

KIC 009112301

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})
009112301-01	OBS	No	4.126070	135.062943	39.6	14.415	8.2	7.5	3.52	5747	2.35	3636.16
009112301-02	OBS	No	28.883794	155.029549	120.8	64.829	8.1	6.5	3.52	5747	4.70	271.53
009112301-03	OBS	No	238.733477	251.705228	335.0	8.610	7.4	7.3	3.52	5747	6.95	16.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009112301-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009112301-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST
009112301-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

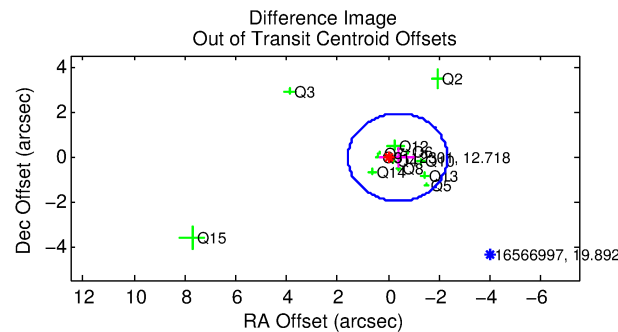
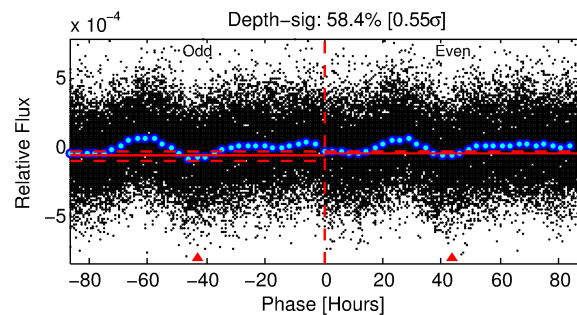
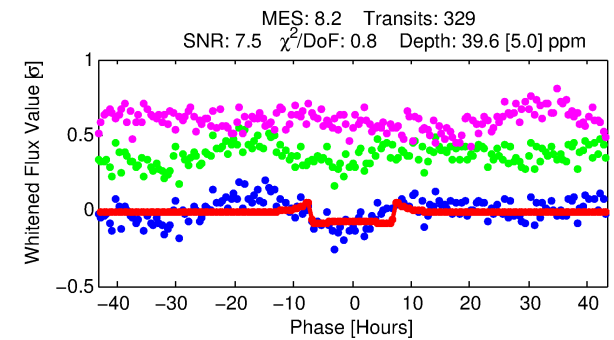
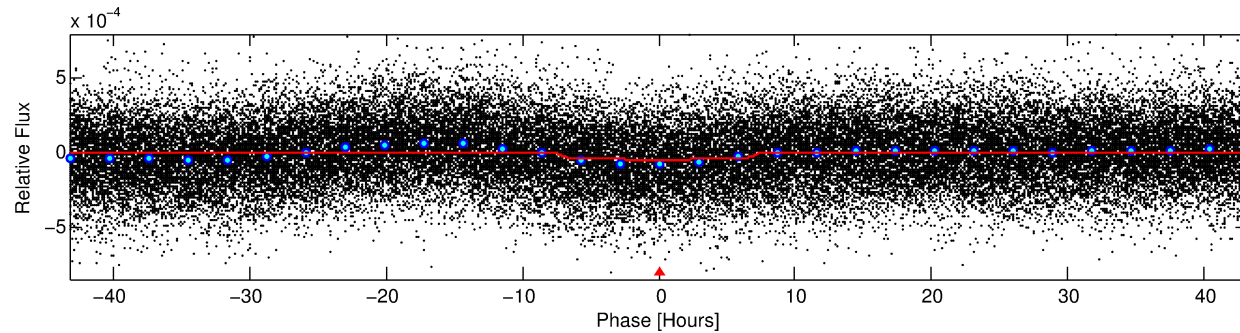
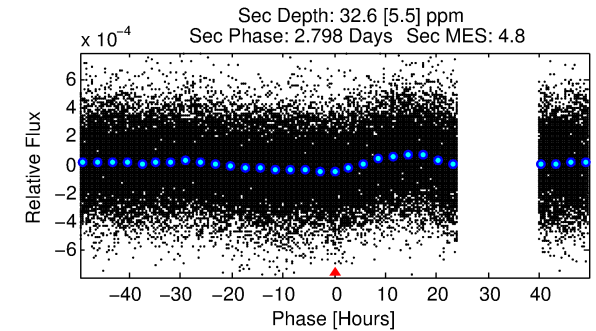
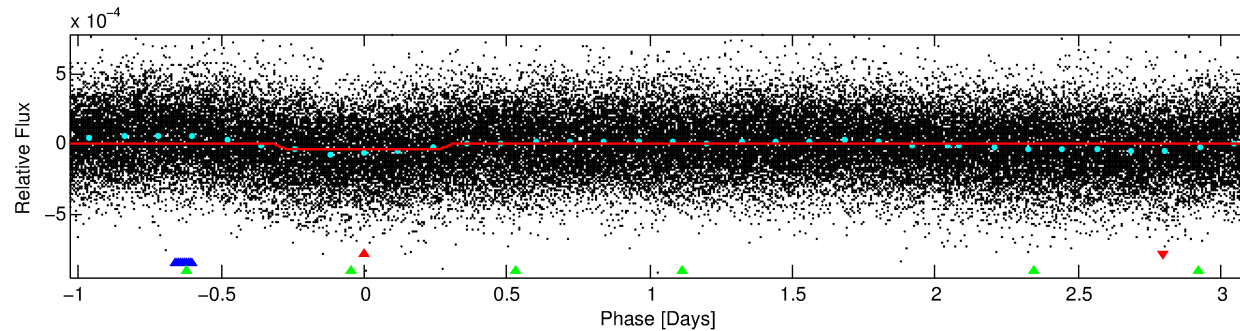
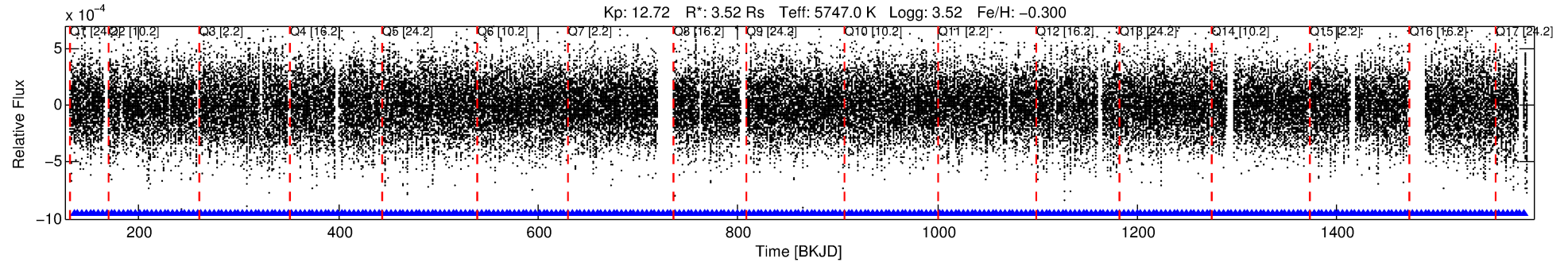
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009112301-01

No Significant Match Found

DV One-Page Summary

KIC: 9112301 Candidate: 1 of 3 Period: 4.126 d



DV Fit Results:

Period = 4.12607 [0.00005] d
Epoch = 135.0629 [0.0072] BKJD
Rp/R* = 0.0061 [0.0015]
a/R* = 1.81 [1.45]
b = 0.68 [0.92]
Seff = 3636.16 [2261.92]
Teq = 1980 [308] K
Rp = 2.35 [1.13] Re
a = 0.0576 [0.0220] AU
Ag = 10.79 [8.58] [1.14σ]
Teffp = 5549 [769] K [4.31σ]

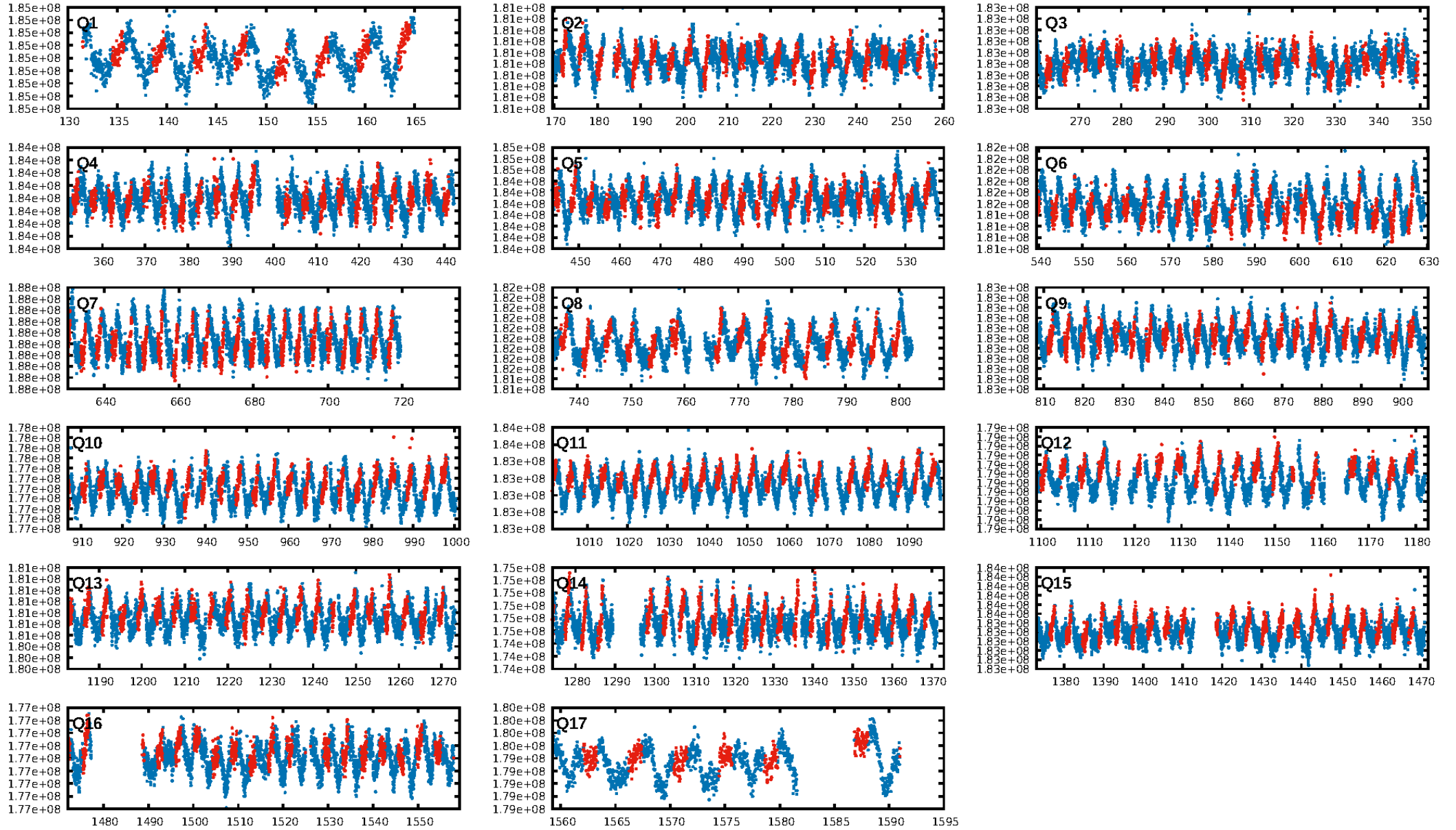
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [8.95σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 7.02e-10
RollingBand-fgt: 1.00 [315/315]
GhostDiagnostic-chr: 2.121
Centroid-sig: 20.9%
Centroid-so: 0.799 arcsec [1.33σ]
OotOffset-rm: 0.375 arcsec [0.58σ]
KicOffset-rm: 0.414 arcsec [0.66σ]
OotOffset-st: 4/3/3/3 [13]
KicOffset-st: 4/3/3/3 [13]
DiffImageQuality-fgm: 0.69 [9/13]
DiffImageOverlap-fno: 1.00 [17/17]

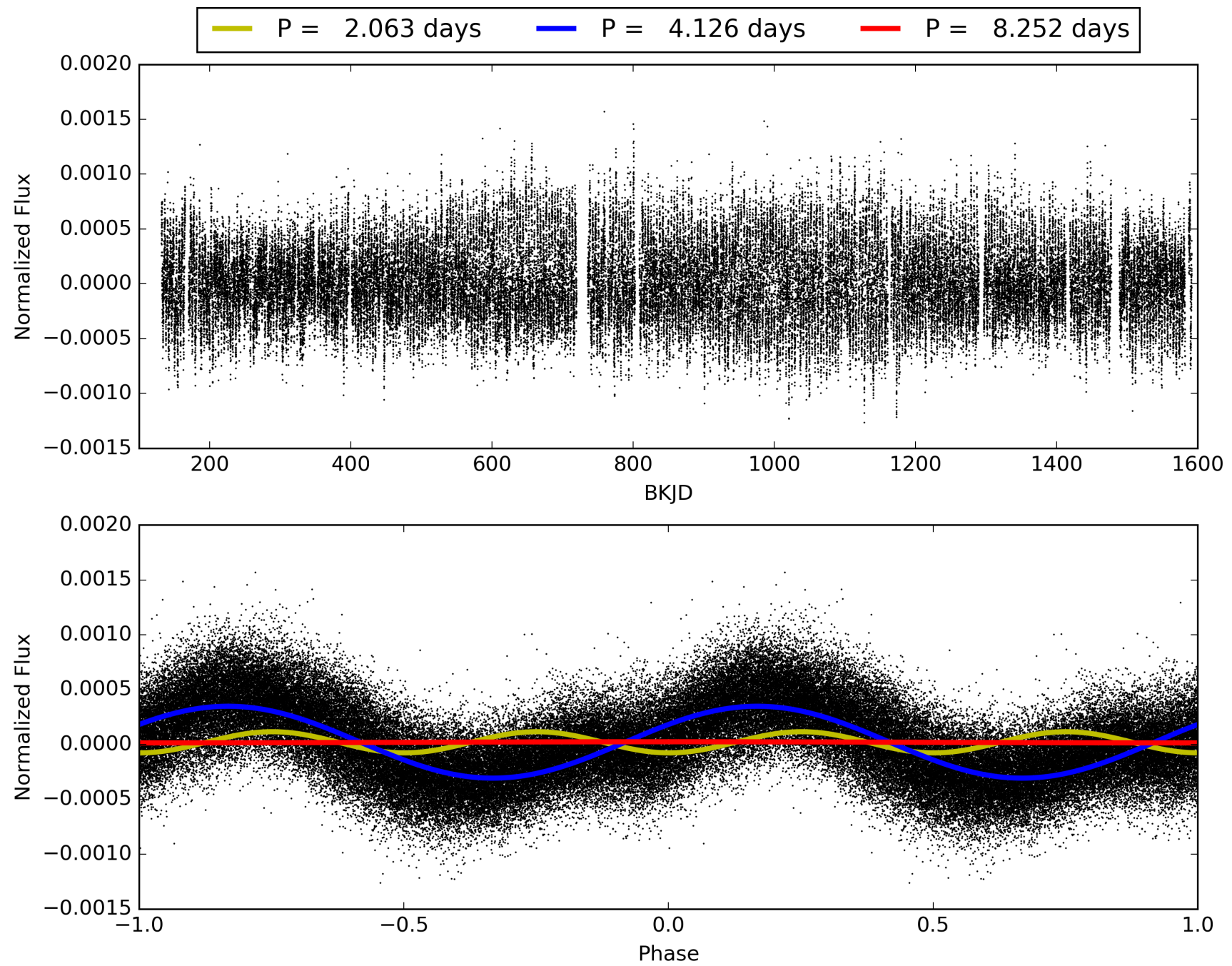
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:37:58 Z

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

TCE 009112301-01, PDC Light Curves

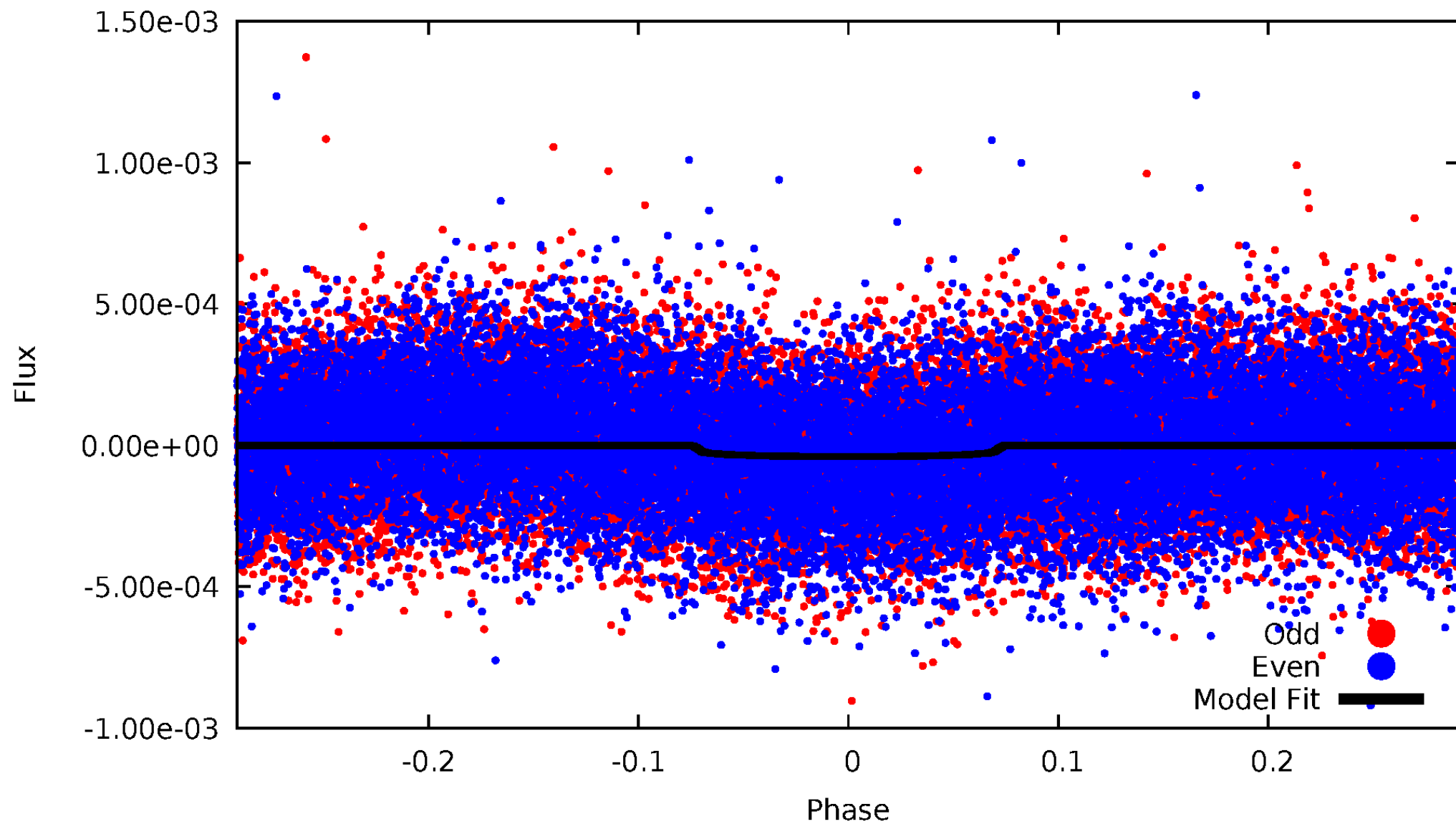


TCE 009112301-01



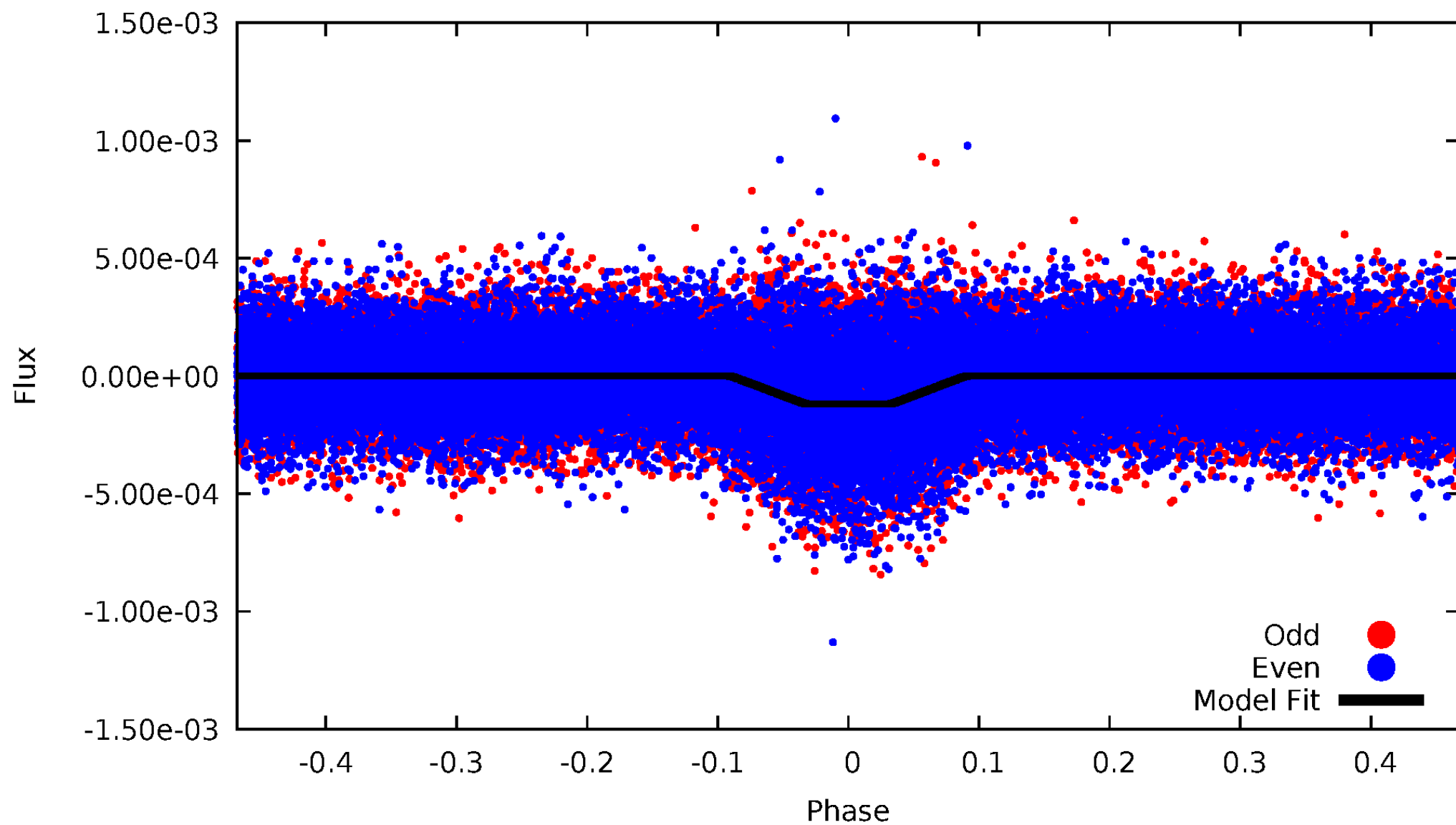
DV Odd/Even

TCE 009112301-01

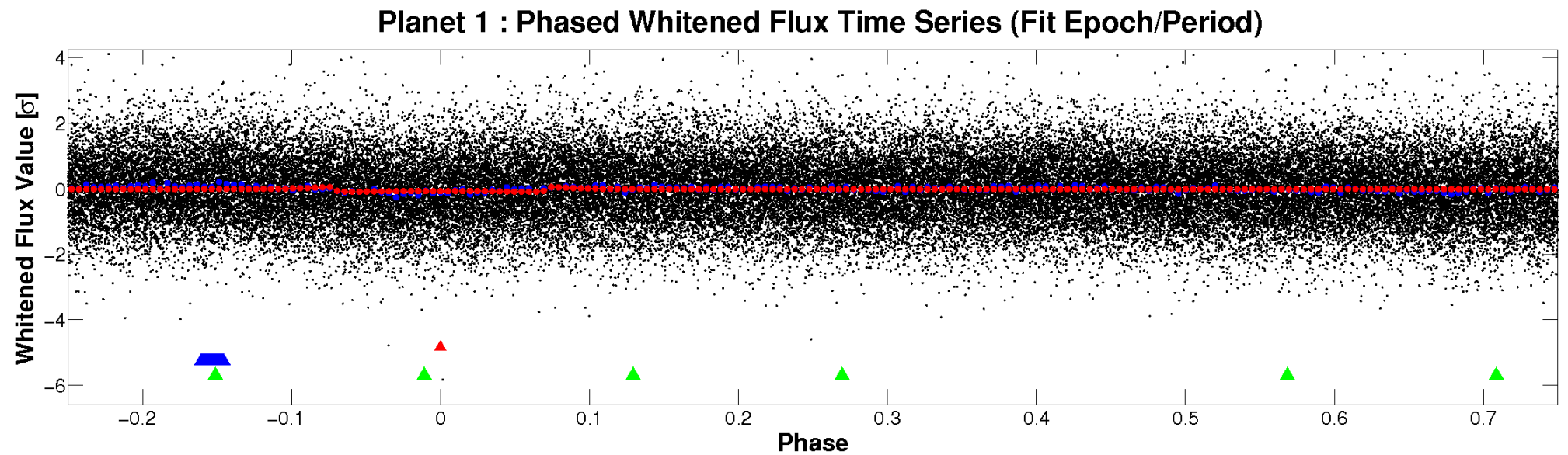
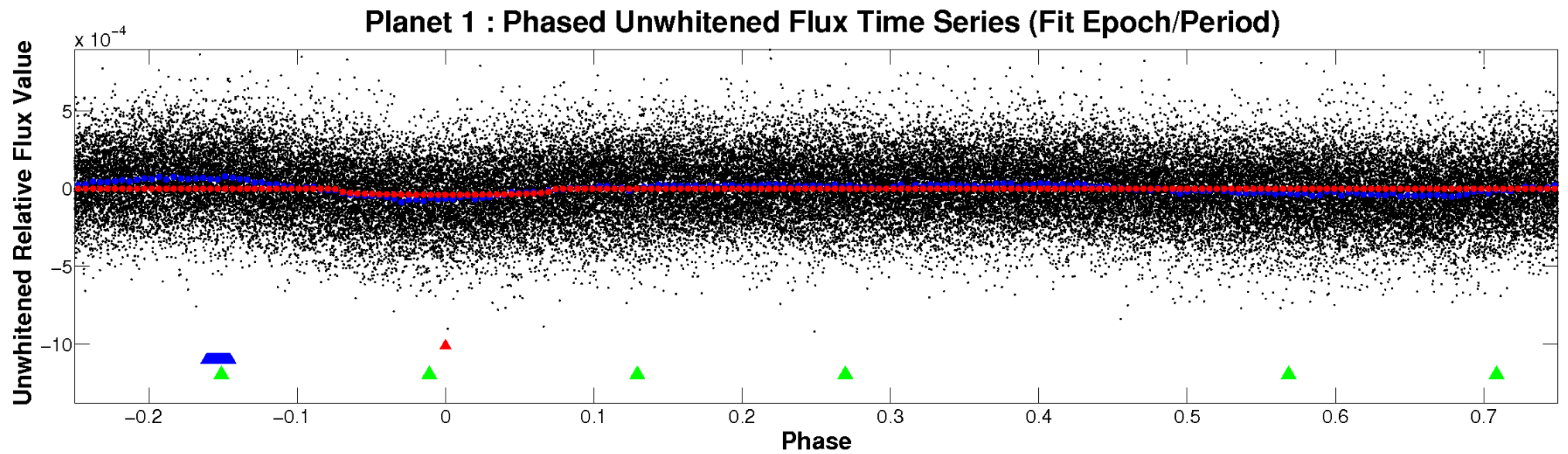


ALT Odd/Even

TCE 009112301-01

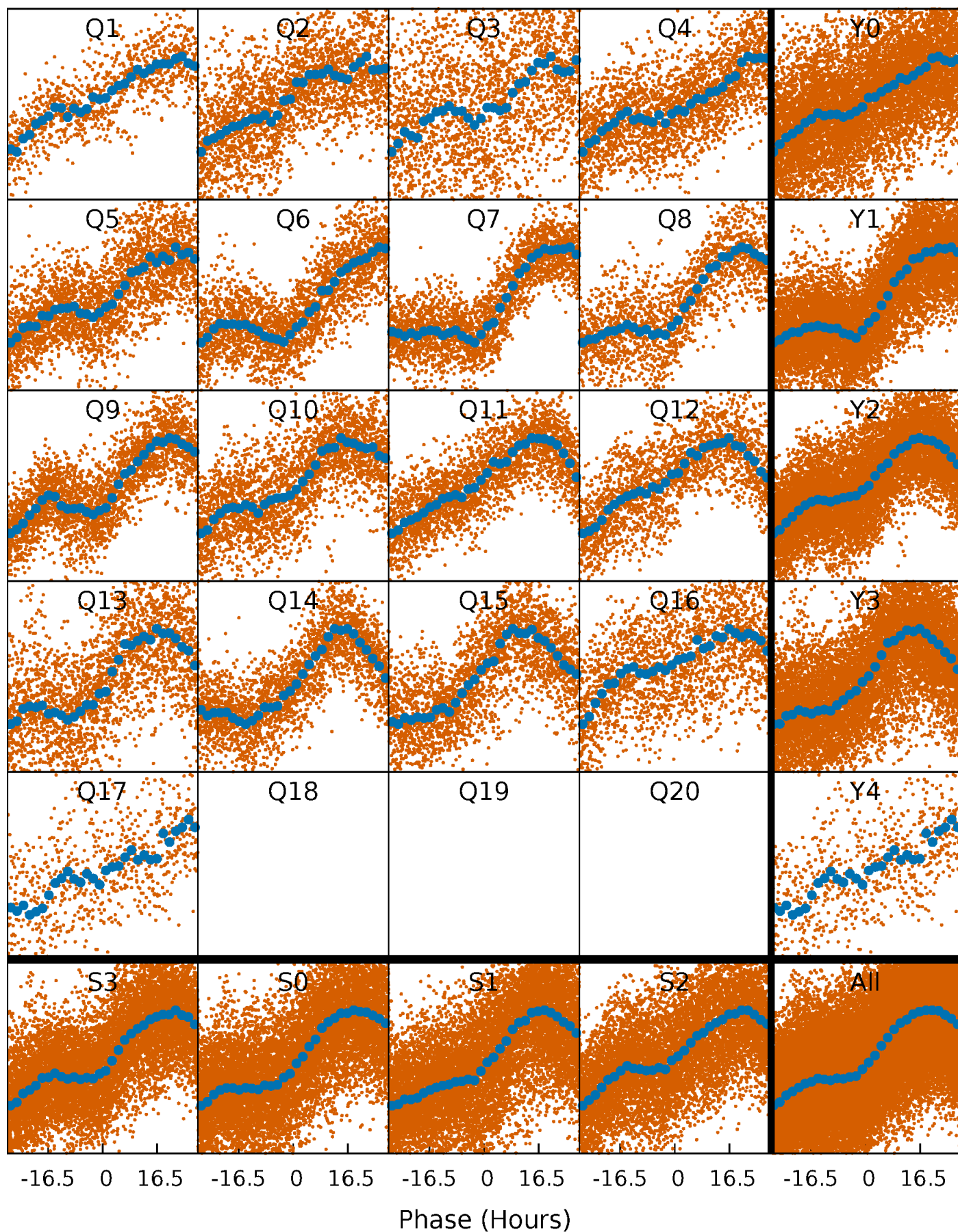


Non-Whitened Vs. Whitened Light Curve



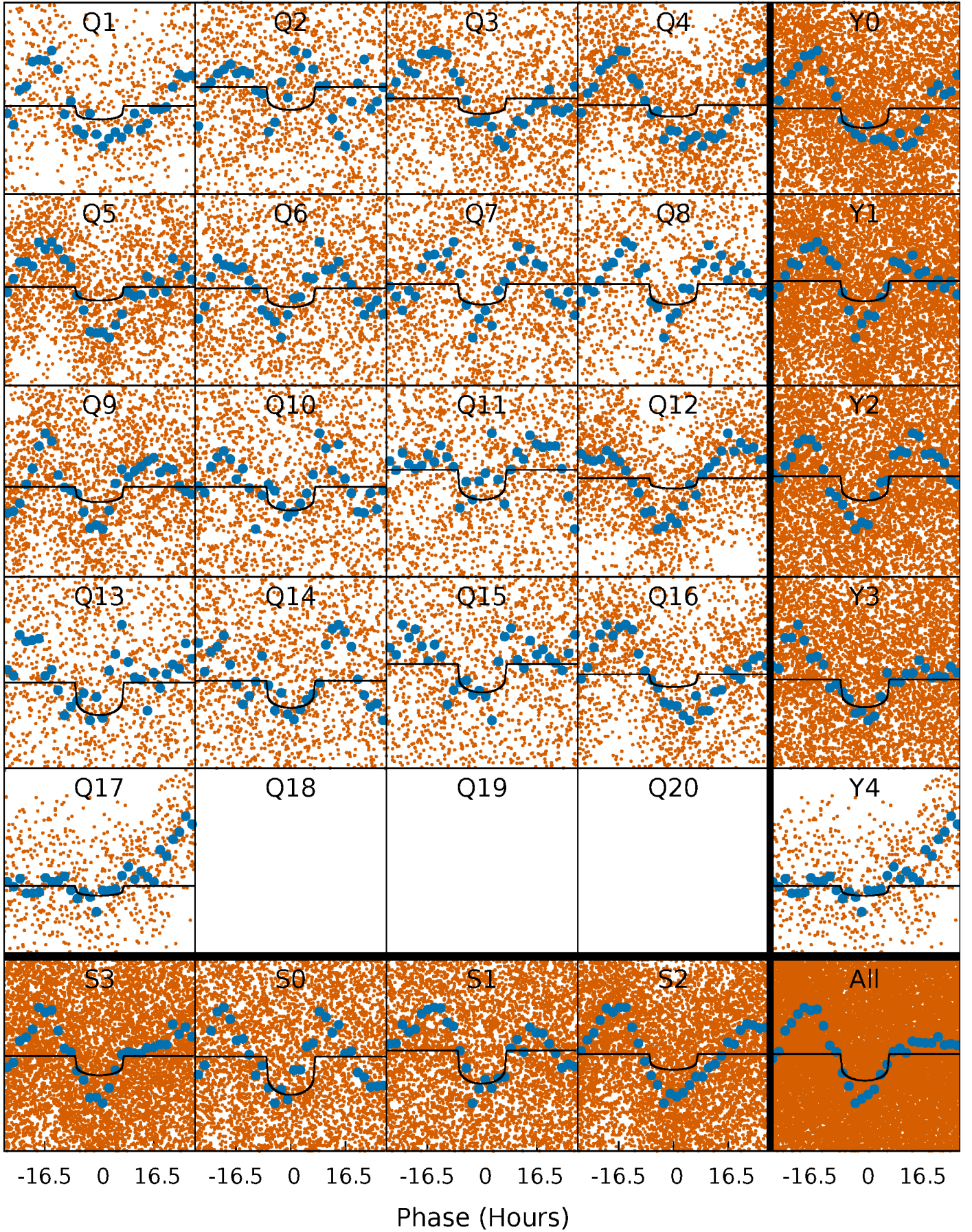
PDC Quarter-Phased Transit Curves

TCE 009112301-01 P= 4.126070 Days $T_0=135.062943$ (BKJD)



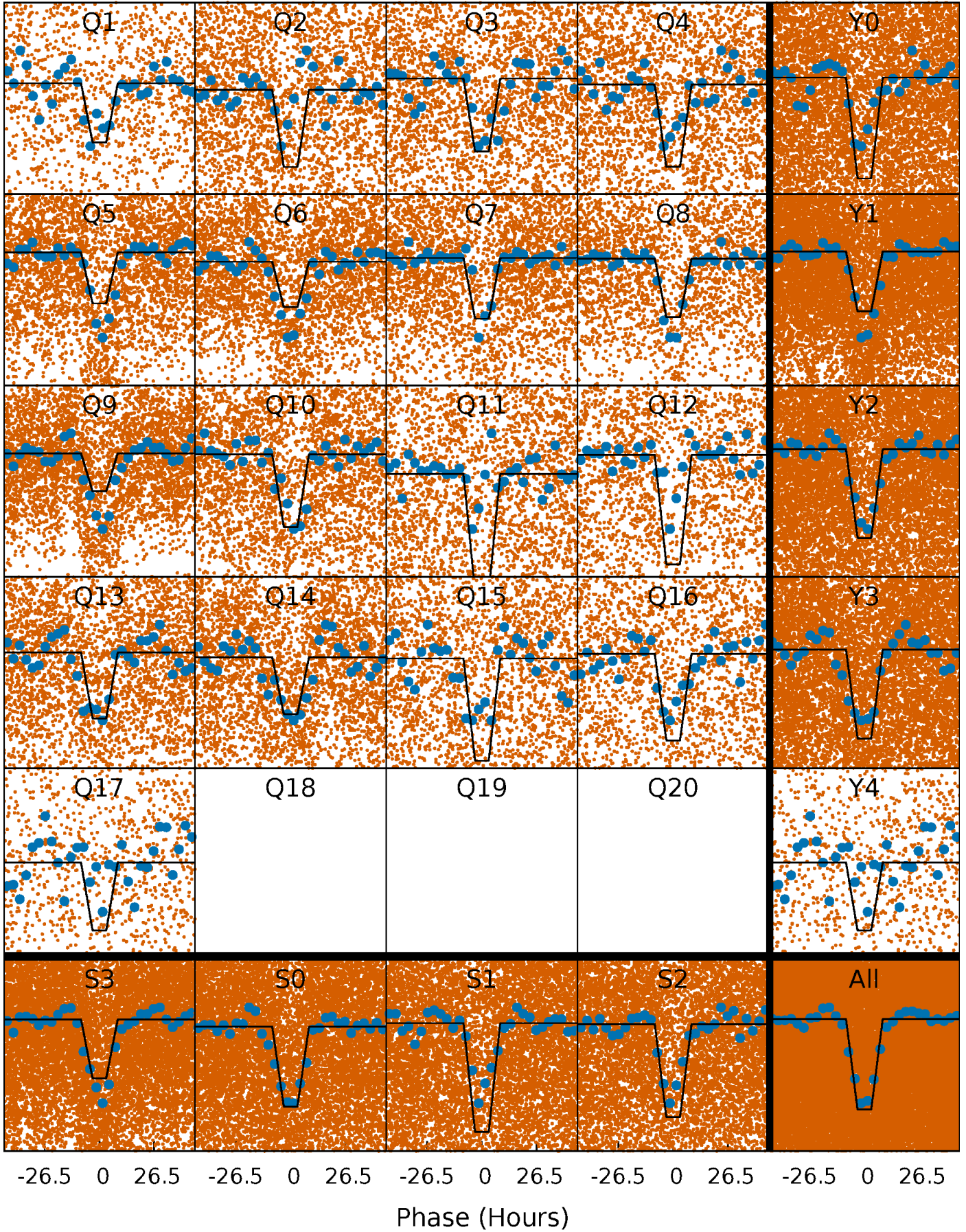
DV Quarter-Phased Transit Curves

TCE 009112301-01 P= 4.126070 Days $T_0=135.062943$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

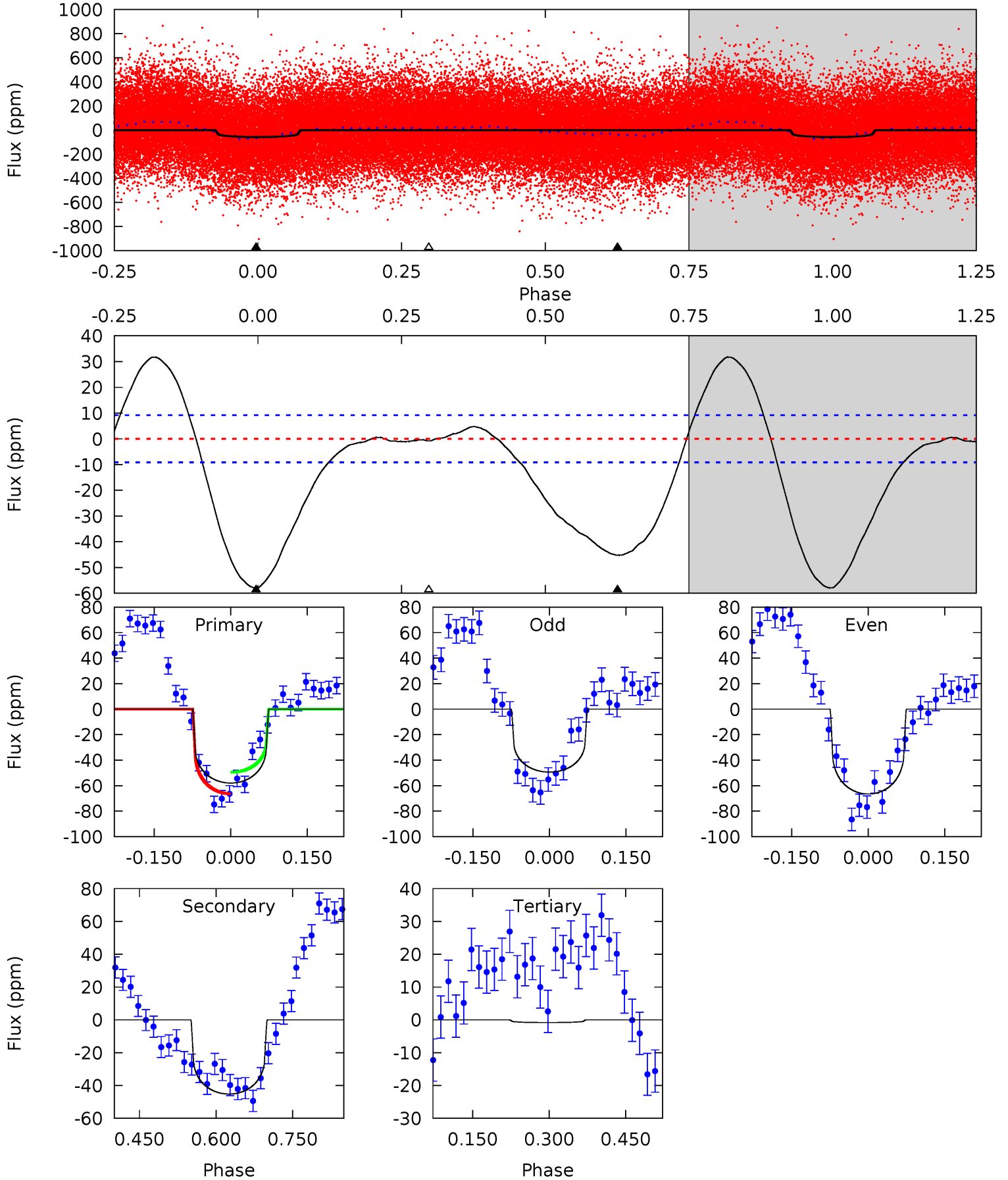
TCE 009112301-01 P= 4.126076 Days $T_0=134.966342$ (BKJD)



DV Model-Shift Uniqueness Test

009112301-01, P = 4.126070 Days, E = 130.936873 Days

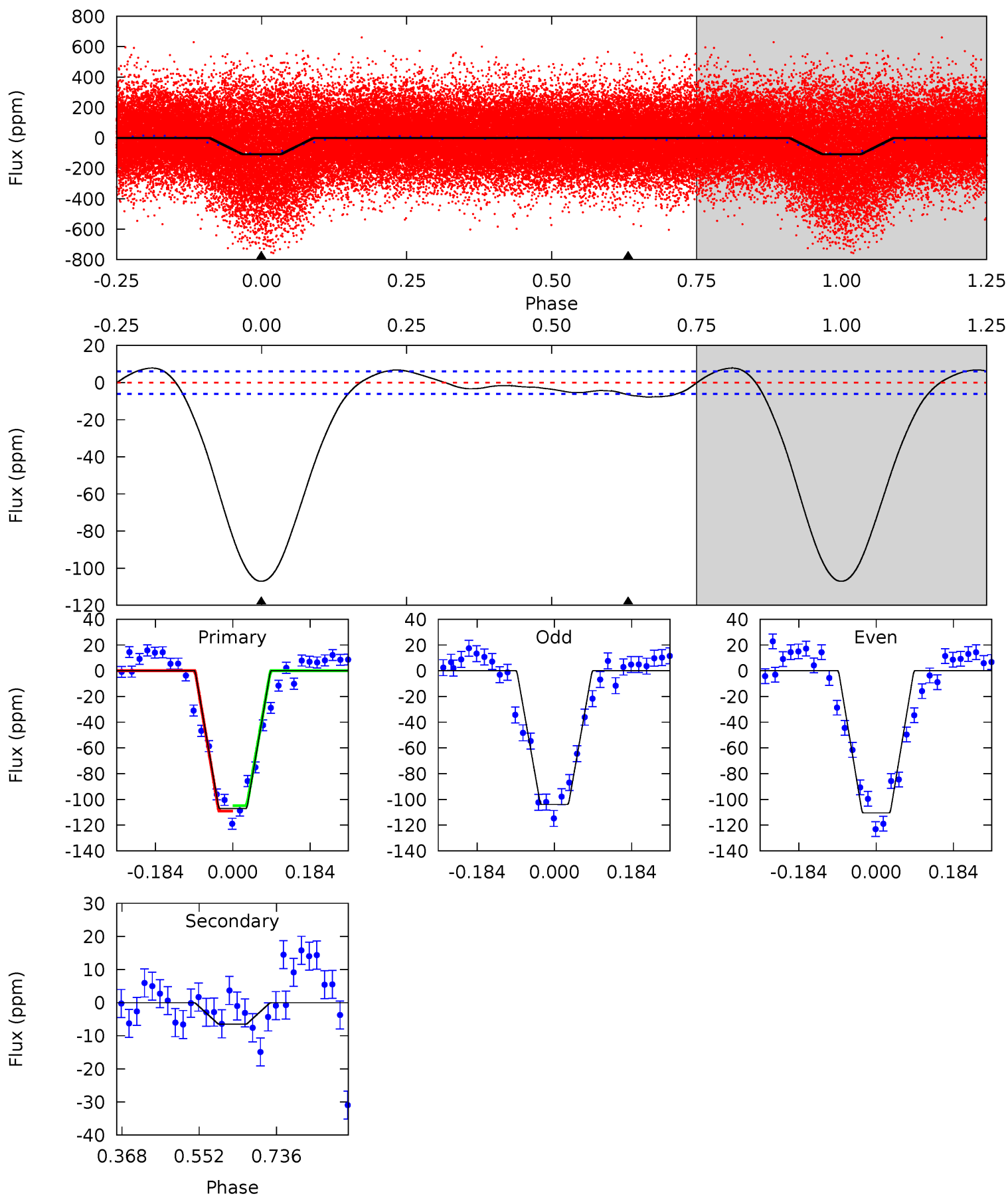
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.3	22.1	0.40	0	4.48	1.44	5.71	27.9	28.3	21.7	22.1	4.21	1.02	0.35	4.10



Alt Model-Shift Uniqueness Test

009112301-01, P = 4.126076 Days, E = 130.840266 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
78.3	4.77	0	0	4.44	1.33	2.66	78.3	78.3	4.77	4.77	2.39	0.95	0.07	1.50



Stellar Parameters For KIC 009112301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5747^{+207}_{-253}	$3.522^{+0.345}_{-0.138}$	$-0.300^{+0.300}_{-0.300}$	$3.516^{+0.780}_{-1.449}$	$1.502^{+0.203}_{-0.439}$	$0.049^{+0.132}_{-0.020}$
	+4%/-4%	+10%/-4%	+100%/-100%	+22%/-41%	+14%/-29%	+272%/-40%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009112301-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-45 ± 2	$2.18^{+0.76}_{-0.63}$	2712^{+211}_{-283}	5963^{+902}_{-661}	17^{+16}_{-7}
Alt.	-7 ± 1	$4.01^{+0.92}_{-1.00}$	2709^{+217}_{-274}	3059^{+304}_{-367}	$0.731^{+0.546}_{-0.276}$

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

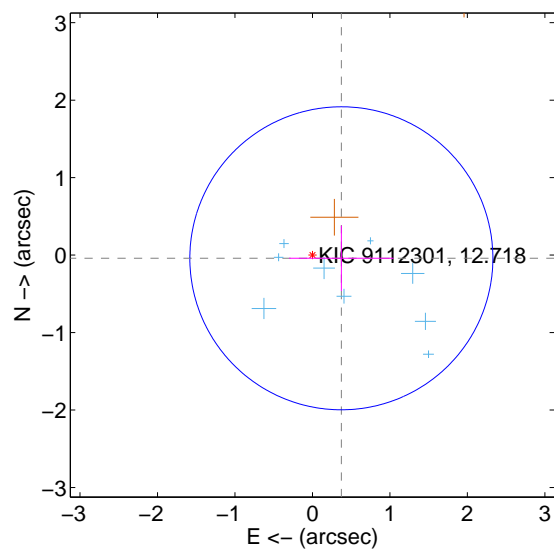
Supplemental centroid analysis for 009112301-01. Kepler magnitude: 12.72. Transit SNR 7.50

There are 9 quarters with good PRF difference image offsets

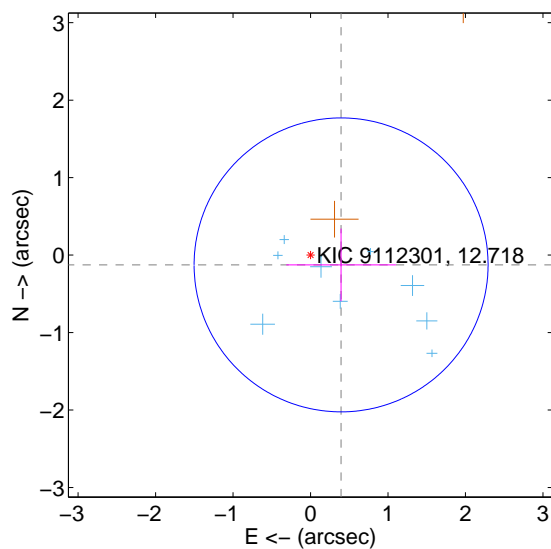
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.375 ± 0.652	0.58	-0.373 ± 0.674	-0.041 ± 0.422
PRF-fit source offset from KIC position	0.414 ± 0.632	0.66	-0.394 ± 0.708	-0.126 ± 0.469
photometric centroid source offset	0.80 ± 0.60	1.33	-0.72 ± 0.62	-0.35 ± 0.53

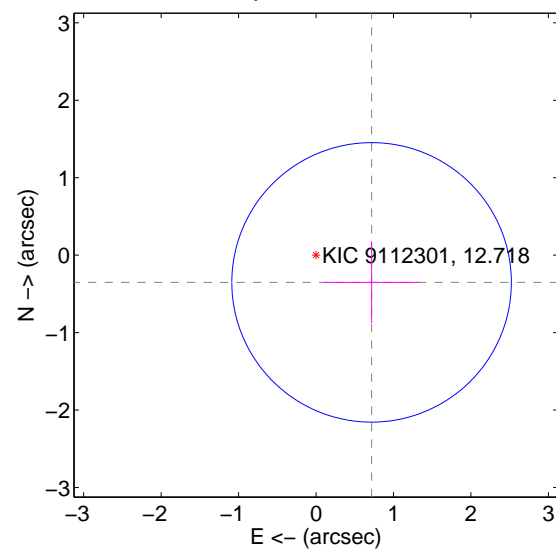
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

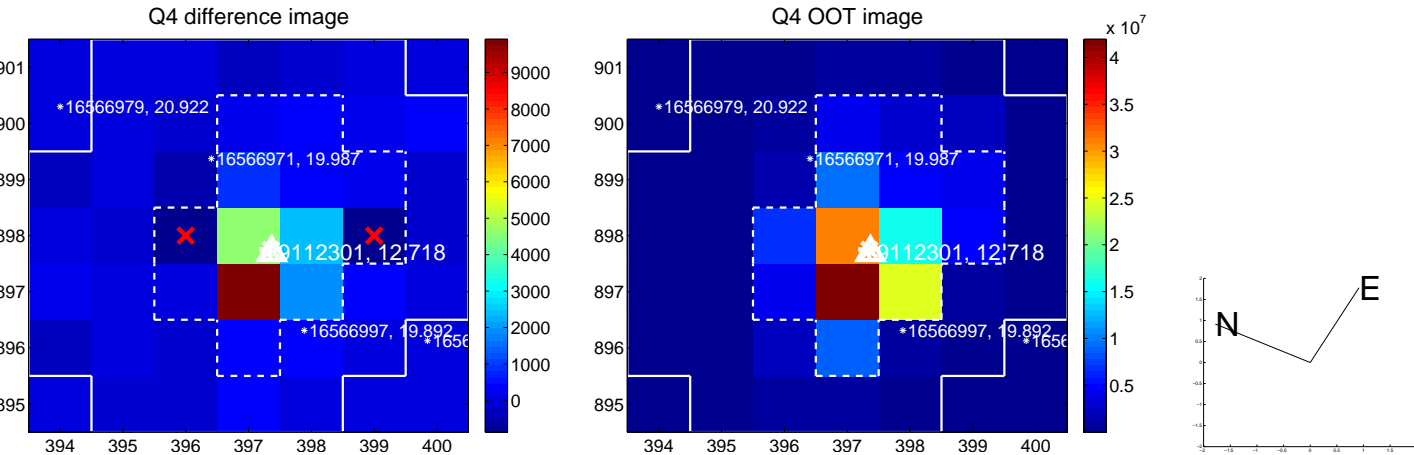
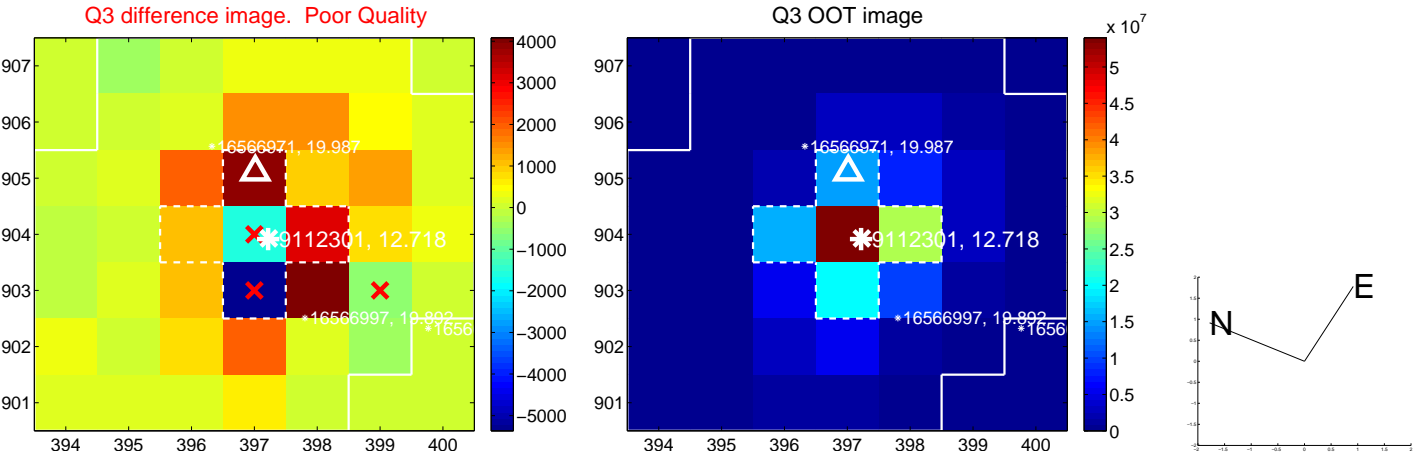
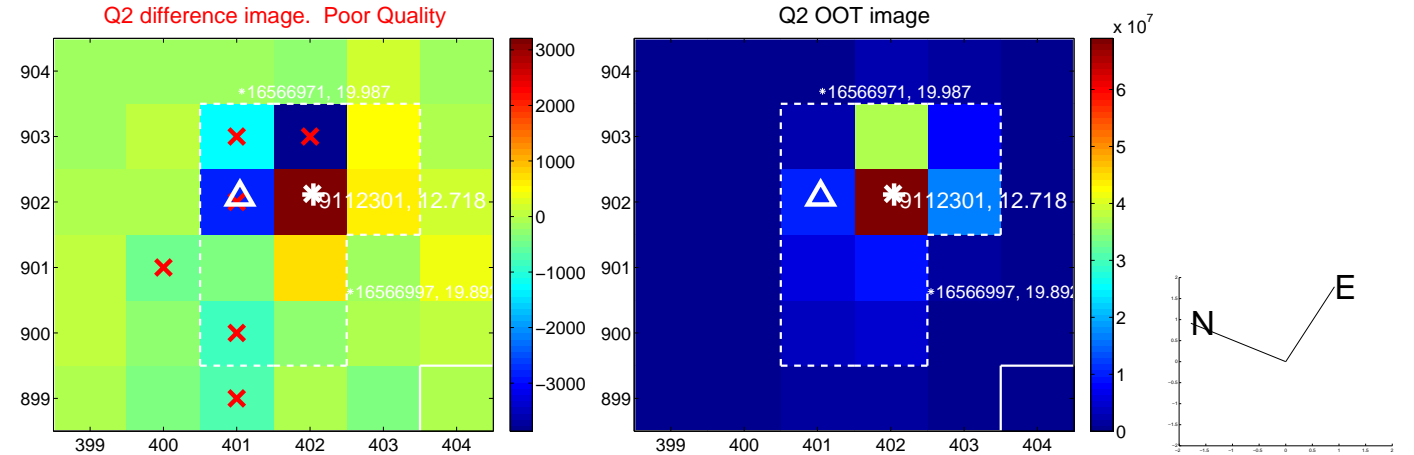
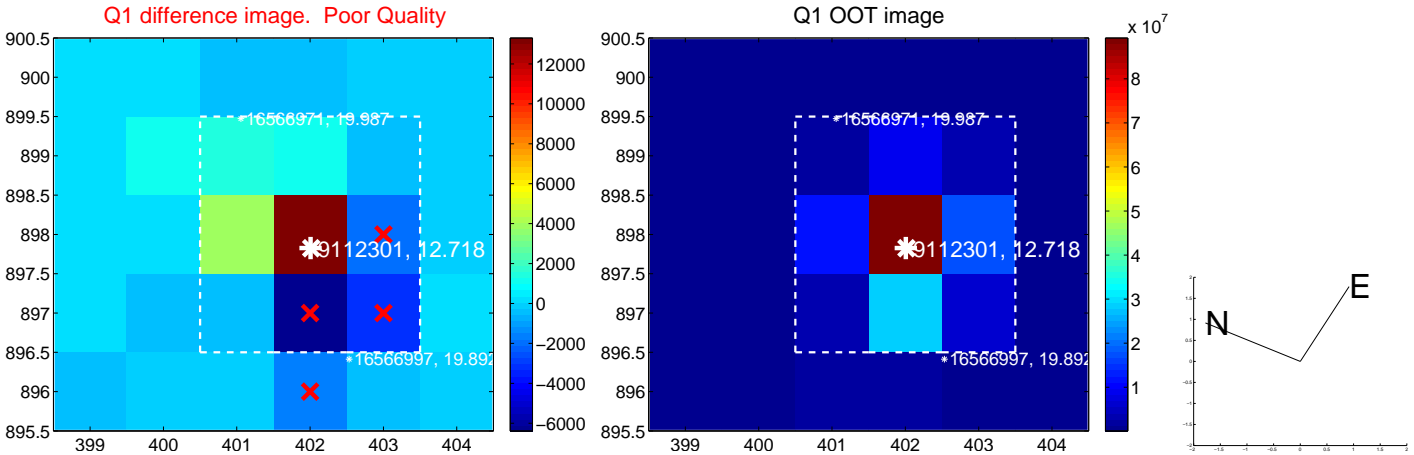


offset from photometric centroids

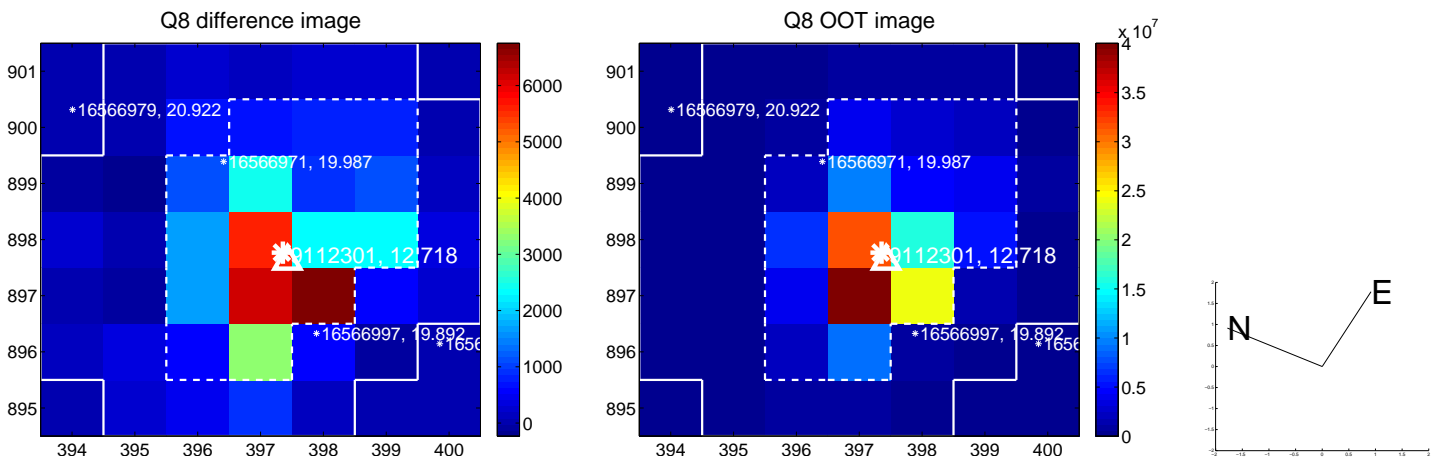
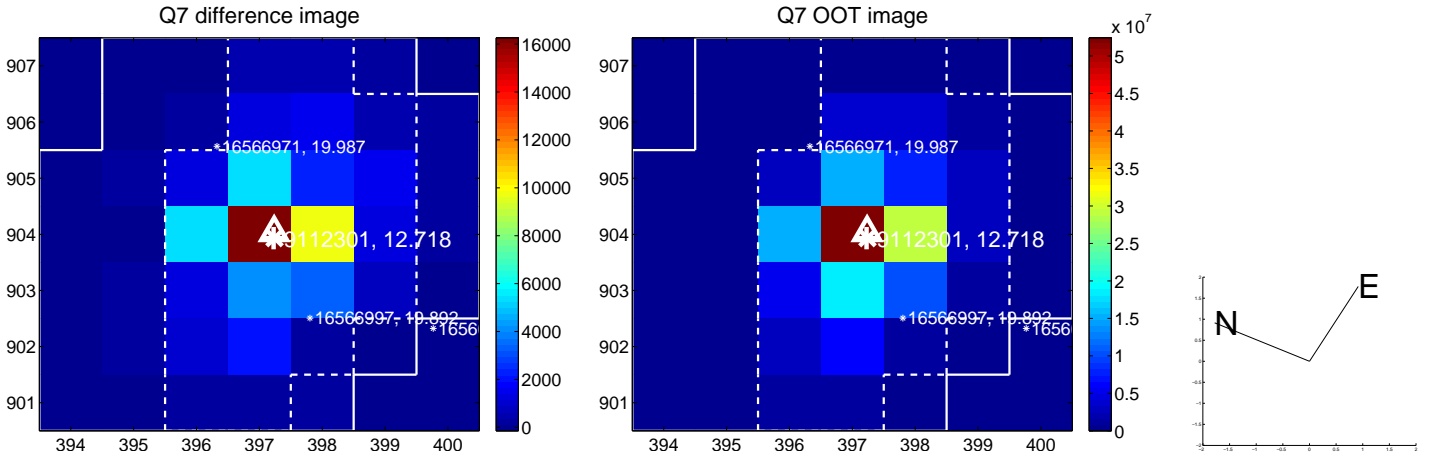
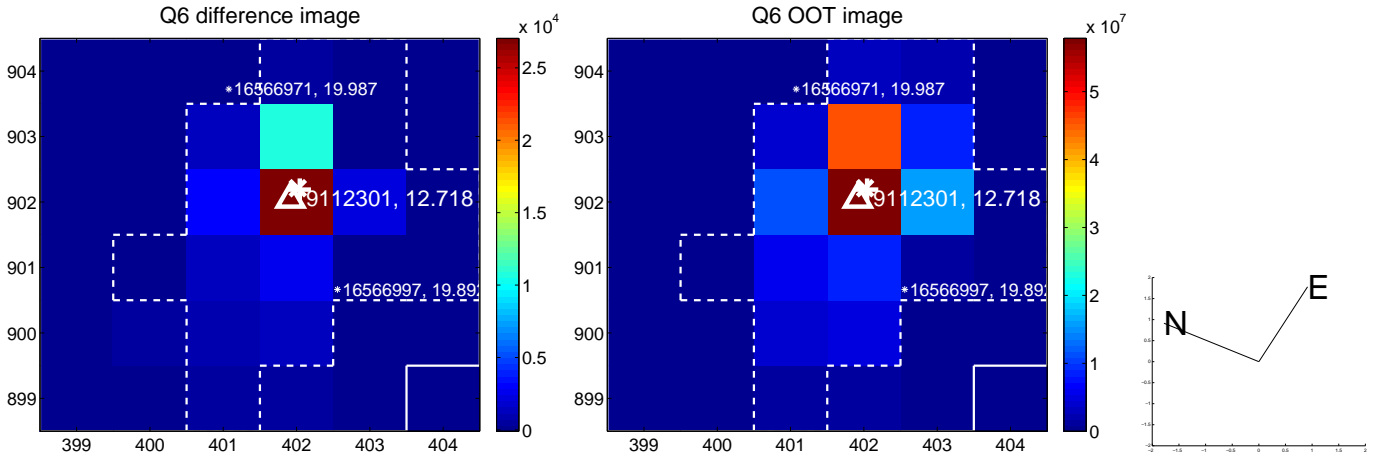
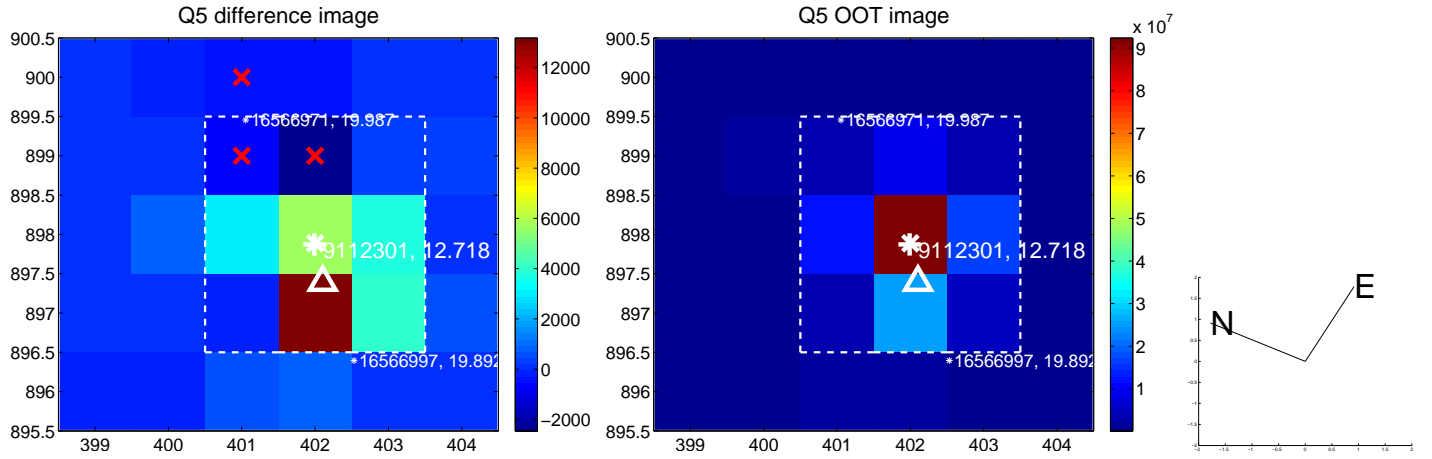


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

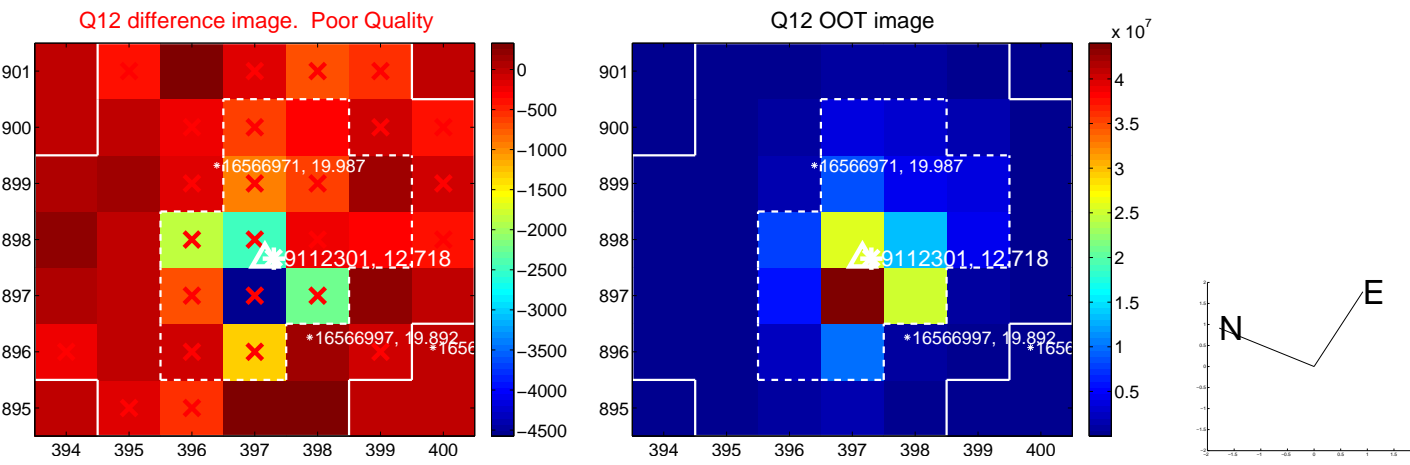
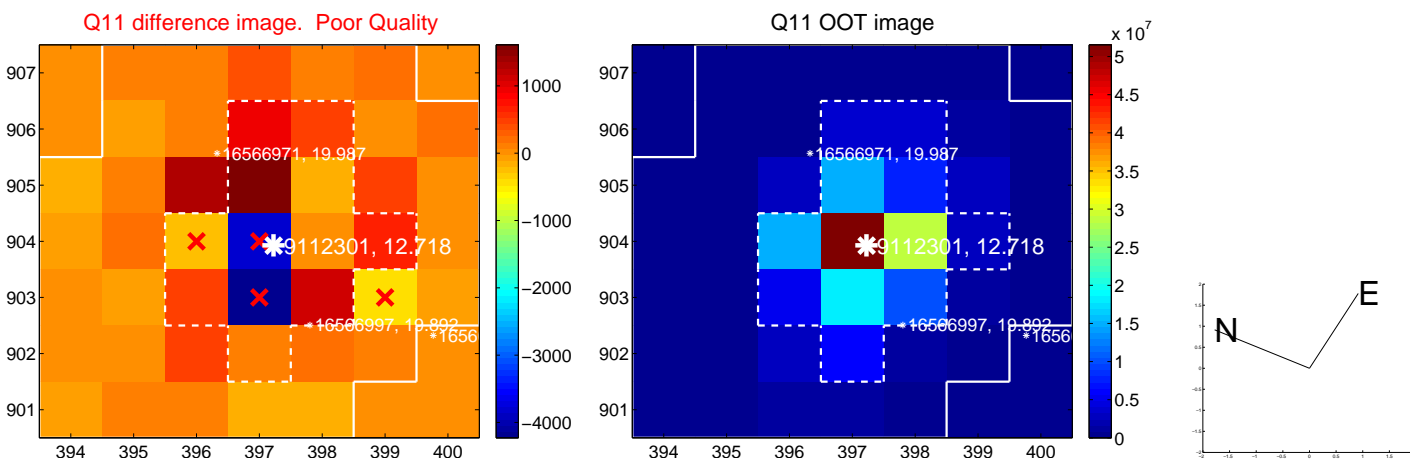
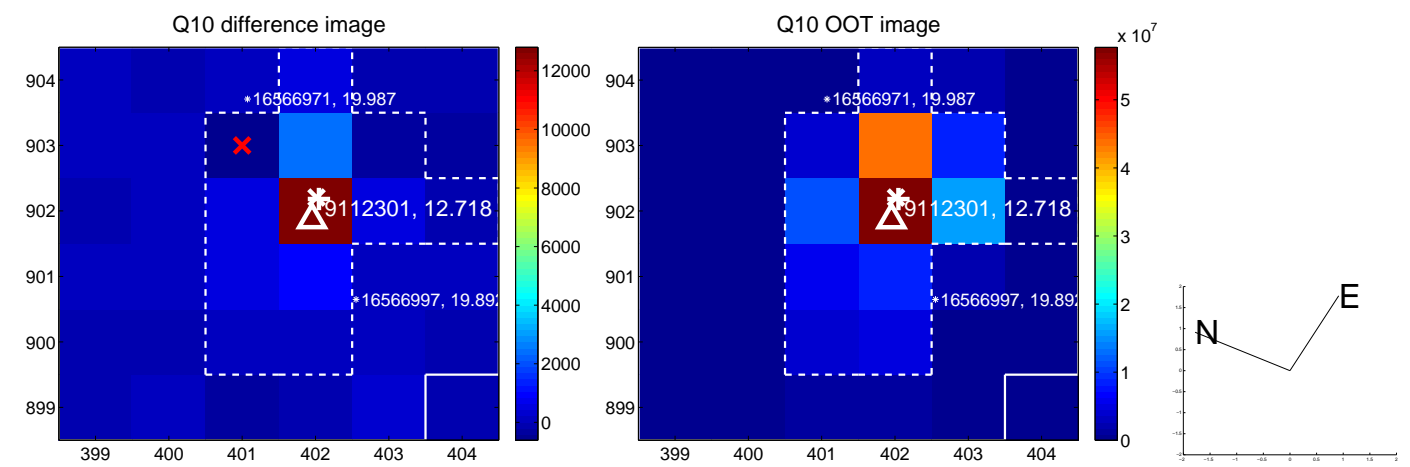
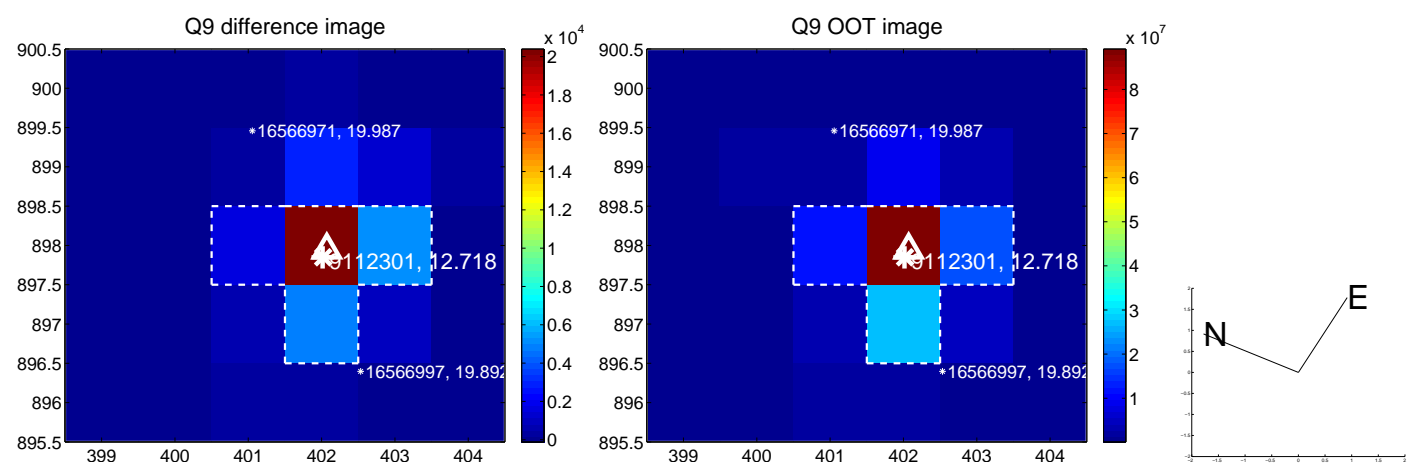
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



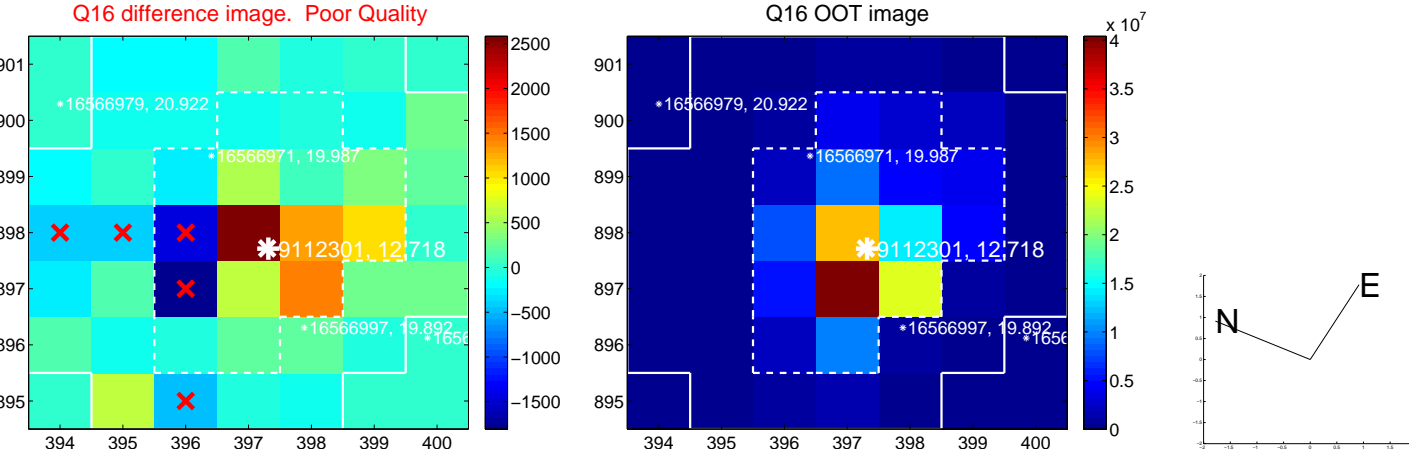
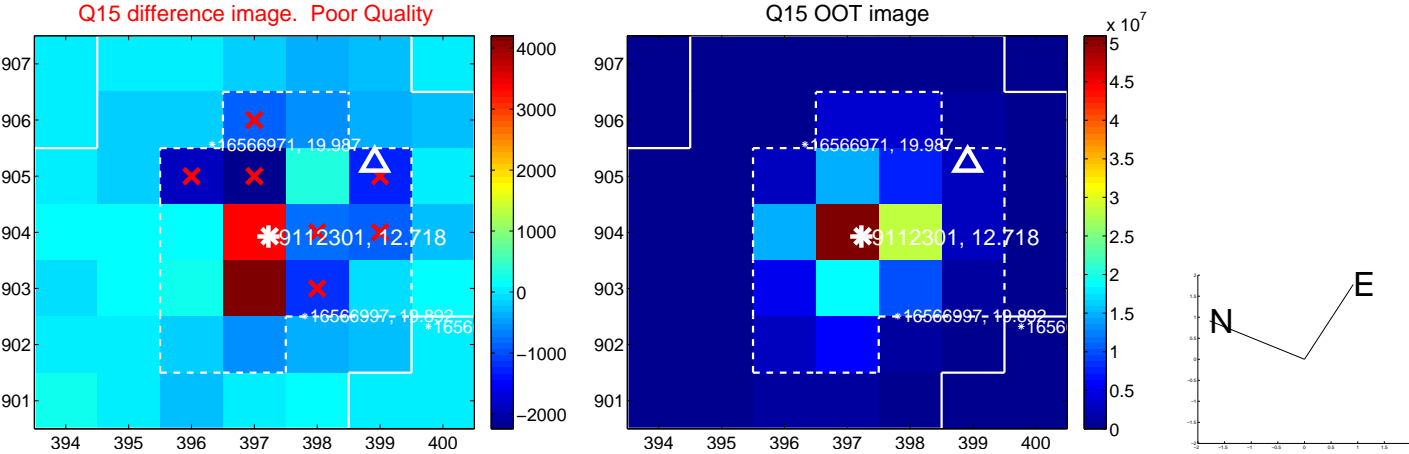
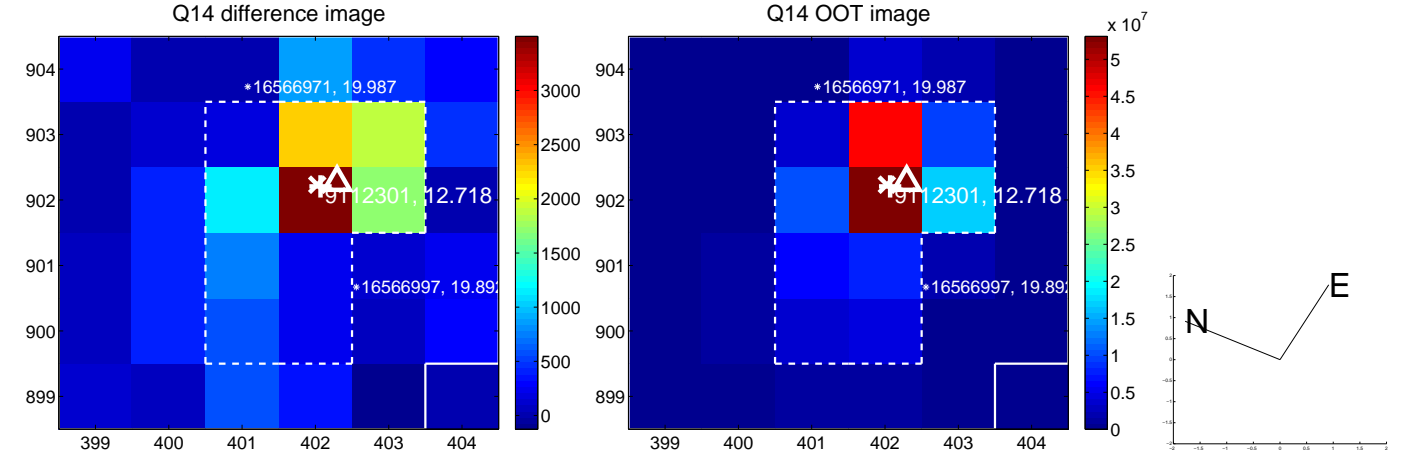
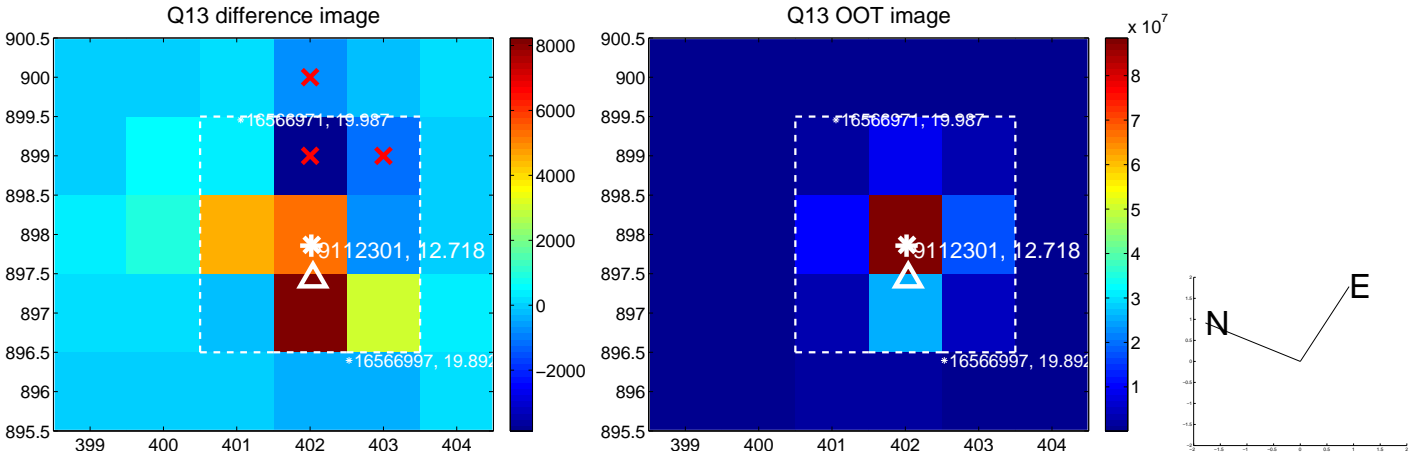
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



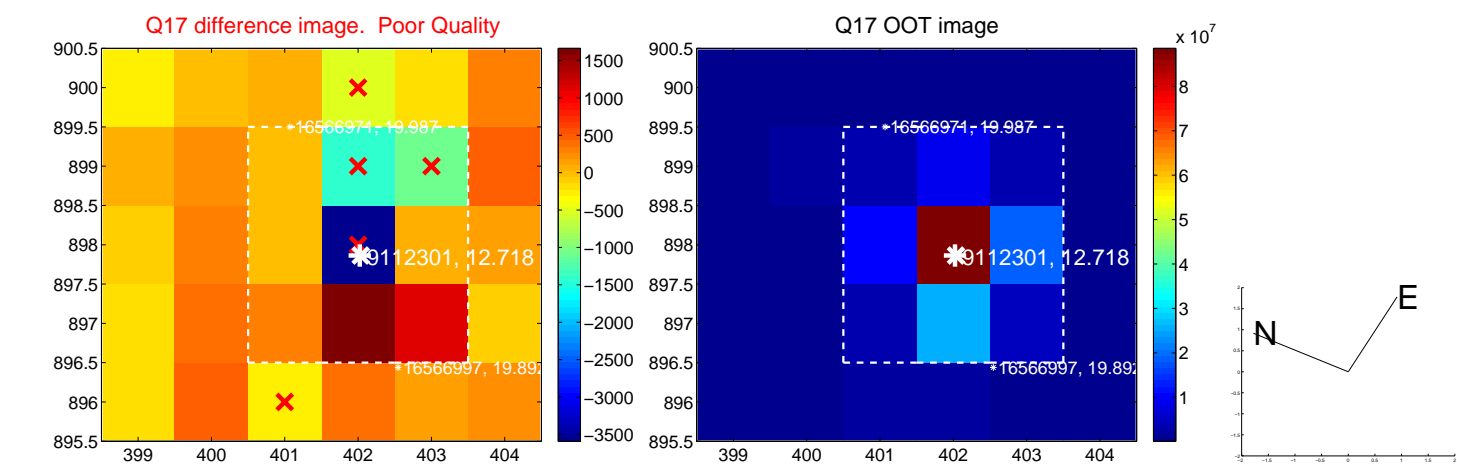
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



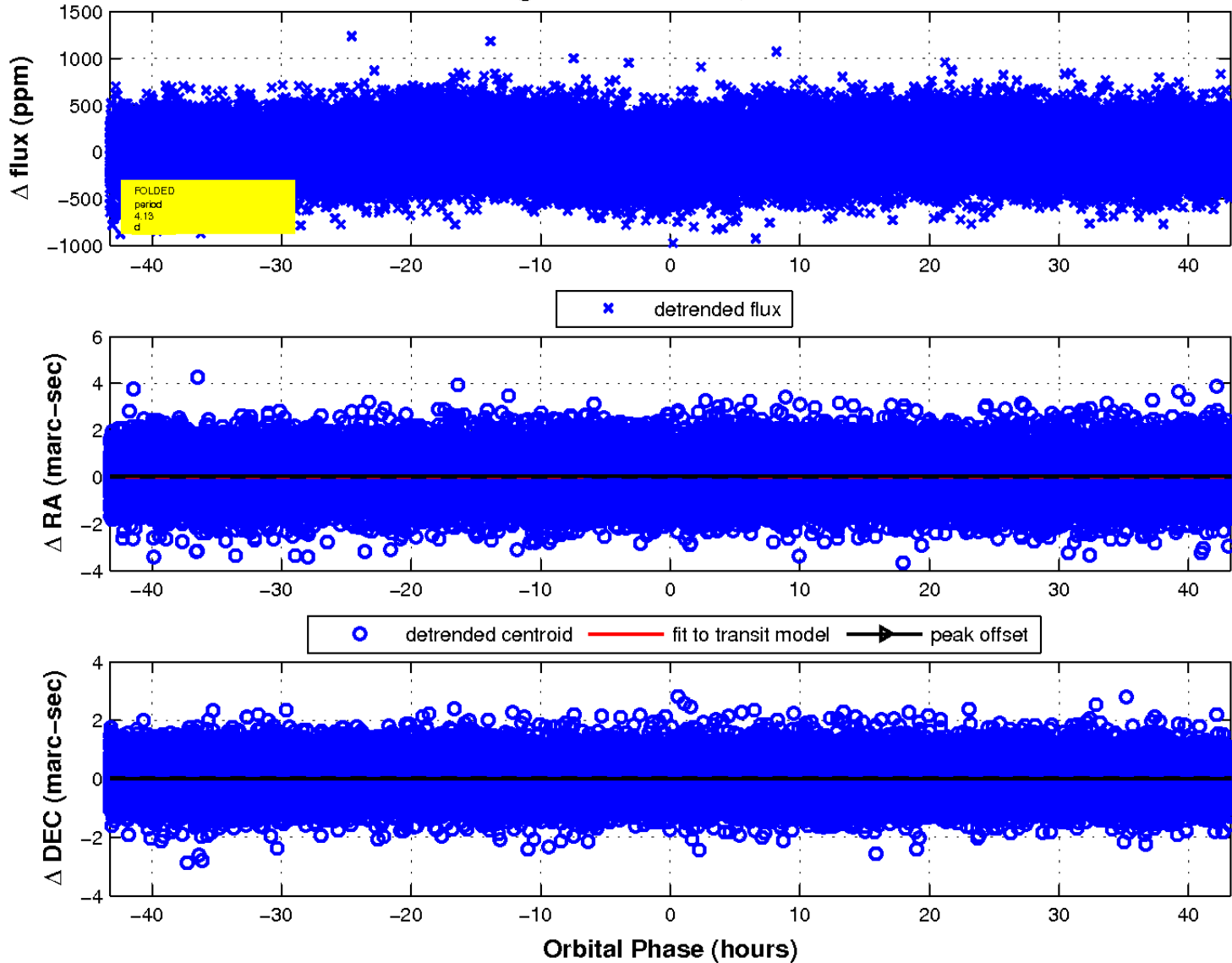
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

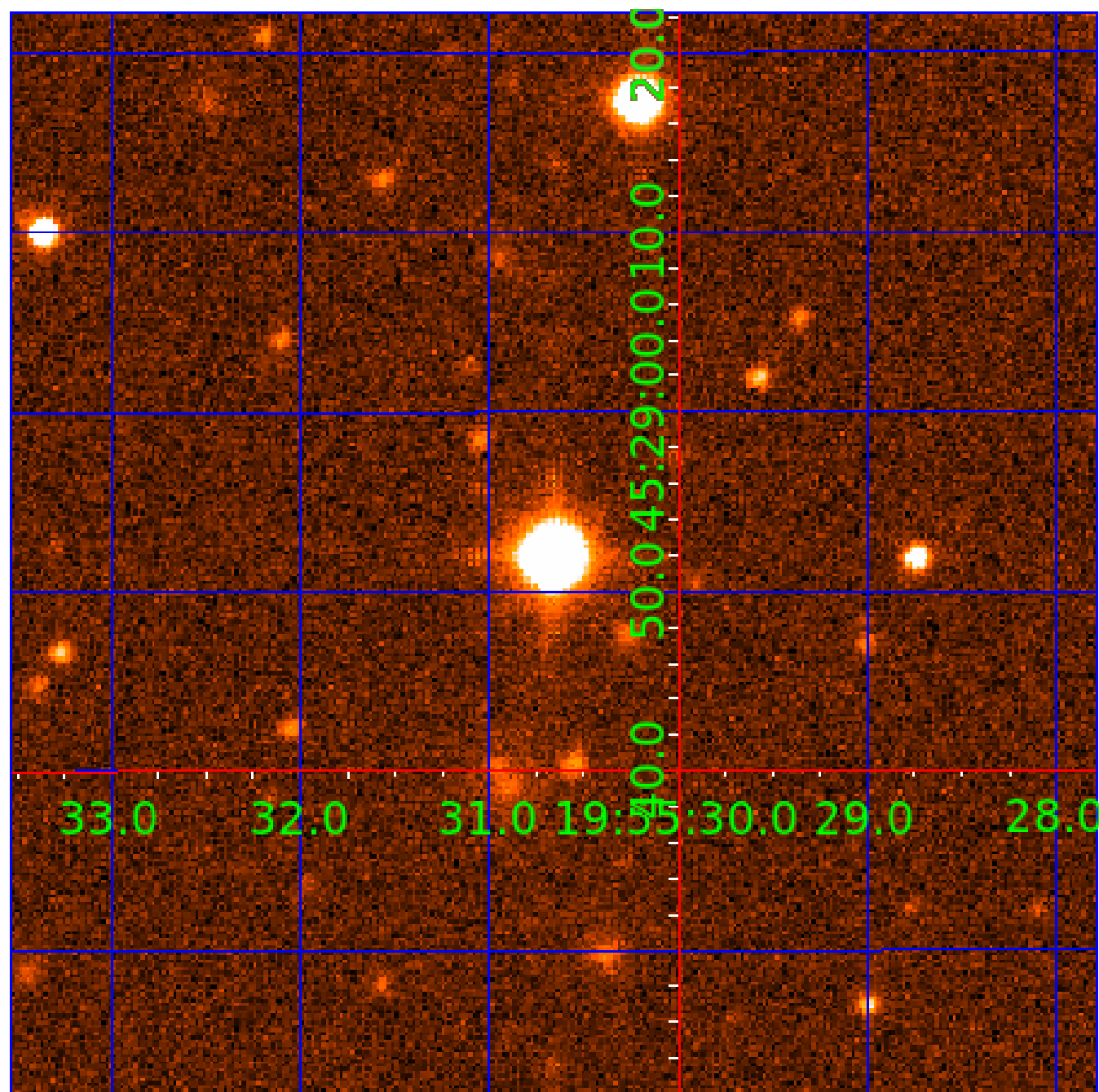


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 009112301

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})
009112301-01	OBS	No	4.126070	135.062943	39.6	14.415	8.2	7.5	3.52	5747	2.35	3636.16
009112301-02	OBS	No	28.883794	155.029549	120.8	64.829	8.1	6.5	3.52	5747	4.70	271.53
009112301-03	OBS	No	238.733477	251.705228	335.0	8.610	7.4	7.3	3.52	5747	6.95	16.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009112301-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009112301-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST
009112301-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

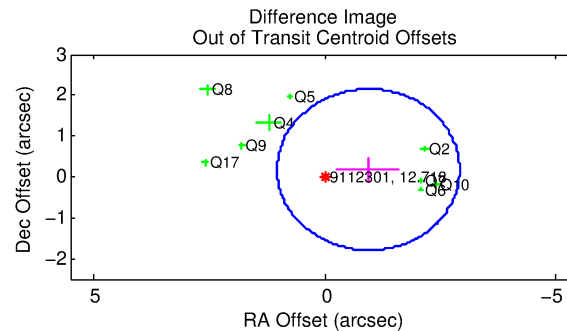
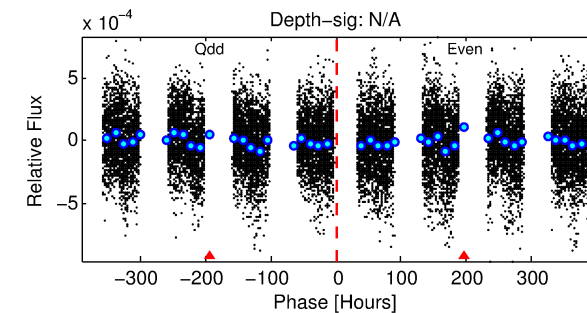
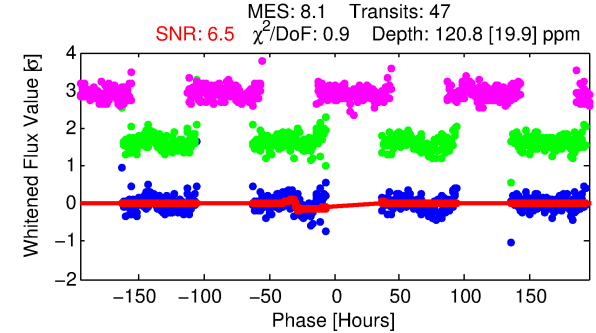
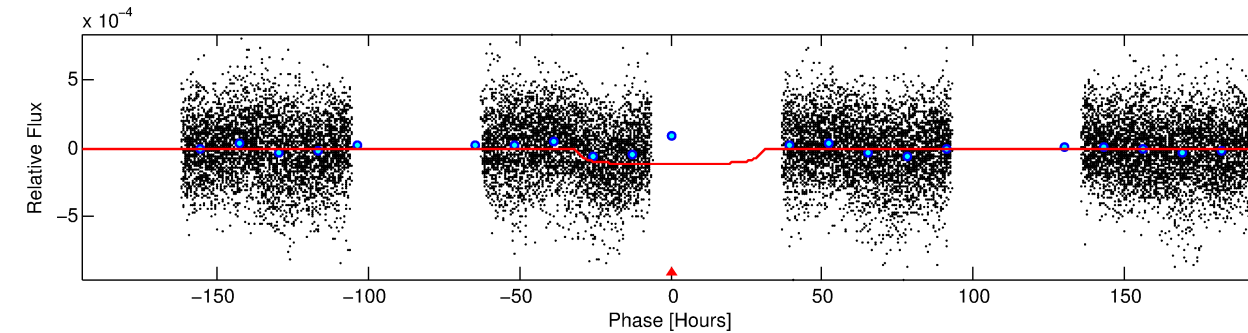
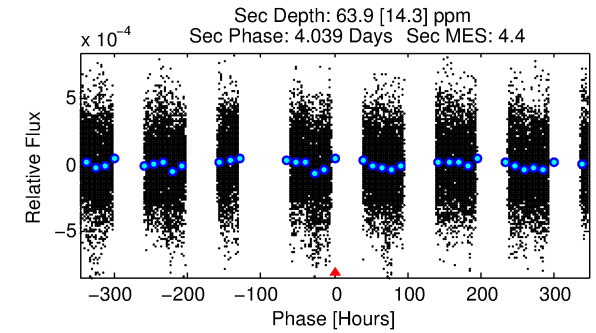
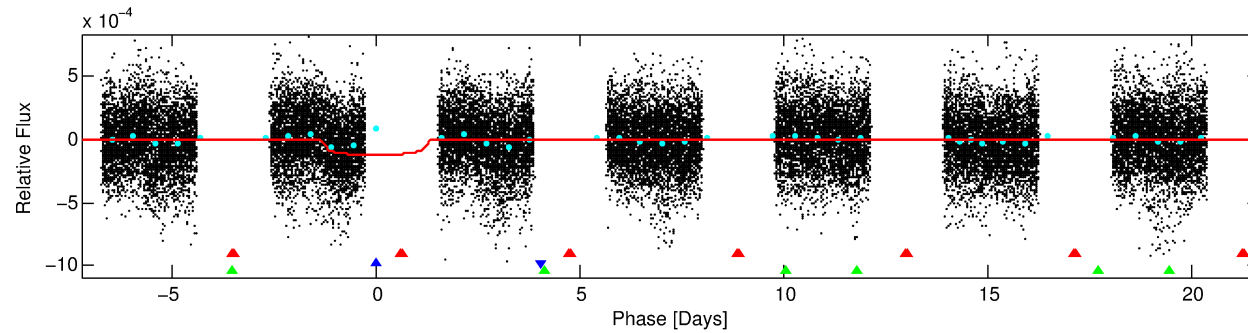
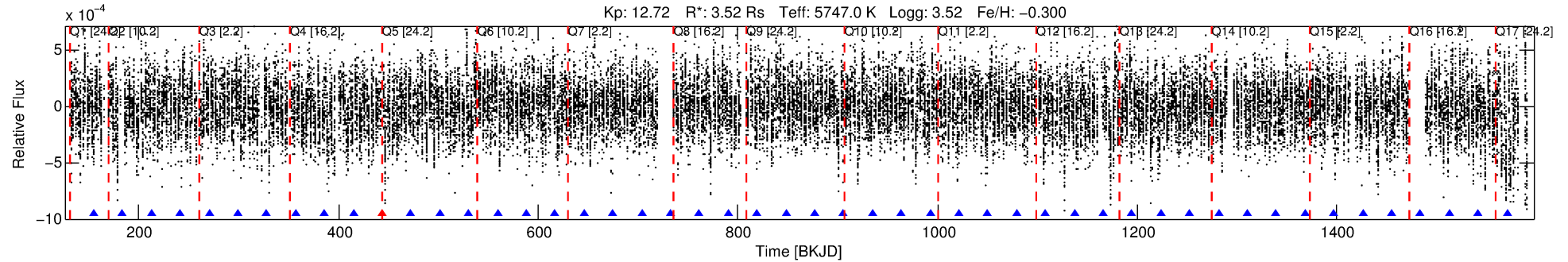
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009112301-02

No Significant Match Found

DV One-Page Summary

KIC: 9112301 Candidate: 2 of 3 Period: 28.884 d



DV Fit Results:

Period = 28.88379 [0.00216] d
Epoch = 155.0295 [0.1682] BKJD
Rp/R* = 0.0122 [0.0012]
a/R* = 1.69 [0.22]
b = 0.93 [0.03]
Seff = 271.53 [168.91]
Teq = 1035 [161] K
Rp = 4.70 [1.99] Re
a = 0.2109 [0.0805] AU
Ag = 70.91 [47.20] [1.48σ]
Teffp = 4644 [399] K [8.39σ]

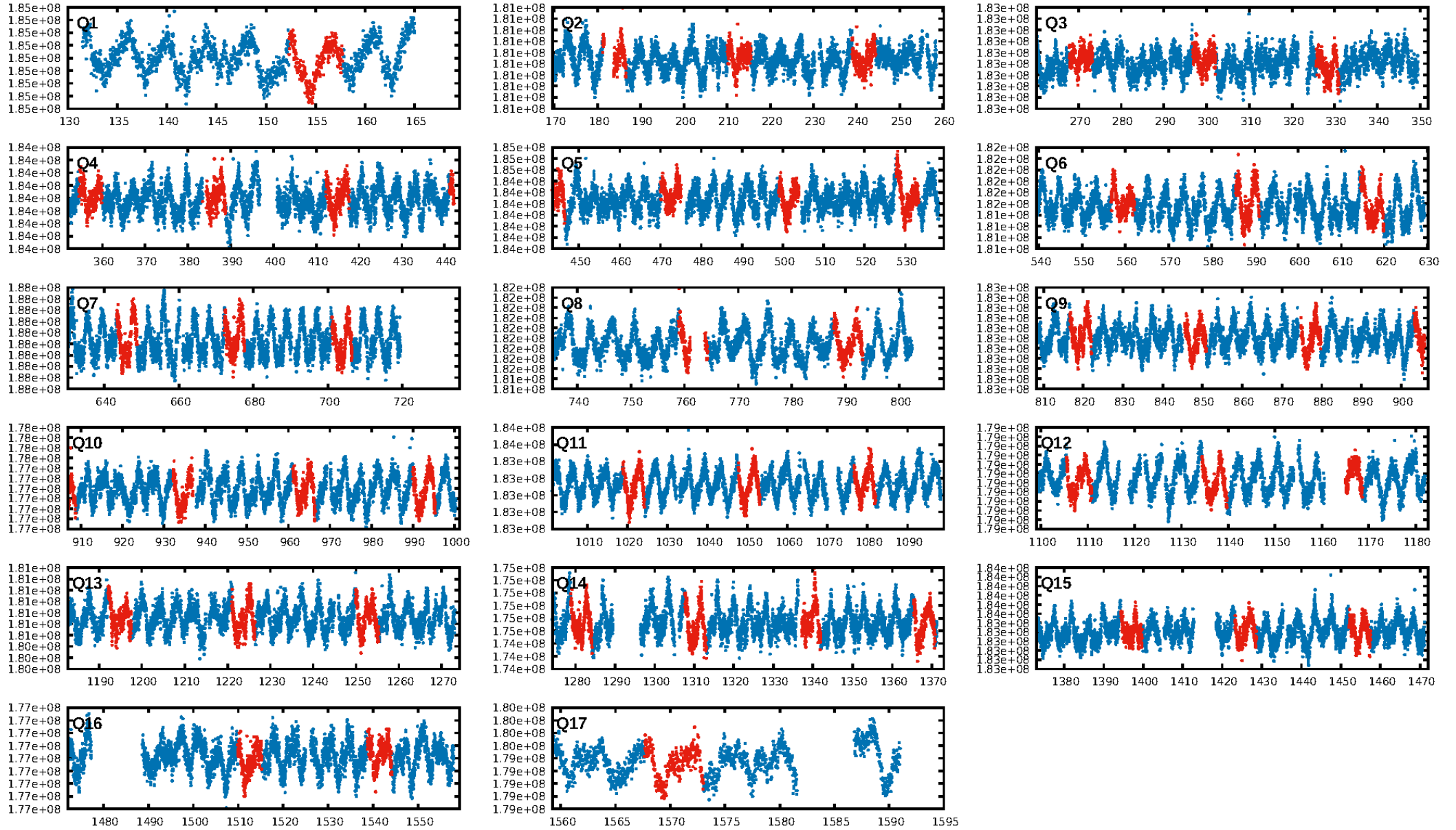
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.95σ]
LongPeriod-sig: 100.0% [77.01σ]
ModelChiSquare2-sig: 92.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.62e-09
RollingBand-fgt: 0.98 [44/45]
GhostDiagnostic-chr: -0.04727
Centroid-sig: 3.5%
Centroid-so: 0.409 arcsec [1.29σ]
OotOffset-rm: 0.964 arcsec [1.47σ]
KicOffset-rm: 0.977 arcsec [1.47σ]
OotOffset-st: 3/1/2/3 [9]
KicOffset-st: 3/1/2/3 [9]
DiffImageQuality-fgm: 0.89 [8/9]
DiffImageOverlap-fno: 0.00 [0/15]

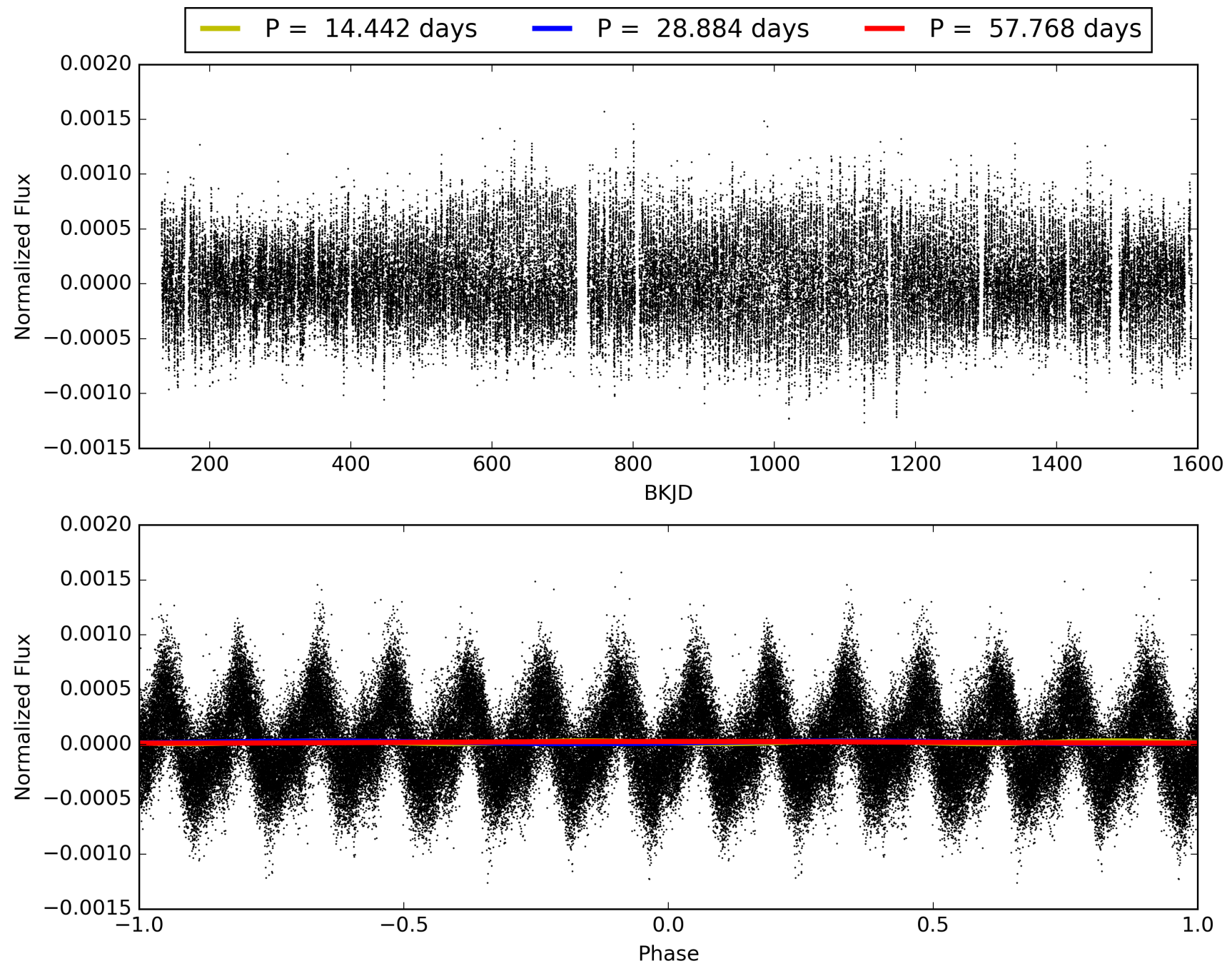
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:38:12 Z

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

TCE 009112301-02, PDC Light Curves

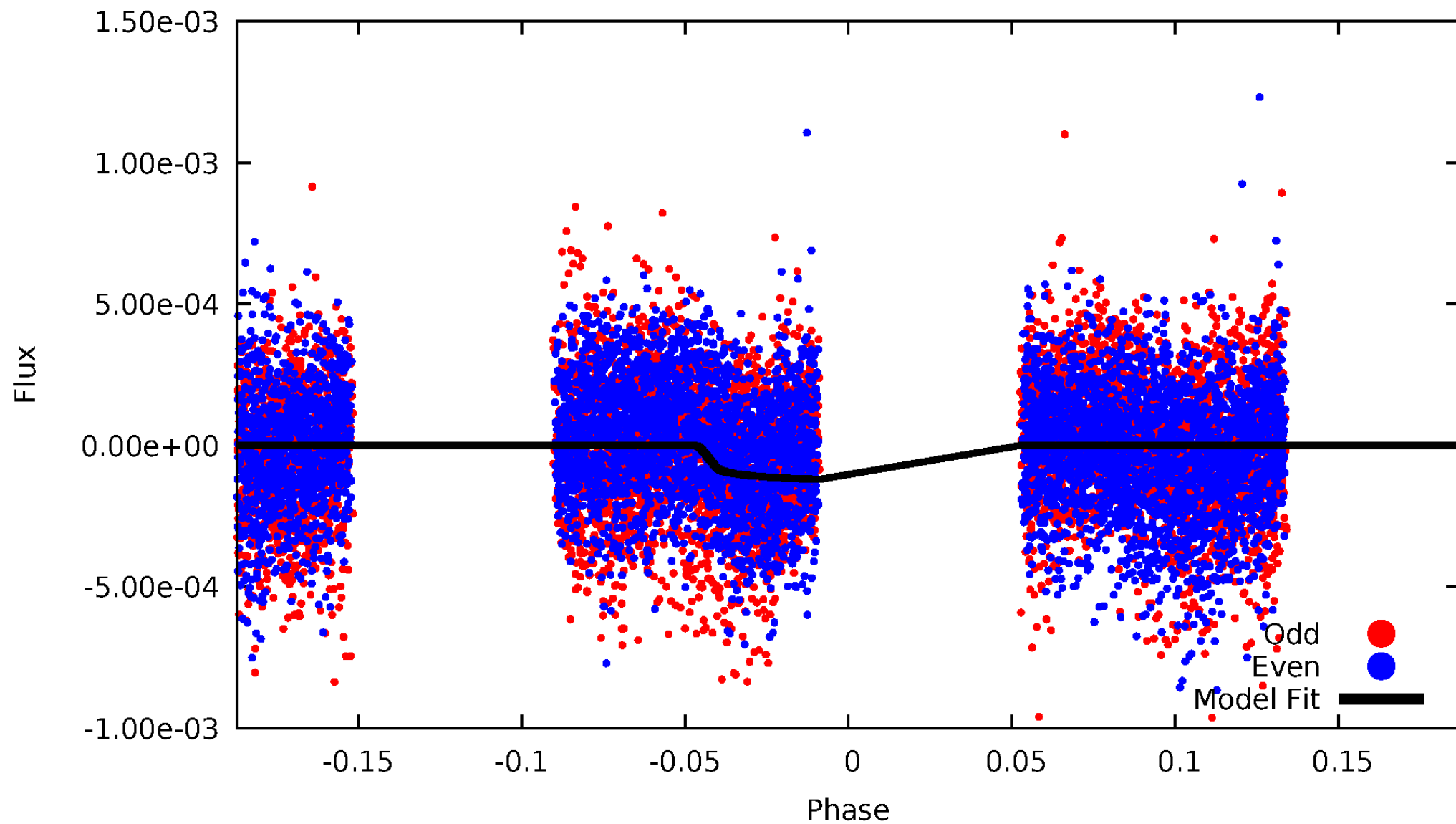


TCE 009112301-02



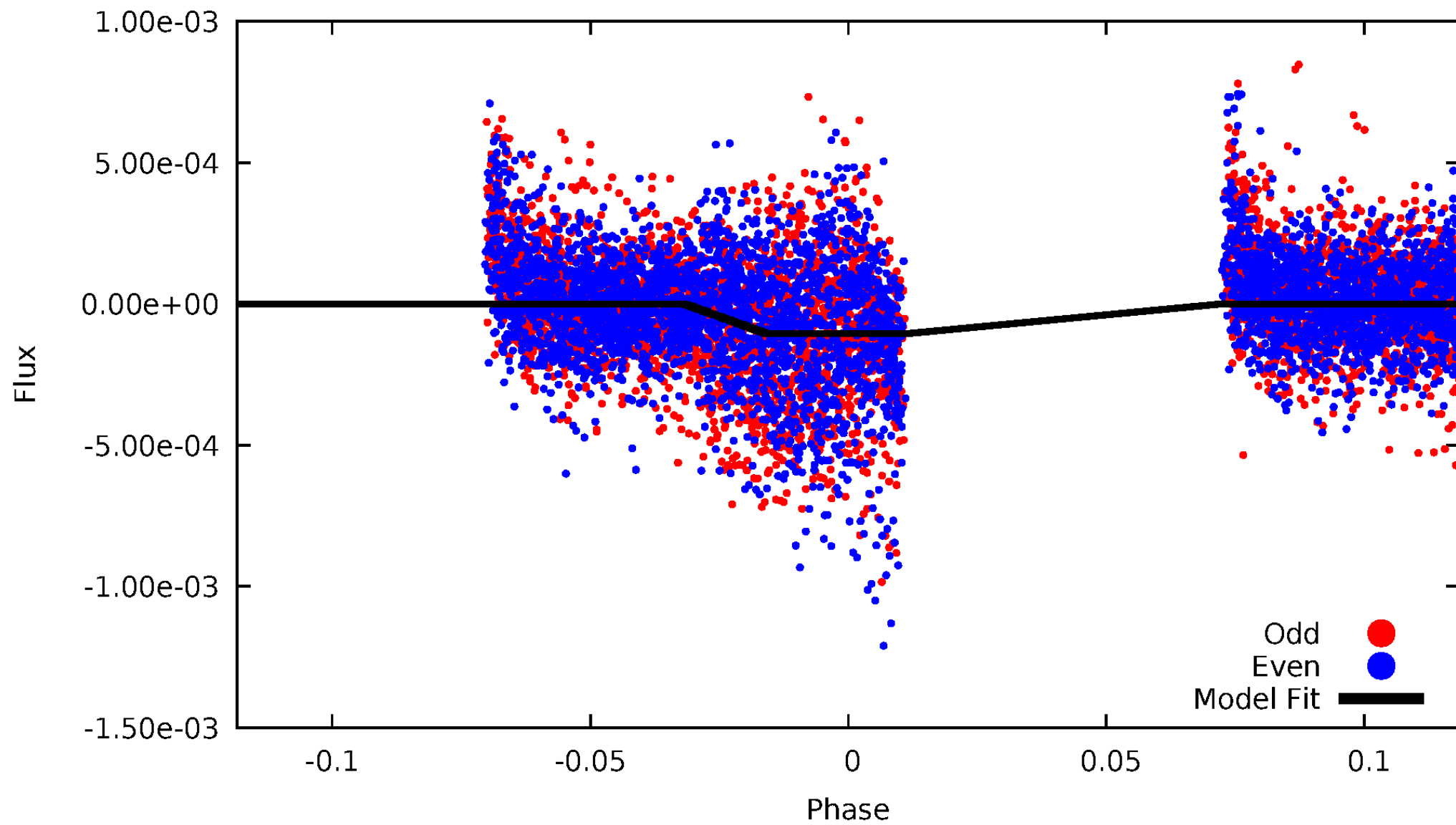
DV Odd/Even

TCE 009112301-02



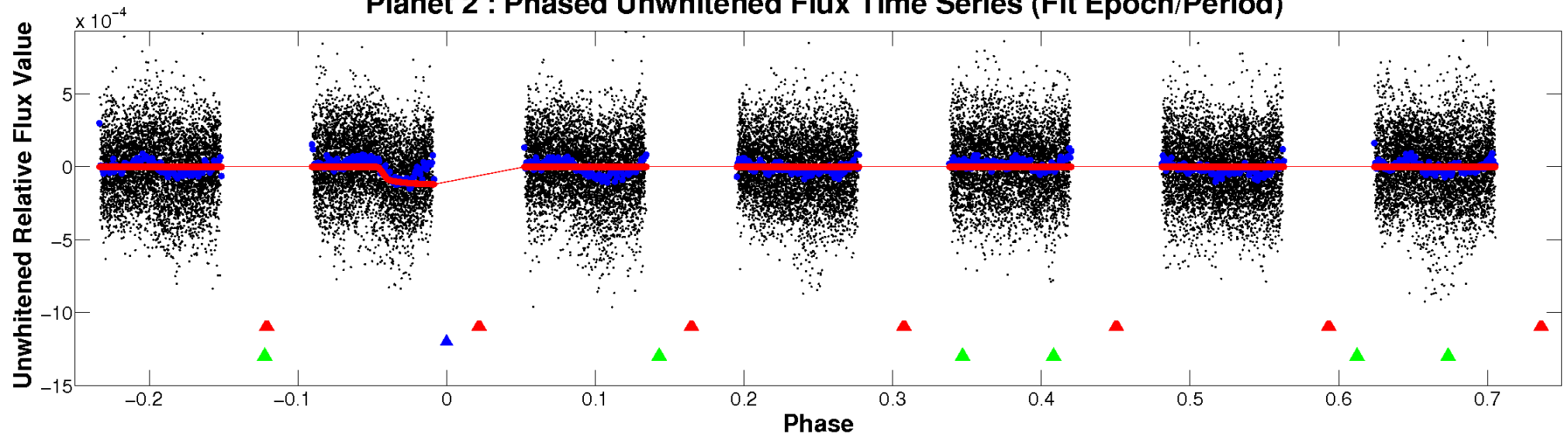
ALT Odd/Even

TCE 009112301-02

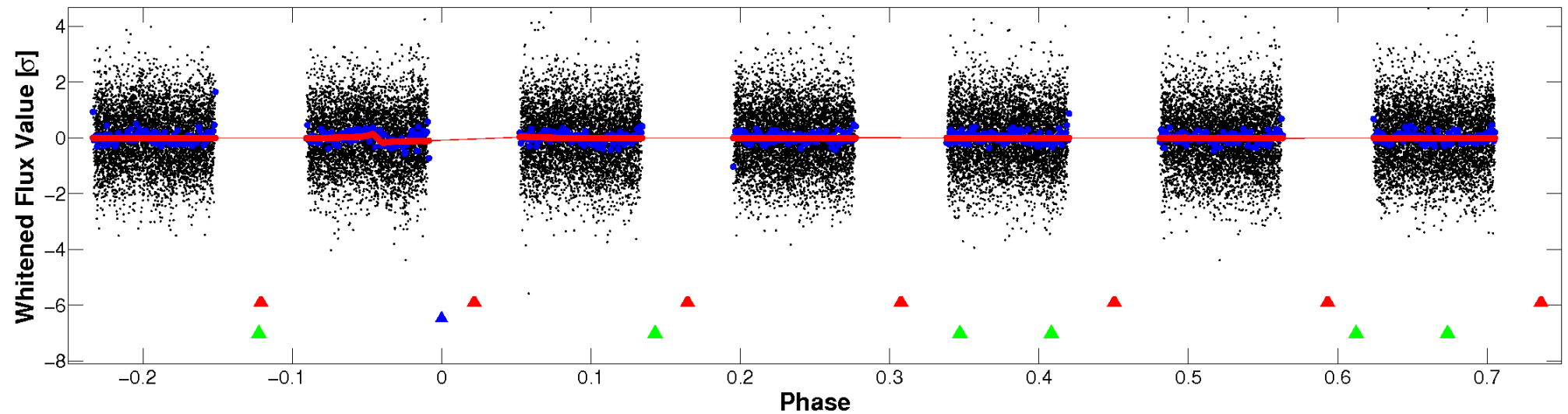


Non-Whitened Vs. Whitened Light Curve

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

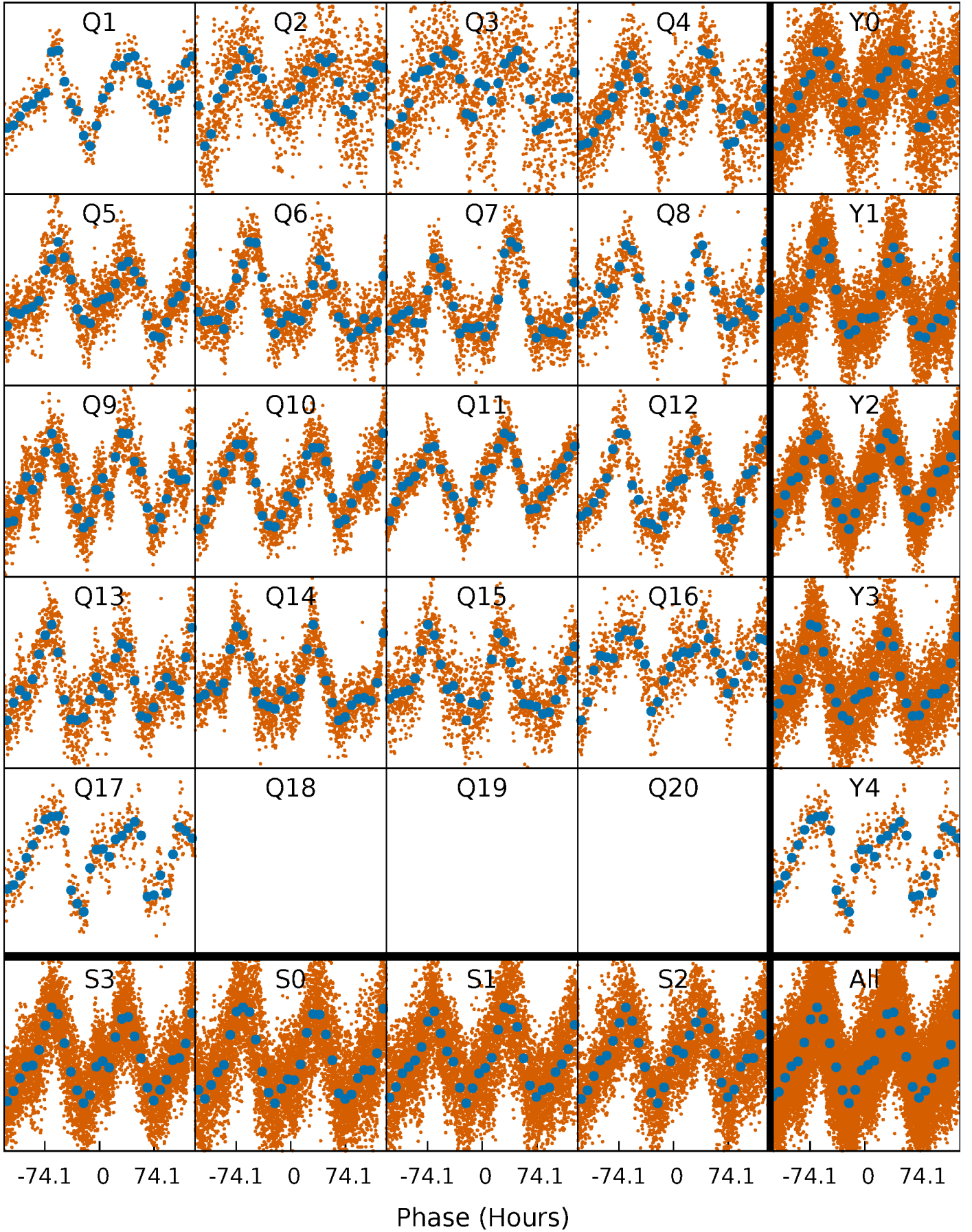


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



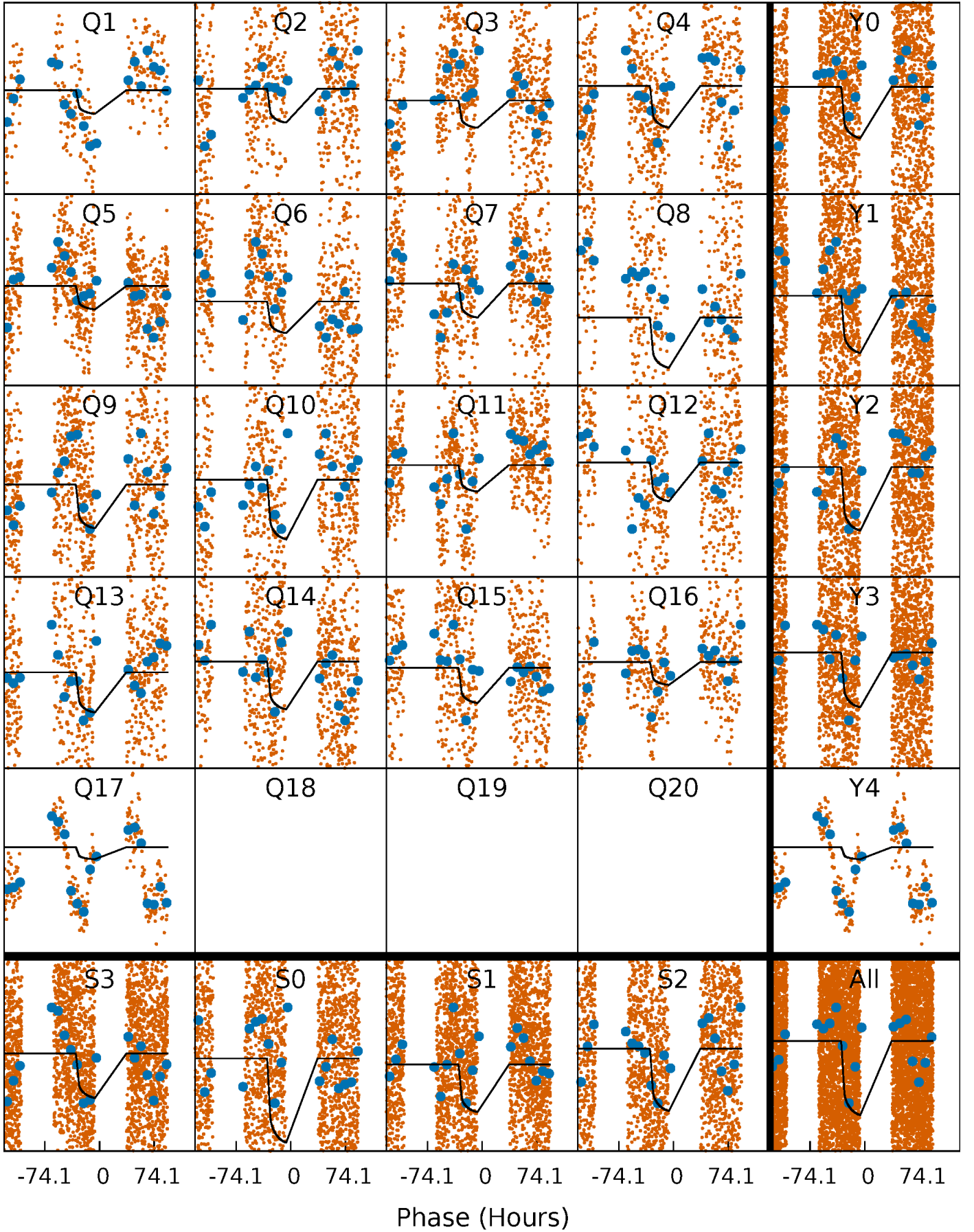
PDC Quarter-Phased Transit Curves

TCE 009112301-02 $P = 28.883794$ Days $T_0 = 155.029549$ (BKJD)



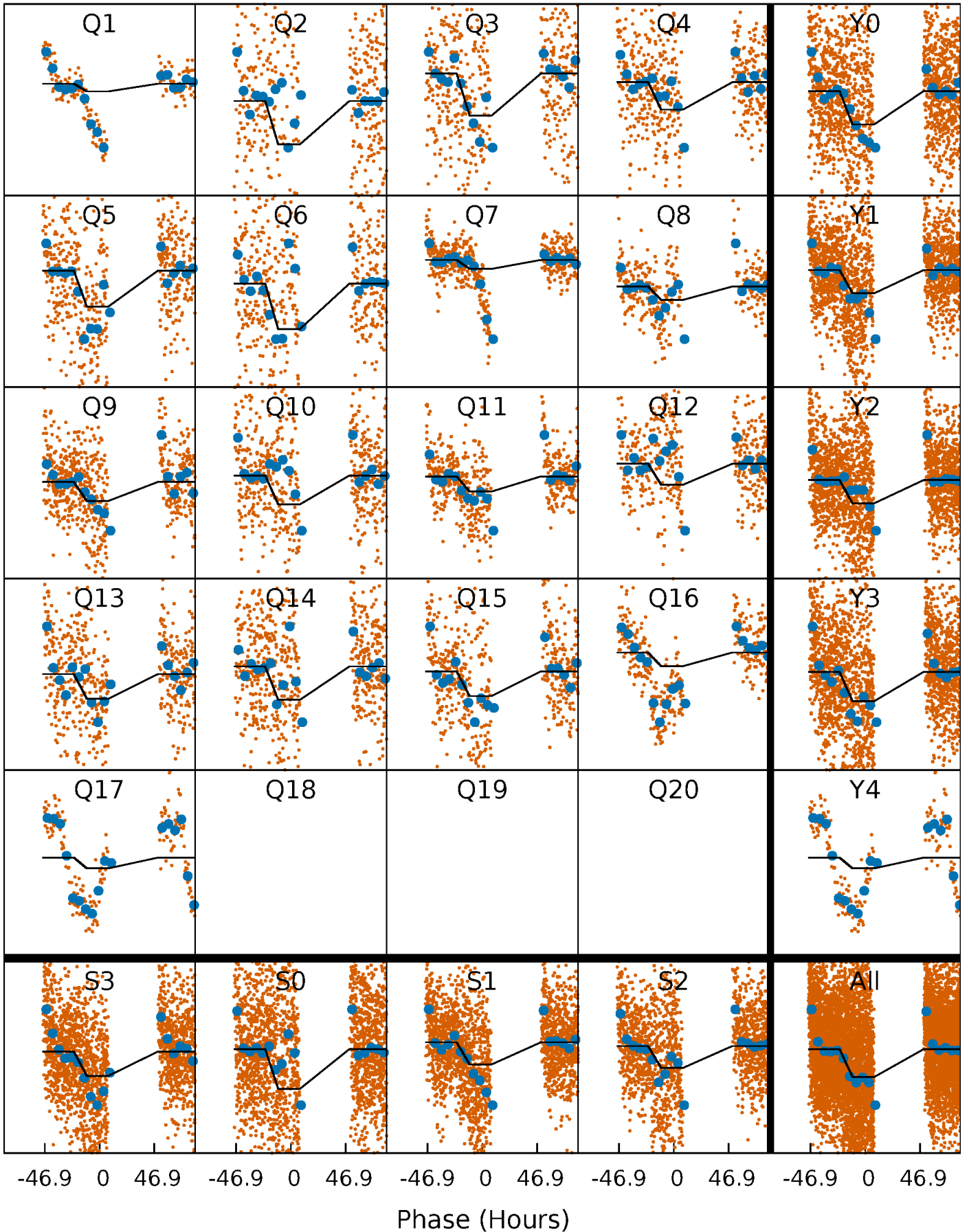
DV Quarter-Phased Transit Curves

TCE 009112301-02 P= 28.883794 Days $T_0=155.029549$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

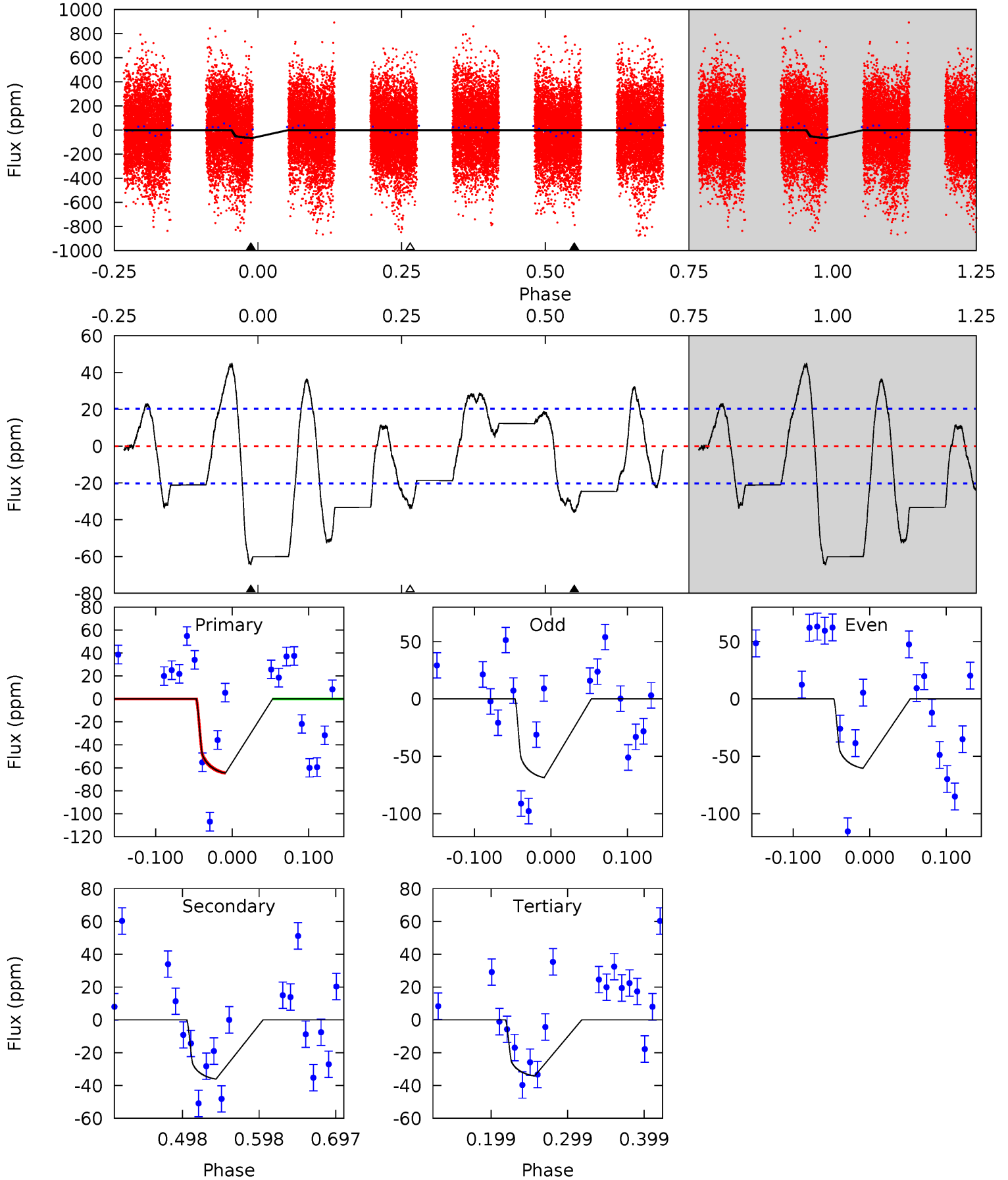
TCE 009112301-02 $P = 28.881372$ Days $T_0 = 154.513919$ (BKJD)



DV Model-Shift Uniqueness Test

009112301-02, P = 28.883794 Days, E = 126.145755 Days

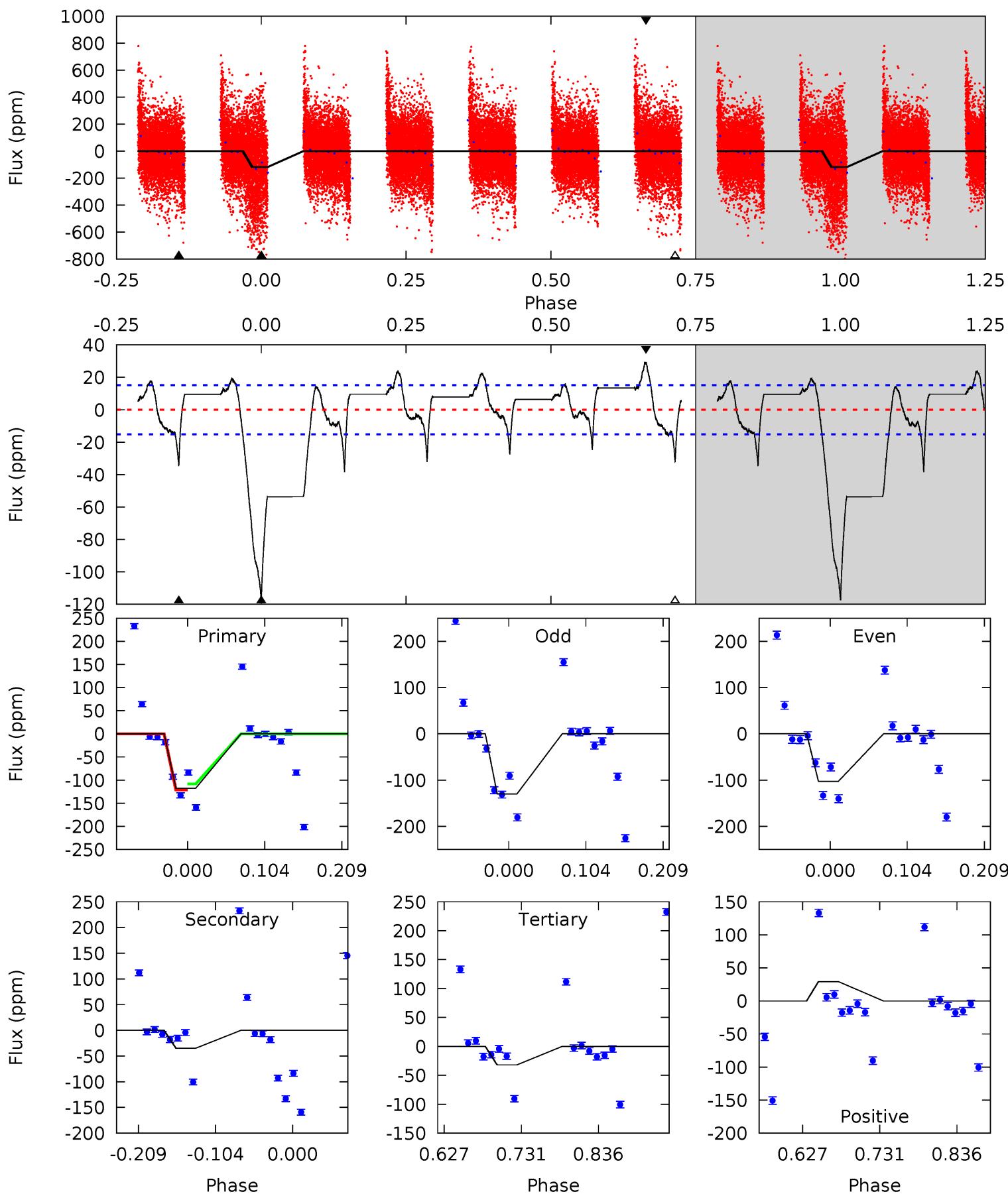
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.5	8.09	7.67	0	4.57	1.65	4.84	6.82	14.5	0.42	8.09	0.93	0	0.41	0



Alt Model-Shift Uniqueness Test

009112301-02, P = 28.881372 Days, E = 125.632547 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.4	10.4	9.62	8.81	4.56	1.62	3.76	25.7	26.5	0.83	1.64	4.03	1.09	0.20	1.57



Stellar Parameters For KIC 009112301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5747^{+207}_{-253}	$3.522^{+0.345}_{-0.138}$	$-0.300^{+0.300}_{-0.300}$	$3.516^{+0.780}_{-1.449}$	$1.502^{+0.203}_{-0.439}$	$0.049^{+0.132}_{-0.020}$
	+4%/-4%	+10%/-4%	+100%/-100%	+22%/-41%	+14%/-29%	+272%/-40%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009112301-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-36 ± 4	$4.50^{+0.84}_{-0.99}$	1417^{+111}_{-139}	4261^{+228}_{-227}	44^{+25}_{-13}
Alt.	-35 ± 3	$3.78^{+0.84}_{-0.82}$	1417^{+112}_{-136}	4498^{+272}_{-251}	58^{+35}_{-18}

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

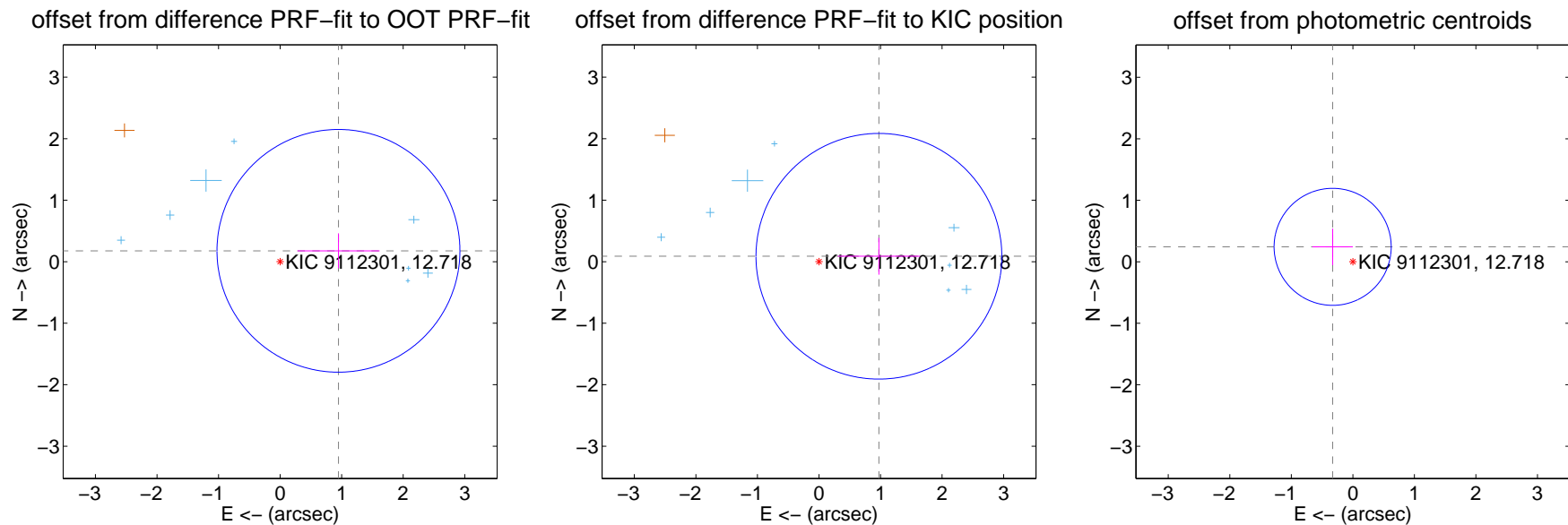
DV Centroid Data

Supplemental centroid analysis for 009112301-02. Kepler magnitude: 12.72. Transit SNR 6.46

There are 8 quarters with good PRF difference image offsets

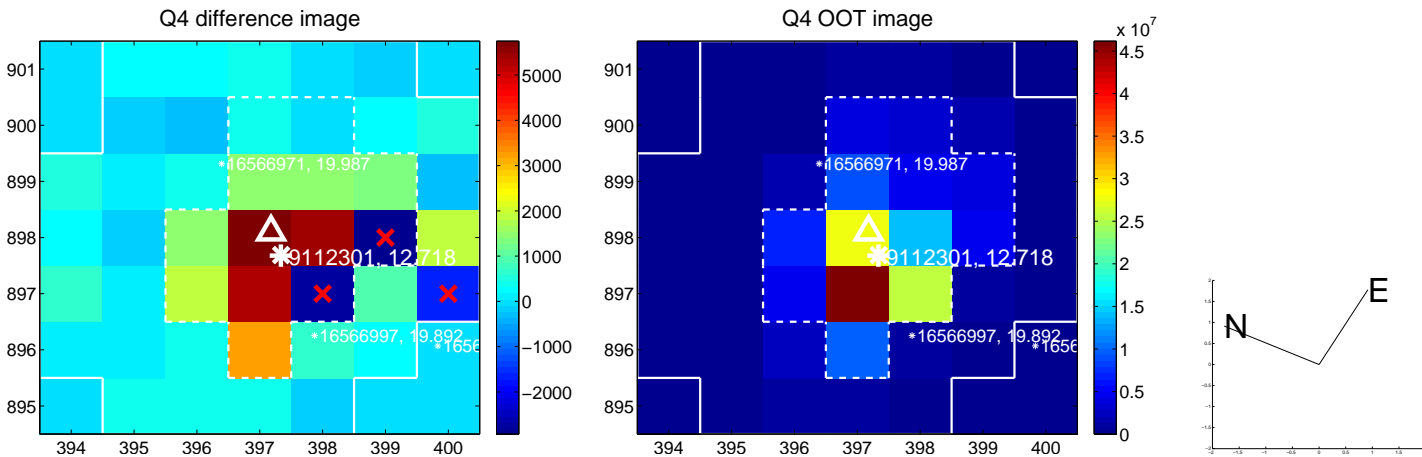
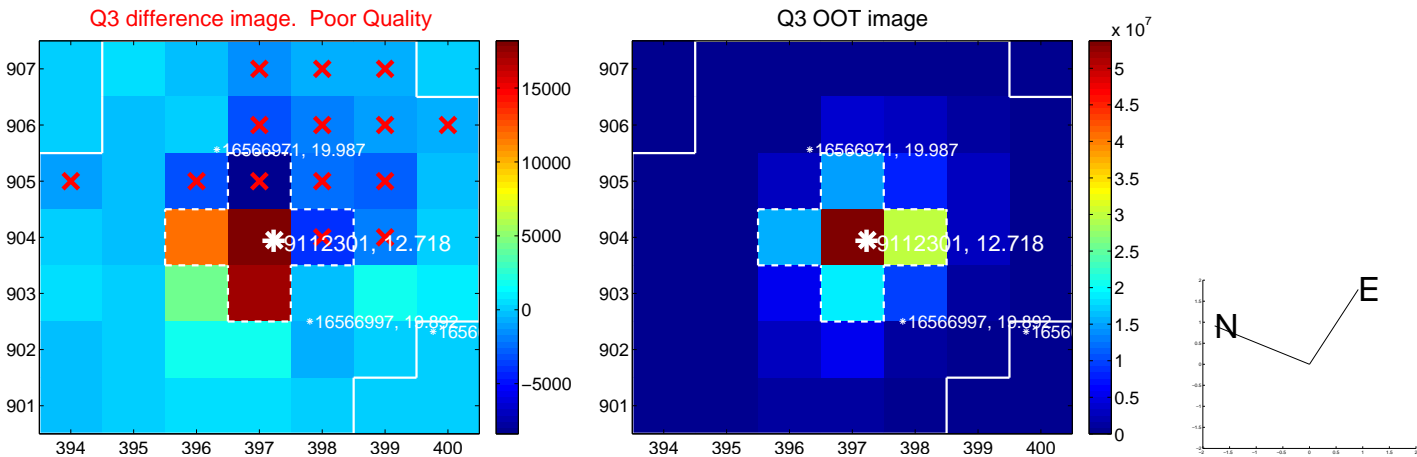
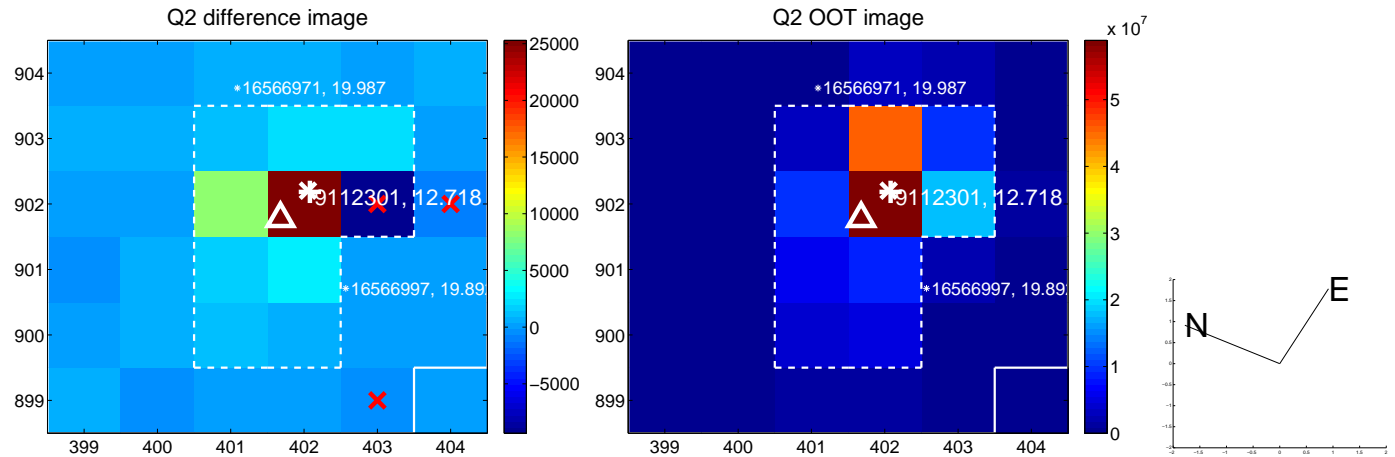
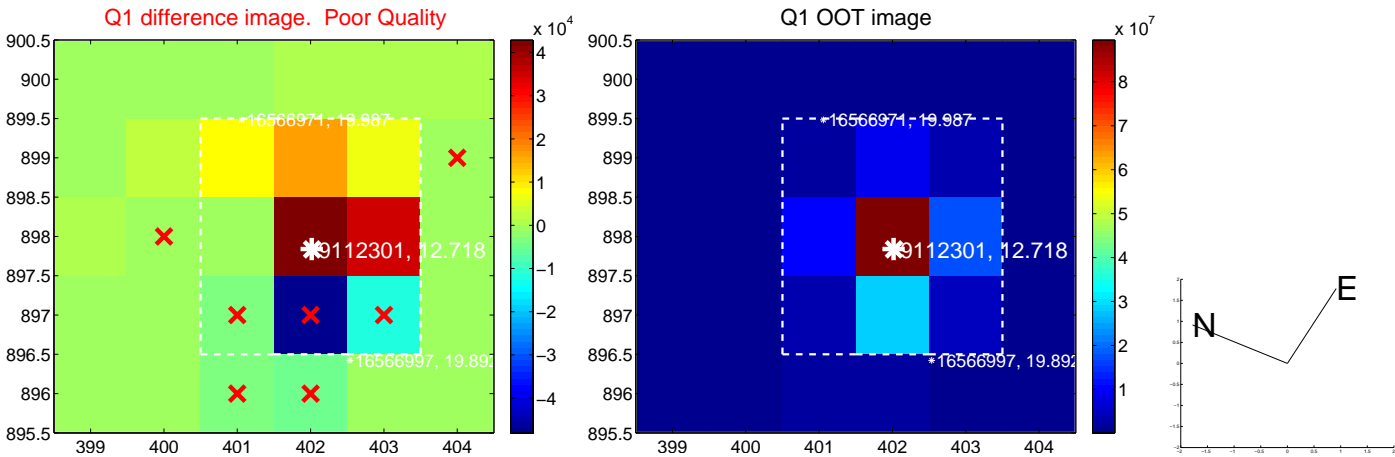
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.964 ± 0.658	1.47	-0.948 ± 0.667	0.177 ± 0.284
PRF-fit source offset from KIC position	0.977 ± 0.666	1.47	-0.973 ± 0.668	0.088 ± 0.300
photometric centroid source offset	0.41 ± 0.32	1.29	0.33 ± 0.33	0.24 ± 0.30

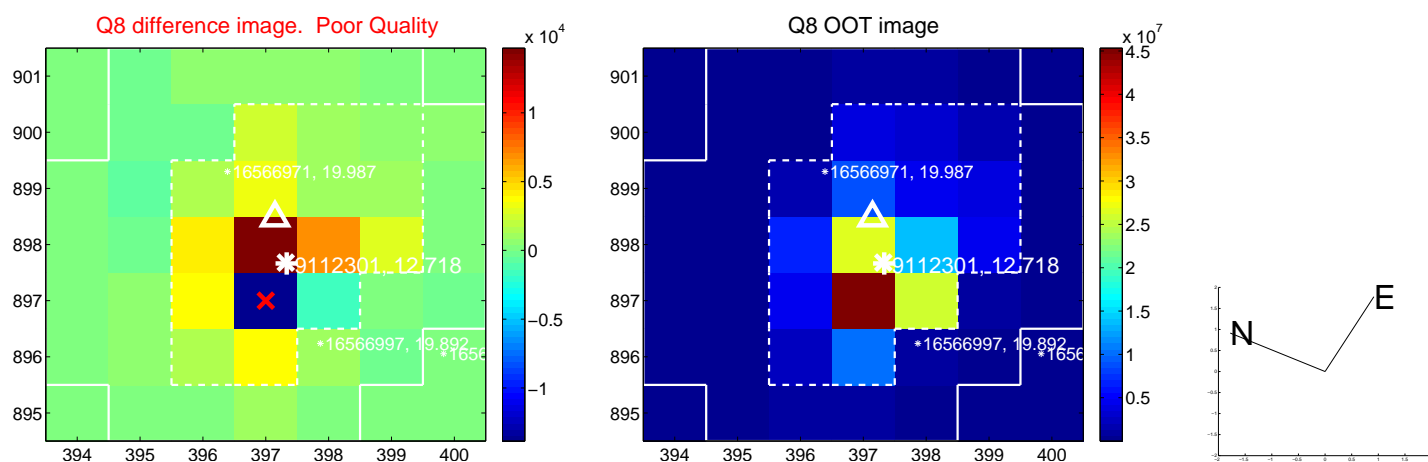
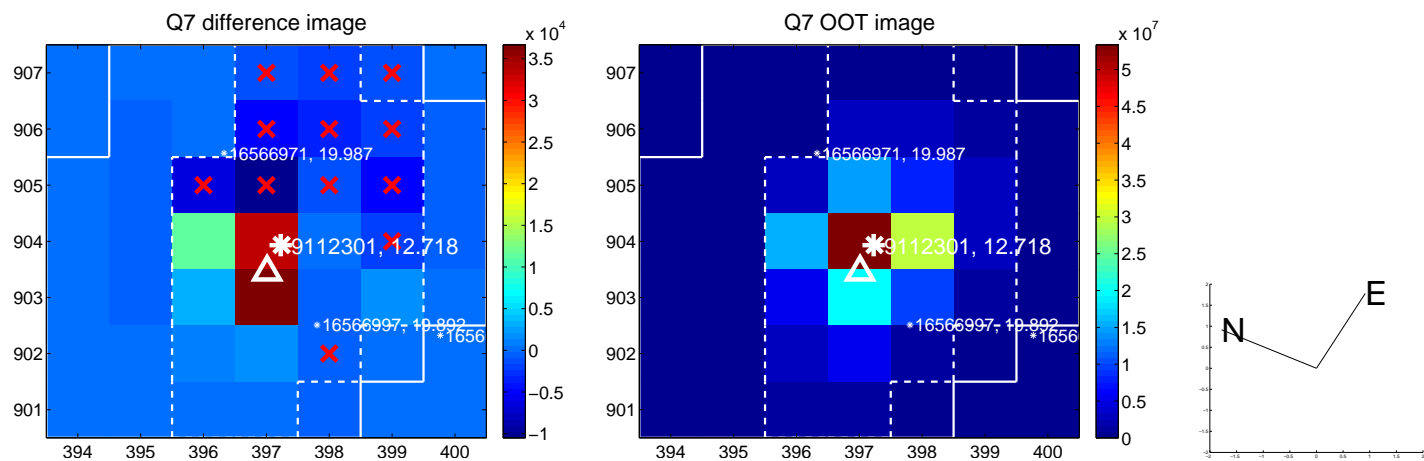
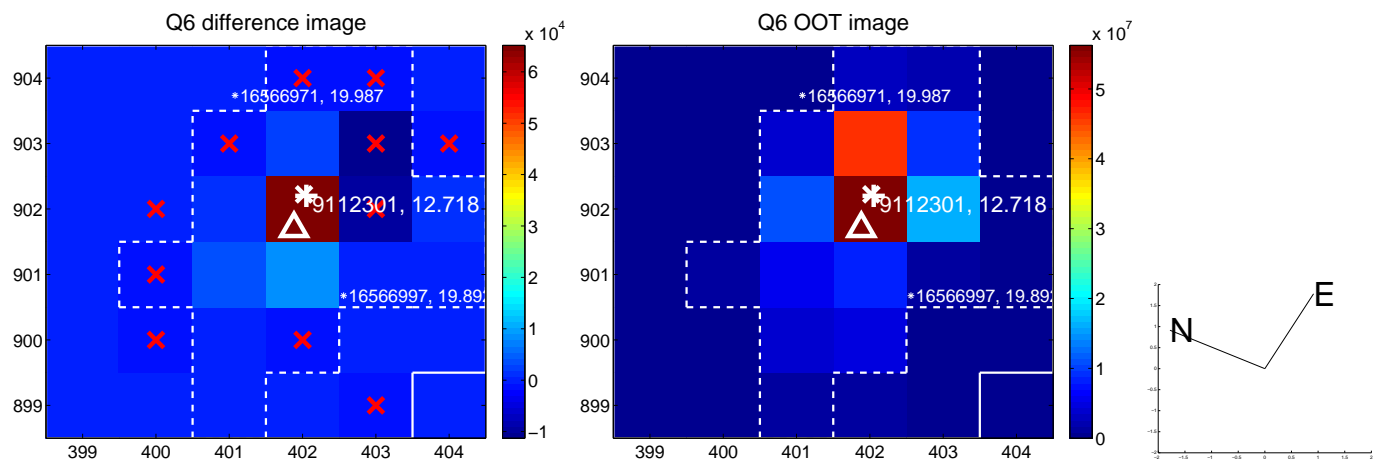
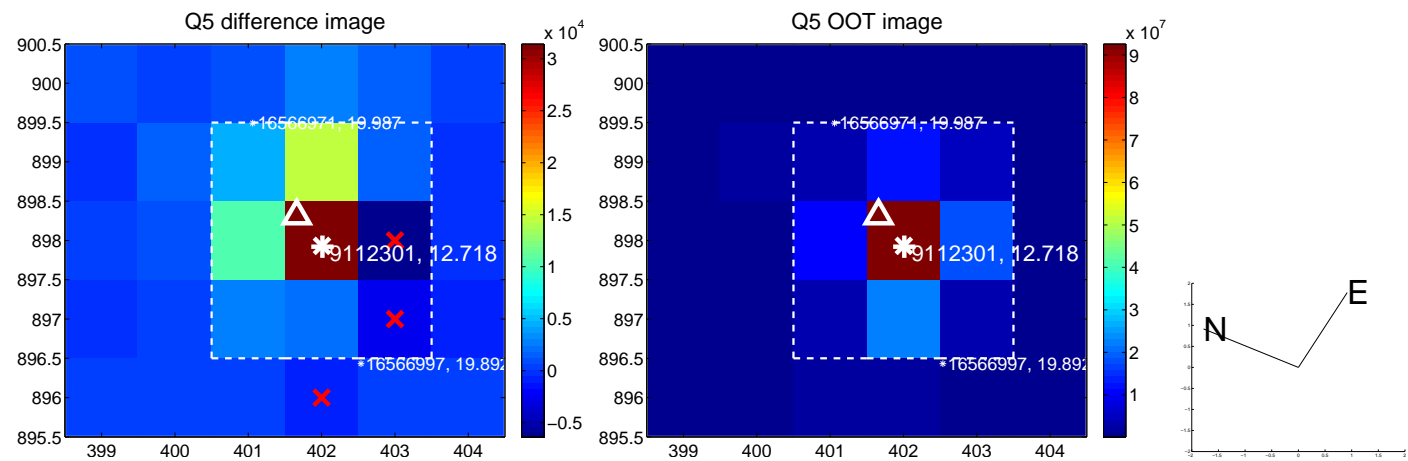


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

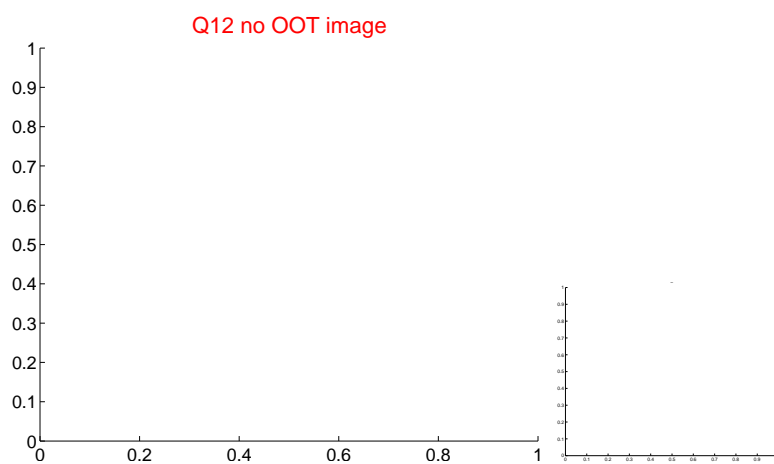
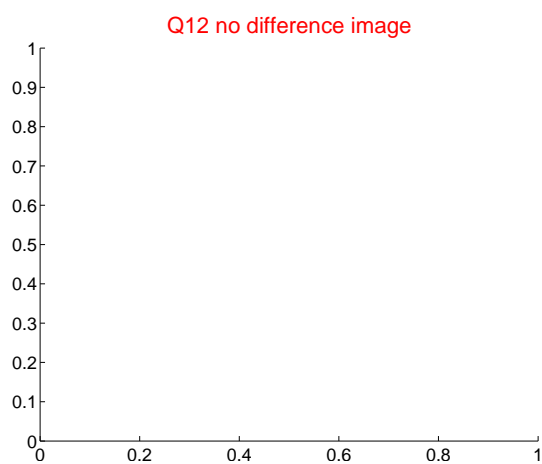
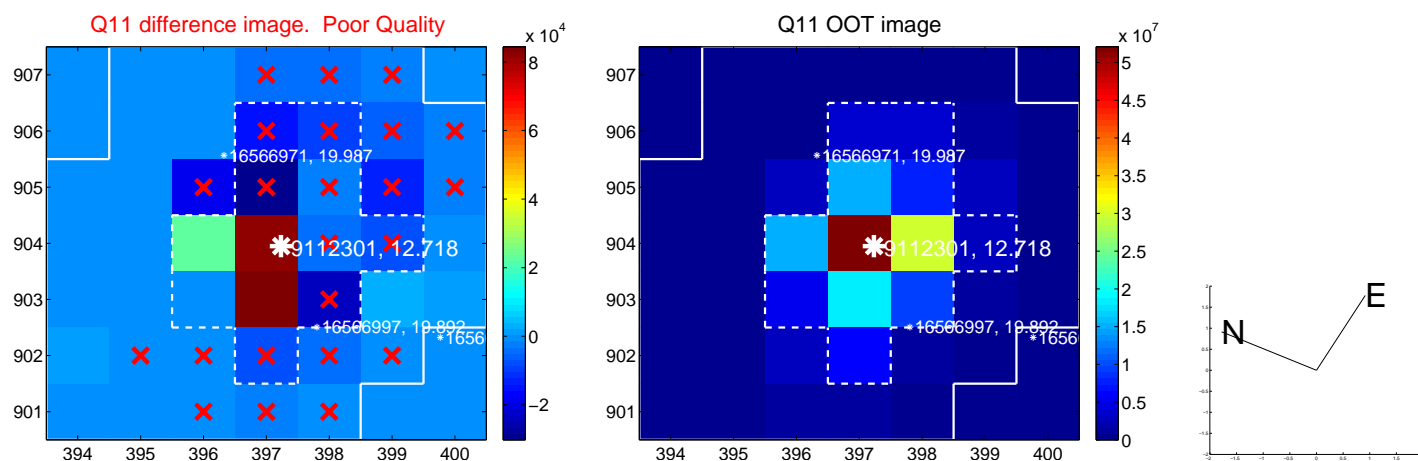
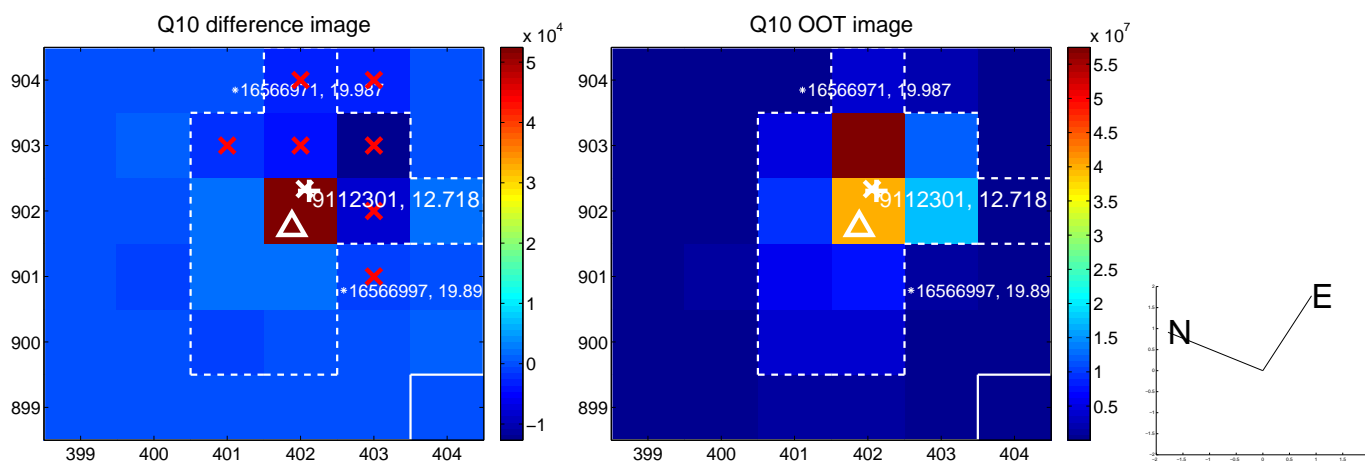
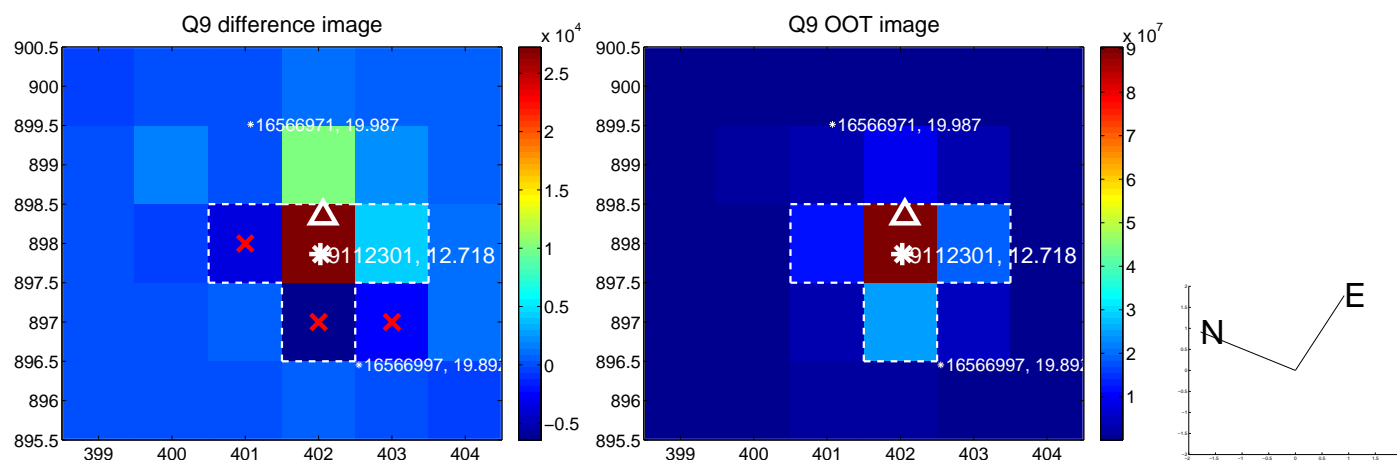
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



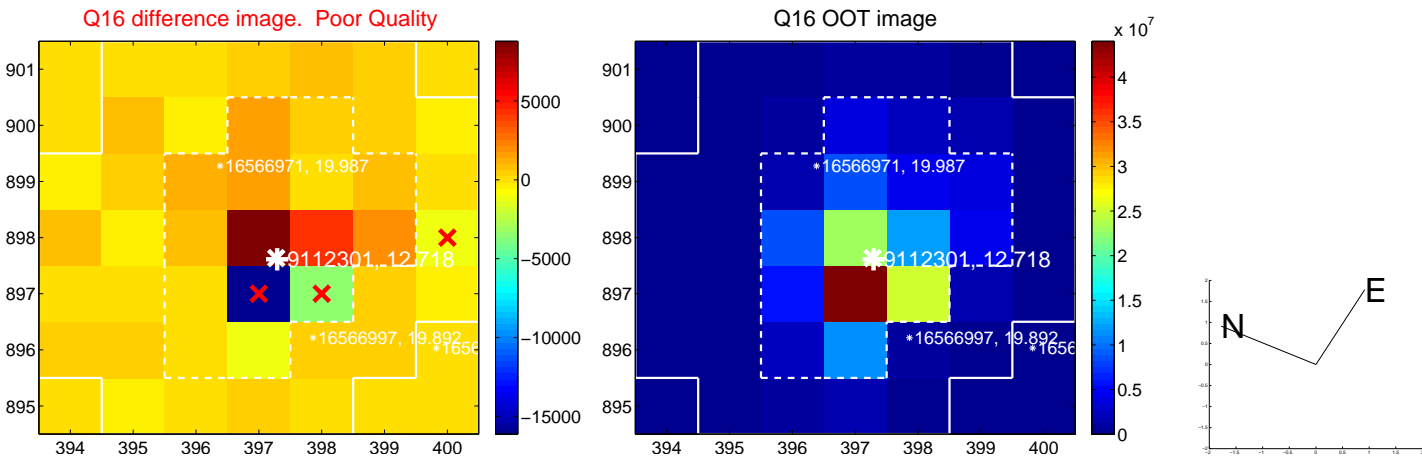
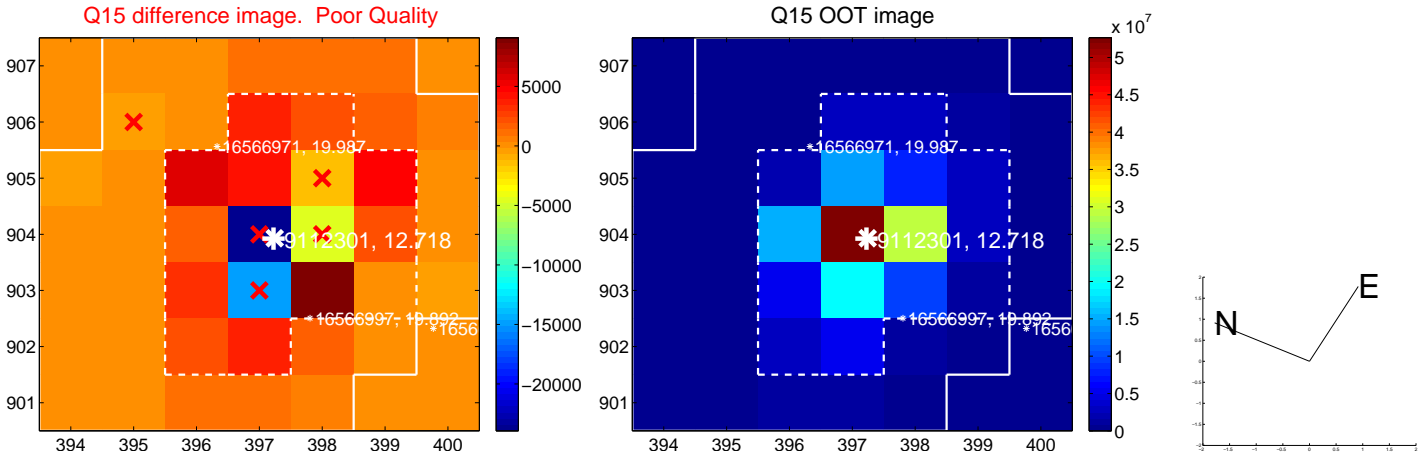
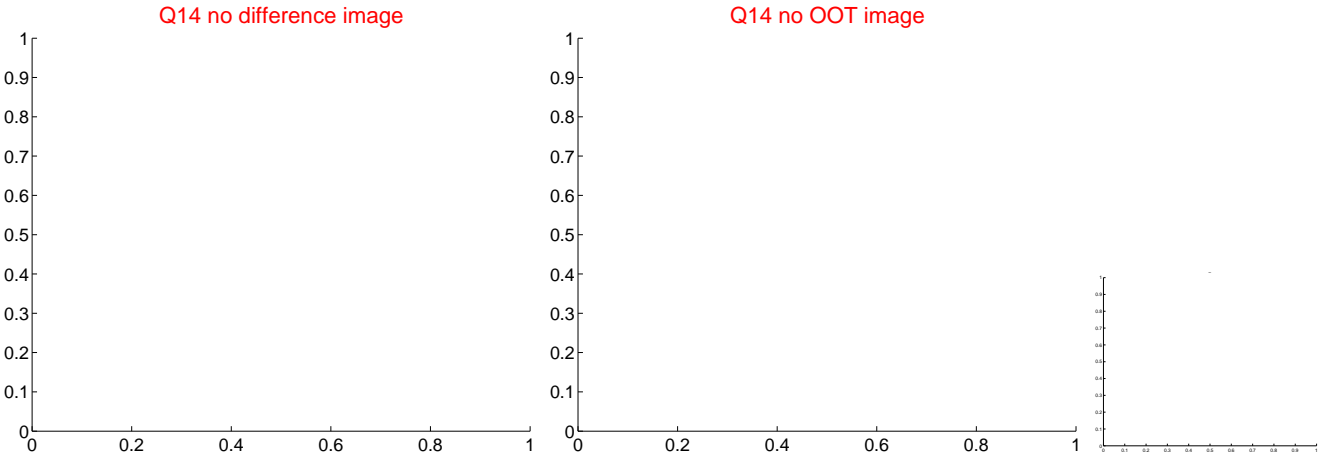
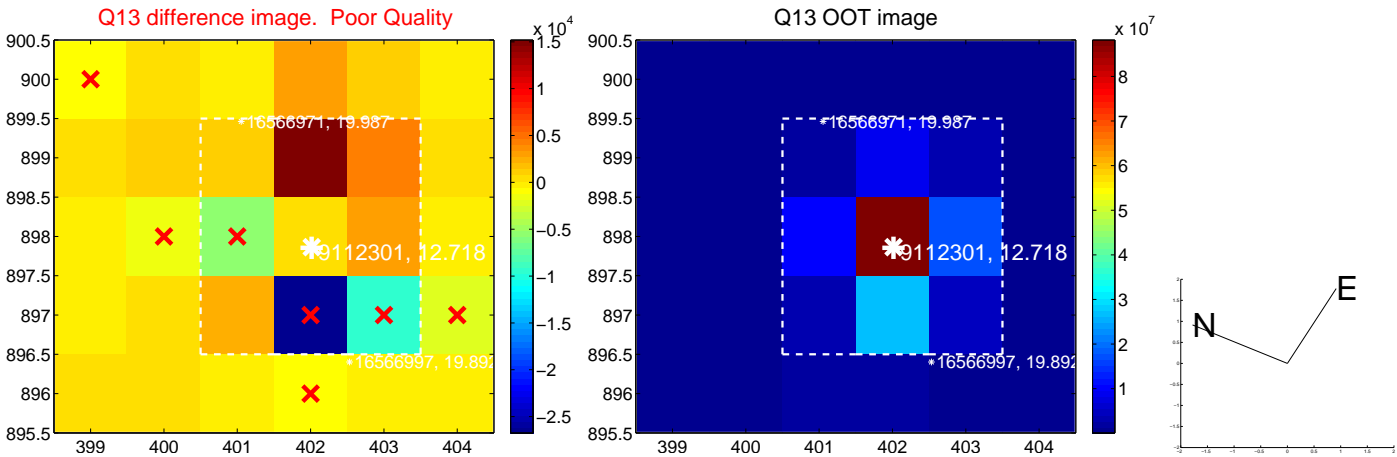
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



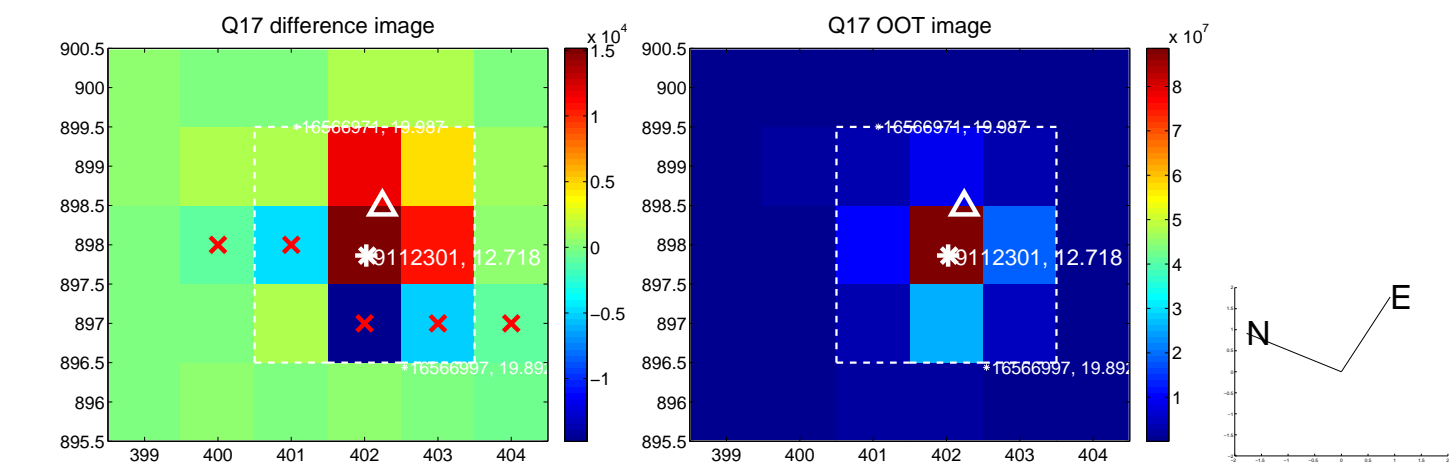
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



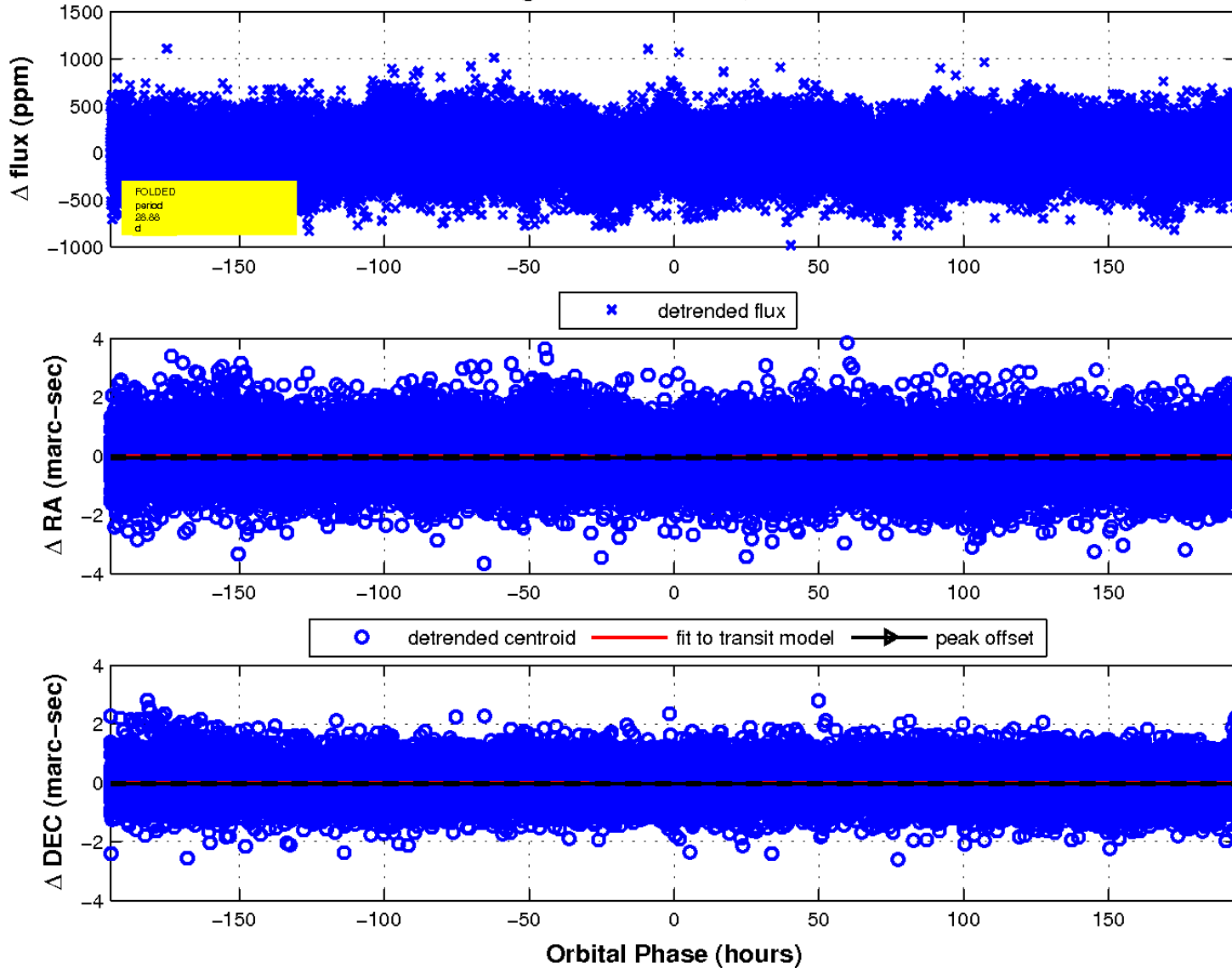
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

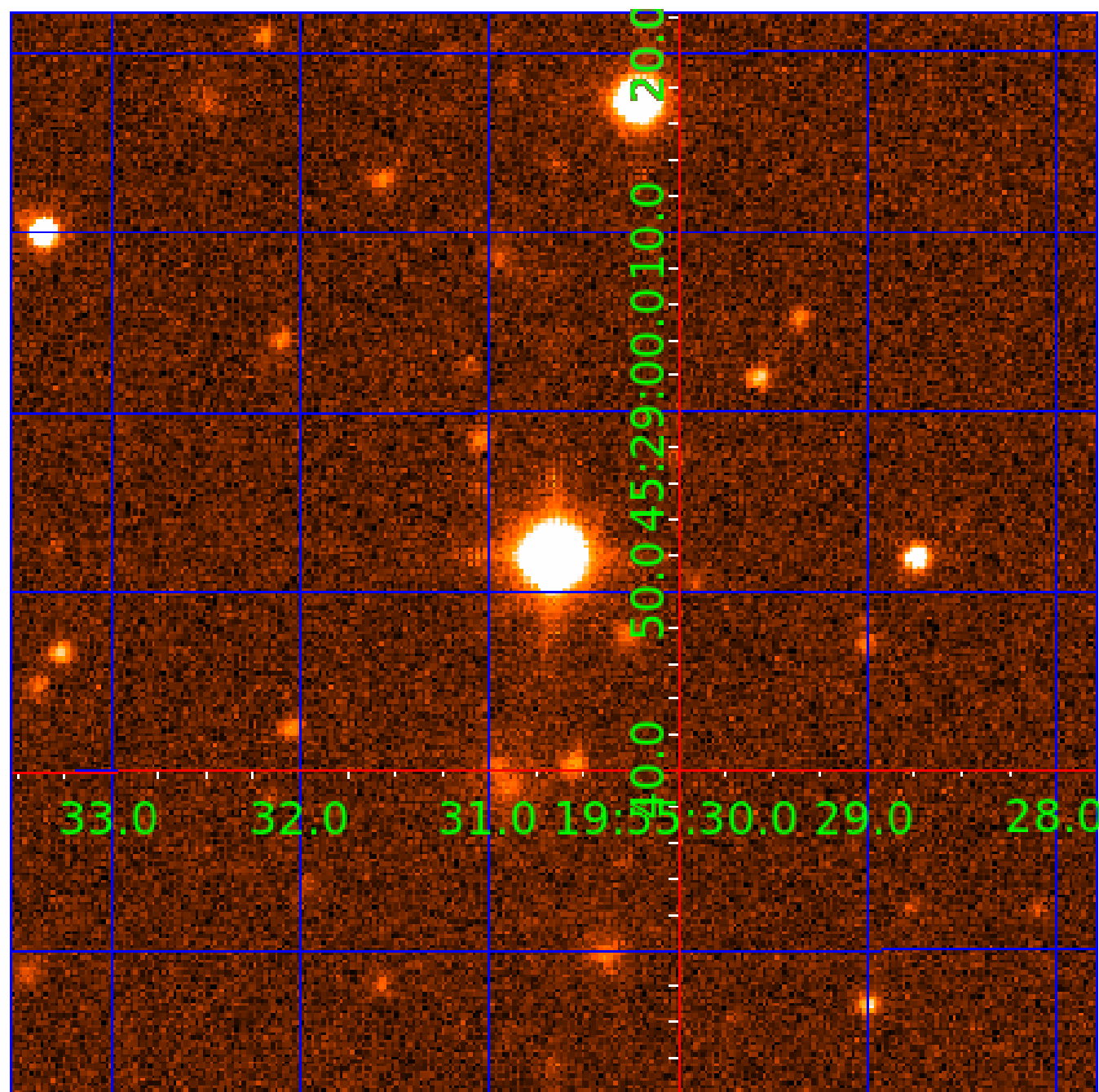


fluxWeightedCentroids, Planet 2 of 3



UKIRT Image

Declination



KIC 009112301

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})
009112301-01	OBS	No	4.126070	135.062943	39.6	14.415	8.2	7.5	3.52	5747	2.35	3636.16
009112301-02	OBS	No	28.883794	155.029549	120.8	64.829	8.1	6.5	3.52	5747	4.70	271.53
009112301-03	OBS	No	238.733477	251.705228	335.0	8.610	7.4	7.3	3.52	5747	6.95	16.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009112301-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV
009112301-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_ZUMA—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—SAME_NTL_PERIOD—HALO_GHOST
009112301-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

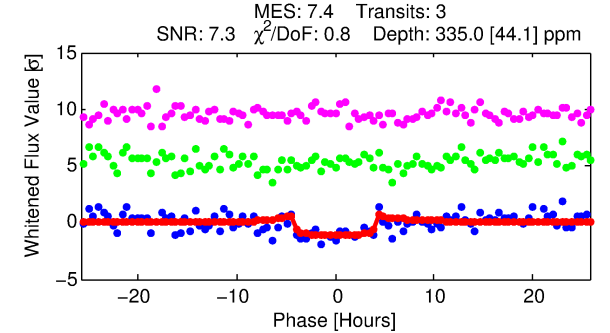
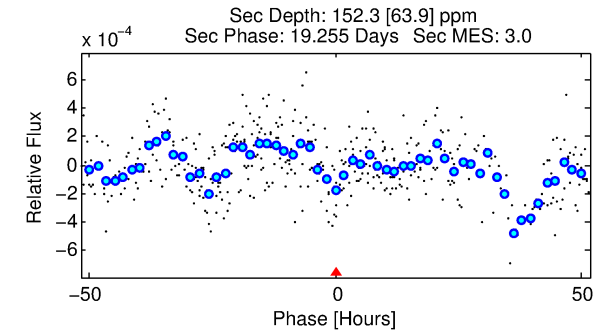
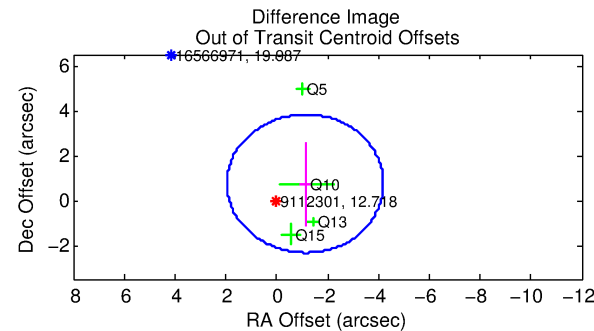
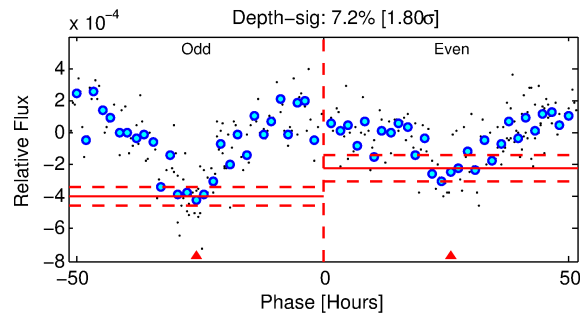
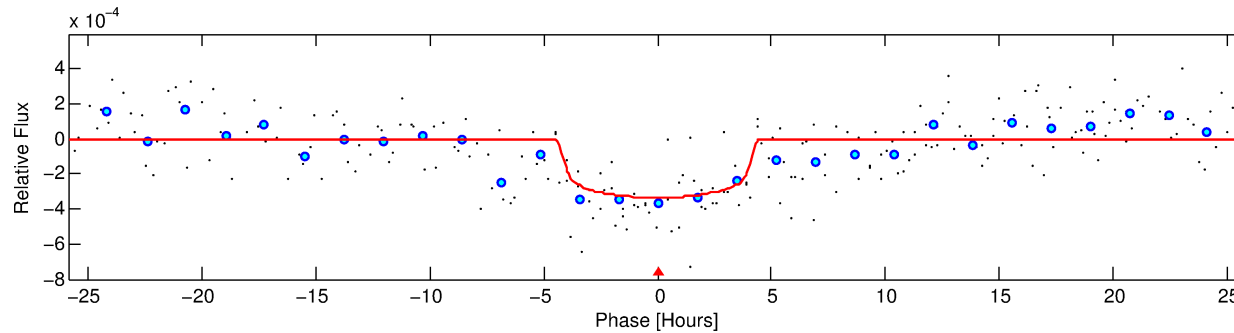
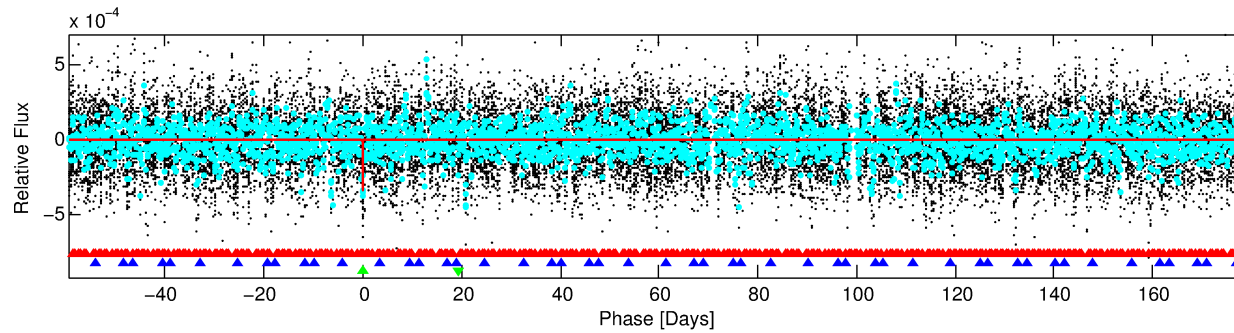
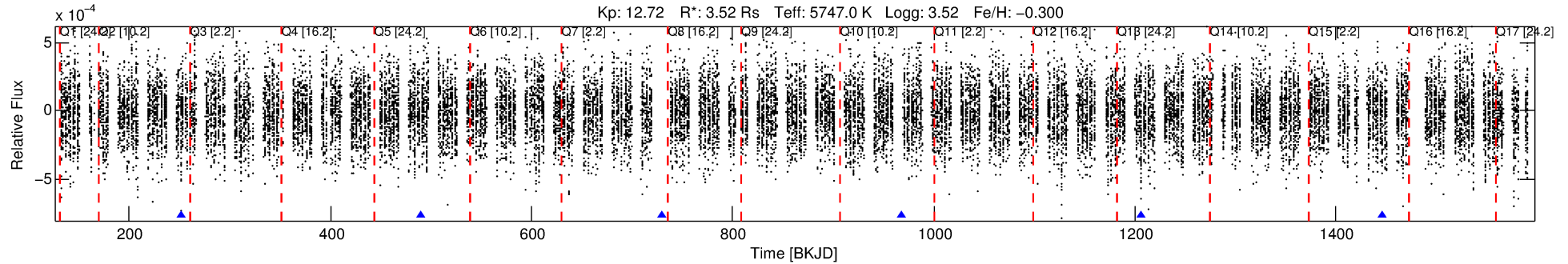
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009112301-03

No Significant Match Found

DV One-Page Summary

KIC: 9112301 Candidate: 3 of 3 Period: 238.733 d



DV Fit Results:

Period = 238.73348 [0.00281] d
Epoch = 251.7052 [0.0103] BKJD
Rp/R* = 0.0181 [0.0057]
a/R* = 149.74 [210.71]
b = 0.73 [0.89]
Seff = 16.25 [10.11]
Teq = 512 [80] K
Rp = 6.94 [3.59] Re
a = 0.8623 [0.3290] AU
Ag = 1292.18 [1241.43] [1.04 σ]
Teffp = 4746 [917] K [4.60 σ]

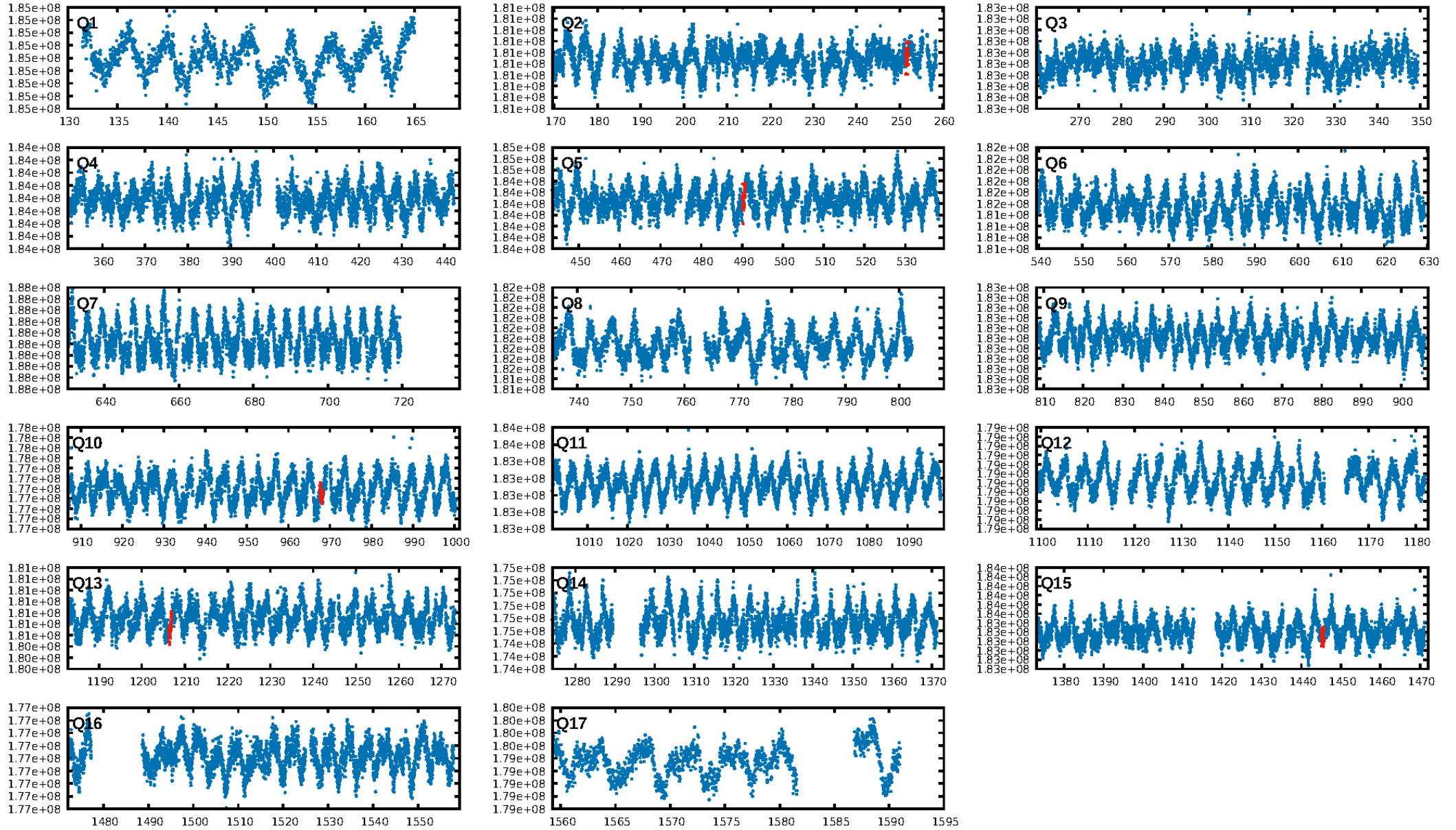
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [77.01 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 24.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.93e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.387
Centroid-sig: 38.9%
Centroid-so: 0.693 arcsec [1.01 σ]
OotOffset-rm: 1.348 arcsec [1.31 σ]
KicOffset-rm: 1.420 arcsec [1.40 σ]
OotOffset-st: 1/1/0/2 [4]
KicOffset-st: 1/1/0/2 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 0.60 [3/5]

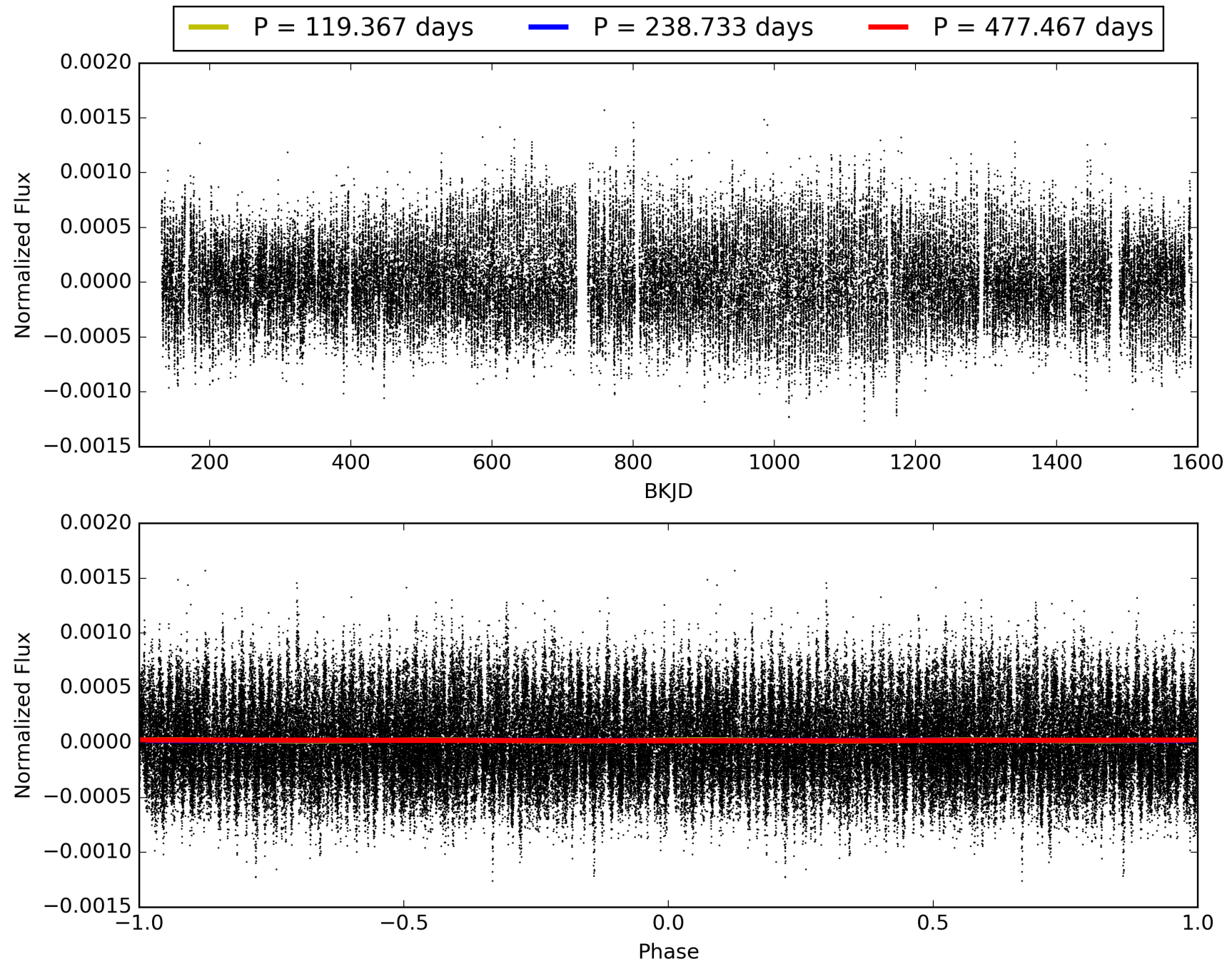
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 00:38:19 Z

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

TCE 009112301-03, PDC Light Curves

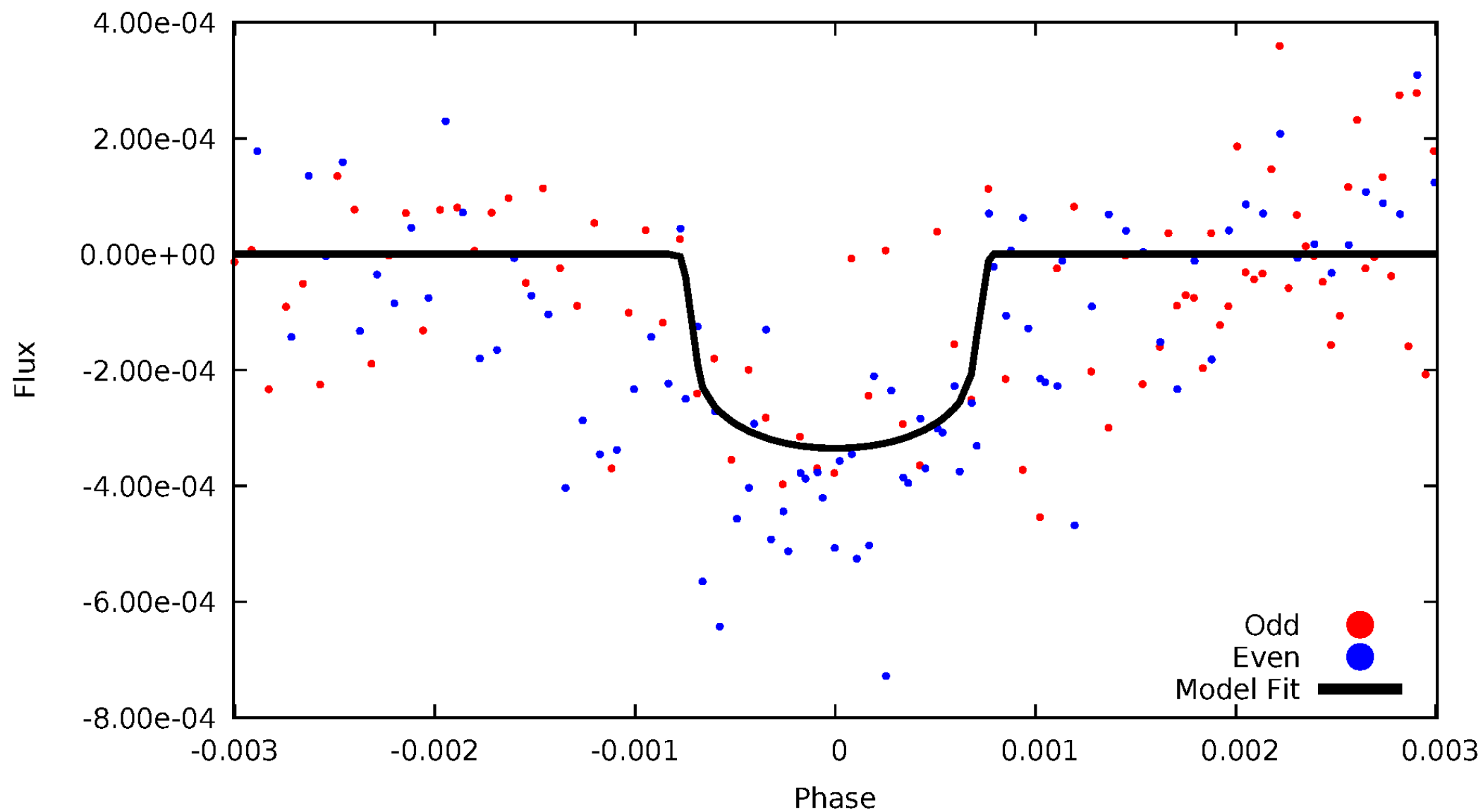


TCE 009112301-03



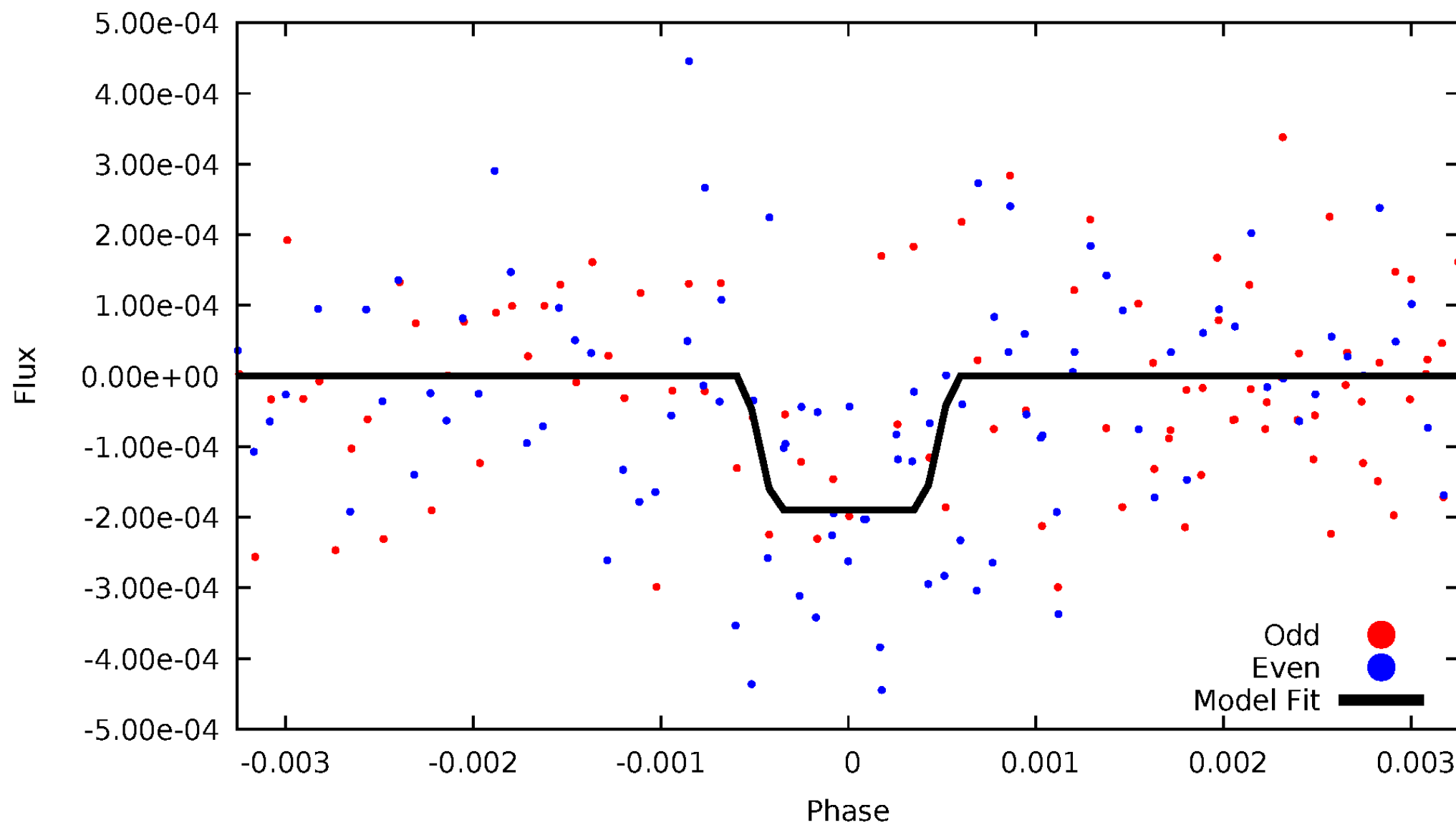
DV Odd/Even

TCE 009112301-03



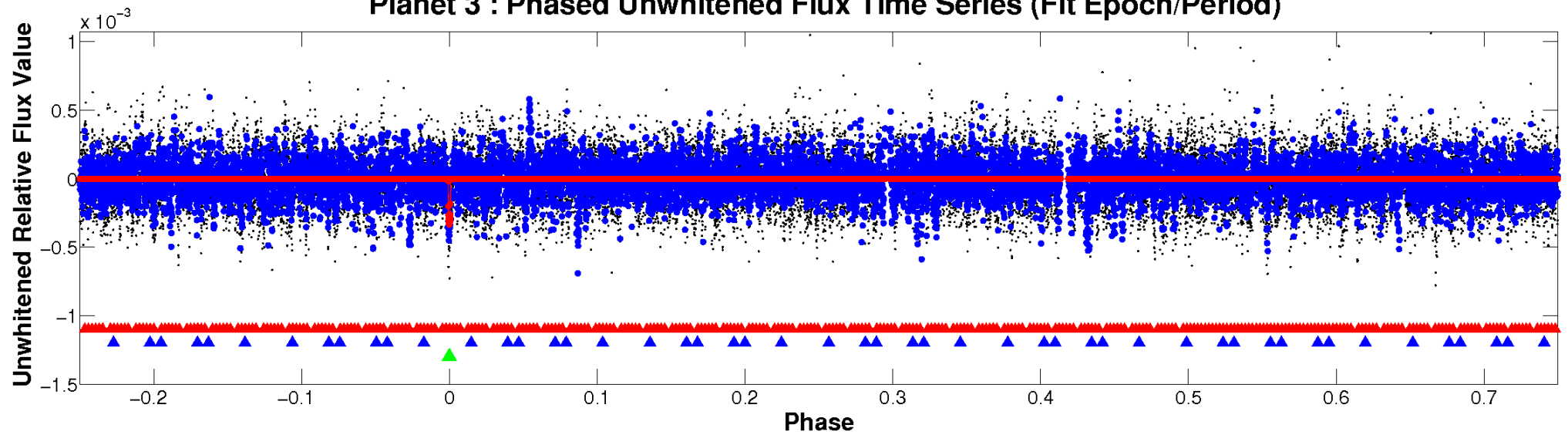
ALT Odd/Even

TCE 009112301-03

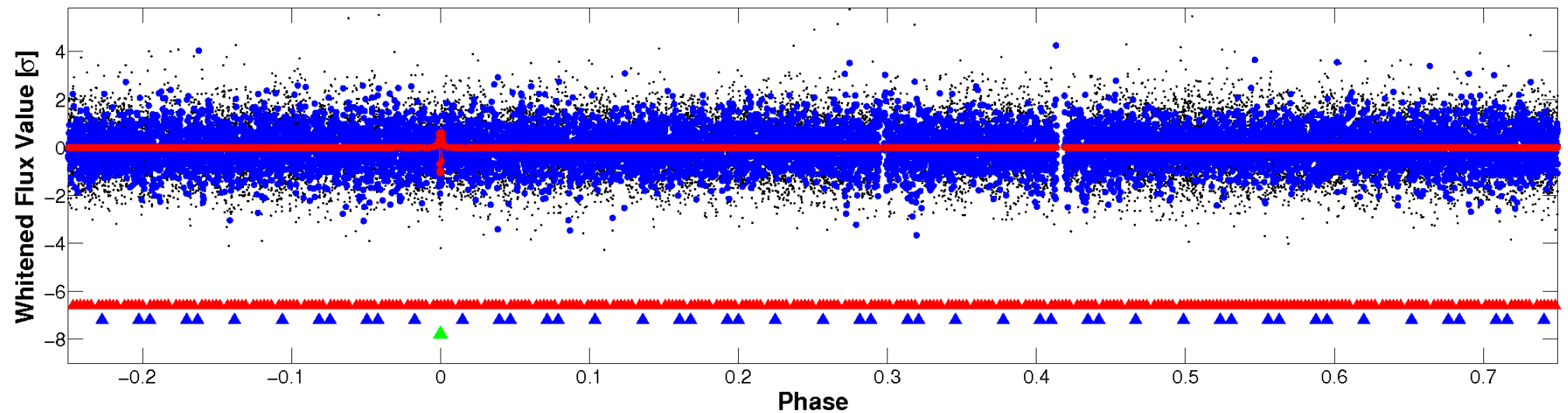


Non-Whitened Vs. Whitened Light Curve

Planet 3 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

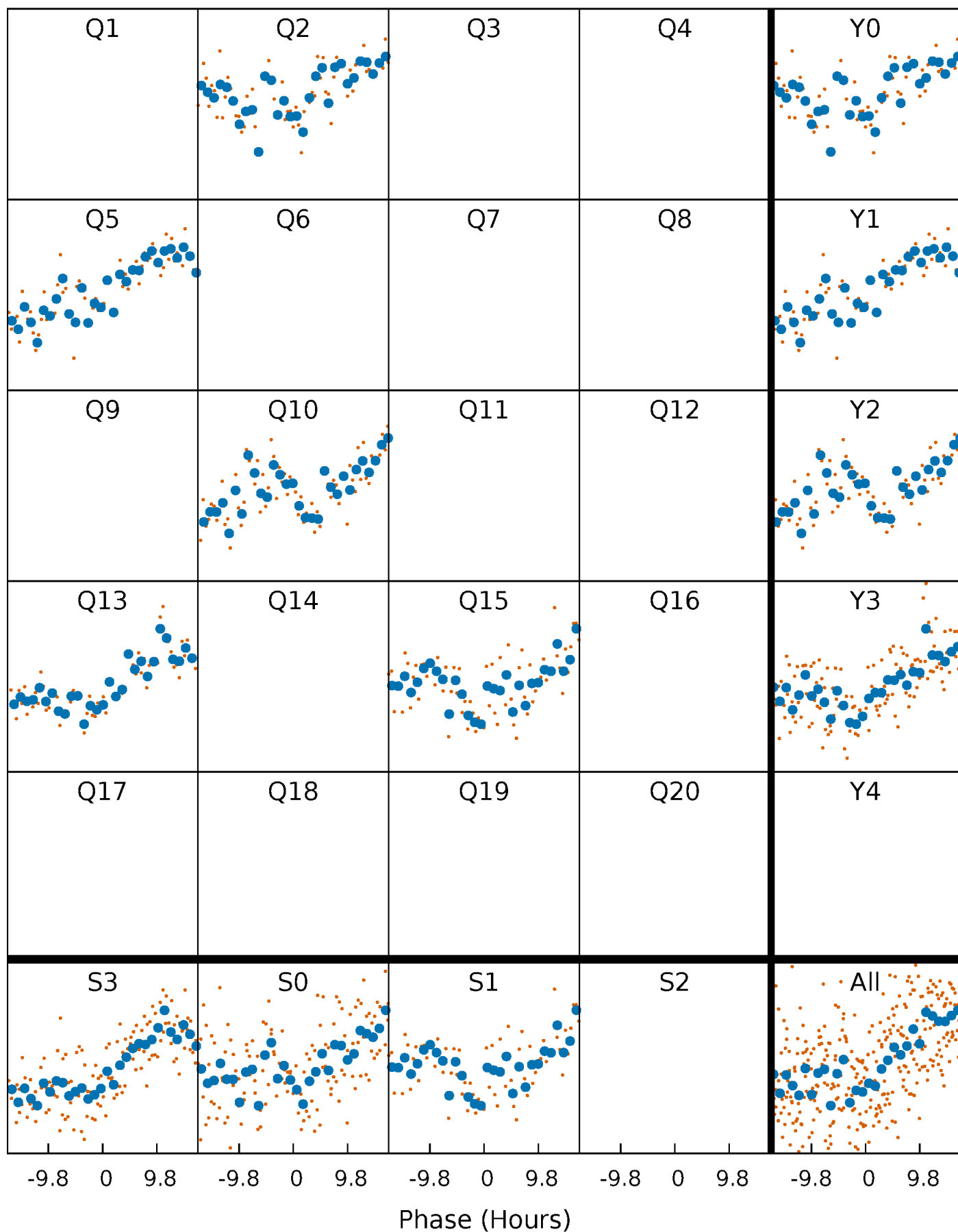


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



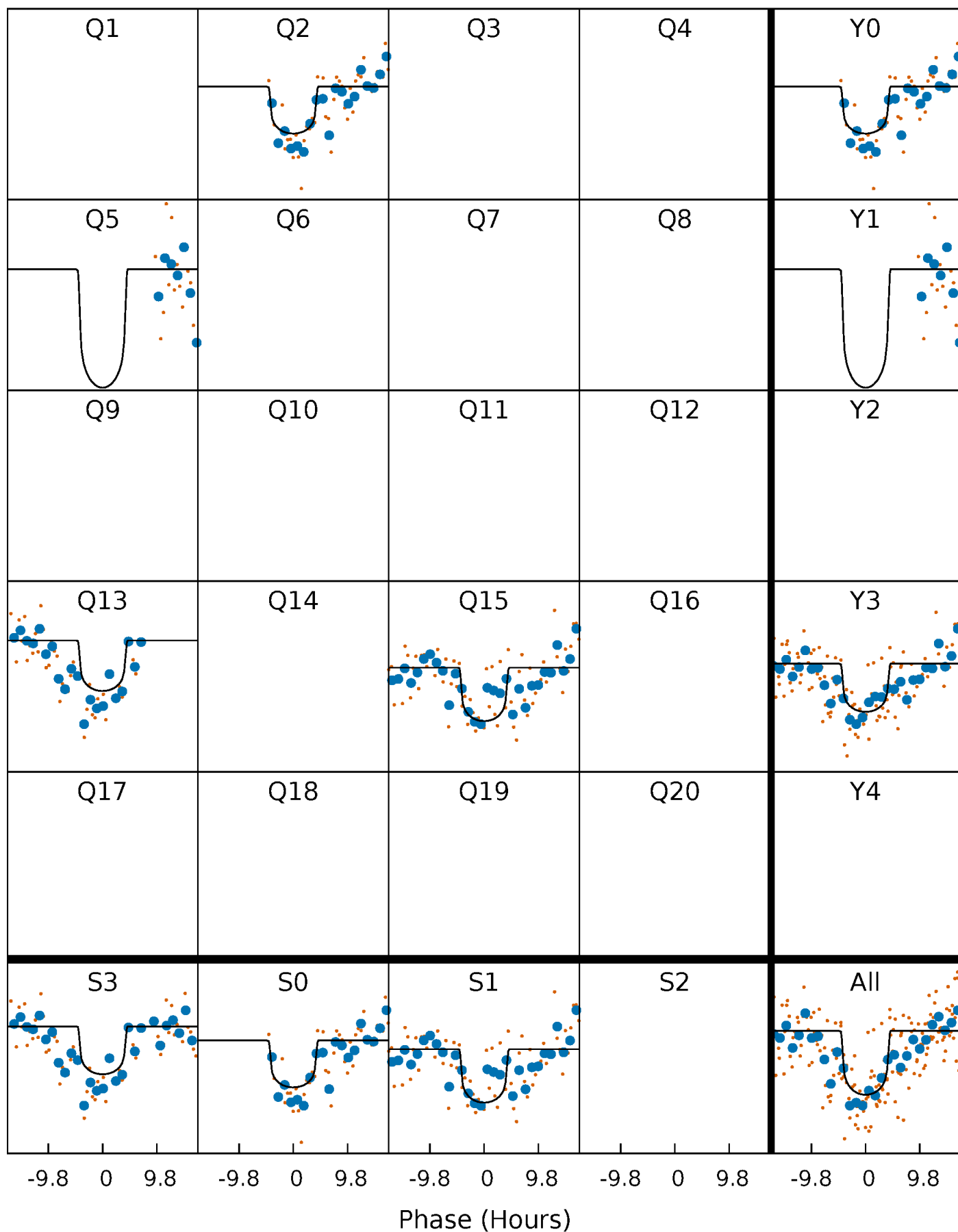
PDC Quarter-Phased Transit Curves

TCE 009112301-03 $P=238.733477$ Days $T_0=251.705229$ (BKJD)



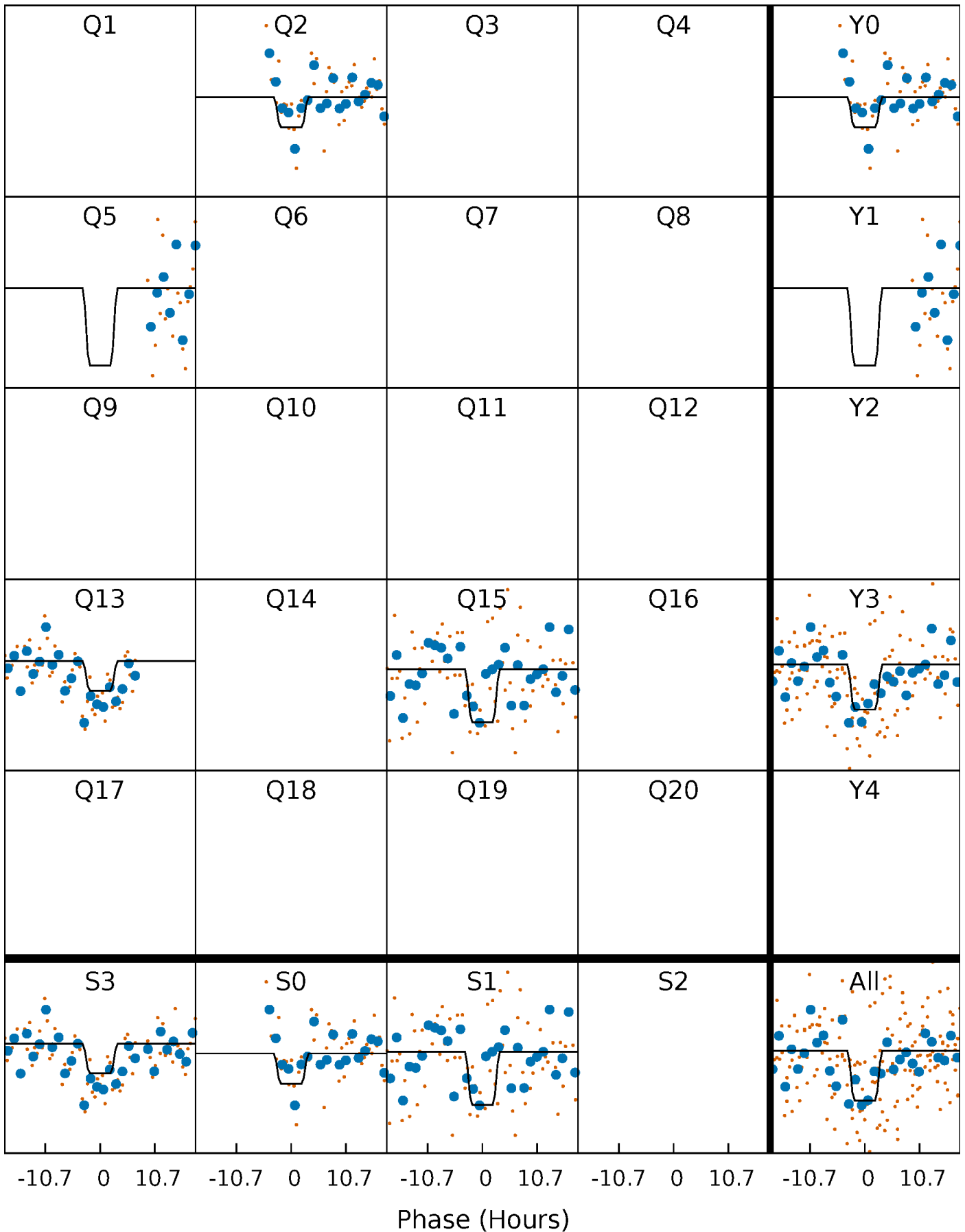
DV Quarter-Phased Transit Curves

TCE 009112301-03 $P=238.733477$ Days $T_0=251.705229$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

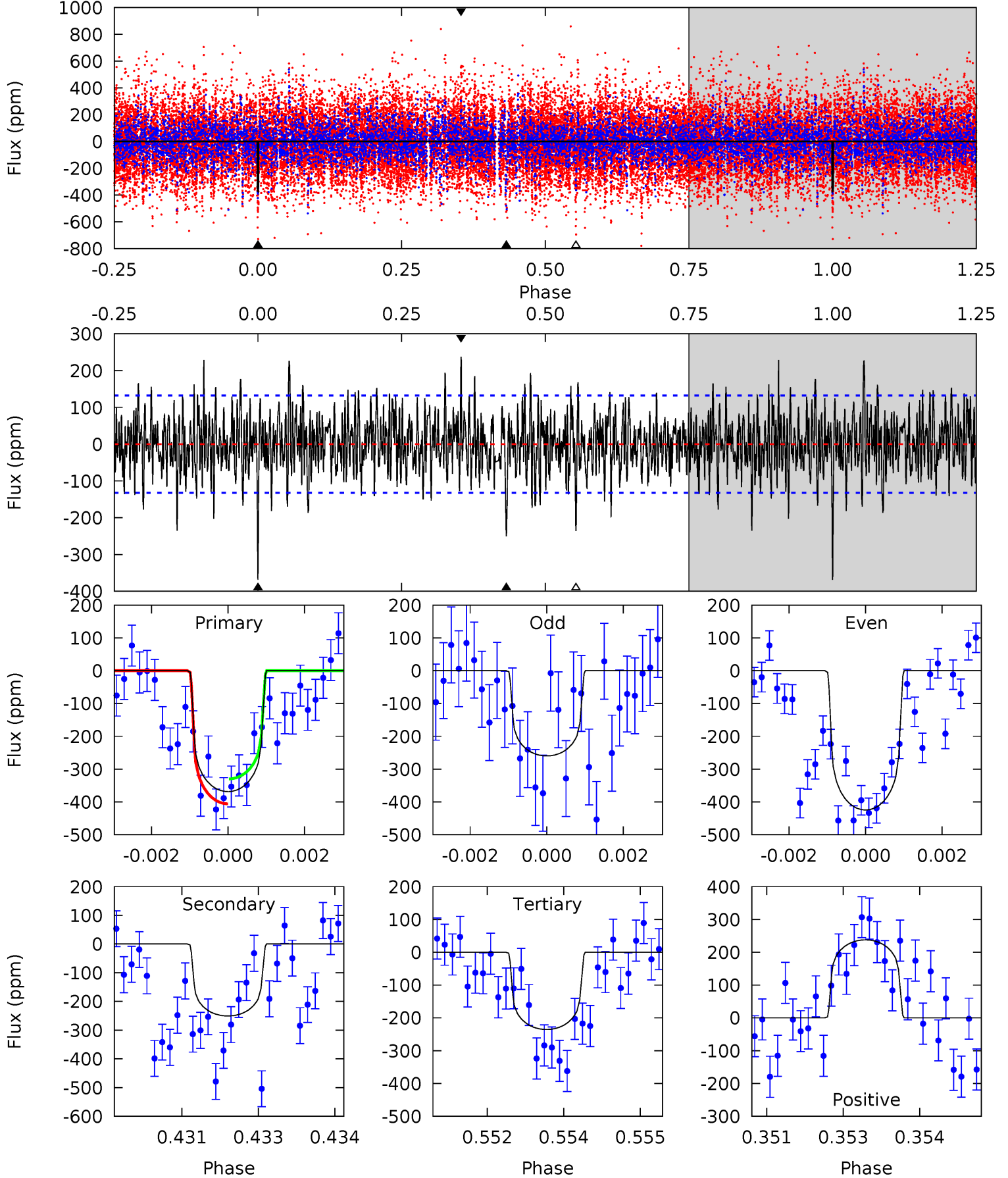
TCE 009112301-03 $P=238.725281$ Days $T_0=251.723240$ (BKJD)



DV Model-Shift Uniqueness Test

009112301-03, P = 238.733477 Days, E = 12.971752 Days

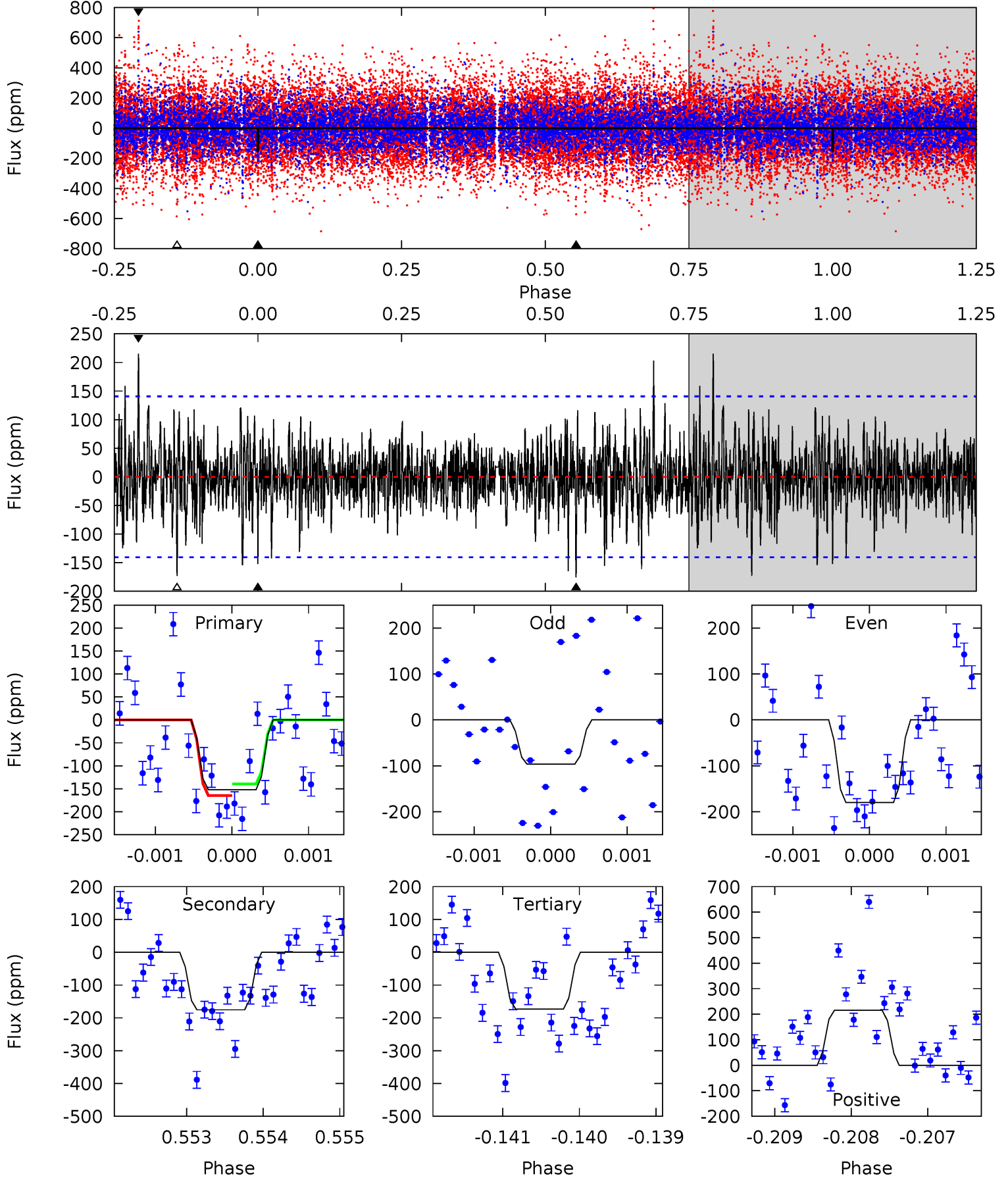
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.0	10.2	9.56	9.65	5.37	3.16	2.63	5.41	5.31	0.61	0.52	3.16	0.92	0.39	1.54



Alt Model-Shift Uniqueness Test

009112301-03, P = 238.725281 Days, E = 12.997959 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.87	6.78	6.69	8.32	5.43	3.26	1.62	-0.81	-2.44	0.09	-1.54	1.54	1.46	0.55	0.48



Stellar Parameters For KIC 009112301

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5747^{+207}_{-253}	$3.522^{+0.345}_{-0.138}$	$-0.300^{+0.300}_{-0.300}$	$3.516^{+0.780}_{-1.449}$	$1.502^{+0.203}_{-0.439}$	$0.049^{+0.132}_{-0.020}$
	+4%/-4%	+10%/-4%	+100%/-100%	+22%/-41%	+14%/-29%	+272%/-40%
Source	PHO1	FLK73	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 009112301-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-251 ± 25	$6.29^{+2.73}_{-2.14}$	701^{+54}_{-79}	5410^{+1050}_{-657}	2519^{+3141}_{-1257}
Alt.	-175 ± 26	$4.92^{+2.54}_{-2.17}$	697^{+61}_{-68}	5561^{+1688}_{-778}	2894^{+6058}_{-1620}

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

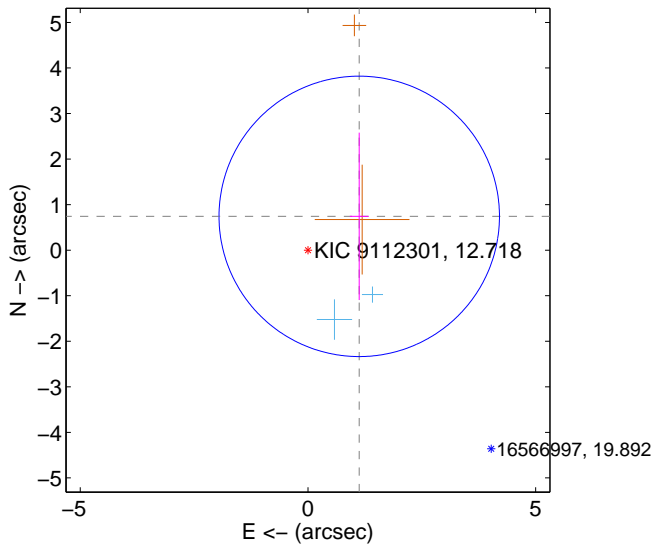
Supplemental centroid analysis for 009112301-03. Kepler magnitude: 12.72. Transit SNR 7.26

There are 2 quarters with good PRF difference image offsets

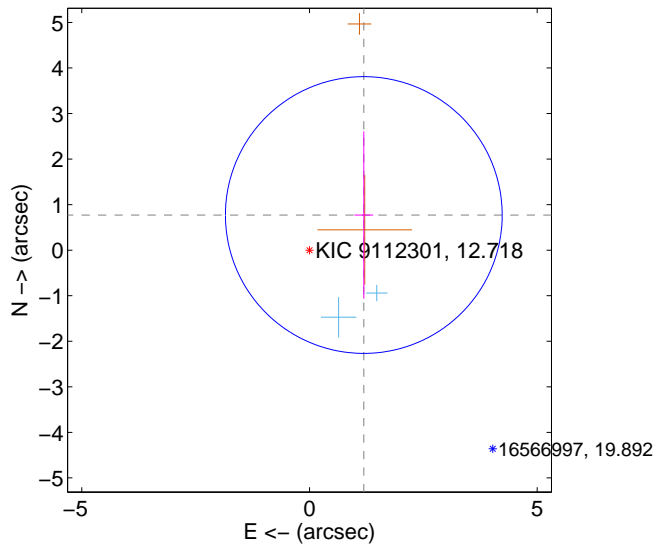
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.348 ± 1.026	1.31	-1.126 ± 0.206	0.742 ± 1.838
PRF-fit source offset from KIC position	1.420 ± 1.013	1.40	-1.193 ± 0.205	0.771 ± 1.838
photometric centroid source offset	0.69 ± 0.68	1.01	-0.67 ± 0.69	0.18 ± 0.62

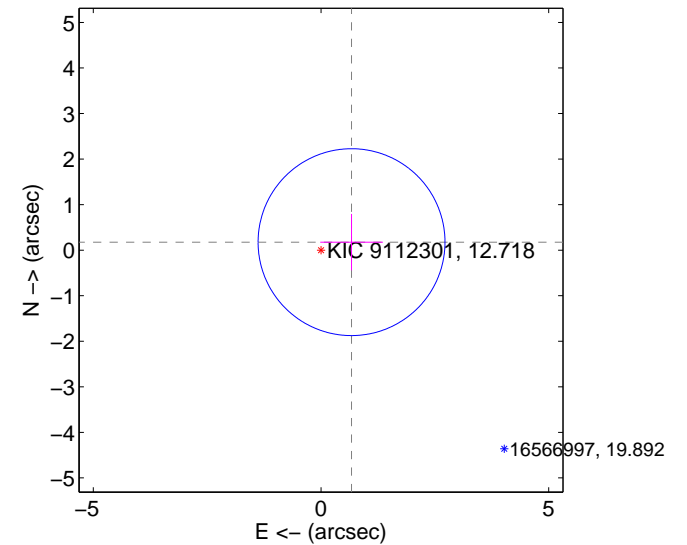
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

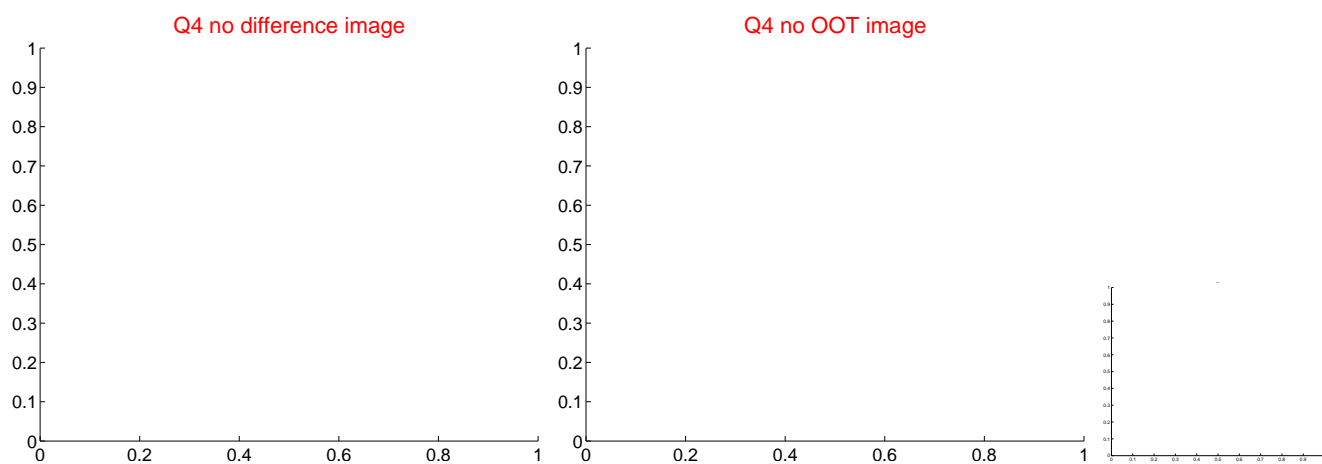
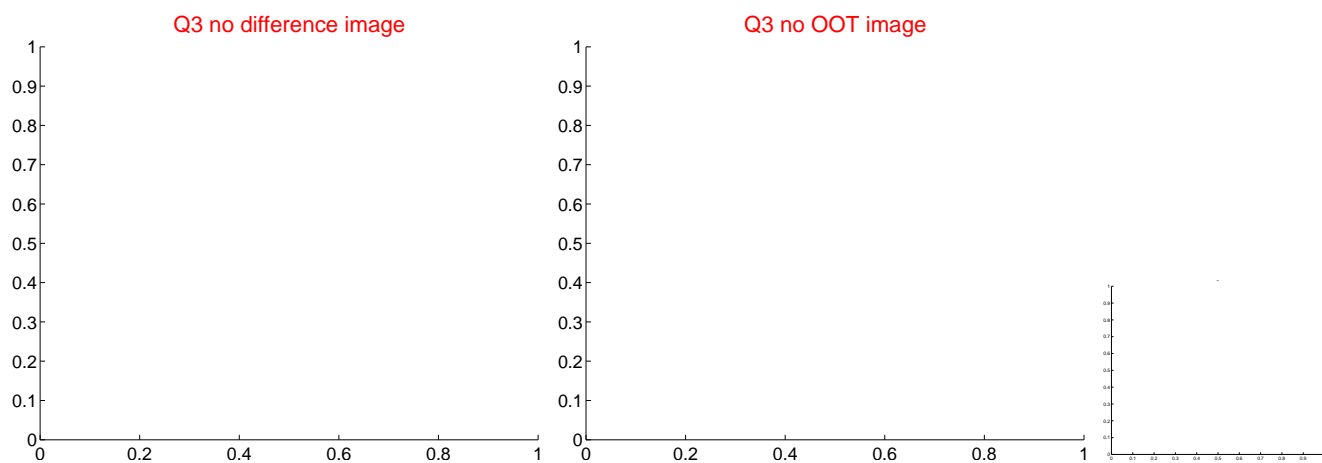
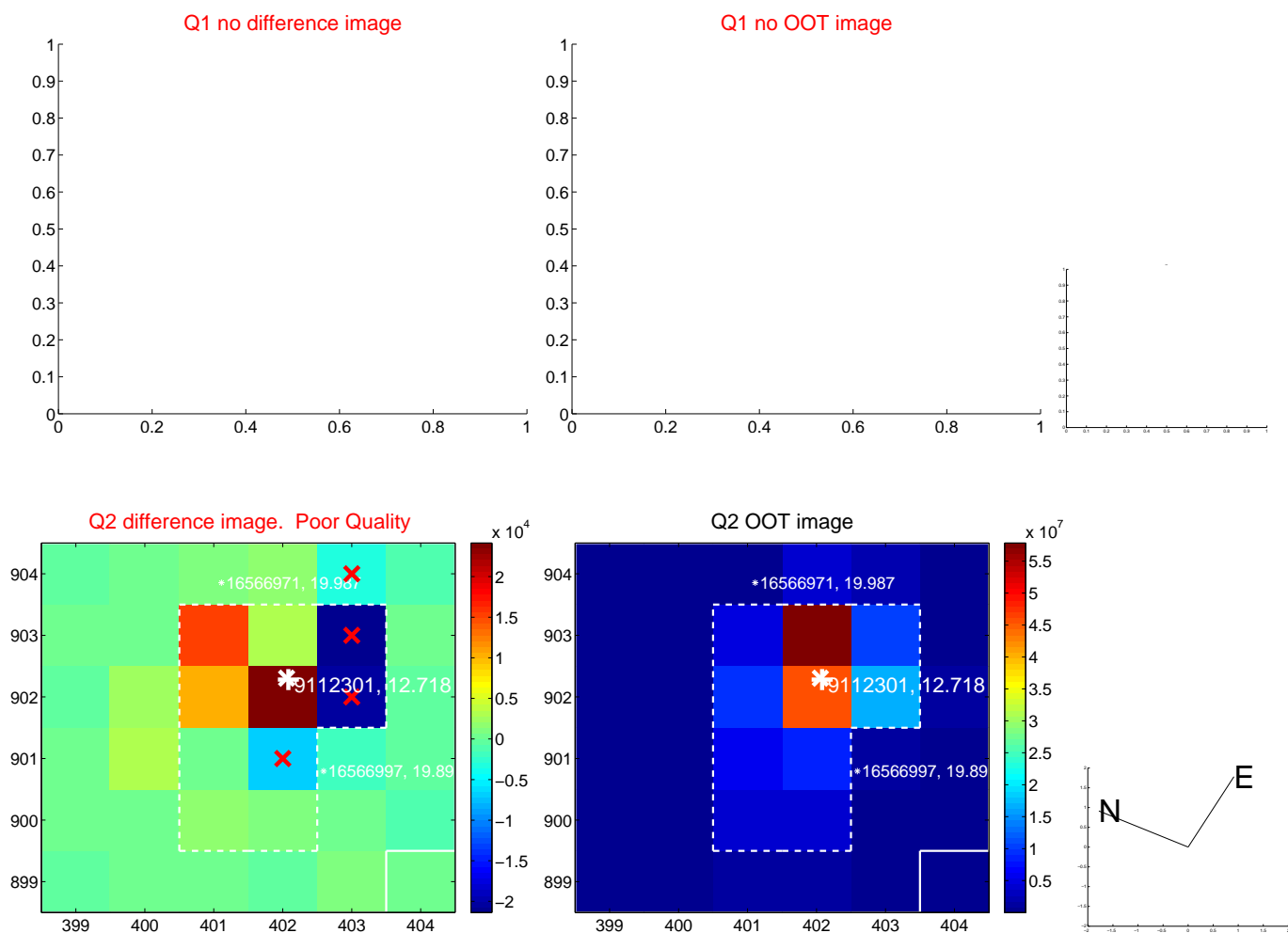


offset from photometric centroids

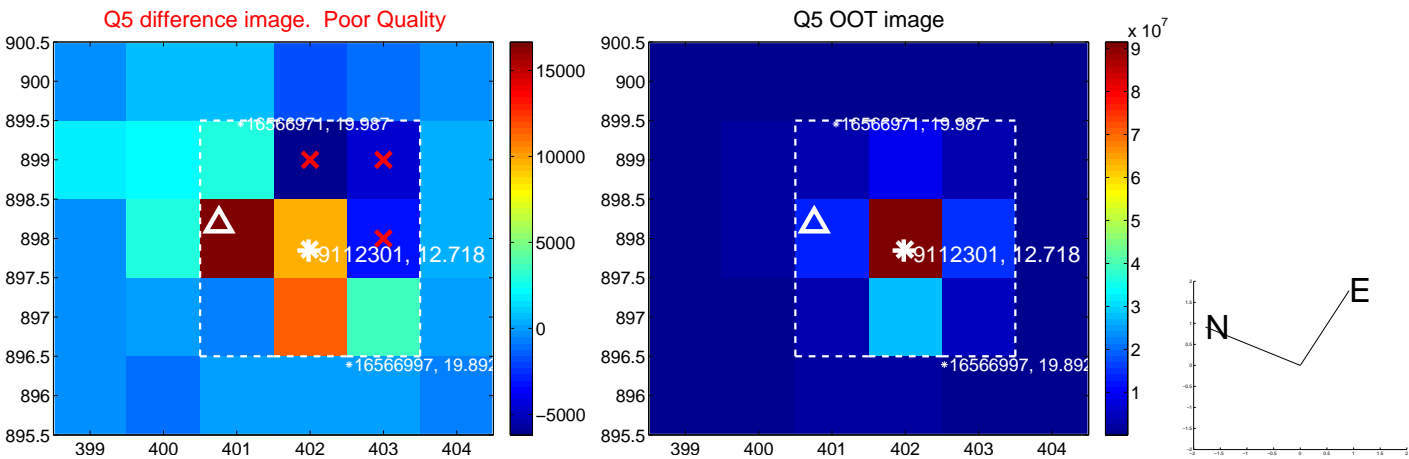


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . Red *: target star. Blue *: Other stars. Text next to a star gives its KIC ID and kepmag. KIC IDs > 15,000,000 are from the UKIRT catalog.

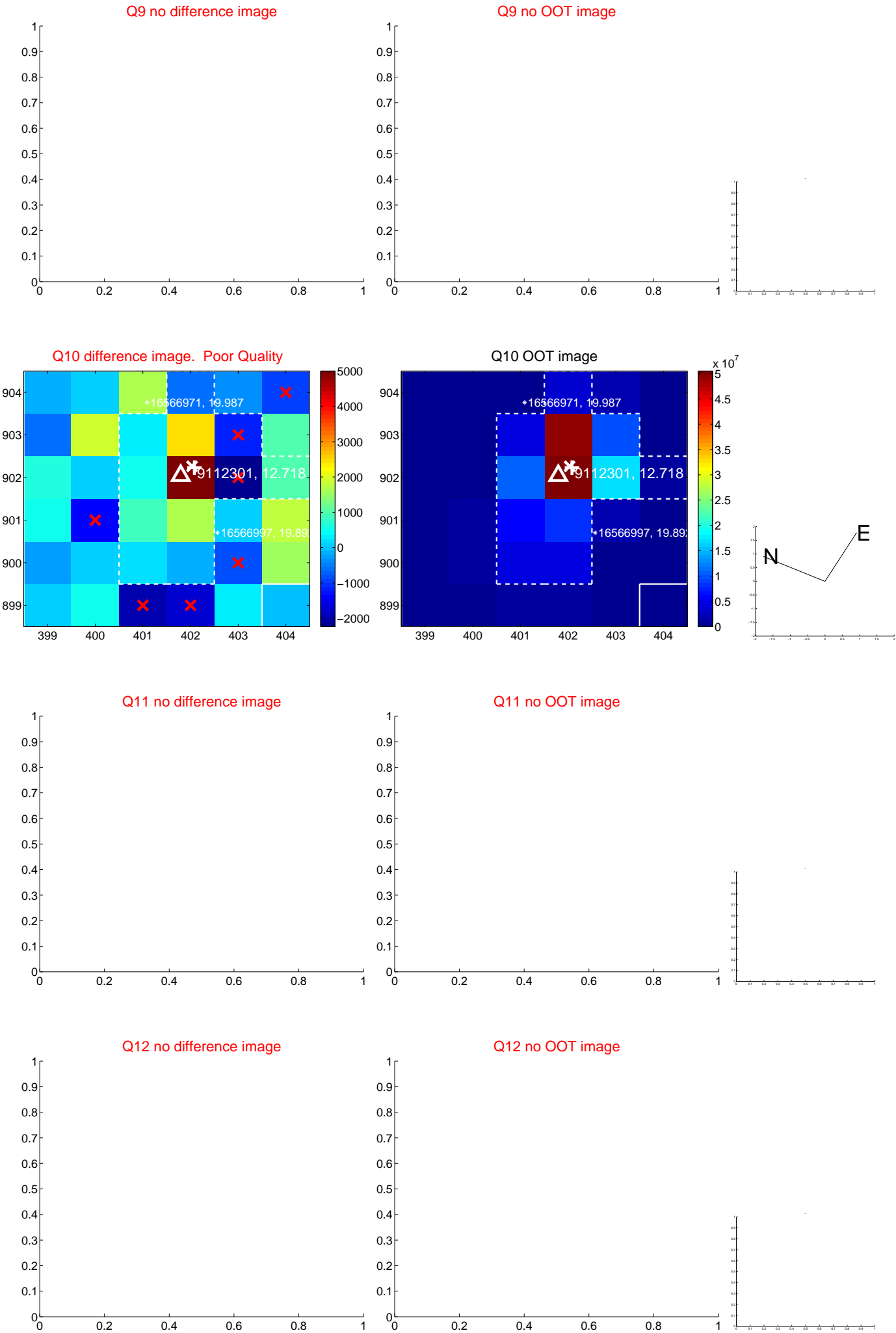
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



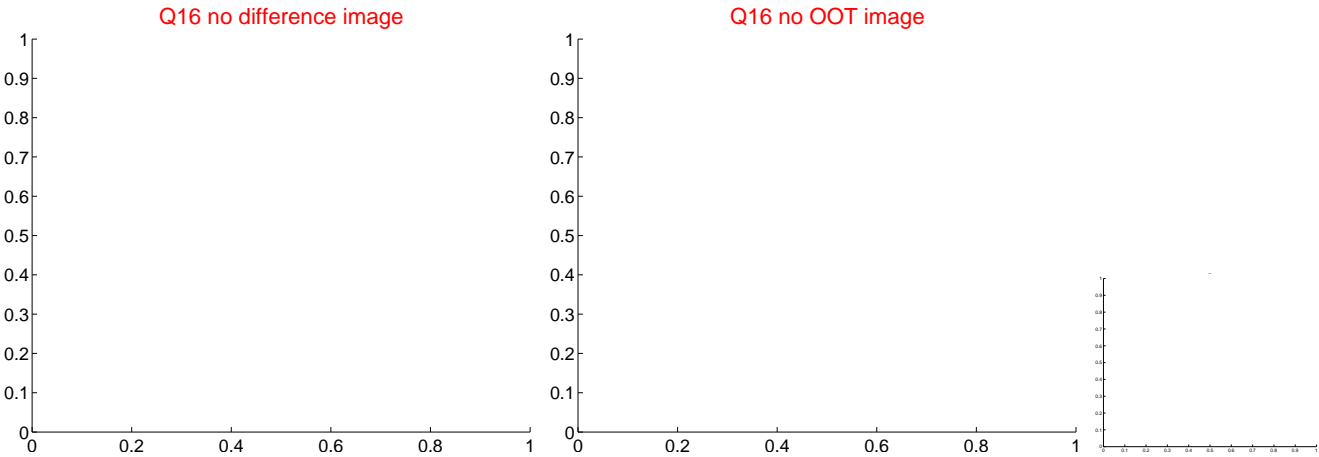
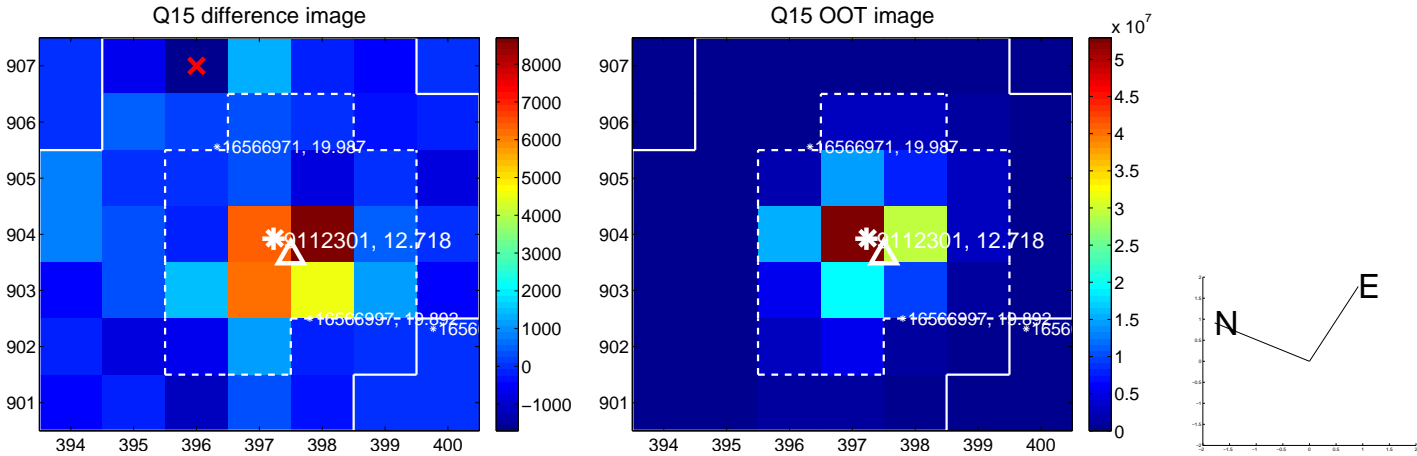
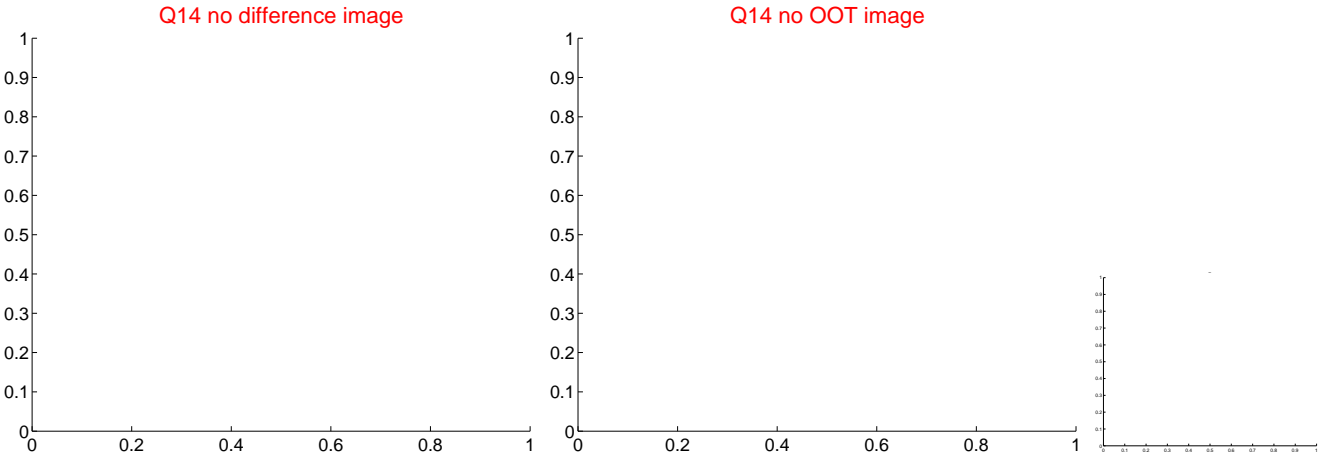
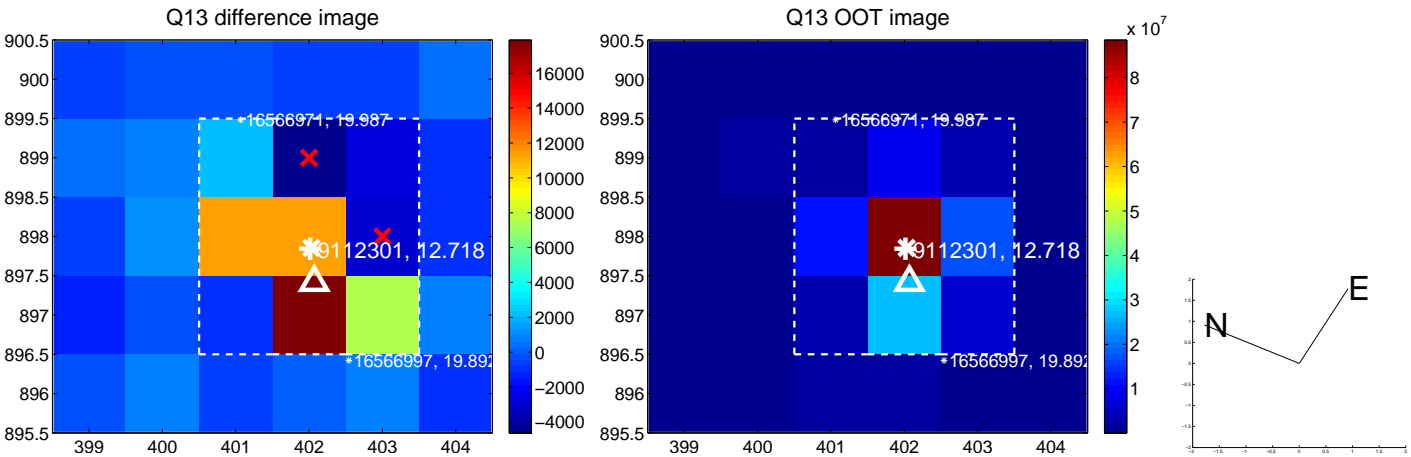
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



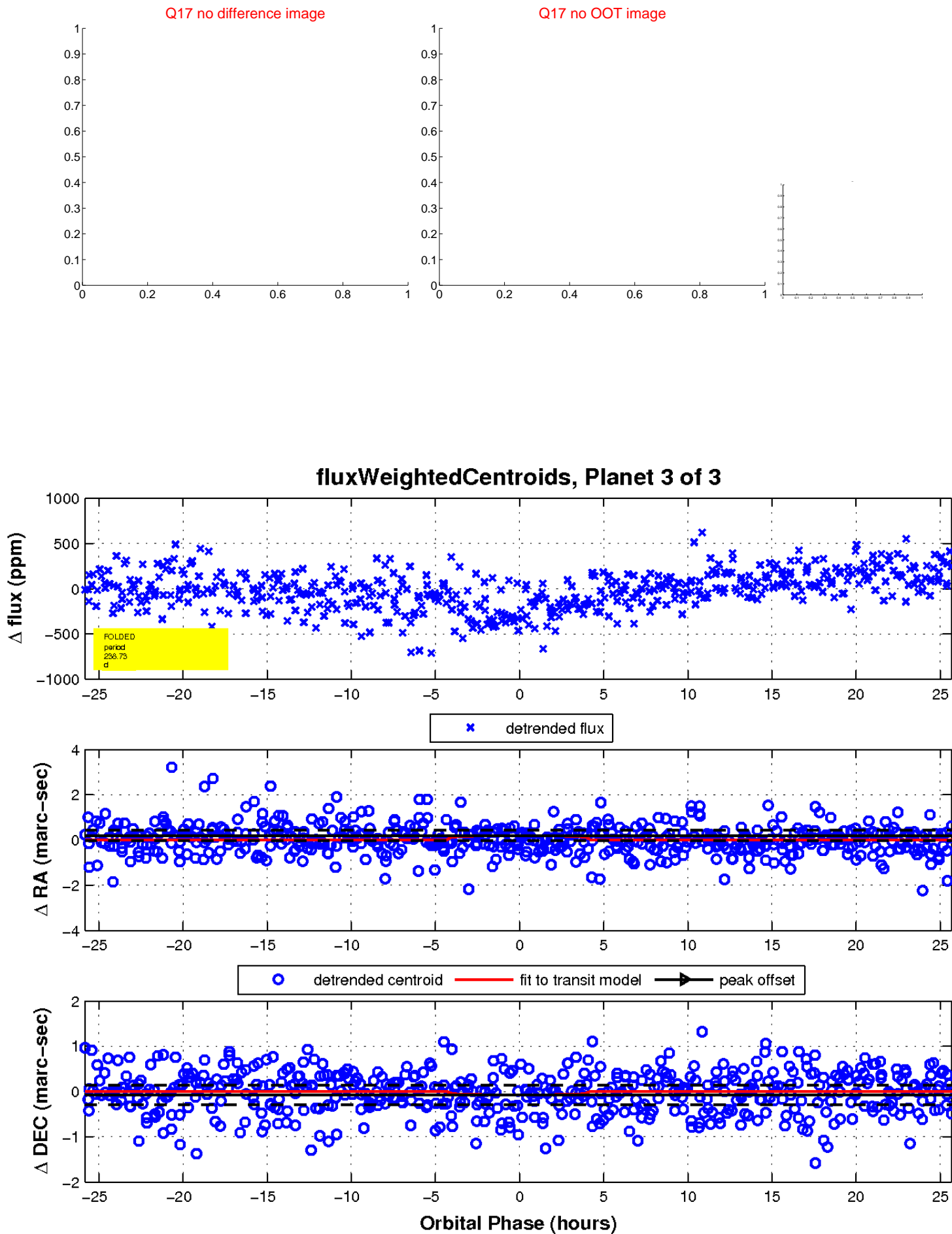
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

