

KIC 012307309

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})
012307309-01	OBS	No	1.745232	132.566882	9.4	7.553	12.9	7.1	2.12	7872	0.66	12829.22
012307309-02	OBS	No	636.495632	262.528501	83.0	75.602	9.6	3.9	2.12	7872	2.20	4.92
012307309-03	OBS	No	369.404709	161.691362	59.1	15.000	9.2	-1.0	2.12	7872	1.66	10.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012307309-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
012307309-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
012307309-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED

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

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

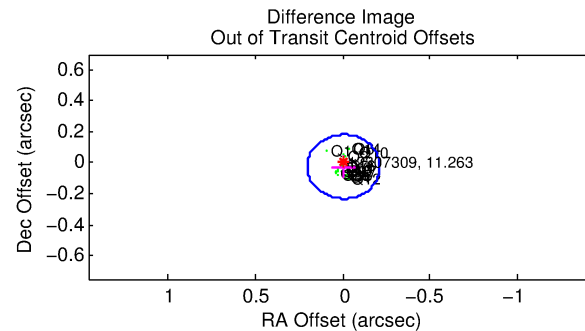
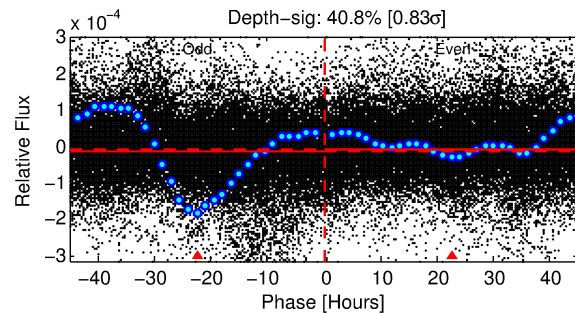
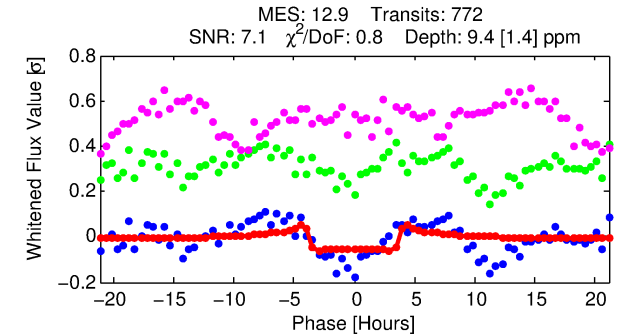
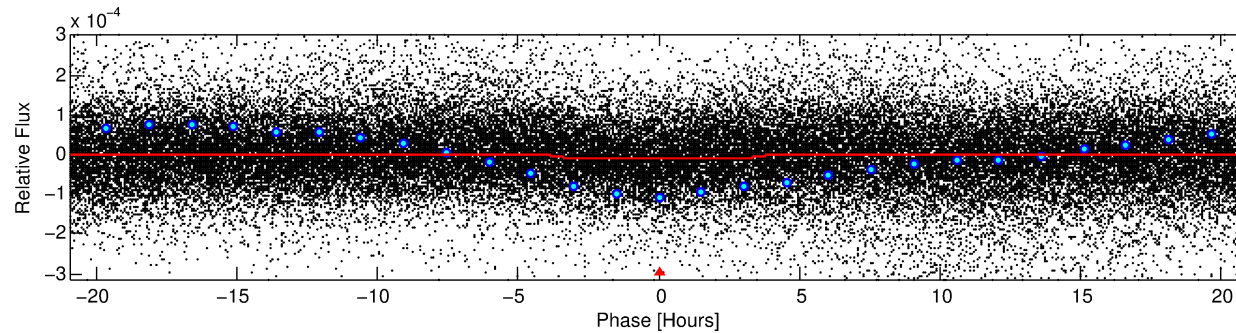
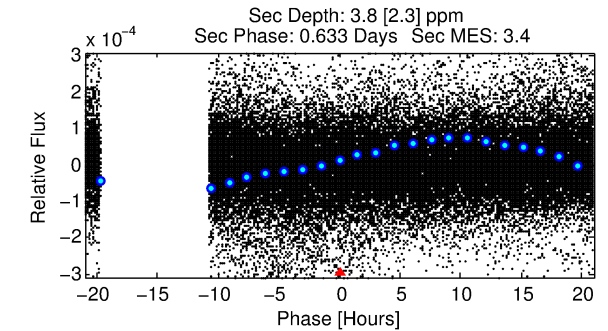
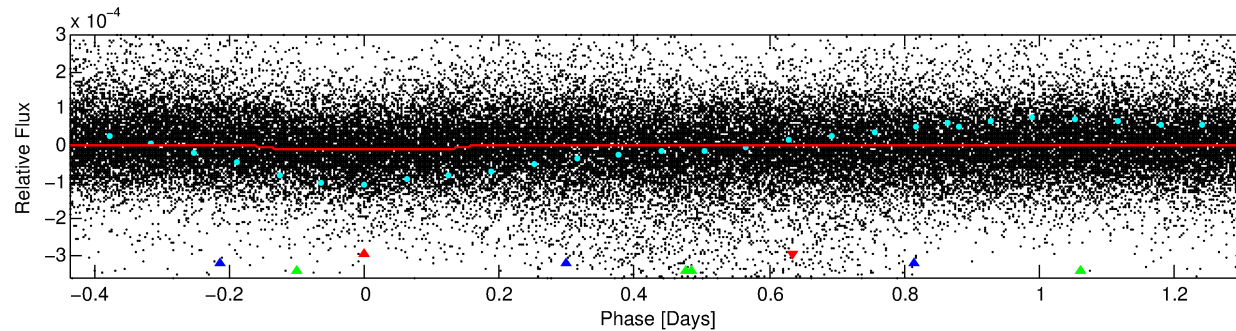
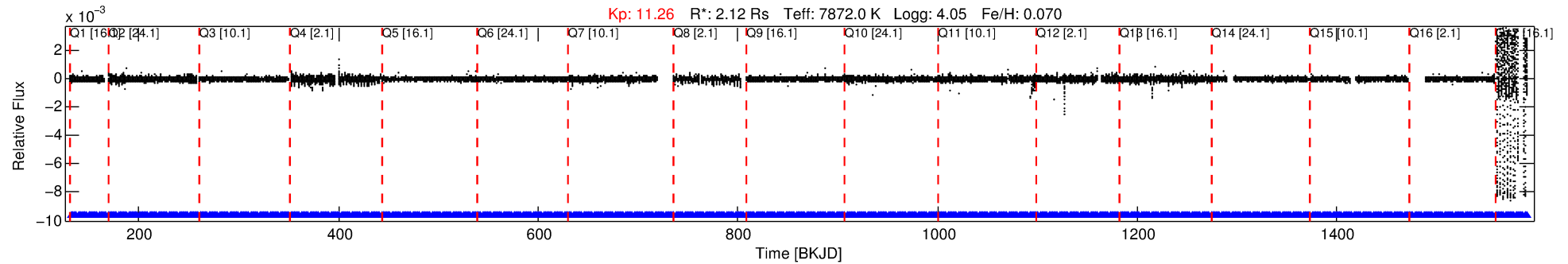
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012307309-01

No Significant Match Found

DV One-Page Summary

KIC: 12307309 Candidate: 1 of 3 Period: 1.745 d



DV Fit Results:

Period = 1.74523 [0.00002] d
Epoch = 132.5669 [0.0048] BKJD
Rp/R* = 0.0028 [0.0026]
a/R* = 1.87 [7.43]
b = 0.00 [1908.88]
Seff = 12829.22 [4291.16]
Teff = 2714 [227] K
Rp = 0.66 [0.63] Re
a = 0.0348 [0.0070] AU
Ag = 5.86 [11.62] [0.42σ]
Teffp = 6530 [3213] K [1.18σ]

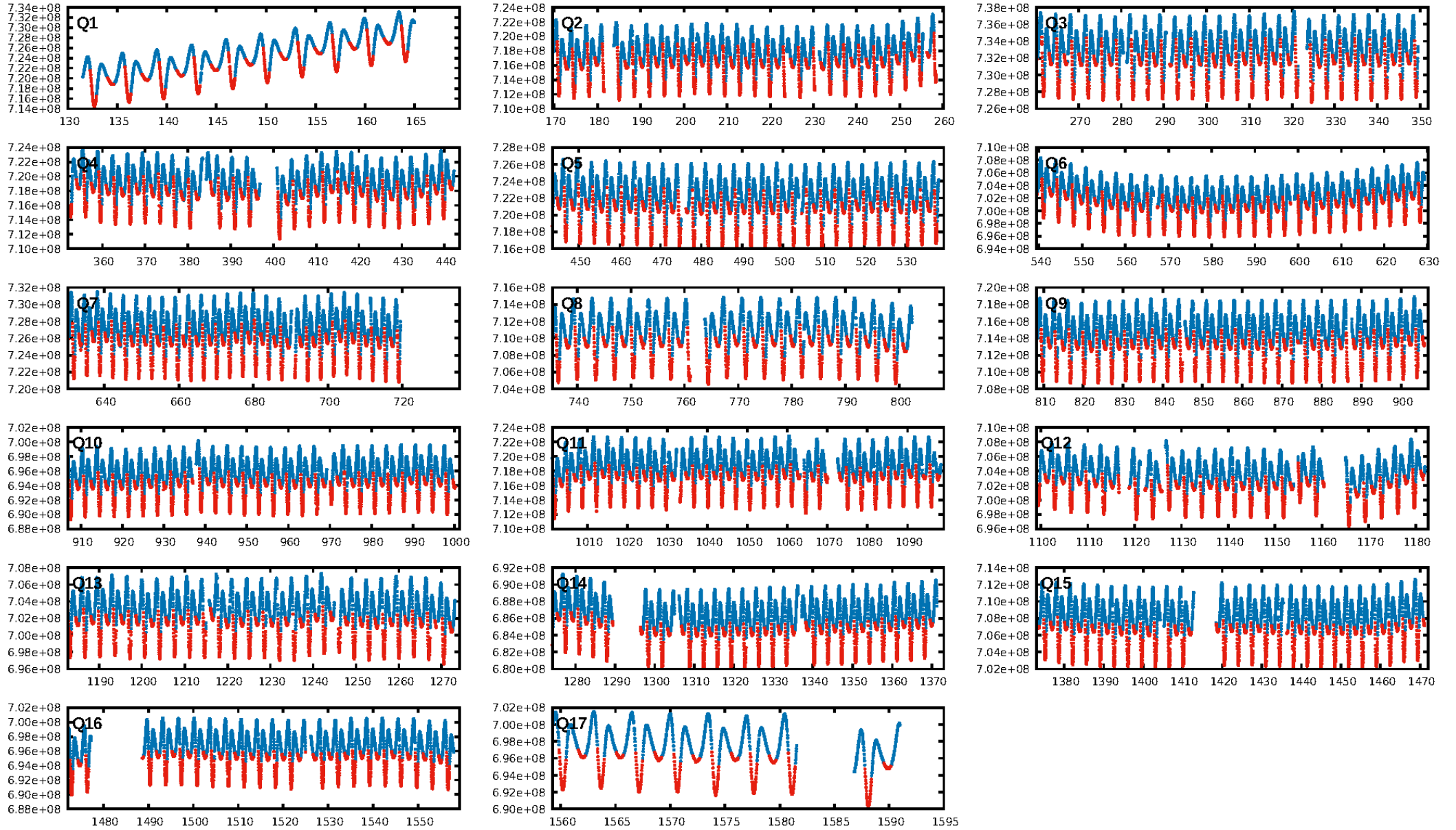
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [525.41σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.39e-27
RollingBand-fgt: 1.00 [738/738]
GhostDiagnostic-chr: 0.6171
Centroid-sig: 0.0%
Centroid-so: 7.830 arcsec [5.32σ]
OotOffset-rm: 0.026 arcsec [0.37σ]
KicOffset-rm: 0.035 arcsec [0.49σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

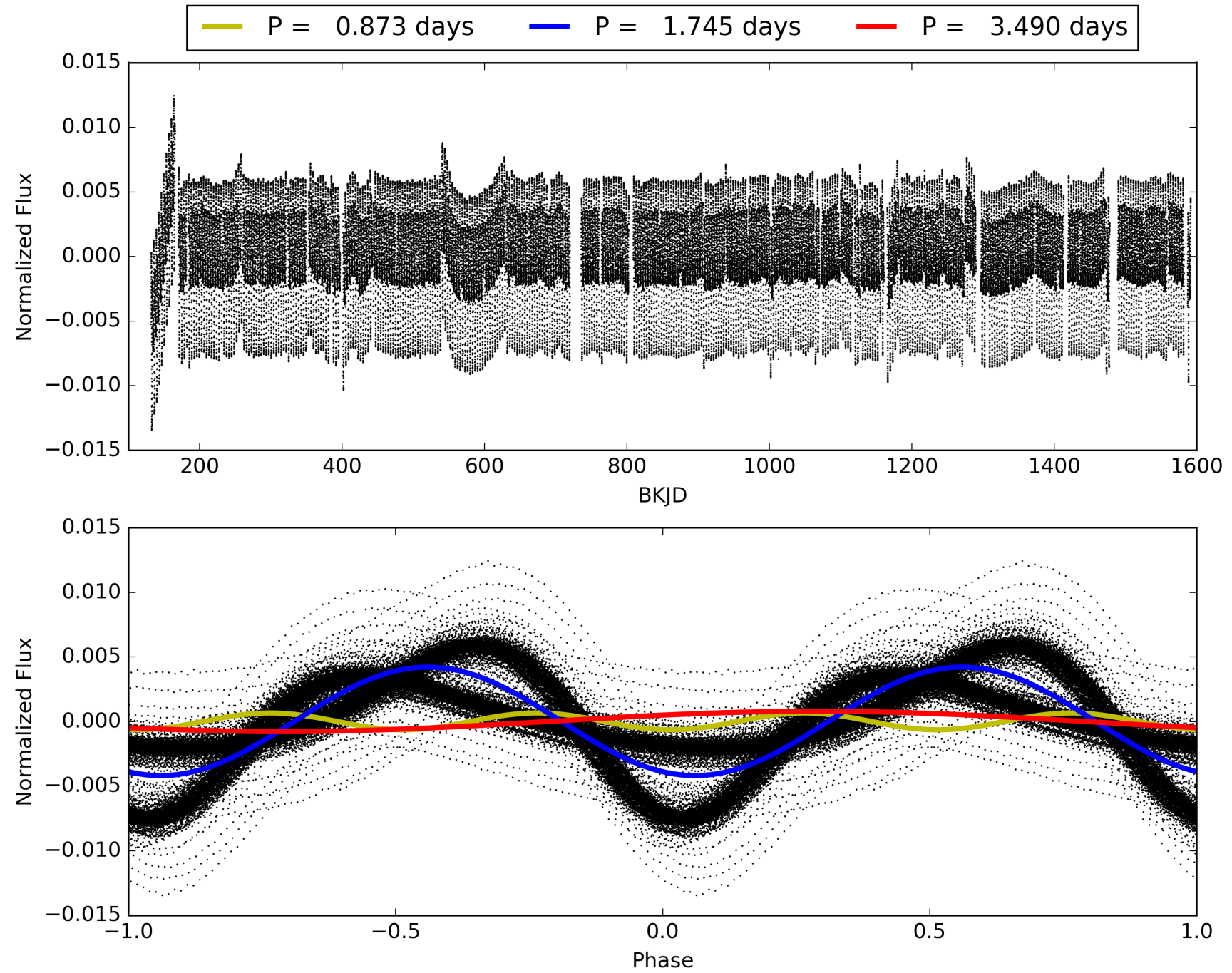
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:57:17 Z

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

TCE 012307309-01, PDC Light Curves

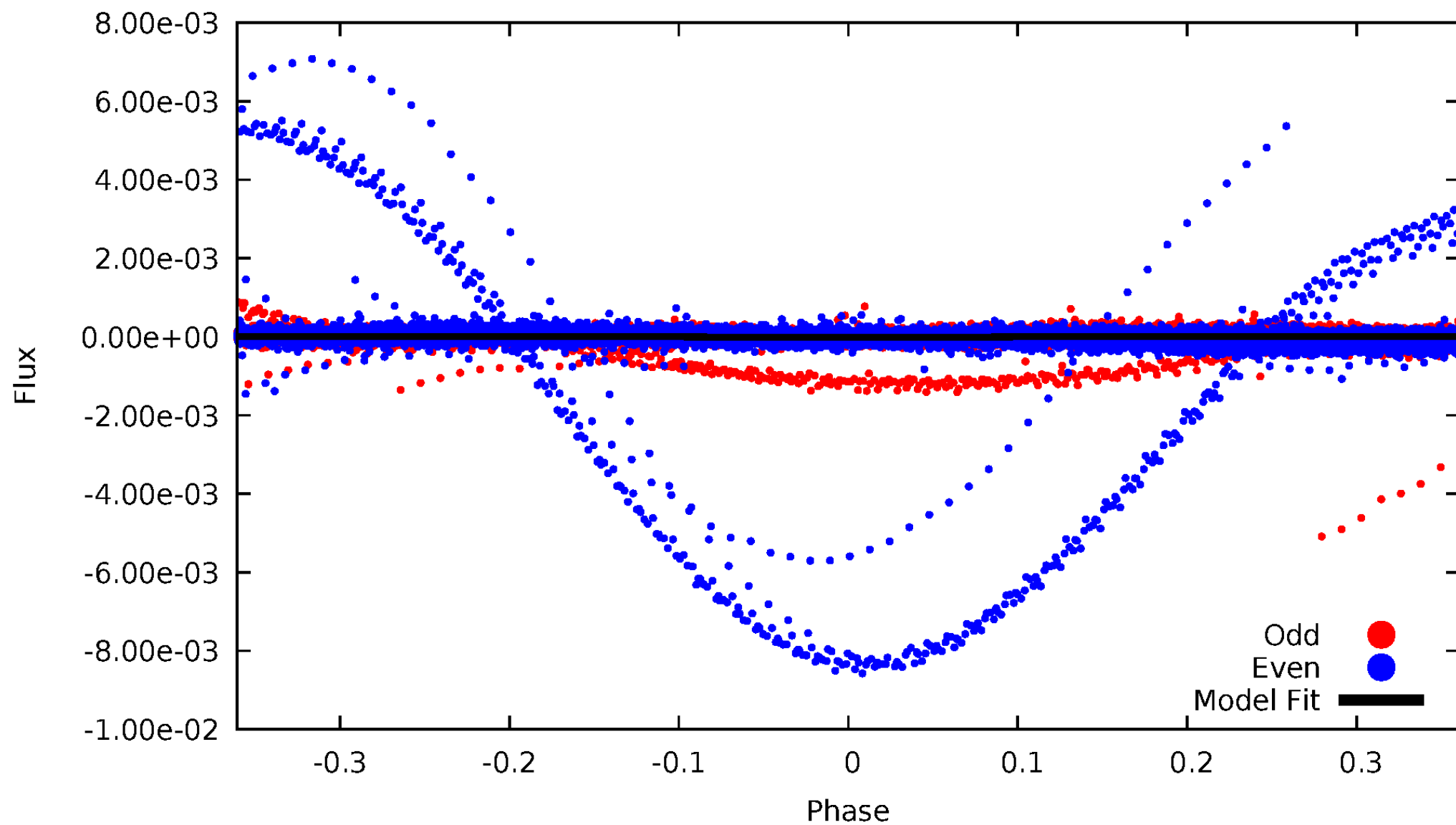


TCE 012307309-01



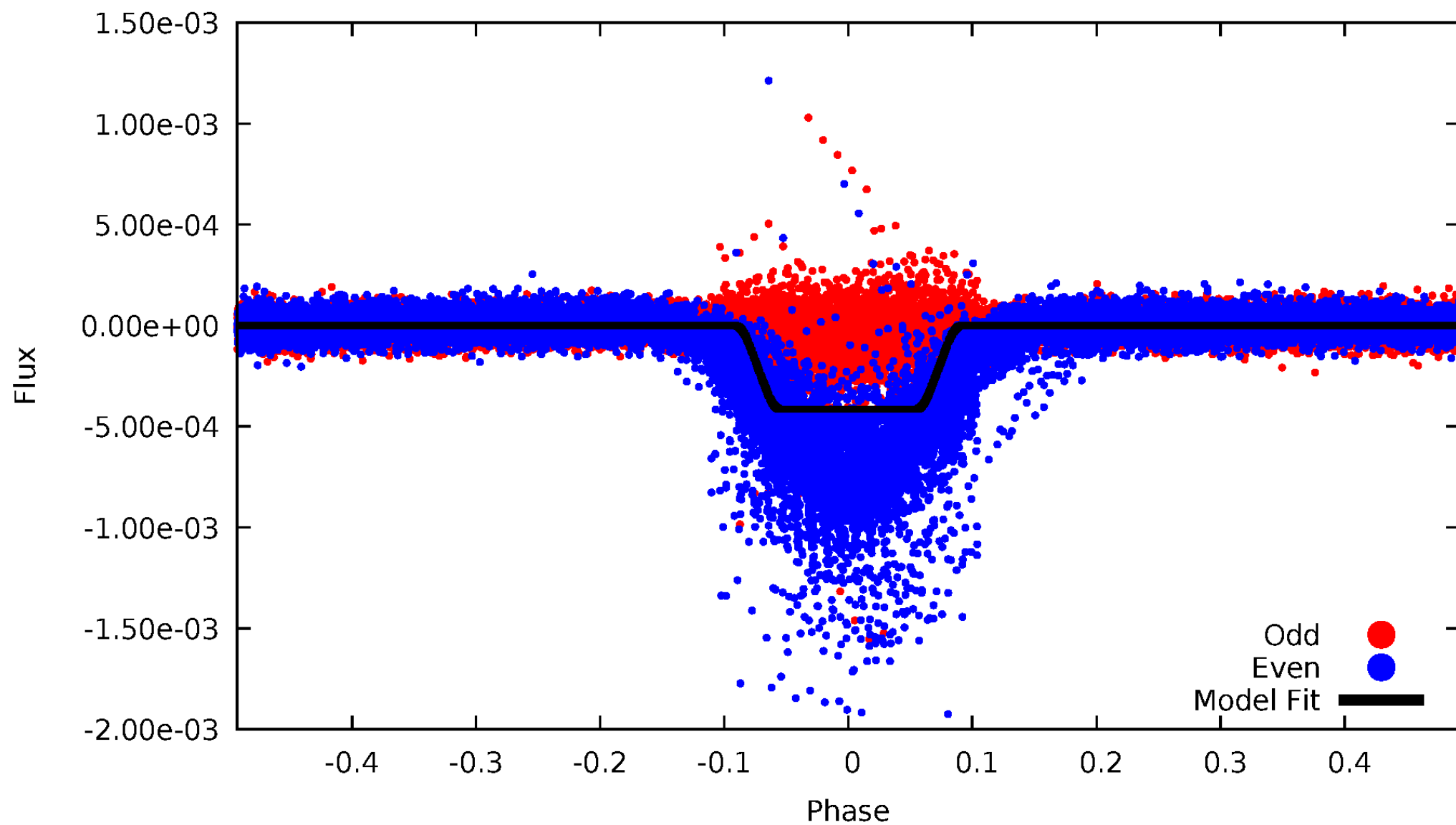
DV Odd/Even

TCE 012307309-01



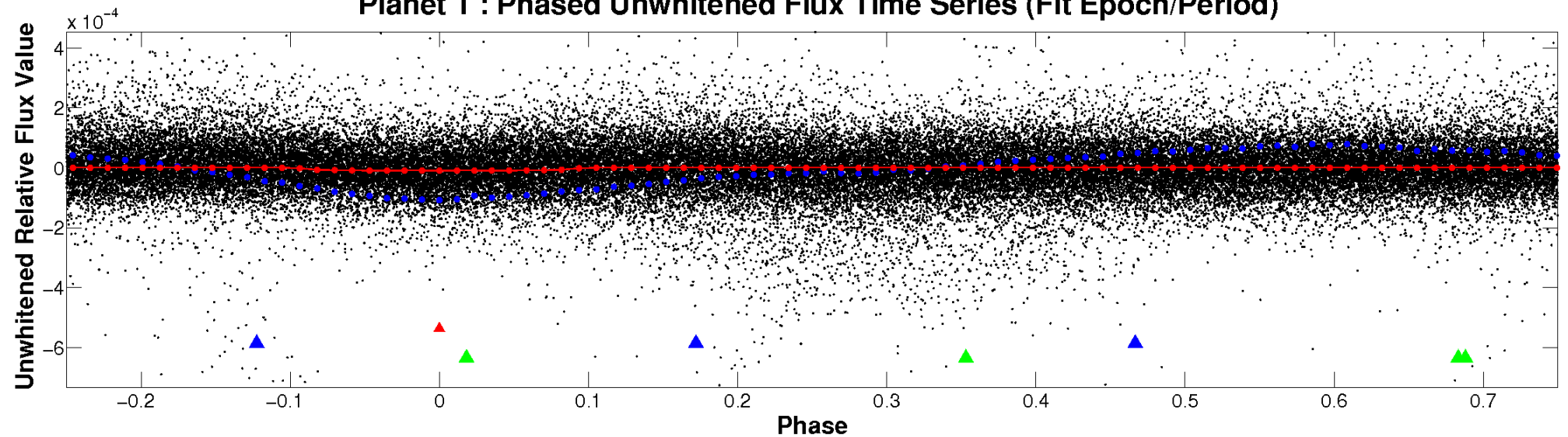
ALT Odd/Even

TCE 012307309-01

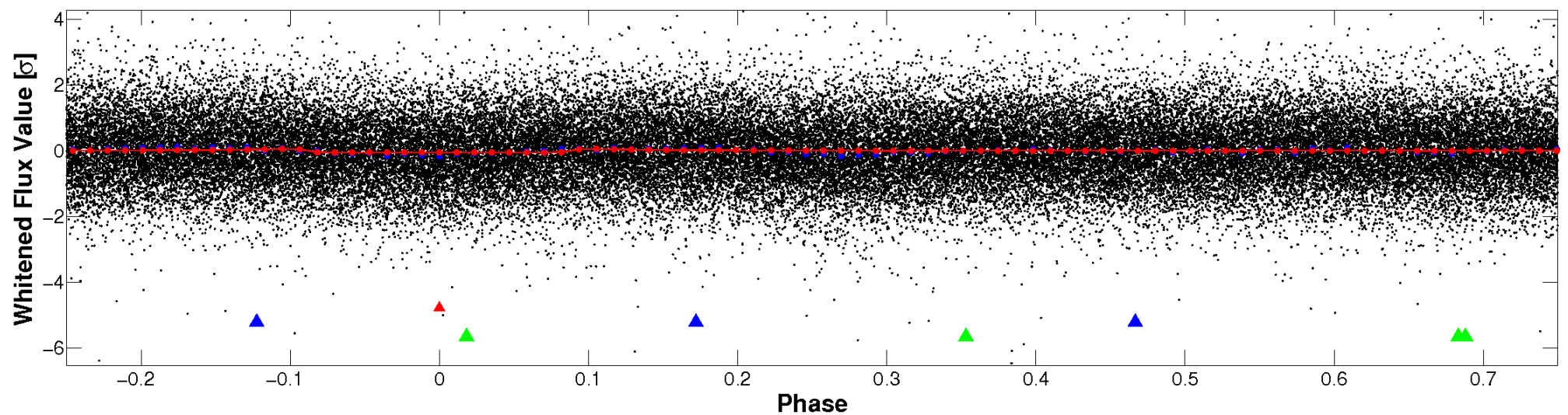


Non-Whitened Vs. Whitened Light Curve

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

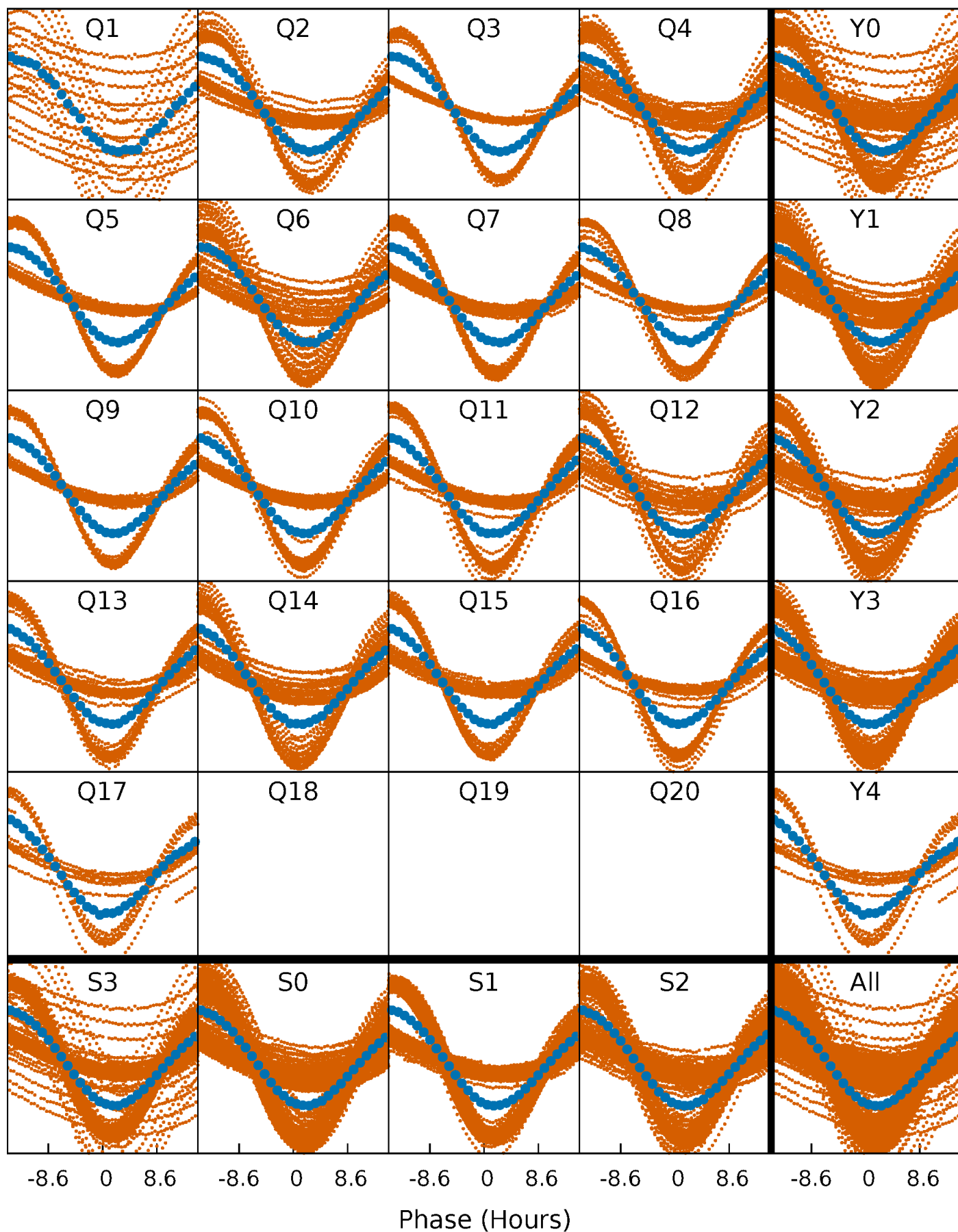


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



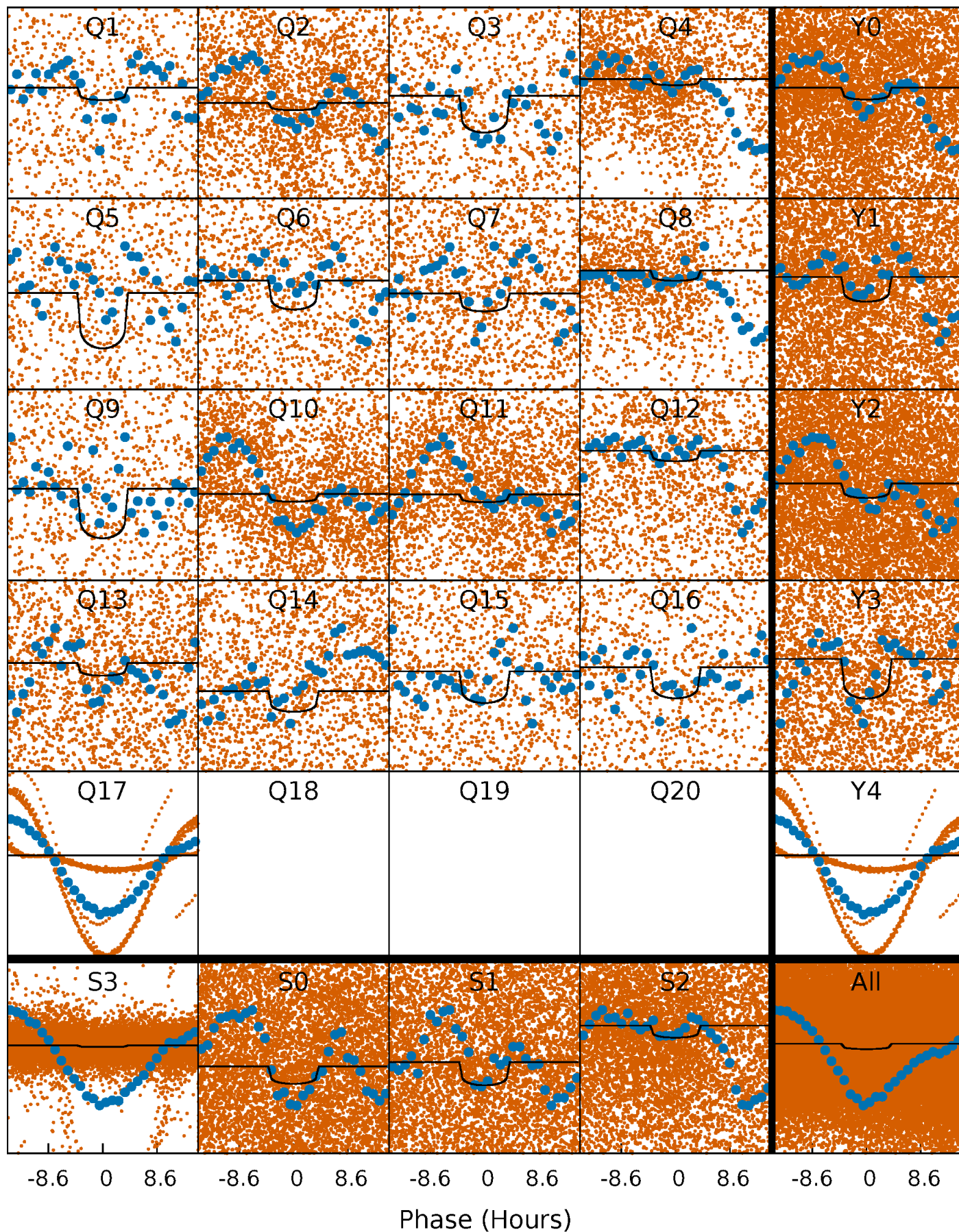
PDC Quarter-Phased Transit Curves

TCE 012307309-01 P= 1.745232 Days $T_0=132.566882$ (BKJD)



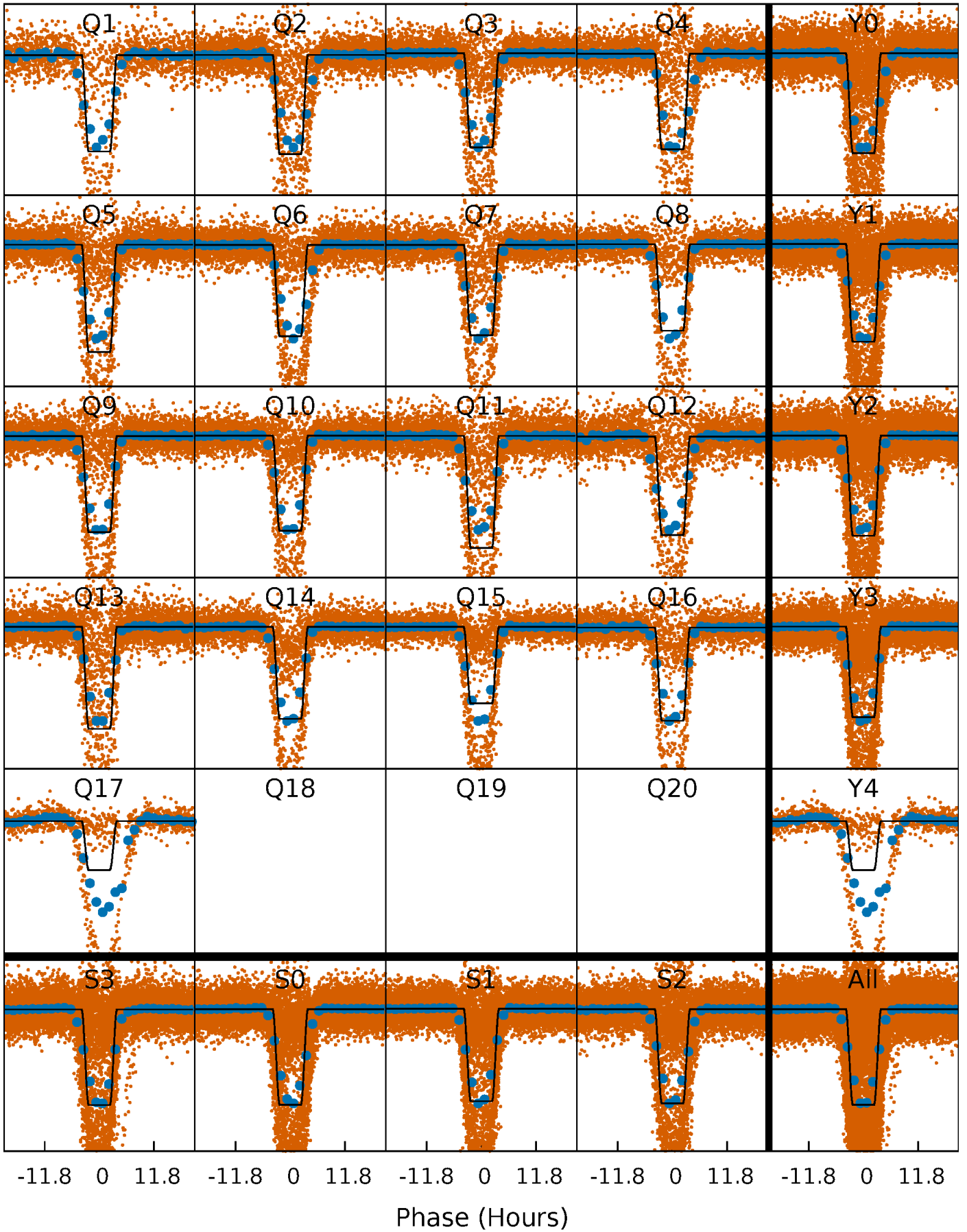
DV Quarter-Phased Transit Curves

TCE 012307309-01 P= 1.745232 Days $T_0=132.566882$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

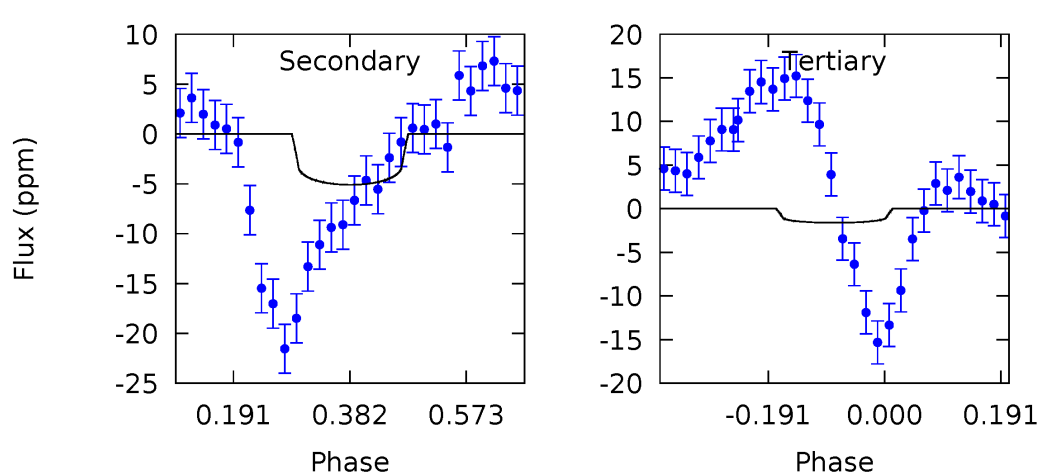
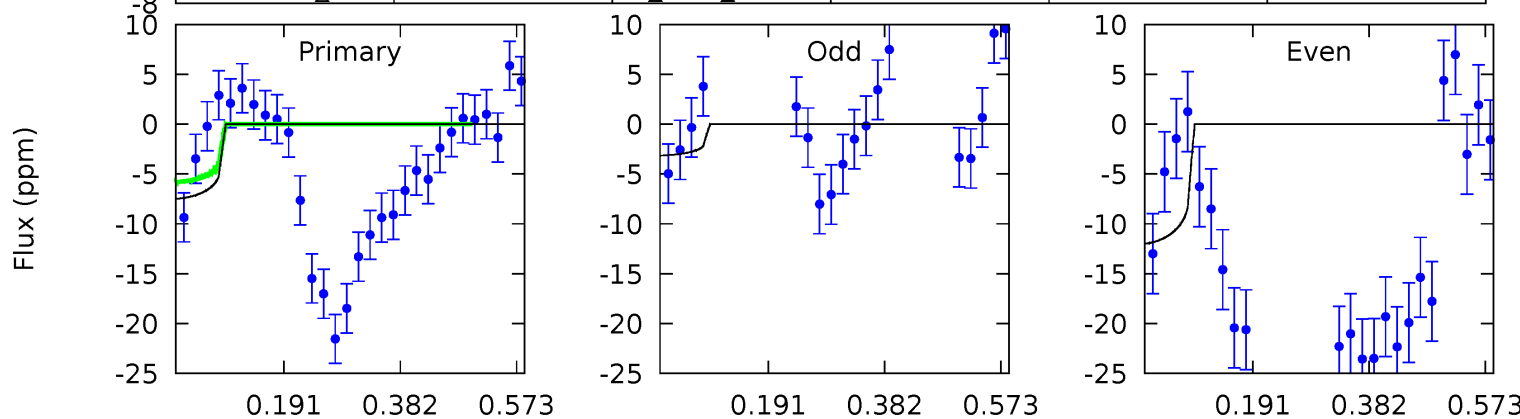
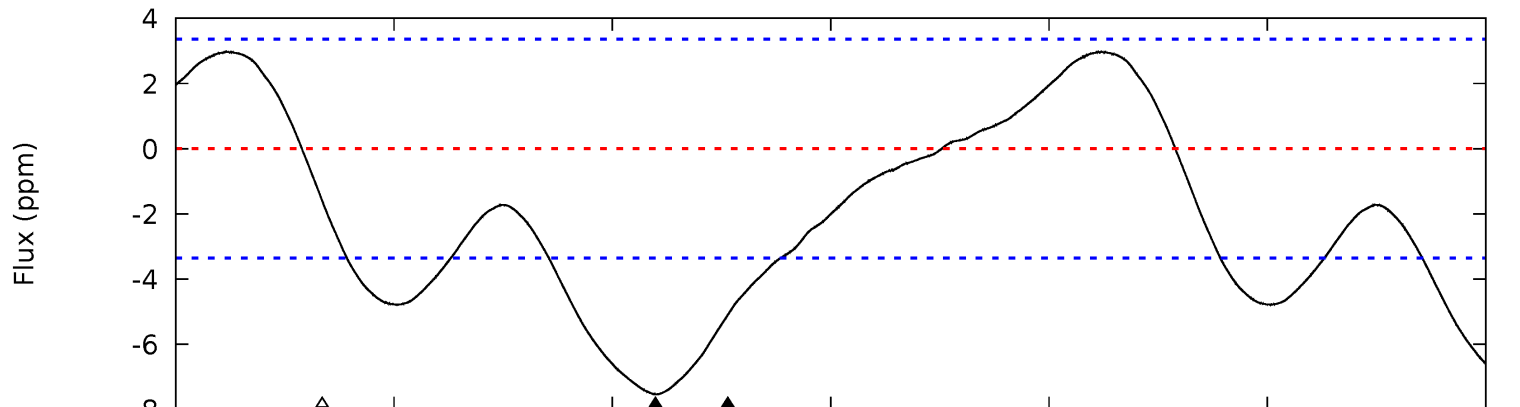
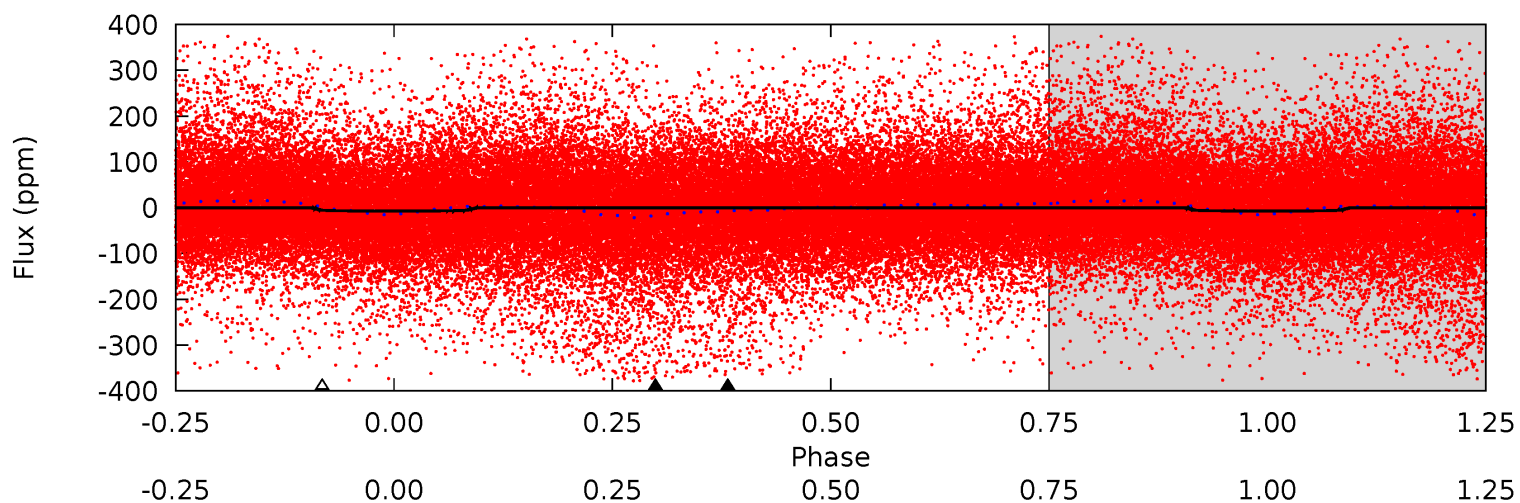
TCE 012307309-01 P= 1.745093 Days $T_0=132.600776$ (BKJD)



DV Model-Shift Uniqueness Test

012307309-01, P = 1.745232 Days, E = 130.821650 Days

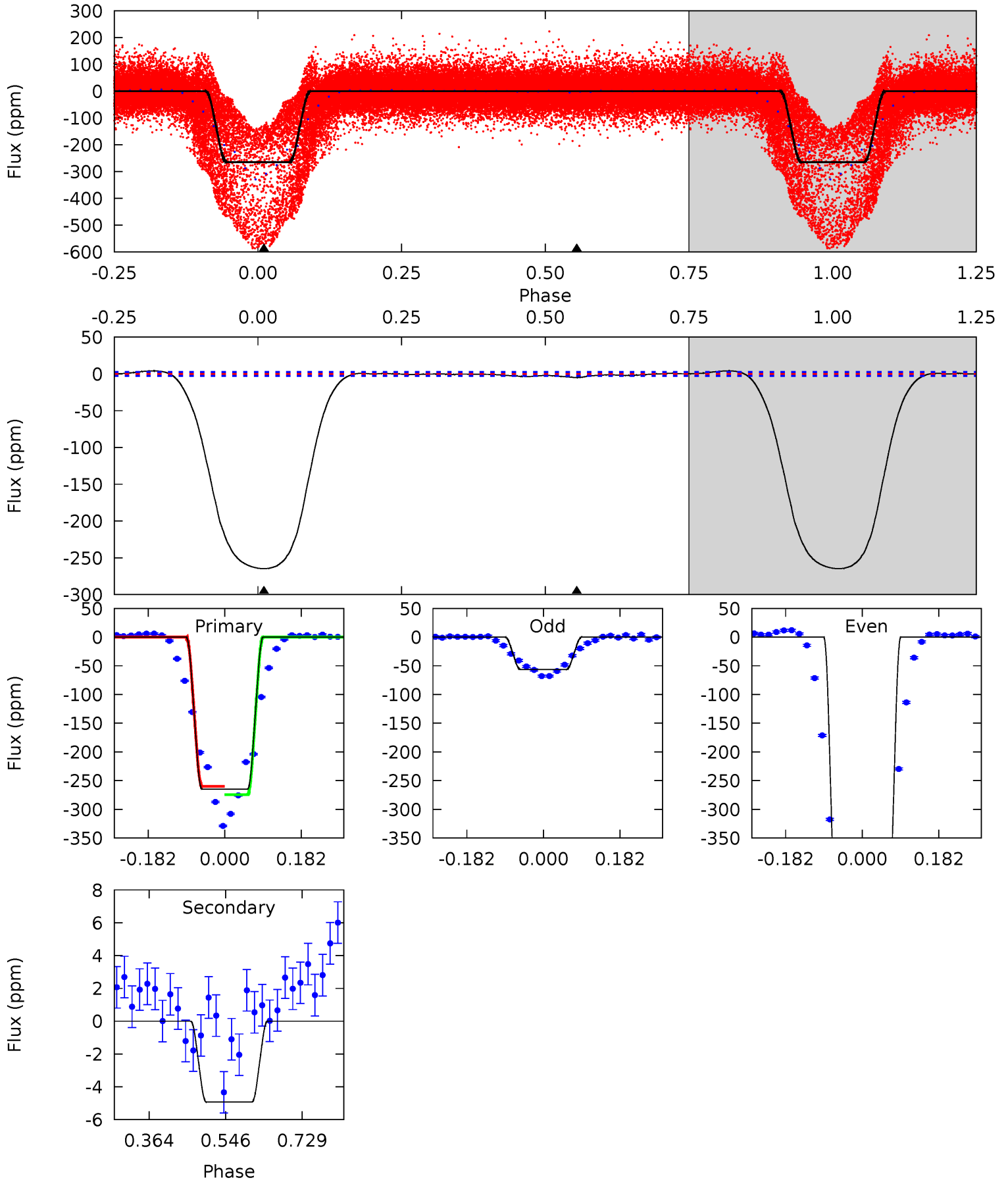
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.94	6.73	2.11	0	4.43	1.31	3.36	7.83	9.94	4.61	6.73	5.87	10.7	0.28	2.24



Alt Model-Shift Uniqueness Test

012307309-01, P = 1.745093 Days, E = 130.855683 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
440.5	8.19	0	0	4.44	1.33	2.35	440.5	440.5	8.19	8.19	661.4	1.18	0.02	0



Stellar Parameters For KIC 012307309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7872^{+216}_{-351}	$4.049^{+0.150}_{-0.150}$	$0.070^{+0.150}_{-0.350}$	$2.124^{+0.524}_{-0.477}$	$1.841^{+0.147}_{-0.319}$	$0.271^{+0.215}_{-0.121}$
	+3%/-4%	+4%/-4%	+214%/-500%	+25%/-22%	+8%/-17%	+79%/-45%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 012307309-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-5 ± 1	$0.76^{+0.55}_{-0.47}$	3777^{+262}_{-252}	6251^{+6124}_{-1476}	$5.809^{+34.910}_{-3.928}$
Alt.	-5 ± 1	$4.63^{+0.96}_{-0.75}$	3775^{+257}_{-230}	-3152^{+337}_{-232}	$0.147^{+0.070}_{-0.046}$

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 $A_{obs} \gg 1.0$

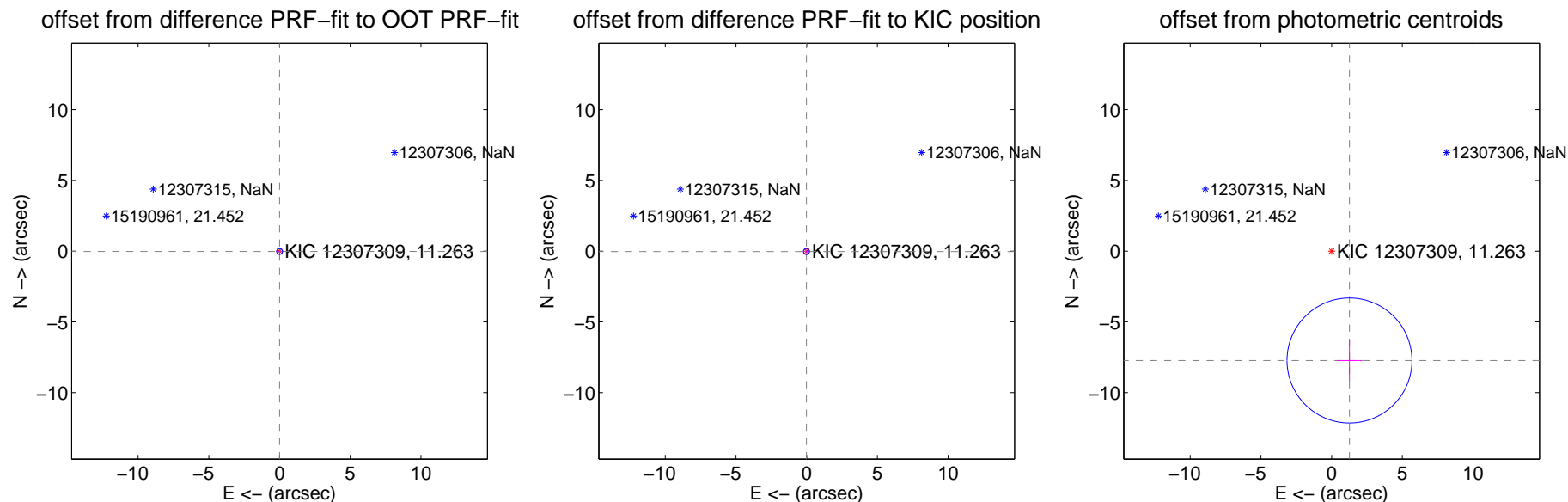
DV Centroid Data

Supplemental centroid analysis for 012307309-01. **Kepler magnitude: 11.26.** Transit SNR 7.15

There are 17 quarters with good PRF difference image offsets

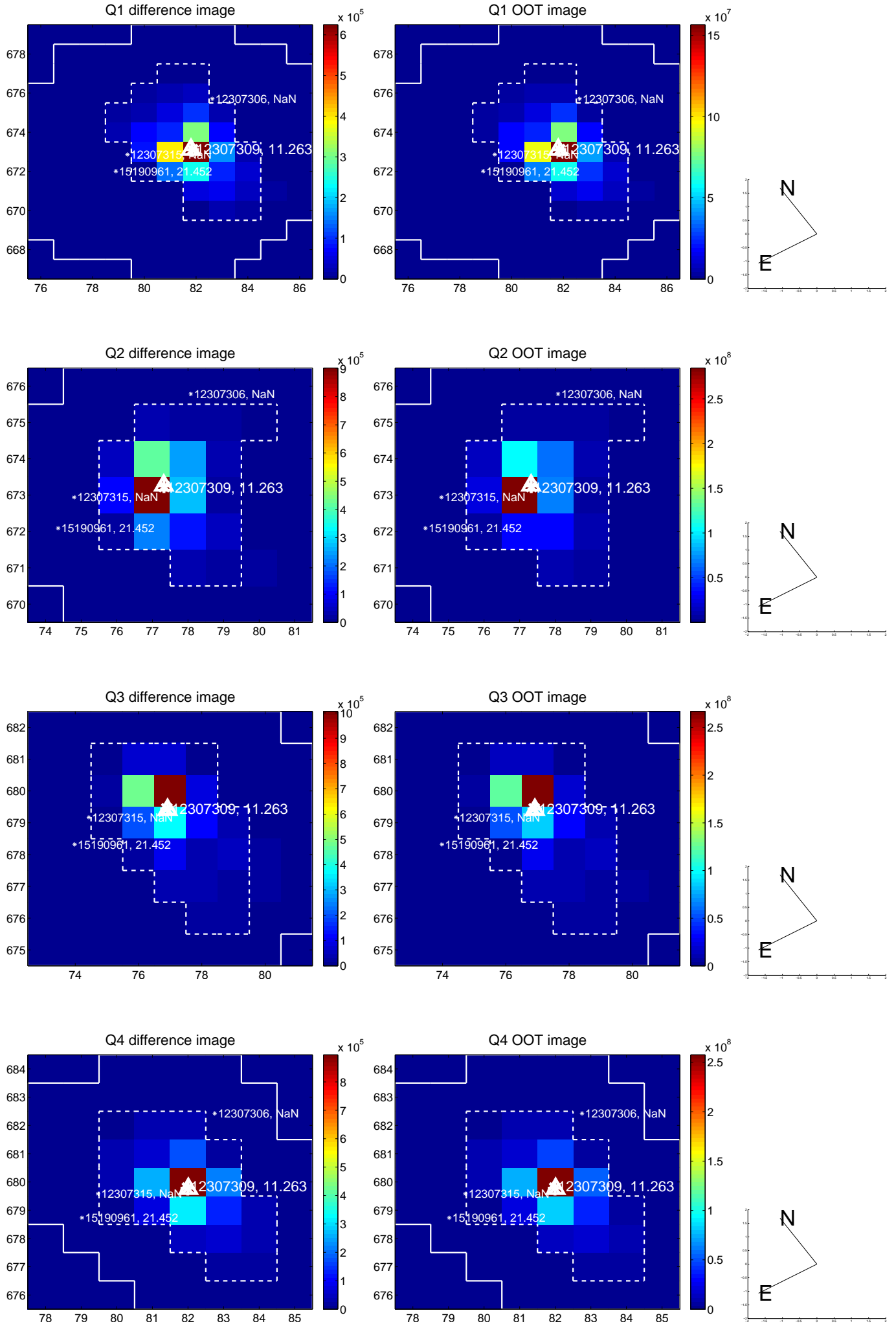
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.026 ± 0.069	0.37	-0.005 ± 0.067	-0.025 ± 0.069
PRF-fit source offset from KIC position	0.035 ± 0.071	0.49	0.019 ± 0.068	-0.029 ± 0.072
photometric centroid source offset	7.83 ± 1.47	5.32	-1.26 ± 0.89	-7.73 ± 1.48

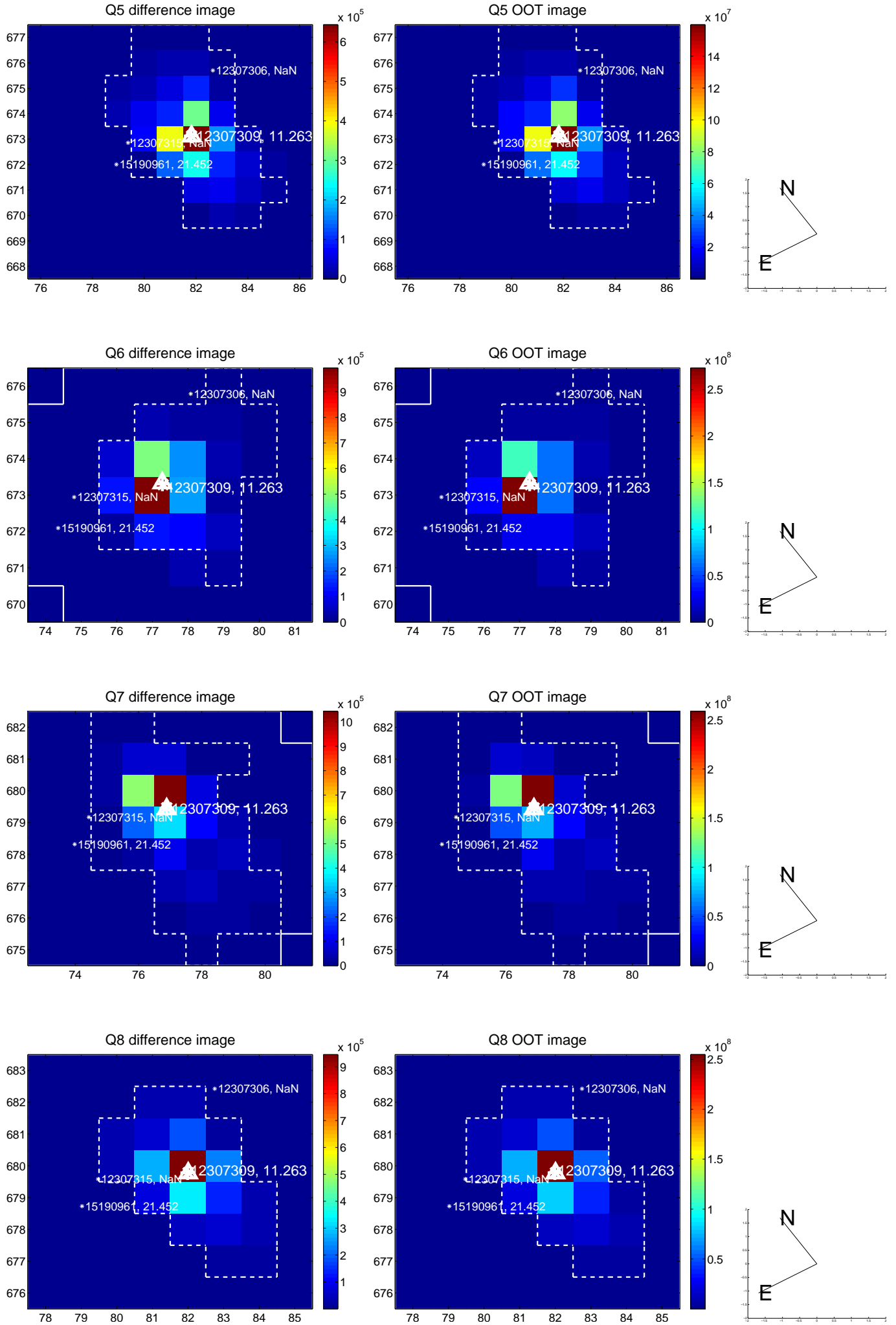


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

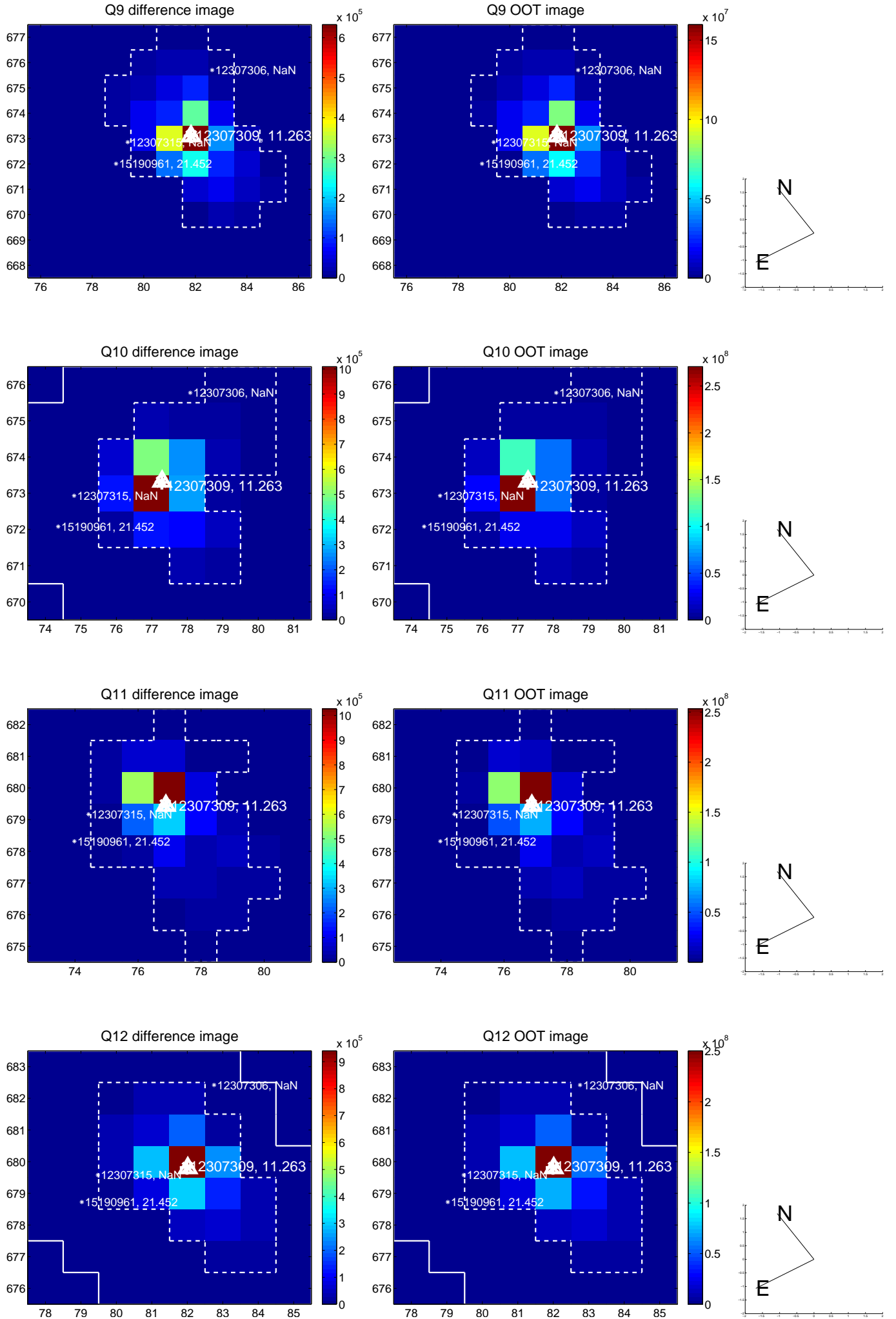
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



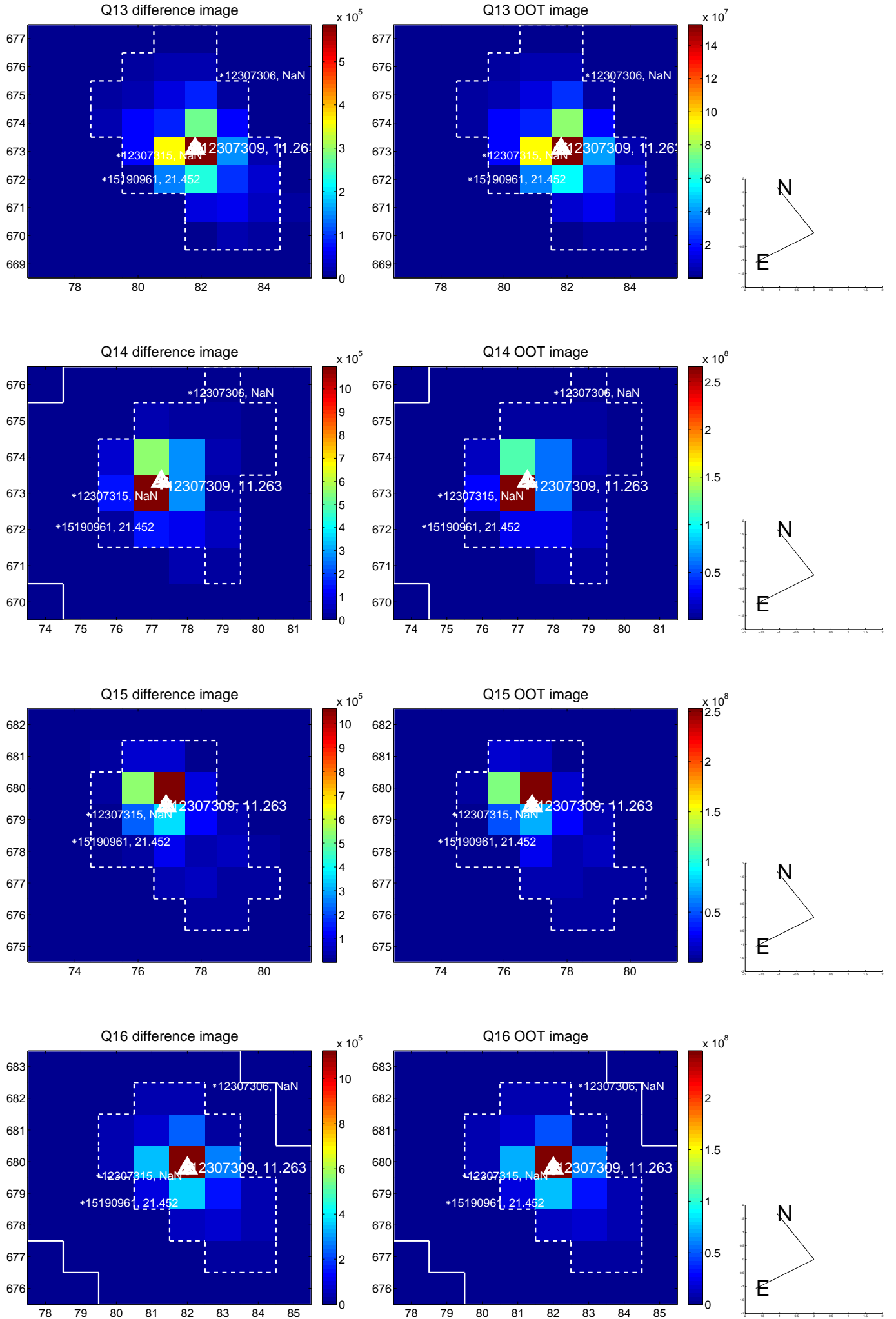
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



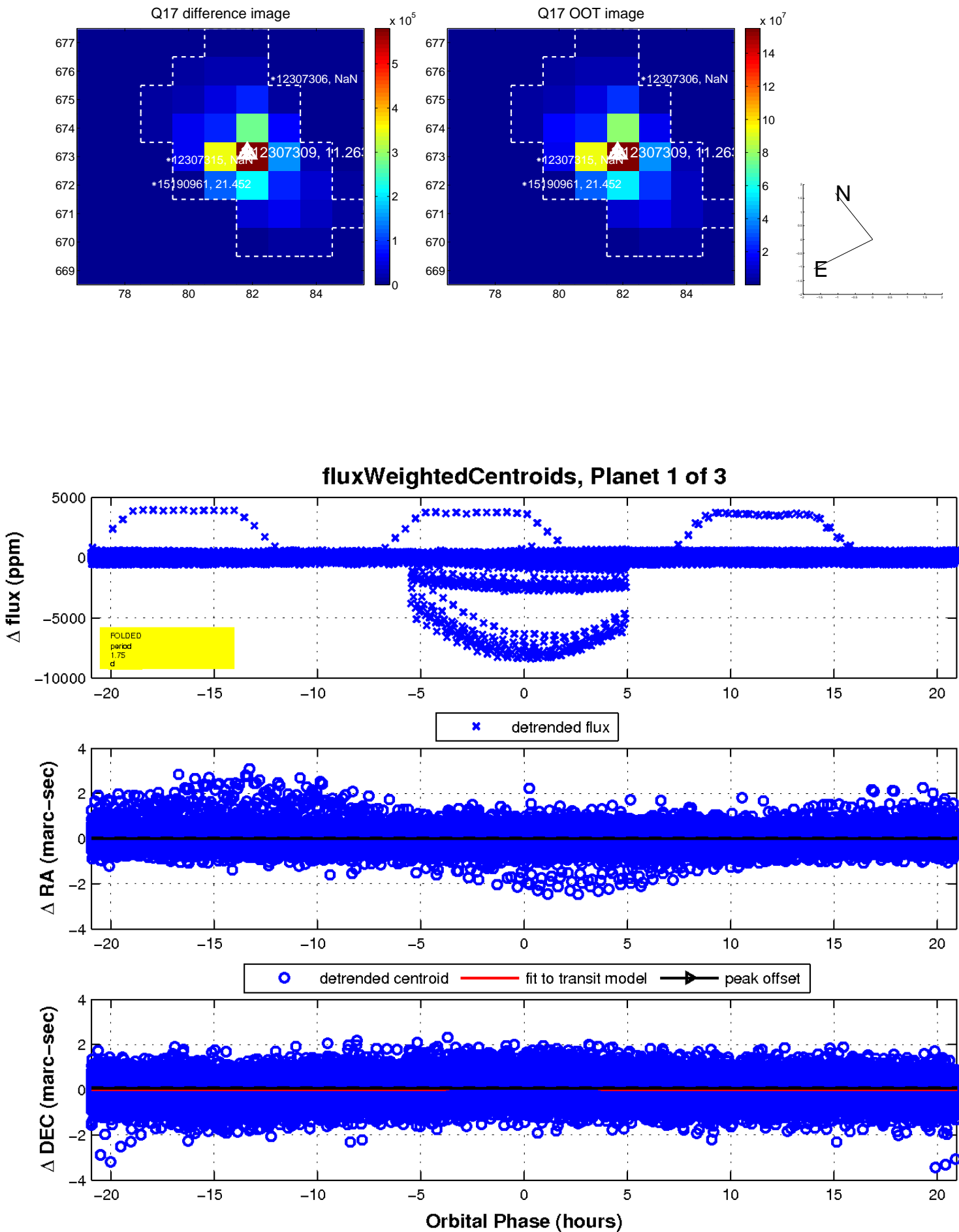
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

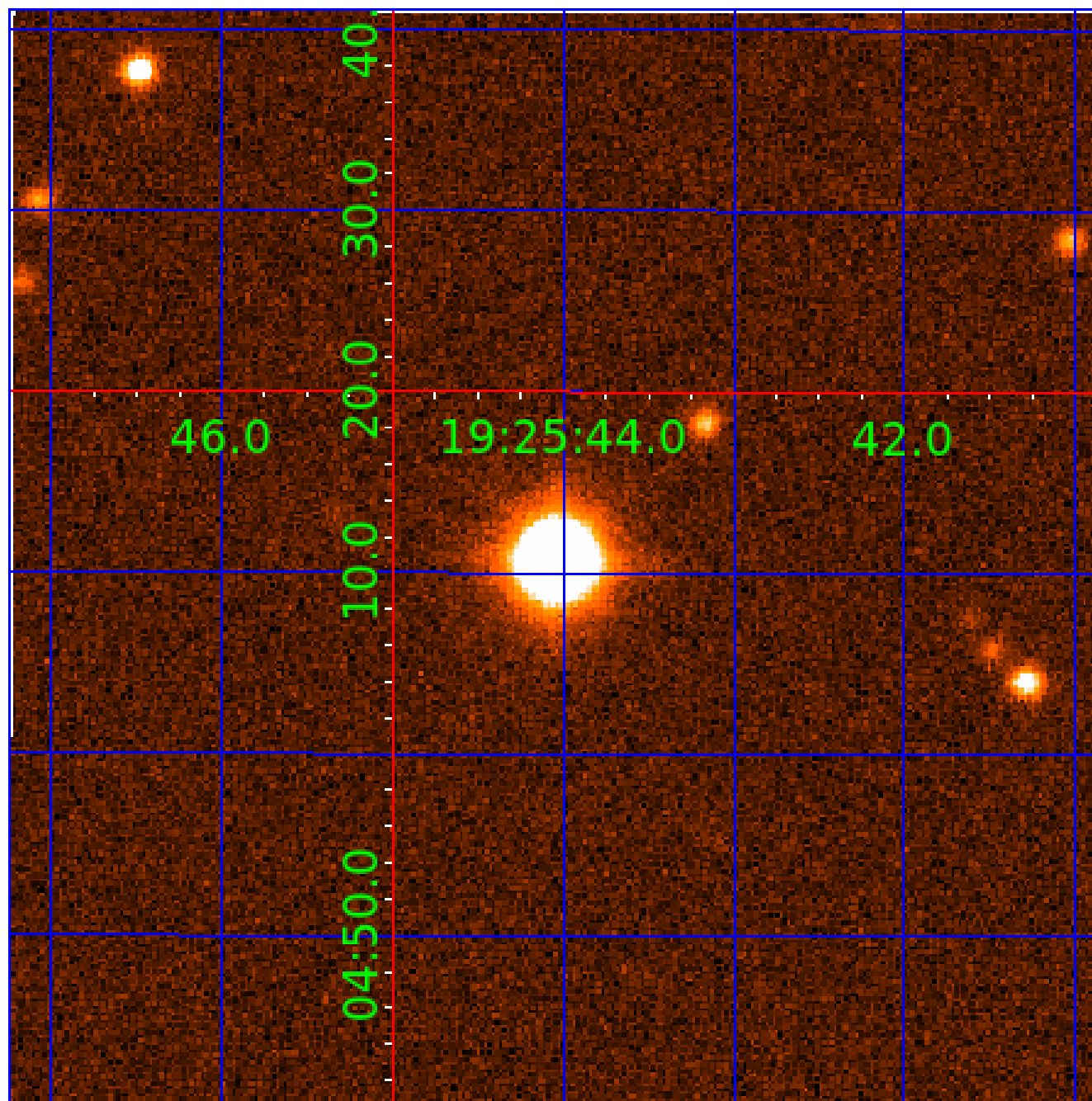


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012307309

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})
012307309-01	OBS	No	1.745232	132.566882	9.4	7.553	12.9	7.1	2.12	7872	0.66	12829.22
012307309-02	OBS	No	636.495632	262.528501	83.0	75.602	9.6	3.9	2.12	7872	2.20	4.92
012307309-03	OBS	No	369.404709	161.691362	59.1	15.000	9.2	-1.0	2.12	7872	1.66	10.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012307309-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
012307309-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
012307309-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED

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

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

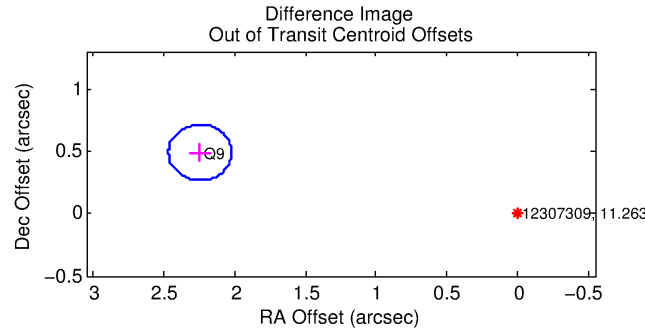
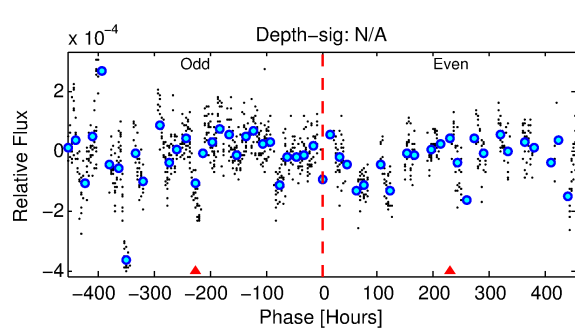
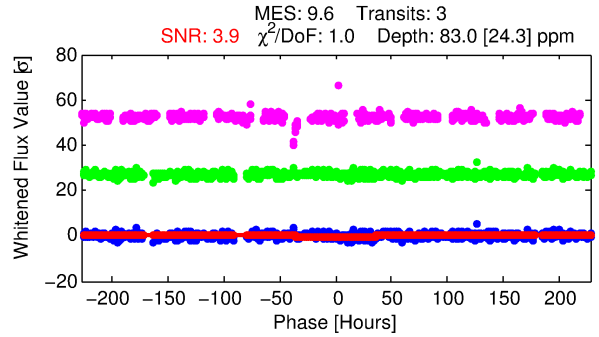
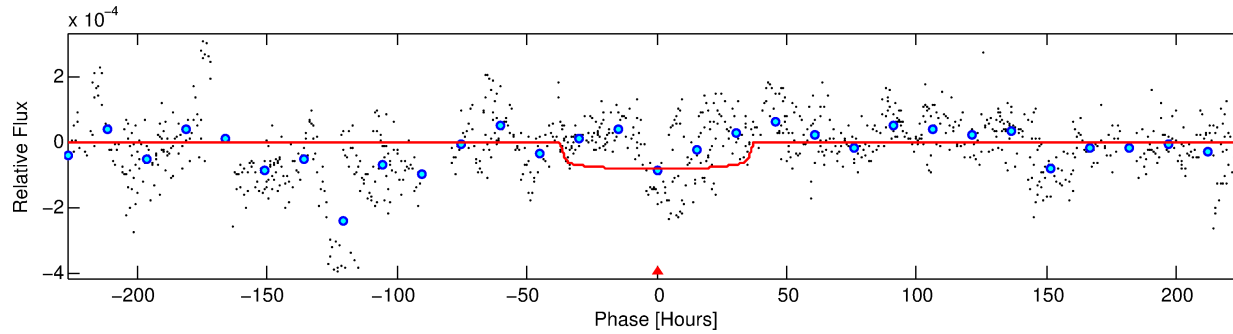
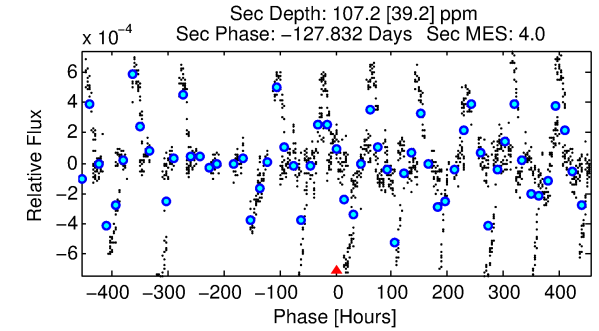
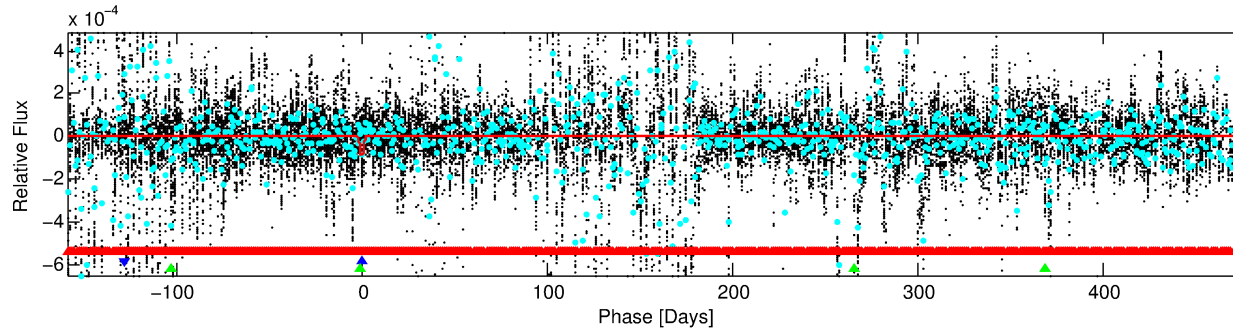
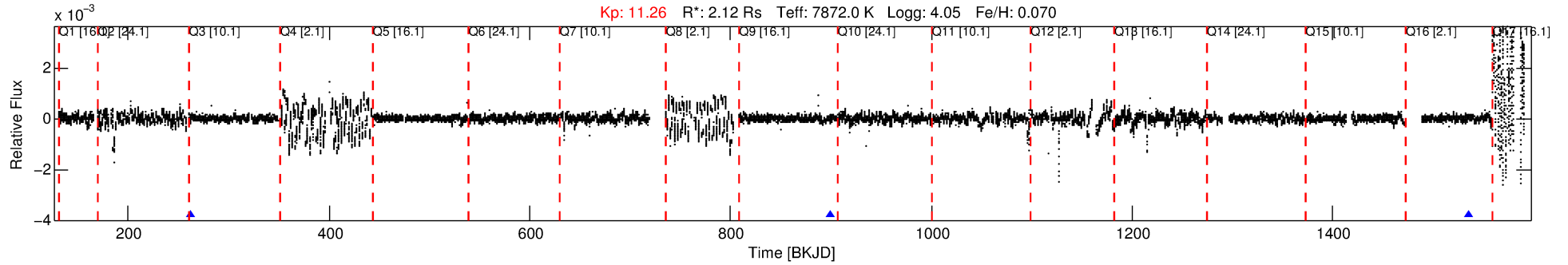
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012307309-02

No Significant Match Found

DV One-Page Summary

KIC: 12307309 Candidate: 2 of 3 Period: 636.496 d



DV Fit Results:

Period = 636.49563 [0.06520] d
Epoch = 262.5285 [0.0484] BKJD
Rp/R* = 0.0095 [0.0016]
a/R* = 32.65 [11.39]
b = 0.87 [0.09]
Seff = 4.92 [1.65]
Teq = 380 [32] K
Rp = 2.20 [0.65] Re
a = 1.7755 [0.3565] AU
Ag = 38256.32 [21750.24] [1.76σ]
Teff = 8213 [1077] K [7.27σ]

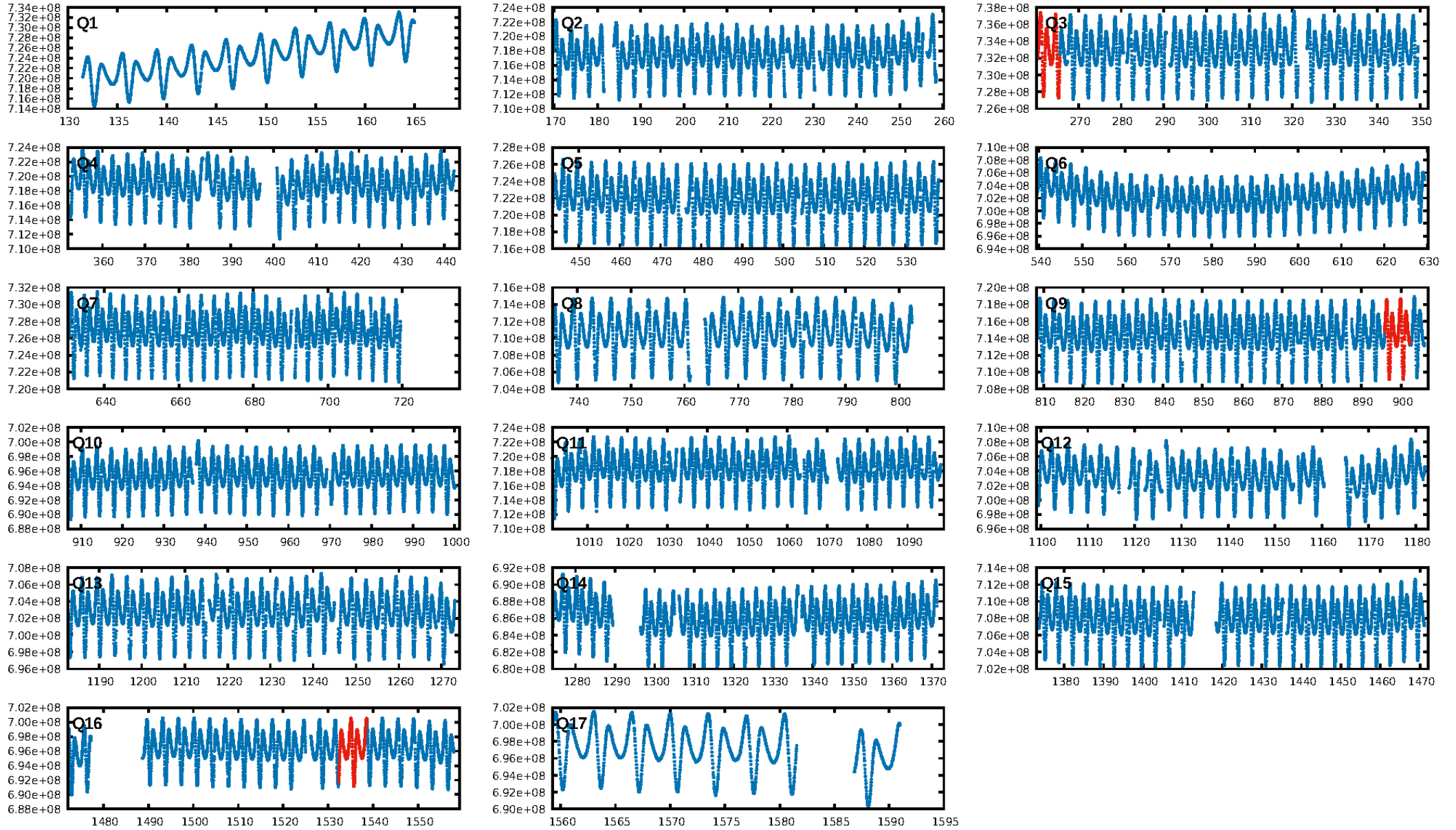
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [83.17σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 21.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.43e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.8025
Centroid-sig: 0.4%
Centroid-so: 3.352 arcsec [1.74σ]
OotOffset-rm: 2.298 arcsec [30.94σ]
KicOffset-rm: 2.450 arcsec [33.00σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.00 [0/1]

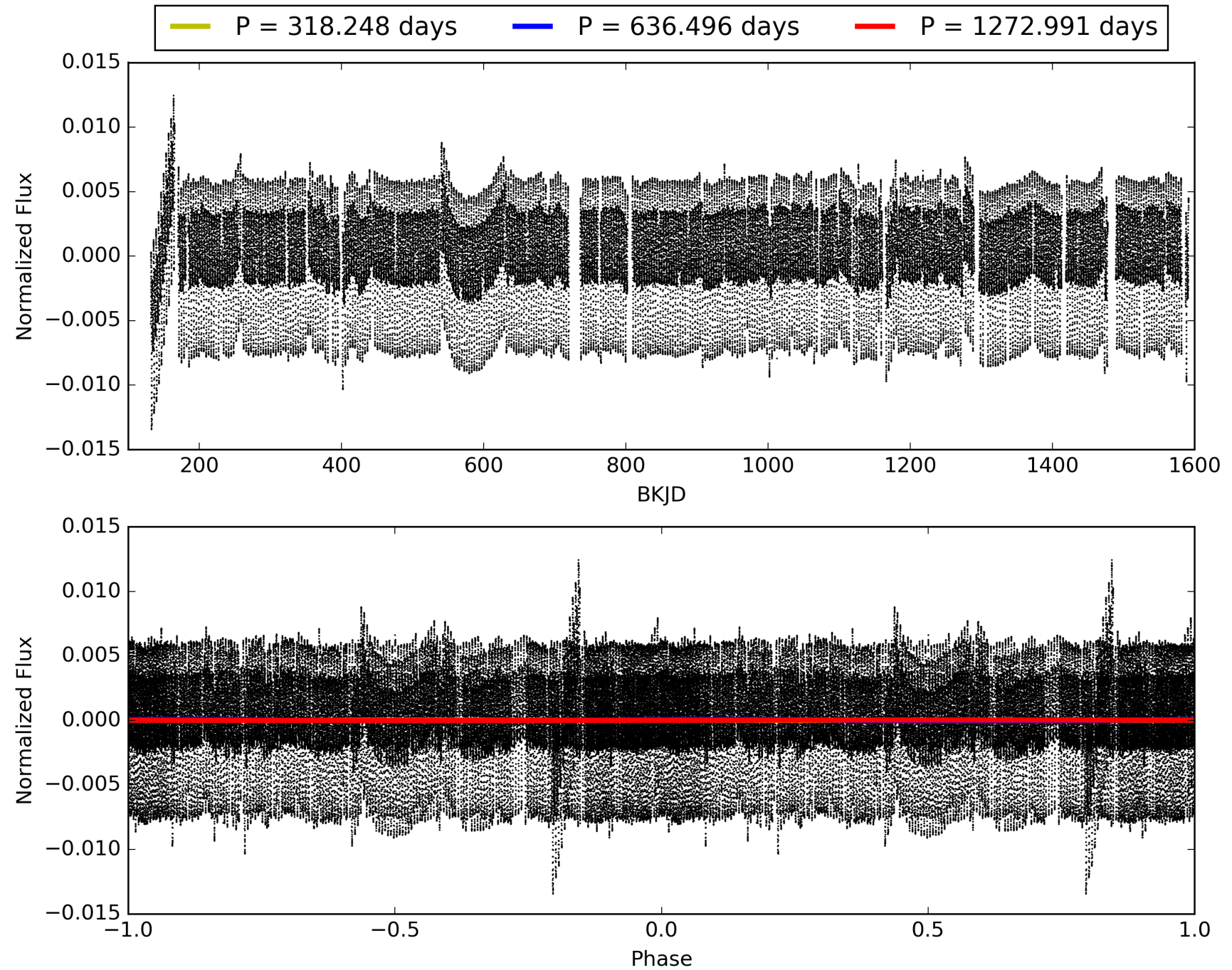
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:57:29 Z

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

TCE 012307309-02, PDC Light Curves

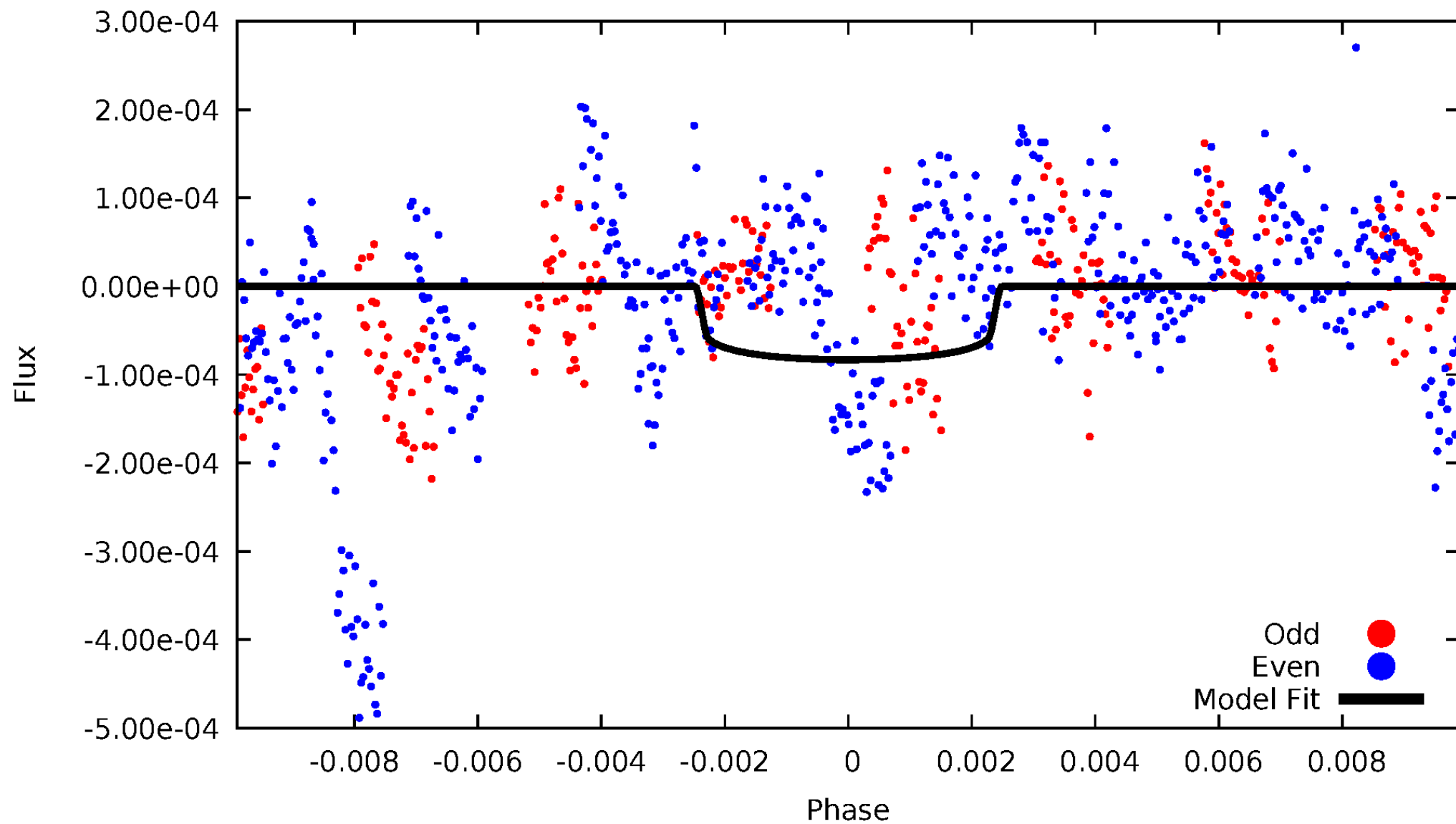


TCE 012307309-02



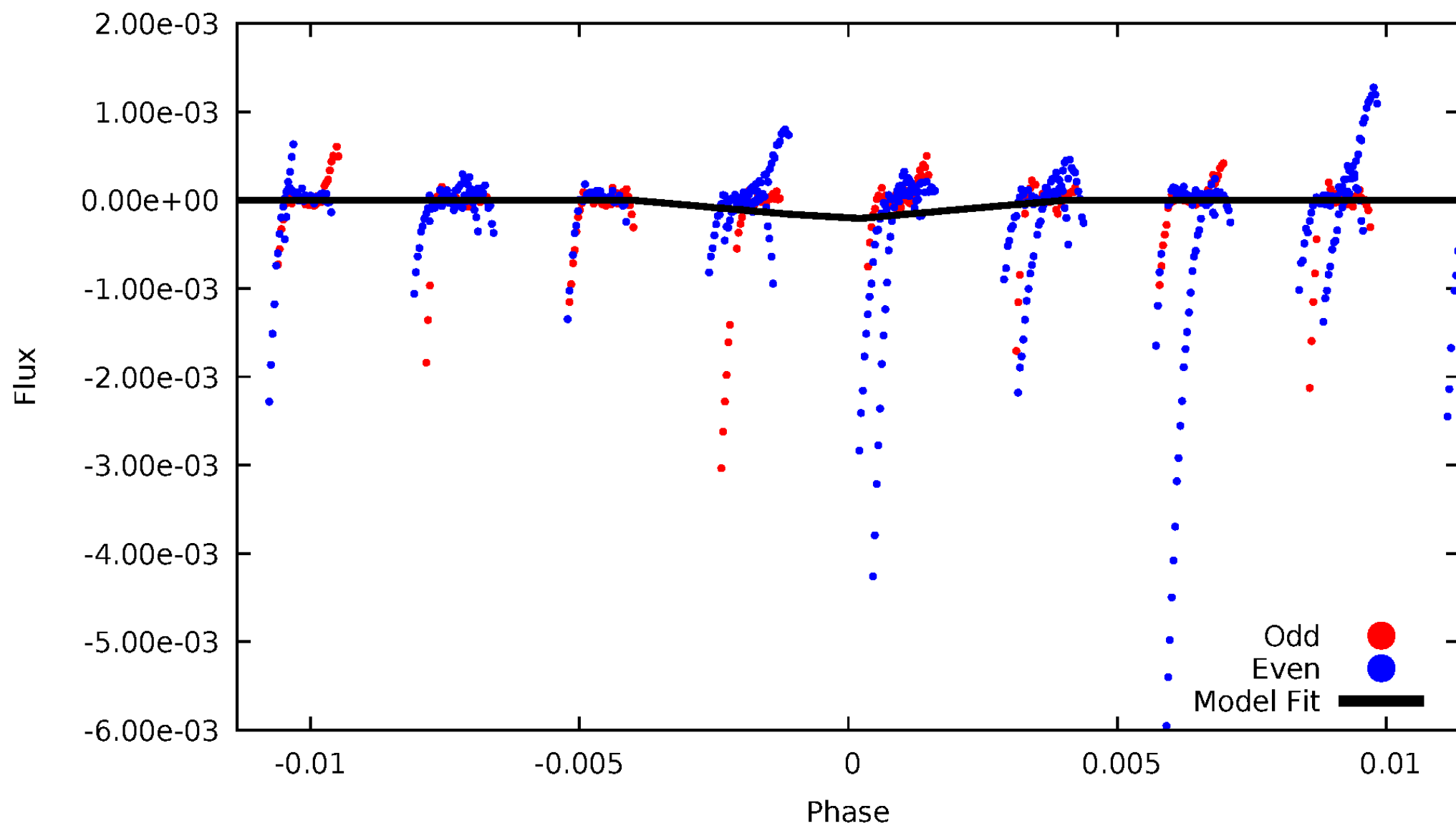
DV Odd/Even

TCE 012307309-02



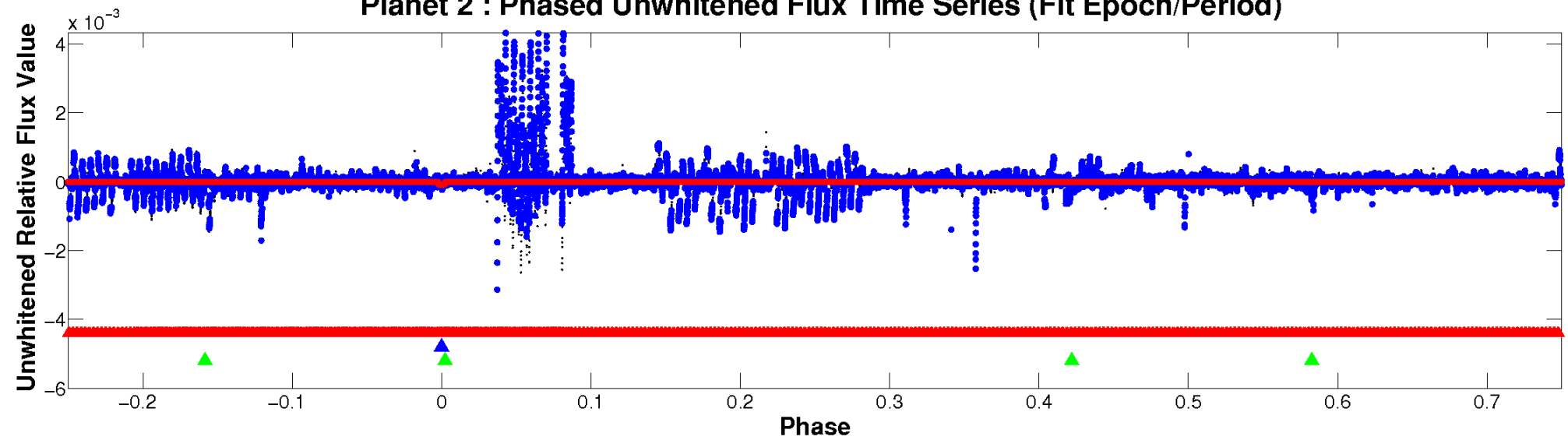
ALT Odd/Even

TCE 012307309-02

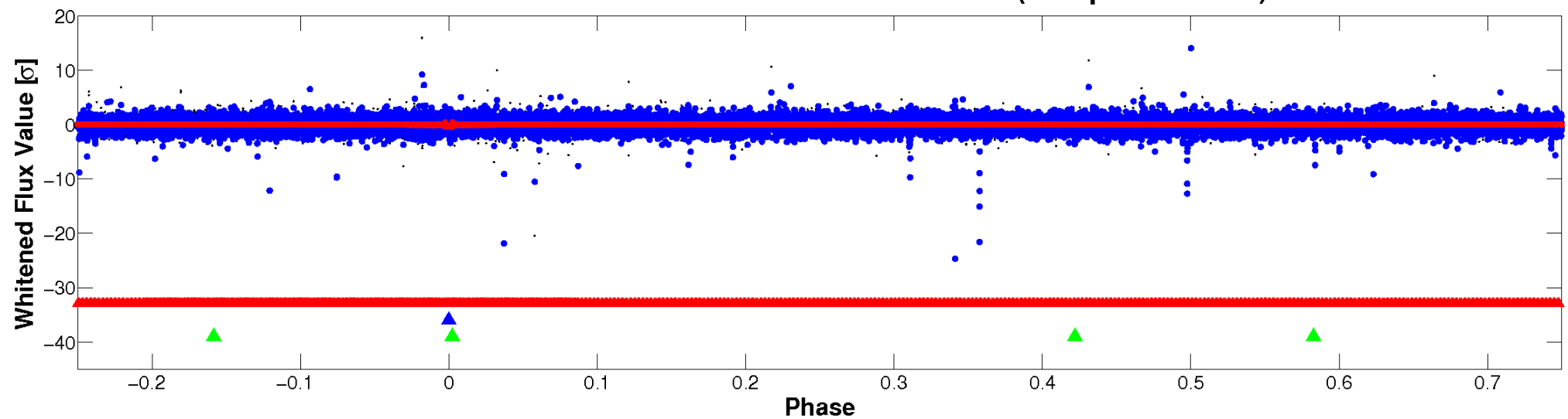


Non-Whitened Vs. Whitened Light Curve

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

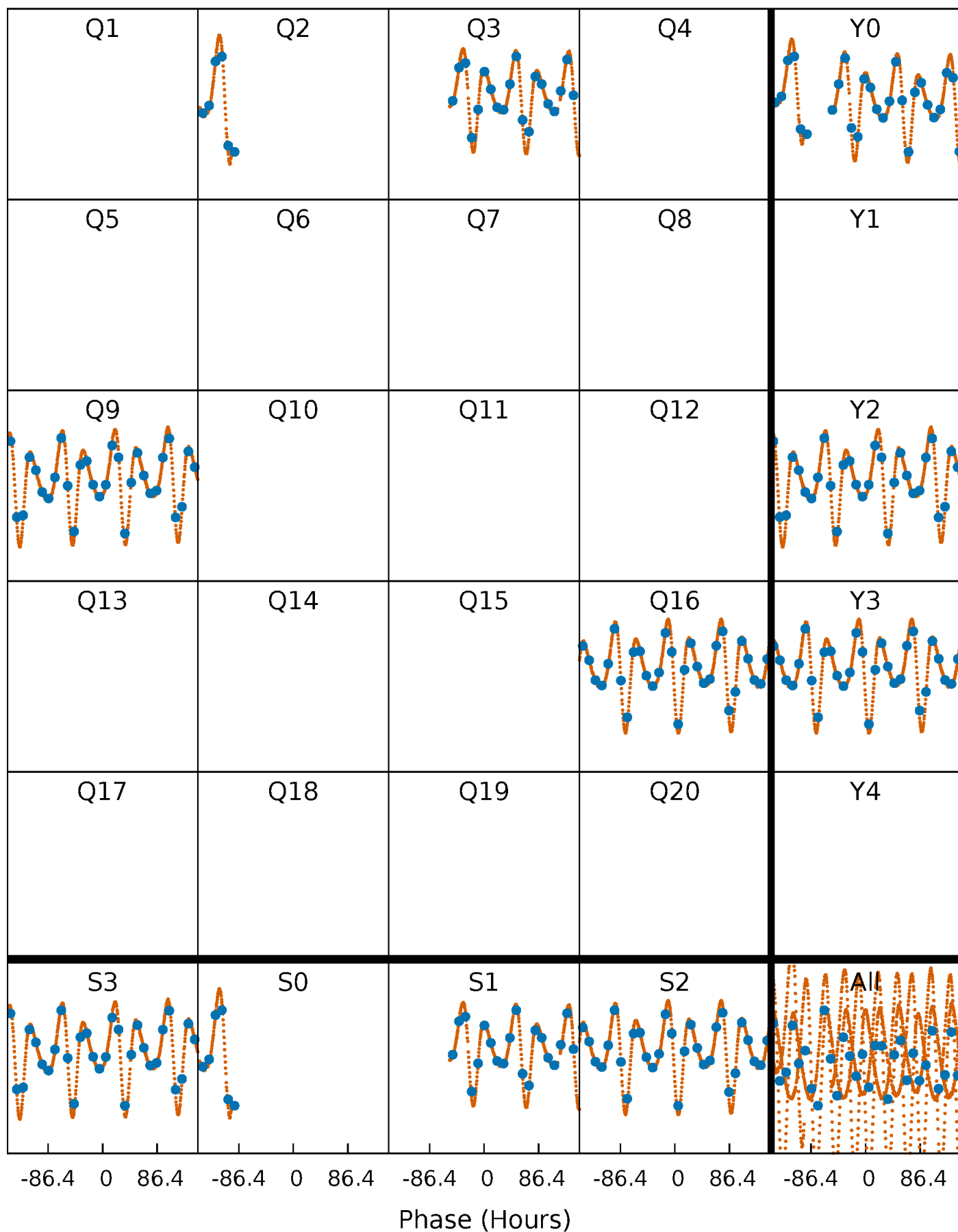


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



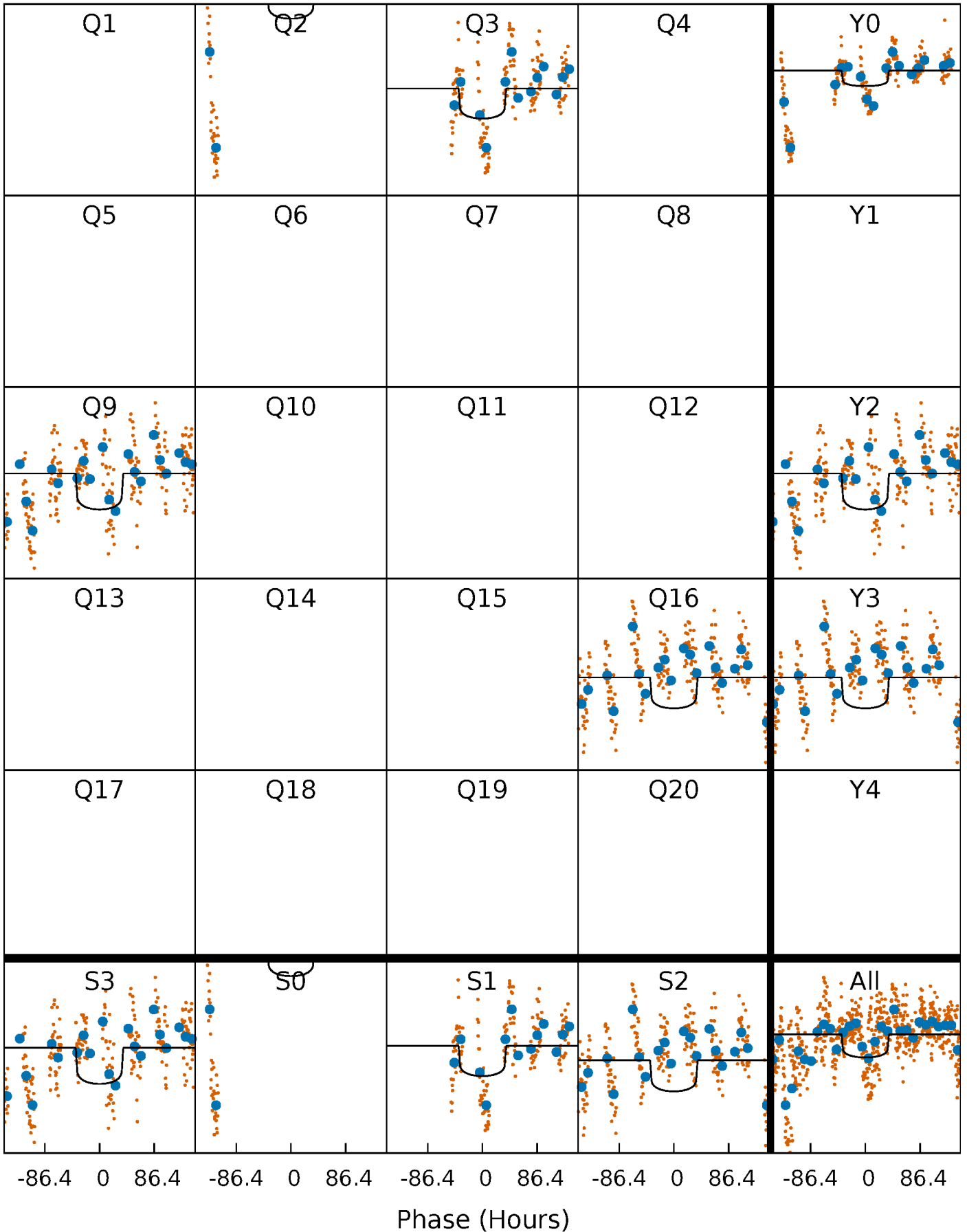
PDC Quarter-Phased Transit Curves

TCE 012307309-02 $P=636.495632$ Days $T_0=262.528501$ (BKJD)



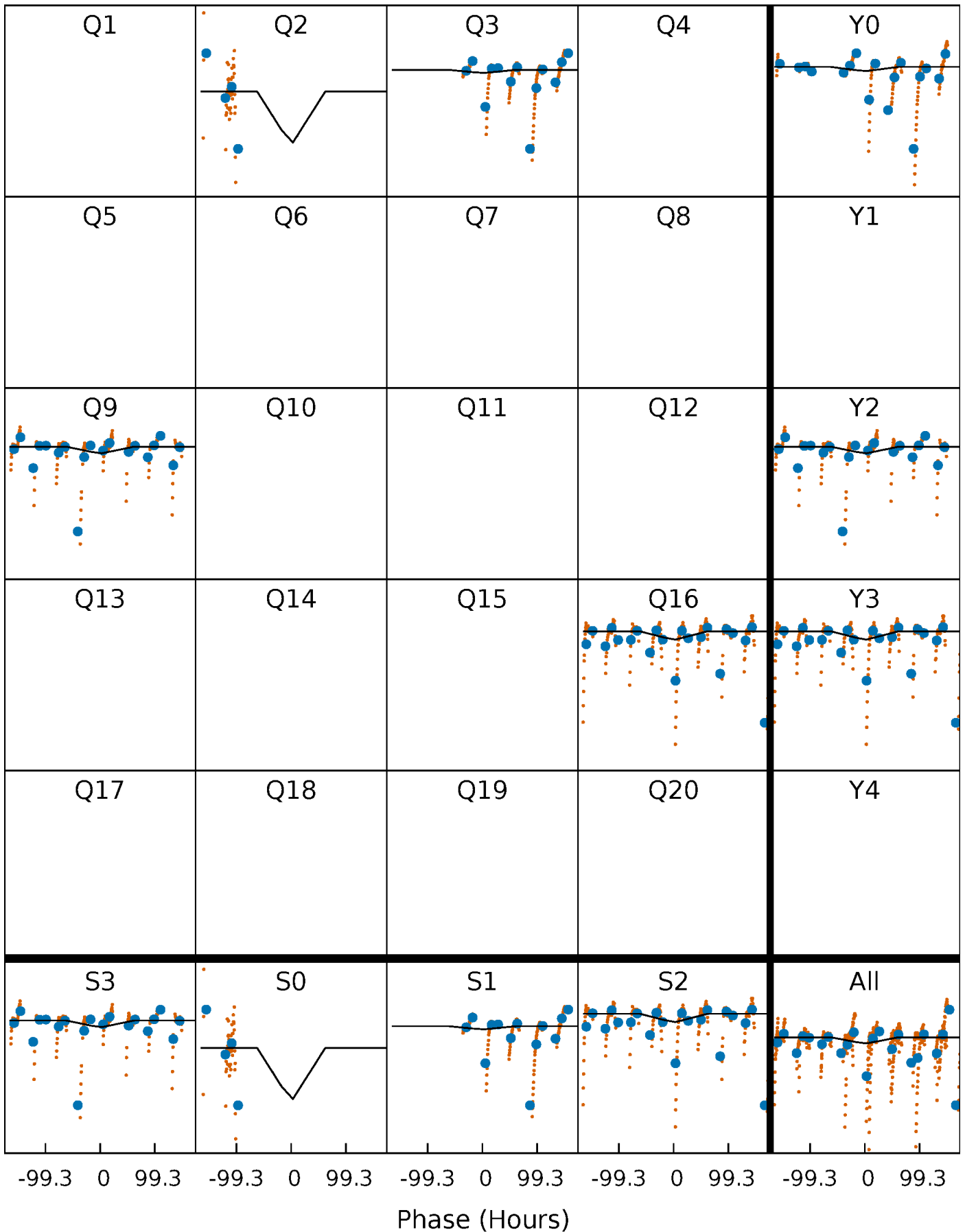
DV Quarter-Phased Transit Curves

TCE 012307309-02 $P=636.495632$ Days $T_0=262.528501$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

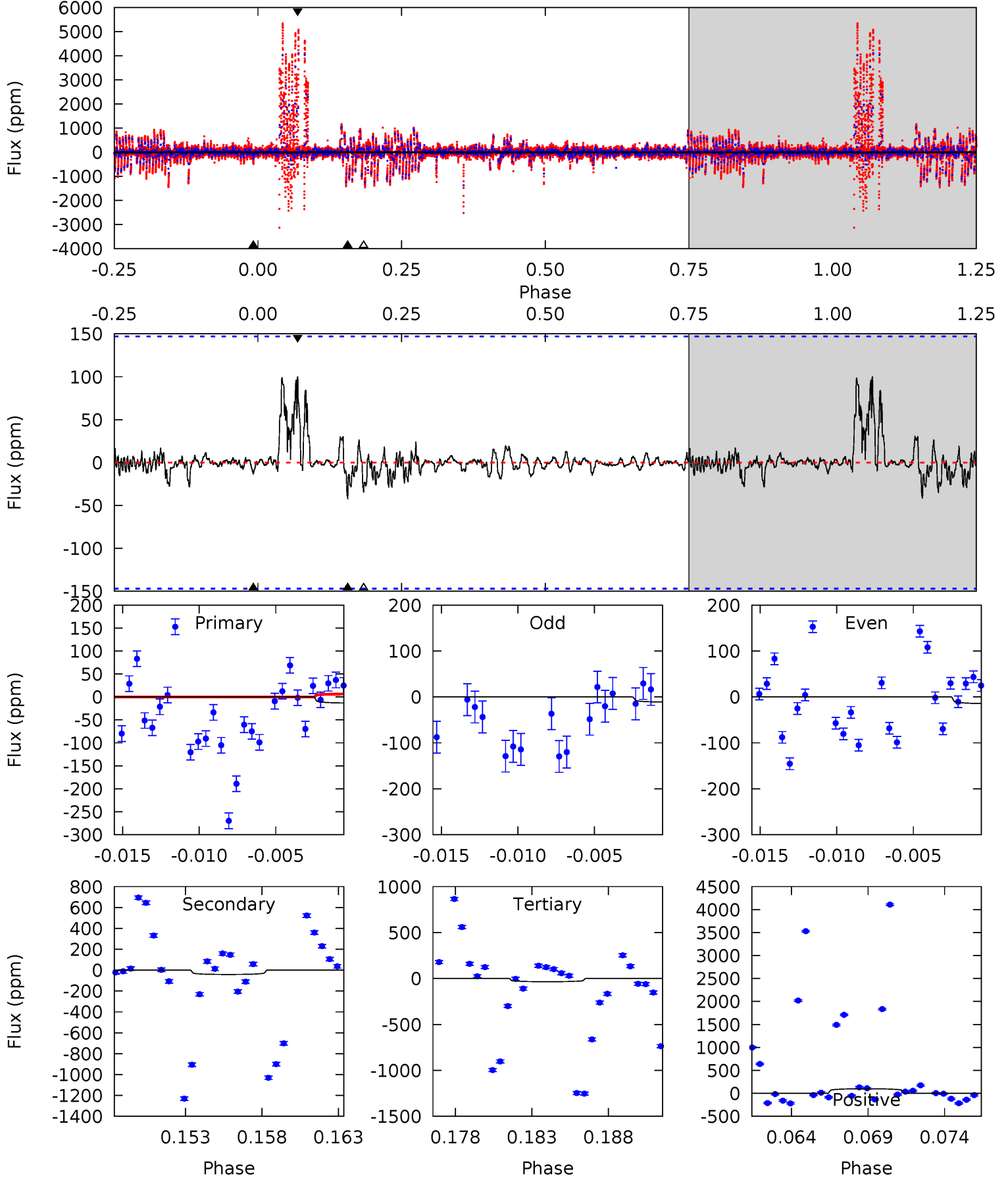
TCE 012307309-02 $P=637.097967$ Days $T_0=261.932813$ (BKJD)



DV Model-Shift Uniqueness Test

012307309-02, P = 636.495632 Days, E = 262.528501 Days

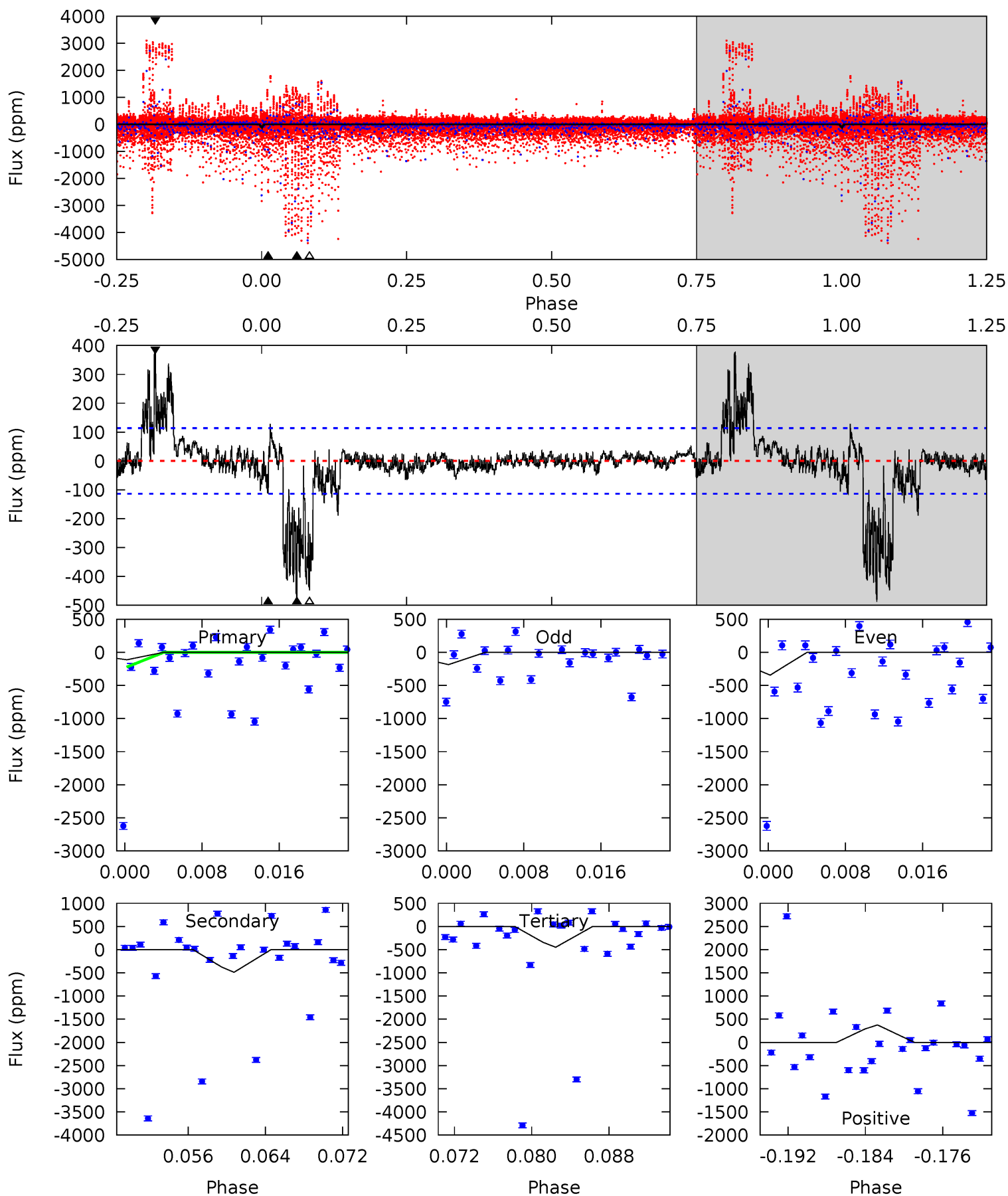
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.47	1.46	1.21	3.51	5.16	2.81	0.62	-0.75	-3.04	0.25	-2.04	0.07	1.95	0.71	0.43



Alt Model-Shift Uniqueness Test

012307309-02, P = 637.097967 Days, E = 261.932813 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.03	21.8	20.0	16.8	5.07	2.65	3.68	-15.0	-11.8	1.79	5.00	3.16	0.86	0.44	2.90



Stellar Parameters For KIC 012307309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	7872^{+216}_{-351}	$4.049^{+0.150}_{-0.150}$	$0.070^{+0.150}_{-0.350}$	$2.124^{+0.524}_{-0.477}$	$1.841^{+0.147}_{-0.319}$	$0.271^{+0.215}_{-0.121}$
	+3%/-4%	+4%/-4%	+214%/-500%	+25%/-22%	+8%/-17%	+79%/-45%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 012307309-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-42 ± 28	$2.20^{+0.44}_{-0.45}$	528^{+37}_{-35}	6189^{+1251}_{-1480}	13632^{+14079}_{-9650}
Alt.	-488 ± 22	$3.81^{+0.61}_{-0.58}$	527^{+36}_{-36}	9447^{+782}_{-736}	57378^{+20745}_{-14856}

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 $A_{obs} \gg 1.0$

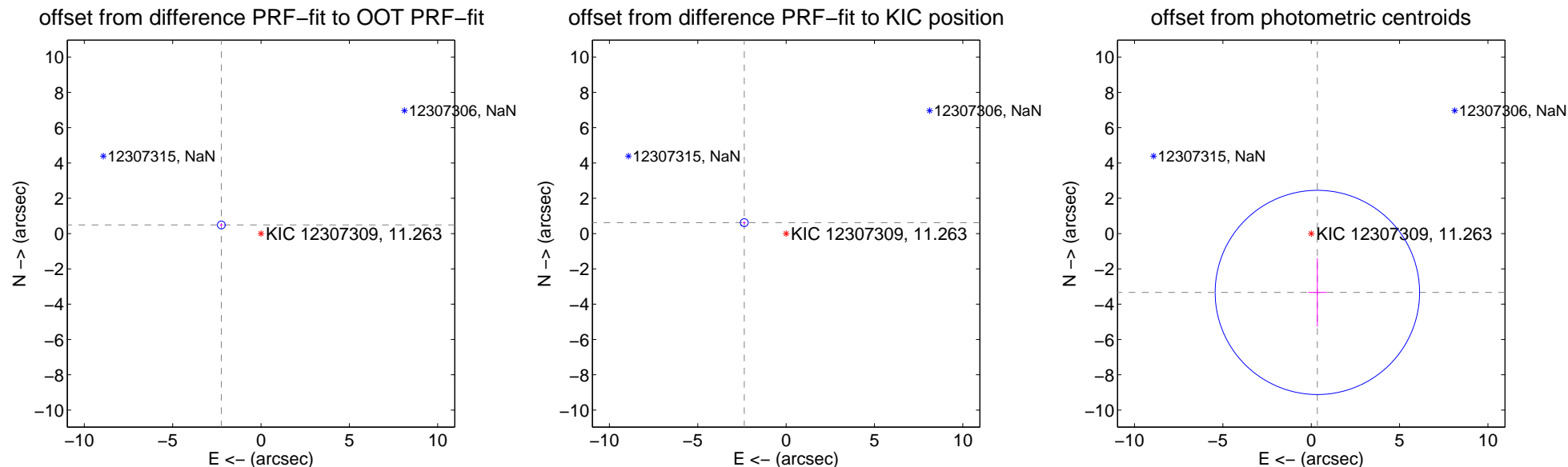
DV Centroid Data

Supplemental centroid analysis for 012307309-02. **Kepler magnitude: 11.26.** Transit SNR 3.87

There are 0 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.298 \pm 0.074	30.94	2.246 \pm 0.074	0.489 \pm 0.072
PRF-fit source offset from KIC position	2.450 \pm 0.074	33.00	2.370 \pm 0.074	0.620 \pm 0.072
photometric centroid source offset	3.35 \pm 1.93	1.74	-0.35 \pm 0.52	-3.33 \pm 1.94



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

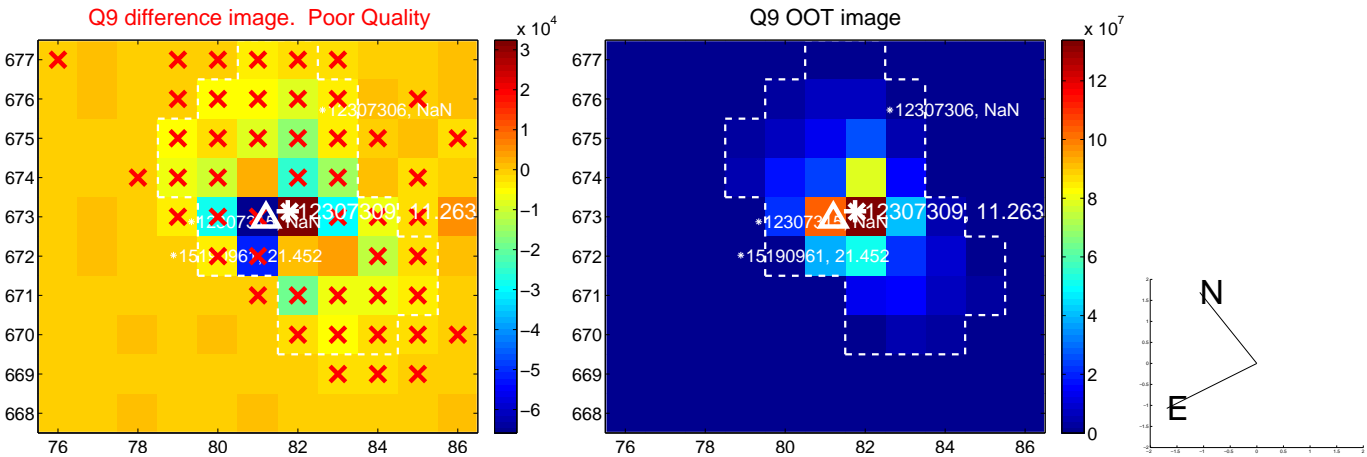
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



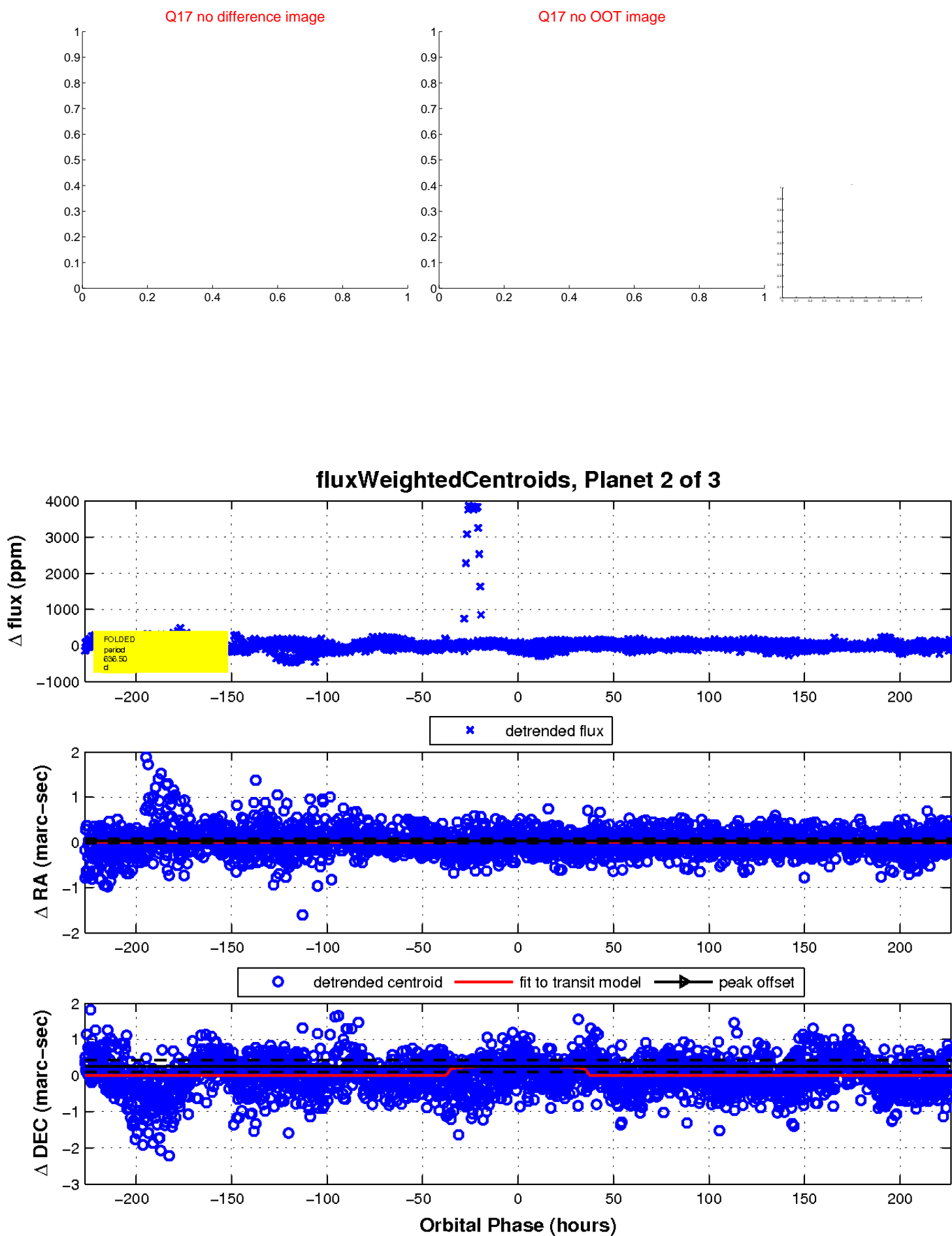
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

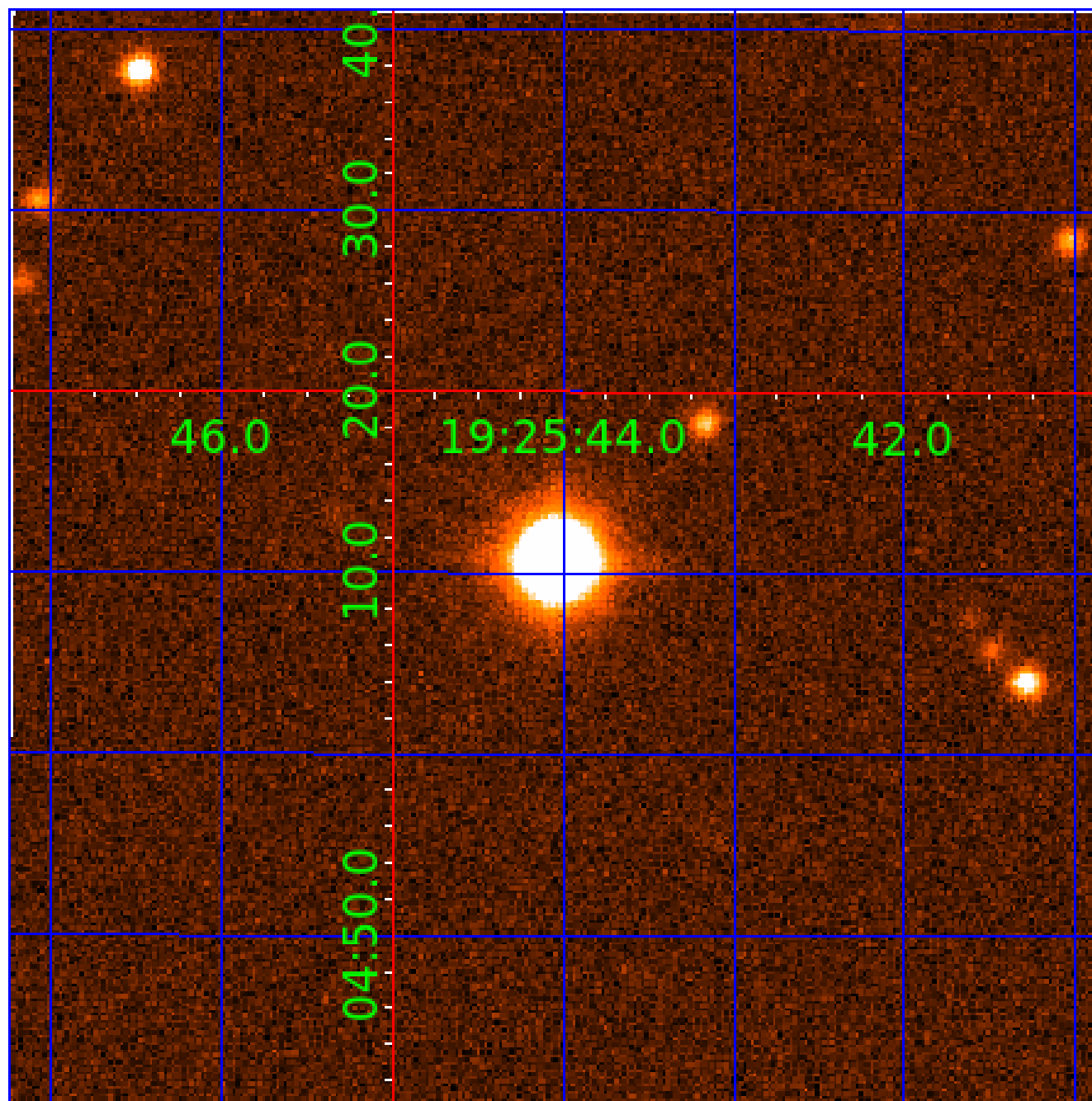


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012307309

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})
012307309-01	OBS	No	1.745232	132.566882	9.4	7.553	12.9	7.1	2.12	7872	0.66	12829.22
012307309-02	OBS	No	636.495632	262.528501	83.0	75.602	9.6	3.9	2.12	7872	2.20	4.92
012307309-03	OBS	No	369.404709	161.691362	59.1	15.000	9.2	-1.0	2.12	7872	1.66	10.17

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012307309-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—MOD_NONUNIQ_DV—CENT_SATURATED
012307309-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_SATURATED
012307309-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—LPP_DV—ALL_TRANS_CHASES—CENT_SATURATED

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

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

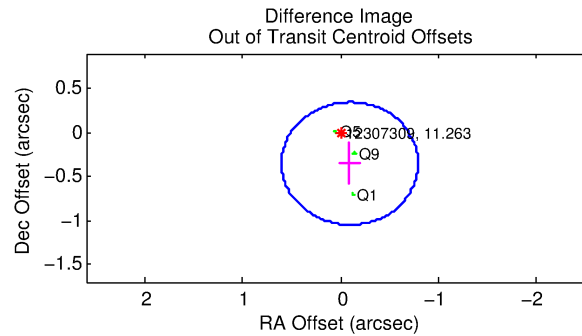
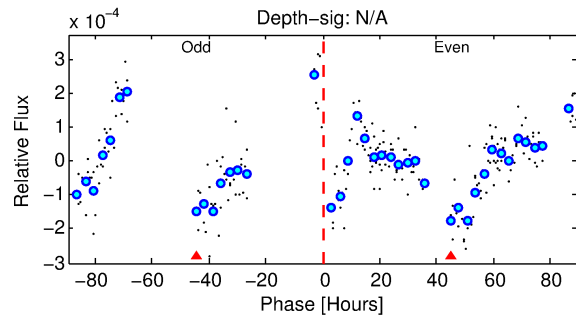
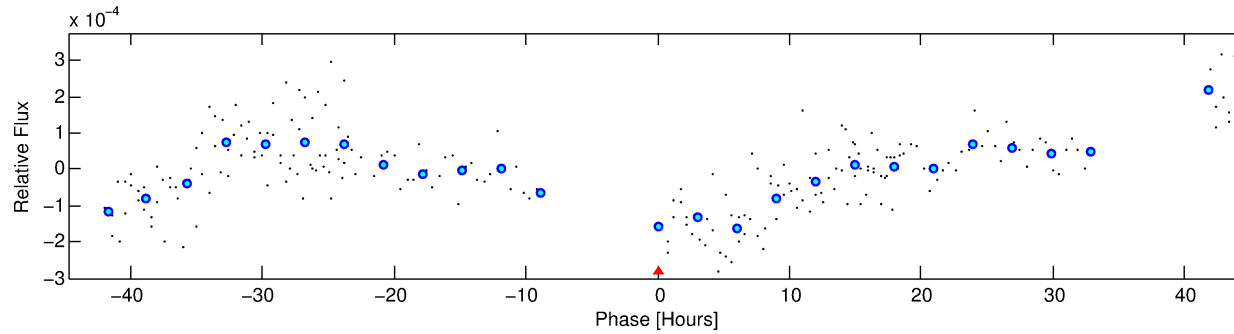
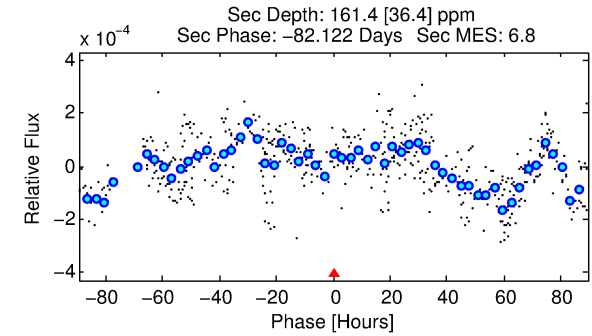
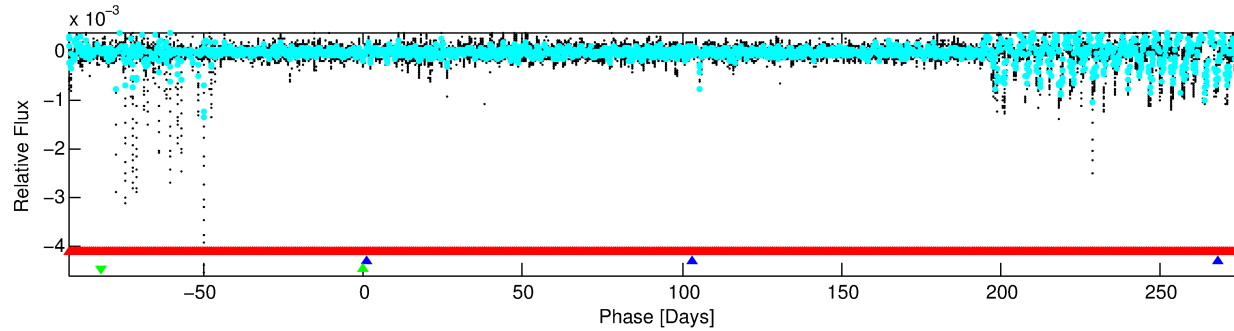
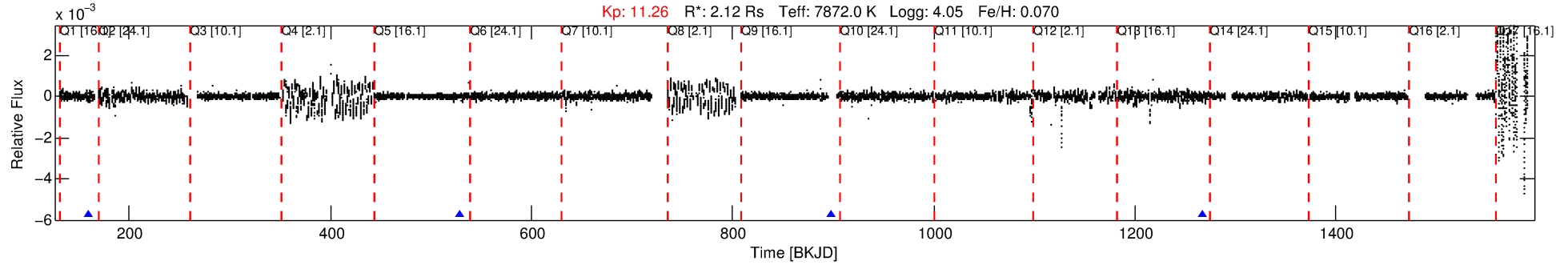
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 012307309-03

No Significant Match Found

DV One-Page Summary

KIC: 12307309 Candidate: 3 of 3 Period: 369.405 d



TPS TCE Results:

Period = 369.40471 d
Epoch = 161.6914 BKJD

DV fit results are unavailable

DV Diagnostic Results:

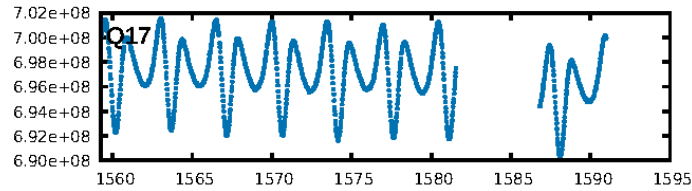
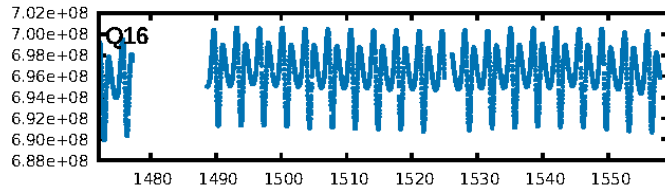
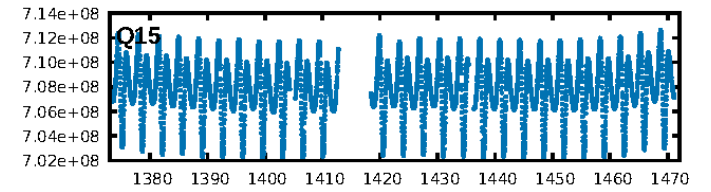
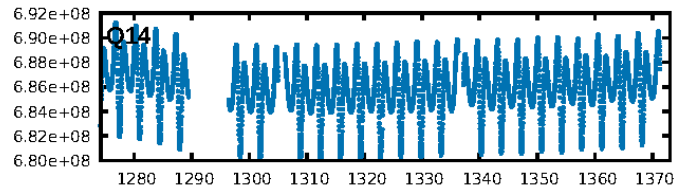
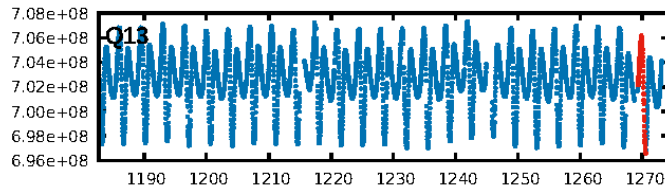
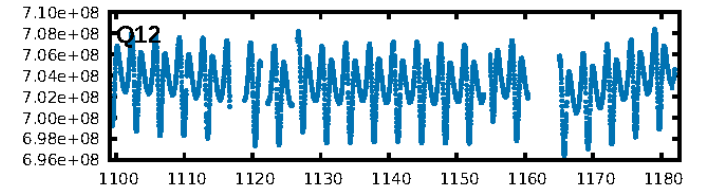
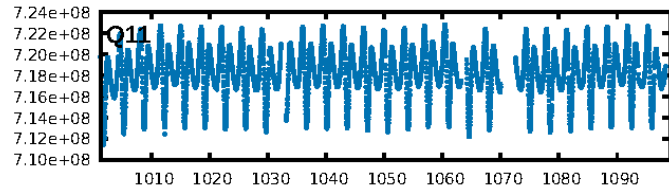
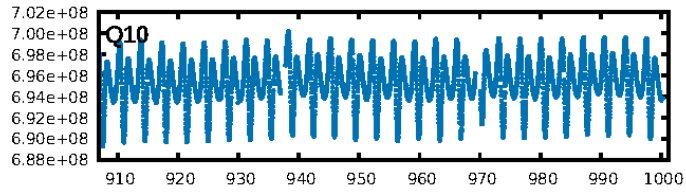
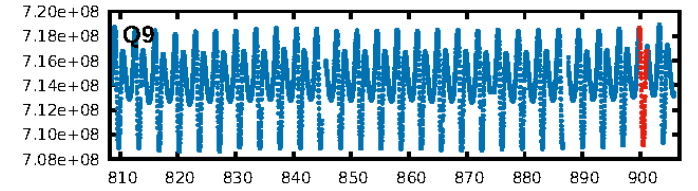
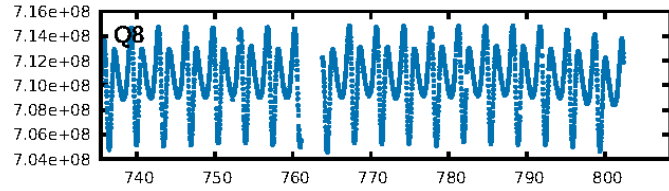
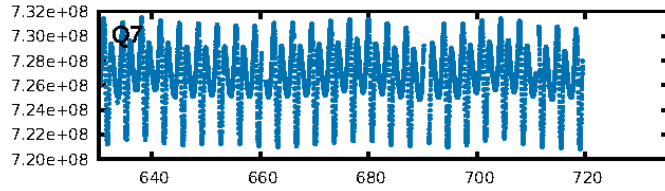
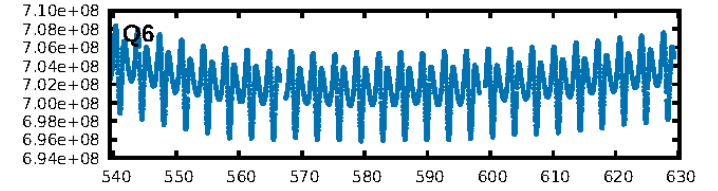
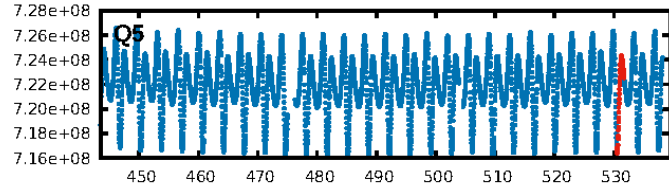
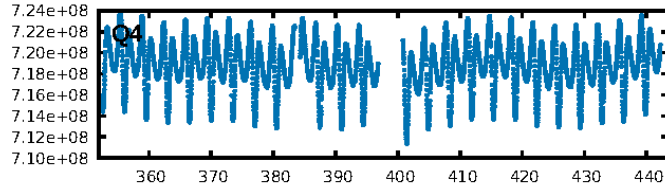
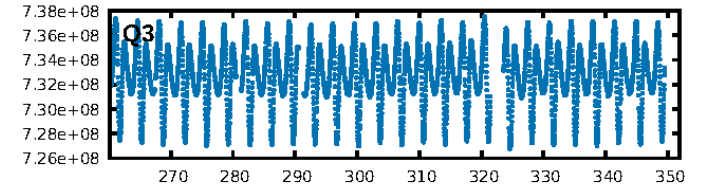
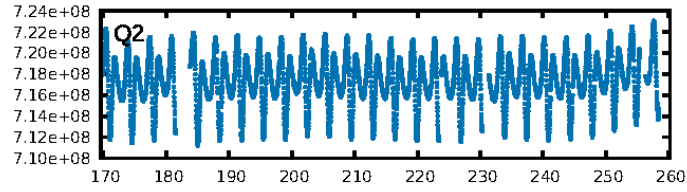
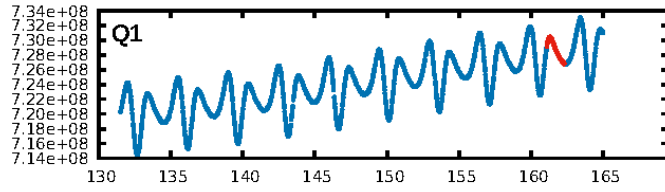
ShortPeriod-sig: 100.0% [525.41 σ]
LongPeriod-sig: 100.0% [83.17 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.67e-10
RollingBand-fgt: 1.00 [1/1]
GhostDiagnostic-chr: -0.4646

Centroid-sig: 94.1%
Centroid-so: 0.185 arcsec [2.63 σ]
OotOffset-rm: 0.364 arcsec [1.56 σ]
KicOffset-rm: 0.235 arcsec [0.92 σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.00 [0/3]

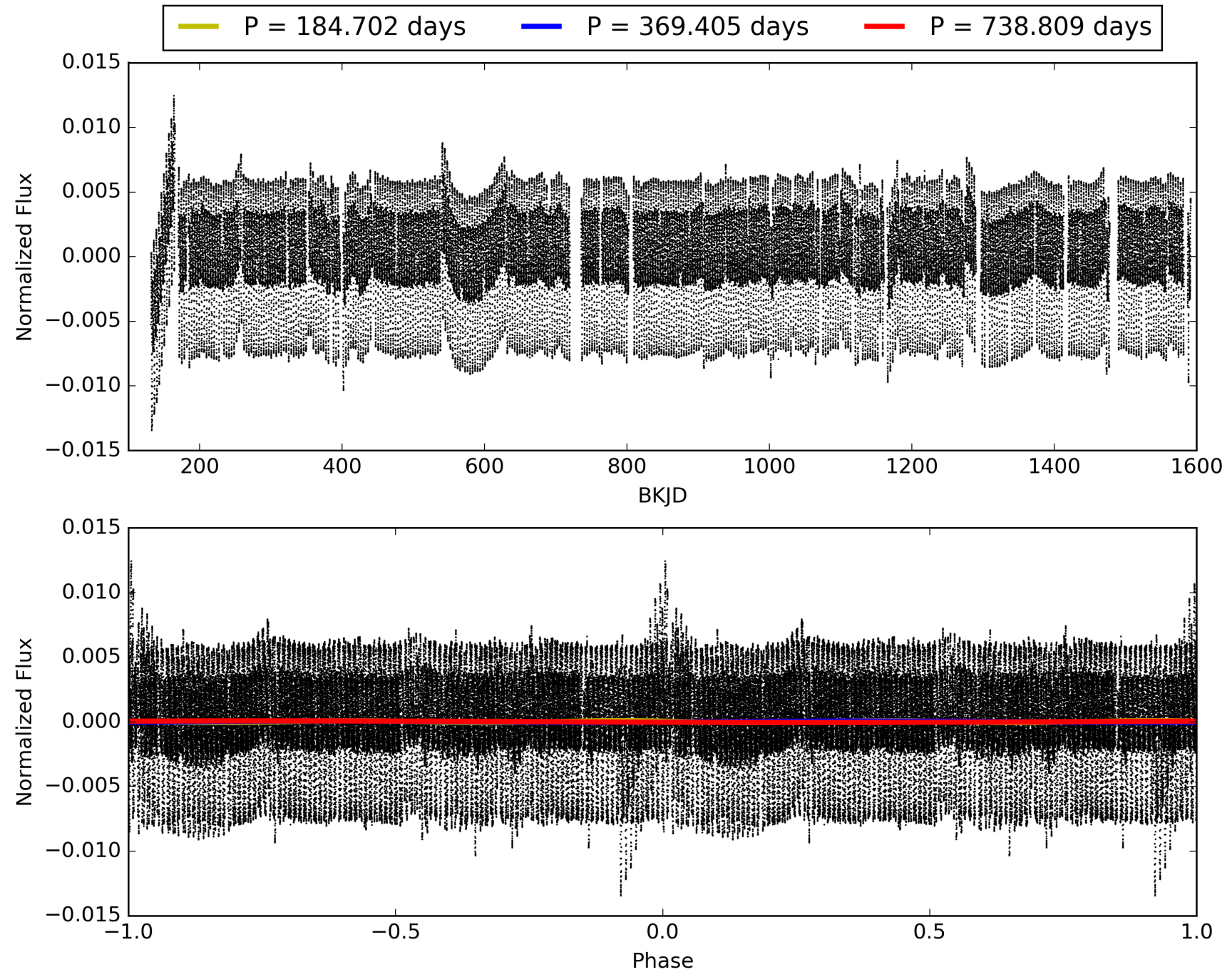
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:57:34 Z

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

TCE 012307309-03, PDC Light Curves

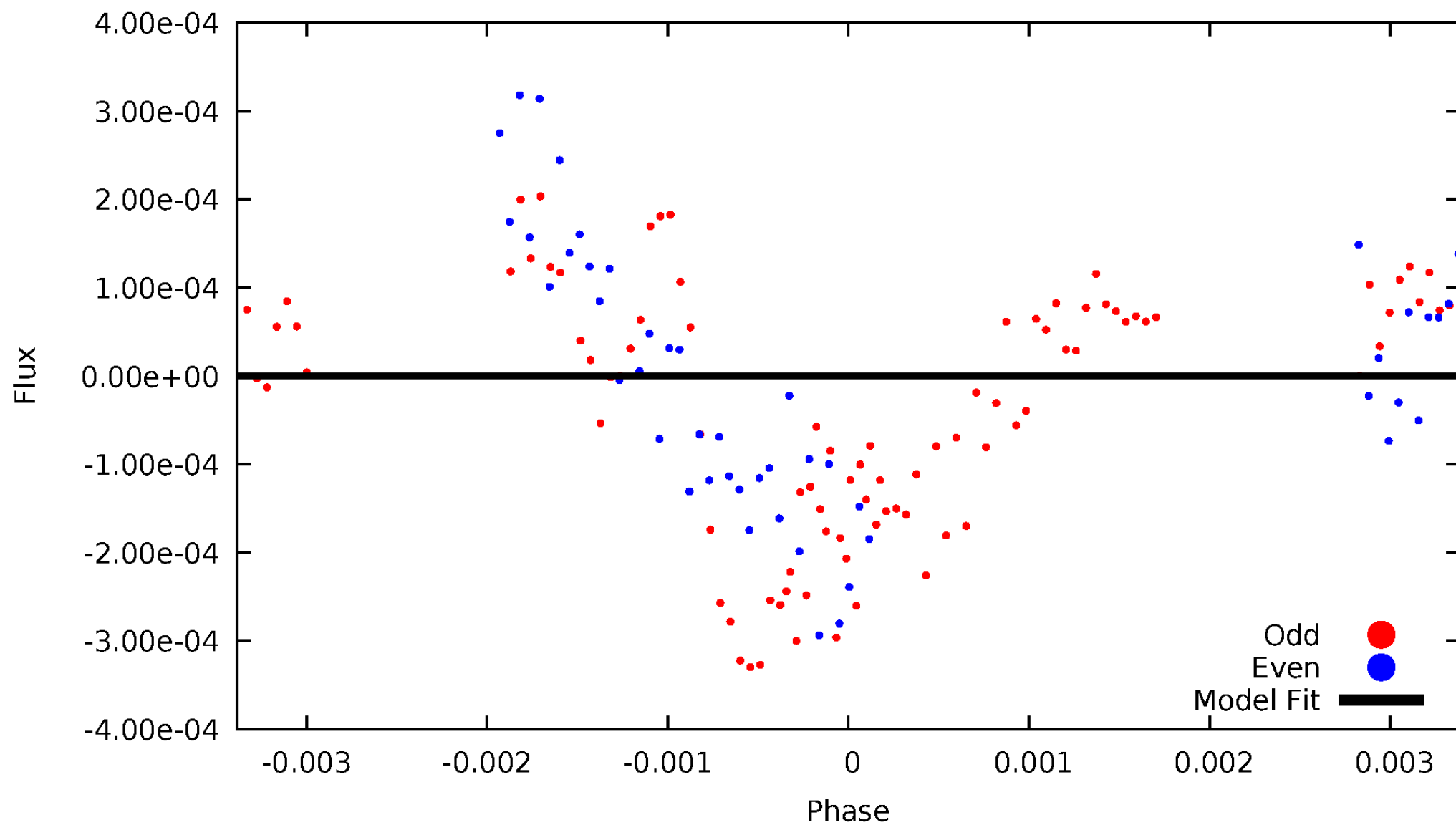


TCE 012307309-03



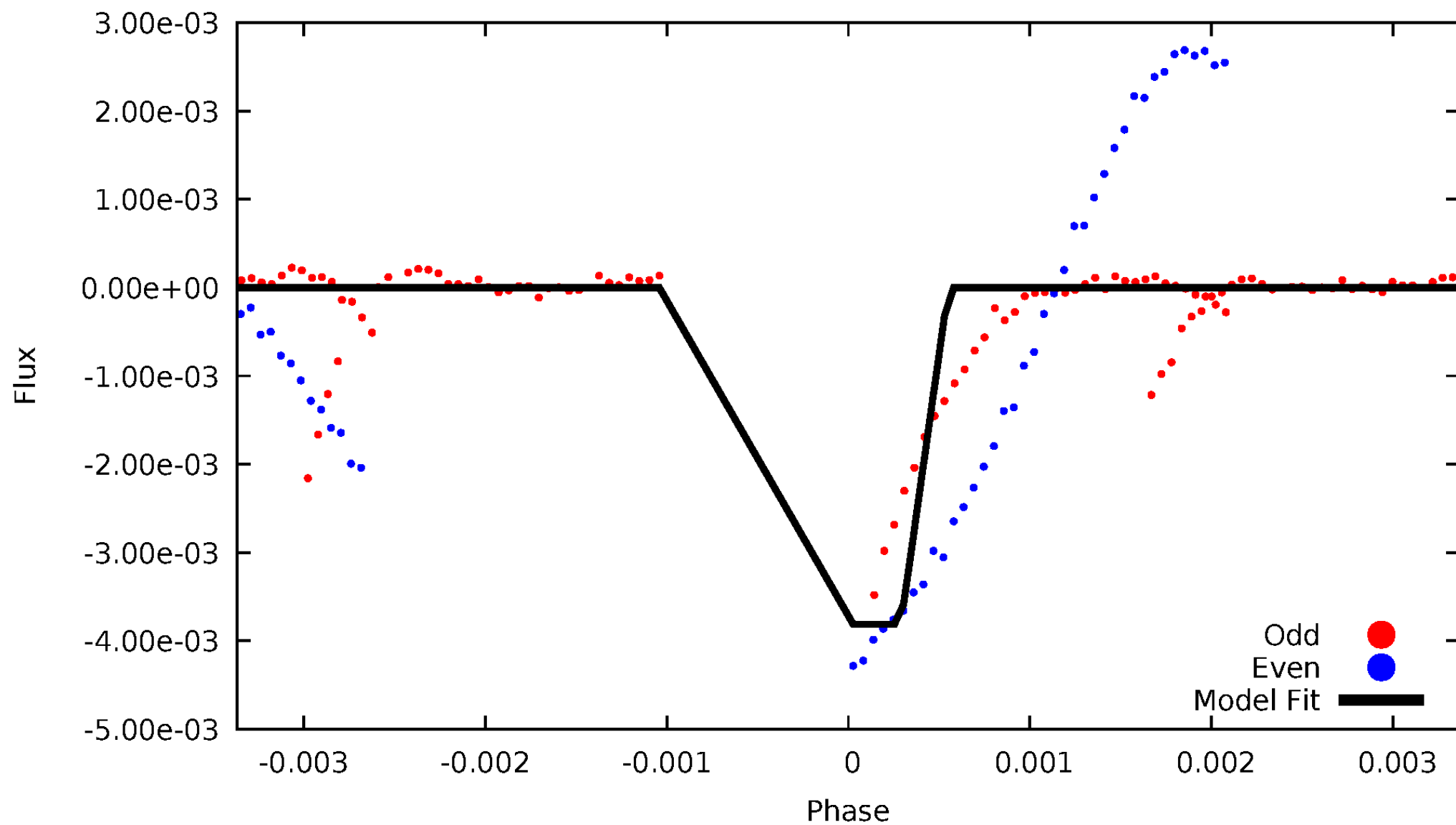
DV Odd/Even

TCE 012307309-03



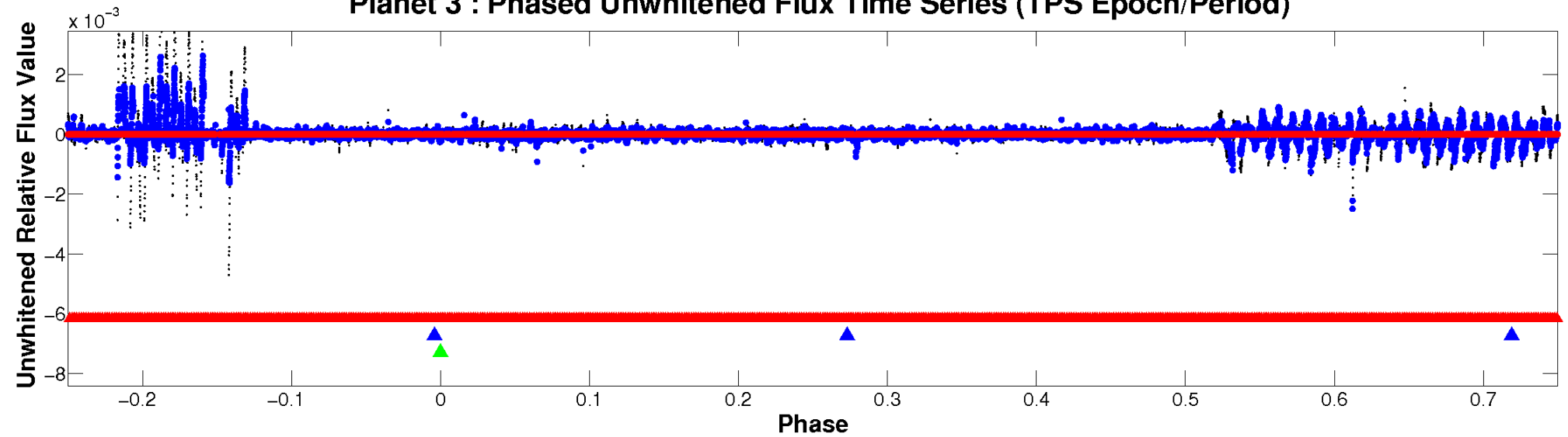
ALT Odd/Even

TCE 012307309-03

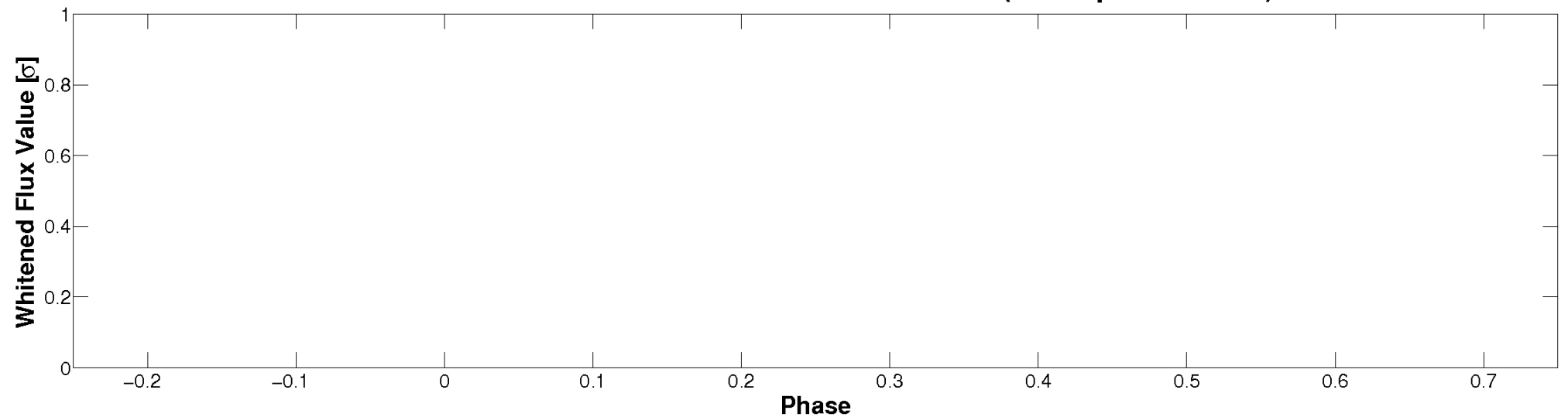


Non-Whitened Vs. Whitened Light Curve

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

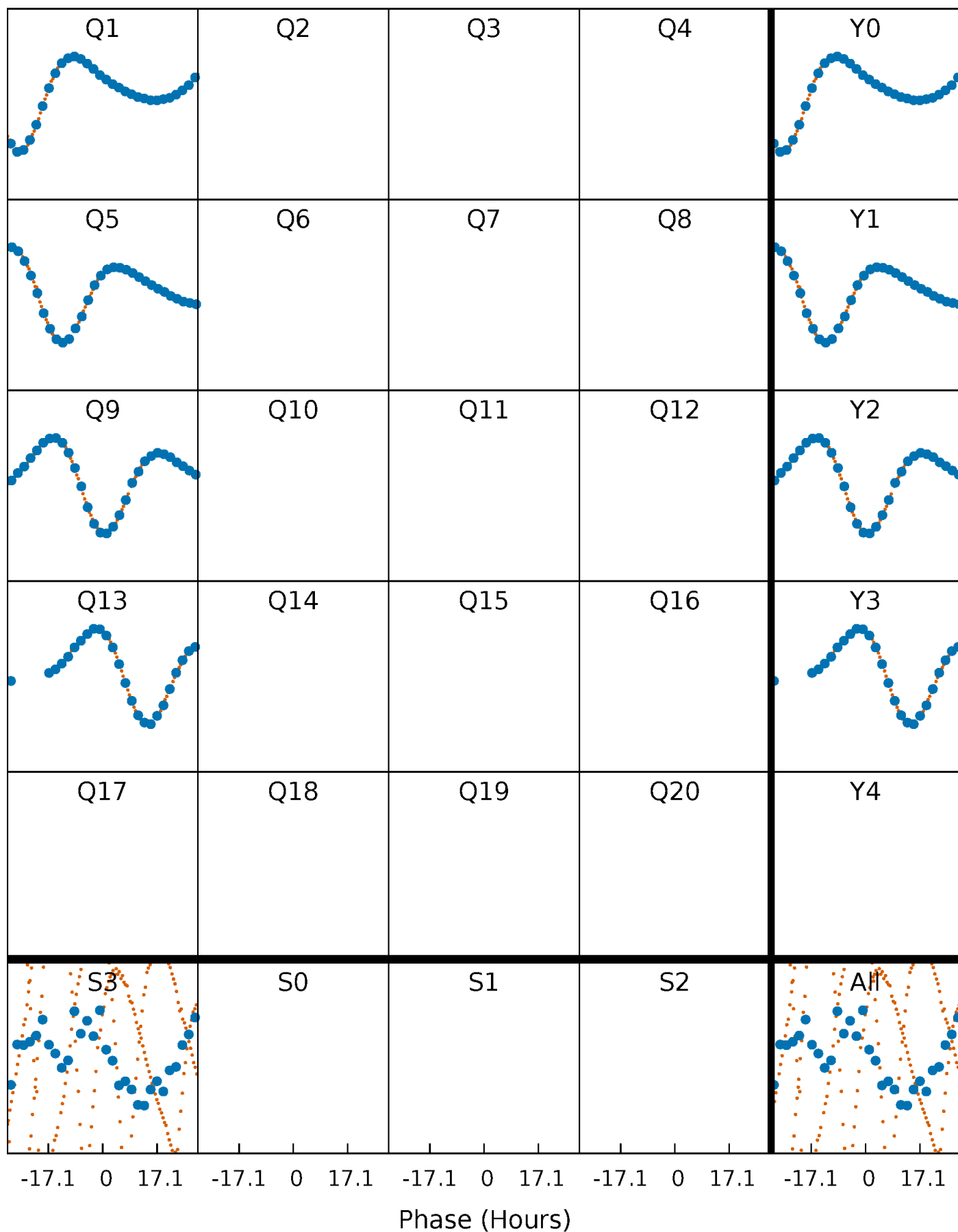


Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)



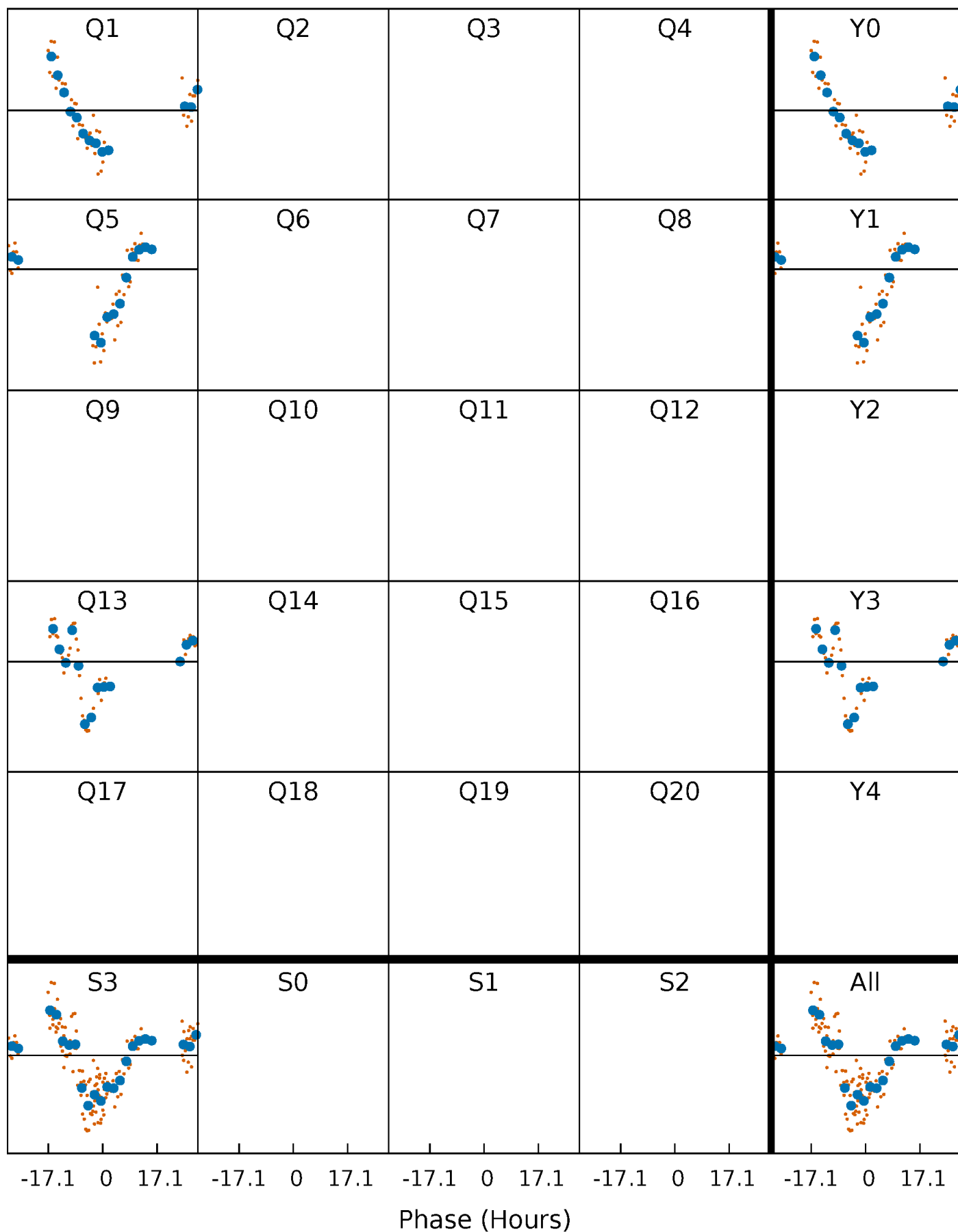
PDC Quarter-Phased Transit Curves

TCE 012307309-03 $P=369.404709$ Days $T_0=161.691362$ (BKJD)



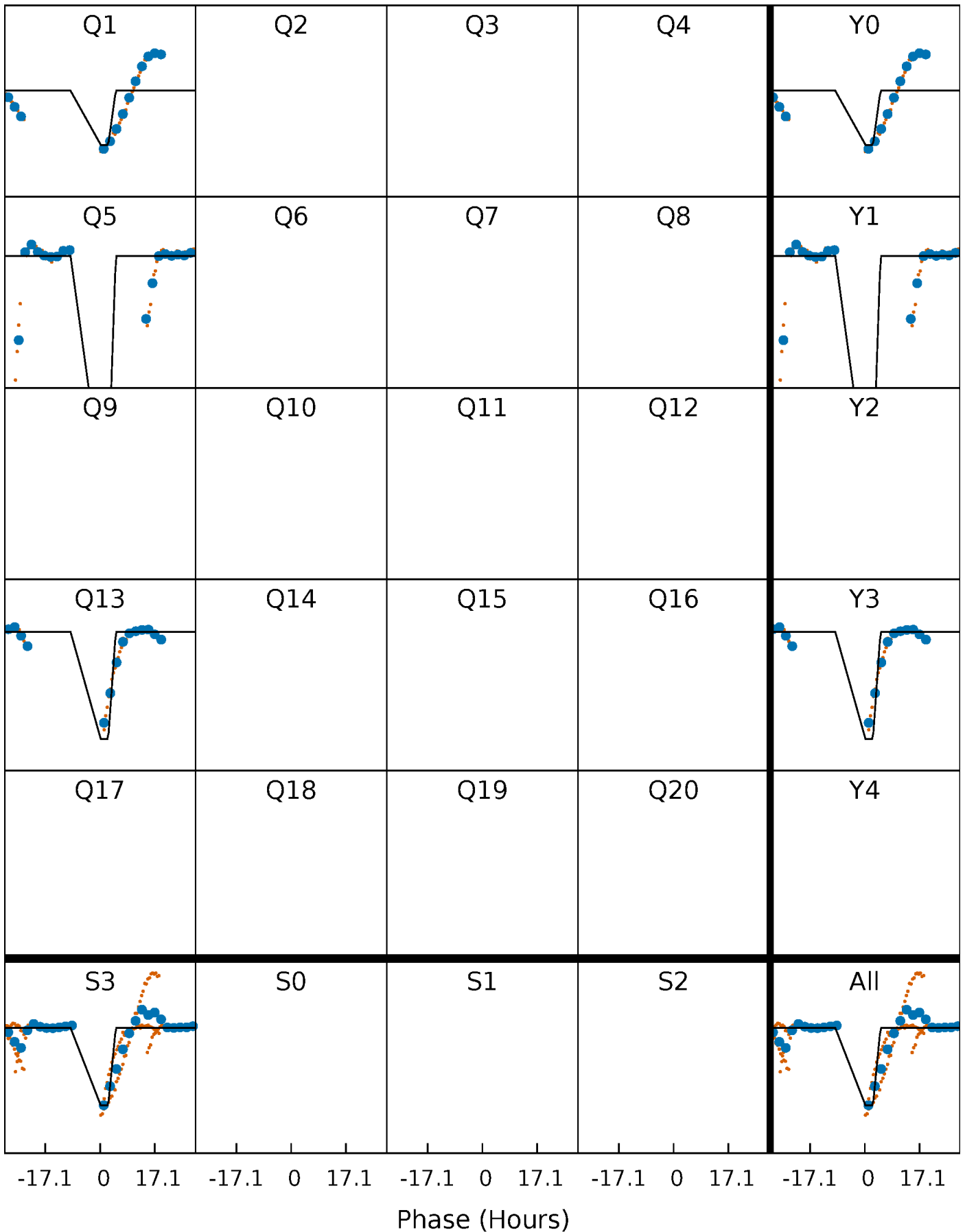
DV Quarter-Phased Transit Curves

TCE 012307309-03 $P=369.404709$ Days $T_0=161.691362$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

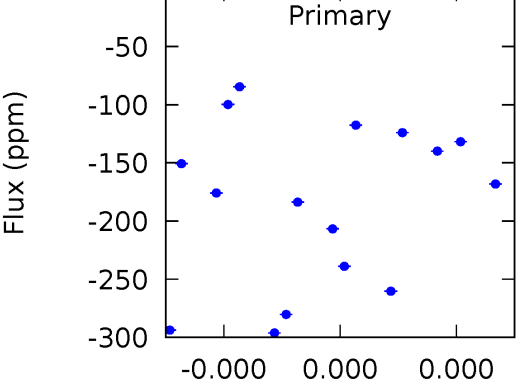
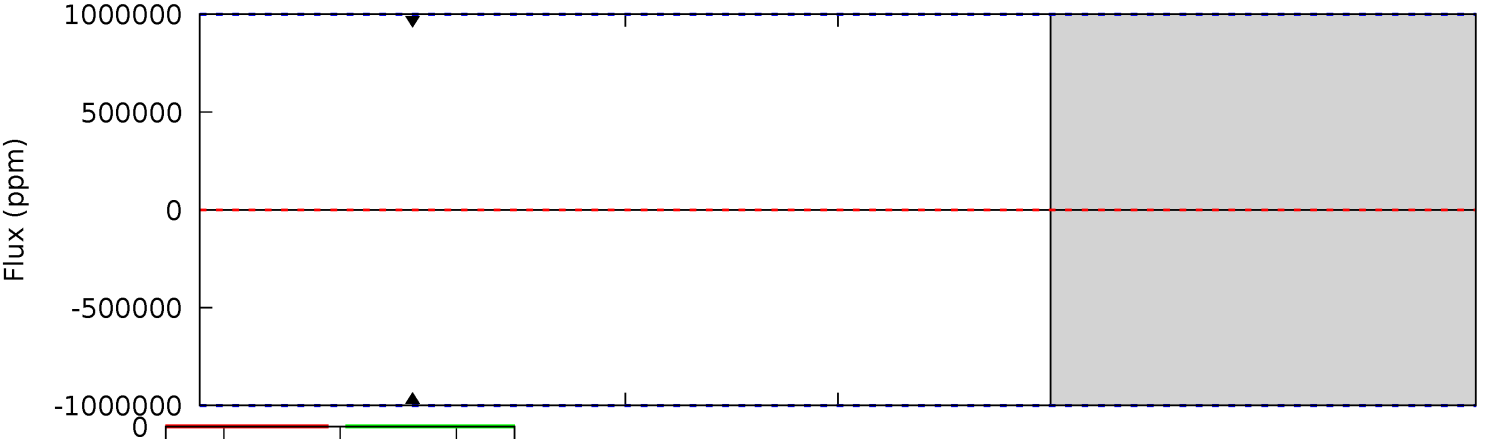
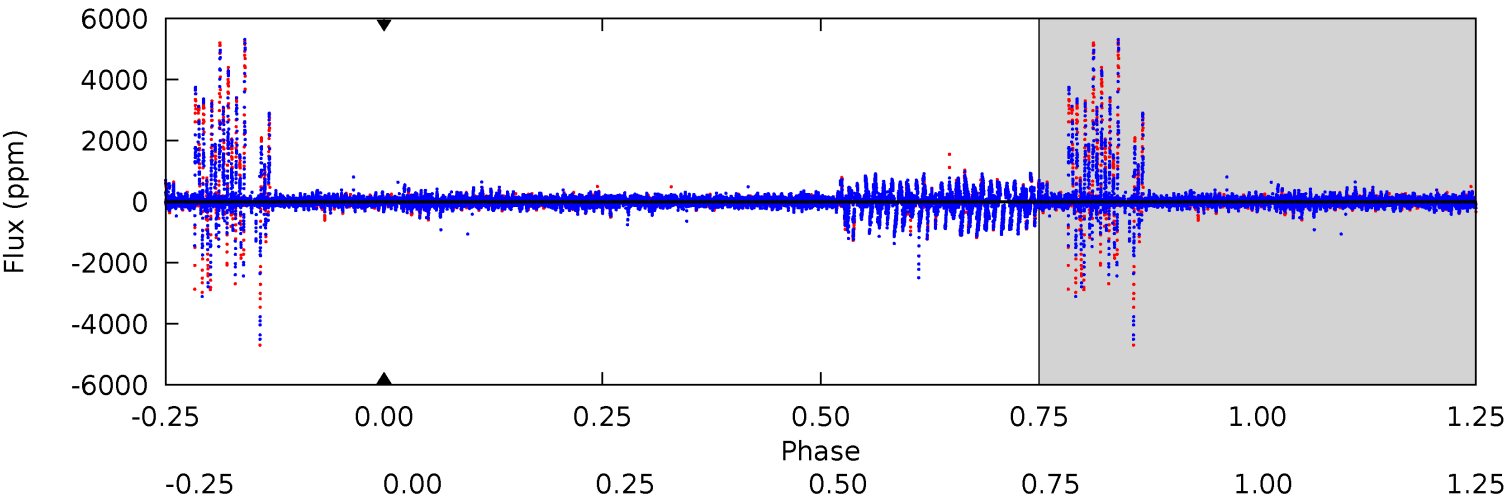
TCE 012307309-03 $P=369.404709$ Days $T_0=159.231279$ (BKJD)



DV Model-Shift Uniqueness Test

012307309-03, P = 369.404709 Days, E = 161.691362 Days

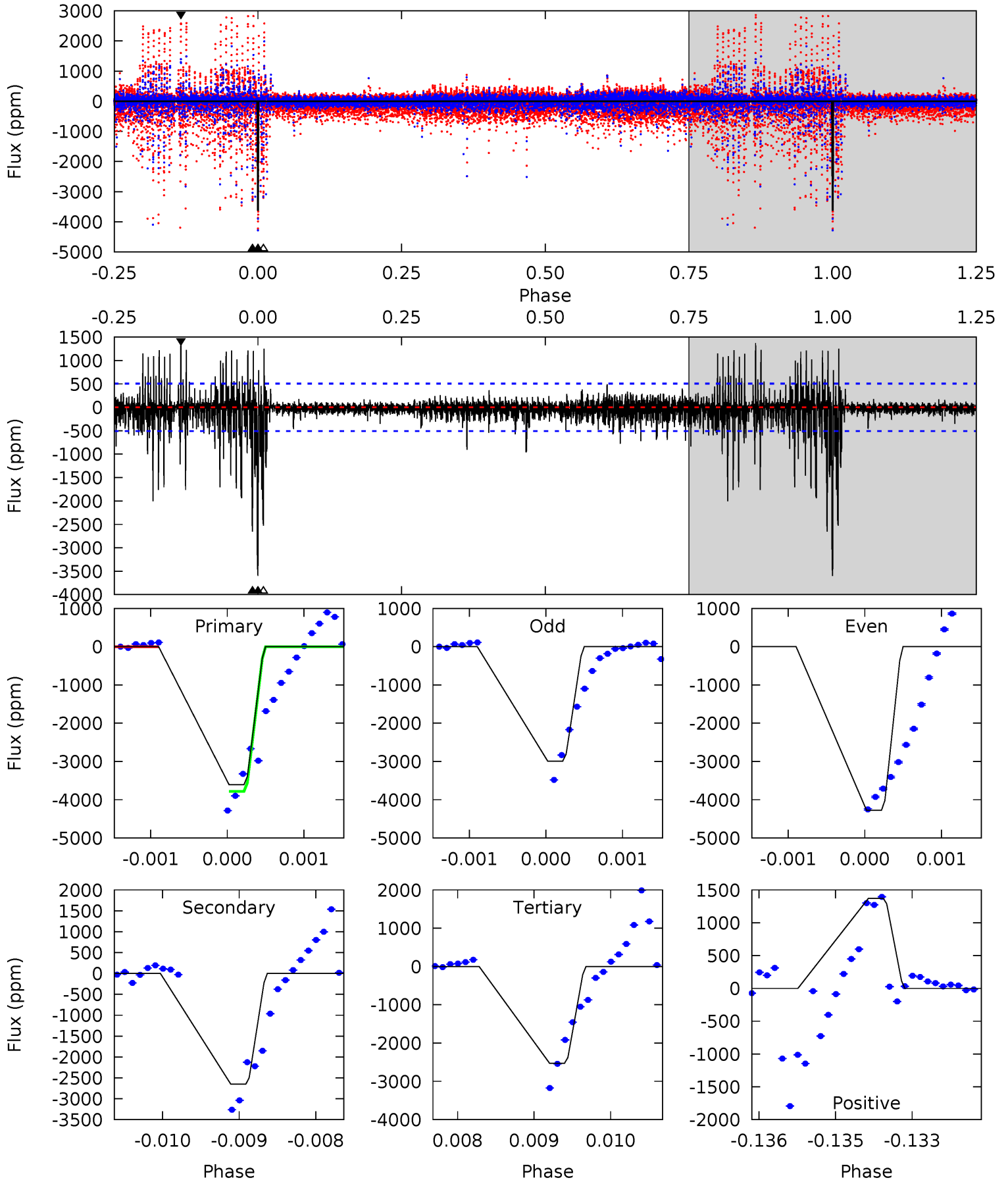
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

012307309-03, P = 369.404709 Days, E = 159.231279 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.6	28.4	27.1	14.7	5.42	3.25	2.35	11.5	23.9	1.37	13.7	6.26	1.00	0.28	0



Stellar Parameters For KIC 012307309

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	7872^{+216}_{-351}	$4.049^{+0.150}_{-0.150}$	$0.070^{+0.150}_{-0.350}$	$2.124^{+0.524}_{-0.477}$	$1.841^{+0.147}_{-0.319}$	$0.271^{+0.215}_{-0.121}$
	+3%/-4%	+4%/-4%	+214%/-500%	+25%/-22%	+8%/-17%	+79%/-45%
Source	KIC0	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 012307309-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$16.96^{+18.40}_{-12.58}$	635^{+45}_{-41}	-5368^{+51921}_{-39254}	$-4820.609^{+595781.179}_{-484505.115}$
Alt.	-2654 ± 93	$21.46^{+19.09}_{-13.88}$	631^{+39}_{-42}	5671^{+4434}_{-1325}	4858^{+32949}_{-3574}

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 $A_{obs} \gg 1.0$

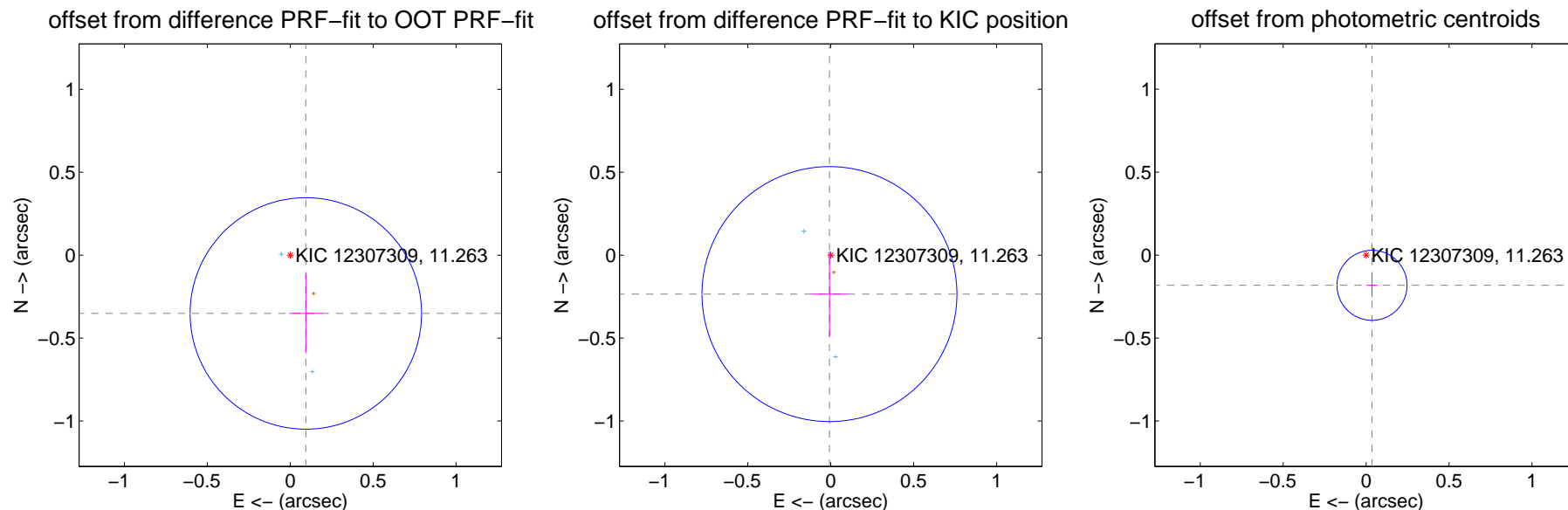
DV Centroid Data

Supplemental centroid analysis for 012307309-03. **Kepler magnitude: 11.26.** Transit SNR -1.00

There are 2 quarters with good PRF difference image offsets

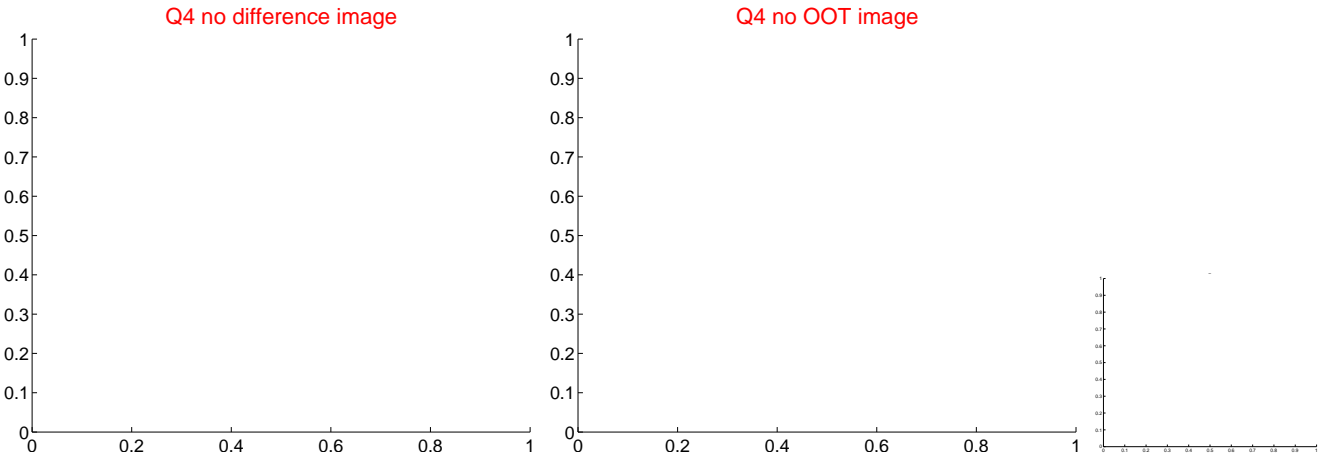
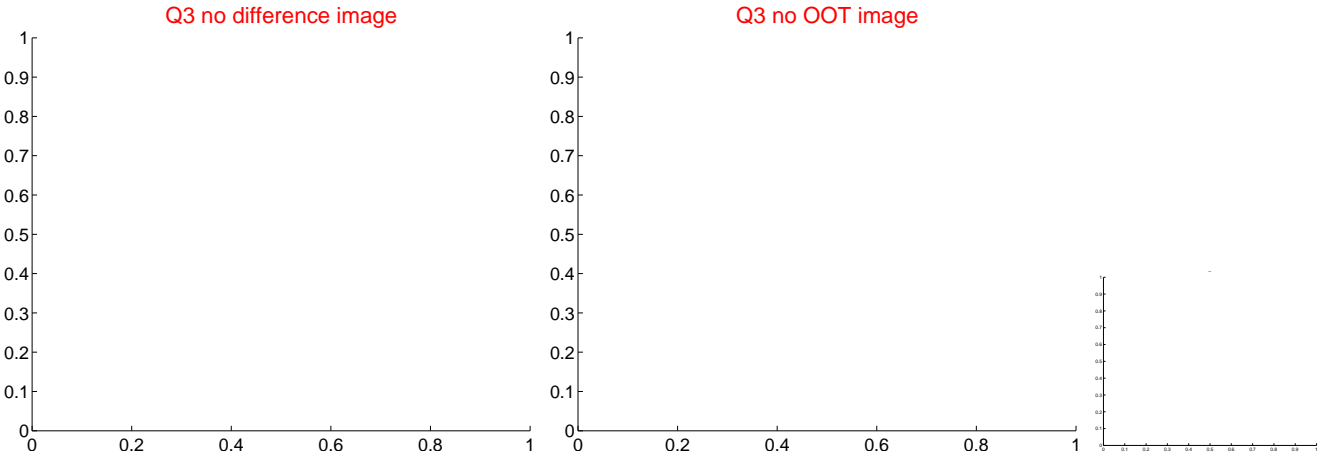
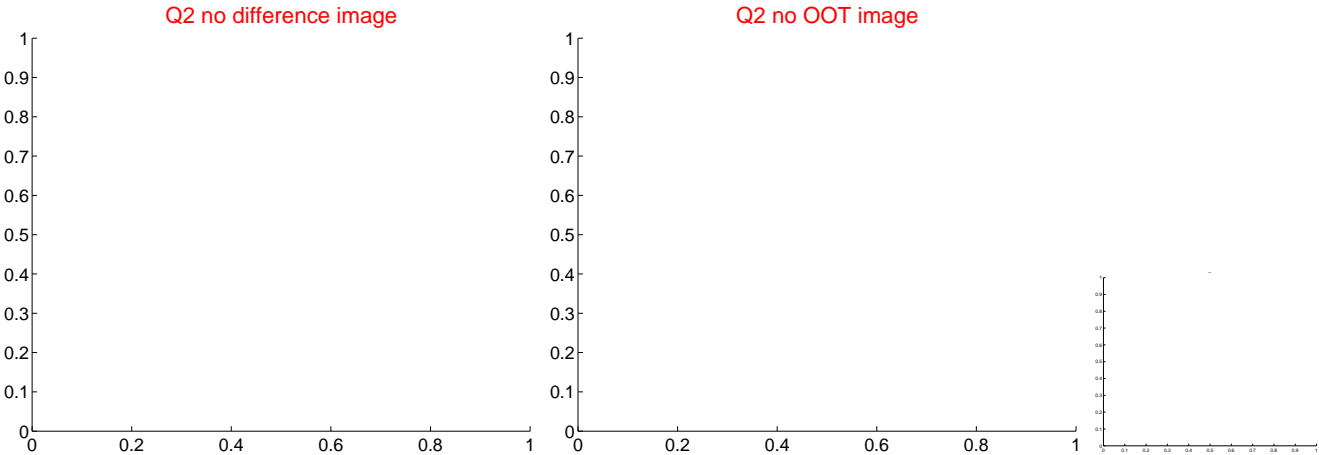
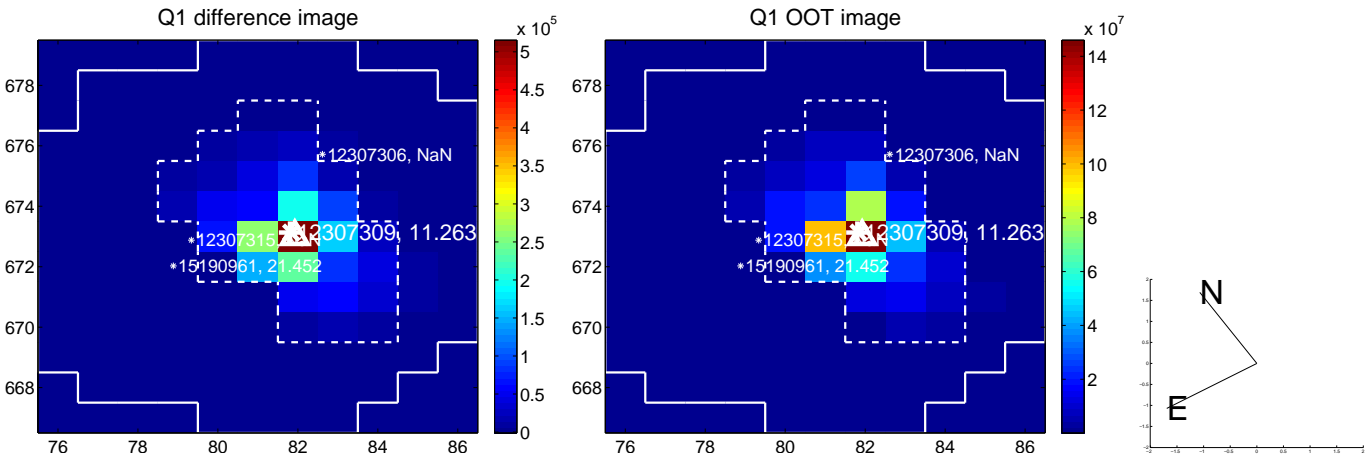
The direct PRF centroid is offset from the target star catalog position by about 0.18 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.364 ± 0.233	1.56	-0.094 ± 0.100	-0.351 ± 0.239
PRF-fit source offset from KIC position	0.235 ± 0.256	0.92	0.008 ± 0.112	-0.235 ± 0.256
photometric centroid source offset	0.19 ± 0.07	2.63	-0.04 ± 0.03	-0.18 ± 0.07

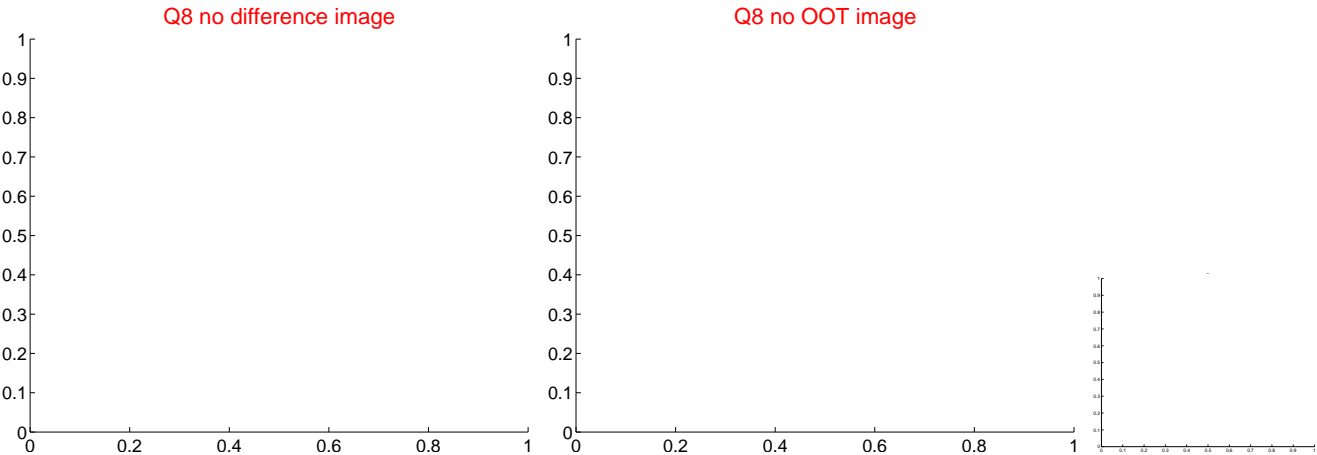
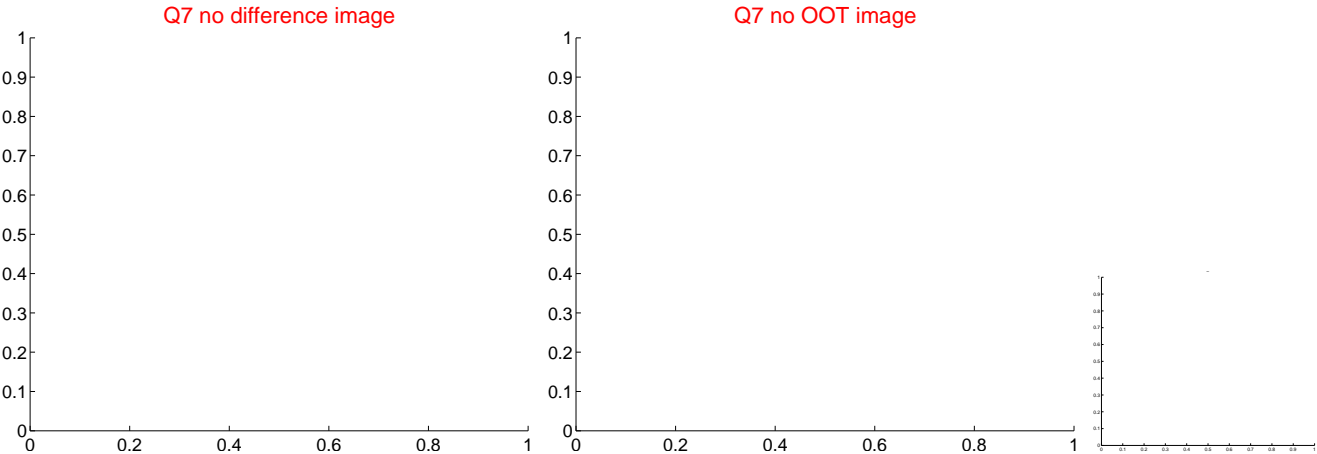
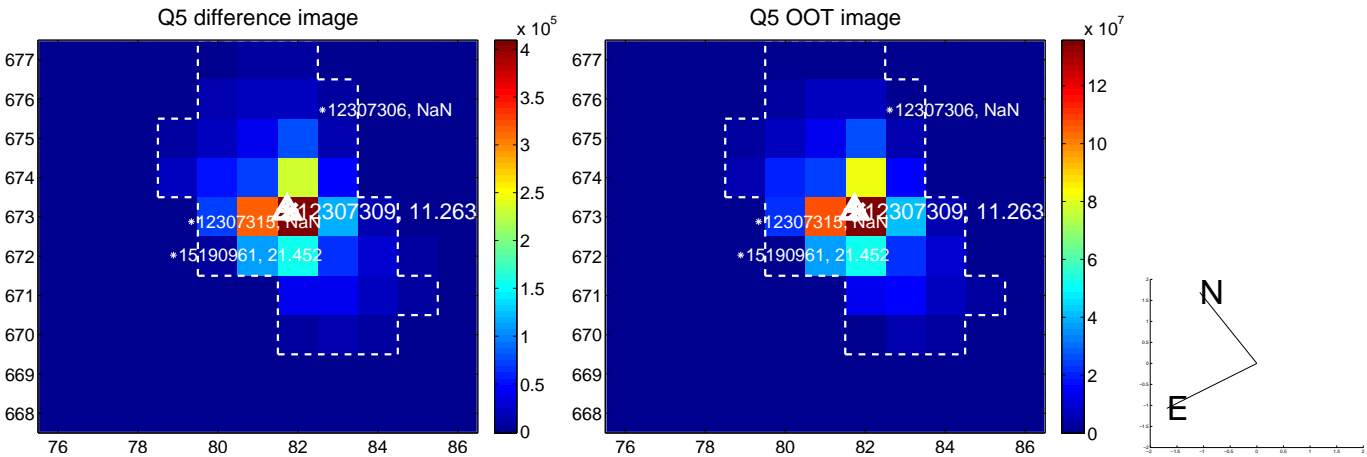


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

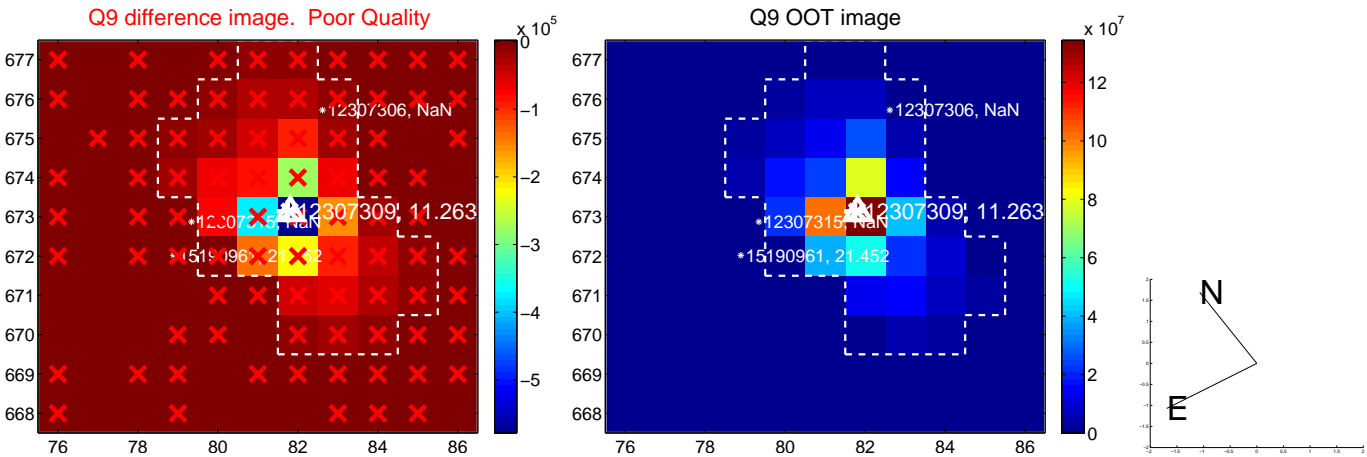
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



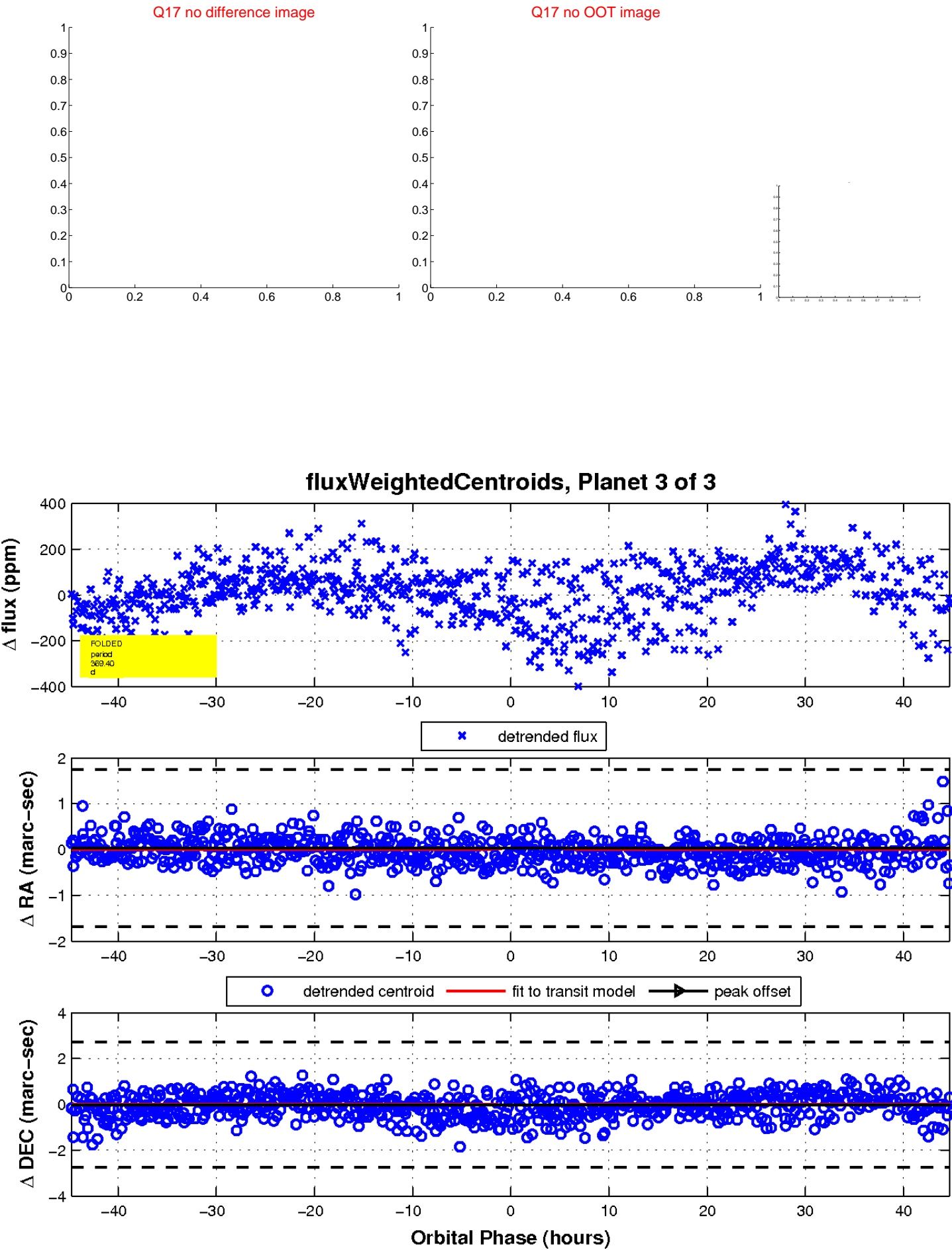
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

