

KIC 002162268

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})
002162268-01	OBS	No	0.906319	131.831153	74.1	4.896	7.2	7.8	0.73	4791	0.77	946.28
002162268-03	OBS	No	230.312345	212.011879	1658.4	32.270	10.6	5.4	0.73	4791	3.25	0.59
002162268-04	OBS	No	41.351180	142.749275	1108.9	9.142	8.8	8.1	0.73	4791	2.45	5.80

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002162268-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
002162268-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002162268-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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

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

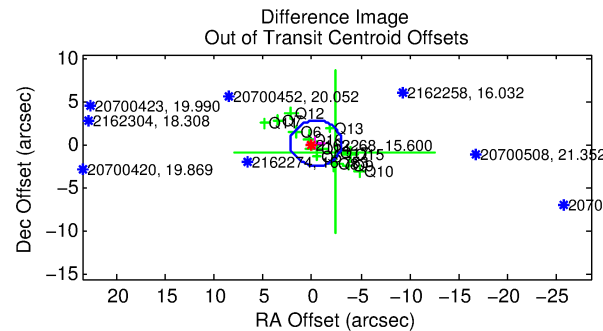
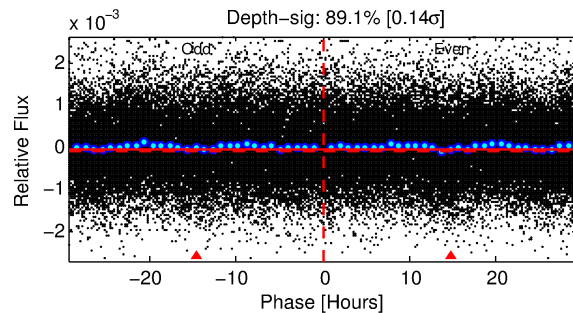
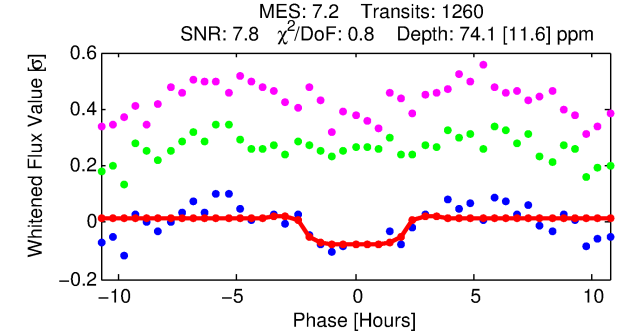
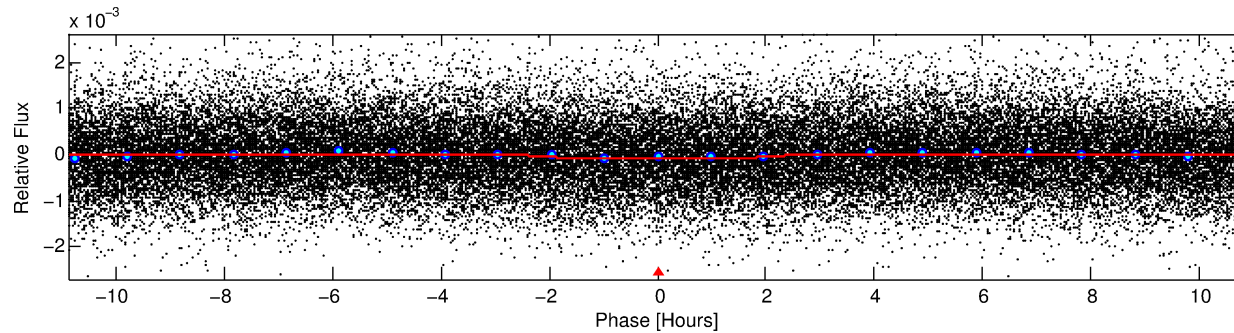
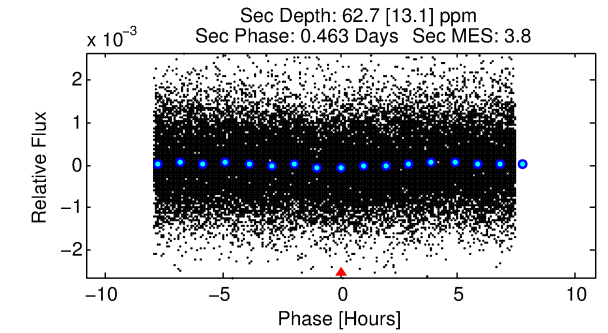
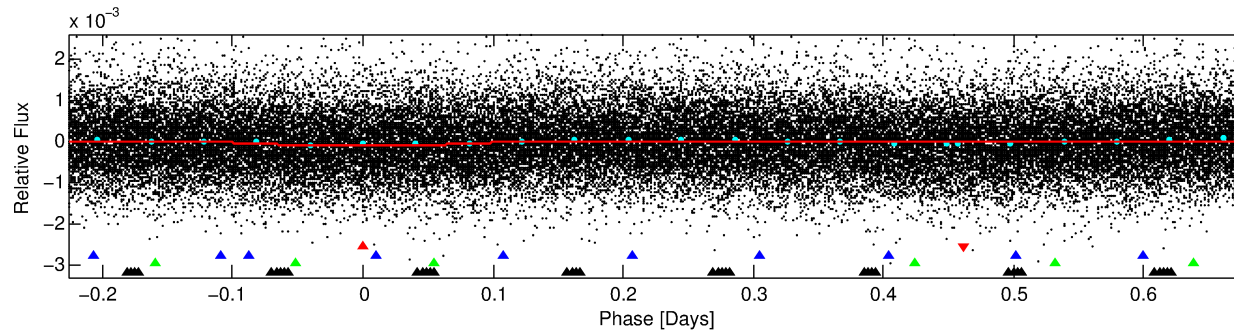
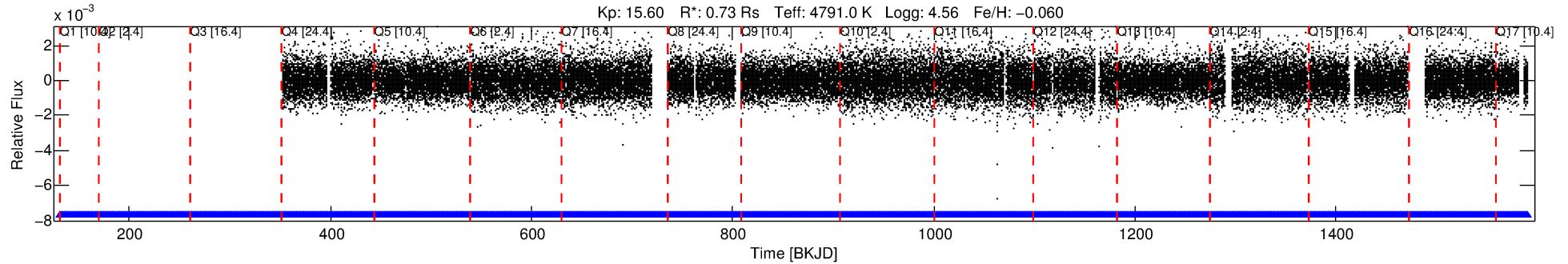
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002162268-01

No Significant Match Found

DV One-Page Summary

KIC: 2162268 Candidate: 1 of 4 Period: 0.906 d



DV Fit Results:

Period = 0.90632 [0.00001] d
Epoch = 131.8312 [0.0061] BKJD
Rp/R* = 0.0096 [0.0065]
a/R* = 1.15 [0.73]
b = 0.89 [0.61]
Seff = 946.28 [176.85]
Teq = 1414 [66] K
Rp = 0.77 [0.52] Re
a = 0.0164 [0.0013] AU
Ag = 15.69 [21.49] [0.68 σ]
Teff = 4352 [1493] K [1.97 σ]

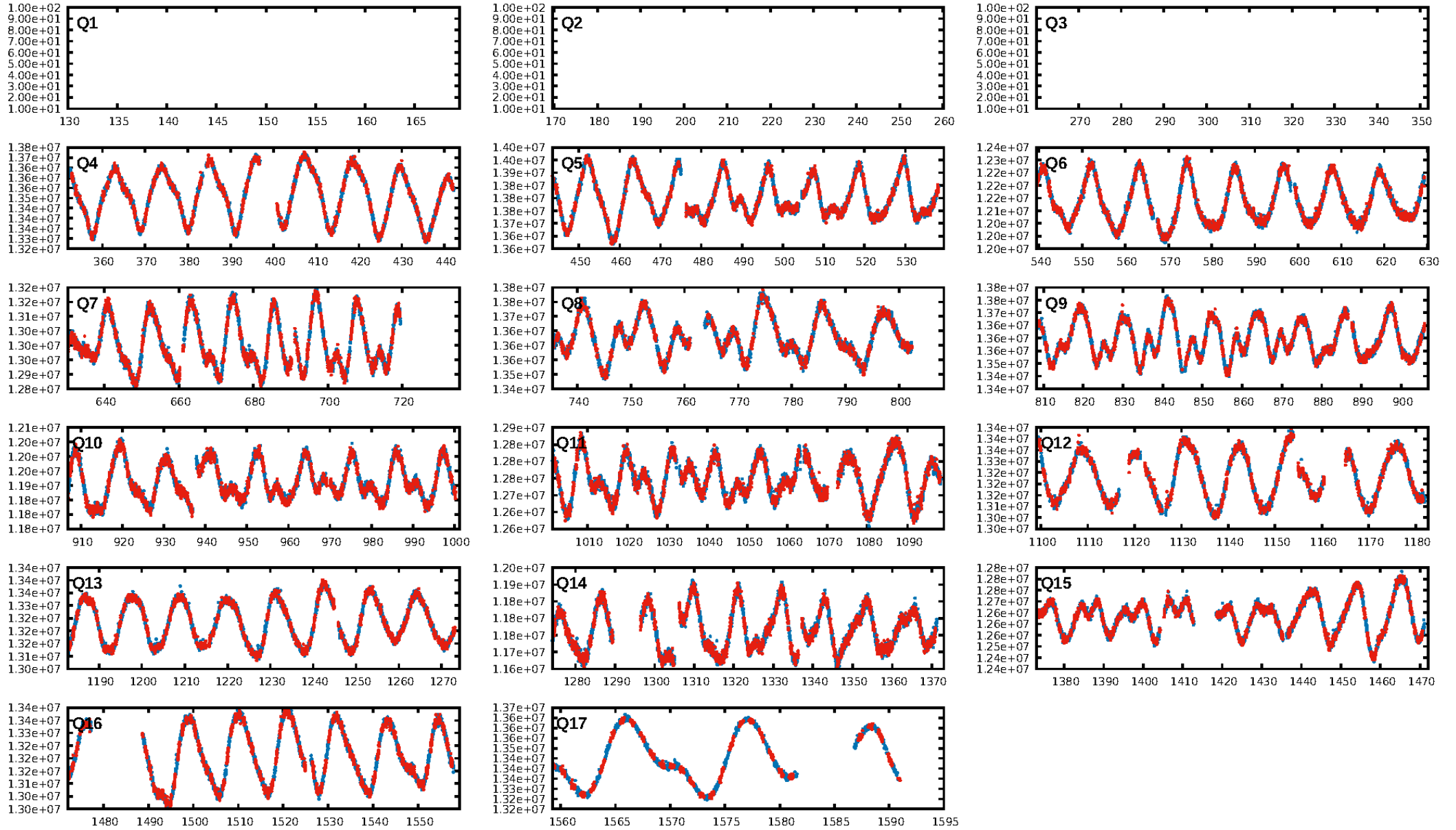
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [93.60 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.23e-11
RollingBand-fgt: 1.00 [1230/1230]
GhostDiagnostic-chr: -0.2171
Centroid-sig: 1.7%
Centroid-so: 1.783 arcsec [1.36 σ]
OotOffset-rm: 0.450 arcsec [0.51 σ]
OotOffset-st: 3/3/3/4 [13]
KicOffset-rm: 0.152 arcsec [0.20 σ]
KicOffset-st: 3/3/3/4 [13]
DiffImageQuality-fgm: 0.15 [2/13]
DiffImageOverlap-fno: 1.00 [14/14]

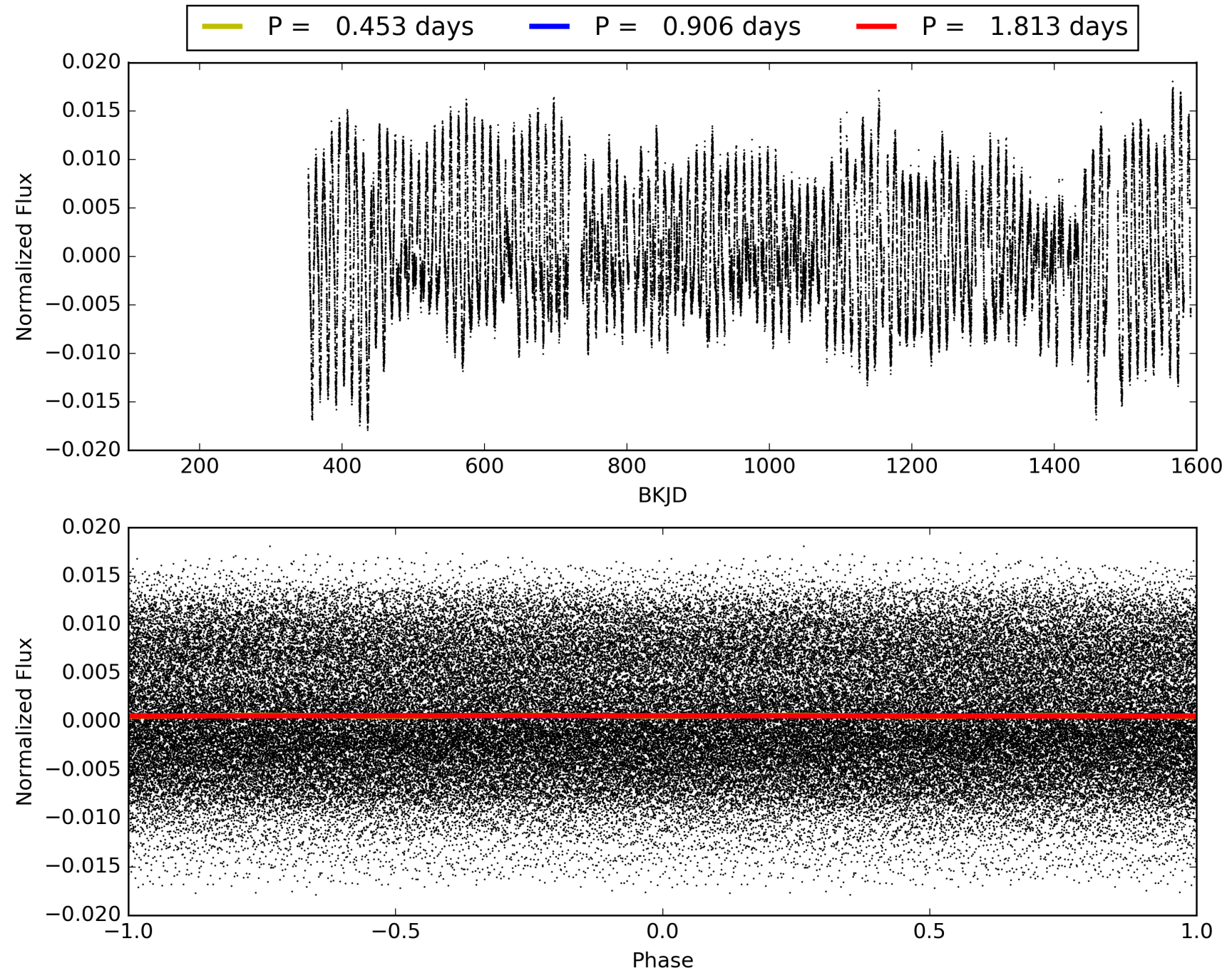
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 002162268-01, PDC Light Curves

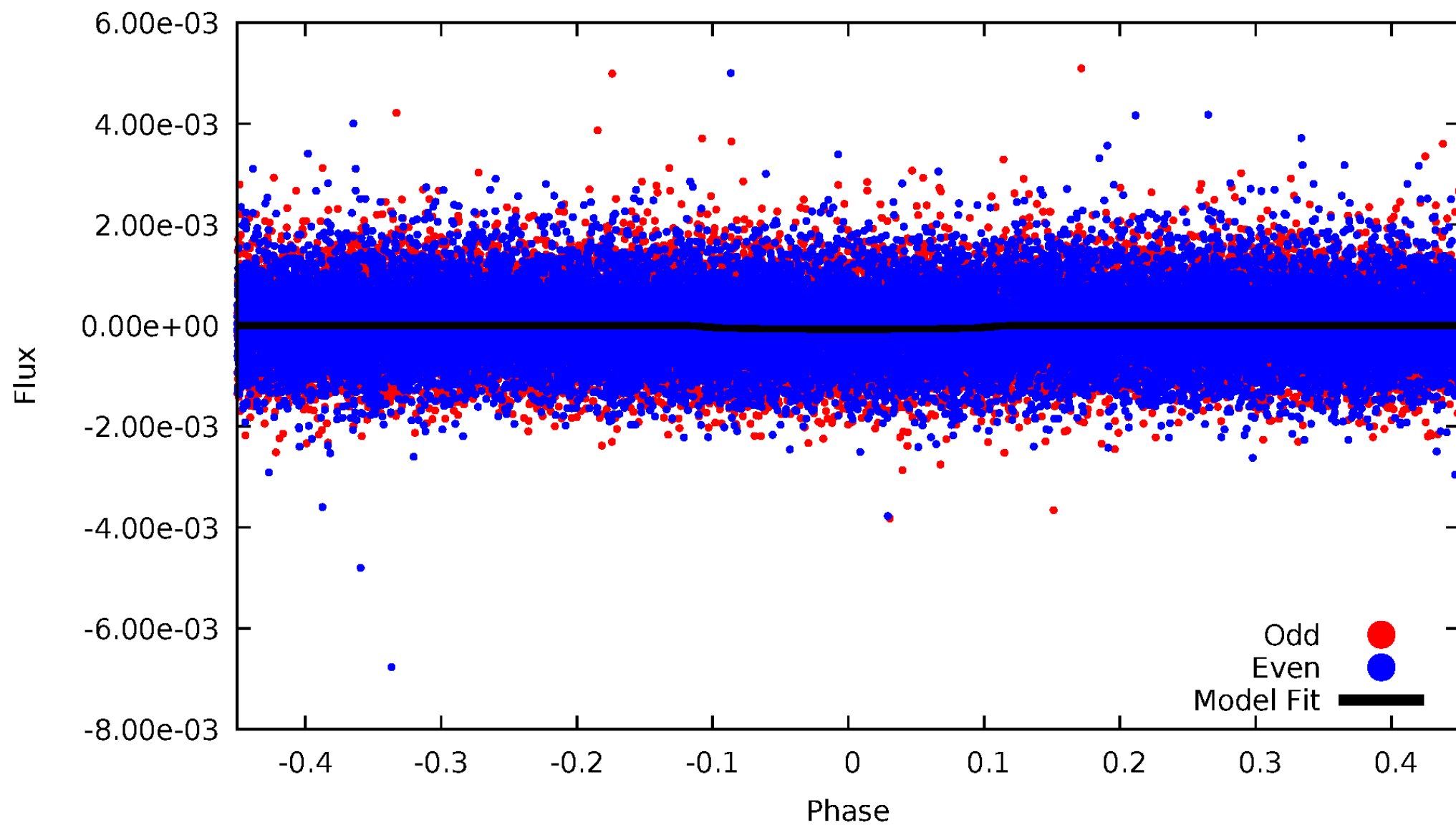


TCE 002162268-01



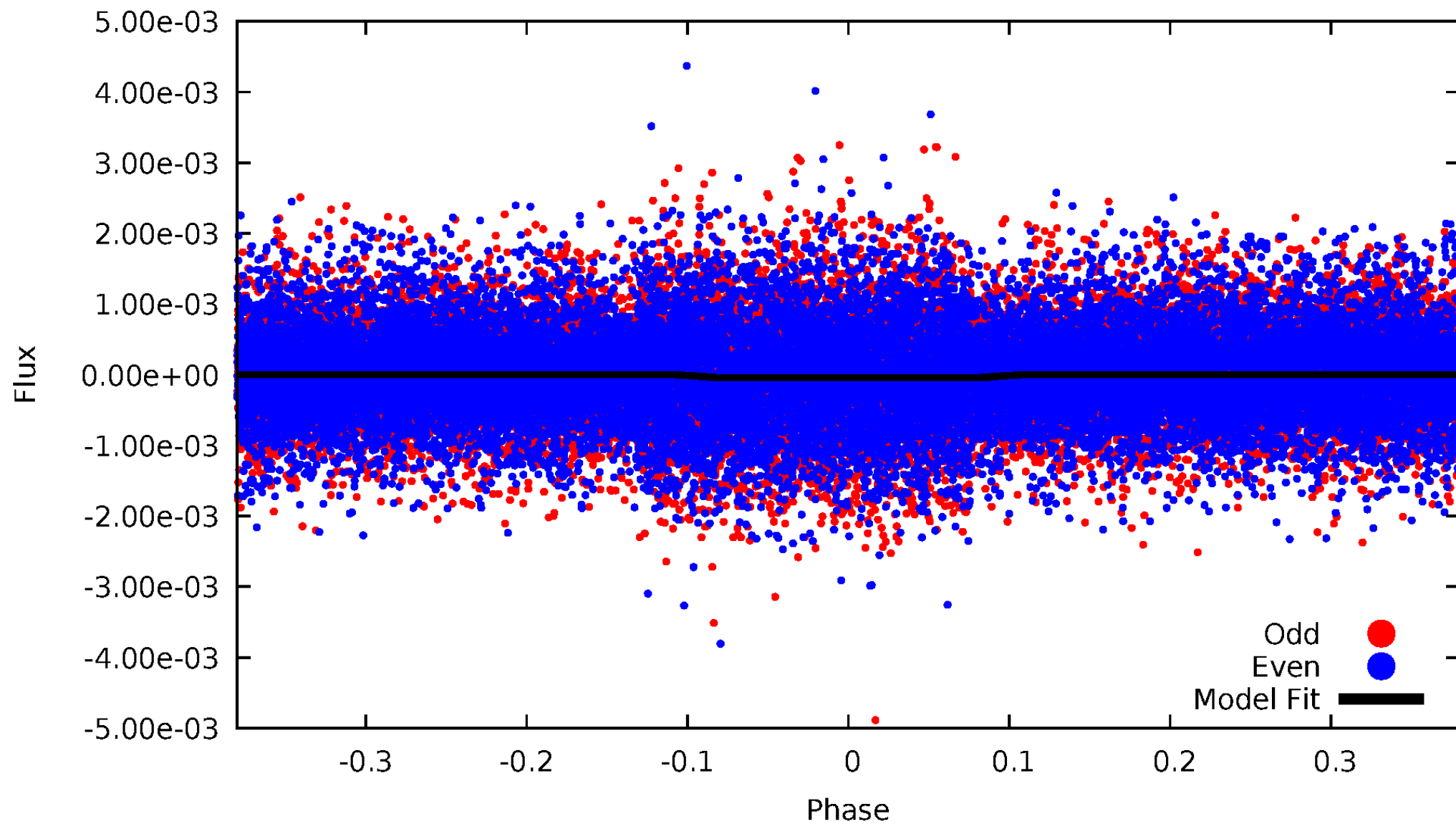
DV Odd/Even

TCE 002162268-01



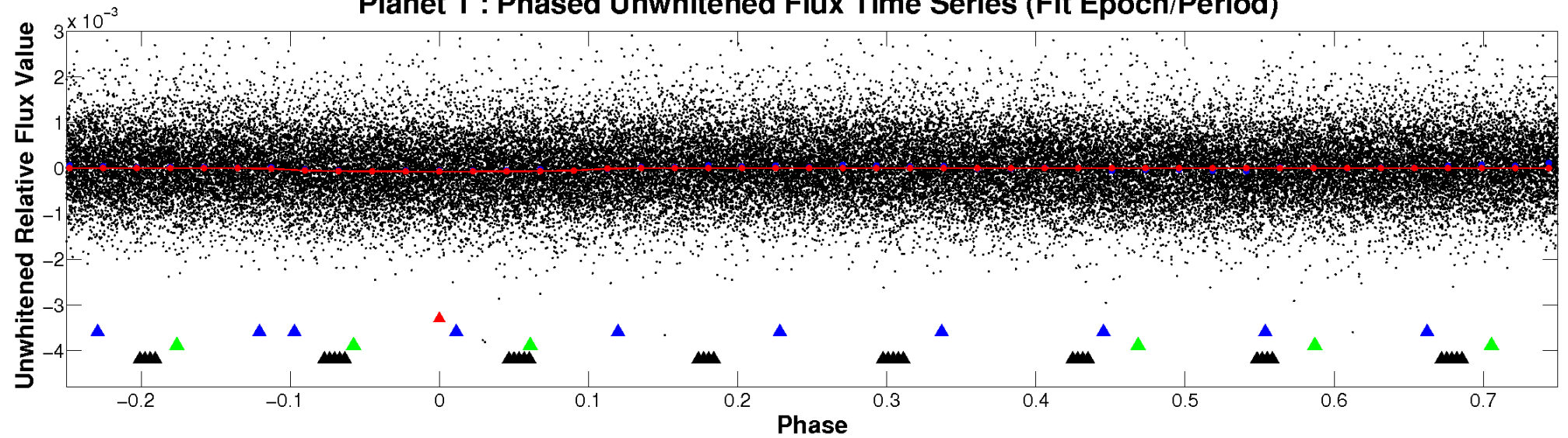
ALT Odd/Even

TCE 002162268-01

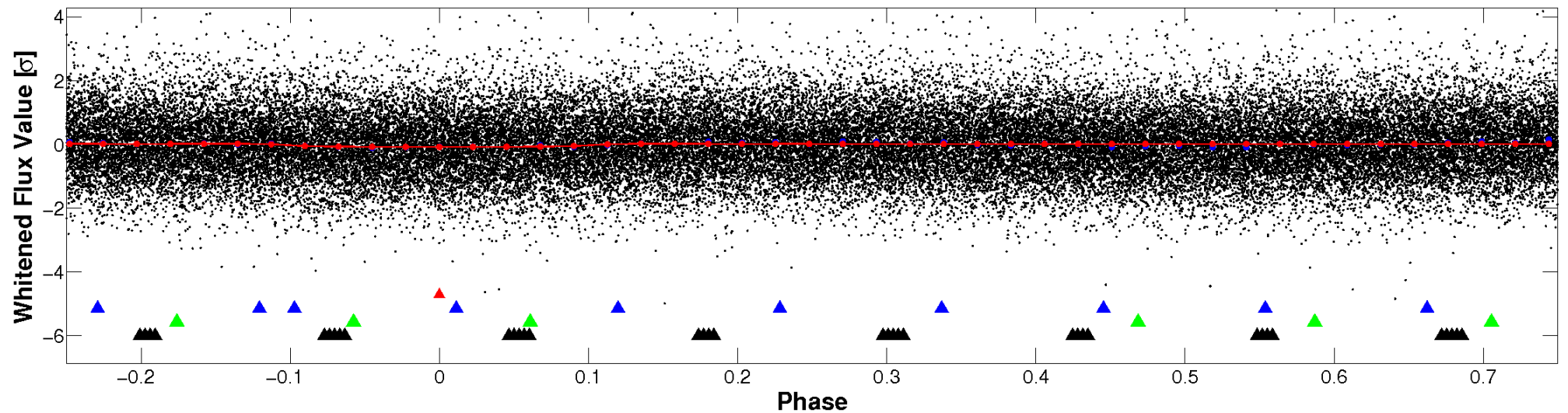


Non-Whitened Vs. Whitened Light Curve

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

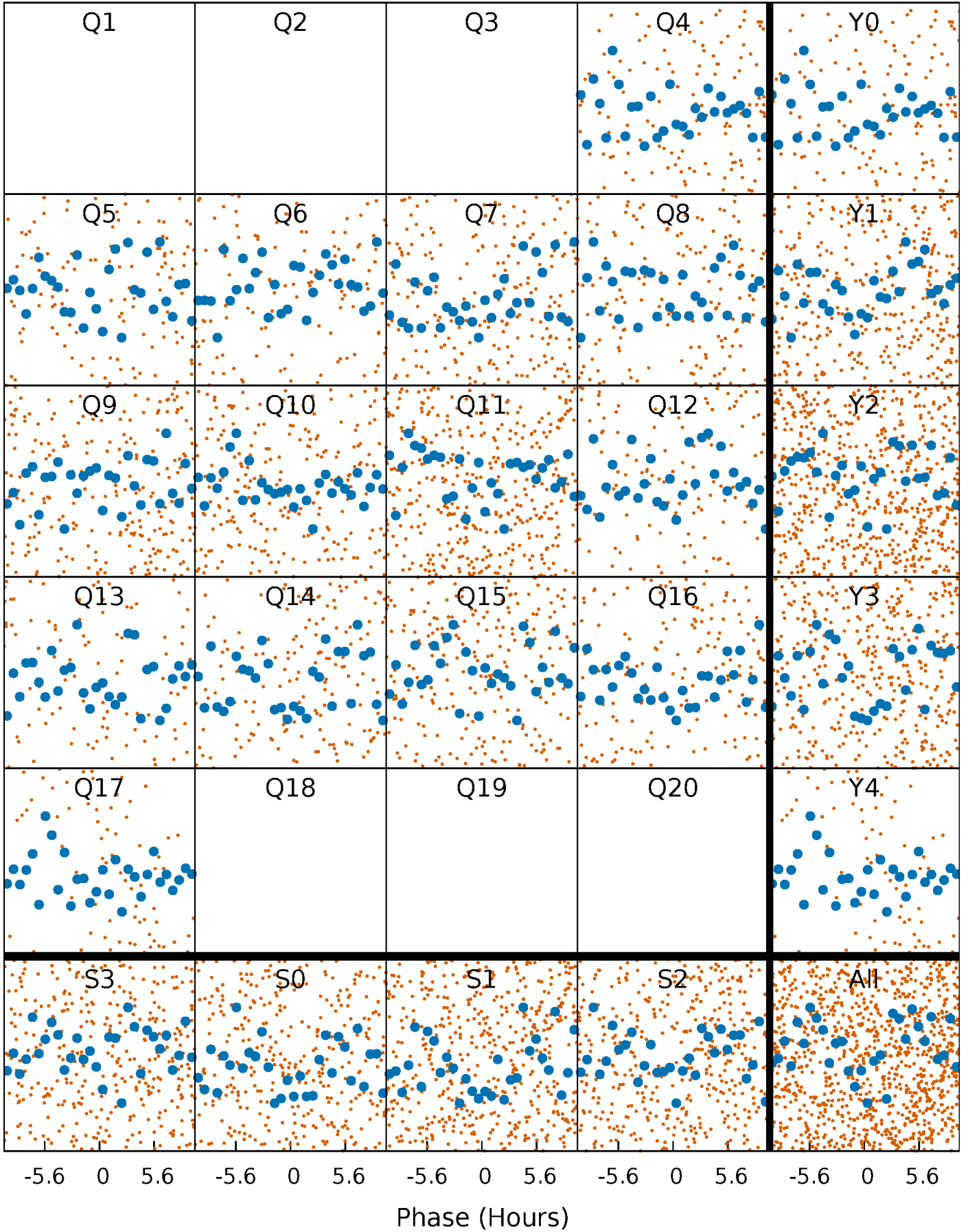


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



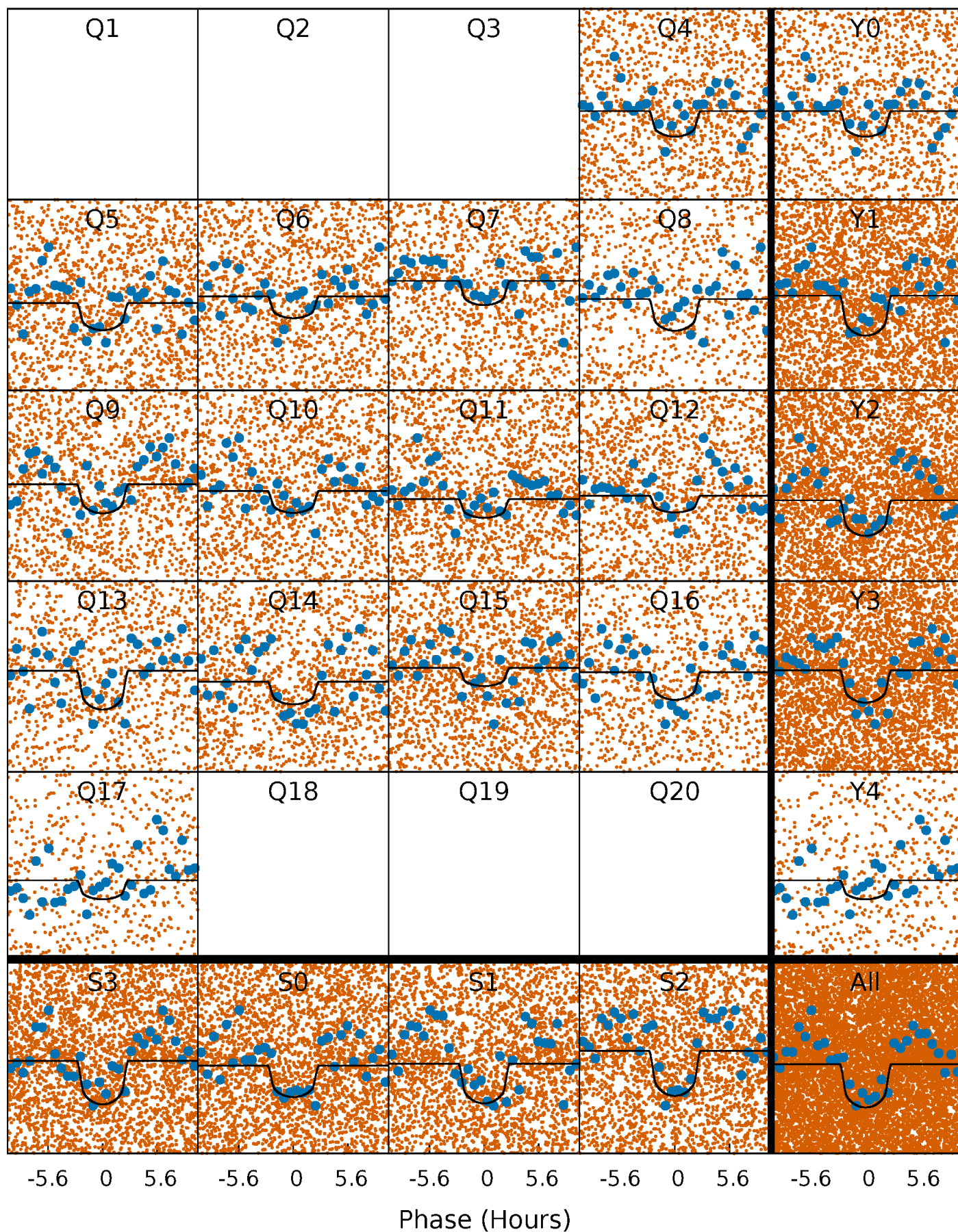
PDC Quarter-Phased Transit Curves

TCE 002162268-01 P= 0.906319 Days $T_0=131.831153$ (BKJD)



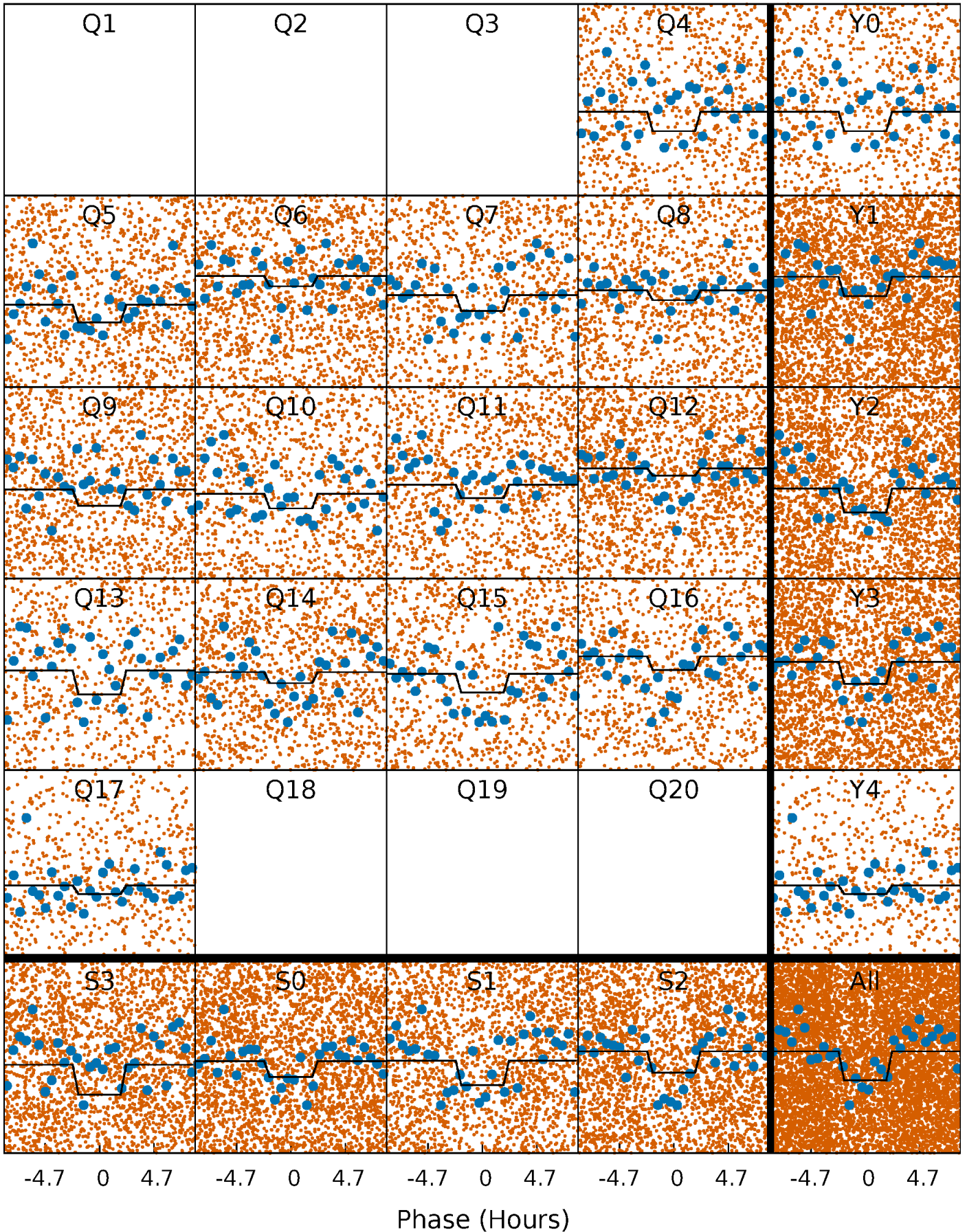
DV Quarter-Phased Transit Curves

TCE 002162268-01 P= 0.906319 Days $T_0=131.831153$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

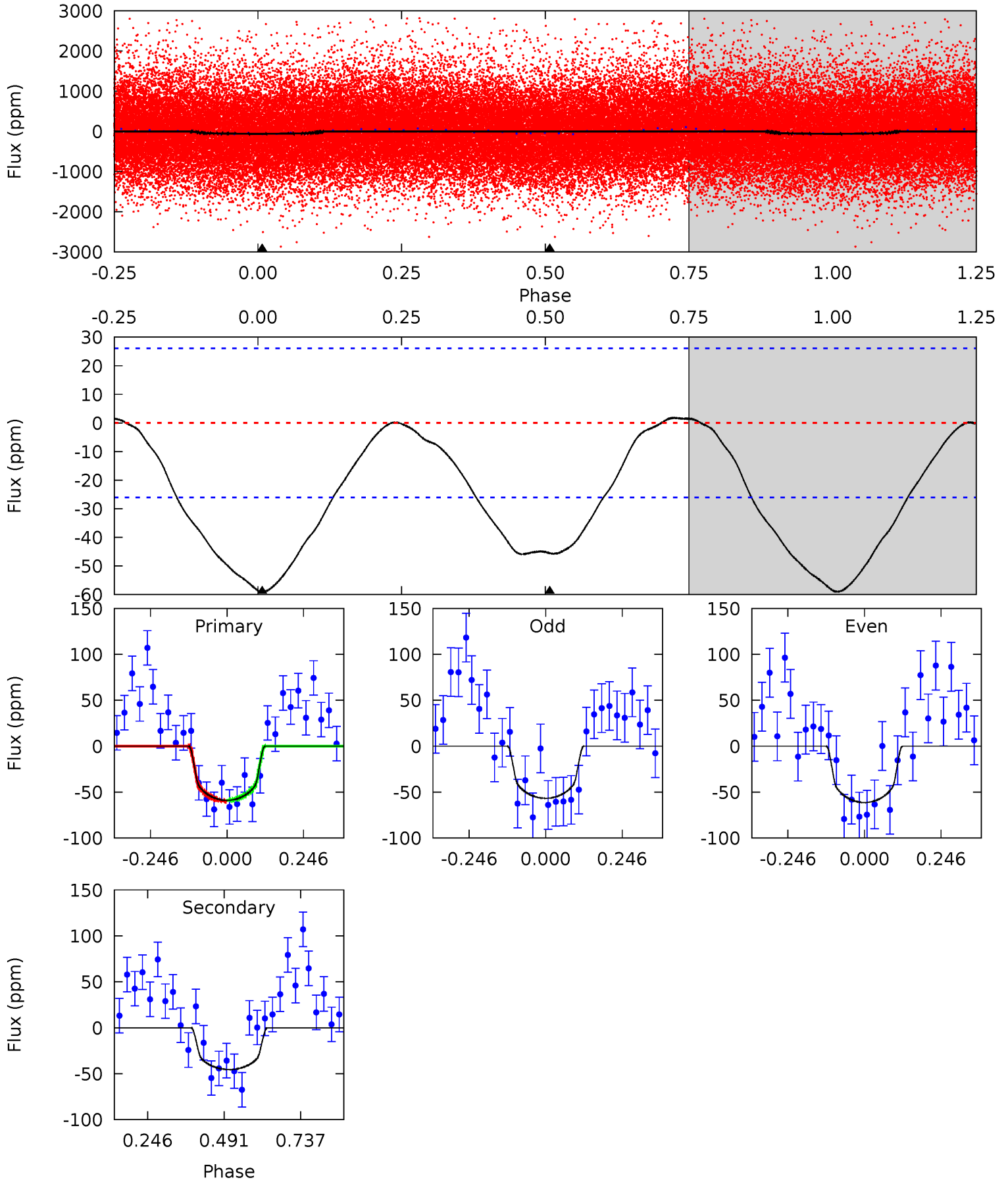
TCE 002162268-01 P= 0.906337 Days $T_0=131.823321$ (BKJD)



DV Model-Shift Uniqueness Test

002162268-01, P = 0.906319 Days, E = 131.831153 Days

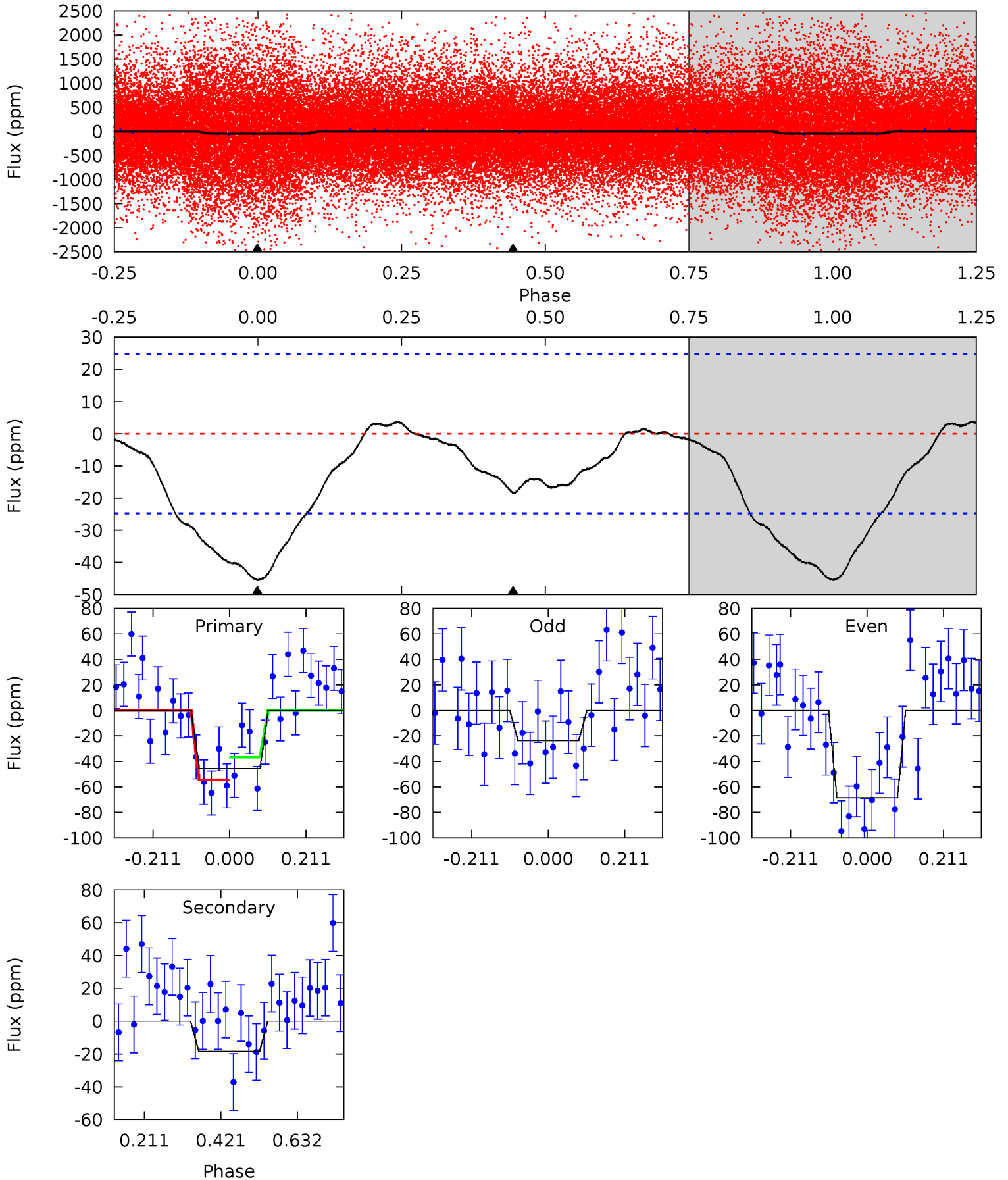
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.89	7.63	0	0	4.37	1.16	0.26	9.89	9.89	7.63	7.63	0.39	0.94	0.03	0.06



Alt Model-Shift Uniqueness Test

002162268-01, P = 0.906337 Days, E = 131.823321 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.10	3.28	0	0	4.41	1.25	0.37	8.10	8.10	3.28	3.28	3.97	0.82	0.08	1.60



Stellar Parameters For KIC 002162268

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4791^{+172}_{-172}	$4.561^{+0.066}_{-0.039}$	$-0.060^{+0.300}_{-0.300}$	$0.734^{+0.057}_{-0.070}$	$0.715^{+0.085}_{-0.053}$	$2.545^{+0.731}_{-0.366}$
	+4%/-4%	+1%/-1%	+500%/-500%	+8%/-10%	+12%/-7%	+29%/-14%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002162268-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-46 ± 6	$0.80^{+0.50}_{-0.45}$	1963^{+80}_{-78}	4050^{+1679}_{-623}	10^{+41}_{-7}
Alt.	-18 ± 6	$0.61^{+0.48}_{-0.38}$	1968^{+89}_{-84}	3789^{+1836}_{-676}	$7.066^{+44.240}_{-4.840}$

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

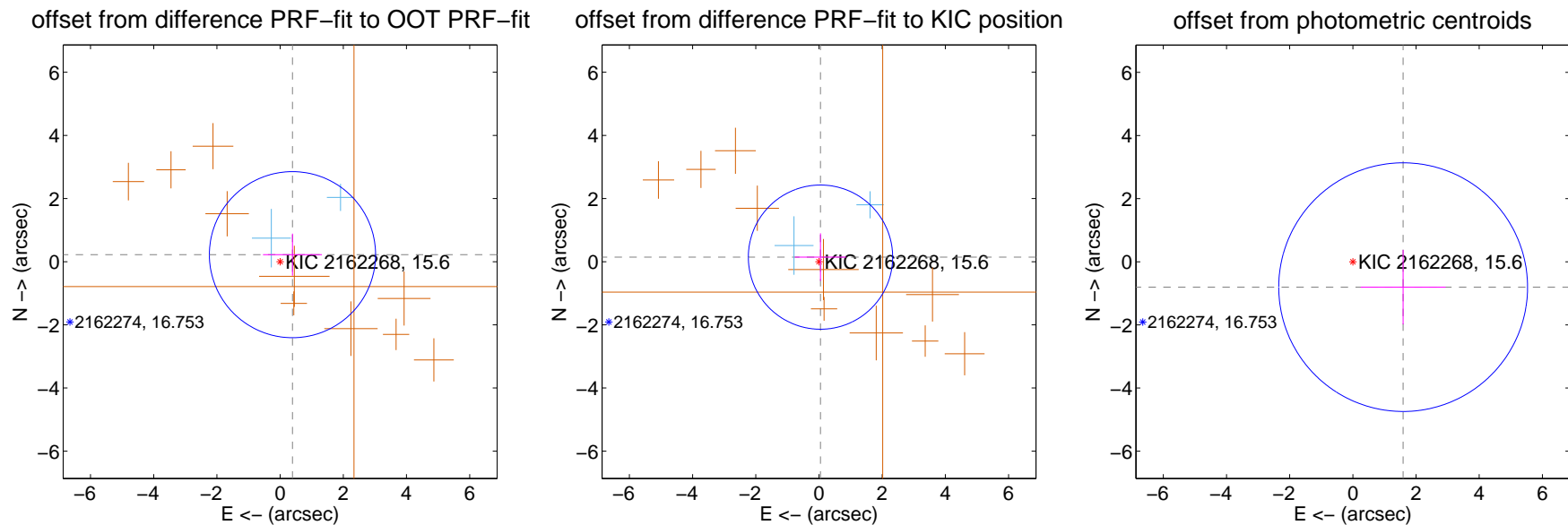
DV Centroid Data

Supplemental centroid analysis for 002162268-01. Kepler magnitude: 15.60. Transit SNR 7.79

There are 2 quarters with good PRF difference image offsets

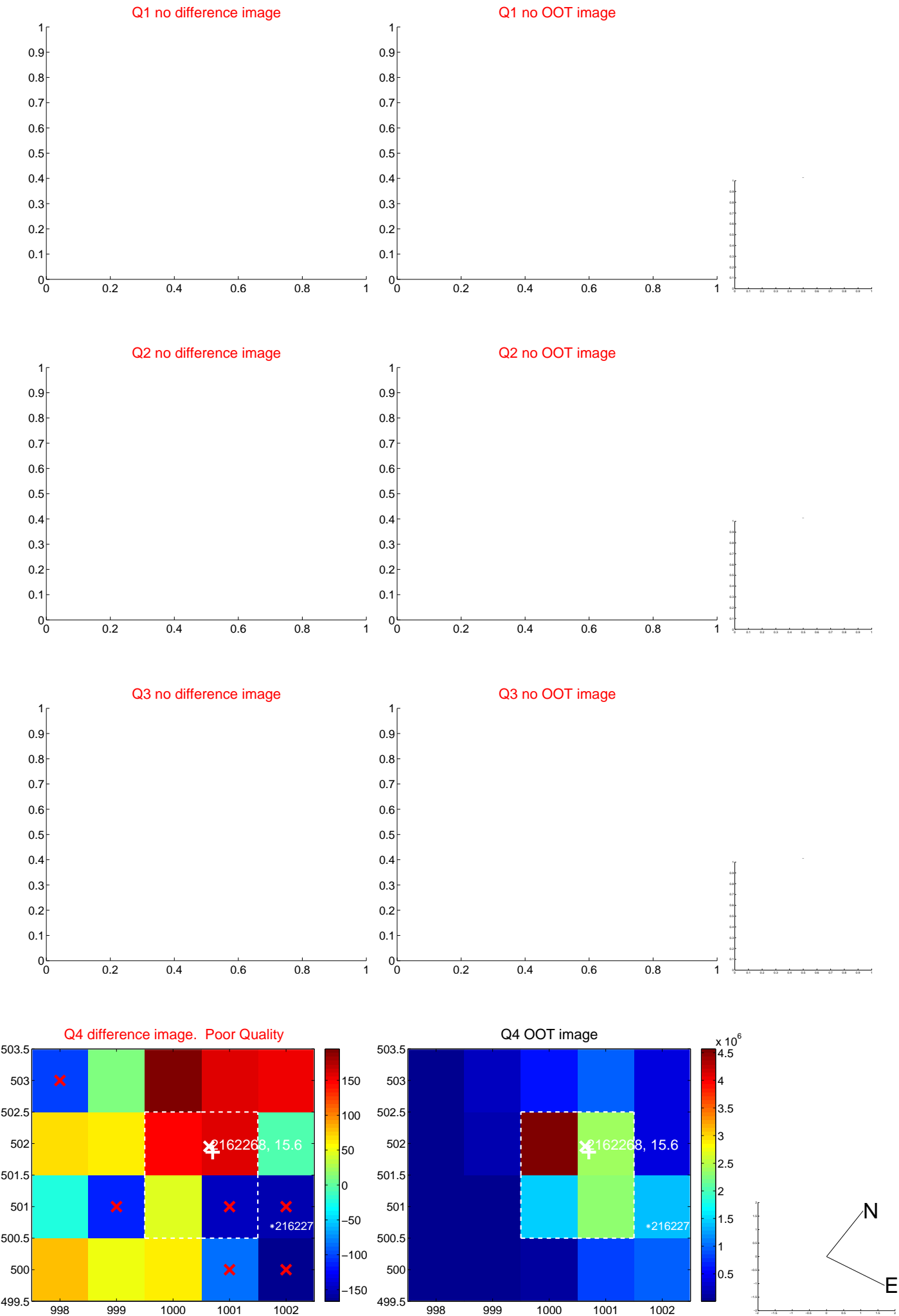
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.450 ± 0.877	0.51	-0.391 ± 0.934	0.222 ± 0.668
PRF-fit source offset from KIC position	0.152 ± 0.761	0.20	-0.048 ± 0.813	0.144 ± 0.755
photometric centroid source offset	1.78 ± 1.31	1.36	-1.59 ± 1.34	-0.80 ± 1.18

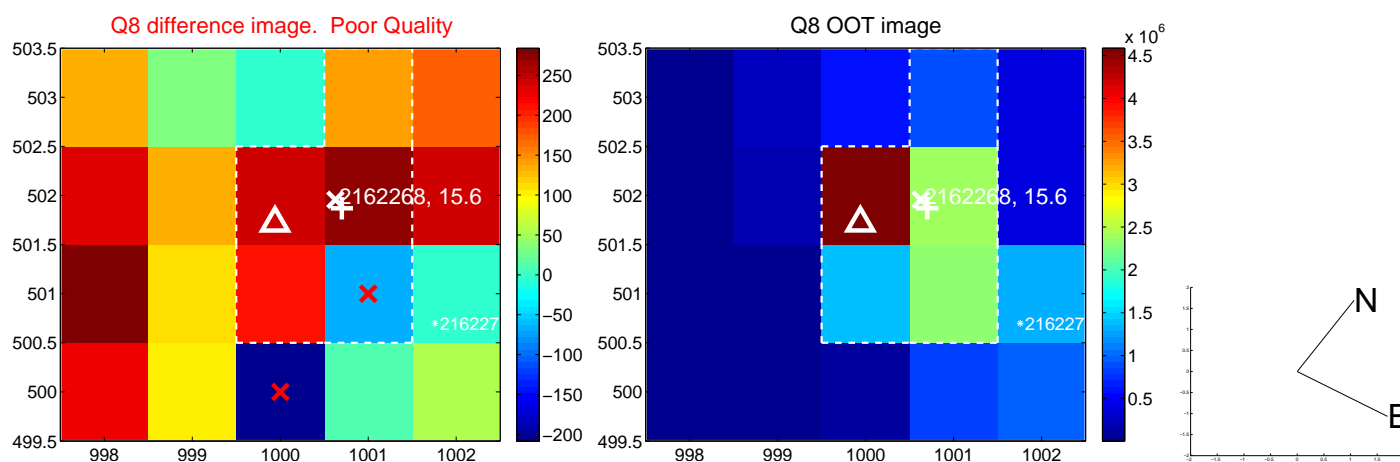
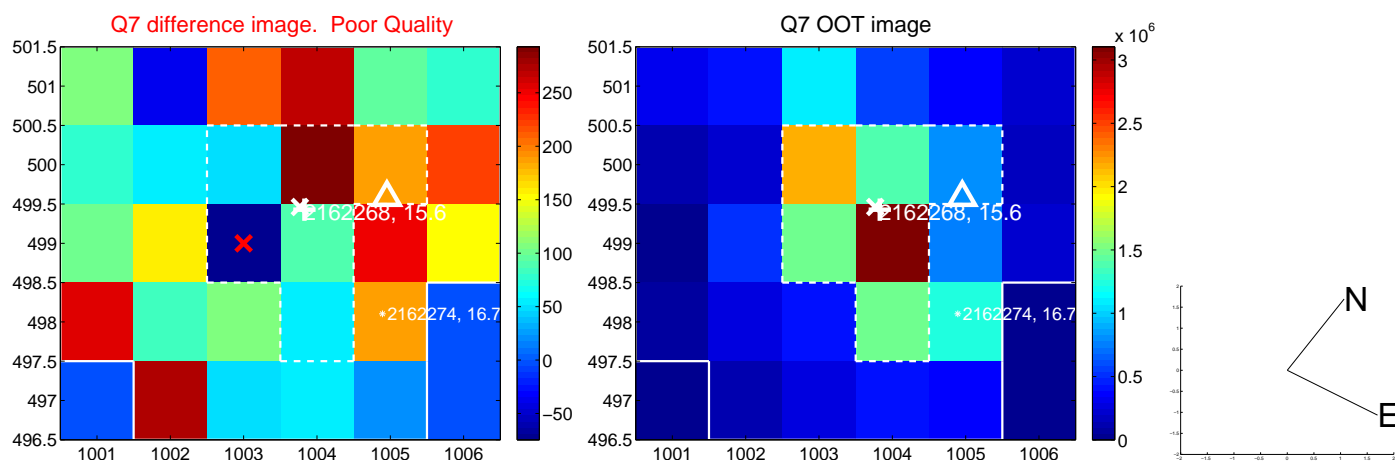
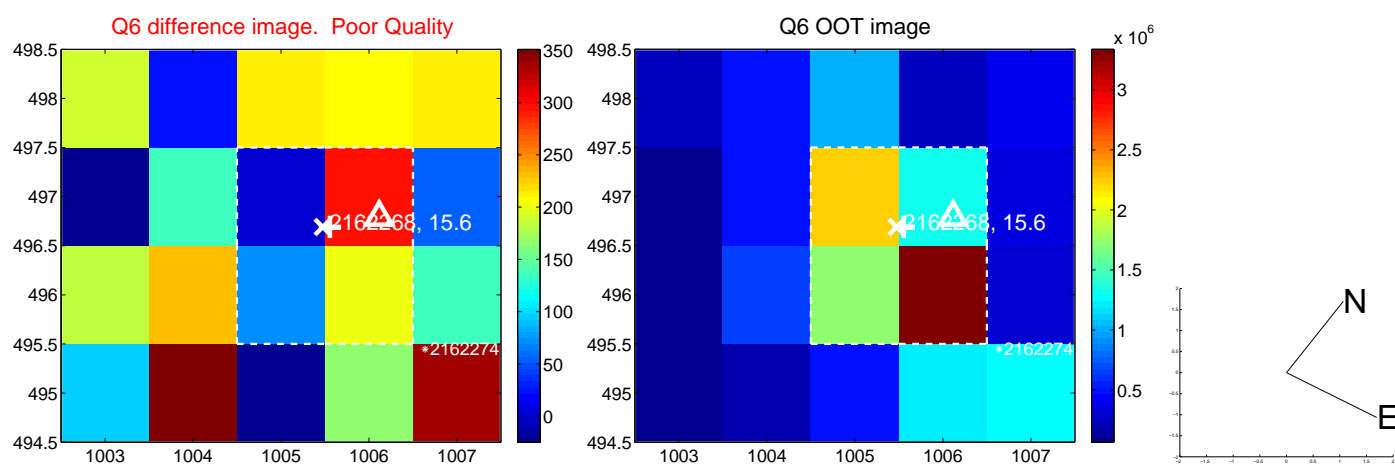
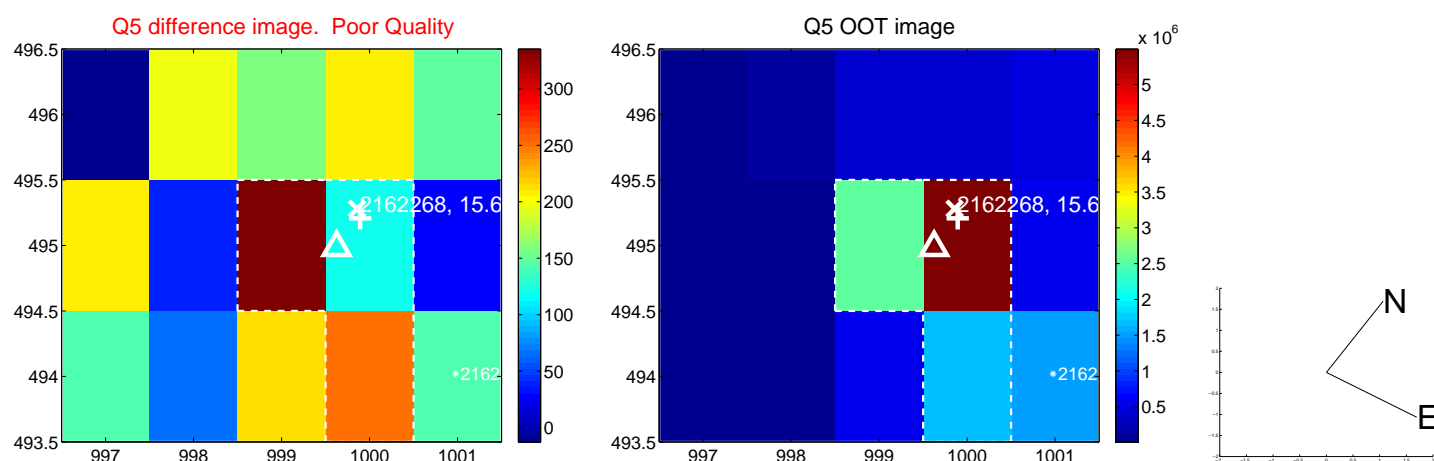


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

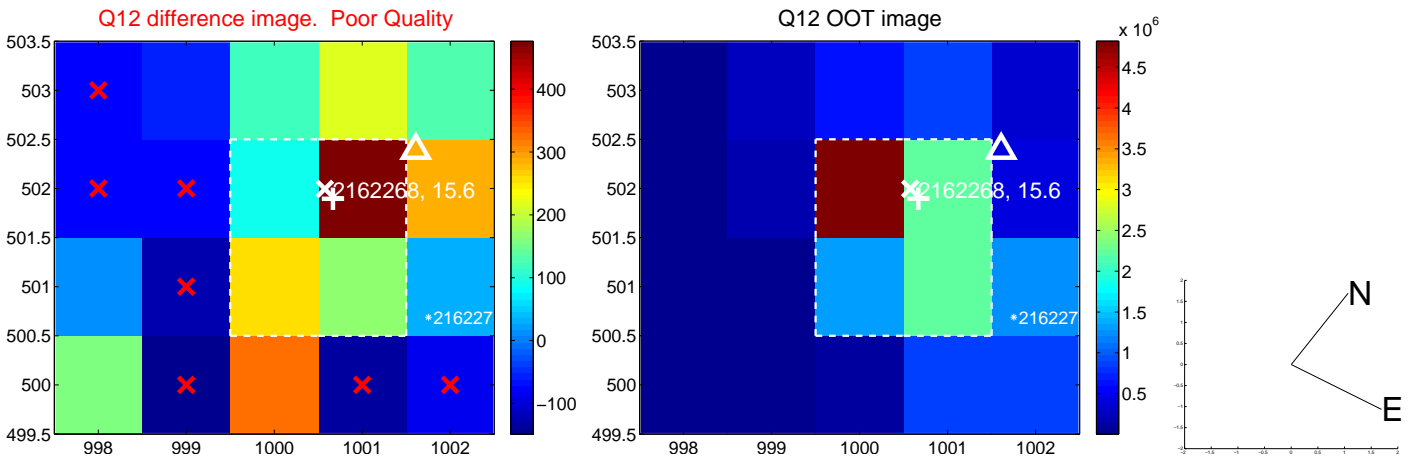
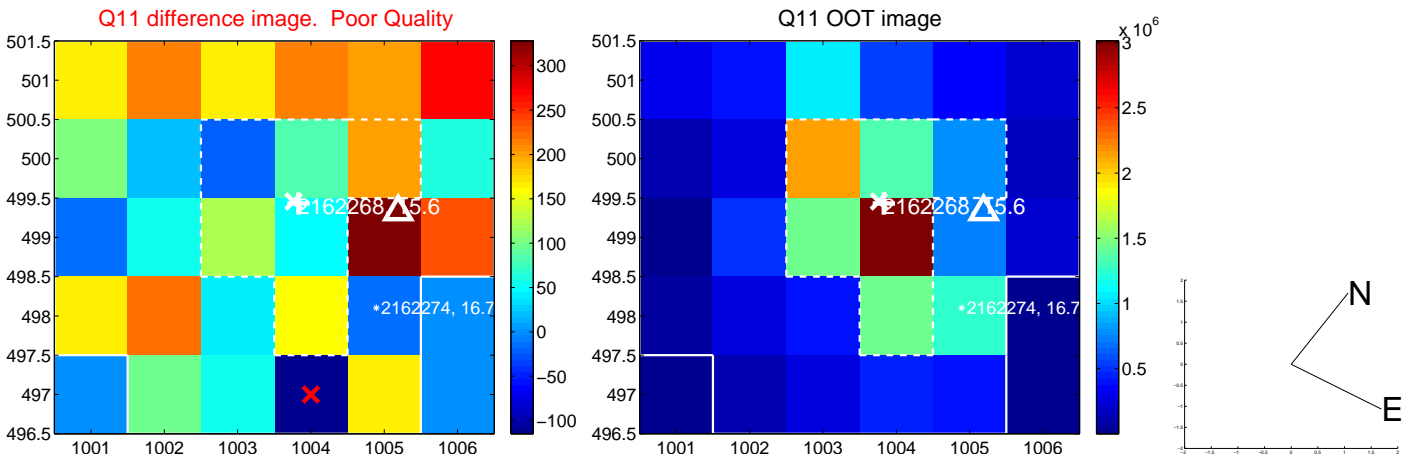
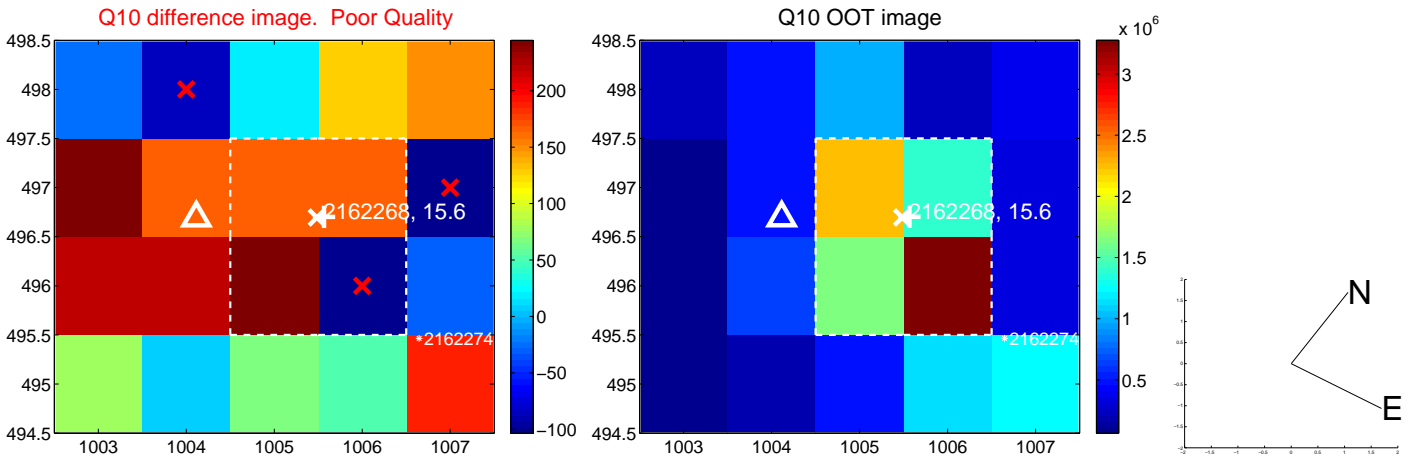
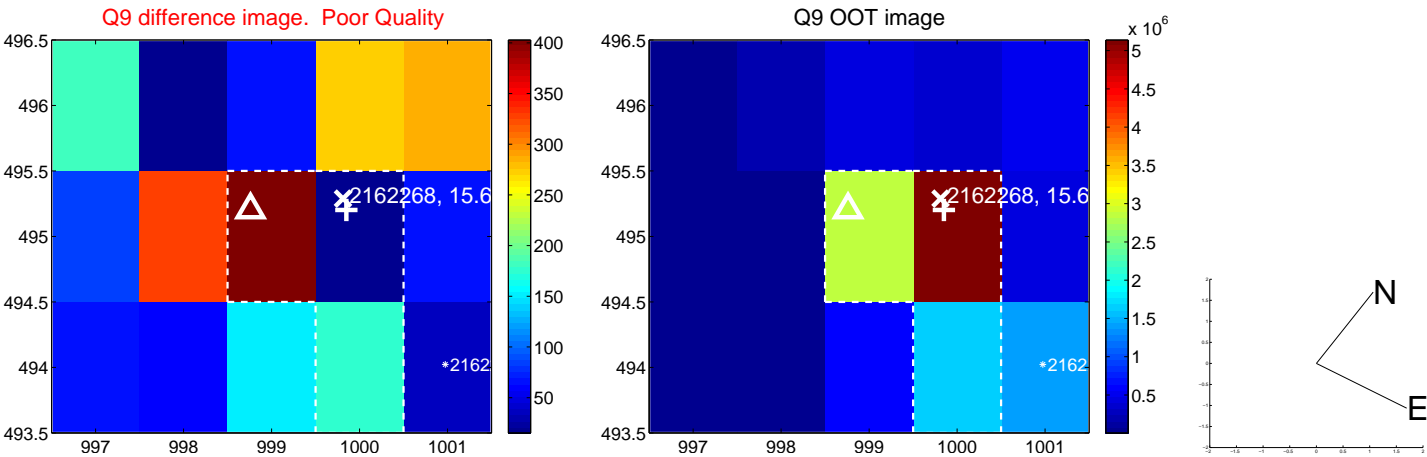
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



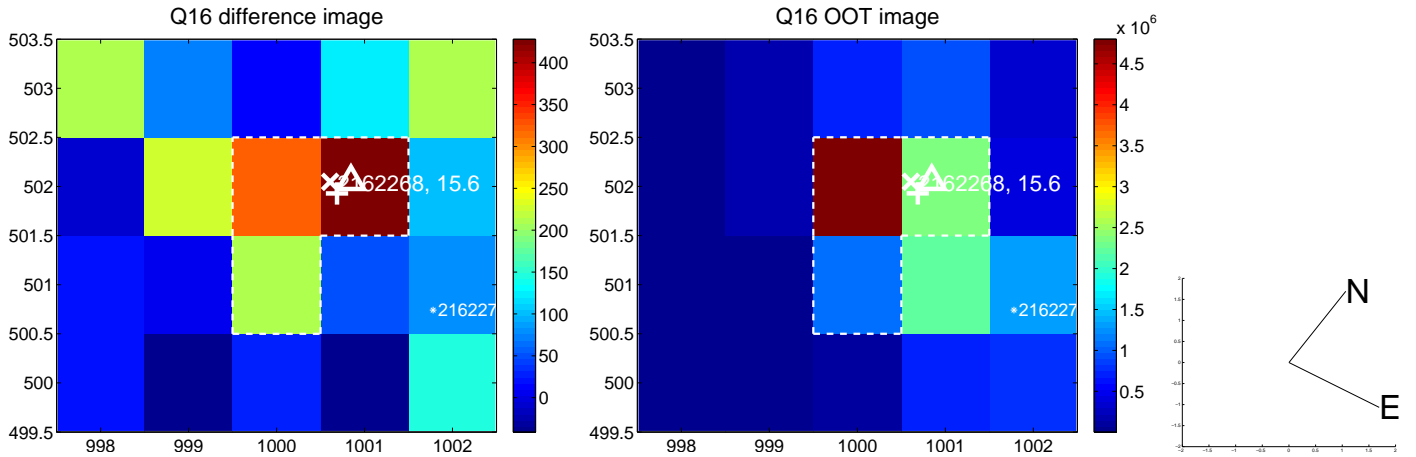
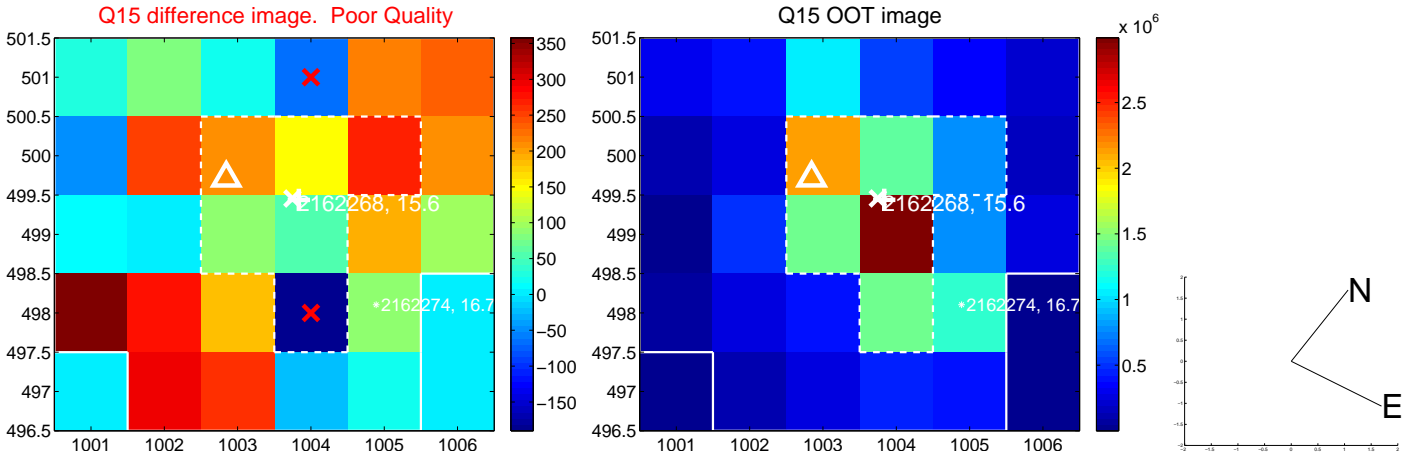
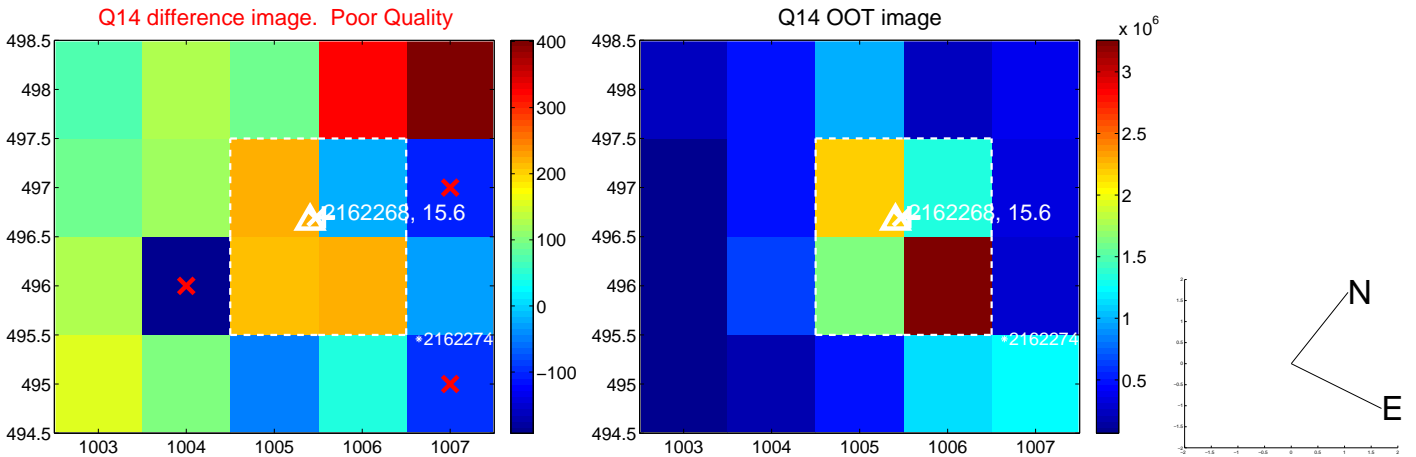
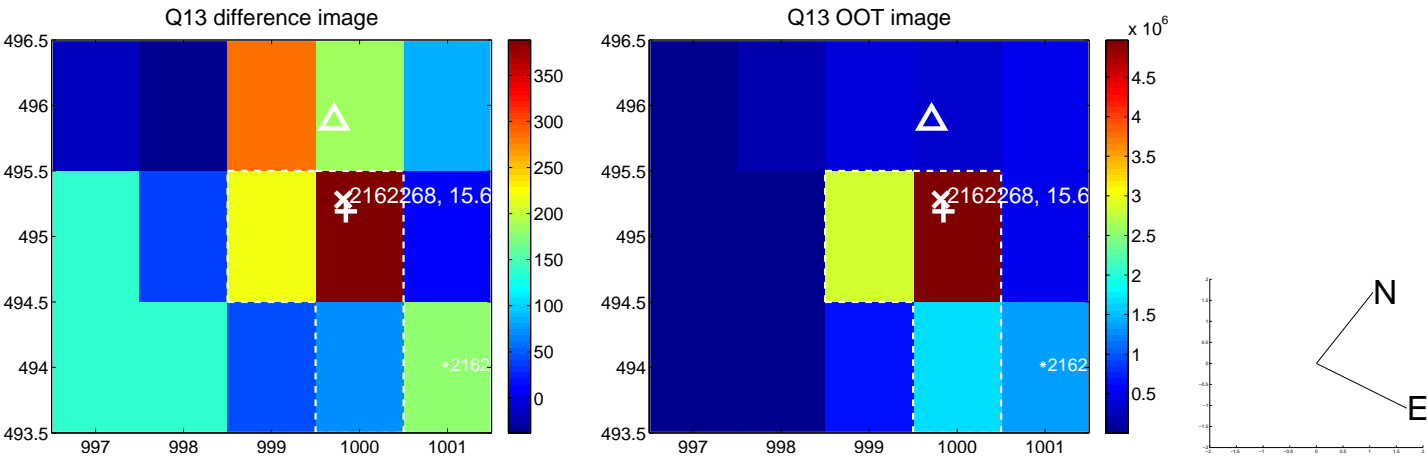
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



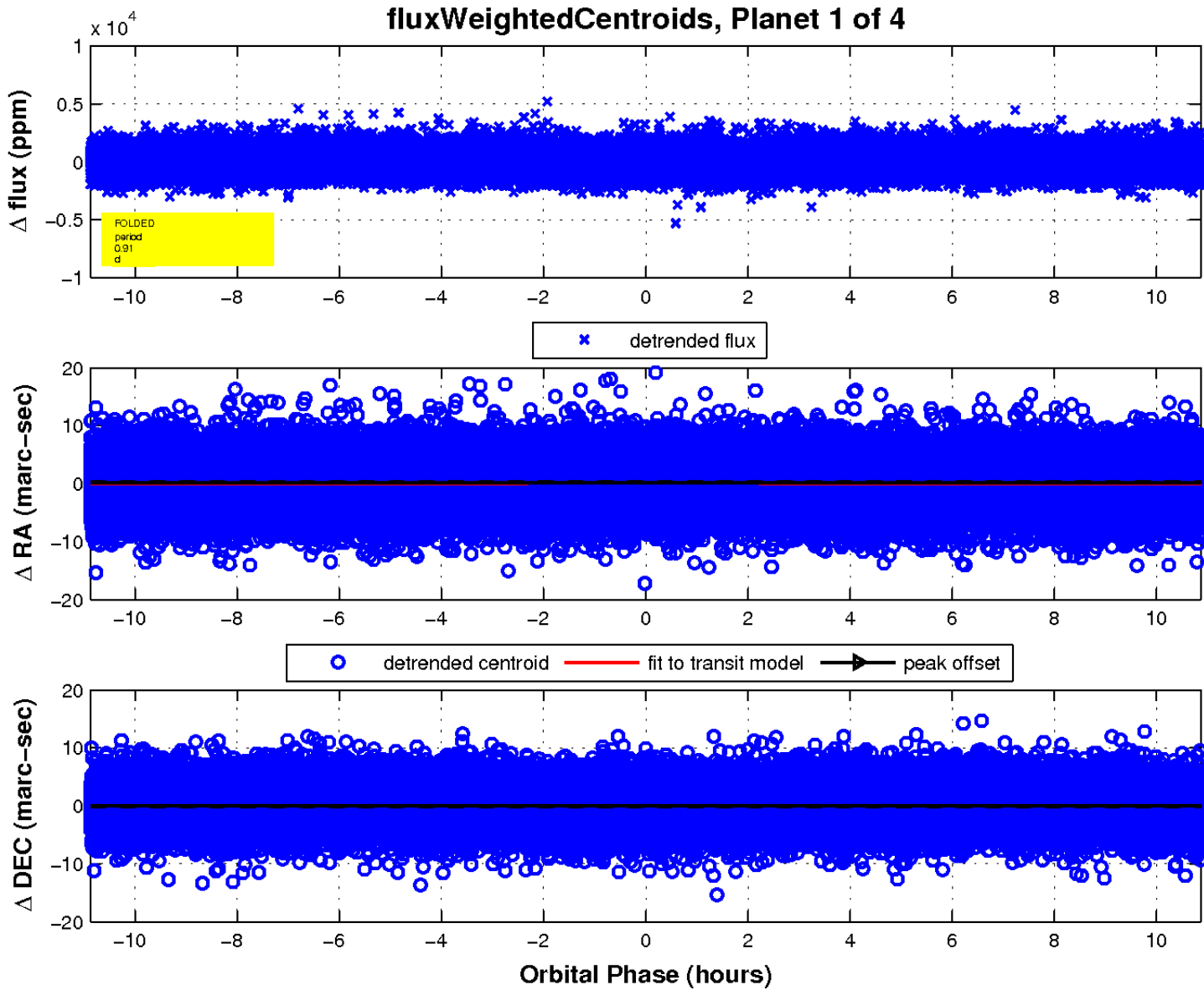
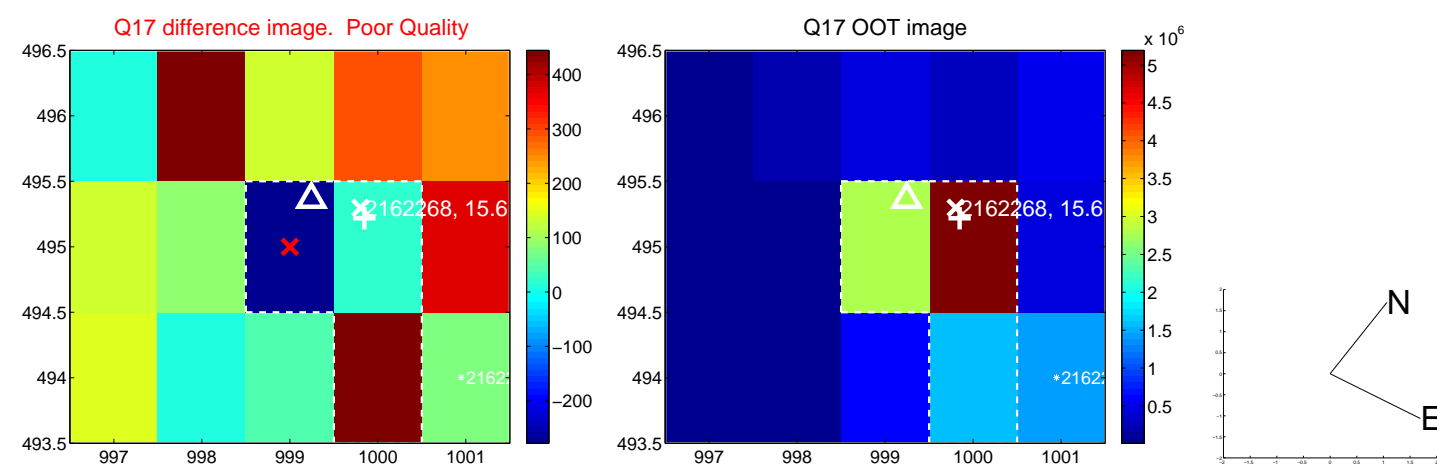
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

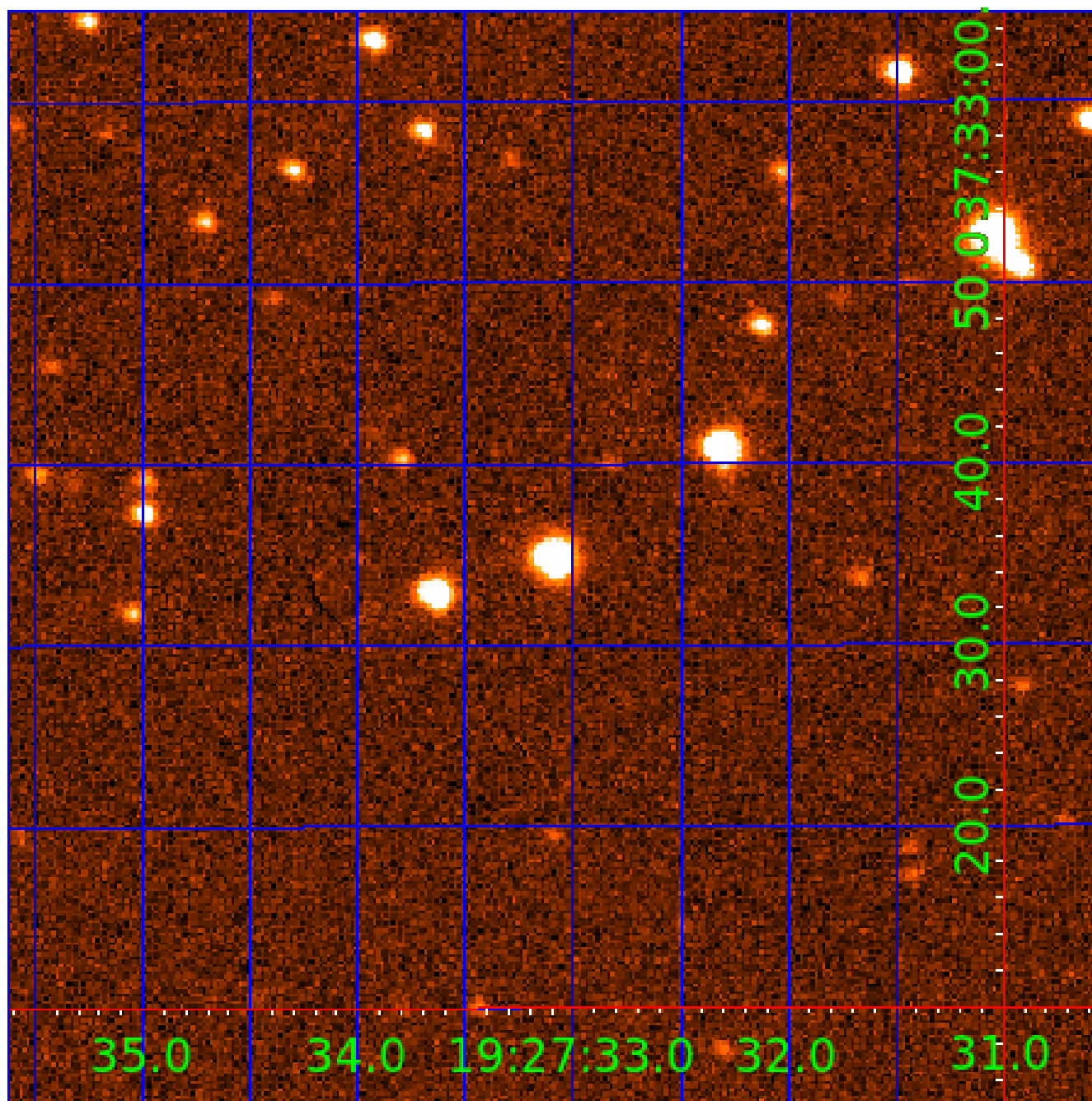


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002162268

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})
002162268-01	OBS	No	0.906319	131.831153	74.1	4.896	7.2	7.8	0.73	4791	0.77	946.28
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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002162268-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002162268-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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

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

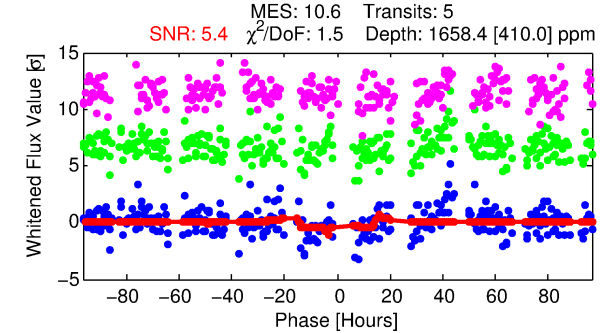
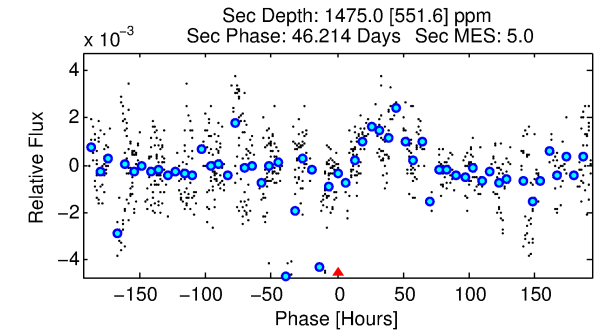
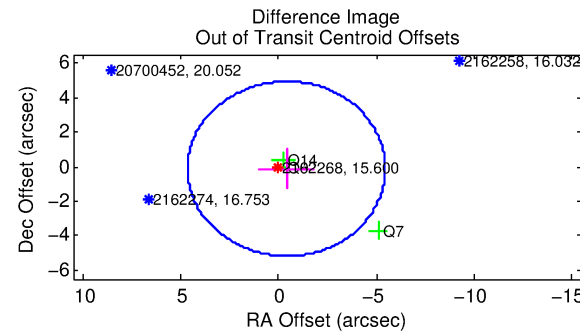
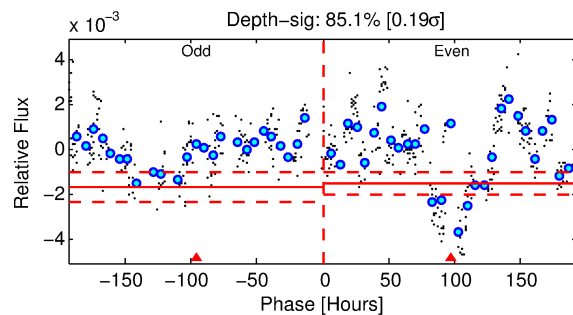
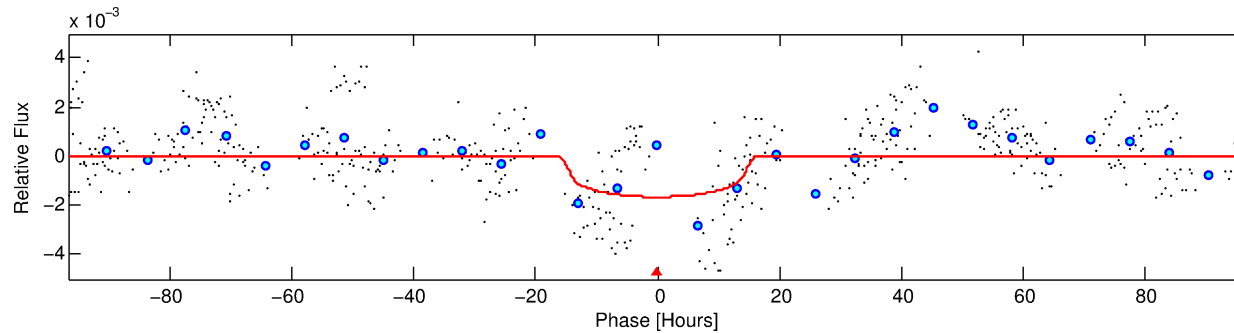
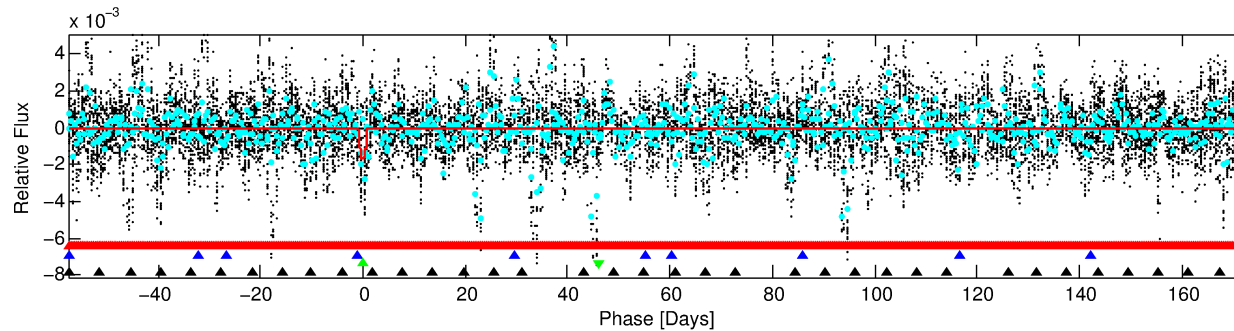
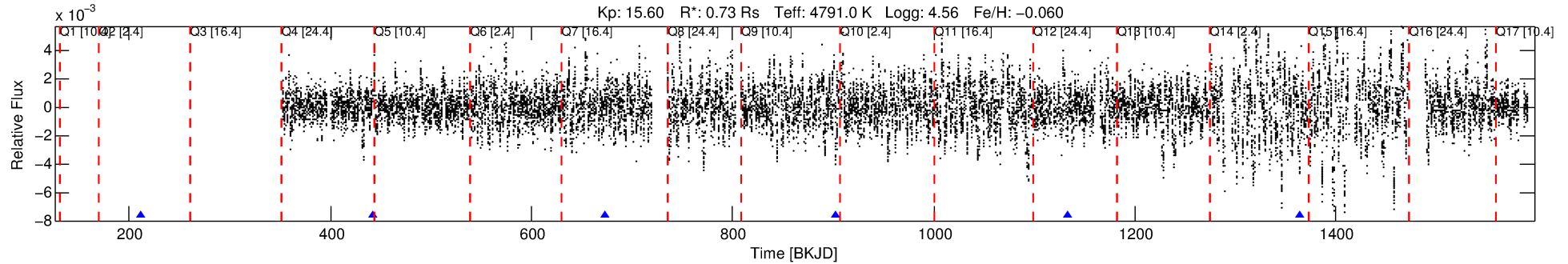
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002162268-03

No Significant Match Found

DV One-Page Summary

KIC: 2162268 Candidate: 3 of 4 Period: 230.312 d



DV Fit Results:

Period = 230.31234 [0.03498] d
Epoch = 212.0119 [0.1429] BKJD
Rp/R* = 0.0406 [0.0081]
a/R* = 39.79 [20.27]
b = 0.74 [0.30]
Seff = 0.59 [0.11]
Teq = 223 [10] K
Rp = 3.25 [0.72] Re
a = 0.6577 [0.0535] AU
Ag = 33269.10 [18591.68] [1.79 σ]
Teffp = 4662 [658] K [6.75 σ]

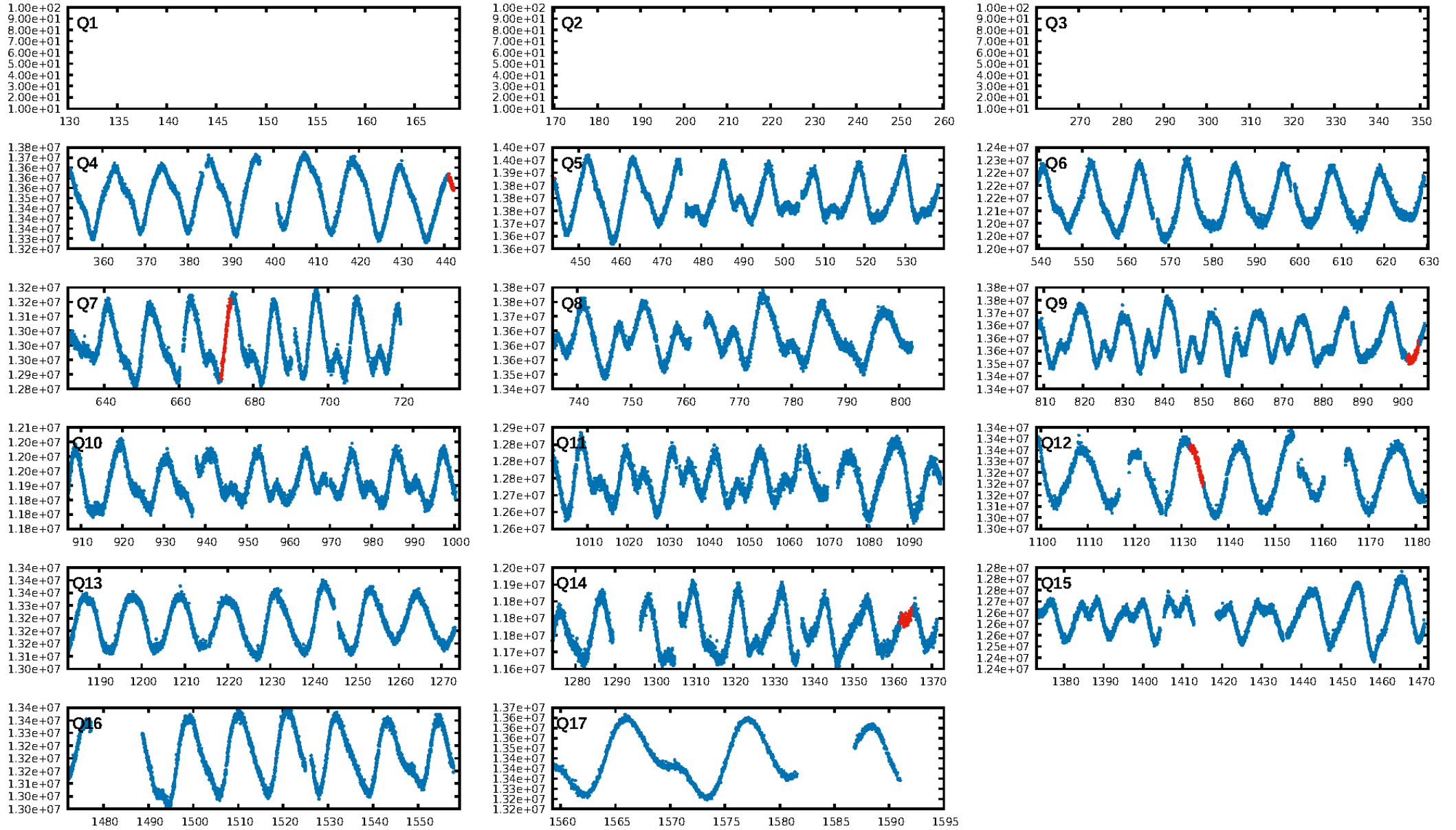
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [63.85 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.85e-12
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -1.413
Centroid-sig: 29.3%
Centroid-so: 1.083 arcsec [2.34 σ]
OotOffset-rm: 0.419 arcsec [0.25 σ]
OotOffset-st: 1/1/0/1 [3]
KicOffset-rm: 0.286 arcsec [0.21 σ]
KicOffset-st: 1/1/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

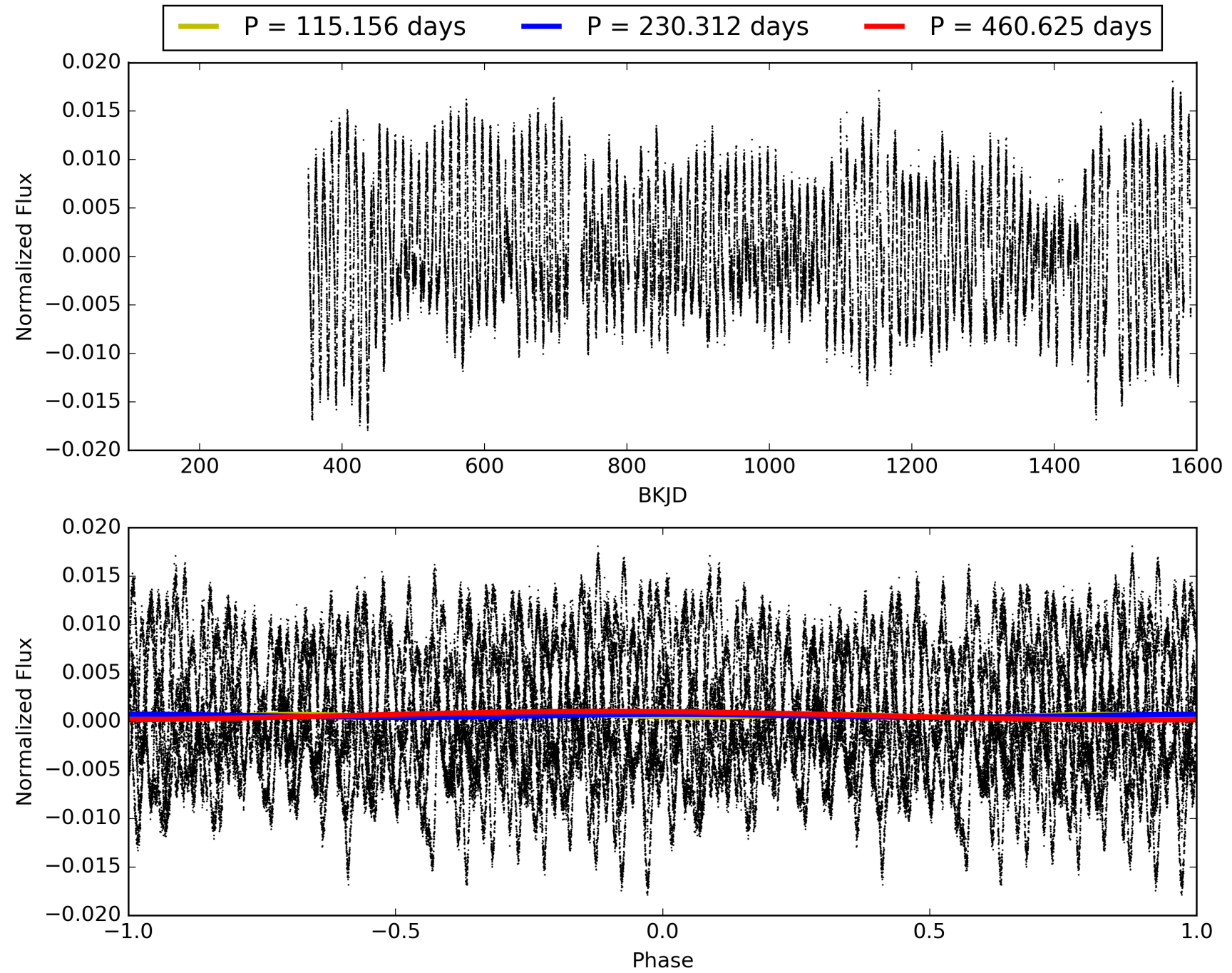
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:49:35 Z

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

TCE 002162268-03, PDC Light Curves

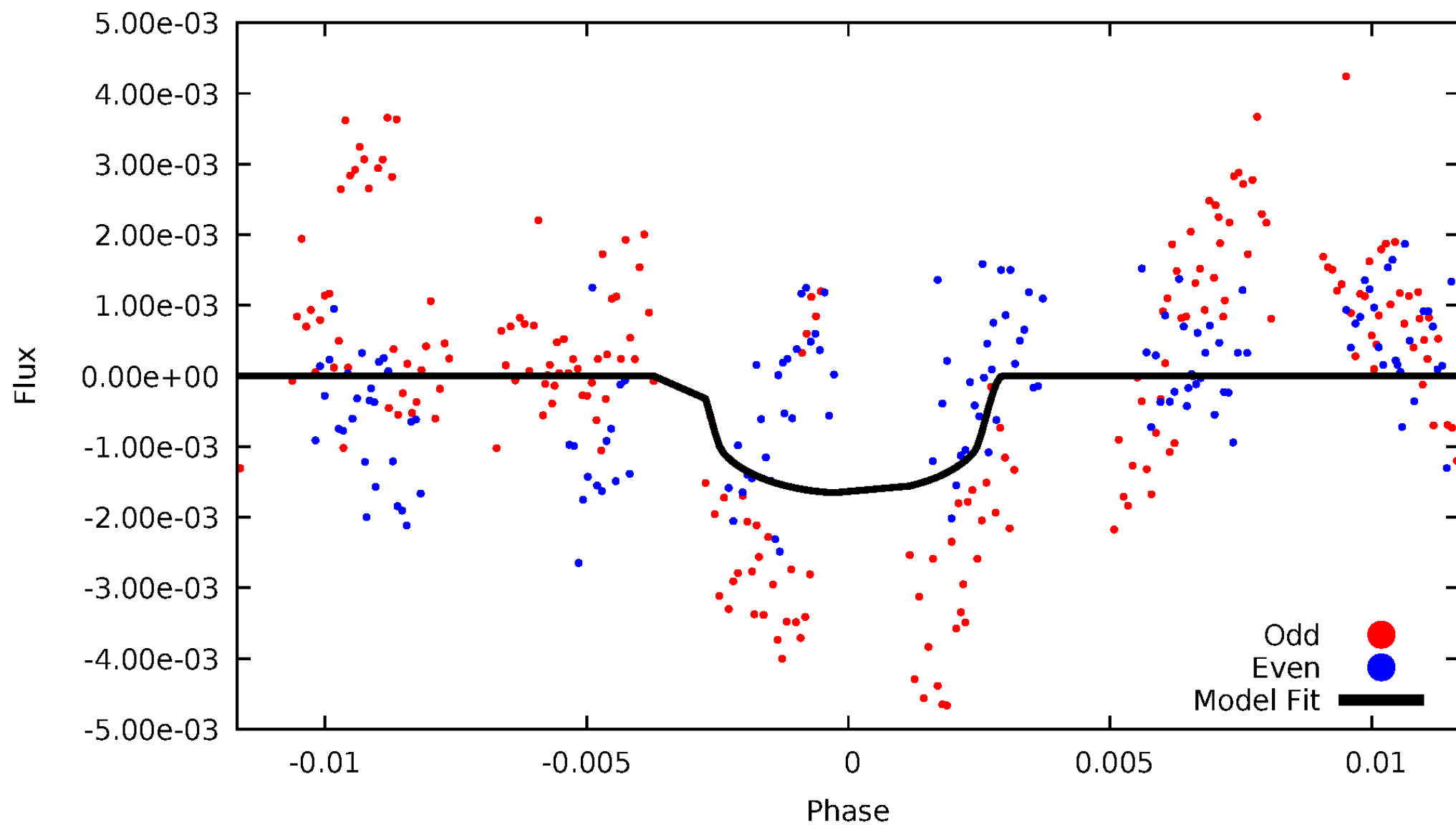


TCE 002162268-03



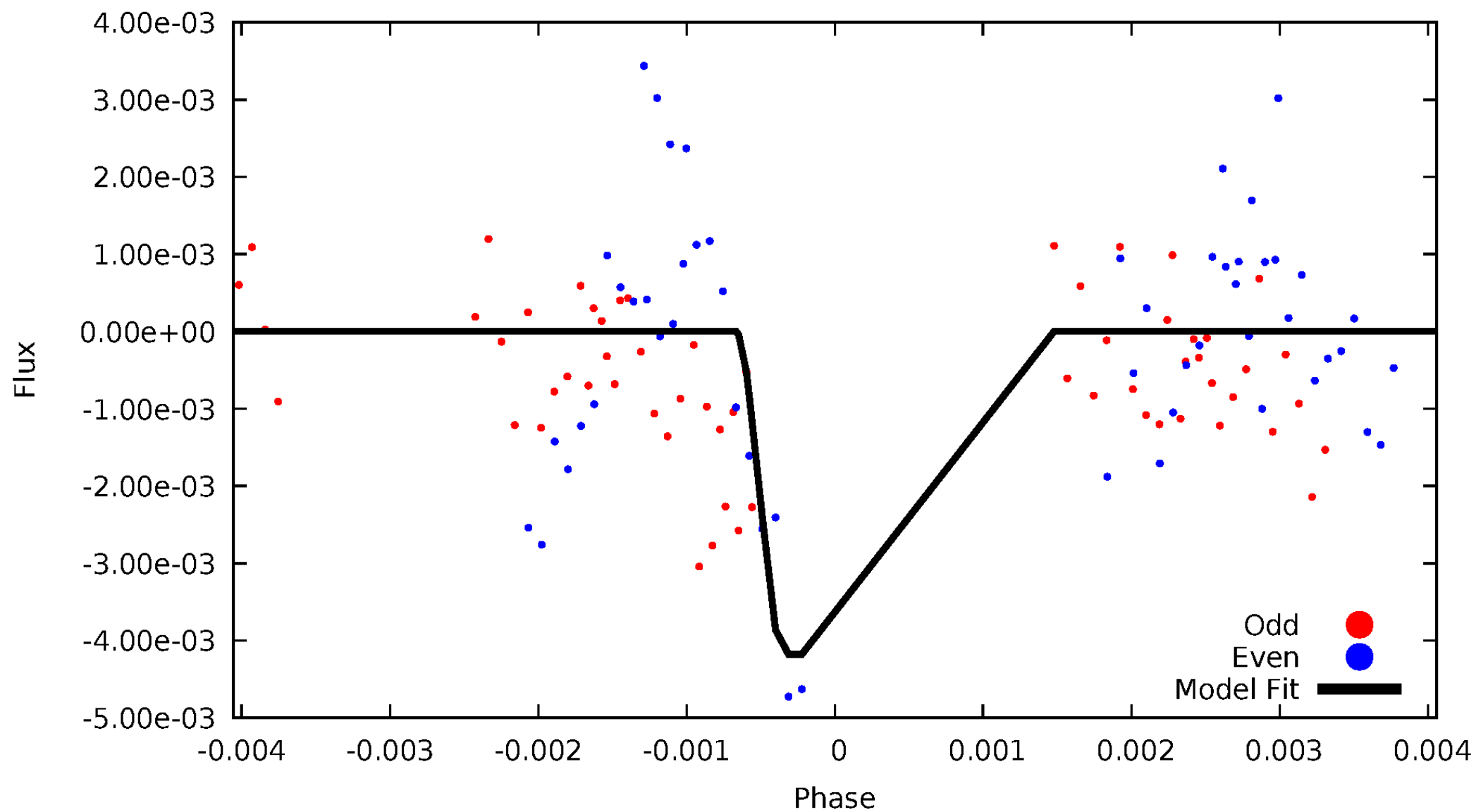
DV Odd/Even

TCE 002162268-03

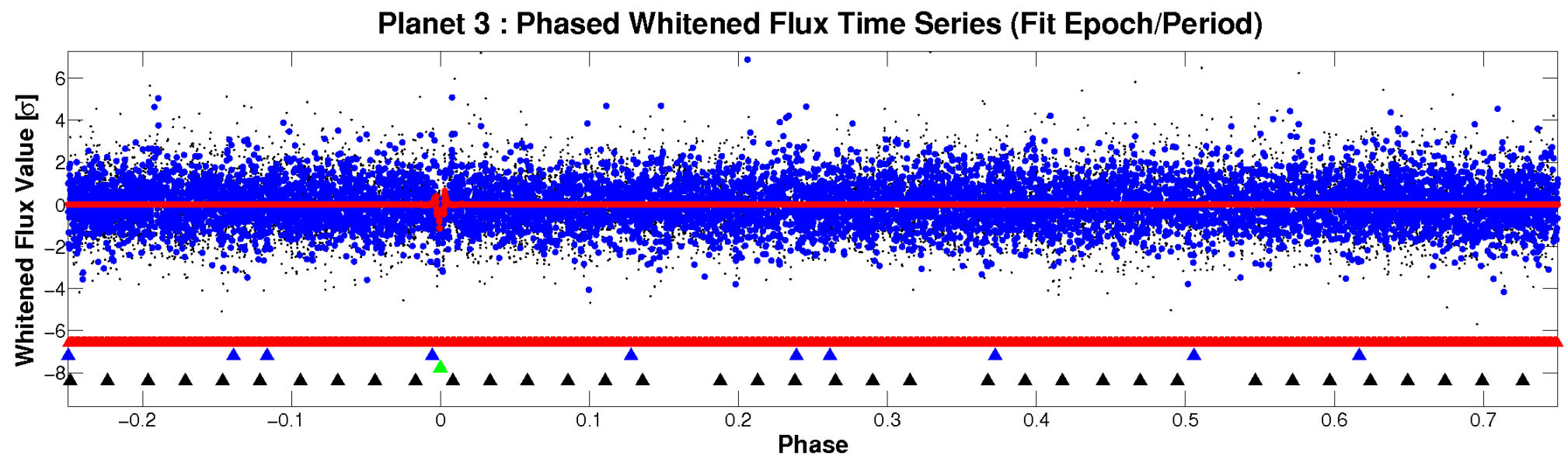
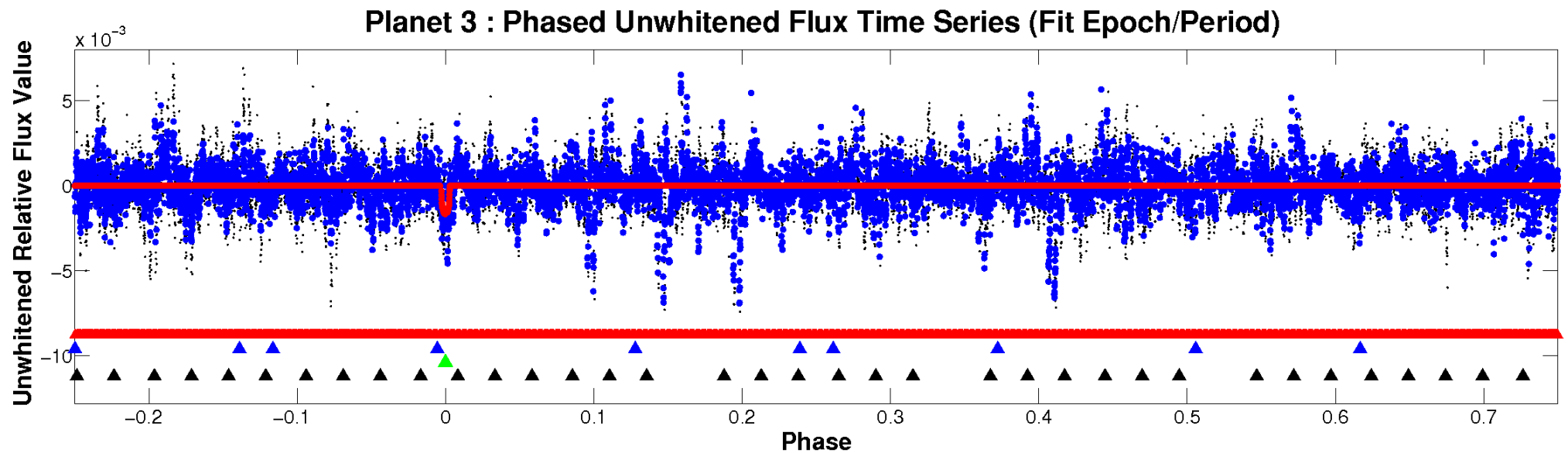


ALT Odd/Even

TCE 002162268-03

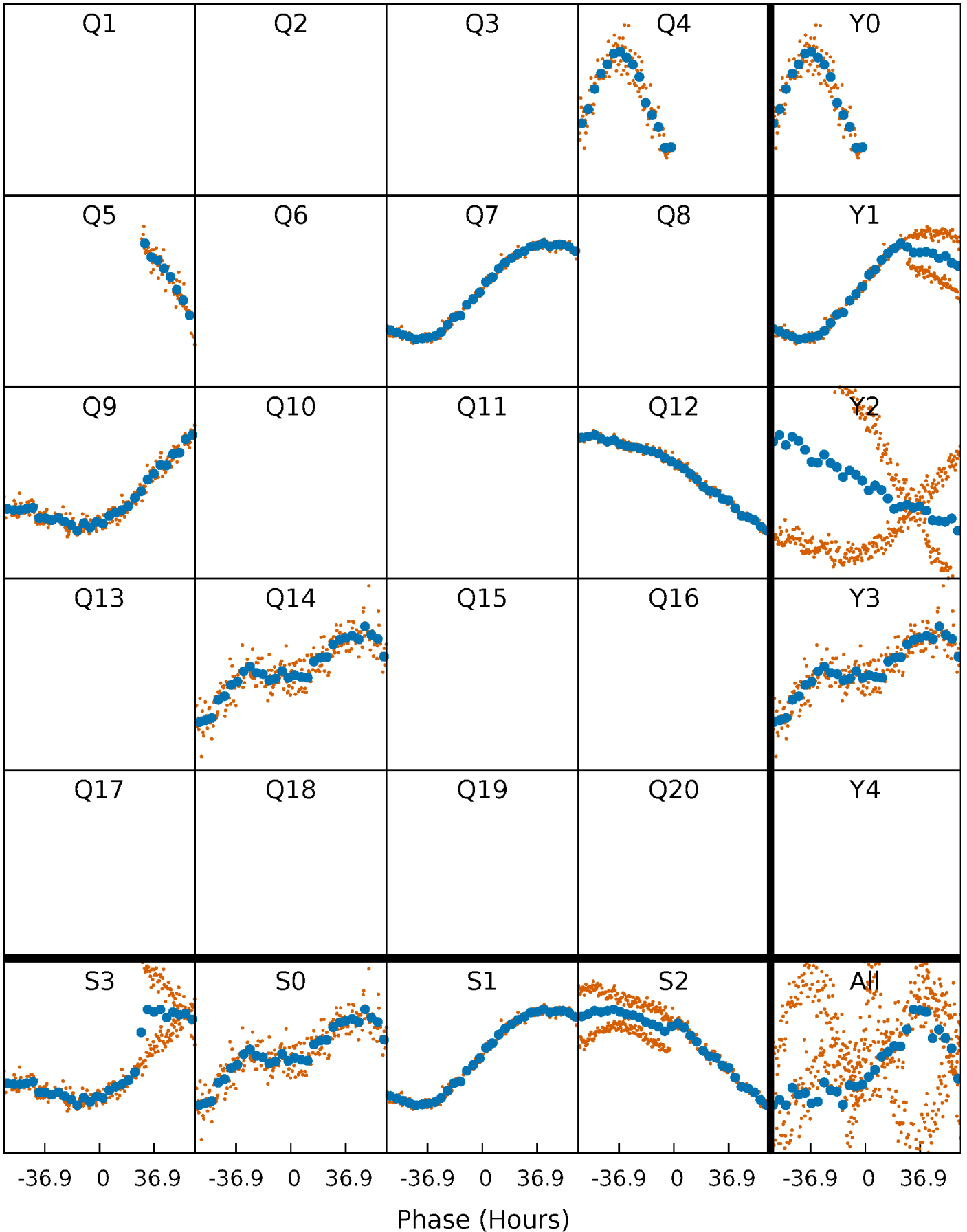


Non-Whitened Vs. Whitened Light Curve



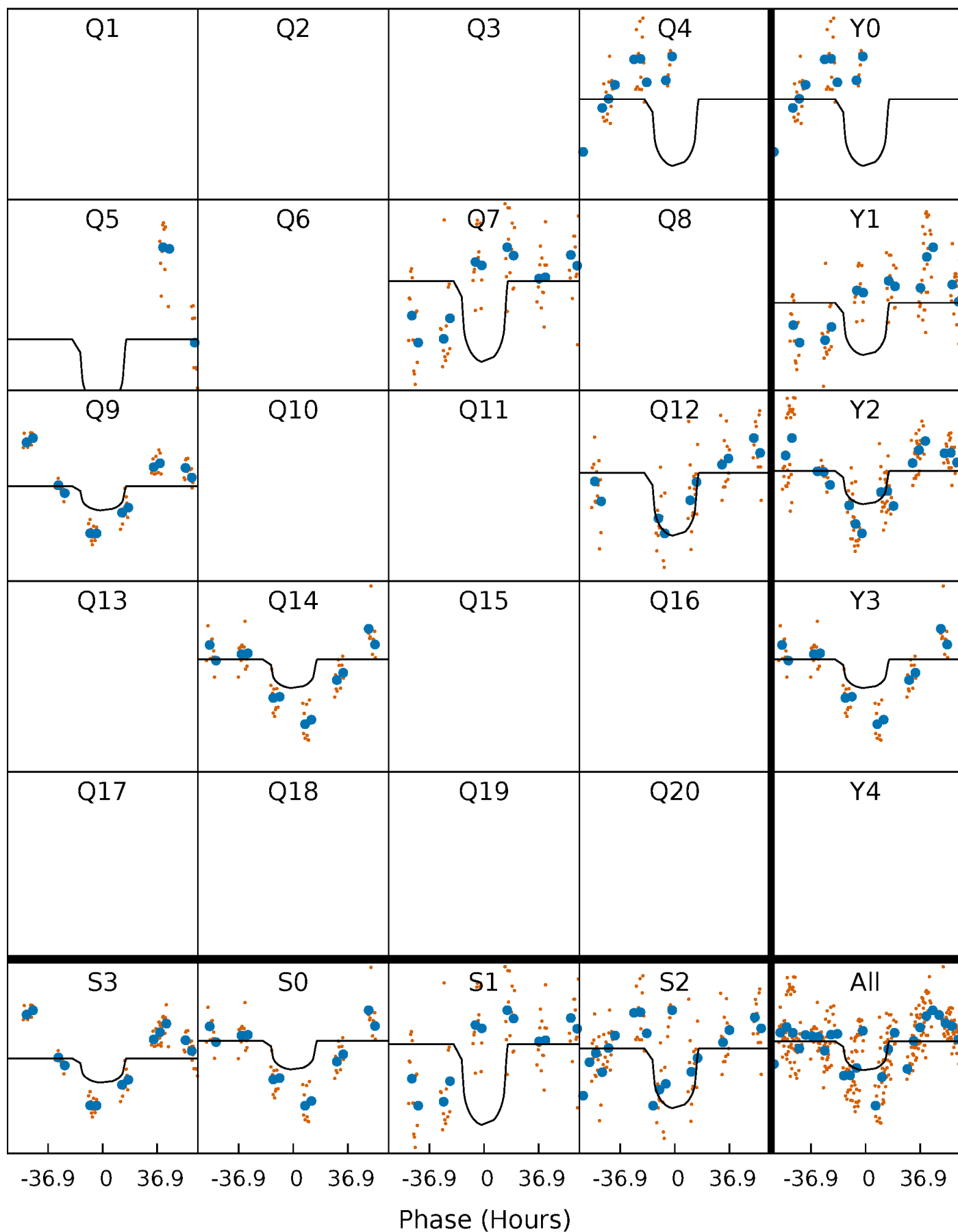
PDC Quarter-Phased Transit Curves

TCE 002162268-03 P=230.312345 Days $T_0=212.011879$ (BKJD)



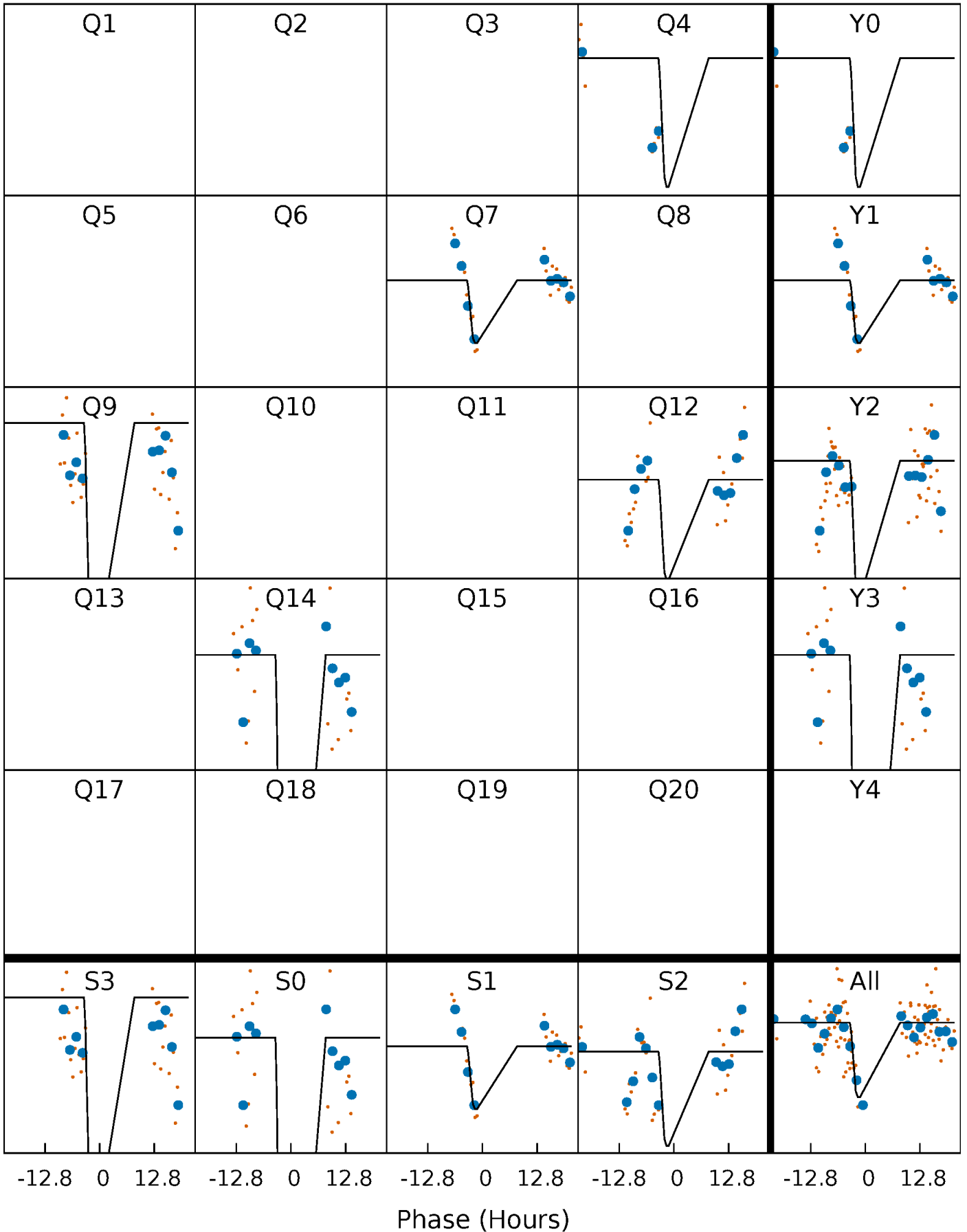
DV Quarter-Phased Transit Curves

TCE 002162268-03 $P=230.312345$ Days $T_0=212.011879$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

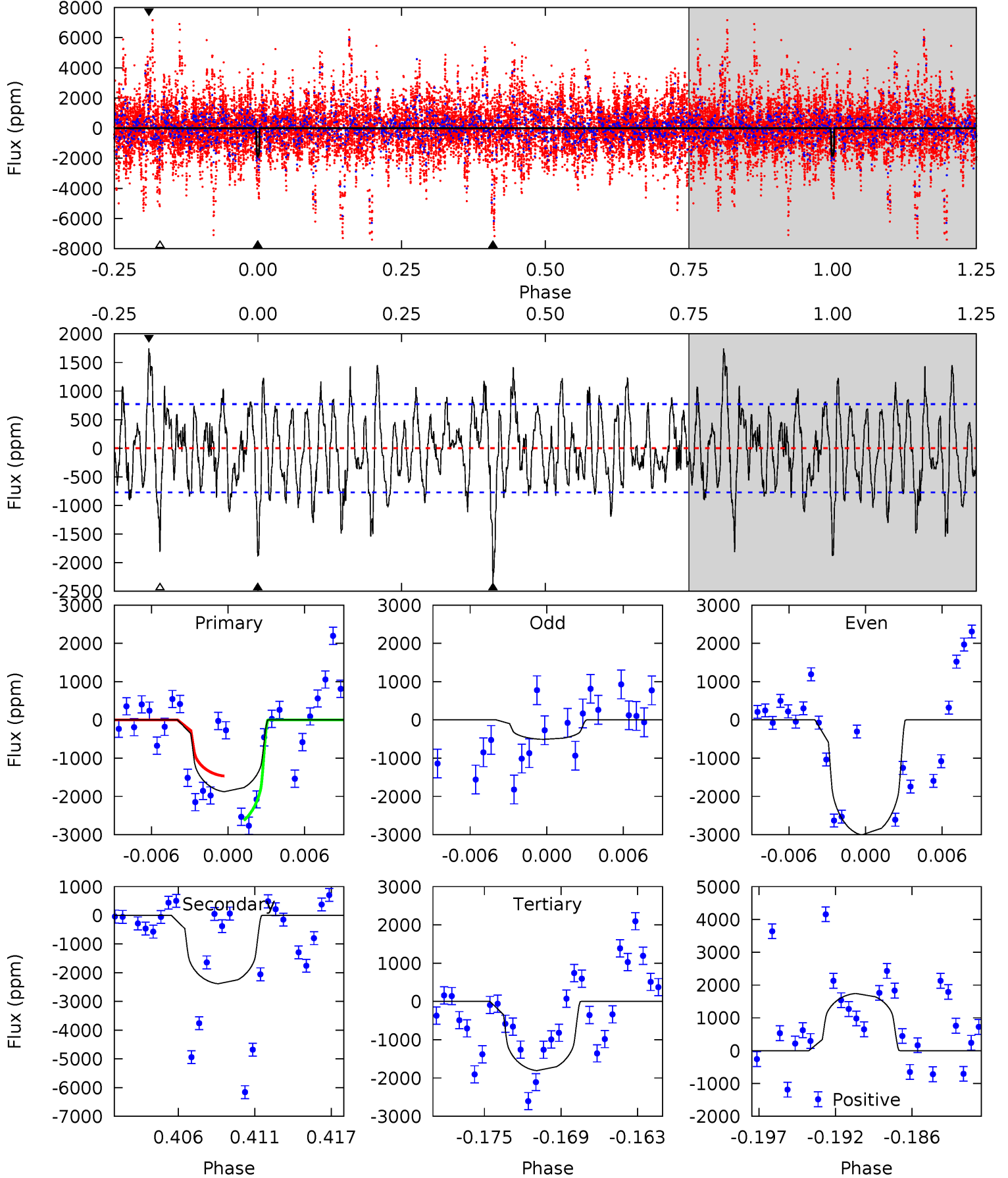
TCE 002162268-03 $P=230.293032$ Days $T_0=212.038610$ (BKJD)



DV Model-Shift Uniqueness Test

002162268-03, P = 230.312345 Days, E = 212.011879 Days

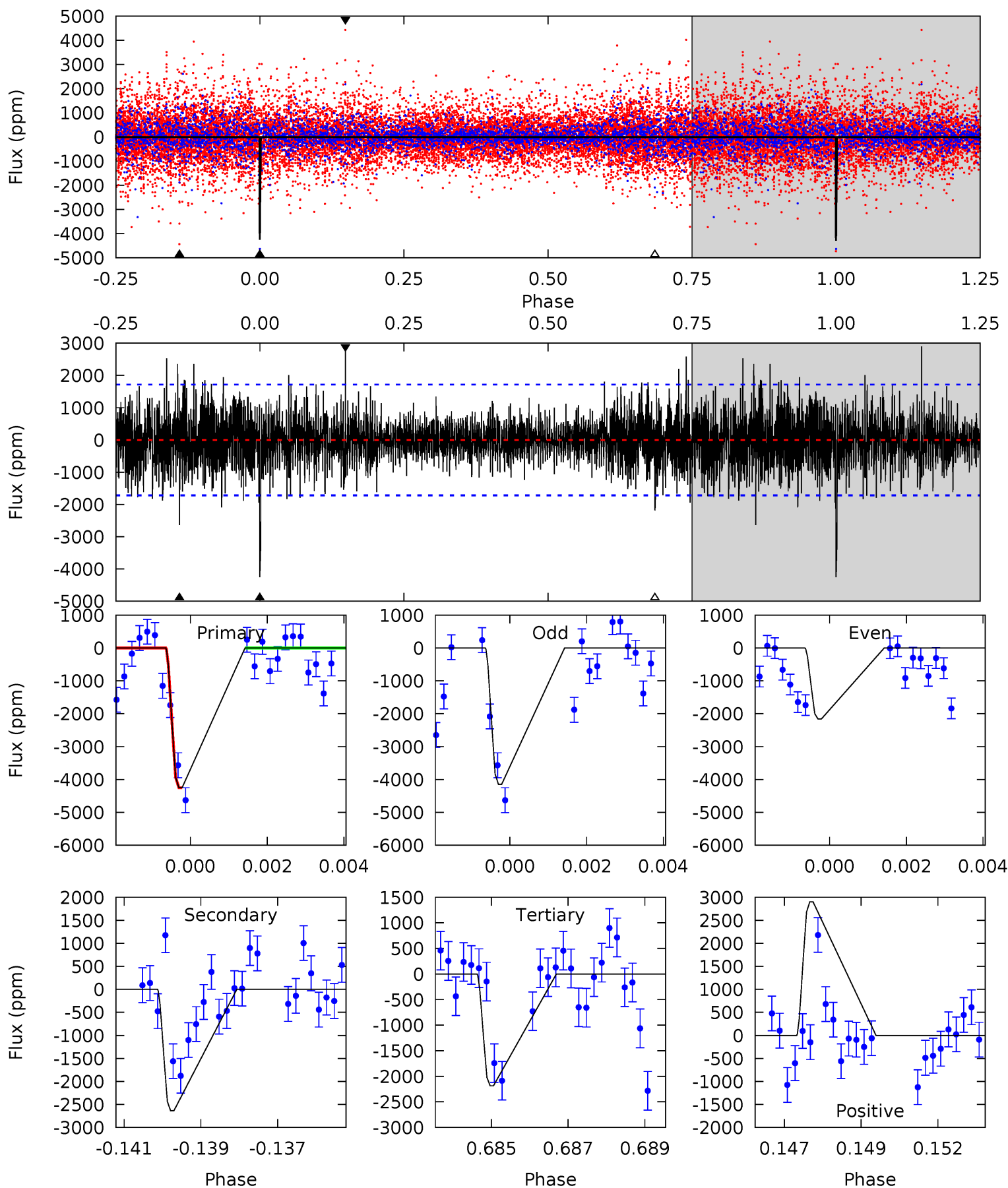
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	15.9	12.1	11.6	5.14	2.77	3.72	0.46	0.88	3.84	4.26	8.39	1.17	0.42	3.83



Alt Model-Shift Uniqueness Test

002162268-03, P = 230.293032 Days, E = 212.038610 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.2	8.17	6.77	8.99	5.32	3.08	1.55	6.40	4.18	1.40	-0.82	2.24	0	0.41	0



Stellar Parameters For KIC 002162268

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4791^{+172}_{-172}	$4.561^{+0.066}_{-0.039}$	$-0.060^{+0.300}_{-0.300}$	$0.734^{+0.057}_{-0.070}$	$0.715^{+0.085}_{-0.053}$	$2.545^{+0.731}_{-0.366}$
	+4%/-4%	+1%/-1%	+500%/-500%	+8%/-10%	+12%/-7%	+29%/-14%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002162268-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-2384 ± 150	$3.23^{+0.61}_{-0.65}$	310^{+14}_{-13}	5170^{+567}_{-413}	54593^{+31611}_{-15985}
Alt.	-2637 ± 323	$5.15^{+0.79}_{-0.69}$	310^{+13}_{-12}	4372^{+276}_{-278}	23734^{+8577}_{-5921}

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

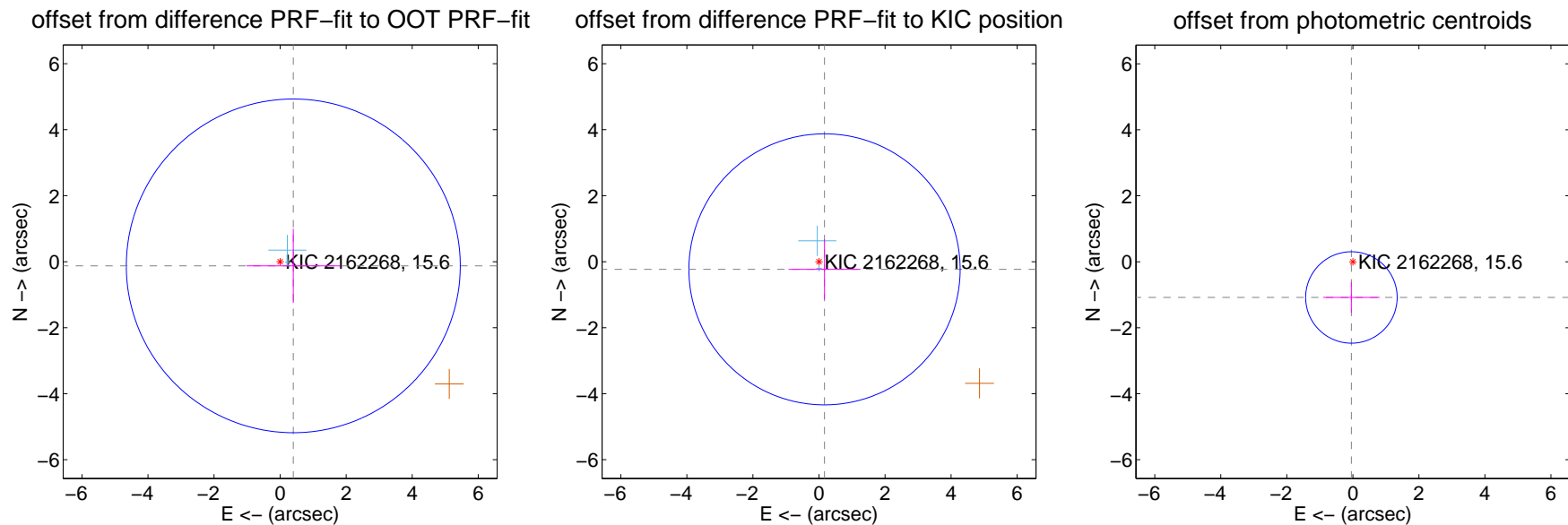
DV Centroid Data

Supplemental centroid analysis for 002162268-03. Kepler magnitude: 15.60. Transit SNR 5.44

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.39 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.419 ± 1.685	0.25	-0.399 ± 1.415	-0.126 ± 1.121
PRF-fit source offset from KIC position	0.286 ± 1.369	0.21	-0.168 ± 1.089	-0.232 ± 0.911
photometric centroid source offset	1.08 ± 0.46	2.34	0.04 ± 0.85	-1.08 ± 0.46

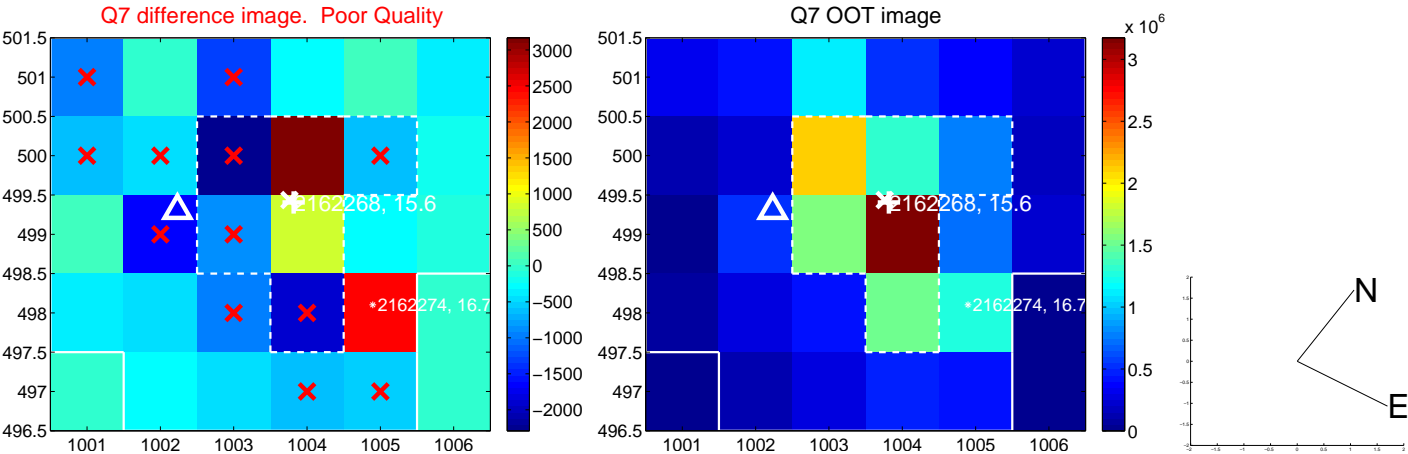


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

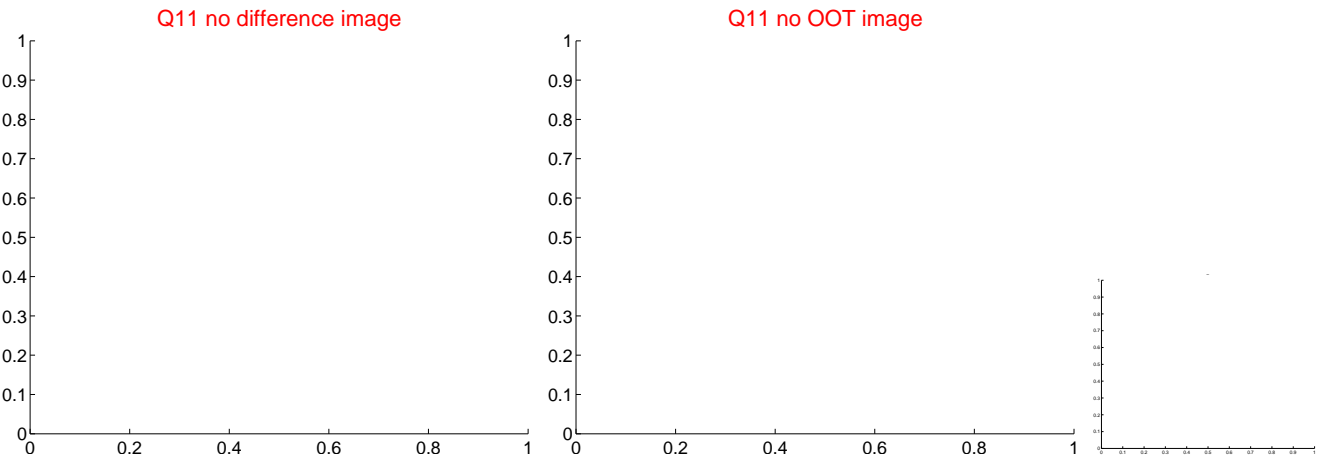
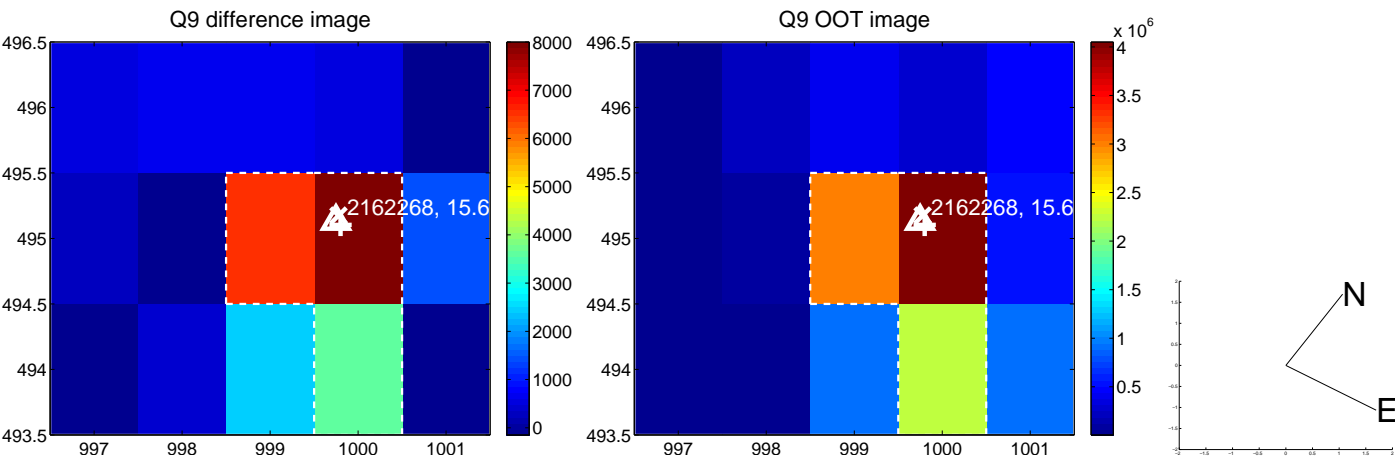
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

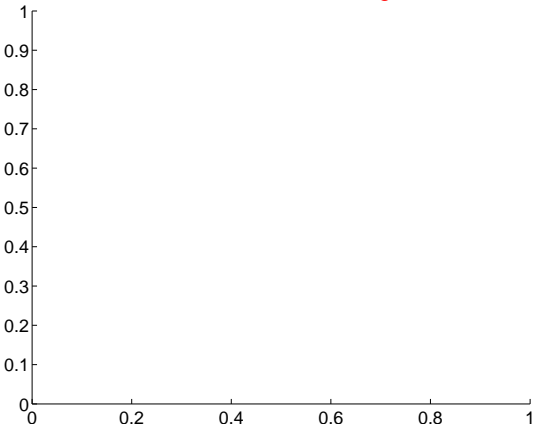


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

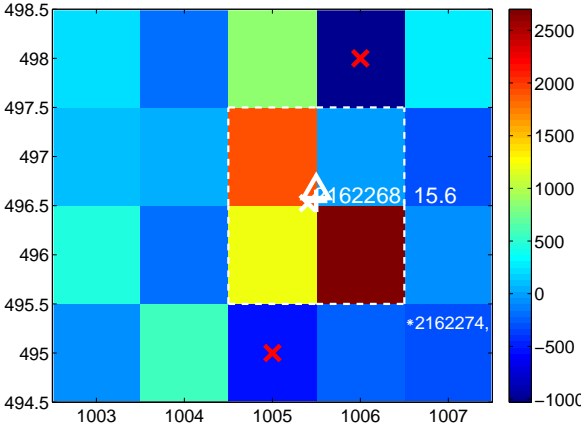
Q13 no difference image



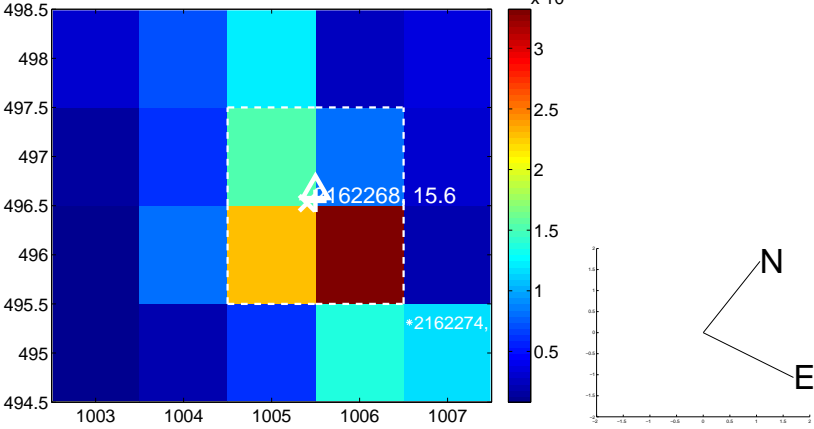
Q13 no OOT image



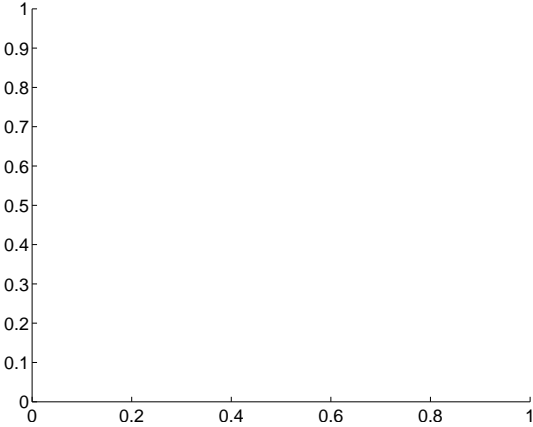
Q14 difference image



Q14 OOT image



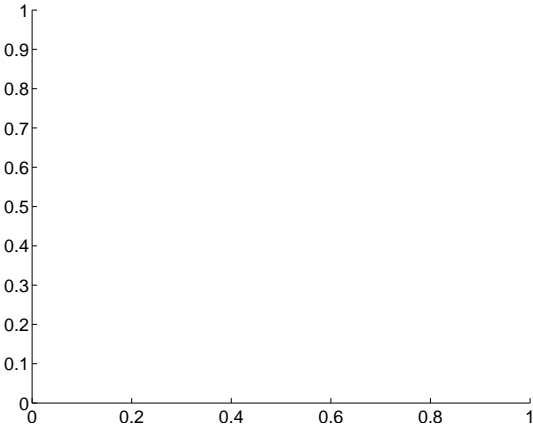
Q15 no difference image



Q15 no OOT image



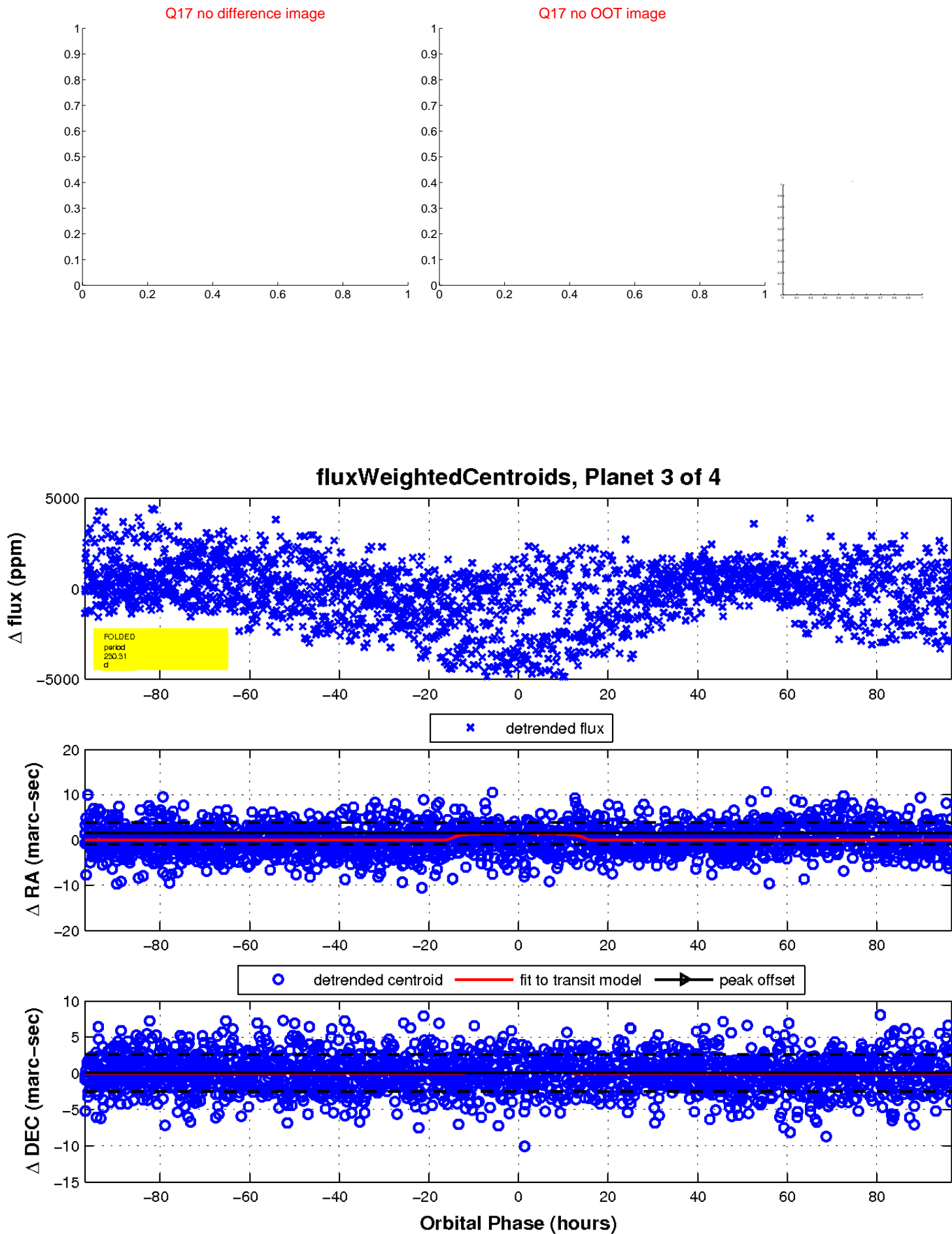
Q16 no difference image



Q16 no OOT image

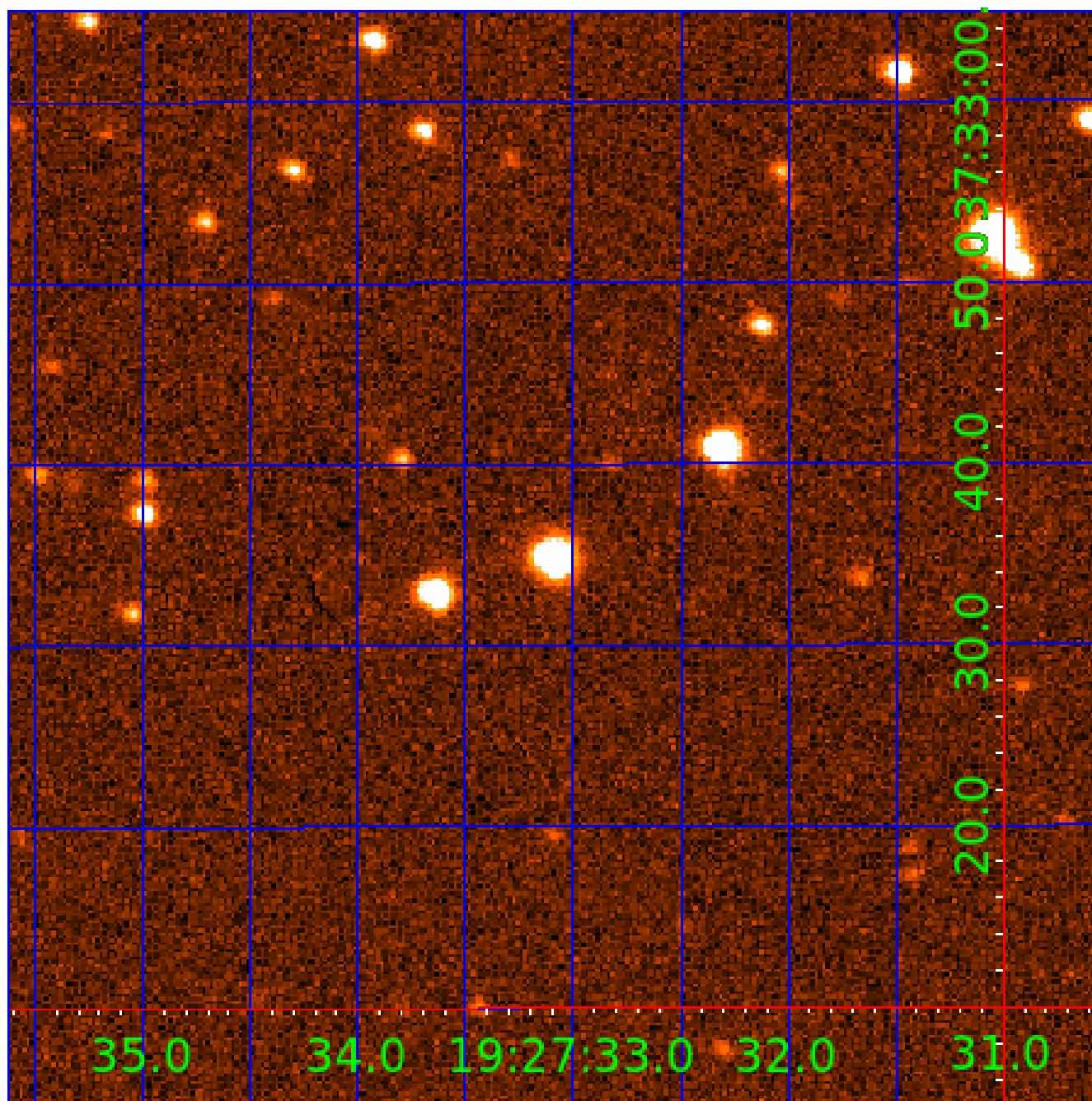


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002162268

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})
002162268-01	OBS	No	0.906319	131.831153	74.1	4.896	7.2	7.8	0.73	4791	0.77	946.28
002162268-03	OBS	No	230.312345	212.011879	1658.4	32.270	10.6	5.4	0.73	4791	3.25	0.59
002162268-04	OBS	No	41.351180	142.749275	1108.9	9.142	8.8	8.1	0.73	4791	2.45	5.80

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002162268-01	OBS	FP	0.00	1	0	1	0	LPP_DV—HALO_GHOST
002162268-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
002162268-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS

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

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

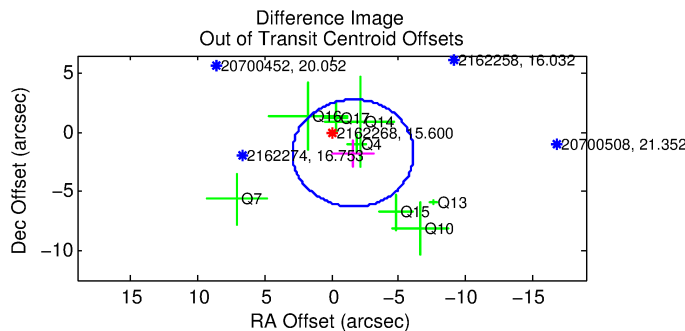
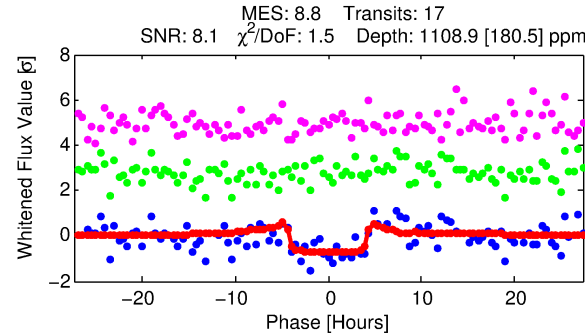
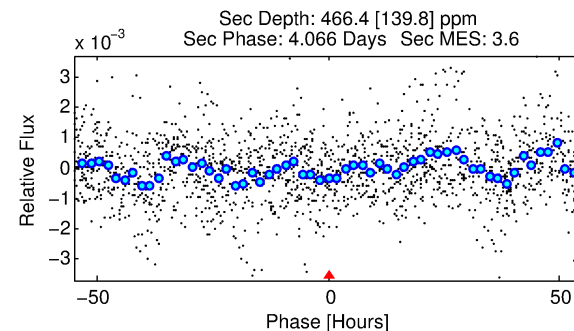
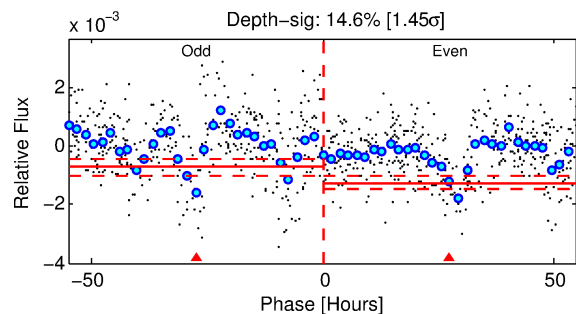
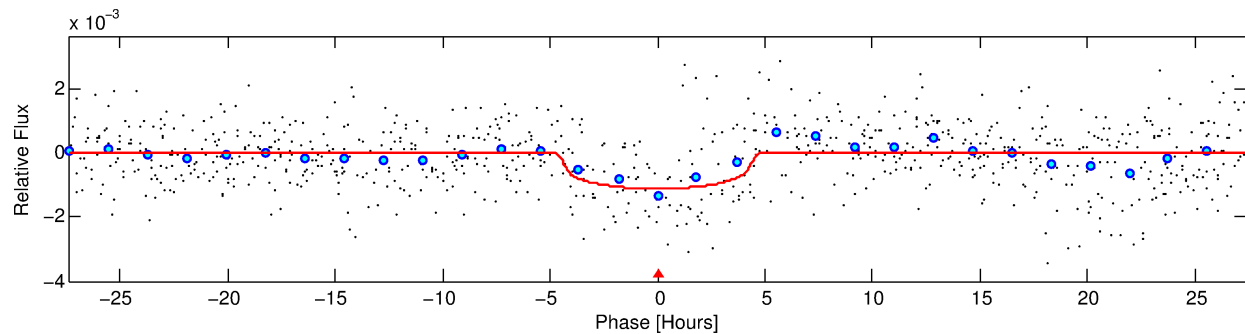
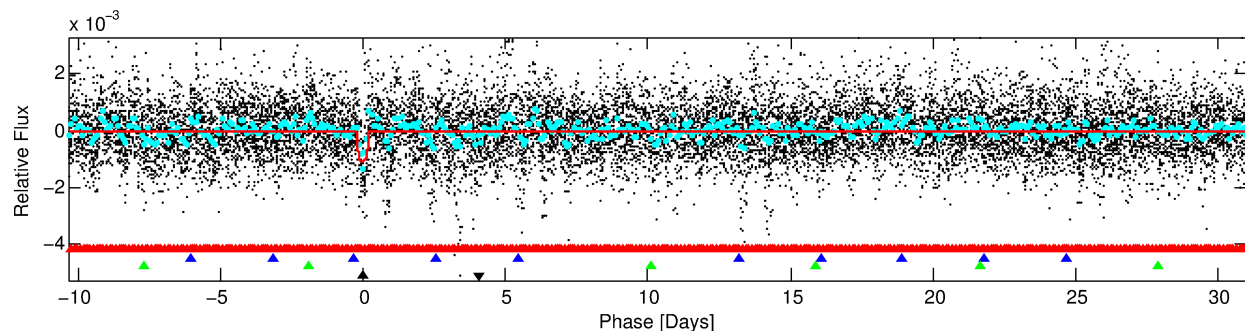
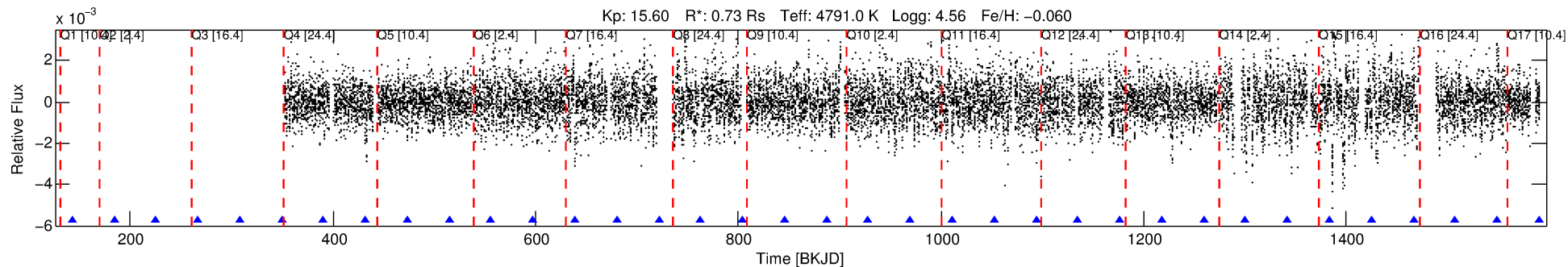
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002162268-04

No Significant Match Found

DV One-Page Summary

KIC: 2162268 Candidate: 4 of 4 Period: 41.351 d



DV Fit Results:

Period = 41.35118 [0.00071] d
Epoch = 142.7493 [0.0163] BKJD
Rp/R* = 0.0306 [0.0269]
a/R* = 31.35 [88.79]
b = 0.49 [4.48]
Seff = 5.80 [1.08]
Teq = 396 [18] K
Rp = 2.45 [2.17] Re
a = 0.2093 [0.0170] AU
Ag = 1871.07 [3349.70] [0.56 σ]
Teffp = 4025 [1803] K [2.01 σ]

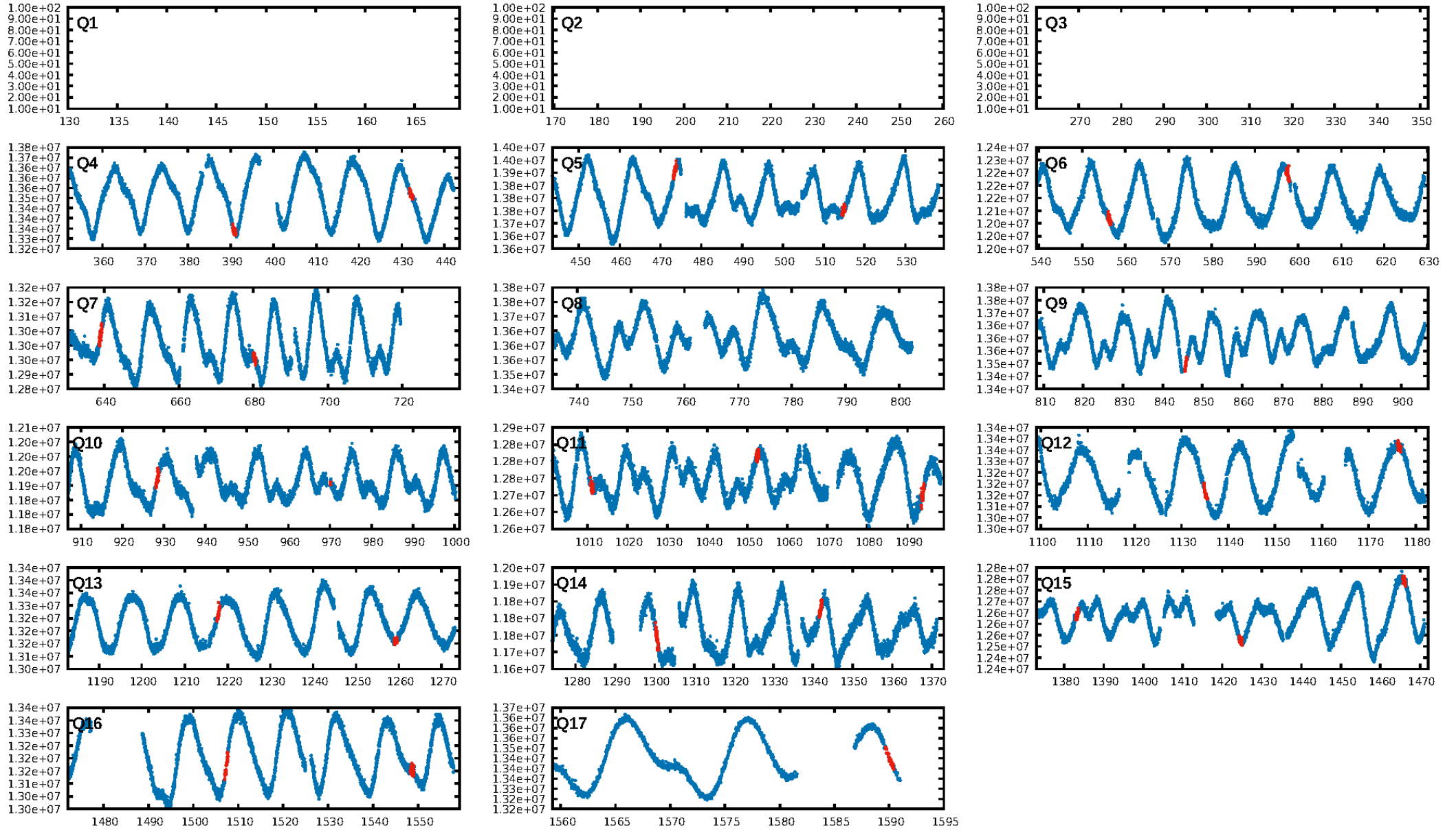
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [93.60 σ]
LongPeriod-sig: 100.0% [231.12 σ]
ModelChiSquare2-sig: 4.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.37e-12
RollingBand-fgt: 1.00 [17/17]
GhostDiagnostic-chr: -9.732
Centroid-sig: 9.0%
Centroid-so: 0.782 arcsec [1.65 σ]
OotOffset-rm: 2.396 arcsec [1.58 σ]
KicOffset-rm: 2.293 arcsec [1.45 σ]
OotOffset-st: 2/2/2/2 [8]
KicOffset-st: 2/2/2/2 [8]
DiffImageQuality-fgm: 0.25 [2/8]
DiffImageOverlap-fno: 0.00 [0/12]

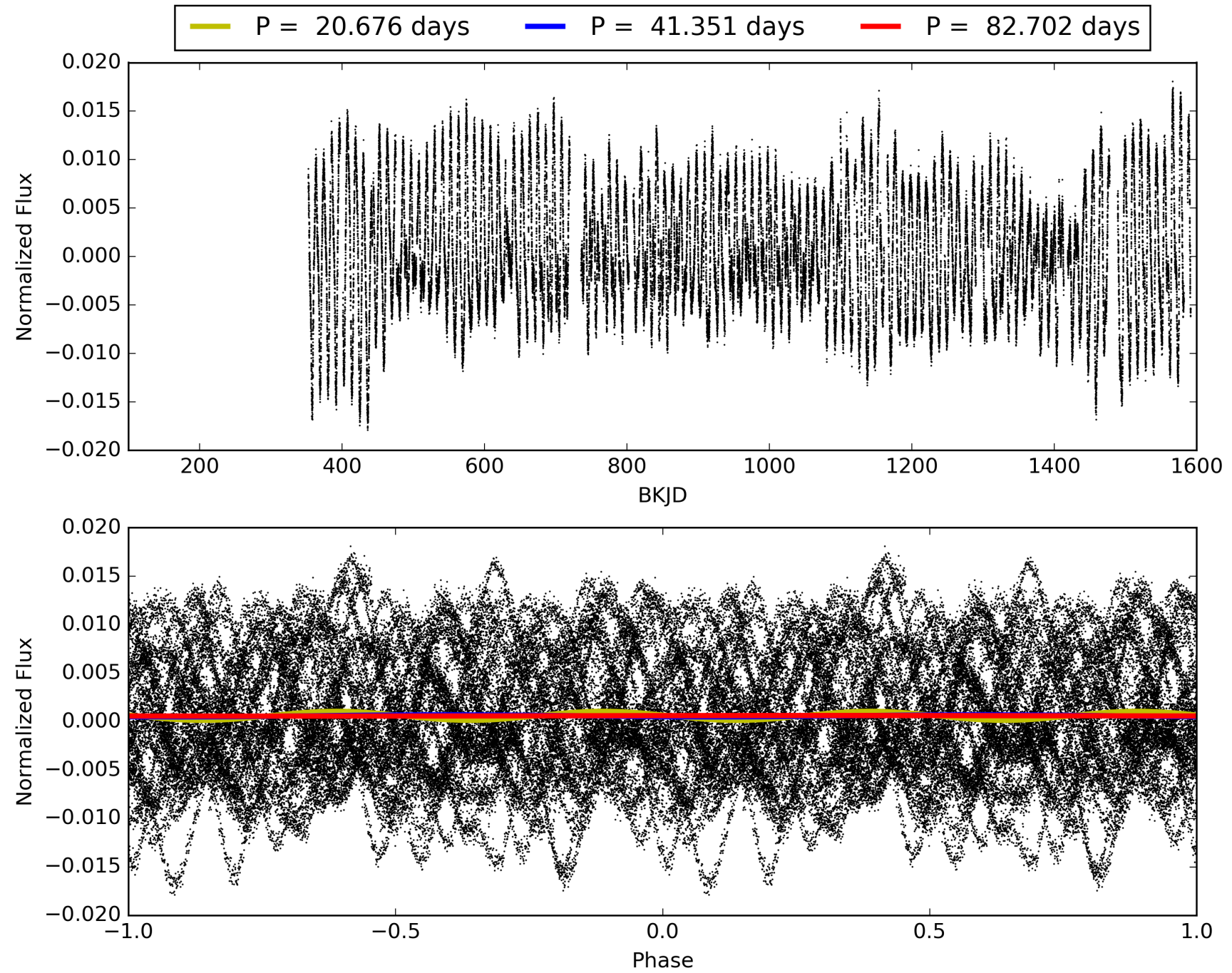
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 01:49:39 Z

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

TCE 002162268-04, PDC Light Curves

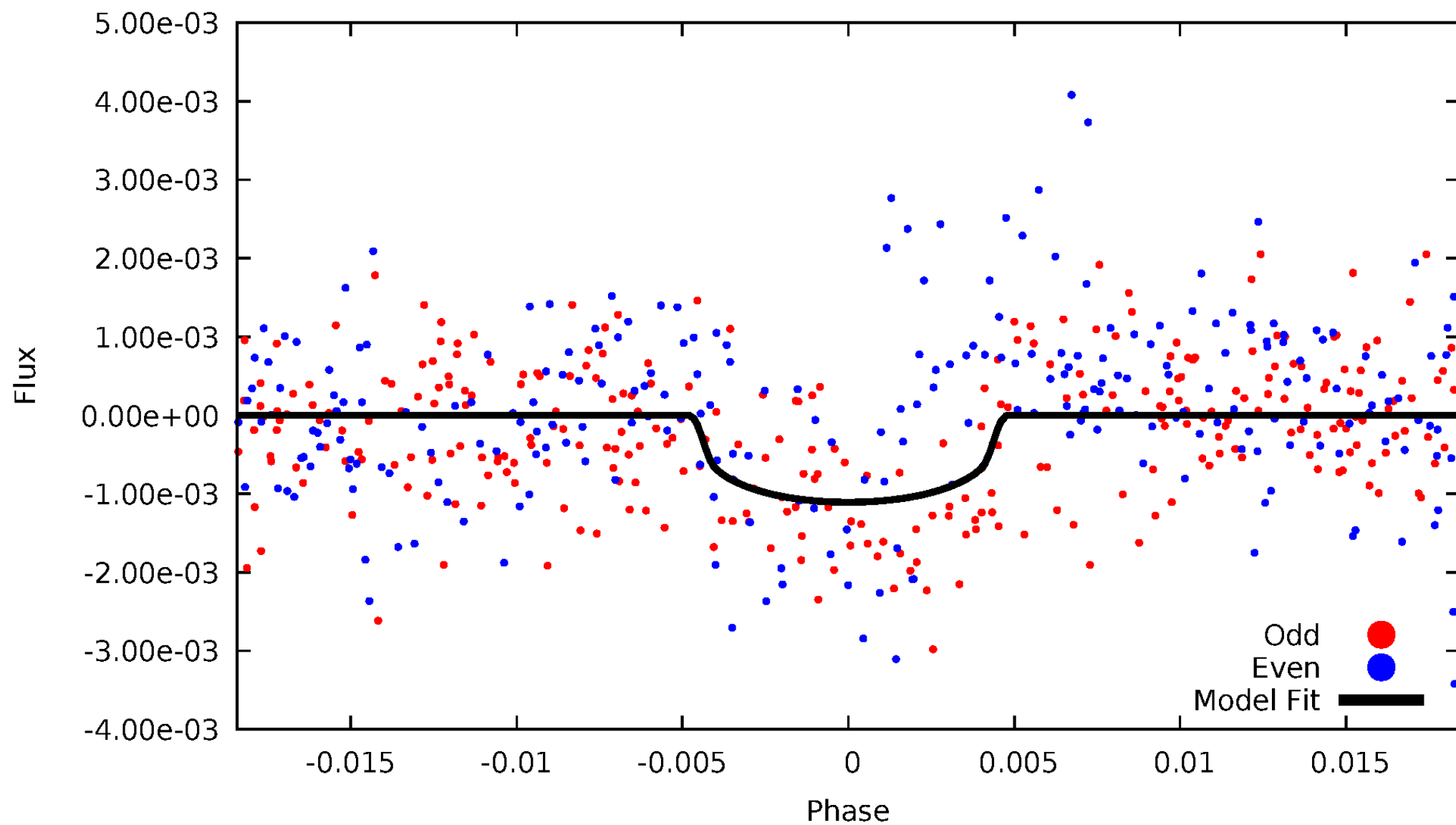


TCE 002162268-04



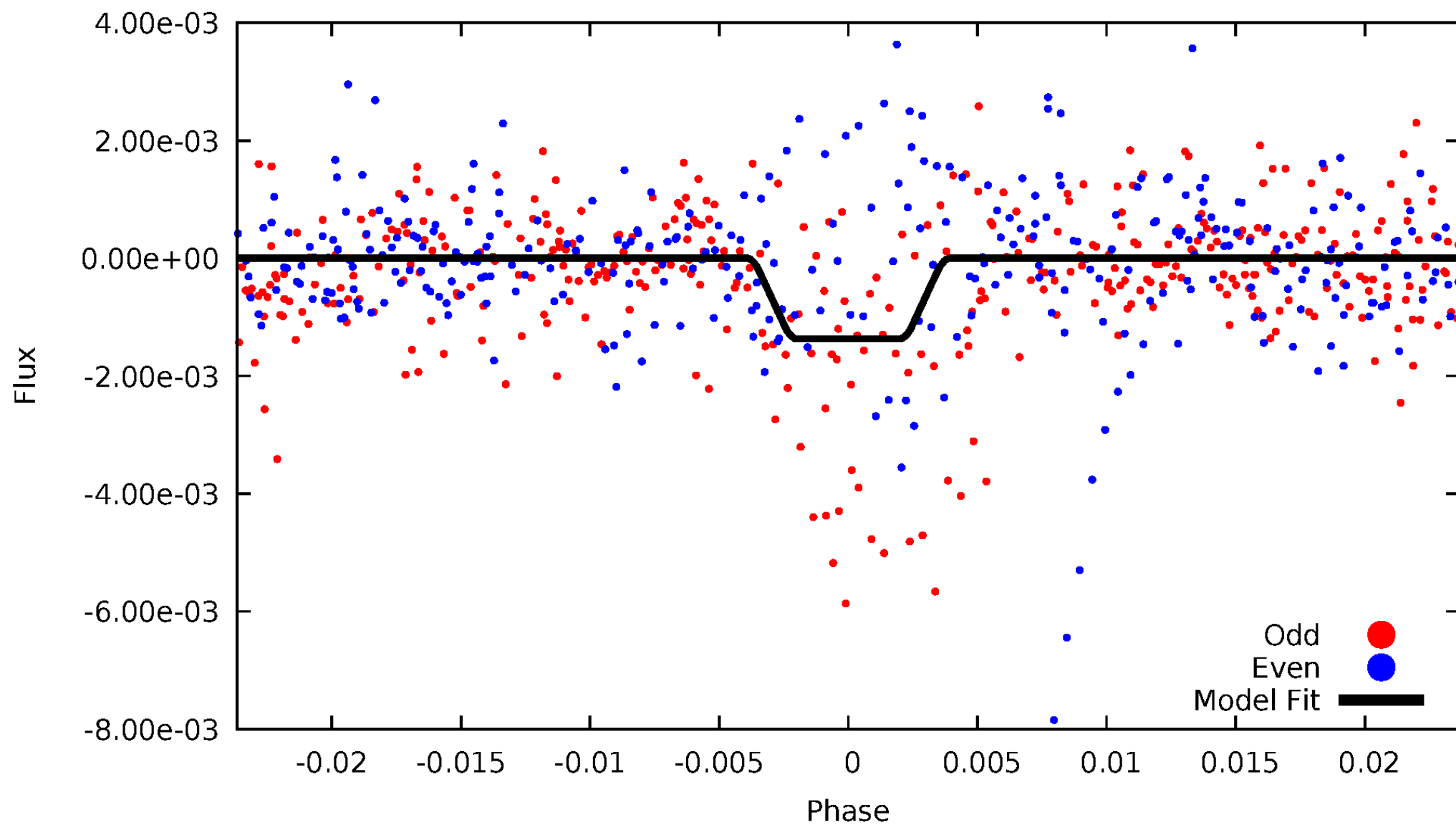
DV Odd/Even

TCE 002162268-04



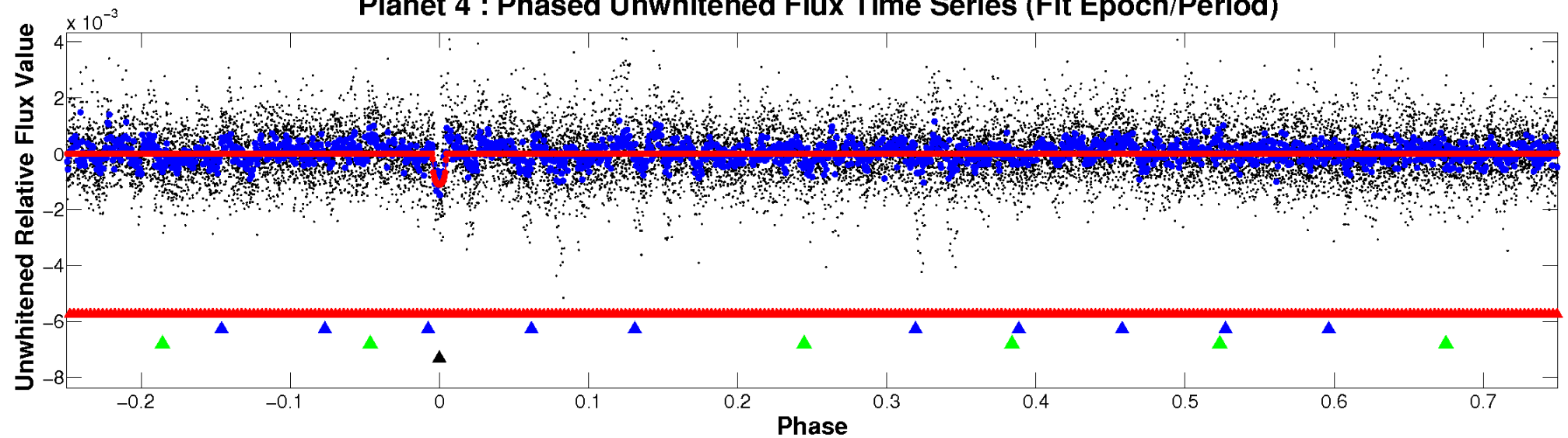
ALT Odd/Even

TCE 002162268-04

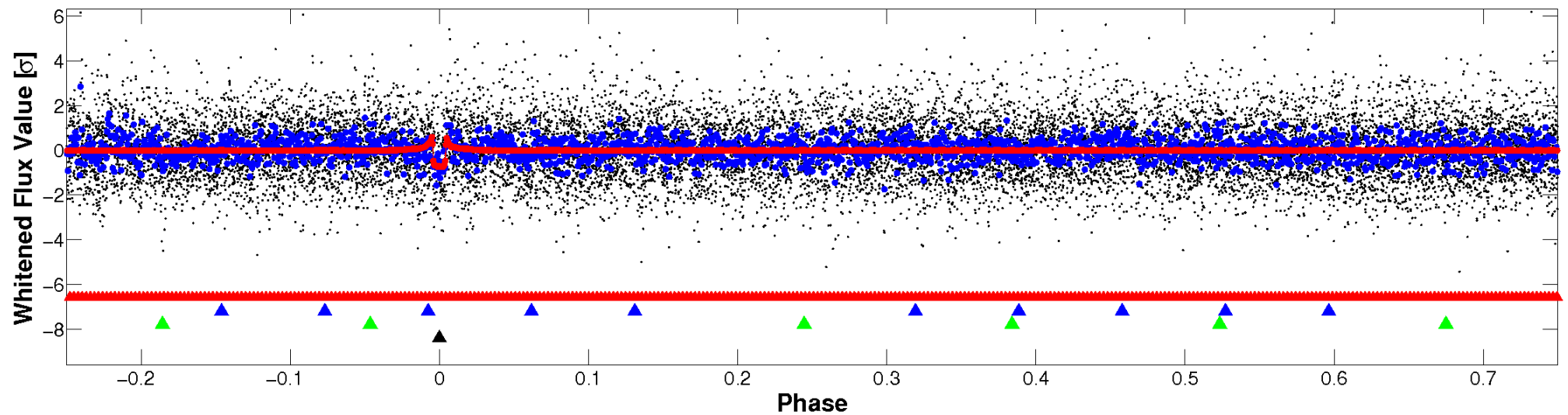


Non-Whitened Vs. Whitened Light Curve

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

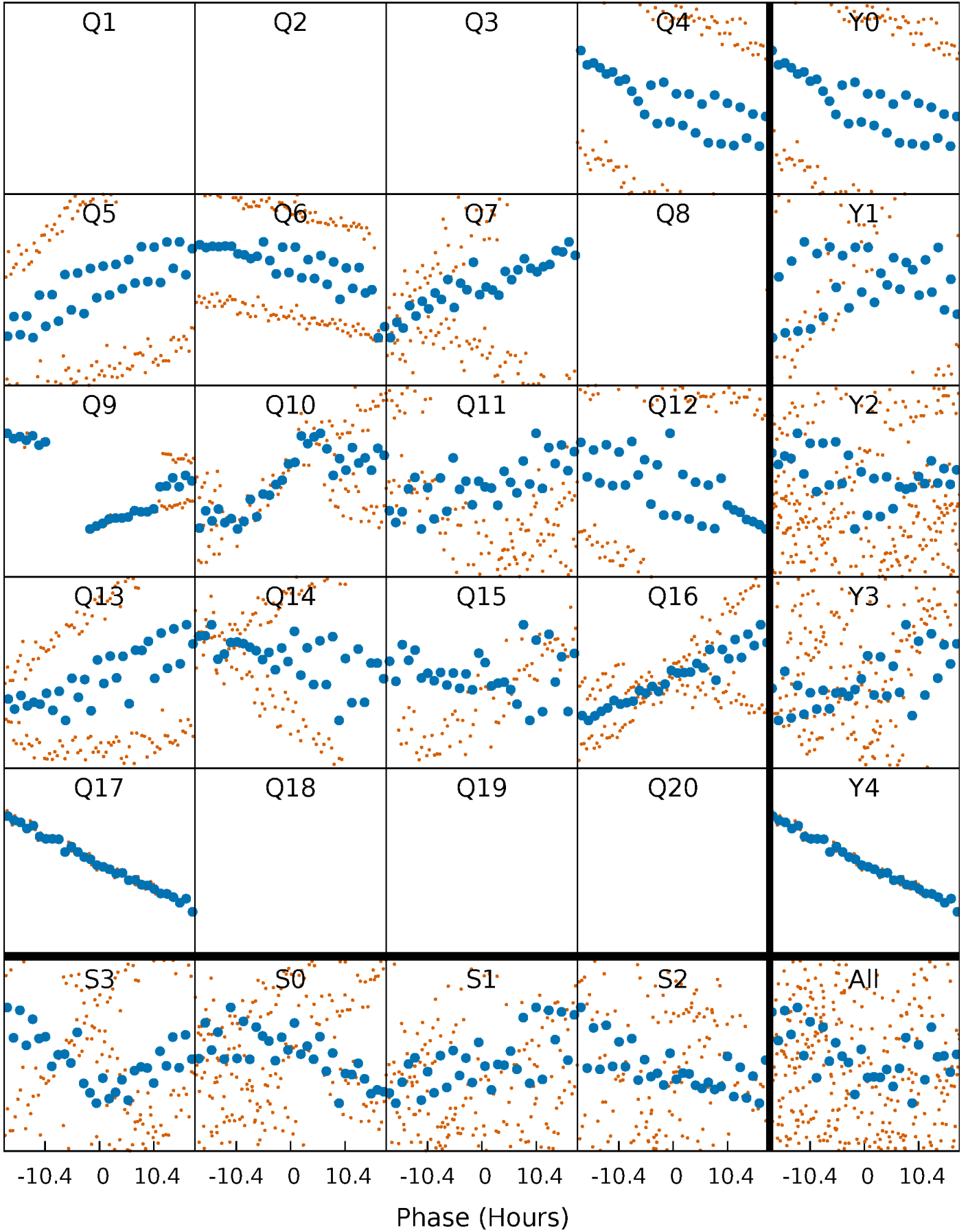


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



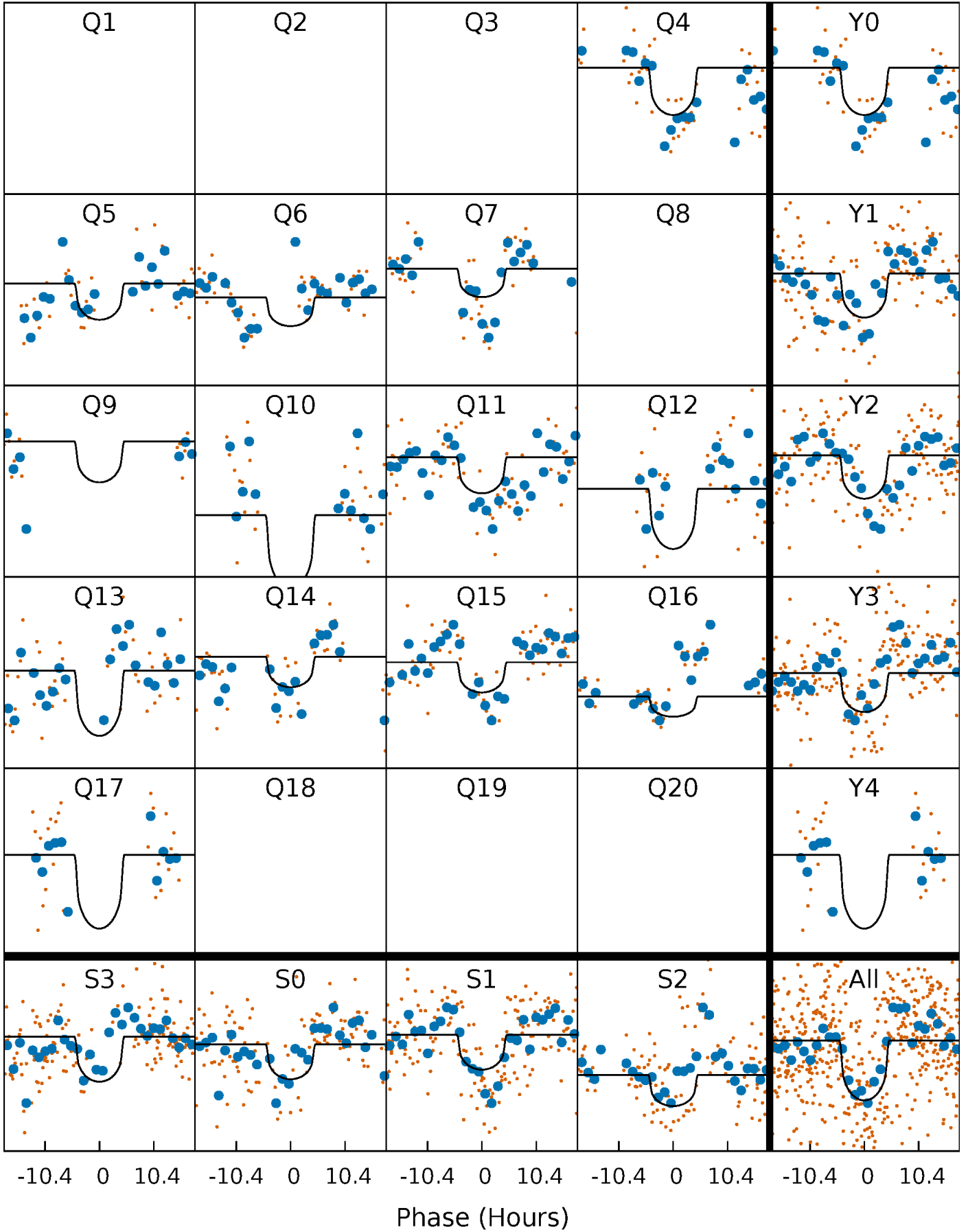
PDC Quarter-Phased Transit Curves

TCE 002162268-04 $P = 41.351180$ Days $T_0 = 142.749275$ (BKJD)



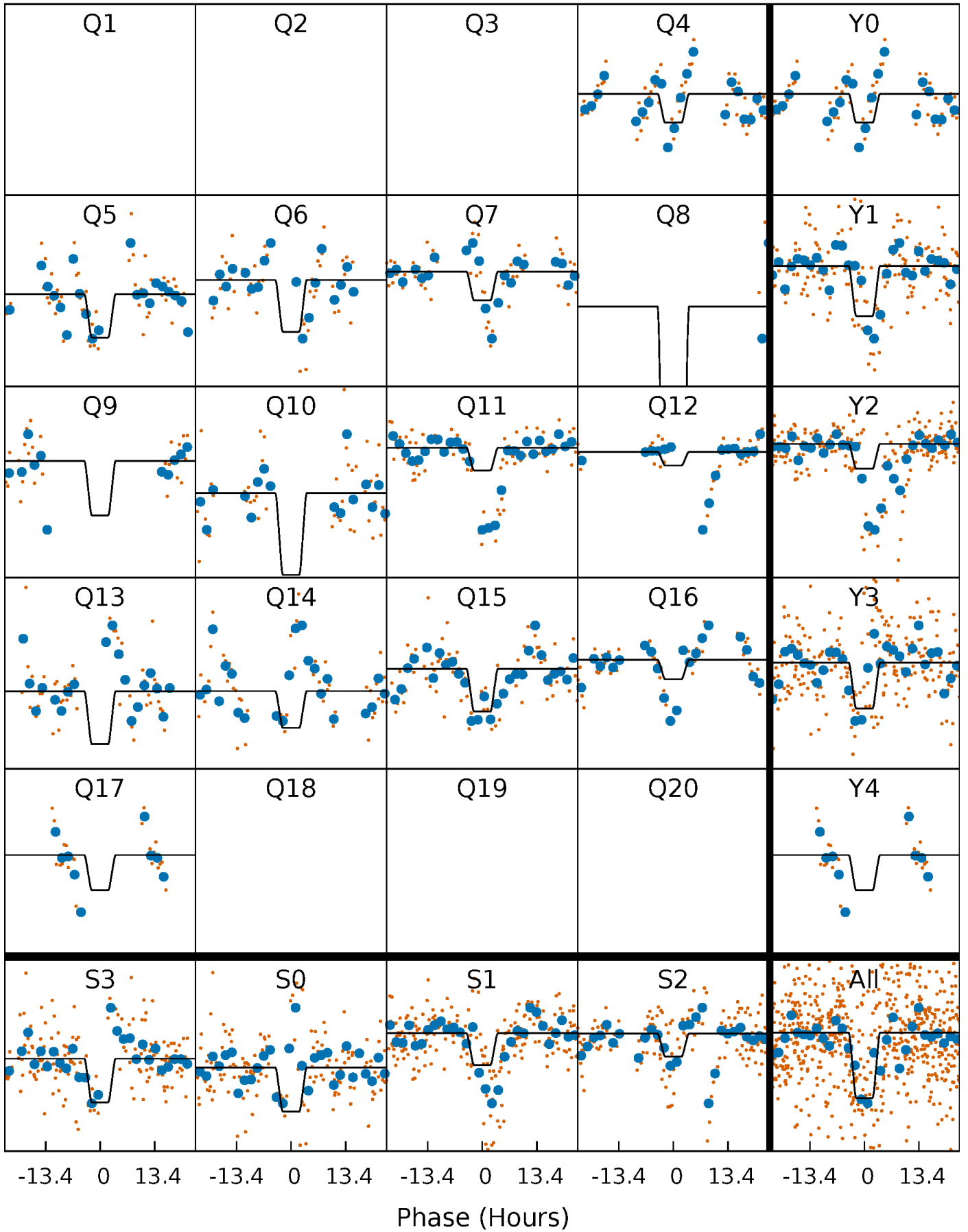
DV Quarter-Phased Transit Curves

TCE 002162268-04 $P = 41.351180$ Days $T_0 = 142.749275$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

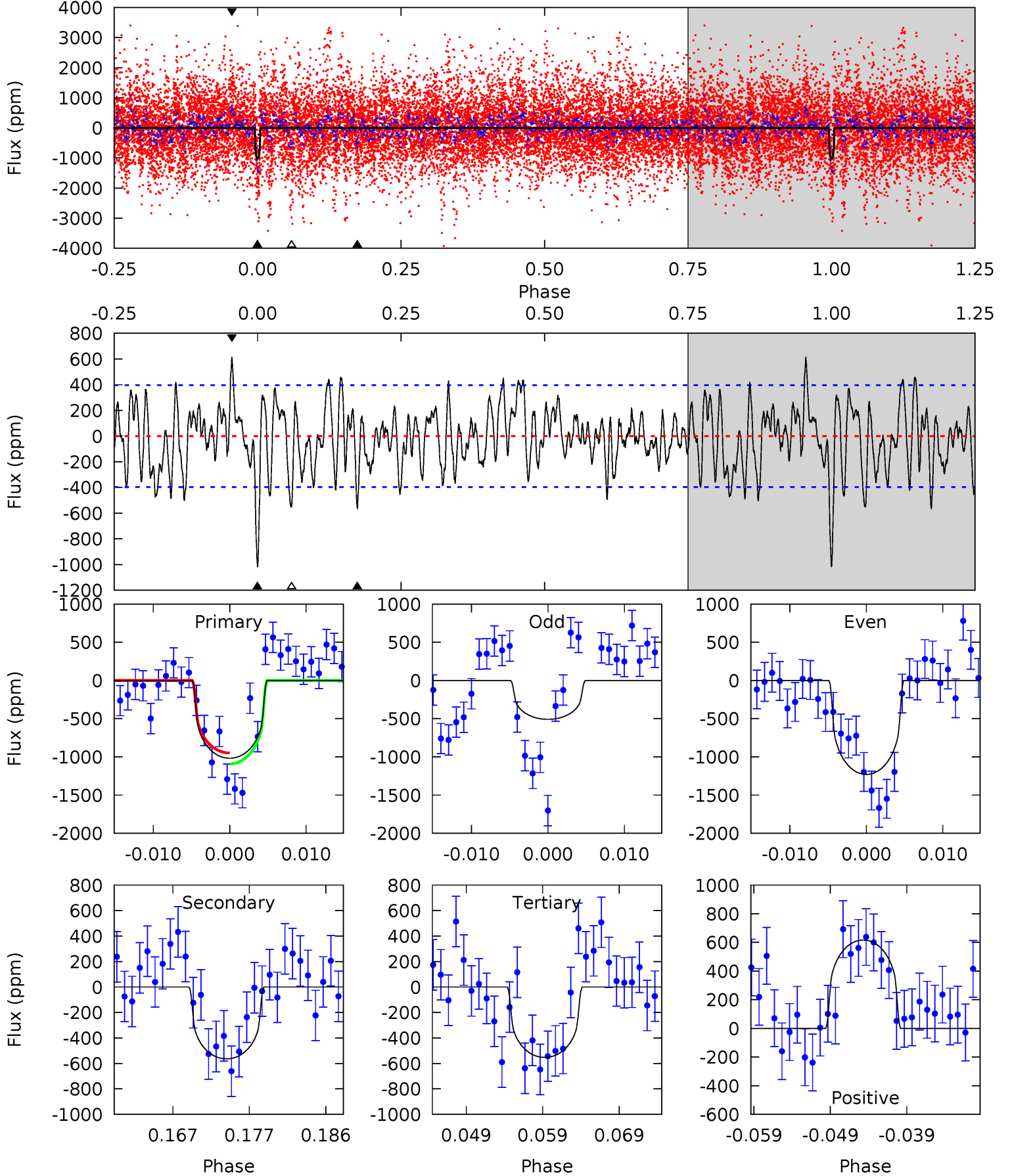
TCE 002162268-04 P= 41.350467 Days $T_0=142.732202$ (BKJD)



DV Model-Shift Uniqueness Test

002162268-04, P = 41.351180 Days, E = 142.749275 Days

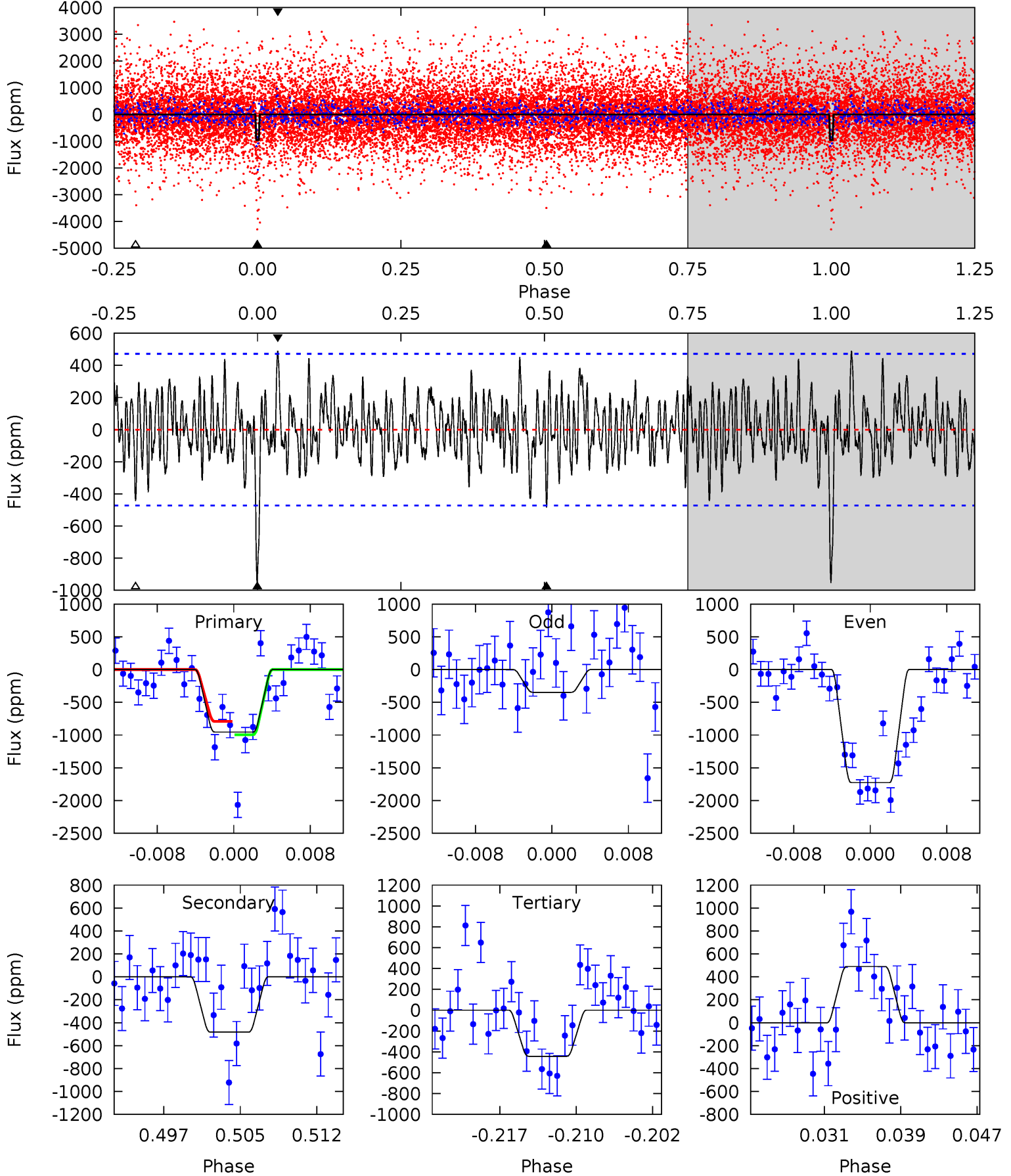
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.9	7.15	7.00	7.81	5.03	2.58	2.52	5.90	5.09	0.14	-0.67	4.63	3.11	0.38	0.91



Alt Model-Shift Uniqueness Test

002162268-04, P = 41.350467 Days, E = 142.732202 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.2	5.18	4.75	5.27	5.07	2.66	1.65	5.50	4.98	0.43	-0.09	7.76	0.76	0.34	0



Stellar Parameters For KIC 002162268

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4791^{+172}_{-172}	$4.561^{+0.066}_{-0.039}$	$-0.060^{+0.300}_{-0.300}$	$0.734^{+0.057}_{-0.070}$	$0.715^{+0.085}_{-0.053}$	$2.545^{+0.731}_{-0.366}$
	+4%/-4%	+1%/-1%	+500%/-500%	+8%/-10%	+12%/-7%	+29%/-14%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 002162268-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-564 ± 79	$2.88^{+1.84}_{-1.62}$	550^{+24}_{-23}	4053^{+1810}_{-601}	1660^{+7843}_{-1060}
Alt.	-482 ± 93	$3.15^{+2.09}_{-1.88}$	550^{+23}_{-23}	3842^{+1643}_{-595}	1225^{+5855}_{-817}

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

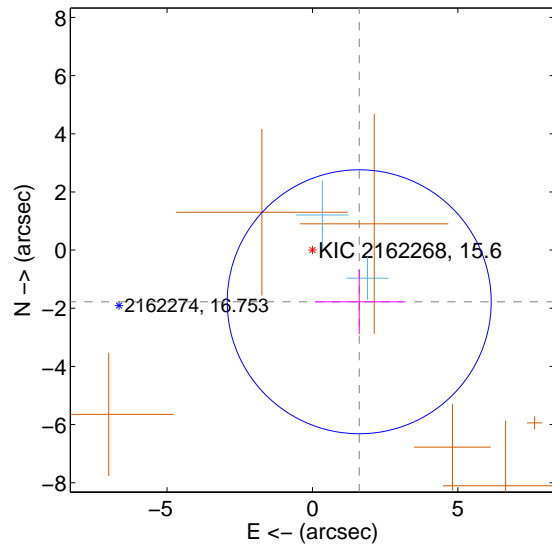
Supplemental centroid analysis for 002162268-04. Kepler magnitude: 15.60. Transit SNR 8.12

There are 2 quarters with good PRF difference image offsets

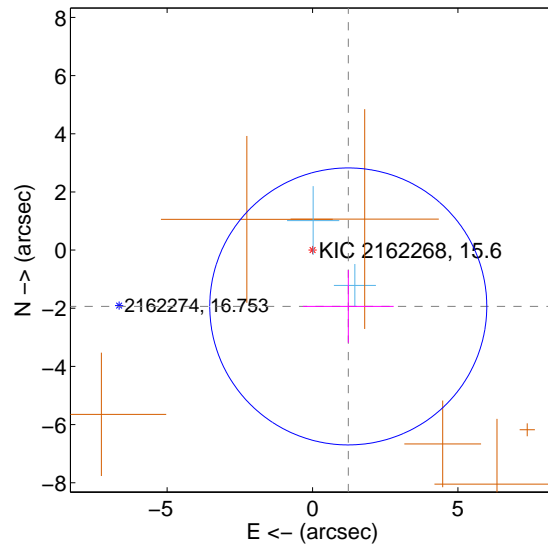
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.396 ± 1.512	1.58	-1.608 ± 1.514	-1.776 ± 1.114
PRF-fit source offset from KIC position	2.293 ± 1.587	1.45	-1.229 ± 1.562	-1.937 ± 1.248
photometric centroid source offset	0.78 ± 0.47	1.65	0.34 ± 0.58	-0.70 ± 0.44

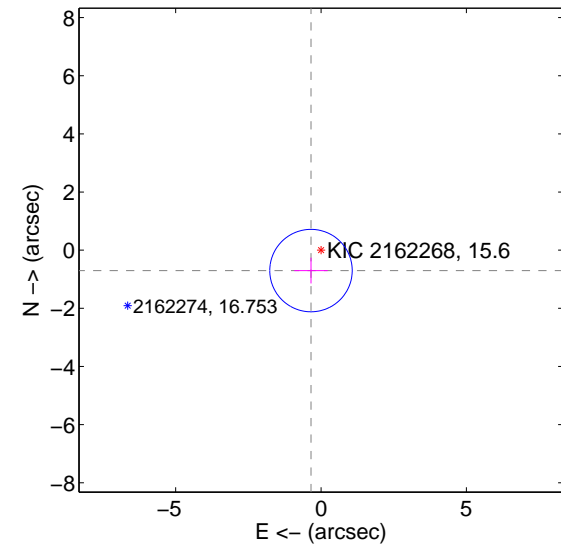
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

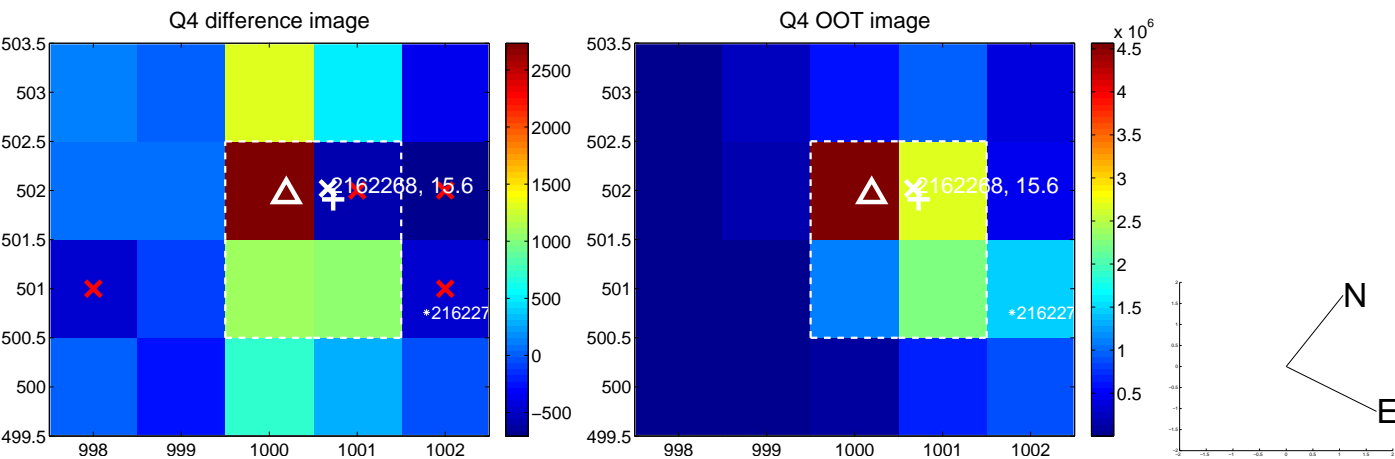
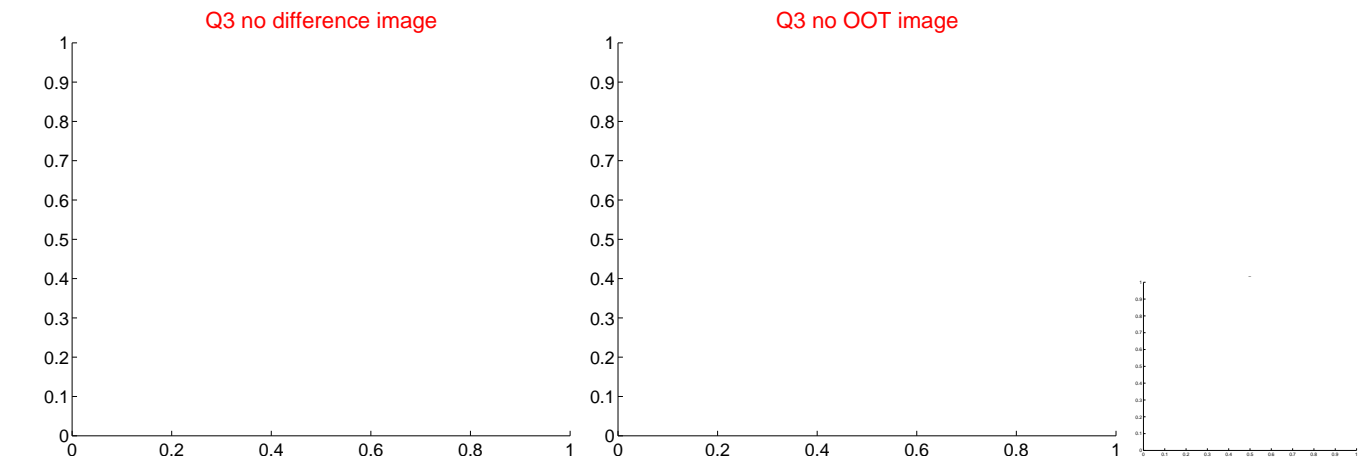
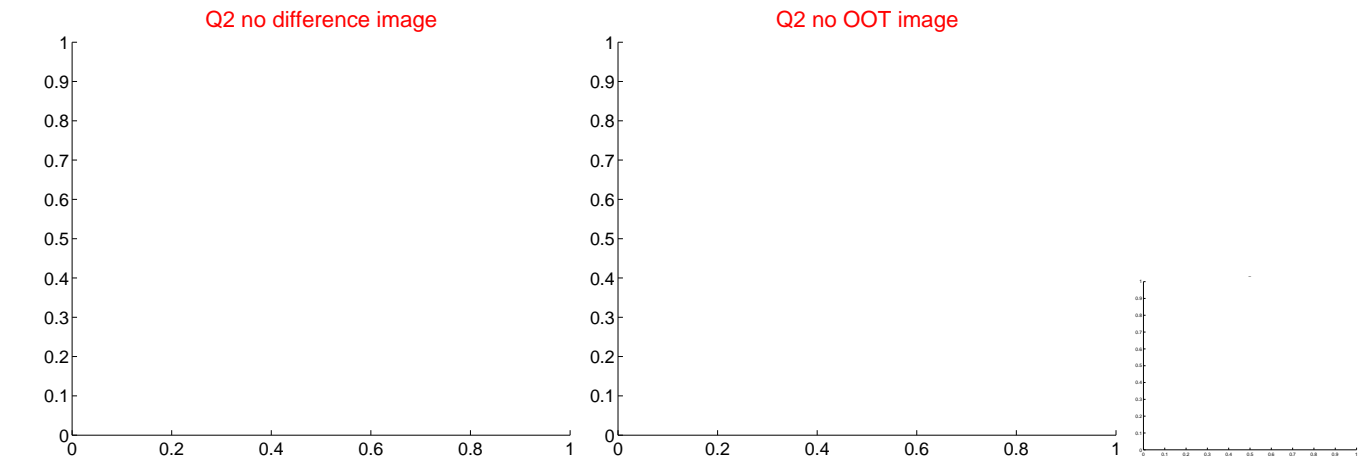
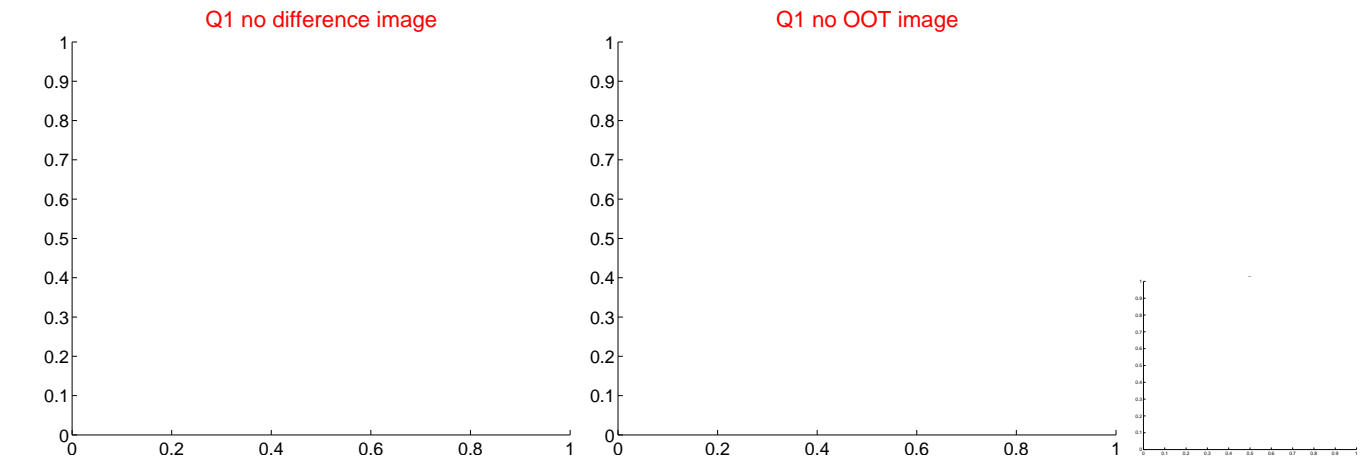


offset from photometric centroids

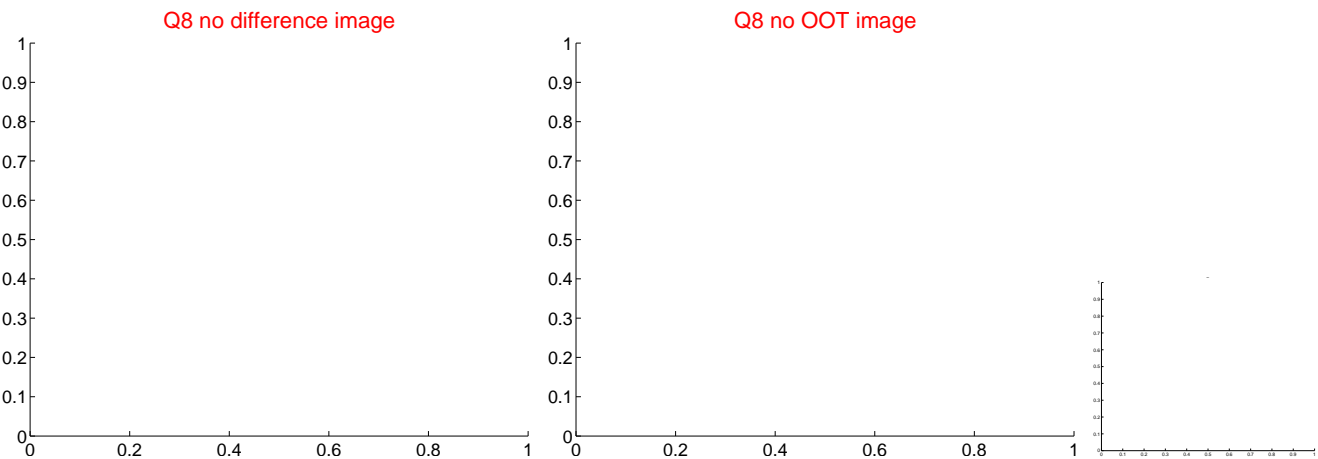
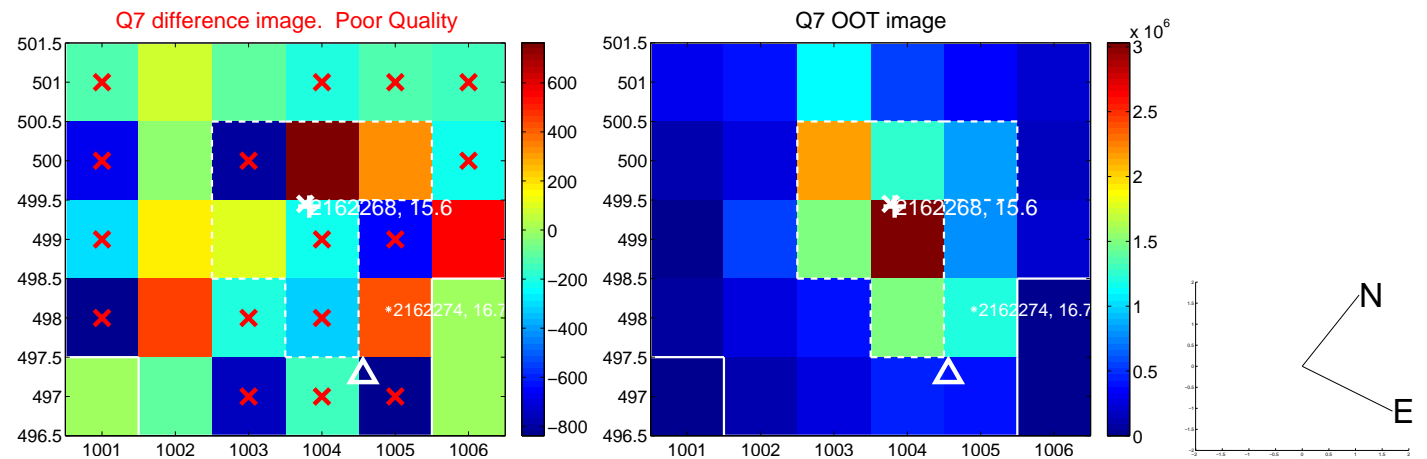
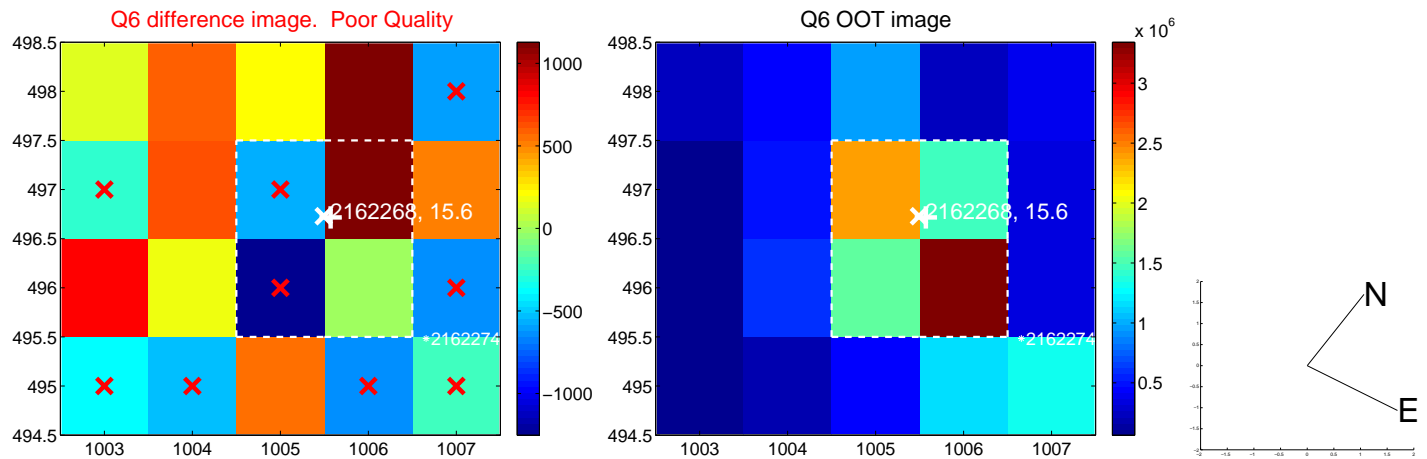
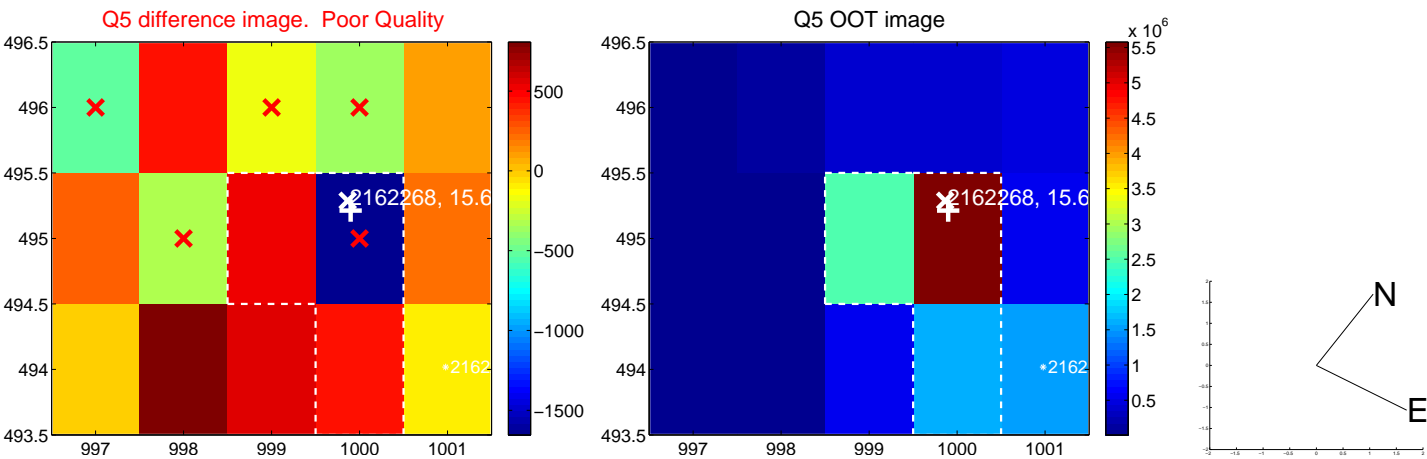


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

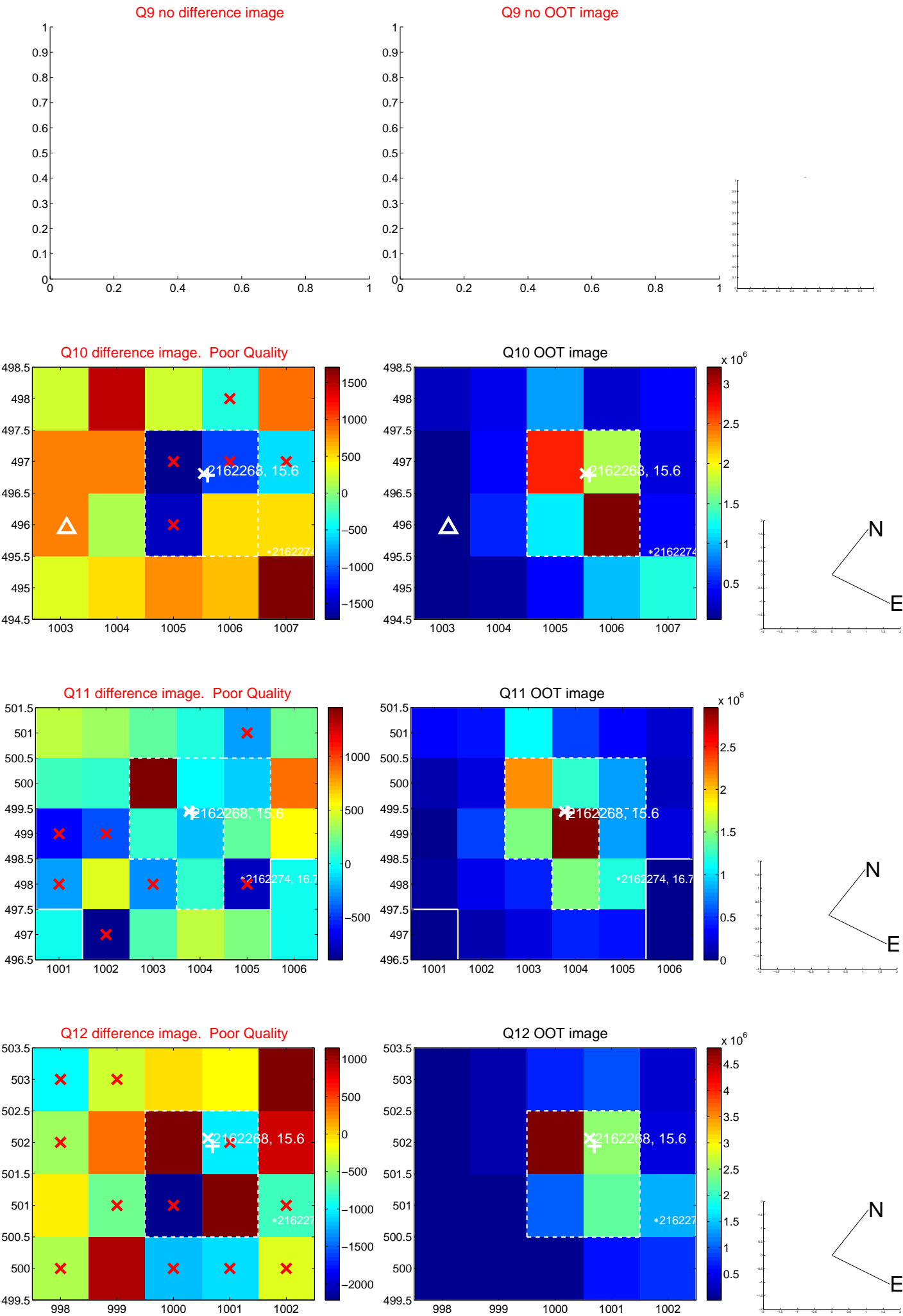
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



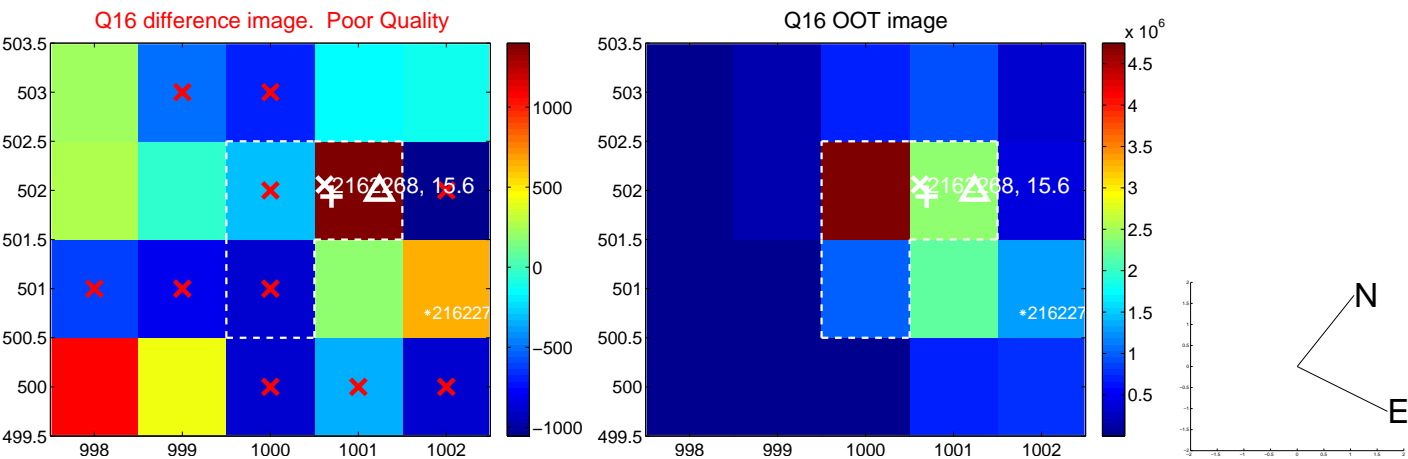
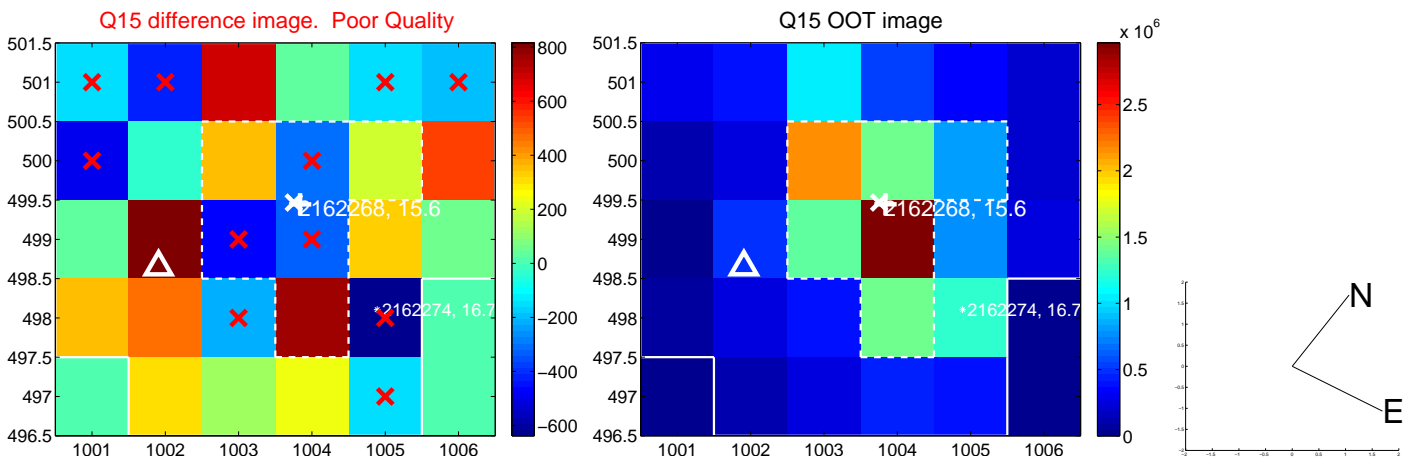
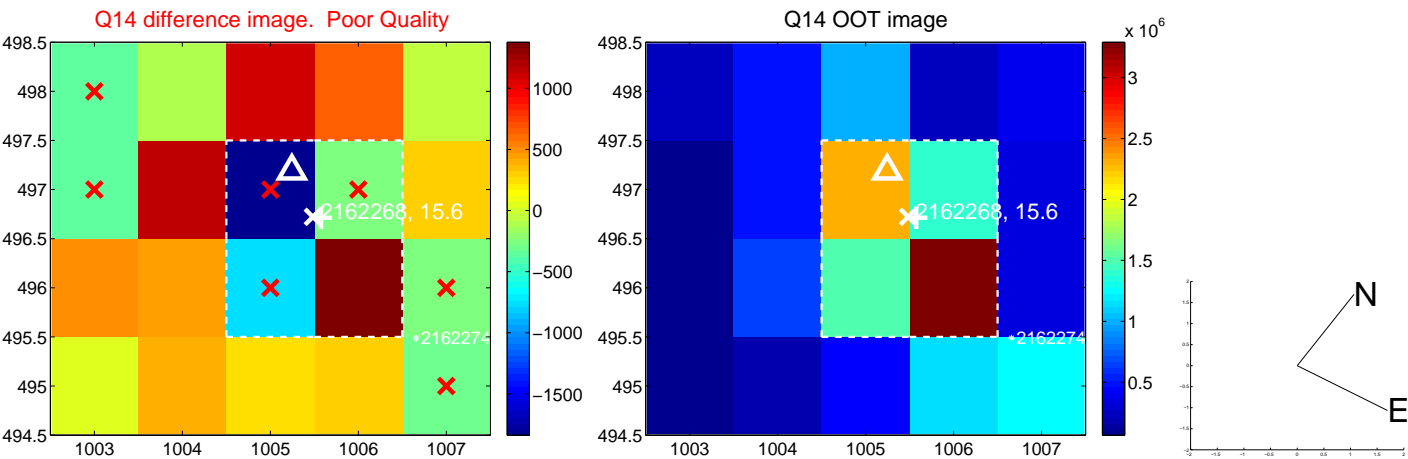
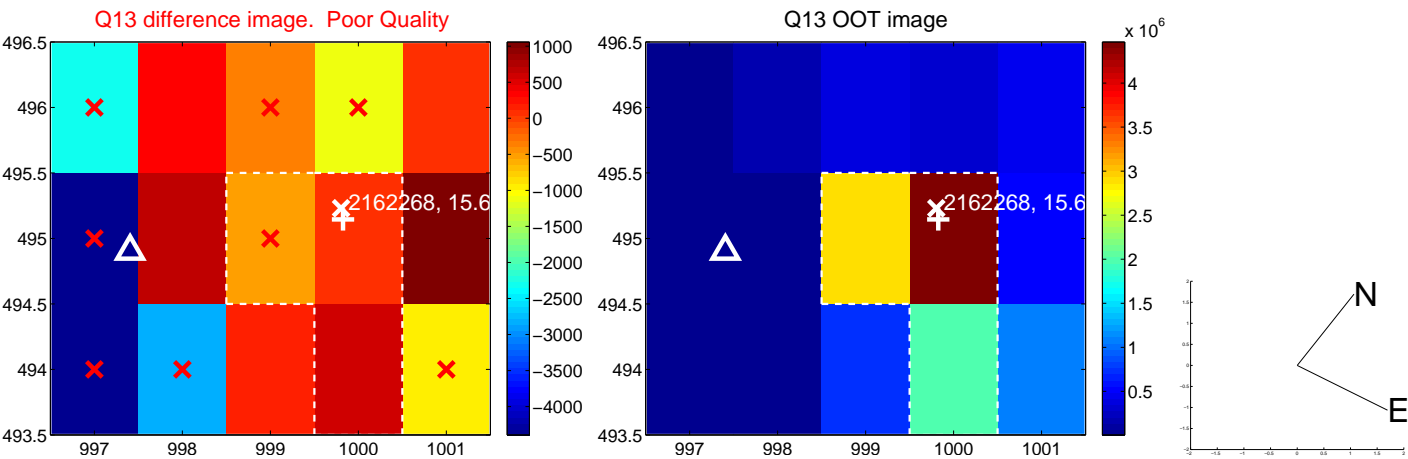
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



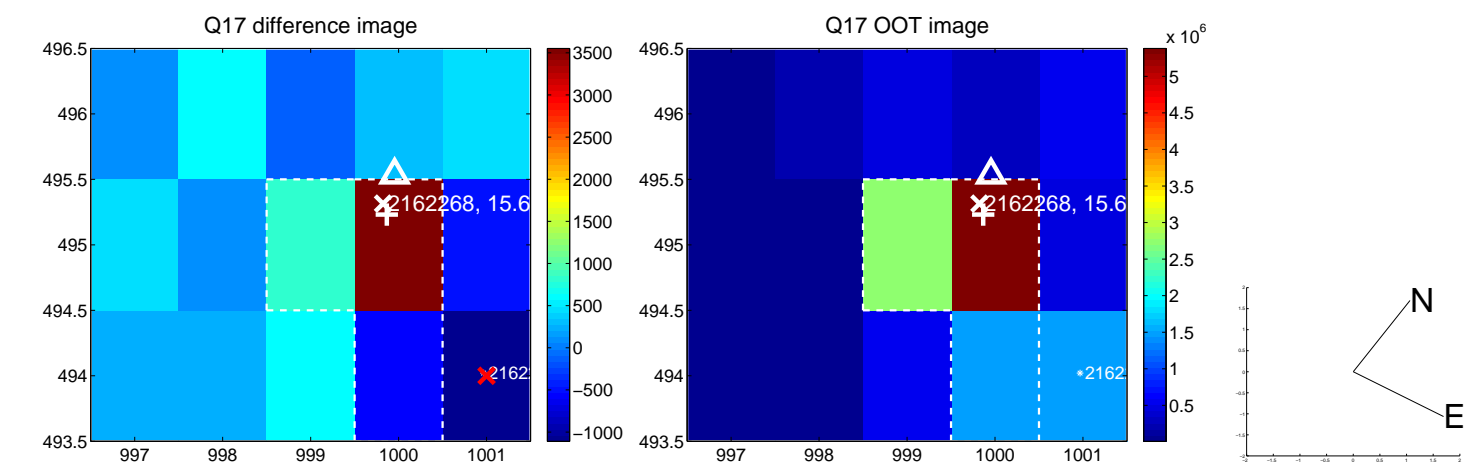
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



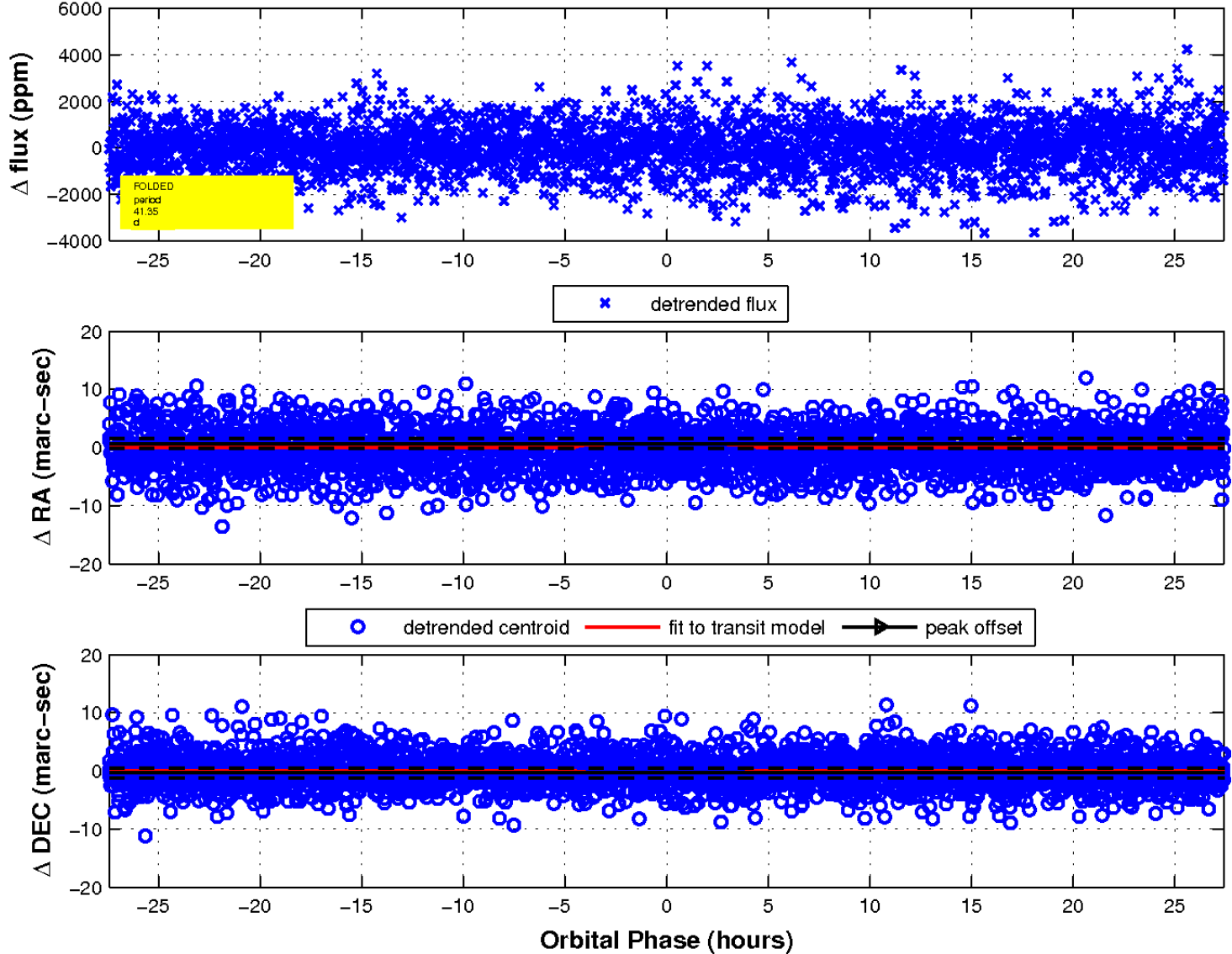
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 4 of 4



UKIRT Image

Declination

