

KIC 012069252

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})
012069252-01	OBS	No	1.260948	132.657918	224.2	9.375	12.5	15.2	1.80	7309	4.54	12267.35
012069252-02	OBS	No	20.111259	133.782525	327.8	5.000	13.6	-1.0	1.80	7309	3.30	305.56
012069252-03	OBS	No	13.489154	132.672953	2254.2	1.061	12.8	11.8	1.80	7309	8.71	520.44
012069252-04	OBS	No	28.688536	150.492636	773.9	15.185	11.5	7.8	1.80	7309	6.29	190.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012069252-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
012069252-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
012069252-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
012069252-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

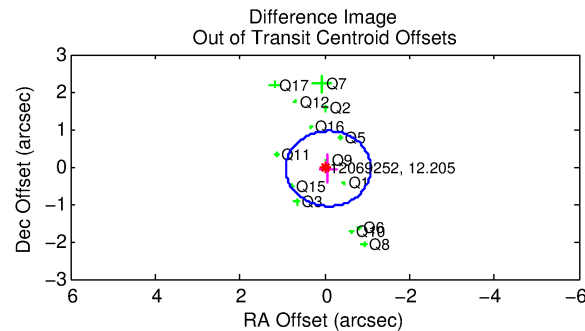
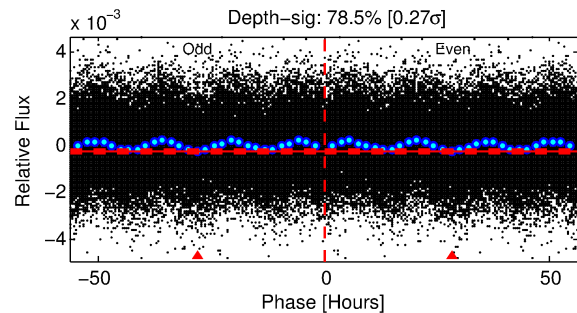
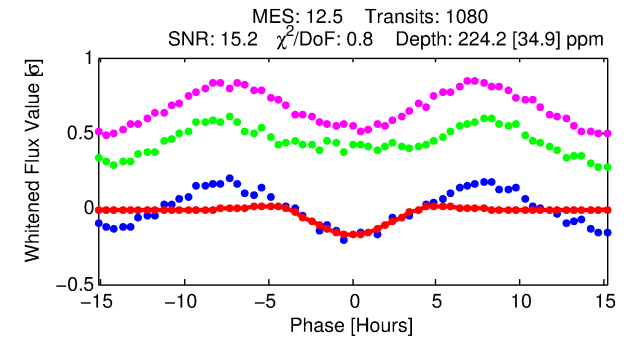
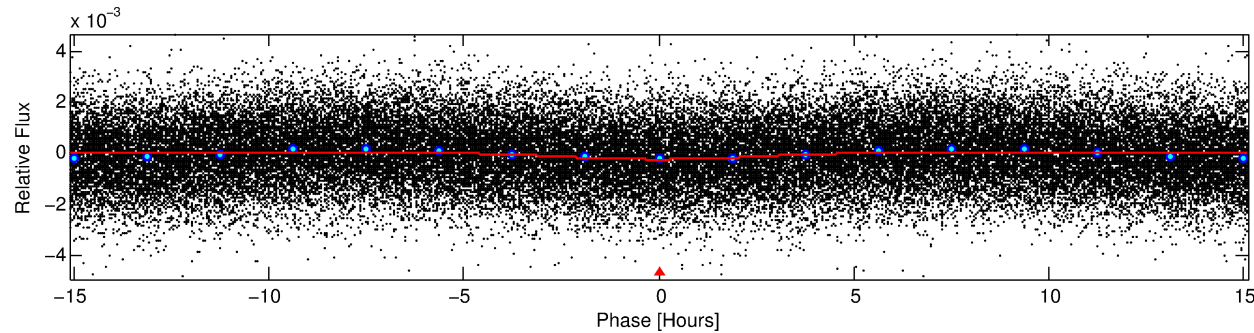
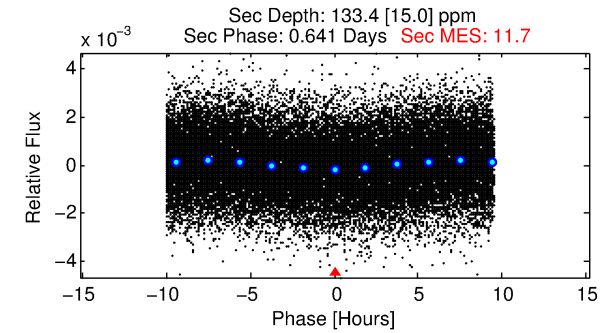
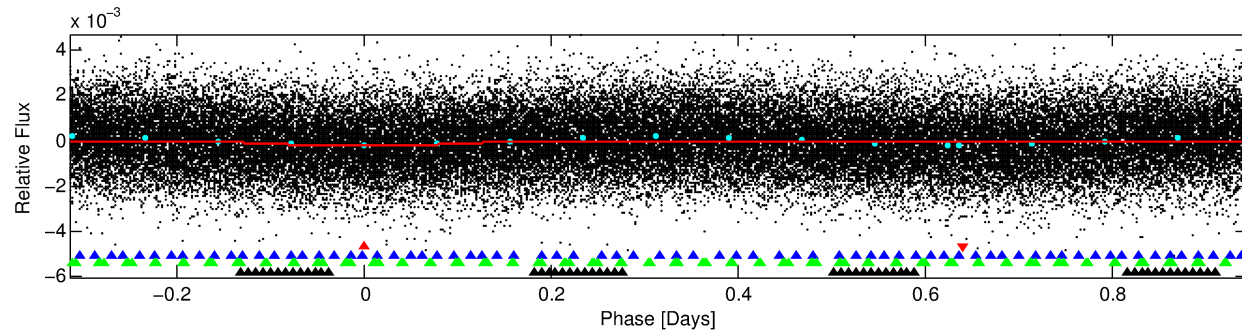
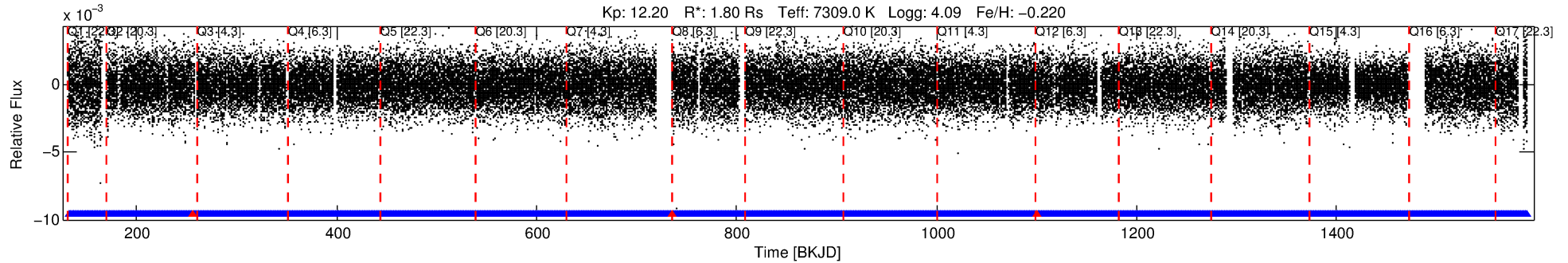
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012069252-01

No Significant Match Found

DV One-Page Summary

KIC: 12069252 Candidate: 1 of 4 Period: 1.261 d



DV Fit Results:

Period = 1.26095 [0.00002] d
Epoch = 132.6579 [0.0111] BKJD
Rp/R* = 0.0231 [0.0305]
a/R* = 1.04 [0.02]
b = 0.99 [0.05]
Seff = 12267.35 [2814.53]
Teq = 2684 [154] K
Rp = 4.54 [6.05] Re
a = 0.0260 [0.0041] AU
Ag = 2.40 [6.36] [0.22σ]
Teffp = 5165 [3411] K [0.73σ]

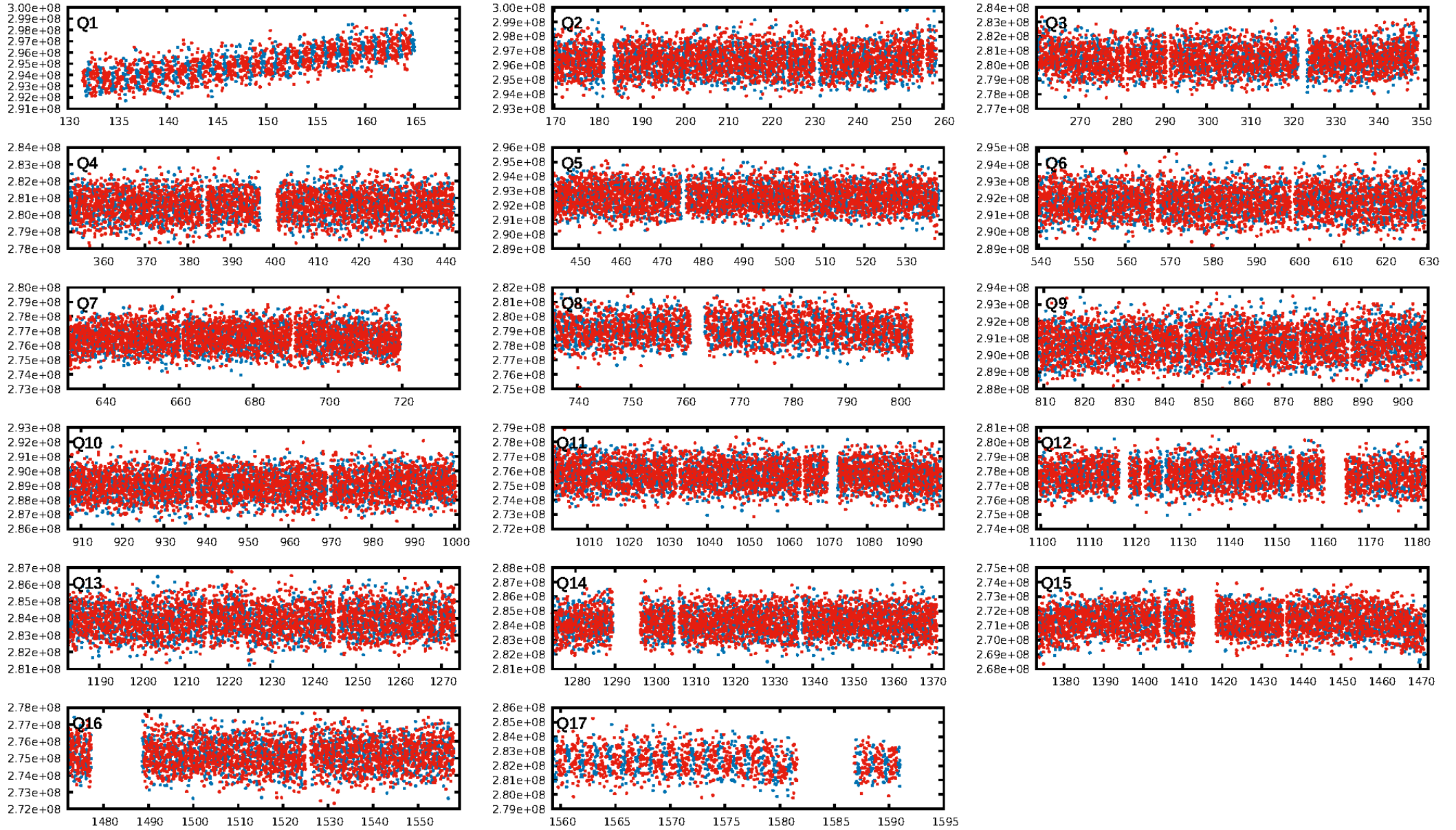
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [31.1σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.16e-168
RollingBand-fgt: 1.00 [1029/1032]
GhostDiagnostic-chr: 1.333
Centroid-sig: N/A
Centroid-so: 0.162 arcsec [2.21σ]
OotOffset-rm: 0.097 arcsec [0.29σ]
KicOffset-rm: 0.252 arcsec [0.59σ]
OotOffset-st: 3/4/3/4 [14]
KicOffset-st: 3/4/3/4 [14]
DiffImageQuality-fgm: 0.79 [11/14]
DiffImageOverlap-fno: 1.00 [17/17]

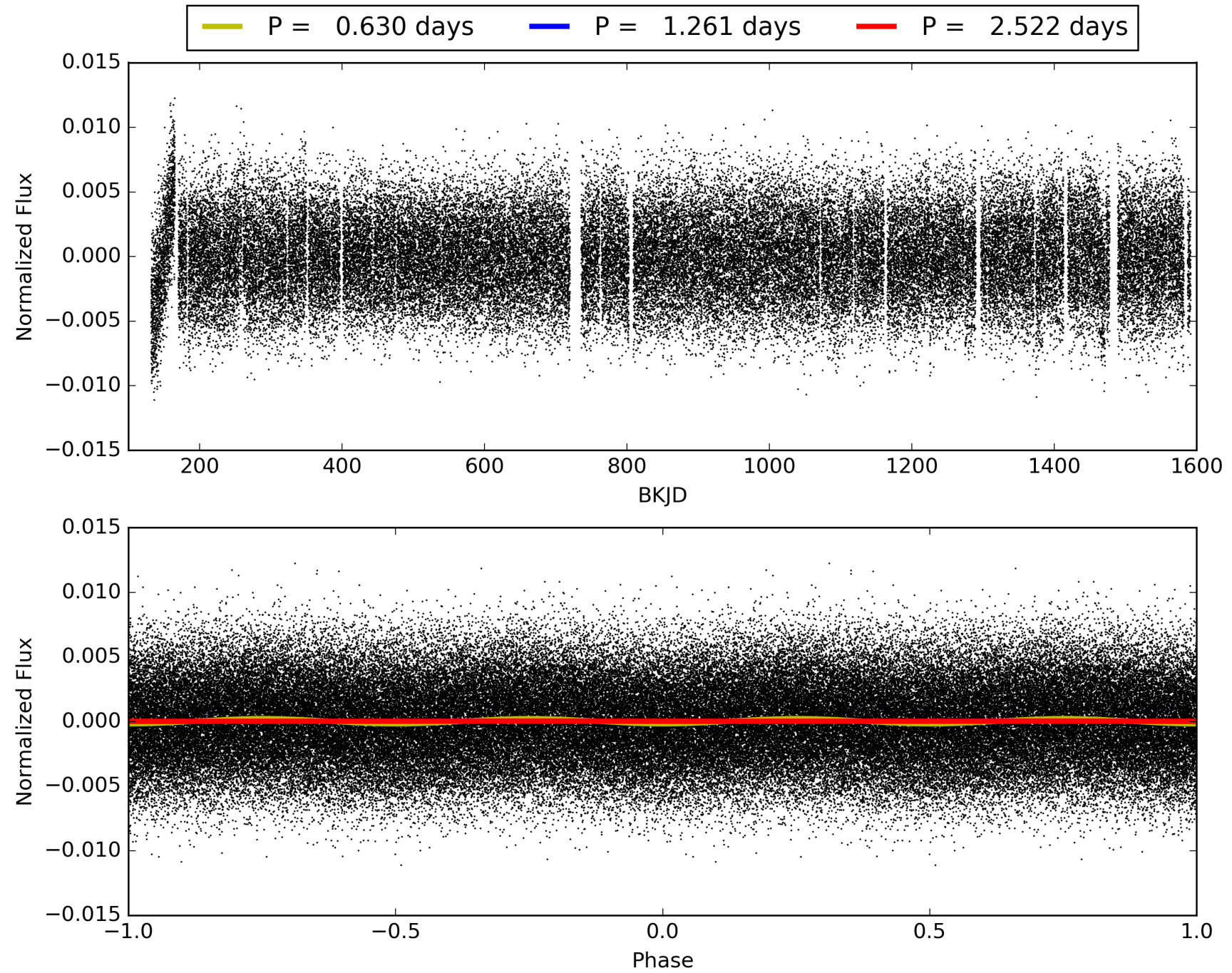
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:20:38 Z

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

TCE 012069252-01, PDC Light Curves

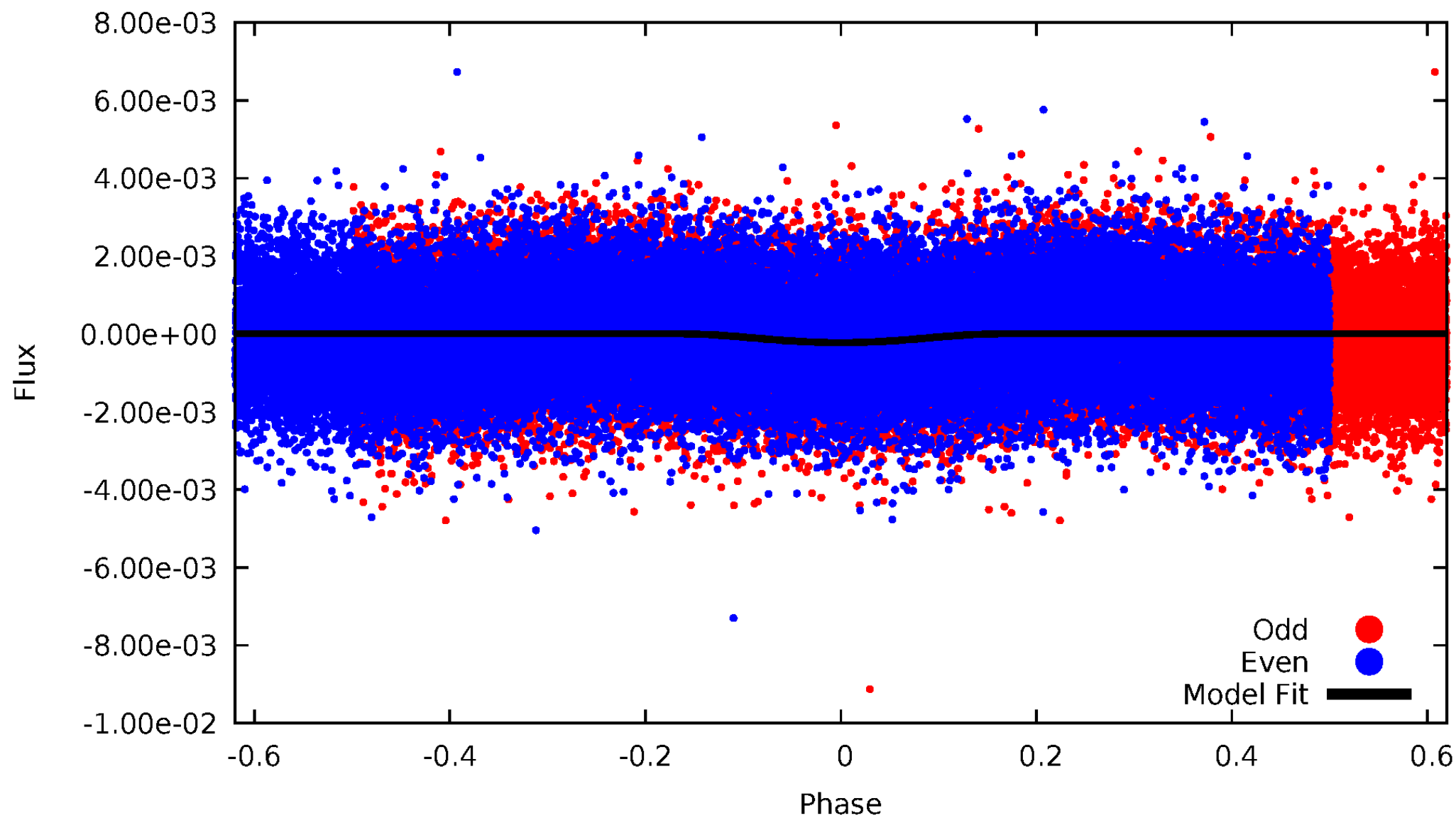


TCE 012069252-01



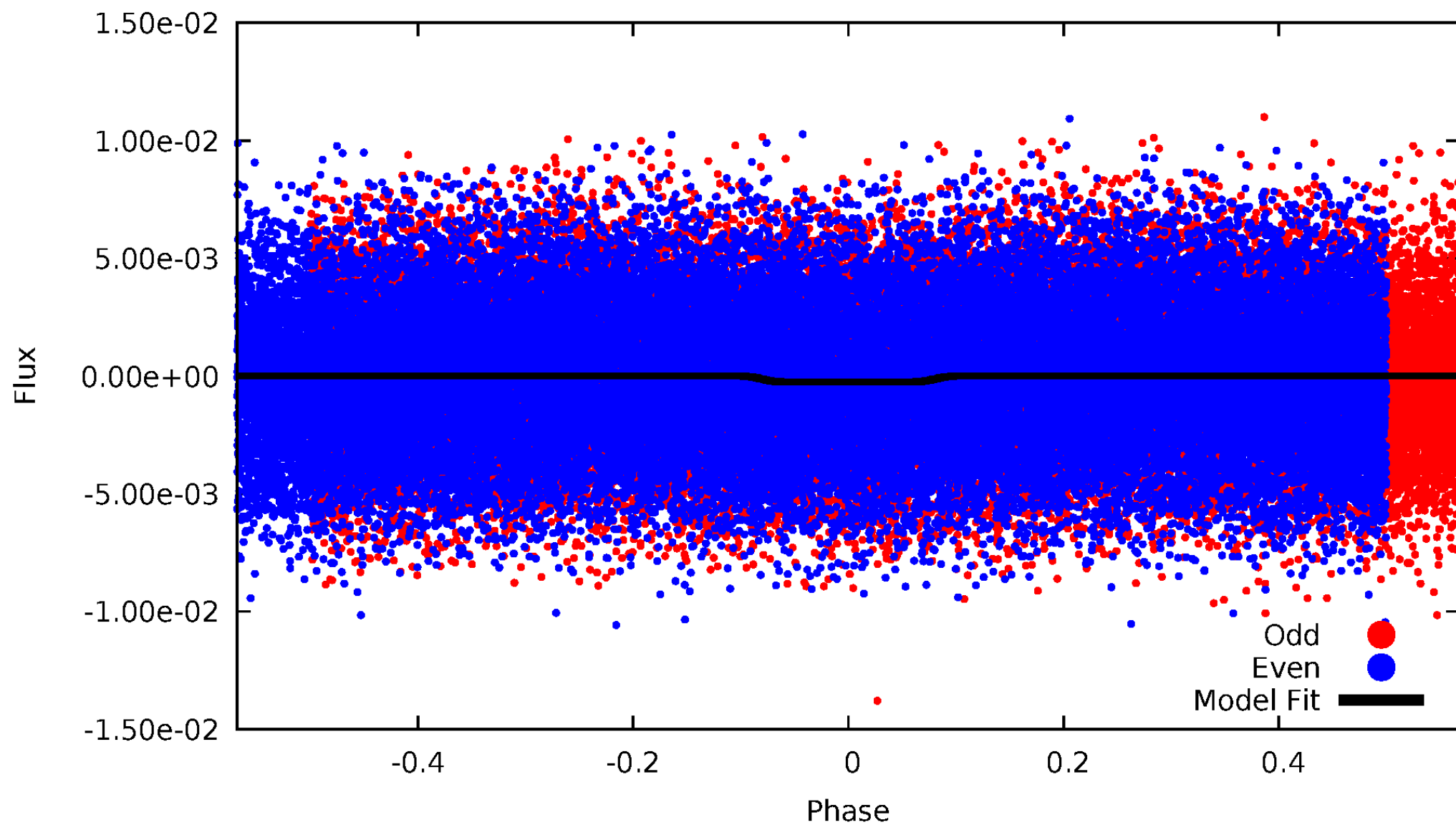
DV Odd/Even

TCE 012069252-01

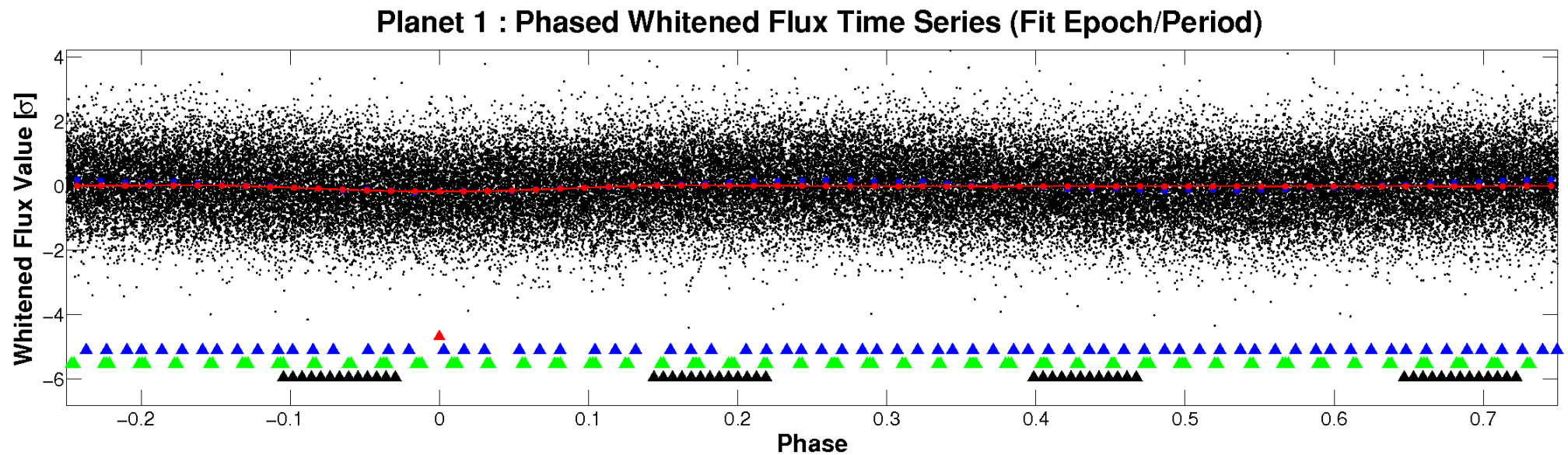
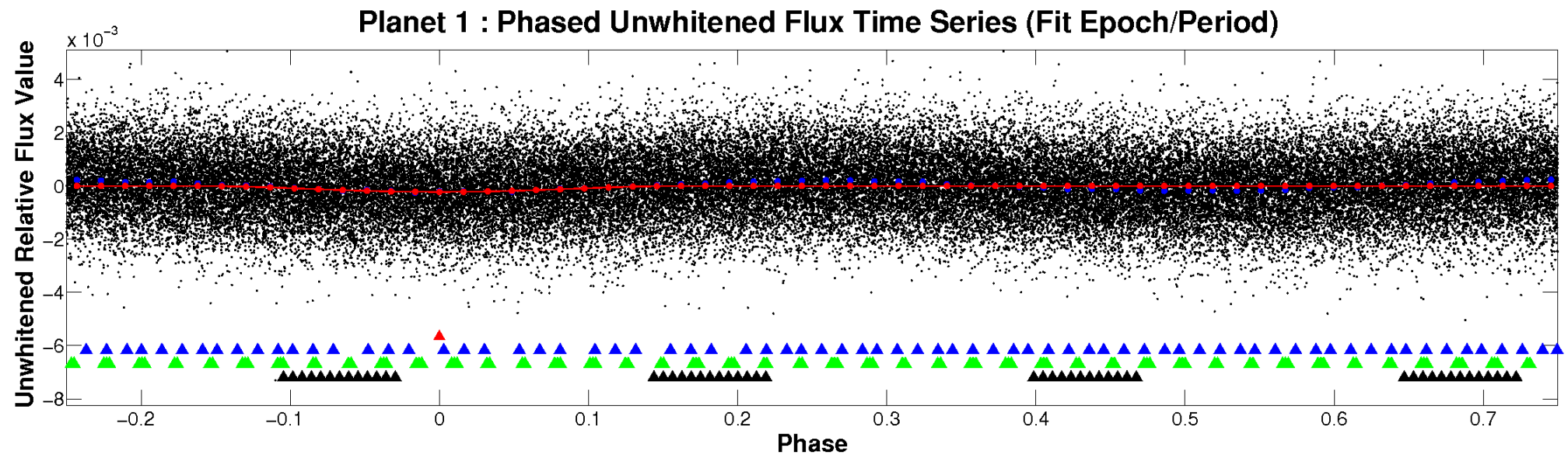


ALT Odd/Even

TCE 012069252-01

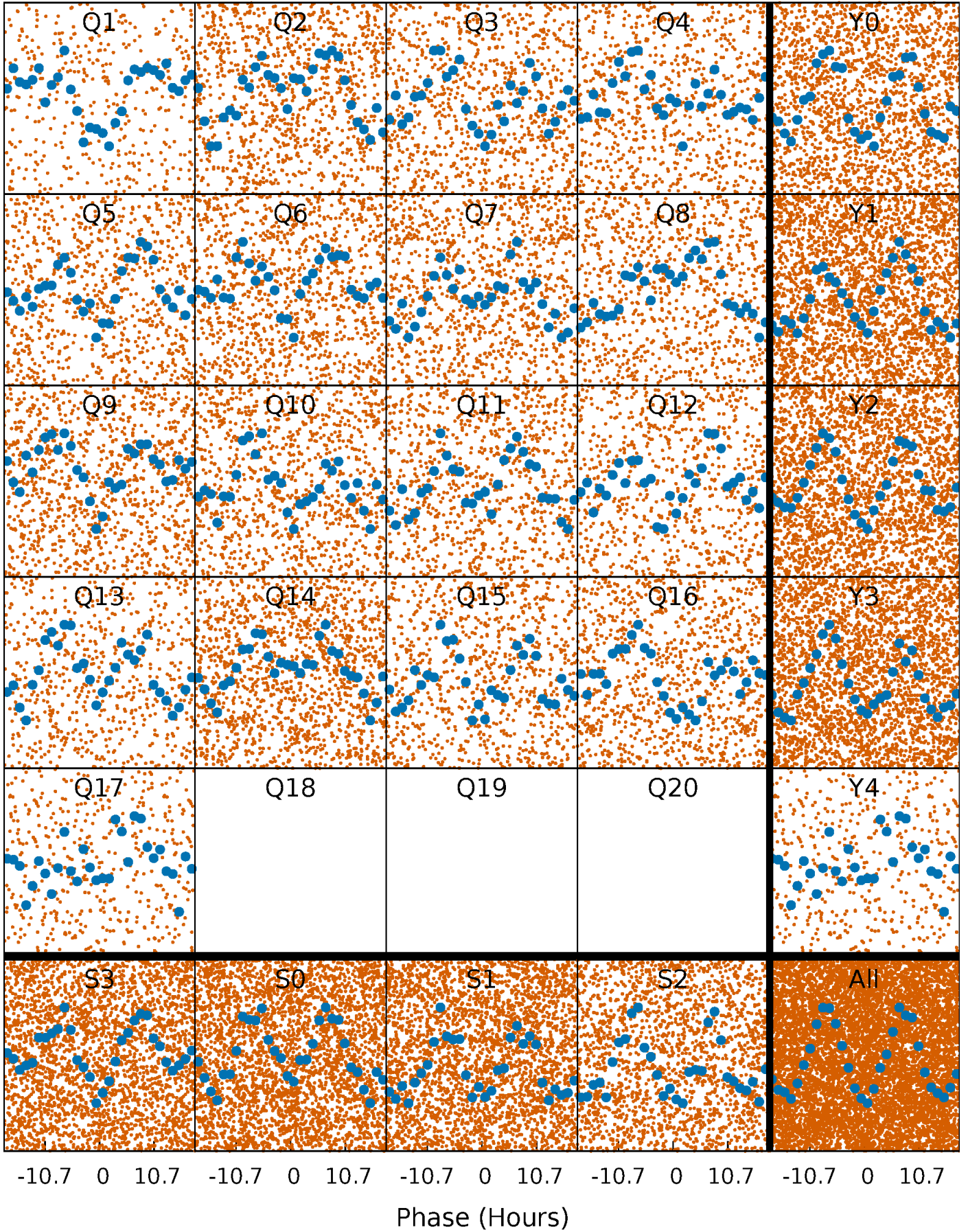


Non-Whitened Vs. Whitened Light Curve



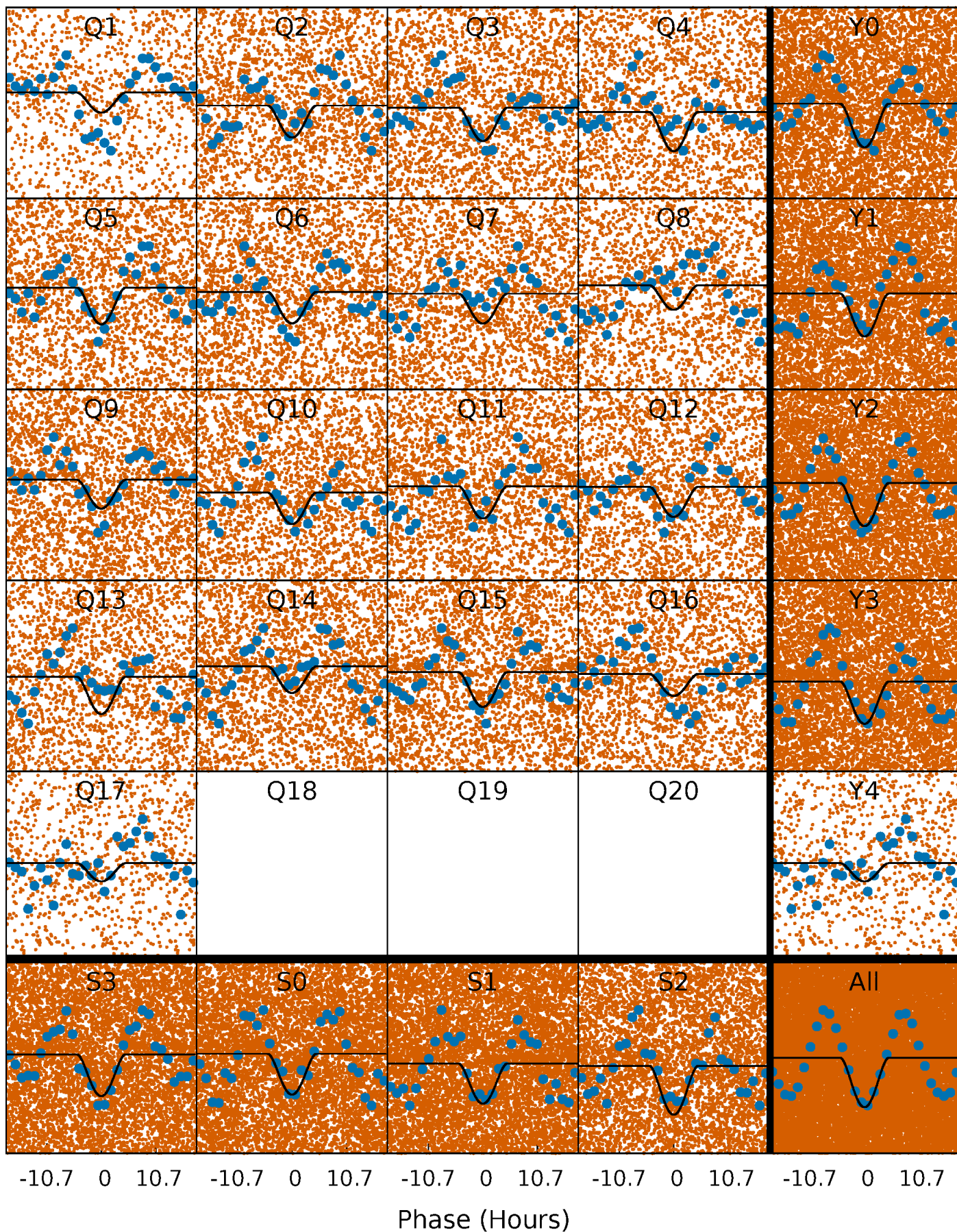
PDC Quarter-Phased Transit Curves

TCE 012069252-01 P= 1.260948 Days $T_0=132.657918$ (BKJD)



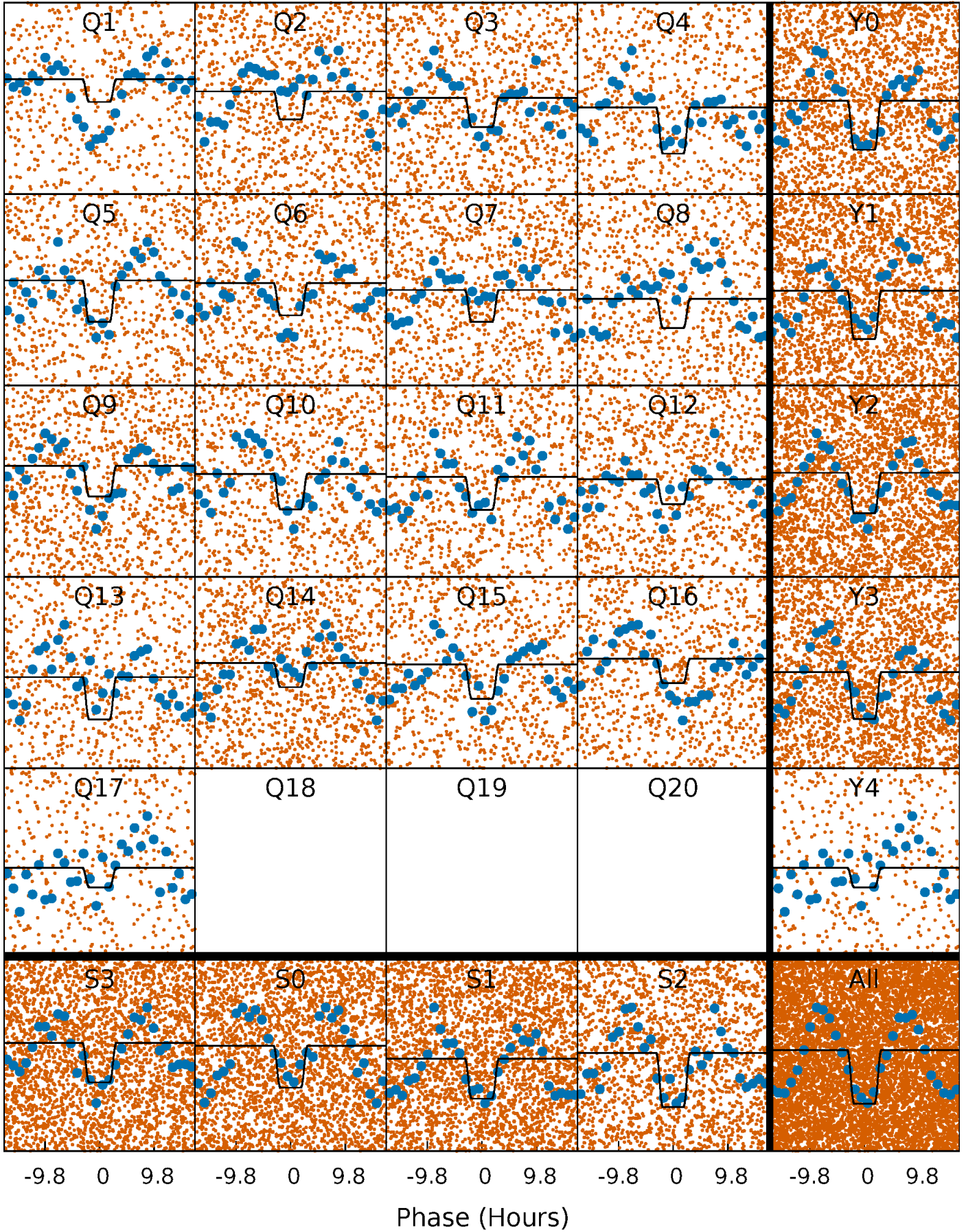
DV Quarter-Phased Transit Curves

TCE 012069252-01 P= 1.260948 Days $T_0=132.657918$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

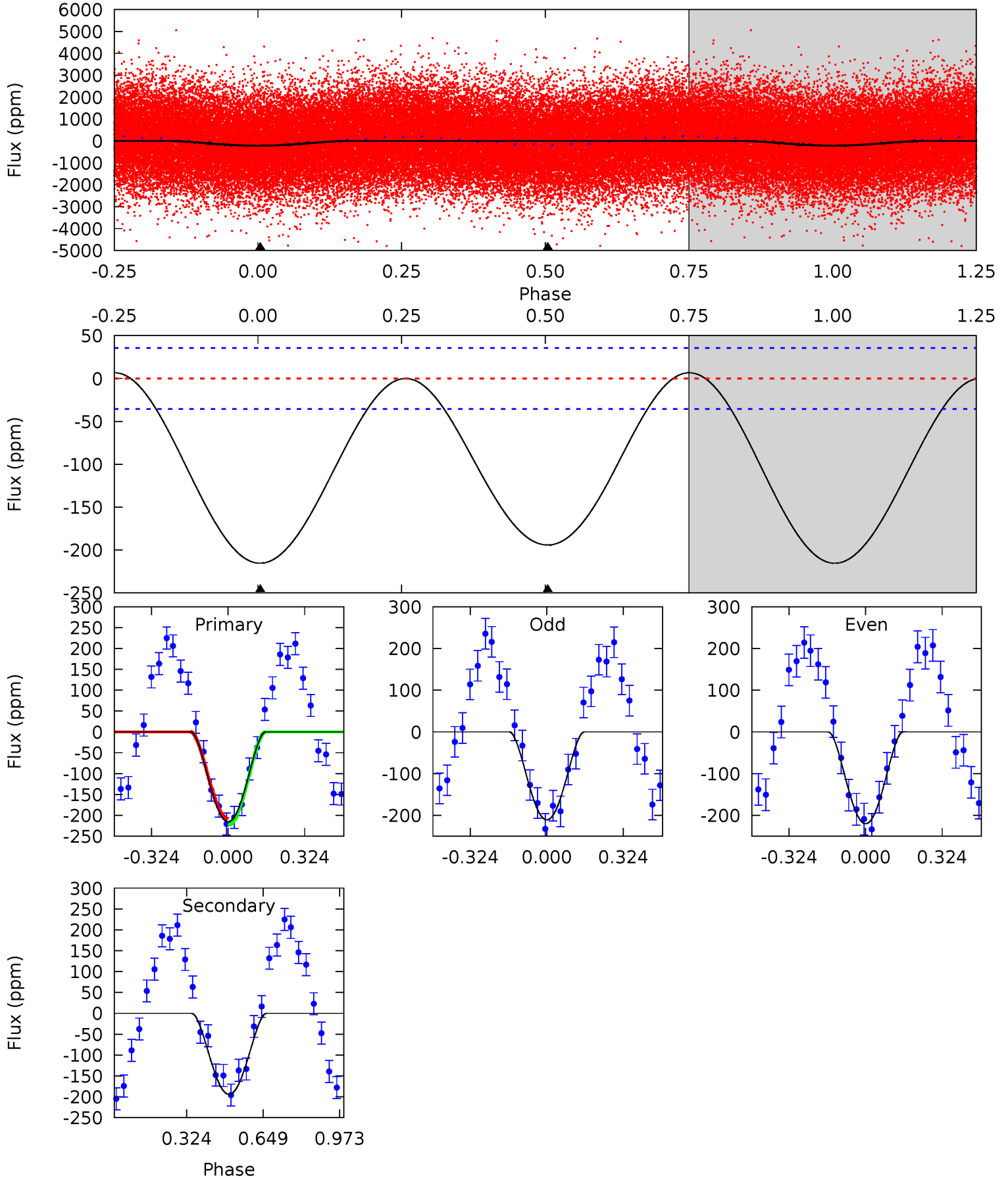
TCE 012069252-01 P= 1.260933 Days $T_0=132.668620$ (BKJD)



DV Model-Shift Uniqueness Test

012069252-01, P = 1.260948 Days, E = 131.396970 Days

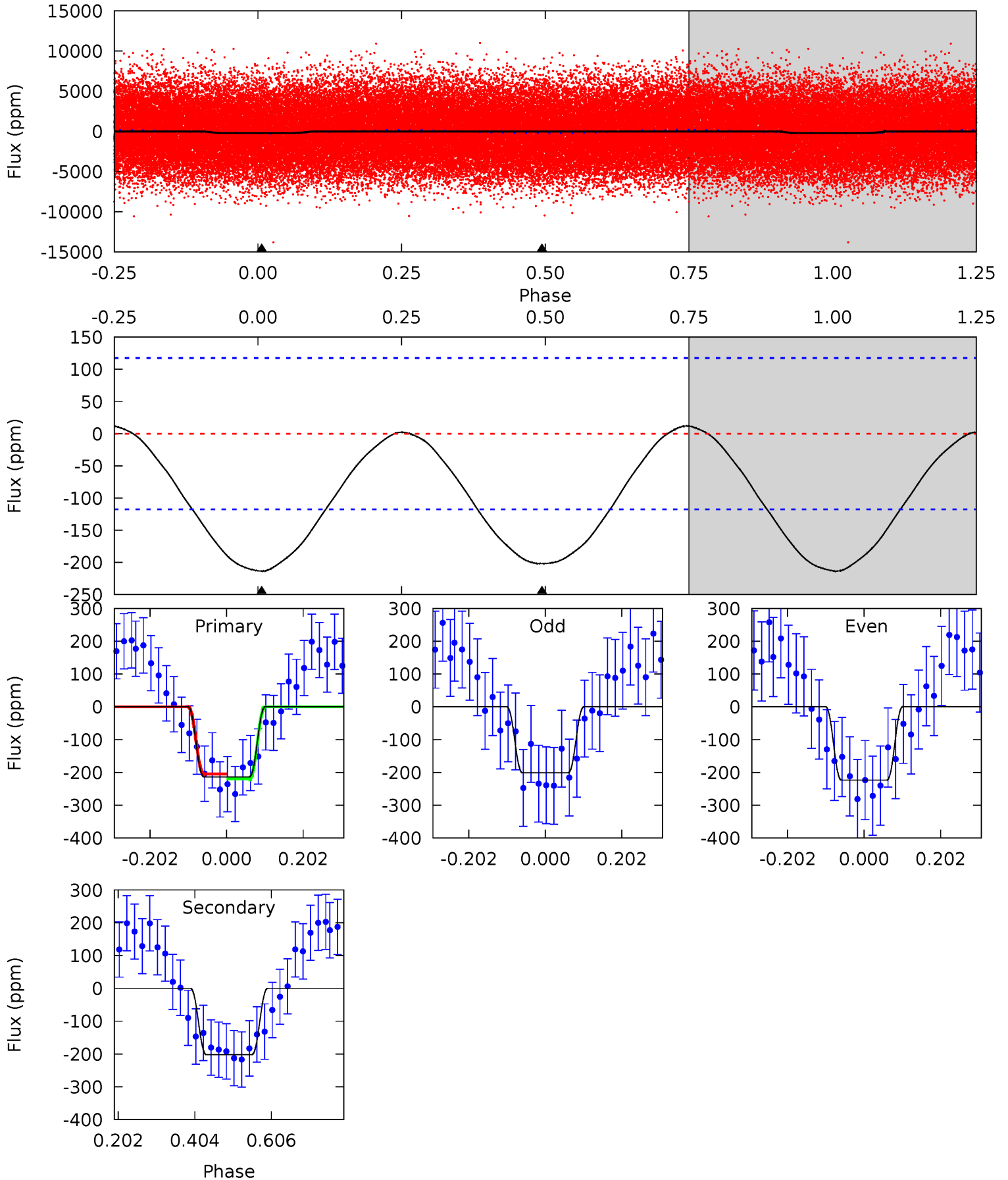
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.2	23.6	0	0	4.31	0.99	0.47	26.2	26.2	23.6	23.6	0.56	1.18	0.03	0.96



Alt Model-Shift Uniqueness Test

012069252-01, P = 1.260933 Days, E = 131.407687 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.02	7.59	0	0	4.42	1.28	0.29	8.02	8.02	7.59	7.59	0.41	1.02	0.05	0.29



Stellar Parameters For KIC 012069252

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7309^{+76}_{-87}	$4.095^{+0.120}_{-0.120}$	$-0.220^{+0.150}_{-0.150}$	$1.799^{+0.346}_{-0.283}$	$1.469^{+0.128}_{-0.116}$	$0.355^{+0.204}_{-0.131}$
	+1%/-1%	+3%/-3%	+68%/-68%	+19%/-16%	+9%/-8%	+58%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 012069252-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-194 ± 8	$6.19^{+5.59}_{-3.99}$	3744^{+172}_{-166}	4766^{+3592}_{-1412}	$1.943^{+13.162}_{-1.410}$
Alt.	-202 ± 27	$5.58^{+4.87}_{-3.64}$	3744^{+178}_{-145}	5054^{+3886}_{-1405}	$2.425^{+15.860}_{-1.758}$

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 $A_{obs} \gg 1.0$

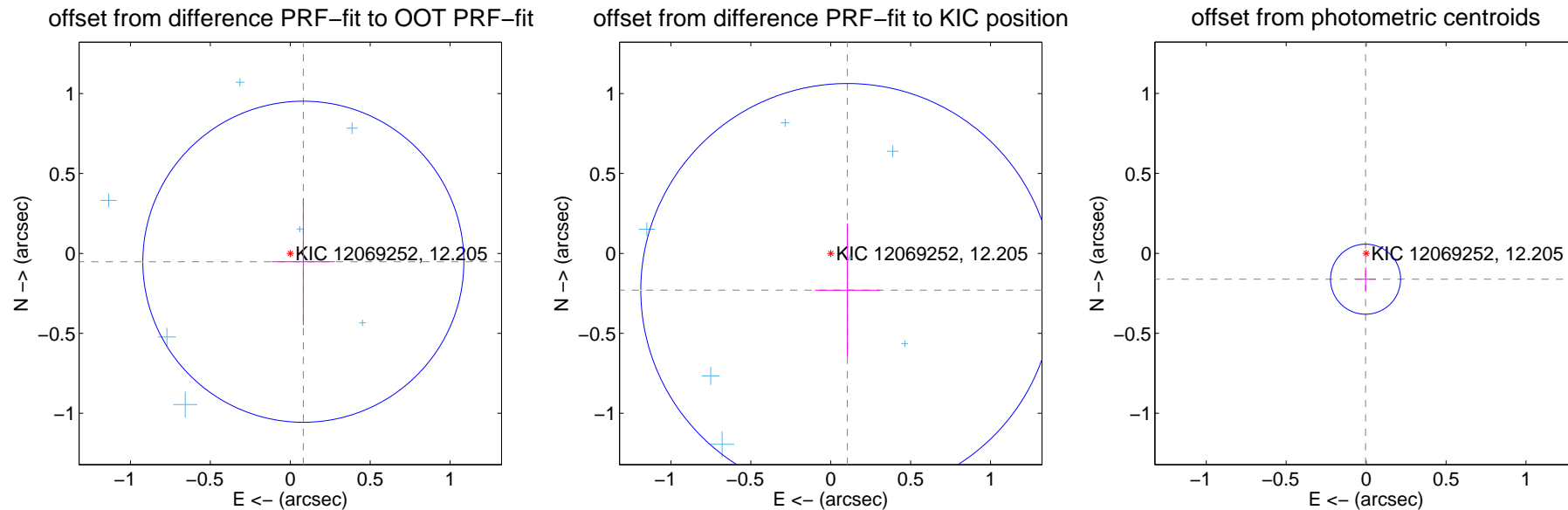
DV Centroid Data

Supplemental centroid analysis for 012069252-01. Kepler magnitude: 12.21. Transit SNR 15.24

There are 11 quarters with good PRF difference image offsets

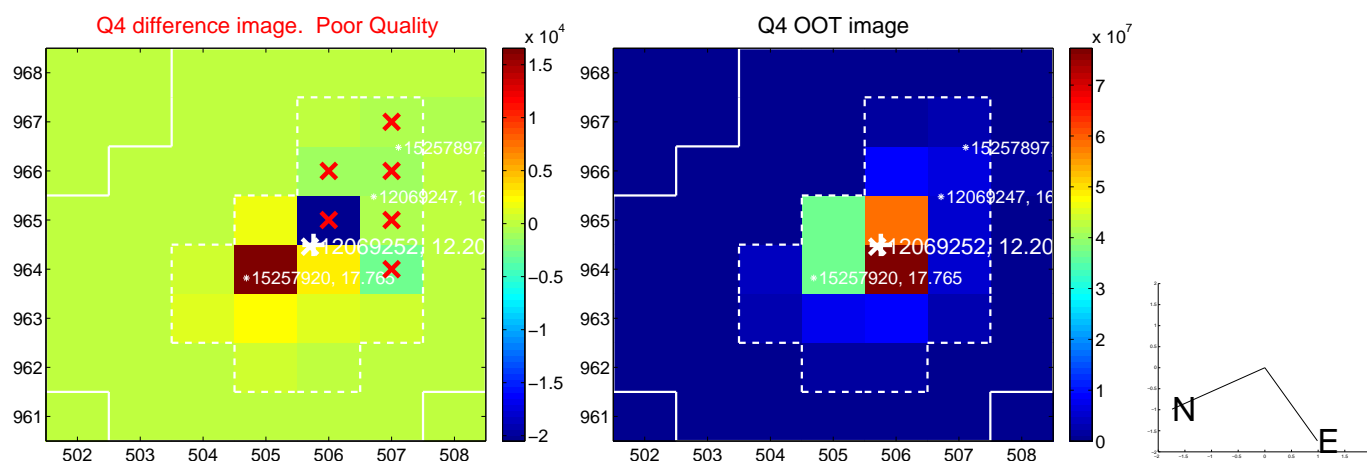
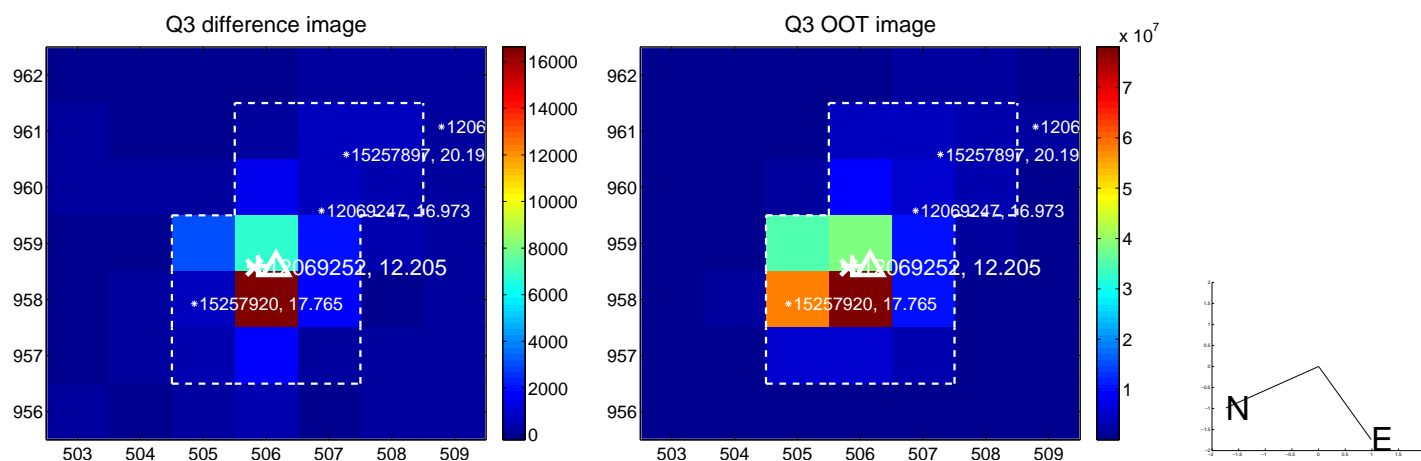
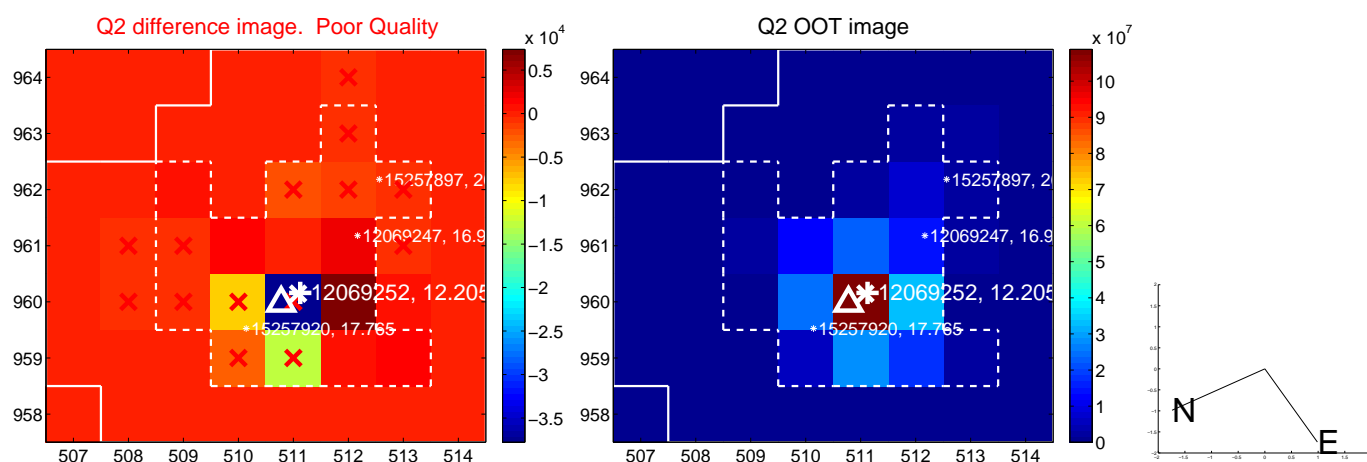
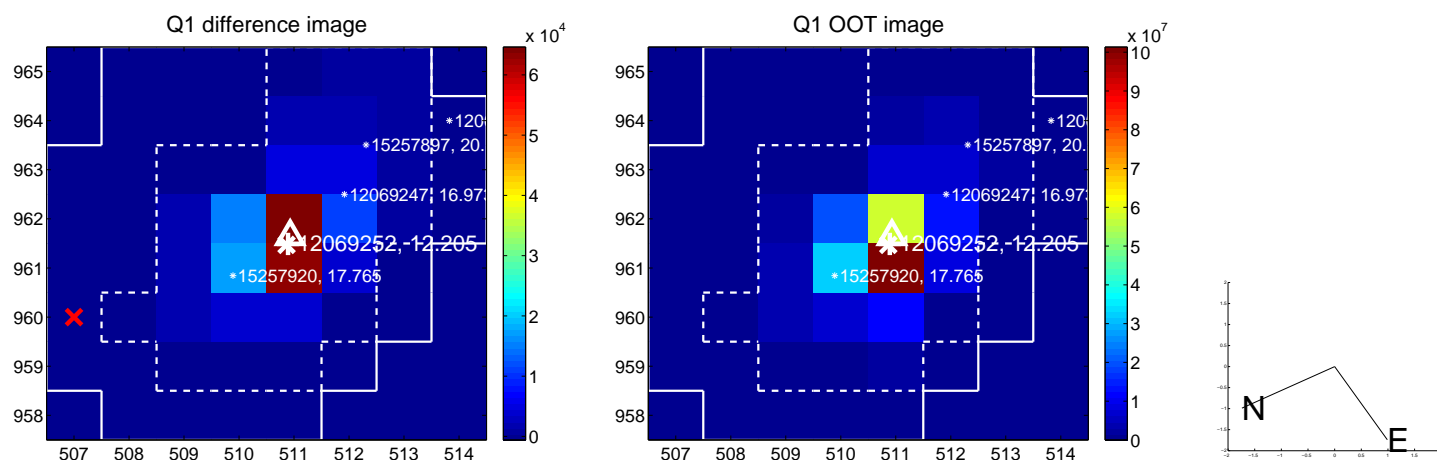
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.097 ± 0.335	0.29	-0.082 ± 0.197	-0.052 ± 0.397
PRF-fit source offset from KIC position	0.252 ± 0.431	0.59	-0.104 ± 0.203	-0.230 ± 0.417
photometric centroid source offset	0.16 ± 0.07	2.21	0.00 ± 0.06	-0.16 ± 0.07

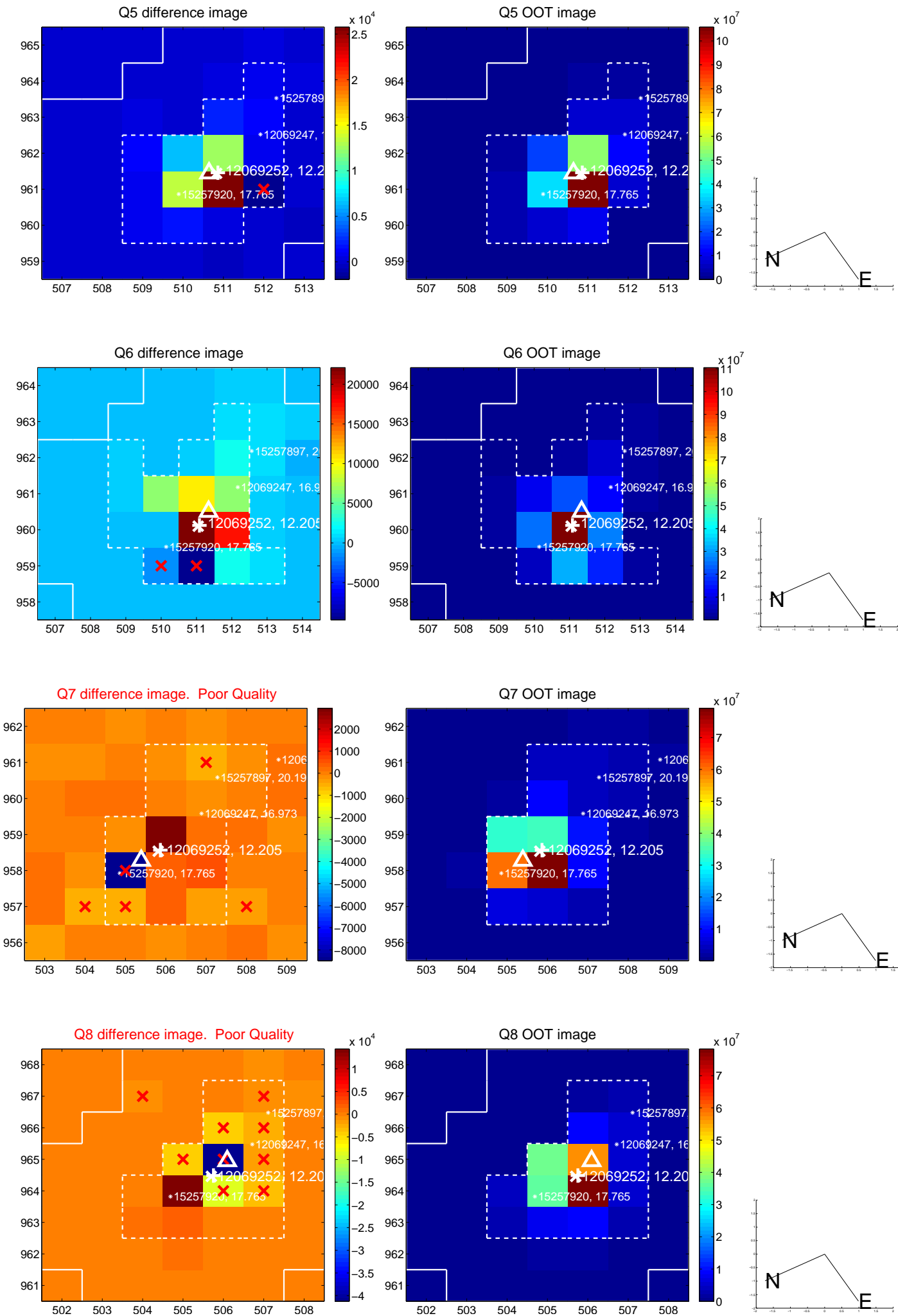


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

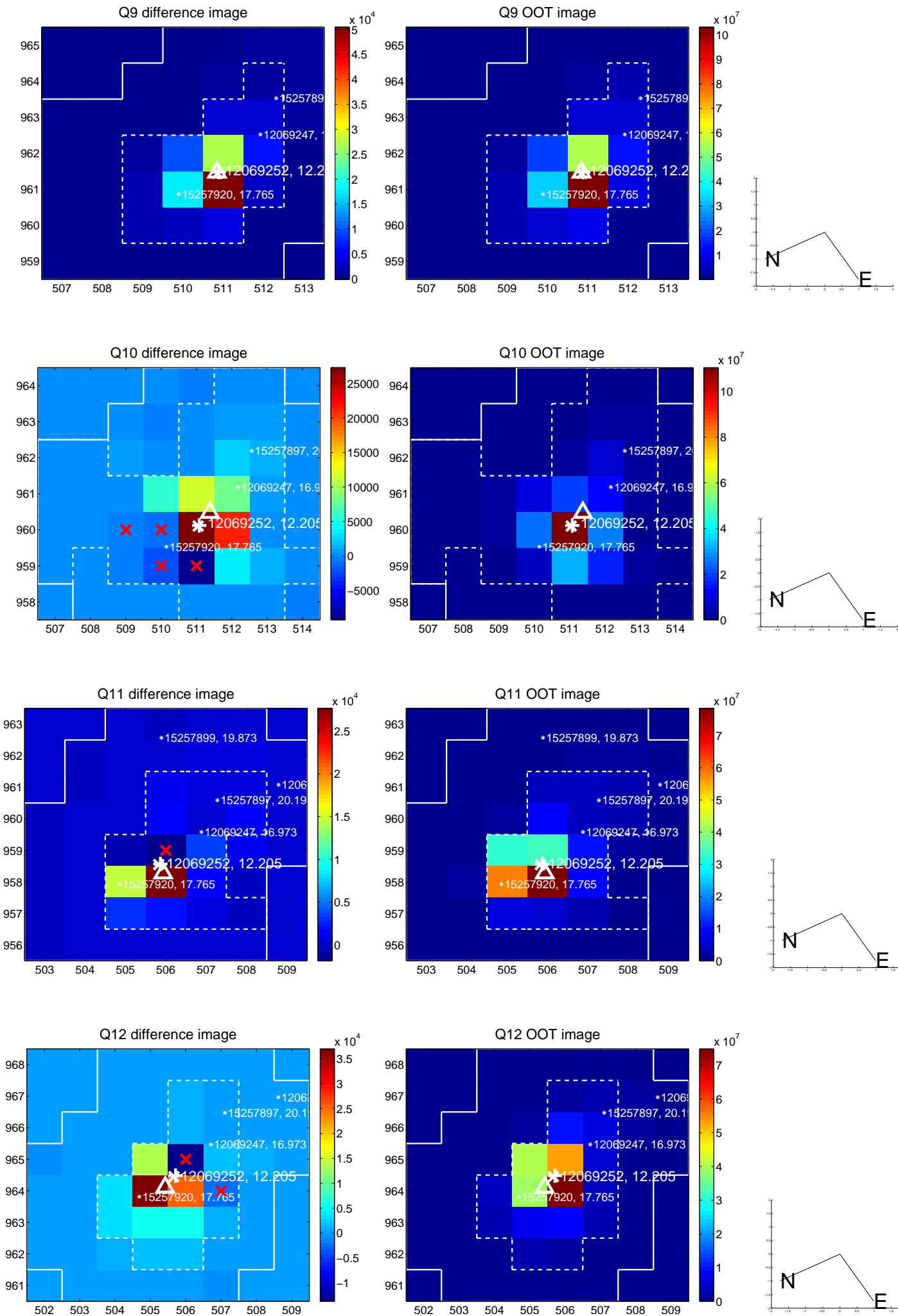
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



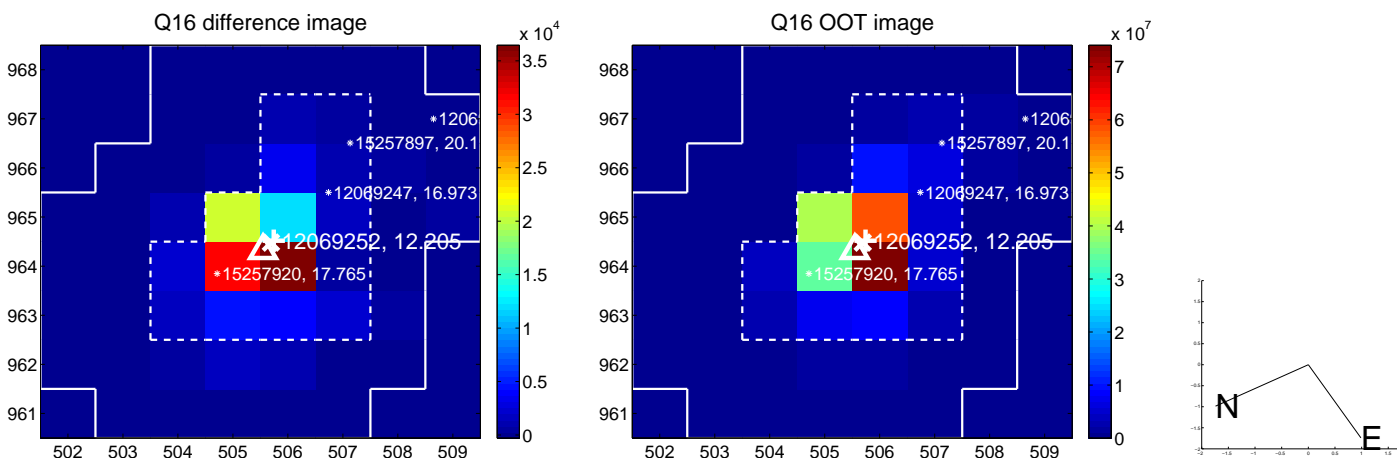
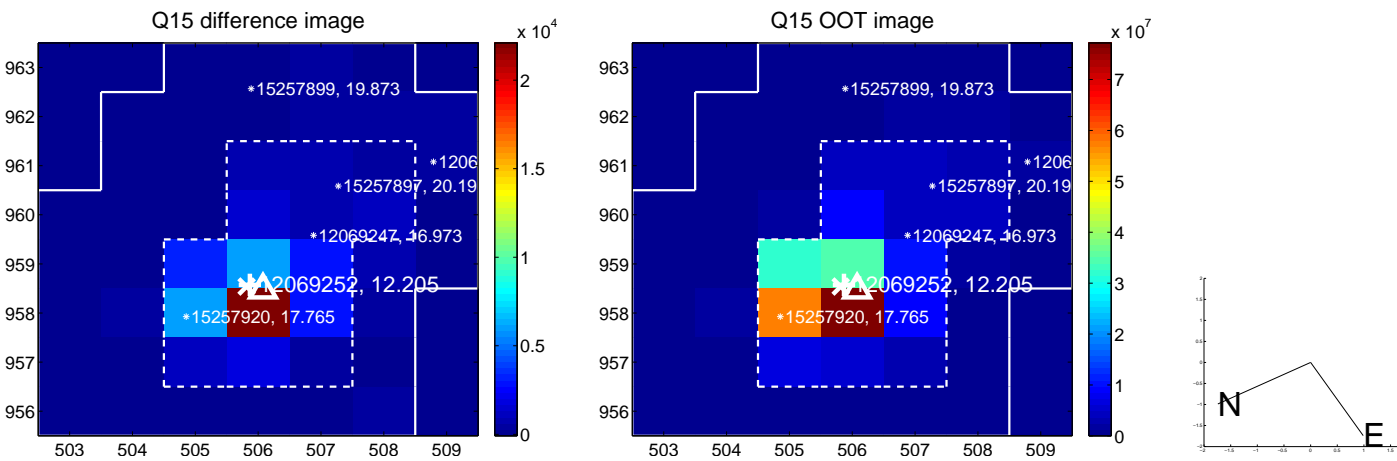
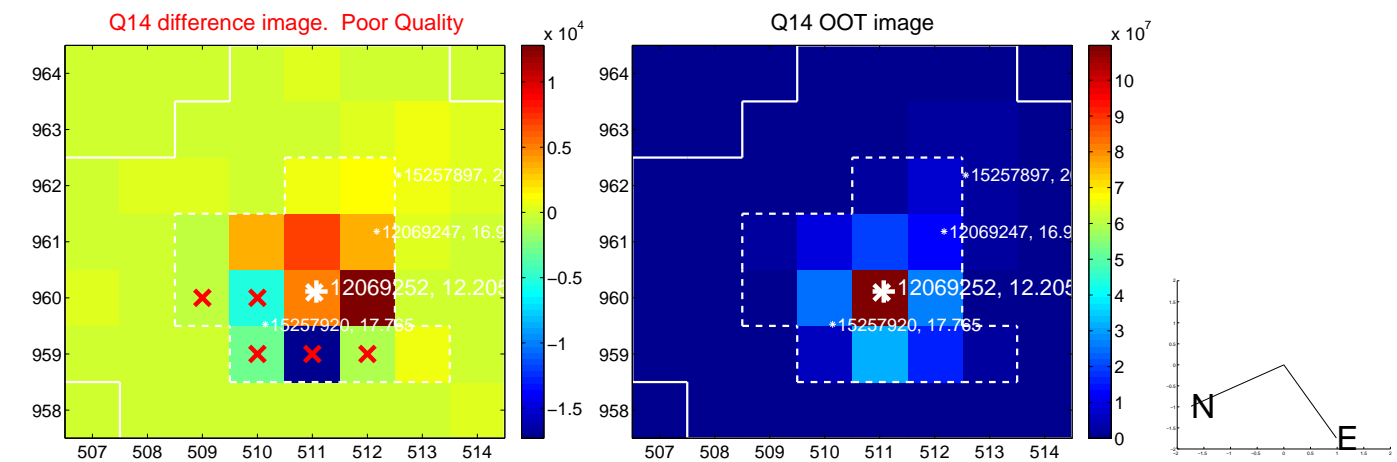
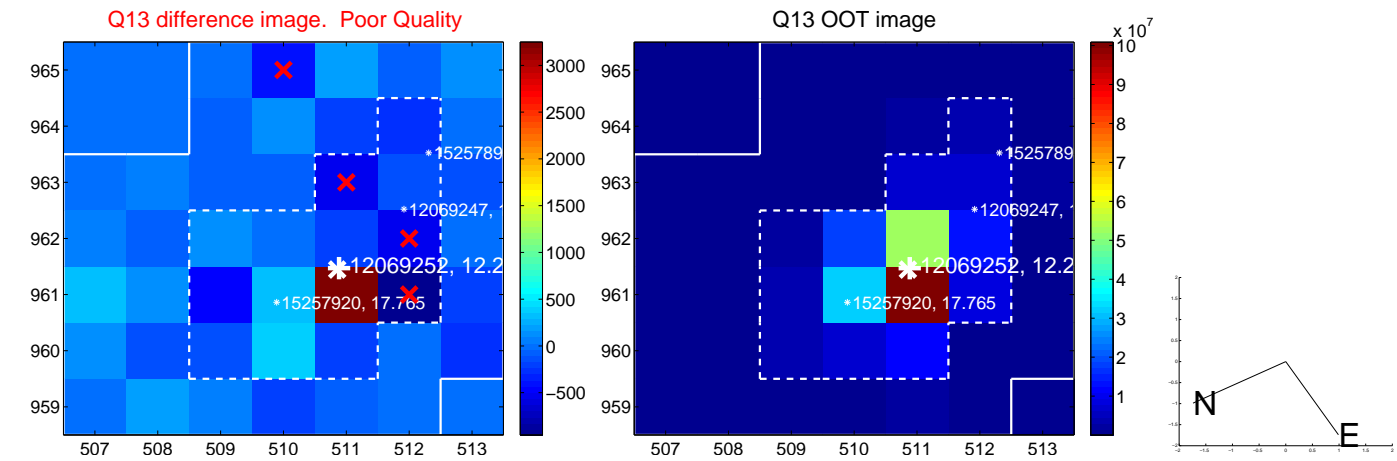
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



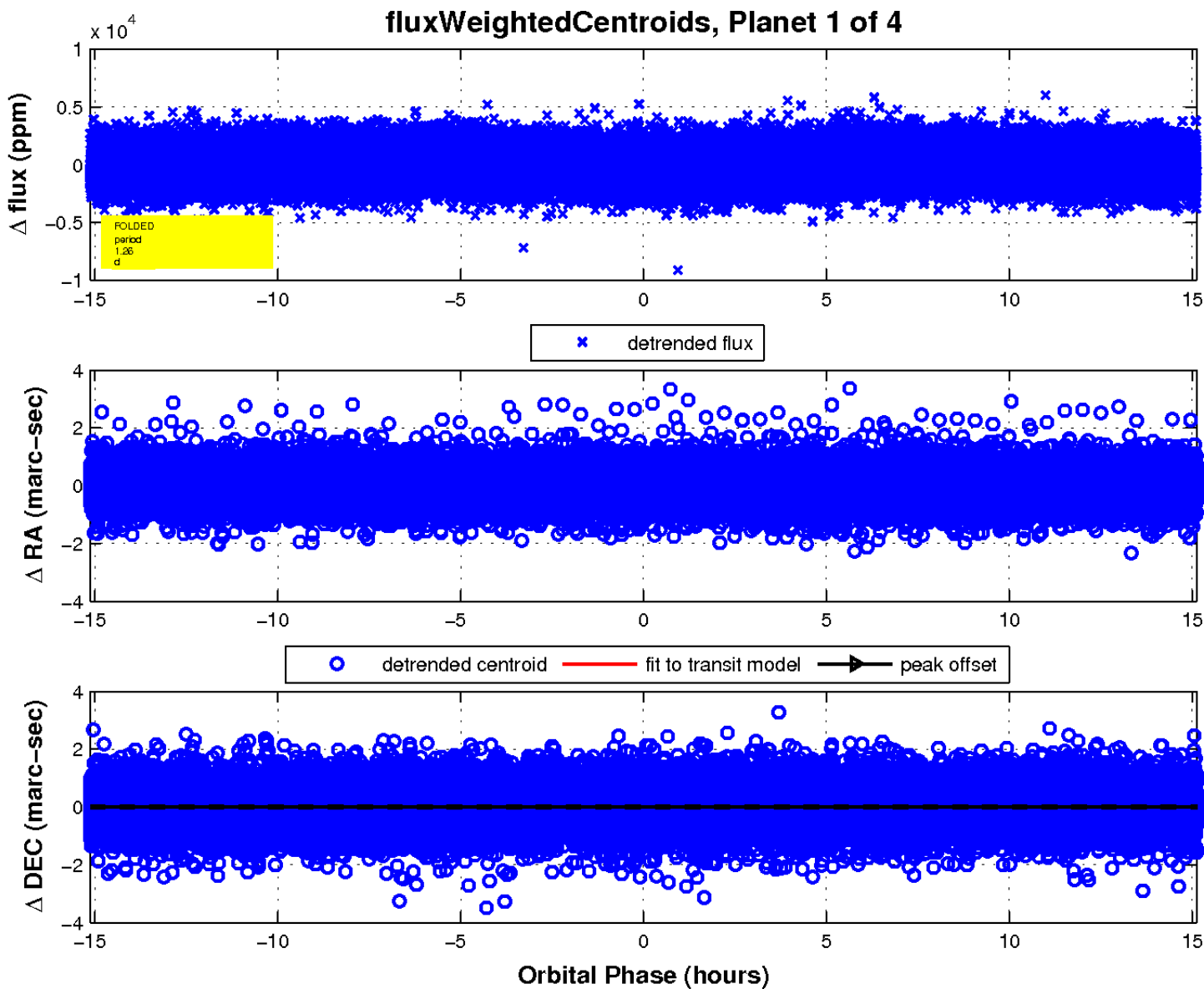
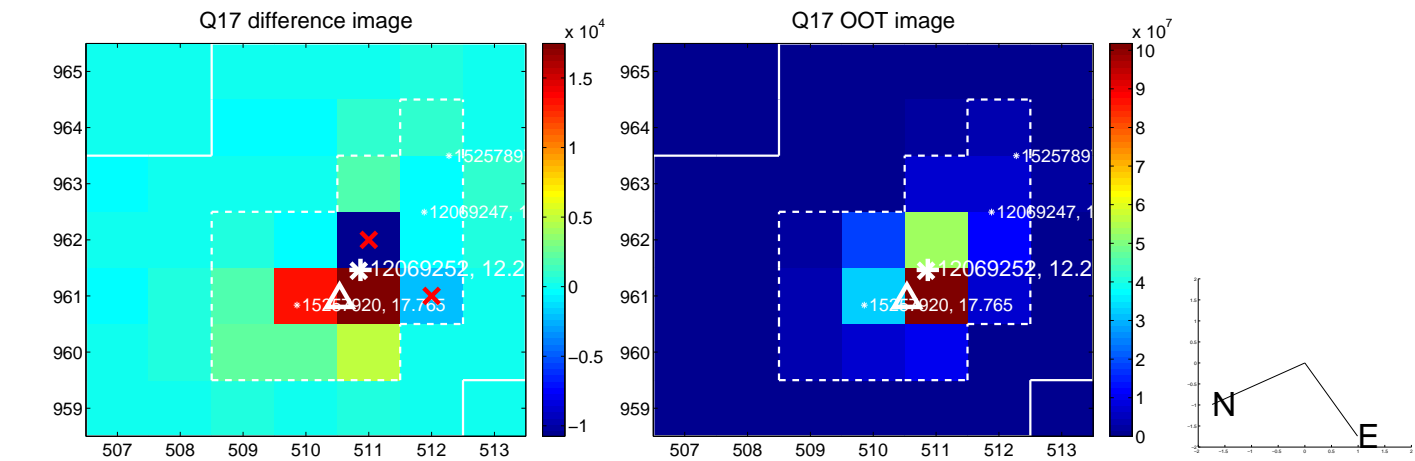
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



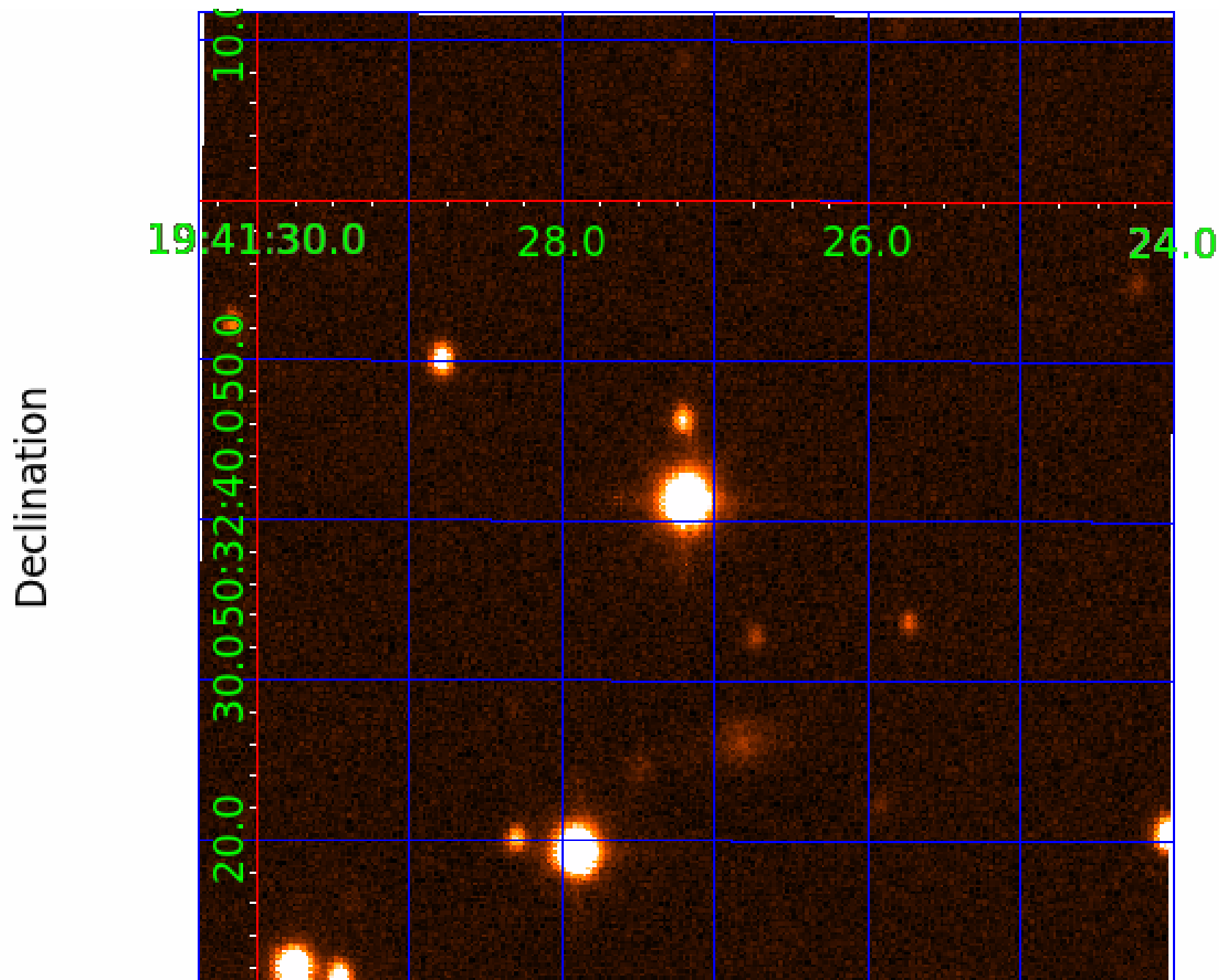
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 012069252

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})
012069252-01	OBS	No	1.260948	132.657918	224.2	9.375	12.5	15.2	1.80	7309	4.54	12267.35
012069252-02	OBS	No	20.111259	133.782525	327.8	5.000	13.6	-1.0	1.80	7309	3.30	305.56
012069252-03	OBS	No	13.489154	132.672953	2254.2	1.061	12.8	11.8	1.80	7309	8.71	520.44
012069252-04	OBS	No	28.688536	150.492636	773.9	15.185	11.5	7.8	1.80	7309	6.29	190.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012069252-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
012069252-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
012069252-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
012069252-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

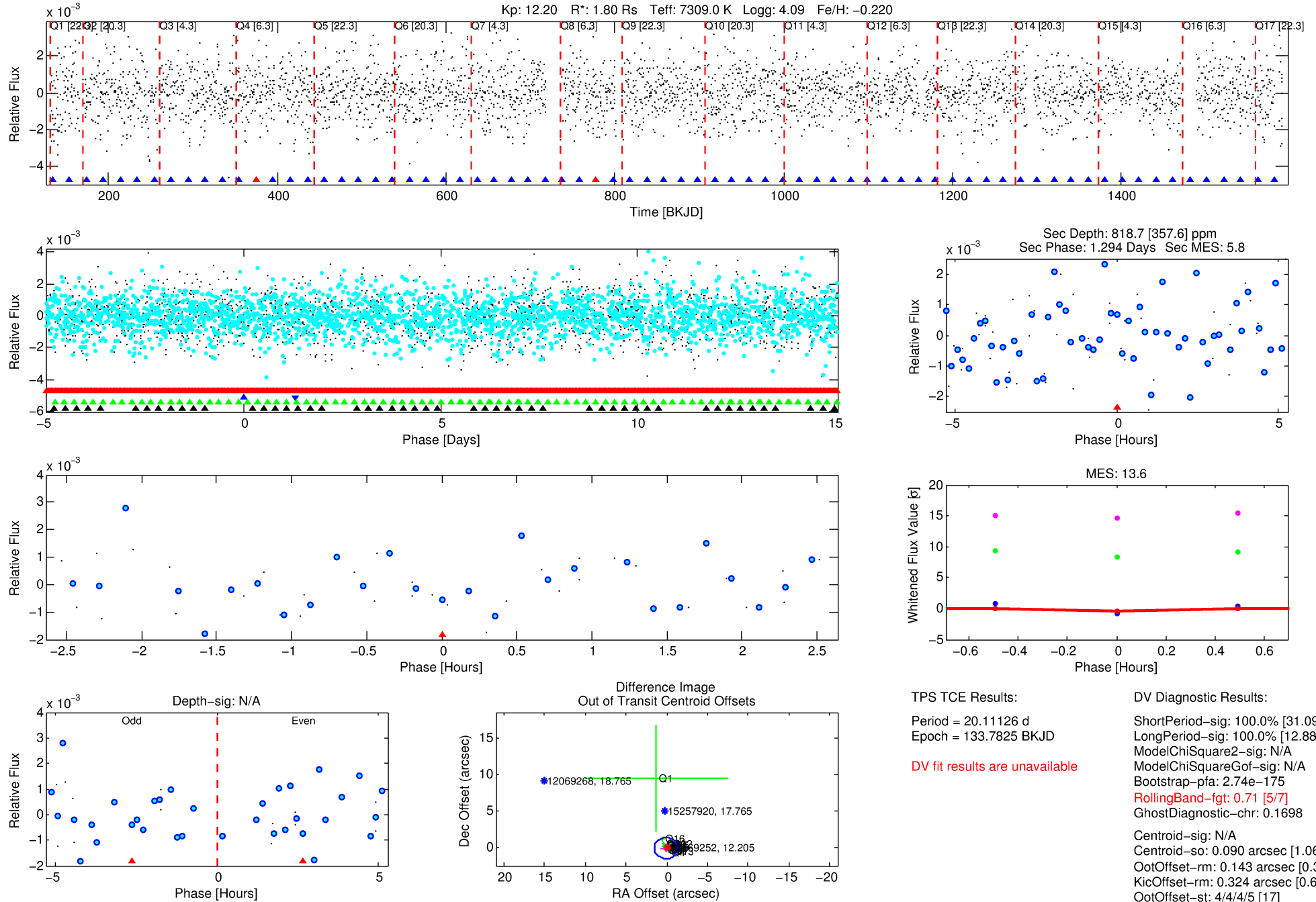
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012069252-02

No Significant Match Found

DV One-Page Summary

KIC: 12069252 Candidate: 2 of 4 Period: 20.111 d



TPS TCE Results:

Period = 20.11126 d
Epoch = 133.7825 BKJD

DV fit results are unavailable

DV Diagnostic Results:

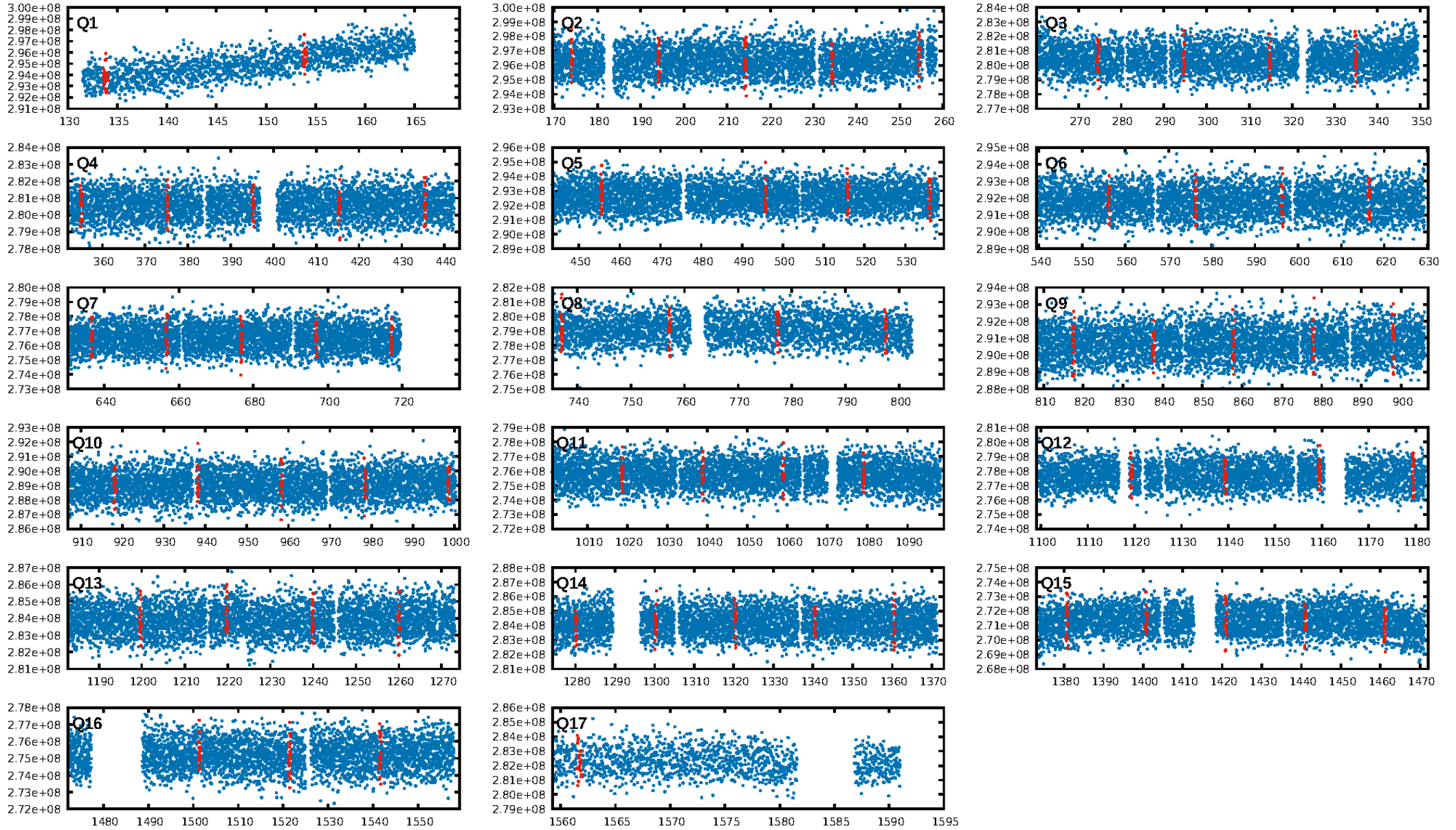
ShortPeriod-sig: 100.0% [31.09 σ]
LongPeriod-sig: 100.0% [12.88 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.74e-175
RollingBand-fgt: 0.71 [5/7]
GhostDiagnostic-chr: 0.1698

Centroid-sig: N/A
Centroid-so: 0.090 arcsec [1.06 σ]
OotOffset-rm: 0.143 arcsec [0.30 σ]
OotOffset-st: 4/4/4/5 [17]
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DiffImageQuality-fgm: 0.29 [5/17]
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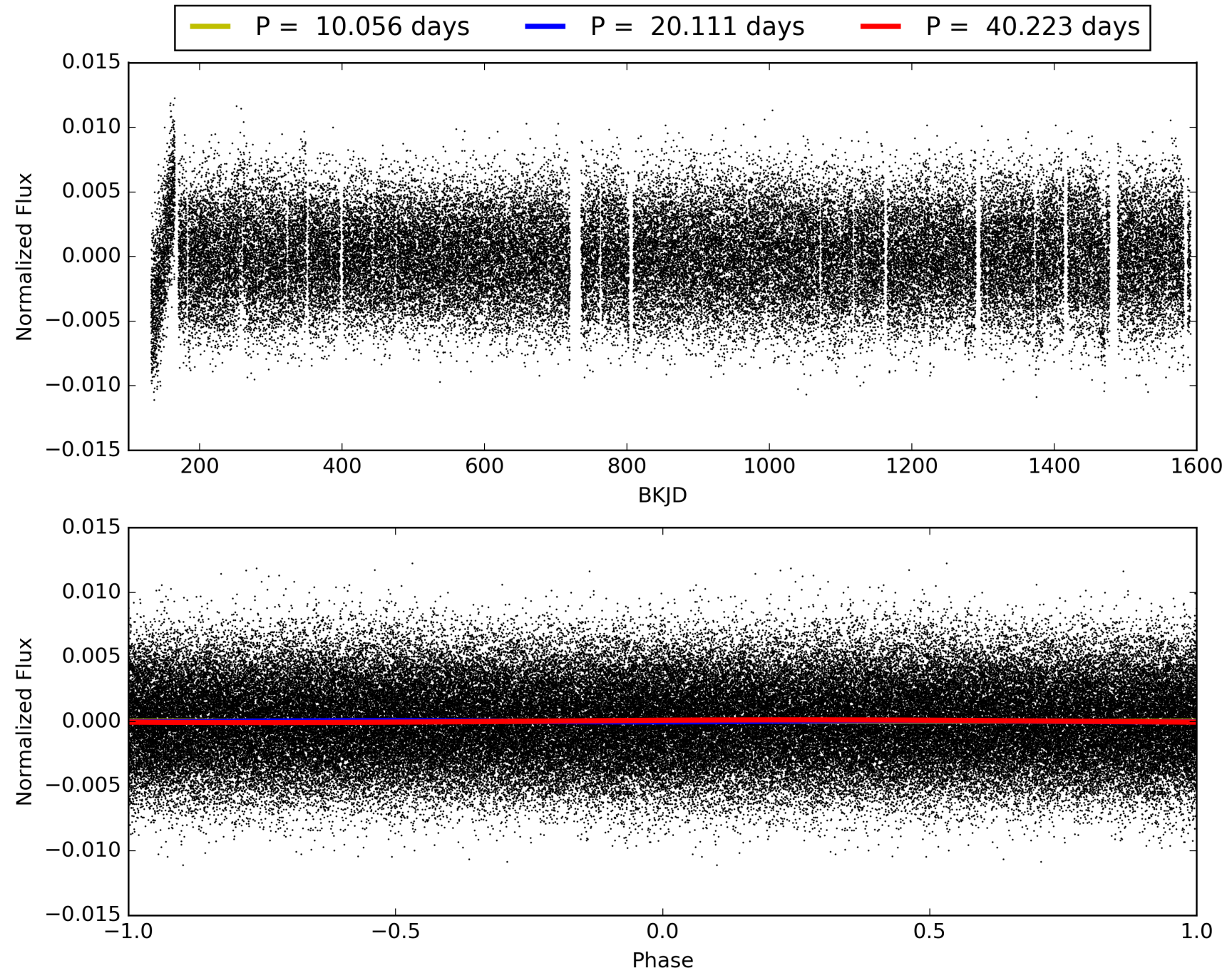
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 012069252-02, PDC Light Curves

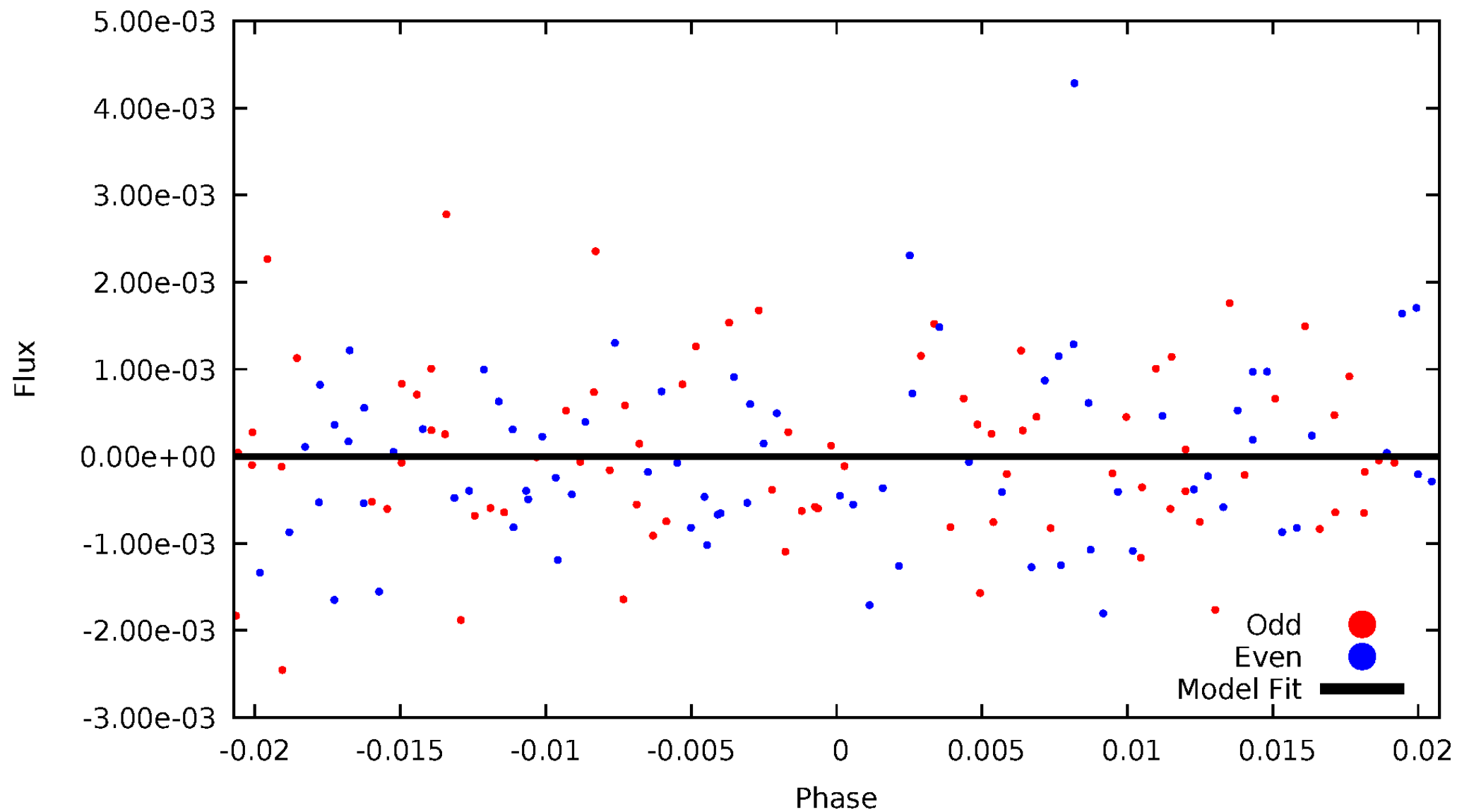


TCE 012069252-02



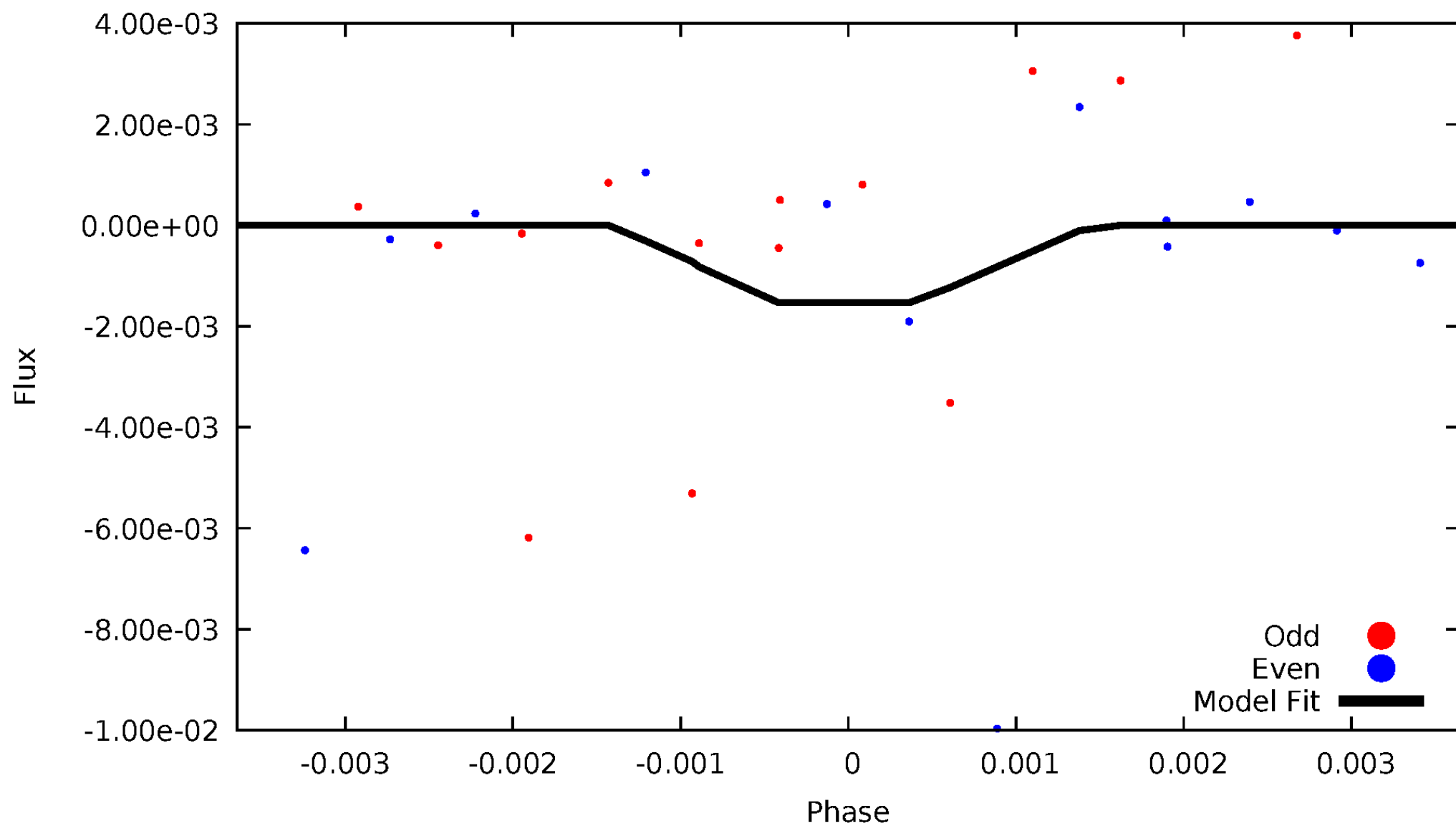
DV Odd/Even

TCE 012069252-02



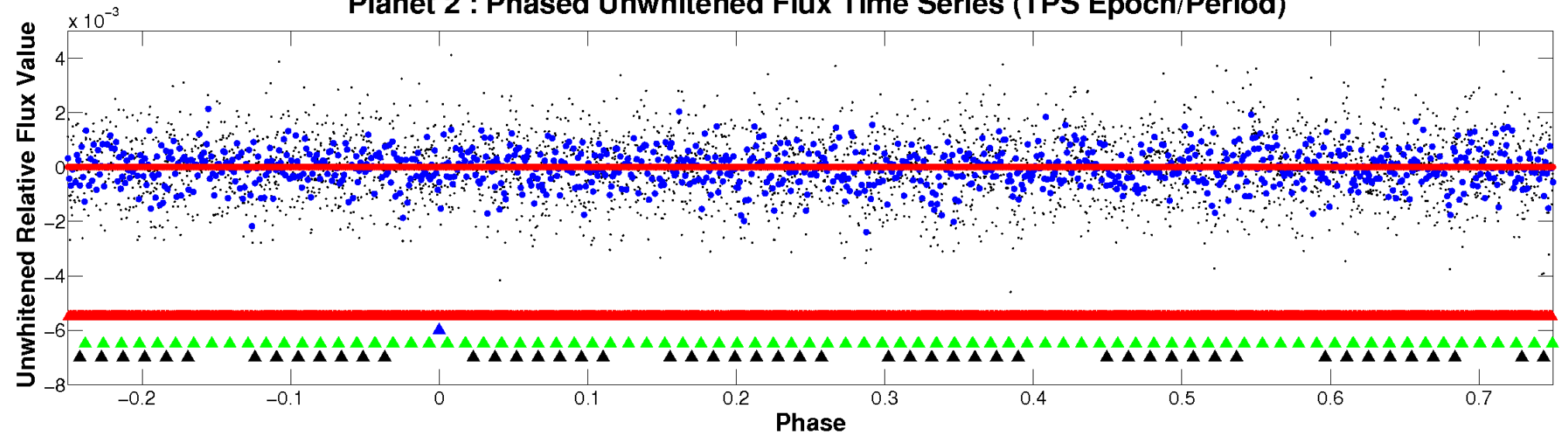
ALT Odd/Even

TCE 012069252-02

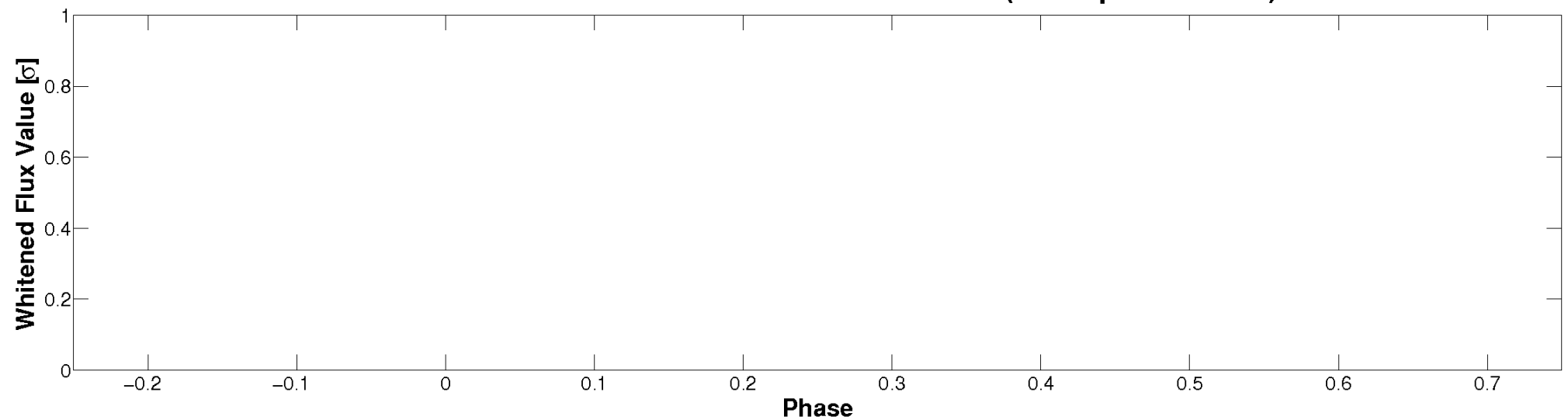


Non-Whitened Vs. Whitened Light Curve

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

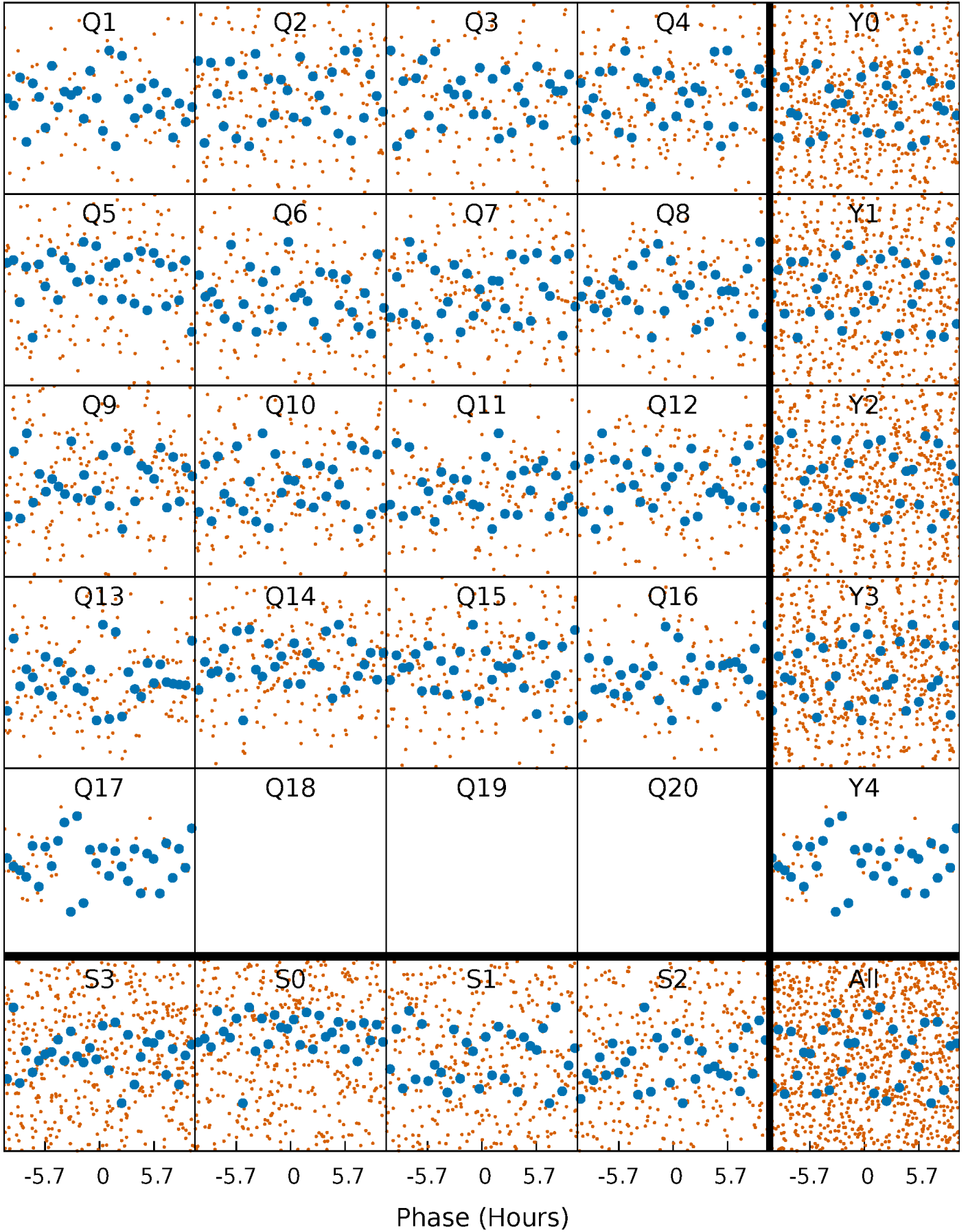


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



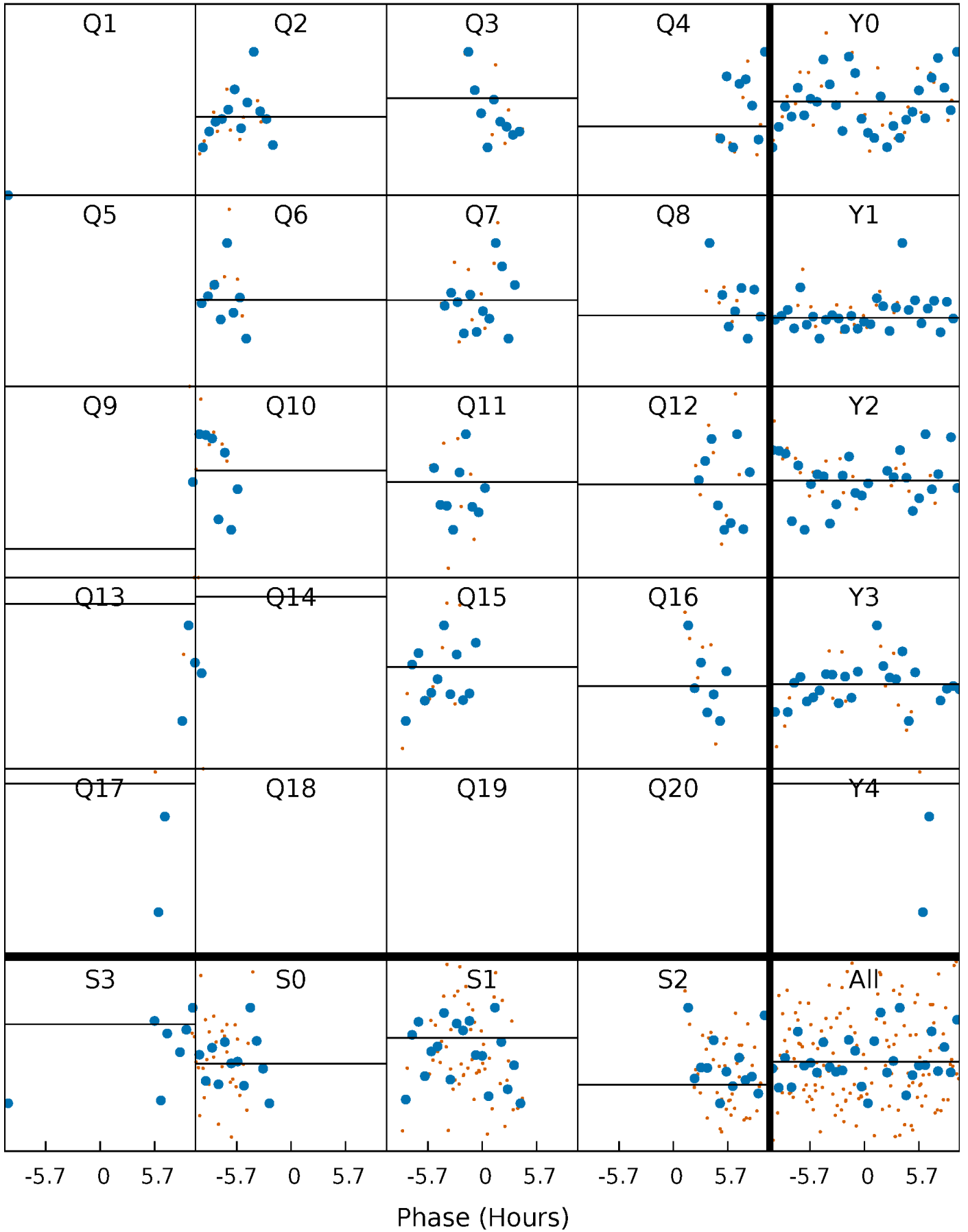
PDC Quarter-Phased Transit Curves

TCE 012069252-02 P= 20.111259 Days $T_0=133.782525$ (BKJD)



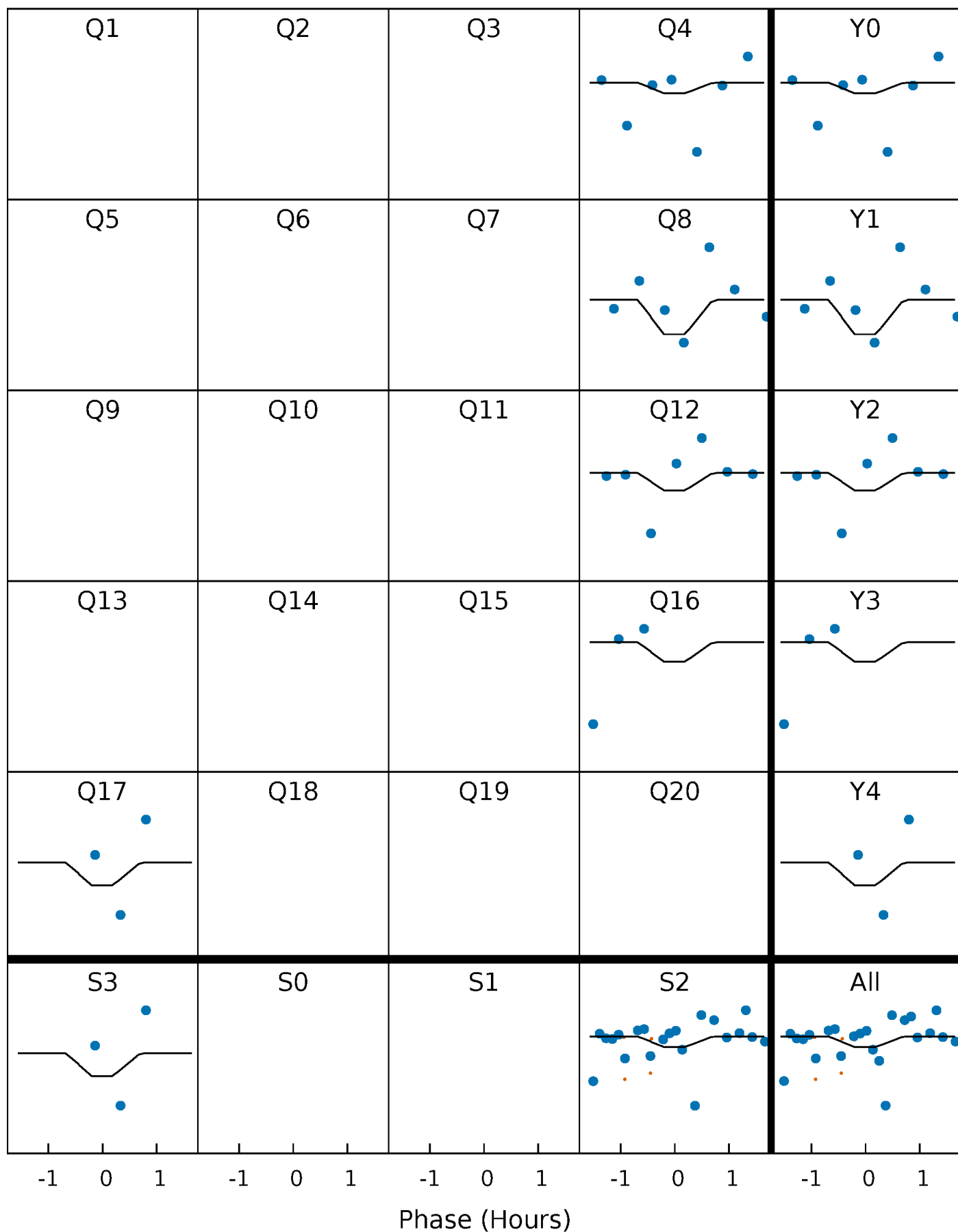
DV Quarter-Phased Transit Curves

TCE 012069252-02 P= 20.111259 Days $T_0=133.782525$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

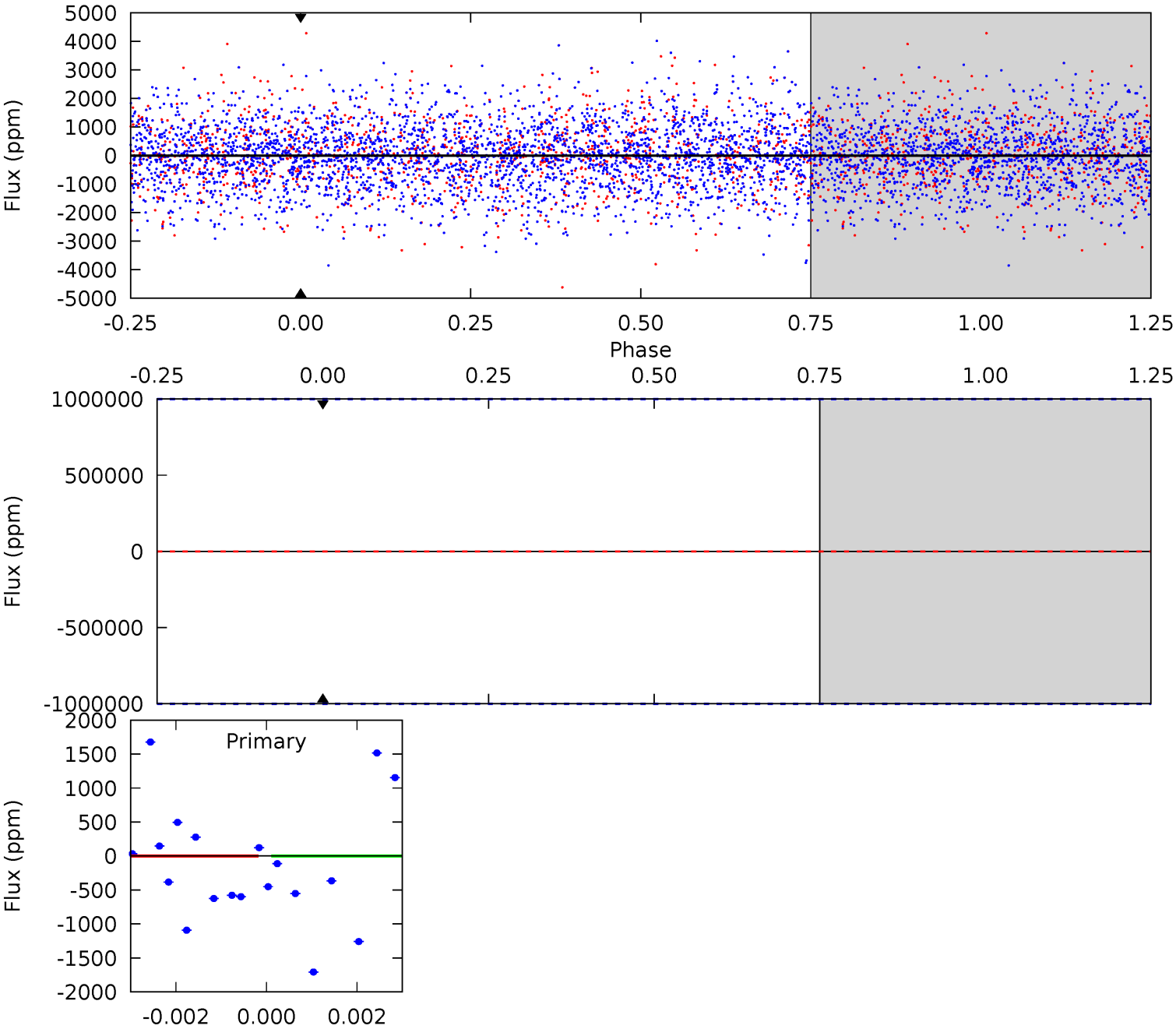
TCE 012069252-02 P= 20.111259 Days $T_0=134.032088$ (BKJD)



DV Model-Shift Uniqueness Test

012069252-02, P = 20.111259 Days, E = 113.671266 Days

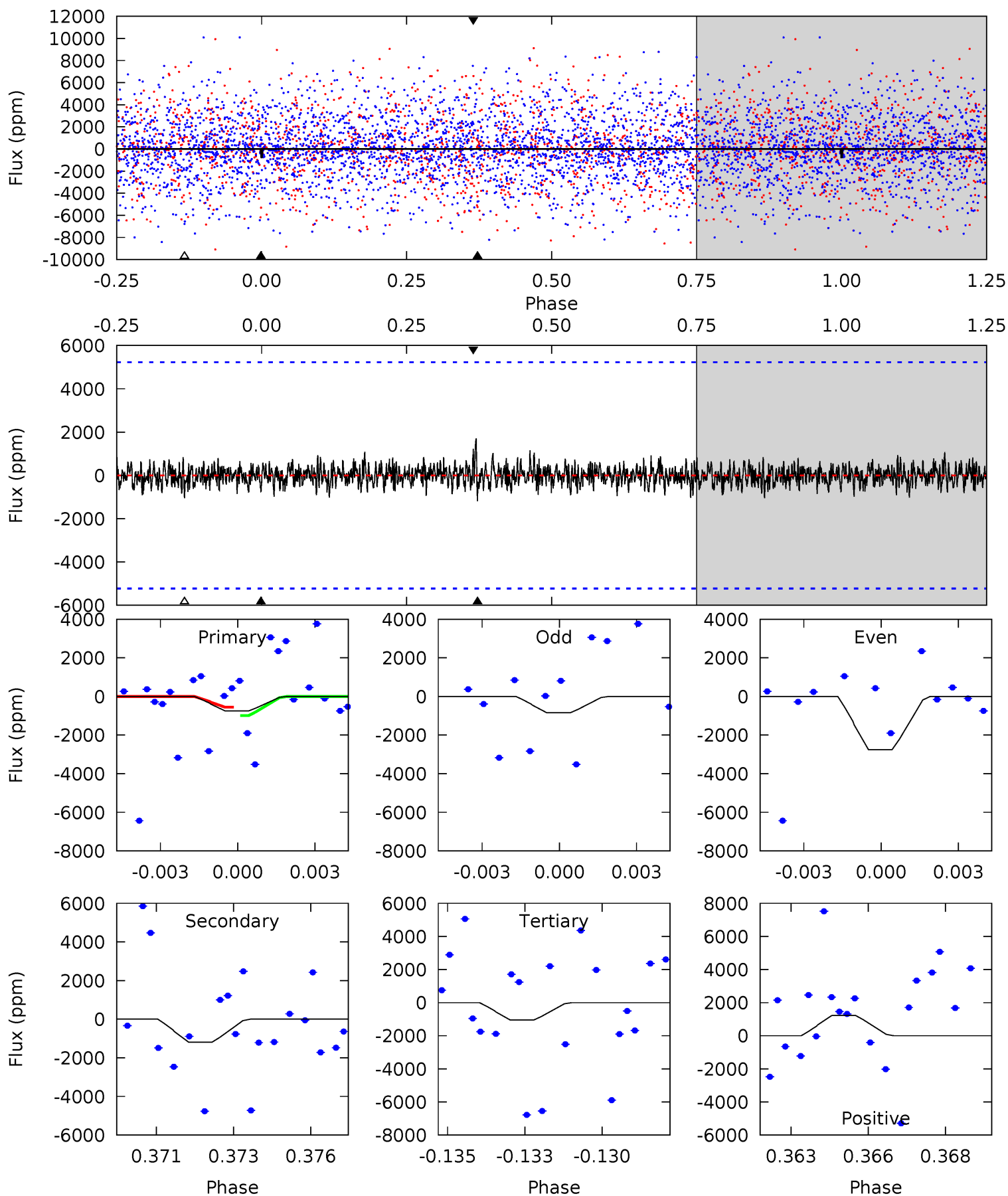
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

012069252-02, P = 20.111259 Days, E = 113.920829 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.76	1.20	1.06	1.24	5.28	3.02	0.36	-0.31	-0.48	0.14	-0.04	1.00	1.18	0.59	0.22



Stellar Parameters For KIC 012069252

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7309^{+76}_{-87}	$4.095^{+0.120}_{-0.120}$	$-0.220^{+0.150}_{-0.150}$	$1.799^{+0.346}_{-0.283}$	$1.469^{+0.128}_{-0.116}$	$0.355^{+0.204}_{-0.131}$
	+1%/-1%	+3%/-3%	+68%/-68%	+19%/-16%	+9%/-8%	+58%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 012069252-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$14.89^{+14.45}_{-10.81}$	1489^{+70}_{-68}	3871^{+40642}_{-38807}	18^{+15338}_{-9973}
Alt.	-1189 ± 989	$15.94^{+15.35}_{-10.92}$	1488^{+77}_{-63}	4511^{+3957}_{-1512}	49^{+568}_{-45}

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 $A_{obs} \gg 1.0$

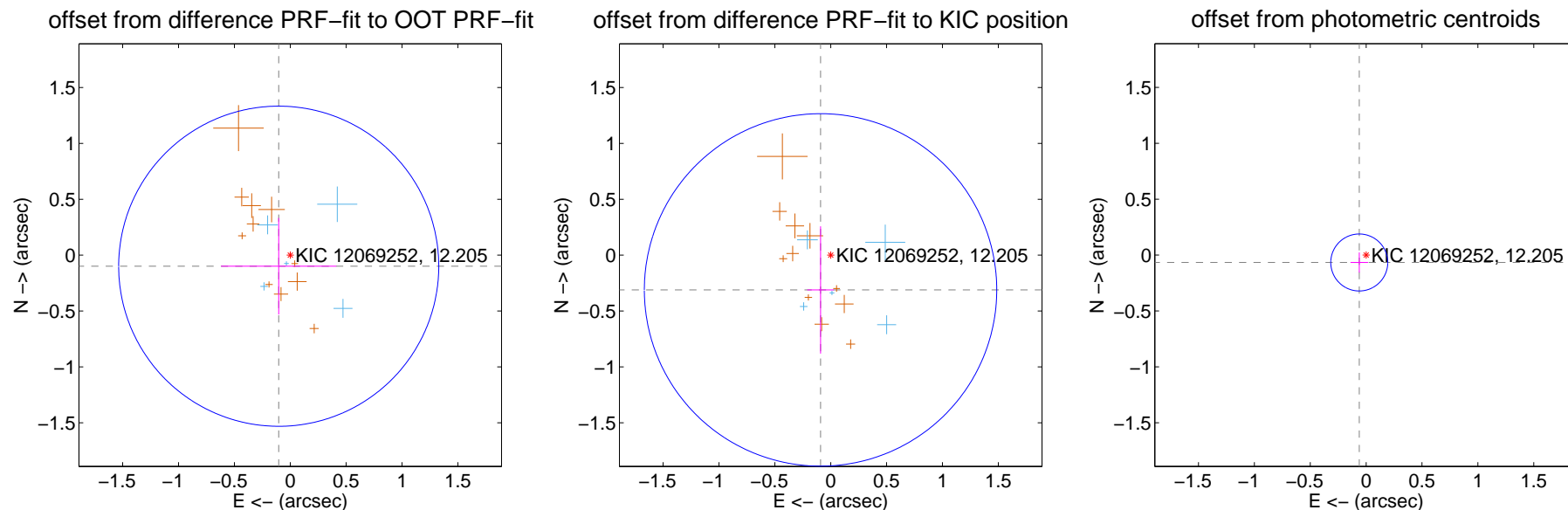
DV Centroid Data

Supplemental centroid analysis for 012069252-02. Kepler magnitude: 12.21. Transit SNR -1.00

There are 5 quarters with good PRF difference image offsets

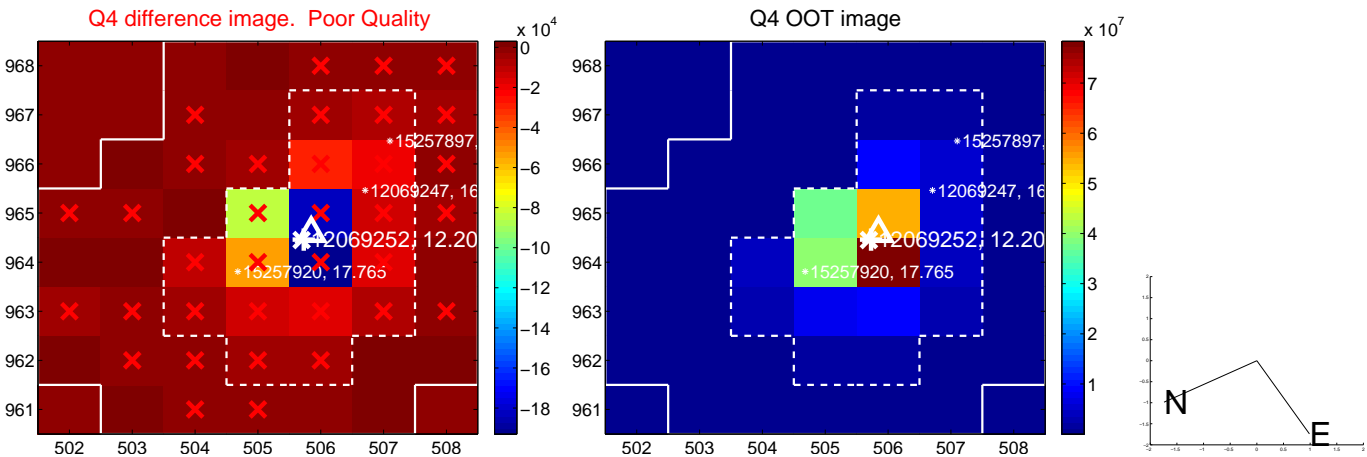
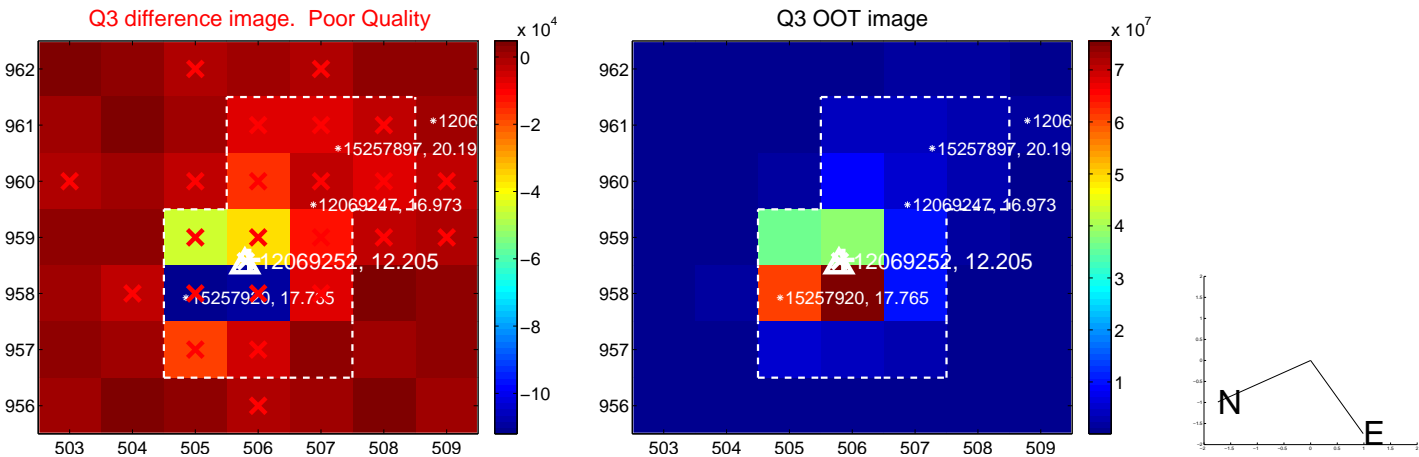
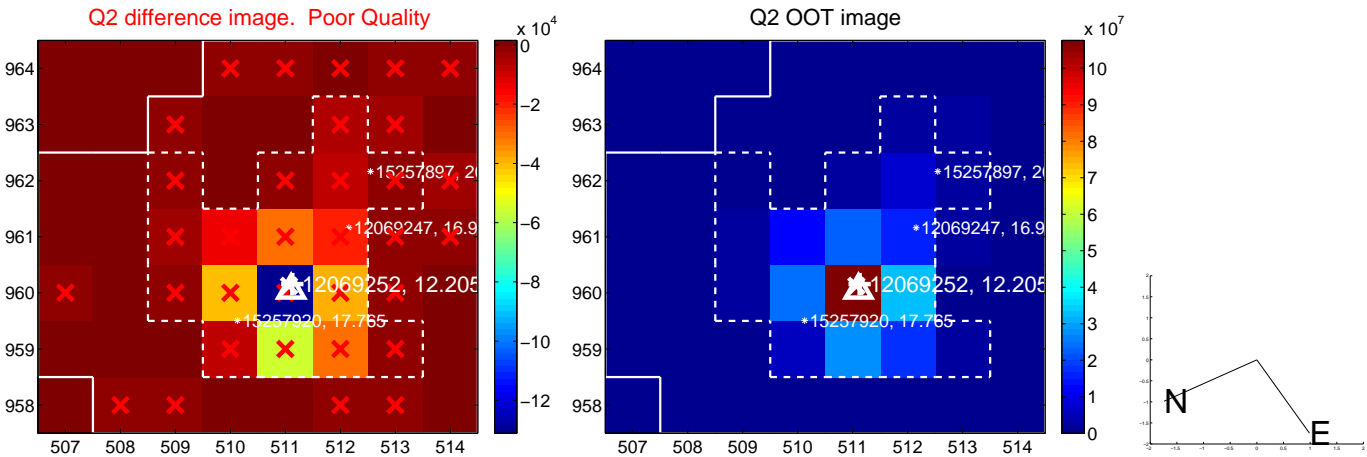
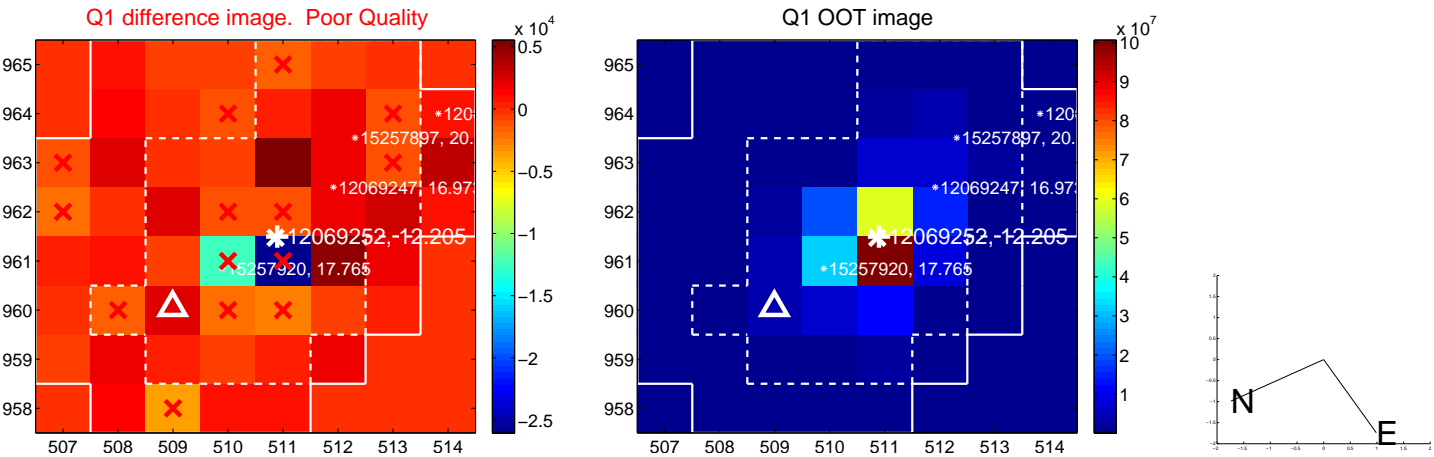
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.143 ± 0.478	0.30	0.103 ± 0.516	-0.099 ± 0.432
PRF-fit source offset from KIC position	0.324 ± 0.526	0.62	0.091 ± 0.120	-0.311 ± 0.570
photometric centroid source offset	0.09 ± 0.08	1.06	0.06 ± 0.08	-0.07 ± 0.09

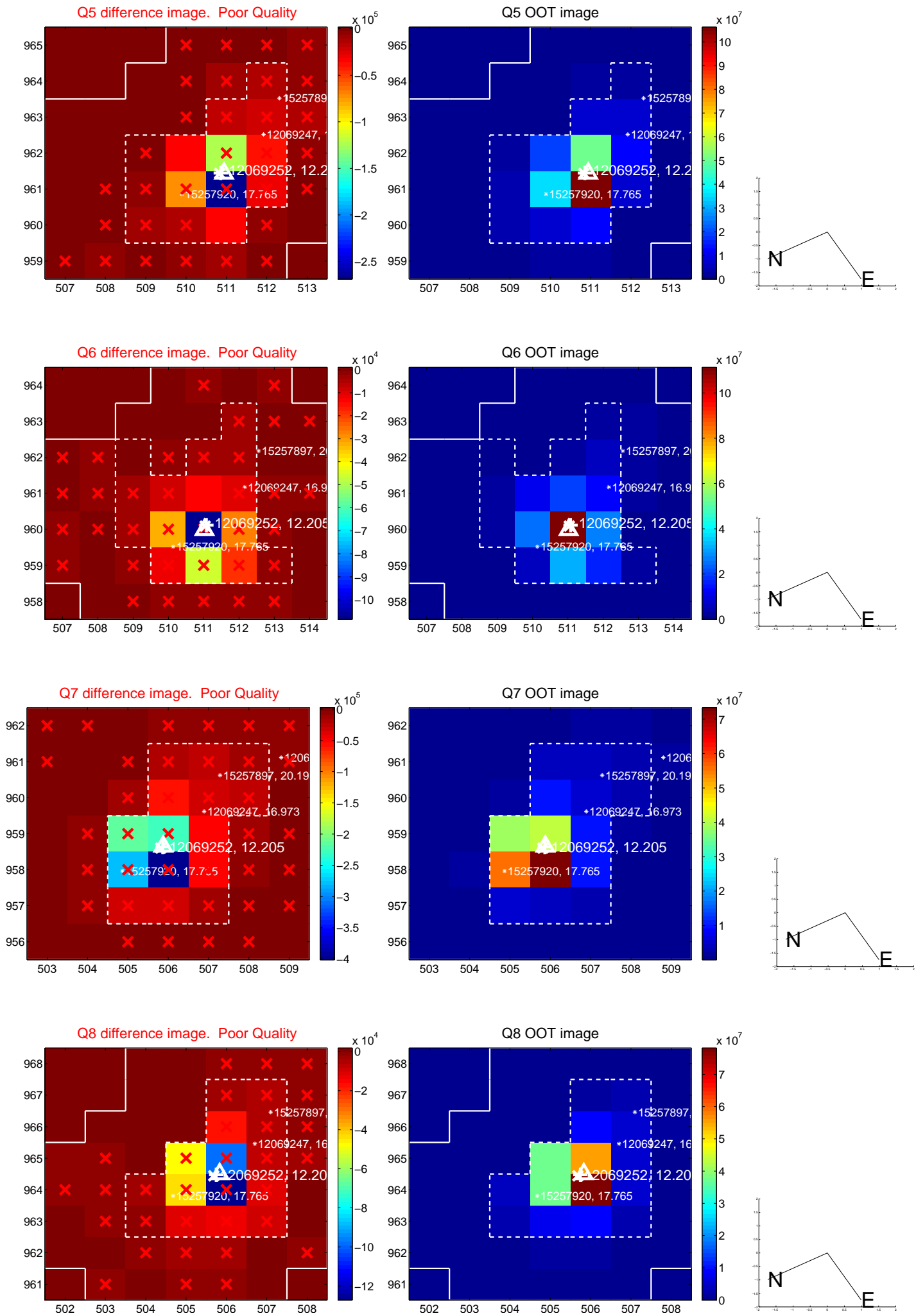


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

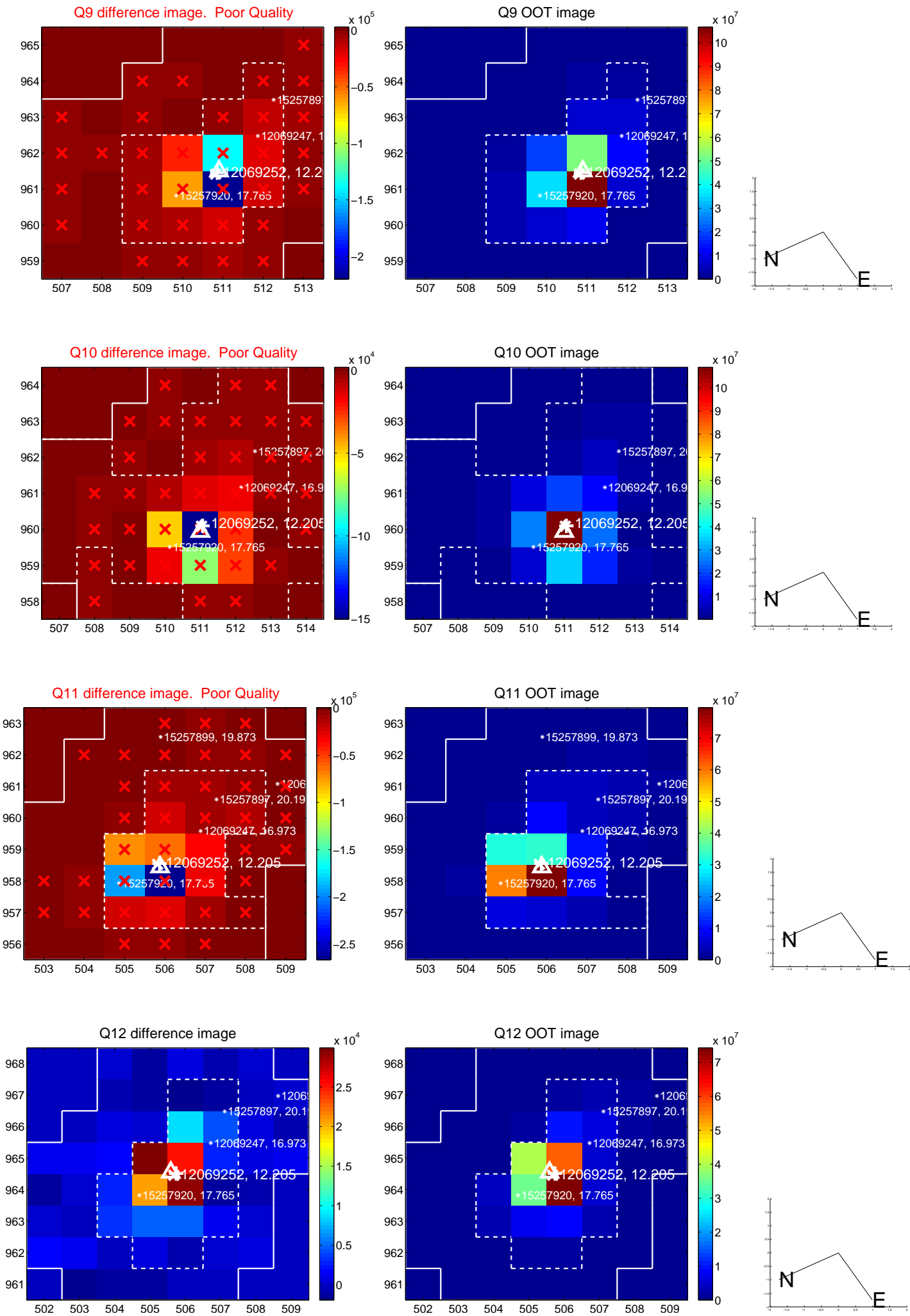
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



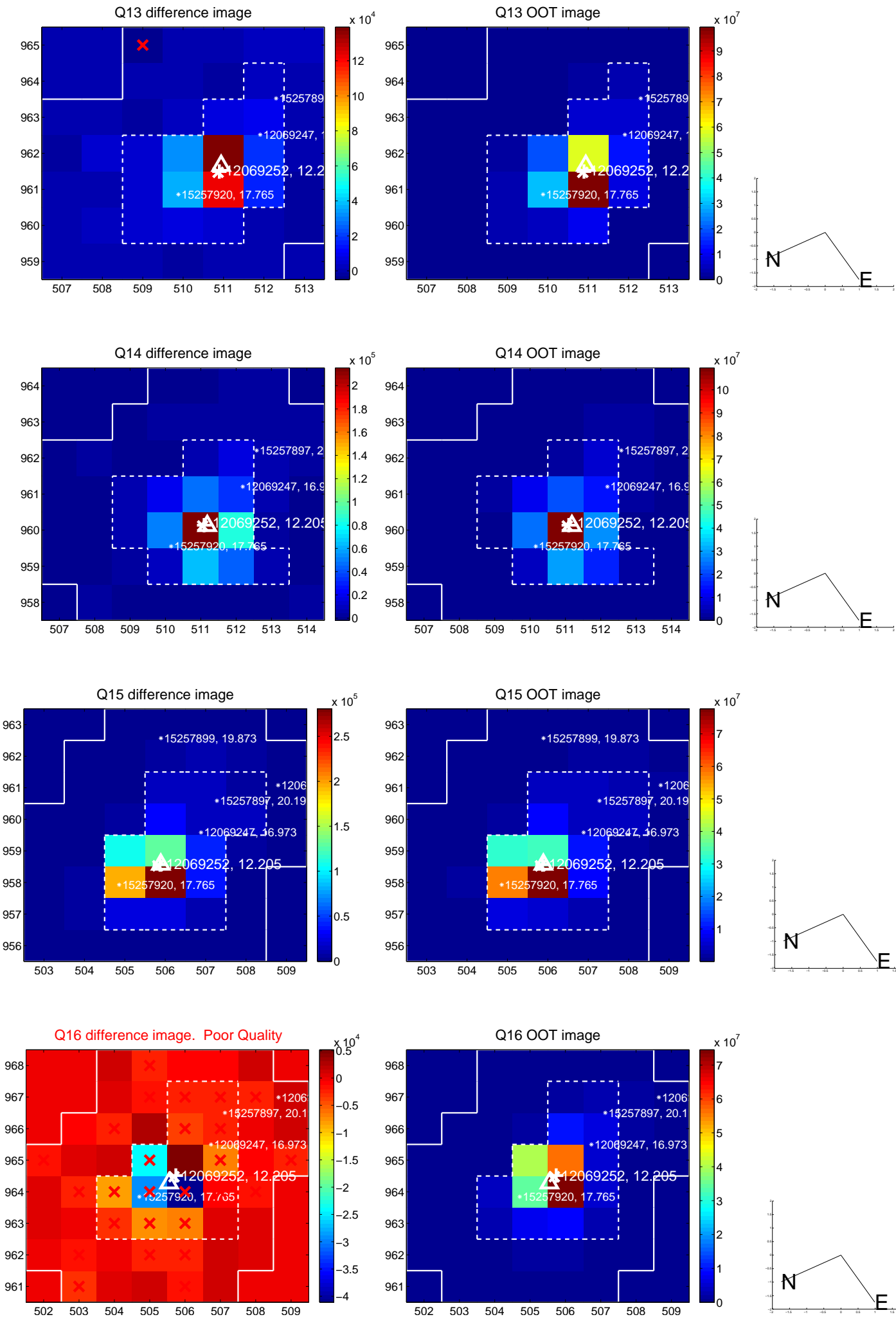
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



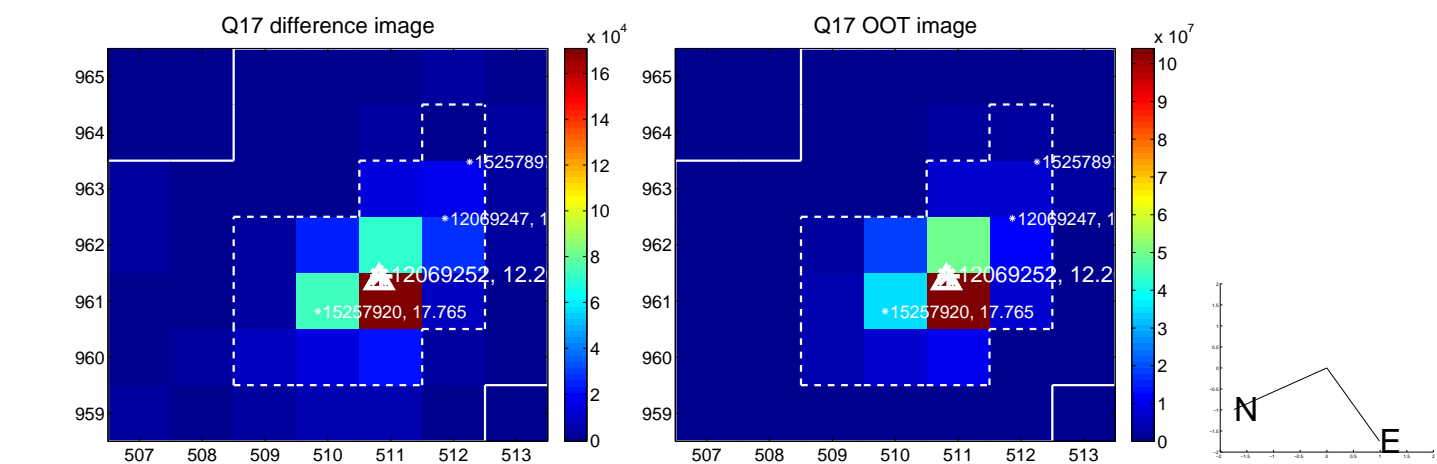
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



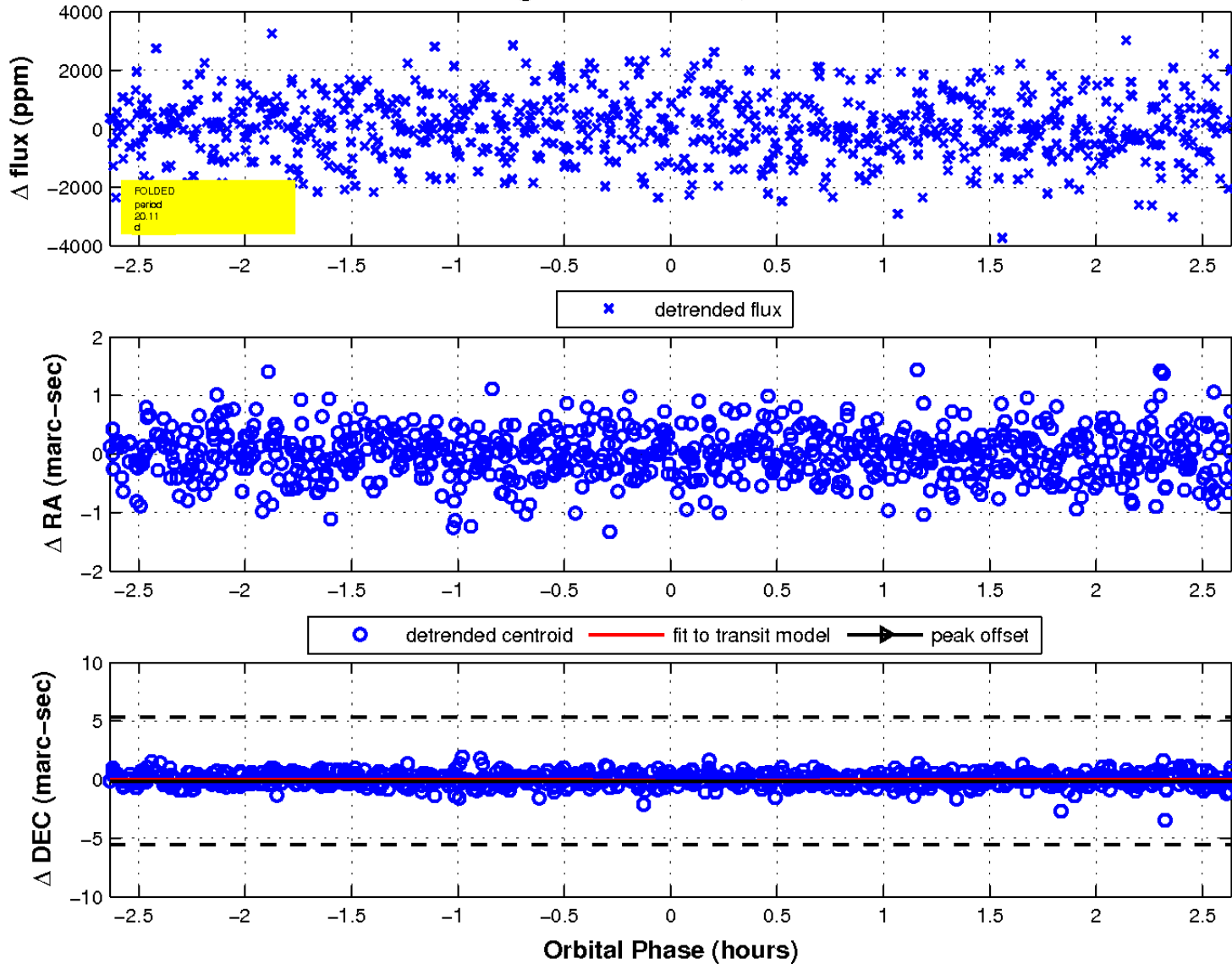
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



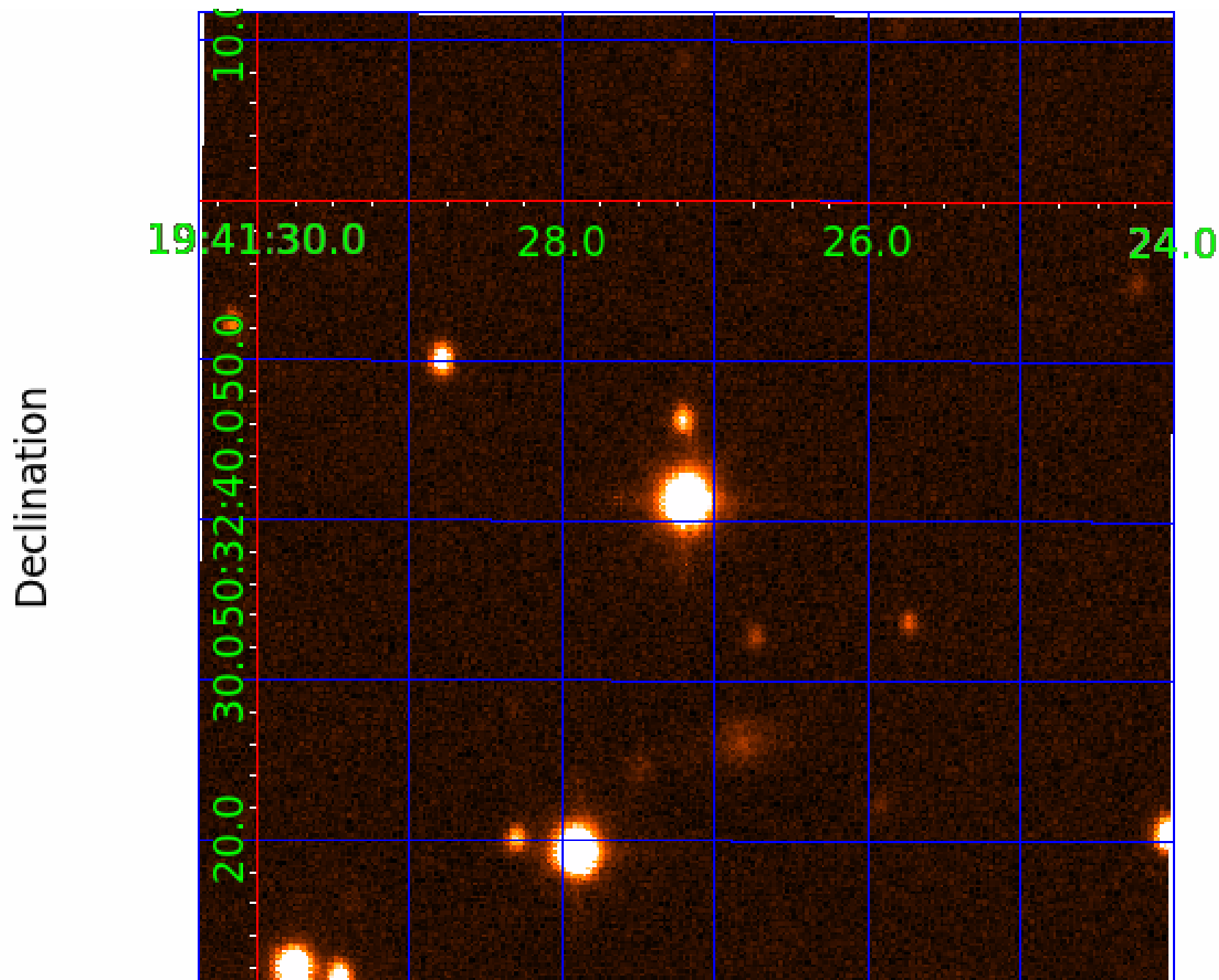
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 2 of 4



UKIRT Image



KIC 012069252

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})
012069252-01	OBS	No	1.260948	132.657918	224.2	9.375	12.5	15.2	1.80	7309	4.54	12267.35
012069252-02	OBS	No	20.111259	133.782525	327.8	5.000	13.6	-1.0	1.80	7309	3.30	305.56
012069252-03	OBS	No	13.489154	132.672953	2254.2	1.061	12.8	11.8	1.80	7309	8.71	520.44
012069252-04	OBS	No	28.688536	150.492636	773.9	15.185	11.5	7.8	1.80	7309	6.29	190.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012069252-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
012069252-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
012069252-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
012069252-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

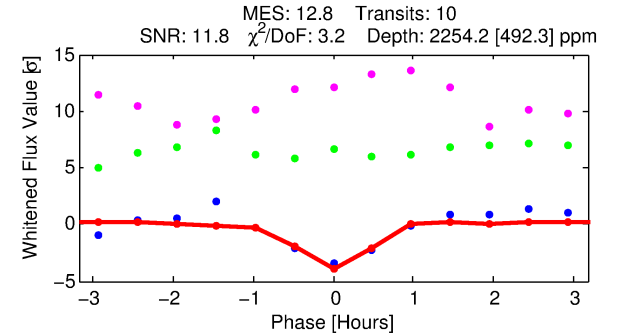
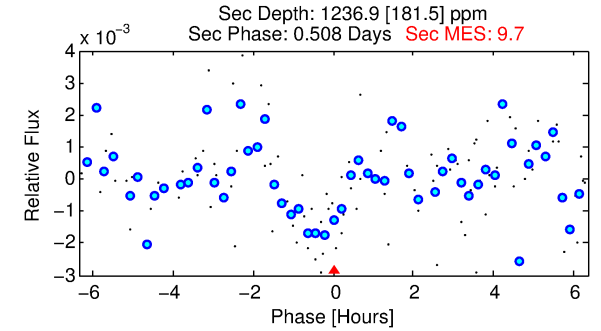
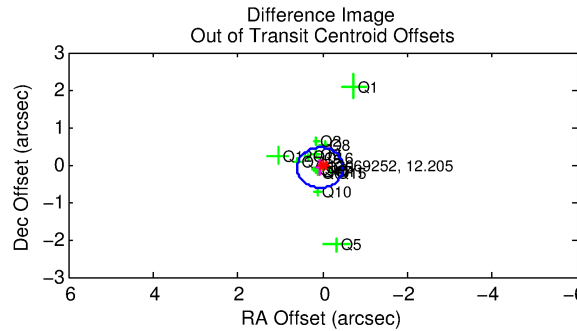
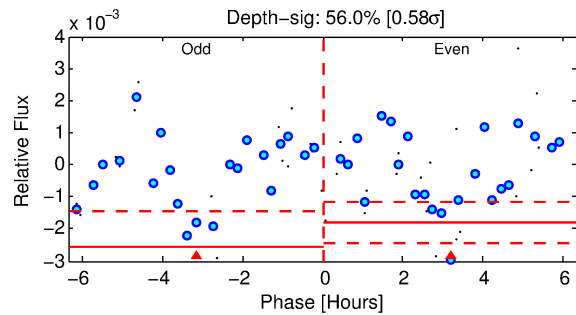
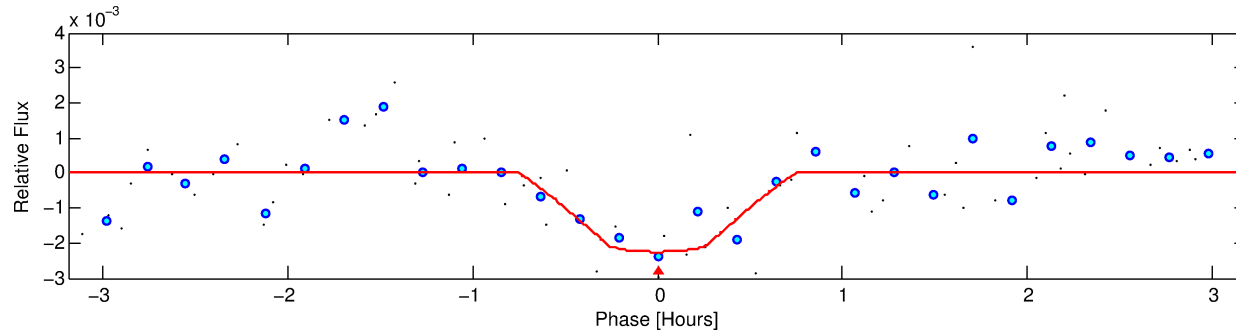
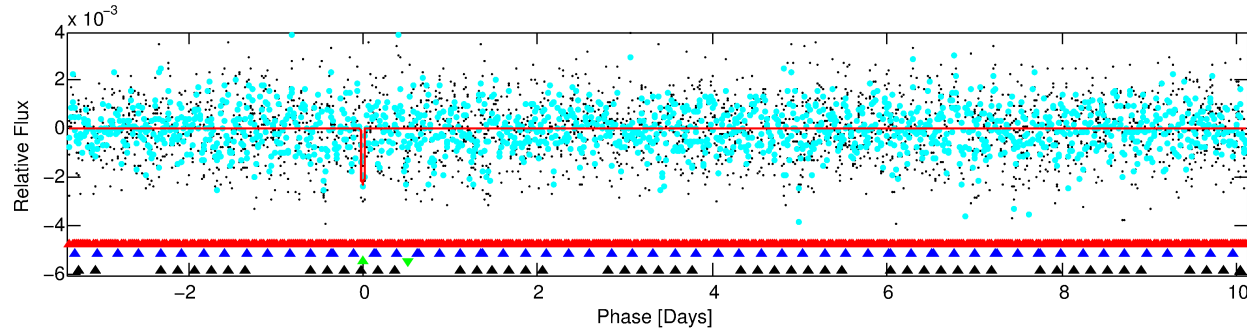
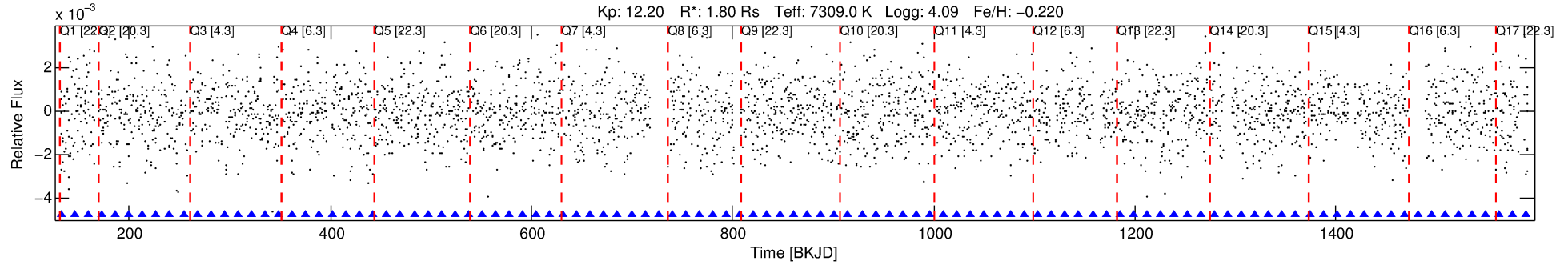
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012069252-03

No Significant Match Found

DV One-Page Summary

KIC: 12069252 Candidate: 3 of 4 Period: 13.489 d



DV Fit Results:

Period = 13.48915 [0.00013] d
Epoch = 132.6730 [0.0075] BKJD
Rp/R* = 0.0444 [0.0602]
a/R* = 101.42 [816.43]
b = 0.03 [267.83]
Seff = 520.44 [119.40]
Teff = 1218 [70] K
Rp = 8.71 [11.93] Re
a = 0.1261 [0.0199] AU
Ag = 142.62 [388.75] [0.36 σ]
Teffp = 6507 [4420] K [1.20 σ]

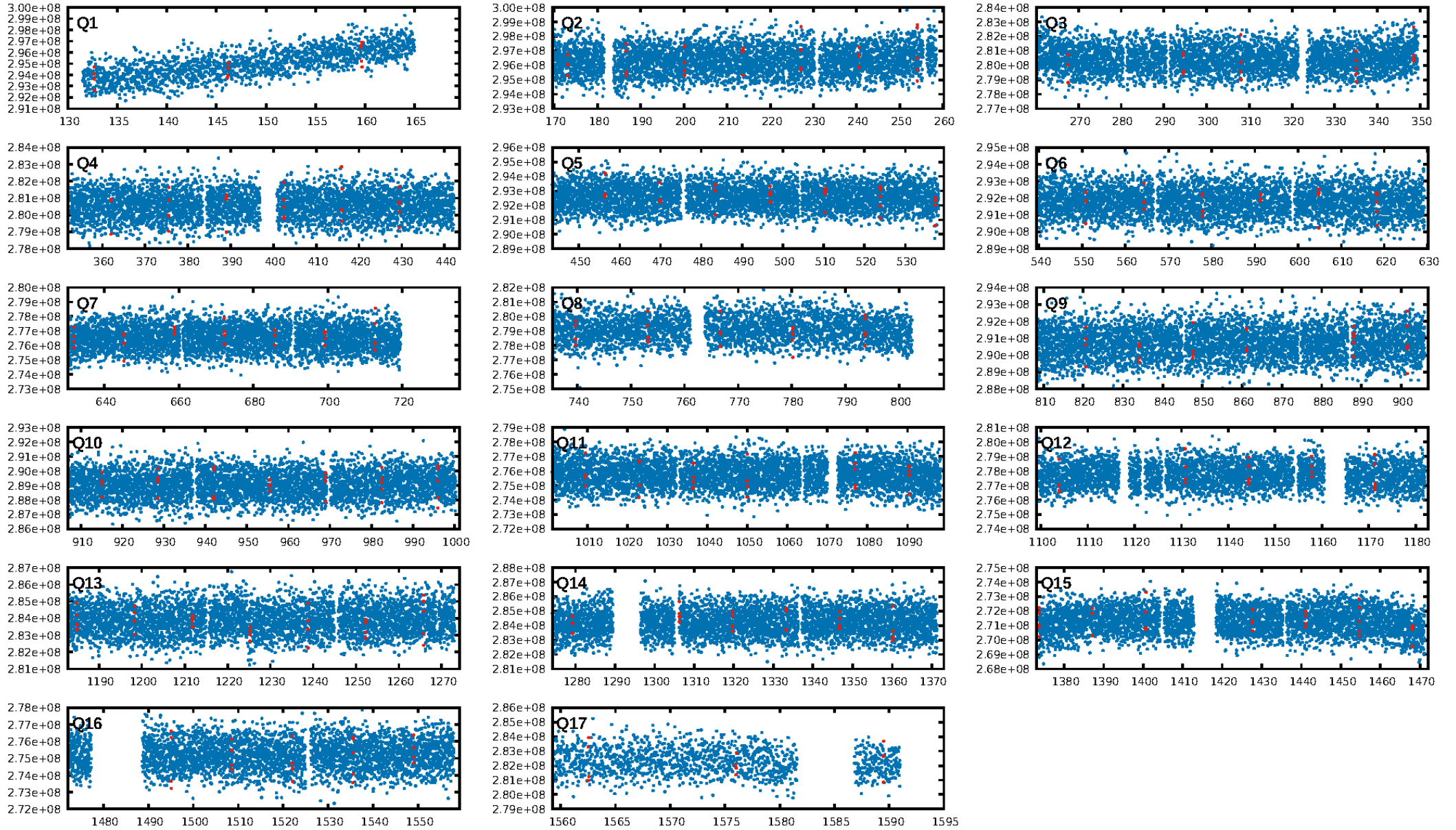
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [31.11 σ]
LongPeriod-sig: 100.0% [31.09 σ]
ModelChiSquare2-sig: 0.5%
ModelChiSquareGof-sig: 73.7%
Bootstrap-pfa: 6.95e-18
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 1.201
Centroid-sig: N/A
Centroid-so: 0.196 arcsec [3.97 σ]
OotOffset-rm: 0.100 arcsec [0.56 σ]
KicOffset-rm: 0.305 arcsec [1.39 σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.65 [11/17]
DiffImageOverlap-fno: 1.00 [17/17]

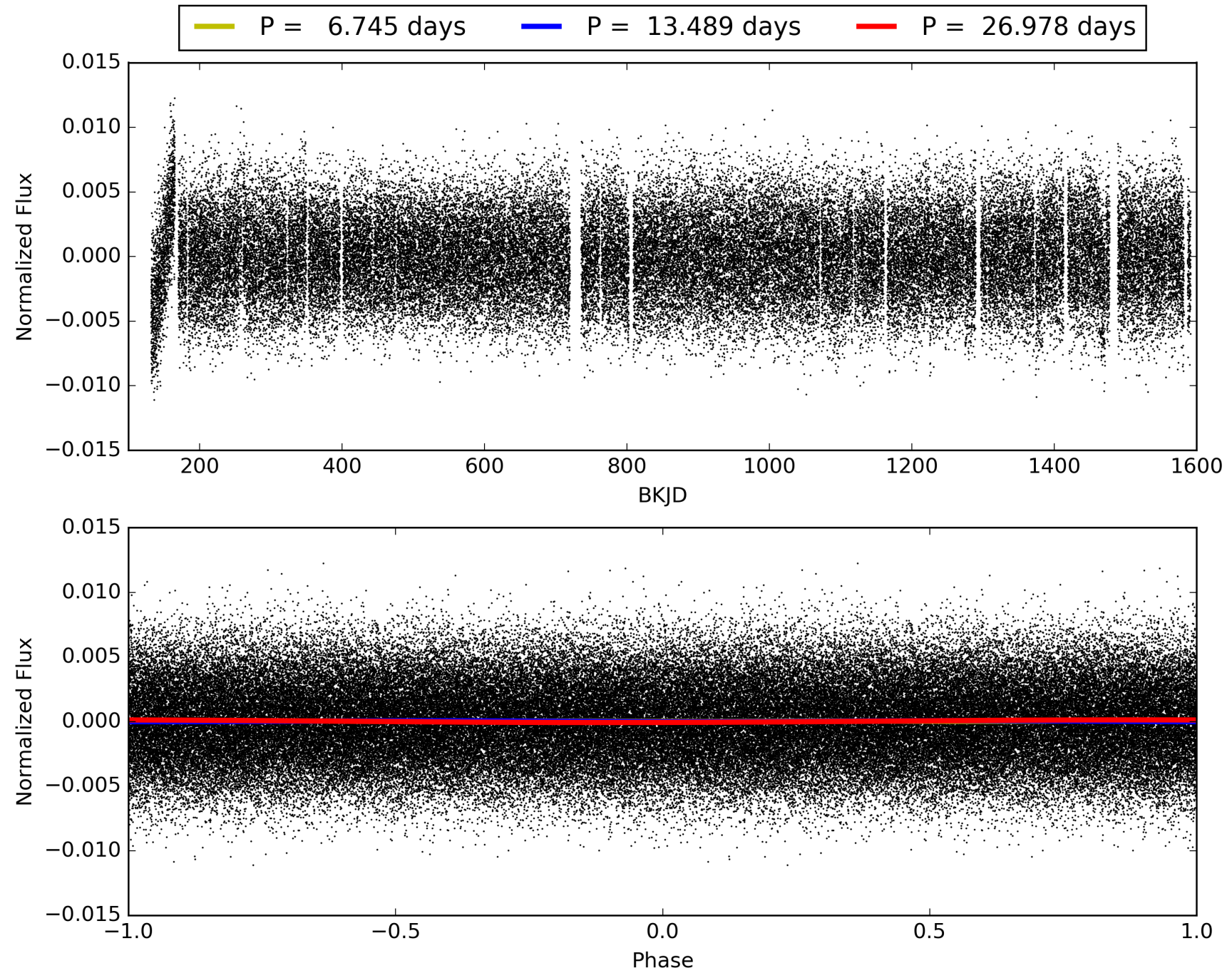
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:20:53 Z

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

TCE 012069252-03, PDC Light Curves

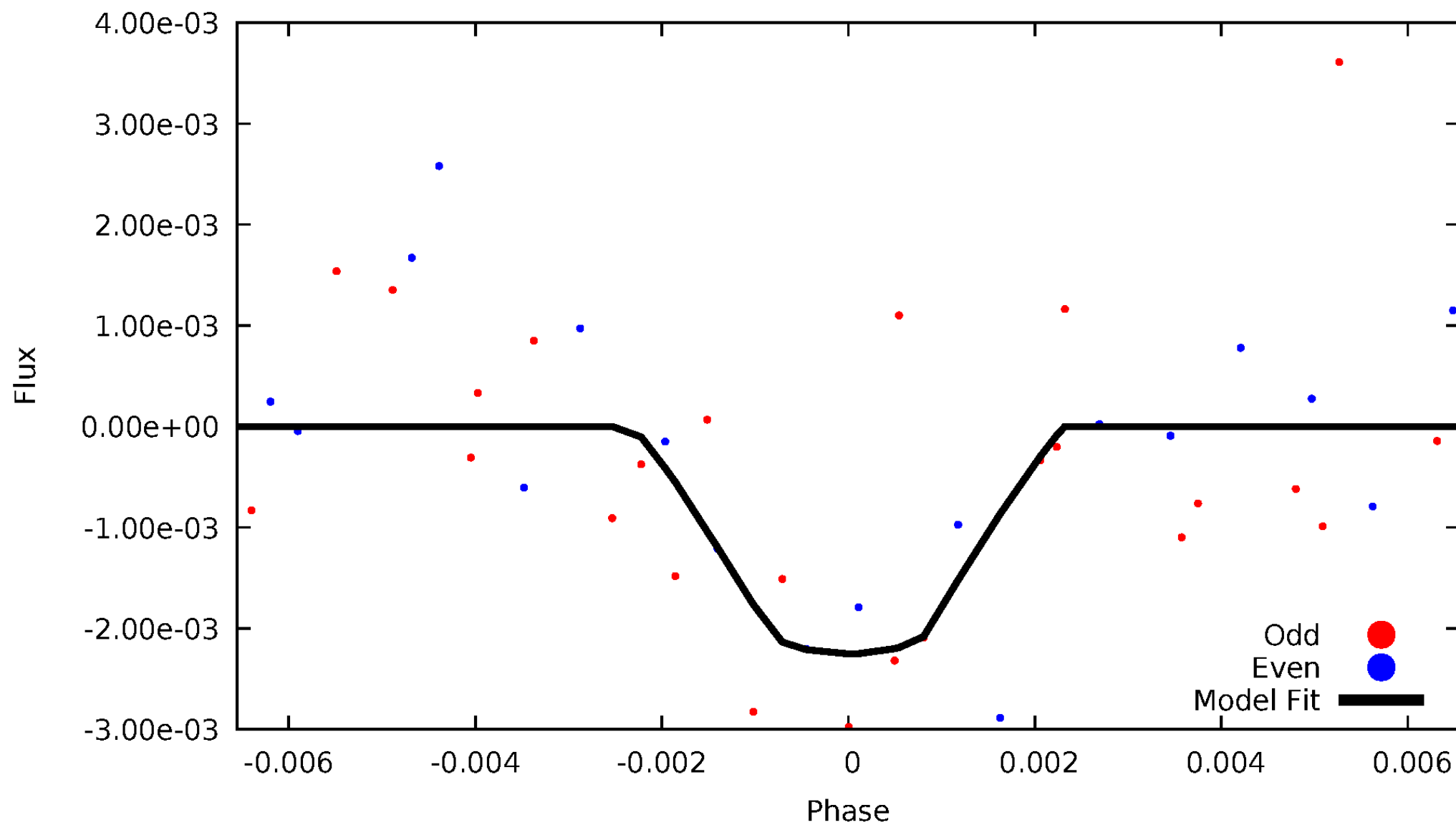


TCE 012069252-03



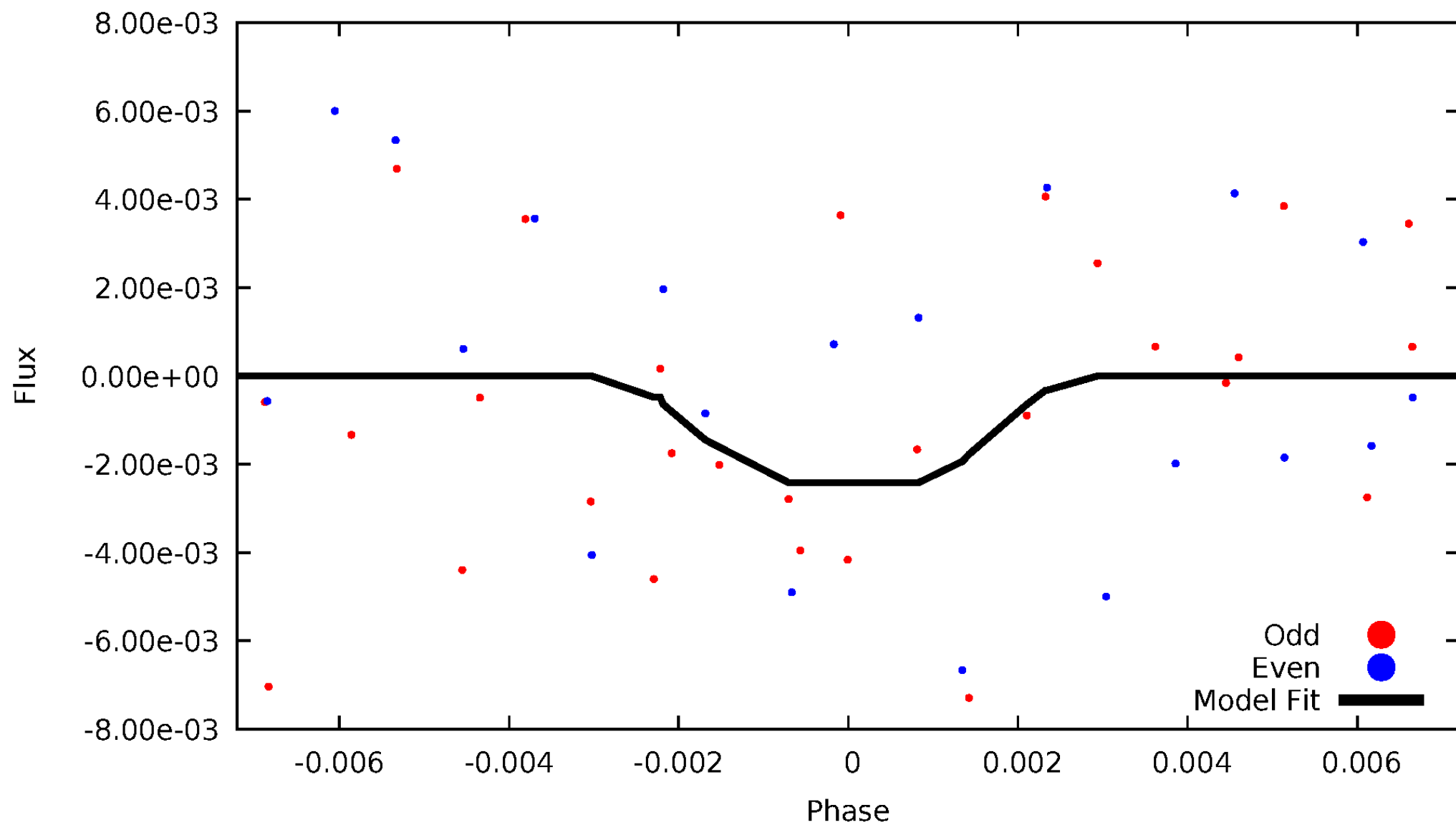
DV Odd/Even

TCE 012069252-03



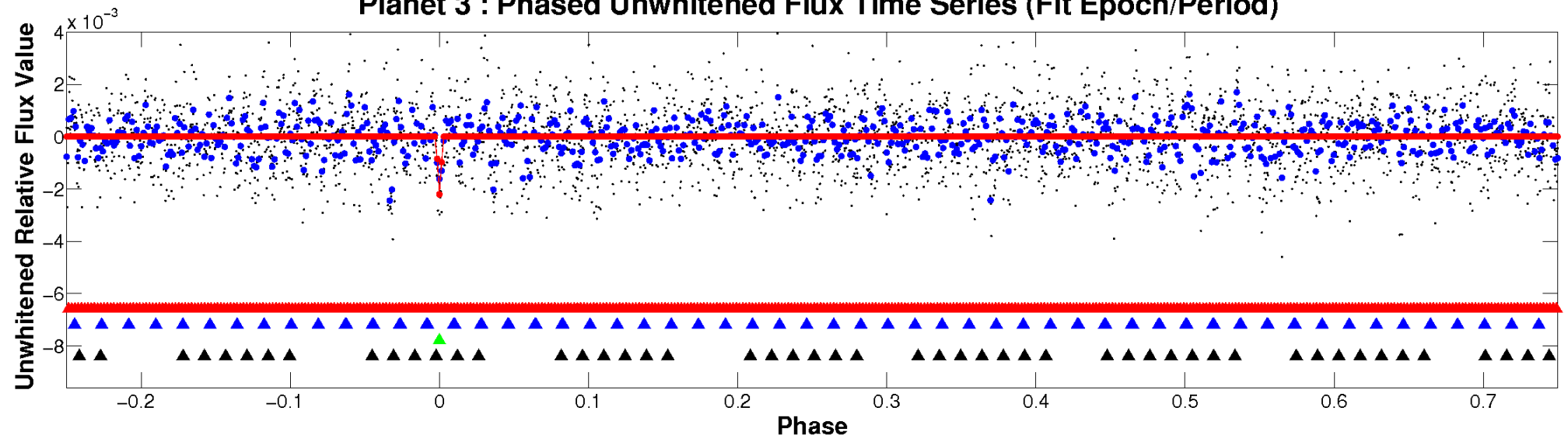
ALT Odd/Even

TCE 012069252-03

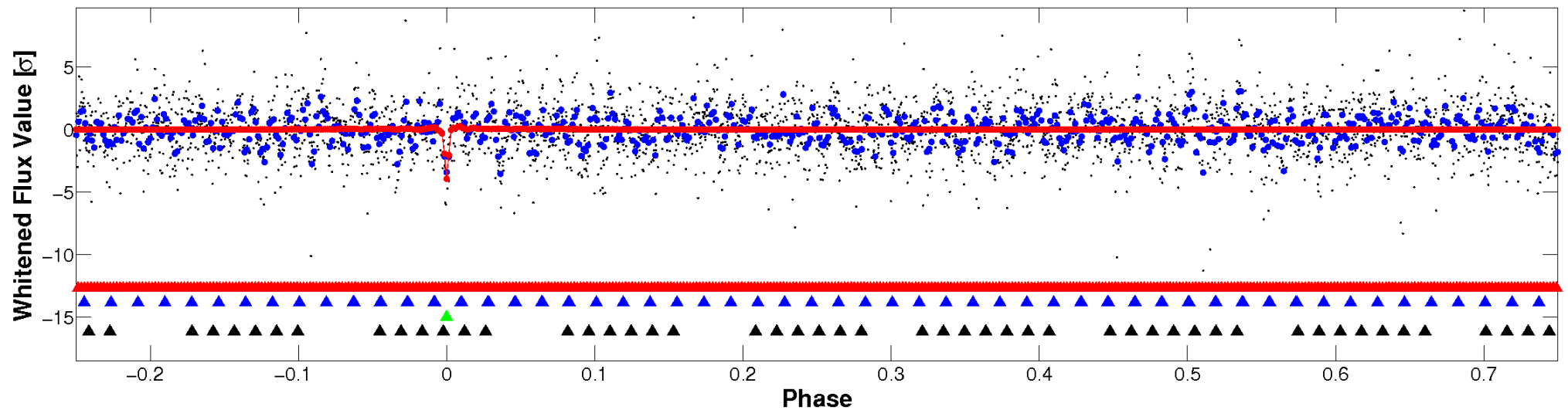


Non-Whitened Vs. Whitened Light Curve

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

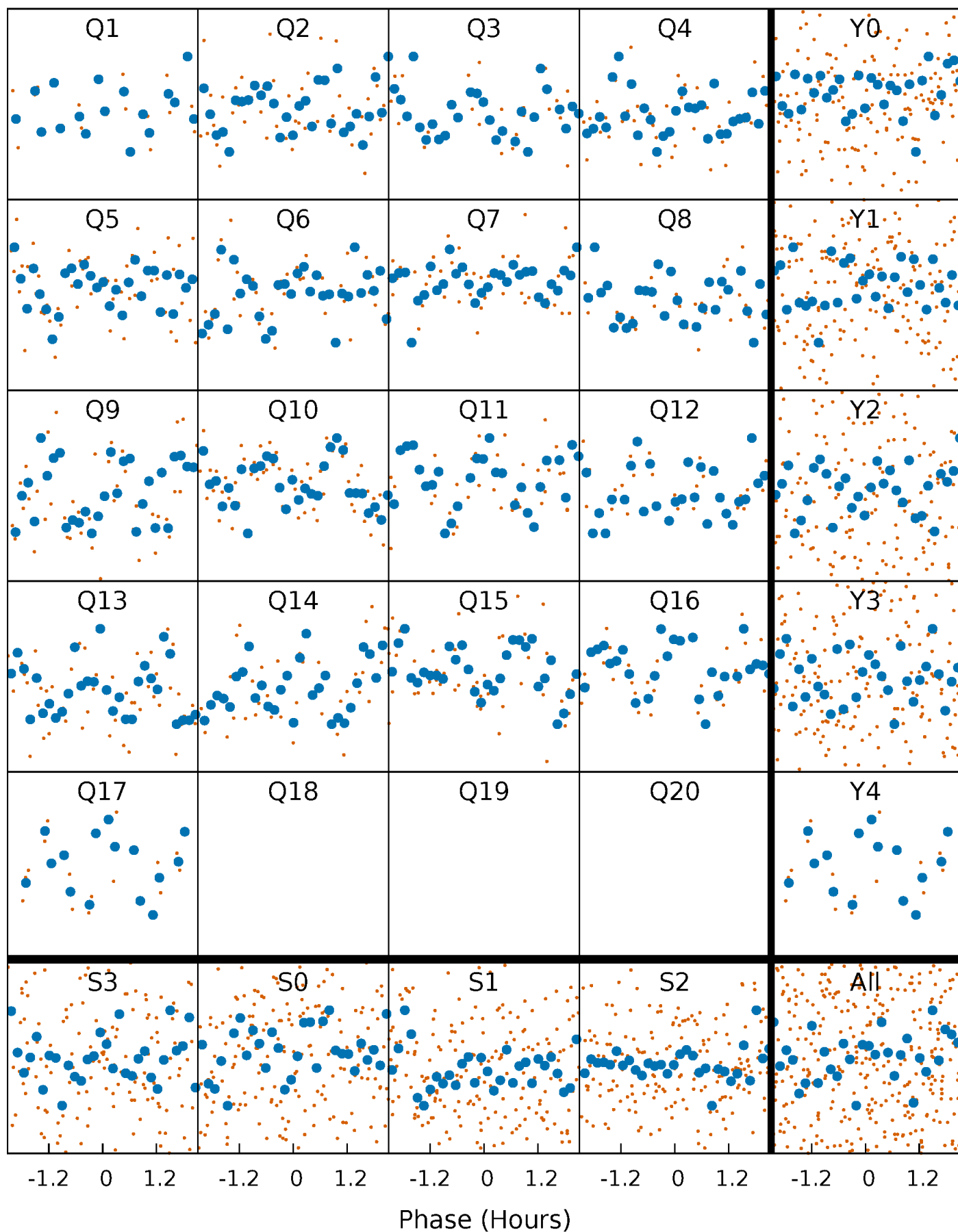


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



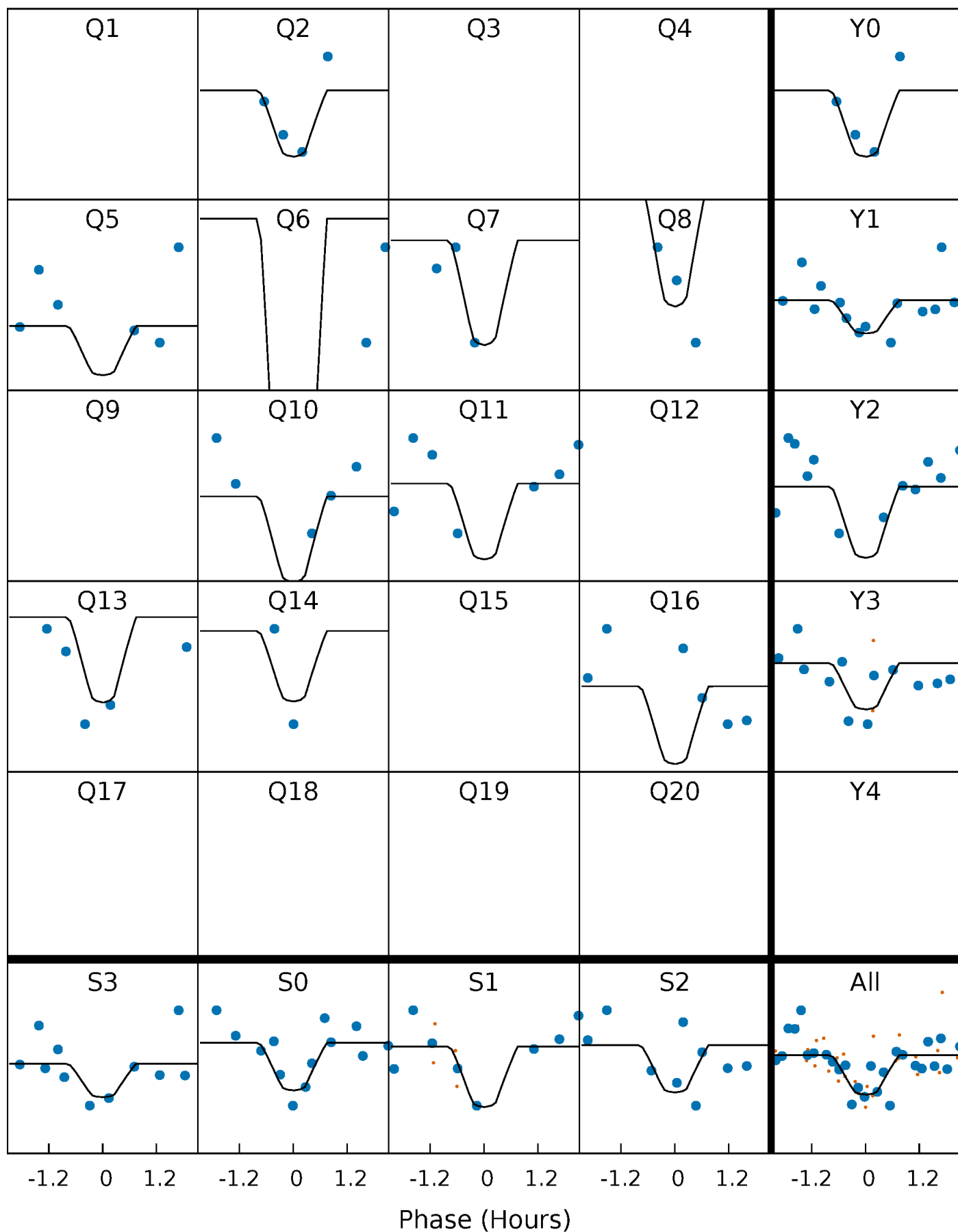
PDC Quarter-Phased Transit Curves

TCE 012069252-03 P= 13.489154 Days $T_0=132.672953$ (BKJD)



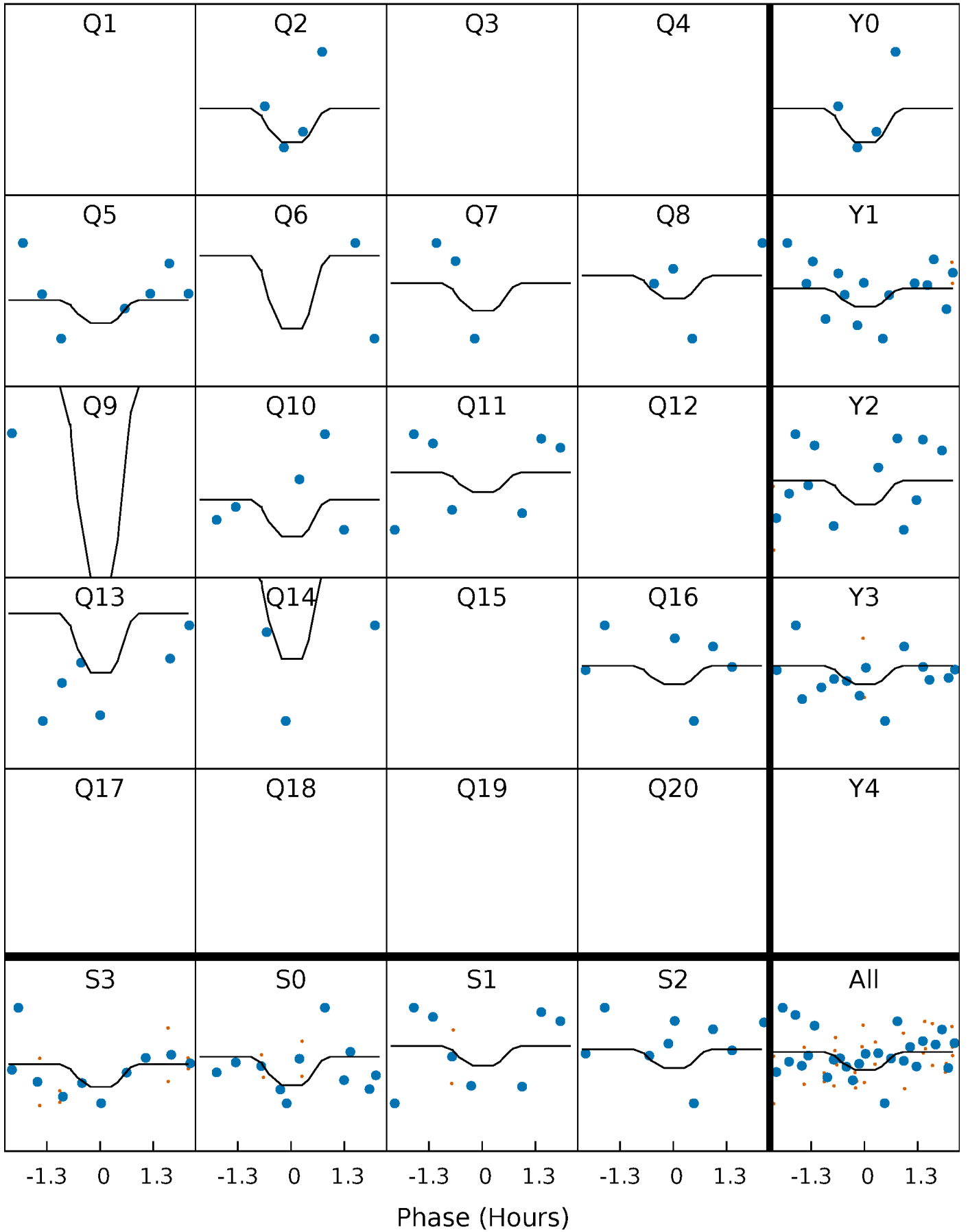
DV Quarter-Phased Transit Curves

TCE 012069252-03 P= 13.489154 Days $T_0=132.672953$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

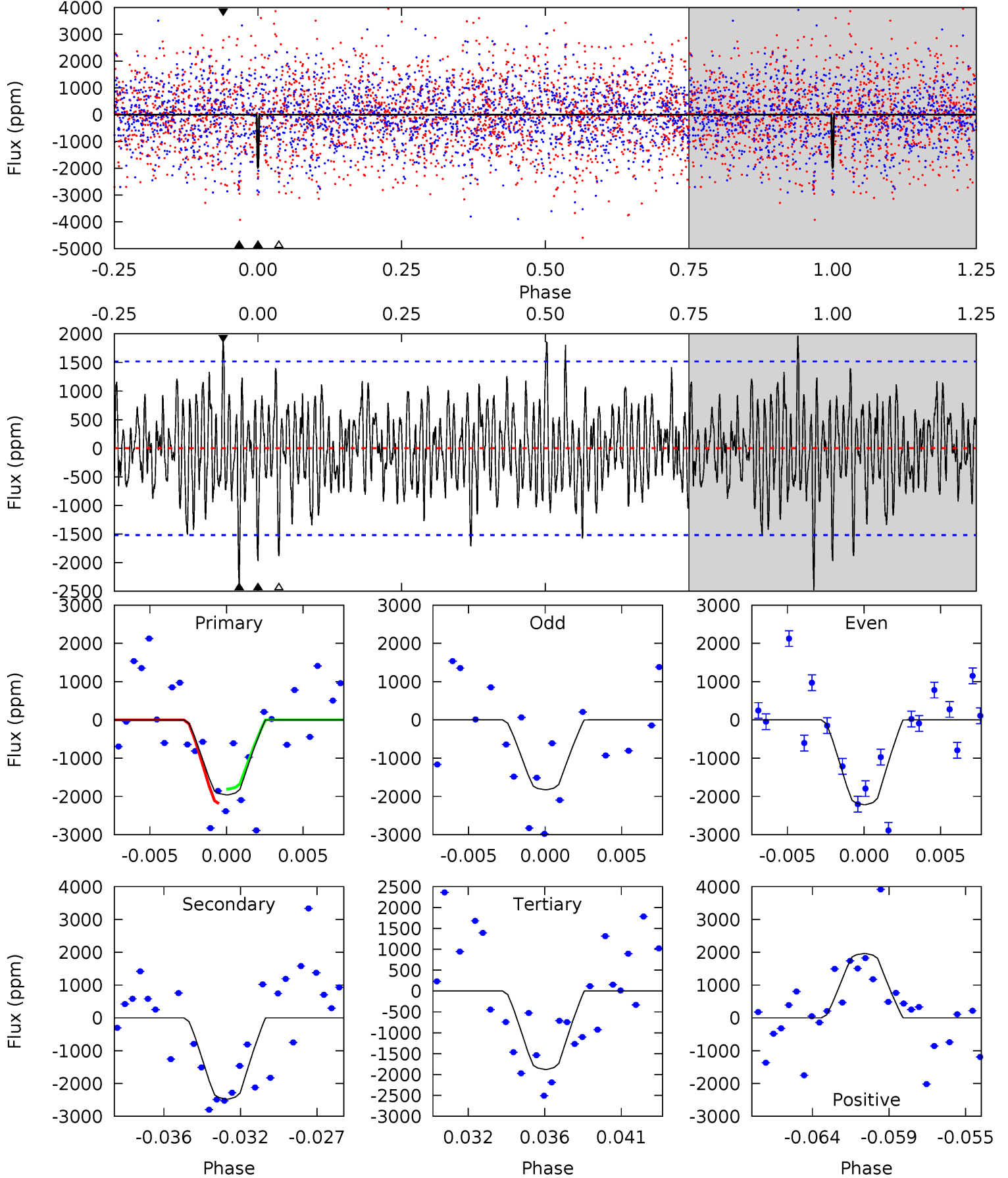
TCE 012069252-03 $P = 13.489244$ Days $T_0 = 132.672465$ (BKJD)



DV Model-Shift Uniqueness Test

012069252-03, P = 13.489154 Days, E = 119.183799 Days

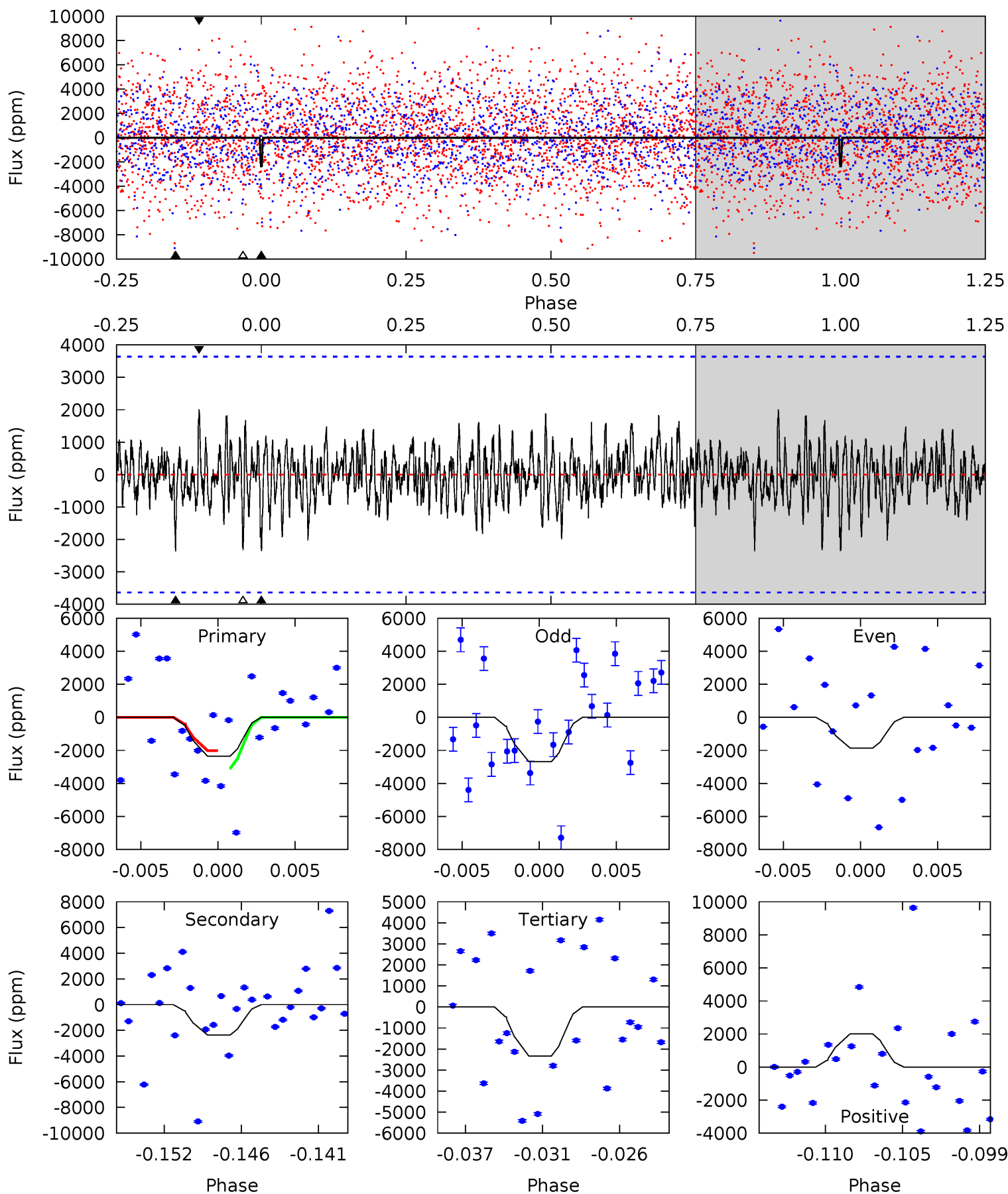
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.69	8.45	6.41	6.69	5.18	2.84	2.04	0.28	0.00	2.04	1.76	0.65	0.78	0.44	0.64



Alt Model-Shift Uniqueness Test

012069252-03, P = 13.489244 Days, E = 119.183221 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.33	3.34	3.30	2.84	5.15	2.79	0.95	0.04	0.49	0.05	0.50	0.57	0.88	0.46	0.75



Stellar Parameters For KIC 012069252

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7309^{+76}_{-87}	$4.095^{+0.120}_{-0.120}$	$-0.220^{+0.150}_{-0.150}$	$1.799^{+0.346}_{-0.283}$	$1.469^{+0.128}_{-0.116}$	$0.355^{+0.204}_{-0.131}$
	+1%/-1%	+3%/-3%	+68%/-68%	+19%/-16%	+9%/-8%	+58%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 012069252-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-2478 ± 293	$12.04^{+10.87}_{-7.96}$	1700^{+72}_{-76}	6515^{+6895}_{-1719}	151^{+1135}_{-110}
Alt.	-2361 ± 707	$13.52^{+9.72}_{-8.61}$	1698^{+85}_{-70}	6057^{+5076}_{-1360}	115^{+711}_{-79}

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 $A_{obs} \gg 1.0$

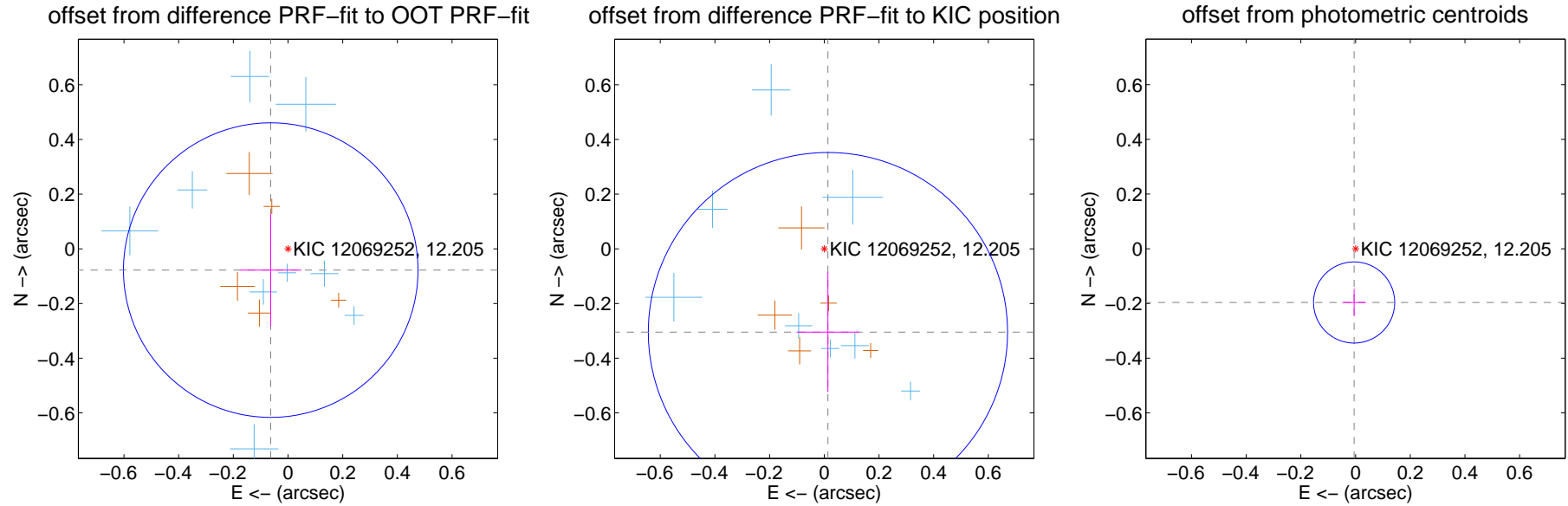
DV Centroid Data

Supplemental centroid analysis for 012069252-03. Kepler magnitude: 12.21. Transit SNR 11.77

There are 11 quarters with good PRF difference image offsets

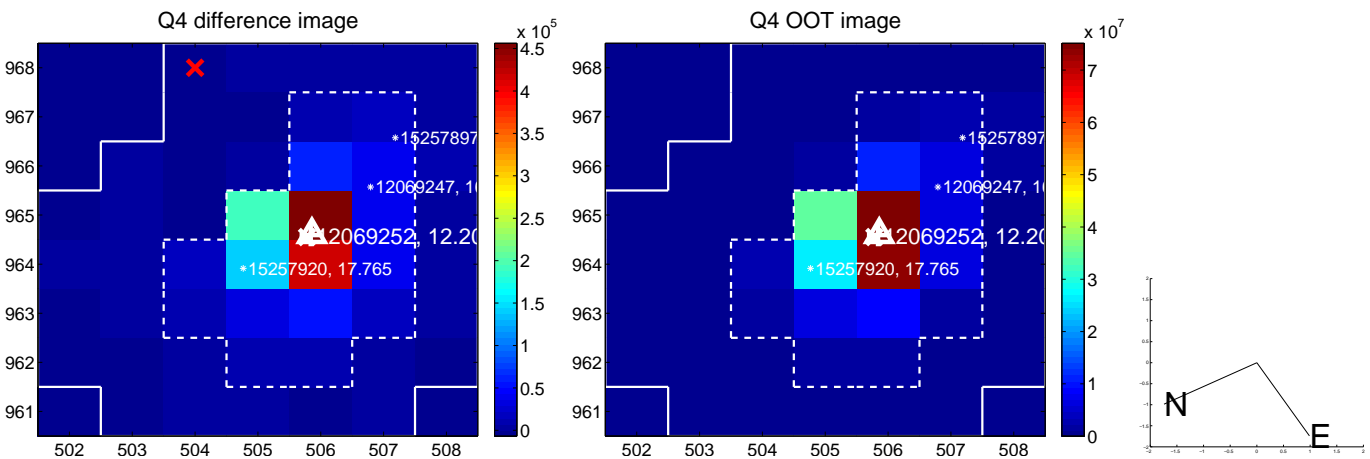
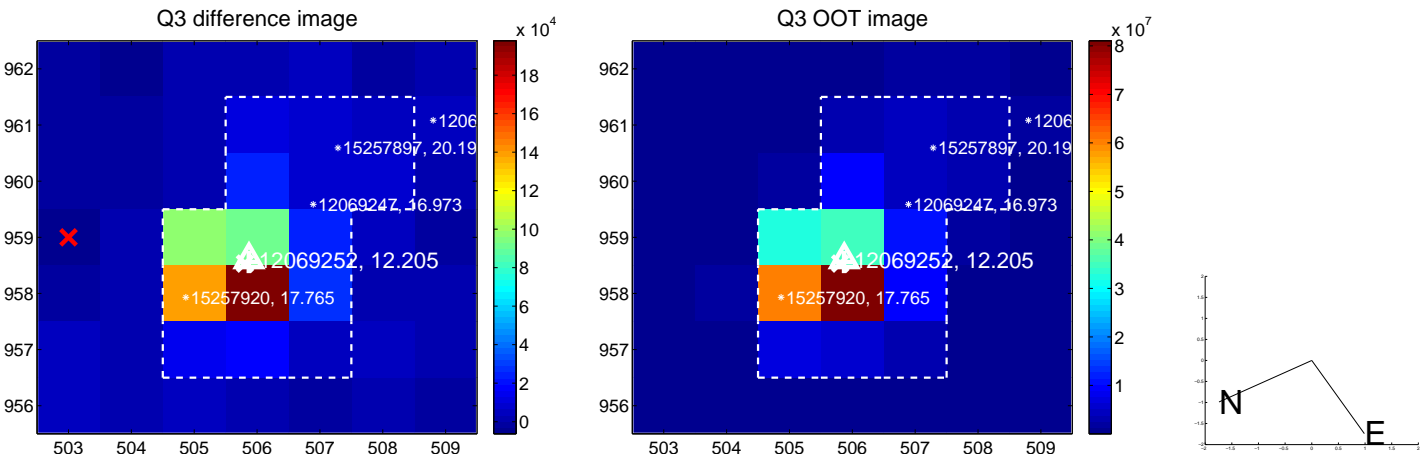
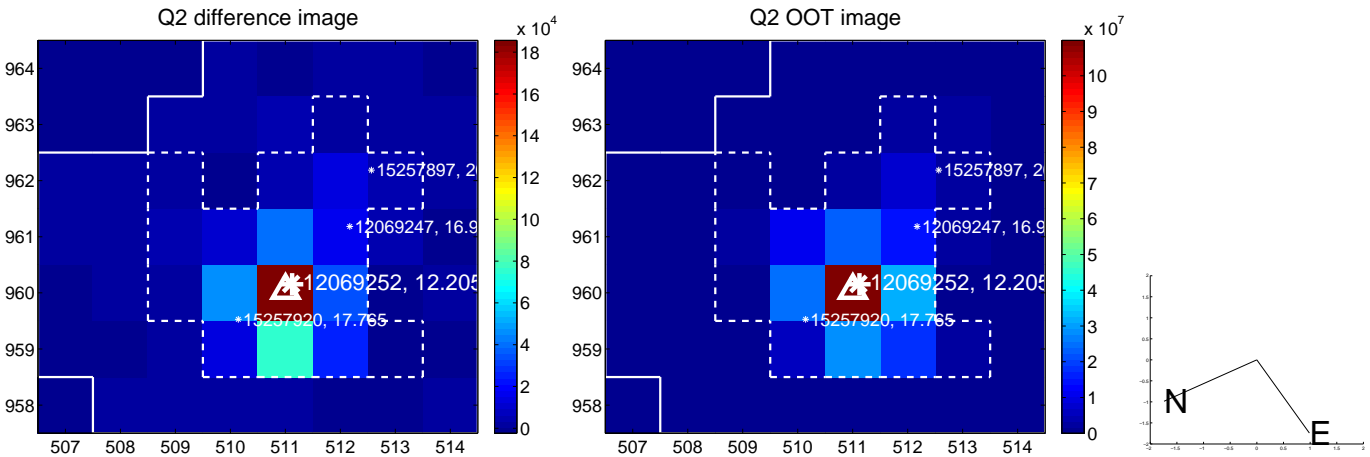
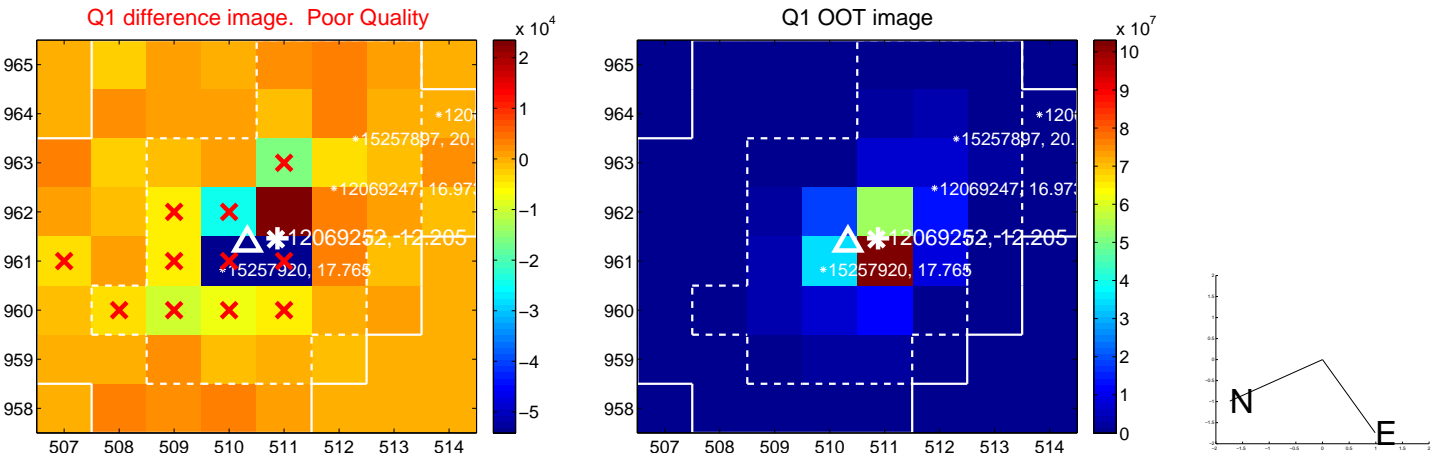
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.100 ± 0.180	0.56	0.063 ± 0.112	-0.078 ± 0.206
PRF-fit source offset from KIC position	0.305 ± 0.219	1.39	-0.013 ± 0.114	-0.305 ± 0.220
photometric centroid source offset	0.20 ± 0.05	3.97	0.01 ± 0.04	-0.20 ± 0.05

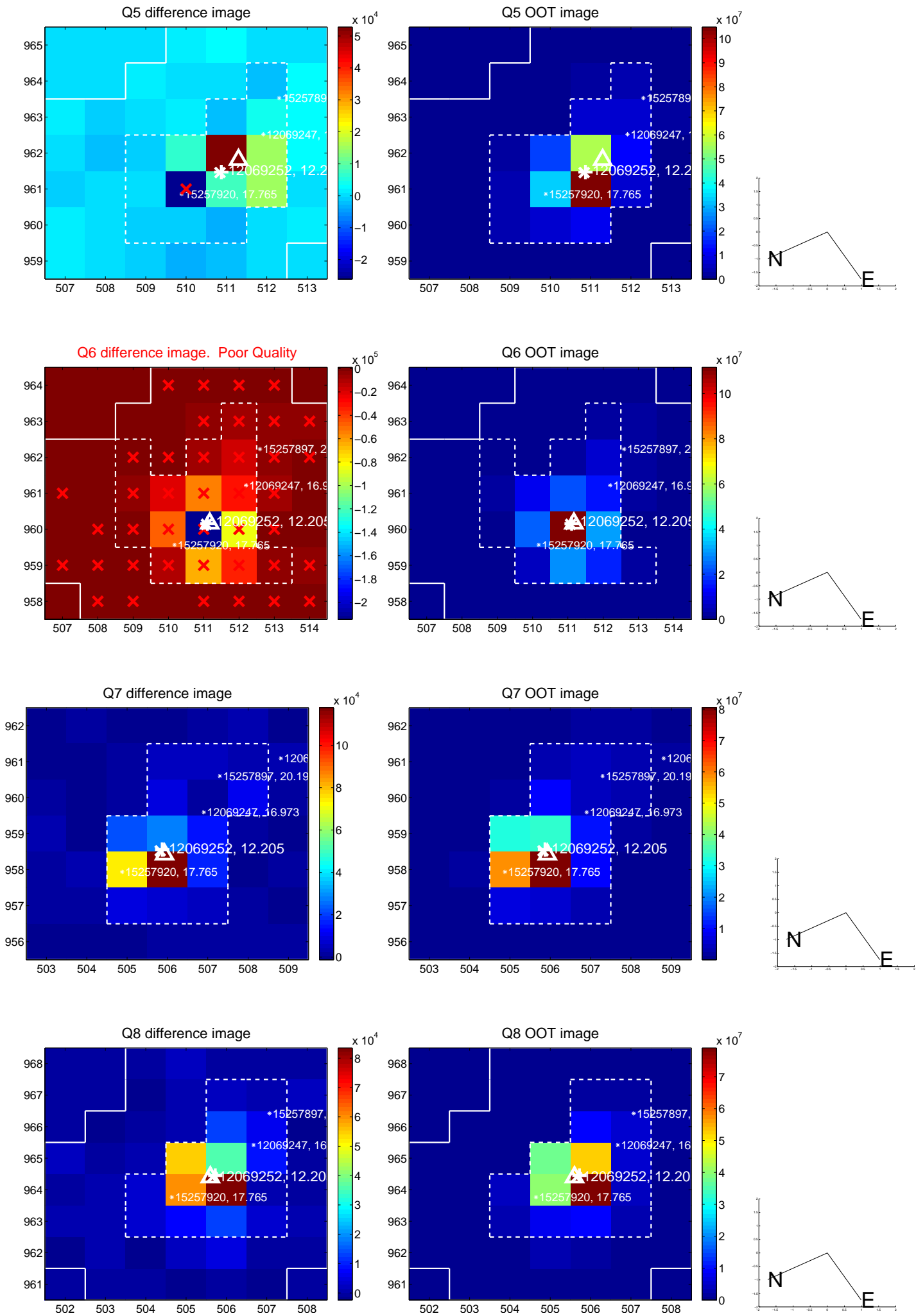


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

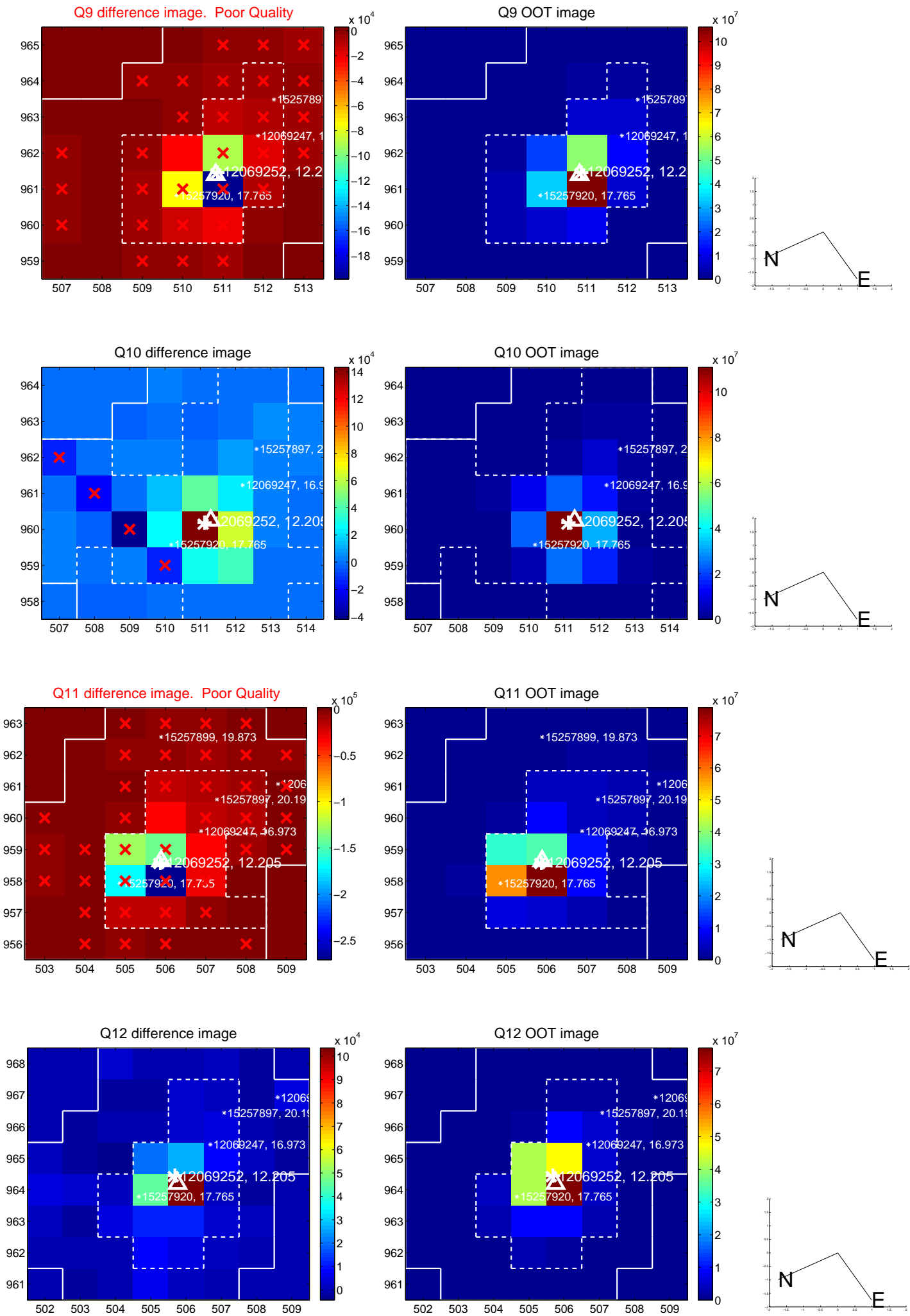
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



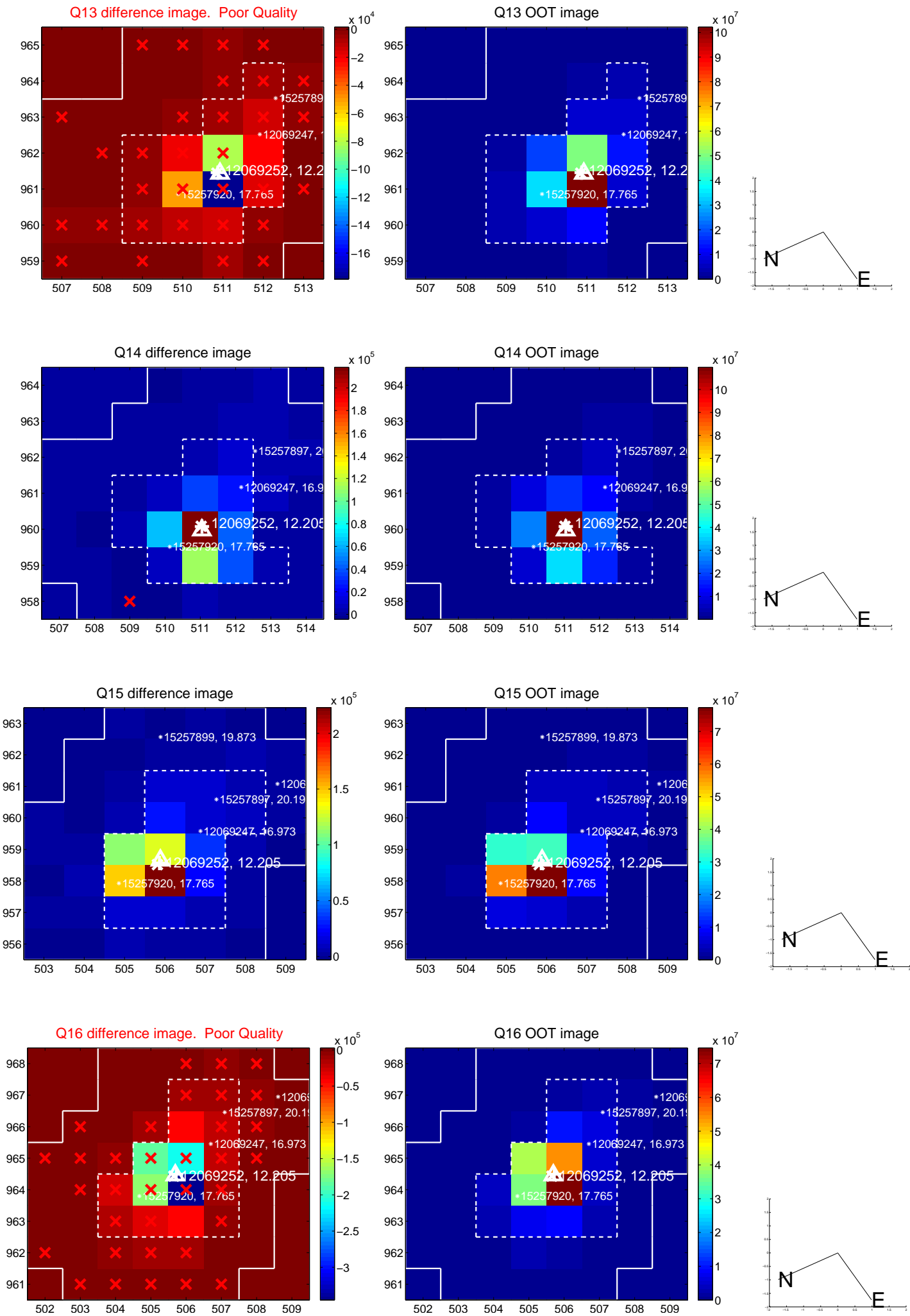
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



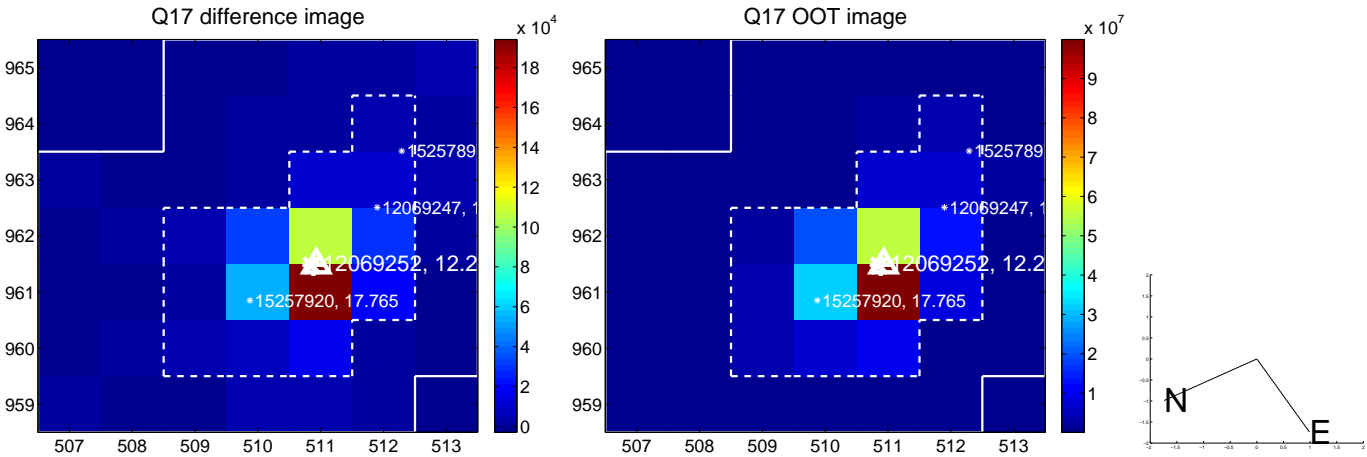
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



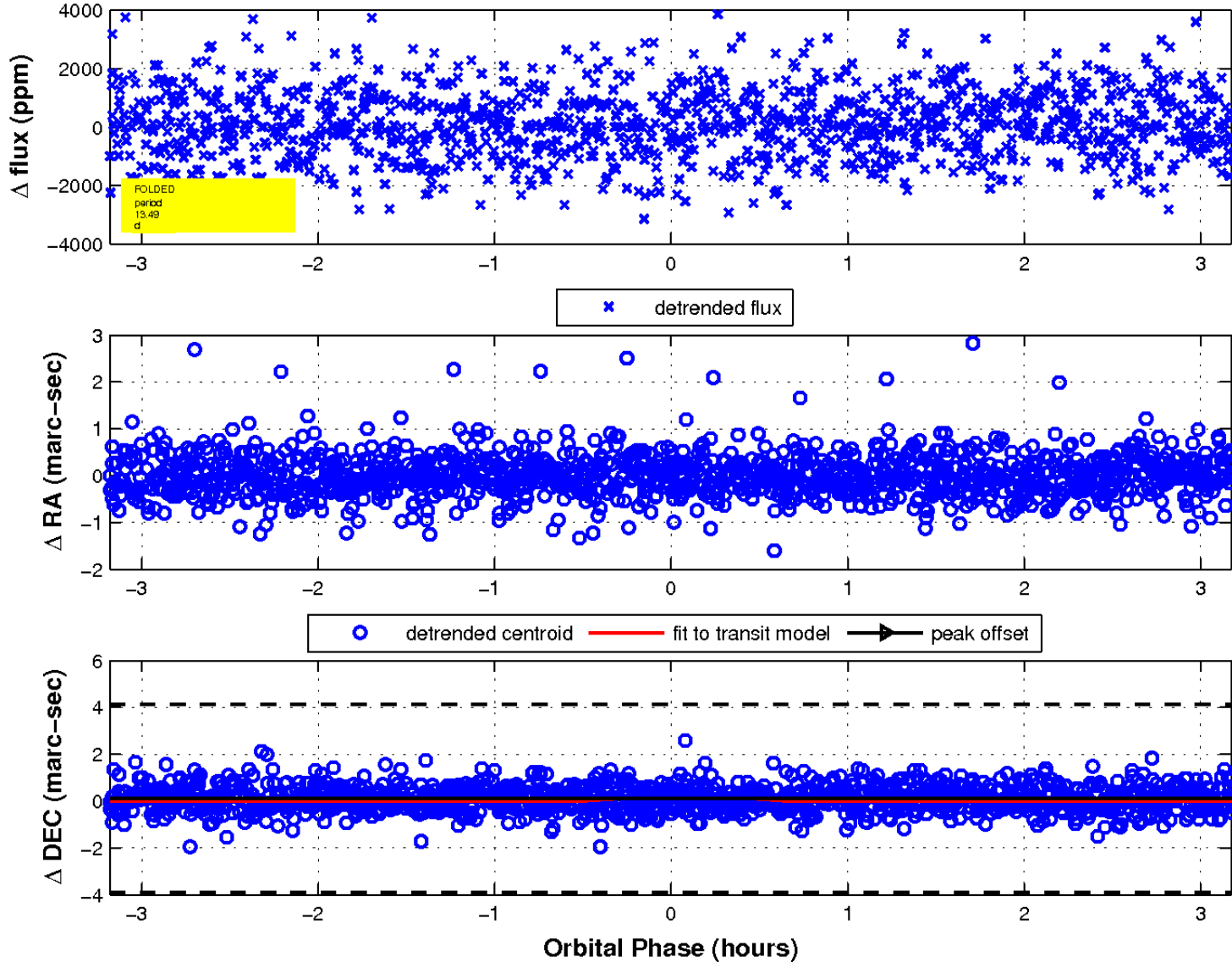
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



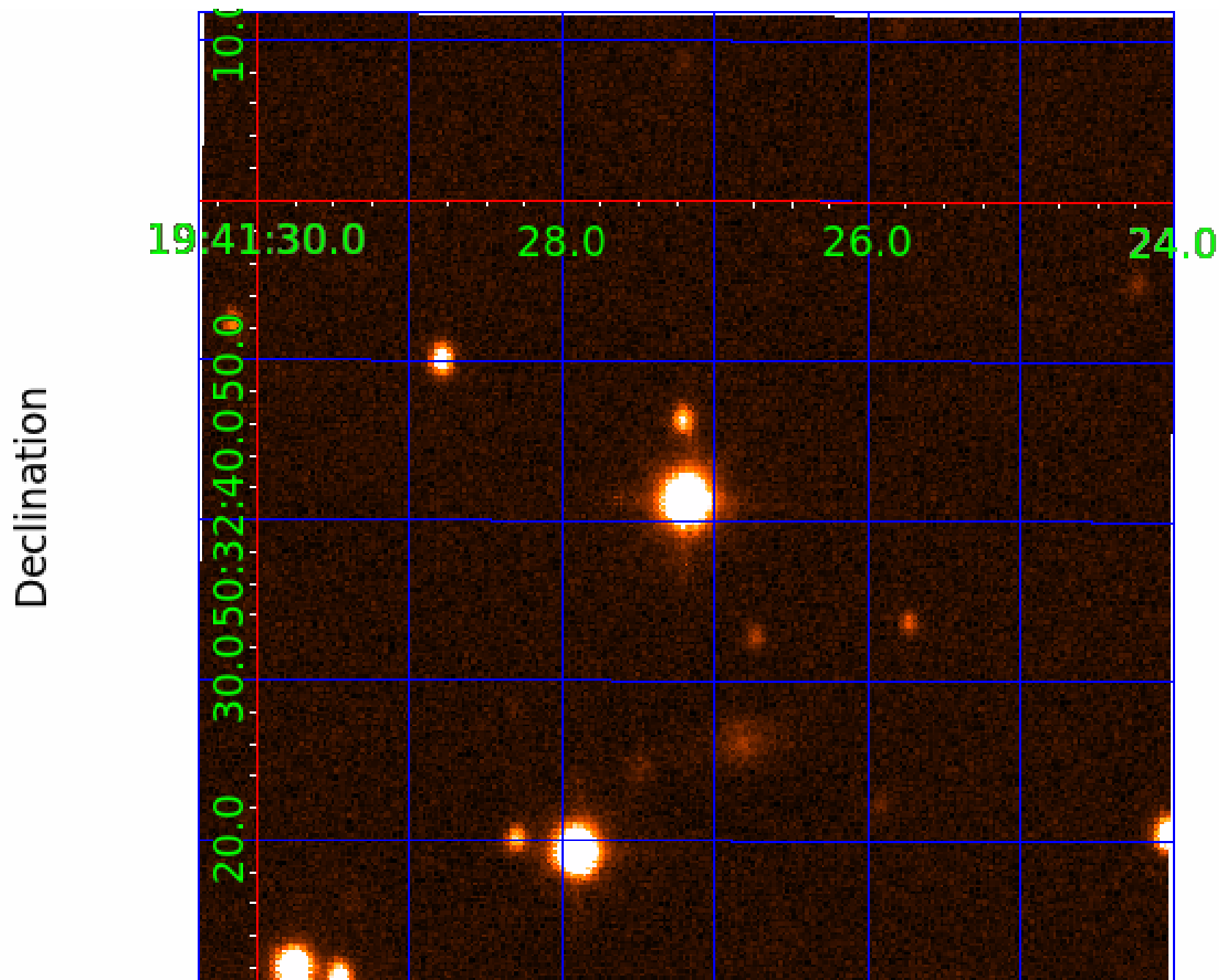
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



fluxWeightedCentroids, Planet 3 of 4



UKIRT Image



KIC 012069252

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})
012069252-01	OBS	No	1.260948	132.657918	224.2	9.375	12.5	15.2	1.80	7309	4.54	12267.35
012069252-02	OBS	No	20.111259	133.782525	327.8	5.000	13.6	-1.0	1.80	7309	3.30	305.56
012069252-03	OBS	No	13.489154	132.672953	2254.2	1.061	12.8	11.8	1.80	7309	8.71	520.44
012069252-04	OBS	No	28.688536	150.492636	773.9	15.185	11.5	7.8	1.80	7309	6.29	190.28

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012069252-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT
012069252-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS—HALO_GHOST
012069252-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
012069252-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT

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

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

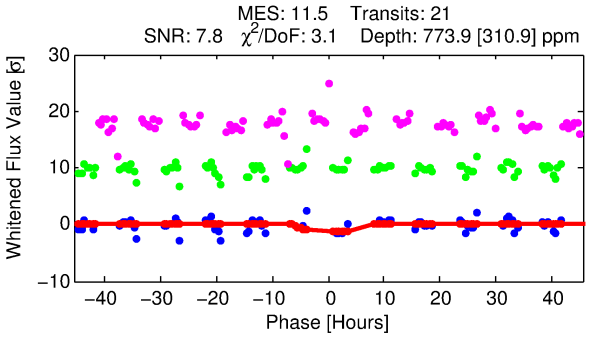
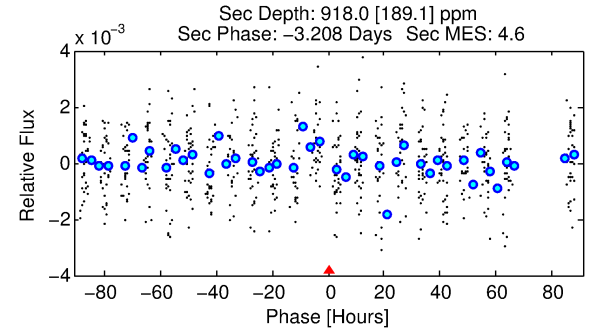
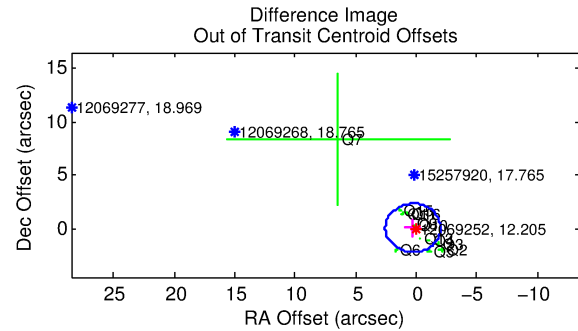
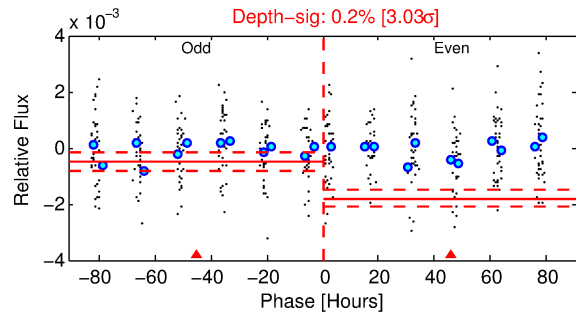
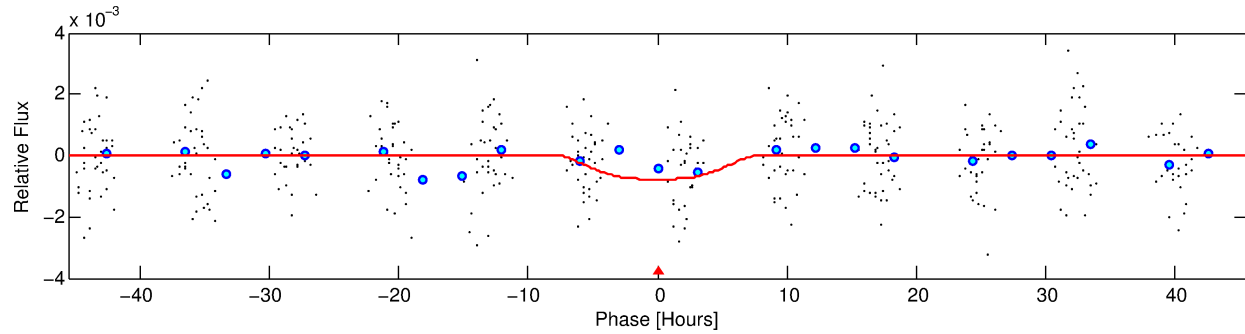
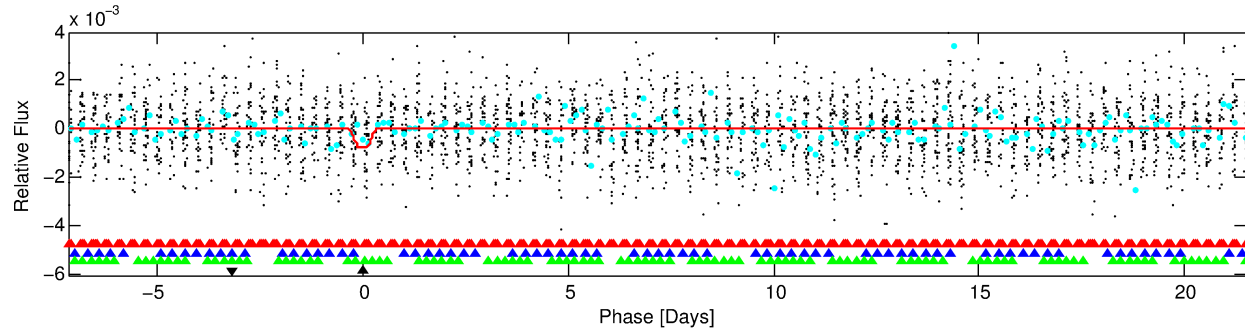
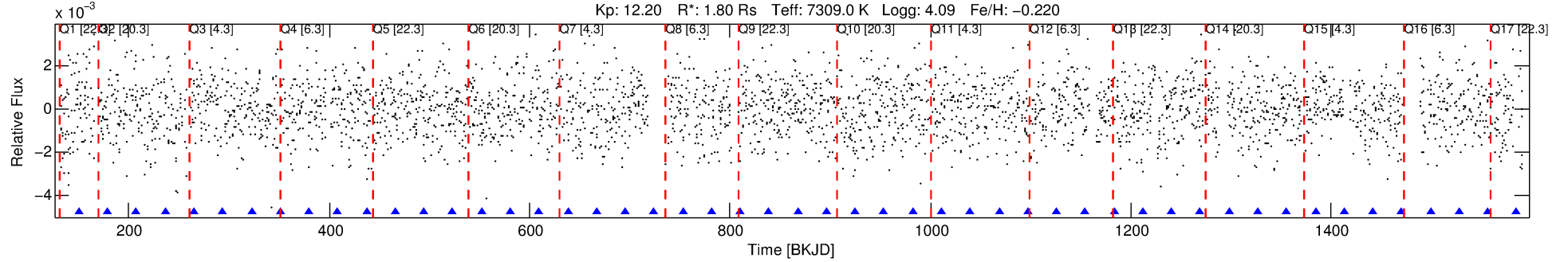
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012069252-04

No Significant Match Found

DV One-Page Summary

KIC: 12069252 Candidate: 4 of 4 Period: 28.689 d



DV Fit Results:

Period = 28.68854 [0.00369] d
Epoch = 150.4926 [0.0916] BKJD
Rp/R* = 0.0321 [0.0094]
a/R* = 5.39 [4.45]
b = 0.96 [0.05]
Seff = 190.28 [43.66]
Teq = 947 [54] K
Rp = 6.29 [2.20] Re
a = 0.2085 [0.0329] AU
Ag = 554.50 [365.88] [1.51σ]
Teffp = 7105 [1106] K [5.56σ]

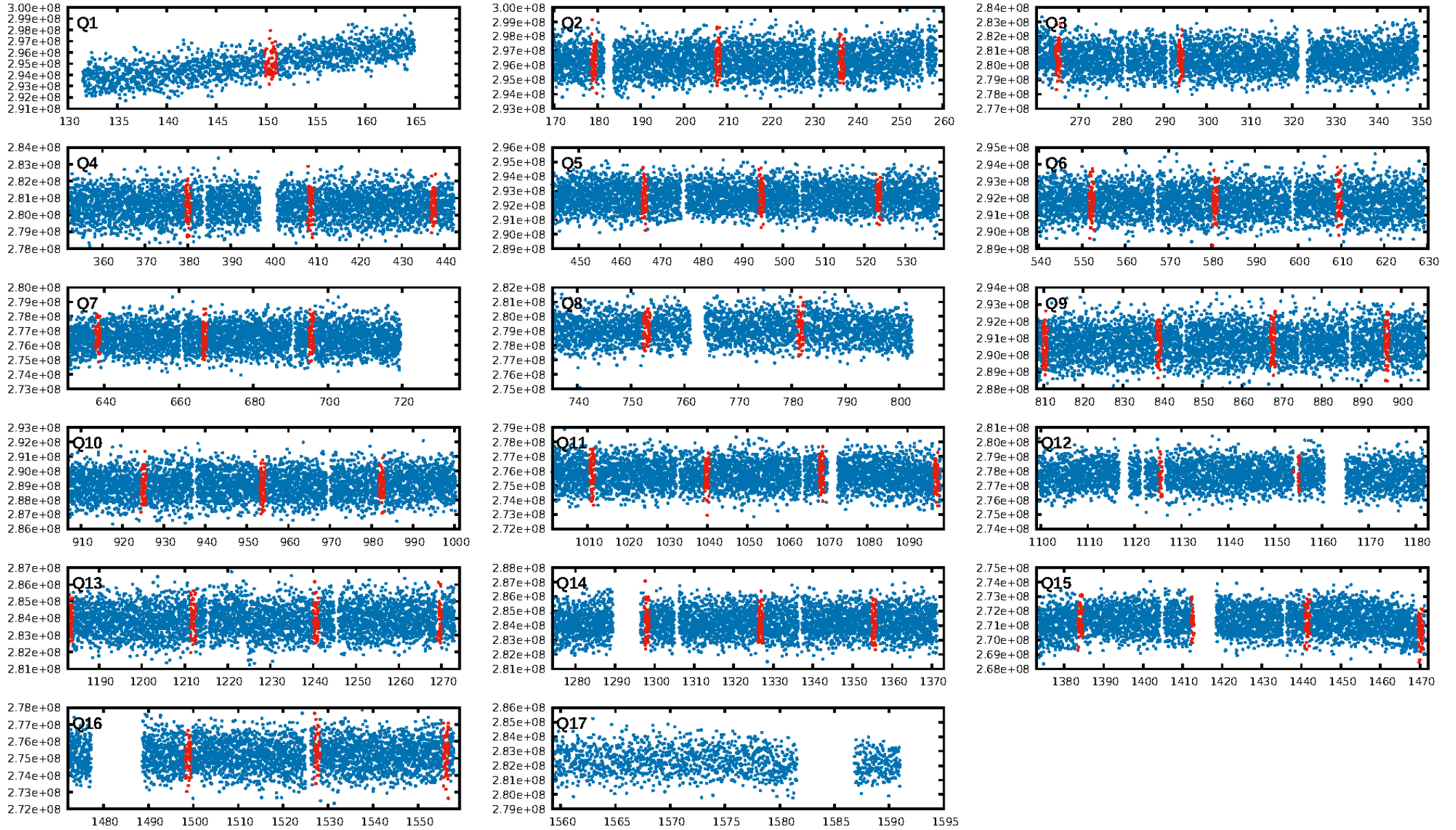
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [12.88σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.79e-35
RollingBand-fgt: 1.00 [21/21]
GhostDiagnostic-chr: 2.869
Centroid-sig: N/A
Centroid-so: 0.228 arcsec [2.68σ]
OotOffset-rm: 0.308 arcsec [0.41σ]
OotOffset-st: 3/4/2/3 [12]
KicOffset-rm: 0.287 arcsec [0.39σ]
KicOffset-st: 3/4/2/3 [12]
DiffImageQuality-fgm: 0.50 [6/12]
DiffImageOverlap-fno: 0.00 [0/15]

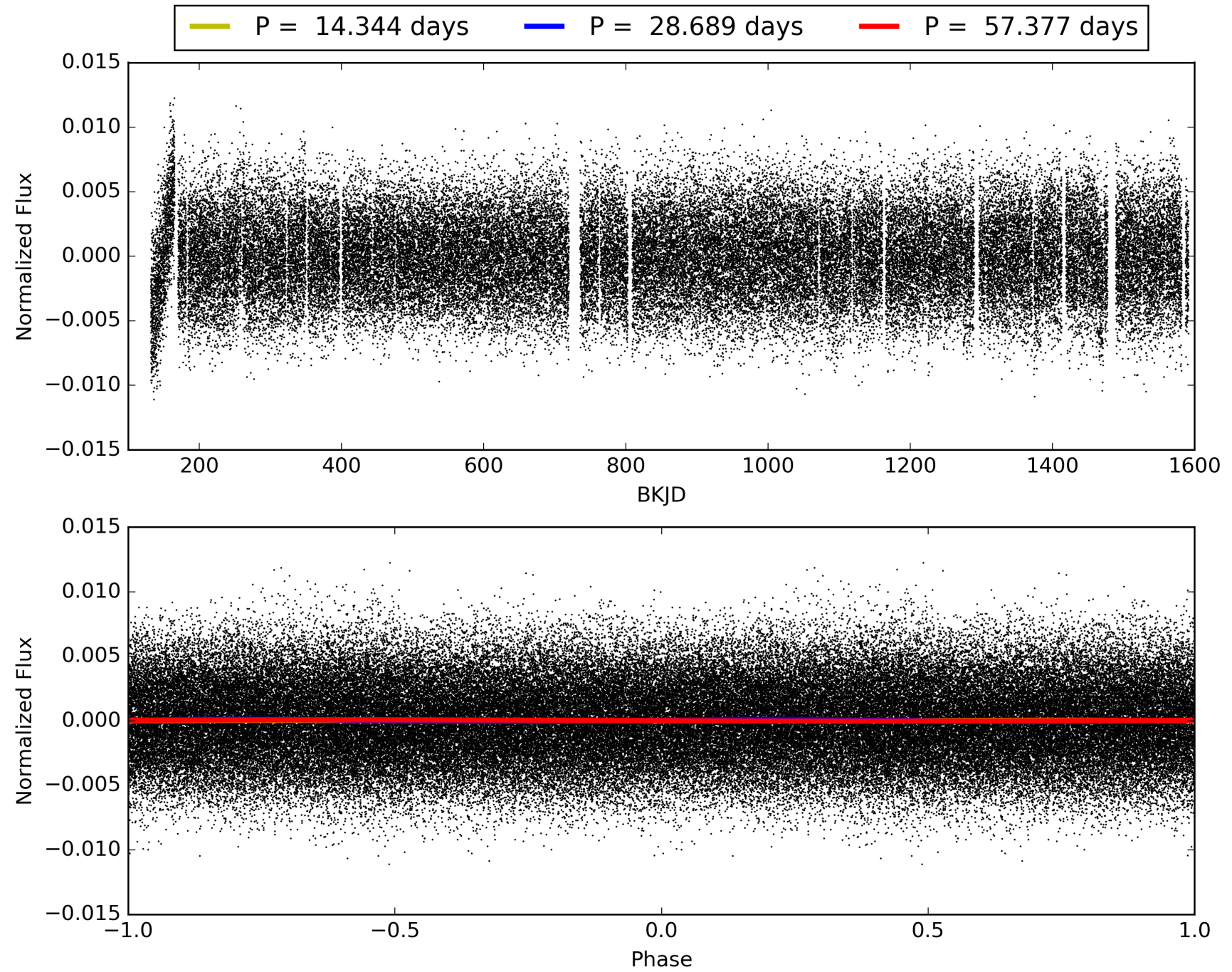
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 22:20:56 Z

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

TCE 012069252-04, PDC Light Curves

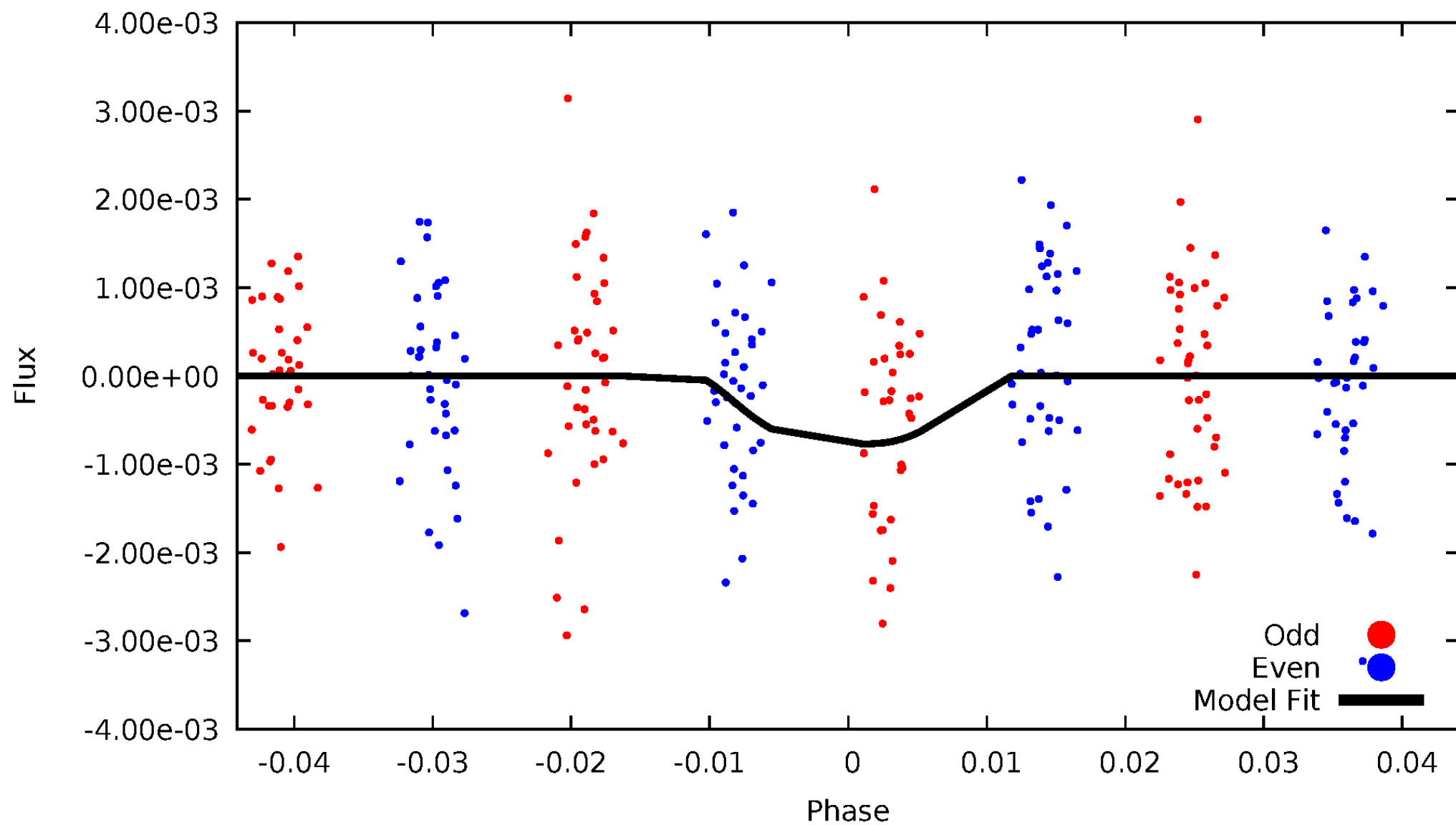


TCE 012069252-04



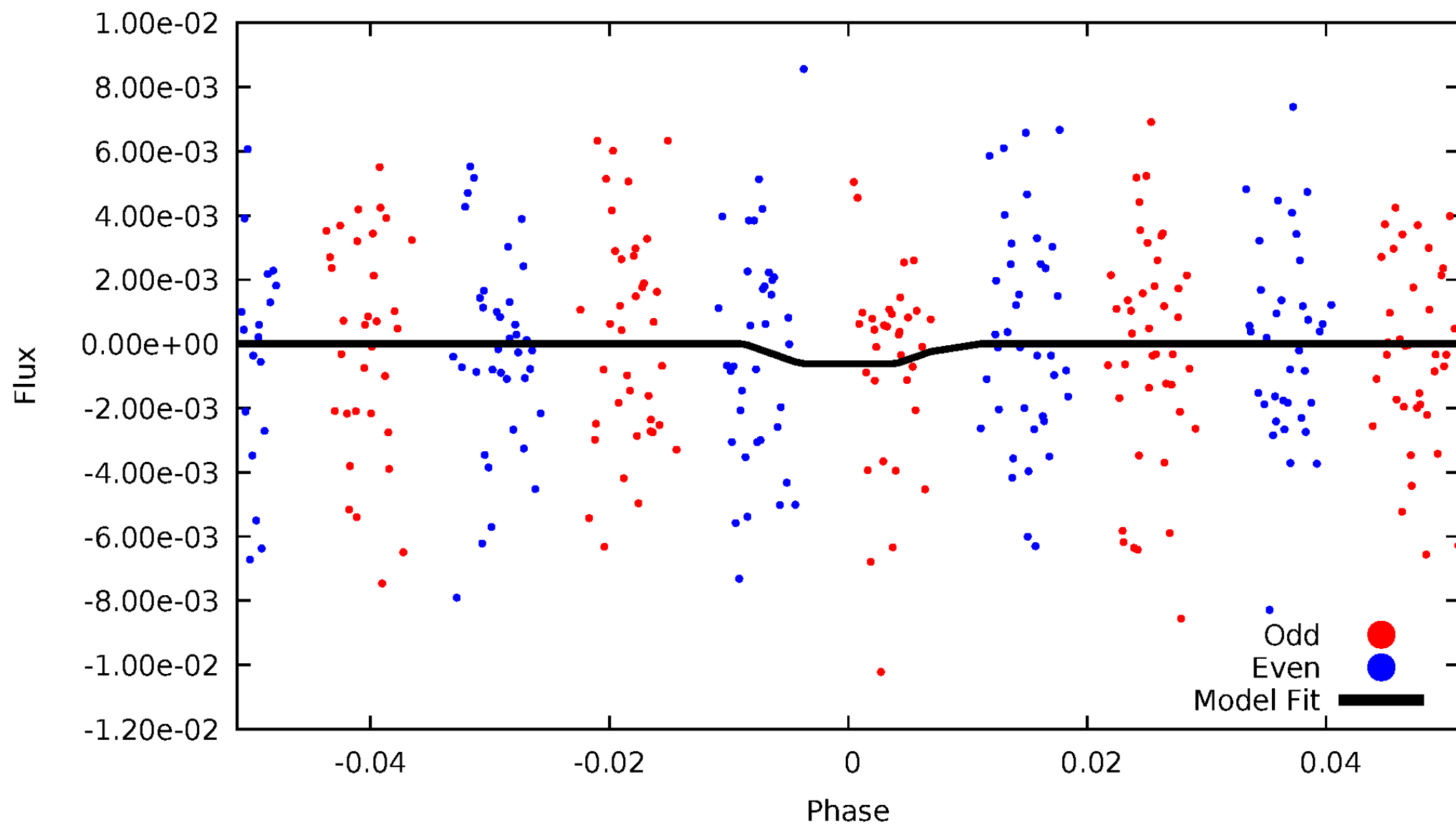
DV Odd/Even

TCE 012069252-04



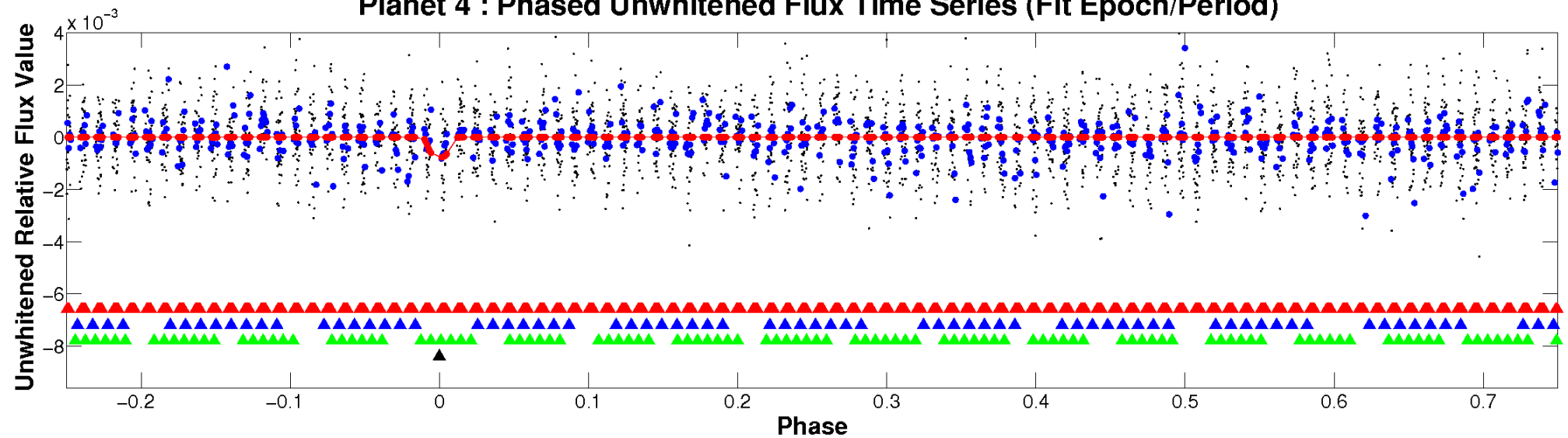
ALT Odd/Even

TCE 012069252-04

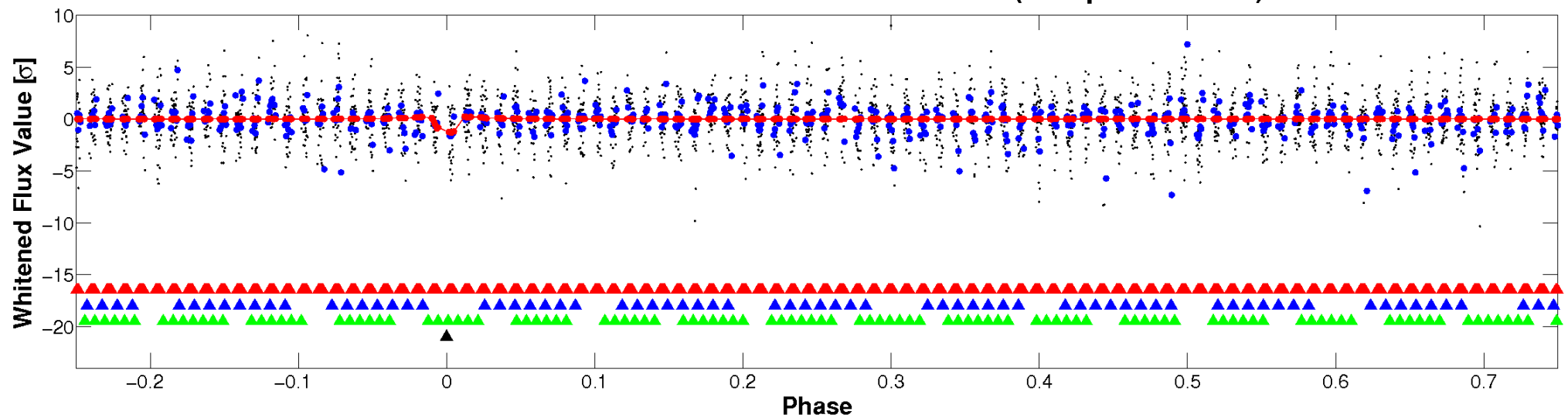


Non-Whitened Vs. Whitened Light Curve

Planet 4 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

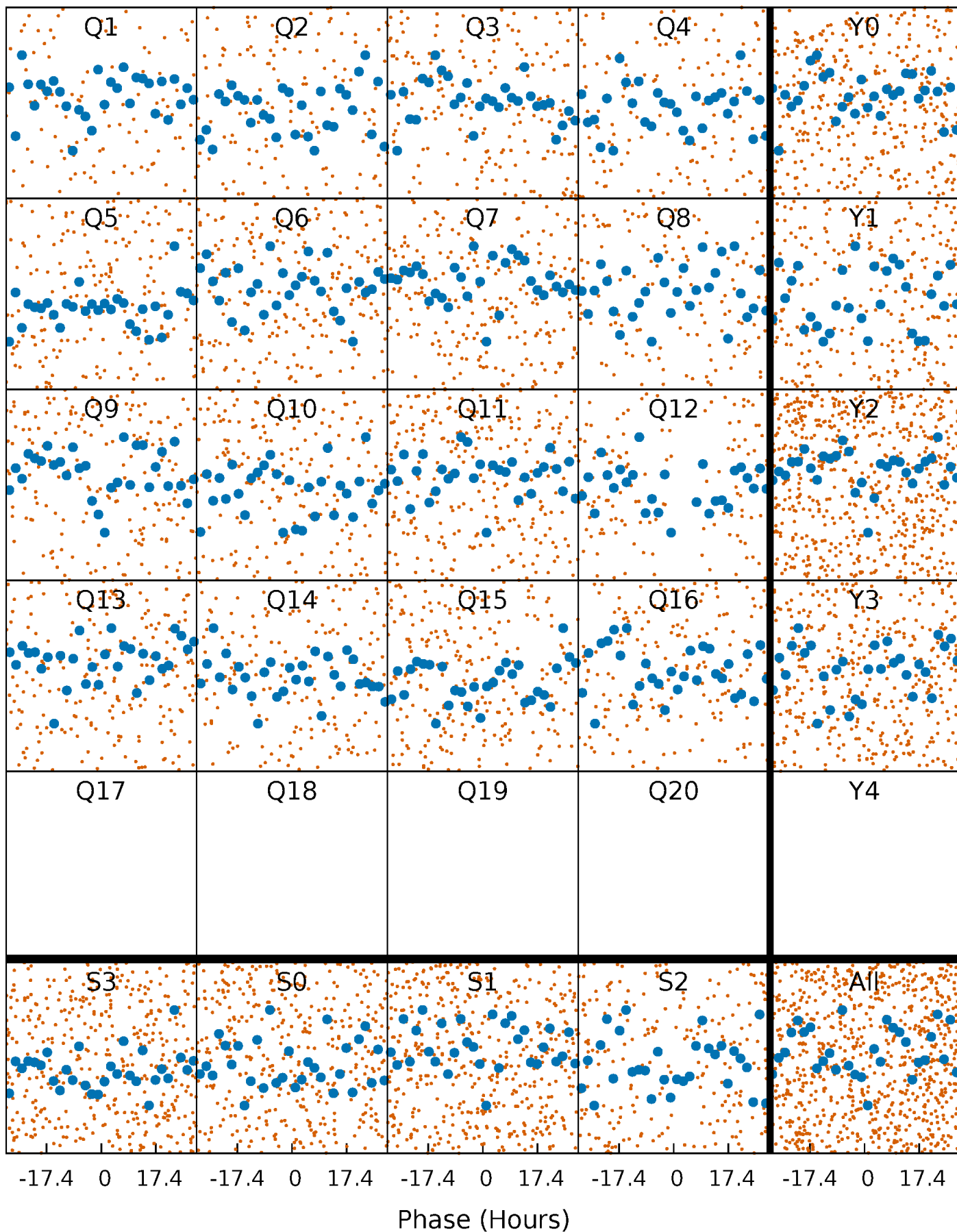


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



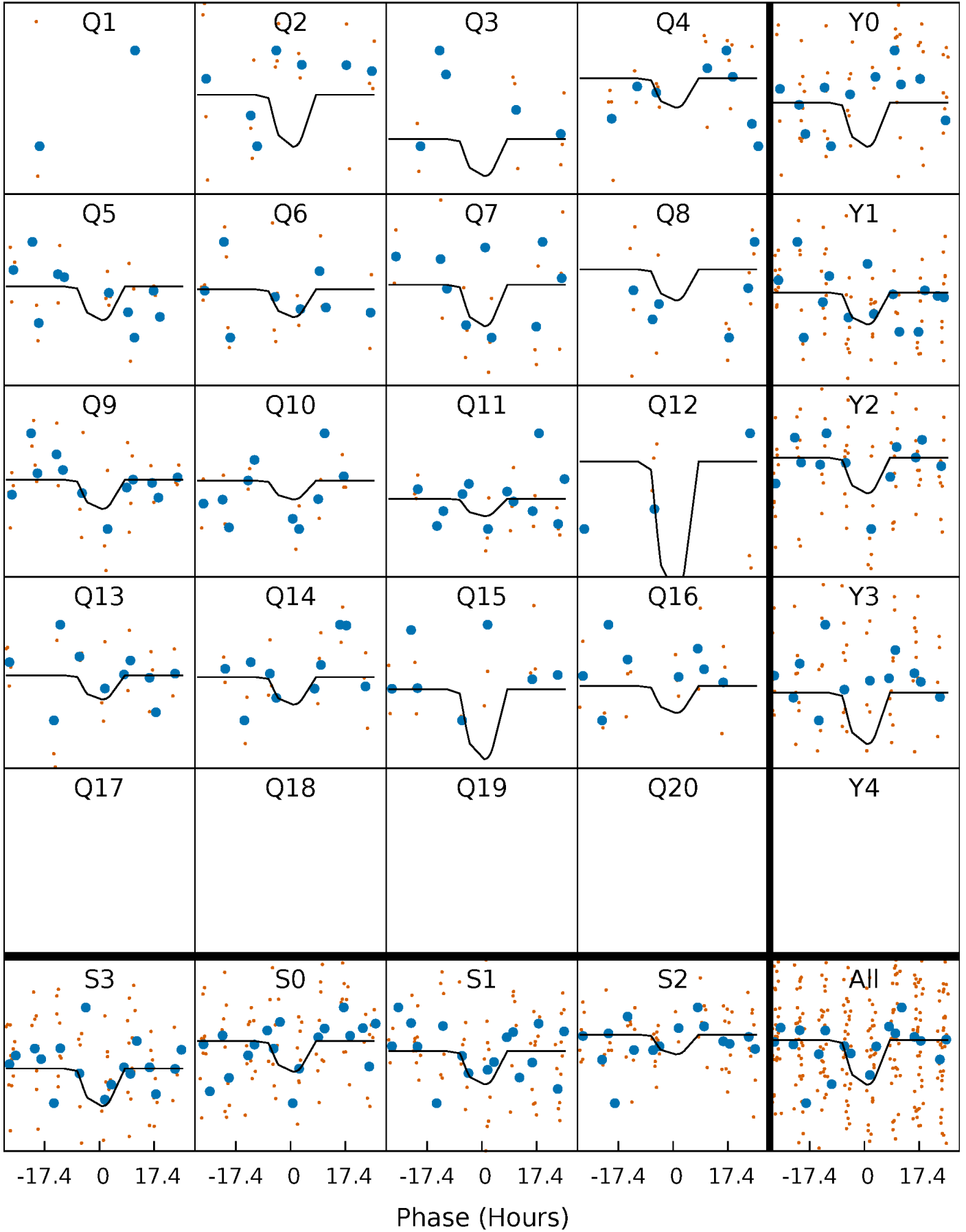
PDC Quarter-Phased Transit Curves

TCE 012069252-04 P= 28.688536 Days $T_0=150.492636$ (BKJD)



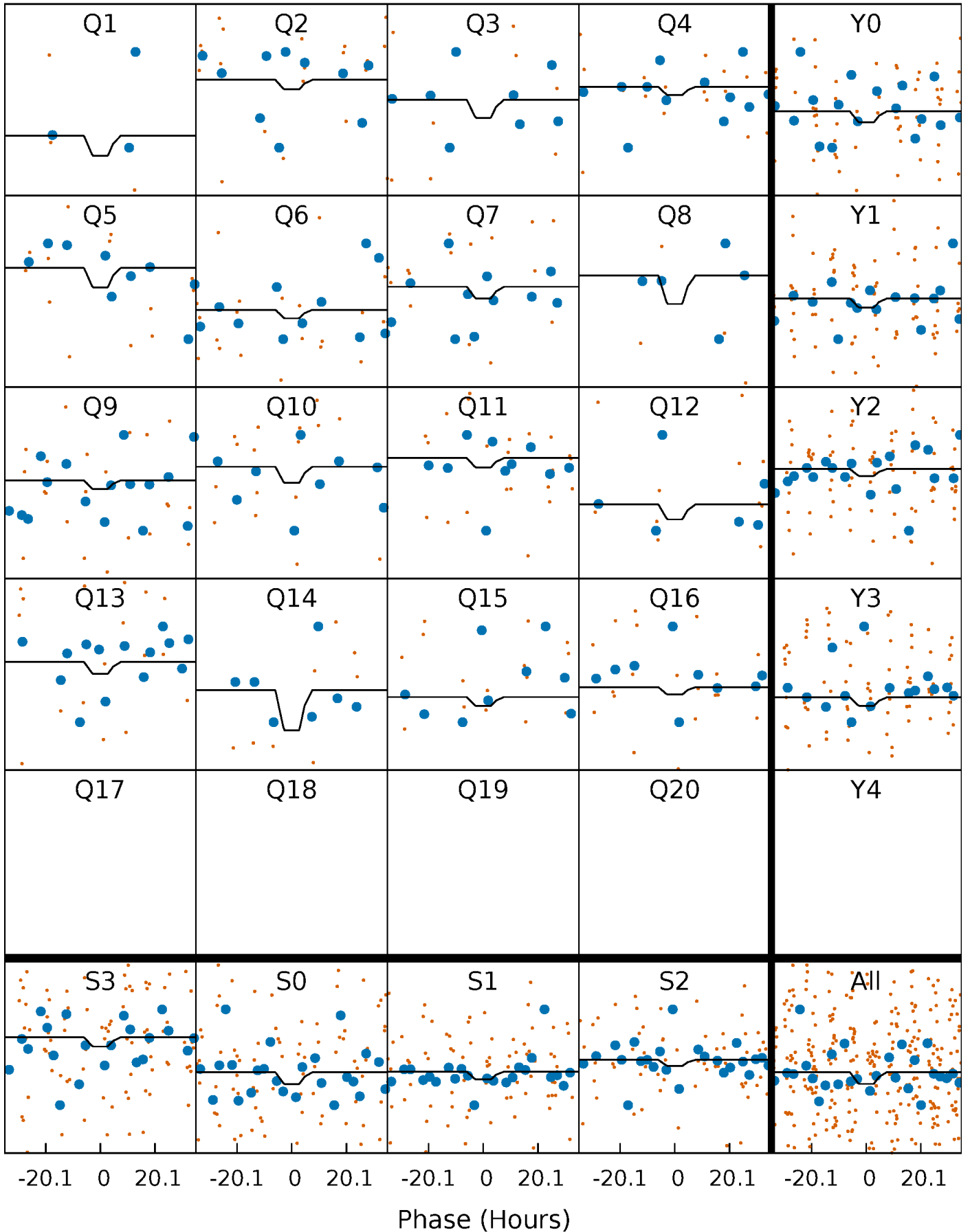
DV Quarter-Phased Transit Curves

TCE 012069252-04 P= 28.688536 Days $T_0=150.492636$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

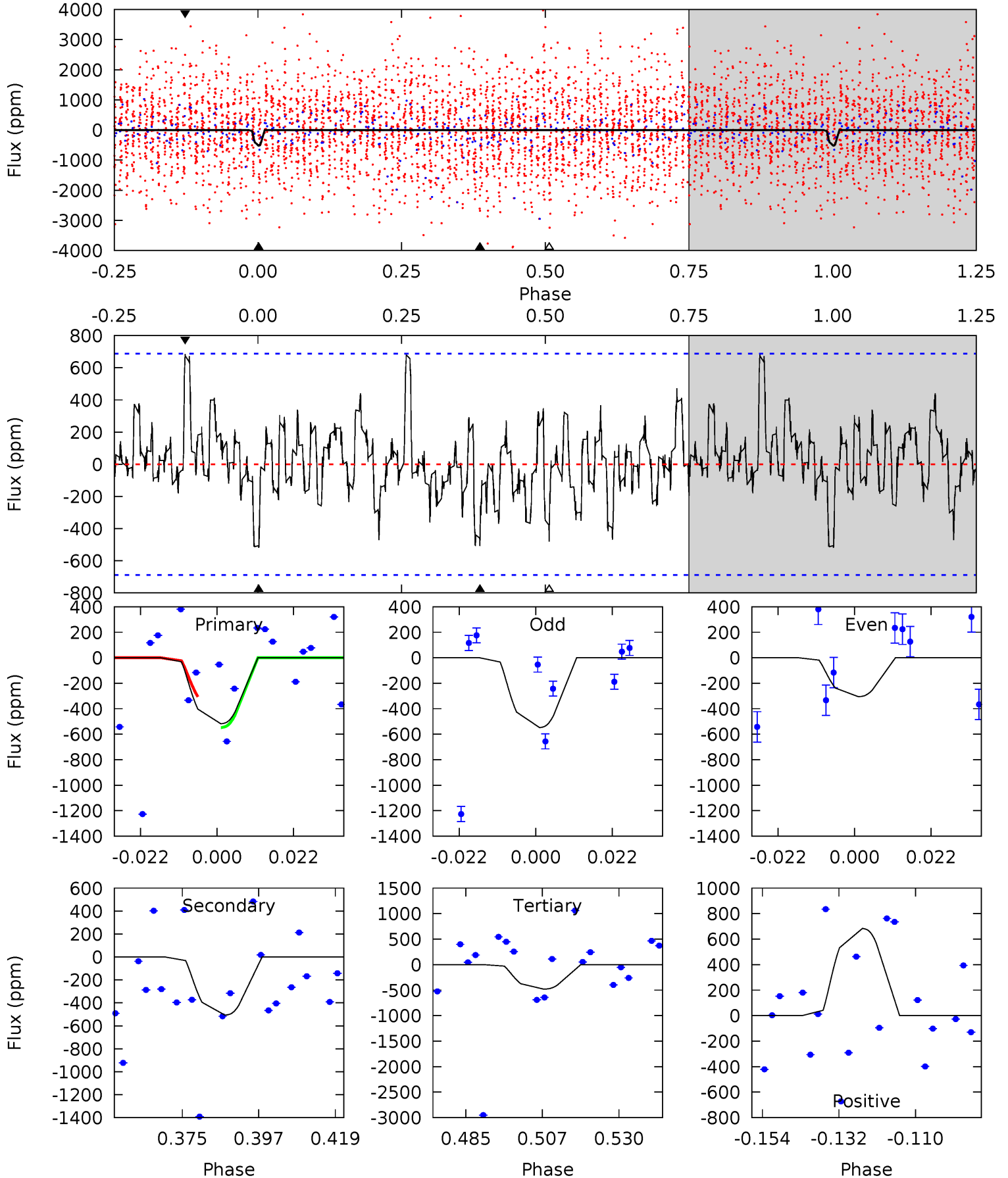
TCE 012069252-04 P= 28.690101 Days $T_0=150.437448$ (BKJD)



DV Model-Shift Uniqueness Test

012069252-04, P = 28.688536 Days, E = 121.804100 Days

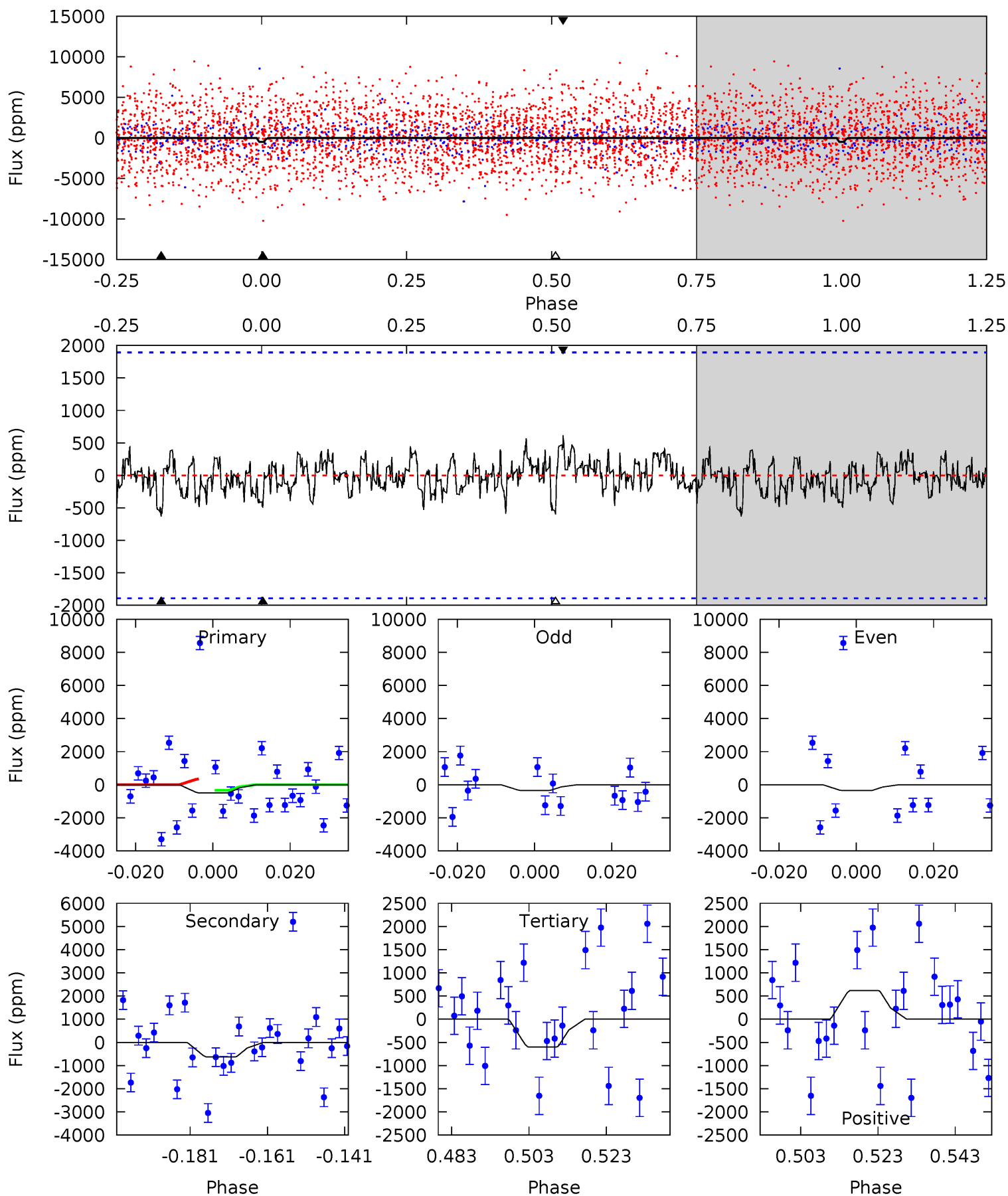
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.67	3.59	3.41	4.84	4.87	2.29	1.30	0.26	-1.17	0.19	-1.25	0.87	1.05	0.57	0.86



Alt Model-Shift Uniqueness Test

012069252-04, P = 28.690101 Days, E = 121.747347 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.29	1.63	1.55	1.59	4.89	2.32	0.53	-0.26	-0.31	0.08	0.04	0.01	-13.8	0.49	0.01



Stellar Parameters For KIC 012069252

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7309^{+76}_{-87}	$4.095^{+0.120}_{-0.120}$	$-0.220^{+0.150}_{-0.150}$	$1.799^{+0.346}_{-0.283}$	$1.469^{+0.128}_{-0.116}$	$0.355^{+0.204}_{-0.131}$
	+1%/-1%	+3%/-3%	+68%/-68%	+19%/-16%	+9%/-8%	+58%/-37%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 012069252-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-507 ± 141	$6.33^{+1.84}_{-1.78}$	1324^{+60}_{-65}	5992^{+1160}_{-734}	297^{+285}_{-134}
Alt.	-632 ± 387	$5.06^{+1.82}_{-1.95}$	1323^{+60}_{-57}	7191^{+2834}_{-1826}	572^{+1106}_{-394}

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 $A_{obs} \gg 1.0$

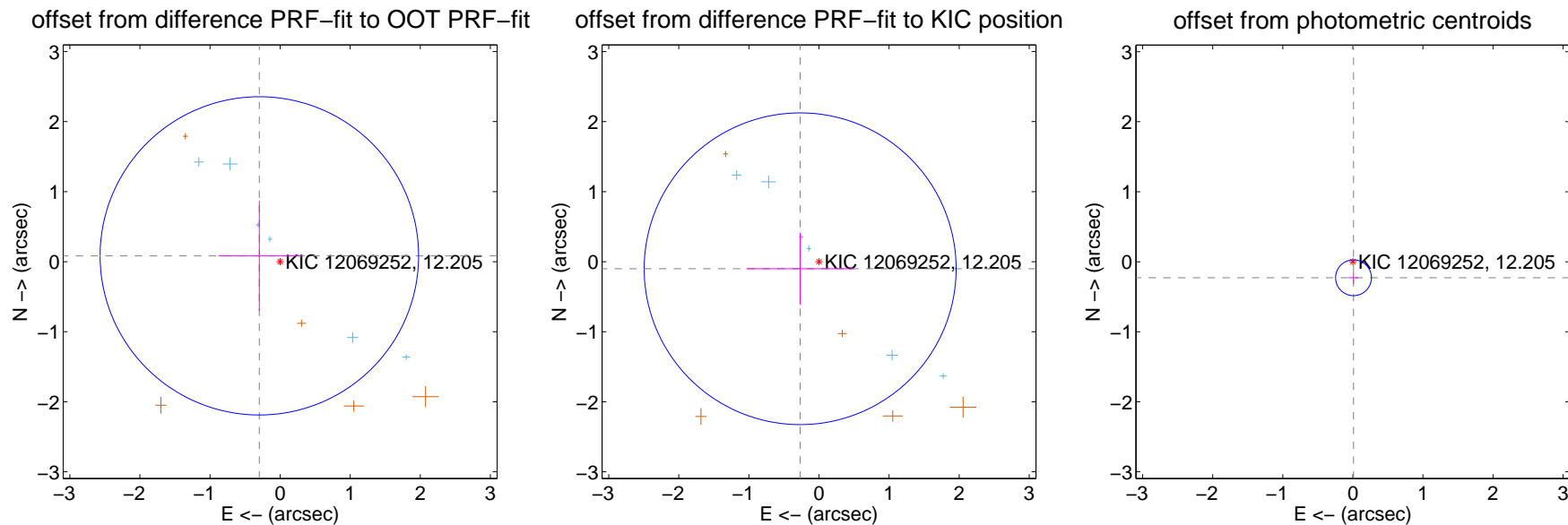
DV Centroid Data

Supplemental centroid analysis for 012069252-04. Kepler magnitude: 12.21. Transit SNR 7.77

There are 6 quarters with good PRF difference image offsets

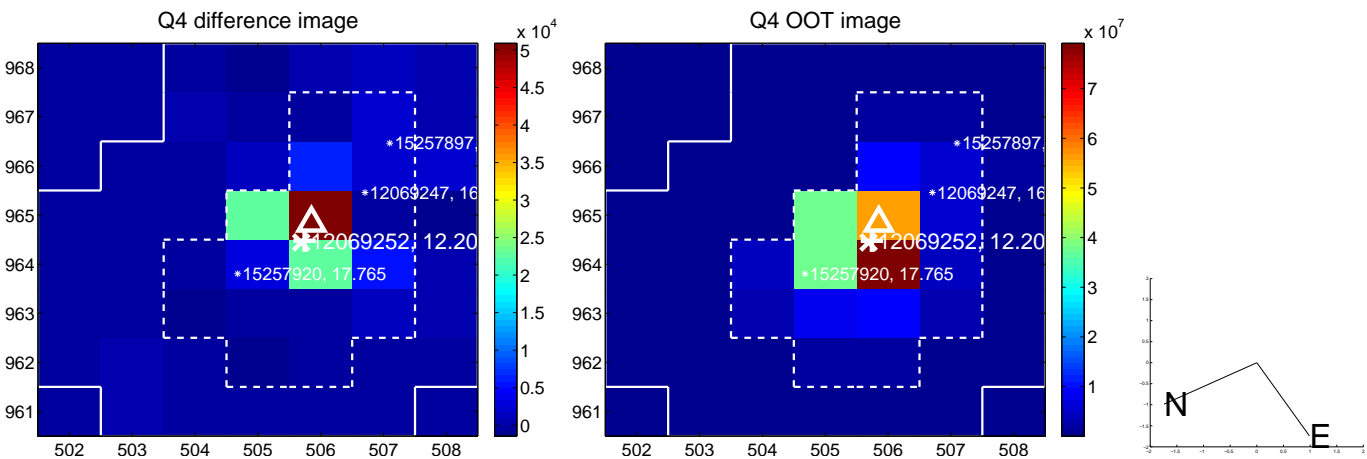
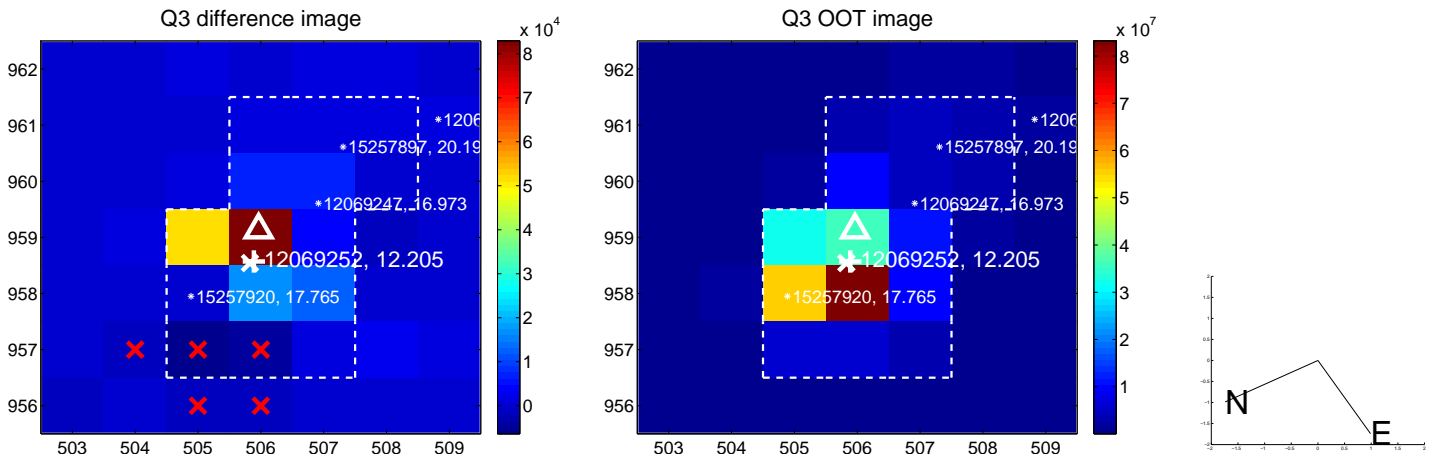
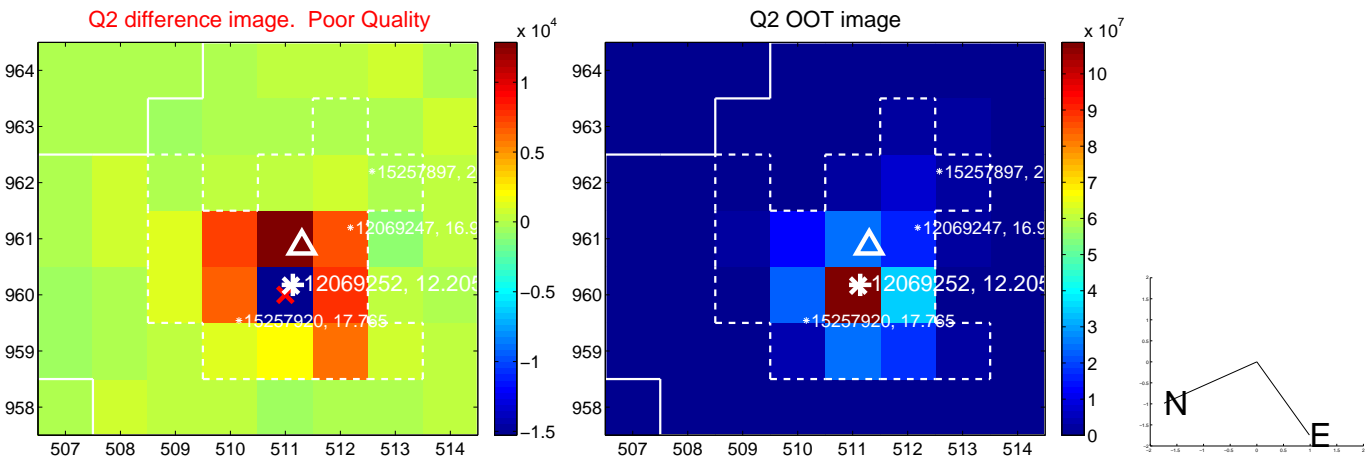
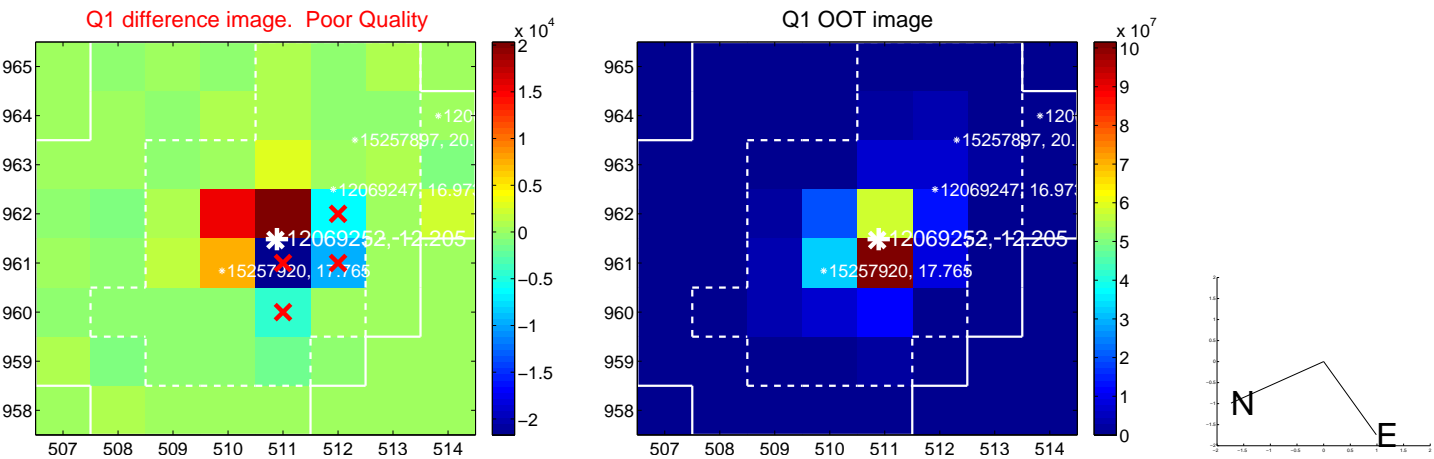
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.308 ± 0.757	0.41	0.296 ± 0.584	0.083 ± 0.786
PRF-fit source offset from KIC position	0.287 ± 0.742	0.39	0.269 ± 0.768	-0.101 ± 0.515
photometric centroid source offset	0.23 ± 0.09	2.68	-0.01 ± 0.07	-0.23 ± 0.09

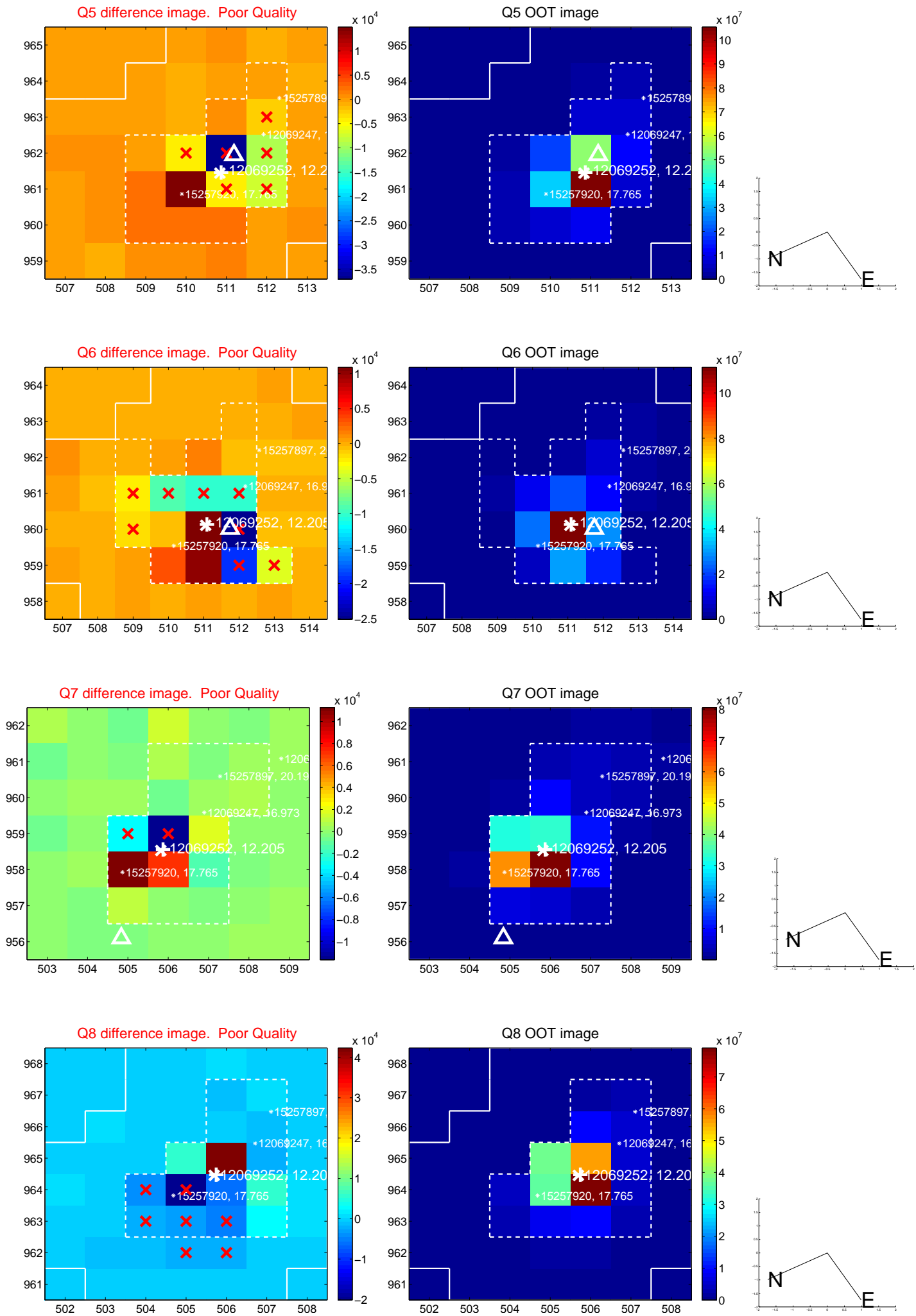


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

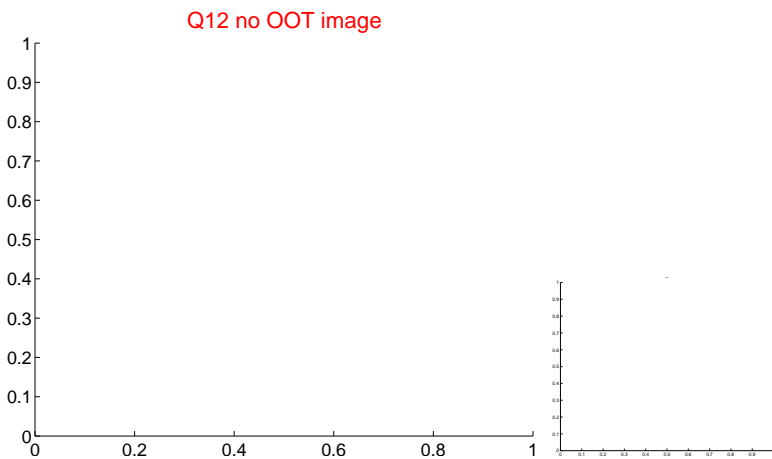
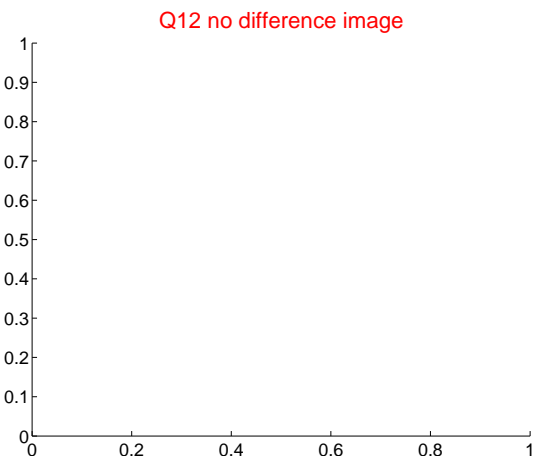
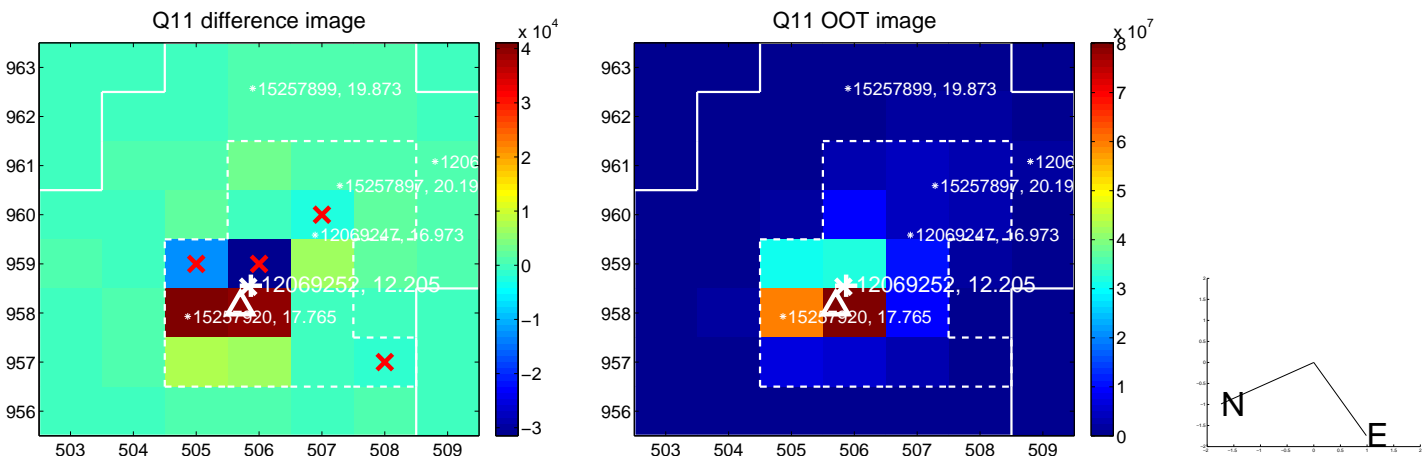
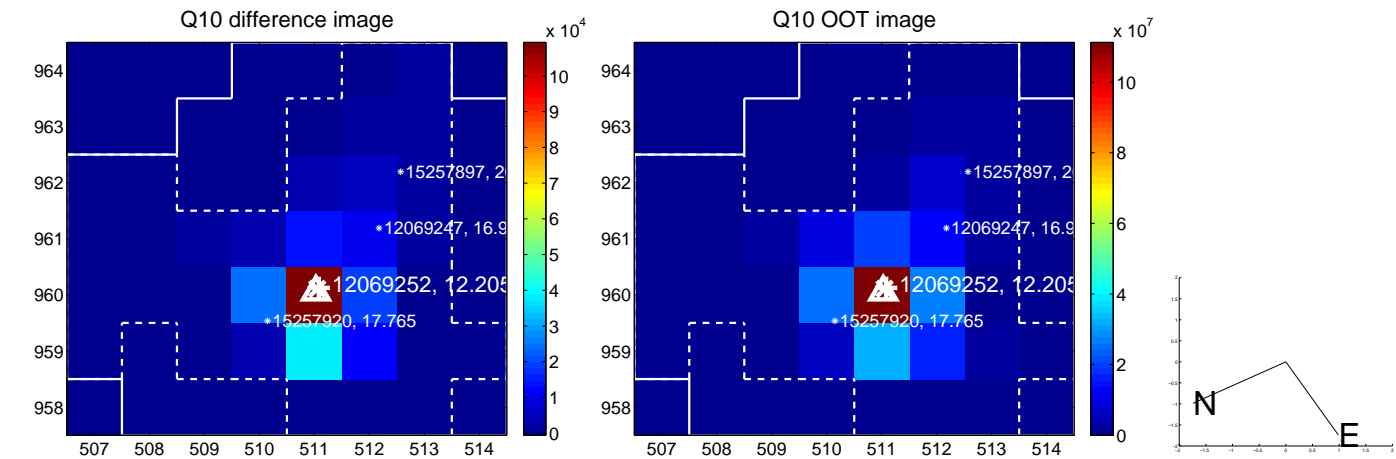
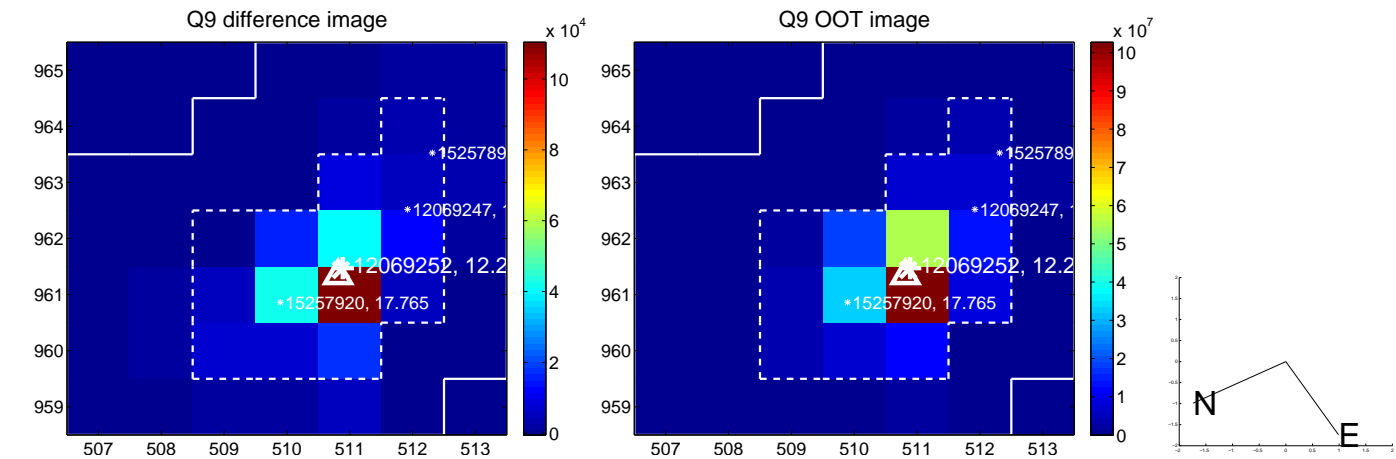
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



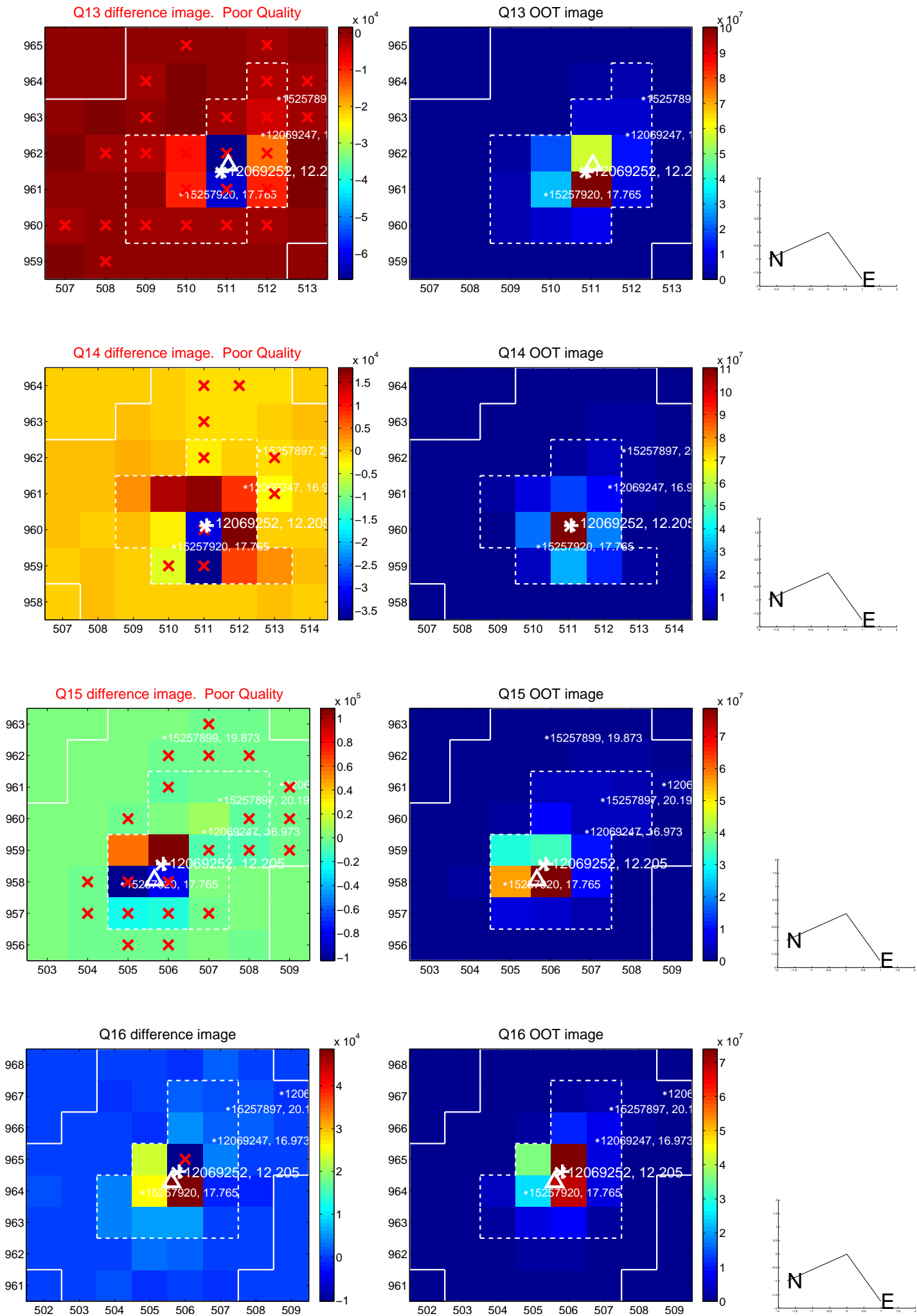
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



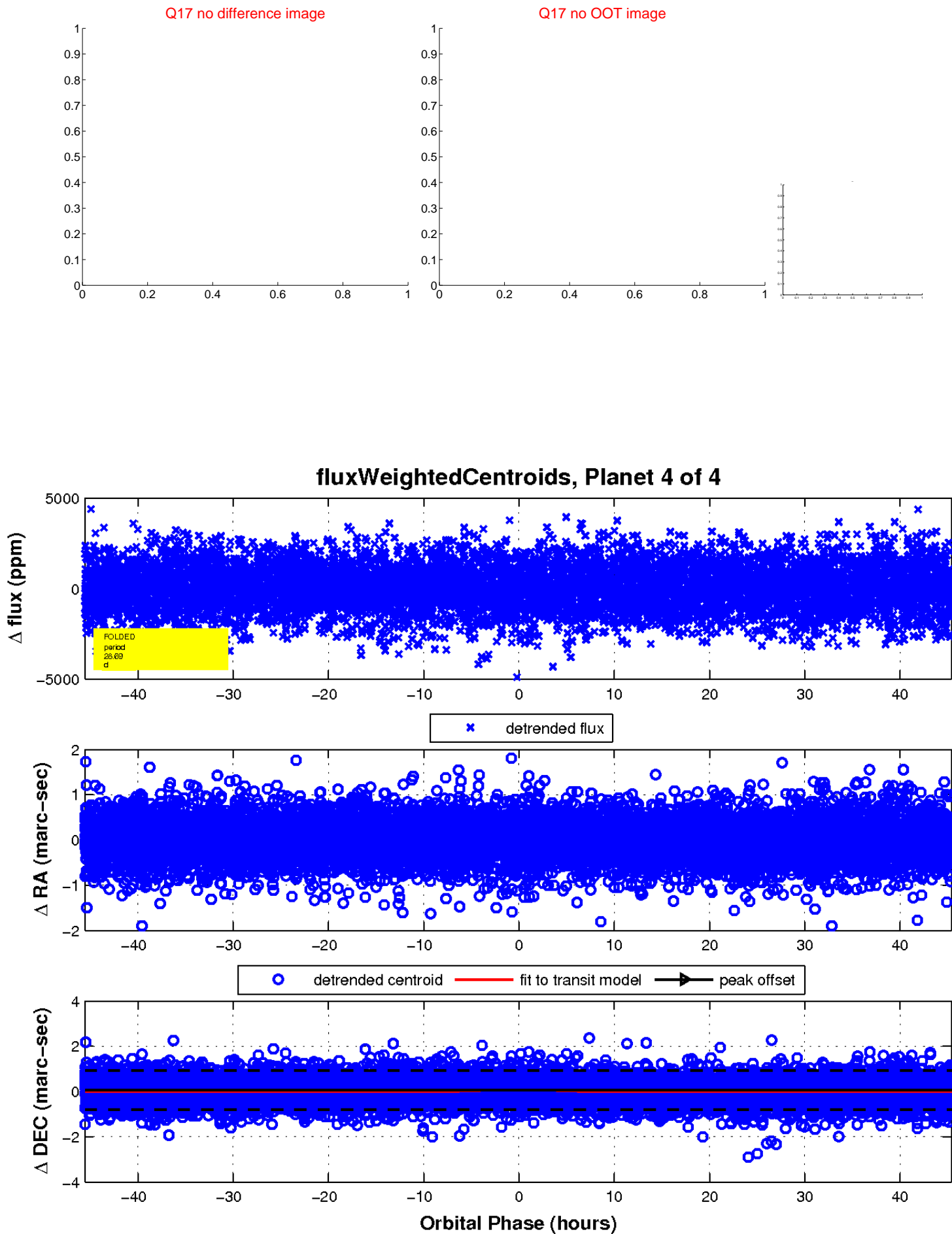
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

