

KIC 009006449

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})
009006449-01	OBS	1413.01	12.645032	138.633051	191.7	9.119	22.8	24.4	0.89	5607	1.51	71.38
009006449-02	OBS	1413.02	21.526308	132.287564	182.9	8.350	16.6	18.0	0.89	5607	1.33	35.11
009006449-03	OBS	1413.03	33.884607	159.992664	225.1	5.521	12.9	13.6	0.89	5607	1.58	19.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009006449-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
009006449-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009006449-03	OBS	PC	0.94	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.

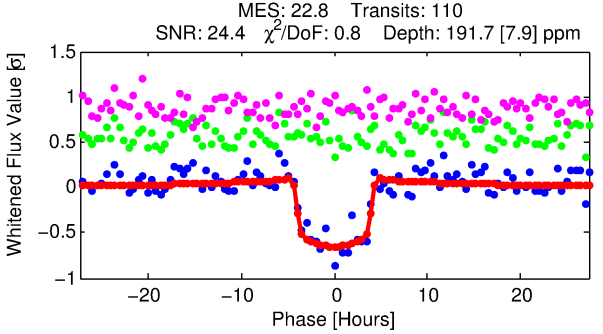
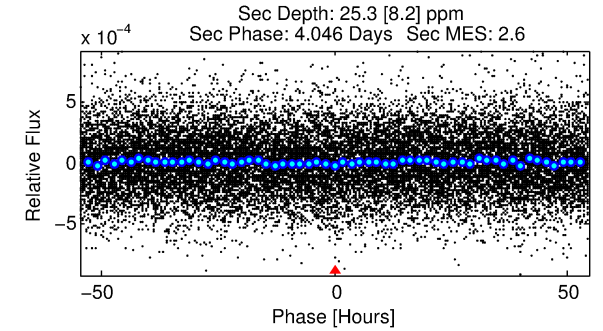
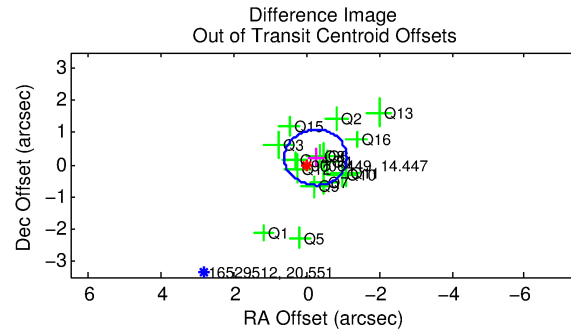
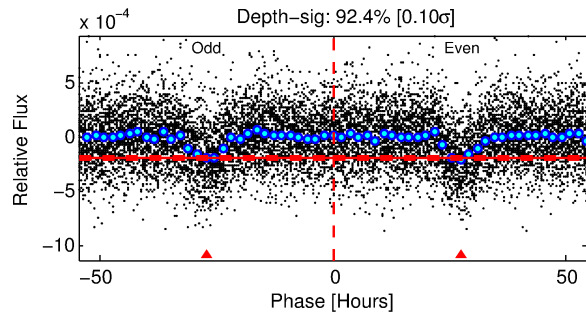
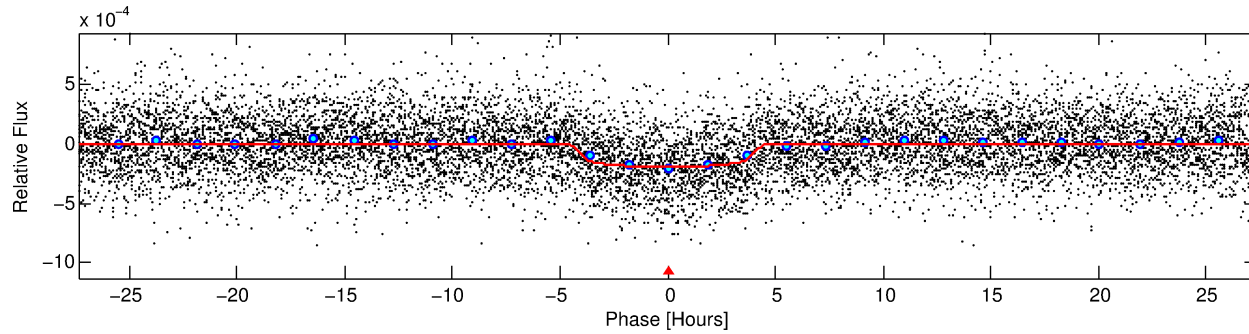
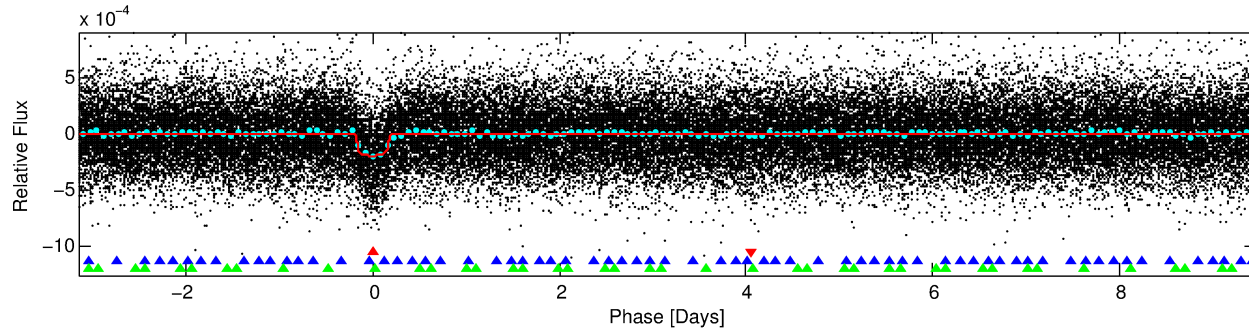
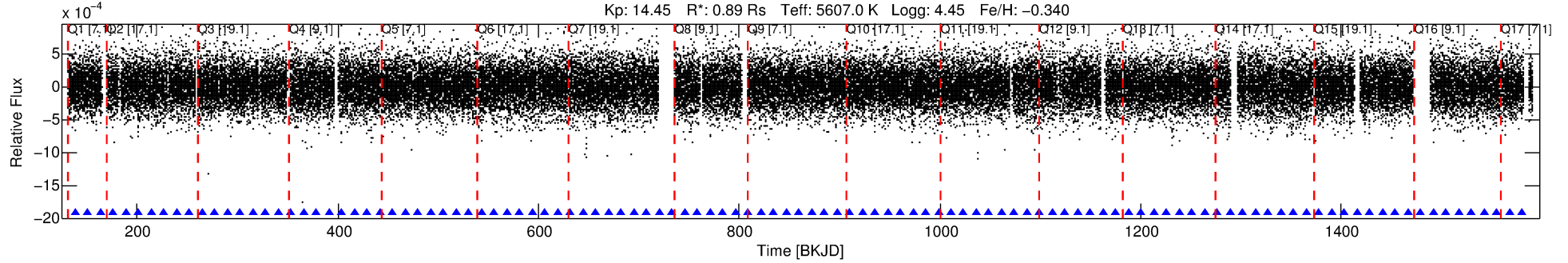
Ephemeris Match Information For 009006449-01

No Significant Match Found

DV One-Page Summary

KIC: 9006449 Candidate: 1 of 3 Period: 12.645 d
KOI: K01413.01 Name: Kepler-295b Corr: 0.982

Kp: 14.45 R*: 0.89 Rs Teff: 5607.0 K Logg: 4.45 Fe/H: -0.340



DV Fit Results:

Period = 12.64503 [0.00010] d
Epoch = 138.6331 [0.0063] BKJD
Rp/R* = 0.0156 [0.0008]
a/R* = 4.40 [0.88]
b = 0.93 [0.03]
Seff = 71.37 [22.75]
Teff = 741 [59] K
Rp = 1.51 [0.35] Re
a = 0.0987 [0.0197] AU
Ag = 59.30 [26.86] [2.17σ]
Teffp = 3180 [283] K [8.42σ]

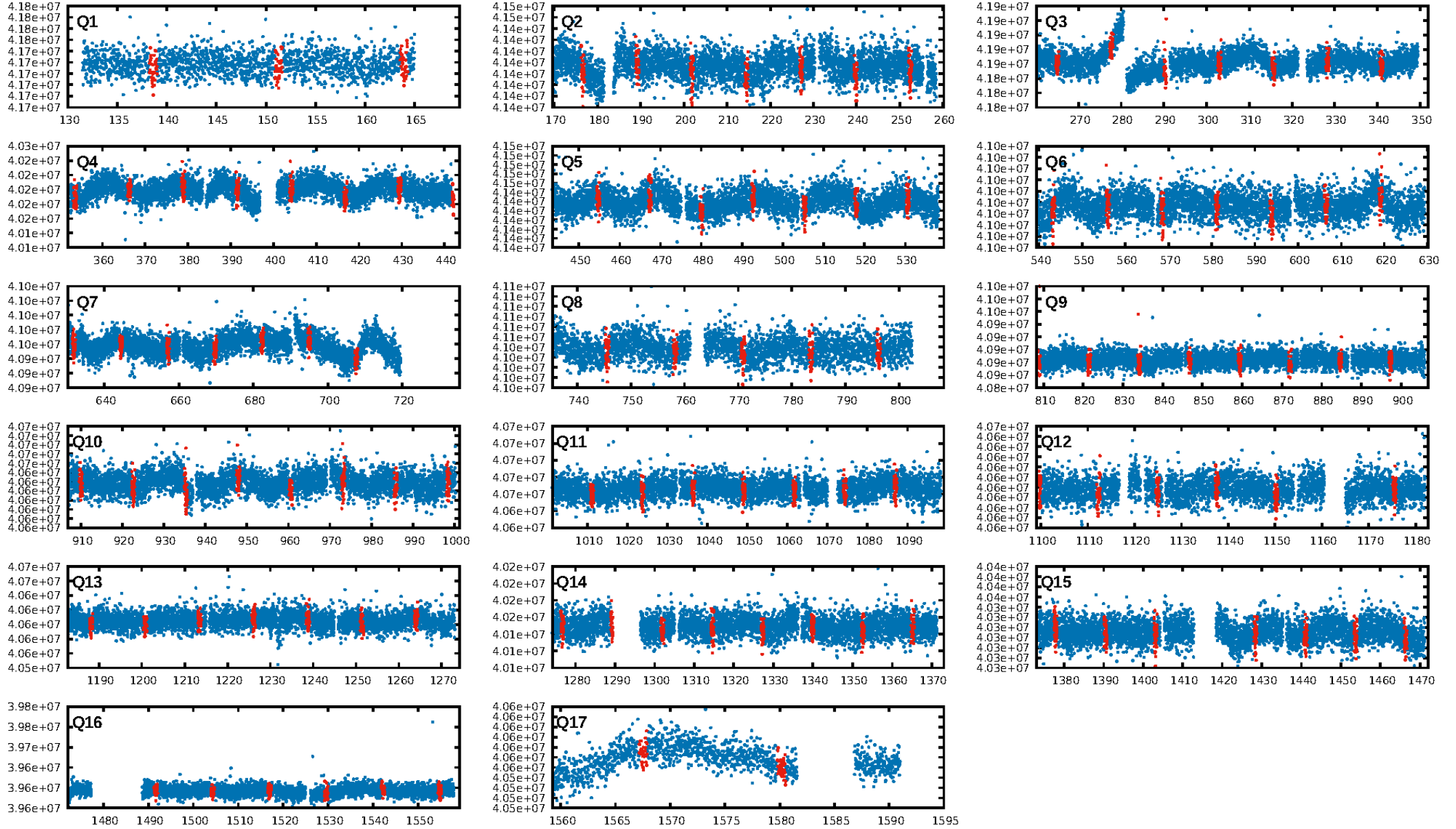
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [17.24σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.54e-106
RollingBand-fgt: 1.00 [105/105]
GhostDiagnostic-chr: 7.396
Centroid-sig: 0.0%
Centroid-so: 1.243 arcsec [3.05σ]
OotOffset-rm: 0.337 arcsec [1.17σ]
KicOffset-rm: 0.361 arcsec [1.16σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 1.00 [16/16]
DiffImageOverlap-fno: 1.00 [17/17]

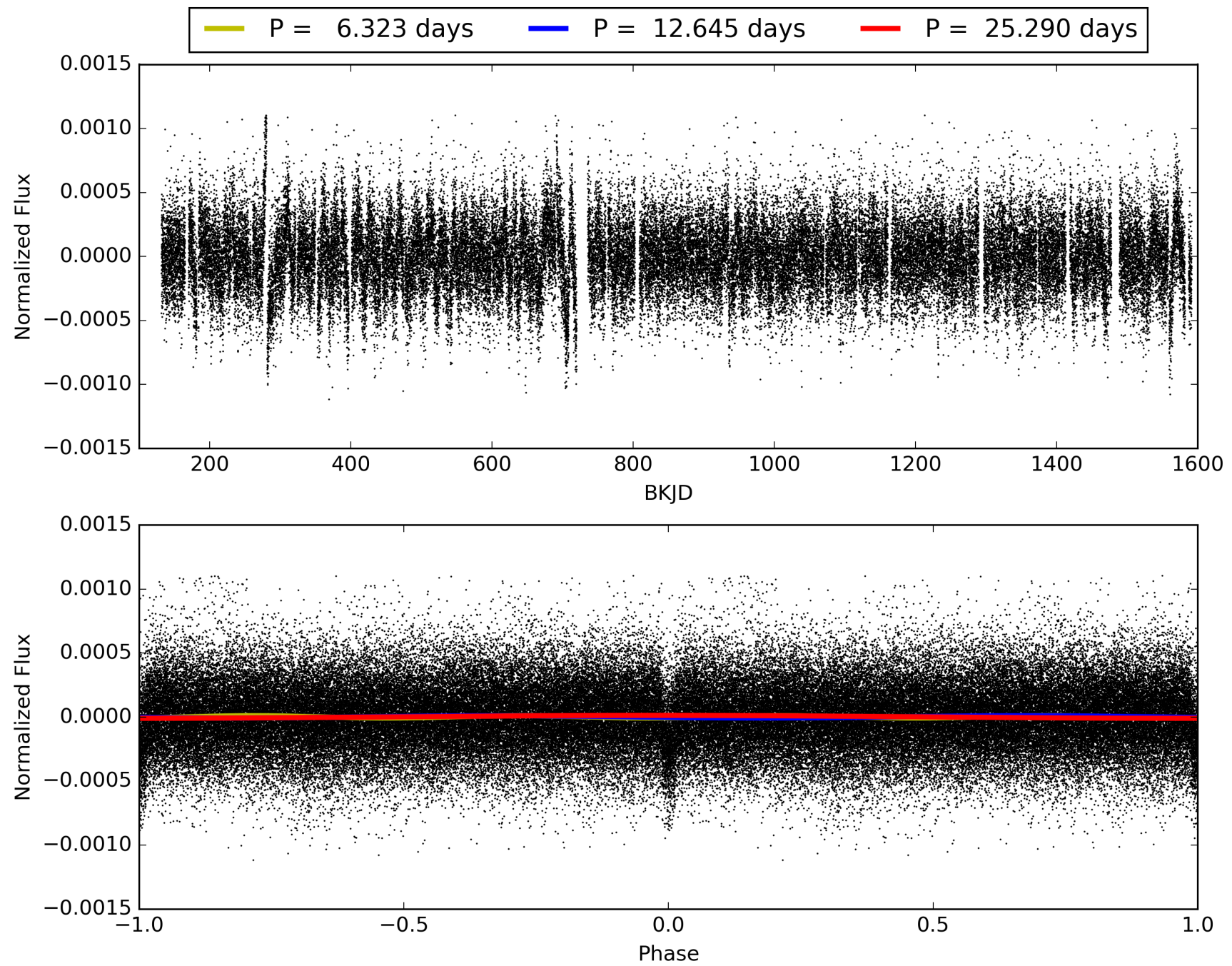
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009006449-01, PDC Light Curves

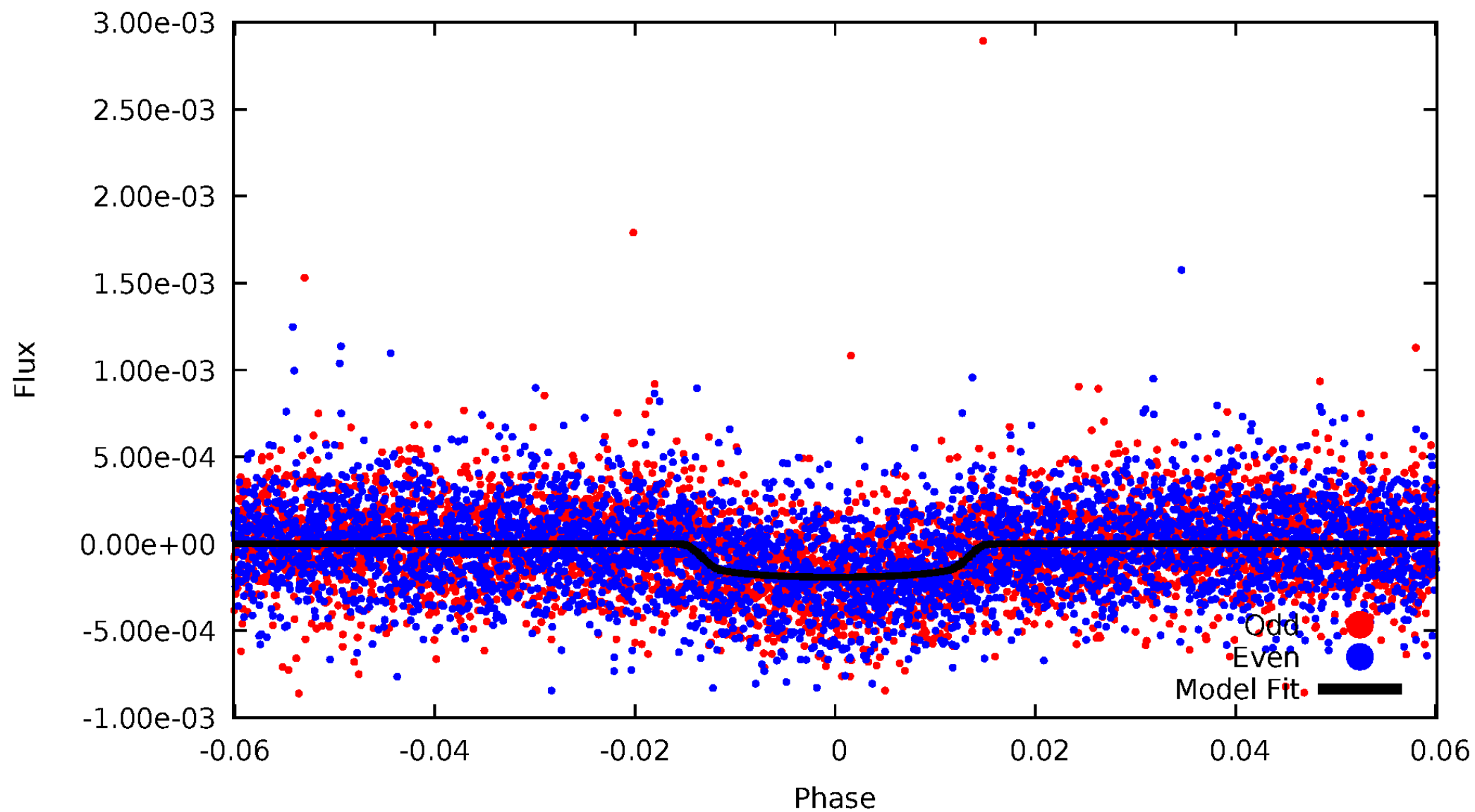


TCE 009006449-01



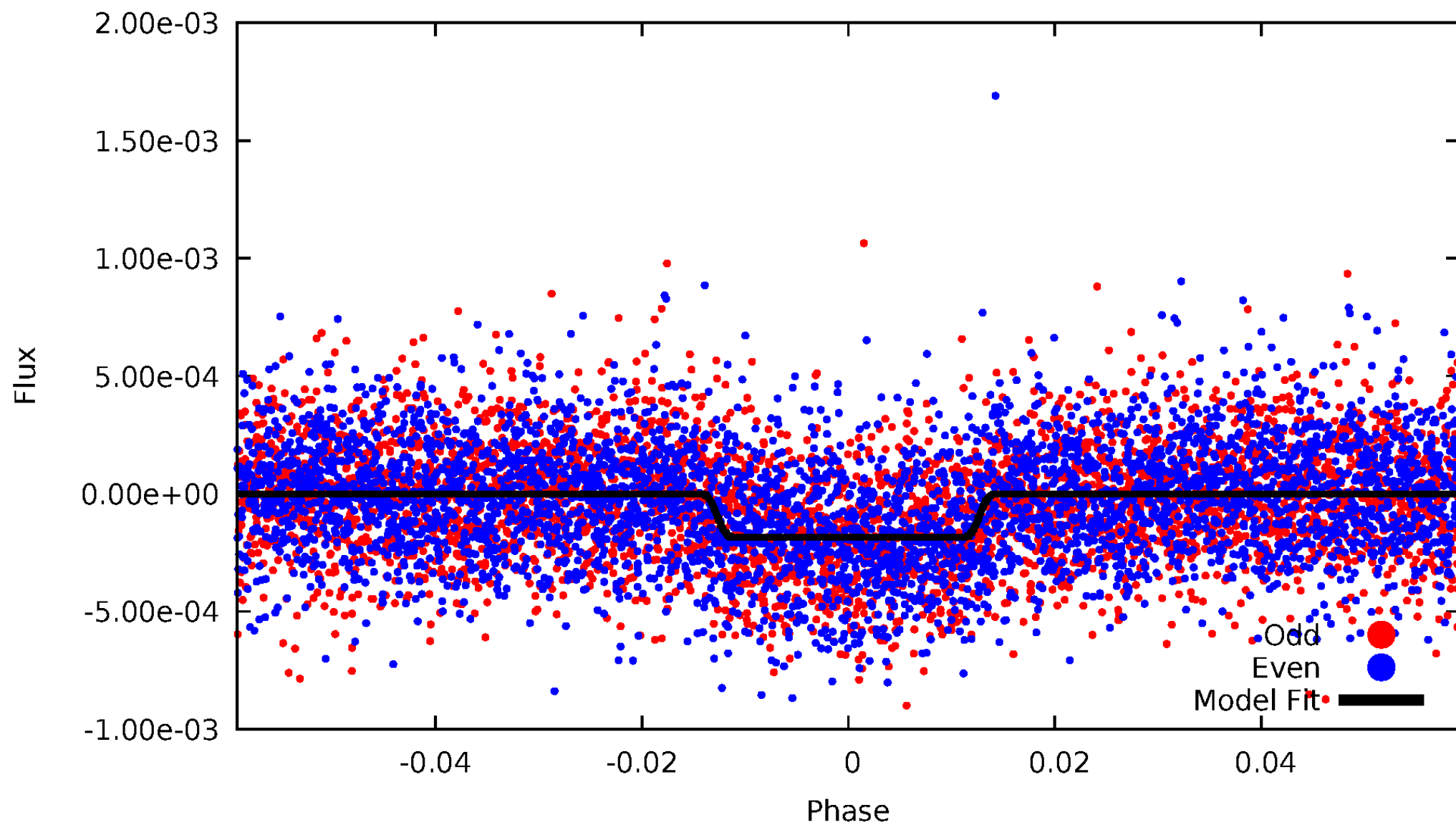
DV Odd/Even

TCE 009006449-01

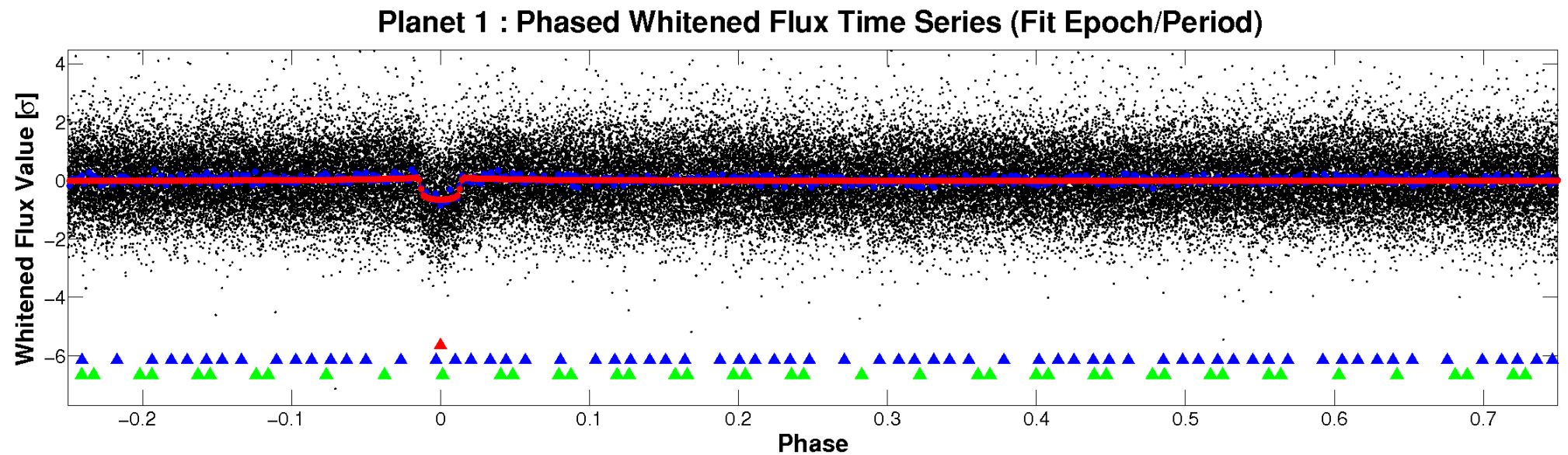
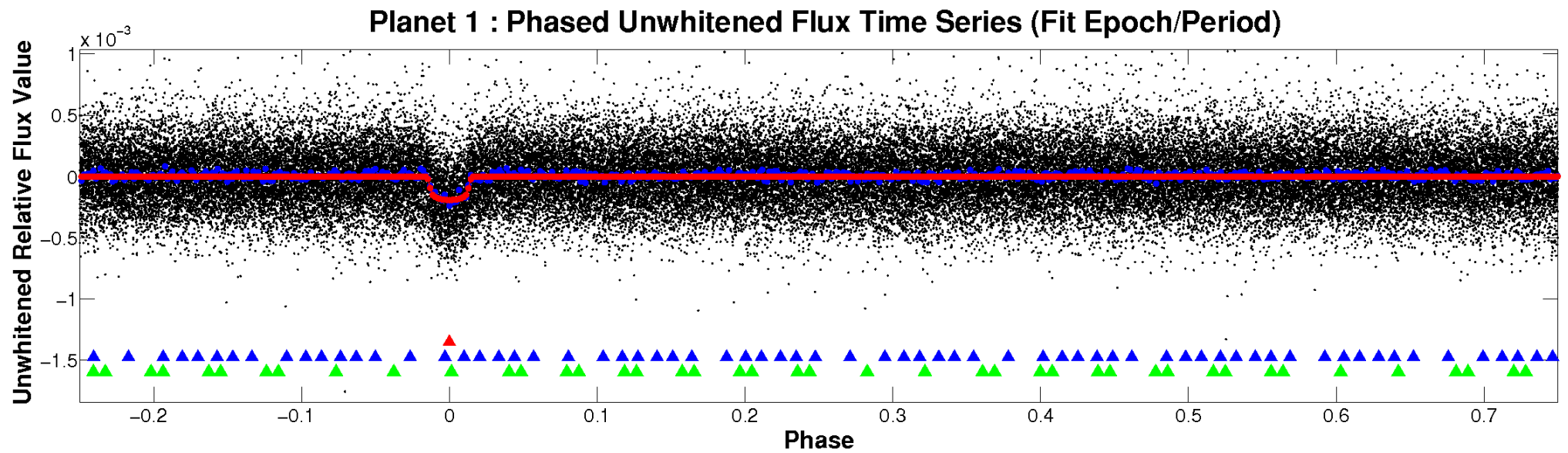


ALT Odd/Even

TCE 009006449-01

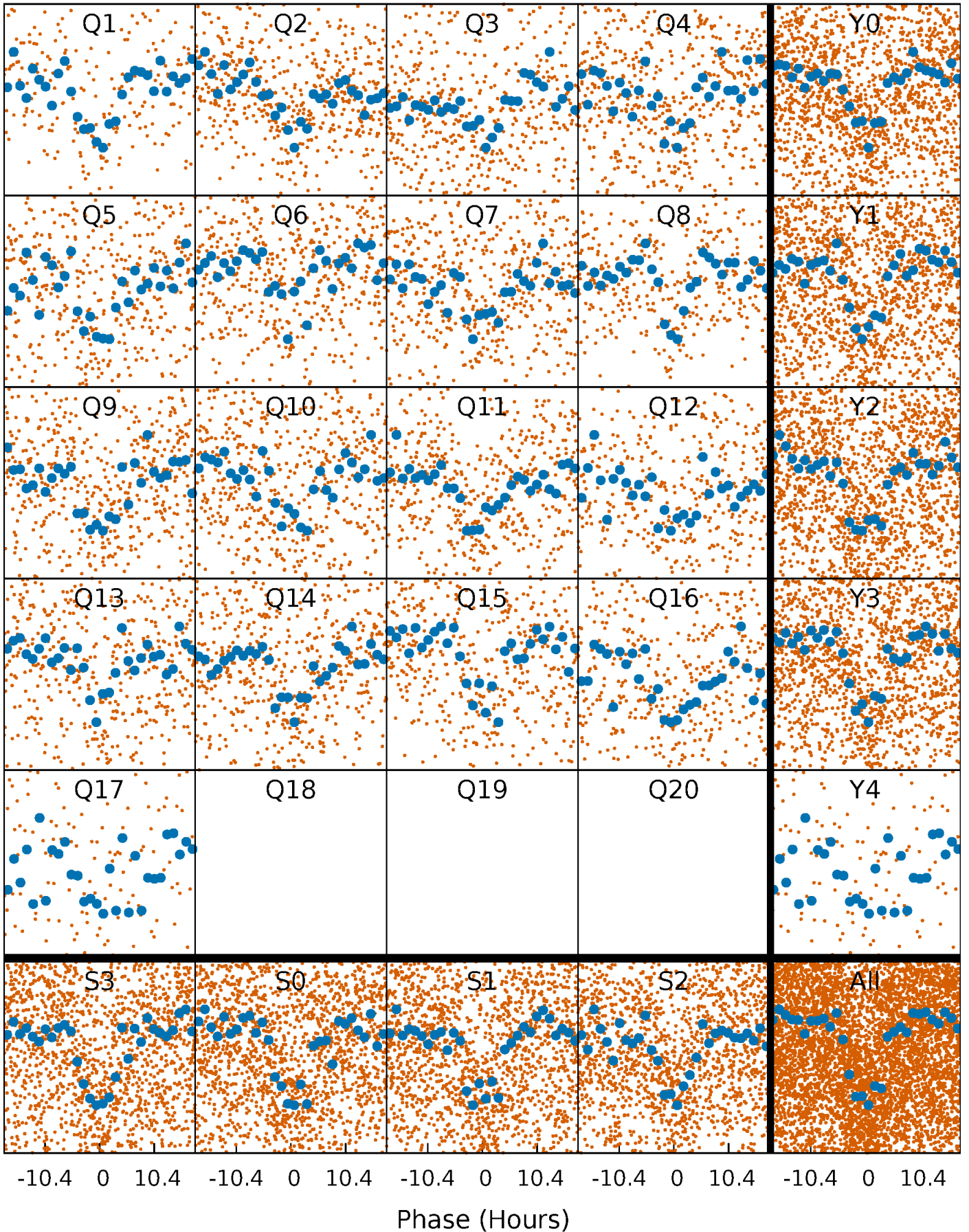


Non-Whitened Vs. Whitened Light Curve



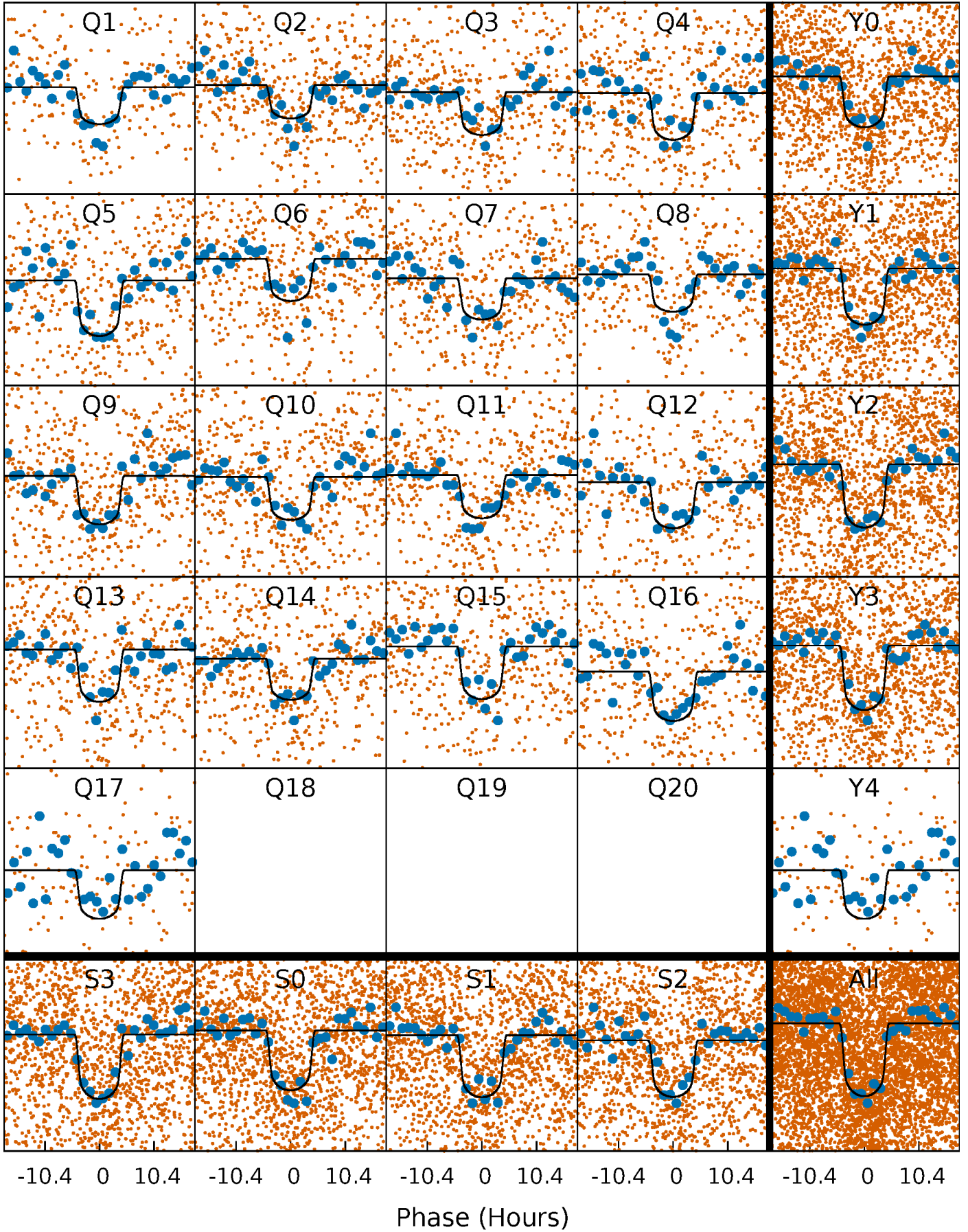
PDC Quarter-Phased Transit Curves

TCE 009006449-01 P= 12.645032 Days $T_0=138.633051$ (BKJD)



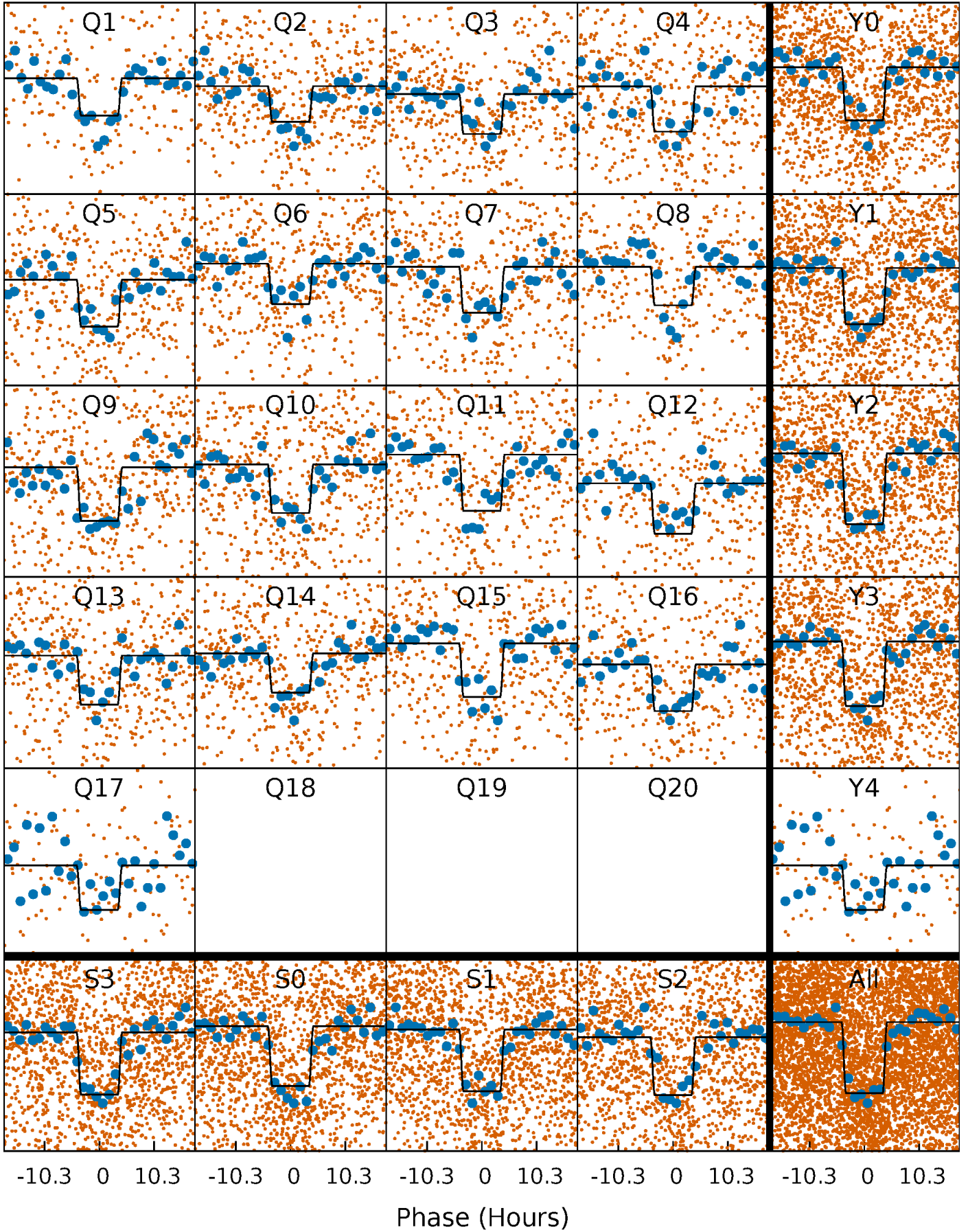
DV Quarter-Phased Transit Curves

TCE 009006449-01 P= 12.645032 Days $T_0=138.633051$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

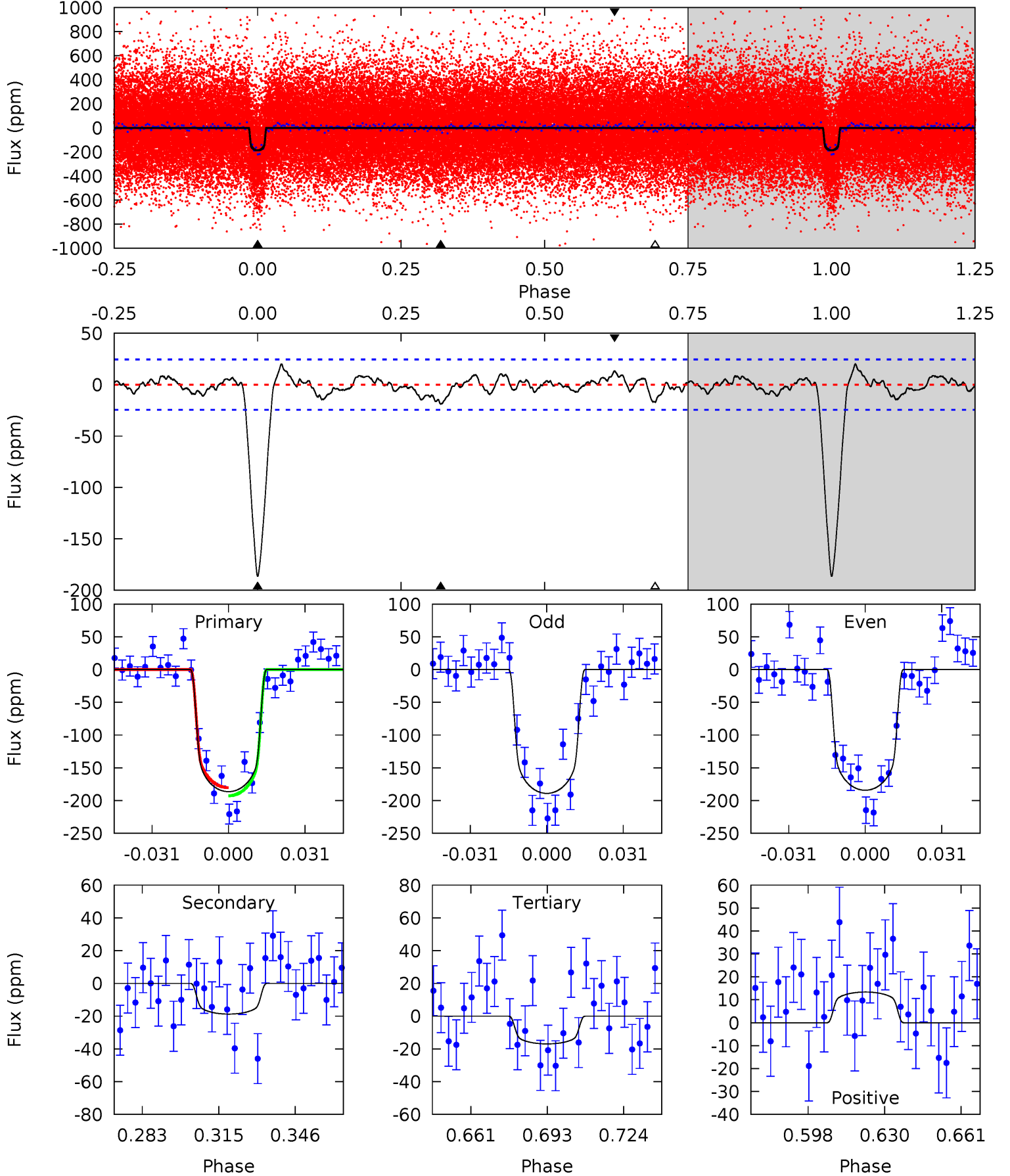
TCE 009006449-01 P= 12.645190 Days $T_0=138.624167$ (BKJD)



DV Model-Shift Uniqueness Test

009006449-01, P = 12.645032 Days, E = 125.988019 Days

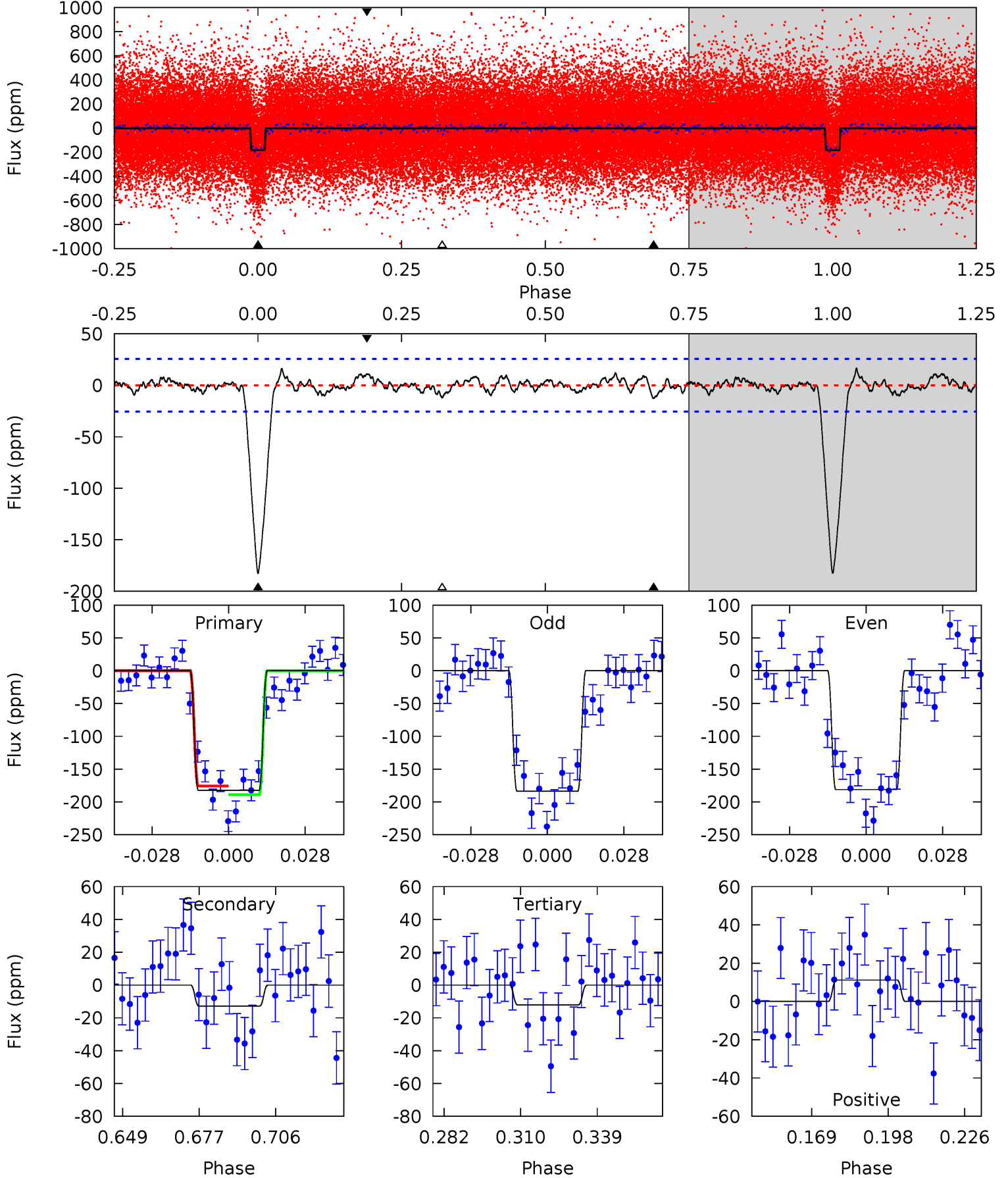
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
36.6	3.68	3.33	2.62	4.80	2.15	1.20	33.3	34.0	0.35	1.06	0.47	1.01	0.10	1.22



Alt Model-Shift Uniqueness Test

009006449-01, P = 12.645190 Days, E = 125.978977 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.4	2.41	2.29	2.11	4.82	2.19	0.88	32.1	32.3	0.13	0.31	0.23	0.98	0.08	1.22



Stellar Parameters For KIC 009006449

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5607^{+152}_{-152}	$4.447^{+0.112}_{-0.168}$	$-0.340^{+0.300}_{-0.300}$	$0.886^{+0.203}_{-0.119}$	$0.800^{+0.115}_{-0.062}$	$1.623^{+0.929}_{-0.733}$
	+3%/-3%	+3%/-4%	+88%/-88%	+23%/-13%	+14%/-8%	+57%/-45%
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 009006449-01 / KOI 1413.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-19 ± 5	$1.53^{+0.23}_{-0.15}$	1044^{+65}_{-53}	3446^{+150}_{-177}	42^{+15}_{-13}
Alt.	-13 ± 5	$1.33^{+0.20}_{-0.14}$	1043^{+64}_{-54}	3380^{+225}_{-276}	38^{+20}_{-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 $A_{\text{obs}} \gg 1.0$

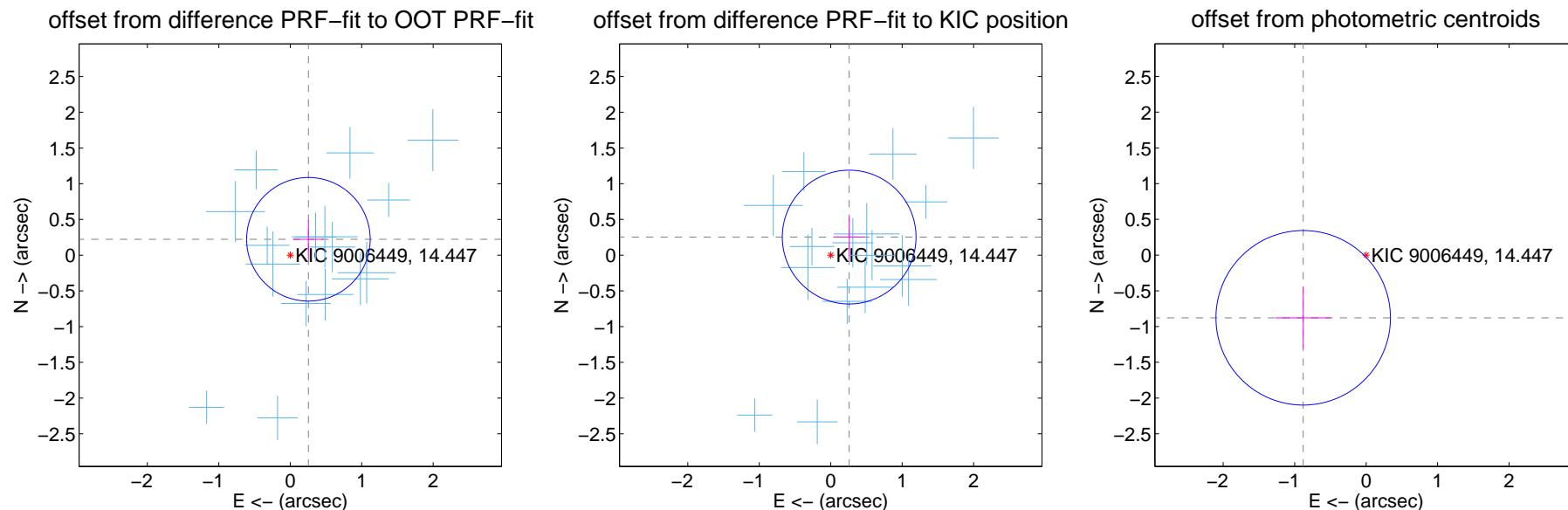
DV Centroid Data

Supplemental centroid analysis for 009006449-01. Kepler magnitude: 14.45. Transit SNR 24.41

There are 16 quarters with good PRF difference image offsets

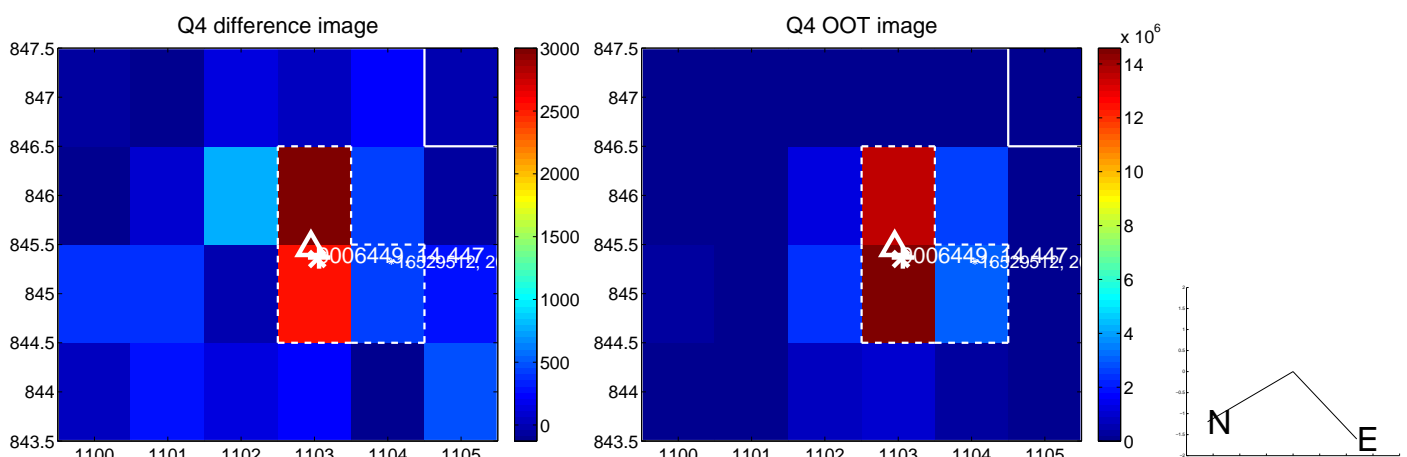
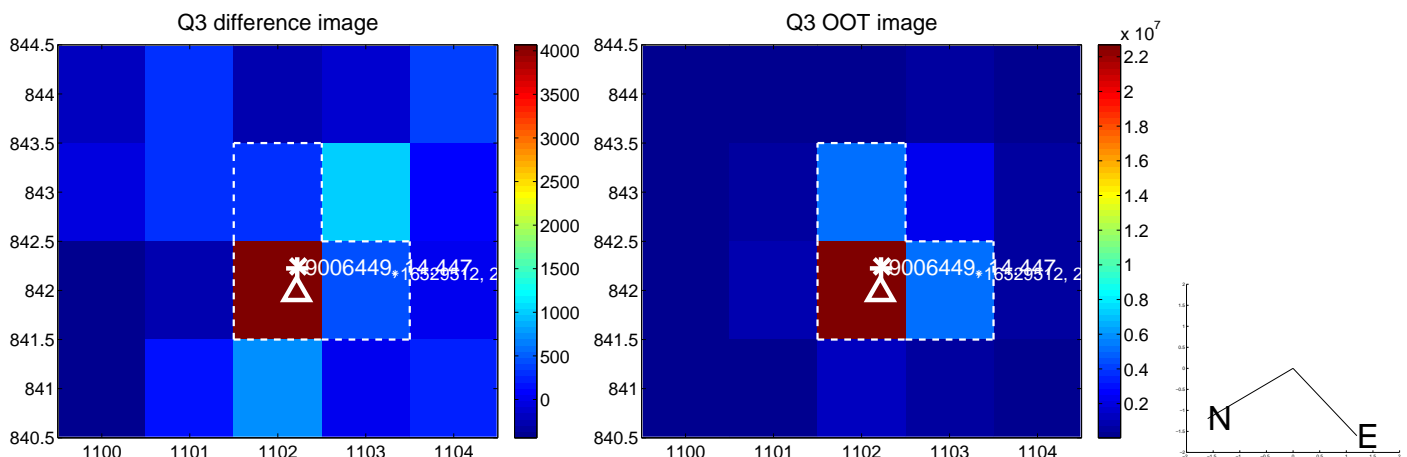
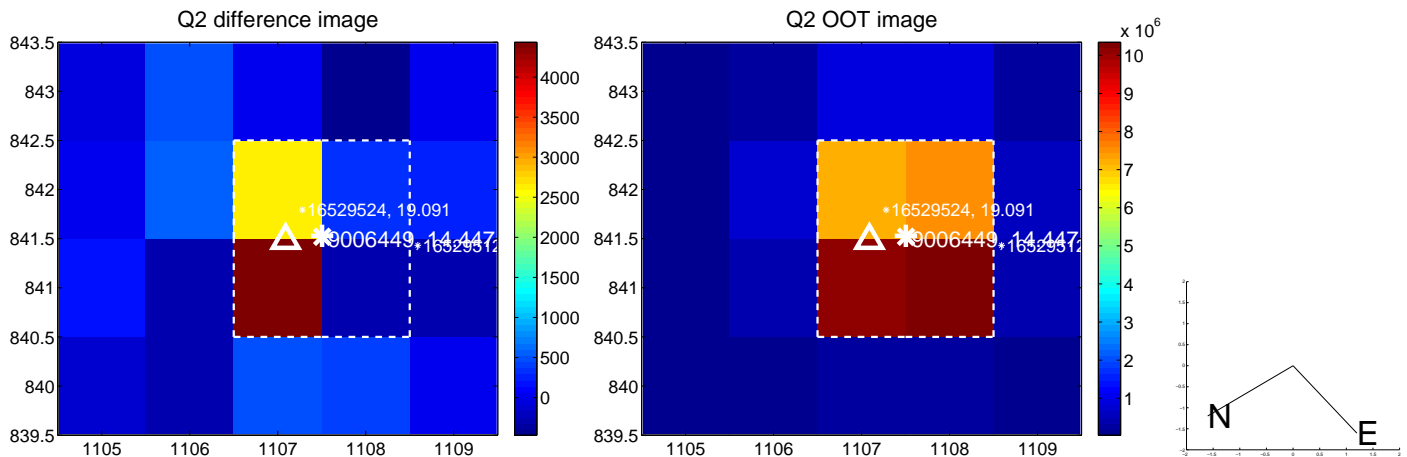
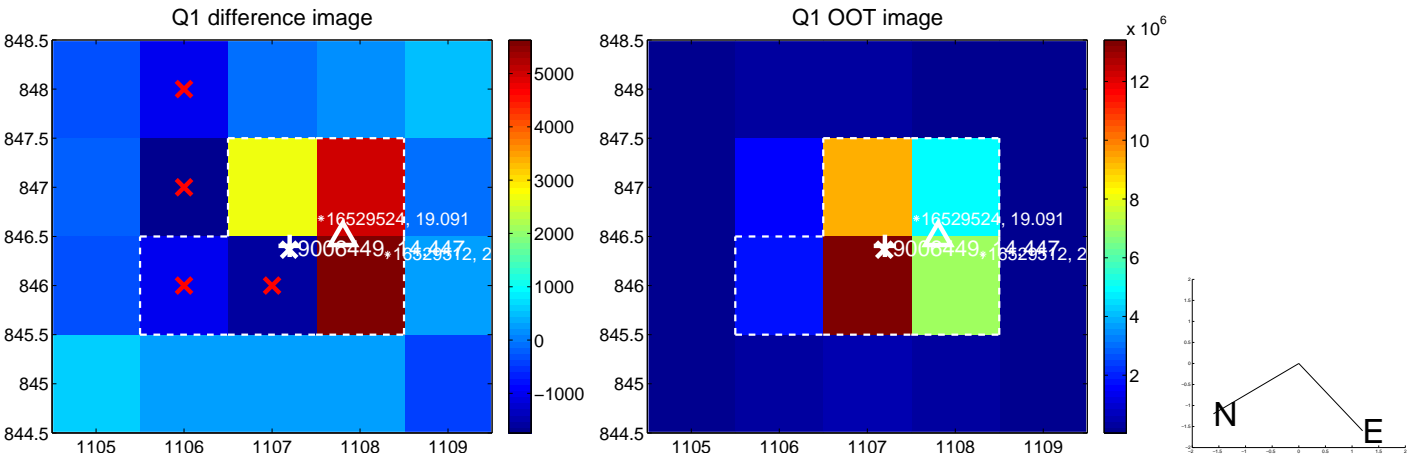
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.337 ± 0.288	1.17	-0.254 ± 0.211	0.222 ± 0.268
PRF-fit source offset from KIC position	0.361 ± 0.312	1.16	-0.258 ± 0.215	0.253 ± 0.293
photometric centroid source offset	1.24 ± 0.41	3.05	0.88 ± 0.39	-0.88 ± 0.43

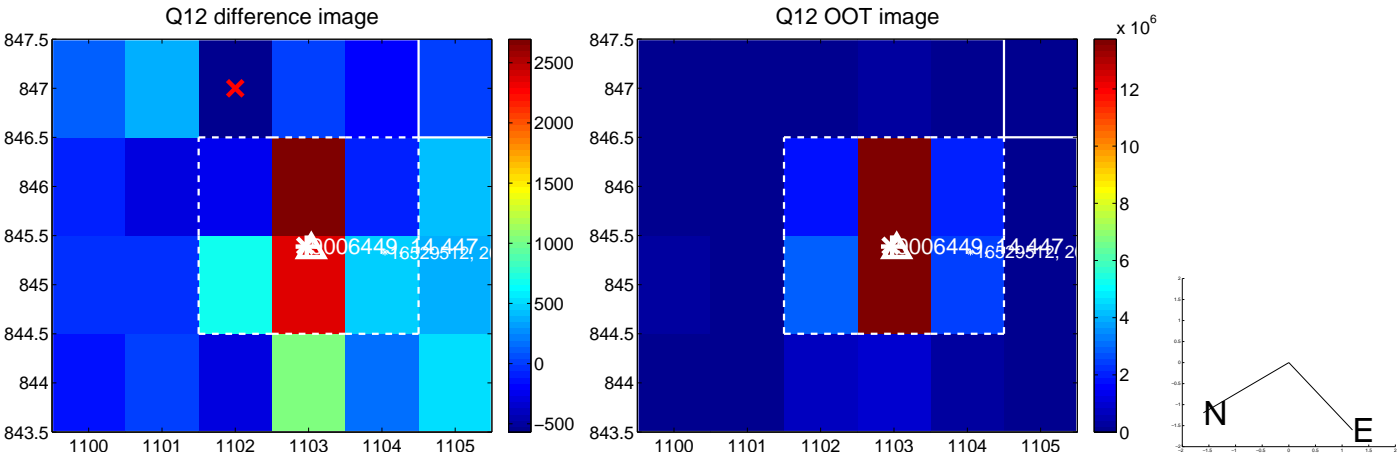
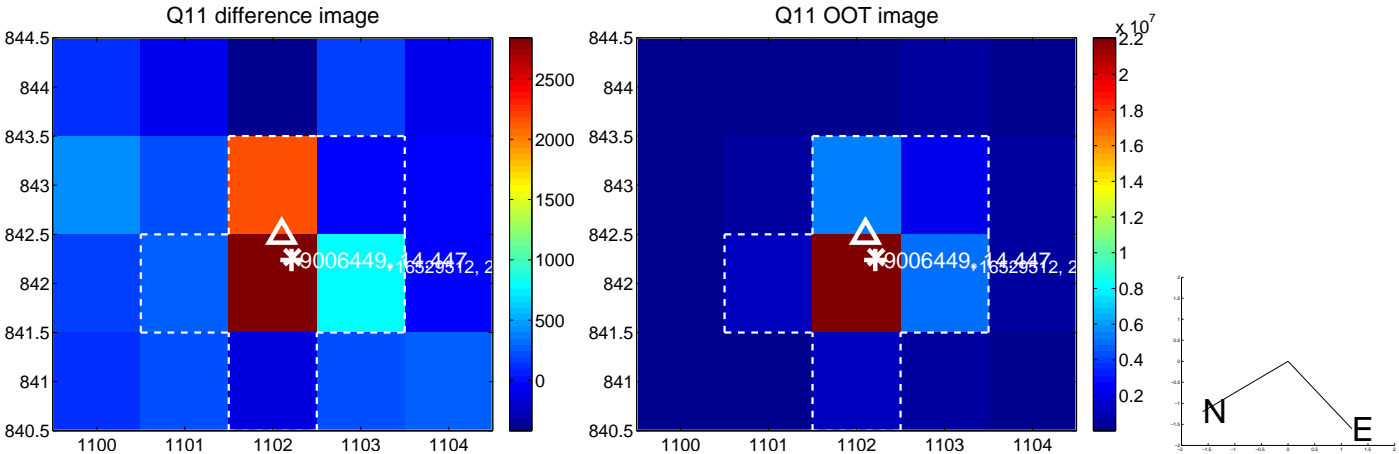
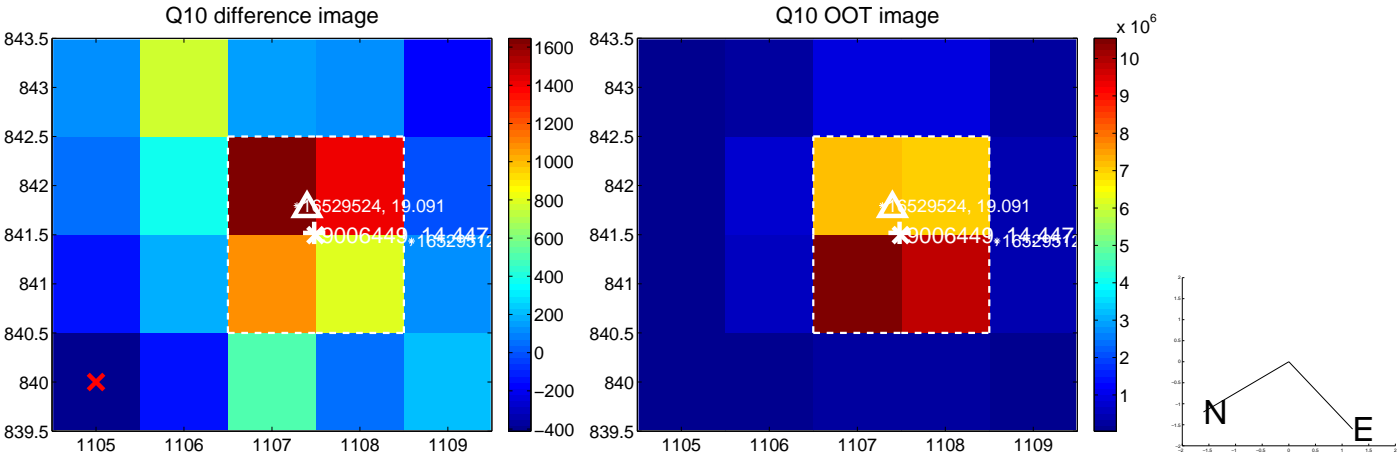
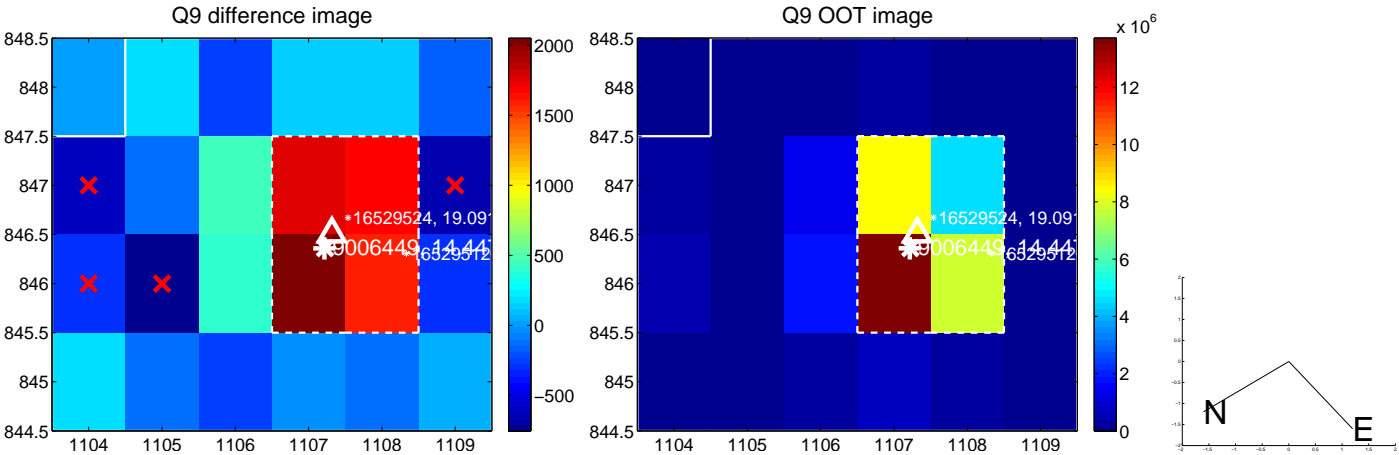


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

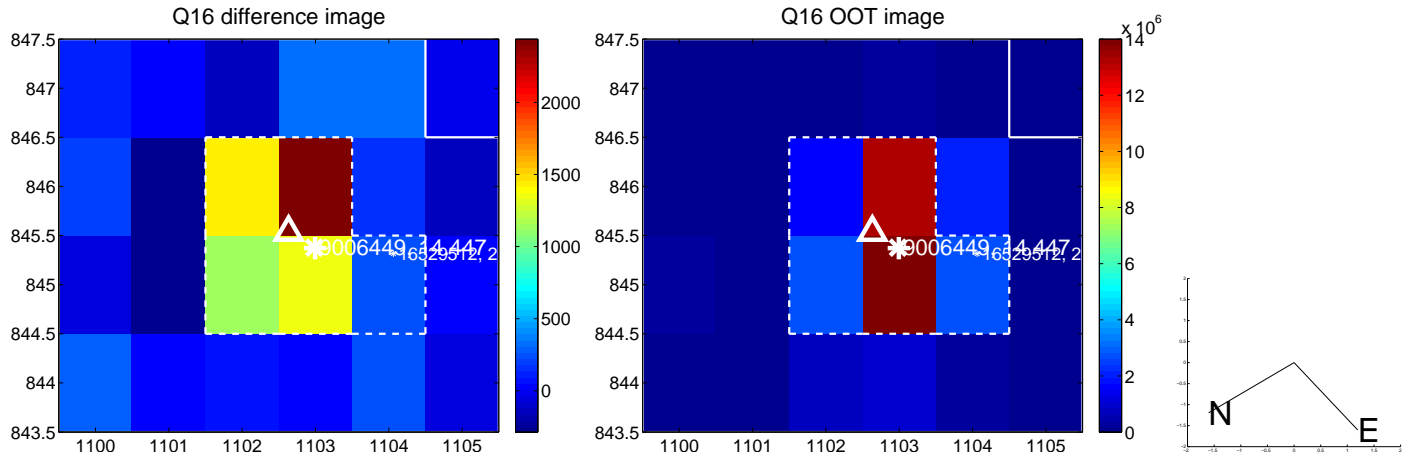
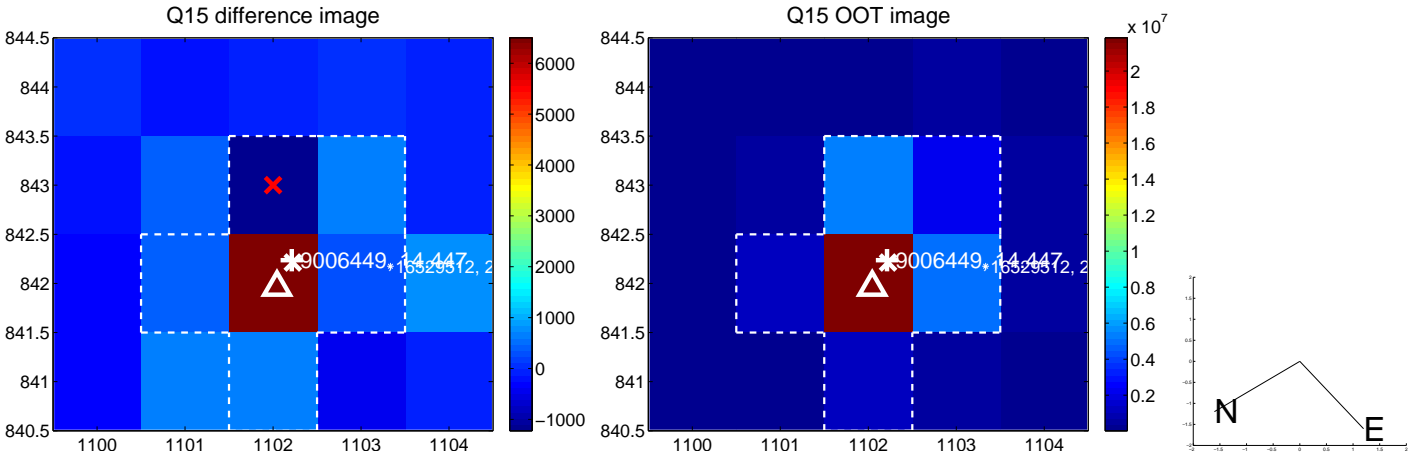
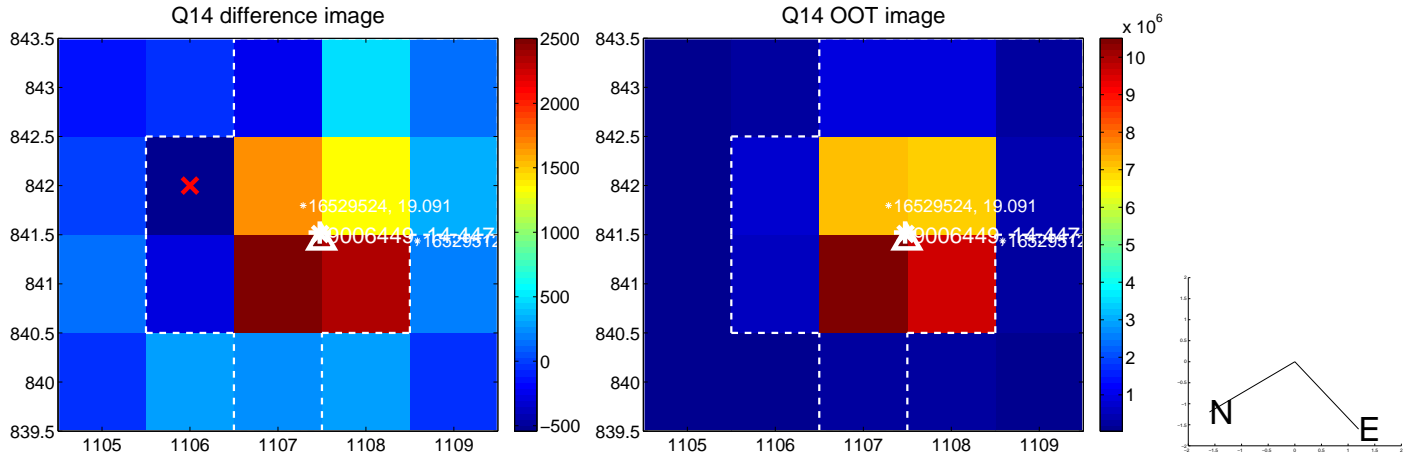
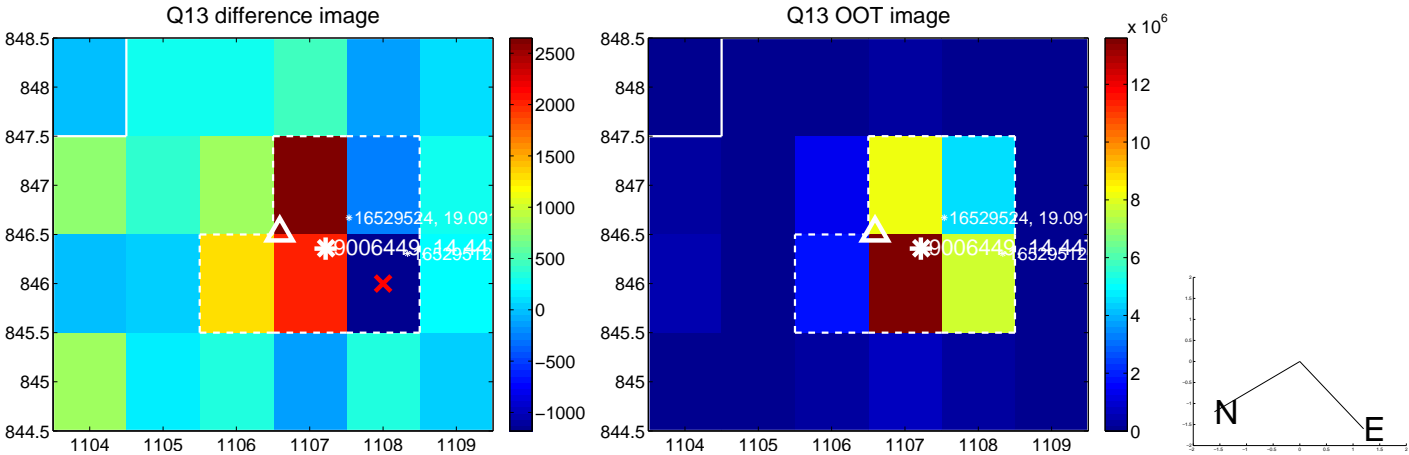
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

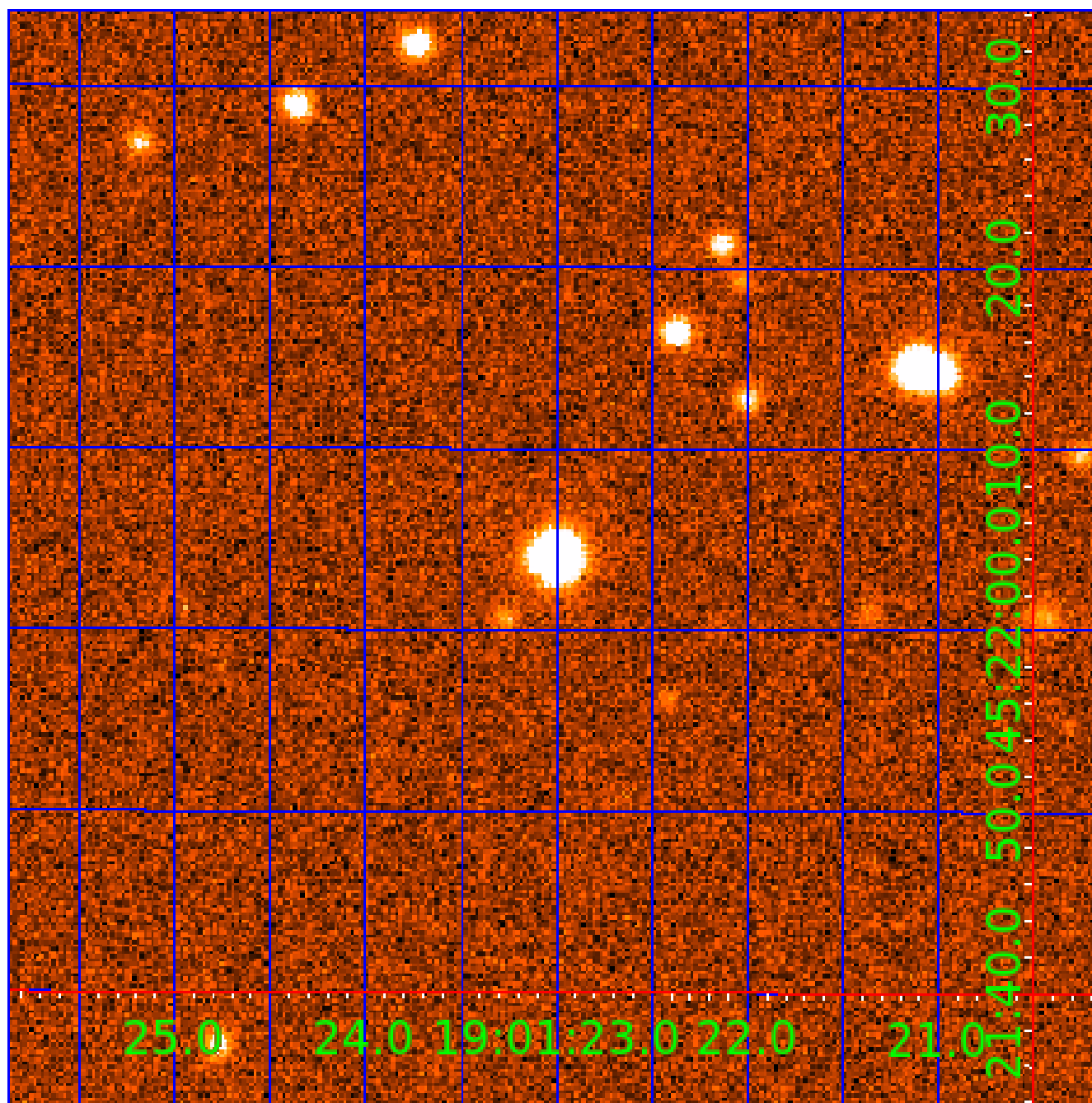


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009006449

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})
009006449-01	OBS	1413.01	12.645032	138.633051	191.7	9.119	22.8	24.4	0.89	5607	1.51	71.38
009006449-02	OBS	1413.02	21.526308	132.287564	182.9	8.350	16.6	18.0	0.89	5607	1.33	35.11
009006449-03	OBS	1413.03	33.884607	159.992664	225.1	5.521	12.9	13.6	0.89	5607	1.58	19.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009006449-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
009006449-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009006449-03	OBS	PC	0.94	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.

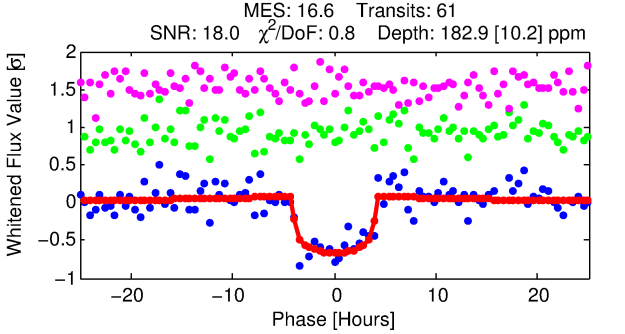
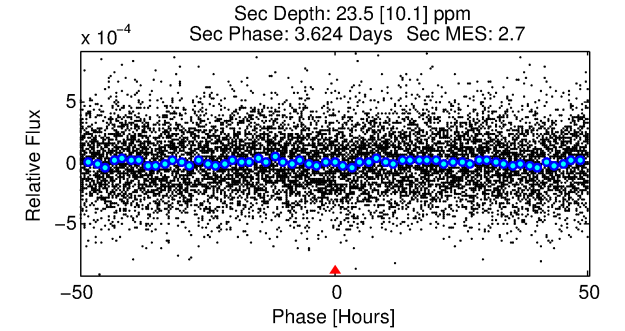
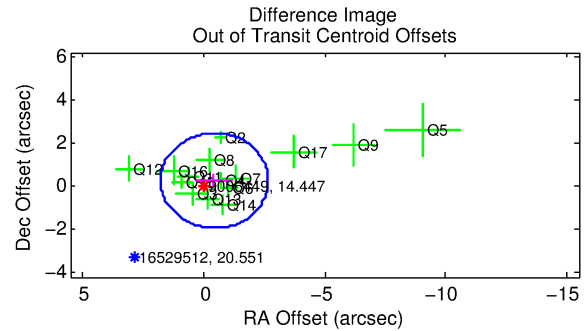
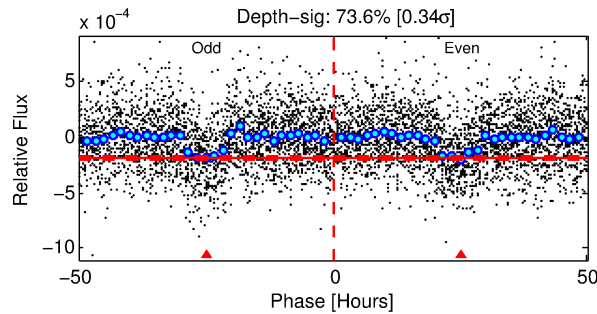
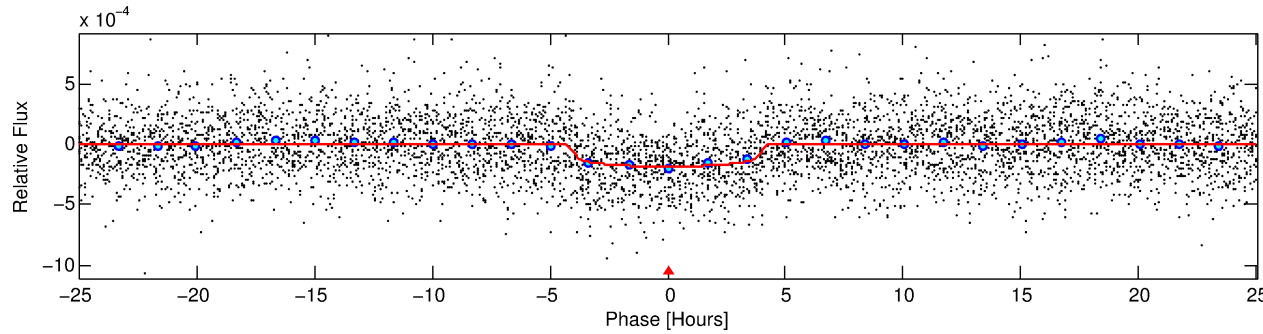
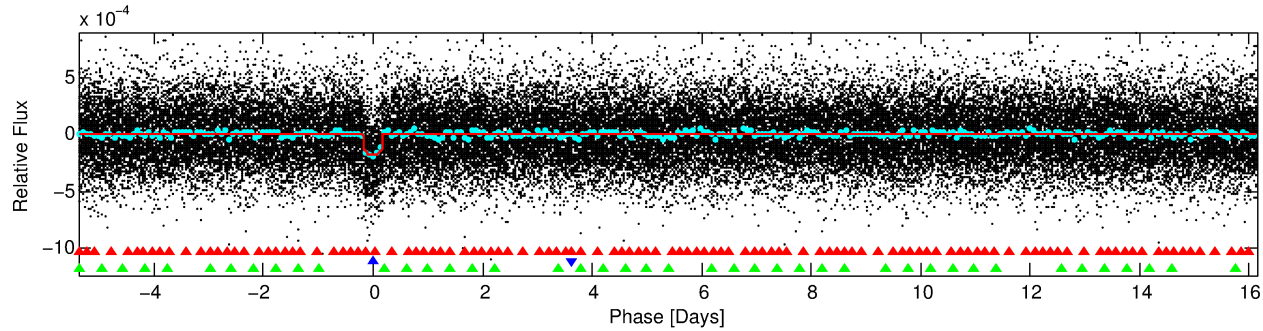
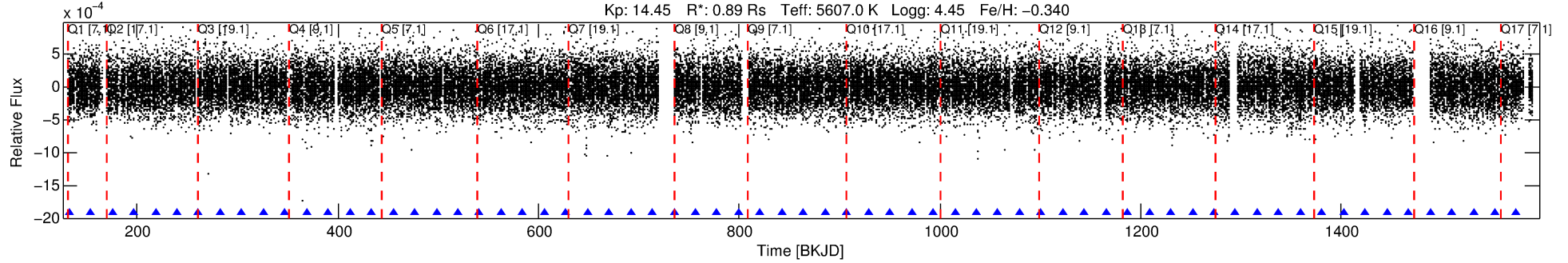
Ephemeris Match Information For 009006449-02

No Significant Match Found

DV One-Page Summary

KIC: 9006449 Candidate: 2 of 3 Period: 21.526 d
KOI: K01413.02 Name: Kepler-295c Corr: 0.995

Kp: 14.45 R*: 0.89 Rs Teff: 5607.0 K Logg: 4.45 Fe/H: -0.340



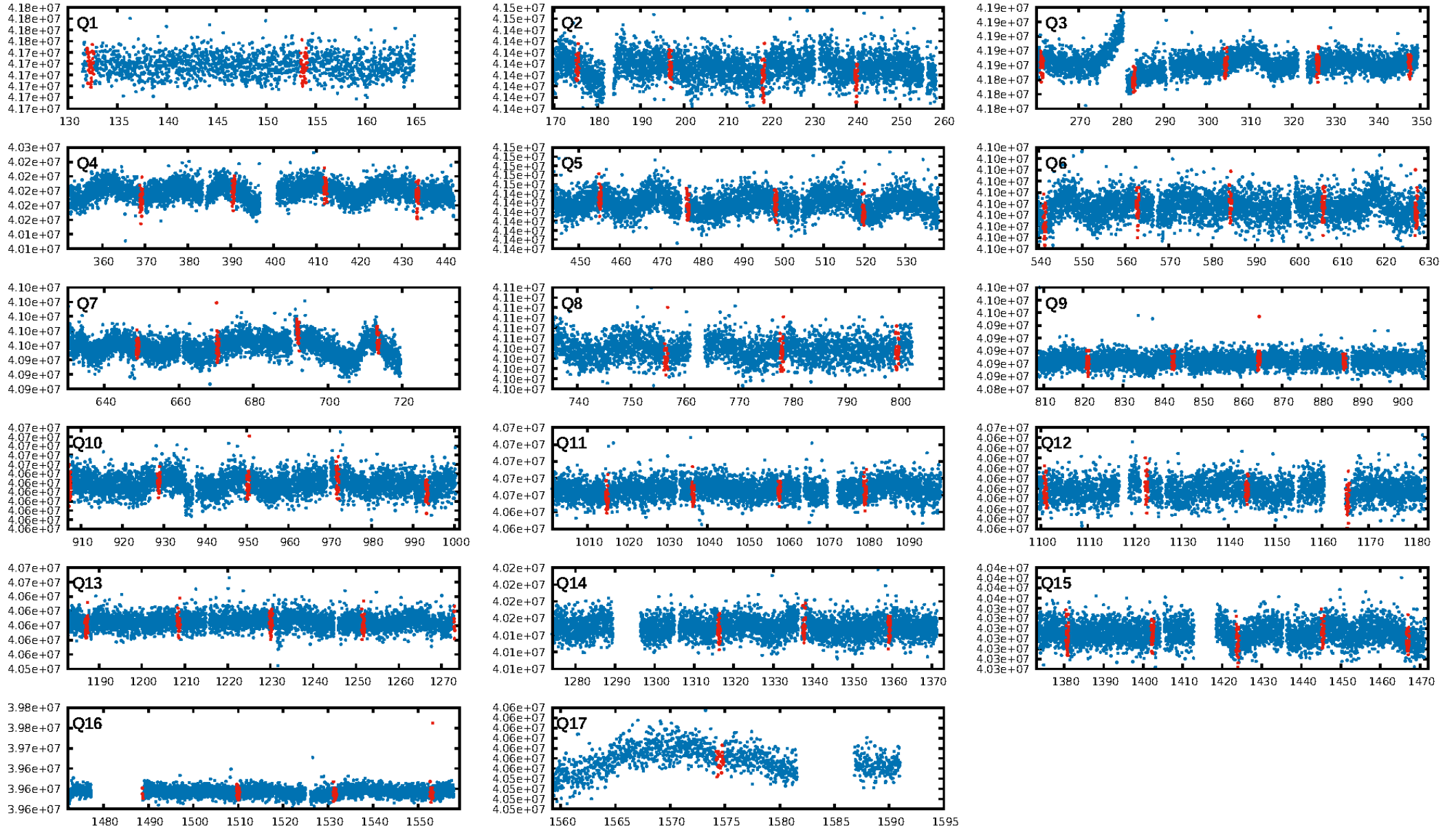
DV Fit Results:

Period = 21.52631 [0.00020] d
Epoch = 132.2876 [0.0075] BKJD
Rp/R* = 0.0137 [0.0040]
a/R* = 12.39 [16.34]
b = 0.80 [0.62]
Seff = 35.11 [11.19]
Teq = 621 [49] K
Rp = 1.33 [0.49] Re
a = 0.1407 [0.0281] AU
Ag = 145.06 [113.96] [1.26σ]
Teffp = 3331 [611] K [4.42σ]

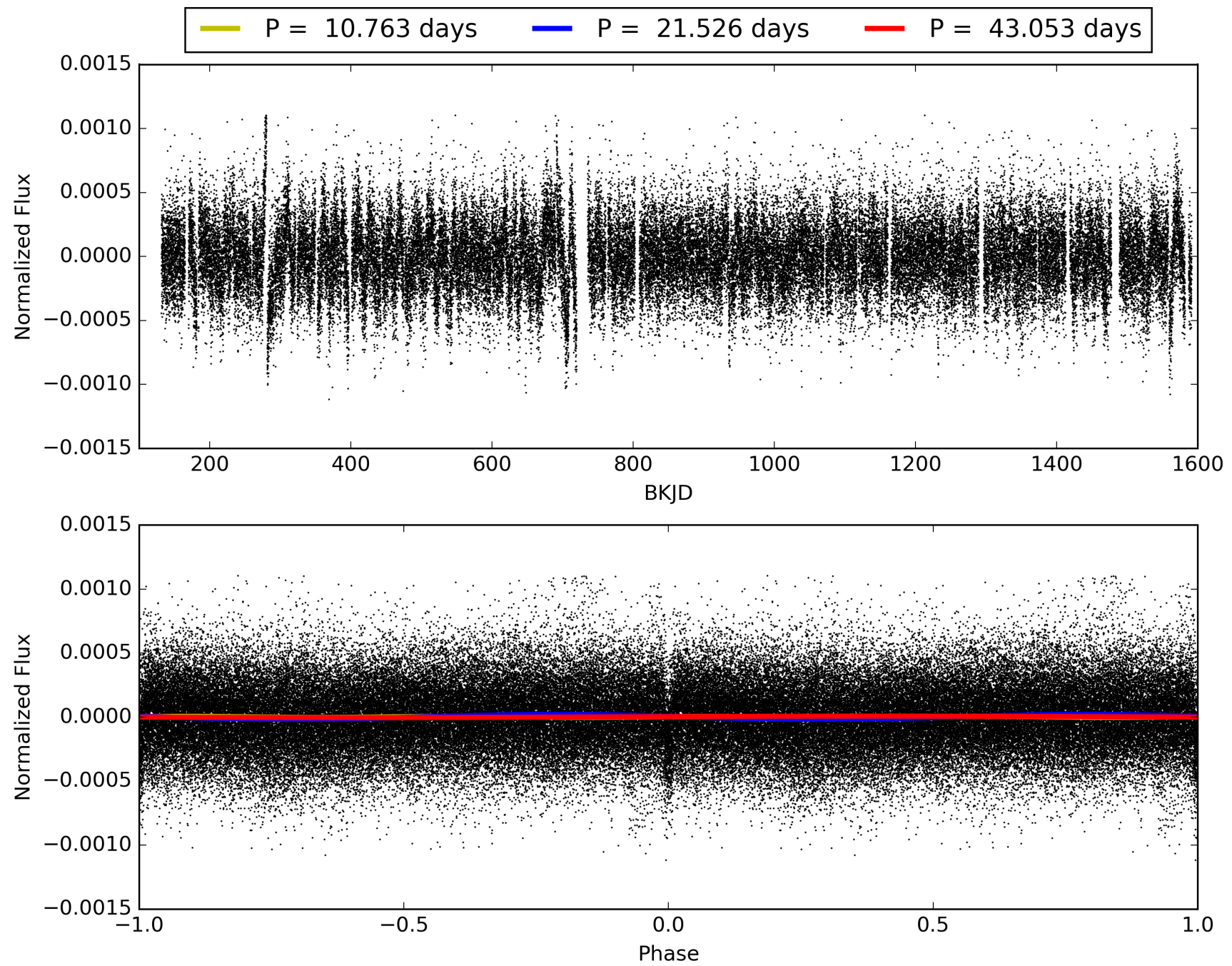
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [17.24σ]
LongPeriod-sig: 100.0% [29.63σ]
ModelChiSquare2-sig: 99.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.36e-58
RollingBand-fgt: 1.00 [58/58]
GhostDiagnostic-chr: 2.805
Centroid-sig: 2.3%
Centroid-so: 0.958 arcsec [1.68σ]
OotOffset-rm: 0.510 arcsec [0.69σ]
KicOffset-rm: 0.514 arcsec [0.63σ]
OotOffset-st: 3/4/4/4 [15]
KicOffset-st: 3/4/4/4 [15]
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DiffImageOverlap-fno: 1.00 [17/17]

TCE 009006449-02, PDC Light Curves

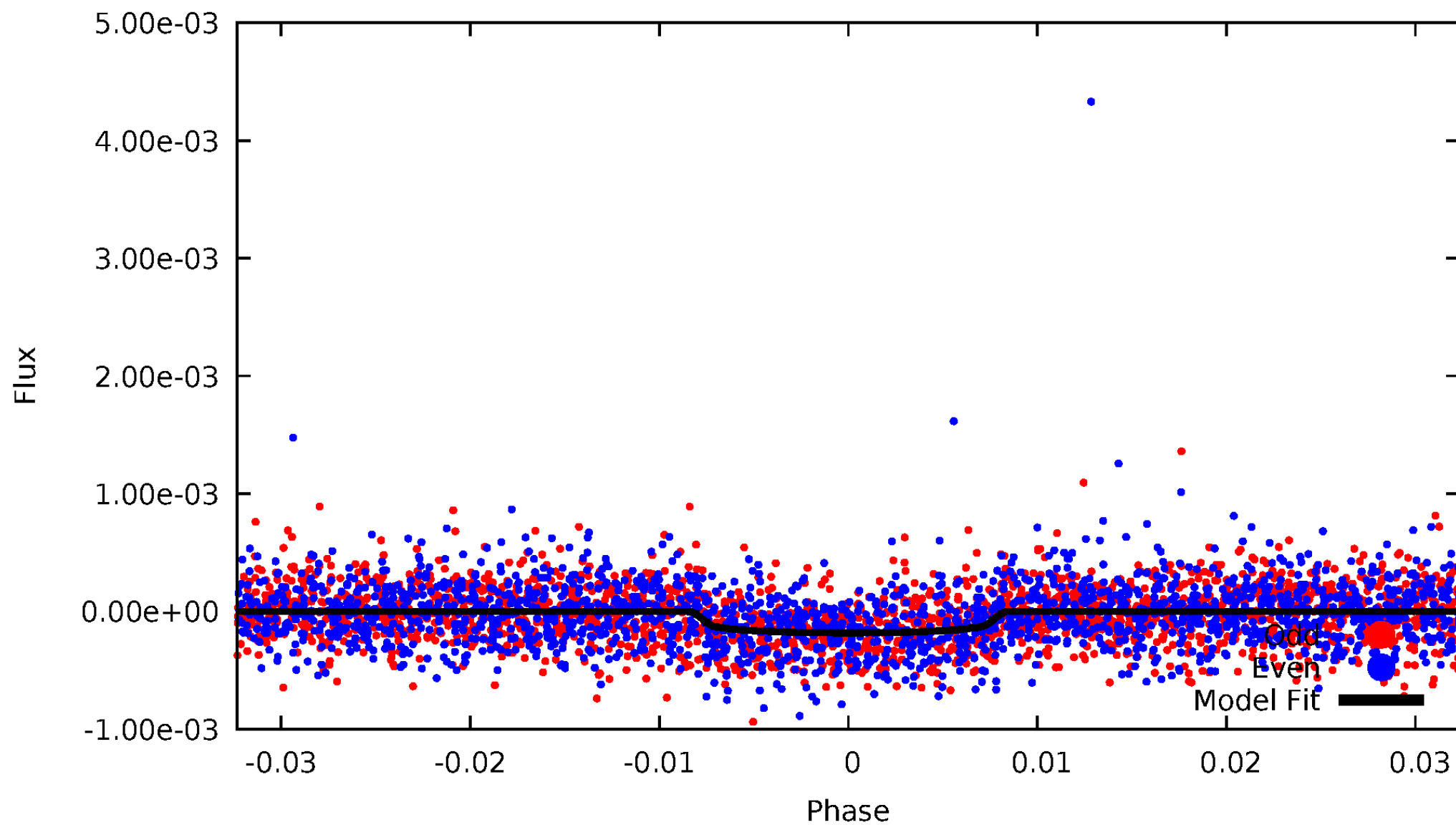


TCE 009006449-02



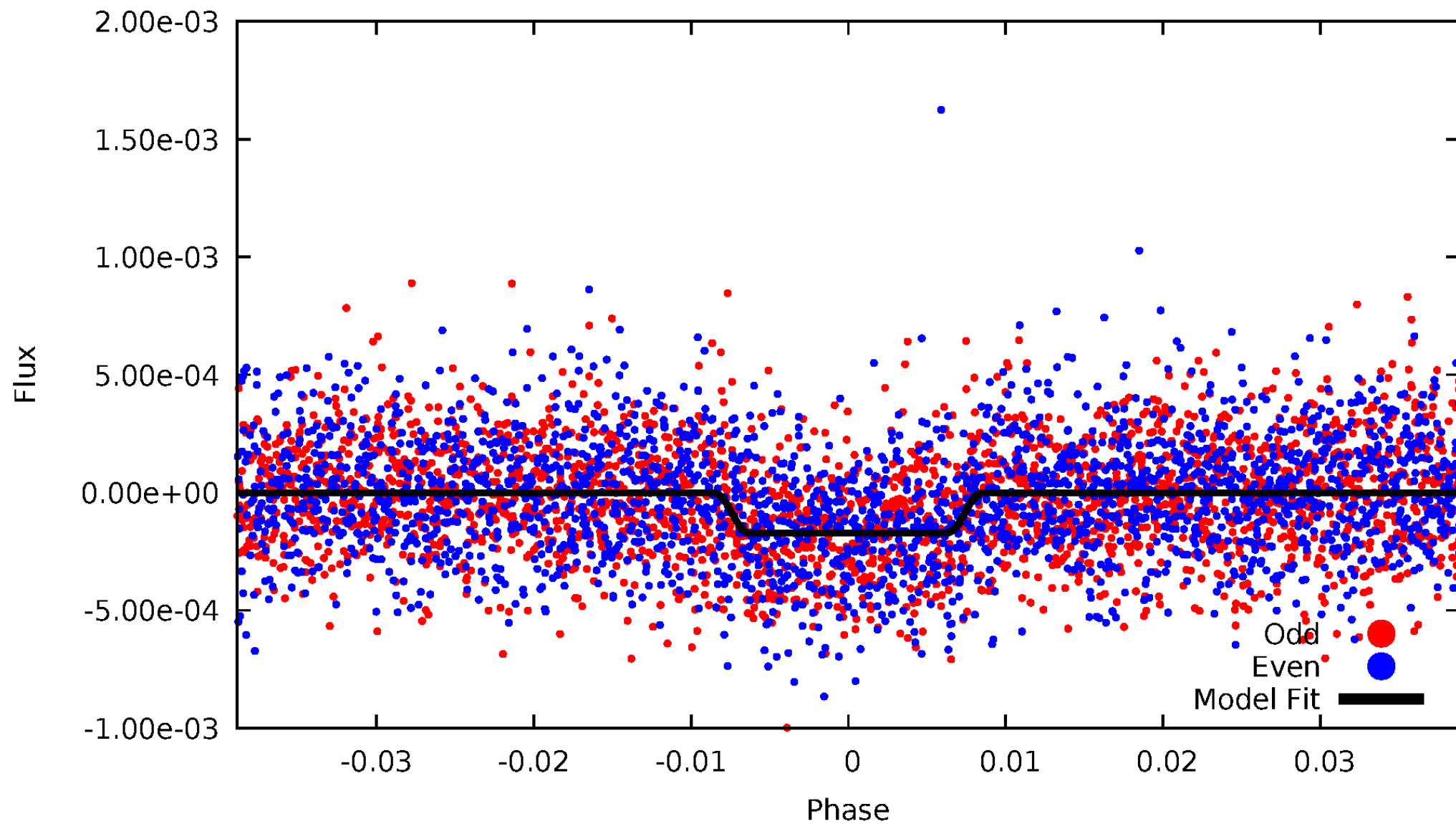
DV Odd/Even

TCE 009006449-02



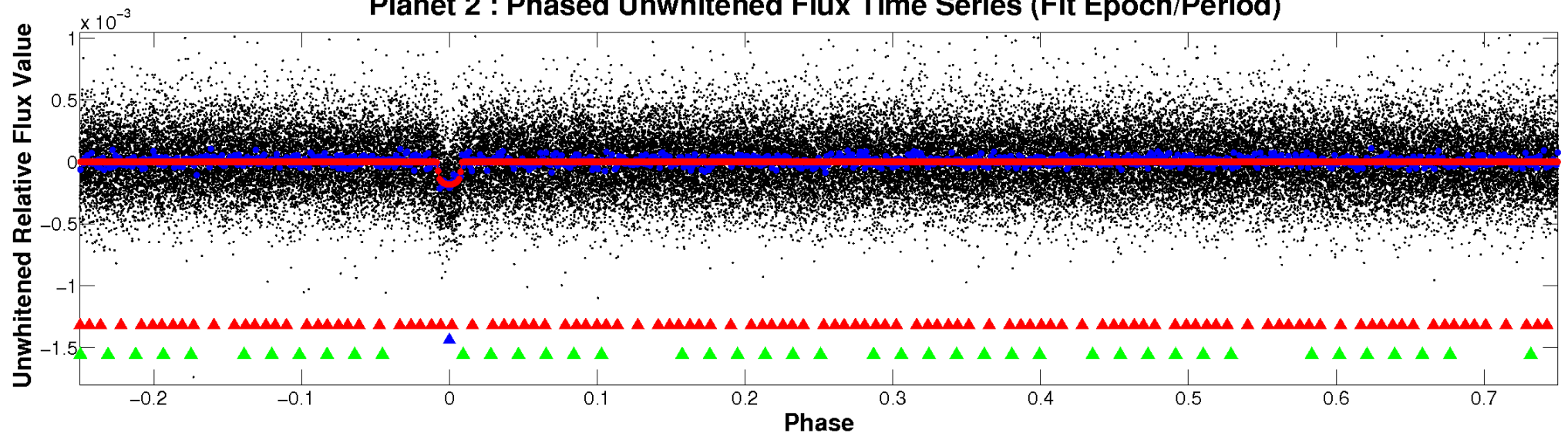
ALT Odd/Even

TCE 009006449-02

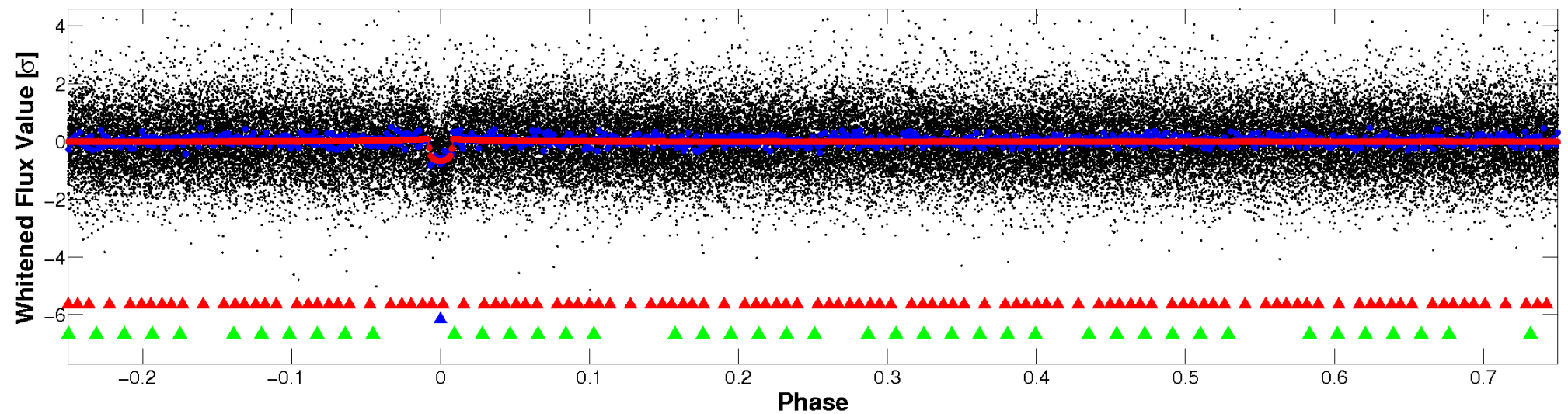


Non-Whitened Vs. Whitened Light Curve

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

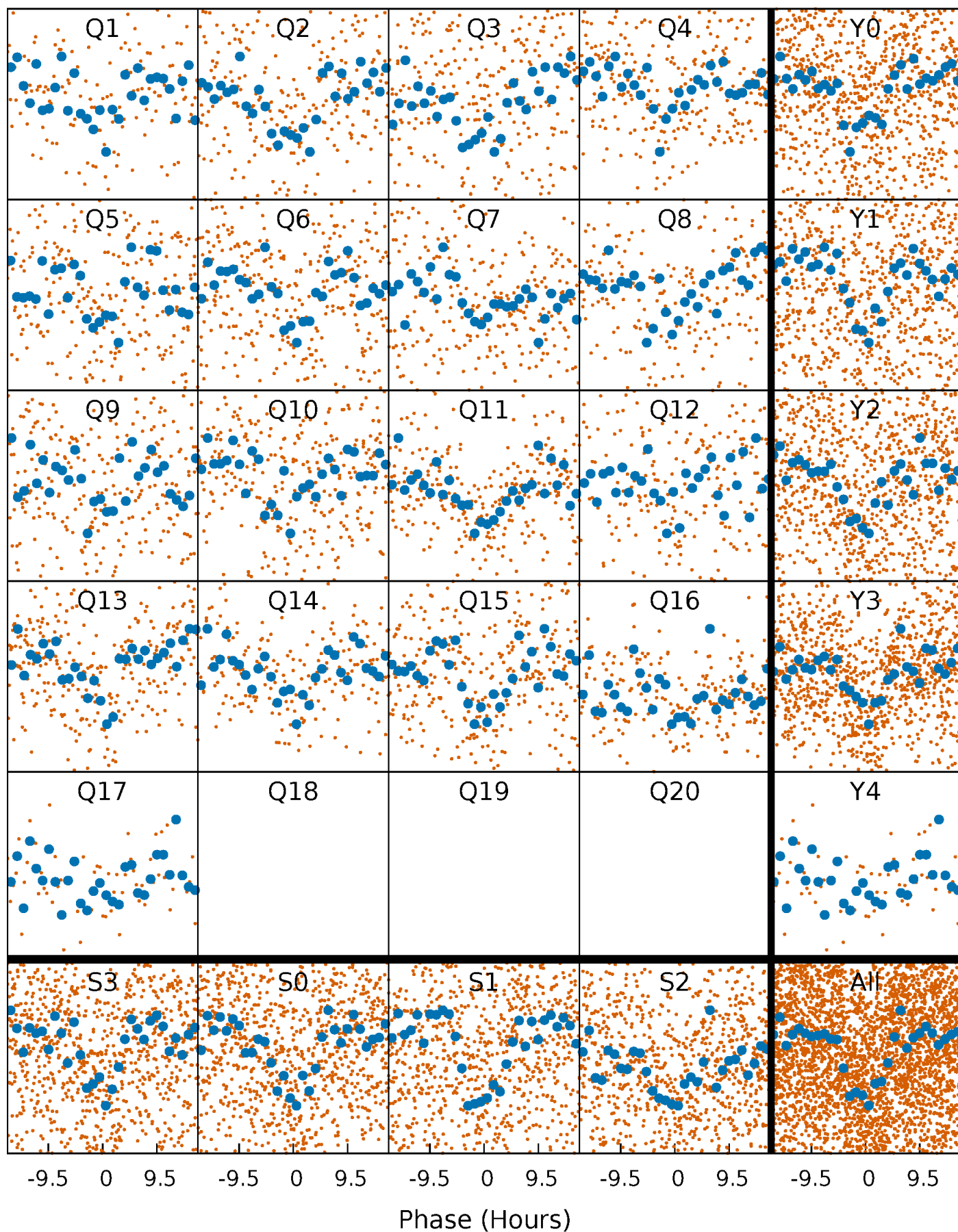


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



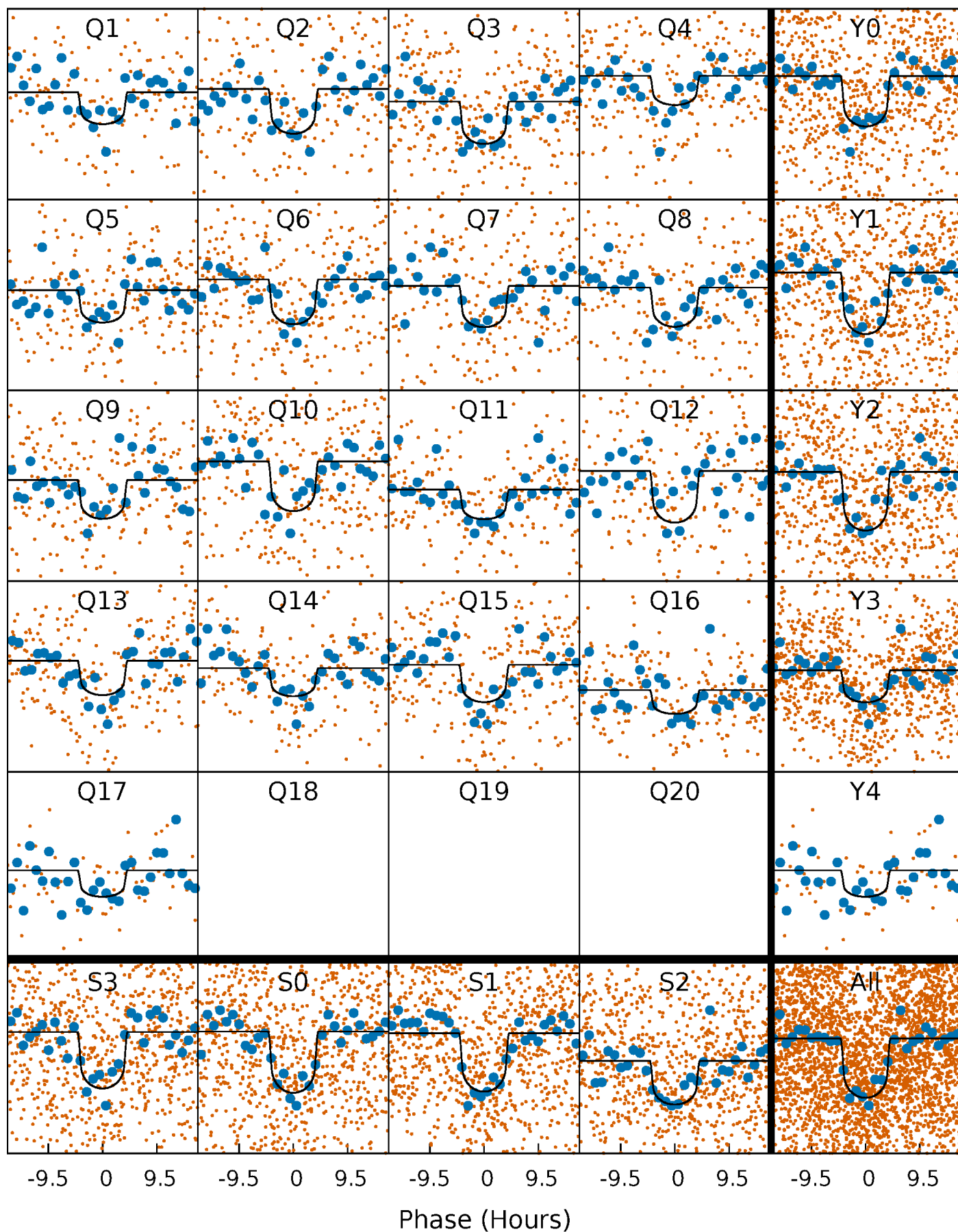
PDC Quarter-Phased Transit Curves

TCE 009006449-02 P= 21.526308 Days $T_0=132.287564$ (BKJD)



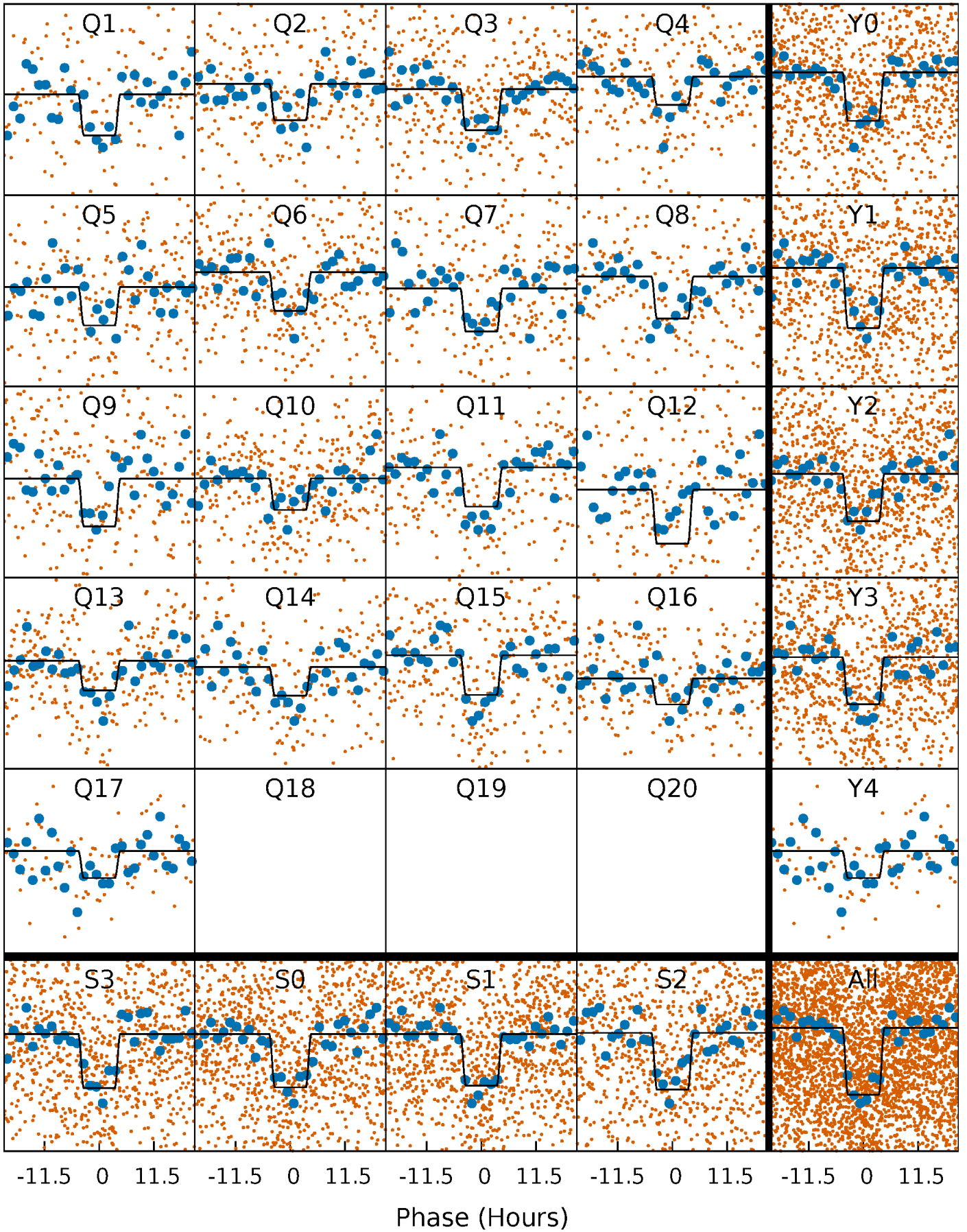
DV Quarter-Phased Transit Curves

TCE 009006449-02 P= 21.526308 Days $T_0=132.287564$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

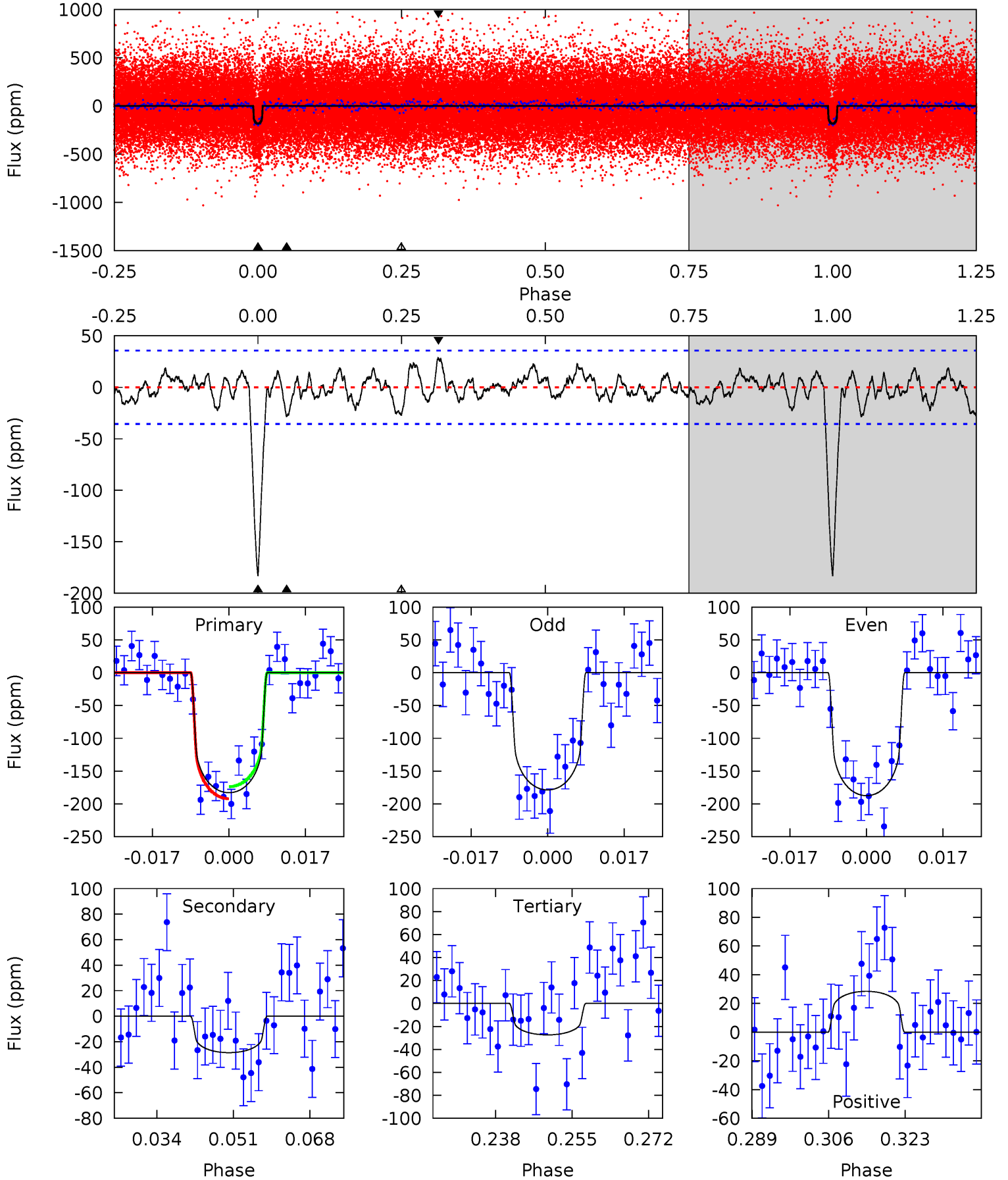
TCE 009006449-02 P= 21.527071 Days $T_0=132.254633$ (BKJD)



DV Model-Shift Uniqueness Test

009006449-02, P = 21.526308 Days, E = 110.761256 Days

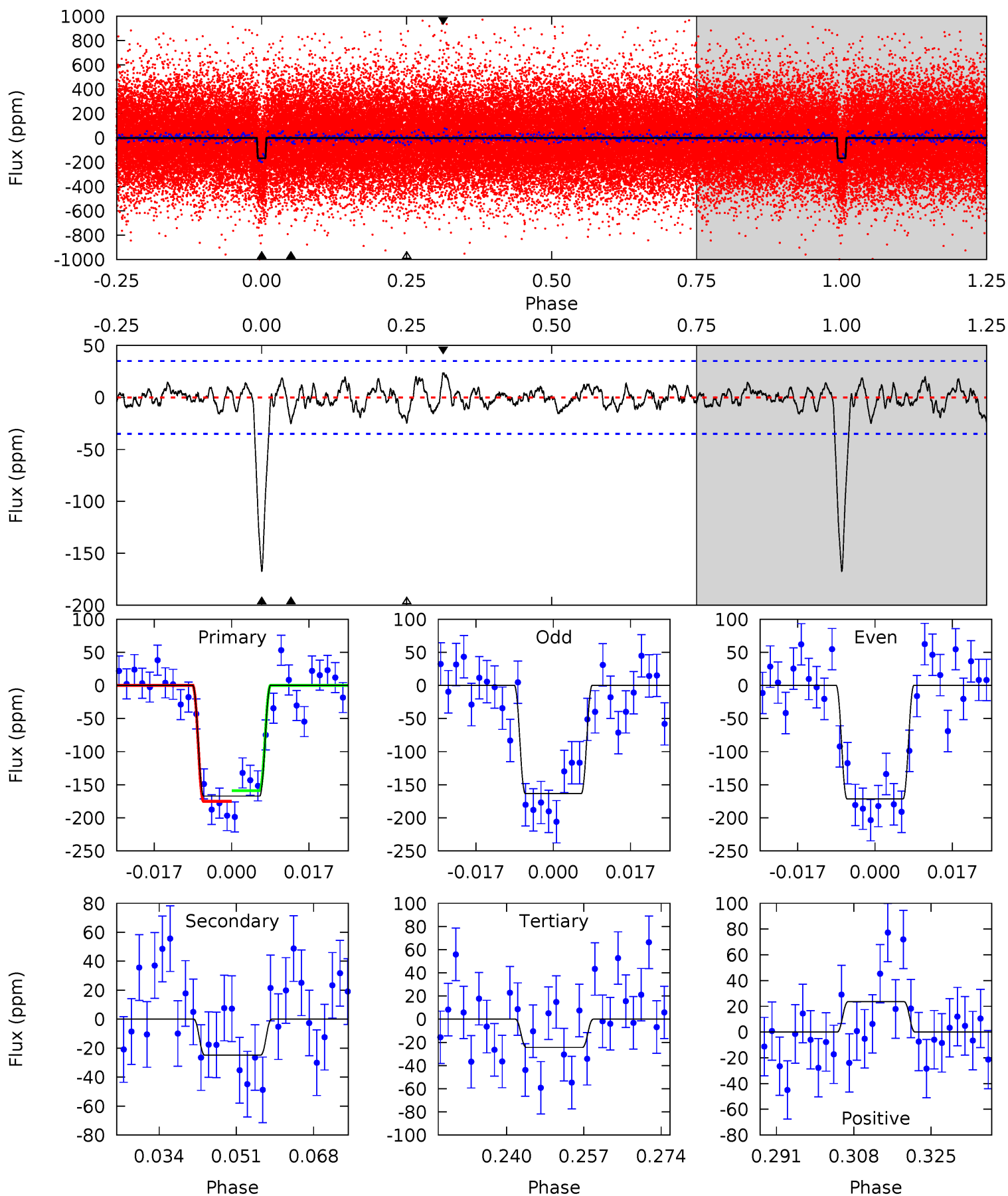
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.2	3.94	3.77	3.92	4.92	2.39	1.36	21.5	21.3	0.17	0.02	0.60	0.97	0.13	1.27



Alt Model-Shift Uniqueness Test

009006449-02, P = 21.527071 Days, E = 110.727562 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.5	3.49	3.43	3.31	4.92	2.38	1.11	20.1	20.2	0.06	0.18	0.57	0.97	0.12	1.13



Stellar Parameters For KIC 009006449

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5607^{+152}_{-152}	$4.447^{+0.112}_{-0.168}$	$-0.340^{+0.300}_{-0.300}$	$0.886^{+0.203}_{-0.119}$	$0.800^{+0.115}_{-0.062}$	$1.623^{+0.929}_{-0.733}$
	+3%/-3%	+3%/-4%	+88%/-88%	+23%/-13%	+14%/-8%	+57%/-45%
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 009006449-02 / KOI 1413.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-29 ± 7	$1.34^{+0.47}_{-0.41}$	871^{+59}_{-43}	3855^{+586}_{-366}	174^{+206}_{-86}
Alt.	-25 ± 7	$1.29^{+0.43}_{-0.41}$	870^{+54}_{-42}	3780^{+609}_{-369}	153^{+214}_{-71}

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 $A_{obs} \gg 1.0$

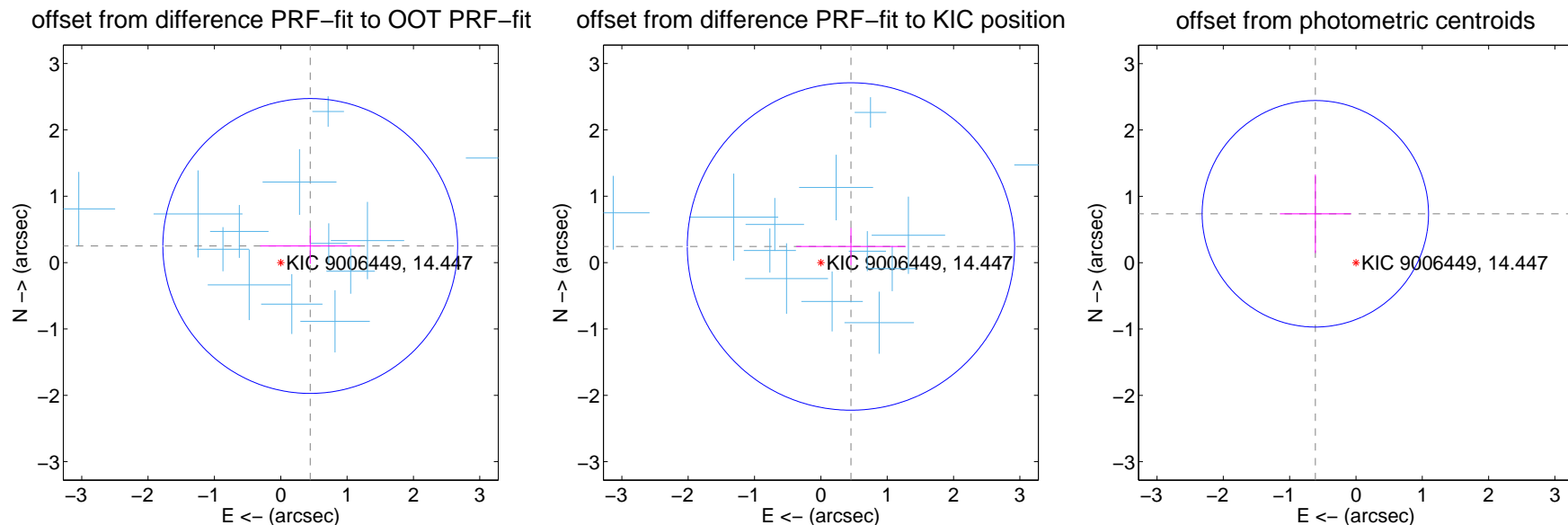
DV Centroid Data

Supplemental centroid analysis for 009006449-02. Kepler magnitude: 14.45. Transit SNR 18.01

There are 13 quarters with good PRF difference image offsets

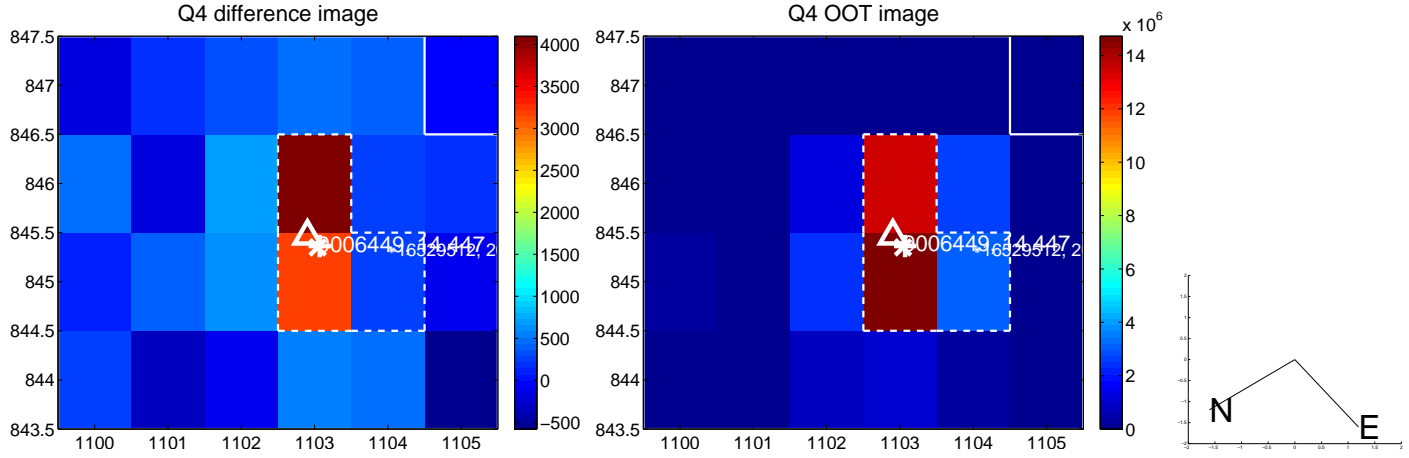
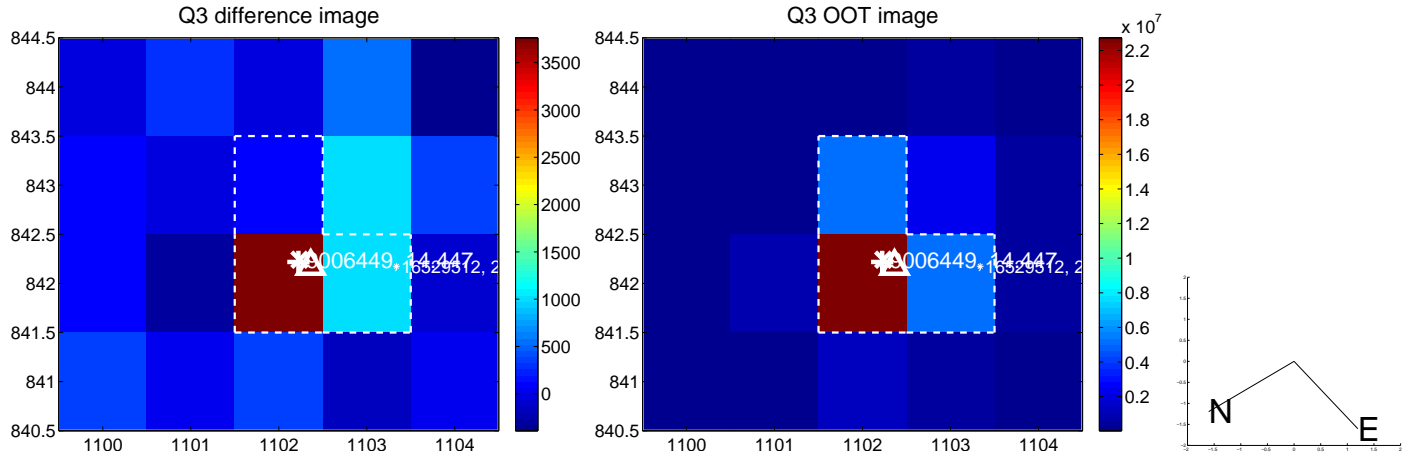
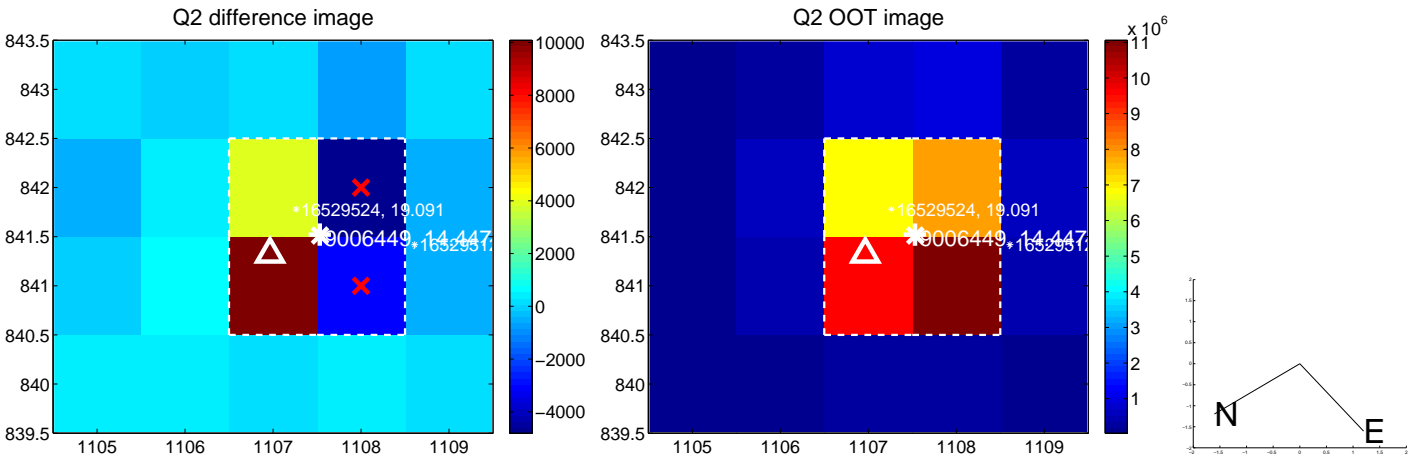
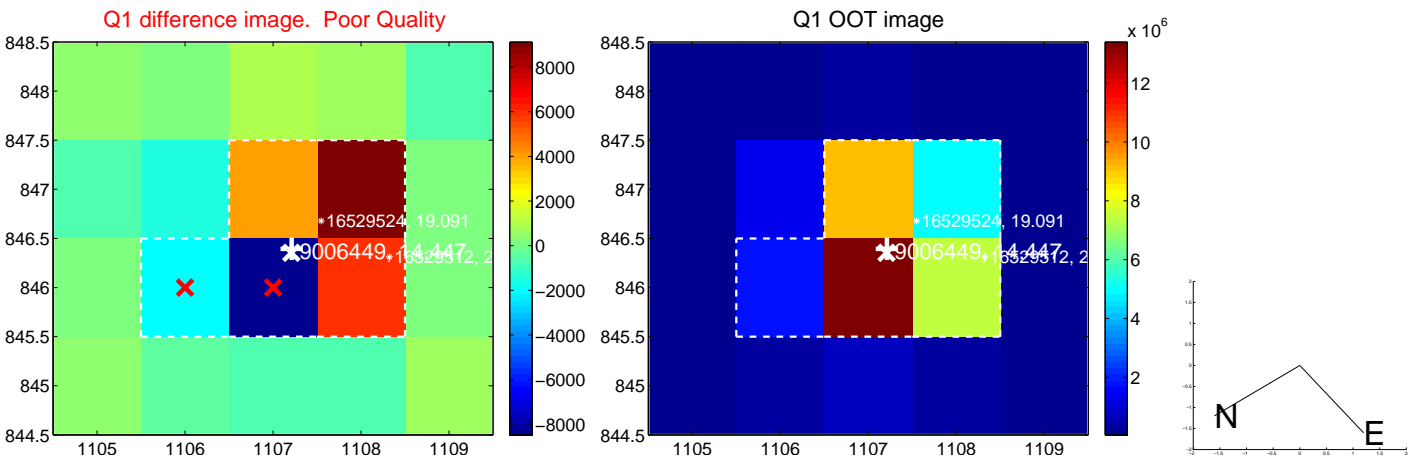
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.510 ± 0.740	0.69	-0.445 ± 0.754	0.250 ± 0.269
PRF-fit source offset from KIC position	0.514 ± 0.822	0.63	-0.453 ± 0.826	0.242 ± 0.280
photometric centroid source offset	0.96 ± 0.57	1.68	0.61 ± 0.54	0.74 ± 0.59

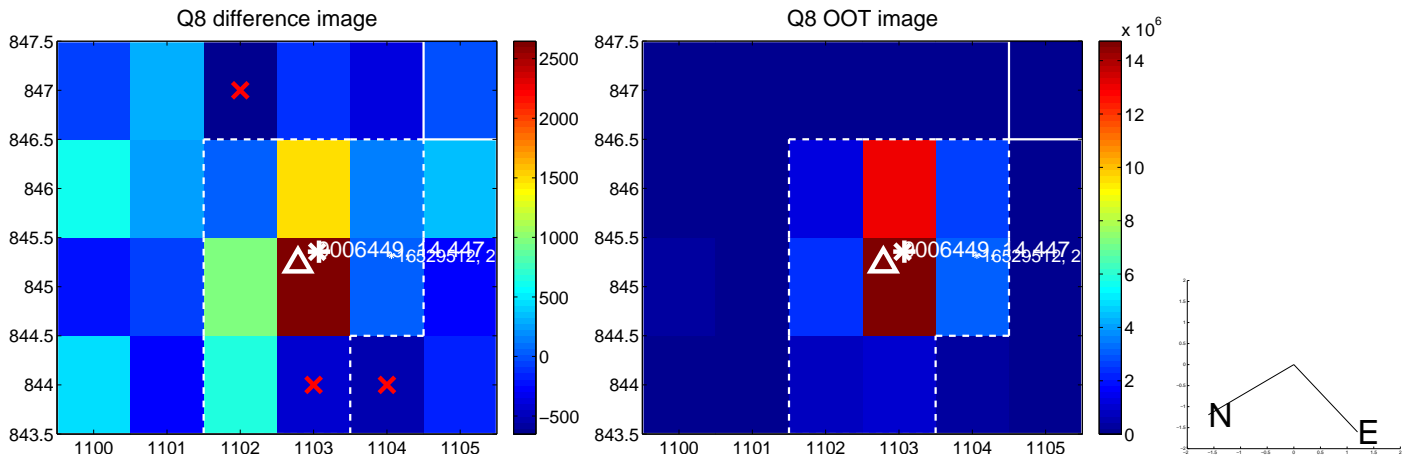
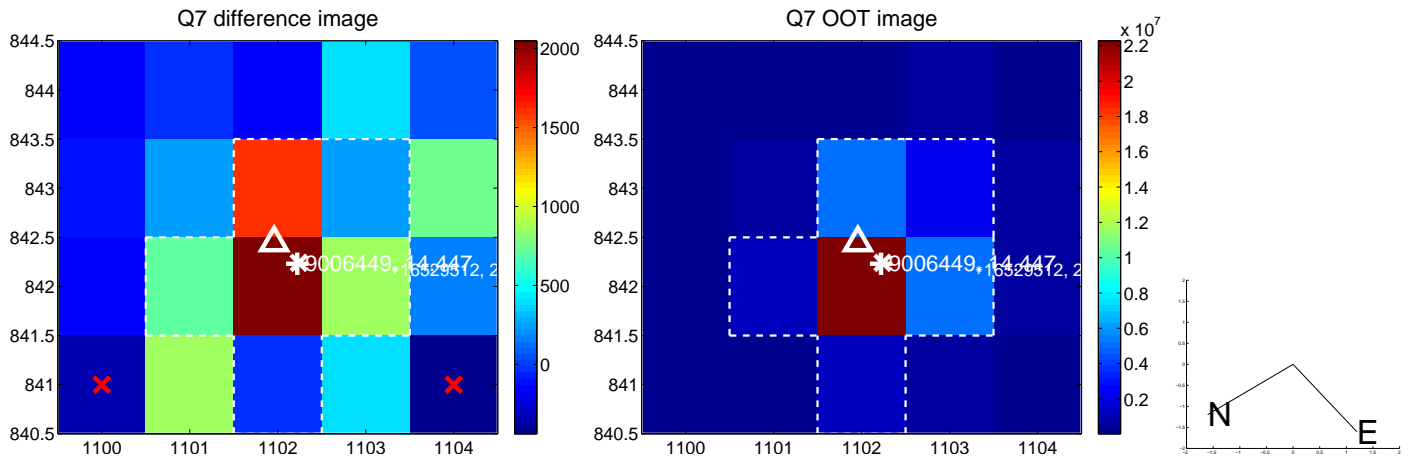
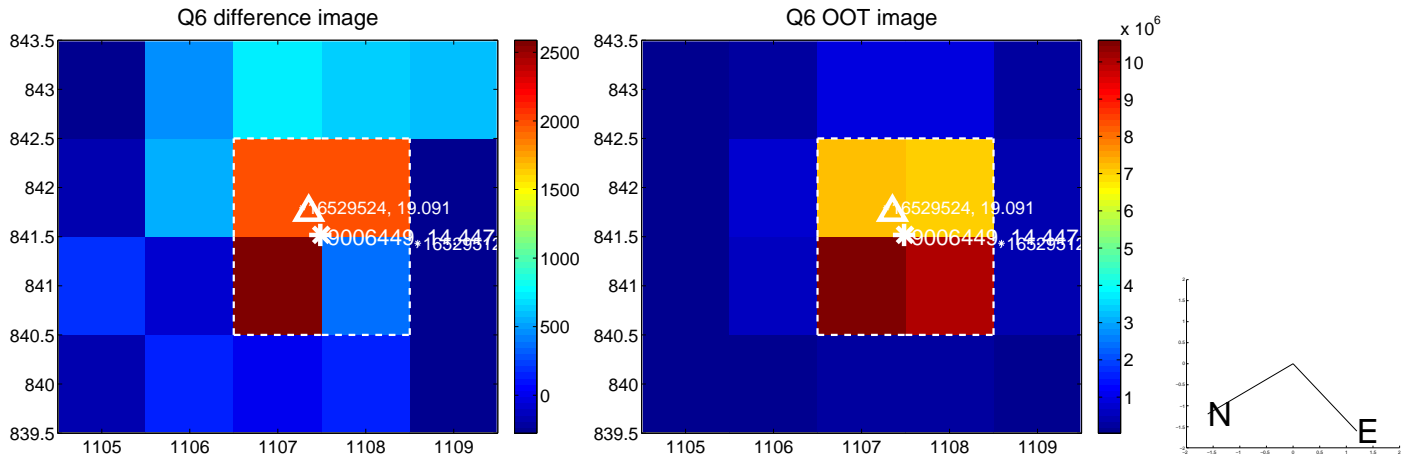
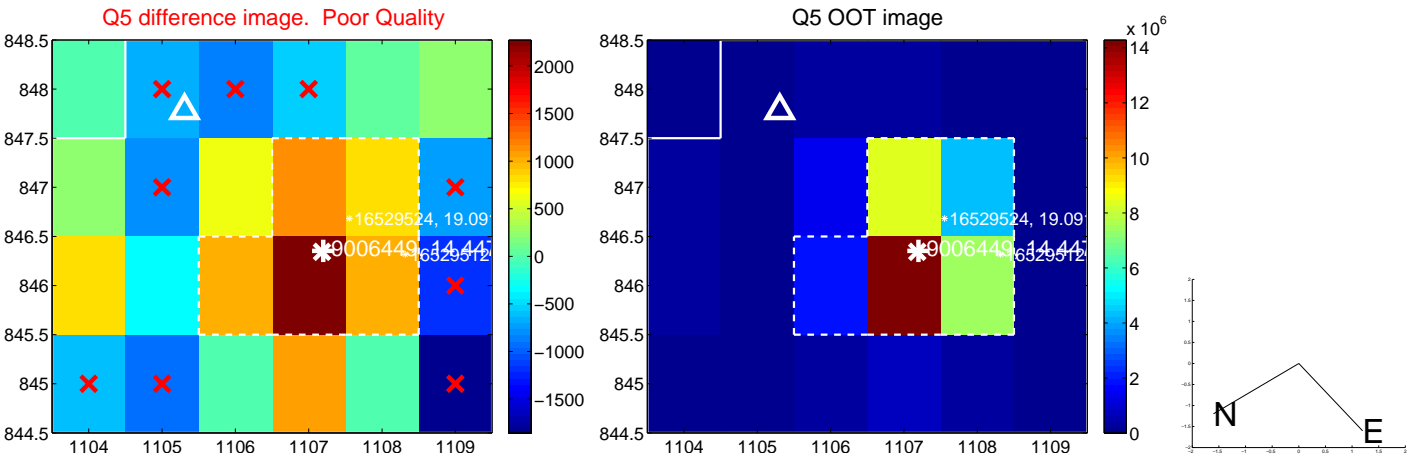


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

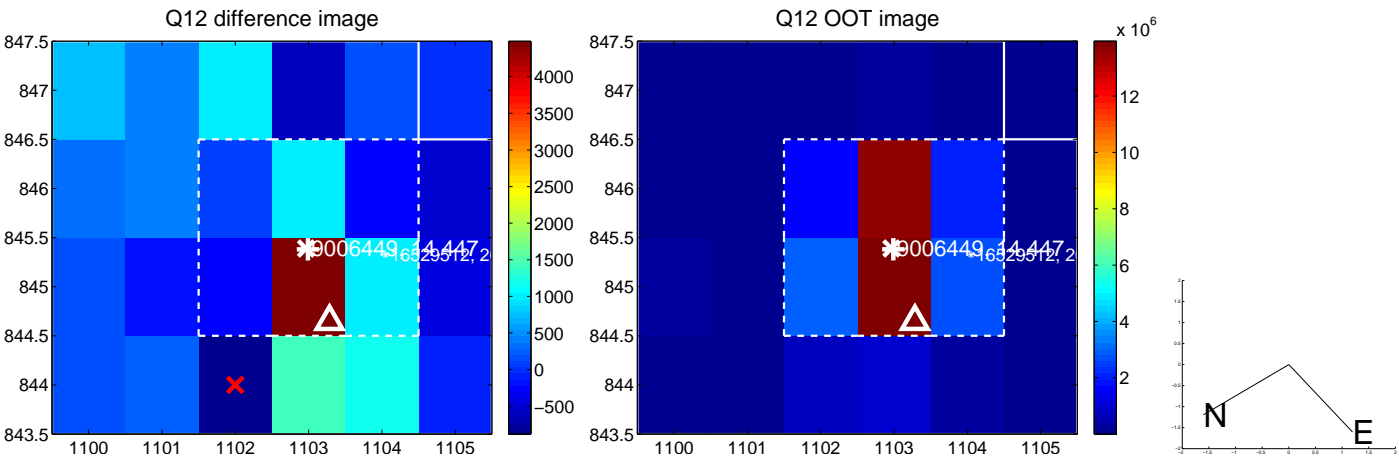
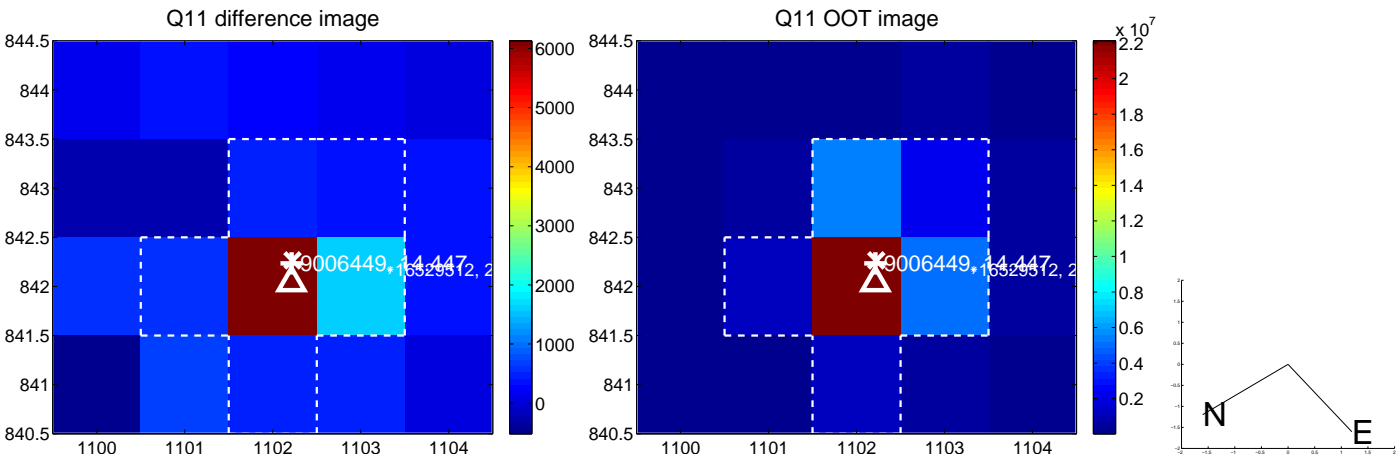
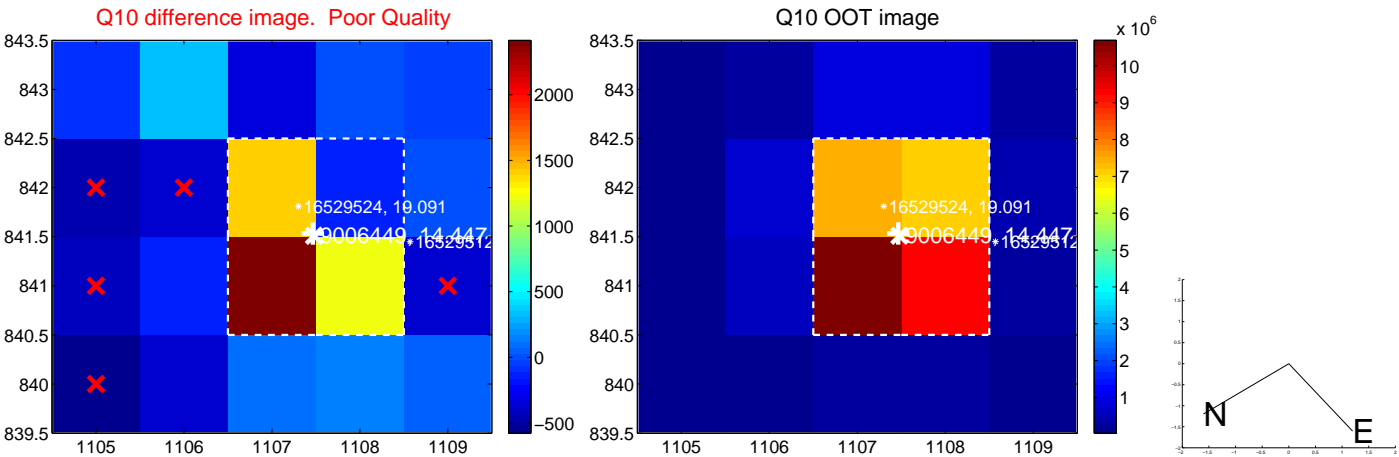
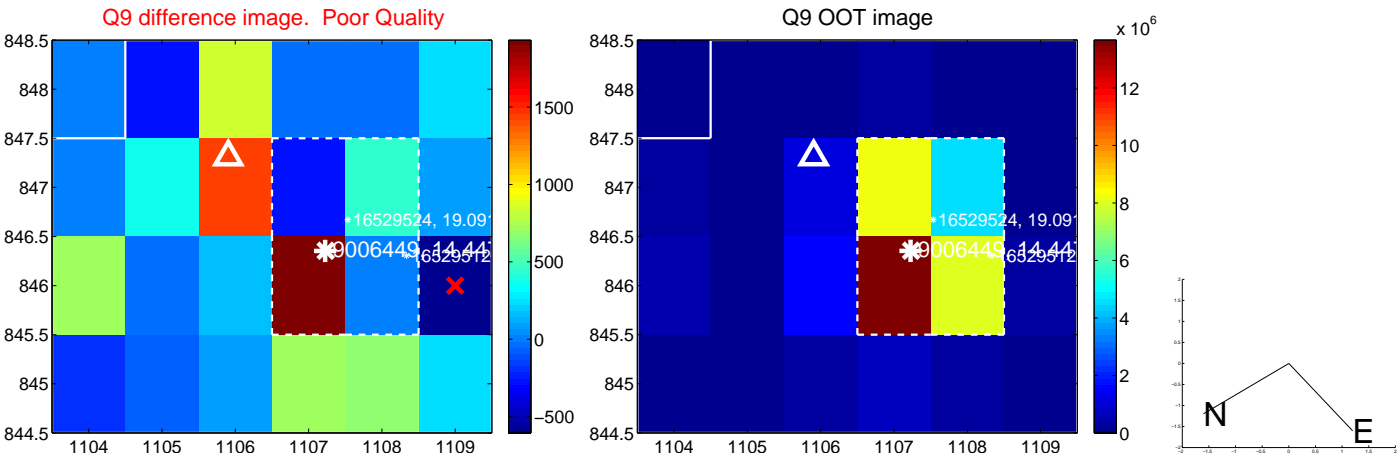
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



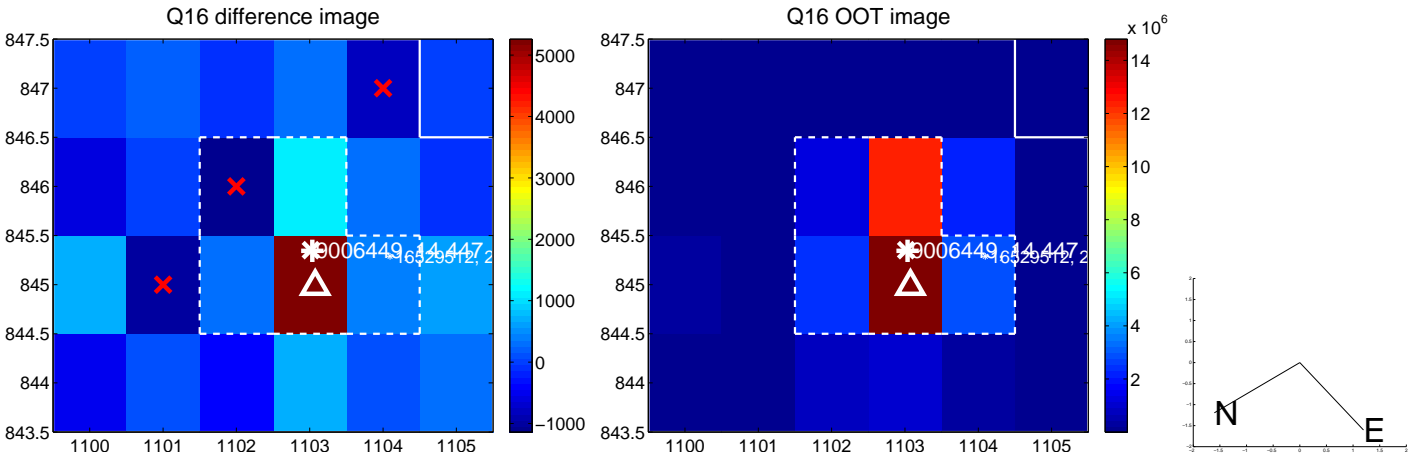
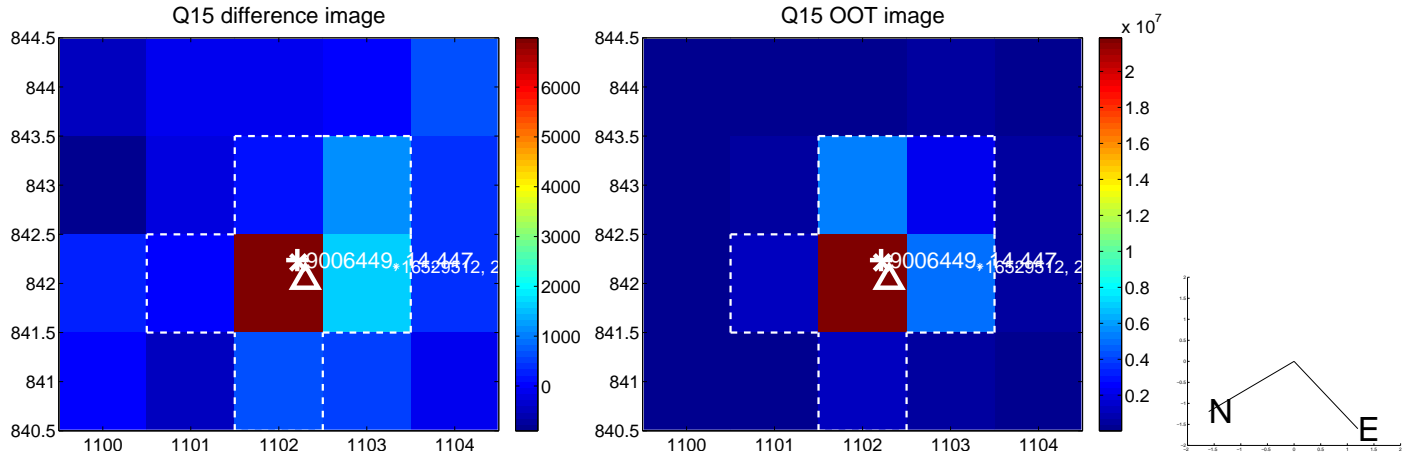
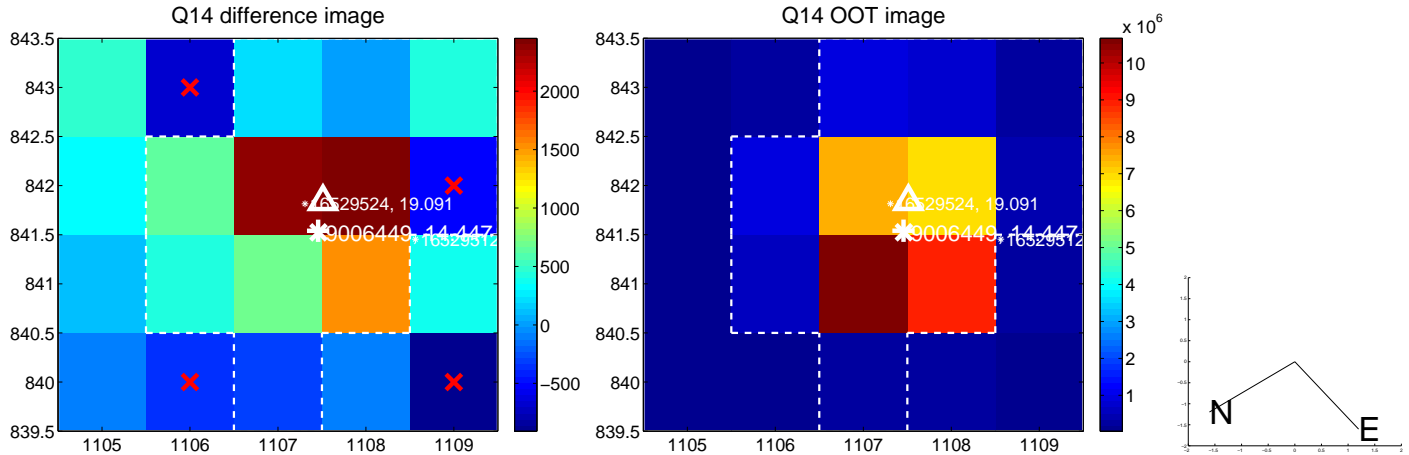
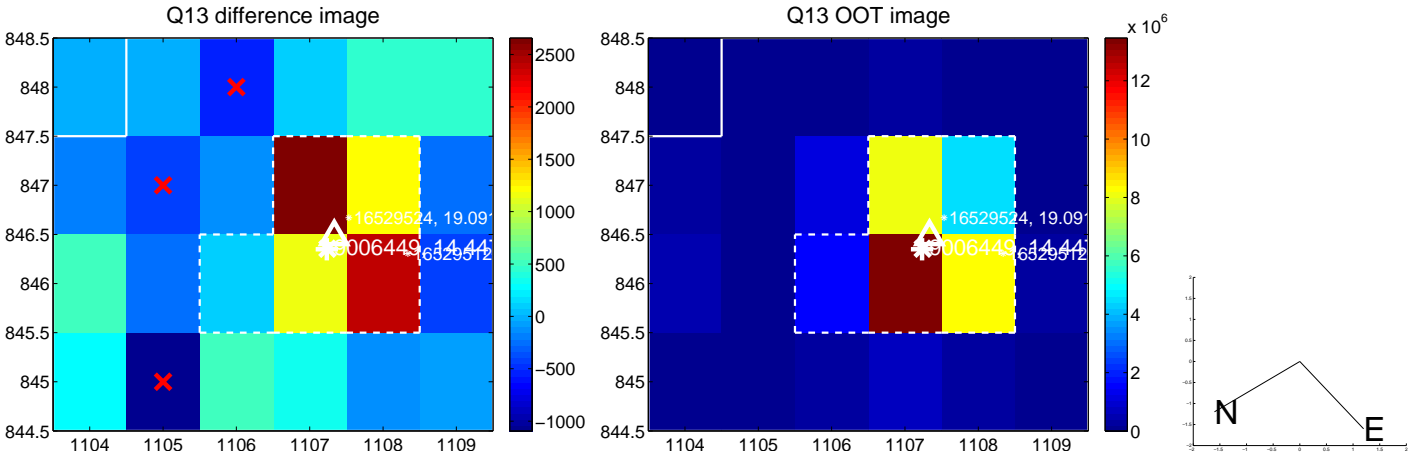
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



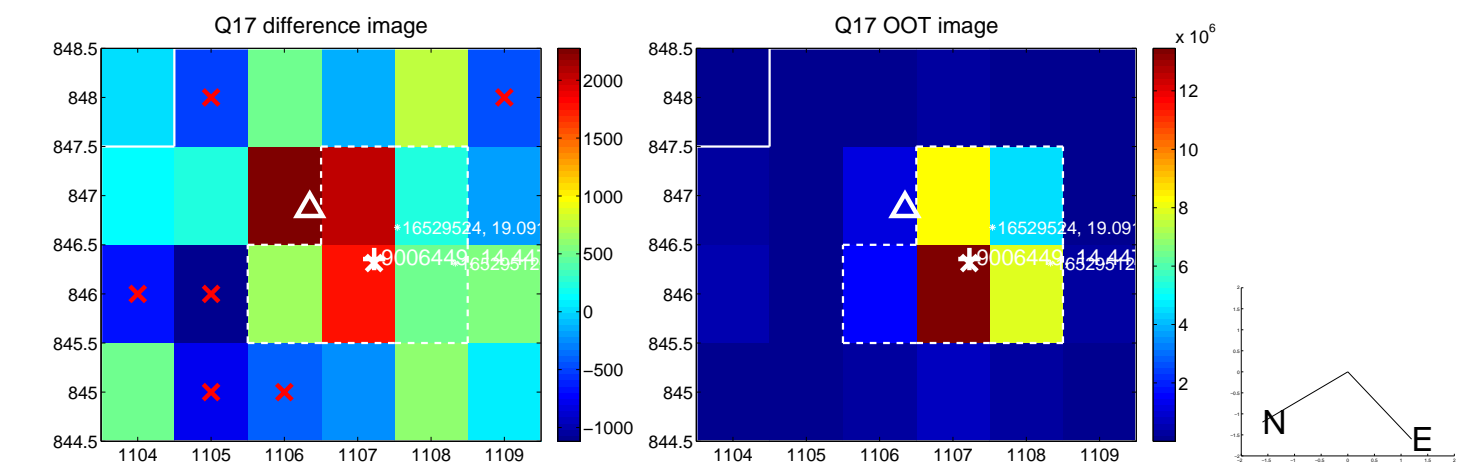
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



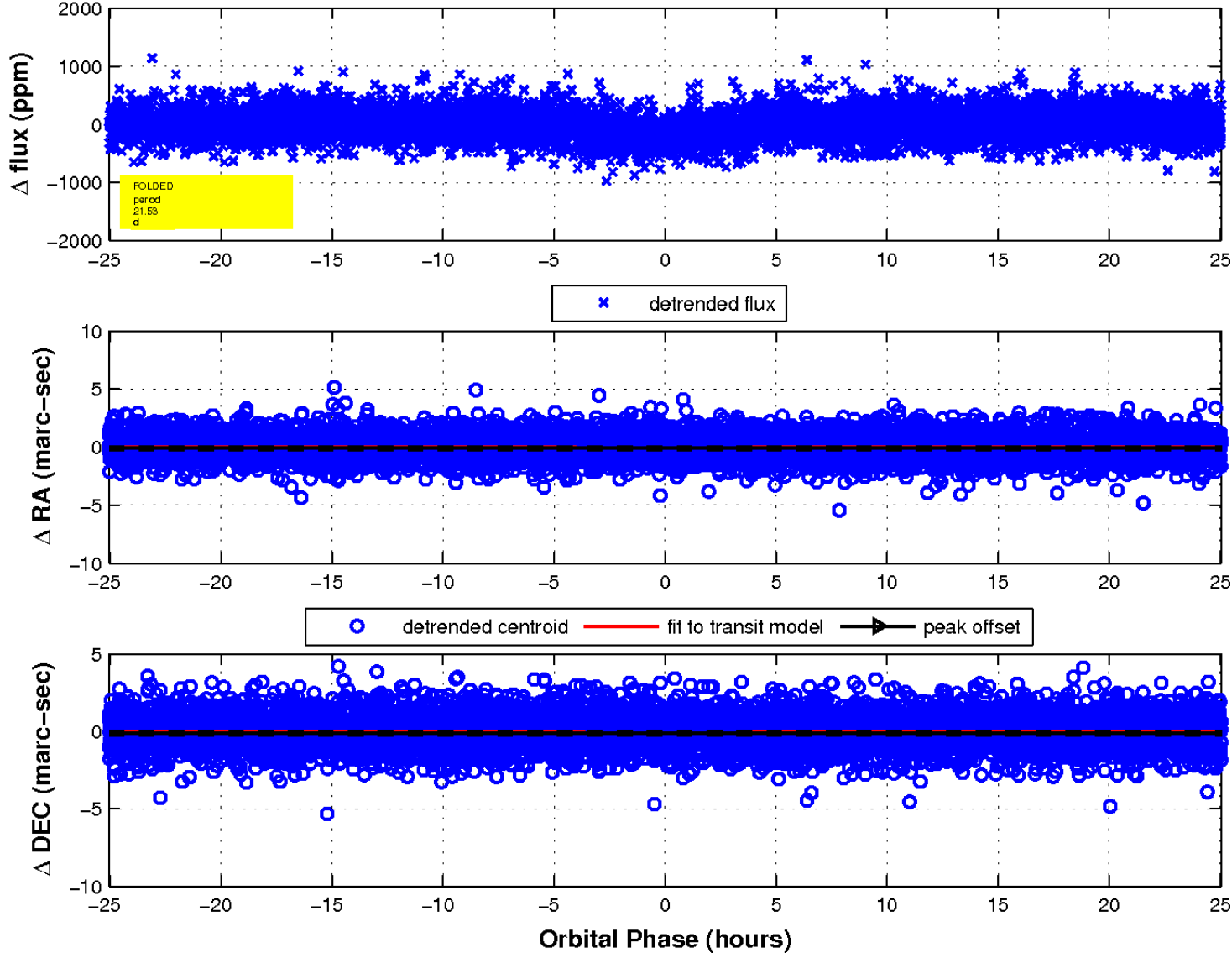
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

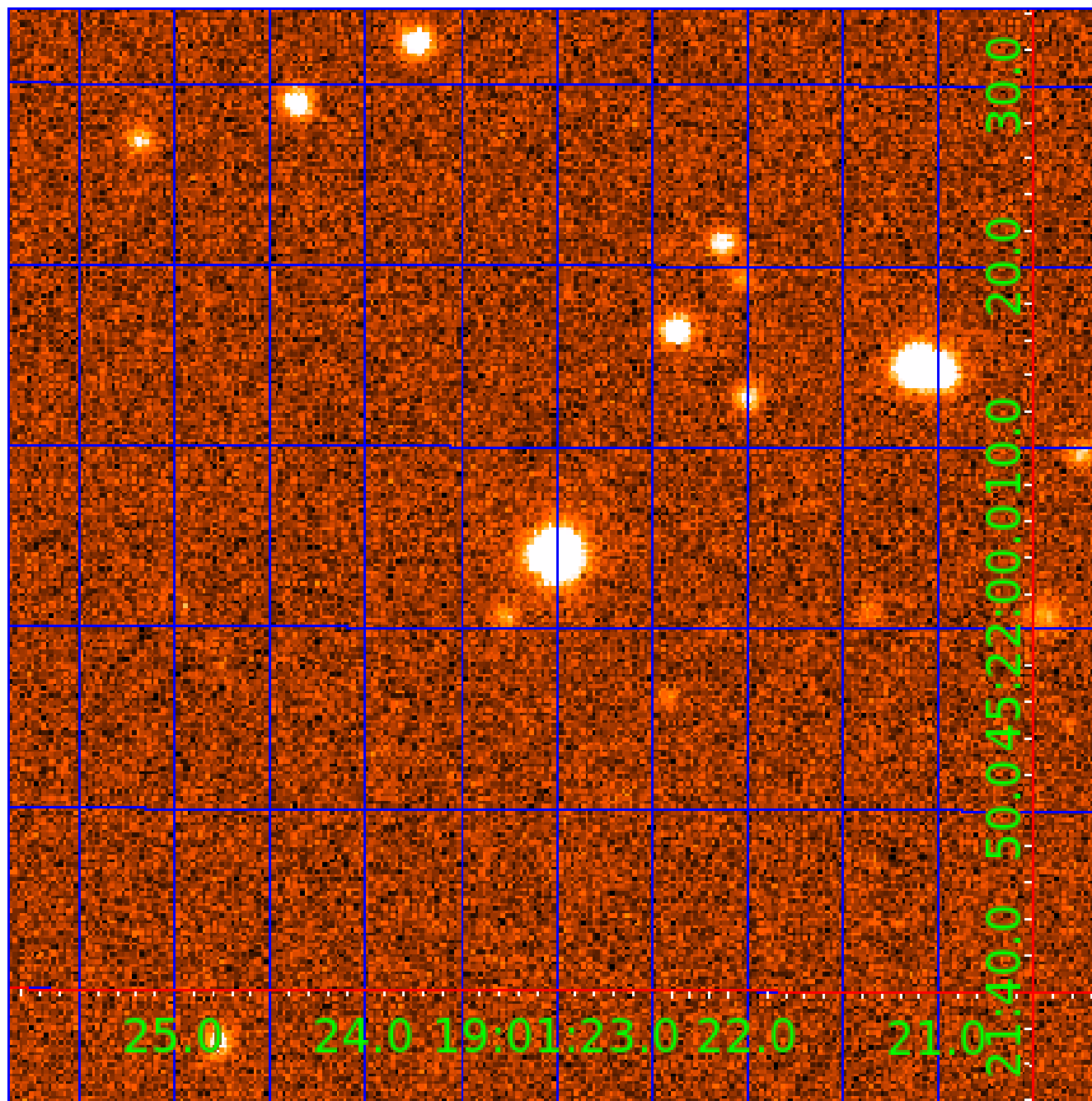


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



KIC 009006449

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})
009006449-01	OBS	1413.01	12.645032	138.633051	191.7	9.119	22.8	24.4	0.89	5607	1.51	71.38
009006449-02	OBS	1413.02	21.526308	132.287564	182.9	8.350	16.6	18.0	0.89	5607	1.33	35.11
009006449-03	OBS	1413.03	33.884607	159.992664	225.1	5.521	12.9	13.6	0.89	5607	1.58	19.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009006449-01	OBS	PC	0.99	0	0	0	0	NO_COMMENT
009006449-02	OBS	PC	1.00	0	0	0	0	NO_COMMENT
009006449-03	OBS	PC	0.94	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.

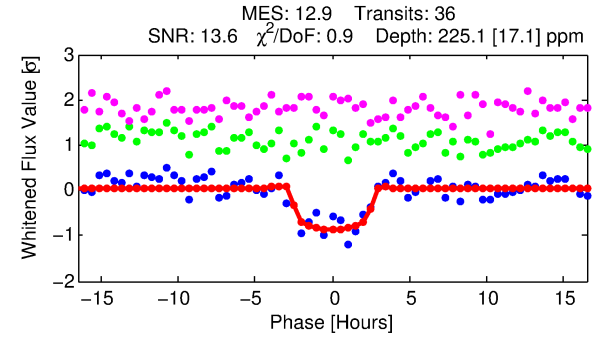
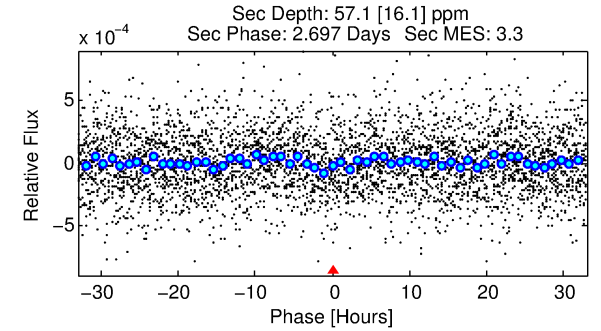
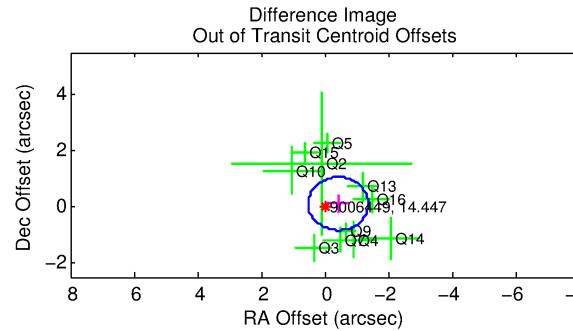
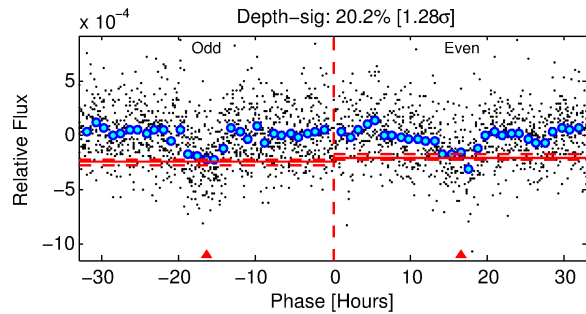
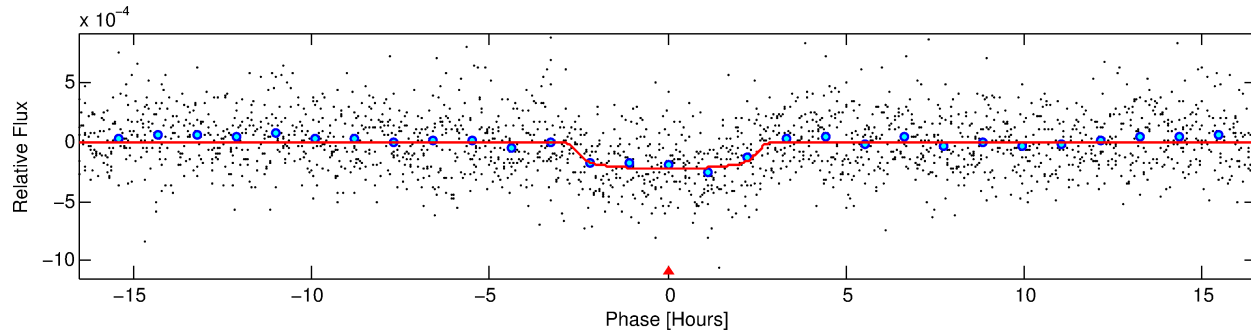
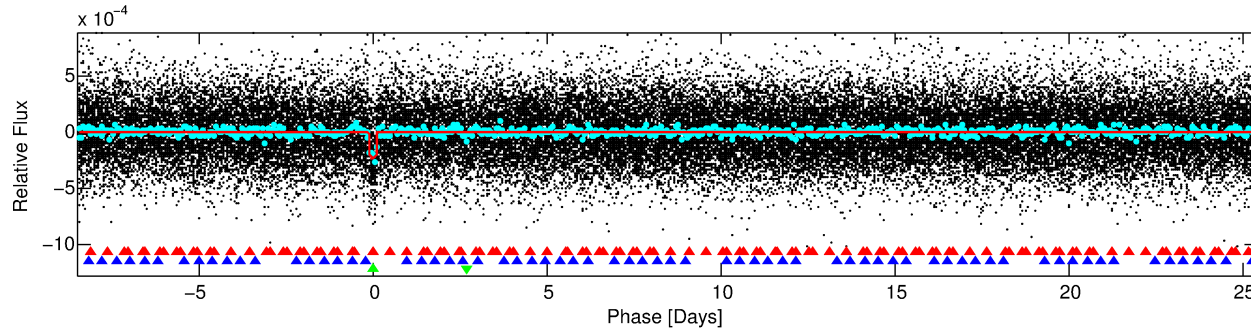
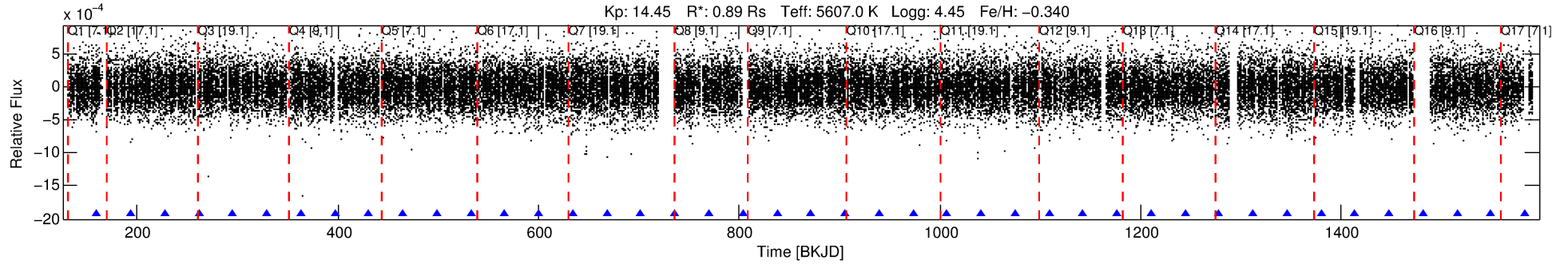
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009006449-03

No Significant Match Found

DV One-Page Summary

KIC: 9006449 Candidate: 3 of 3 Period: 33.885 d
KOI: K01413.03 Name: Kepler-295d Corr: 0.921



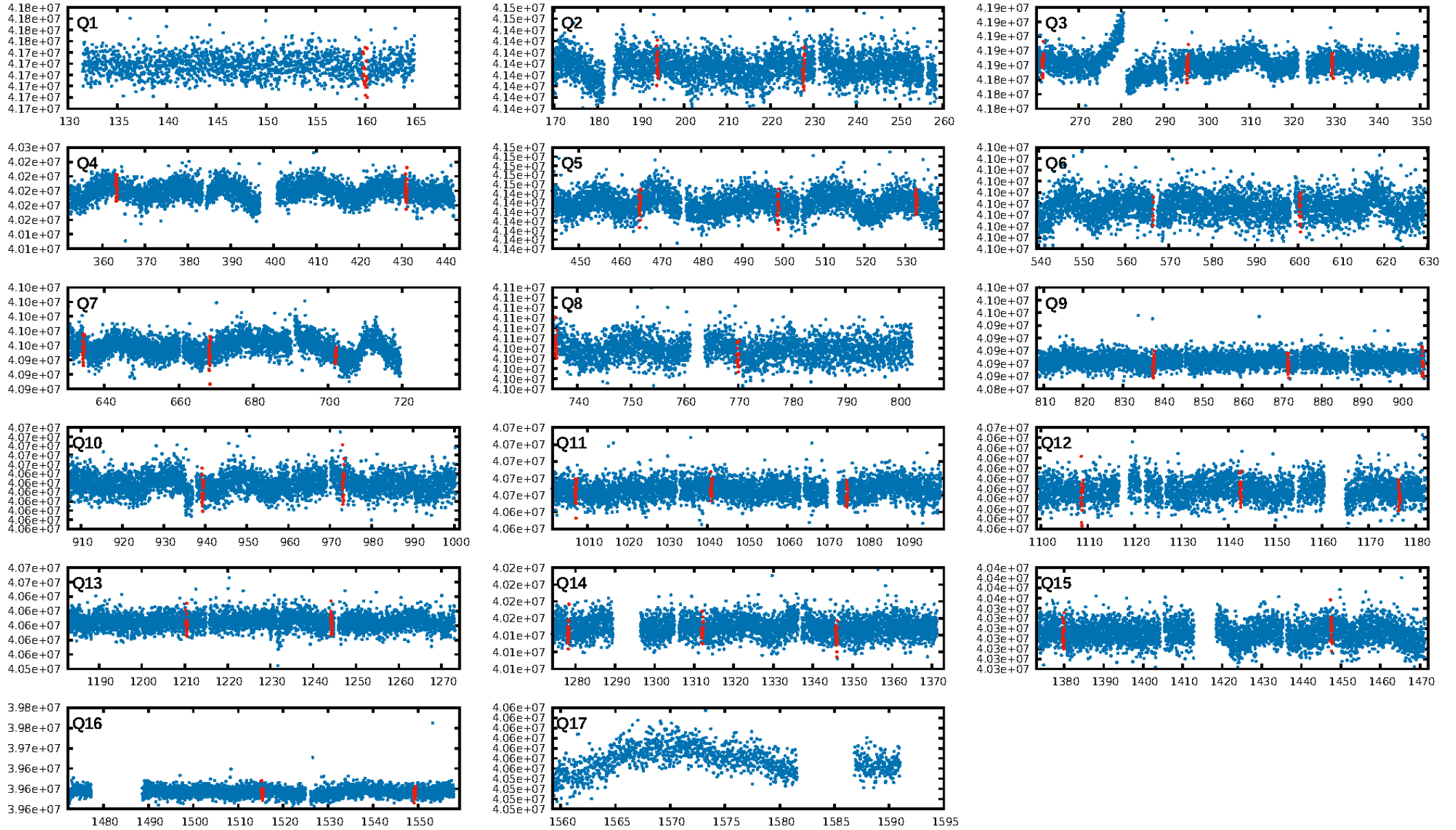
DV Fit Results:

Period = 33.88461 [0.00034] d
Epoch = 159.9927 [0.0080] BKJD
Rp/R* = 0.0164 [0.0033]
a/R* = 22.07 [20.65]
b = 0.90 [0.20]
Seff = 19.18 [6.11]
Teq = 534 [43] K
Rp = 1.58 [0.48] Re
a = 0.1904 [0.0381] AU
Ag = 455.53 [262.38] [1.73 σ]
Teffp = 3811 [480] K [6.80 σ]

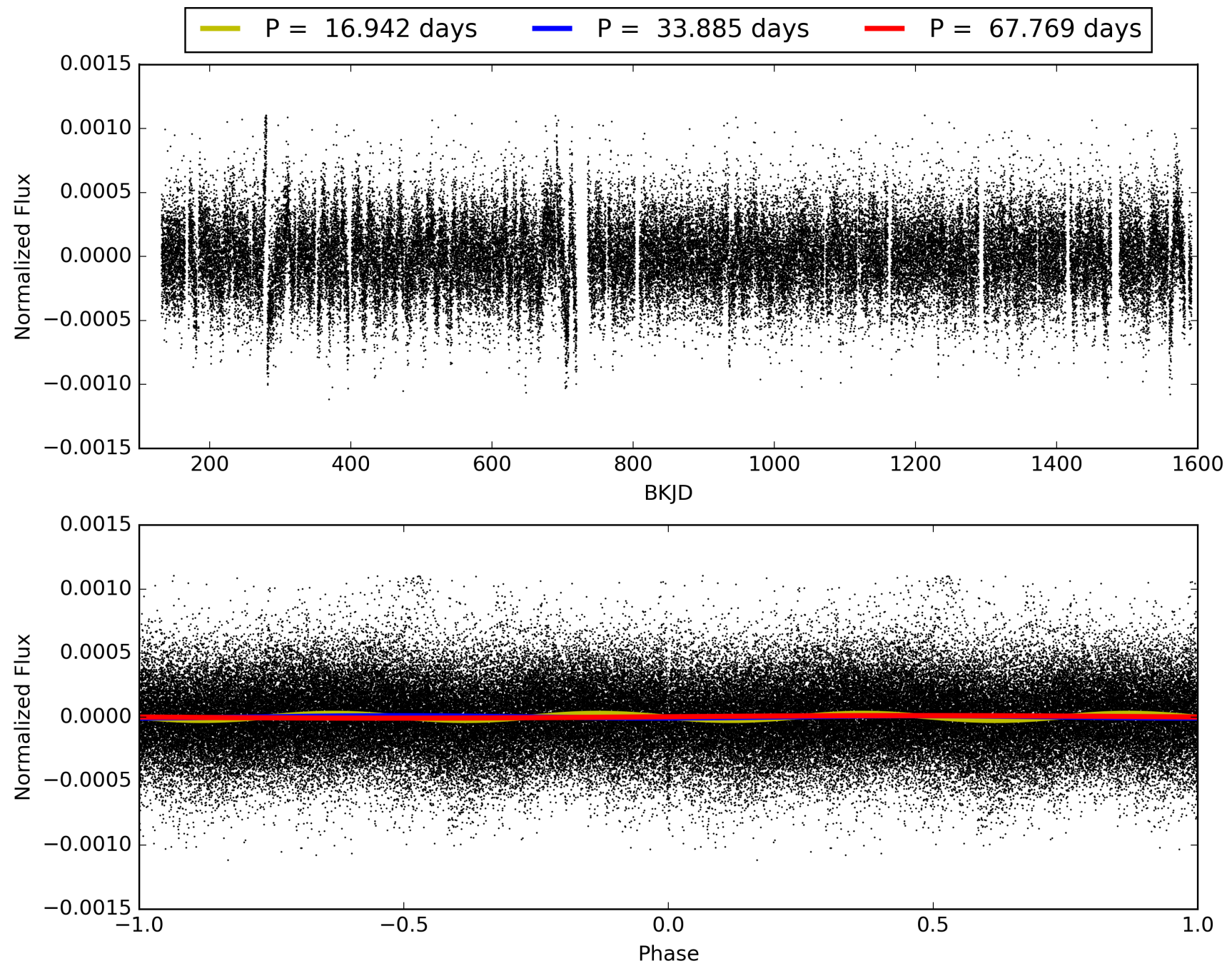
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [29.63 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 95.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.07e-35
RollingBand-fgt: 1.00 [35/35]
GhostDiagnostic-chr: 8.218
Centroid-sig: 30.4%
Centroid-so: 0.795 arcsec [1.08 σ]
OotOffset-rm: 0.439 arcsec [1.39 σ]
KicOffset-rm: 0.474 arcsec [1.52 σ]
OotOffset-st: 3/3/2/3 [11]
KicOffset-st: 3/3/2/3 [11]
DiffImageQuality-fgm: 0.82 [9/11]
DiffImageOverlap-fno: 1.00 [15/15]

TCE 009006449-03, PDC Light Curves

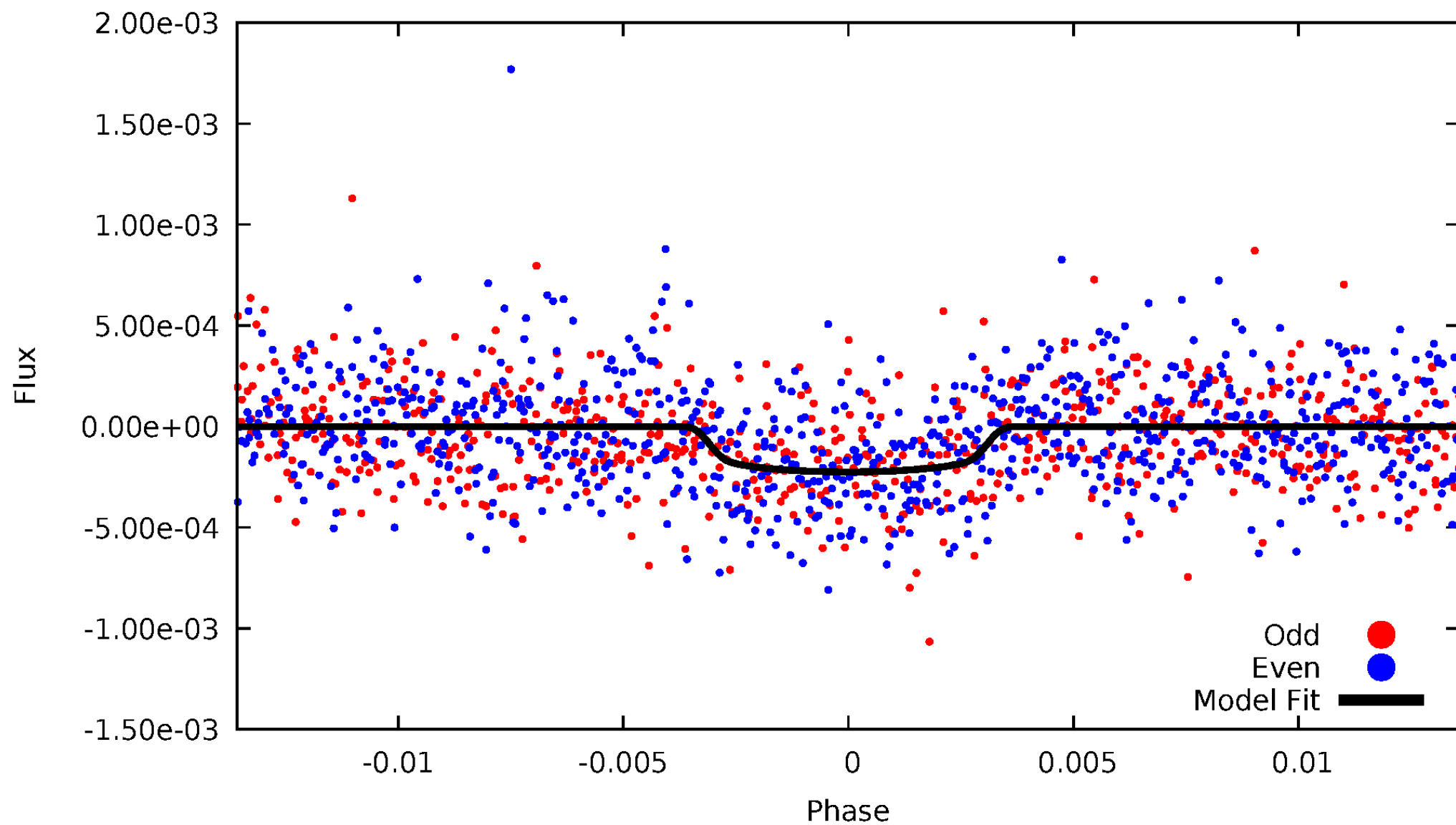


TCE 009006449-03



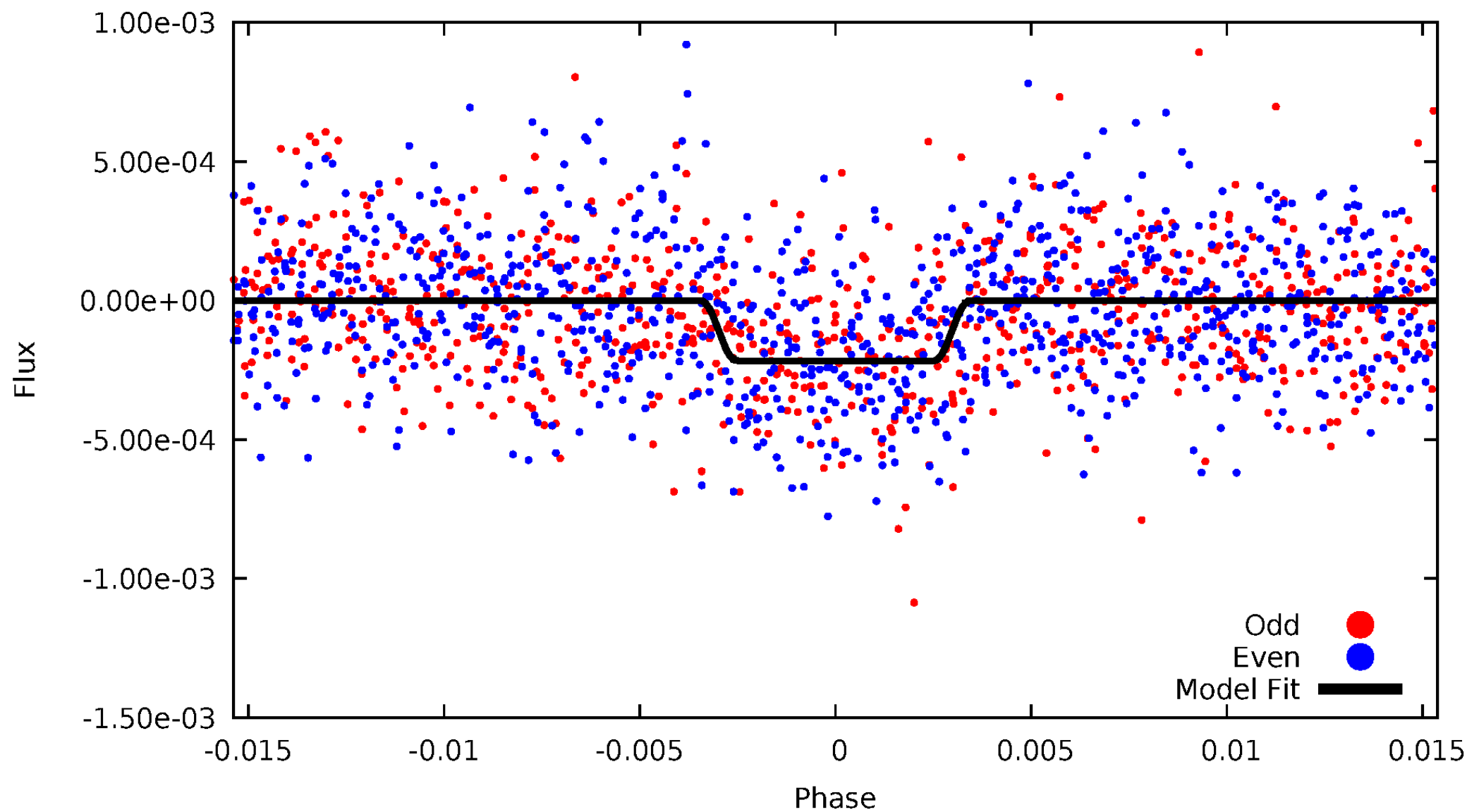
DV Odd/Even

TCE 009006449-03

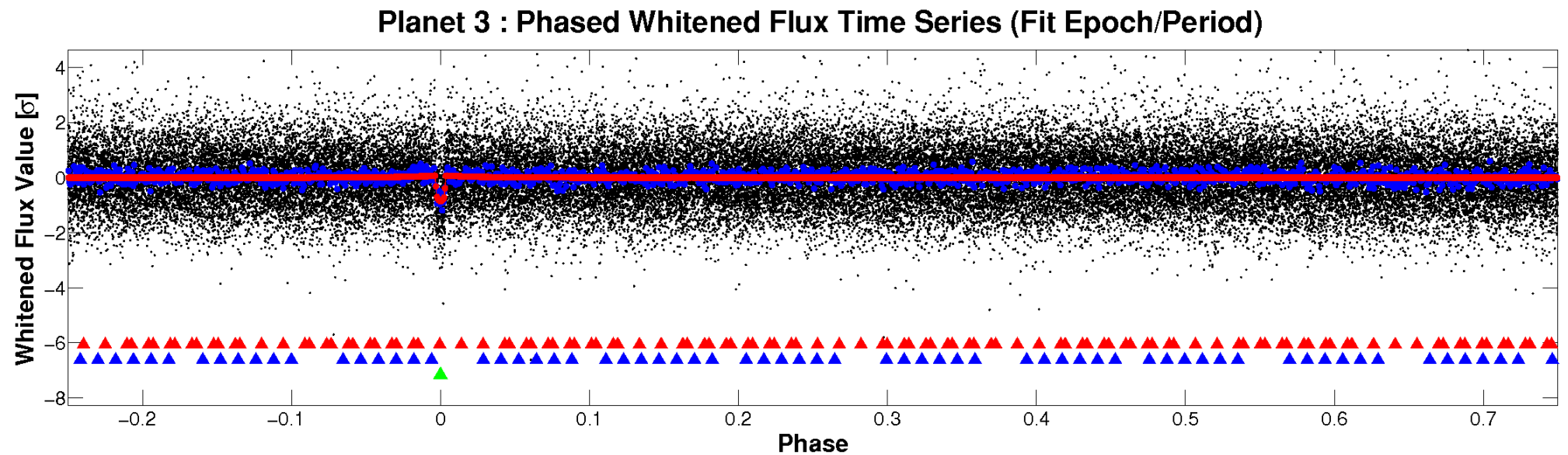
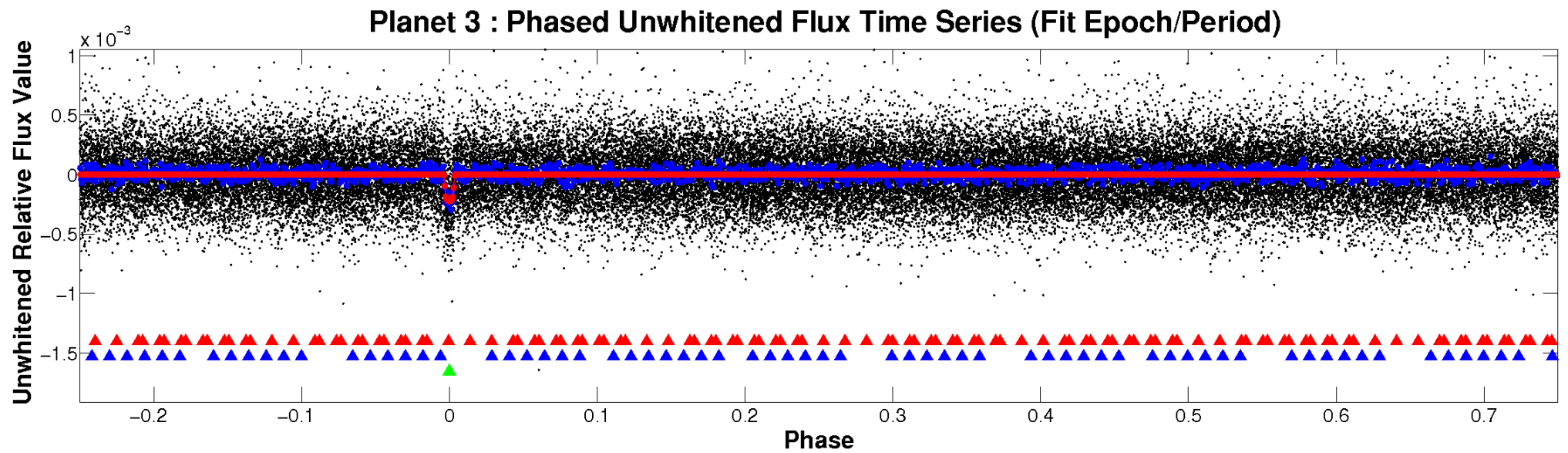


ALT Odd/Even

TCE 009006449-03

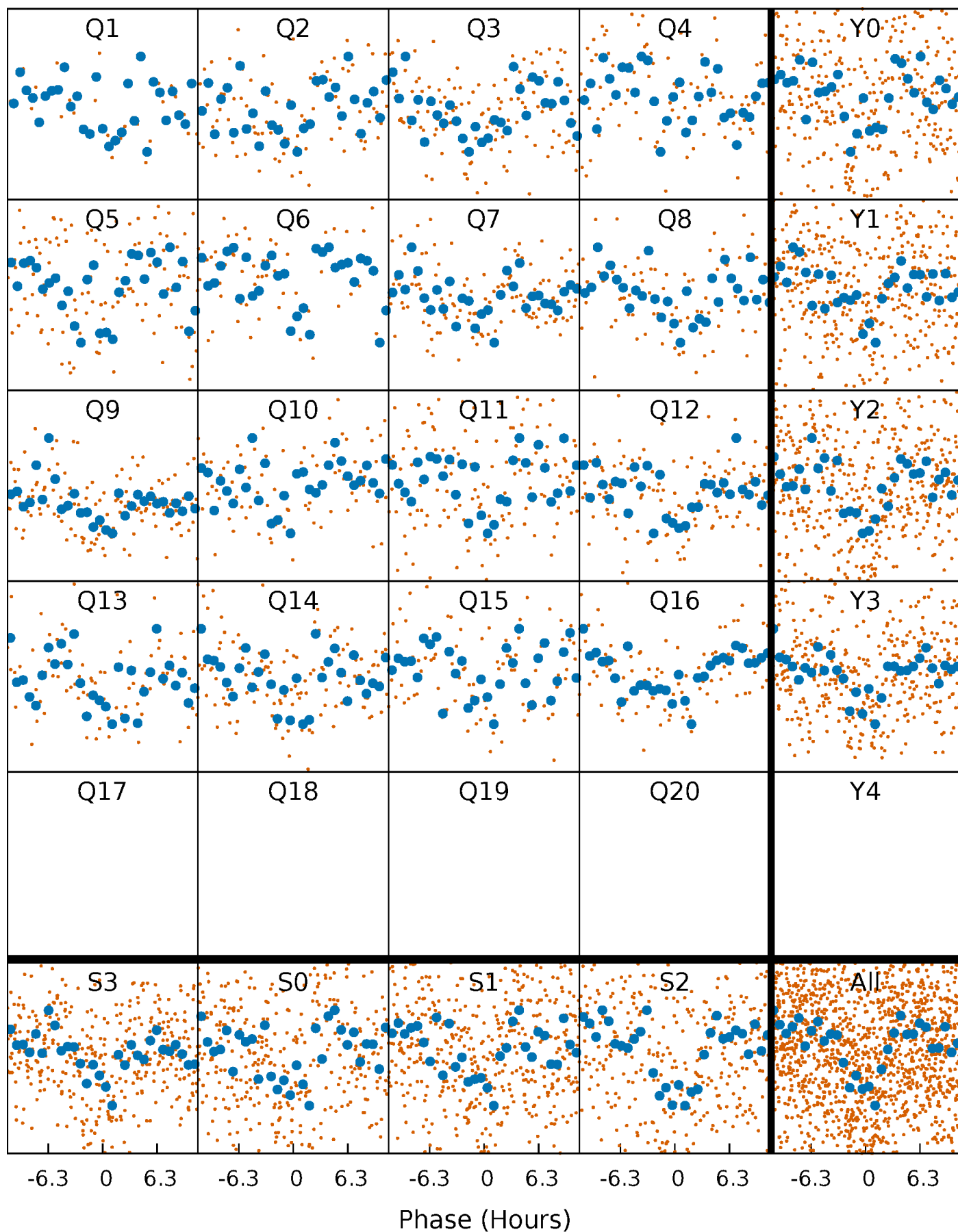


Non-Whitened Vs. Whitened Light Curve



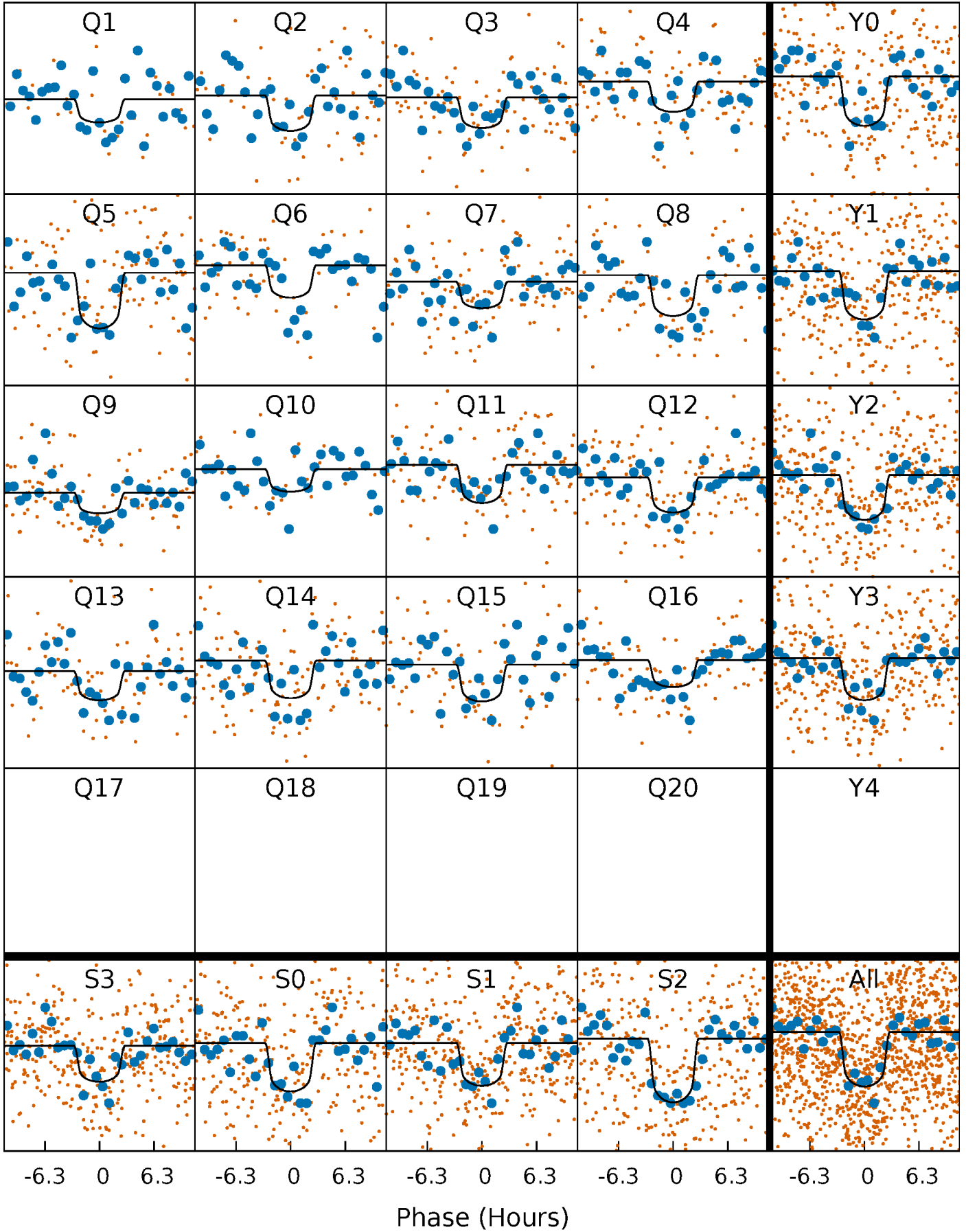
PDC Quarter-Phased Transit Curves

TCE 009006449-03 P= 33.884607 Days $T_0=159.992664$ (BKJD)



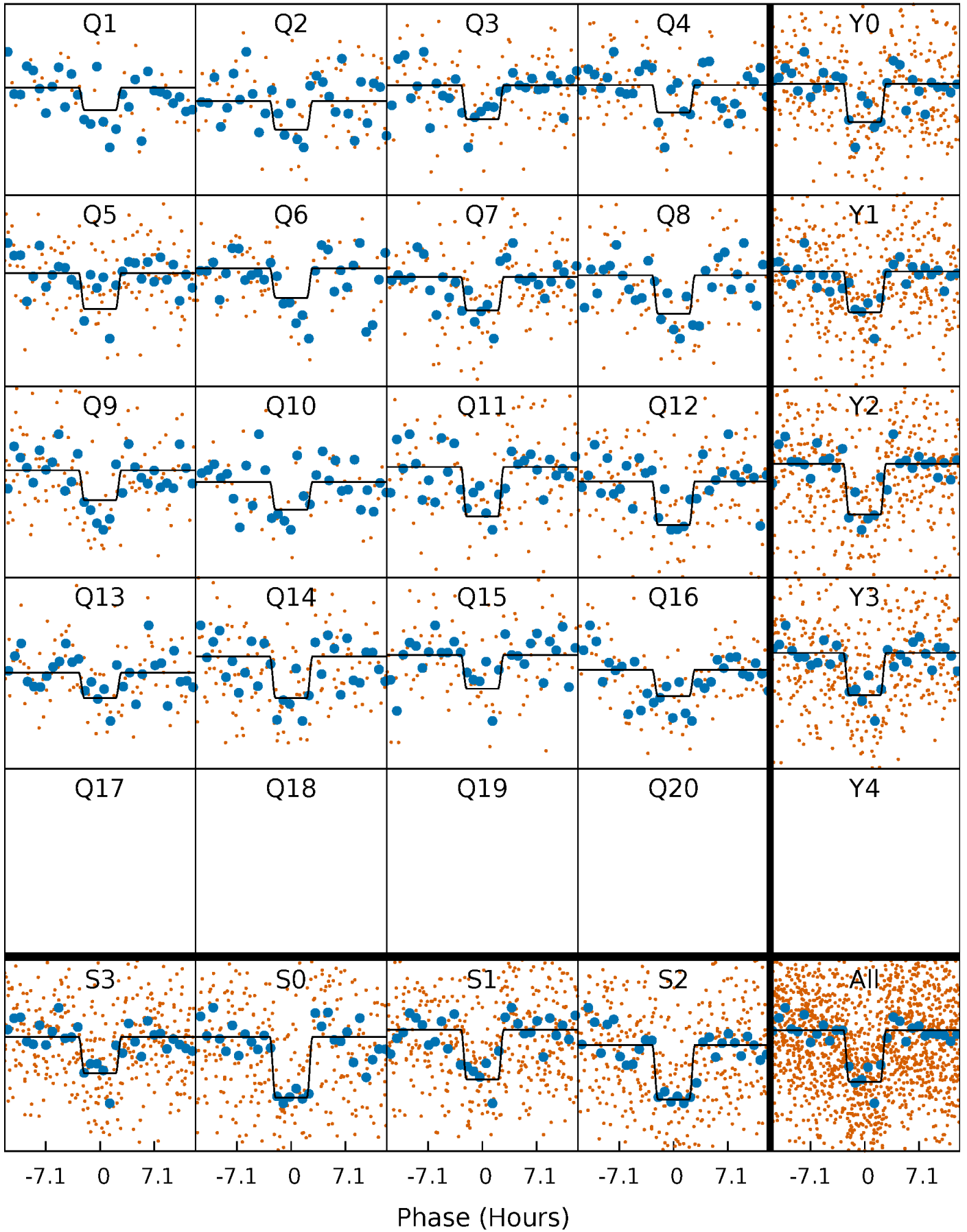
DV Quarter-Phased Transit Curves

TCE 009006449-03 P= 33.884607 Days $T_0=159.992664$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

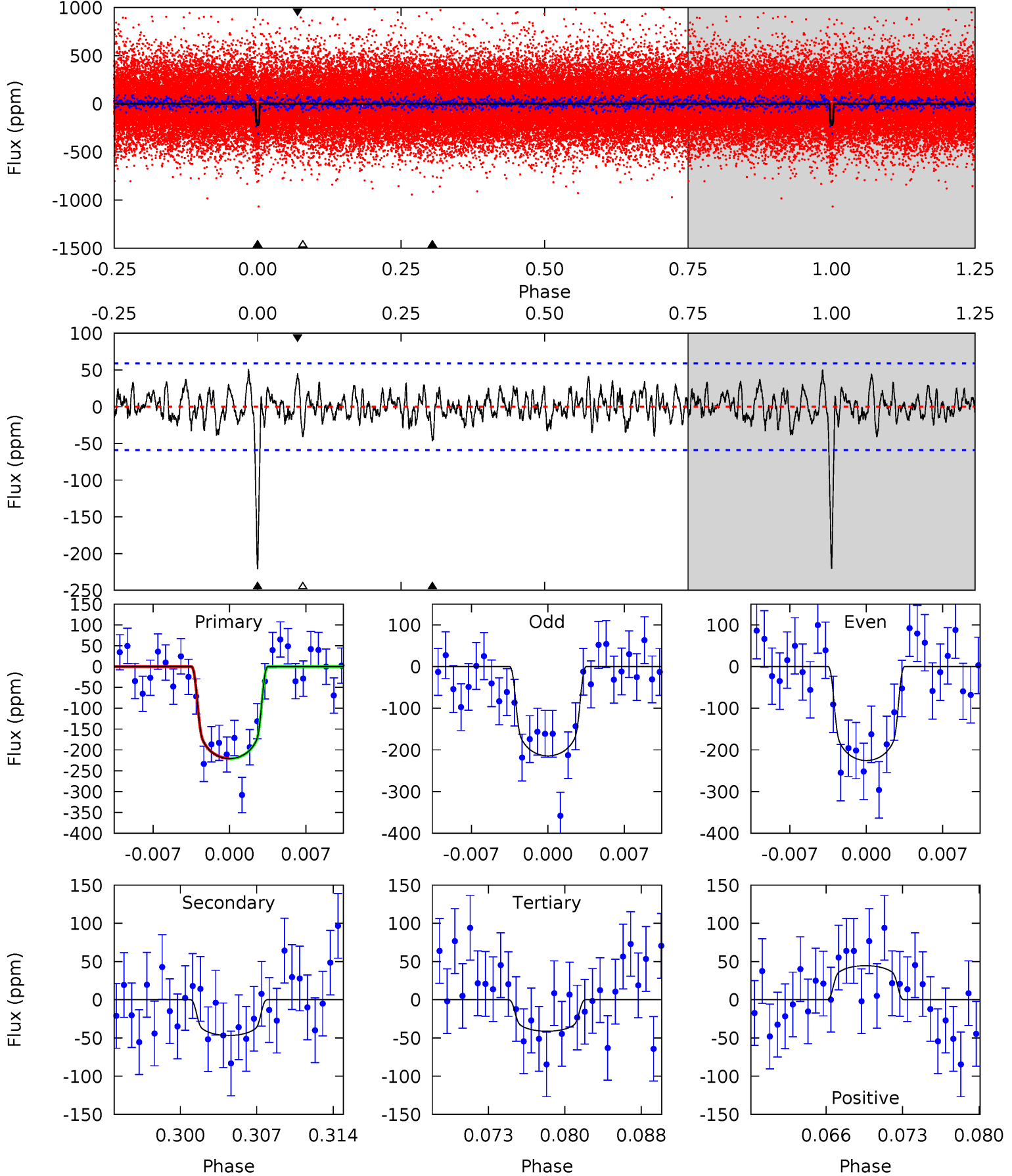
TCE 009006449-03 P= 33.884489 Days $T_0=159.987352$ (BKJD)



DV Model-Shift Uniqueness Test

009006449-03, P = 33.884607 Days, E = 126.108057 Days

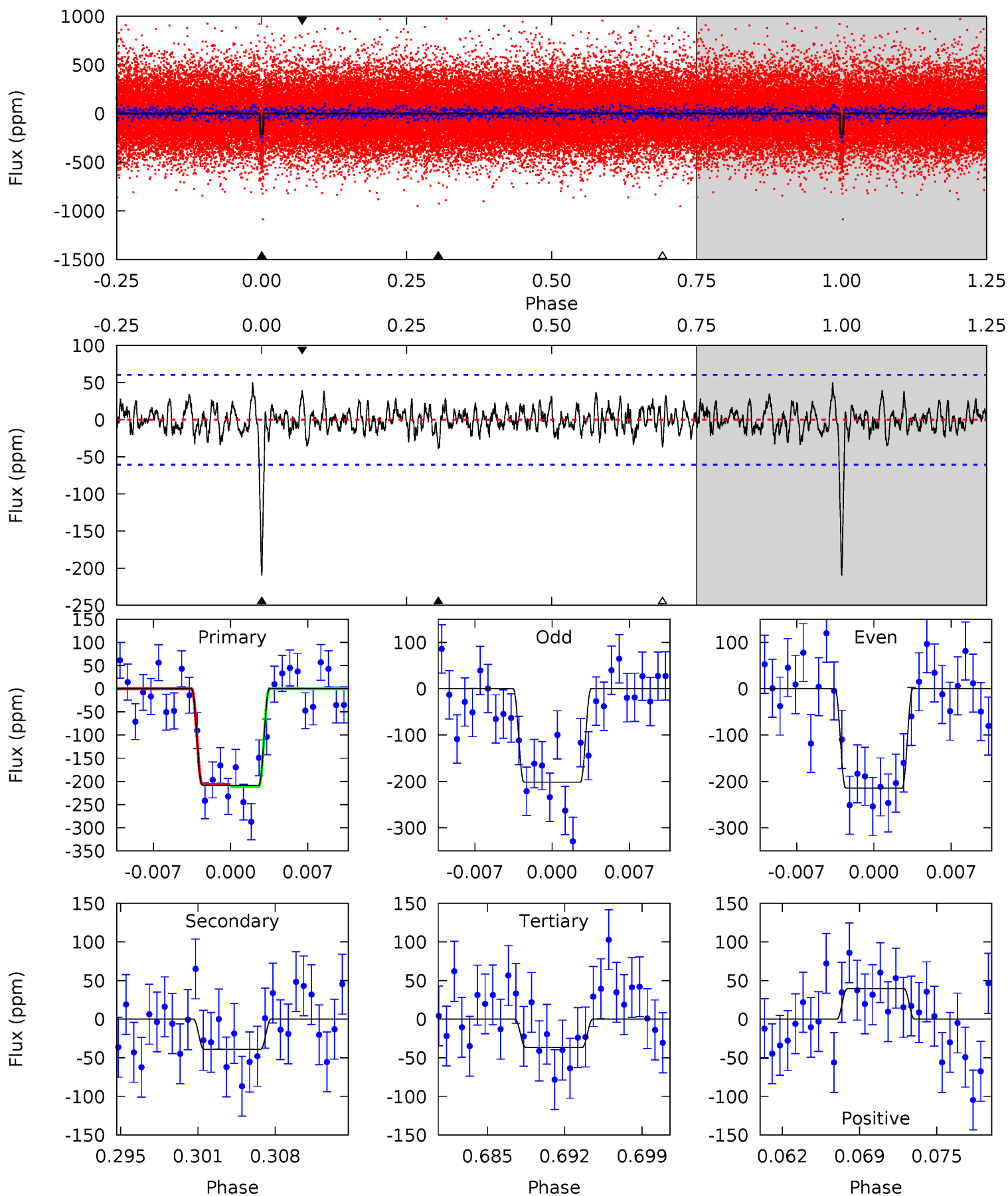
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.0	4.02	3.54	3.84	5.09	2.68	1.30	15.5	15.2	0.48	0.18	0.48	0.95	0.19	0.03



Alt Model-Shift Uniqueness Test

009006449-03, P = 33.884489 Days, E = 126.102863 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.6	3.30	3.08	3.33	5.10	2.70	1.13	14.5	14.2	0.22	-0.04	0.53	1.01	0.19	0.20



Stellar Parameters For KIC 009006449

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5607^{+152}_{-152}	$4.447^{+0.112}_{-0.168}$	$-0.340^{+0.300}_{-0.300}$	$0.886^{+0.203}_{-0.119}$	$0.800^{+0.115}_{-0.062}$	$1.623^{+0.929}_{-0.733}$
	+3%/-3%	+3%/-4%	+88%/-88%	+23%/-13%	+14%/-8%	+57%/-45%
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 009006449-03 / KOI 1413.03

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-47 ± 12	$1.62^{+0.40}_{-0.36}$	750^{+50}_{-35}	3944^{+384}_{-301}	355^{+255}_{-142}
Alt.	-39 ± 12	$1.44^{+0.41}_{-0.35}$	751^{+53}_{-40}	3962^{+458}_{-349}	369^{+317}_{-169}

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 $A_{obs} \gg 1.0$

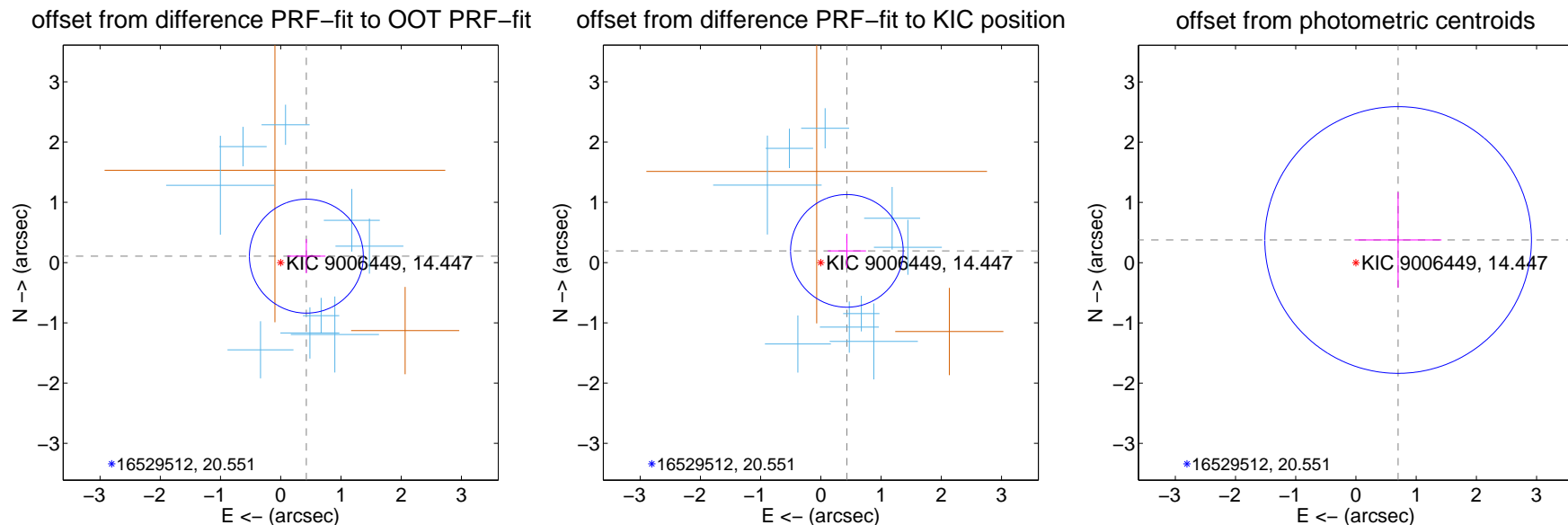
DV Centroid Data

Supplemental centroid analysis for 009006449-03. Kepler magnitude: 14.45. Transit SNR 13.60

There are 9 quarters with good PRF difference image offsets

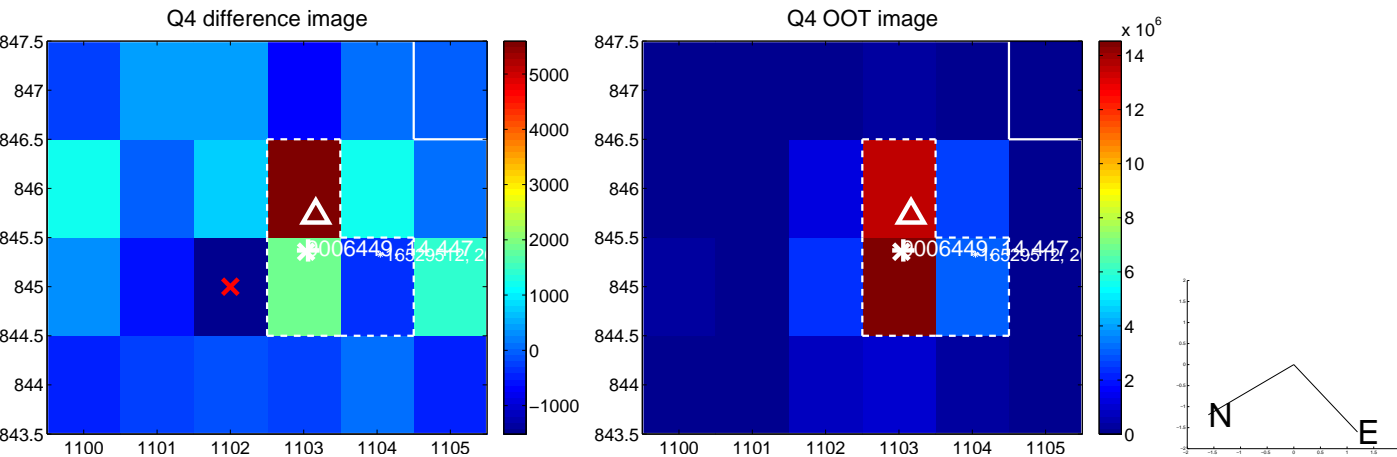
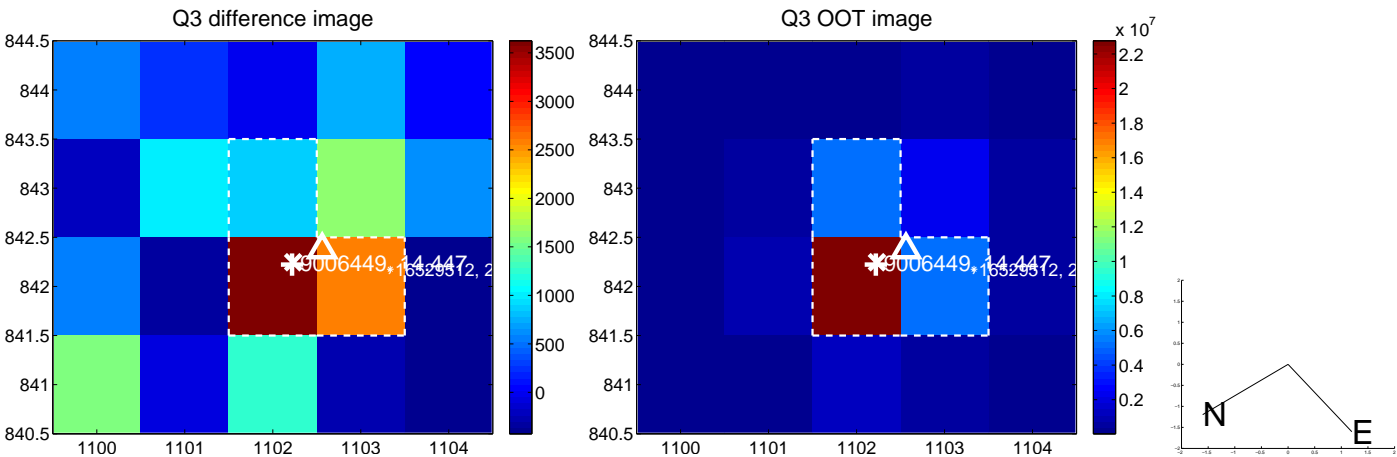
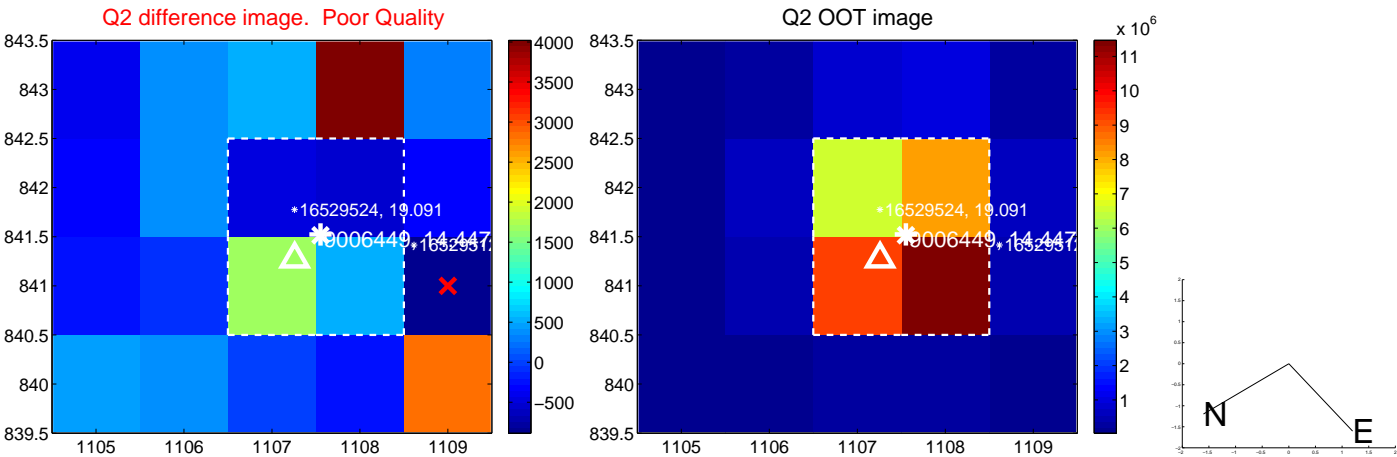
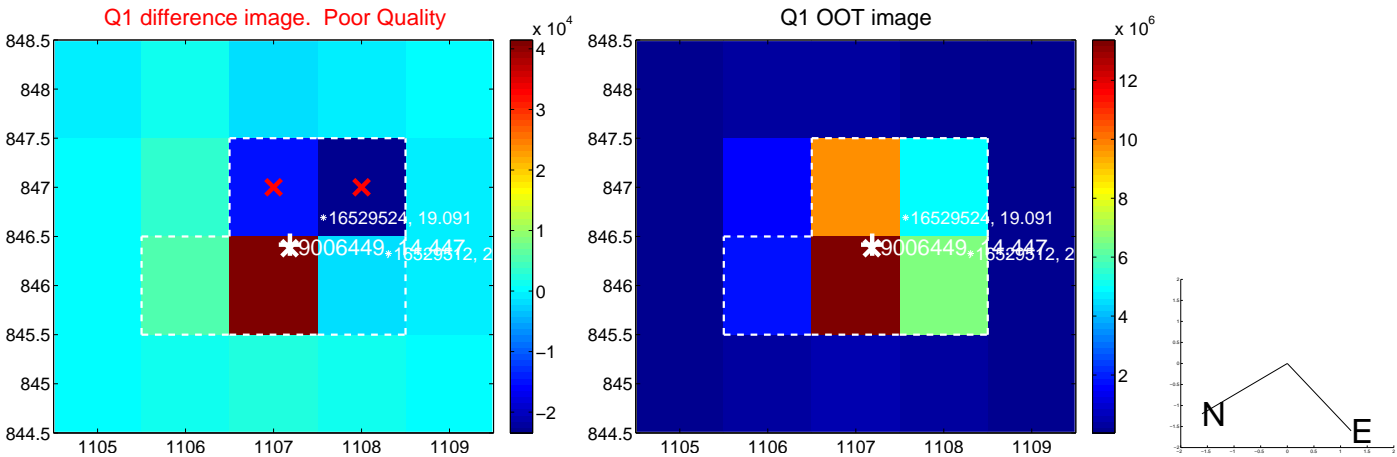
The direct PRF centroid is offset from the target star catalog position by about 0.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.439 ± 0.315	1.39	-0.425 ± 0.317	0.107 ± 0.283
PRF-fit source offset from KIC position	0.474 ± 0.312	1.52	-0.432 ± 0.317	0.194 ± 0.283
photometric centroid source offset	0.80 ± 0.74	1.08	-0.70 ± 0.72	0.38 ± 0.79

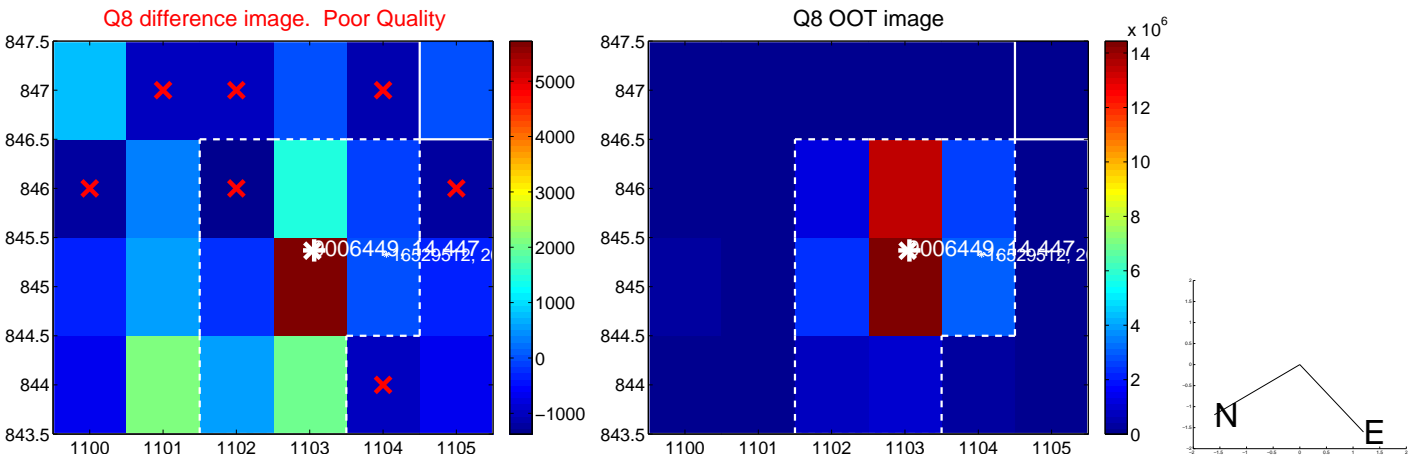
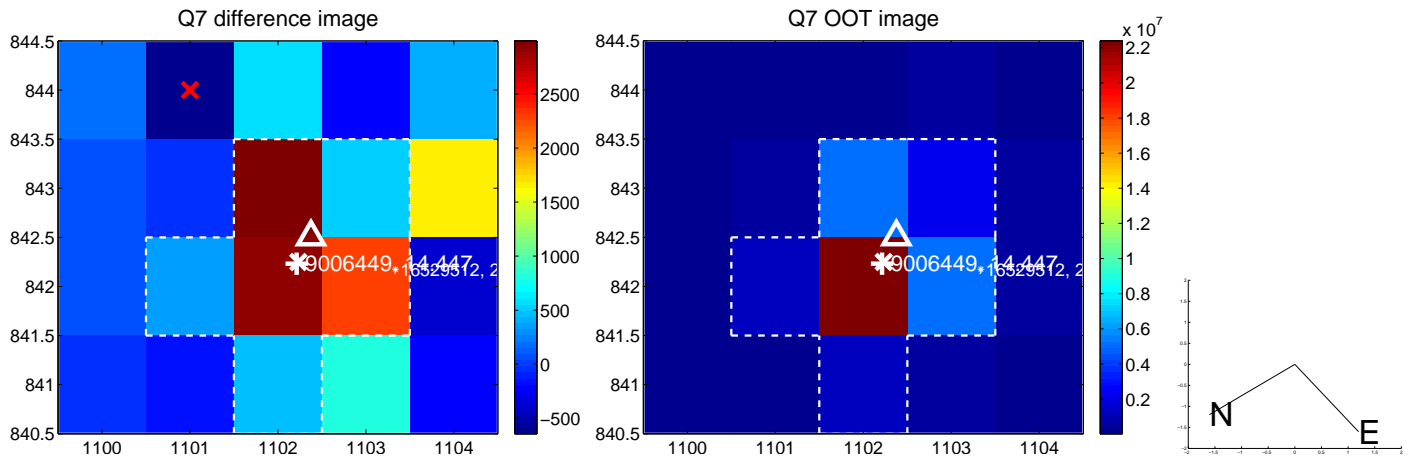
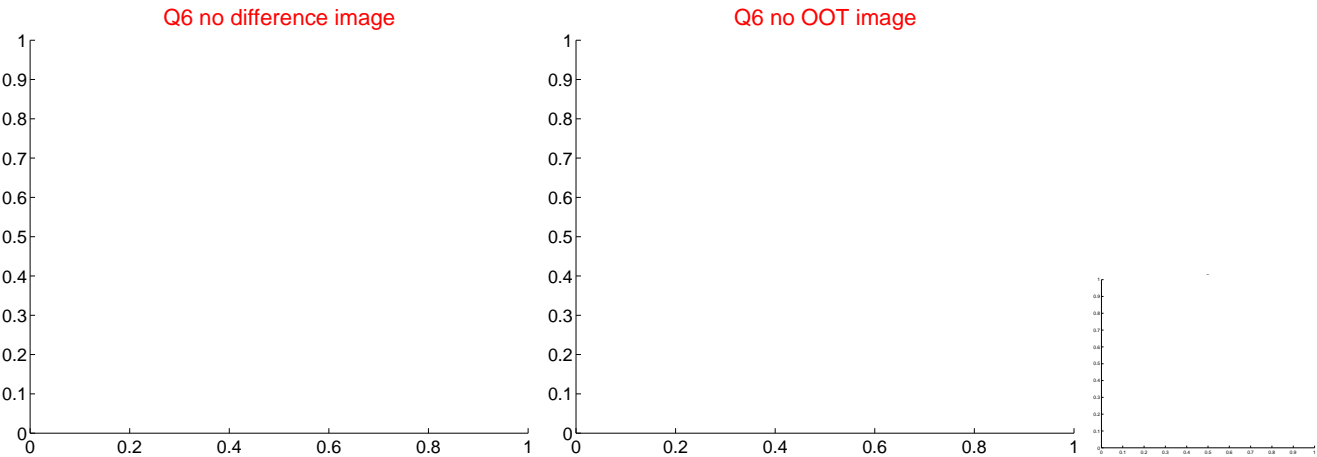
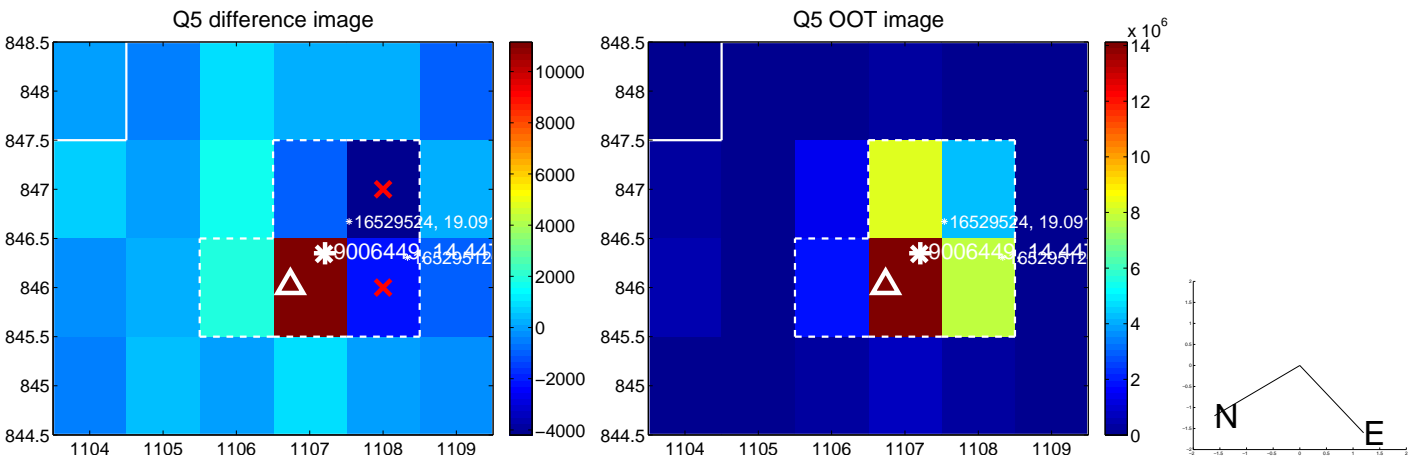


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

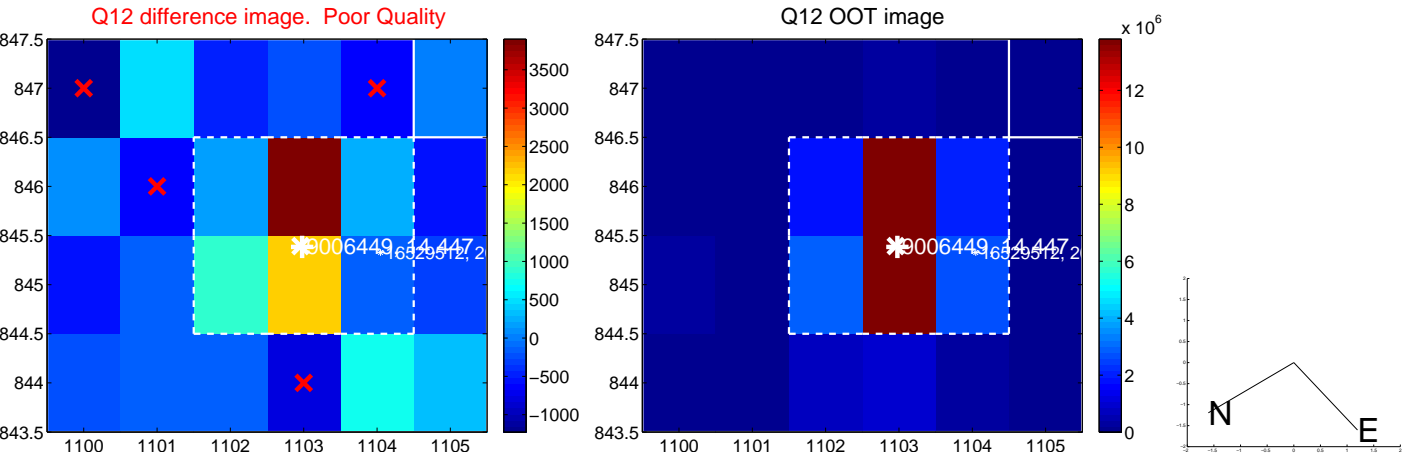
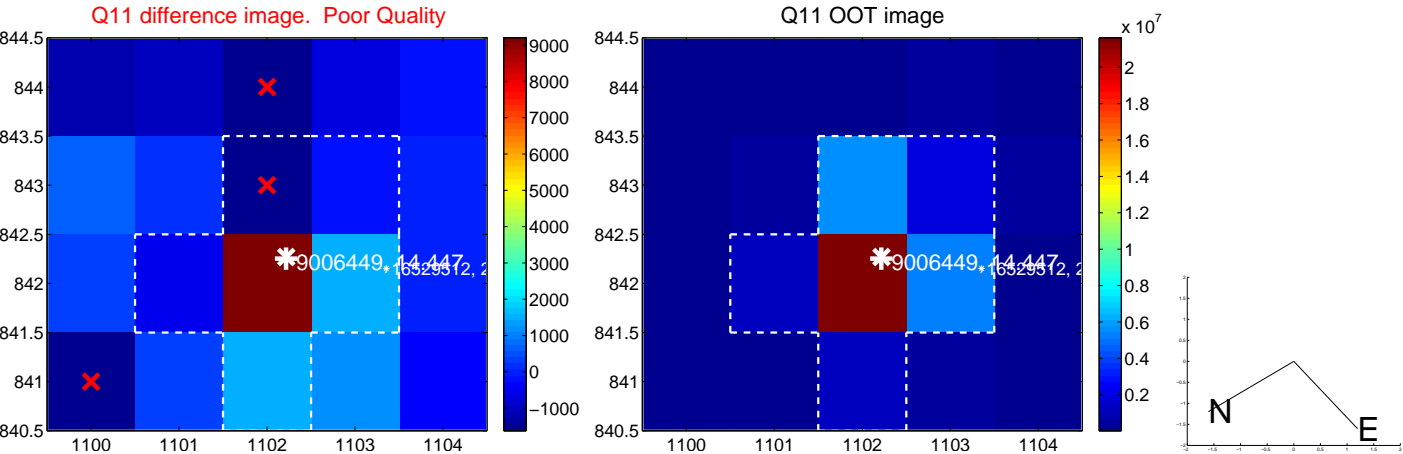
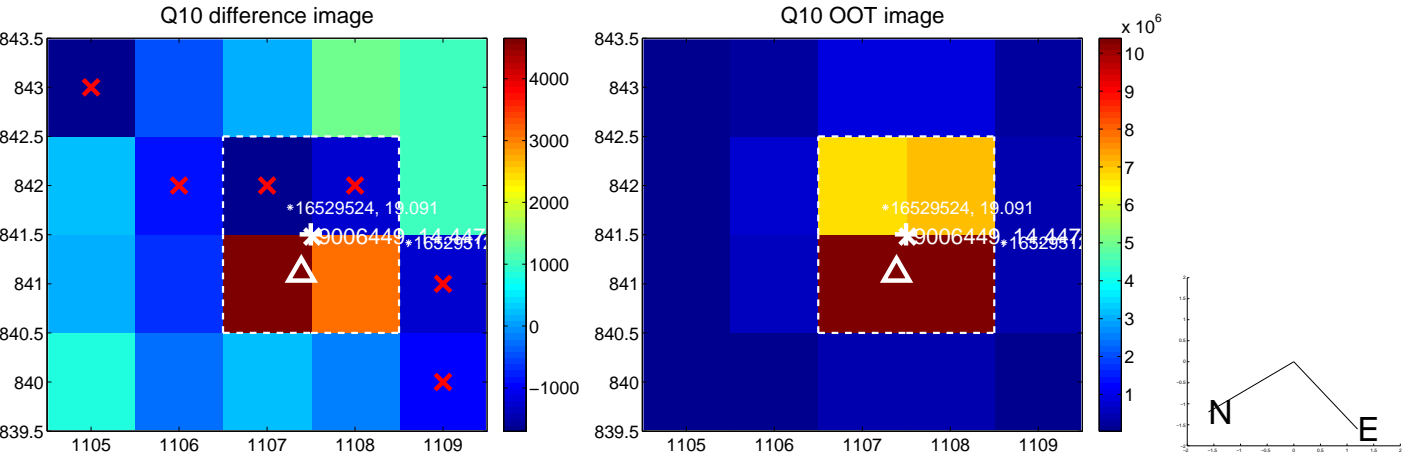
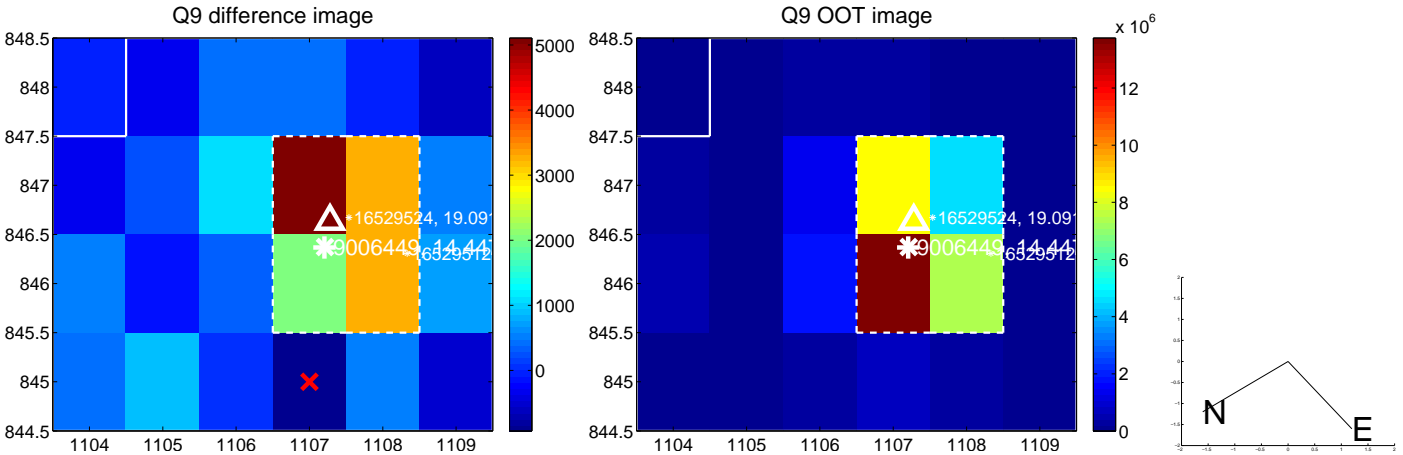
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



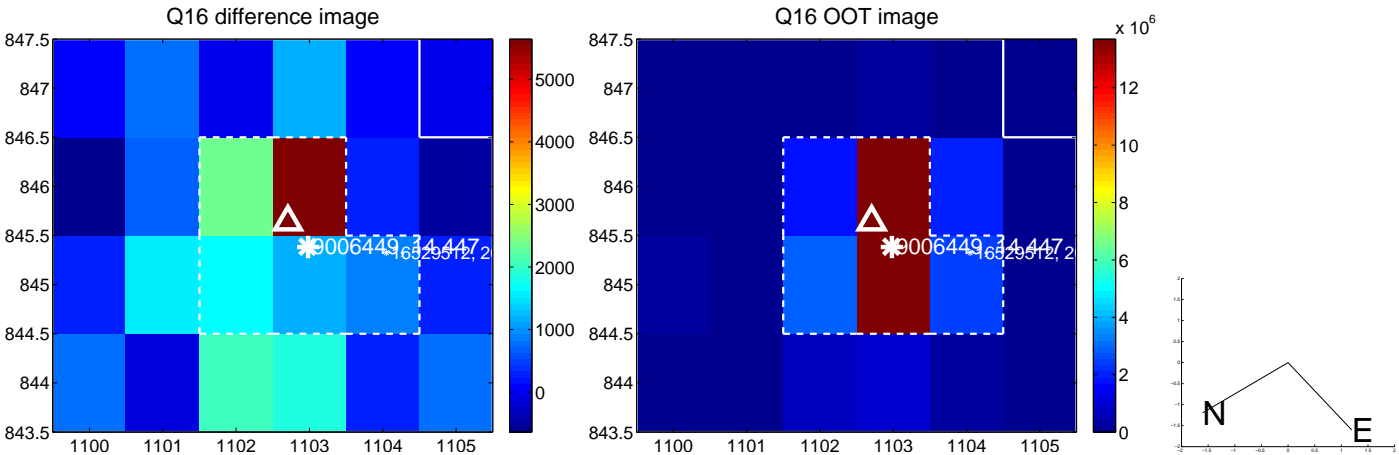
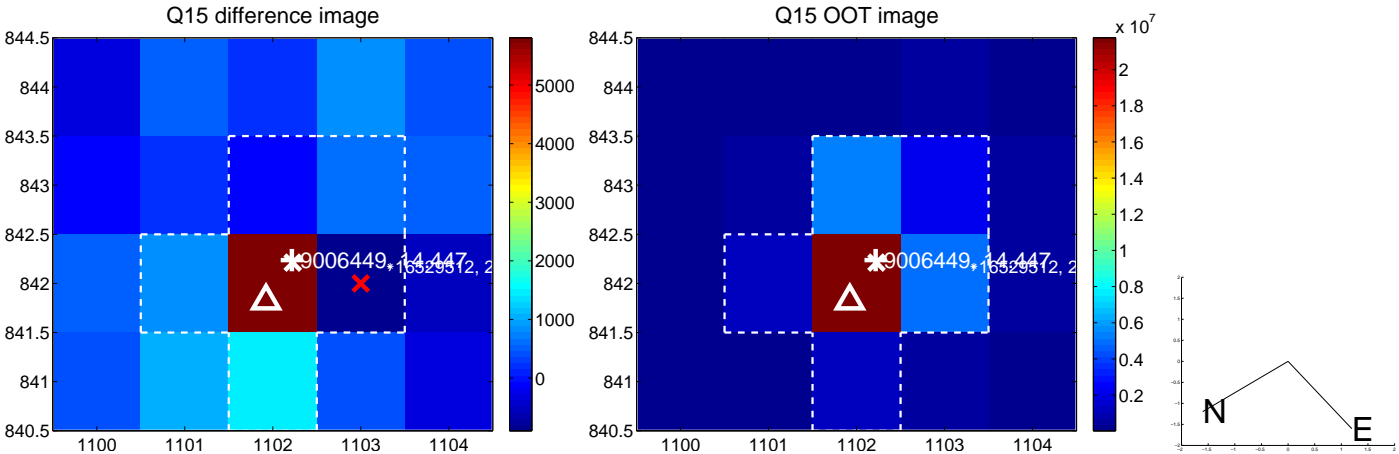
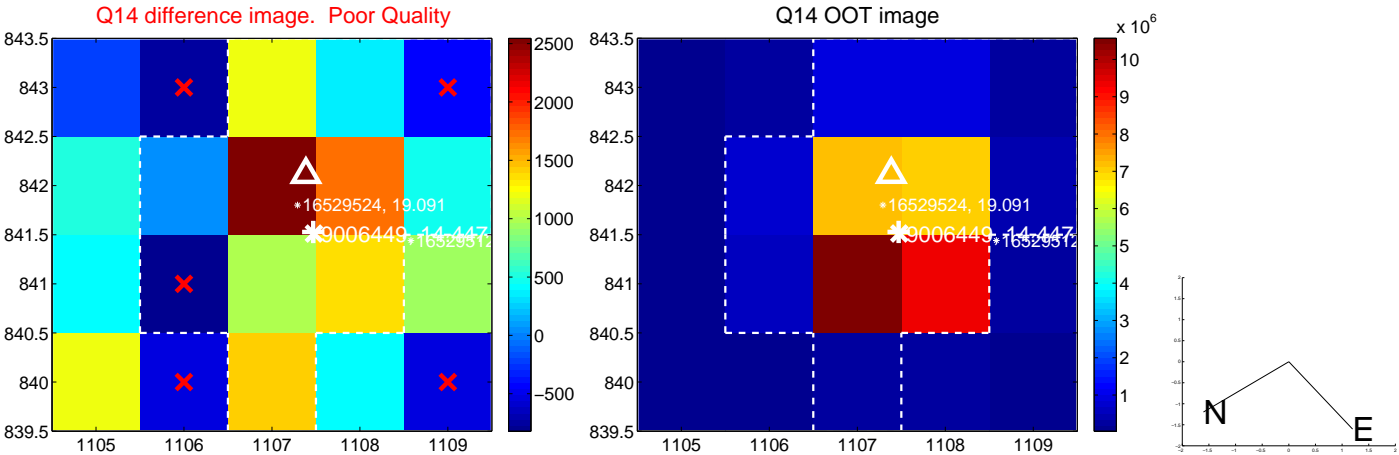
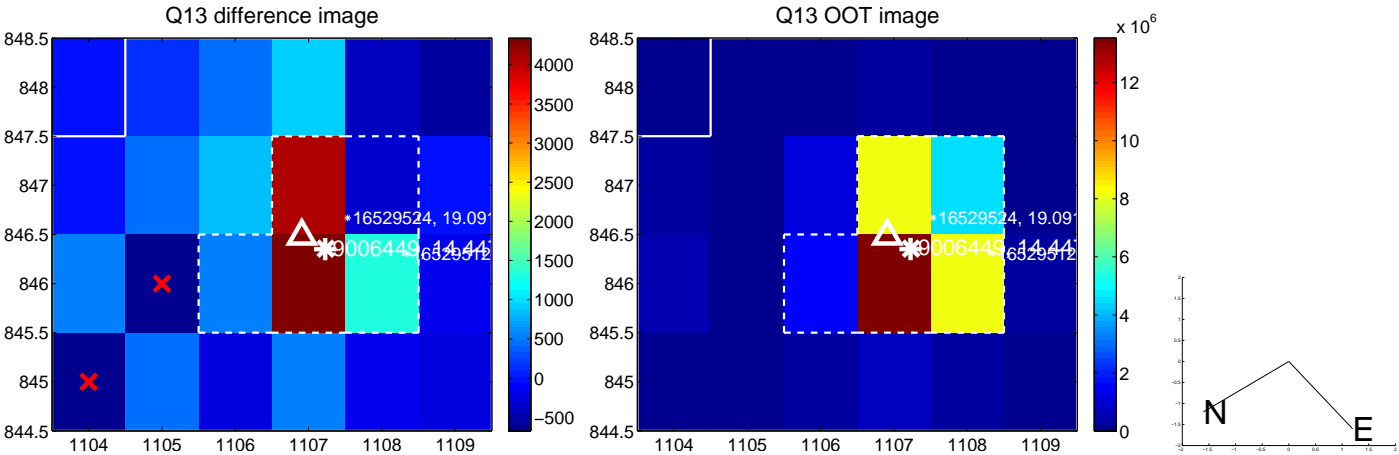
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



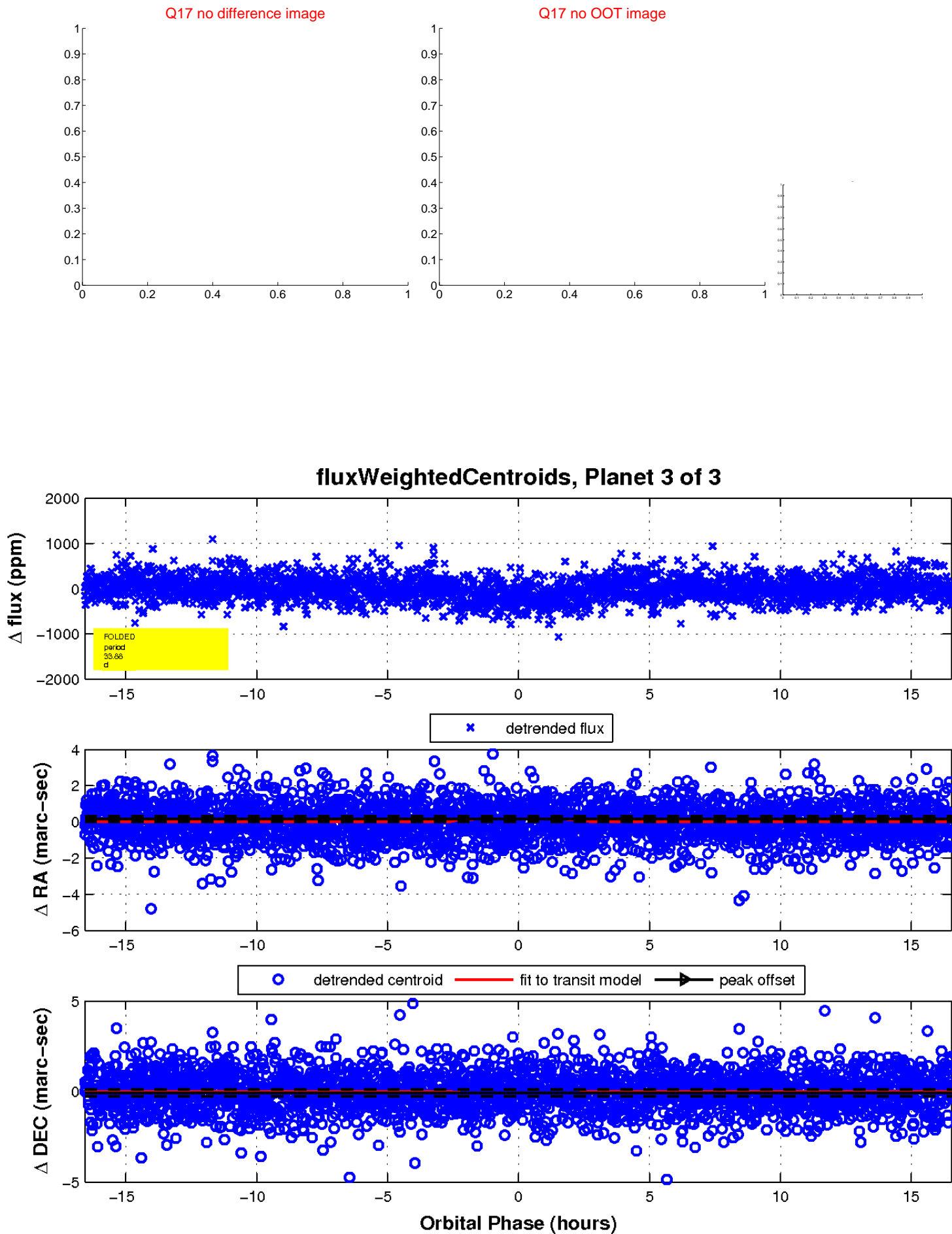
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

