

KIC 009291039

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})
009291039-01	OBS	3230.01	8.808486	134.258527	50.1	20.088	16.7	18.0	1.21	6017	1.38	236.45
009291039-02	OBS	No	462.505423	485.357117	113.6	2.395	11.3	2.8	1.21	6017	1.53	1.20
009291039-03	OBS	3230.02	3.796526	135.177431	20.9	9.450	11.1	11.5	1.21	6017	0.65	726.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009291039-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009291039-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT— MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009291039-03	OBS	FP	0.00	1	0	0	1	LPP_DV—EPHEM_MATCH

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

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

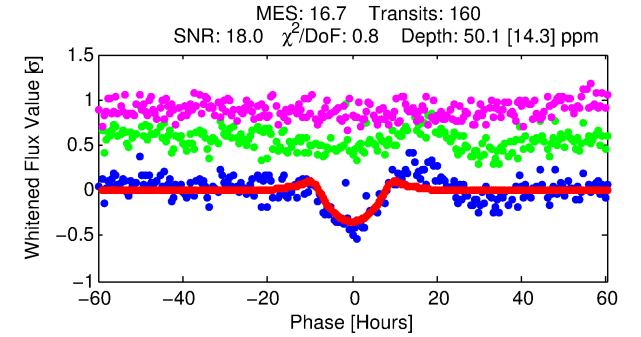
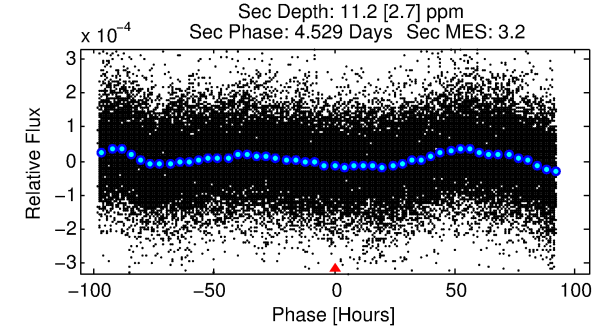
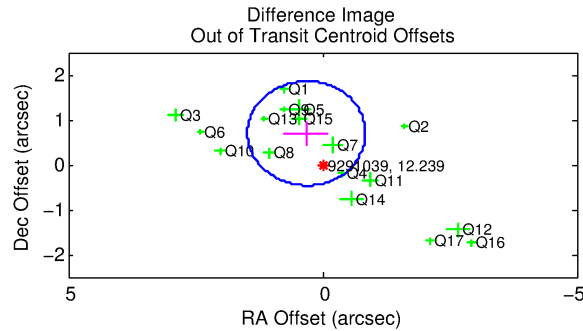
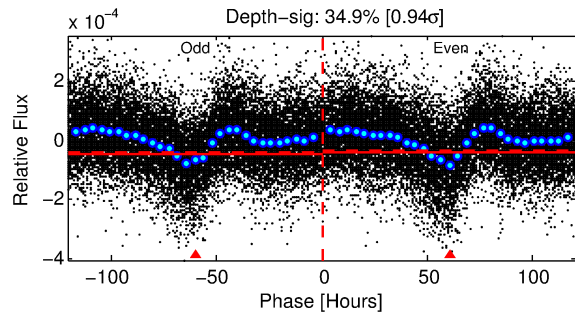
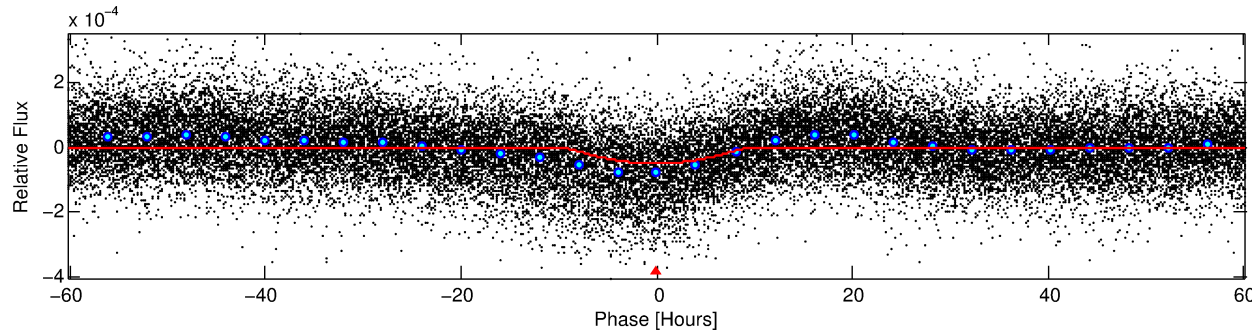
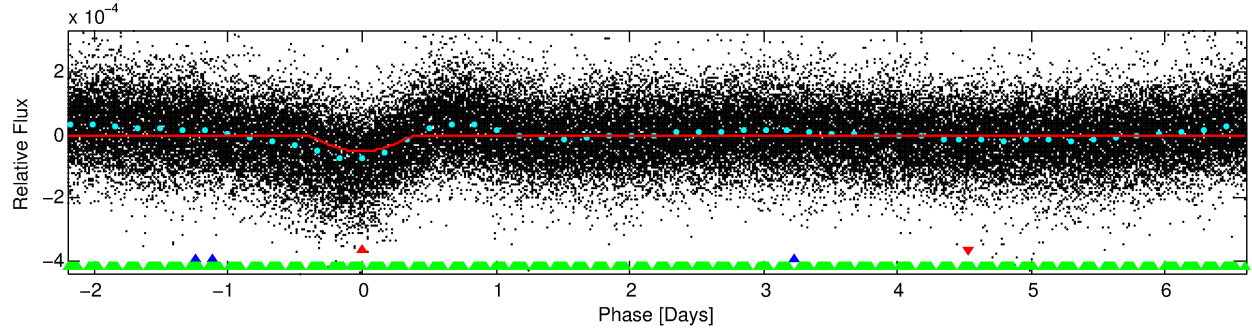
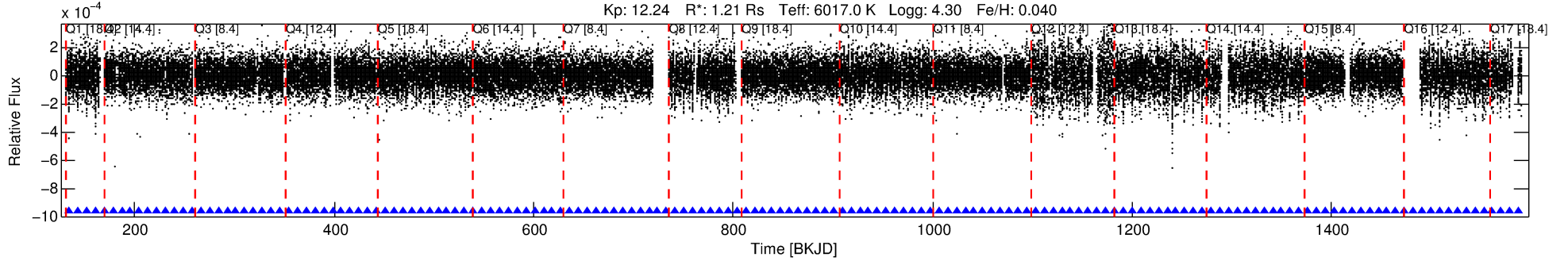
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009291039-01

No Significant Match Found

DV One-Page Summary

KIC: 9291039 Candidate: 1 of 3 Period: 8.808 d
KOI: K03230.01 Corr: 0.866



DV Fit Results:

Period = 8.80849 [0.00022] d
Epoch = 134.2585 [0.0189] BKJD
Rp/R* = 0.0104 [0.0033]
a/R* = 1.17 [0.04]
b = 0.99 [0.01]
Seff = 236.45 [65.03]
Teq = 1000 [69] K
Rp = 1.38 [0.51] Re
a = 0.0853 [0.0145] AU
Ag = 23.61 [16.89] [1.34 σ]
Teffp = 3408 [581] K [4.11 σ]

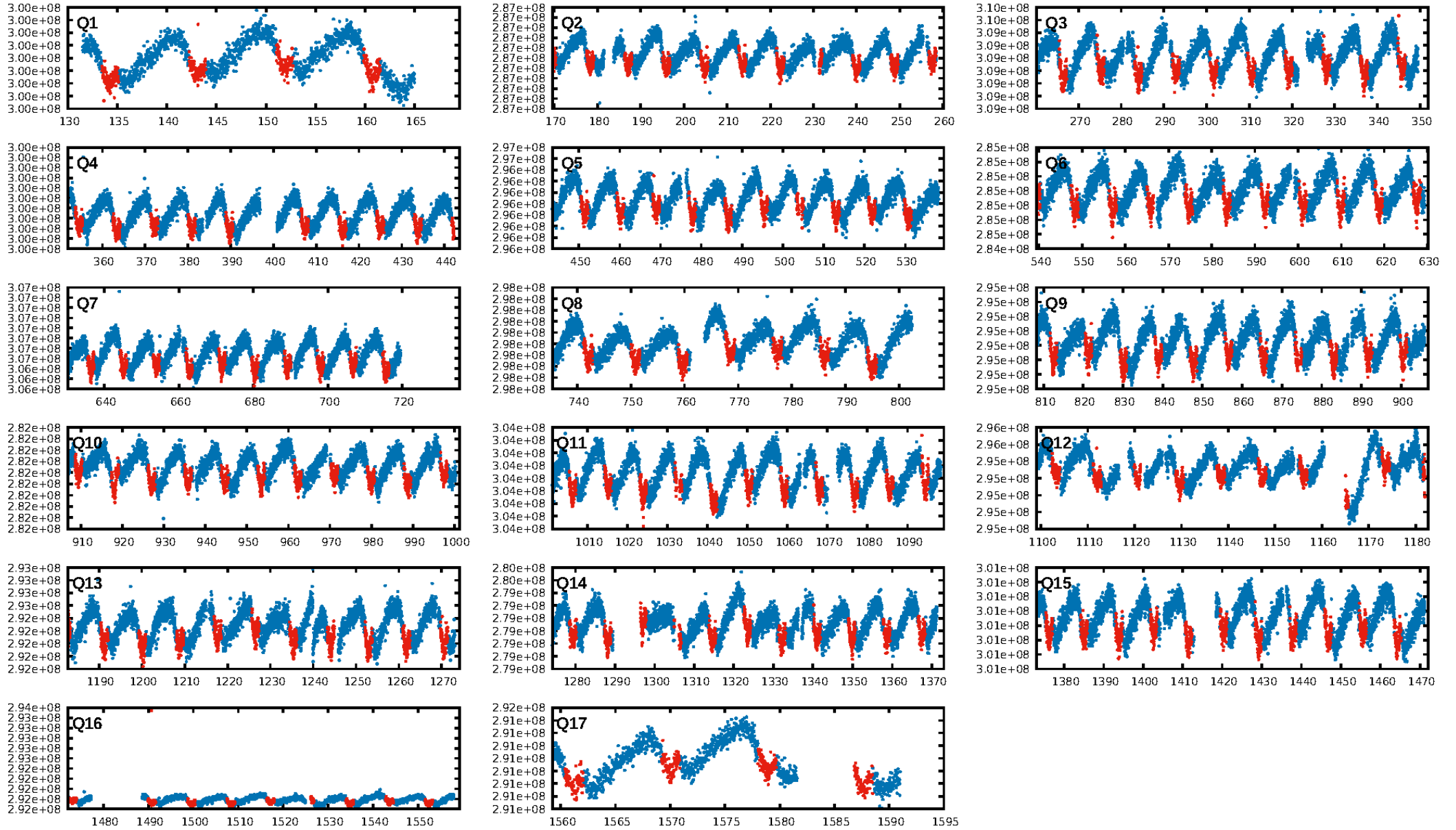
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [5.42 σ]
LongPeriod-sig: 100.0% [538.24 σ]
ModelChiSquare2-sig: 44.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 8.12e-51
RollingBand-fgt: 1.00 [152/152]
GhostDiagnostic-chr: 1.531
Centroid-sig: N/A
Centroid-so: 0.890 arcsec [1.99 σ]
OotOffset-rm: 0.766 arcsec [1.98 σ]
KicOffset-rm: 0.670 arcsec [1.69 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.82 [14/17]
DiffImageOverlap-fno: 0.53 [9/17]

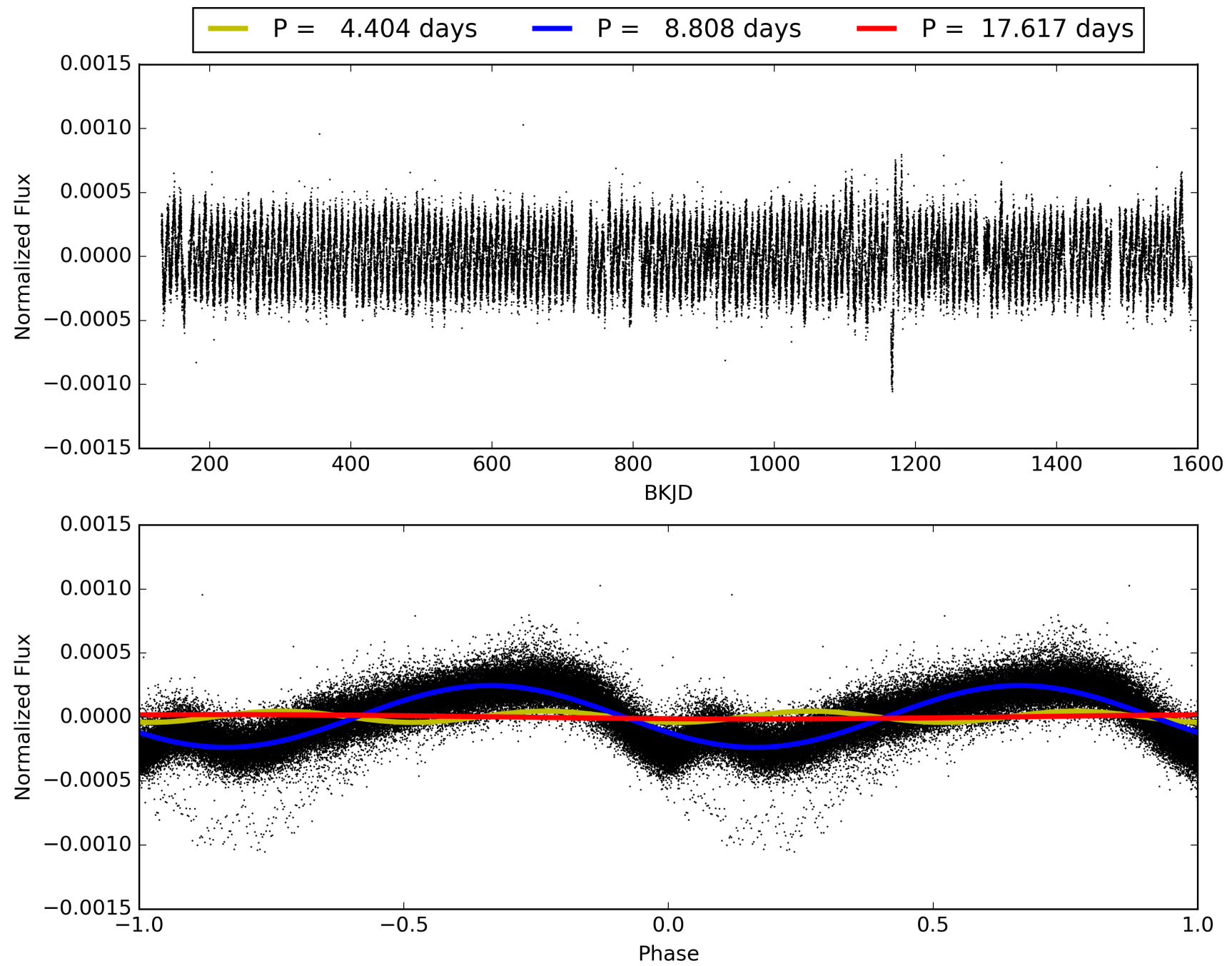
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 009291039-01, PDC Light Curves

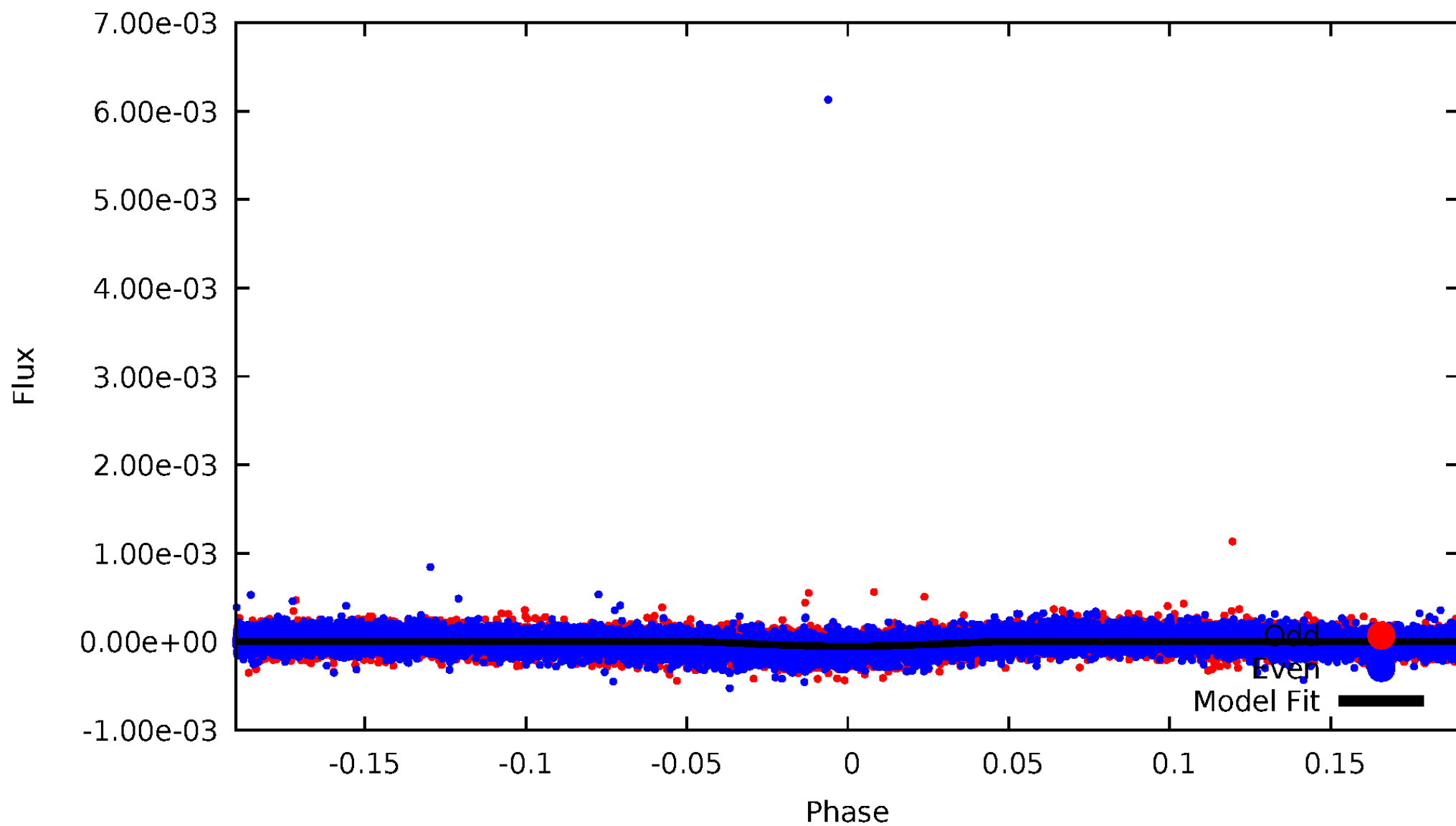


TCE 009291039-01



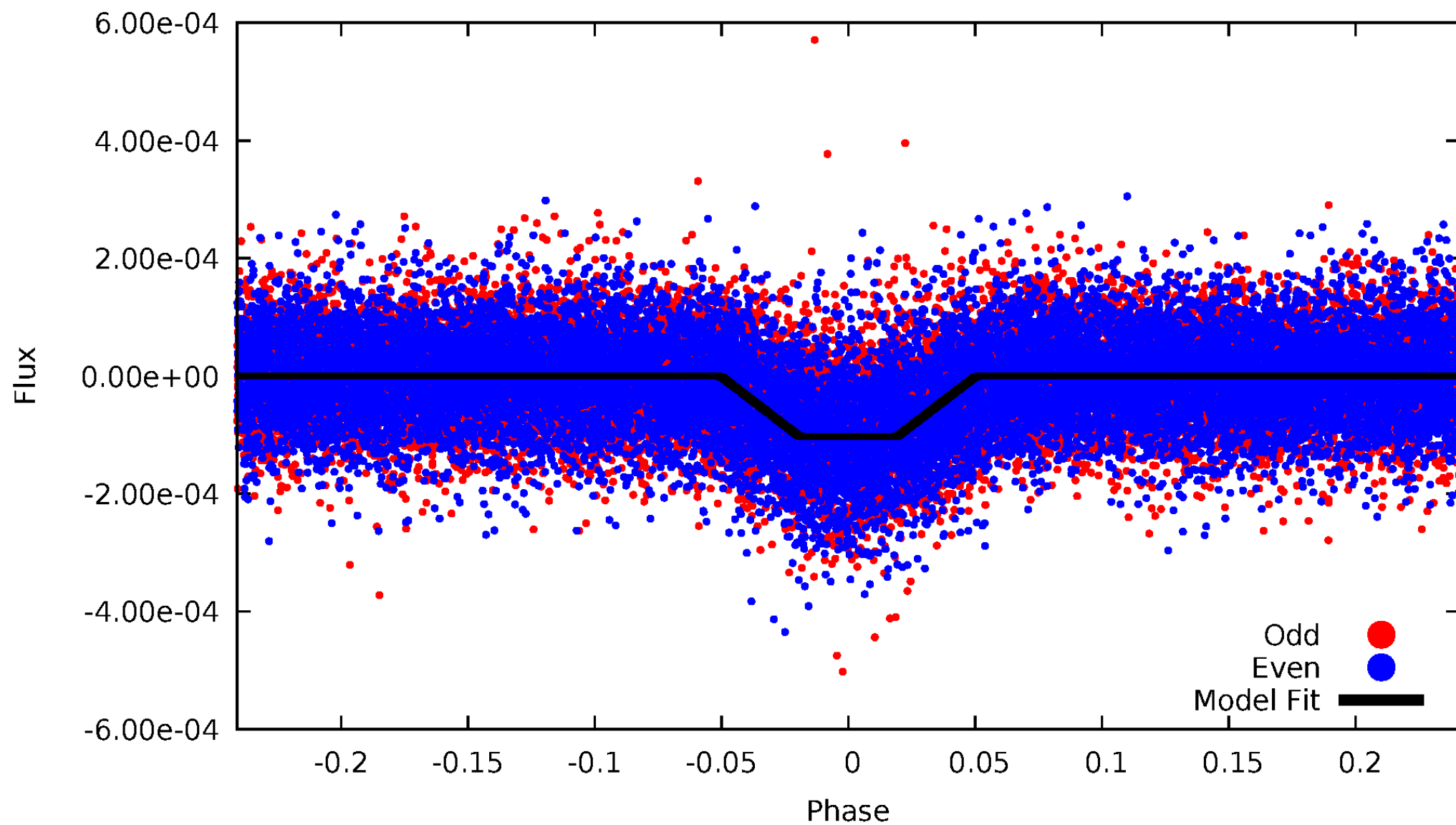
DV Odd/Even

TCE 009291039-01

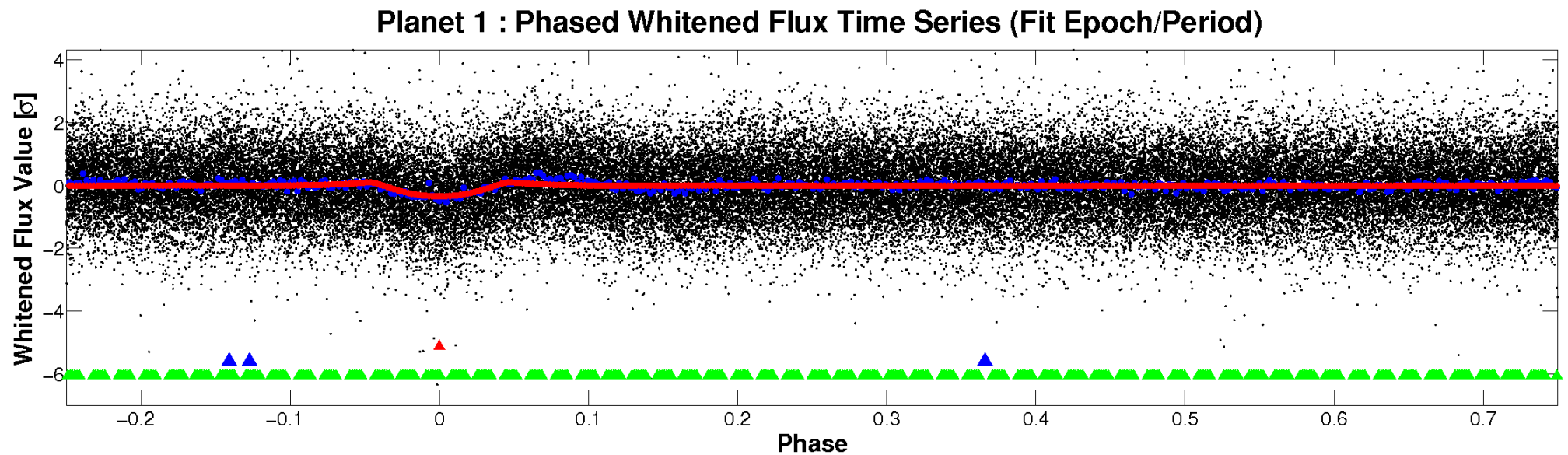
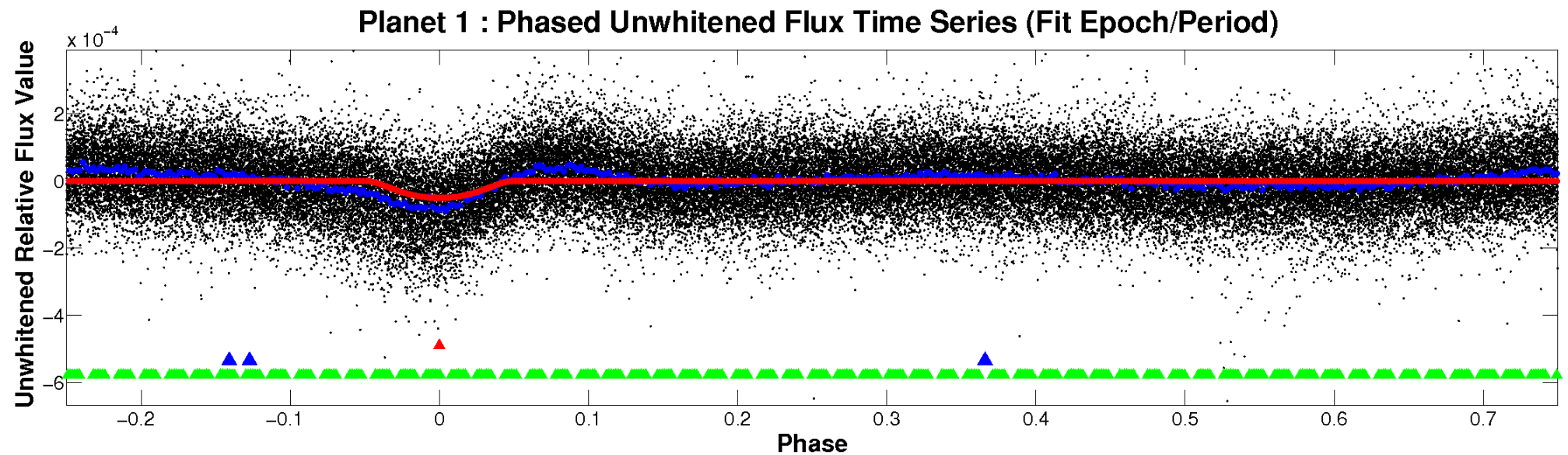


ALT Odd/Even

TCE 009291039-01

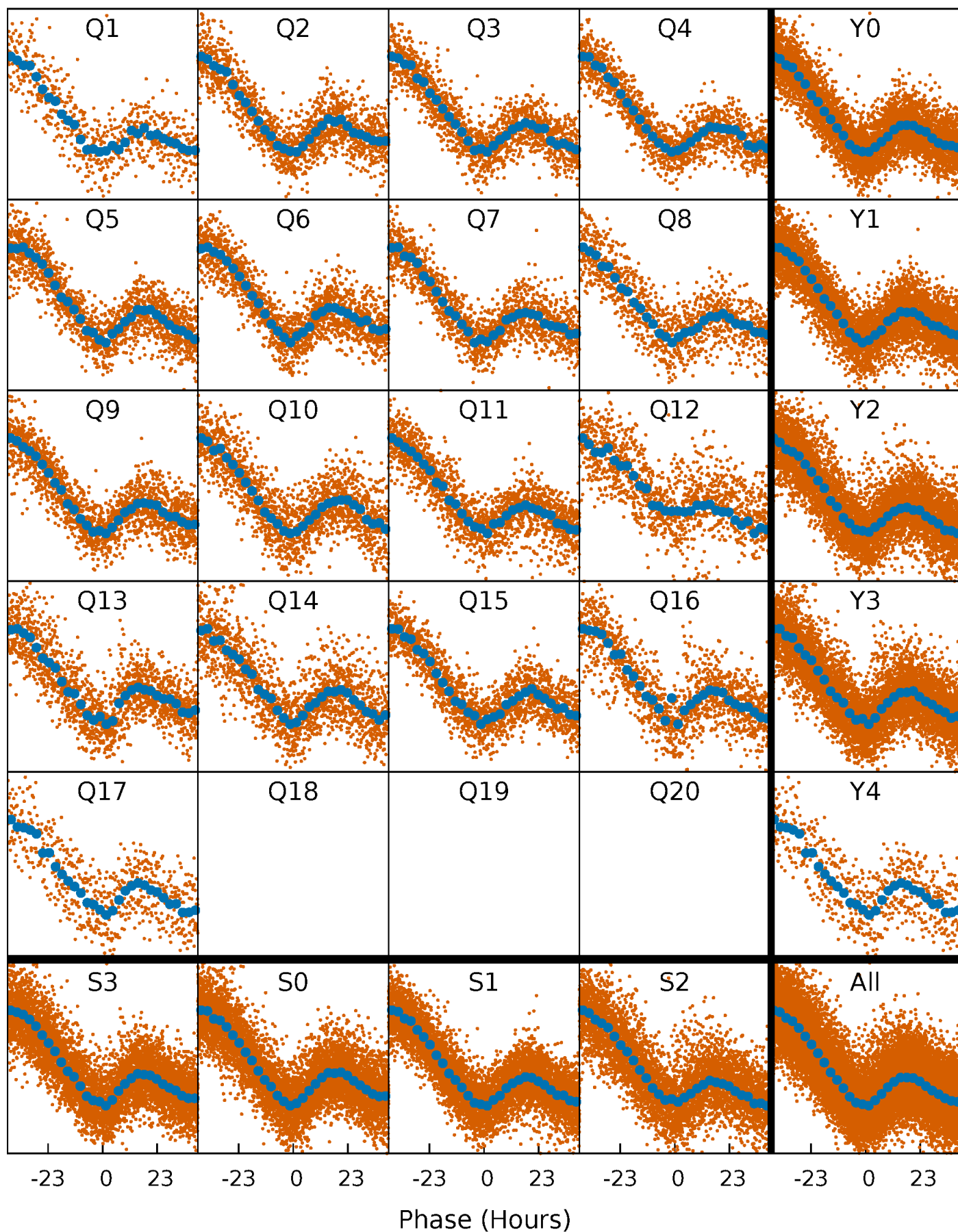


Non-Whitened Vs. Whitened Light Curve



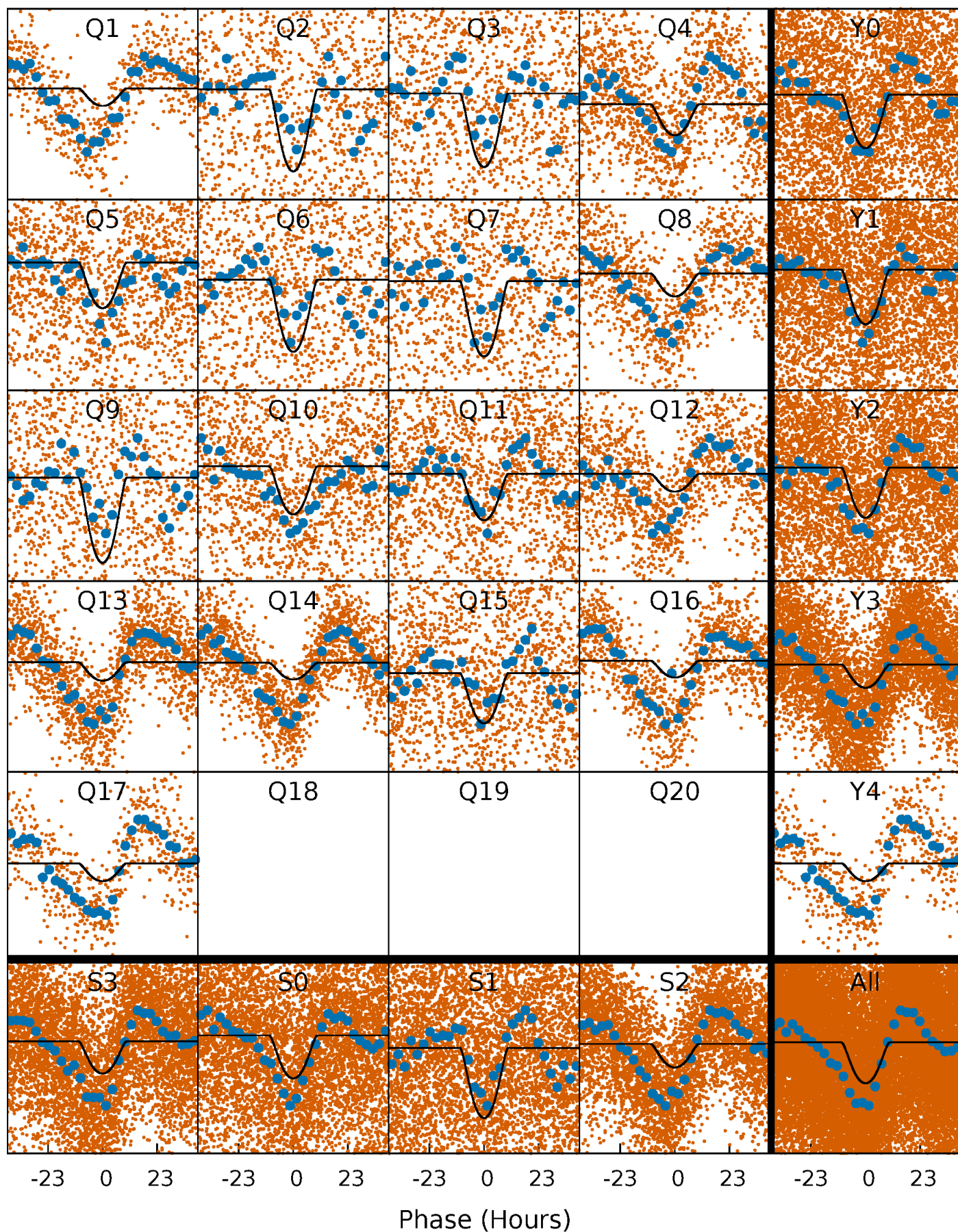
PDC Quarter-Phased Transit Curves

TCE 009291039-01 P= 8.808486 Days $T_0=134.258527$ (BKJD)



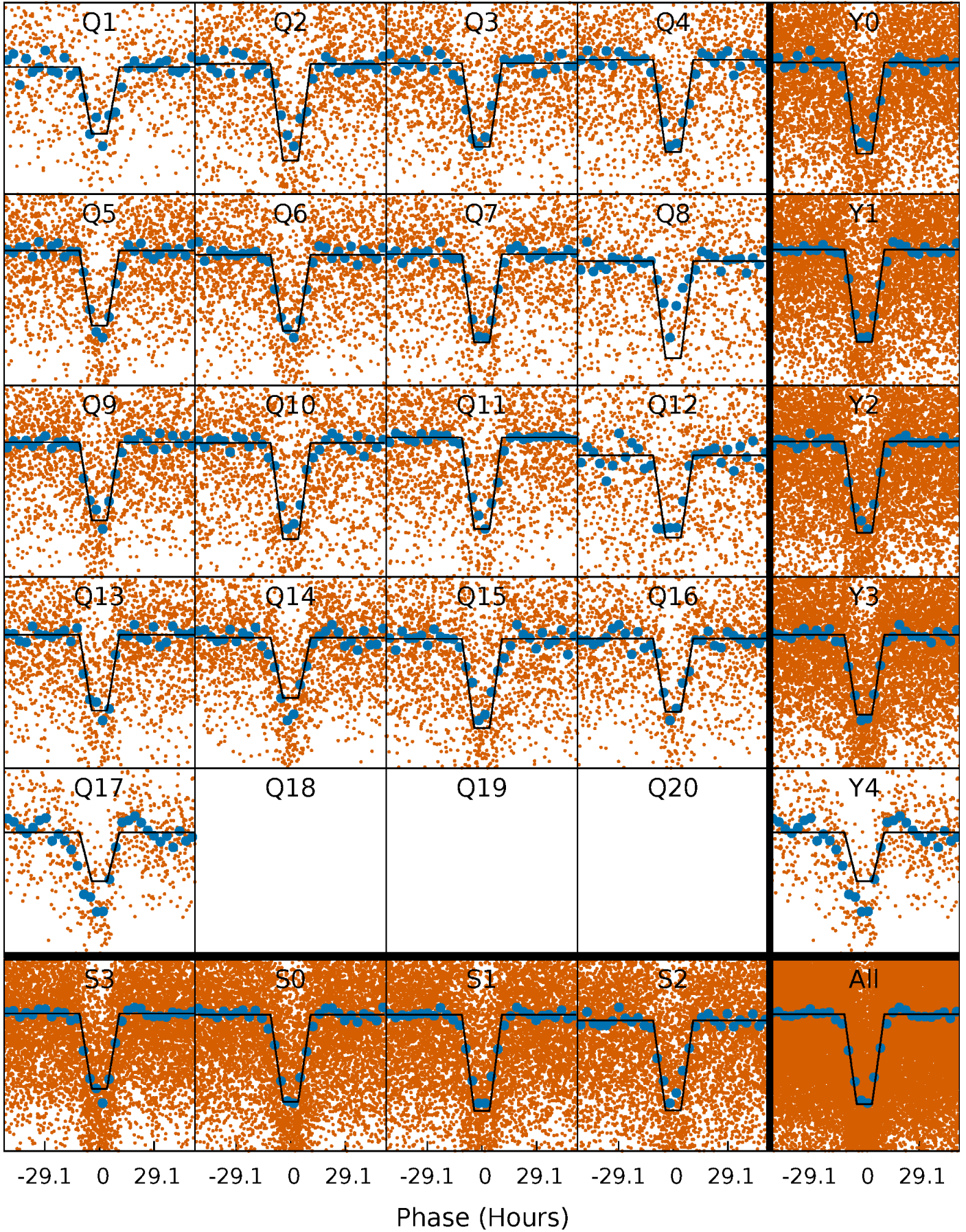
DV Quarter-Phased Transit Curves

TCE 009291039-01 P= 8.808486 Days $T_0=134.258527$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

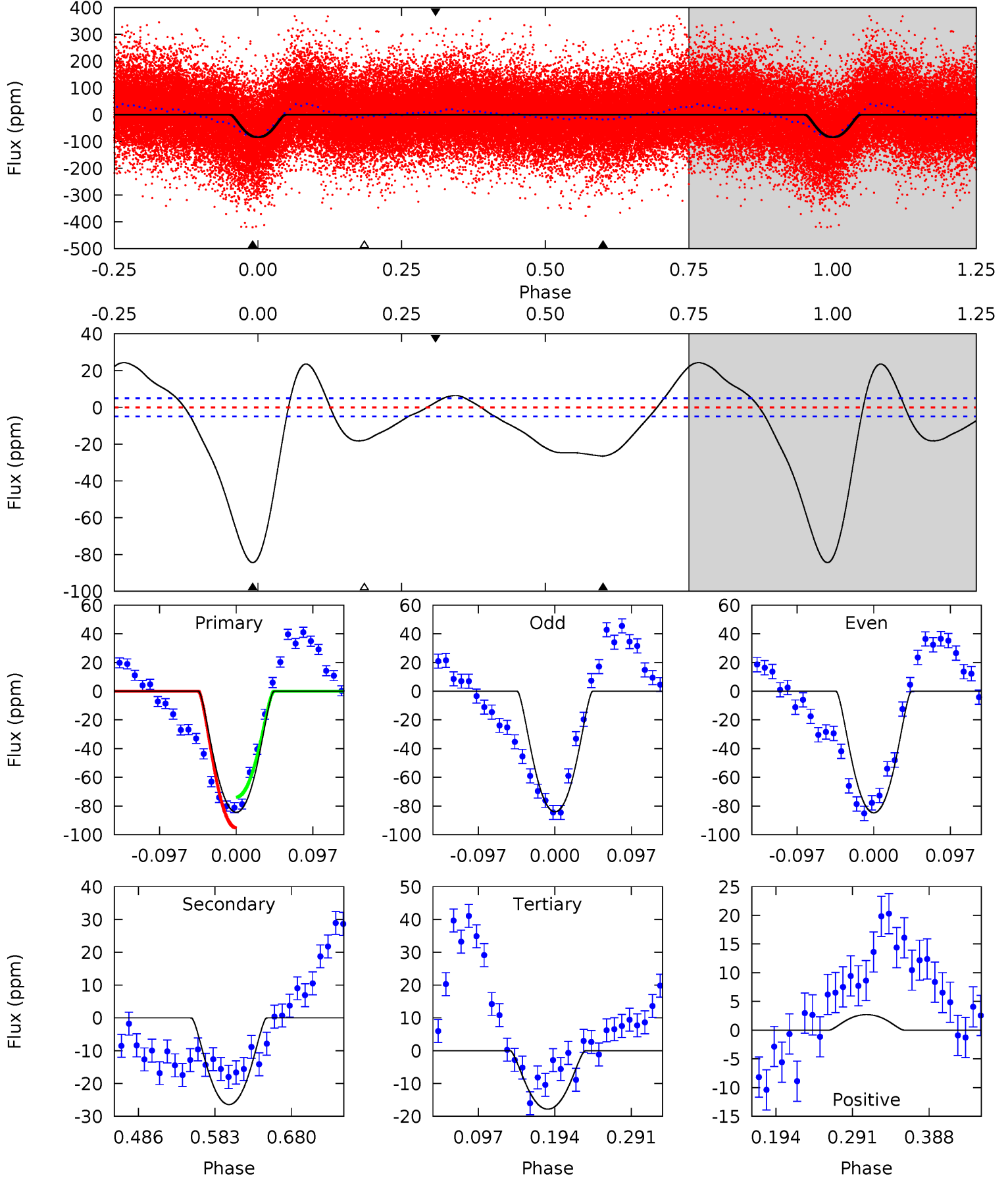
TCE 009291039-01 P= 8.809055 Days $T_0=134.204914$ (BKJD)



DV Model-Shift Uniqueness Test

009291039-01, P = 8.808486 Days, E = 125.450041 Days

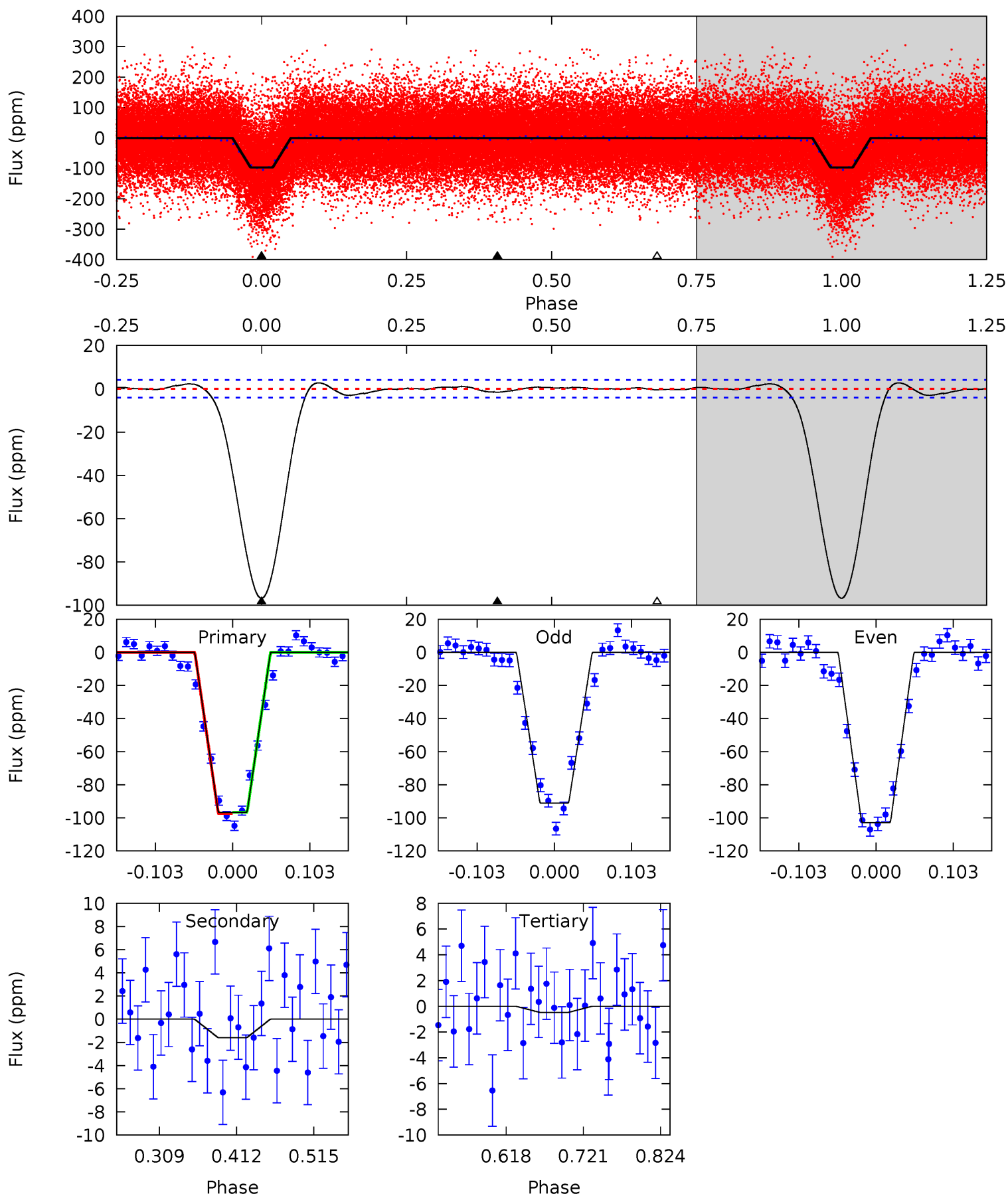
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
77.7	24.3	16.4	2.49	4.57	1.66	11.7	61.3	75.2	7.92	21.8	0.32	1.02	0.22	9.84



Alt Model-Shift Uniqueness Test

009291039-01, P = 8.809055 Days, E = 125.395859 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
108.2	1.78	0.53	0	4.56	1.63	1.17	107.6	108.2	1.26	1.78	6.59	0.98	0.03	0.32



Stellar Parameters For KIC 009291039

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6017^{+163}_{-181}	$4.300^{+0.135}_{-0.135}$	$0.040^{+0.250}_{-0.300}$	$1.210^{+0.245}_{-0.200}$	$1.064^{+0.138}_{-0.126}$	$0.846^{+0.532}_{-0.325}$
	+3%/-3%	+3%/-3%	+625%/-750%	+20%/-17%	+13%/-12%	+63%/-38%
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 009291039-01 / KOI 3230.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-26 ± 1	$1.35^{+0.48}_{-0.45}$	1396^{+79}_{-77}	4451^{+754}_{-441}	57^{+69}_{-25}
Alt.	-2 ± 1	$1.34^{+0.48}_{-0.44}$	1398^{+87}_{-78}	2822^{+375}_{-391}	$3.558^{+5.105}_{-2.323}$

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

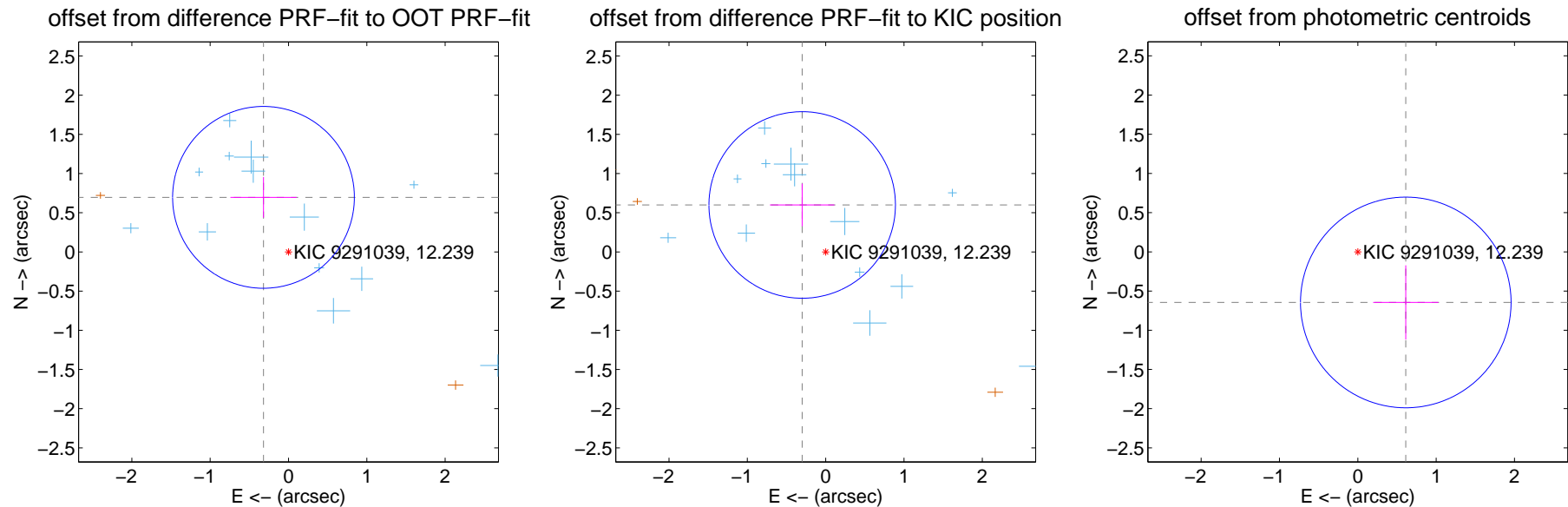
DV Centroid Data

Supplemental centroid analysis for 009291039-01. Kepler magnitude: 12.24. Transit SNR 17.96

There are 14 quarters with good PRF difference image offsets

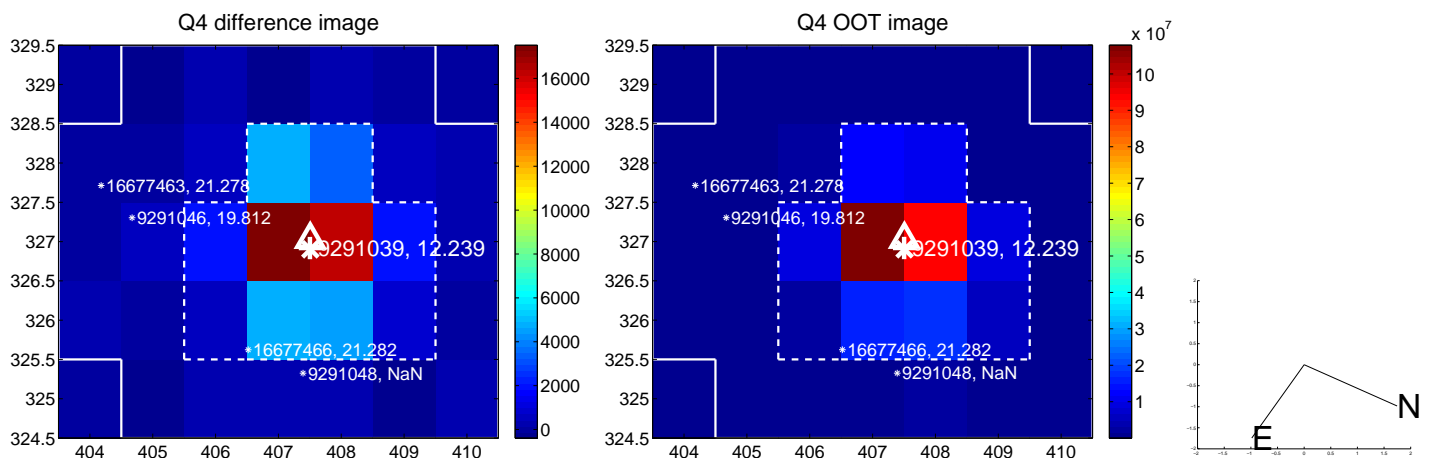
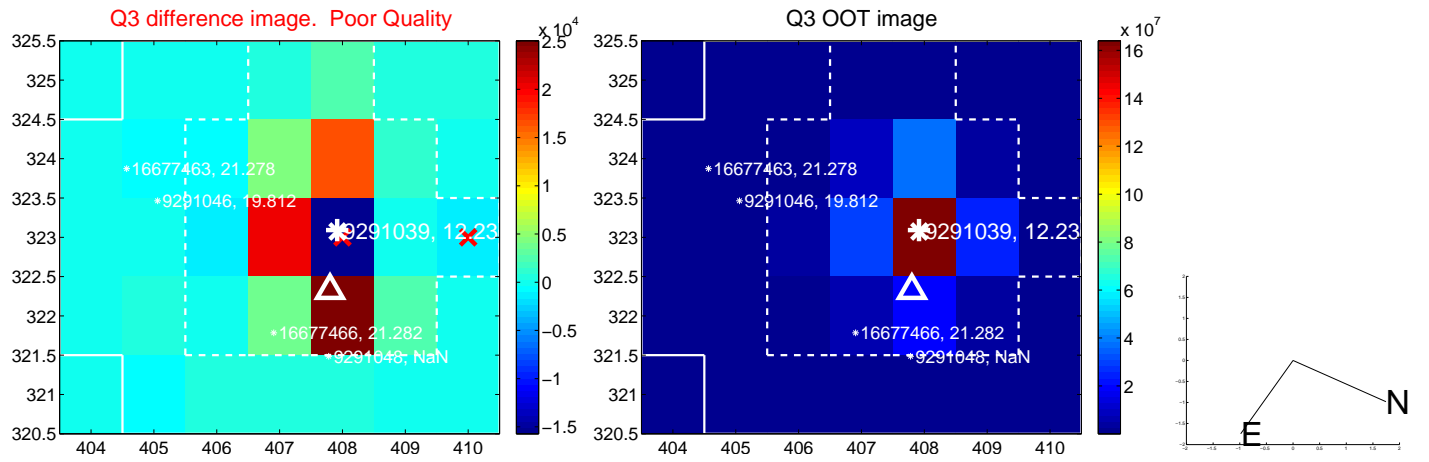
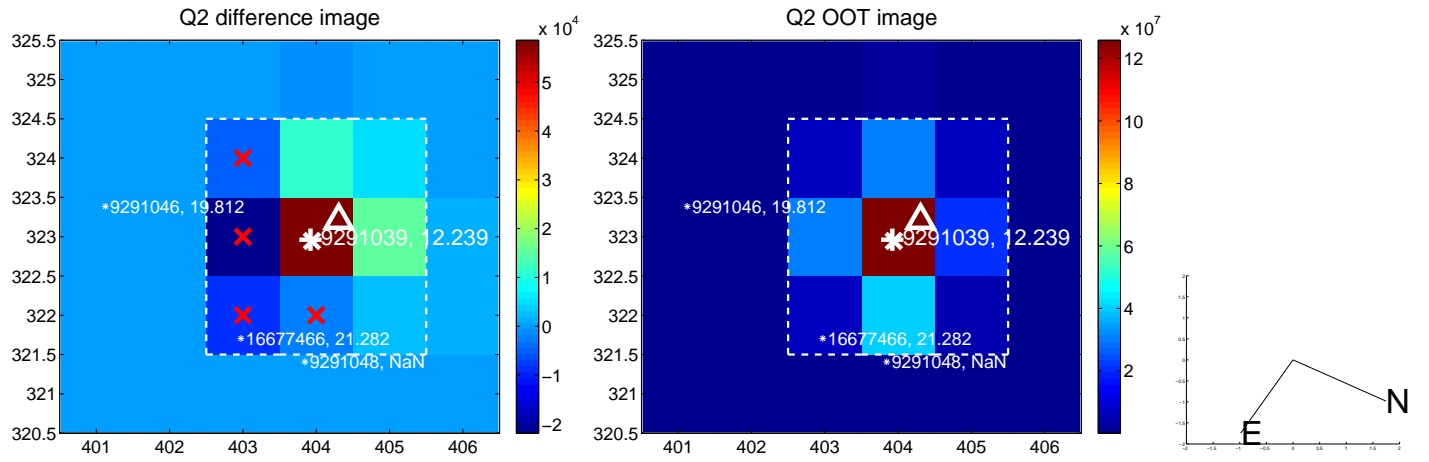
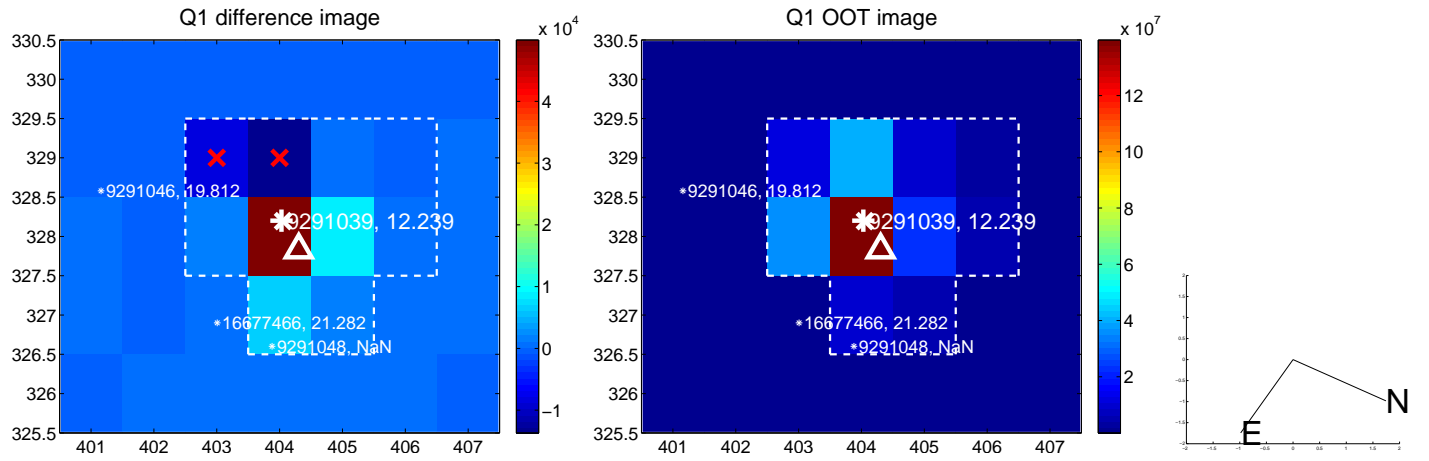
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.766 ± 0.387	1.98	0.319 ± 0.423	0.696 ± 0.259
PRF-fit source offset from KIC position	0.670 ± 0.397	1.69	0.300 ± 0.411	0.599 ± 0.272
photometric centroid source offset	0.89 ± 0.45	1.99	-0.61 ± 0.42	-0.65 ± 0.47

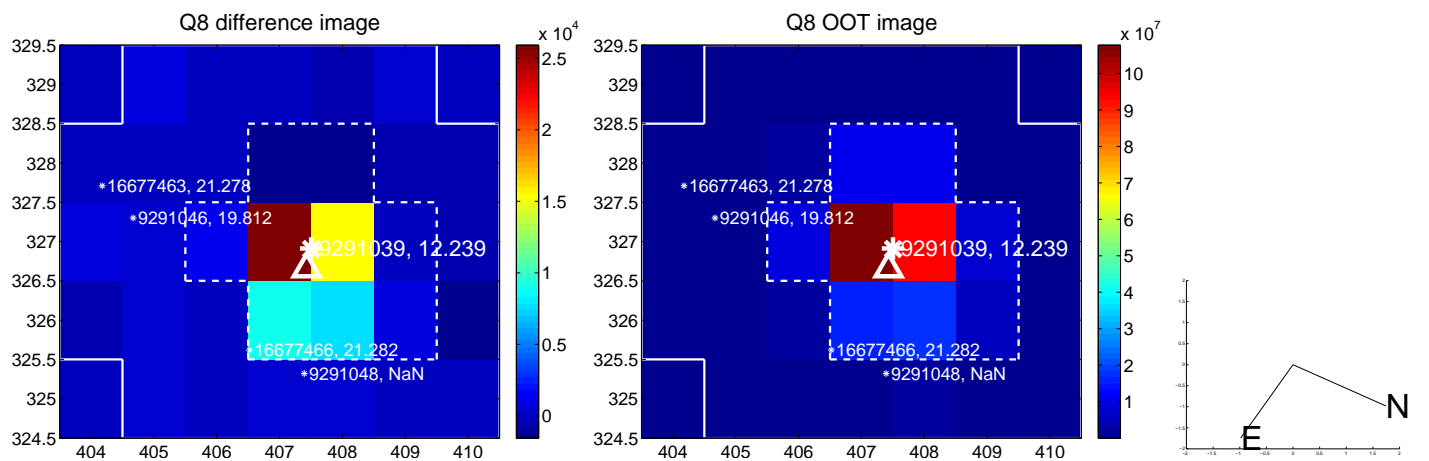
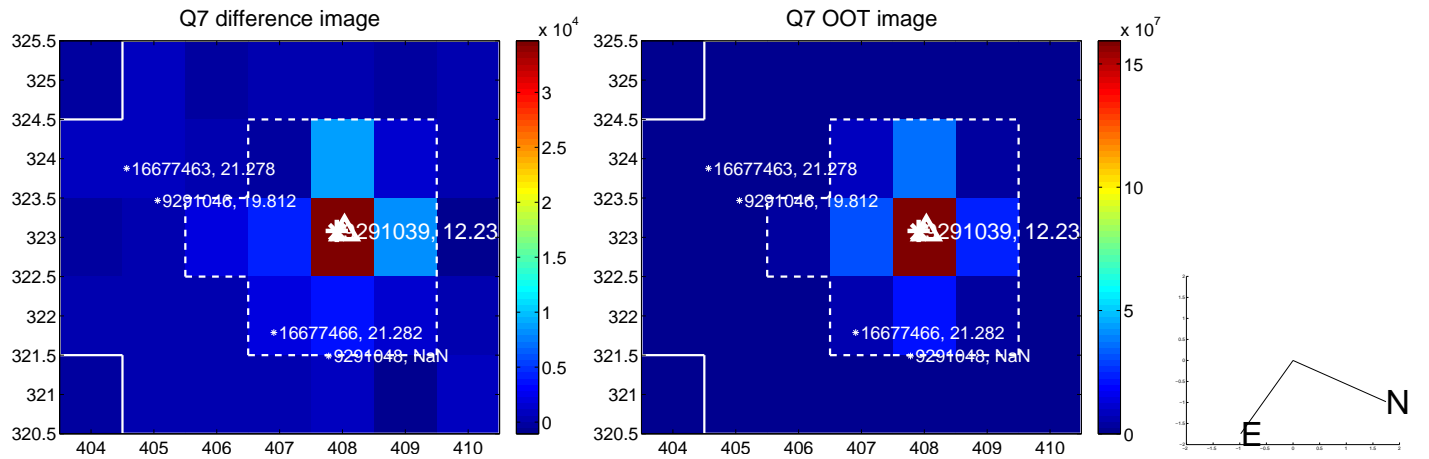
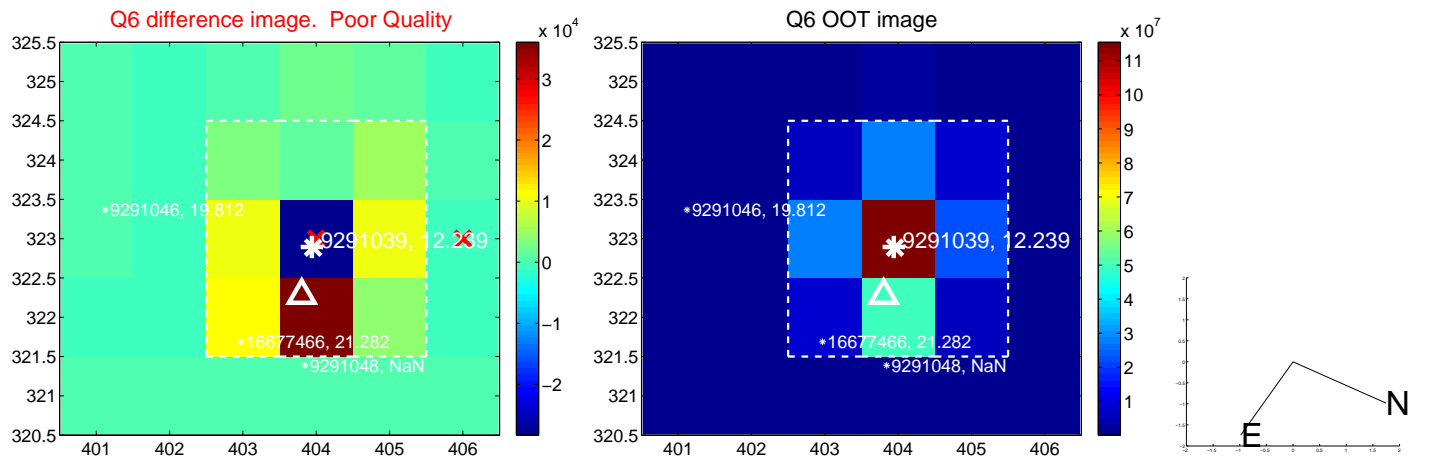
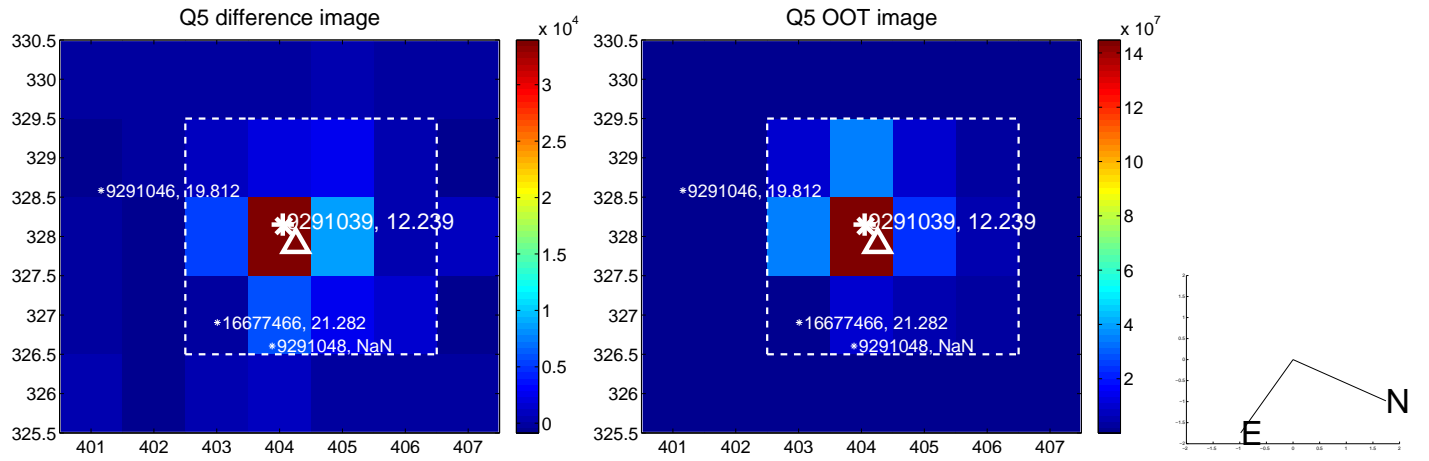


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

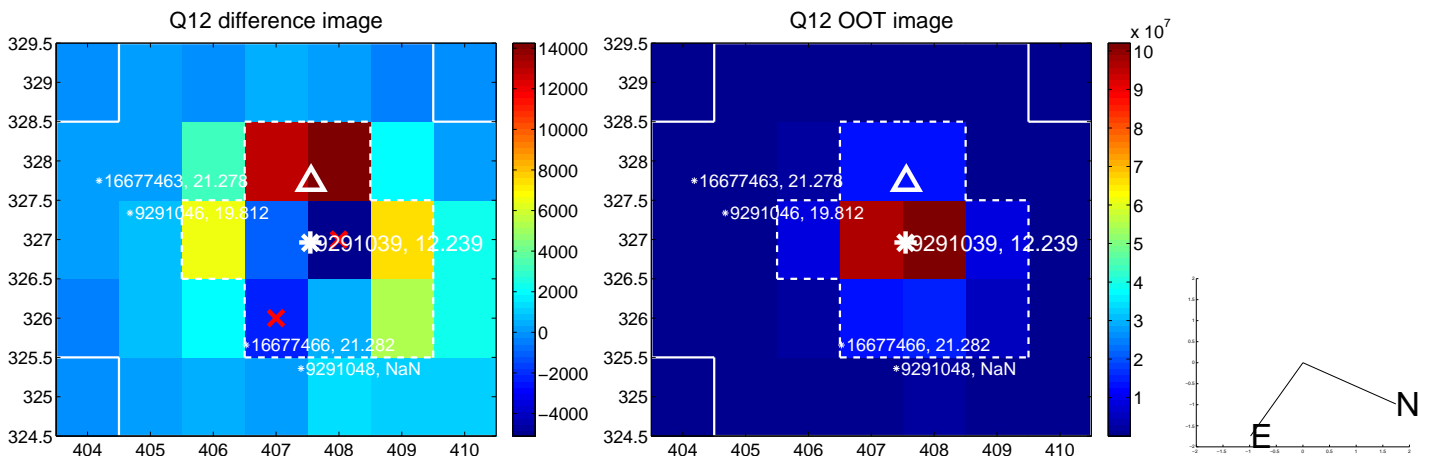
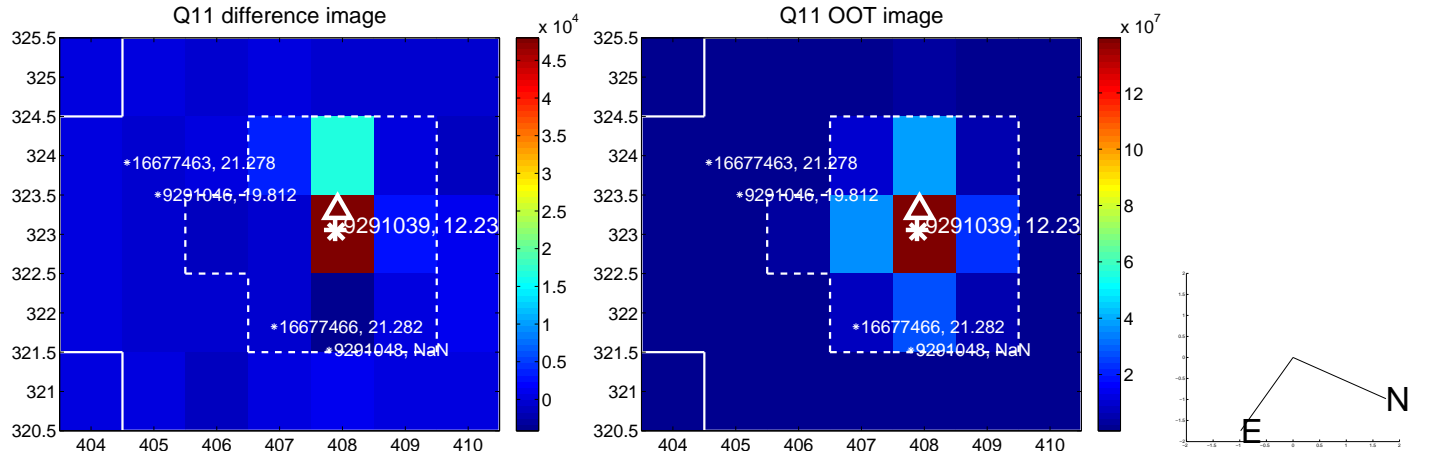
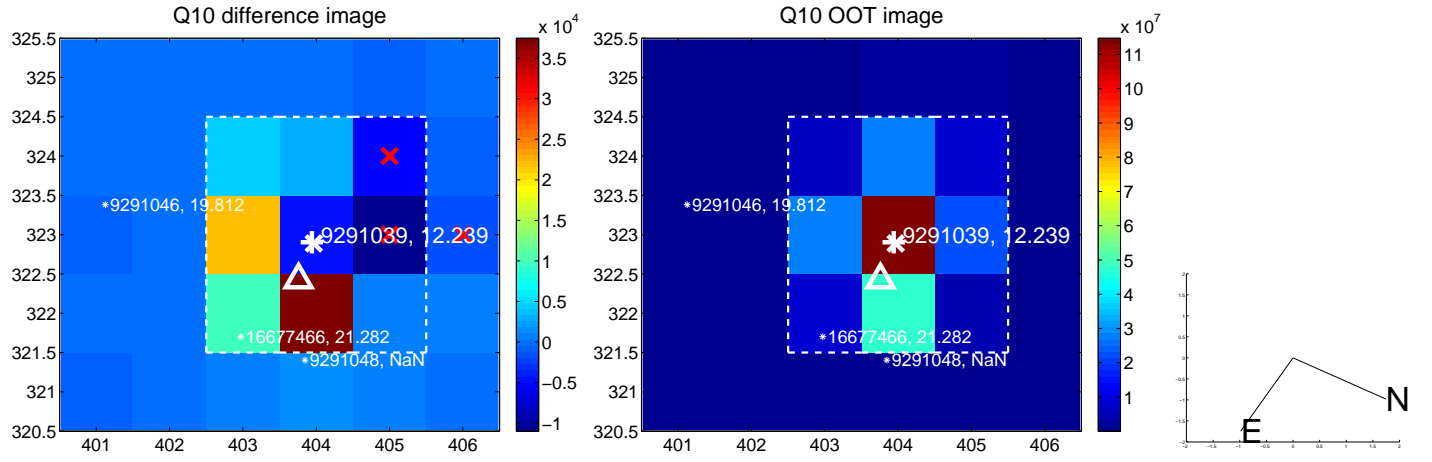
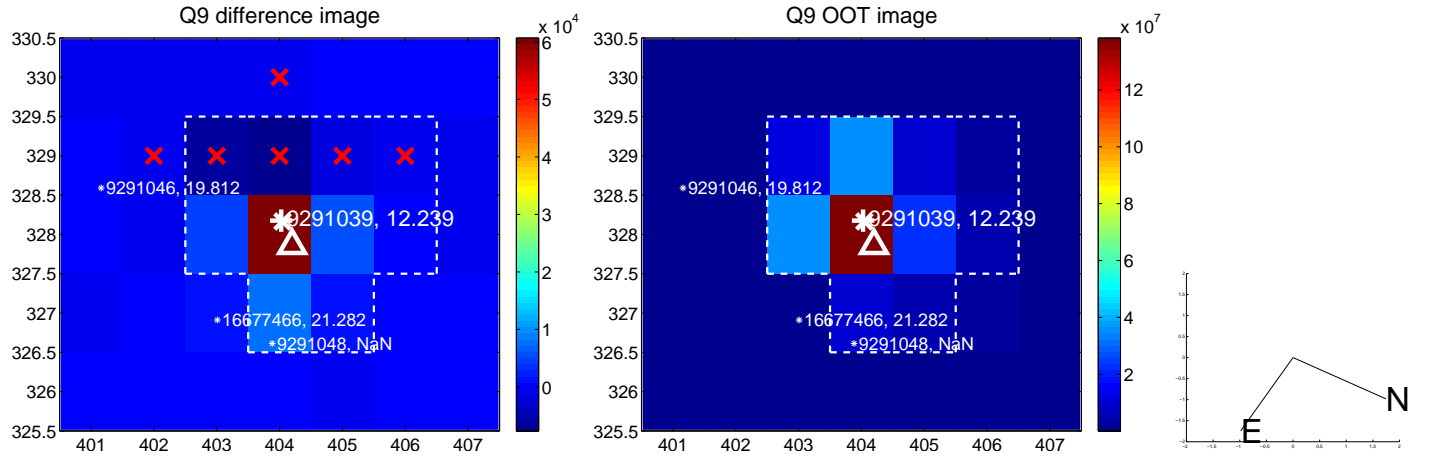
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



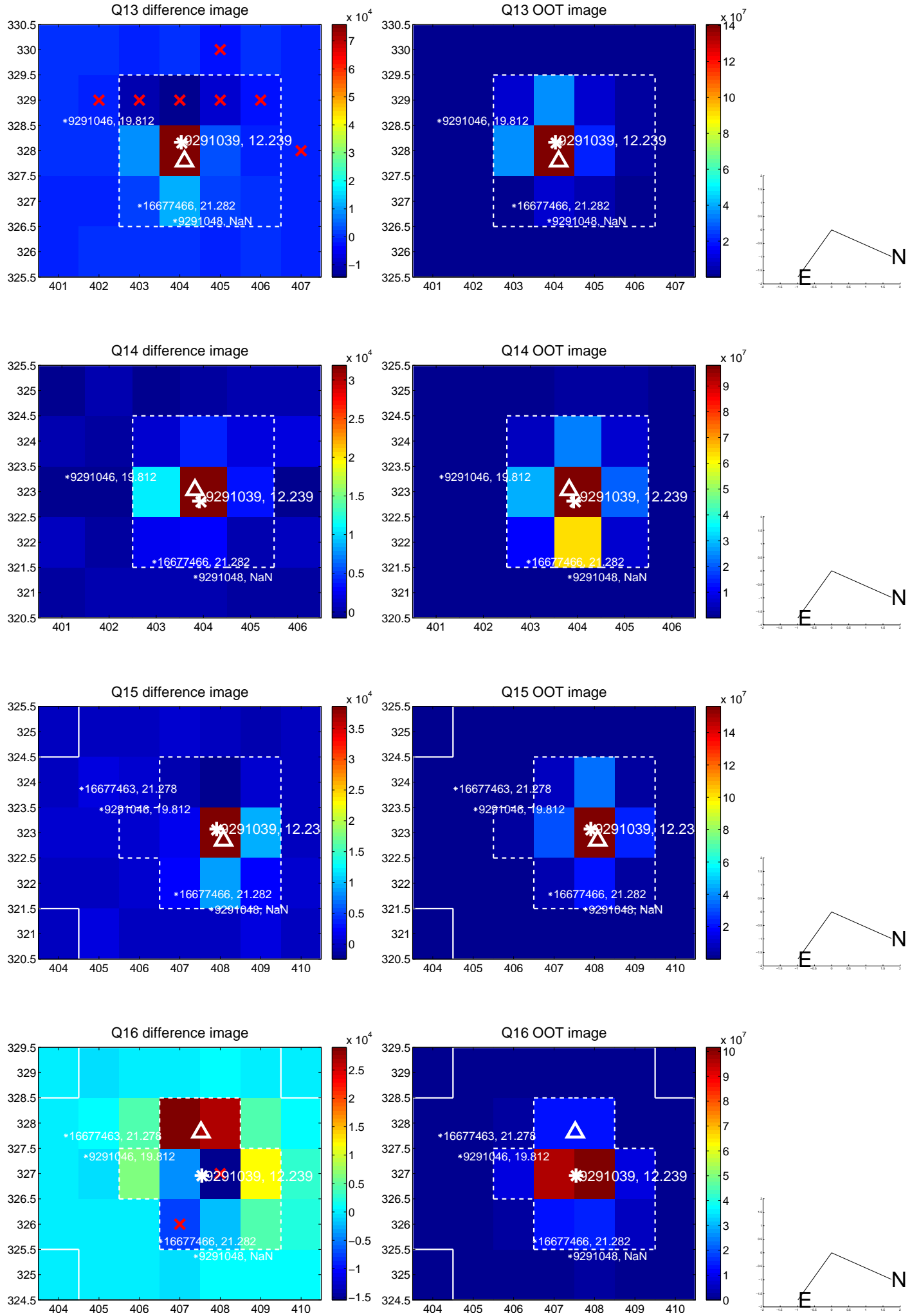
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



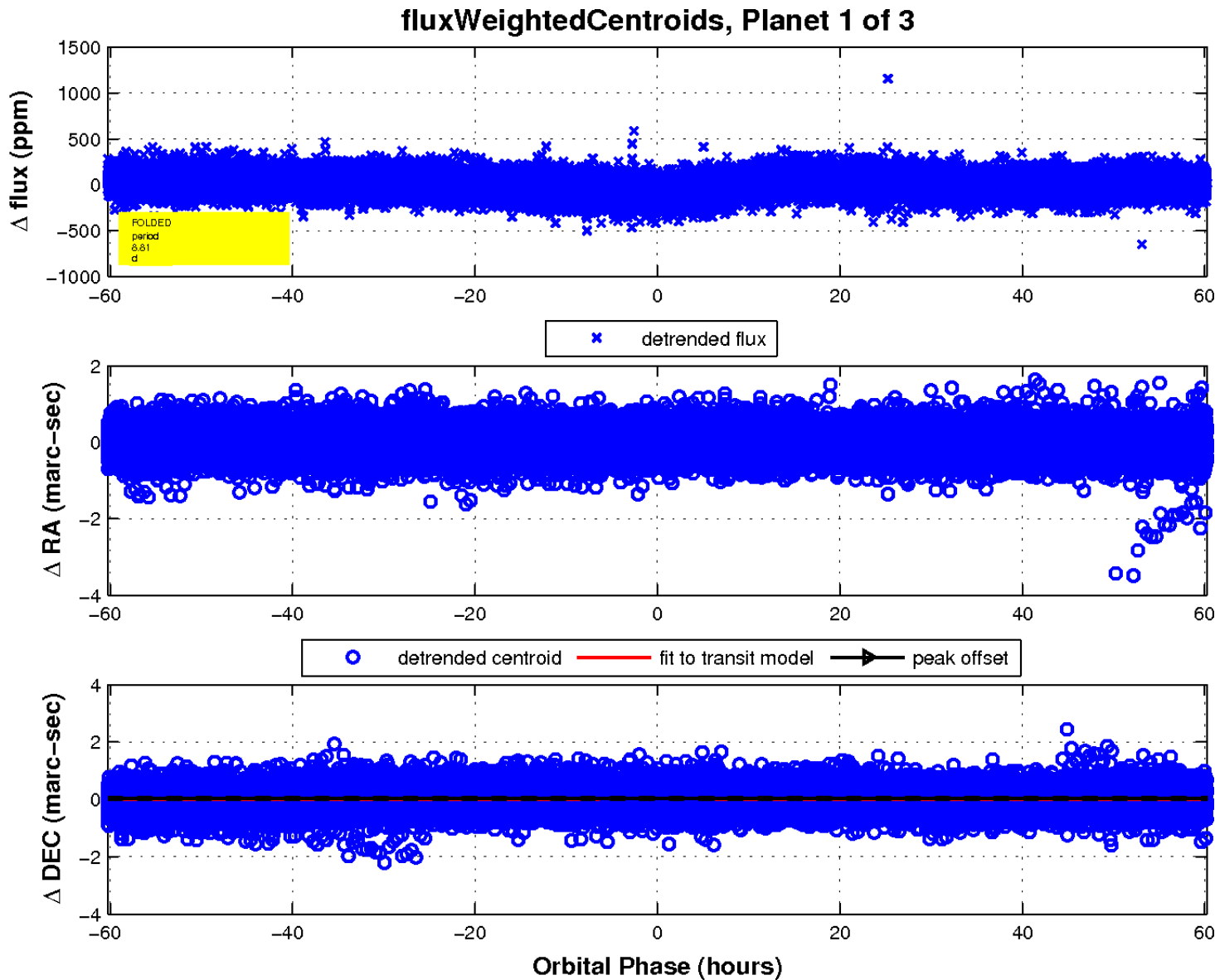
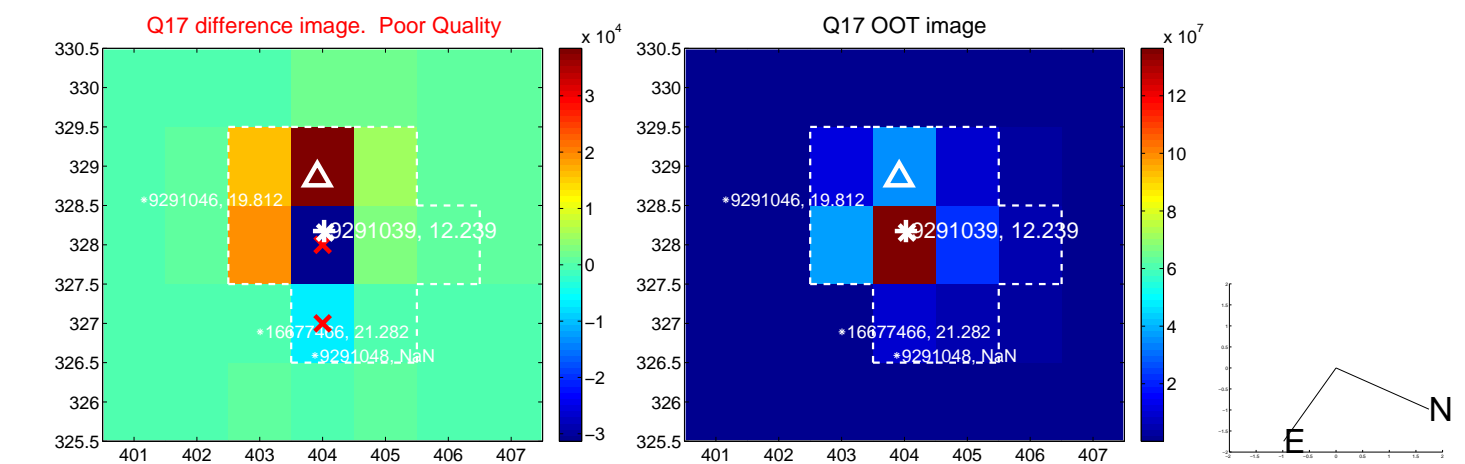
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

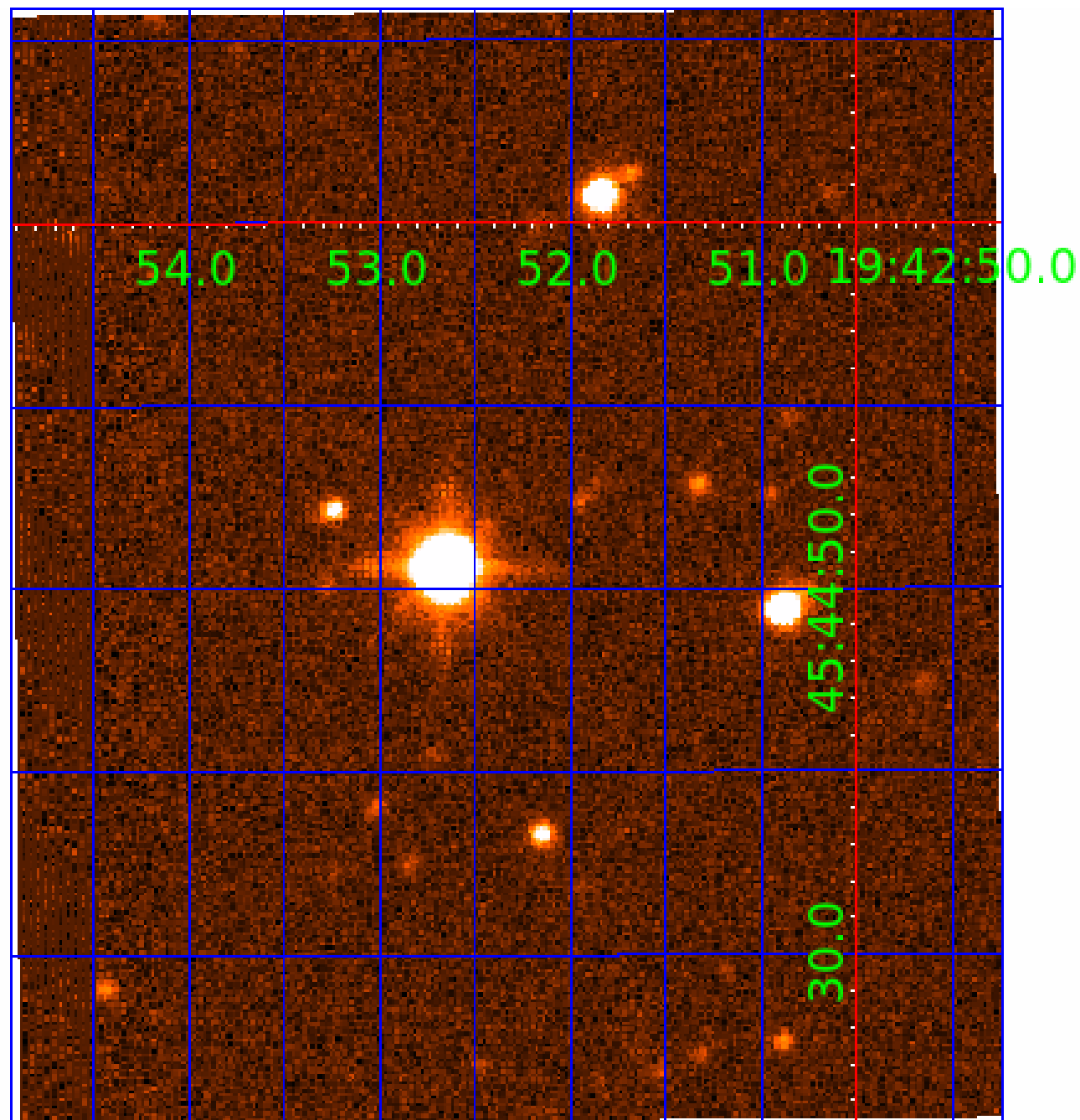


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009291039

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})
009291039-01	OBS	3230.01	8.808486	134.258527	50.1	20.088	16.7	18.0	1.21	6017	1.38	236.45
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009291039-03	OBS	3230.02	3.796526	135.177431	20.9	9.450	11.1	11.5	1.21	6017	0.65	726.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009291039-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009291039-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009291039-03	OBS	FP	0.00	1	0	0	1	LPP_DV—EPHEM_MATCH

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 009291039-02

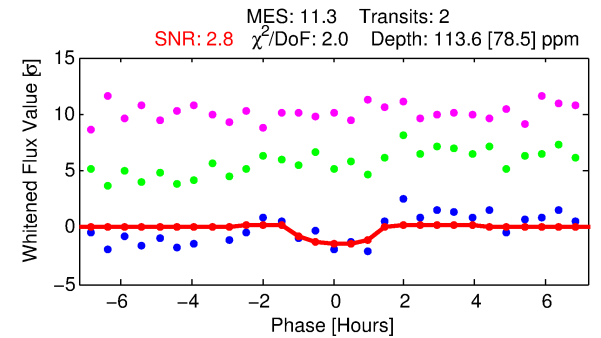
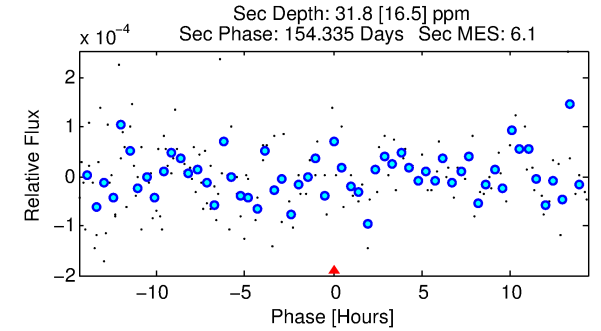
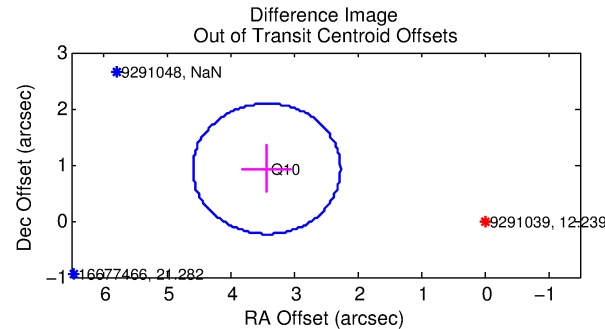
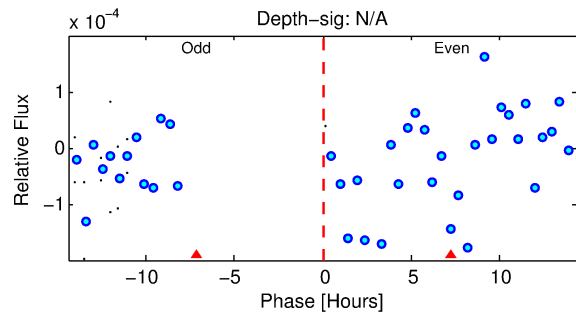
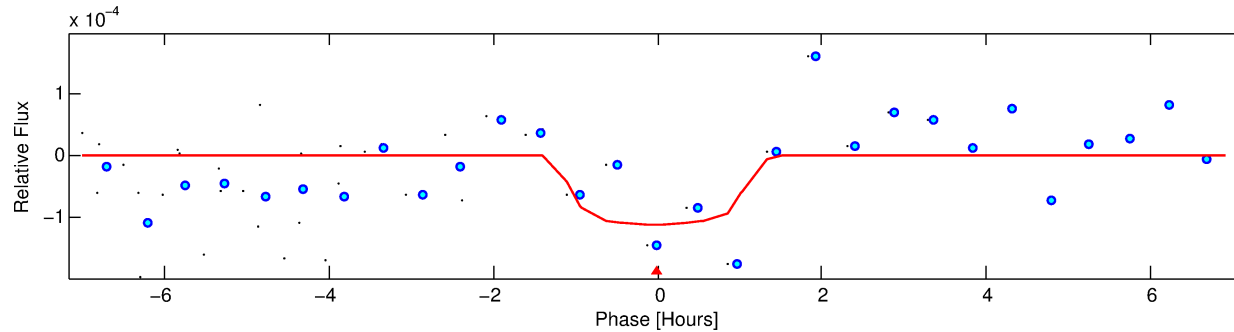
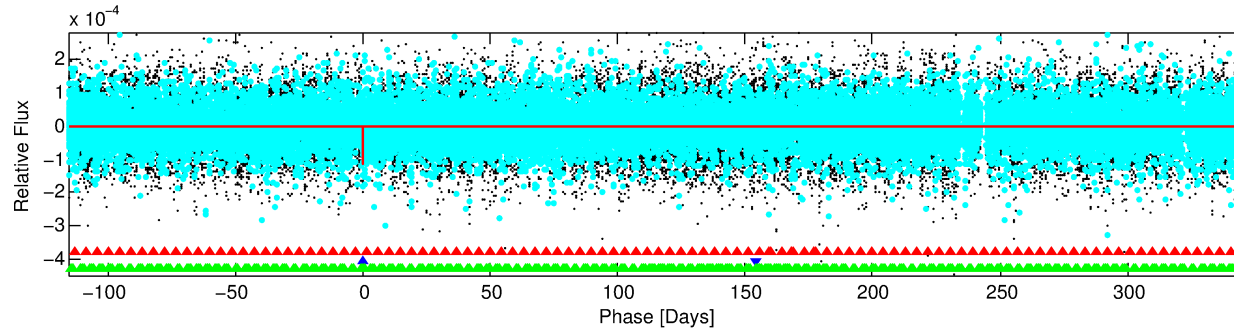
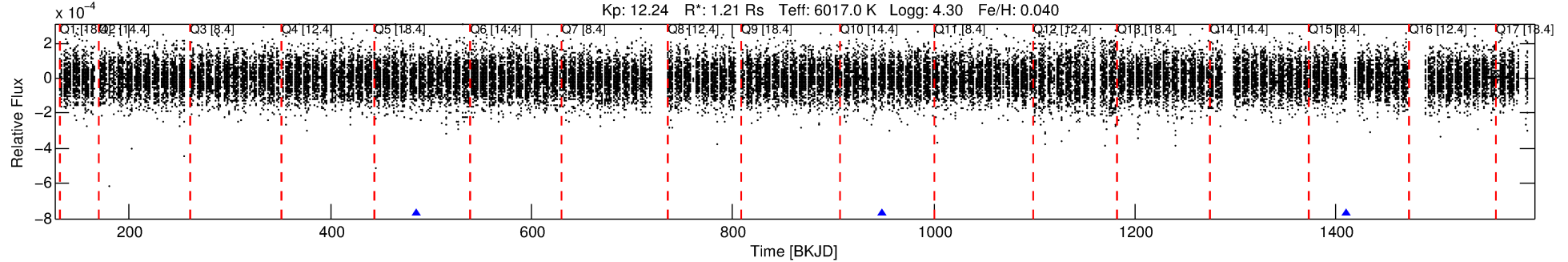
No Significant Match Found

DV One-Page Summary

KIC: 9291039 Candidate: 2 of 3 Period: 462.505 d

KOI: K03230 Corr: No Ephemeris Match

Kp: 12.24 R*: 1.21 Rs Teff: 6017.0 K Logg: 4.30 Fe/H: 0.040



DV Fit Results:

Period = 462.50542 [0.03181] d
Epoch = 485.3571 [0.0271] BKJD
Rp/R* = 0.0116 [0.0391]
a/R* = 666.50 [11247.45]
b = 0.91 [3.43]
Seff = 1.20 [0.33]
Teq = 267 [18] K
Rp = 1.53 [5.18] Re
a = 1.1957 [0.2035] AU
Ag = 10639.87 [72022.32] [0.15σ]
Teff = 4193 [7092] K [0.55σ]

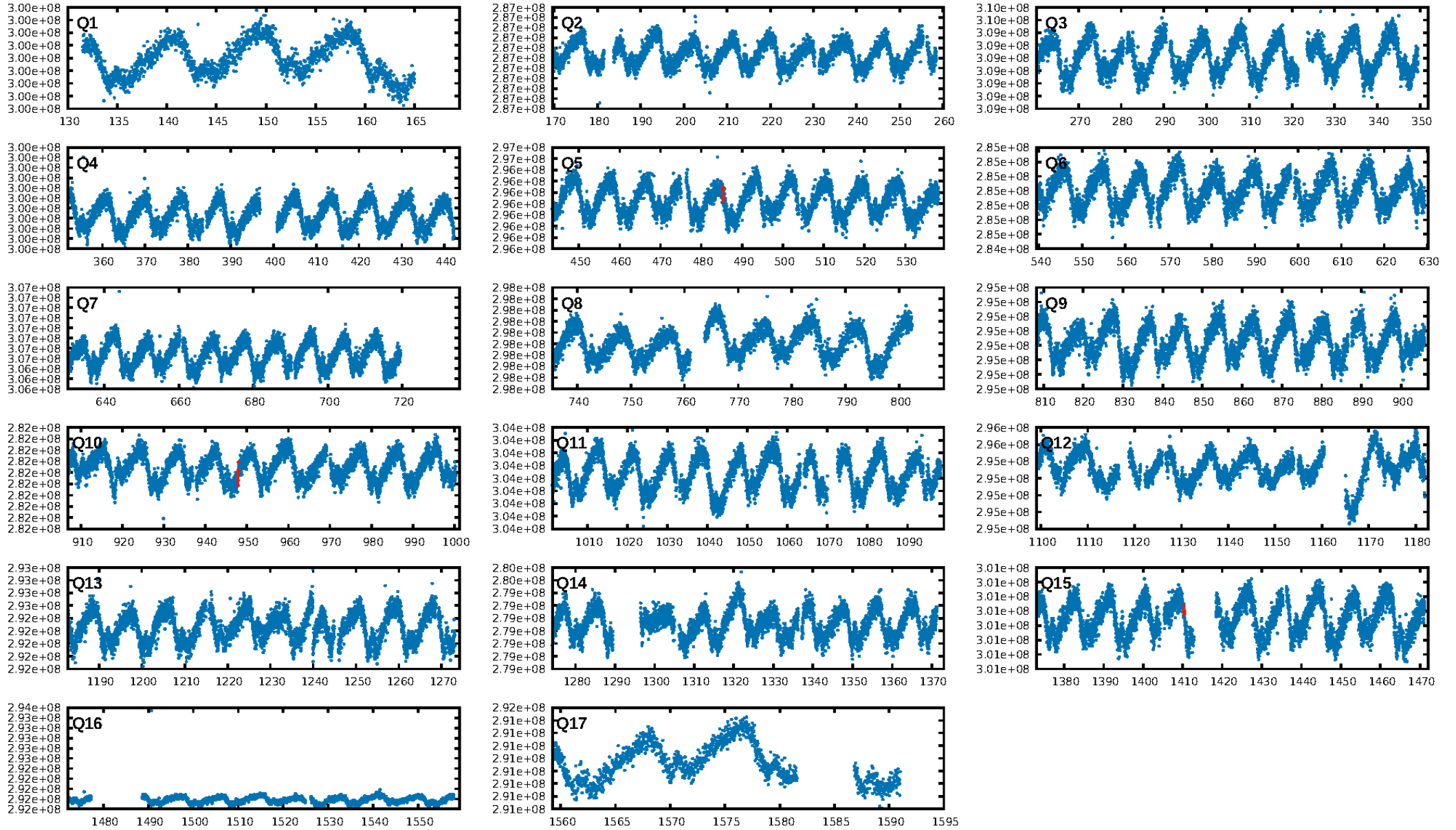
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [538.24σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 91.8%
ModelChiSquareGof-sig: 99.4%
Bootstrap-pfa: 4.34e-26
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: -2.445
Centroid-sig: N/A
Centroid-so: 0.198 arcsec [0.08σ]
OotOffset-rm: 3.549 arcsec [9.16σ]
KicOffset-rm: 3.512 arcsec [9.08σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 0.33 [1/3]

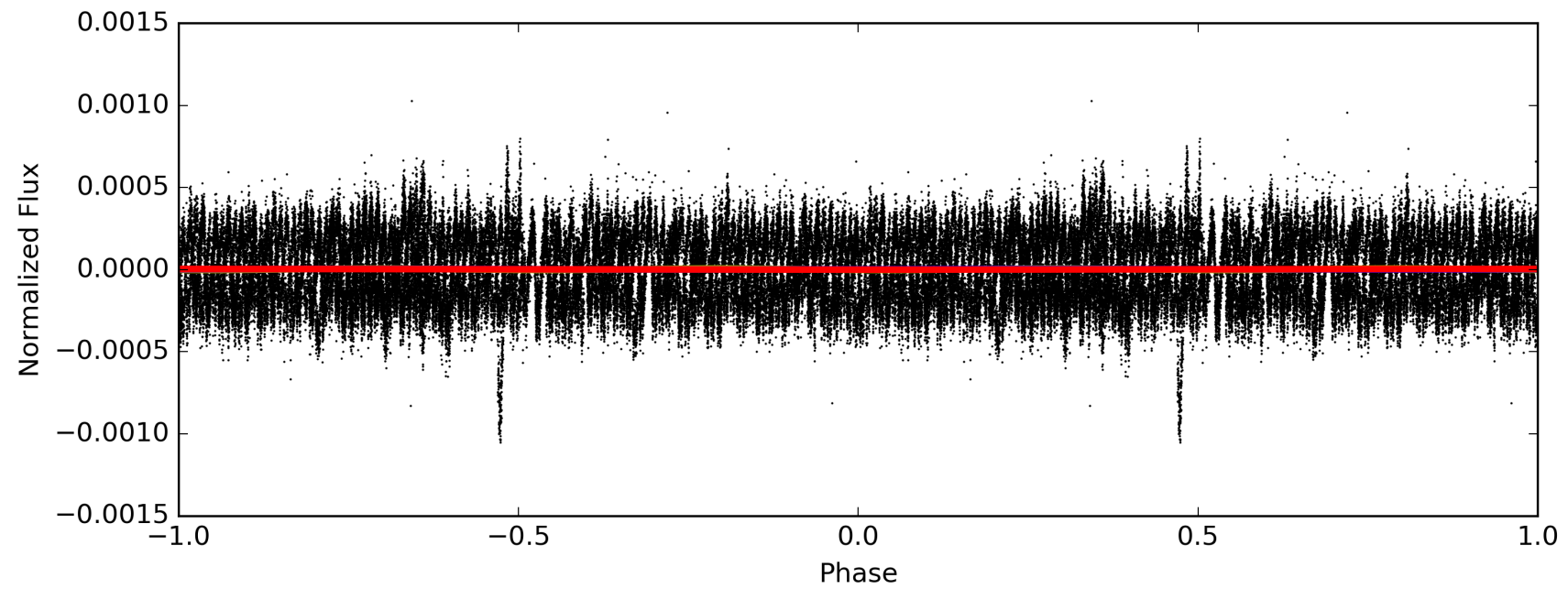
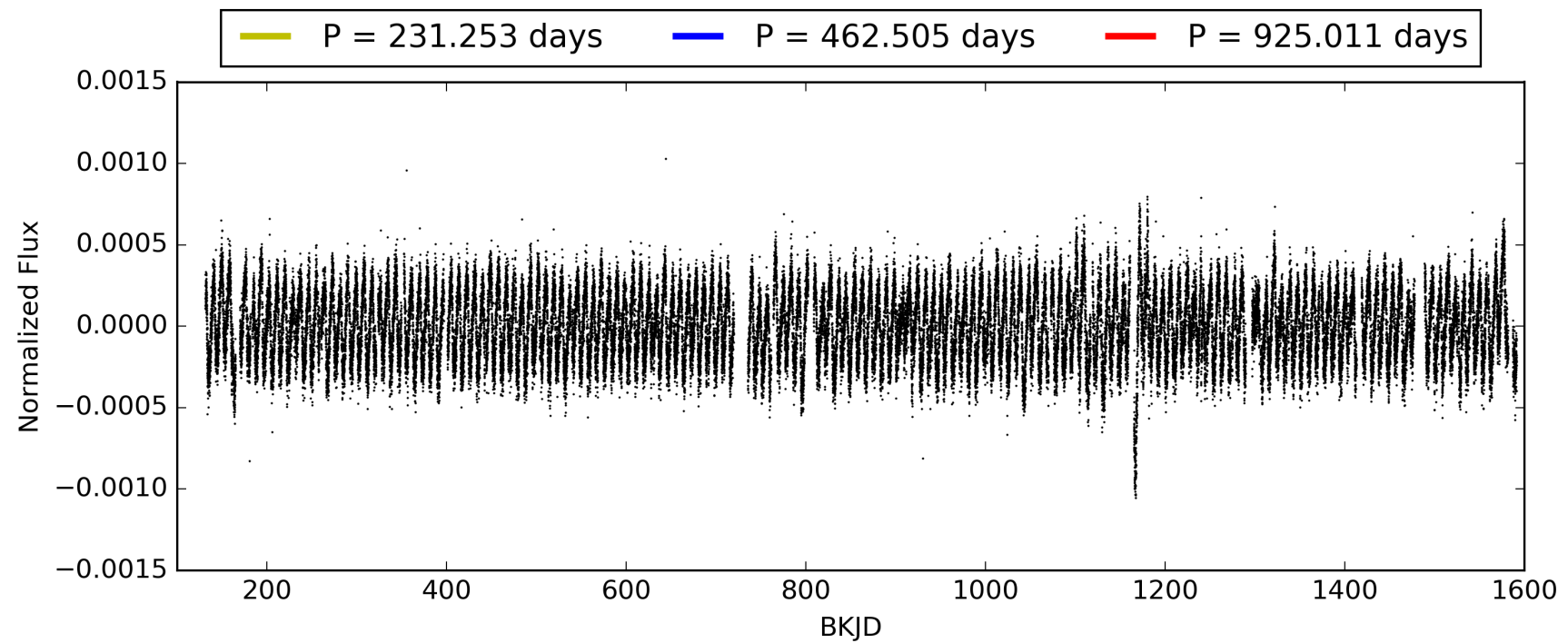
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 14:56:49 Z

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

TCE 009291039-02, PDC Light Curves

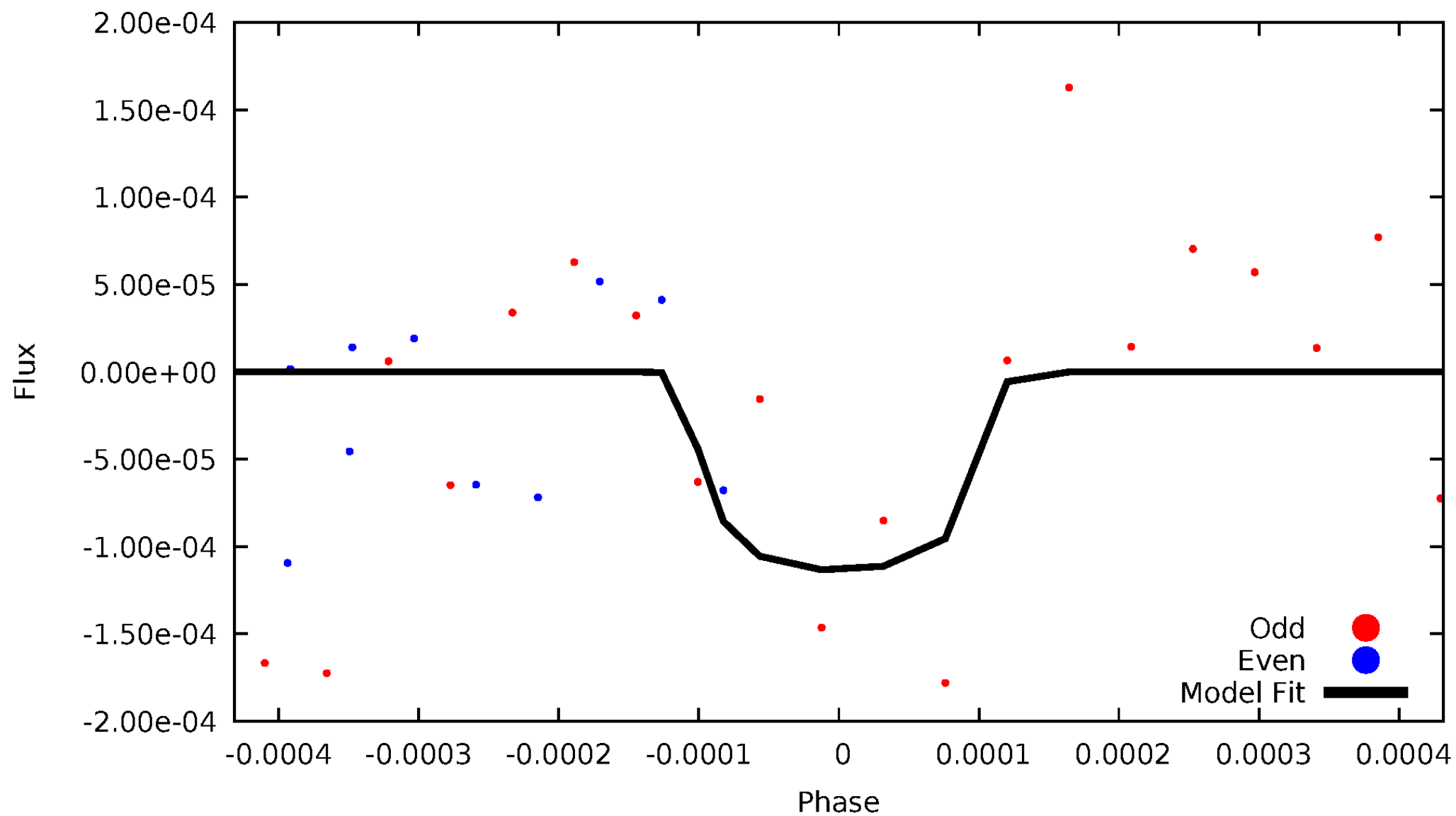


TCE 009291039-02



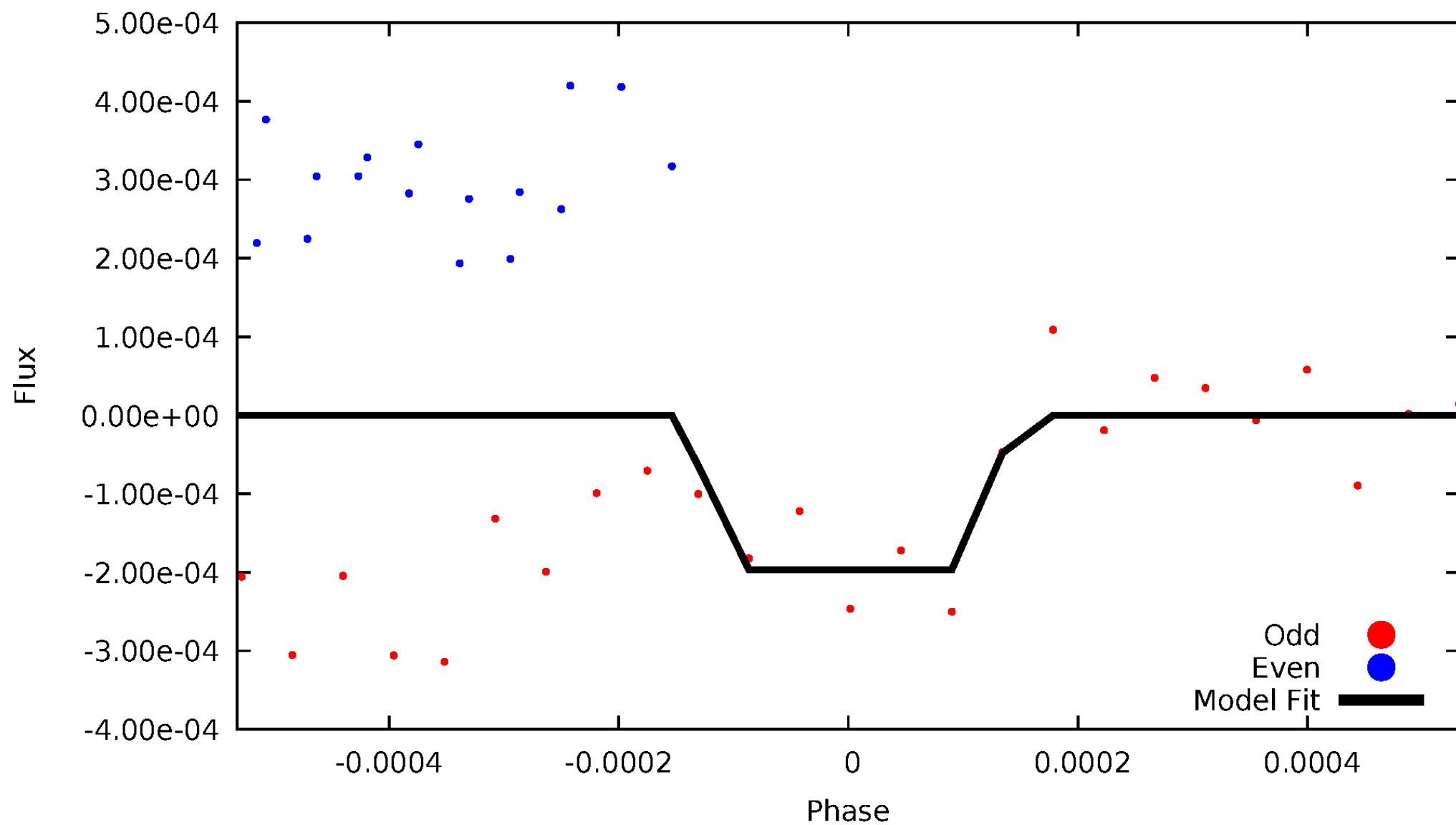
DV Odd/Even

TCE 009291039-02



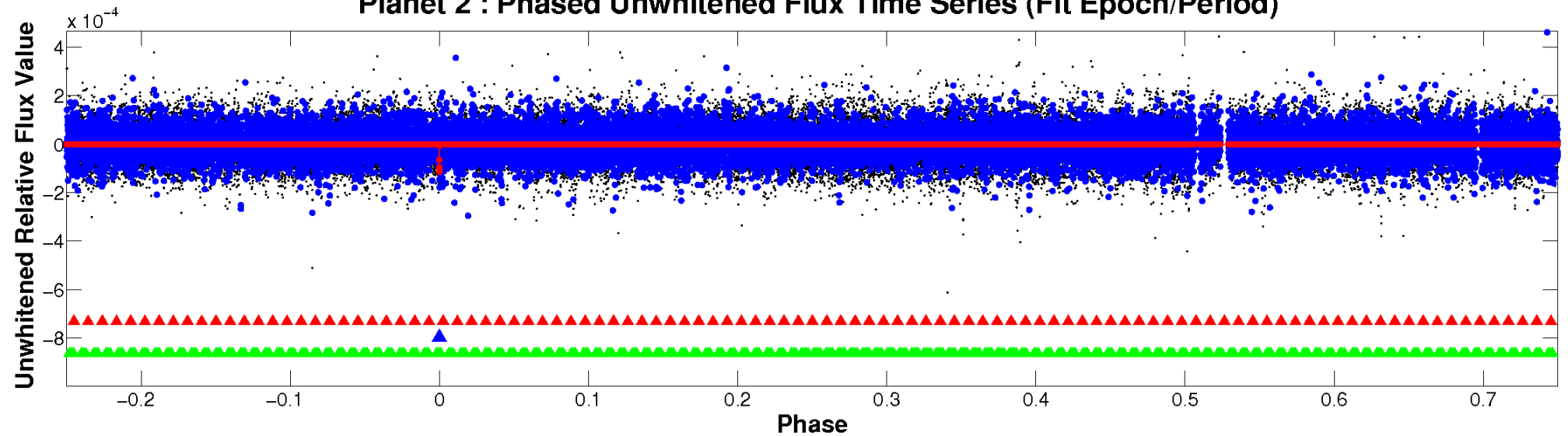
ALT Odd/Even

TCE 009291039-02

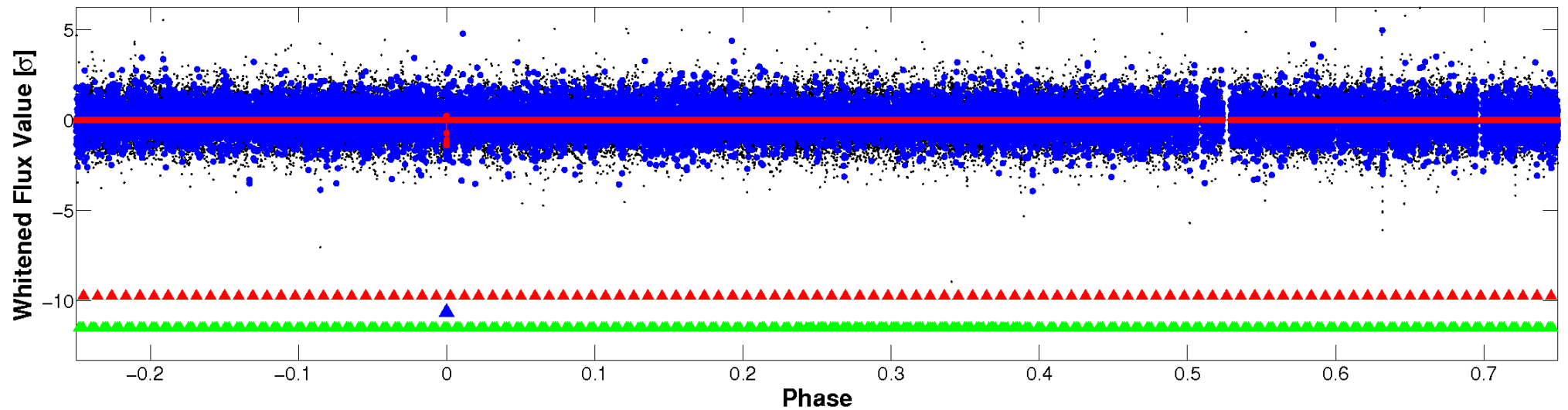


Non-Whitened Vs. Whitened Light Curve

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

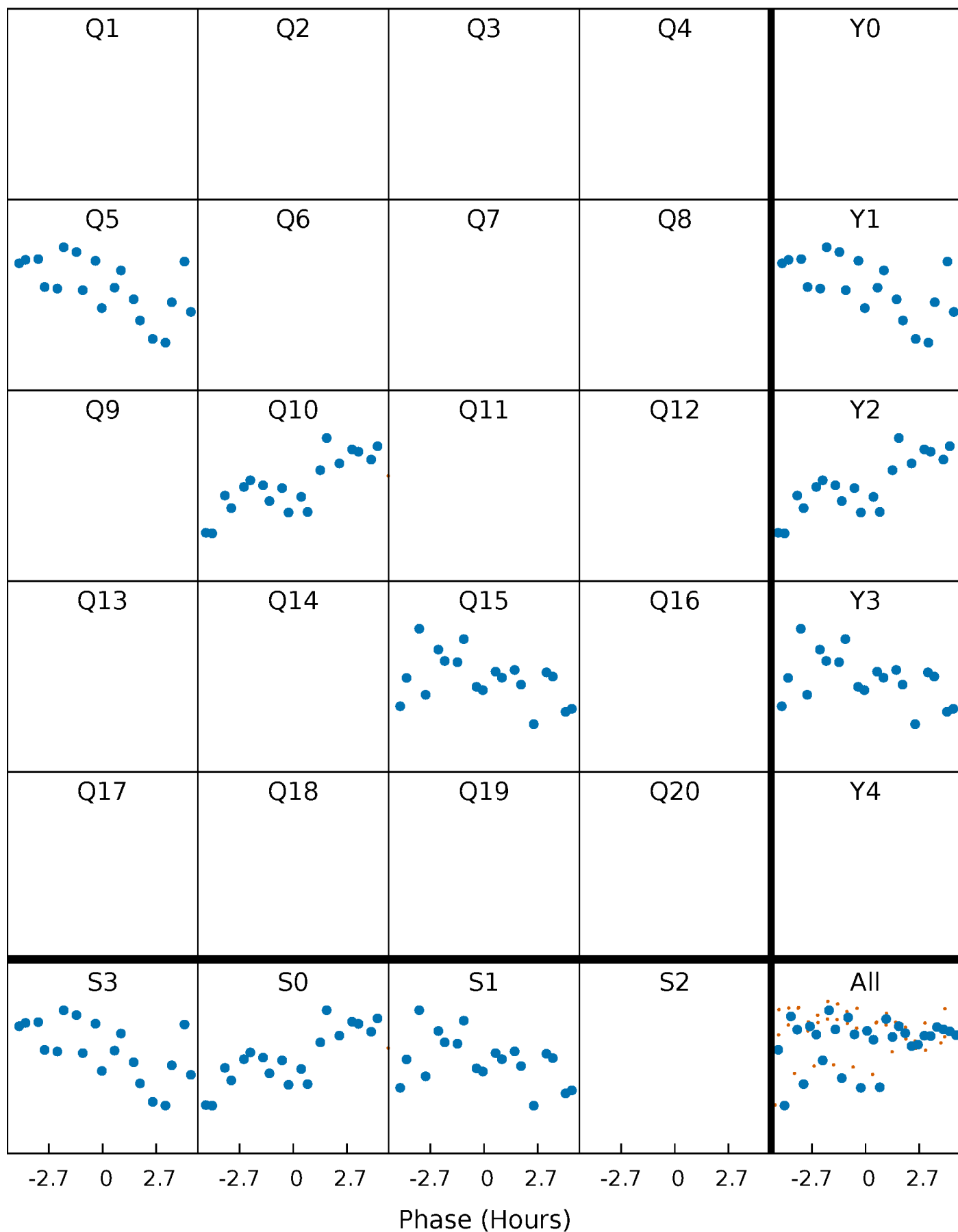


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



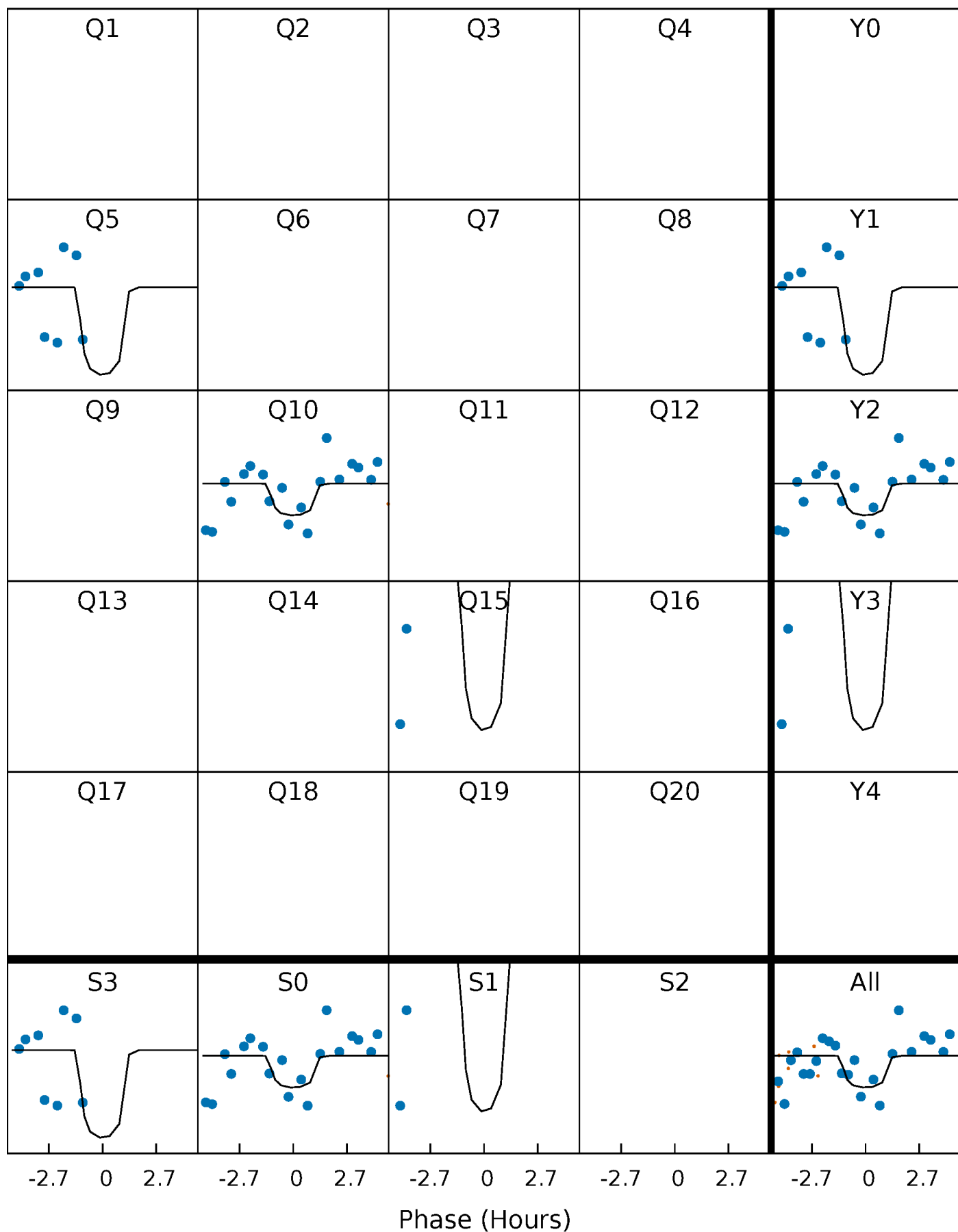
PDC Quarter-Phased Transit Curves

TCE 009291039-02 P=462.505423 Days $T_0=485.357117$ (BKJD)



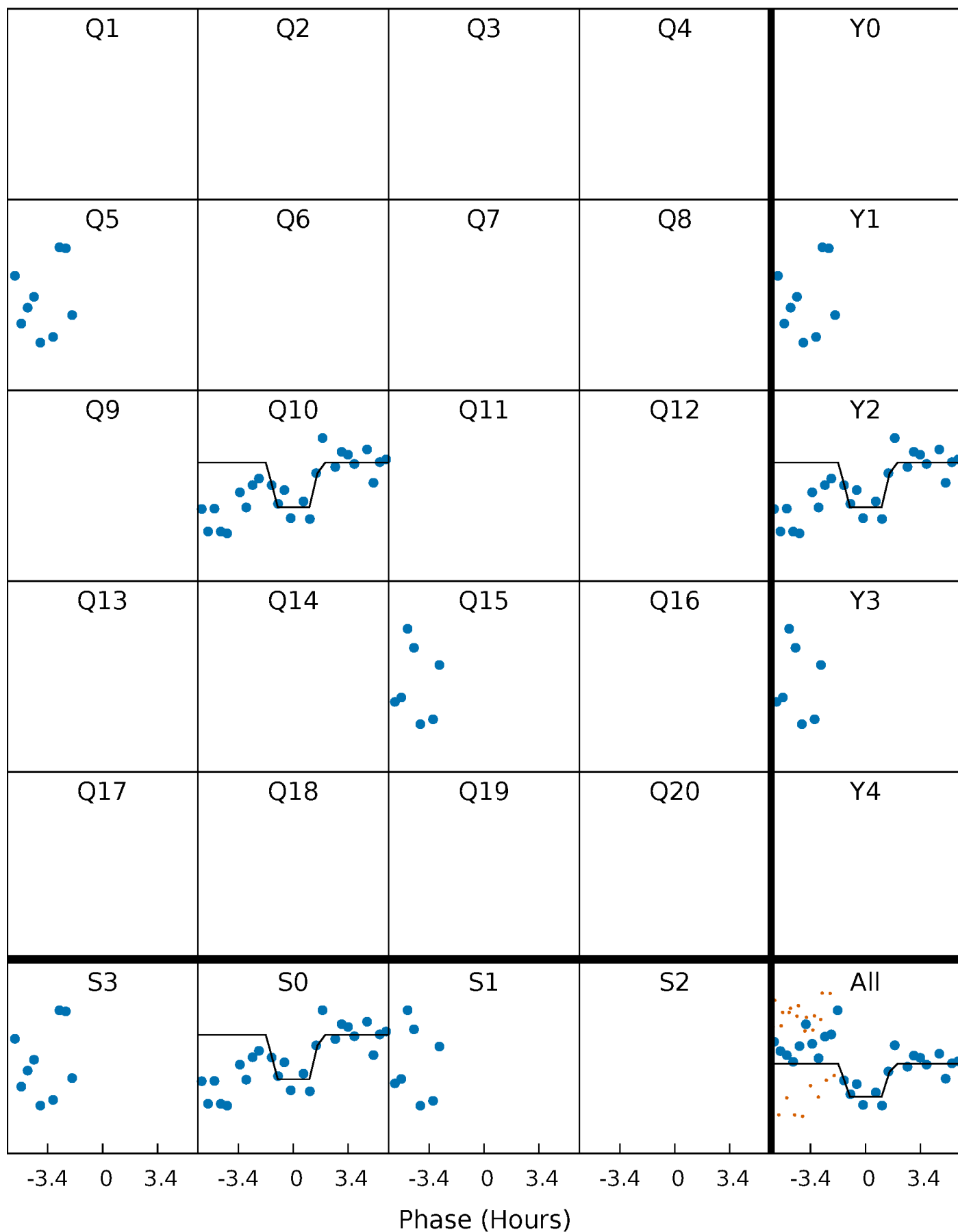
DV Quarter-Phased Transit Curves

TCE 009291039-02 P=462.505423 Days $T_0=485.357117$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

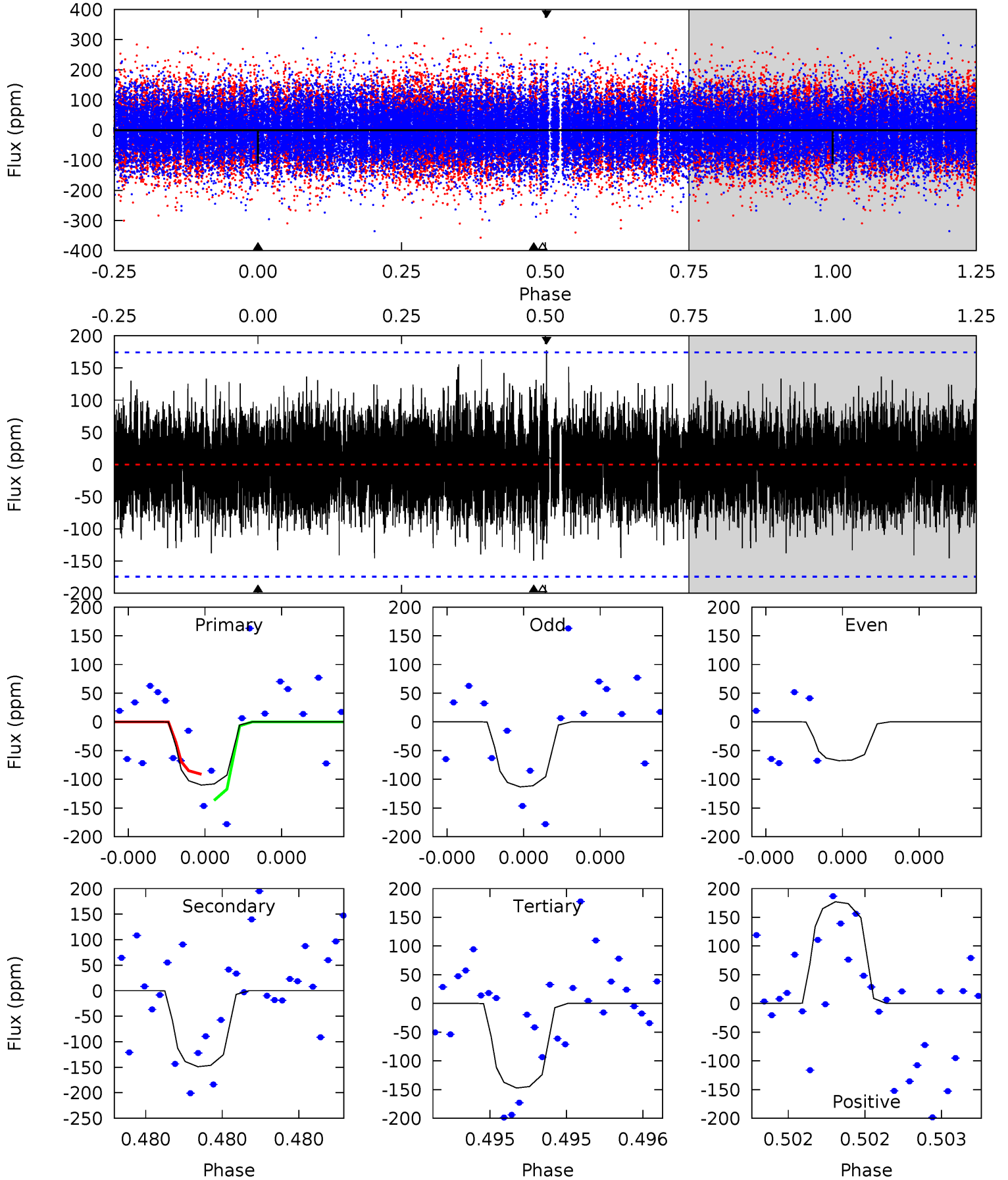
TCE 009291039-02 P=462.465952 Days $T_0=485.390107$ (BKJD)



DV Model-Shift Uniqueness Test

009291039-02, P = 462.505423 Days, E = 22.851694 Days

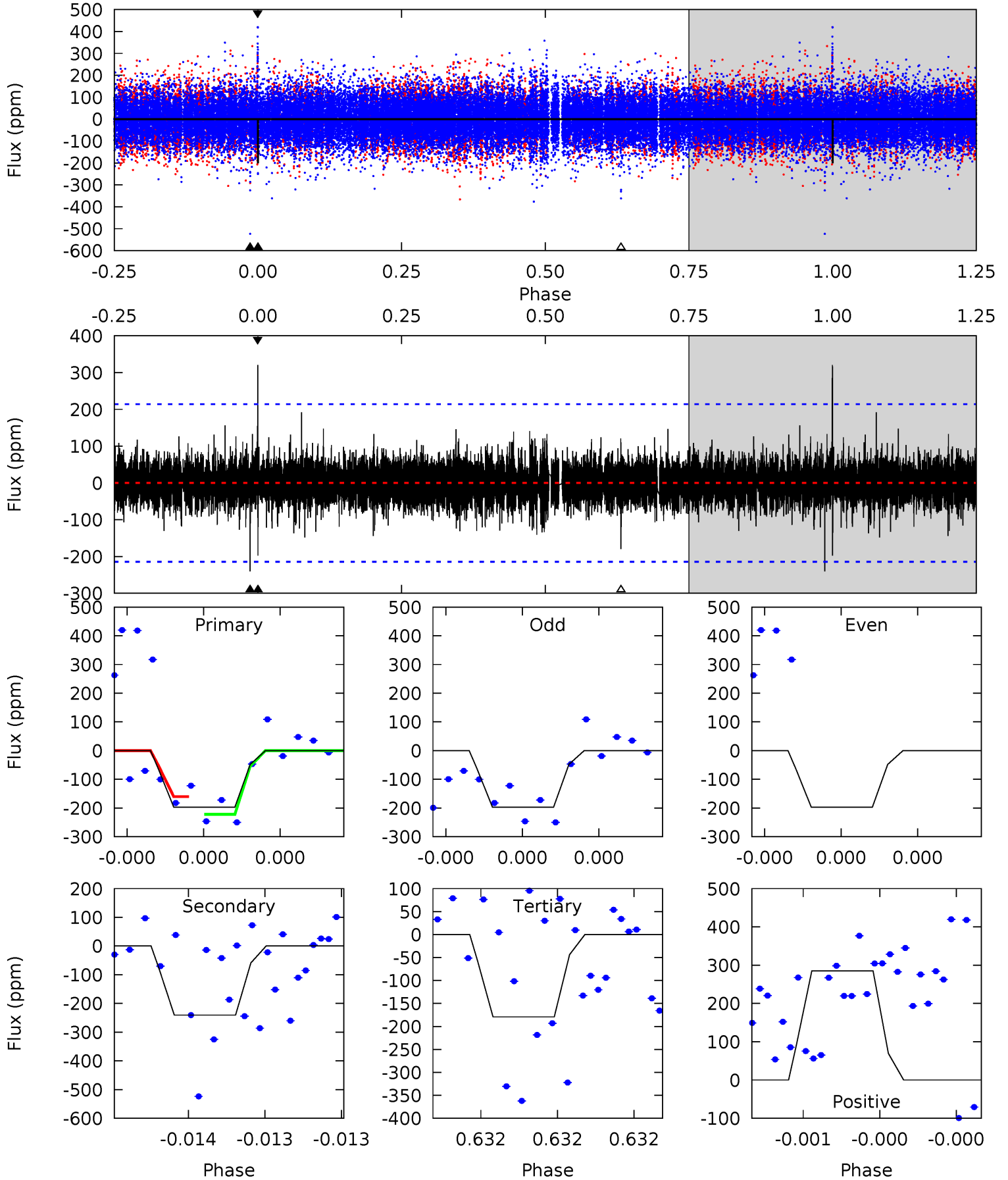
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.59	4.86	4.81	5.78	5.68	3.65	1.20	-1.22	-2.19	0.05	-0.92	0.56	1.00	0.54	0.74



Alt Model-Shift Uniqueness Test

009291039-02, P = 462.465952 Days, E = 22.924155 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.25	6.42	4.78	7.60	5.71	3.69	0.91	0.47	-2.35	1.64	-1.18	0	1.00	0.57	0.72



Stellar Parameters For KIC 009291039

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6017^{+163}_{-181}	$4.300^{+0.135}_{-0.135}$	$0.040^{+0.250}_{-0.300}$	$1.210^{+0.245}_{-0.200}$	$1.064^{+0.138}_{-0.126}$	$0.846^{+0.532}_{-0.325}$
	+3%/-3%	+3%/-3%	+625%/-750%	+20%/-17%	+13%/-12%	+63%/-38%
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 009291039-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-149 ± 31	$4.27^{+4.25}_{-2.94}$	375^{+22}_{-19}	3992^{+2586}_{-812}	6138^{+61796}_{-4654}
Alt.	-241 ± 38	$4.22^{+4.40}_{-2.81}$	374^{+20}_{-23}	4385^{+2705}_{-919}	10447^{+84644}_{-7938}

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

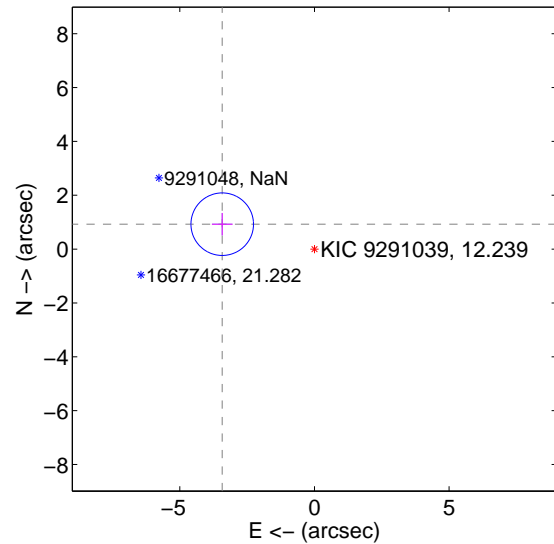
Supplemental centroid analysis for 009291039-02. Kepler magnitude: 12.24. Transit SNR 2.83

There are 1 quarters with good PRF difference image offsets

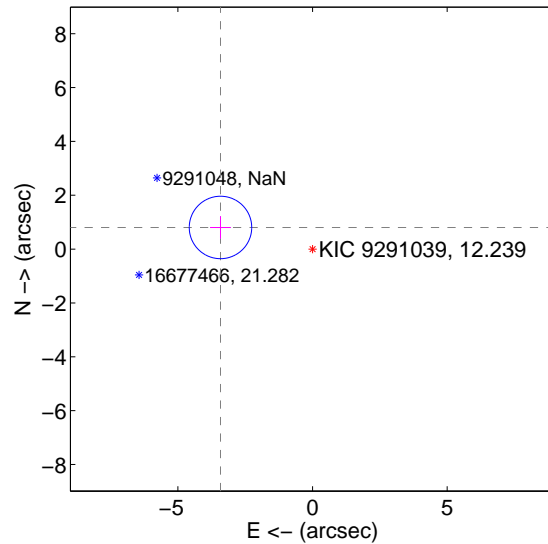
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.549 \pm 0.387	9.16	3.426 \pm 0.385	0.926 \pm 0.418
PRF-fit source offset from KIC position	3.512 \pm 0.387	9.08	3.419 \pm 0.385	0.804 \pm 0.418
photometric centroid source offset	0.20 \pm 2.43	0.08	-0.07 \pm 2.25	-0.18 \pm 2.46

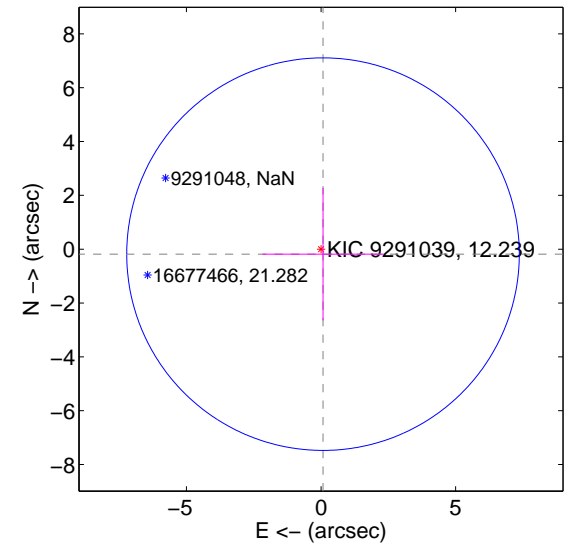
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

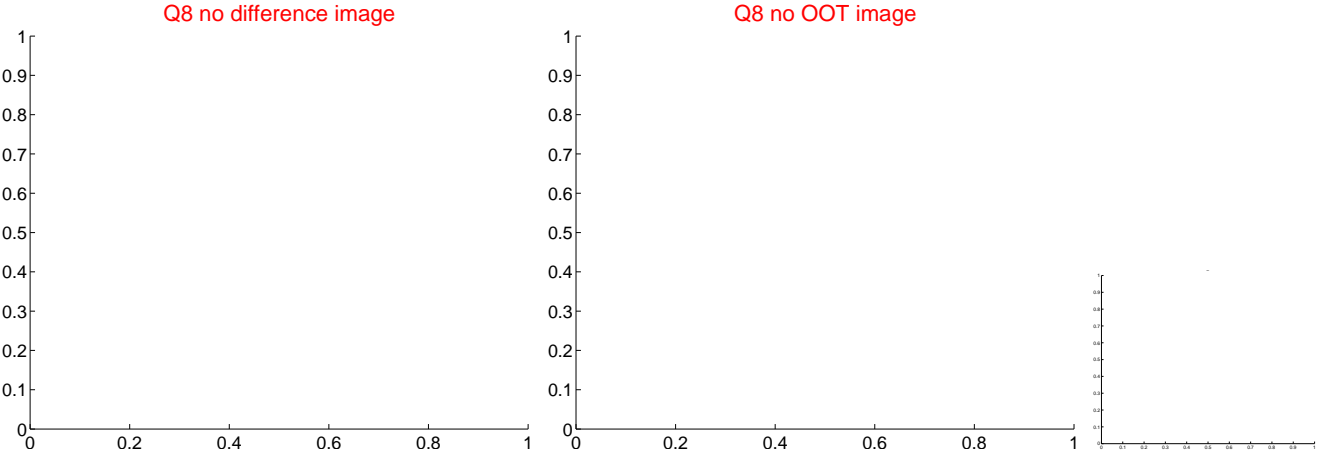
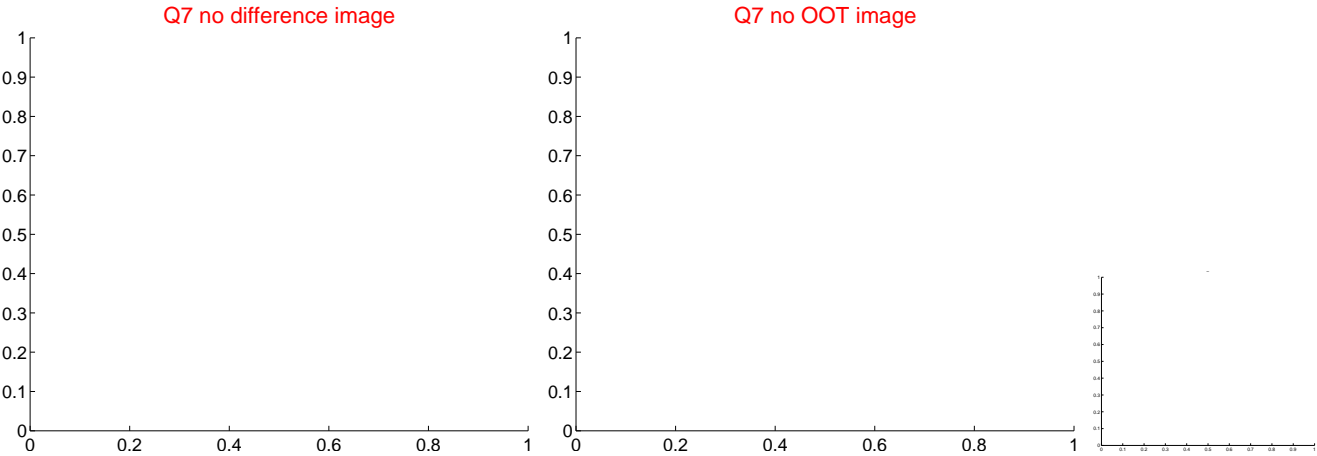
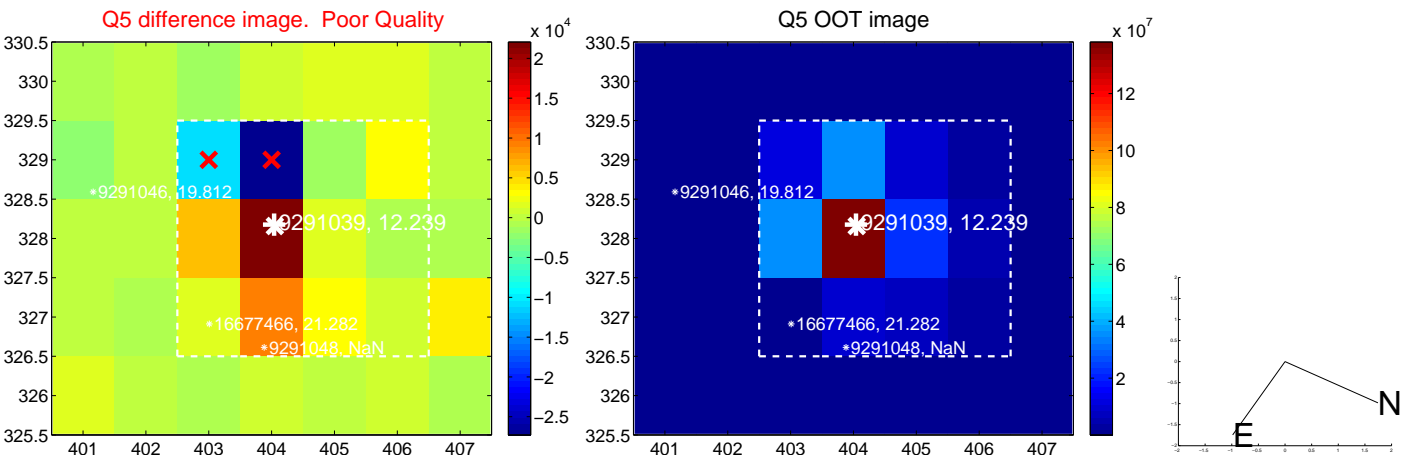


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

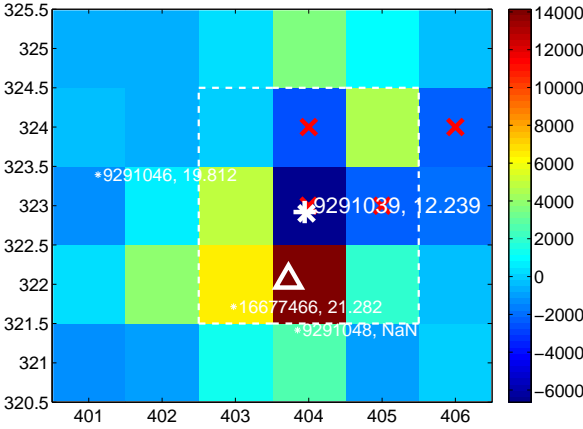
Q9 no difference image



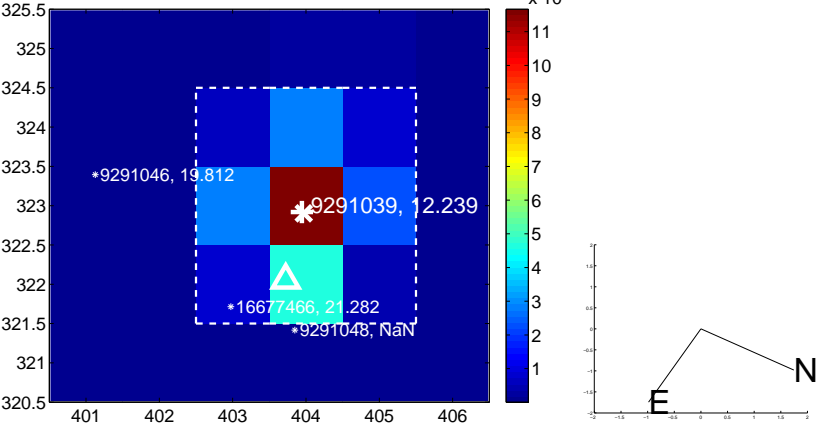
Q9 no OOT image



Q10 difference image



Q10 OOT image



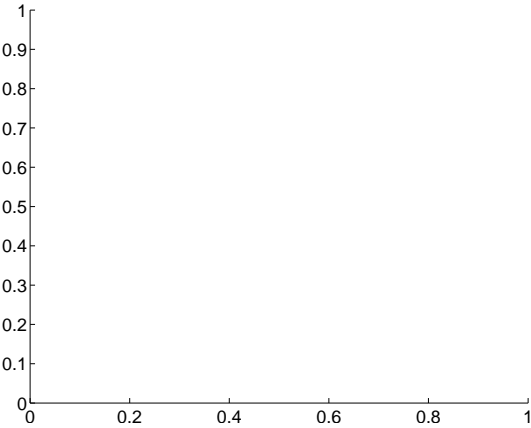
Q11 no difference image



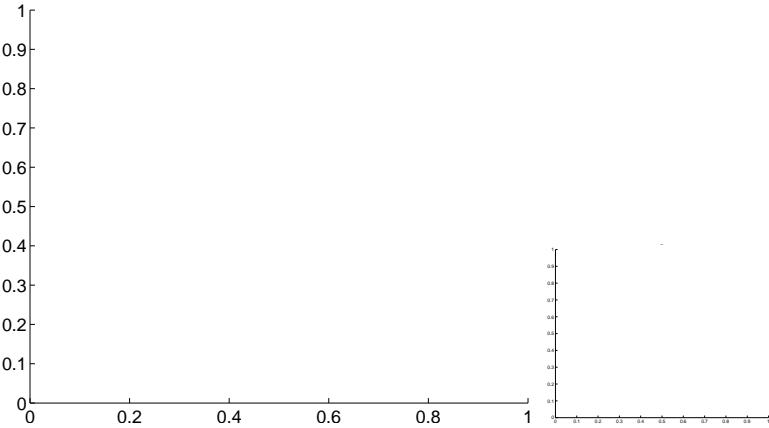
Q11 no OOT image



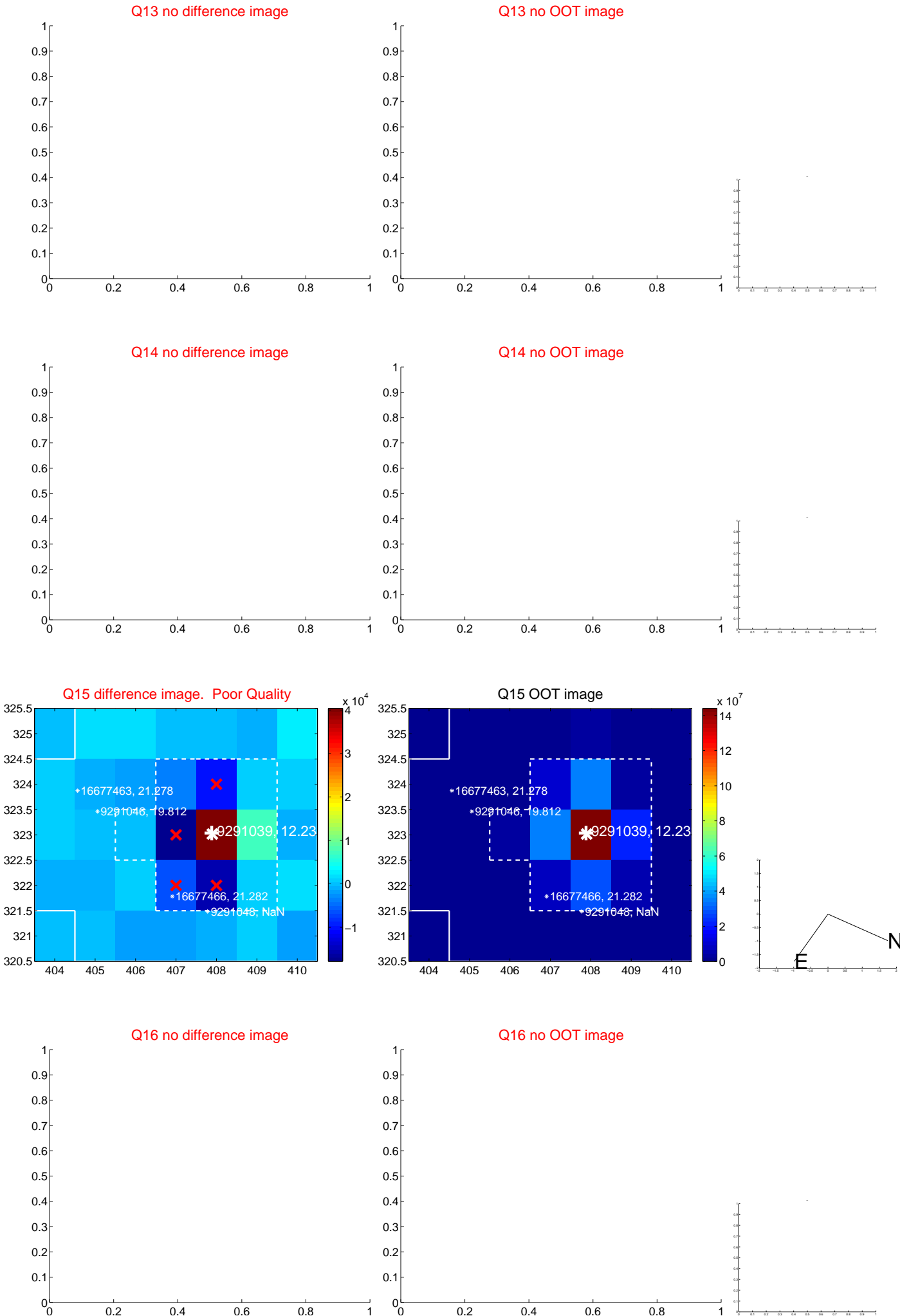
Q12 no difference image



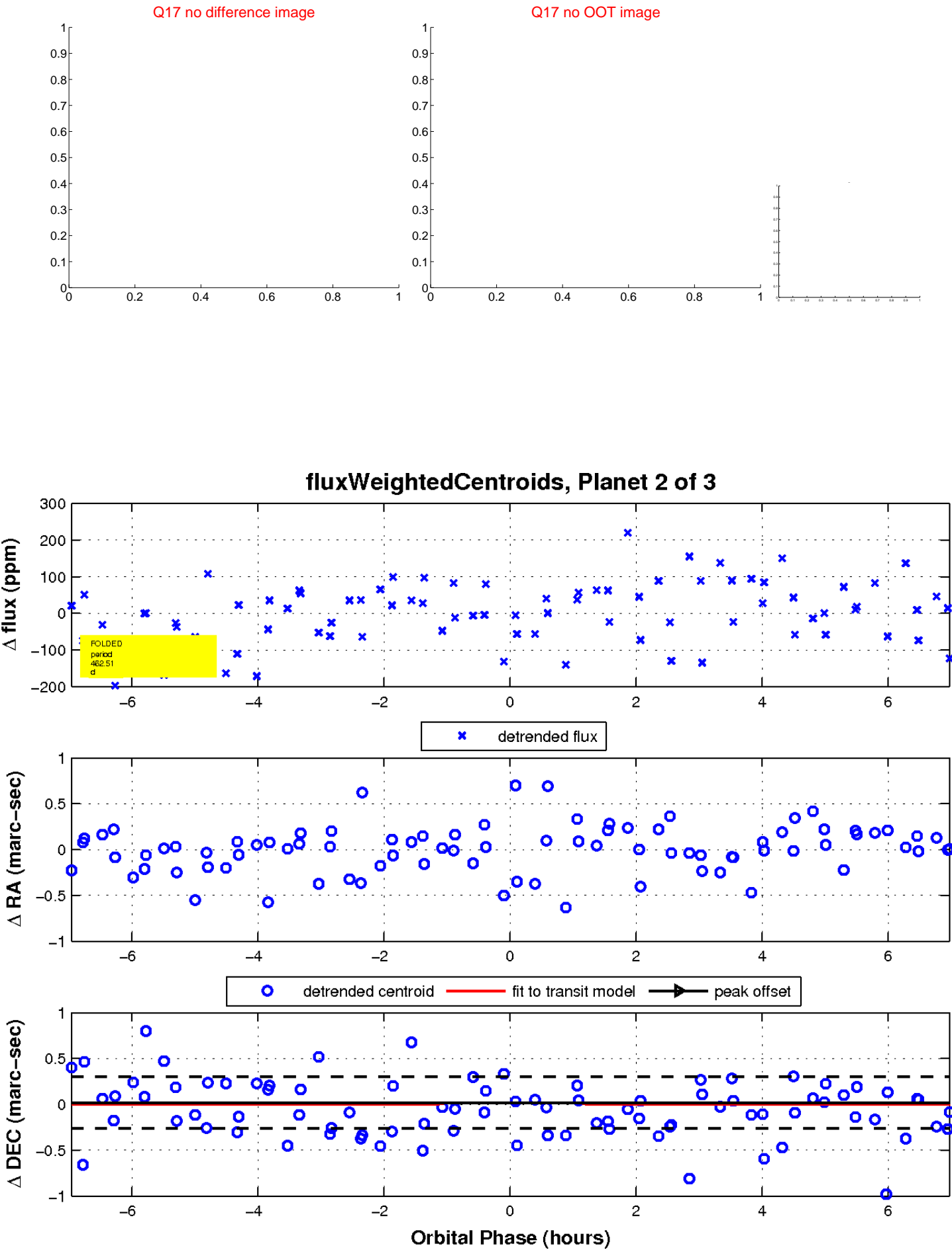
Q12 no OOT image



white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.

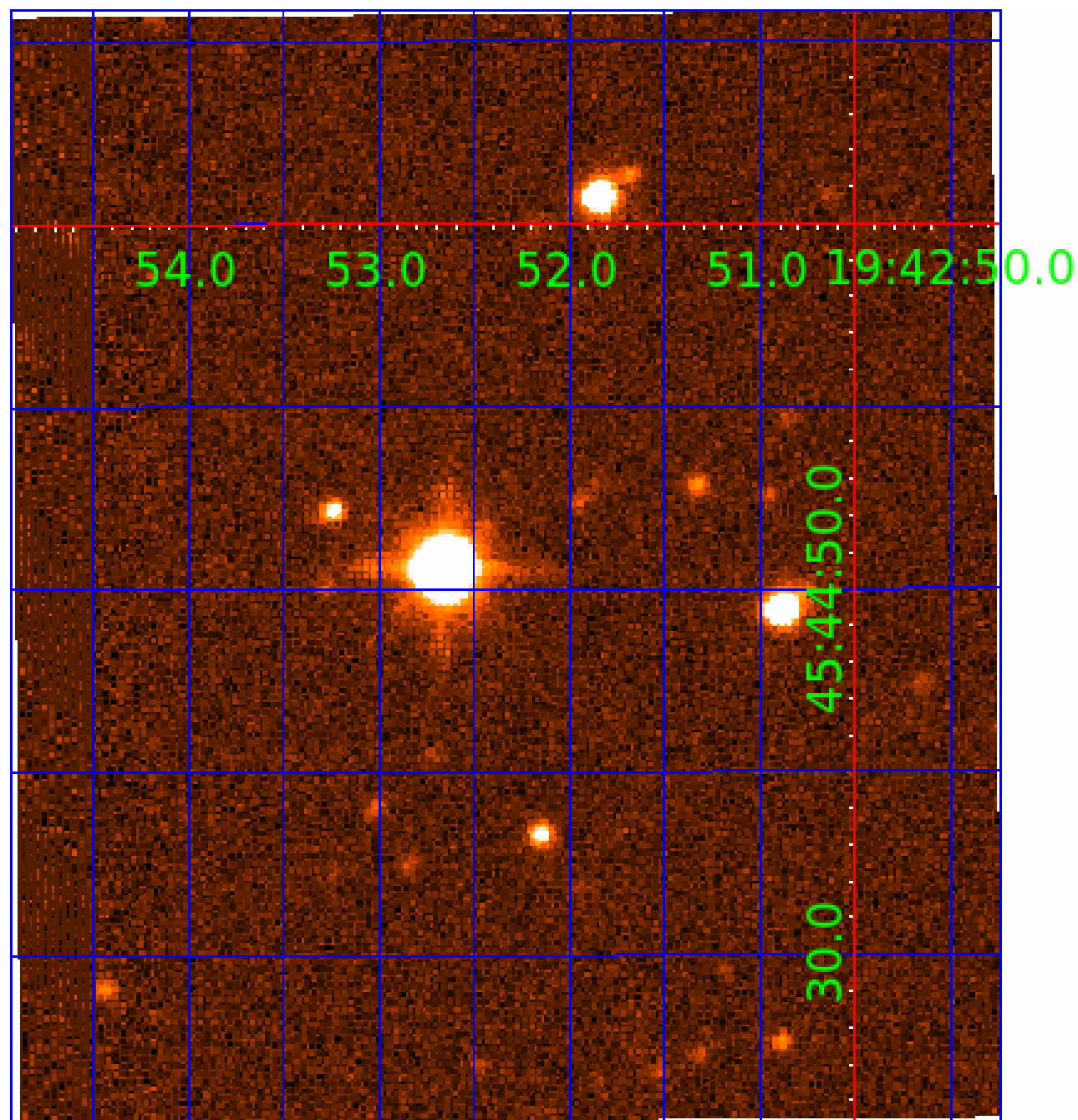


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009291039

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})
009291039-01	OBS	3230.01	8.808486	134.258527	50.1	20.088	16.7	18.0	1.21	6017	1.38	236.45
009291039-02	OBS	No	462.505423	485.357117	113.6	2.395	11.3	2.8	1.21	6017	1.53	1.20
009291039-03	OBS	3230.02	3.796526	135.177431	20.9	9.450	11.1	11.5	1.21	6017	0.65	726.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009291039-01	OBS	FP	0.00	1	0	0	0	LPP_DV
009291039-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009291039-03	OBS	FP	0.00	1	0	0	1	LPP_DV—EPHEM_MATCH

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.

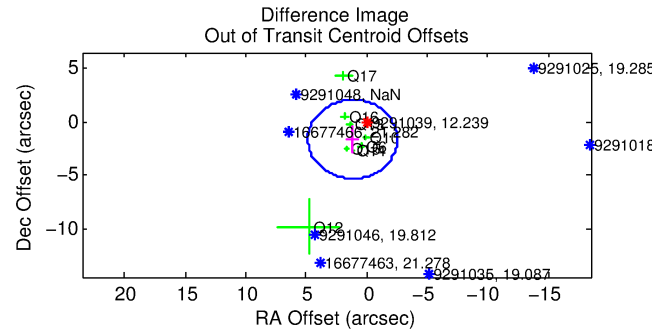
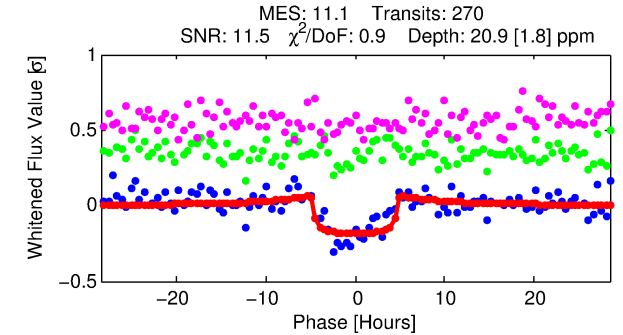
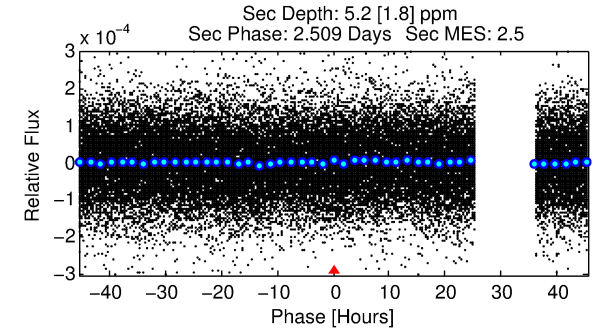
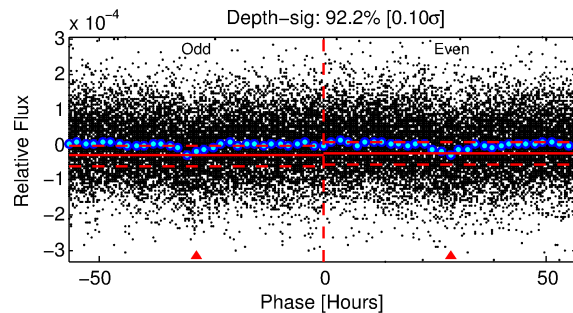
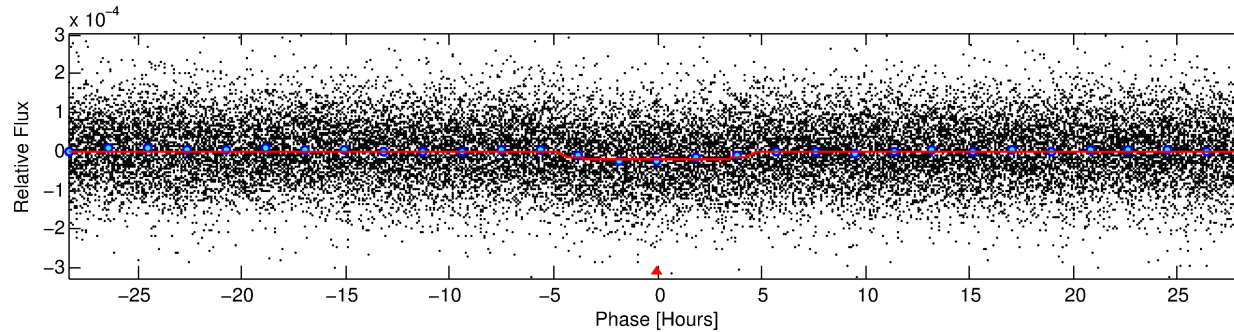
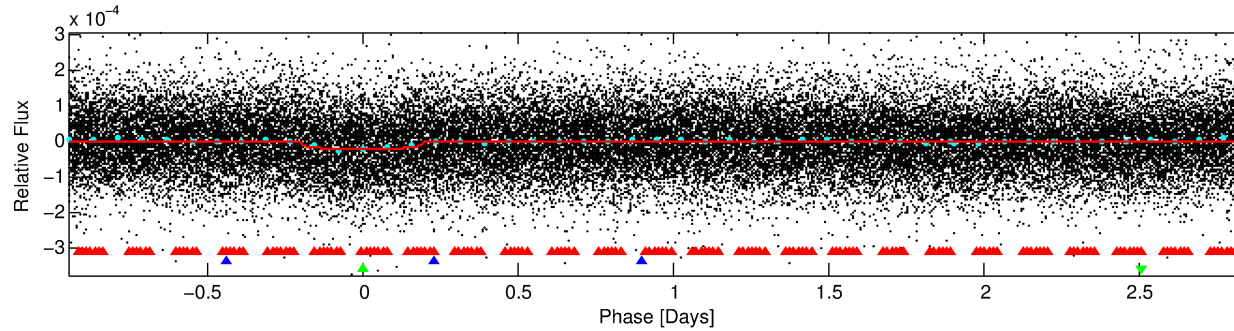
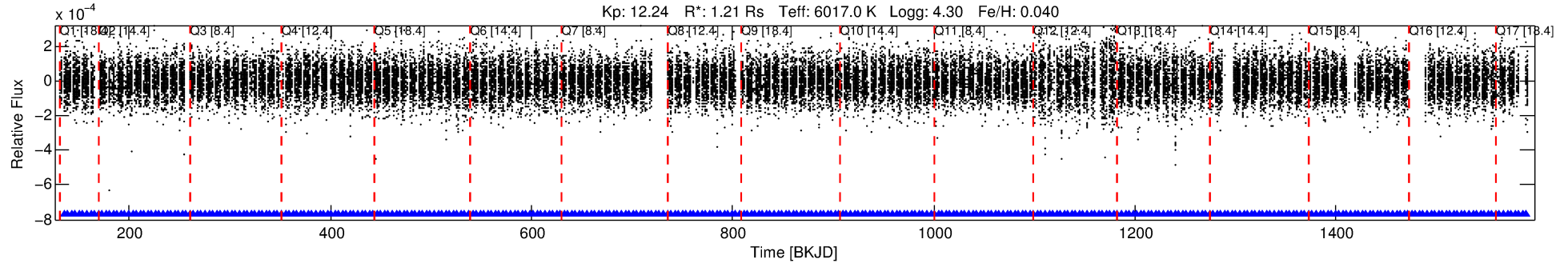
Ephemeris Match Information For 009291039-03

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist ($''$)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
009291039-03	9291039	7155.01	9291368	1:1	304.5	77	1	14.01	12.24	25957.00	Col-Anomaly	0	0.81	2.66

Notes: P₁:P₂ is the period ratio. Dist is the distance in arcseconds. Δ Row and Δ Col are the number of pixels apart in row and column. m₂ and m₁ are the magnitudes of the parent and child. D₂/D₁ is the parent's transit depth divided by the child's. σ_P and σ_T are the significance of the match in period and epoch. For a match to be considered significant $\sigma_P < 5.0$ and $\sigma_T < 5.0$. Matches which have σ_P and σ_T very close to this cutoff should receive extra scrutiny, especially if the period ratio is very large.

DV One-Page Summary

KIC: 9291039 Candidate: 3 of 3 Period: 3.797 d
KOI: K03230.02 Corr: 0.951



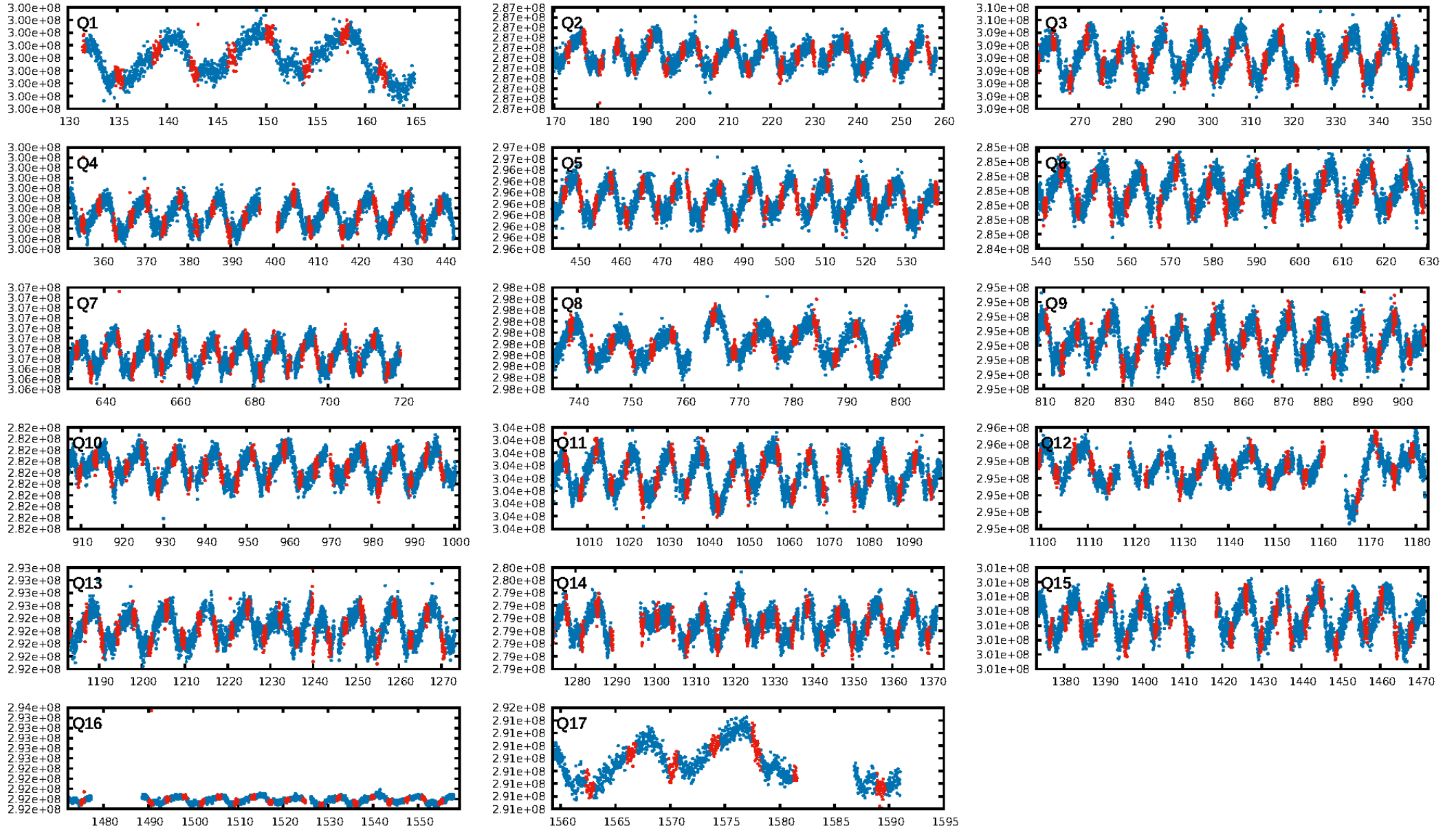
DV Fit Results:

Period = 3.79653 [0.00004] d
Epoch = 135.1774 [0.0071] BKJD
Rp/R* = 0.0049 [0.0010]
a/R* = 1.71 [1.17]
b = 0.89 [0.25]
Seff = 726.26 [199.75]
Teq = 1324 [91] K
Rp = 0.65 [0.19] Re
a = 0.0487 [0.0083] AU
Ag = 16.01 [9.48] [1.58 σ]
Teffp = 4094 [564] K [4.85 σ]

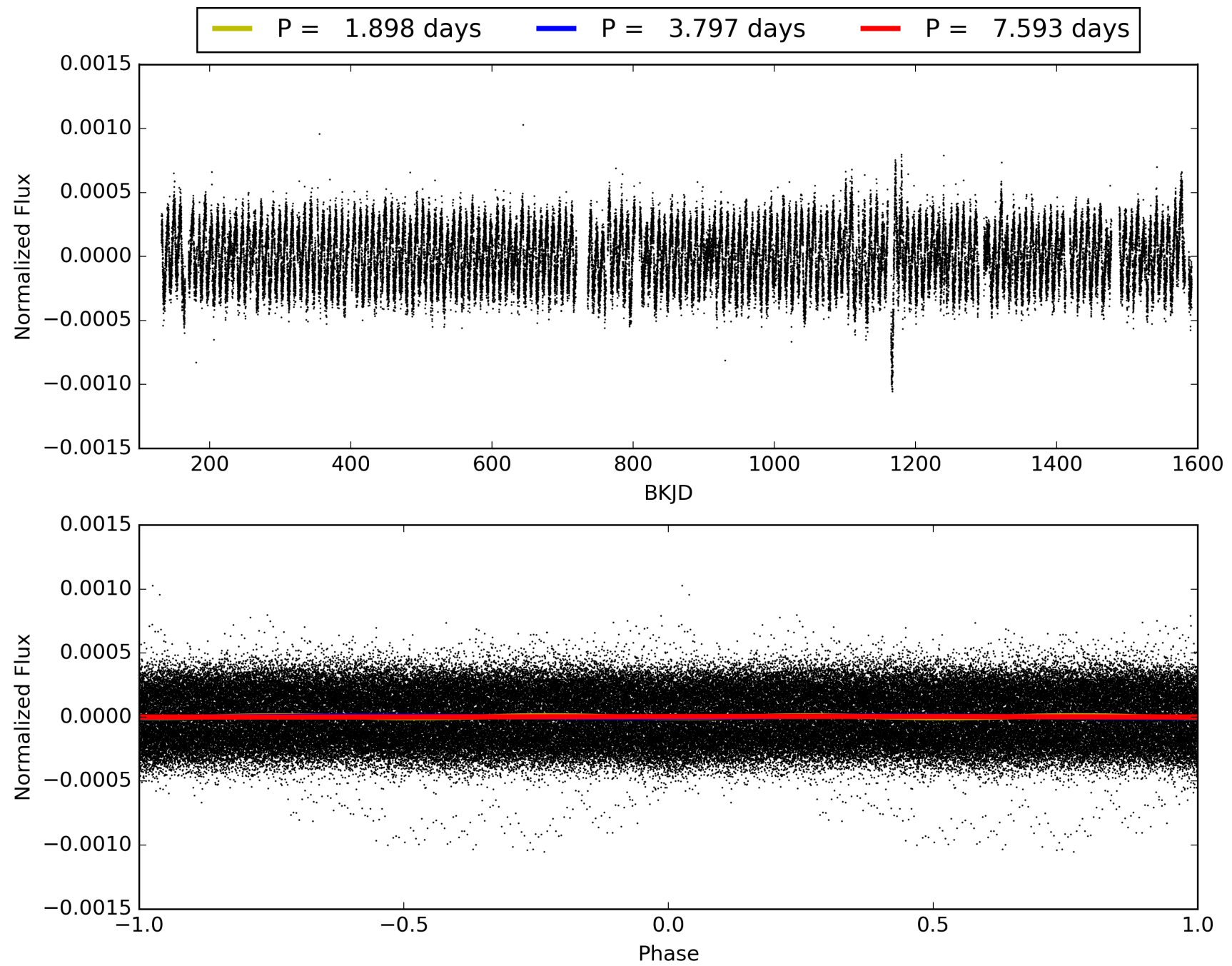
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [5.42 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 3.53e-22
RollingBand-fgt: 1.00 [258/258]
GhostDiagnostic-chr: 3.199
Centroid-sig: N/A
Centroid-so: 2.220 arcsec [3.12 σ]
OotOffset-rm: 2.008 arcsec [1.63 σ]
KicOffset-rm: 2.095 arcsec [1.66 σ]
OotOffset-st: 3/1/2/2 [8]
KicOffset-st: 3/1/2/2 [8]
DiffImageQuality-fgm: 0.75 [6/8]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 009291039-03, PDC Light Curves

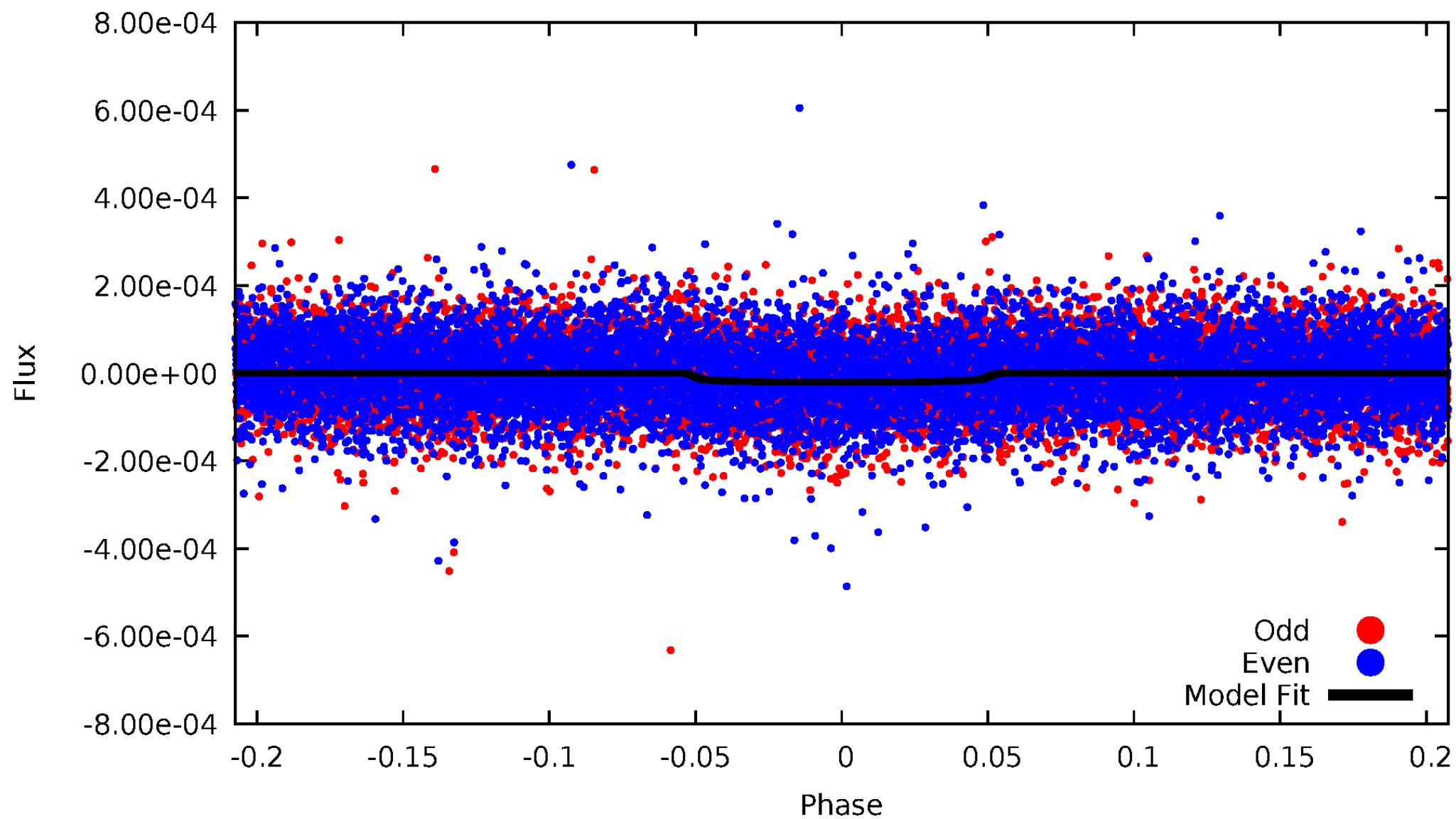


TCE 009291039-03



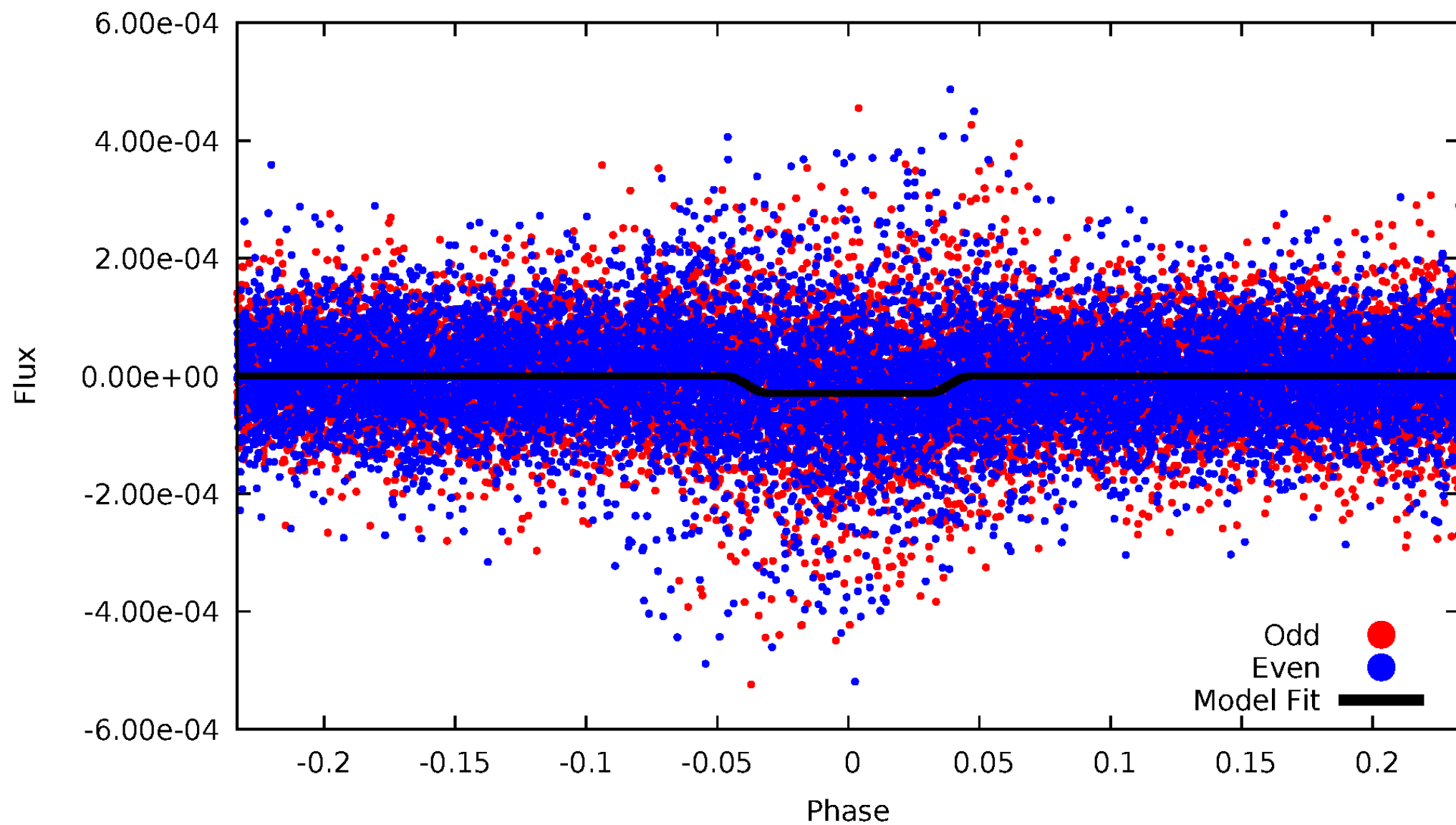
DV Odd/Even

TCE 009291039-03



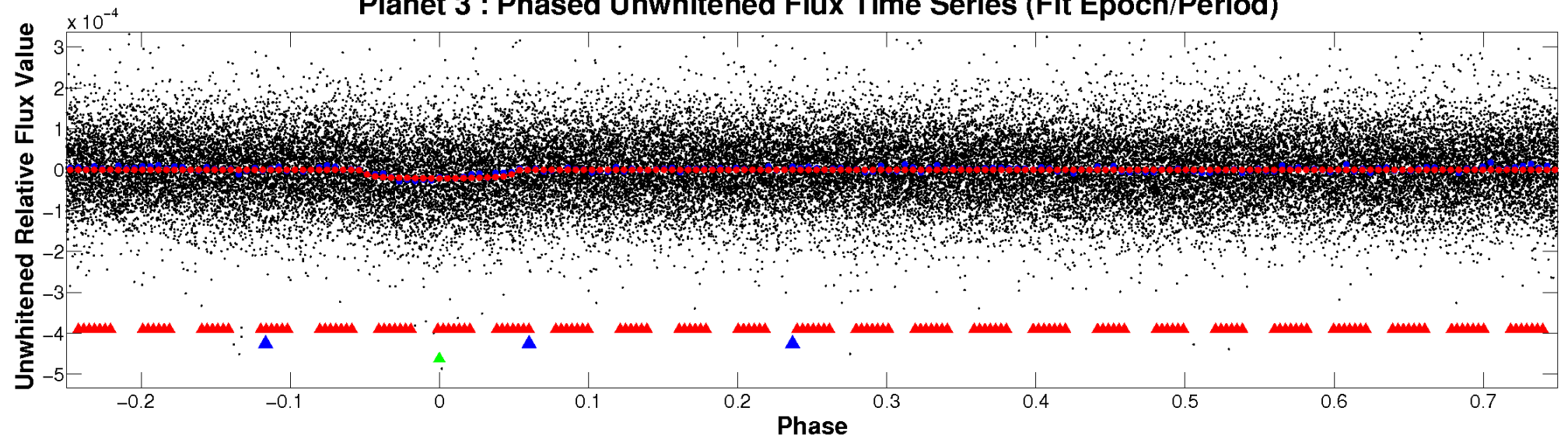
ALT Odd/Even

TCE 009291039-03

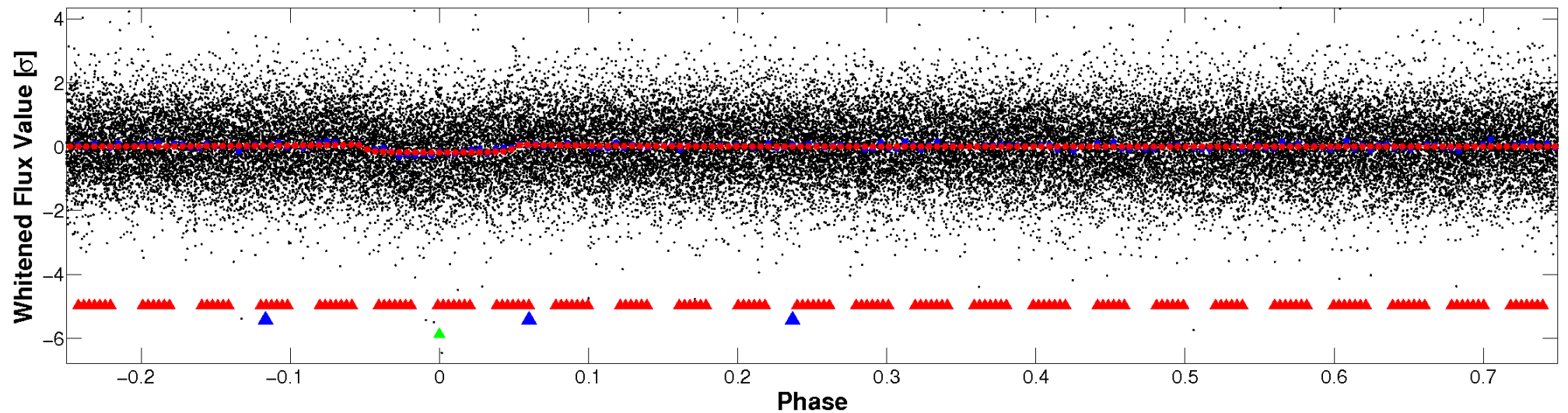


Non-Whitened Vs. Whitened Light Curve

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

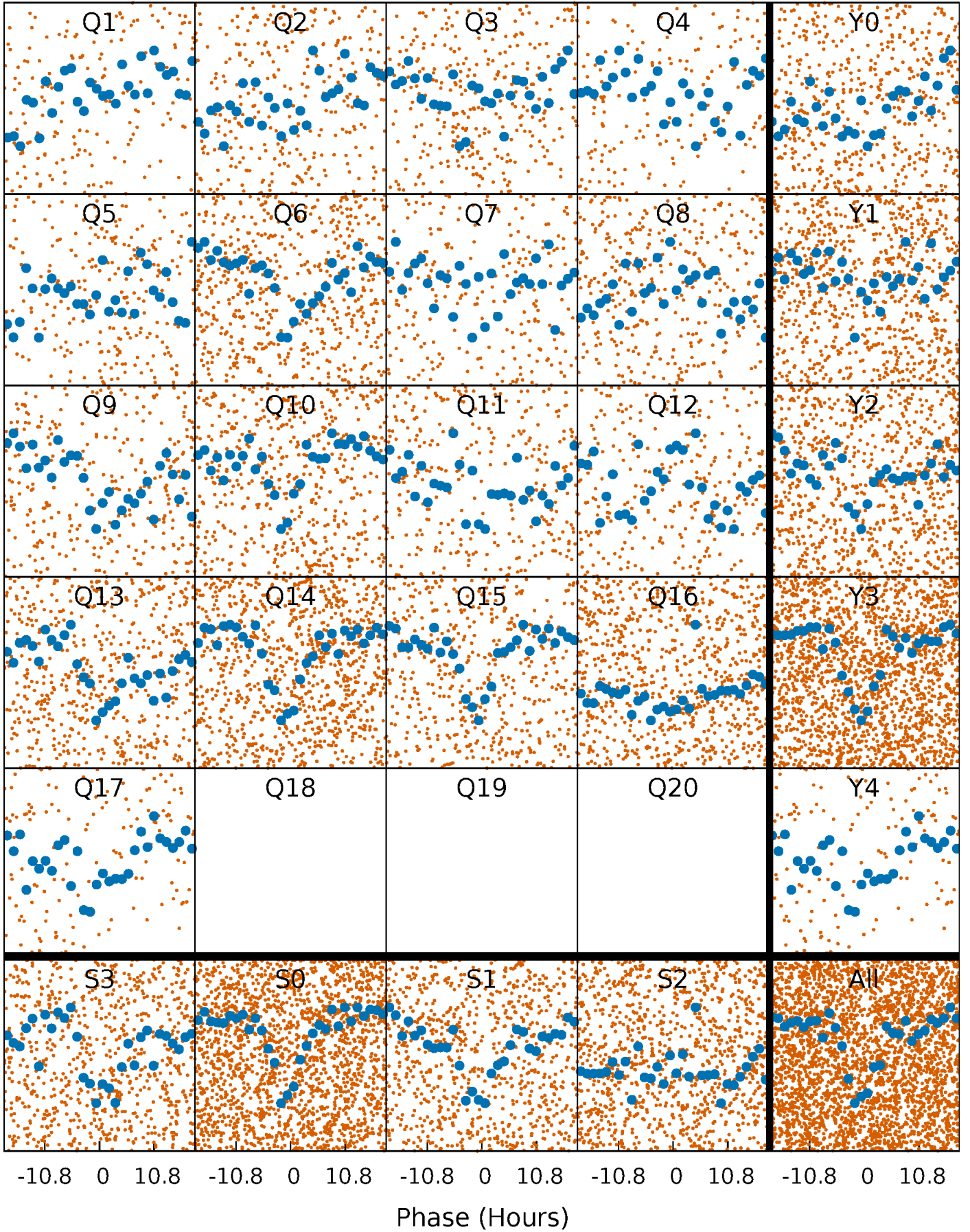


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



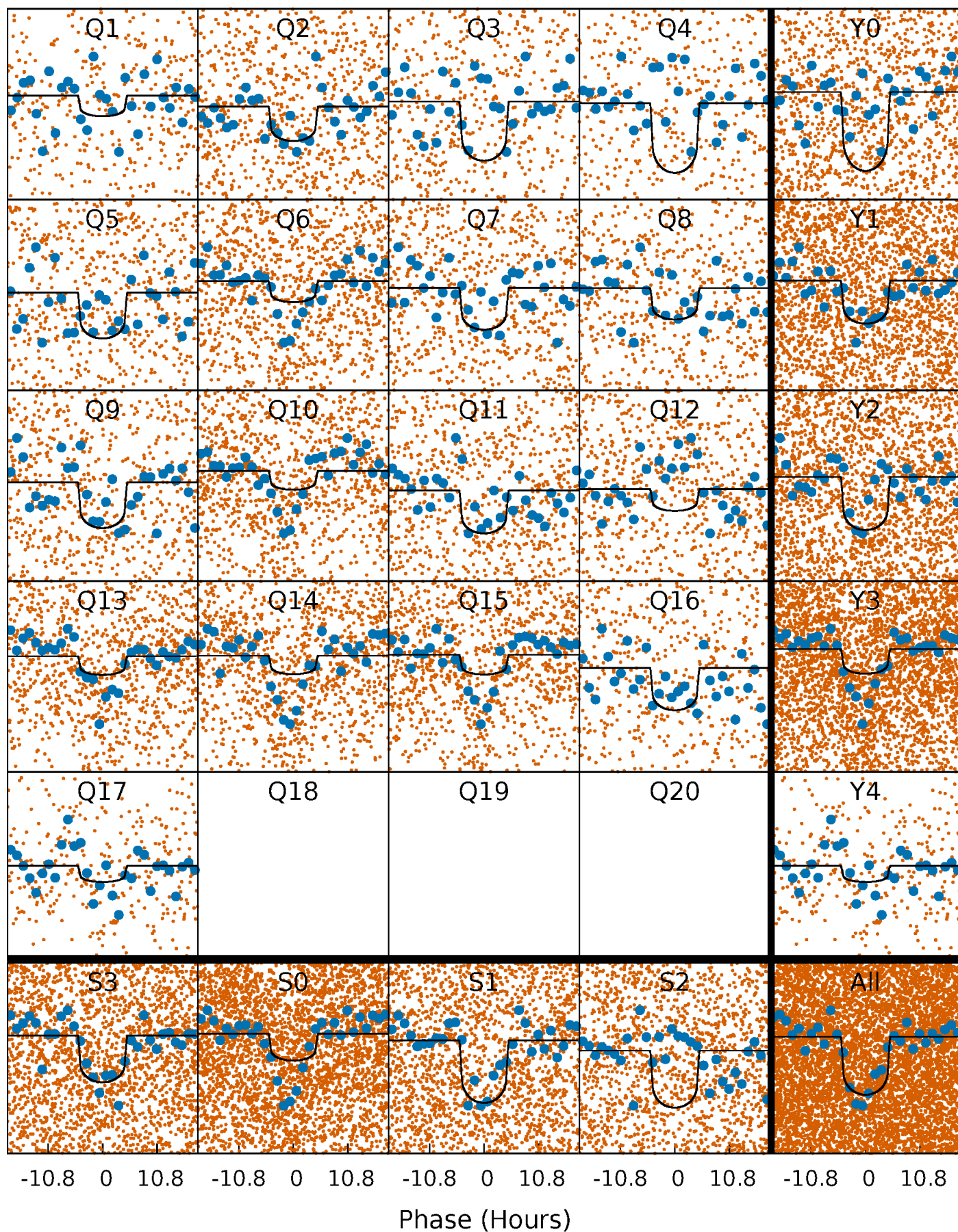
PDC Quarter-Phased Transit Curves

TCE 009291039-03 P= 3.796526 Days $T_0=135.177431$ (BKJD)



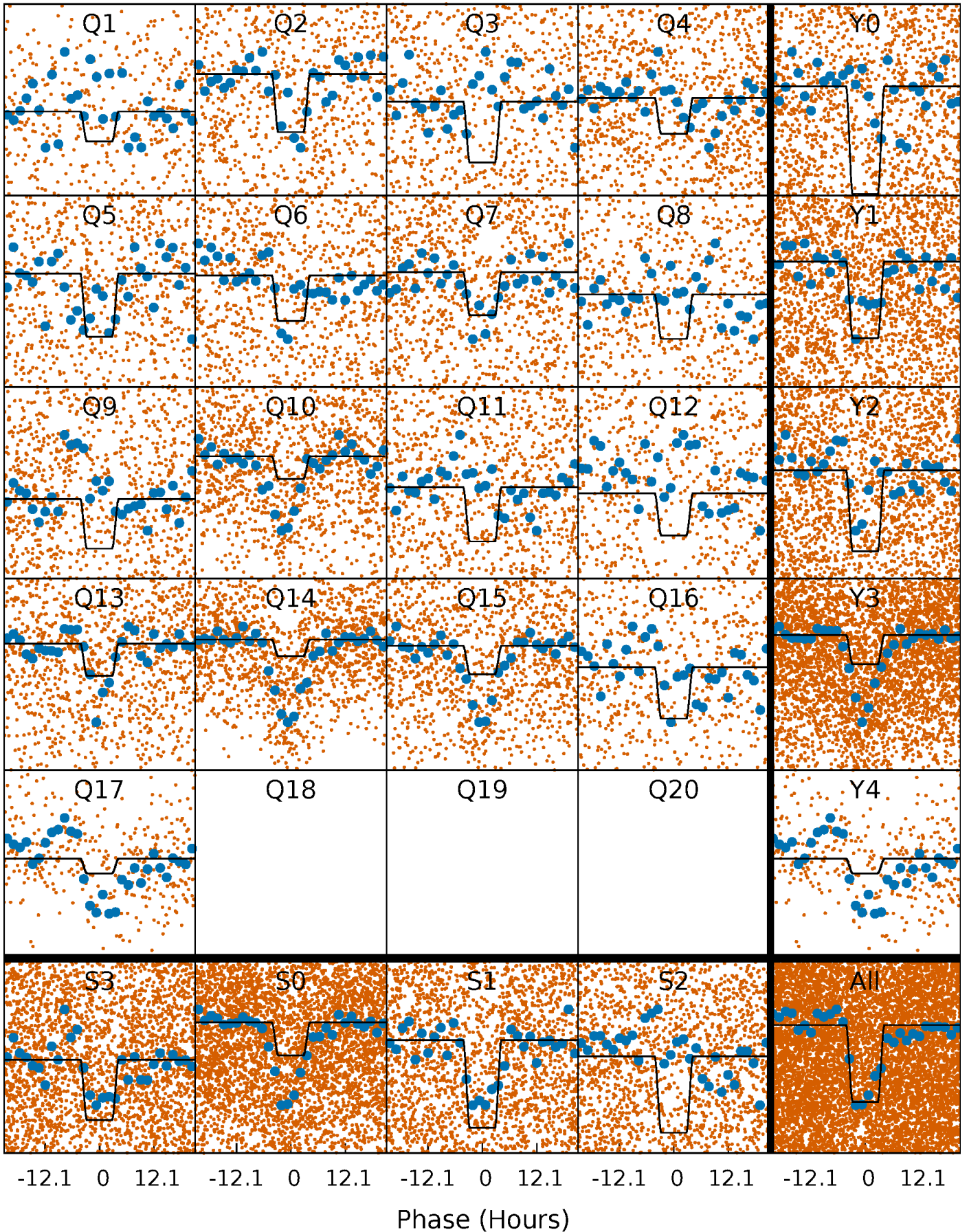
DV Quarter-Phased Transit Curves

TCE 009291039-03 P= 3.796526 Days $T_0=135.177431$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

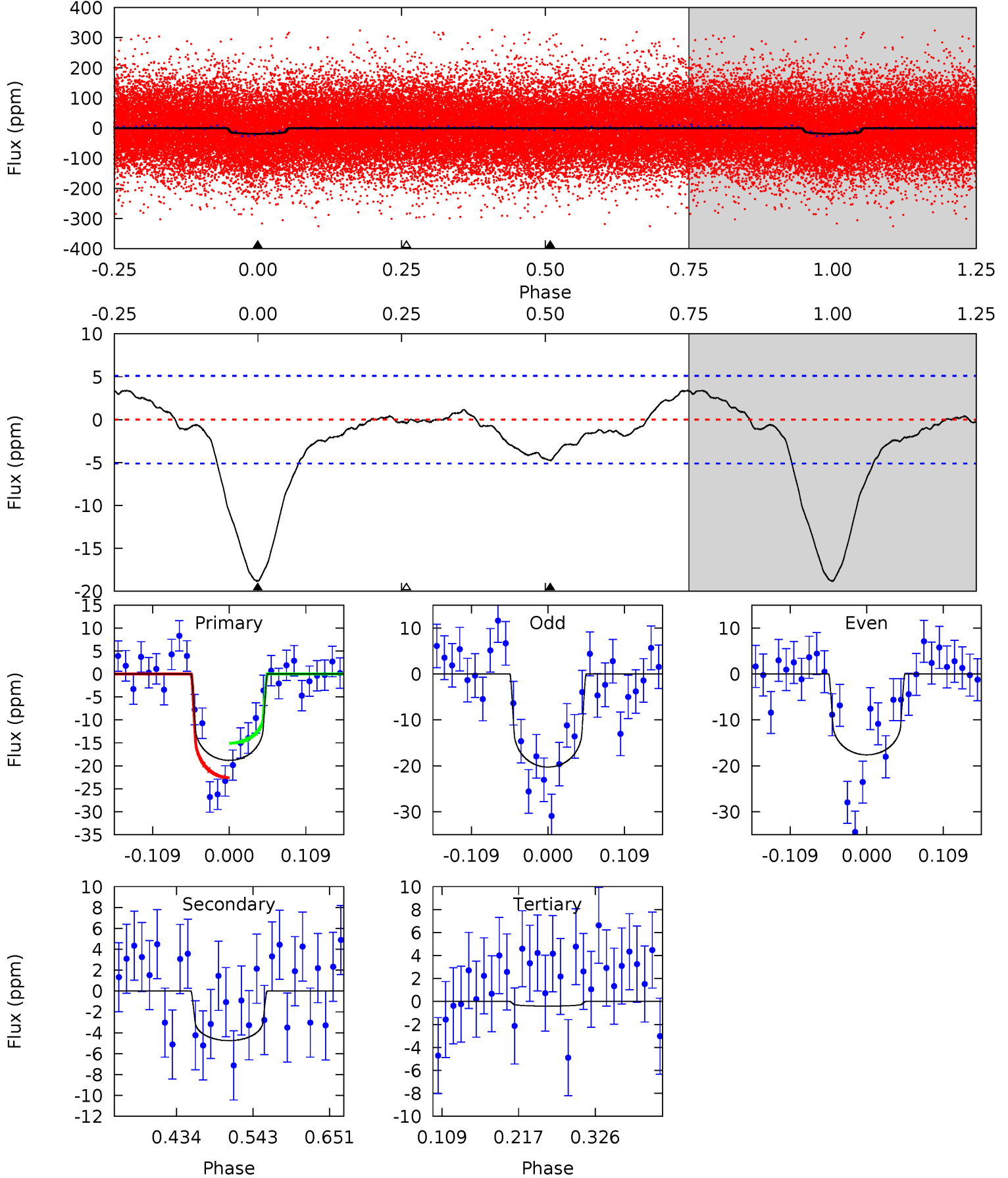
TCE 009291039-03 P= 3.796486 Days $T_0=135.185737$ (BKJD)



DV Model-Shift Uniqueness Test

009291039-03, P = 3.796526 Days, E = 131.380905 Days

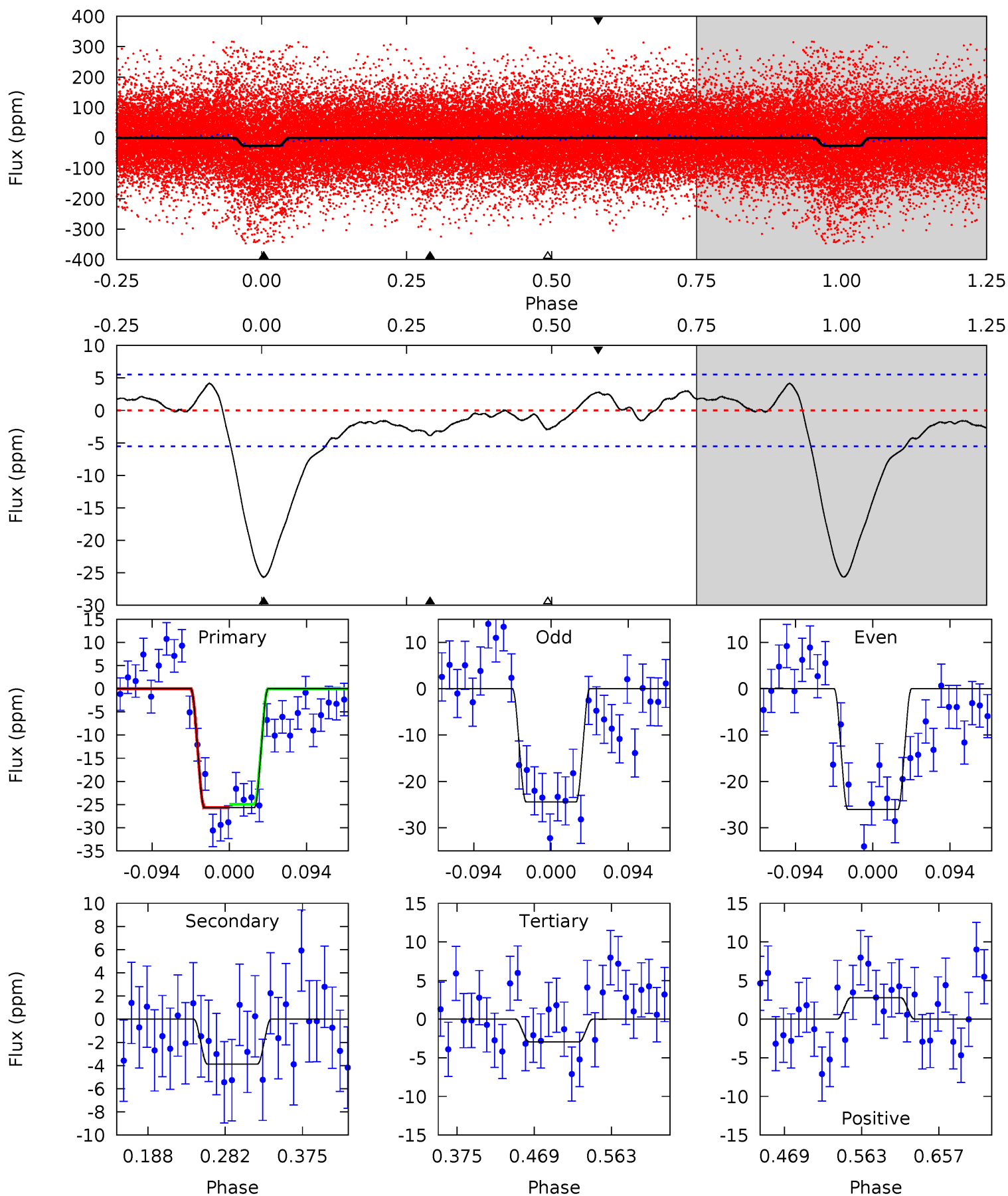
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.7	4.23	0.36	0	4.55	1.60	1.38	16.4	16.7	3.87	4.23	1.19	1.03	0.15	3.35



Alt Model-Shift Uniqueness Test

009291039-03, P = 3.796486 Days, E = 131.389251 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.2	3.21	2.43	2.30	4.58	1.68	1.74	18.8	18.9	0.78	0.90	0.68	0.91	0.14	0.31



Stellar Parameters For KIC 009291039

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6017^{+163}_{-181}	$4.300^{+0.135}_{-0.135}$	$0.040^{+0.250}_{-0.300}$	$1.210^{+0.245}_{-0.200}$	$1.064^{+0.138}_{-0.126}$	$0.846^{+0.532}_{-0.325}$
	+3%/-3%	+3%/-3%	+625%/-750%	+20%/-17%	+13%/-12%	+63%/-38%
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 009291039-03 / KOI 3230.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-5 ± 1	$0.64^{+0.16}_{-0.14}$	1846^{+116}_{-106}	4213^{+435}_{-363}	15^{+10}_{-6}
Alt.	-4 ± 1	$0.72^{+0.16}_{-0.14}$	1852^{+102}_{-96}	3918^{+383}_{-323}	$9.758^{+6.455}_{-3.896}$

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

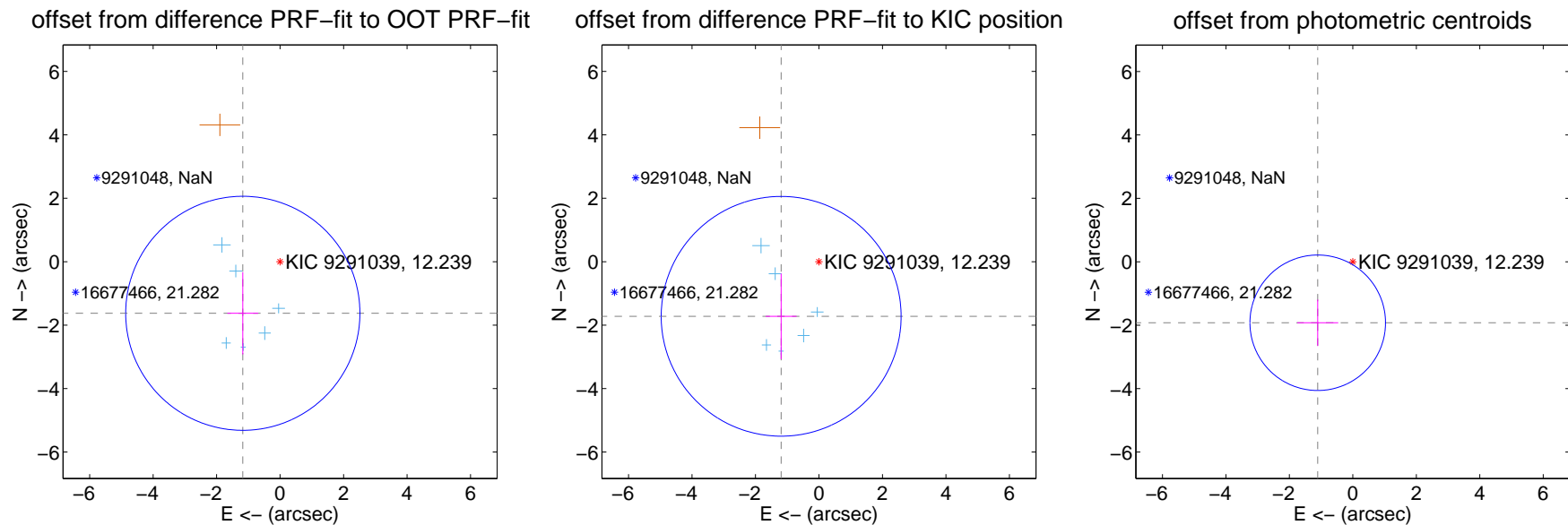
DV Centroid Data

Supplemental centroid analysis for 009291039-03. Kepler magnitude: 12.24. Transit SNR 11.50

There are 6 quarters with good PRF difference image offsets

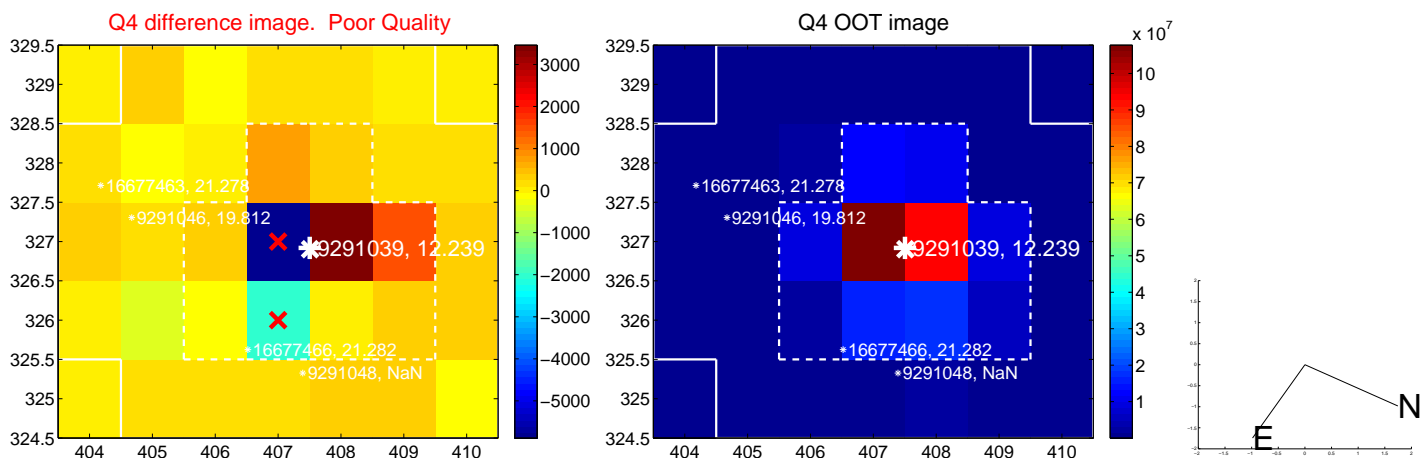
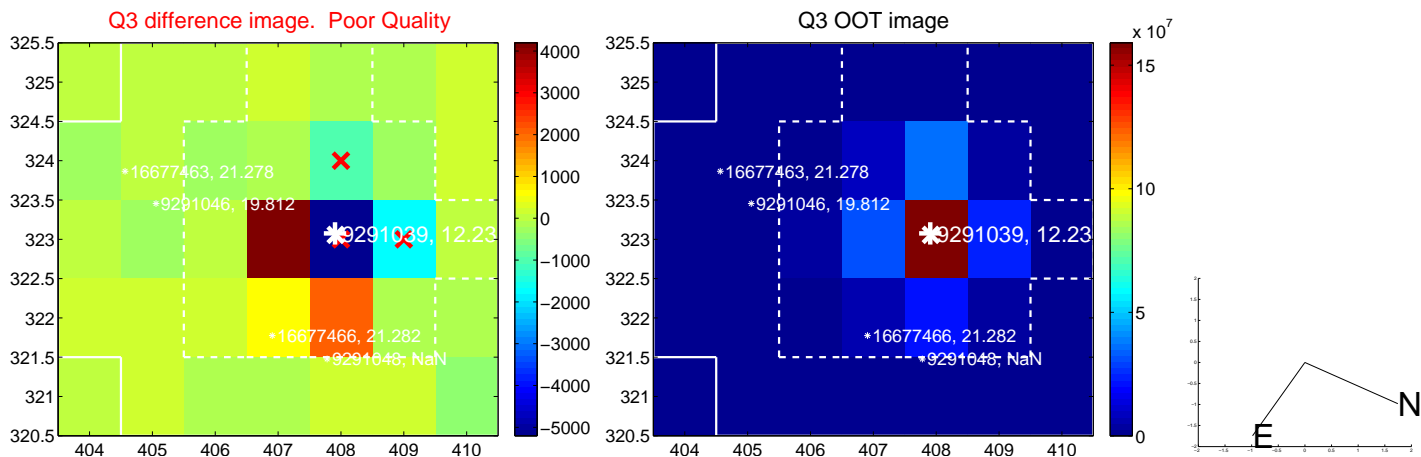
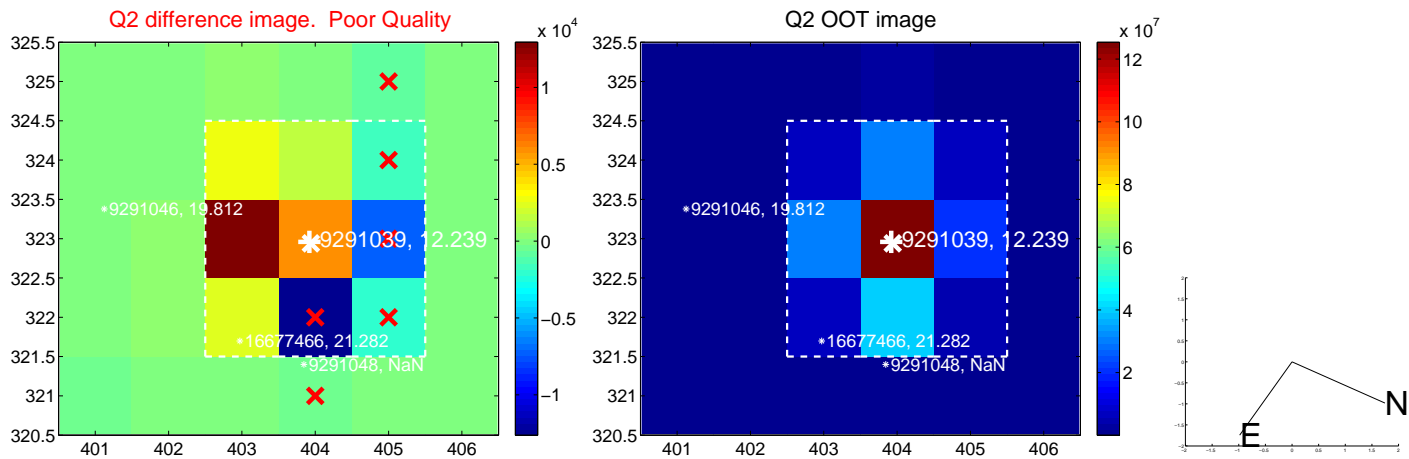
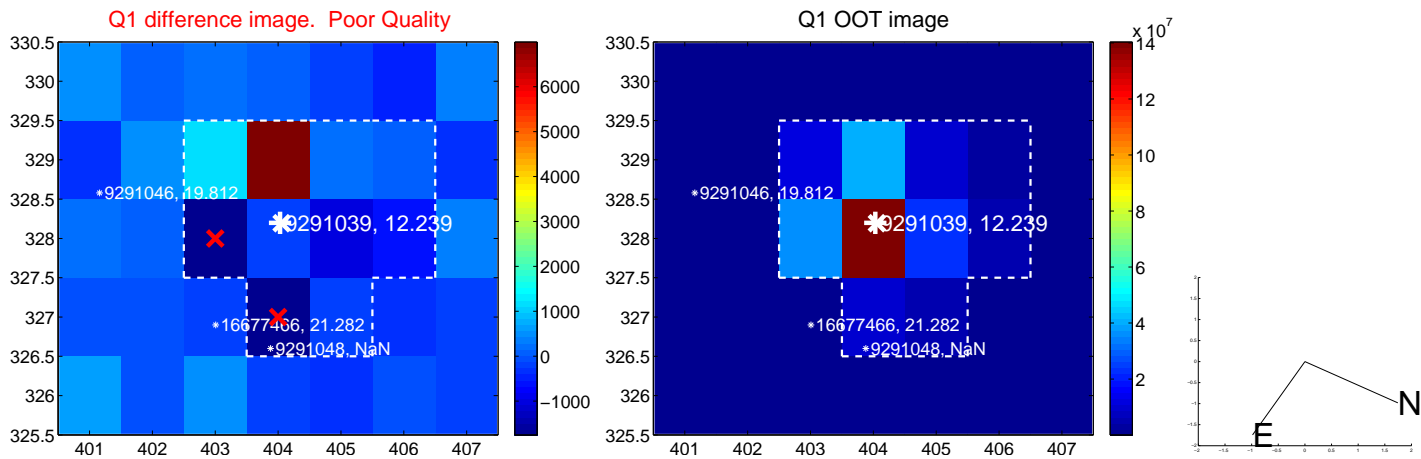
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.008 ± 1.230	1.63	1.176 ± 0.485	-1.627 ± 1.296
PRF-fit source offset from KIC position	2.095 ± 1.260	1.66	1.192 ± 0.486	-1.722 ± 1.350
photometric centroid source offset	2.22 ± 0.71	3.12	1.11 ± 0.65	-1.92 ± 0.73

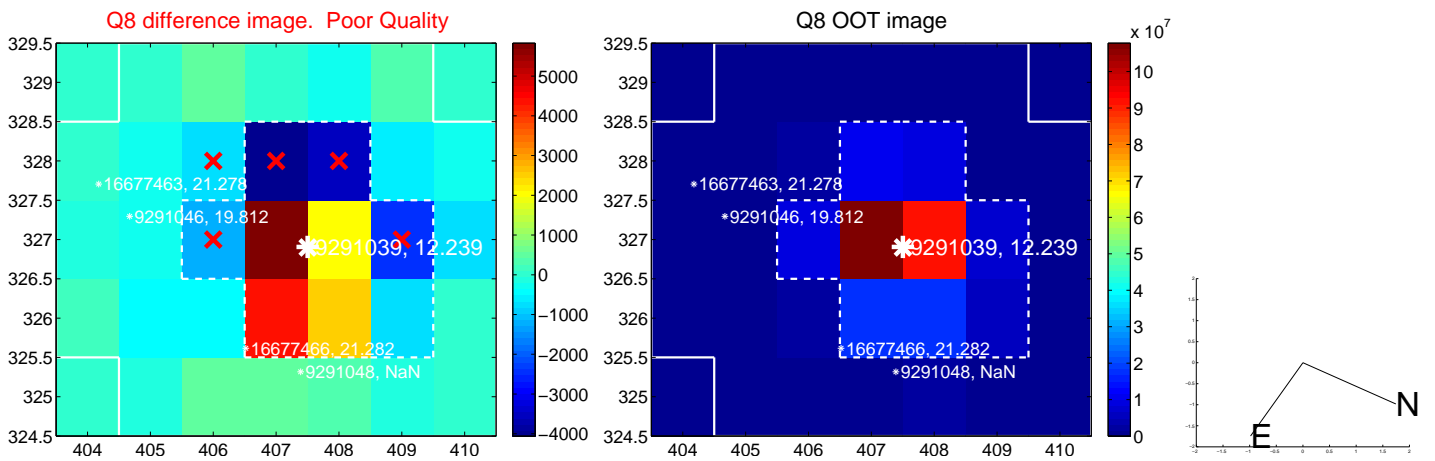
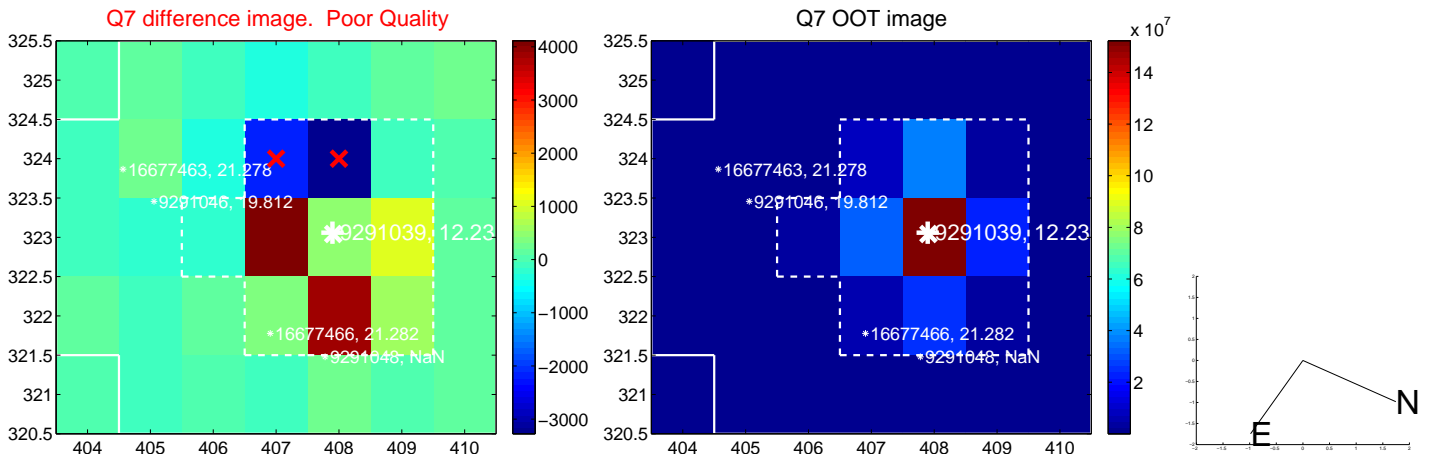
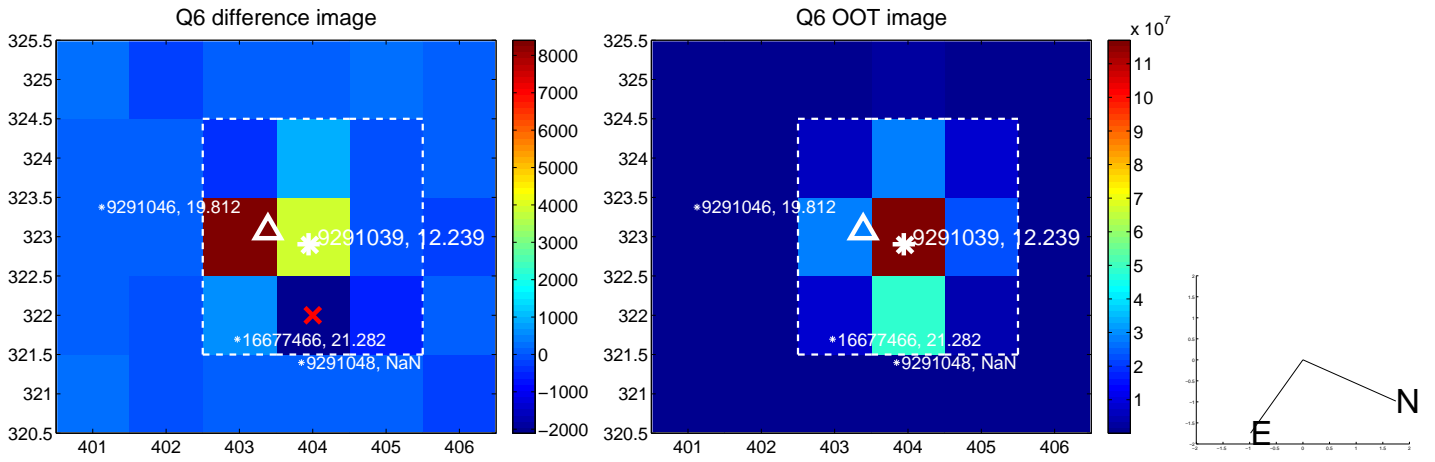
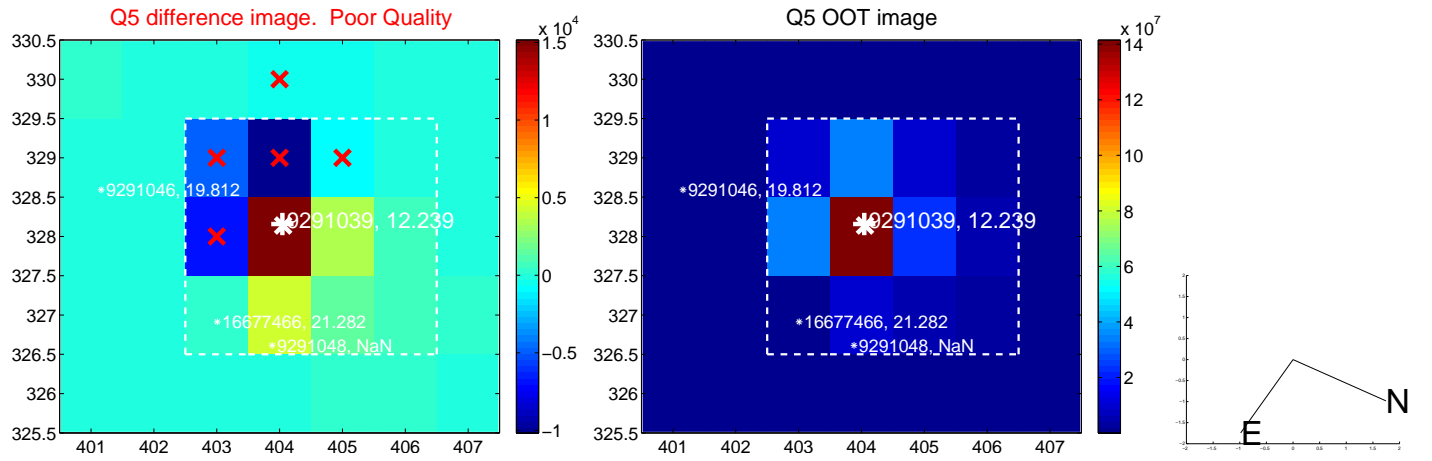


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

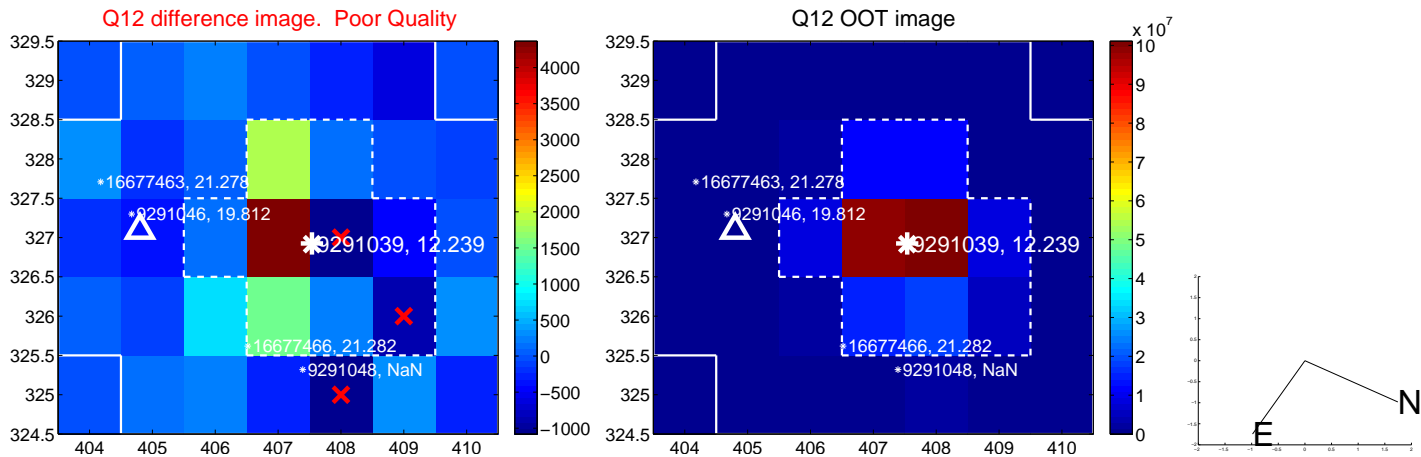
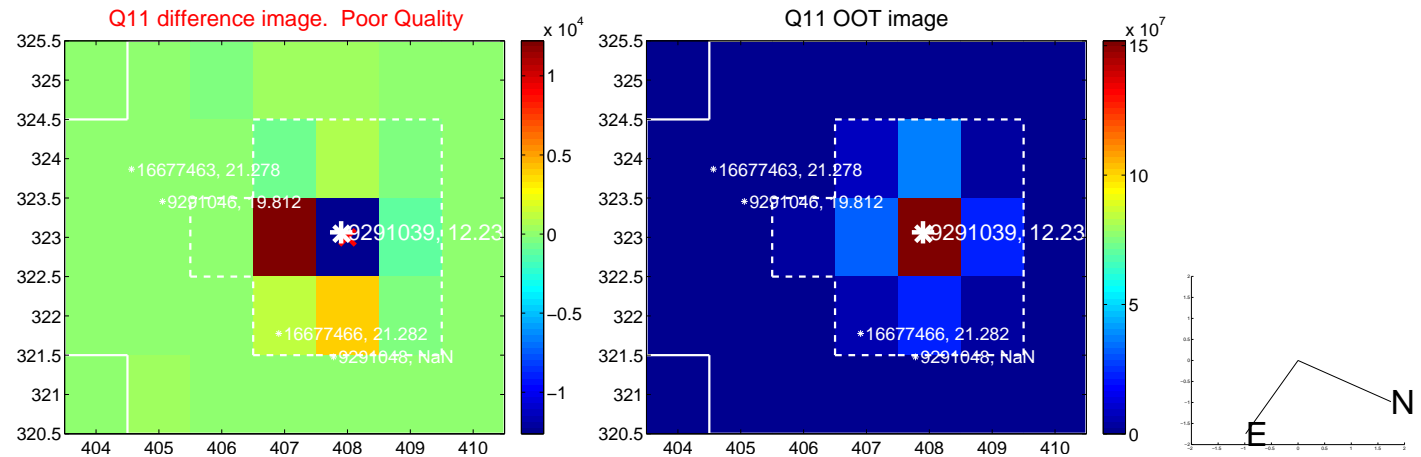
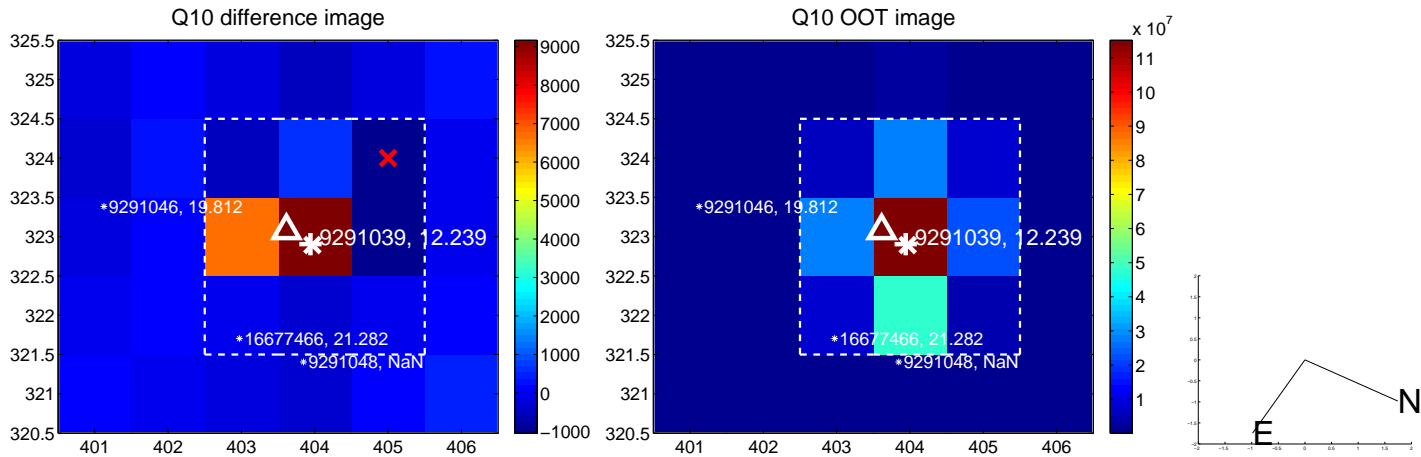
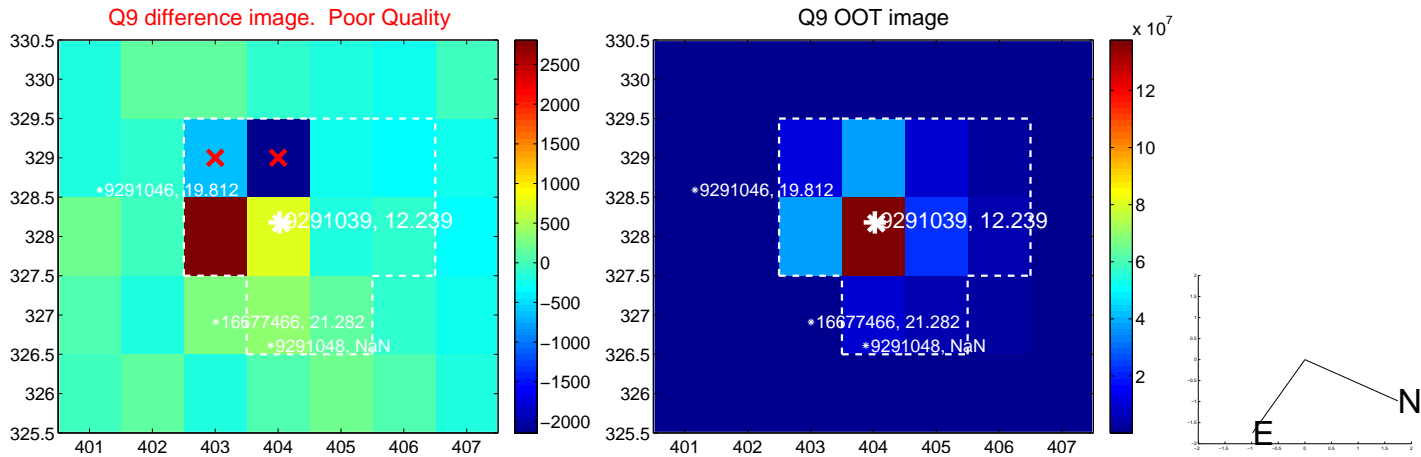
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



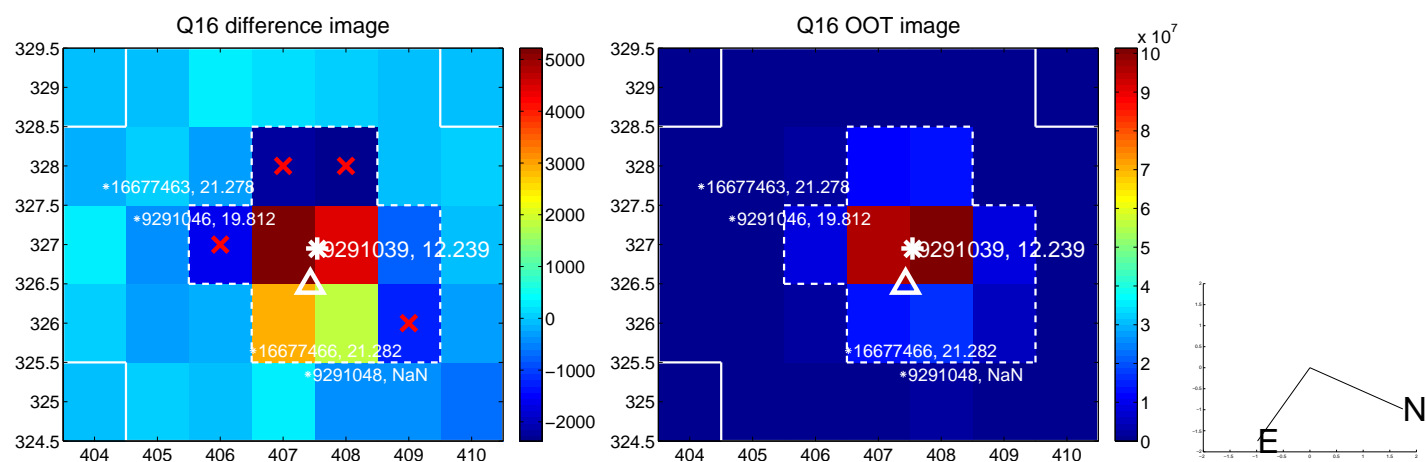
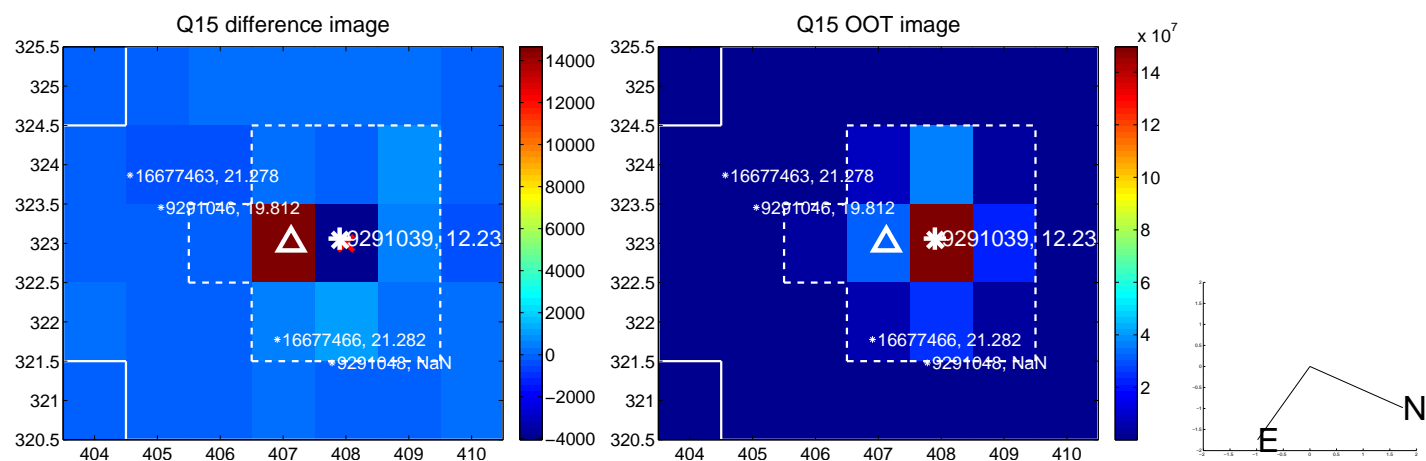
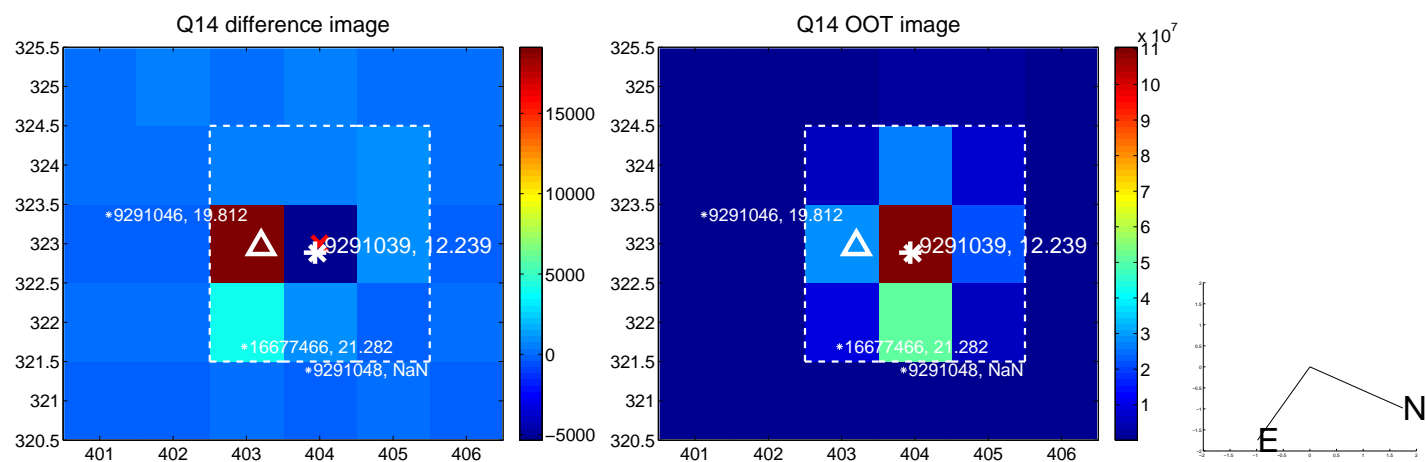
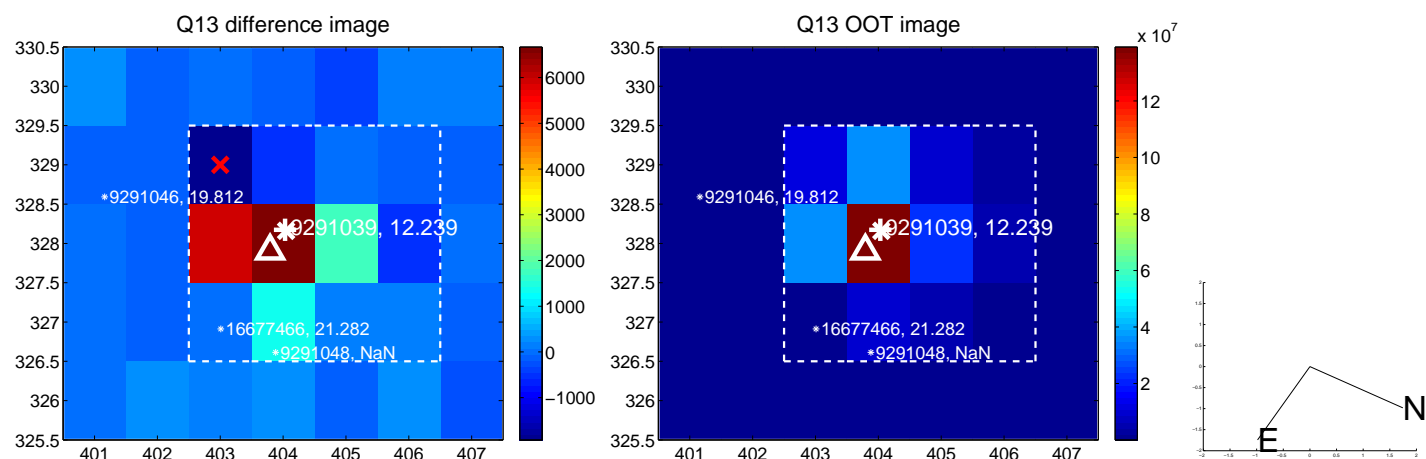
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

