

KIC 002833709

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})
002833709-01	OBS	No	374.857533	394.729443	650.3	5.215	18.9	31.5	6.16	5000	15.42	23.30
002833709-02	OBS	No	386.597710	367.345066	244.0	8.232	52.0	15.4	6.16	5000	9.86	22.36
002833709-03	OBS	No	386.734442	367.882083	1145.2	3.000	50.2	-1.0	6.16	5000	20.46	22.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002833709-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
002833709-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002833709-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_SATURATED

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

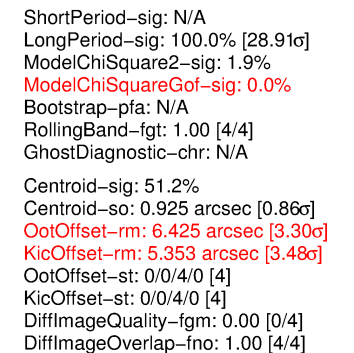
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

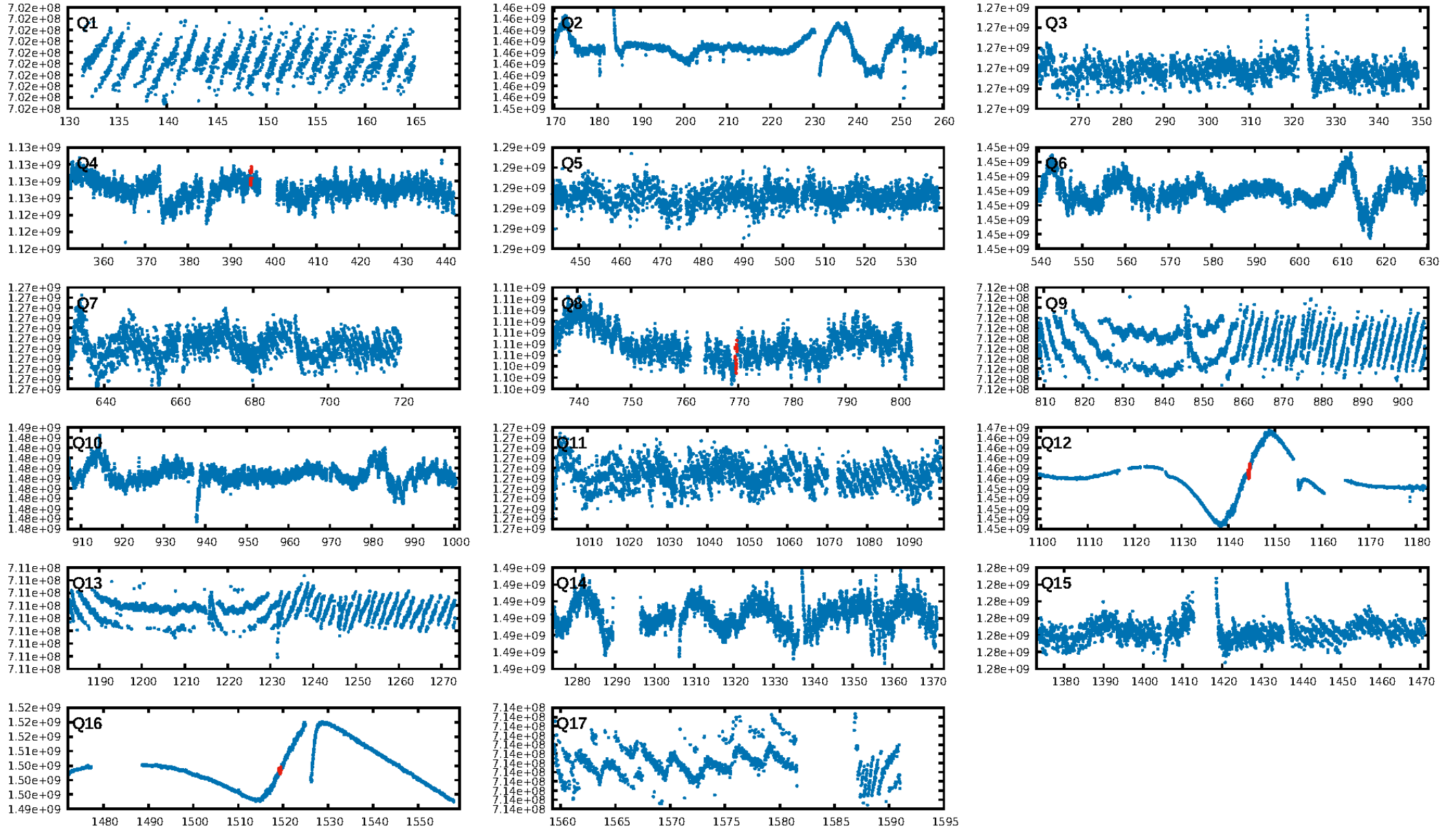
Ephemeris Match Information For 002833709-01

No Significant Match Found

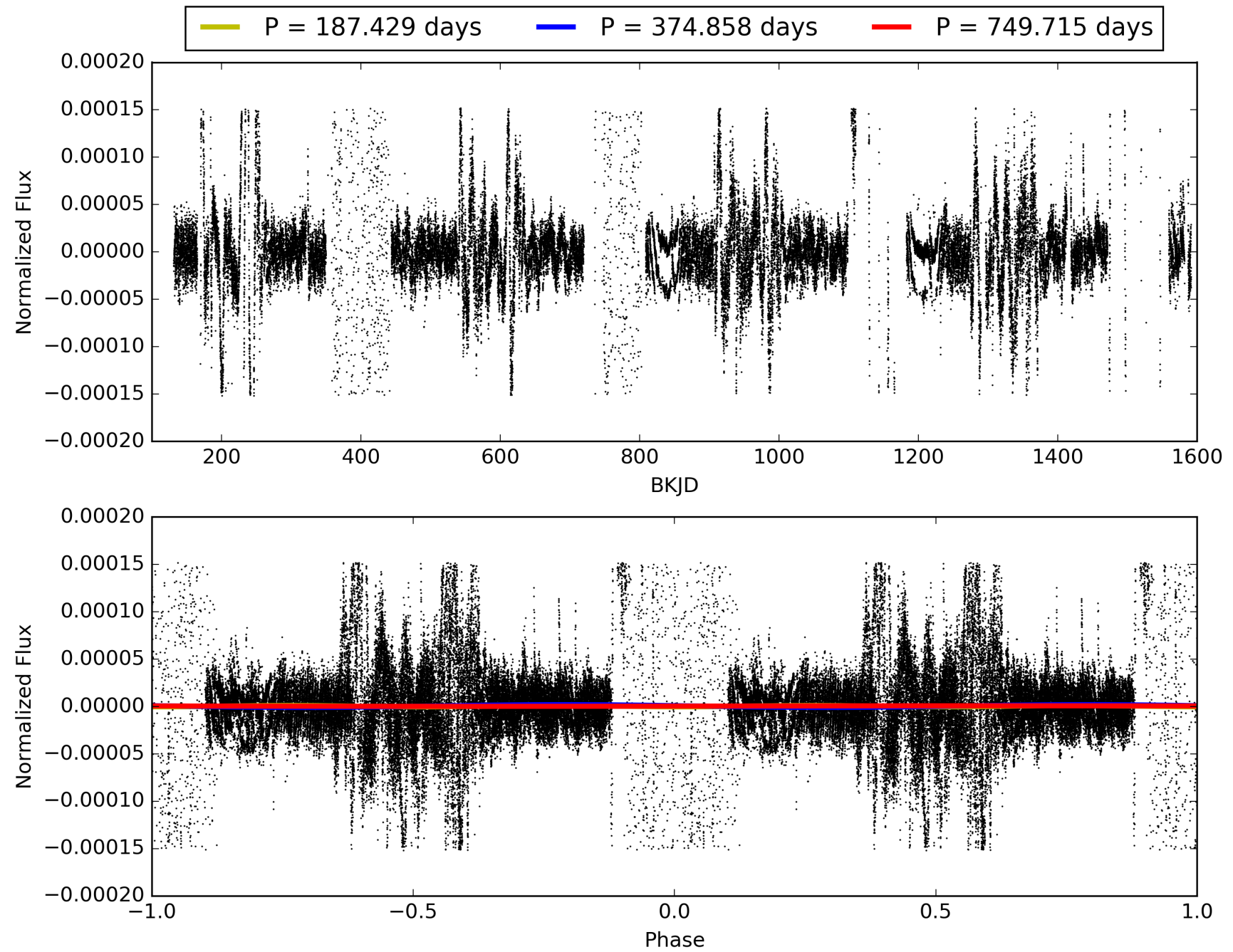
KIC: 2833709 Candidate: 1 of 3 Period: 374.858 d



TCE 002833709-01, PDC Light Curves

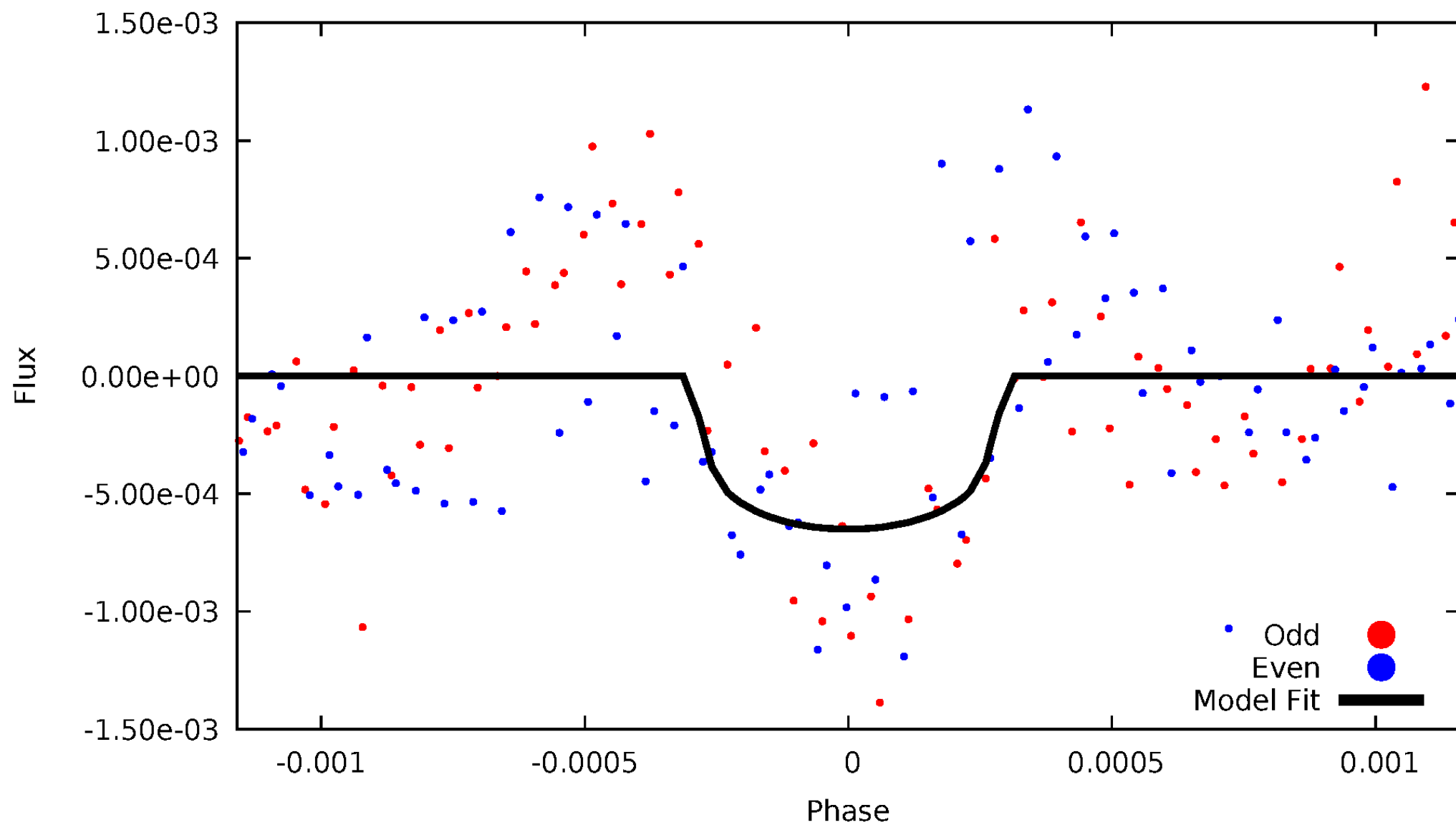


TCE 002833709-01



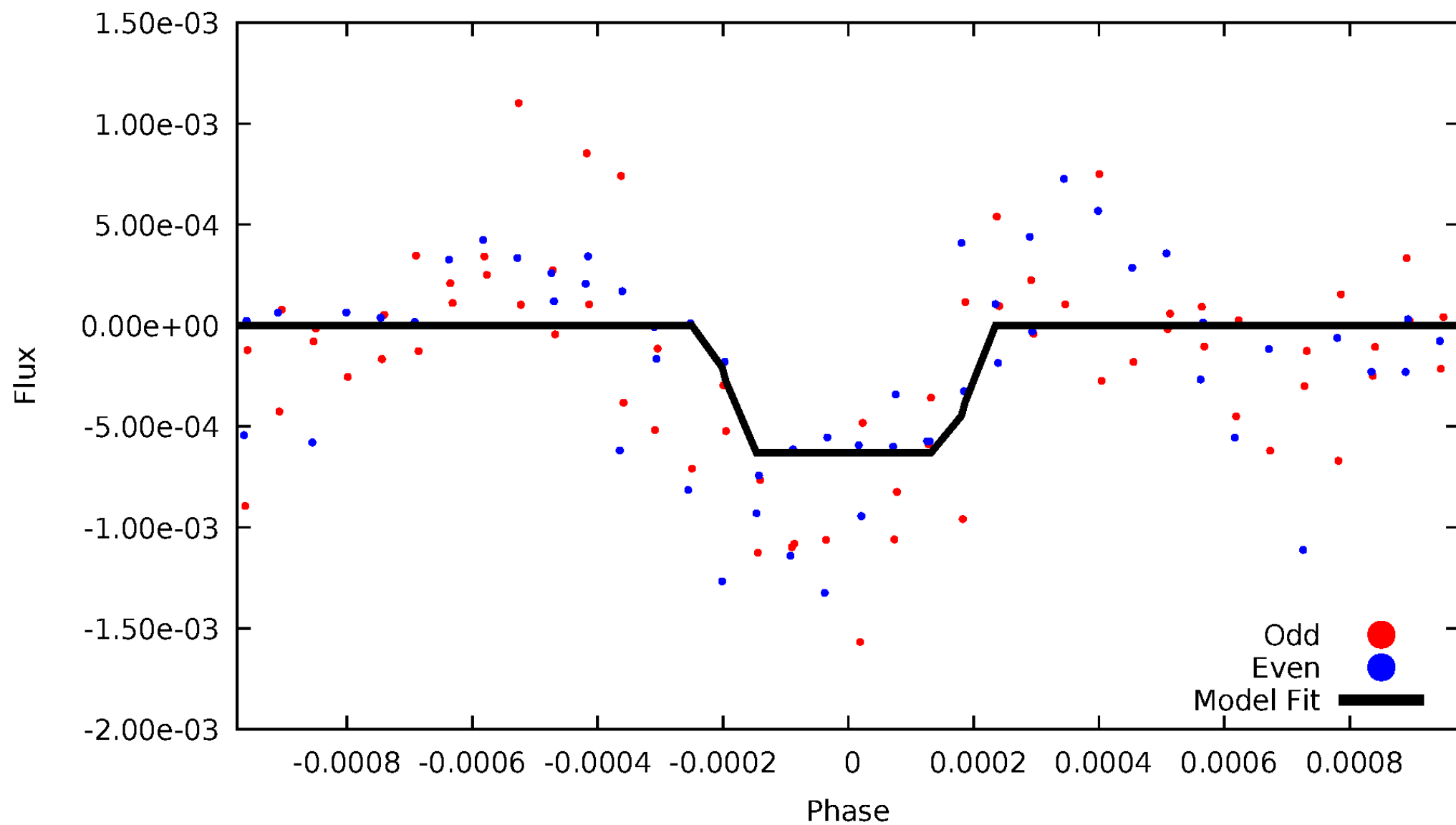
DV Odd/Even

TCE 002833709-01



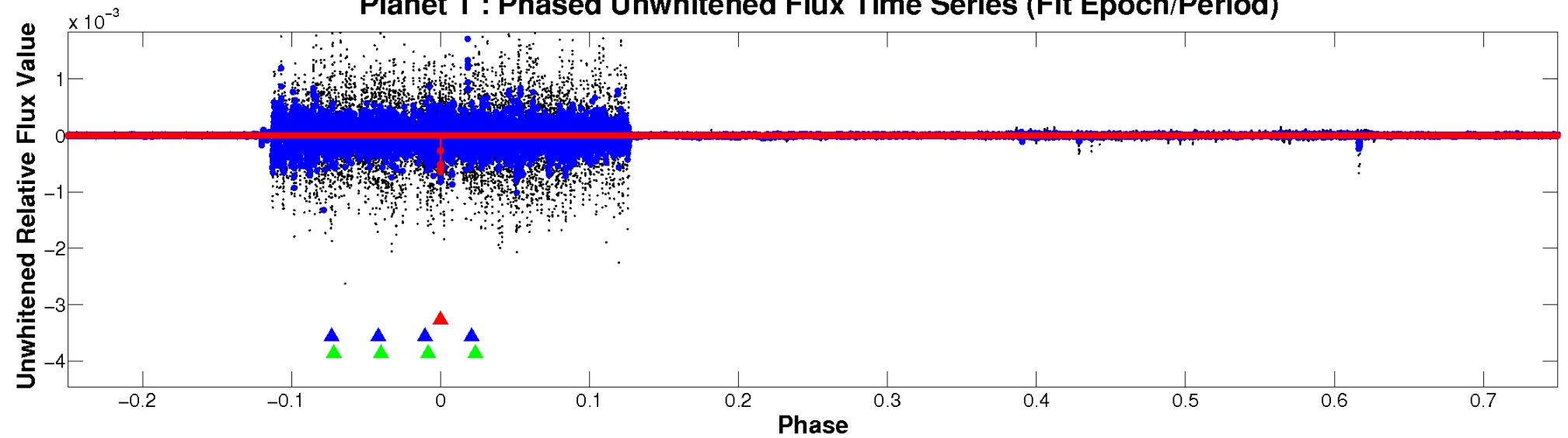
ALT Odd/Even

TCE 002833709-01

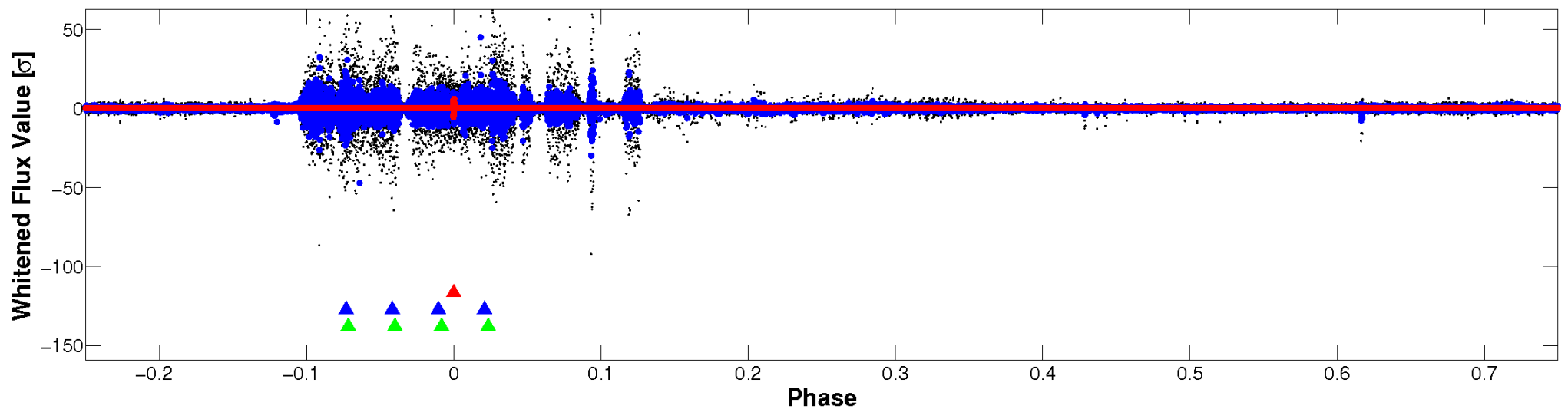


Non-Whitened Vs. Whitened Light Curve

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

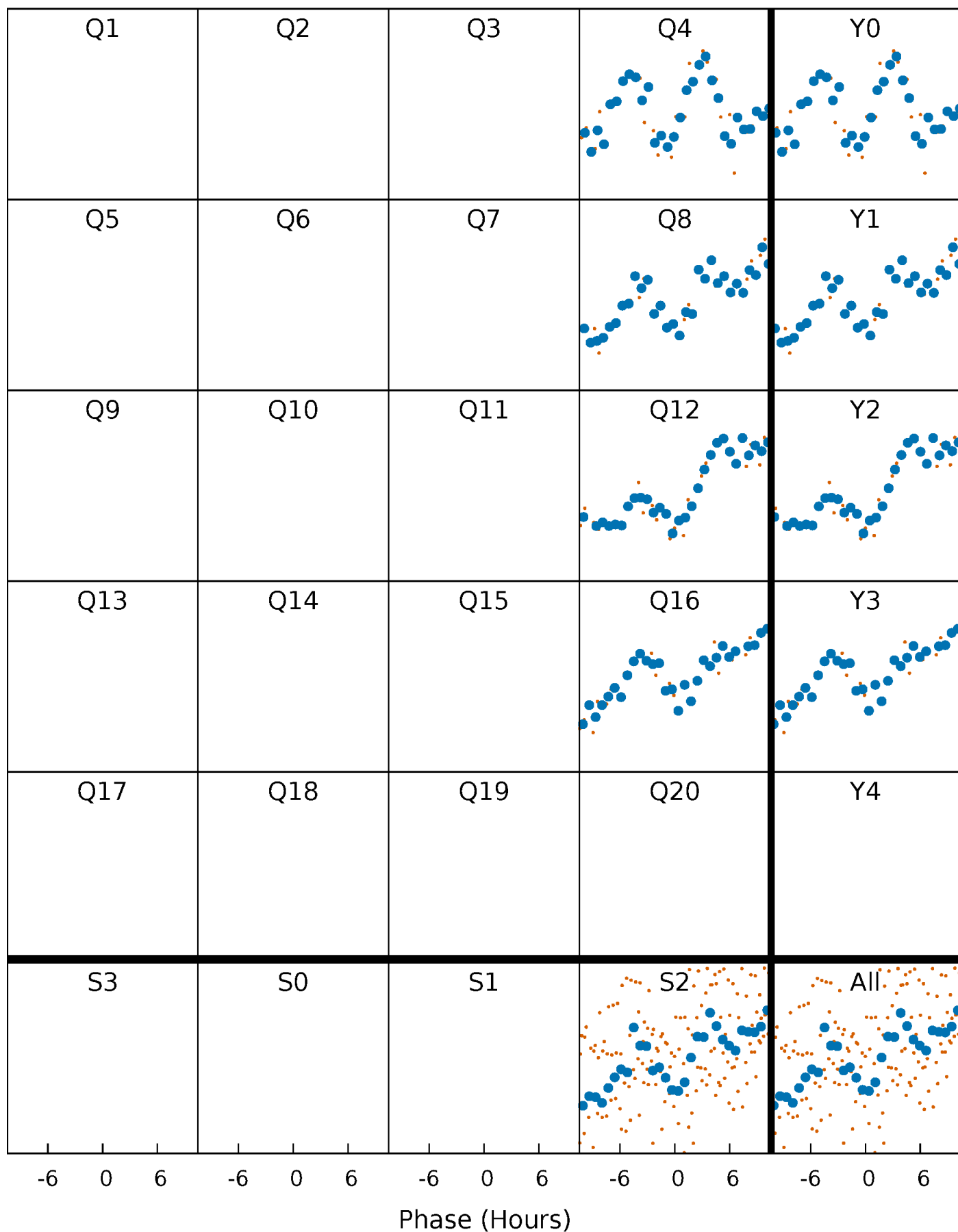


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



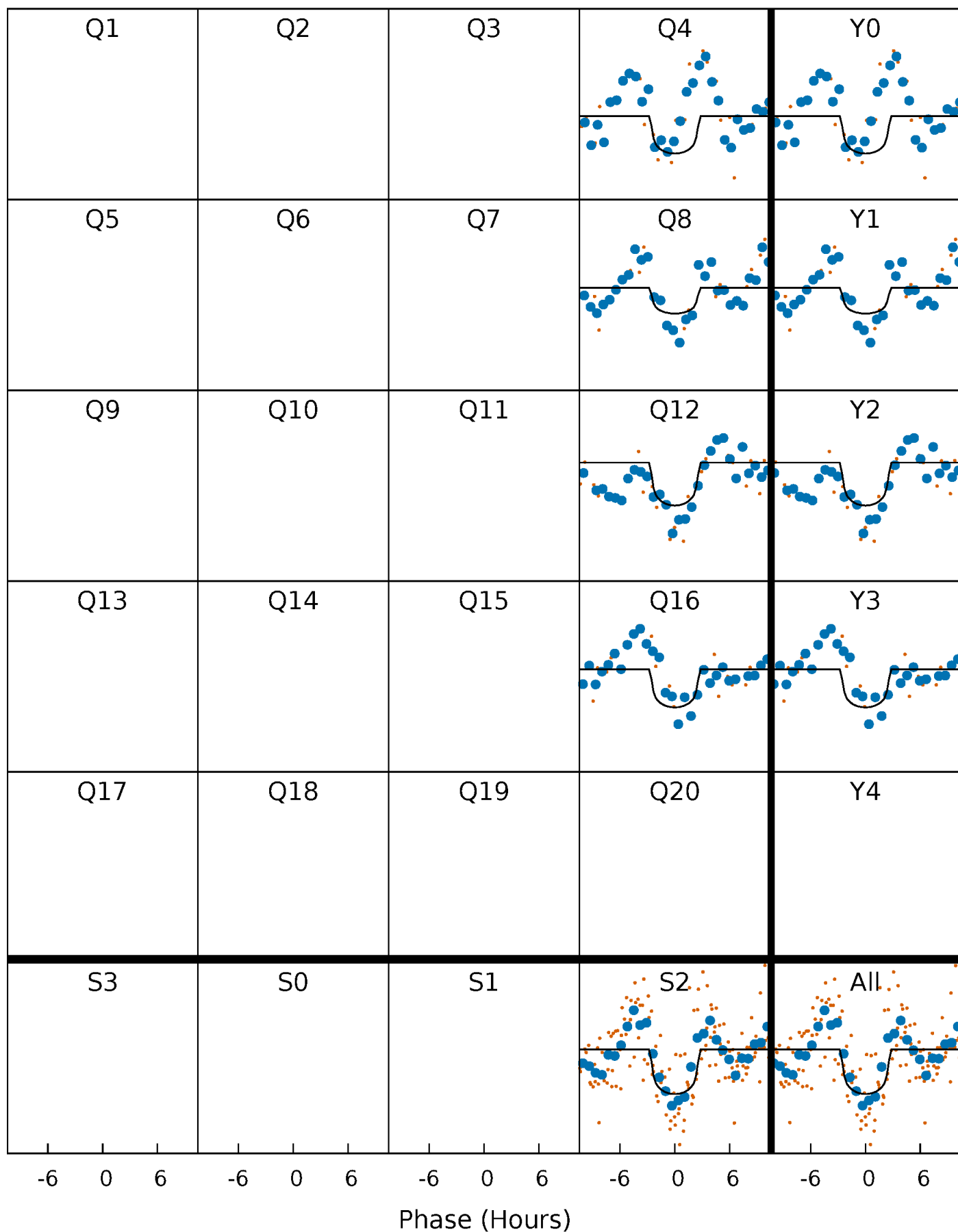
PDC Quarter-Phased Transit Curves

TCE 002833709-01 P=374.857533 Days $T_0=394.729443$ (BKJD)



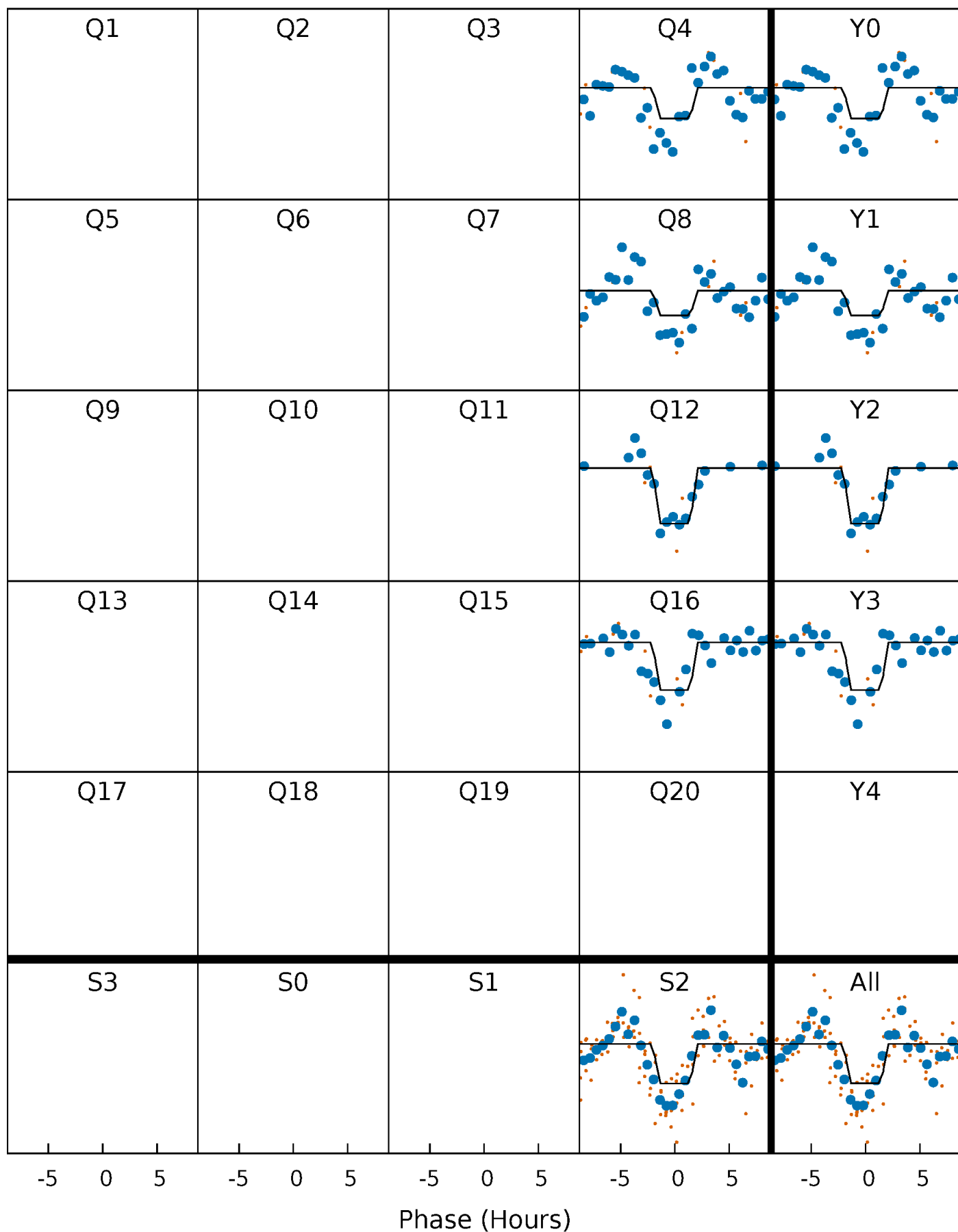
DV Quarter-Phased Transit Curves

TCE 002833709-01 P=374.857533 Days $T_0=394.729443$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

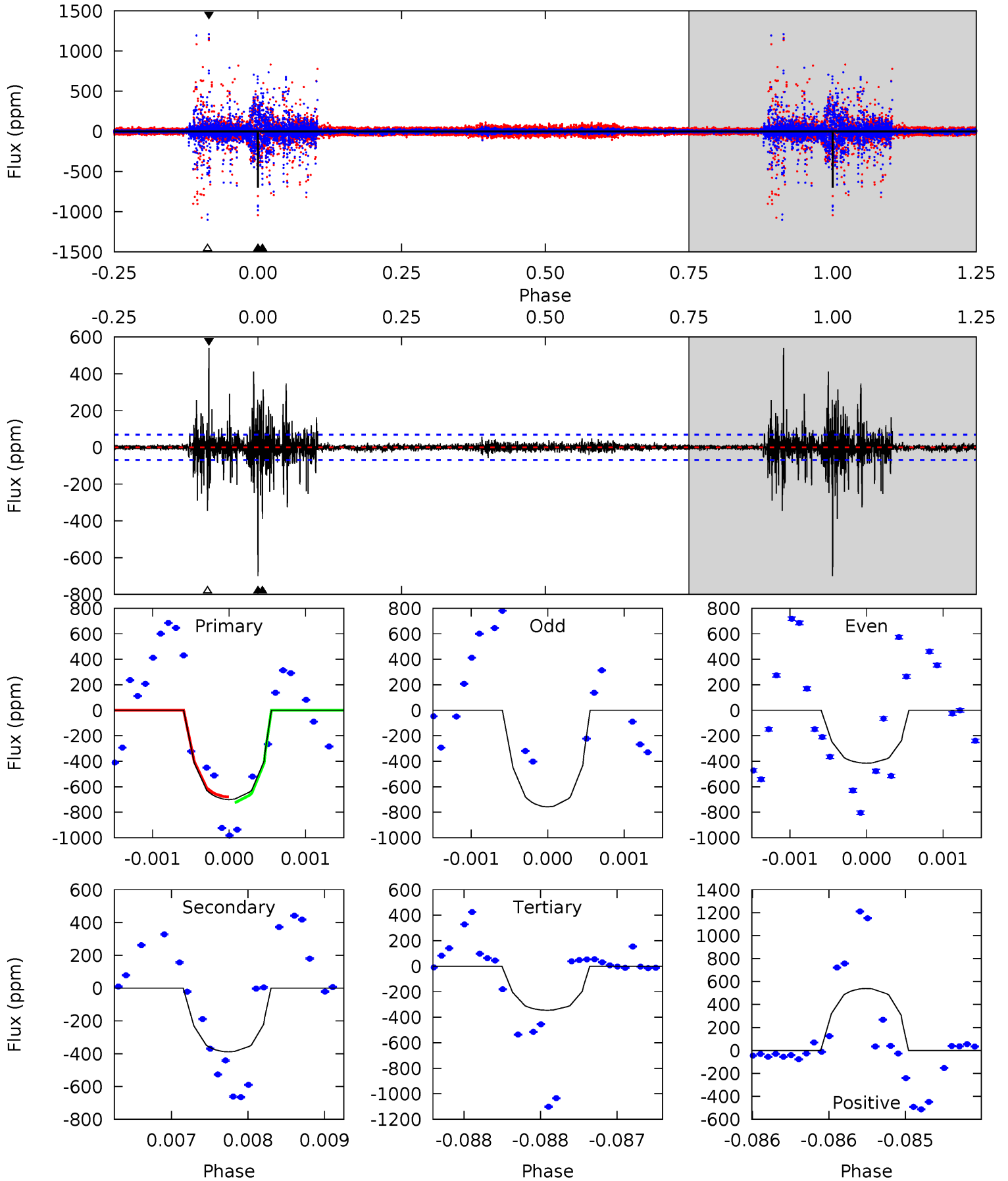
TCE 002833709-01 P=374.874092 Days $T_0=394.728178$ (BKJD)



DV Model-Shift Uniqueness Test

002833709-01, $P = 374.857533$ Days, $E = 19.871910$ Days

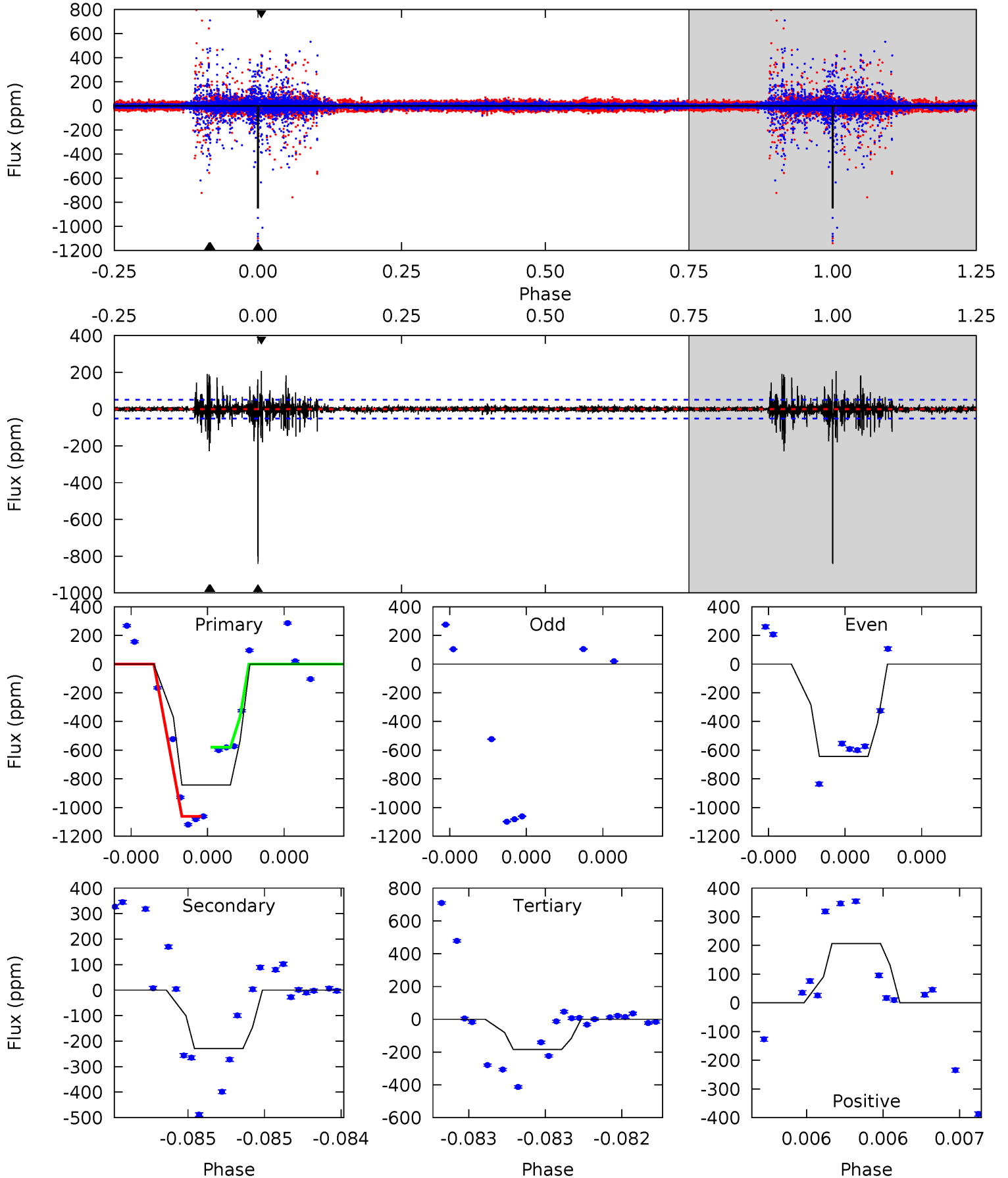
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
56.1	31.2	27.7	43.3	5.55	3.45	2.11	28.5	12.9	3.49	-12.1	6.71	0.91	0.44	1.67



Alt Model-Shift Uniqueness Test

002833709-01, P = 374.874092 Days, E = 19.854086 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
92.3	25.1	20.2	22.7	5.60	3.52	1.43	72.2	69.7	4.91	2.40	0	1.09	0.20	0



Stellar Parameters For KIC 002833709

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5000^{+83}_{-52}	$2.776^{+0.121}_{-0.148}$	$-0.780^{+0.150}_{-0.100}$	$6.161^{+2.238}_{-0.746}$	$0.827^{+0.379}_{-0.020}$	$0.005^{+0.003}_{-0.002}$
	+2%/-1%	+4%/-5%	+19%/-13%	+36%/-12%	+46%/-2%	+52%/-47%
Source	SPE74	SPE74	SPE74	DSEP		

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

Secondary Eclipse Parameters for KIC 002833709-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-389 ± 12	$37.27^{+43.20}_{-25.86}$	784^{+49}_{-33}	3474^{+1933}_{-656}	147^{+1409}_{-115}
Alt.	-229 ± 9	$40.81^{+42.66}_{-27.74}$	782^{+54}_{-32}	3124^{+1433}_{-526}	74^{+634}_{-56}

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 $A_{obs} \gg 1.0$

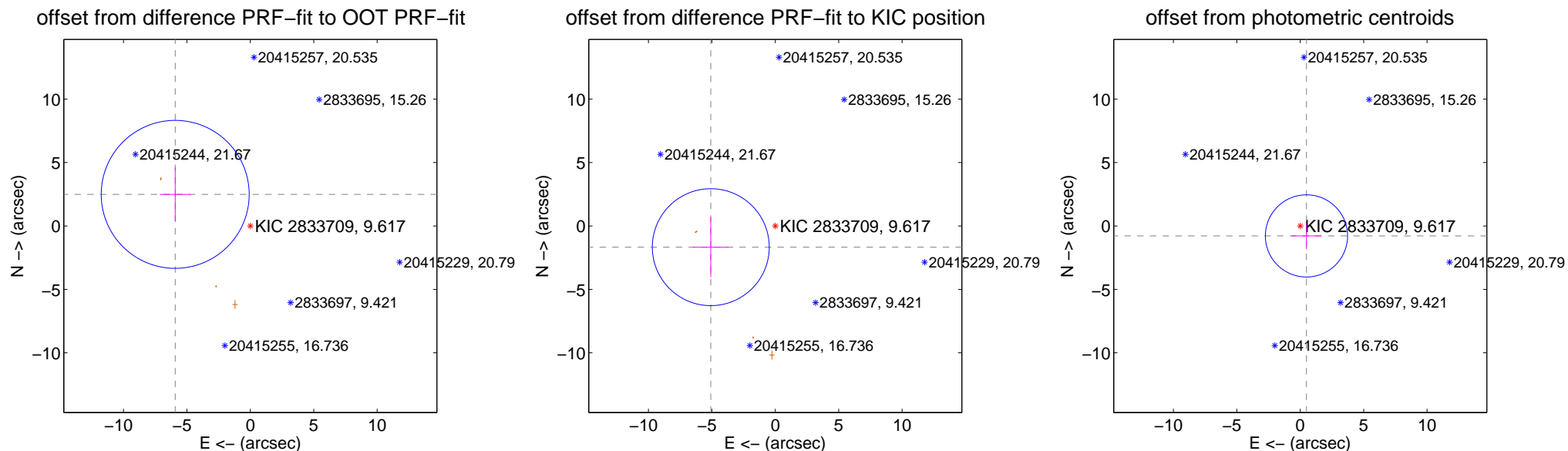
DV Centroid Data

Supplemental centroid analysis for 002833709-01. **Kepler magnitude: 9.62.** Transit SNR 31.46

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 4.27 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.425 ± 1.944	3.30	5.922 ± 1.214	2.492 ± 2.133
PRF-fit source offset from KIC position	5.353 ± 1.537	3.48	5.085 ± 1.420	-1.672 ± 2.355
photometric centroid source offset	0.93 ± 1.08	0.86	-0.49 ± 1.18	-0.78 ± 1.04



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



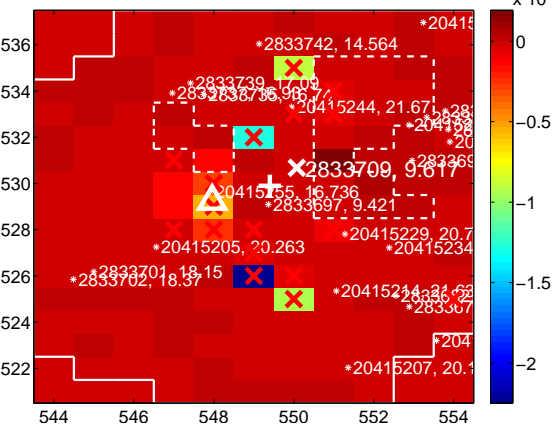
Q3 no difference image



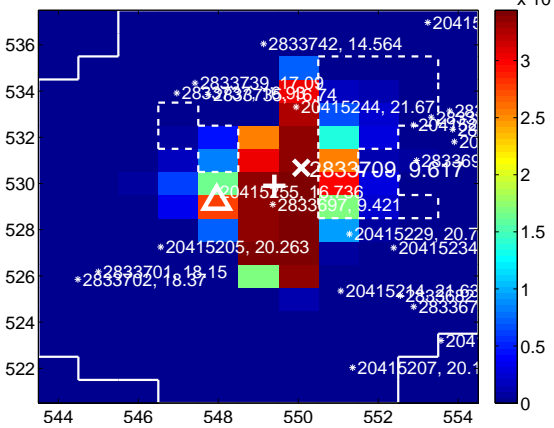
Q3 no OOT image



Q4 difference image. Poor Quality



Q4 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 no difference image



Q6 no OOT image



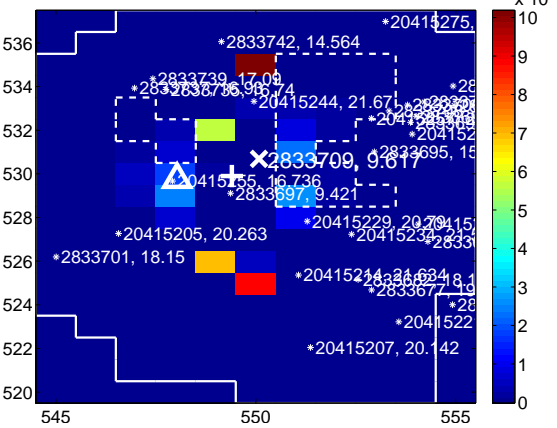
Q7 no difference image



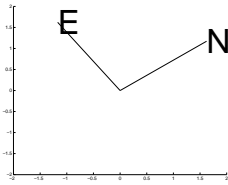
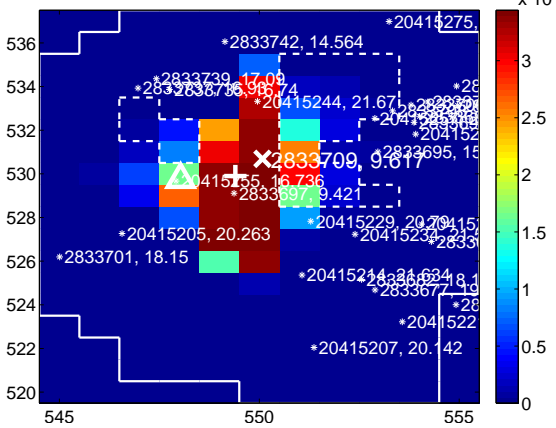
Q7 no OOT image



Q8 difference image. Poor Quality



Q8 OOT image



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

Q9 no difference image



Q9 no OOT image



Q10 no difference image



Q10 no OOT image



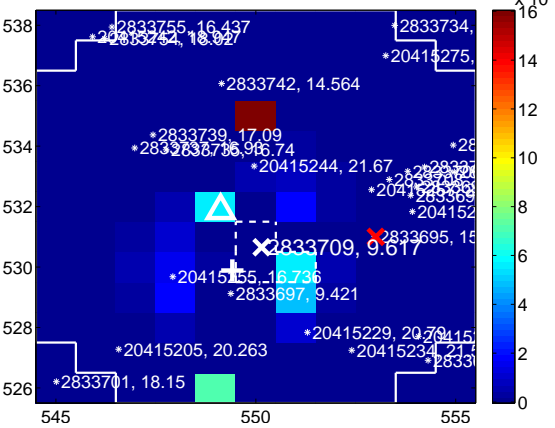
Q11 no difference image



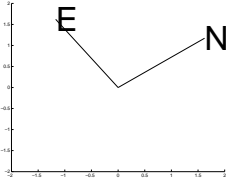
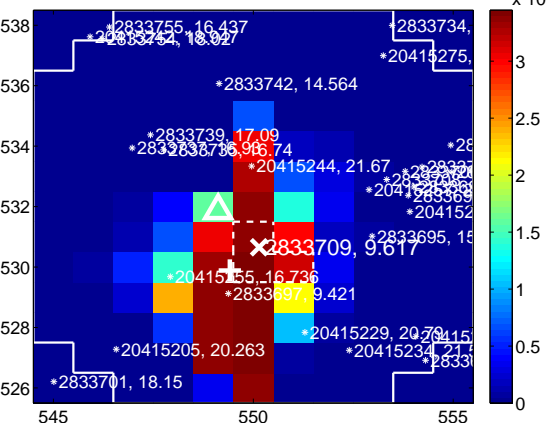
Q11 no OOT image



Q12 difference image. Poor Quality

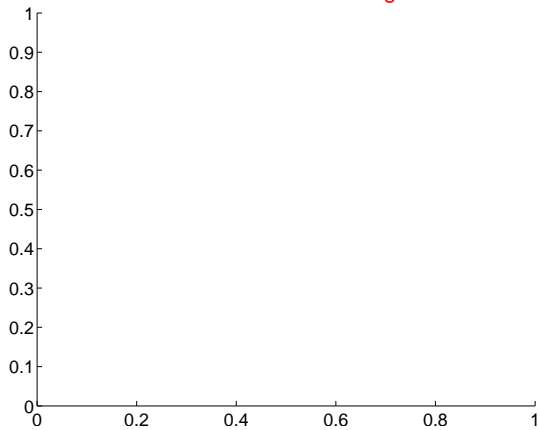


Q12 OOT image

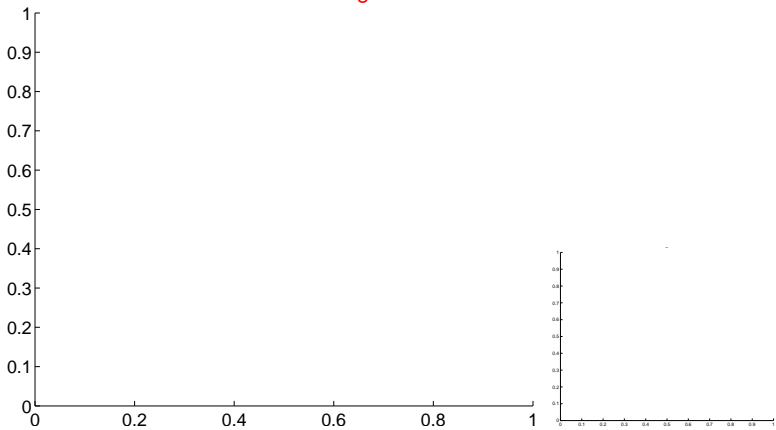


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

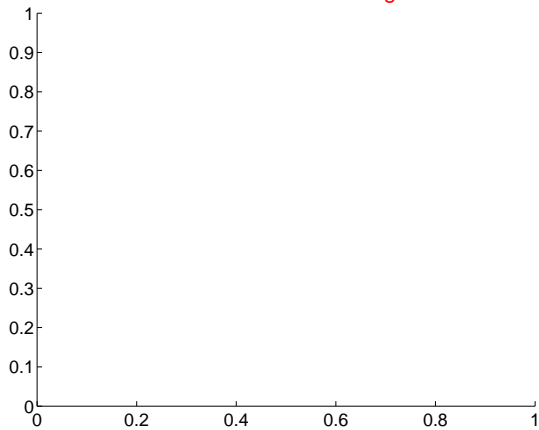
Q13 no difference image



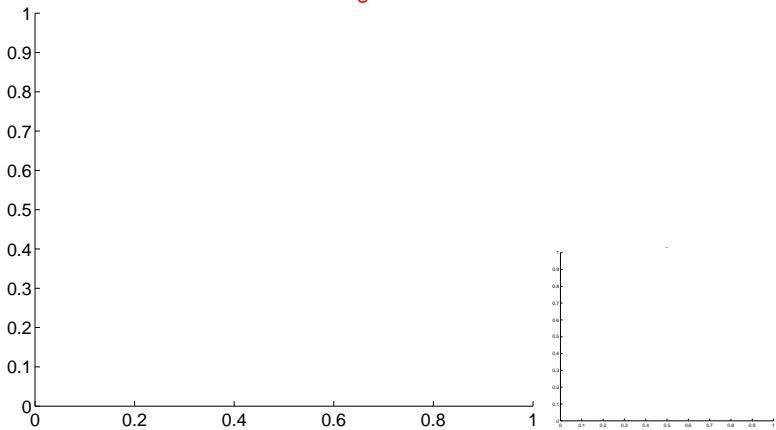
Q13 no OOT image



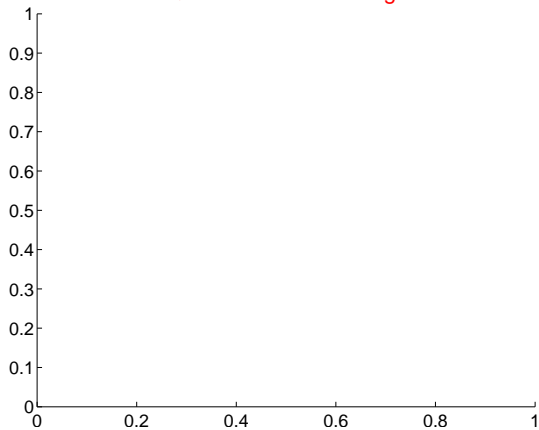
Q14 no difference image



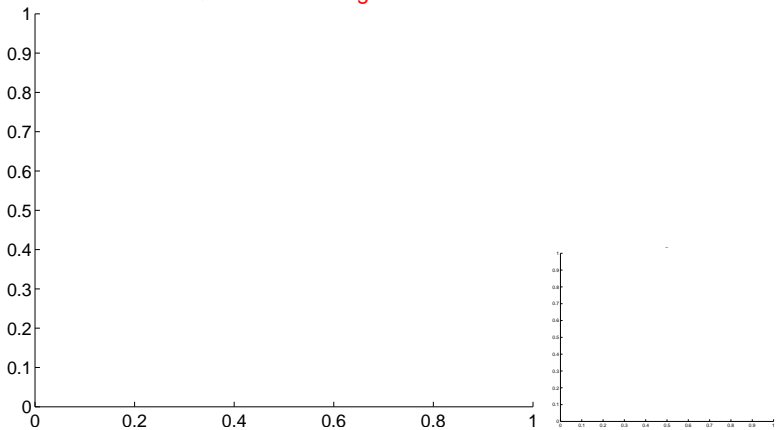
Q14 no OOT image



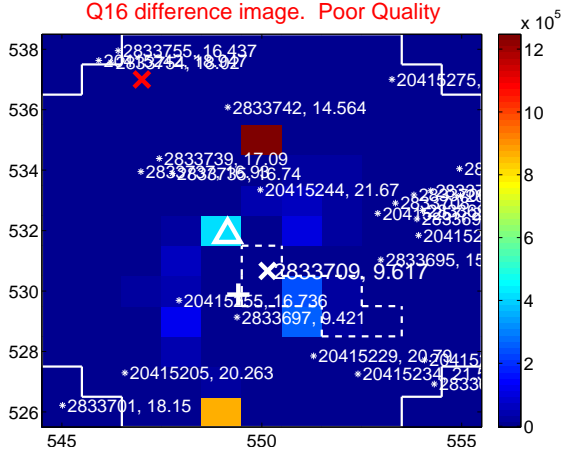
Q15 no difference image



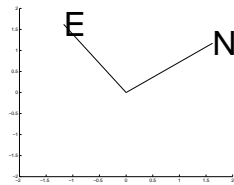
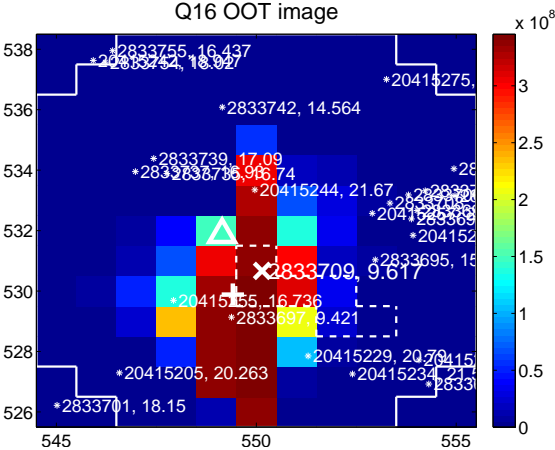
Q15 no OOT image



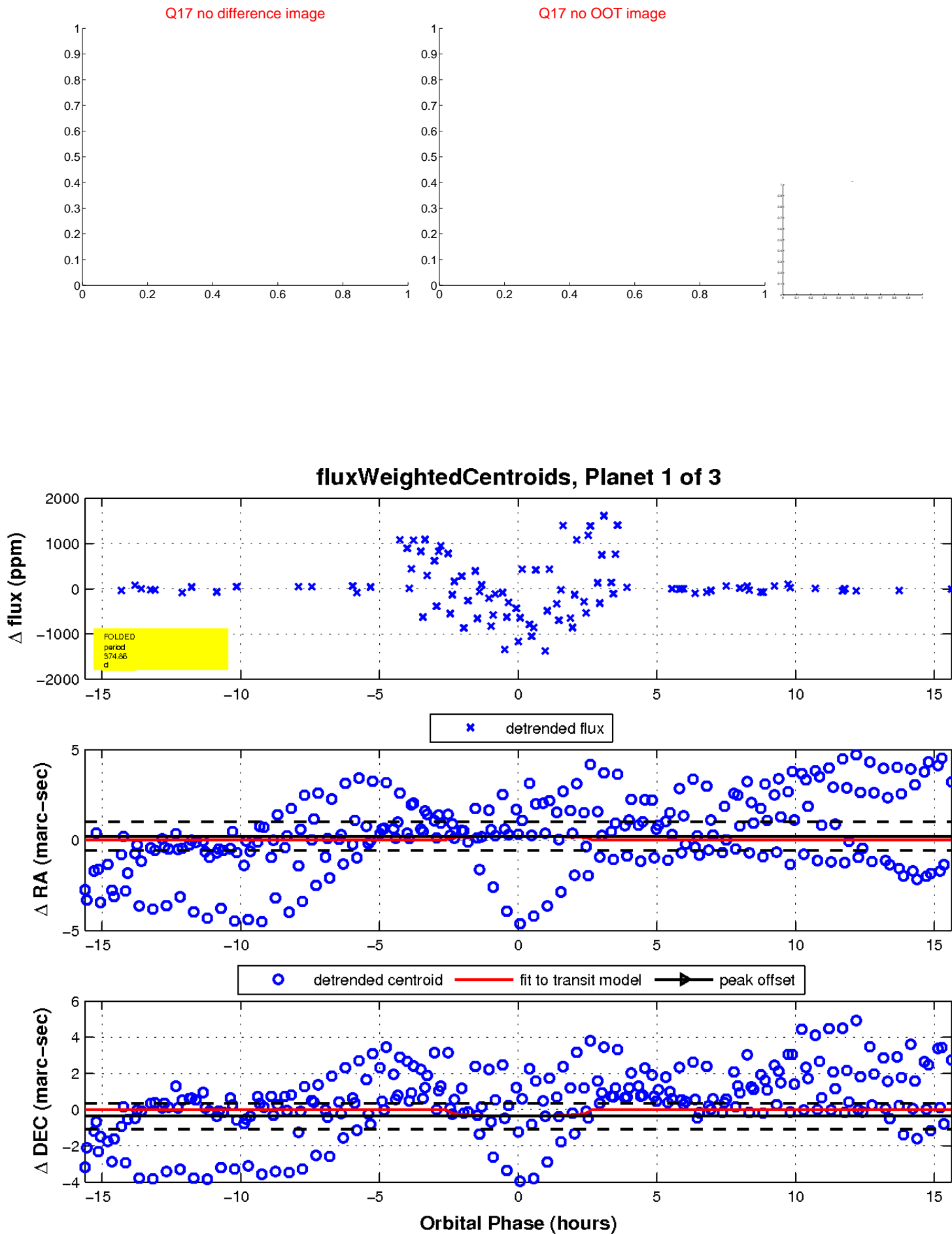
Q16 difference image. Poor Quality



Q16 OOT image

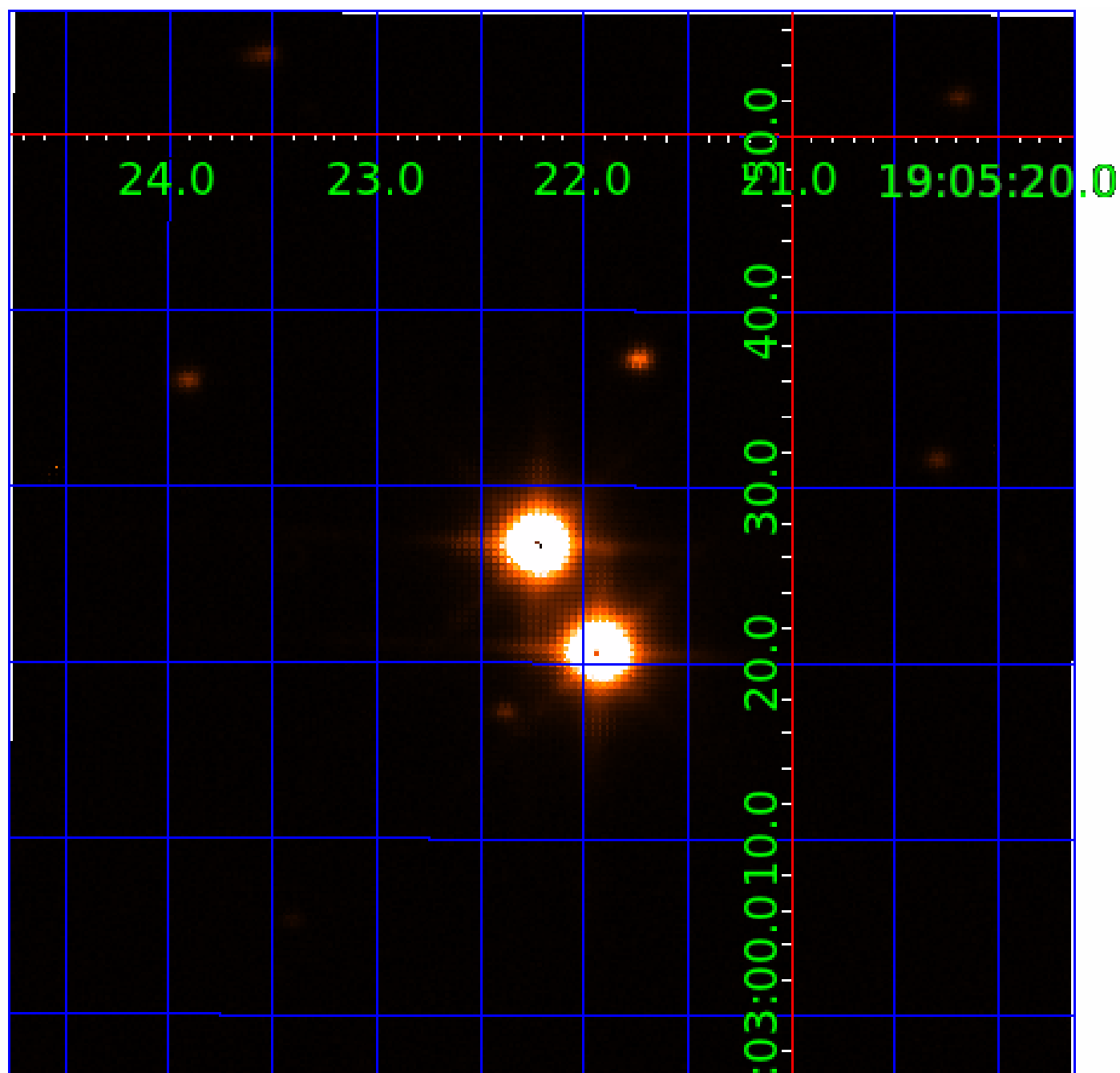


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002833709

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})
002833709-01	OBS	No	374.857533	394.729443	650.3	5.215	18.9	31.5	6.16	5000	15.42	23.30
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002833709-03	OBS	No	386.734442	367.882083	1145.2	3.000	50.2	-1.0	6.16	5000	20.46	22.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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002833709-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002833709-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_SATURATED

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

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

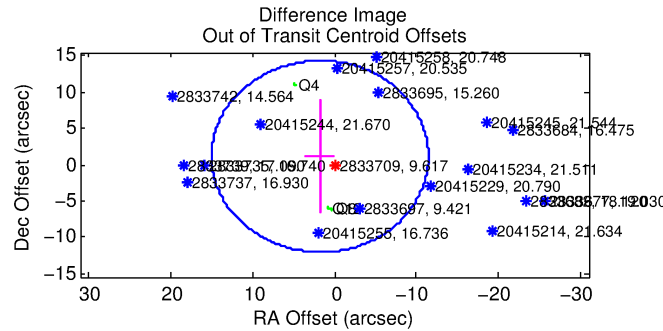
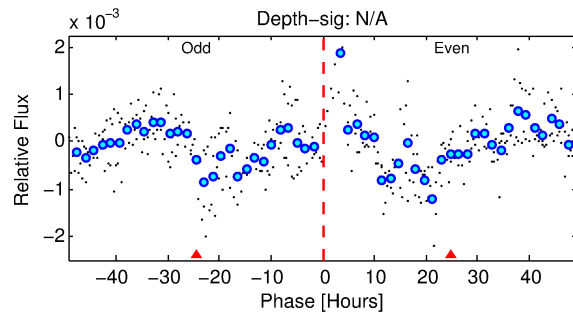
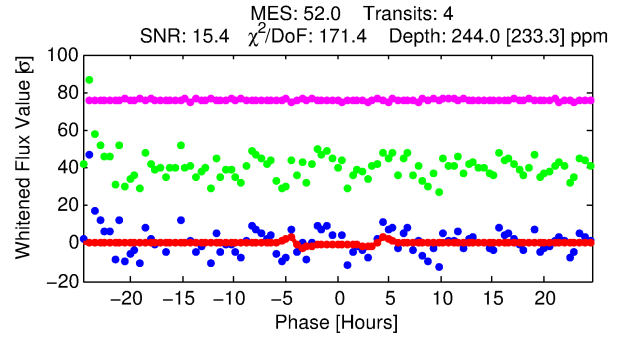
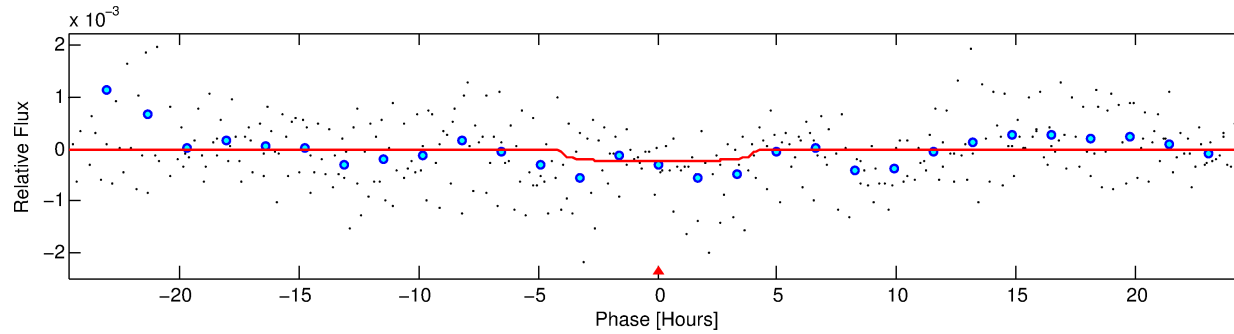
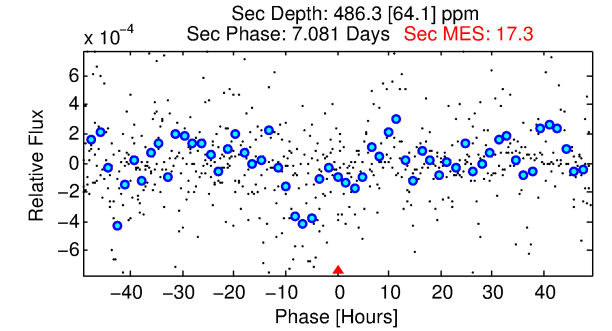
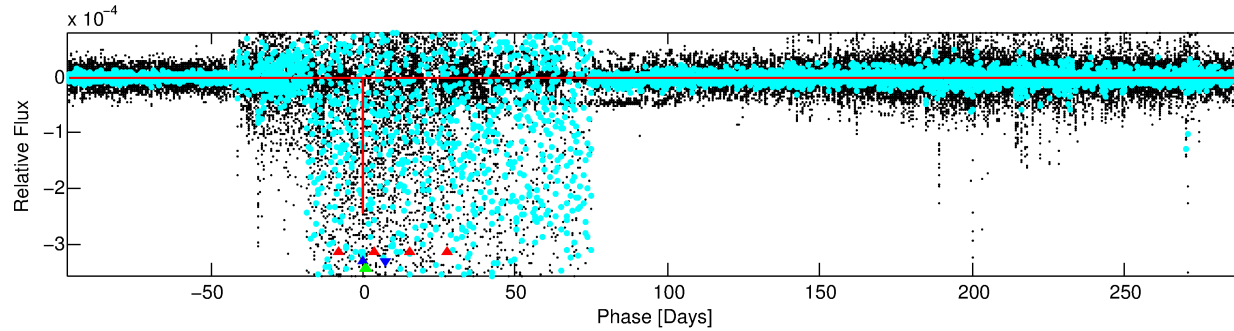
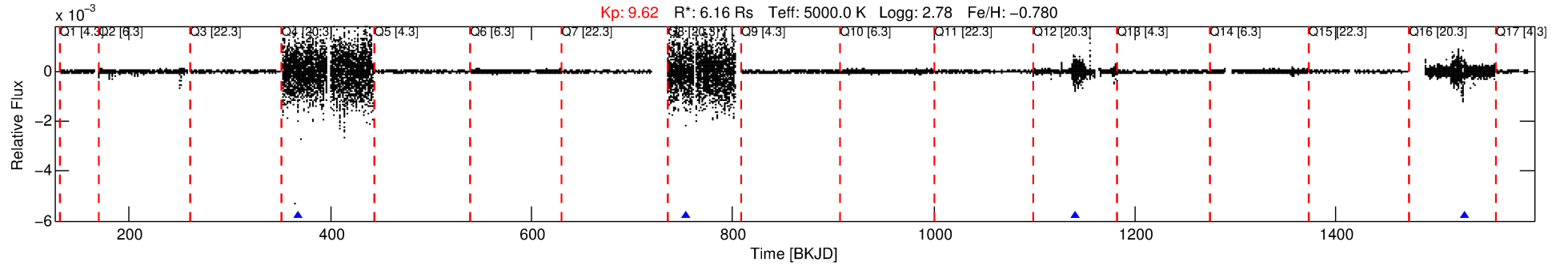
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002833709-02

No Significant Match Found

DV One-Page Summary

KIC: 2833709 Candidate: 2 of 3 Period: 386.598 d



DV Fit Results:

Period = 386.59771 [0.01920] d
Epoch = 367.3451 [0.0293] BKJD
Rp/R* = 0.0147 [0.0382]
a/R* = 306.88 [3192.42]
b = 0.55 [13.49]
Seff = 22.36 [7.57]
Teq = 555 [47] K
Rp = 9.86 [25.91] Re
a = 0.9749 [0.2608] AU
Ag = 2617.76 [13664.24] [0.19σ]
Teffp = 6132 [7987] K [0.70σ]

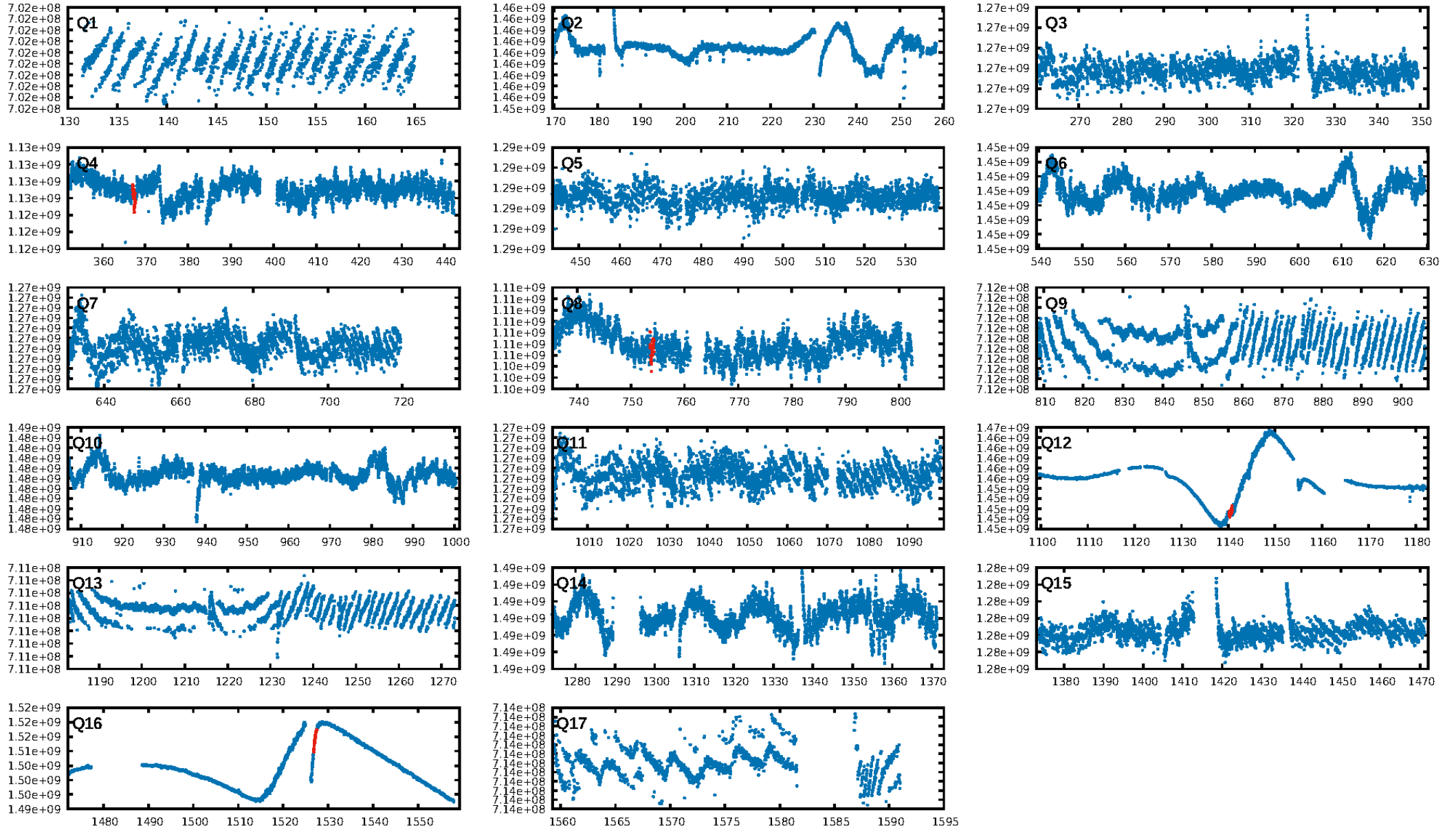
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [28.91σ]
LongPeriod-sig: 29.2% [0.37σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: N/A
Centroid-sig: 15.7%
Centroid-so: 4.235 arcsec [1.31σ]
OotOffset-rm: 2.106 arcsec [0.48σ]
OotOffset-st: 0/0/3/0 [3]
KicOffset-rm: 2.830 arcsec [0.38σ]
KicOffset-st: 0/0/3/0 [3]
DiffImageQuality-fgm: 0.00 [0/3]
DiffImageOverlap-fno: 0.33 [1/3]

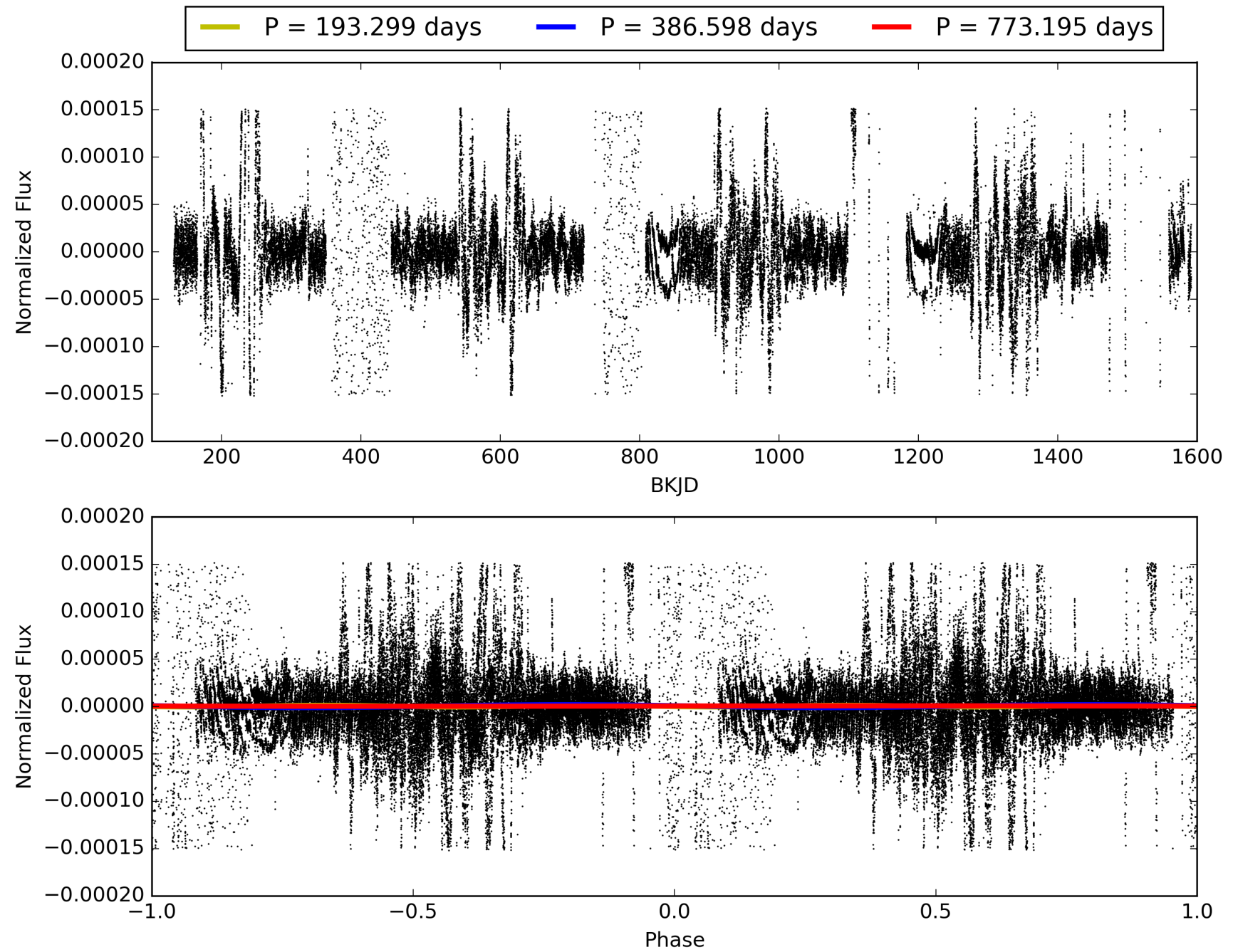
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:40:58 Z

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

TCE 002833709-02, PDC Light Curves

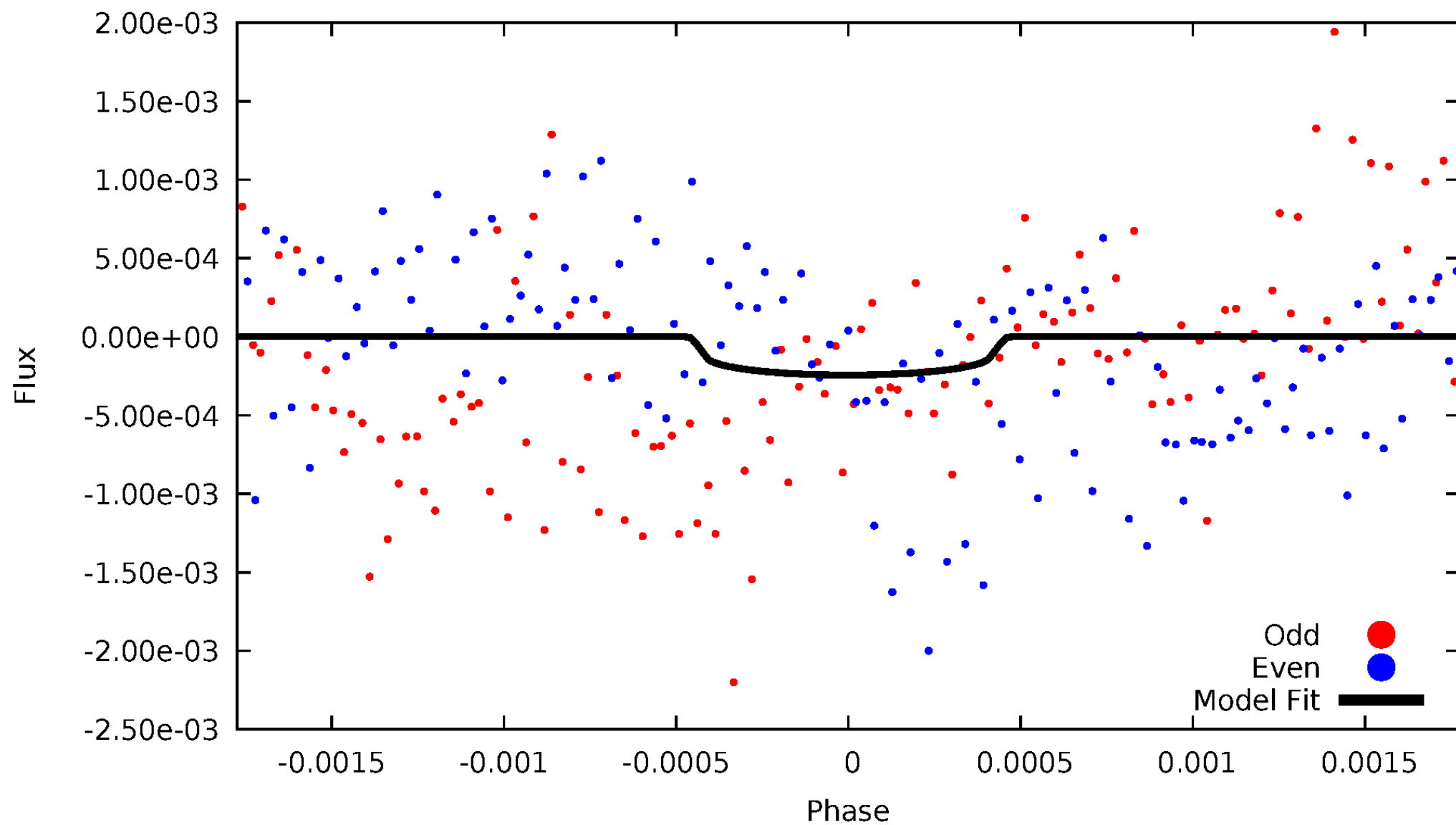


TCE 002833709-02



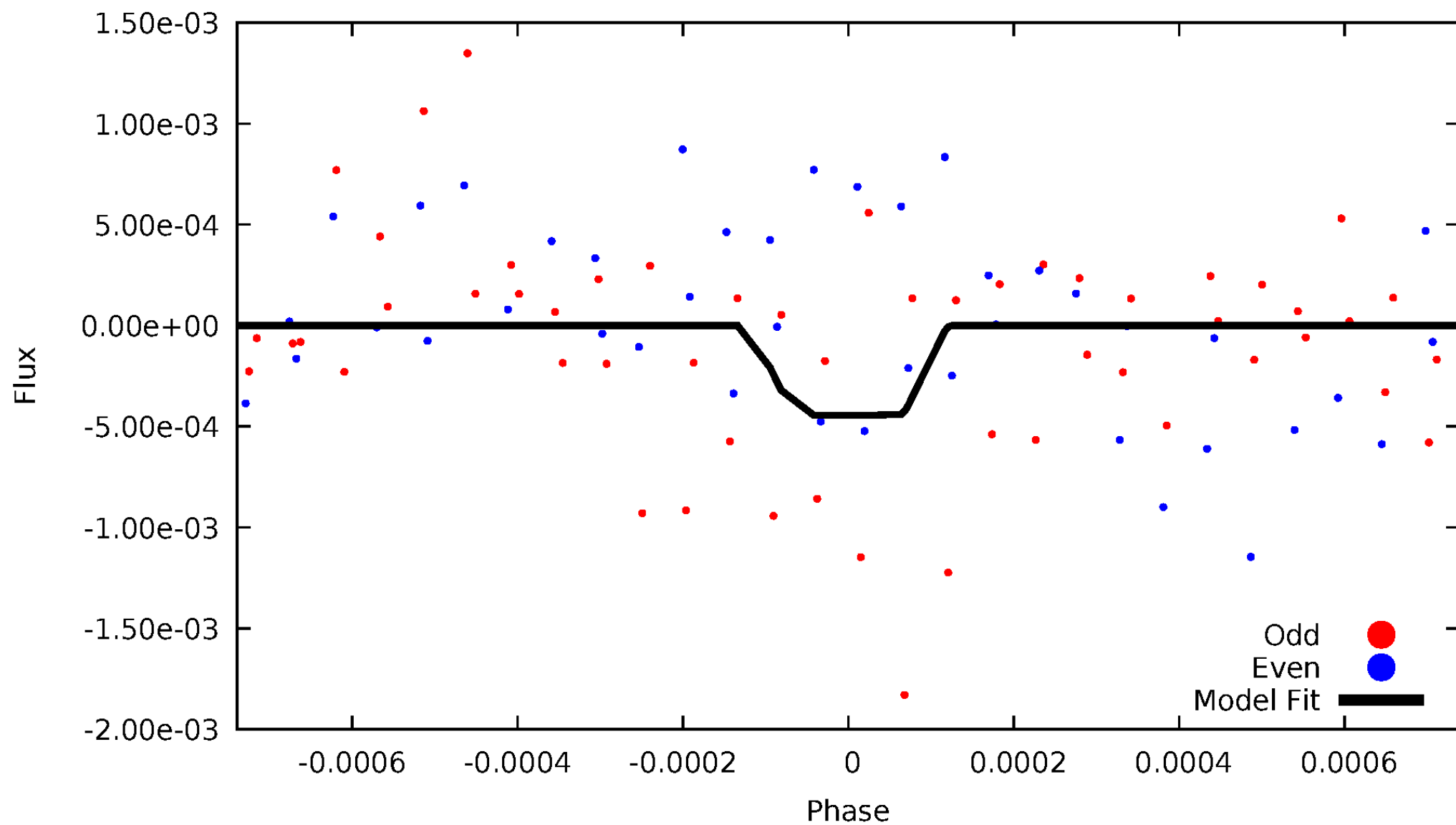
DV Odd/Even

TCE 002833709-02



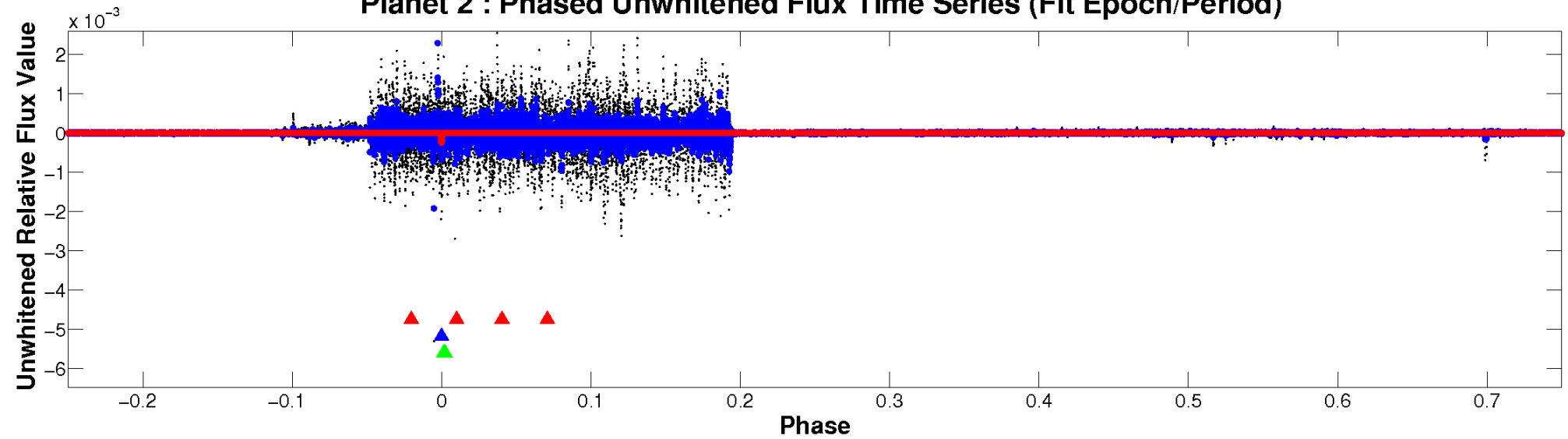
ALT Odd/Even

TCE 002833709-02

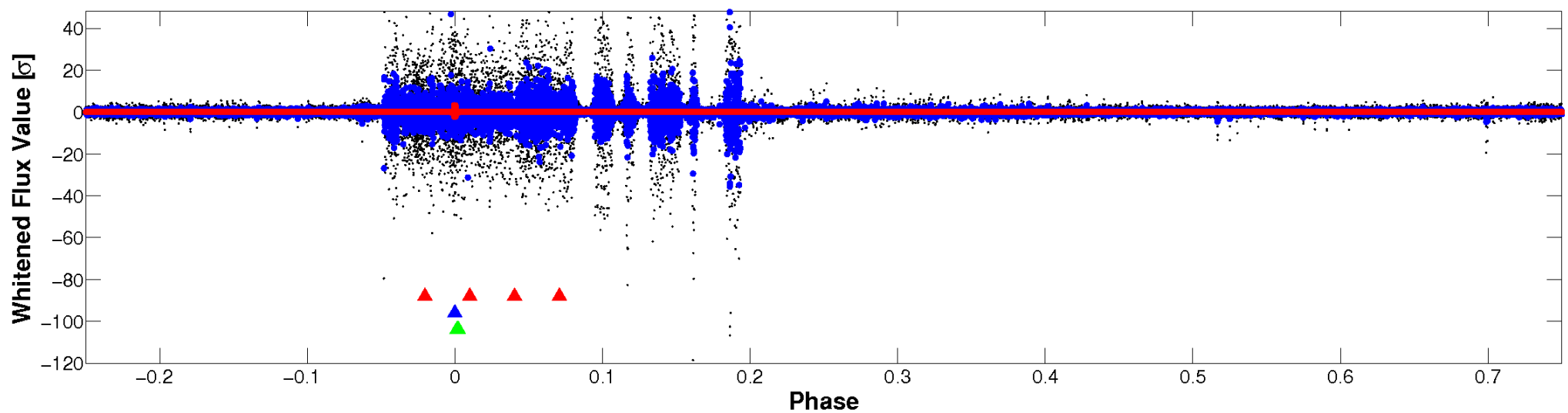


Non-Whitened Vs. Whitened Light Curve

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

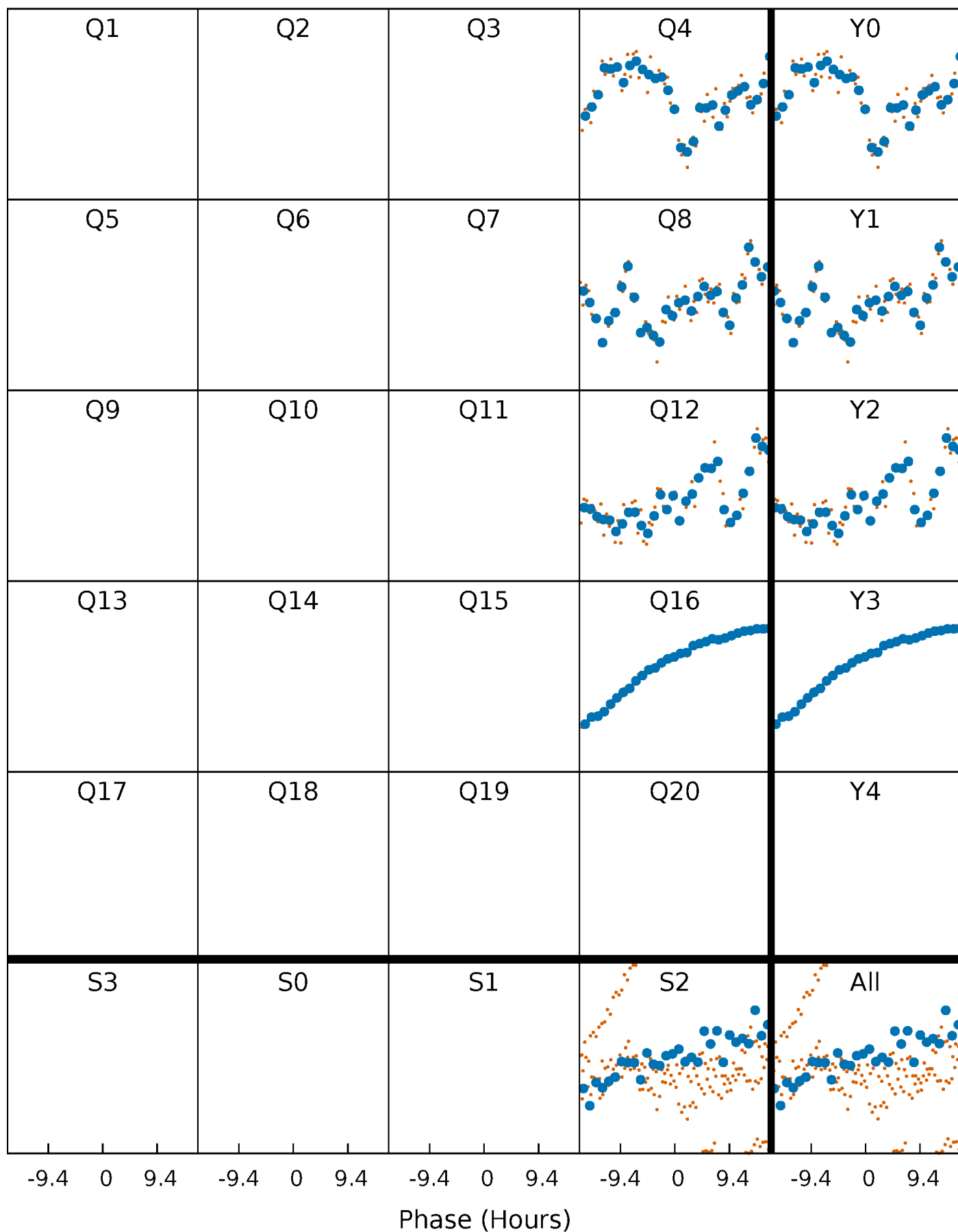


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 002833709-02 P=386.597710 Days $T_0=367.345066$ (BKJD)



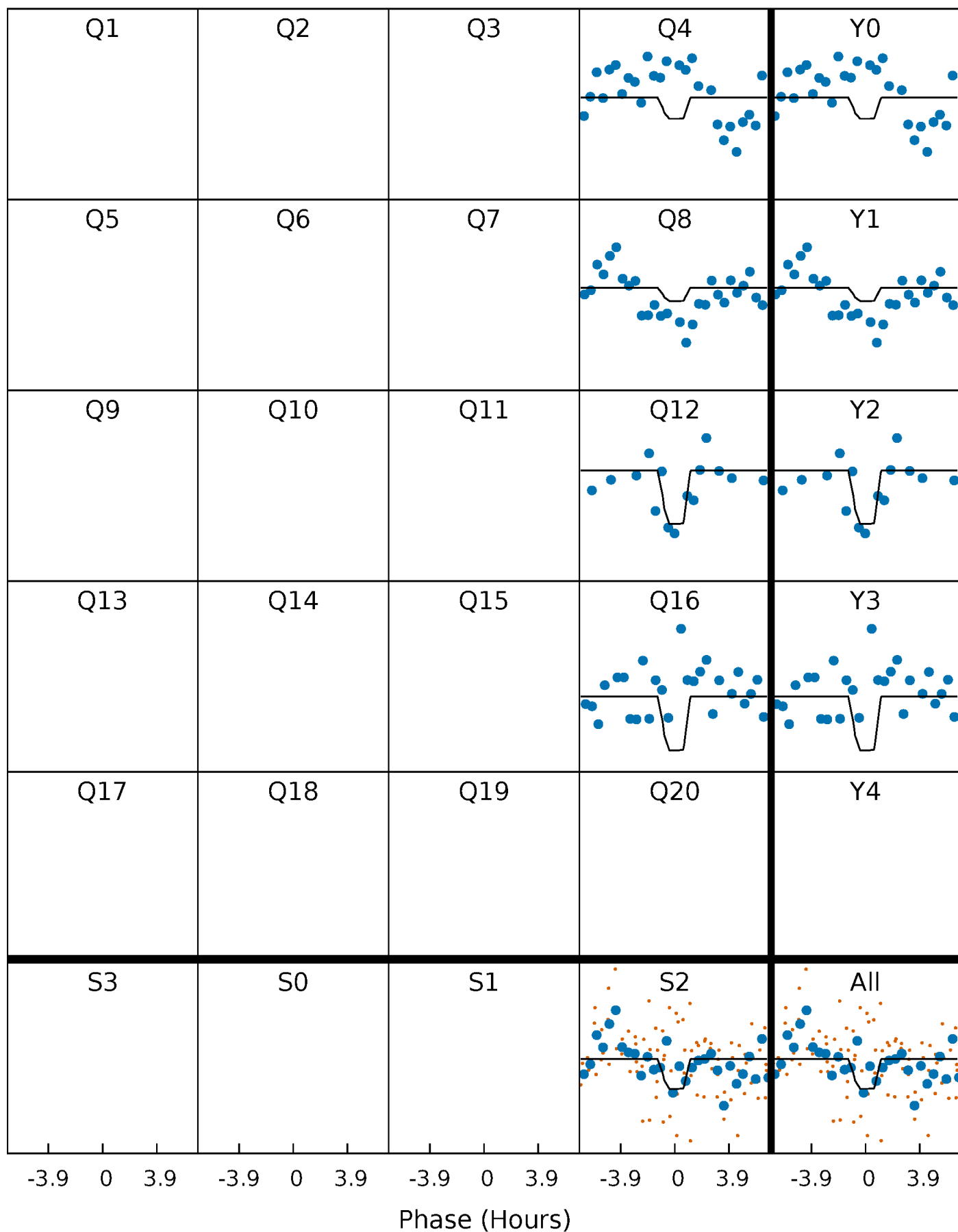
DV Quarter-Phased Transit Curves

TCE 002833709-02 $P=386.597710$ Days $T_0=367.345066$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

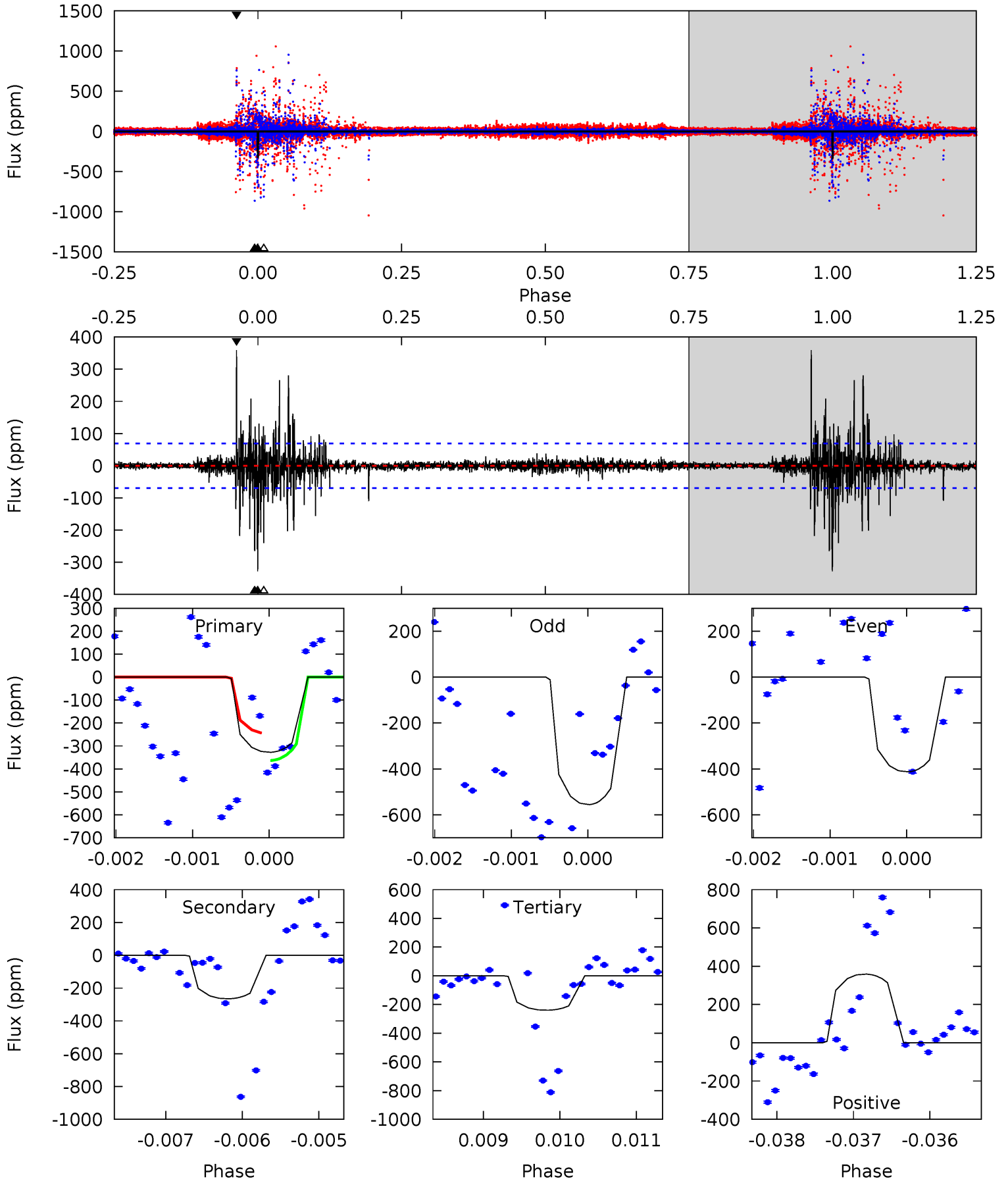
TCE 002833709-02 P=386.540692 Days $T_0=367.247159$ (BKJD)



DV Model-Shift Uniqueness Test

002833709-02, P = 386.597710 Days, E = 367.345066 Days

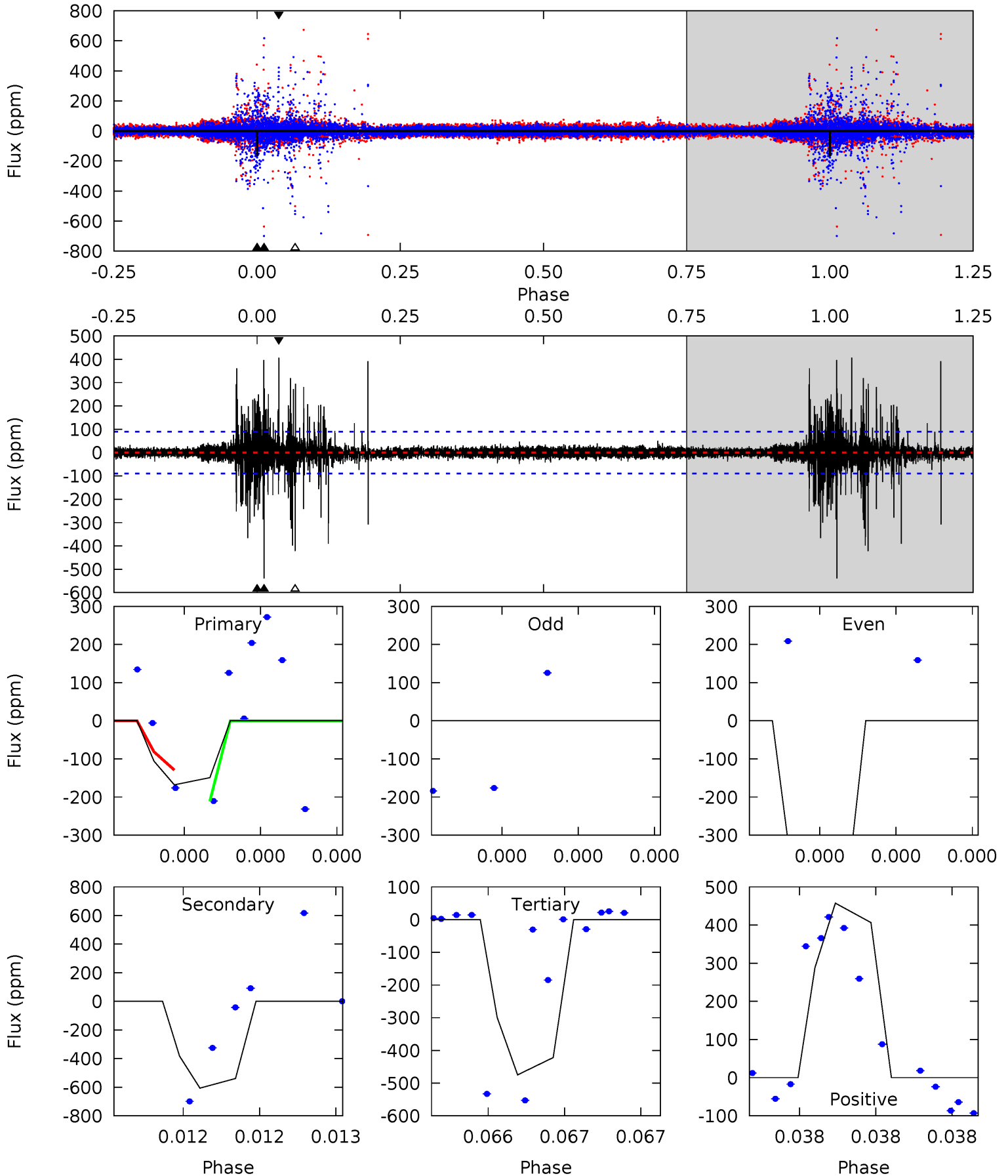
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.8	20.9	18.9	28.2	5.46	3.31	1.35	6.89	-2.47	1.98	-7.38	3.48	0.91	0.52	0



Alt Model-Shift Uniqueness Test

002833709-02, P = 386.540692 Days, E = 367.247159 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.52	34.4	26.9	25.9	5.72	3.70	1.25	-17.4	-16.4	7.46	8.44	0	2.01	0.43	2.21



Stellar Parameters For KIC 002833709

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5000^{+83}_{-52}	$2.776^{+0.121}_{-0.148}$	$-0.780^{+0.150}_{-0.100}$	$6.161^{+2.238}_{-0.746}$	$0.827^{+0.379}_{-0.020}$	$0.005^{+0.003}_{-0.002}$
	+2%/-1%	+4%/-5%	+19%/-13%	+36%/-12%	+46%/-2%	+52%/-47%
Source	SPE74	SPE74	SPE74	DSEP		

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

Secondary Eclipse Parameters for KIC 002833709-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-265 ± 13	$21.80^{+21.30}_{-14.05}$	773^{+48}_{-31}	3883^{+2082}_{-737}	296^{+2285}_{-216}
Alt.	-539 ± 16	$24.70^{+24.90}_{-16.15}$	775^{+50}_{-33}	4245^{+2644}_{-884}	499^{+3734}_{-377}

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 $A_{obs} \gg 1.0$

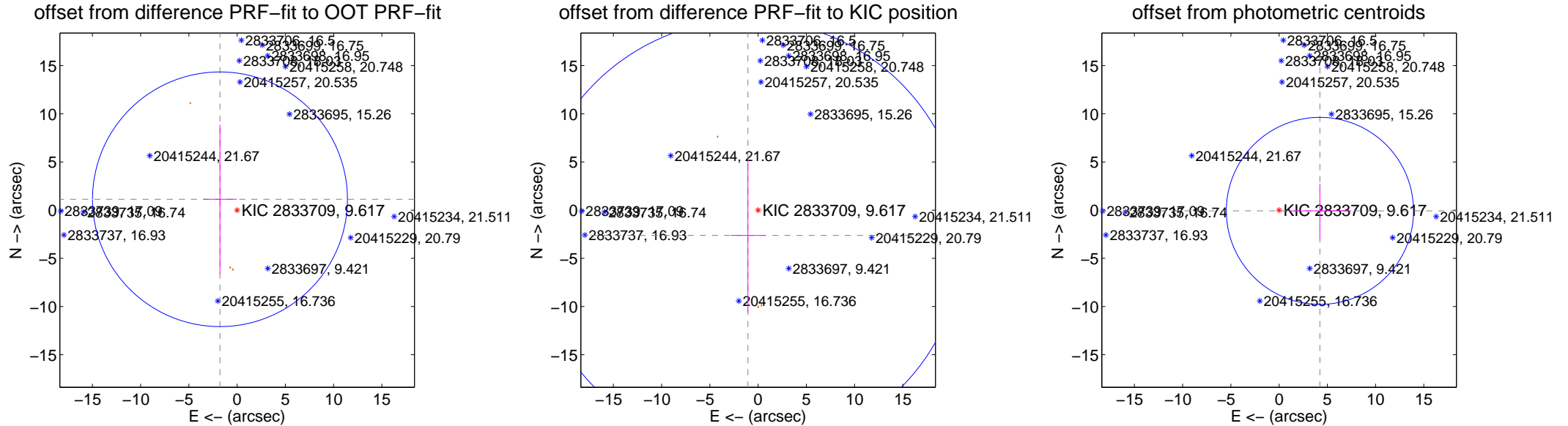
DV Centroid Data

Supplemental centroid analysis for 002833709-02. **Kepler magnitude: 9.62.** Transit SNR 15.38

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 4.15 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.106 ± 4.405	0.48	1.778 ± 1.758	1.129 ± 7.736
PRF-fit source offset from KIC position	2.830 ± 7.461	0.38	1.057 ± 1.787	-2.625 ± 8.011
photometric centroid source offset	4.23 ± 3.23	1.31	-4.23 ± 3.24	-0.07 ± 2.82



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



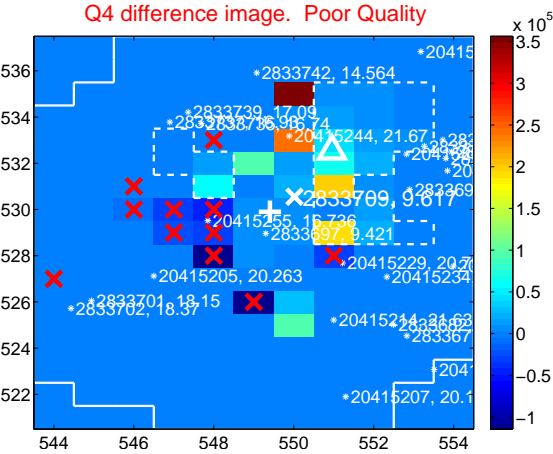
Q3 no difference image



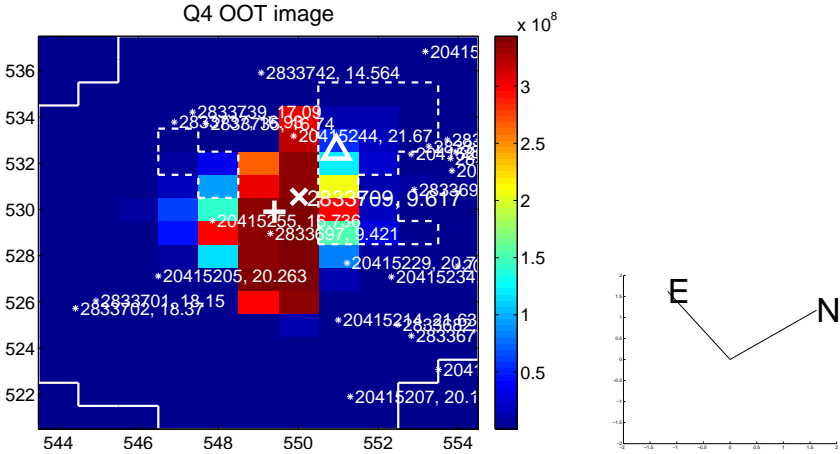
Q3 no OOT image



Q4 difference image. Poor Quality



Q4 OOT image



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

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



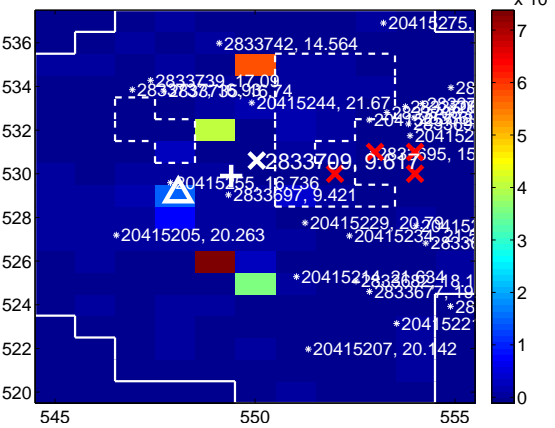
Q7 no difference image



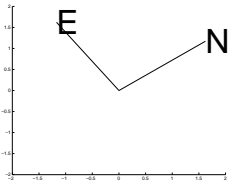
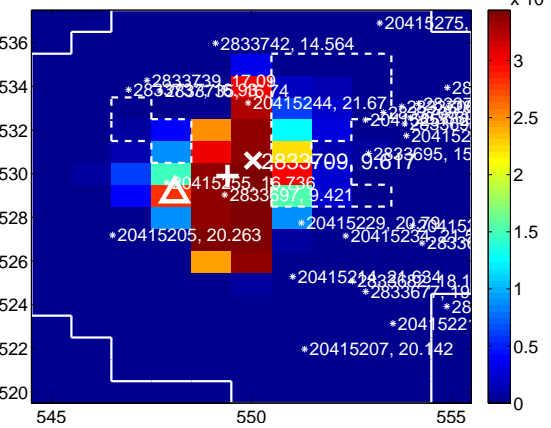
Q7 no OOT image



Q8 difference image. Poor Quality



Q8 OOT image

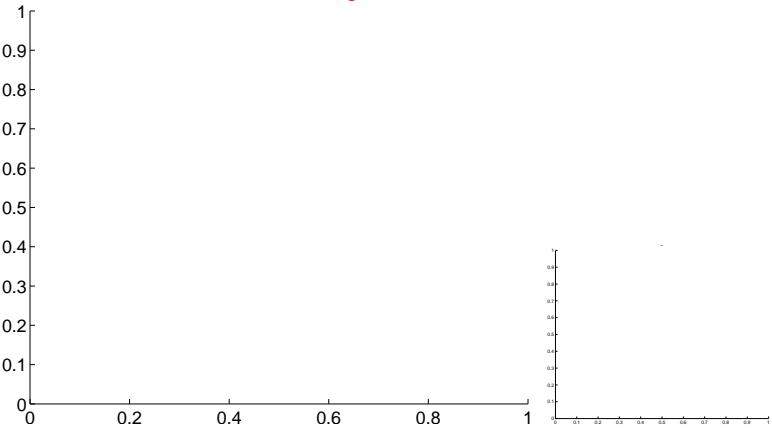


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q9 no difference image



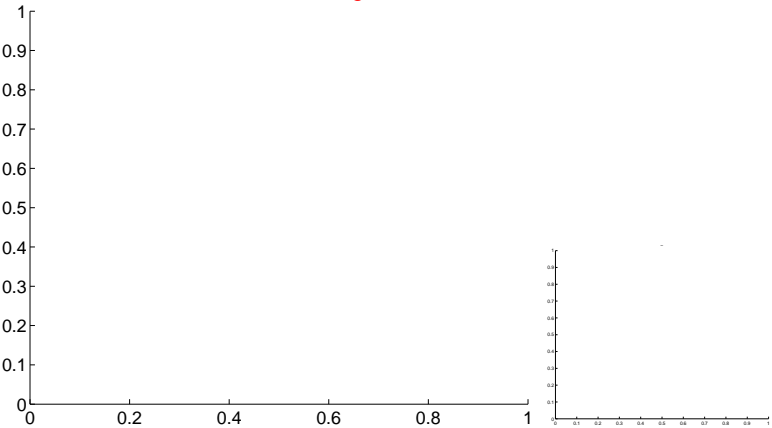
Q9 no OOT image



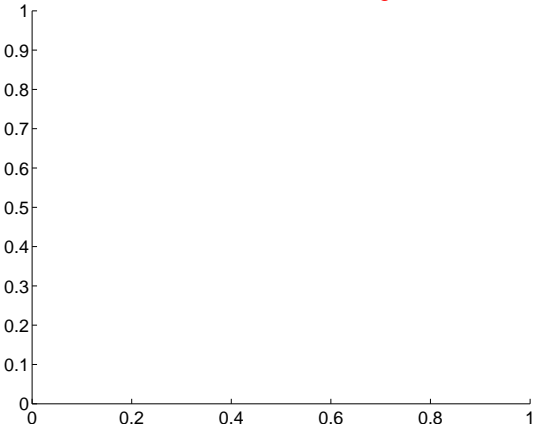
Q10 no difference image



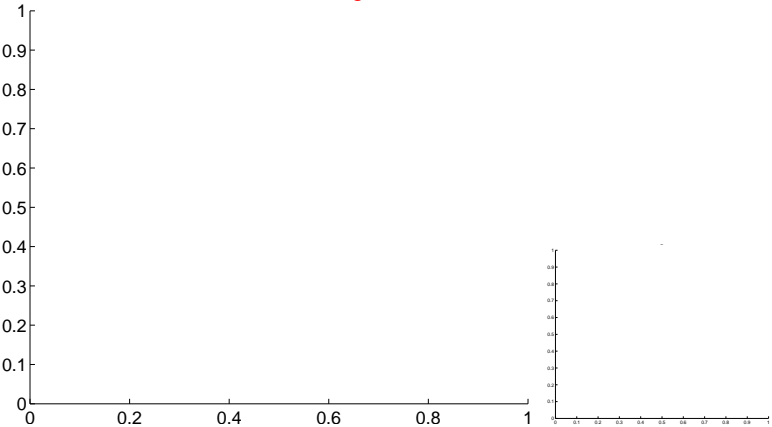
Q10 no OOT image



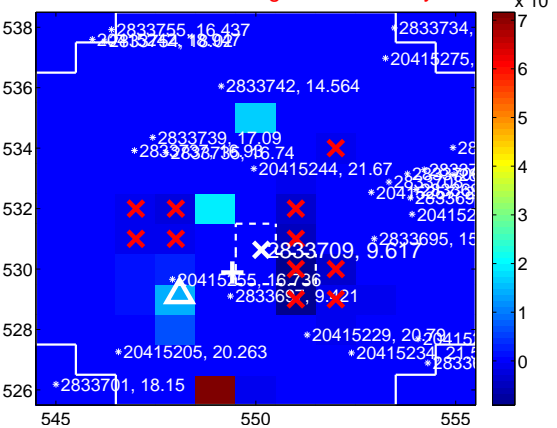
Q11 no difference image



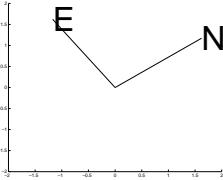
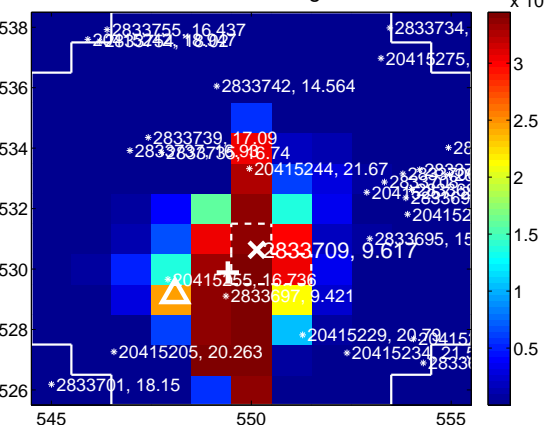
Q11 no OOT image



Q12 difference image. Poor Quality



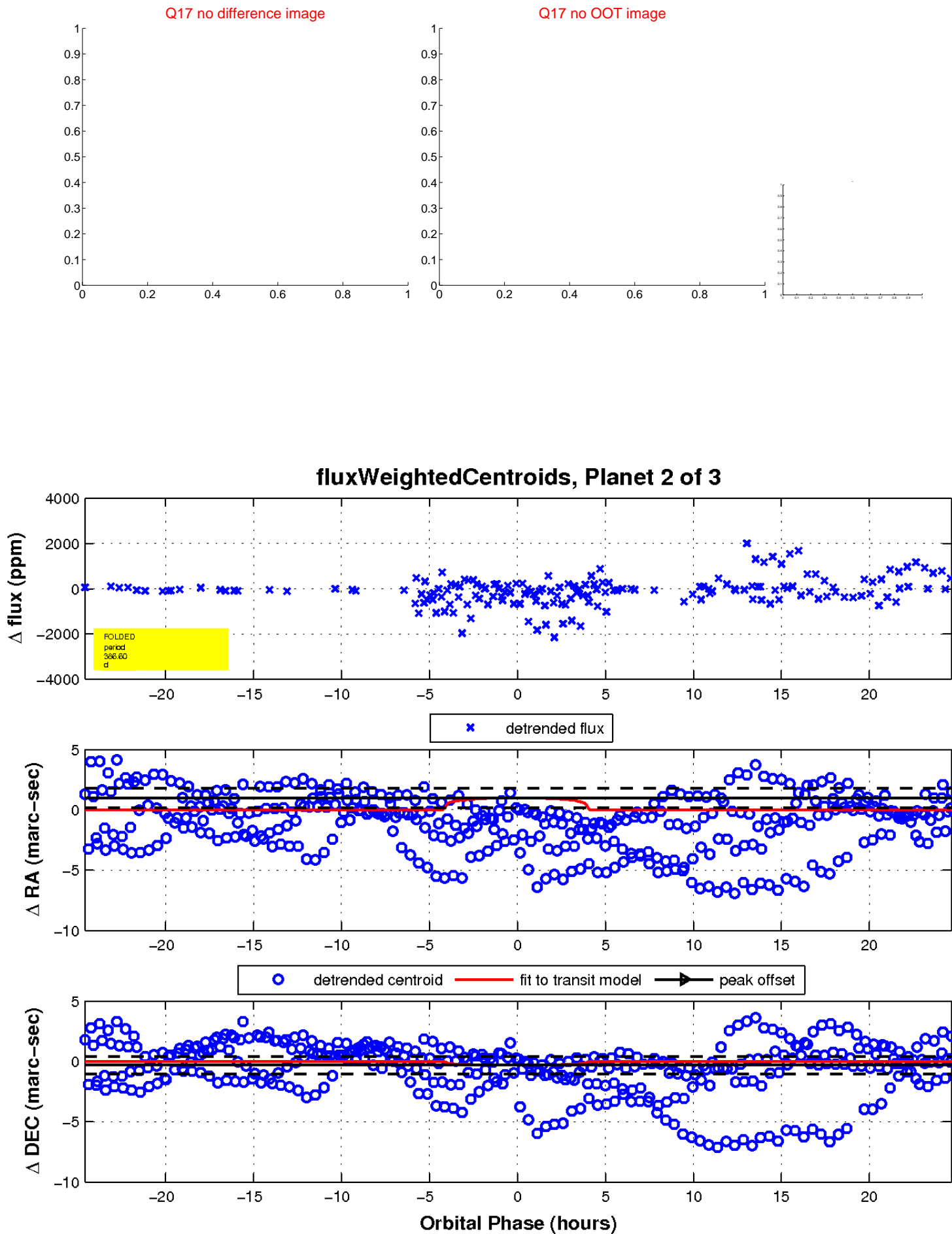
Q12 OOT image



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

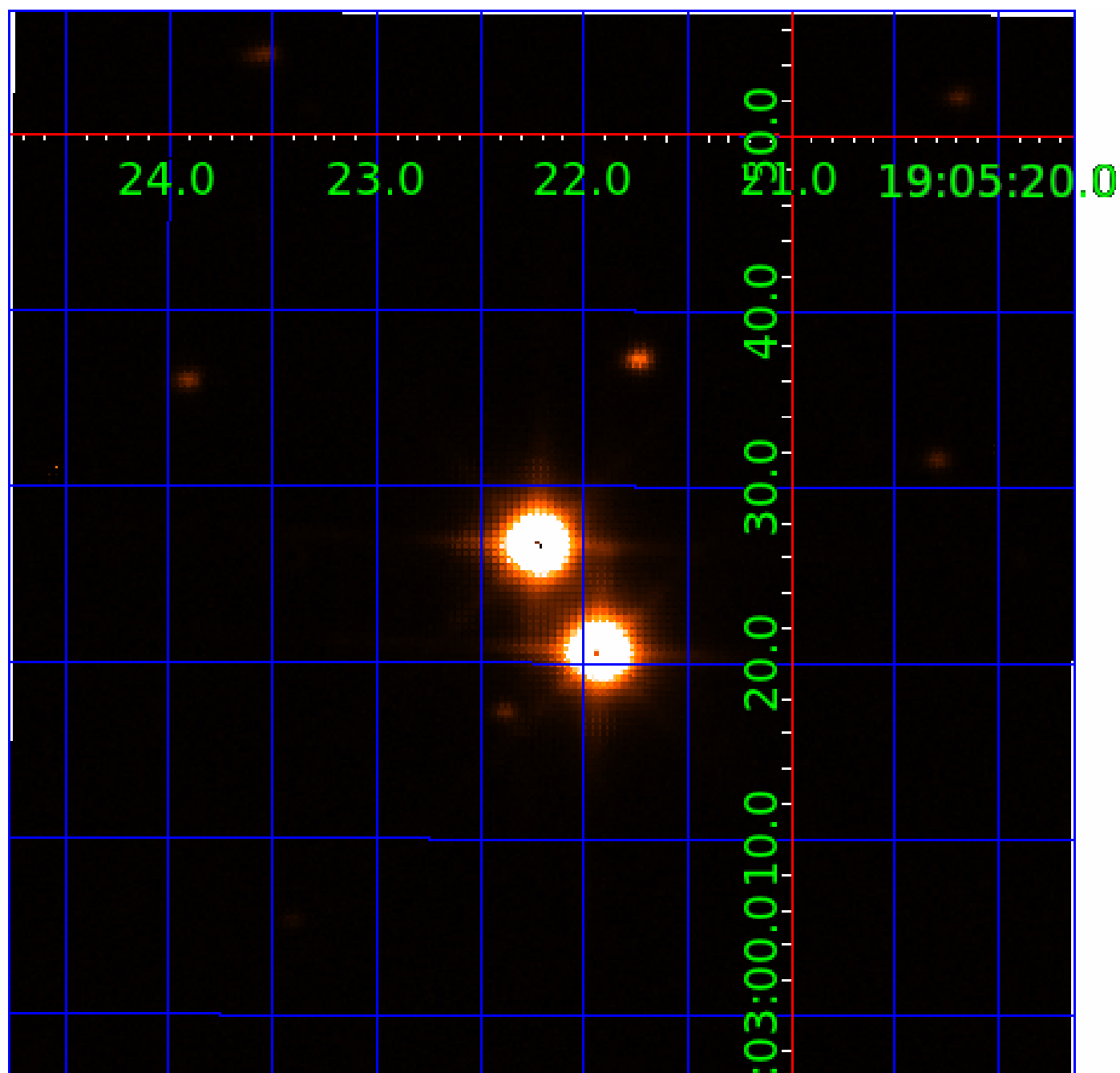


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 002833709

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})
002833709-01	OBS	No	374.857533	394.729443	650.3	5.215	18.9	31.5	6.16	5000	15.42	23.30
002833709-02	OBS	No	386.597710	367.345066	244.0	8.232	52.0	15.4	6.16	5000	9.86	22.36
002833709-03	OBS	No	386.734442	367.882083	1145.2	3.000	50.2	-1.0	6.16	5000	20.46	22.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
002833709-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_SATURATED
002833709-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
002833709-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_SATURATED

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

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

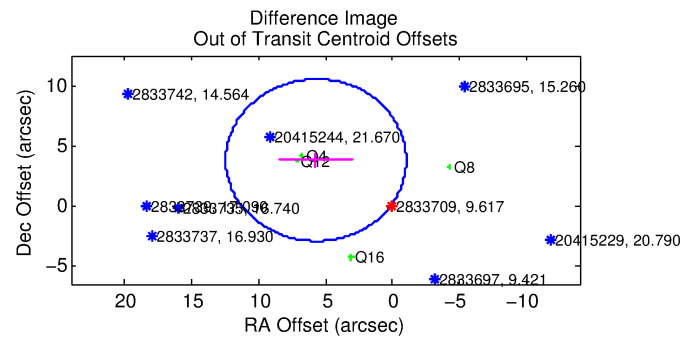
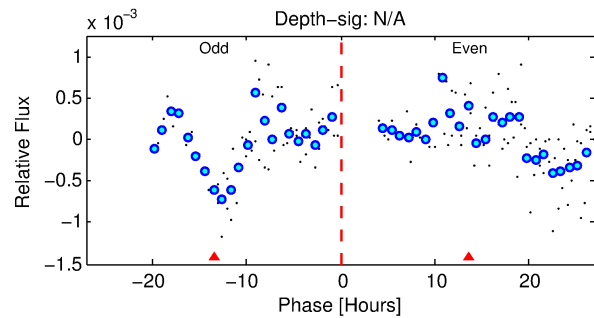
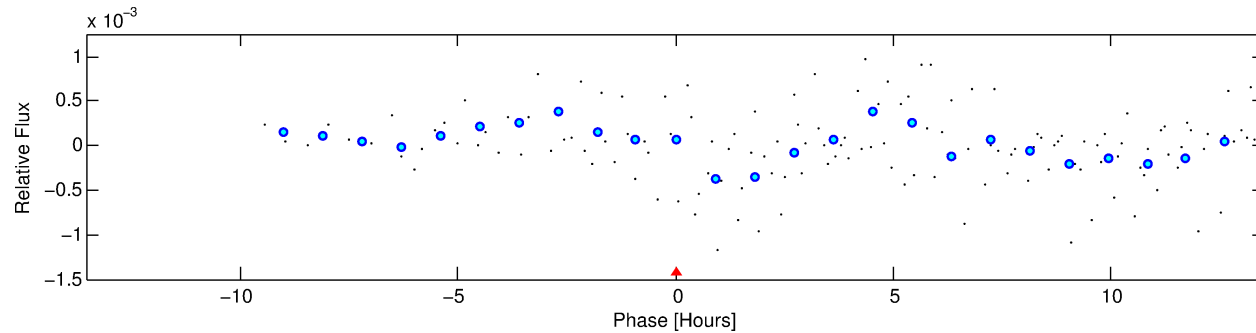
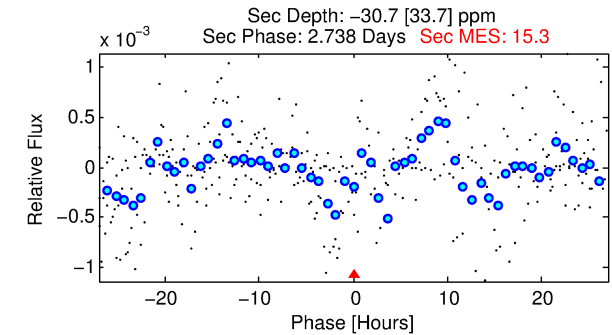
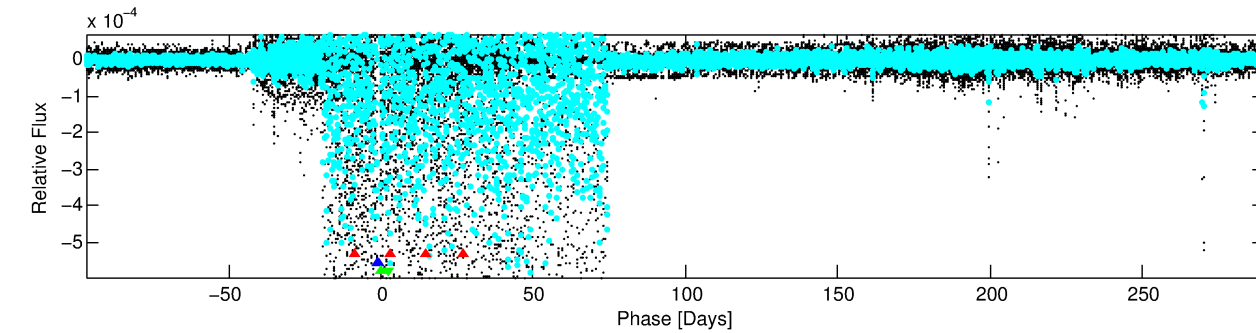
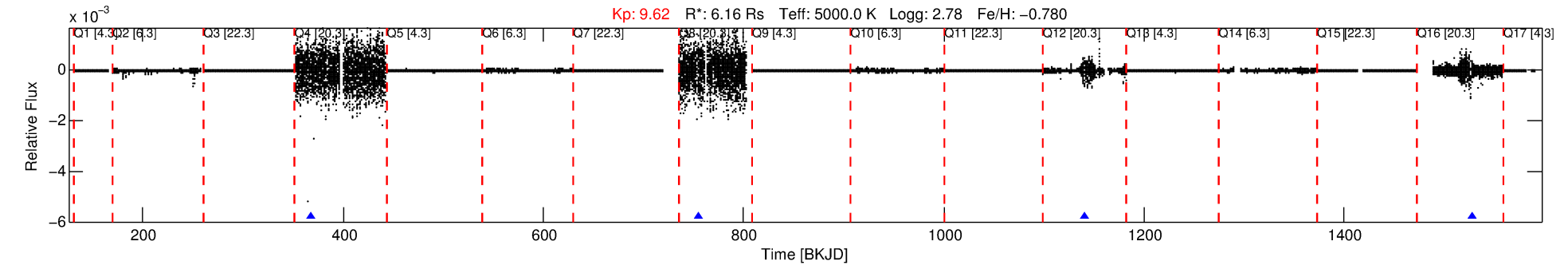
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 002833709-03

No Significant Match Found

DV One-Page Summary

KIC: 2833709 Candidate: 3 of 3 Period: 386.734 d



TPS TCE Results:

Period = 386.73444 d
Epoch = 367.8821 BKJD

DV fit results are unavailable

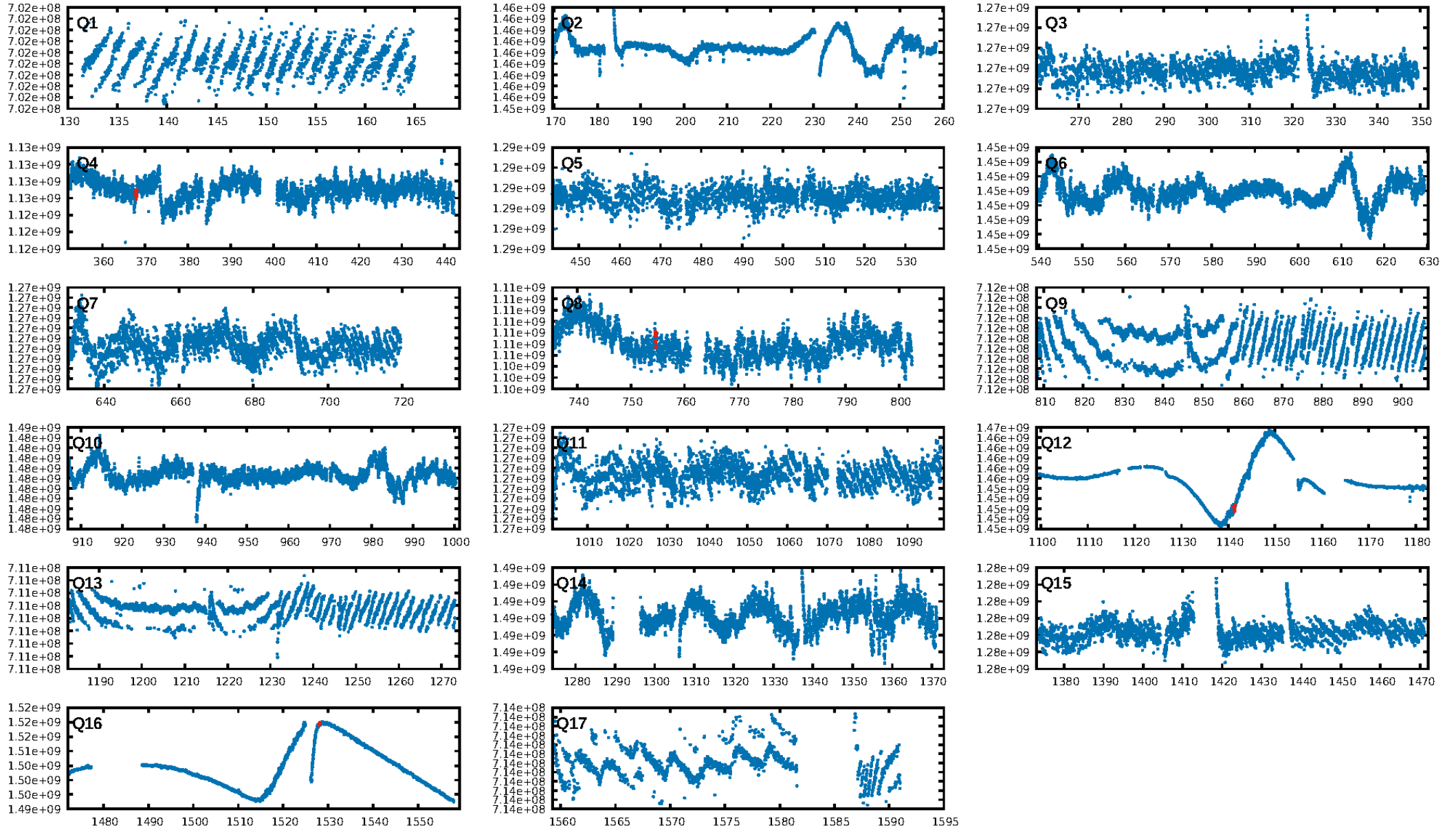
DV Diagnostic Results:

ShortPeriod-sig: 29.2% [0.37 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: N/A
Centroid-sig: 6.2%
Centroid-so: 0.896 arcsec [0.72 σ]
OotOffset-rm: 6.855 arcsec [3.05 σ]
KicOffset-rm: 4.909 arcsec [1.79 σ]
OotOffset-st: 0/0/4/0 [4]
KicOffset-st: 0/0/4/0 [4]
DiffImageQuality-fgm: 0.00 [0/4]
DiffImageOverlap-fno: 0.75 [3/4]

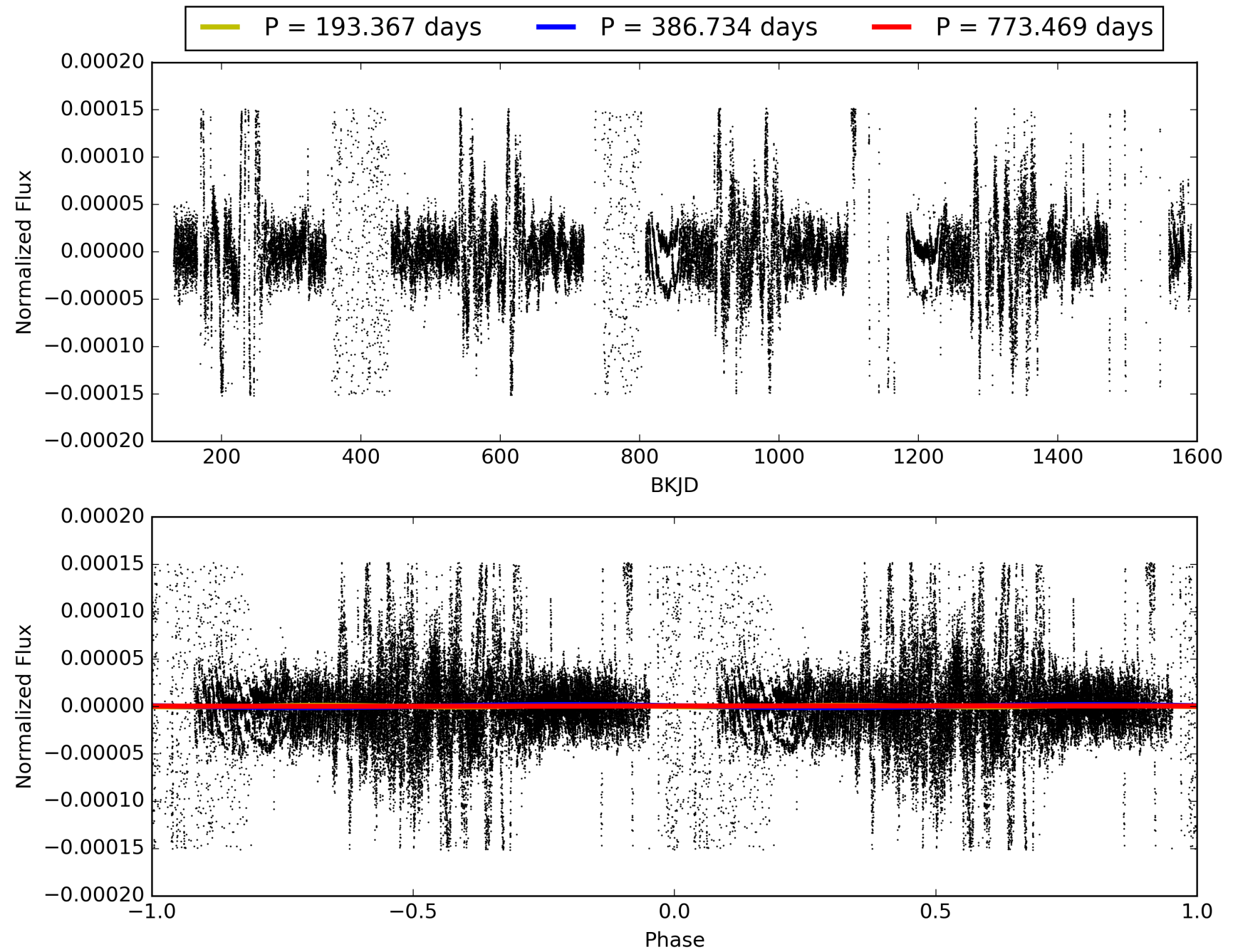
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:41:10 Z

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

TCE 002833709-03, PDC Light Curves

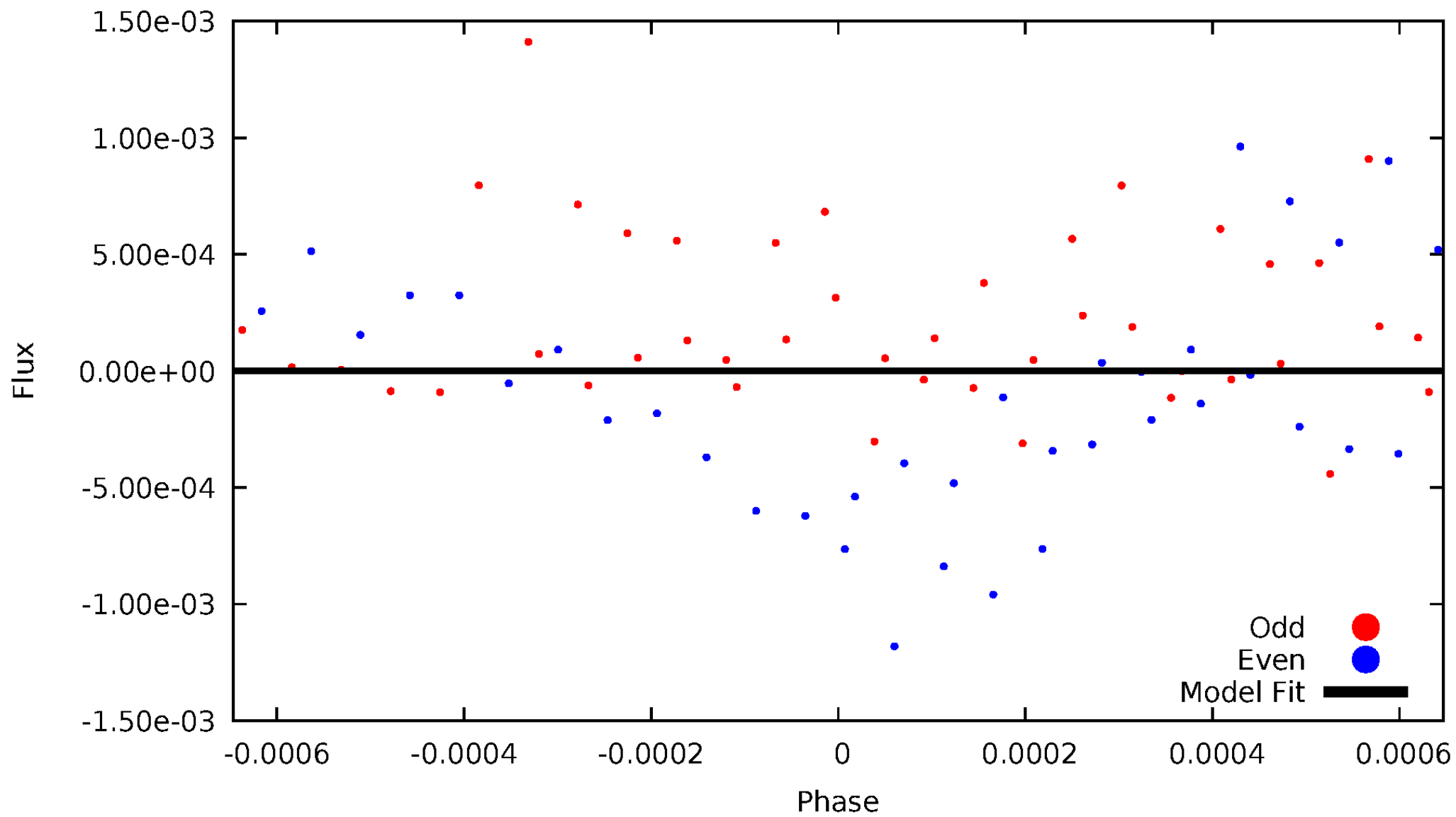


TCE 002833709-03



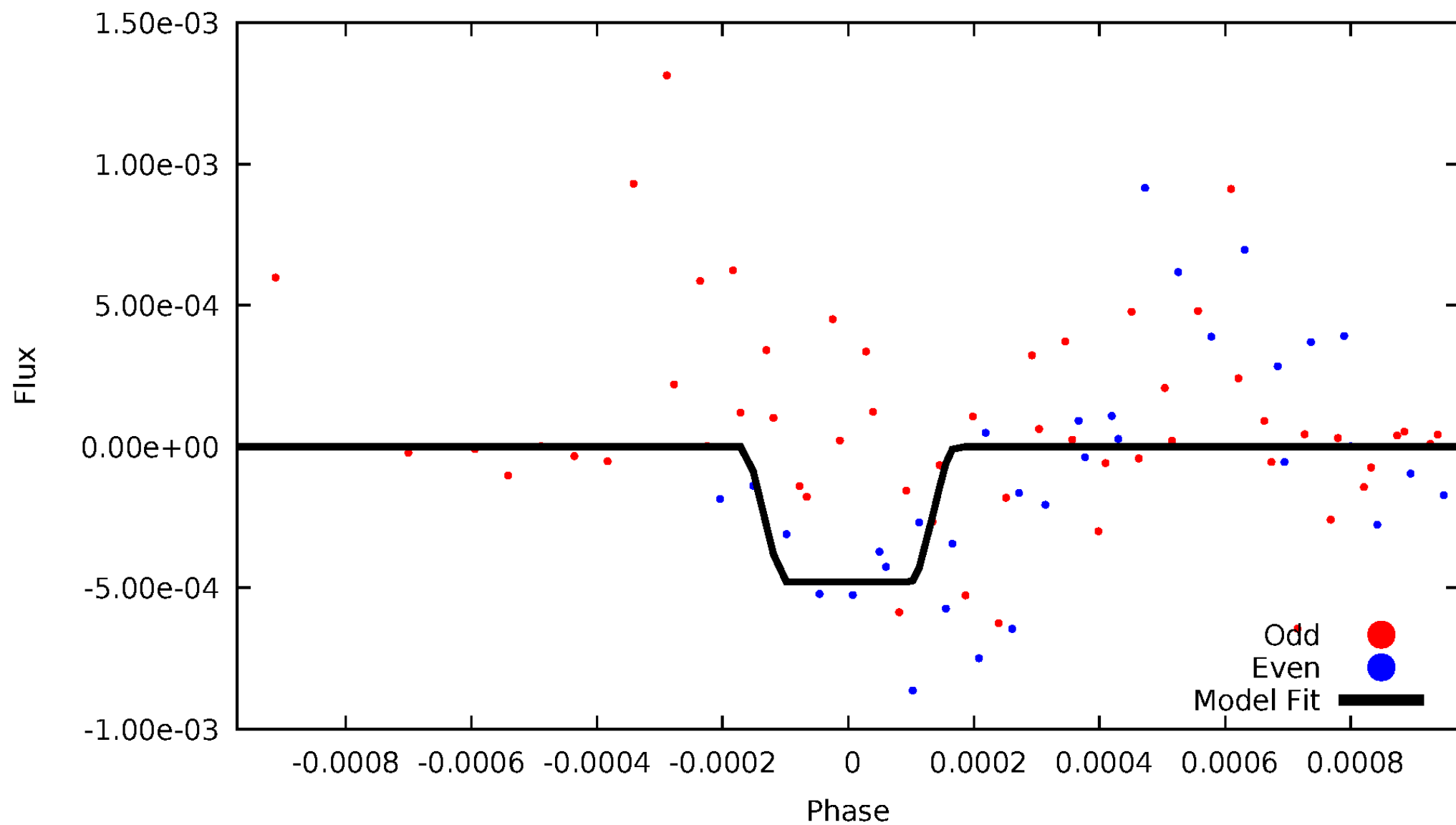
DV Odd/Even

TCE 002833709-03



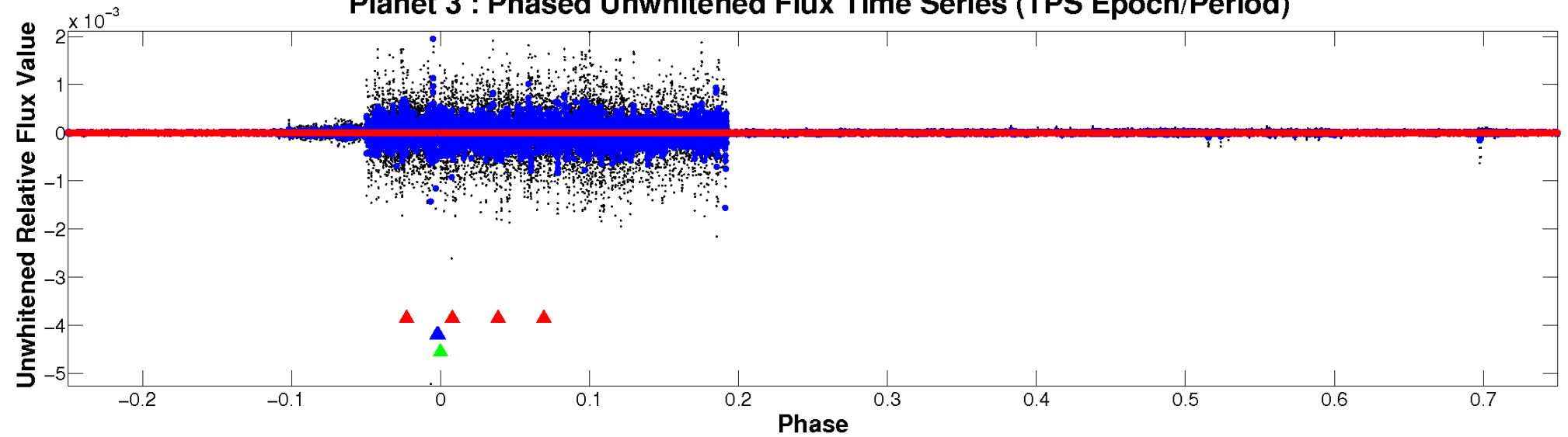
ALT Odd/Even

TCE 002833709-03



Non-Whitened Vs. Whitened Light Curve

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

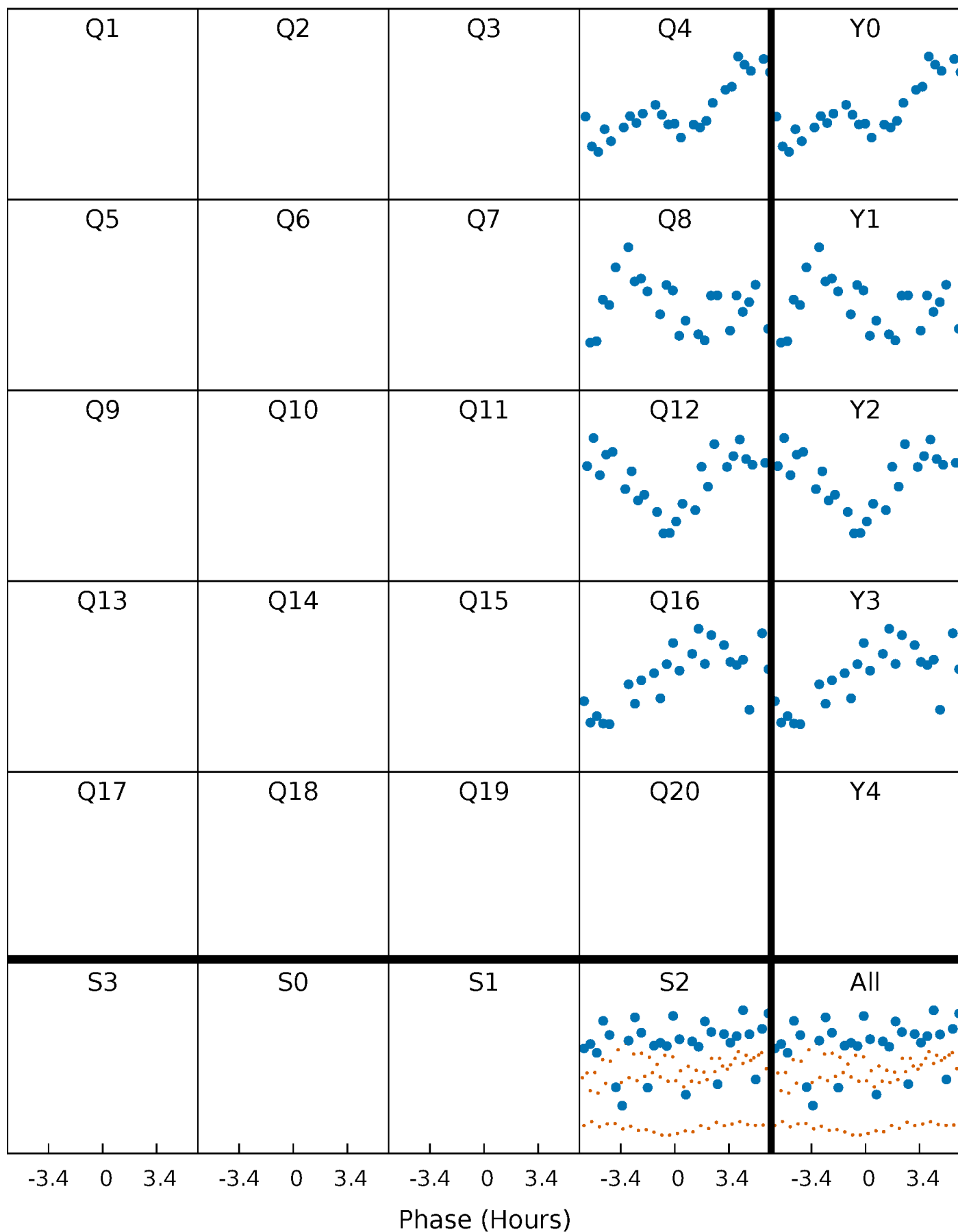


Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)



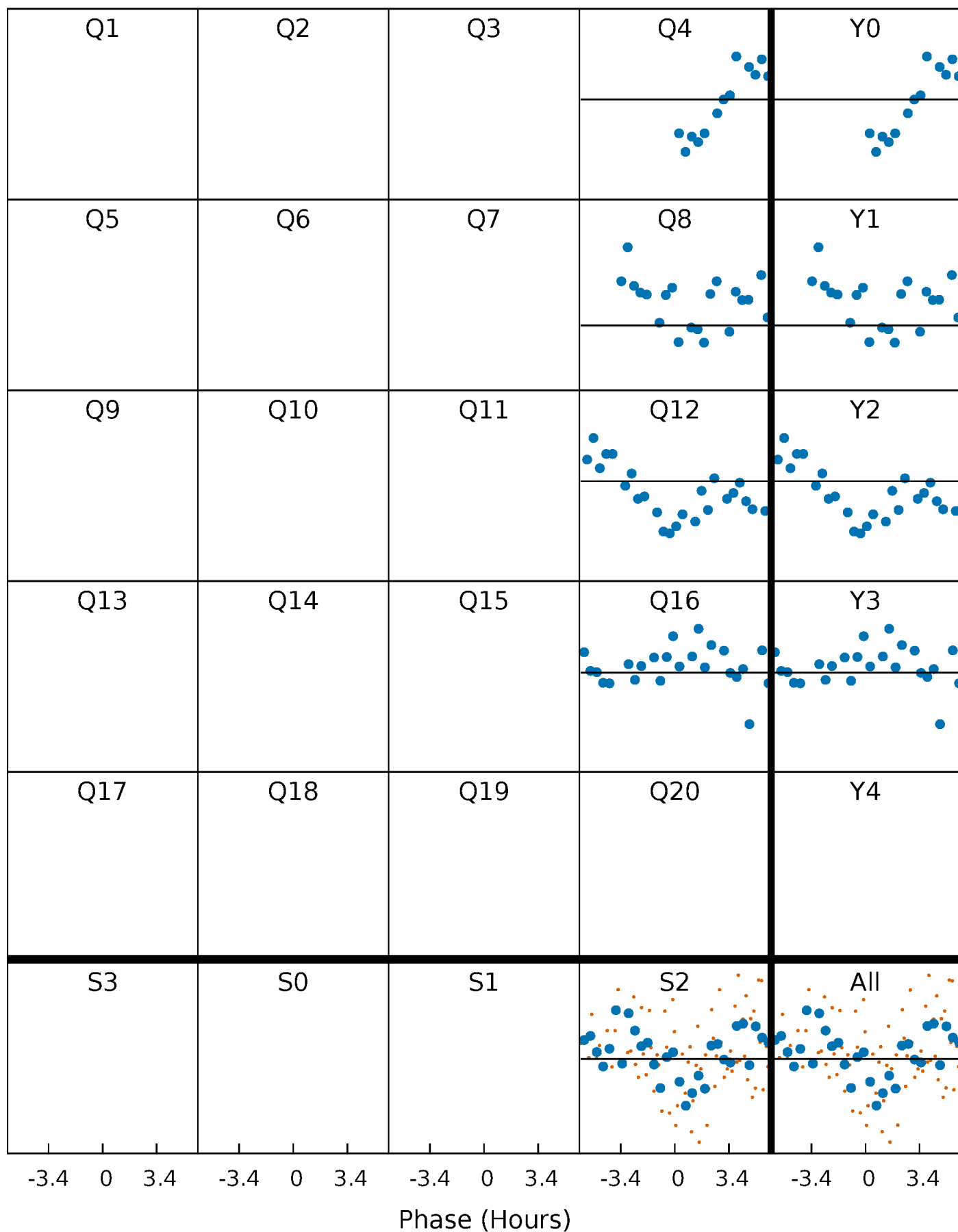
PDC Quarter-Phased Transit Curves

TCE 002833709-03 $P=386.734442$ Days $T_0=367.882083$ (BKJD)



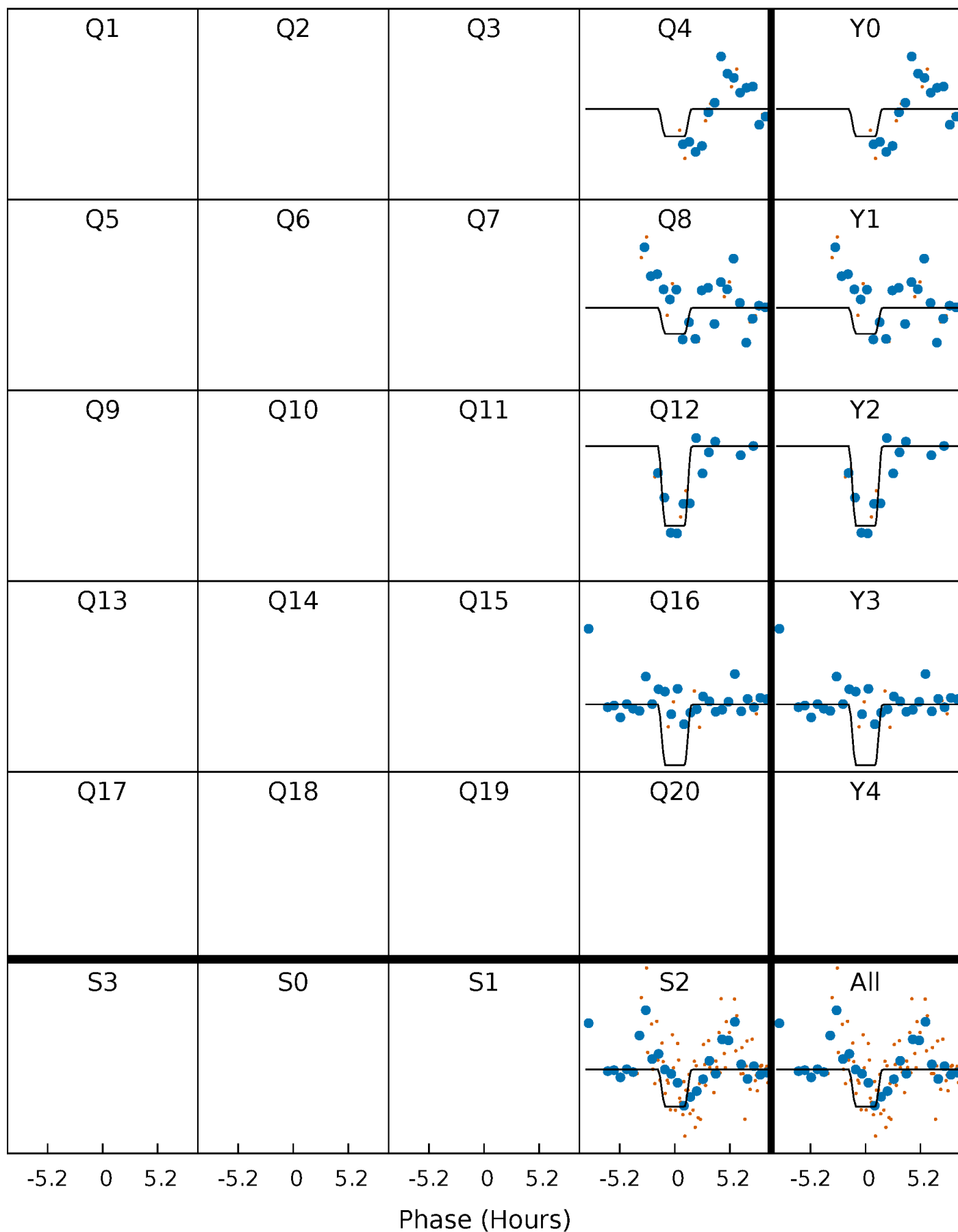
DV Quarter-Phased Transit Curves

TCE 002833709-03 $P=386.734442$ Days $T_0=367.882083$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

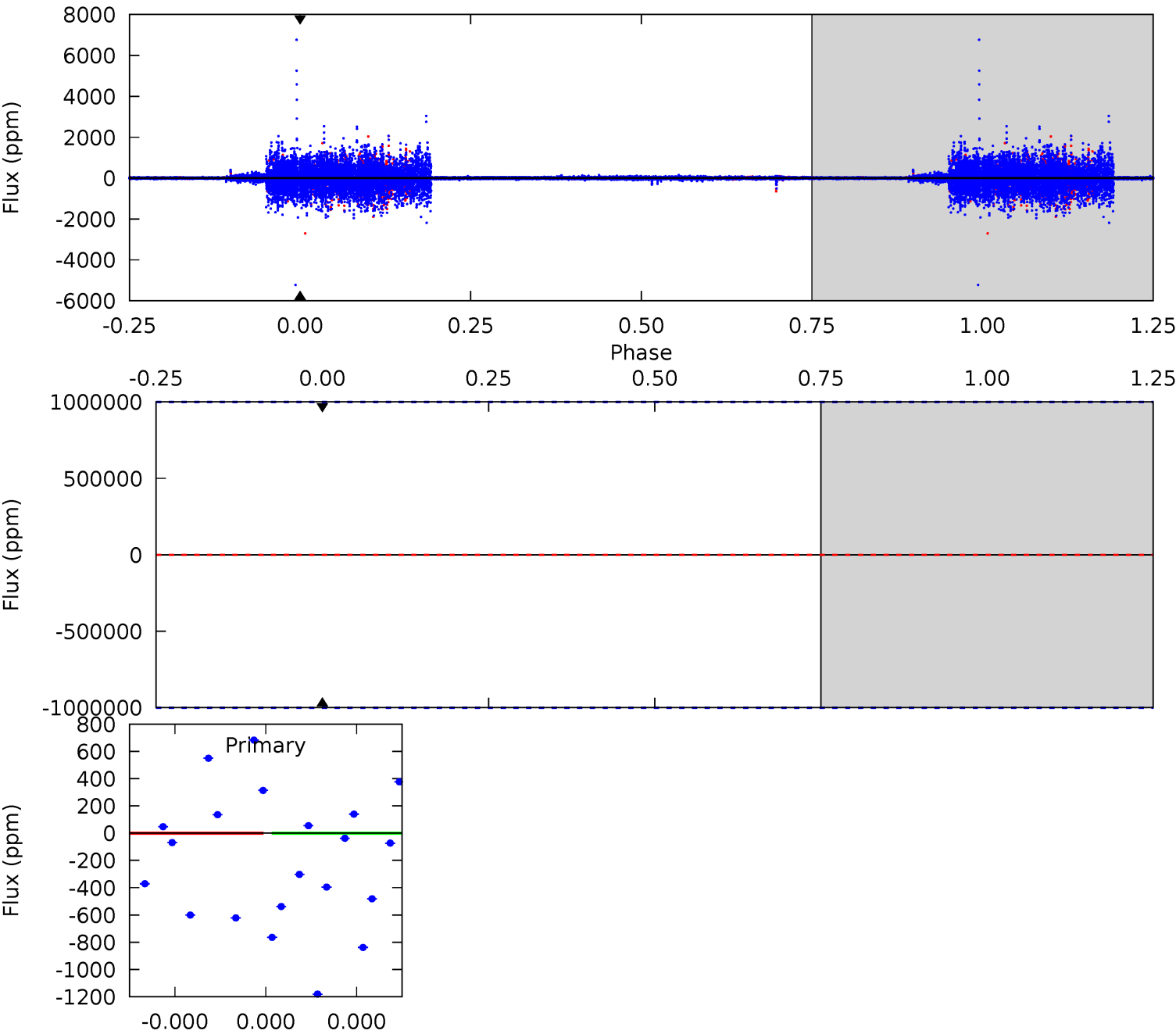
TCE 002833709-03 $P=386.734442$ Days $T_0=367.865733$ (BKJD)



DV Model-Shift Uniqueness Test

002833709-03, P = 386.734442 Days, E = 367.882083 Days

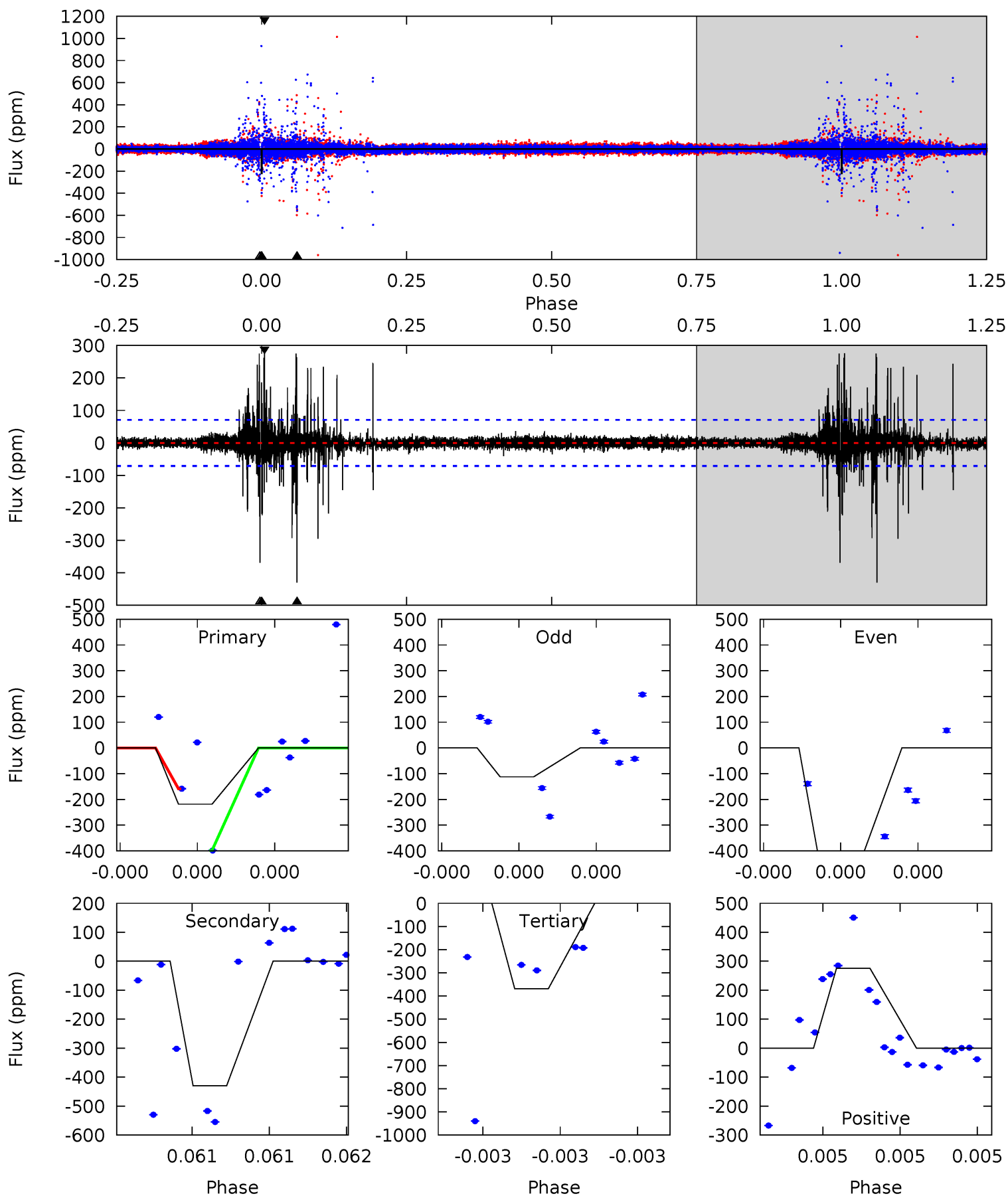
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

002833709-03, P = 386.734442 Days, E = 367.865733 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.4	34.2	29.4	22.0	5.65	3.60	1.21	-12.0	-4.55	4.83	12.3	8.46	1.19	0.39	0



Stellar Parameters For KIC 002833709

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5000^{+83}_{-52}	$2.776^{+0.121}_{-0.148}$	$-0.780^{+0.150}_{-0.100}$	$6.161^{+2.238}_{-0.746}$	$0.827^{+0.379}_{-0.020}$	$0.005^{+0.003}_{-0.002}$
	+2%/-1%	+4%/-5%	+19%/-13%	+36%/-12%	+46%/-2%	+52%/-47%
Source	SPE74	SPE74	SPE74	DSEP		

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

Secondary Eclipse Parameters for KIC 002833709-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$59.34^{+52.90}_{-41.07}$	776^{+55}_{-33}	-3722^{+17135}_{-9016}	$-194.648^{+27712.965}_{-25637.138}$
Alt.	-430 ± 13	$55.18^{+49.05}_{-37.55}$	772^{+53}_{-31}	3136^{+1360}_{-514}	78^{+699}_{-56}

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

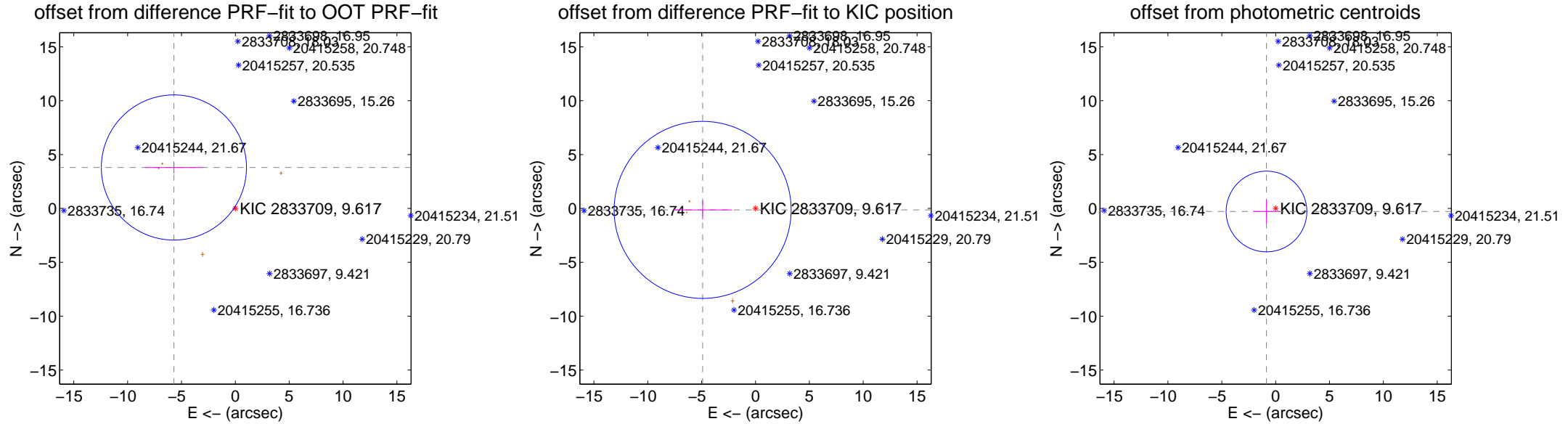
DV Centroid Data

Supplemental centroid analysis for 002833709-03. **Kepler magnitude: 9.62.** Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

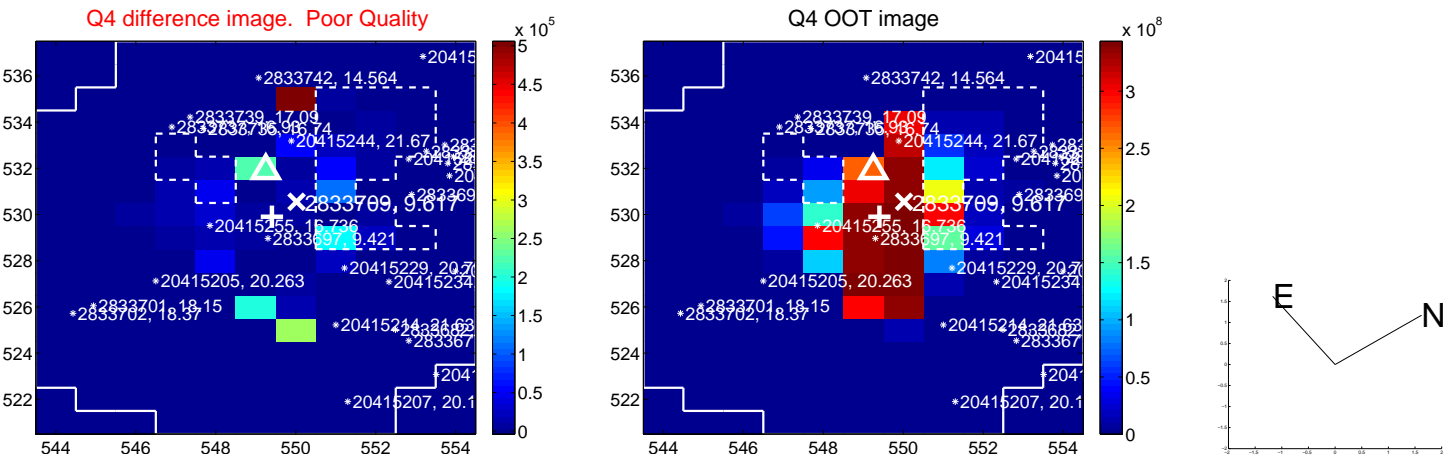
The OOT PRF centroid is offset from the target star catalog position by about 4.42 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.855 ± 2.246	3.05	5.704 ± 2.674	3.802 ± 0.556
PRF-fit source offset from KIC position	4.909 ± 2.739	1.79	4.907 ± 2.740	-0.135 ± 0.881
photometric centroid source offset	0.90 ± 1.25	0.72	0.85 ± 1.26	-0.28 ± 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.

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



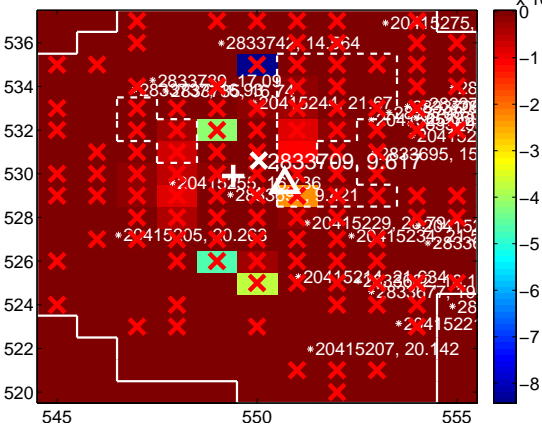
Q7 no difference image



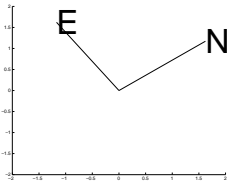
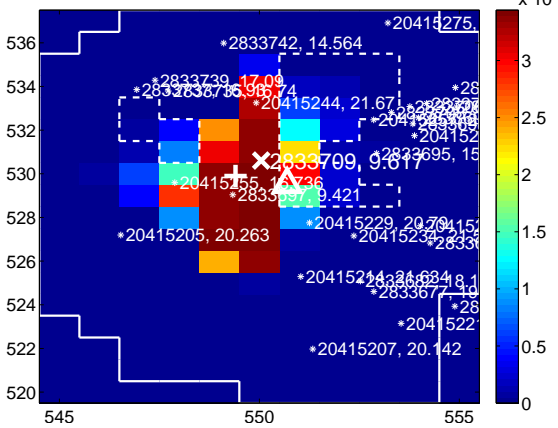
Q7 no OOT image



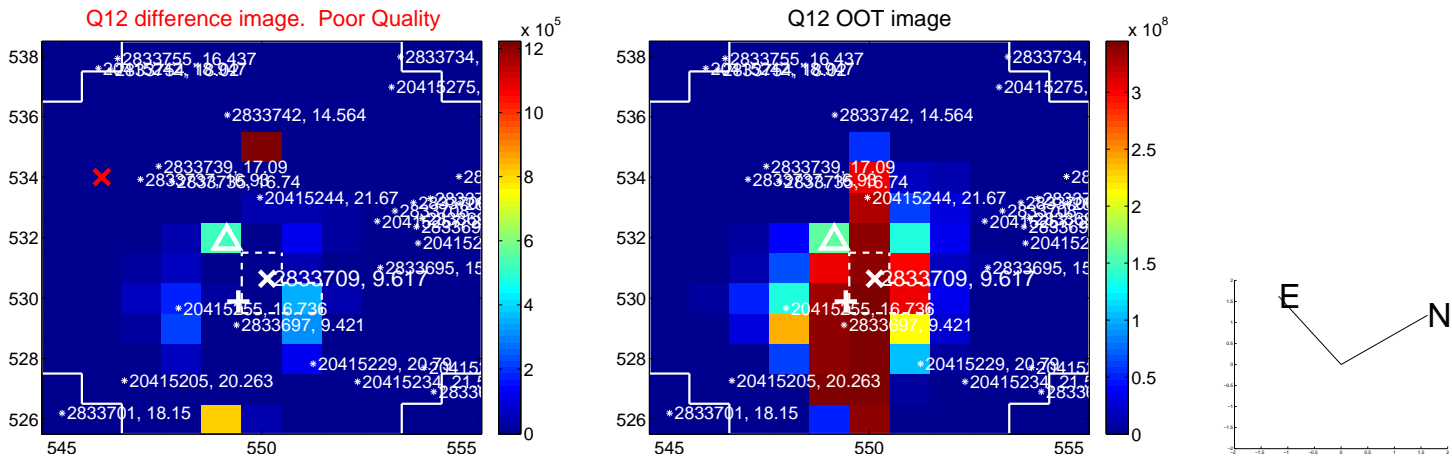
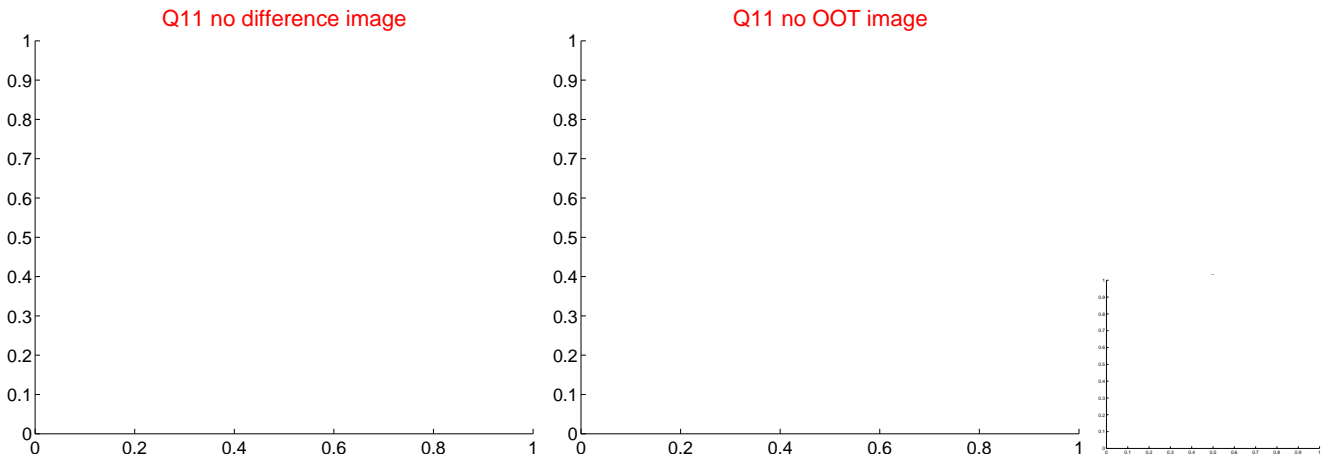
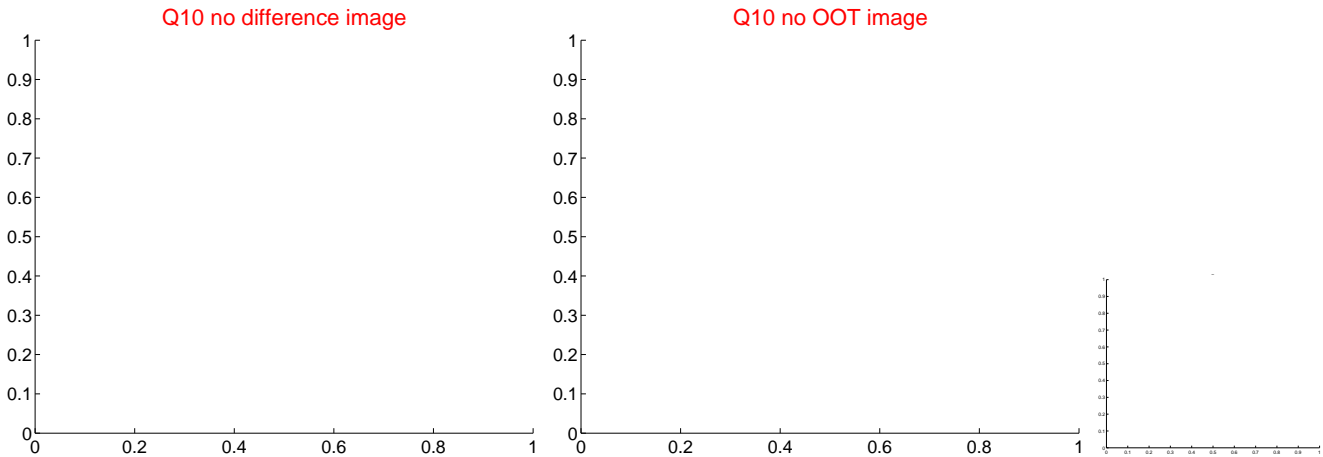
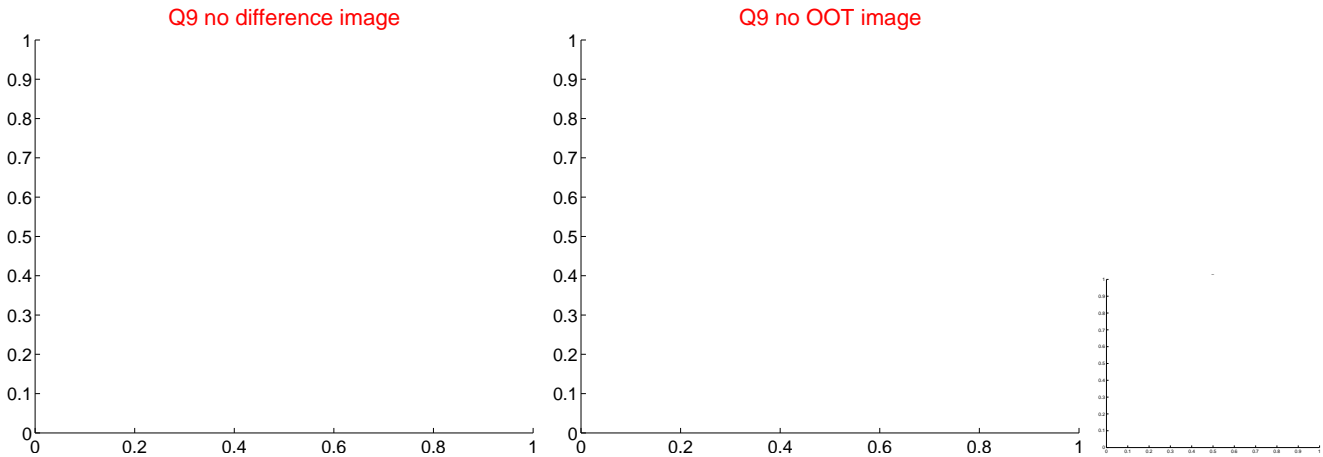
Q8 difference image. Poor Quality



Q8 OOT image

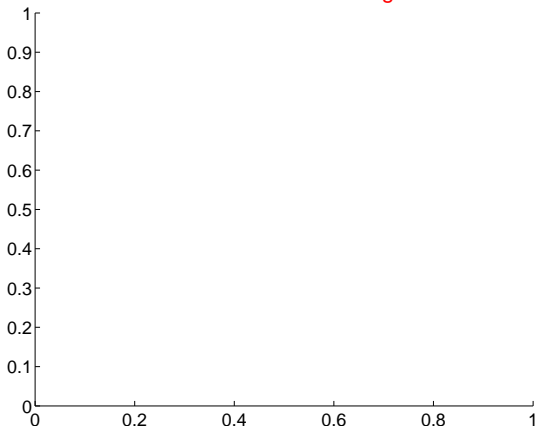


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value

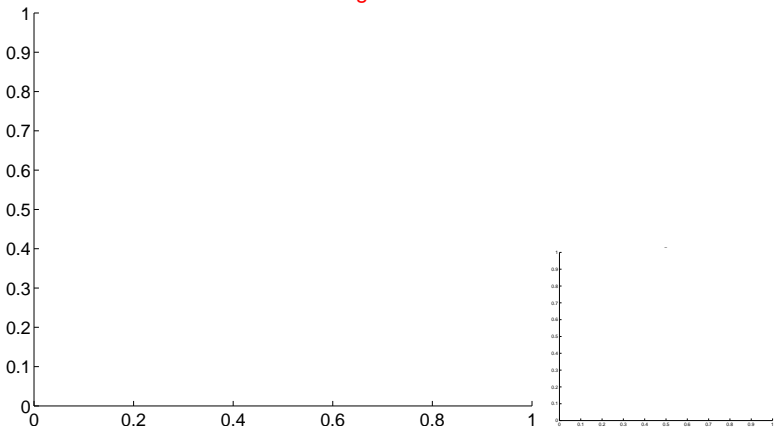


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

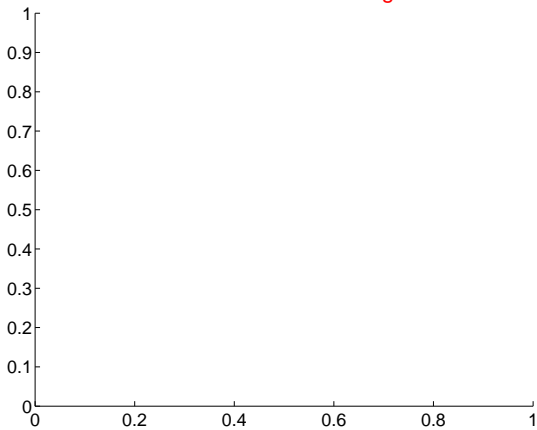
Q13 no difference image



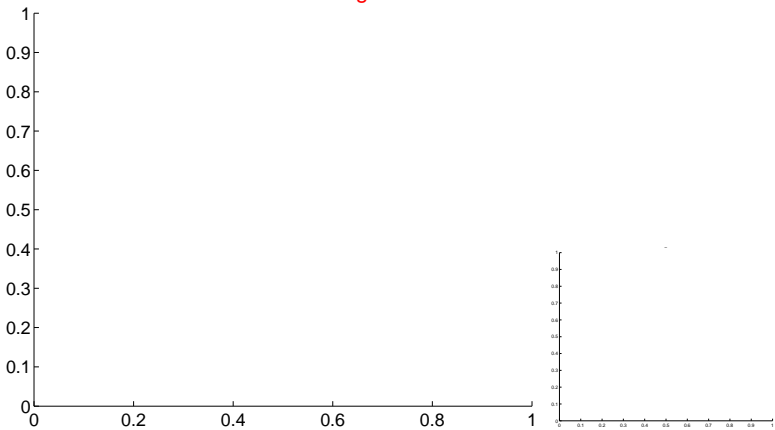
Q13 no OOT image



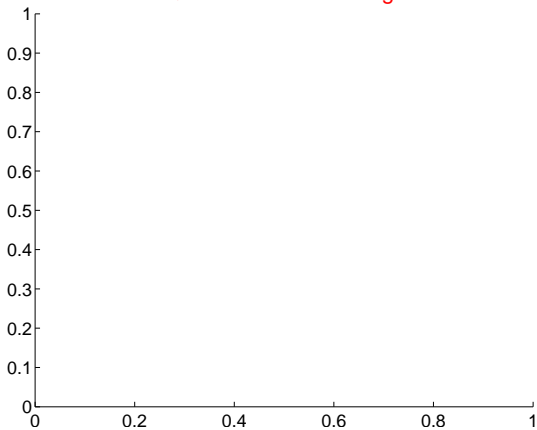
Q14 no difference image



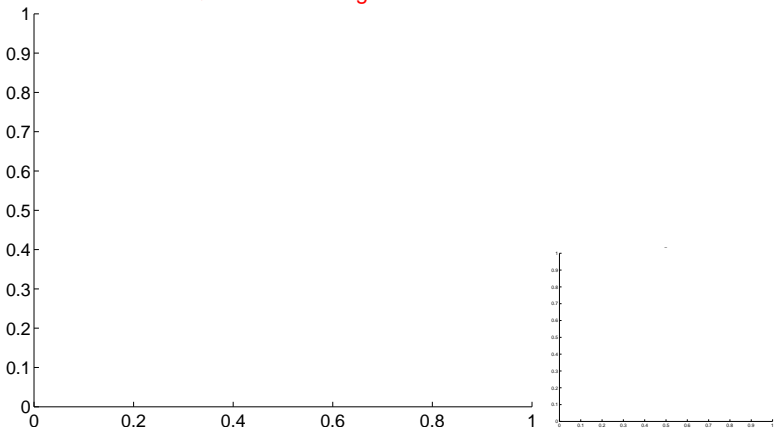
Q14 no OOT image



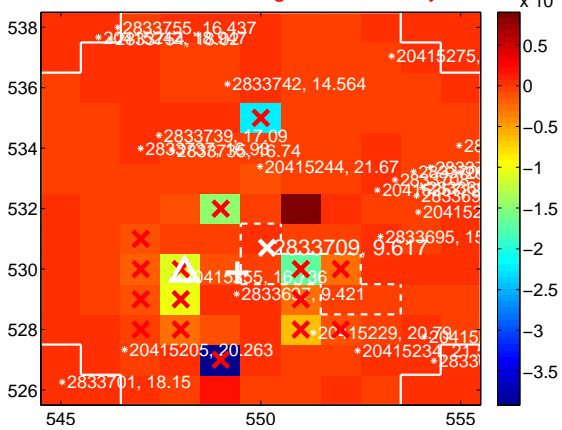
Q15 no difference image



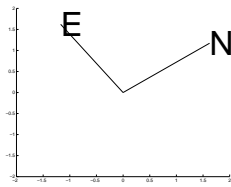
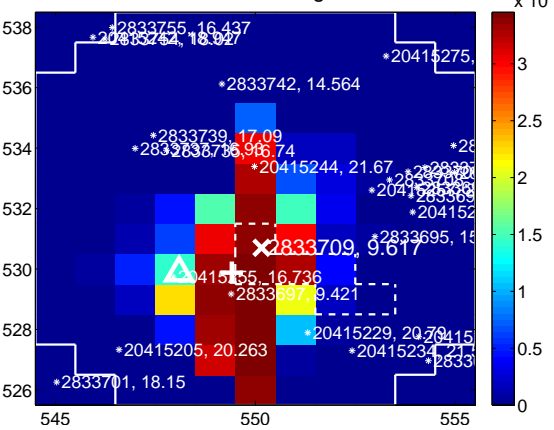
Q15 no OOT image



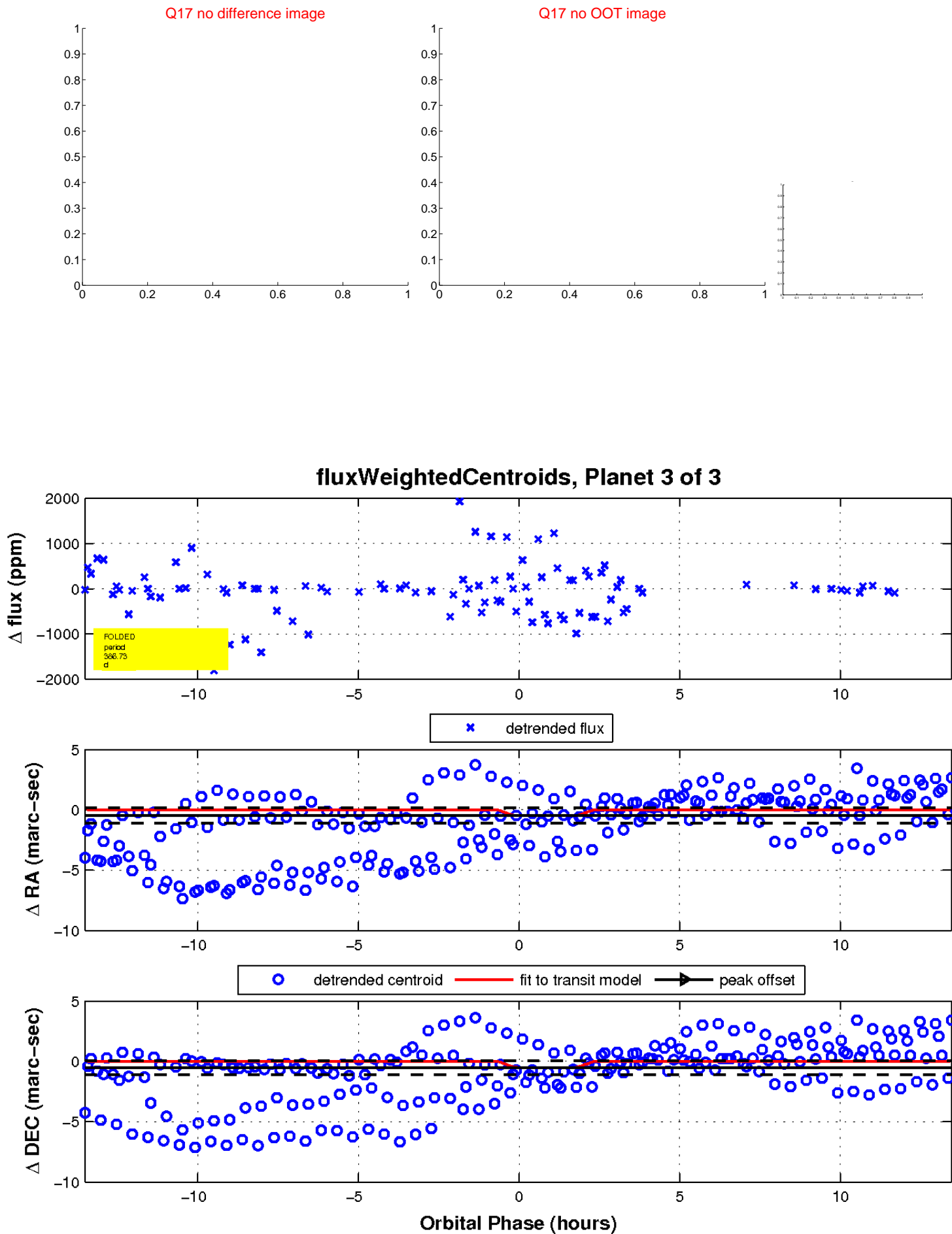
Q16 difference image. Poor Quality



Q16 OOT image



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



UKIRT Image

Declination

