

KIC 009413335

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})
009413335-01	OBS	No	2.276848	133.589239	16.4	8.651	8.8	5.9	3.57	6807	1.68	14727.60
009413335-02	OBS	No	170.149624	275.928847	243.9	4.344	7.6	7.9	3.57	6807	6.27	46.79
009413335-03	OBS	No	121.259431	141.234031	258.8	2.388	7.4	7.6	3.57	6807	6.57	73.50
009413335-04	OBS	No	263.342468	339.252983	254.0	7.556	7.1	7.0	3.57	6807	6.59	26.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009413335-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009413335-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009413335-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
009413335-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

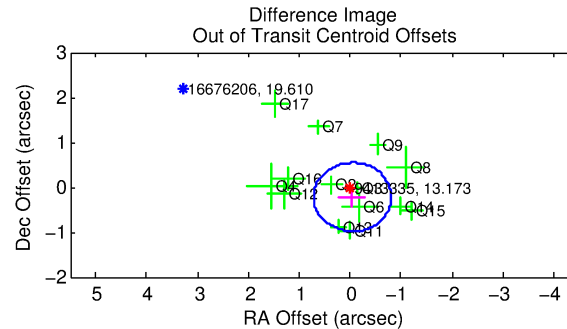
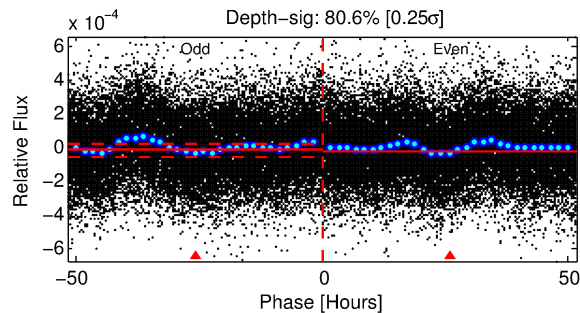
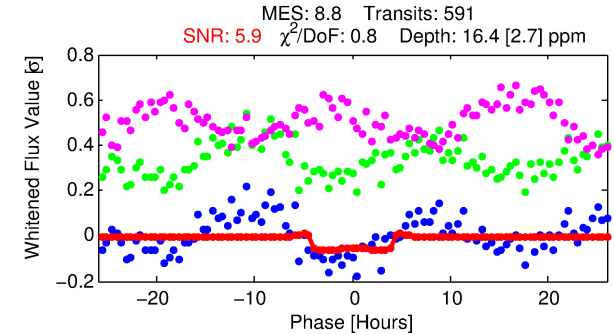
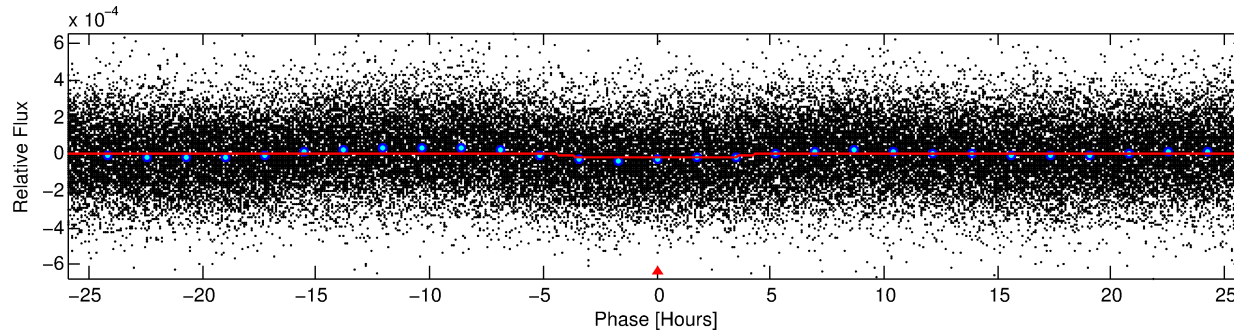
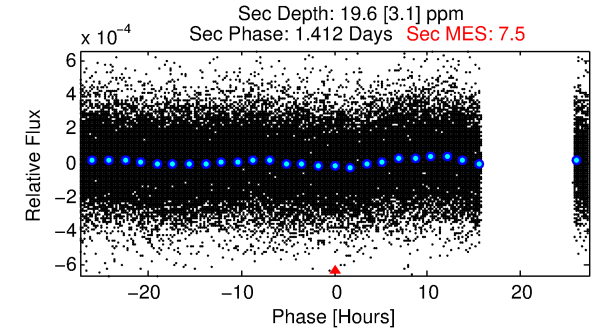
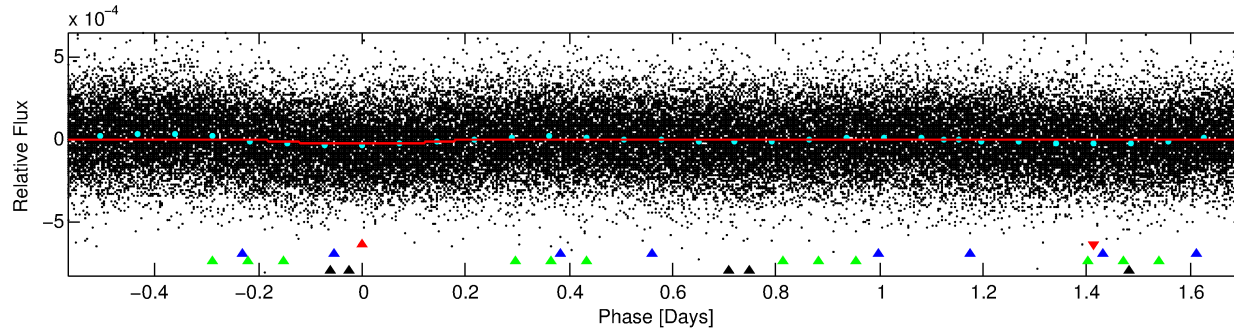
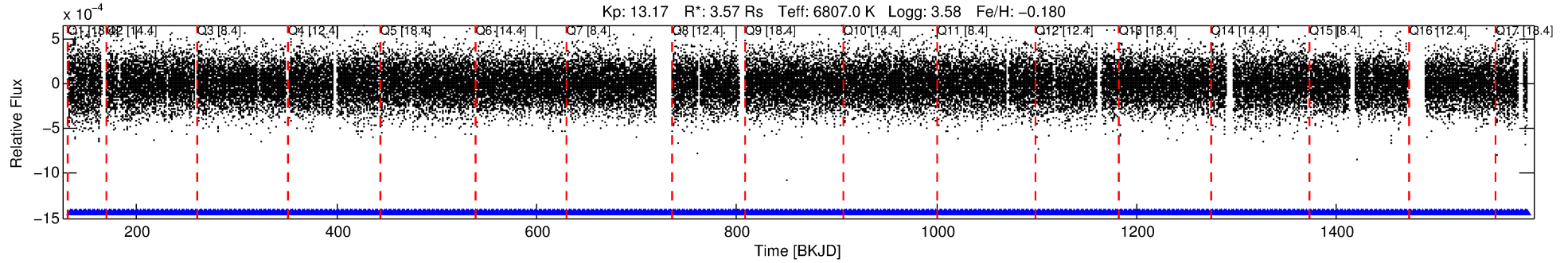
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009413335-01

No Significant Match Found

DV One-Page Summary

KIC: 9413335 Candidate: 1 of 4 Period: 2.277 d



DV Fit Results:

Period = 2.27685 [0.00004] d
Epoch = 133.5892 [0.0094] BKJD
Rp/R* = 0.0043 [0.0014]
a/R* = 1.30 [1.00]
b = 0.90 [0.41]
Seff = 14727.60 [7729.88]
Teq = 2809 [369] K
Rp = 1.68 [0.78] Re
a = 0.0408 [0.0131] AU
Ag = 6.34 [5.26] [1.01σ]
Teffp = 6890 [1153] K [3.37σ]

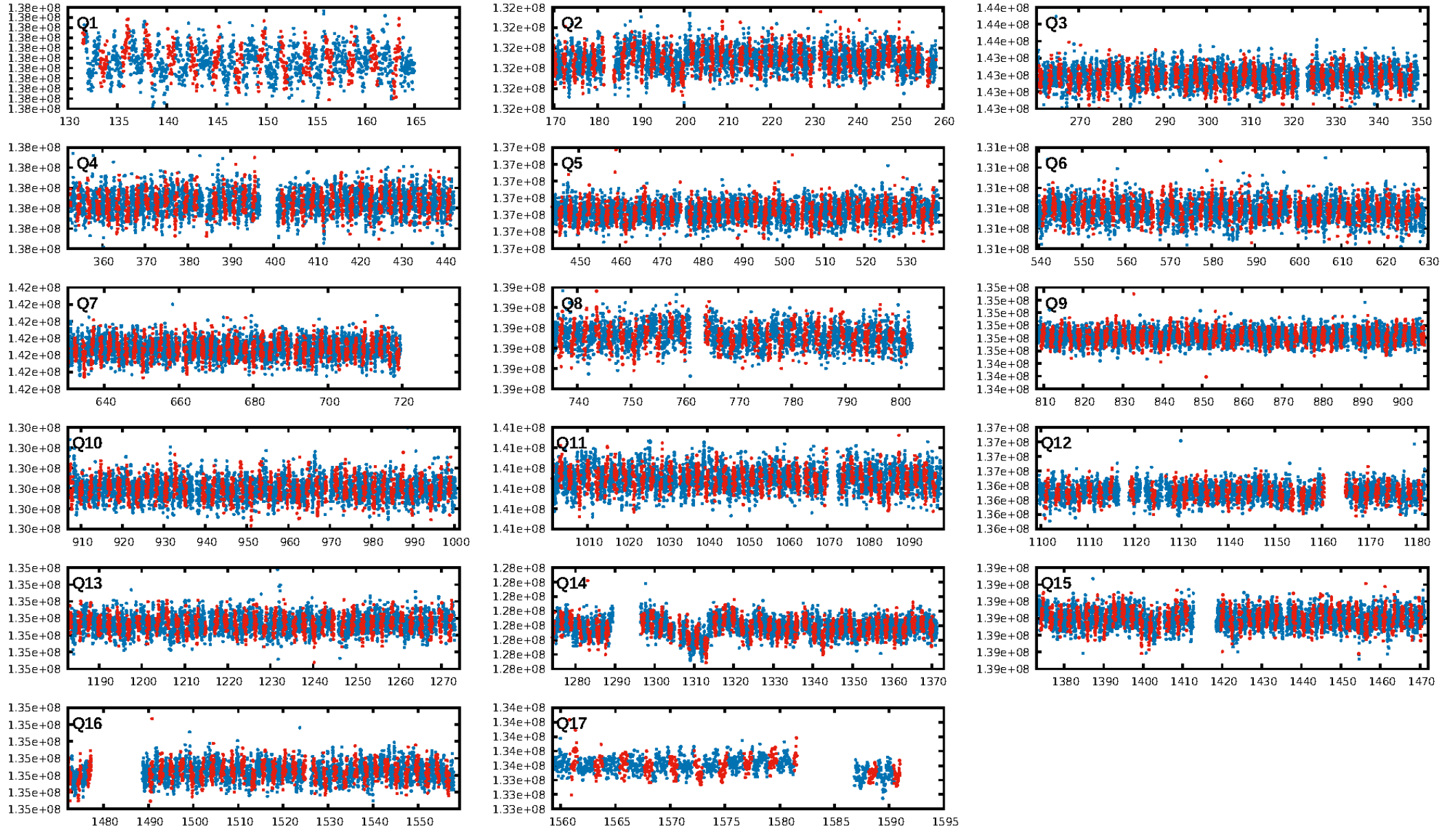
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [318.20σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.75e-12
RollingBand-fgt: 1.00 [565/565]
GhostDiagnostic-chr: 2.738
Centroid-sig: 13.8%
Centroid-so: 1.051 arcsec [0.96σ]
OotOffset-rm: 0.225 arcsec [0.88σ]
KicOffset-rm: 0.124 arcsec [0.57σ]
OotOffset-st: 3/4/4/3 [14]
KicOffset-st: 3/4/4/3 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [17/17]

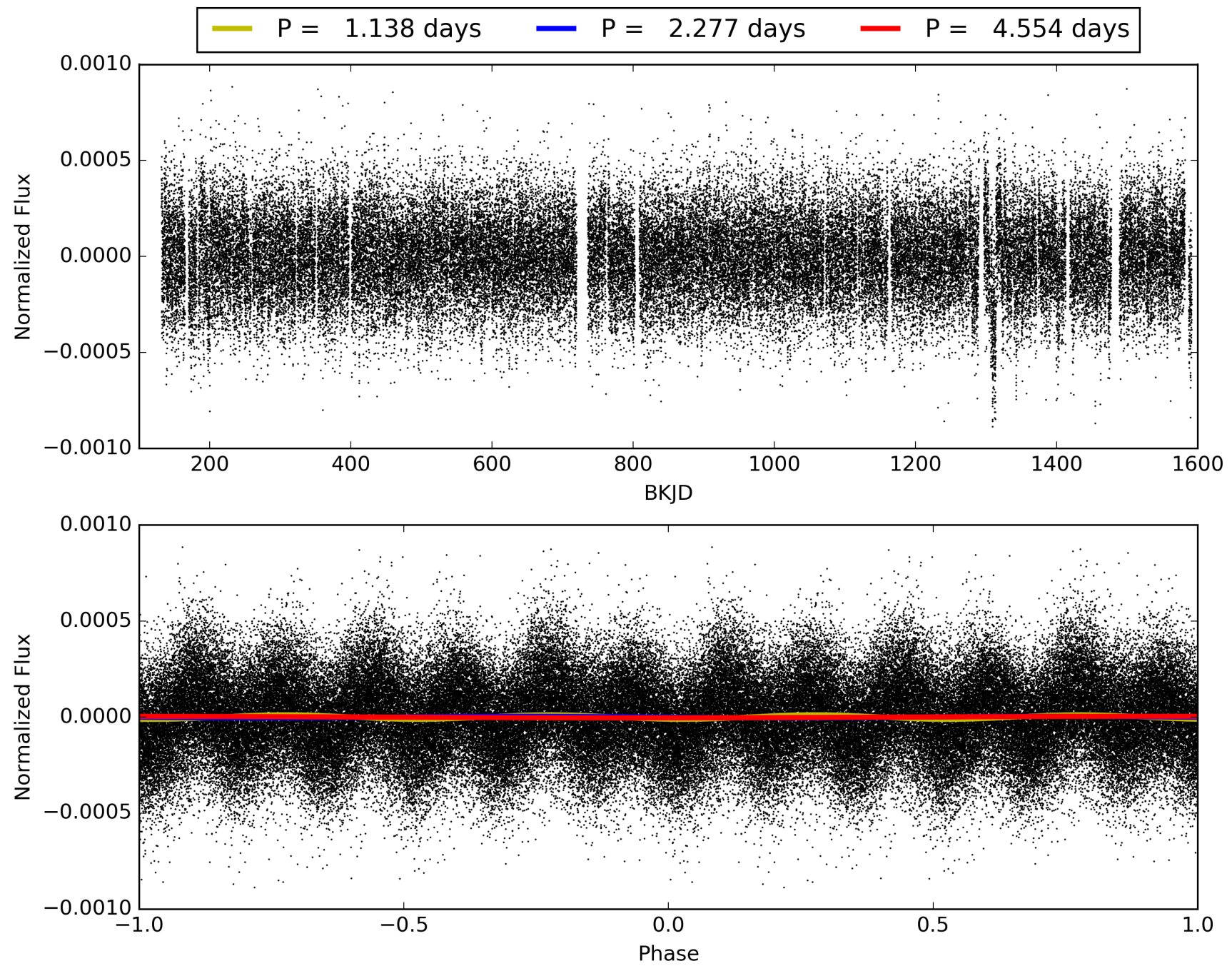
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 22:34:58 Z

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

TCE 009413335-01, PDC Light Curves

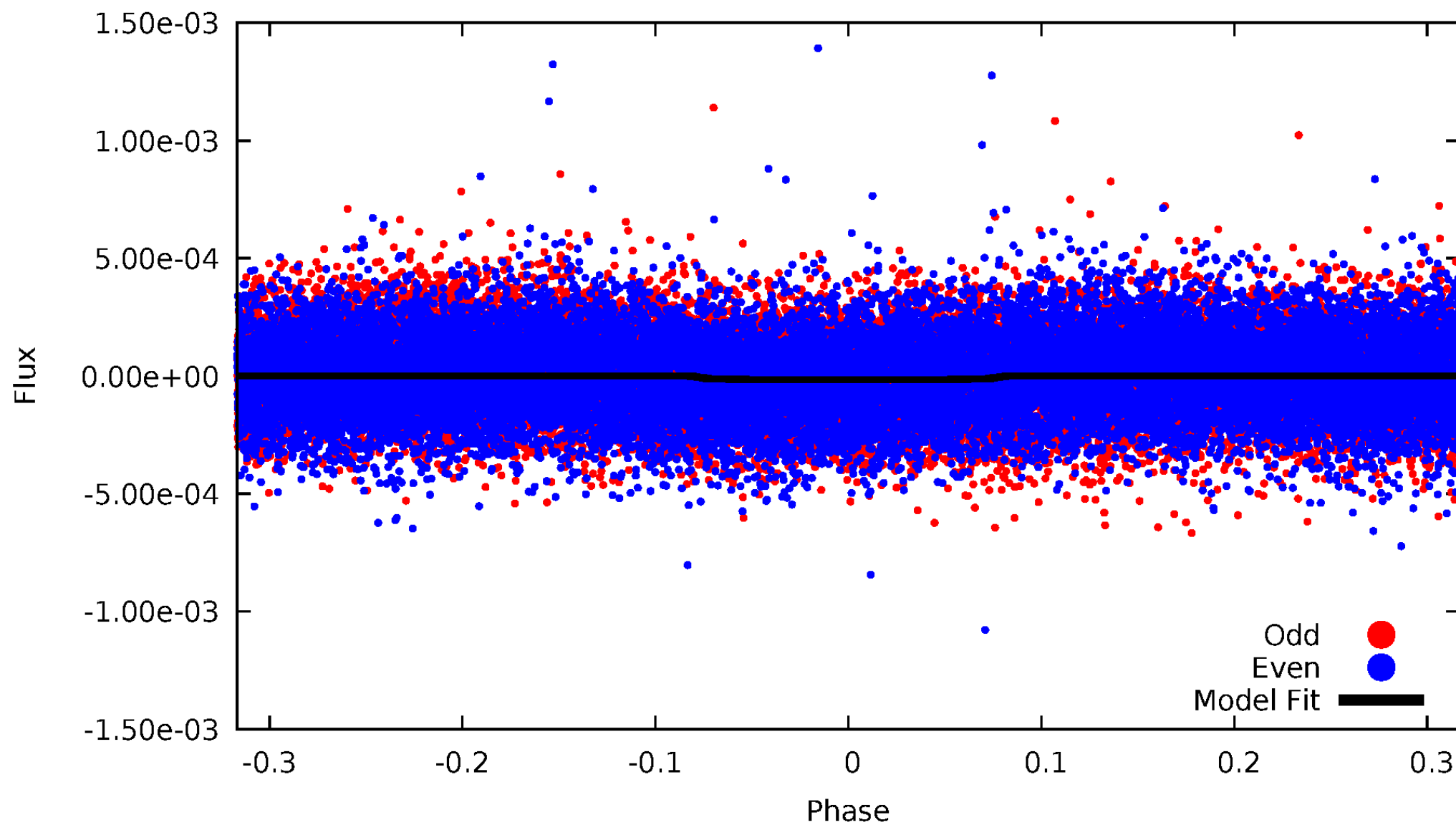


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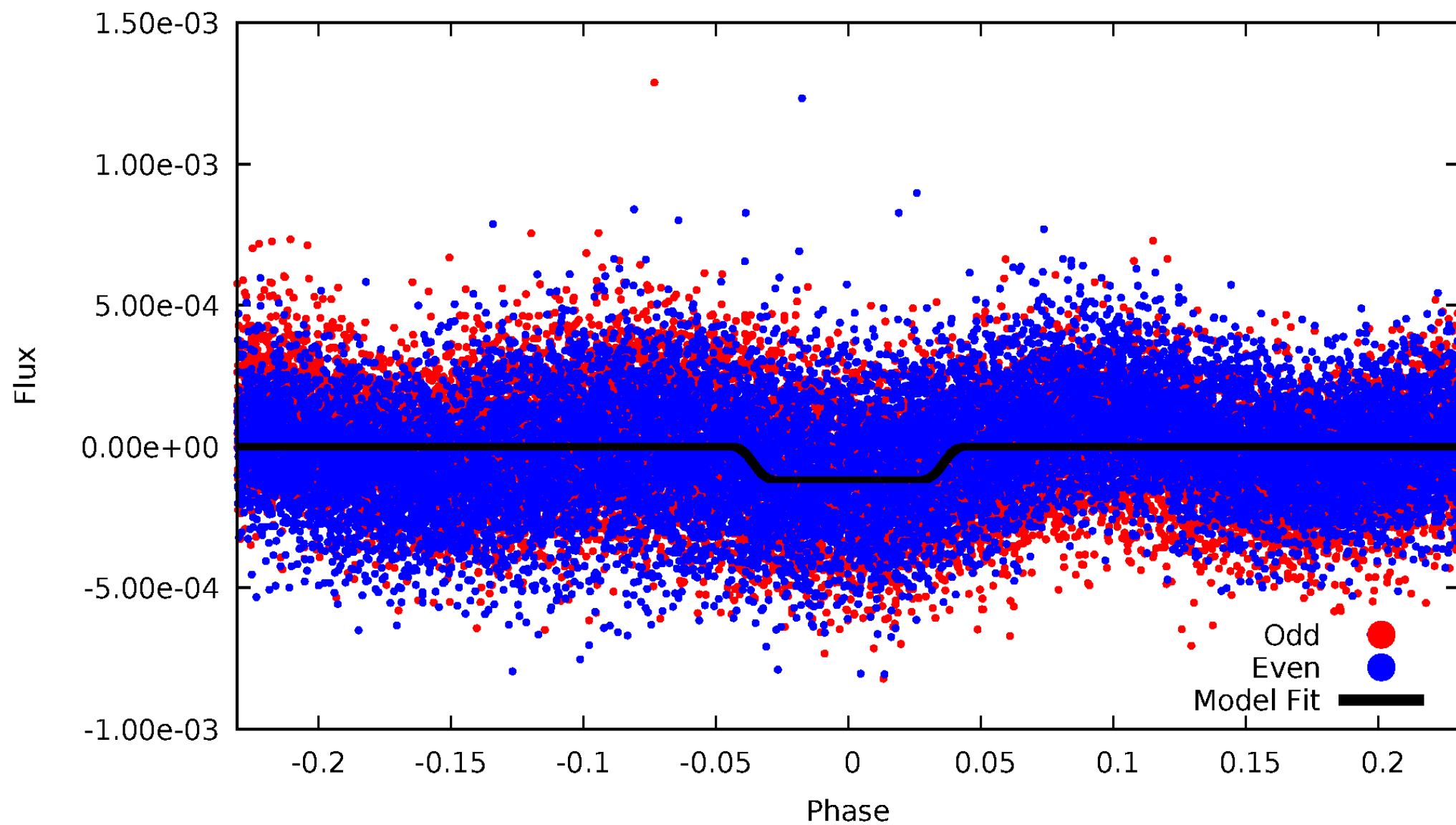
DV Odd/Even

TCE 009413335-01

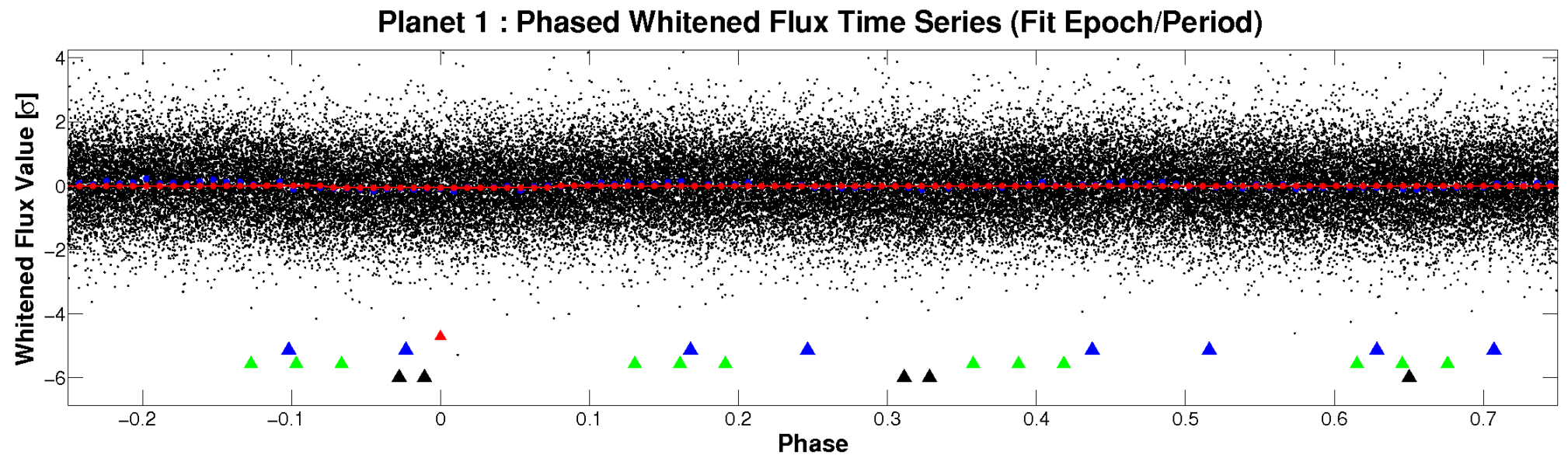
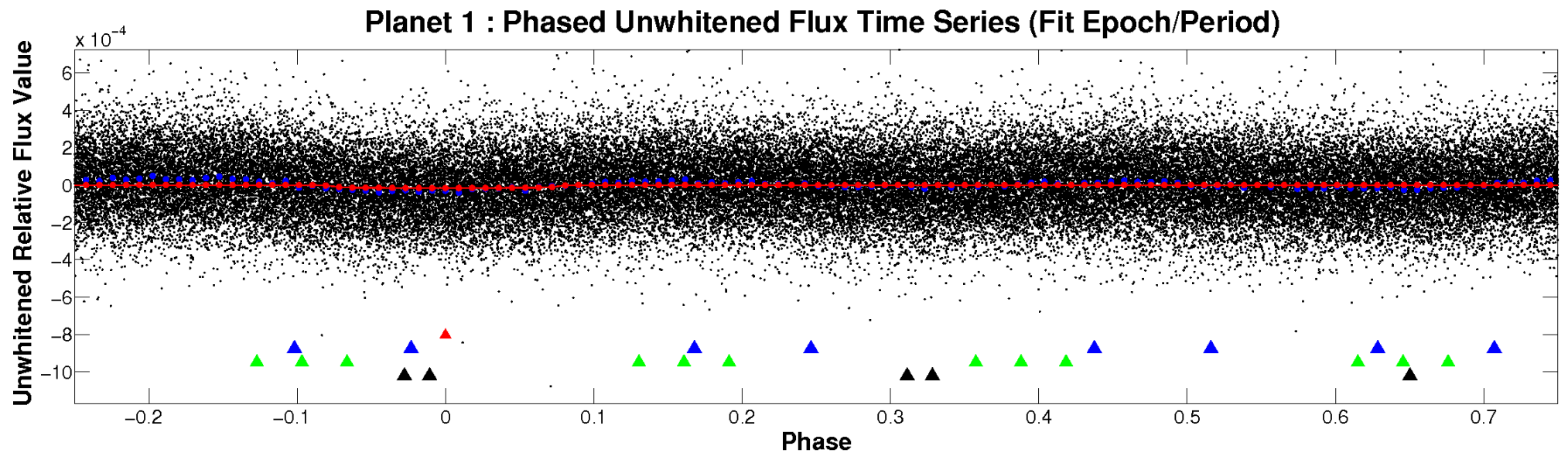


ALT Odd/Even

TCE 009413335-01

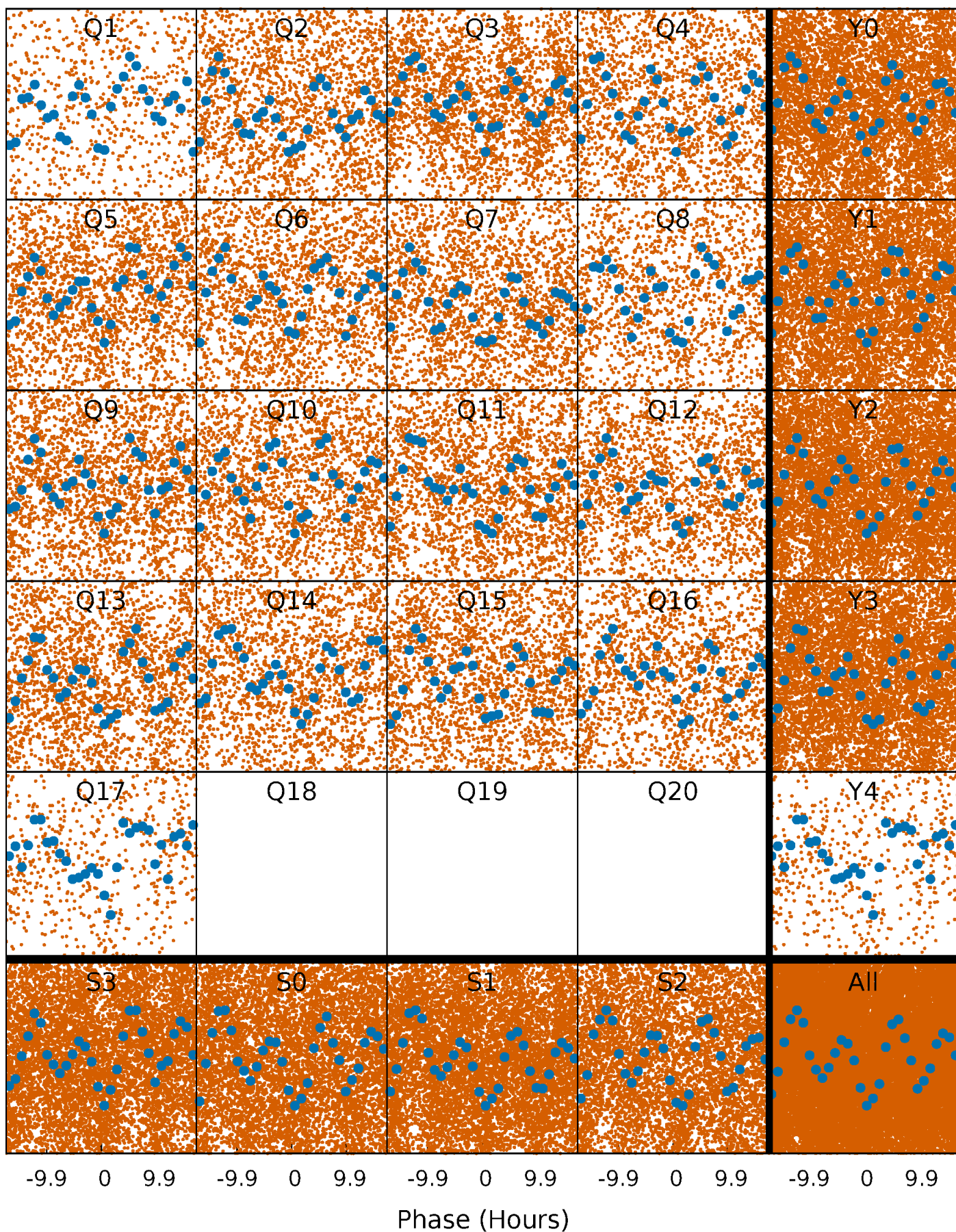


Non-Whitened Vs. Whitened Light Curve



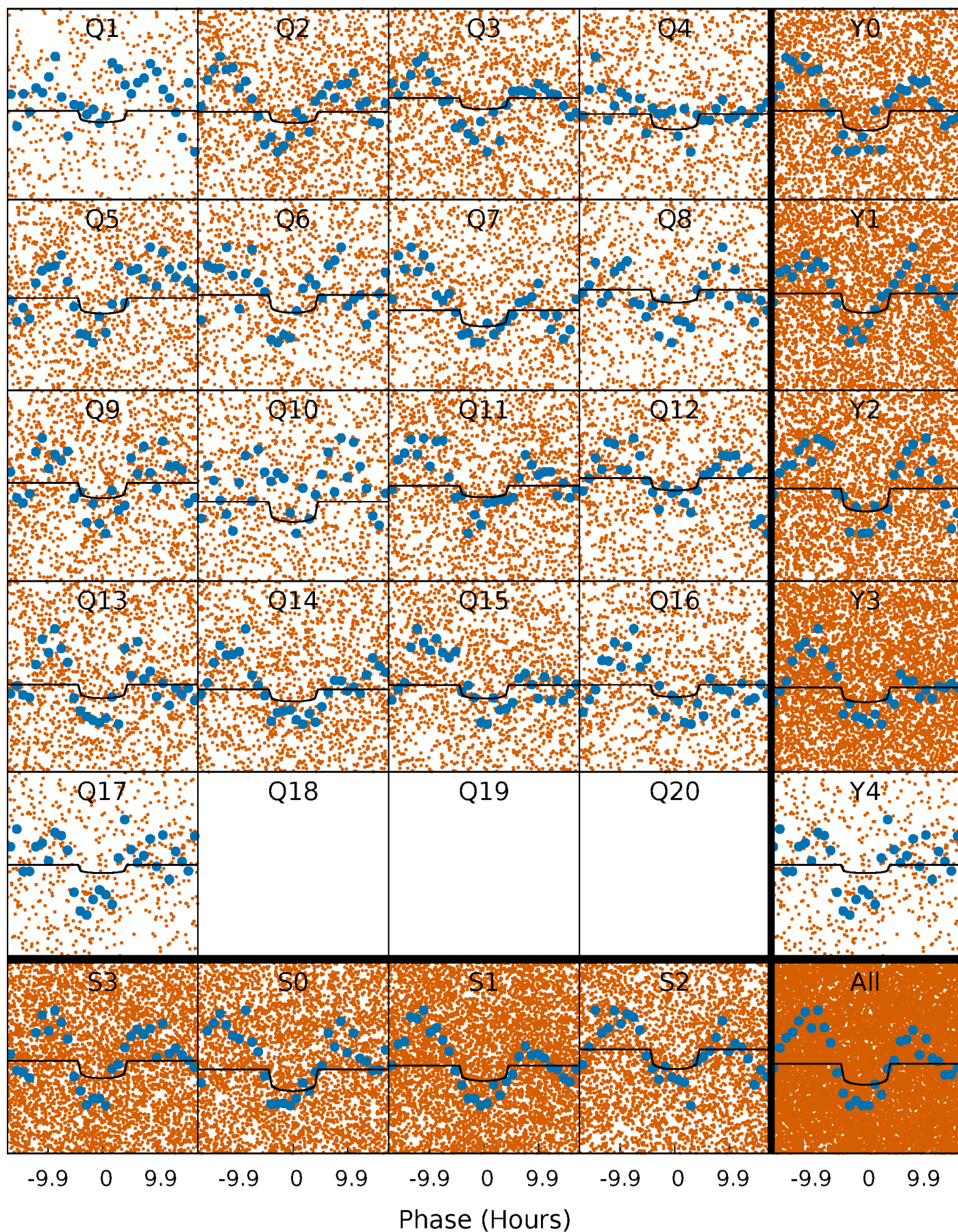
PDC Quarter-Phased Transit Curves

TCE 009413335-01 P= 2.276848 Days $T_0=133.589239$ (BKJD)



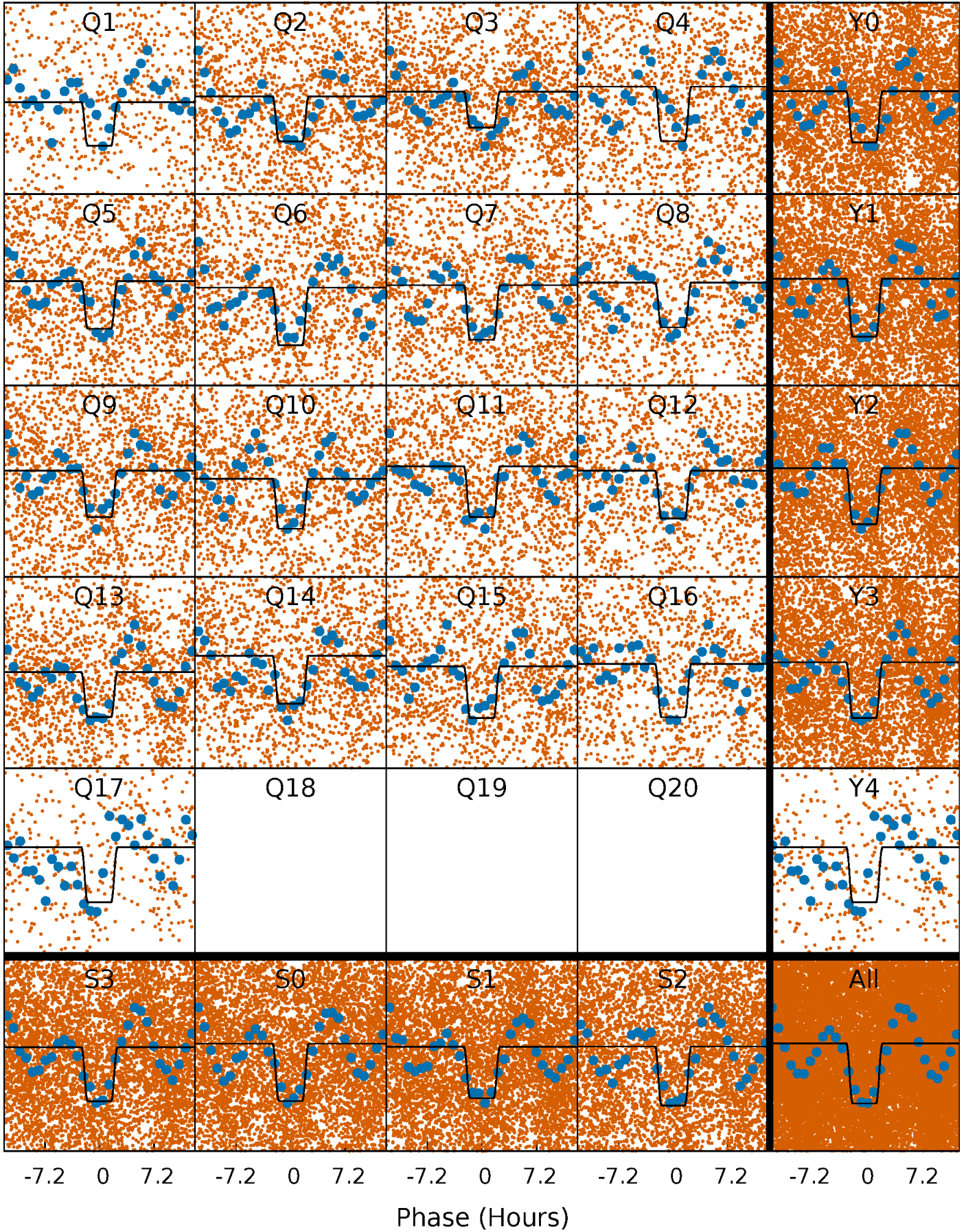
DV Quarter-Phased Transit Curves

TCE 009413335-01 P= 2.276848 Days $T_0=133.589239$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

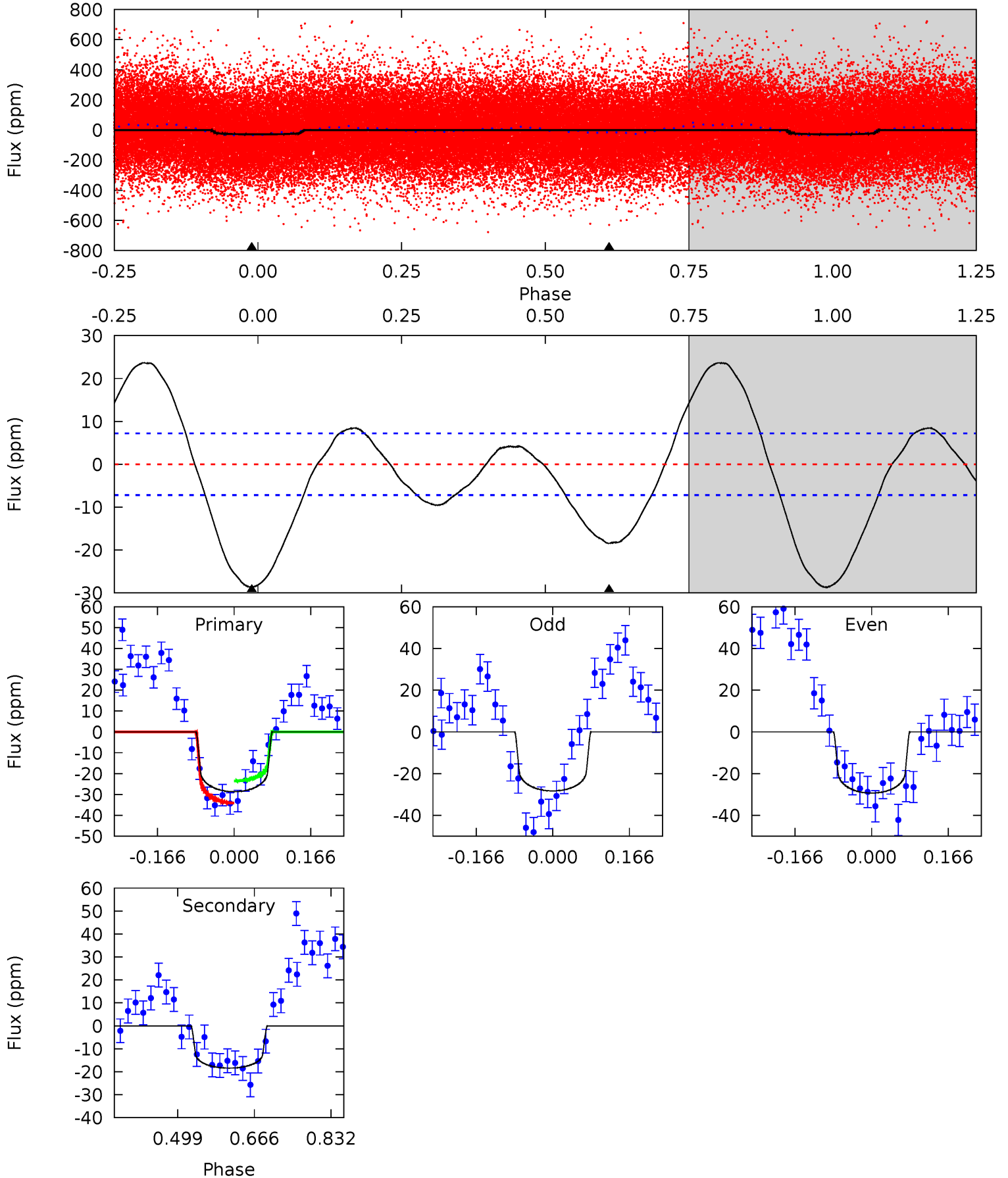
TCE 009413335-01 P= 2.277044 Days $T_0=133.565036$ (BKJD)



DV Model-Shift Uniqueness Test

009413335-01, P = 2.276848 Days, E = 131.312391 Days

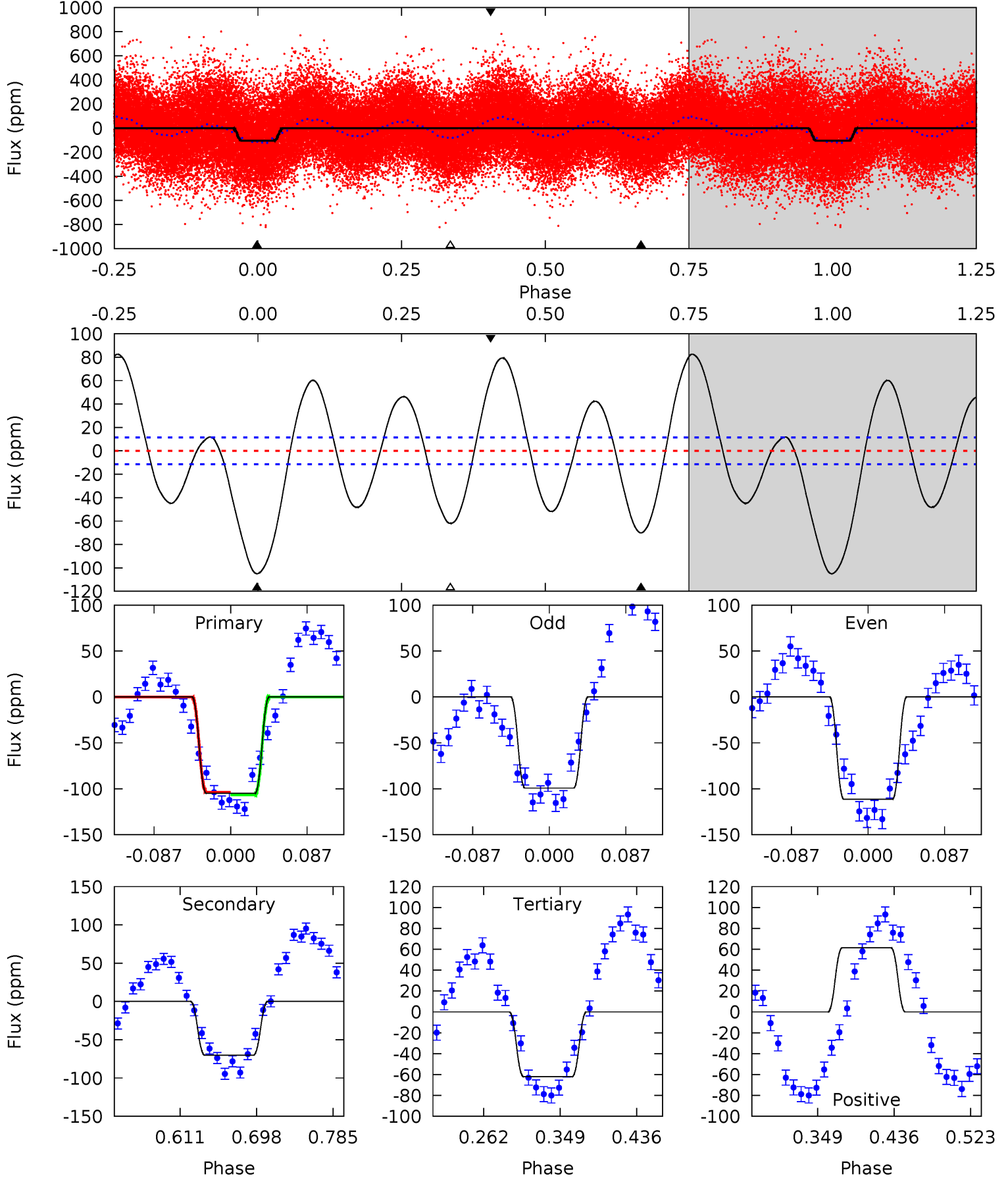
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.7	11.4	0	0	4.46	1.38	6.16	17.7	17.7	11.4	11.4	0.32	0.95	0.45	3.27



Alt Model-Shift Uniqueness Test

009413335-01, P = 2.277044 Days, E = 131.287992 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.1	28.1	24.8	24.6	4.59	1.71	16.7	17.2	17.5	3.27	3.49	2.42	1.06	0.44	0.60



Stellar Parameters For KIC 009413335

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6807^{+184}_{-225}	$3.575^{+0.296}_{-0.056}$	$-0.180^{+0.300}_{-0.250}$	$3.571^{+0.405}_{-1.216}$	$1.749^{+0.184}_{-0.316}$	$0.054^{+0.113}_{-0.010}$
	+3%/-3%	+8%/-2%	+167%/-139%	+11%/-34%	+11%/-18%	+209%/-18%
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 009413335-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-18 ± 2	$1.58^{+0.55}_{-0.55}$	3846^{+188}_{-302}	6689^{+1706}_{-939}	$6.712^{+8.681}_{-2.897}$
Alt.	-70 ± 2	$3.92^{+0.75}_{-0.77}$	3827^{+196}_{-327}	5872^{+426}_{-388}	$4.200^{+2.130}_{-1.182}$

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 $A_{obs} \gg 1.0$

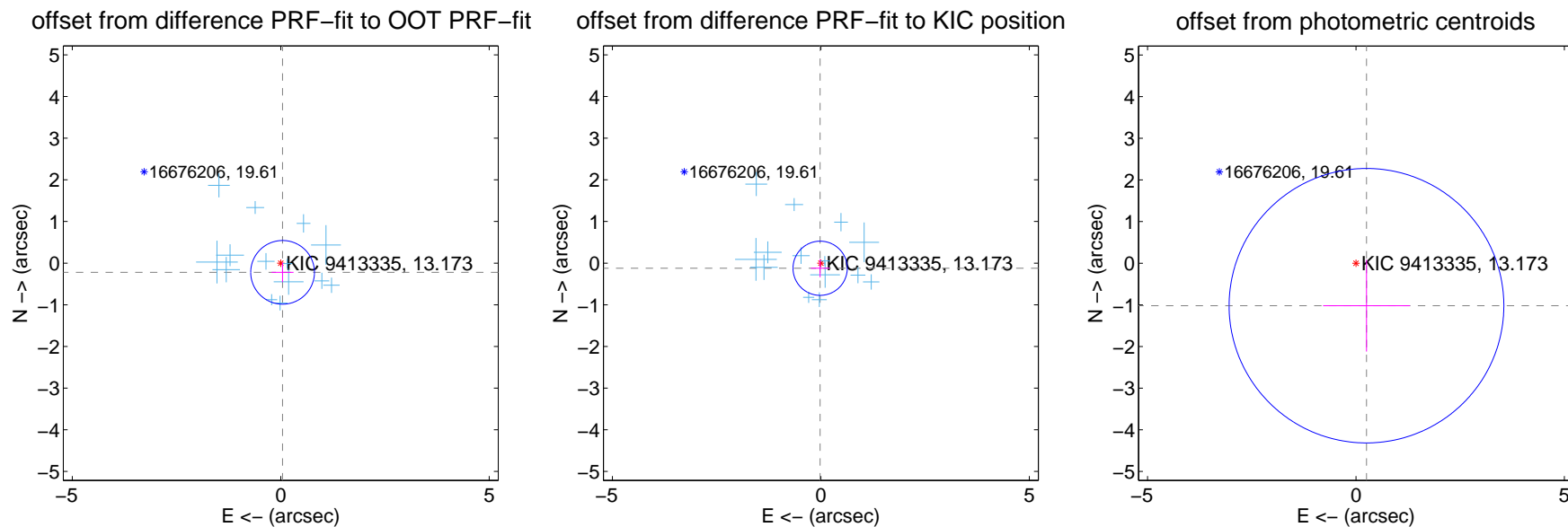
DV Centroid Data

Supplemental centroid analysis for 009413335-01. Kepler magnitude: 13.17. Transit SNR 5.87

There are 14 quarters with good PRF difference image offsets

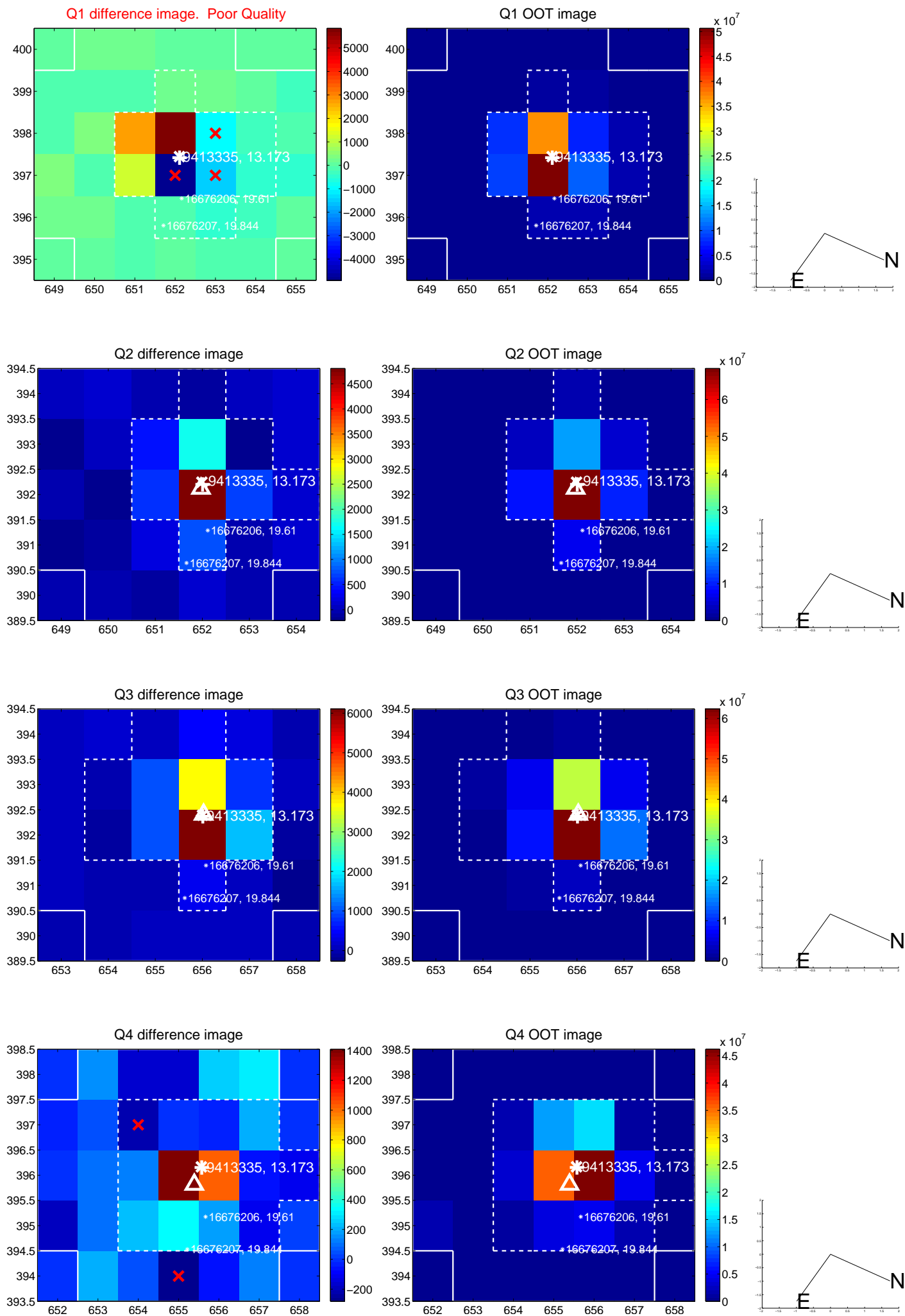
The direct PRF centroid is offset from the target star catalog position by about 0.07 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.225 ± 0.255	0.88	-0.044 ± 0.262	-0.221 ± 0.234
PRF-fit source offset from KIC position	0.124 ± 0.217	0.57	0.017 ± 0.225	-0.123 ± 0.217
photometric centroid source offset	1.05 ± 1.10	0.96	-0.25 ± 1.04	-1.02 ± 1.10

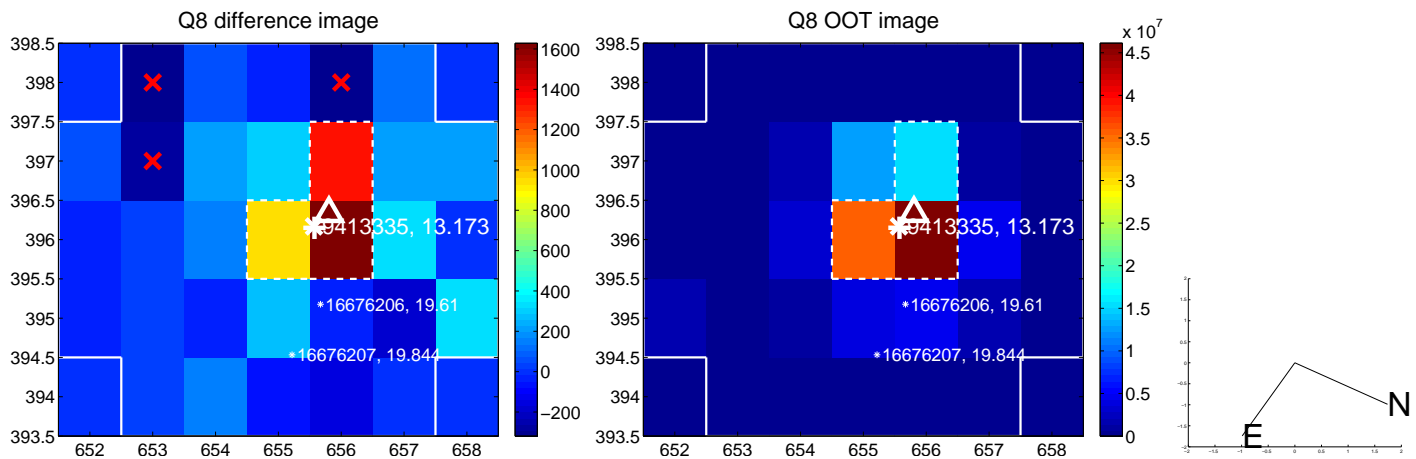
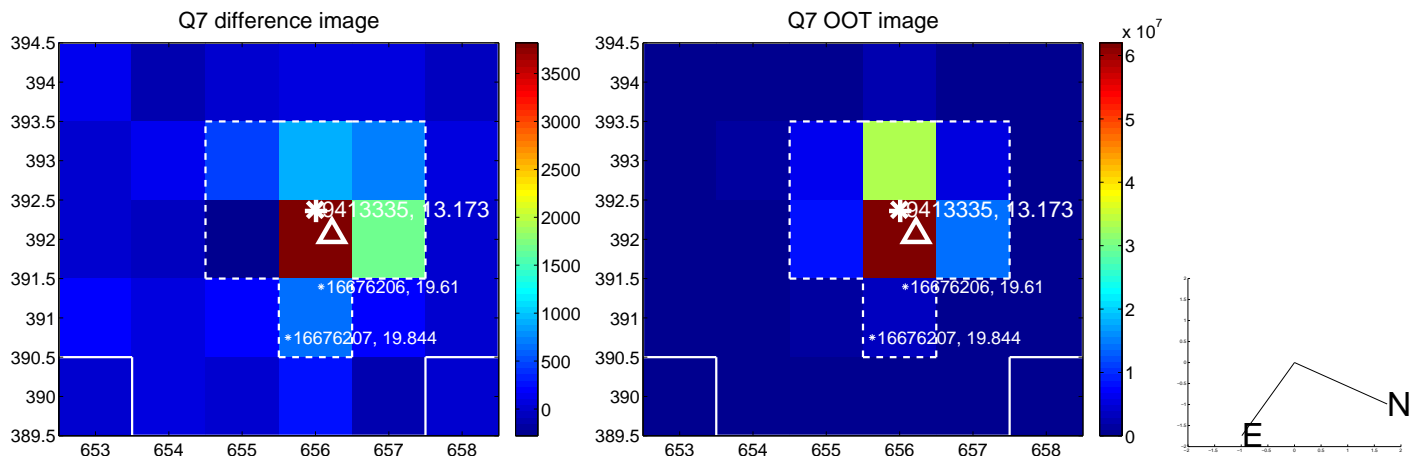
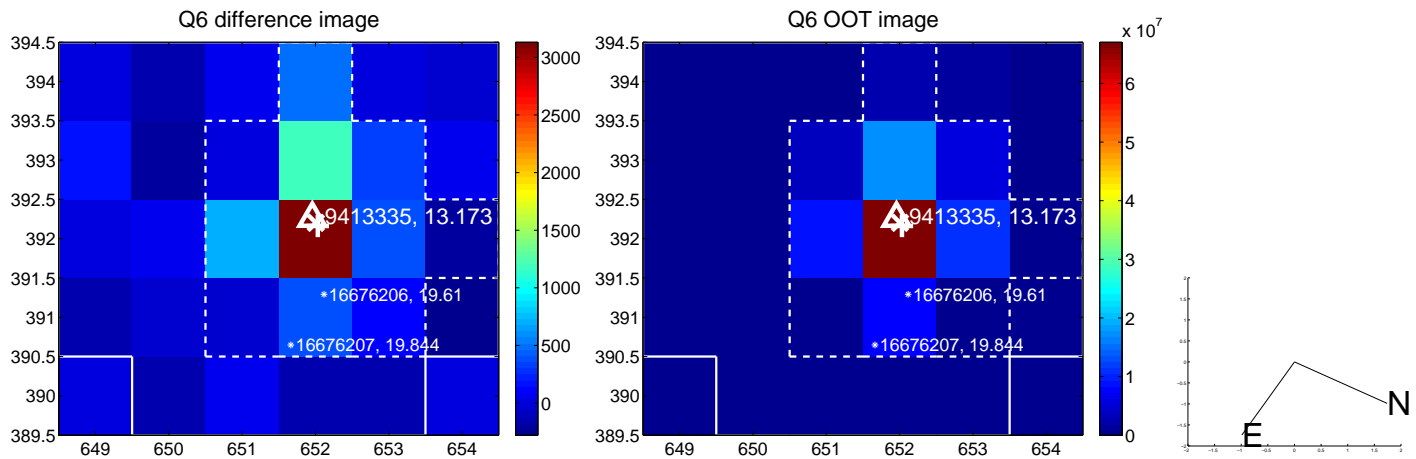
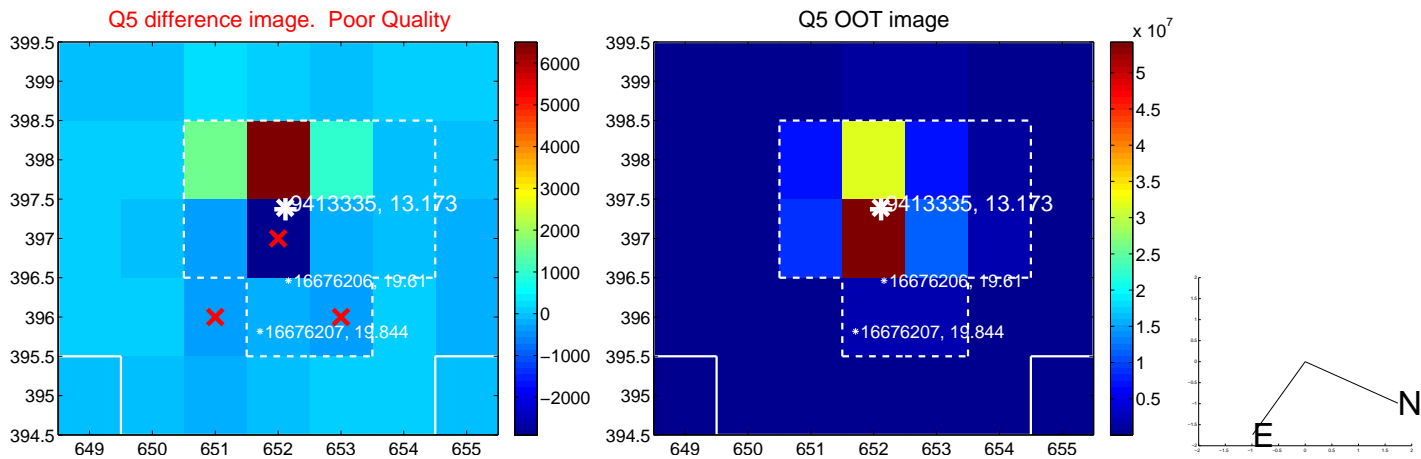


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

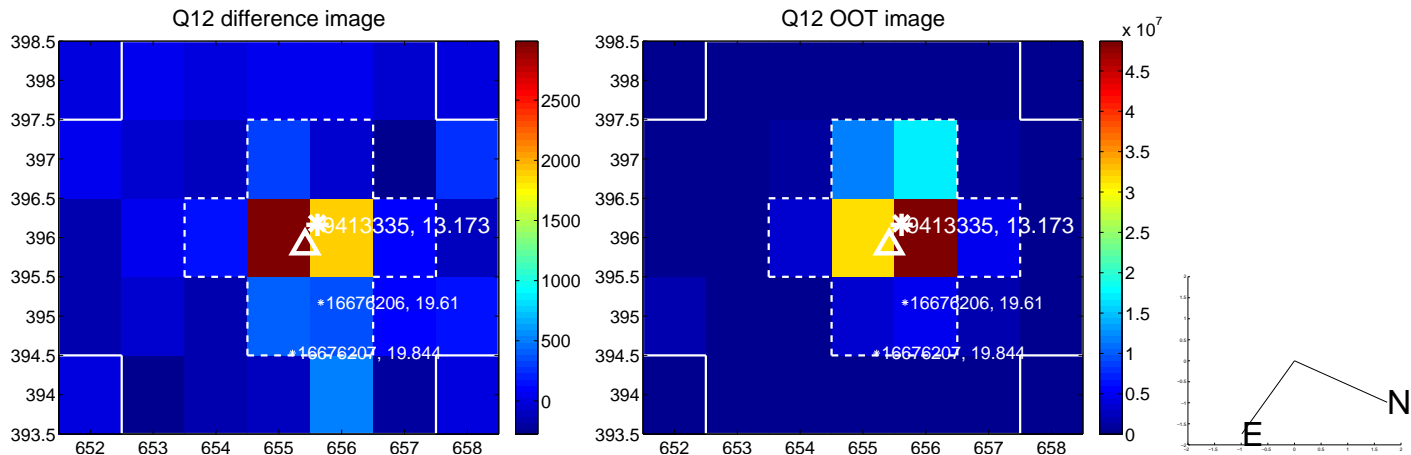
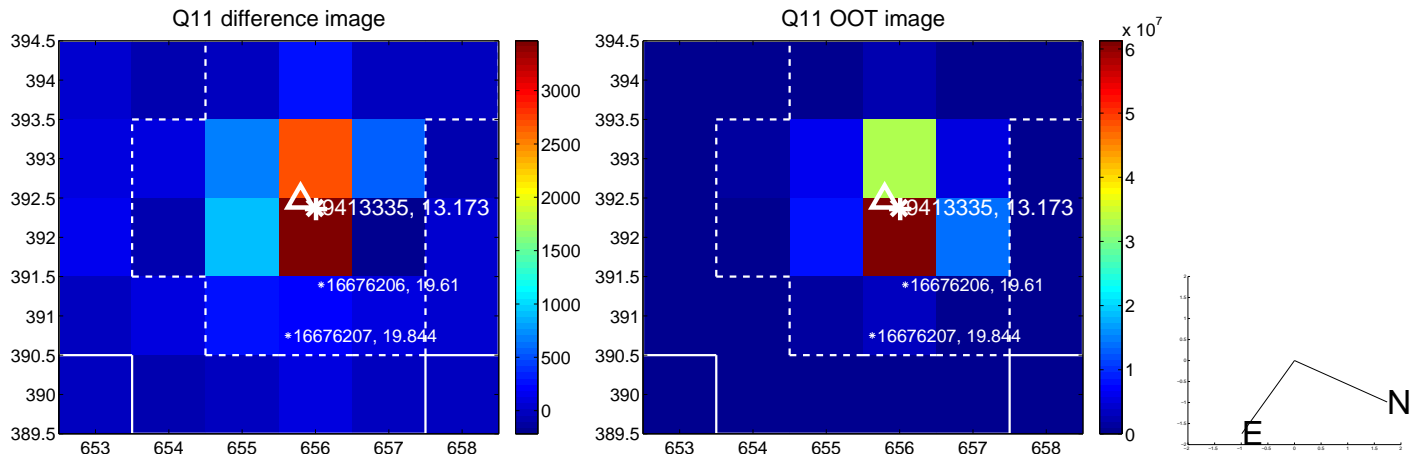
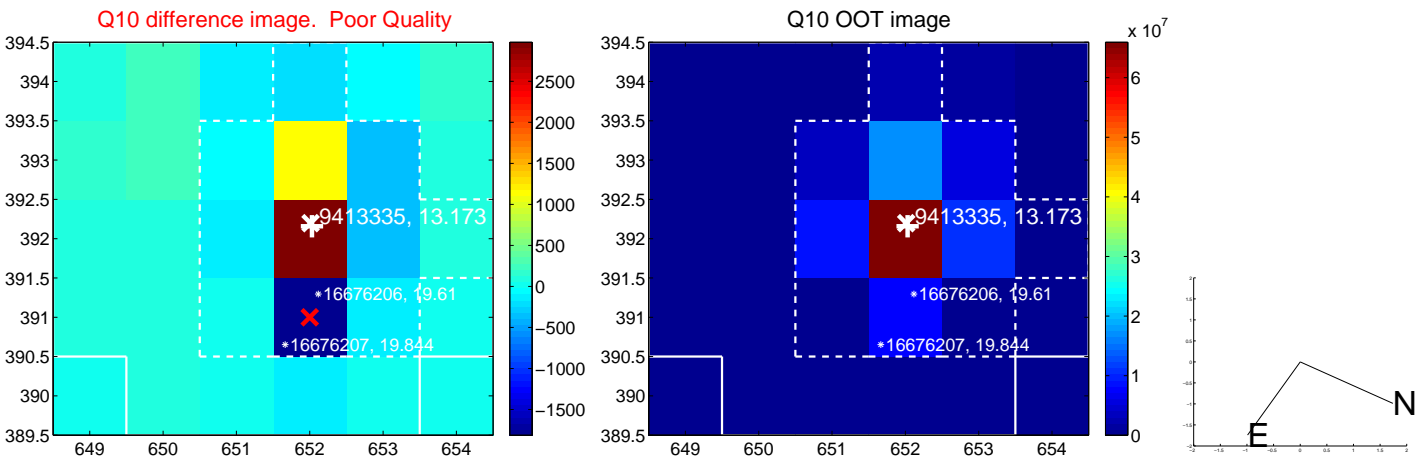
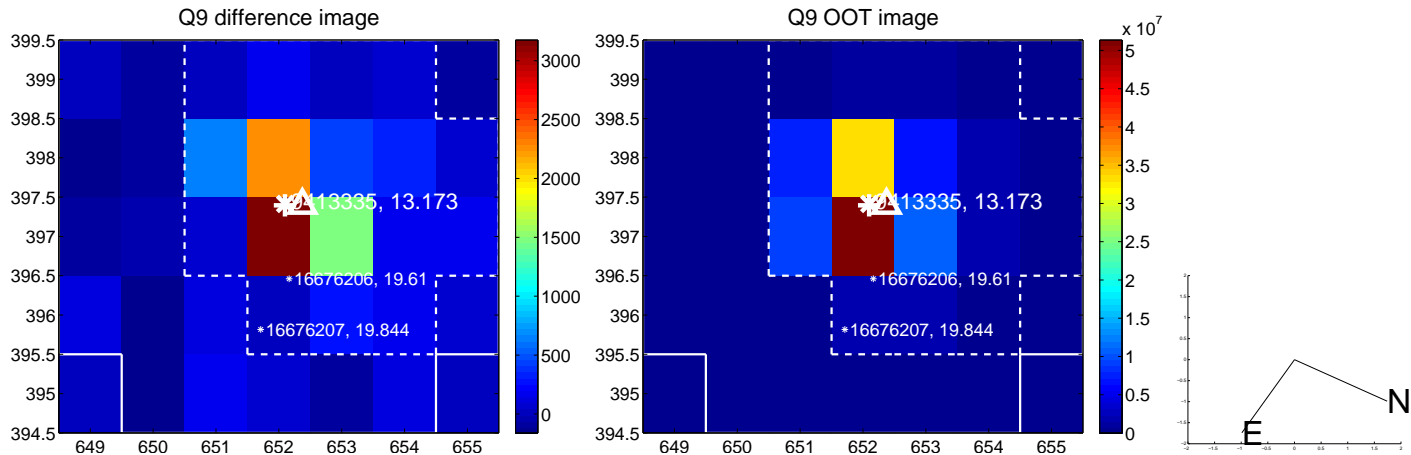
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



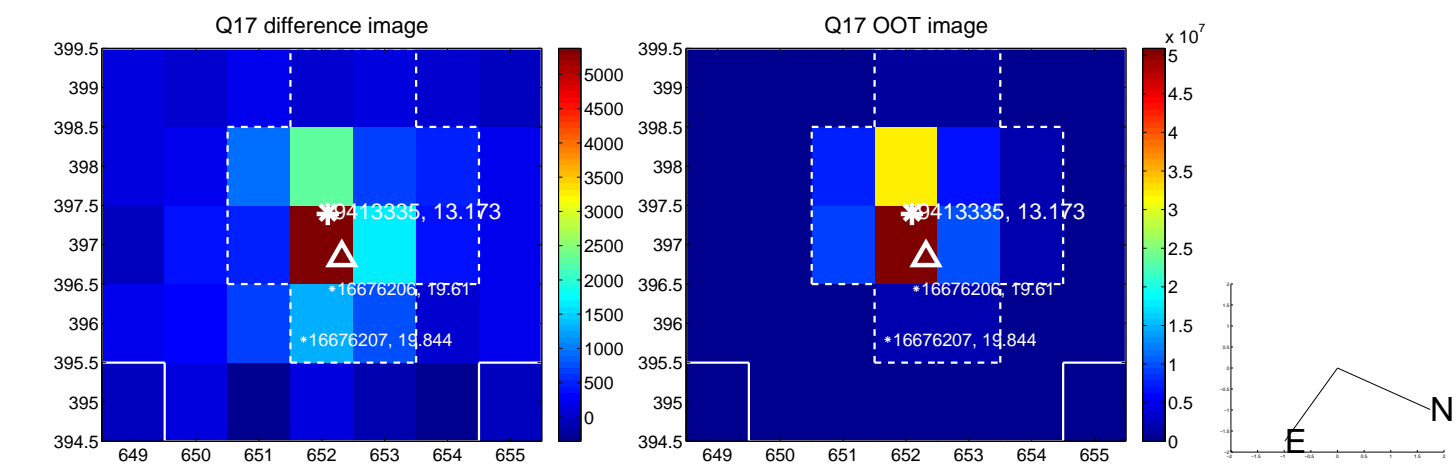
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



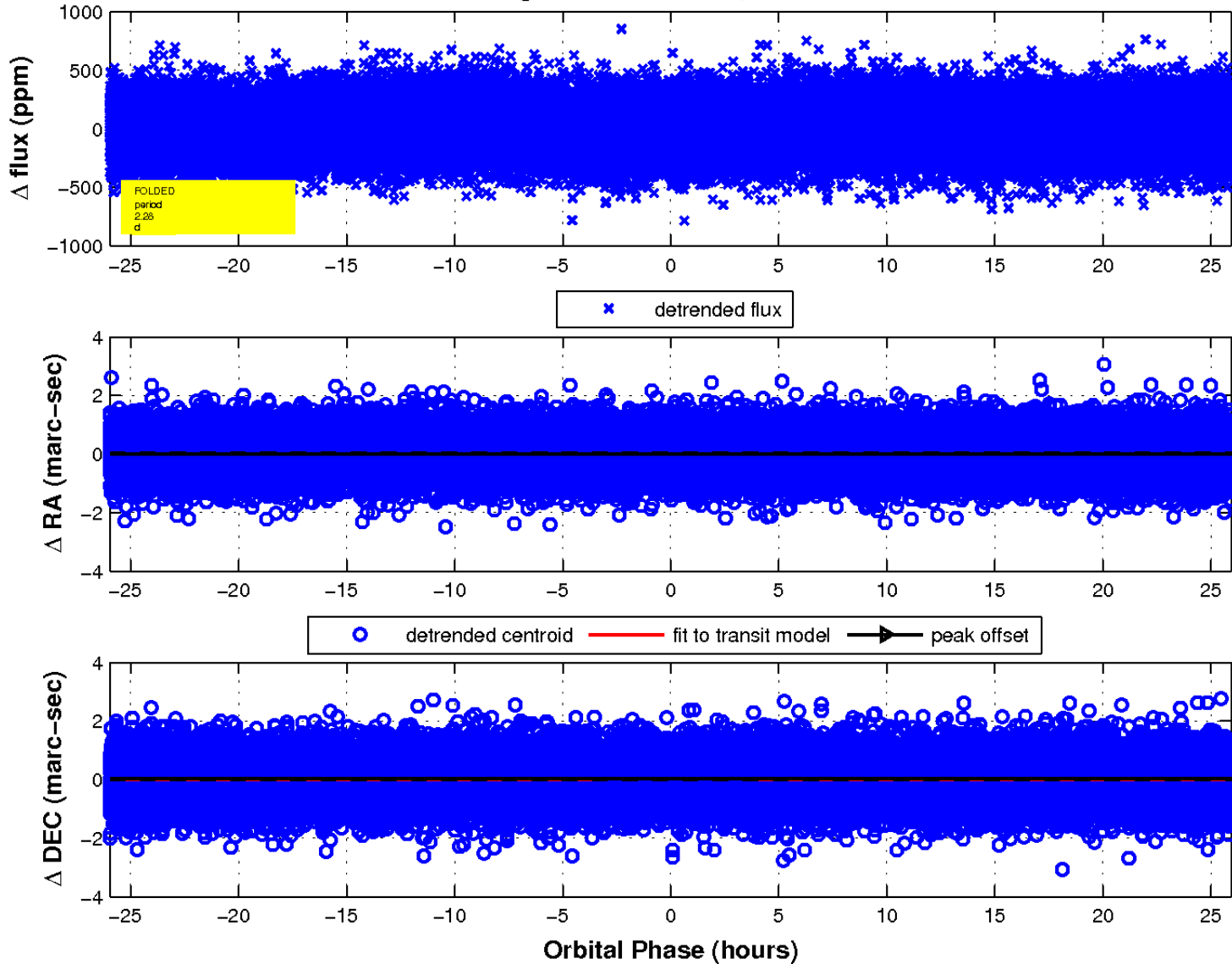
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

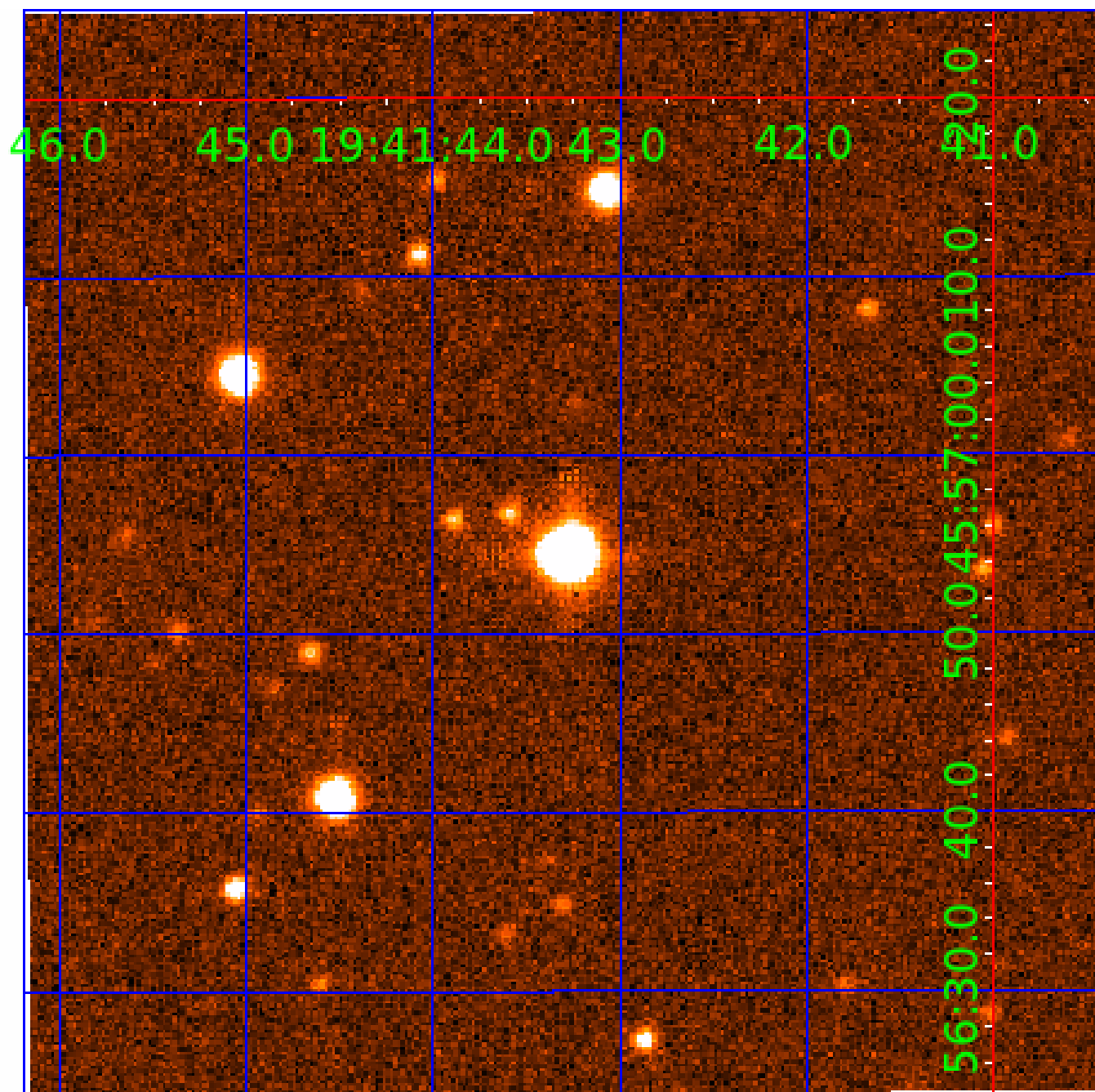


fluxWeightedCentroids, Planet 1 of 4



UKIRT Image

Declination



KIC 009413335

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})
009413335-01	OBS	No	2.276848	133.589239	16.4	8.651	8.8	5.9	3.57	6807	1.68	14727.60
009413335-02	OBS	No	170.149624	275.928847	243.9	4.344	7.6	7.9	3.57	6807	6.27	46.79
009413335-03	OBS	No	121.259431	141.234031	258.8	2.388	7.4	7.6	3.57	6807	6.57	73.50
009413335-04	OBS	No	263.342468	339.252983	254.0	7.556	7.1	7.0	3.57	6807	6.59	26.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009413335-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009413335-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009413335-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
009413335-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

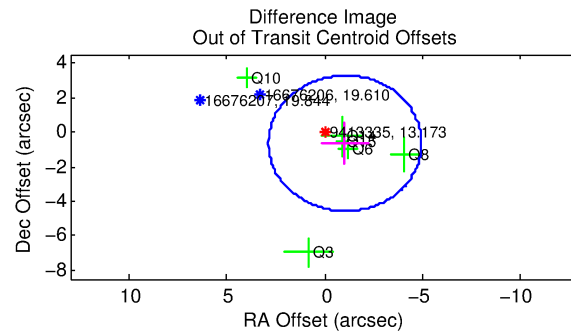
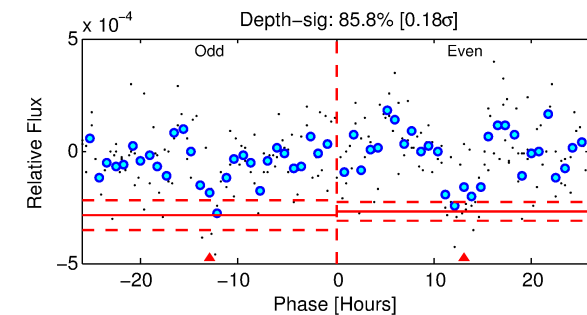
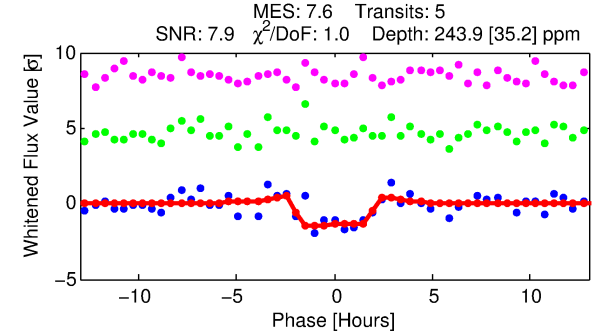
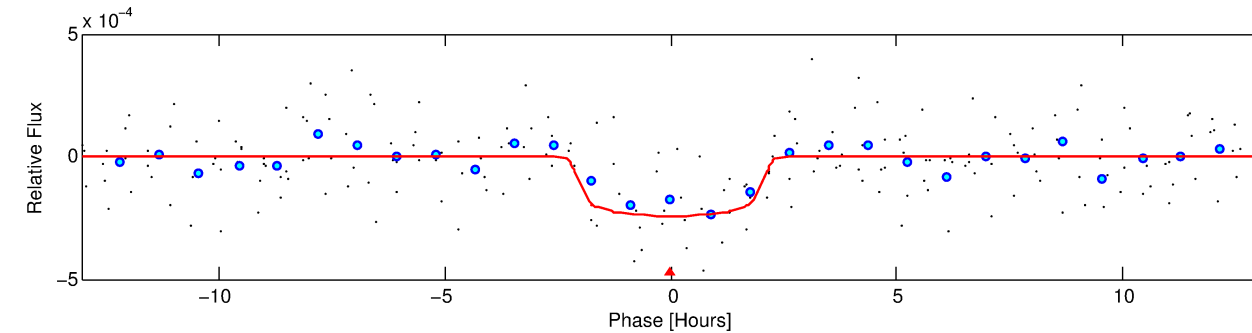
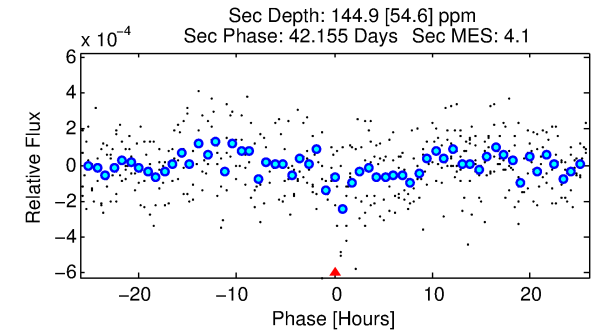
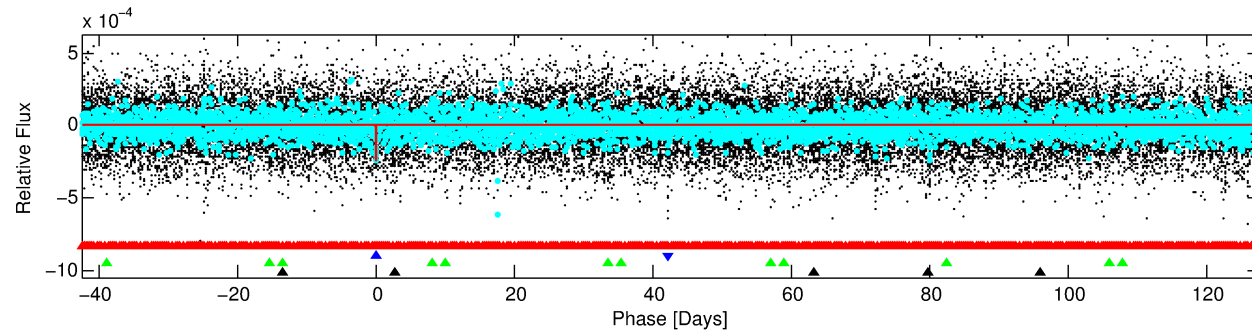
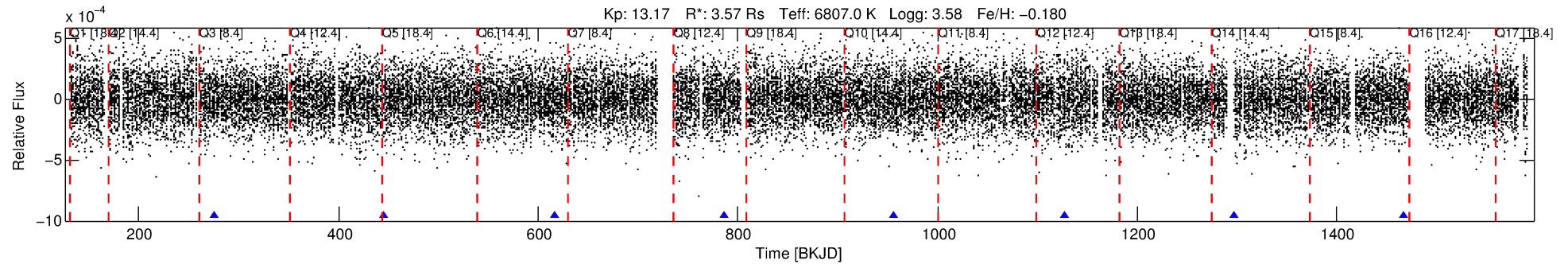
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009413335-02

No Significant Match Found

DV One-Page Summary

KIC: 9413335 Candidate: 2 of 4 Period: 170.150 d



DV Fit Results:

Period = 170.14962 [0.00207] d
Epoch = 275.9288 [0.0089] BKJD
Rp/R* = 0.0161 [0.0057]
a/R* = 170.20 [337.76]
b = 0.84 [0.69]
Seff = 46.79 [24.56]
Teq = 667 [88] K
Rp = 6.27 [3.08] Re
a = 0.7241 [0.2325] AU
Ag = 1064.20 [1010.32] [1.05σ]
Teffp = 5889 [1197] K [4.35σ]

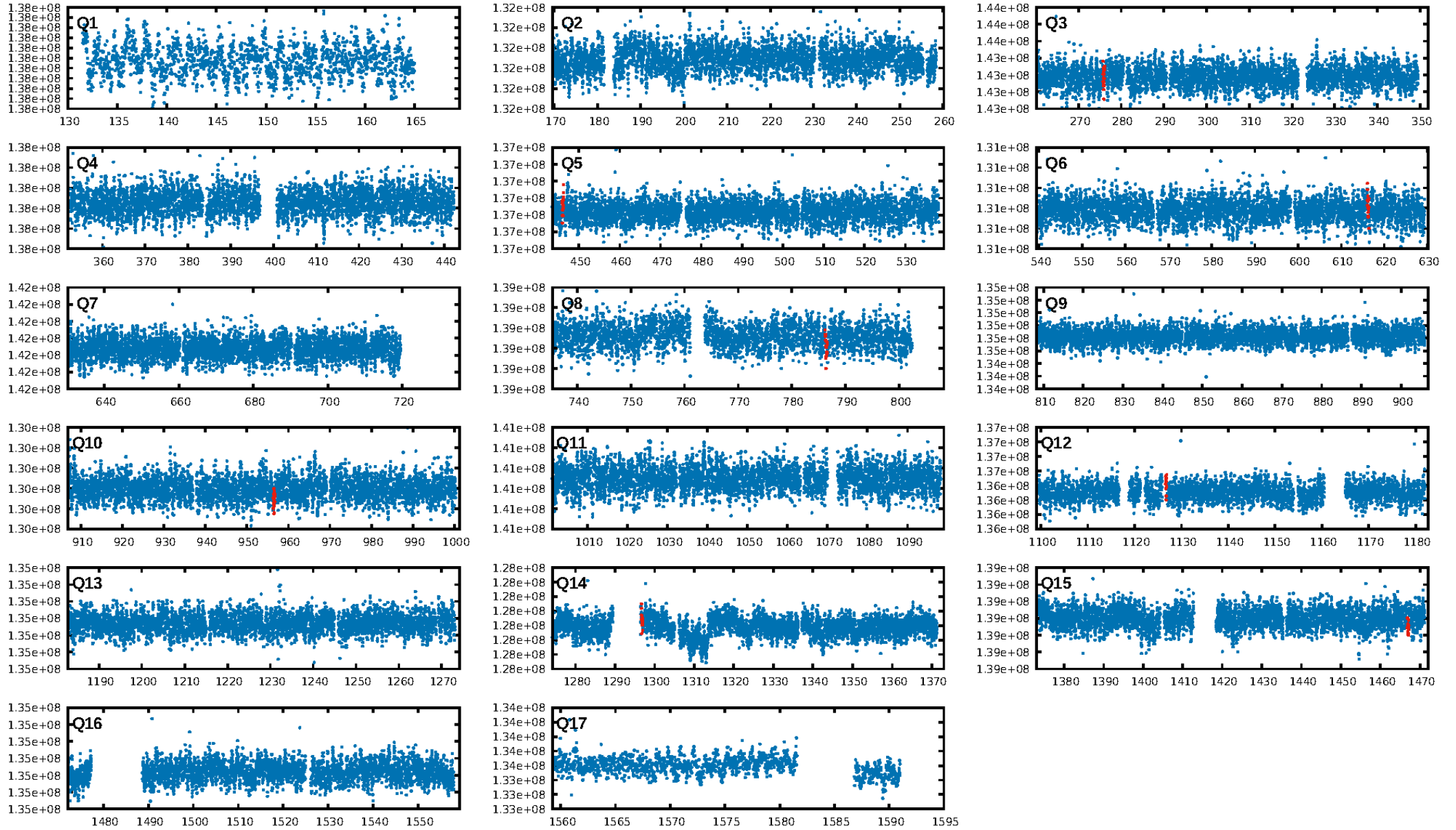
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [236.71σ]
LongPeriod-sig: 100.0% [256.63σ]
ModelChiSquare2-sig: 54.6%
ModelChiSquareGof-sig: 98.6%
Bootstrap-pfa: 7.67e-10
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -1.829
Centroid-sig: 3.1%
Centroid-so: 1.232 arcsec [1.39σ]
OotOffset-rm: 1.226 arcsec [0.94σ]
KicOffset-rm: 1.133 arcsec [1.29σ]
OotOffset-st: 3/2/1/0 [6]
KicOffset-st: 3/2/1/0 [6]
DiffImageQuality-fgm: 0.50 [3/6]
DiffImageOverlap-fno: 0.57 [4/7]

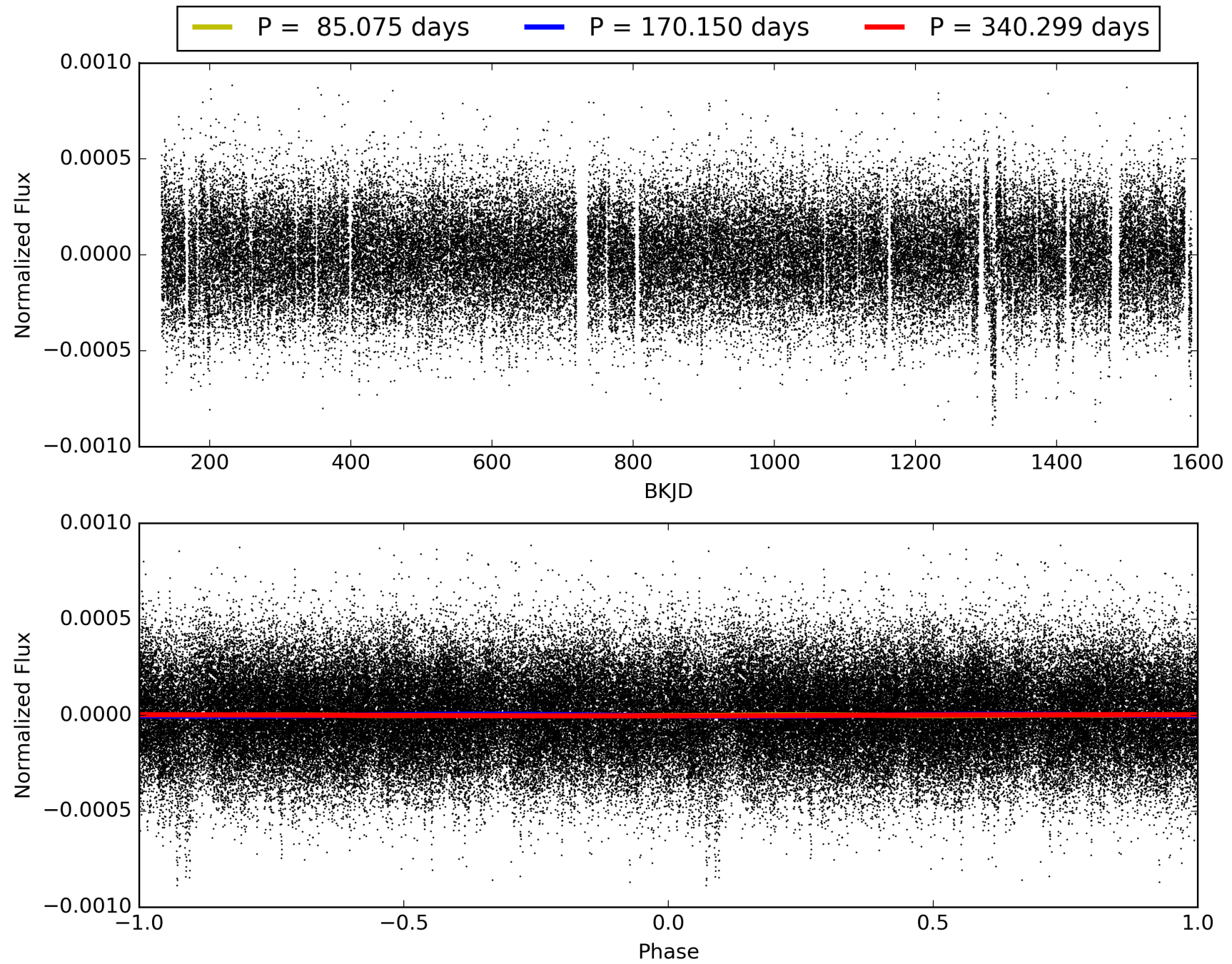
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 22:35:10 Z

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

TCE 009413335-02, PDC Light Curves

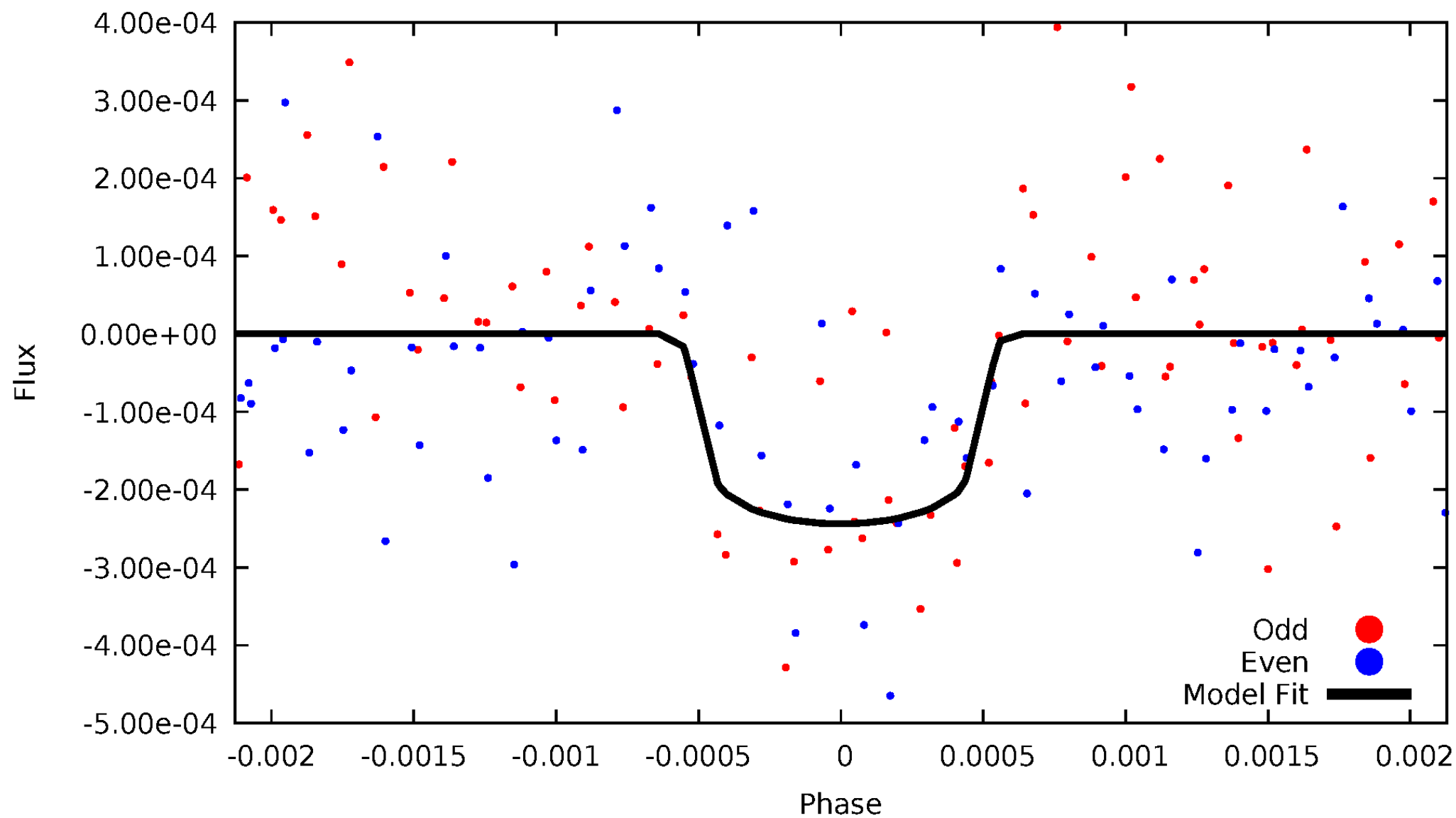


TCE 009413335-02



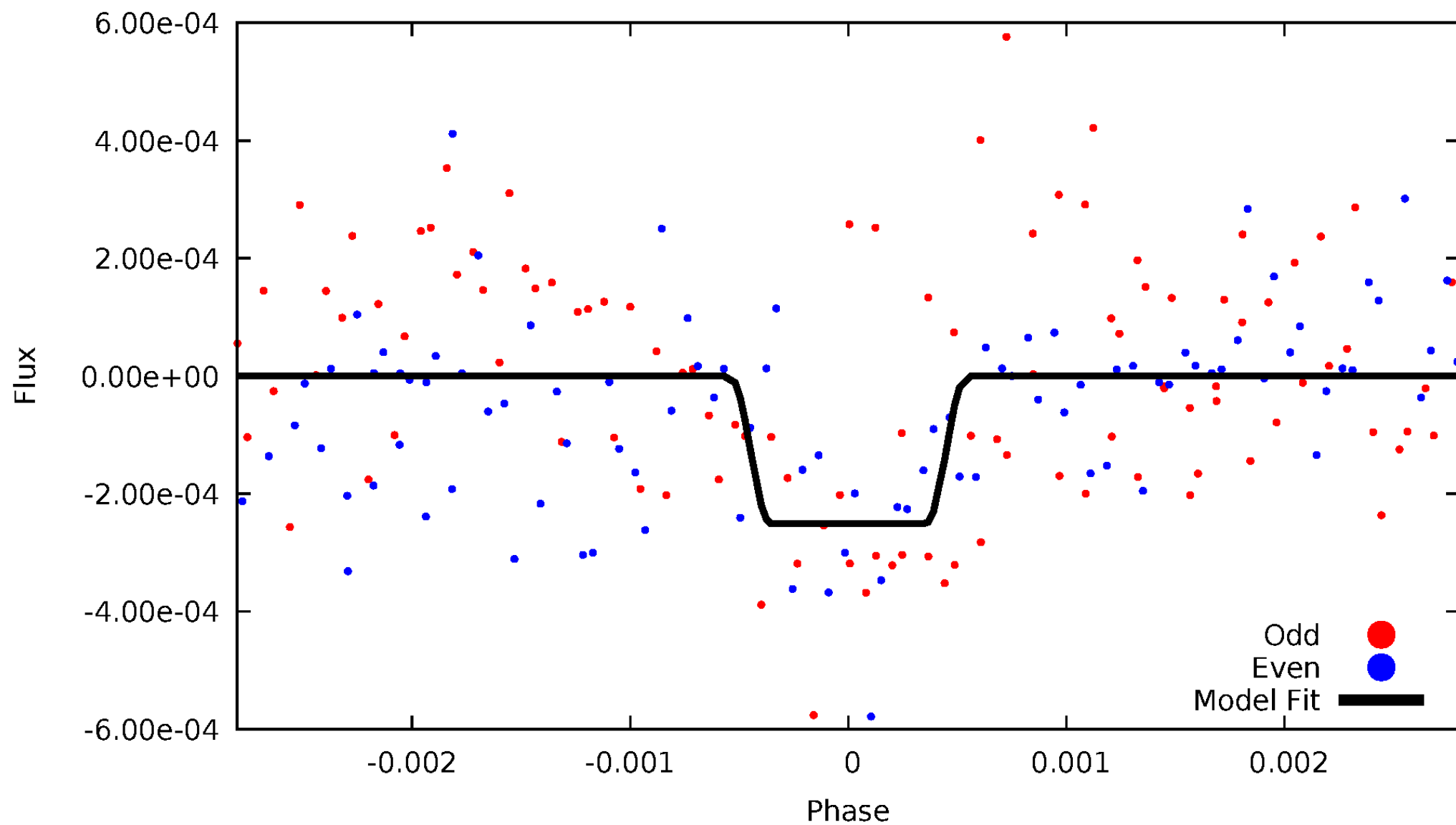
DV Odd/Even

TCE 009413335-02



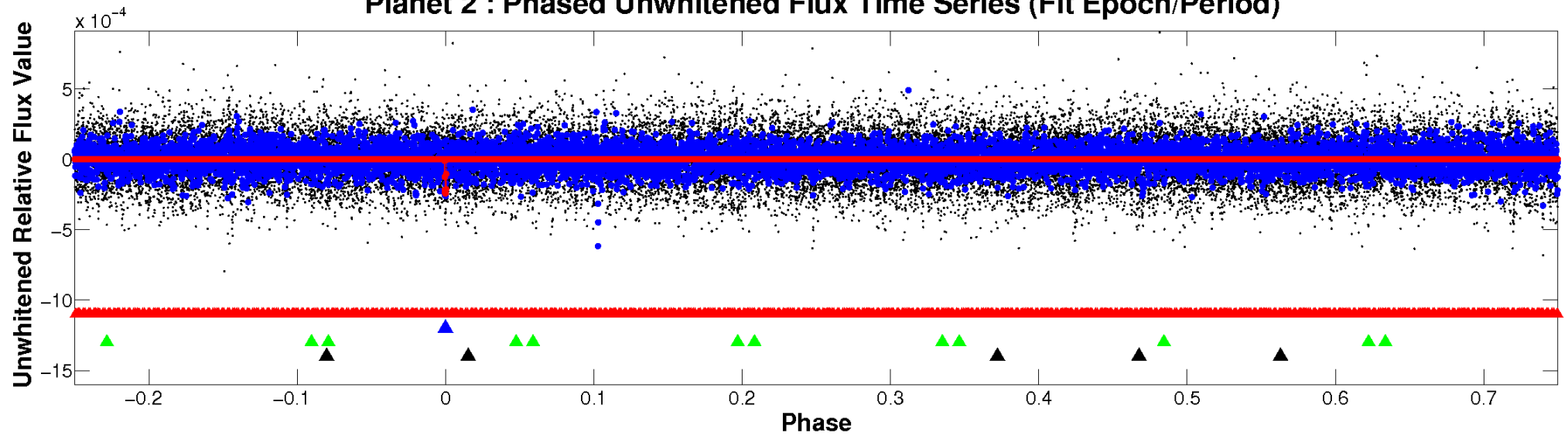
ALT Odd/Even

TCE 009413335-02

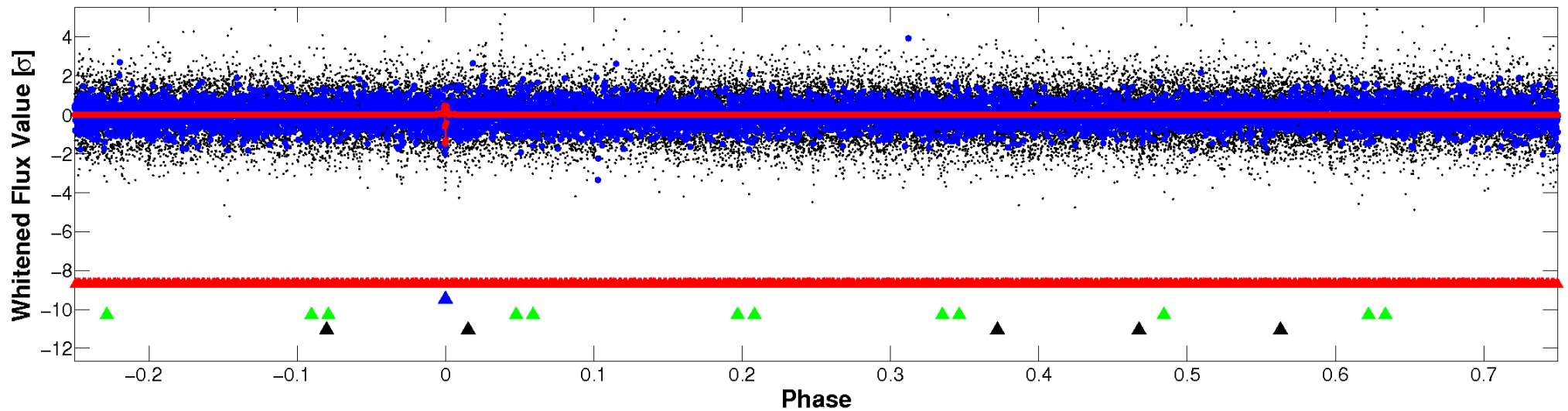


Non-Whitened Vs. Whitened Light Curve

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



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



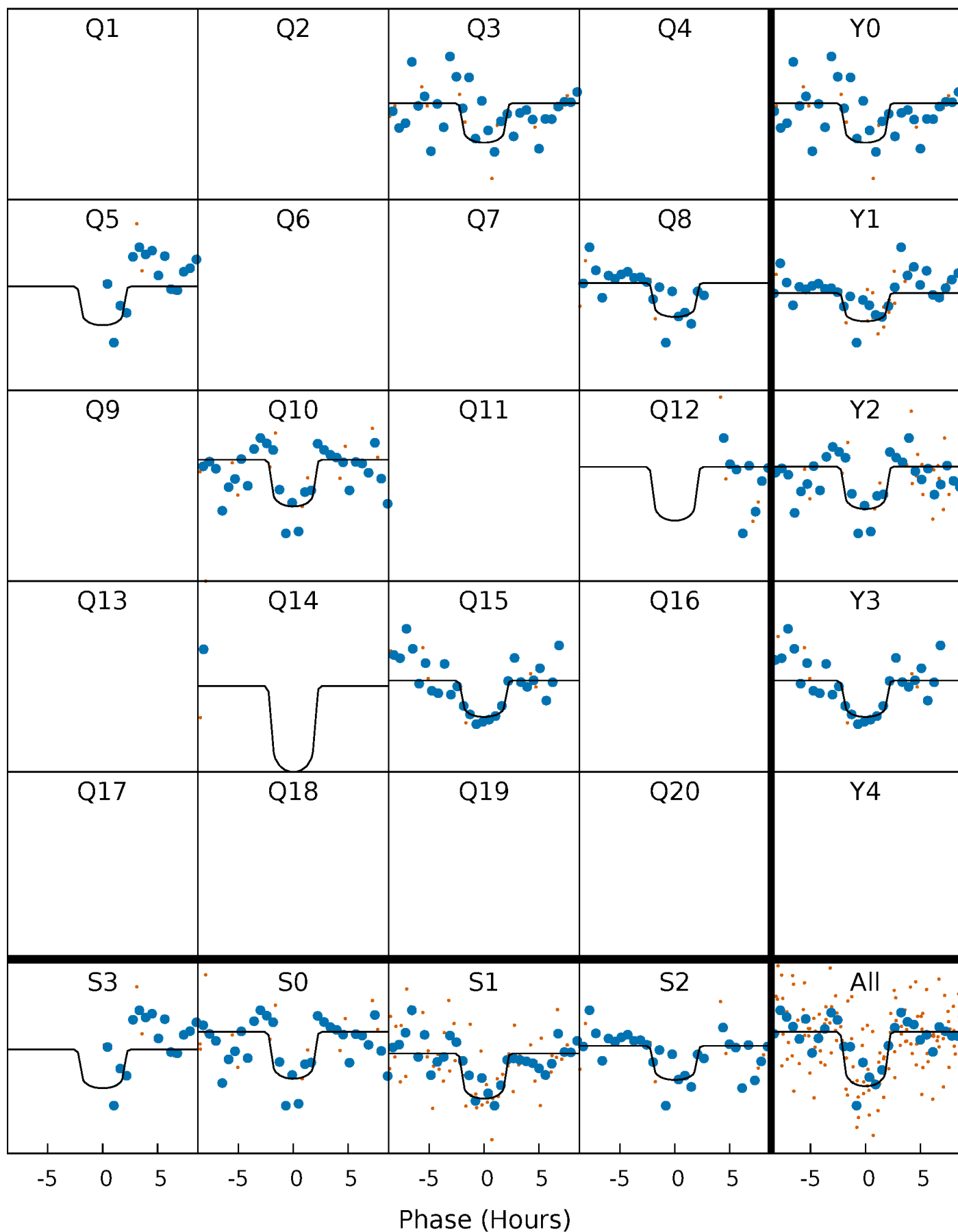
PDC Quarter-Phased Transit Curves

TCE 009413335-02 P=170.149624 Days $T_0=275.928847$ (BKJD)



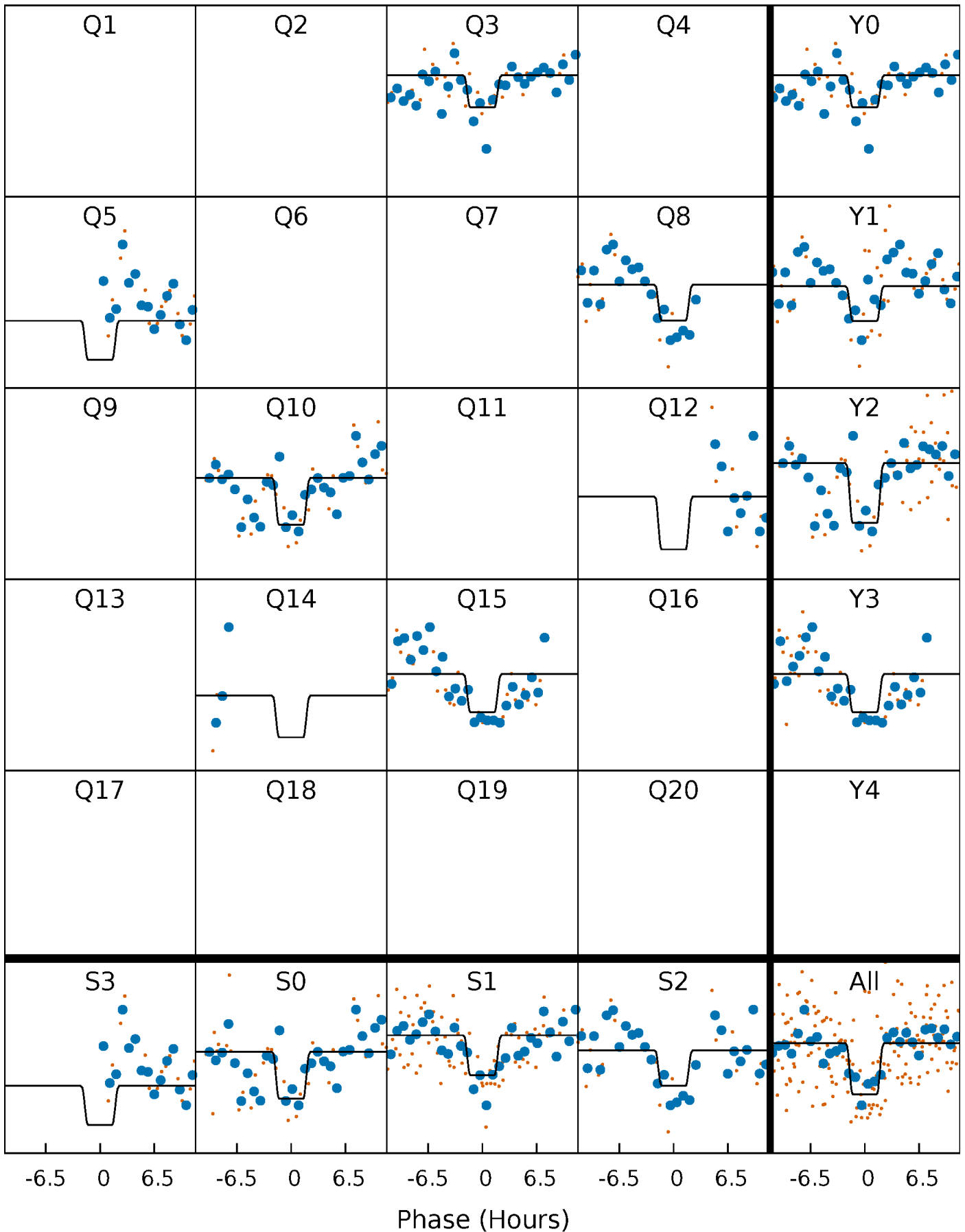
DV Quarter-Phased Transit Curves

TCE 009413335-02 $P=170.149624$ Days $T_0=275.928847$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

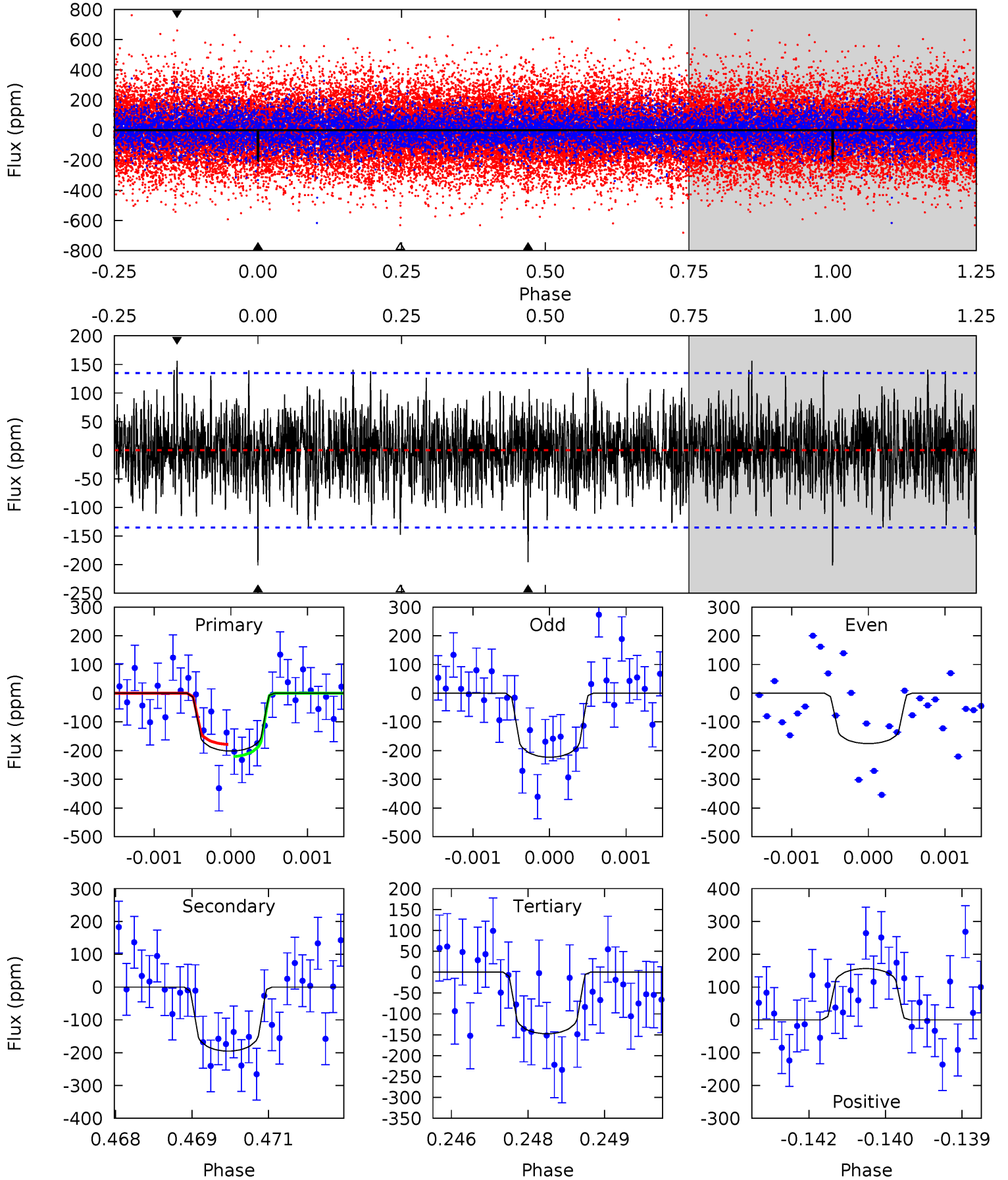
TCE 009413335-02 P=170.143767 Days $T_0=275.940617$ (BKJD)



DV Model-Shift Uniqueness Test

009413335-02, P = 170.149624 Days, E = 105.779223 Days

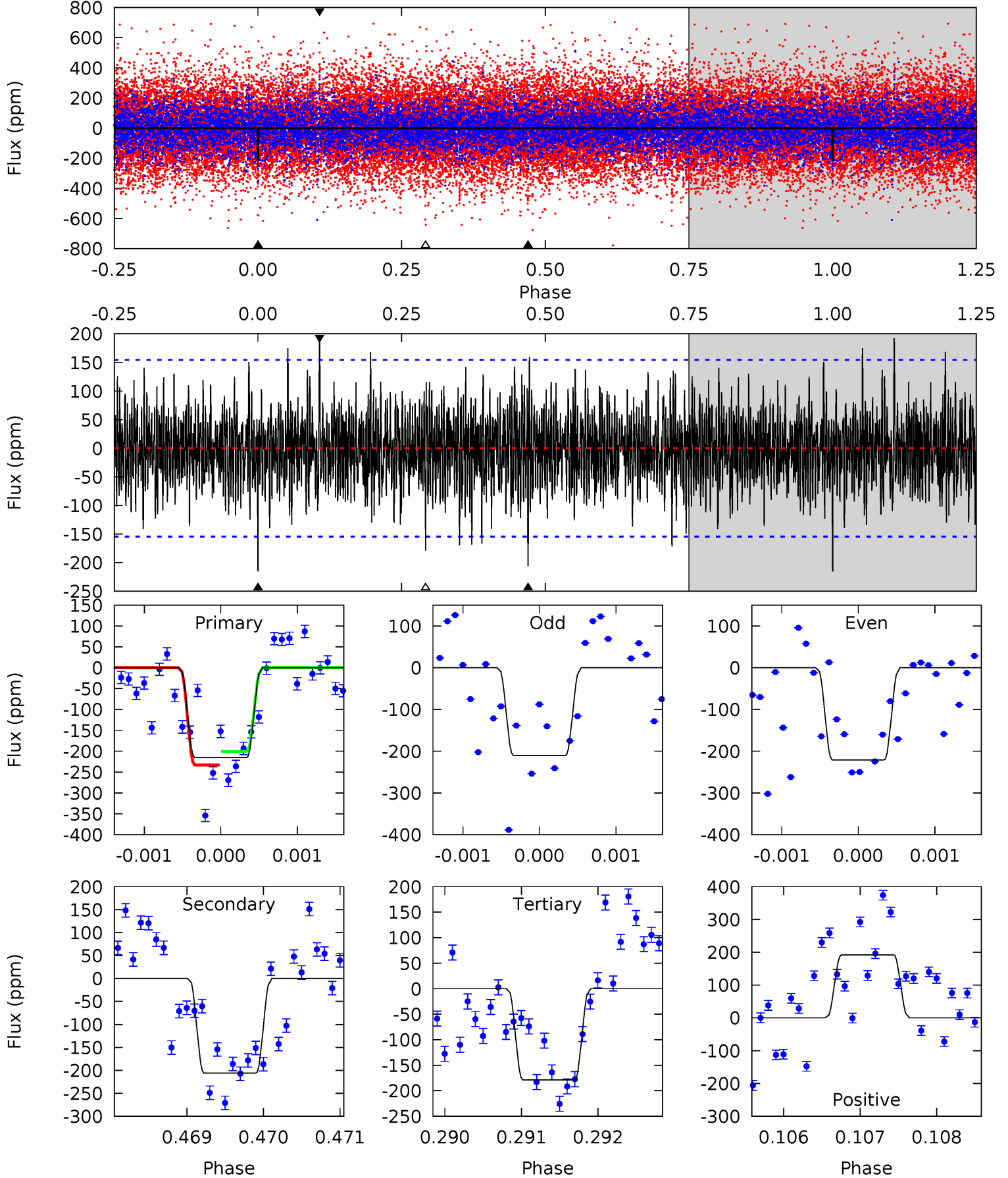
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.11	7.86	5.94	6.29	5.43	3.26	1.76	2.17	1.82	1.92	1.57	0.96	0.93	0.44	0.84



Alt Model-Shift Uniqueness Test

009413335-02, P = 170.143767 Days, E = 105.796850 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.59	7.26	6.30	6.78	5.45	3.28	1.86	1.29	0.81	0.96	0.49	0.18	0.74	0.47	0.57



Stellar Parameters For KIC 009413335

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6807^{+184}_{-225}	$3.575^{+0.296}_{-0.056}$	$-0.180^{+0.300}_{-0.250}$	$3.571^{+0.405}_{-1.216}$	$1.749^{+0.184}_{-0.316}$	$0.054^{+0.113}_{-0.010}$
	+3%/-3%	+8%/-2%	+167%/-139%	+11%/-34%	+11%/-18%	+209%/-18%
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 009413335-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-195 ± 25	$5.74^{+2.49}_{-2.16}$	906^{+48}_{-75}	6332^{+1878}_{-975}	1743^{+2653}_{-920}
Alt.	-206 ± 28	$5.67^{+2.30}_{-2.19}$	906^{+48}_{-73}	6479^{+2067}_{-937}	1870^{+3115}_{-916}

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

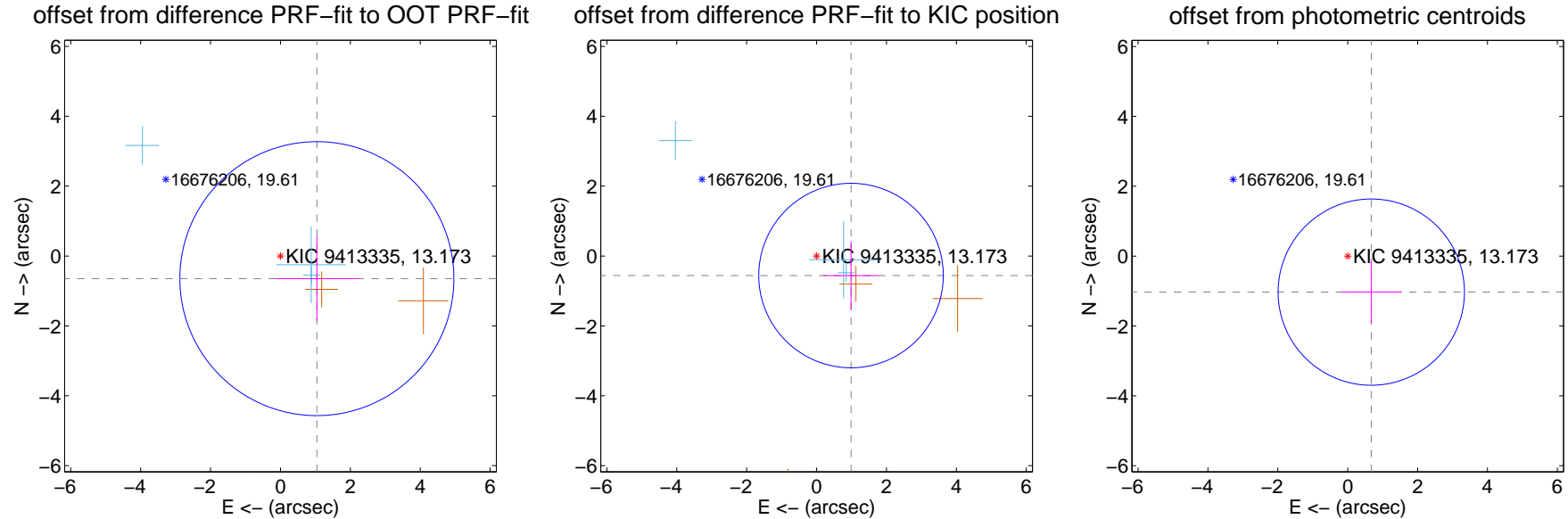
DV Centroid Data

Supplemental centroid analysis for 009413335-02. Kepler magnitude: 13.17. Transit SNR 7.90

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.226 ± 1.307	0.94	-1.042 ± 1.187	-0.647 ± 1.207
PRF-fit source offset from KIC position	1.133 ± 0.880	1.29	-0.985 ± 0.787	-0.558 ± 0.981
photometric centroid source offset	1.23 ± 0.89	1.39	-0.67 ± 0.88	-1.03 ± 0.89



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.

Q1 no difference image



Q1 no OOT image



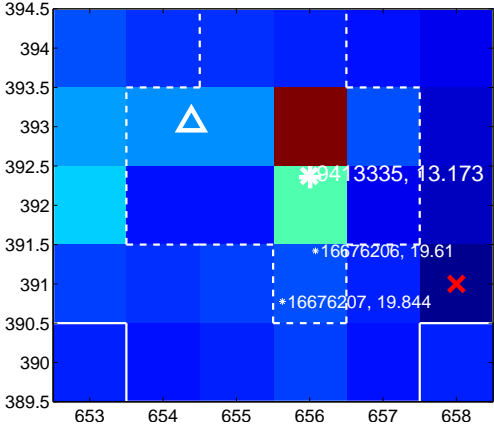
Q2 no difference image



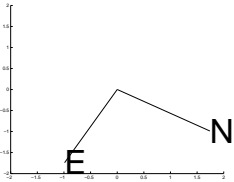
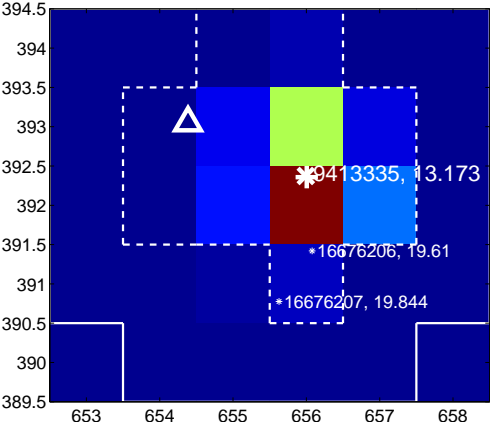
Q2 no OOT image



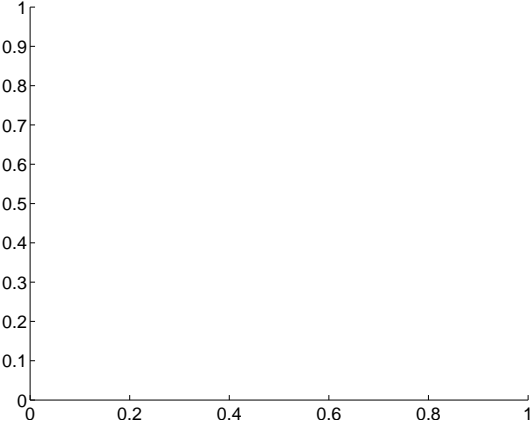
Q3 difference image. Poor Quality



Q3 OOT image



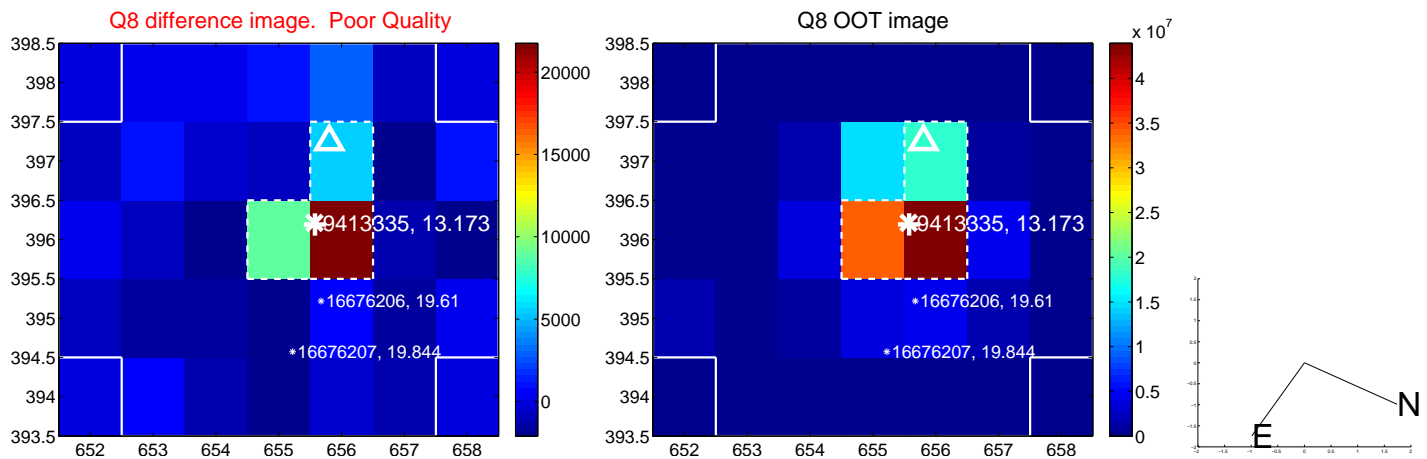
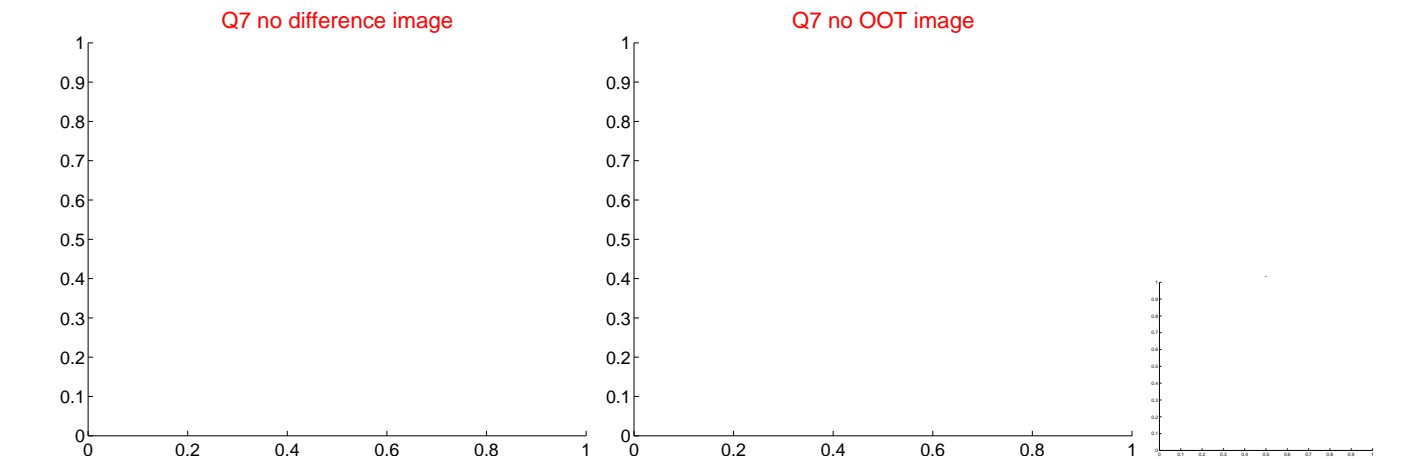
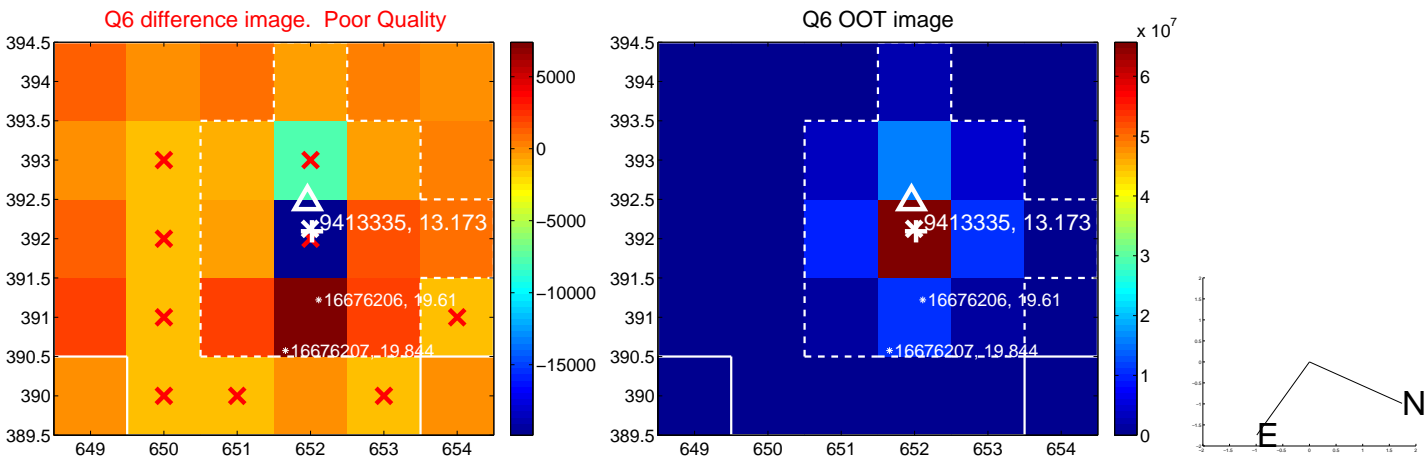
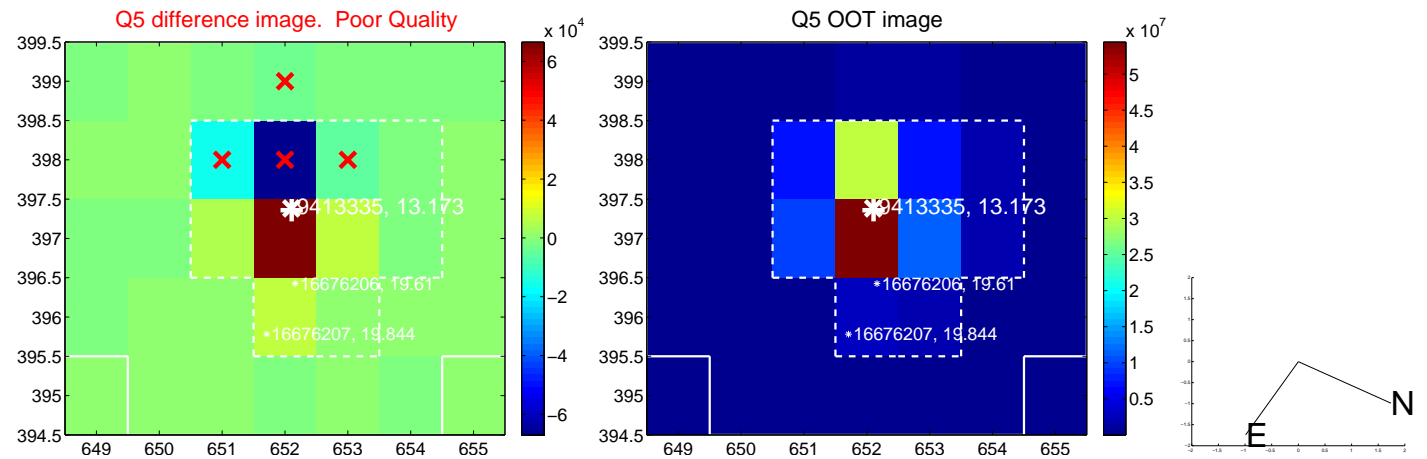
Q4 no difference image



Q4 no OOT image



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

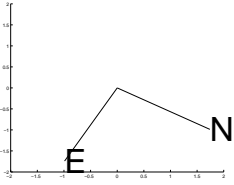
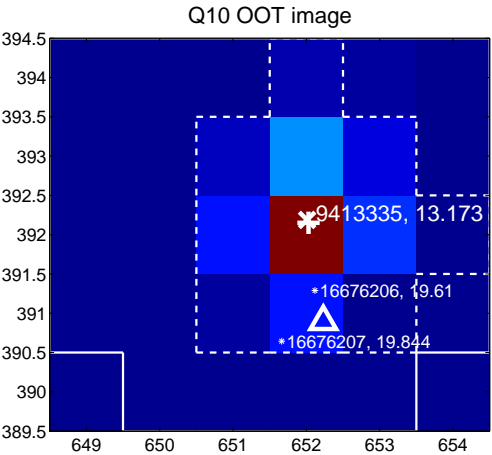
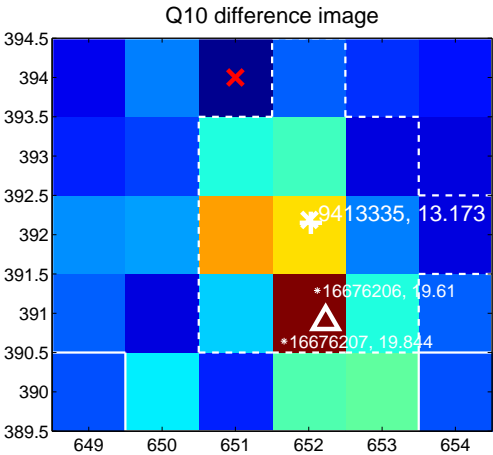


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

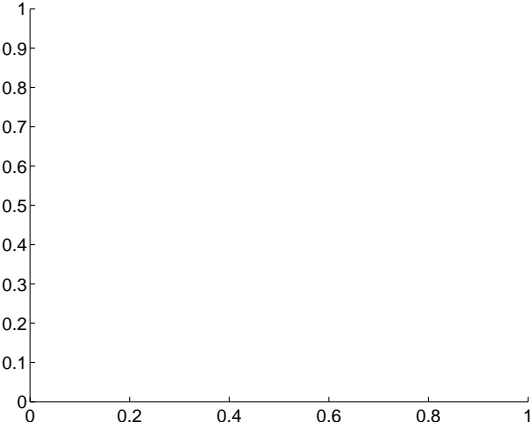
Q9 no difference image



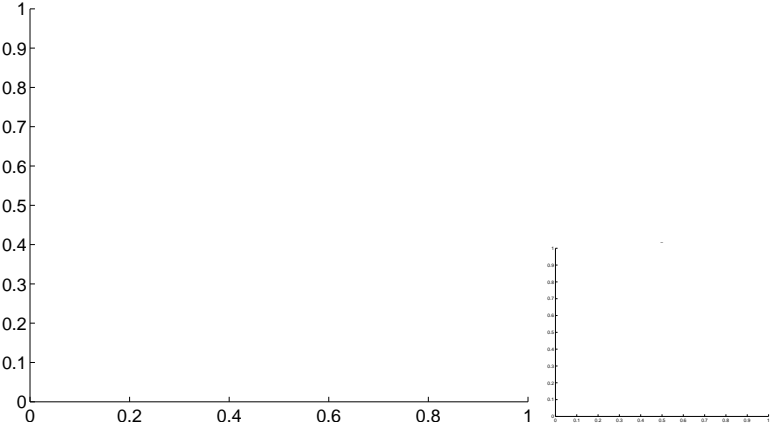
Q9 no OOT image



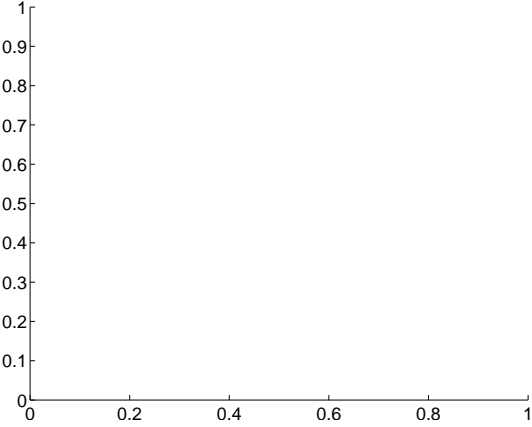
Q11 no difference image



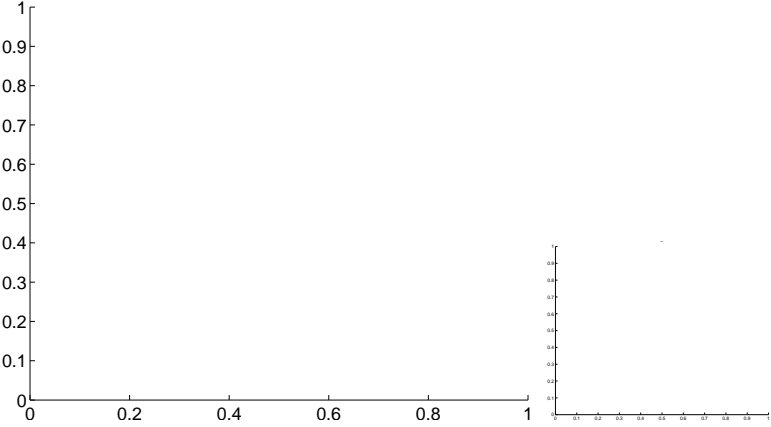
Q11 no OOT image



Q12 no difference image



Q12 no OOT image



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

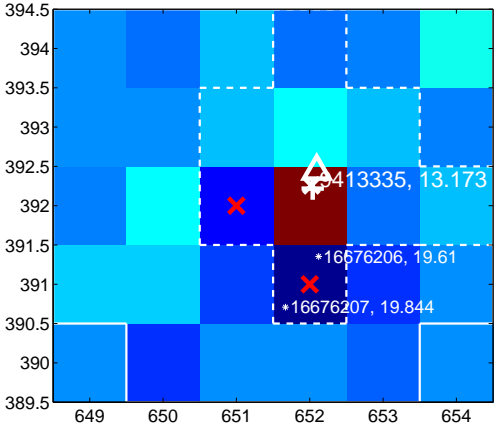
Q13 no difference image



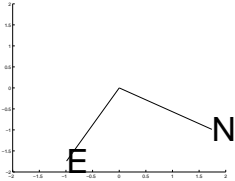
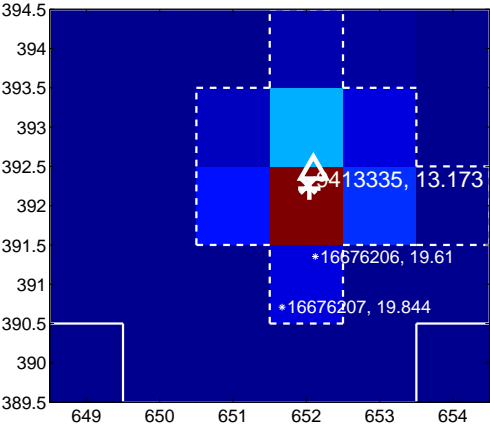
Q13 no OOT image



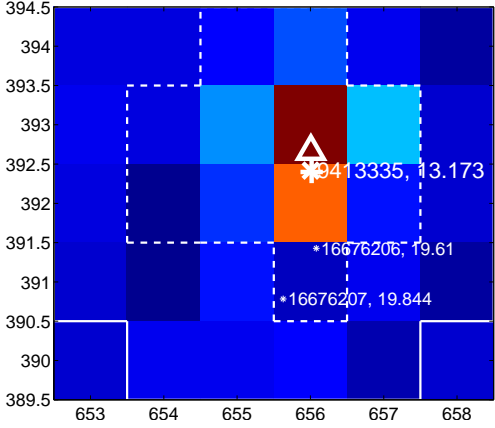
Q14 difference image



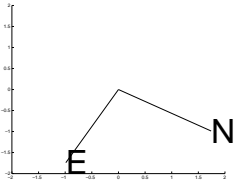
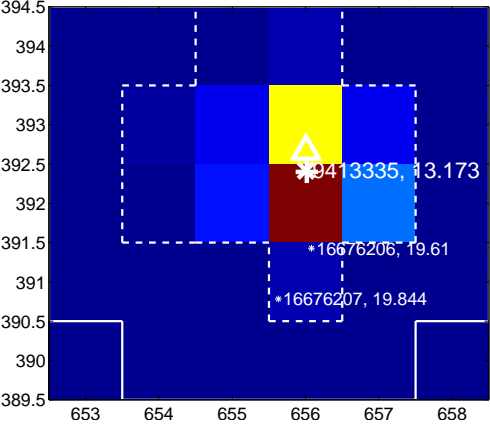
Q14 OOT image



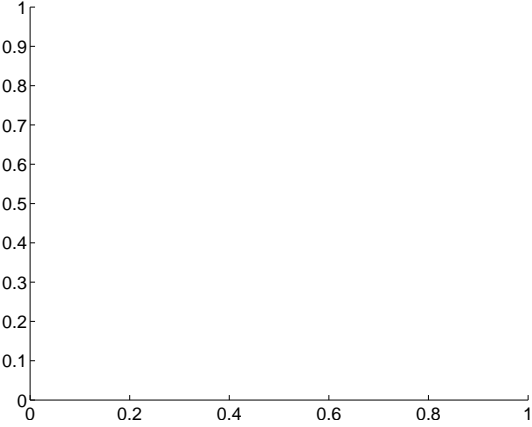
Q15 difference image



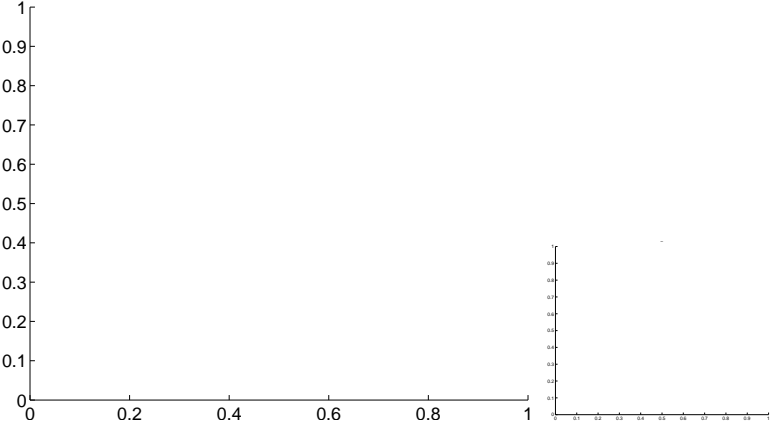
Q15 OOT image



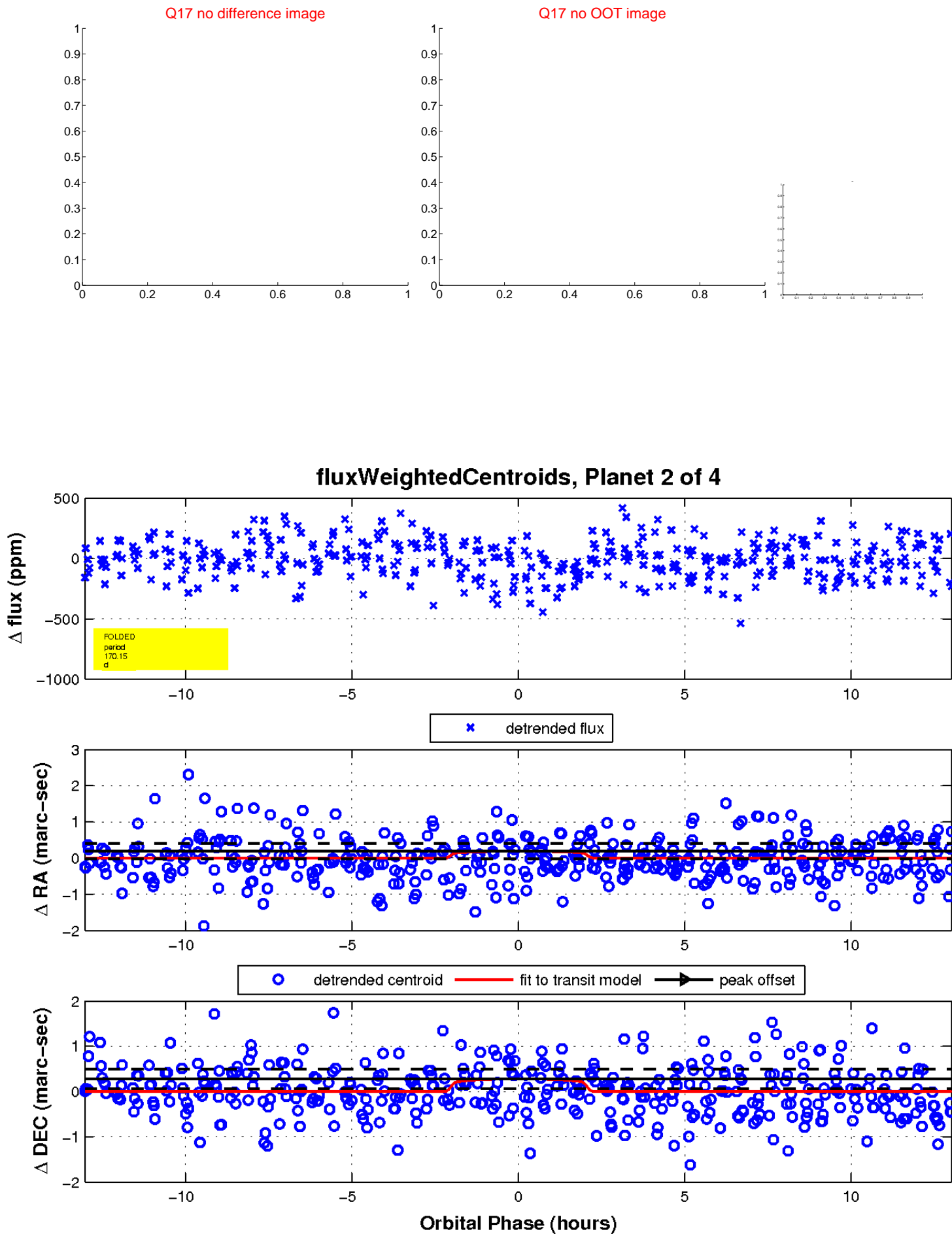
Q16 no difference image



Q16 no OOT image

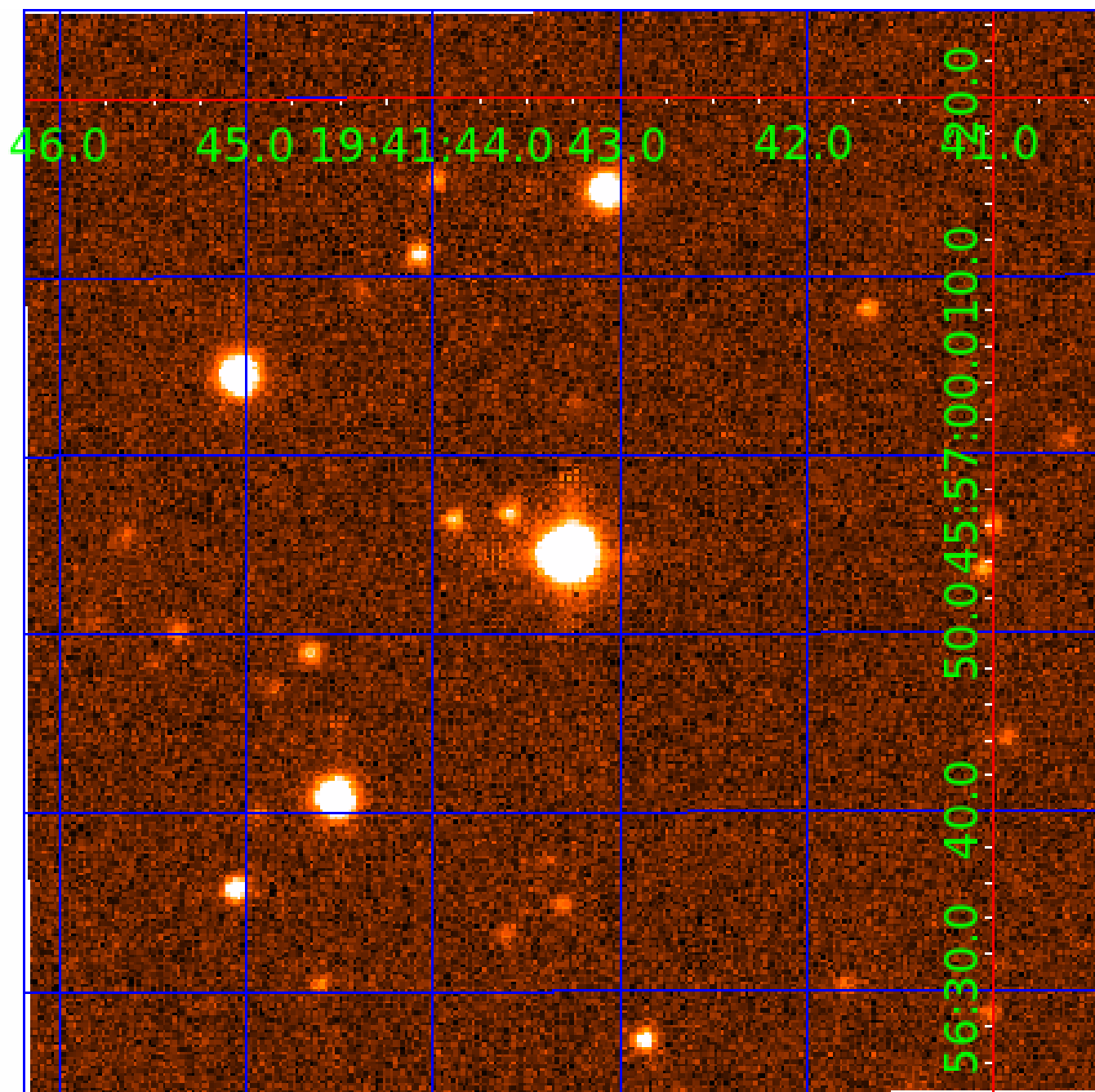


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009413335

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})
009413335-01	OBS	No	2.276848	133.589239	16.4	8.651	8.8	5.9	3.57	6807	1.68	14727.60
009413335-02	OBS	No	170.149624	275.928847	243.9	4.344	7.6	7.9	3.57	6807	6.27	46.79
009413335-03	OBS	No	121.259431	141.234031	258.8	2.388	7.4	7.6	3.57	6807	6.57	73.50
009413335-04	OBS	No	263.342468	339.252983	254.0	7.556	7.1	7.0	3.57	6807	6.59	26.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009413335-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009413335-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009413335-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
009413335-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

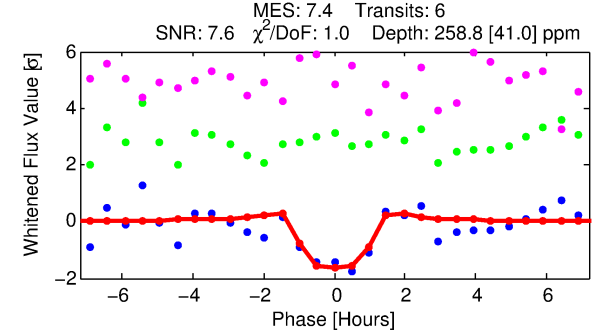
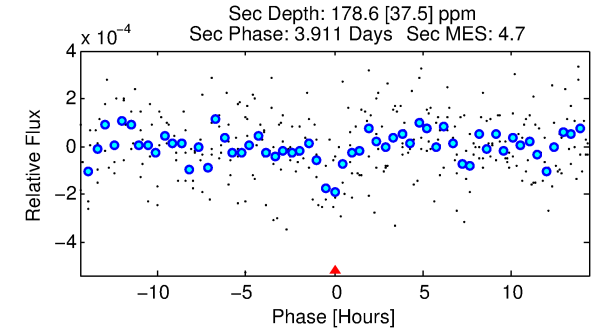
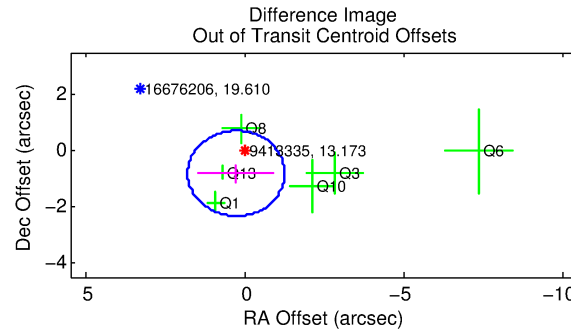
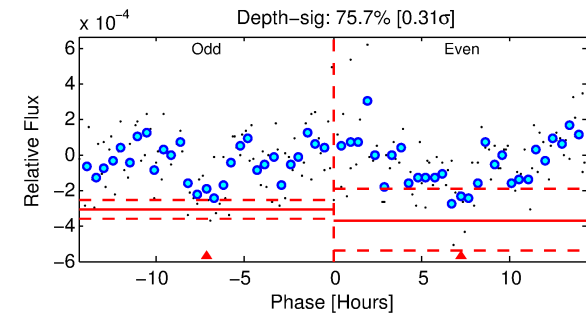
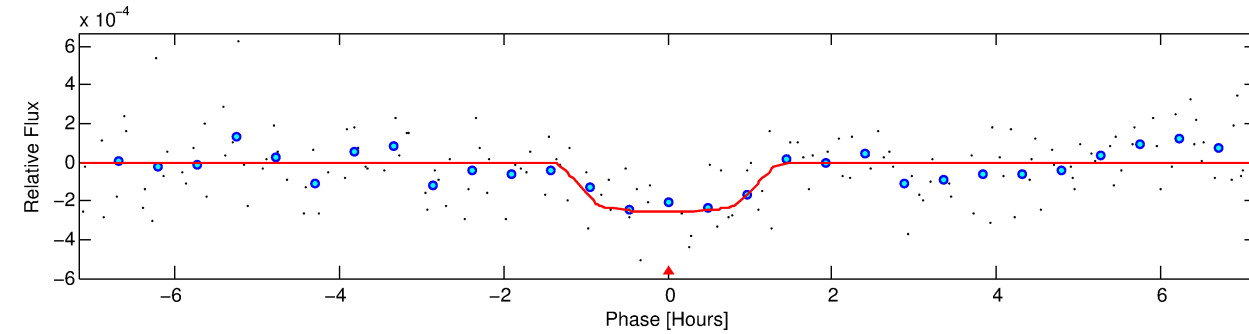
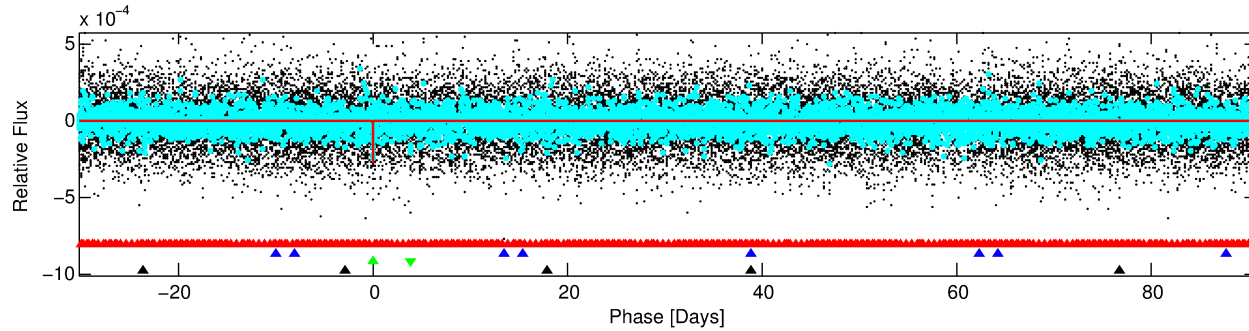
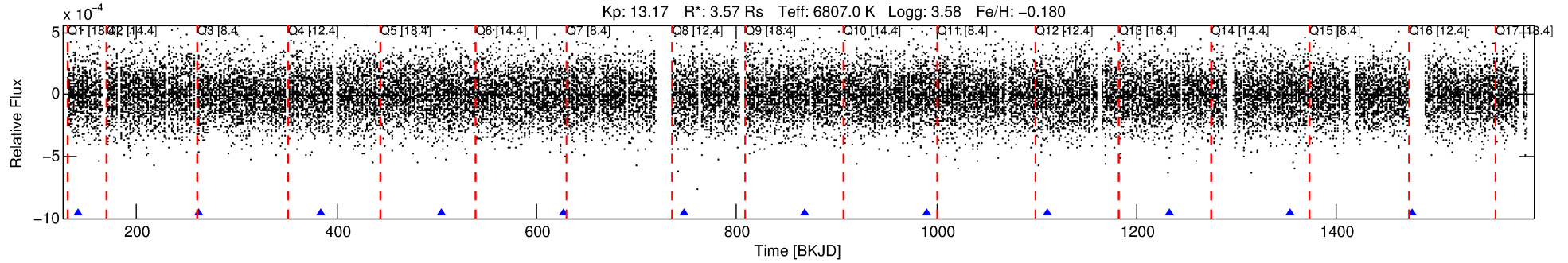
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009413335-03

No Significant Match Found

DV One-Page Summary

KIC: 9413335 Candidate: 3 of 4 Period: 121.259 d



DV Fit Results:

Period = 121.25943 [0.00121] d
Epoch = 141.2340 [0.0072] BKJD
Rp/R* = 0.0168 [0.0157]
a/R* = 202.87 [1119.55]
b = 0.87 [1.53]
Seff = 73.50 [38.58]
Teff = 747 [98] K
Rp = 6.56 [6.52] Re
a = 0.5777 [0.1855] AU
Ag = 760.74 [1479.67] [0.51 σ]
Teffp = 6062 [2853] K [1.86 σ]

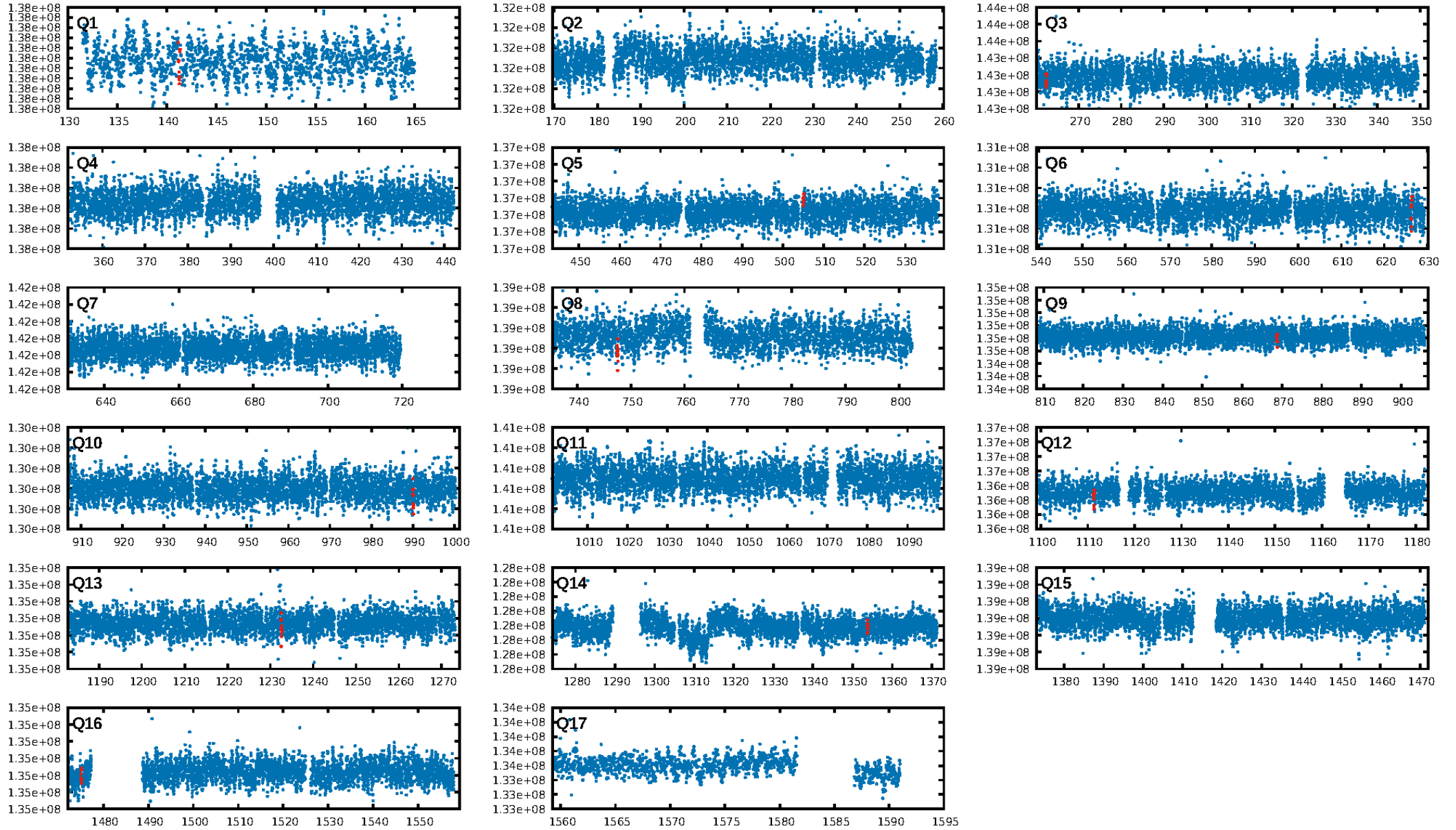
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [318.20 σ]
LongPeriod-sig: 100.0% [236.71 σ]
ModelChiSquare2-sig: 93.2%
ModelChiSquareGof-sig: 93.7%
Bootstrap-pfa: 1.35e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.185
Centroid-sig: 9.2%
Centroid-so: 1.087 arcsec [1.03 σ]
OotOffset-rm: 0.858 arcsec [1.69 σ]
KicOffset-rm: 0.823 arcsec [1.33 σ]
OotOffset-st: 2/1/1/2 [6]
KicOffset-st: 2/1/1/2 [6]
DiffImageQuality-fgm: 0.50 [3/6]
DiffImageOverlap-fno: 0.67 [6/9]

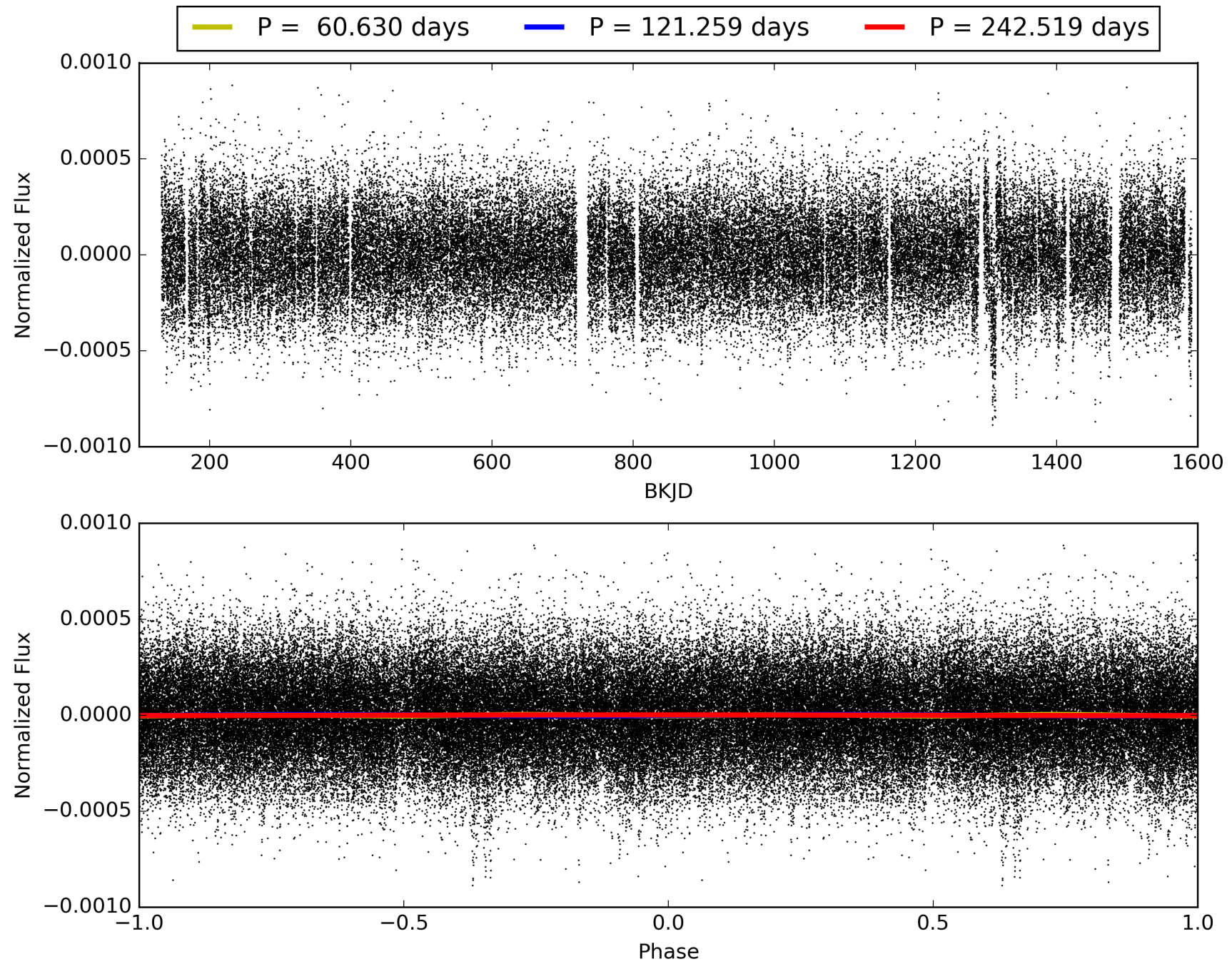
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 22:35:17 Z

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

TCE 009413335-03, PDC Light Curves

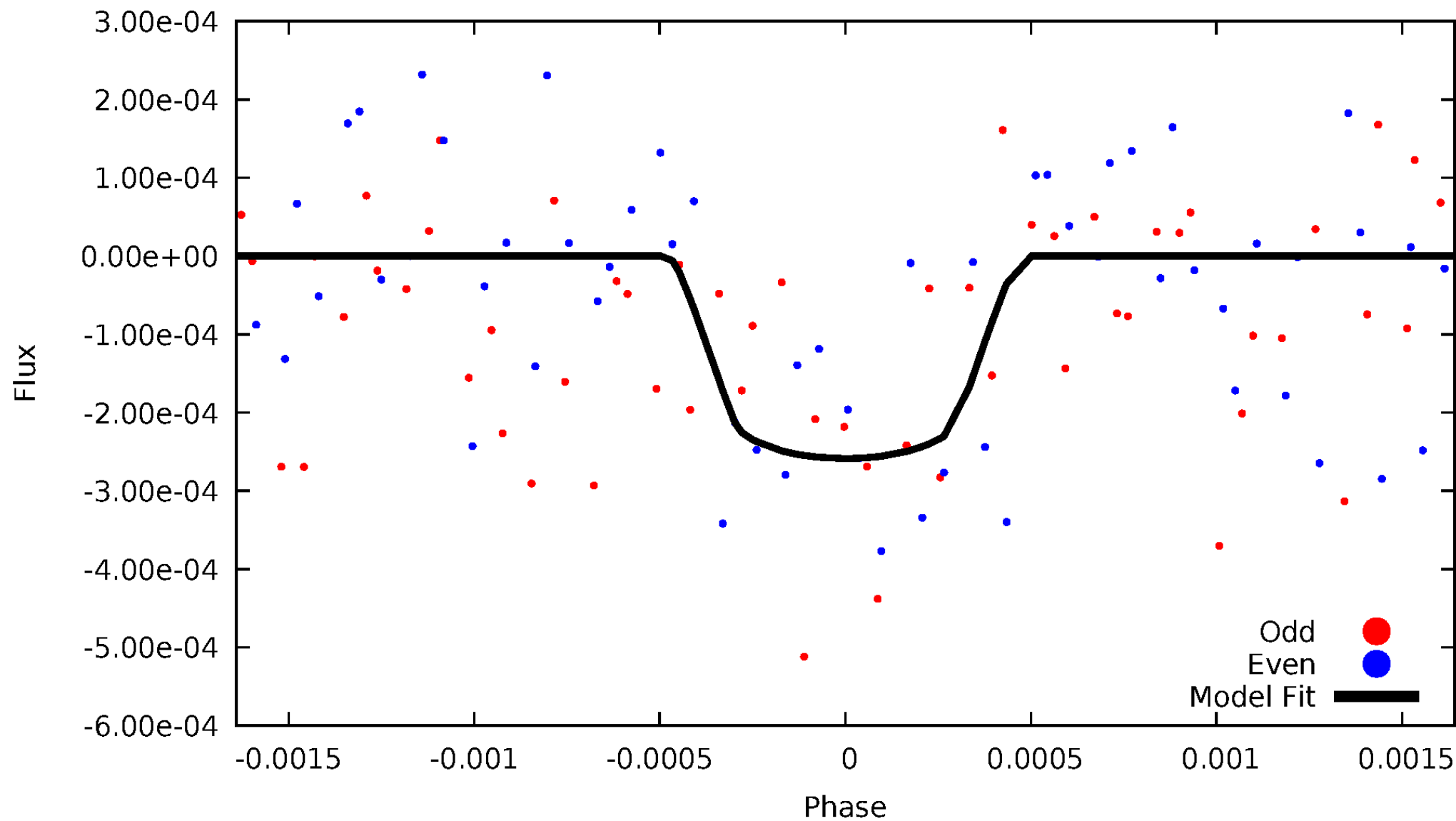


TCE 009413335-03



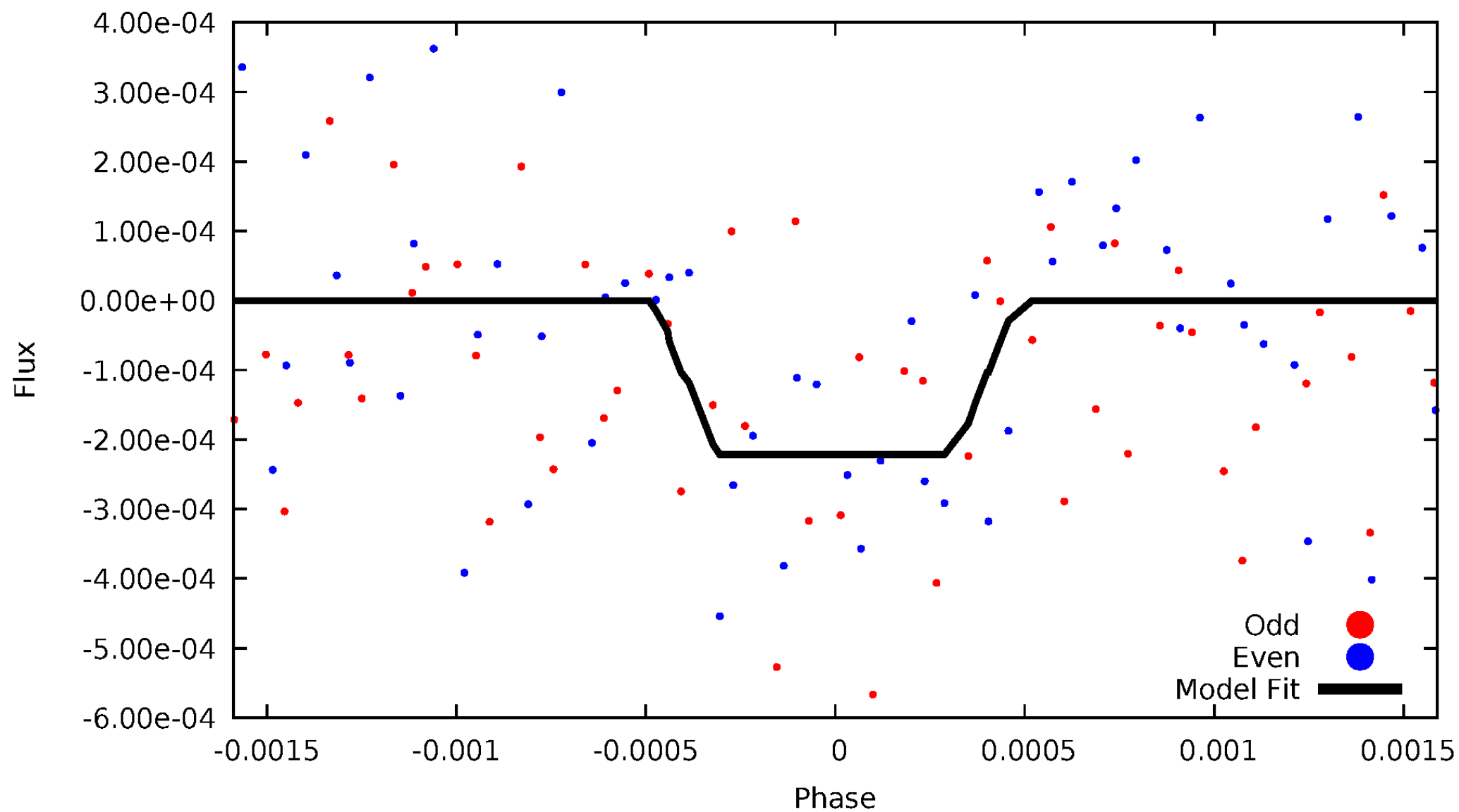
DV Odd/Even

TCE 009413335-03

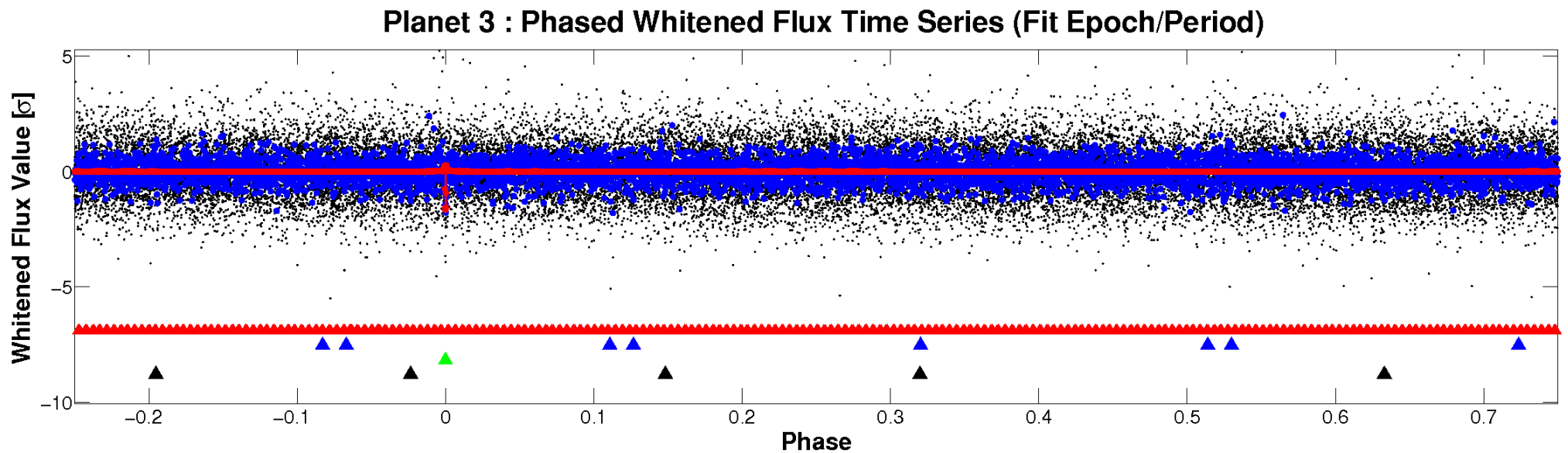
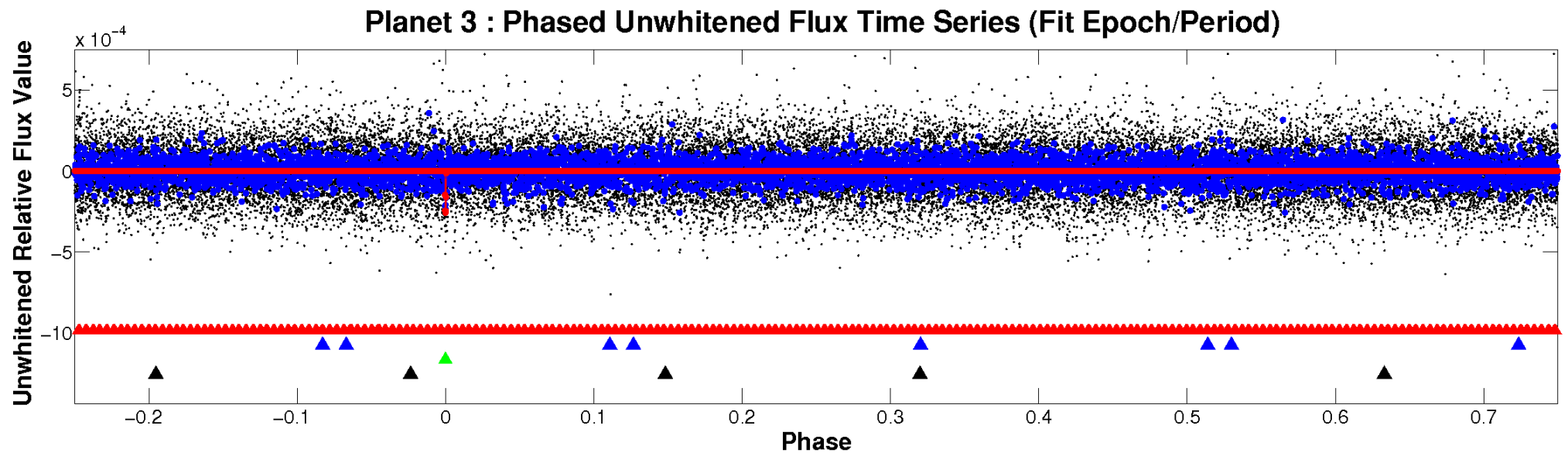


ALT Odd/Even

TCE 009413335-03

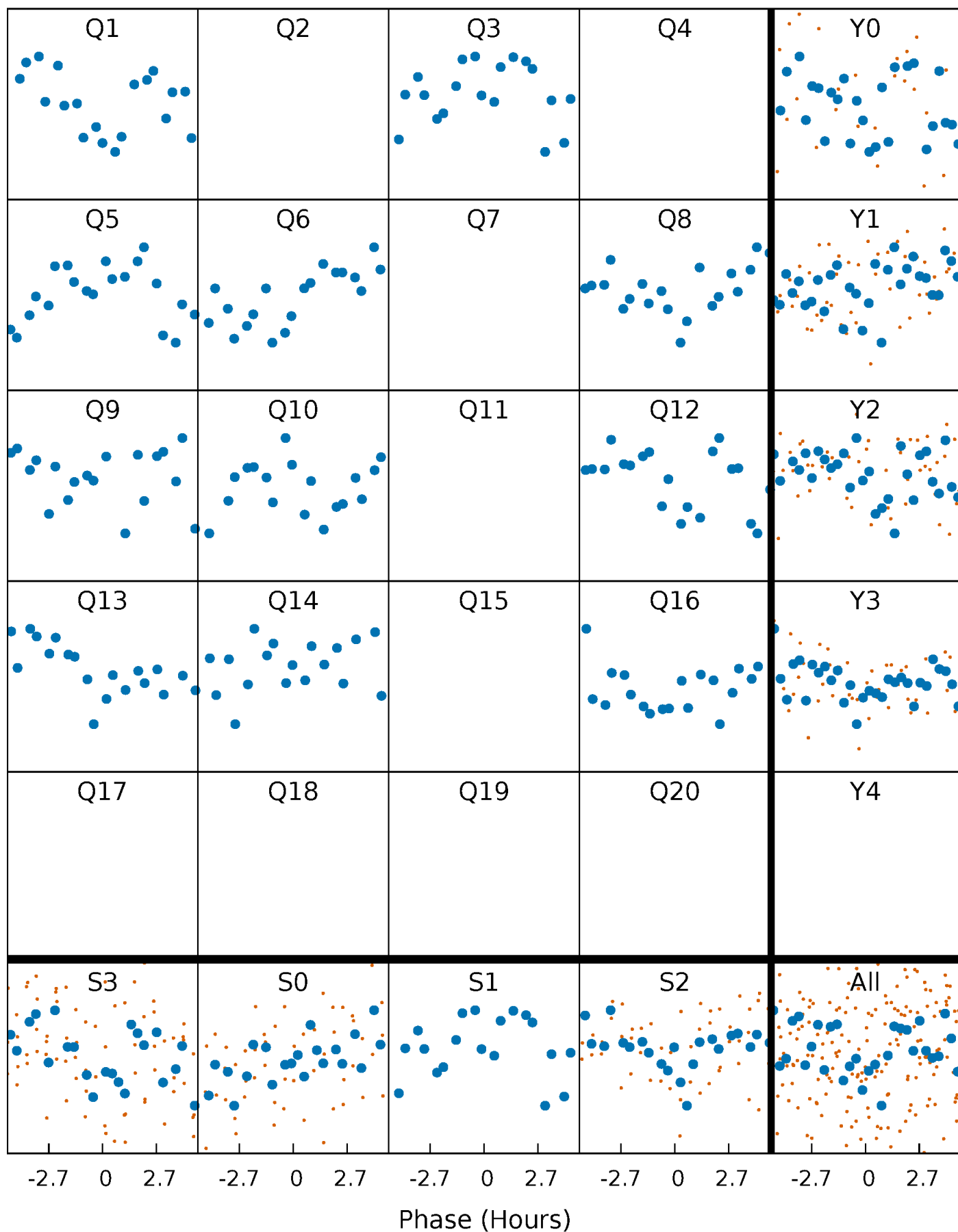


Non-Whitened Vs. Whitened Light Curve



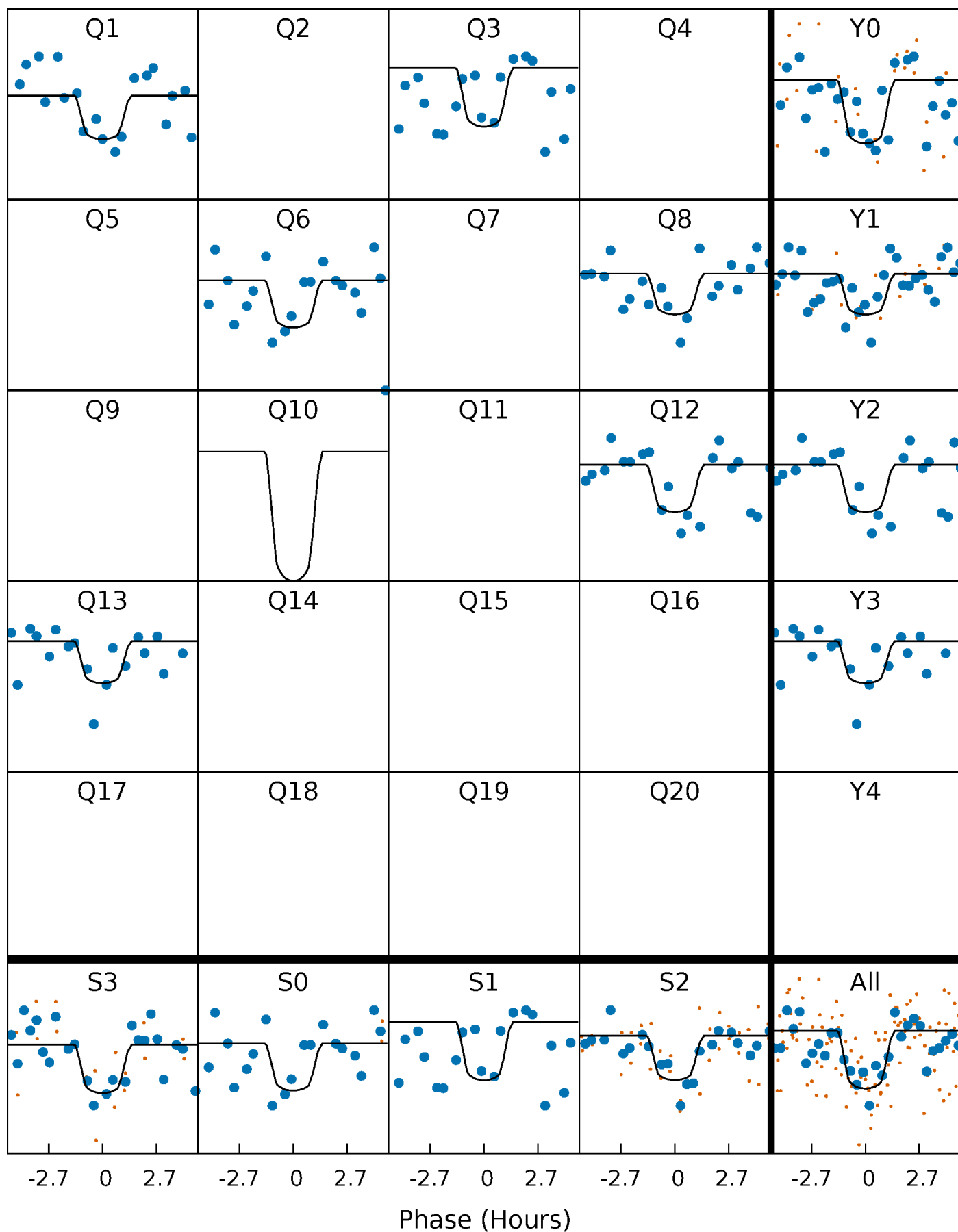
PDC Quarter-Phased Transit Curves

TCE 009413335-03 P=121.259431 Days $T_0=141.234031$ (BKJD)



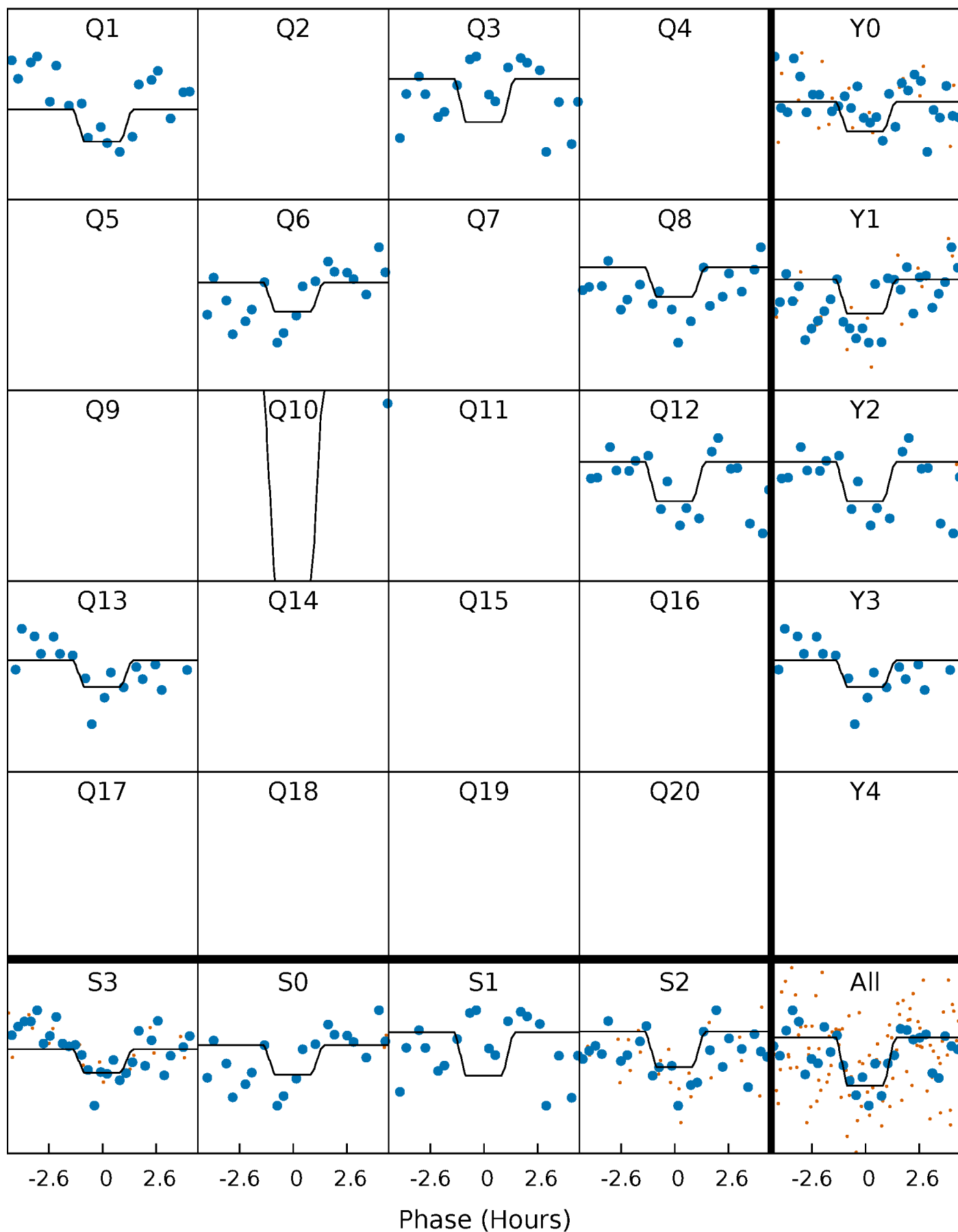
DV Quarter-Phased Transit Curves

TCE 009413335-03 P=121.259431 Days $T_0=141.234031$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

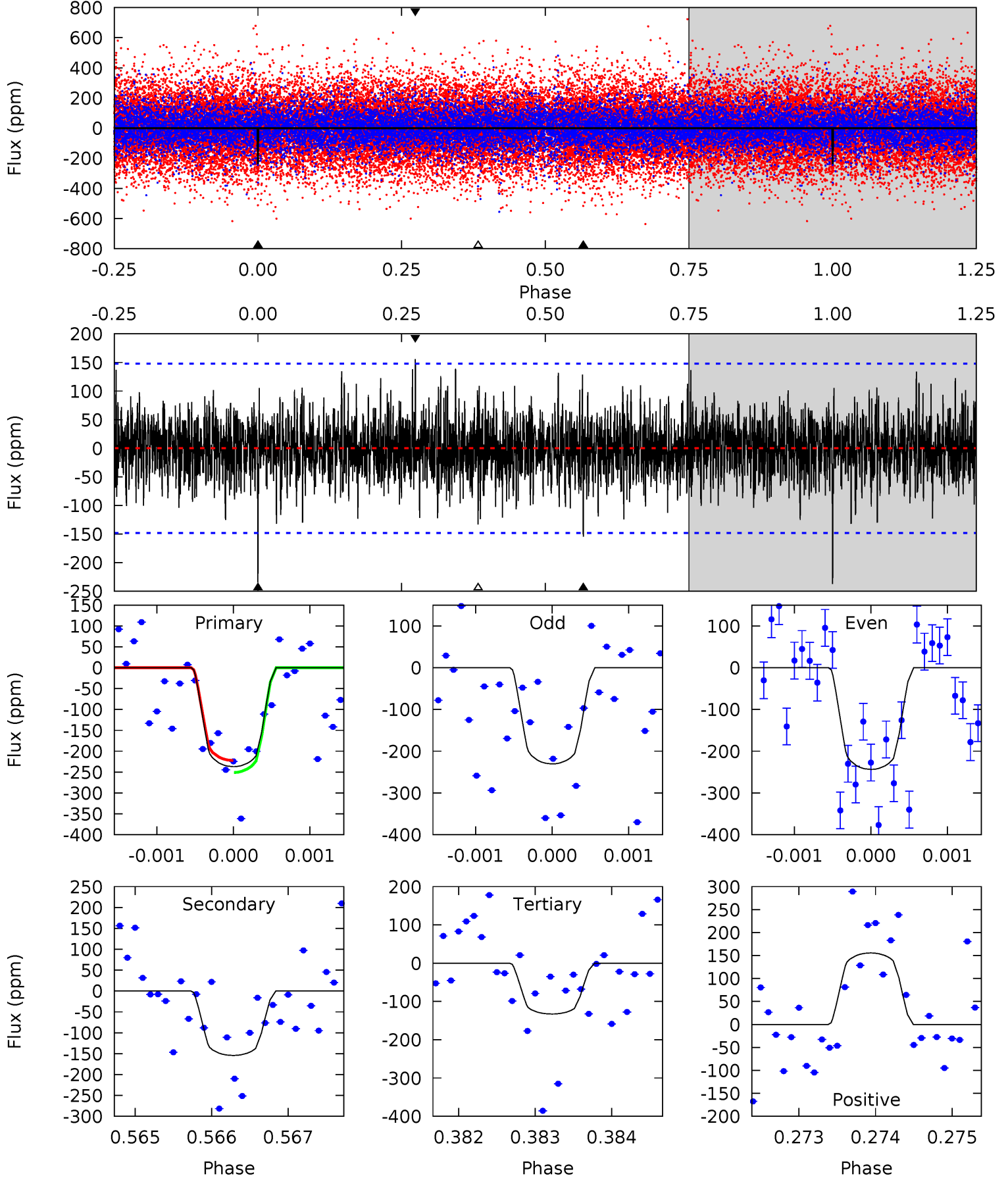
TCE 009413335-03 P=121.261105 Days $T_0=141.224253$ (BKJD)



DV Model-Shift Uniqueness Test

009413335-03, P = 121.259431 Days, E = 19.974600 Days

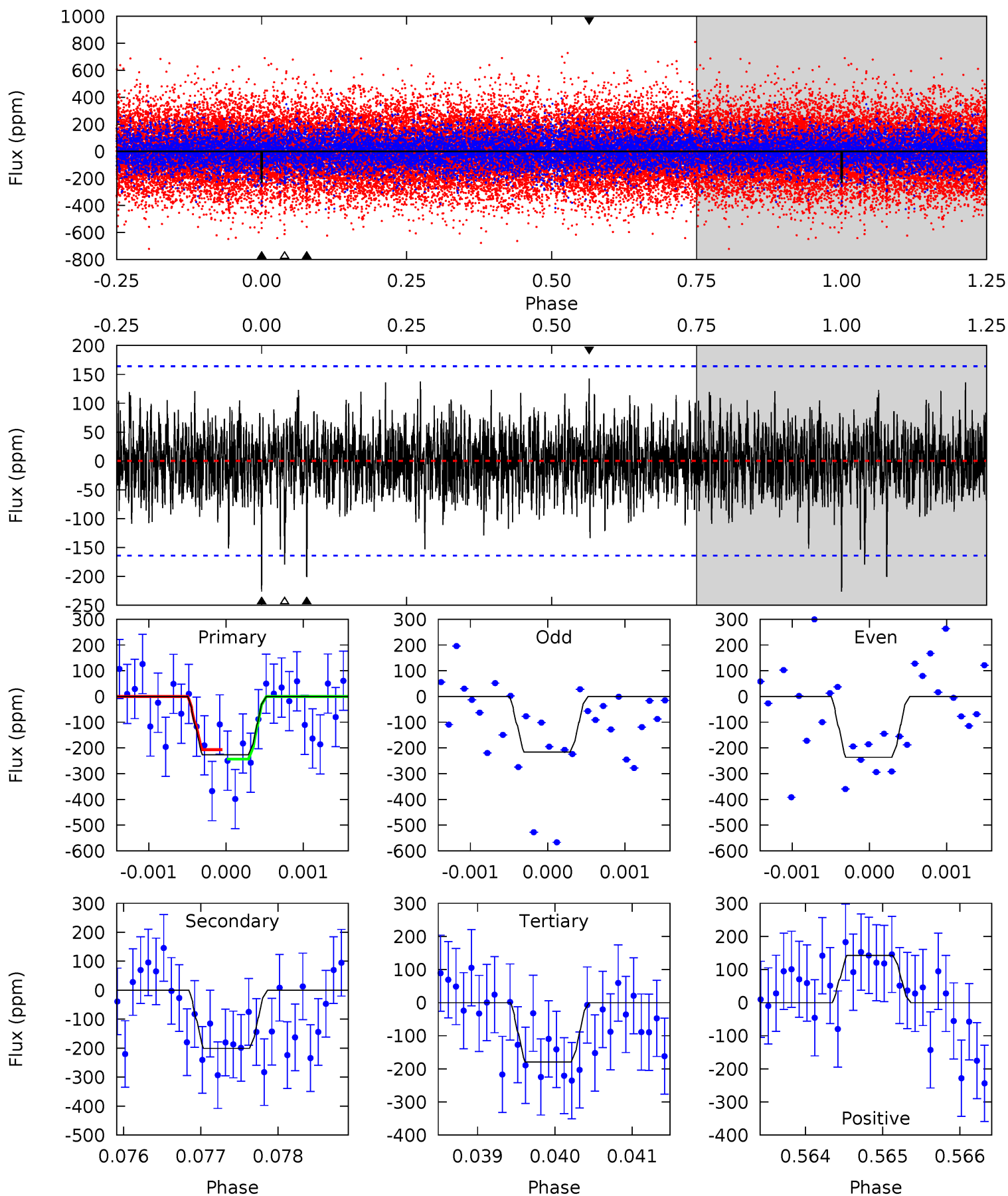
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.76	5.70	4.91	5.75	5.47	3.32	1.50	3.85	3.01	0.79	-0.05	0.24	0.88	0.40	0.53



Alt Model-Shift Uniqueness Test

009413335-03, P = 121.261105 Days, E = 19.963148 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.52	6.67	5.96	4.73	5.45	3.29	1.39	1.55	2.78	0.71	1.94	0.35	0.88	0.39	0.62



Stellar Parameters For KIC 009413335

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6807^{+184}_{-225}	$3.575^{+0.296}_{-0.056}$	$-0.180^{+0.300}_{-0.250}$	$3.571^{+0.405}_{-1.216}$	$1.749^{+0.184}_{-0.316}$	$0.054^{+0.113}_{-0.010}$
	+3%/-3%	+8%/-2%	+167%/-139%	+11%/-34%	+11%/-18%	+209%/-18%
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 009413335-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-154 ± 27	$6.80^{+5.57}_{-4.33}$	1013^{+60}_{-82}	5478^{+4121}_{-1159}	610^{+4027}_{-421}
Alt.	-201 ± 30	$6.44^{+5.03}_{-4.10}$	1014^{+56}_{-89}	5957^{+5298}_{-1346}	863^{+5494}_{-594}

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

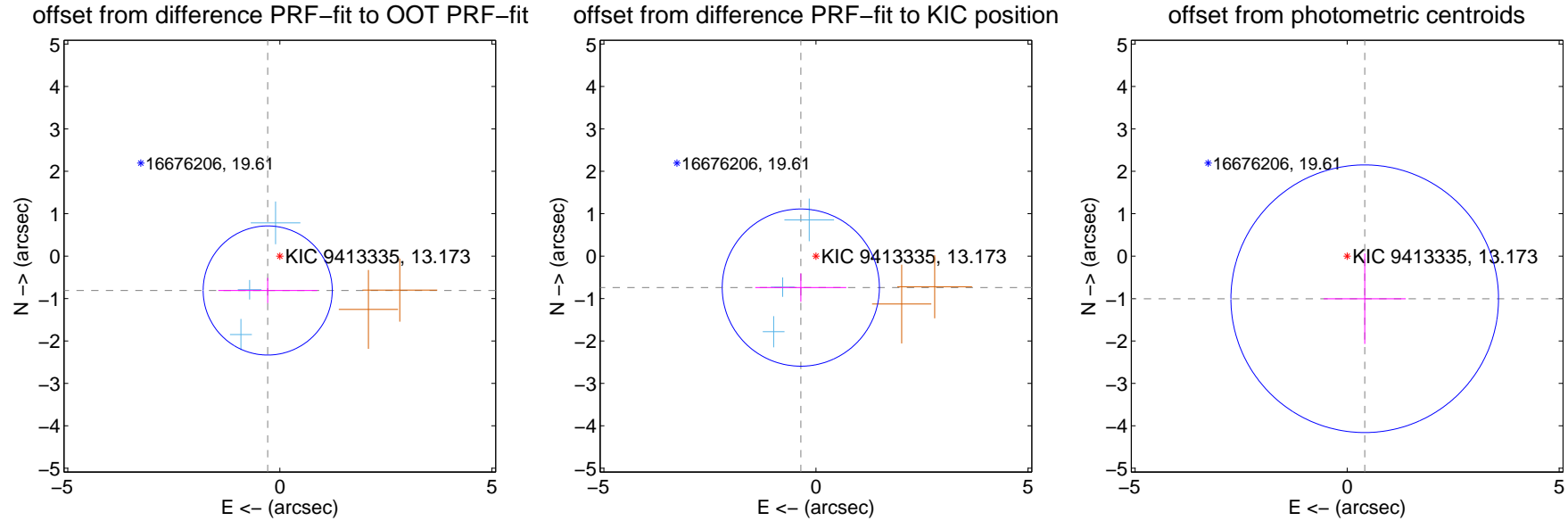
DV Centroid Data

Supplemental centroid analysis for 009413335-03. Kepler magnitude: 13.17. Transit SNR 7.58

There are 3 quarters with good PRF difference image offsets

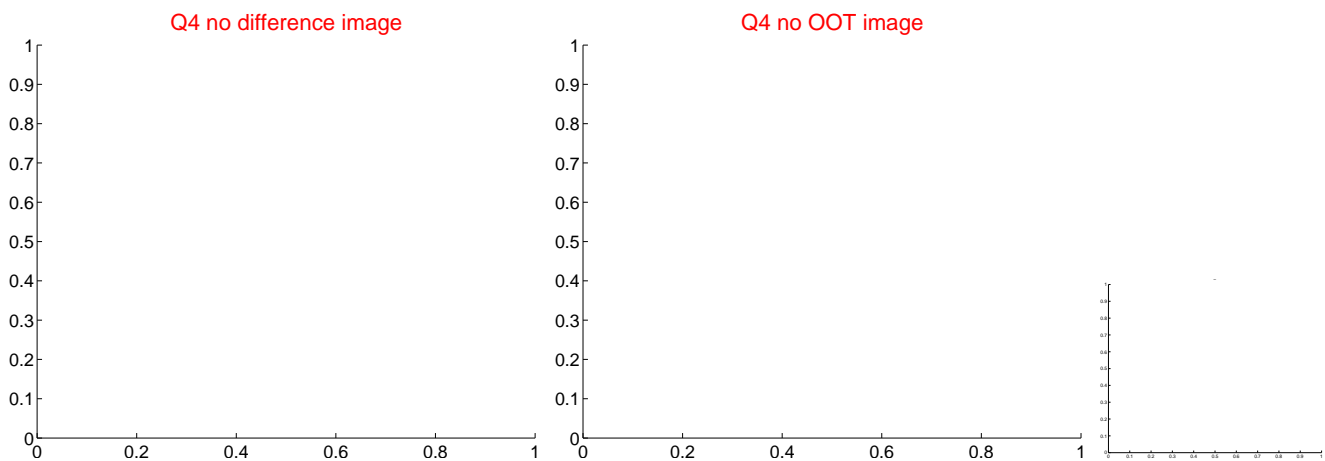
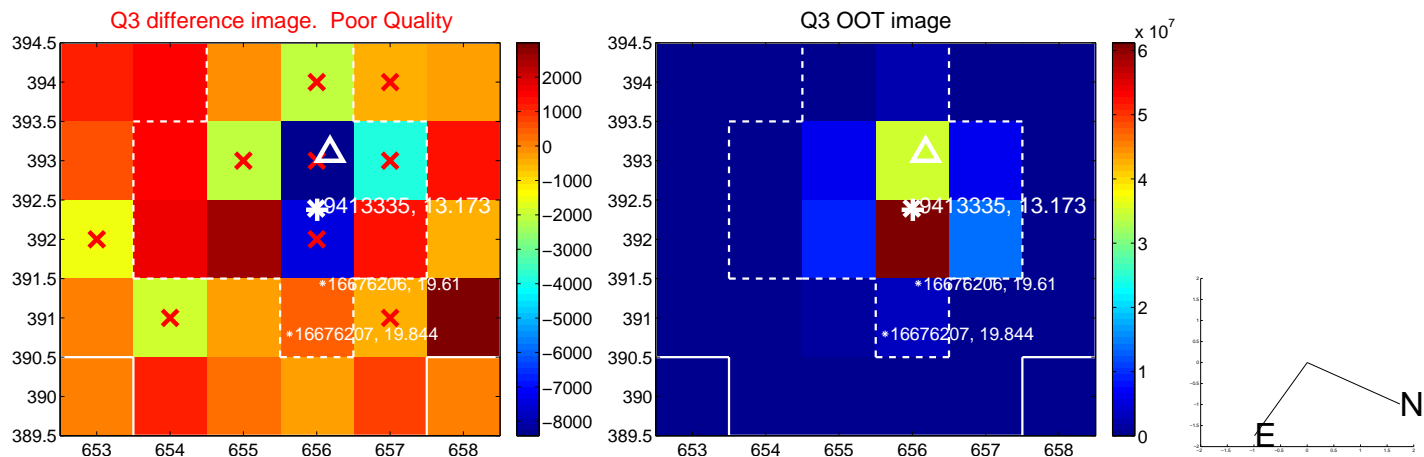
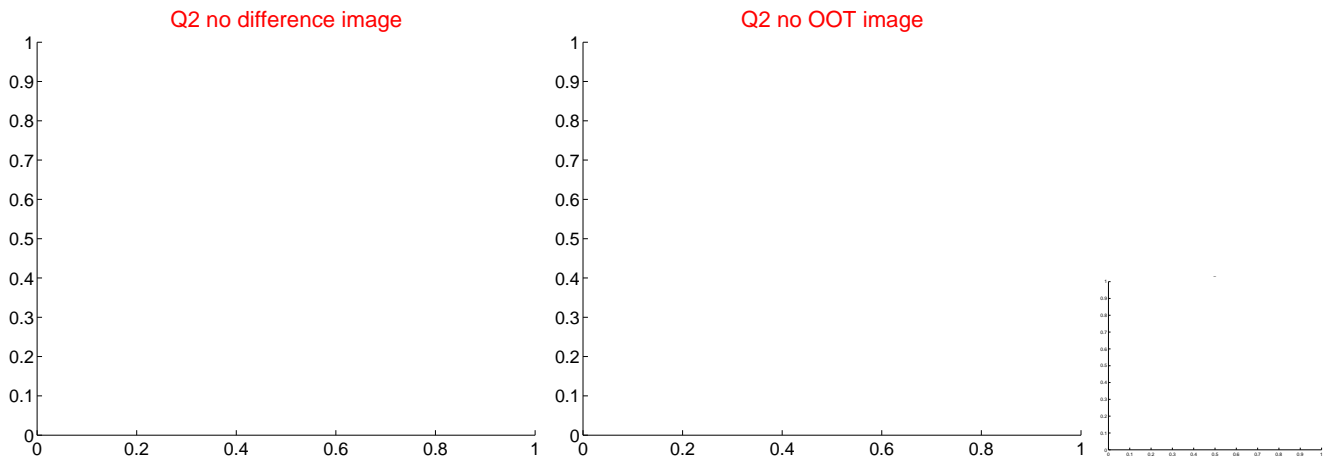
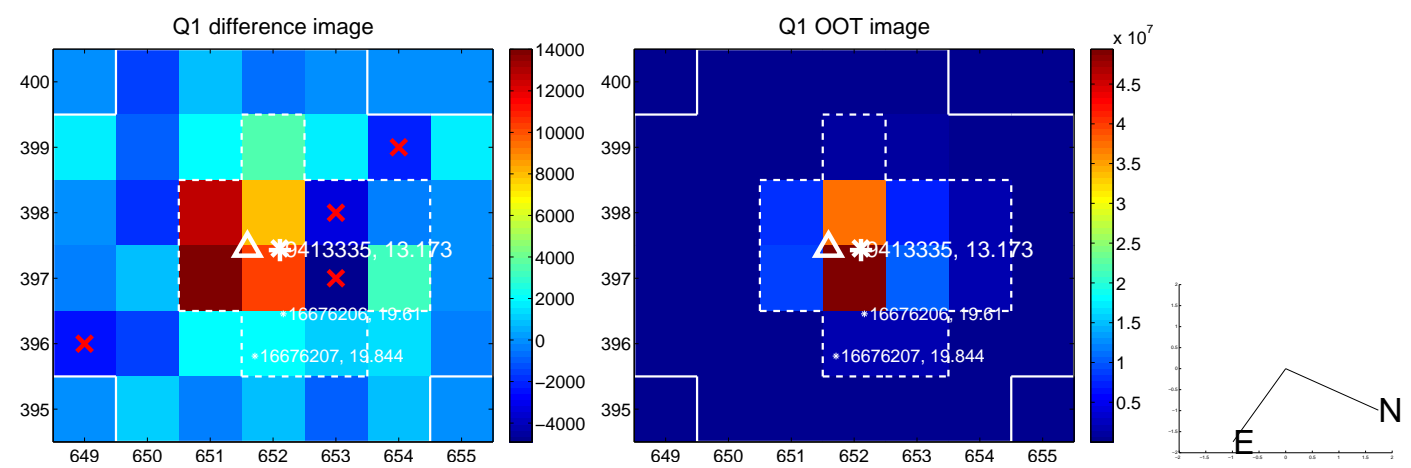
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.858 ± 0.507	1.69	0.285 ± 1.166	-0.810 ± 0.295
PRF-fit source offset from KIC position	0.823 ± 0.618	1.33	0.356 ± 1.073	-0.742 ± 0.334
photometric centroid source offset	1.09 ± 1.05	1.03	-0.41 ± 0.97	-1.00 ± 1.07



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

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



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

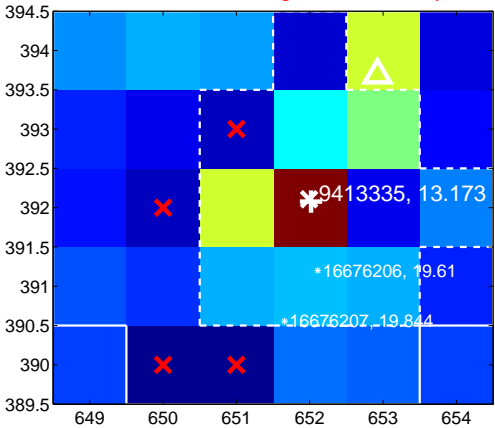
Q5 no difference image



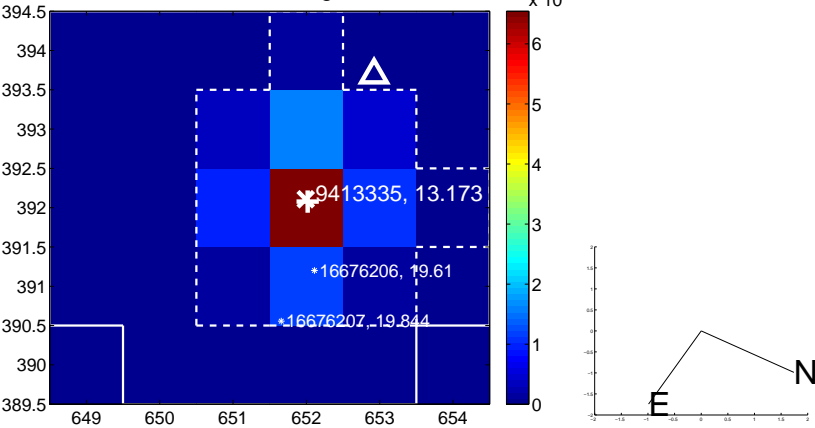
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



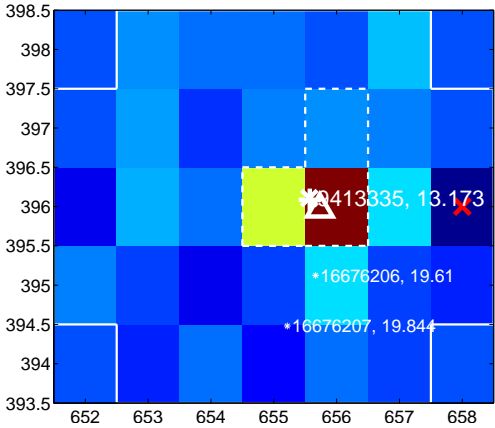
Q7 no difference image



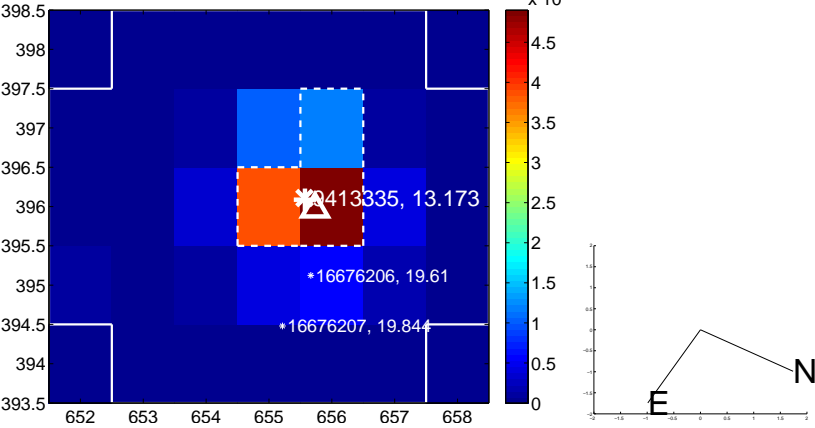
Q7 no OOT image



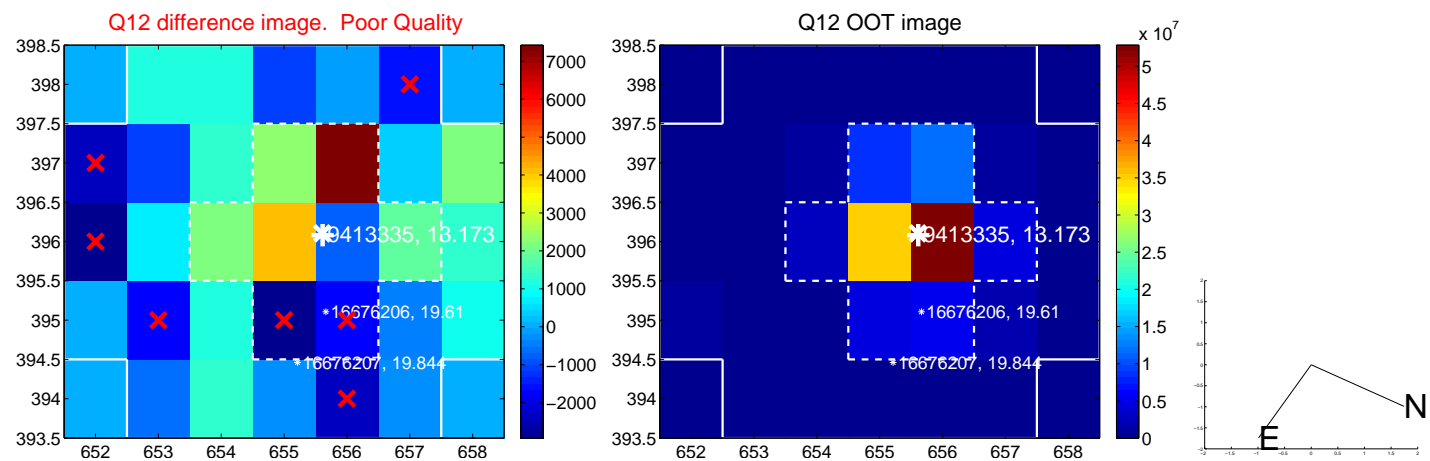
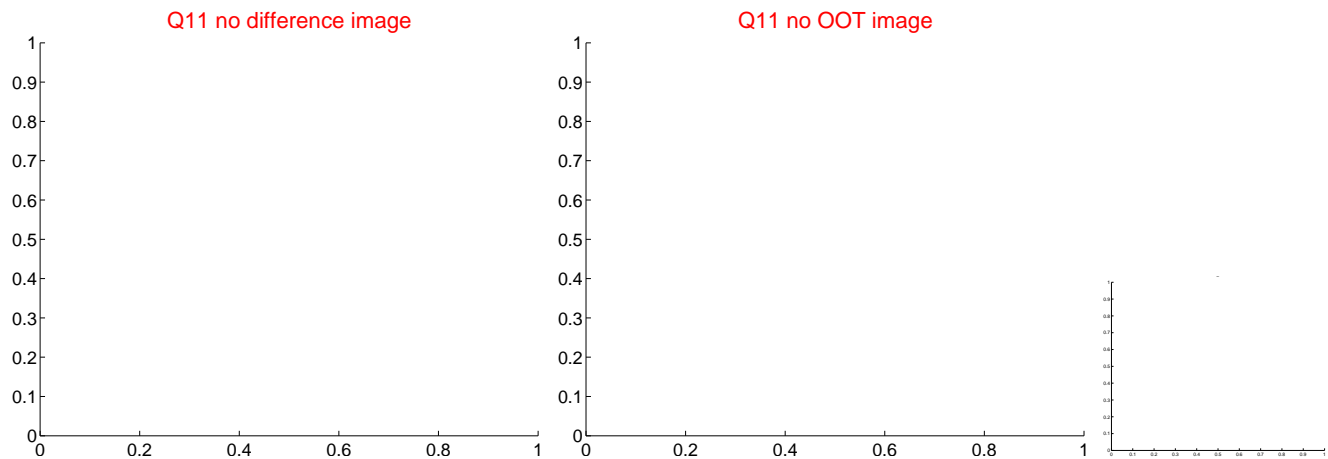
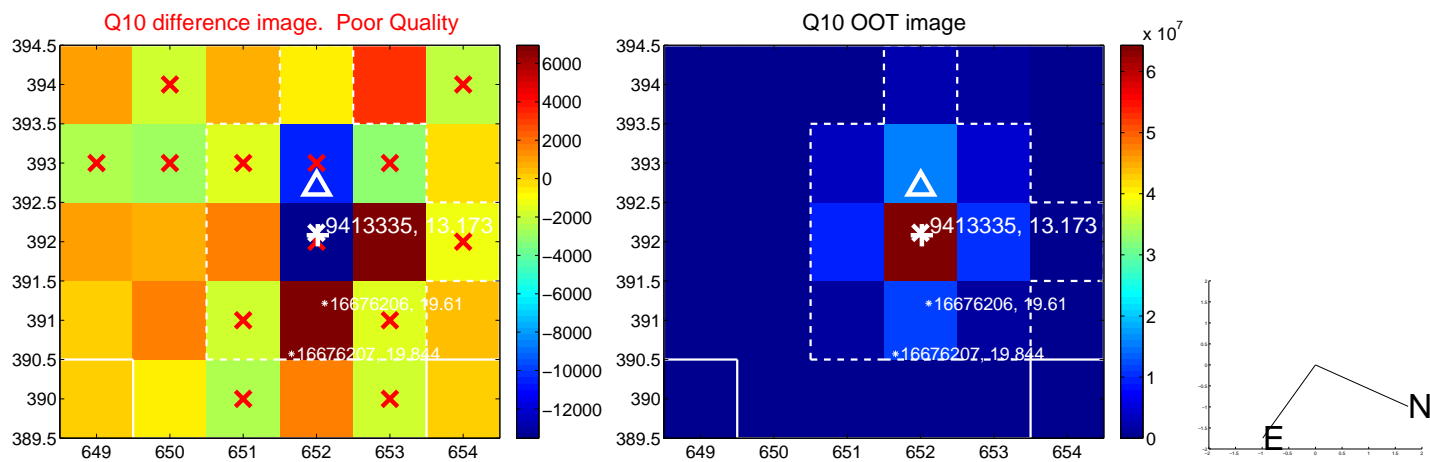
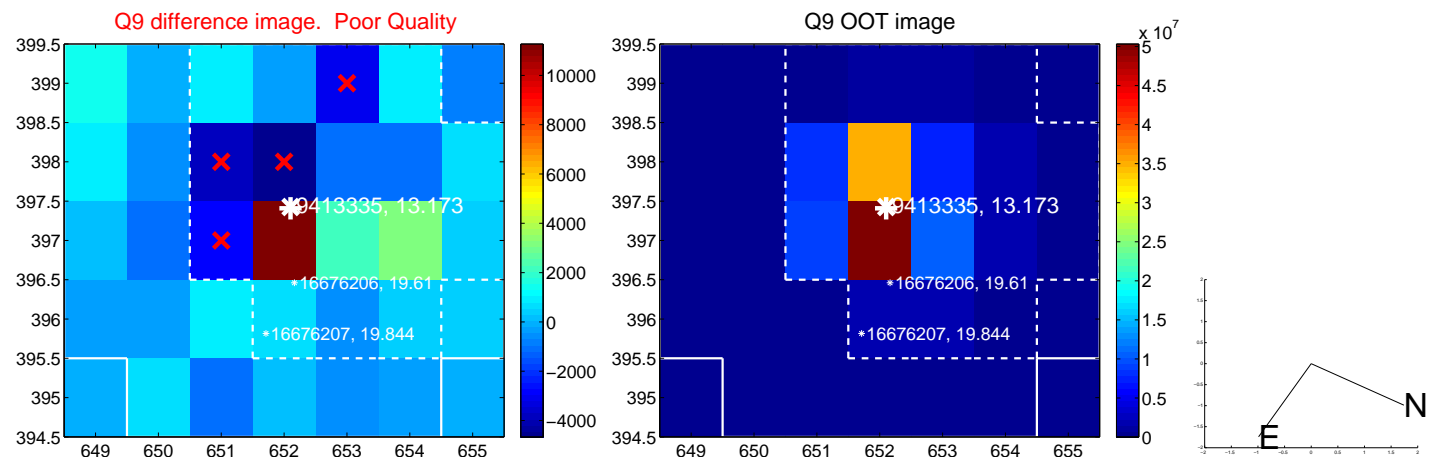
Q8 difference image



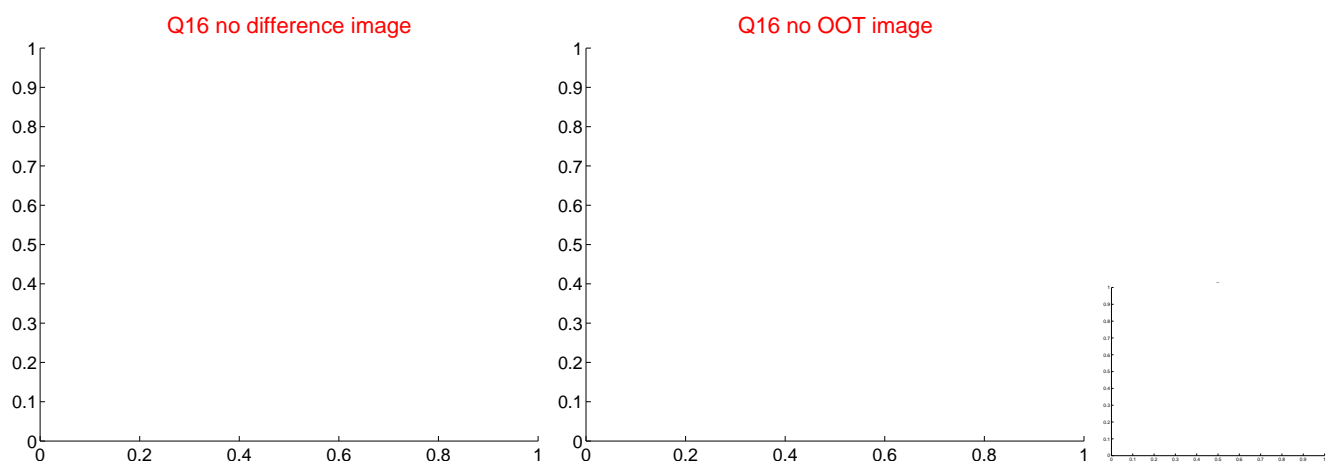
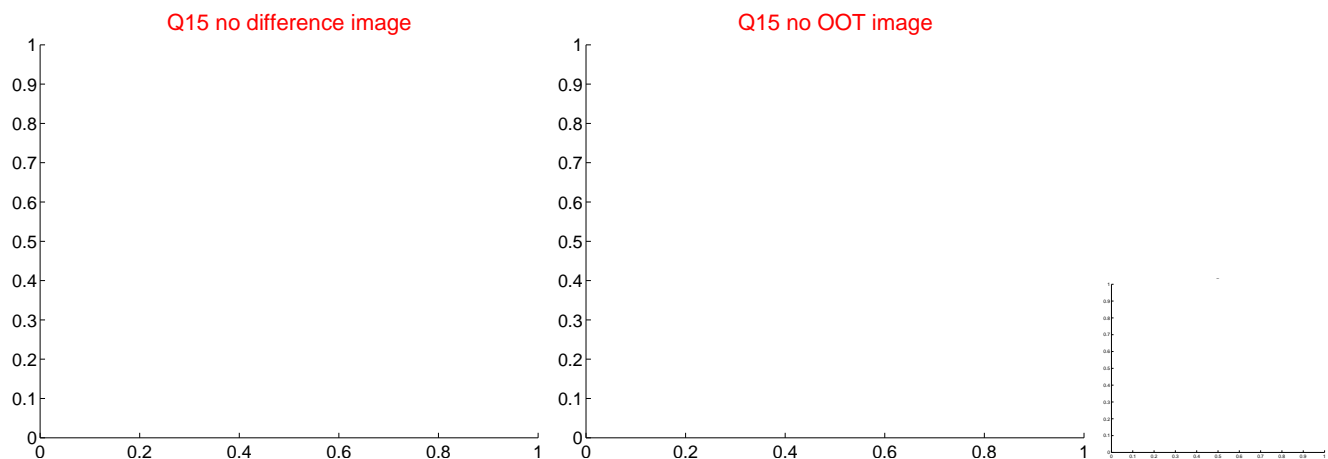
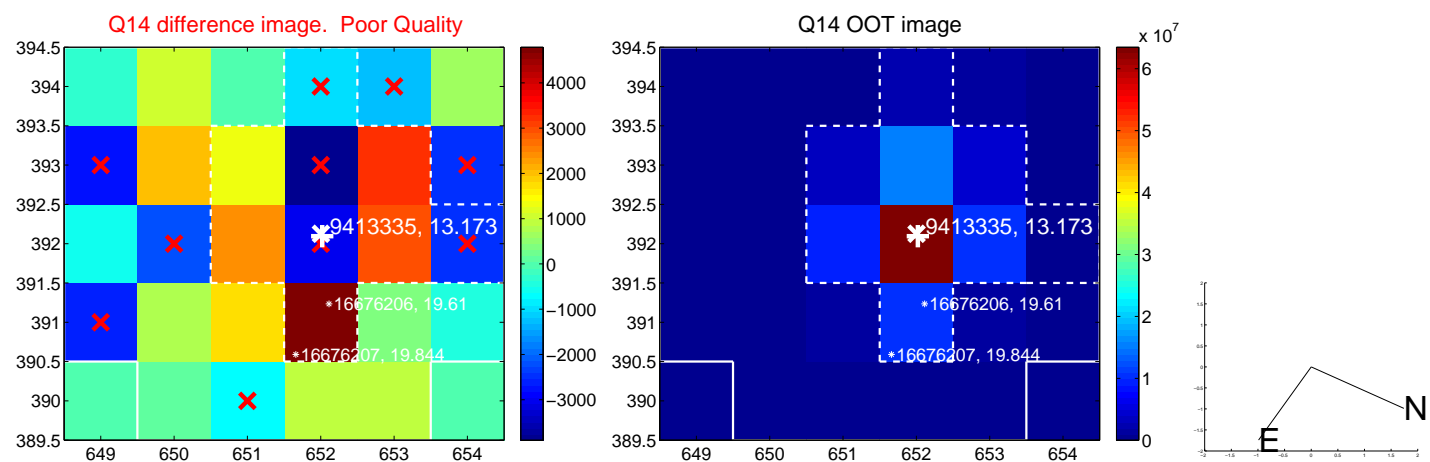
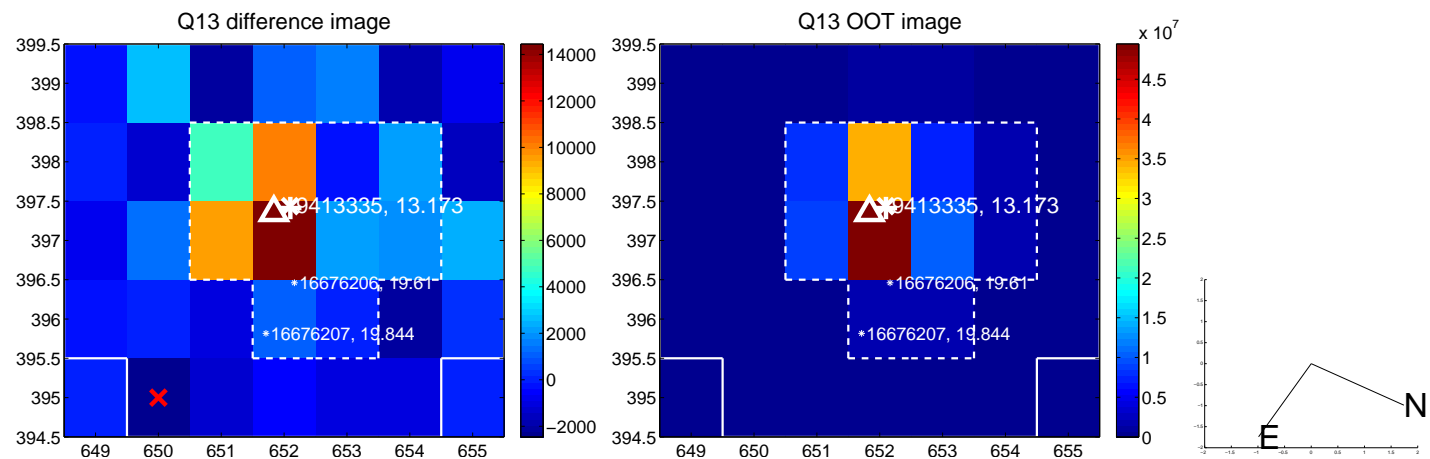
Q8 OOT image



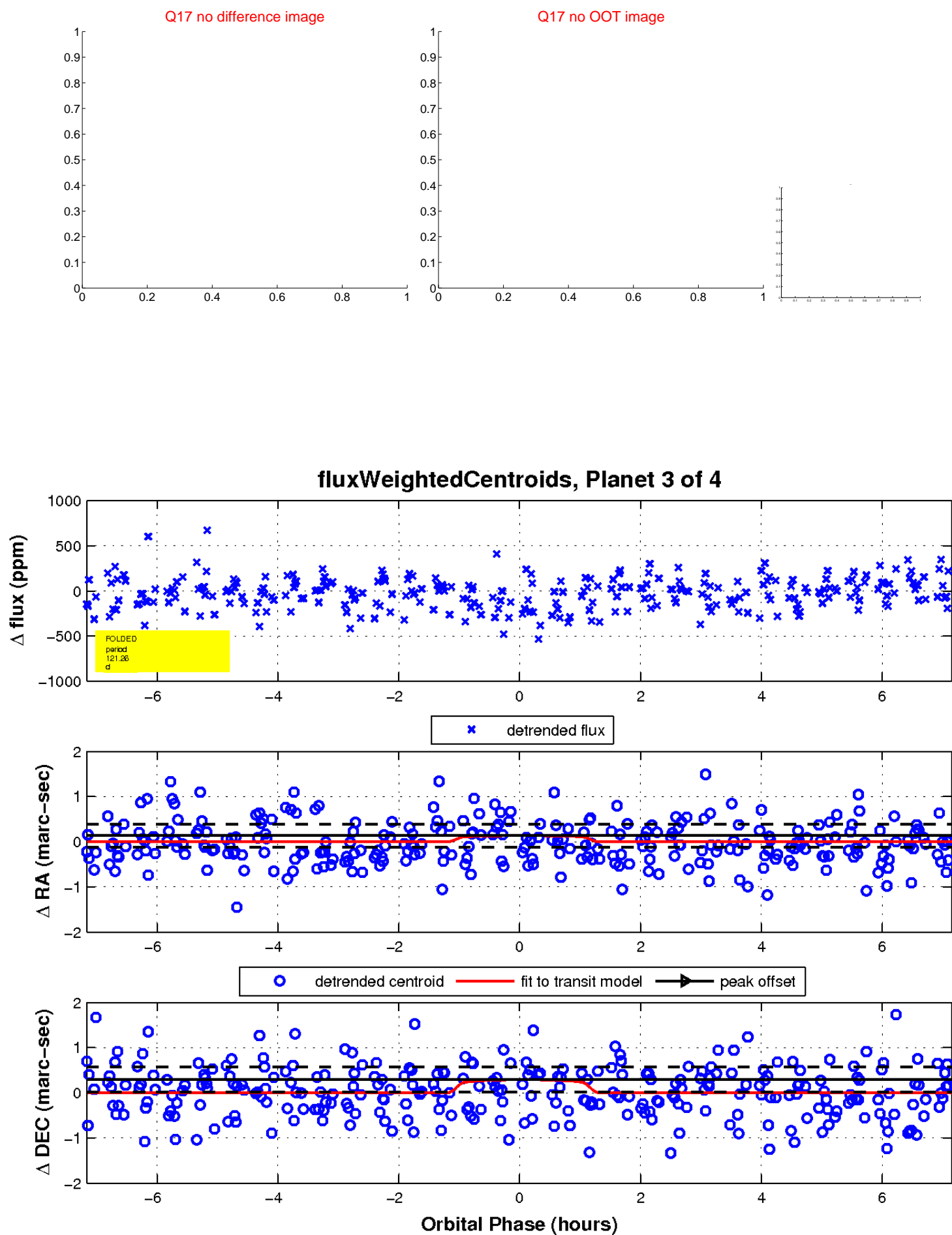
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

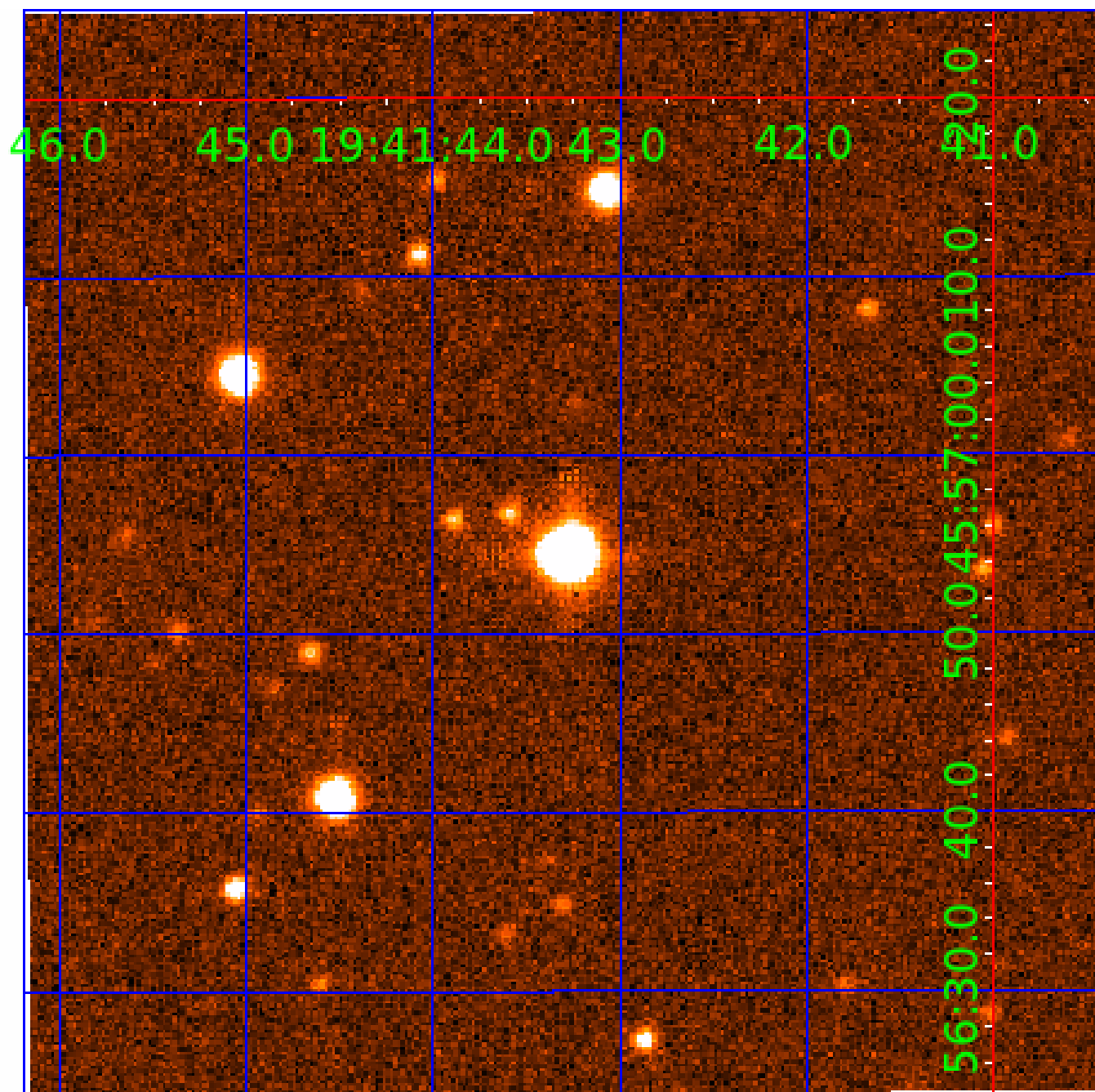


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 009413335

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})
009413335-01	OBS	No	2.276848	133.589239	16.4	8.651	8.8	5.9	3.57	6807	1.68	14727.60
009413335-02	OBS	No	170.149624	275.928847	243.9	4.344	7.6	7.9	3.57	6807	6.27	46.79
009413335-03	OBS	No	121.259431	141.234031	258.8	2.388	7.4	7.6	3.57	6807	6.57	73.50
009413335-04	OBS	No	263.342468	339.252983	254.0	7.556	7.1	7.0	3.57	6807	6.59	26.14

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009413335-01	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT
009413335-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT
009413335-03	OBS	FP	0.00	1	0	0	0	TRANS_GAPPED—MOD_NONUNIQ_ALT—MOD_TER_ALT
009413335-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT

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

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

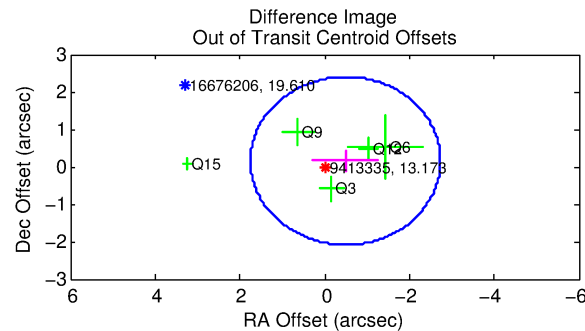
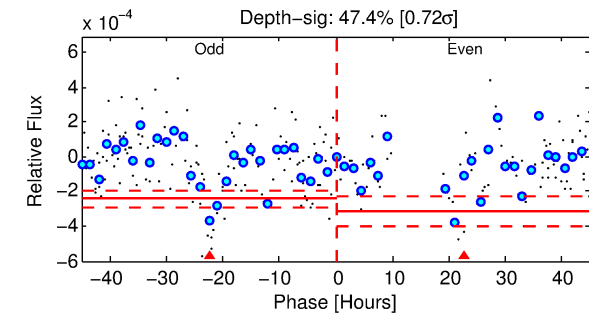
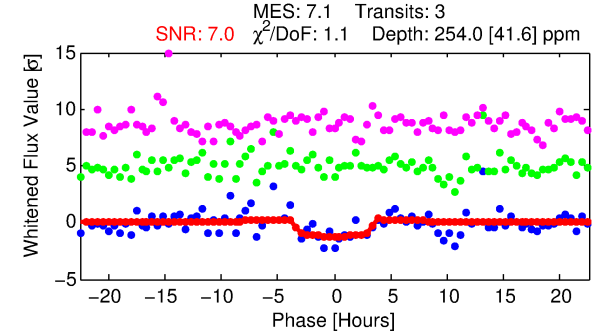
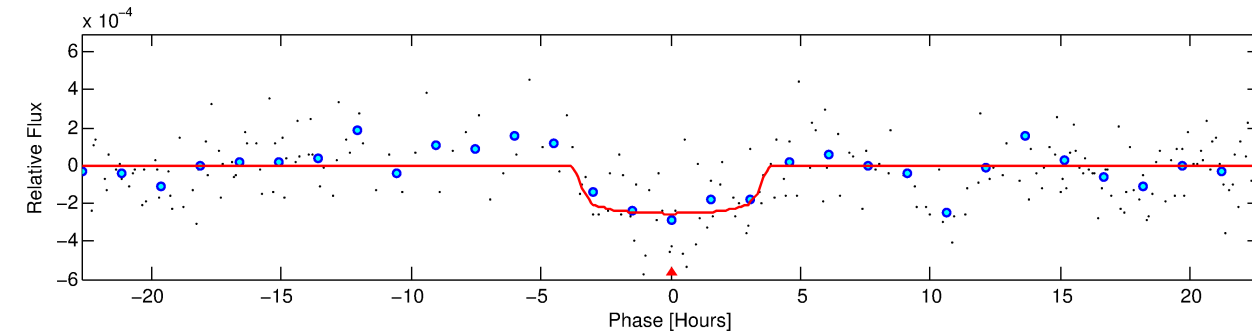
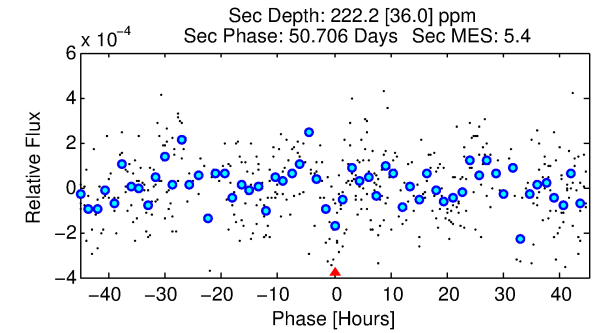
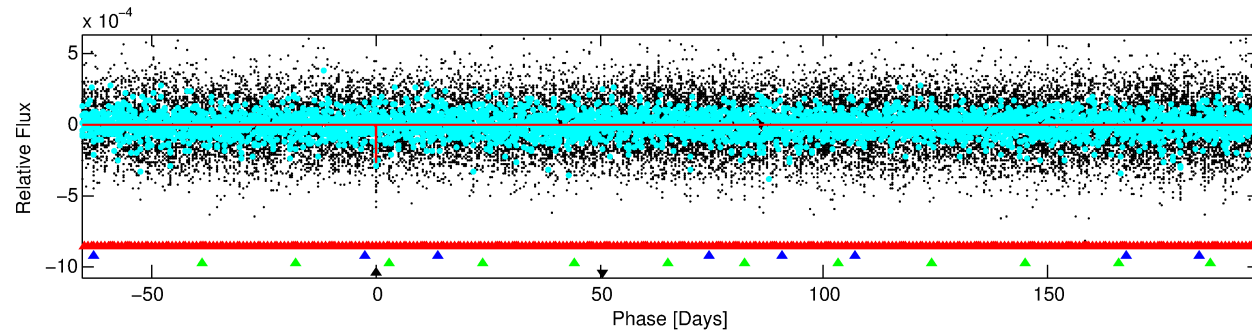
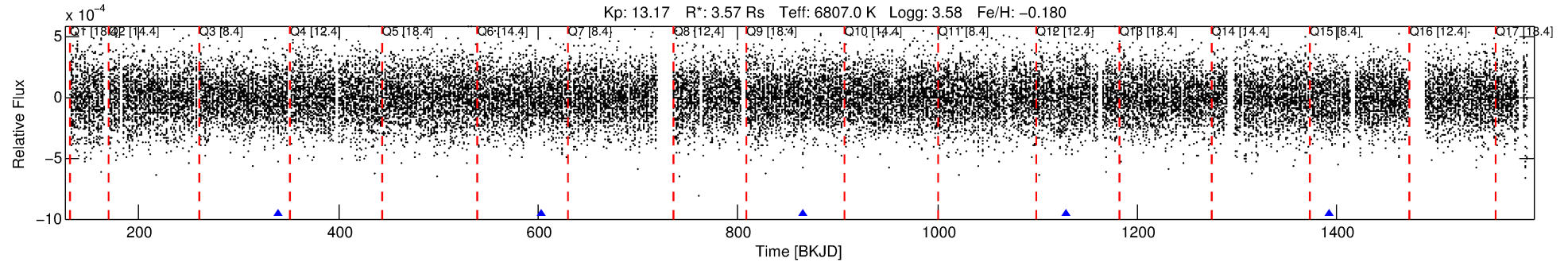
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009413335-04

No Significant Match Found

DV One-Page Summary

KIC: 9413335 Candidate: 4 of 4 Period: 263.342 d



DV Fit Results:

Period = 263.34247 [0.00703] d
Epoch = 339.2530 [0.0152] BKJD
Rp/R* = 0.0169 [0.0048]
a/R* = 128.88 [206.00]
b = 0.89 [0.36]
Seff = 26.13 [13.72]
Teq = 577 [76] K
Rp = 6.59 [2.92] Re
a = 0.9688 [0.3112] AU
Ag = 2639.44 [2052.65] [1.29σ]
Teffp = 6389 [964] K [6.01σ]

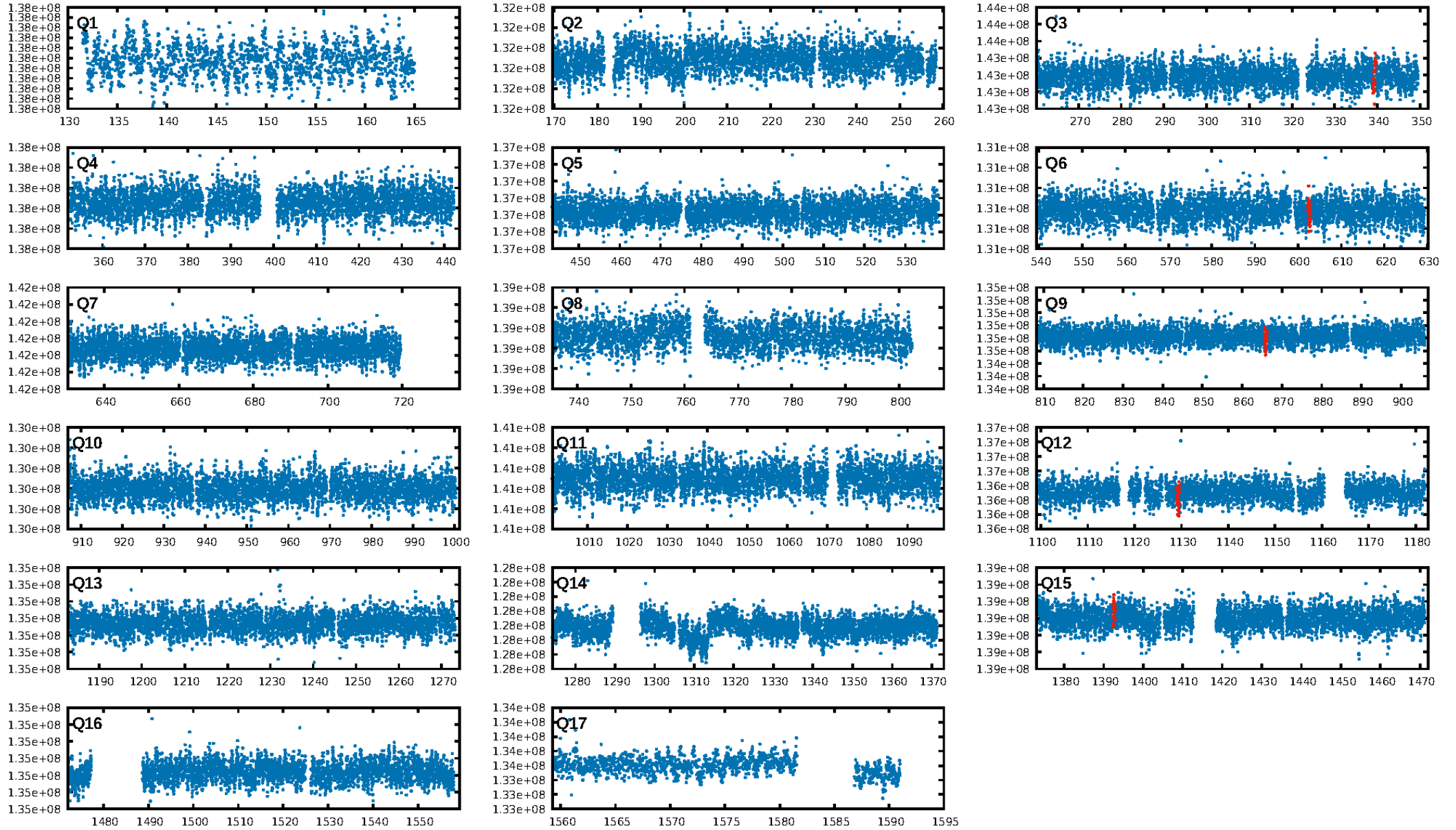
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [256.63σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 11.1%
ModelChiSquareGof-sig: 81.1%
Bootstrap-pfa: 7.85e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.34
Centroid-sig: 49.0%
Centroid-so: 0.674 arcsec [0.75σ]
OotOffset-rm: 0.515 arcsec [0.69σ]
KicOffset-rm: 0.482 arcsec [0.77σ]
OotOffset-st: 1/2/1/1 [5]
KicOffset-st: 1/2/1/1 [5]
DiffImageQuality-fgm: 0.80 [4/5]
DiffImageOverlap-fno: 0.20 [1/5]

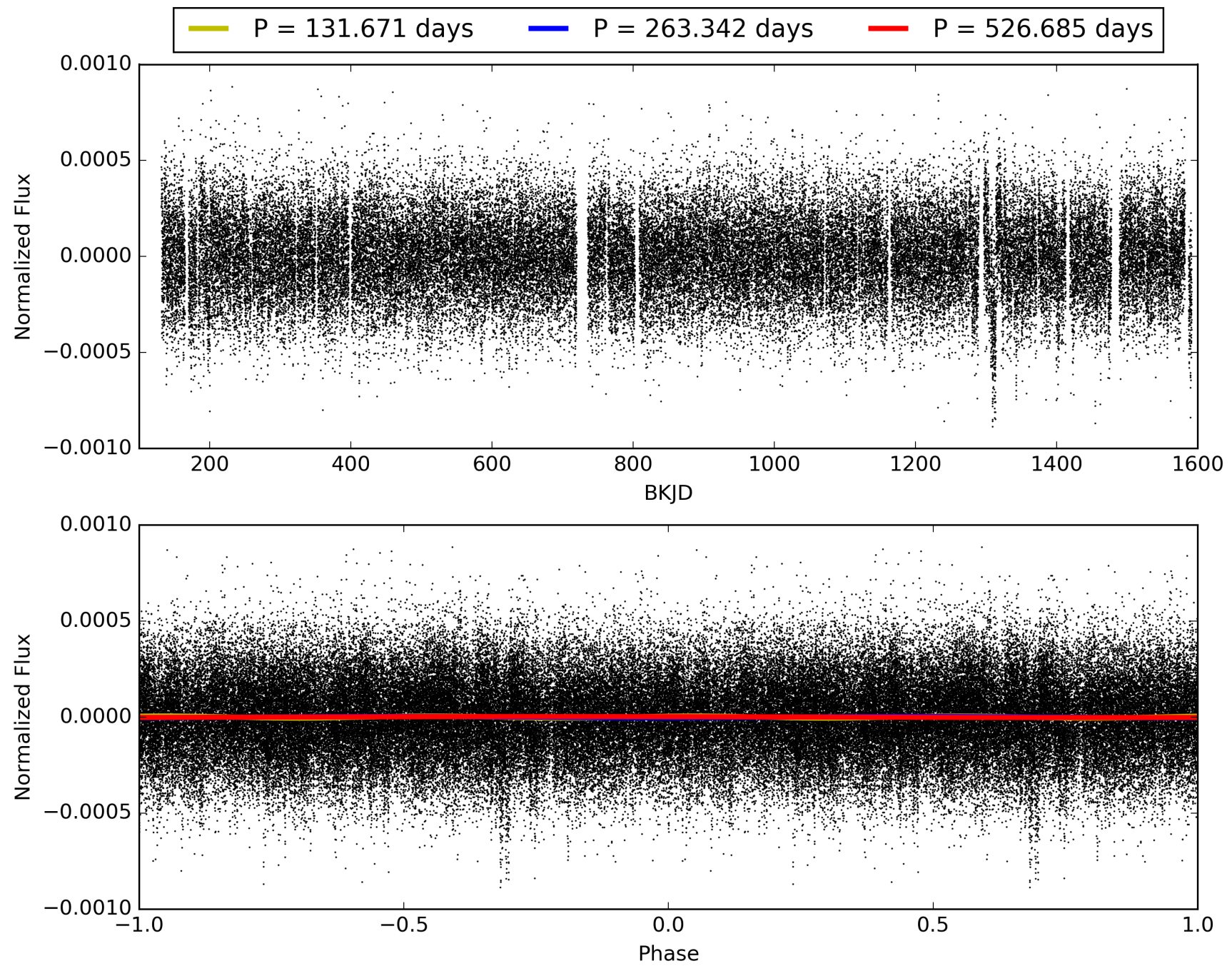
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 22:35:24 Z

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

TCE 009413335-04, PDC Light Curves

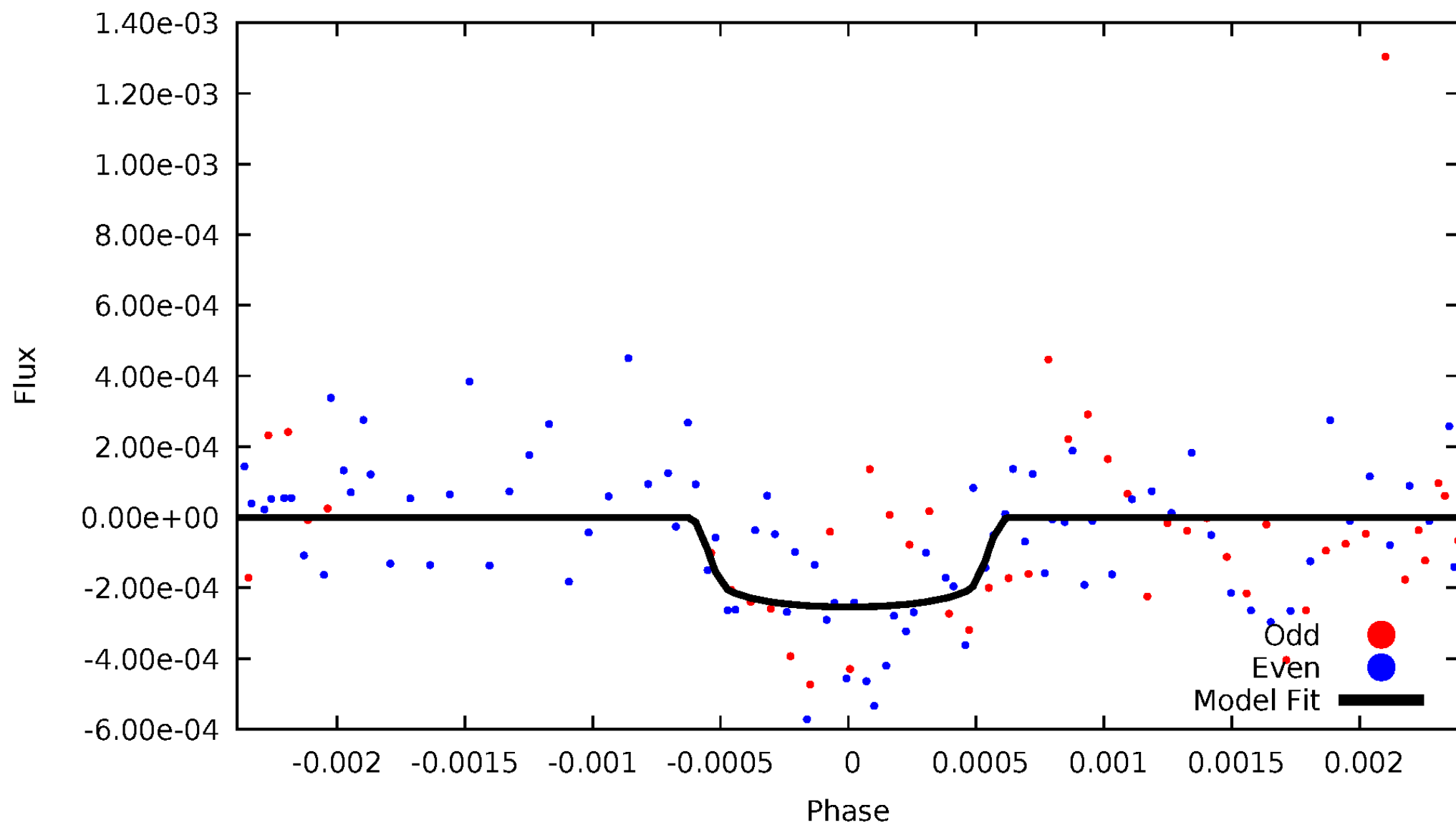


TCE 009413335-04



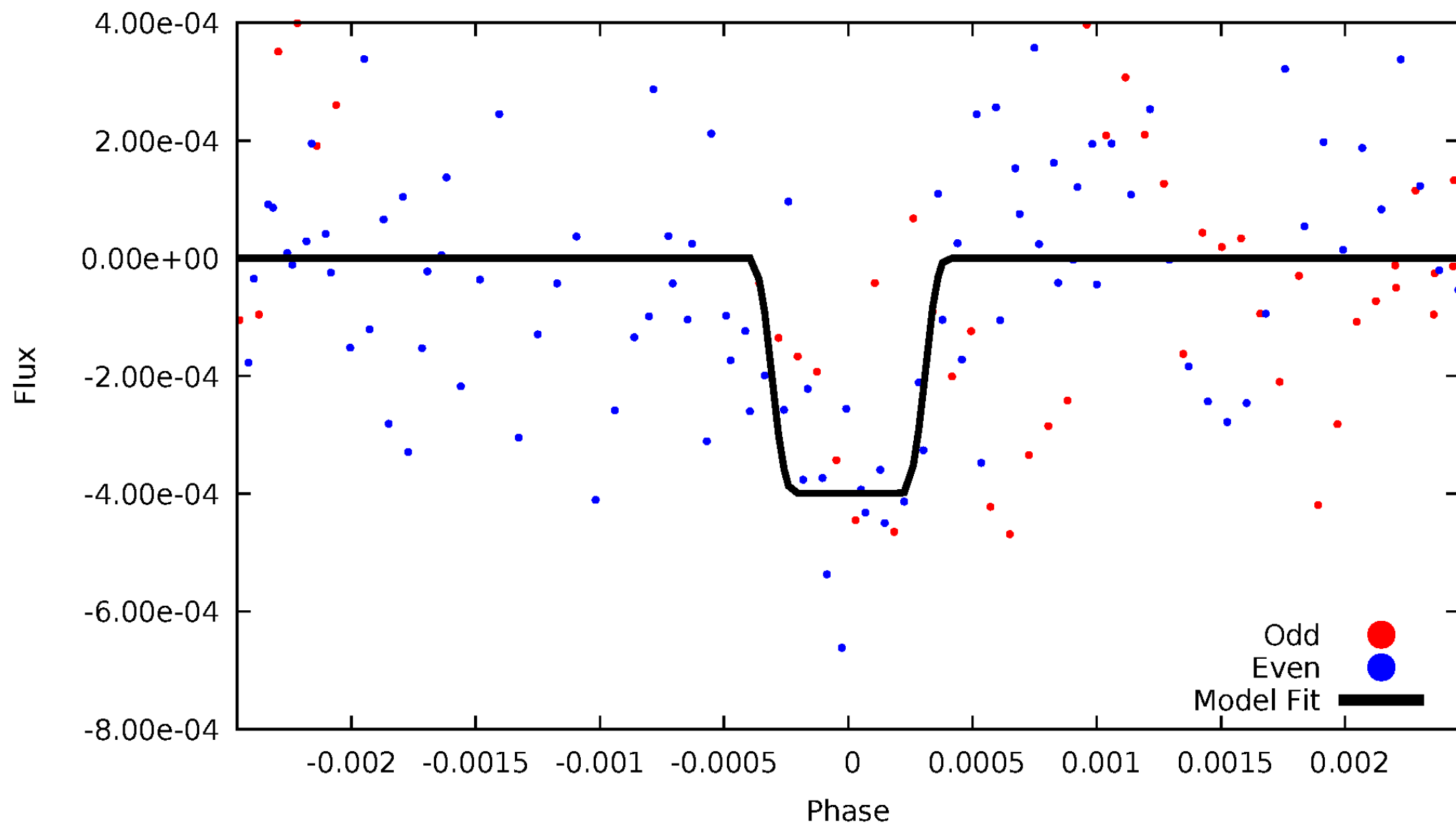
DV Odd/Even

TCE 009413335-04



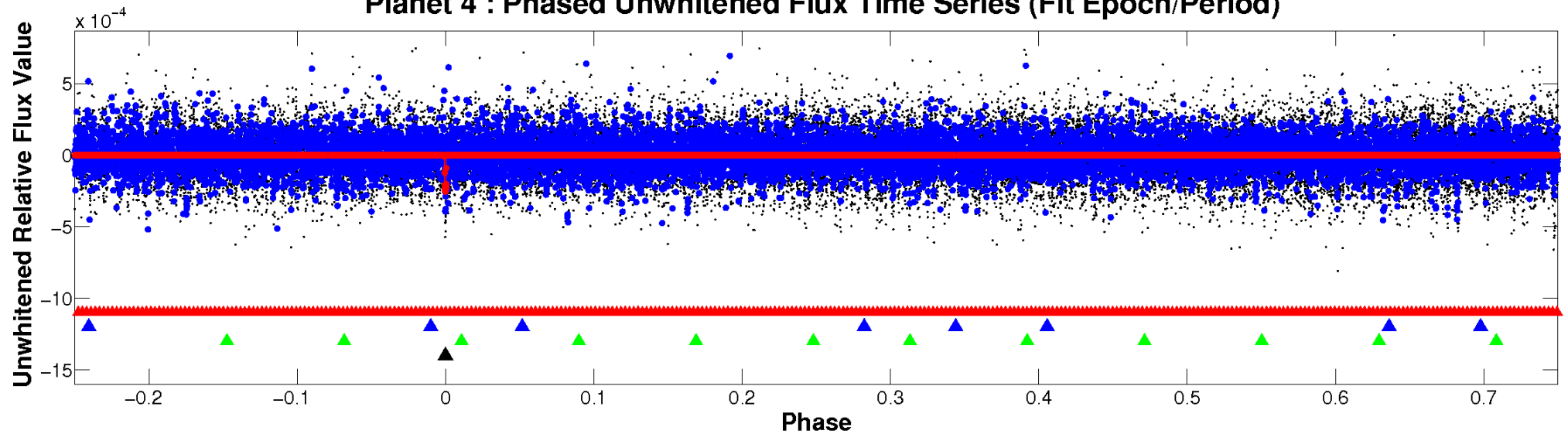
ALT Odd/Even

TCE 009413335-04

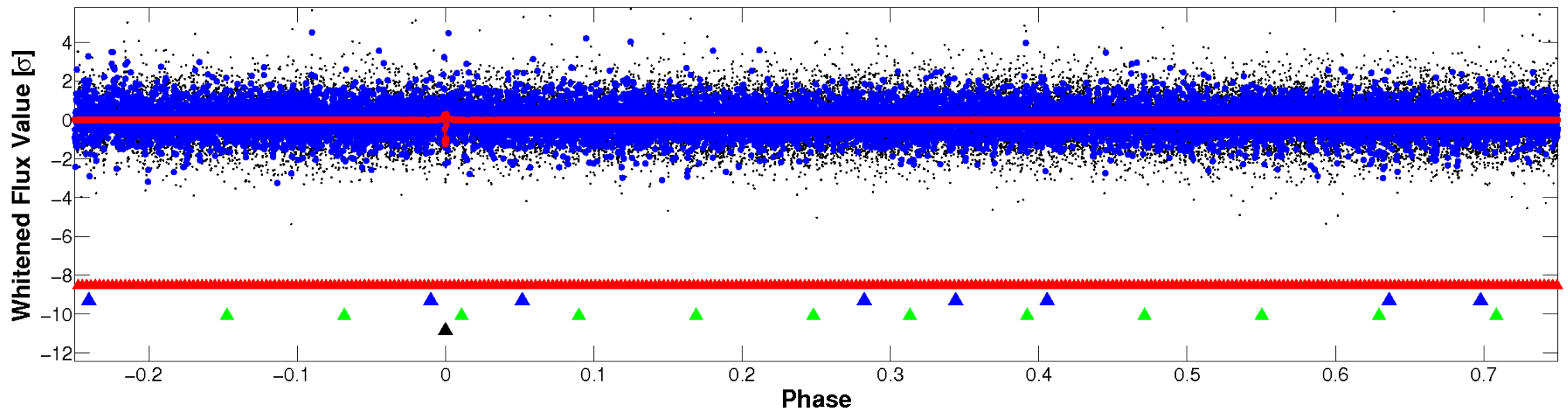


Non-Whitened Vs. Whitened Light Curve

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

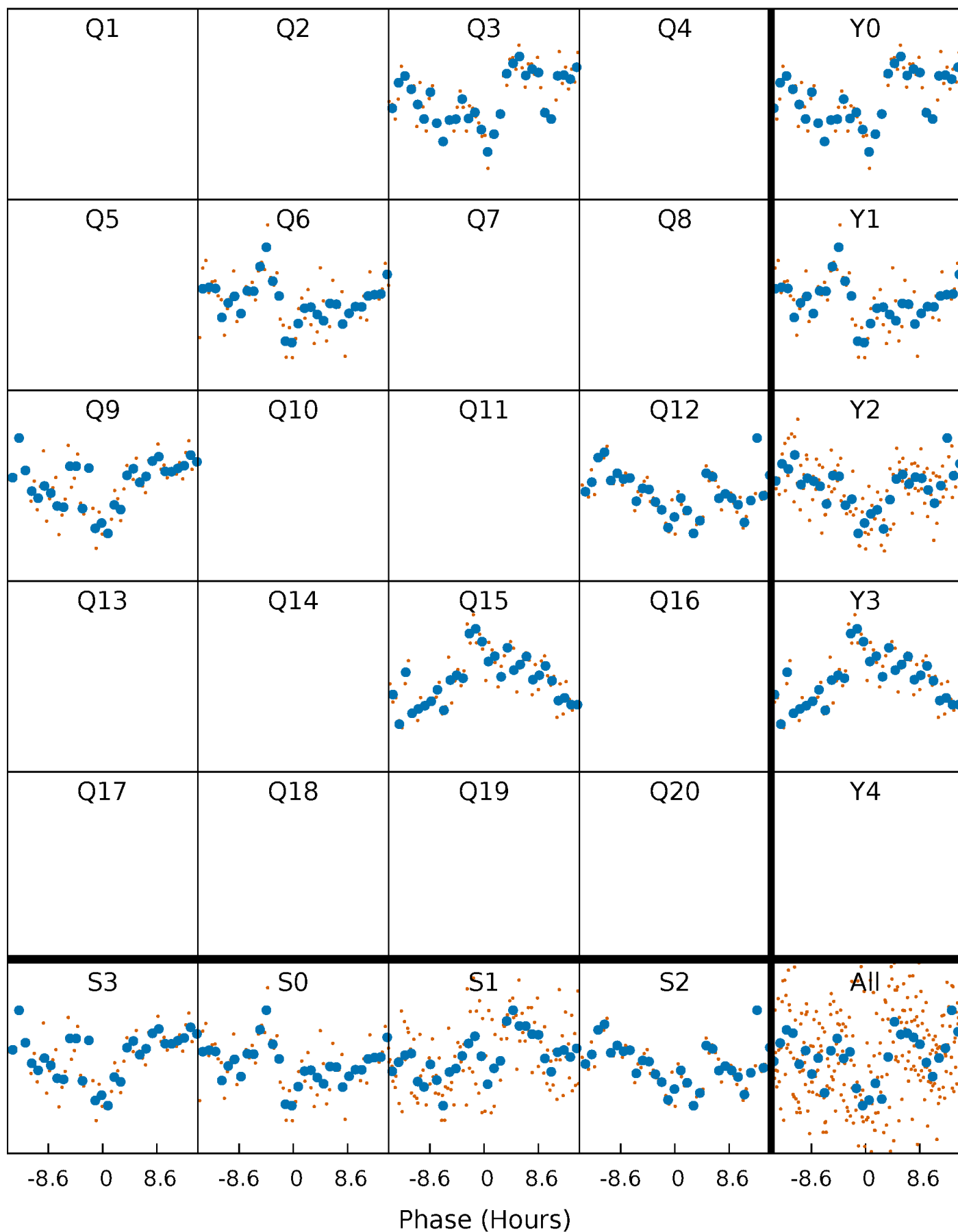


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



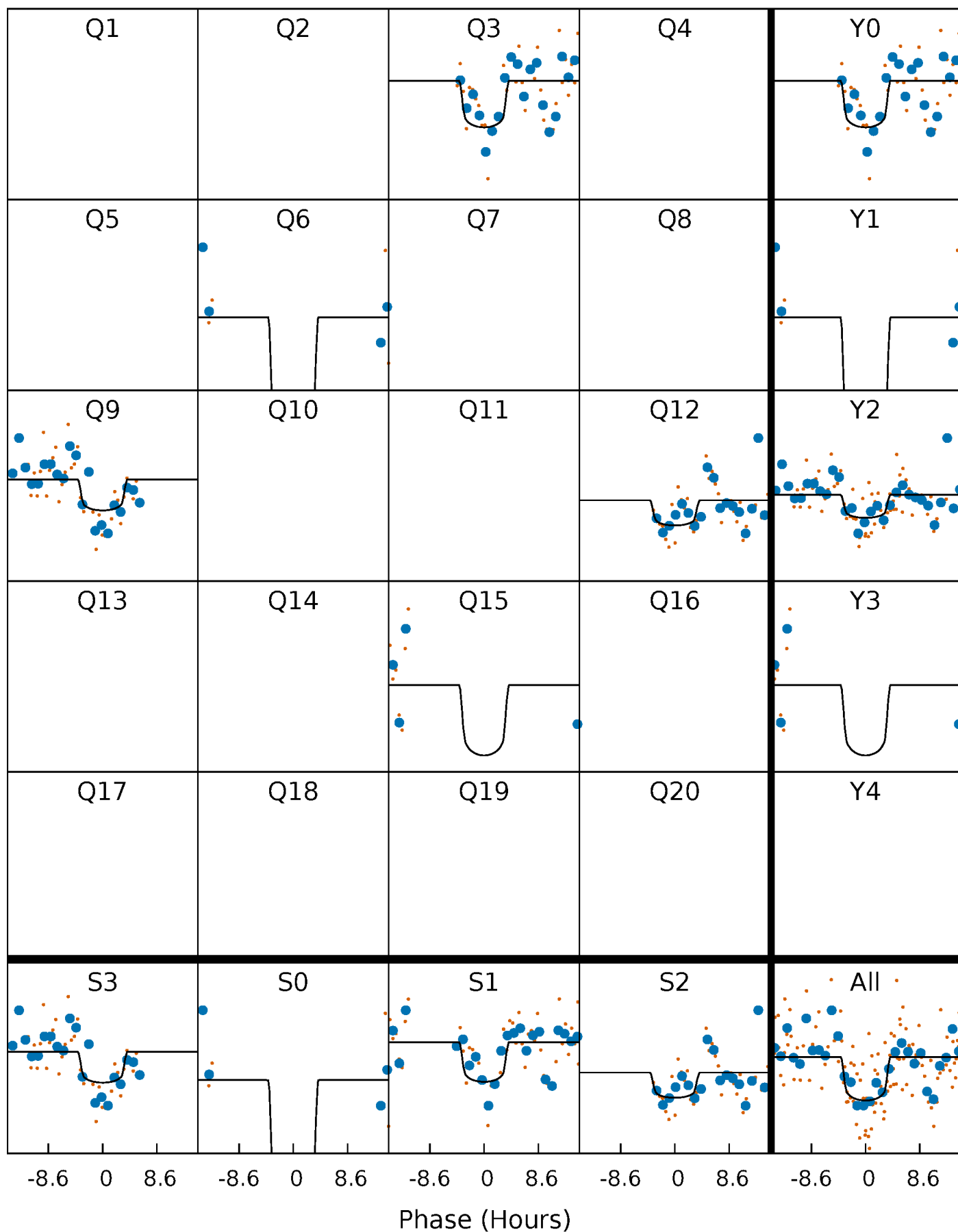
PDC Quarter-Phased Transit Curves

TCE 009413335-04 P=263.342468 Days $T_0=339.252983$ (BKJD)



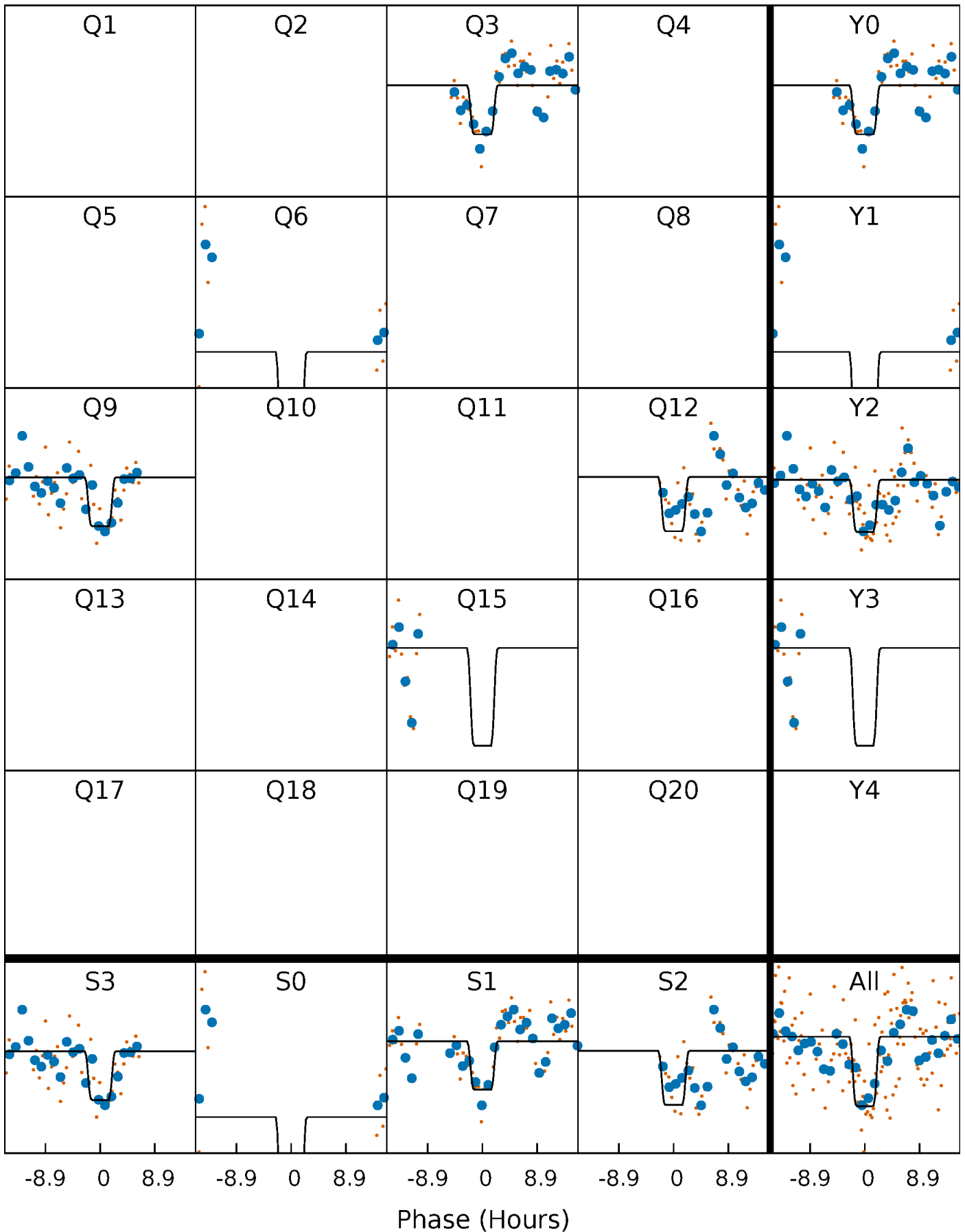
DV Quarter-Phased Transit Curves

TCE 009413335-04 P=263.342468 Days $T_0=339.252983$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

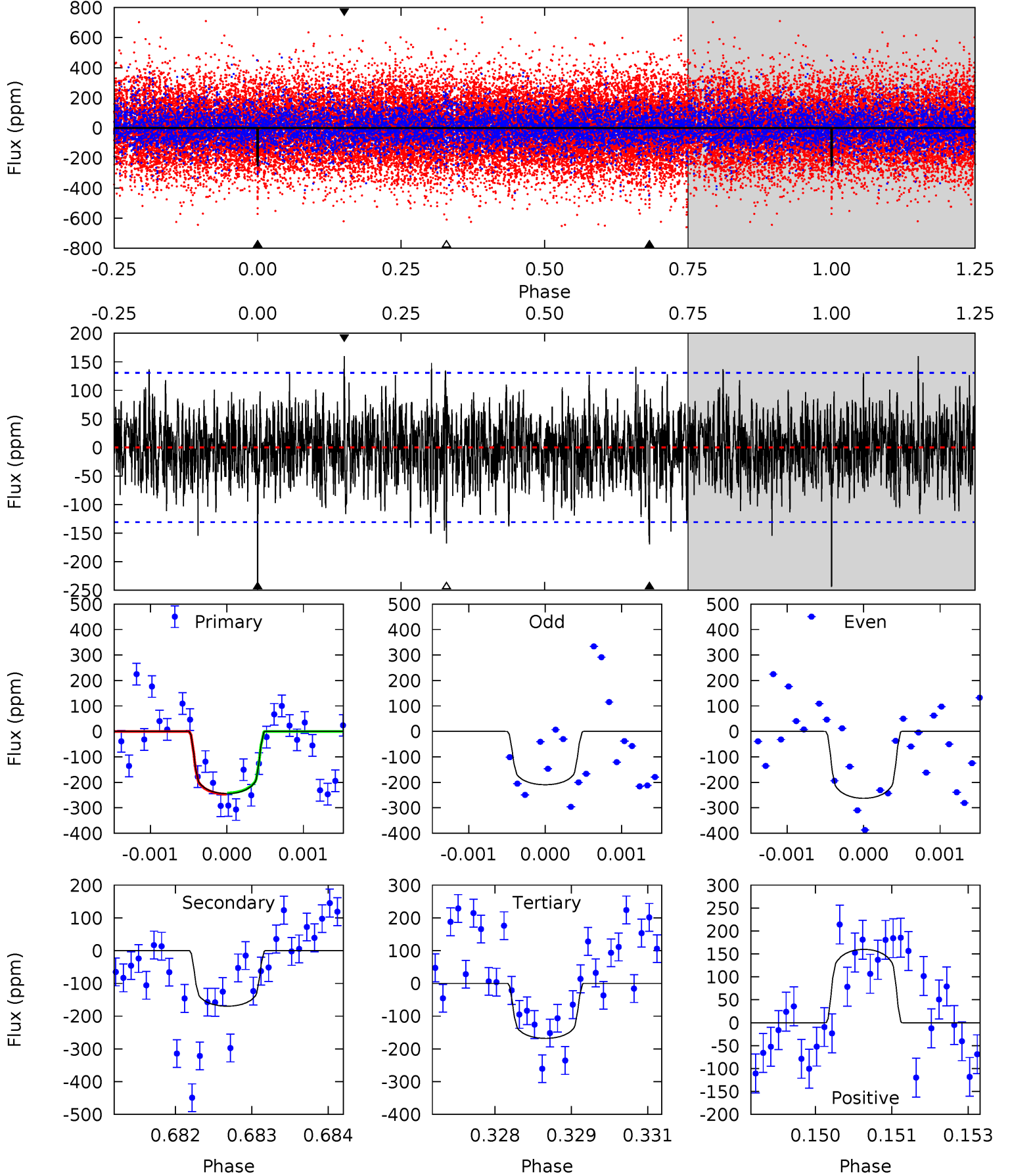
TCE 009413335-04 P=263.315663 Days $T_0=339.286532$ (BKJD)



DV Model-Shift Uniqueness Test

009413335-04, P = 263.342468 Days, E = 75.910515 Days

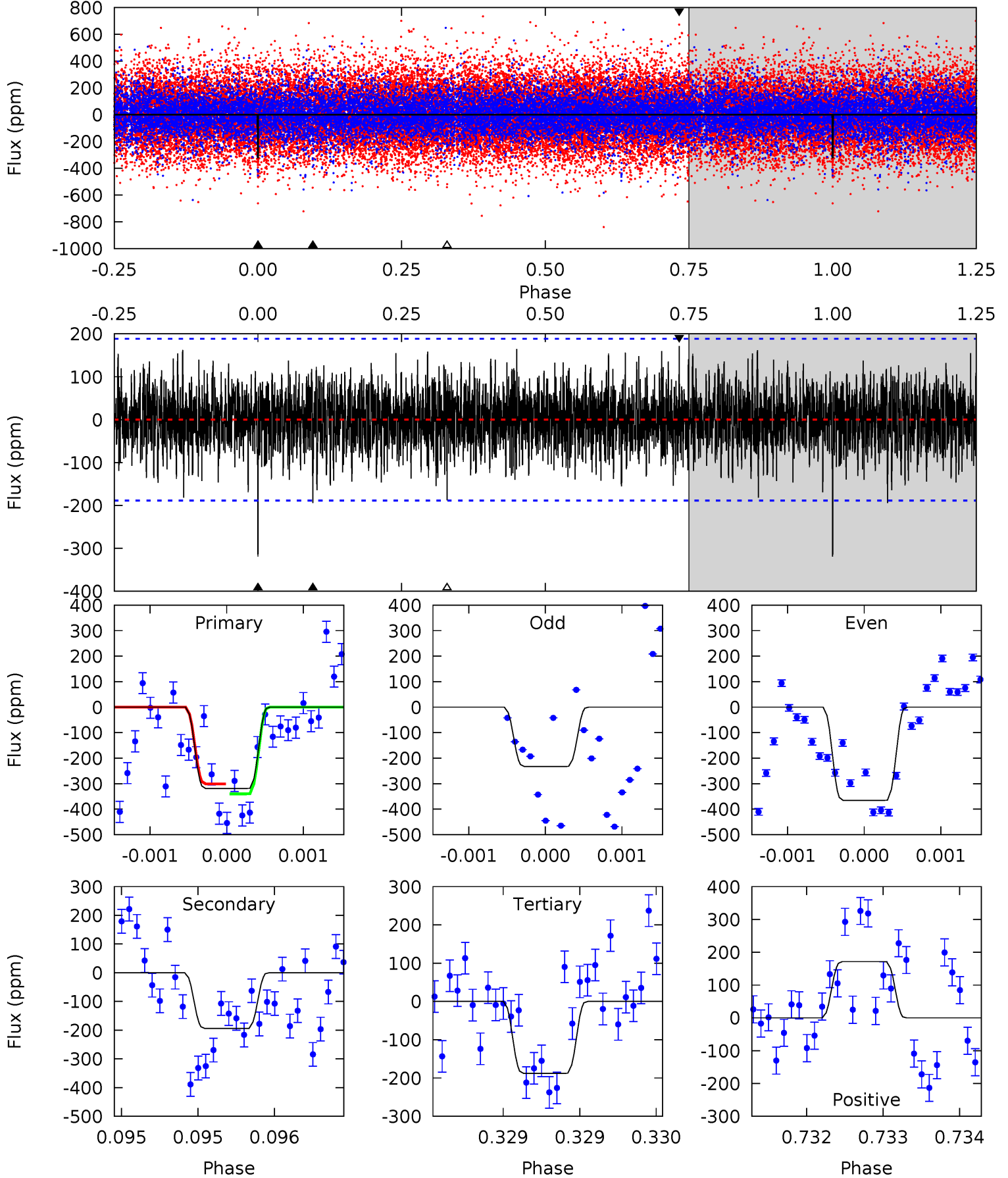
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	7.02	6.94	6.61	5.41	3.22	1.86	3.15	3.48	0.07	0.40	1.05	1.17	0.40	0.09



Alt Model-Shift Uniqueness Test

009413335-04, P = 263.315663 Days, E = 75.970869 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.31	5.67	5.49	5.01	5.50	3.37	1.51	3.83	4.30	0.18	0.65	1.84	0.97	0.35	0.58



Stellar Parameters For KIC 009413335

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6807^{+184}_{-225}	$3.575^{+0.296}_{-0.056}$	$-0.180^{+0.300}_{-0.250}$	$3.571^{+0.405}_{-1.216}$	$1.749^{+0.184}_{-0.316}$	$0.054^{+0.113}_{-0.010}$
	+3%/-3%	+8%/-2%	+167%/-139%	+11%/-34%	+11%/-18%	+209%/-18%
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 009413335-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-170 ± 24	$6.00^{+2.25}_{-1.92}$	783^{+42}_{-69}	5989^{+1126}_{-734}	2406^{+2787}_{-1085}
Alt.	-194 ± 34	$7.20^{+2.13}_{-1.96}$	784^{+44}_{-66}	5664^{+848}_{-604}	1944^{+1593}_{-872}

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

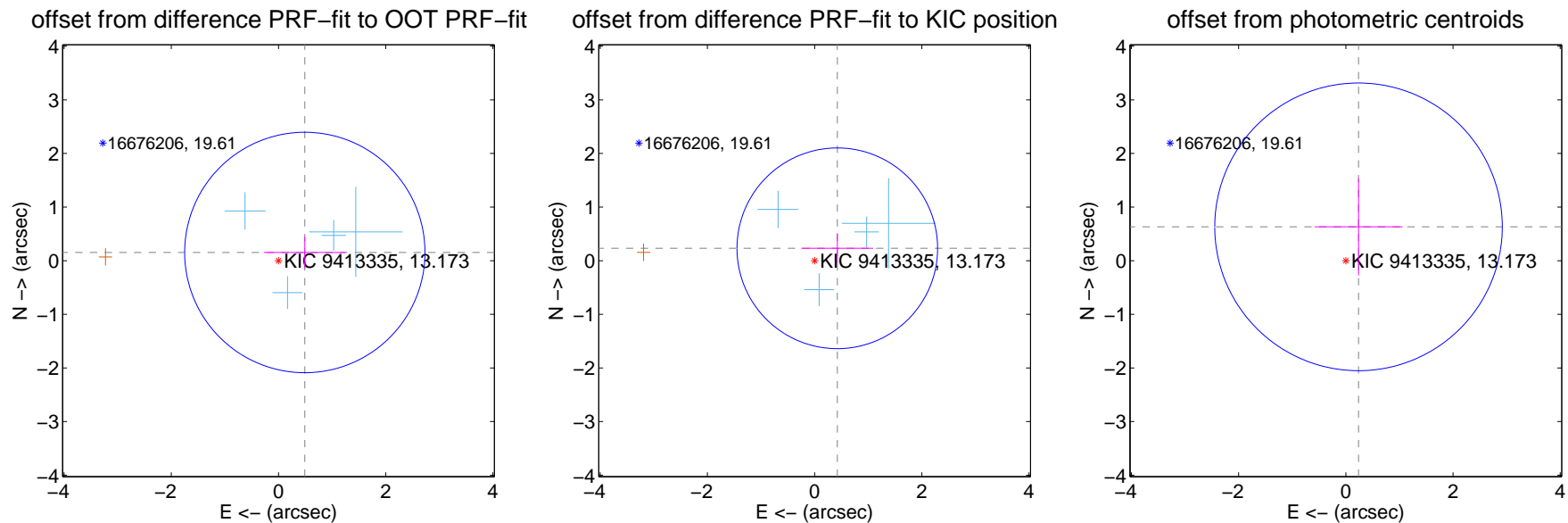
DV Centroid Data

Supplemental centroid analysis for 009413335-04. Kepler magnitude: 13.17. Transit SNR 7.01

There are 4 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.515 ± 0.747	0.69	-0.491 ± 0.761	0.153 ± 0.294
PRF-fit source offset from KIC position	0.482 ± 0.624	0.77	-0.423 ± 0.670	0.231 ± 0.278
photometric centroid source offset	0.67 ± 0.89	0.75	-0.24 ± 0.82	0.63 ± 0.90



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.

Q1 no difference image



Q1 no OOT image



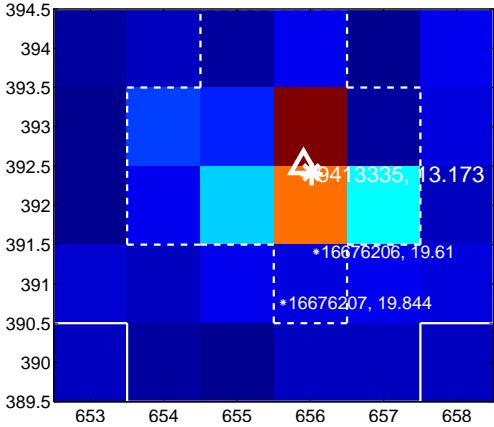
Q2 no difference image



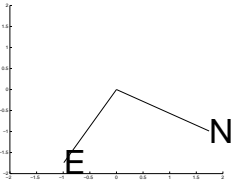
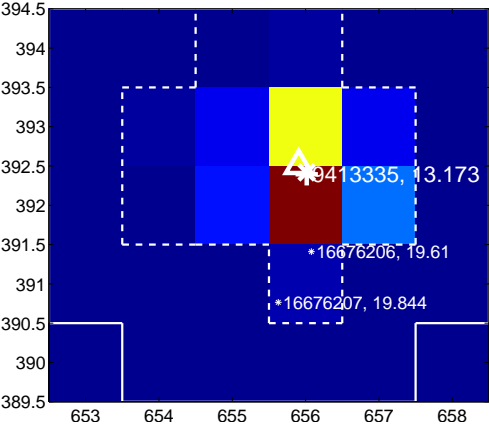
Q2 no OOT image



Q3 difference image



Q3 OOT image



Q4 no difference image



Q4 no OOT image



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

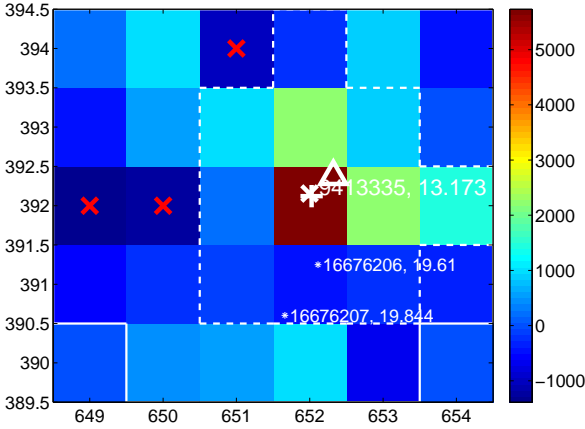
Q5 no difference image



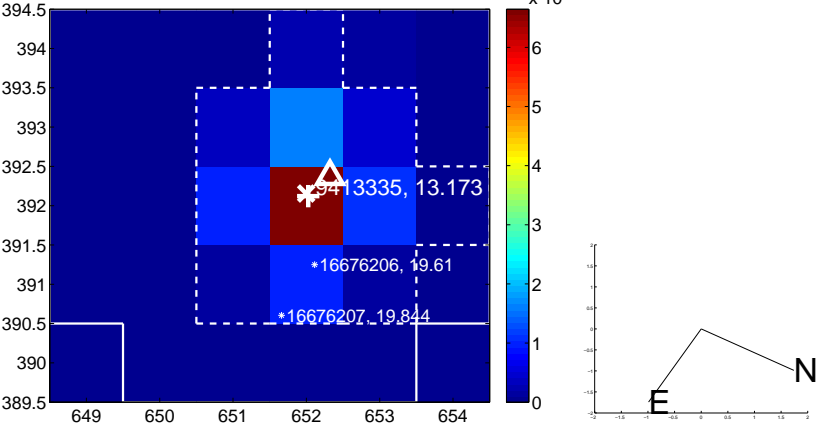
Q5 no OOT image



Q6 difference image



Q6 OOT image



Q7 no difference image



Q7 no OOT image



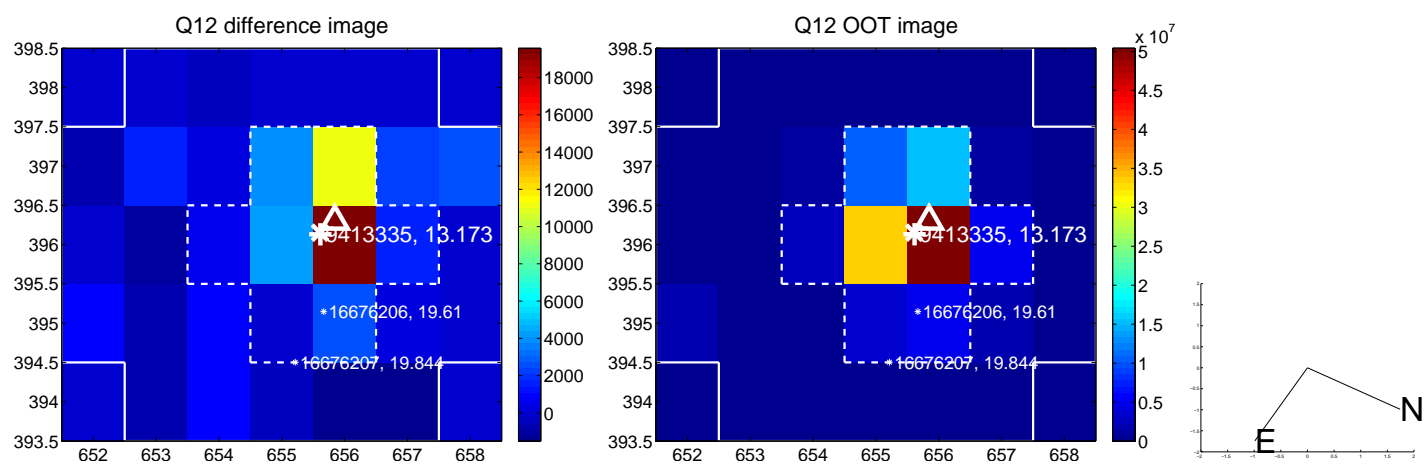
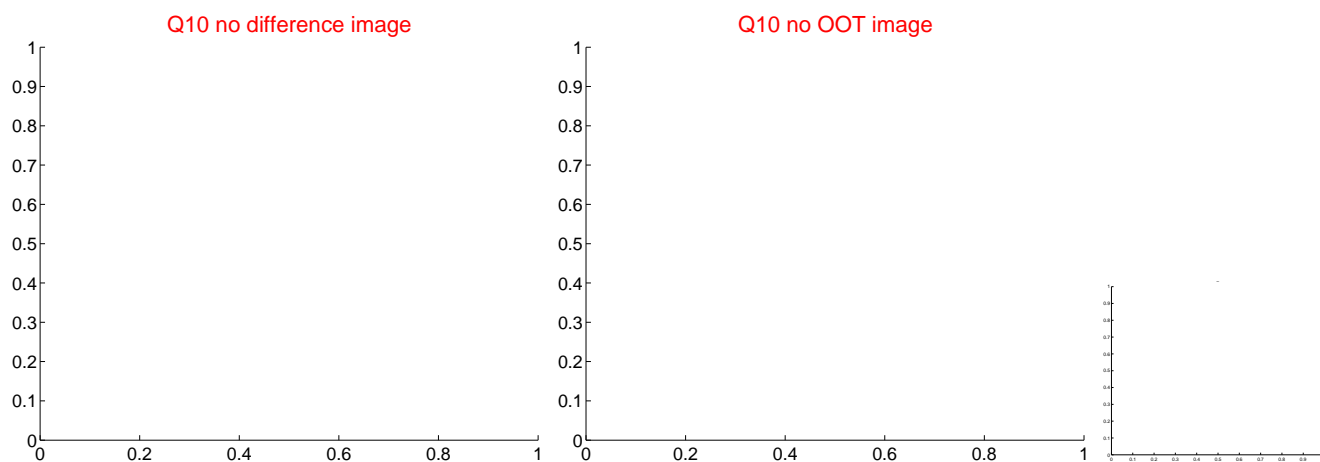
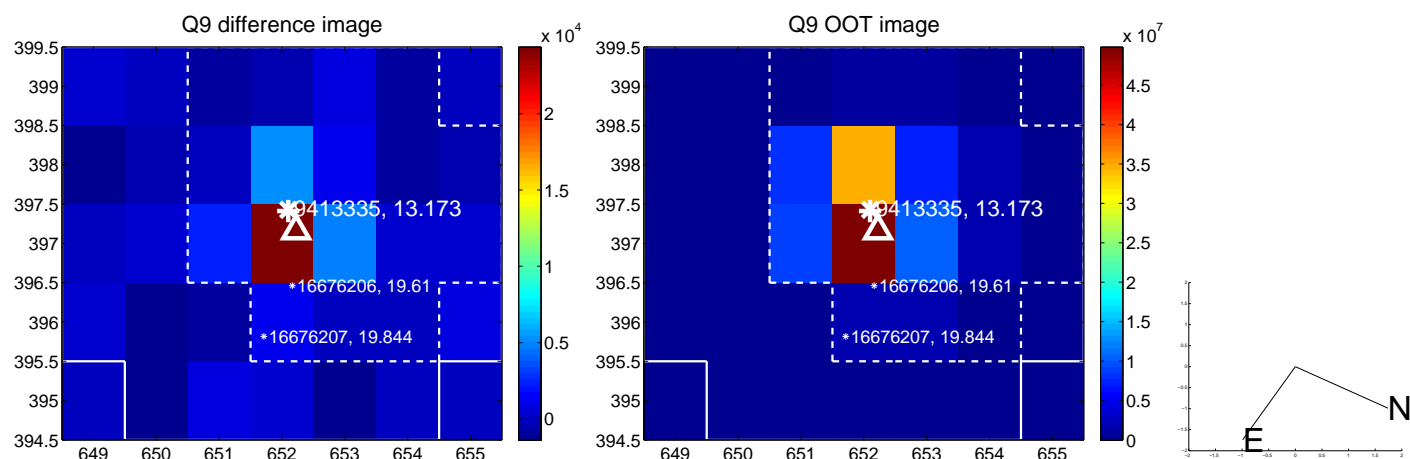
Q8 no difference image



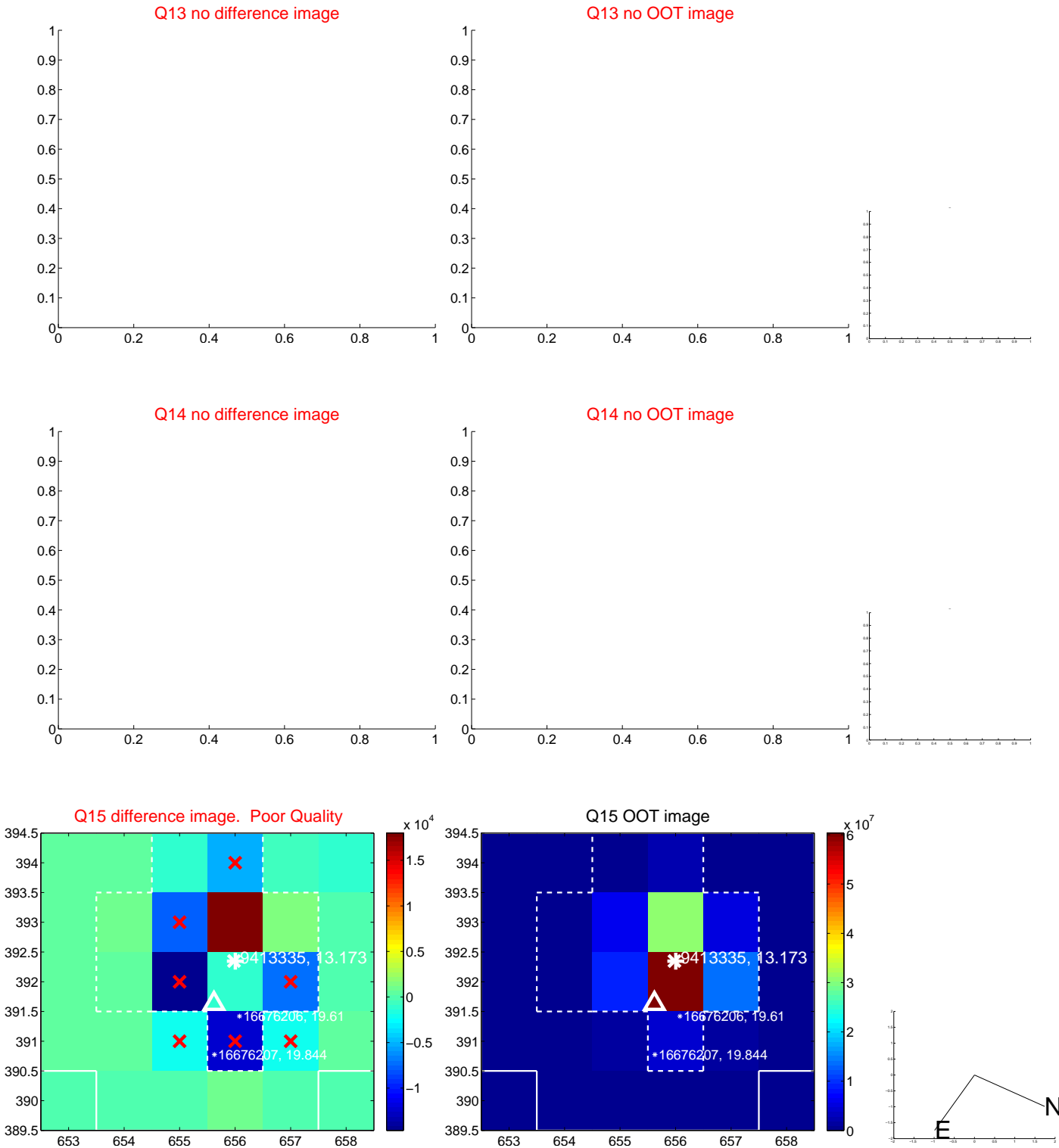
Q8 no OOT image



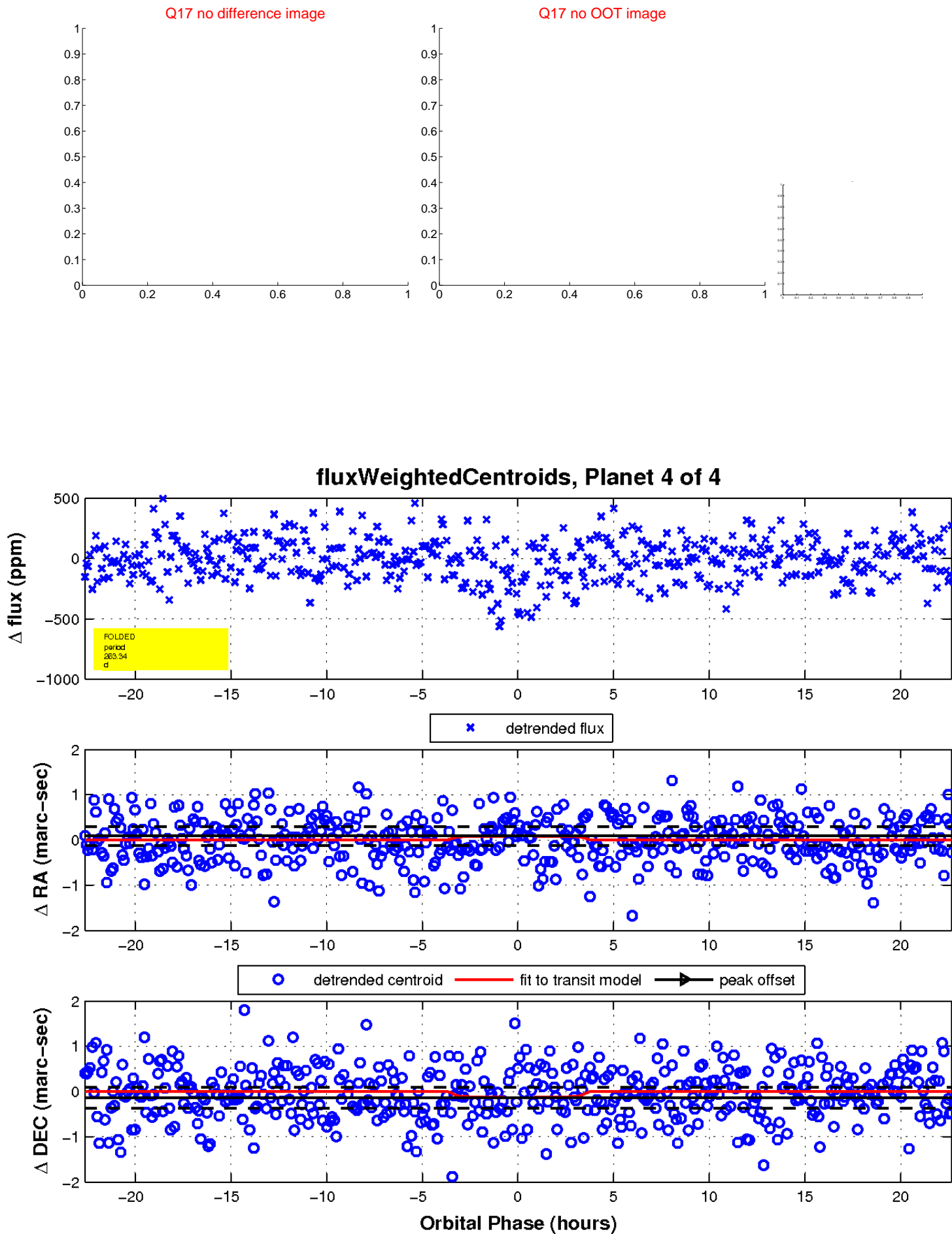
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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

