

KIC 007031638

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})
007031638-01	OBS	7805.01	1.133502	132.453455	15.6	3.463	7.3	7.1	1.12	6318	0.52	3834.60
007031638-02	OBS	No	214.861654	136.974799	250.8	7.094	9.5	5.4	1.12	6318	1.94	3.52
007031638-03	OBS	No	356.125119	436.368492	279.6	5.684	8.9	7.0	1.12	6318	2.18	1.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007031638-01	OBS	FP	0.00	0	1	0	1	MOD_SEC_DV—EPHEM_MATCH
007031638-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007031638-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—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.

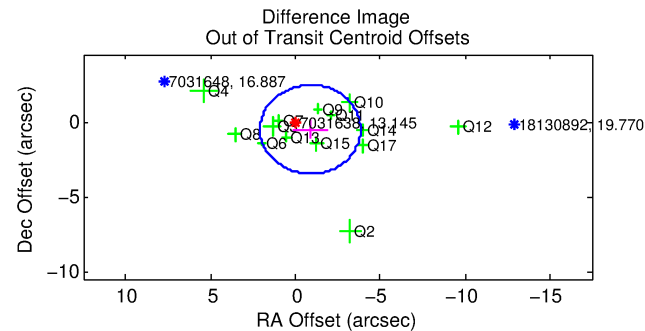
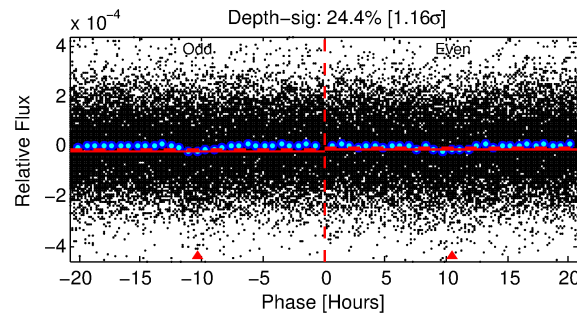
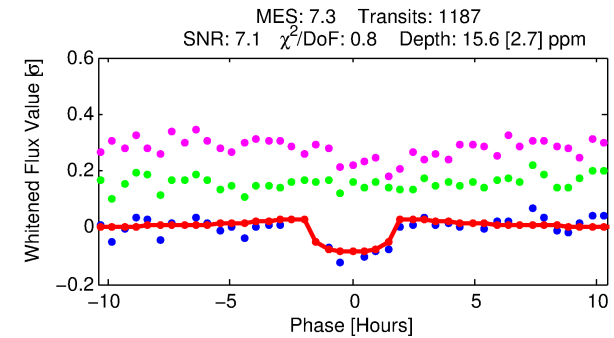
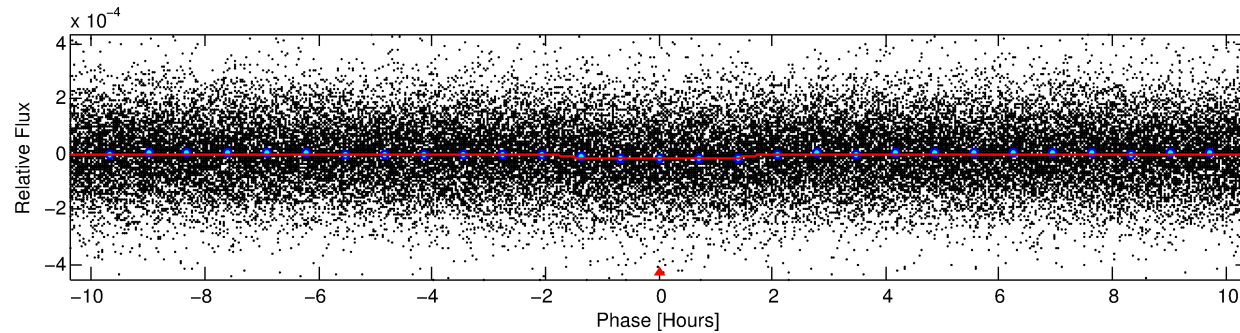
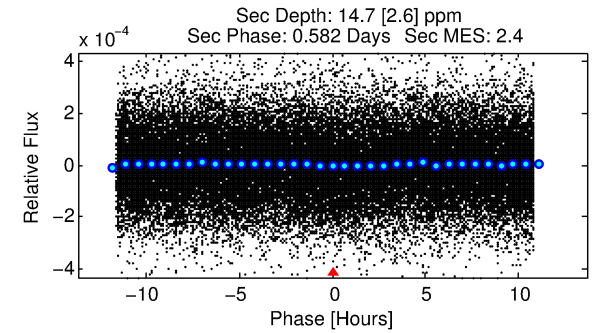
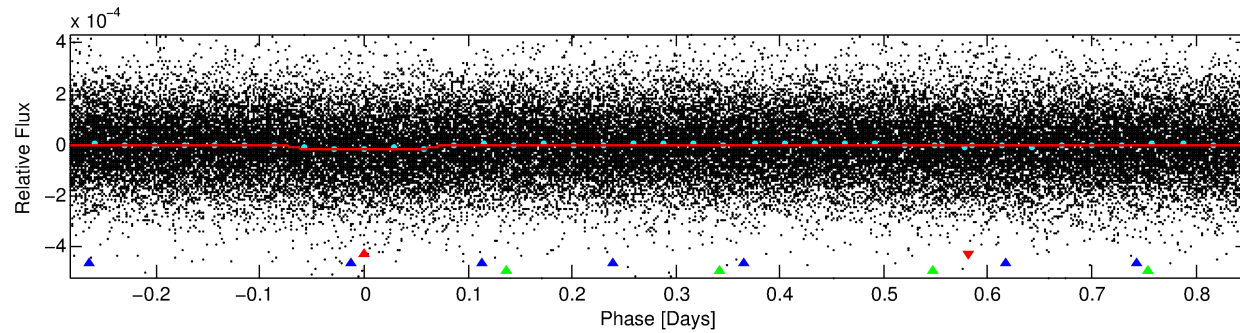
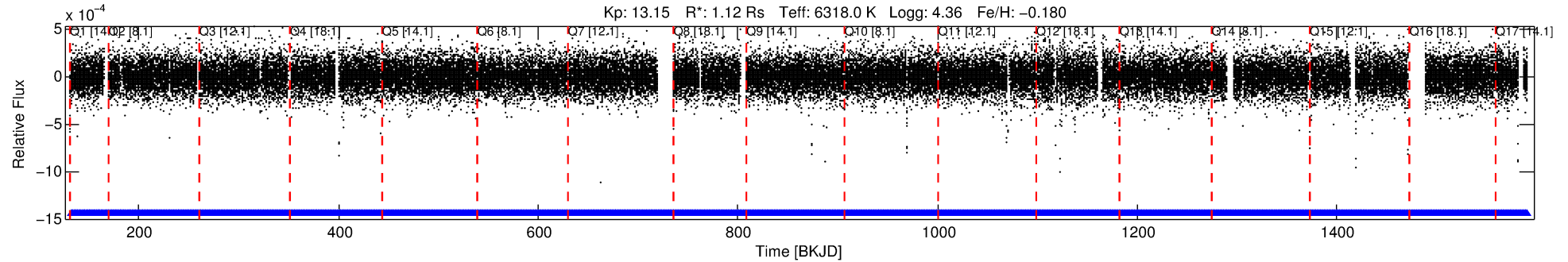
Ephemeris Match Information For 007031638-01

TCE (1)	KIC	Parent (2)	Parent KIC	P ₁ :P ₂	Dist (μ)	Δ Row	Δ Col	m ₂	m ₁	D ₂ /D ₁	Mechanism	Flag	σ_P	σ_T
007031638-01	7031638	RR-Lyr-pri	7198959	2:1	930.0	84	-219	7.86	13.14	38956.00	Direct-PRF	0	1.25	19.98

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: 7031638 Candidate: 1 of 3 Period: 1.134 d



DV Fit Results:

Period = 1.13350 [0.00002] d
Epoch = 132.4535 [0.0044] BKJD
Rp/R* = 0.0042 [0.0013]
a/R* = 1.47 [1.33]
b = 0.90 [0.38]
Seff = 3834.60 [1163.07]
Teff = 2007 [152] K
Rp = 0.52 [0.20] Re
a = 0.0216 [0.0041] AU
Ag = 14.10 [9.99] [1.31σ]
Teffp = 6012 [1000] K [3.96σ]

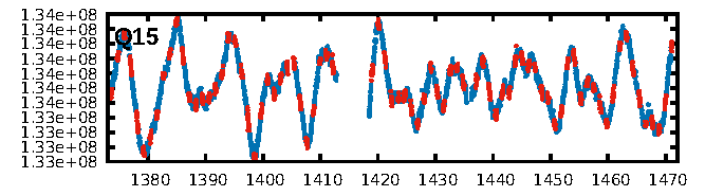
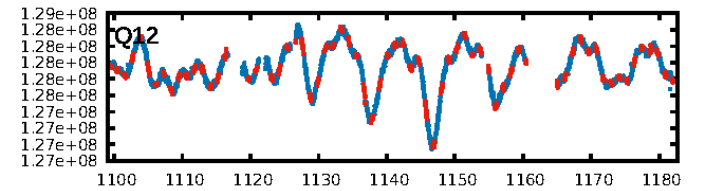
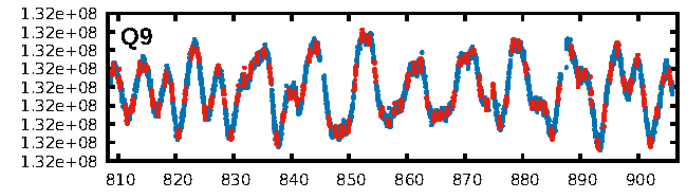
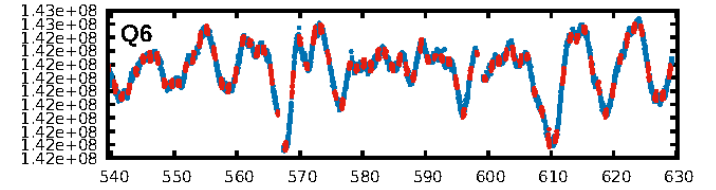
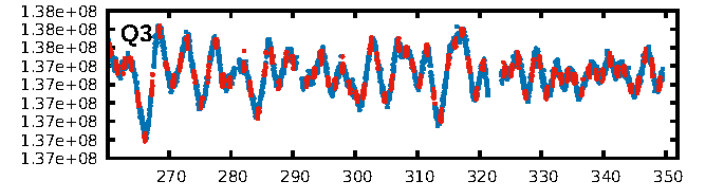
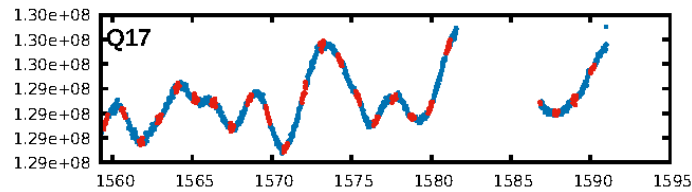
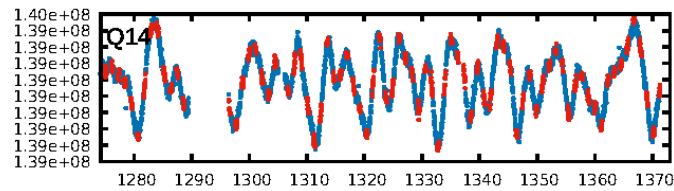
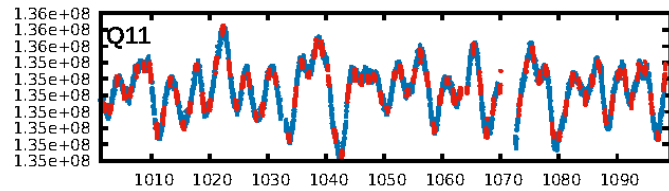
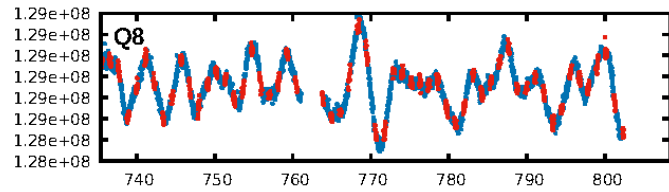
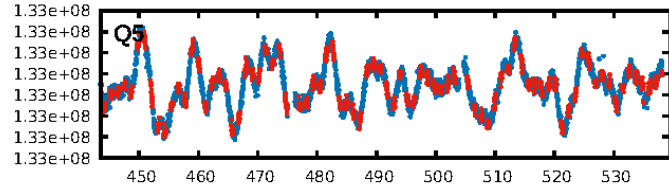
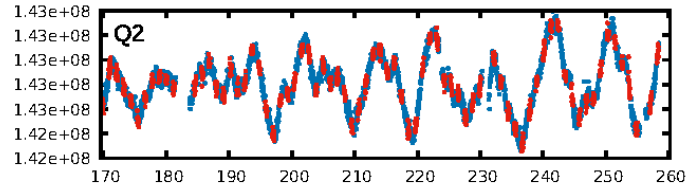
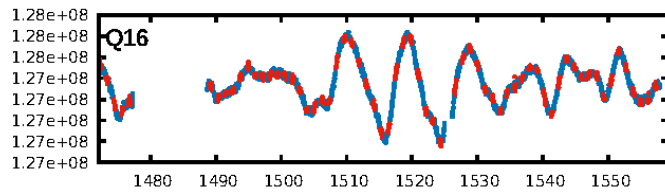
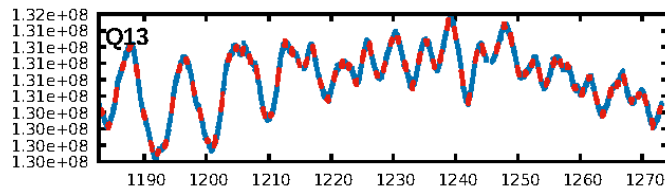
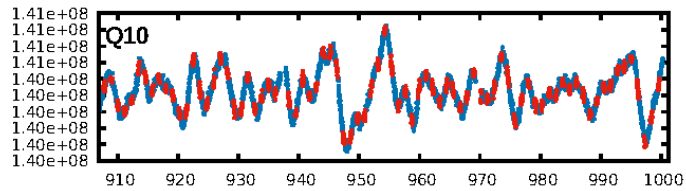
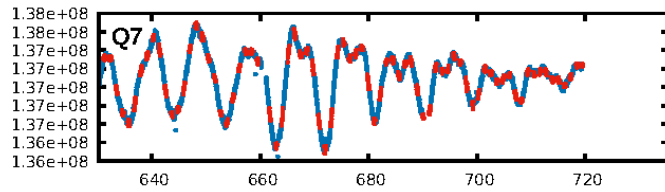
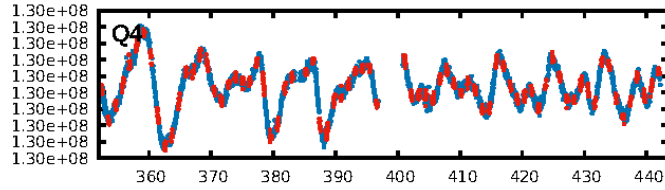
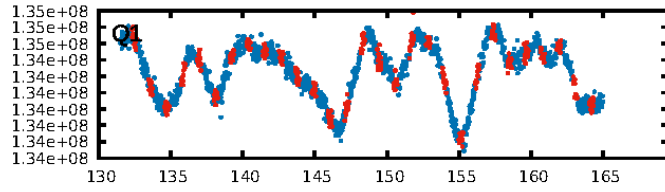
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [649.79σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.84e-12
RollingBand-fgt: 1.00 [1135/1135]
GhostDiagnostic-chr: -0.867
Centroid-sig: 5.8%
Centroid-so: 1.570 arcsec [1.34σ]
OotOffset-rm: 1.021 arcsec [1.03σ]
KicOffset-rm: 1.005 arcsec [1.17σ]
OotOffset-st: 4/4/3/3 [14]
KicOffset-st: 4/4/3/3 [14]
DiffImageQuality-fgm: 0.29 [4/14]
DiffImageOverlap-fno: 1.00 [17/17]

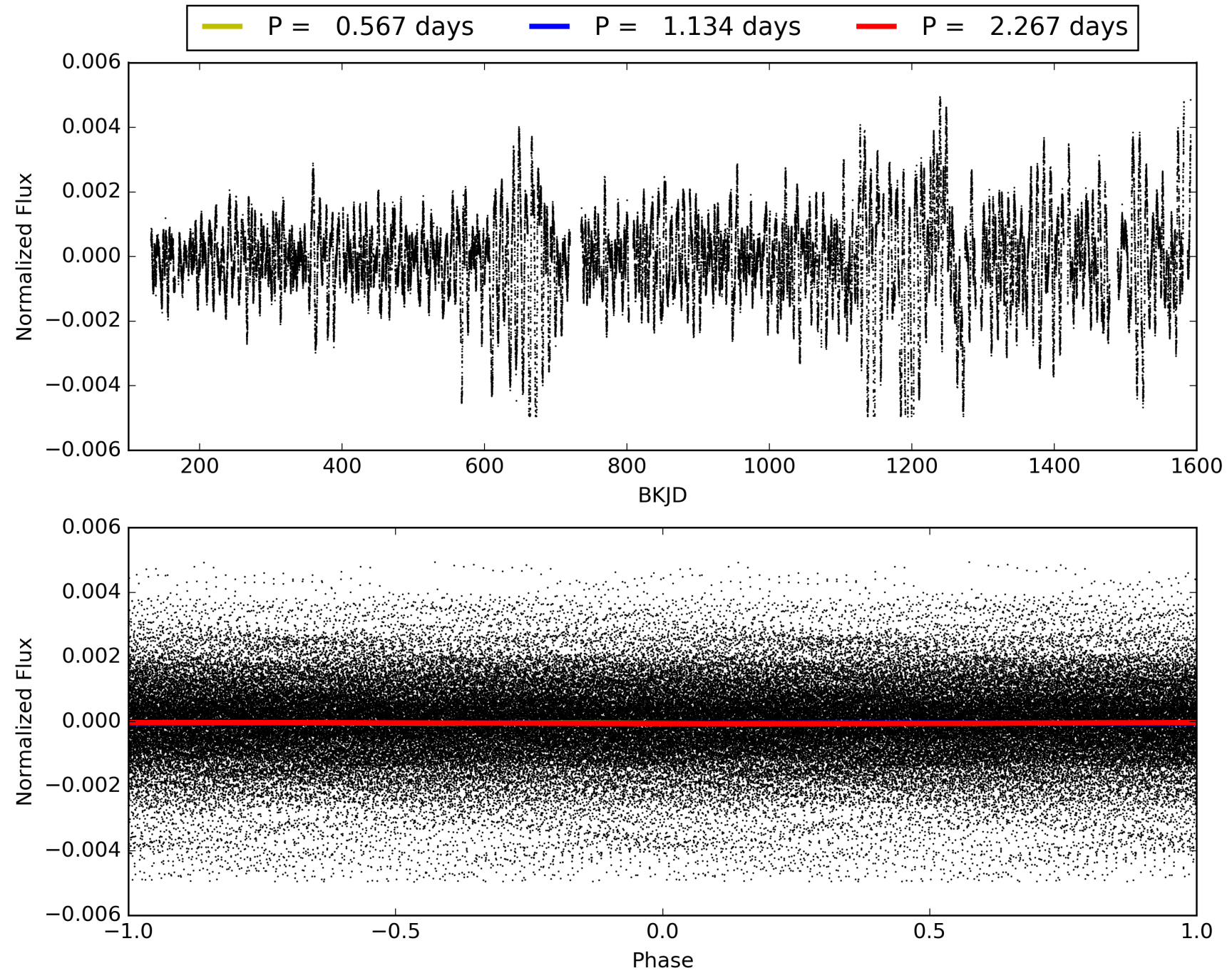
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:01:47 Z

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

TCE 007031638-01, PDC Light Curves

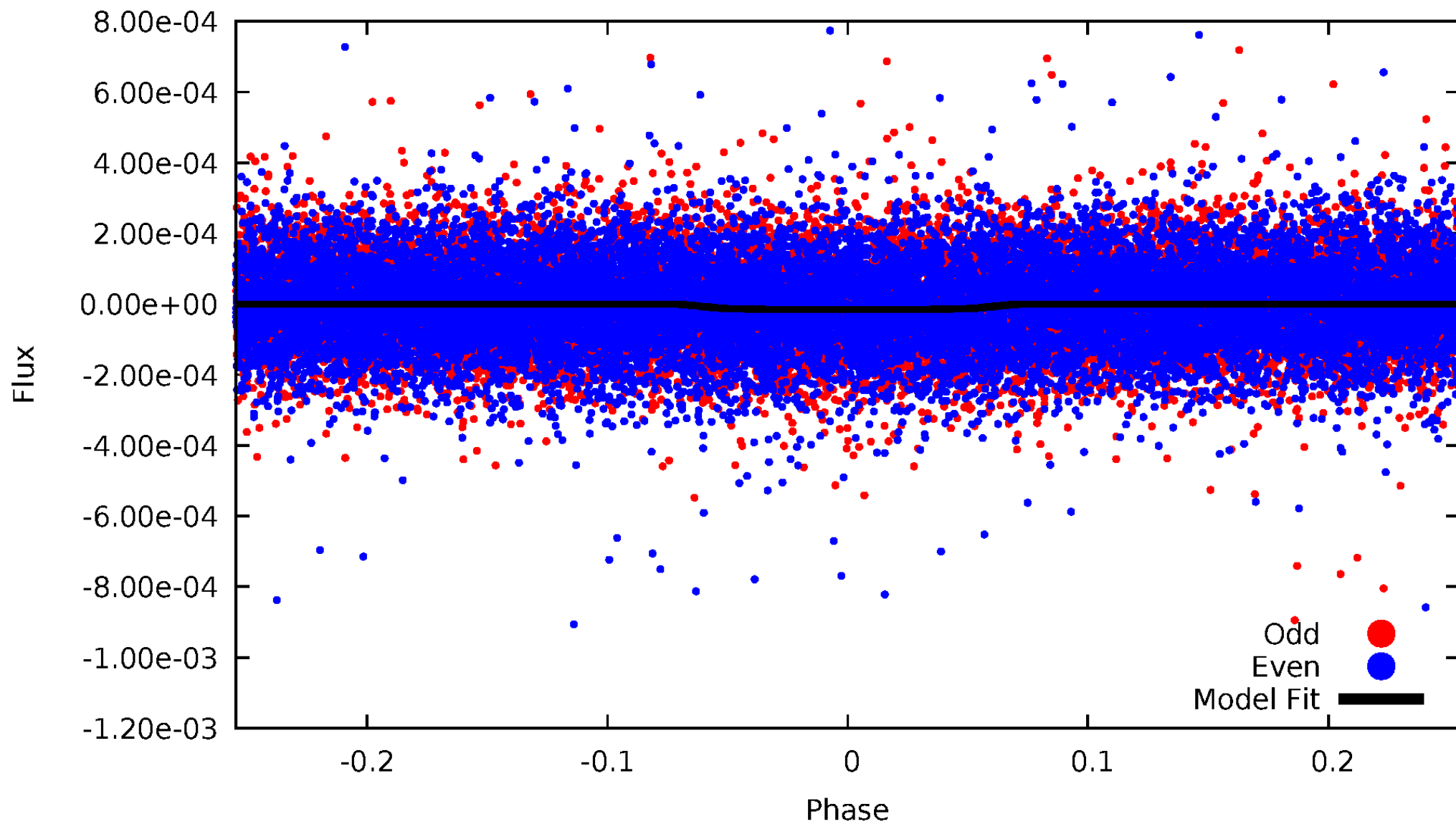


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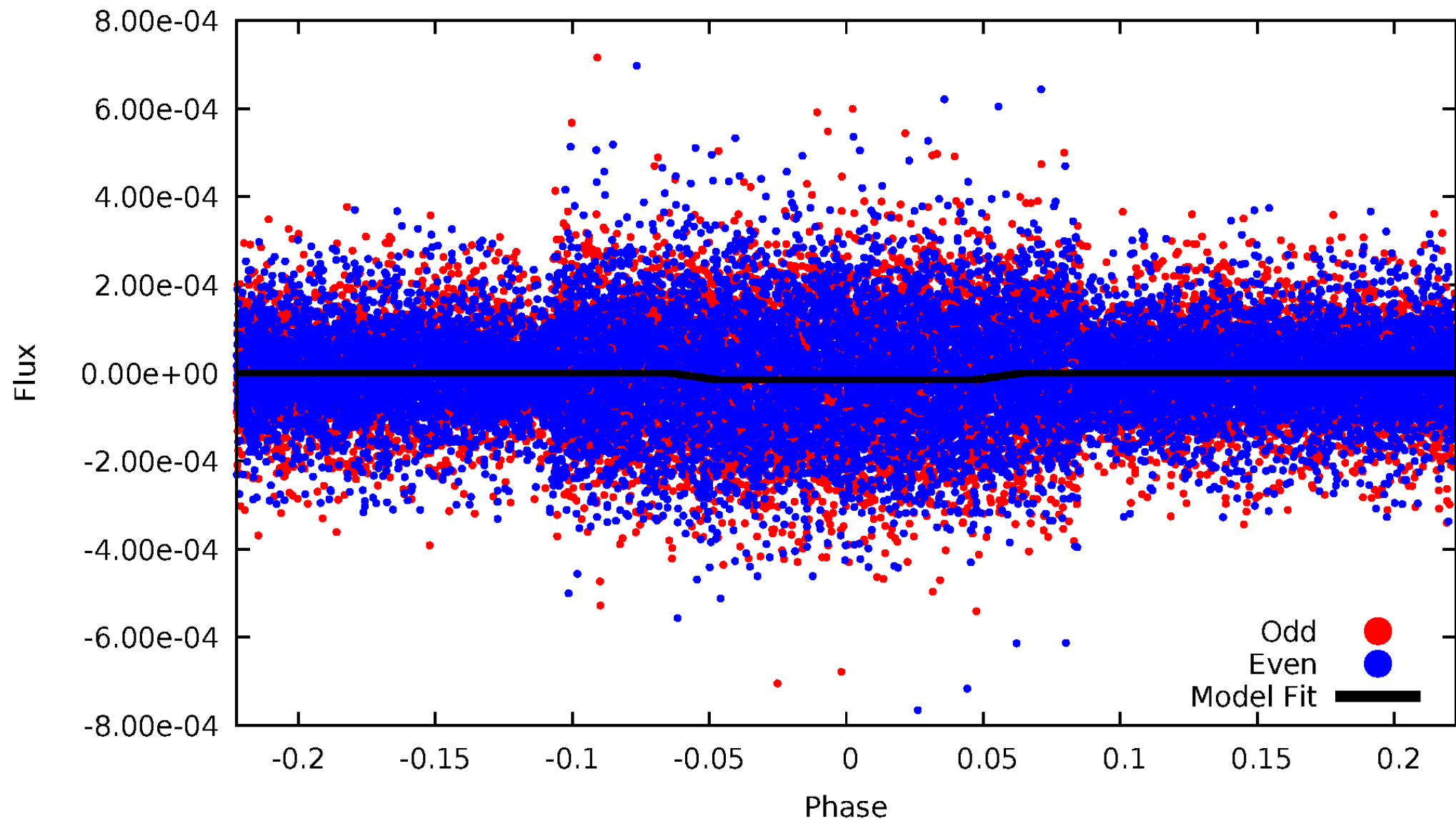
DV Odd/Even

TCE 007031638-01



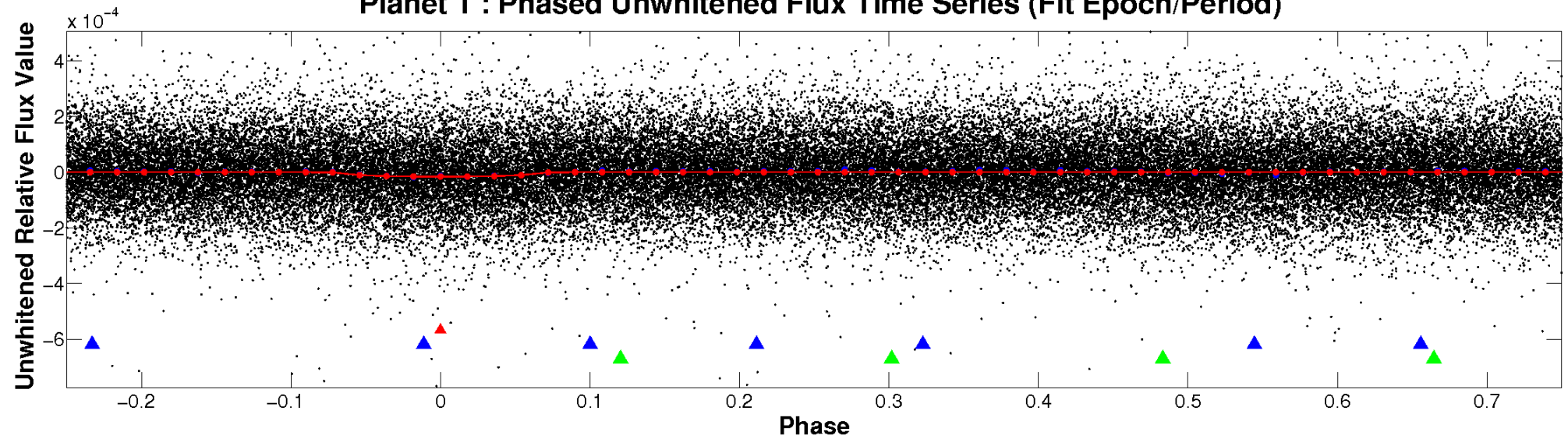
ALT Odd/Even

TCE 007031638-01

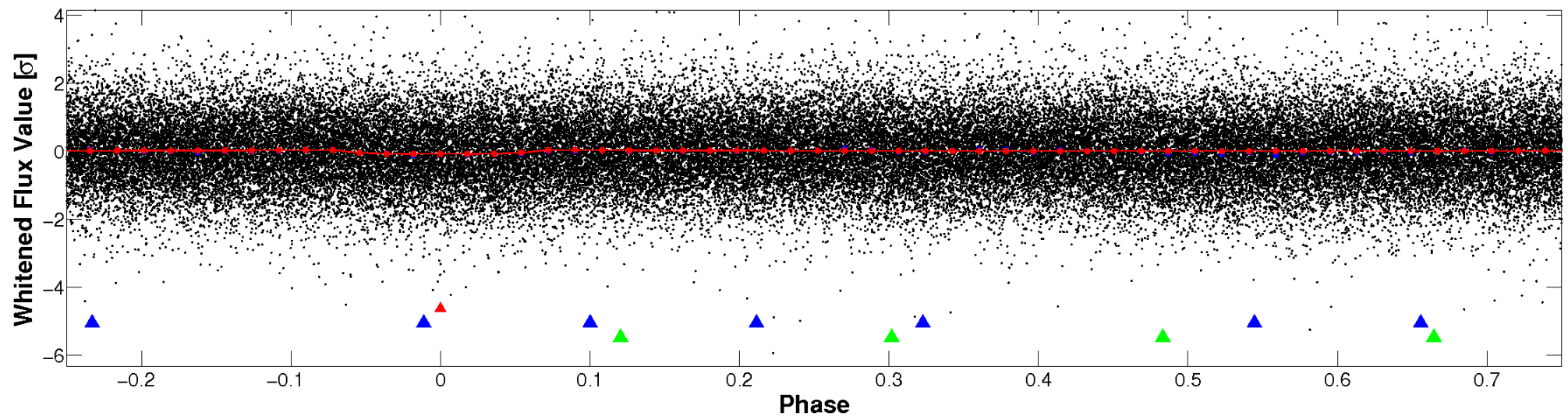


Non-Whitened Vs. Whitened Light Curve

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

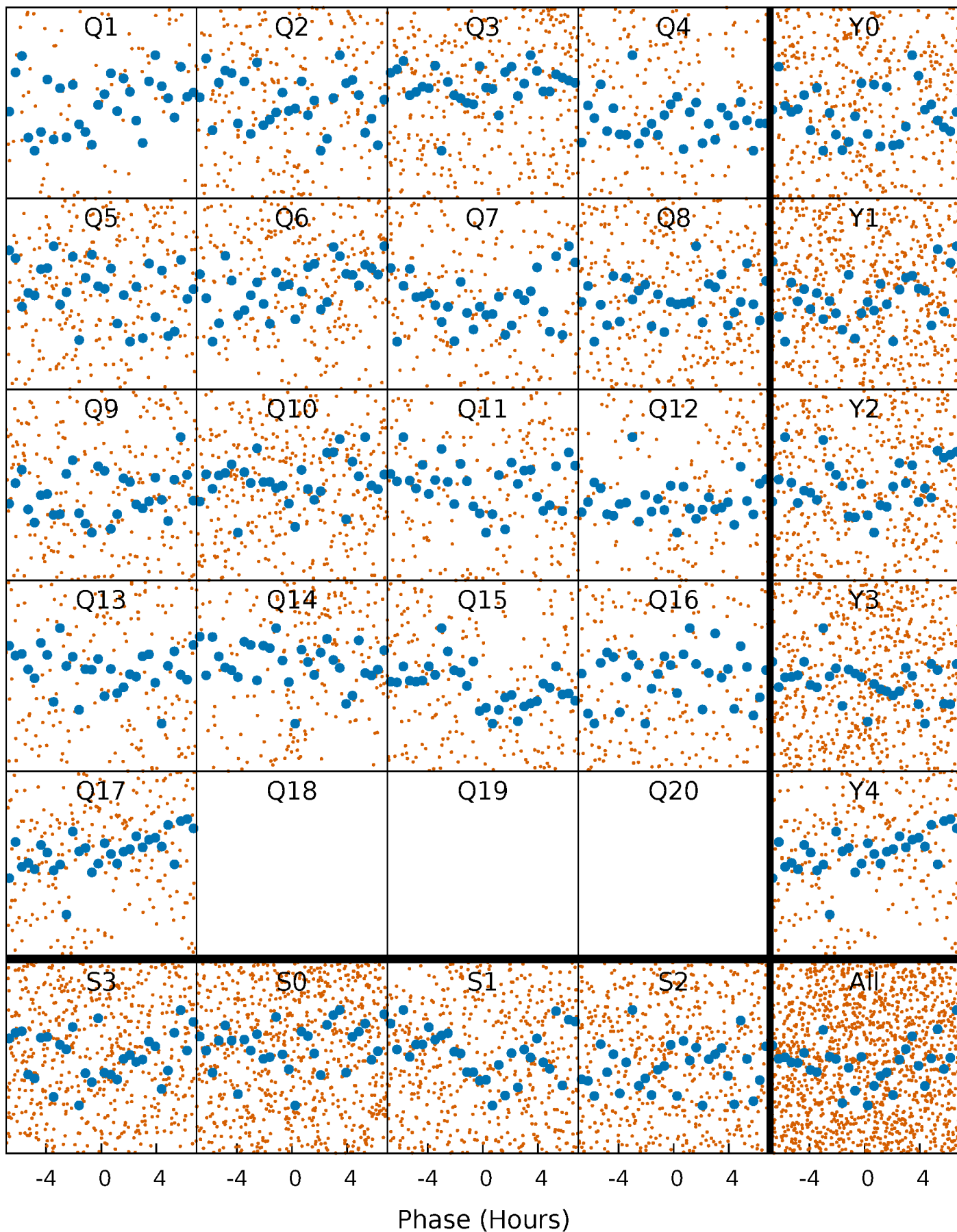


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



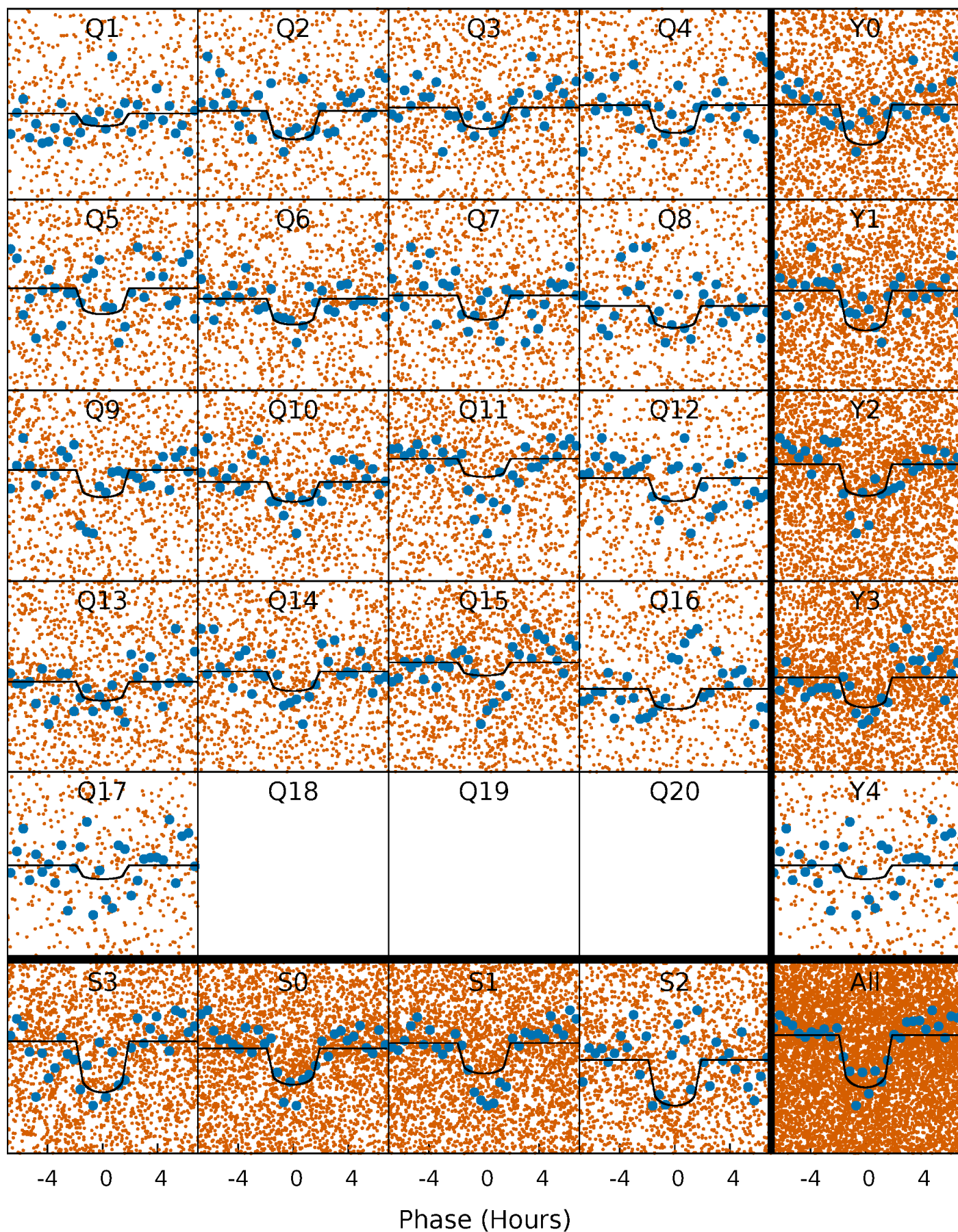
PDC Quarter-Phased Transit Curves

TCE 007031638-01 P= 1.133502 Days $T_0=132.453455$ (BKJD)



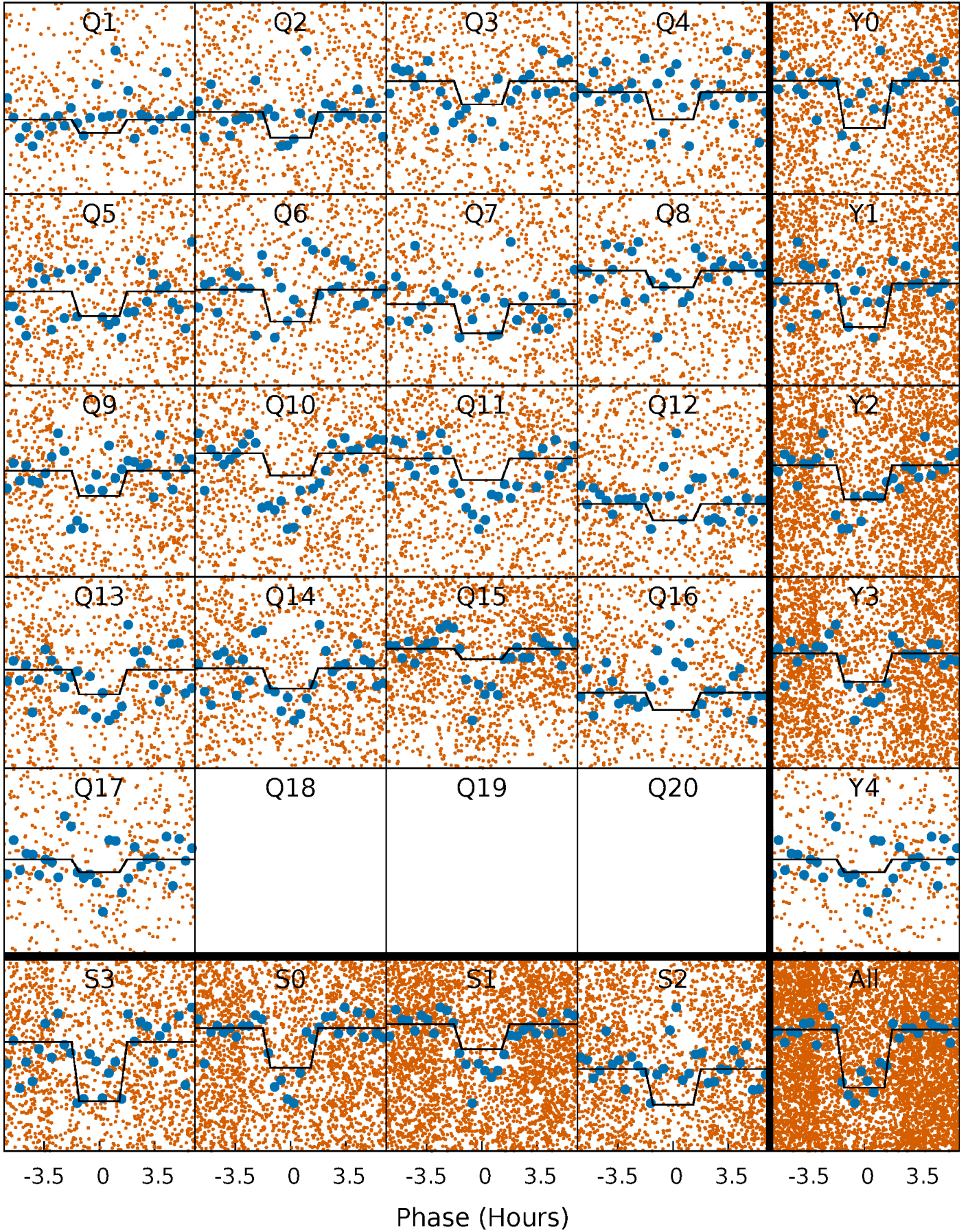
DV Quarter-Phased Transit Curves

TCE 007031638-01 P= 1.133502 Days $T_0=132.453455$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

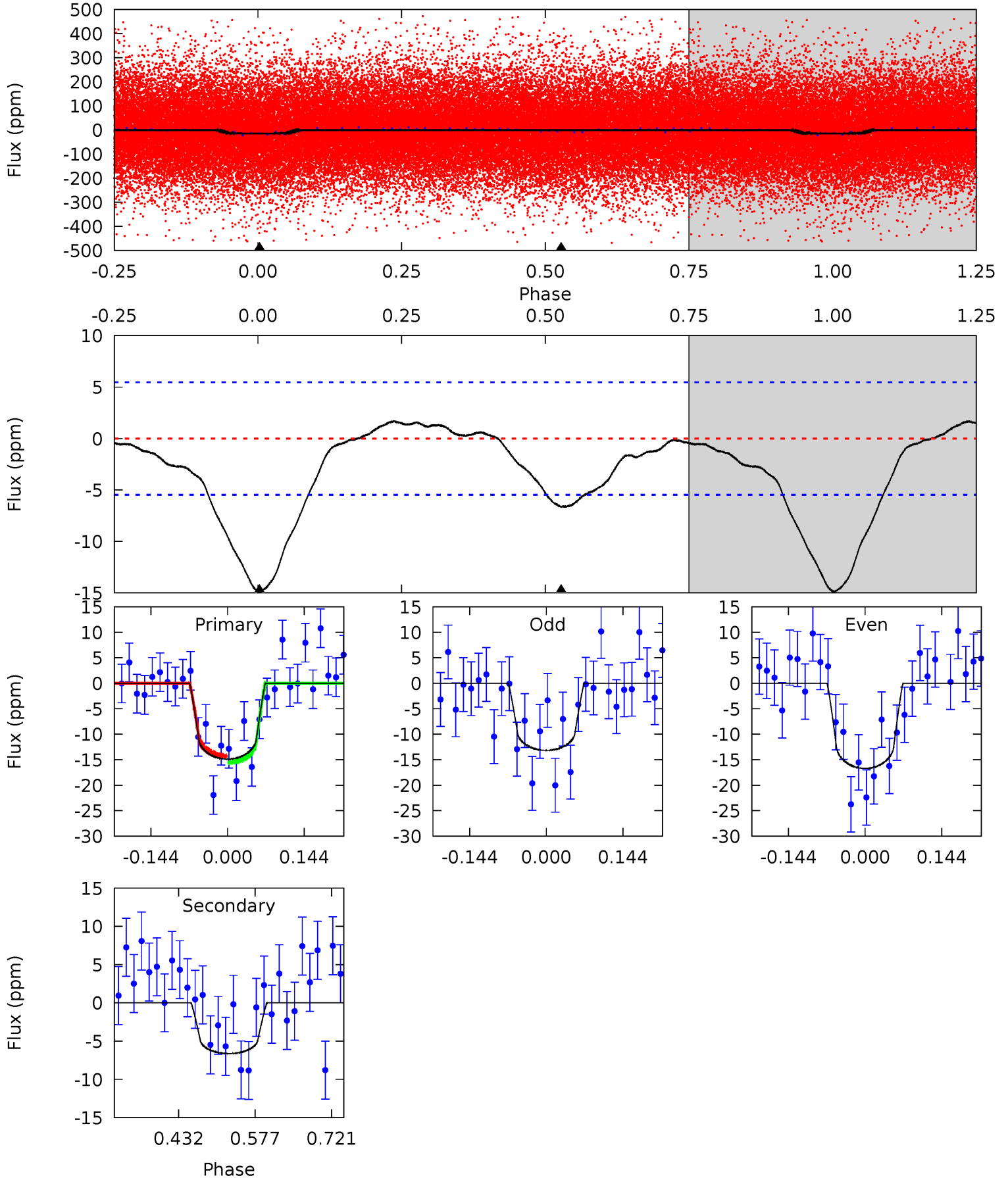
TCE 007031638-01 P= 1.133530 Days $T_0=132.444402$ (BKJD)



DV Model-Shift Uniqueness Test

007031638-01, P = 1.133502 Days, E = 131.319953 Days

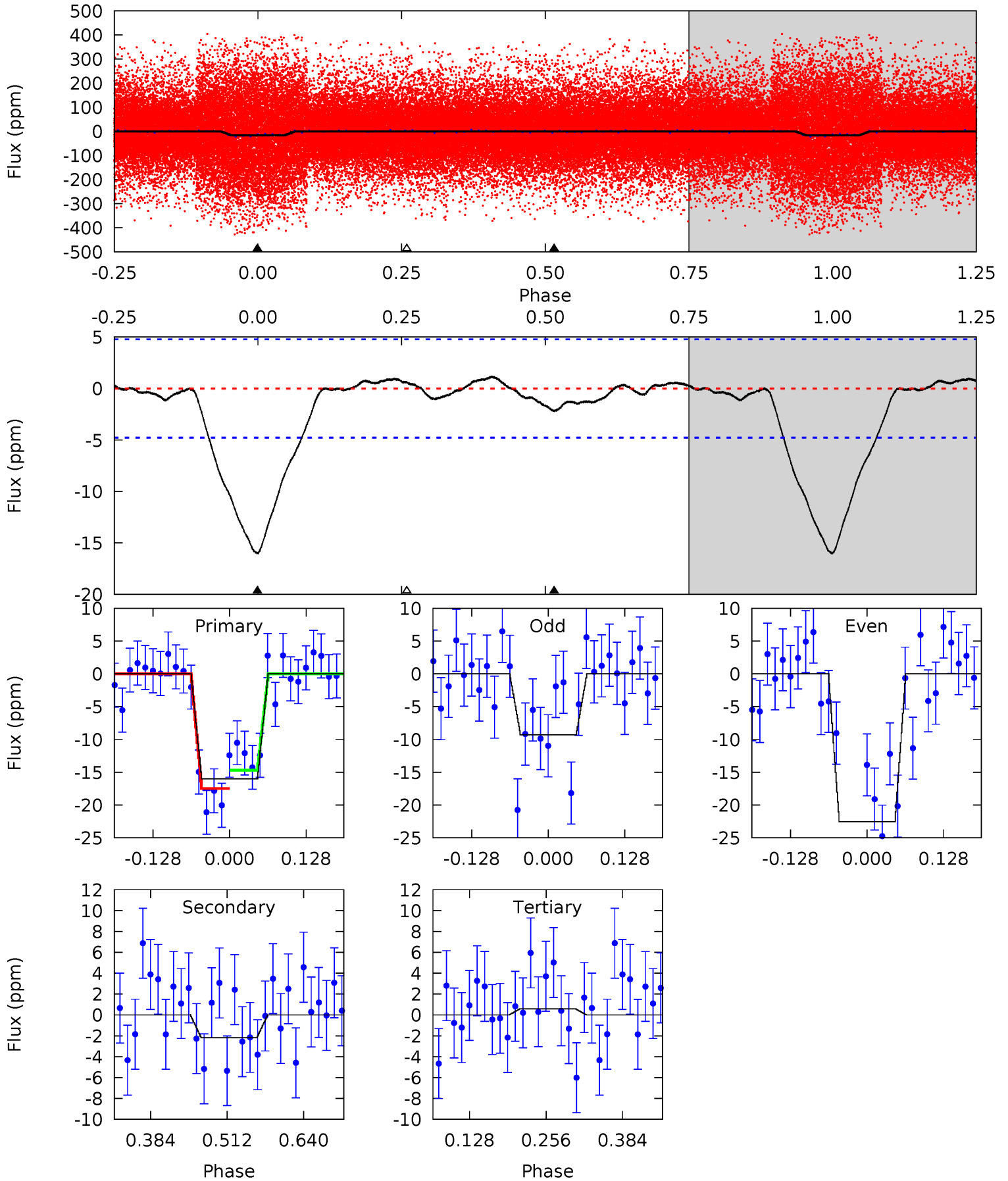
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.2	5.43	0	0	4.49	1.46	0.95	12.2	12.2	5.43	5.43	1.46	1.00	0.10	0.49



Alt Model-Shift Uniqueness Test

007031638-01, P = 1.133530 Days, E = 131.310872 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.1	2.07	-0.55	0	4.51	1.52	0.50	15.7	15.1	2.62	2.07	6.27	1.04	0.07	1.32



Stellar Parameters For KIC 007031638

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6318^{+156}_{-203}	$4.360^{+0.081}_{-0.150}$	$-0.180^{+0.250}_{-0.300}$	$1.121^{+0.252}_{-0.136}$	$1.046^{+0.160}_{-0.107}$	$1.045^{+0.427}_{-0.421}$
	+2%/-3%	+2%/-3%	+139%/-167%	+22%/-12%	+15%/-10%	+41%/-40%
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 007031638-01 / KOI 7805.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-7 ± 1	$0.54^{+0.18}_{-0.17}$	2825^{+157}_{-127}	4909^{+912}_{-571}	$5.781^{+6.260}_{-2.612}$
Alt.	-2 ± 1	$0.48^{+0.17}_{-0.18}$	2806^{+163}_{-126}	4013^{+937}_{-671}	$2.275^{+3.965}_{-1.339}$

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

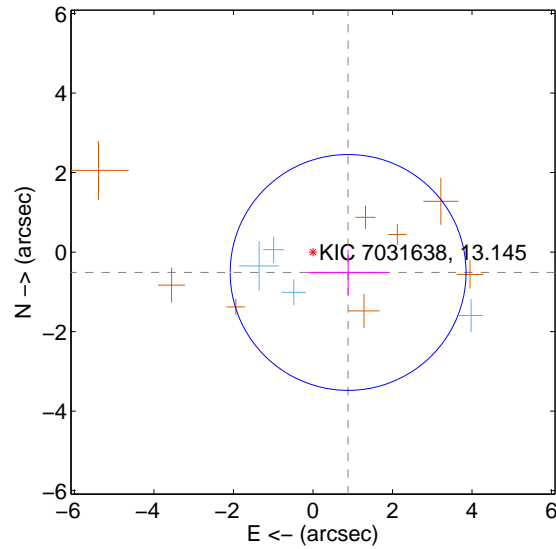
Supplemental centroid analysis for 007031638-01. Kepler magnitude: 13.14. Transit SNR 7.11

There are 4 quarters with good PRF difference image offsets

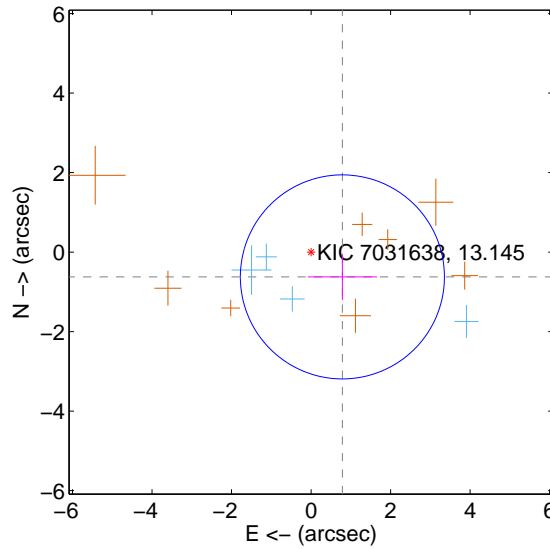
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.021 ± 0.989	1.03	-0.884 ± 1.018	-0.512 ± 0.568
PRF-fit source offset from KIC position	1.005 ± 0.856	1.17	-0.788 ± 0.870	-0.624 ± 0.583
photometric centroid source offset	1.57 ± 1.17	1.34	-0.94 ± 1.30	-1.26 ± 1.09

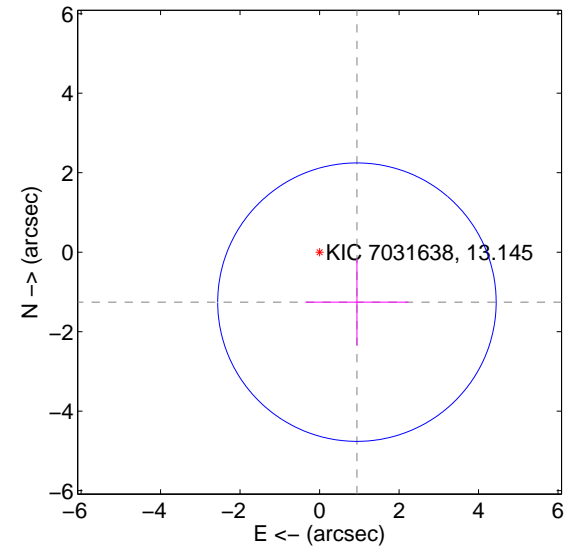
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

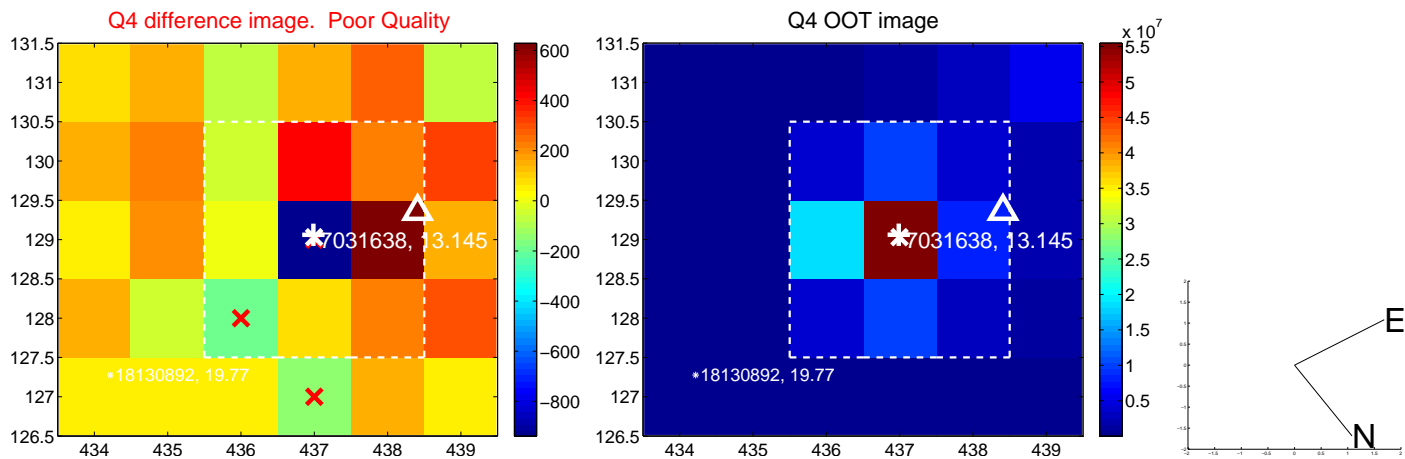
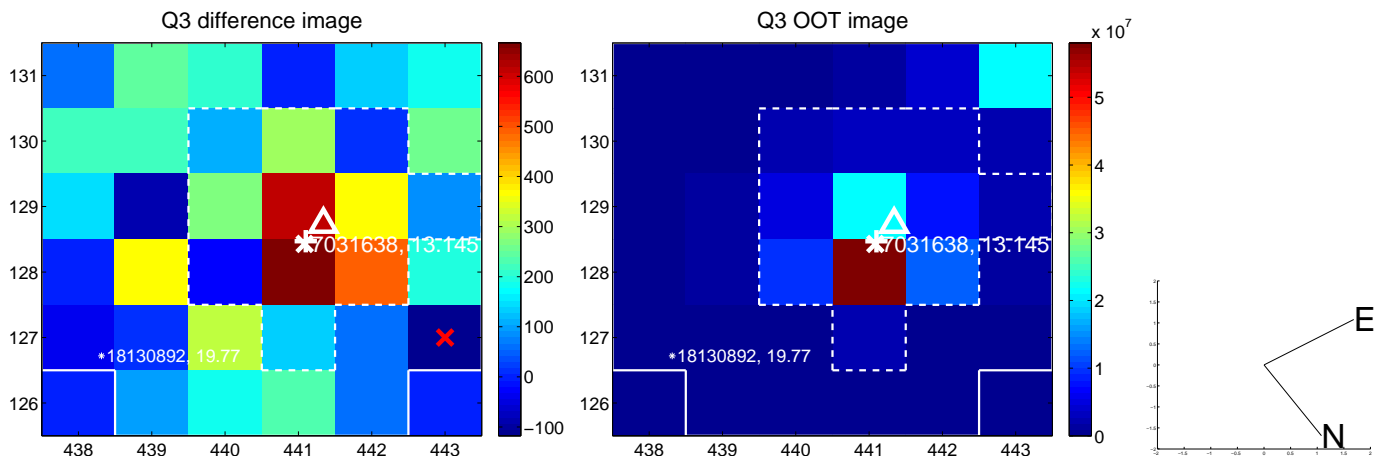
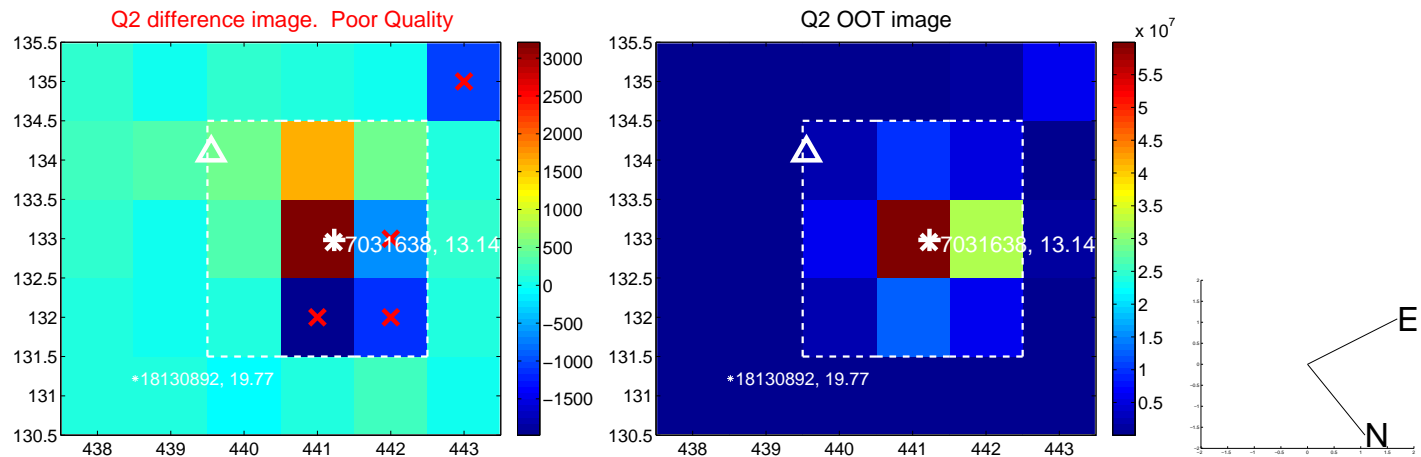
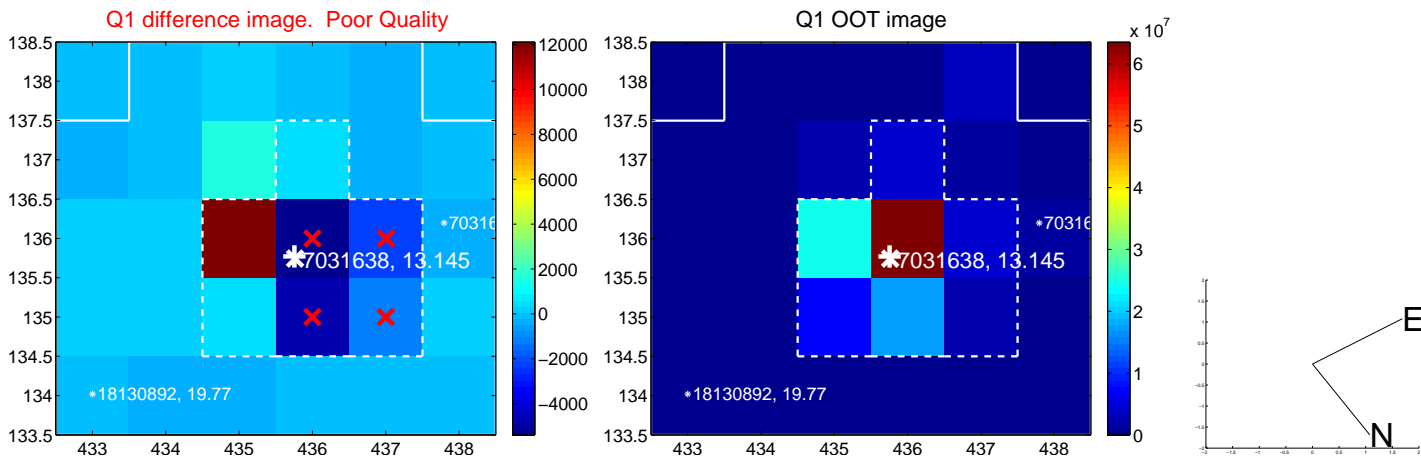


offset from photometric centroids

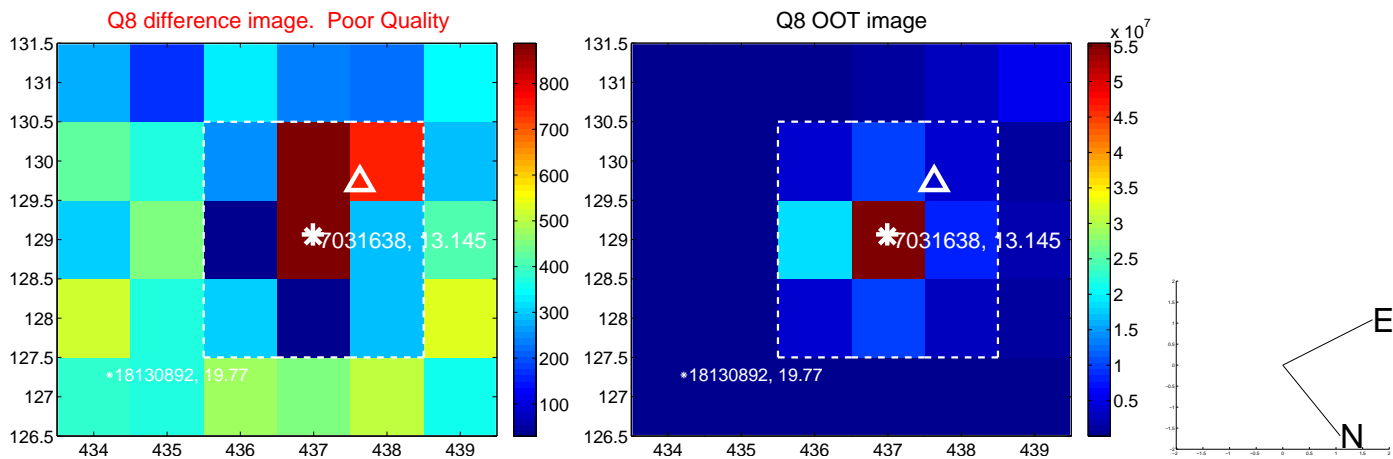
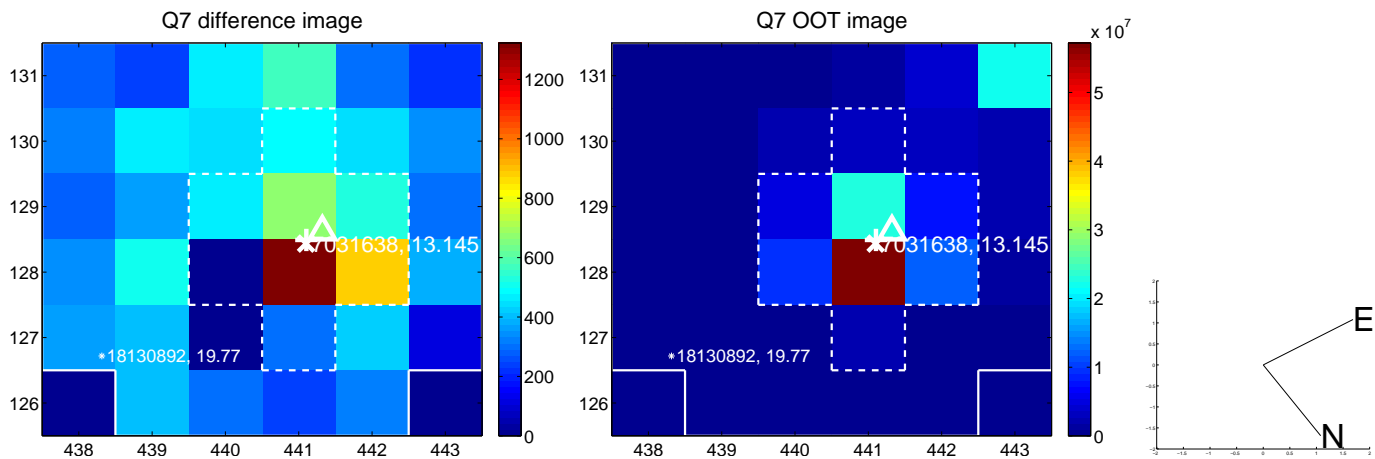
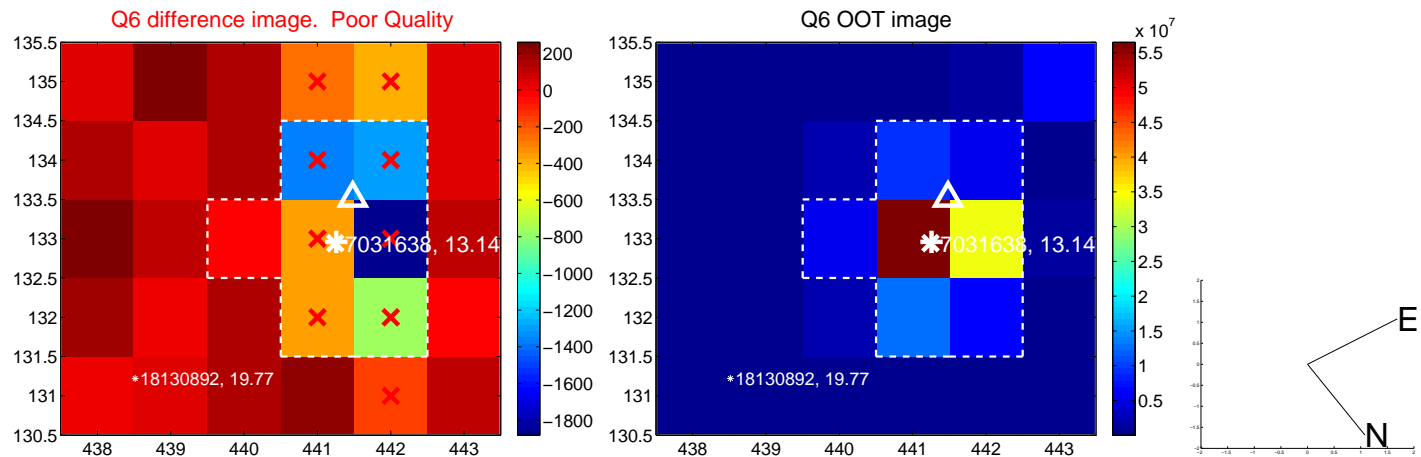
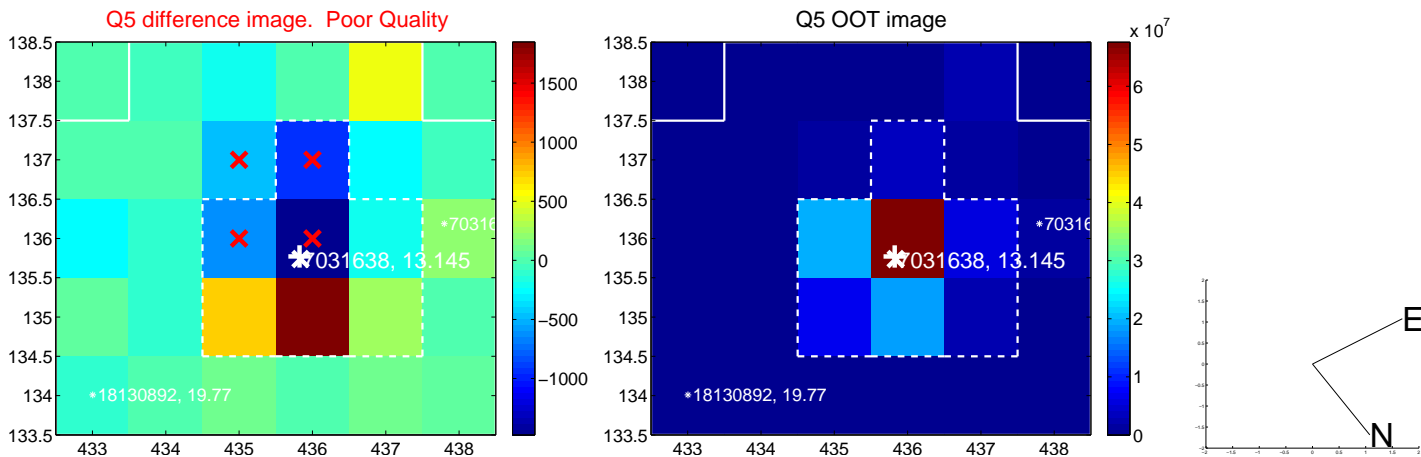


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

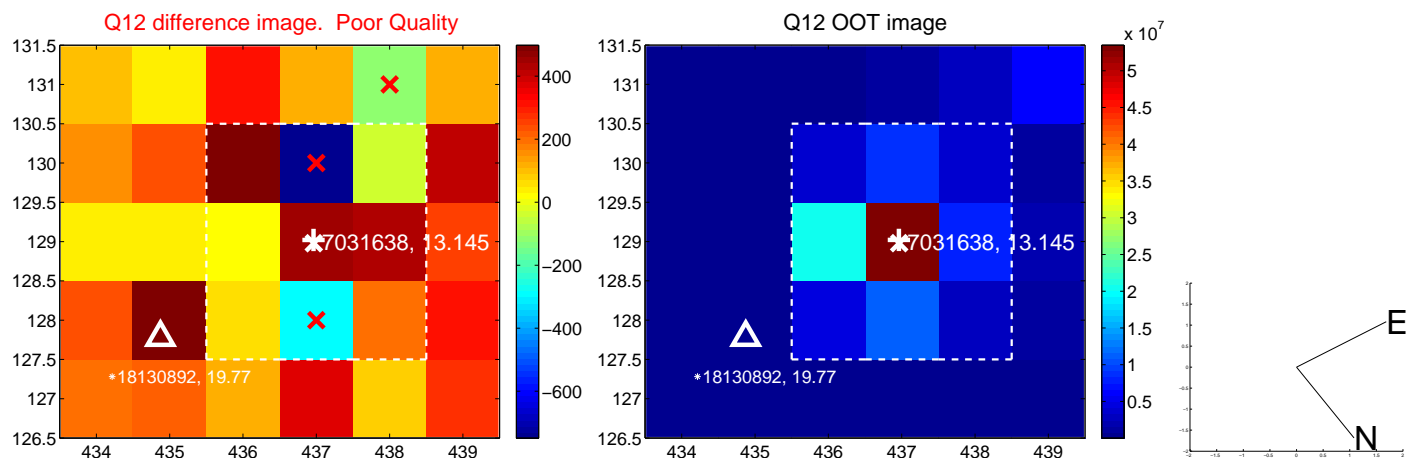
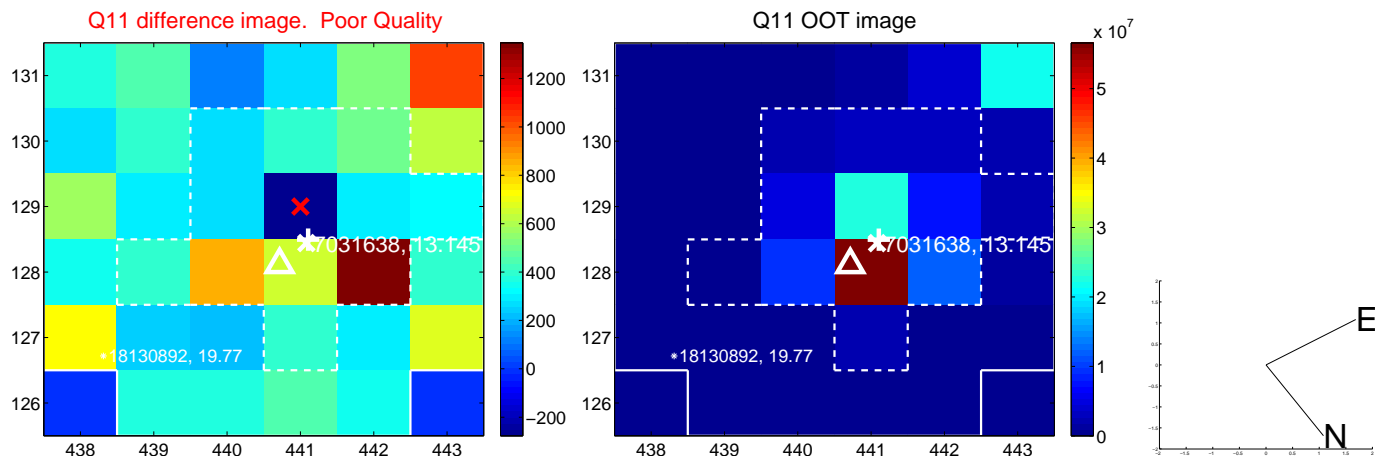
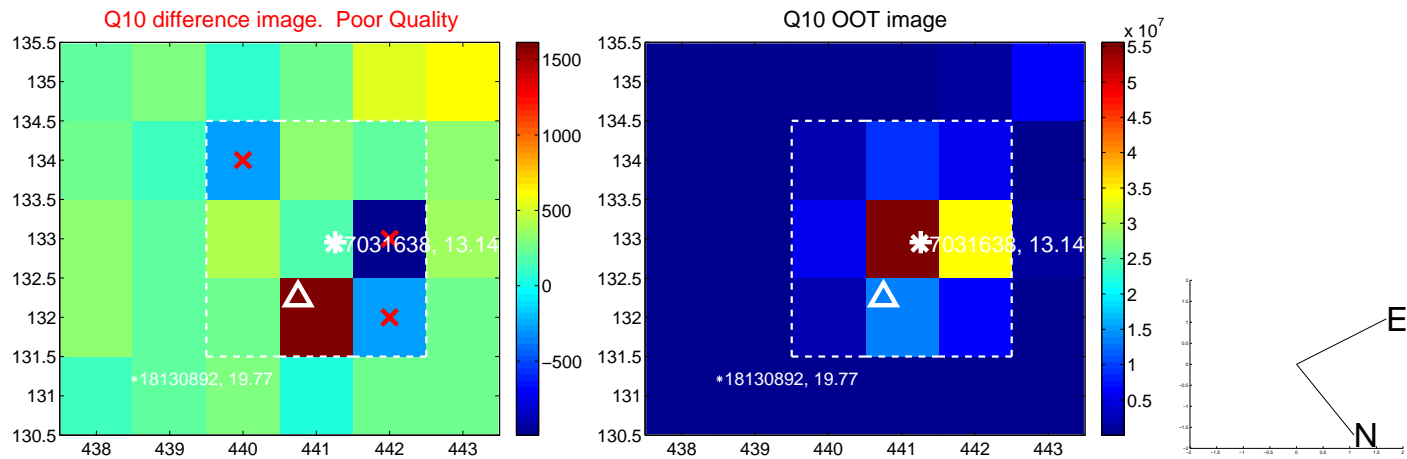
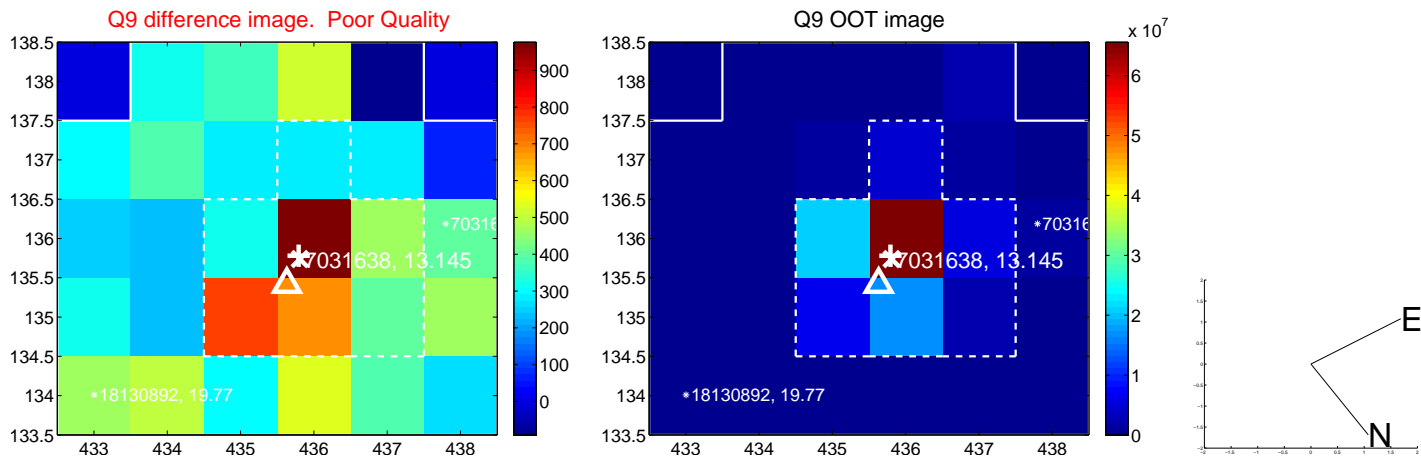
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



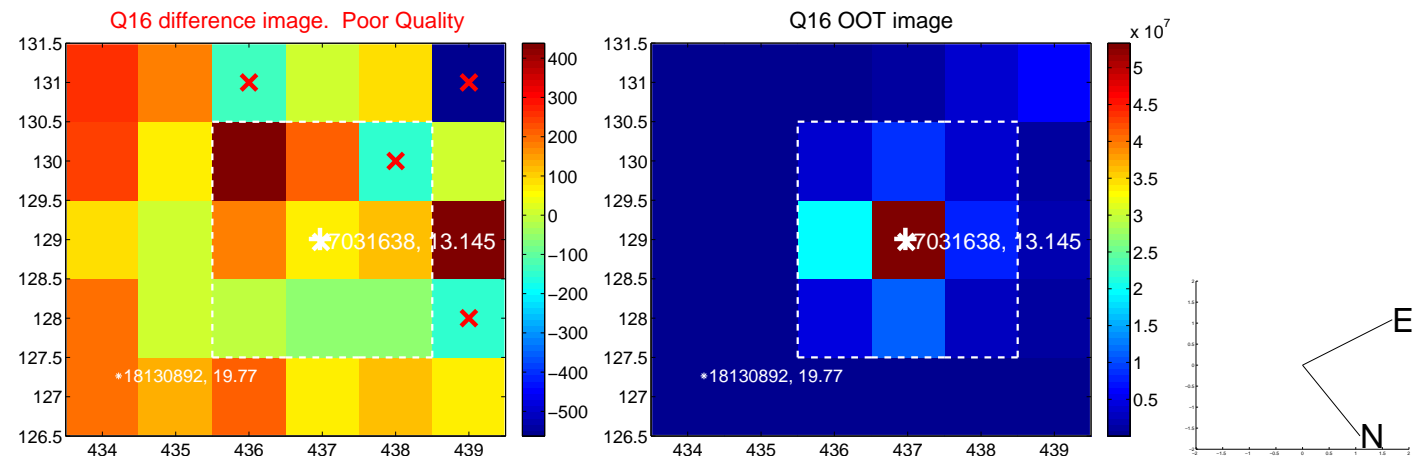
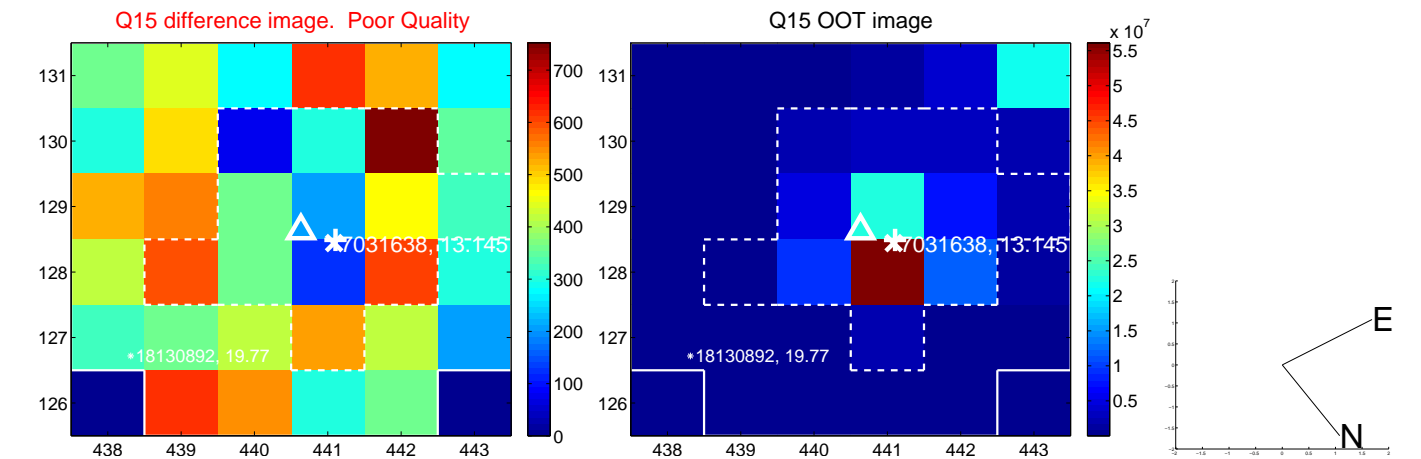
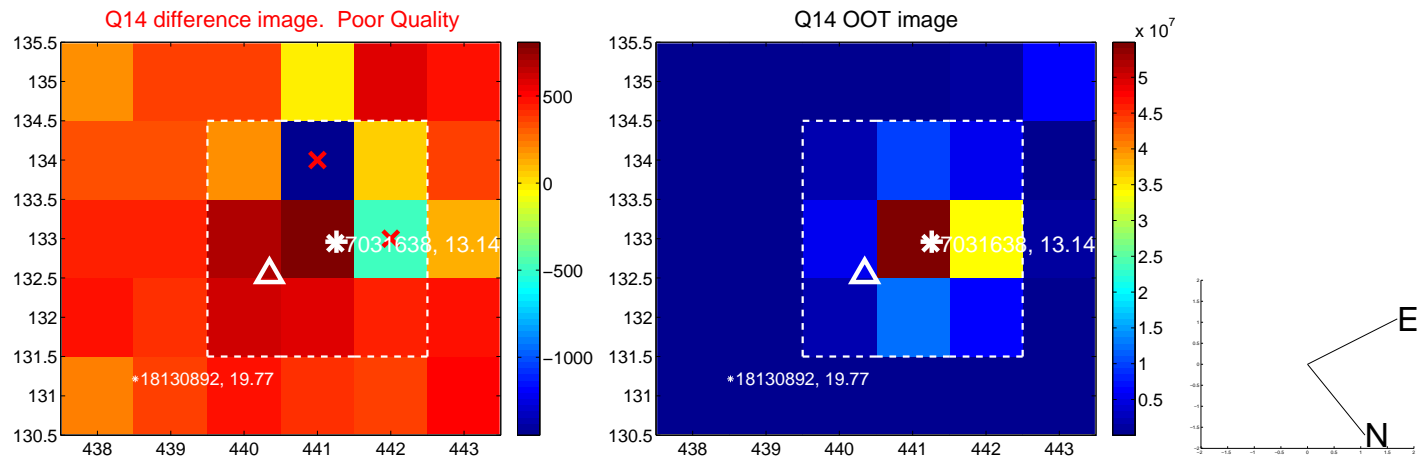
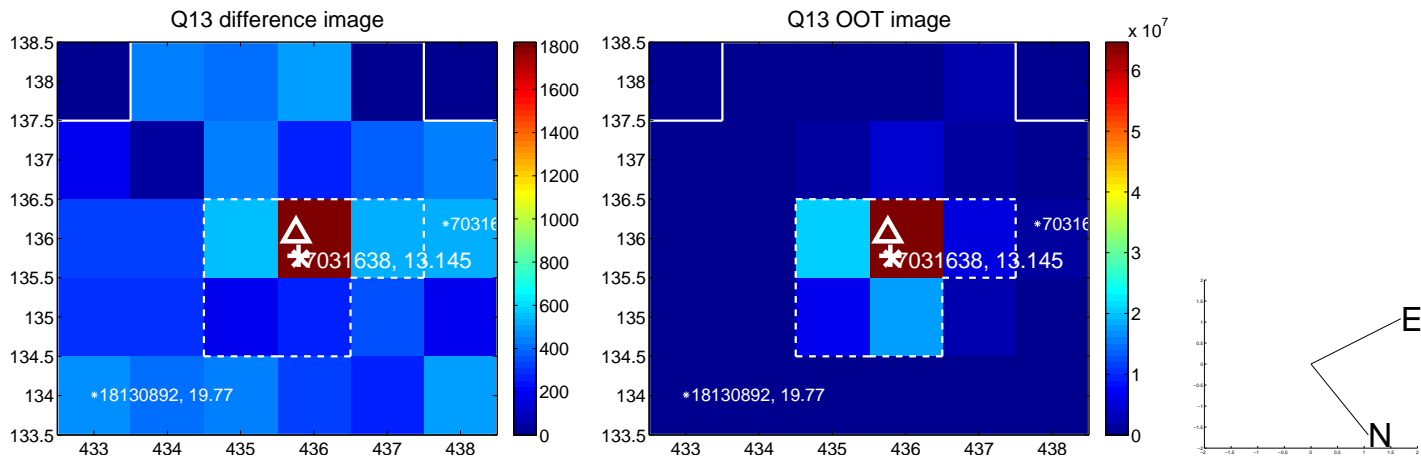
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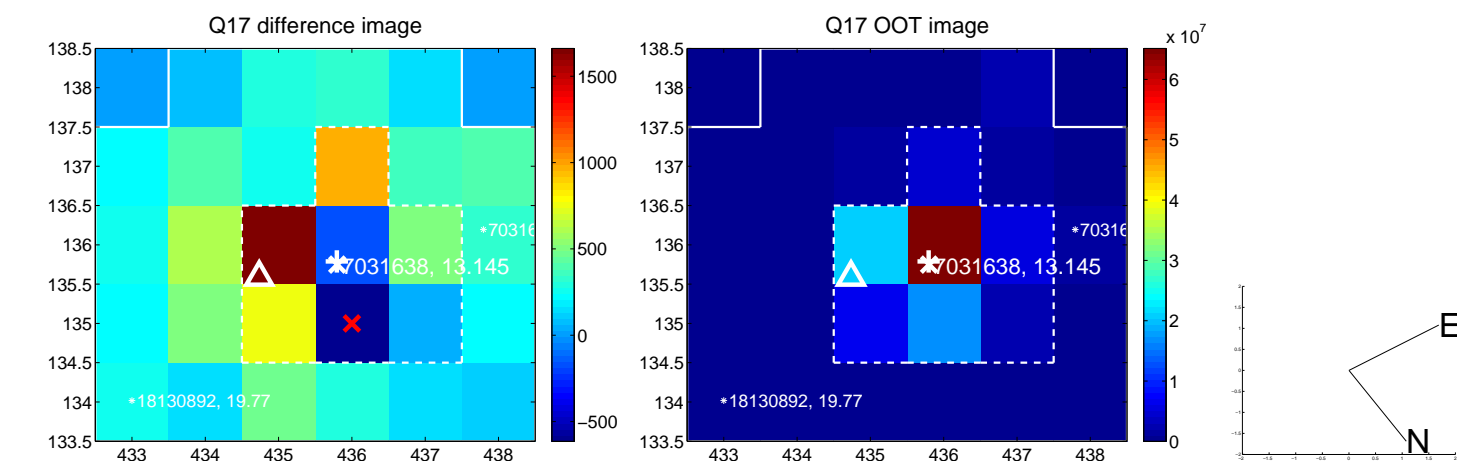
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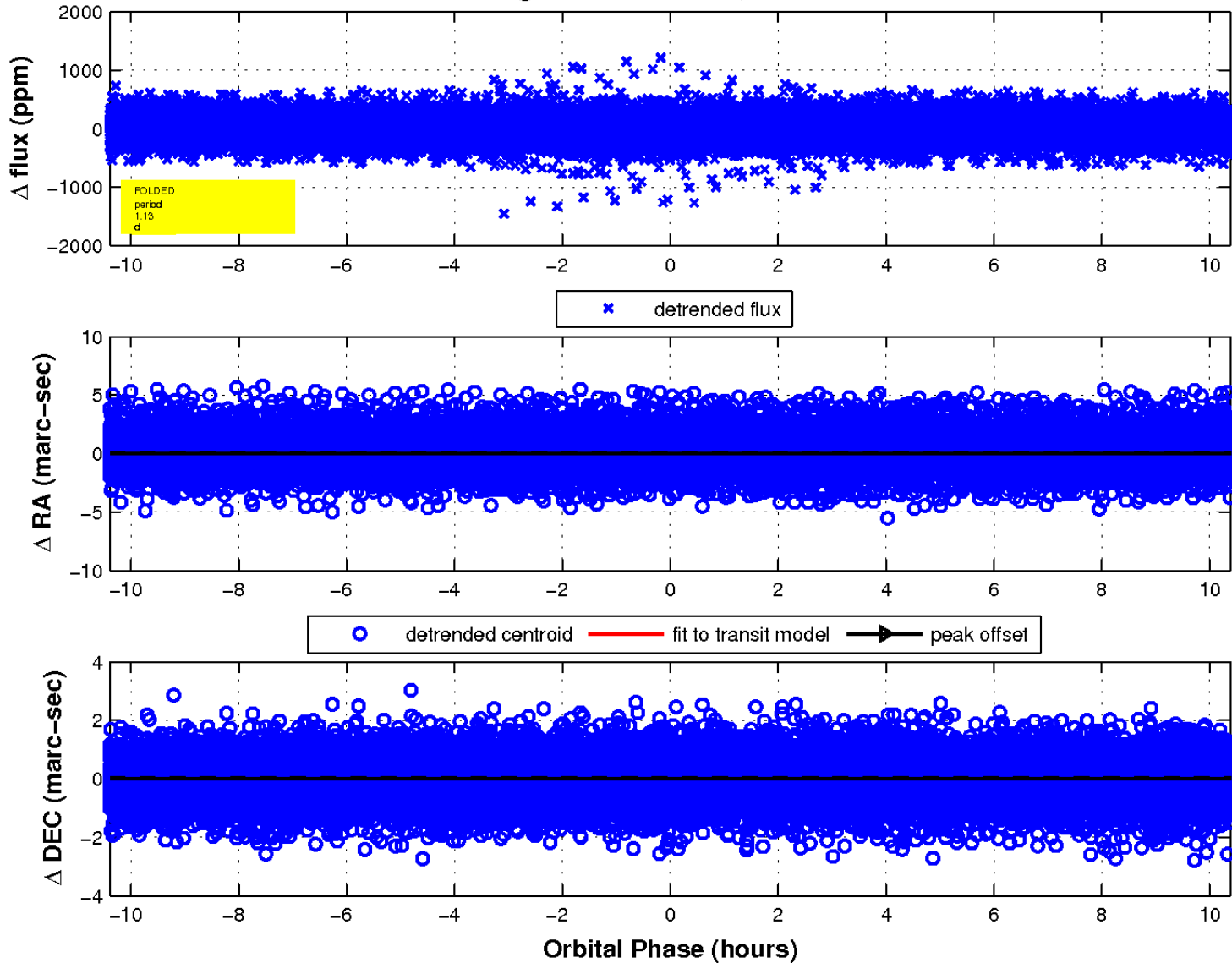
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

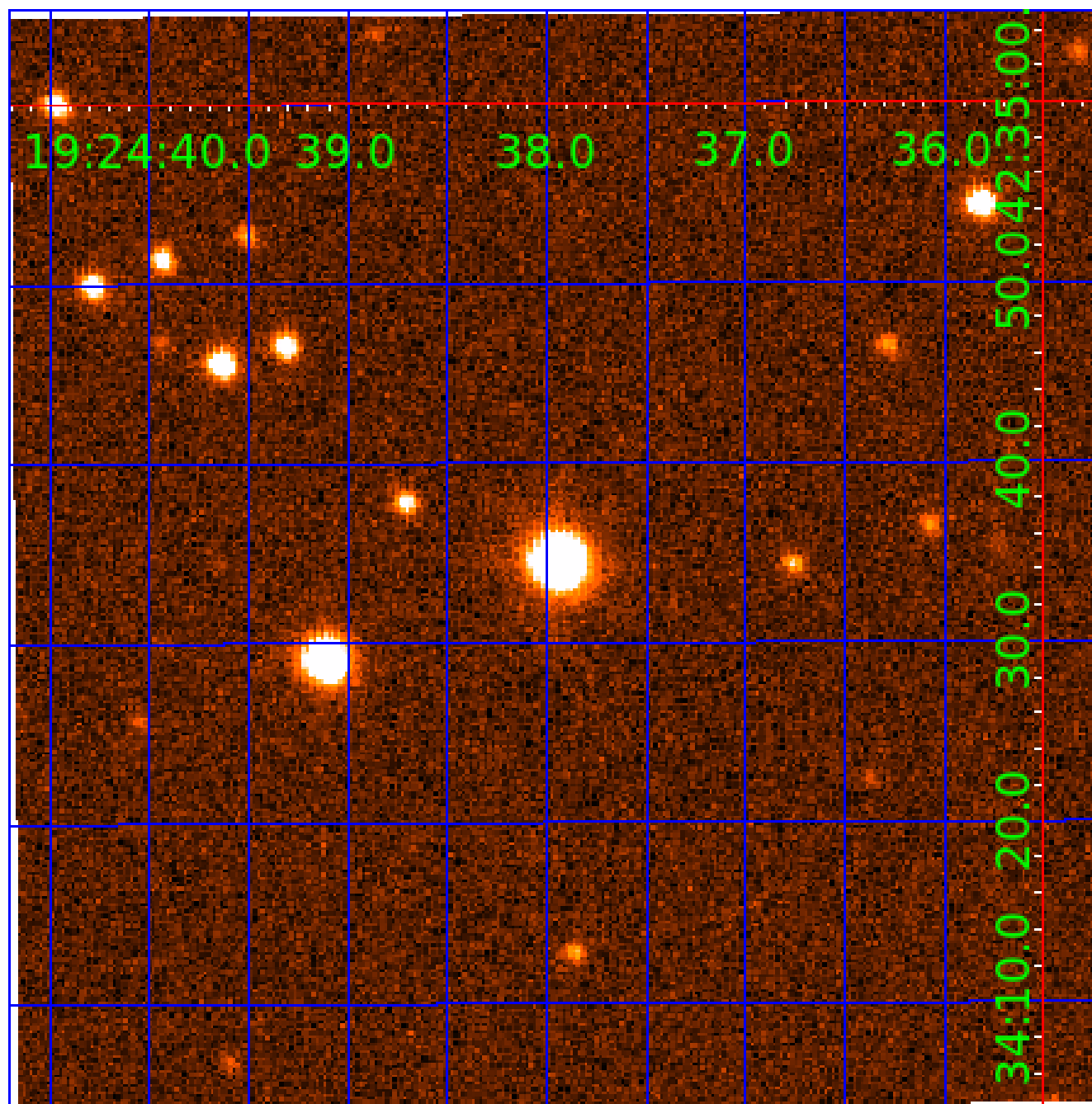


fluxWeightedCentroids, Planet 1 of 3



UKIRT Image

Declination



KIC 007031638

Q1-17 DR25 TCE Parameters

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007031638-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

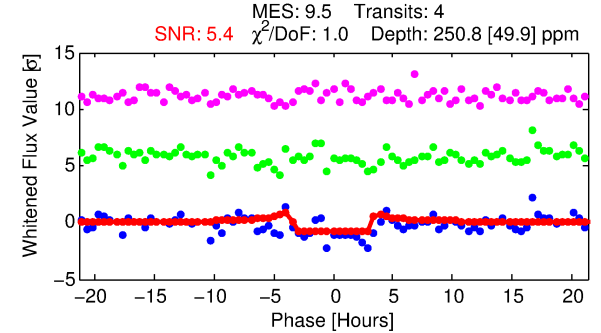
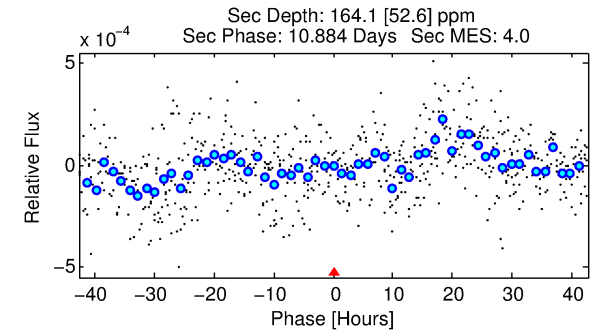
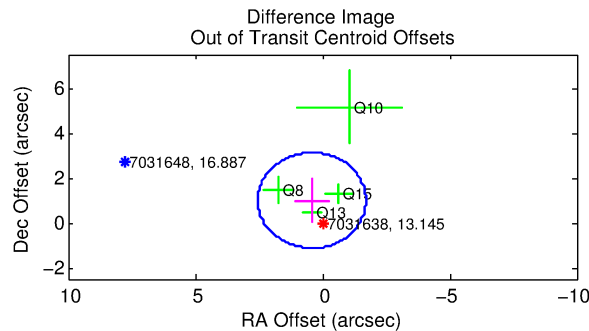
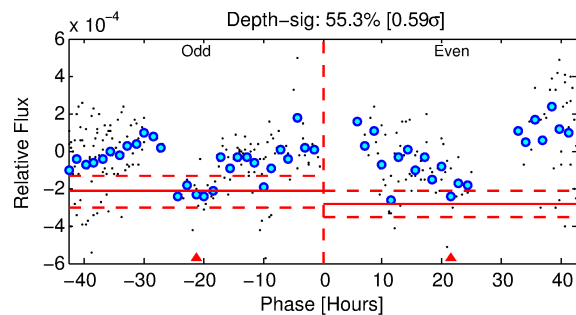
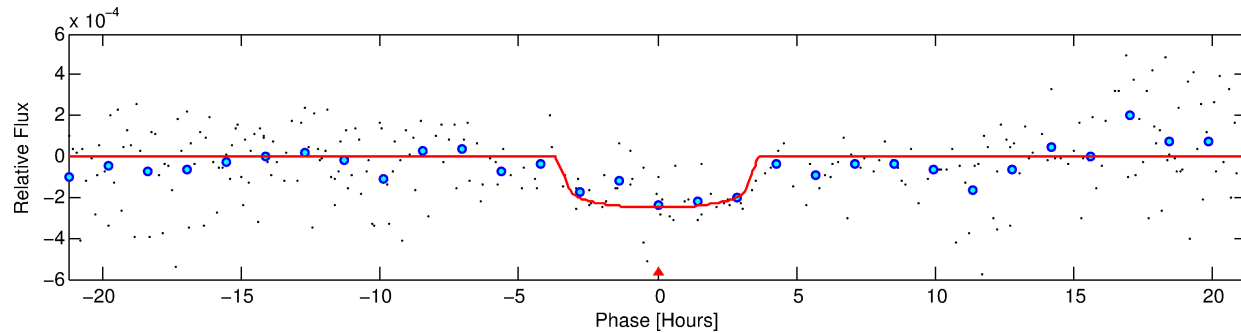
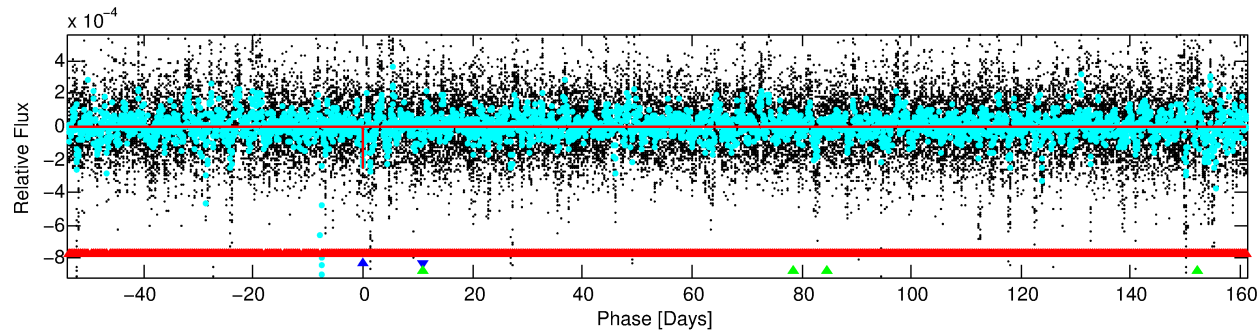
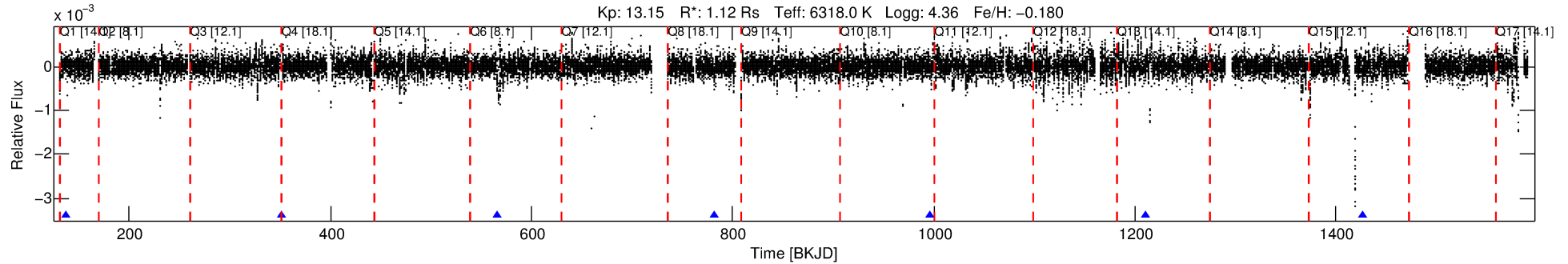
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007031638-02

No Significant Match Found

DV One-Page Summary

KIC: 7031638 Candidate: 2 of 3 Period: 214.862 d



DV Fit Results:

Period = 214.86165 [0.00537] d
Epoch = 136.9748 [0.0223] BKJD
Rp/R* = 0.0158 [0.0127]
a/R* = 154.61 [658.59]
b = 0.77 [2.33]
Seff = 3.52 [1.07]
Teq = 349 [26] K
Rp = 1.94 [1.61] Re
a = 0.7137 [0.1349] AU
Ag = 12260.35 [20343.20] [0.60 σ]
Teffp = 5683 [2332] K [2.29 σ]

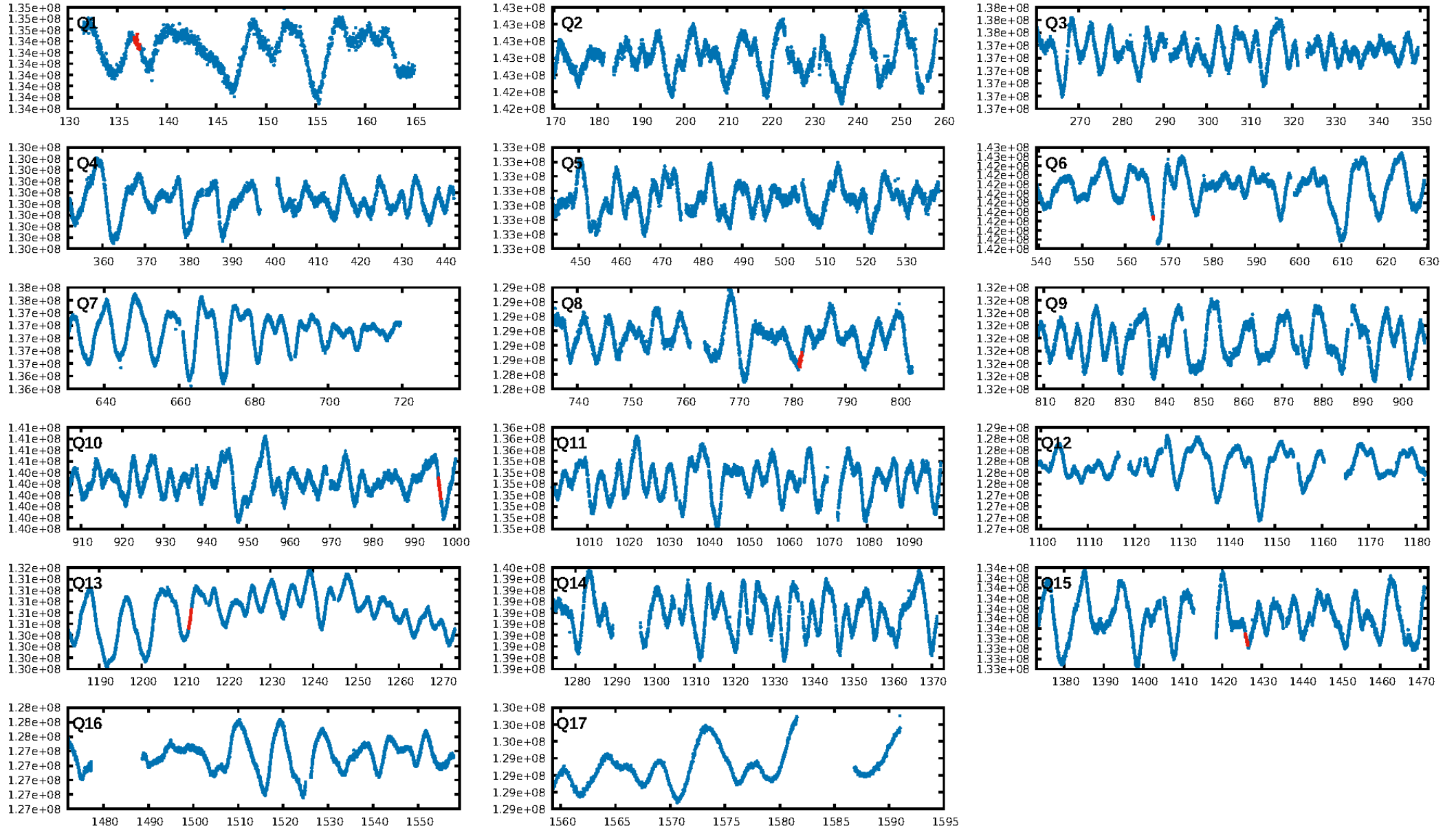
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [649.79 σ]
LongPeriod-sig: 100.0% [372.95 σ]
ModelChiSquare2-sig: 11.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.88e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -133.2
Centroid-sig: 44.5%
Centroid-so: 1.643 arcsec [1.79 σ]
OotOffset-rm: 1.083 arcsec [1.53 σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-rm: 0.977 arcsec [1.66 σ]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/5]

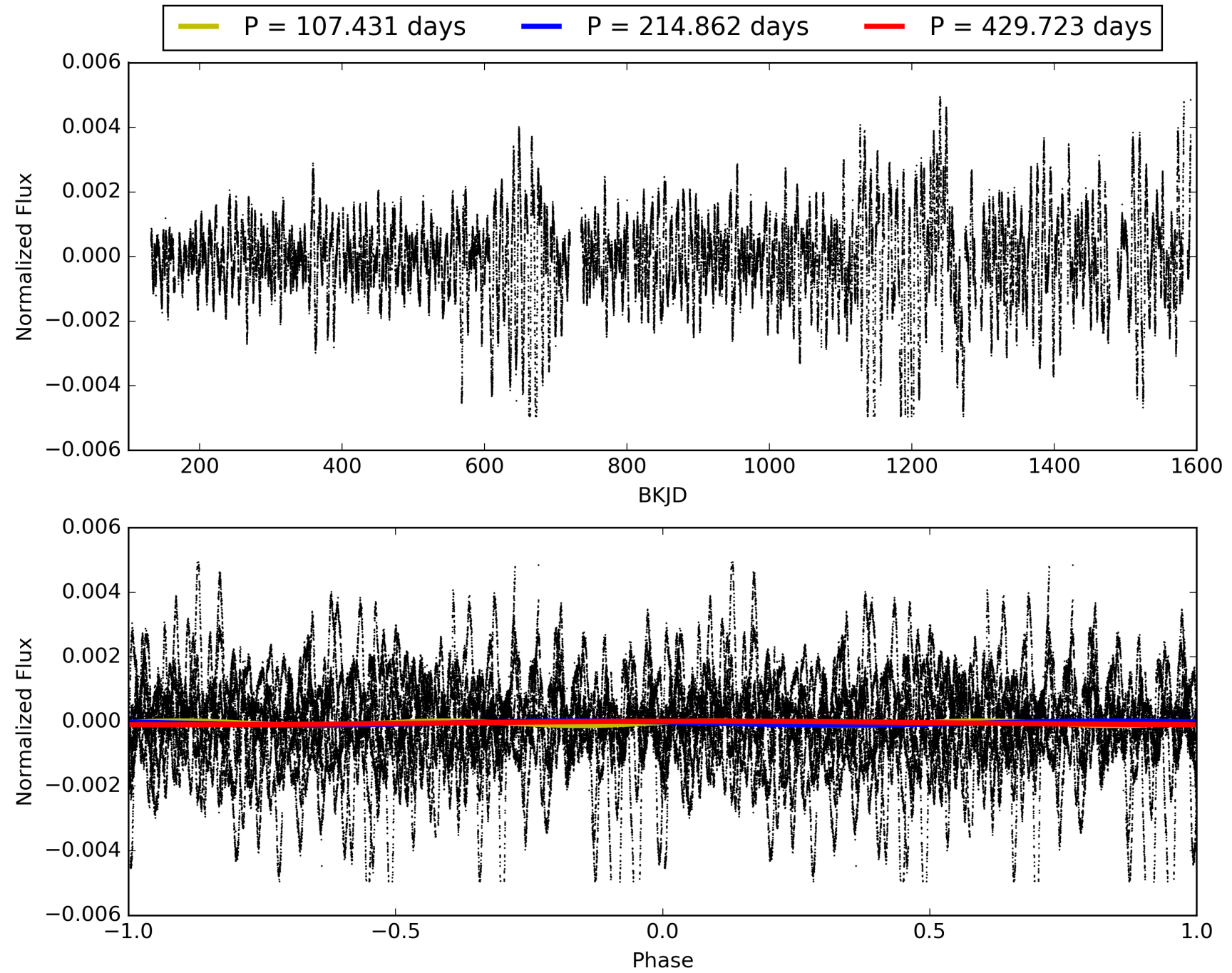
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:01:58 Z

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

TCE 007031638-02, PDC Light Curves

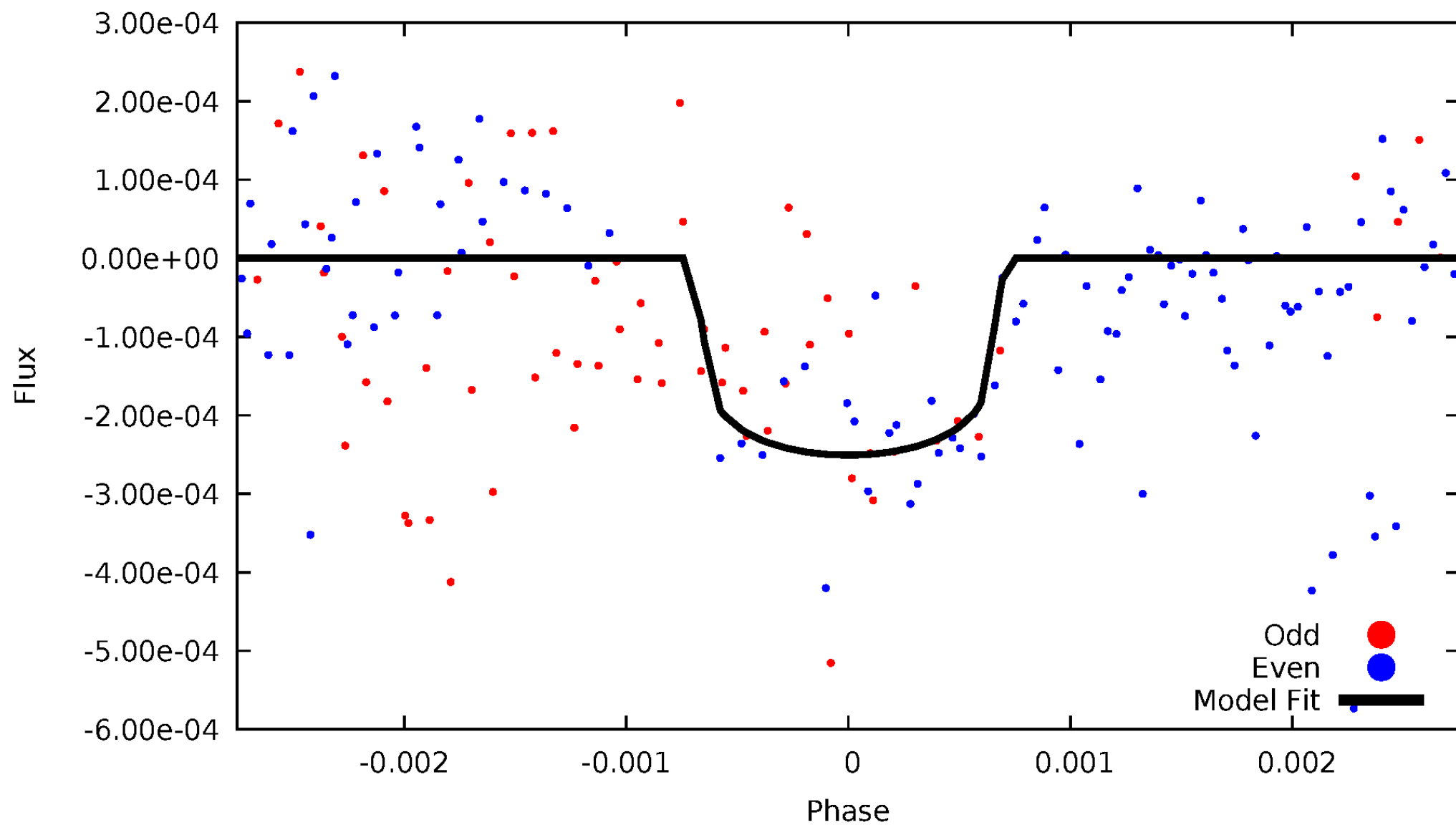


TCE 007031638-02



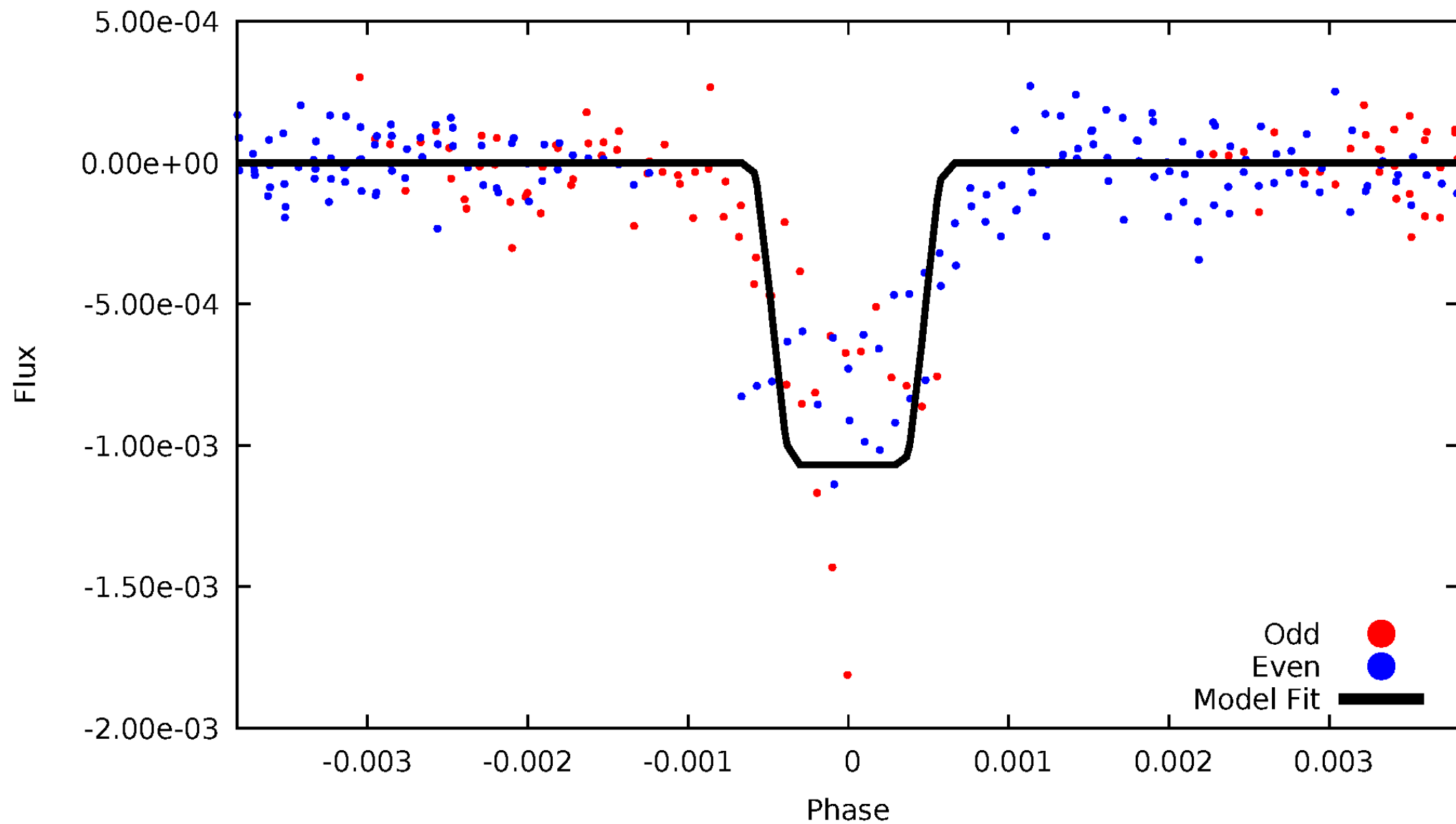
DV Odd/Even

TCE 007031638-02



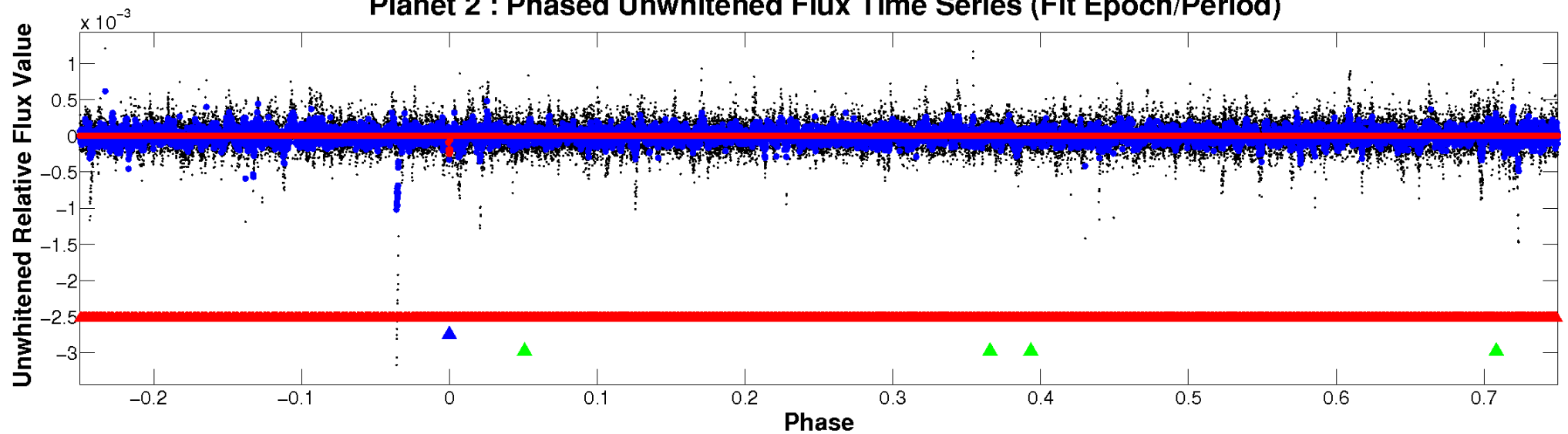
ALT Odd/Even

TCE 007031638-02

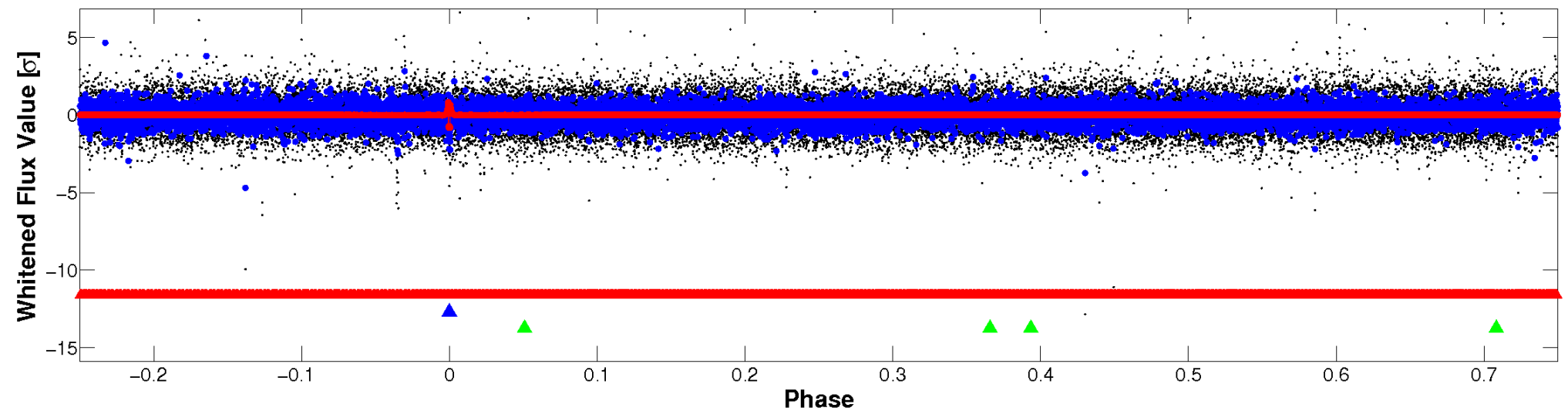


Non-Whitened Vs. Whitened Light Curve

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

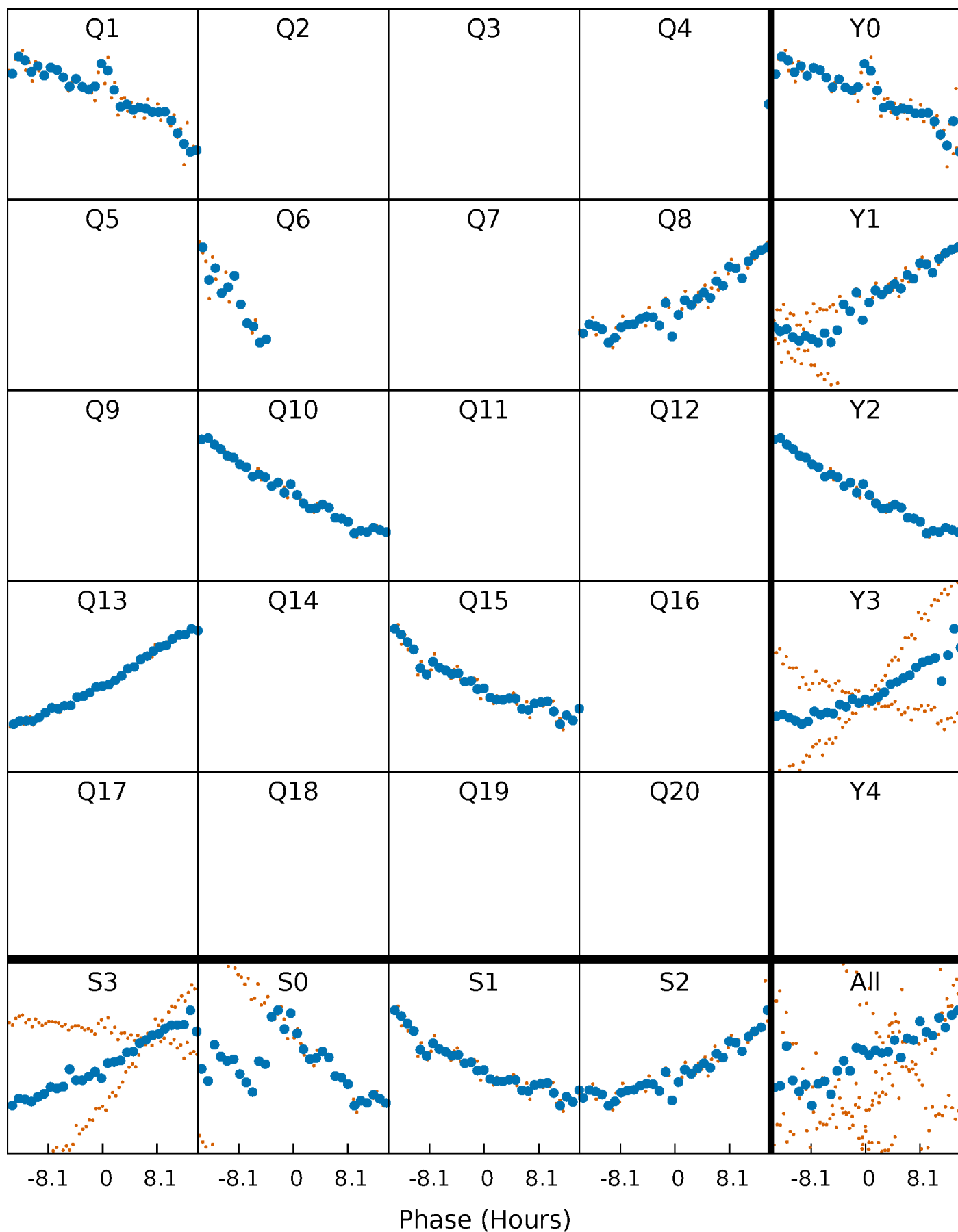


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



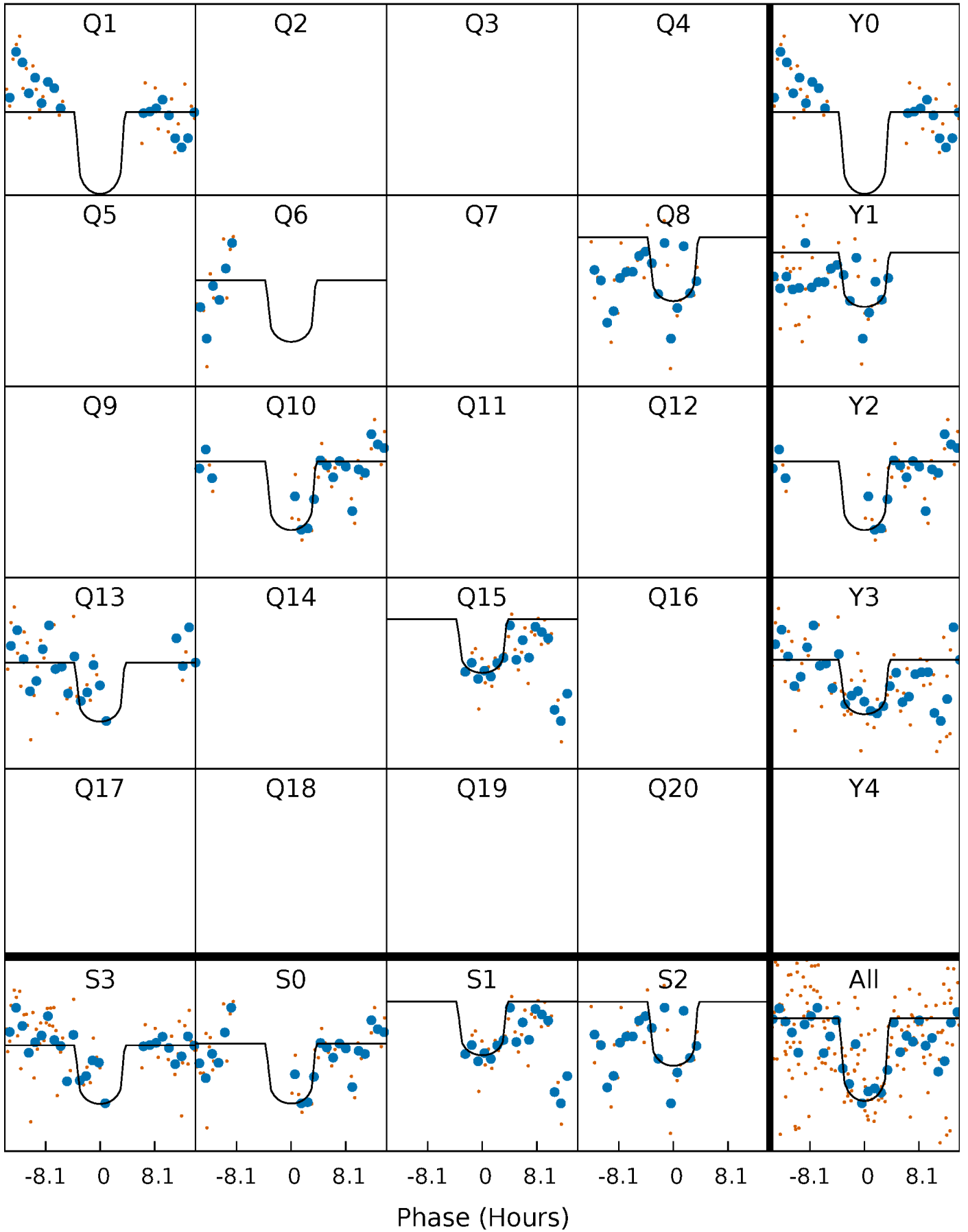
PDC Quarter-Phased Transit Curves

TCE 007031638-02 $P=214.861654$ Days $T_0=136.974799$ (BKJD)



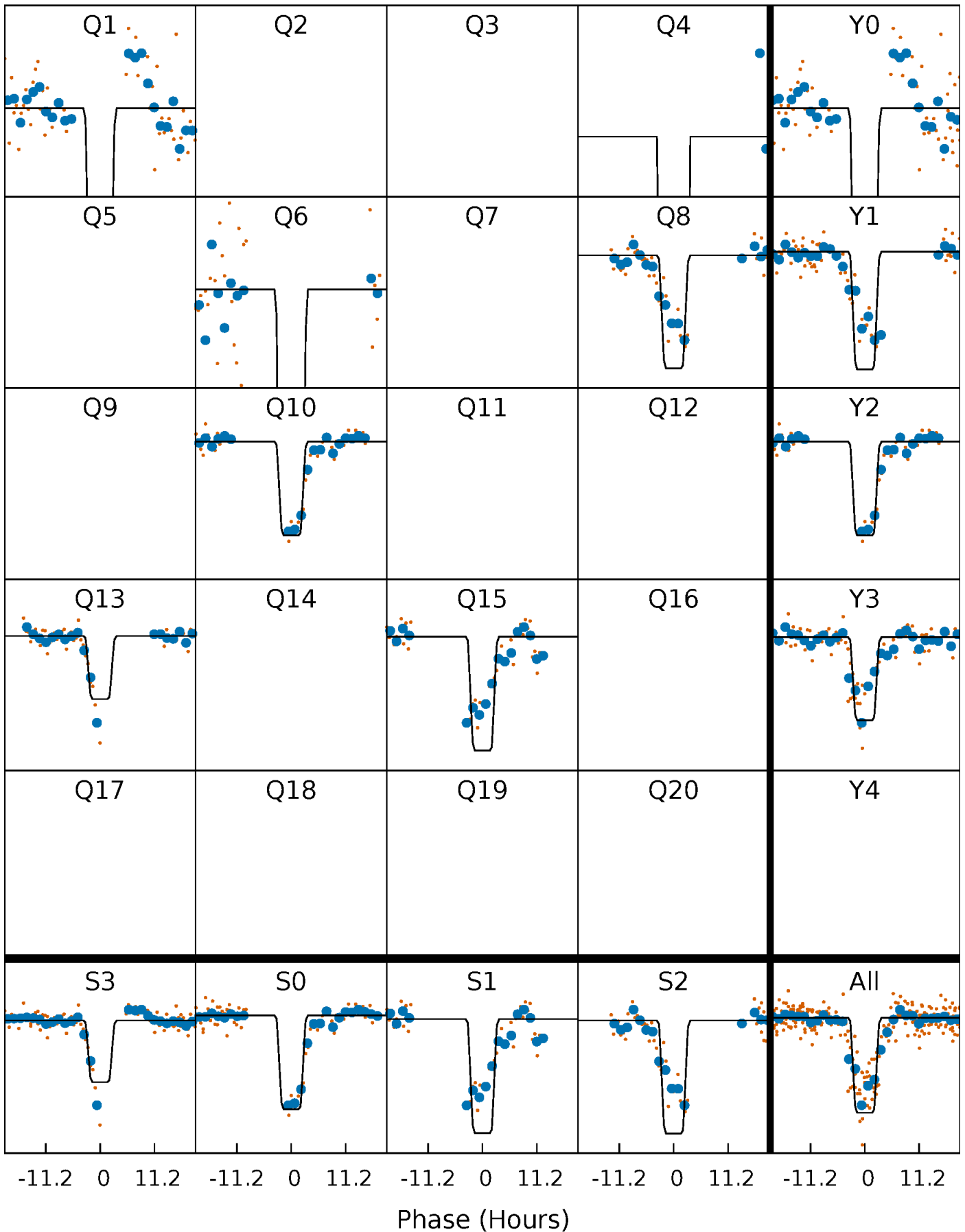
DV Quarter-Phased Transit Curves

TCE 007031638-02 P=214.861654 Days $T_0=136.974799$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

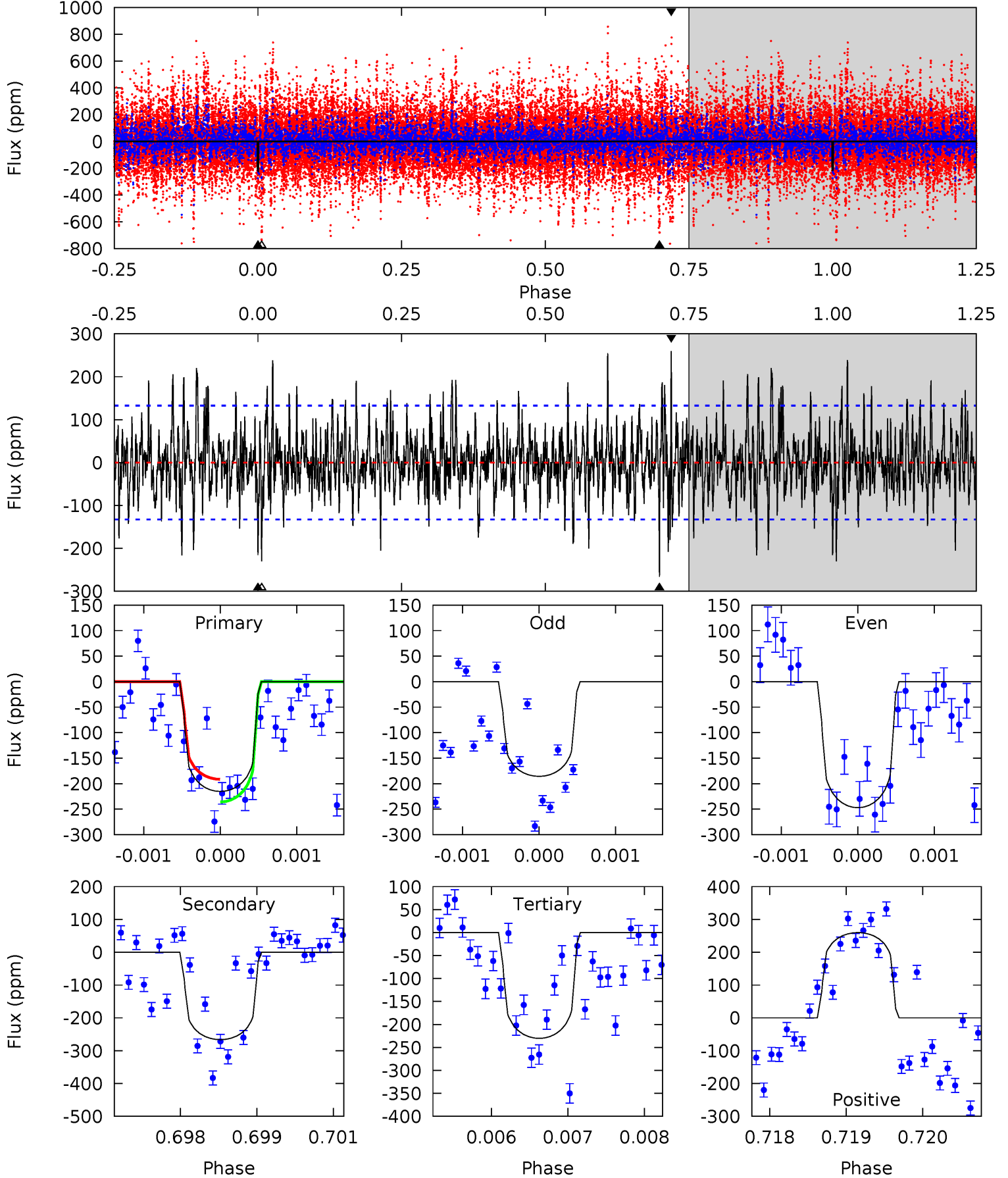
TCE 007031638-02 P=214.858883 Days $T_0=137.010704$ (BKJD)



DV Model-Shift Uniqueness Test

007031638-02, P = 214.861654 Days, E = 136.974799 Days

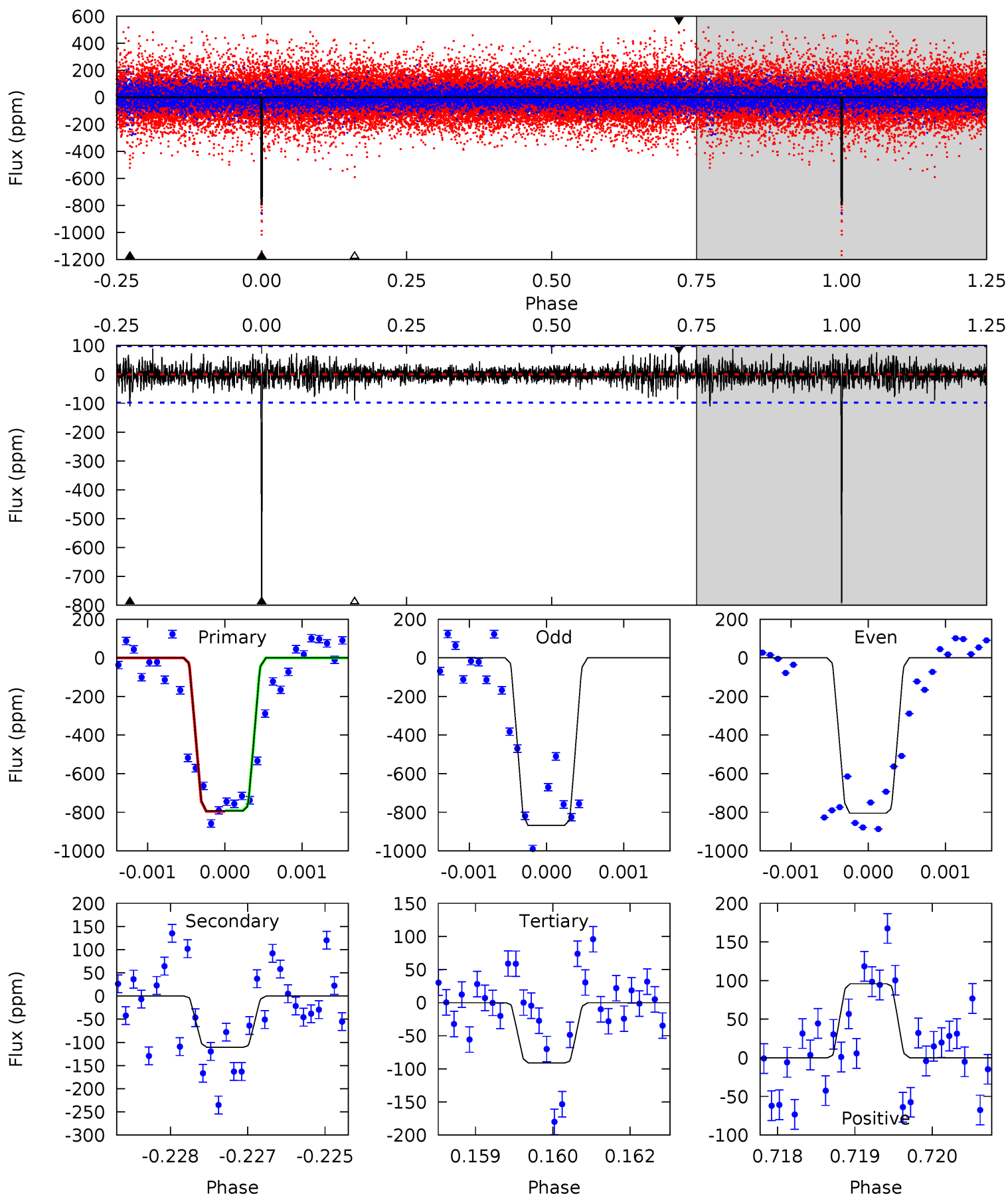
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.76	10.8	9.37	10.6	5.39	3.19	2.53	-0.61	-1.82	1.47	0.26	1.23	0.93	0.49	0.90



Alt Model-Shift Uniqueness Test

007031638-02, P = 214.858883 Days, E = 137.010704 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
43.8	6.10	5.03	5.29	5.41	3.23	1.08	38.8	38.5	1.07	0.81	1.67	1.06	0.11	0.15



Stellar Parameters For KIC 007031638

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6318^{+156}_{-203}	$4.360^{+0.081}_{-0.150}$	$-0.180^{+0.250}_{-0.300}$	$1.121^{+0.252}_{-0.136}$	$1.046^{+0.160}_{-0.107}$	$1.045^{+0.427}_{-0.421}$
	+2%/-3%	+2%/-3%	+139%/-167%	+22%/-12%	+15%/-10%	+41%/-40%
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 007031638-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-266 ± 25	$2.18^{+1.50}_{-1.32}$	490^{+30}_{-21}	6051^{+4530}_{-1183}	15554^{+83111}_{-9968}
Alt.	-110 ± 18	$4.03^{+1.73}_{-1.57}$	490^{+28}_{-23}	3940^{+859}_{-438}	1885^{+3442}_{-960}

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

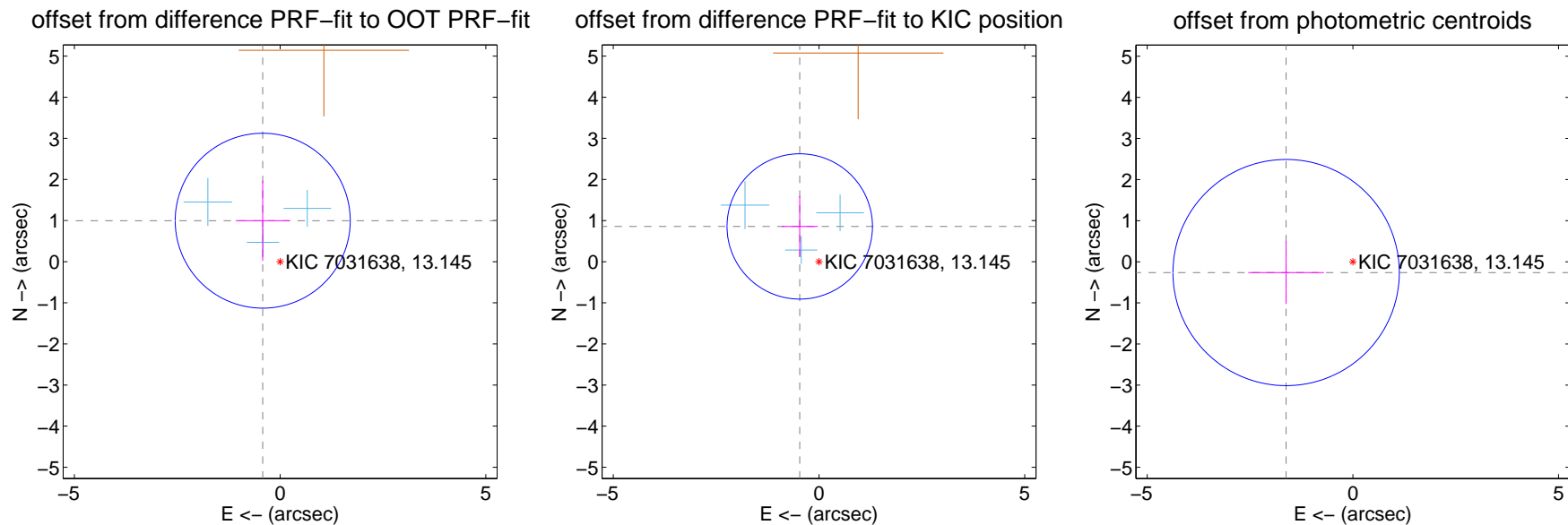
DV Centroid Data

Supplemental centroid analysis for 007031638-02. Kepler magnitude: 13.14. Transit SNR 5.42

There are 3 quarters with good PRF difference image offsets

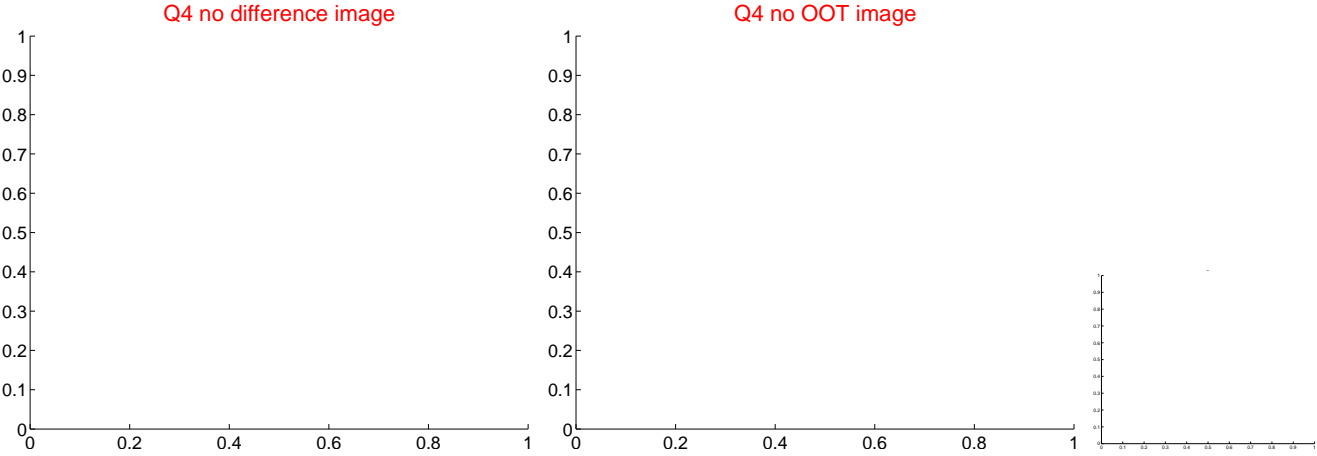
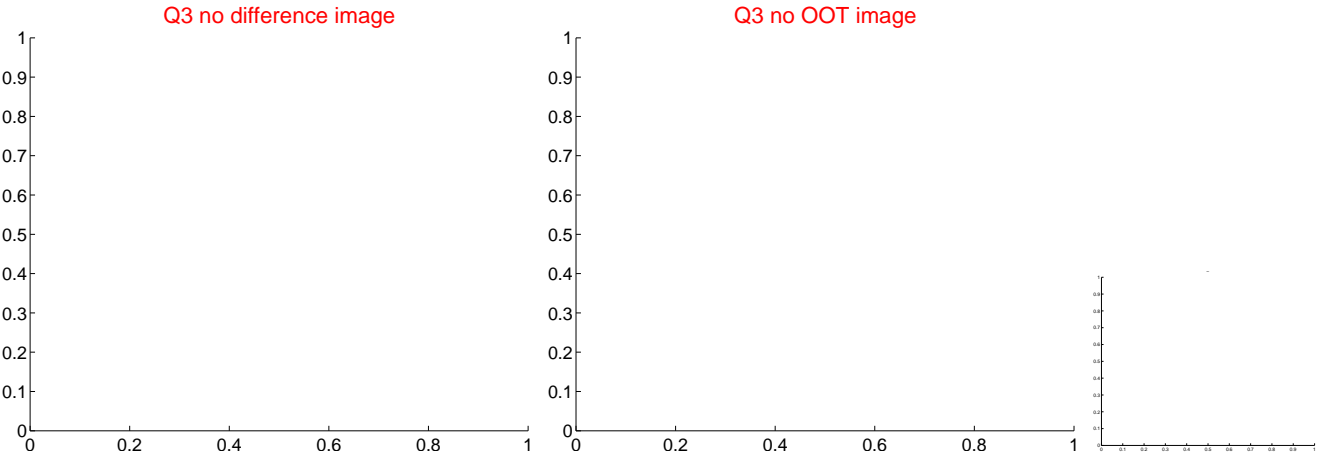
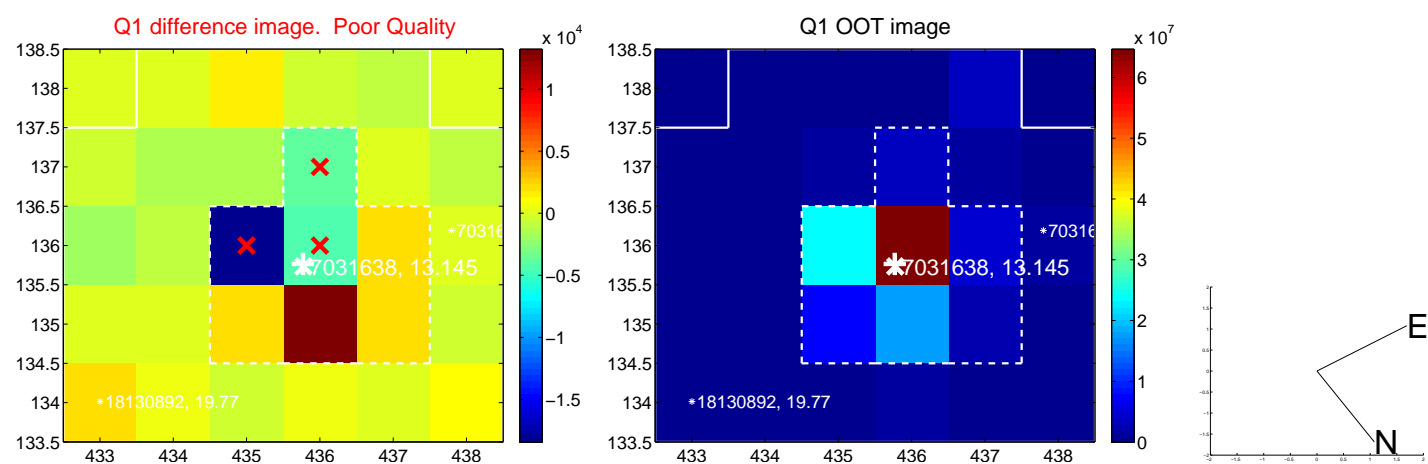
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.083 ± 0.709	1.53	0.422 ± 0.657	0.997 ± 0.975
PRF-fit source offset from KIC position	0.977 ± 0.589	1.66	0.468 ± 0.440	0.858 ± 0.743
photometric centroid source offset	1.64 ± 0.92	1.79	1.62 ± 0.92	-0.26 ± 0.77

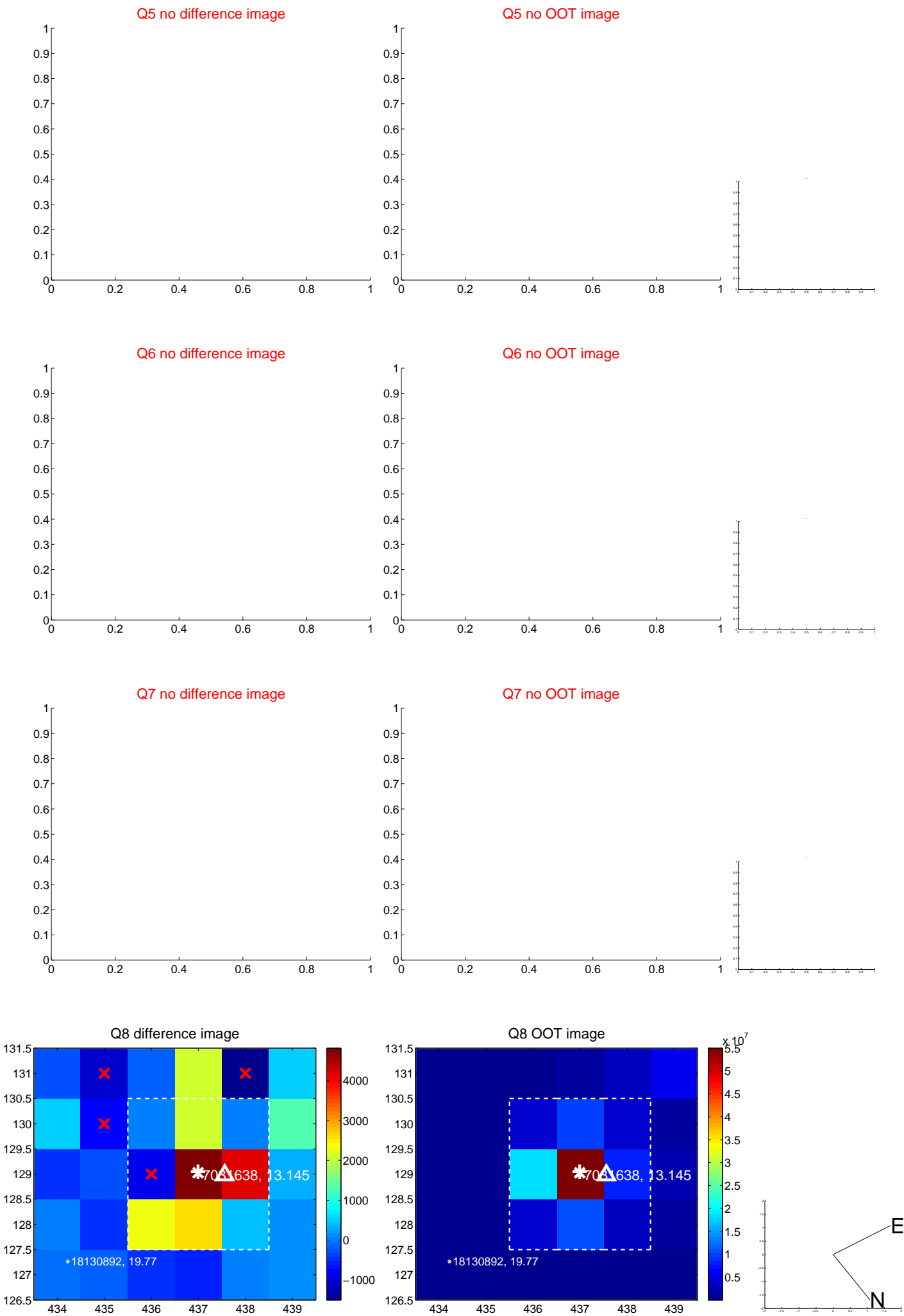


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

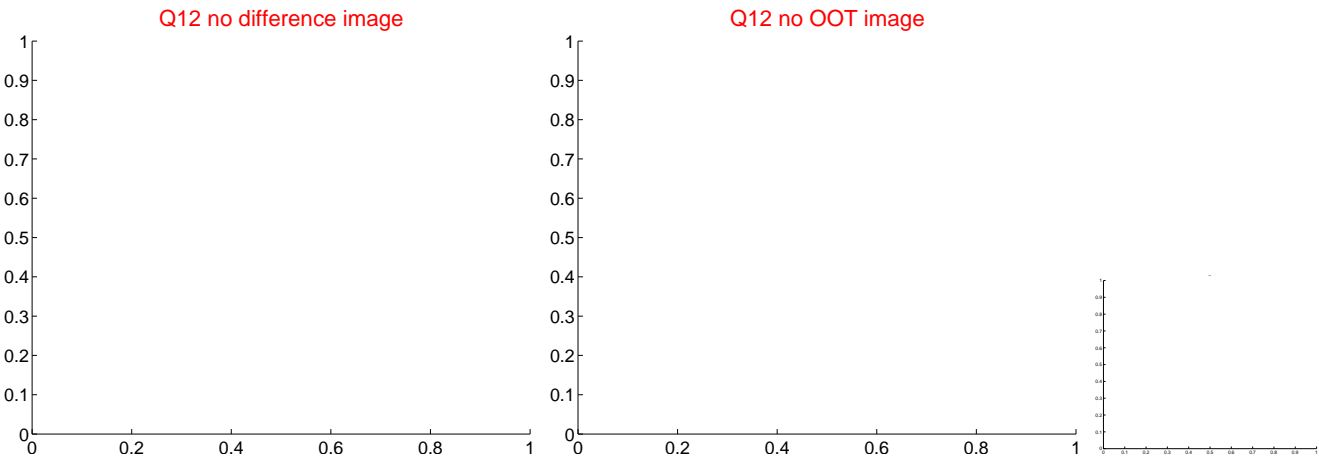
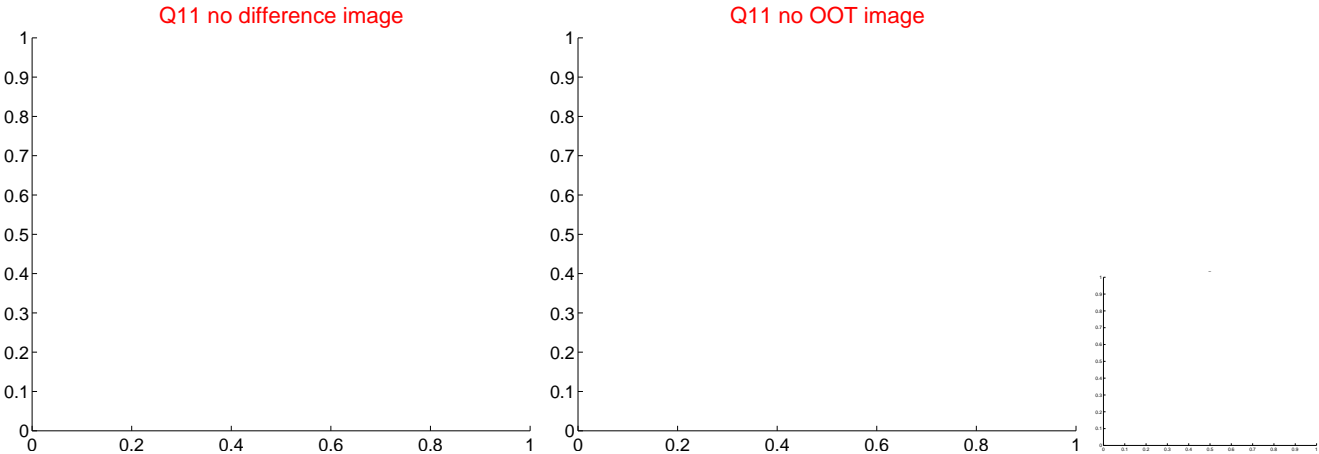
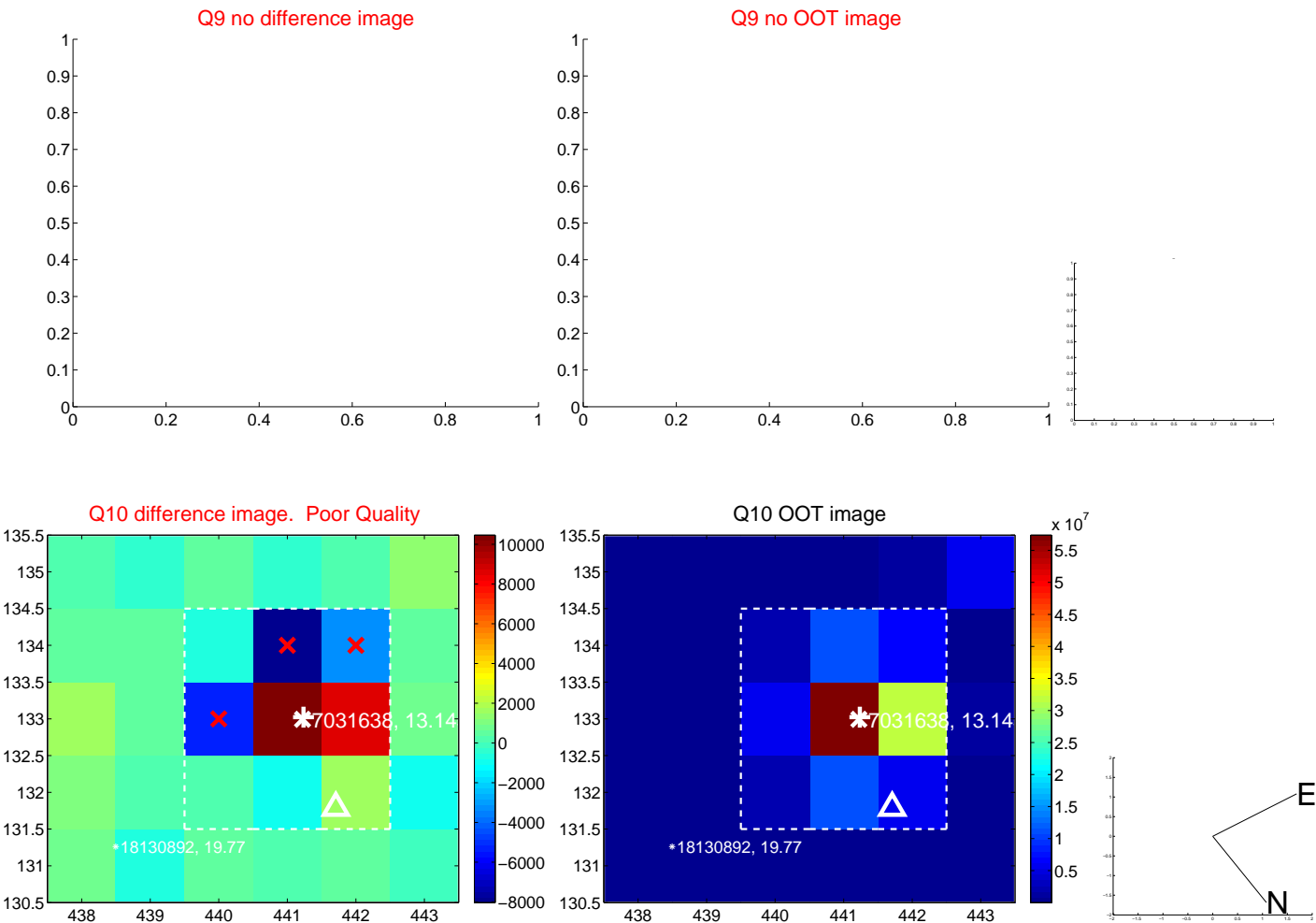
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



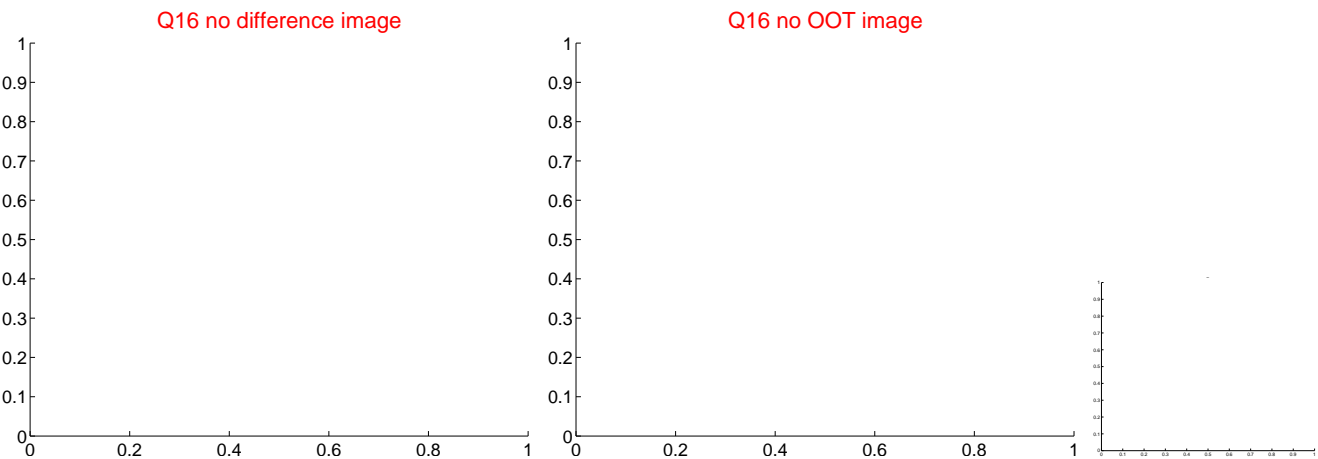
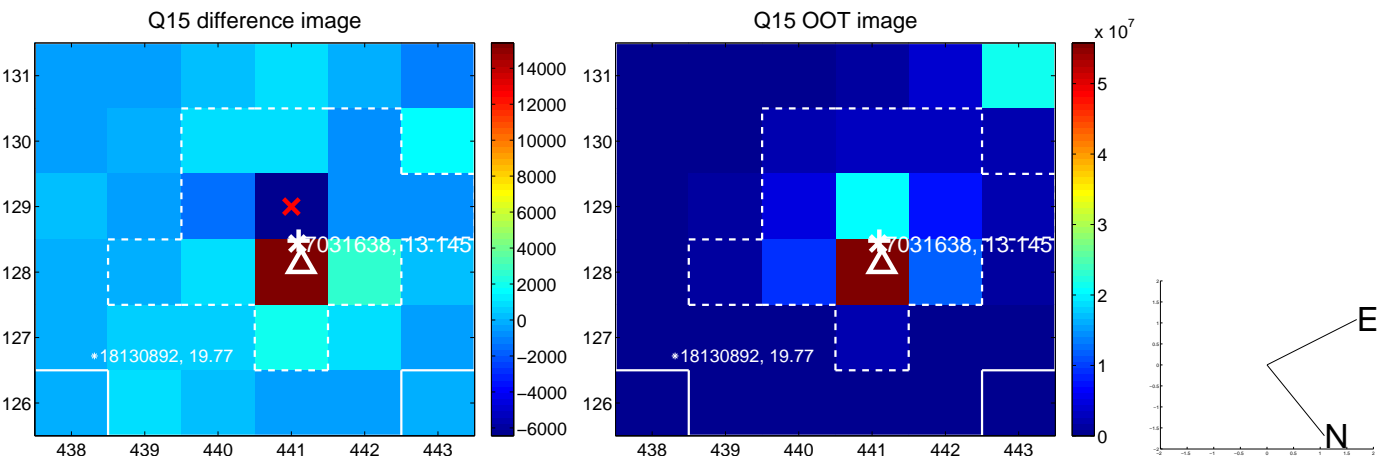
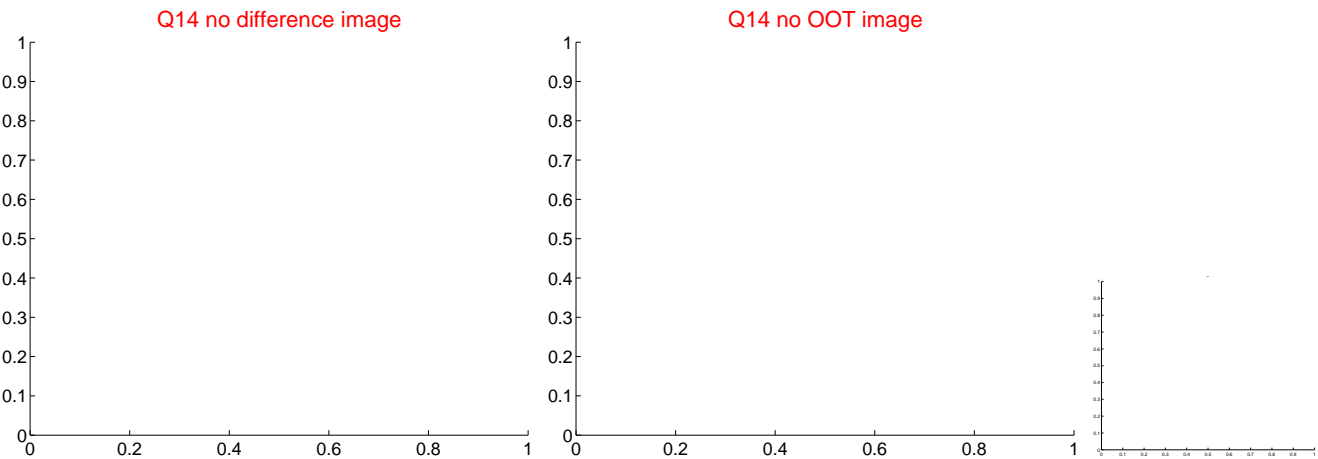
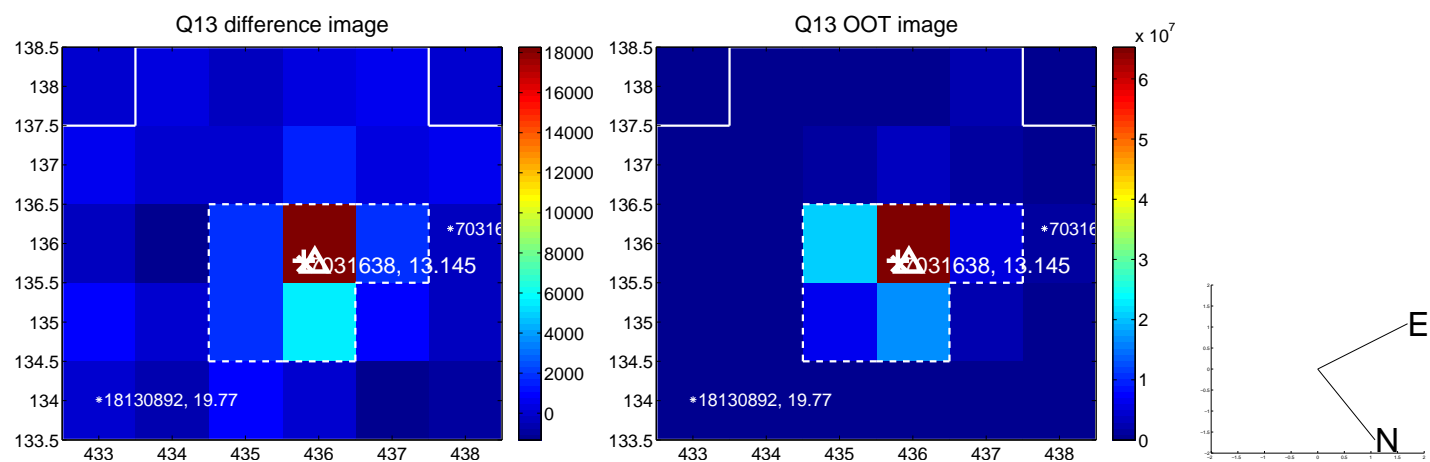
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



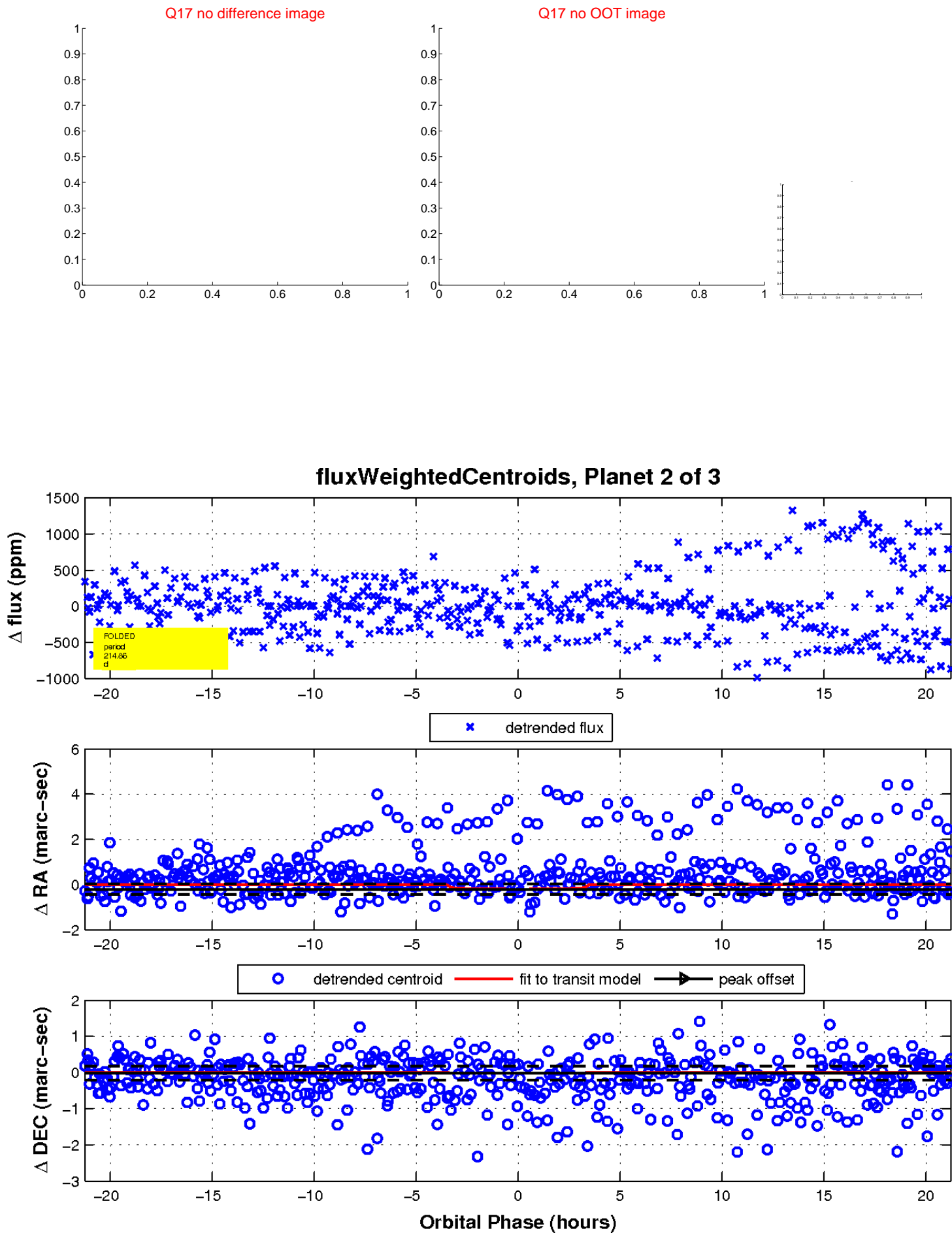
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

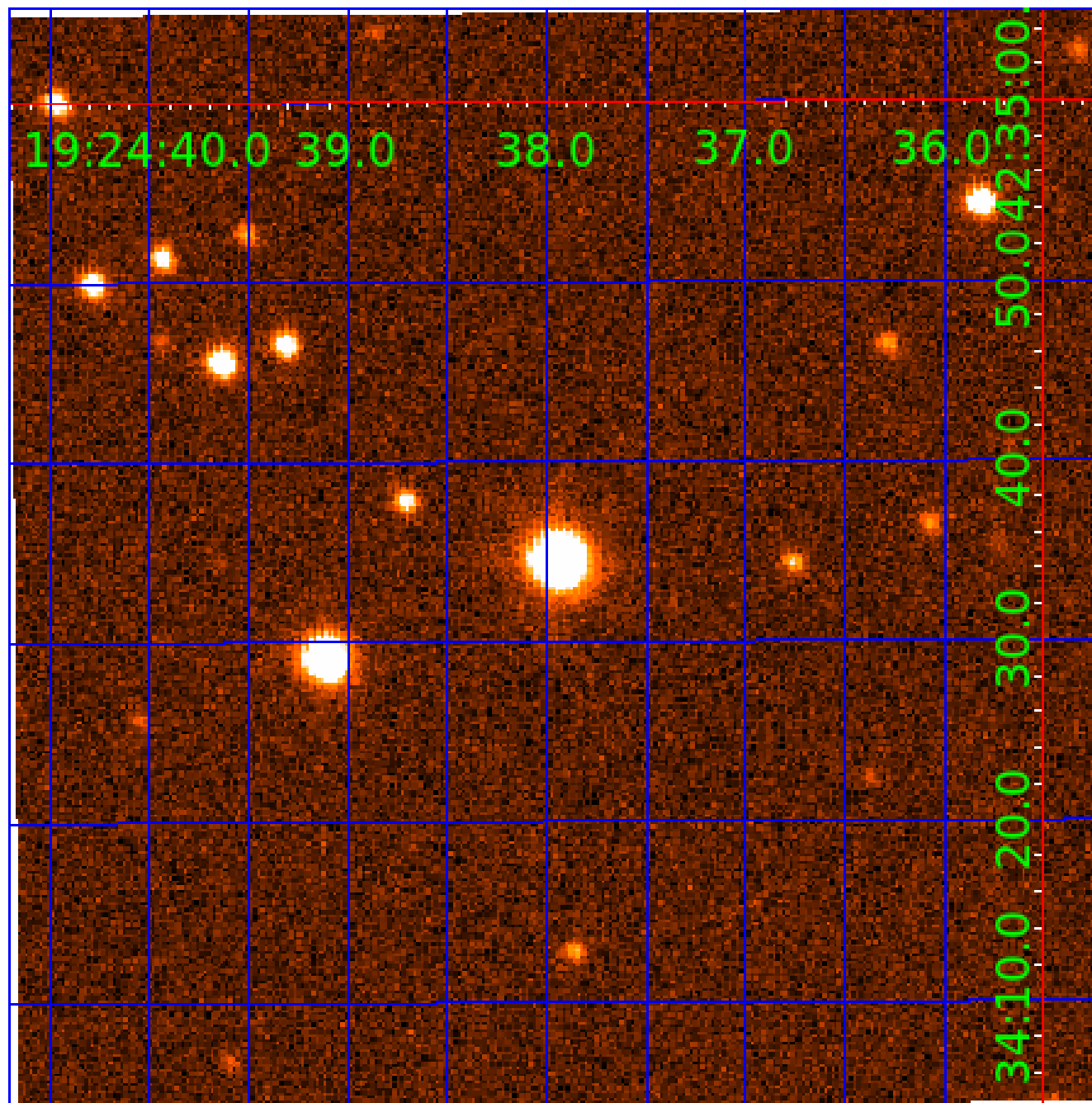


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 007031638

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})
007031638-01	OBS	7805.01	1.133502	132.453455	15.6	3.463	7.3	7.1	1.12	6318	0.52	3834.60
007031638-02	OBS	No	214.861654	136.974799	250.8	7.094	9.5	5.4	1.12	6318	1.94	3.52
007031638-03	OBS	No	356.125119	436.368492	279.6	5.684	8.9	7.0	1.12	6318	2.18	1.79

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
007031638-01	OBS	FP	0.00	0	1	0	1	MOD_SEC_DV—EPHEM_MATCH
007031638-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS
007031638-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—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.

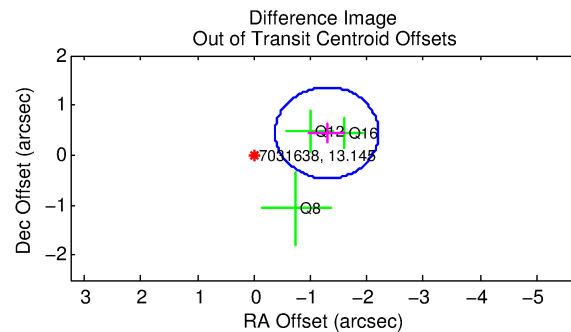
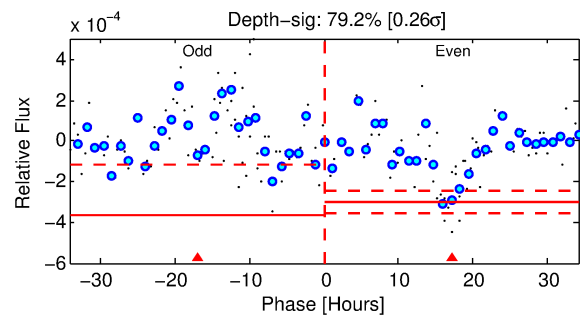
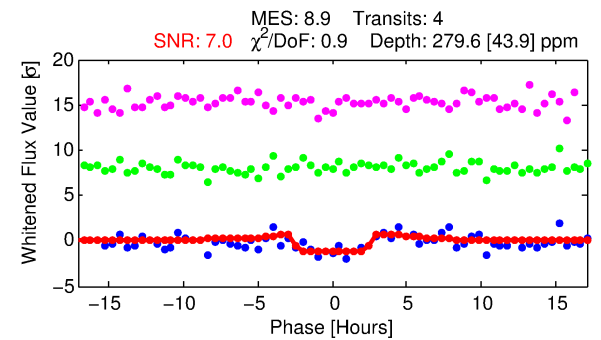
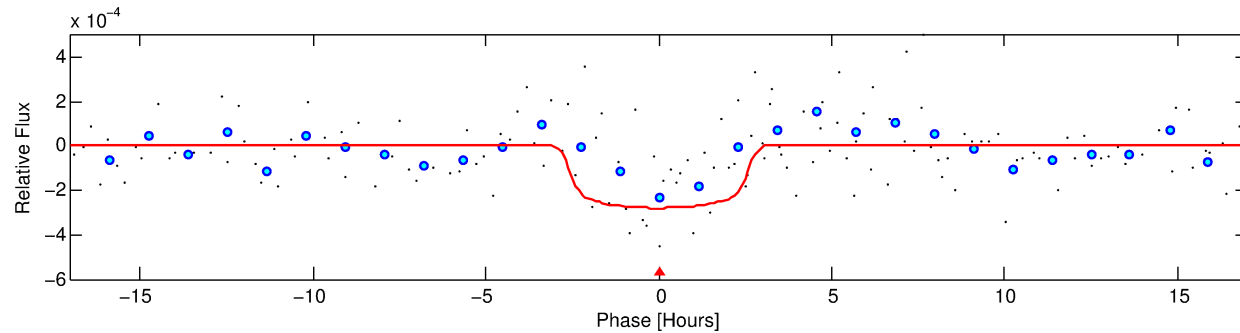
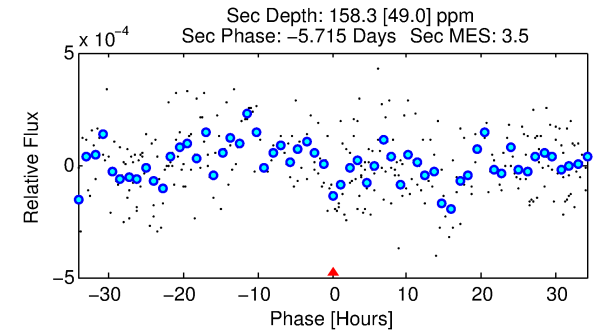
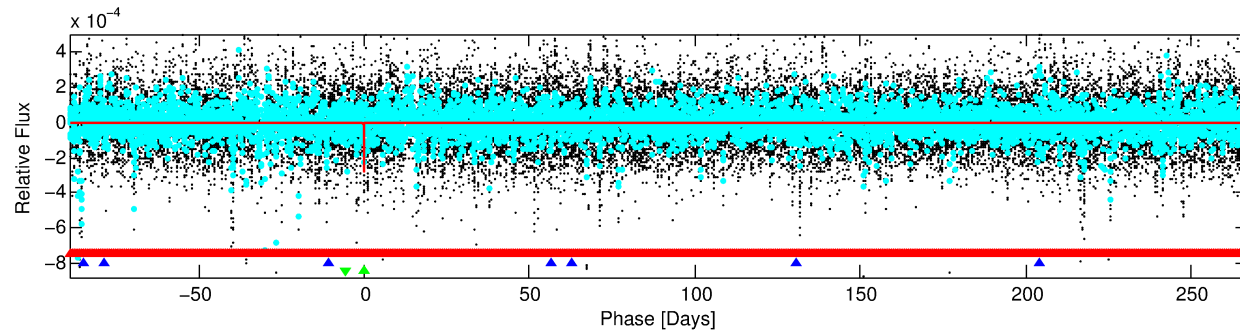
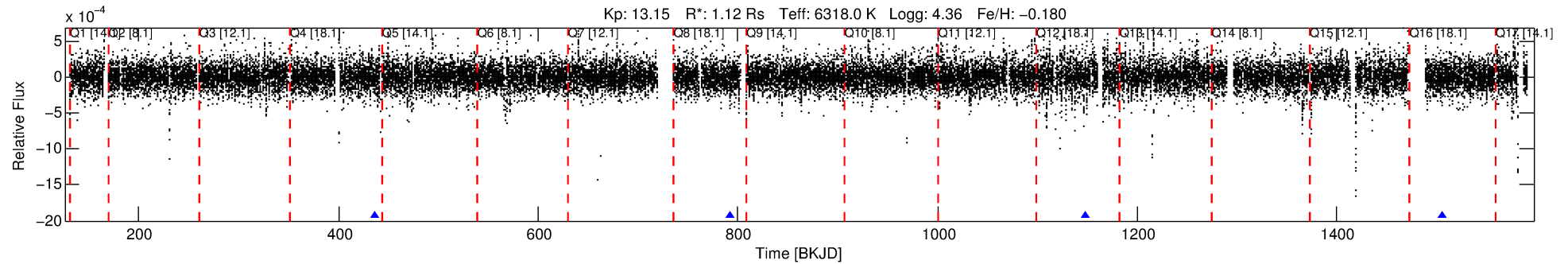
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 007031638-03

No Significant Match Found

DV One-Page Summary

KIC: 7031638 Candidate: 3 of 3 Period: 356.125 d



DV Fit Results:

Period = 356.12512 [0.00542] d
Epoch = 436.3685 [0.0110] BKJD
Rp/R* = 0.0179 [0.0053]
a/R* = 233.55 [353.40]
b = 0.89 [0.34]
Seff = 1.80 [0.54]
Teff = 295 [22] K
Rp = 2.18 [0.81] Re
a = 0.9996 [0.1889] AU
Ag = 18243.54 [13179.50] [1.38σ]
Teffp = 5304 [902] K [5.55σ]

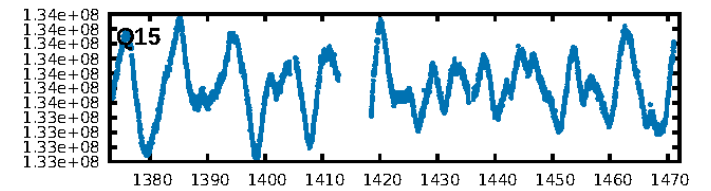
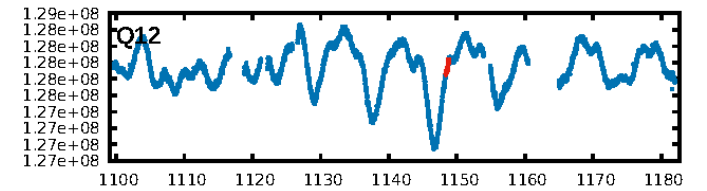
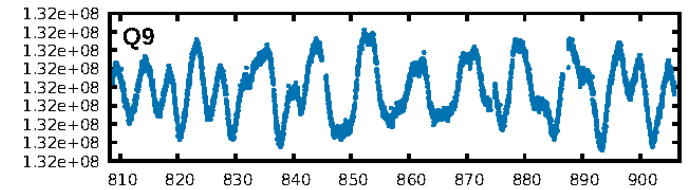
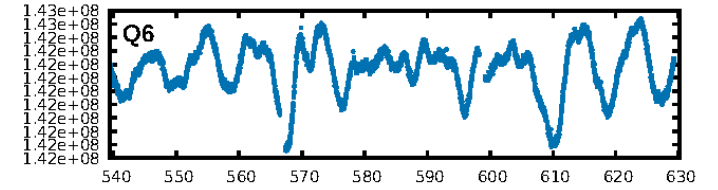
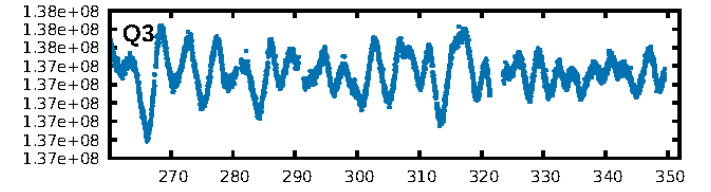
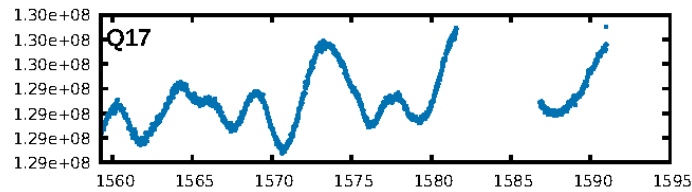
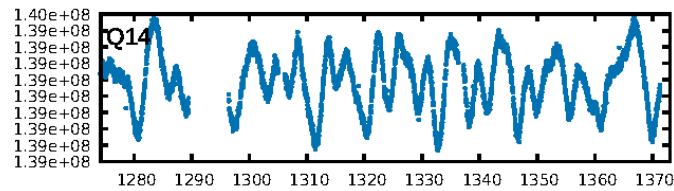
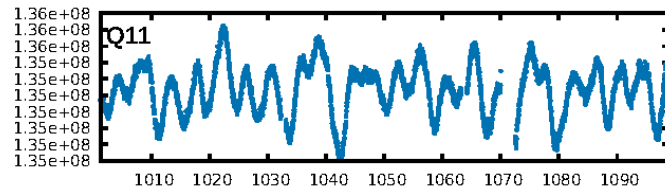
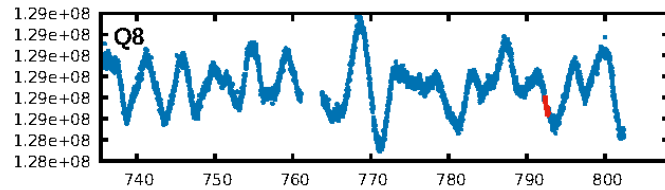
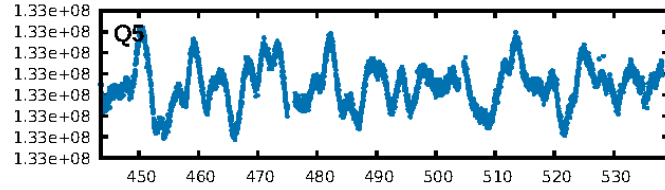
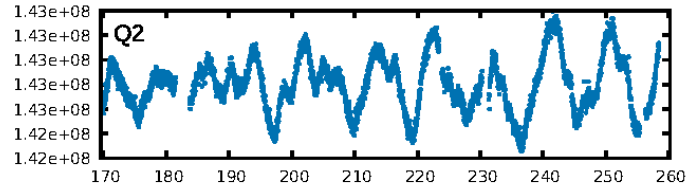
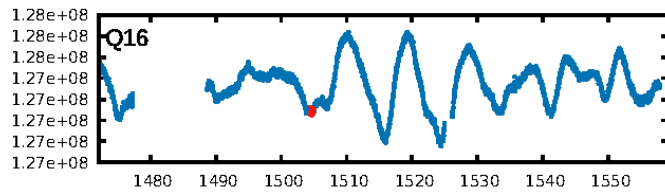
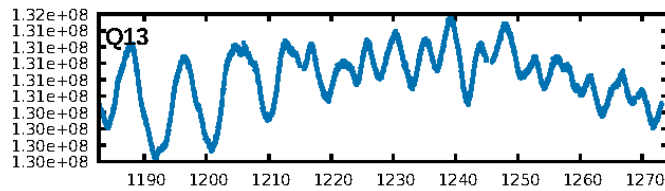
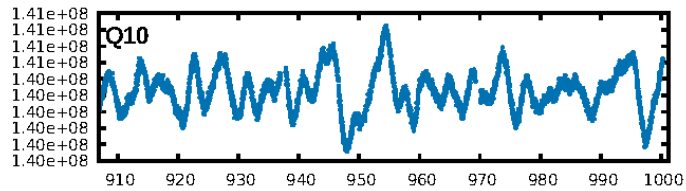
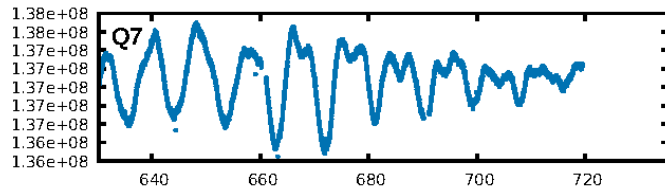
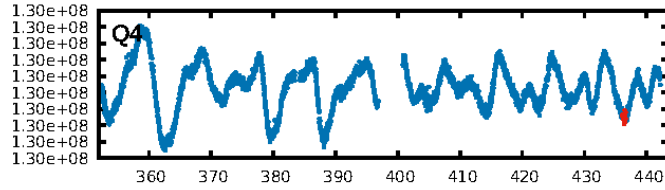
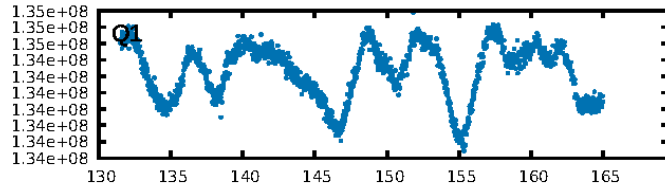
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [372.95σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 15.0%
ModelChiSquareGoF-sig: 99.8%
Bootstrap-pfa: 1.09e-08
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 8.983
Centroid-sig: 82.3%
Centroid-so: 1.105 arcsec [0.94σ]
OotOffset-rm: 1.361 arcsec [4.46σ]
KicOffset-rm: 1.263 arcsec [3.98σ]
OotOffset-st: 0/0/3/0 [3]
KicOffset-st: 0/0/3/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

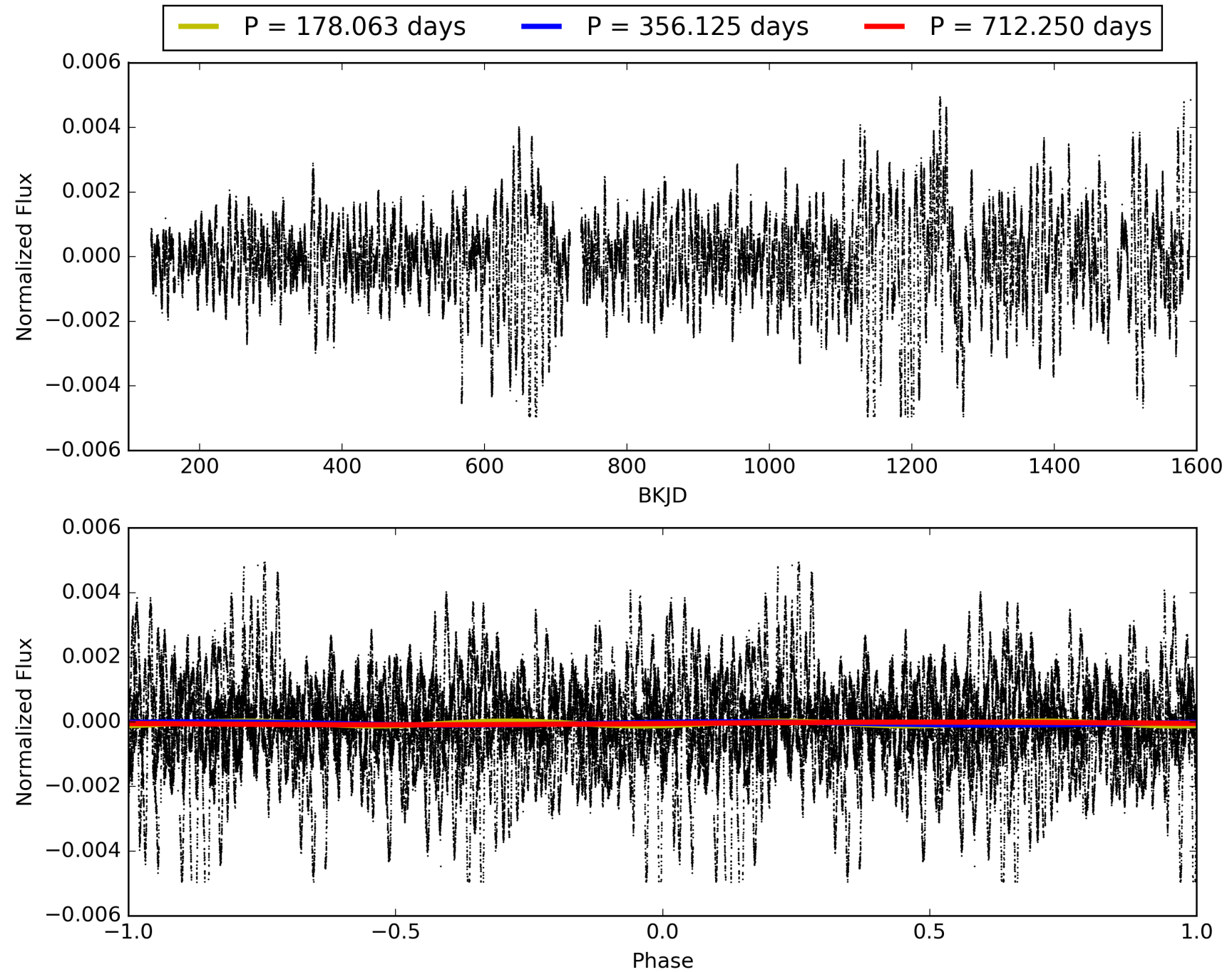
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:02:07 Z

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

TCE 007031638-03, PDC Light Curves

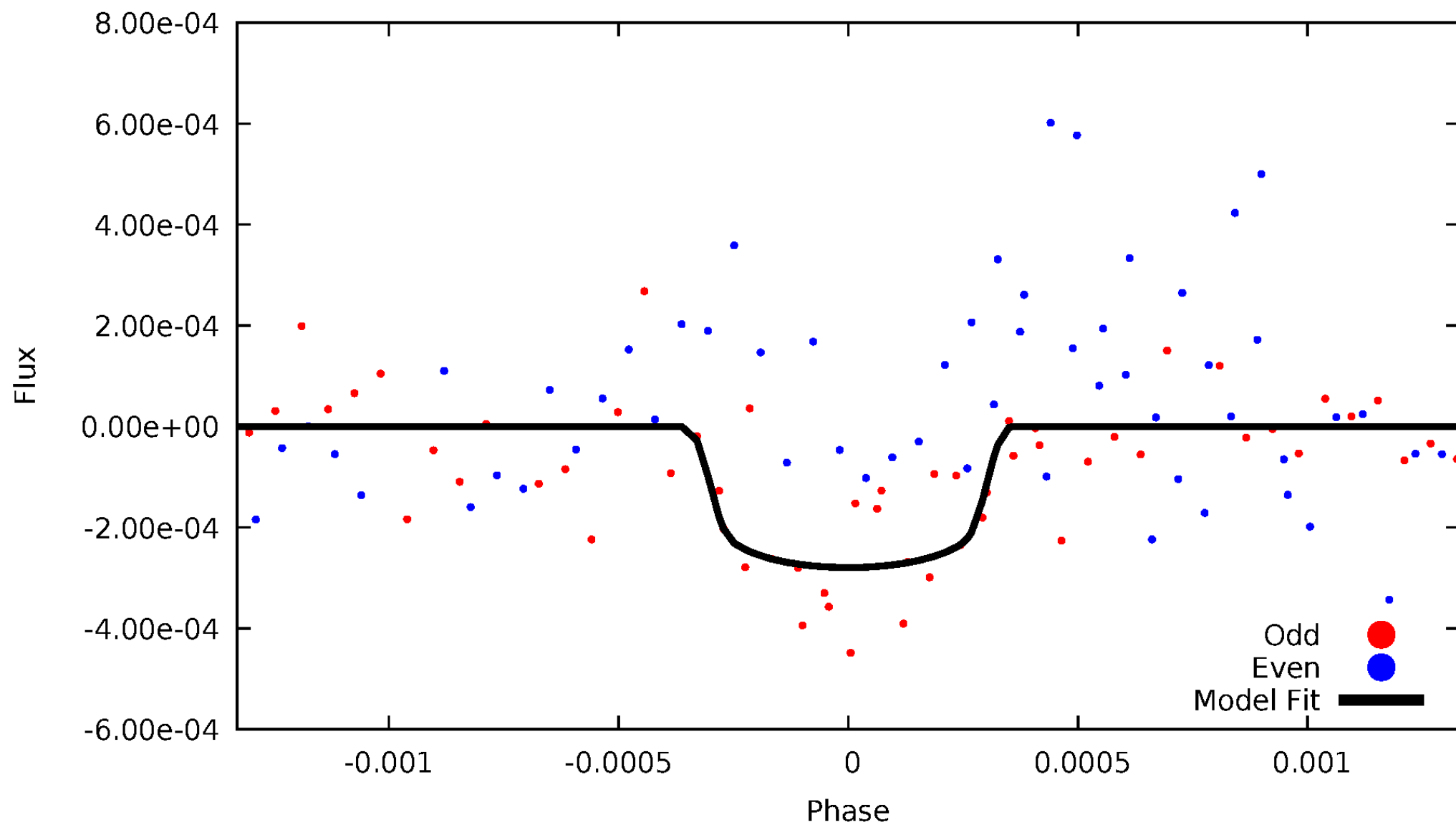


TCE 007031638-03



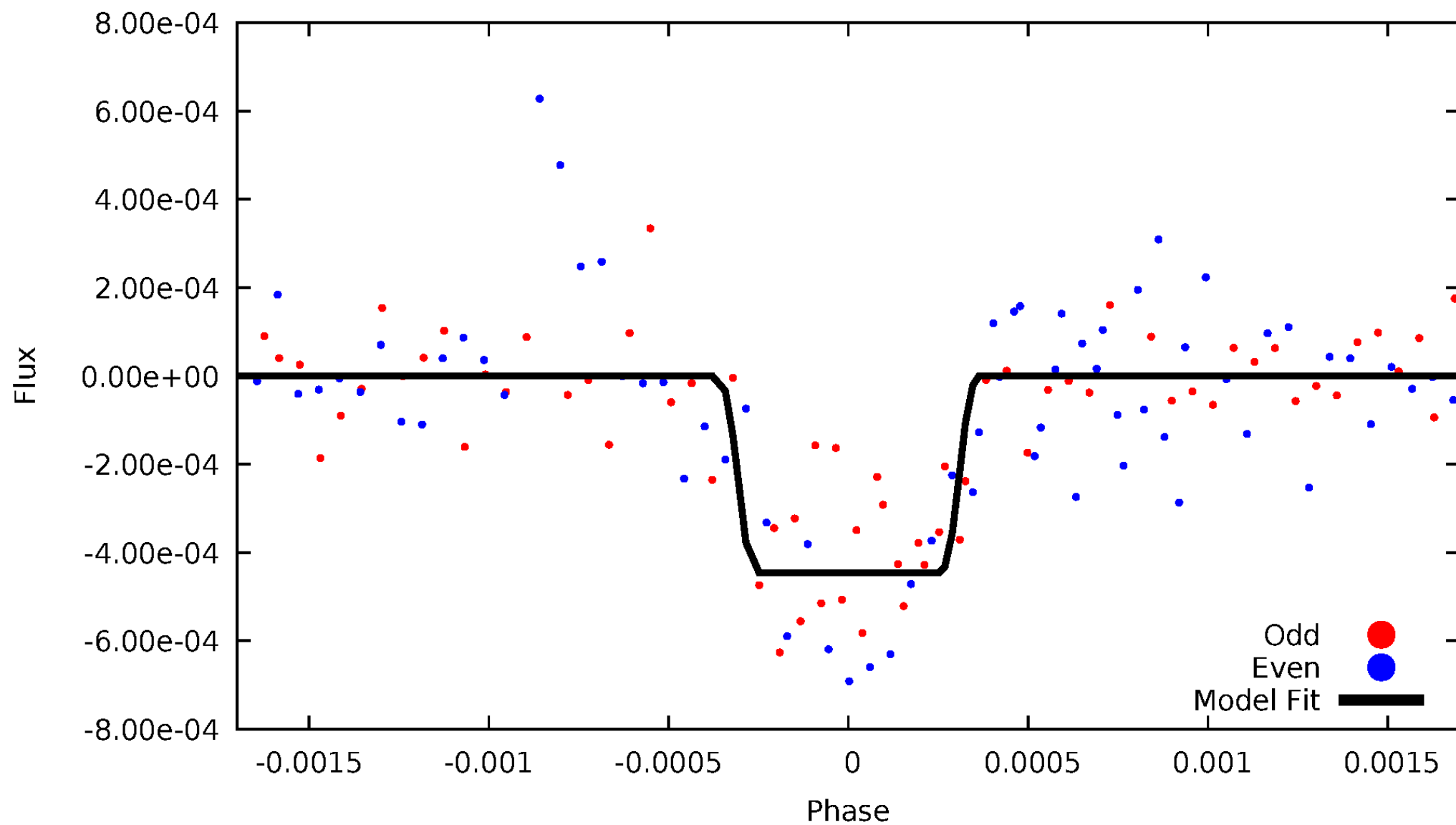
DV Odd/Even

TCE 007031638-03



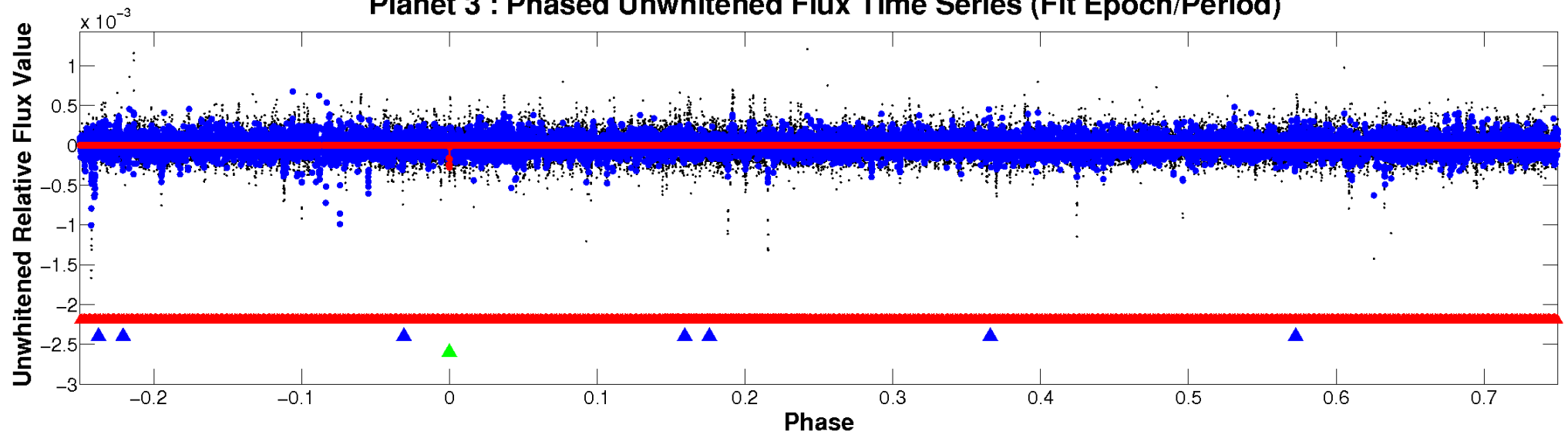
ALT Odd/Even

TCE 007031638-03

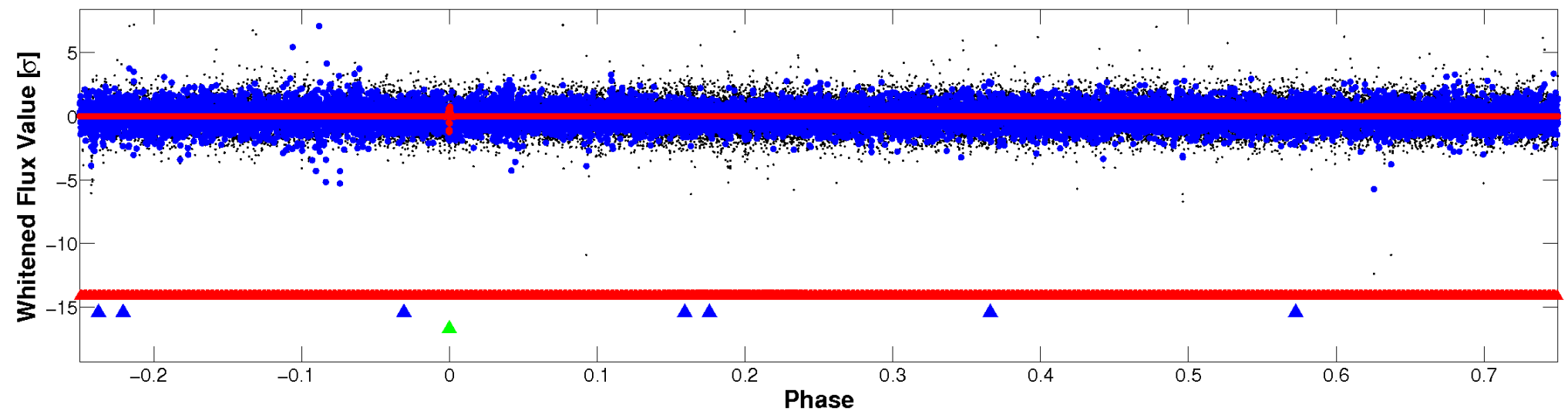


Non-Whitened Vs. Whitened Light Curve

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

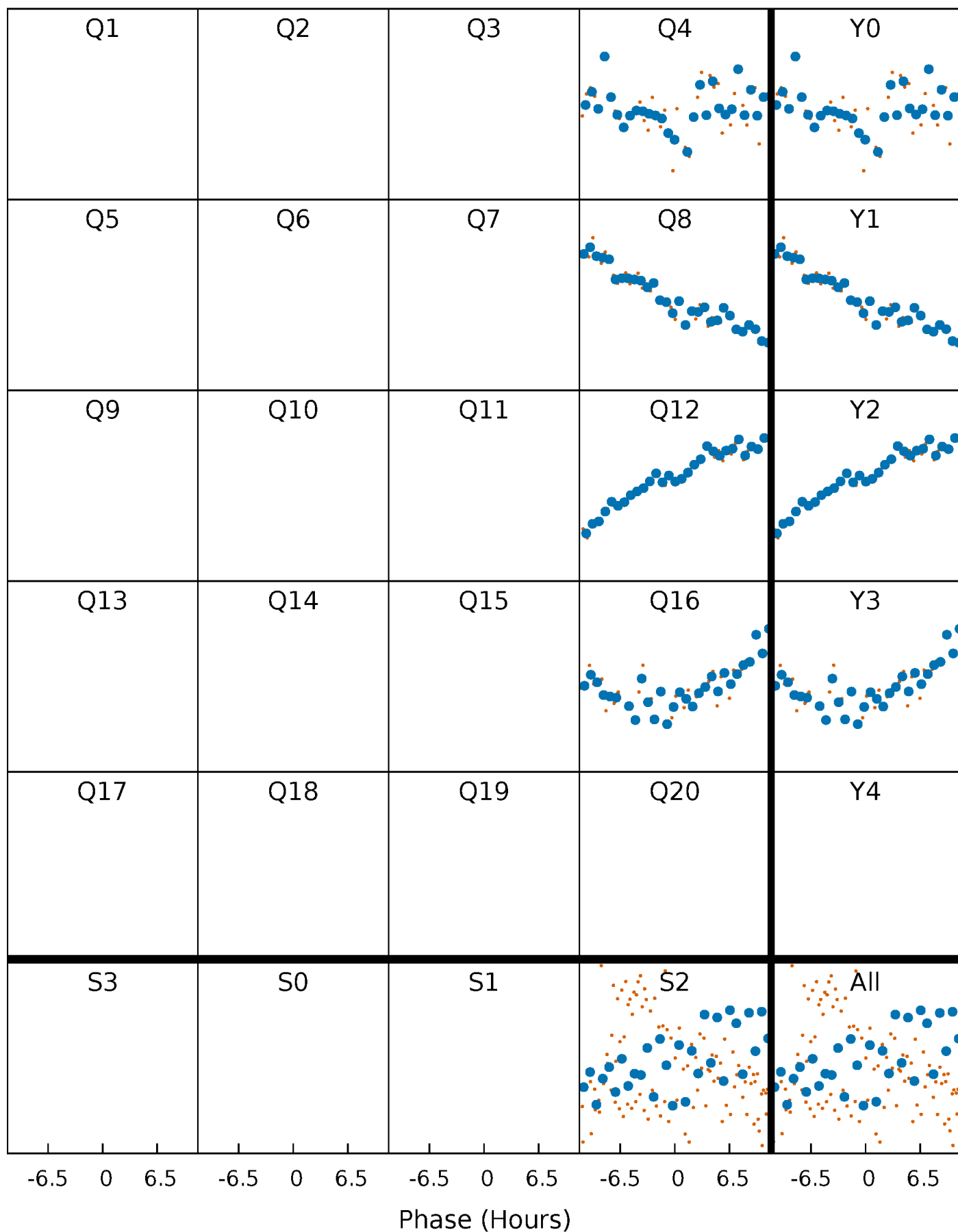


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



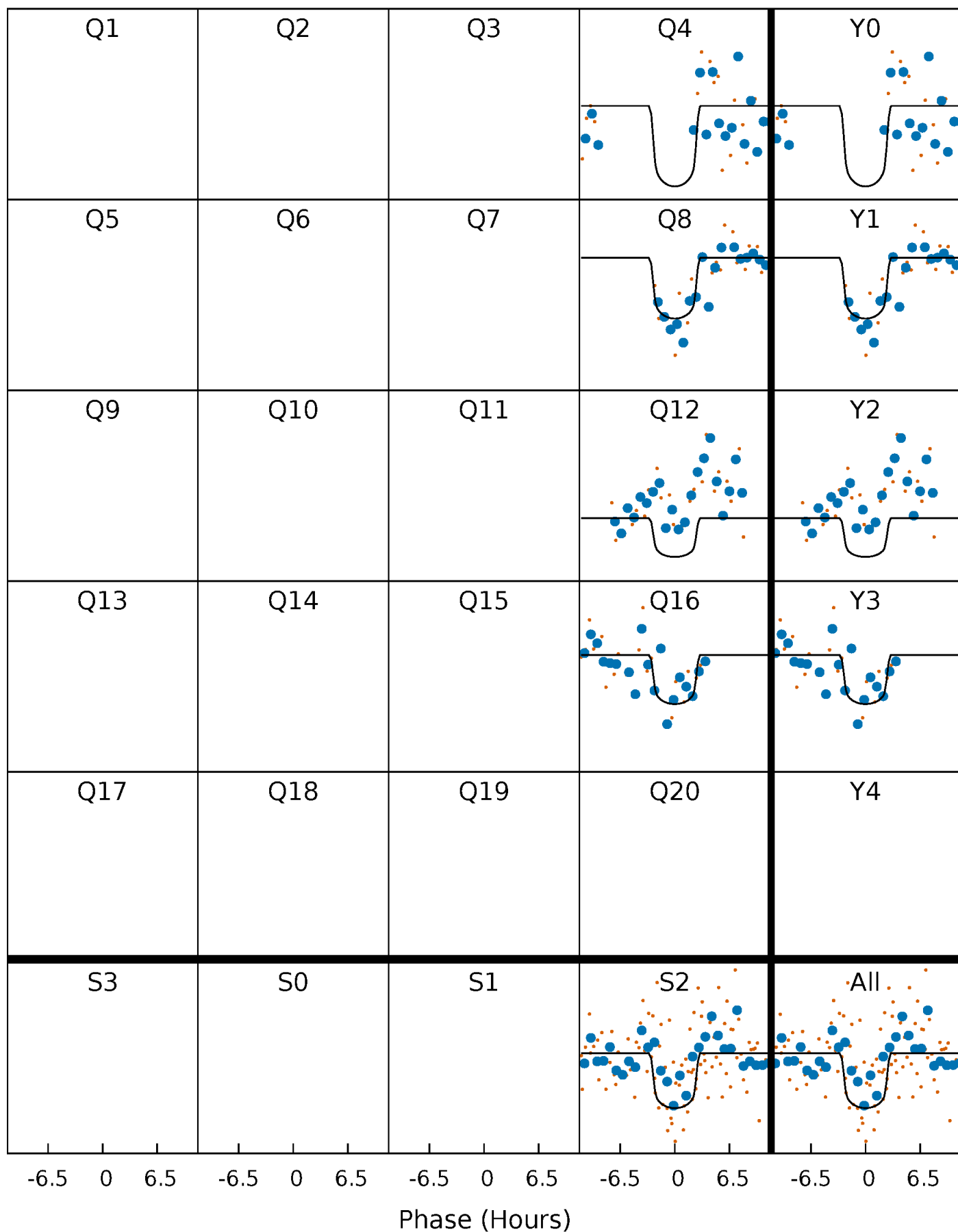
PDC Quarter-Phased Transit Curves

TCE 007031638-03 $P=356.125119$ Days $T_0=436.368492$ (BKJD)



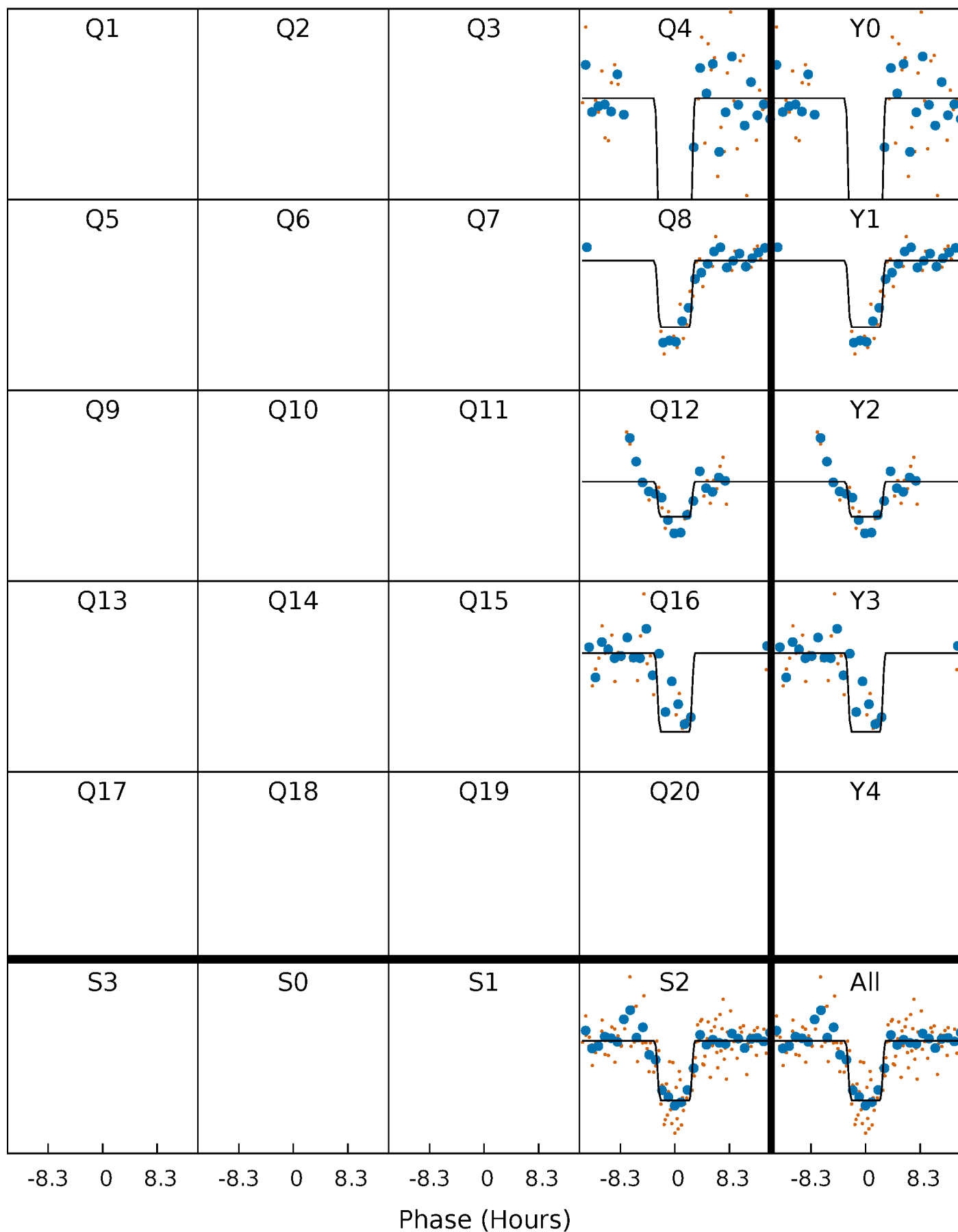
DV Quarter-Phased Transit Curves

TCE 007031638-03 P=356.125119 Days $T_0=436.368492$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

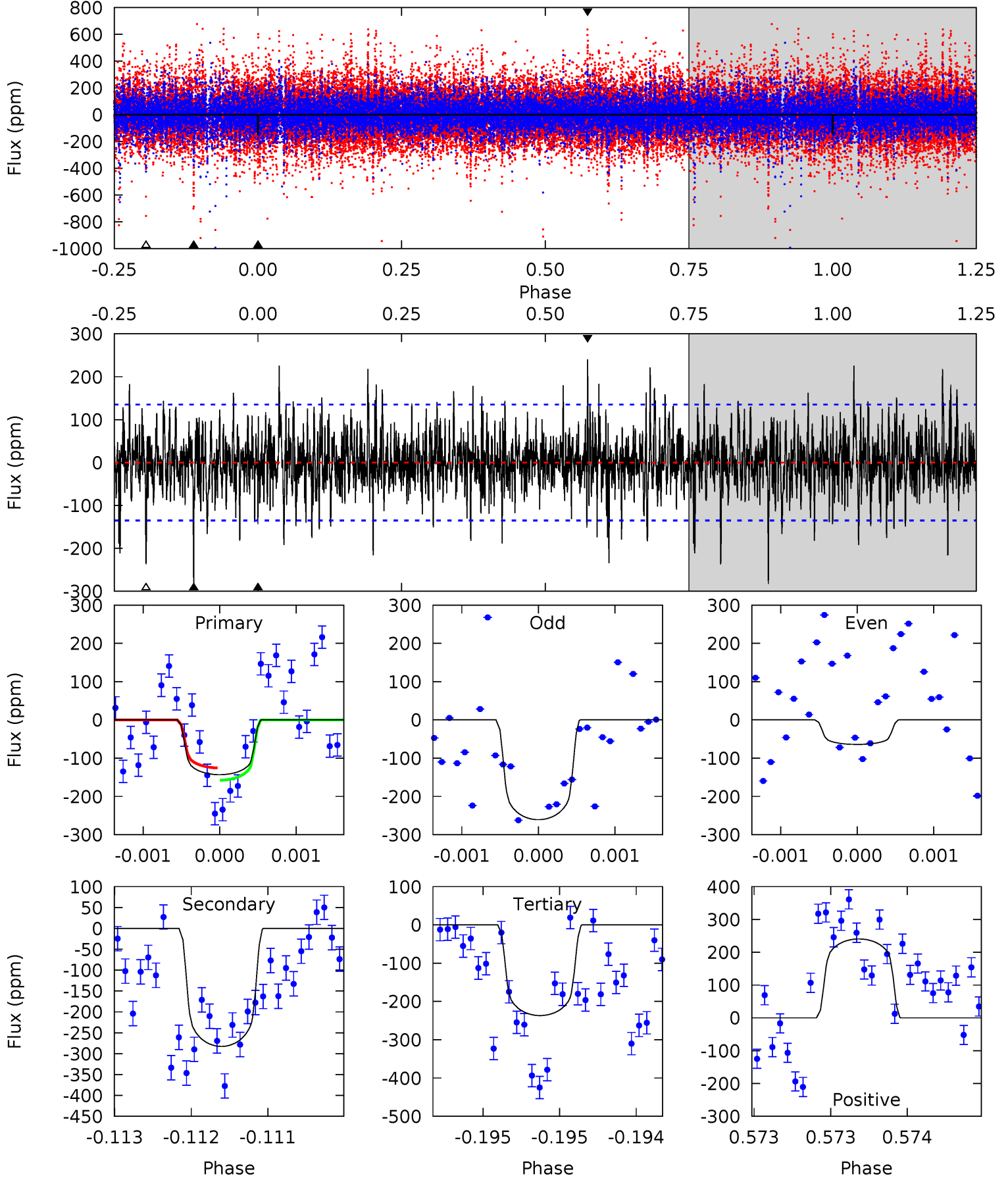
TCE 007031638-03 $P=356.150140$ Days $T_0=436.331410$ (BKJD)



DV Model-Shift Uniqueness Test

007031638-03, P = 356.125119 Days, E = 80.243373 Days

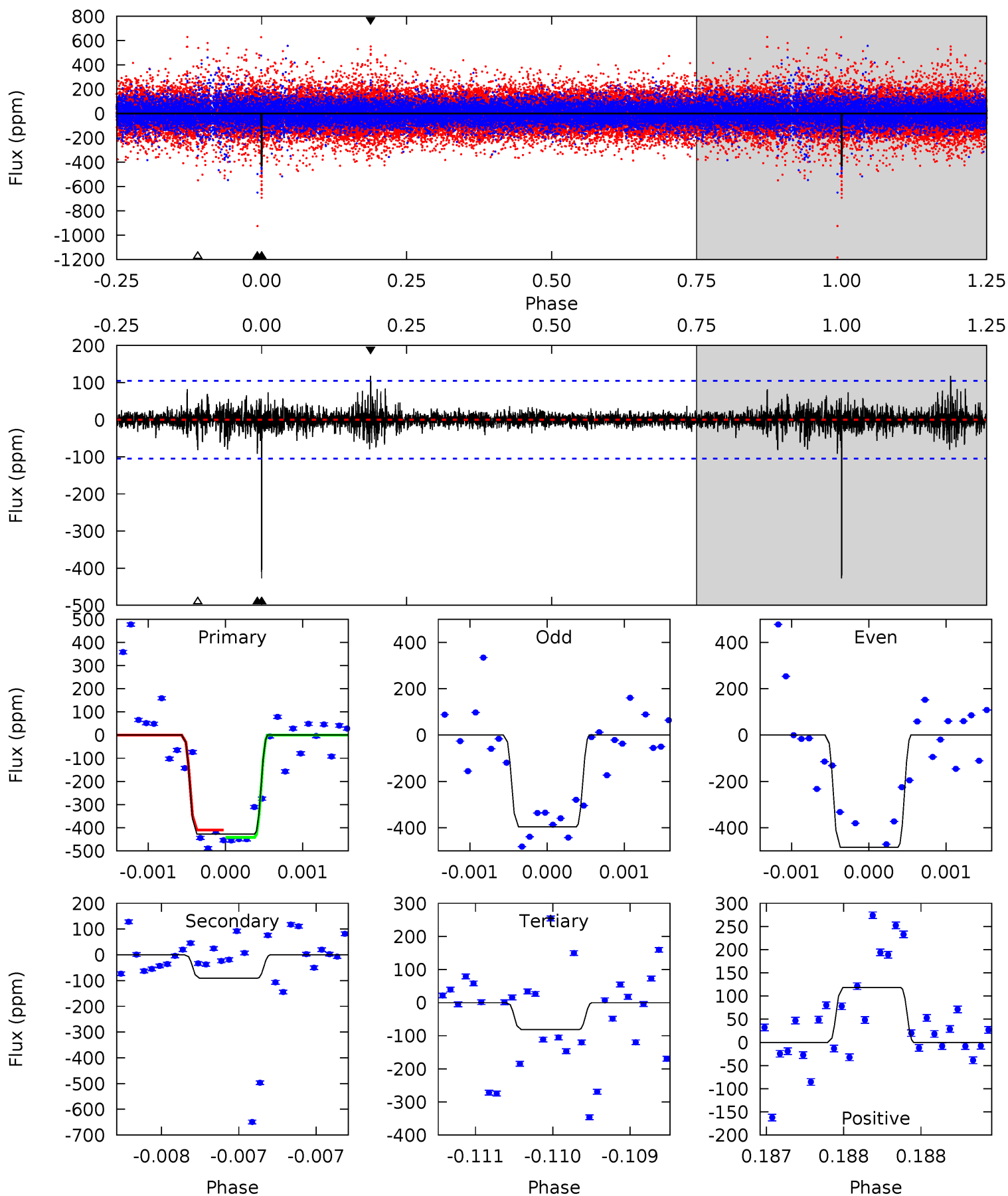
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.86	11.6	9.69	9.84	5.53	3.41	2.20	-3.83	-3.98	1.87	1.73	3.83	0.87	0.46	0.65



Alt Model-Shift Uniqueness Test

007031638-03, P = 356.150140 Days, E = 80.181270 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.5	4.80	4.29	6.23	5.52	3.40	0.81	18.2	16.3	0.50	-1.43	2.18	0.89	0.22	0.83



Stellar Parameters For KIC 007031638

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6318^{+156}_{-203}	$4.360^{+0.081}_{-0.150}$	$-0.180^{+0.250}_{-0.300}$	$1.121^{+0.252}_{-0.136}$	$1.046^{+0.160}_{-0.107}$	$1.045^{+0.427}_{-0.421}$
	+2%/-3%	+2%/-3%	+139%/-167%	+22%/-12%	+15%/-10%	+41%/-40%
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 007031638-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-283±24	$2.20^{+0.68}_{-0.66}$	416^{+22}_{-21}	6159^{+1255}_{-764}	32568^{+31473}_{-13977}
Alt.	-91±19	$2.67^{+0.65}_{-0.72}$	417^{+23}_{-20}	4423^{+555}_{-395}	6934^{+5804}_{-2741}

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

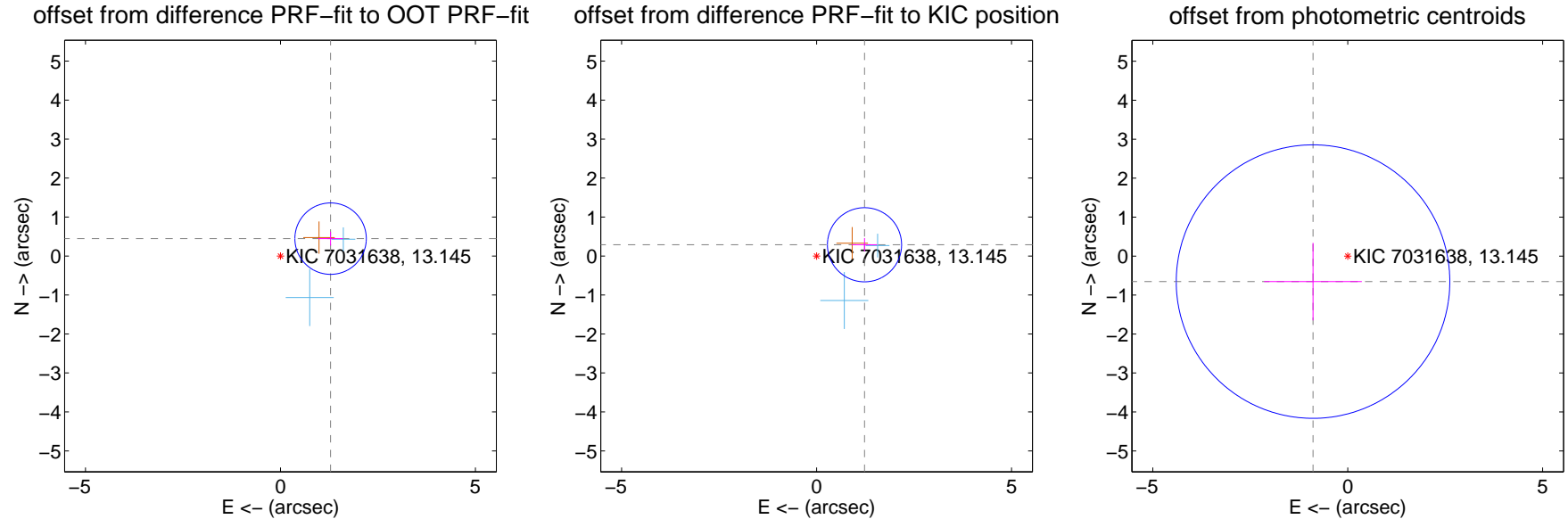
DV Centroid Data

Supplemental centroid analysis for 007031638-03. Kepler magnitude: 13.14. Transit SNR 6.95

There are 2 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.361 ± 0.305	4.46	-1.286 ± 0.317	0.446 ± 0.176
PRF-fit source offset from KIC position	1.263 ± 0.317	3.98	-1.230 ± 0.323	0.289 ± 0.170
photometric centroid source offset	1.10 ± 1.17	0.94	0.89 ± 1.25	-0.65 ± 0.99



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; Δ : difference centroid. red \times : large negative pixel value.

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



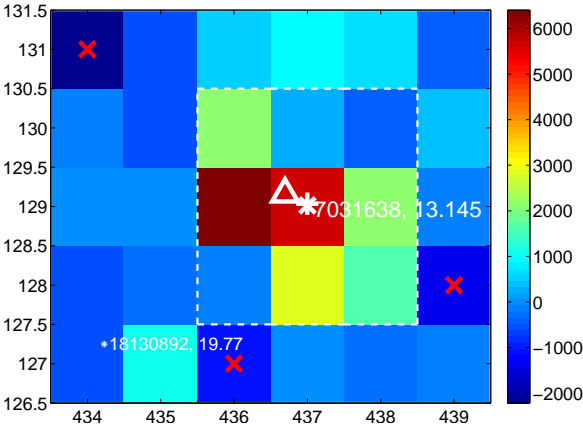
Q7 no difference image



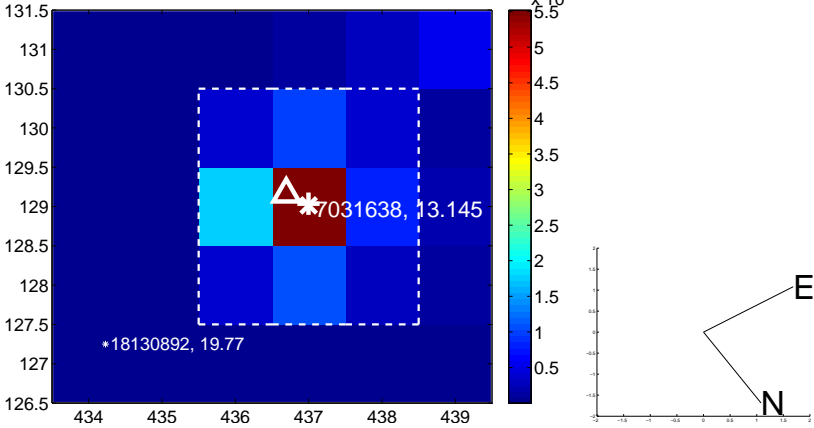
Q7 no OOT image



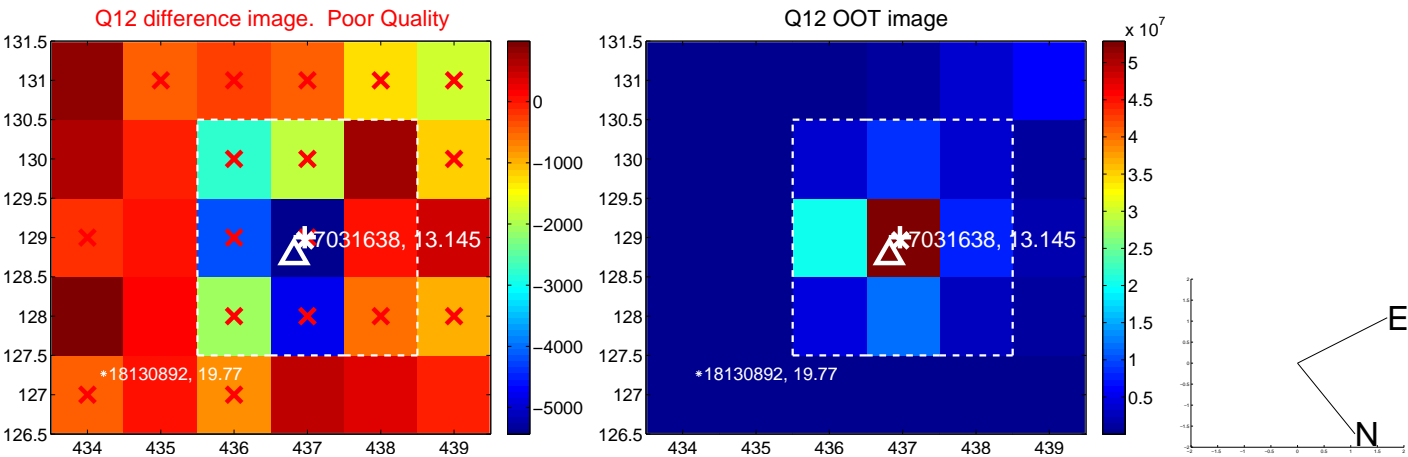
Q8 difference image



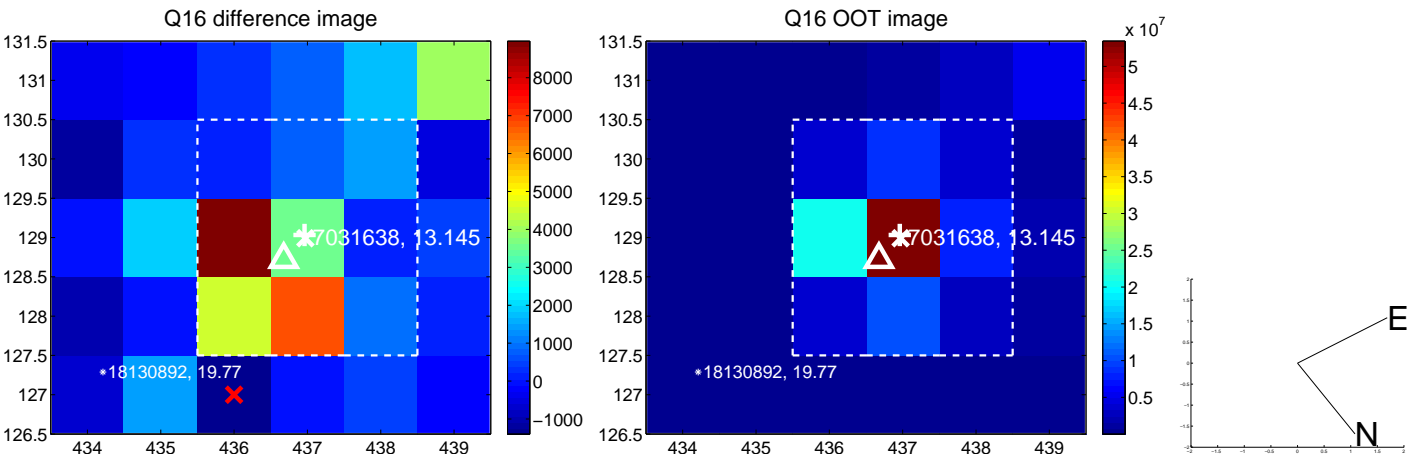
Q8 OOT image



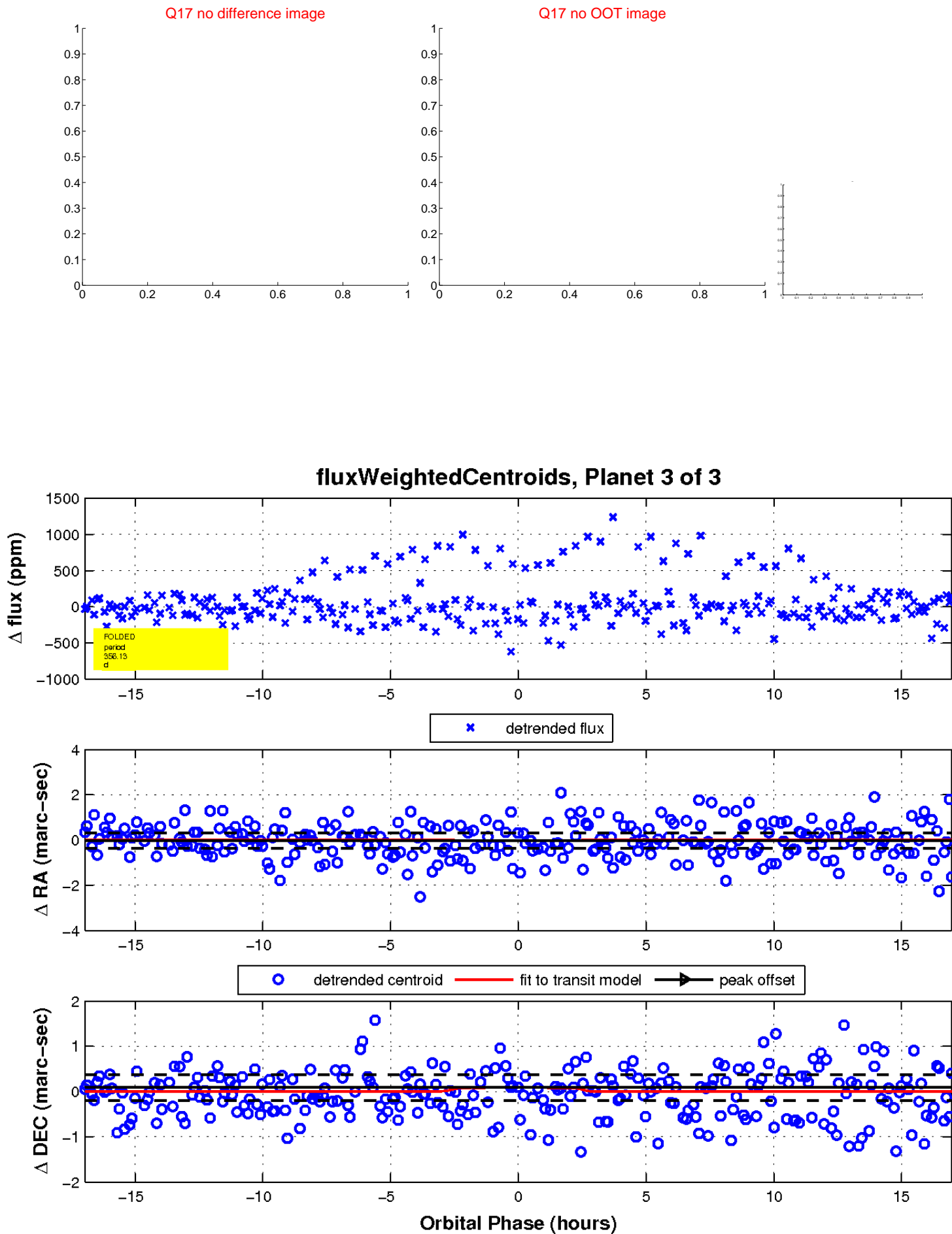
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

