

KIC 009909362

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})
009909362-01	OBS	No	0.538390	131.892018	3.0	2.266	8.9	1.8	4.89	7016	1.03	0.00
009909362-03	OBS	No	9.184537	131.862938	77.2	2.175	7.5	8.6	4.89	7016	4.72	4089.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009909362-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
009909362-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—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.

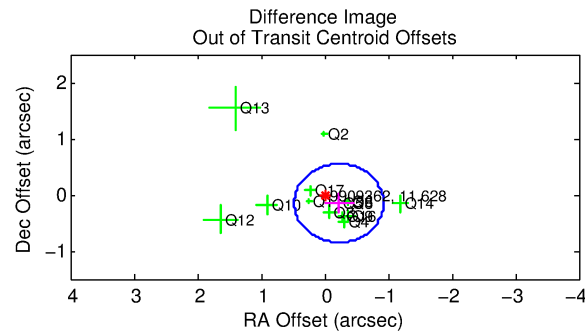
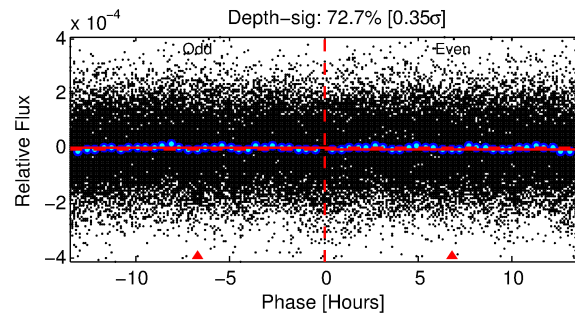
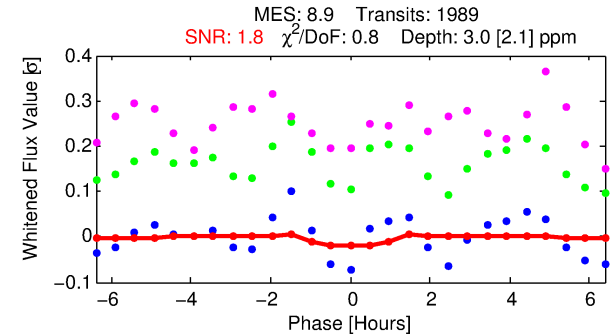
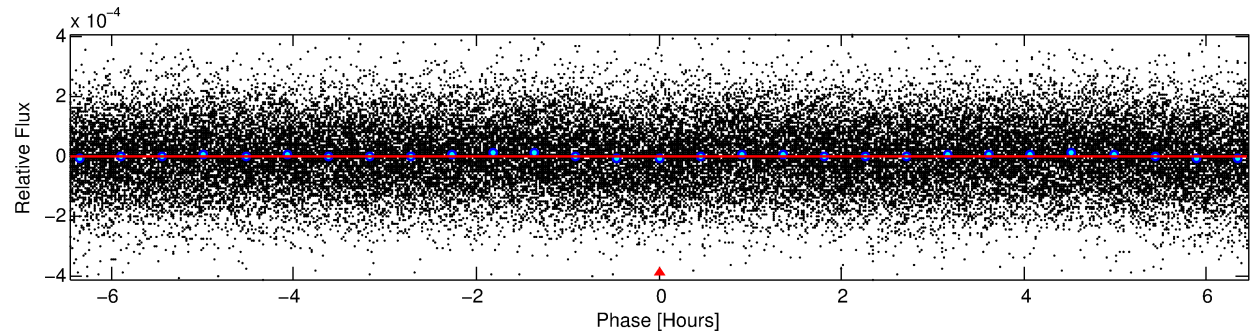
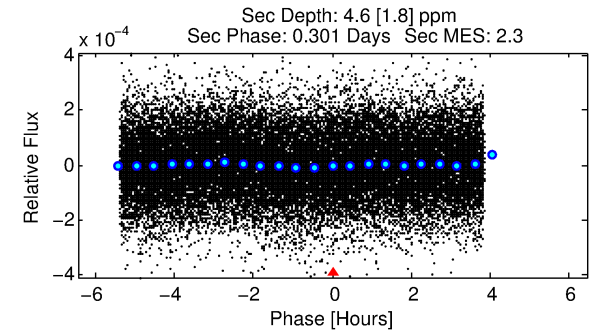
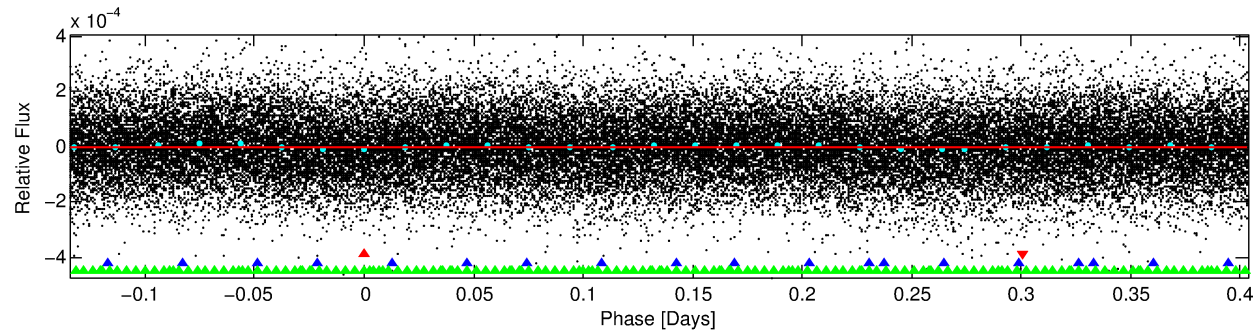
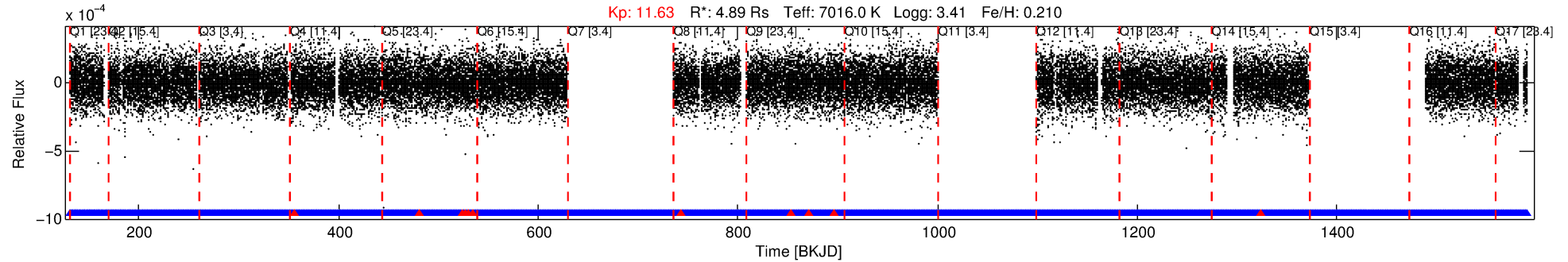
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009909362-01

No Significant Match Found

DV One-Page Summary

KIC: 9909362 Candidate: 1 of 3 Period: 0.538 d



DV Fit Results:

Period = 0.53839 [0.00005] d
Epoch = 131.8920 [0.0116] BKJD
Rp/R* = 0.0019 [0.0011]
a/R* = 1.15 [0.86]
b = 0.94 [0.38]
Seff = N/A
Teq = N/A
Rp = 1.03 [0.75] Re
a = N/A
Ag = N/A
Teffp = N/A

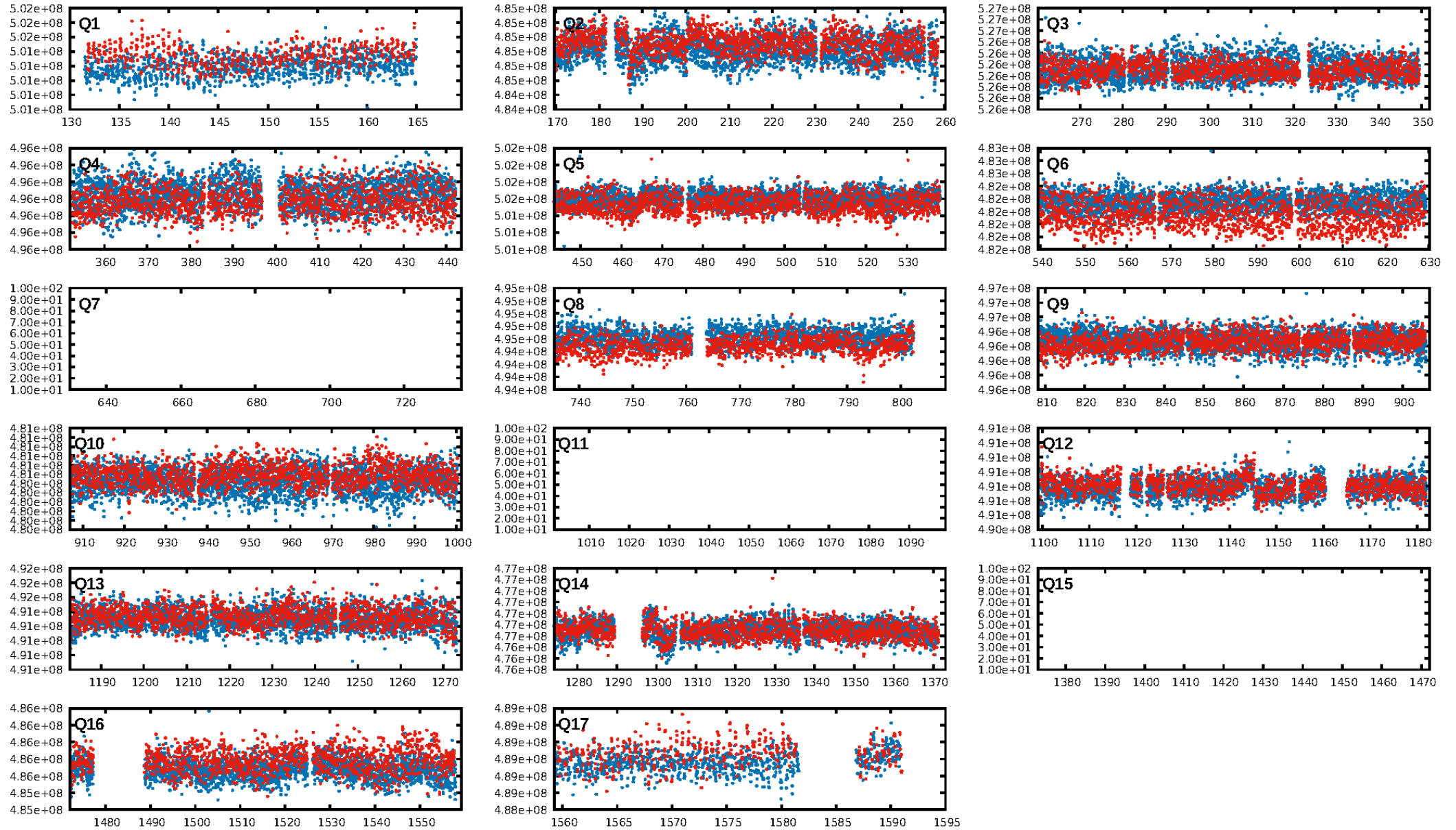
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [66.06σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.93e-13
RollingBand-fgt: 0.99 [1867/1878]
GhostDiagnostic-chr: N/A
Centroid-sig: N/A
Centroid-so: N/A
OotOffset-rm: 0.268 arcsec [1.15σ]
KicOffset-rm: 0.318 arcsec [1.56σ]
OotOffset-st: 4/1/4/5 [14]
KicOffset-st: 4/1/4/5 [14]
DiffImageQuality-fgm: 0.50 [7/14]
DiffImageOverlap-fno: 1.00 [14/14]

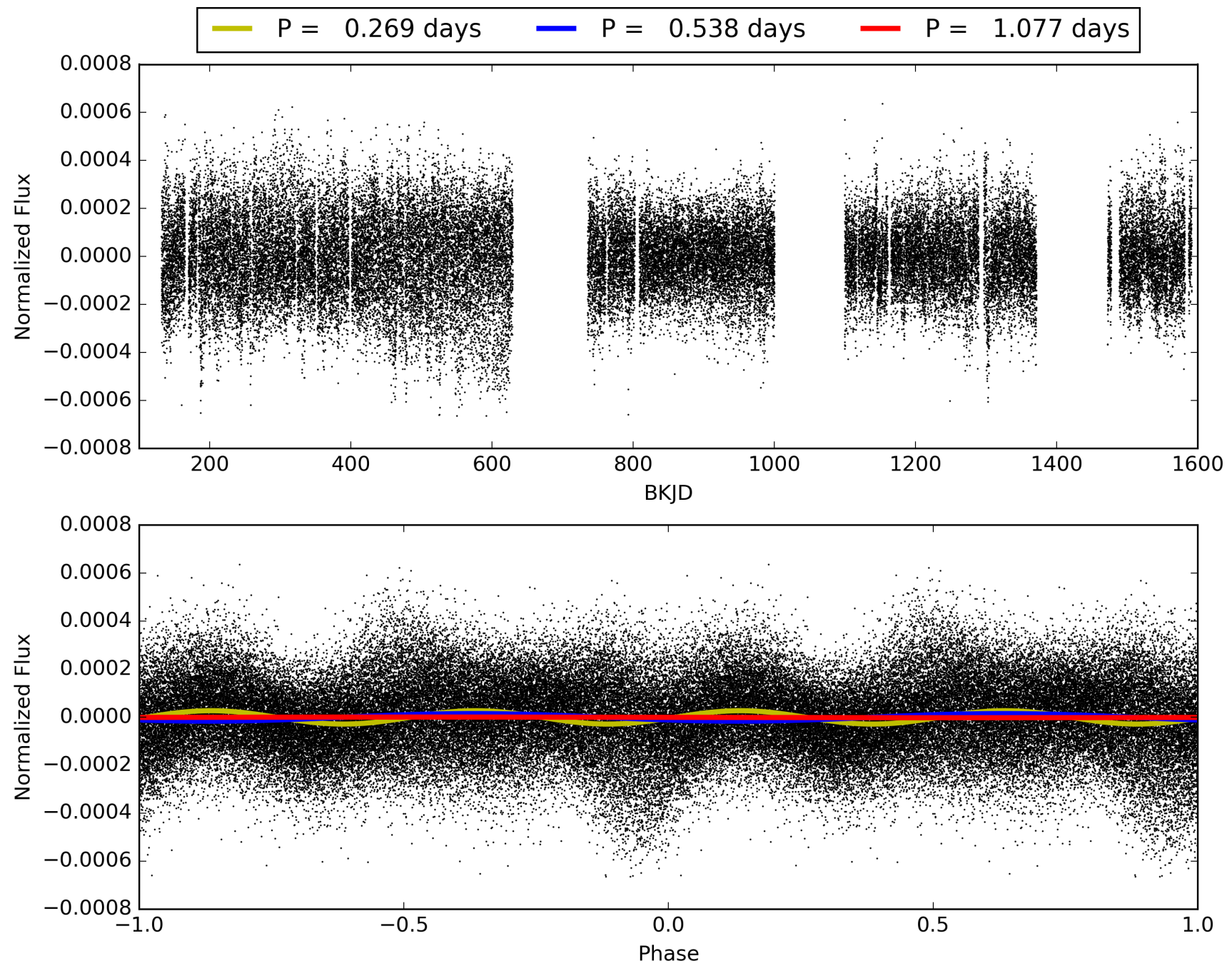
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 20:51:38 Z

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

TCE 009909362-01, PDC Light Curves

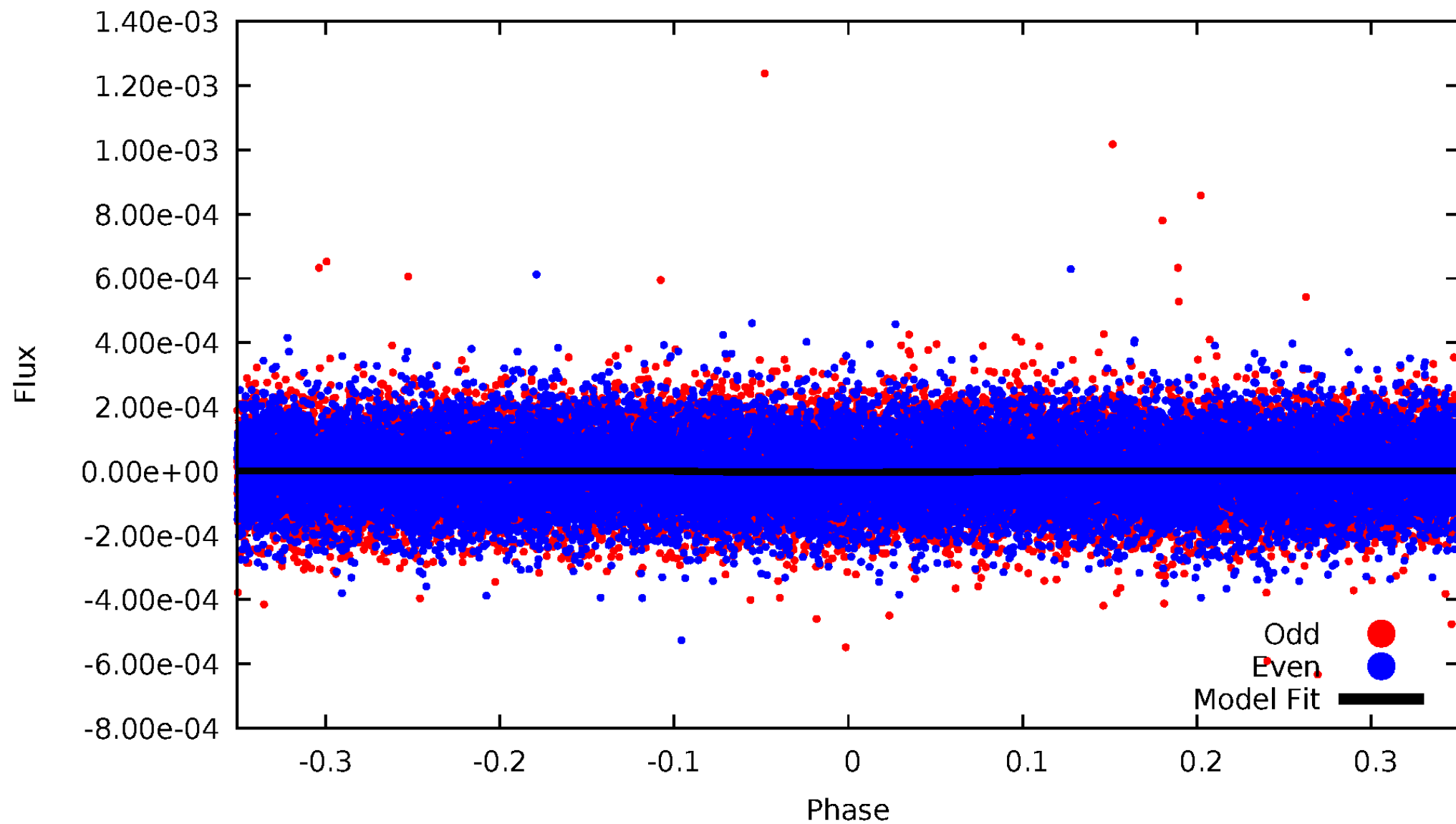


TCE 009909362-01



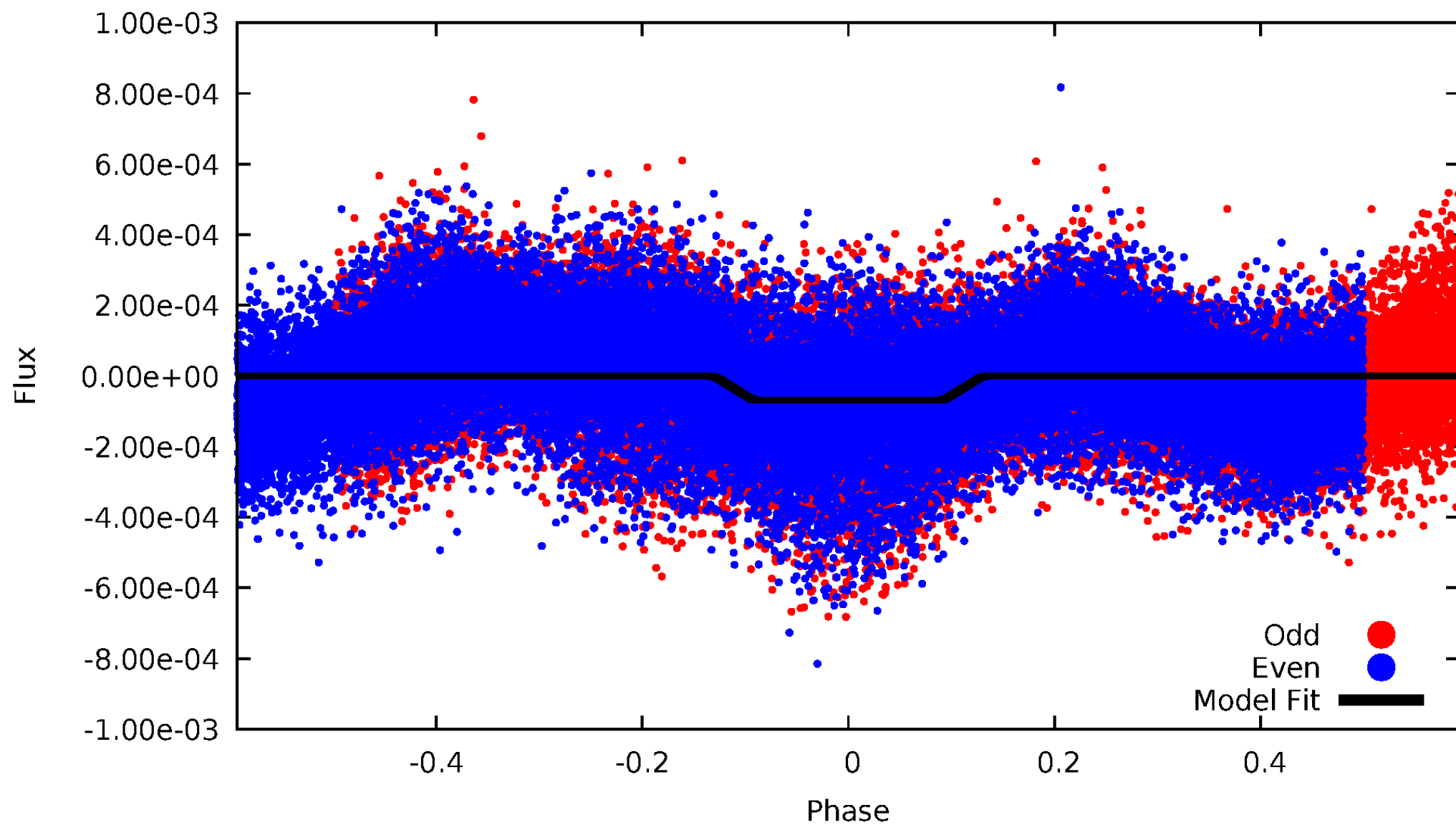
DV Odd/Even

TCE 009909362-01

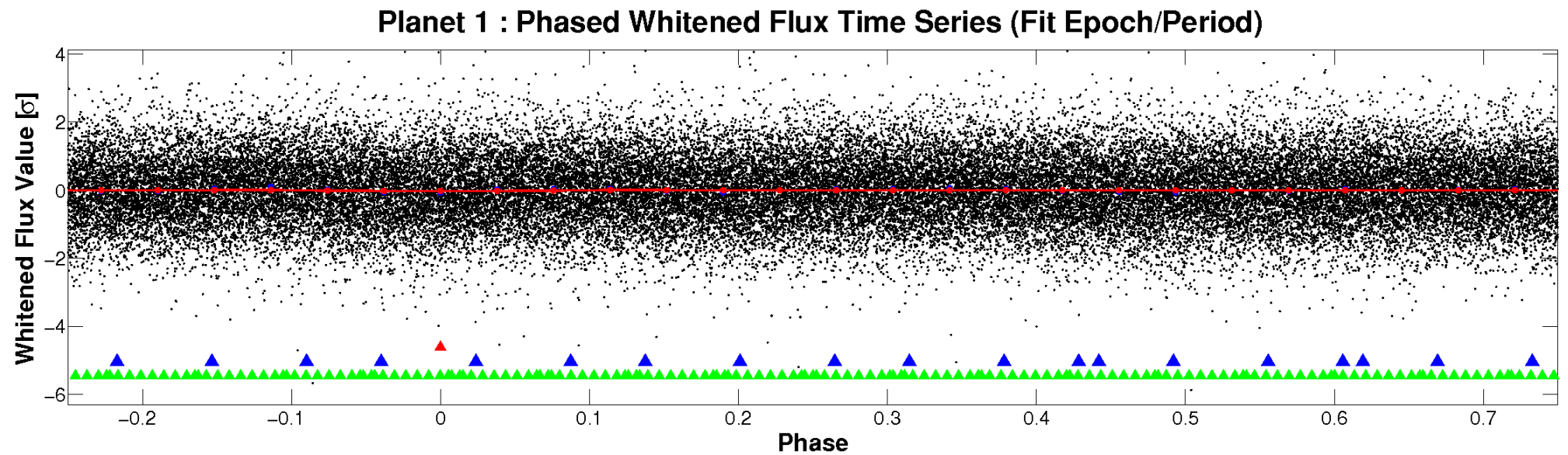
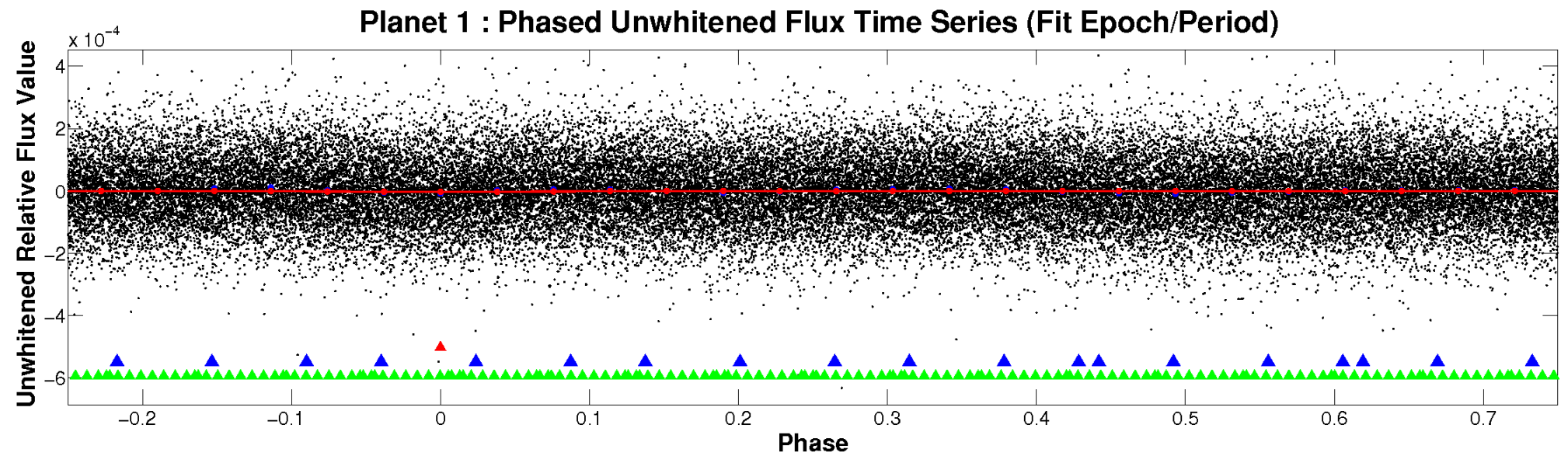


ALT Odd/Even

TCE 009909362-01

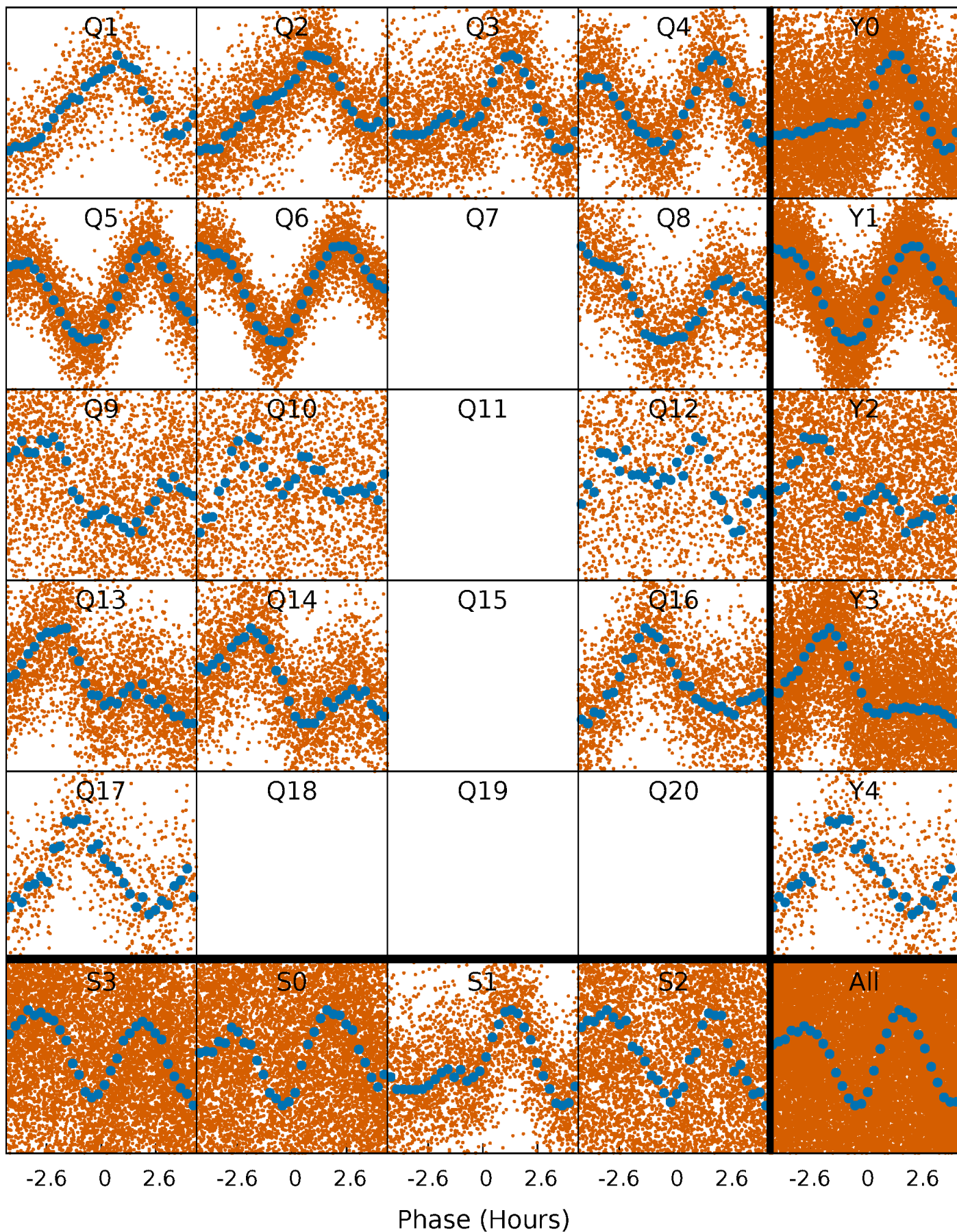


Non-Whitened Vs. Whitened Light Curve



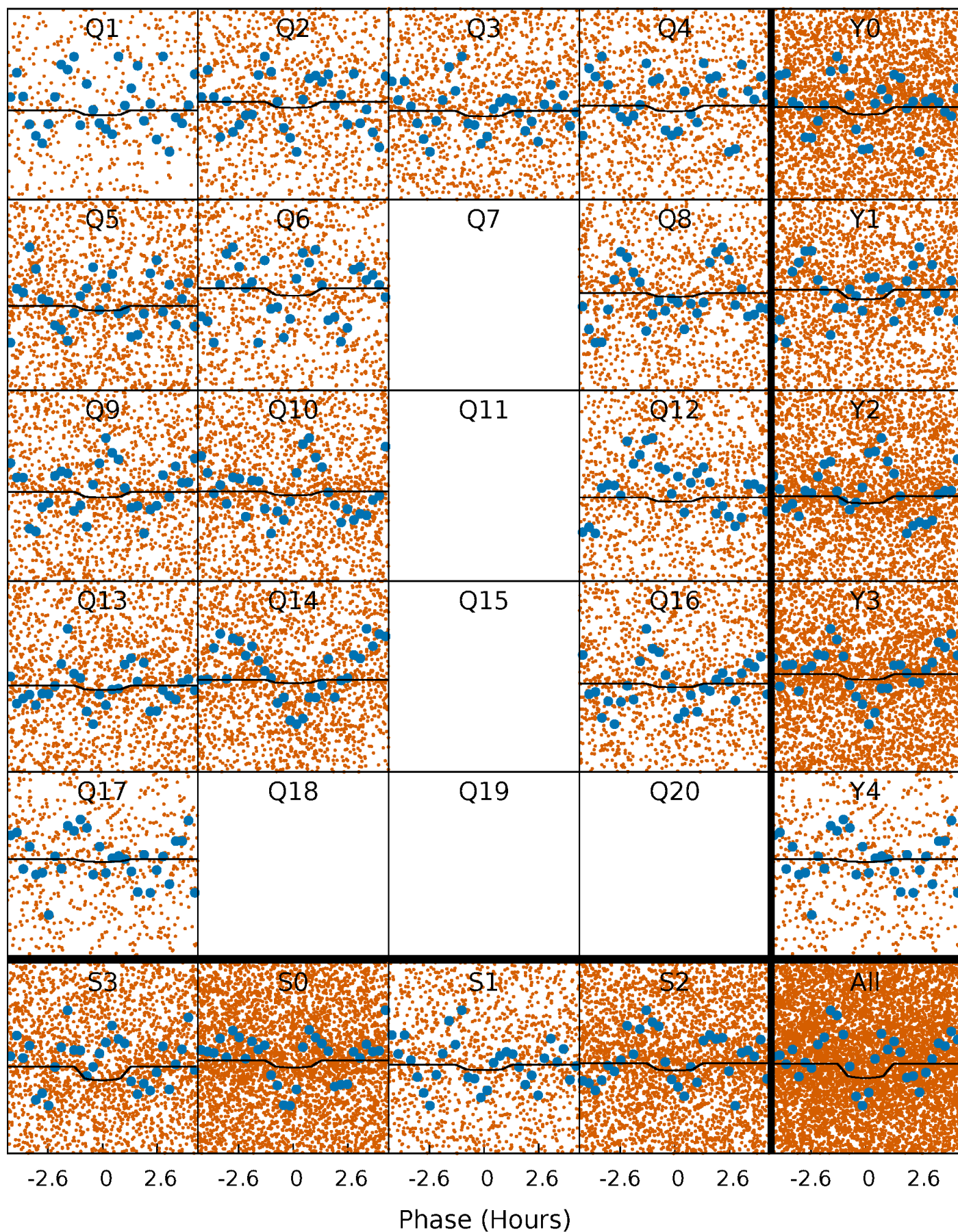
PDC Quarter-Phased Transit Curves

TCE 009909362-01 P= 0.538390 Days $T_0=131.892018$ (BKJD)



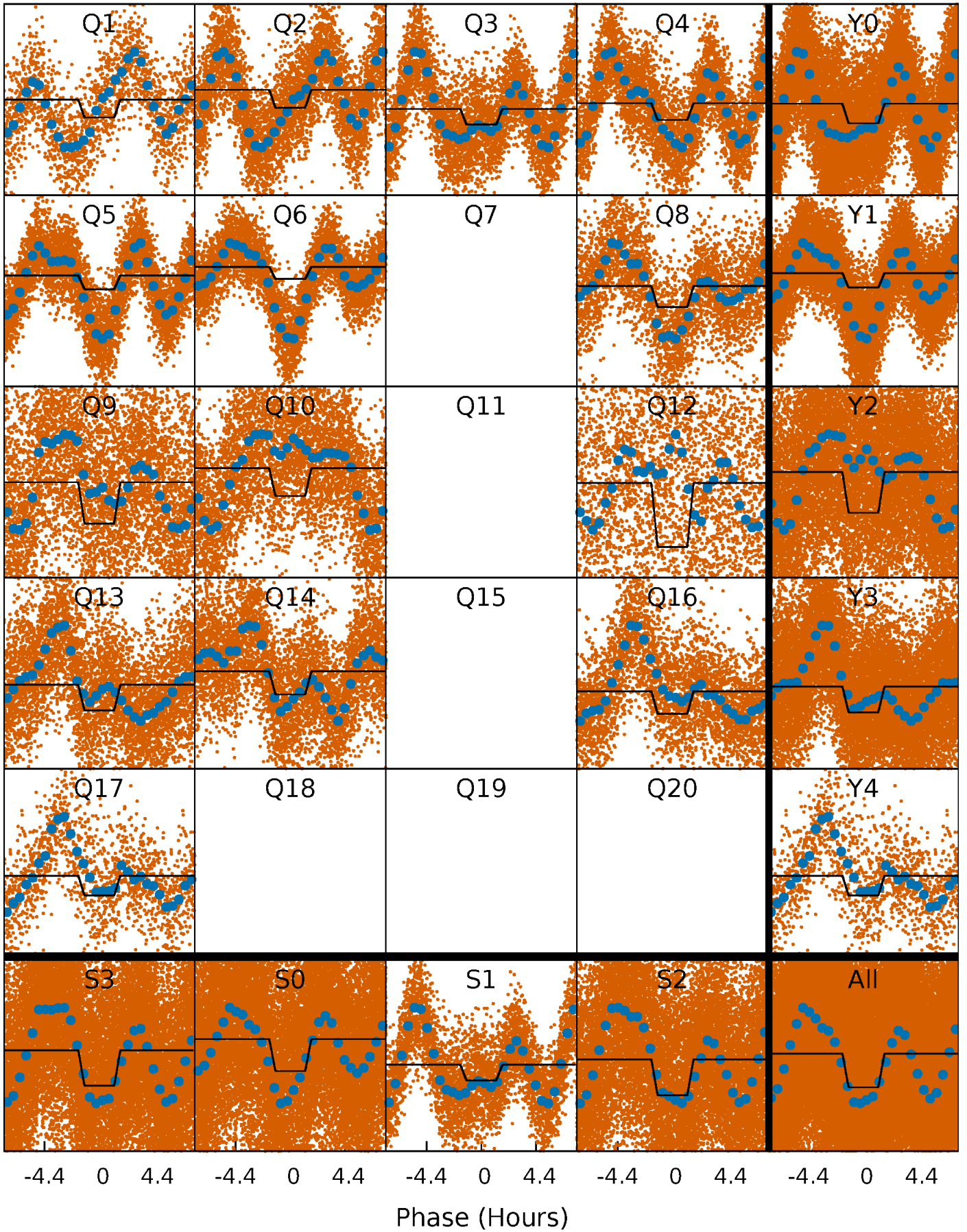
DV Quarter-Phased Transit Curves

TCE 009909362-01 P= 0.538390 Days $T_0=131.892018$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

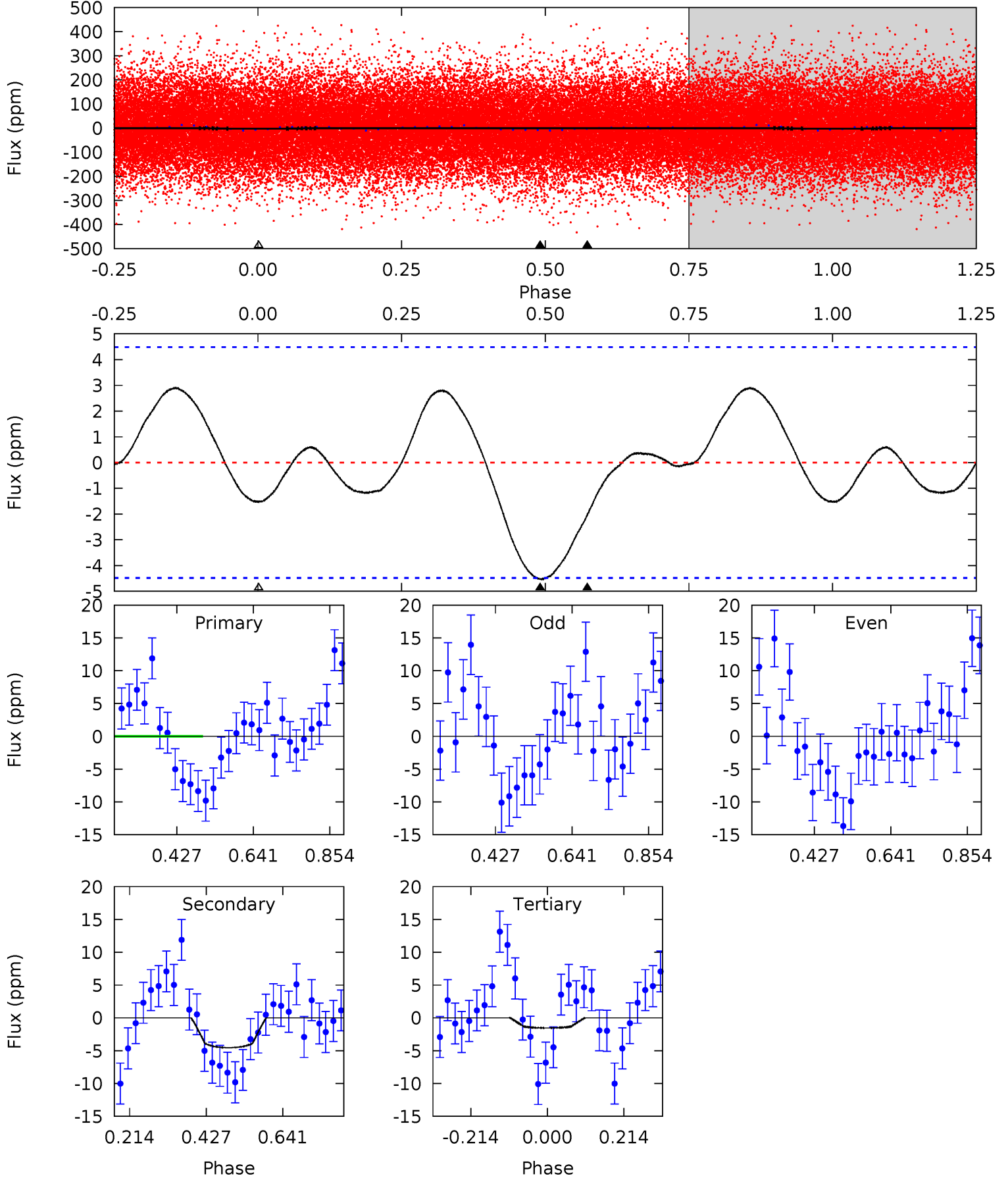
TCE 009909362-01 P= 0.538450 Days $T_0=131.811987$ (BKJD)



DV Model-Shift Uniqueness Test

009909362-01, P = 0.538390 Days, E = 131.353628 Days

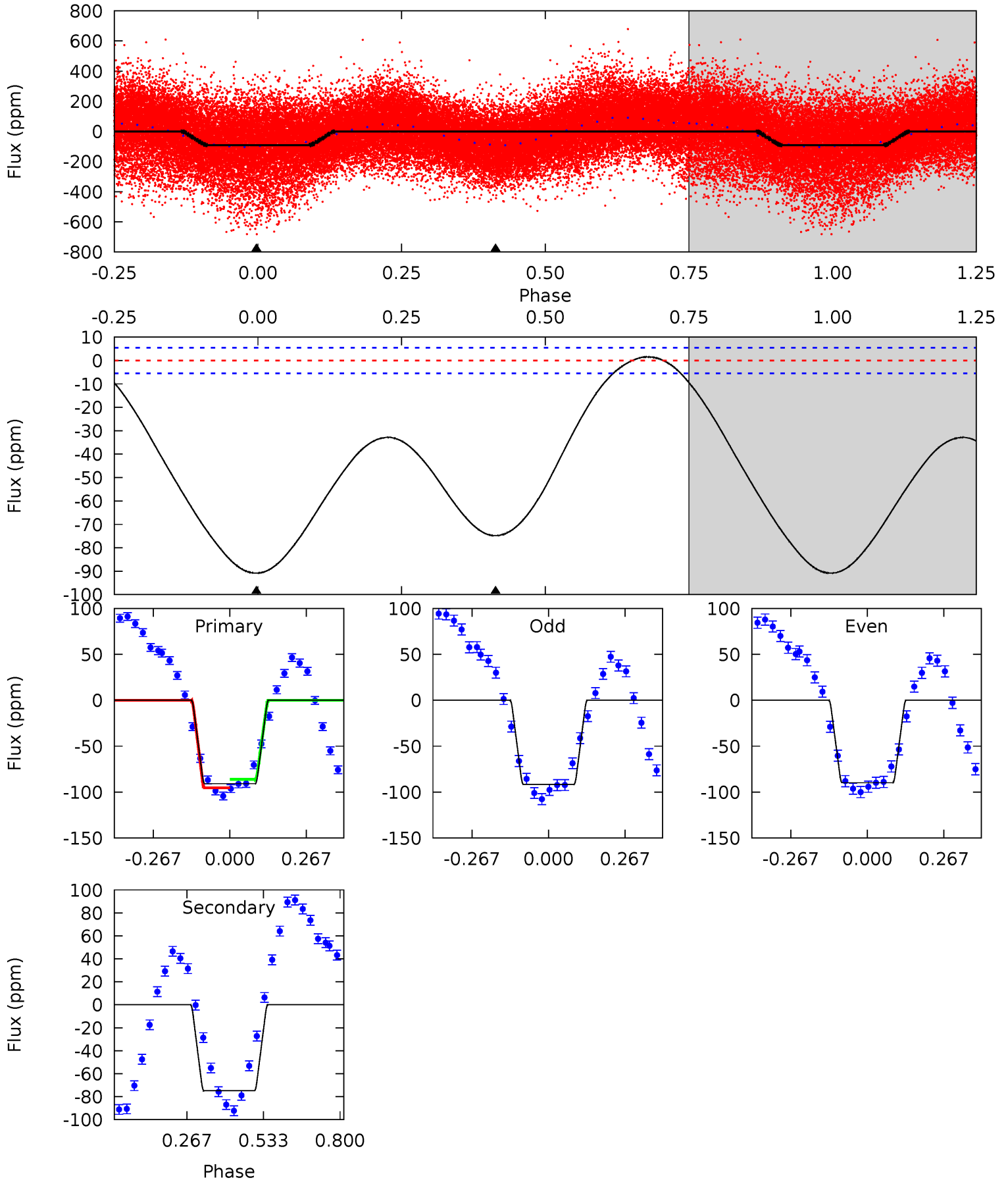
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.00	4.46	1.51	0	4.40	1.24	1.34	0.49	2.00	2.95	4.46	1.00	0.55	0.39	2.07



Alt Model-Shift Uniqueness Test

009909362-01, P = 0.538450 Days, E = 131.273537 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
72.1	59.4	0	0	4.35	1.11	2.98	72.1	72.1	59.4	59.4	0.66	1.21	0.02	3.41



Stellar Parameters For KIC 009909362

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7016^{+166}_{-249}	$3.414^{+0.382}_{-0.090}$	$0.210^{+0.150}_{-0.300}$	$4.895^{+1.108}_{-2.057}$	$2.267^{+0.146}_{-0.437}$	$0.027^{+0.080}_{-0.009}$
	+2%/-4%	+11%/-3%	+71%/-143%	+23%/-42%	+6%/-19%	+295%/-34%
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 009909362-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-5 ± 1	$0.92^{+0.59}_{-0.49}$	7051^{+558}_{-708}	6383^{+5666}_{-3610}	$0.829^{+3.152}_{-0.525}$
Alt.	-75 ± 1	$4.03^{+0.85}_{-0.98}$	7032^{+502}_{-717}	6194^{+900}_{-846}	$0.727^{+0.485}_{-0.228}$

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

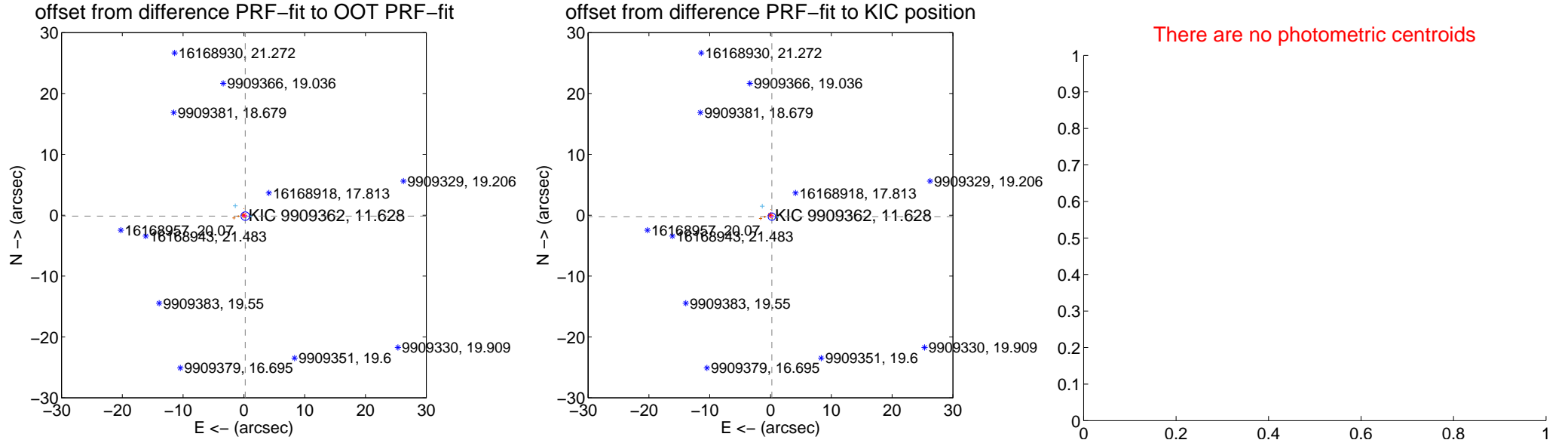
DV Centroid Data

Supplemental centroid analysis for 009909362-01. **Kepler magnitude: 11.63.** Transit SNR 1.82

There are 7 quarters with good PRF difference image offsets

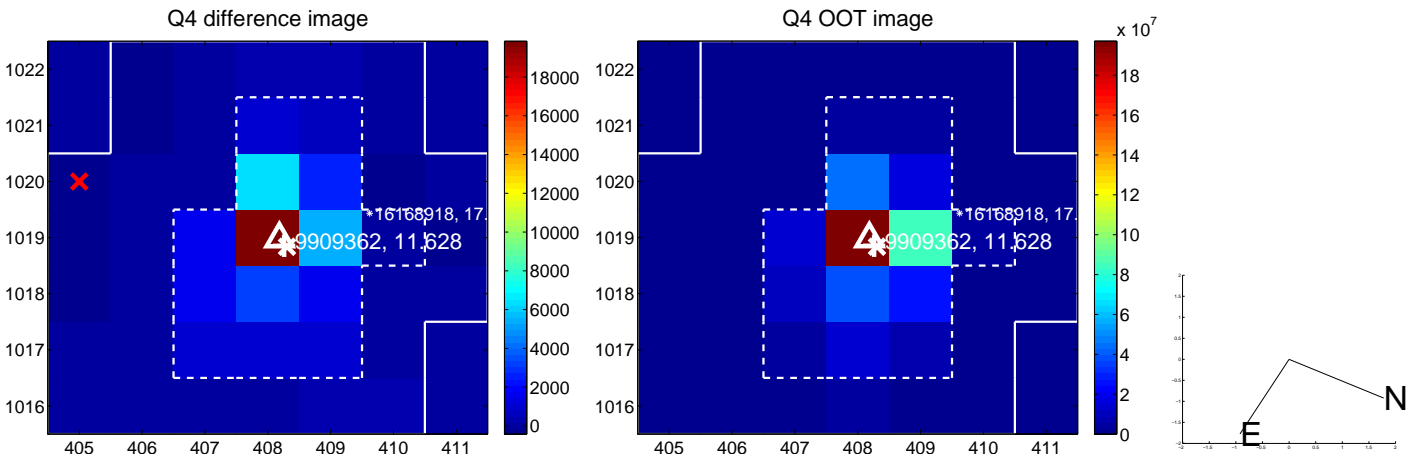
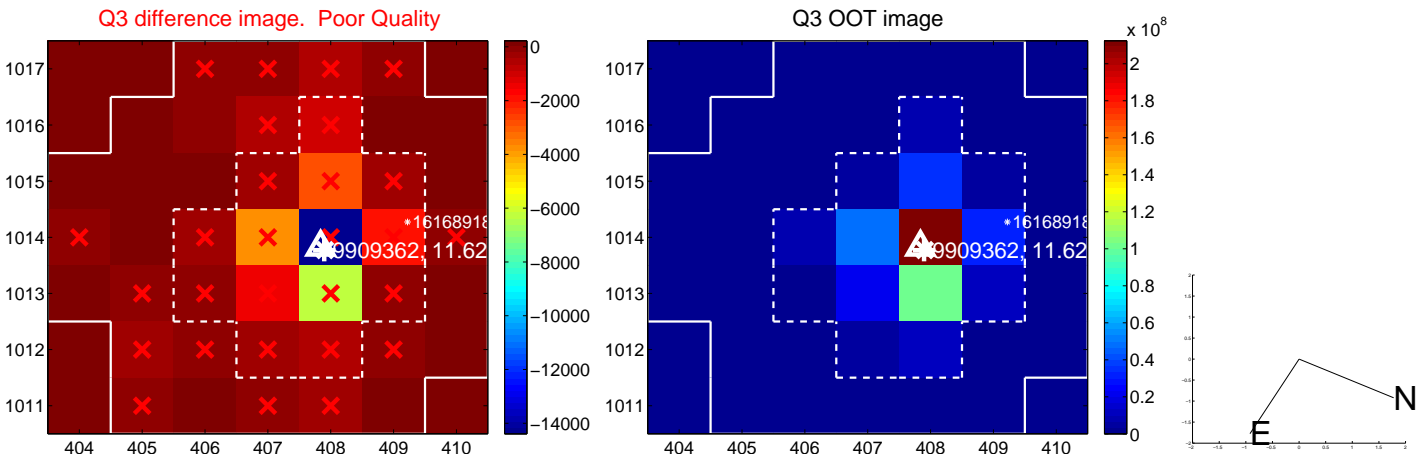
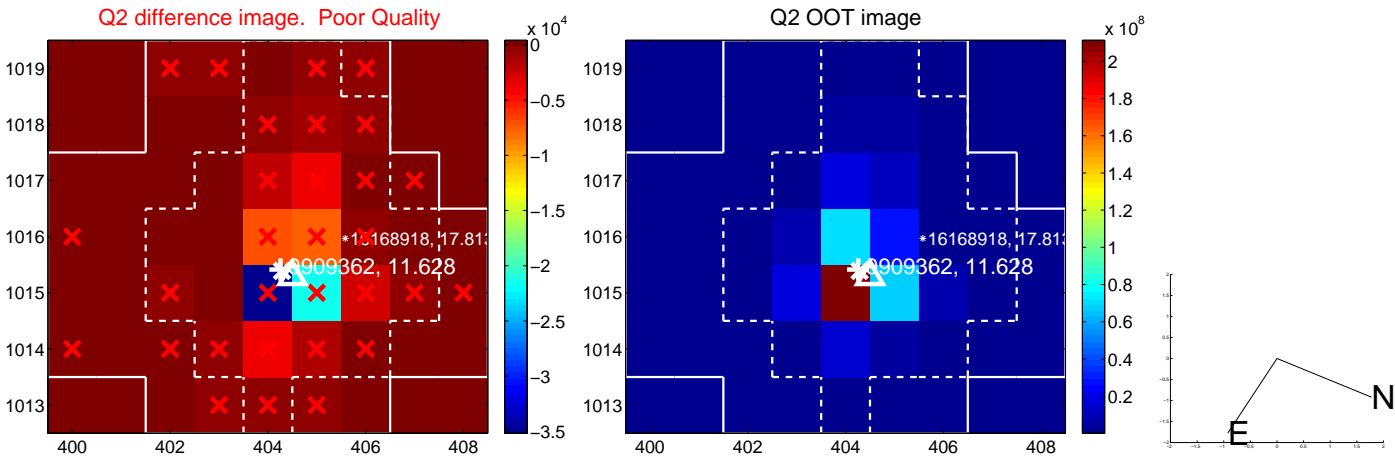
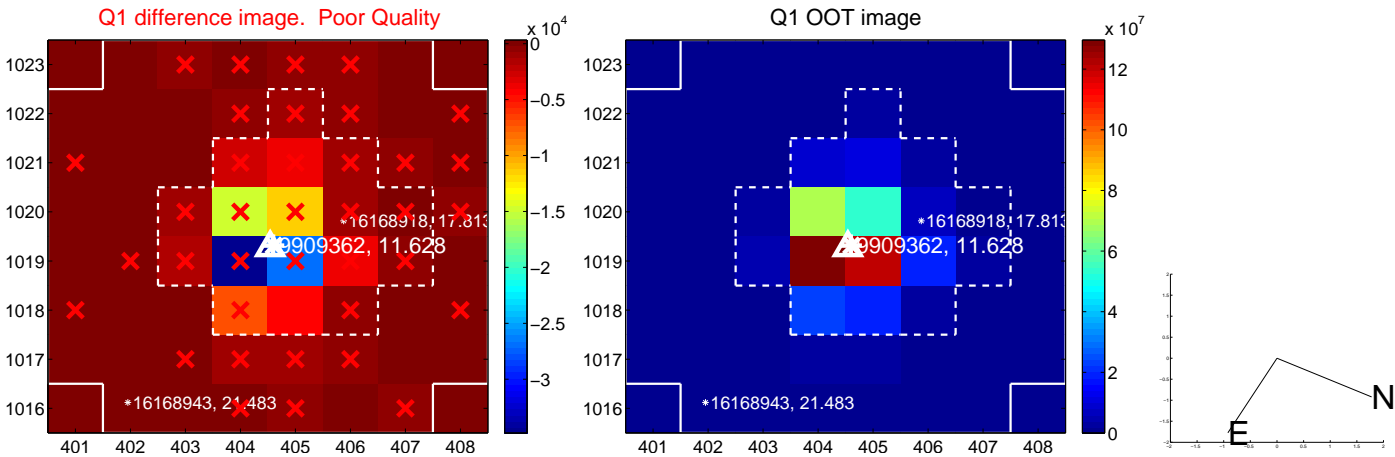
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.268 ± 0.233	1.15	-0.223 ± 0.220	-0.149 ± 0.168
PRF-fit source offset from KIC position	0.318 ± 0.204	1.56	-0.221 ± 0.198	-0.228 ± 0.167
photometric centroid source offset	—	—	—	—

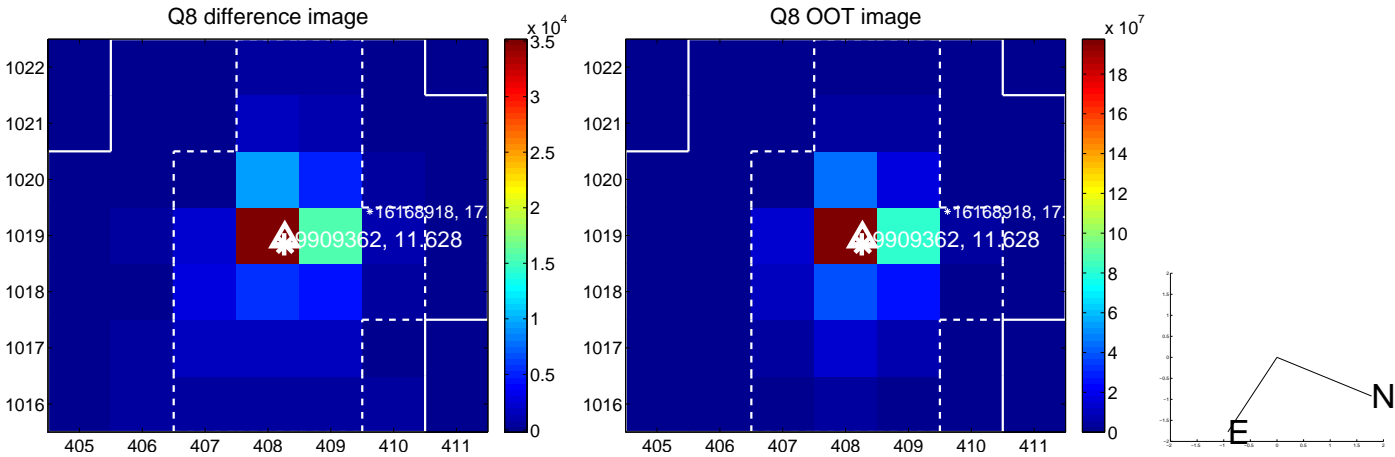
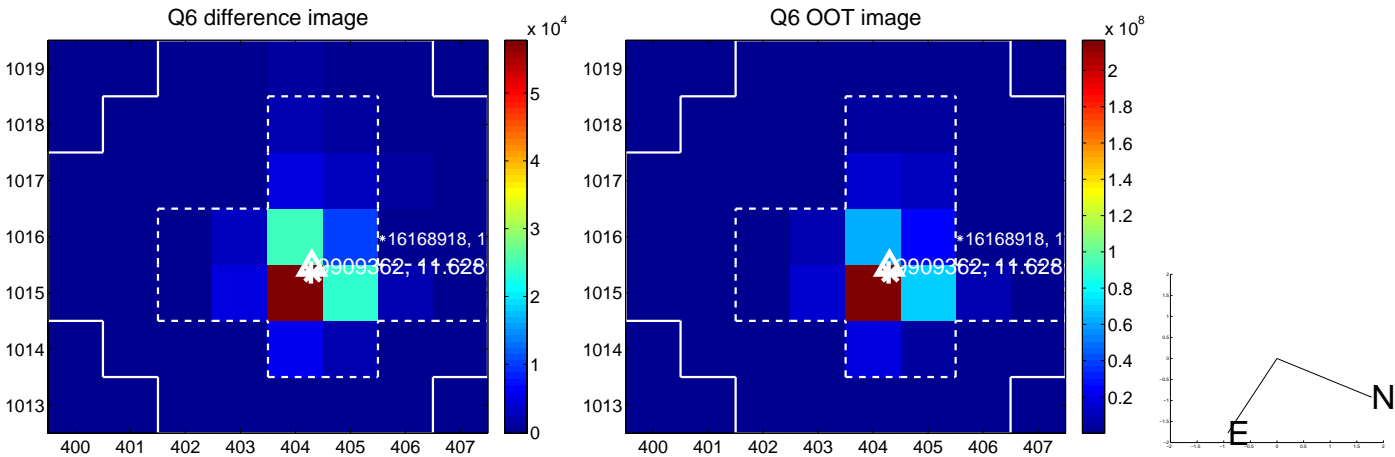
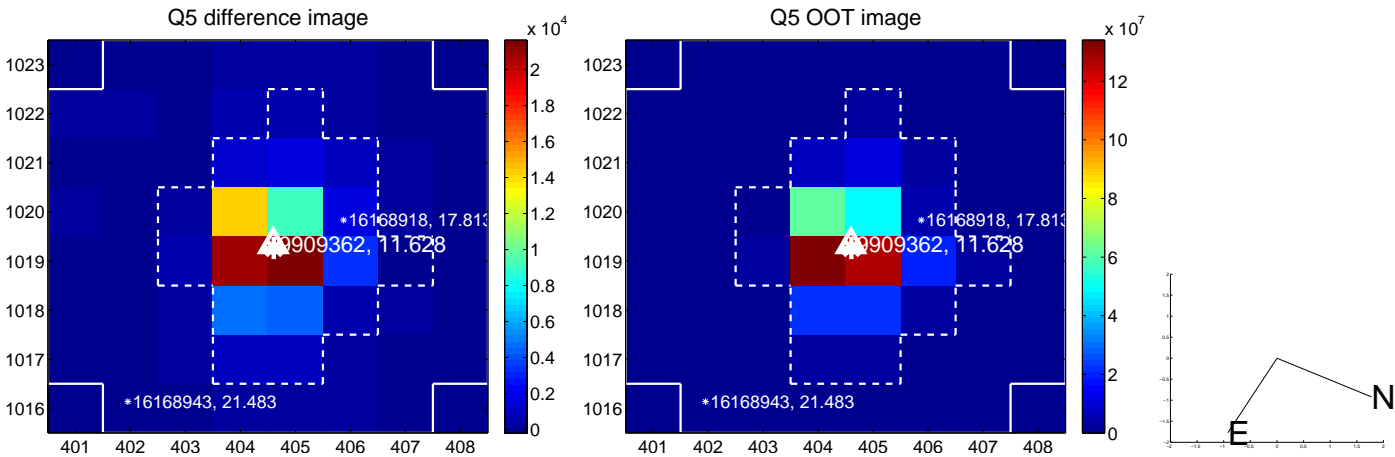


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

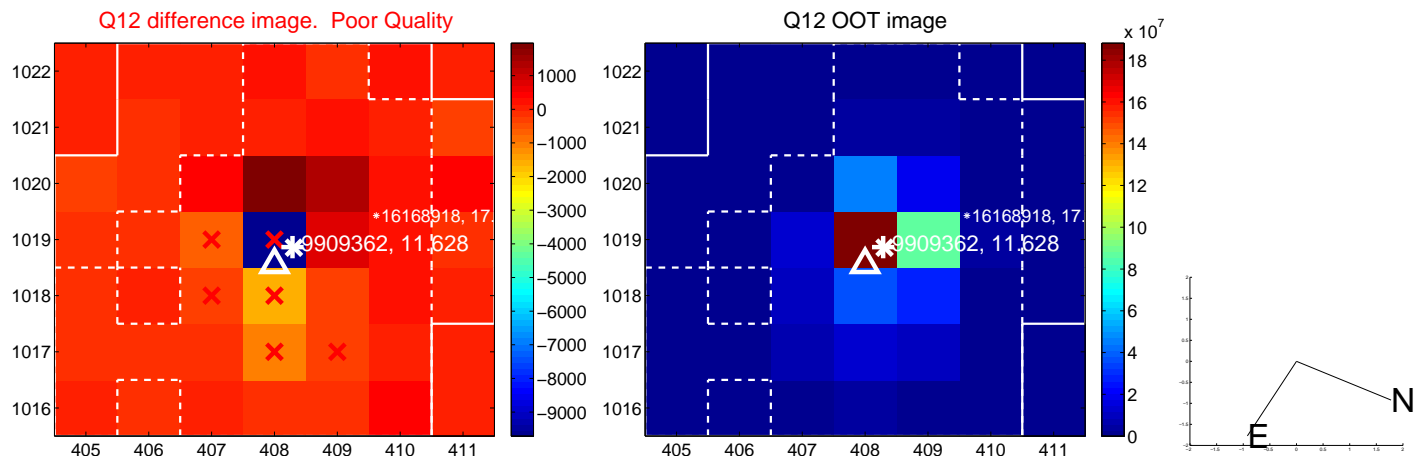
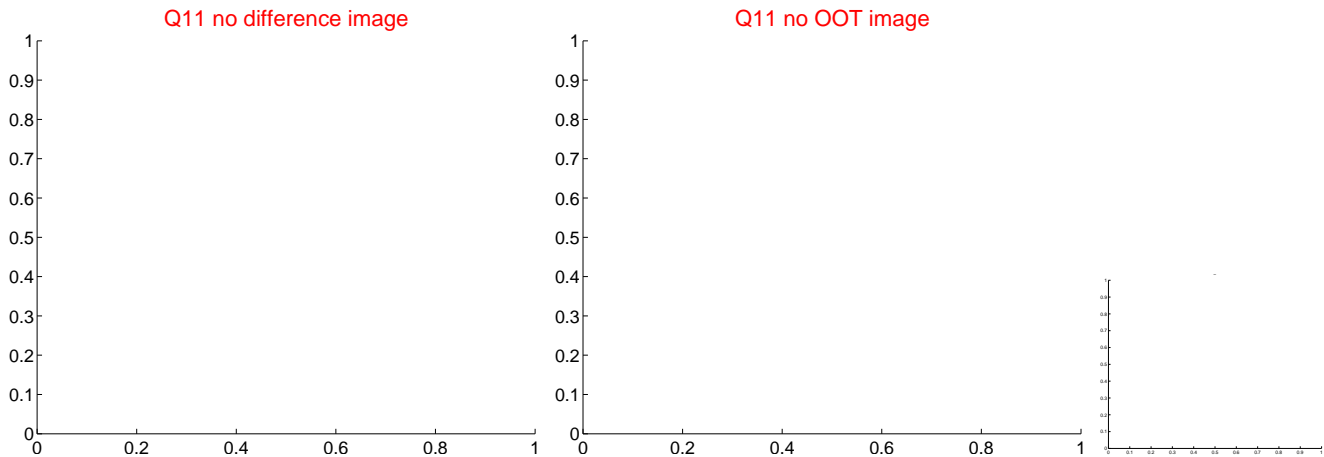
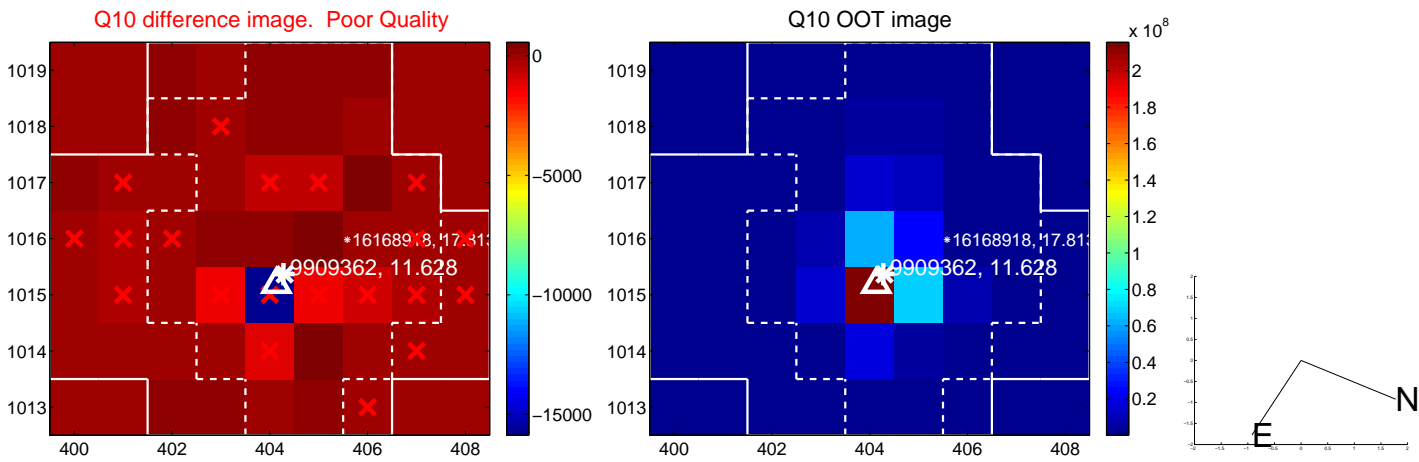
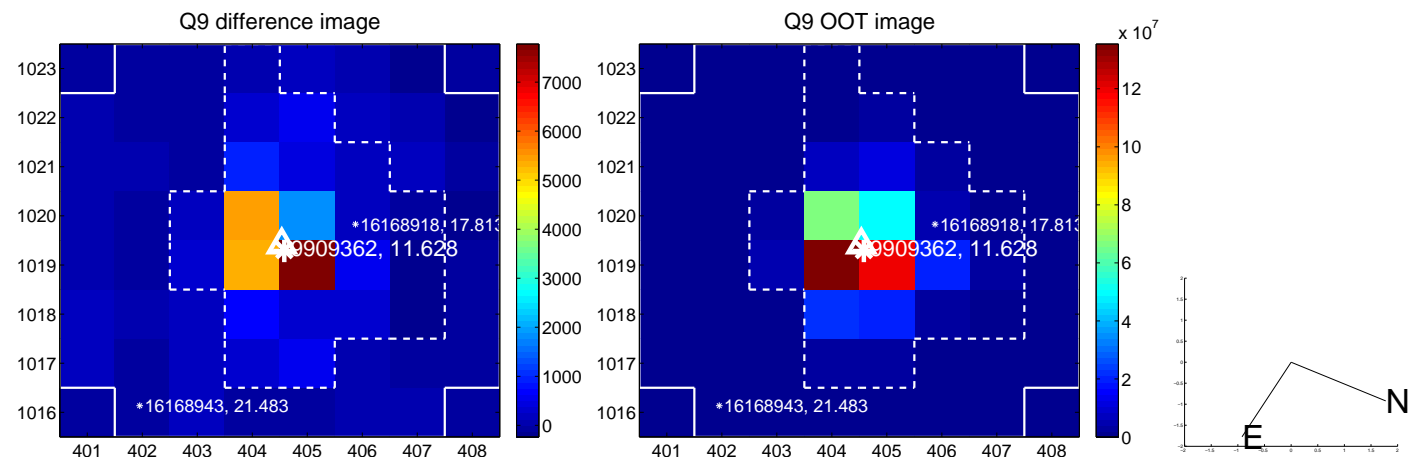
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



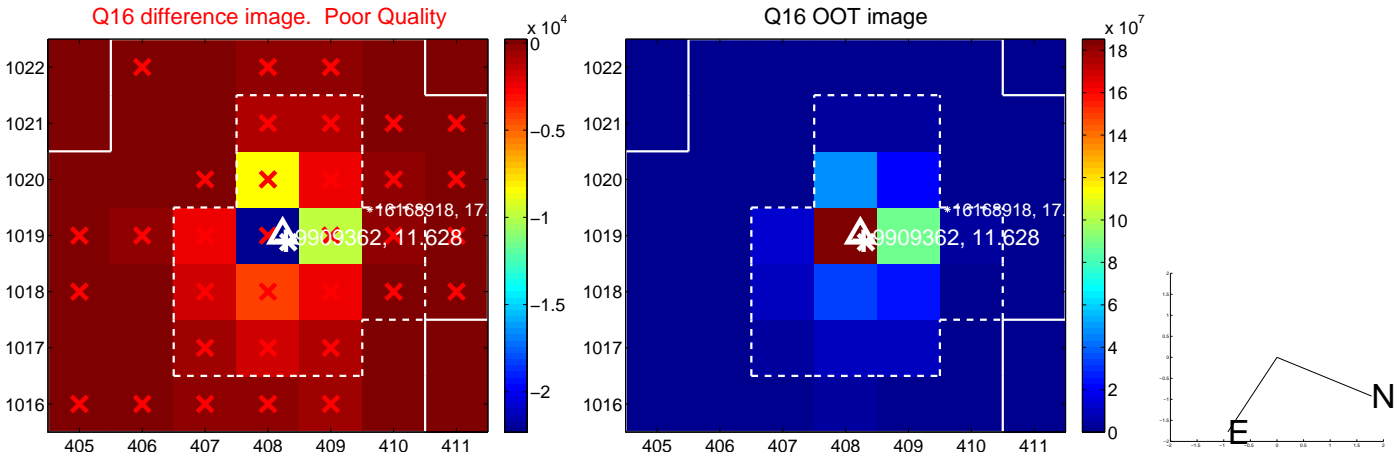
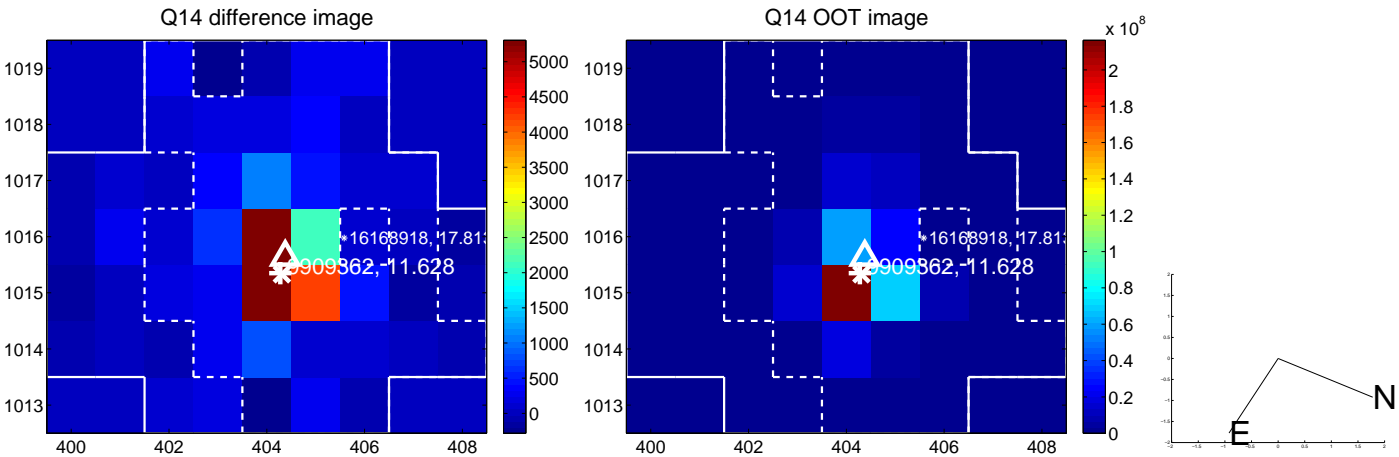
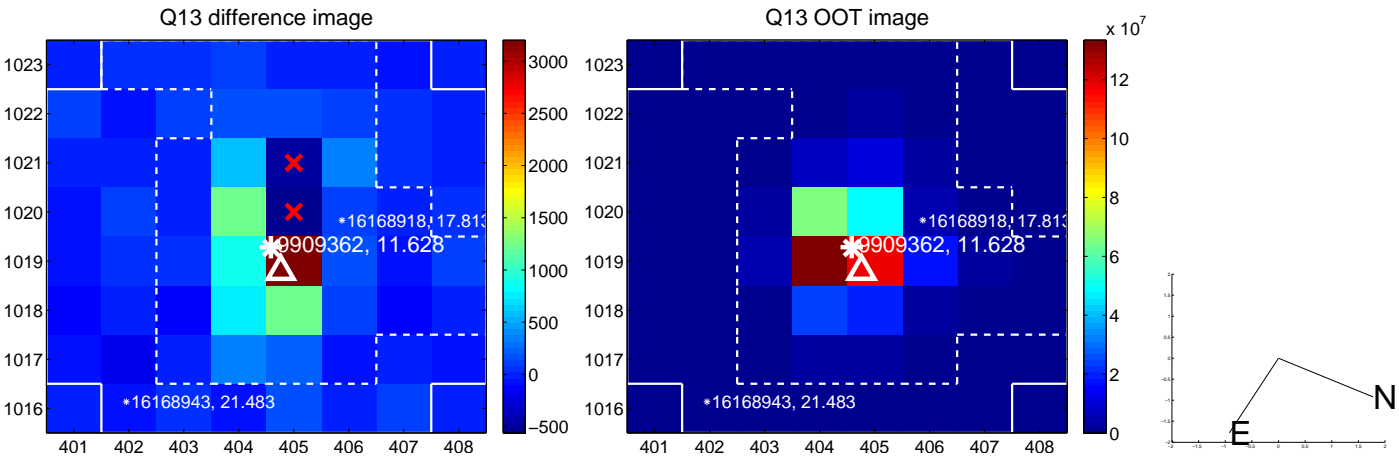
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



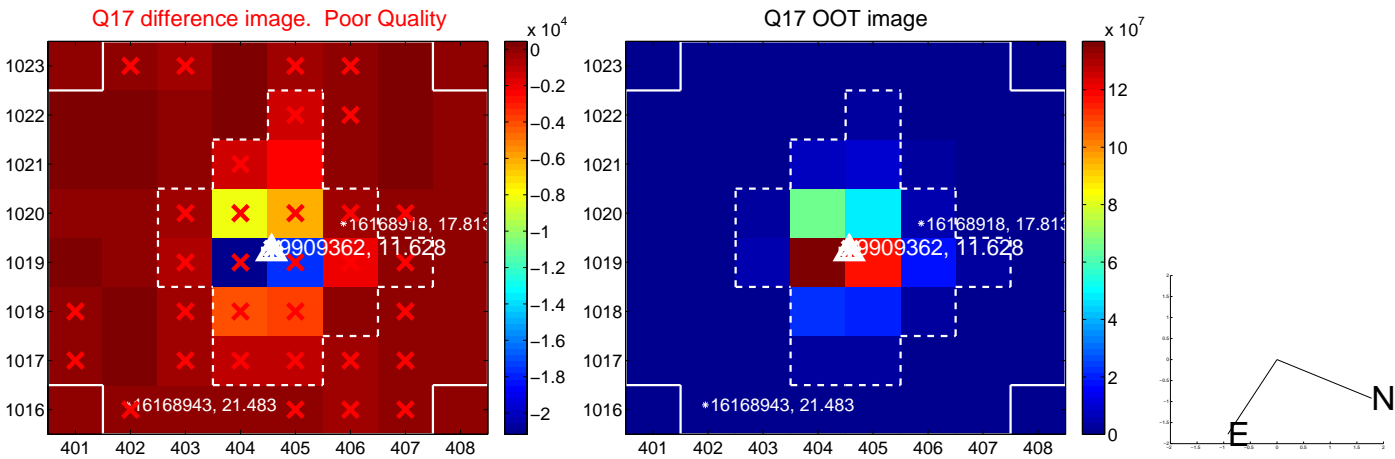
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



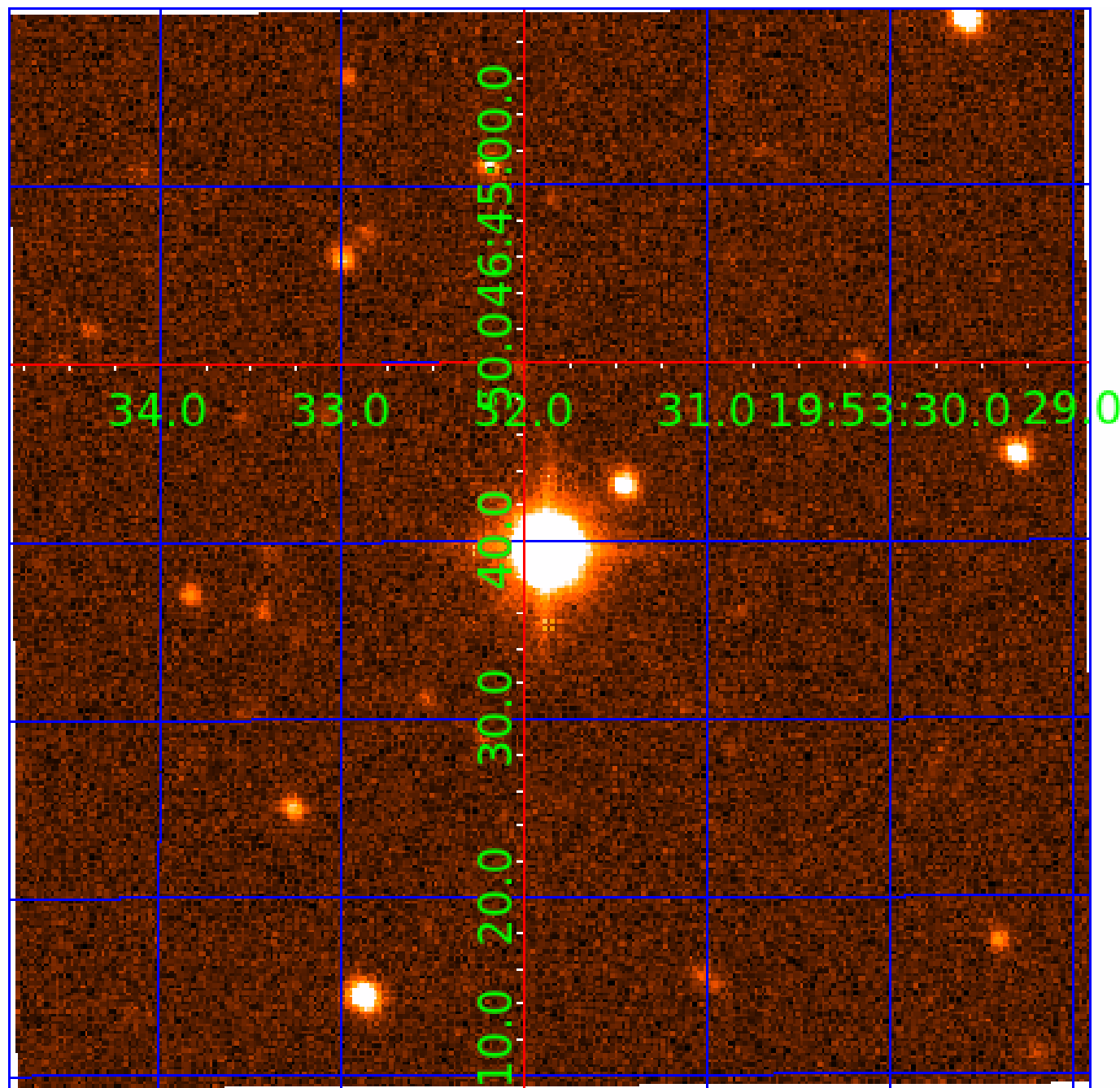
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



folded centroid time series figure for this object.

UKIRT Image

Declination



KIC 009909362

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})
009909362-01	OBS	No	0.538390	131.892018	3.0	2.266	8.9	1.8	4.89	7016	1.03	0.00
009909362-03	OBS	No	9.184537	131.862938	77.2	2.175	7.5	8.6	4.89	7016	4.72	4089.57

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009909362-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV
009909362-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE_ZUMA—TRANS_GAPPED—MOD_NONUNIQ_ALT

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

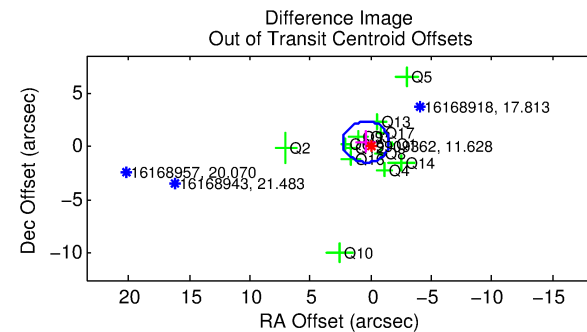
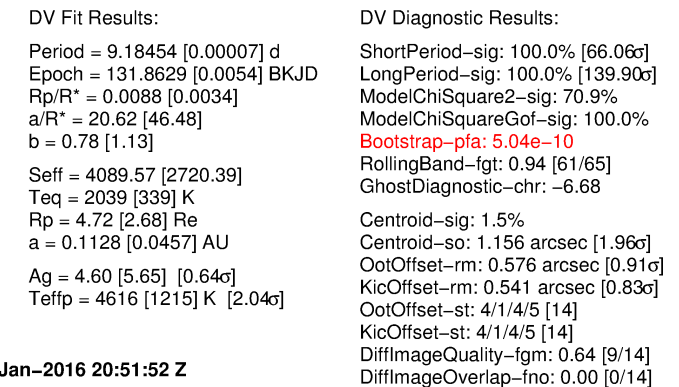
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 009909362-03

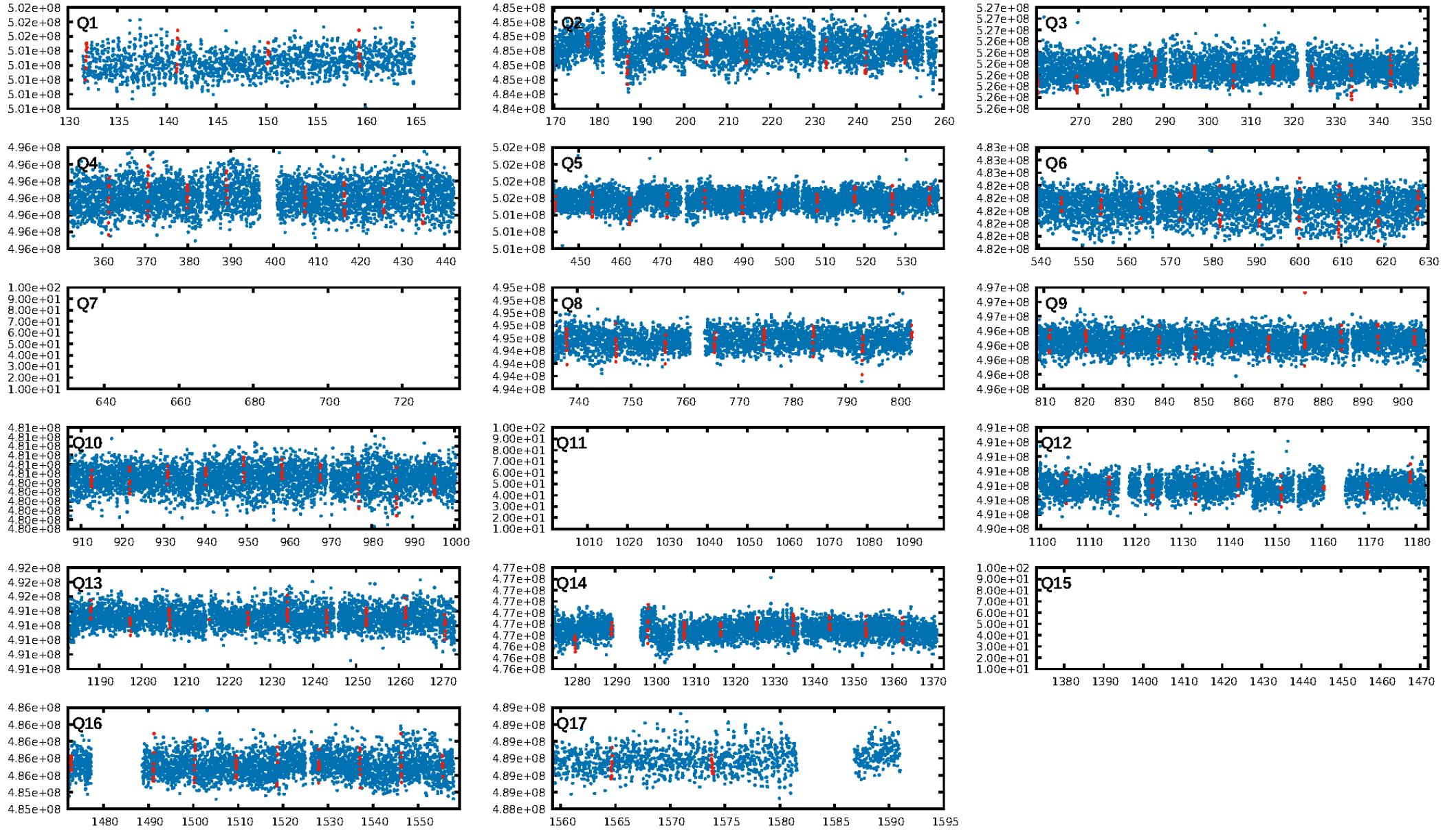
No Significant Match Found

KIC: 9909362 Candidate: 3 of 3 Period: 9.185 d

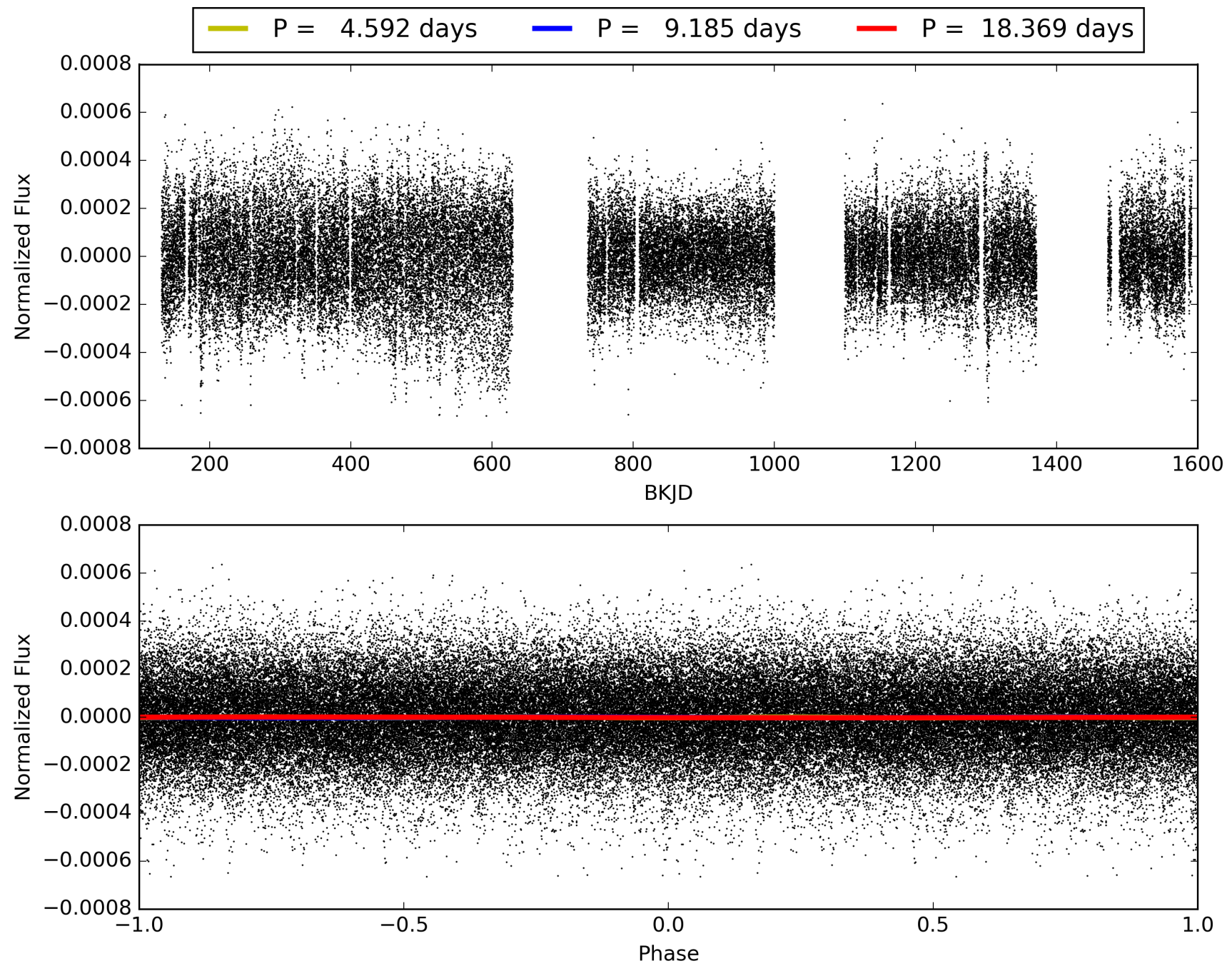


Software Revision: [svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958](https://murzim/repo/soc/tags/release/9.3.42@60958) -- Date Generated: 31-Jan-2016 20:51:52 Z
This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009909362-03, PDC Light Curves

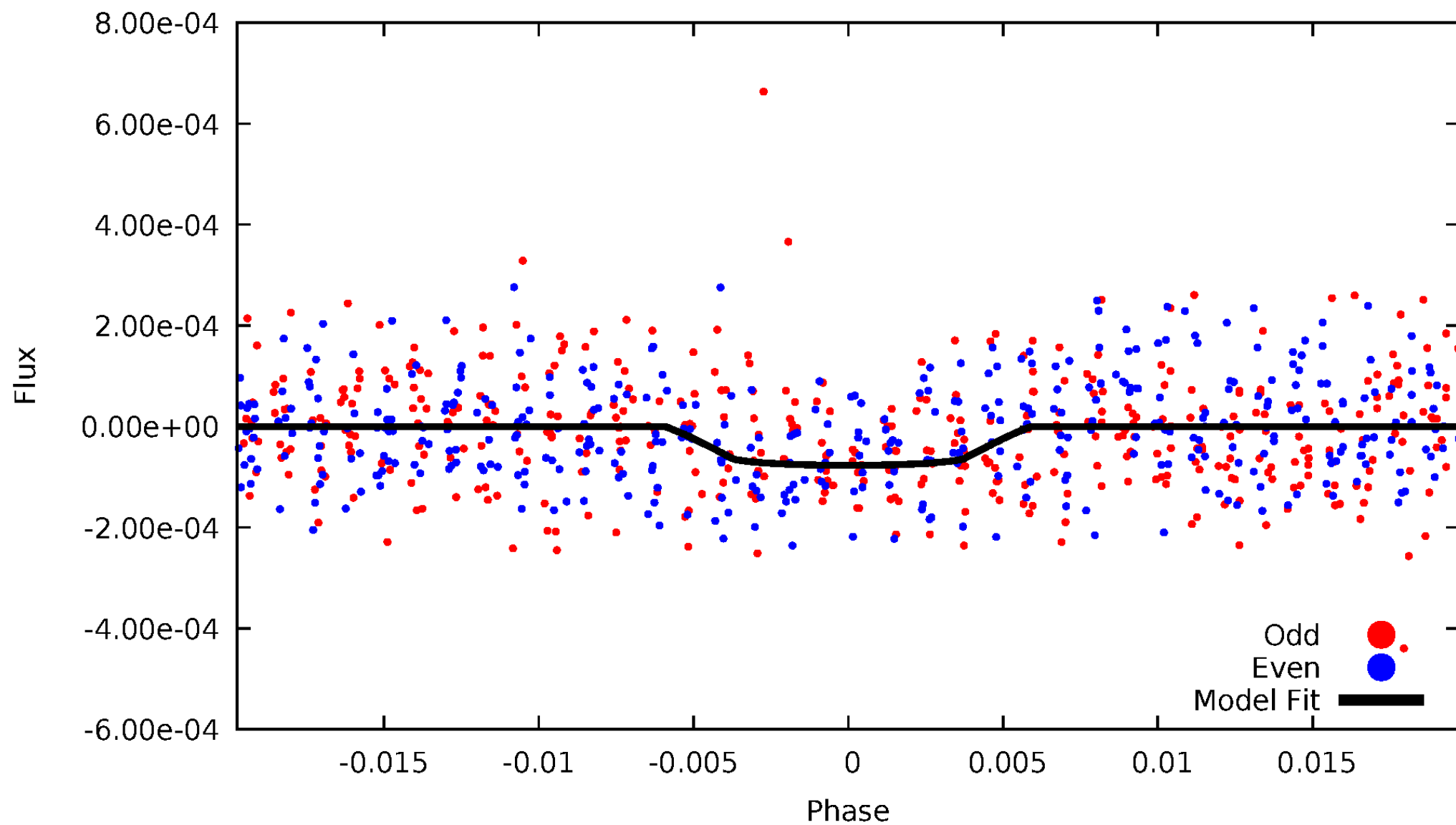


TCE 009909362-03



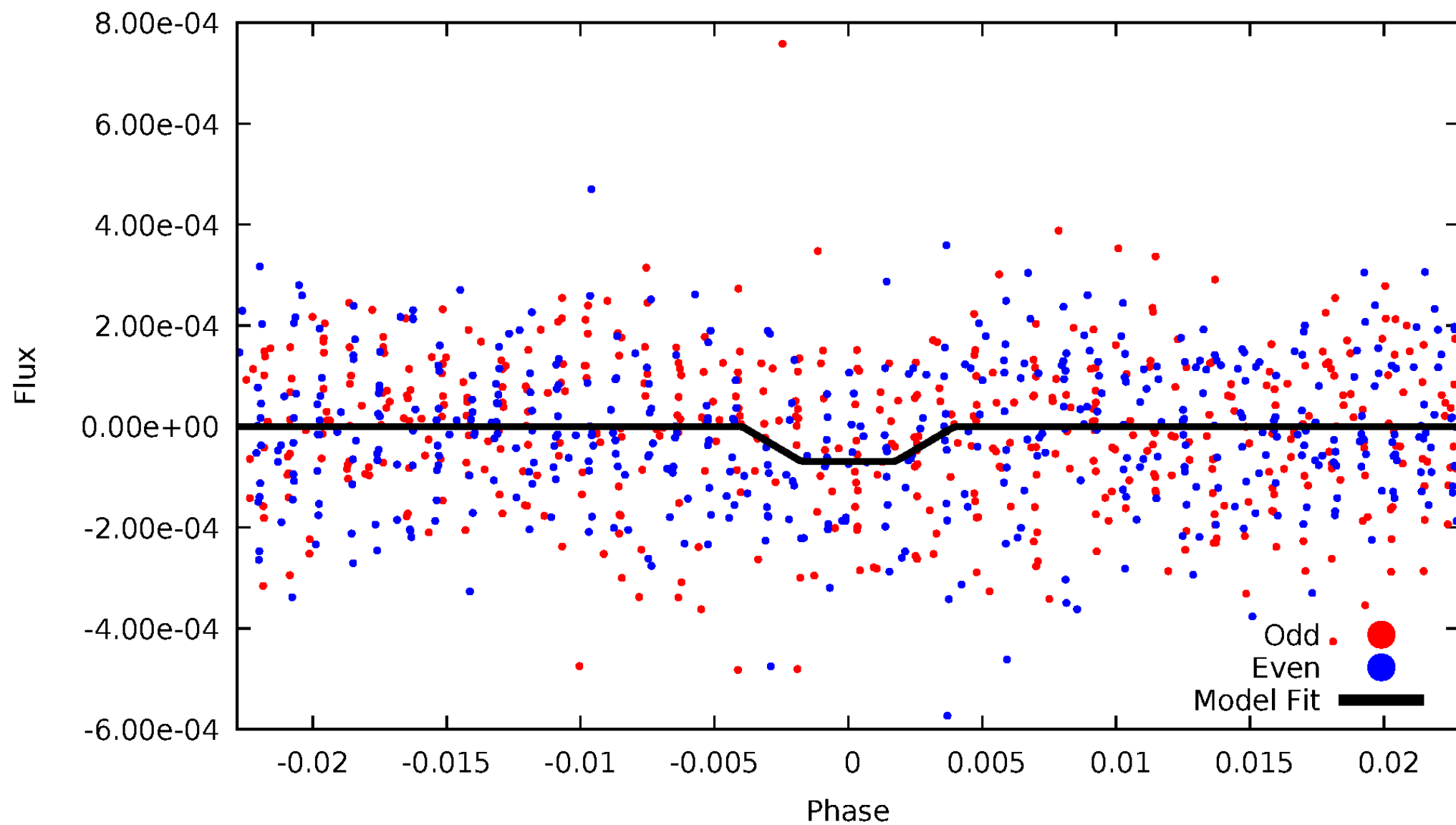
DV Odd/Even

TCE 009909362-03



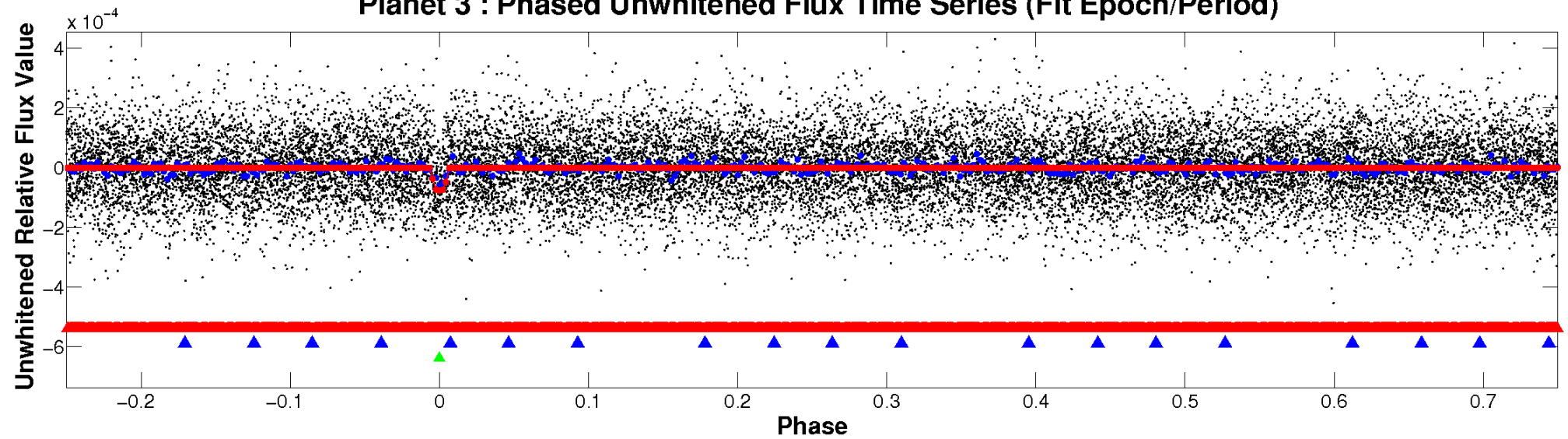
ALT Odd/Even

TCE 009909362-03

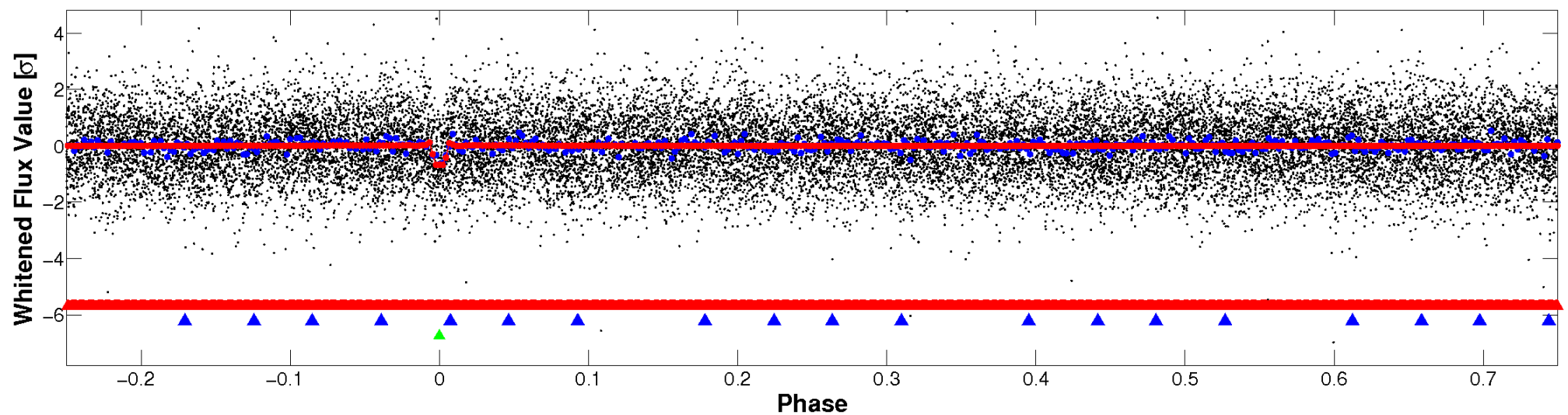


Non-Whitened Vs. Whitened Light Curve

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

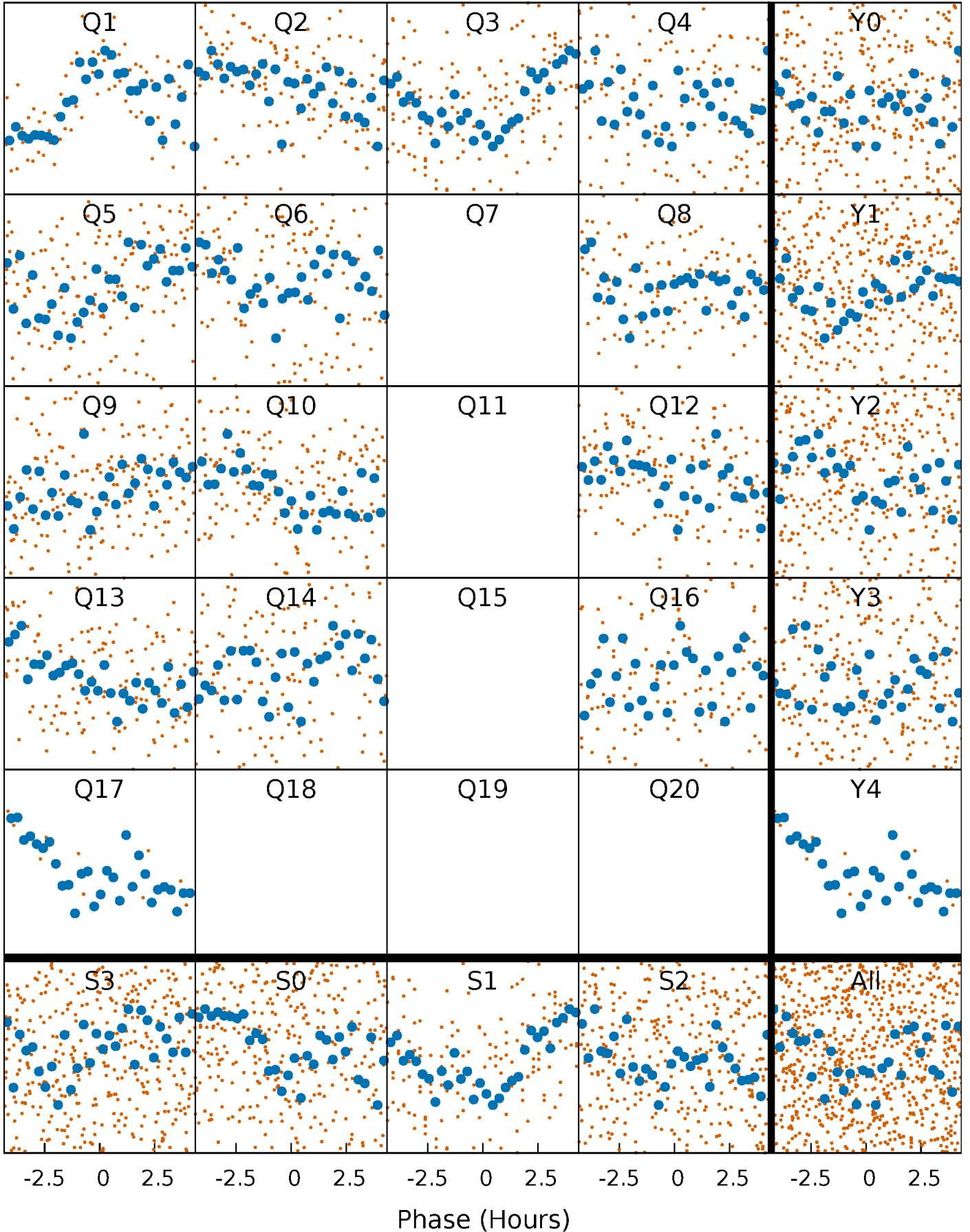


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



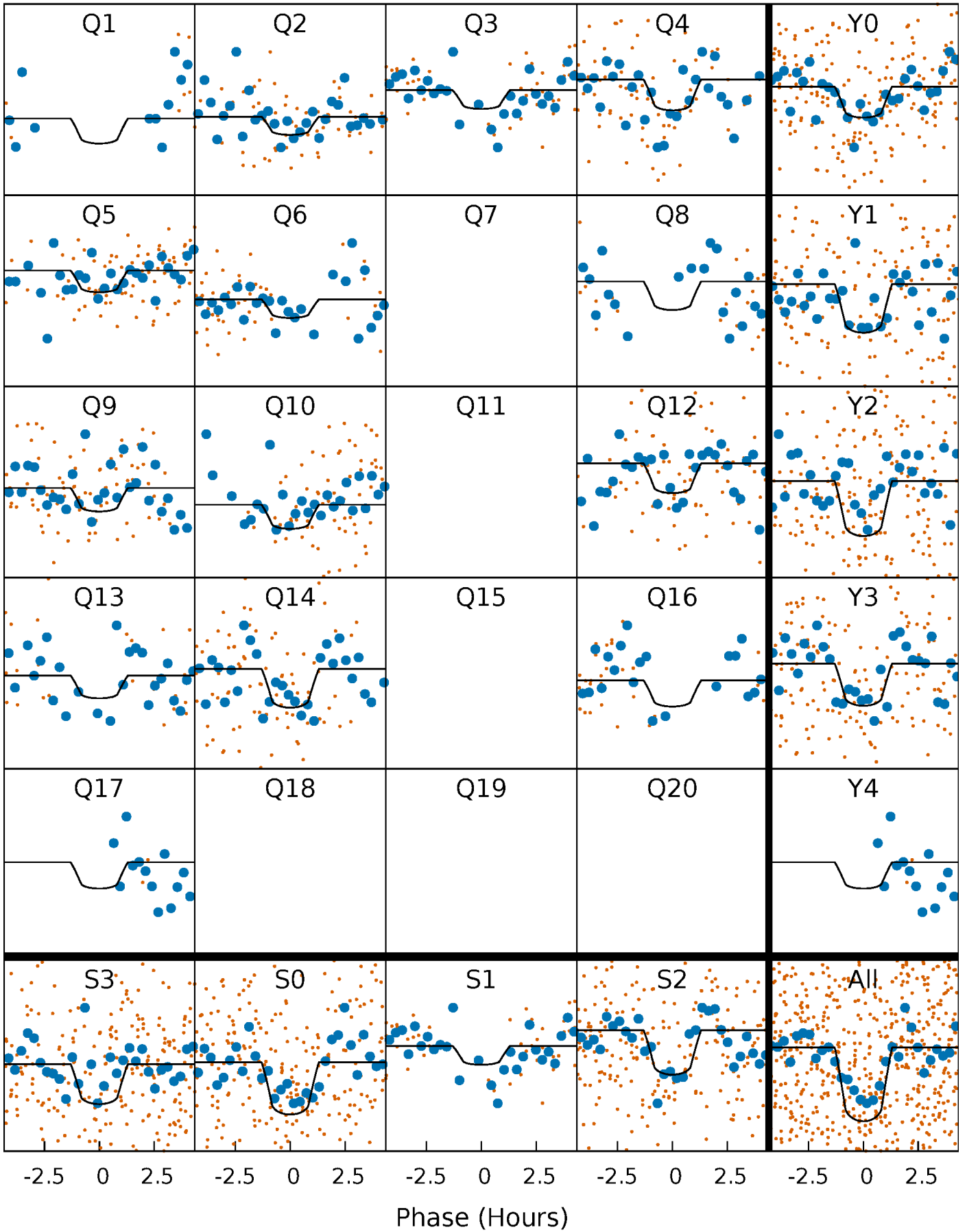
PDC Quarter-Phased Transit Curves

TCE 009909362-03 P= 9.184537 Days $T_0=131.862938$ (BKJD)



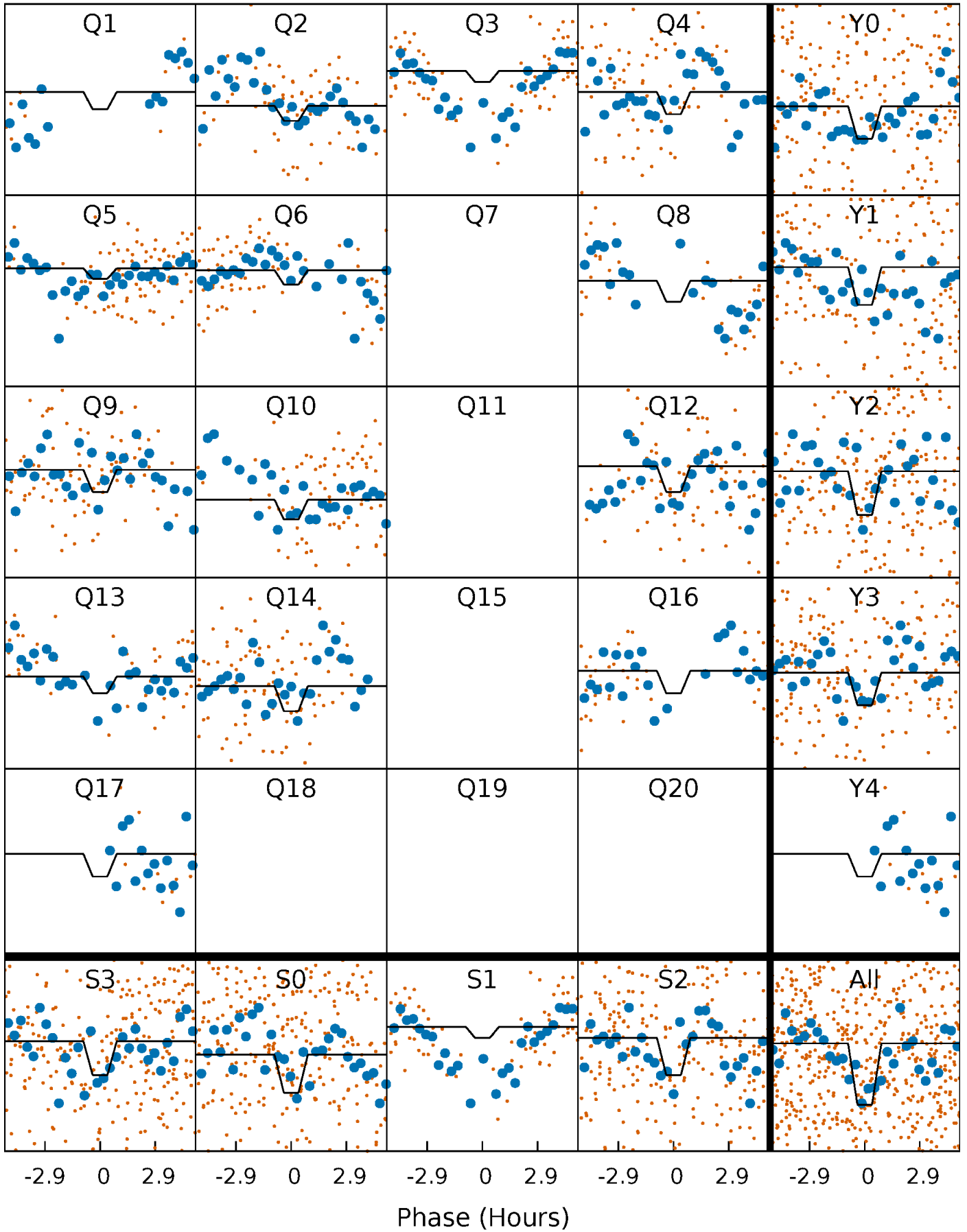
DV Quarter-Phased Transit Curves

TCE 009909362-03 P= 9.184537 Days $T_0=131.862938$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

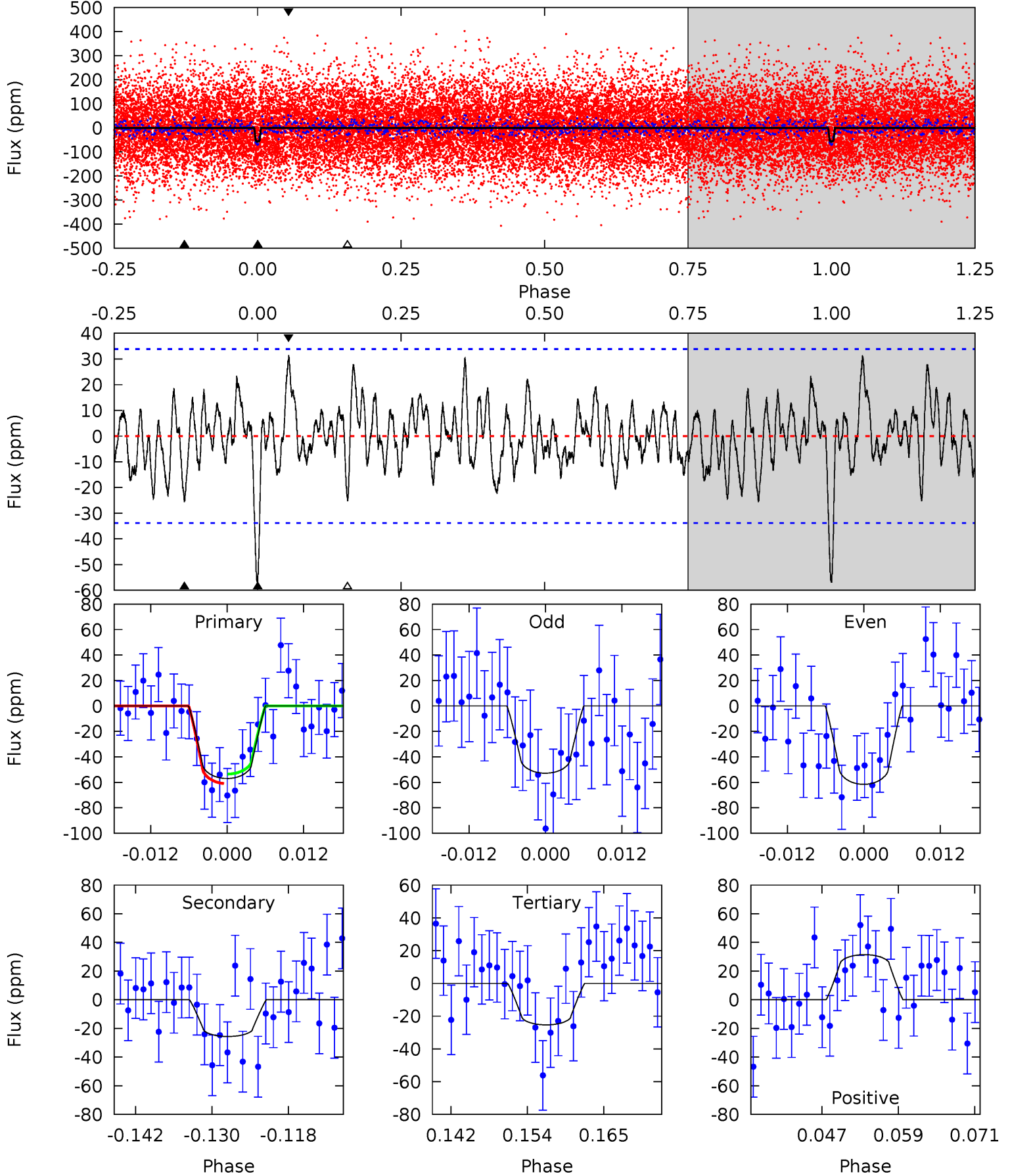
TCE 009909362-03 P= 9.184659 Days $T_0=131.850371$ (BKJD)



DV Model-Shift Uniqueness Test

009909362-03, P = 9.184537 Days, E = 122.678401 Days

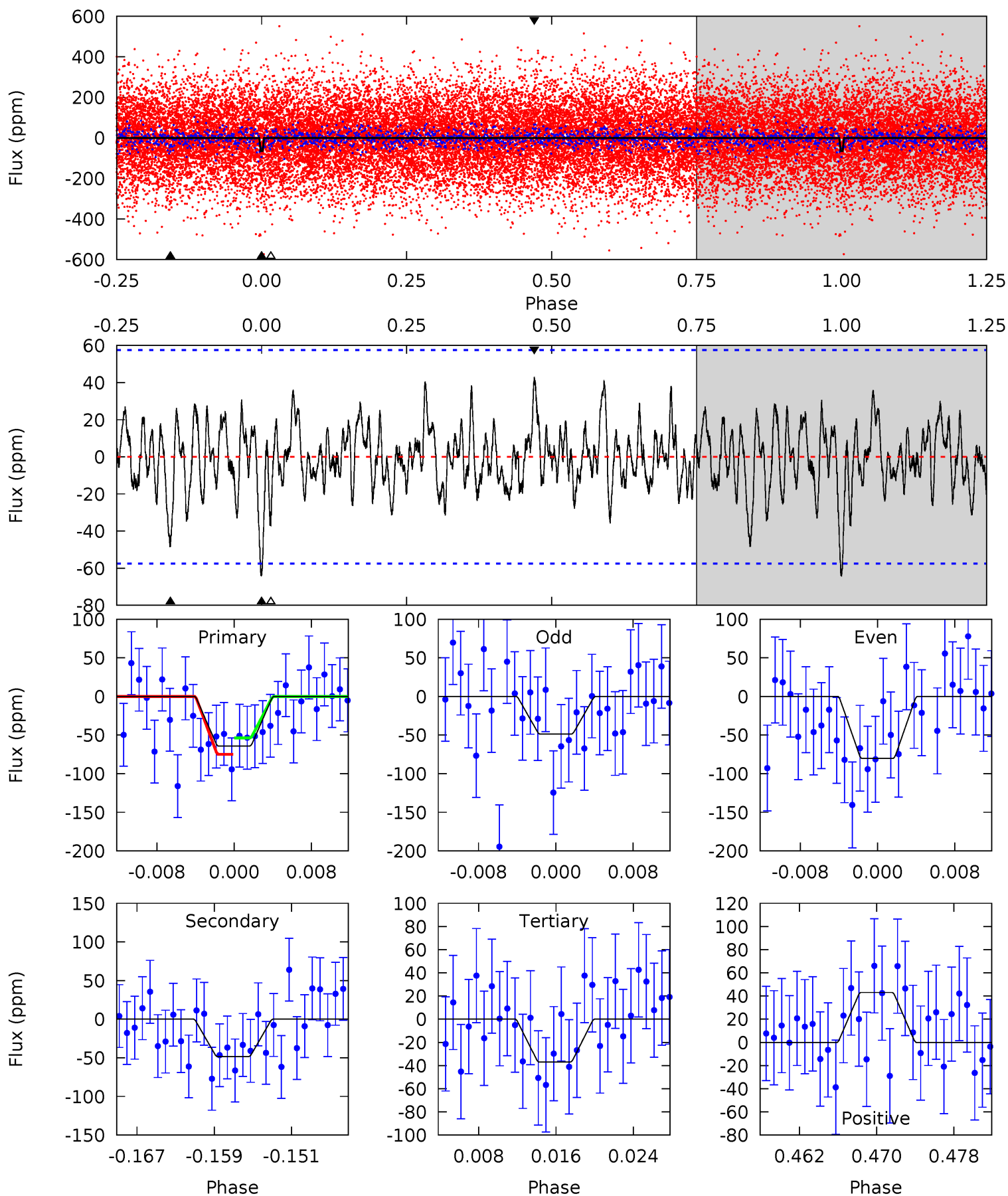
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.41	3.79	3.74	4.65	4.99	2.52	1.45	4.67	3.77	0.04	-0.86	0.64	0.69	0.36	0.55



Alt Model-Shift Uniqueness Test

009909362-03, P = 9.184659 Days, E = 122.665712 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.66	4.26	3.26	3.79	5.07	2.65	1.25	2.41	1.87	1.00	0.47	1.38	1.06	0.40	0.92



Stellar Parameters For KIC 009909362

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7016^{+166}_{-249}	$3.414^{+0.382}_{-0.090}$	$0.210^{+0.150}_{-0.300}$	$4.895^{+1.108}_{-2.057}$	$2.267^{+0.146}_{-0.437}$	$0.027^{+0.080}_{-0.009}$
	+2%/-4%	+11%/-3%	+71%/-143%	+23%/-42%	+6%/-19%	+295%/-34%
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 009909362-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-26 ± 7	$3.95^{+1.82}_{-1.61}$	2736^{+204}_{-294}	5345^{+1548}_{-826}	11^{+20}_{-6}
Alt.	-48 ± 11	$3.96^{+1.80}_{-1.74}$	2747^{+195}_{-308}	6345^{+2176}_{-1059}	22^{+44}_{-12}

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 $A_{obs} \gg 1.0$

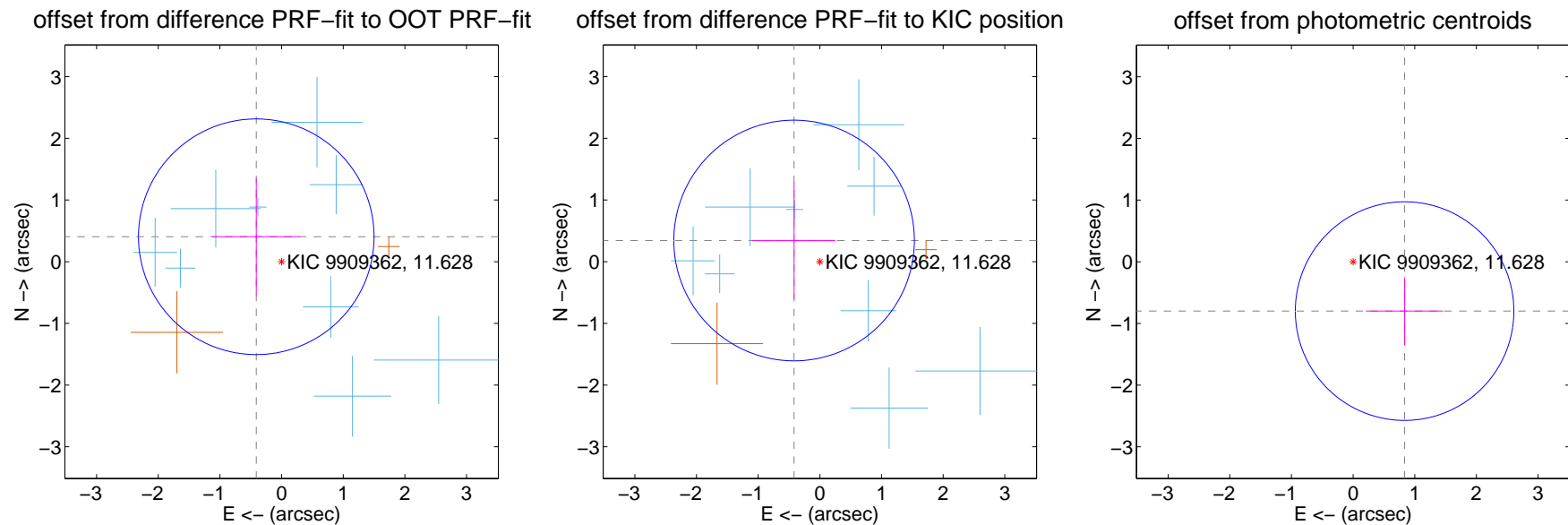
DV Centroid Data

Supplemental centroid analysis for 009909362-03. **Kepler magnitude: 11.63.** Transit SNR 8.60

There are 9 quarters with good PRF difference image offsets

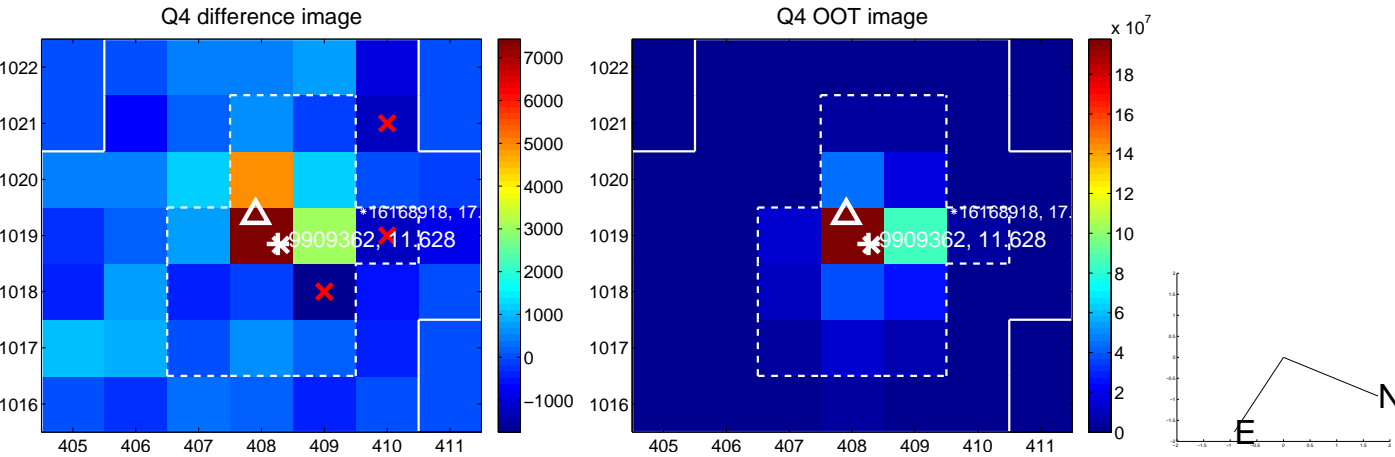
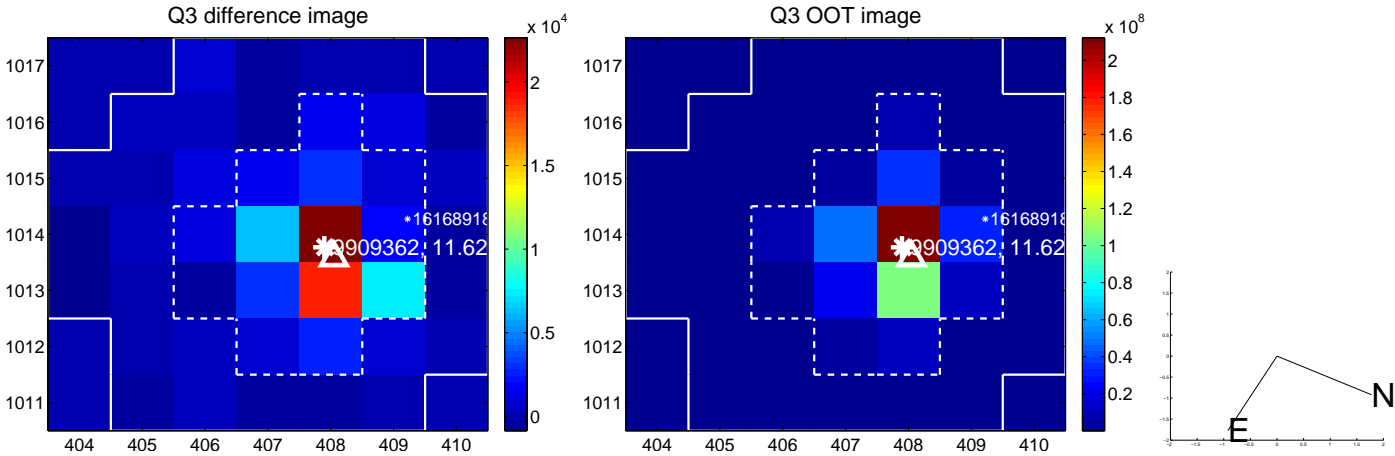
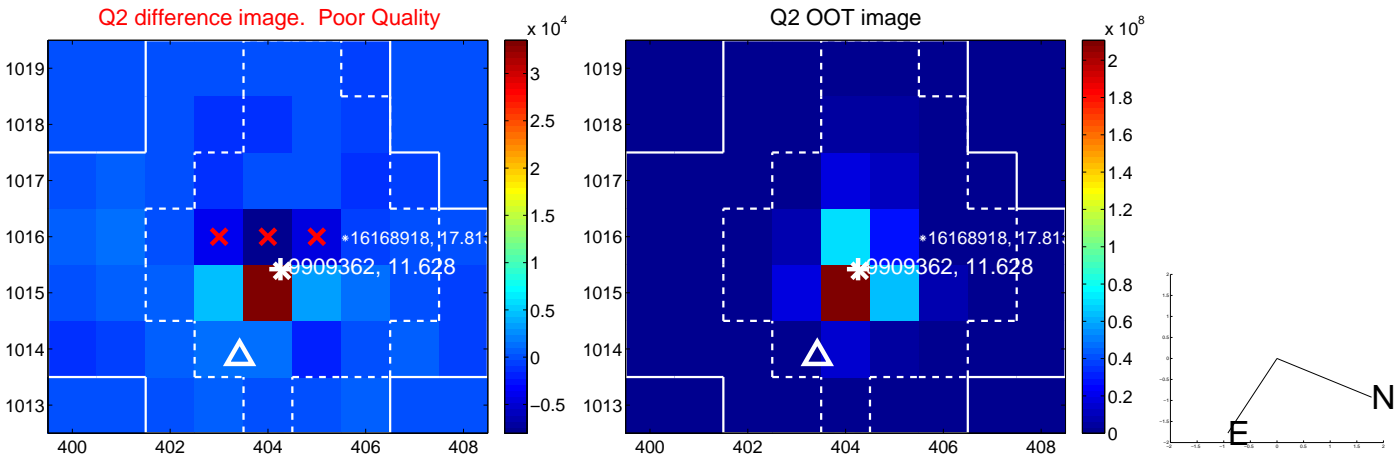
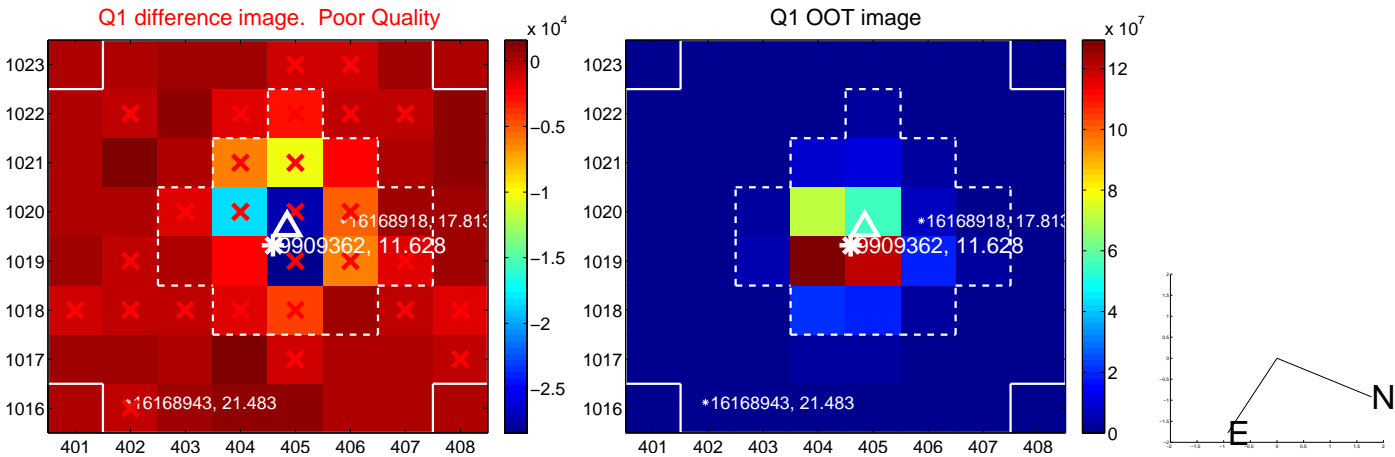
The direct PRF centroid is offset from the target star catalog position by about 0.02 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.576 ± 0.637	0.91	0.411 ± 0.710	0.404 ± 0.944
PRF-fit source offset from KIC position	0.541 ± 0.650	0.83	0.418 ± 0.672	0.344 ± 0.948
photometric centroid source offset	1.16 ± 0.59	1.96	-0.84 ± 0.63	-0.80 ± 0.55

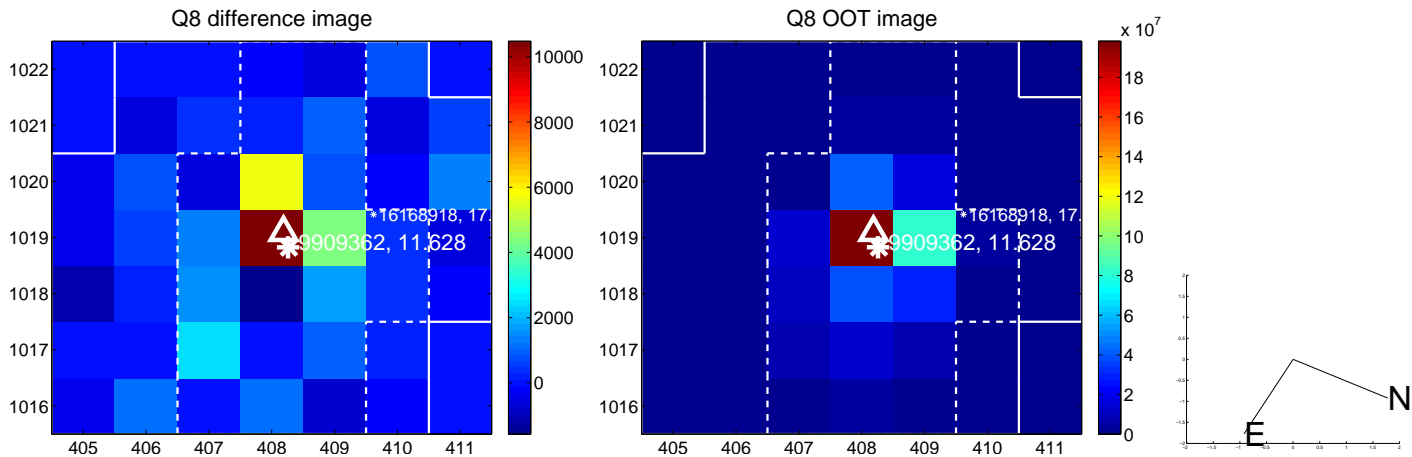
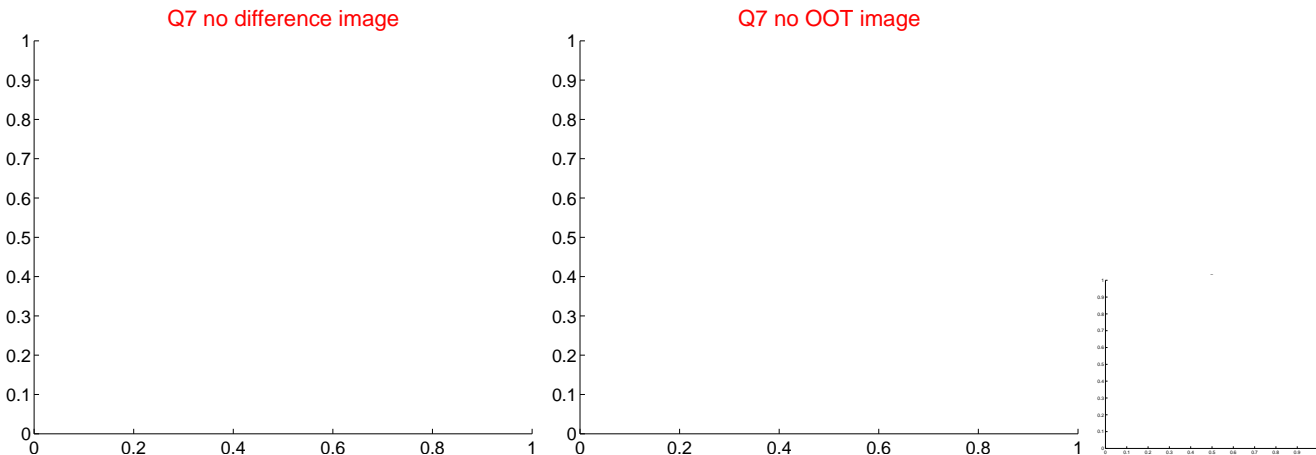
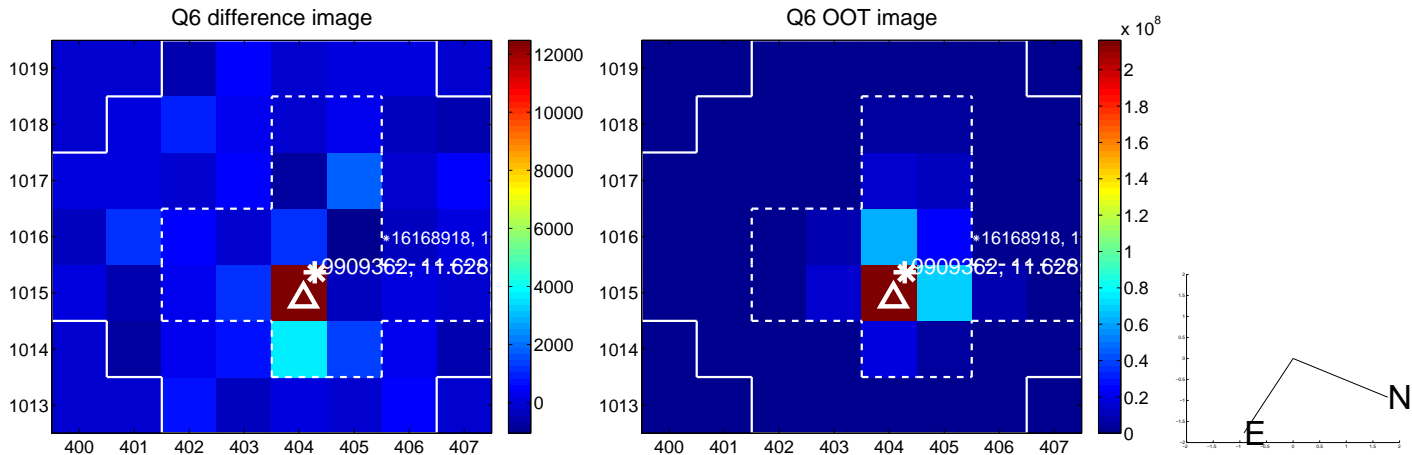
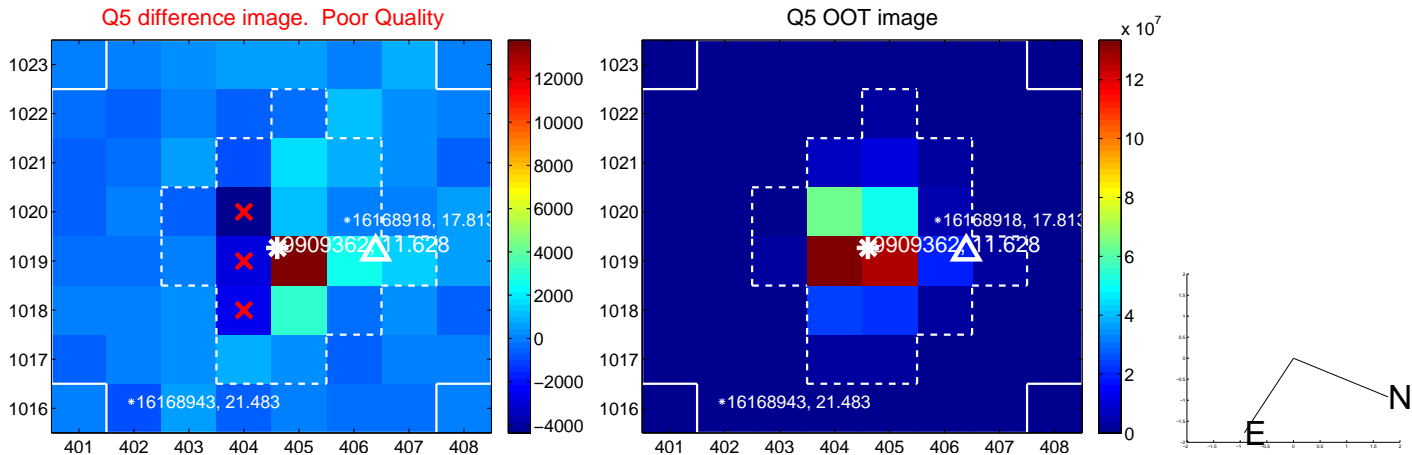


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

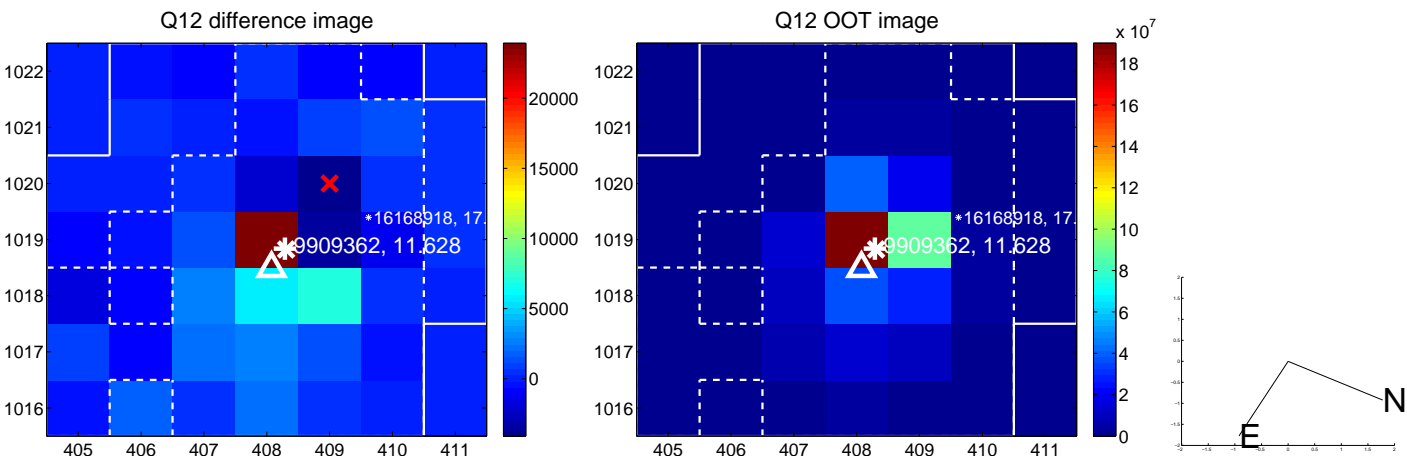
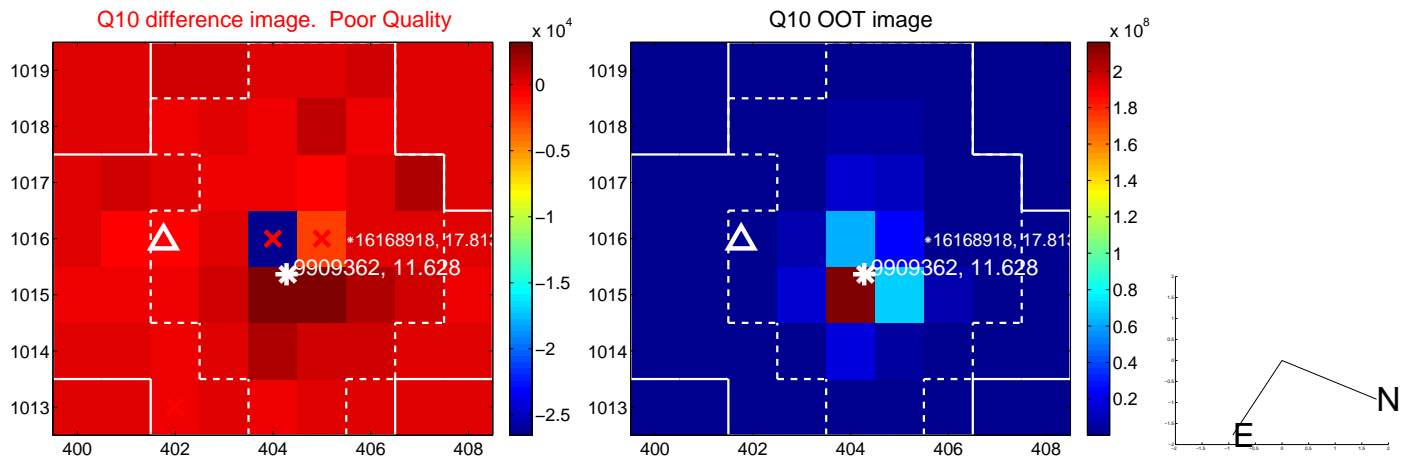
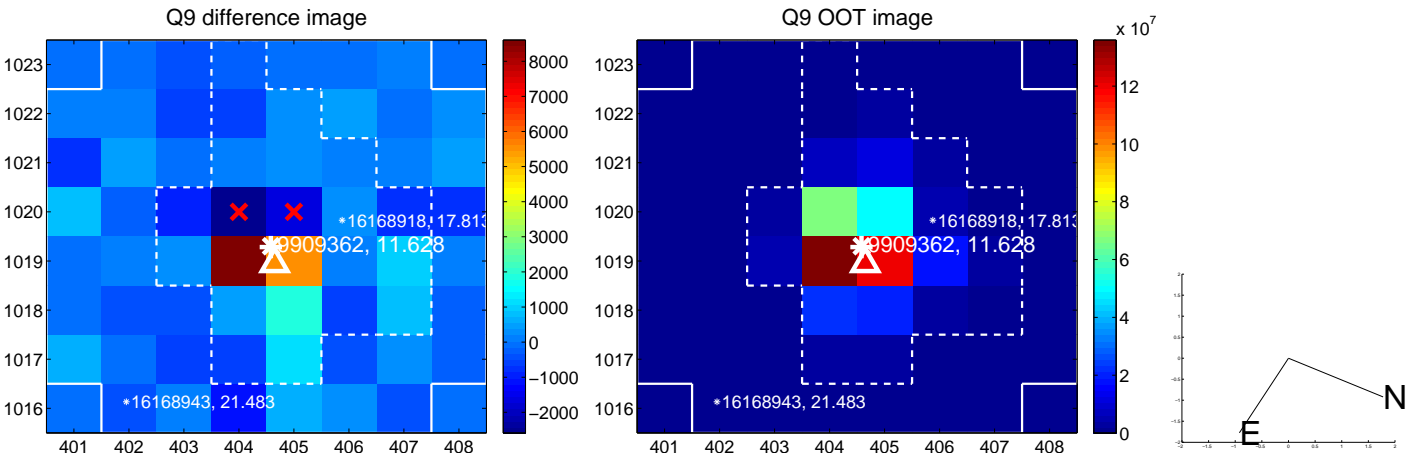
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



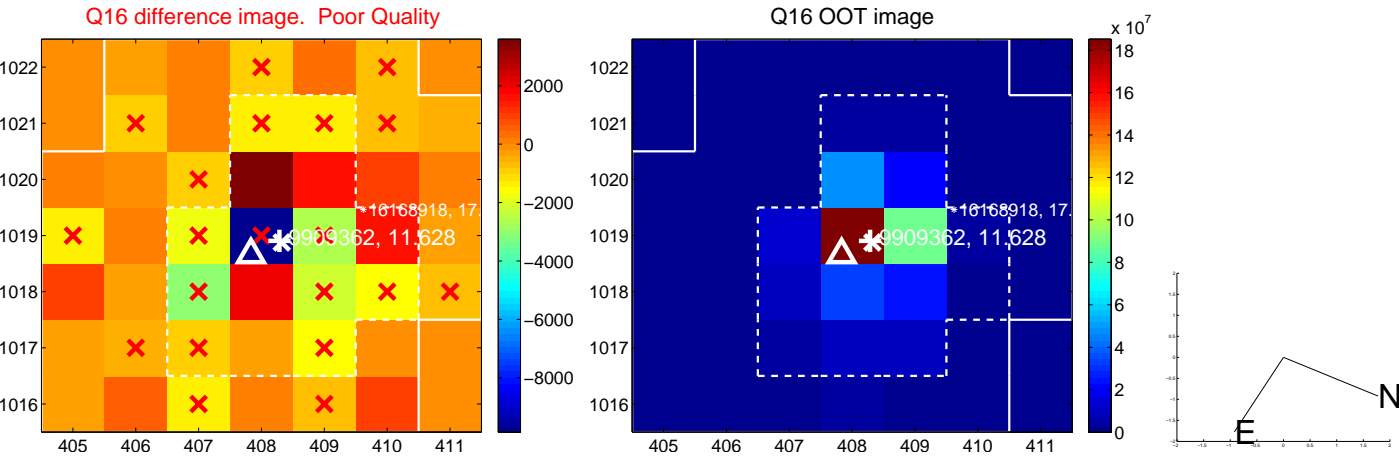
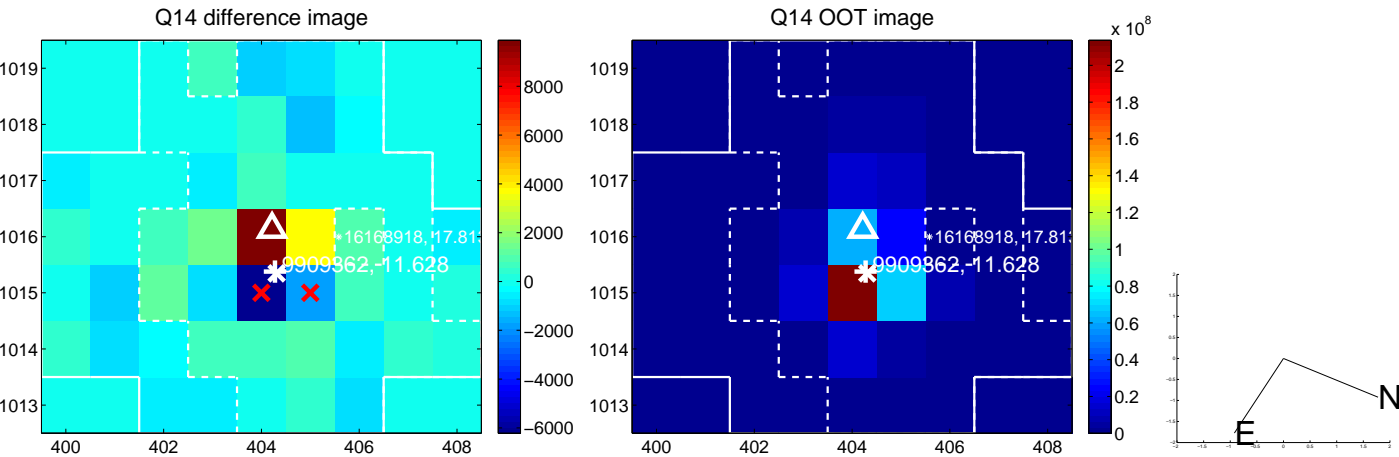
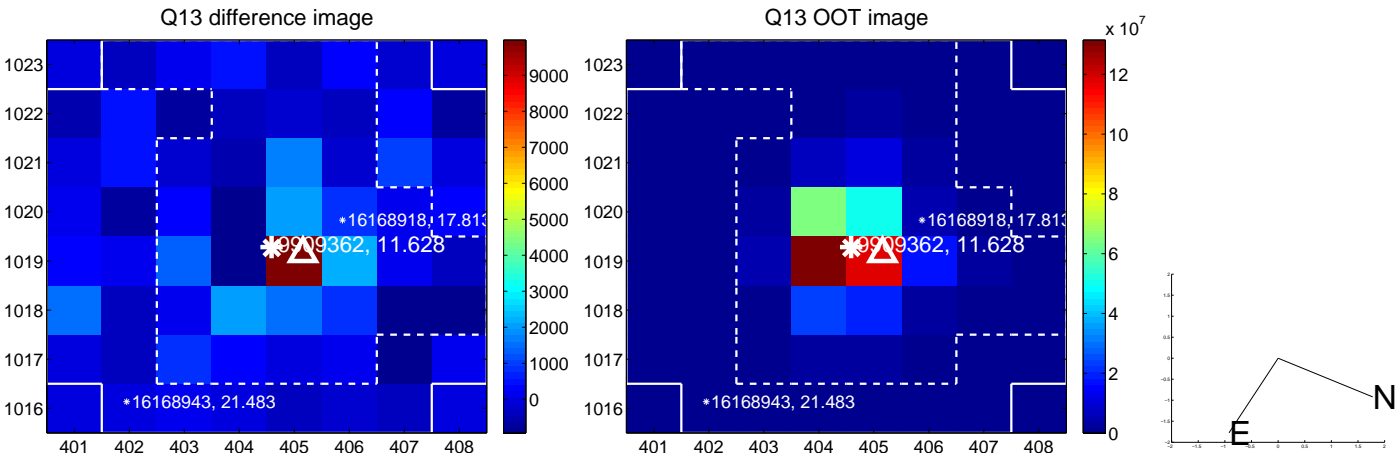
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



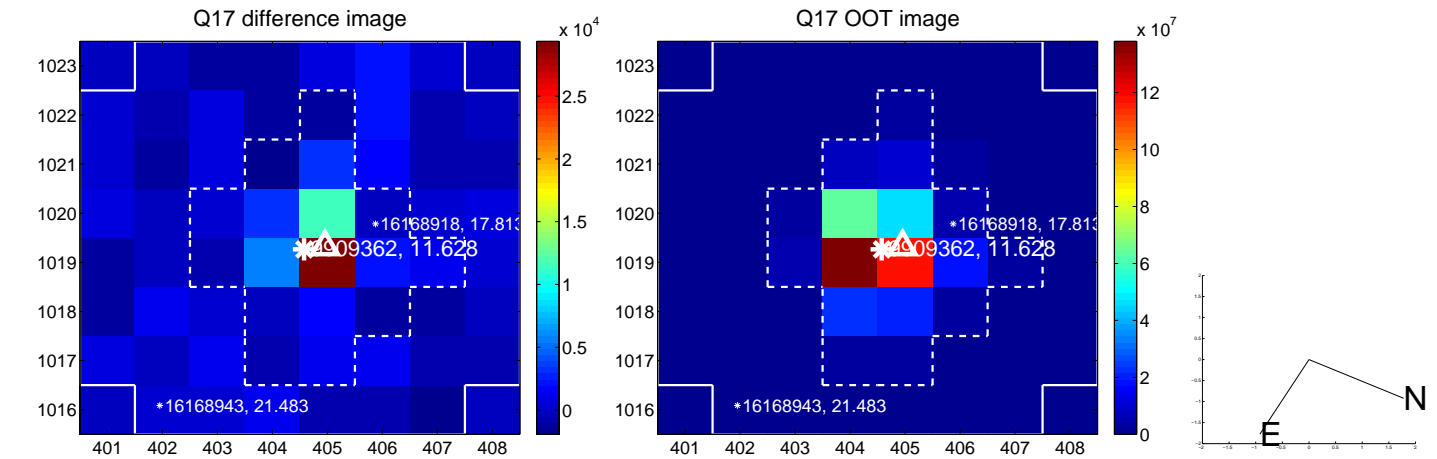
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



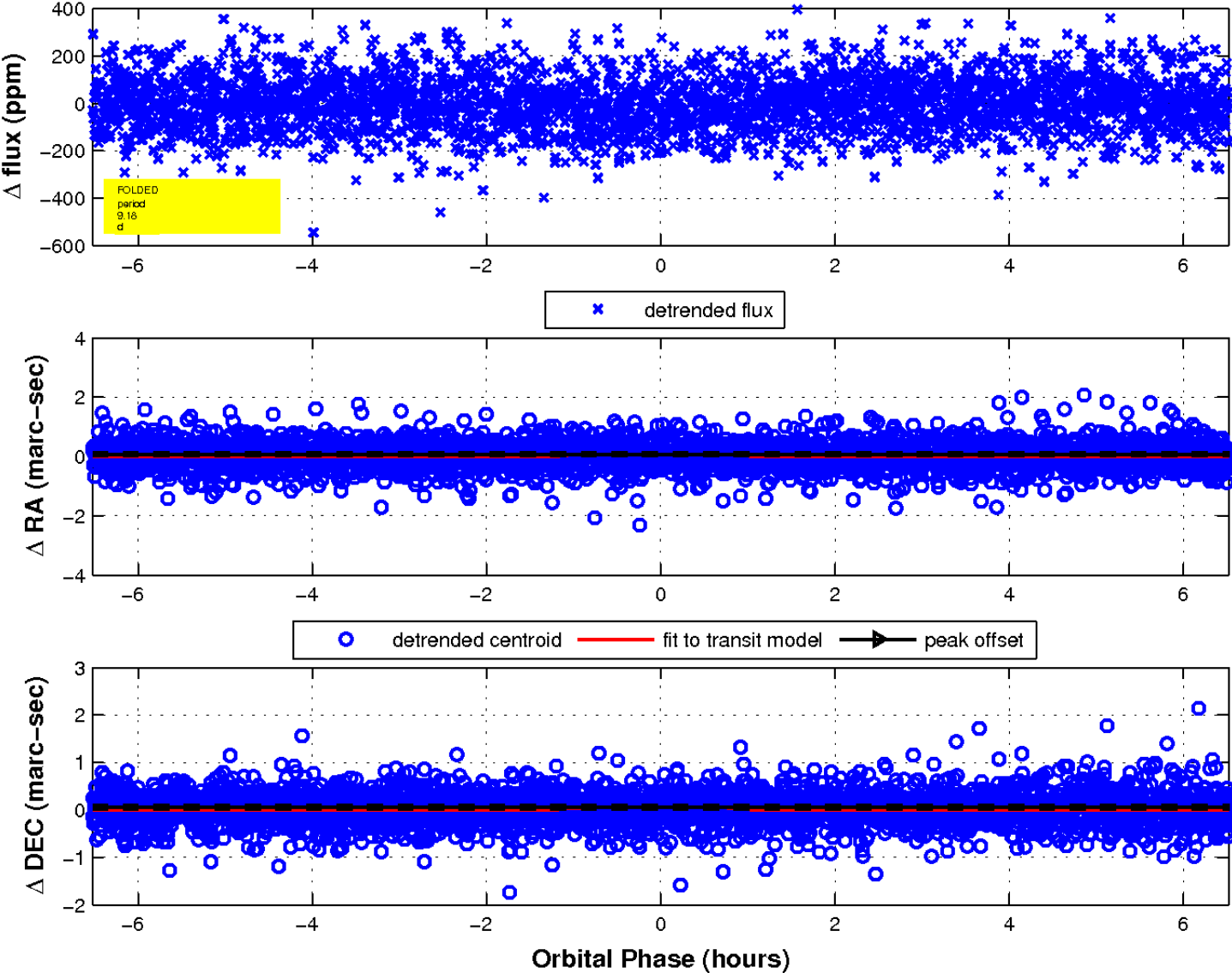
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 3 of 3



UKIRT Image

Declination

