

KIC 009180566

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})
009180566-01	OBS	No	4.356450	135.630488	53.5	15.054	8.4	6.2	2.40	5895	1.76	2055.48
009180566-02	OBS	No	2.765399	134.178439	66.2	13.120	9.0	7.5	2.40	5895	2.10	3767.74
009180566-03	OBS	No	136.517378	148.218168	685.1	3.178	8.1	8.3	2.40	5895	6.98	20.80

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009180566-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009180566-02	OBS	FP	0.00	1	0	0	0	LPP_DV
009180566-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

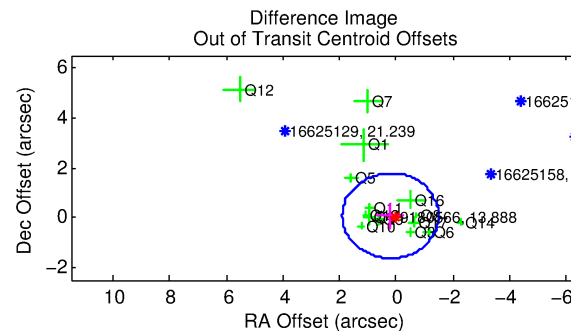
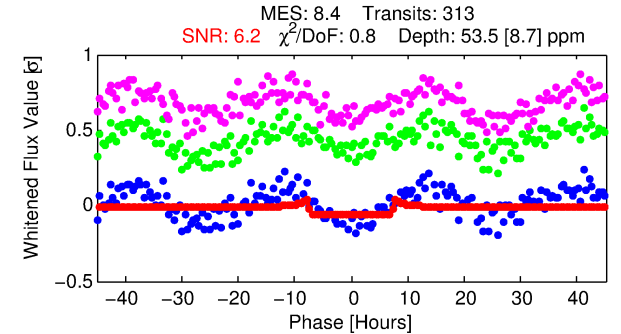
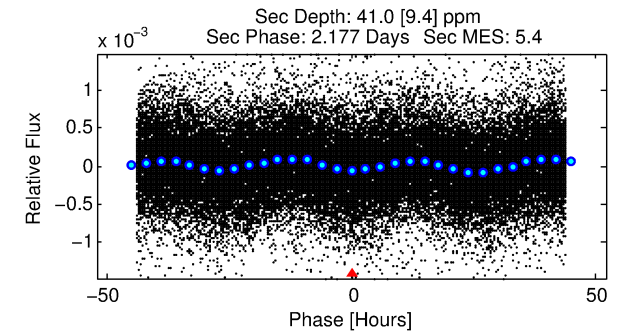
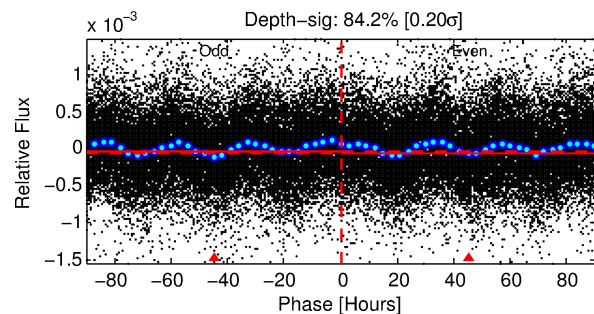
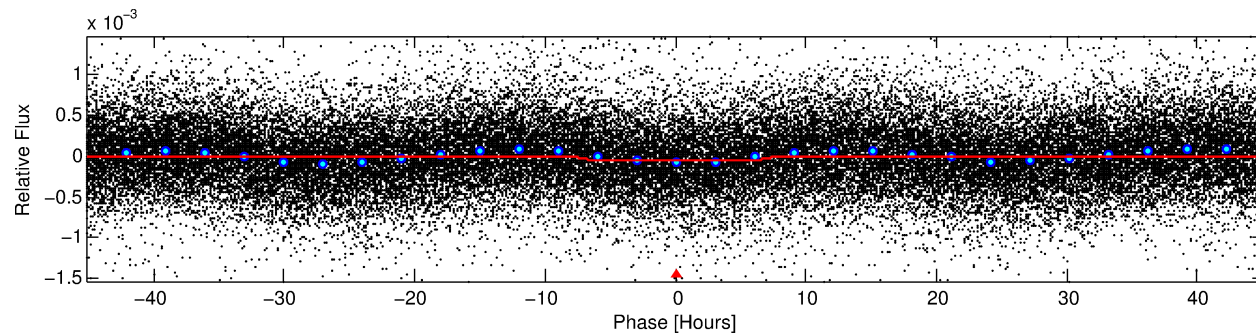
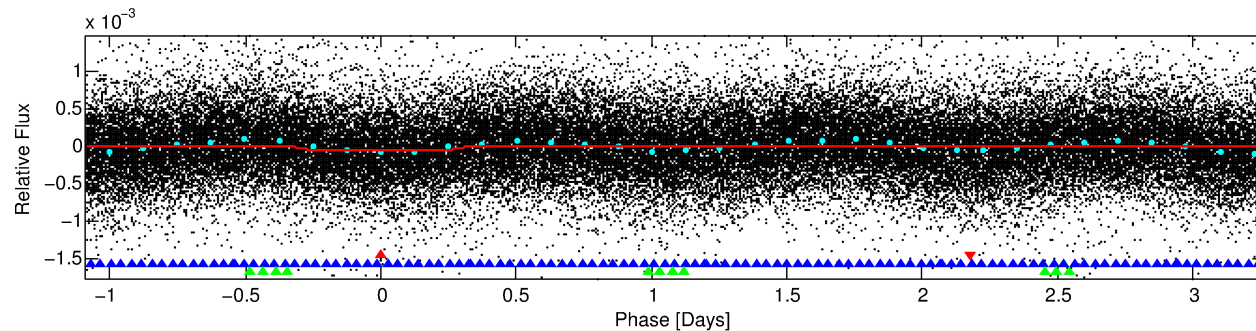
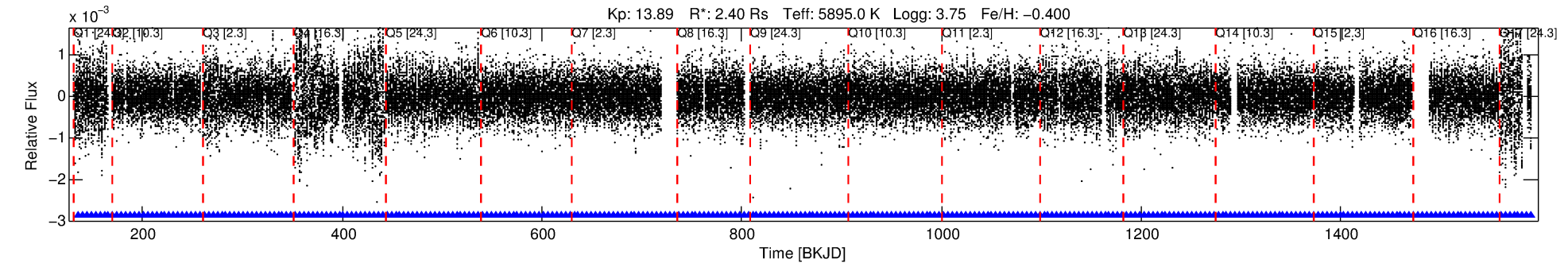
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009180566-01

No Significant Match Found

DV One-Page Summary

KIC: 9180566 Candidate: 1 of 3 Period: 4.356 d
KOI: K04616 Corr: No Ephemeris Match



DV Fit Results:

Period = 4.35645 [0.00007] d
Epoch = 135.6305 [0.0106] BKJD
Rp/R* = 0.0067 [0.0062]
b = 0.27 [15.35]
Seff = 2055.48 [2184.54]
Teff = 1717 [456] K
Rp = 1.76 [1.92] Re
a = 0.0551 [0.0343] AU
Ag = 21.99 [46.97] [0.45 σ]
Teffp = 5748 [2677] K [1.48 σ]

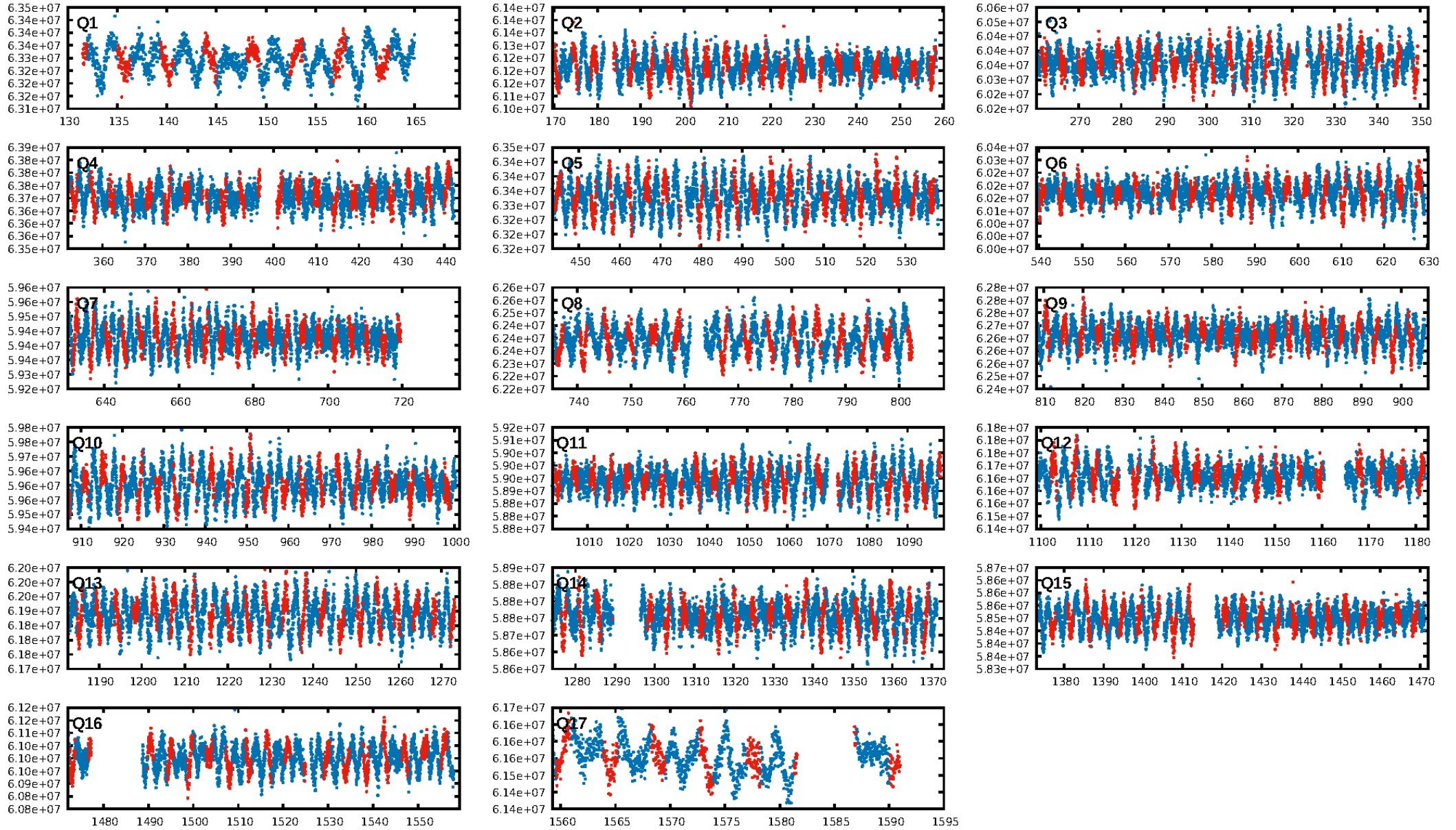
DV Diagnostic Results:

ShortPeriod-sig: 94.4% [1.91 σ]
LongPeriod-sig: 100.0% [206.16 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.19e-08
RollingBand-fgt: 1.00 [299/299]
GhostDiagnostic-chr: 1.671
Centroid-sig: 1.8%
Centroid-so: 1.974 arcsec [2.27 σ]
OotOffset-rm: 0.216 arcsec [0.38 σ]
KicOffset-rm: 0.100 arcsec [0.18 σ]
OotOffset-st: 3/3/4/5 [15]
KicOffset-st: 3/3/4/5 [15]
DiffImageQuality-fgm: 0.53 [8/15]
DiffImageOverlap-fno: 0.41 [7/17]

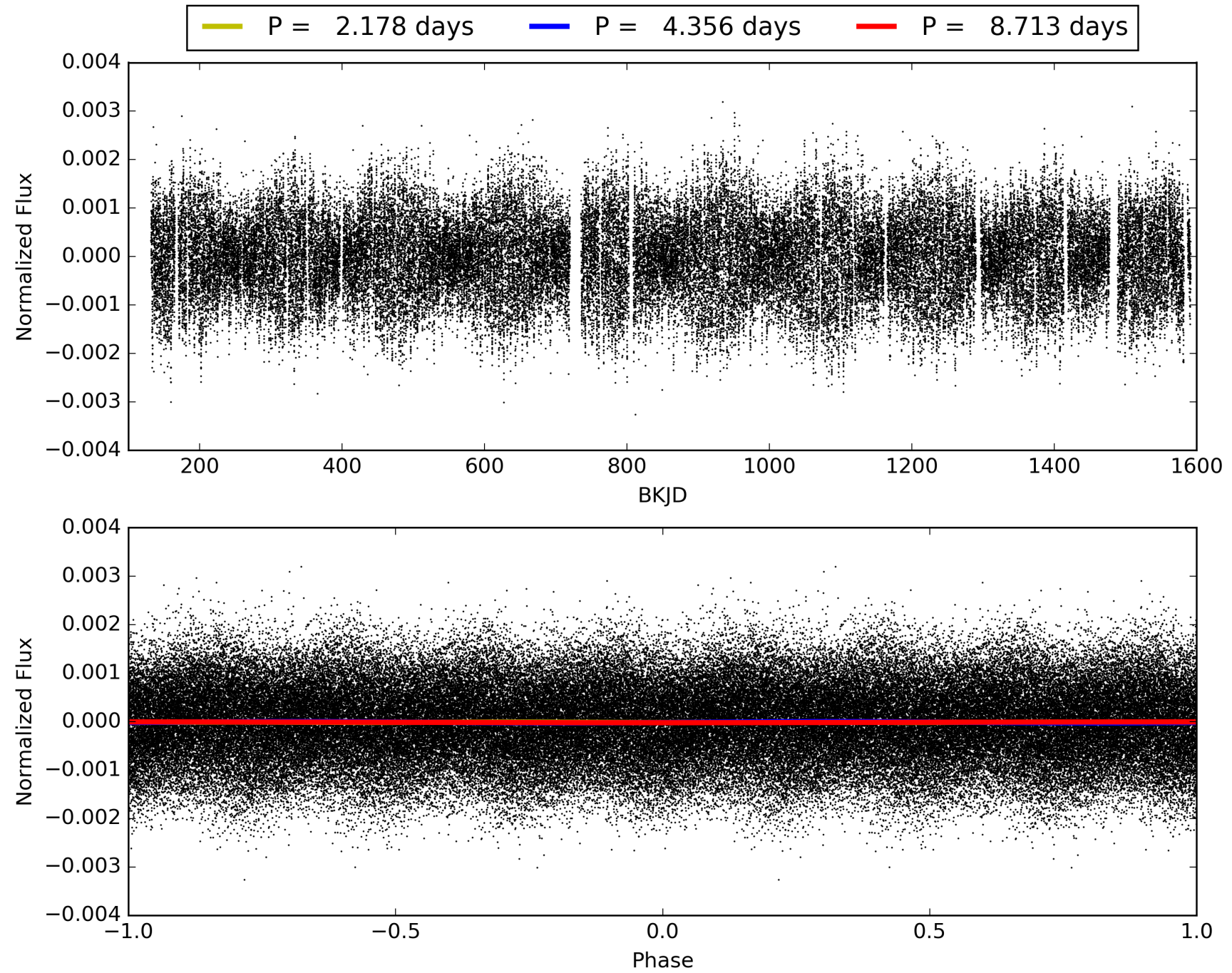
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:46:56 Z

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

TCE 009180566-01, PDC Light Curves

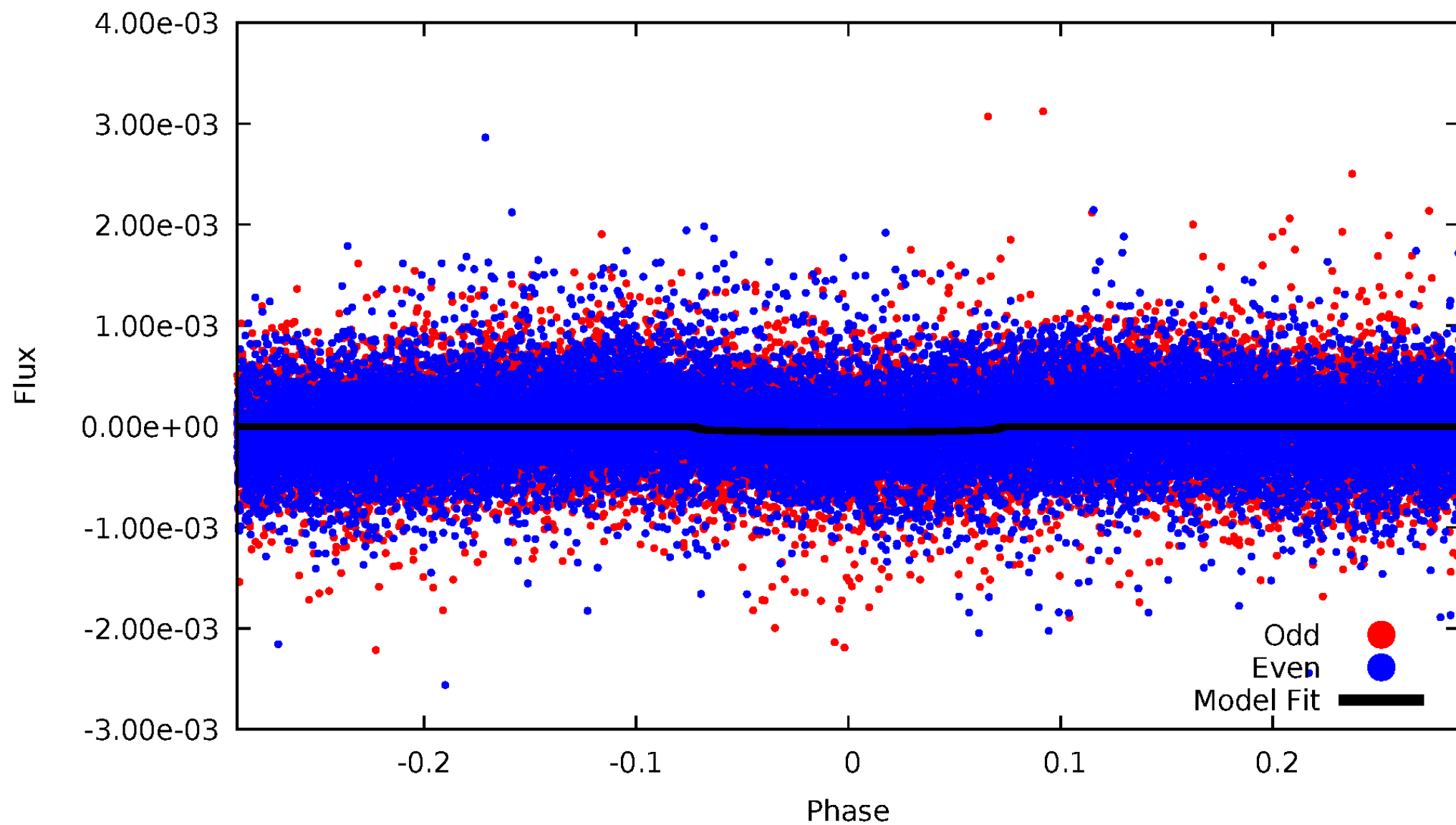


TCE 009180566-01



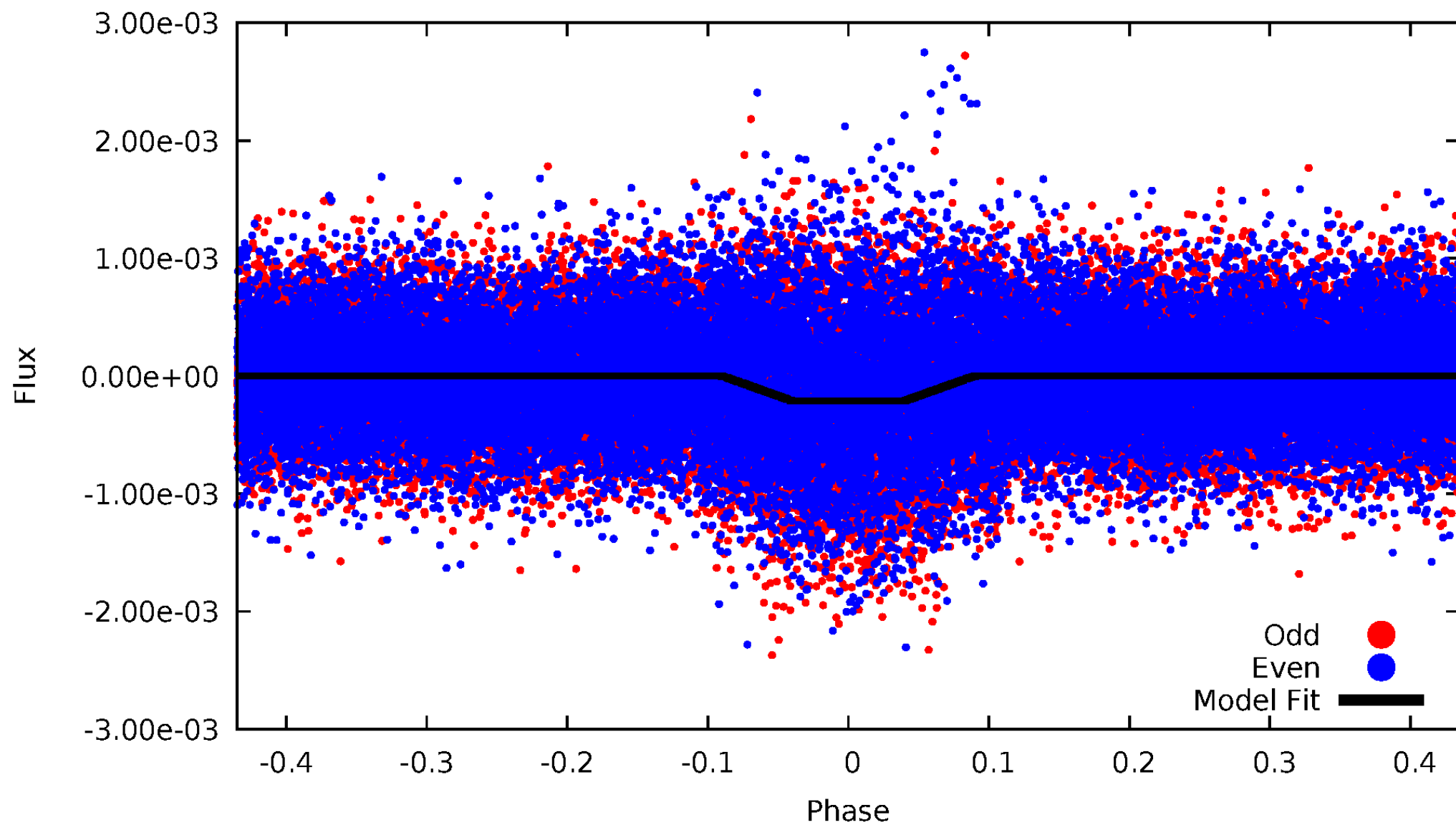
DV Odd/Even

TCE 009180566-01



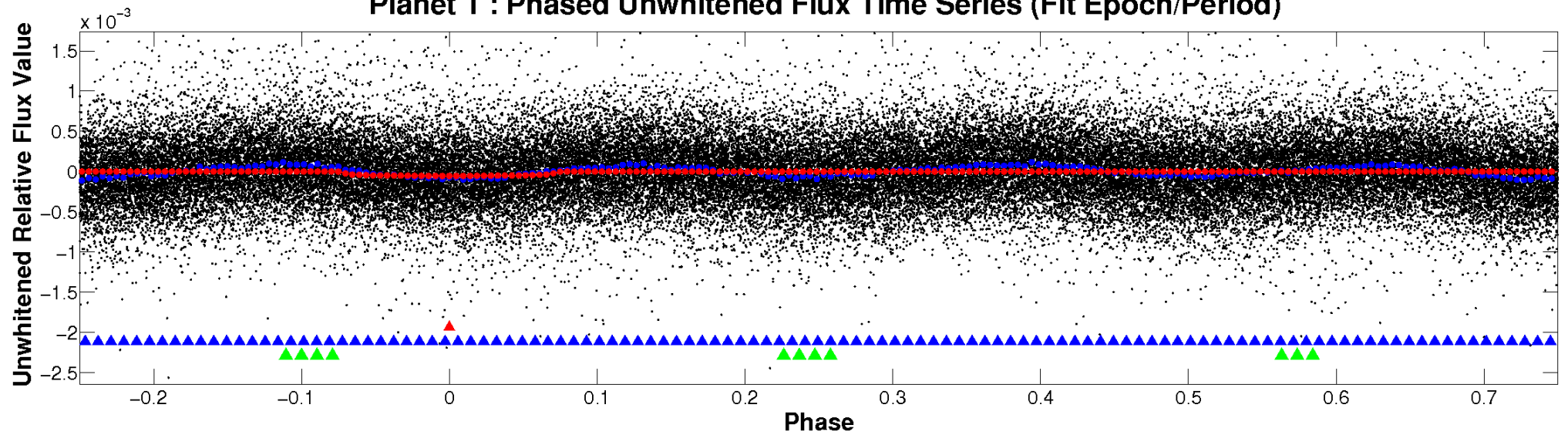
ALT Odd/Even

TCE 009180566-01

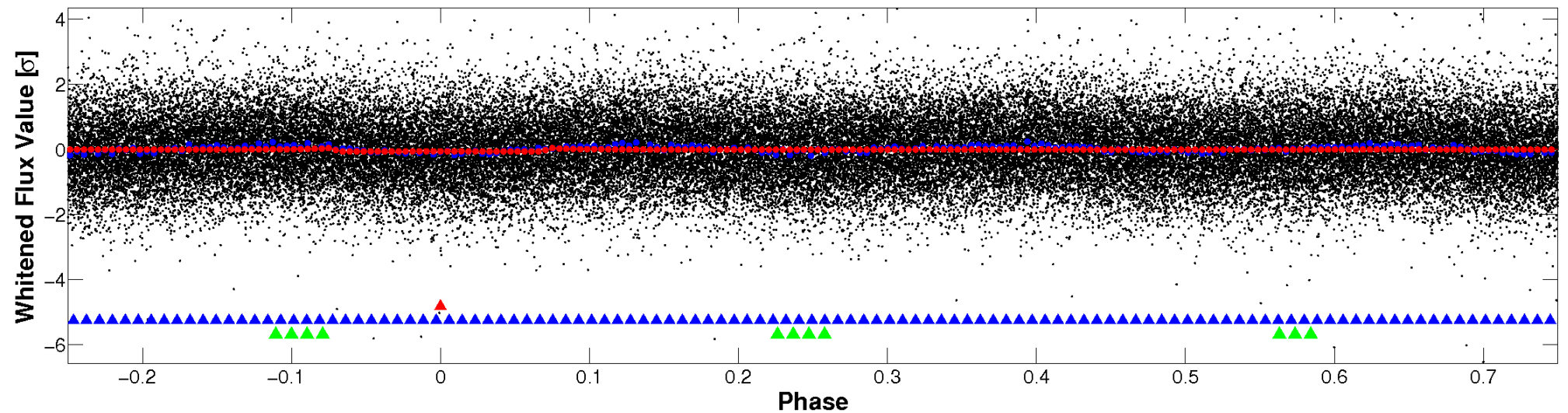


Non-Whitened Vs. Whitened Light Curve

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

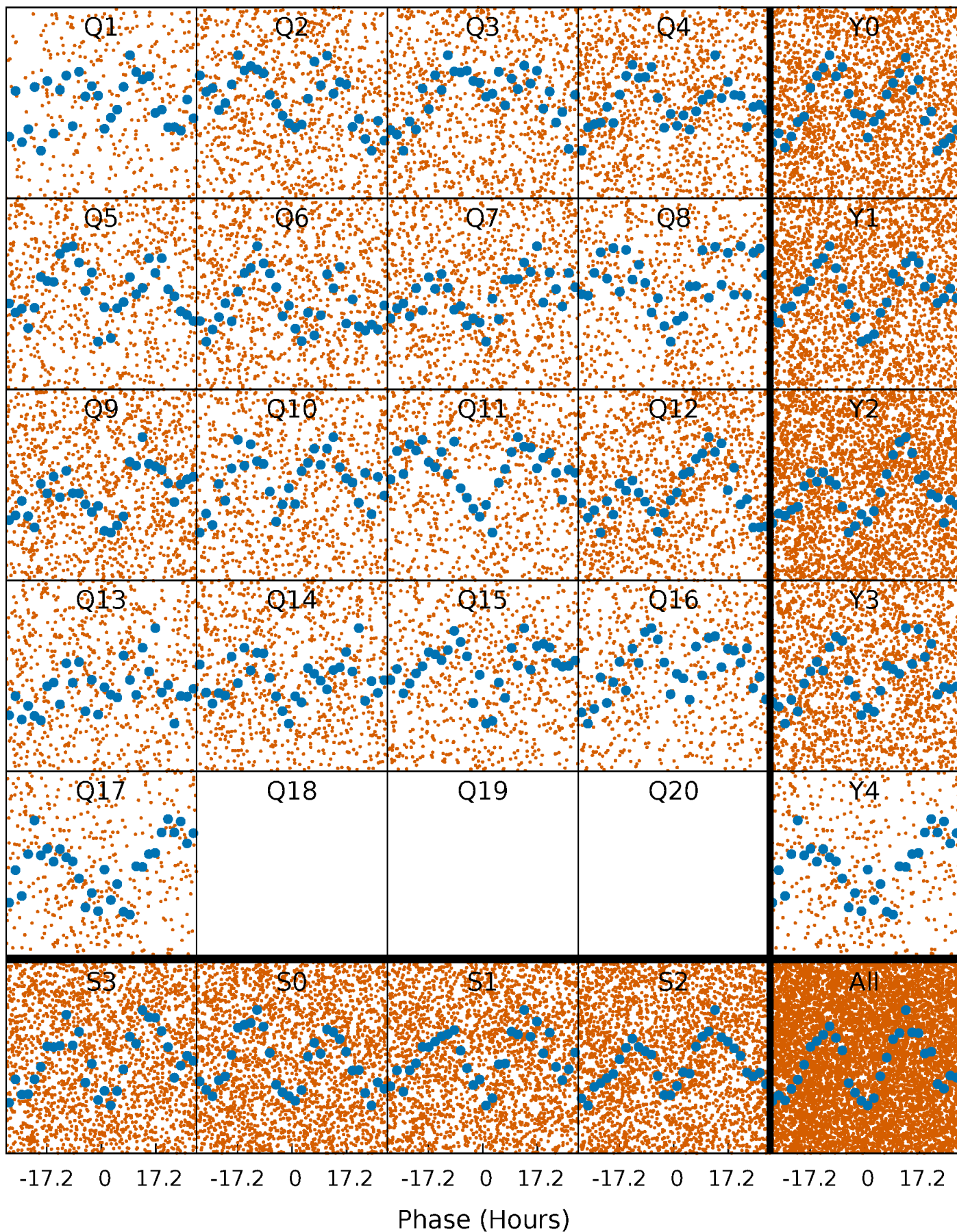


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



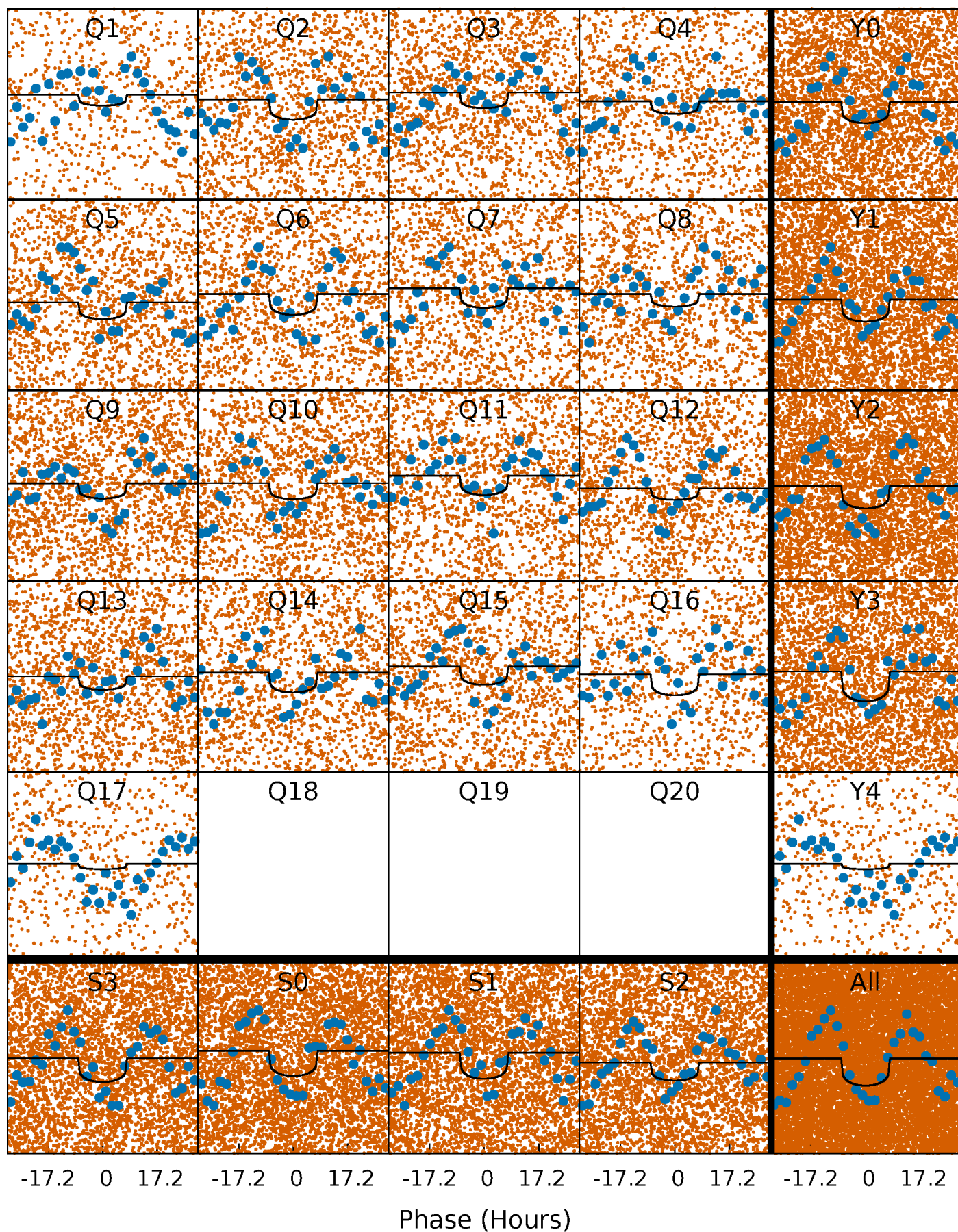
PDC Quarter-Phased Transit Curves

TCE 009180566-01 P= 4.356450 Days $T_0=135.630488$ (BKJD)



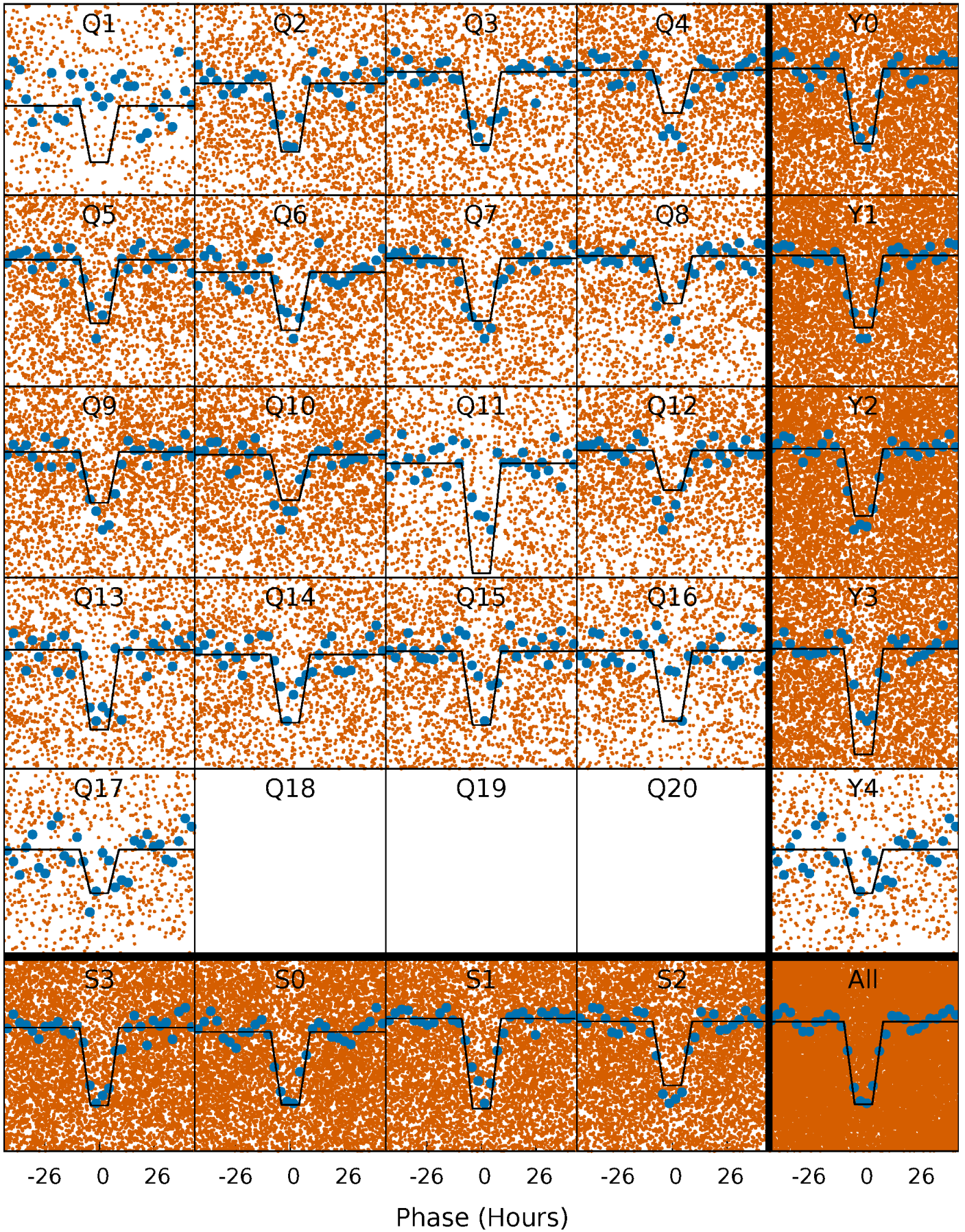
DV Quarter-Phased Transit Curves

TCE 009180566-01 P= 4.356450 Days $T_0=135.630488$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

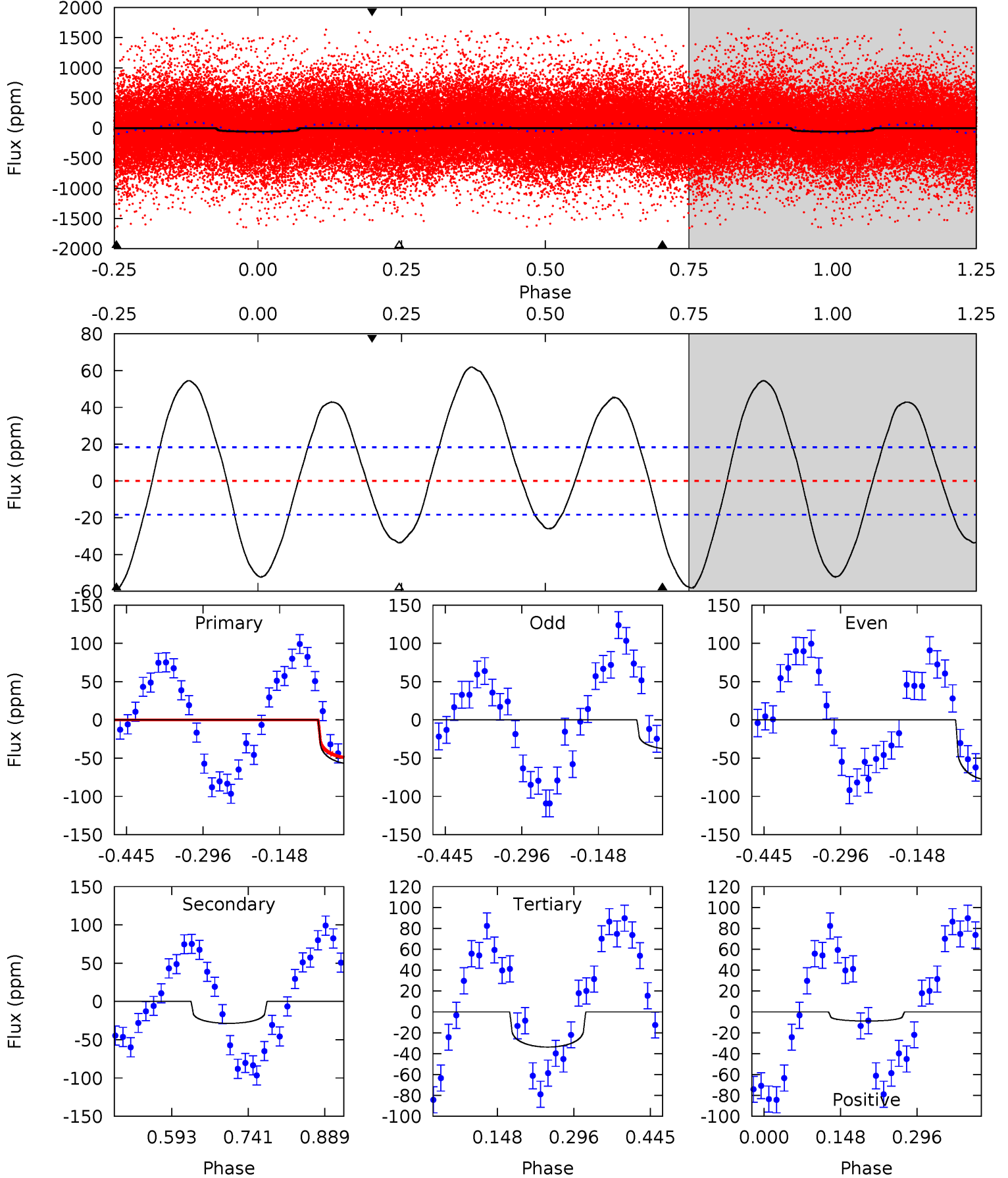
TCE 009180566-01 P= 4.356267 Days $T_0=135.672036$ (BKJD)



DV Model-Shift Uniqueness Test

009180566-01, P = 4.356450 Days, E = 131.274038 Days

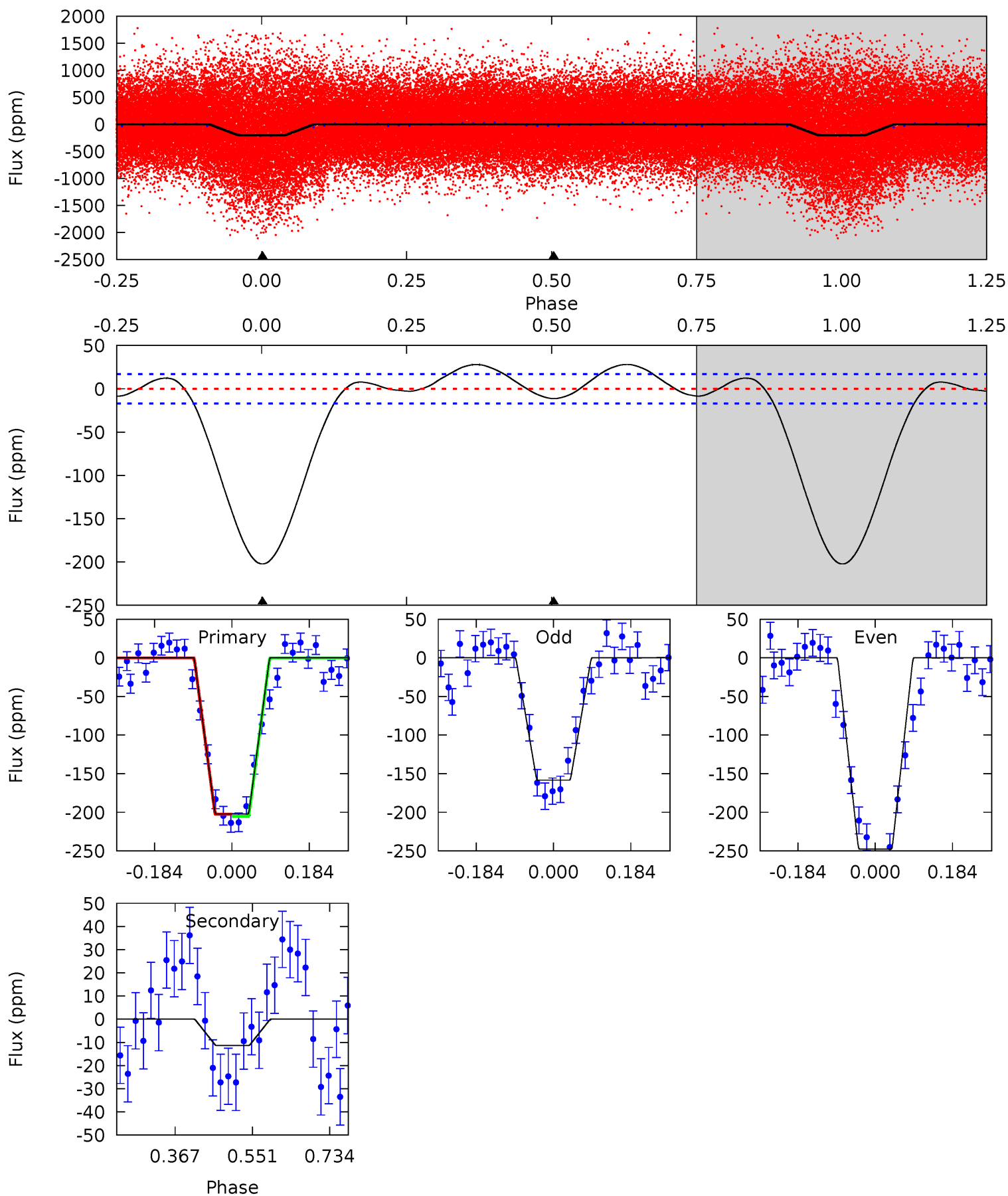
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.2	7.00	8.24	-2.15	4.48	1.45	7.92	6.00	16.4	-1.24	9.15	5.02	0.90	0.52	2.13



Alt Model-Shift Uniqueness Test

009180566-01, P = 4.356267 Days, E = 131.315769 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
52.6	2.96	0	0	4.44	1.33	1.49	52.6	52.6	2.96	2.96	11.6	0.61	0.12	0.35



Stellar Parameters For KIC 009180566

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5895^{+195}_{-177}	$3.747^{+0.640}_{-0.160}$	$-0.400^{+0.350}_{-0.250}$	$2.401^{+0.591}_{-1.380}$	$1.173^{+0.174}_{-0.299}$	$0.119^{+1.254}_{-0.050}$
	+3%/-3%	+17%/-4%	+87%/-62%	+25%/-57%	+15%/-25%	+1050%/-42%
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 009180566-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-29 ± 4	$1.90^{+1.54}_{-1.23}$	2357^{+215}_{-365}	4887^{+2872}_{-951}	13^{+92}_{-9}
Alt.	-11 ± 4	$3.37^{+1.93}_{-1.71}$	2337^{+218}_{-375}	3223^{+811}_{-515}	$1.534^{+5.193}_{-0.941}$

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 $A_{obs} \gg 1.0$

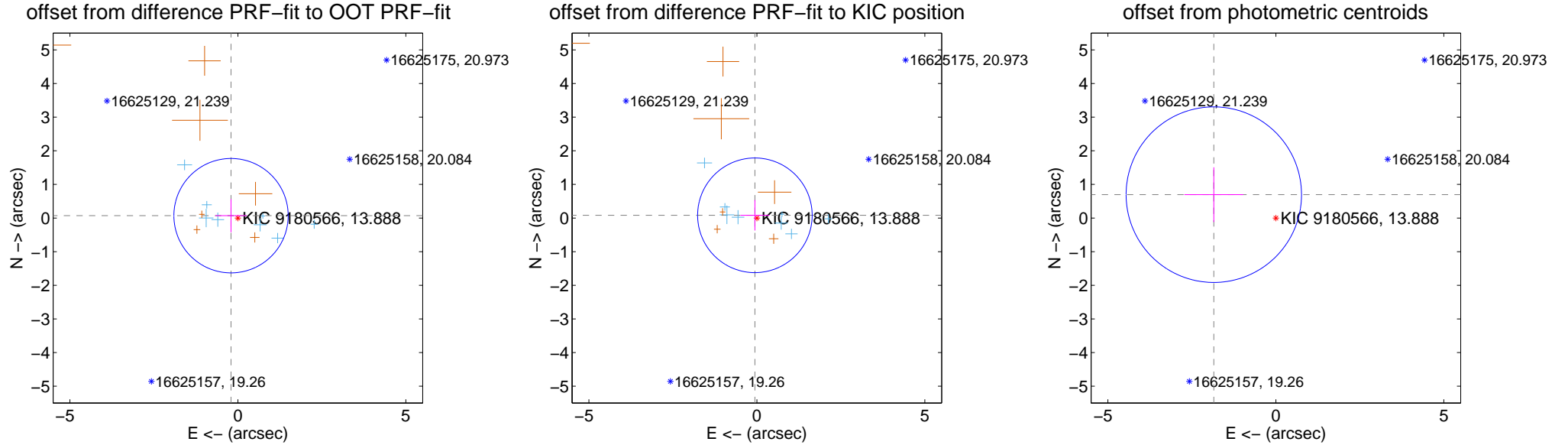
DV Centroid Data

Supplemental centroid analysis for 009180566-01. Kepler magnitude: 13.89. Transit SNR 6.16

There are 8 quarters with good PRF difference image offsets

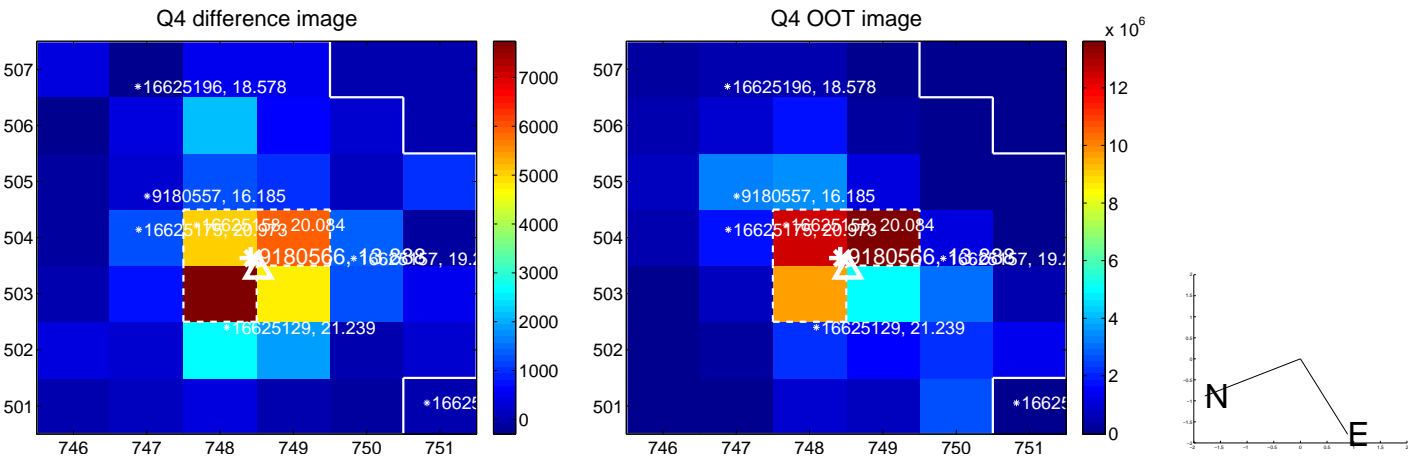
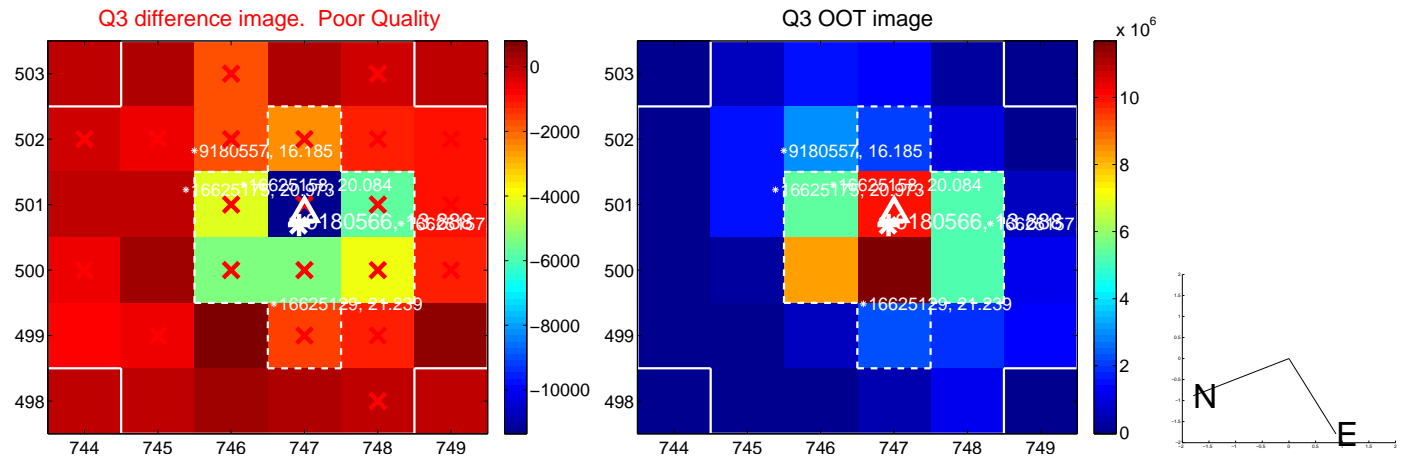
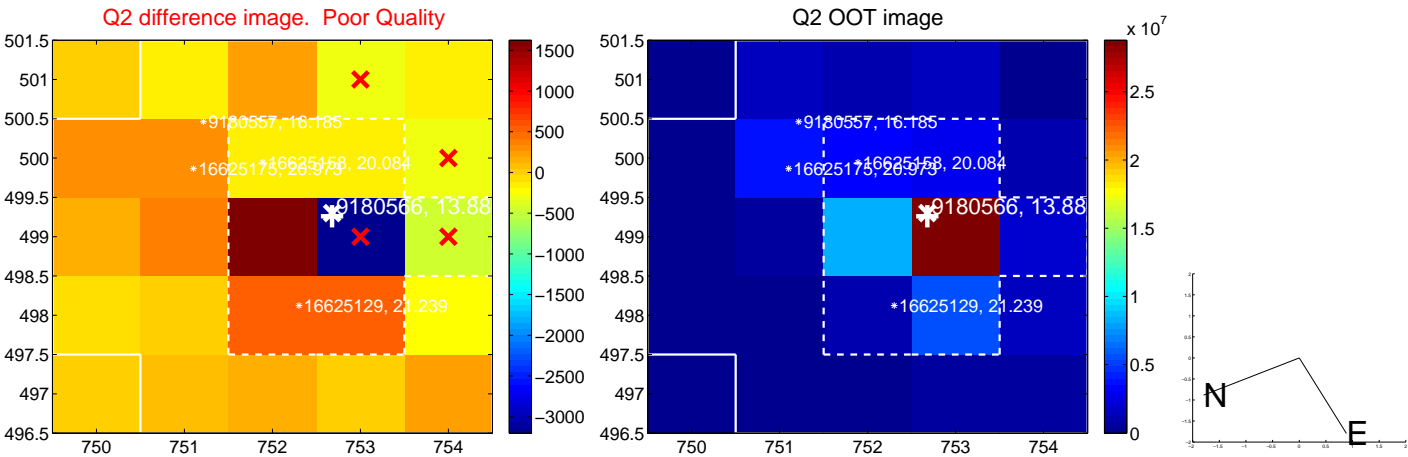
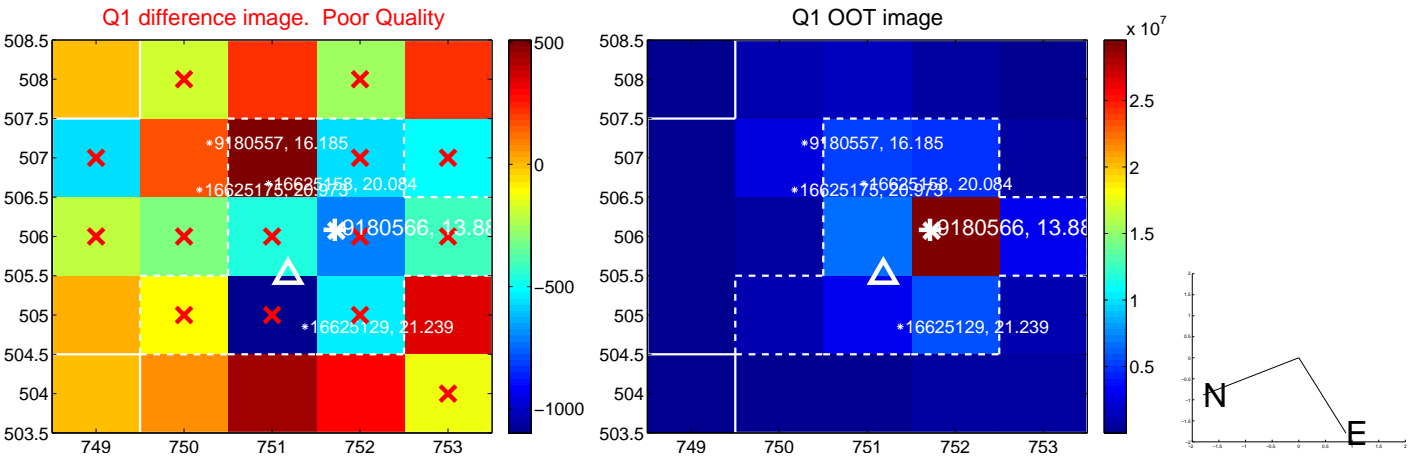
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.216 ± 0.567	0.38	0.204 ± 0.469	0.070 ± 0.493
PRF-fit source offset from KIC position	0.100 ± 0.568	0.18	0.059 ± 0.432	0.081 ± 0.453
photometric centroid source offset	1.97 ± 0.87	2.27	1.85 ± 0.88	0.70 ± 0.81

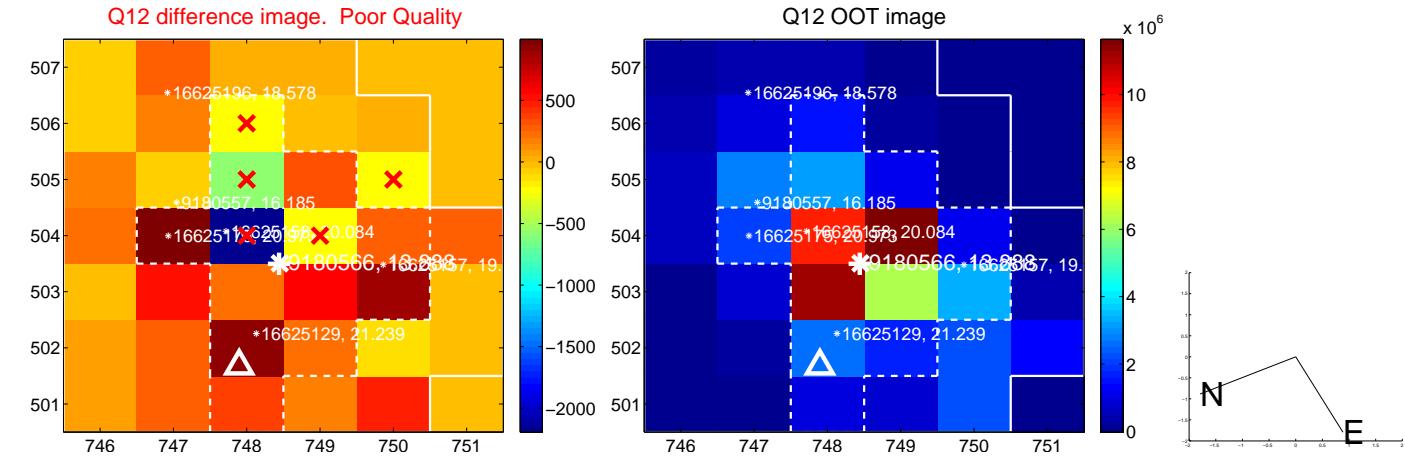
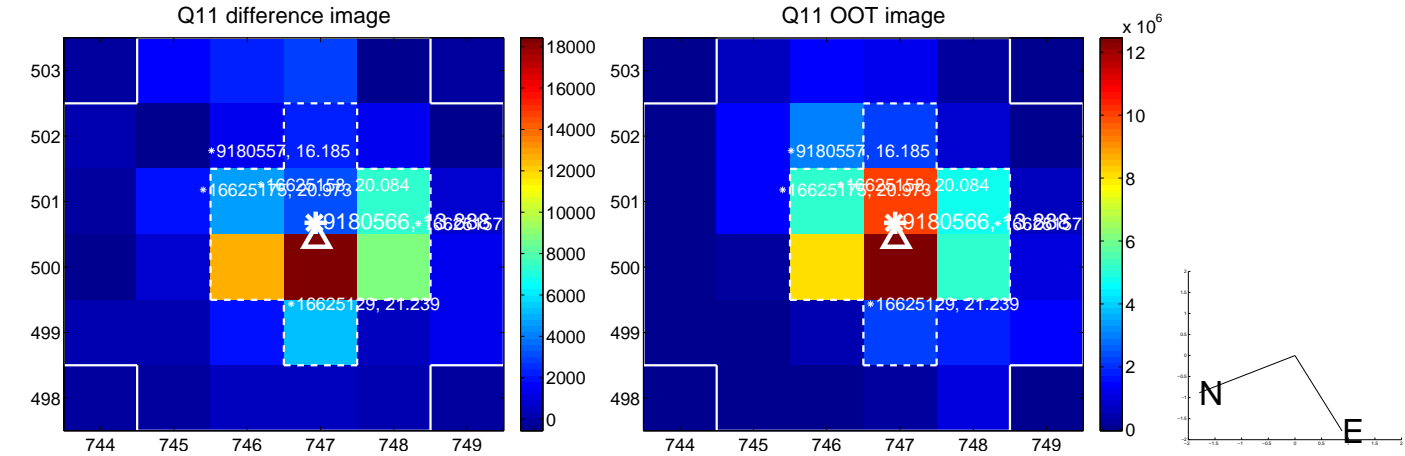
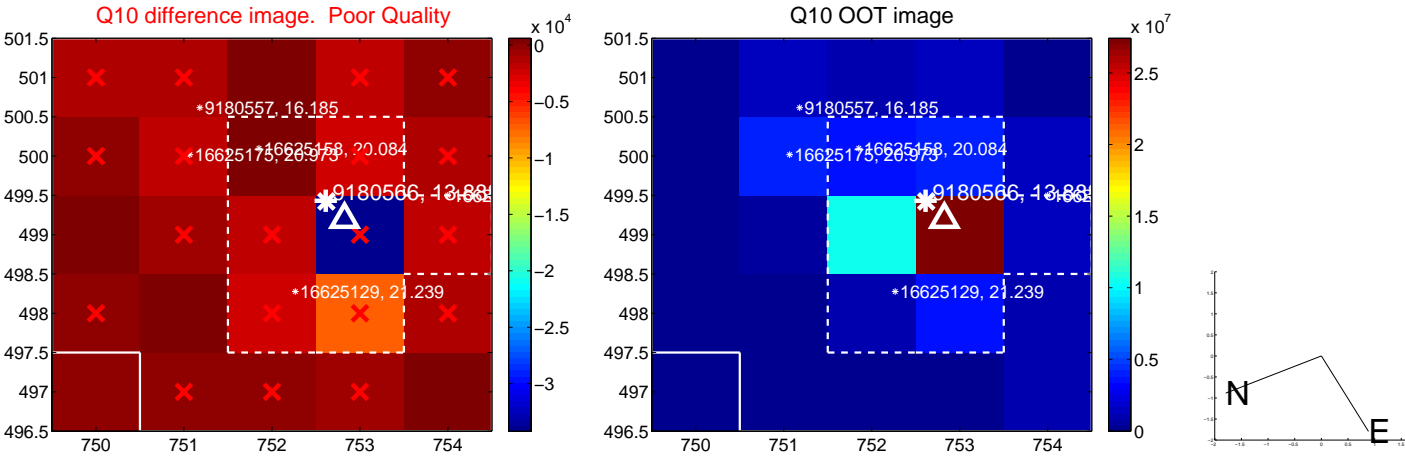
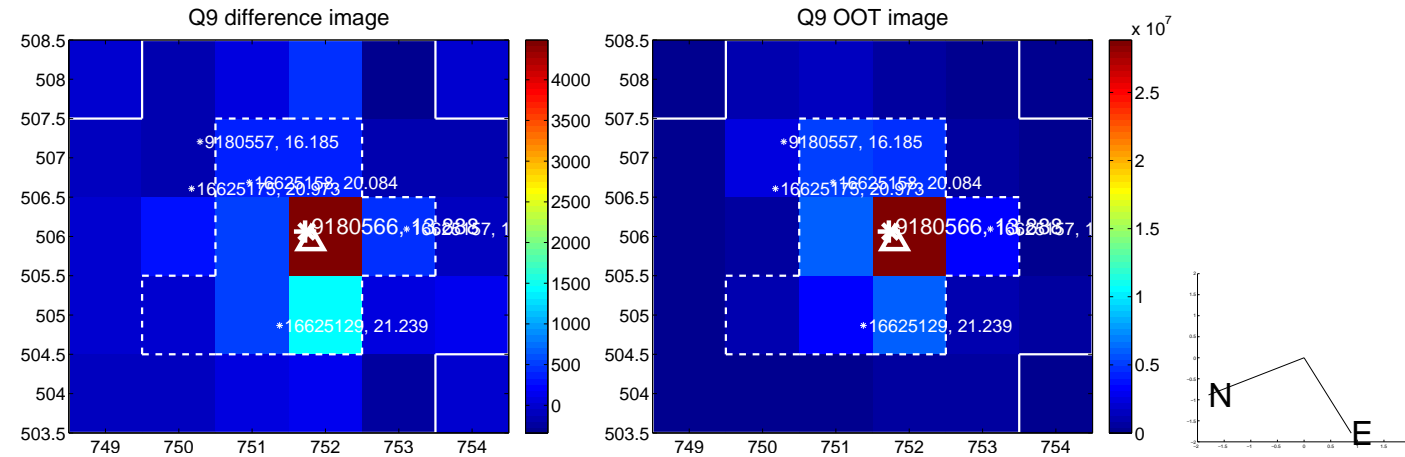


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

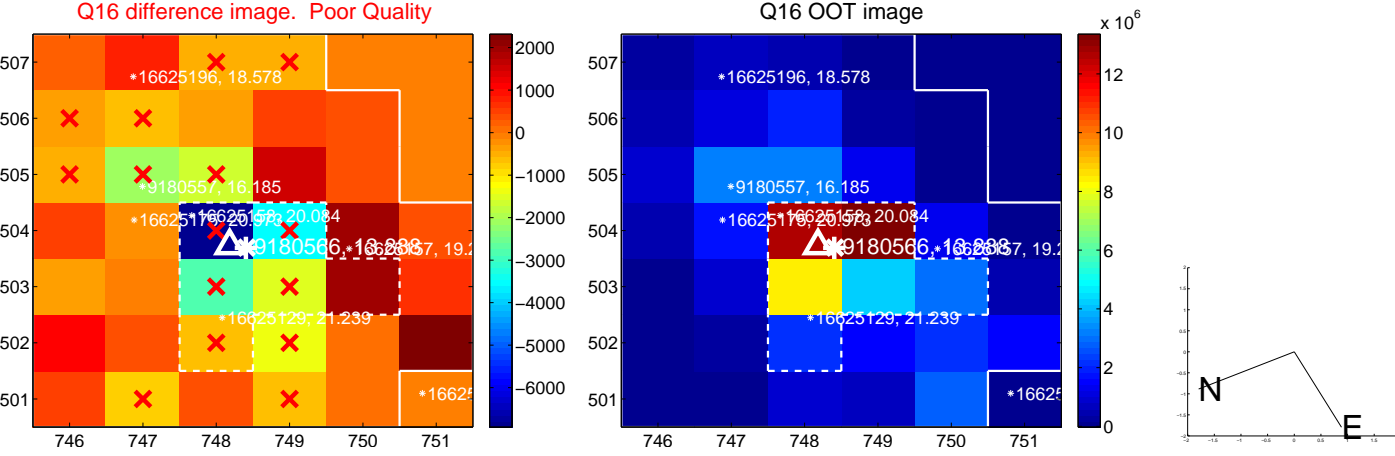
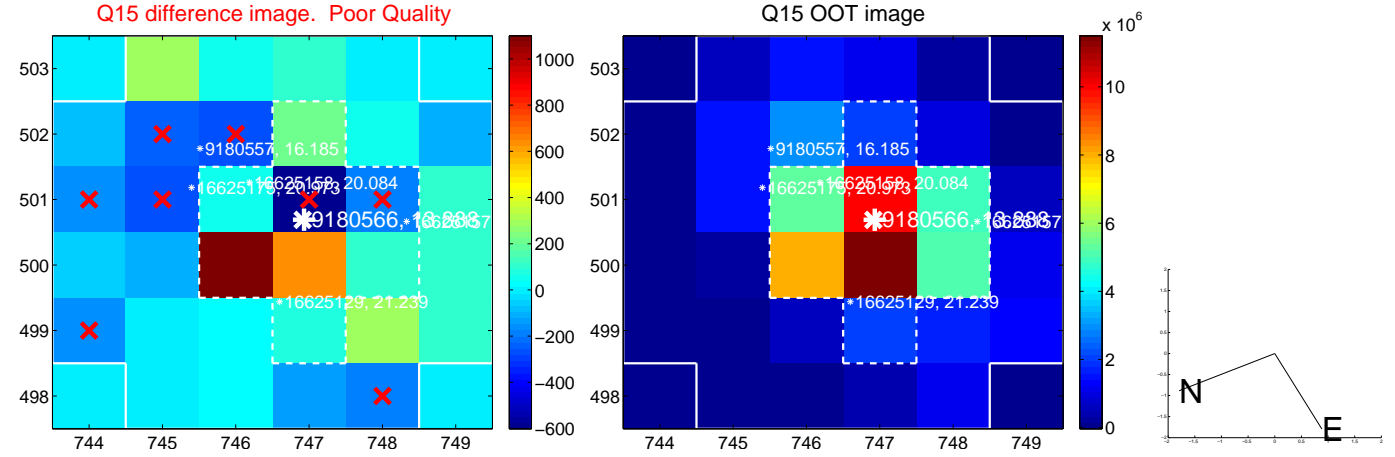
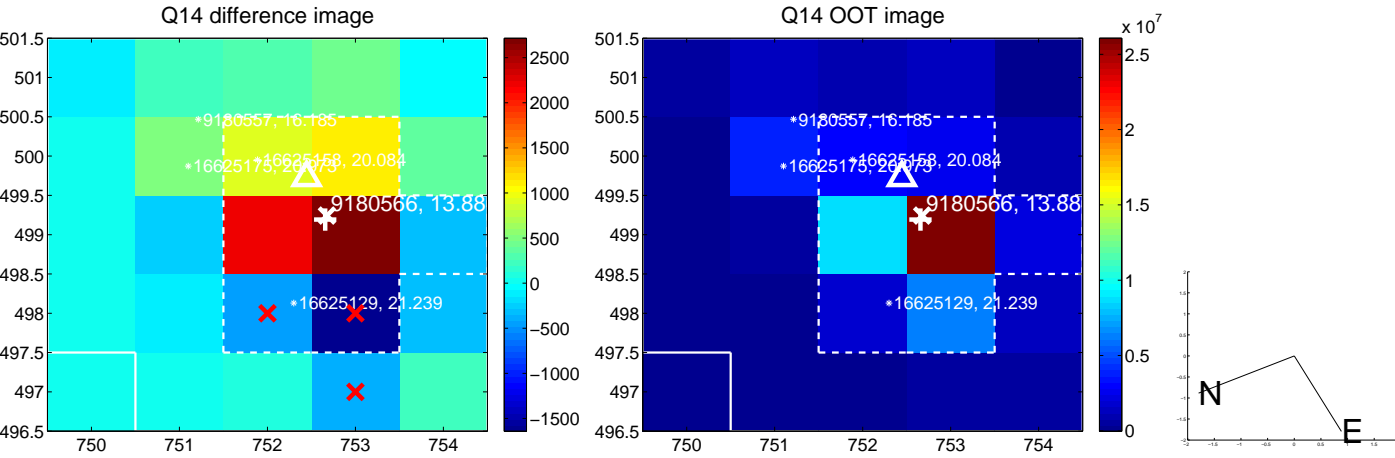
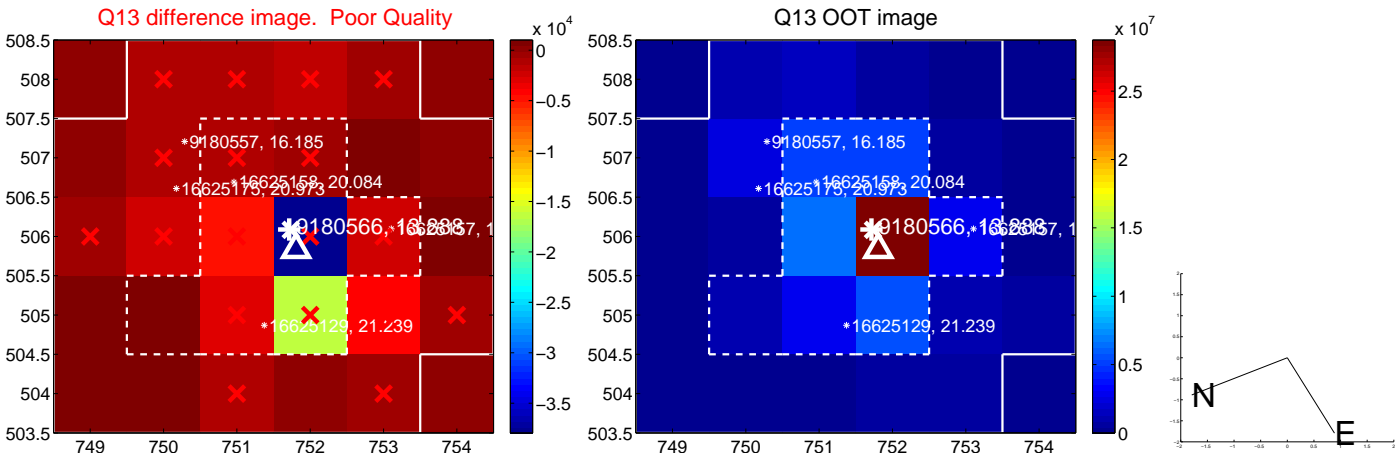
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



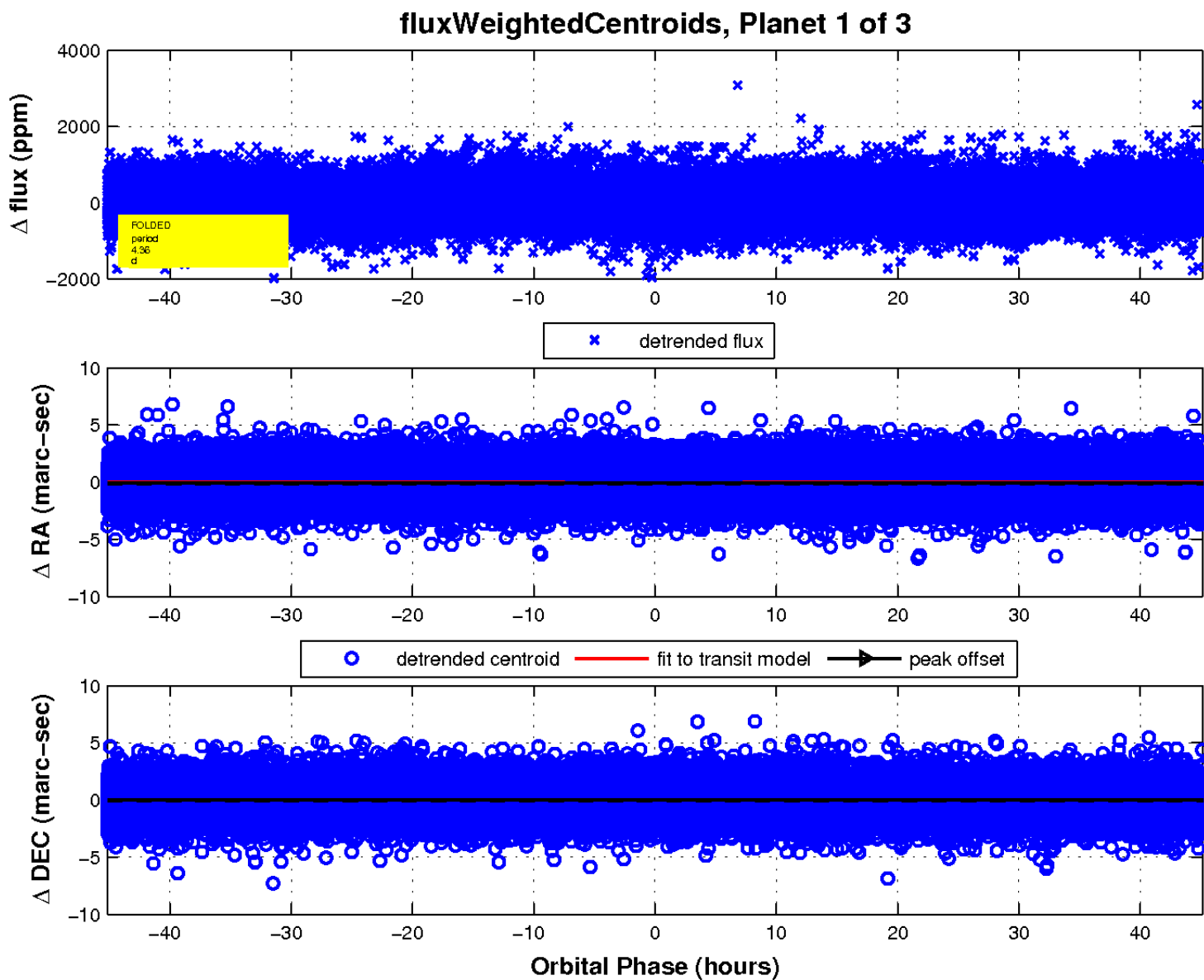
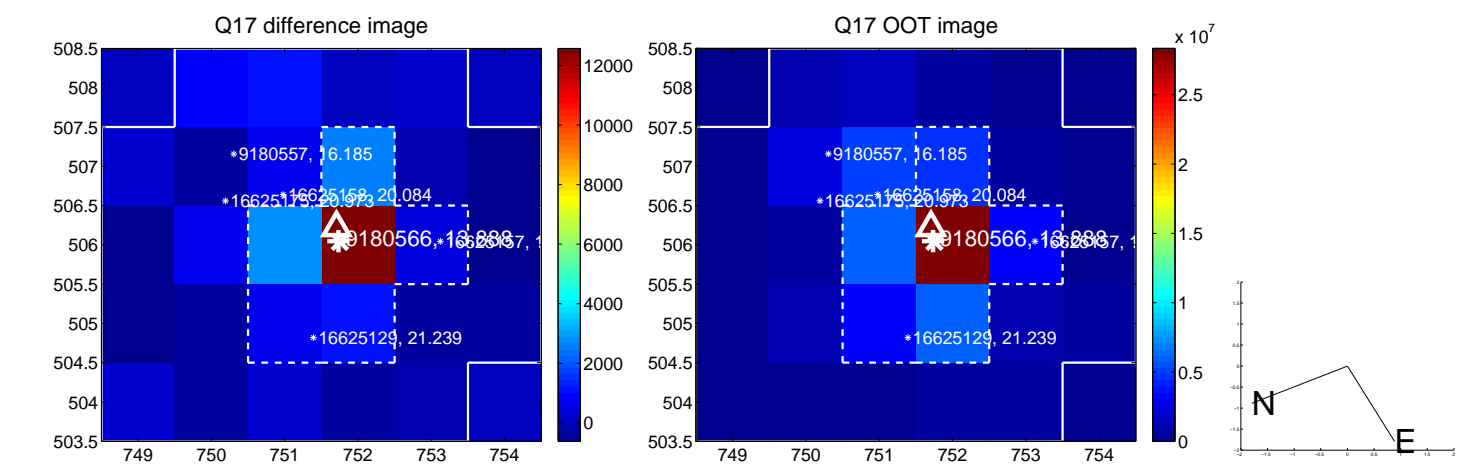
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

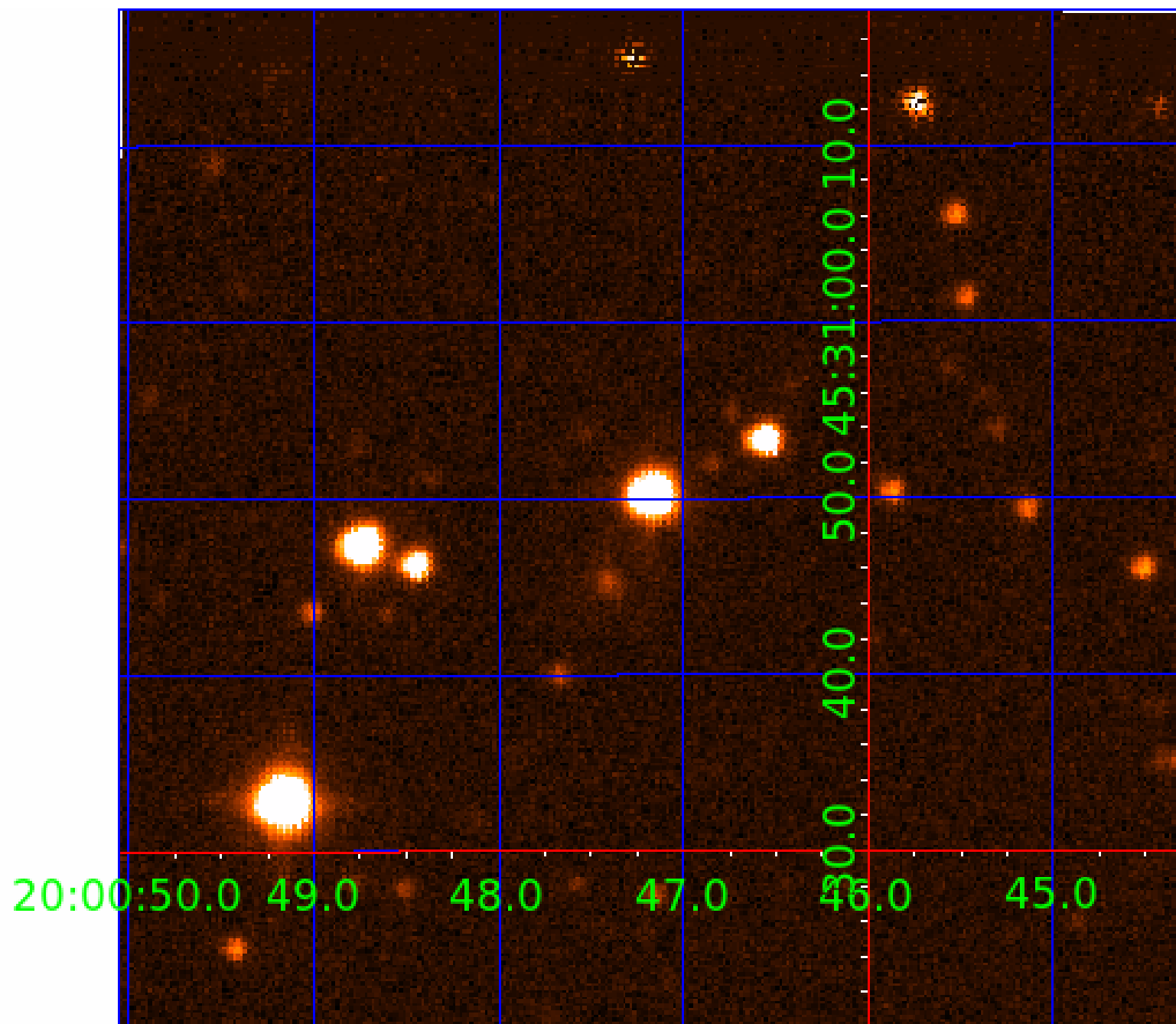


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009180566

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})
009180566-01	OBS	No	4.356450	135.630488	53.5	15.054	8.4	6.2	2.40	5895	1.76	2055.48
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009180566-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009180566-02	OBS	FP	0.00	1	0	0	0	LPP_DV
009180566-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_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.

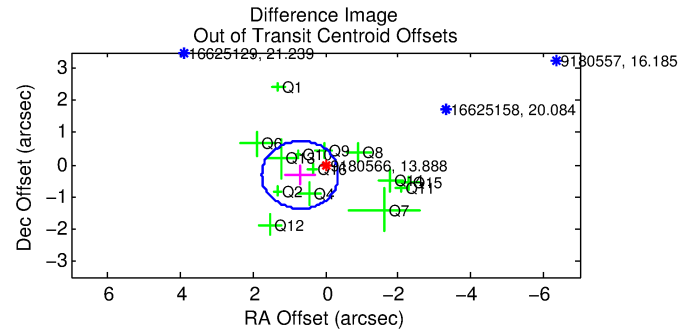
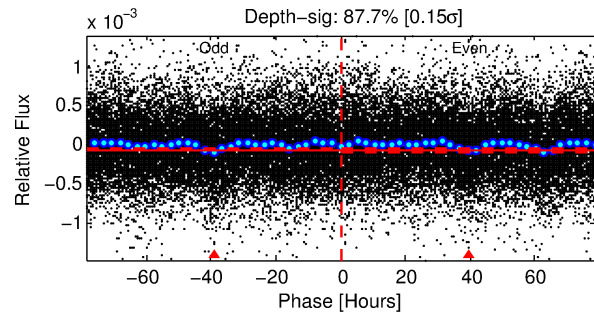
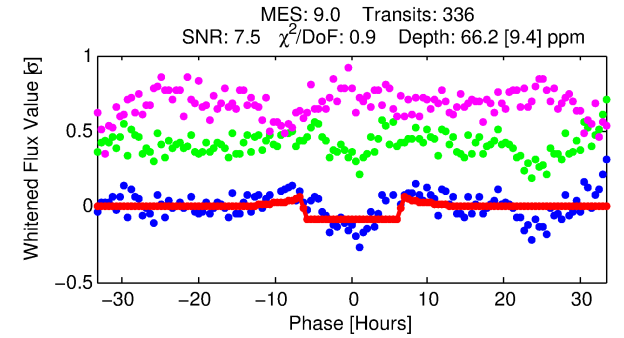
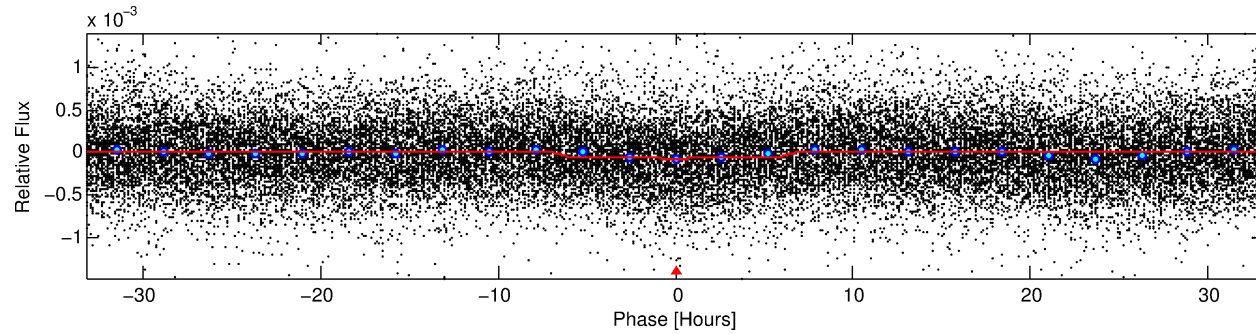
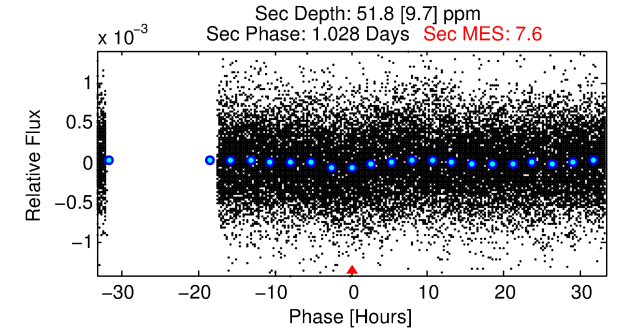
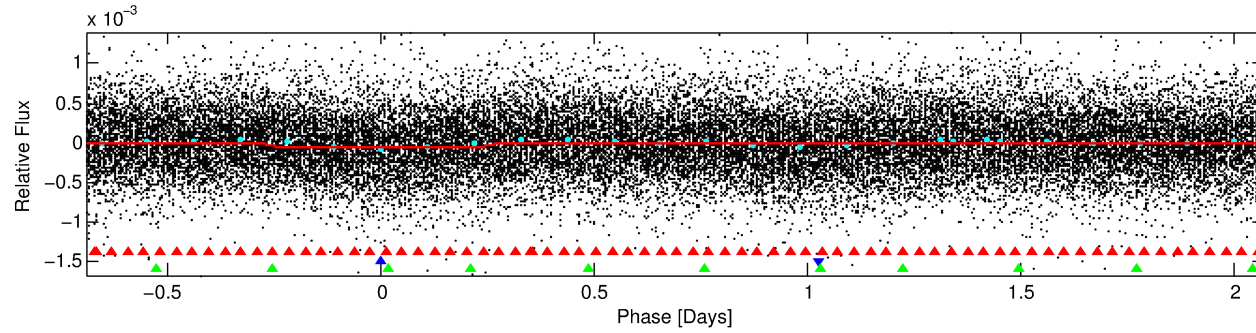
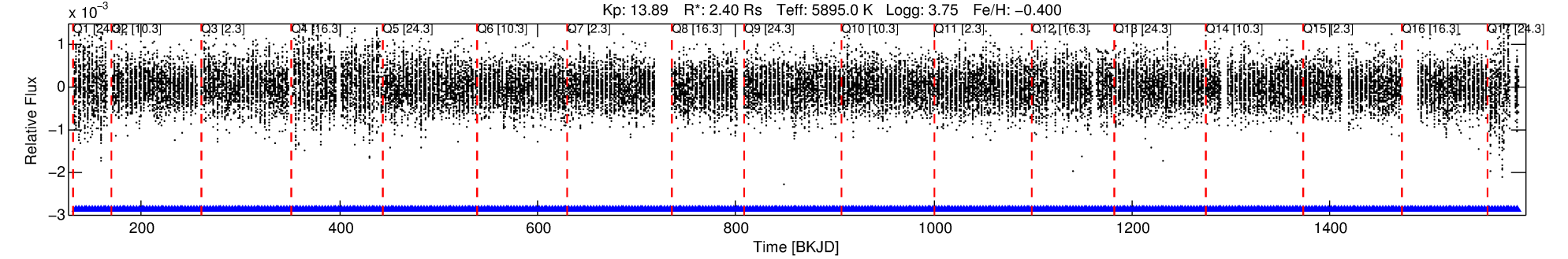
Ephemeris Match Information For 009180566-02

No Significant Match Found

DV One-Page Summary

KIC: 9180566 Candidate: 2 of 3 Period: 2.765 d

KOI: K04616 Corr: No Ephemeris Match



DV Fit Results:

Period = 2.76540 [0.00004] d
Epoch = 134.1784 [0.0085] BKJD
Rp/R* = 0.0080 [0.0034]
a/R* = 1.40 [1.44]
b = 0.73 [1.36]
Seff = 3767.74 [4004.29]
Teff = 1998 [531] K
Rp = 2.10 [1.50] Re
a = 0.0407 [0.0253] AU
Ag = 10.65 [14.55] [0.66σ]
Teffp = 5580 [1225] K [2.68σ]

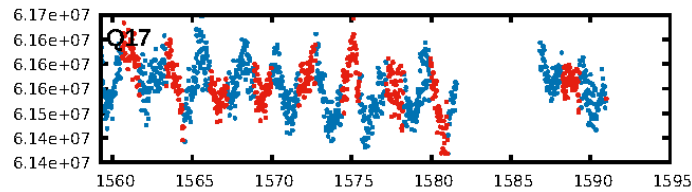
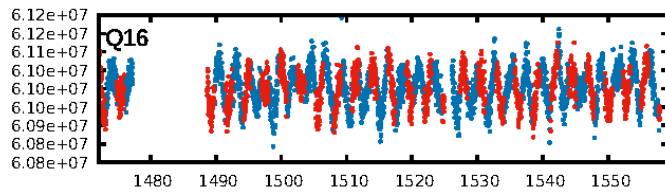
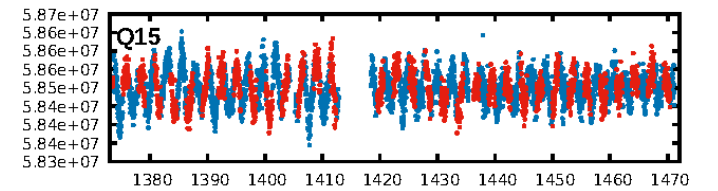
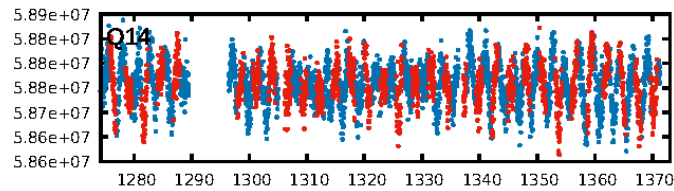
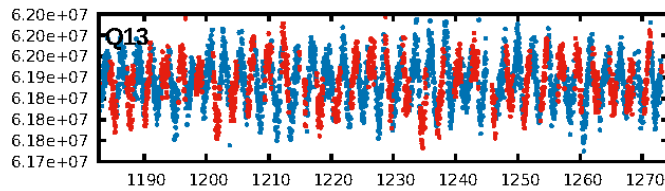
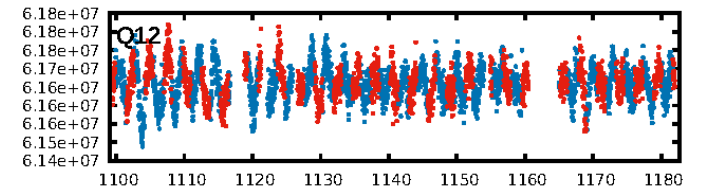
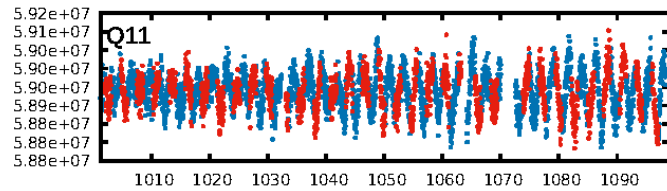
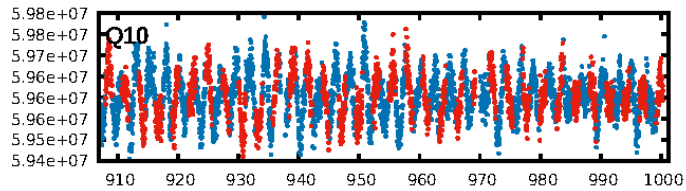
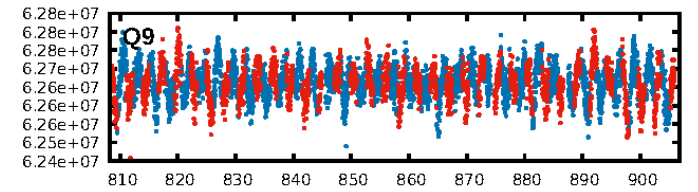
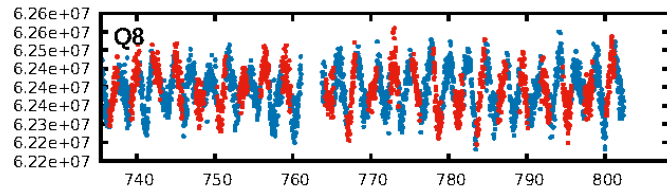
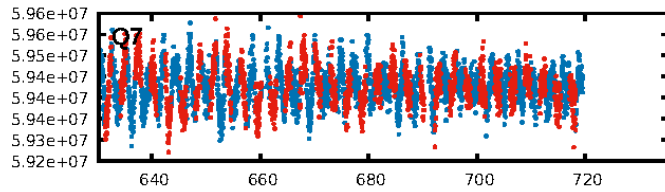
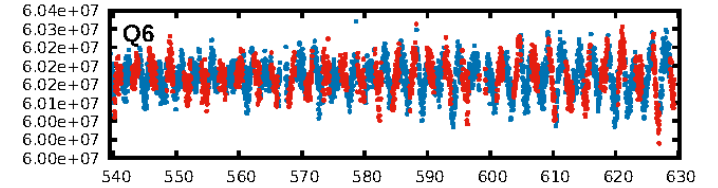
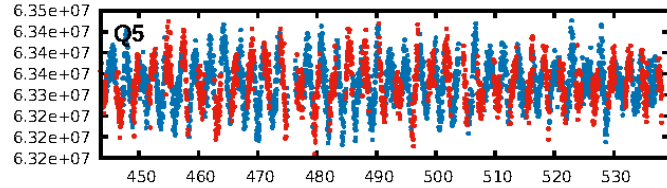
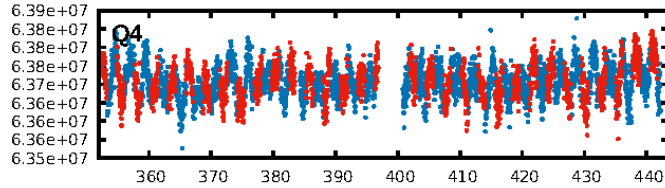
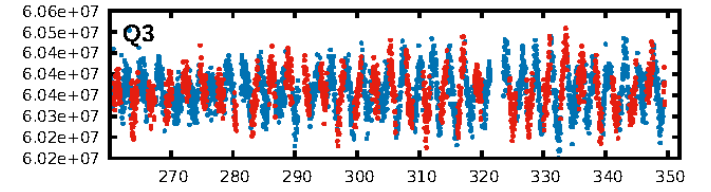
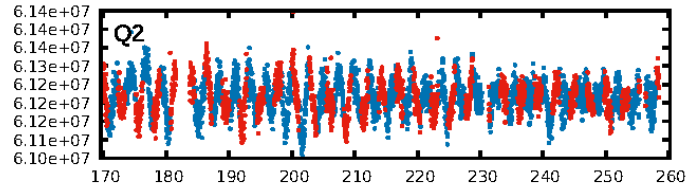
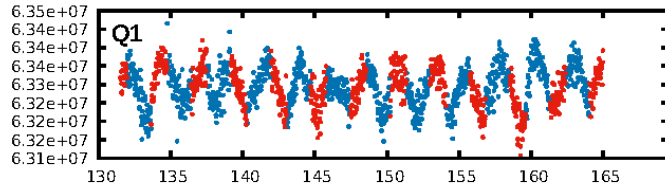
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 94.4% [1.91σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.88e-07
RollingBand-fgt: 1.00 [321/321]
GhostDiagnostic-chr: -0.8306
Centroid-sig: 3.3%
Centroid-so: 0.838 arcsec [1.51σ]
OotOffset-rm: 0.767 arcsec [2.18σ]
KicOffset-rm: 0.843 arcsec [2.42σ]
OotOffset-st: 4/3/4/3 [14]
KicOffset-st: 4/3/4/3 [14]
DiffImageQuality-fgm: 0.71 [10/14]
DiffImageOverlap-fno: 1.00 [17/17]

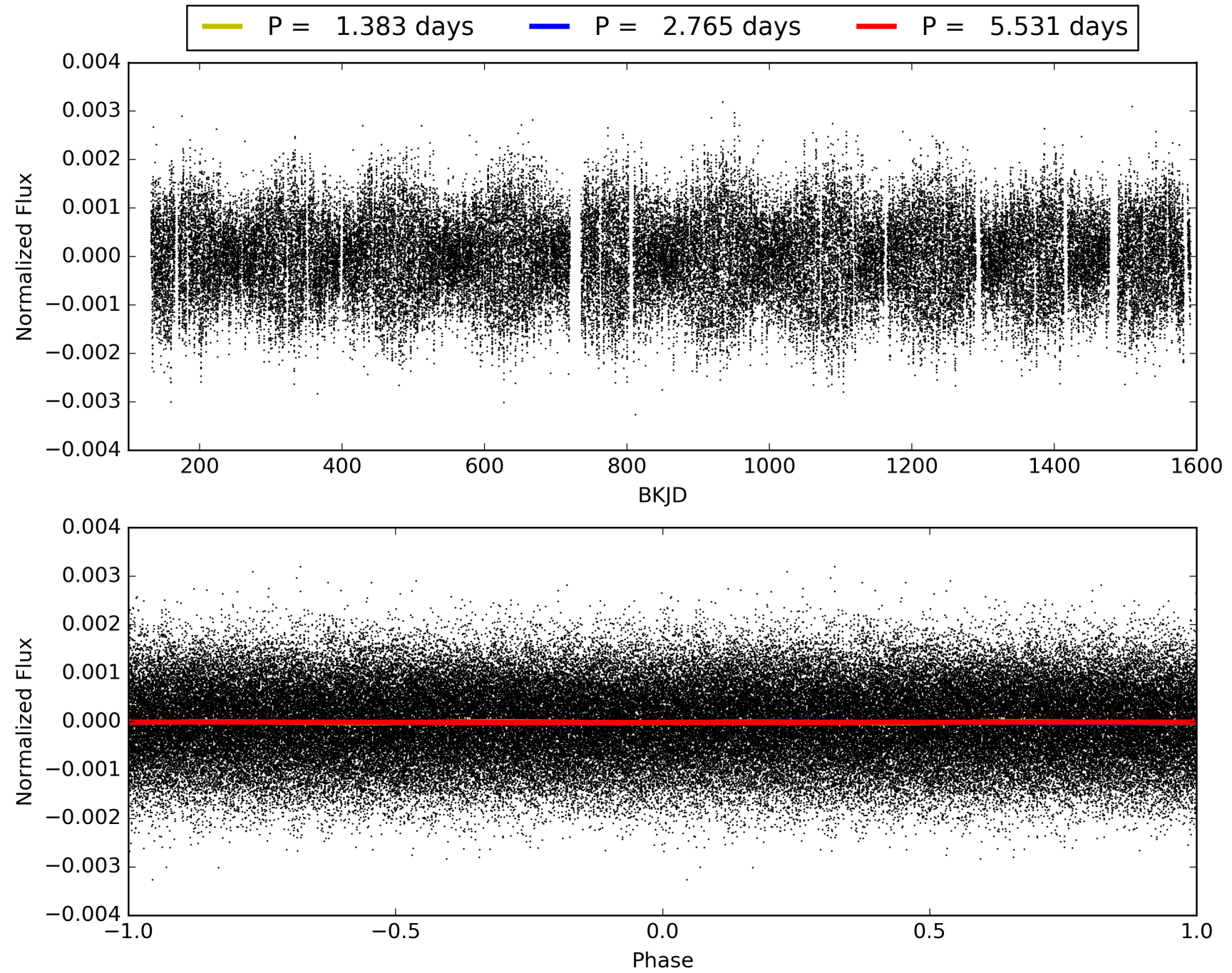
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:47:08 Z

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

TCE 009180566-02, PDC Light Curves

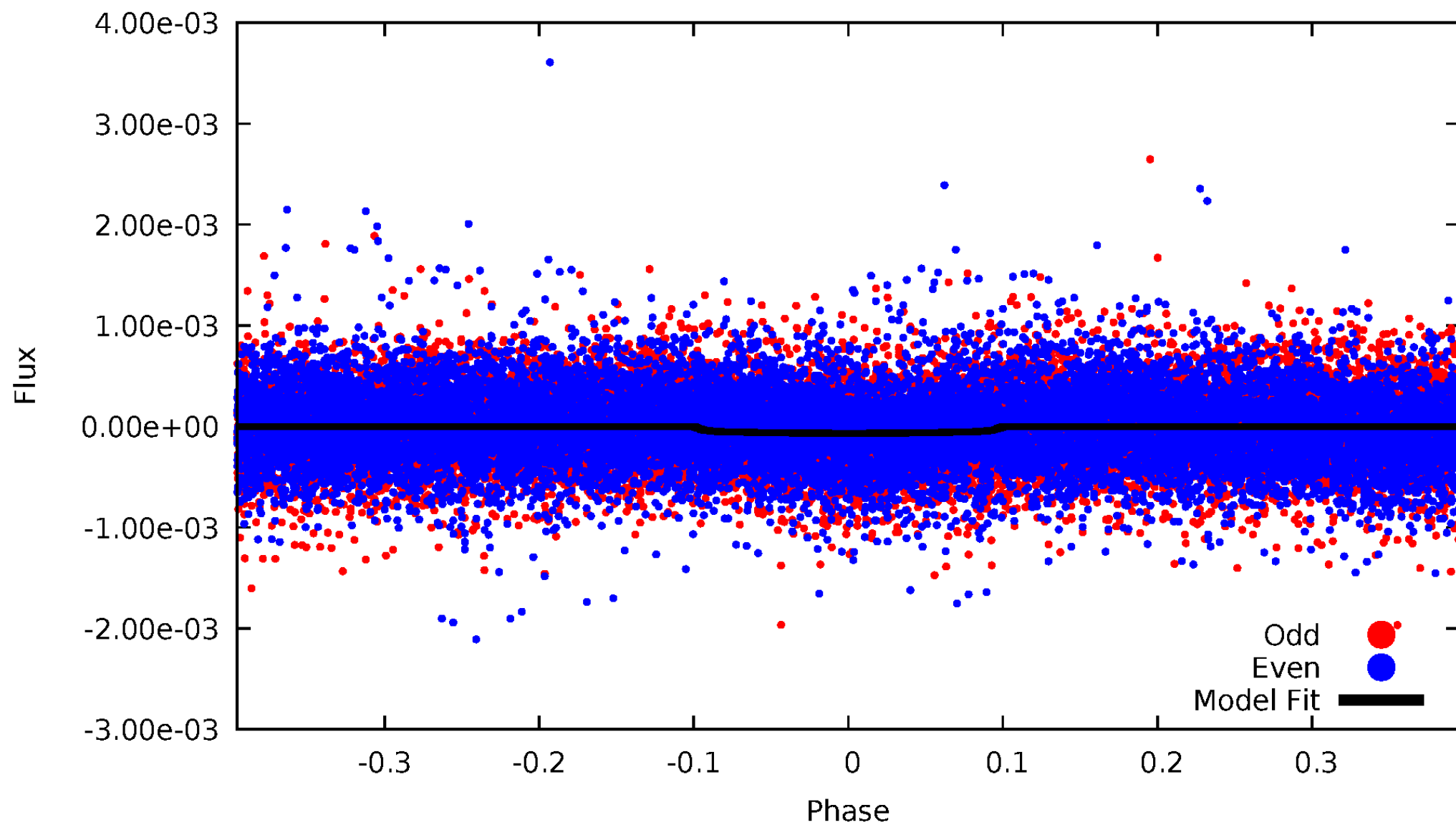


TCE 009180566-02



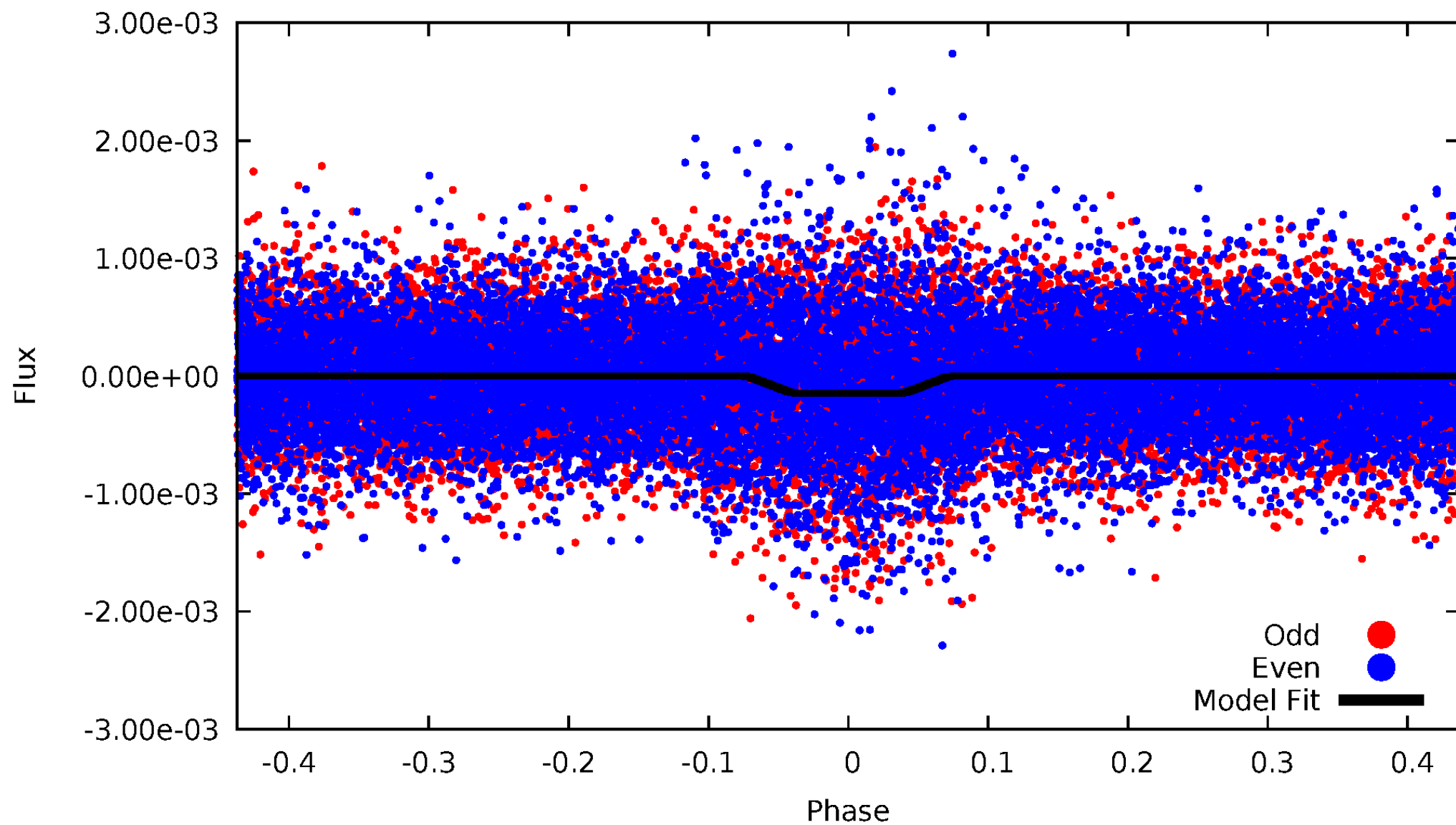
DV Odd/Even

TCE 009180566-02



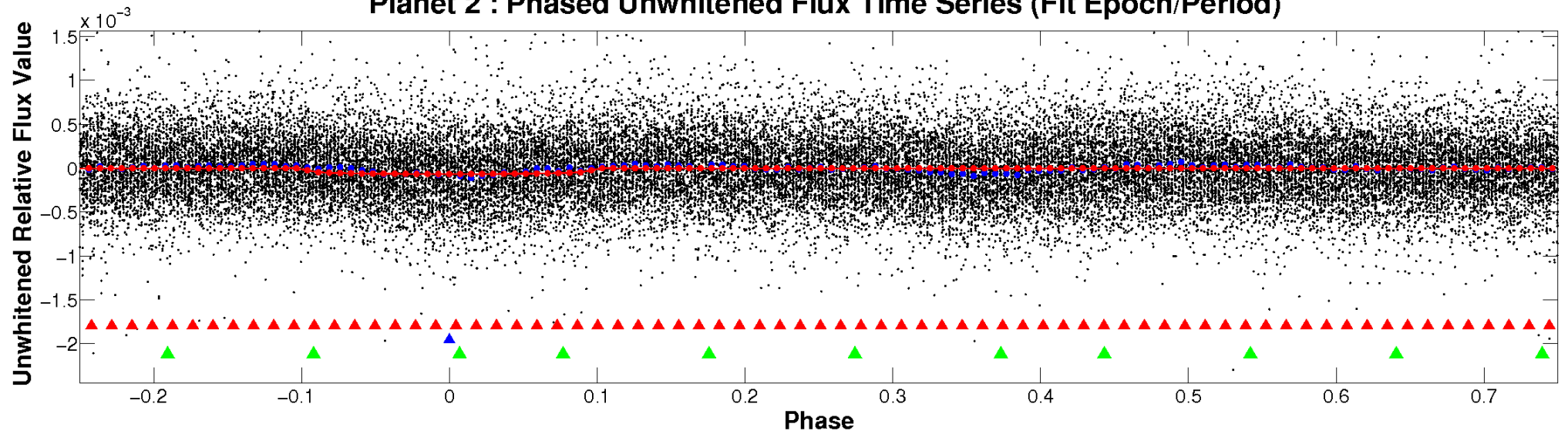
ALT Odd/Even

TCE 009180566-02

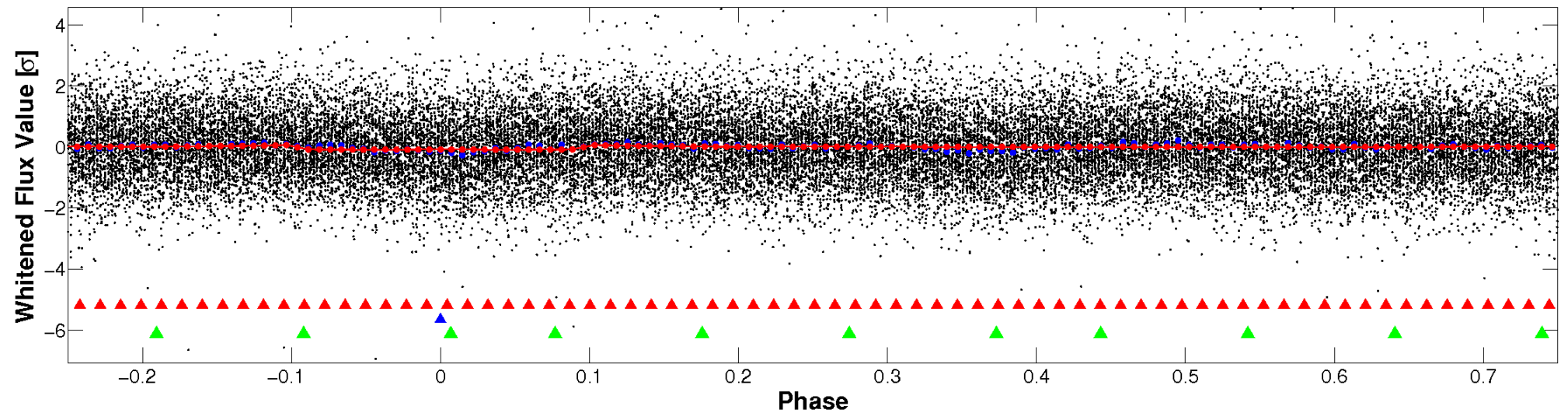


Non-Whitened Vs. Whitened Light Curve

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

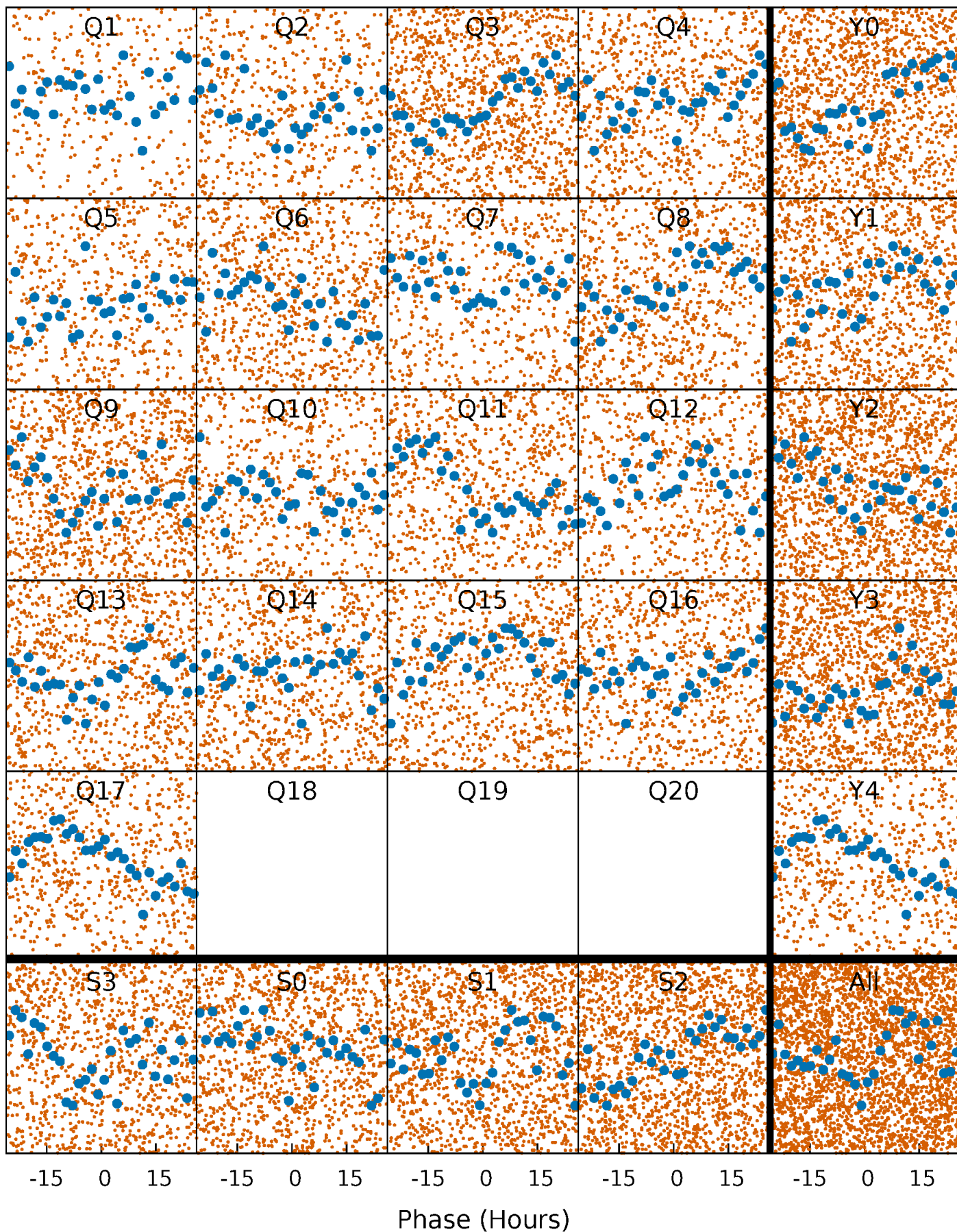


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



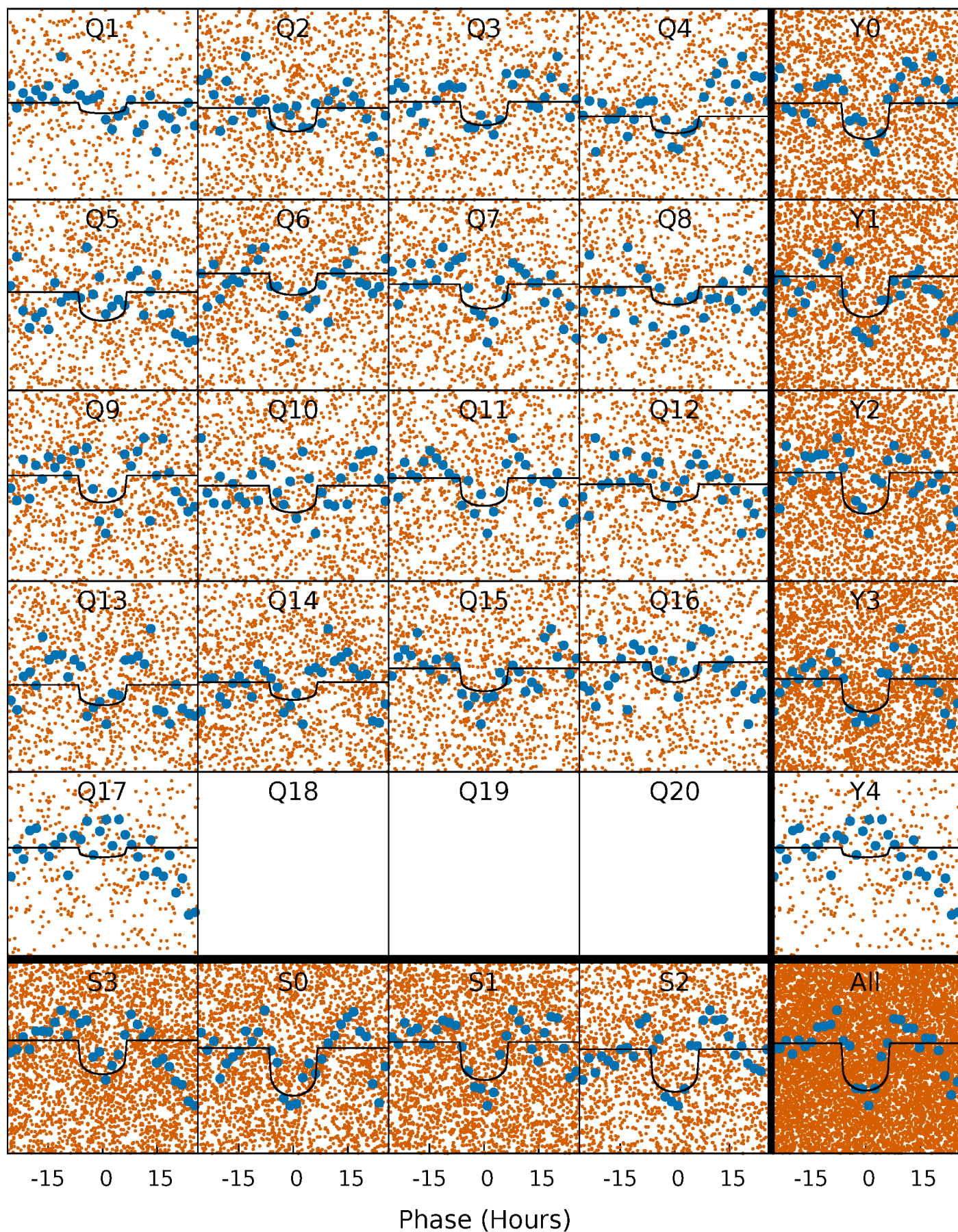
PDC Quarter-Phased Transit Curves

TCE 009180566-02 P= 2.765399 Days $T_0=134.178438$ (BKJD)



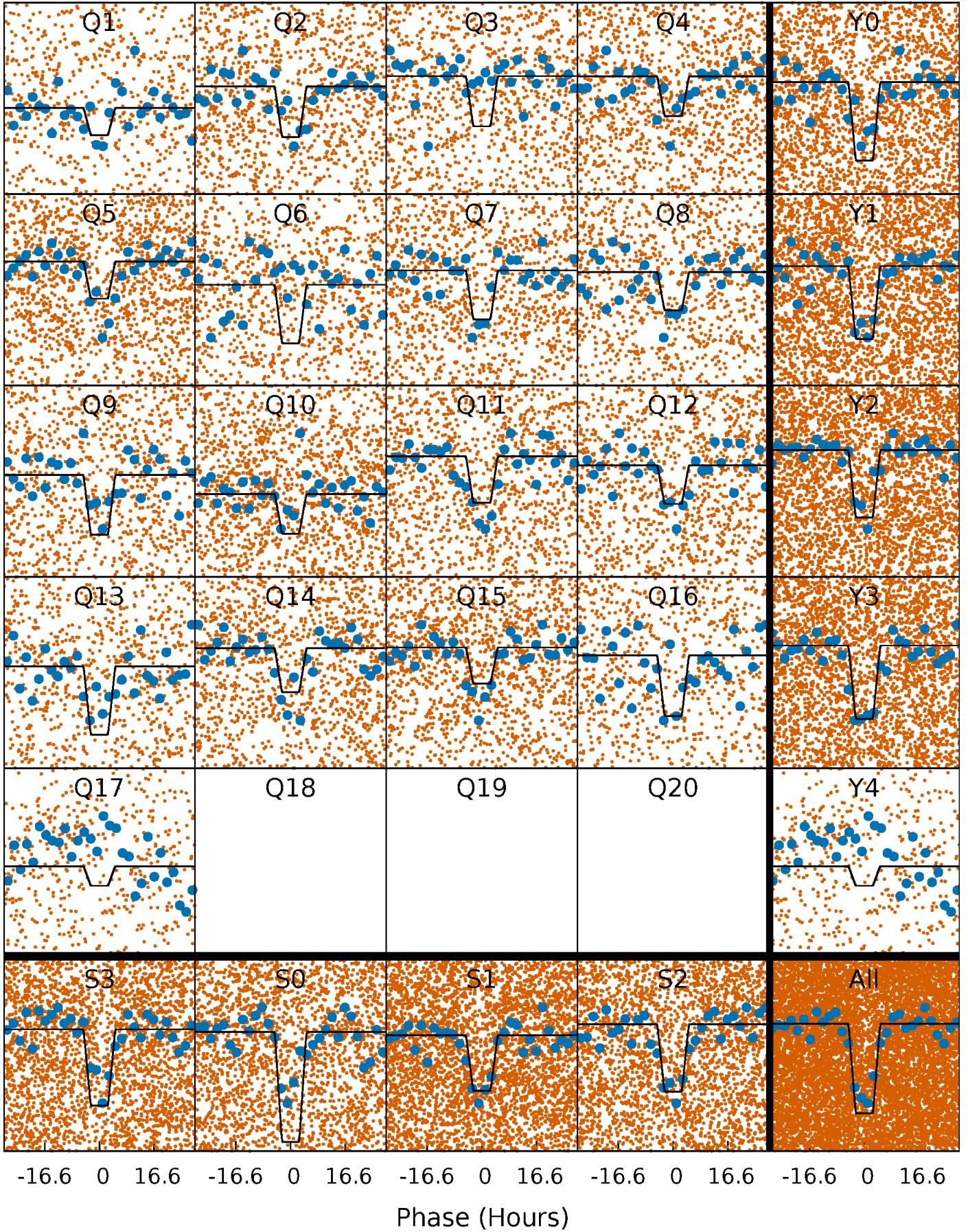
DV Quarter-Phased Transit Curves

TCE 009180566-02 P= 2.765399 Days $T_0=134.178438$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

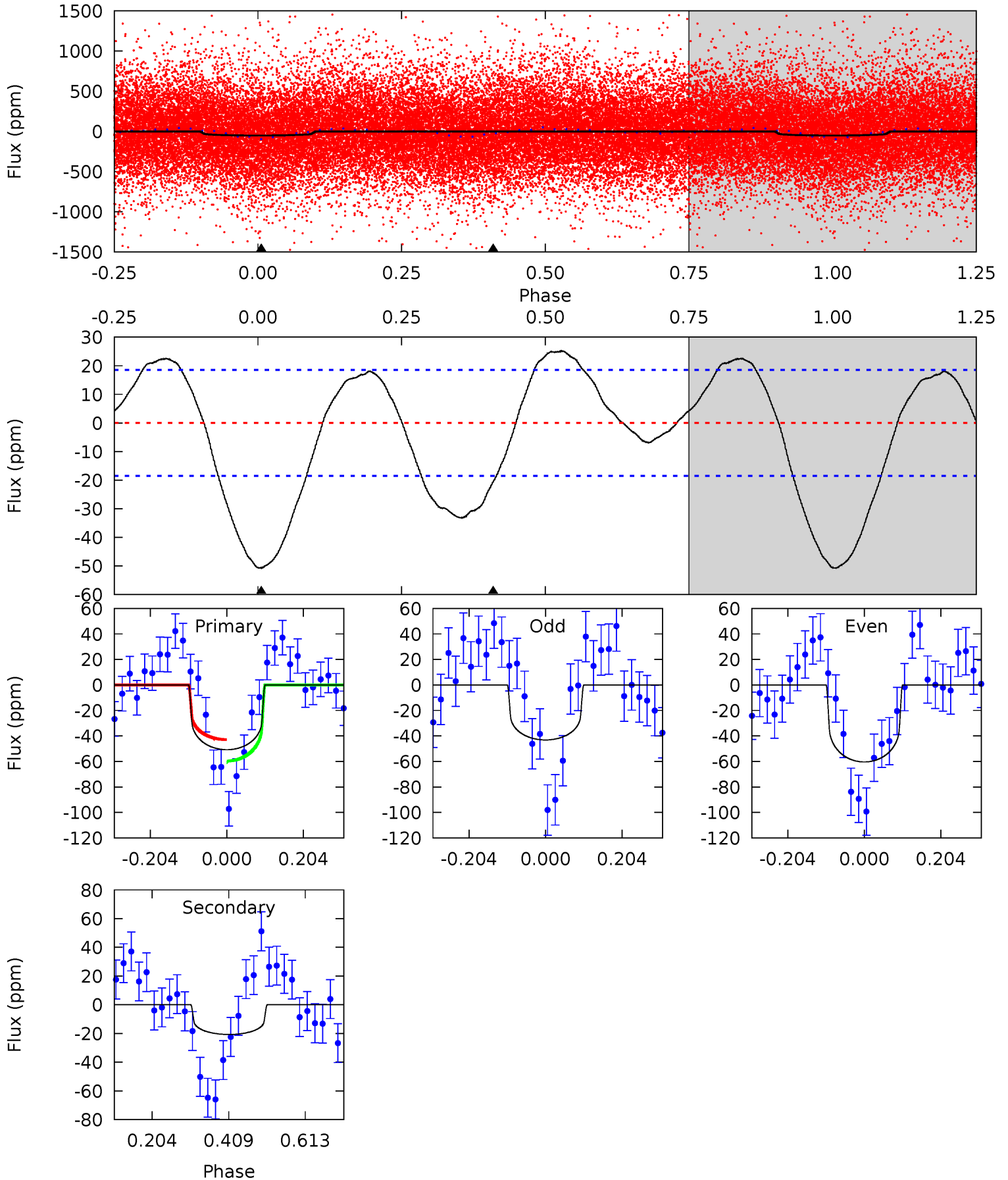
TCE 009180566-02 P= 2.765224 Days $T_0=134.235843$ (BKJD)



DV Model-Shift Uniqueness Test

009180566-02, P = 2.765399 Days, E = 131.413039 Days

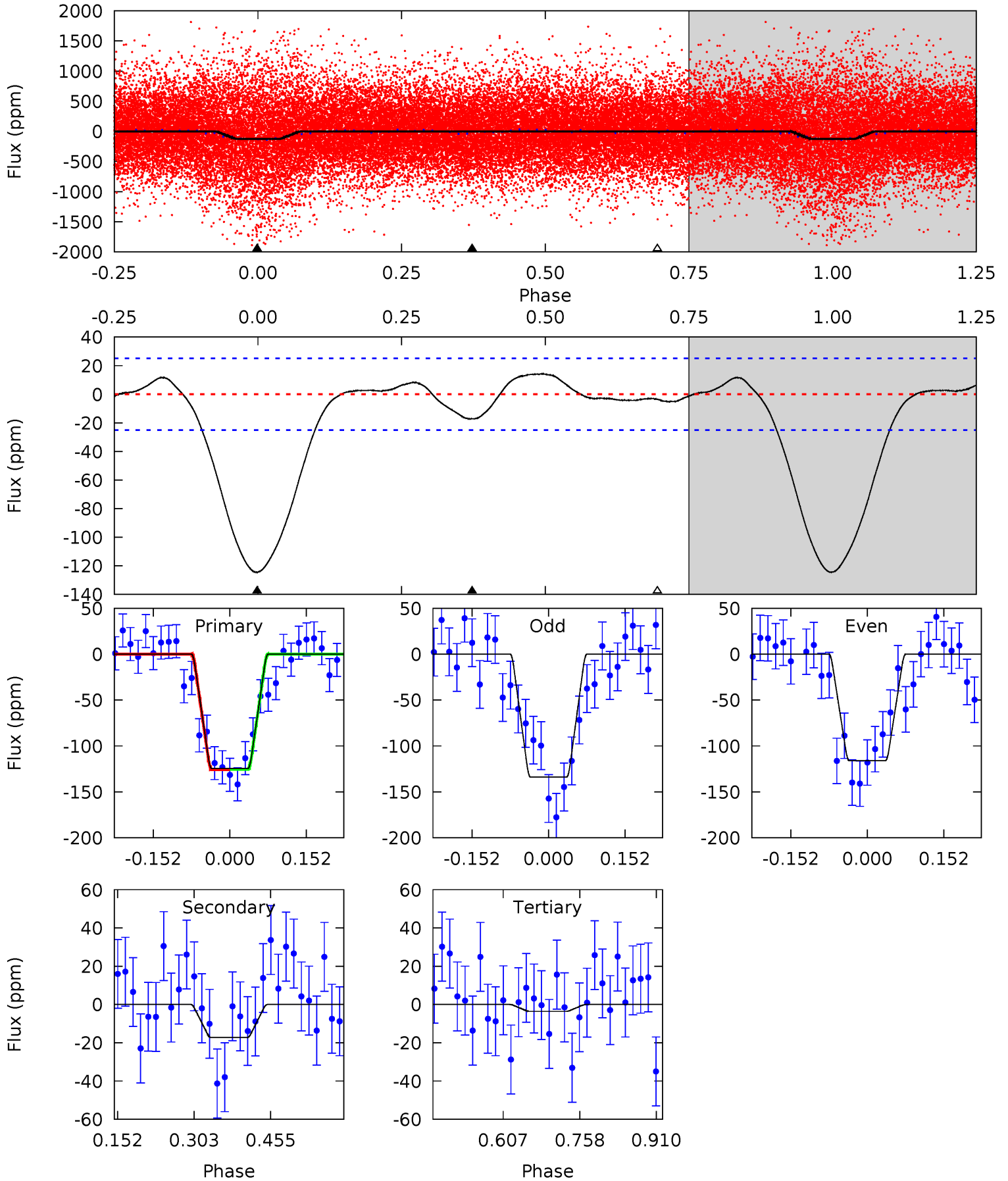
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.1	4.93	0	0	4.41	1.27	1.64	12.1	12.1	4.93	4.93	2.06	0.88	0.33	1.96



Alt Model-Shift Uniqueness Test

009180566-02, P = 2.765224 Days, E = 131.470619 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.2	3.07	0.64	0	4.48	1.43	0.83	21.6	22.2	2.43	3.07	1.59	1.16	0.10	0.03



Stellar Parameters For KIC 009180566

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5895^{+195}_{-177}	$3.747^{+0.640}_{-0.160}$	$-0.400^{+0.350}_{-0.250}$	$2.401^{+0.591}_{-1.380}$	$1.173^{+0.174}_{-0.299}$	$0.119^{+1.254}_{-0.050}$
	+3%/-3%	+17%/-4%	+87%/-62%	+25%/-57%	+15%/-25%	+1050%/-42%
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 009180566-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-21 ± 4	$1.86^{+1.12}_{-0.92}$	2728^{+238}_{-434}	4559^{+1235}_{-686}	$5.564^{+13.643}_{-3.476}$
Alt.	-17 ± 6	$2.82^{+1.30}_{-1.04}$	2729^{+255}_{-429}	3686^{+556}_{-458}	$1.818^{+3.259}_{-0.976}$

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

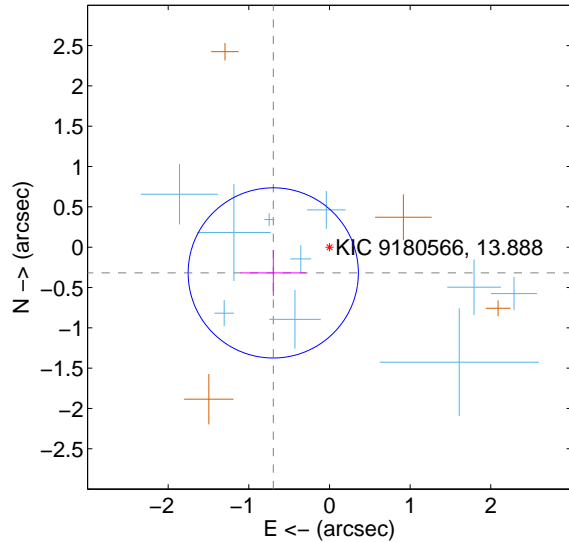
Supplemental centroid analysis for 009180566-02. Kepler magnitude: 13.89. Transit SNR 7.53

There are 10 quarters with good PRF difference image offsets

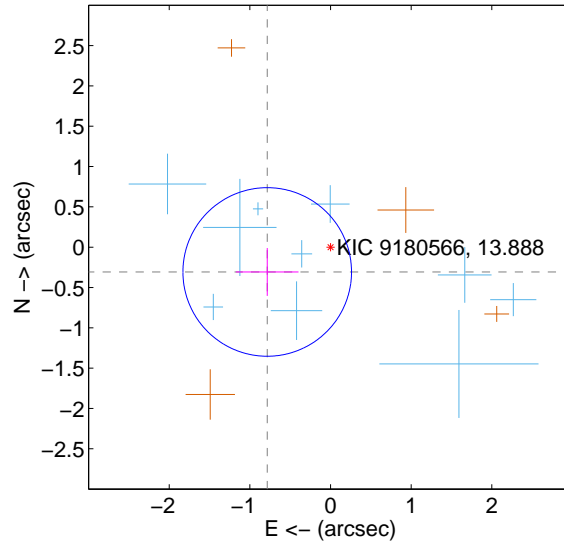
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.767 ± 0.352	2.18	0.697 ± 0.406	-0.319 ± 0.285
PRF-fit source offset from KIC position	0.843 ± 0.348	2.42	0.785 ± 0.388	-0.307 ± 0.296
photometric centroid source offset	0.84 ± 0.55	1.51	0.23 ± 0.59	0.81 ± 0.55

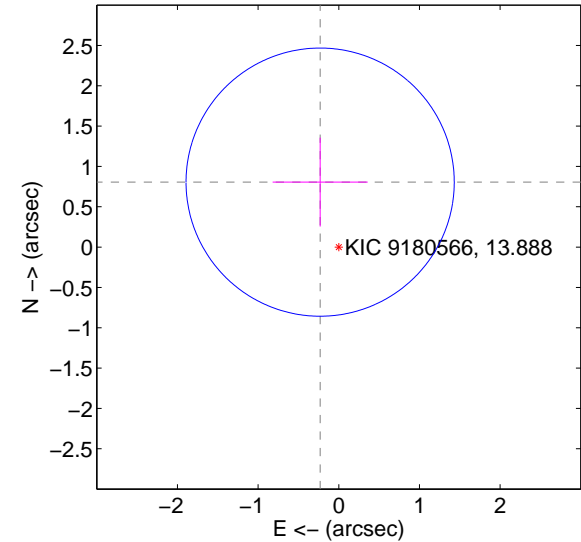
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

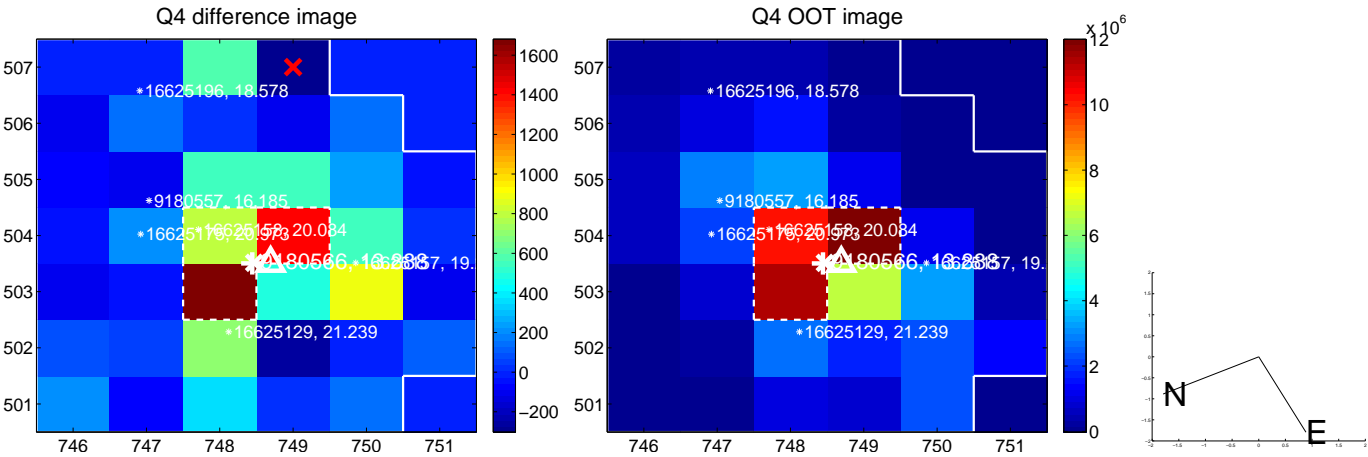
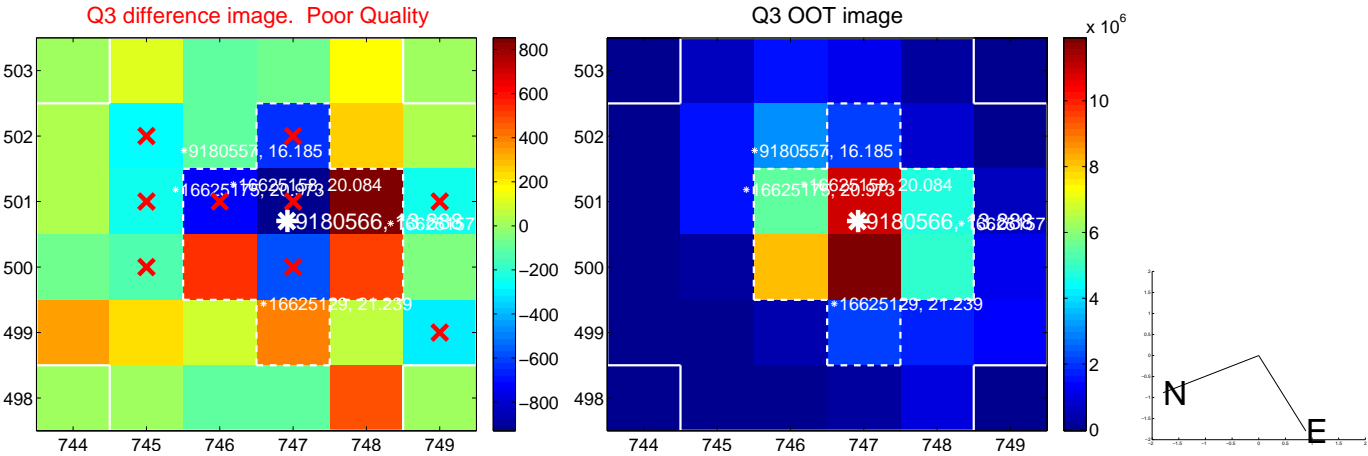
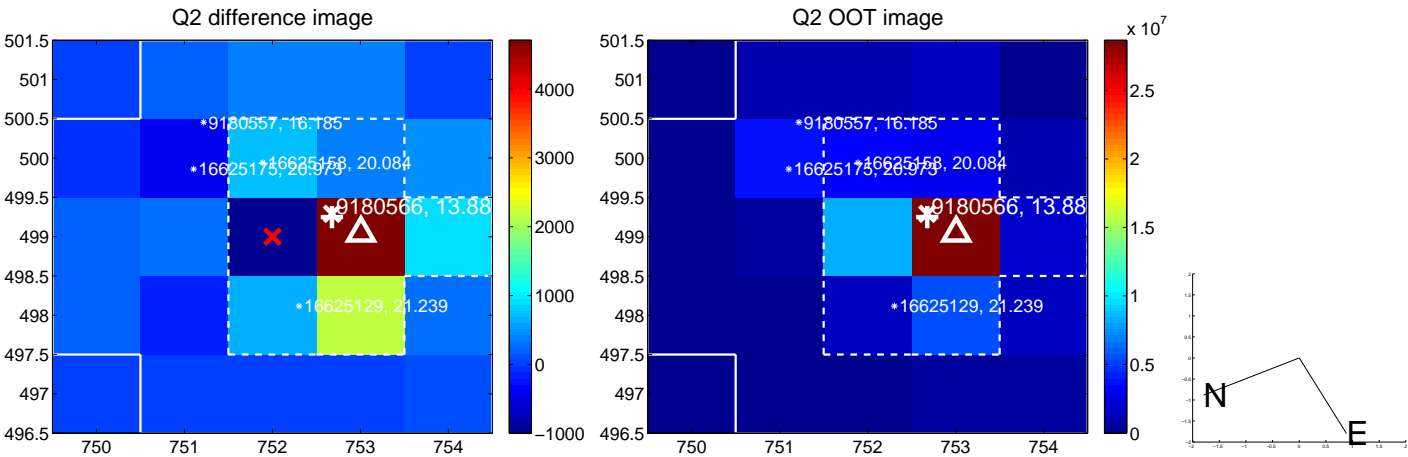
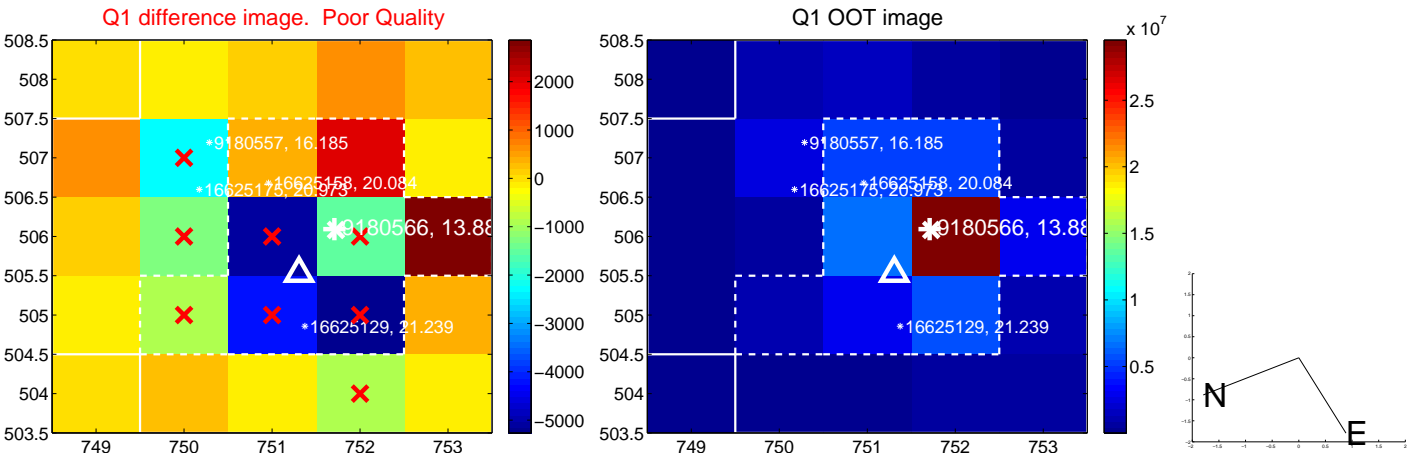


offset from photometric centroids

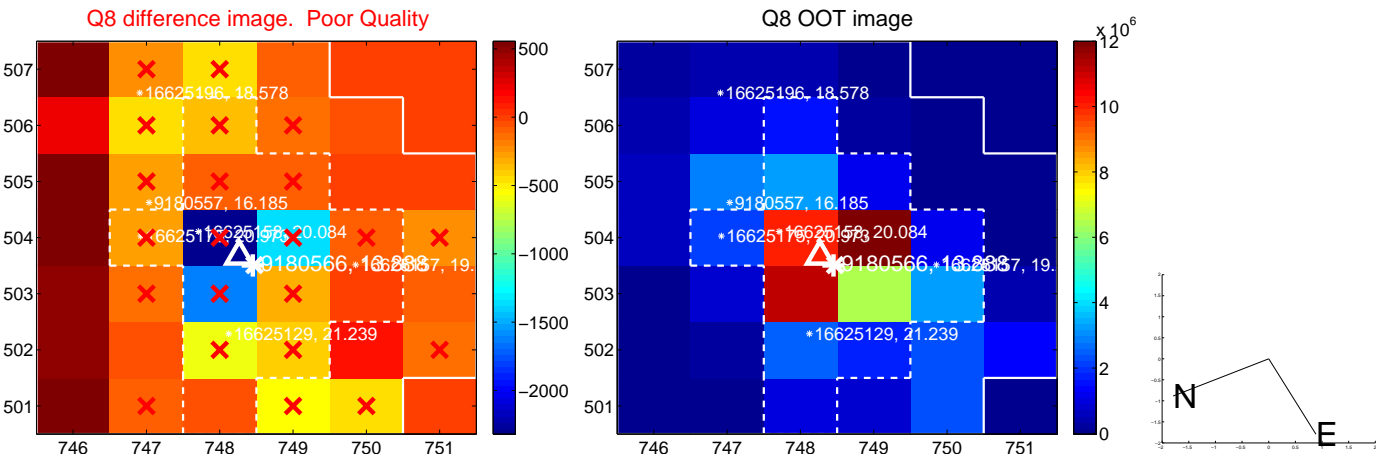
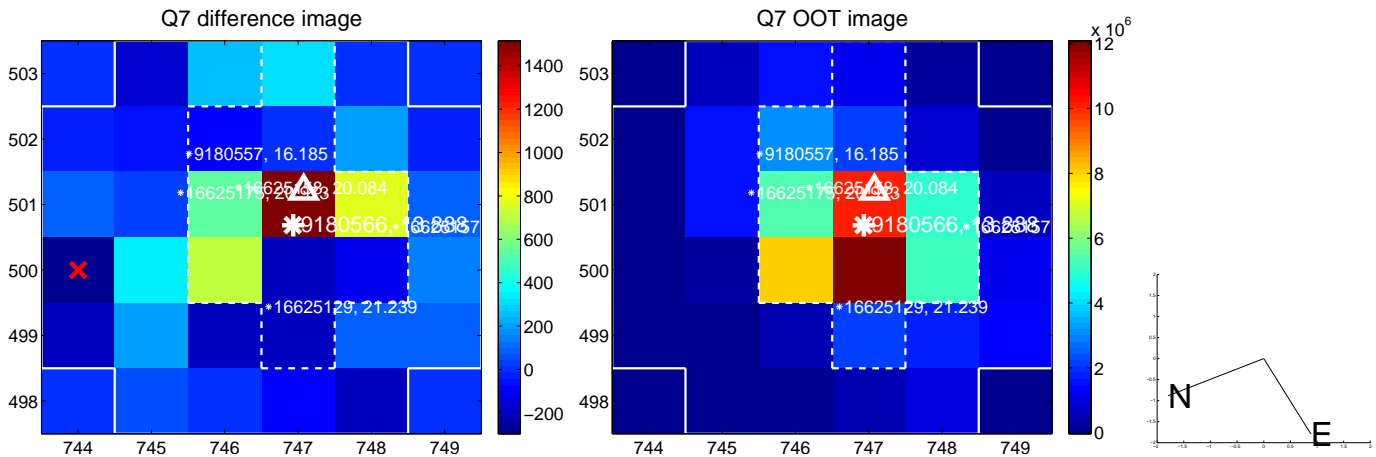
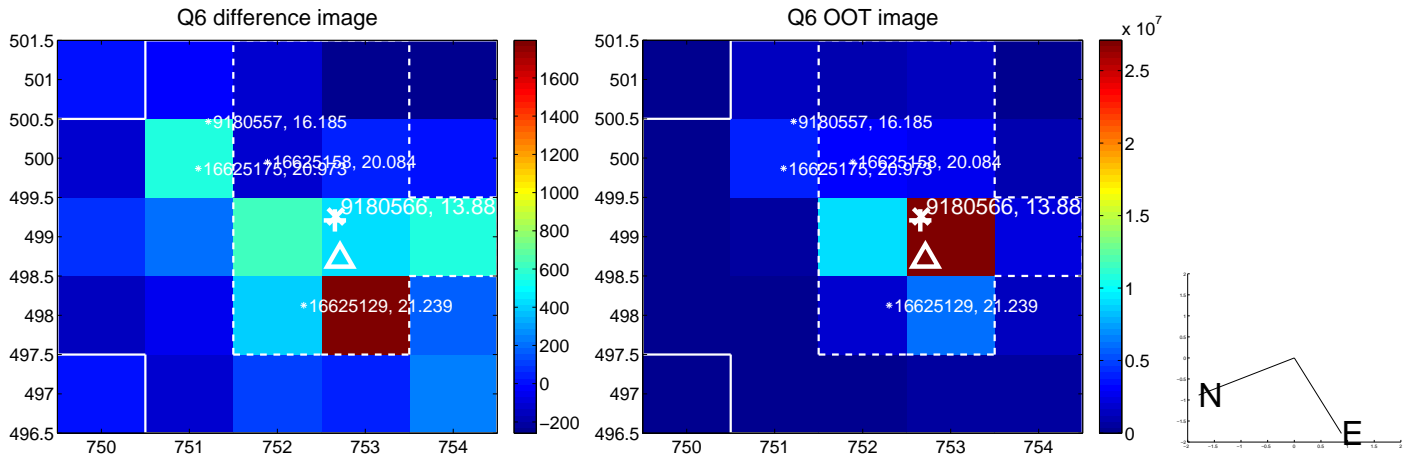
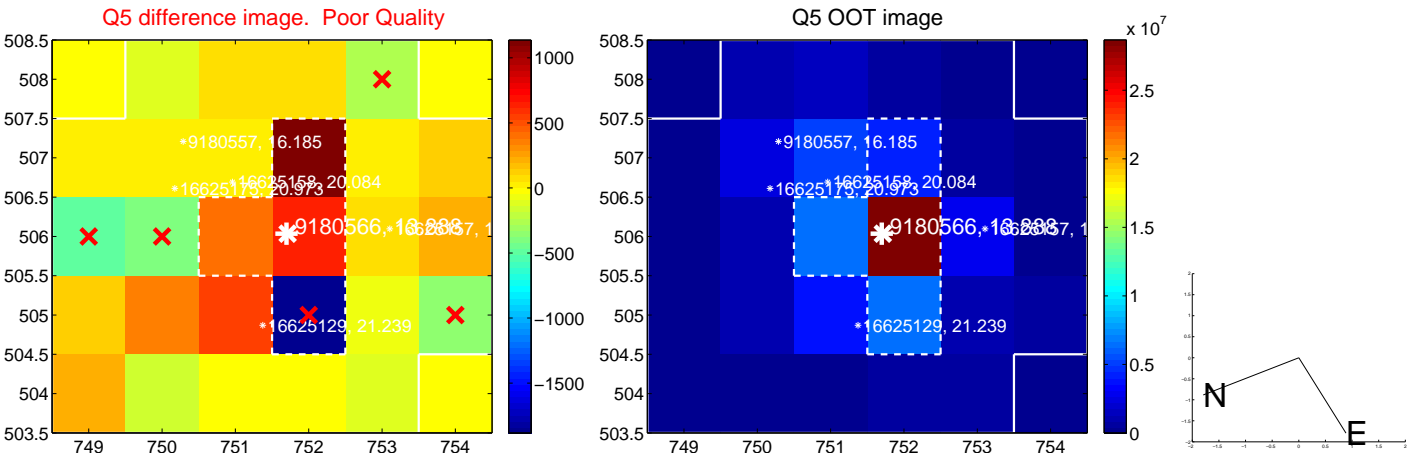


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

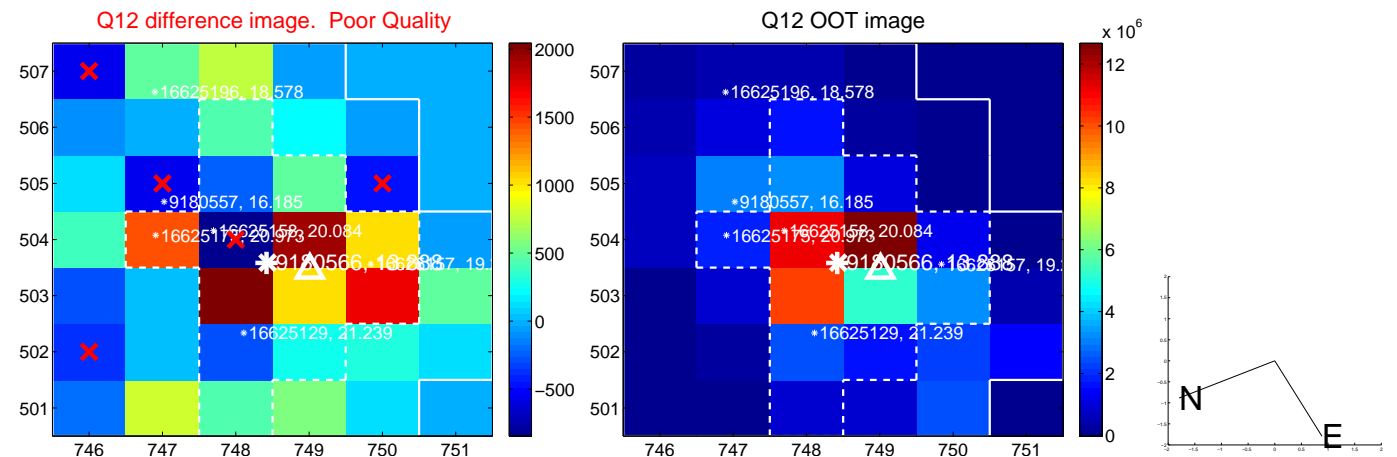
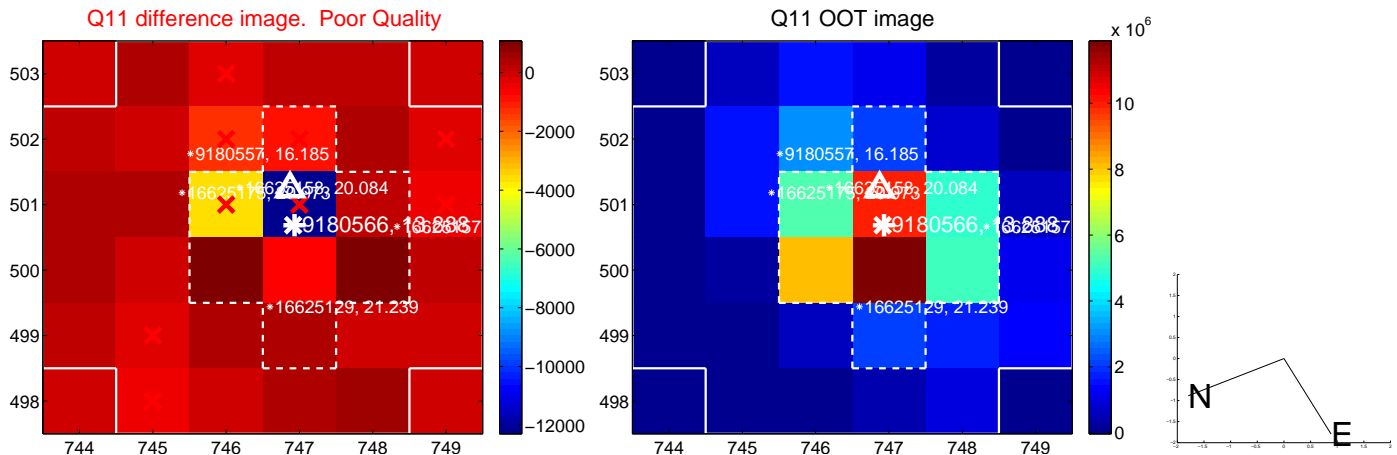
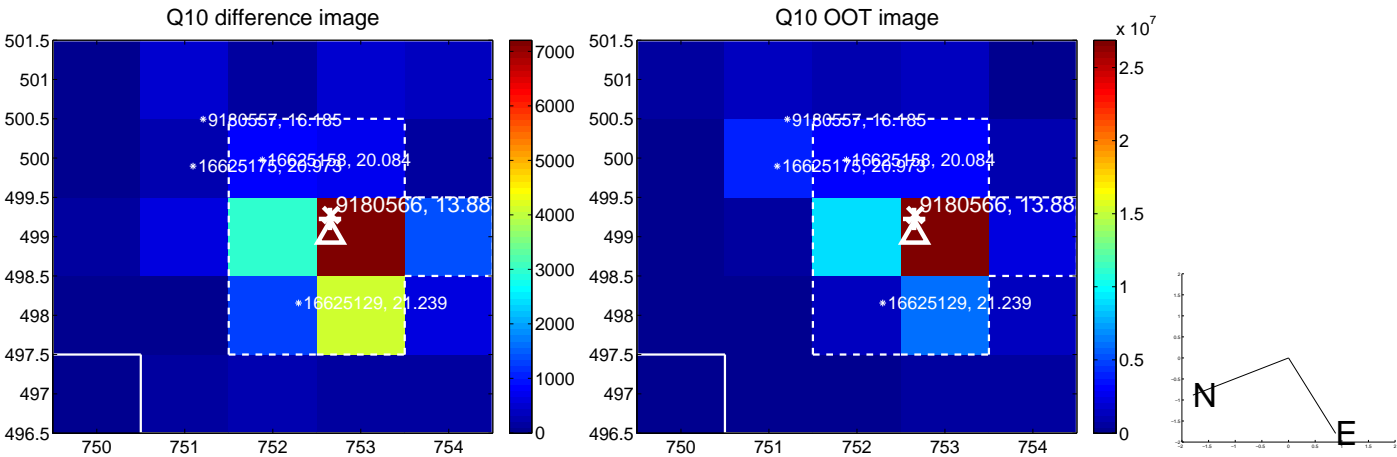
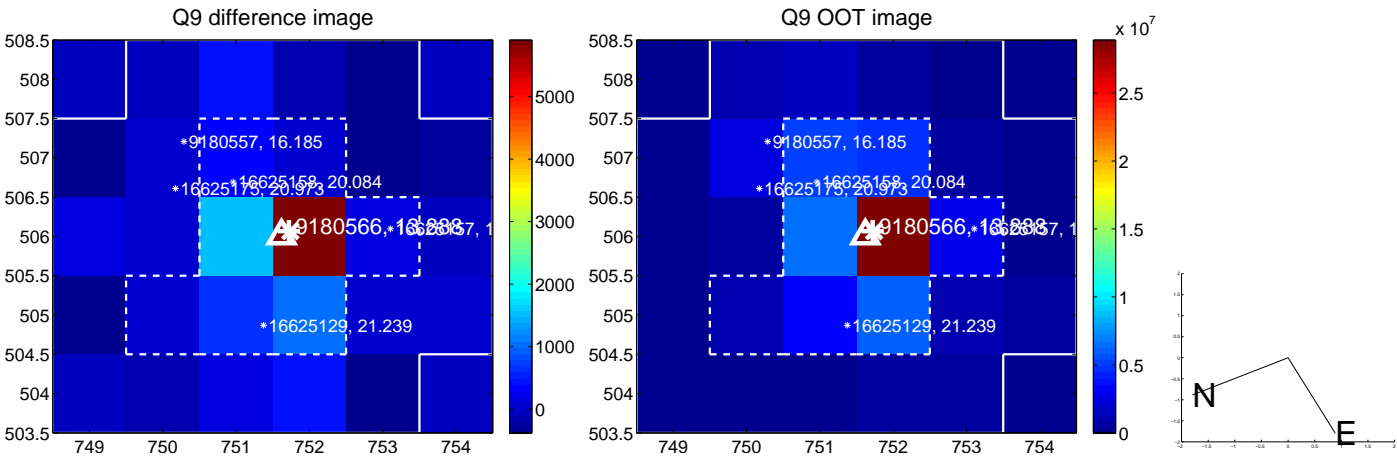
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



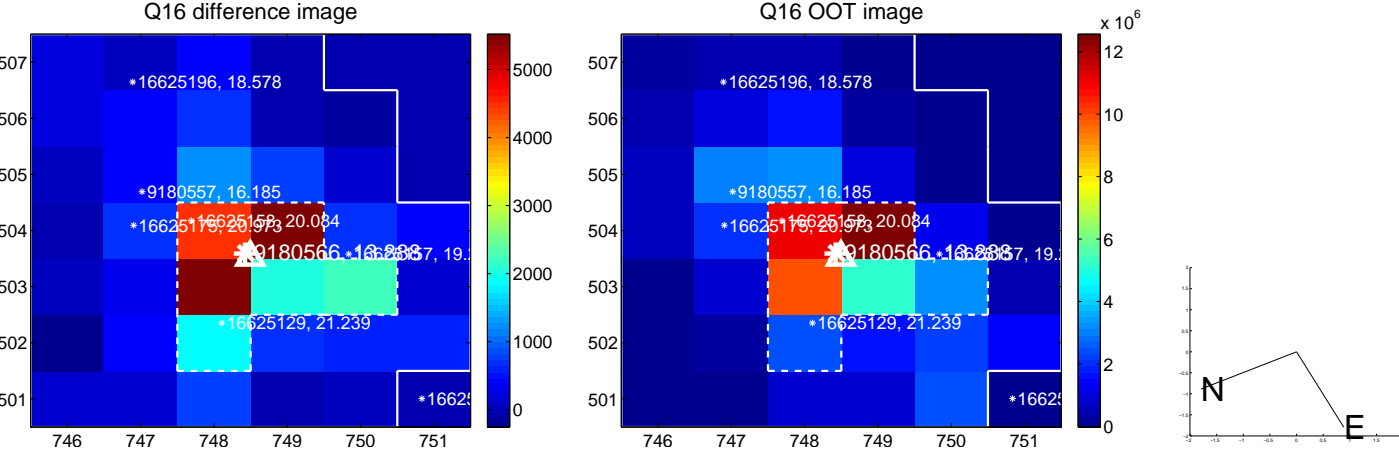
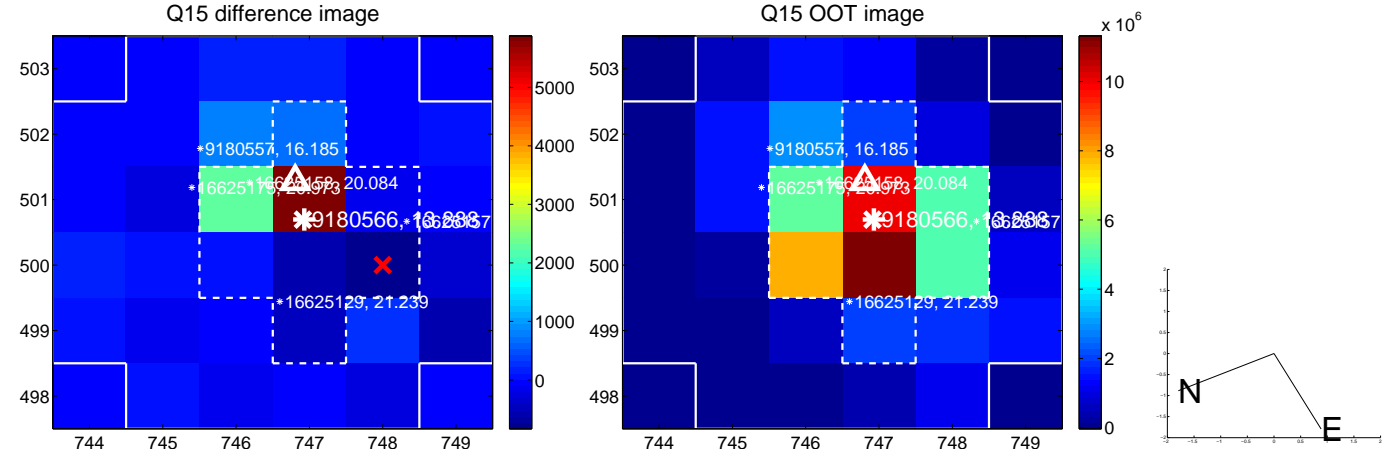
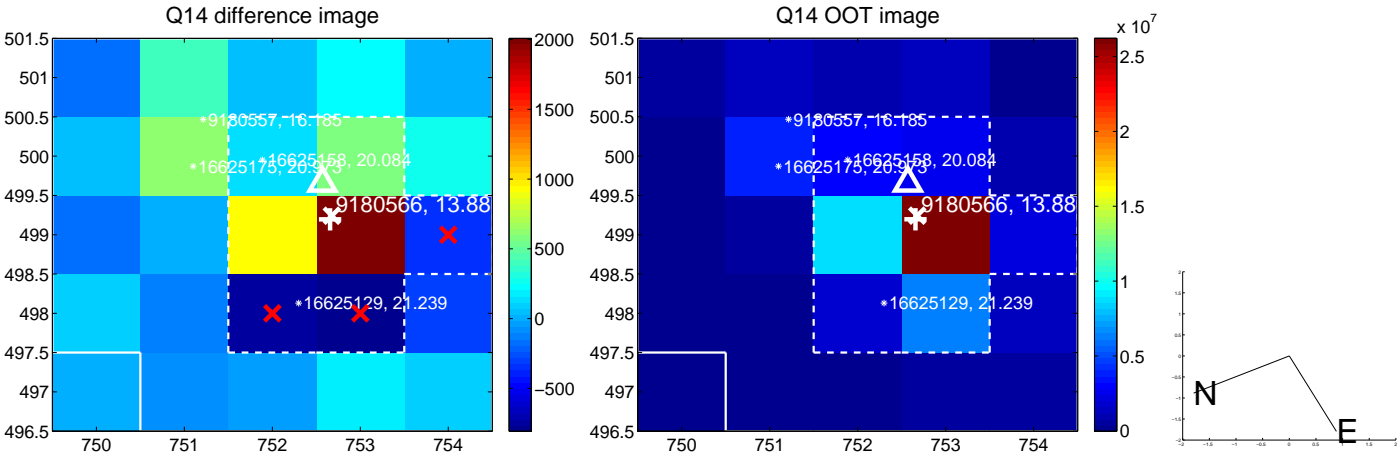
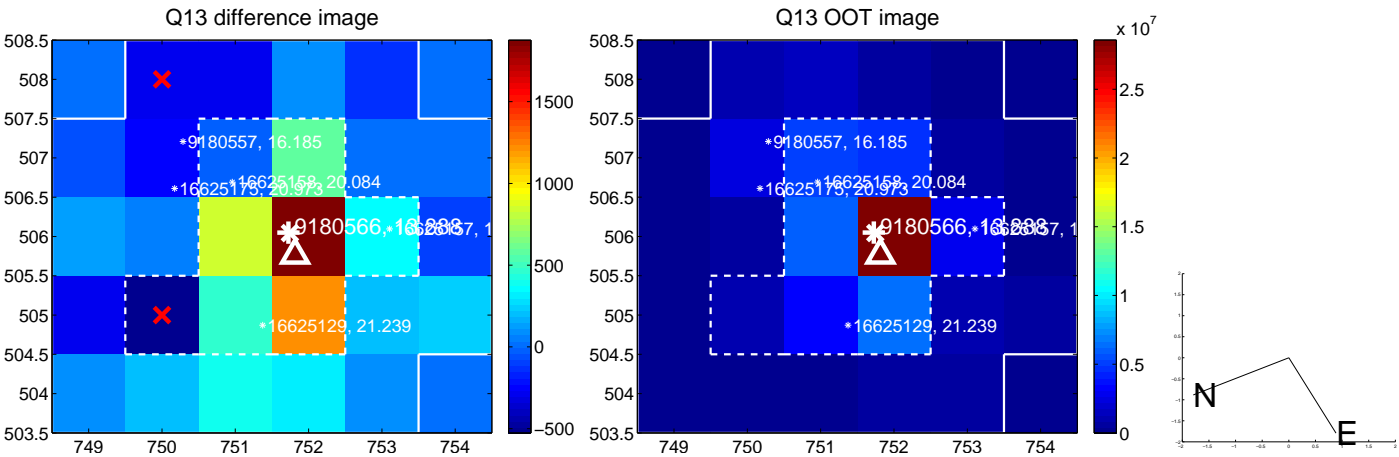
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



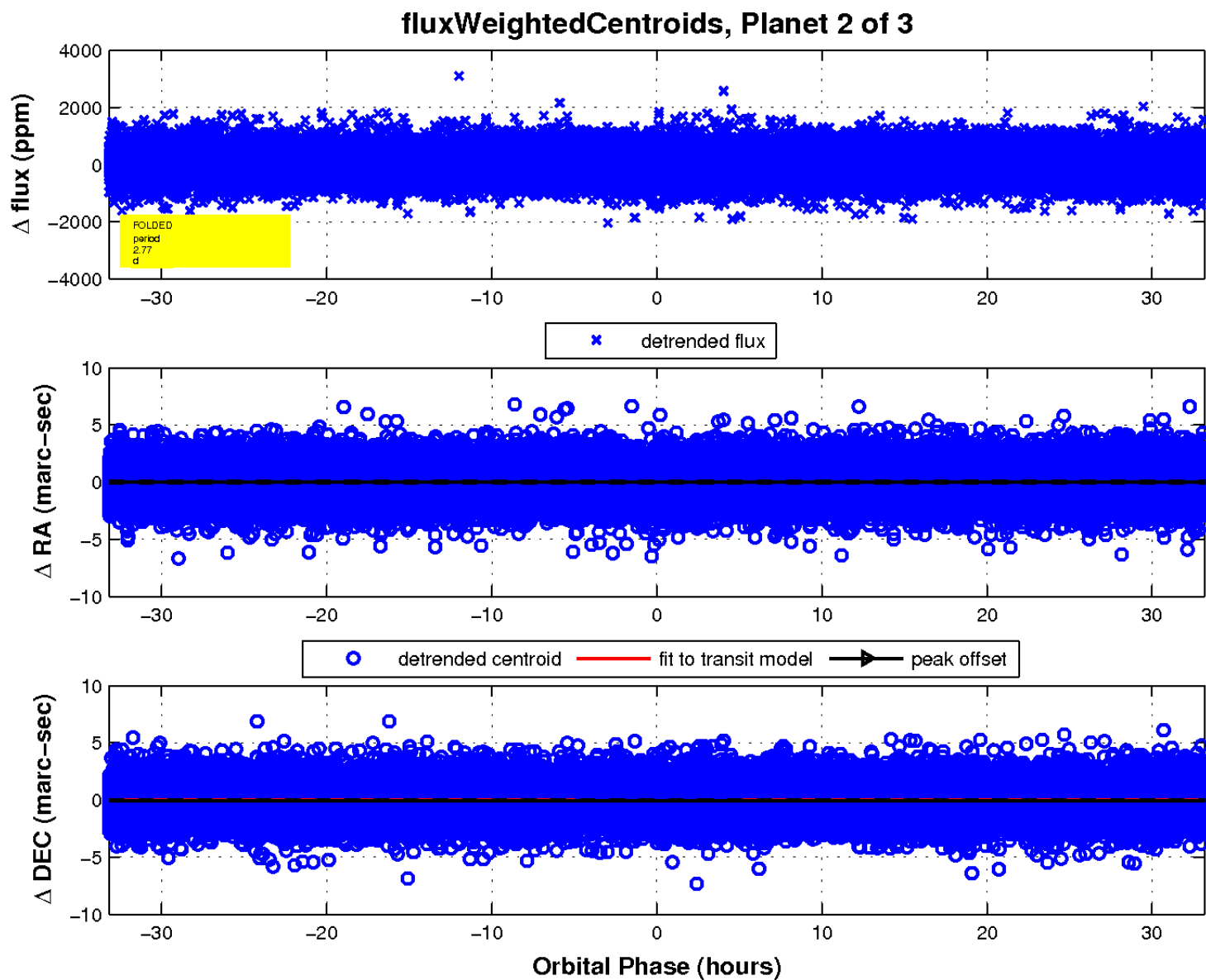
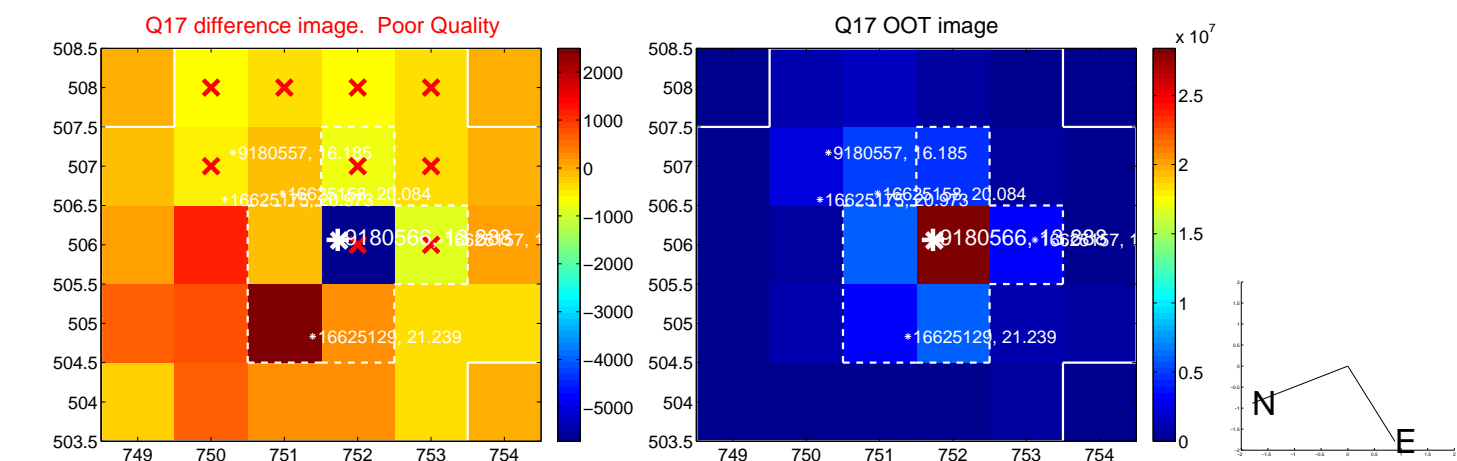
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

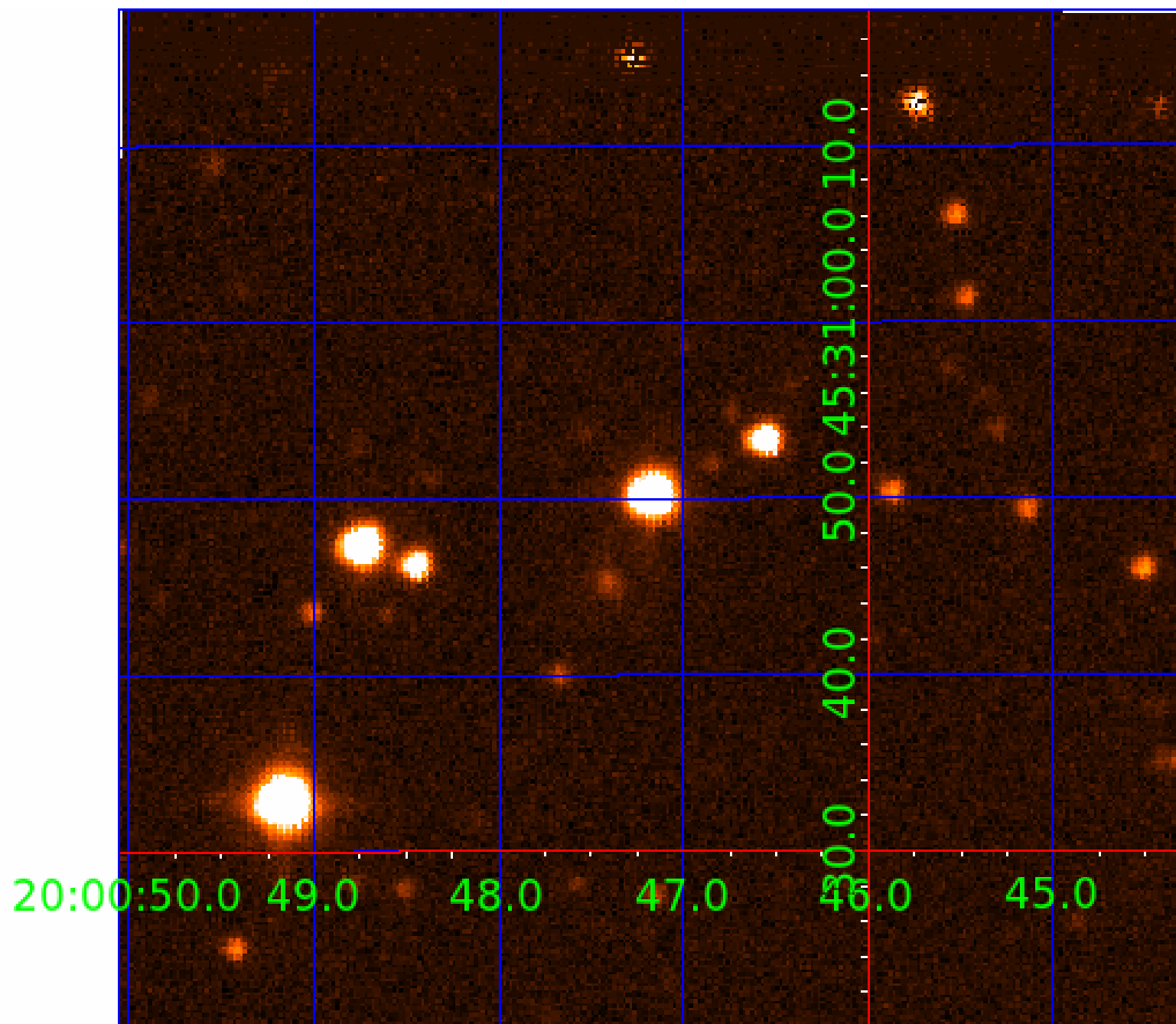


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009180566

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})
009180566-01	OBS	No	4.356450	135.630488	53.5	15.054	8.4	6.2	2.40	5895	1.76	2055.48
009180566-02	OBS	No	2.765399	134.178439	66.2	13.120	9.0	7.5	2.40	5895	2.10	3767.74
009180566-03	OBS	No	136.517378	148.218168	685.1	3.178	8.1	8.3	2.40	5895	6.98	20.80

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009180566-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
009180566-02	OBS	FP	0.00	1	0	0	0	LPP_DV
009180566-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

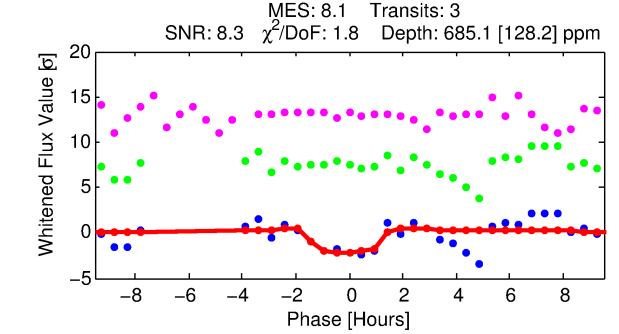
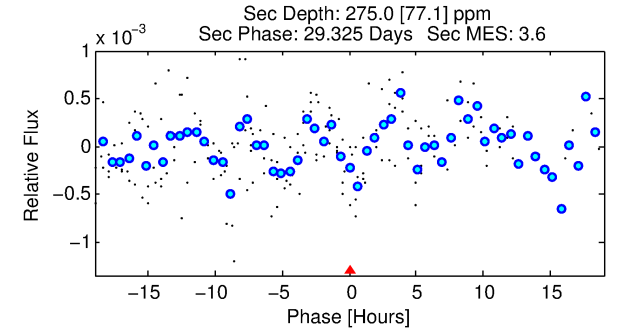
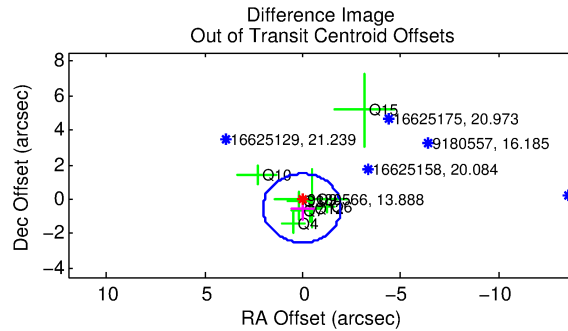
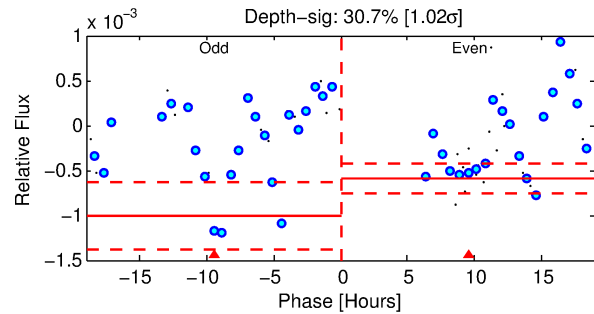
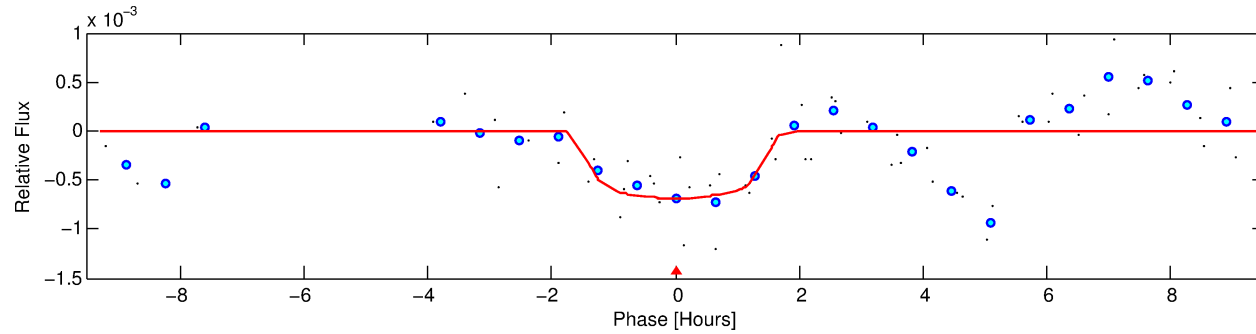
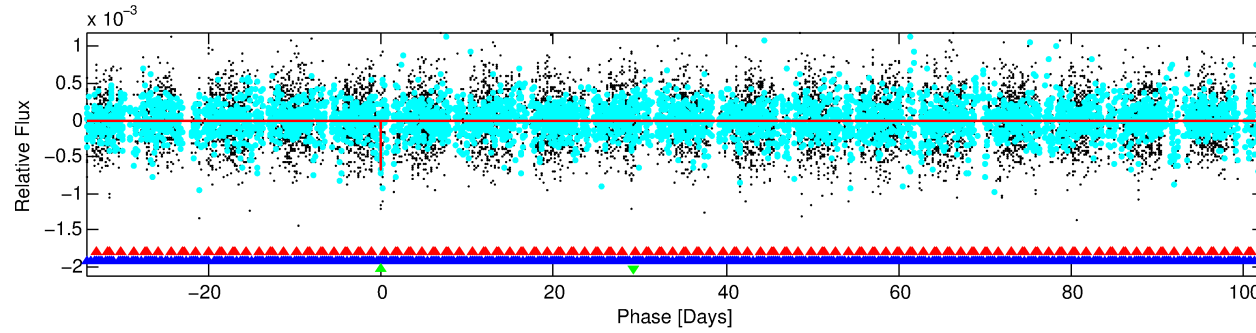
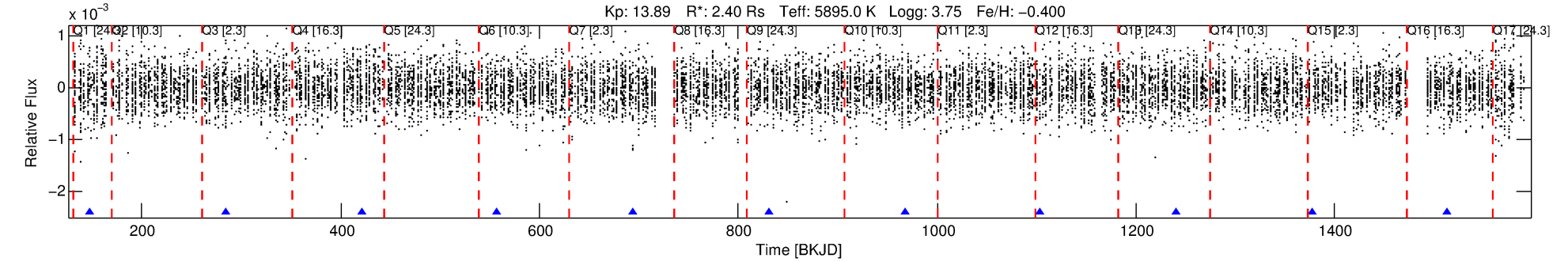
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009180566-03

No Significant Match Found

DV One-Page Summary

KIC: 9180566 Candidate: 3 of 3 Period: 136.517 d
KOI: K04616 Corr: No Ephemeris Match



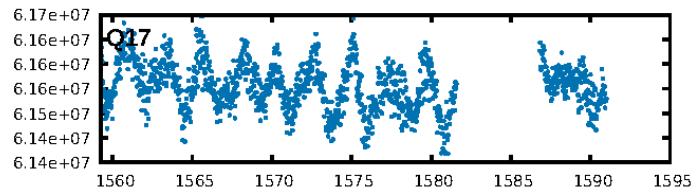
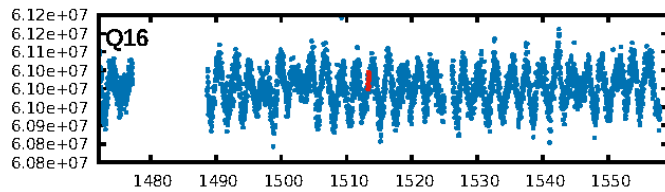
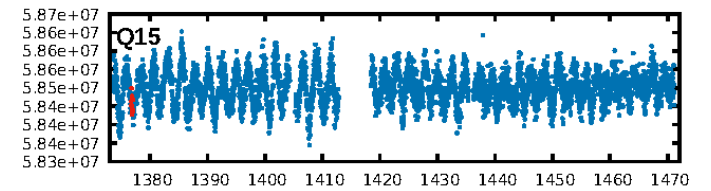
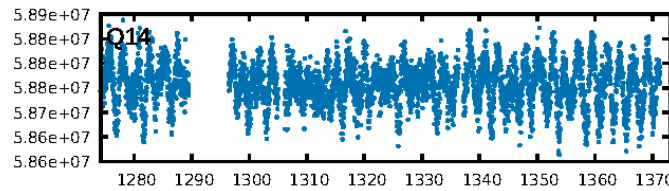
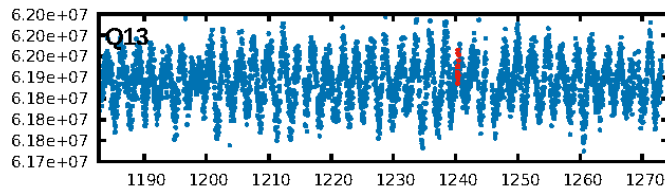
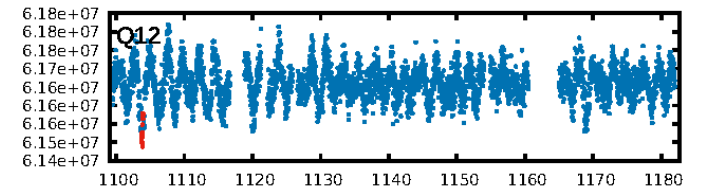
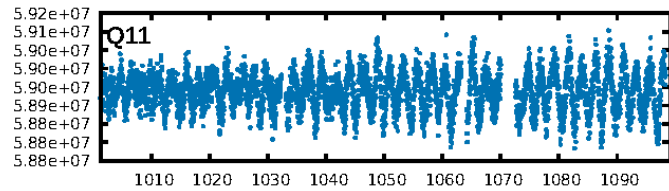
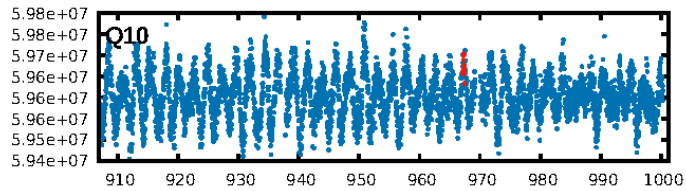
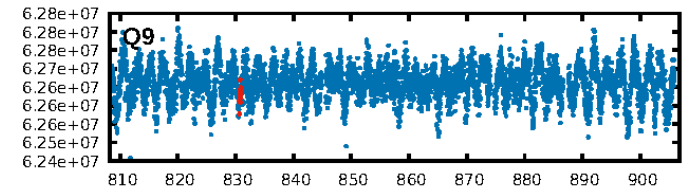
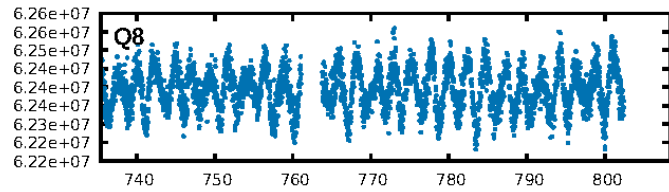
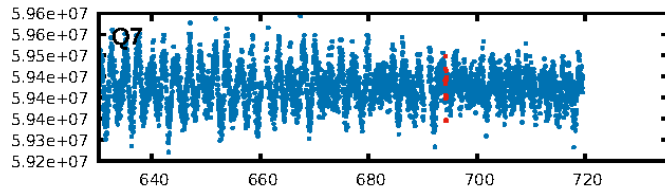
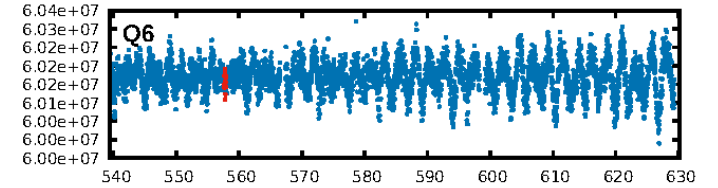
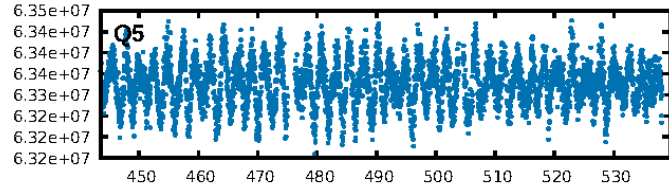
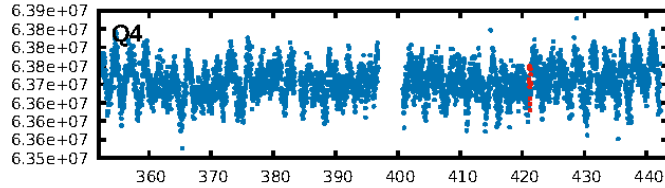
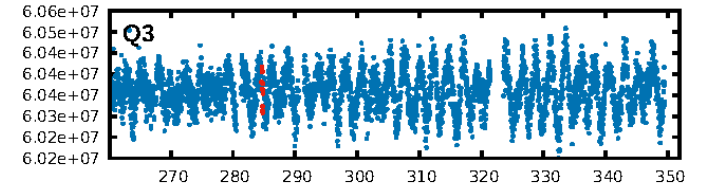
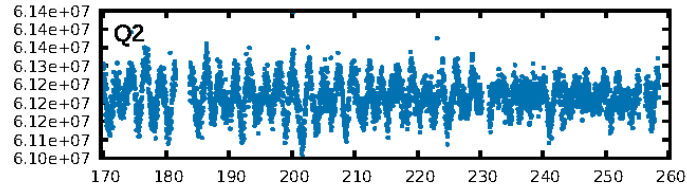
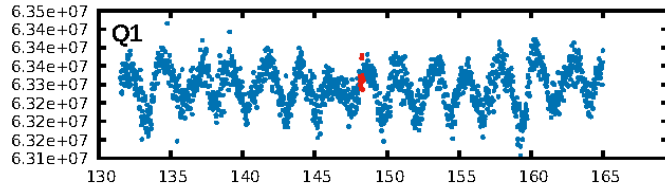
DV Fit Results:

Period = 136.51738 [0.00347] d
Epoch = 148.2182 [0.0186] BKJD
Rp/R* = 0.0266 [0.0327]
a/R* = 208.75 [1269.10]
b = 0.81 [2.67]
Teff = 20.81 [22.11]
Teff = 545 [145] K
Rp = 6.98 [9.47] Re
a = 0.5475 [0.3411] AU
Ag = 930.57 [2501.31] [0.37 σ]
Teffp = 4650 [2879] K [1.42 σ]

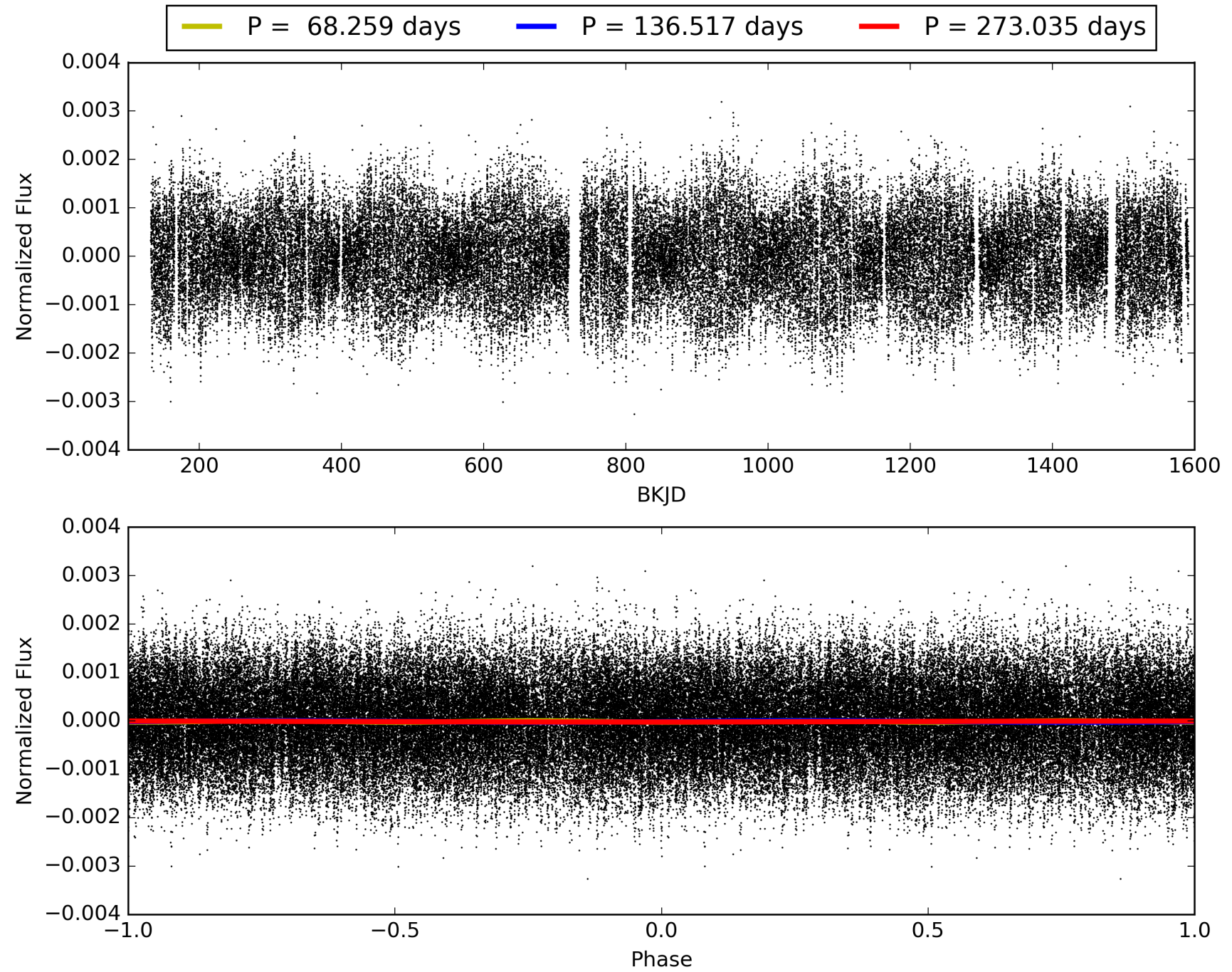
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [206.16 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 59.1%
ModelChiSquareGof-sig: 86.0%
Bootstrap-pfa: 9.59e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 10.73
Centroid-sig: 27.6%
Centroid-so: 0.748 arcsec [1.10 σ]
OotOffset-rm: 0.517 arcsec [0.78 σ]
KicOffset-rm: 0.506 arcsec [0.71 σ]
OotOffset-st: 2/3/2/1 [8]
KicOffset-st: 2/3/2/1 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 0.36 [4/11]

TCE 009180566-03, PDC Light Curves

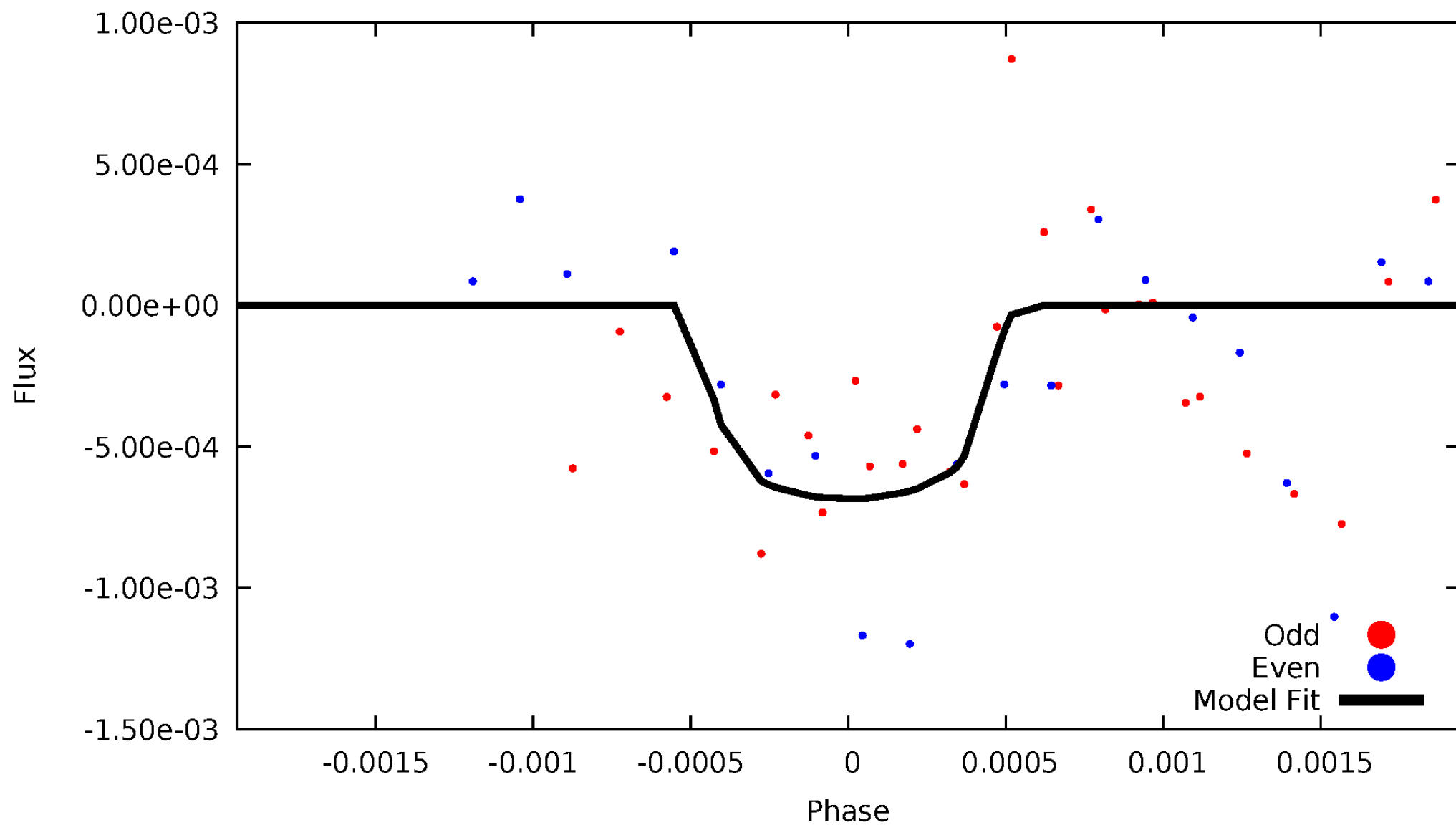


TCE 009180566-03



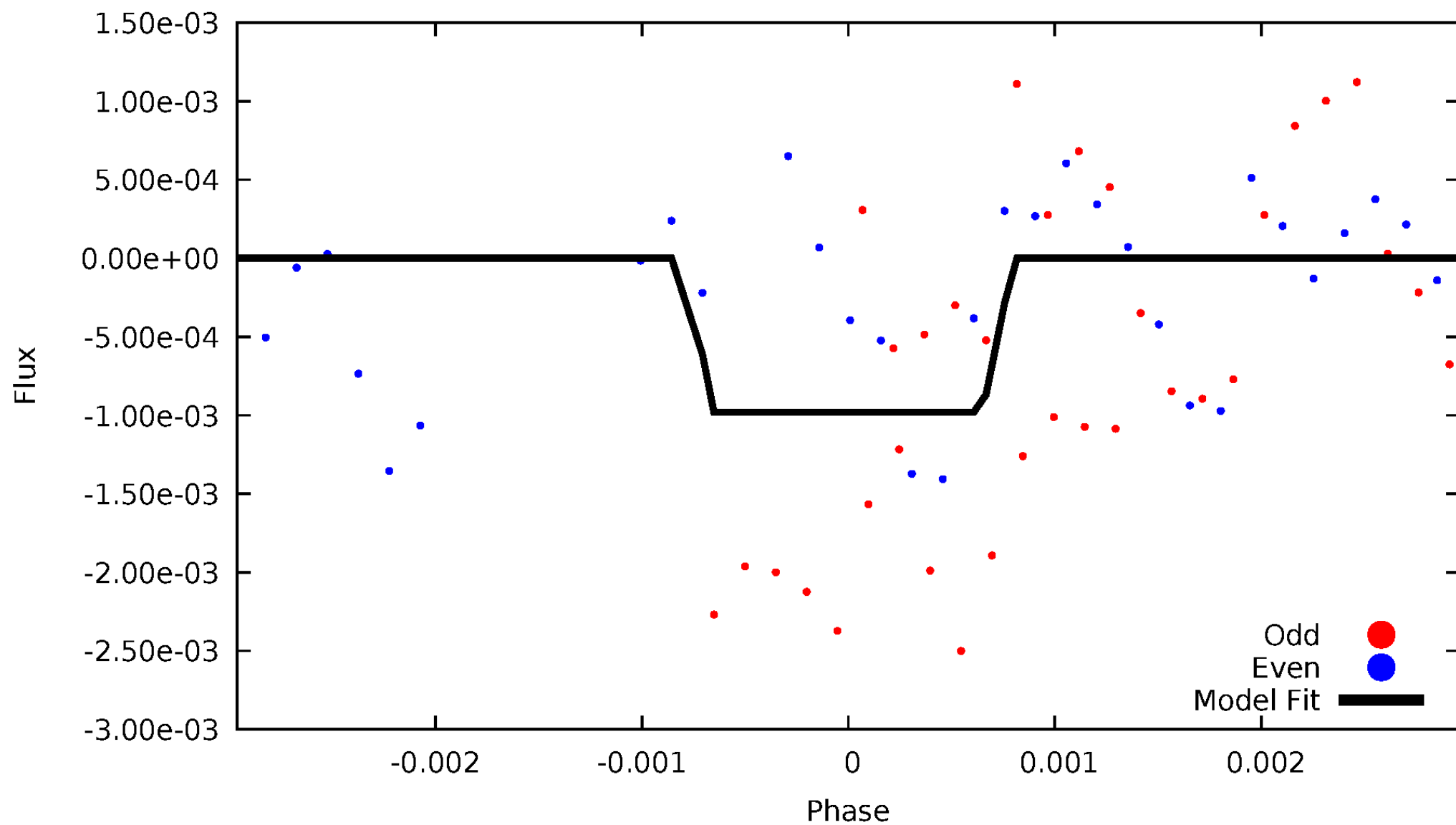
DV Odd/Even

TCE 009180566-03



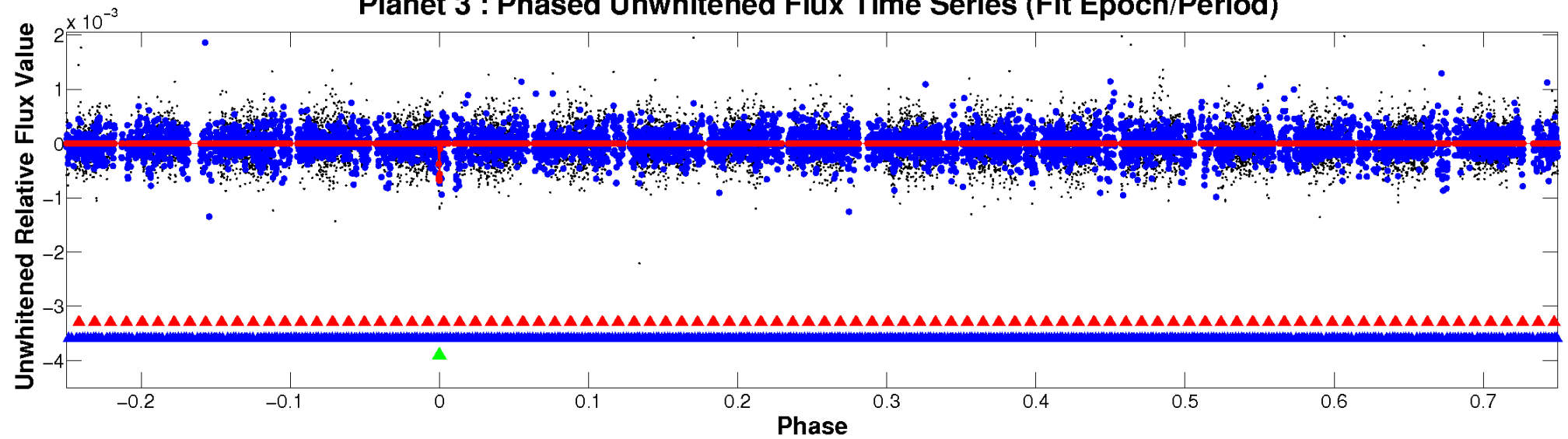
ALT Odd/Even

TCE 009180566-03

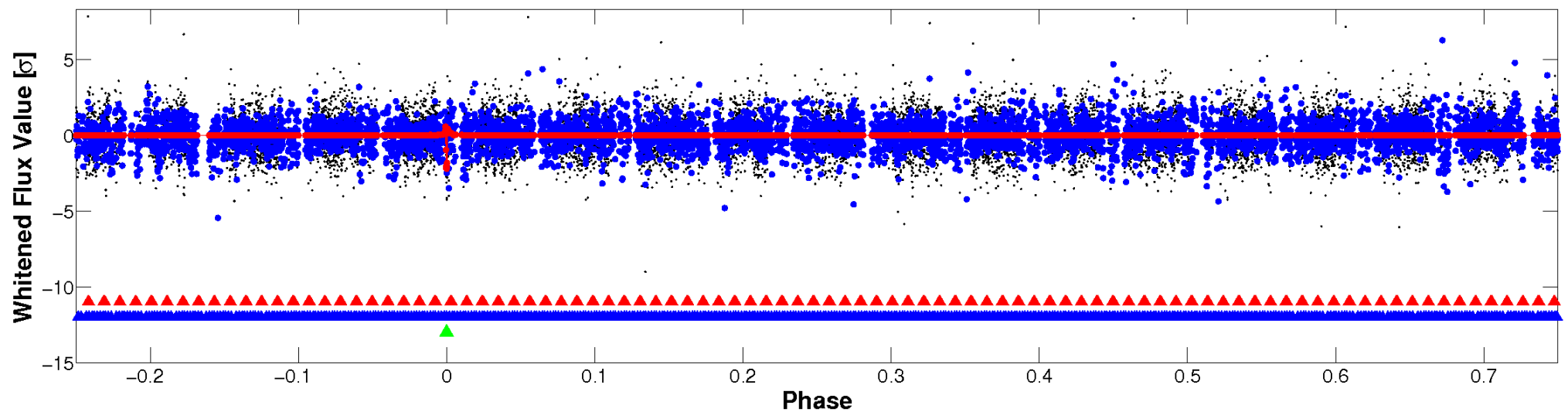


Non-Whitened Vs. Whitened Light Curve

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

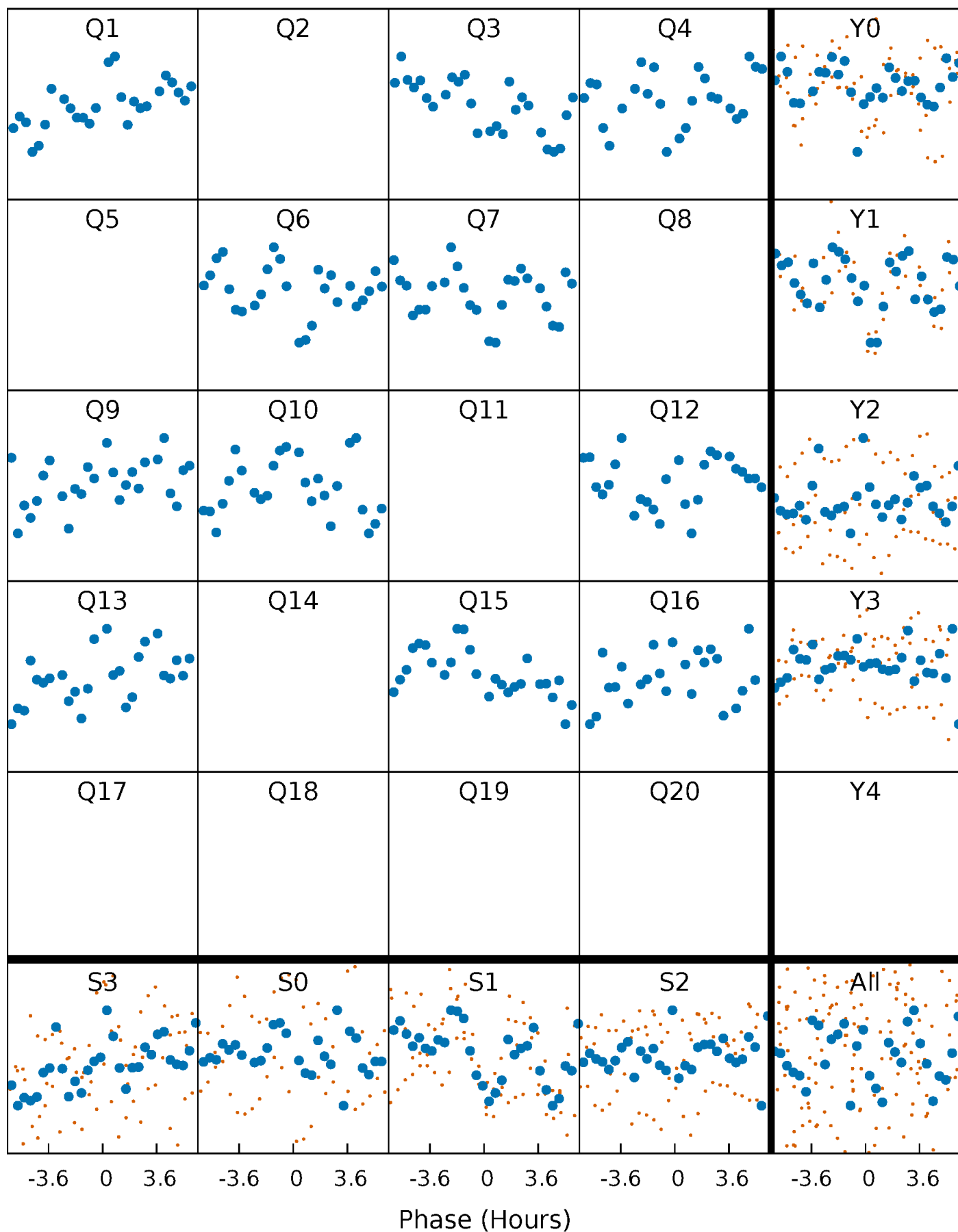


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



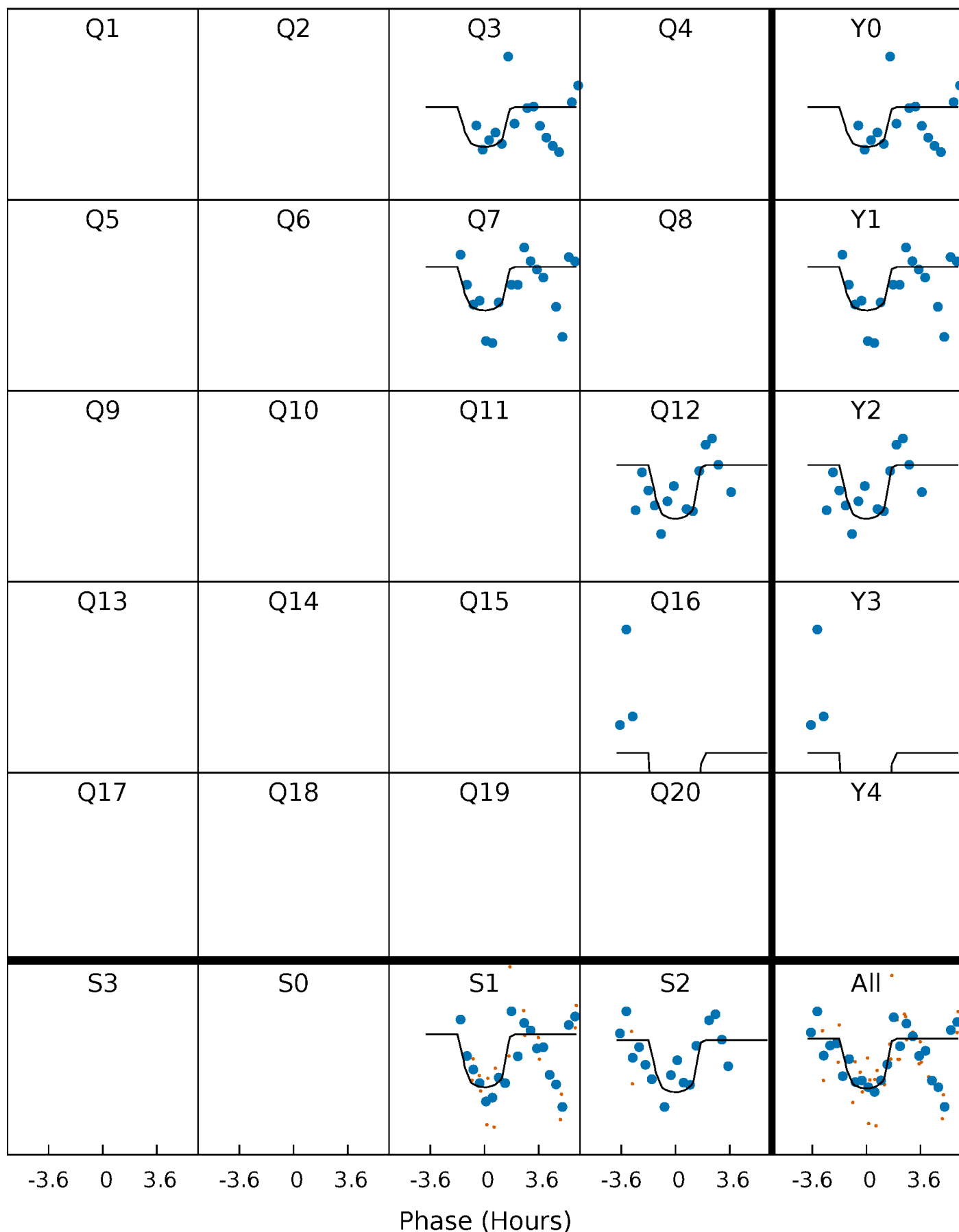
PDC Quarter-Phased Transit Curves

TCE 009180566-03 P=136.517378 Days $T_0=148.218168$ (BKJD)



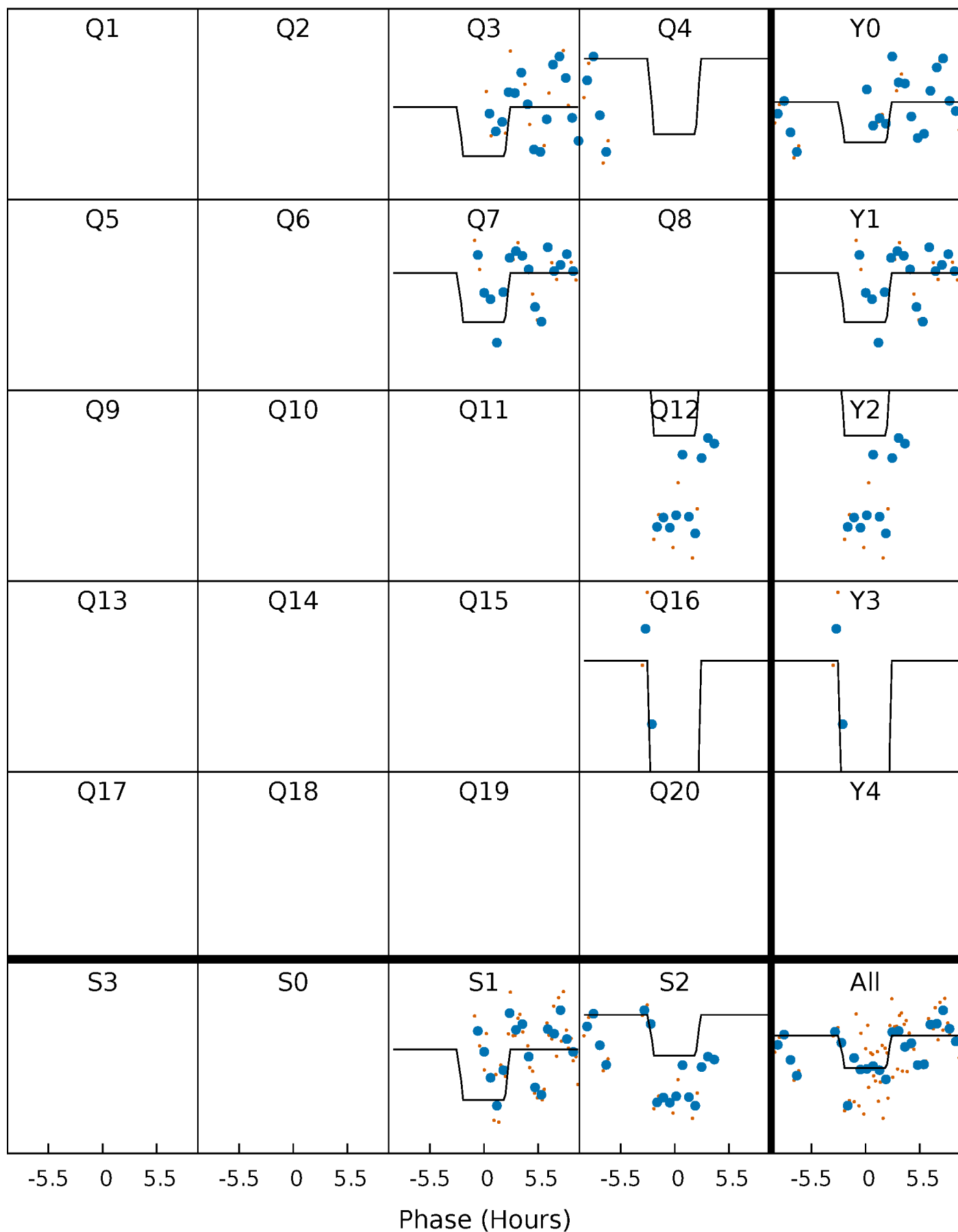
DV Quarter-Phased Transit Curves

TCE 009180566-03 P=136.517378 Days $T_0=148.218168$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

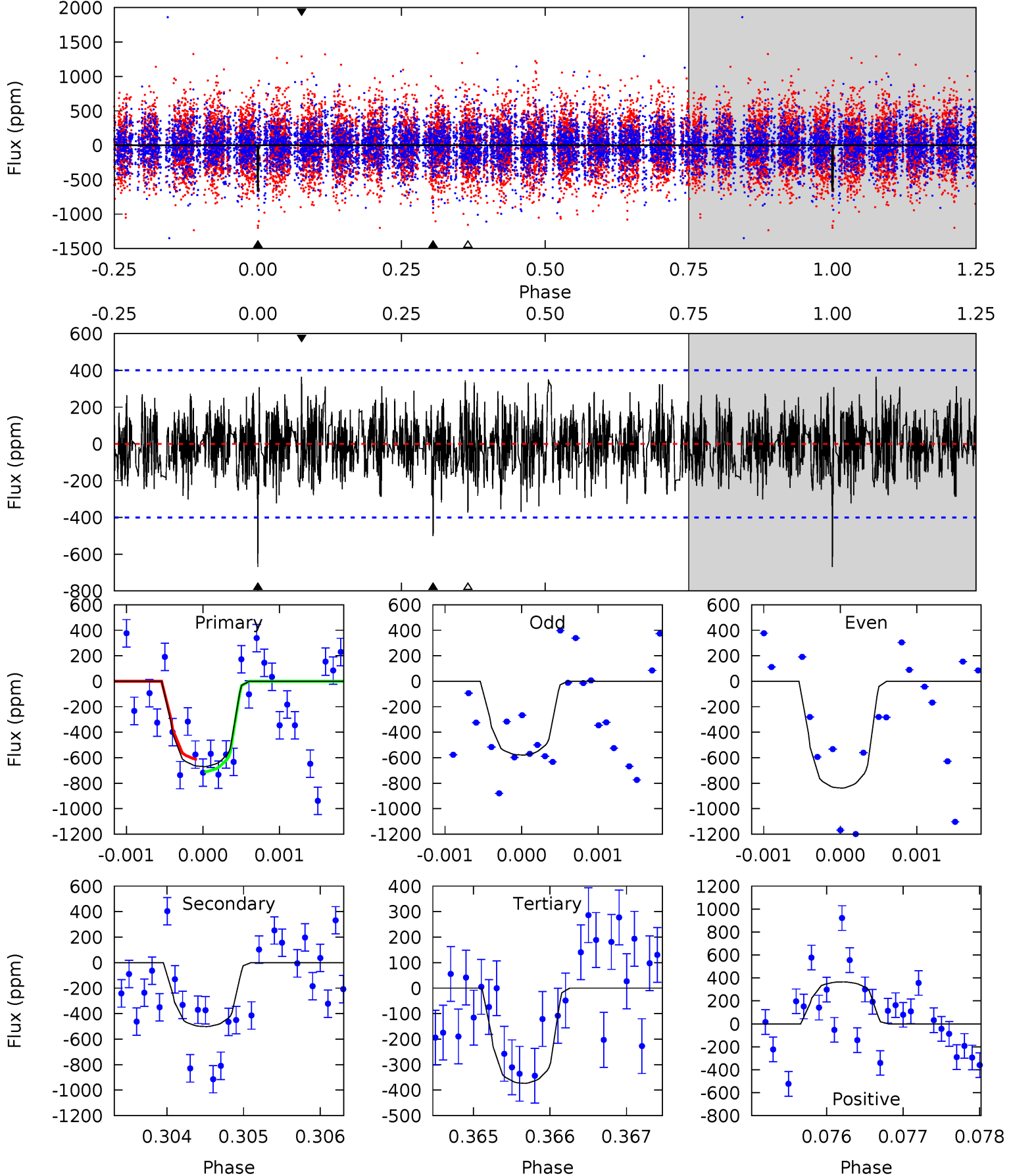
TCE 009180566-03 P=136.519092 Days $T_0=148.175580$ (BKJD)



DV Model-Shift Uniqueness Test

009180566-03, P = 136.517378 Days, E = 11.700790 Days

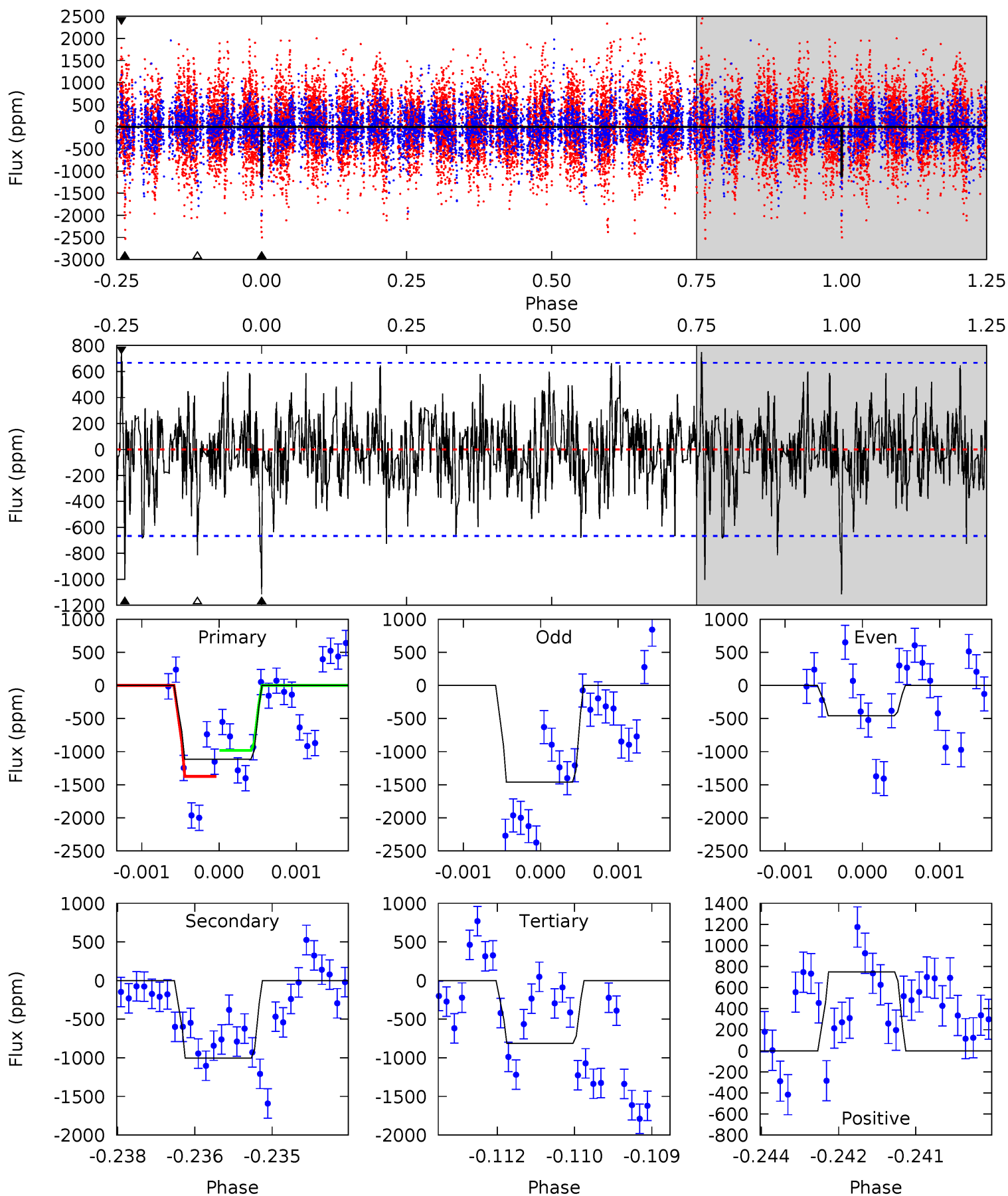
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.11	6.82	5.08	4.97	5.45	3.28	1.50	4.03	4.14	1.75	1.85	1.65	1.12	0.35	0.62



Alt Model-Shift Uniqueness Test

009180566-03, P = 136.519092 Days, E = 11.656488 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.01	8.10	6.57	6.04	5.38	3.18	1.66	2.44	2.96	1.53	2.06	3.85	2.03	0.40	1.39



Stellar Parameters For KIC 009180566

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5895^{+195}_{-177}	$3.747^{+0.640}_{-0.160}$	$-0.400^{+0.350}_{-0.250}$	$2.401^{+0.591}_{-1.380}$	$1.173^{+0.174}_{-0.299}$	$0.119^{+1.254}_{-0.050}$
	+3%/-3%	+17%/-4%	+87%/-62%	+25%/-57%	+15%/-25%	+1050%/-42%
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 009180566-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-502 ± 74	$8.24^{+7.72}_{-5.23}$	746^{+66}_{-114}	4832^{+3201}_{-1029}	1200^{+7971}_{-895}
Alt.	-1004 ± 124	$8.51^{+8.22}_{-5.43}$	741^{+63}_{-112}	5426^{+4188}_{-1172}	2257^{+15238}_{-1667}

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 $A_{obs} \gg 1.0$

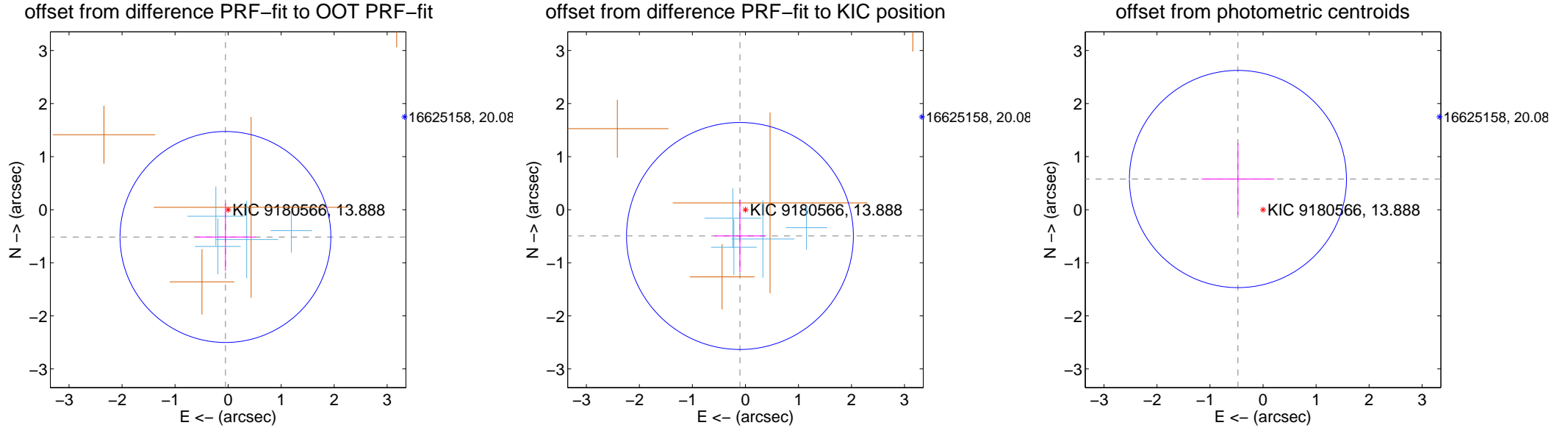
DV Centroid Data

Supplemental centroid analysis for 009180566-03. Kepler magnitude: 13.89. Transit SNR 8.26

There are 4 quarters with good PRF difference image offsets

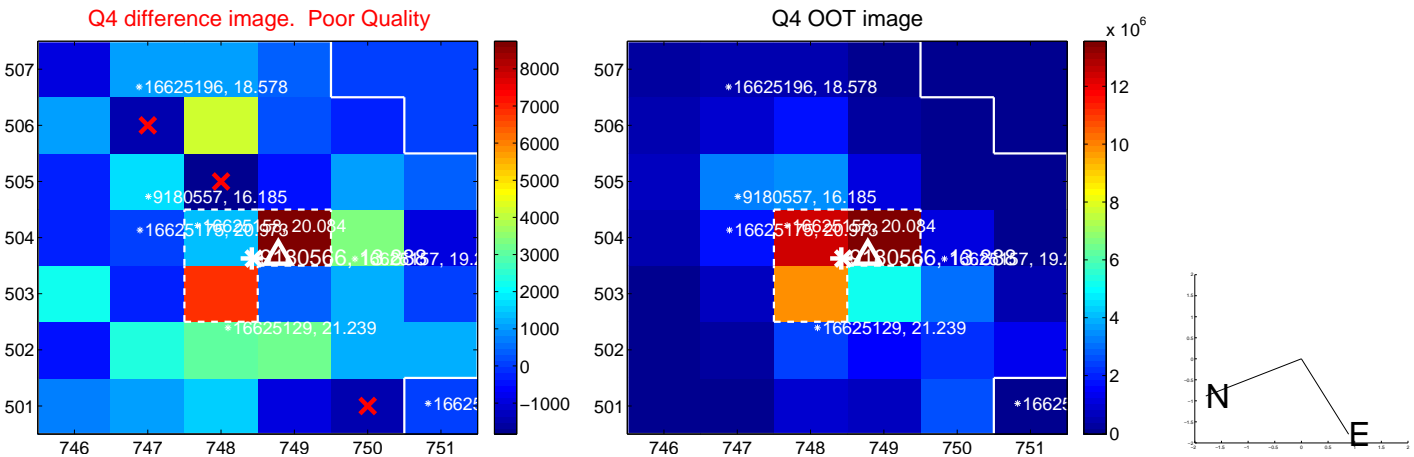
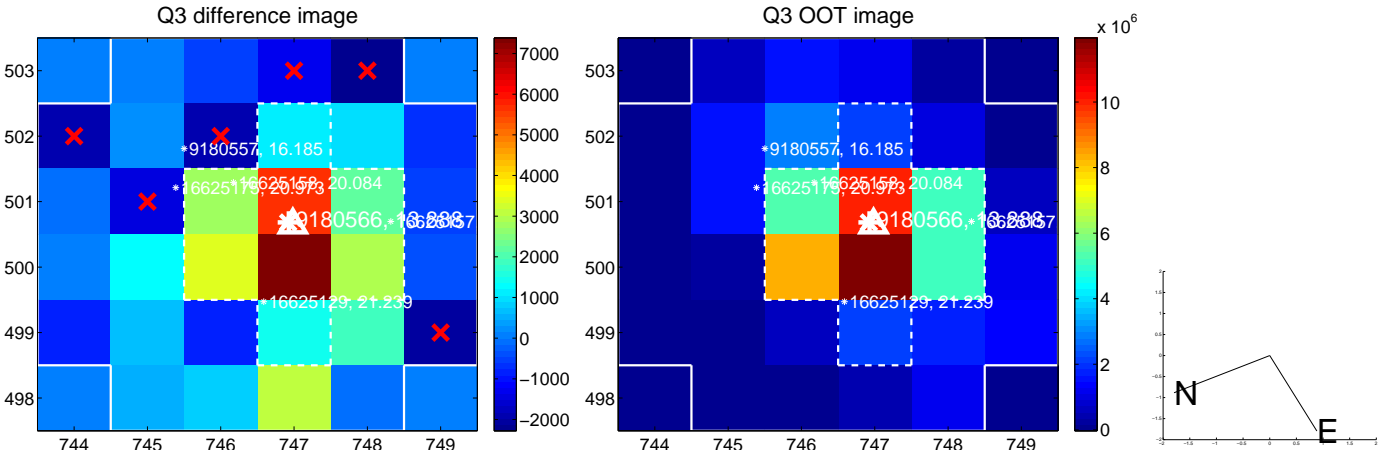
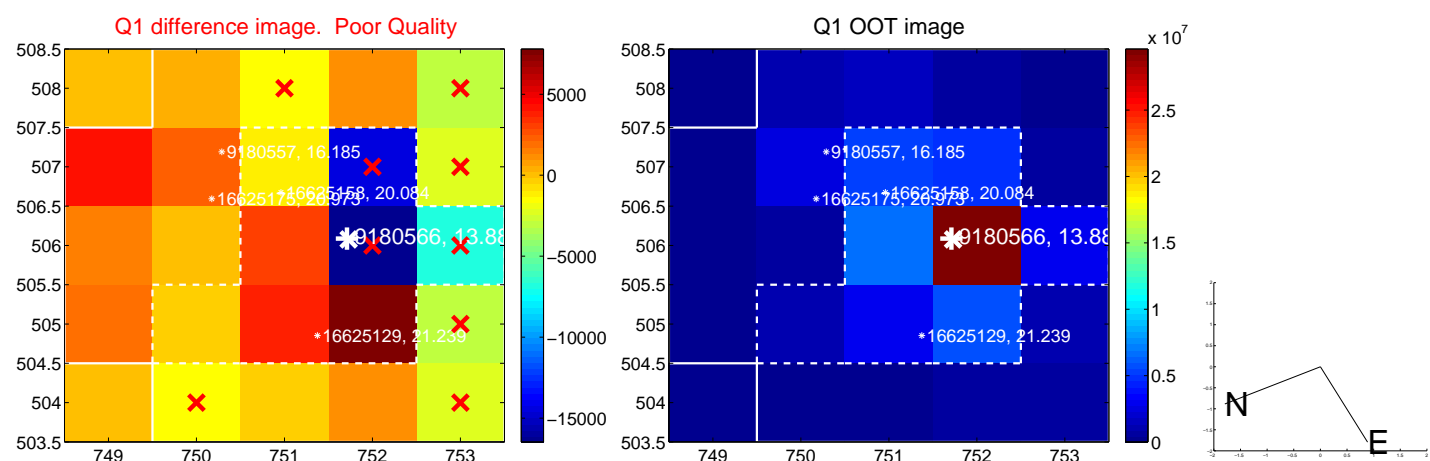
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.517 ± 0.663	0.78	0.050 ± 0.573	-0.514 ± 0.636
PRF-fit source offset from KIC position	0.506 ± 0.713	0.71	0.104 ± 0.484	-0.495 ± 0.684
photometric centroid source offset	0.75 ± 0.68	1.10	0.47 ± 0.69	0.58 ± 0.68

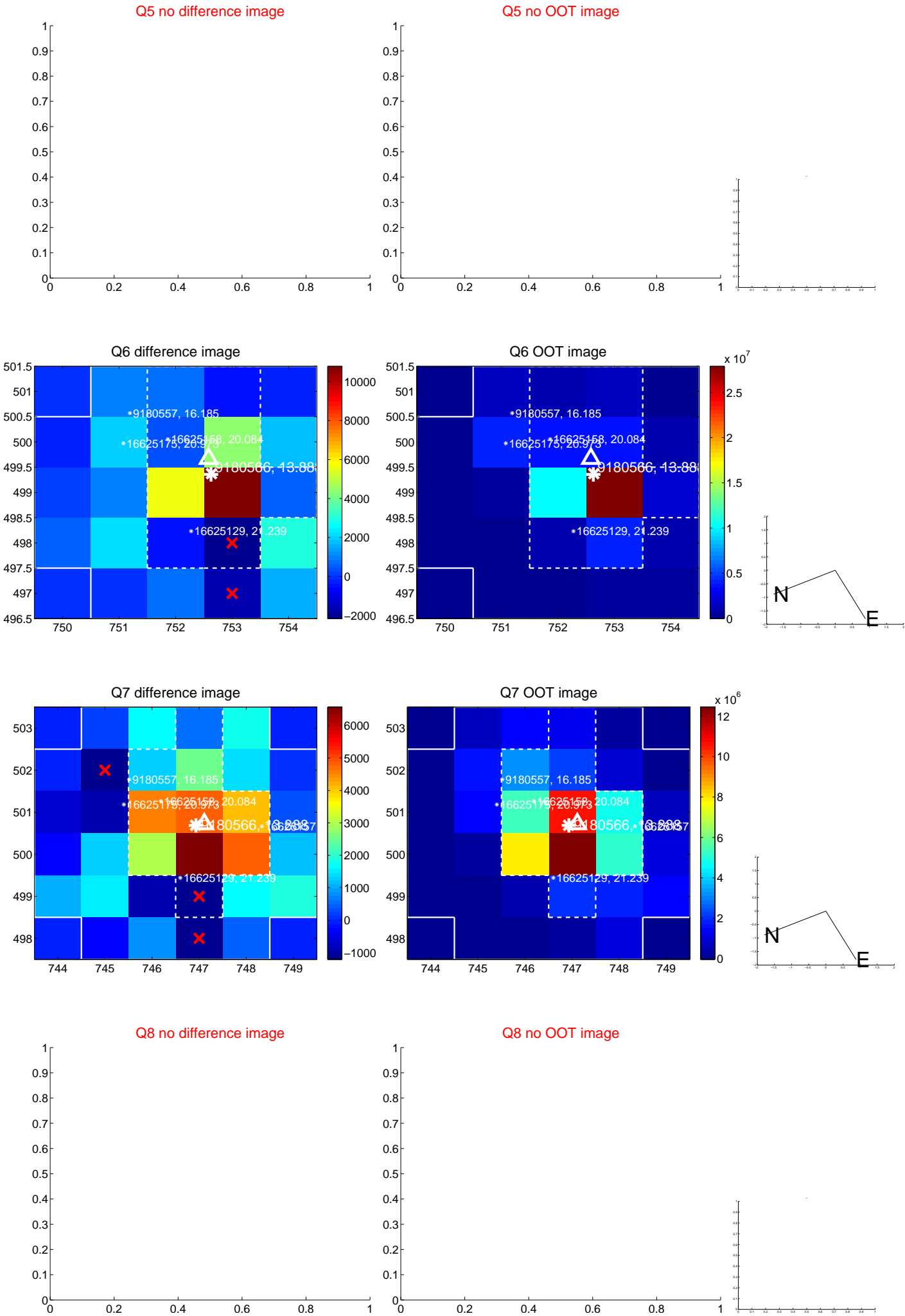


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

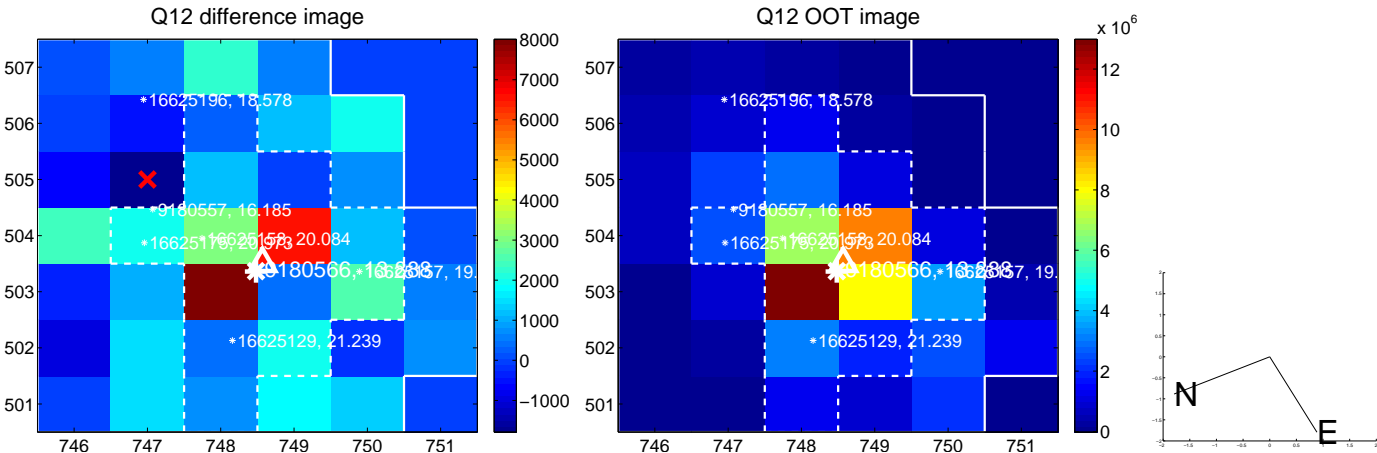
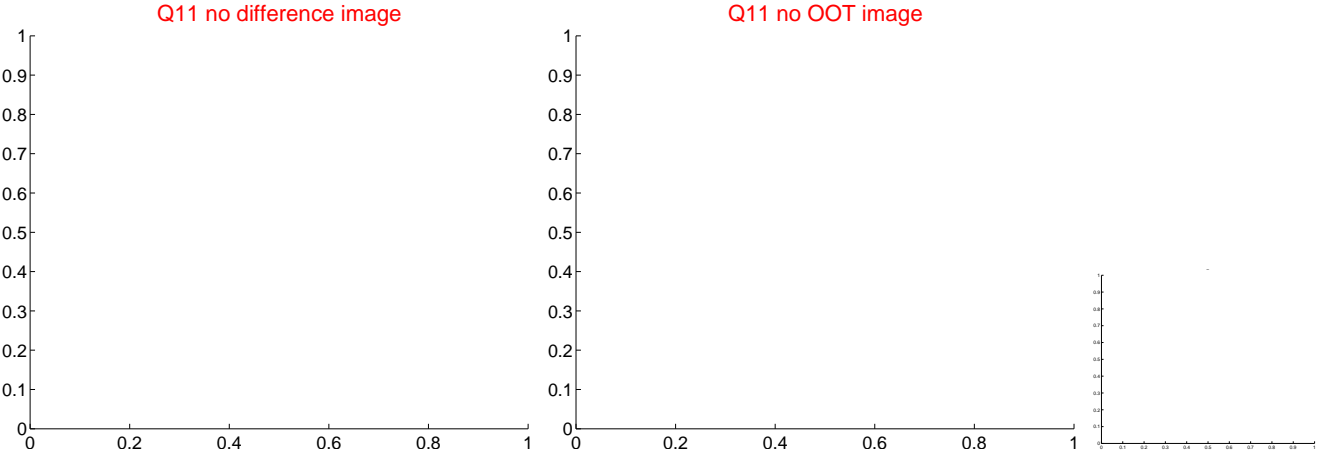
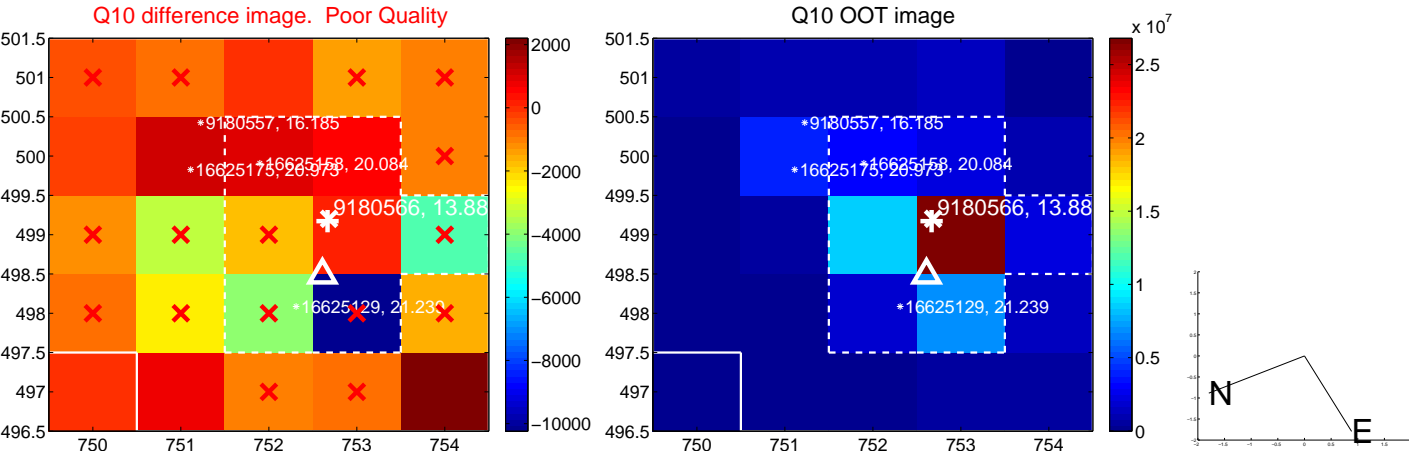
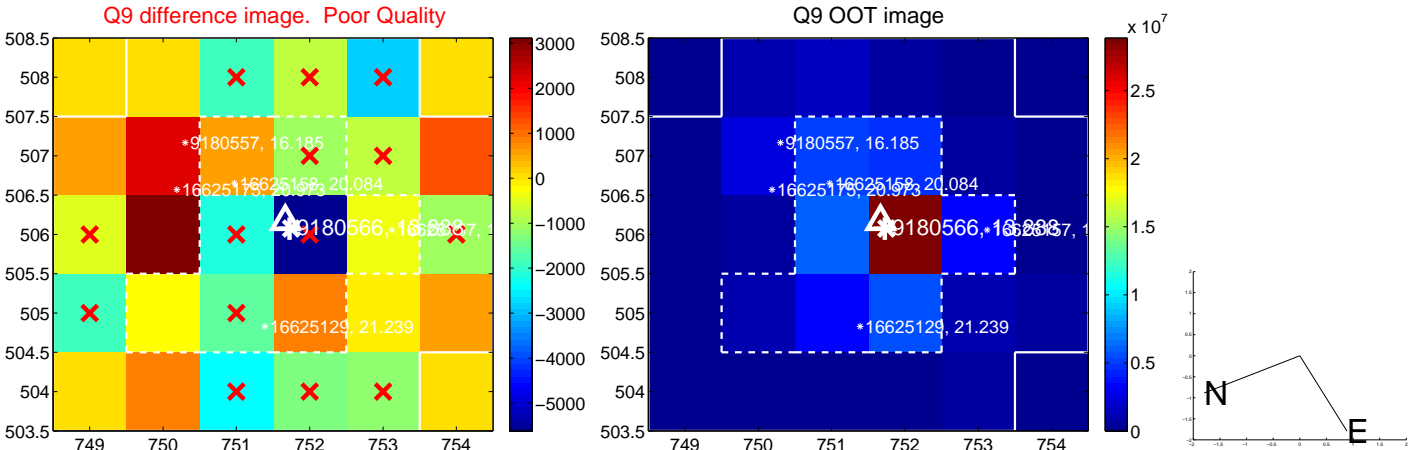
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



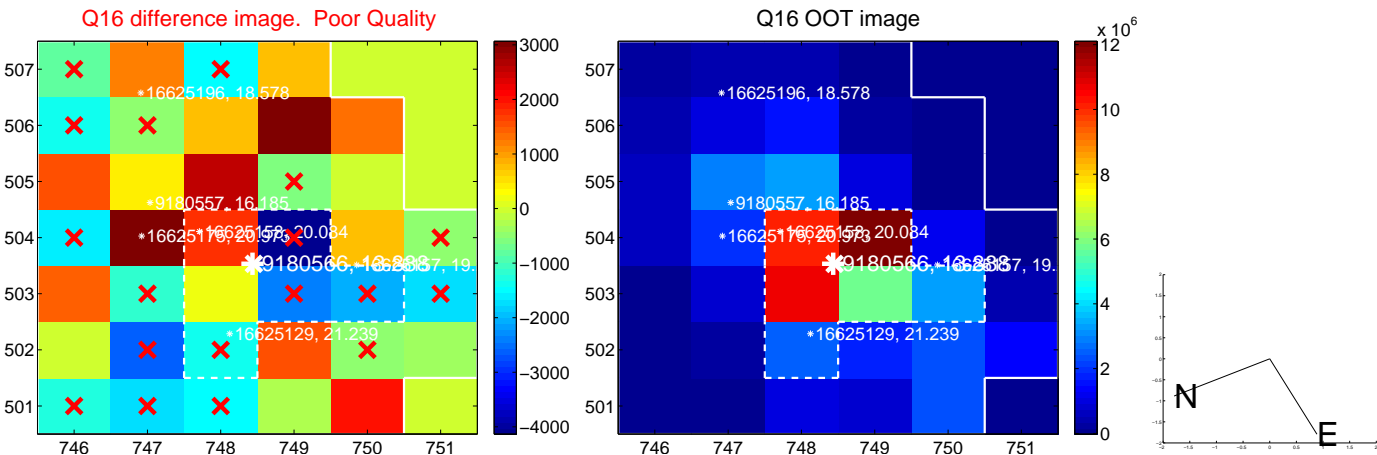
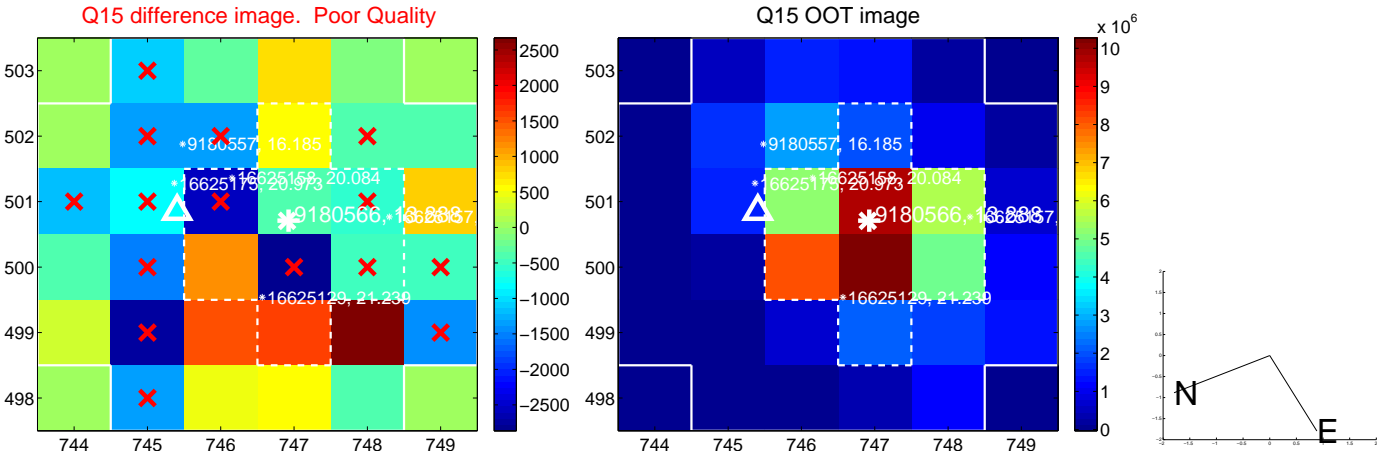
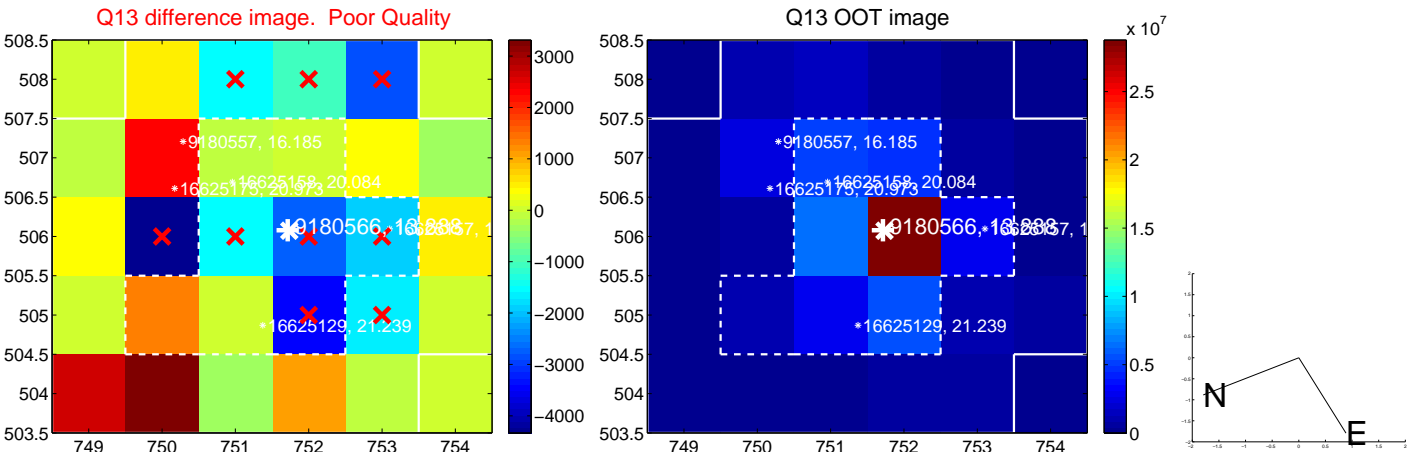
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



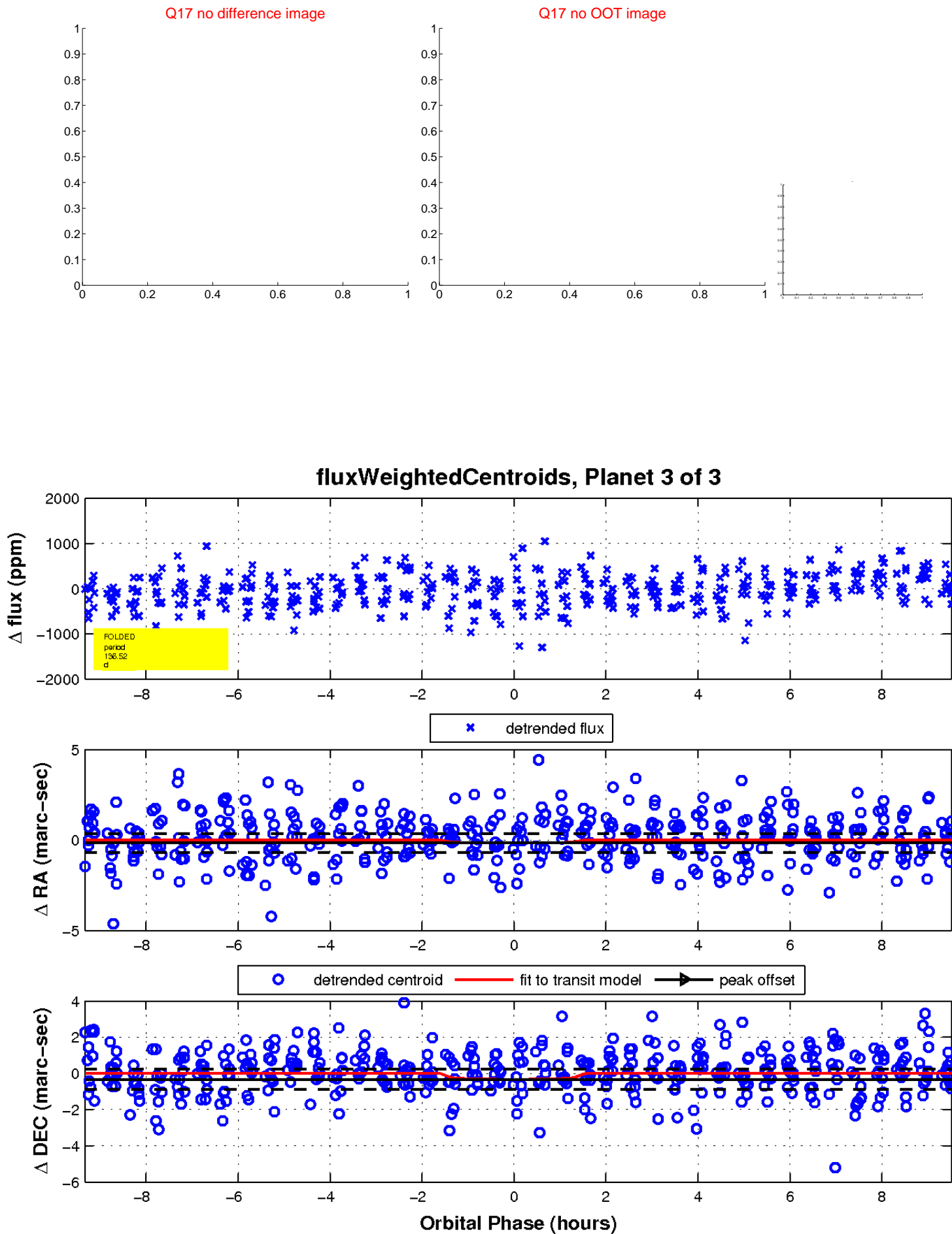
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

