

KIC 009117416

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})
009117416-01	OBS	3425.01	20.034784	145.449957	125.7	7.339	16.5	17.5	2.00	6120	2.87	207.43
009117416-02	OBS	3425.02	3.157220	131.698434	51.6	3.730	13.8	15.0	2.00	6120	1.69	2436.95
009117416-03	OBS	3425.03	7.643587	137.885088	60.1	2.955	8.2	9.4	2.00	6120	1.95	749.65

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009117416-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
009117416-02	OBS	PC	0.95	0	0	0	0	NO_COMMENT
009117416-03	OBS	PC	0.87	0	0	0	0	NO_COMMENT

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

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

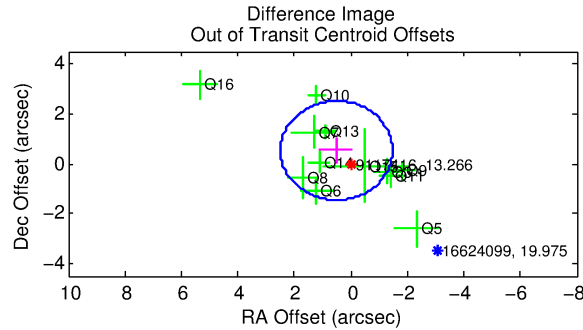
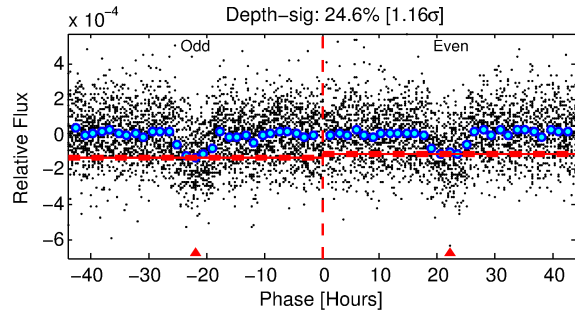
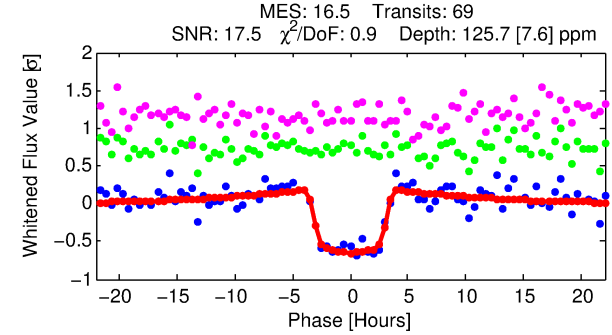
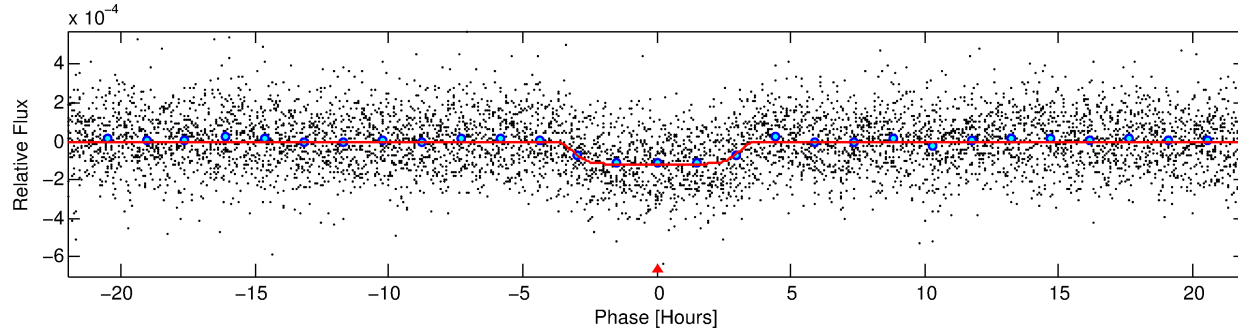
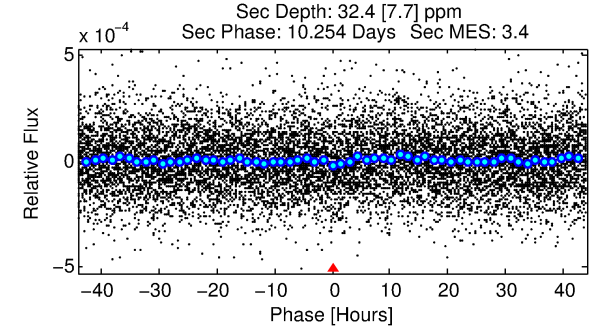
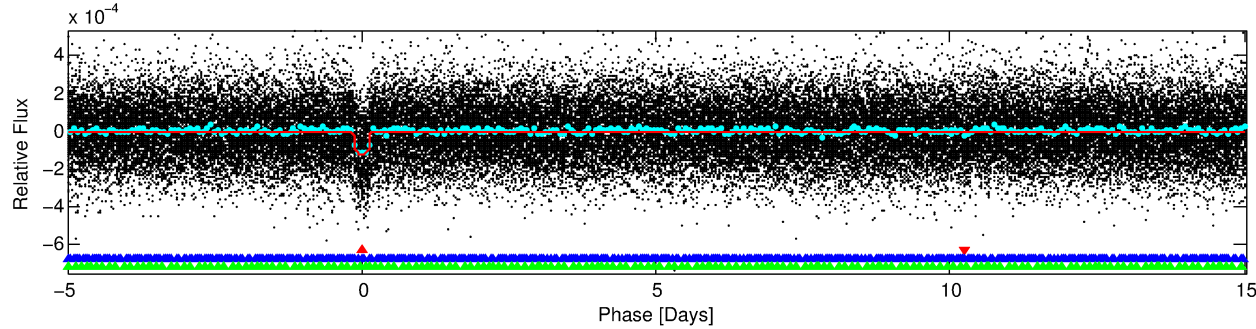
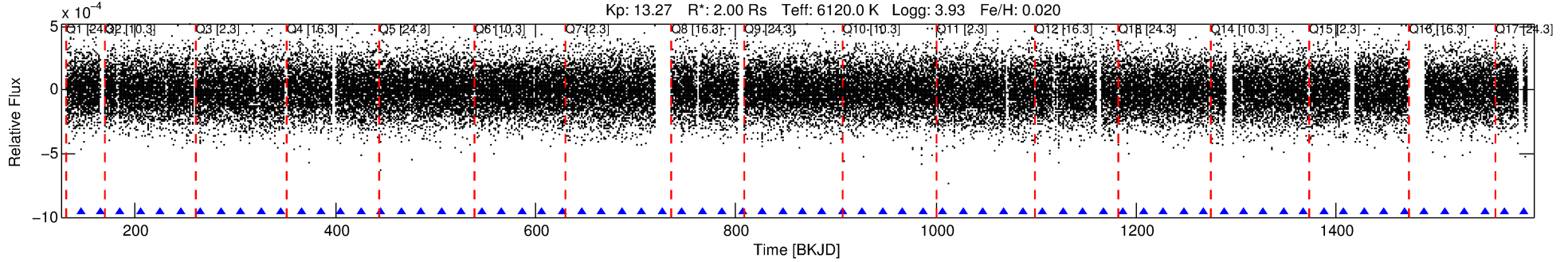
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009117416-01

No Significant Match Found

DV One-Page Summary

KIC: 9117416 Candidate: 1 of 3 Period: 20.035 d
KOI: K03425.01 Corr: 0.950



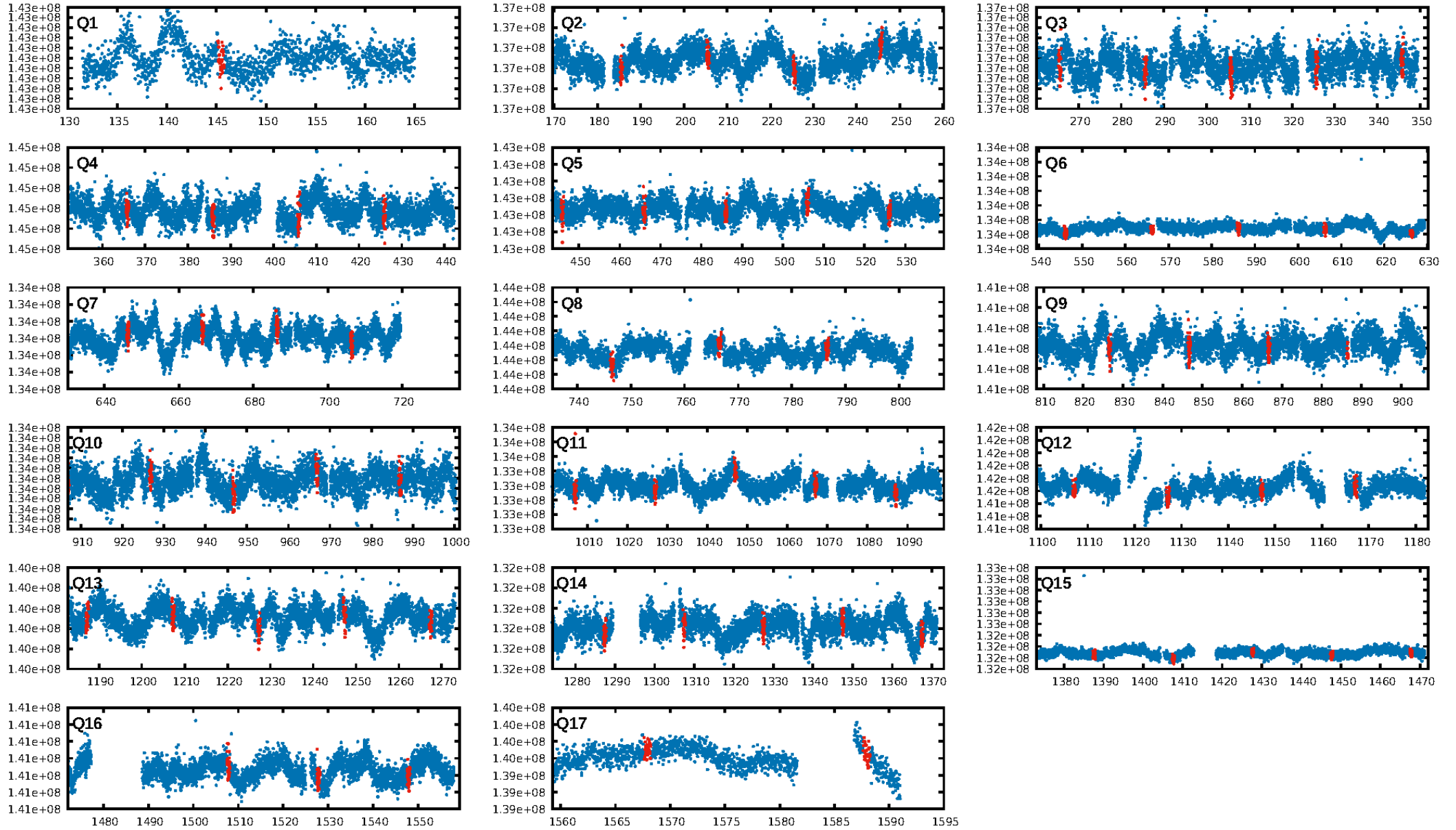
DV Fit Results:

Period = 20.03478 [0.00018] d
Epoch = 145.4500 [0.0074] BKJD
Rp/R* = 0.0131 [0.0007]
a/R* = 6.73 [1.39]
b = 0.96 [0.02]
Seff = 207.43 [141.40]
Teq = 968 [165] K
Rp = 2.87 [1.16] Re
a = 0.1557 [0.0632] AU
Ag = 52.48 [37.55] [1.37σ]
Teffp = 4027 [298] K [8.99σ]

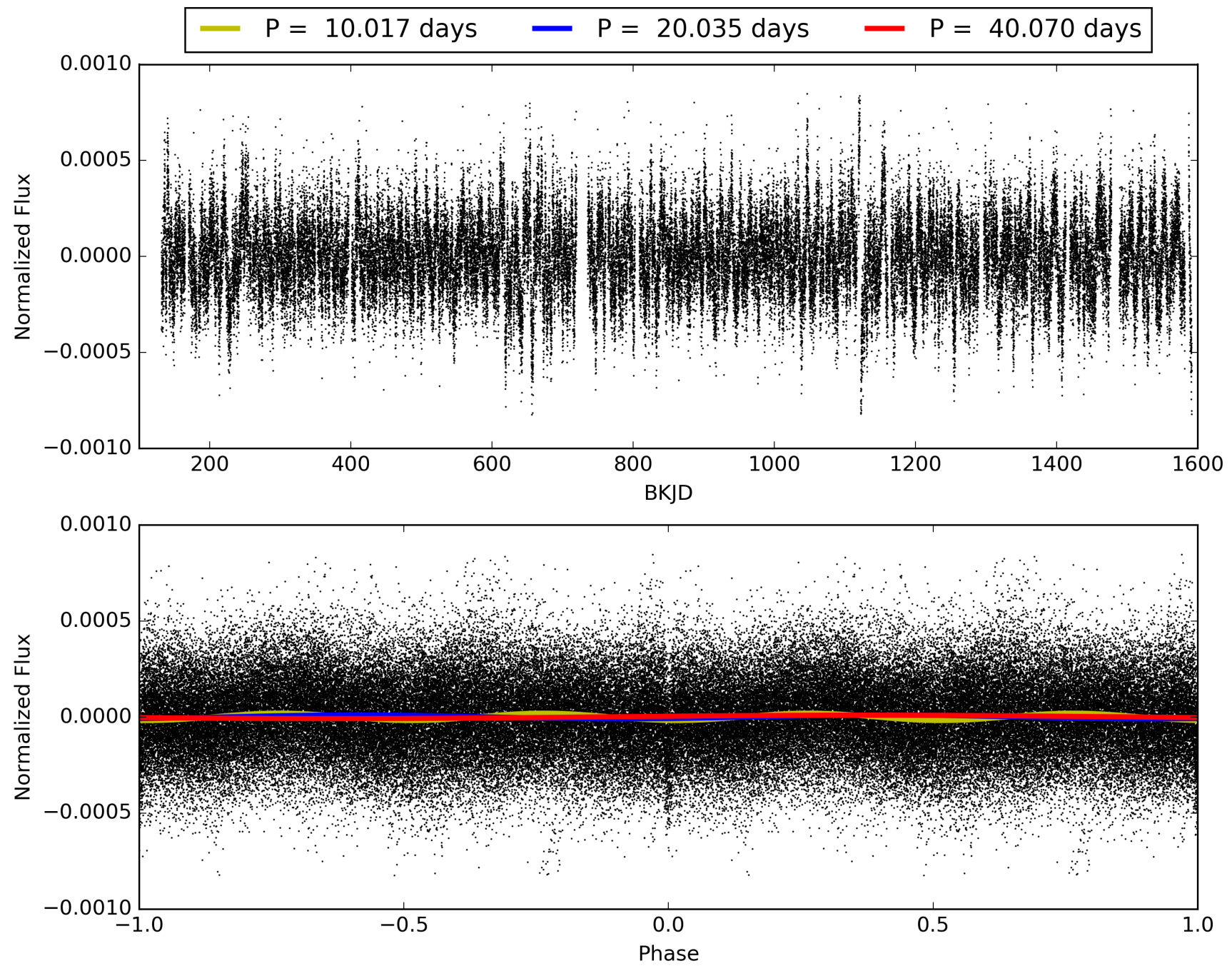
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [37.59σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 99.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.15e-59
RollingBand-fgt: 1.00 [66/66]
GhostDiagnostic-chr: 0.9328
Centroid-sig: 84.3%
Centroid-so: 0.040 arcsec [0.06σ]
OotOffset-rm: 0.737 arcsec [1.11σ]
OotOffset-st: 3/4/2/3 [12]
KicOffset-rm: 0.672 arcsec [0.92σ]
KicOffset-st: 3/4/2/3 [12]
DiffImageQuality-fgm: 0.67 [8/12]
DiffImageOverlap-fno: 0.71 [12/17]

TCE 009117416-01, PDC Light Curves

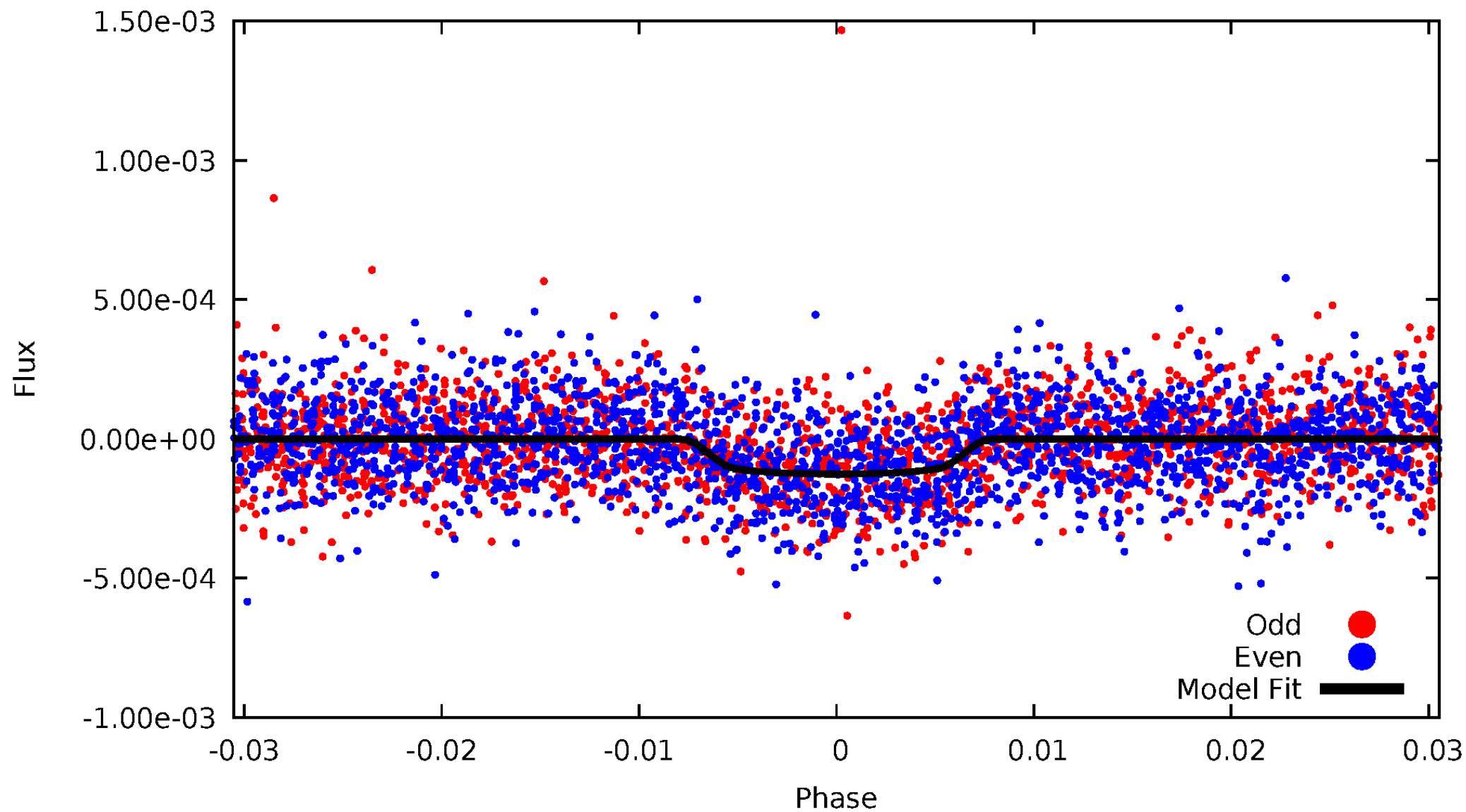


TCE 009117416-01



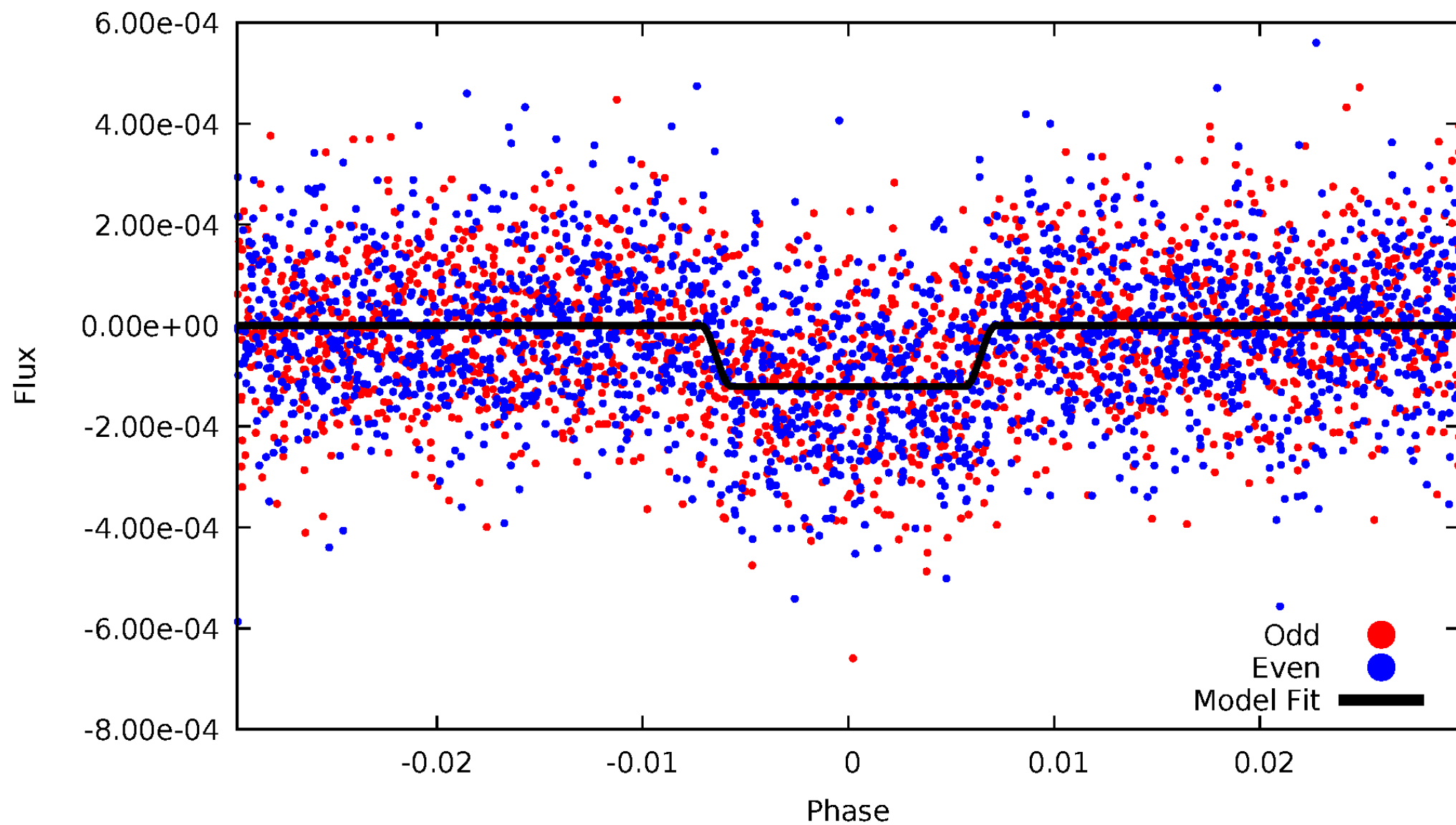
DV Odd/Even

TCE 009117416-01



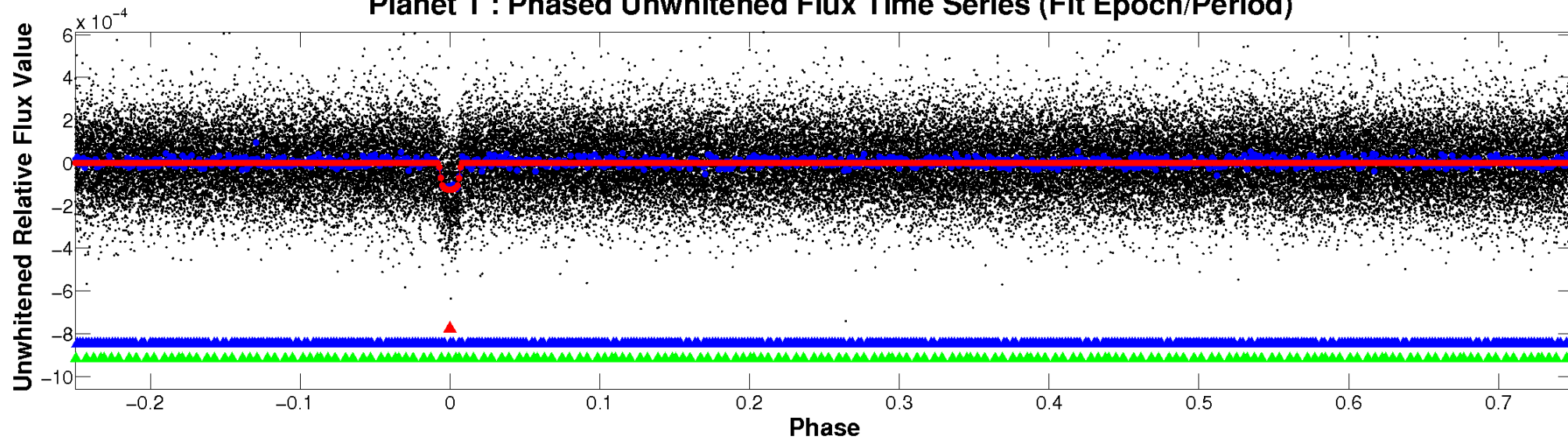
ALT Odd/Even

TCE 009117416-01

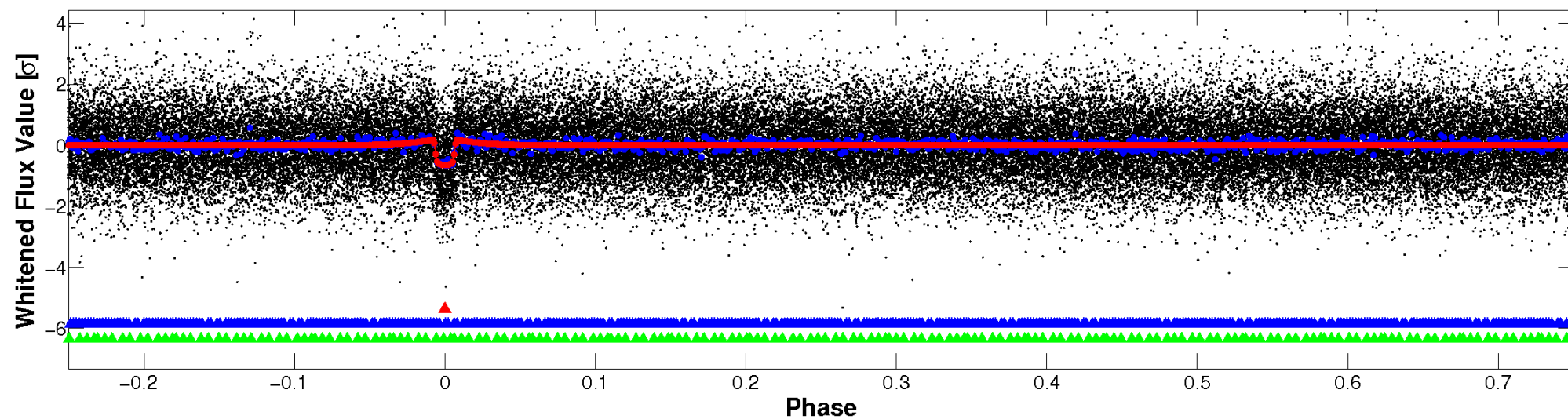


Non-Whitened Vs. Whitened Light Curve

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

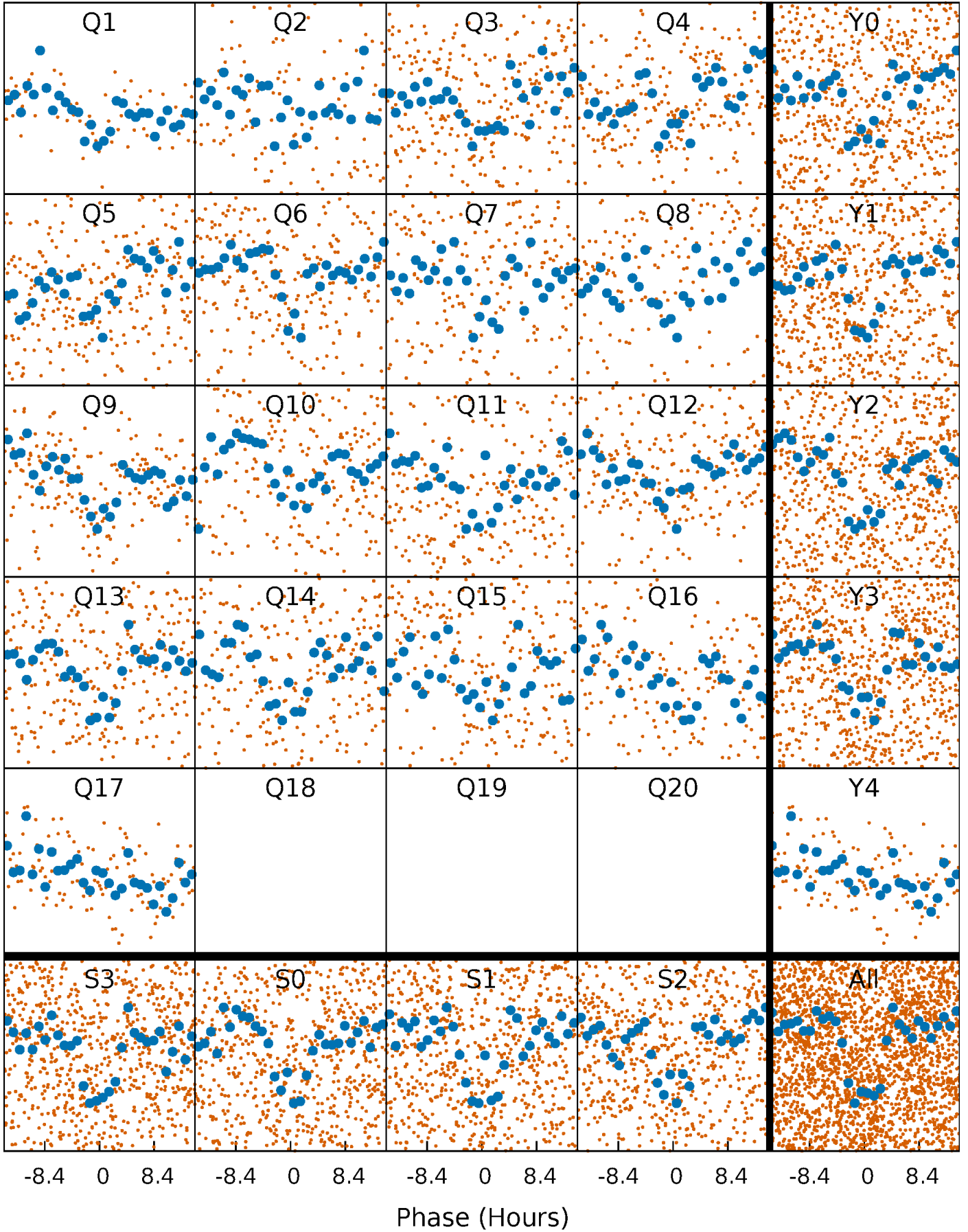


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



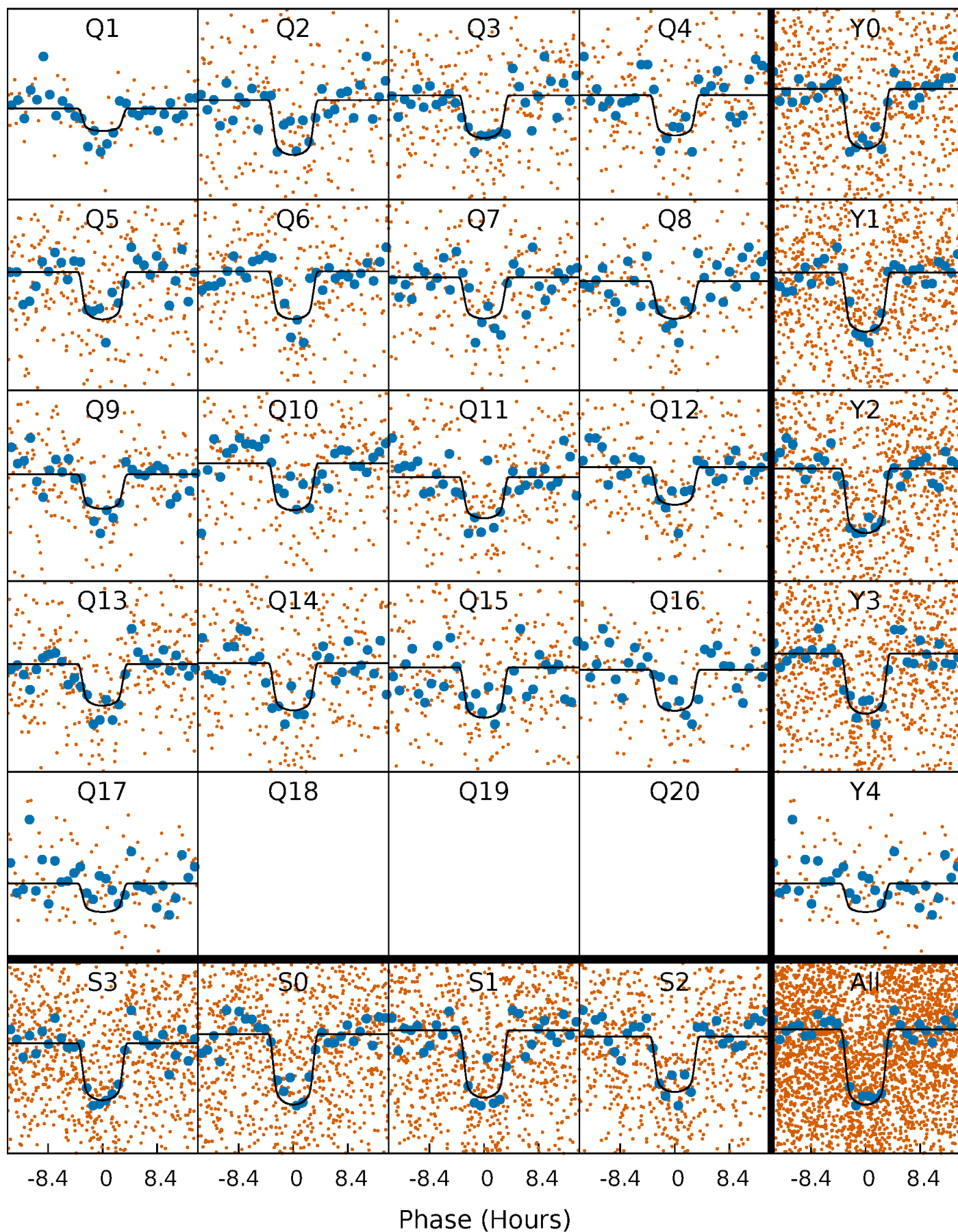
PDC Quarter-Phased Transit Curves

TCE 009117416-01 P= 20.034784 Days $T_0=145.449957$ (BKJD)



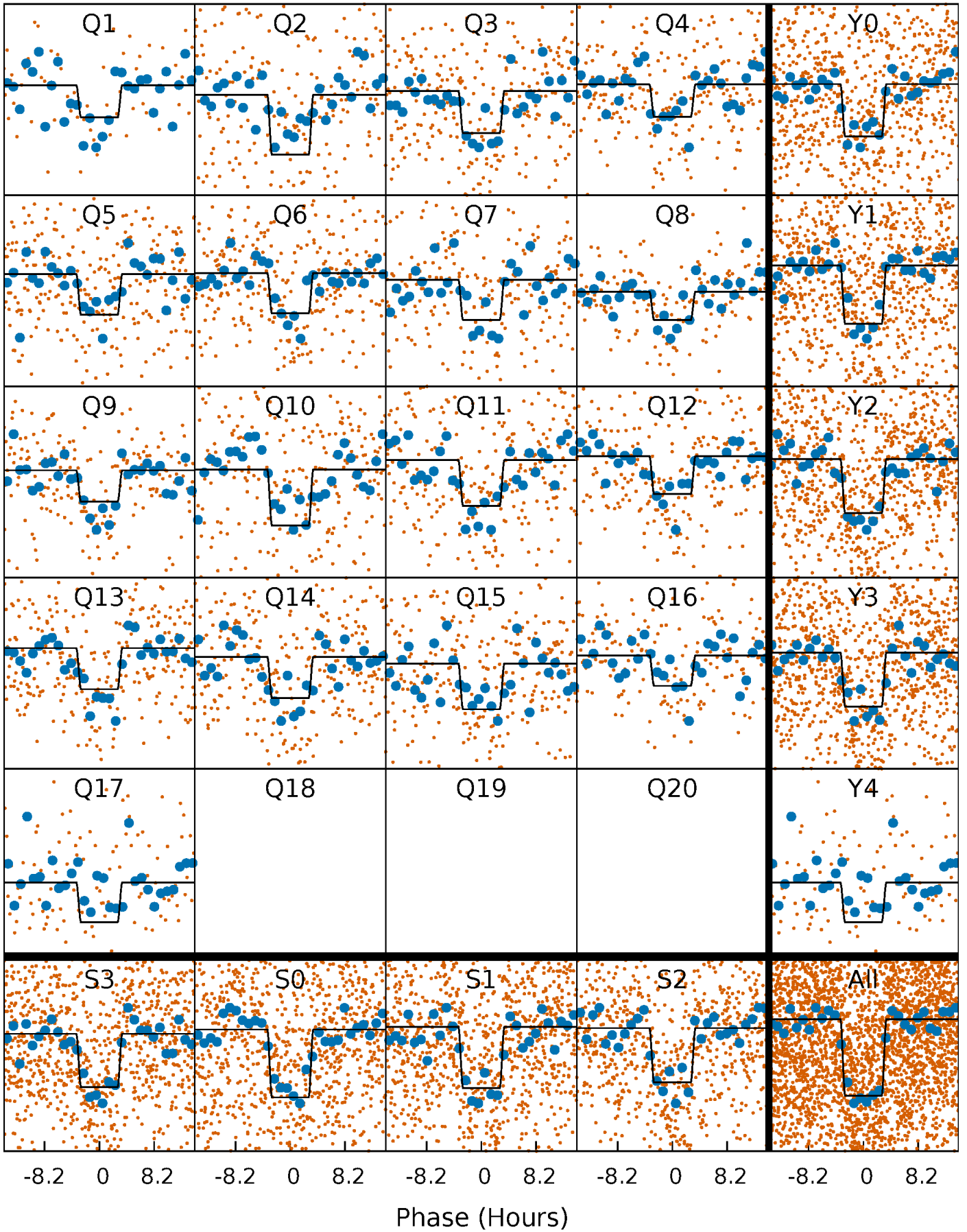
DV Quarter-Phased Transit Curves

TCE 009117416-01 P= 20.034784 Days $T_0=145.449957$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

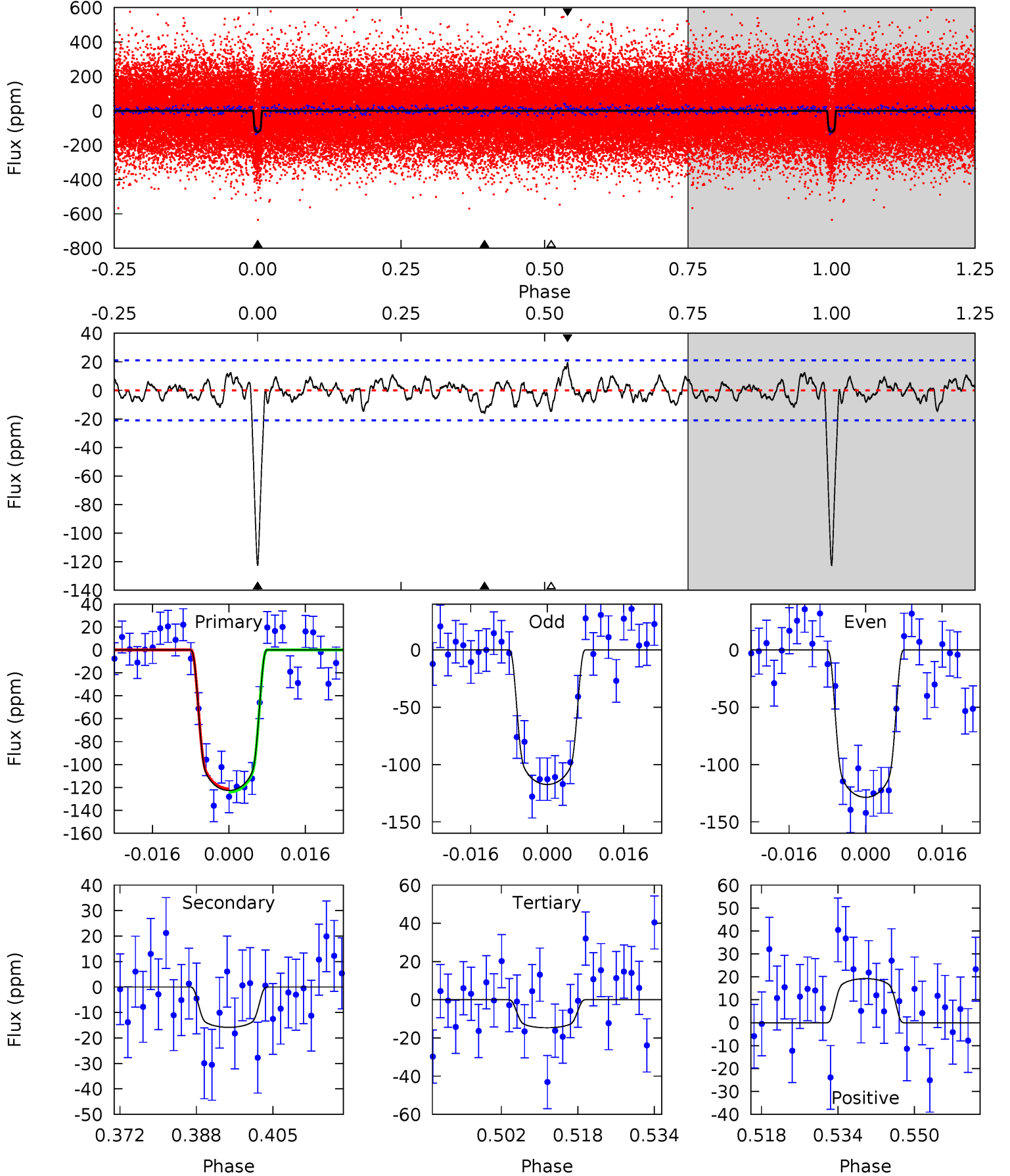
TCE 009117416-01 P= 20.034426 Days $T_0=145.461735$ (BKJD)



DV Model-Shift Uniqueness Test

009117416-01, $P = 20.034784$ Days, $E = 125.415173$ Days

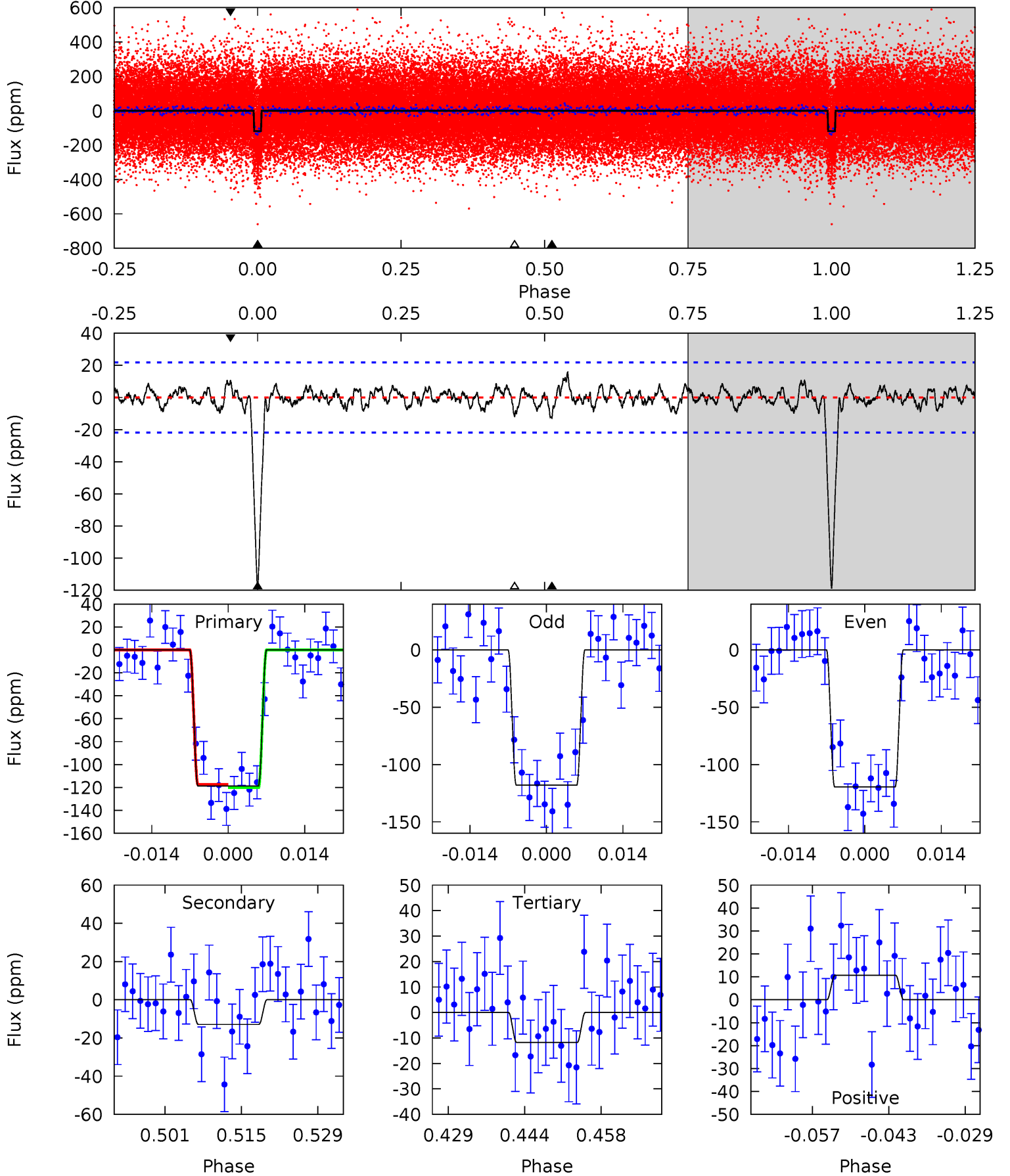
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.8	3.72	3.45	4.52	4.93	2.40	1.29	25.4	24.3	0.27	-0.80	1.31	1.00	0.14	0.33



Alt Model-Shift Uniqueness Test

009117416-01, $P = 20.034426$ Days, $E = 125.427309$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.0	2.93	2.67	2.43	4.96	2.45	0.97	24.3	24.5	0.26	0.50	0.18	0.97	0.12	0.33



Stellar Parameters For KIC 009117416

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6120^{+195}_{-217}	$3.934^{+0.398}_{-0.133}$	$0.020^{+0.250}_{-0.300}$	$2.000^{+0.467}_{-0.801}$	$1.251^{+0.190}_{-0.233}$	$0.220^{+0.689}_{-0.090}$
	+3%/-4%	+10%/-3%	+1250%/-1500%	+23%/-40%	+15%/-19%	+313%/-41%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009117416-01 / KOI 3425.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-16 ± 4	$2.77^{+0.45}_{-0.62}$	1324^{+104}_{-148}	3748^{+189}_{-212}	28^{+18}_{-10}
Alt.	-13 ± 4	$2.31^{+0.41}_{-0.51}$	1323^{+104}_{-137}	3830^{+248}_{-258}	32^{+21}_{-13}

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 $A_{obs} \gg 1.0$

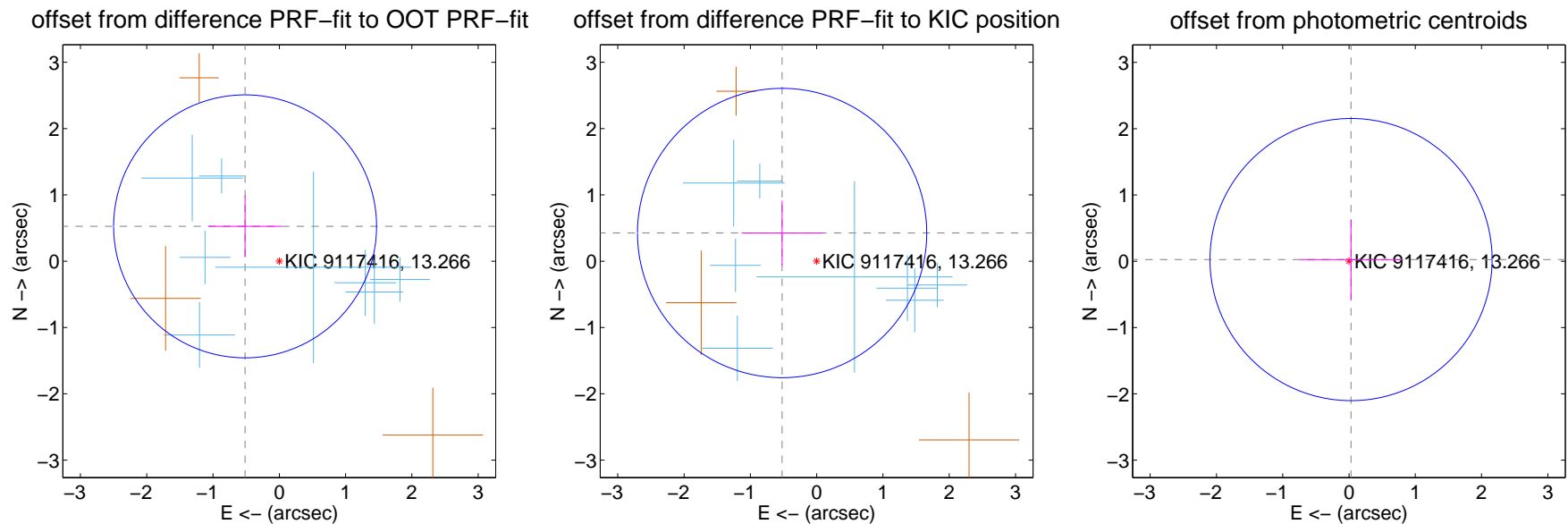
DV Centroid Data

Supplemental centroid analysis for 009117416-01. Kepler magnitude: 13.27. Transit SNR 17.47

There are 8 quarters with good PRF difference image offsets

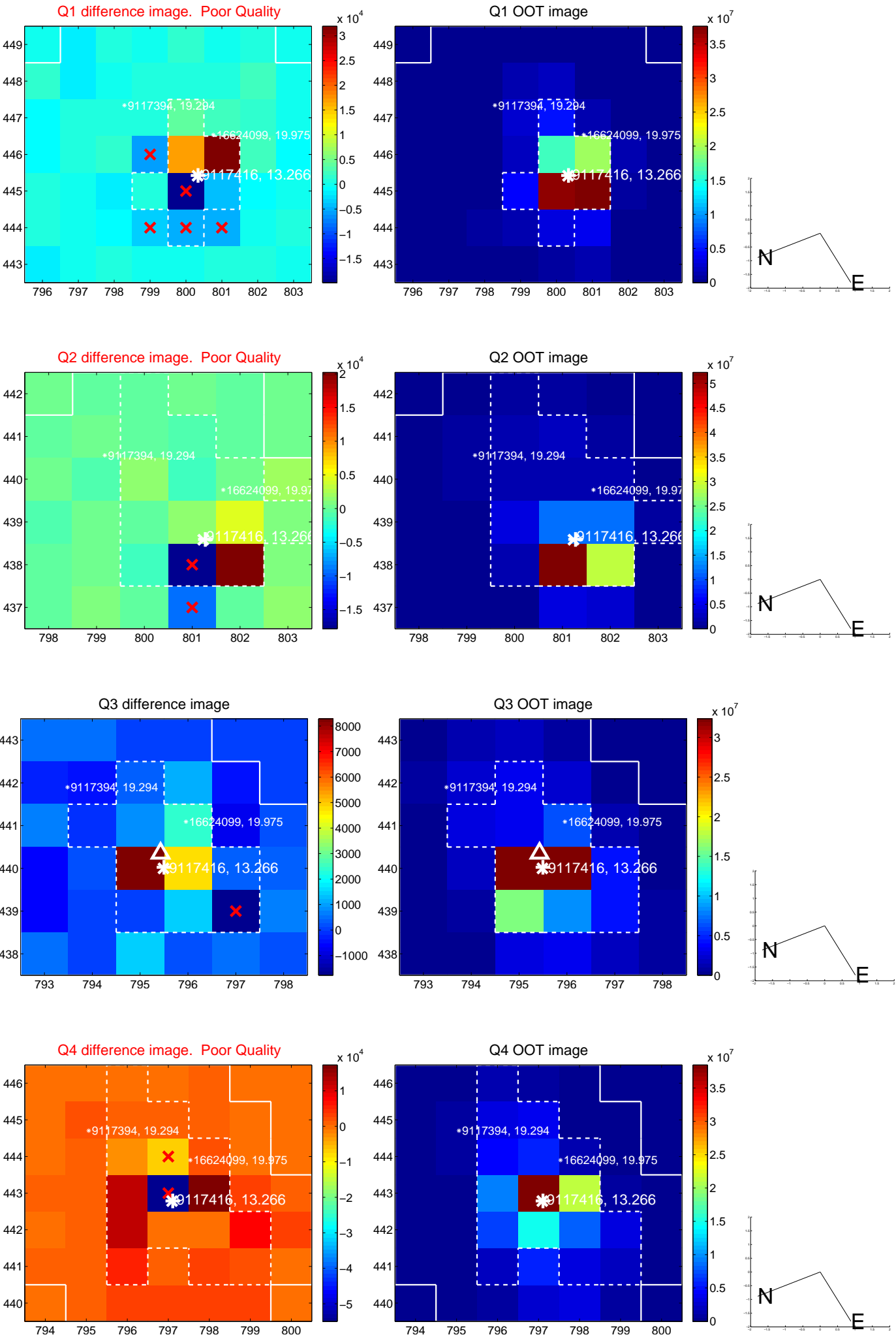
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.737 ± 0.661	1.11	0.516 ± 0.554	0.526 ± 0.464
PRF-fit source offset from KIC position	0.672 ± 0.727	0.92	0.521 ± 0.612	0.425 ± 0.486
photometric centroid source offset	0.04 ± 0.71	0.06	-0.03 ± 0.77	0.03 ± 0.60

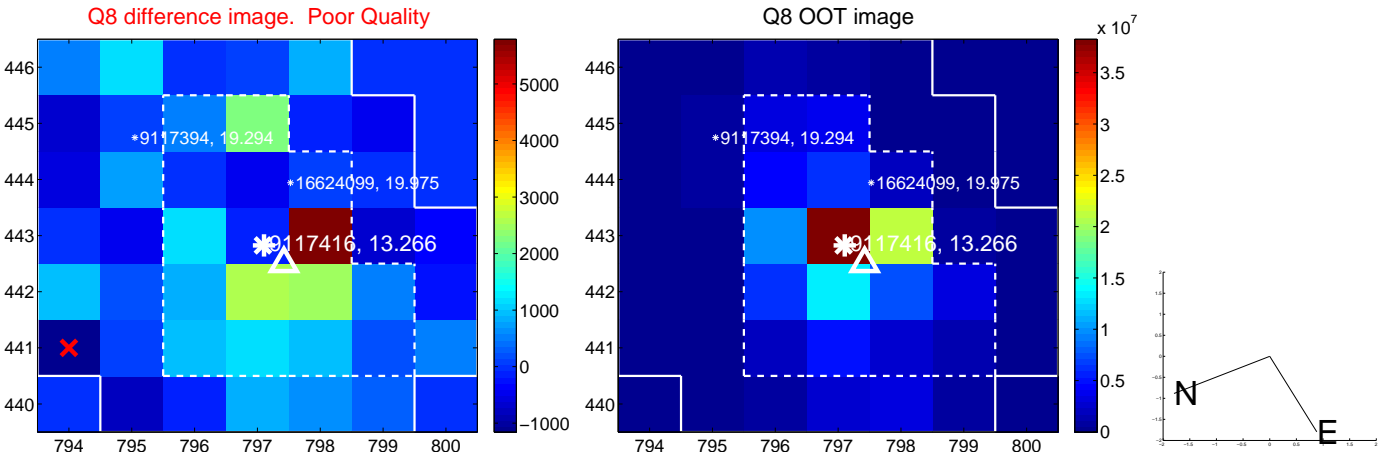
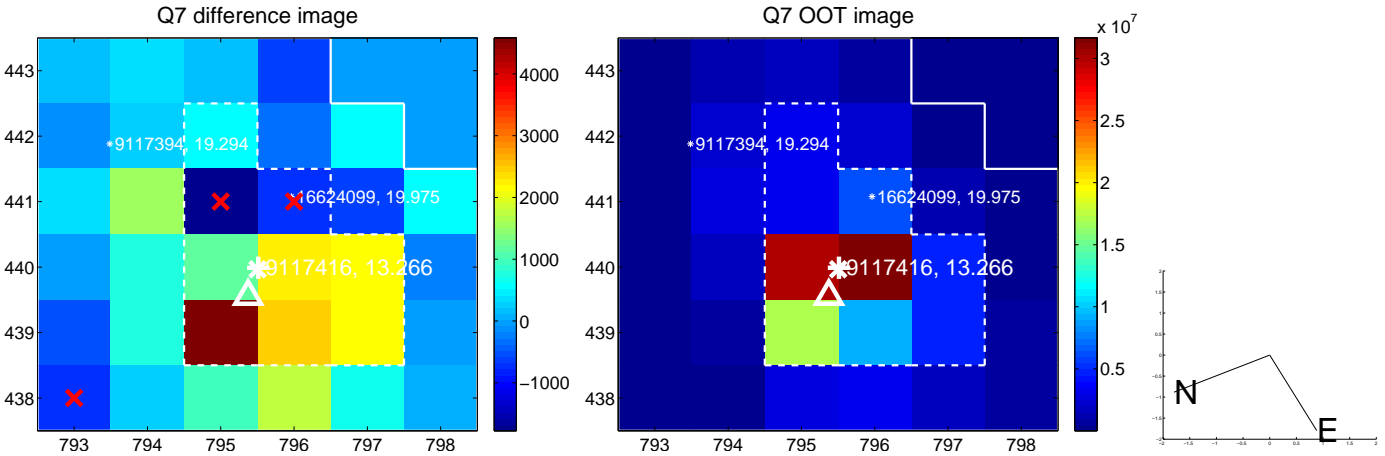
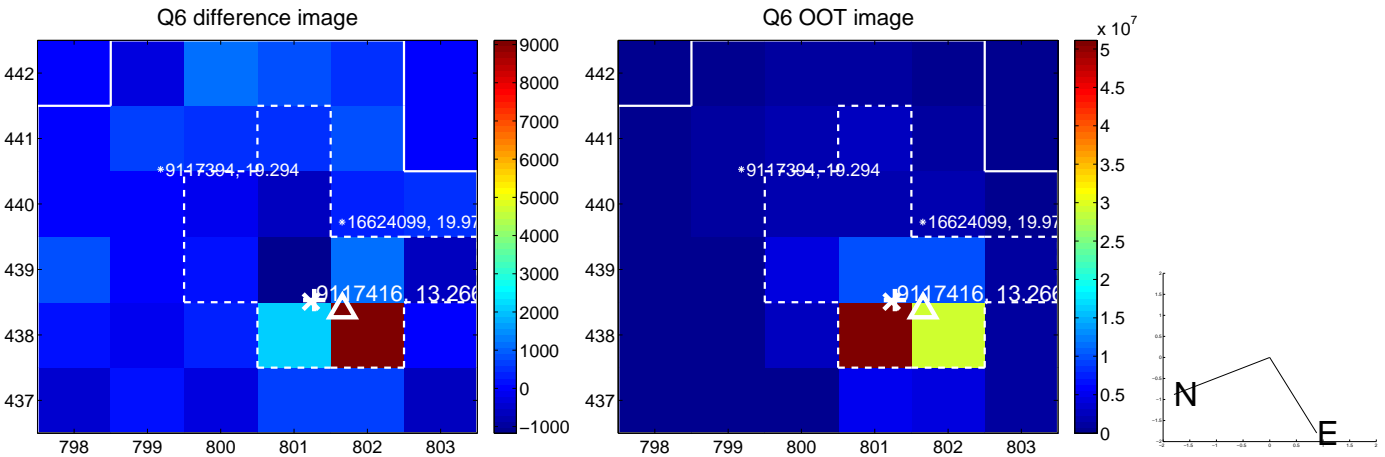
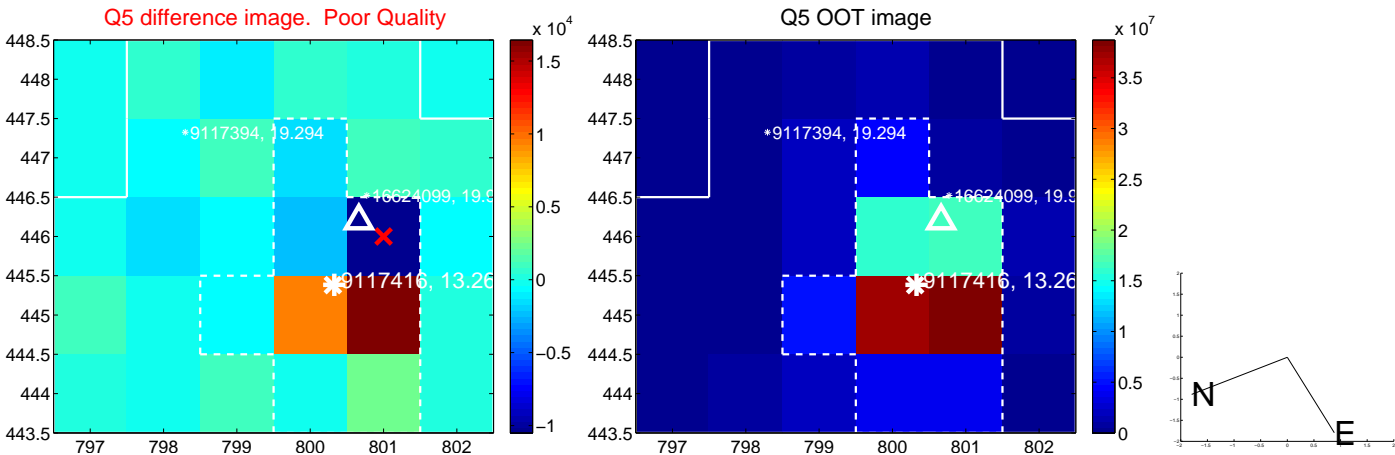


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

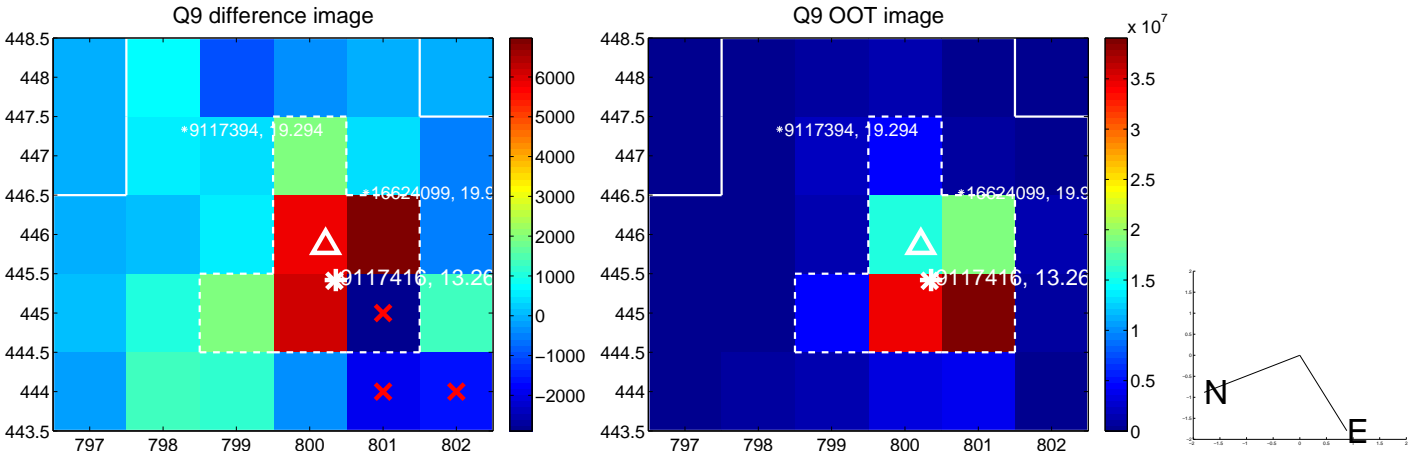
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



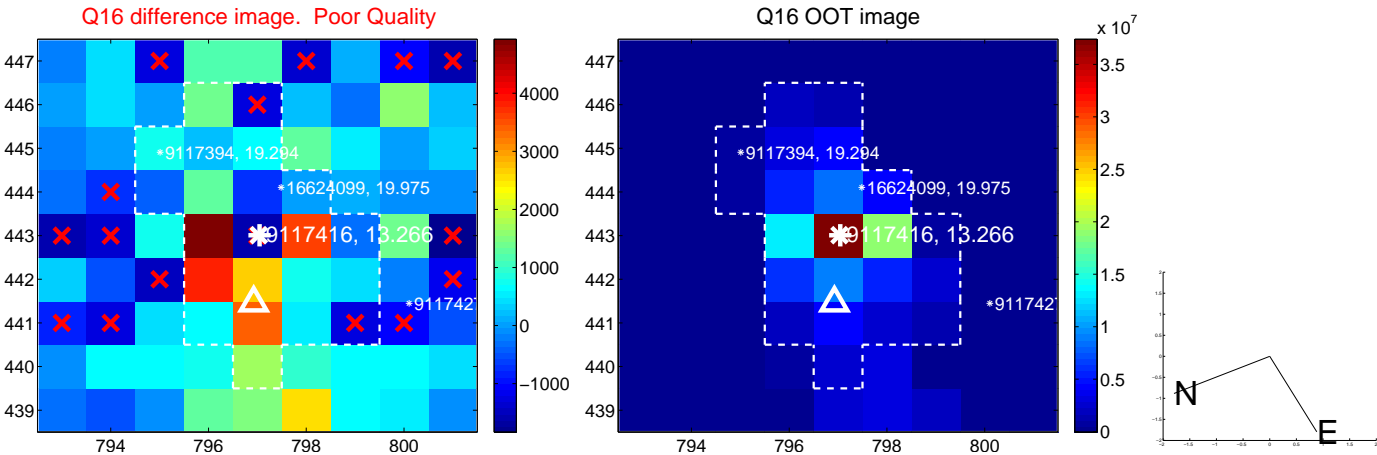
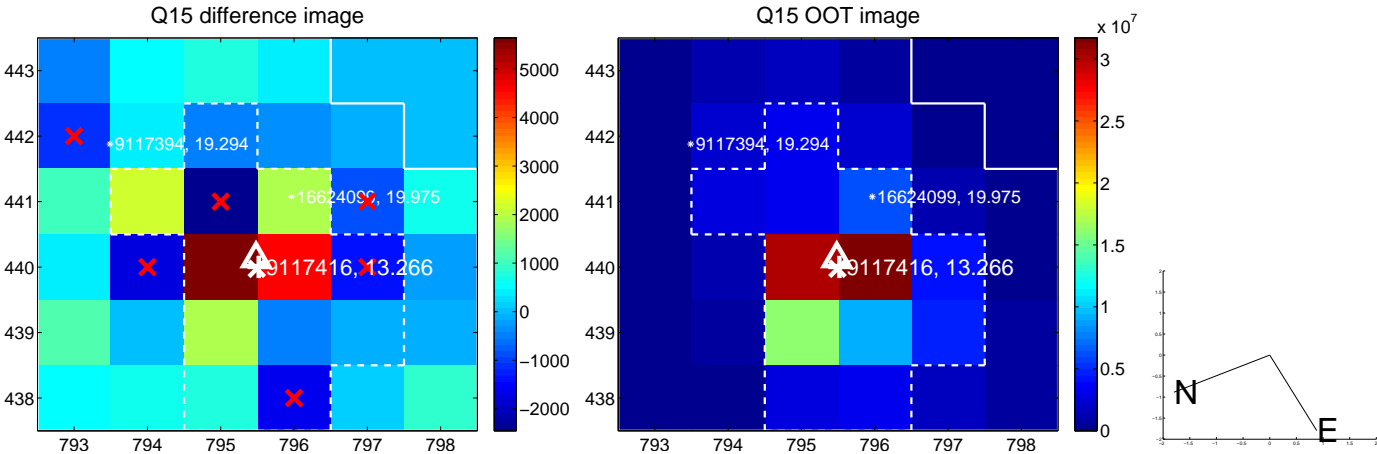
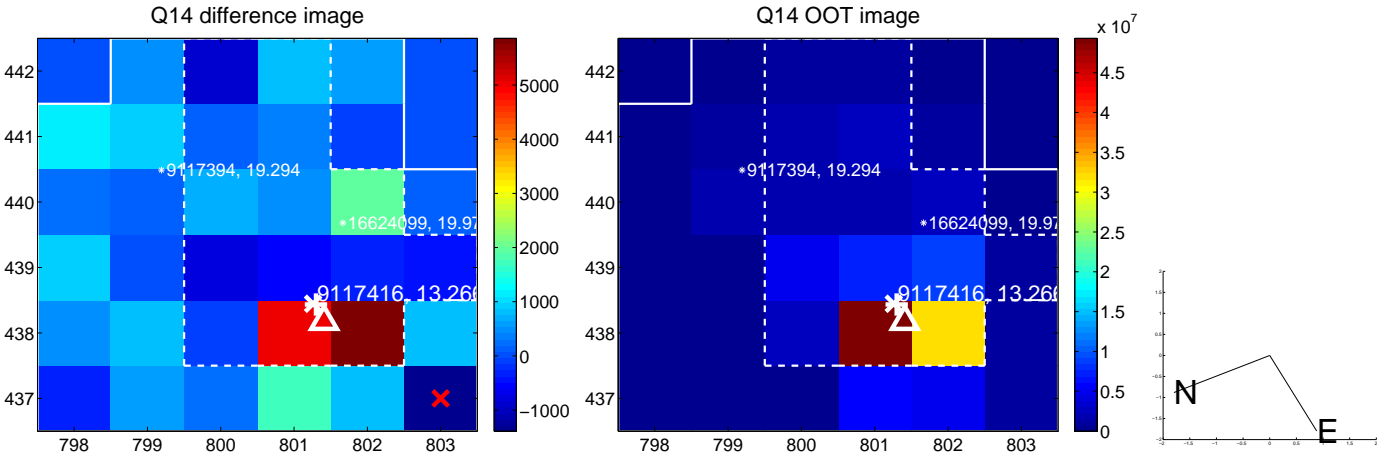
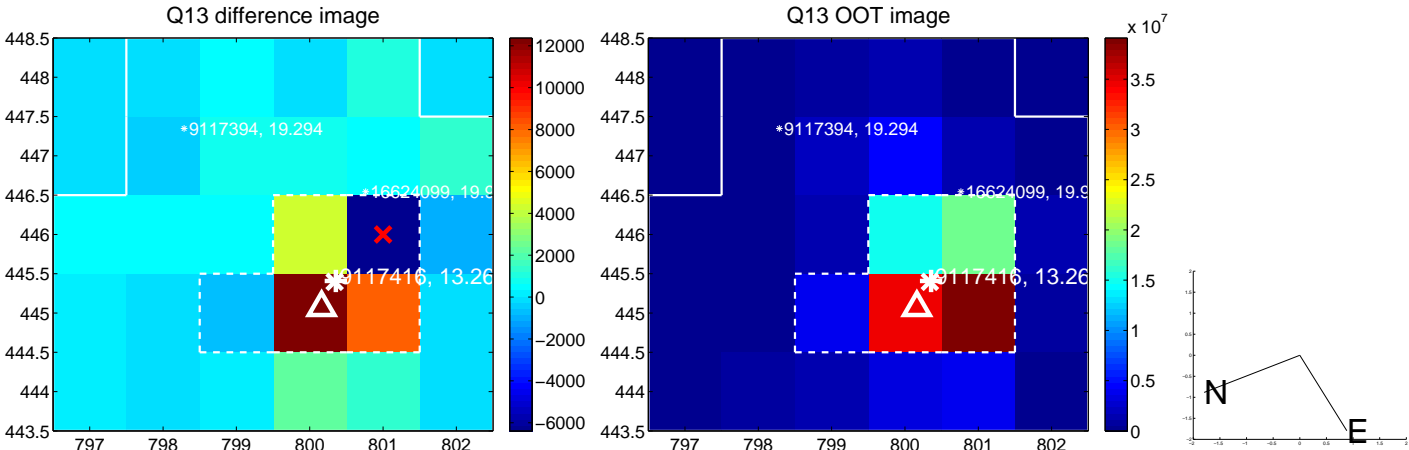
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



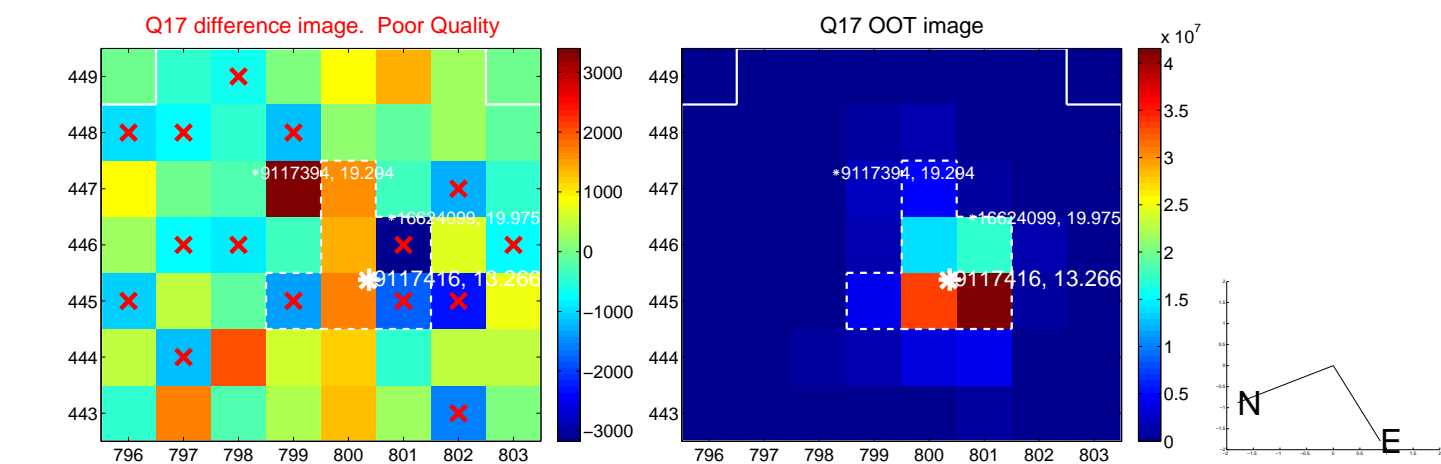
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



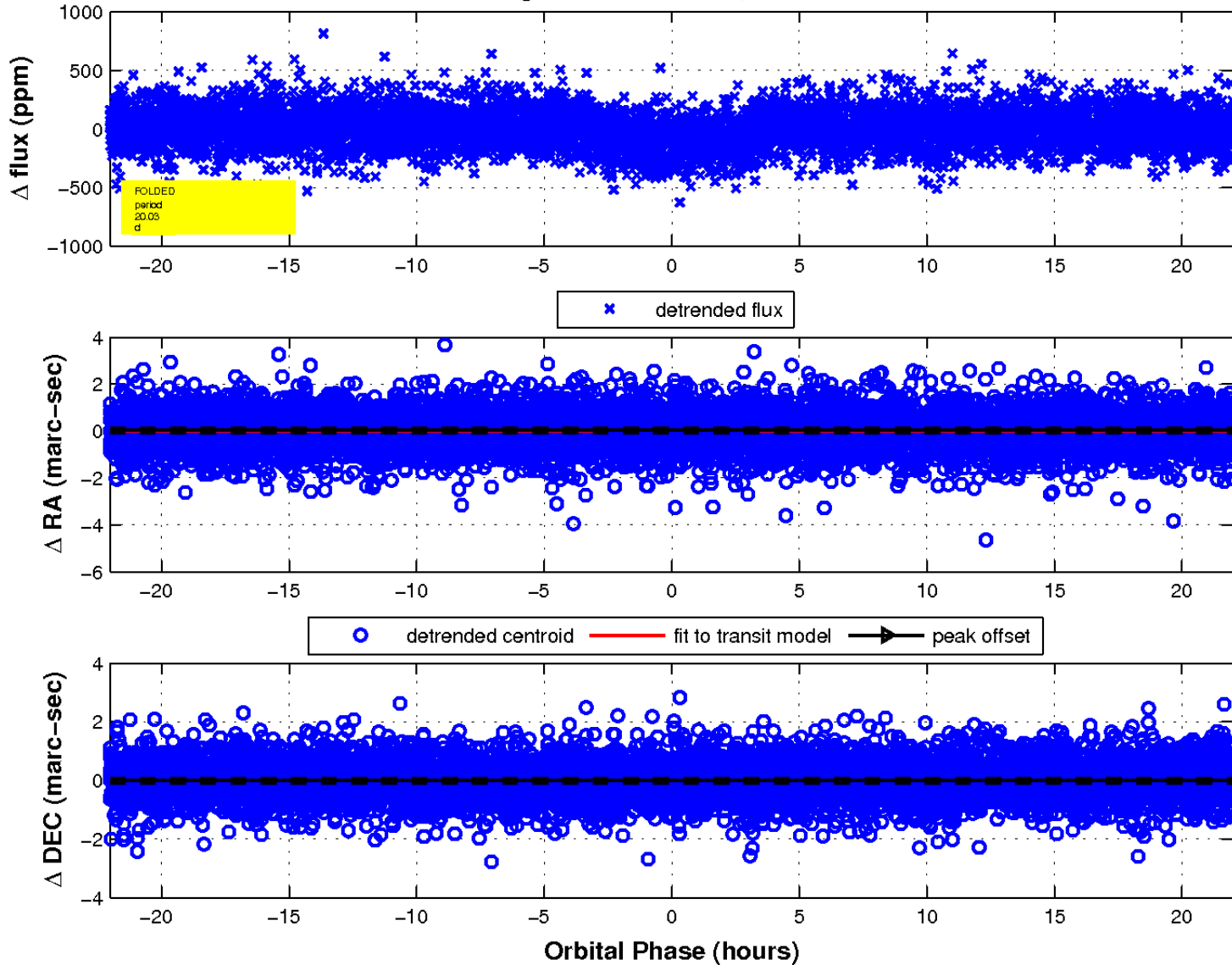
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

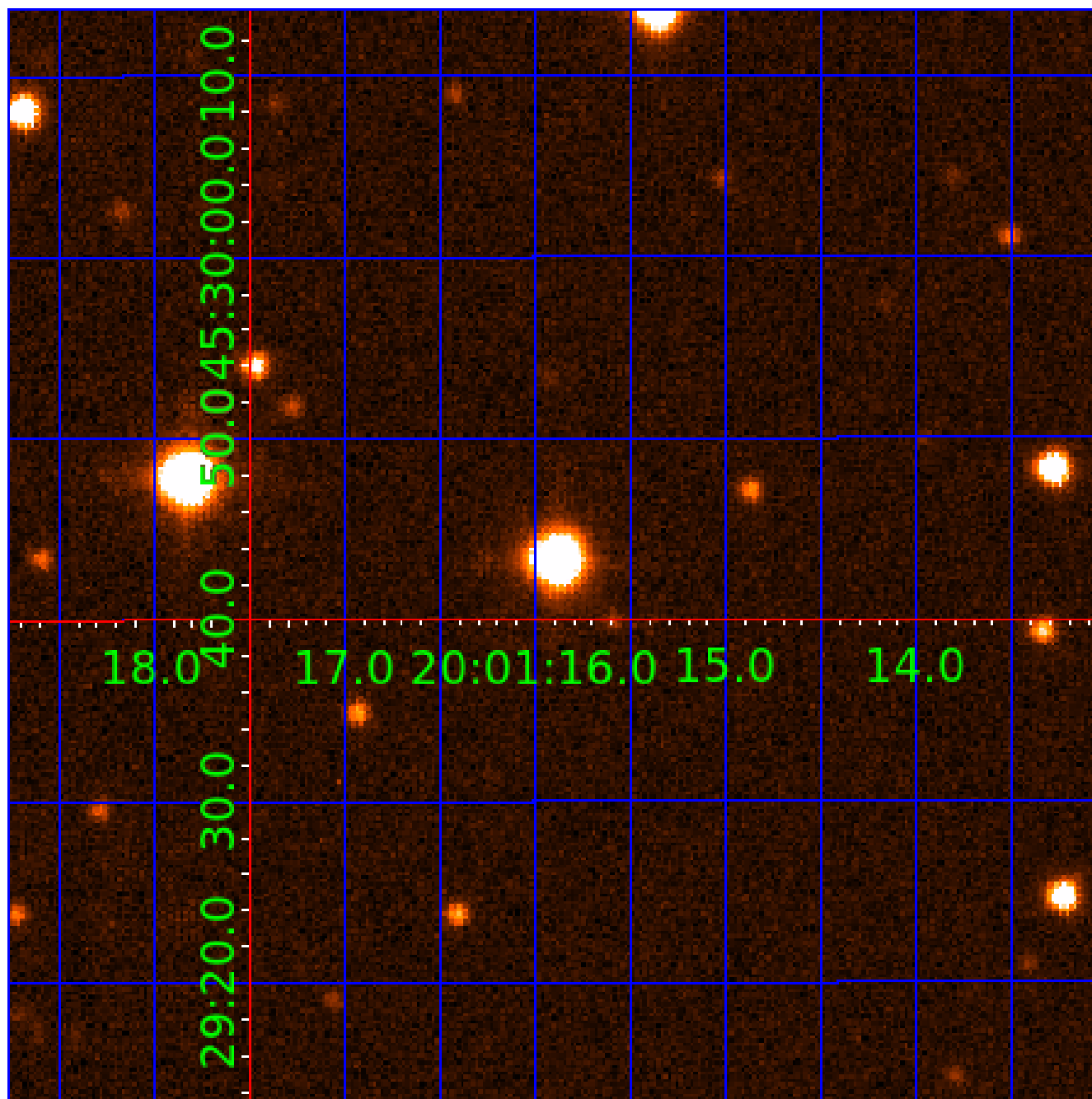


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 009117416

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})
009117416-01	OBS	3425.01	20.034784	145.449957	125.7	7.339	16.5	17.5	2.00	6120	2.87	207.43
009117416-02	OBS	3425.02	3.157220	131.698434	51.6	3.730	13.8	15.0	2.00	6120	1.69	2436.95
009117416-03	OBS	3425.03	7.643587	137.885088	60.1	2.955	8.2	9.4	2.00	6120	1.95	749.65

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009117416-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
009117416-02	OBS	PC	0.95	0	0	0	0	NO_COMMENT
009117416-03	OBS	PC	0.87	0	0	0	0	NO_COMMENT

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

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

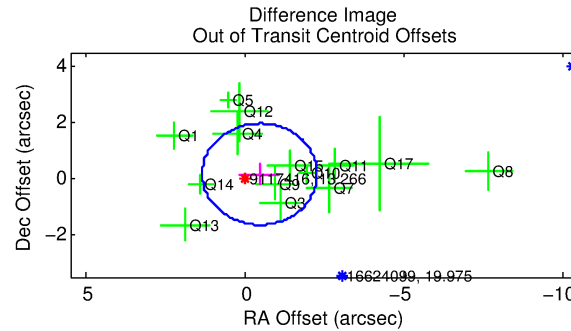
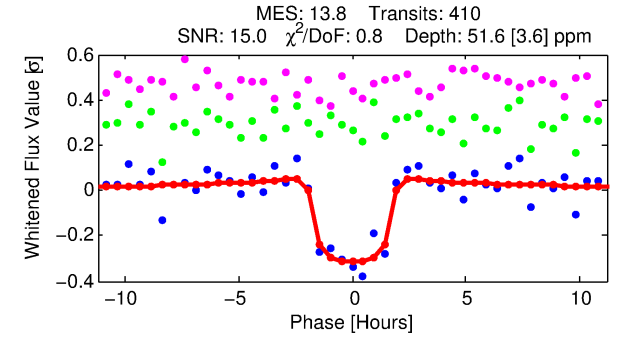
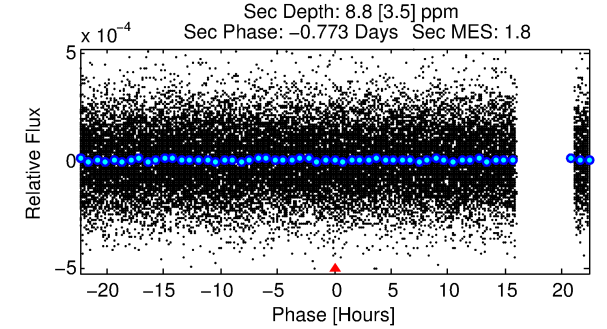
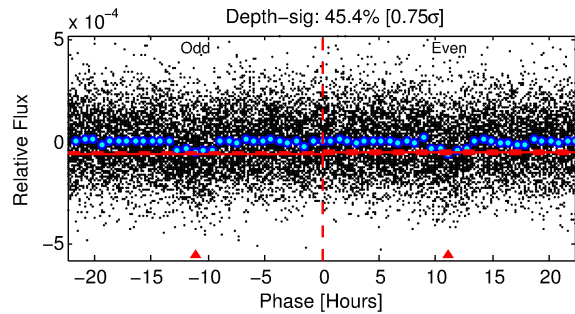
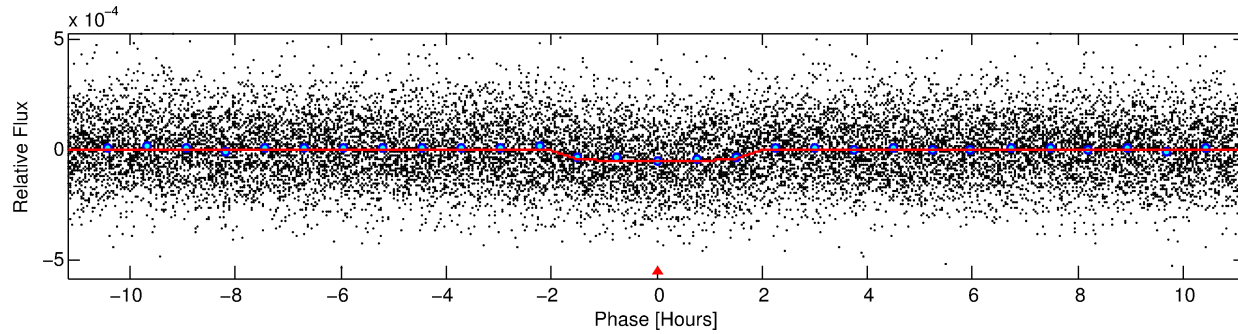
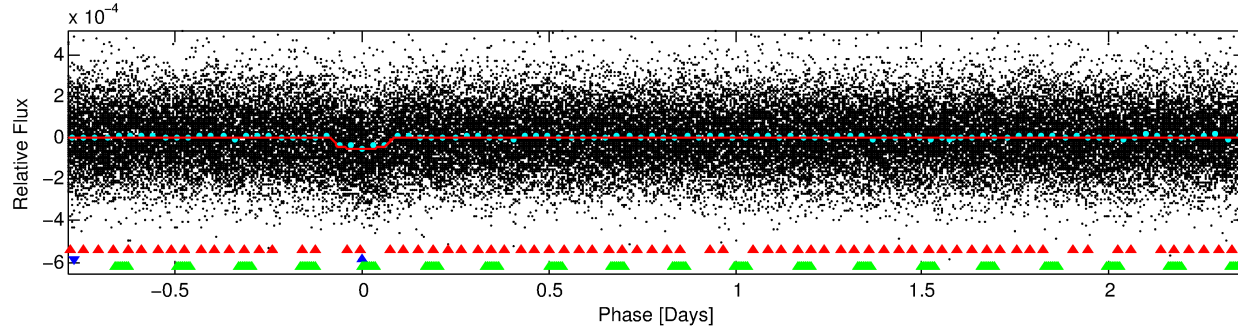
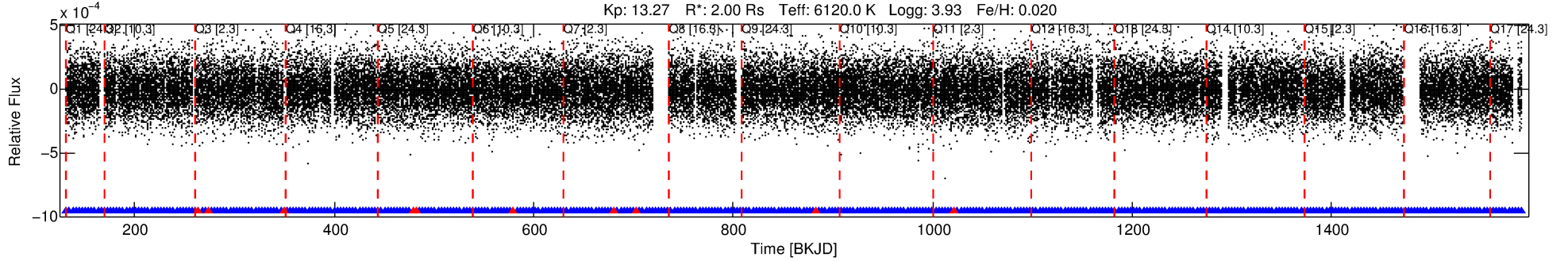
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009117416-02

No Significant Match Found

DV One-Page Summary

KIC: 9117416 Candidate: 2 of 3 Period: 3.157 d
KOI: K03425.02 Corr: 0.975



DV Fit Results:

Period = 3.15722 [0.00002] d
Epoch = 131.6984 [0.0032] BKJD
Rp/R* = 0.0077 [0.0025]
a/R* = 3.11 [4.77]
b = 0.90 [0.38]
Seff = 2436.95 [1661.19]
Teff = 1792 [305] K
Rp = 1.69 [0.87] Re
a = 0.0454 [0.0184] AU
Ag = 3.53 [3.56] [0.71 σ]
Teffp = 3796 [733] K [2.52 σ]

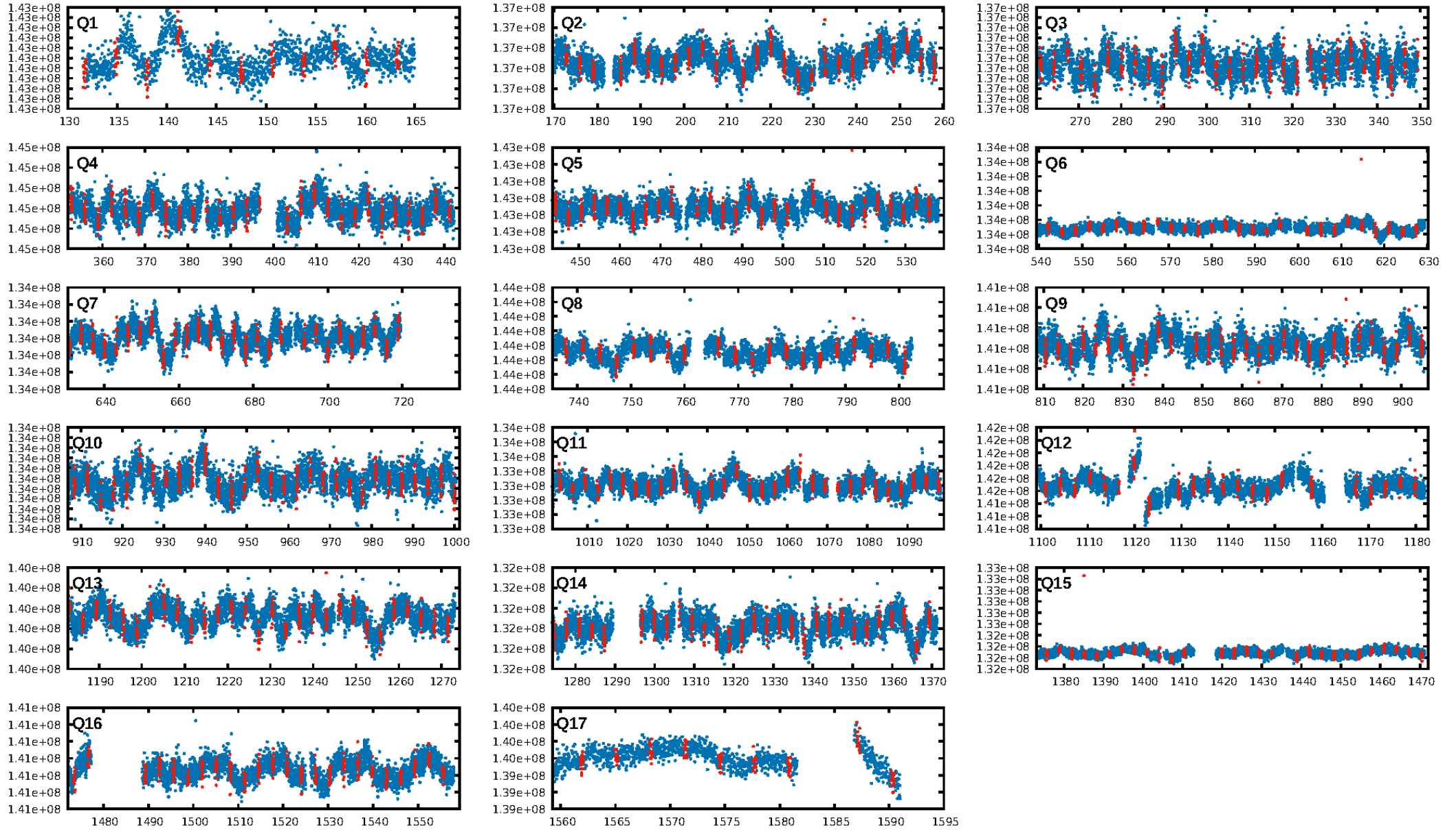
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [22.63 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.45e-42
RollingBand-fgt: 0.97 [381/391]
GhostDiagnostic-chr: 4.5
Centroid-sig: 2.4%
Centroid-so: 1.249 arcsec [1.49 σ]
OotOffset-rm: 0.481 arcsec [0.80 σ]
KicOffset-rm: 0.465 arcsec [0.69 σ]
OotOffset-st: 2/4/3/5 [14]
KicOffset-st: 2/4/3/5 [14]
DiffImageQuality-fgm: 0.57 [8/14]
DiffImageOverlap-fno: 1.00 [17/17]

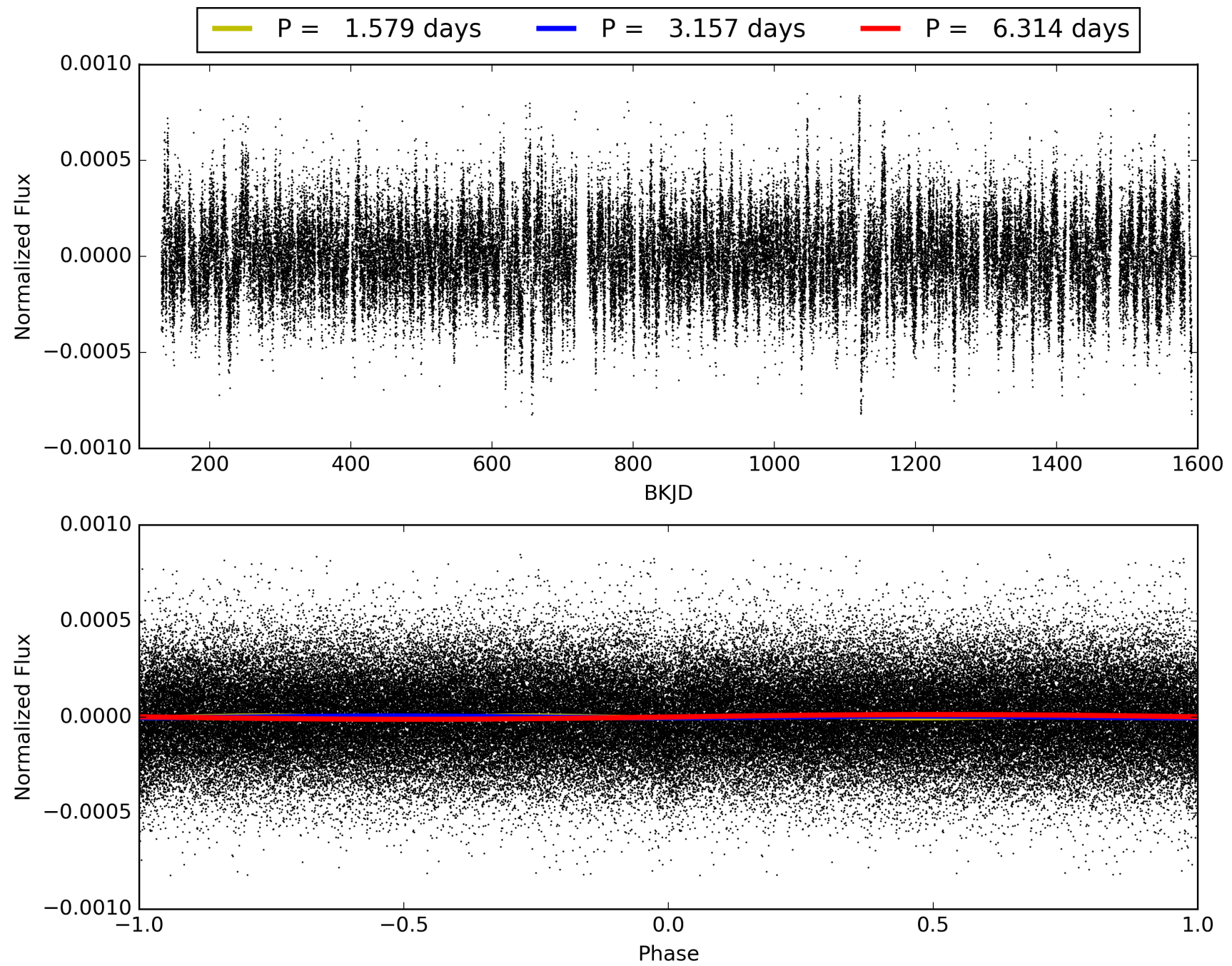
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:10:34 Z

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

TCE 009117416-02, PDC Light Curves

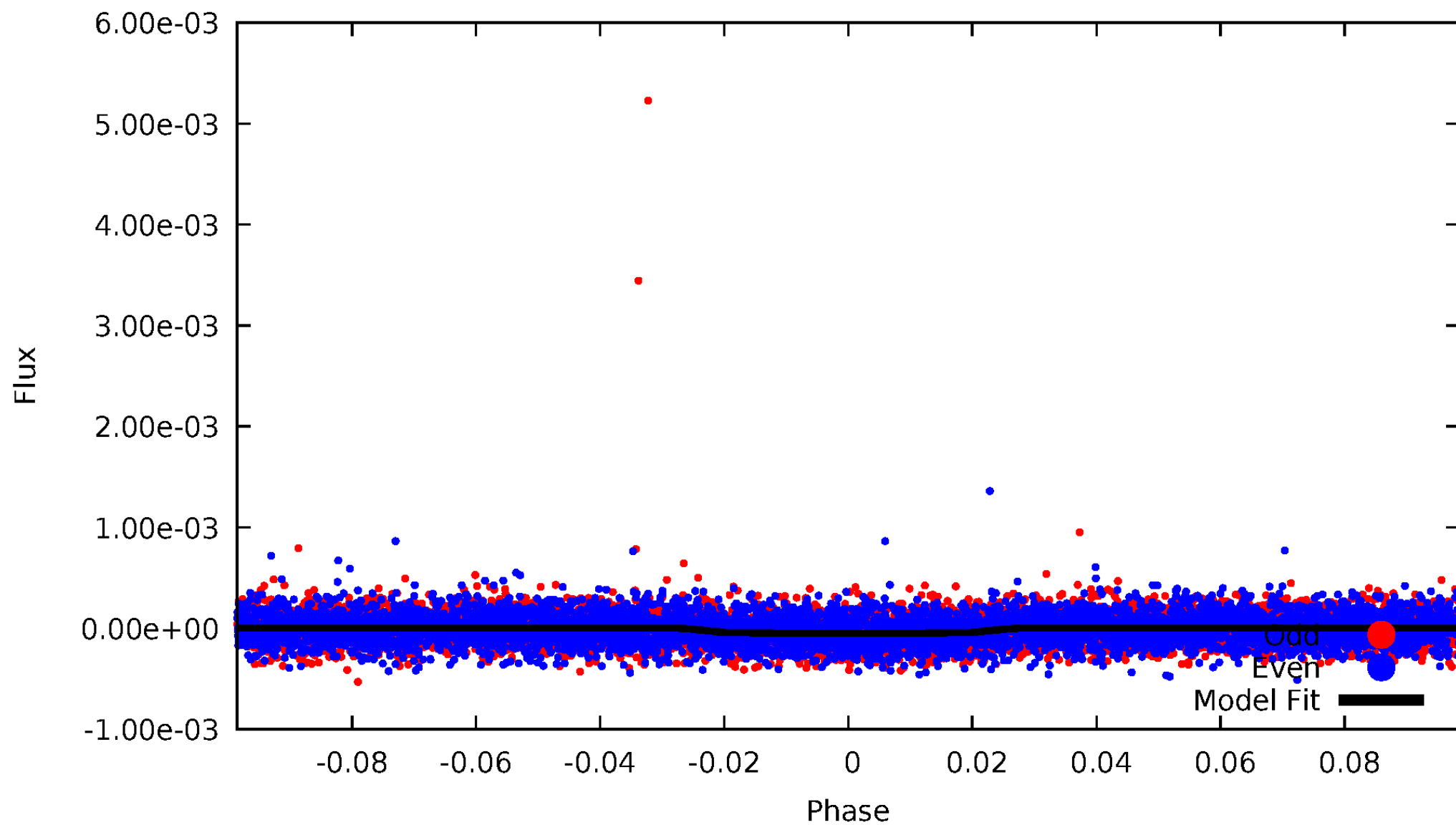


TCE 009117416-02



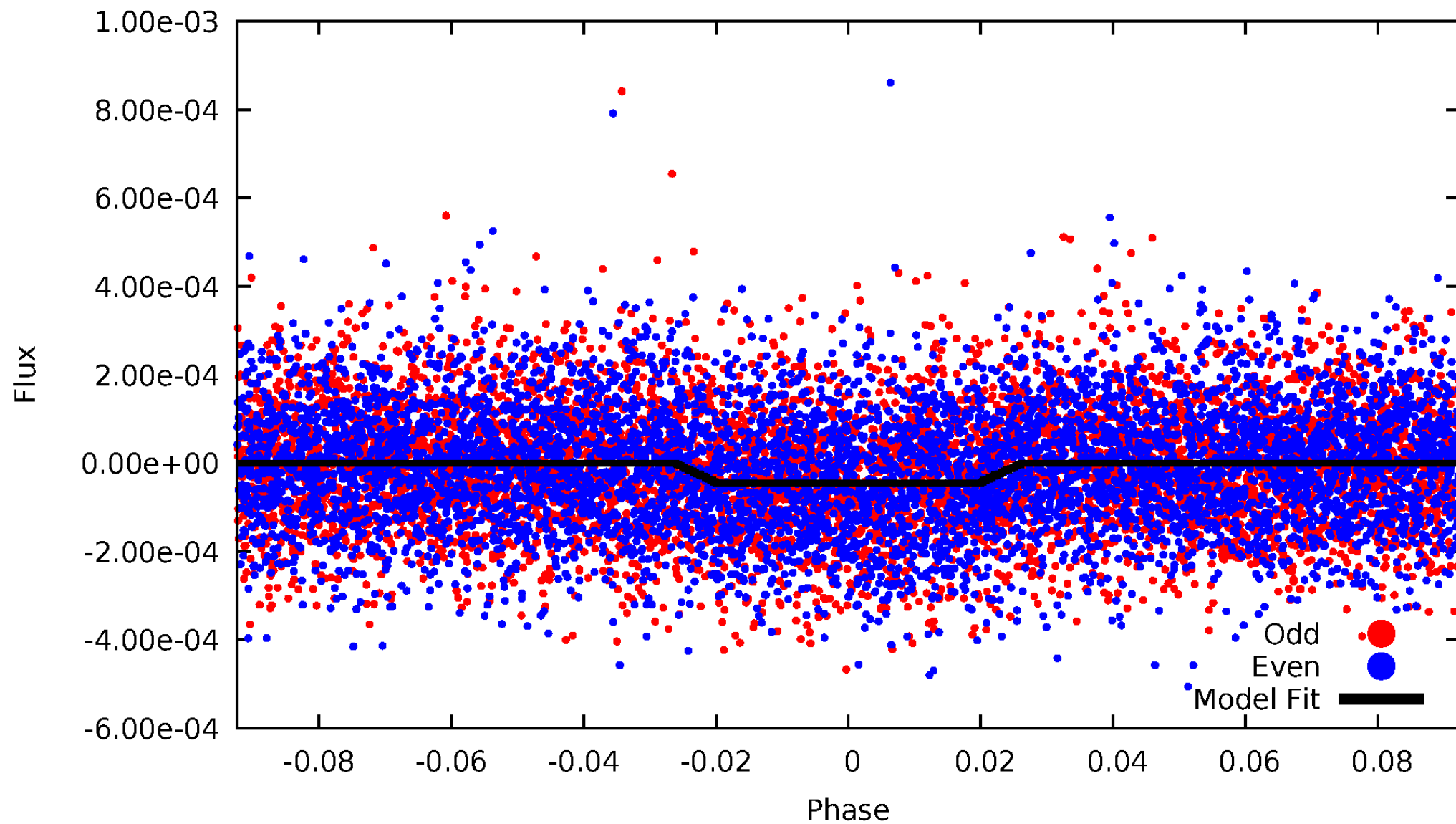
DV Odd/Even

TCE 009117416-02



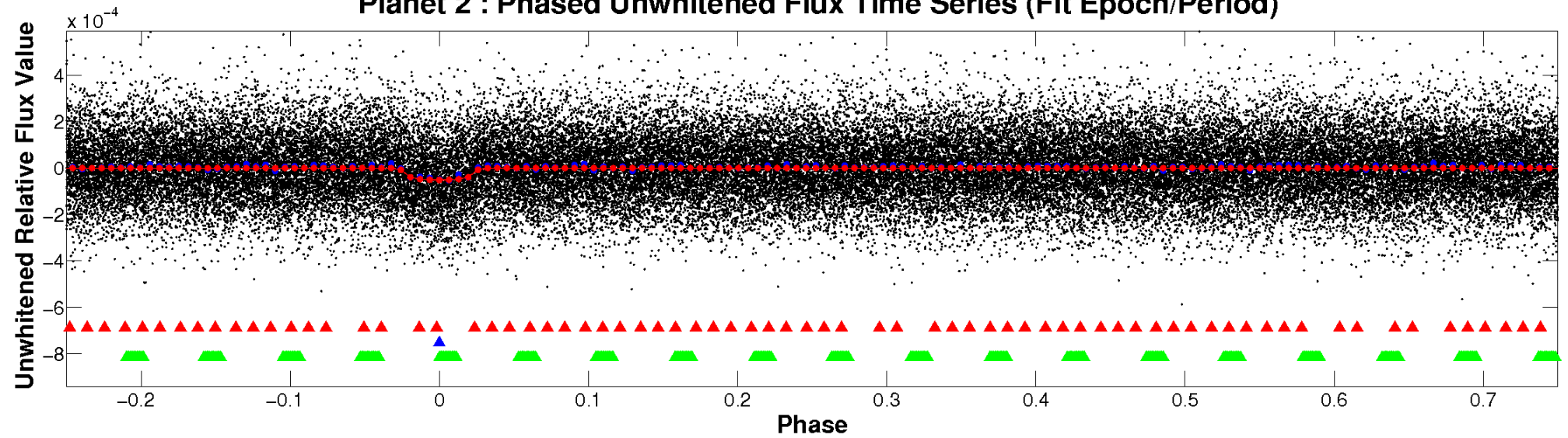
ALT Odd/Even

TCE 009117416-02

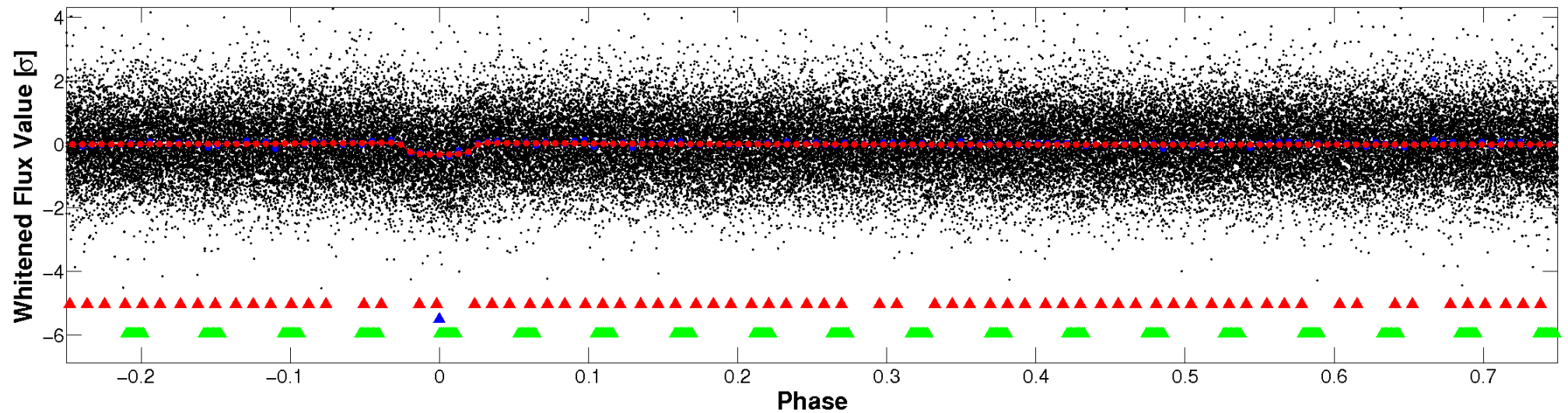


Non-Whitened Vs. Whitened Light Curve

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

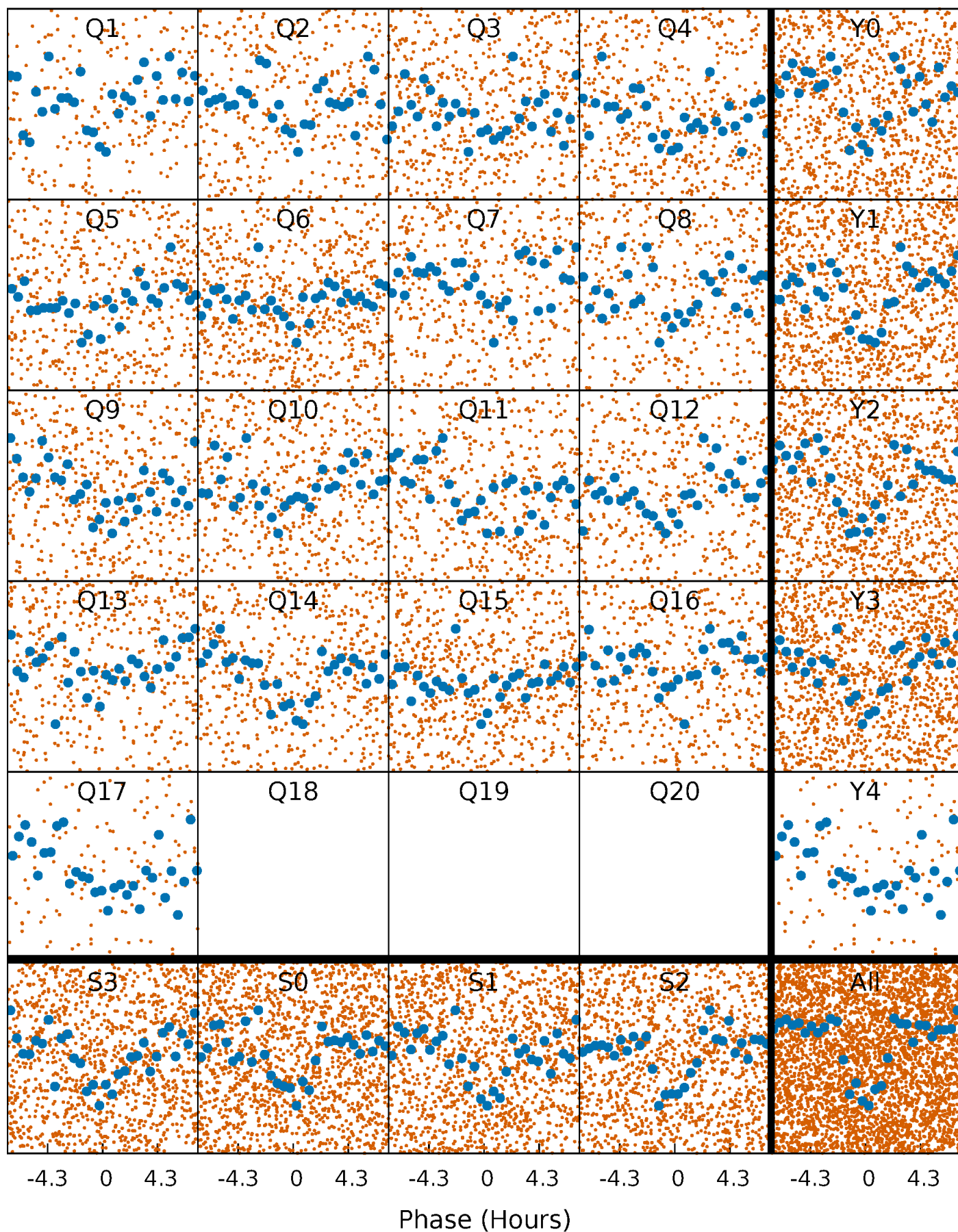


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



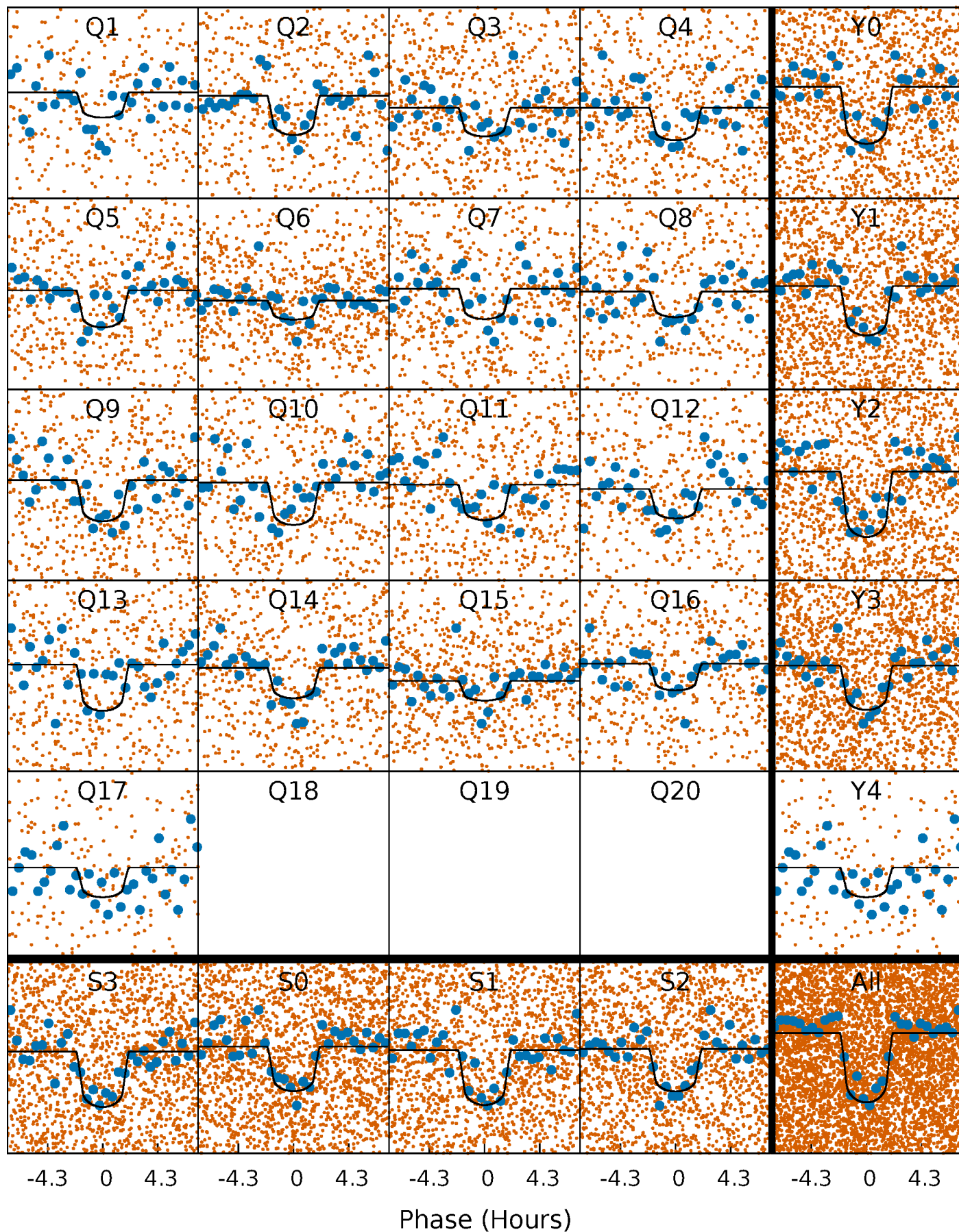
PDC Quarter-Phased Transit Curves

TCE 009117416-02 P= 3.157220 Days $T_0=131.698434$ (BKJD)



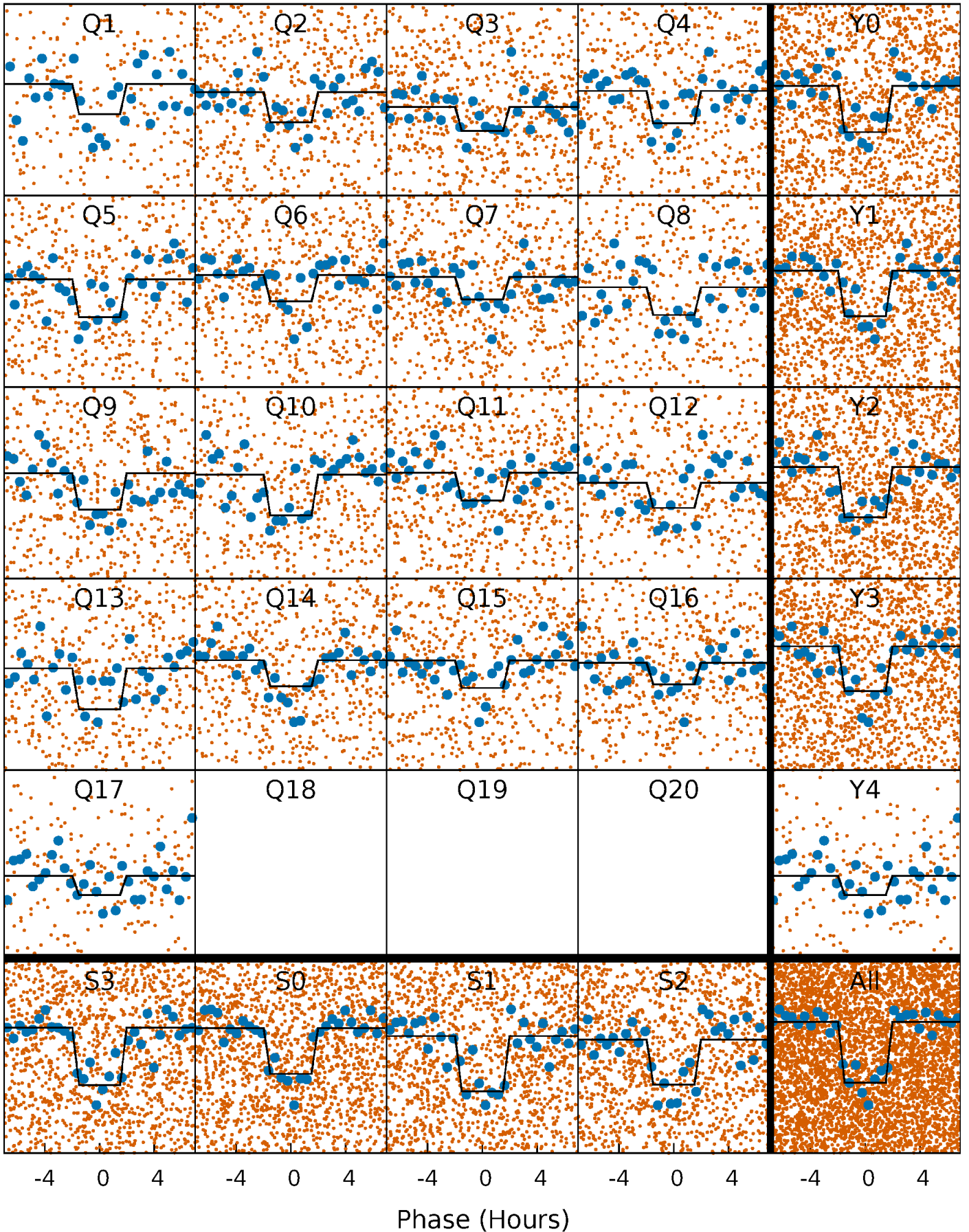
DV Quarter-Phased Transit Curves

TCE 009117416-02 P= 3.157220 Days $T_0=131.698434$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

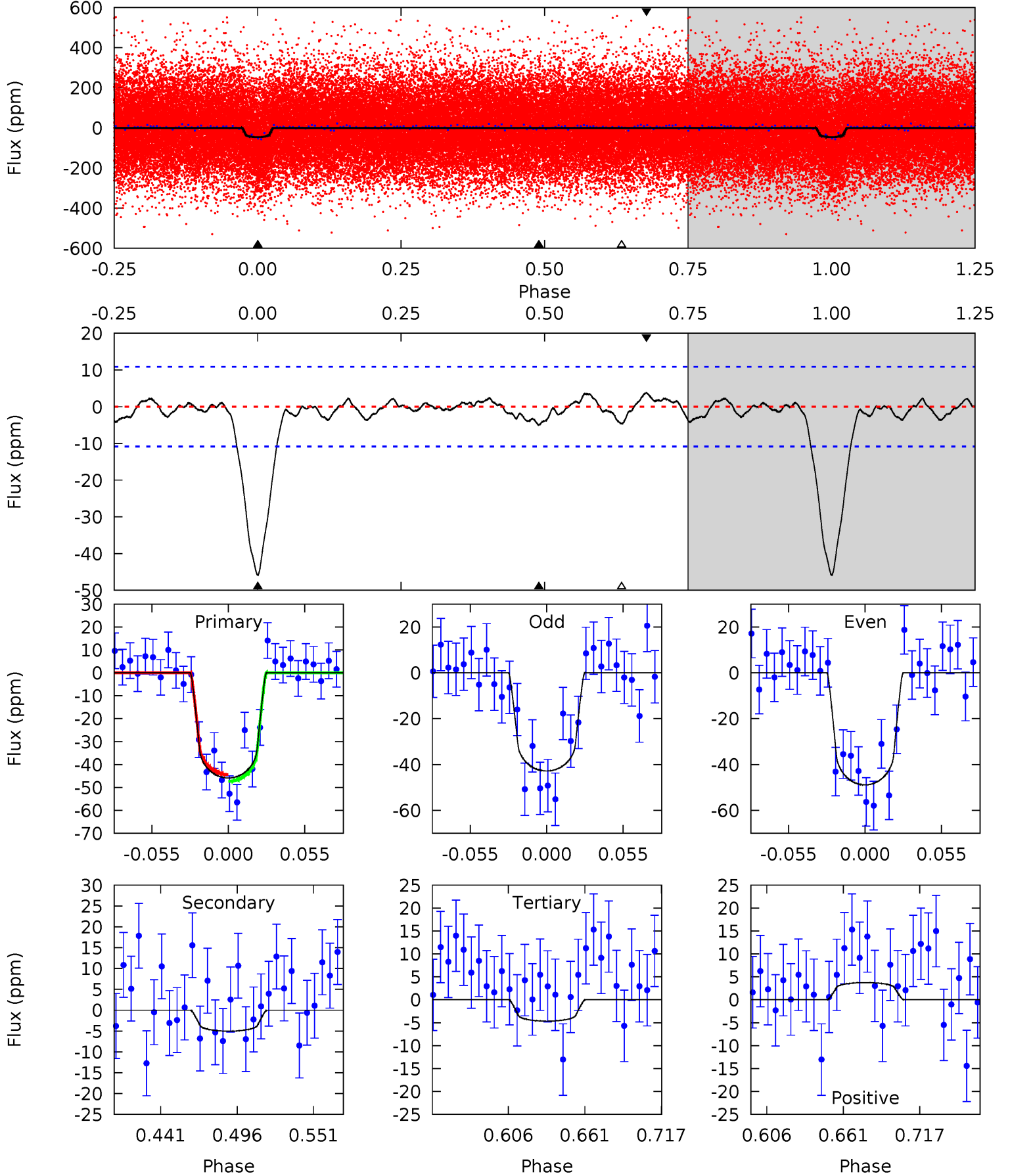
TCE 009117416-02 P= 3.157207 Days $T_0=131.701344$ (BKJD)



DV Model-Shift Uniqueness Test

009117416-02, P = 3.157220 Days, E = 128.541214 Days

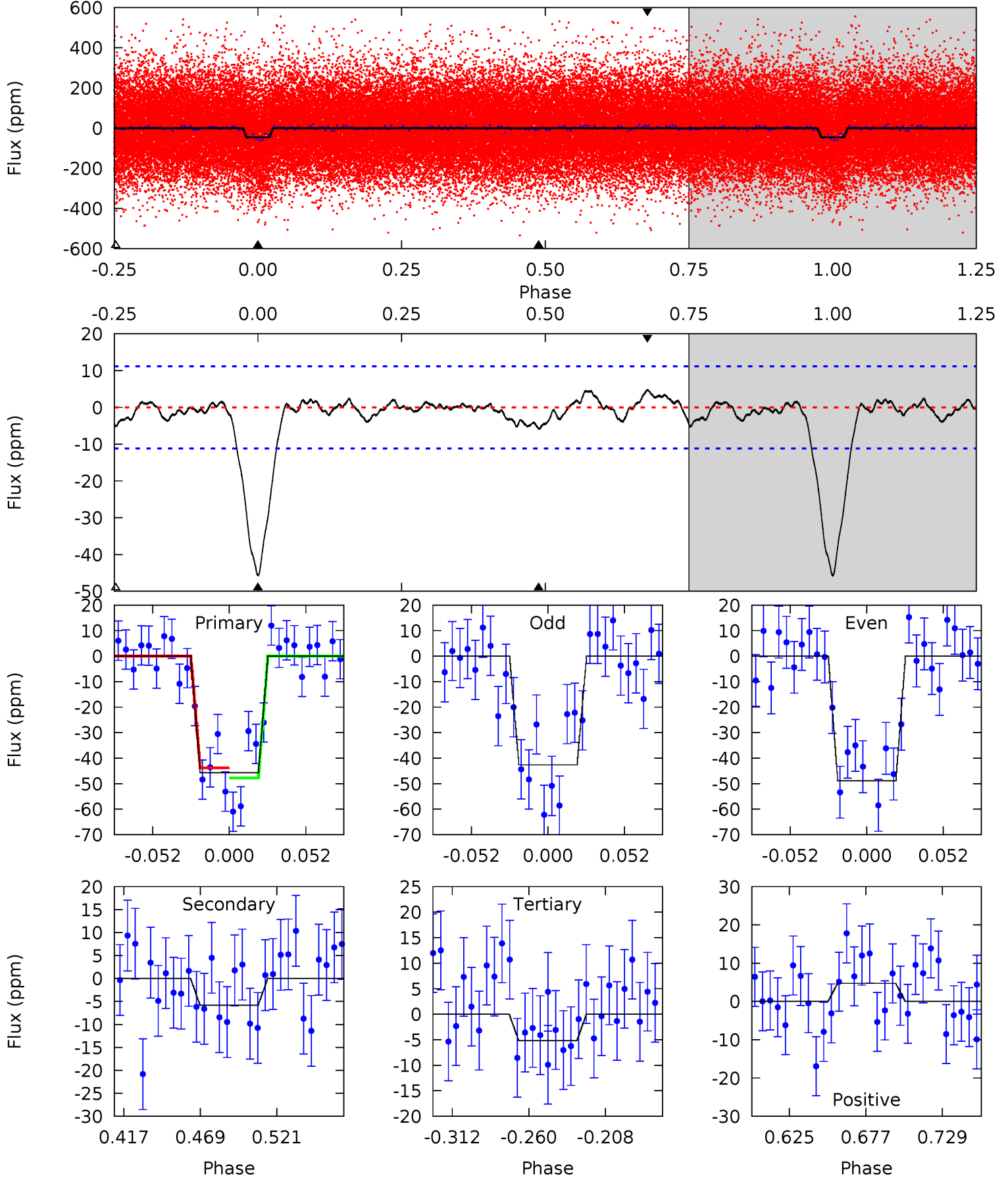
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.8	2.17	2.01	1.62	4.69	1.92	0.75	17.8	18.2	0.15	0.55	1.31	1.00	0.08	0.63



Alt Model-Shift Uniqueness Test

009117416-02, P = 3.157207 Days, E = 128.544137 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.3	2.45	2.19	1.99	4.70	1.94	0.79	17.1	17.3	0.27	0.46	1.32	0.97	0.09	0.84



Stellar Parameters For KIC 009117416

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6120^{+195}_{-217}	$3.934^{+0.398}_{-0.133}$	$0.020^{+0.250}_{-0.300}$	$2.000^{+0.467}_{-0.801}$	$1.251^{+0.190}_{-0.233}$	$0.220^{+0.689}_{-0.090}$
	+3%/-4%	+10%/-3%	+1250%/-1500%	+23%/-40%	+15%/-19%	+313%/-41%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009117416-02 / KOI 3425.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-5 ± 2	$1.55^{+0.64}_{-0.53}$	2458^{+188}_{-269}	3622^{+596}_{-558}	$2.271^{+3.518}_{-1.326}$
Alt.	-6 ± 2	$1.38^{+0.58}_{-0.53}$	2471^{+174}_{-271}	3868^{+805}_{-541}	$3.299^{+5.649}_{-1.945}$

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

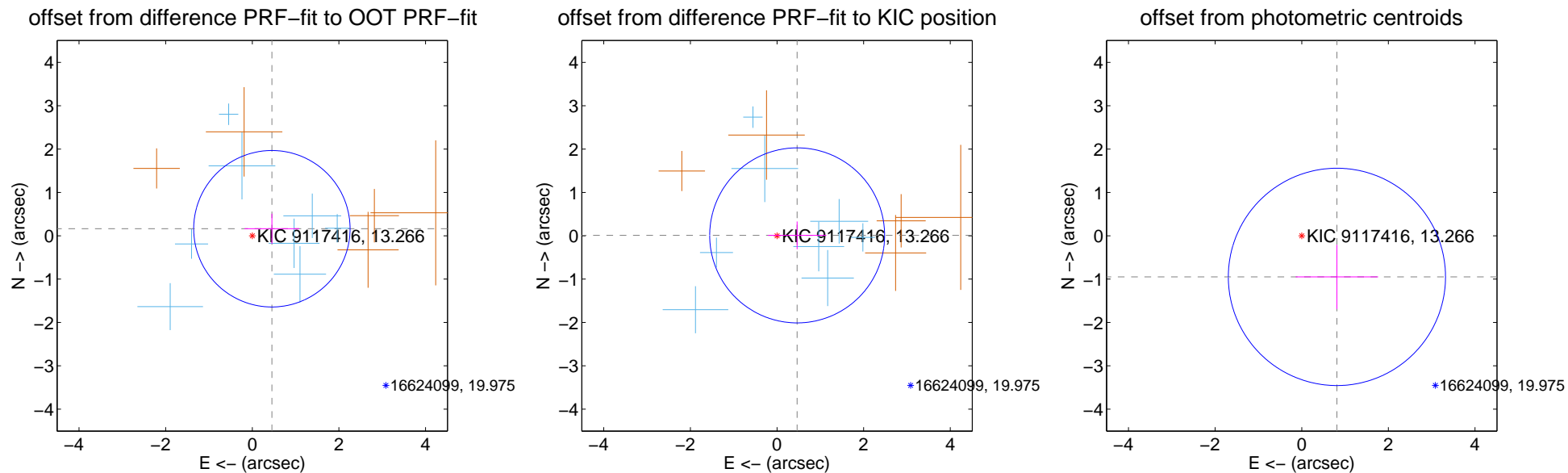
DV Centroid Data

Supplemental centroid analysis for 009117416-02. Kepler magnitude: 13.27. Transit SNR 15.03

There are 8 quarters with good PRF difference image offsets

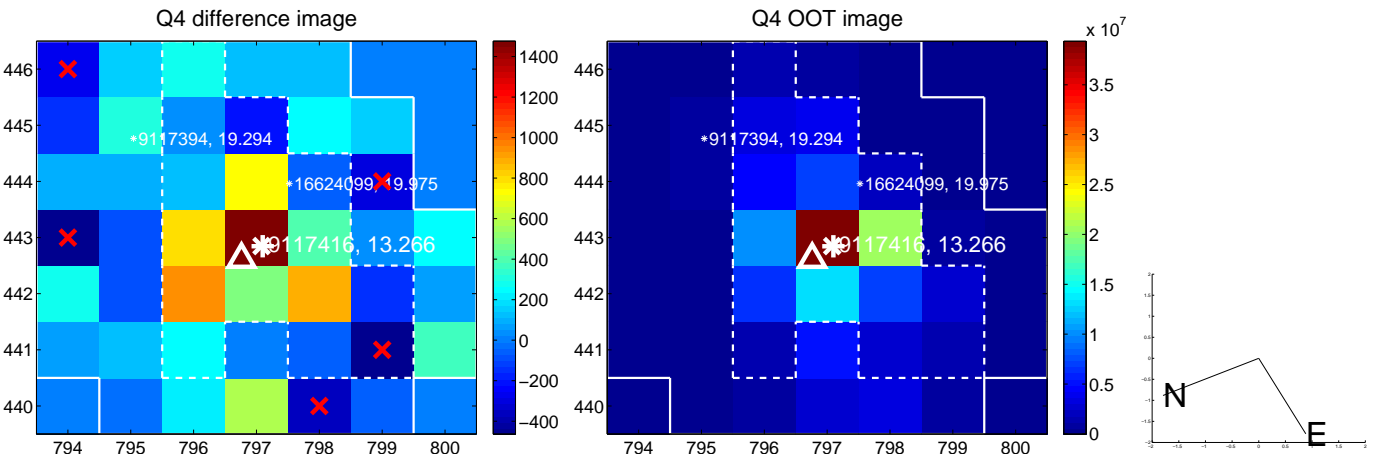
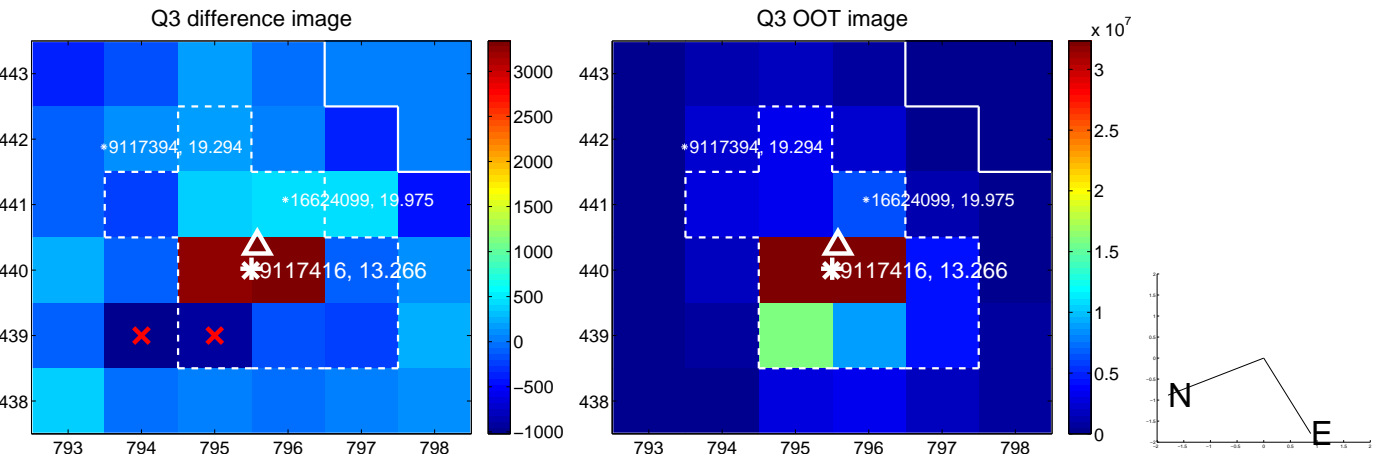
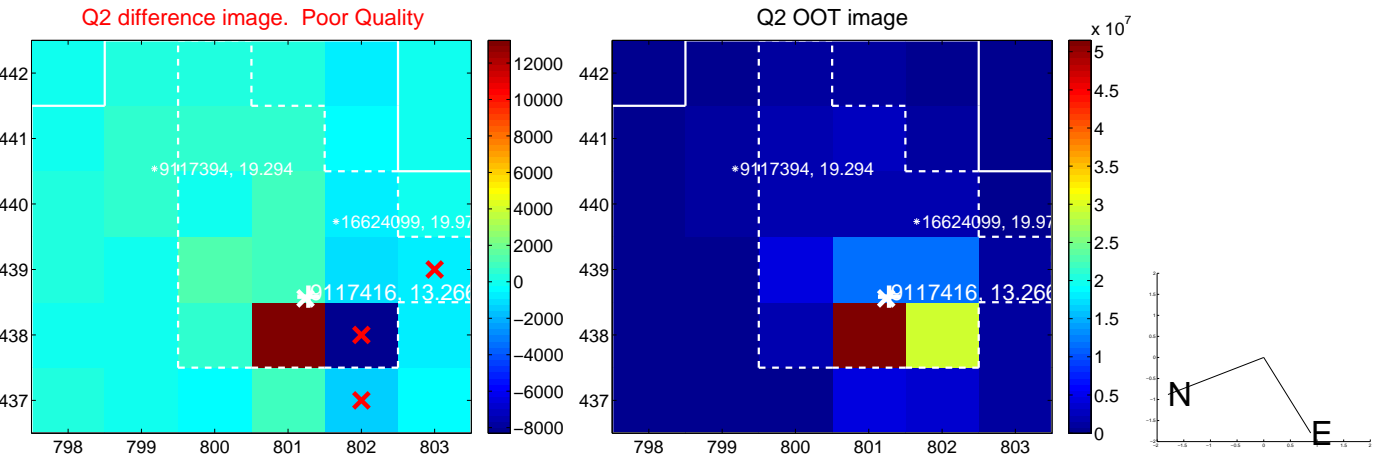
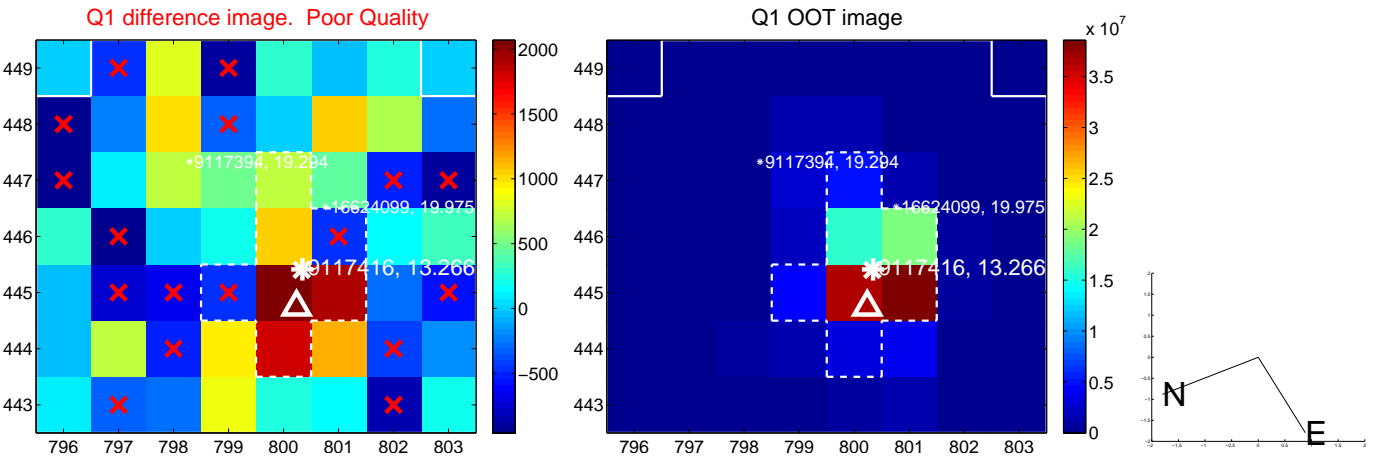
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.481 ± 0.602	0.80	-0.452 ± 0.633	0.162 ± 0.347
PRF-fit source offset from KIC position	0.465 ± 0.673	0.69	-0.465 ± 0.674	0.009 ± 0.320
photometric centroid source offset	1.25 ± 0.84	1.49	-0.81 ± 0.95	-0.95 ± 0.74

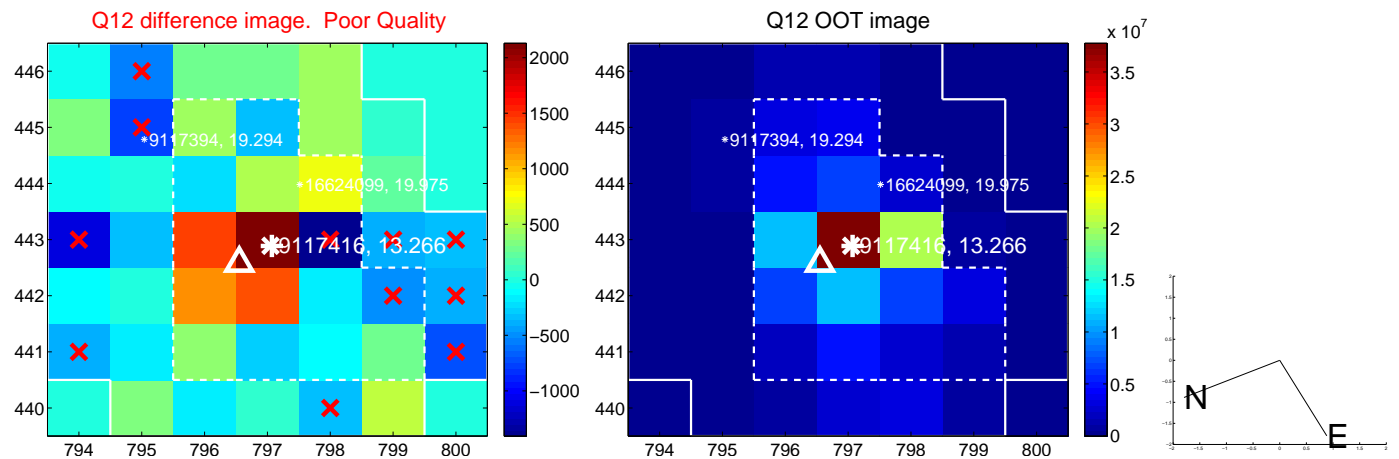
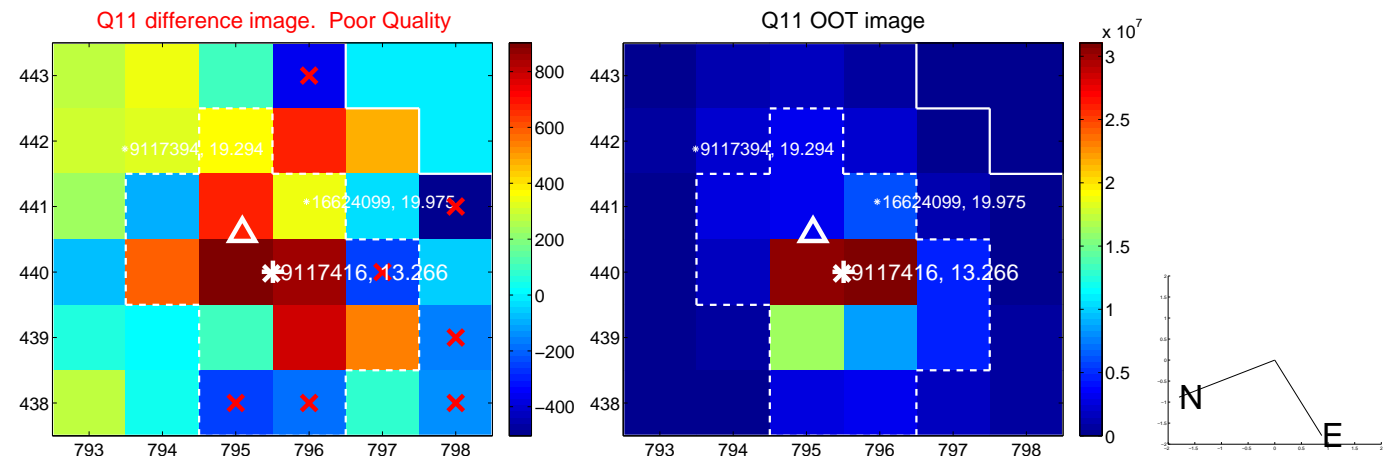
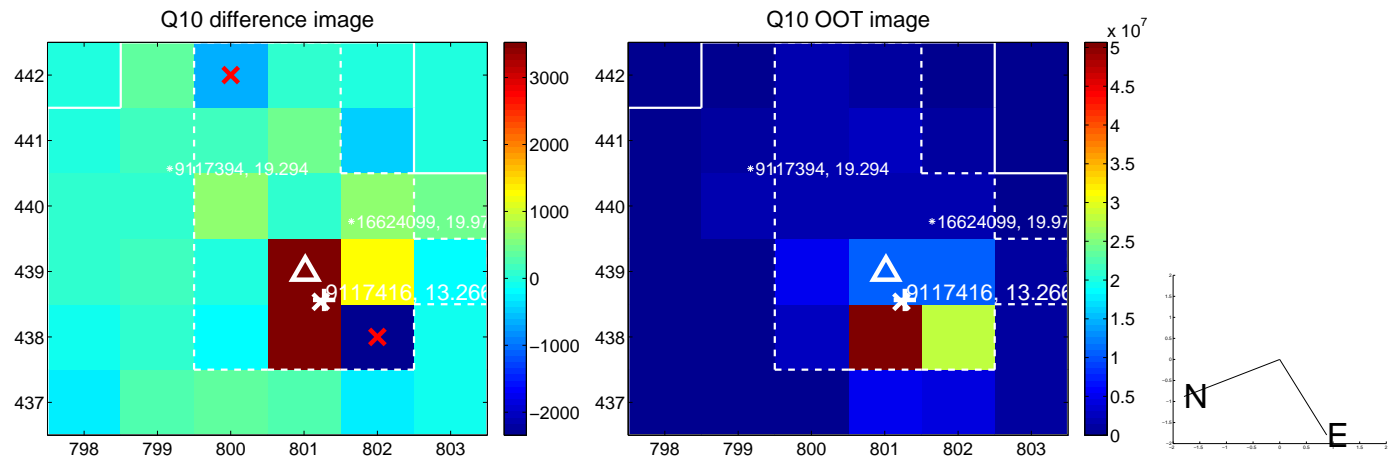
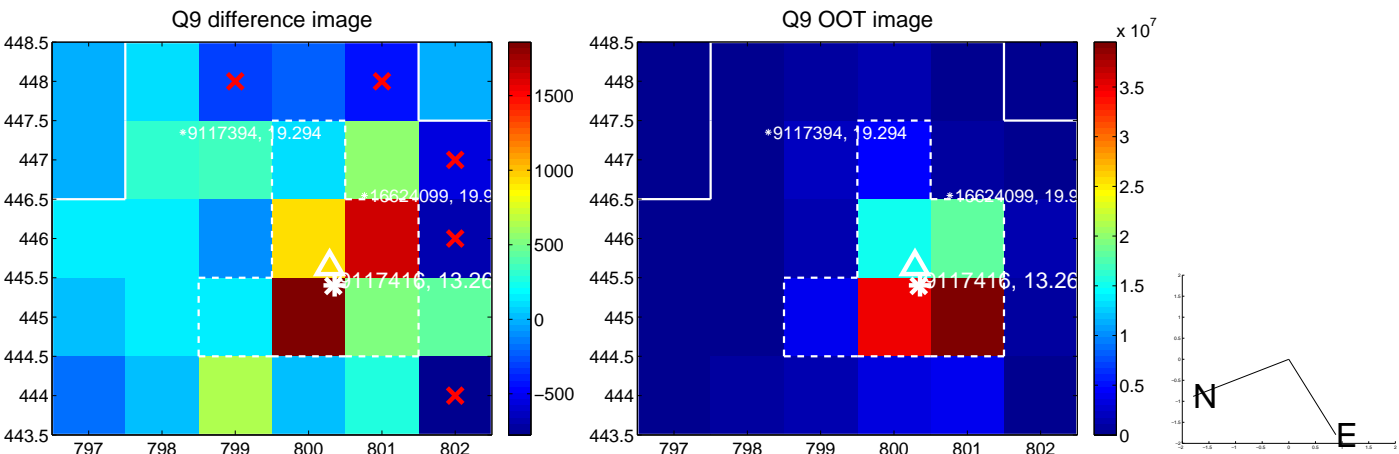


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

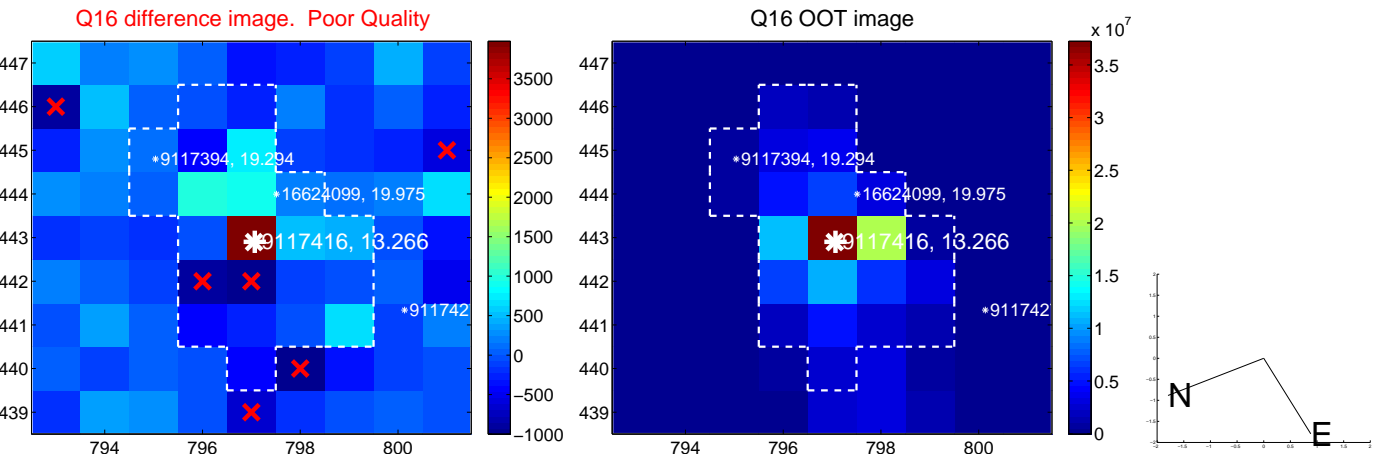
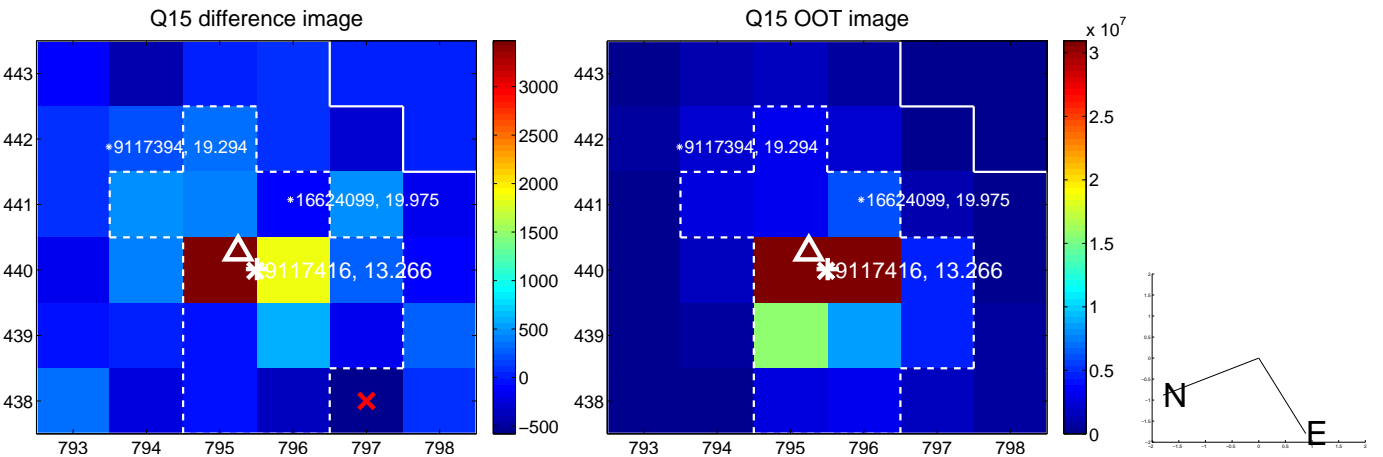
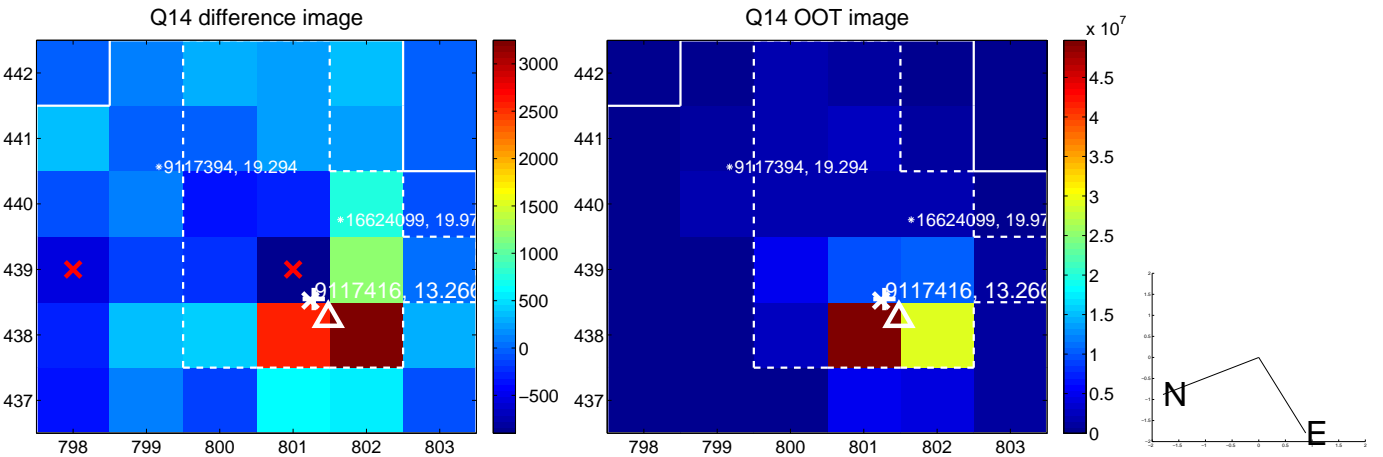
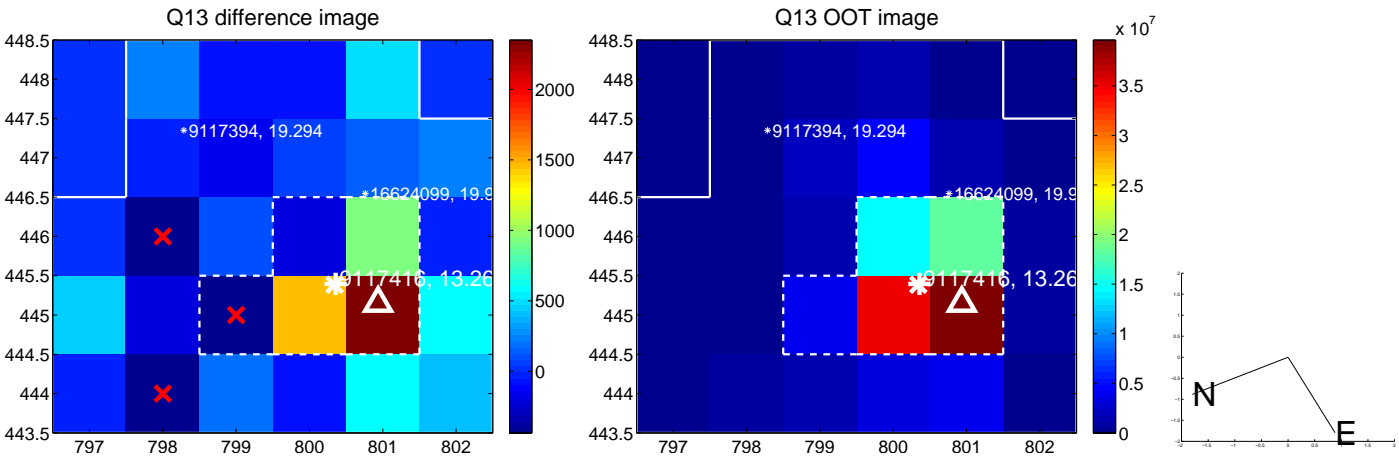
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



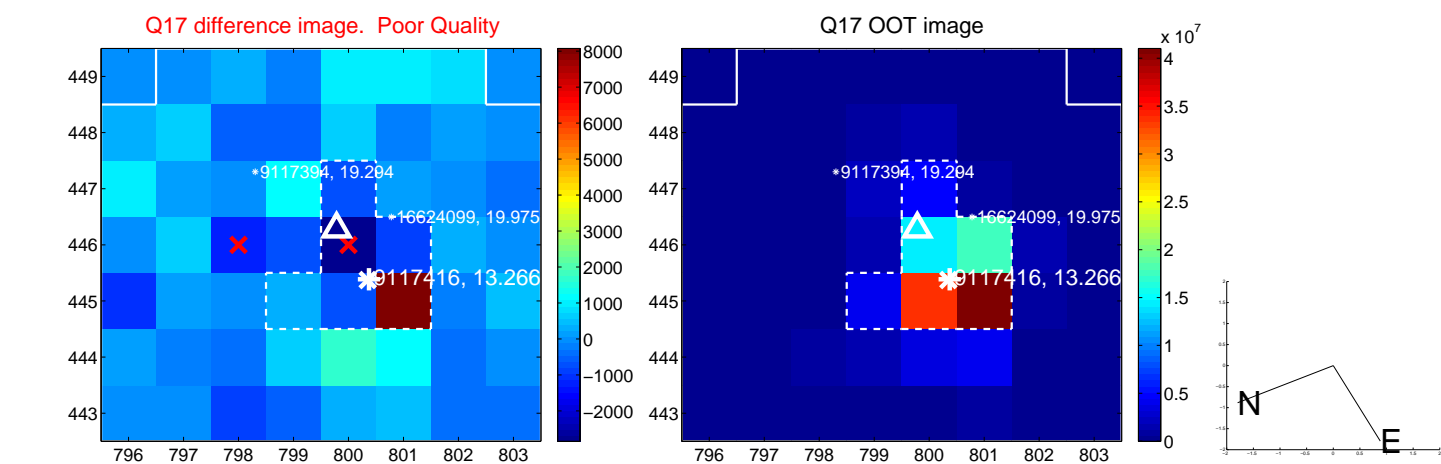
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



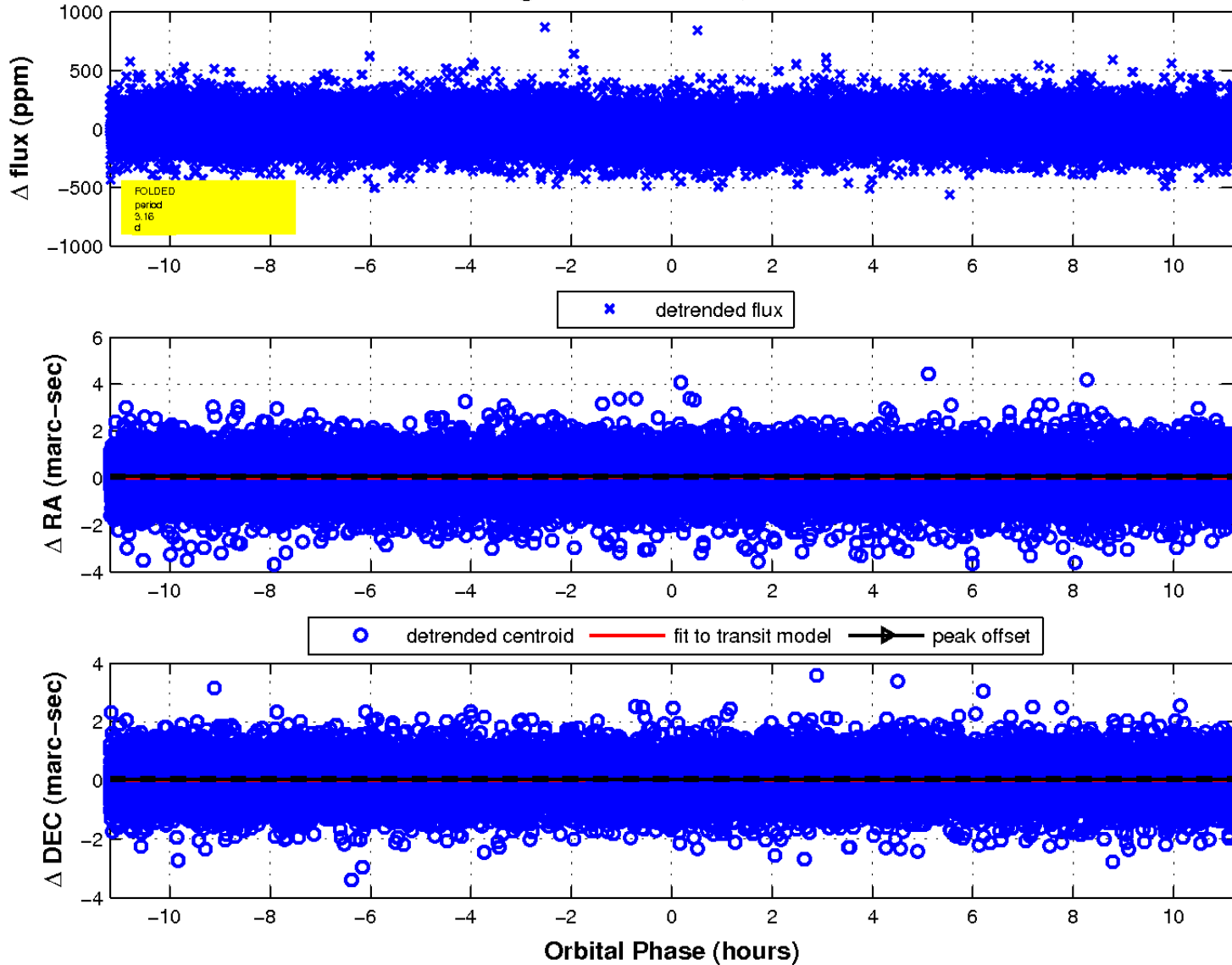
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

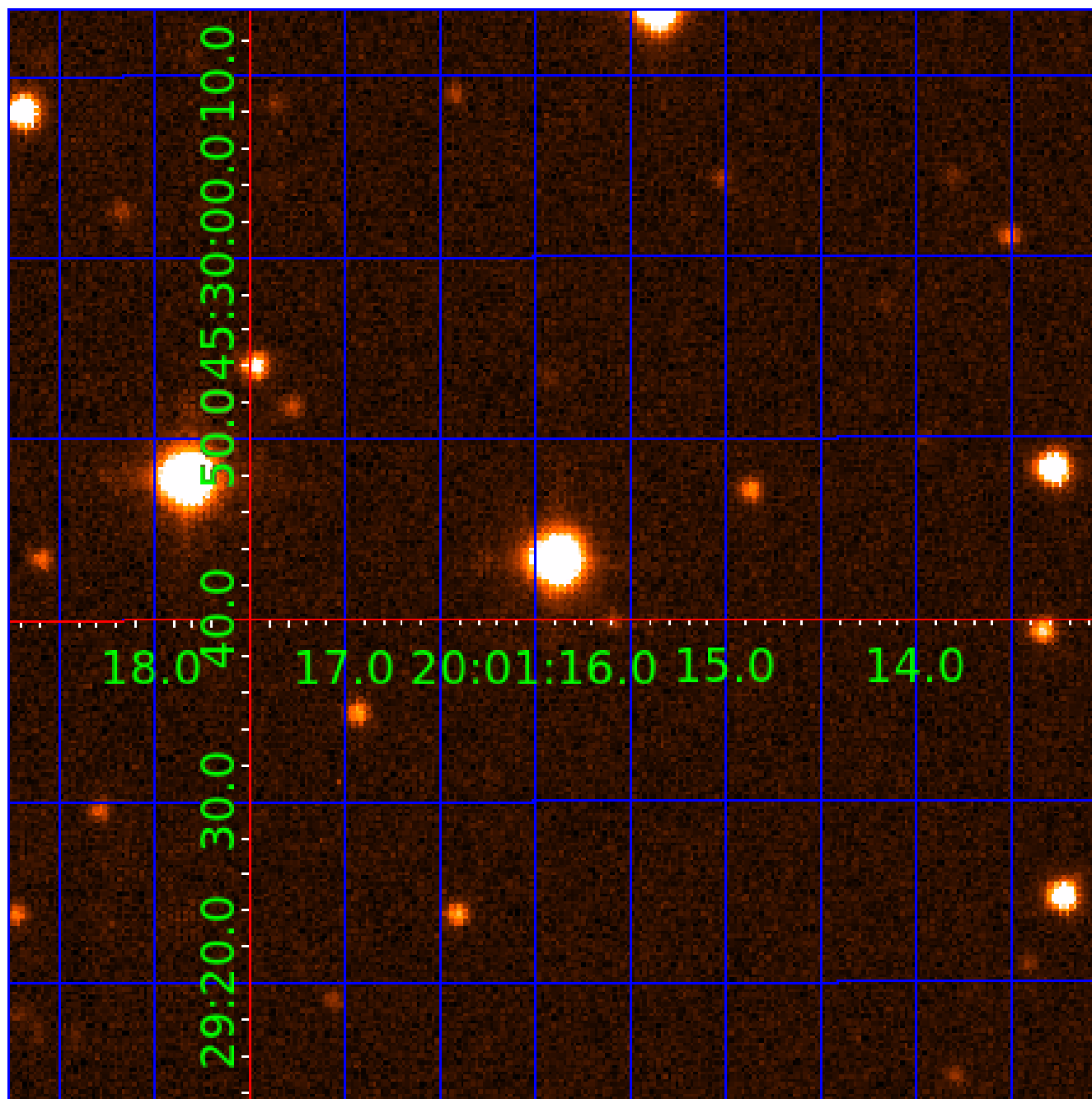


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



KIC 009117416

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})
009117416-01	OBS	3425.01	20.034784	145.449957	125.7	7.339	16.5	17.5	2.00	6120	2.87	207.43
009117416-02	OBS	3425.02	3.157220	131.698434	51.6	3.730	13.8	15.0	2.00	6120	1.69	2436.95
009117416-03	OBS	3425.03	7.643587	137.885088	60.1	2.955	8.2	9.4	2.00	6120	1.95	749.65

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009117416-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
009117416-02	OBS	PC	0.95	0	0	0	0	NO_COMMENT
009117416-03	OBS	PC	0.87	0	0	0	0	NO_COMMENT

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

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

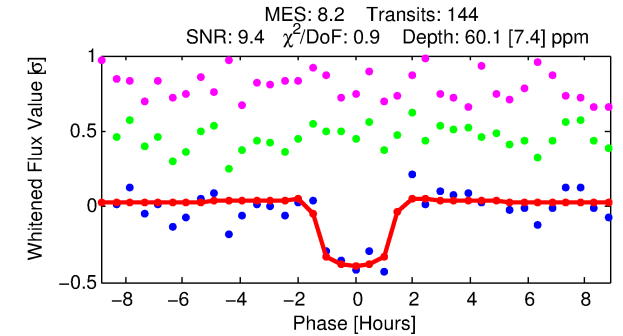
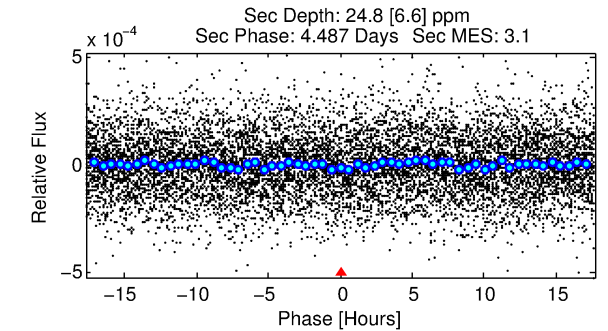
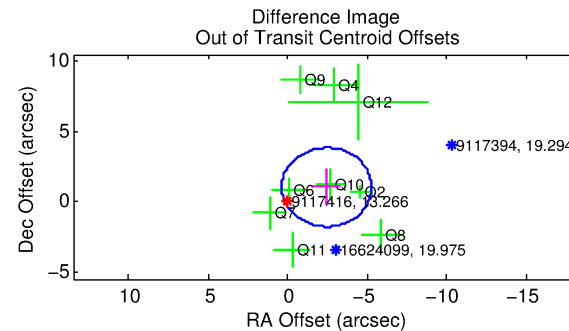
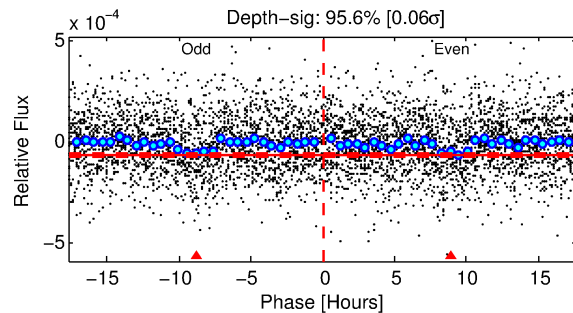
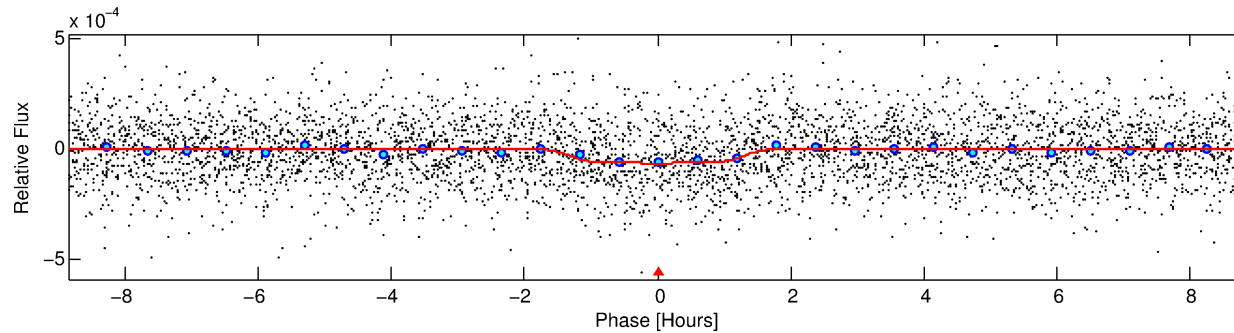
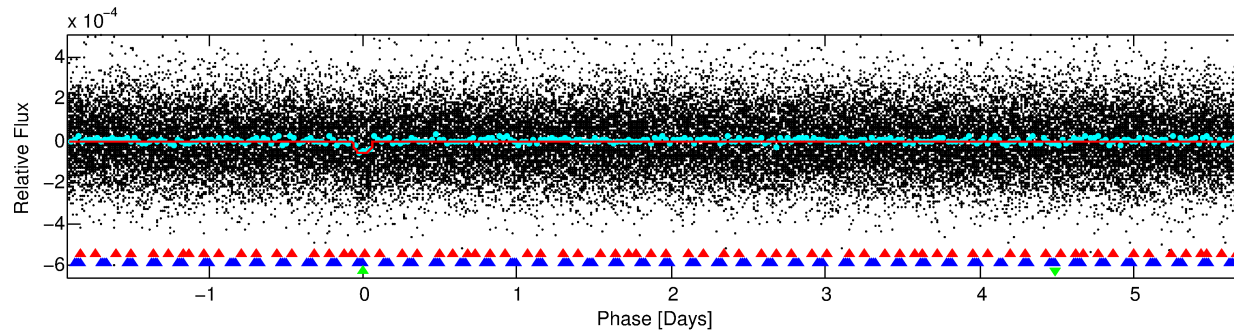
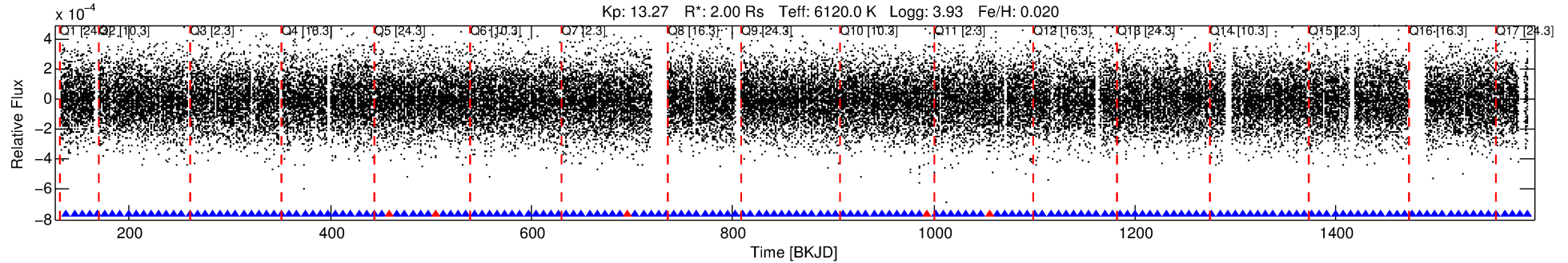
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009117416-03

No Significant Match Found

DV One-Page Summary

KIC: 9117416 Candidate: 3 of 3 Period: 7.644 d
KOI: K03425.03 Corr: 0.937



DV Fit Results:

Period = 7.64359 [0.00006] d
Epoch = 137.8851 [0.0059] BKJD
Rp/R* = 0.0089 [0.0031]
a/R* = 6.58 [12.23]
b = 0.95 [0.18]
Seff = 749.65 [511.01]
Teq = 1334 [227] K
Rp = 1.95 [1.03] Re
a = 0.0819 [0.0332] AU
Ag = 24.01 [23.95] [0.96 σ]
Teff = 4567 [862] K [3.62 σ]

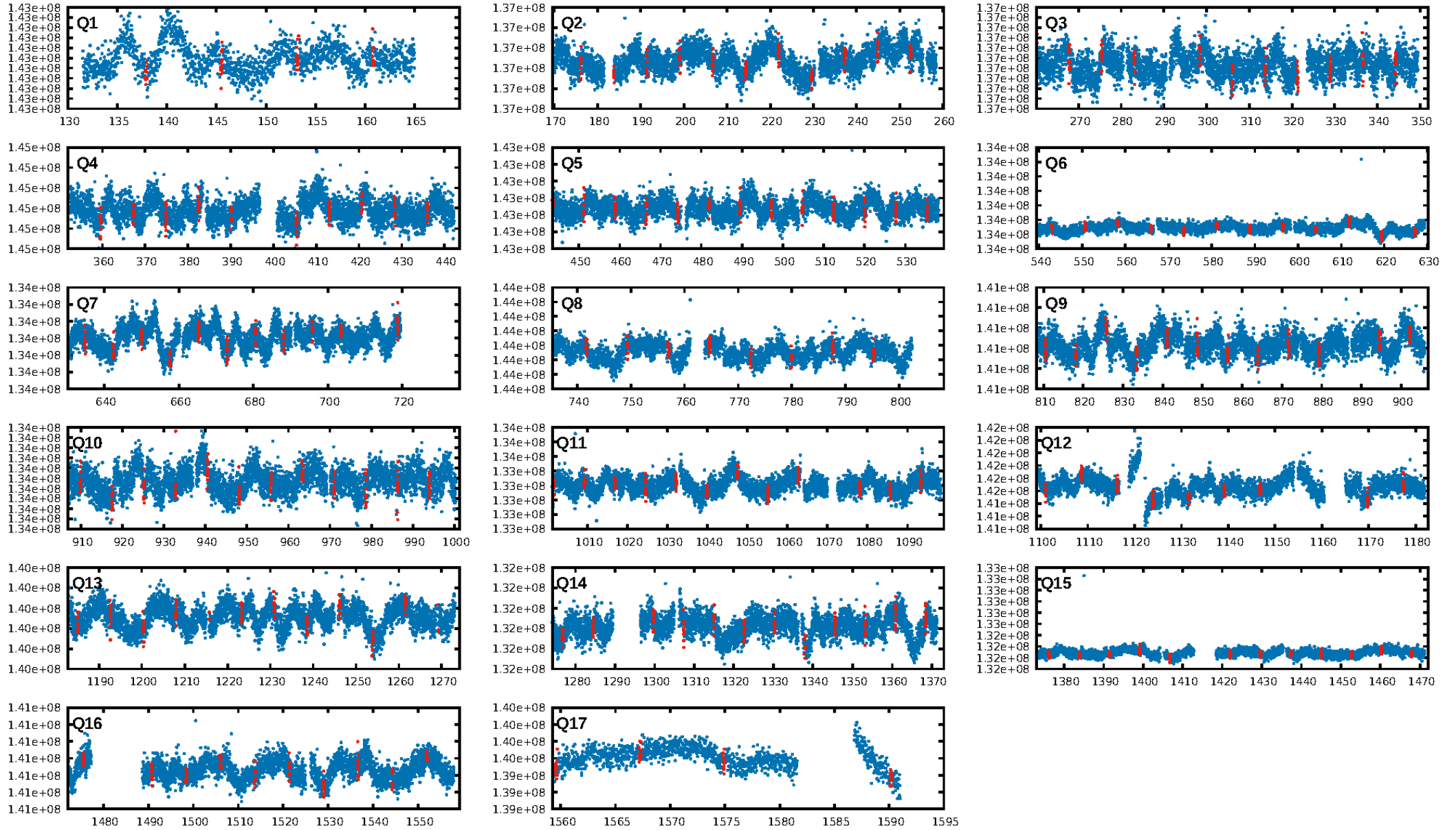
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [22.63 σ]
LongPeriod-sig: 100.0% [37.59 σ]
ModelChiSquare2-sig: 99.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 5.02e-16
RollingBand-fgt: 0.96 [134/139]
GhostDiagnostic-chr: 3.987
Centroid-sig: 23.9%
Centroid-so: 1.043 arcsec [0.84 σ]
OotOffset-rm: 2.649 arcsec [2.83 σ]
KicOffset-rm: 2.594 arcsec [2.84 σ]
OotOffset-st: 3/2/3/1 [9]
KicOffset-st: 3/2/3/1 [9]
DiffImageQuality-fgm: 0.11 [1/9]
DiffImageOverlap-fno: 1.00 [17/17]

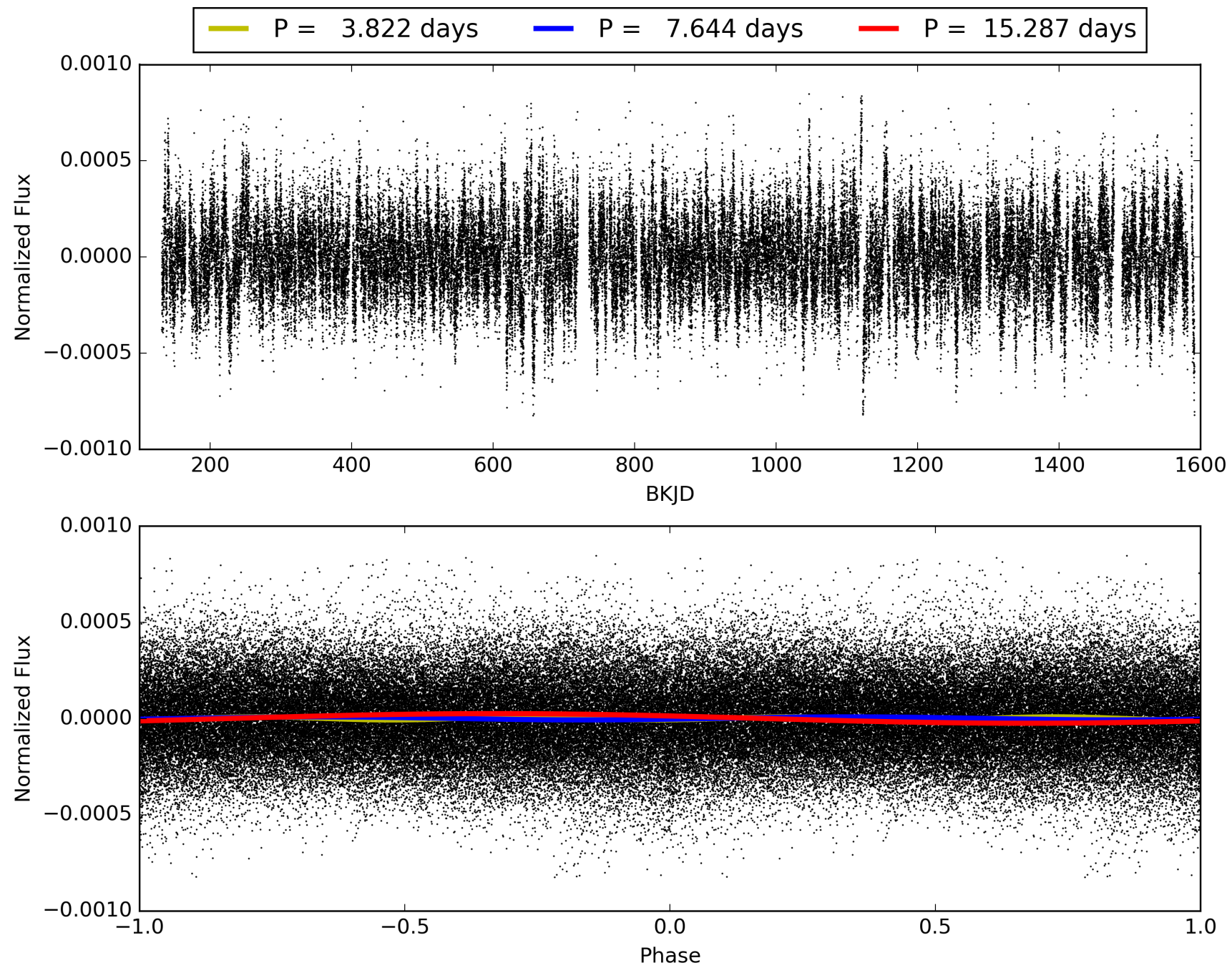
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 12:10:42 Z

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

TCE 009117416-03, PDC Light Curves

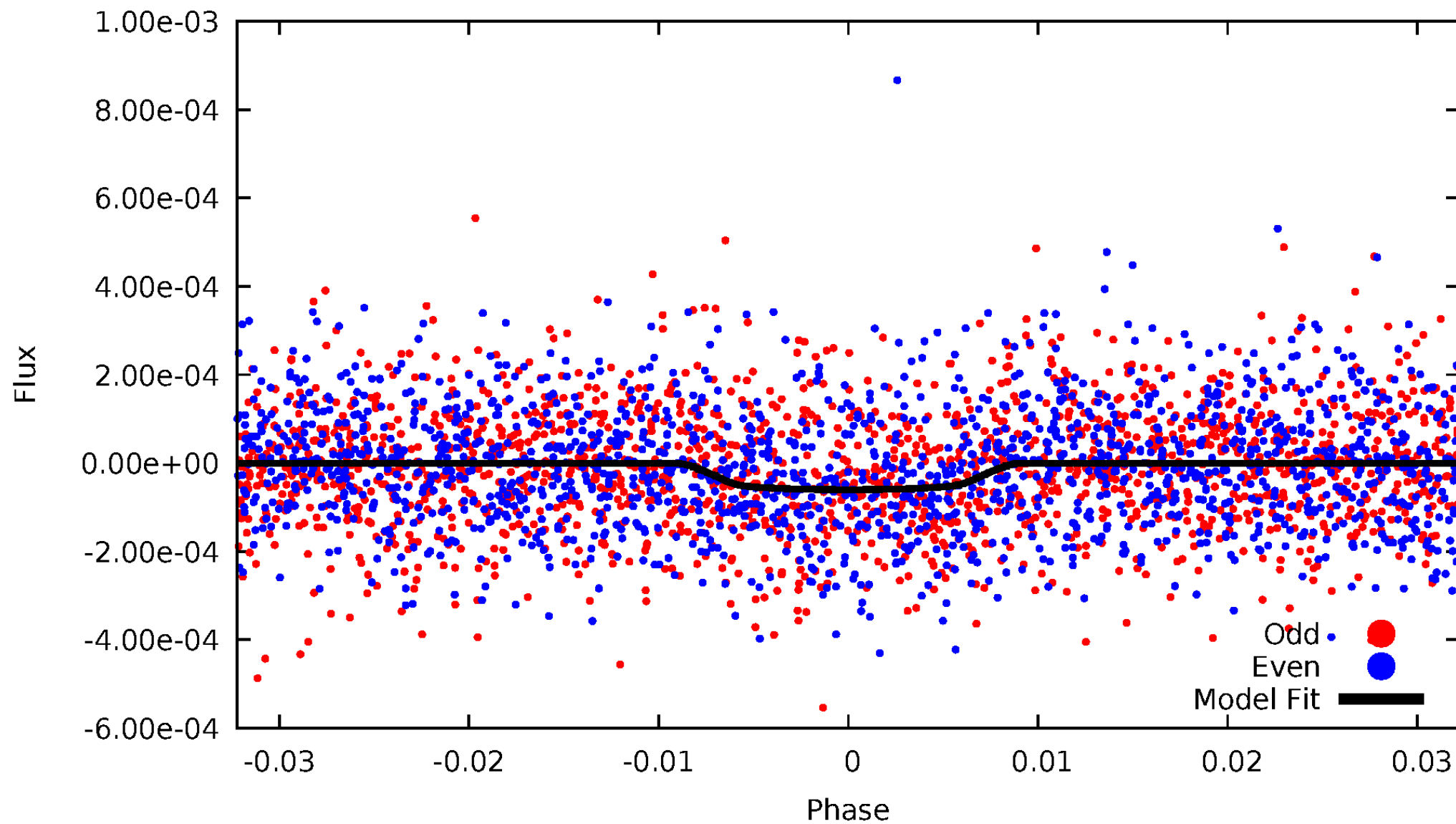


TCE 009117416-03



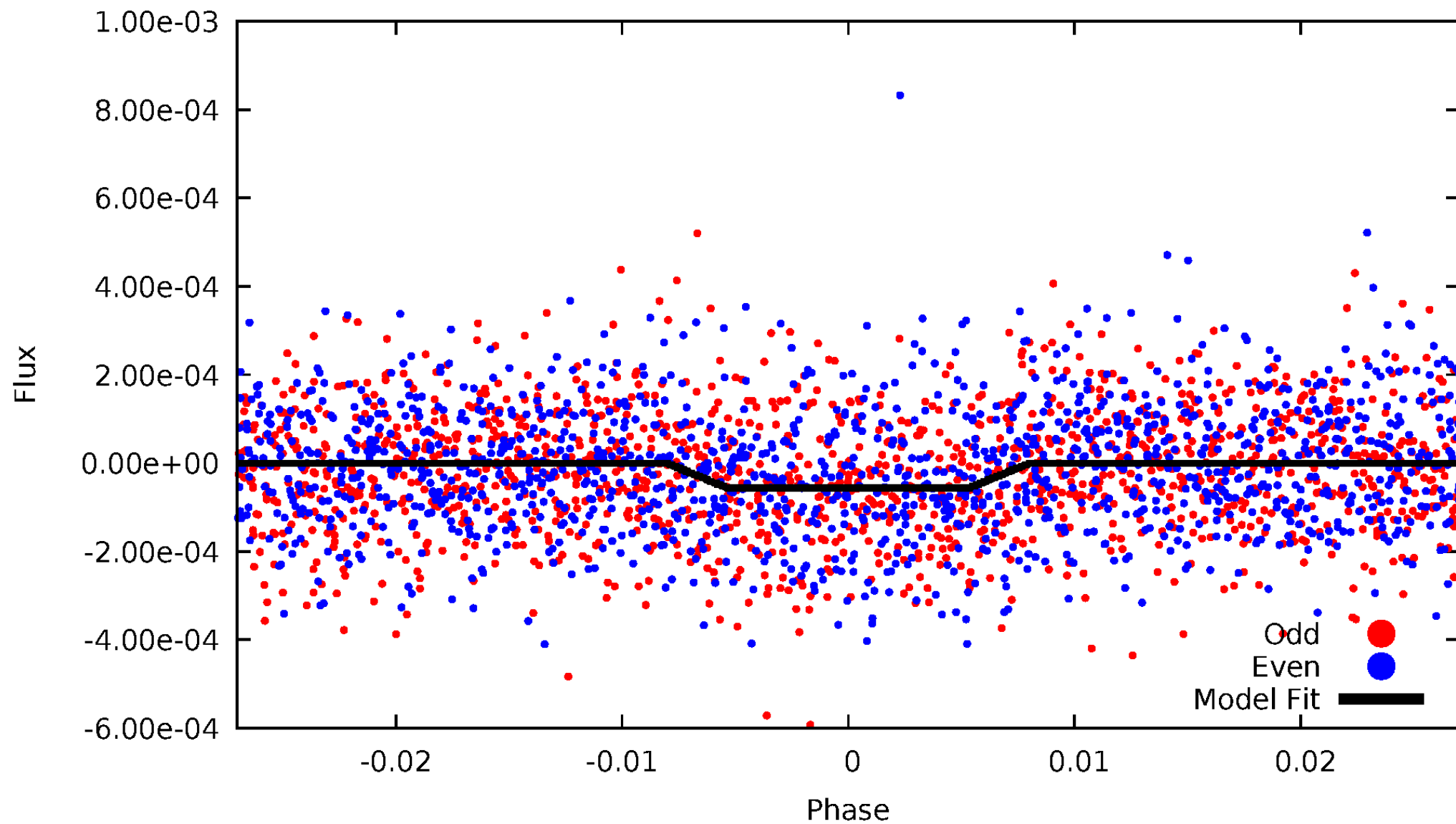
DV Odd/Even

TCE 009117416-03

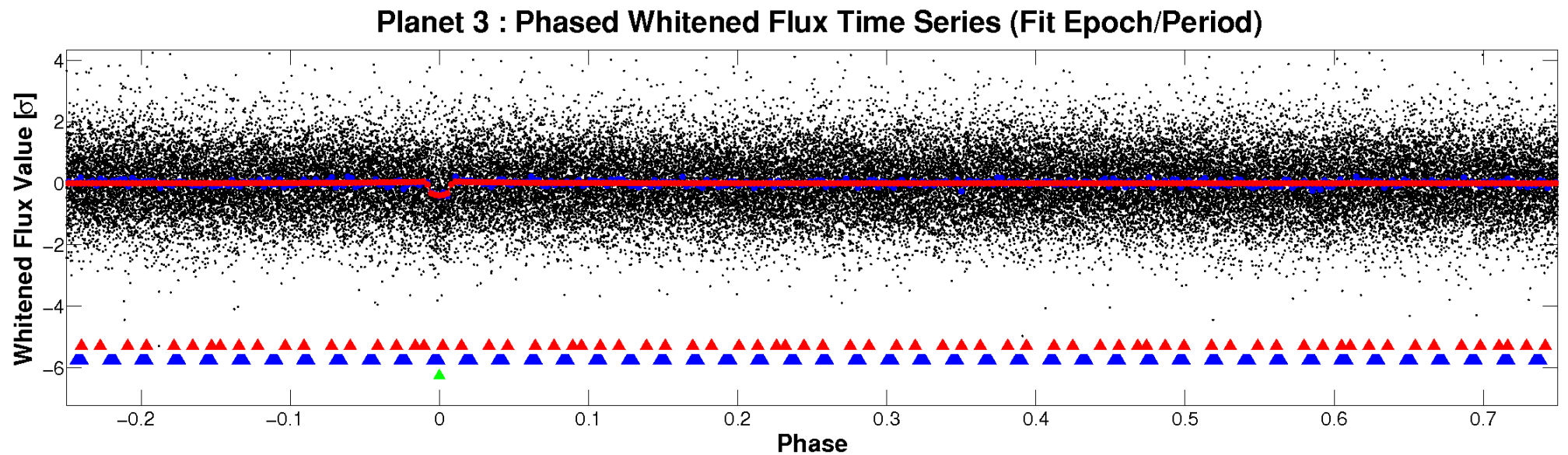
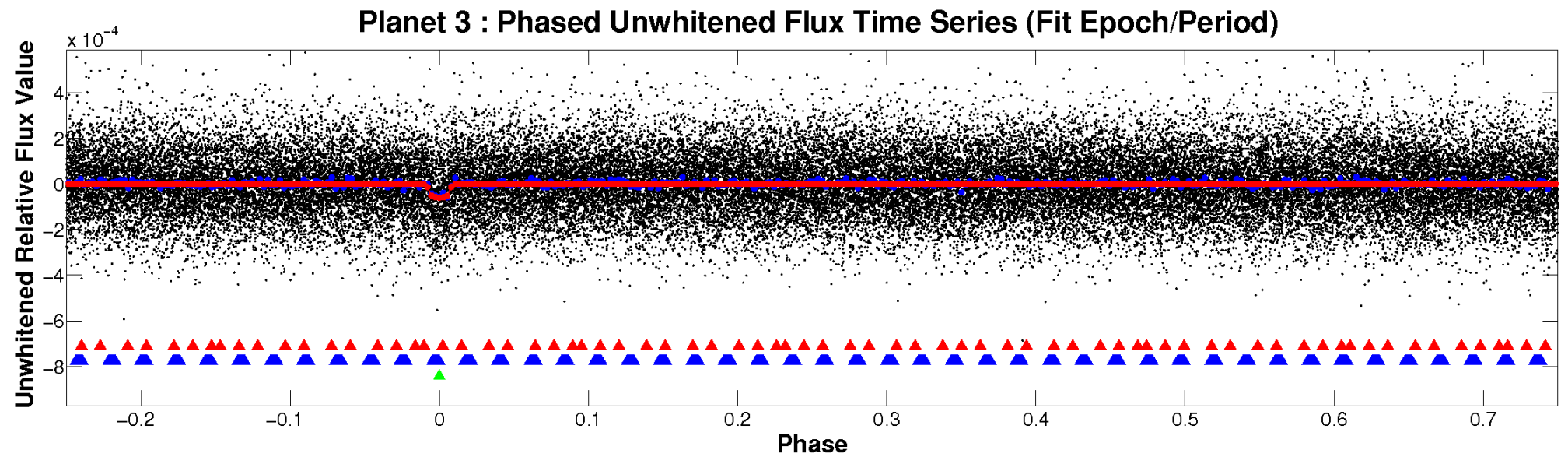


ALT Odd/Even

TCE 009117416-03

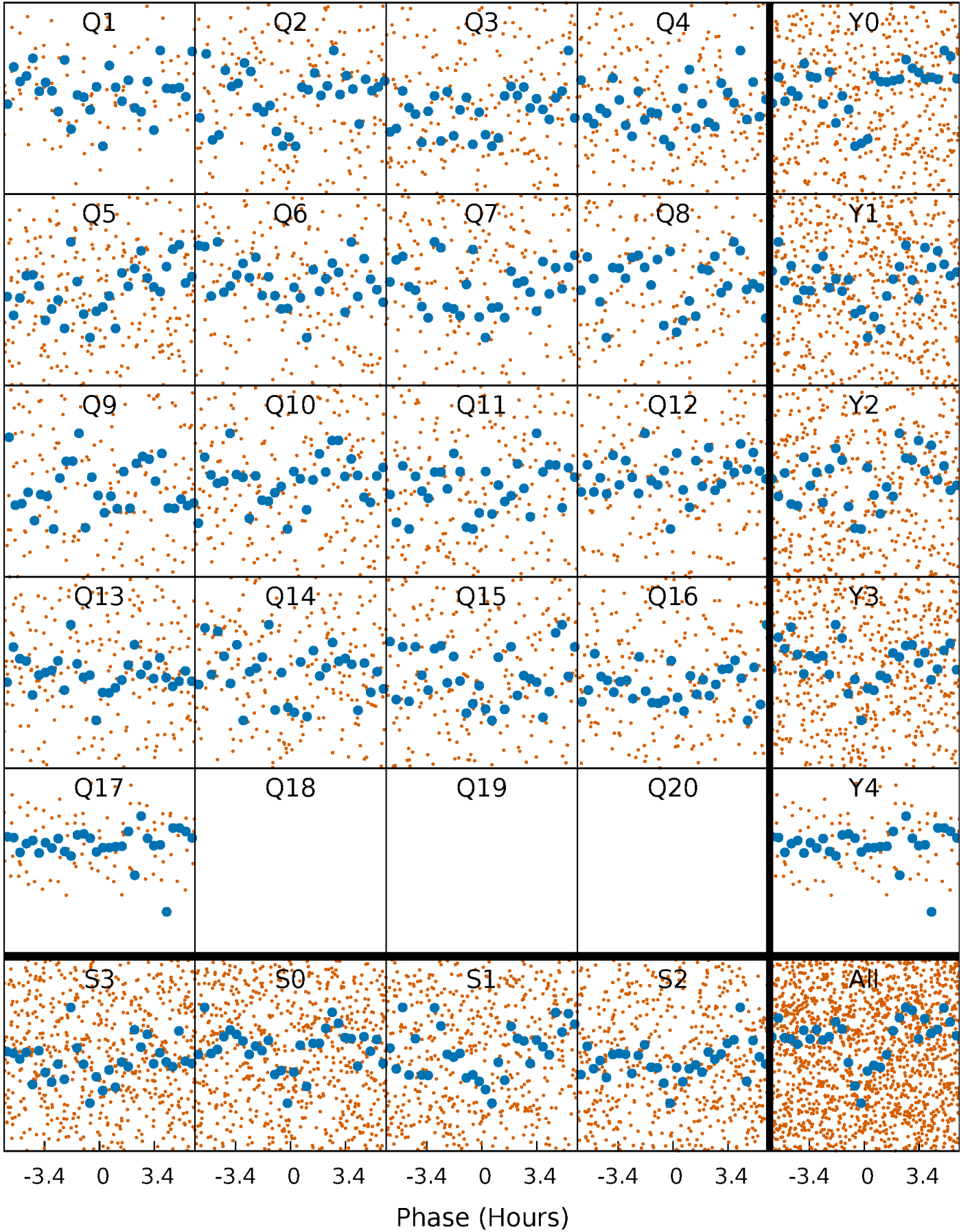


Non-Whitened Vs. Whitened Light Curve



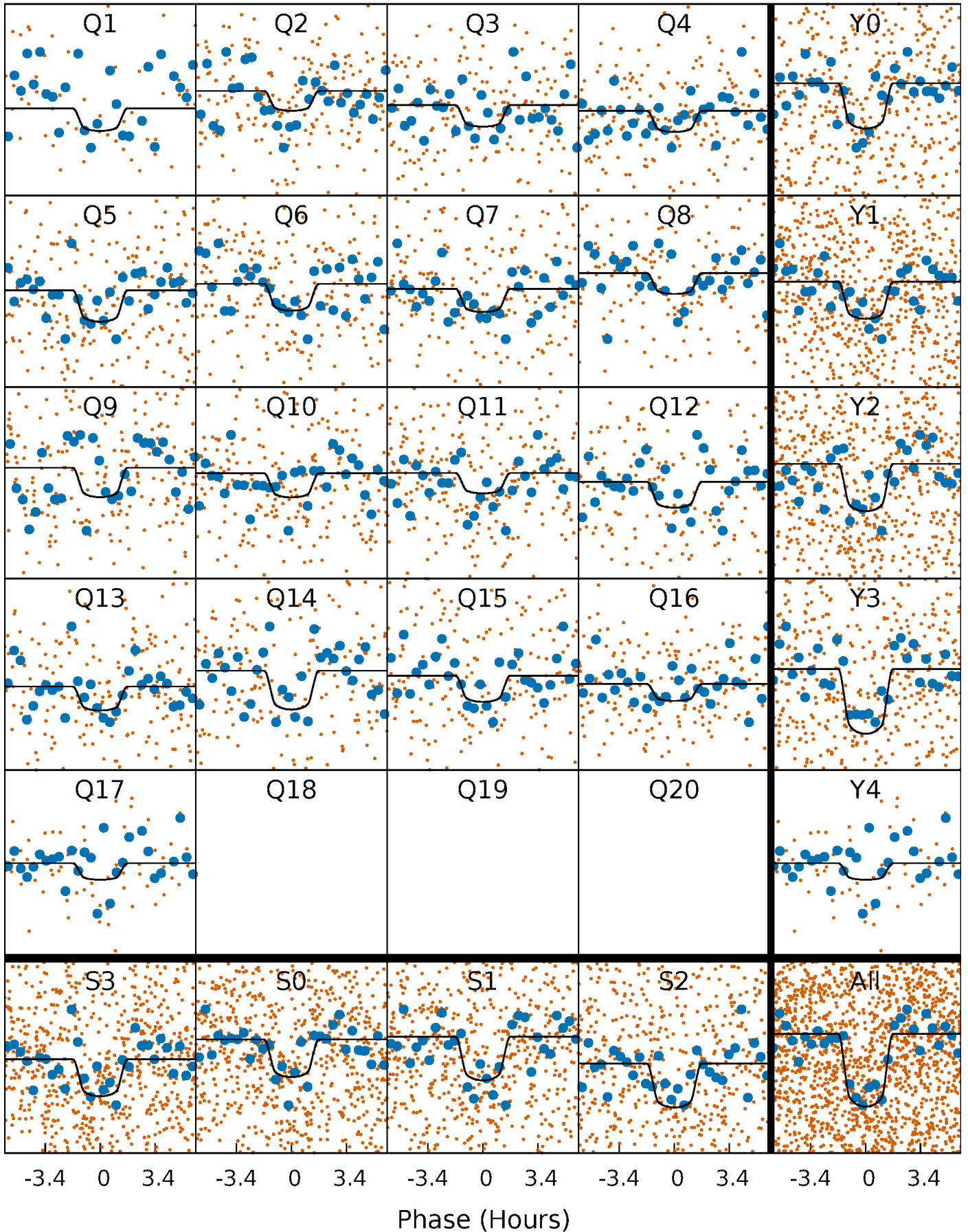
PDC Quarter-Phased Transit Curves

TCE 009117416-03 P= 7.643587 Days $T_0=137.885088$ (BKJD)



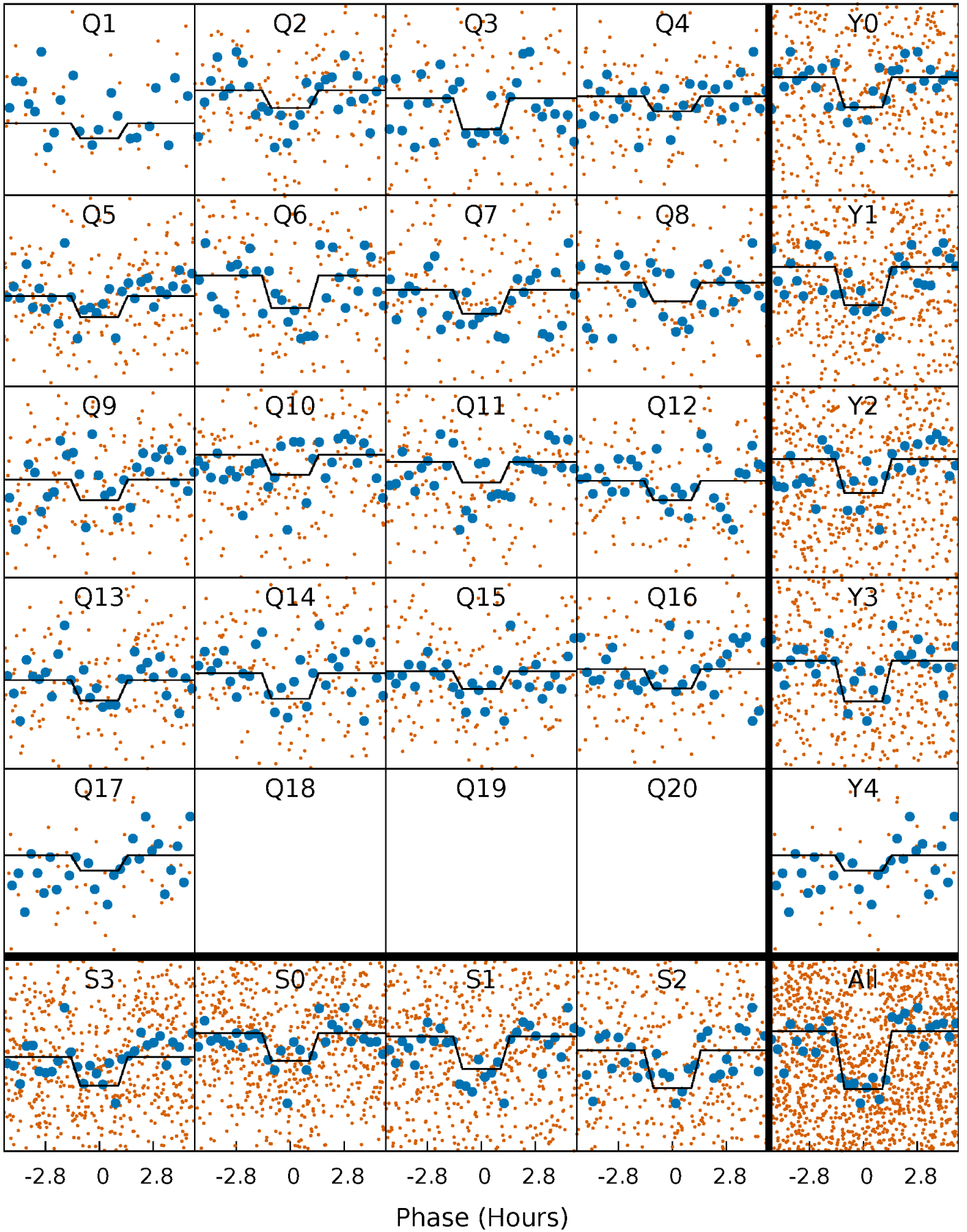
DV Quarter-Phased Transit Curves

TCE 009117416-03 P= 7.643587 Days $T_0=137.885088$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

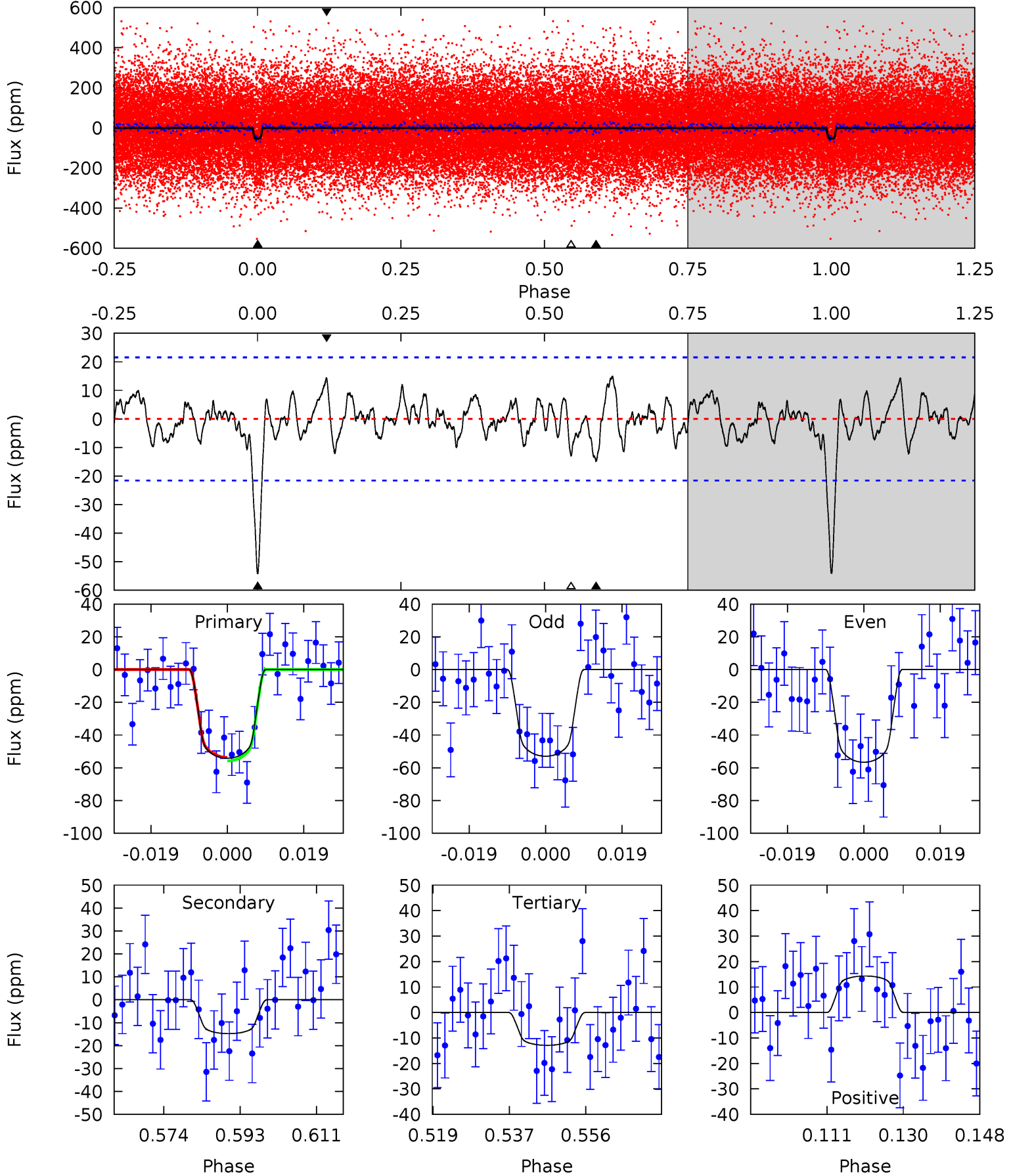
TCE 009117416-03 P= 7.643654 Days $T_0=137.880370$ (BKJD)



DV Model-Shift Uniqueness Test

009117416-03, P = 7.643587 Days, E = 130.241501 Days

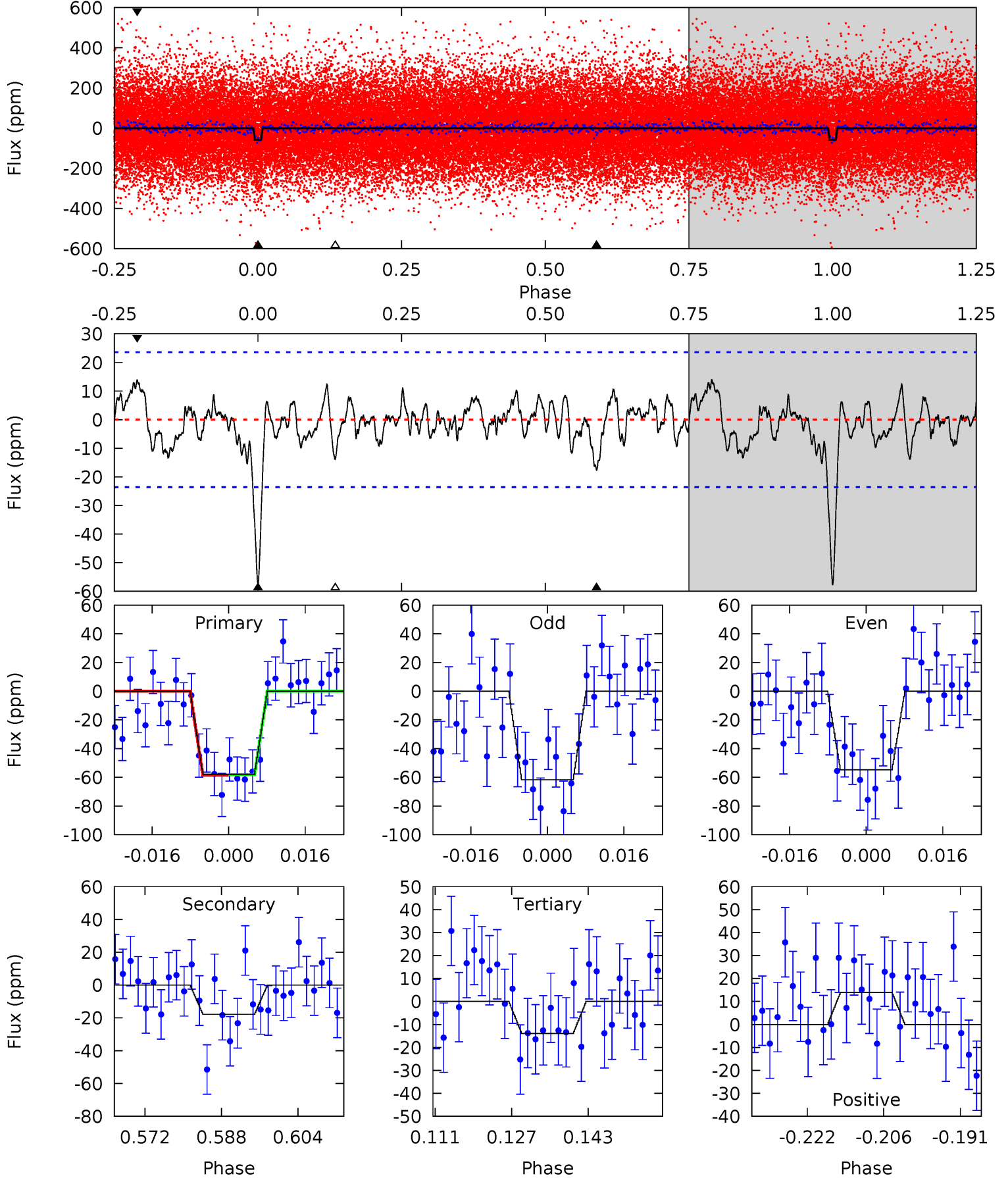
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.3	3.37	2.93	3.26	4.91	2.35	1.18	9.40	9.07	0.43	0.10	0.42	0.93	0.22	0.24



Alt Model-Shift Uniqueness Test

009117416-03, P = 7.643654 Days, E = 130.236716 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	3.73	2.91	2.91	4.94	2.41	1.15	9.20	9.20	0.81	0.81	0.73	0.98	0.19	0.05



Stellar Parameters For KIC 009117416

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6120^{+195}_{-217}	$3.934^{+0.398}_{-0.133}$	$0.020^{+0.250}_{-0.300}$	$2.000^{+0.467}_{-0.801}$	$1.251^{+0.190}_{-0.233}$	$0.220^{+0.689}_{-0.090}$
	+3%/-4%	+10%/-3%	+1250%/-1500%	+23%/-40%	+15%/-19%	+313%/-41%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 009117416-03 / KOI 3425.03

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-15 ± 4	$1.82^{+0.74}_{-0.70}$	1832^{+140}_{-203}	4223^{+859}_{-480}	16^{+26}_{-8}
Alt.	-18 ± 5	$1.51^{+0.76}_{-0.69}$	1818^{+158}_{-210}	4706^{+1306}_{-680}	28^{+66}_{-17}

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

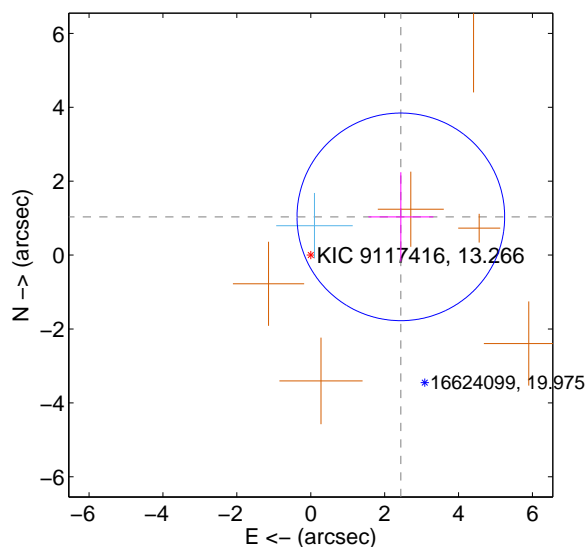
Supplemental centroid analysis for 009117416-03. Kepler magnitude: 13.27. Transit SNR 9.39

There are 1 quarters with good PRF difference image offsets

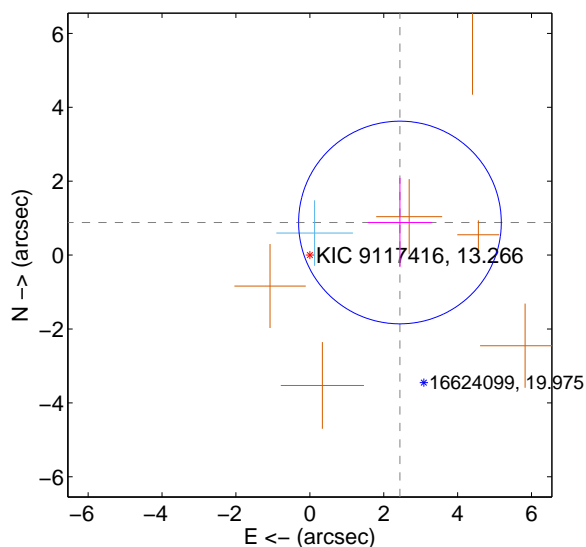
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.649 ± 0.937	2.83	-2.439 ± 0.879	1.035 ± 1.208
PRF-fit source offset from KIC position	2.594 ± 0.914	2.84	-2.439 ± 0.869	0.882 ± 1.205
photometric centroid source offset	1.04 ± 1.24	0.84	-0.55 ± 1.47	0.89 ± 1.14

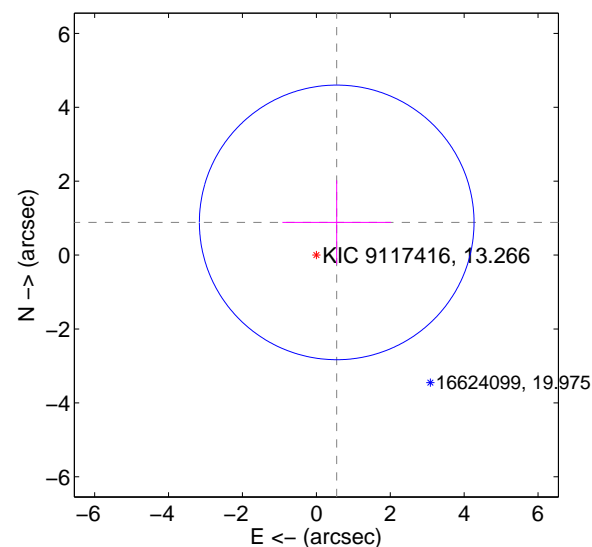
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

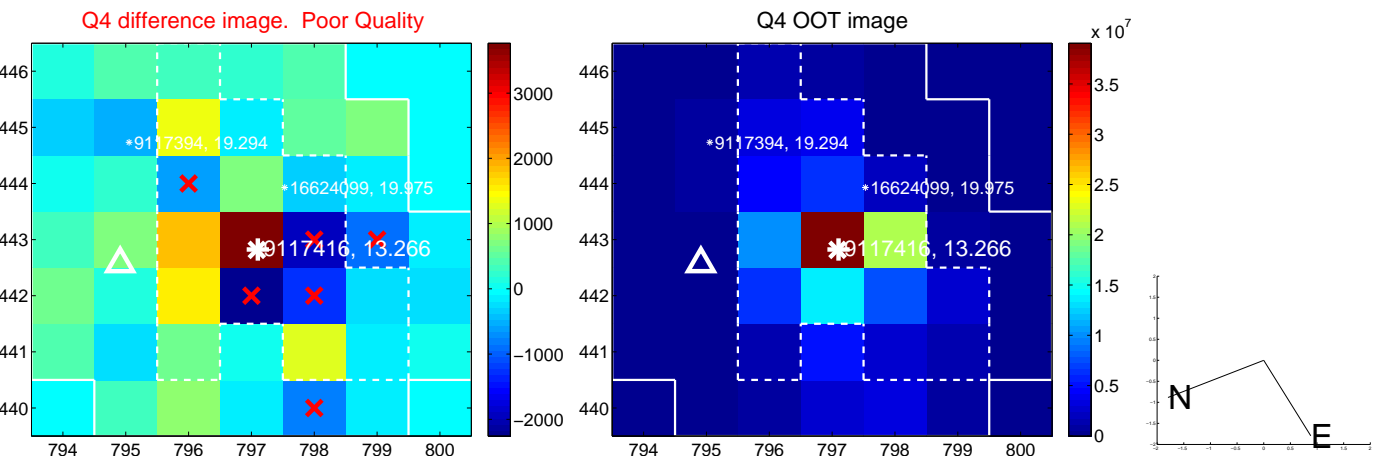
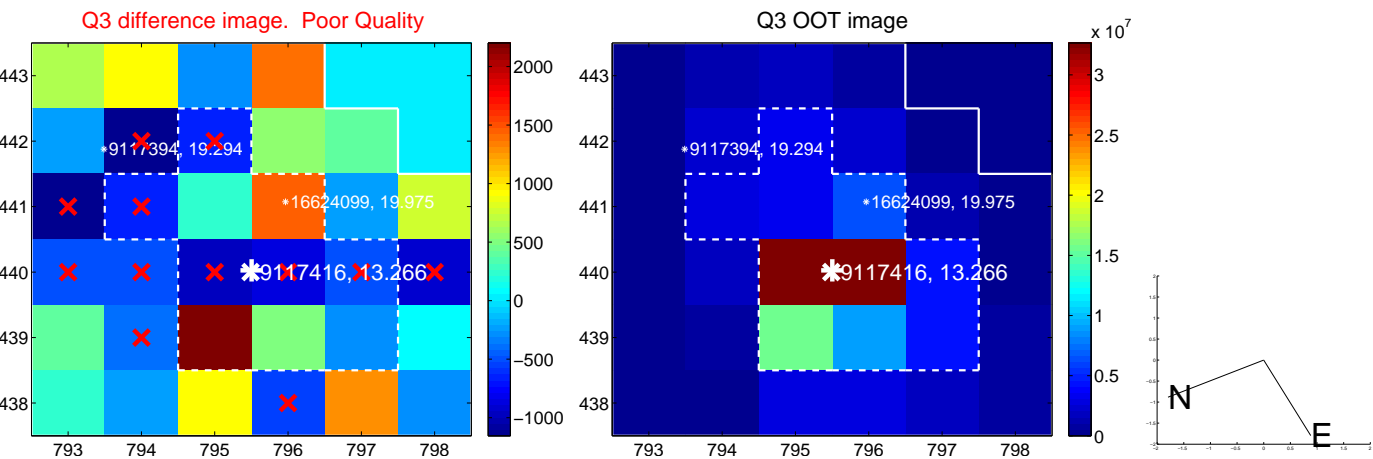
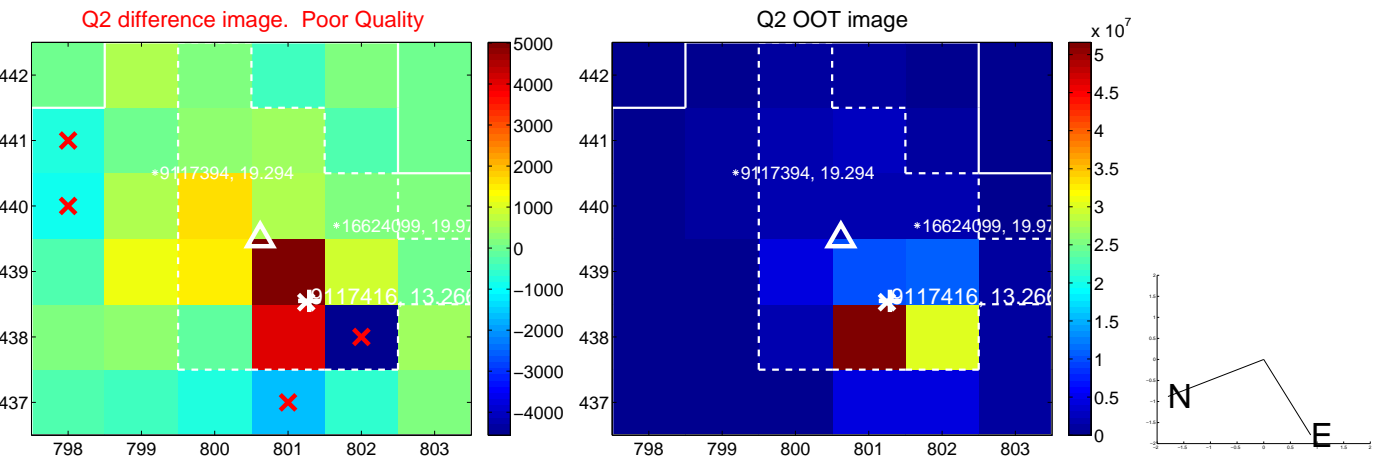
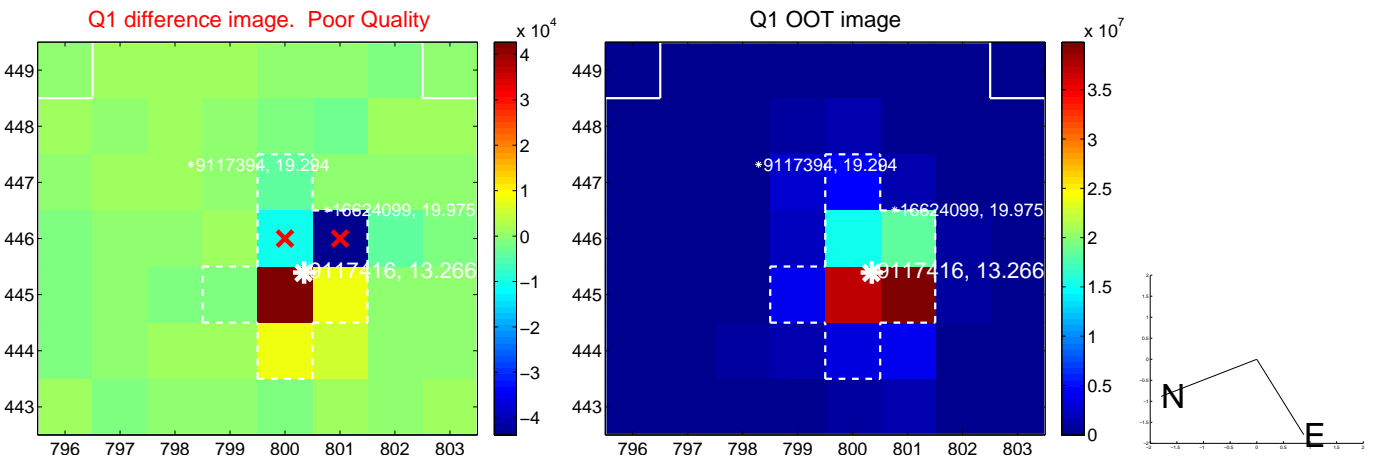


offset from photometric centroids

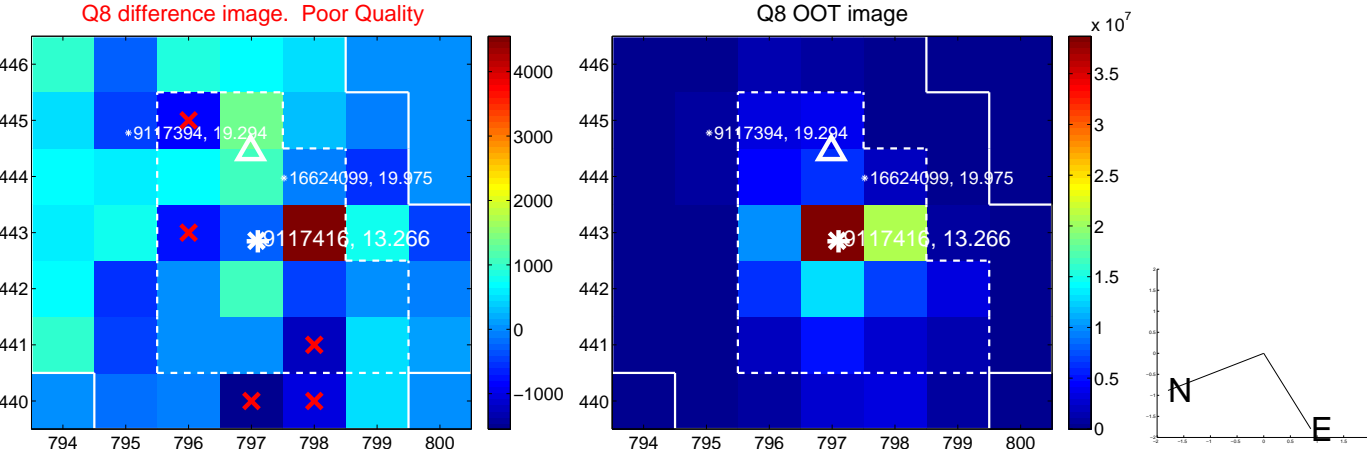
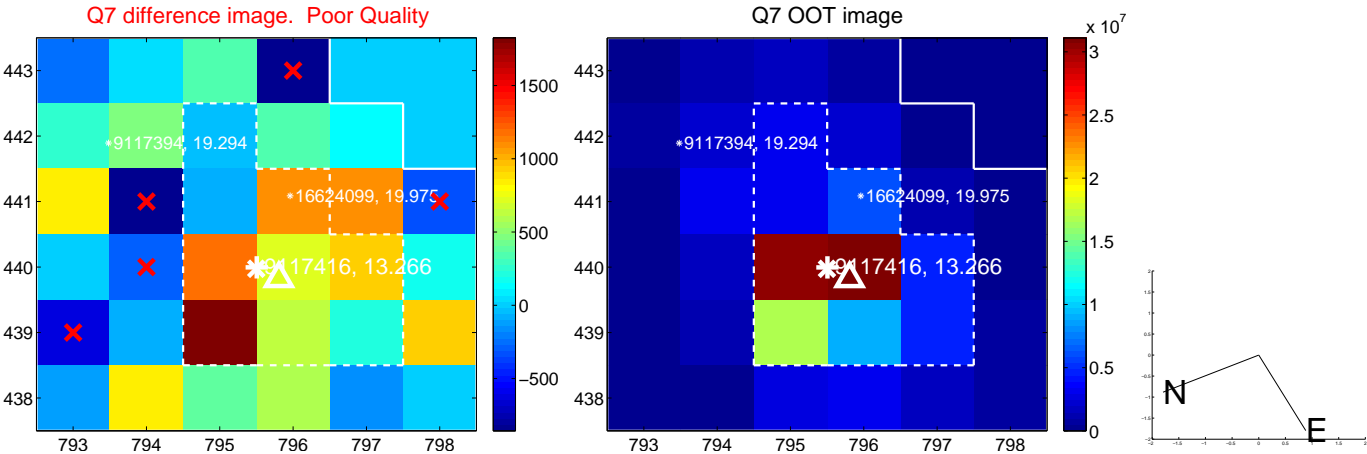
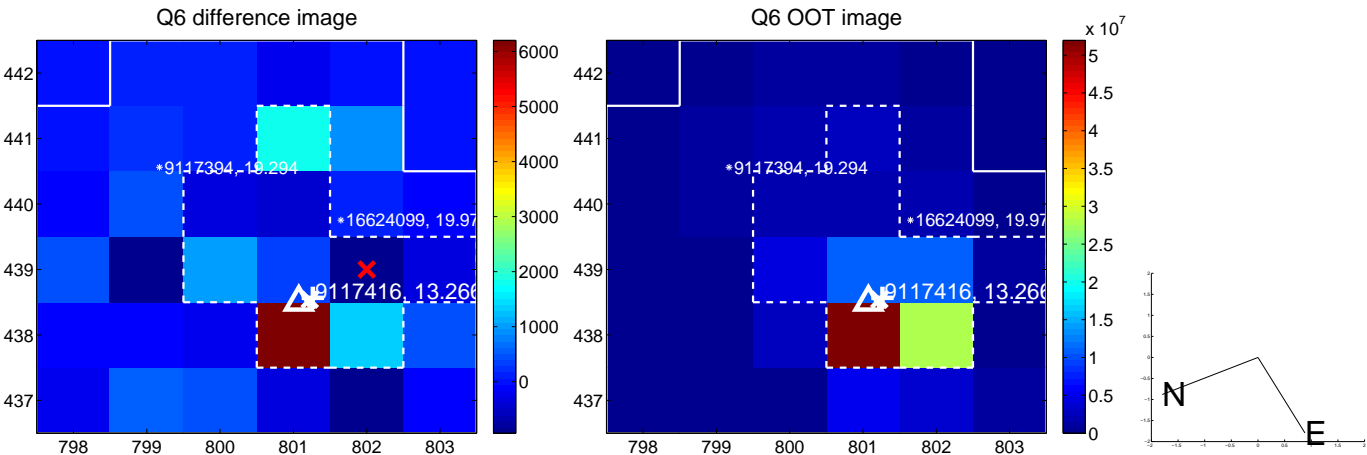
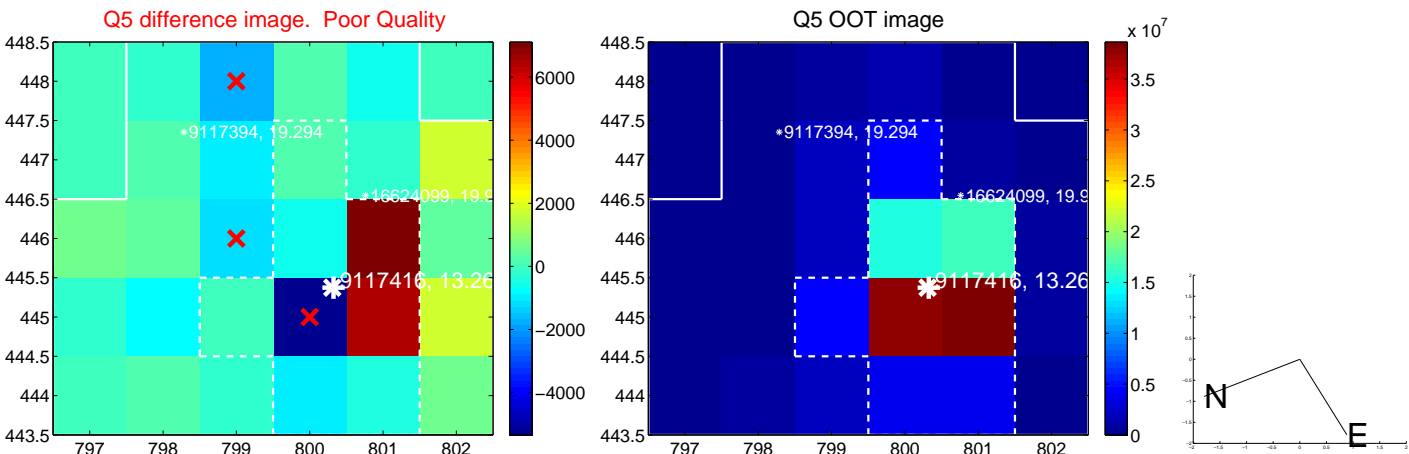


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

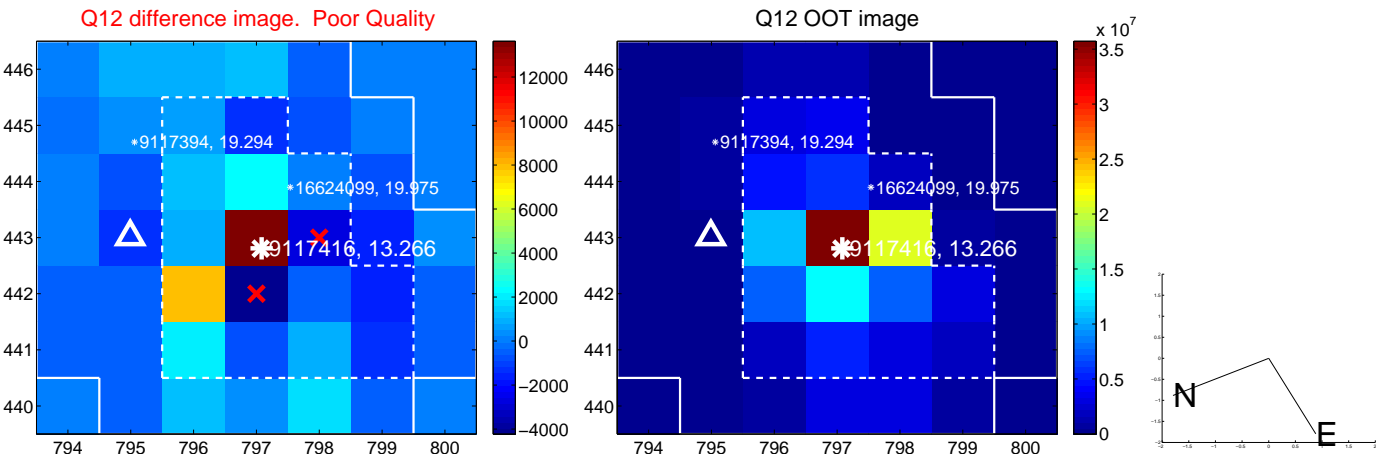
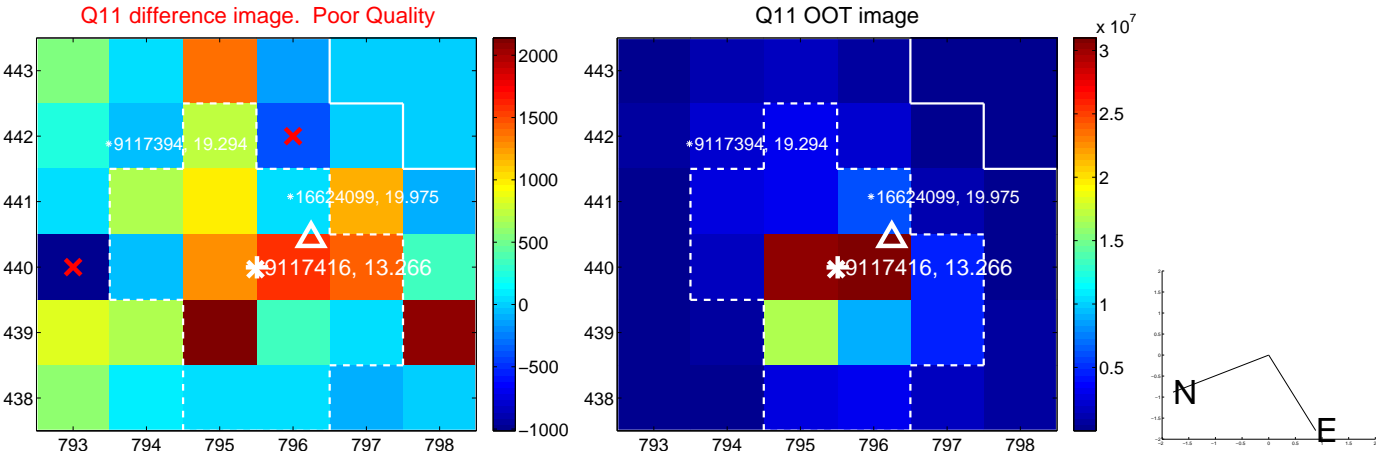
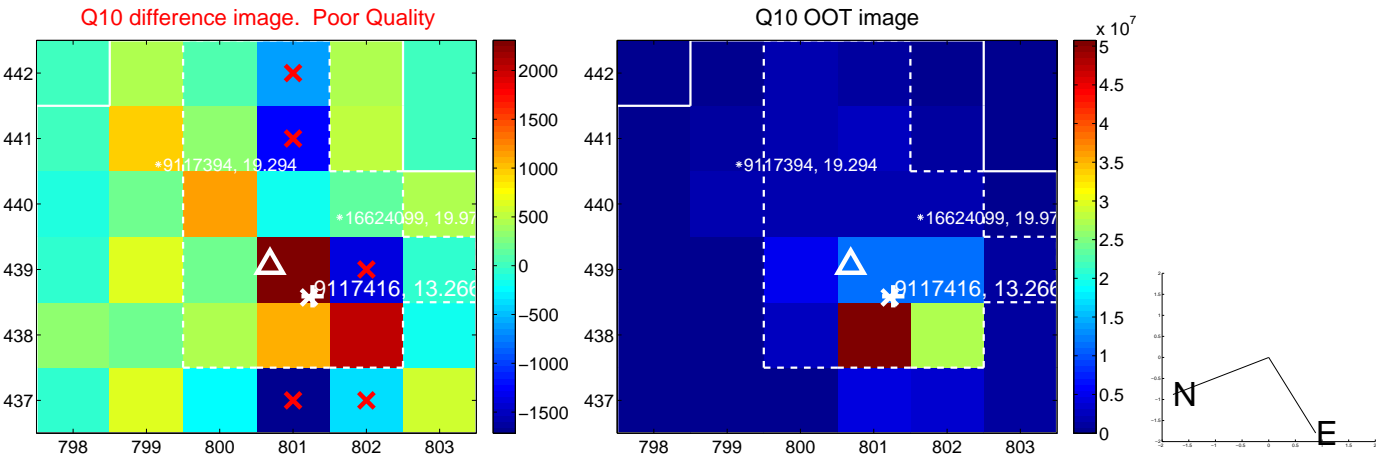
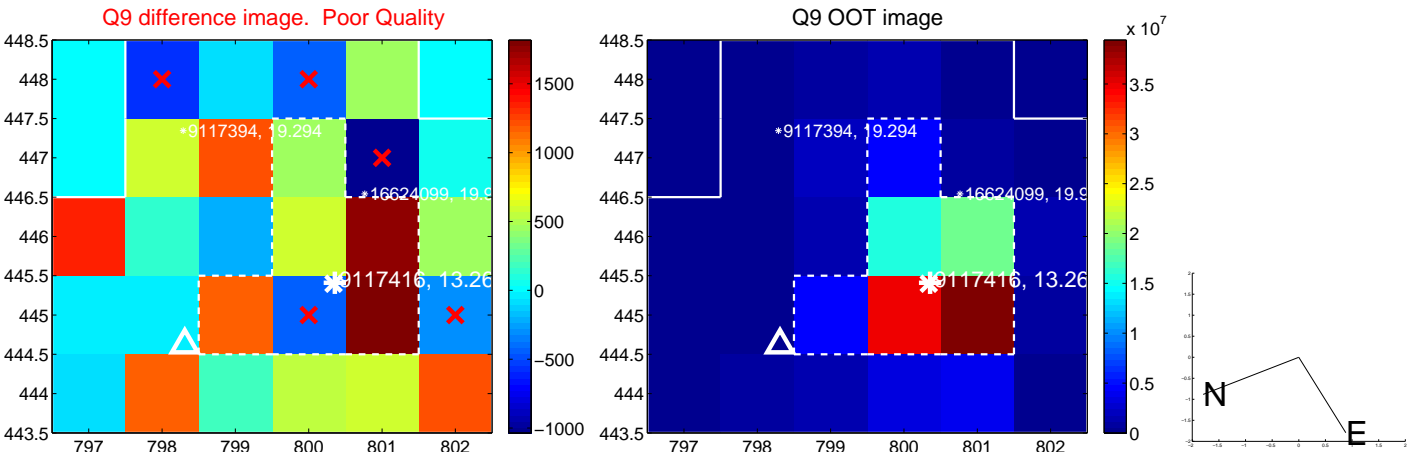
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



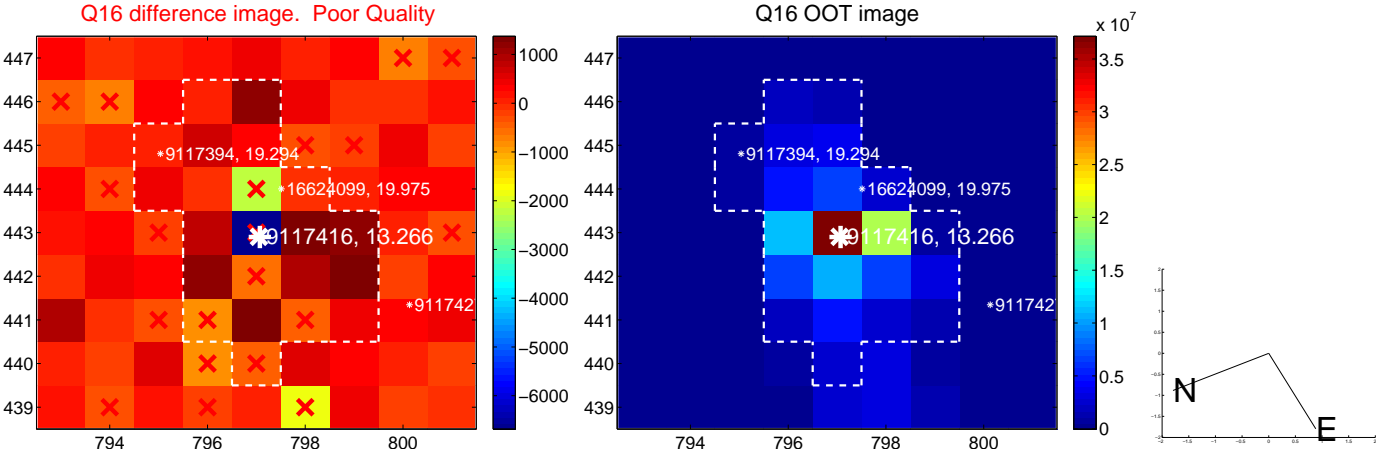
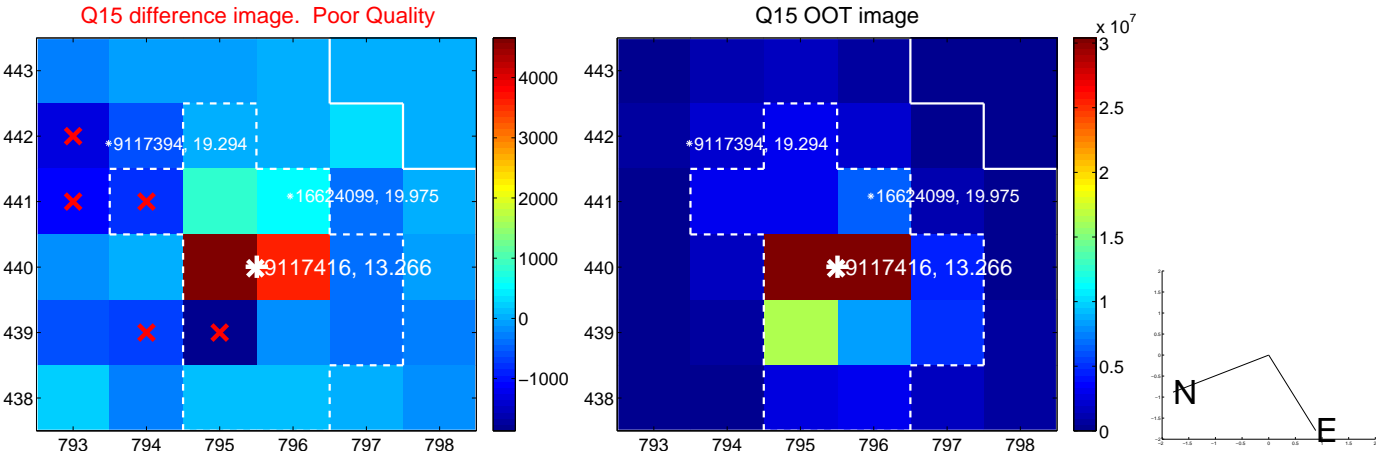
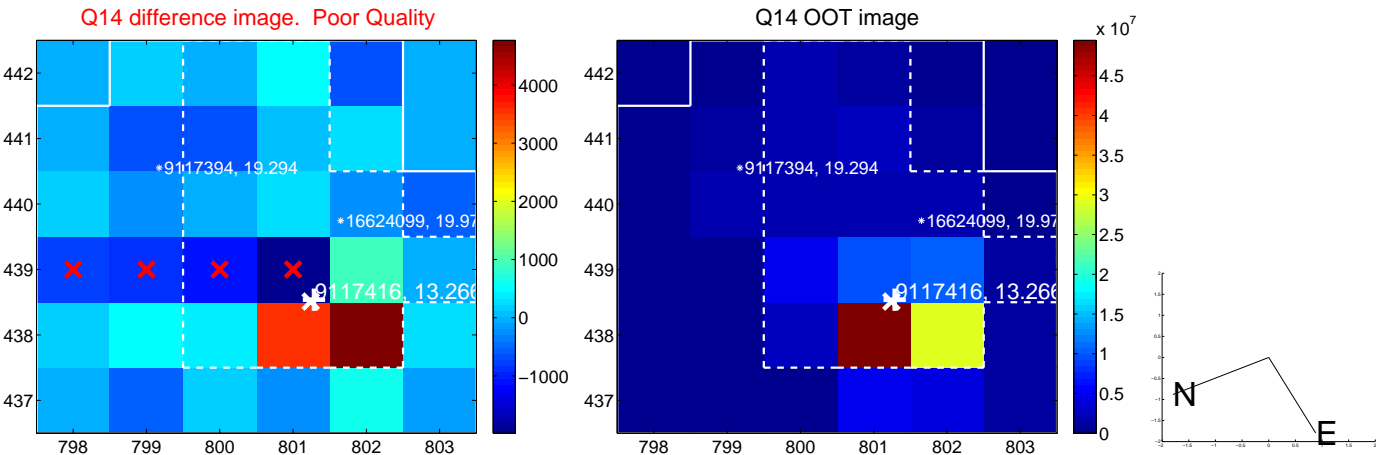
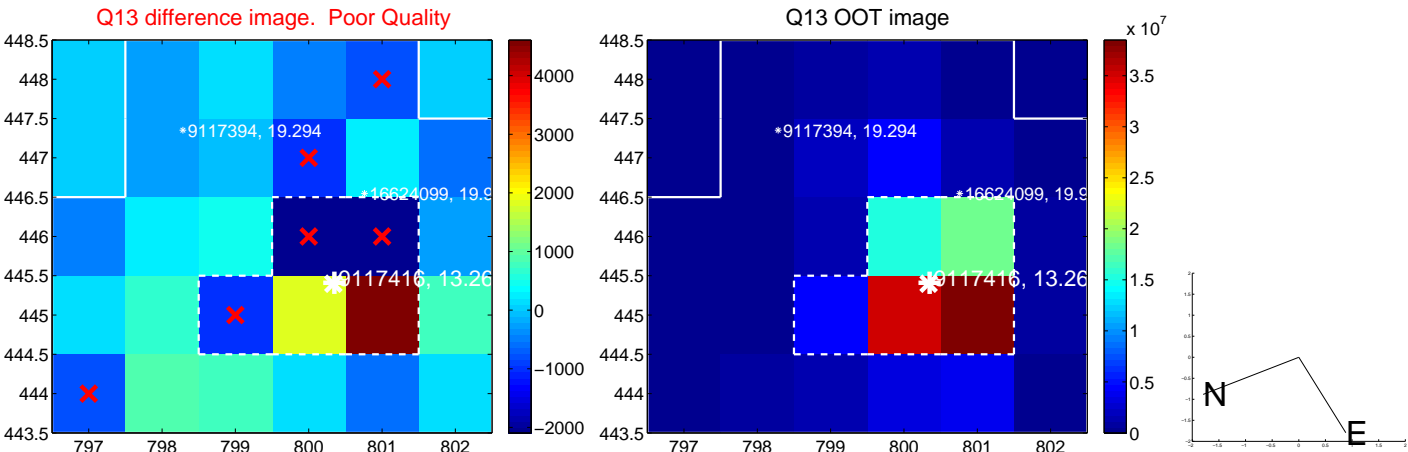
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



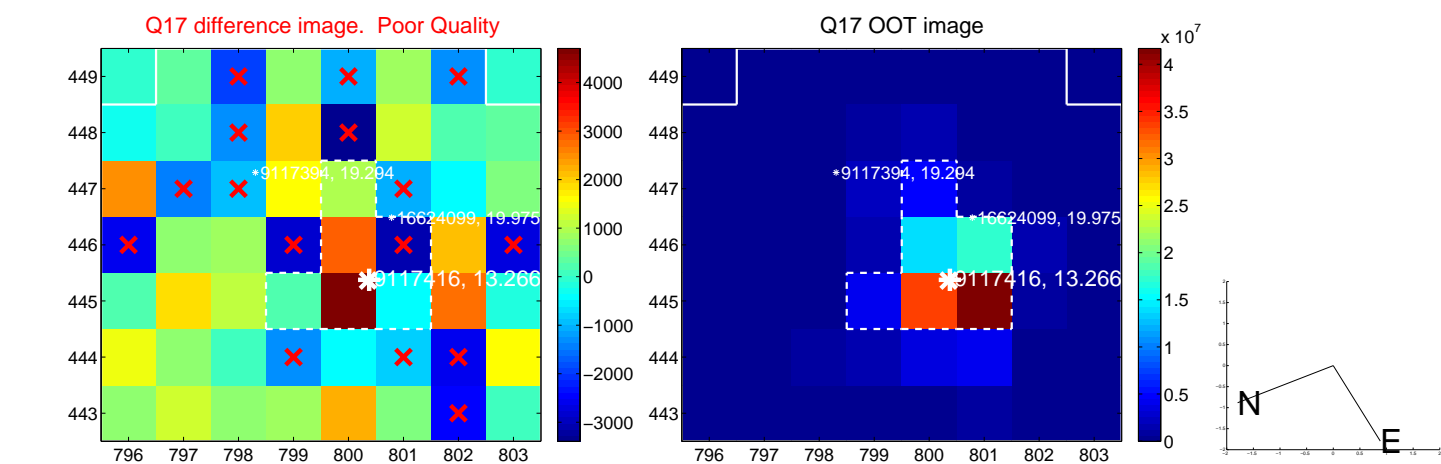
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



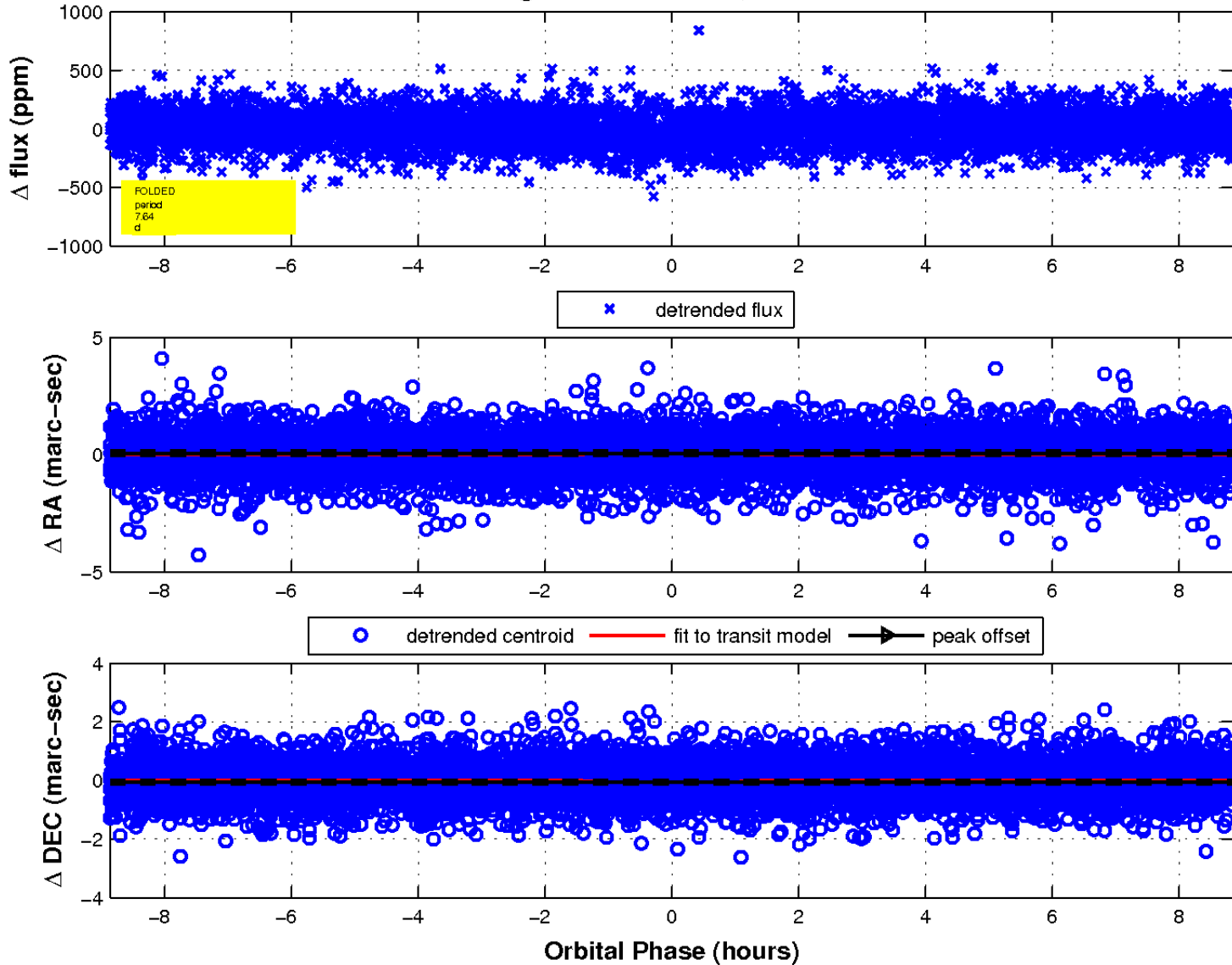
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

