

KIC 003443221

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})
003443221-01	OBS	No	349.538161	340.983694	2706.9	8.608	27.2	3.1	1.66	6959	10.55	4.90
003443221-02	OBS	No	514.285174	493.477654	257.7	5.314	15.6	1.0	1.66	6959	2.91	2.93
003443221-03	OBS	No	343.388984	360.383279	7201.6	9.377	20.2	8.4	1.66	6959	24.93	5.01
003443221-04	OBS	No	313.954586	303.497109	3925.8	9.495	17.3	3.8	1.66	6959	18.68	5.65

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003443221-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003443221-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003443221-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003443221-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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.

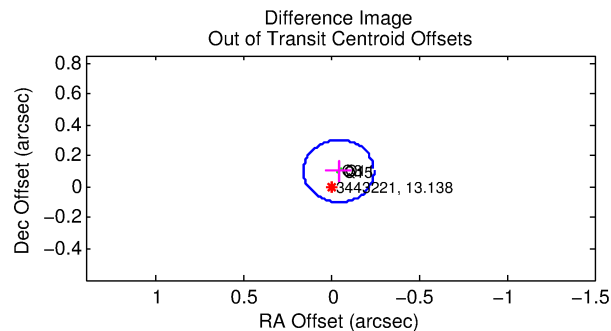
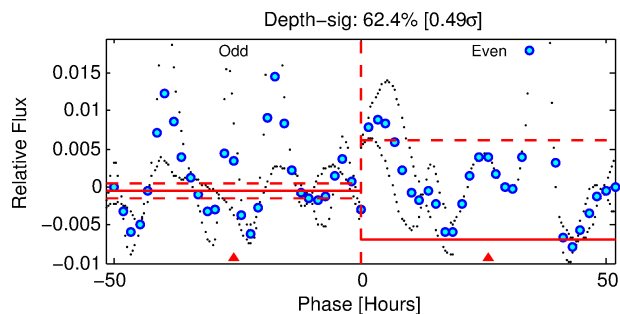
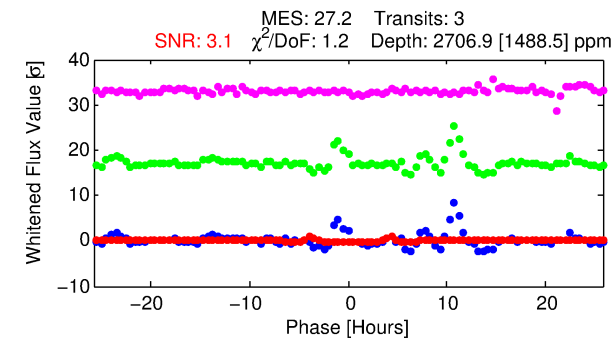
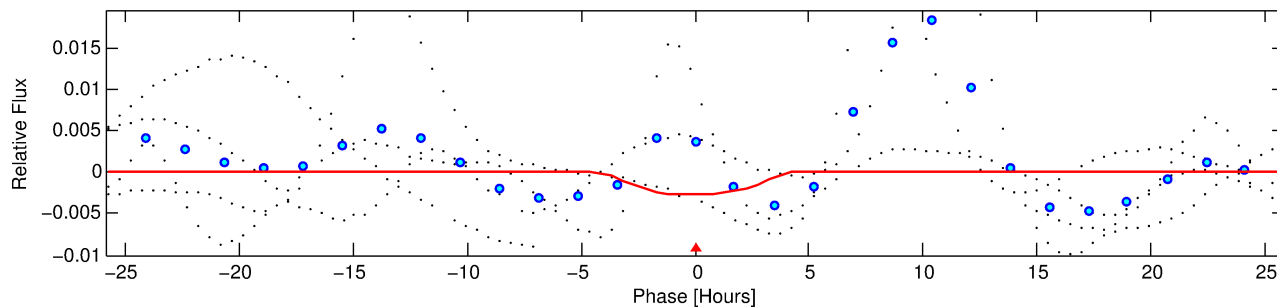
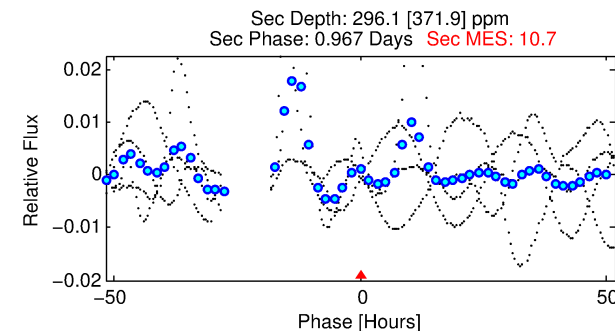
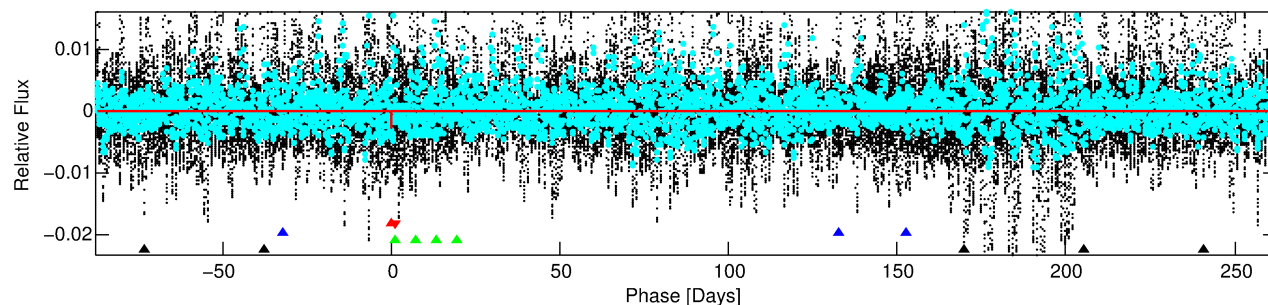
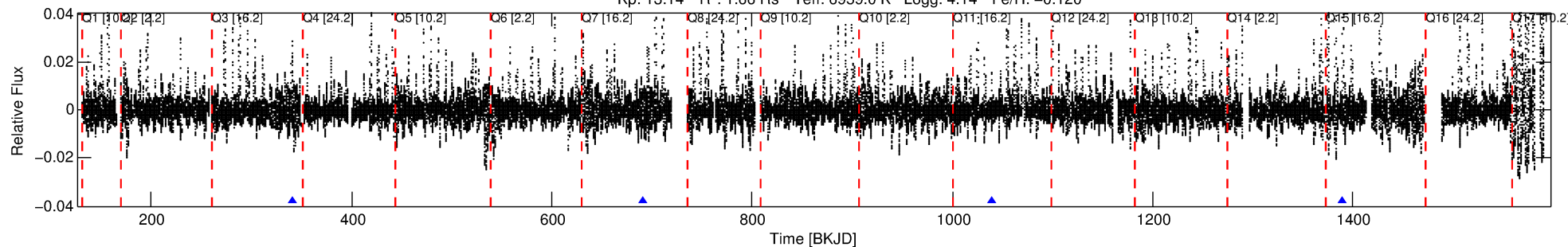
Ephemeris Match Information For 003443221-01

No Significant Match Found

DV One-Page Summary

KIC: 3443221 Candidate: 1 of 4 Period: 349.538 d

Kp: 13.14 R*: 1.66 Rs Teff: 6959.0 K Logg: 4.14 Fe/H: -0.120



DV Fit Results:

Period = 349.53816 [0.00893] d
Epoch = 340.9837 [0.0189] BKJD
Rp/R* = 0.0582 [0.0166]
a/R* = 150.56 [16.73]
b = 0.94 [0.02]
Seff = 4.90 [1.06]
Teq = 379 [20] K
Rp = 10.55 [3.49] Re
a = 1.0879 [0.1553] AU
Ag = 1732.01 [2417.33] [0.72σ]
Teff = 3784 [1306] K [2.61σ]

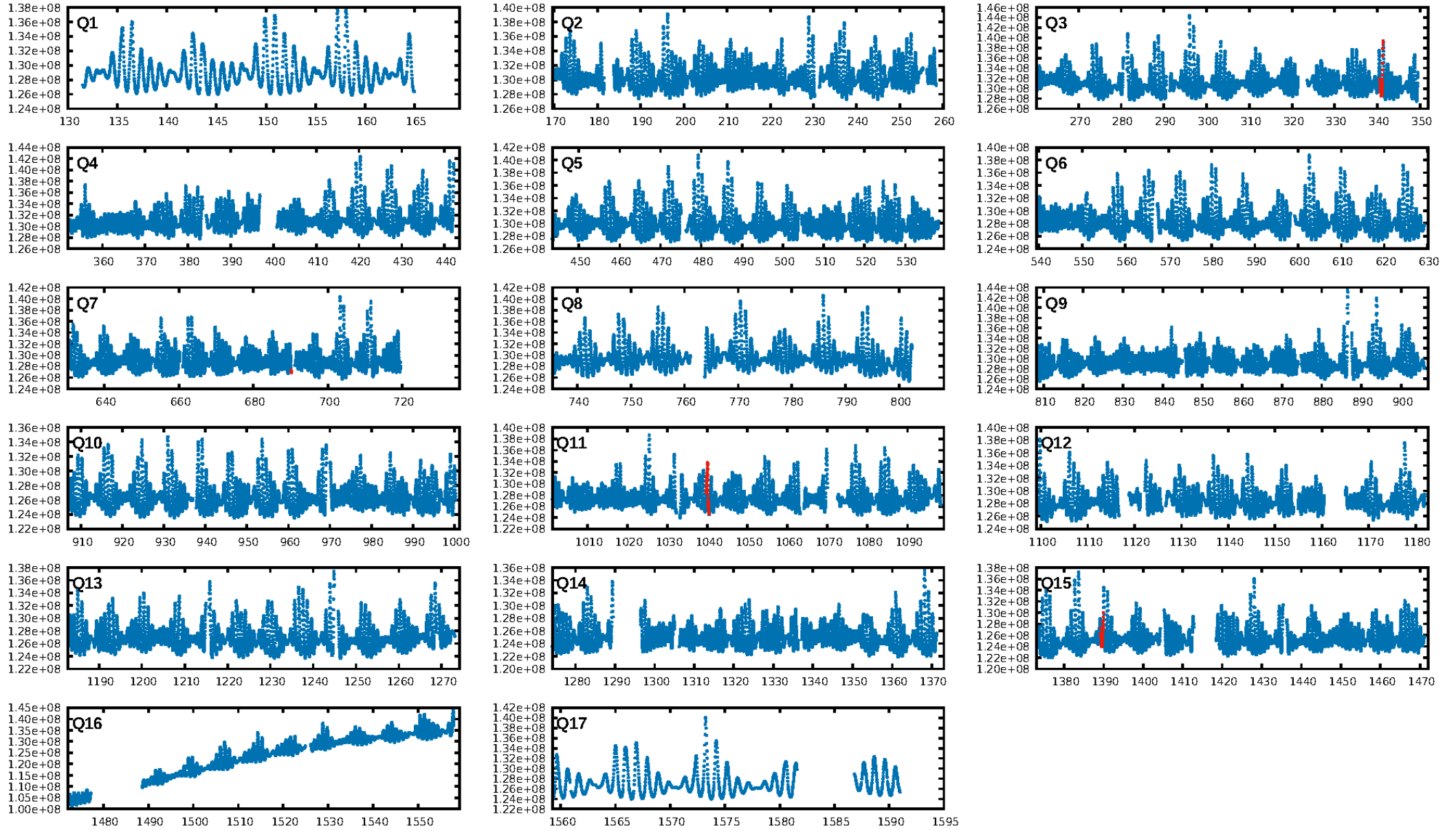
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [11.59σ]
LongPeriod-sig: 100.0% [390.87σ]
ModelChiSquare2-sig: 42.4%
ModelChiSquareGof-sig: 78.8%
Bootstrap-pfa: 4.36e-15
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.559
Centroid-sig: N/A
Centroid-so: 0.498 arcsec [0.47σ]
OotOffset-rm: 0.111 arcsec [1.65σ]
KicOffset-rm: 0.115 arcsec [1.71σ]
OotOffset-st: 0/3/0/0 [3]
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DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

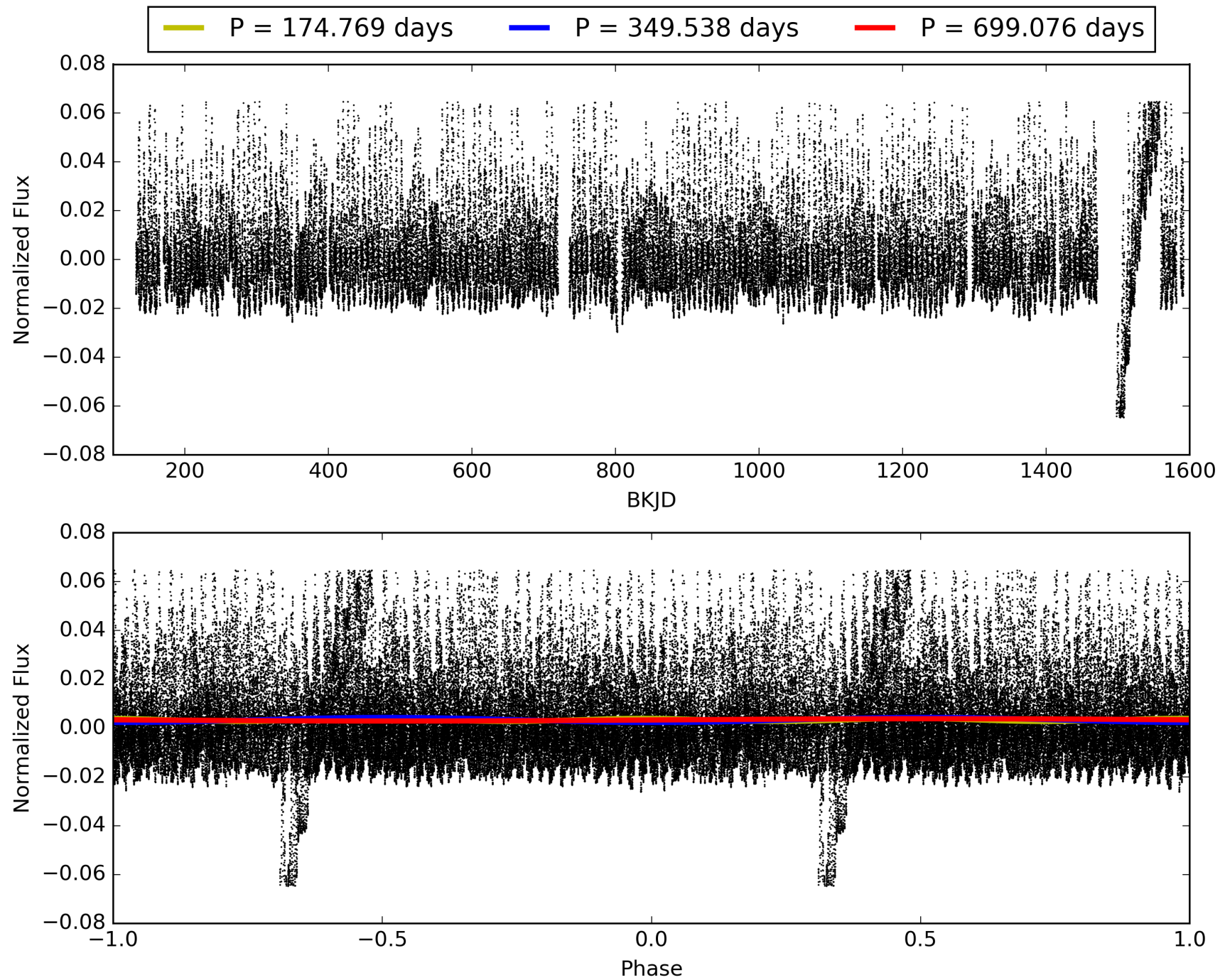
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 003443221-01, PDC Light Curves

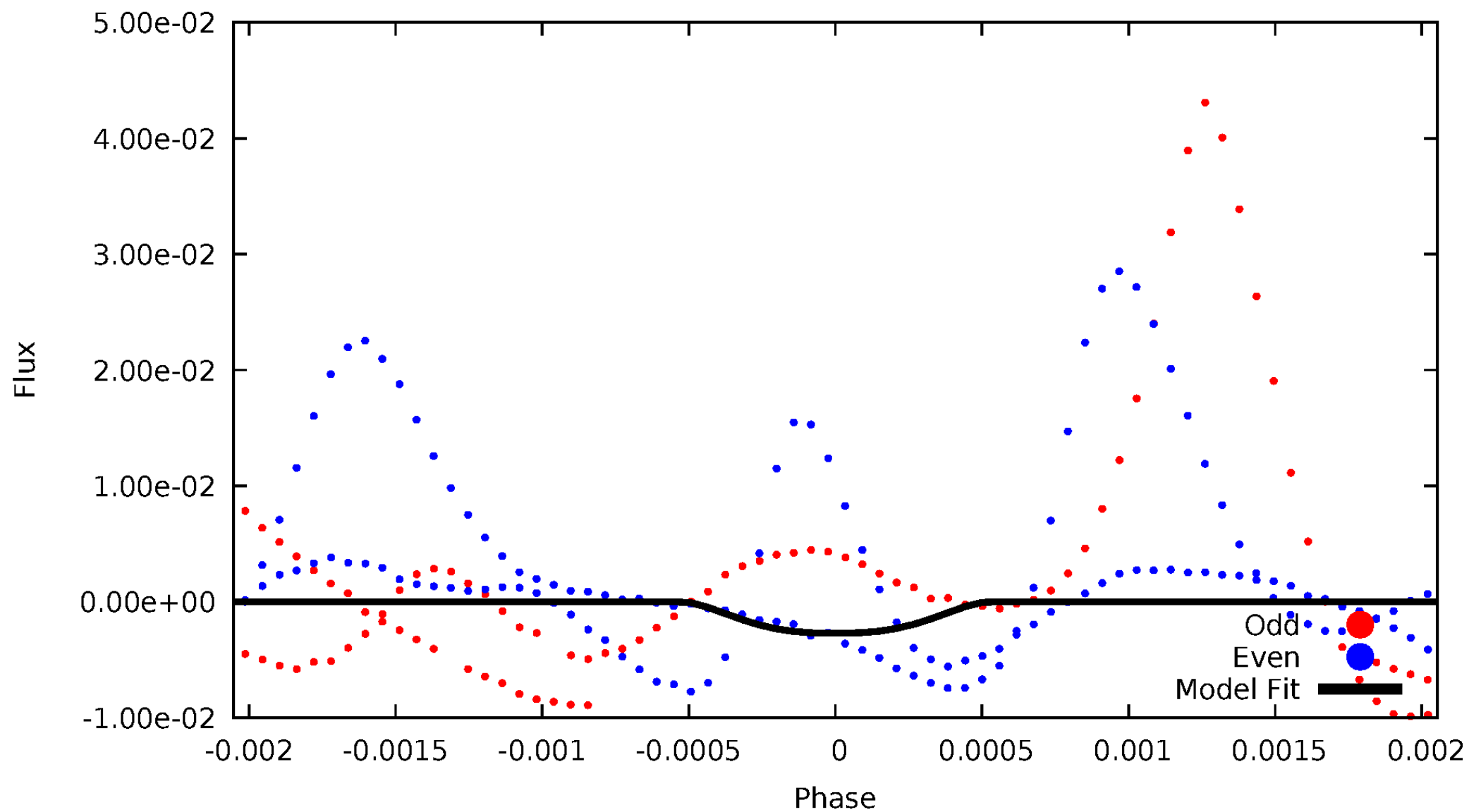


TCE 003443221-01



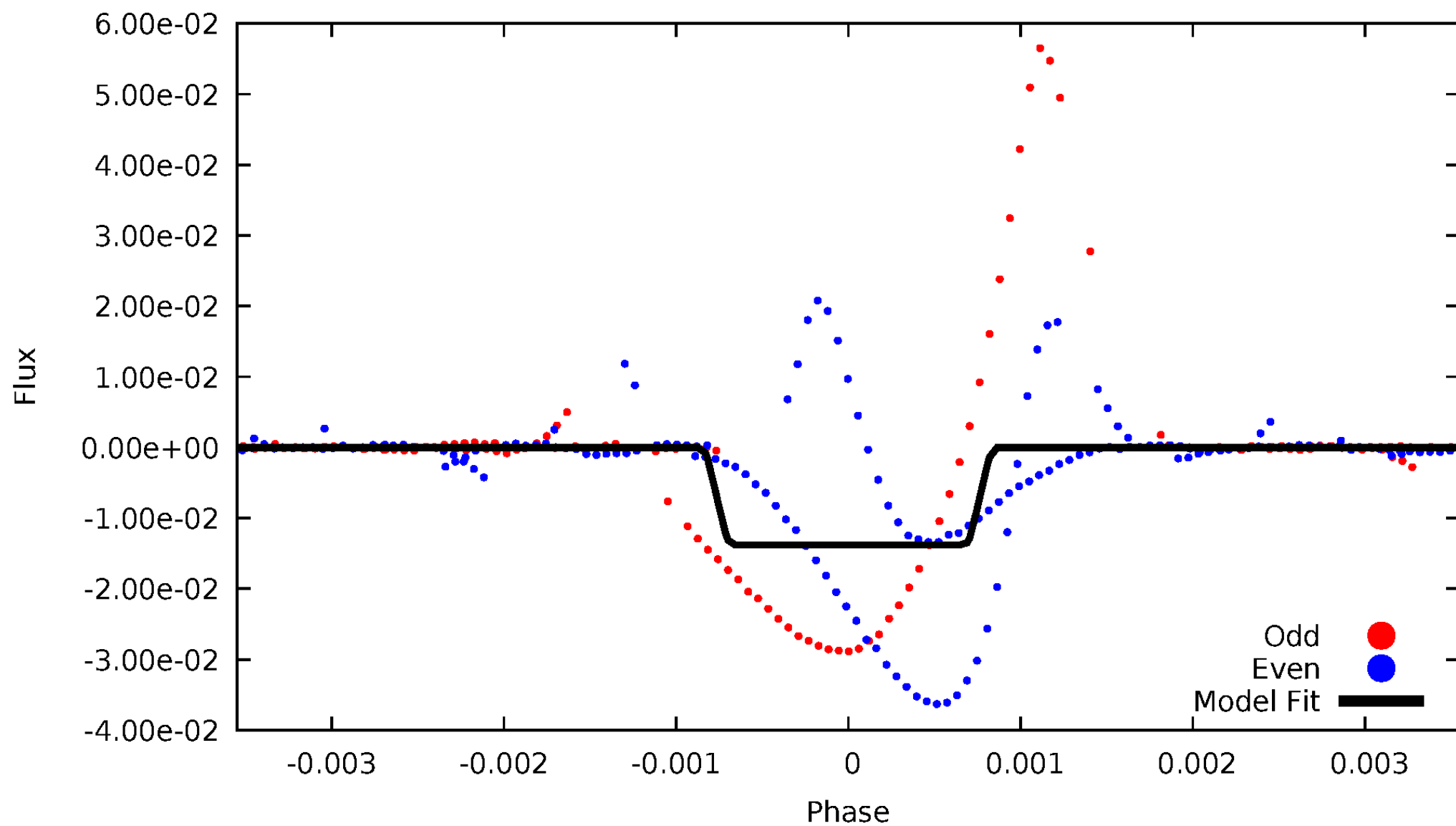
DV Odd/Even

TCE 003443221-01



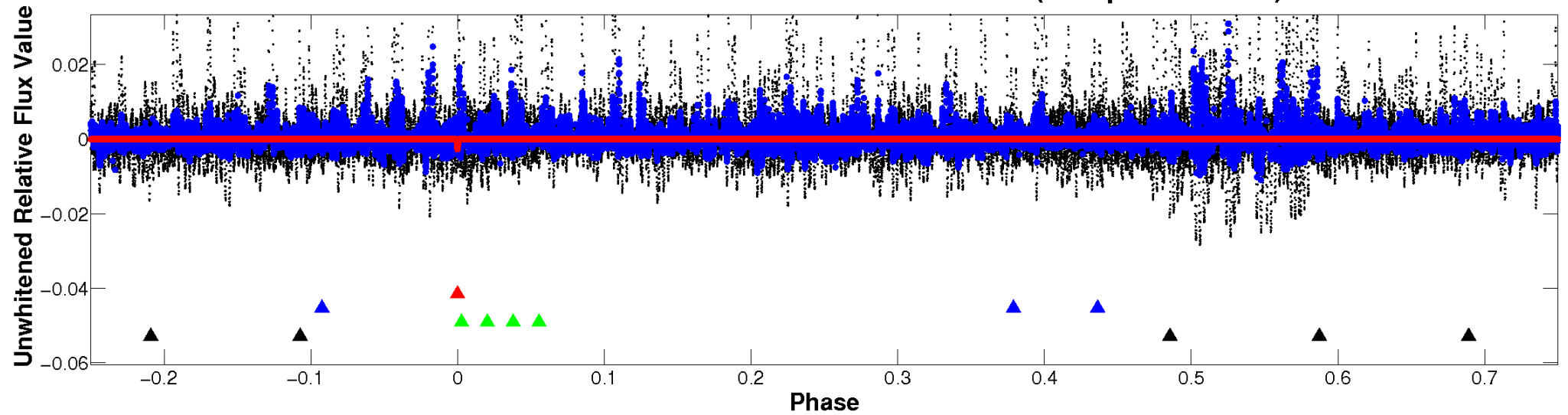
ALT Odd/Even

TCE 003443221-01

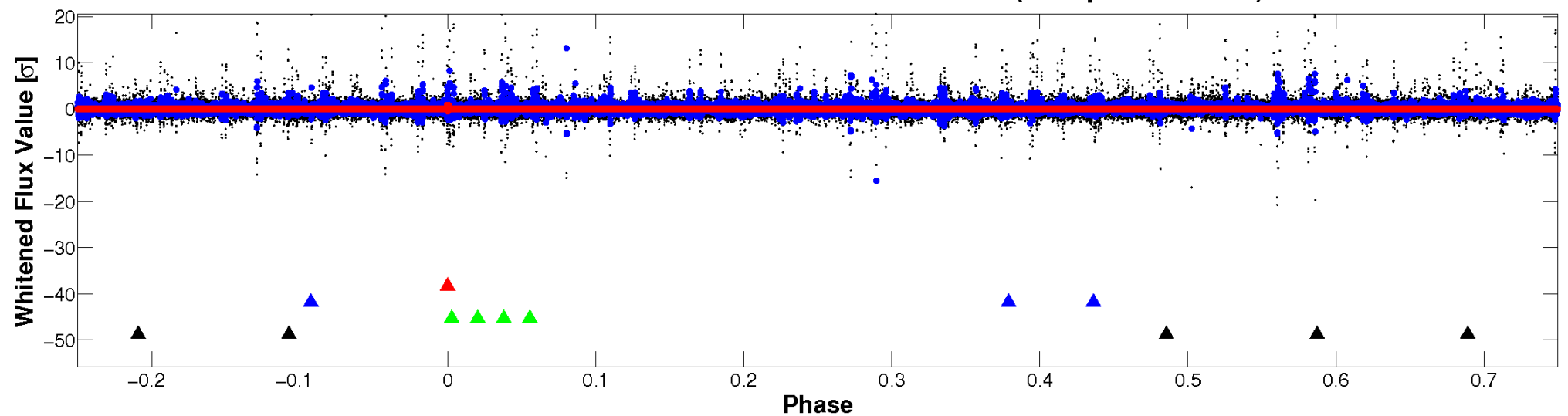


Non-Whitened Vs. Whitened Light Curve

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

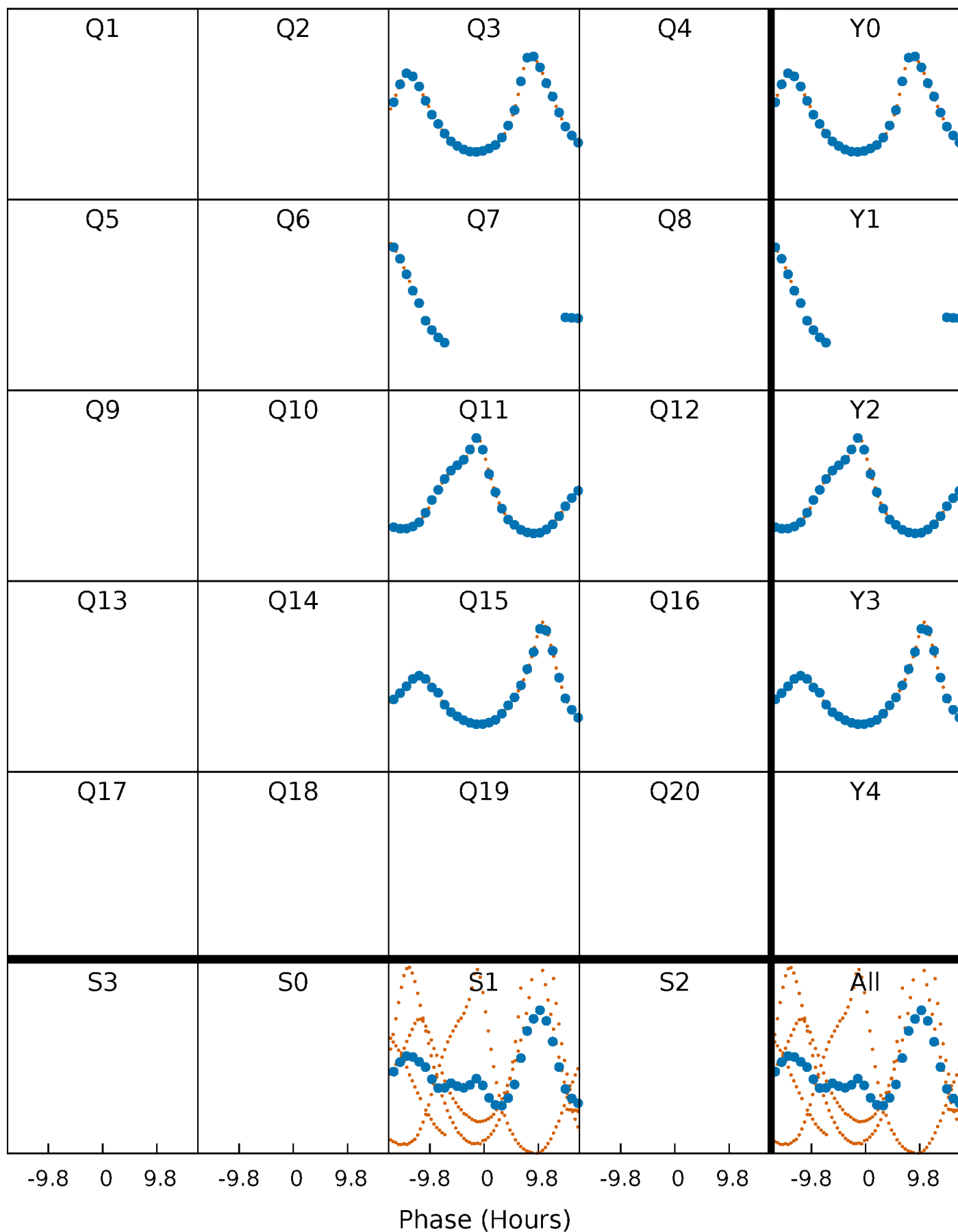


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



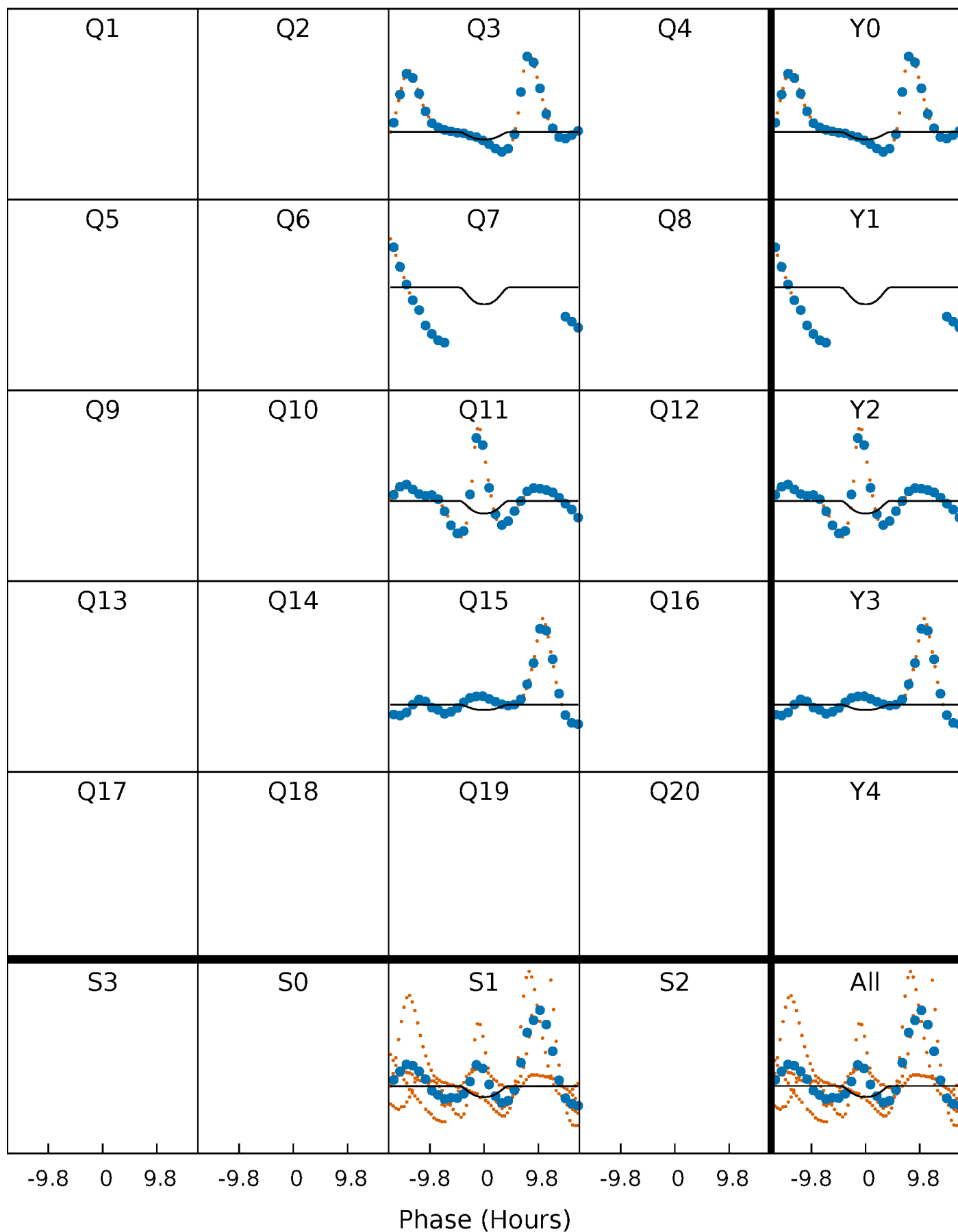
PDC Quarter-Phased Transit Curves

TCE 003443221-01 P=349.538161 Days $T_0=340.983694$ (BKJD)



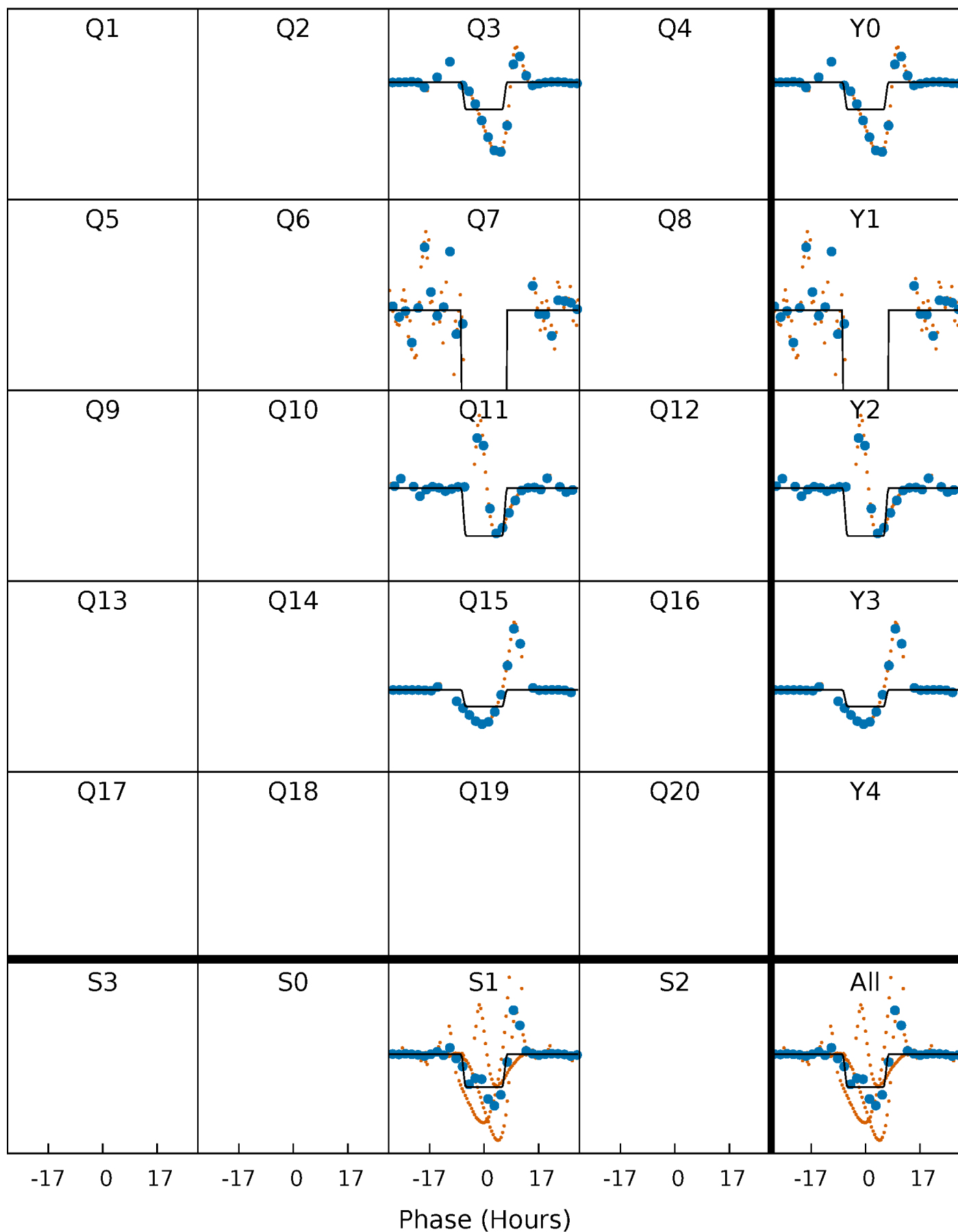
DV Quarter-Phased Transit Curves

TCE 003443221-01 P=349.538161 Days $T_0=340.983694$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

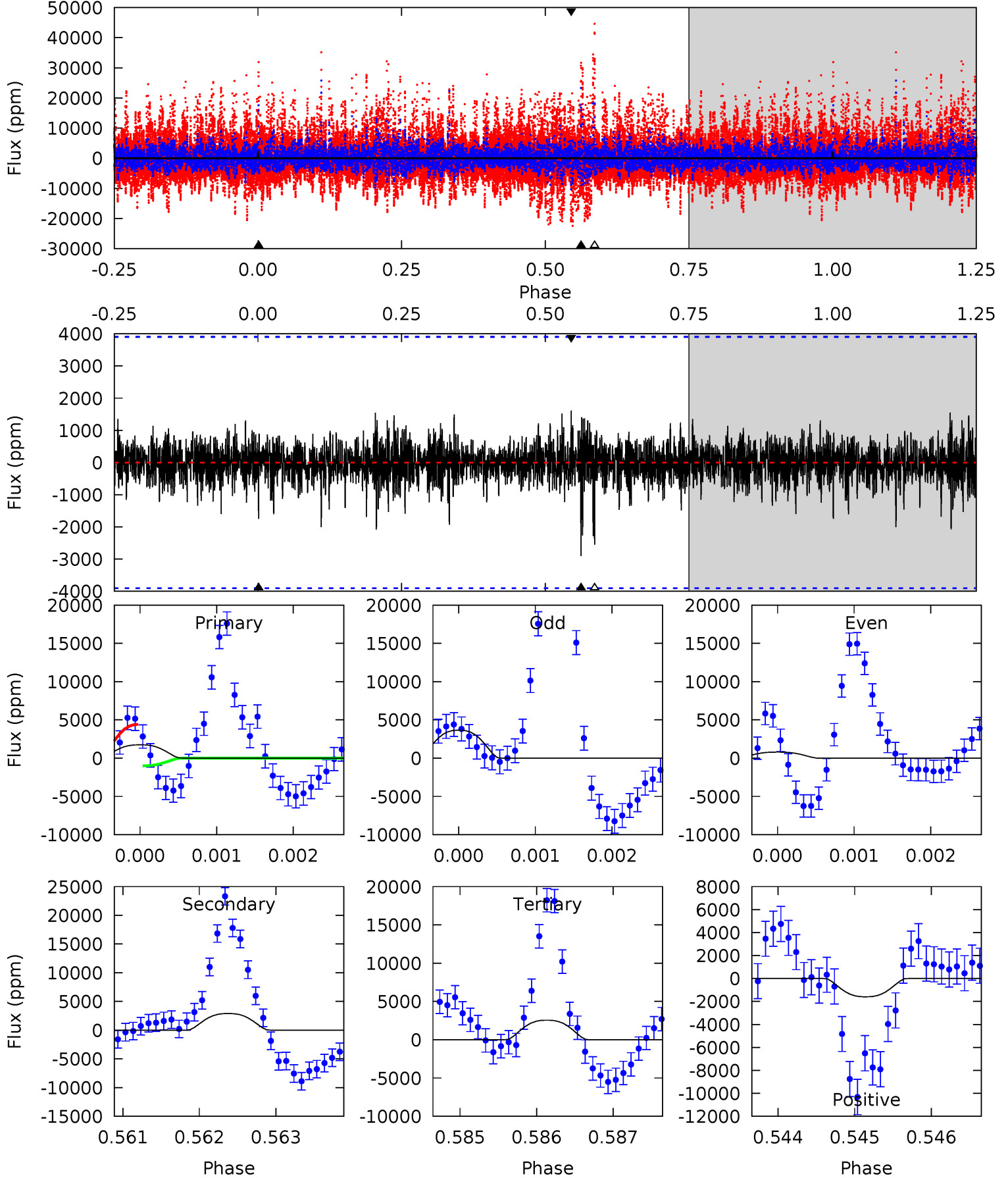
TCE 003443221-01 P=349.577344 Days $T_0=340.917823$ (BKJD)



DV Model-Shift Uniqueness Test

003443221-01, P = 349.538161 Days, E = 340.983694 Days

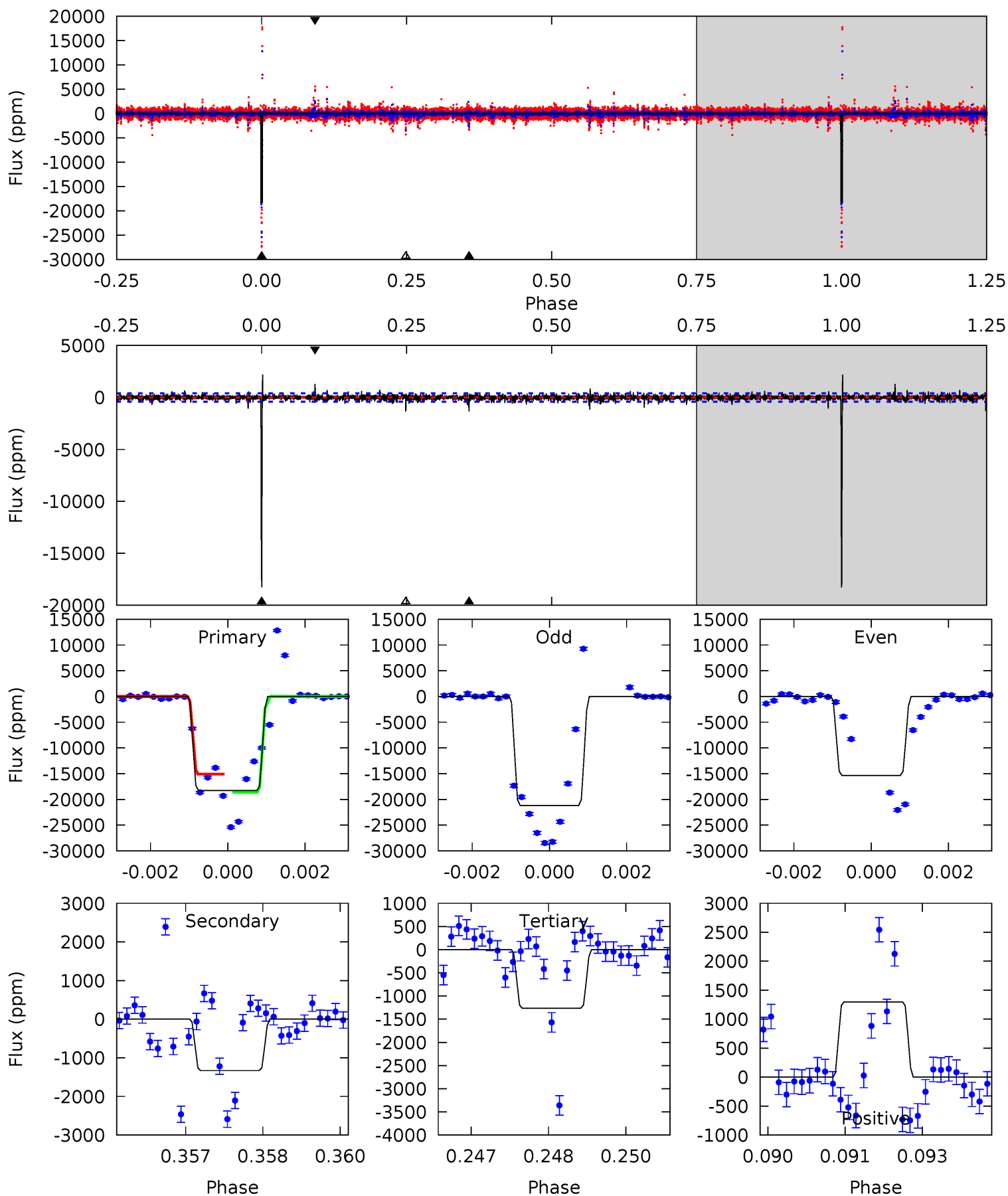
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.44	4.05	3.56	2.23	5.45	3.29	0.67	-1.12	0.21	0.49	1.82	1.55	0.48	0.35	2.41



Alt Model-Shift Uniqueness Test

003443221-01, P = 349.577344 Days, E = 340.917823 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
240.4	17.5	16.6	17.1	5.36	3.14	2.00	223.8	223.3	0.91	0.41	30.0	1.03	0.11	0



Stellar Parameters For KIC 003443221

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6959^{+83}_{-83}	$4.145^{+0.095}_{-0.116}$	$-0.120^{+0.150}_{-0.150}$	$1.661^{+0.278}_{-0.202}$	$1.411^{+0.102}_{-0.102}$	$0.434^{+0.183}_{-0.152}$
	+1%/-1%	+2%/-3%	+125%/-125%	+17%/-12%	+7%/-7%	+42%/-35%
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 003443221-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-2898 ± 716	$10.63^{+3.14}_{-3.20}$	532^{+23}_{-20}	6714^{+1490}_{-943}	16955^{+17720}_{-7812}
Alt.	-1331 ± 76	$21.35^{+3.85}_{-3.41}$	531^{+23}_{-21}	4141^{+246}_{-195}	1913^{+771}_{-518}

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 $A_{obs} \gg 1.0$

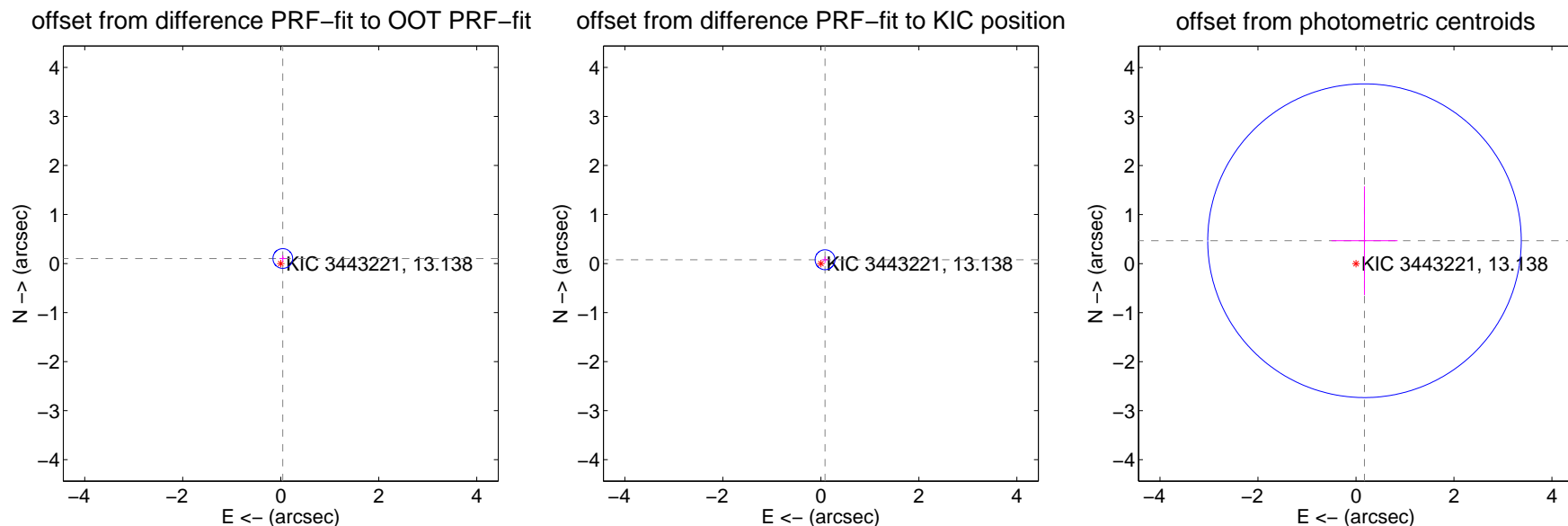
DV Centroid Data

Supplemental centroid analysis for 003443221-01. Kepler magnitude: 13.14. Transit SNR 3.11

There are 2 quarters with good PRF difference image offsets

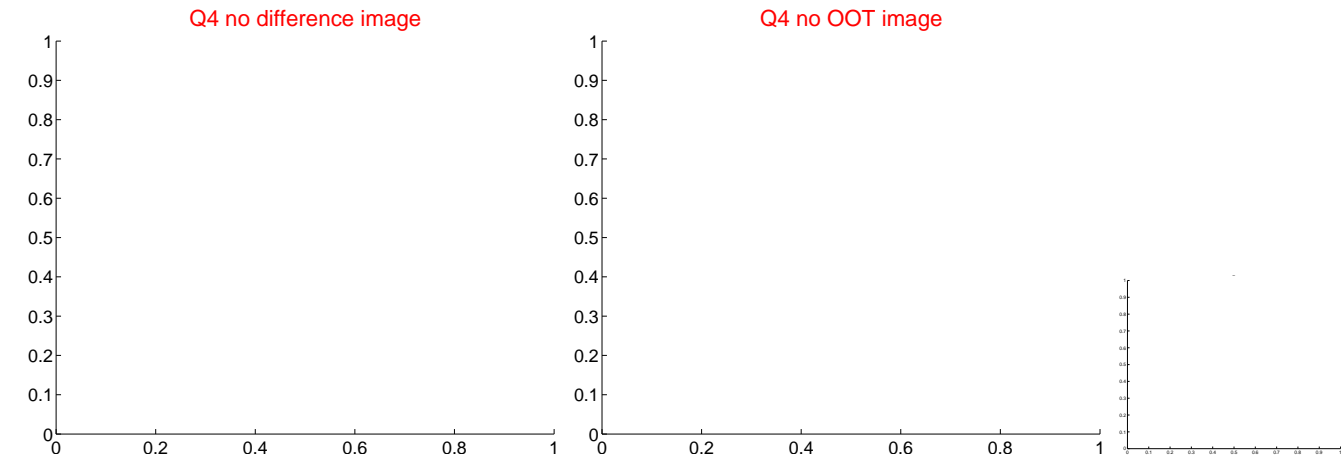
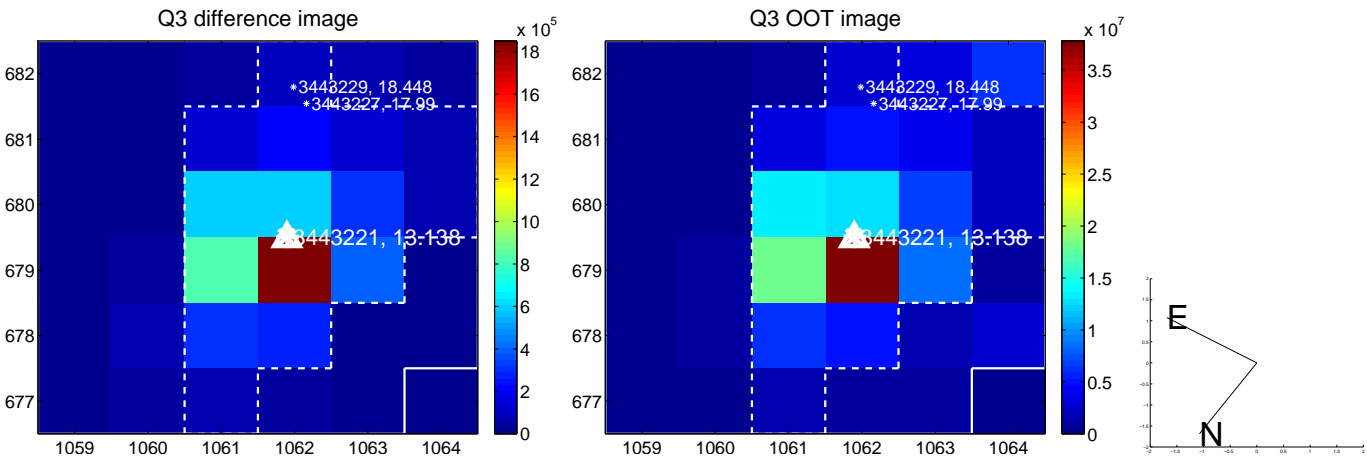
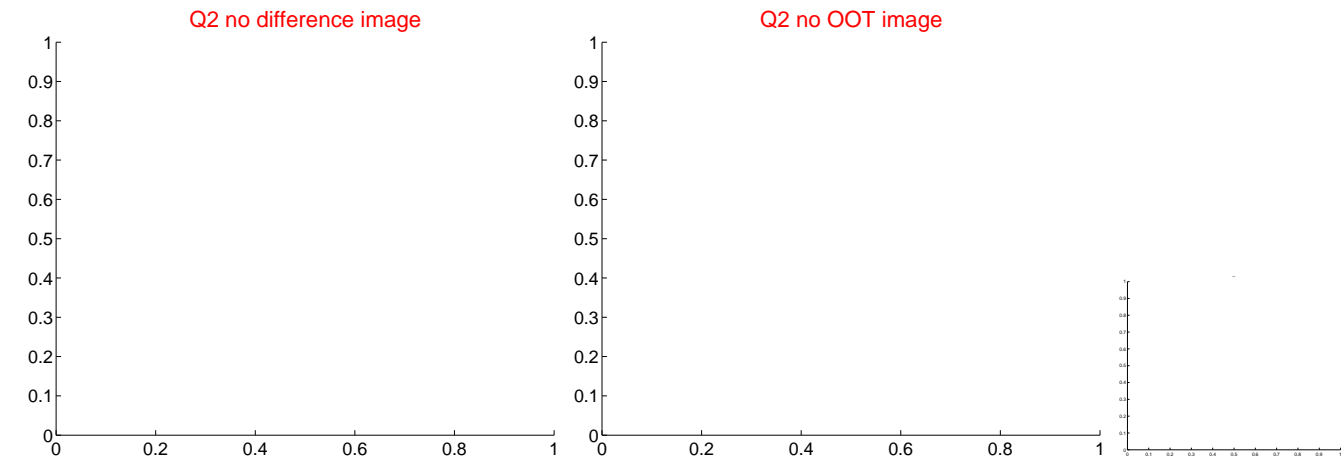
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.111 ± 0.067	1.65	-0.042 ± 0.067	0.103 ± 0.067
PRF-fit source offset from KIC position	0.115 ± 0.068	1.71	-0.085 ± 0.068	0.078 ± 0.067
photometric centroid source offset	0.50 ± 1.07	0.47	-0.17 ± 0.68	0.47 ± 1.11



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.

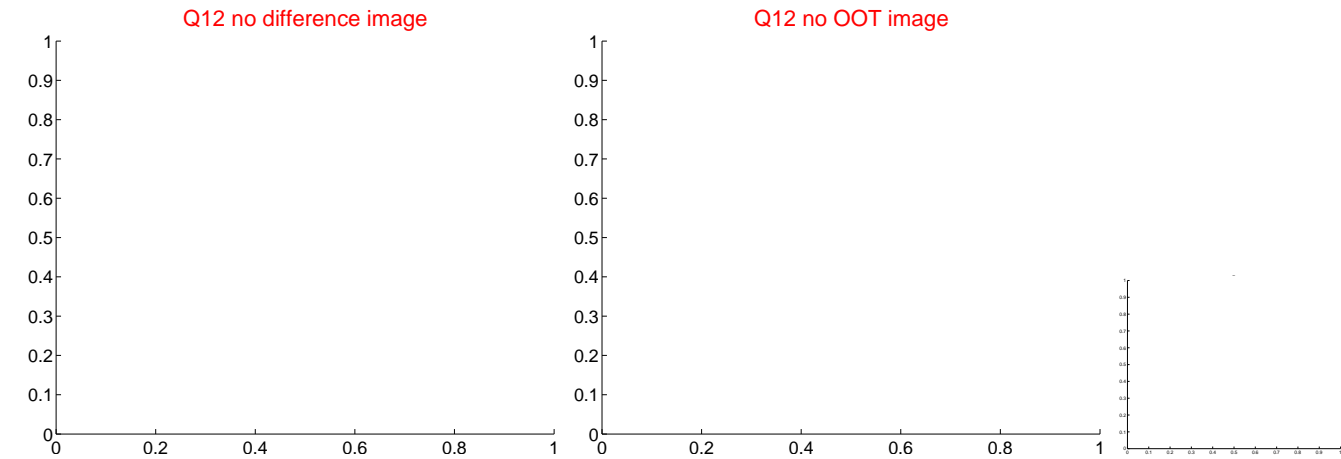
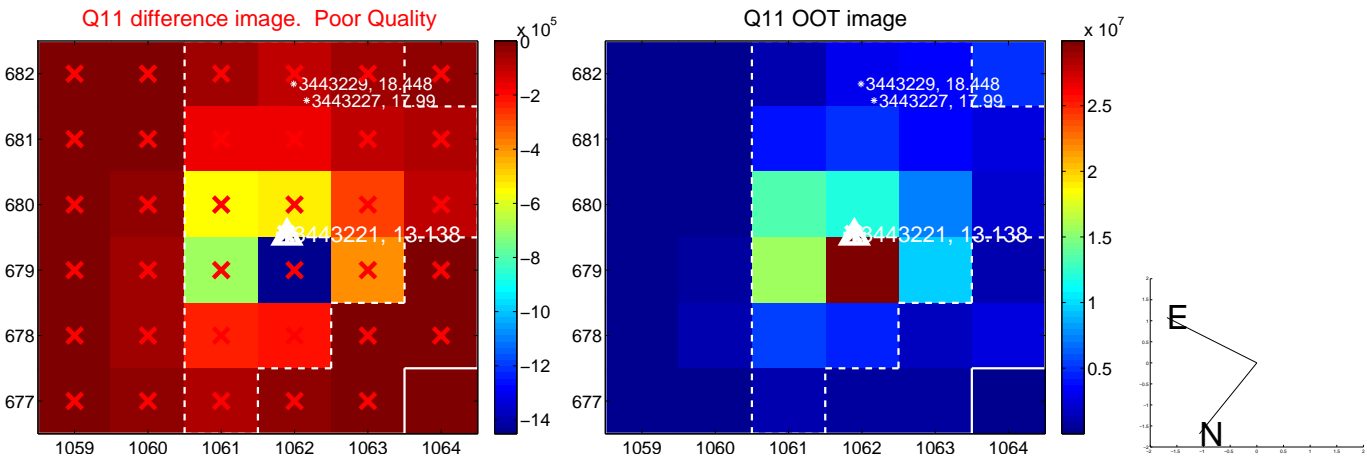
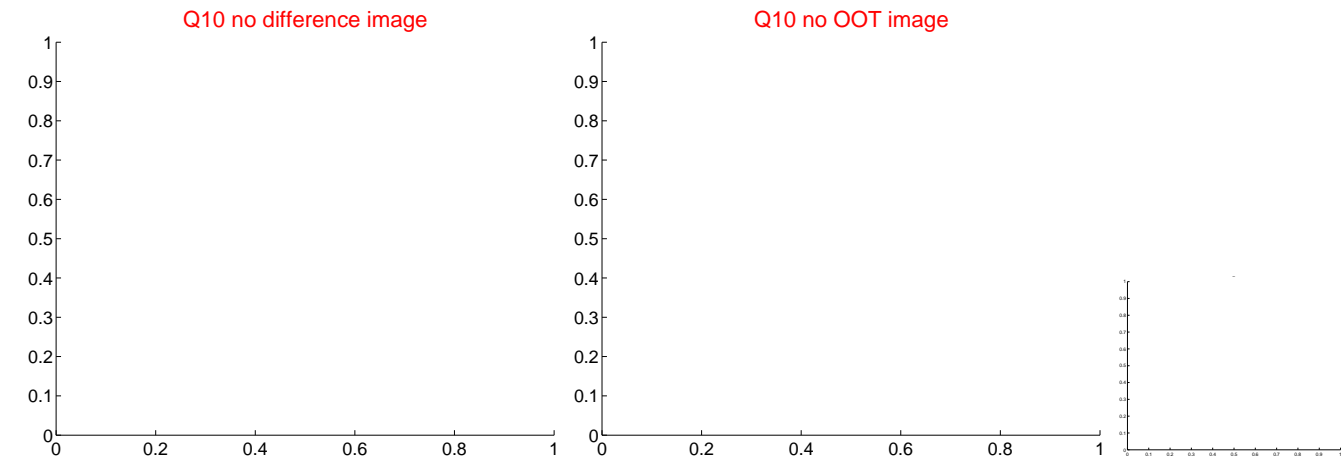
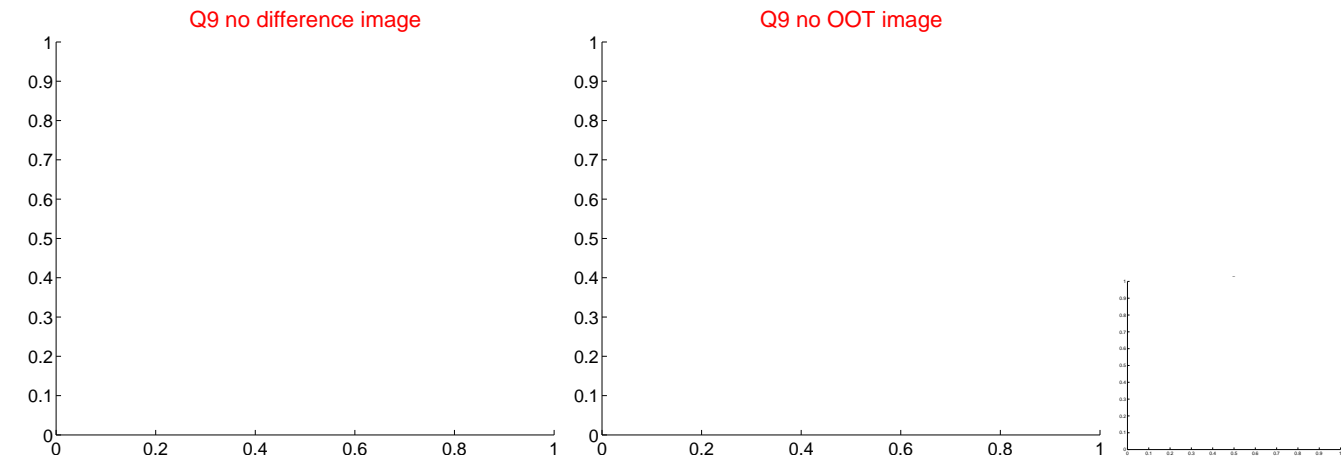
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



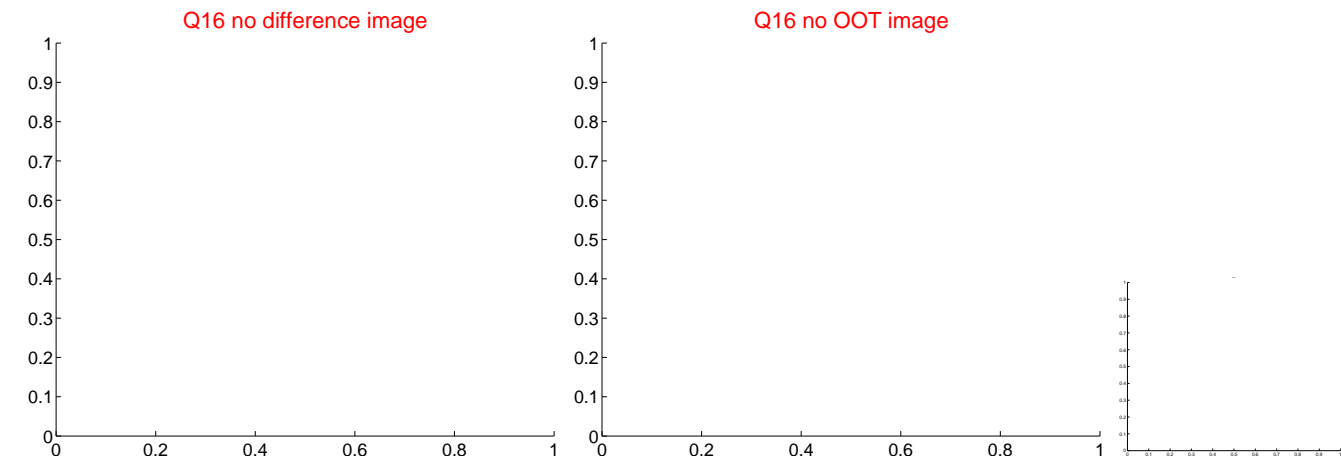
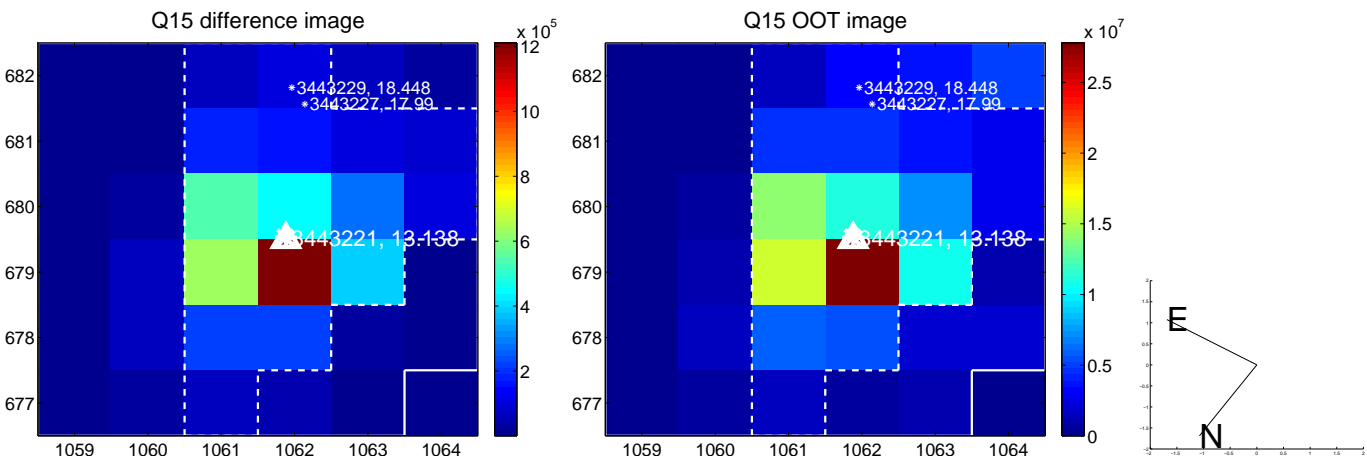
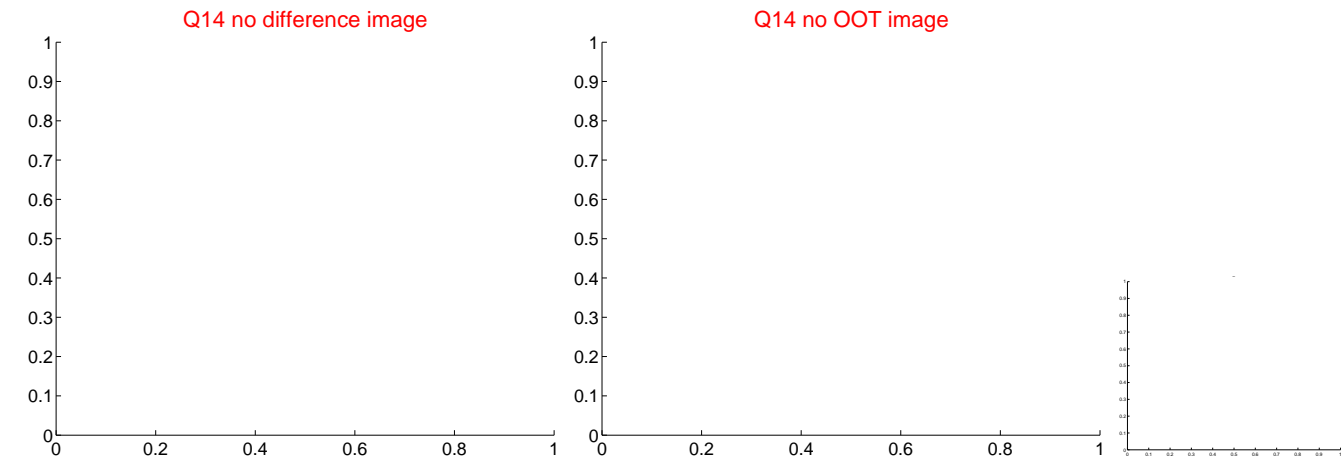
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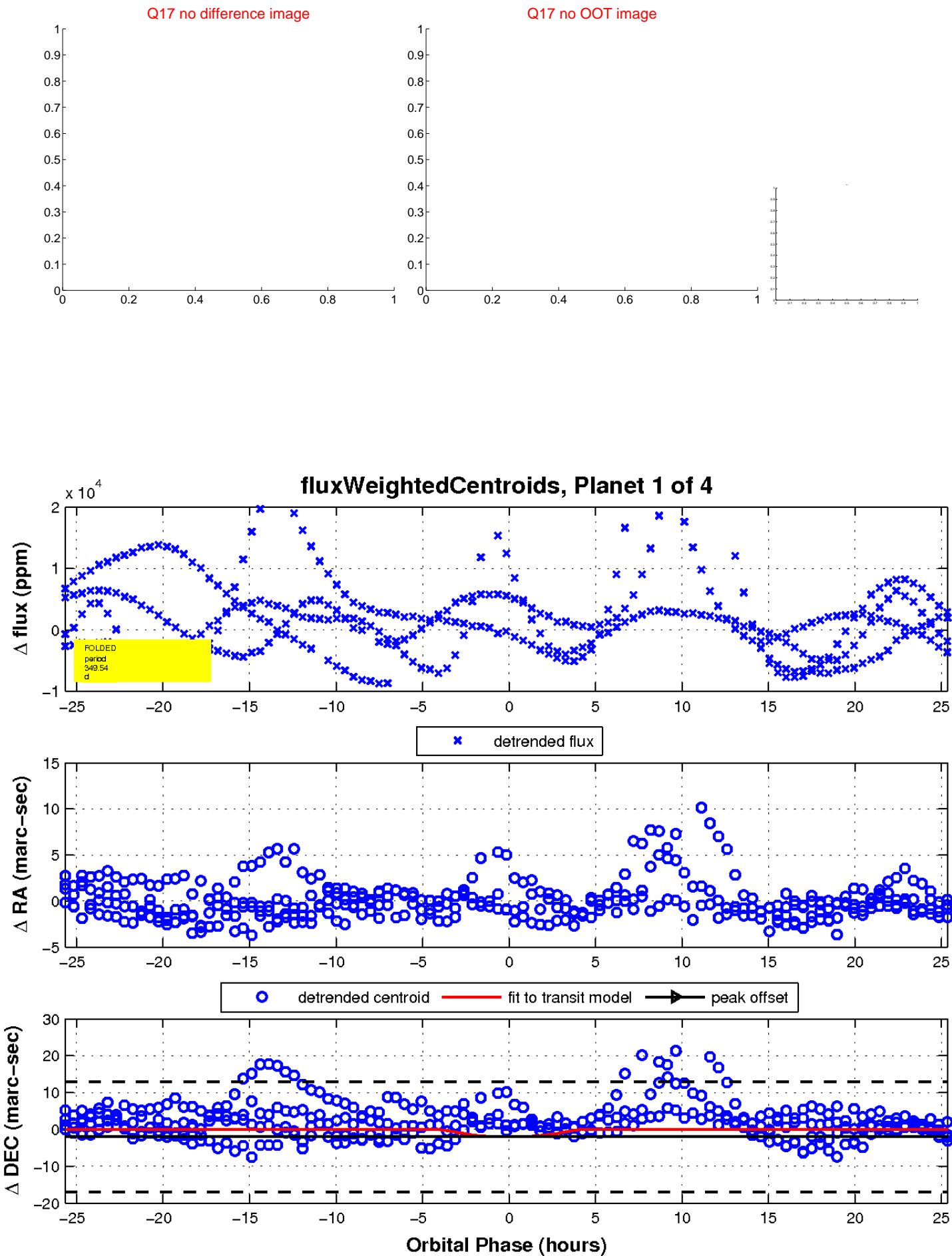
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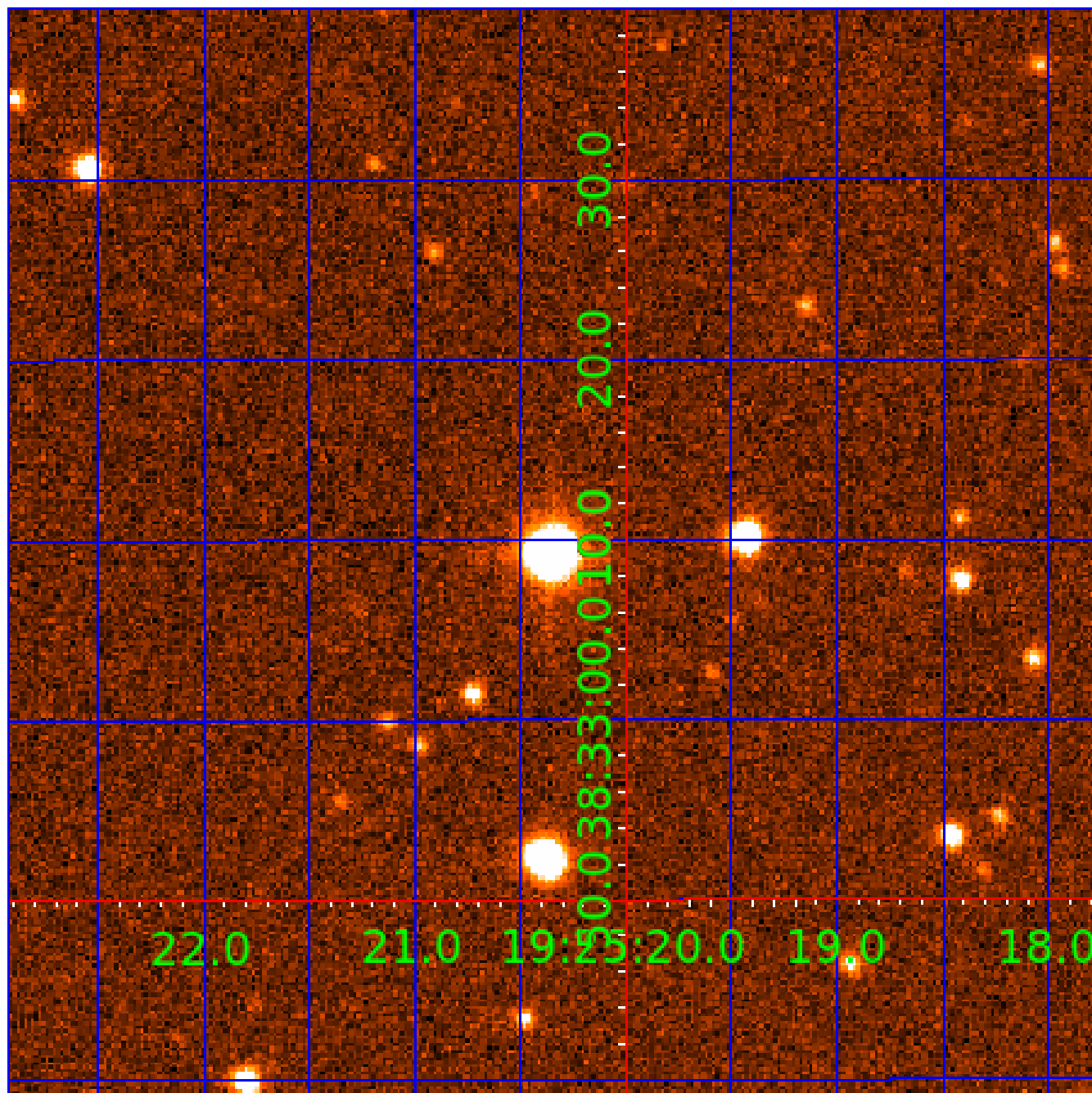


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003443221

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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003443221-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003443221-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003443221-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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.

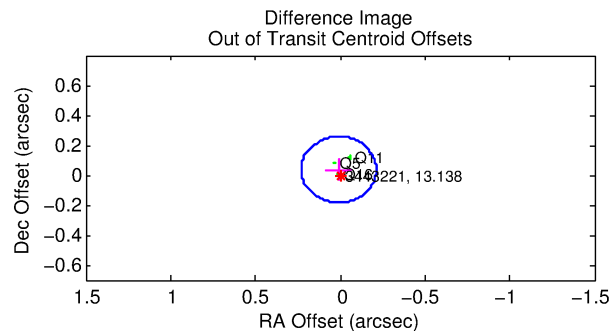
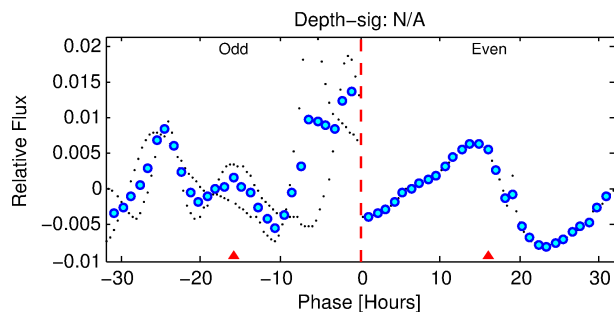
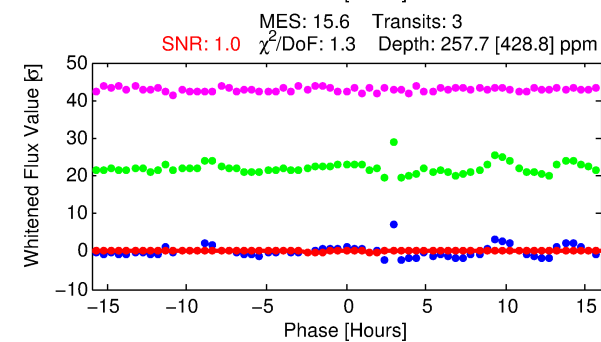
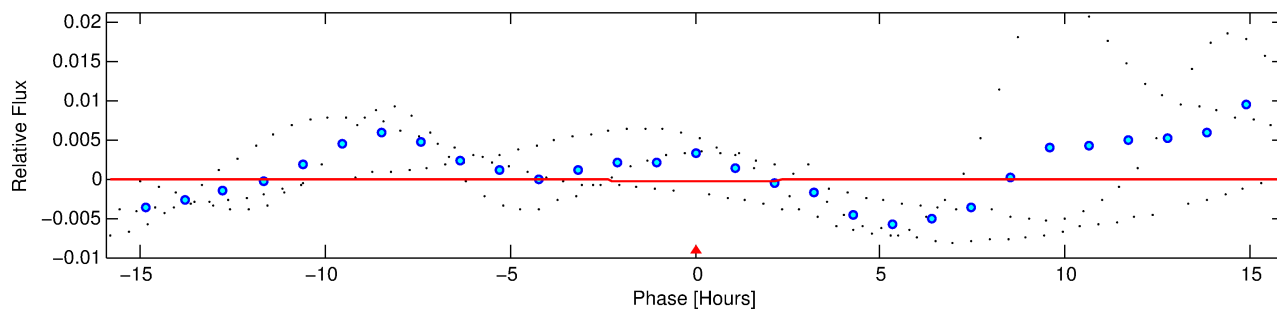
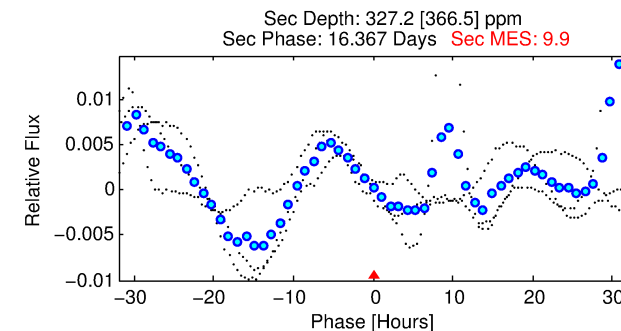
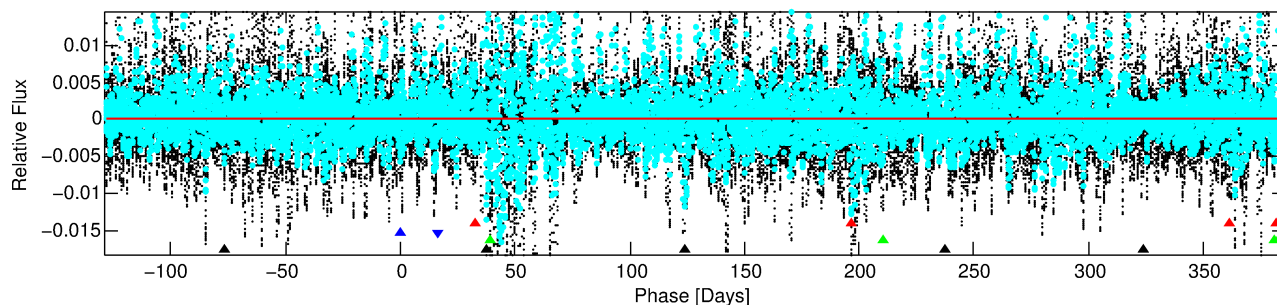
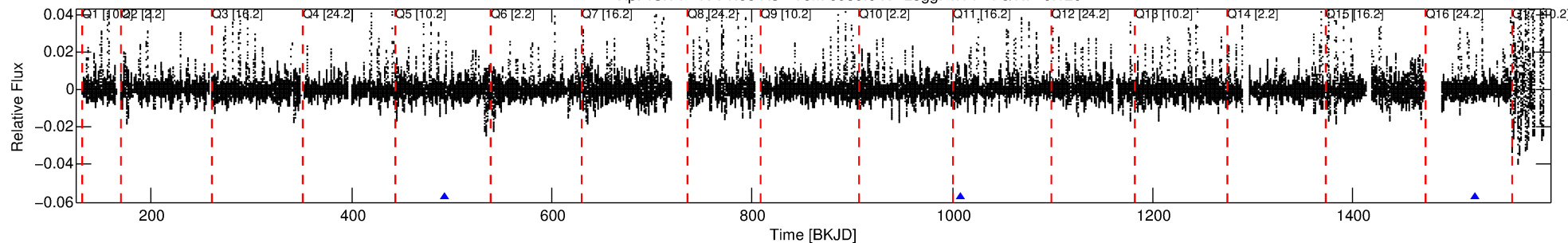
Ephemeris Match Information For 003443221-02

No Significant Match Found

DV One-Page Summary

KIC: 3443221 Candidate: 2 of 4 Period: 514.285 d

Kp: 13.14 R*: 1.66 Rs Teff: 6959.0 K Logg: 4.14 Fe/H: -0.120



DV Fit Results:

Period = 514.28517 [0.02734] d
Epoch = 493.4777 [0.0295] BKJD
Rp/R* = 0.0161 [0.0302]
a/R* = 488.80 [3844.48]
b = 0.77 [4.12]
Seff = 2.93 [0.63]
Teq = 334 [18] K
Rp = 2.91 [5.49] Re
a = 1.4074 [0.2009] AU
Ag = 42016.70 [164930.68] [0.25σ]
Teff = 7383 [7235] K [0.97σ]

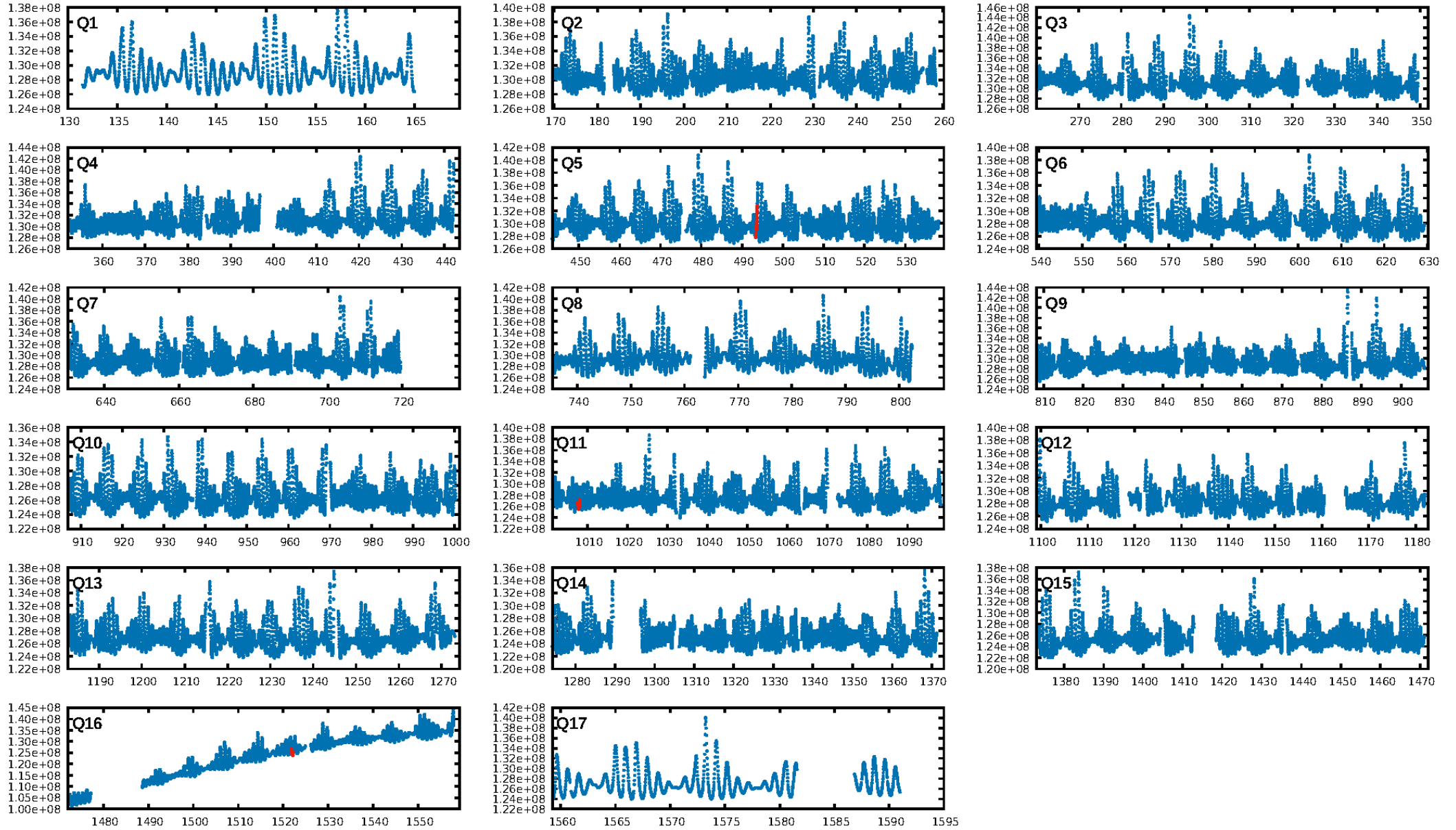
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [390.87σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 95.3%
ModelChiSquareGof-sig: 98.2%
Bootstrap-pfa: 3.97e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.562
Centroid-sig: N/A
Centroid-so: 1.712 arcsec [0.49σ]
OotOffset-rm: 0.038 arcsec [0.51σ]
KicOffset-rm: 0.025 arcsec [0.34σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-st: 0/1/1/1 [3]
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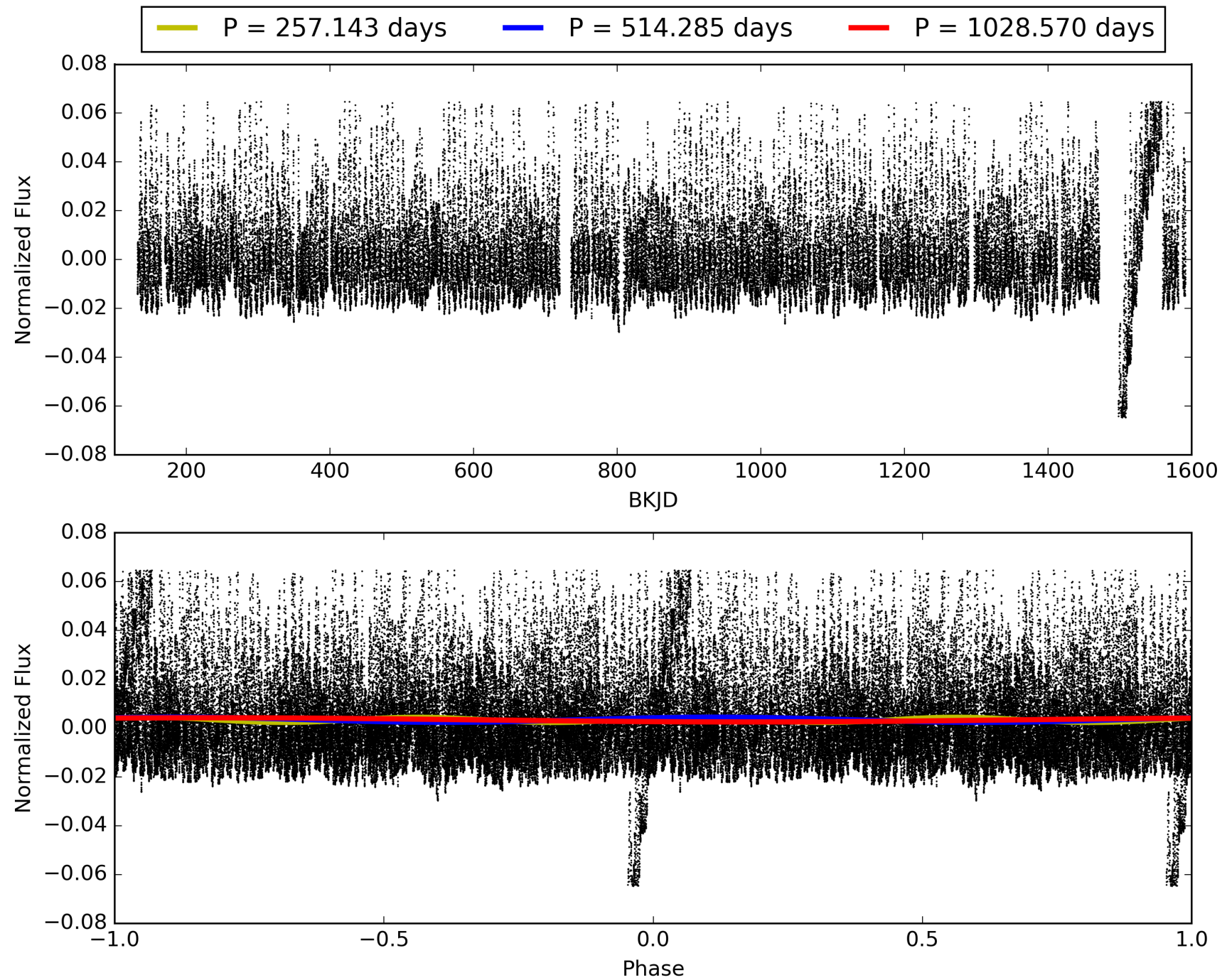
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:28:48 Z

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

TCE 003443221-02, PDC Light Curves

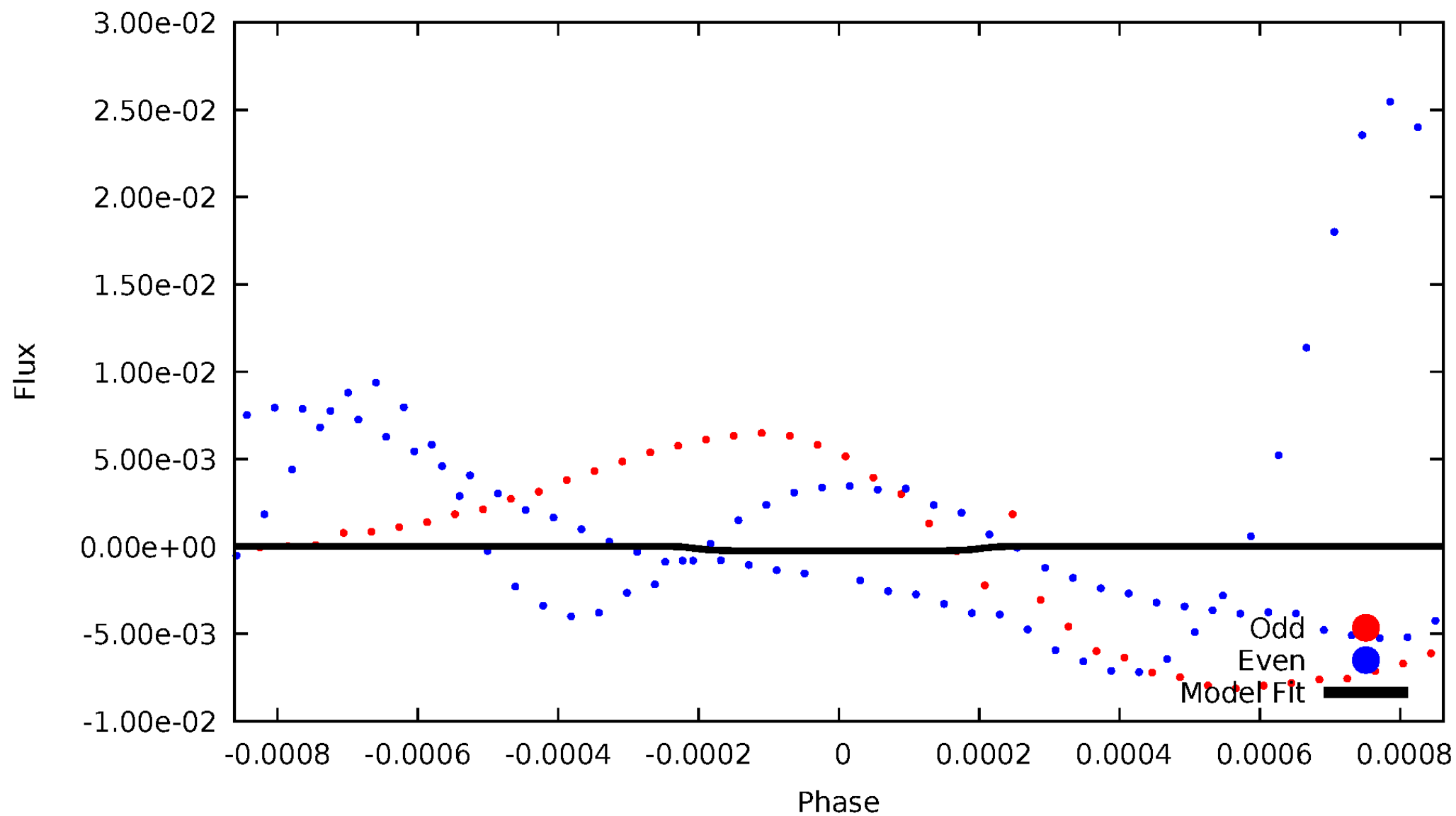


TCE 003443221-02



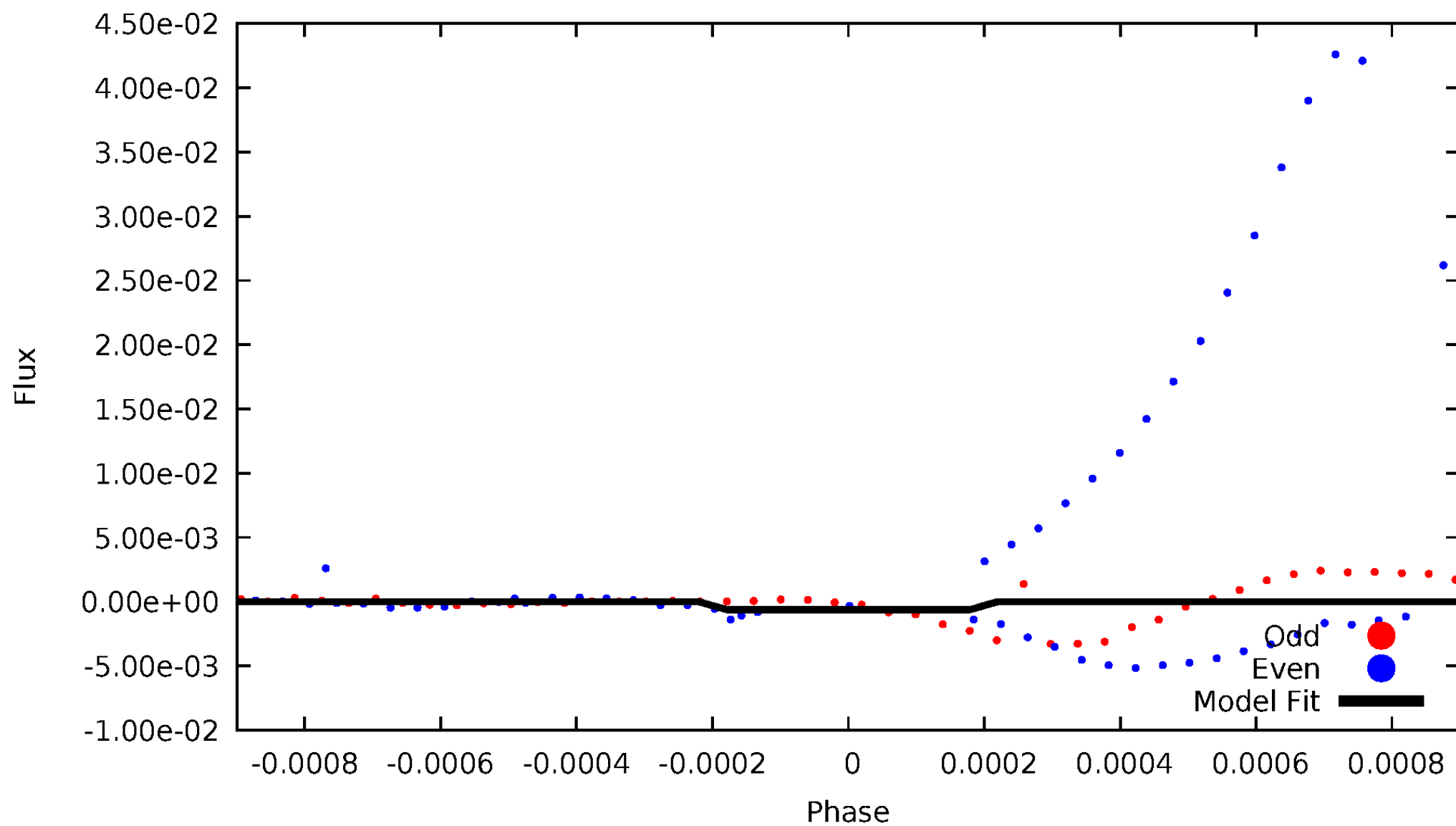
DV Odd/Even

TCE 003443221-02



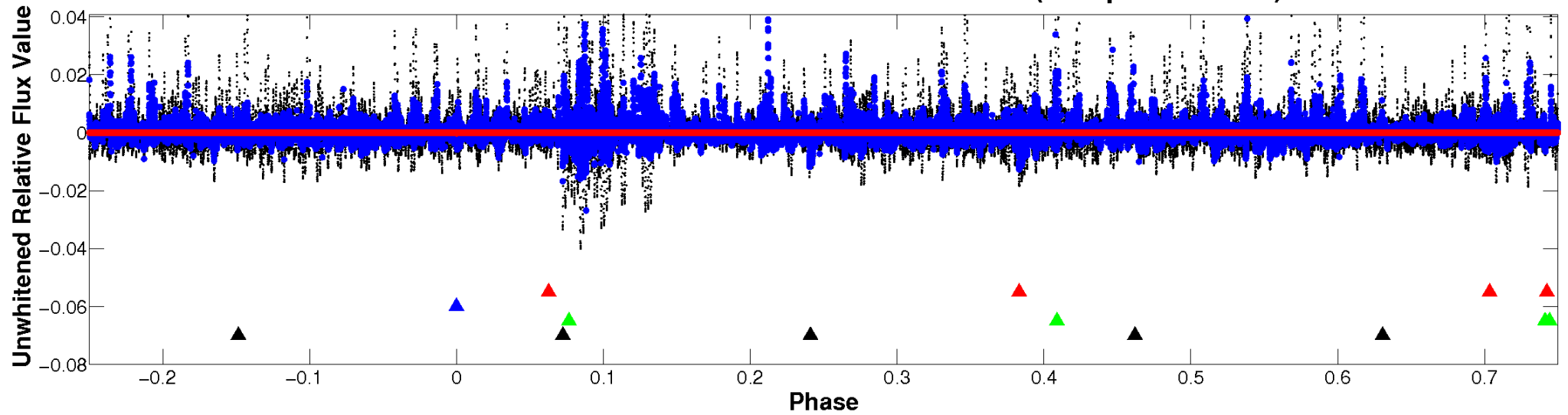
ALT Odd/Even

TCE 003443221-02

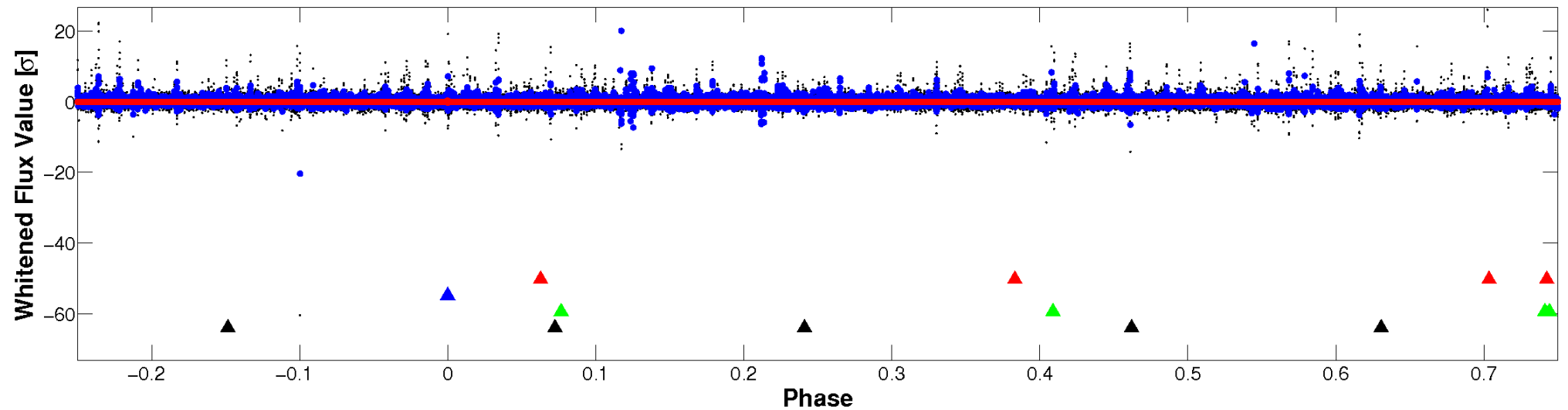


Non-Whitened Vs. Whitened Light Curve

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

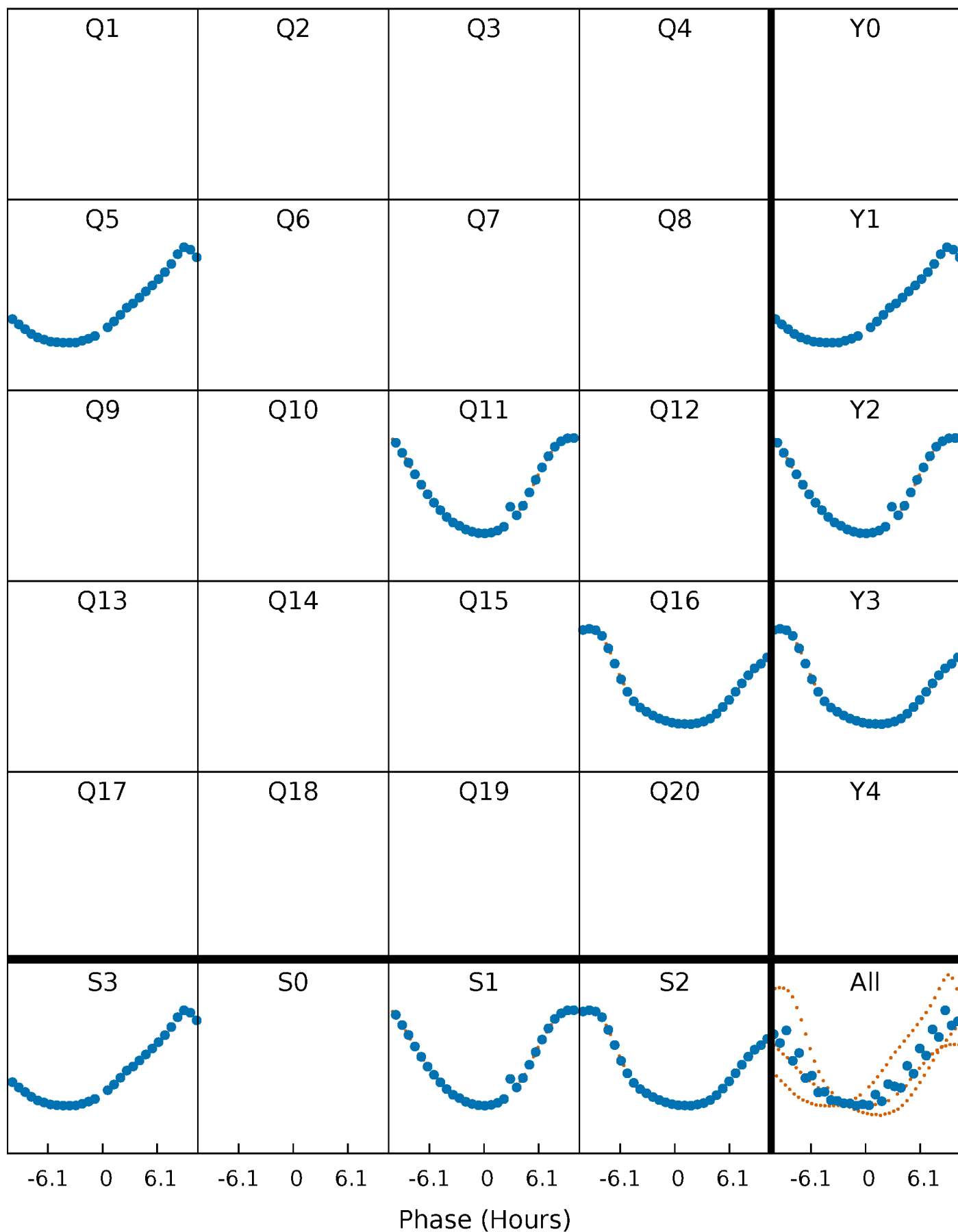


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



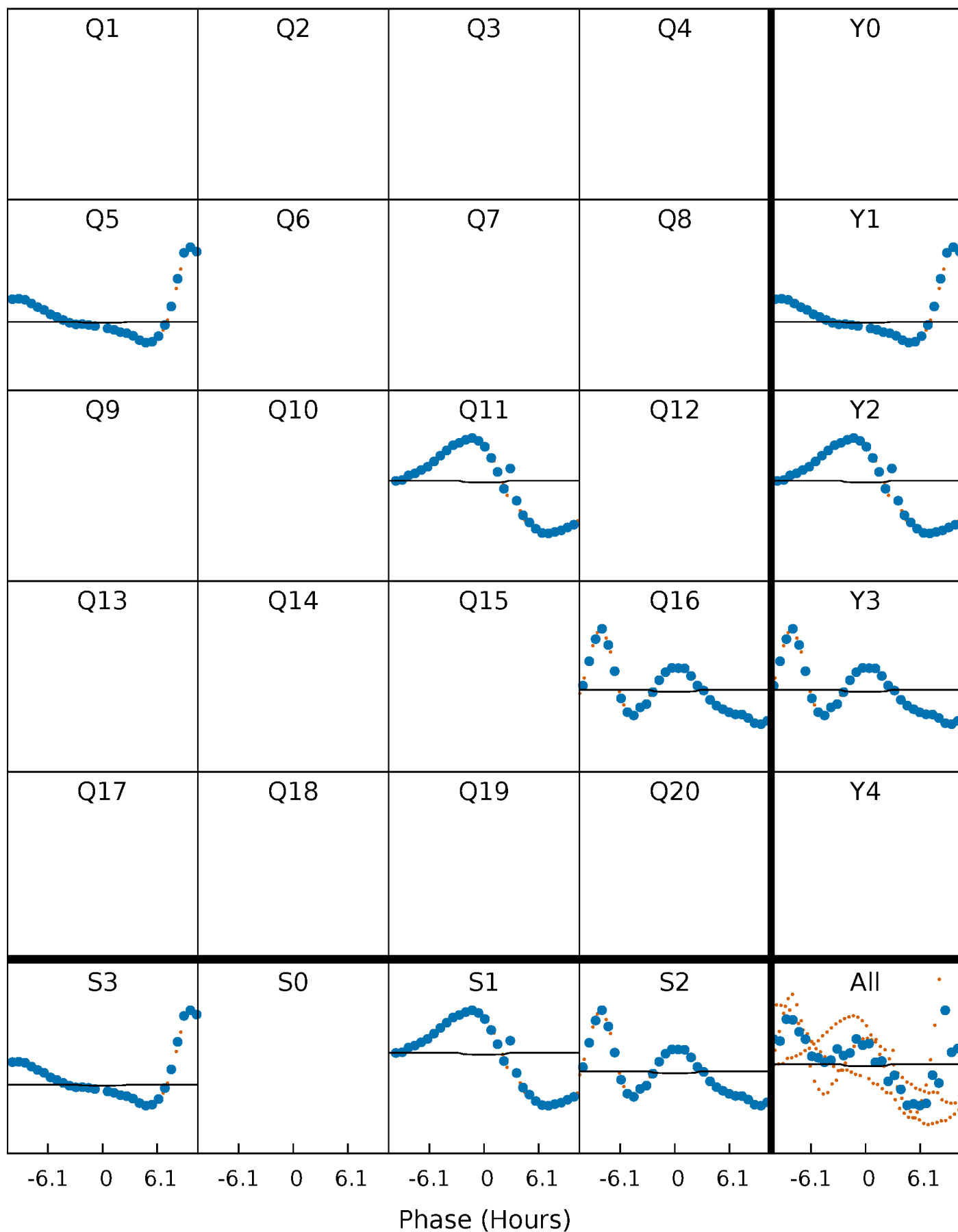
PDC Quarter-Phased Transit Curves

TCE 003443221-02 $P=514.285174$ Days $T_0=493.477654$ (BKJD)



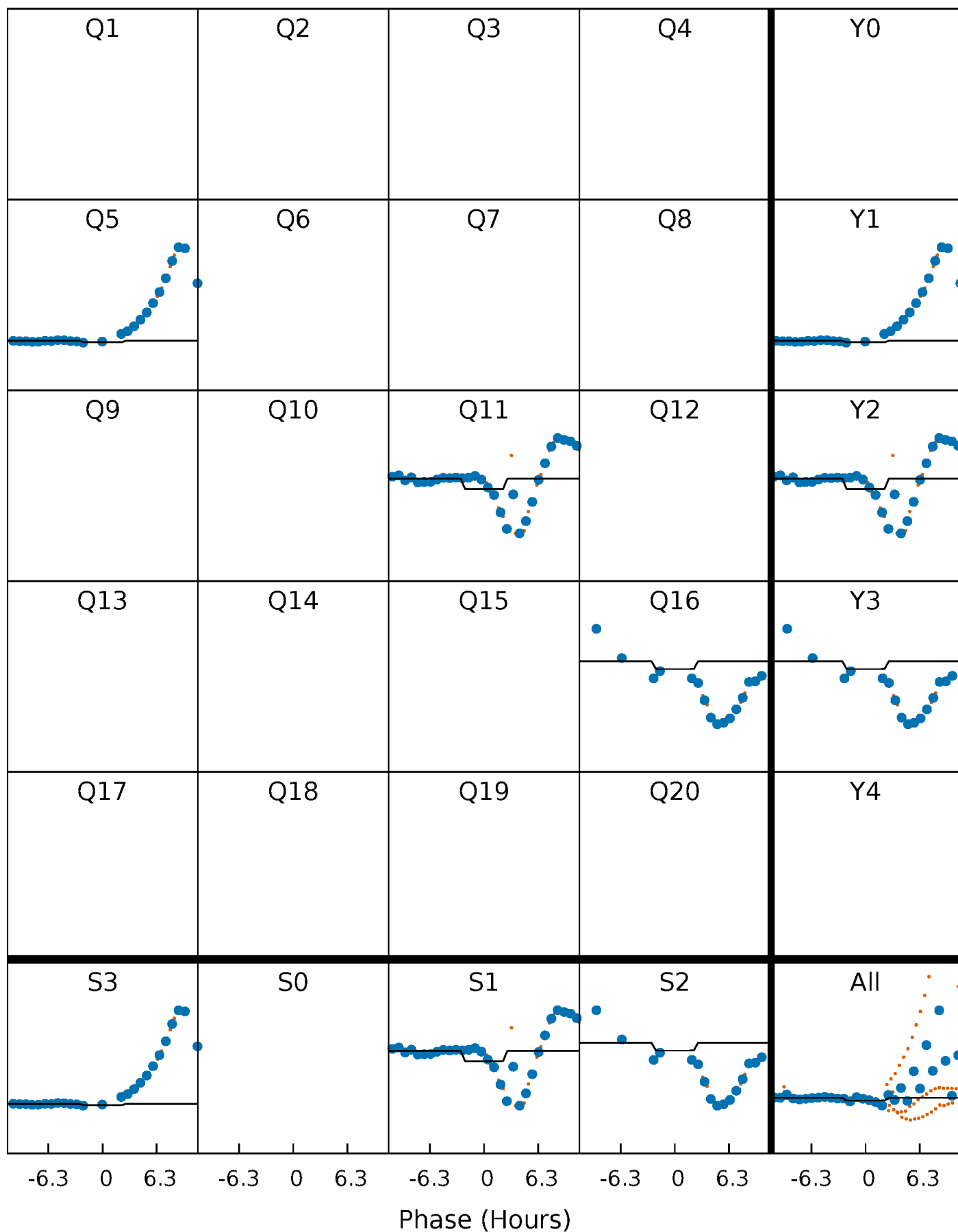
DV Quarter-Phased Transit Curves

TCE 003443221-02 $P=514.285174$ Days $T_0=493.477654$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

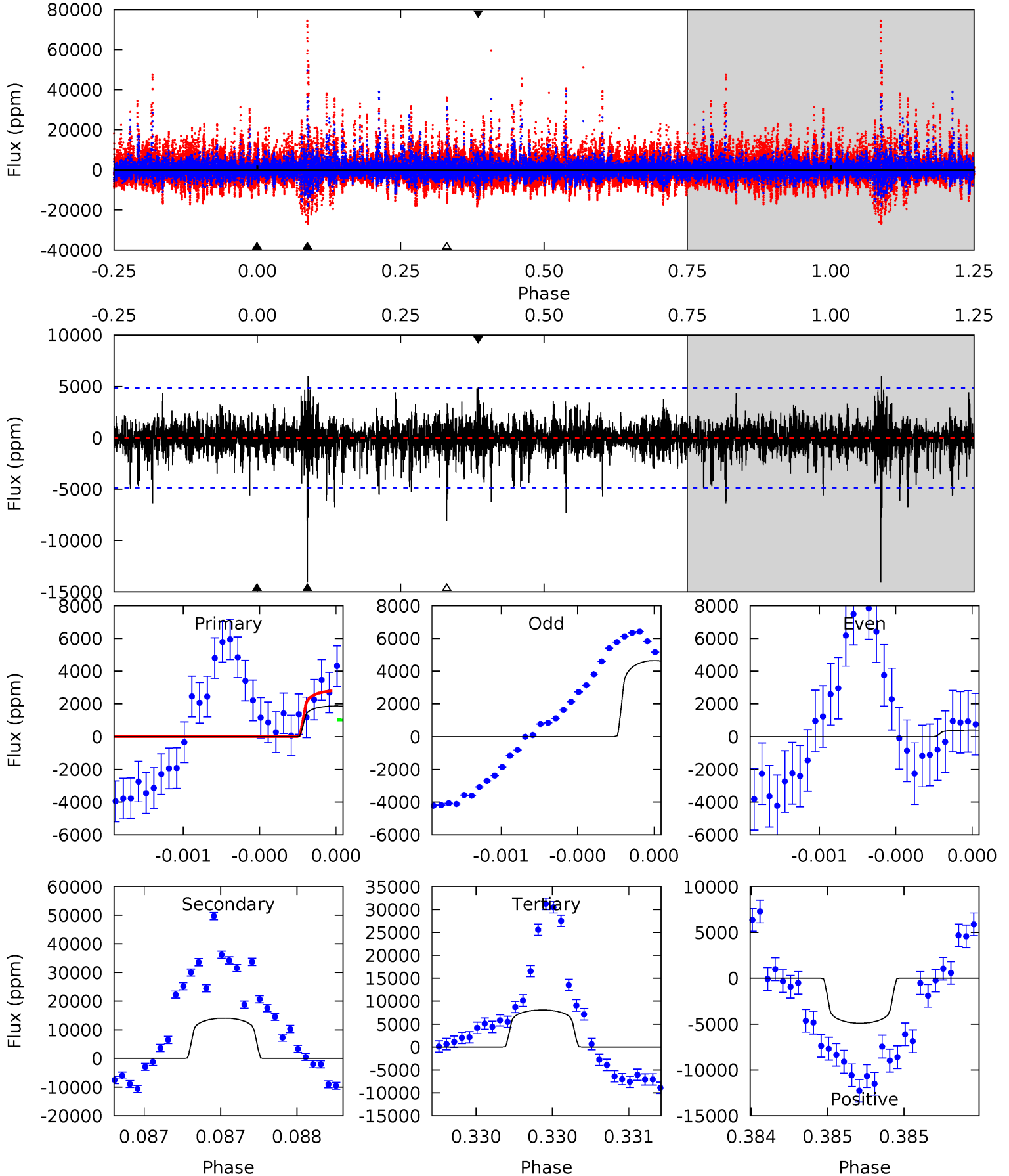
TCE 003443221-02 $P=514.265027$ Days $T_0=493.492495$ (BKJD)



DV Model-Shift Uniqueness Test

003443221-02, P = 514.285174 Days, E = 493.477654 Days

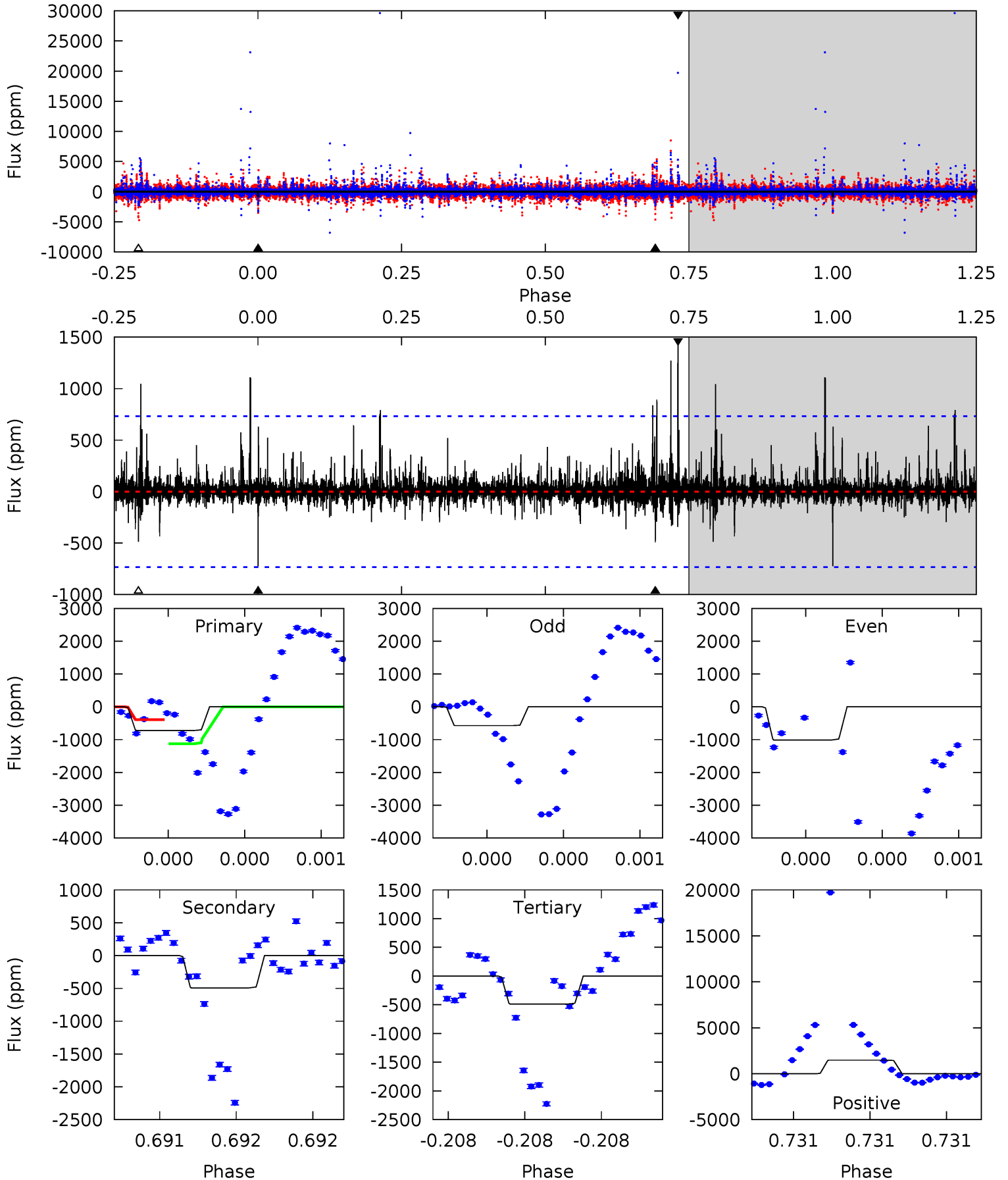
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.16	16.2	9.31	5.66	5.58	3.49	1.45	-7.15	-3.50	6.91	10.6	1.87	0.62	0.30	1.03



Alt Model-Shift Uniqueness Test

003443221-02, P = 514.265027 Days, E = 493.492495 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.53	3.77	3.73	11.3	5.61	3.53	0.67	1.80	-5.76	0.04	-7.51	0.89	1.10	0.67	2.85



Stellar Parameters For KIC 003443221

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6959^{+83}_{-83}	$4.145^{+0.095}_{-0.116}$	$-0.120^{+0.150}_{-0.150}$	$1.661^{+0.278}_{-0.202}$	$1.411^{+0.102}_{-0.102}$	$0.434^{+0.183}_{-0.152}$
	+1%/-1%	+2%/-3%	+125%/-125%	+17%/-12%	+7%/-7%	+42%/-35%
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 003443221-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-14074 ± 868	$5.25^{+4.47}_{-3.79}$	467^{+20}_{-17}	$22812^{+133716}_{-10821}$	$583003^{+6590930}_{-418492}$
Alt.	-493 ± 131	$6.17^{+4.74}_{-3.99}$	465^{+21}_{-17}	5623^{+4466}_{-1243}	14510^{+93596}_{-10284}

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

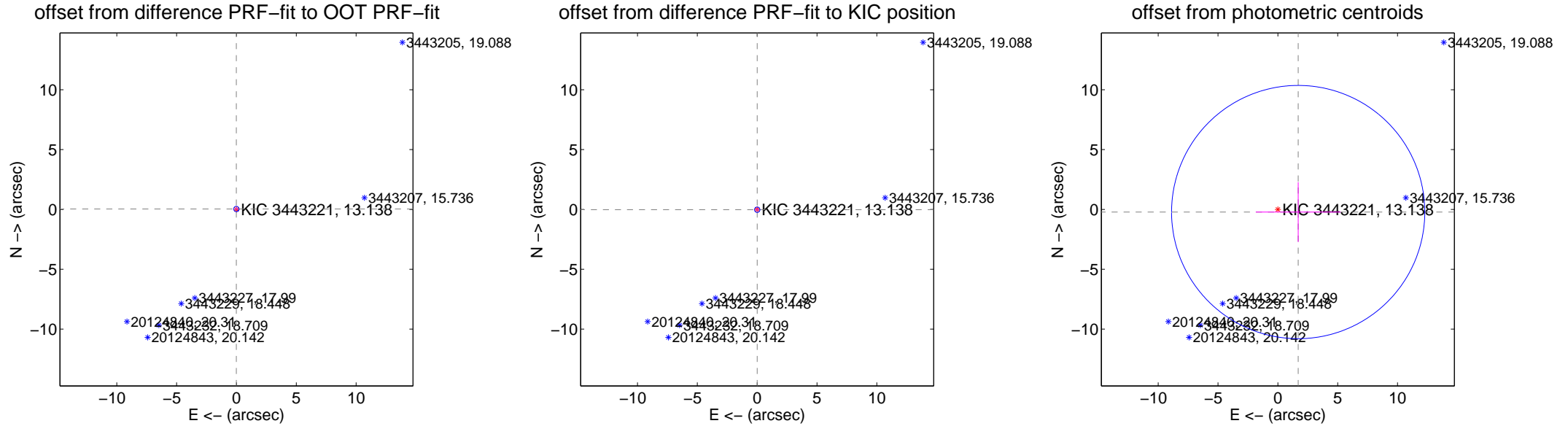
DV Centroid Data

Supplemental centroid analysis for 003443221-02. Kepler magnitude: 13.14. Transit SNR 1.05

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.038 ± 0.074	0.51	0.009 ± 0.069	0.037 ± 0.074
PRF-fit source offset from KIC position	0.025 ± 0.075	0.34	-0.005 ± 0.072	-0.025 ± 0.075
photometric centroid source offset	1.71 ± 3.53	0.49	-1.70 ± 3.54	-0.22 ± 2.50

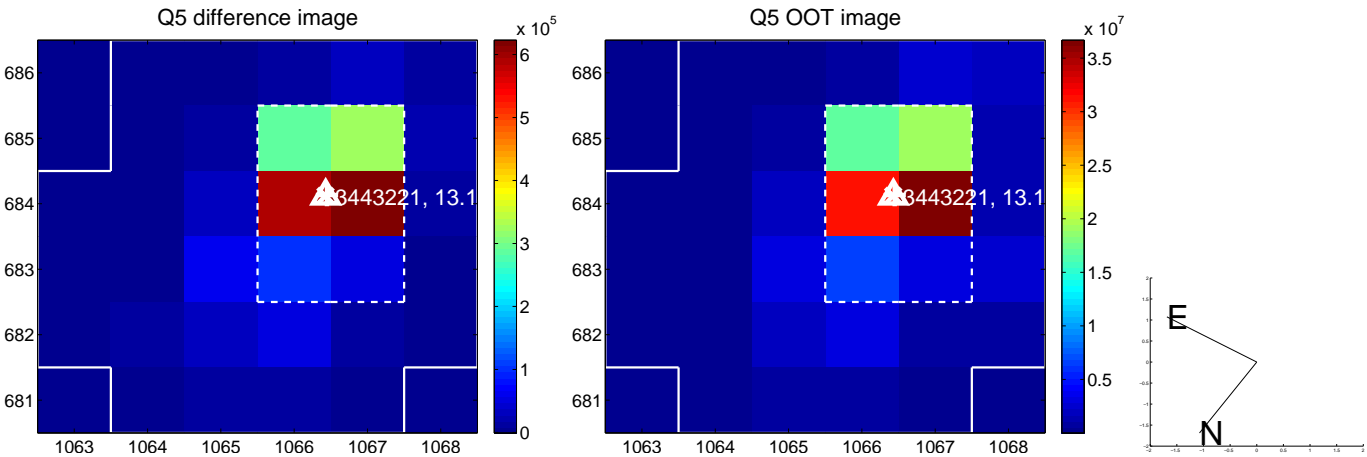


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

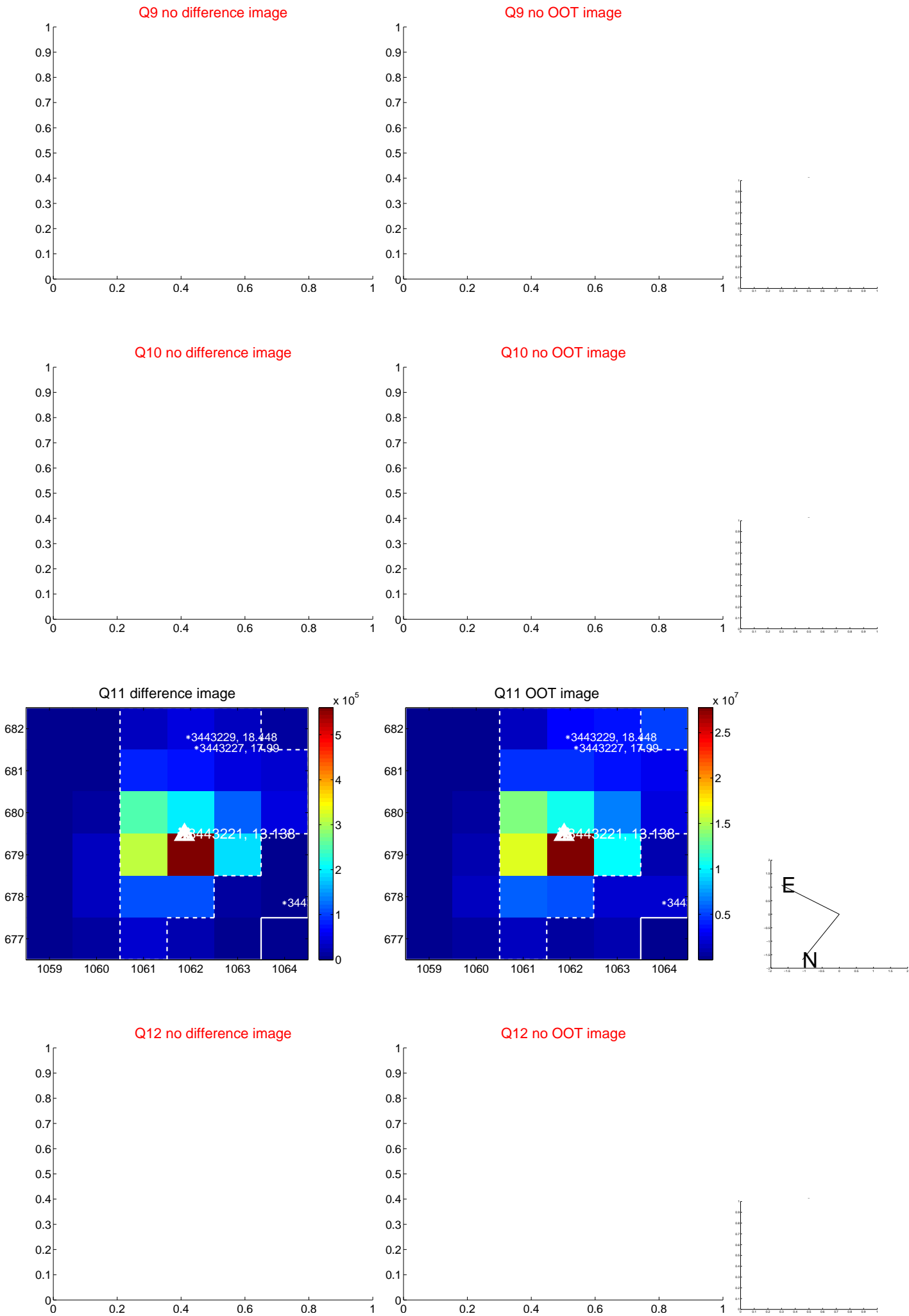
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



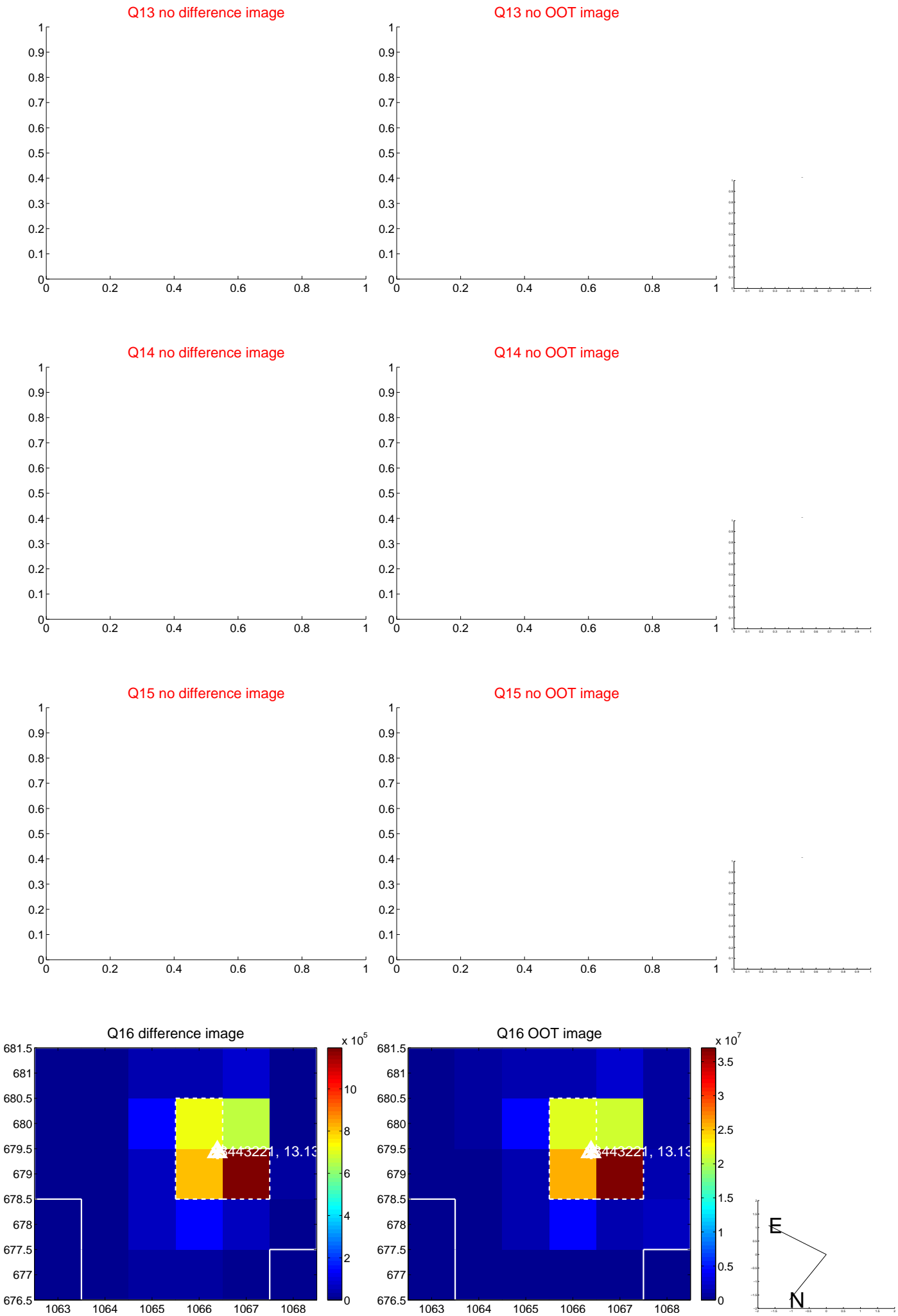
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



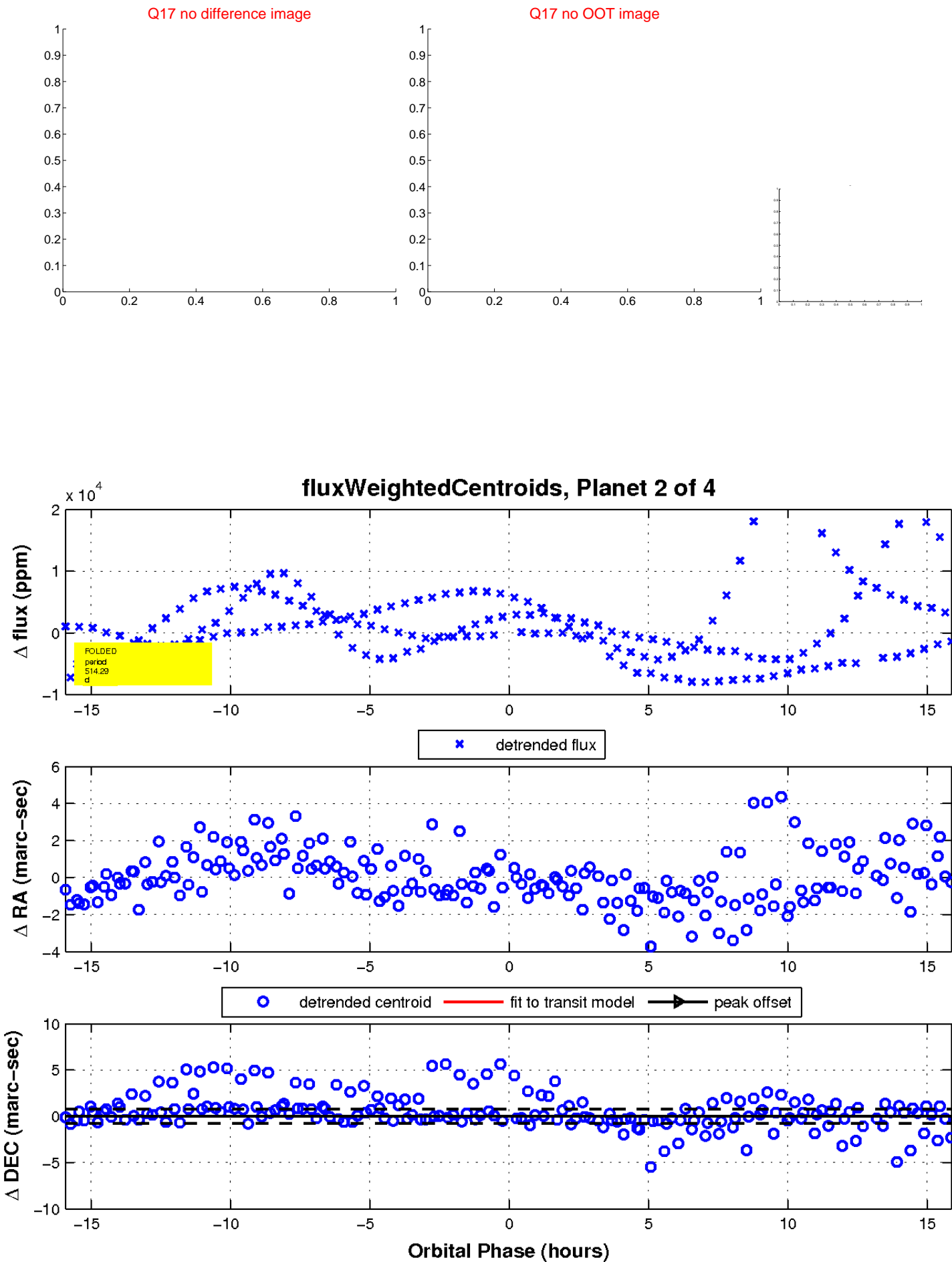
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

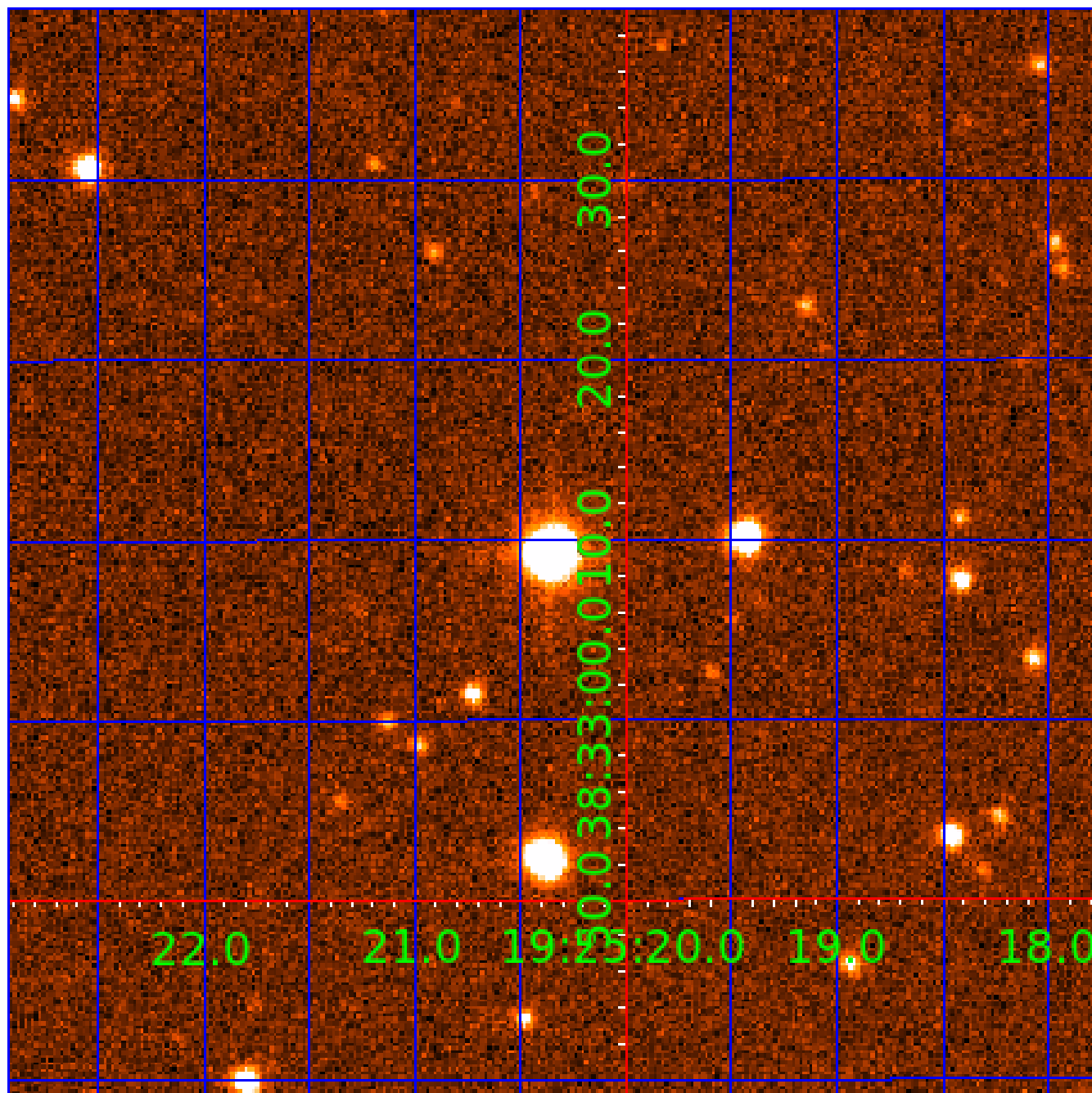


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003443221

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})
003443221-01	OBS	No	349.538161	340.983694	2706.9	8.608	27.2	3.1	1.66	6959	10.55	4.90
003443221-02	OBS	No	514.285174	493.477654	257.7	5.314	15.6	1.0	1.66	6959	2.91	2.93
003443221-03	OBS	No	343.388984	360.383279	7201.6	9.377	20.2	8.4	1.66	6959	24.93	5.01
003443221-04	OBS	No	313.954586	303.497109	3925.8	9.495	17.3	3.8	1.66	6959	18.68	5.65

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003443221-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003443221-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003443221-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003443221-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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.

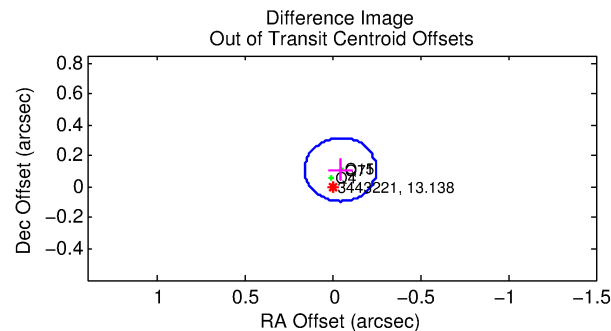
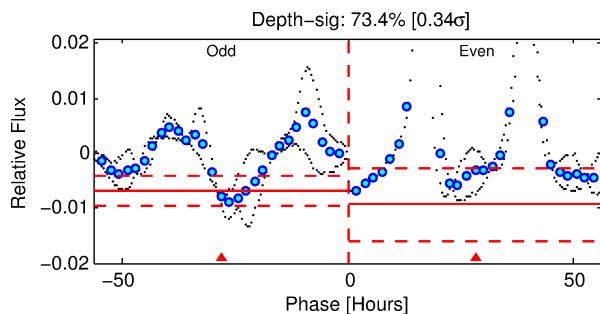
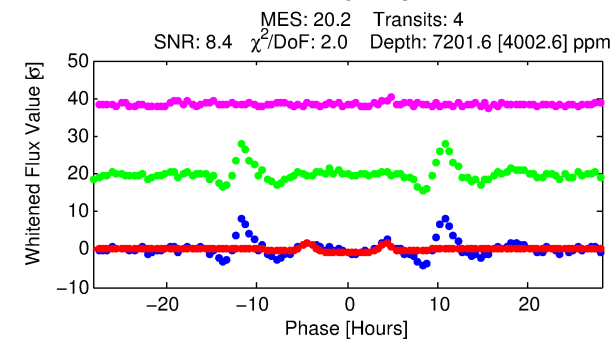
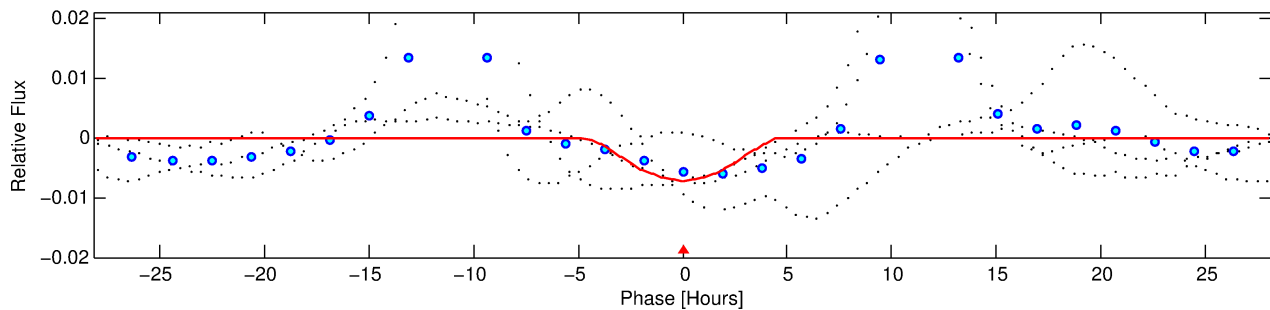
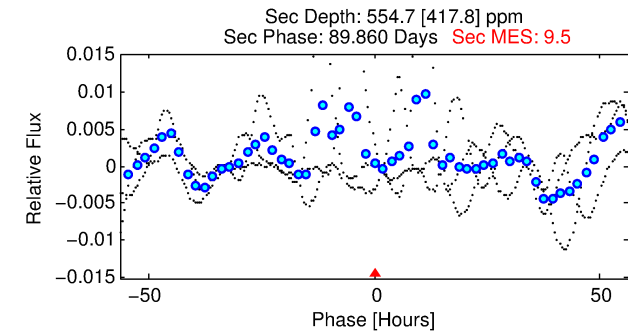
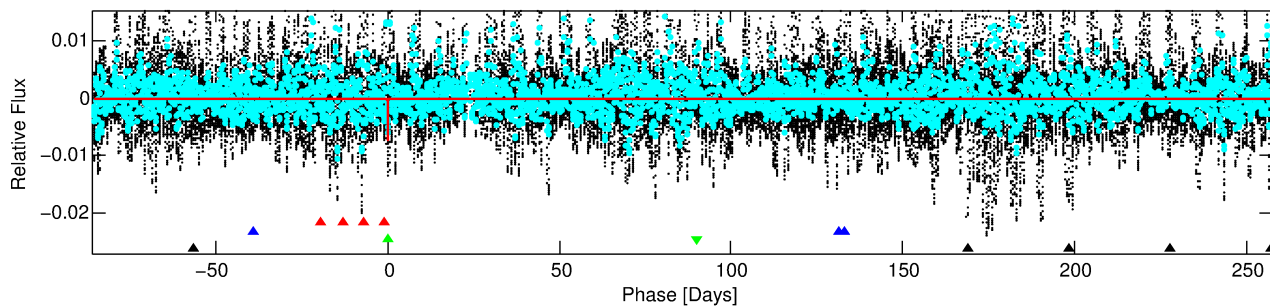
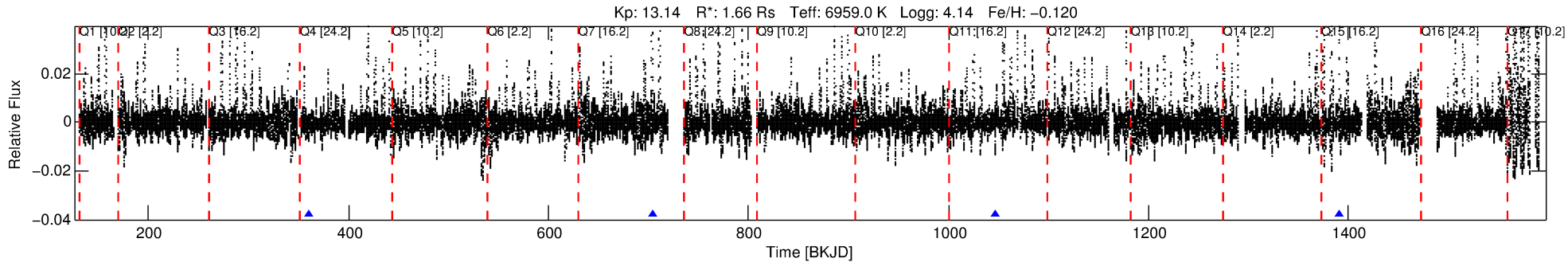
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003443221-03

No Significant Match Found

DV One-Page Summary

KIC: 3443221 Candidate: 3 of 4 Period: 343.389 d



DV Fit Results:

Period = 343.38898 [0.00555] d
Epoch = 360.3833 [0.0094] BKJD
Rp/R* = 0.1375 [0.1447]
a/R* = 151.70 [22.97]
b = 1.00 [0.25]
Seff = 5.02 [1.08]
Teq = 382 [21] K
Rp = 24.93 [26.56] Re
a = 1.0751 [0.1535] AU
Ag = 567.61 [1274.39] [0.44σ]
Teffp = 2880 [1610] K [1.55σ]

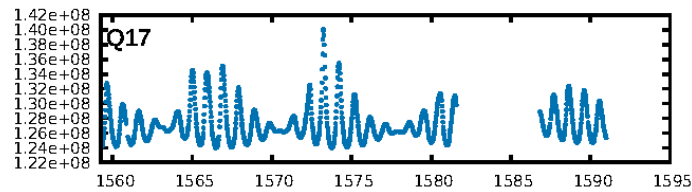
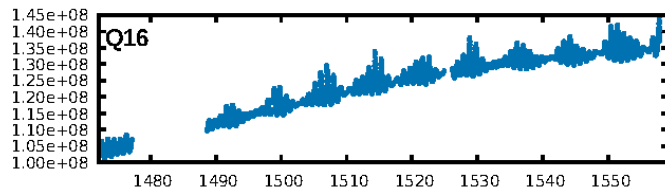
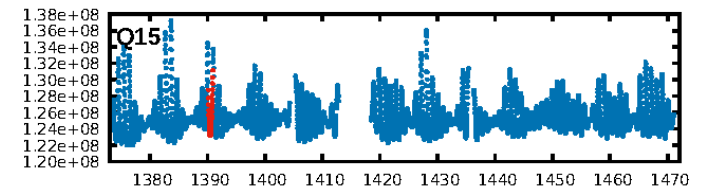
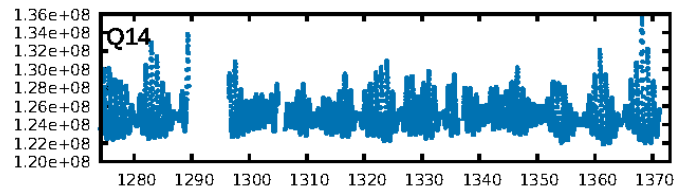
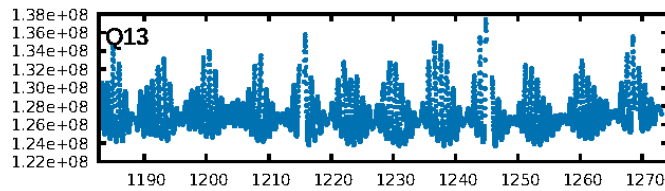
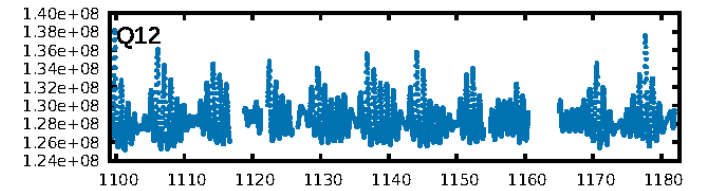
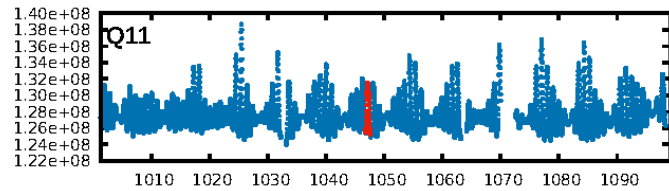
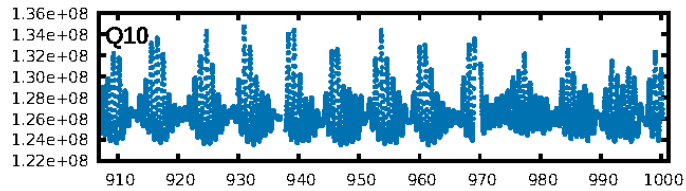
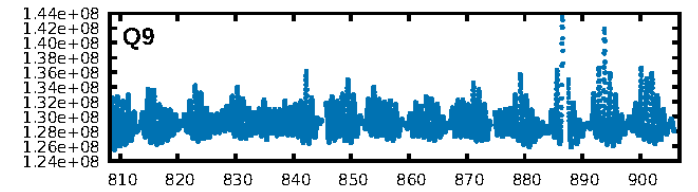
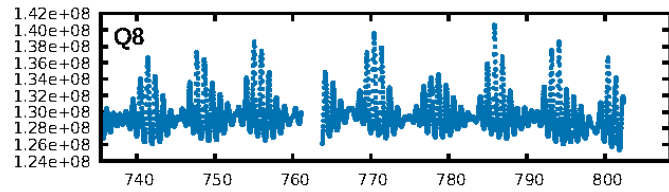
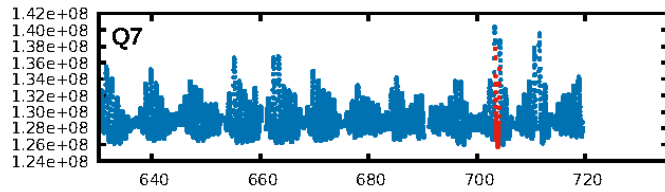
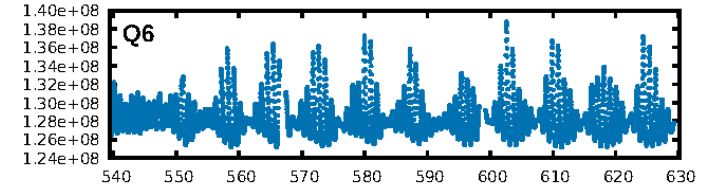
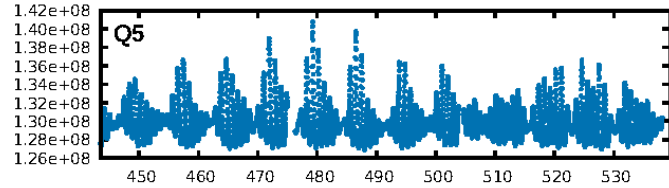
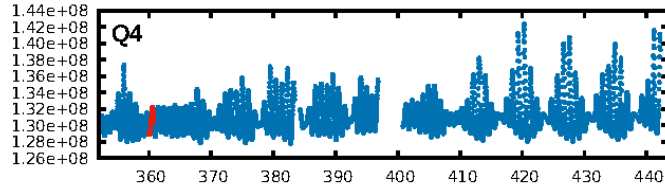
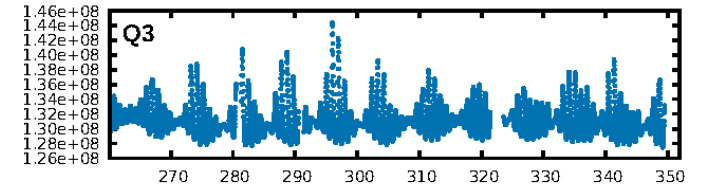
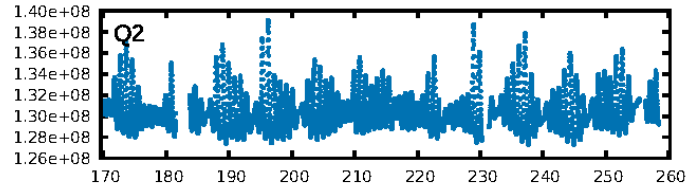
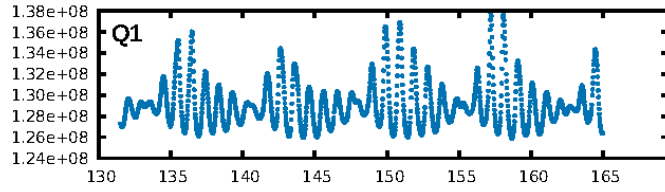
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [52.94σ]
LongPeriod-sig: 100.0% [11.59σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 49.8%
Bootstrap-pfa: 8.71e-11
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.872
Centroid-sig: N/A
Centroid-so: 0.437 arcsec [2.62σ]
OotOffset-rm: 0.120 arcsec [1.76σ]
KicOffset-rm: 0.117 arcsec [1.69σ]
OotOffset-st: 0/3/1/0 [4]
KicOffset-st: 0/3/1/0 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

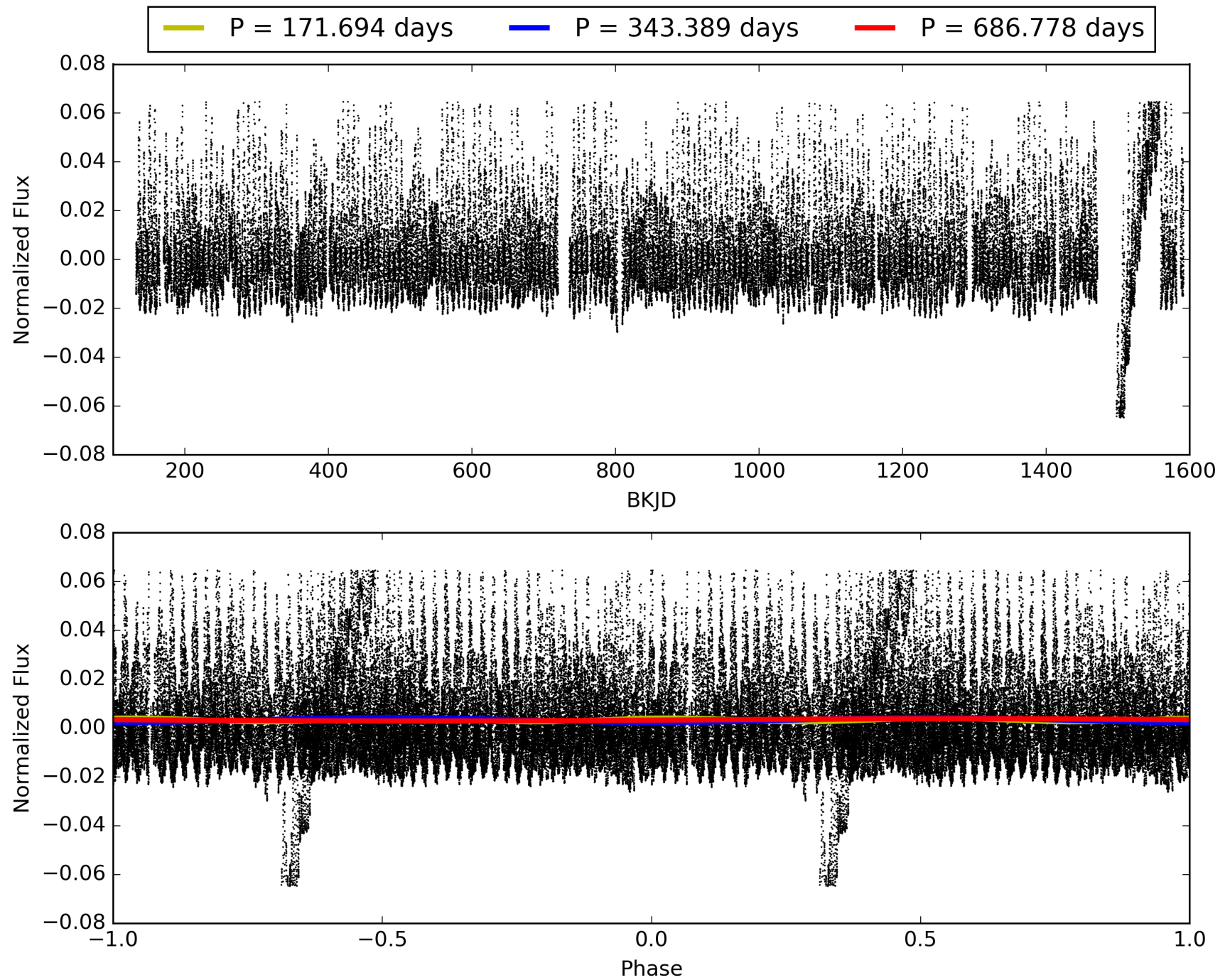
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:28:58 Z

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

TCE 003443221-03, PDC Light Curves

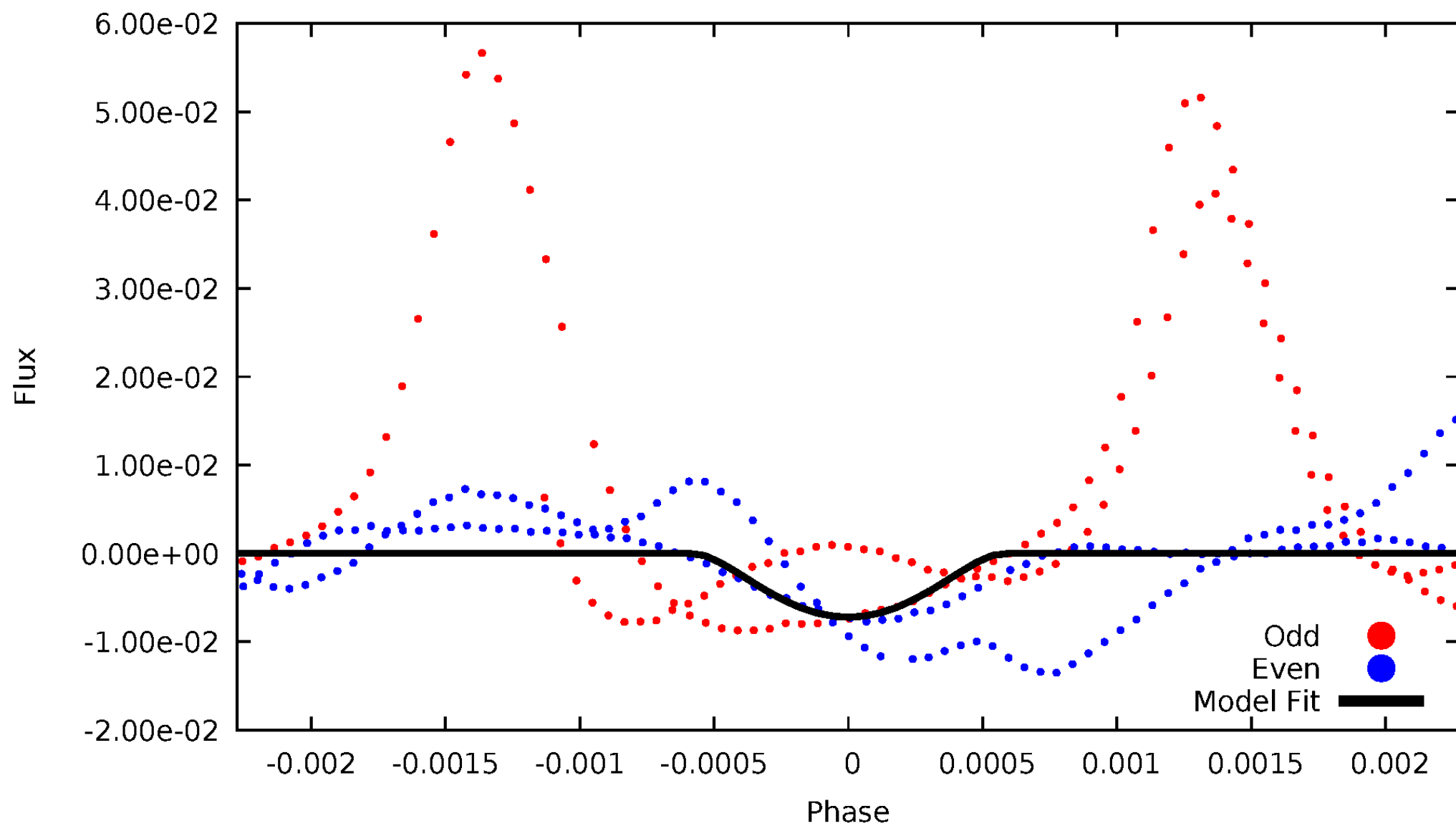


TCE 003443221-03



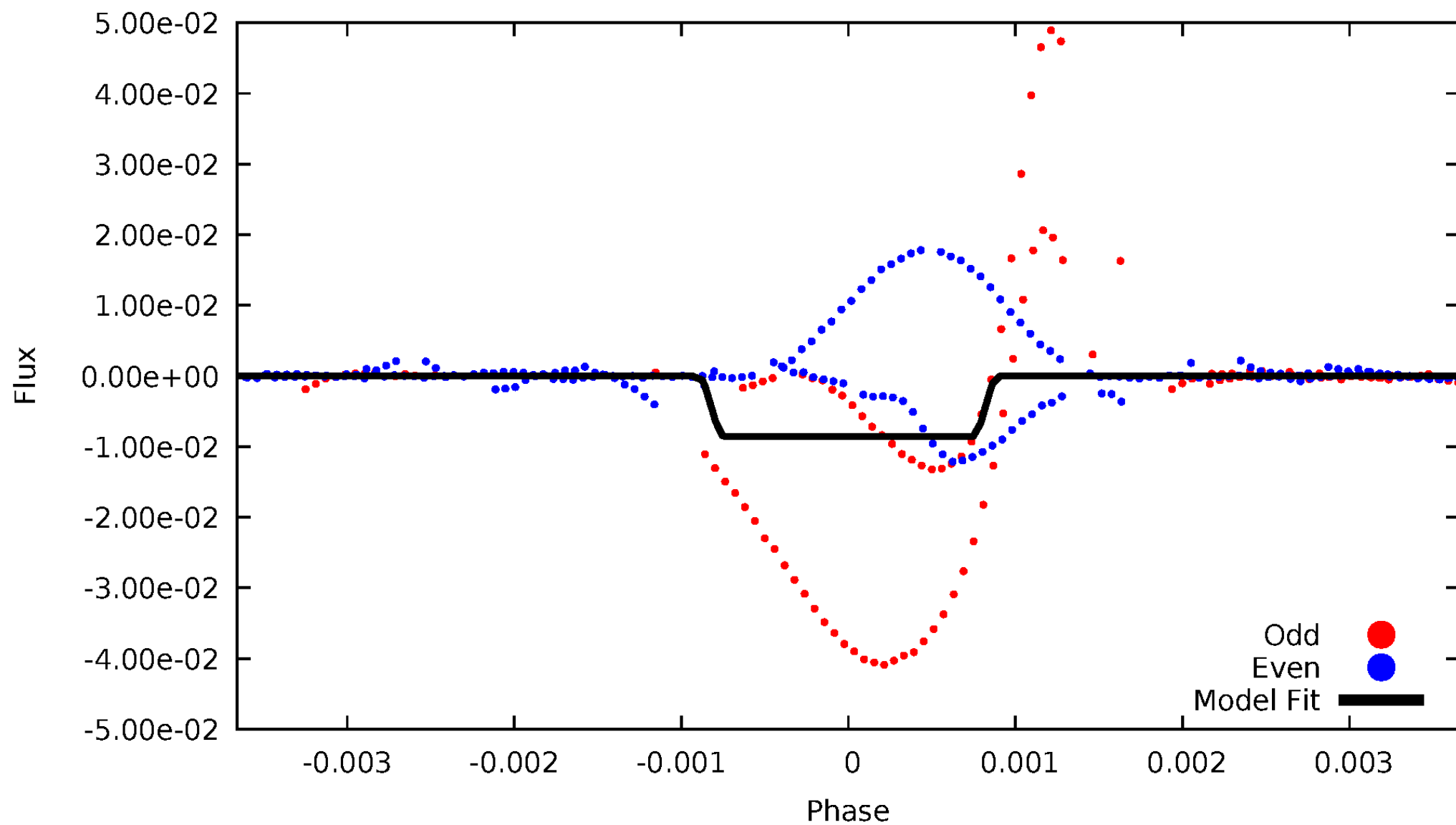
DV Odd/Even

TCE 003443221-03



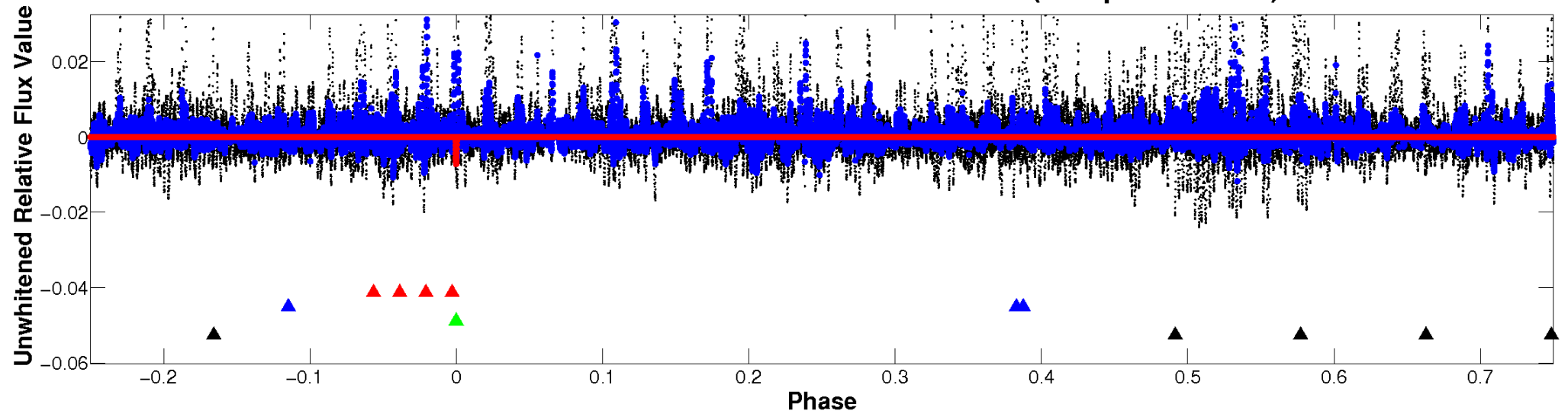
ALT Odd/Even

TCE 003443221-03

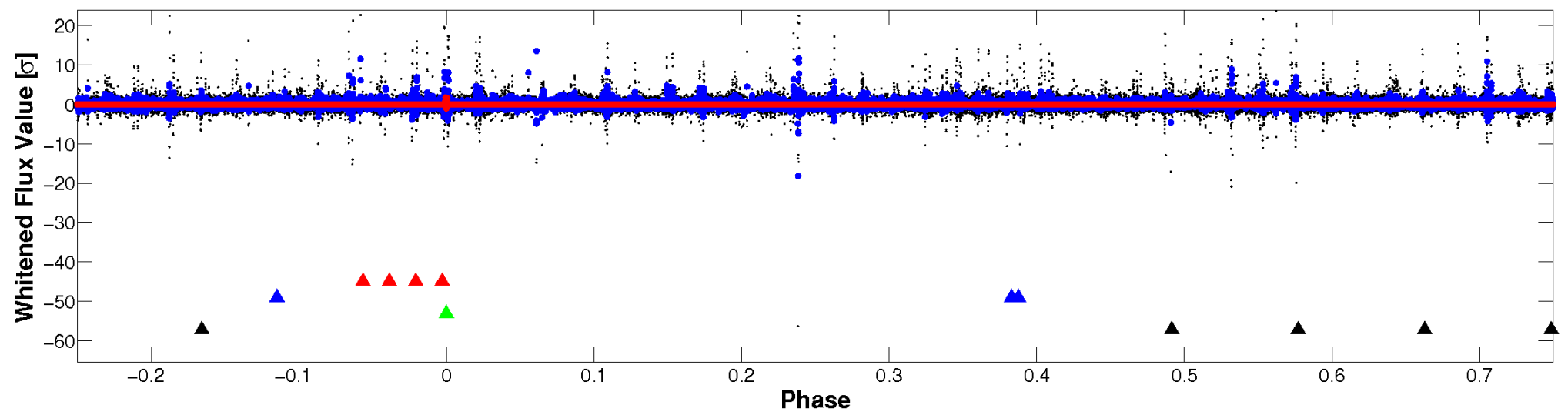


Non-Whitened Vs. Whitened Light Curve

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

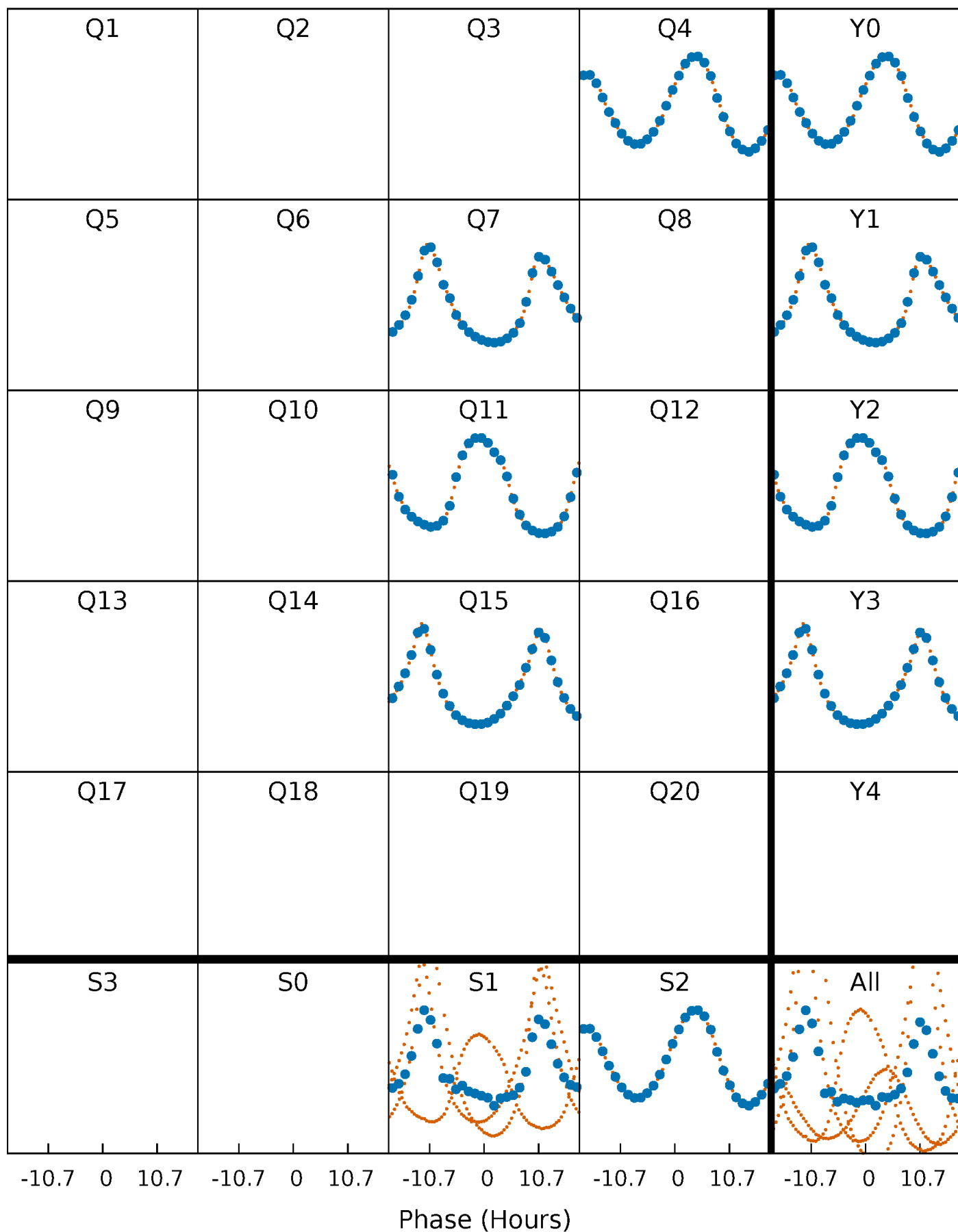


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



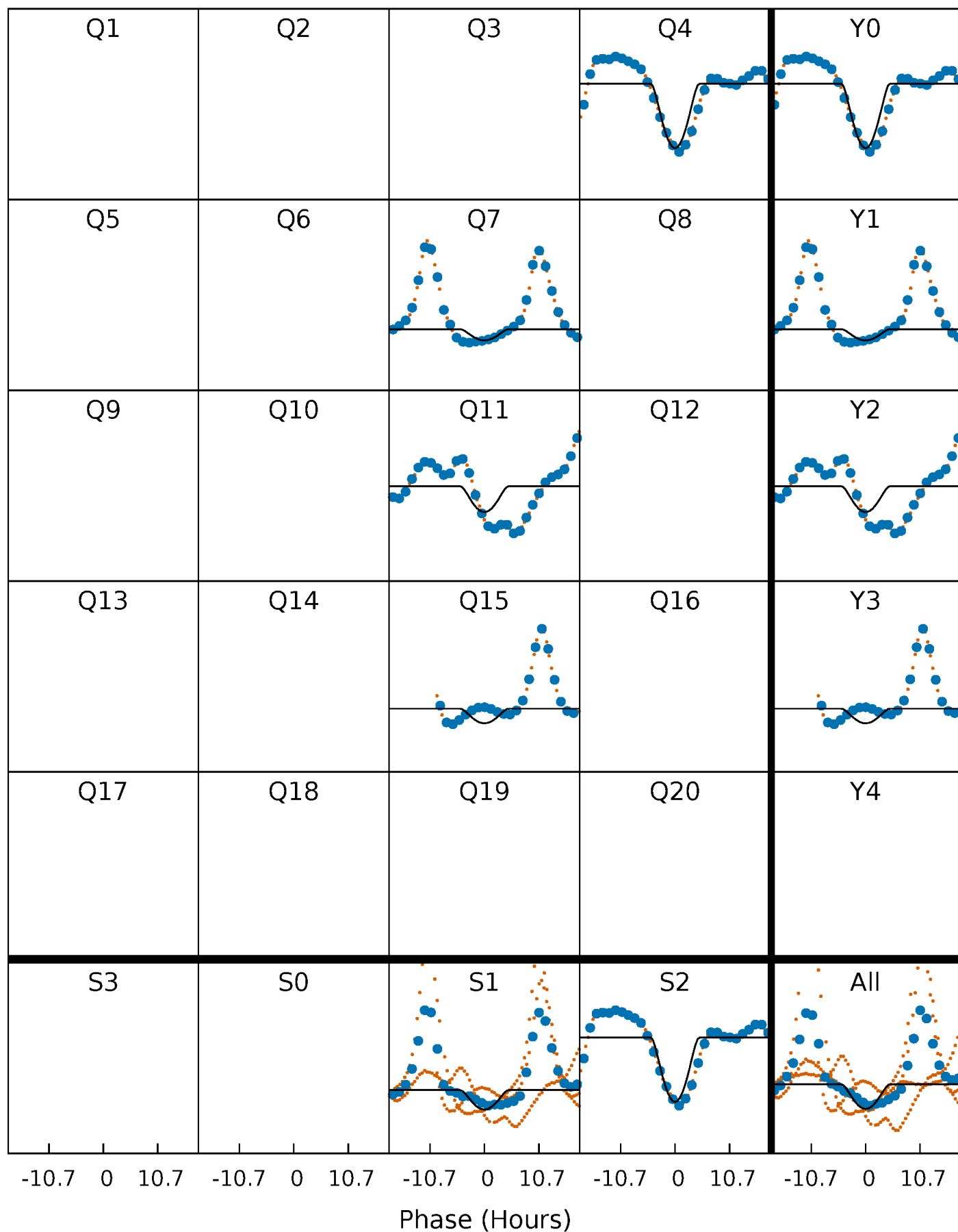
PDC Quarter-Phased Transit Curves

TCE 003443221-03 $P=343.388984$ Days $T_0=360.383279$ (BKJD)



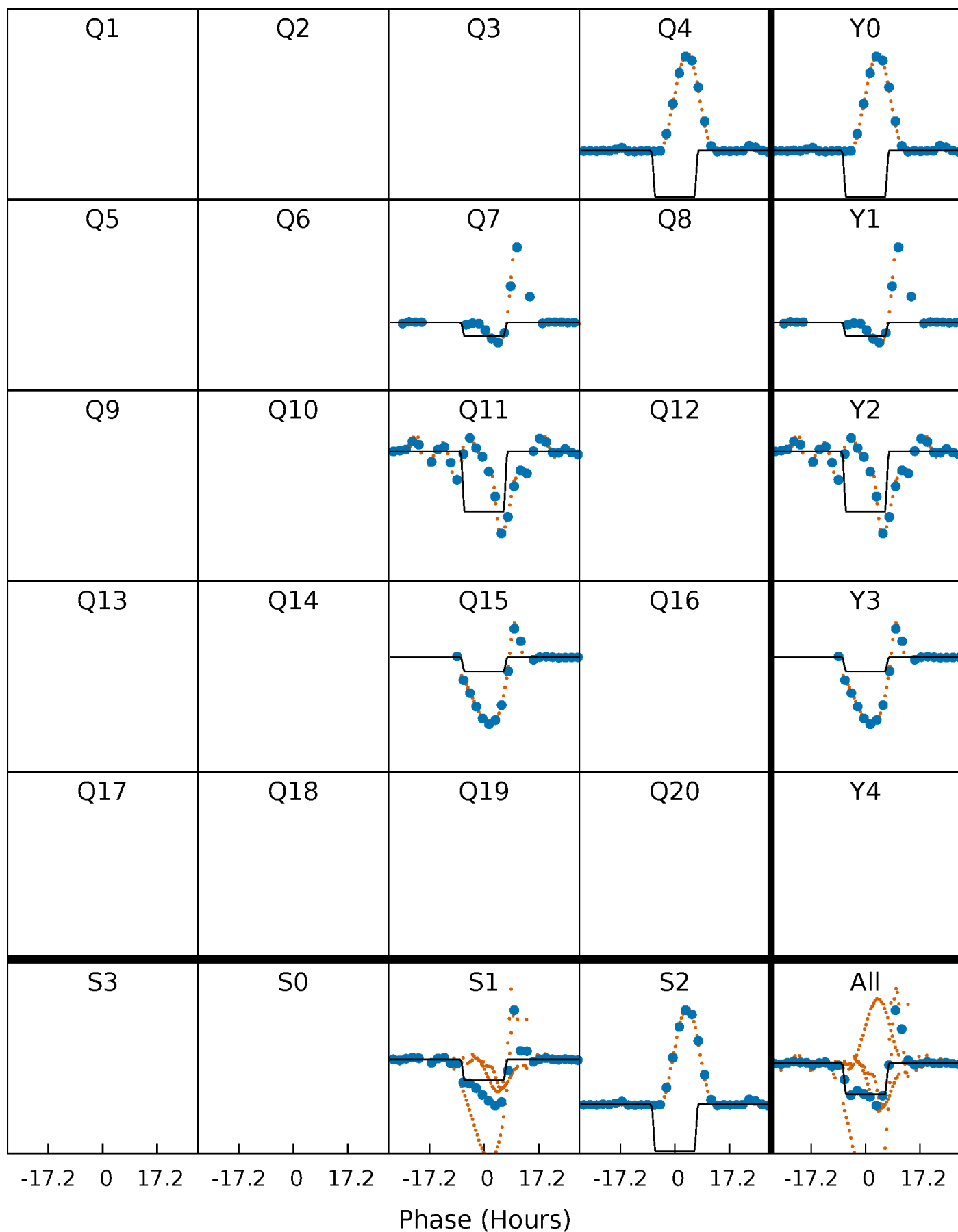
DV Quarter-Phased Transit Curves

TCE 003443221-03 $P=343.388984$ Days $T_0=360.383279$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

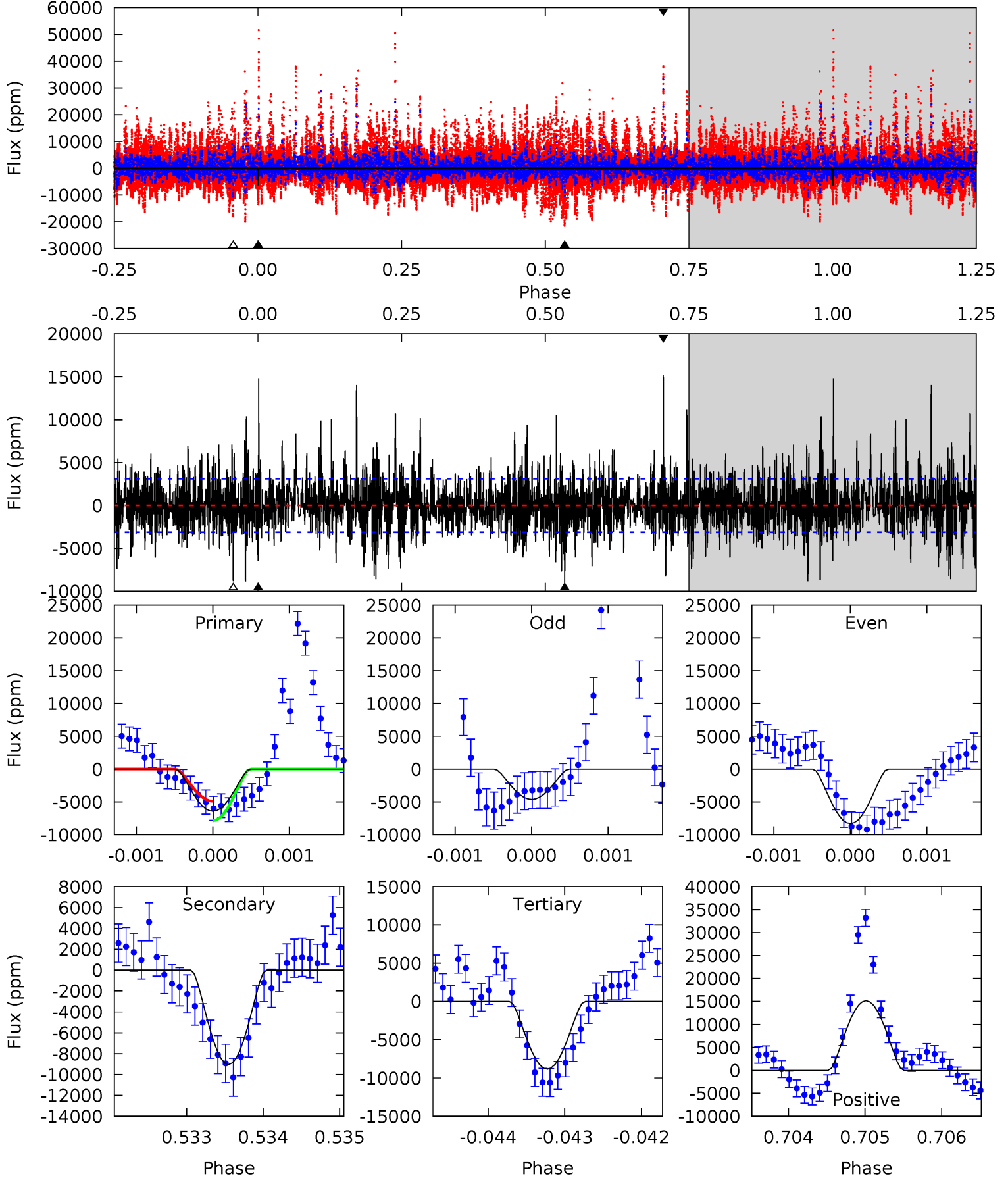
TCE 003443221-03 P=343.406409 Days $T_0=360.400197$ (BKJD)



DV Model-Shift Uniqueness Test

003443221-03, P = 343.388984 Days, E = 16.994295 Days

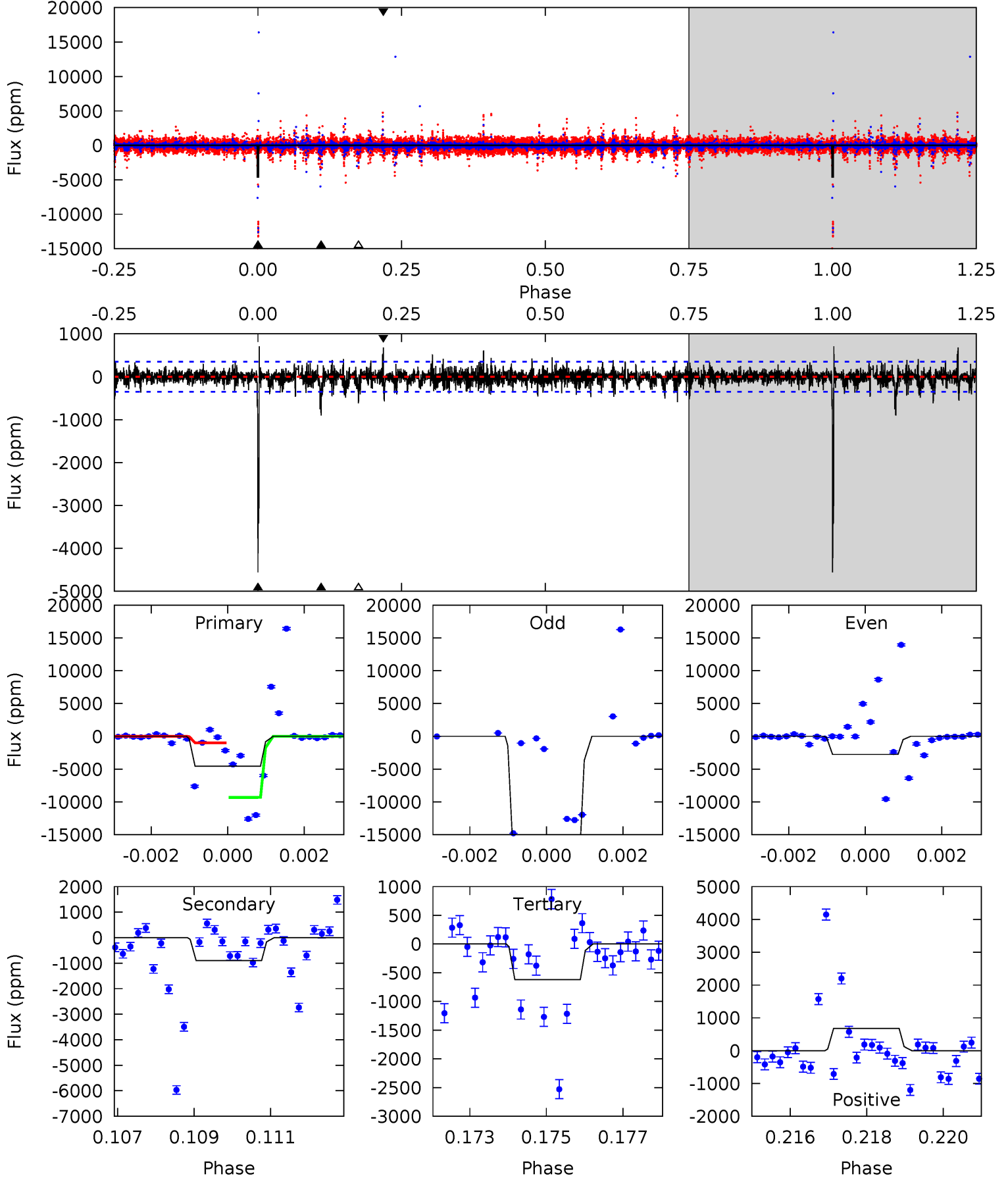
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.2	15.7	15.4	26.4	5.42	3.24	4.50	-4.20	-15.2	0.34	-10.7	2.74	0.78	0.63	2.58



Alt Model-Shift Uniqueness Test

003443221-03, P = 343.406409 Days, E = 16.993788 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
69.4	13.7	9.42	10.3	5.35	3.13	1.76	60.0	59.1	4.29	3.38	86.3	1.50	0.13	0



Stellar Parameters For KIC 003443221

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6959^{+83}_{-83}	$4.145^{+0.095}_{-0.116}$	$-0.120^{+0.150}_{-0.150}$	$1.661^{+0.278}_{-0.202}$	$1.411^{+0.102}_{-0.102}$	$0.434^{+0.183}_{-0.152}$
	+1%/-1%	+2%/-3%	+125%/-125%	+17%/-12%	+7%/-7%	+42%/-35%
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 003443221-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-9032 ± 575	$31.79^{+23.05}_{-19.88}$	535^{+24}_{-19}	5188^{+3529}_{-1013}	5583^{+34212}_{-3639}
Alt.	-900 ± 66	$25.46^{+22.63}_{-16.70}$	535^{+24}_{-19}	3651^{+1896}_{-630}	872^{+6972}_{-624}

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 $A_{obs} \gg 1.0$

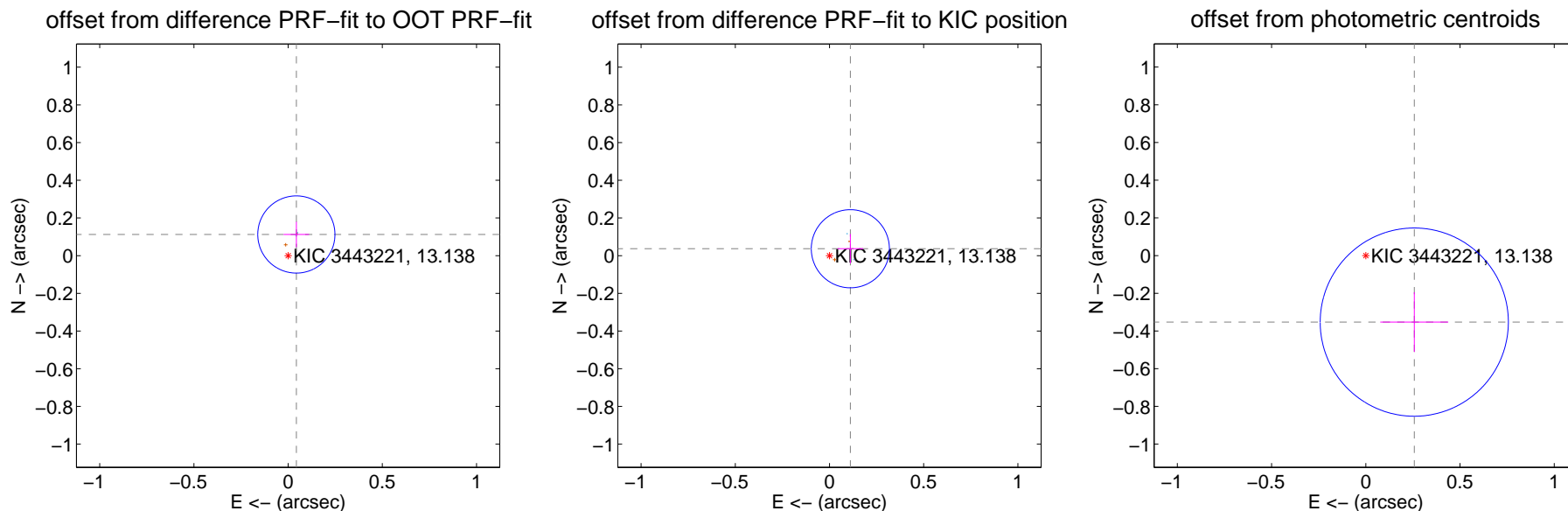
DV Centroid Data

Supplemental centroid analysis for 003443221-03. Kepler magnitude: 13.14. Transit SNR 8.38

There are 2 quarters with good PRF difference image offsets

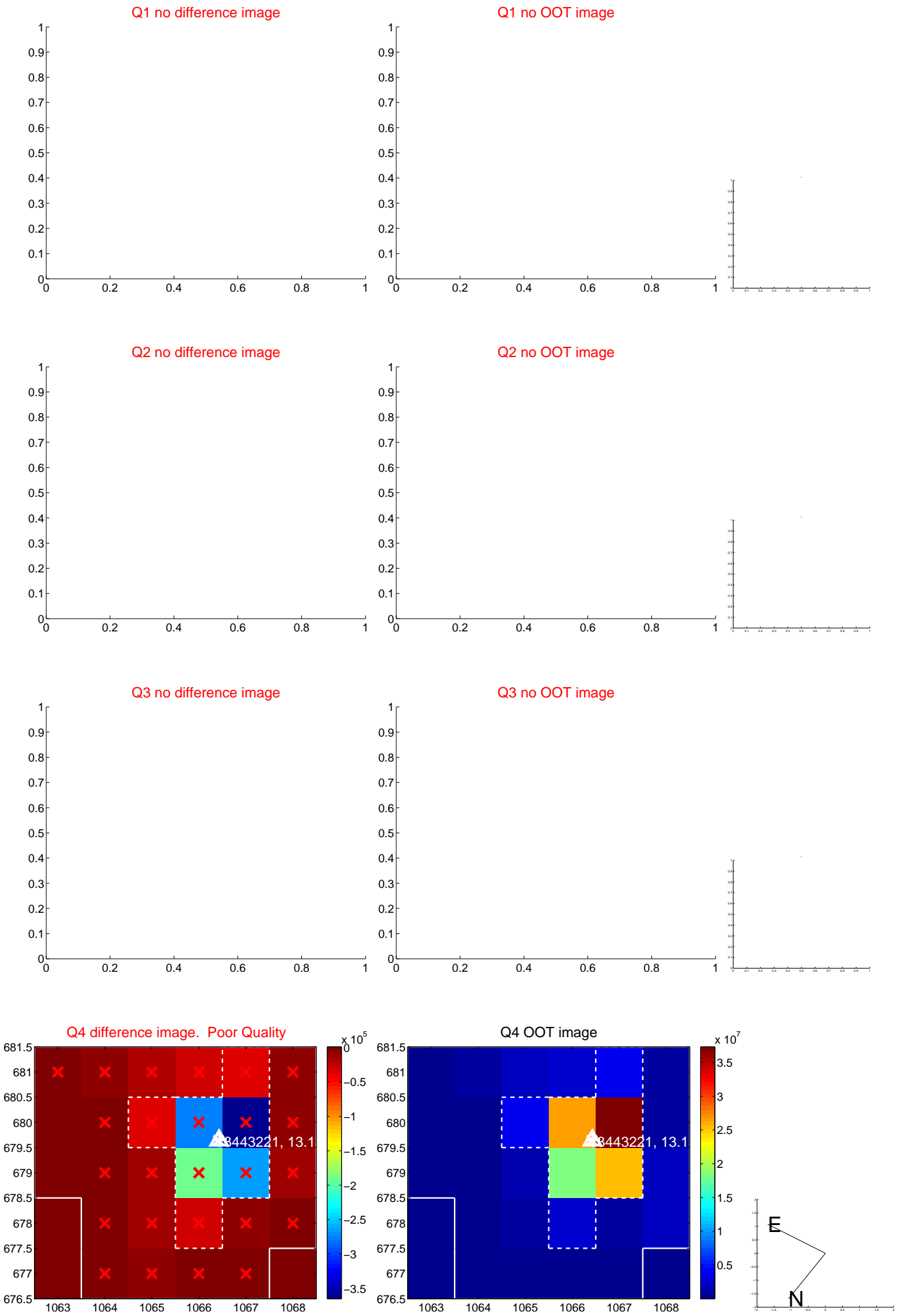
The direct PRF centroid is offset from the target star catalog position by about 0.04 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.120 ± 0.068	1.76	-0.044 ± 0.068	0.112 ± 0.068
PRF-fit source offset from KIC position	0.117 ± 0.069	1.69	-0.111 ± 0.068	0.037 ± 0.078
photometric centroid source offset	0.44 ± 0.17	2.62	-0.26 ± 0.18	-0.35 ± 0.16

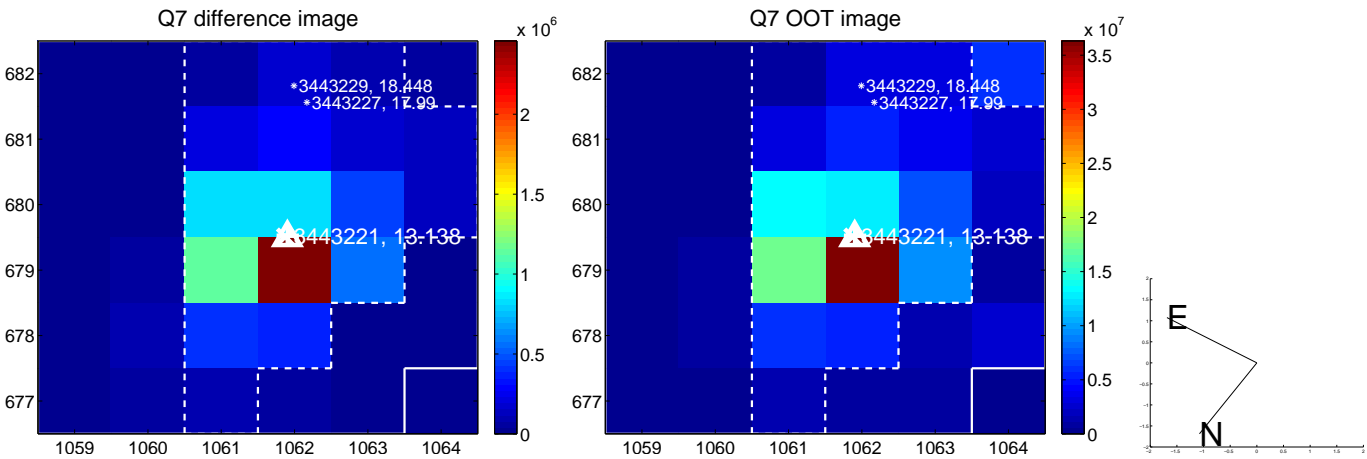


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

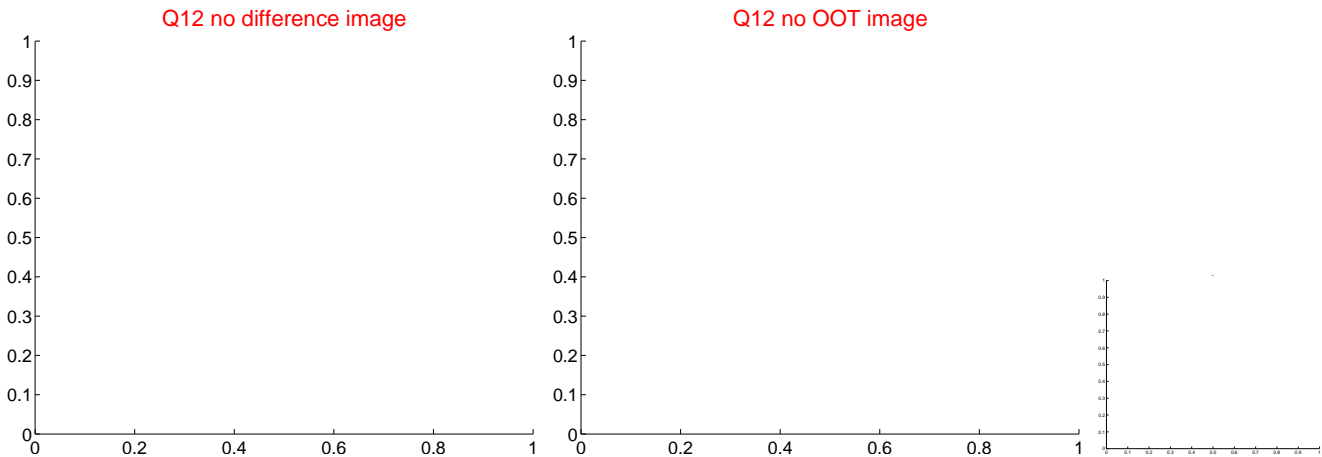
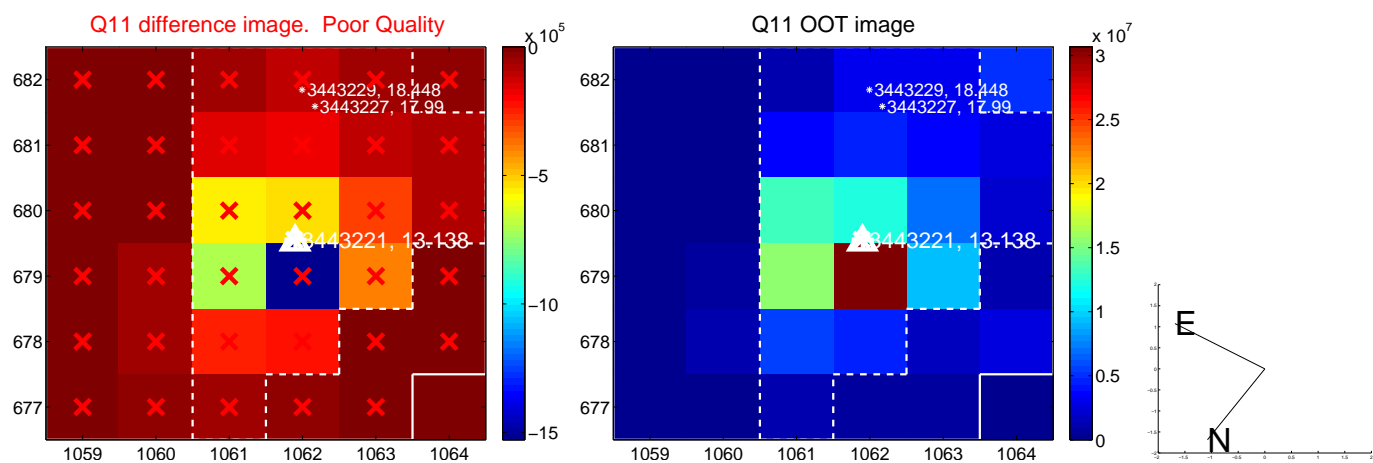
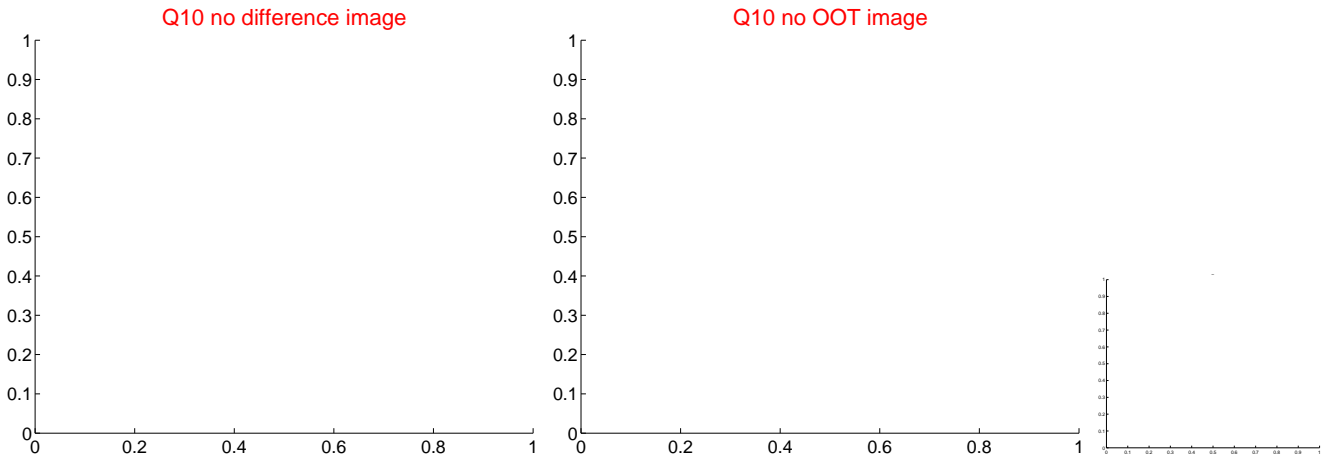
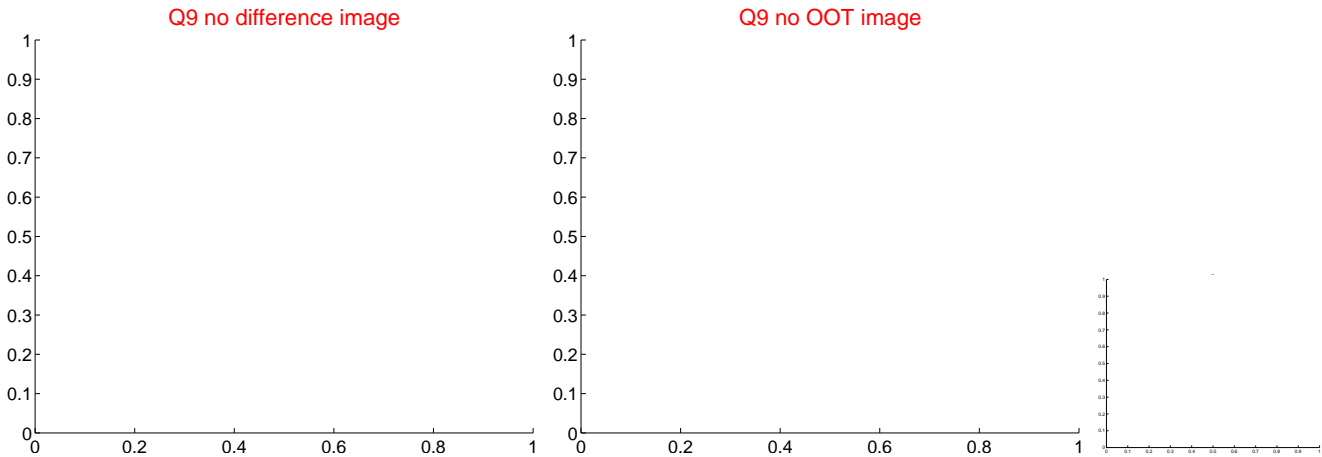
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



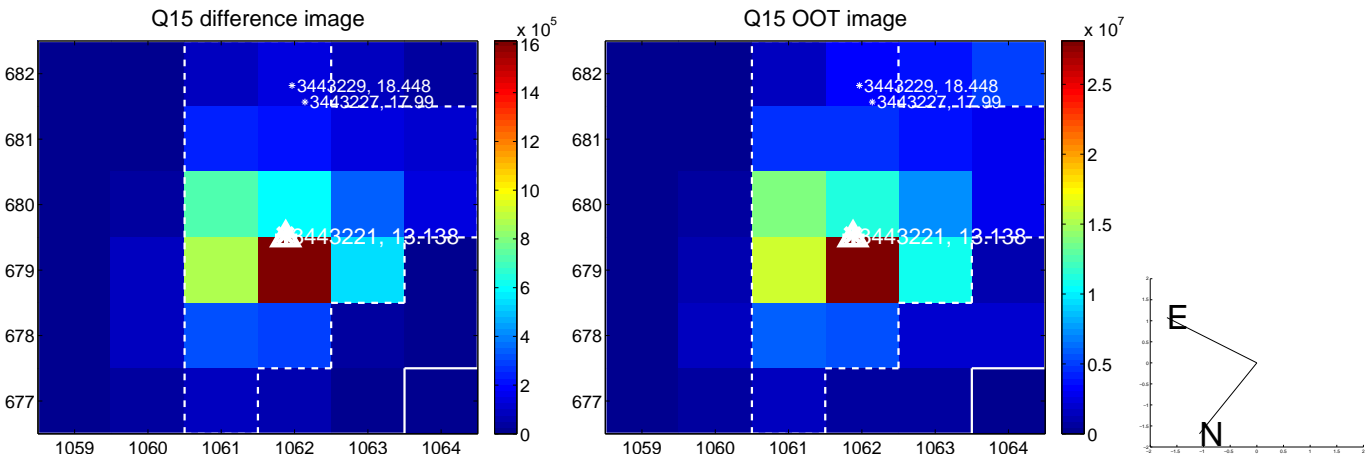
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



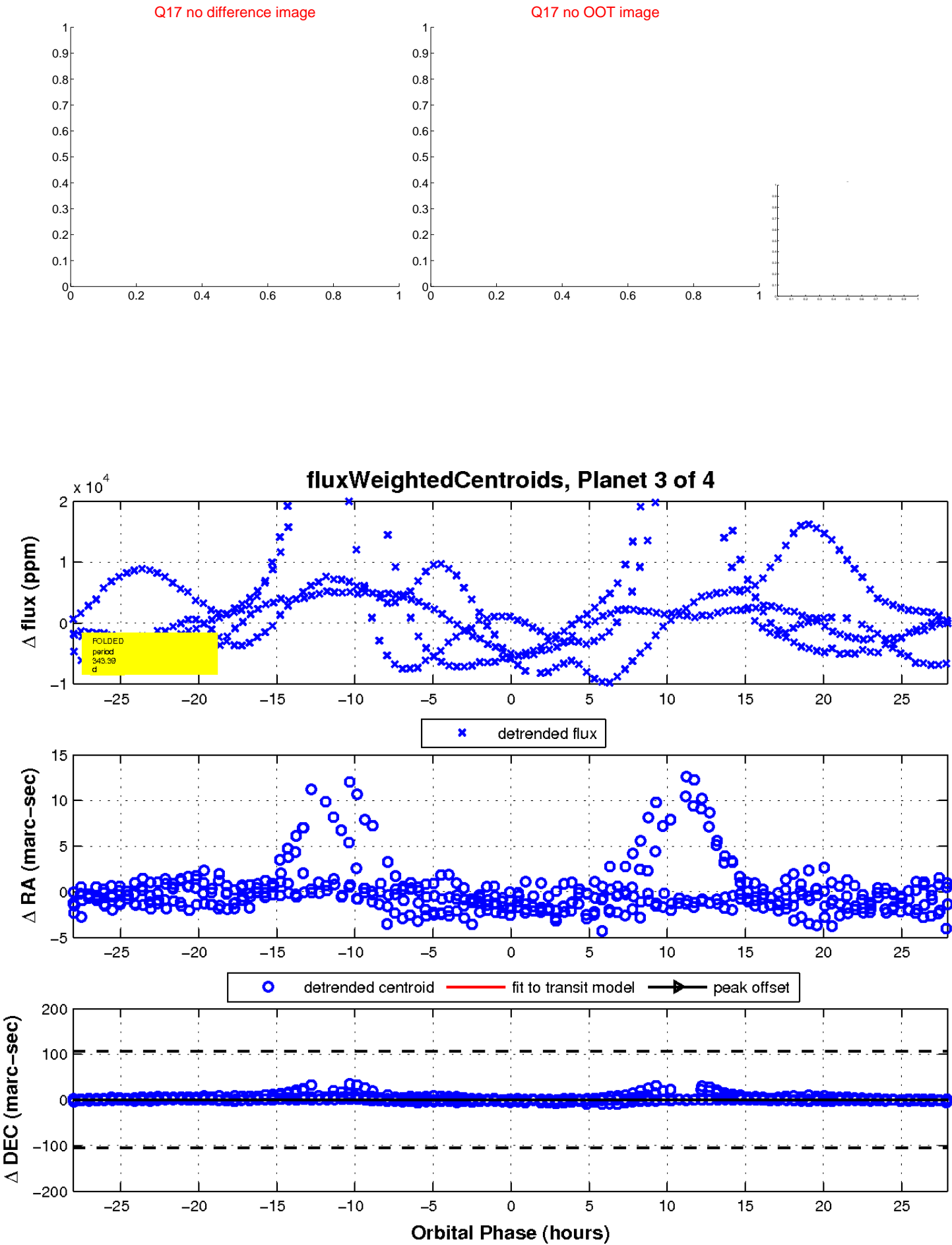
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

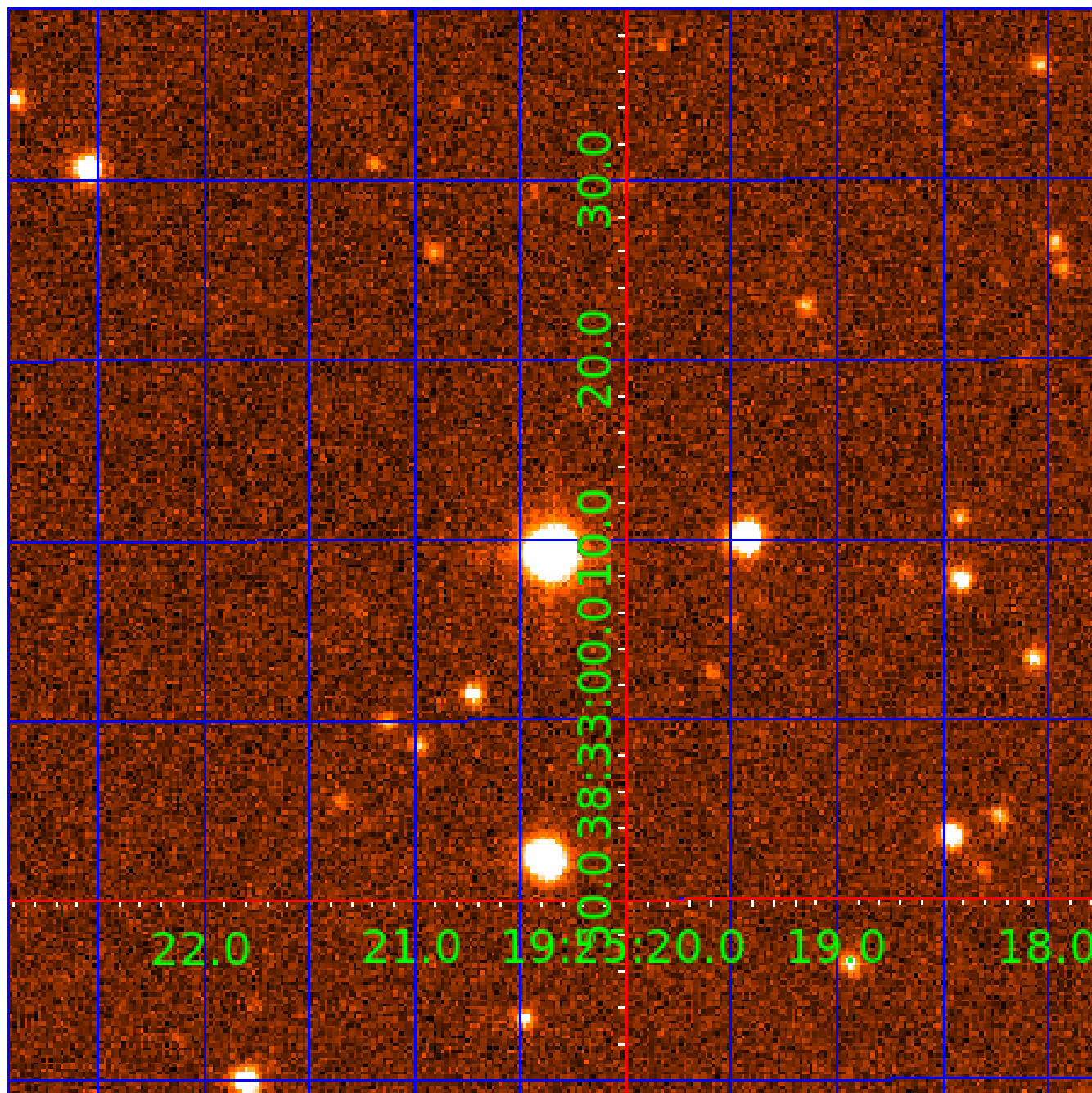


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003443221

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})
003443221-01	OBS	No	349.538161	340.983694	2706.9	8.608	27.2	3.1	1.66	6959	10.55	4.90
003443221-02	OBS	No	514.285174	493.477654	257.7	5.314	15.6	1.0	1.66	6959	2.91	2.93
003443221-03	OBS	No	343.388984	360.383279	7201.6	9.377	20.2	8.4	1.66	6959	24.93	5.01
003443221-04	OBS	No	313.954586	303.497109	3925.8	9.495	17.3	3.8	1.66	6959	18.68	5.65

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003443221-01	OBS	FP	0.00	1	0	0	0	LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003443221-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
003443221-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003443221-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_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.

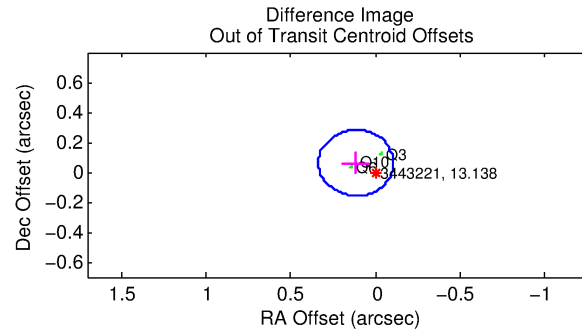
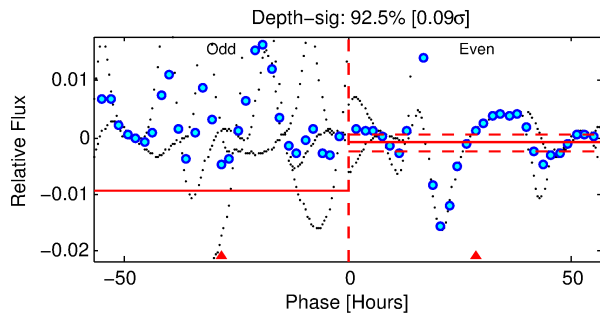
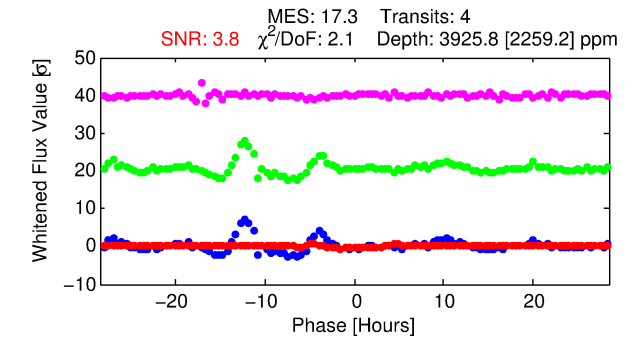
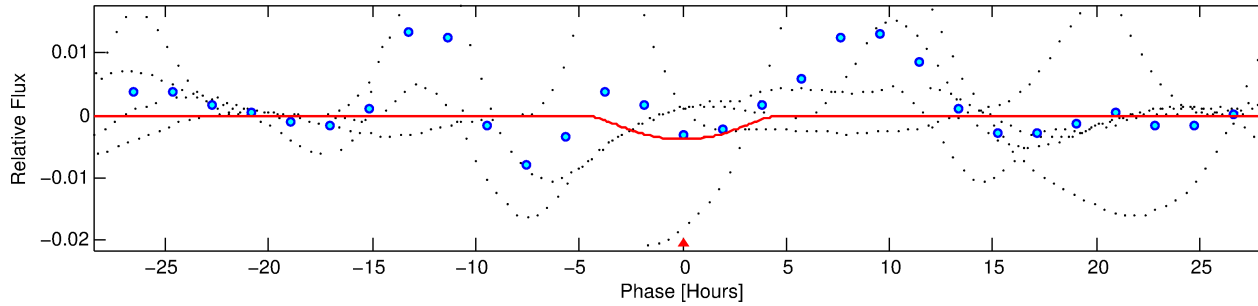
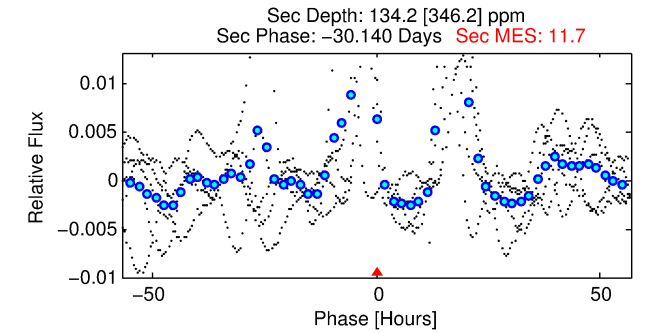
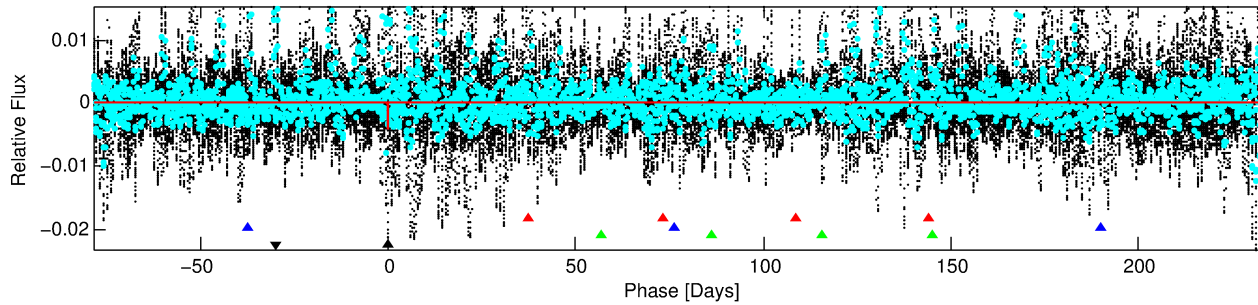
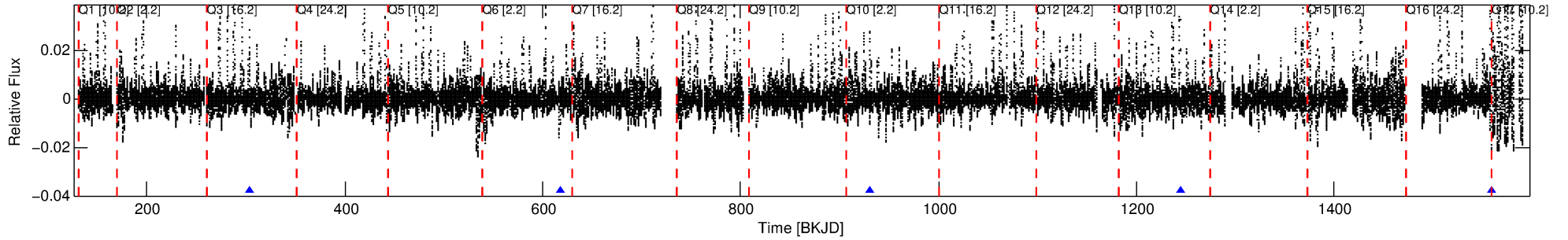
Ephemeris Match Information For 003443221-04

No Significant Match Found

DV One-Page Summary

KIC: 3443221 Candidate: 4 of 4 Period: 313.955 d

Kp: 13.14 R*: 1.66 Rs Teff: 6959.0 K Logg: 4.14 Fe/H: -0.120



DV Fit Results:

Period = 313.95459 [0.01926] d
Epoch = 303.4971 [0.0293] BKJD
Rp/R* = 0.1031 [0.2989]
a/R* = 117.73 [57.65]
b = 1.00 [0.41]
Seff = 5.65 [1.22]
Teq = 393 [21] K
Rp = 18.68 [54.27] Re
a = 1.0128 [0.1446] AU
Ag = 217.12 [1379.06] [0.16σ]
Teffp = 2333 [3703] K [0.52σ]

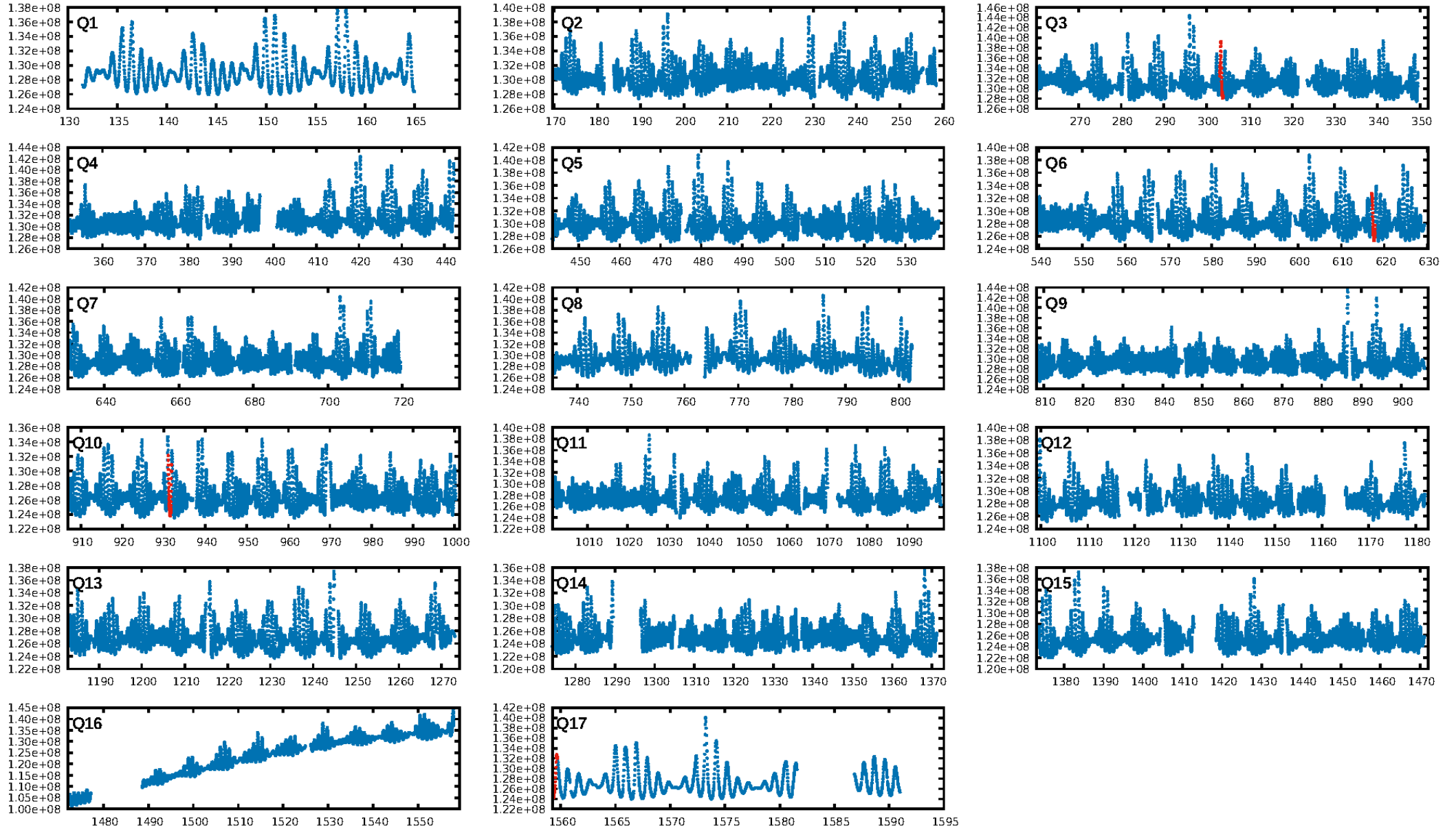
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [52.94σ]
ModelChiSquare2-sig: 0.3%
ModelChiSquareGof-sig: 99.9%
Bootstrap-pfa: 3.99e-12
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -2.293
Centroid-sig: N/A
Centroid-so: 2.015 arcsec [4.57σ]
OotOffset-rm: 0.131 arcsec [1.78σ]
KicOffset-rm: 0.217 arcsec [2.42σ]
OotOffset-st: 2/1/0/0 [3]
KicOffset-st: 2/1/0/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

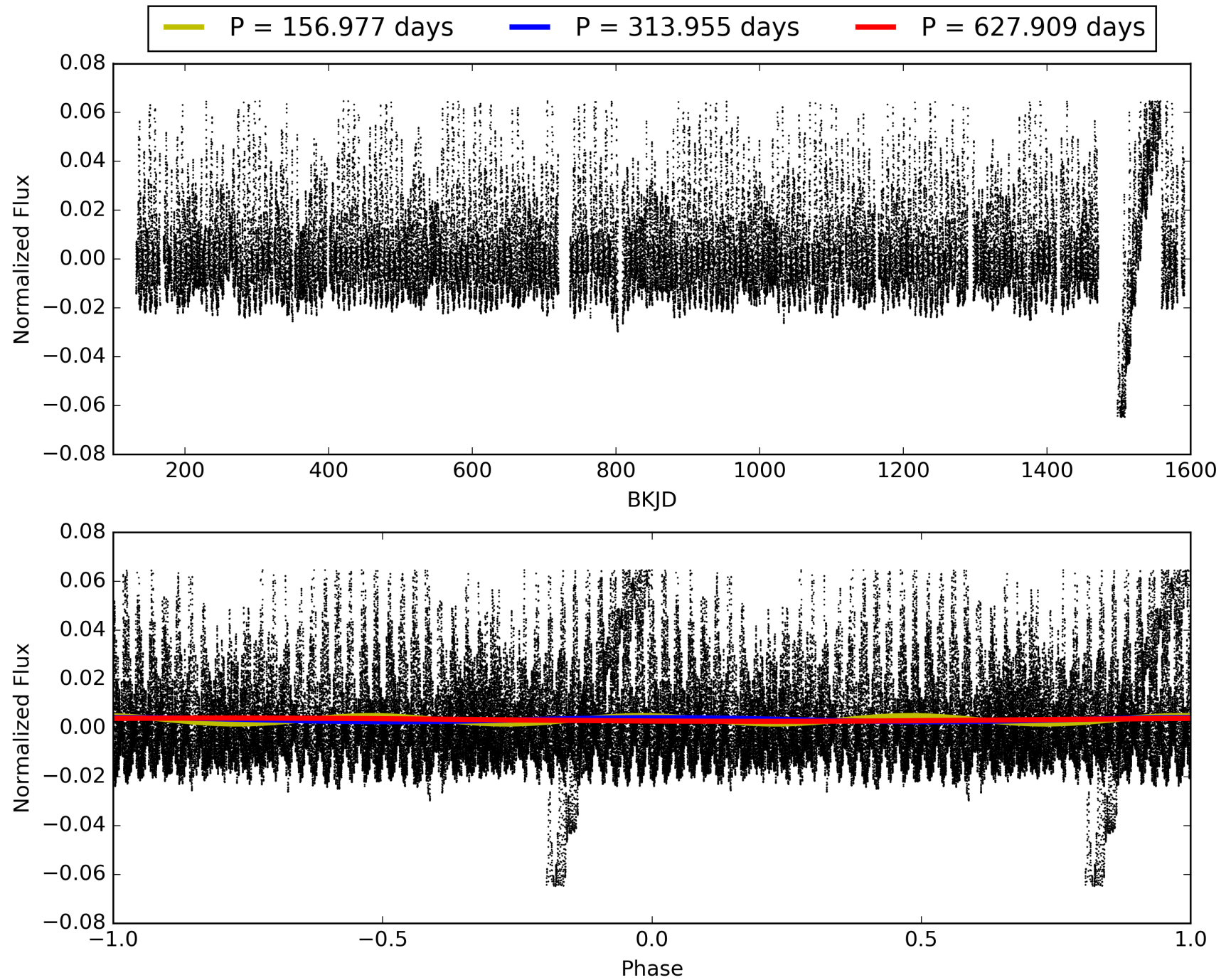
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 05:29:06 Z

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

TCE 003443221-04, PDC Light Curves

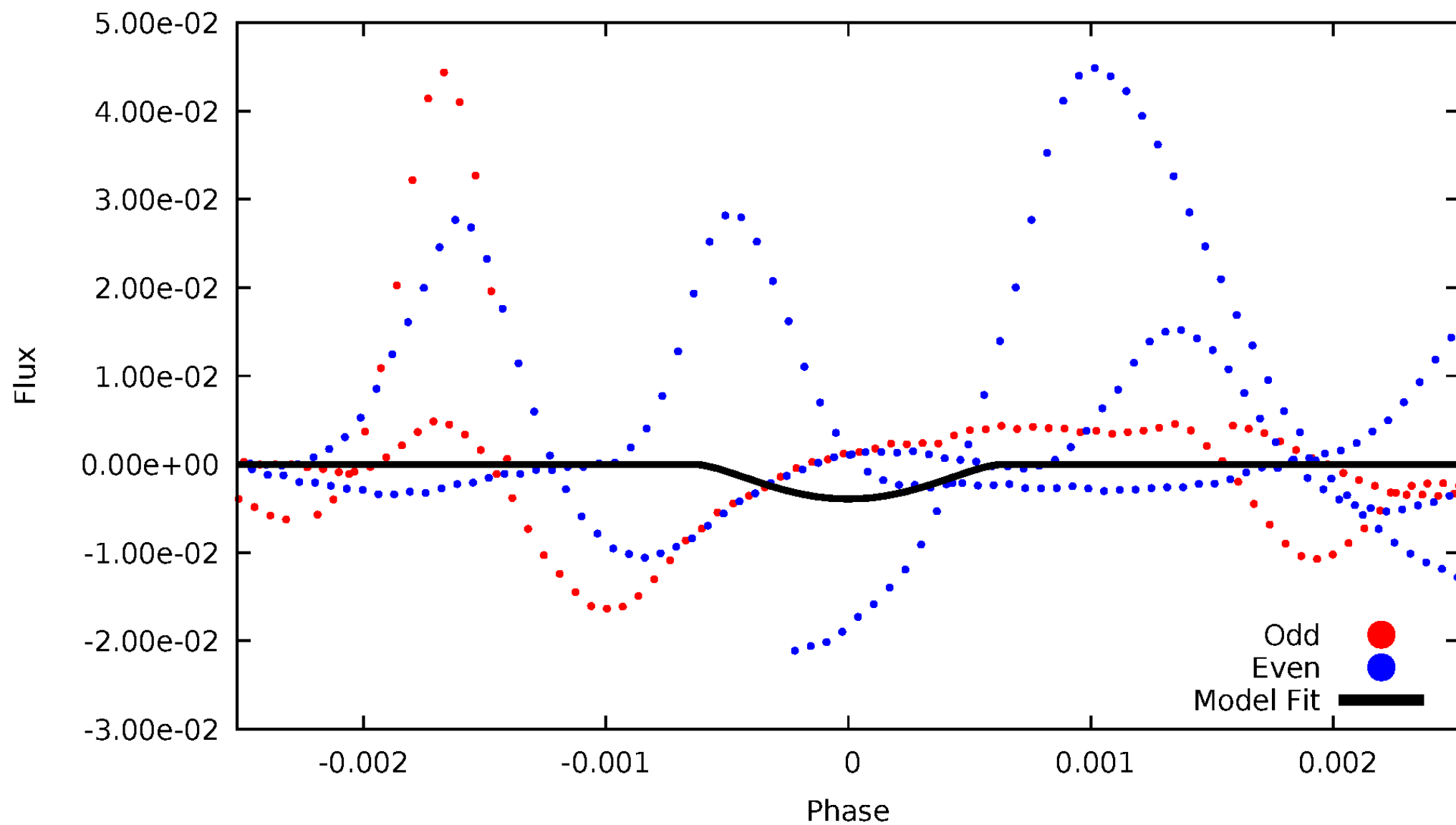


TCE 003443221-04



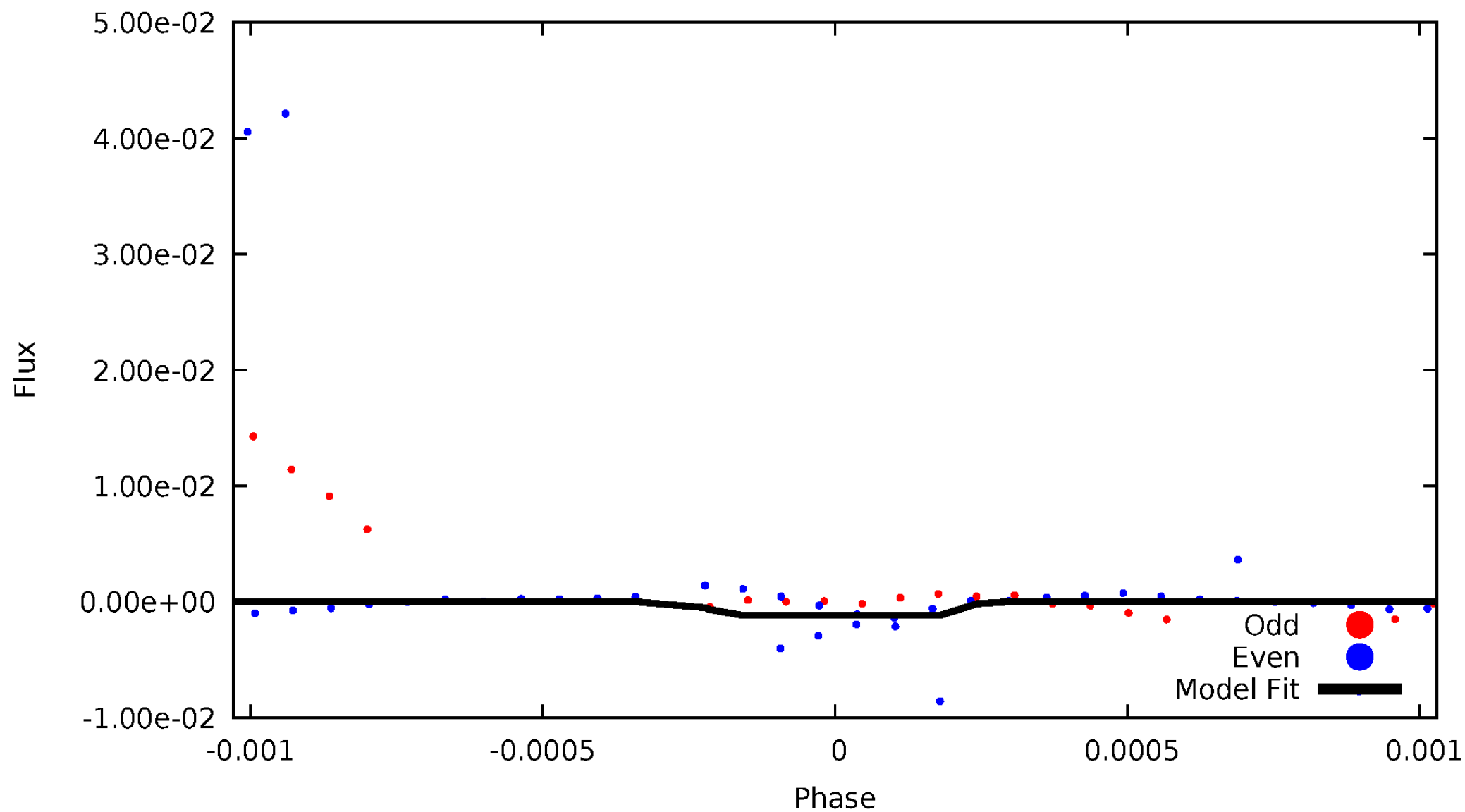
DV Odd/Even

TCE 003443221-04



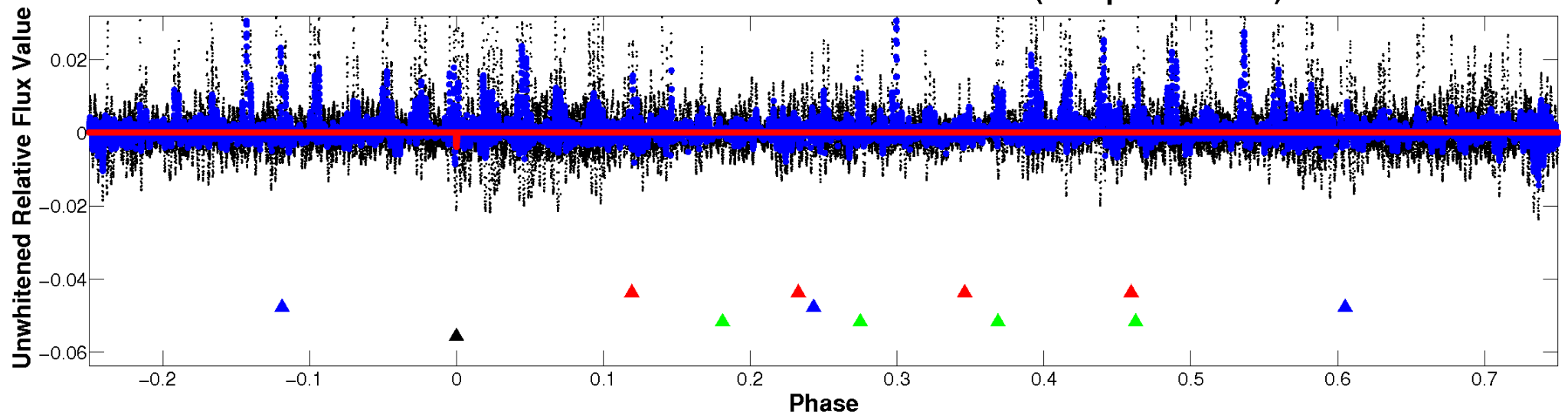
ALT Odd/Even

TCE 003443221-04

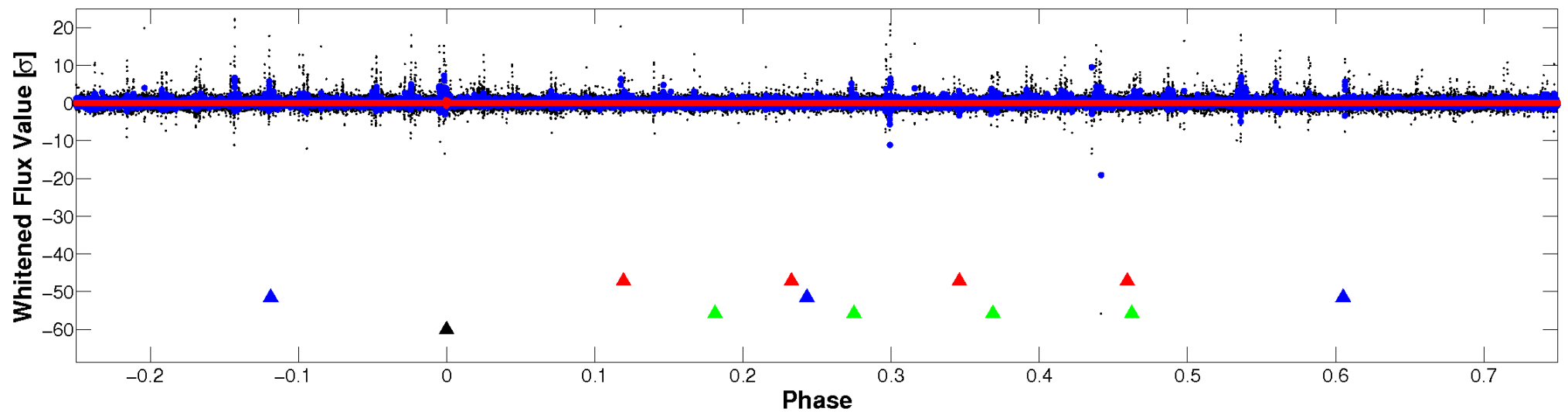


Non-Whitened Vs. Whitened Light Curve

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

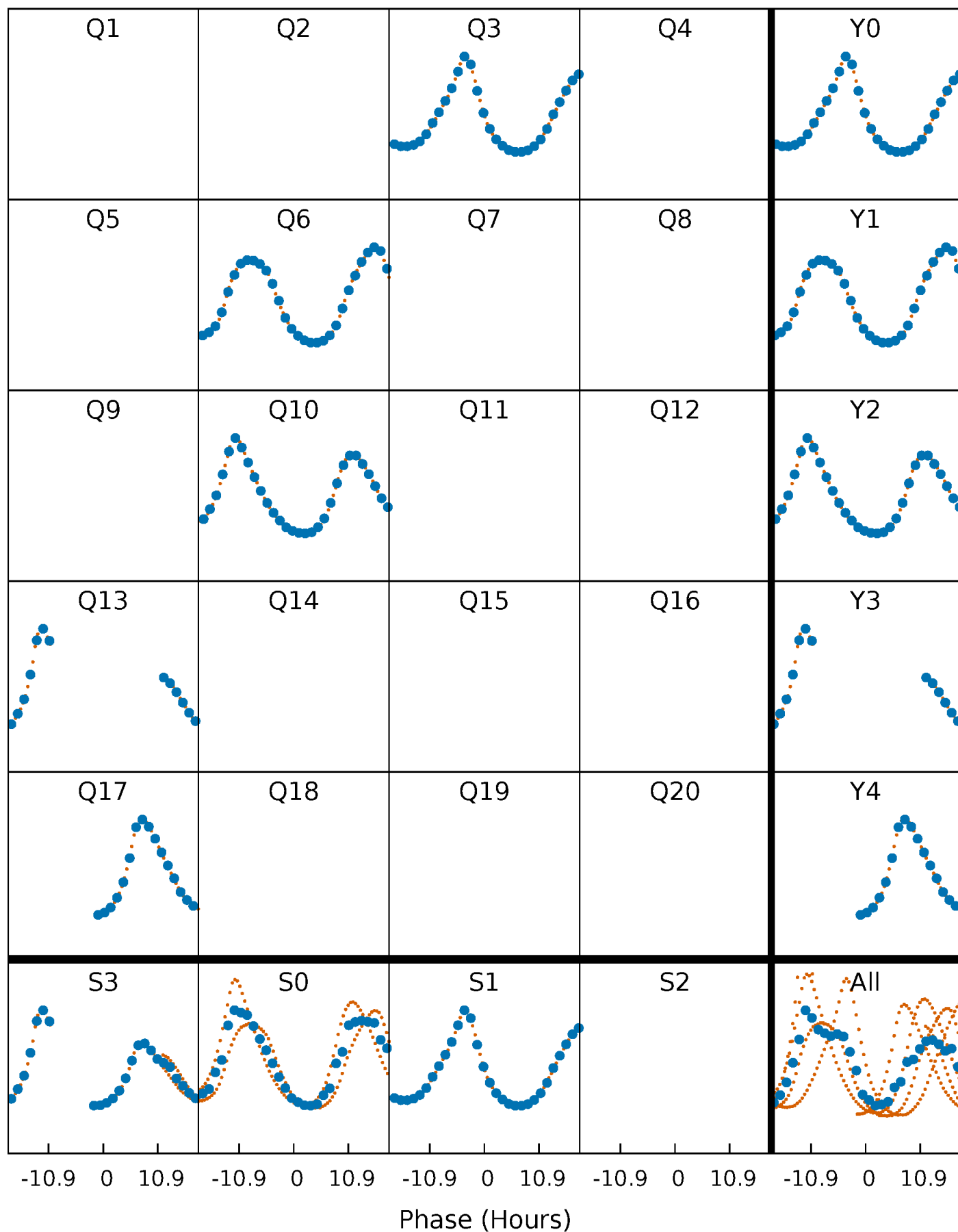


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



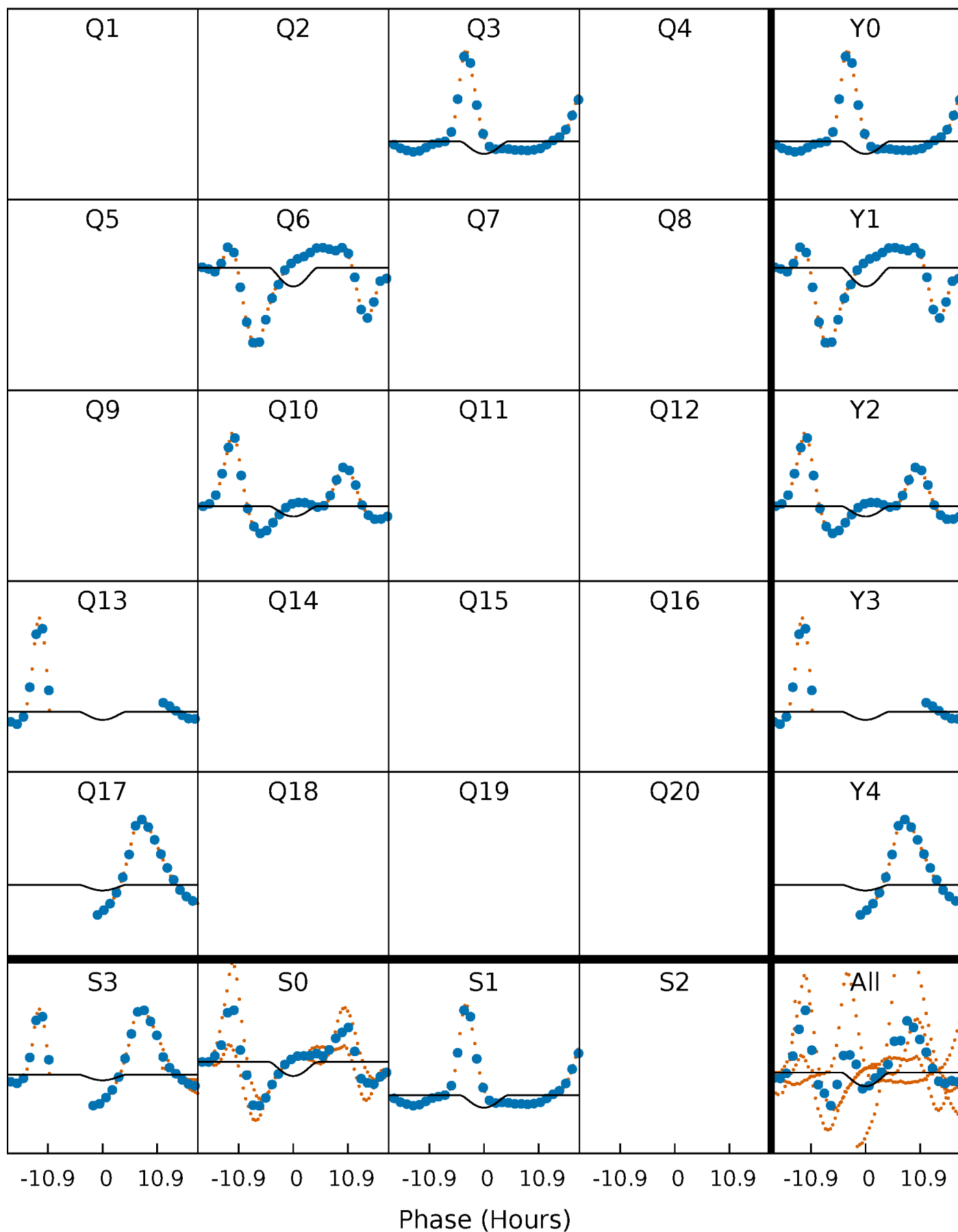
PDC Quarter-Phased Transit Curves

TCE 003443221-04 P=313.954586 Days $T_0=303.497109$ (BKJD)



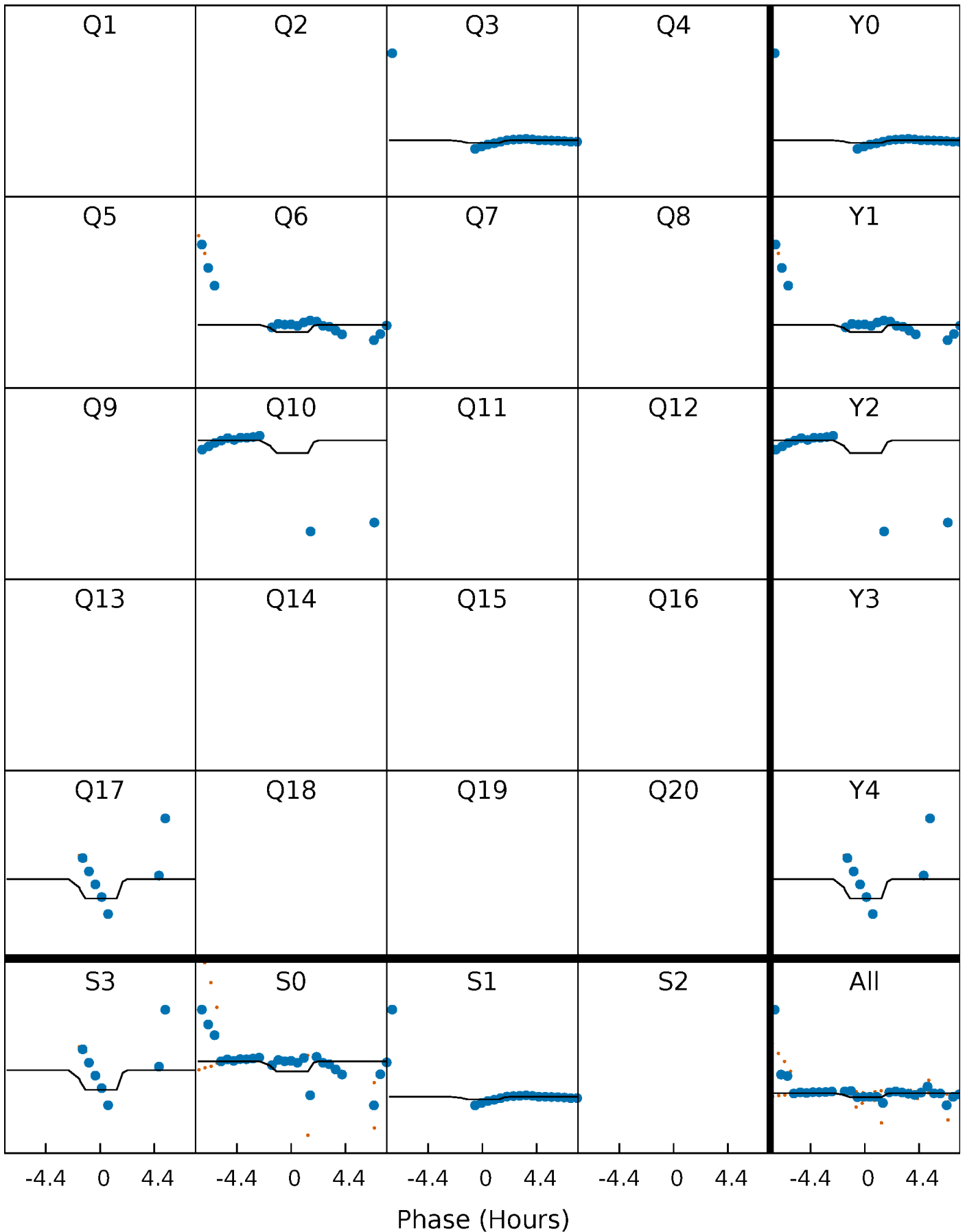
DV Quarter-Phased Transit Curves

TCE 003443221-04 $P=313.954586$ Days $T_0=303.497109$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

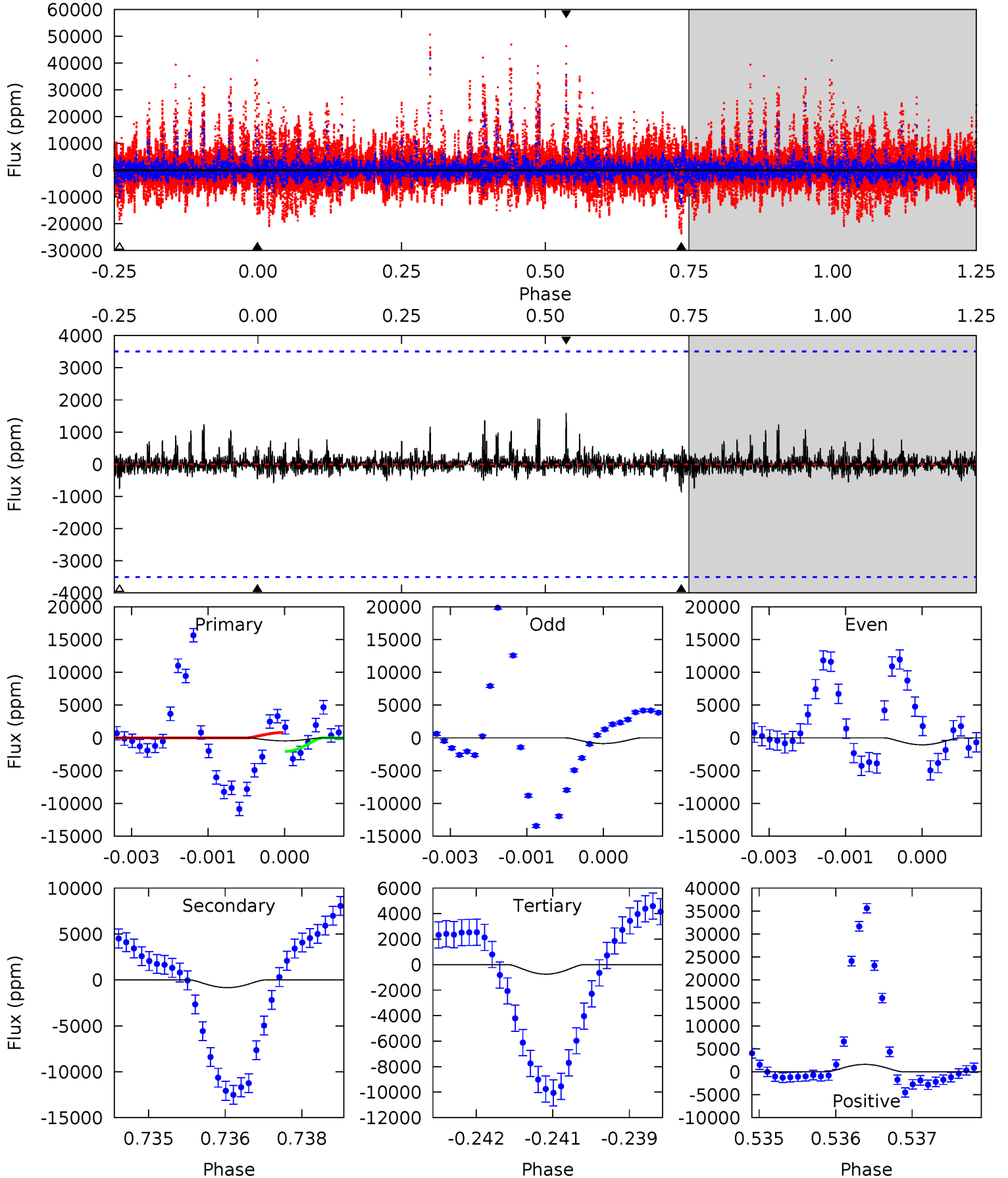
TCE 003443221-04 $P=313.920782$ Days $T_0=303.632924$ (BKJD)



DV Model-Shift Uniqueness Test

003443221-04, P = 313.954586 Days, E = 303.497109 Days

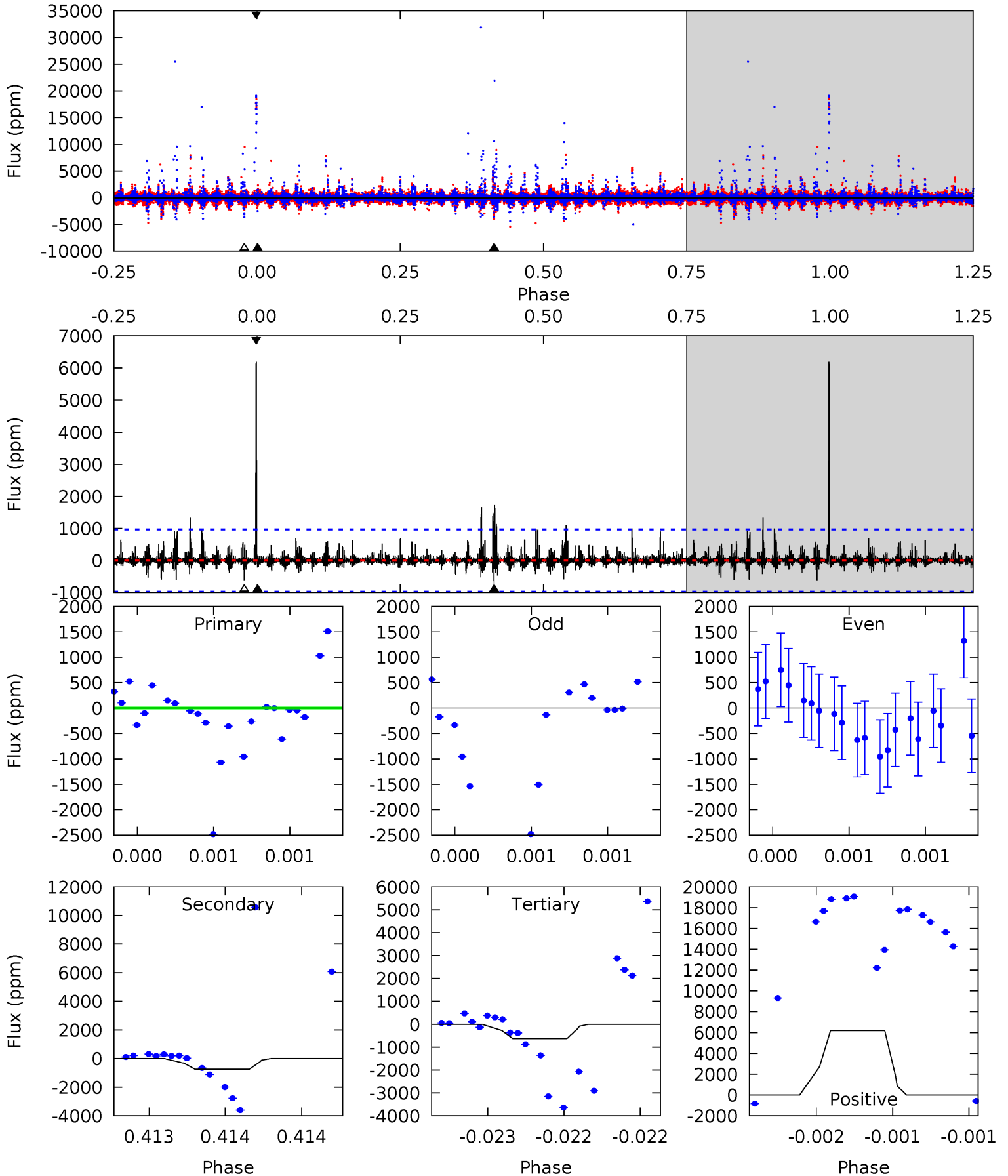
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.71	1.30	1.15	2.46	5.41	3.22	0.31	-0.44	-1.75	0.14	-1.16	0.13	-4.80	0.65	0.94



Alt Model-Shift Uniqueness Test

003443221-04, P = 313.920782 Days, E = 303.632924 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.25	4.29	3.62	35.6	5.59	3.51	0.79	-2.37	-34.4	0.67	-31.4	1.84	2.91	0.89	1.77



Stellar Parameters For KIC 003443221

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6959^{+83}_{-83}	$4.145^{+0.095}_{-0.116}$	$-0.120^{+0.150}_{-0.150}$	$1.661^{+0.278}_{-0.202}$	$1.411^{+0.102}_{-0.102}$	$0.434^{+0.183}_{-0.152}$
	+1%/-1%	+2%/-3%	+125%/-125%	+17%/-12%	+7%/-7%	+42%/-35%
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 003443221-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-843 ± 649	$47.24^{+43.06}_{-31.00}$	552^{+23}_{-20}	2888^{+1207}_{-649}	170^{+1327}_{-149}
Alt.	-744 ± 173	$39.75^{+40.34}_{-27.42}$	550^{+25}_{-21}	3093^{+1523}_{-545}	265^{+2619}_{-200}

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 $A_{obs} \gg 1.0$

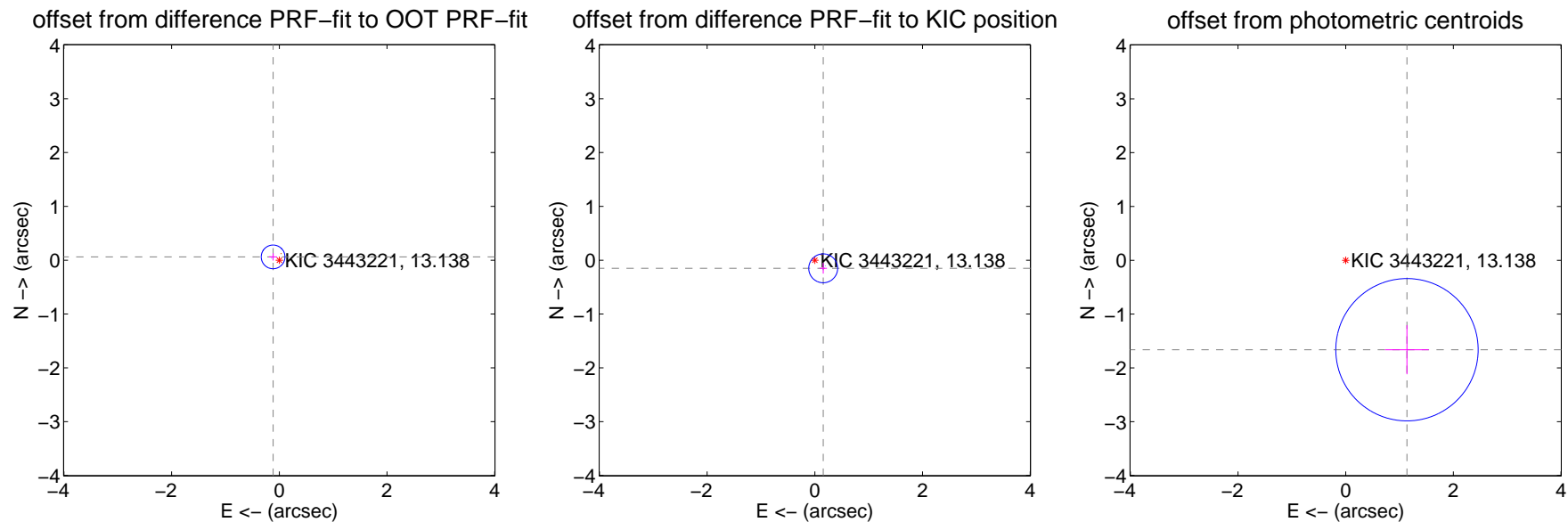
DV Centroid Data

Supplemental centroid analysis for 003443221-04. Kepler magnitude: 13.14. Transit SNR 3.81

There are 2 quarters with good PRF difference image offsets

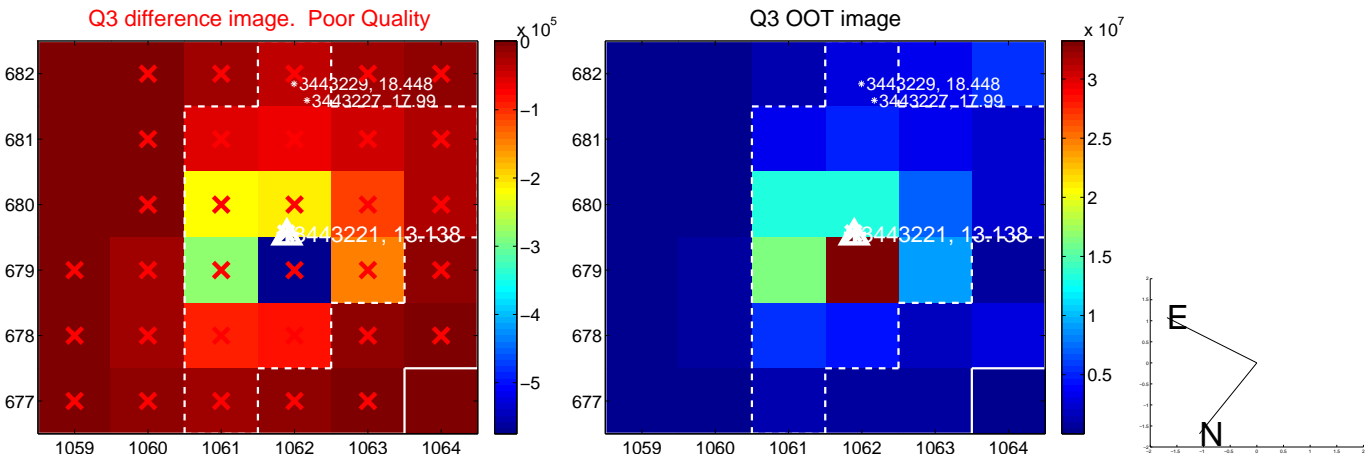
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.131 ± 0.073	1.78	0.115 ± 0.075	0.062 ± 0.068
PRF-fit source offset from KIC position	0.217 ± 0.089	2.42	-0.156 ± 0.068	-0.151 ± 0.099
photometric centroid source offset	2.02 ± 0.44	4.57	-1.14 ± 0.41	-1.66 ± 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 ×: 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.

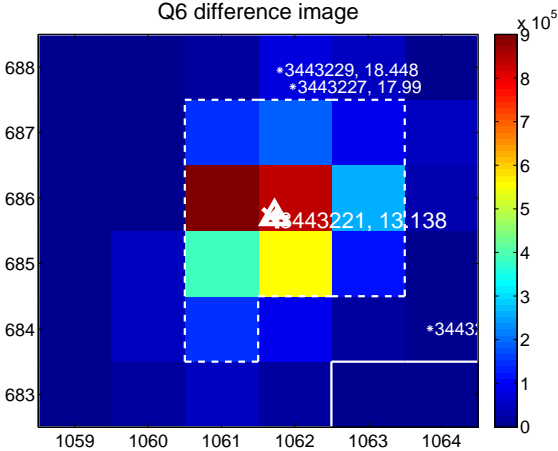
Q5 no difference image



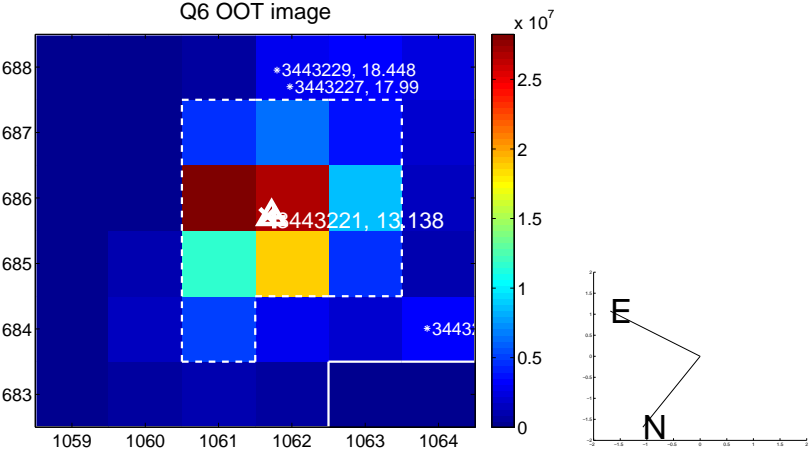
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



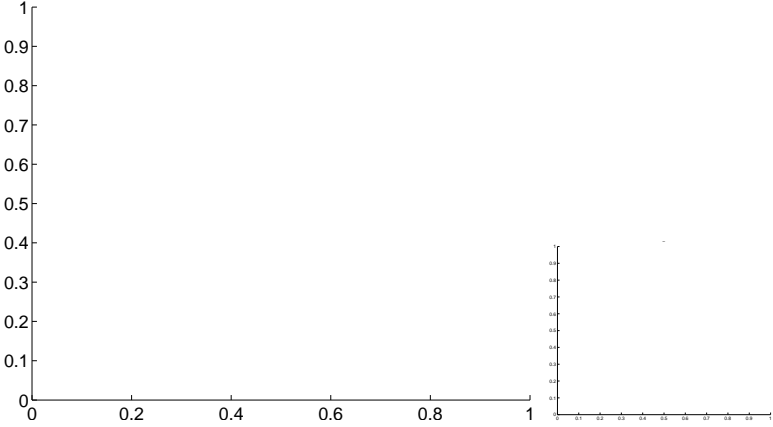
Q7 no OOT image



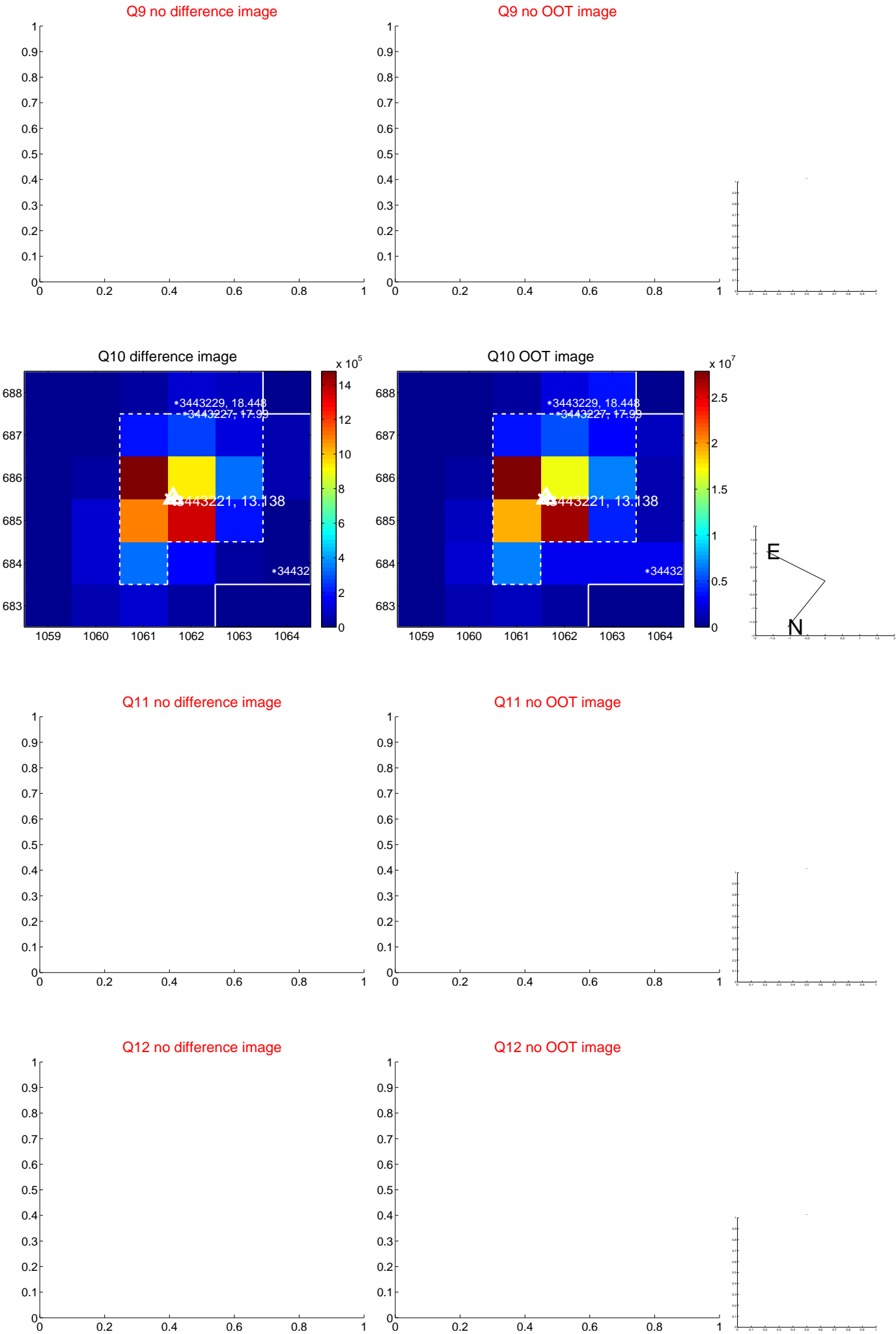
Q8 no difference image



Q8 no OOT image



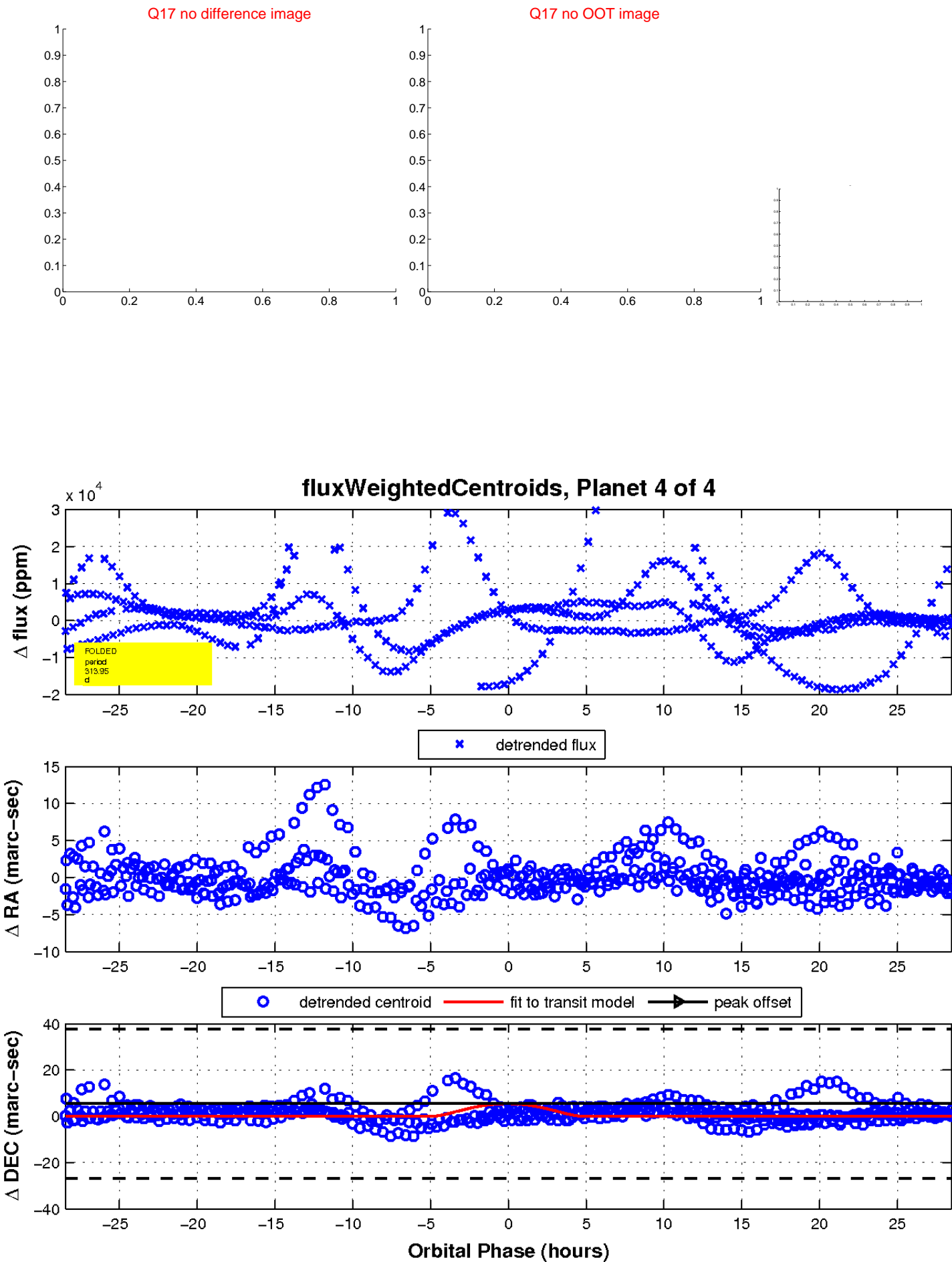
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

