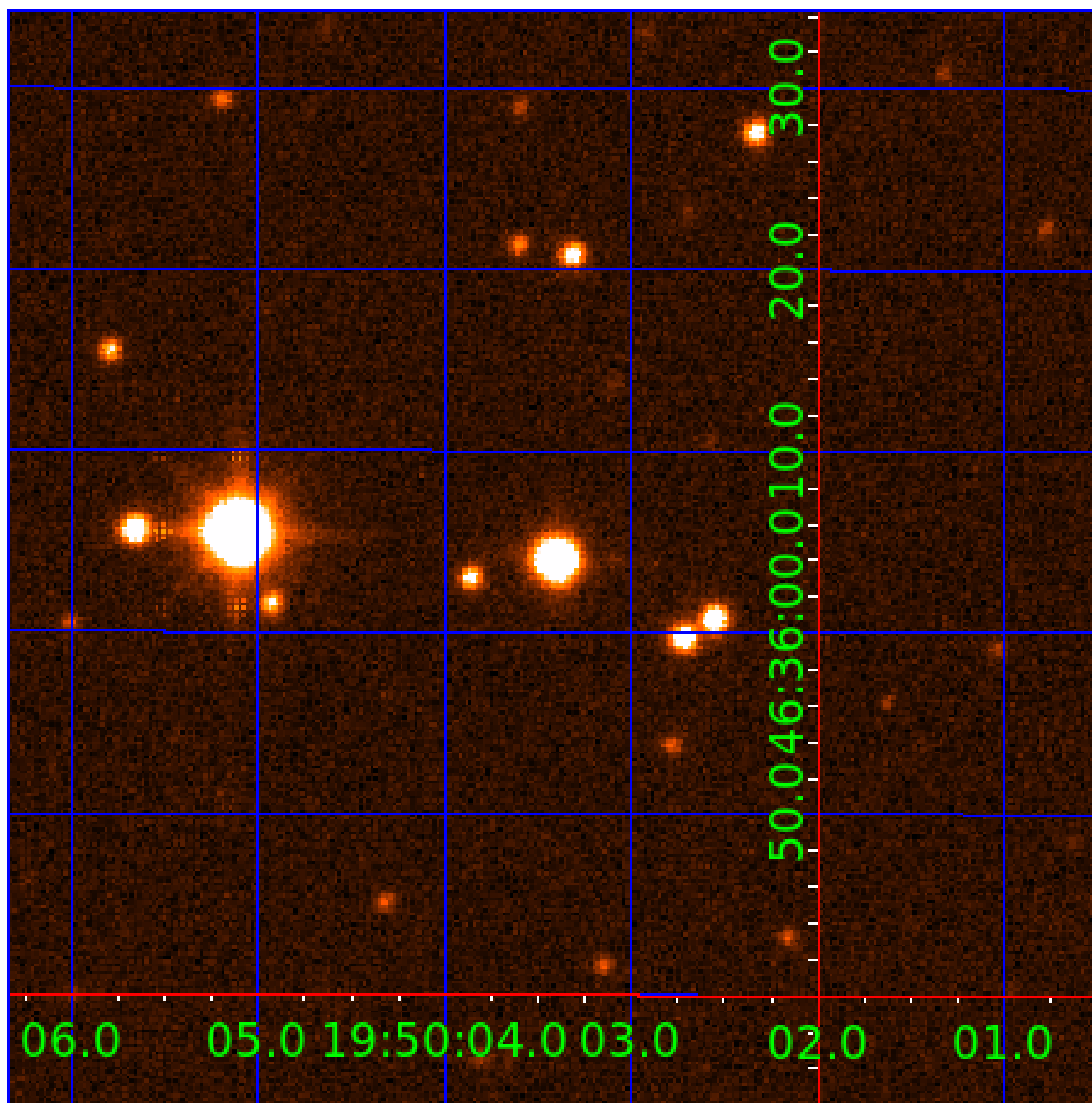


fluxWeightedCentroids, Planet 1 of 2



UKIRT Image

Declination



KIC 009846419

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})
009846419-01	OBS	No	0.530643	131.975498	25.4	1.520	10.2	7.0	1.19	6702	0.64	13649.64
009846419-02	OBS	No	0.530641	131.635867	18.7	3.137	10.4	6.0	1.19	6702	0.53	13649.70

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009846419-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT
009846419-02	OBS	FP	0.00	1	0	0	0	LPP_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.

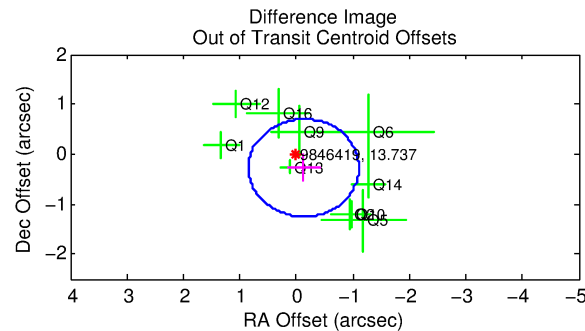
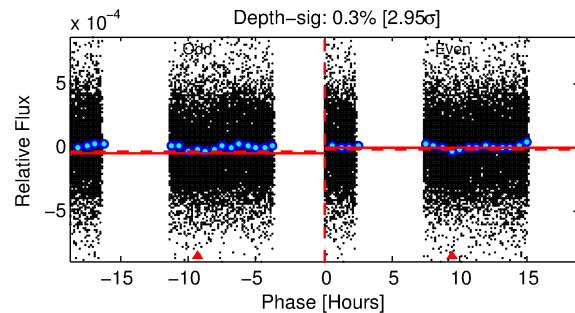
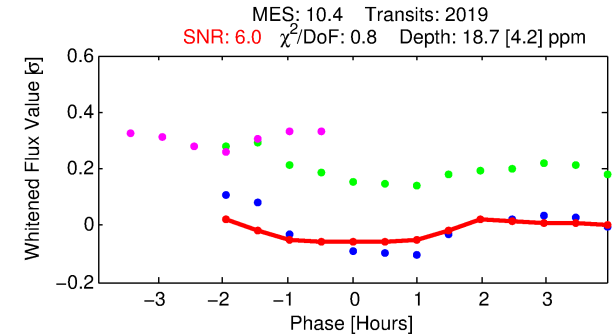
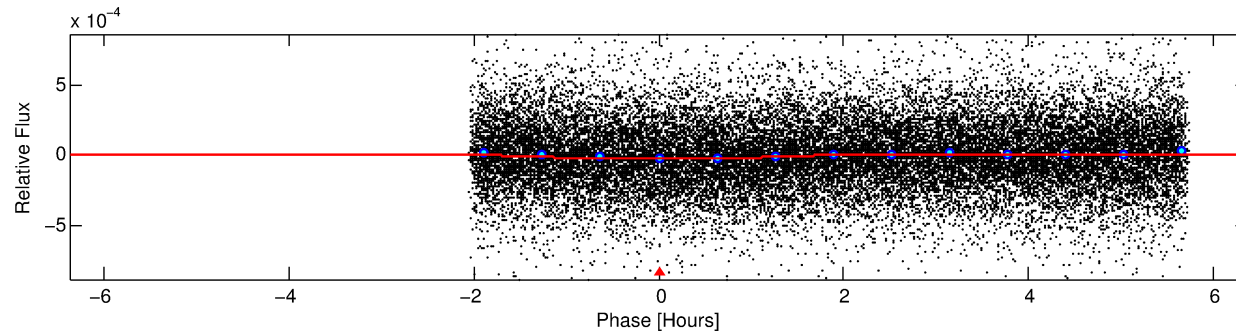
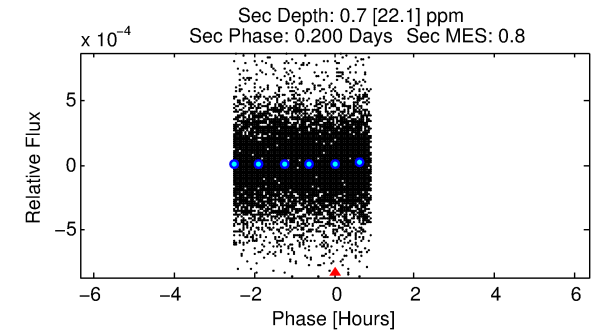
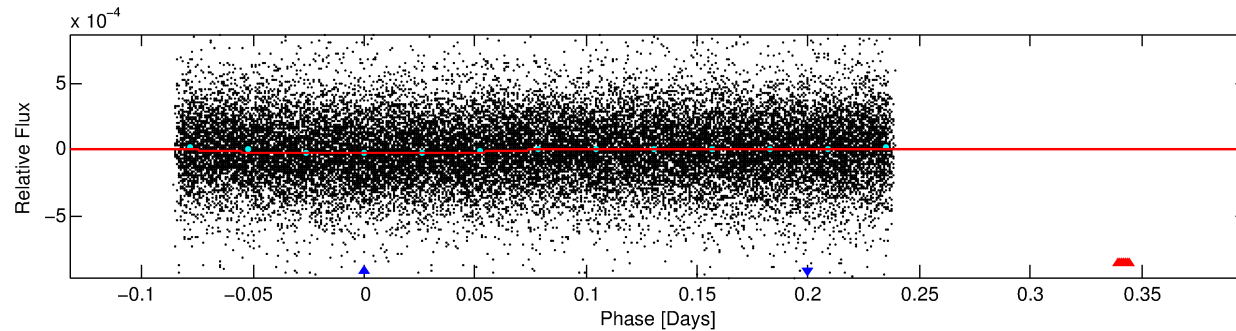
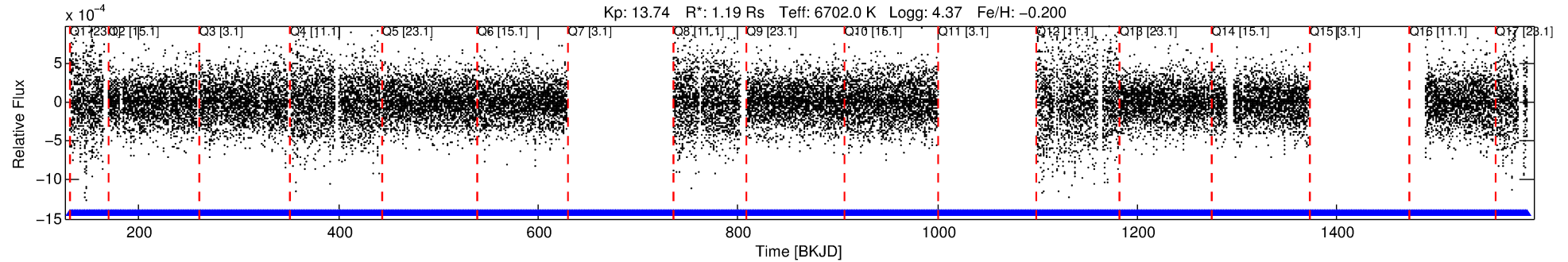
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009846419-02

No Significant Match Found

DV One-Page Summary

KIC: 9846419 Candidate: 2 of 2 Period: 0.531 d



DV Fit Results:

Period = 0.53064 [0.00002] d
Epoch = 131.6359 [0.0045] BKJD
Rp/R* = 0.0041 [0.0026]
a/R* = 1.34 [2.03]
b = 0.51 [4.98]
Seff = 13649.70 [4908.59]
Teq = 2756 [248] K
Rp = 0.53 [0.36] Re
a = 0.0136 [0.0032] AU
Ag = 0.26 [8.02] [-0.09σ]
Teffp = 3052 [23253] K [0.01σ]

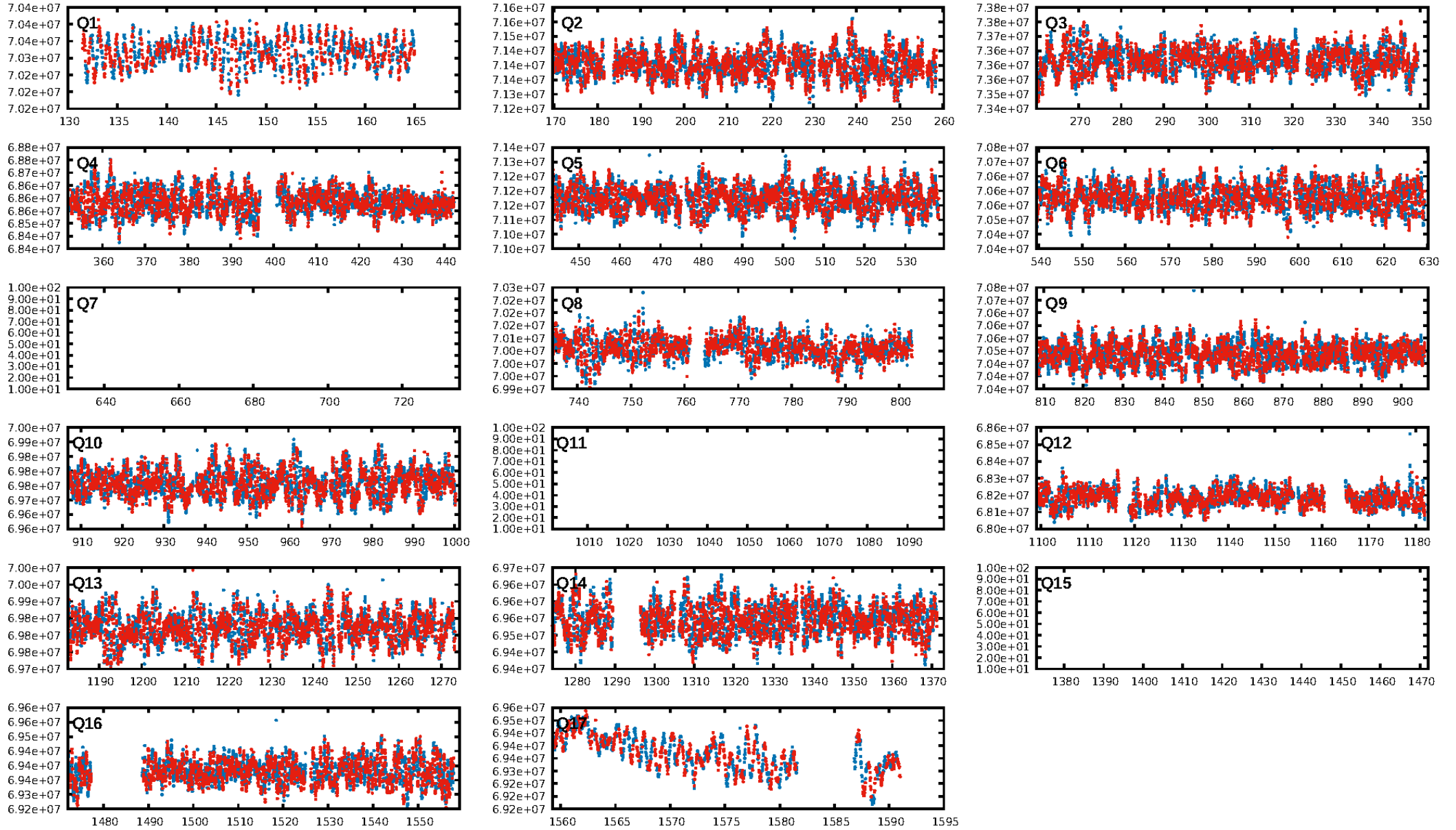
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.62e-23
RollingBand-fgt: 1.00 [1906/1906]
GhostDiagnostic-chr: 2.62
Centroid-sig: 6.3%
Centroid-so: 1.673 arcsec [1.54σ]
OotOffset-rm: 0.304 arcsec [0.93σ]
OotOffset-st: 4/0/2/4 [10]
KicOffset-rm: 0.369 arcsec [1.08σ]
KicOffset-st: 4/0/2/4 [10]
DiffImageQuality-fgm: 0.90 [9/10]
DiffImageOverlap-fno: 0.00 [0/14]

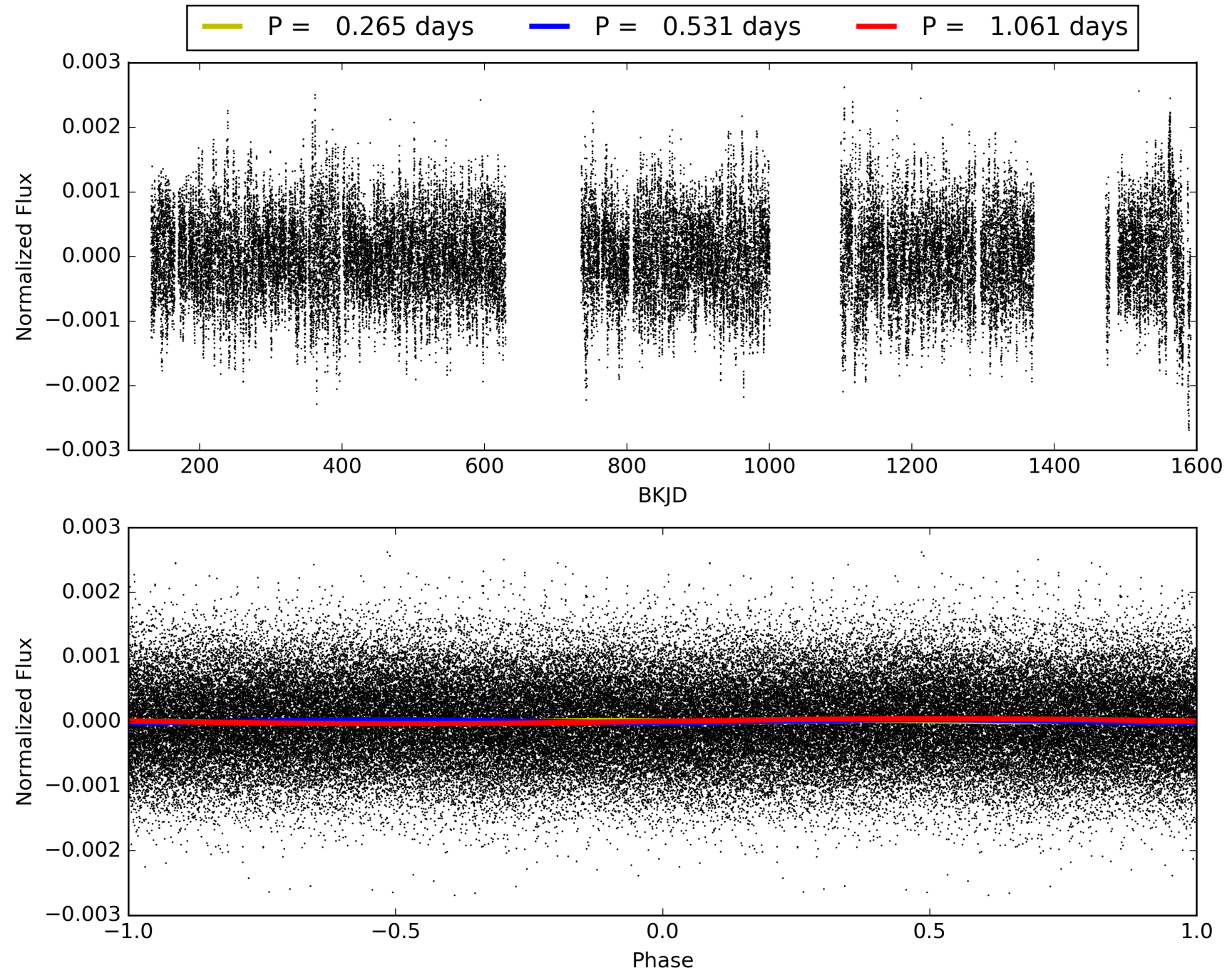
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:46:29 Z

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

TCE 009846419-02, PDC Light Curves

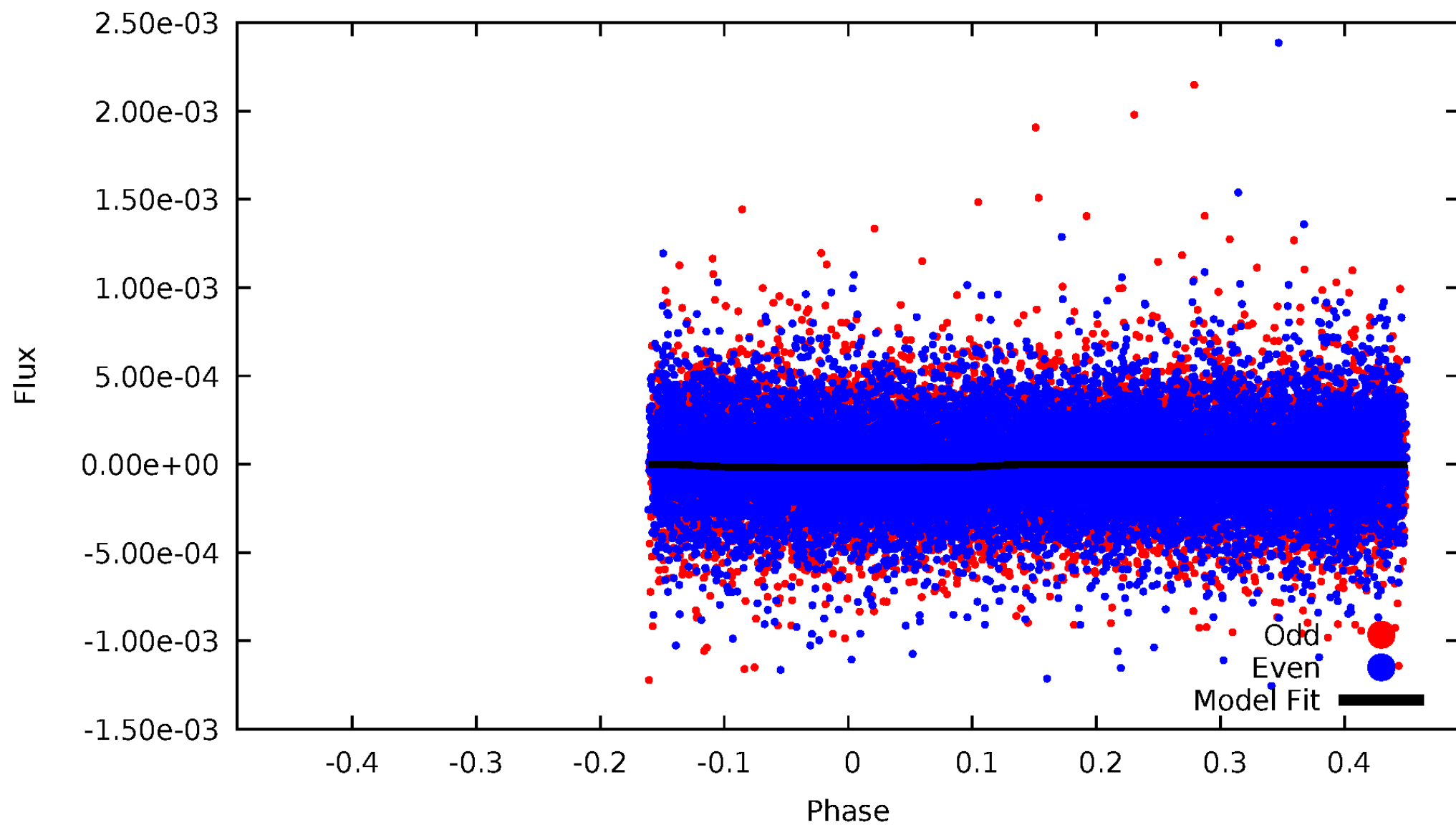


TCE 009846419-02



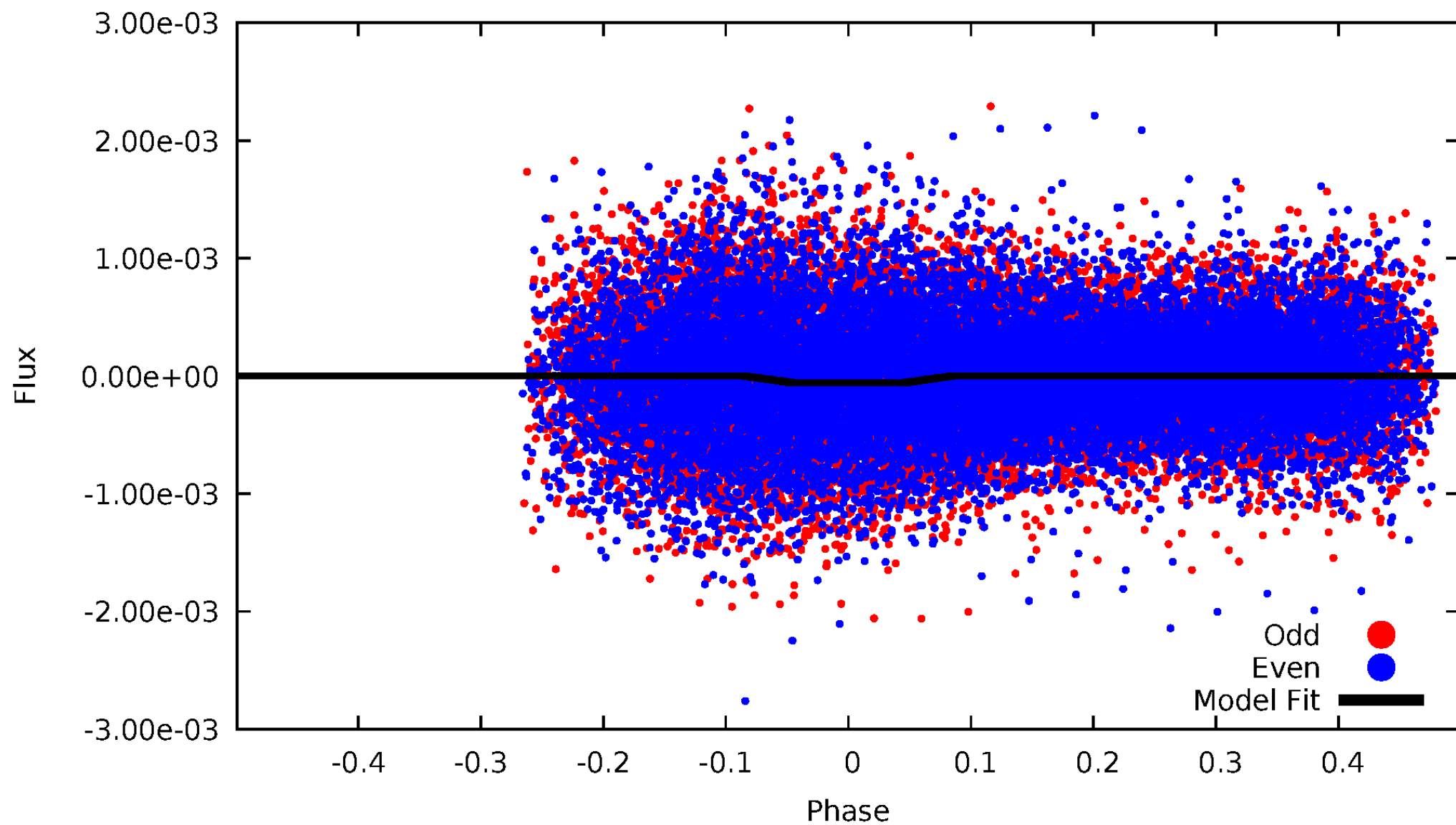
DV Odd/Even

TCE 009846419-02



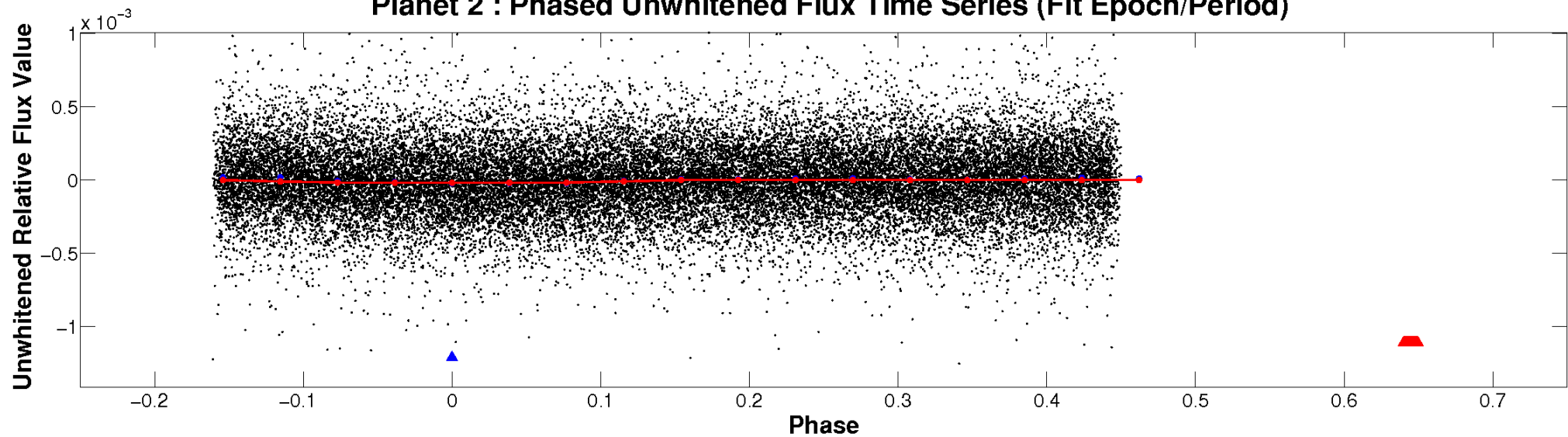
ALT Odd/Even

TCE 009846419-02

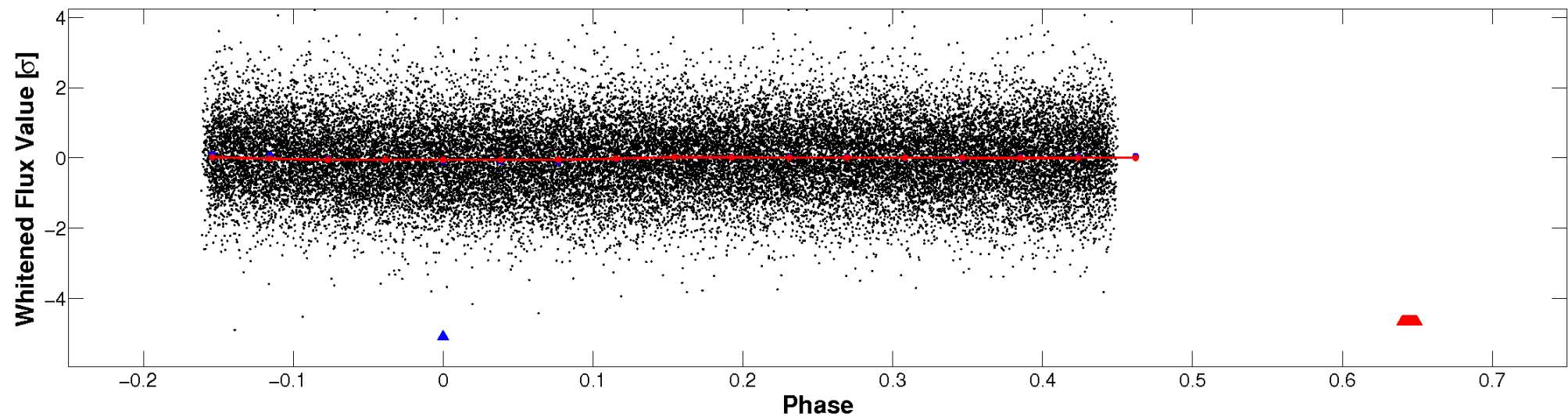


Non-Whitened Vs. Whitened Light Curve

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

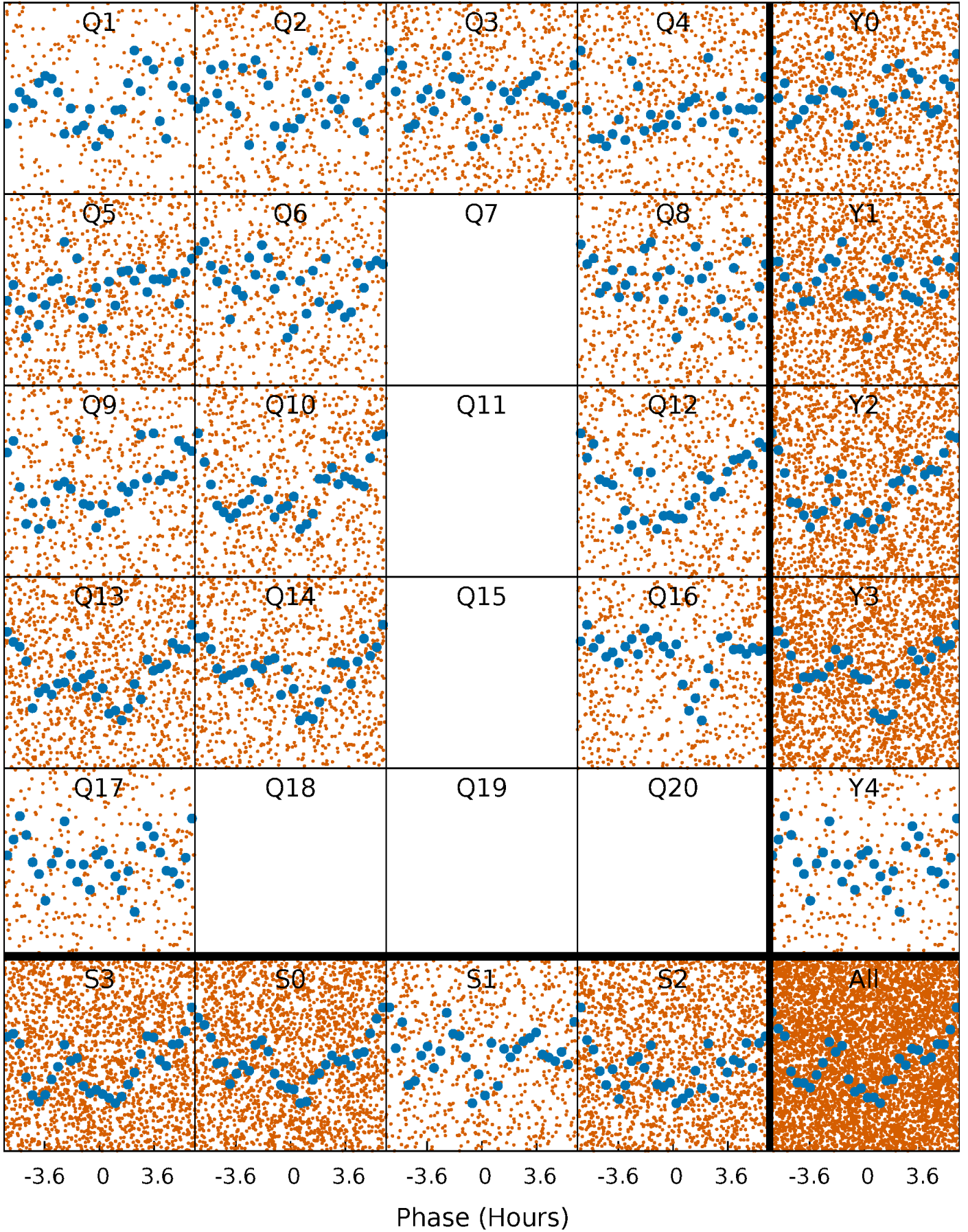


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



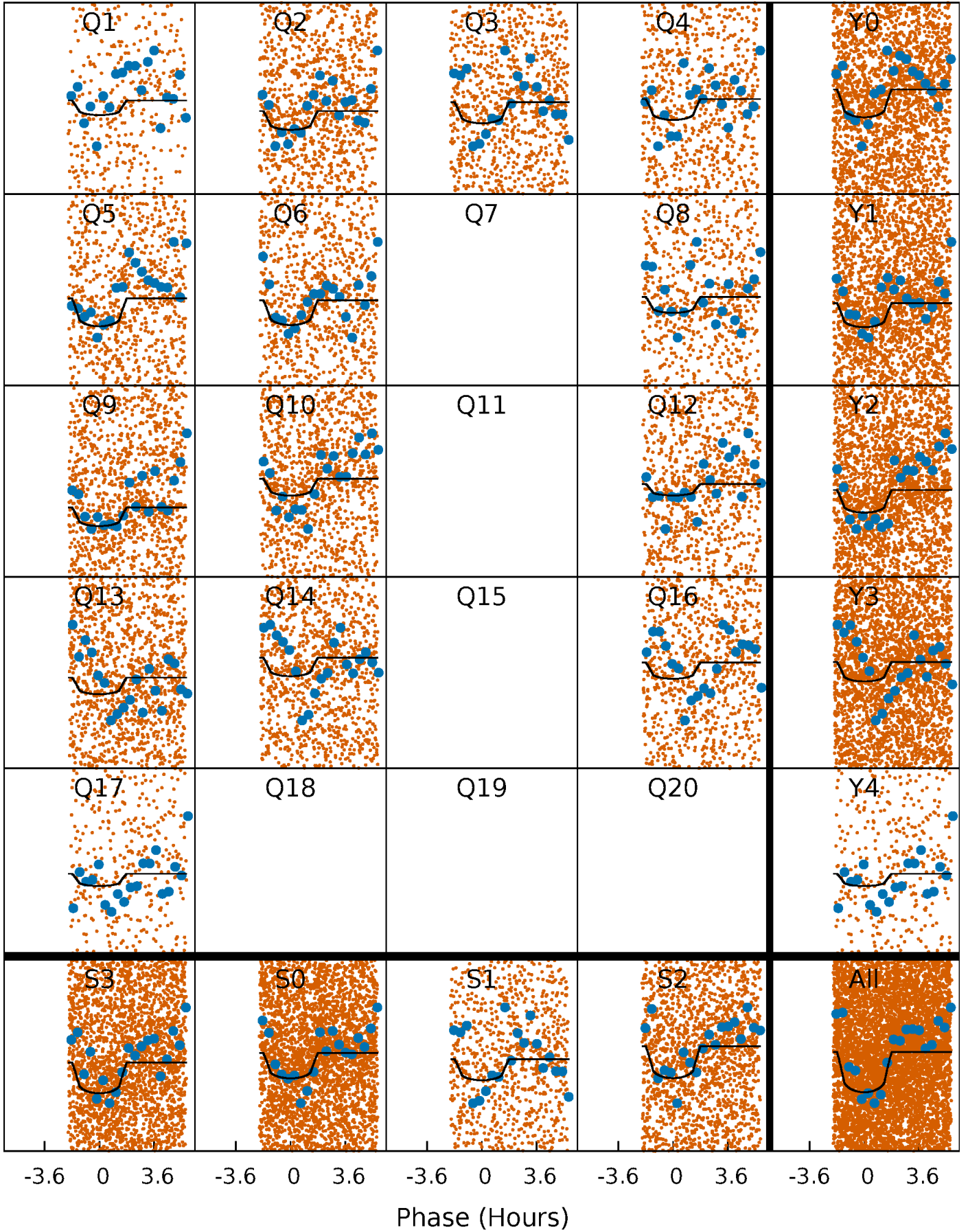
PDC Quarter-Phased Transit Curves

TCE 009846419-02 P= 0.530641 Days $T_0=131.635867$ (BKJD)



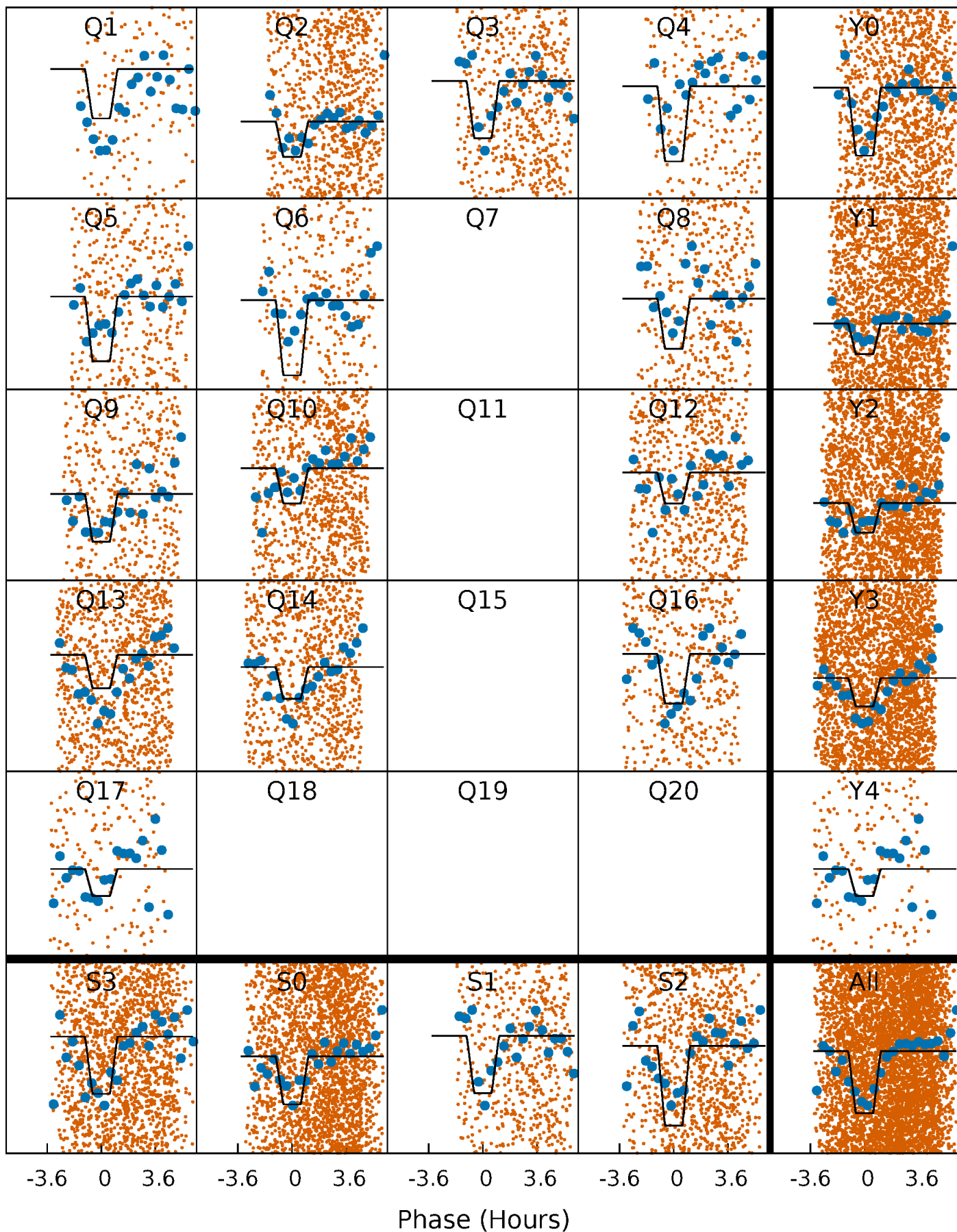
DV Quarter-Phased Transit Curves

TCE 009846419-02 $P = 0.530641$ Days $T_0 = 131.635867$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

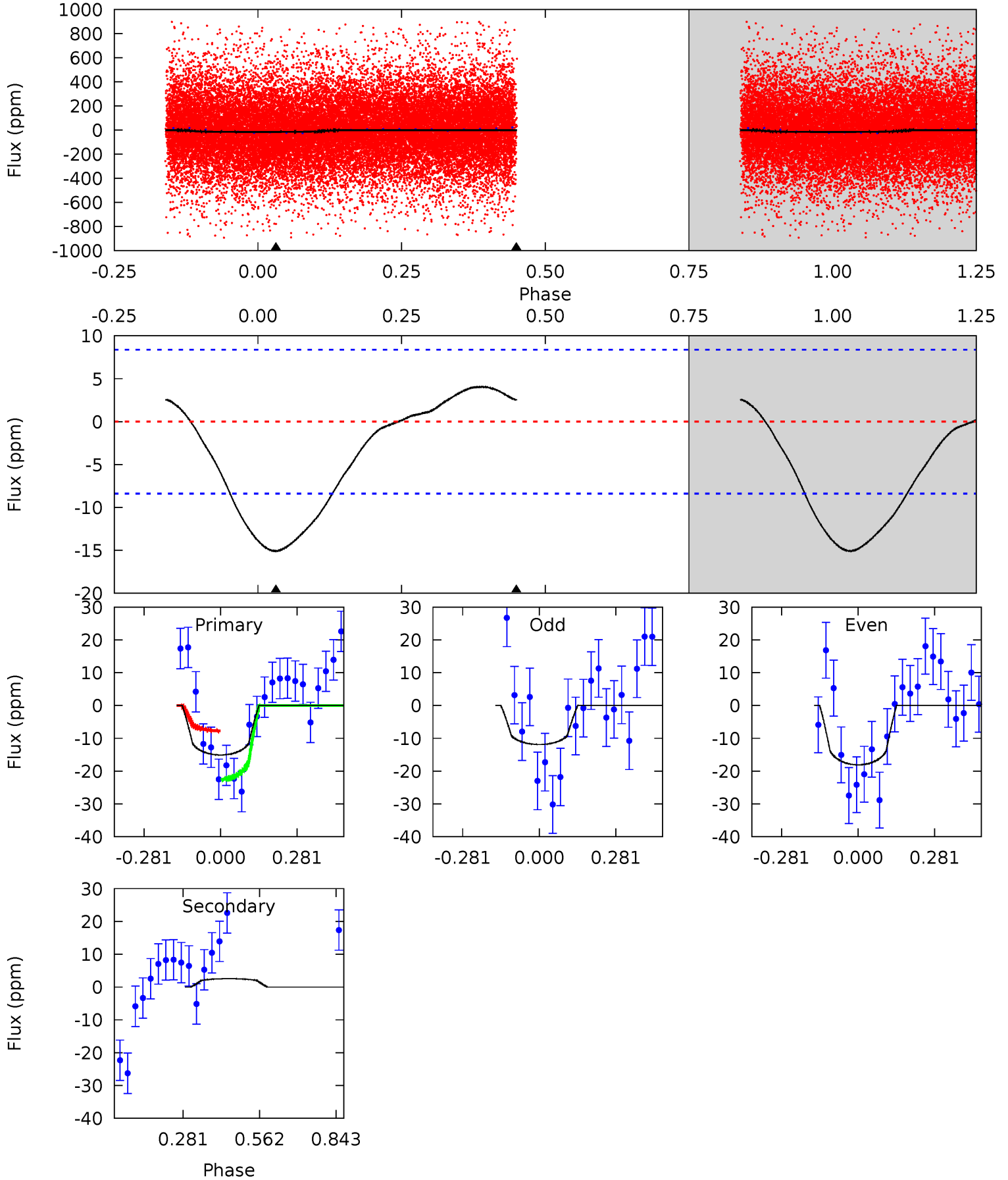
TCE 009846419-02 P= 0.530671 Days $T_0=131.614121$ (BKJD)



DV Model-Shift Uniqueness Test

009846419-02, P = 0.530641 Days, E = 131.105226 Days

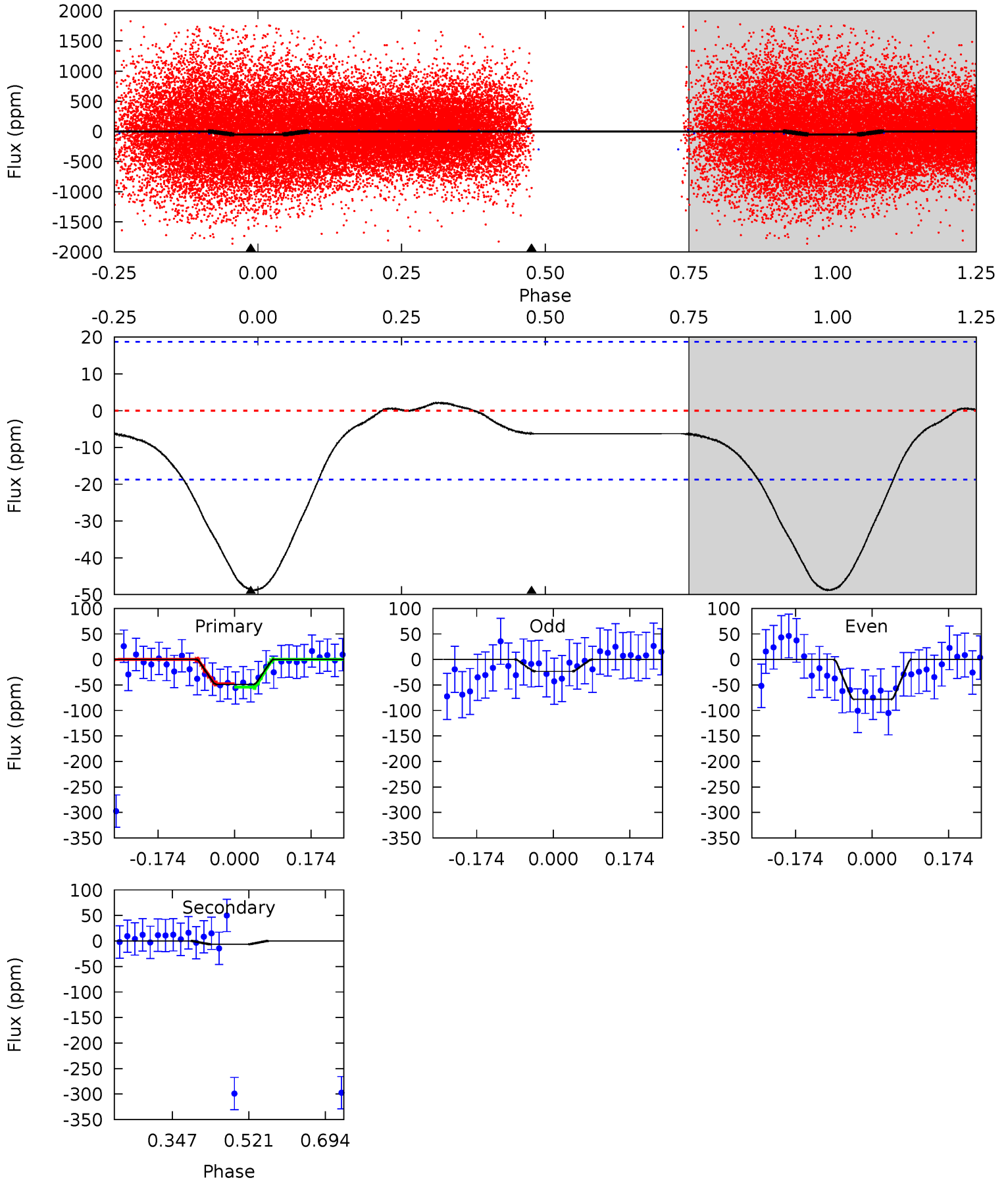
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.82	-1.32	0	0	4.34	1.08	0.46	7.82	7.82	-1.32	-1.32	1.61	0.84	0.21	3.80



Alt Model-Shift Uniqueness Test

009846419-02, P = 0.530671 Days, E = 131.083450 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.6	1.51	0	0	4.45	1.36	0.69	11.6	11.6	1.51	1.51	5.92	0.92	0.04	0.63



Stellar Parameters For KIC 009846419

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6702^{+160}_{-220}	$4.370^{+0.060}_{-0.180}$	$-0.200^{+0.250}_{-0.300}$	$1.185^{+0.336}_{-0.144}$	$1.209^{+0.168}_{-0.168}$	$1.023^{+0.327}_{-0.488}$
	+2%/-3%	+1%/-4%	+125%/-150%	+28%/-12%	+14%/-14%	+32%/-48%
Source	PHO1	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 009846419-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	3 ± 2	$0.57^{+0.33}_{-0.30}$	3916^{+257}_{-184}	-4489^{+700}_{-1709}	$-0.639^{+0.568}_{-3.148}$
Alt.	-6 ± 4	$1.01^{+0.38}_{-0.34}$	3906^{+235}_{-196}	3563^{+1164}_{-6805}	$0.566^{+1.007}_{-0.404}$

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 $A_{obs} \gg 1.0$

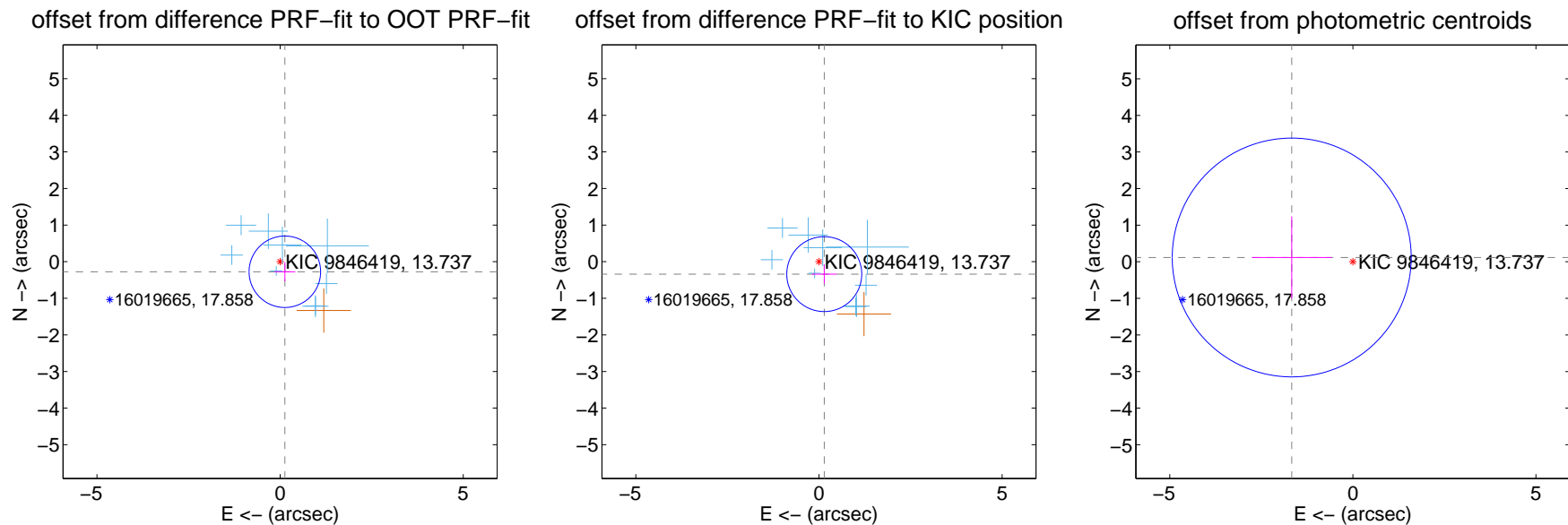
DV Centroid Data

Supplemental centroid analysis for 009846419-02. Kepler magnitude: 13.74. Transit SNR 5.98

There are 9 quarters with good PRF difference image offsets

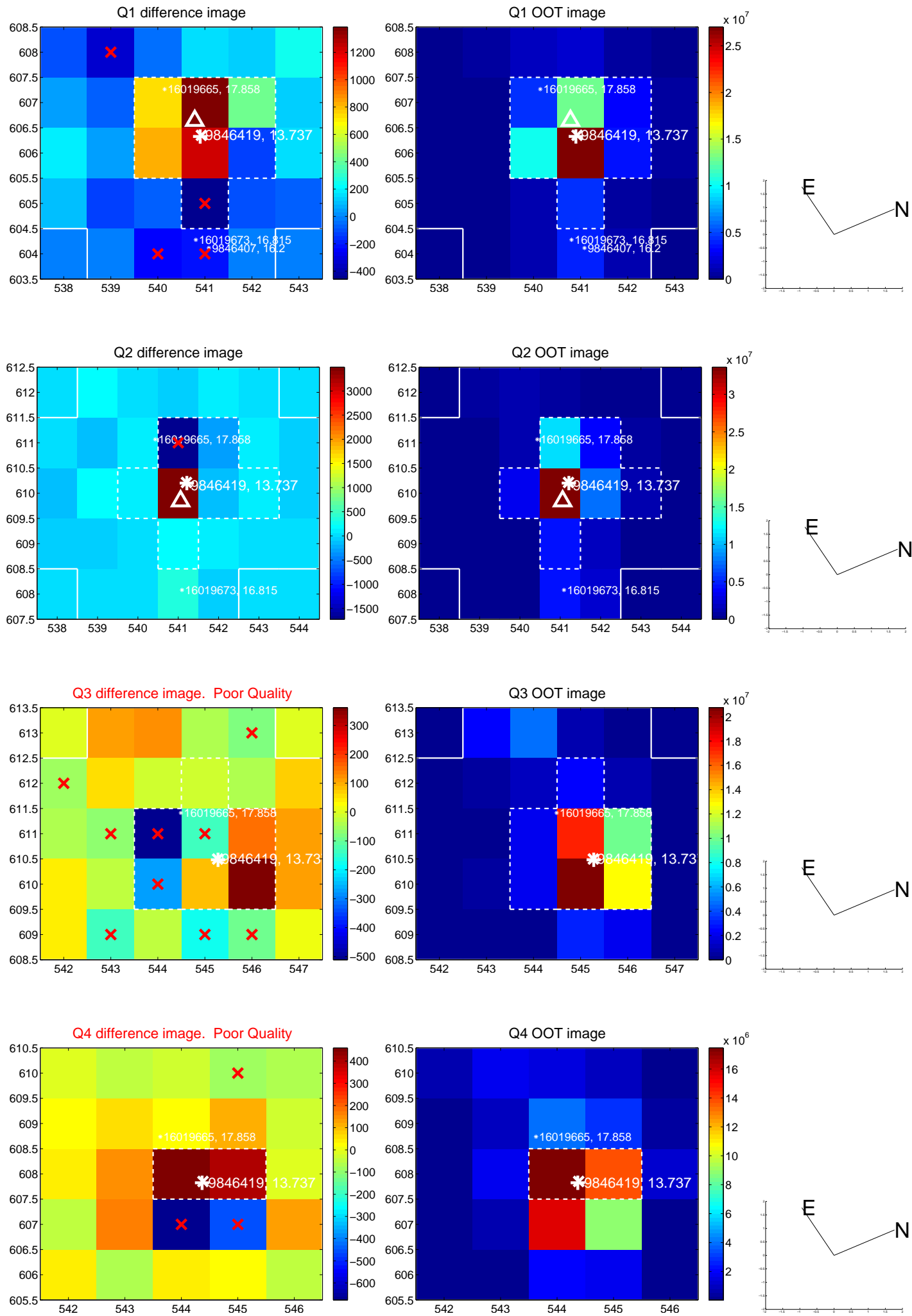
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.304 ± 0.325	0.93	-0.129 ± 0.283	-0.275 ± 0.263
PRF-fit source offset from KIC position	0.369 ± 0.341	1.08	-0.144 ± 0.337	-0.339 ± 0.260
photometric centroid source offset	1.67 ± 1.09	1.54	1.67 ± 1.09	0.12 ± 1.12

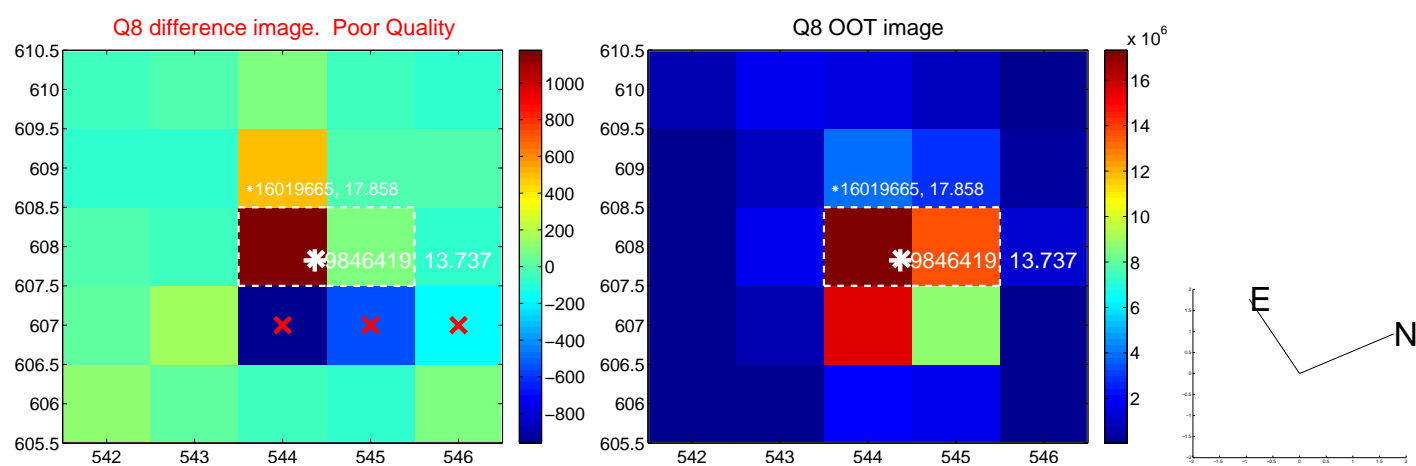
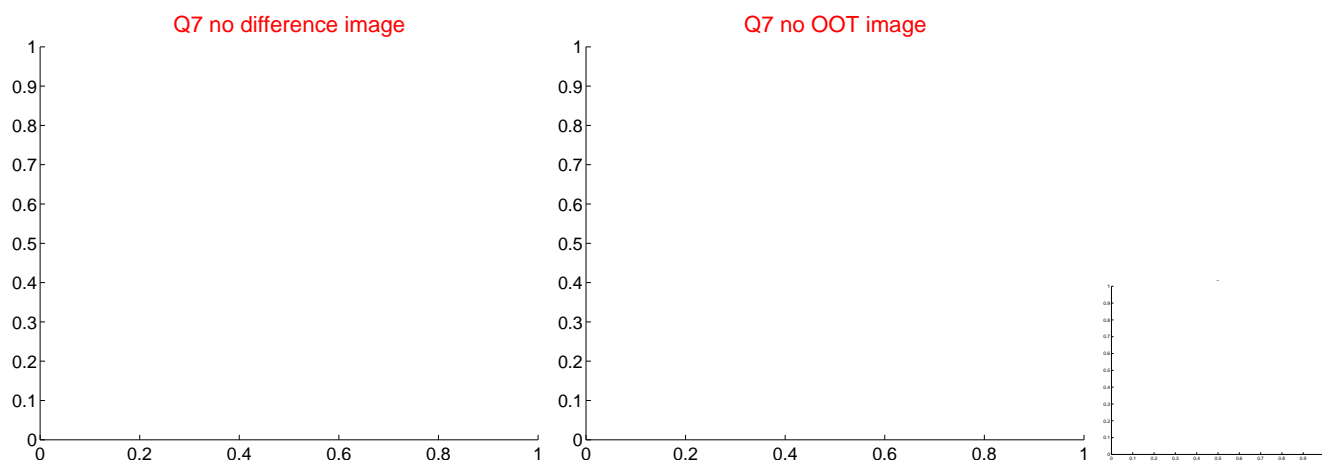
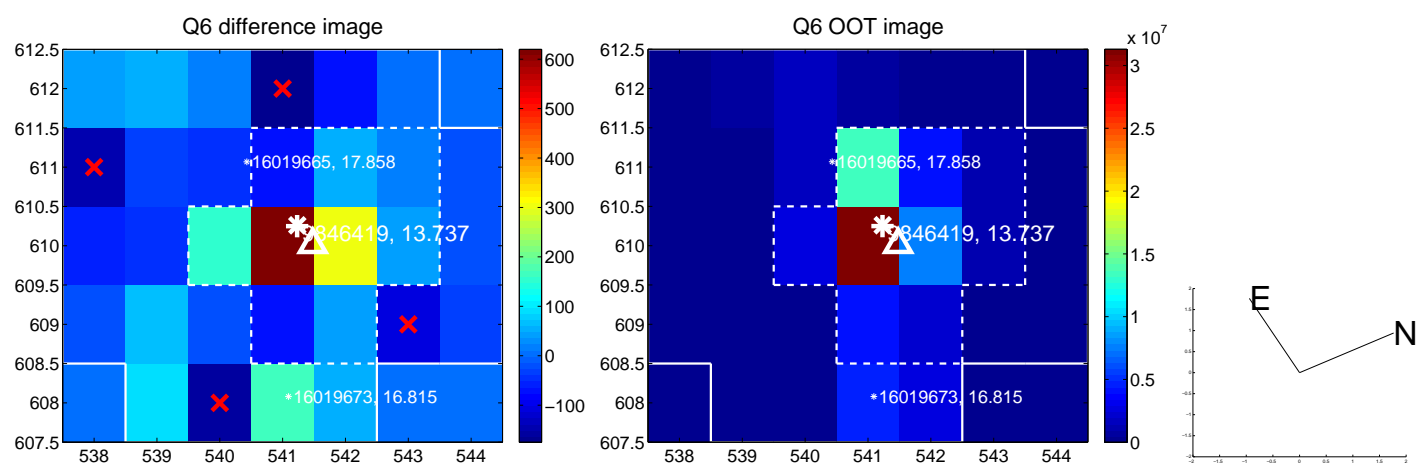
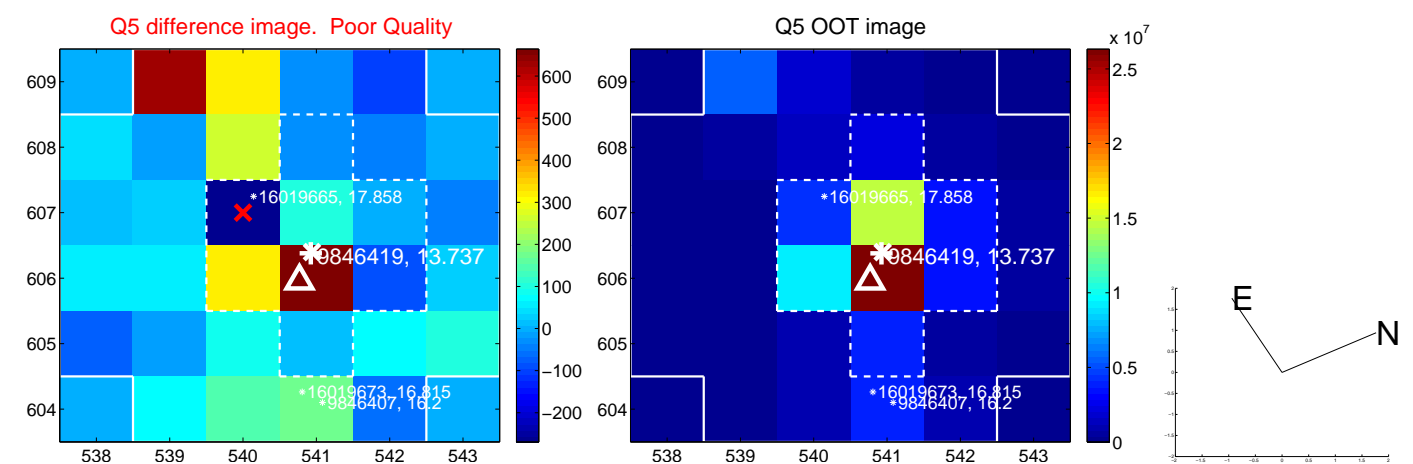


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

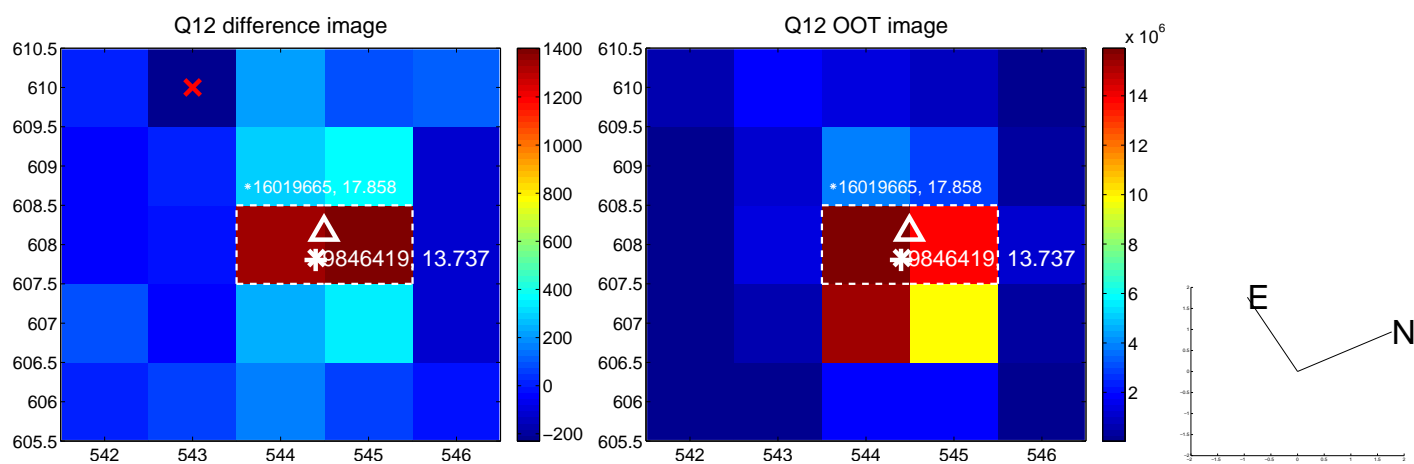
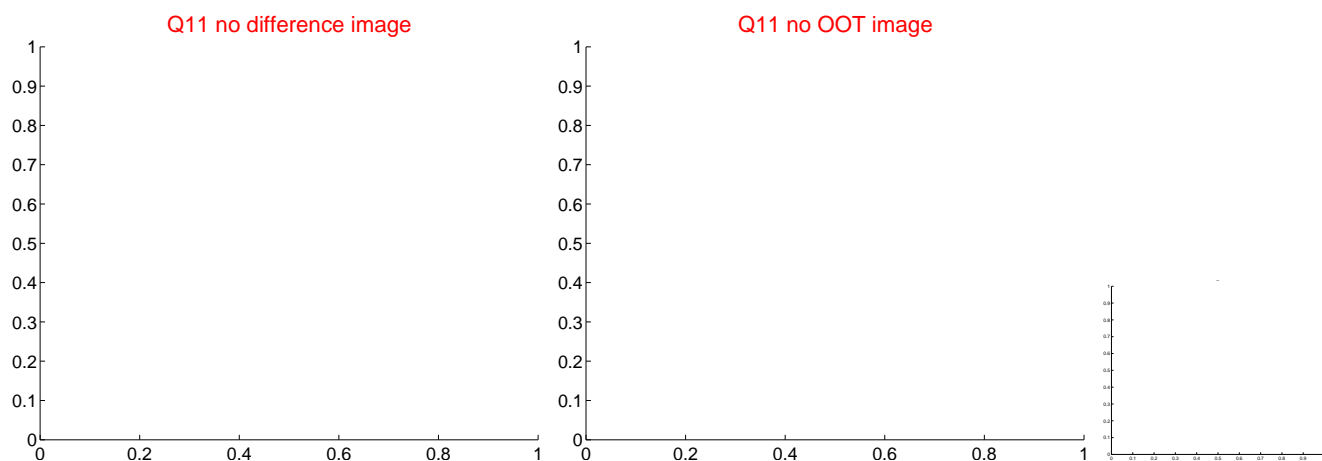
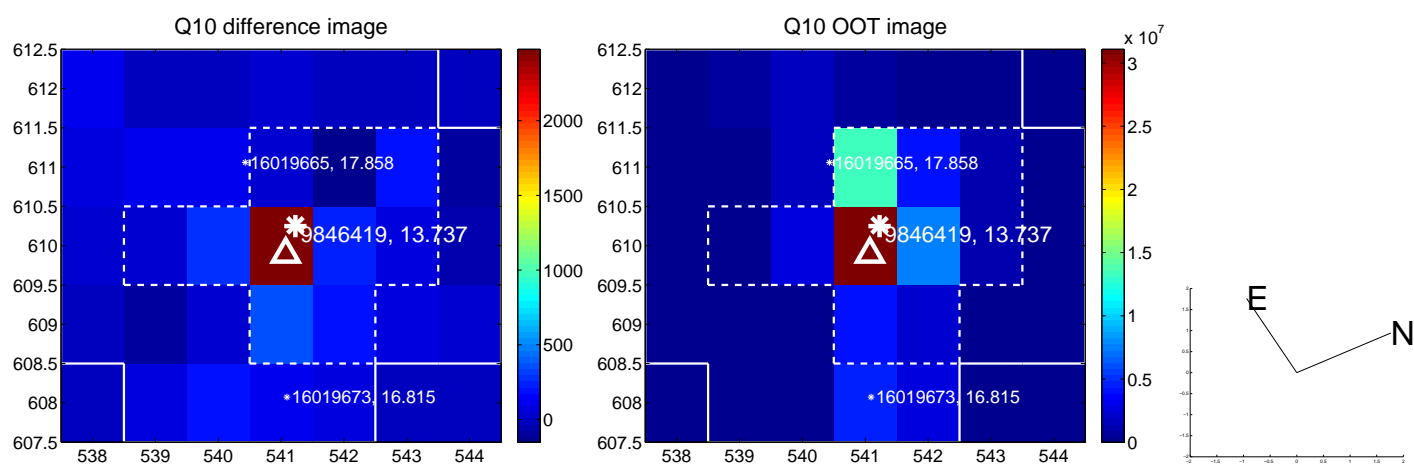
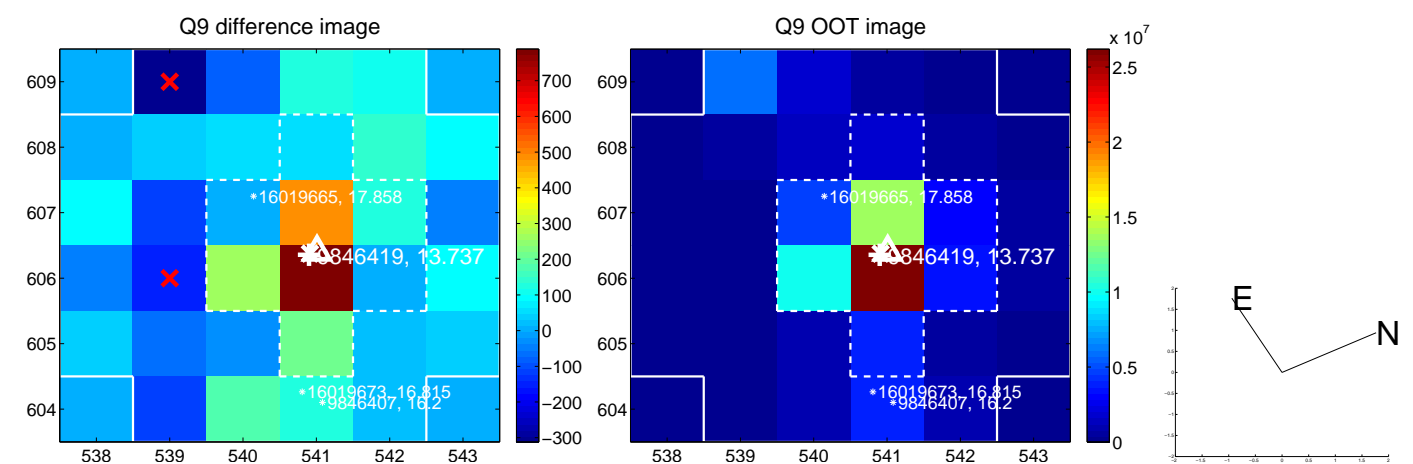
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



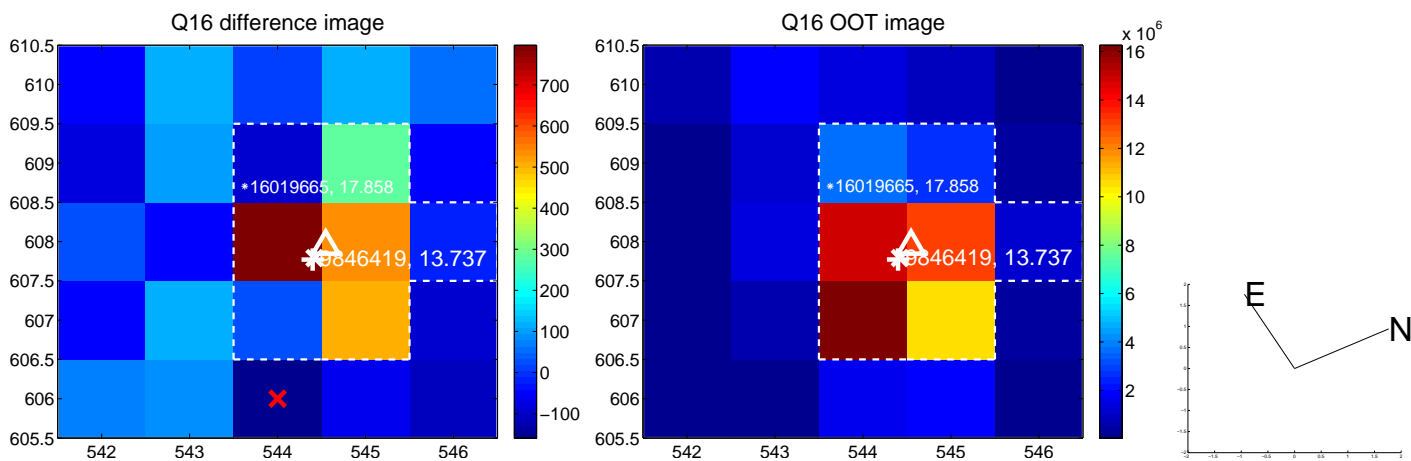
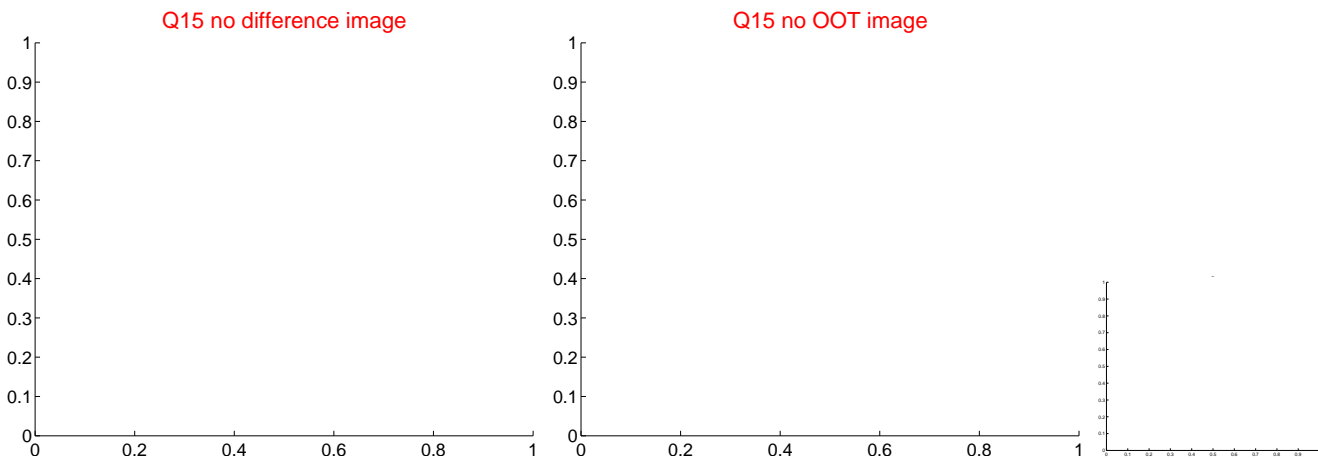
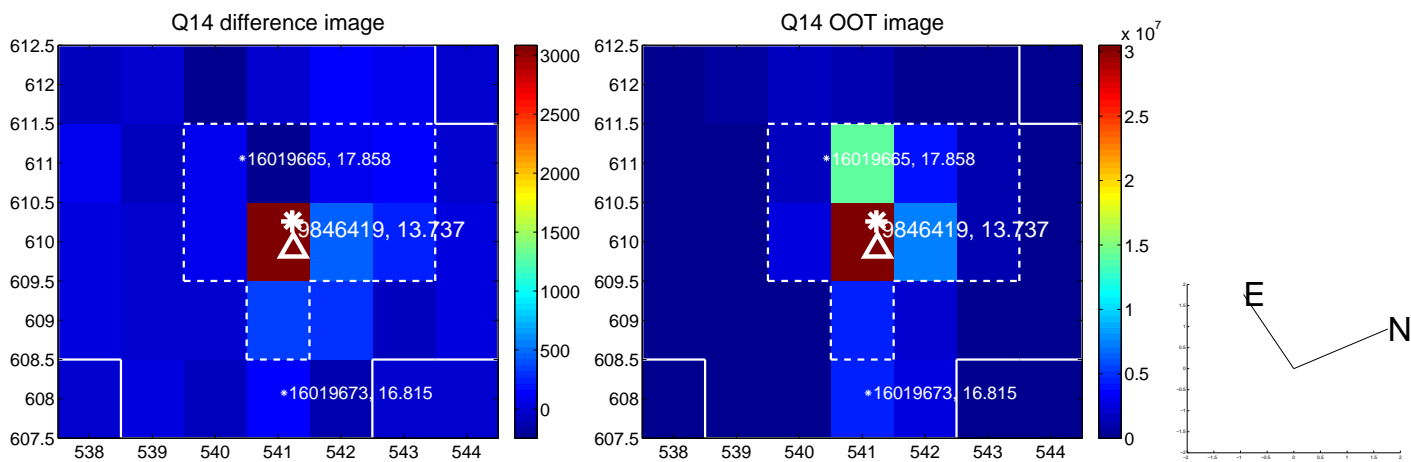
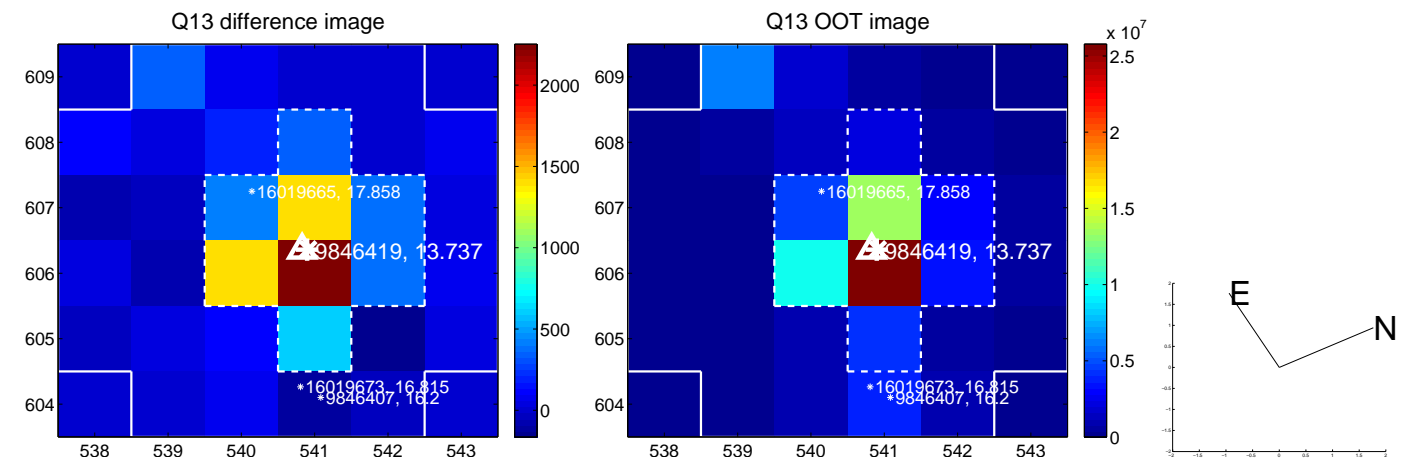
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



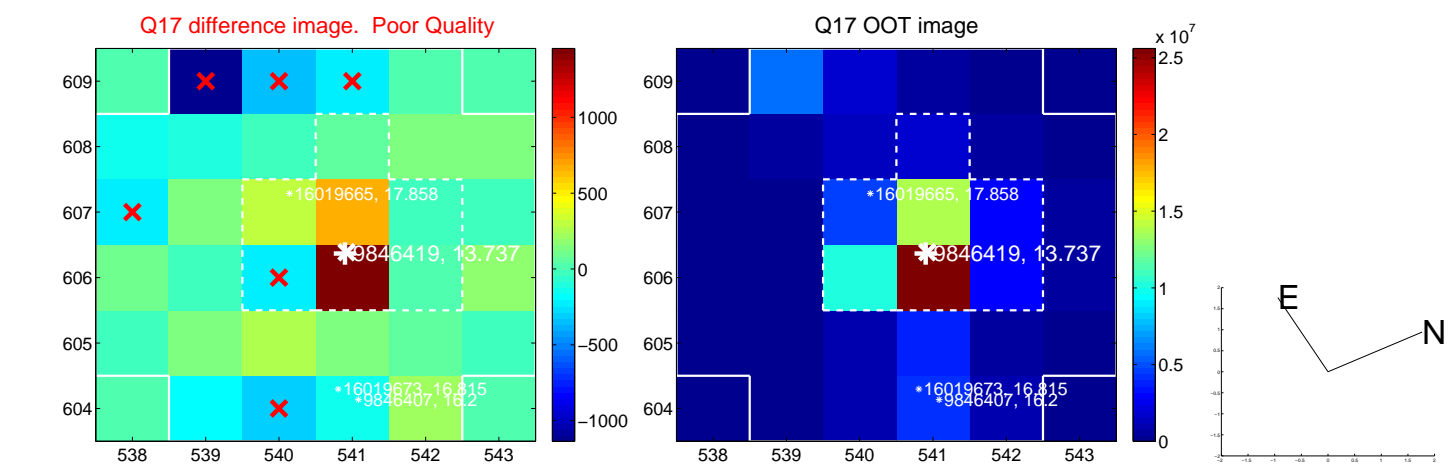
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



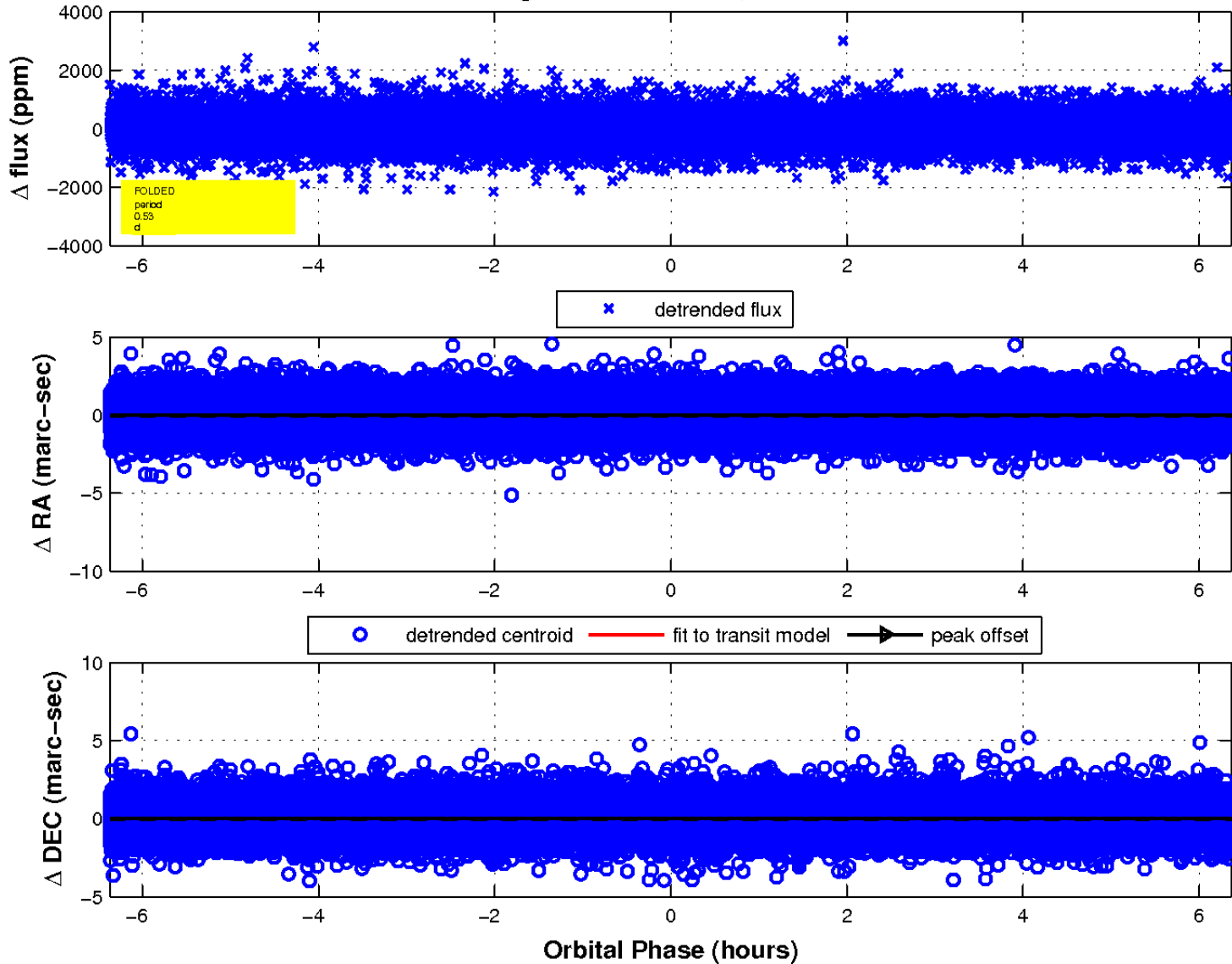
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

