

KIC 003534118

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})
003534118-01	OBS	3641.01	178.412932	218.225227	36523.1	2.940	616.2	568.9	1.15	6078	30.92	4.01
003534118-02	OBS	3641.02	178.418337	217.746962	264.5	20.415	10.4	11.1	1.15	6078	2.19	4.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003534118-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED—HAS_SEC_TCE—CENT_KIC_POS
003534118-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_FEW_DIFFS

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

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

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

Ephemeris Match Information For 003534118-01

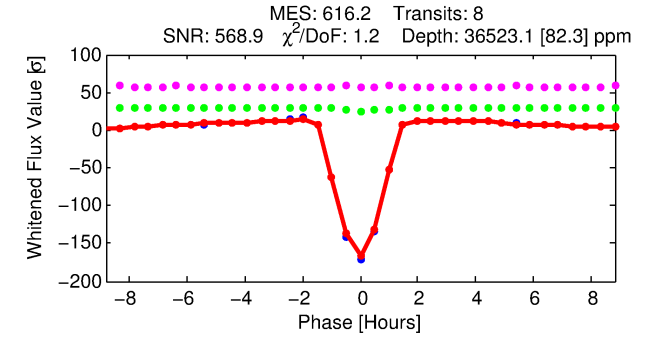
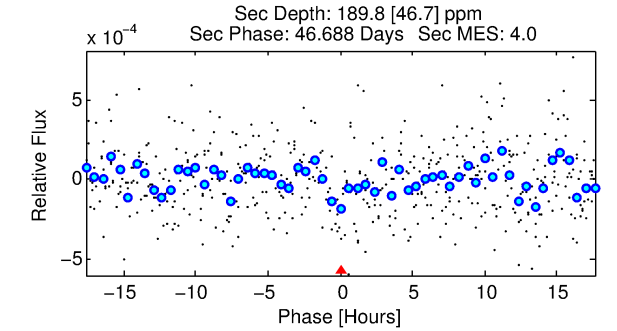
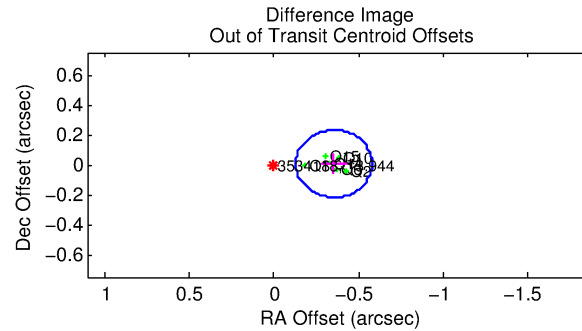
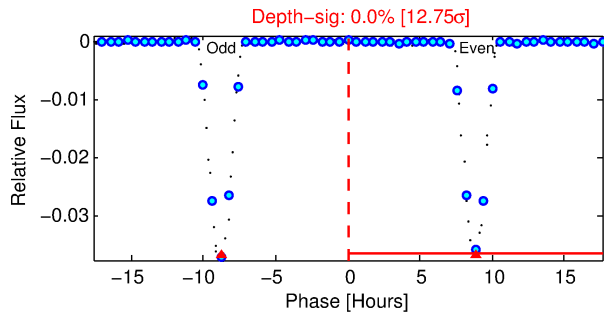
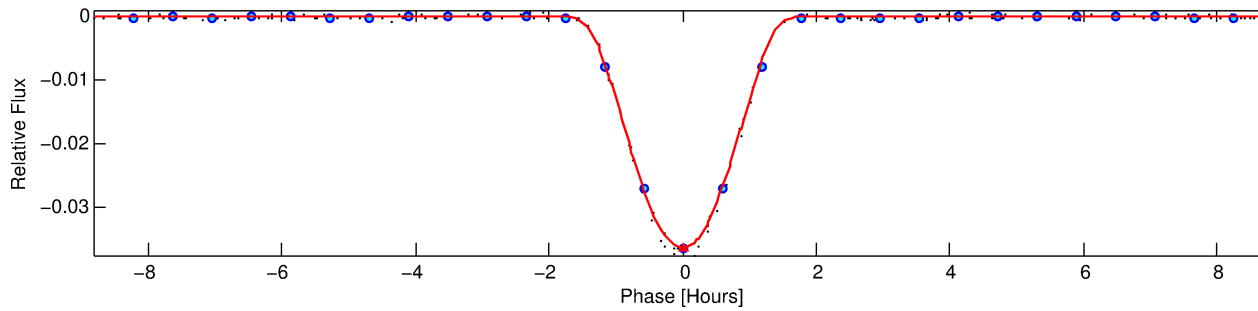
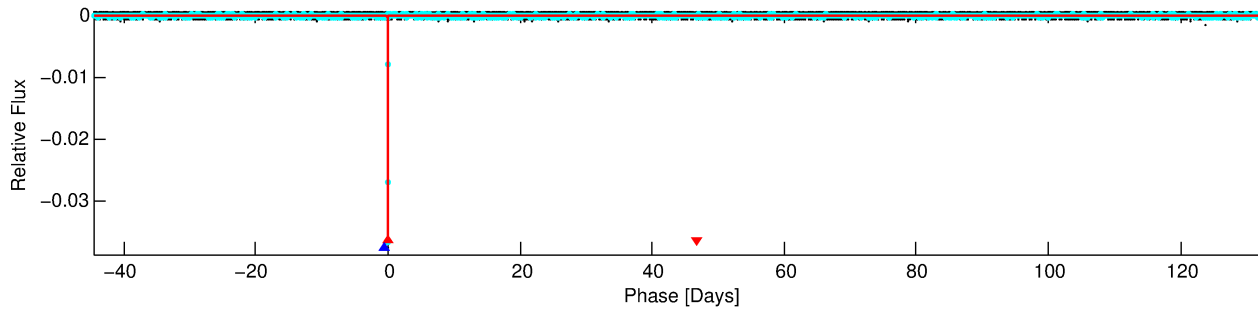
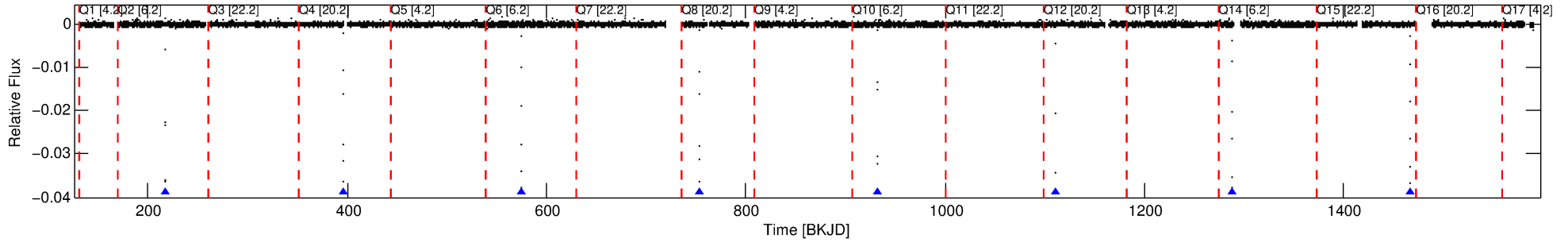
No Significant Match Found

DV One-Page Summary

KIC: 3534118 Candidate: 1 of 2 Period: 178.413 d

KOI: K03641.01 Corr: 1.000

Kp: 13.94 R*: 1.15 Rs Teff: 6078.0 K Logg: 4.35 Fe/H: 0.000



DV Fit Results:

Period = 178.41293 [0.00003] d
Epoch = 218.2252 [0.0001] BKJD
Rp/R* = 0.2468 [0.0164]
a/R* = 393.26 [4.02]
b = 0.91 [0.03]
Seff = 4.01 [0.97]
Teq = 361 [22] K
Rp = 30.92 [5.82] Re
a = 0.6338 [0.0964] AU
Ag = 43.87 [15.79] [2.72σ]
Teffp = 1436 [105] K [9.99σ]

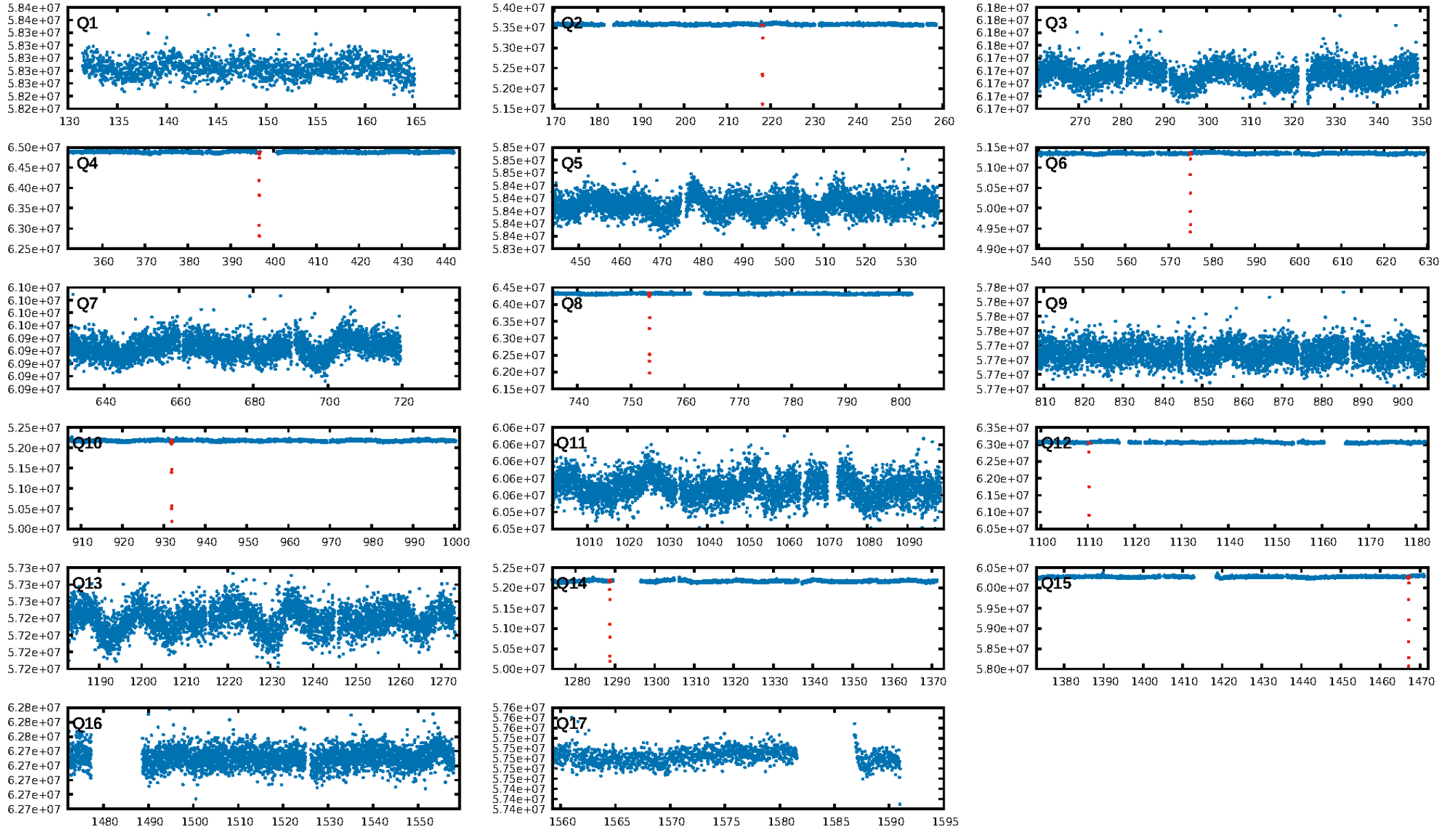
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.5% [0.01σ]
ModelChiSquare2-sig: 7.5%
ModelChiSquareGof-sig: 98.1%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 2.061
Centroid-sig: 0.0%
Centroid-so: 0.565 arcsec [26.26σ]
OotOffset-rm: 0.355 arcsec [4.74σ]
KicOffset-rm: 0.121 arcsec [1.76σ]
OotOffset-st: 4/1/1/0 [6]
KicOffset-st: 4/1/1/0 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 0.00 [0/6]

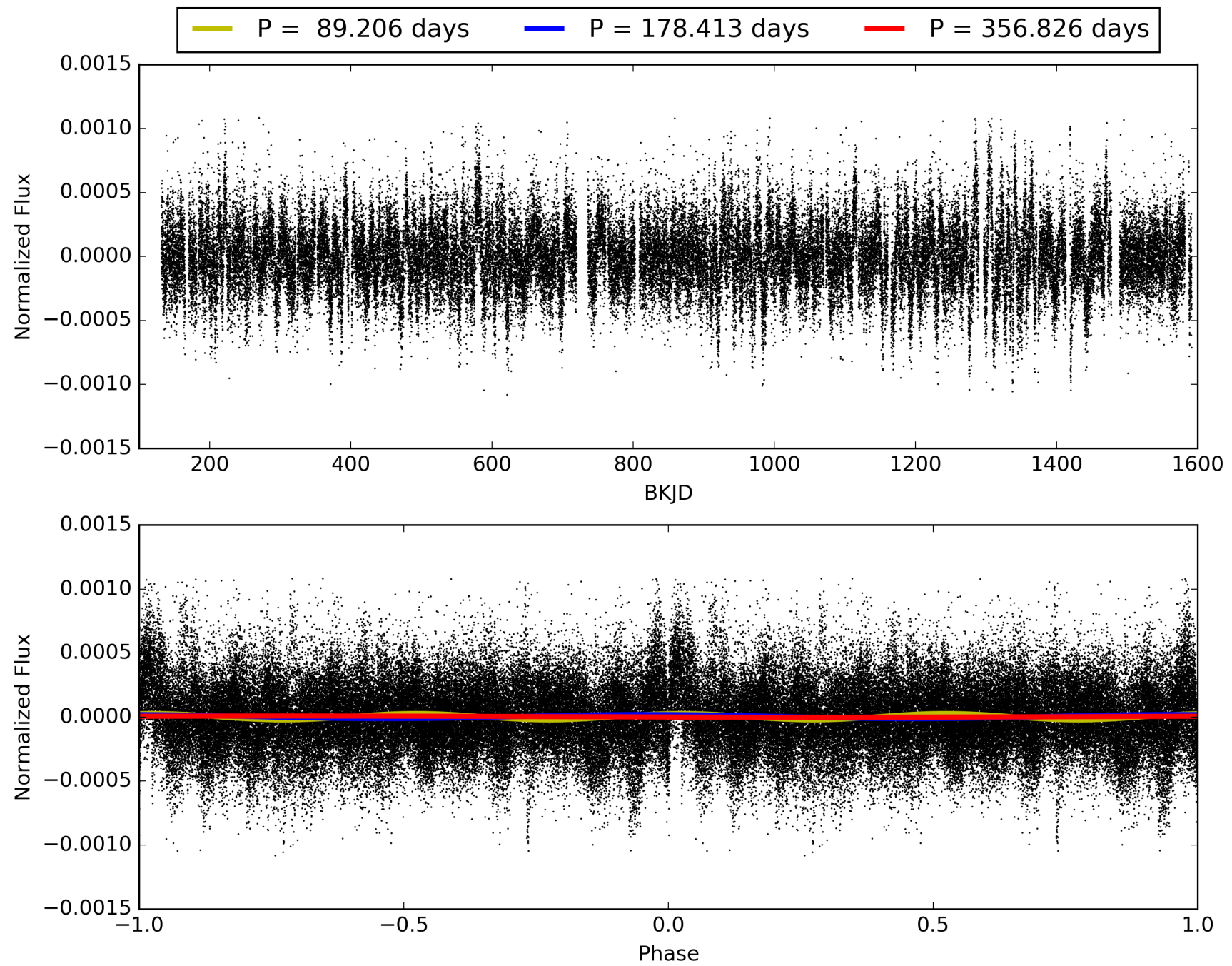
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:19:17 Z

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

TCE 003534118-01, PDC Light Curves

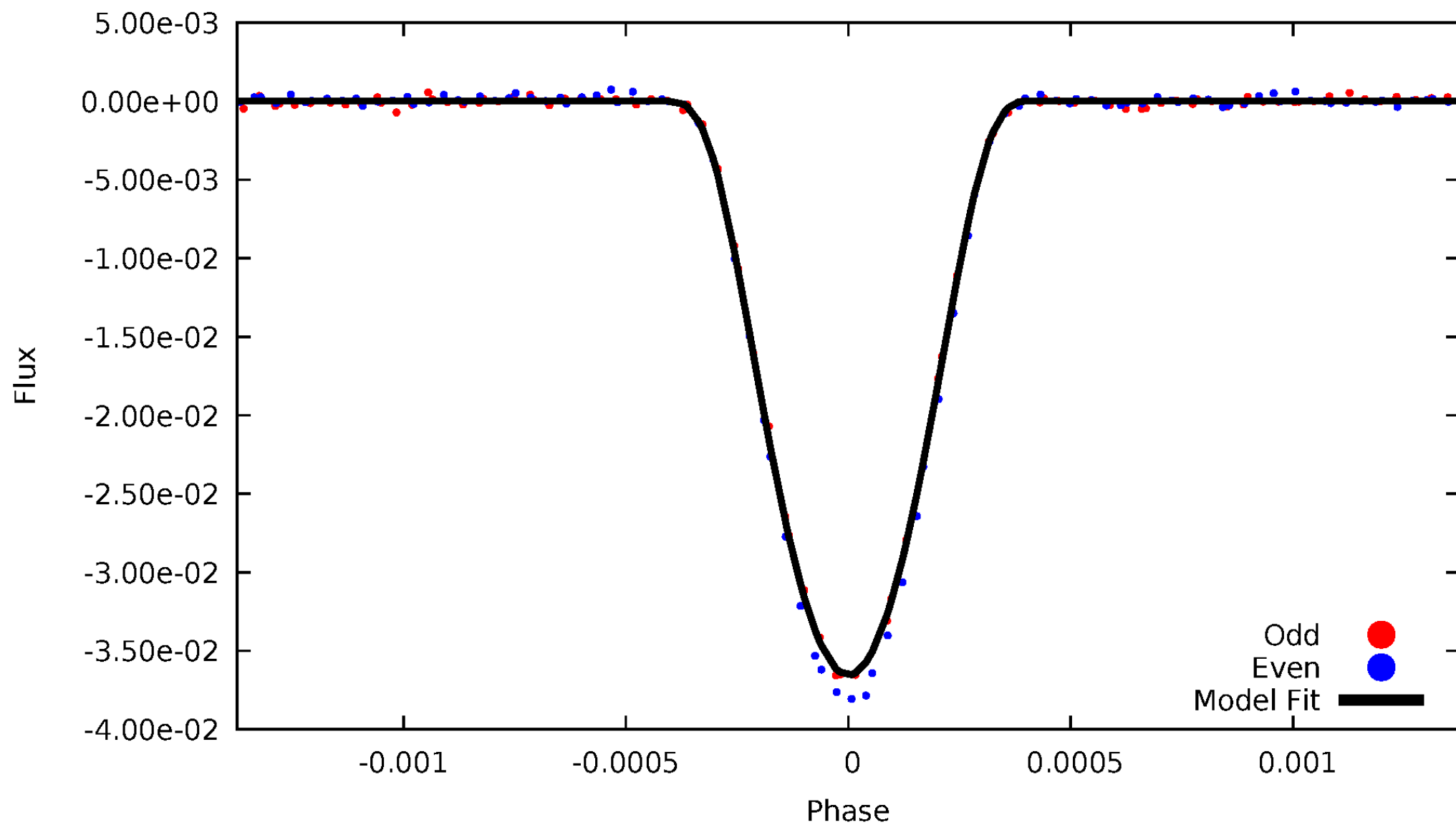


TCE 003534118-01



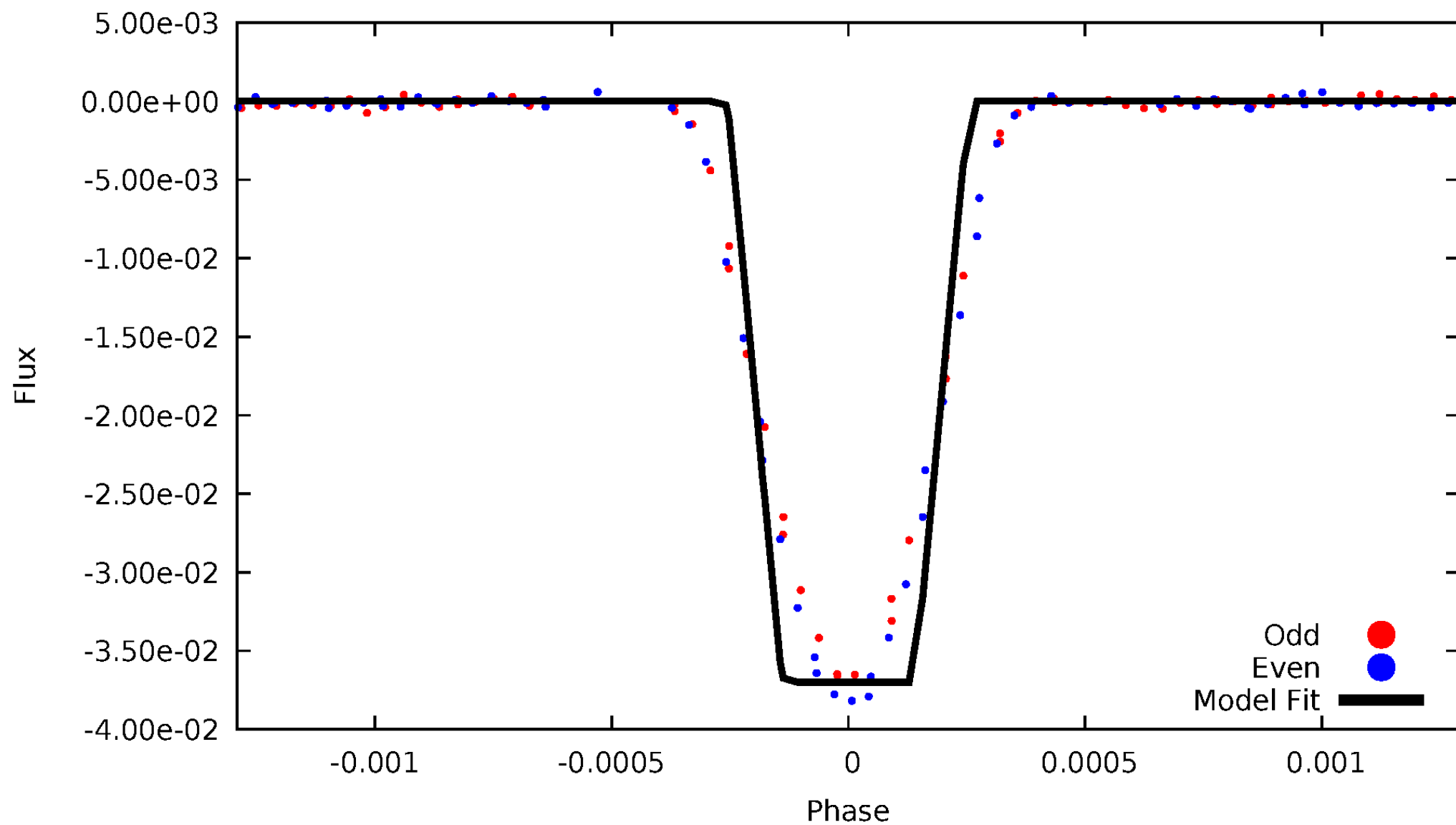
DV Odd/Even

TCE 003534118-01



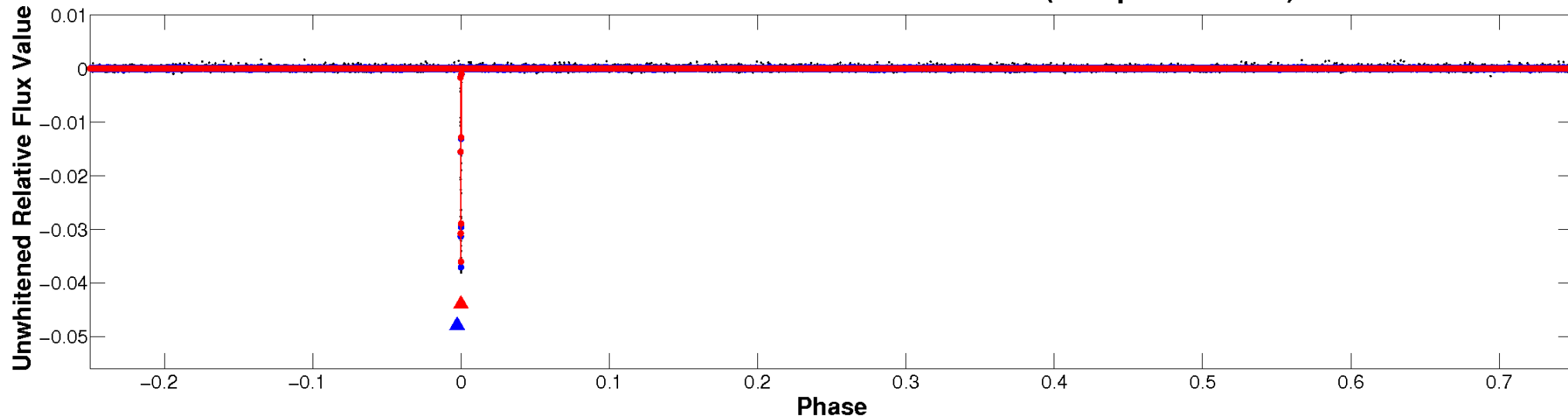
ALT Odd/Even

TCE 003534118-01

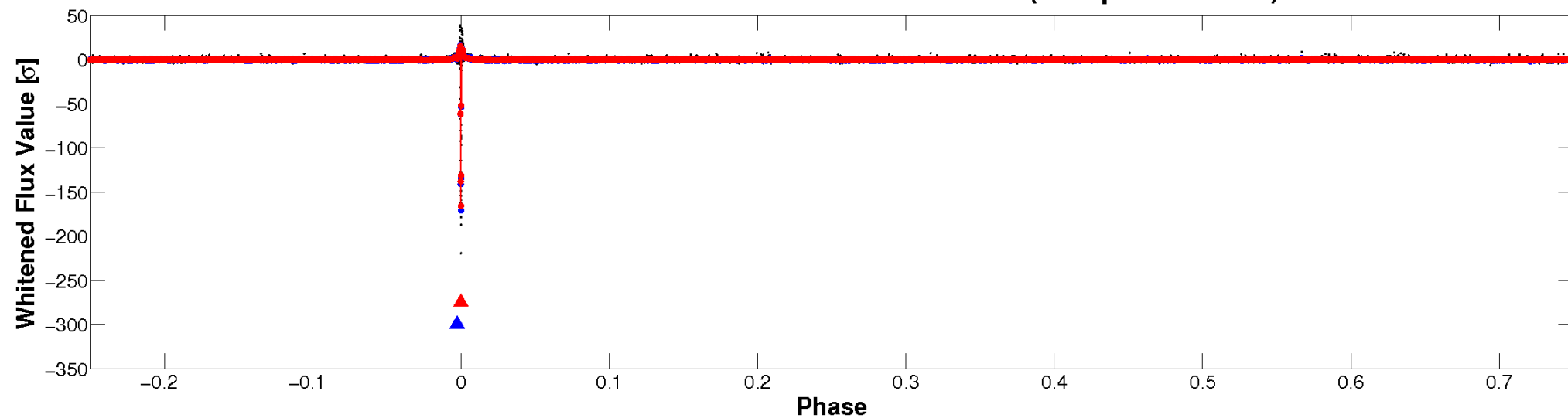


Non-Whitened Vs. Whitened Light Curve

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

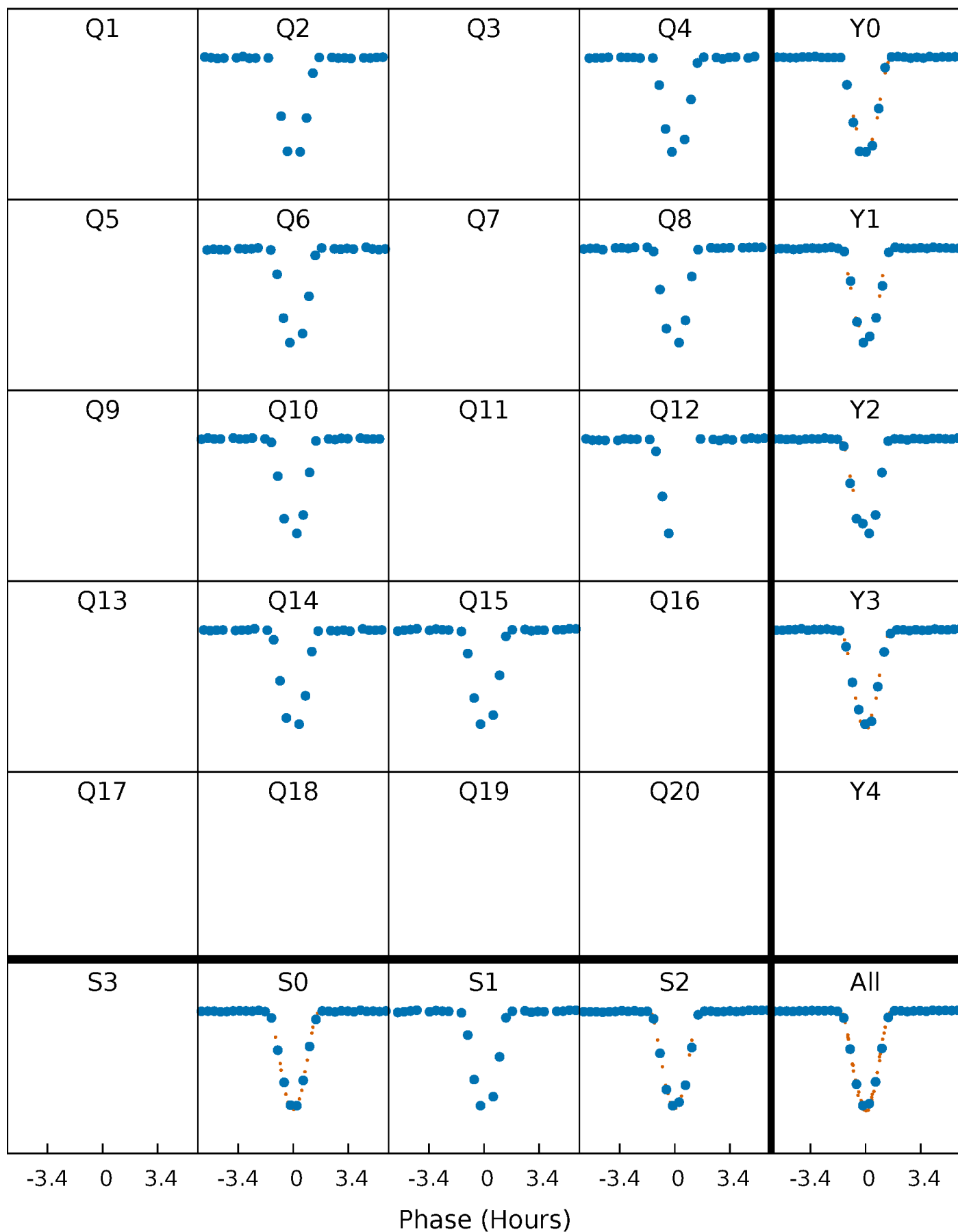


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



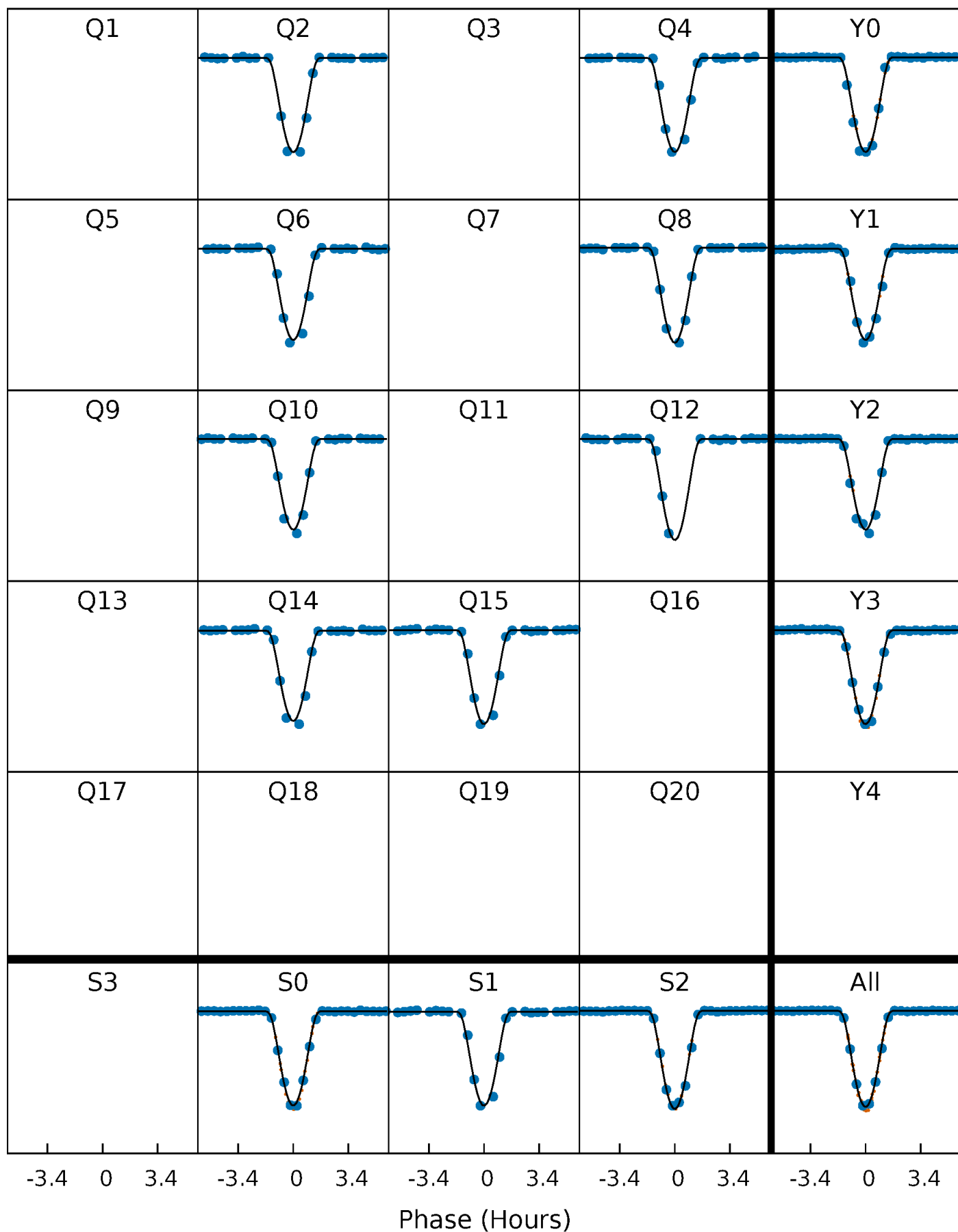
PDC Quarter-Phased Transit Curves

TCE 003534118-01 P=178.412932 Days $T_0=218.225227$ (BKJD)



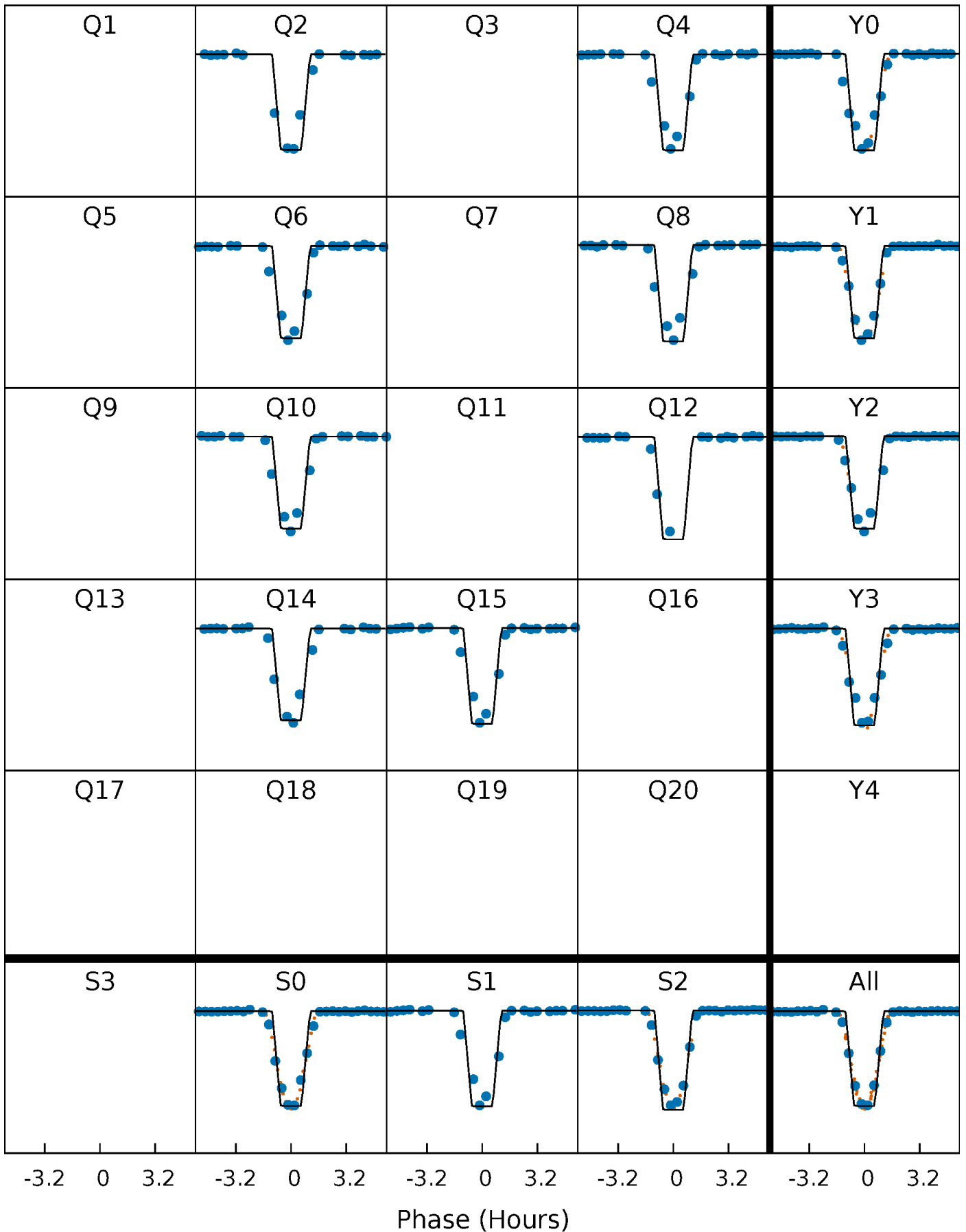
DV Quarter-Phased Transit Curves

TCE 003534118-01 P=178.412932 Days $T_0=218.225227$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

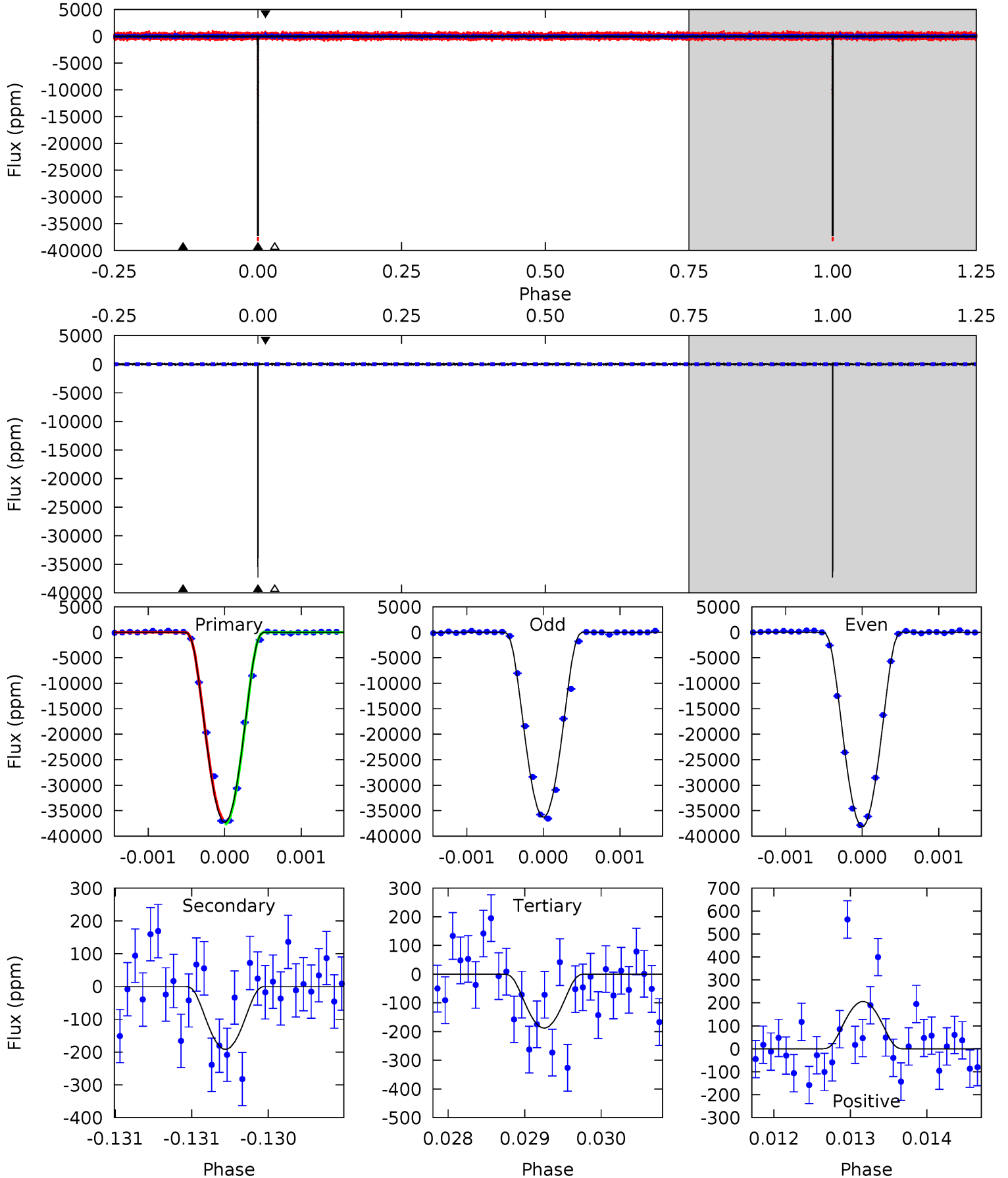
TCE 003534118-01 P=178.412646 Days $T_0=218.226360$ (BKJD)



DV Model-Shift Uniqueness Test

003534118-01, P = 178.412932 Days, E = 39.812295 Days

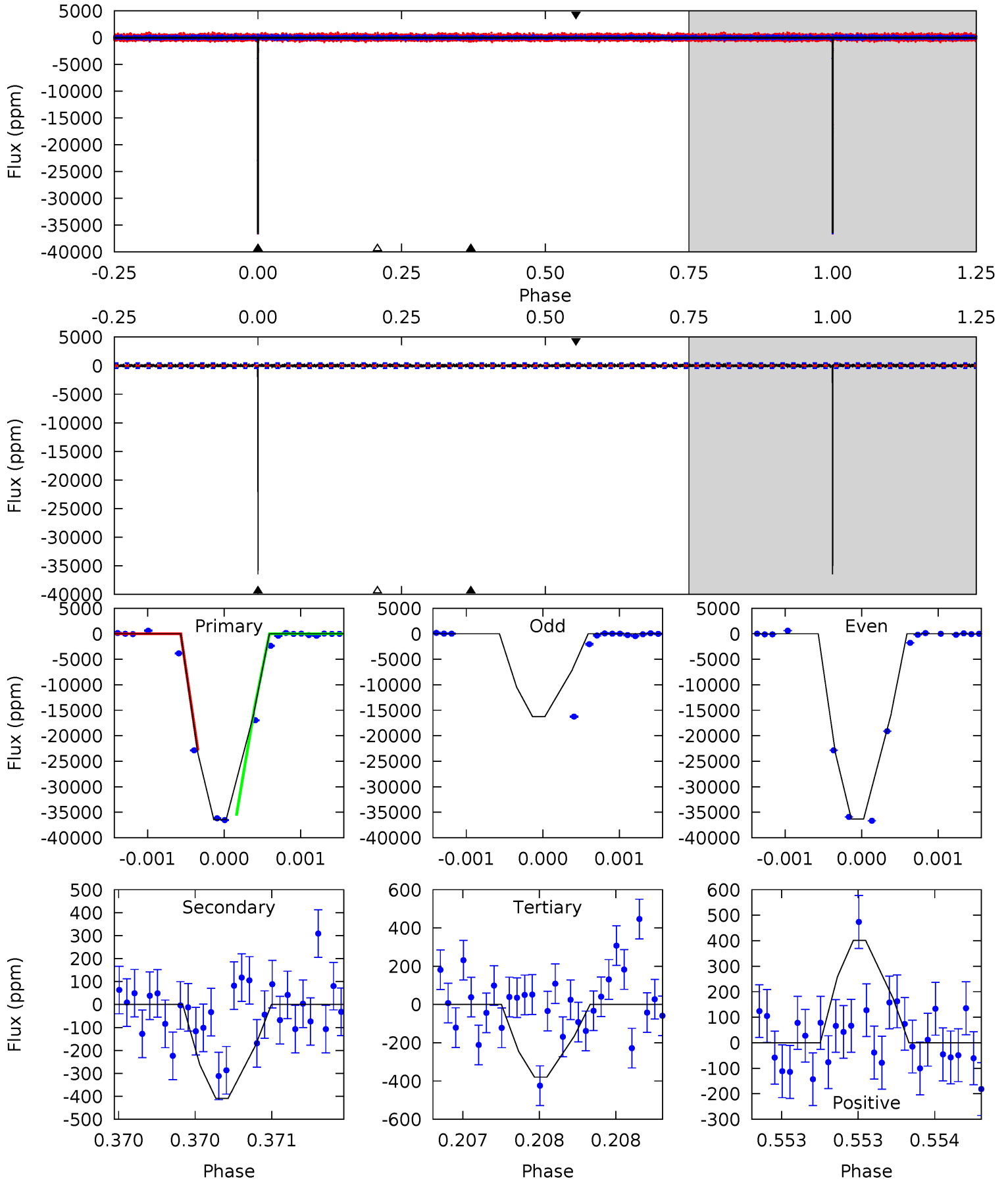
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1181	6.07	5.95	6.52	5.50	3.37	1.64	1175	1174	0.12	-0.45	31.1	1.00	0.01	16.3



Alt Model-Shift Uniqueness Test

003534118-01, P = 178.412646 Days, E = 39.813714 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
461.8	5.18	4.81	5.08	5.56	3.46	1.23	456.9	456.7	0.37	0.10	91.4	1.00	0.01	0



Stellar Parameters For KIC 003534118

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6078^{+122}_{-134}	$4.346^{+0.084}_{-0.126}$	$0.000^{+0.150}_{-0.150}$	$1.148^{+0.202}_{-0.124}$	$1.064^{+0.096}_{-0.072}$	$0.990^{+0.343}_{-0.357}$
	+2%/-2%	+2%/-3%	+inf%/-inf%	+18%/-11%	+9%/-7%	+35%/-36%
Source	SPE57	SPE57	SPE57	DSEP		

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

Secondary Eclipse Parameters for KIC 003534118-01 / KOI 3641.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-192 ± 32	$31.27^{+3.51}_{-3.13}$	505^{+25}_{-21}	2341^{+60}_{-59}	42^{+13}_{-10}
Alt.	-409 ± 79	$24.43^{+3.21}_{-2.66}$	506^{+26}_{-20}	2733^{+106}_{-87}	151^{+49}_{-42}

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

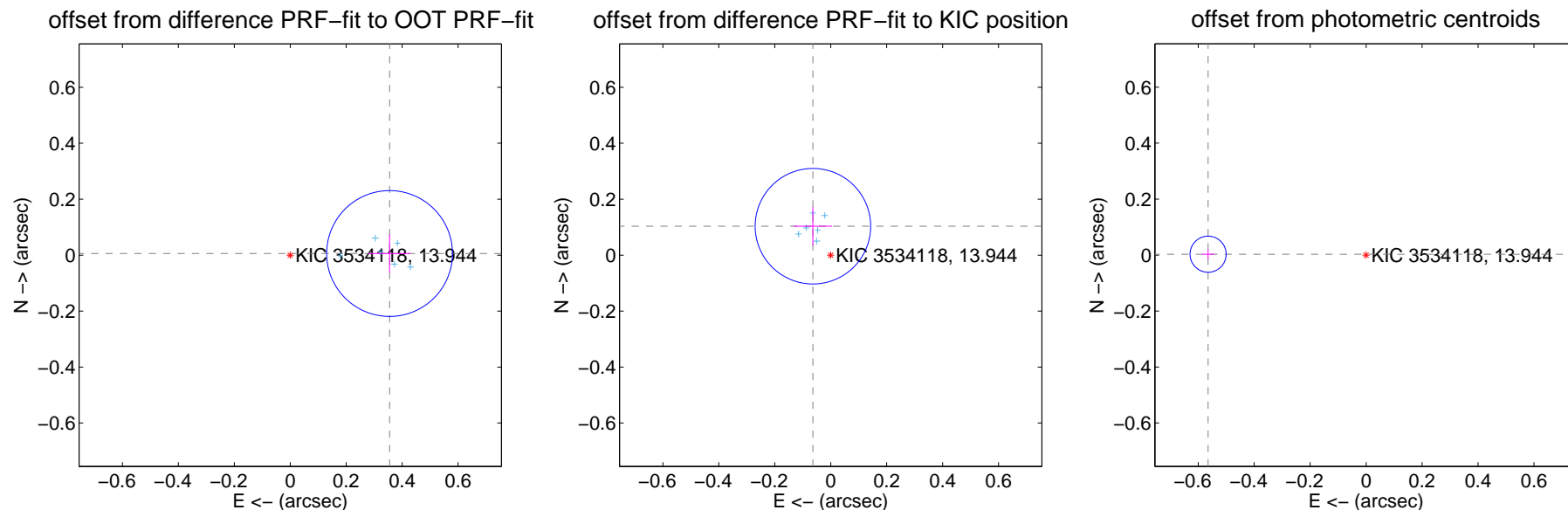
DV Centroid Data

Supplemental centroid analysis for 003534118-01. Kepler magnitude: 13.94. Transit SNR 568.89

There are 6 quarters with good PRF difference image offsets

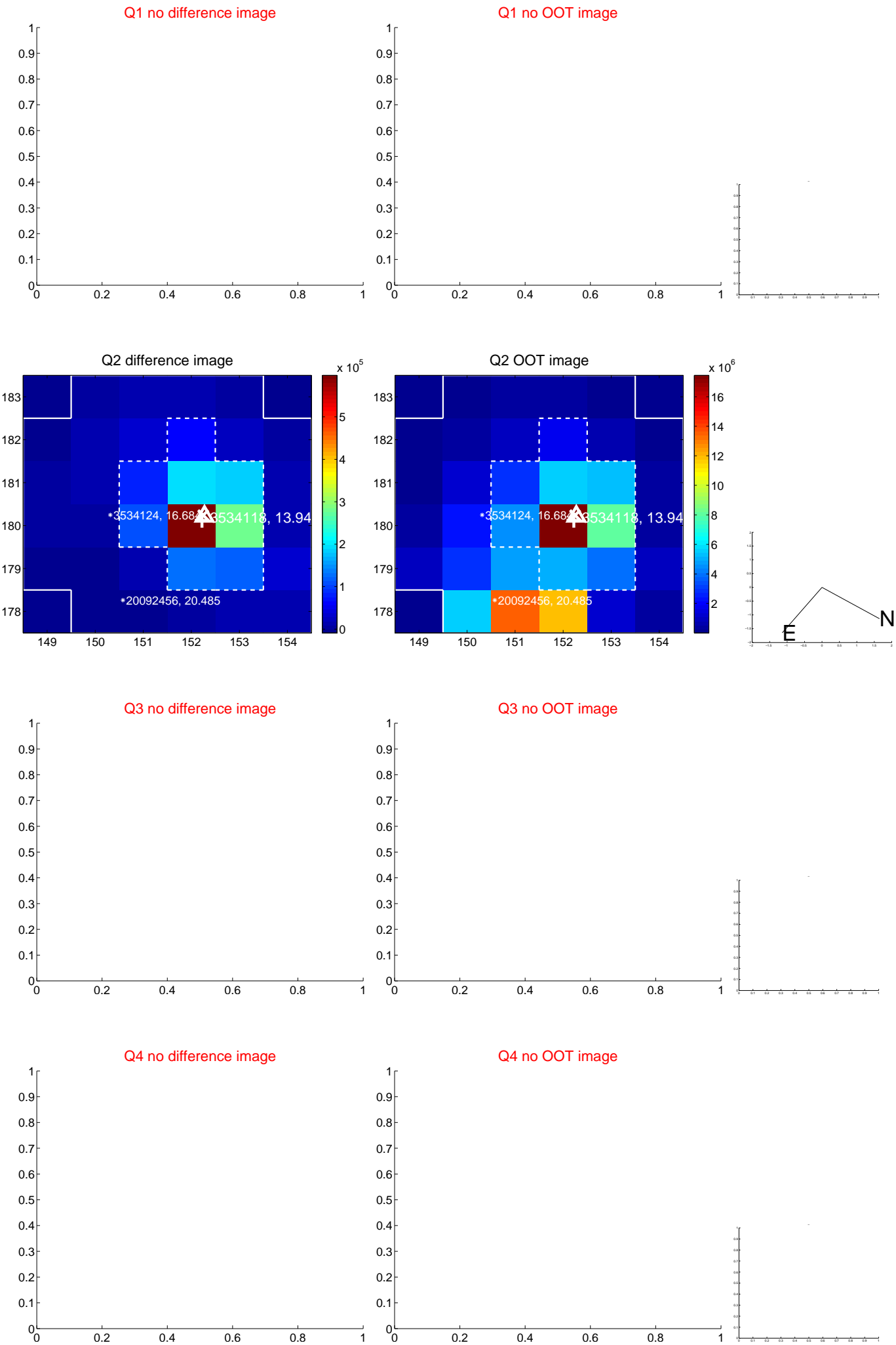
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.355 ± 0.075	4.74	-0.355 ± 0.075	0.006 ± 0.068
PRF-fit source offset from KIC position	0.121 ± 0.069	1.76	0.064 ± 0.068	0.103 ± 0.069
photometric centroid source offset	0.56 ± 0.02	26.26	0.56 ± 0.02	0.00 ± 0.02

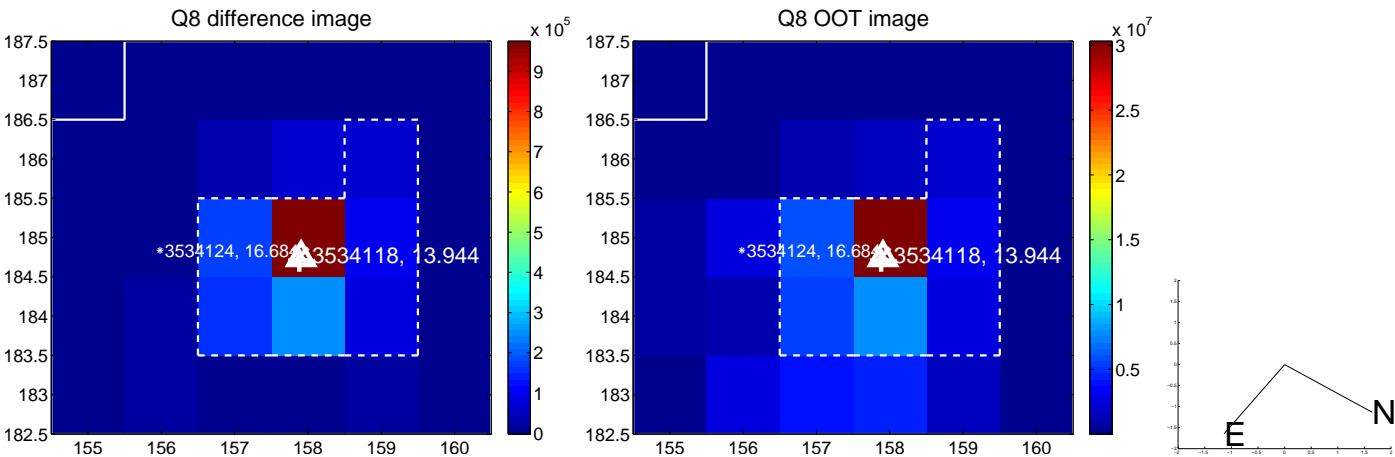
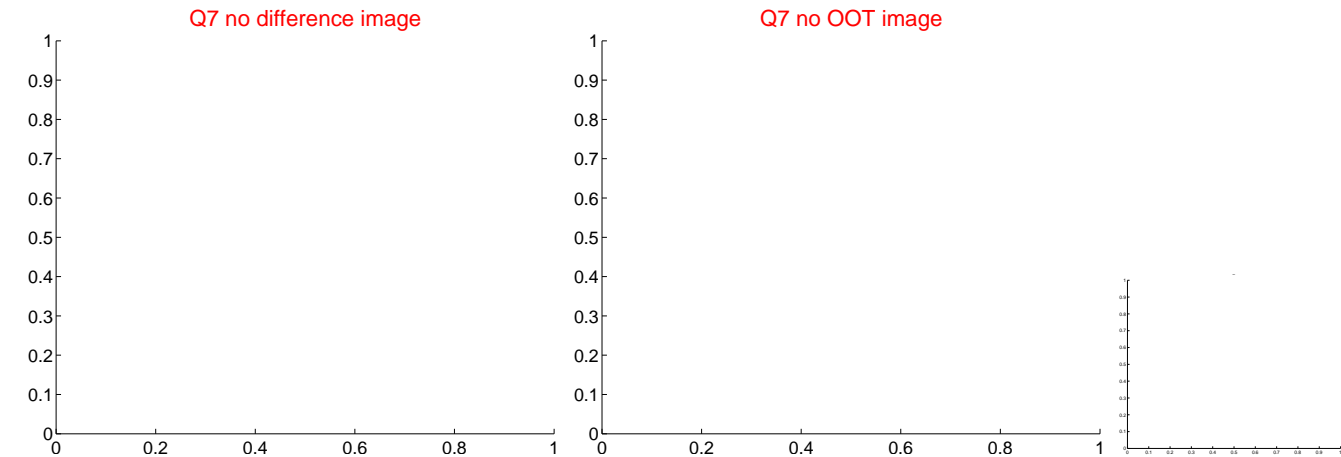
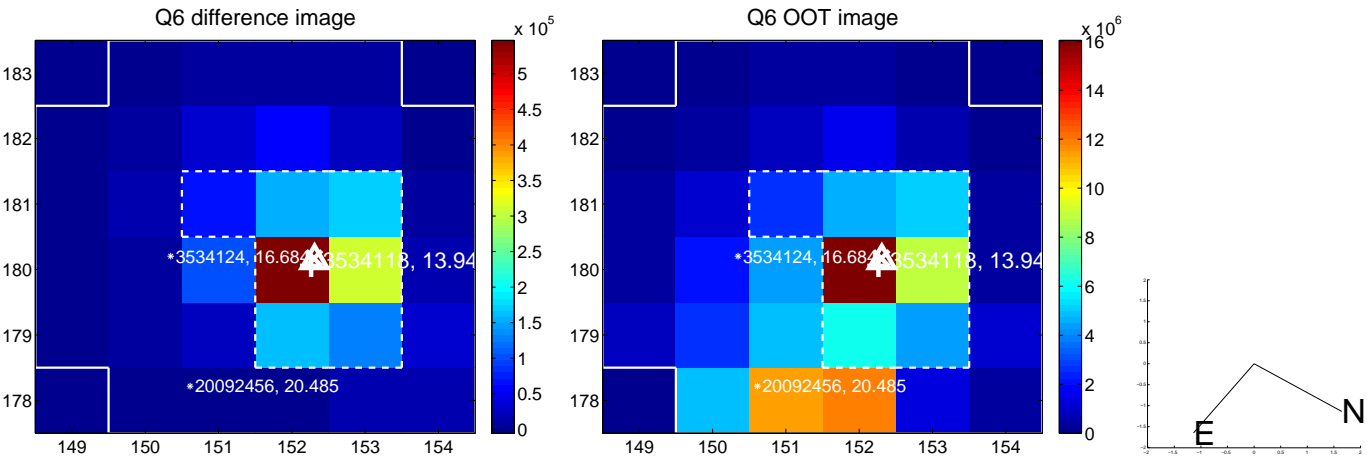


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

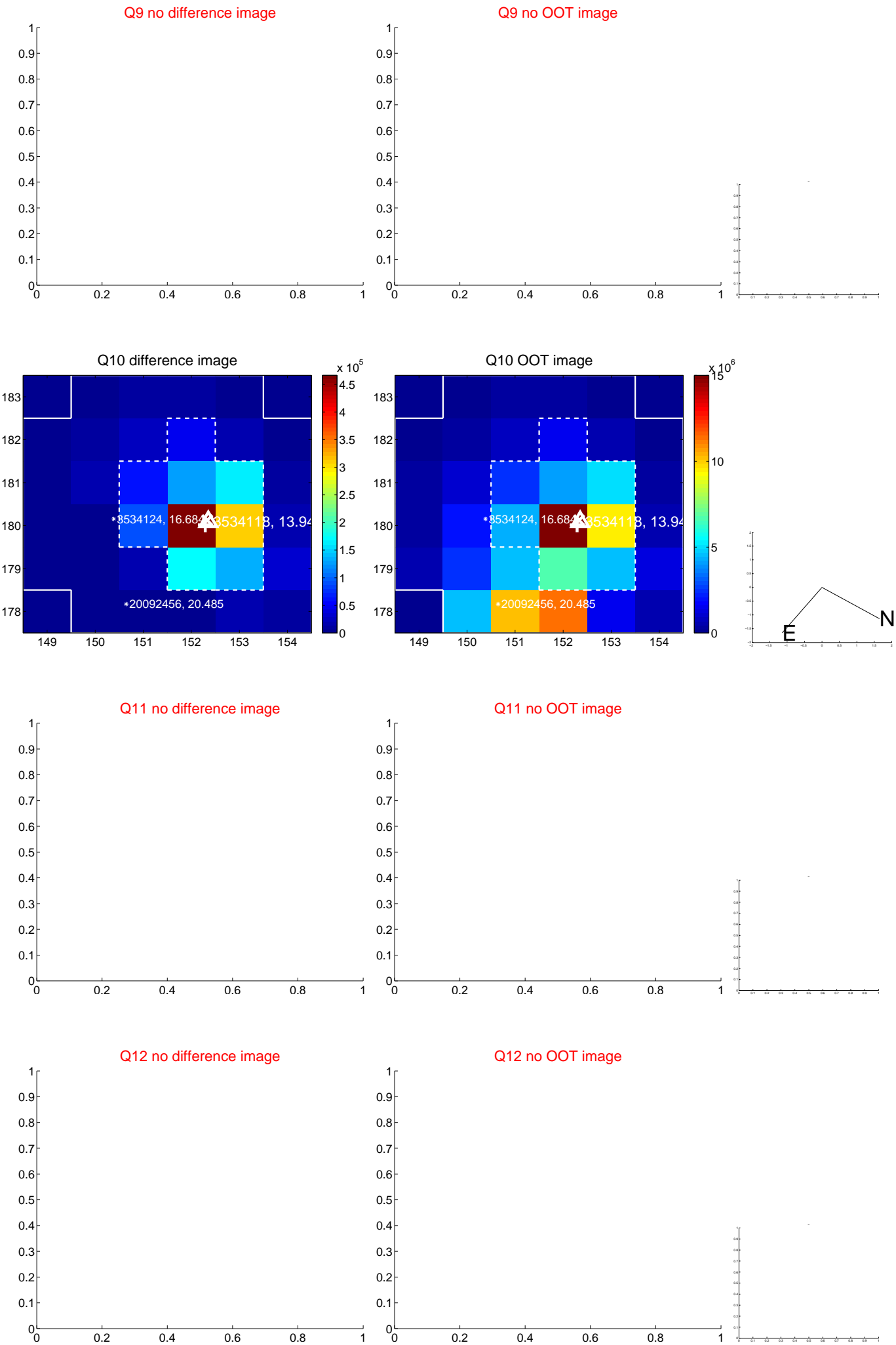
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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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.

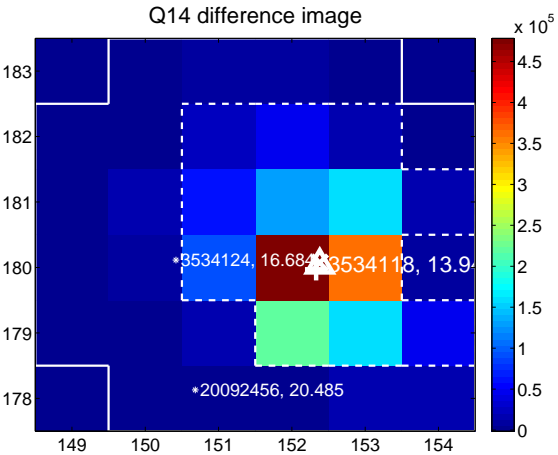
Q13 no difference image



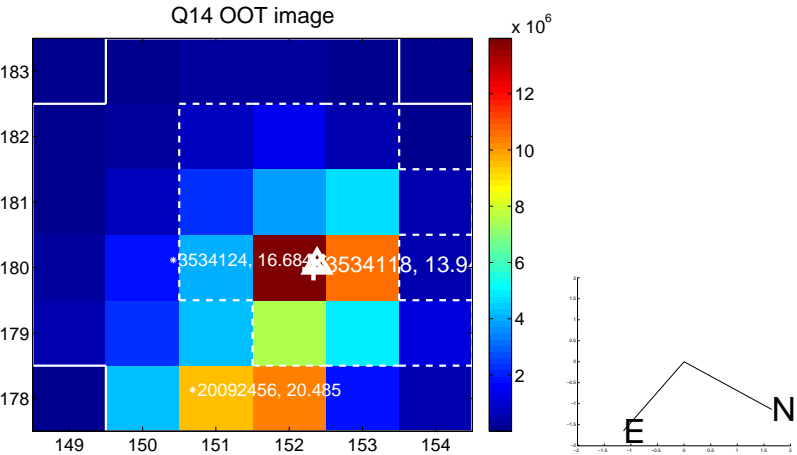
Q13 no OOT image



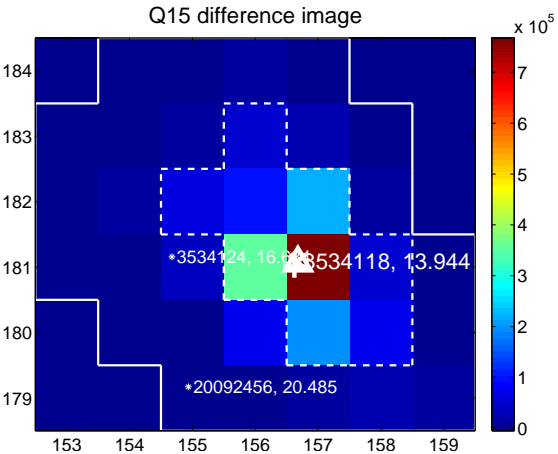
Q14 difference image



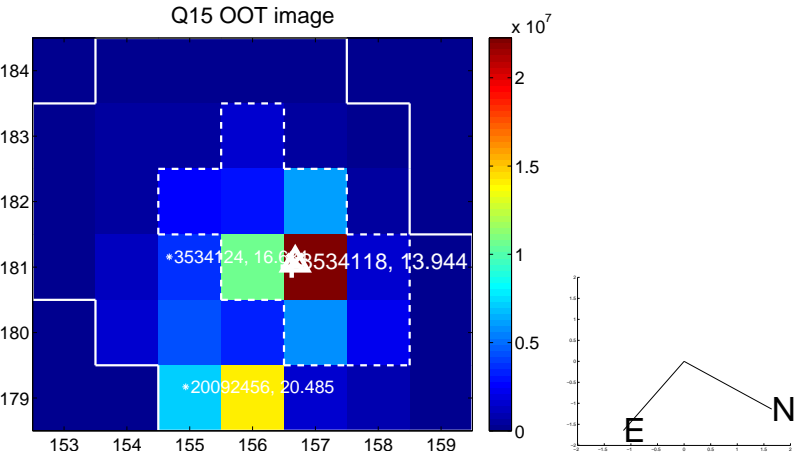
Q14 OOT image



Q15 difference image



Q15 OOT image



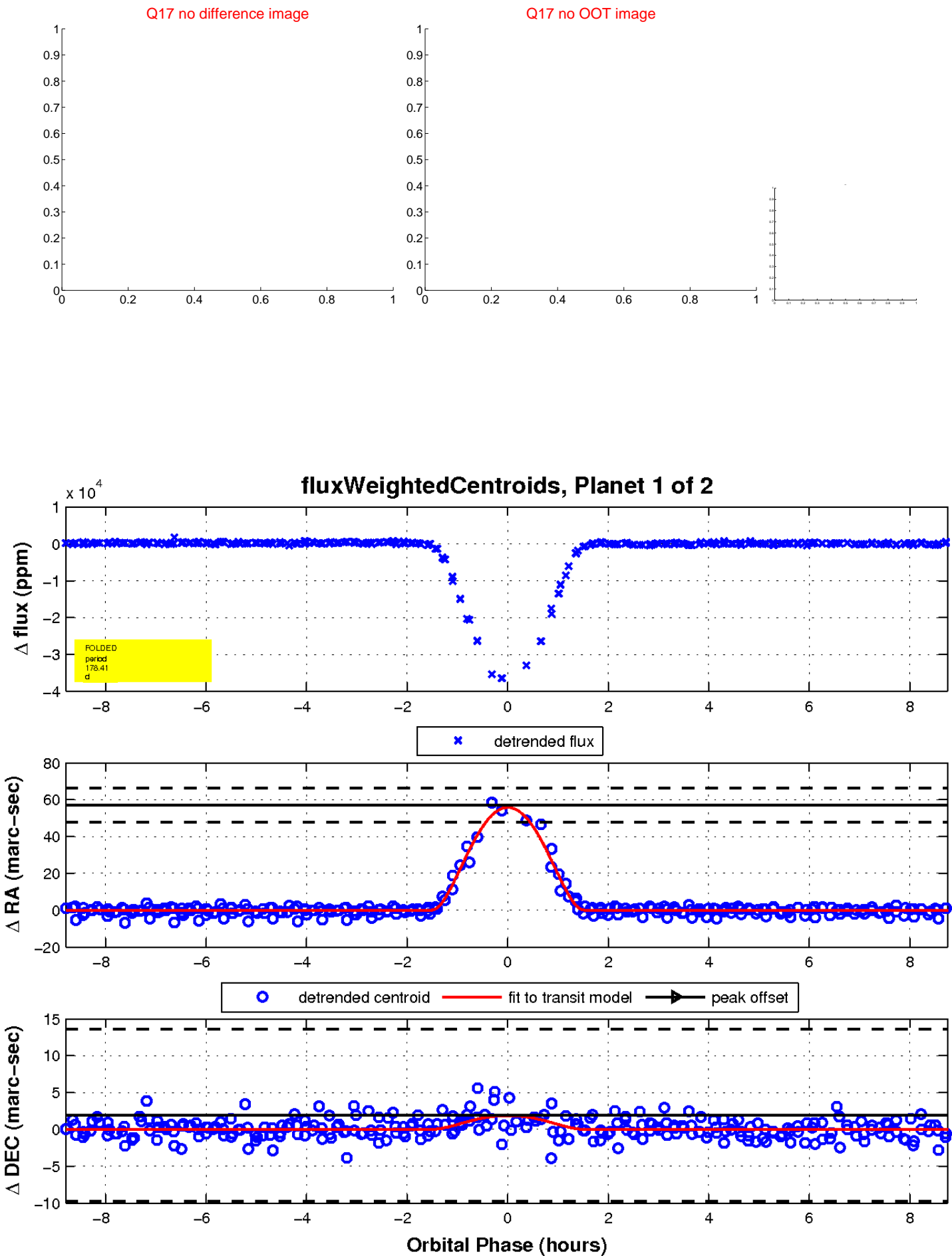
Q16 no difference image



Q16 no OOT image

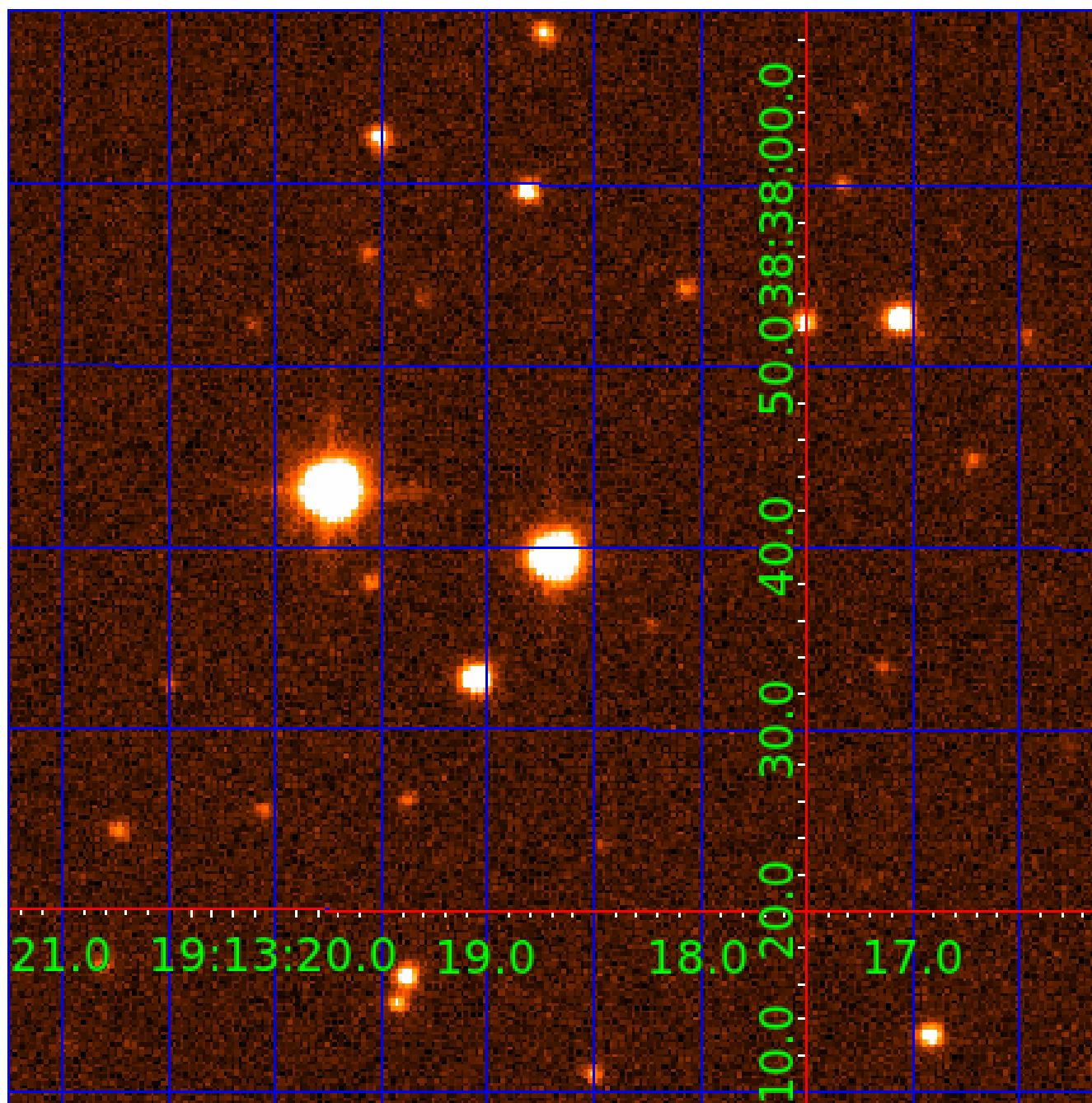


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003534118

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})
003534118-01	OBS	3641.01	178.412932	218.225227	36523.1	2.940	616.2	568.9	1.15	6078	30.92	4.01
003534118-02	OBS	3641.02	178.418337	217.746962	264.5	20.415	10.4	11.1	1.15	6078	2.19	4.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003534118-01	OBS	FP	0.00	0	1	0	0	DEEP_V_SHAPED—HAS_SEC_TCE—CENT_KIC_POS
003534118-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE—CENT_FEW_DIFFS

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

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

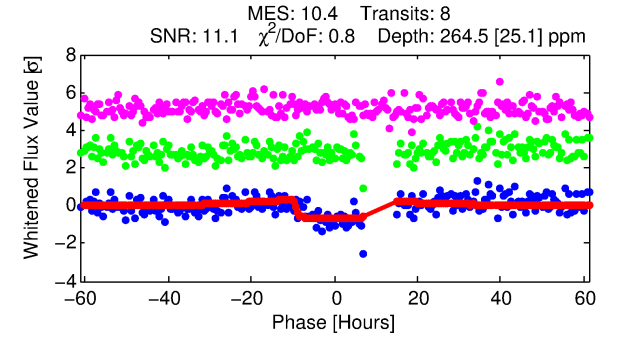
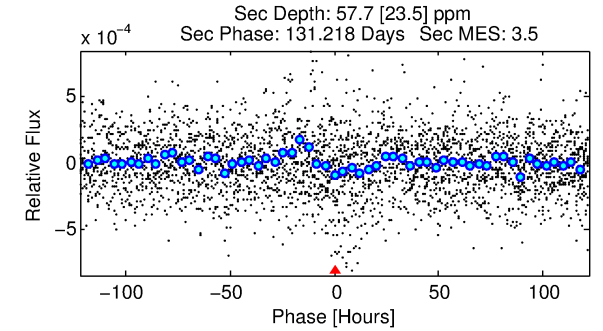
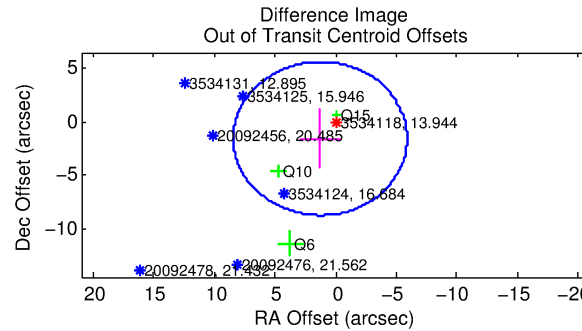
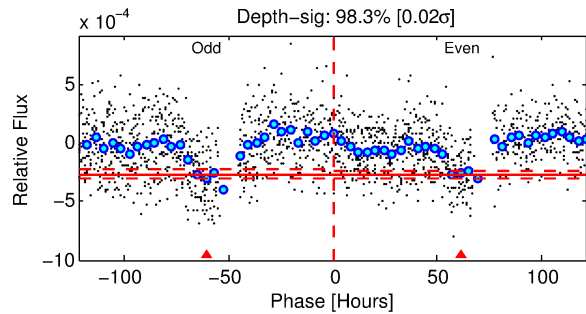
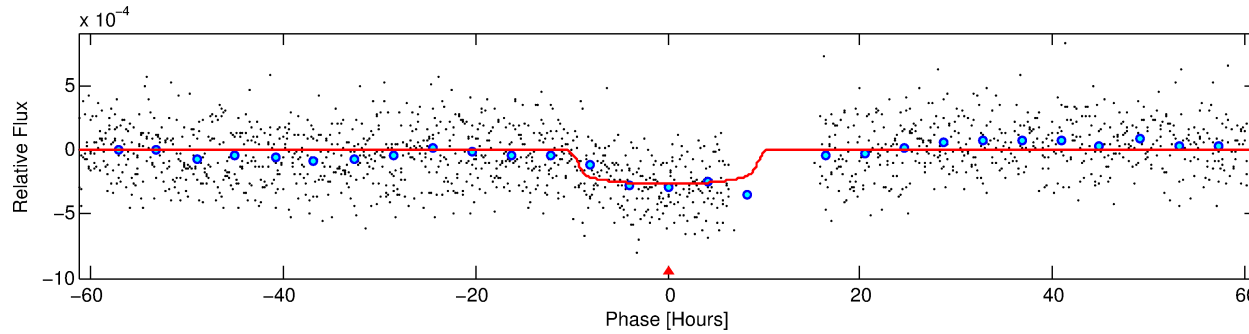
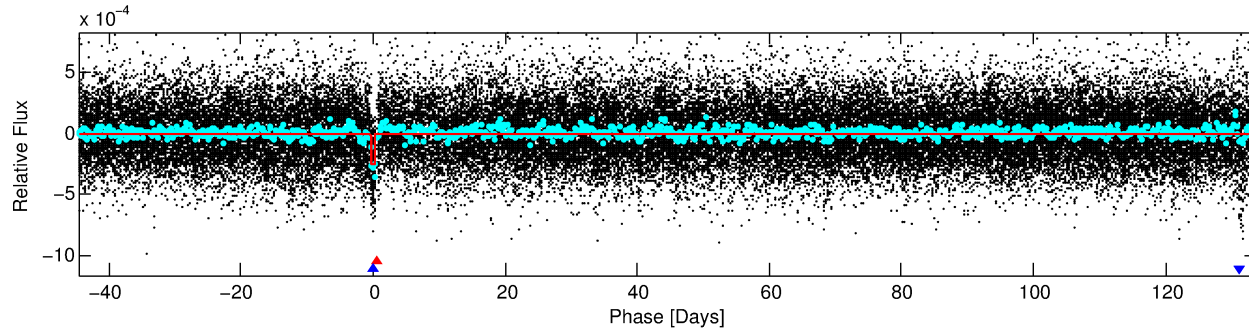
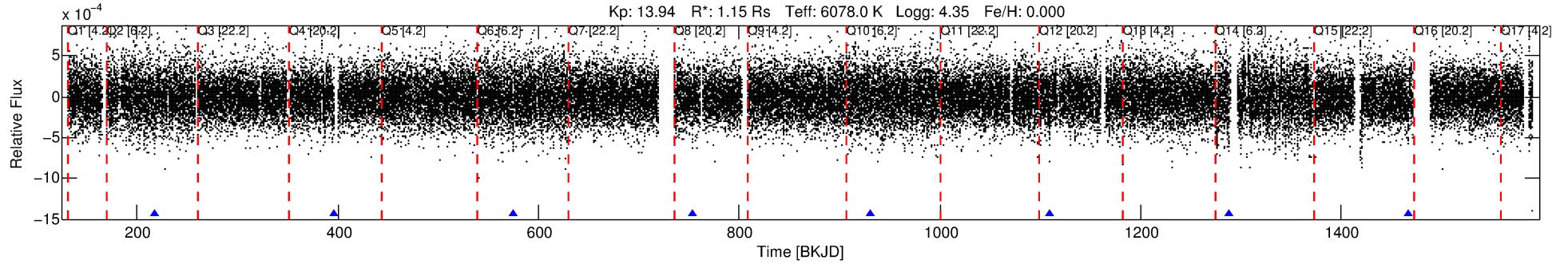
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003534118-02

No Significant Match Found

DV One-Page Summary

KIC: 3534118 Candidate: 2 of 2 Period: 178.418 d
KOI: K03641.02 Corr: 0.794



DV Fit Results:

Period = 178.41834 [0.00631] d
Epoch = 217.7470 [0.0676] BKJD
Rp/R* = 0.0175 [0.0019]
a/R* = 32.66 [15.65]
b = 0.89 [0.12]
Seff = 4.01 [0.97]
Teq = 361 [22] K
Rp = 2.19 [0.45] Re
a = 0.6338 [0.0964] AU
Ag = 2666.75 [1368.93] [1.95σ]
Teffp = 4009 [470] K [7.75σ]

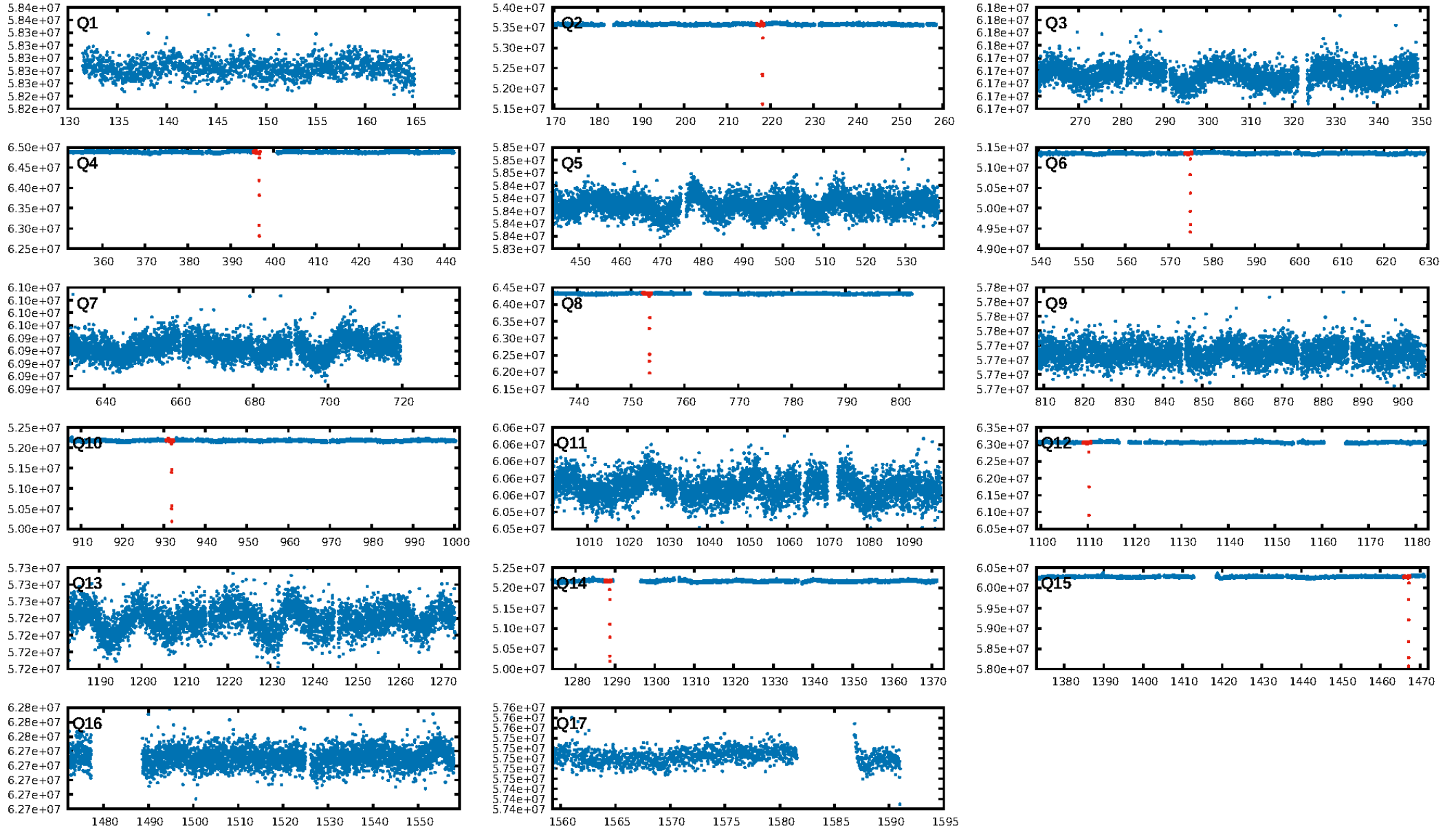
DV Diagnostic Results:

ShortPeriod-sig: 0.5% [0.01σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 82.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.20e-22
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: -2.237
Centroid-sig: 0.1%
Centroid-so: 2.560 arcsec [1.33σ]
OotOffset-rm: 2.014 arcsec [0.84σ]
KicOffset-rm: 2.254 arcsec [1.01σ]
OotOffset-st: 2/1/0/0 [3]
KicOffset-st: 2/1/0/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.00 [0/5]

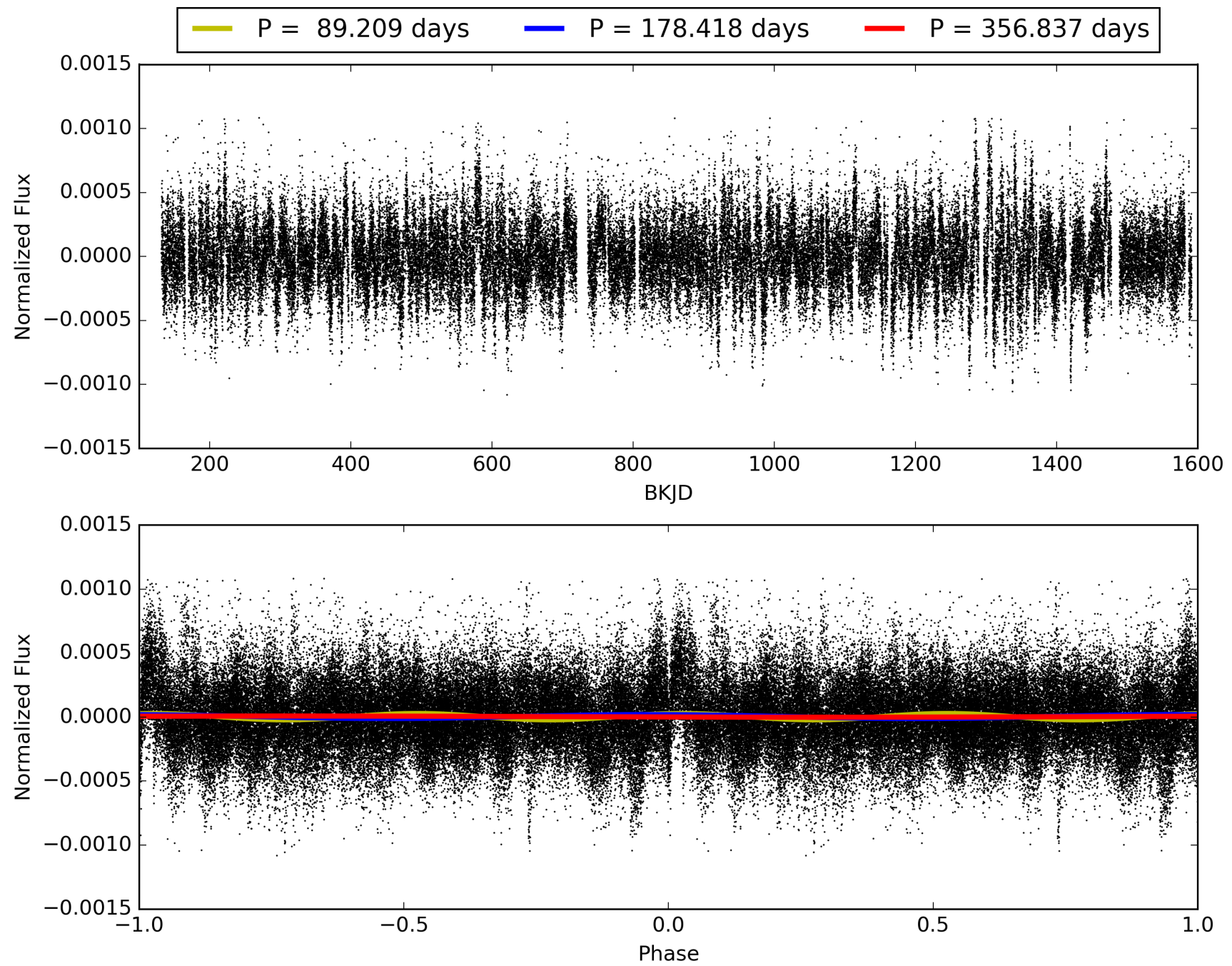
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 23:19:23 Z

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

TCE 003534118-02, PDC Light Curves

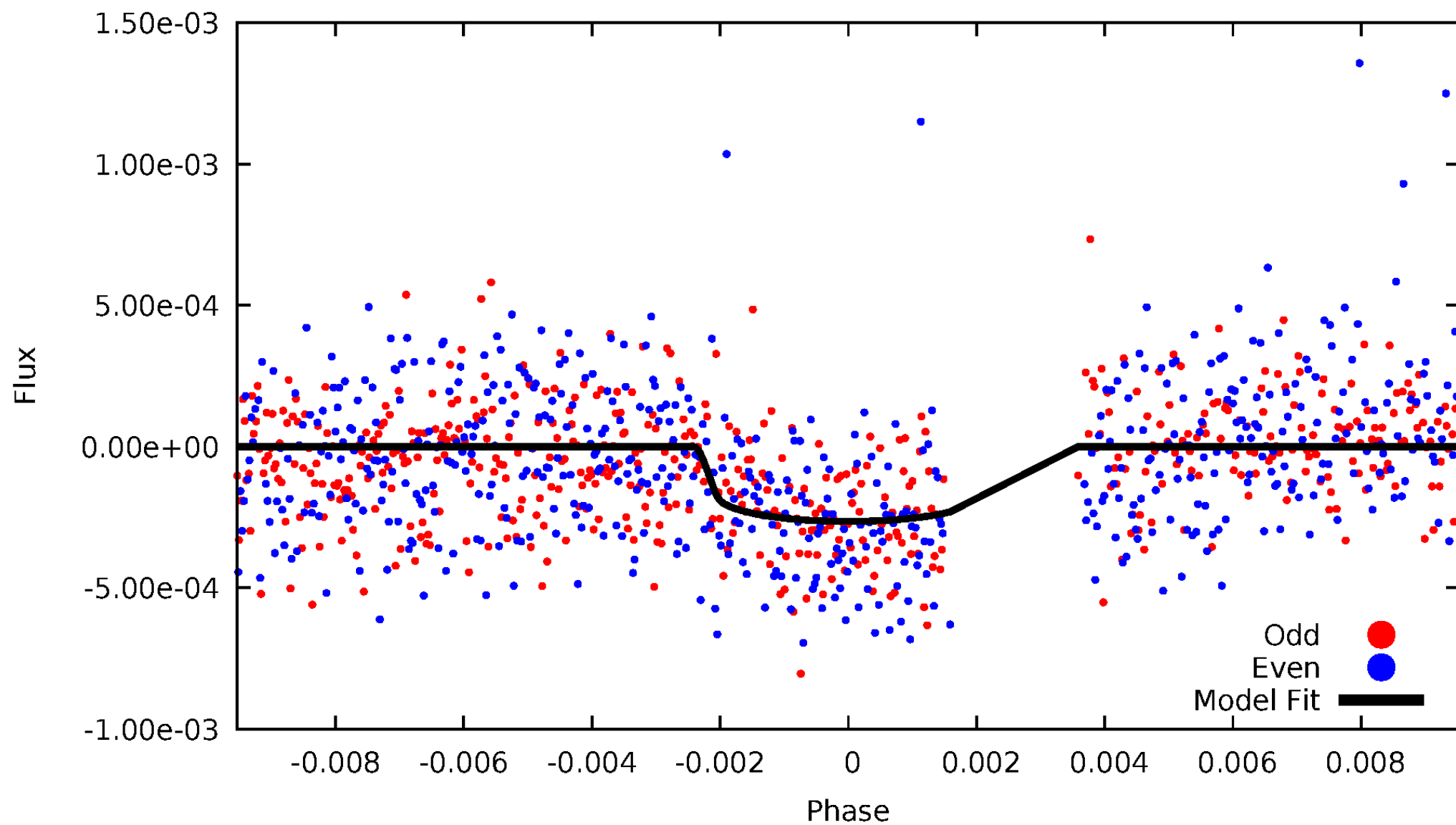


TCE 003534118-02



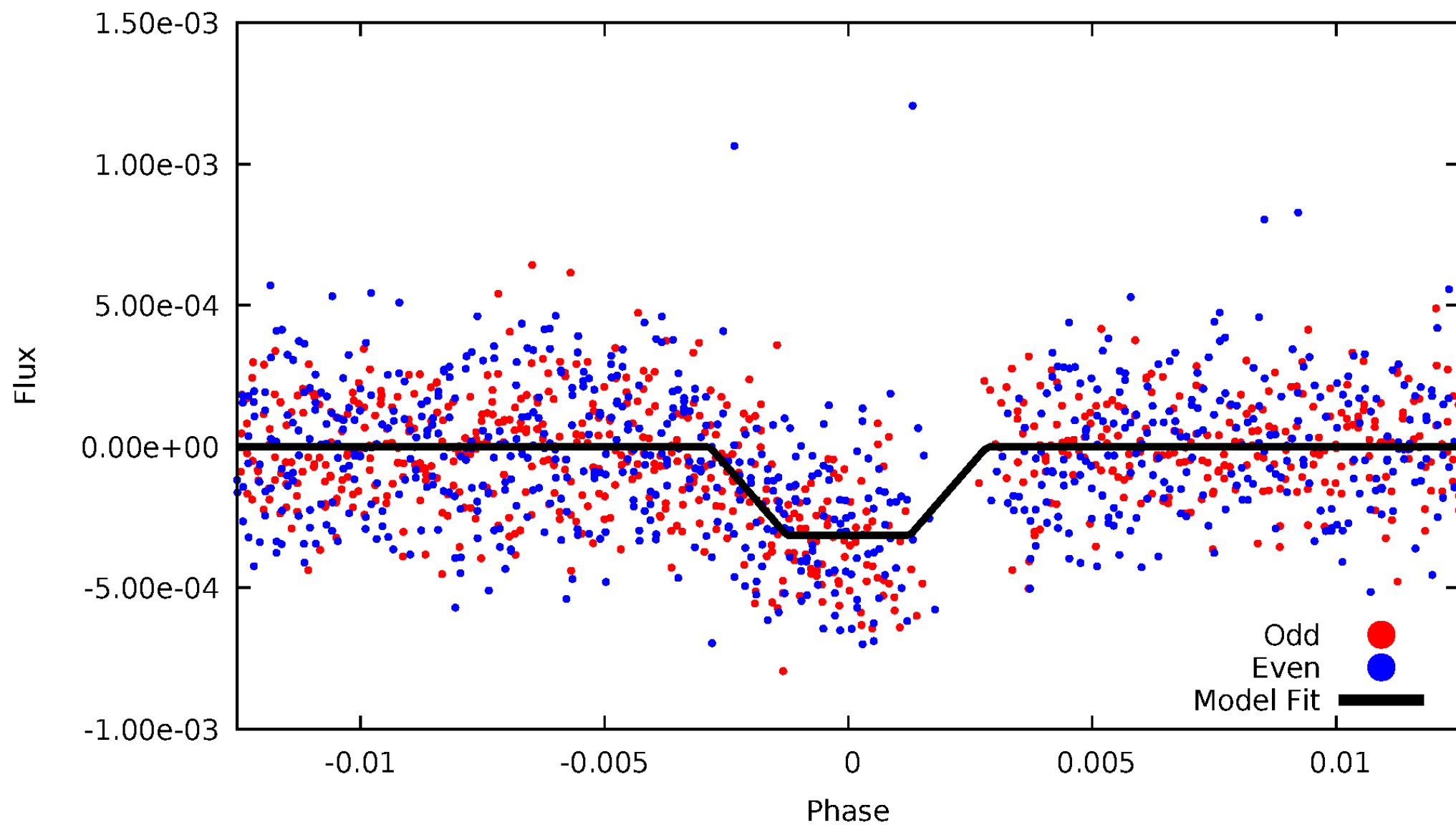
DV Odd/Even

TCE 003534118-02



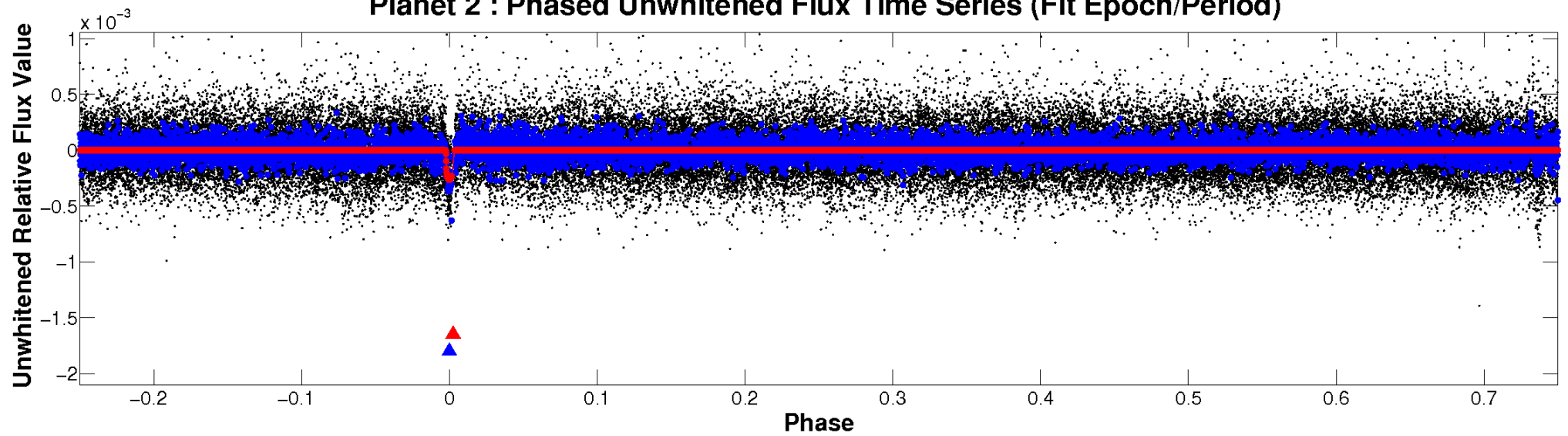
ALT Odd/Even

TCE 003534118-02

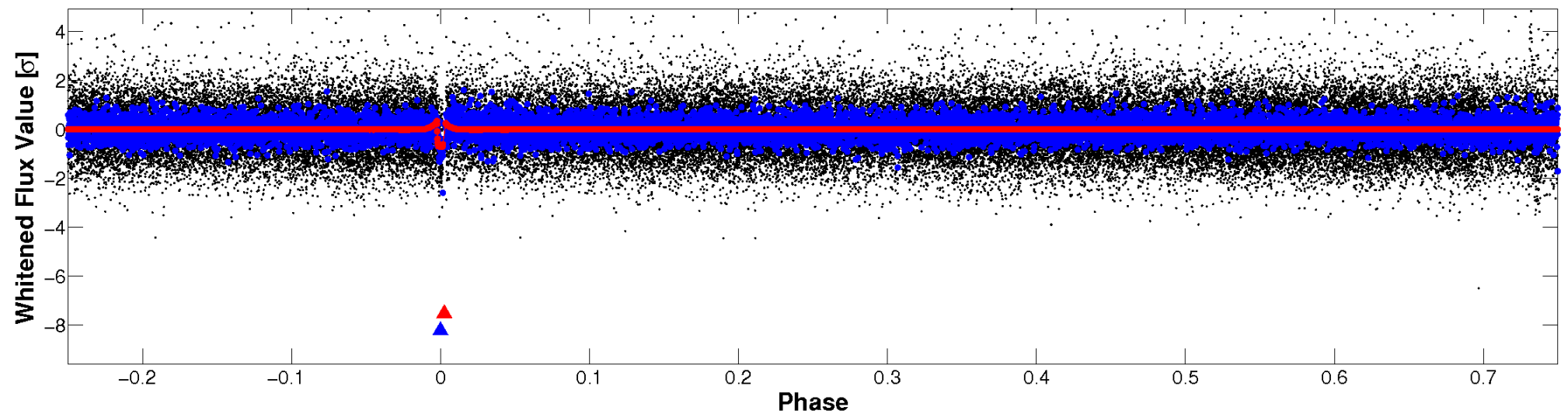


Non-Whitened Vs. Whitened Light Curve

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

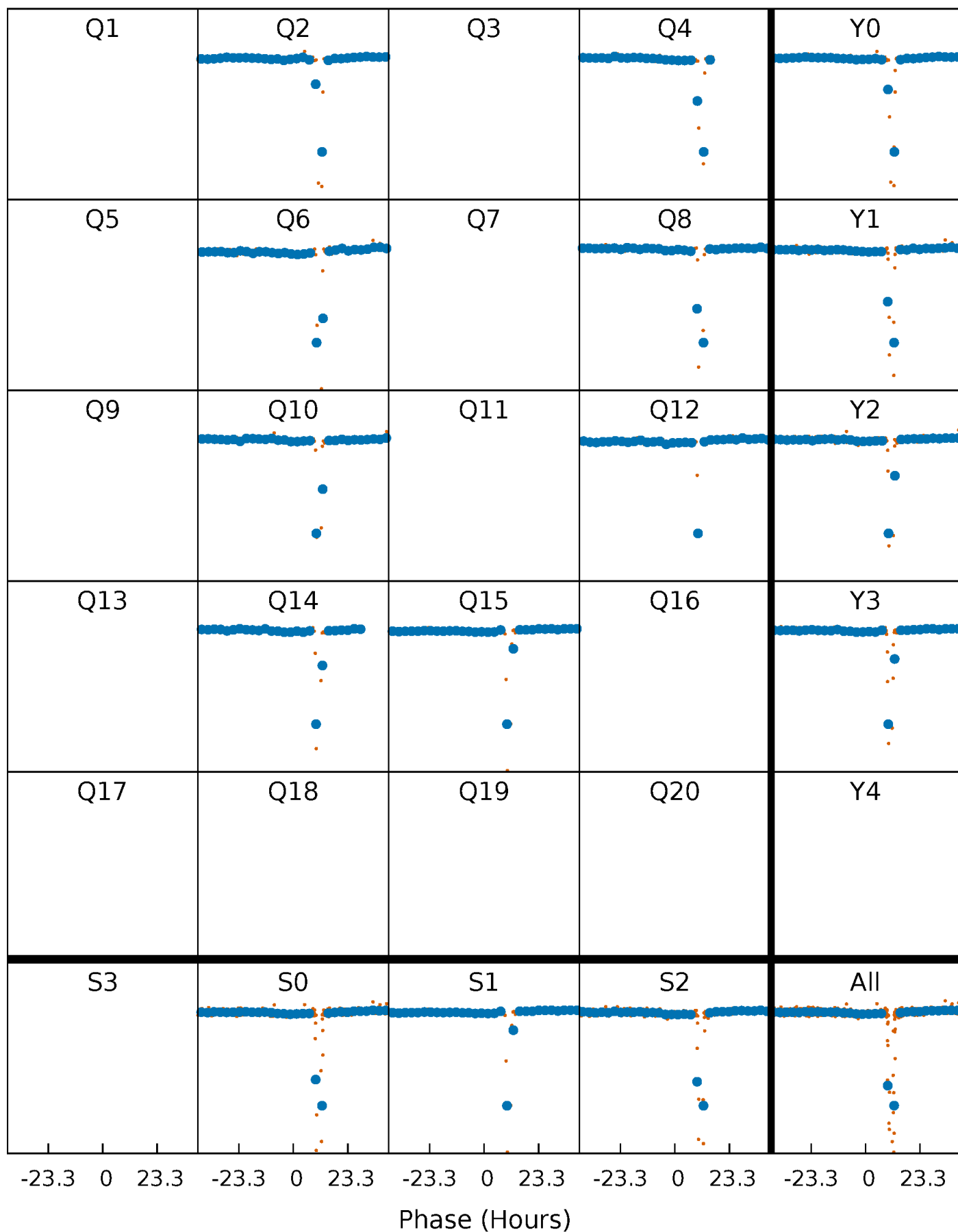


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



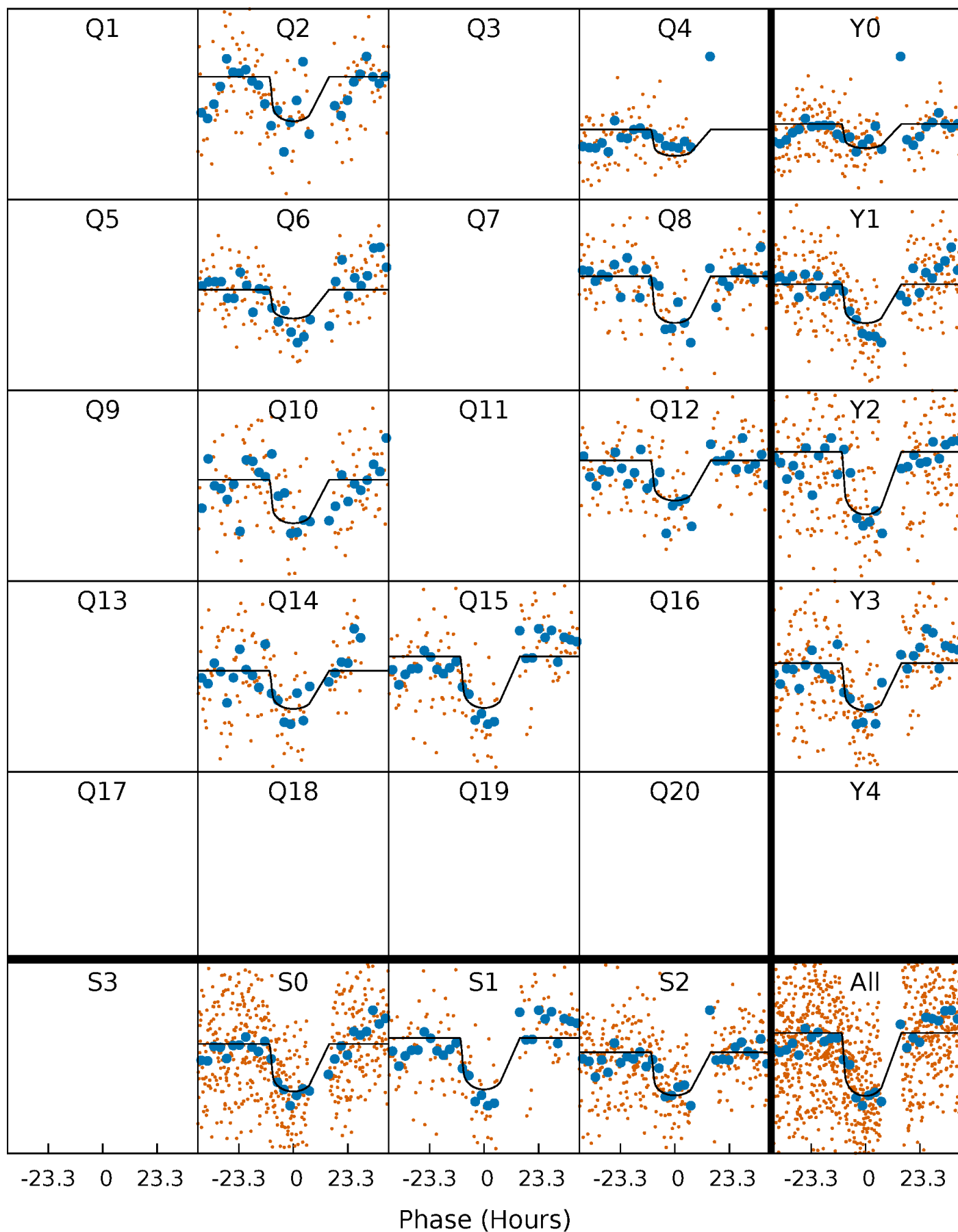
PDC Quarter-Phased Transit Curves

TCE 003534118-02 P=178.418337 Days $T_0=217.746962$ (BKJD)



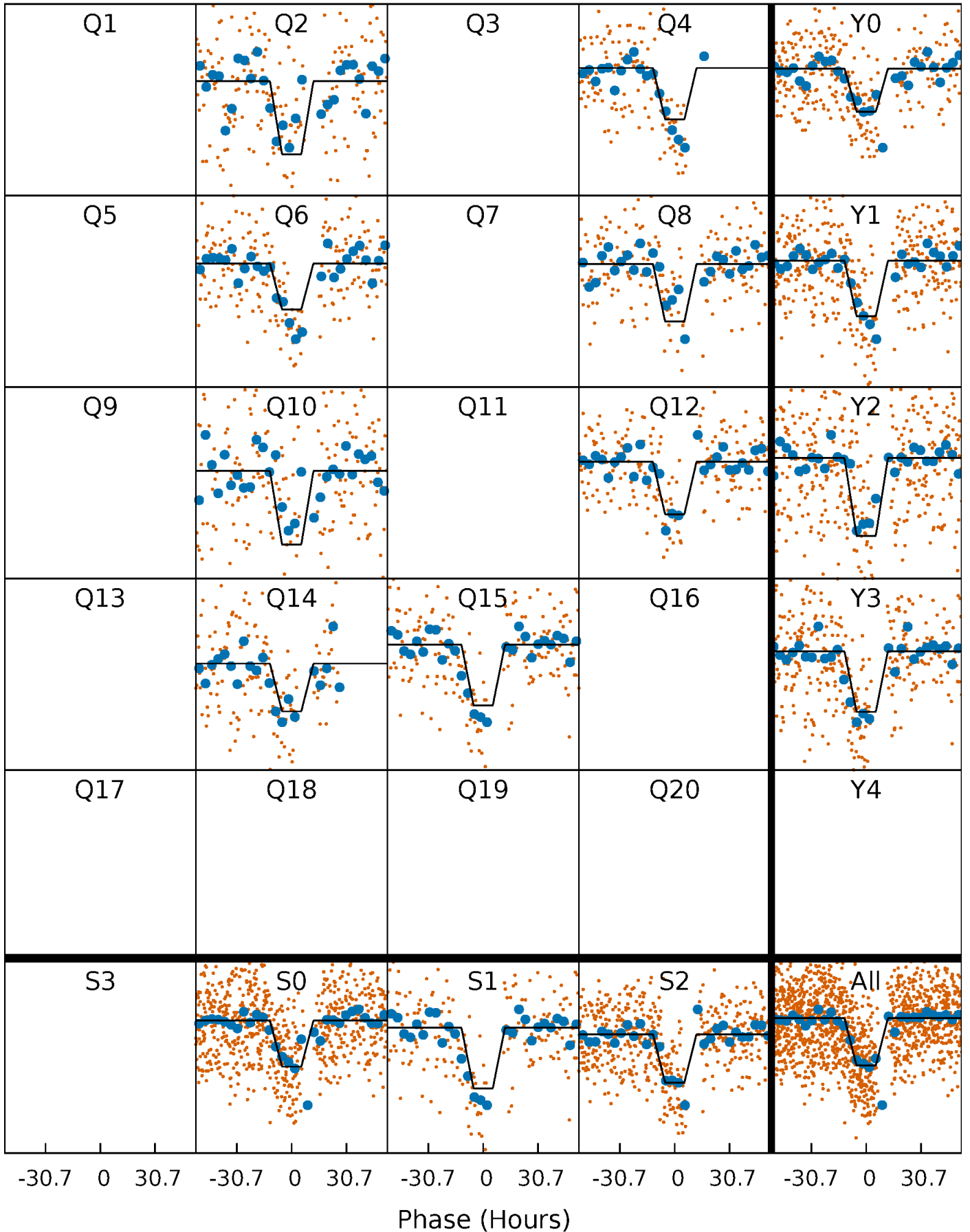
DV Quarter-Phased Transit Curves

TCE 003534118-02 P=178.418337 Days $T_0=217.746962$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

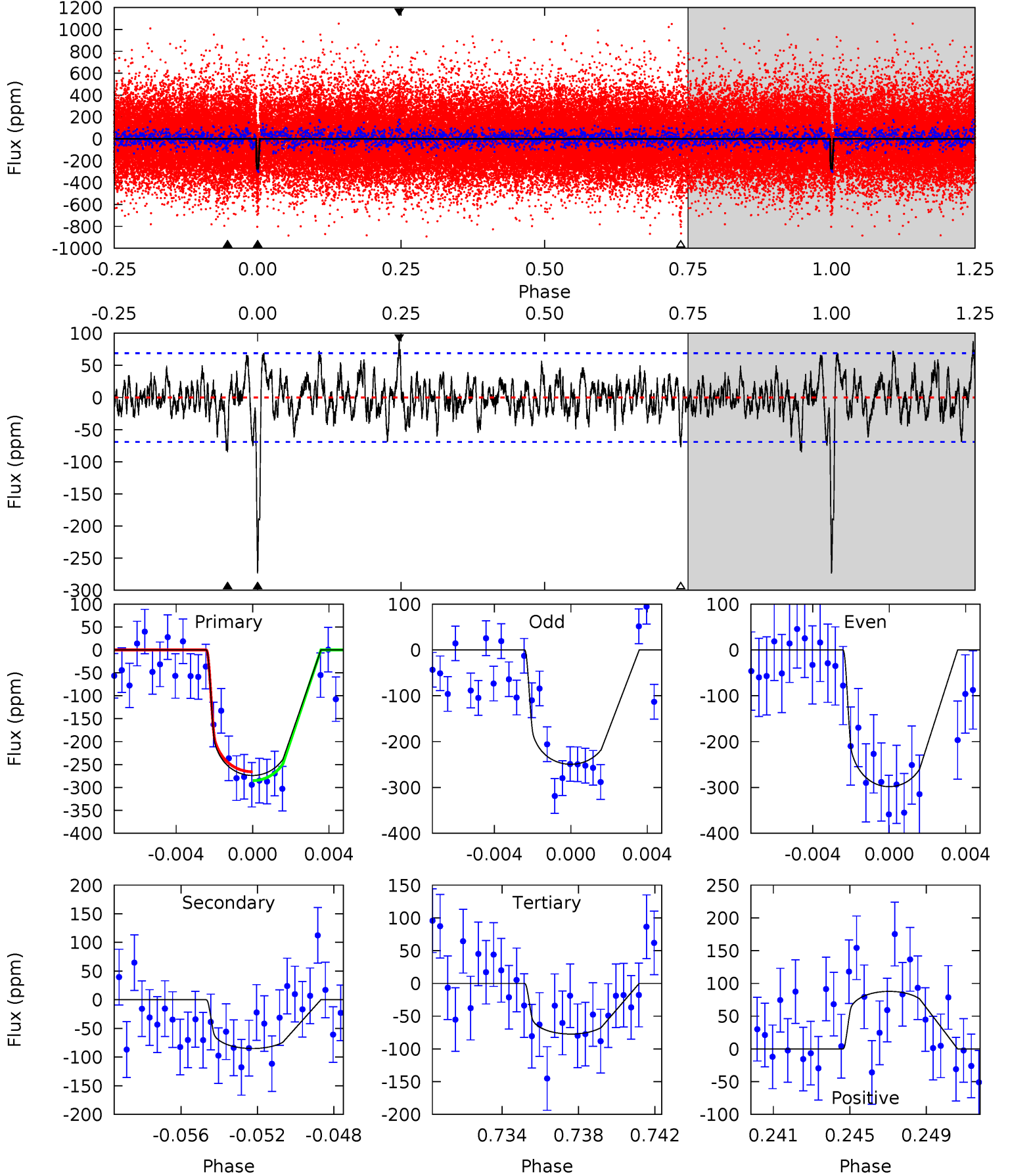
TCE 003534118-02 P=178.446280 Days $T_0=217.713602$ (BKJD)



DV Model-Shift Uniqueness Test

003534118-02, $P = 178.418337$ Days, $E = 39.328625$ Days

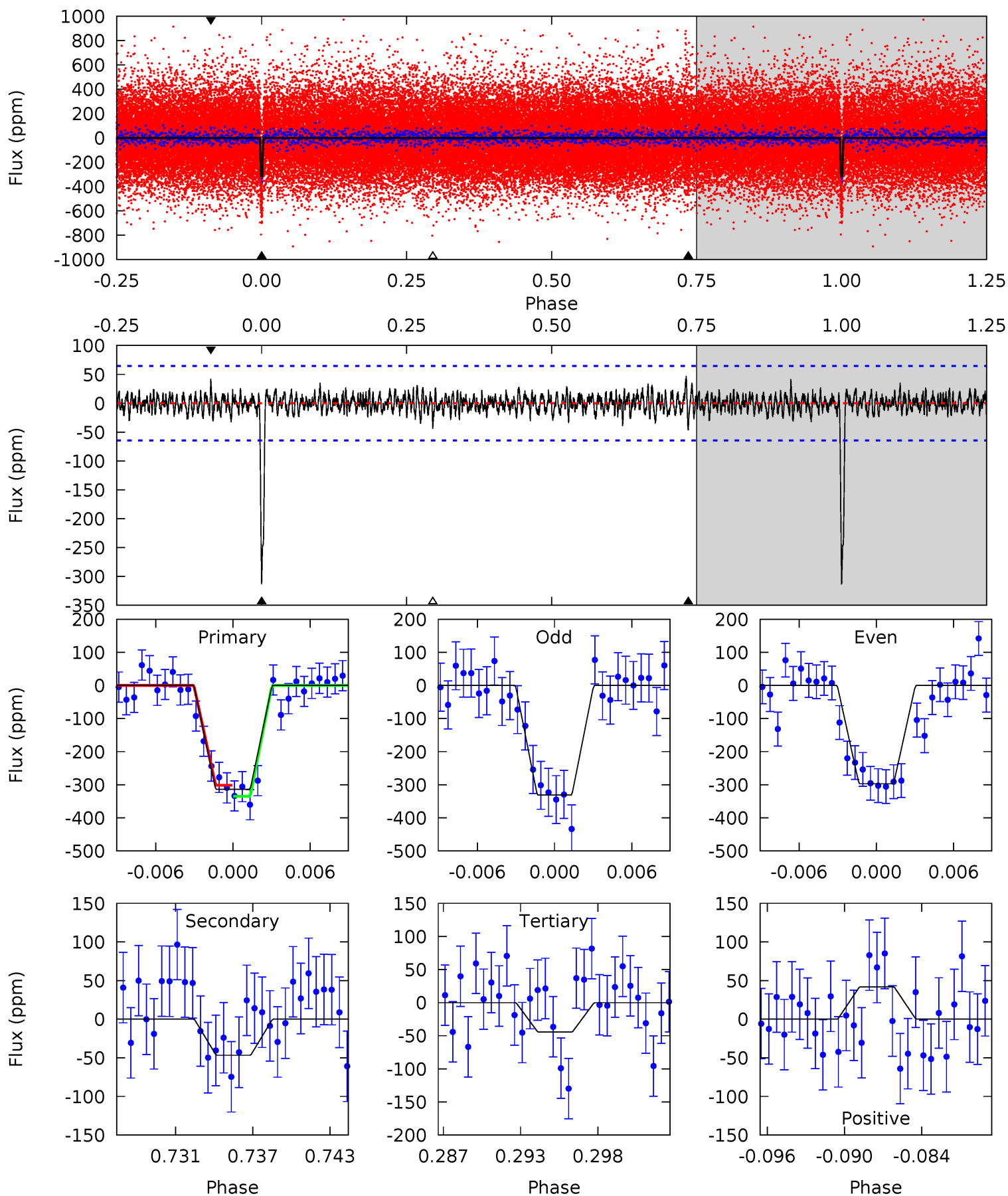
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.6	6.41	5.83	6.62	5.20	2.88	1.77	14.8	14.0	0.58	-0.20	1.85	0.98	0.24	0.70



Alt Model-Shift Uniqueness Test

003534118-02, $P = 178.446280$ Days, $E = 39.267322$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.0	3.72	3.54	3.34	5.14	2.77	0.94	21.5	21.7	0.18	0.38	1.37	0.89	0.13	1.18



Stellar Parameters For KIC 003534118

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6078^{+122}_{-134}	$4.346^{+0.084}_{-0.126}$	$0.000^{+0.150}_{-0.150}$	$1.148^{+0.202}_{-0.124}$	$1.064^{+0.096}_{-0.072}$	$0.990^{+0.343}_{-0.357}$
	+2%/-2%	+2%/-3%	+inf%/-inf%	+18%/-11%	+9%/-7%	+35%/-36%
Source	SPE57	SPE57	SPE57	DSEP		

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

Secondary Eclipse Parameters for KIC 003534118-02 / KOI 3641.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-85 ± 13	$2.21^{+0.32}_{-0.30}$	507^{+23}_{-23}	4581^{+294}_{-227}	3852^{+1411}_{-1005}
Alt.	-47 ± 13	$2.24^{+0.30}_{-0.28}$	506^{+24}_{-20}	4073^{+280}_{-242}	2051^{+917}_{-683}

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

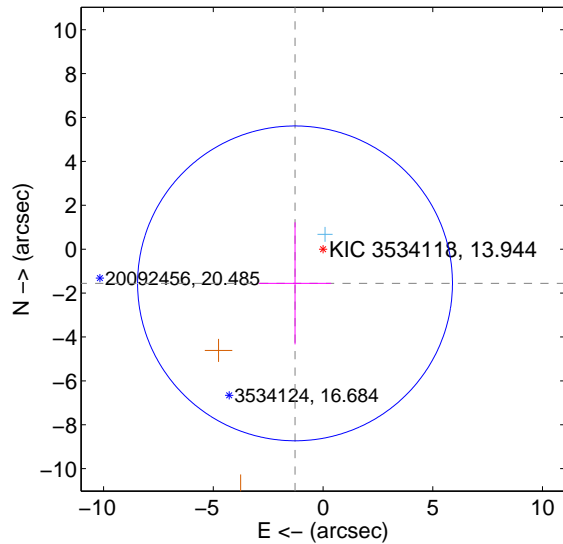
Supplemental centroid analysis for 003534118-02. Kepler magnitude: 13.94. Transit SNR 11.14

There are 1 quarters with good PRF difference image offsets

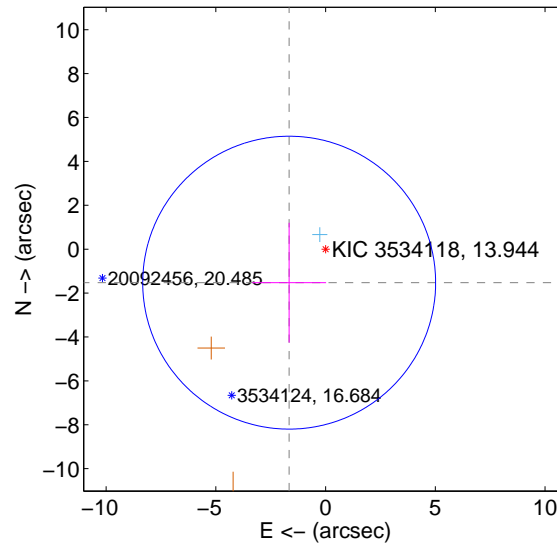
The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.014 ± 2.391	0.84	1.276 ± 1.646	-1.558 ± 2.781
PRF-fit source offset from KIC position	2.254 ± 2.224	1.01	1.659 ± 1.681	-1.526 ± 2.730
photometric centroid source offset	2.56 ± 1.92	1.33	-2.47 ± 1.97	-0.66 ± 1.14

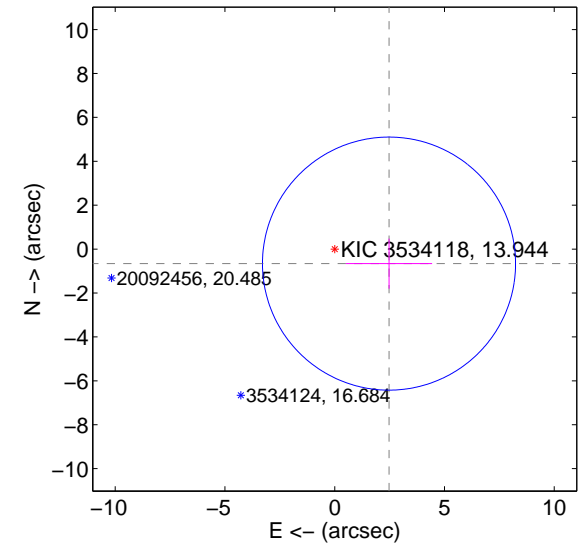
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

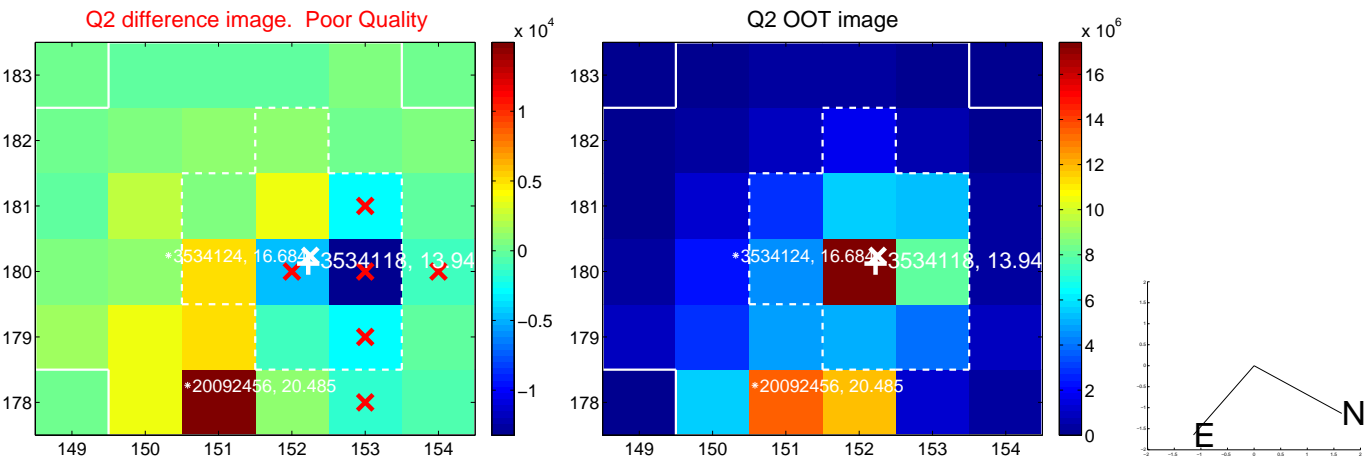


offset from photometric centroids



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

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



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

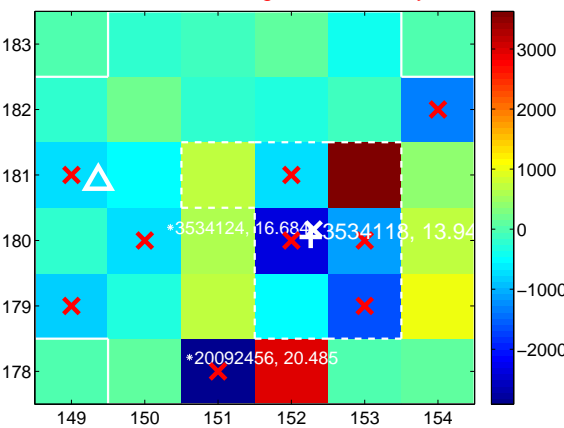
Q5 no difference image



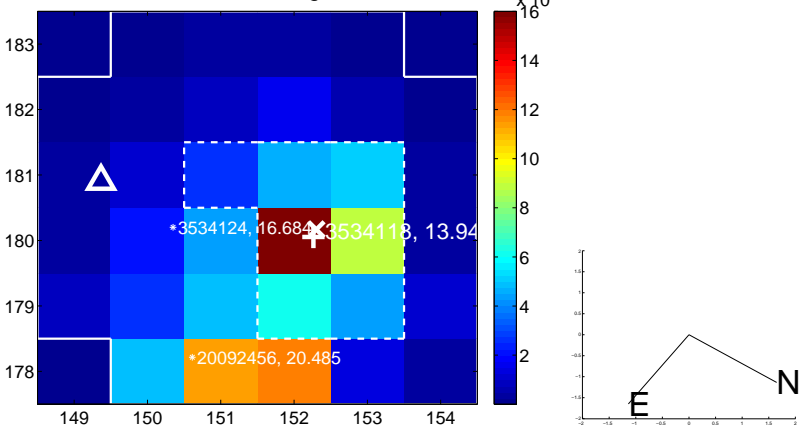
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



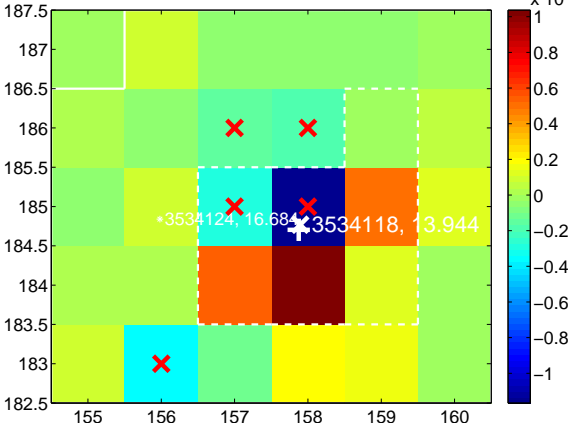
Q7 no difference image



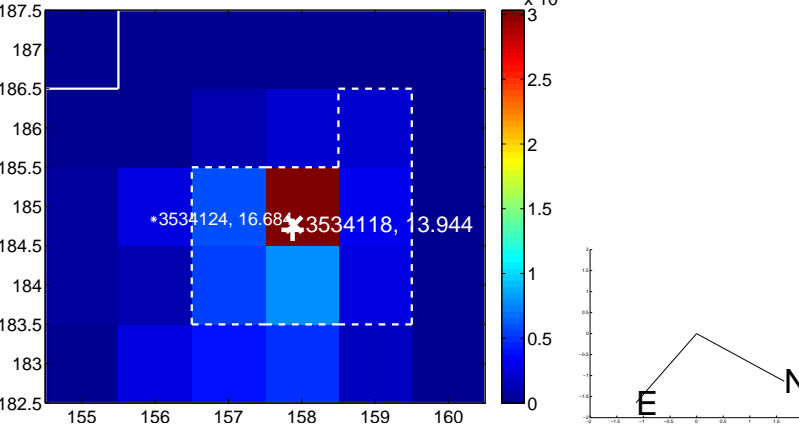
Q7 no OOT image



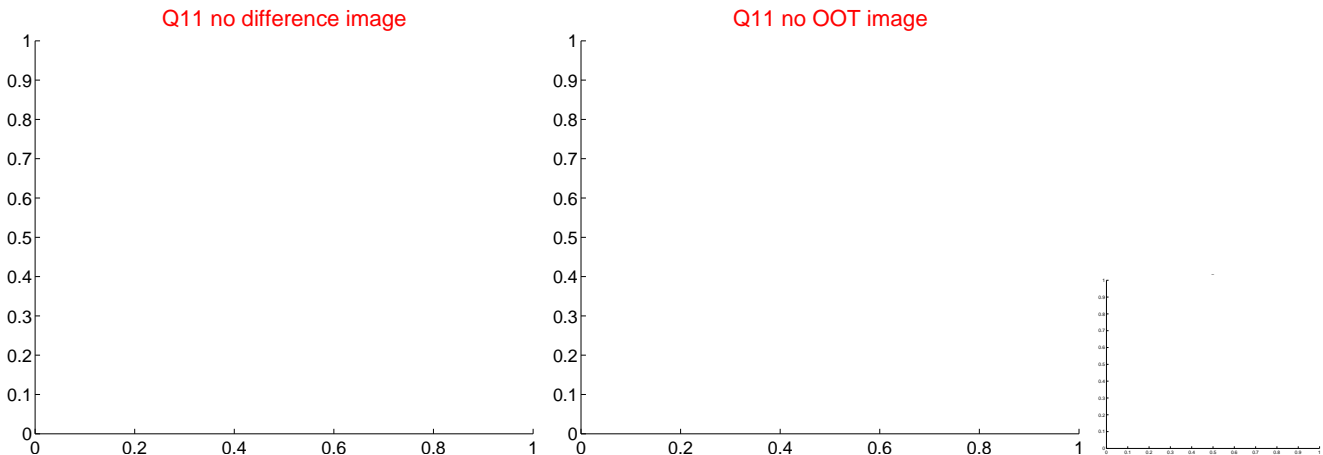
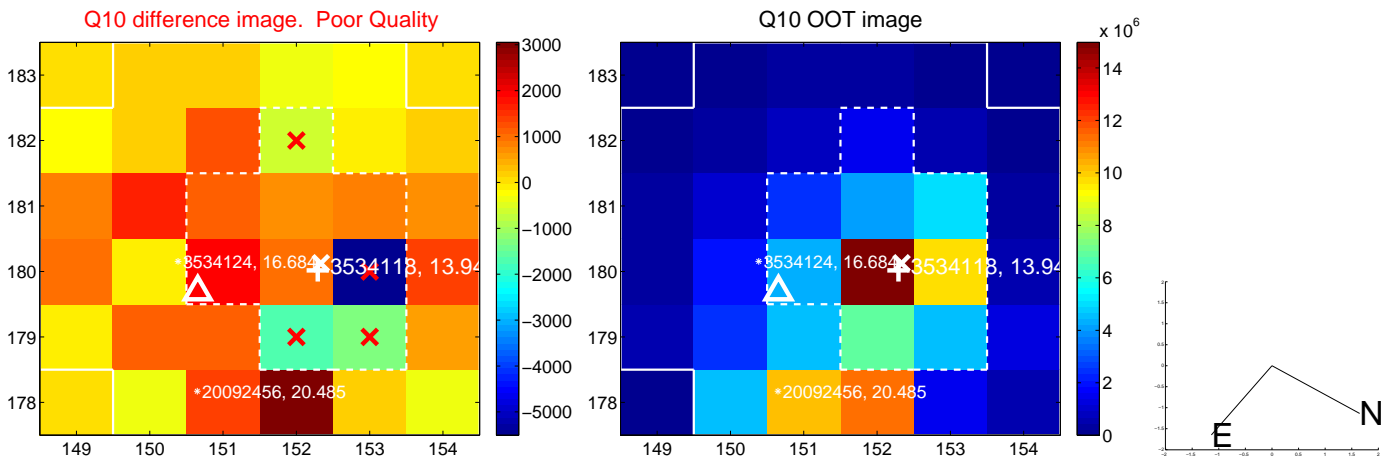
Q8 difference image. Poor Quality



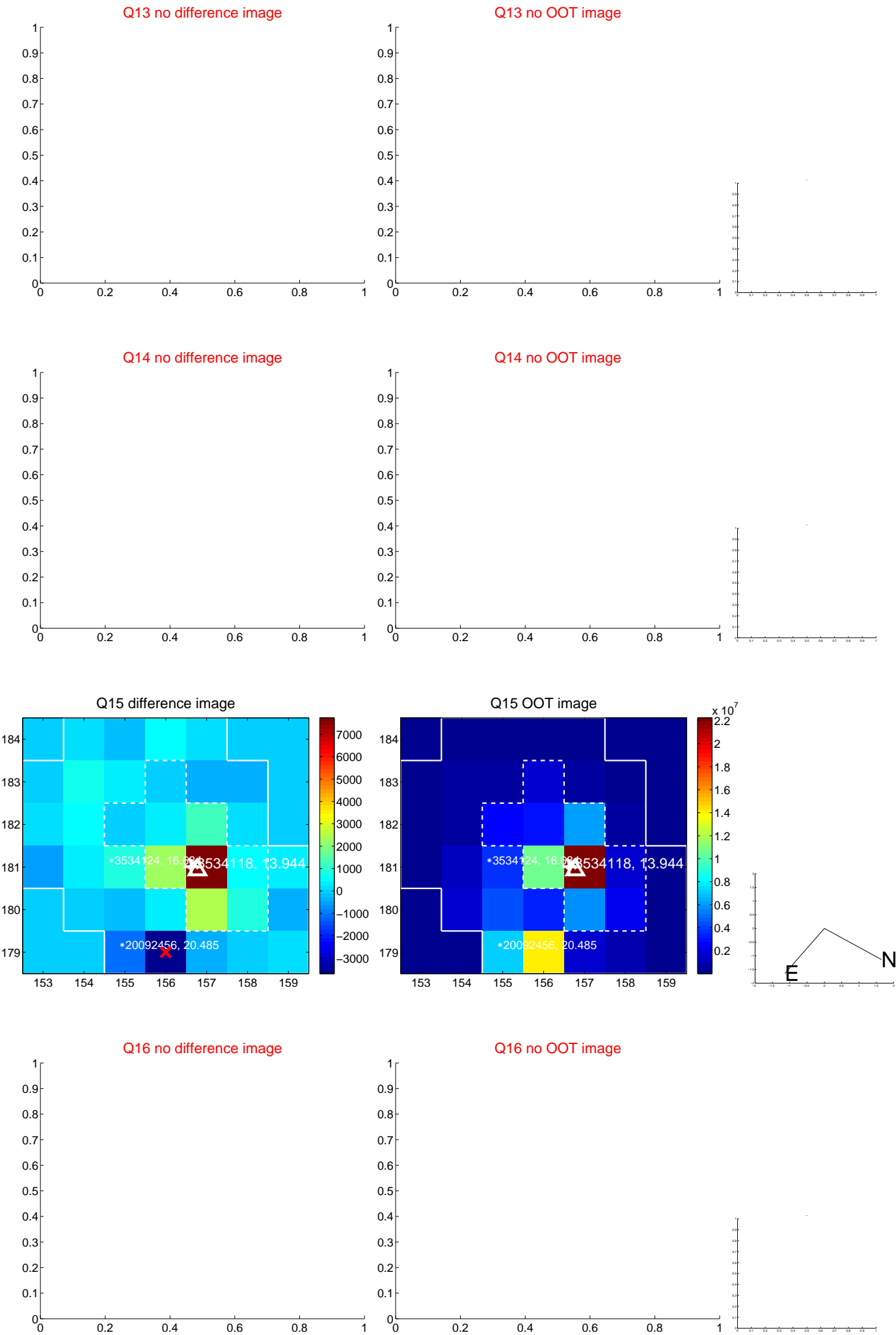
Q8 OOT image



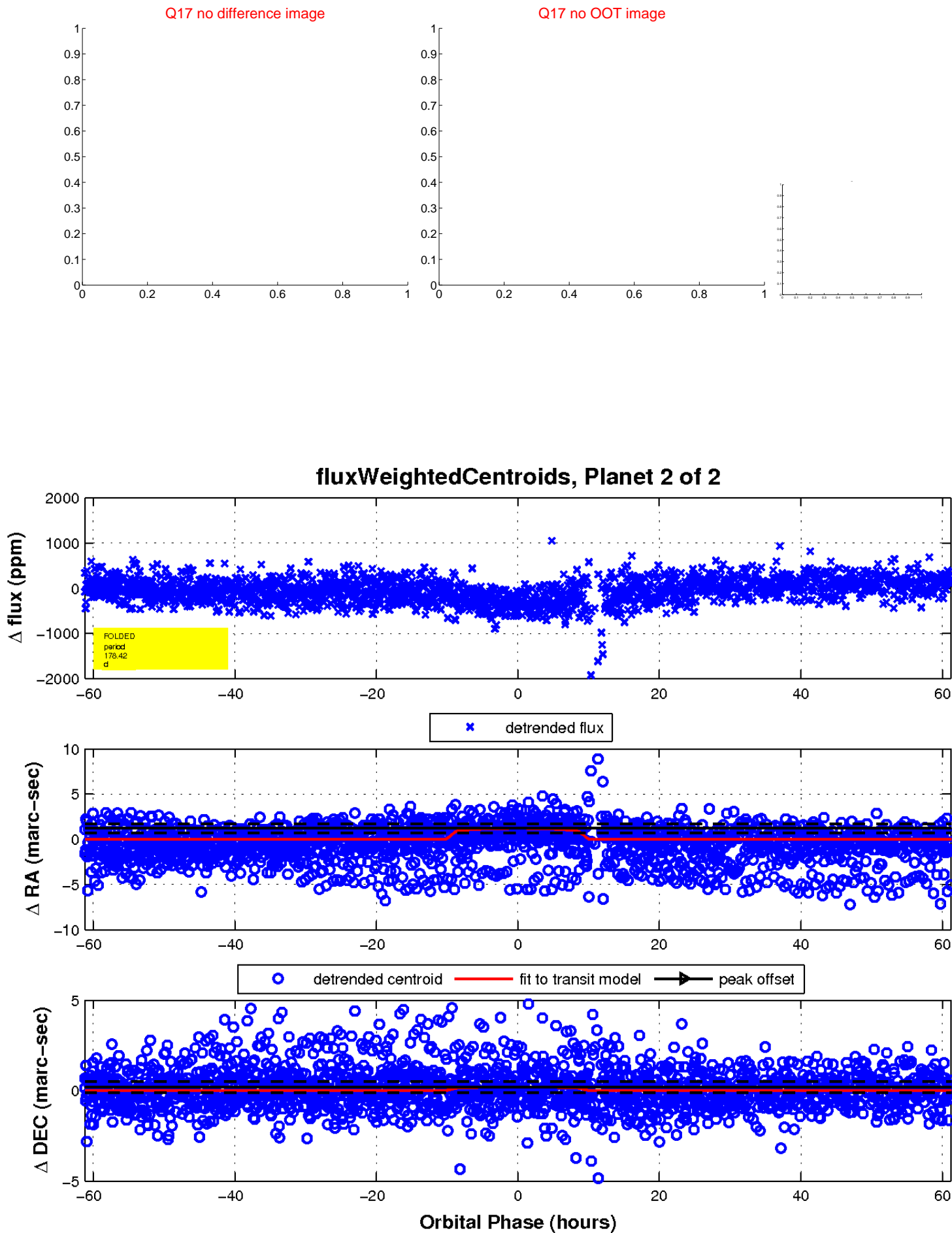
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



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



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



UKIRT Image

Declination

