

KIC 009590158

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})
009590158-01	OBS	No	307.922795	241.128520	1489.7	7.839	25.4	2.5	1.08	5824	4.30	1.40
009590158-02	OBS	No	541.765859	155.366599	6462.8	20.779	21.7	20.1	1.08	5824	10.37	0.66
009590158-03	OBS	No	365.508227	304.626204	3479.3	27.535	20.7	15.7	1.08	5824	7.94	1.11
009590158-04	OBS	No	364.278043	193.910444	12839.3	40.056	25.3	21.0	1.08	5824	22.06	1.12
009590158-05	OBS	No	585.692415	279.142242	5832.3	27.331	18.5	20.3	1.08	5824	15.10	0.59
009590158-06	OBS	No	417.765963	170.578776	3903.7	21.264	14.1	13.2	1.08	5824	10.25	0.93
009590158-07	OBS	No	388.530072	448.006998	6062.9	21.343	10.3	11.3	1.08	5824	12.37	1.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009590158-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009590158-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
009590158-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

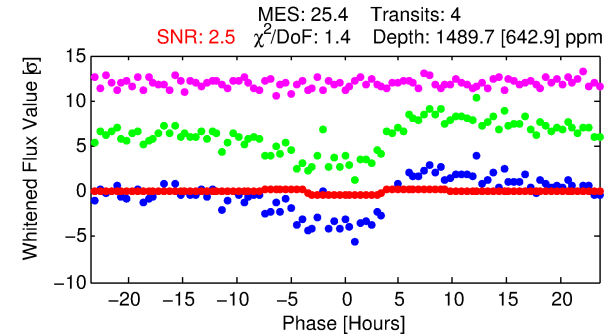
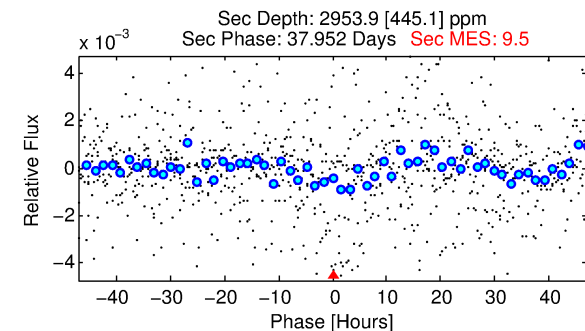
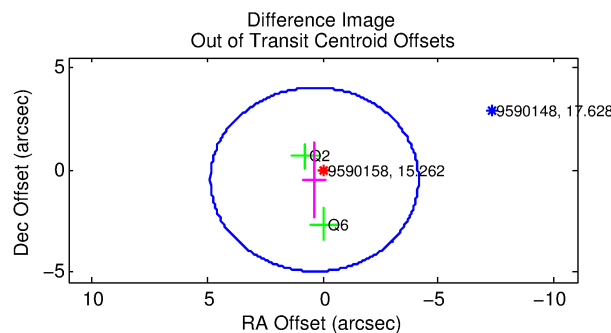
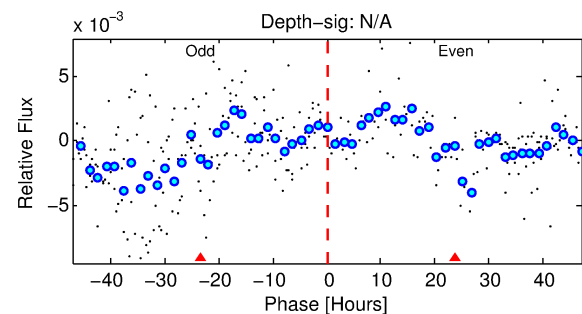
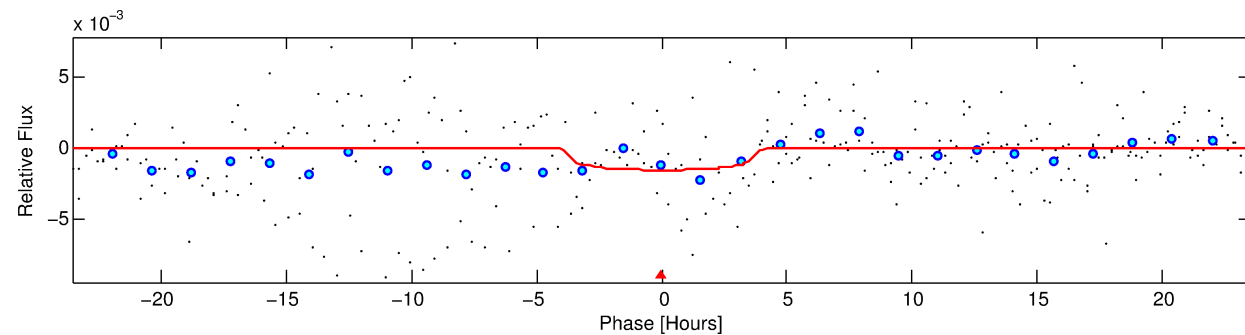
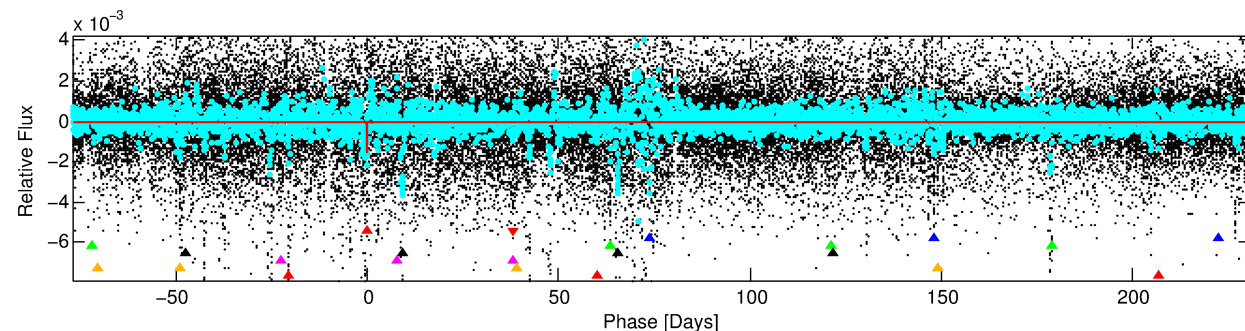
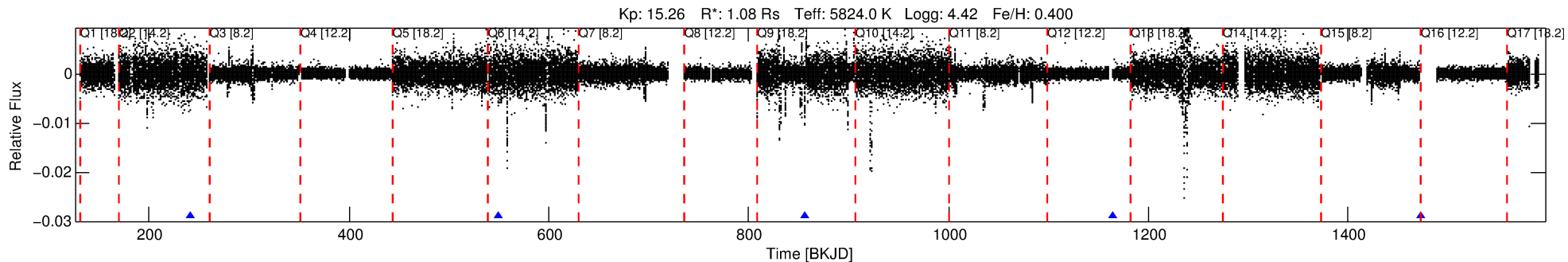
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009590158-01

No Significant Match Found

DV One-Page Summary

KIC: 9590158 Candidate: 1 of 7 Period: 307.923 d



DV Fit Results:

Period = 307.92280 [0.02342] d
Epoch = 241.1285 [0.0378] BKJD
Rp/R* = 0.0364 [0.0533]
a/R* = 262.48 [1542.75]
b = 0.56 [7.44]
Seff = 1.40 [0.56]
Teq = 277 [28] K
Rp = 4.30 [6.42] Re
a = 0.9278 [0.2305] AU
Ag = 75720.93 [223839.10] [0.34] σ
Teffp = 7116 [5226] K [1.31] σ

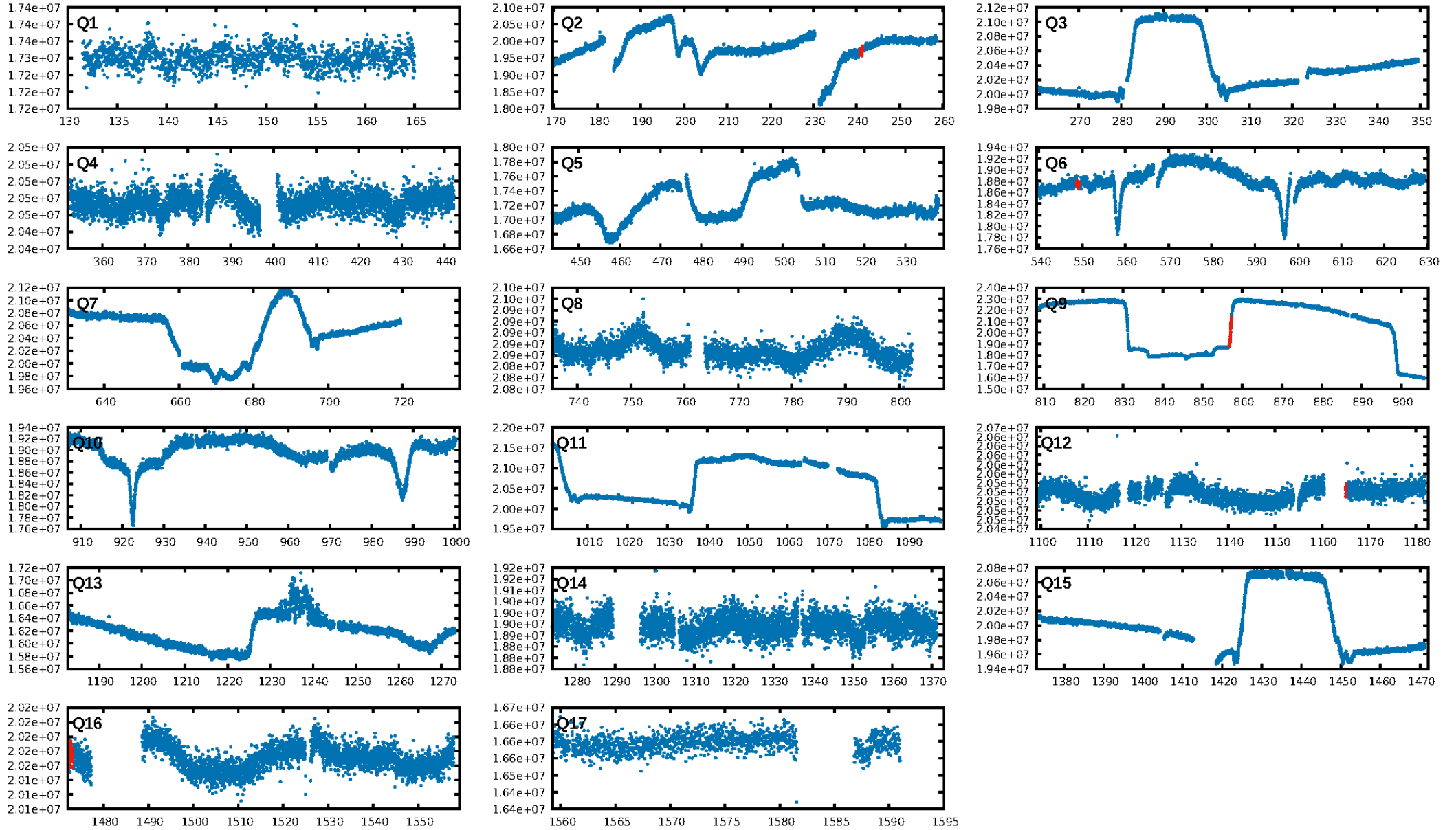
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [33.14] σ
ModelChiSquare2-sig: 30.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.13e-19
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.059
Centroid-sig: N/A
Centroid-so: 37.857 arcsec [119.21] σ
OotOffset-rm: 0.599 arcsec [0.40] σ
KicOffset-rm: 2.871 arcsec [1.97] σ
OotOffset-st: 2/0/0/0 [2]
KicOffset-st: 2/0/0/0 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [3/3]

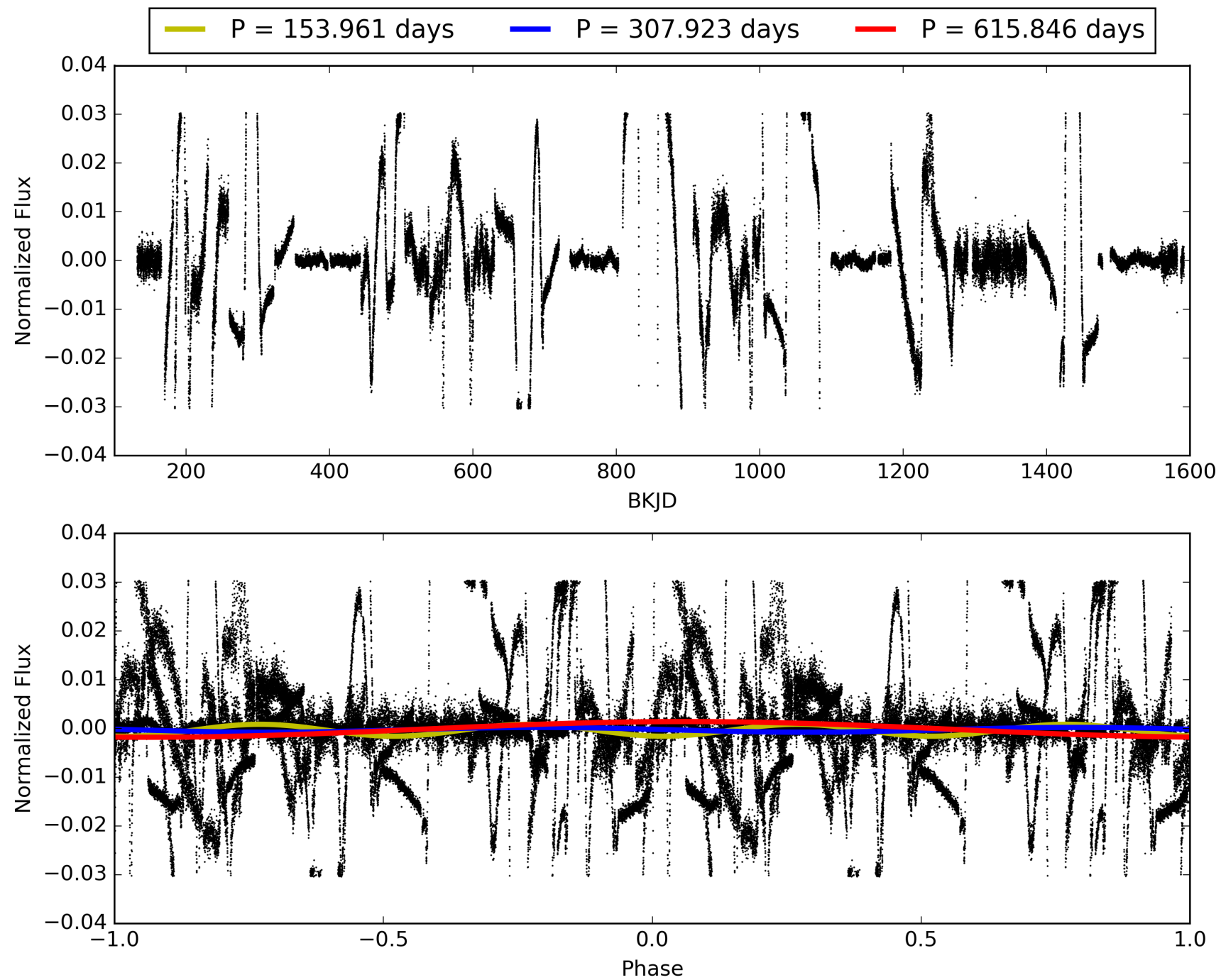
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:26:42 Z

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

TCE 009590158-01, PDC Light Curves

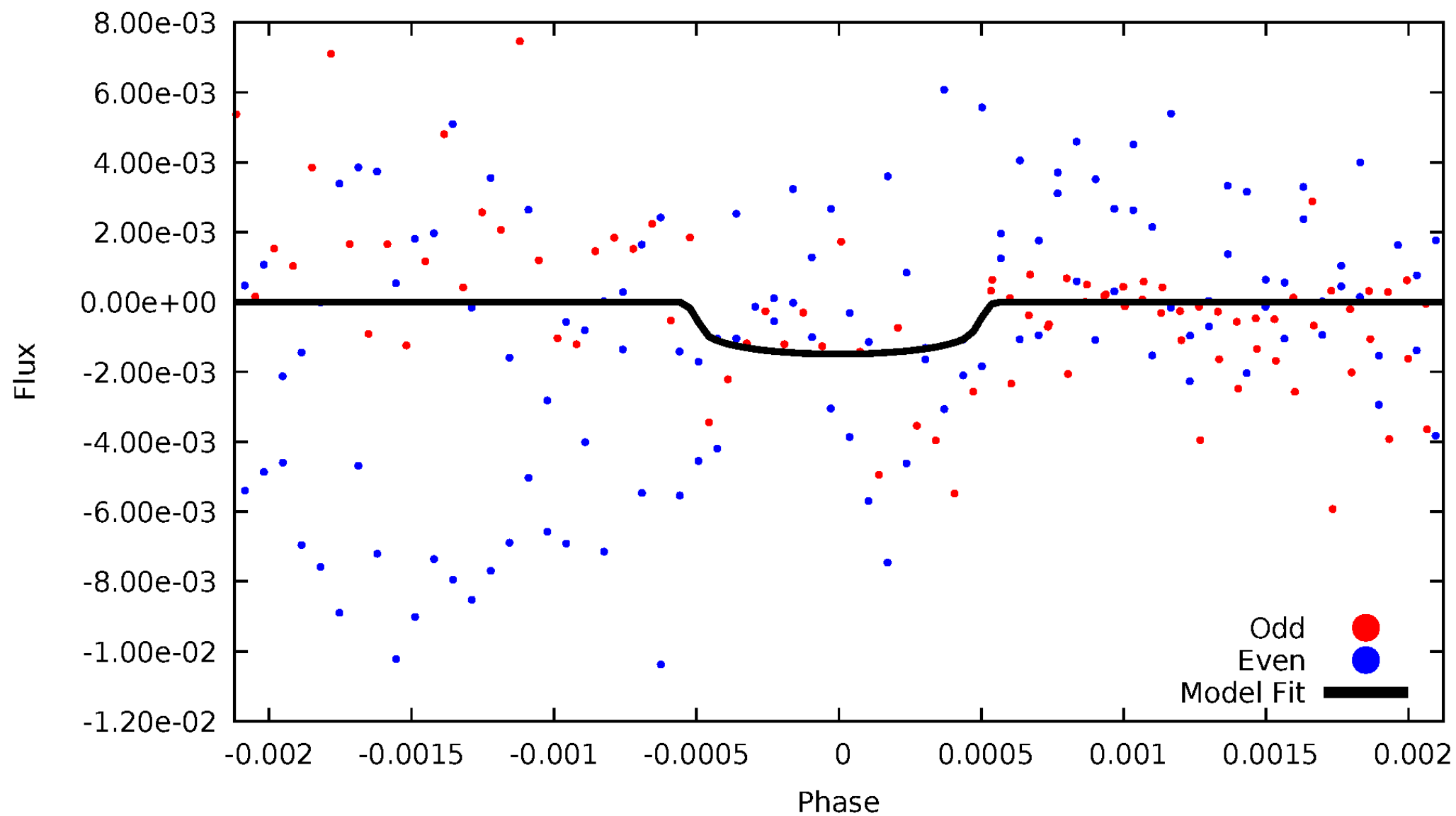


TCE 009590158-01



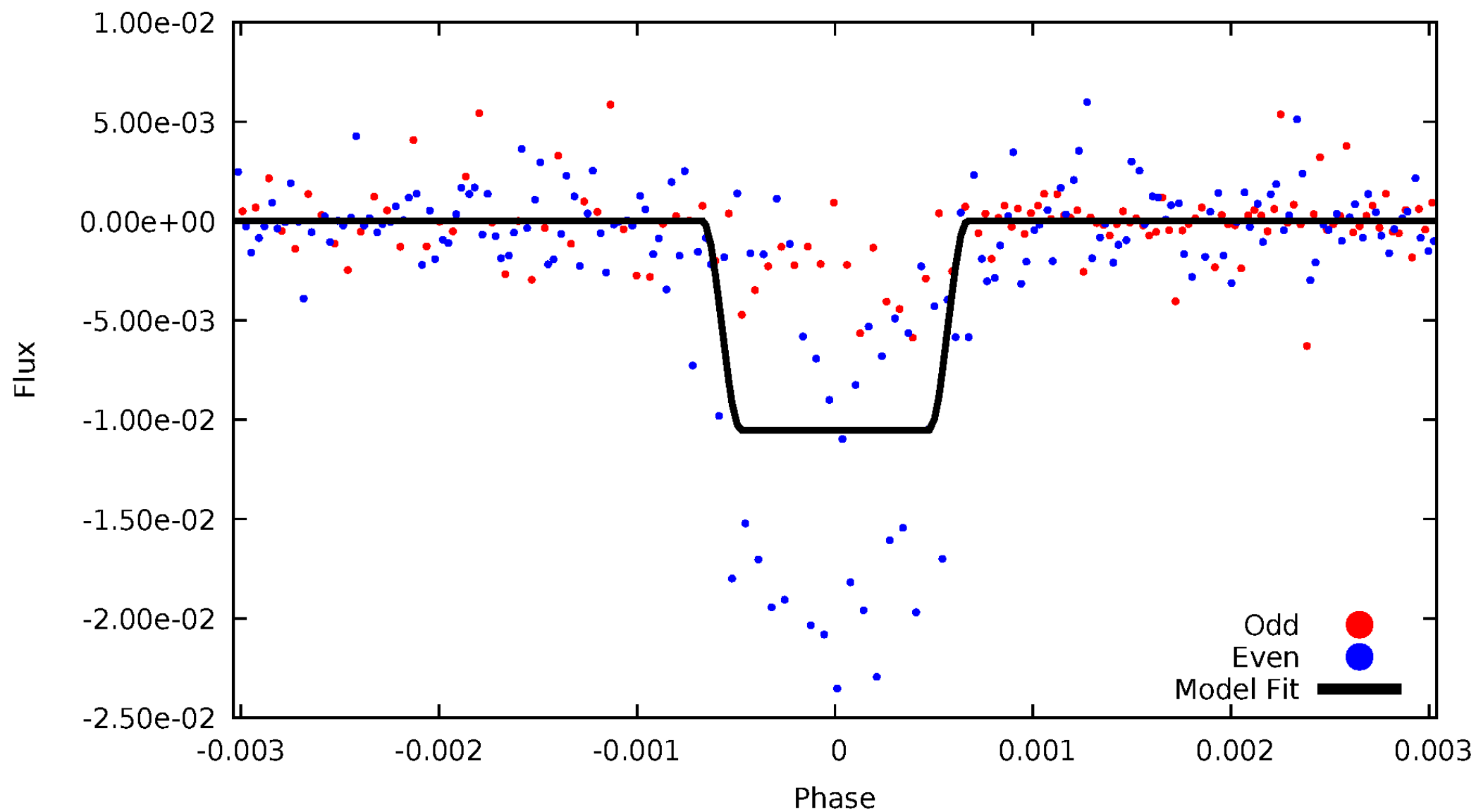
DV Odd/Even

TCE 009590158-01

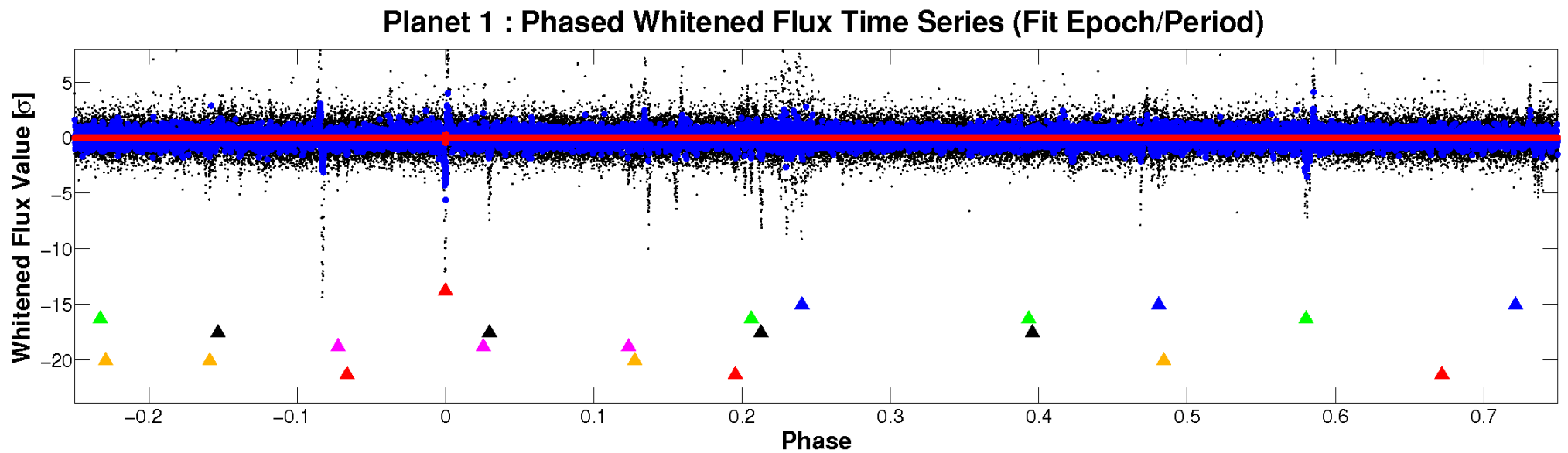
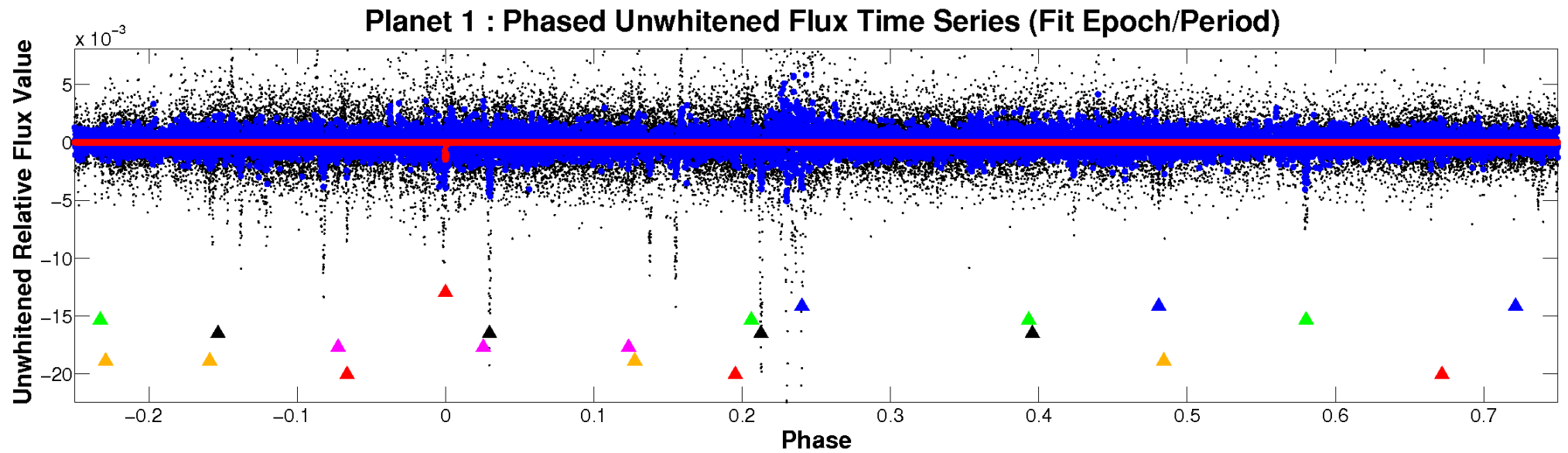


ALT Odd/Even

TCE 009590158-01

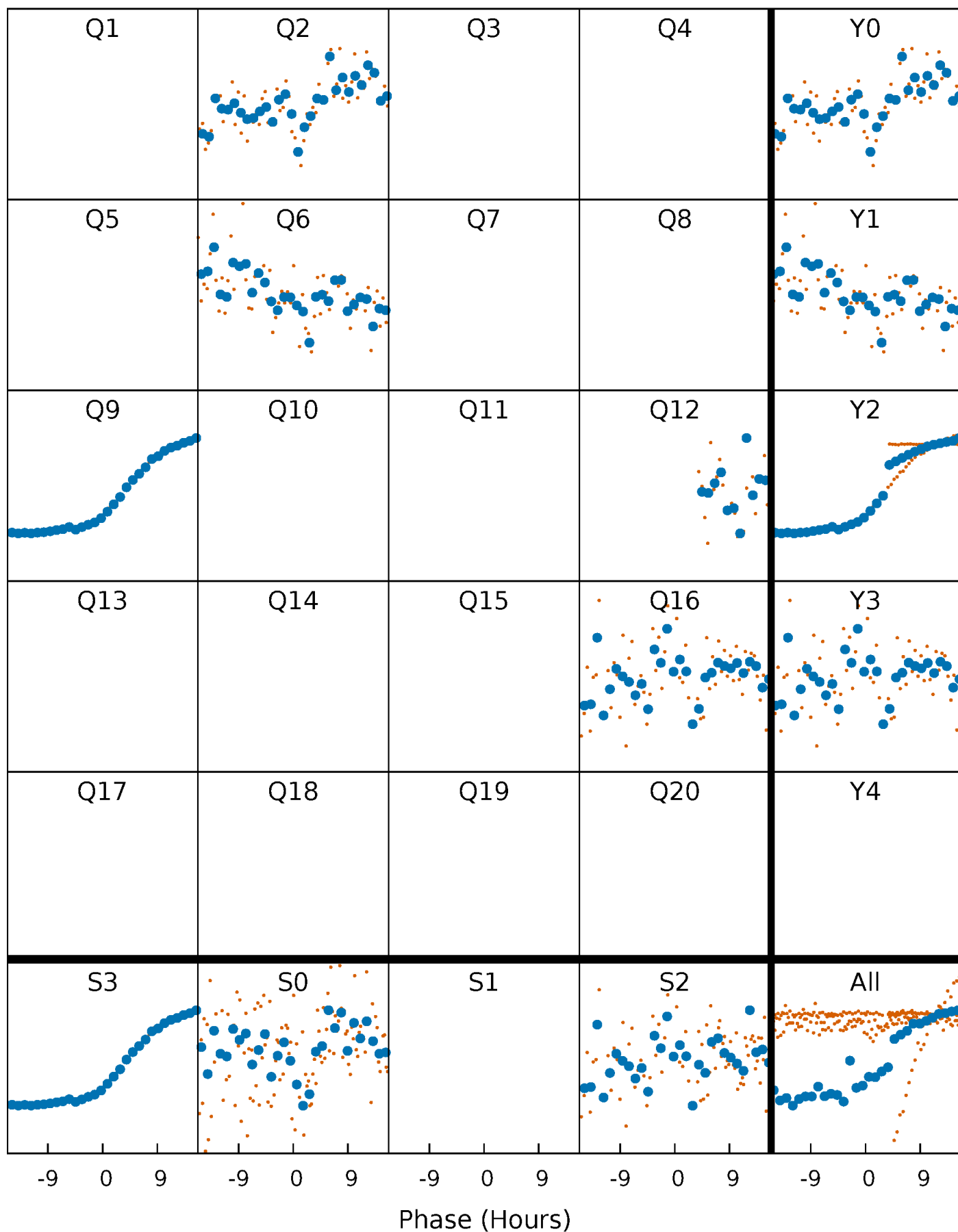


Non-Whitened Vs. Whitened Light Curve



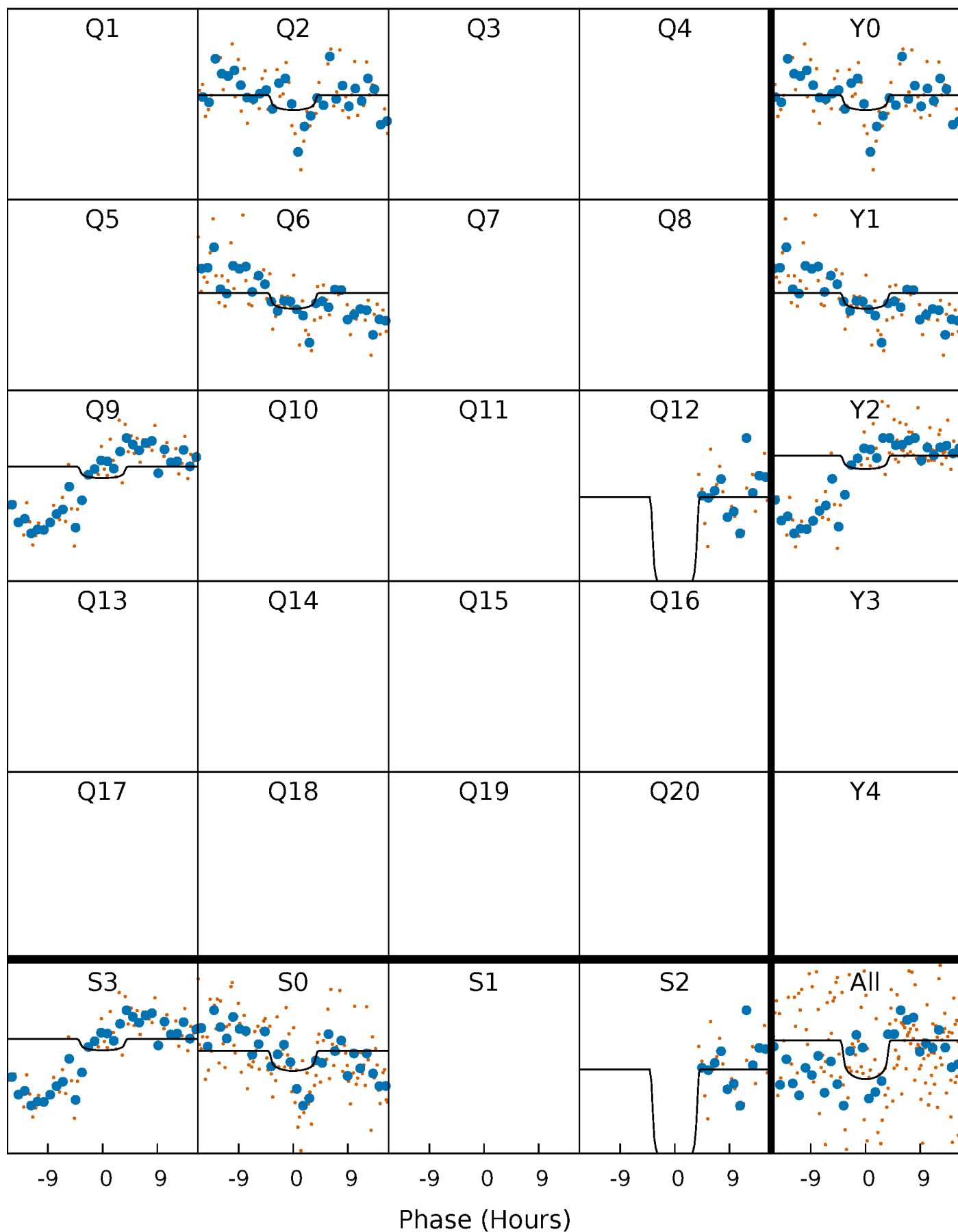
PDC Quarter-Phased Transit Curves

TCE 009590158-01 P=307.922795 Days $T_0=241.128520$ (BKJD)



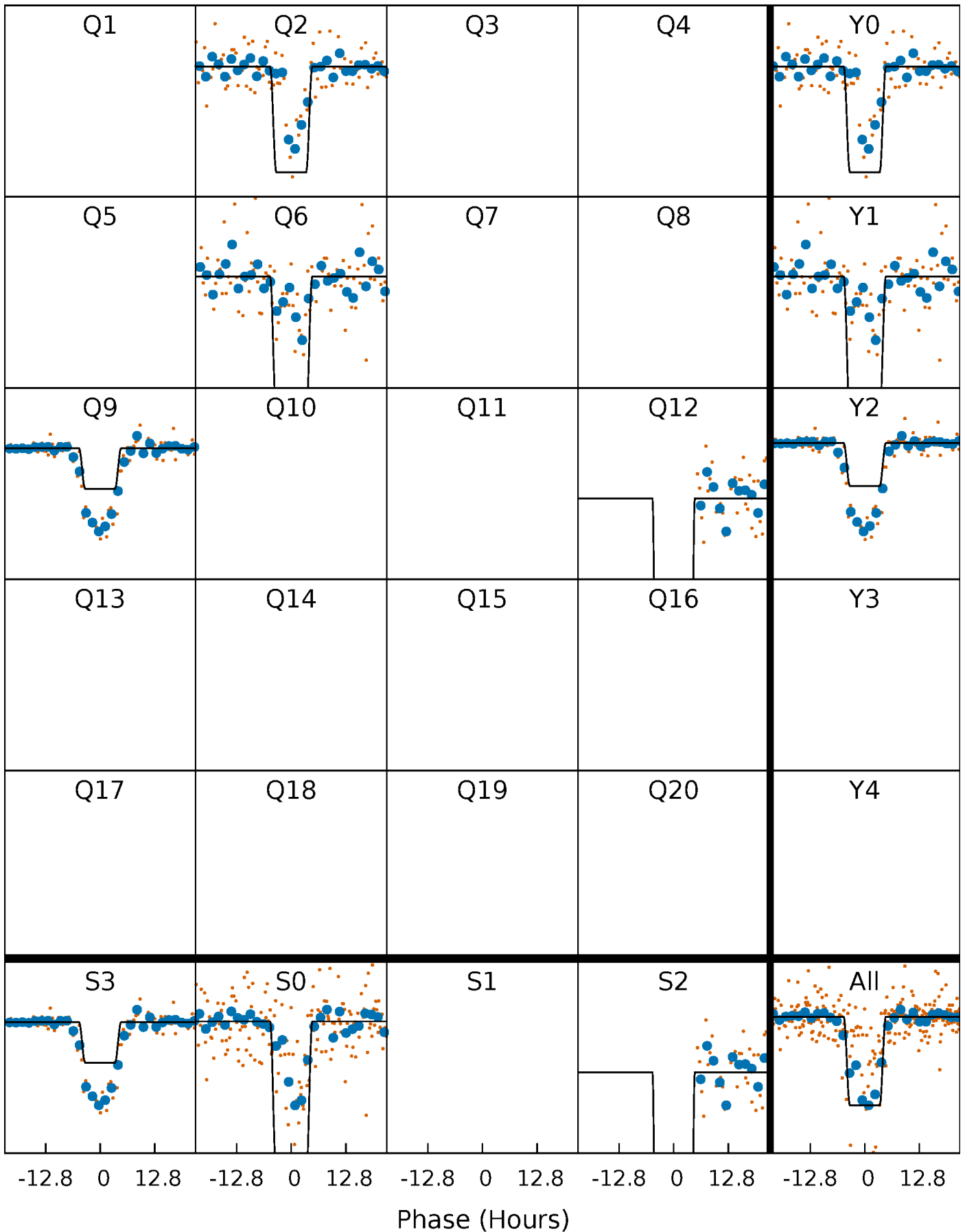
DV Quarter-Phased Transit Curves

TCE 009590158-01 P=307.922795 Days $T_0=241.128520$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

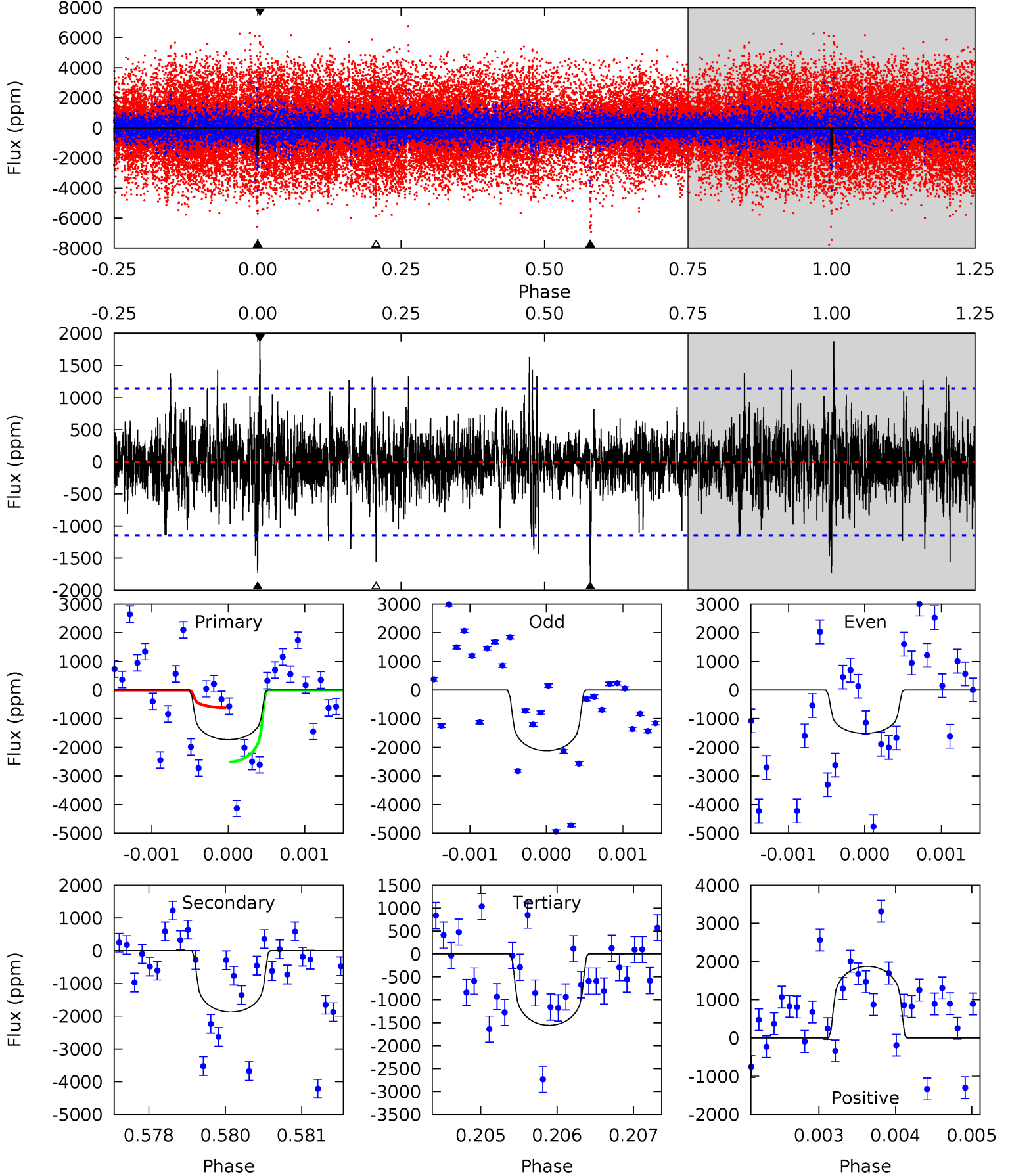
TCE 009590158-01 P=307.886071 Days $T_0=241.169378$ (BKJD)



DV Model-Shift Uniqueness Test

009590158-01, P = 307.922795 Days, E = 241.128520 Days

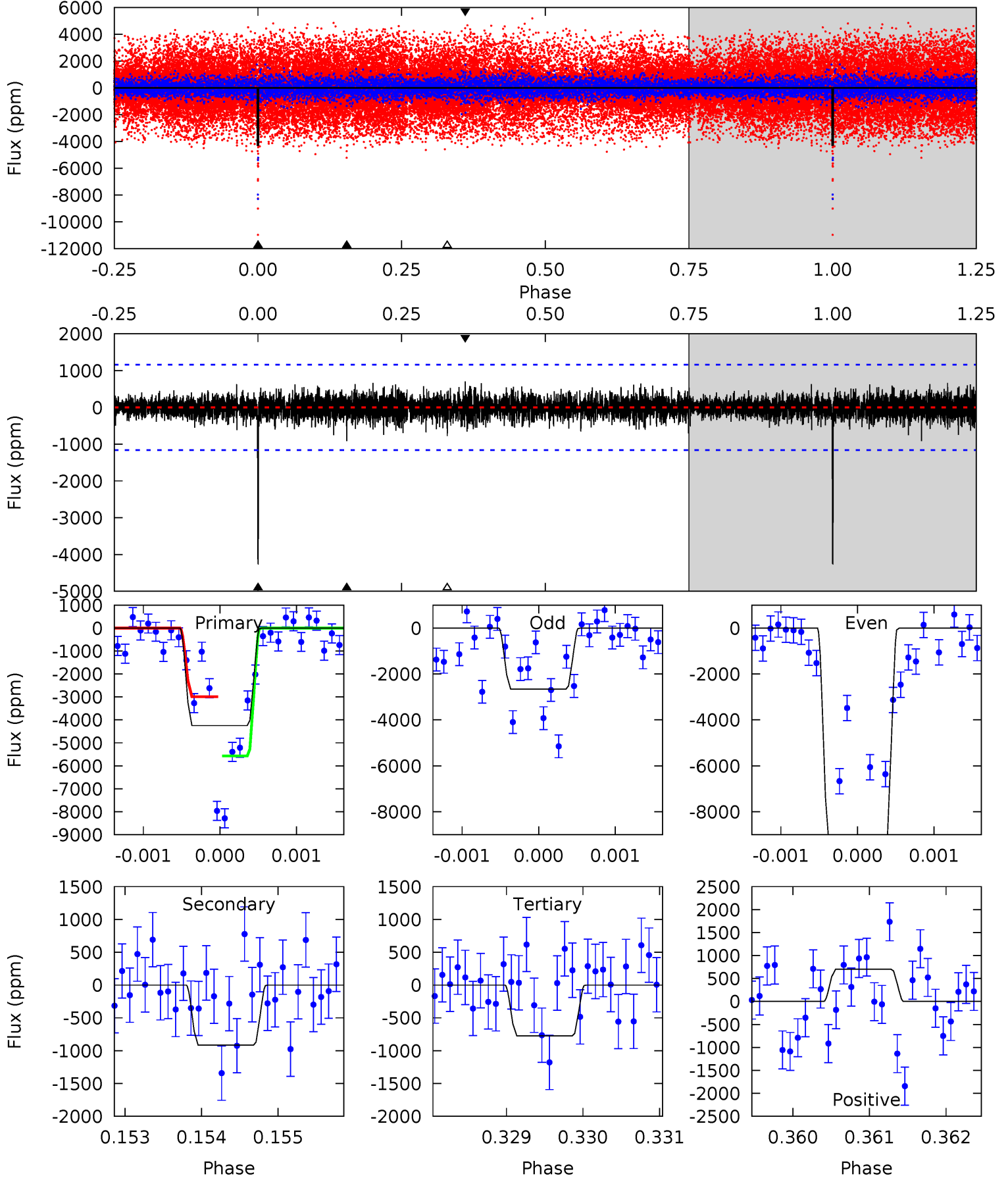
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.22	8.90	7.40	8.90	5.43	3.26	1.60	0.82	-0.68	1.50	-0.01	1.32	0.65	0.50	4.60



Alt Model-Shift Uniqueness Test

009590158-01, P = 307.886071 Days, E = 241.169378 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.8	4.27	3.61	3.27	5.41	3.22	0.86	16.2	16.5	0.66	1.00	18.9	1.90	0.14	0



Stellar Parameters For KIC 009590158

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5824^{+182}_{-223}	$4.420^{+0.067}_{-0.202}$	$0.400^{+0.050}_{-0.300}$	$1.082^{+0.315}_{-0.135}$	$1.123^{+0.122}_{-0.150}$	$1.248^{+0.446}_{-0.637}$
	+3%/-4%	+2%/-5%	+12%/-75%	+29%/-12%	+11%/-13%	+36%/-51%
Source	PHO1	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 009590158-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1874 ± 211	$6.45^{+6.21}_{-4.25}$	393^{+30}_{-20}	5283^{+4339}_{-1193}	$21240^{+159024}_{-15634}$
Alt.	-917 ± 215	$12.66^{+6.97}_{-5.82}$	395^{+27}_{-22}	3592^{+944}_{-463}	2715^{+6436}_{-1658}

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

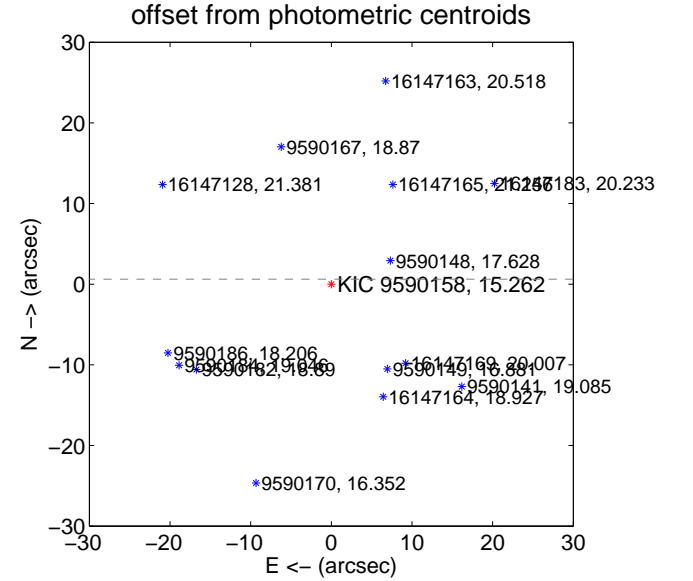
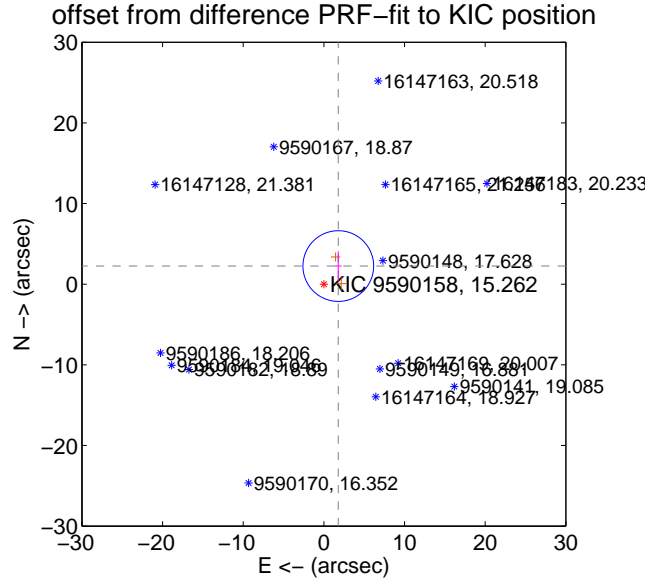
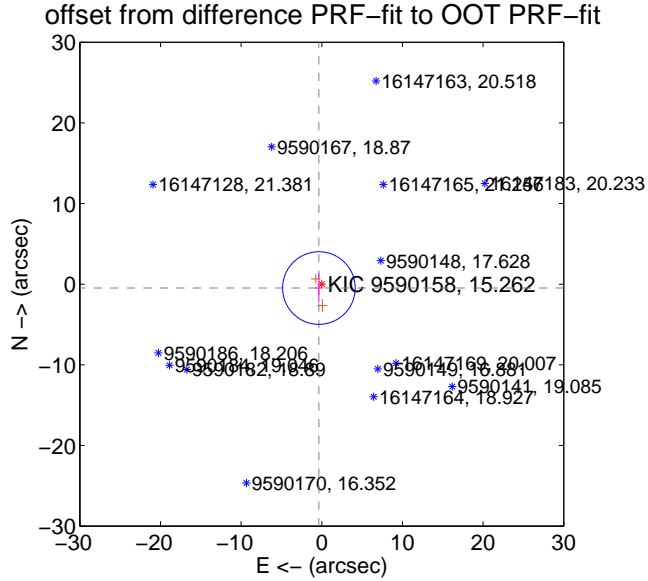
DV Centroid Data

Supplemental centroid analysis for 009590158-01. Kepler magnitude: 15.26. Transit SNR 2.53

There are 0 quarters with good PRF difference image offsets

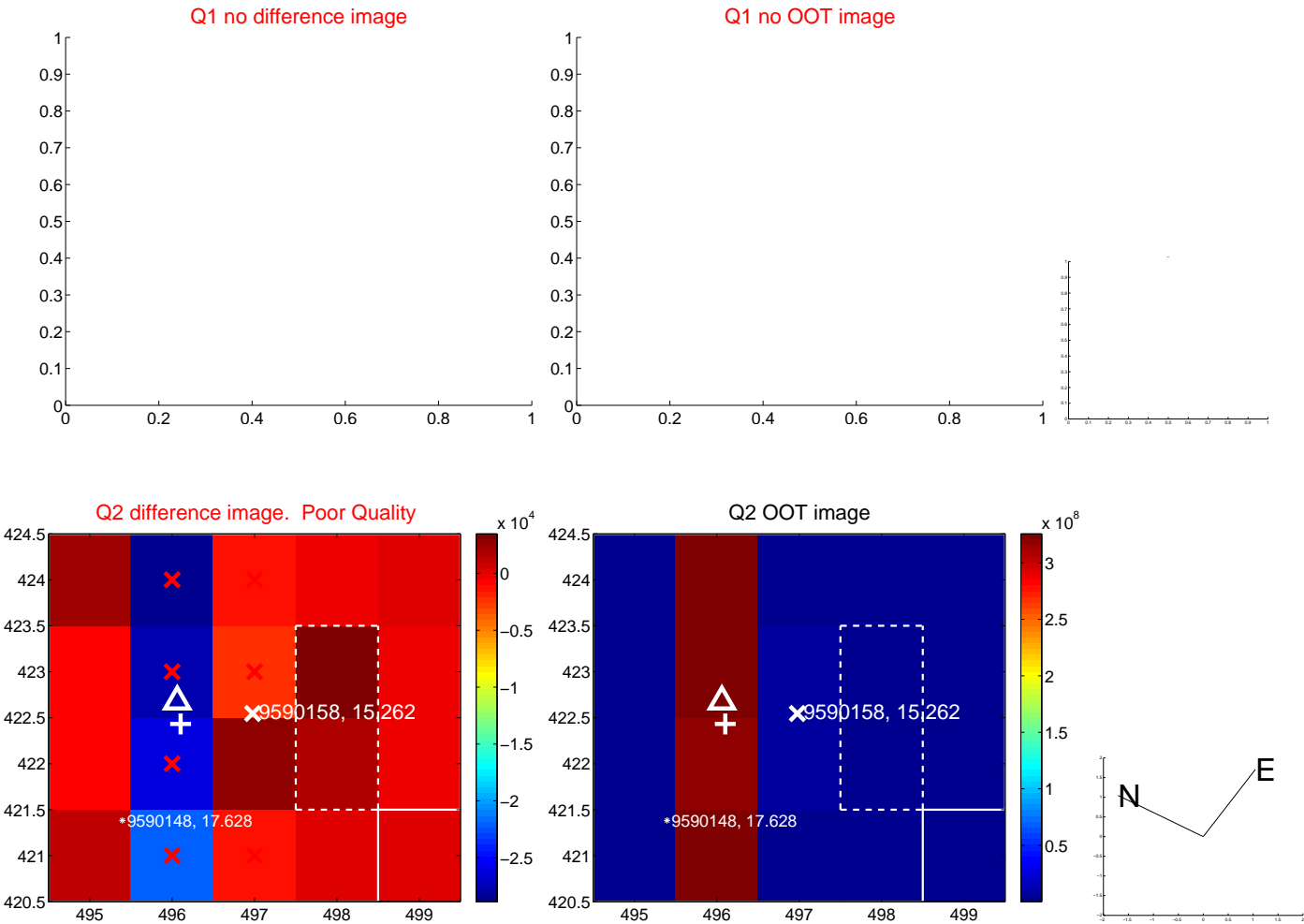
The OOT PRF centroid is offset from the target star catalog position by about 3.43 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.599 ± 1.500	0.40	0.357 ± 0.482	-0.481 ± 1.834
PRF-fit source offset from KIC position	2.871 ± 1.461	1.97	-1.788 ± 0.413	2.247 ± 1.838
photometric centroid source offset	37.86 ± 0.32	119.21	37.85 ± 0.32	0.62 ± 0.19

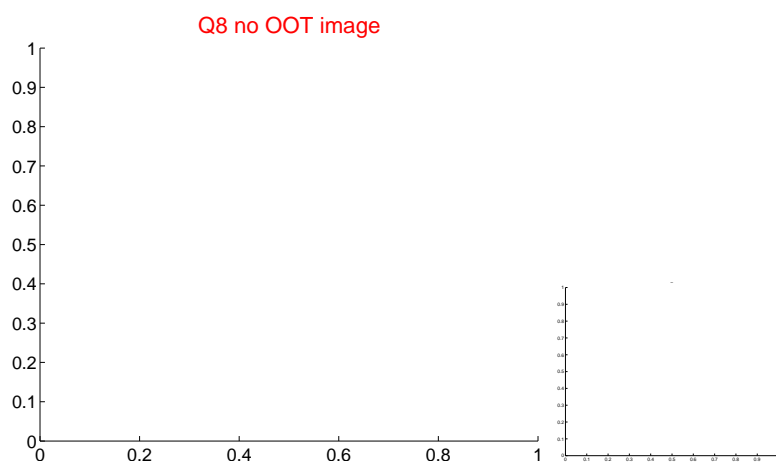
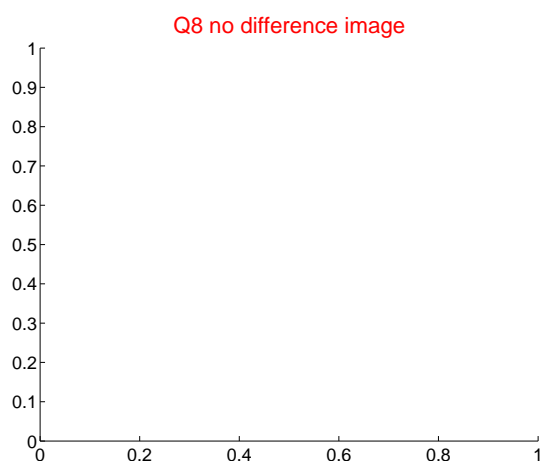
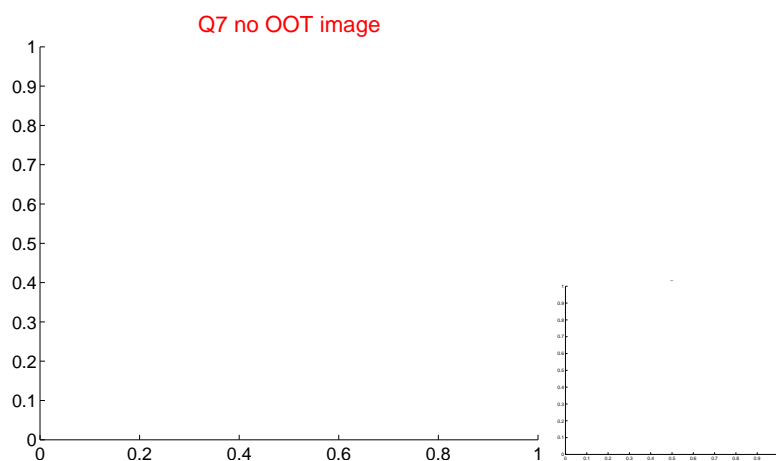
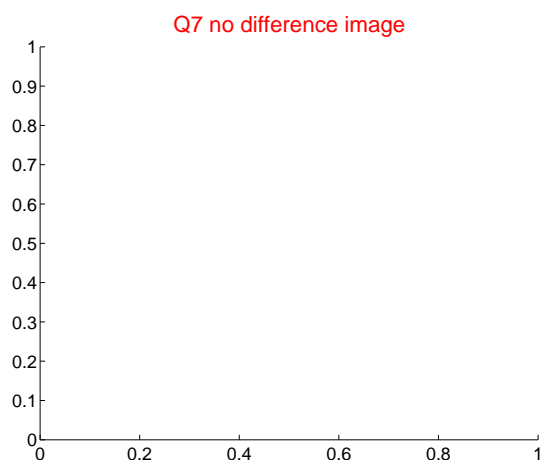
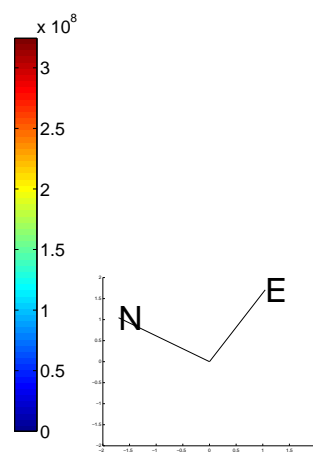
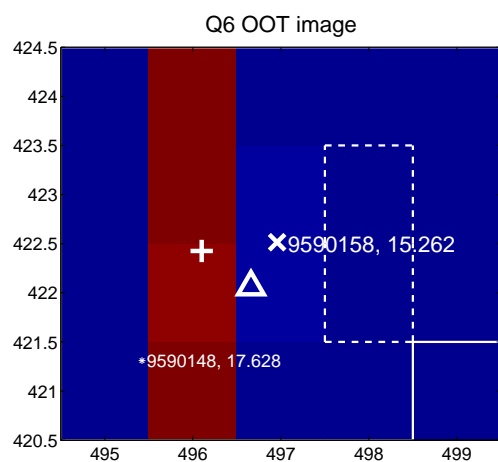
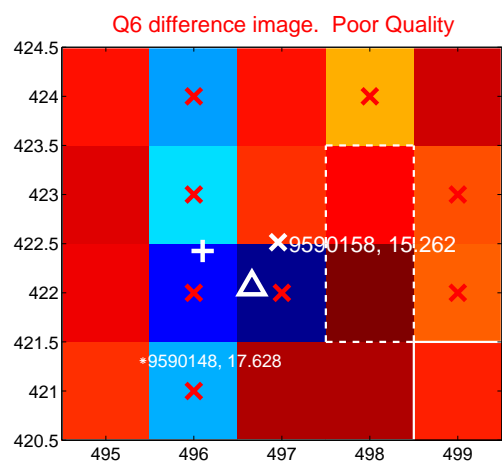
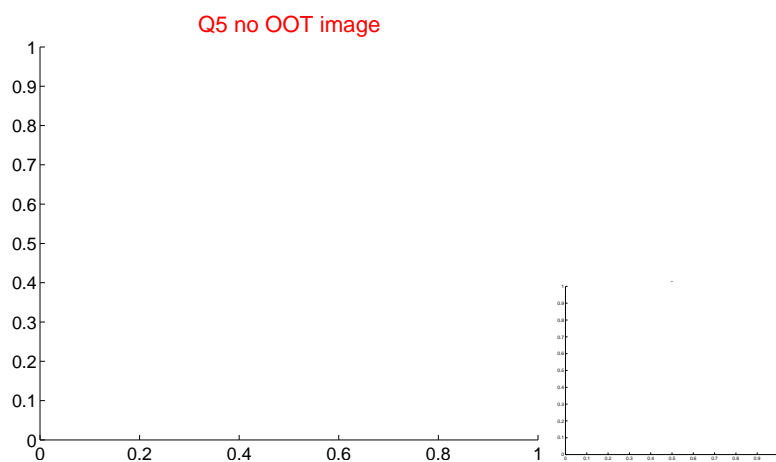
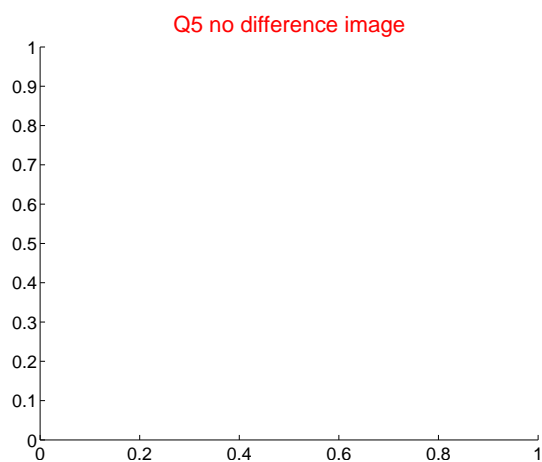


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

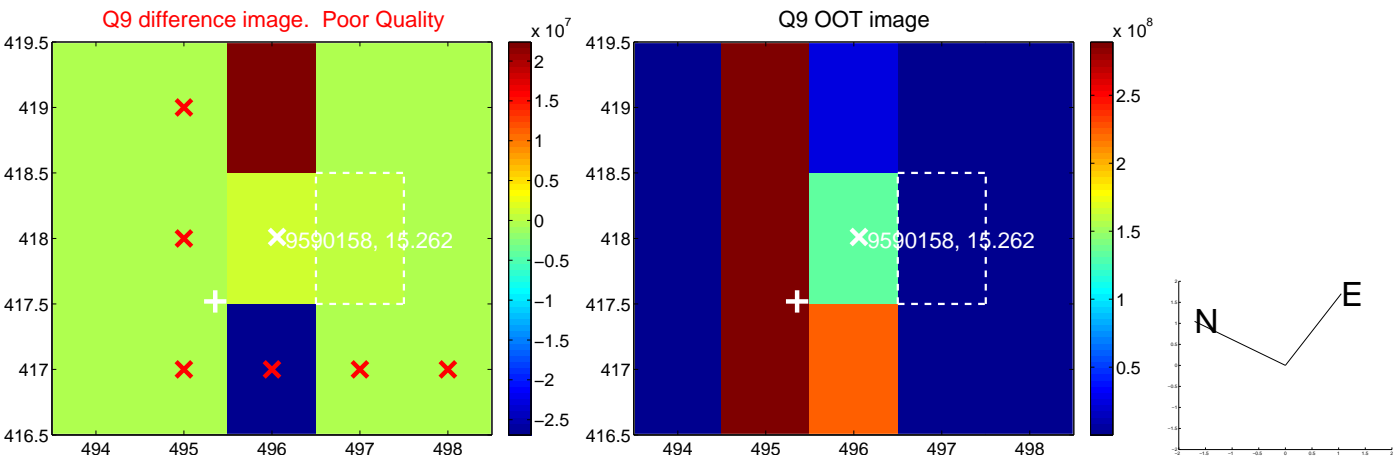
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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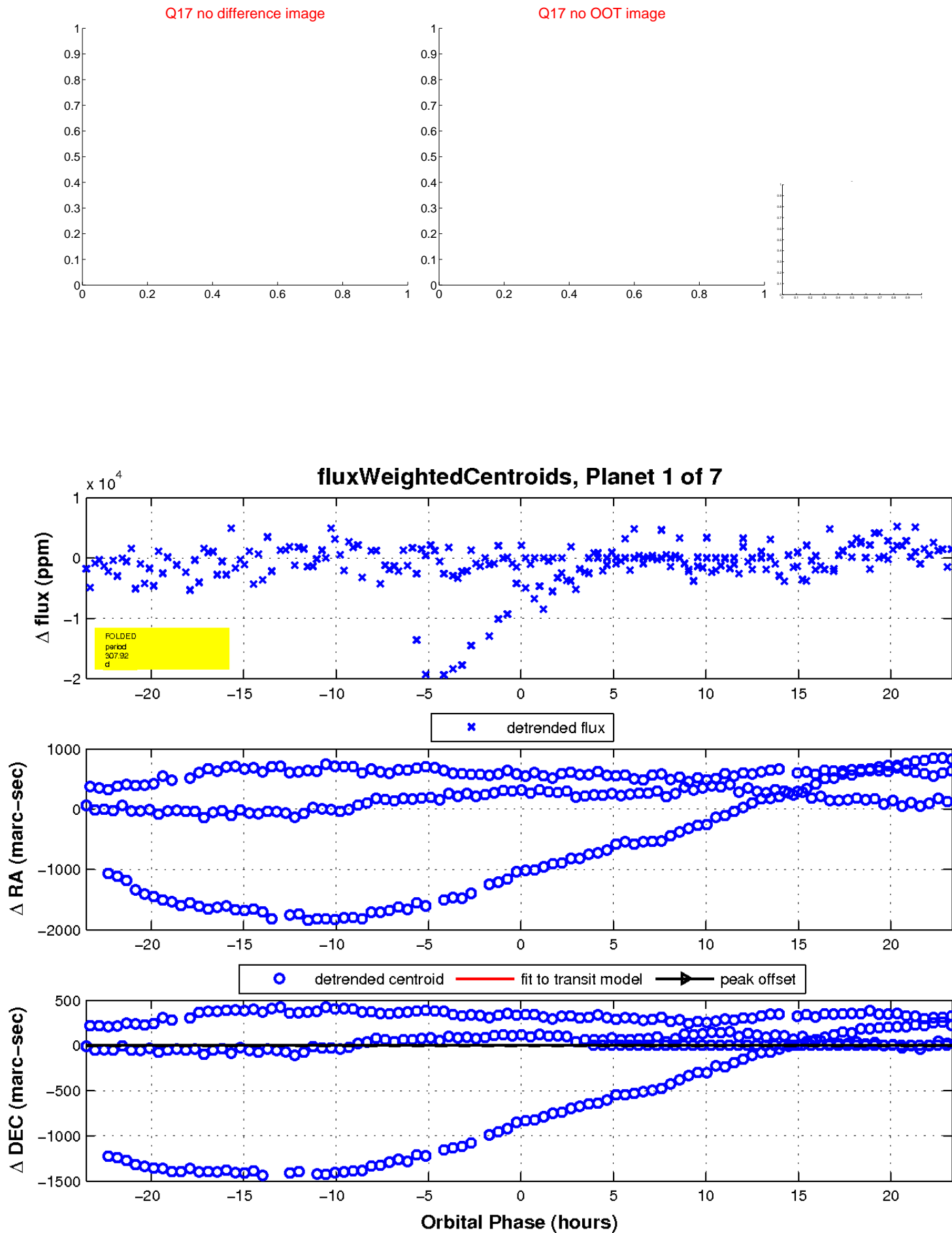
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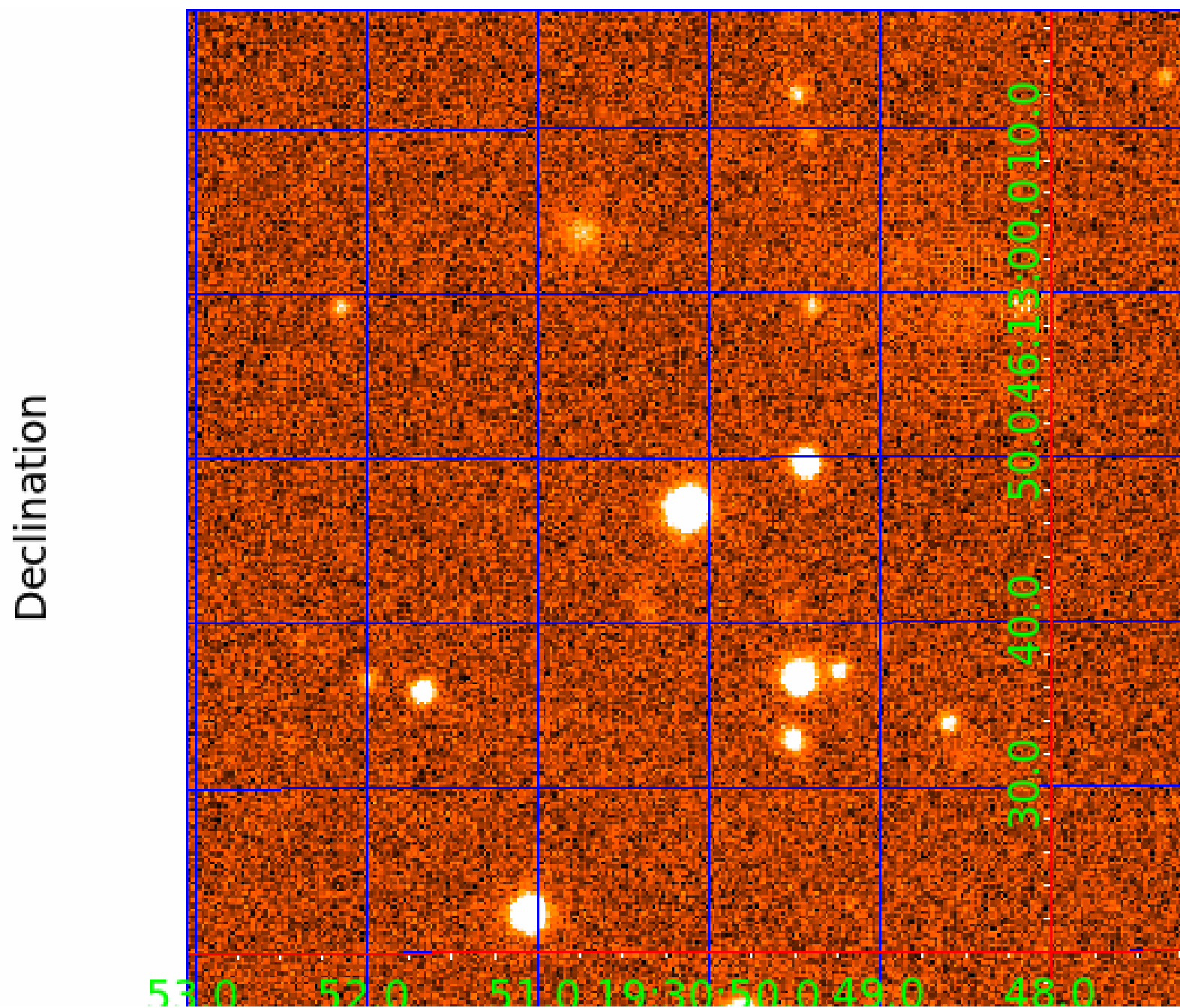
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image



KIC 009590158

Q1-17 DR25 TCE Parameters

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009590158-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009590158-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
009590158-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

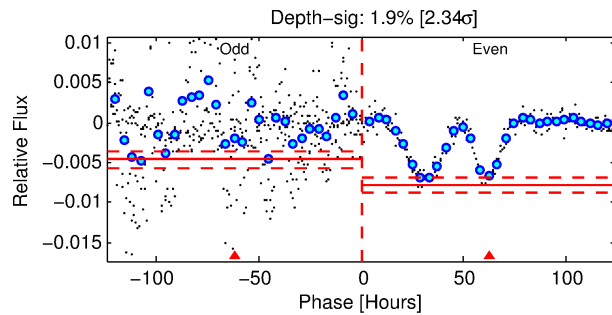
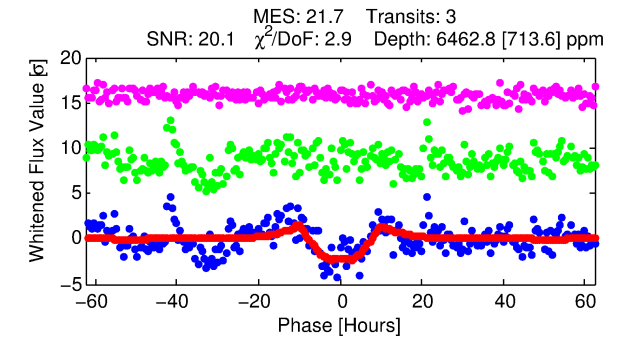
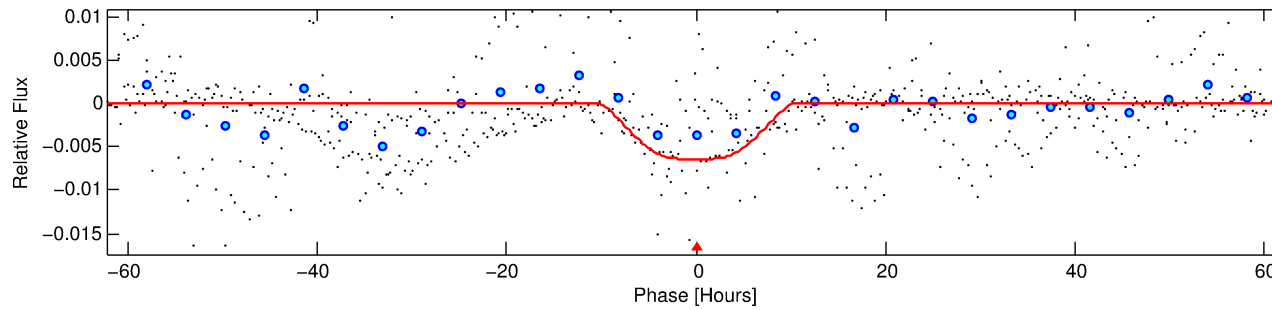
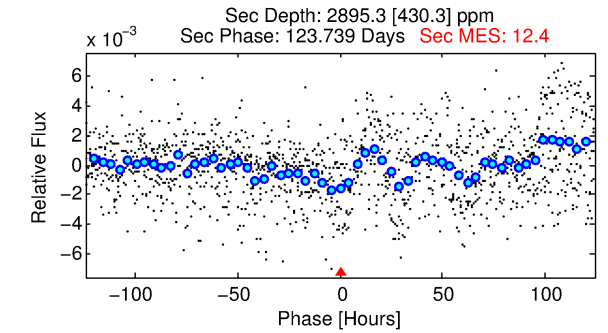
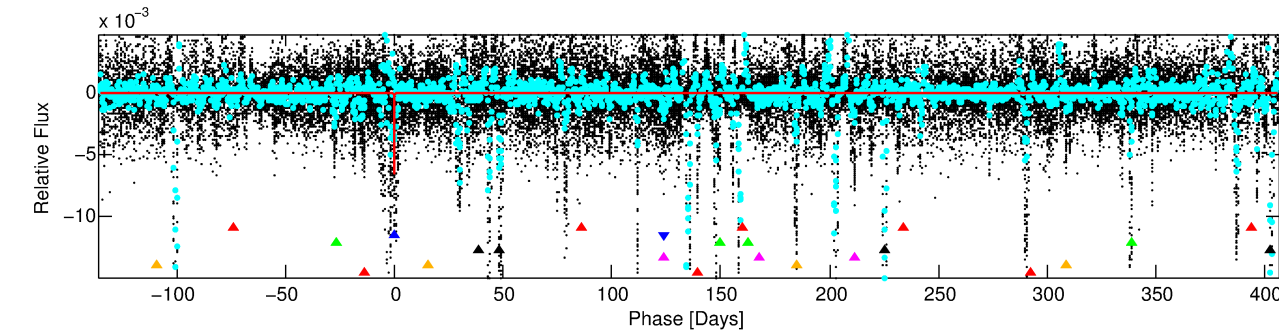
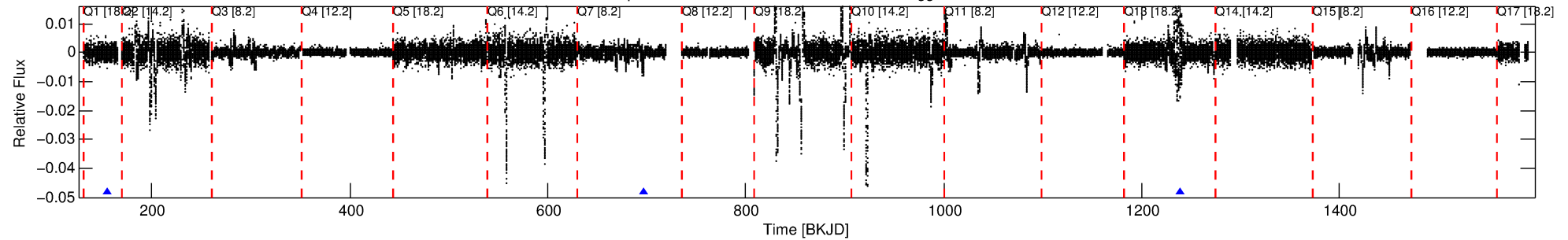
Ephemeris Match Information For 009590158-02

No Significant Match Found

DV One-Page Summary

KIC: 9590158 Candidate: 2 of 7 Period: 541.766 d

Kp: 15.26 R*: 1.08 Rs Teff: 5824.0 K Logg: 4.42 Fe/H: 0.400



DV Fit Results:

Period = 541.76586 [0.03043] d
Epoch = 155.3666 [0.0341] BKJD
Rp/R* = 0.0879 [0.0065]
a/R* = 124.21 [14.48]
b = 0.89 [0.03]
Seff = 0.66 [0.26]
Teq = 230 [23] K
Rp = 10.37 [3.12] Re
a = 1.3522 [0.3359] AU
Ag = 27062.97 [11408.41] [2.37σ]
Teff = 4558 [296] K [14.59σ]

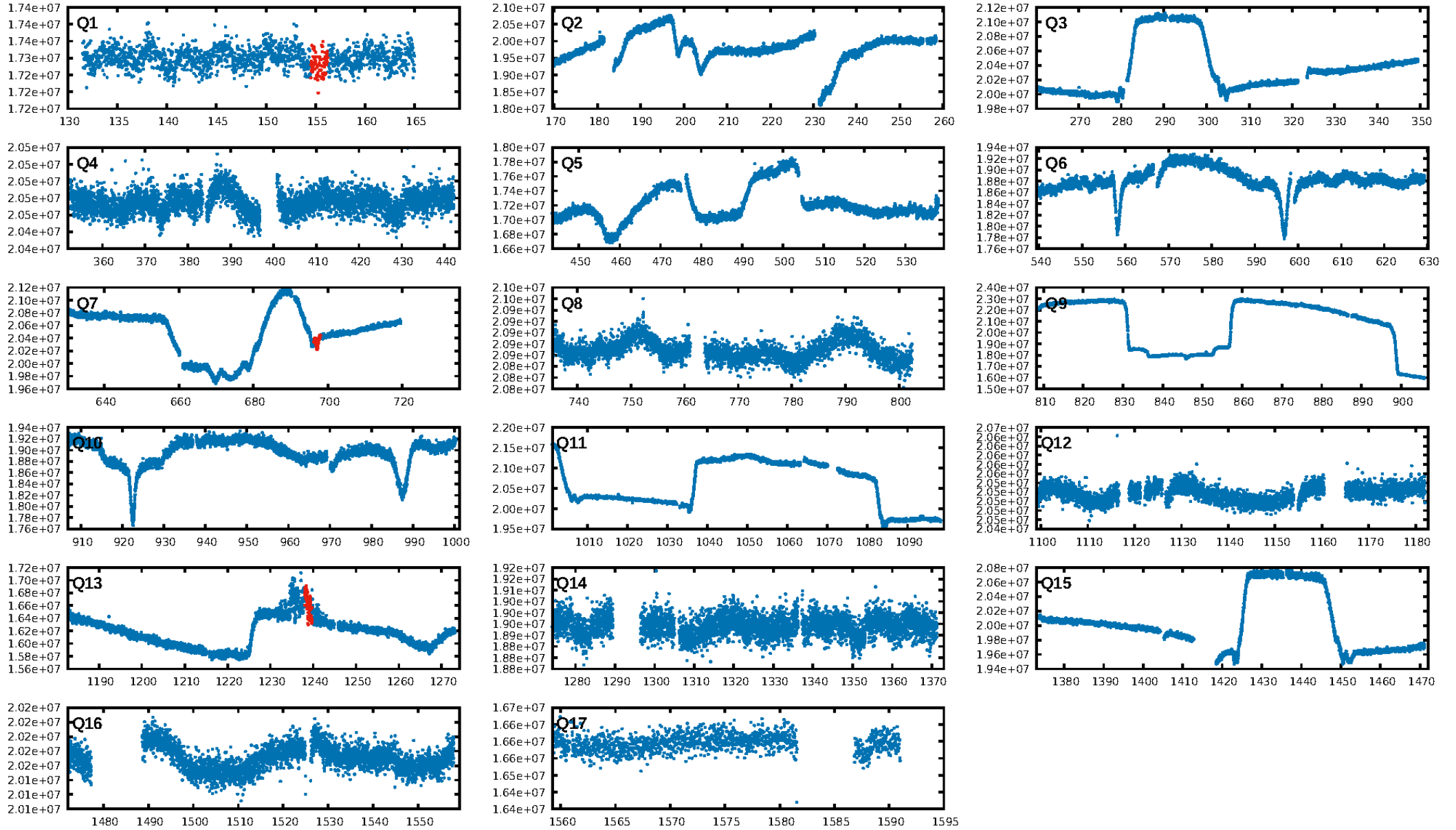
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [100.10σ]
LongPeriod-sig: 100.0% [30.71σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 4.84e-14
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.3798
Centroid-sig: N/A
Centroid-so: 0.758 arcsec [4.32σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [3/3]

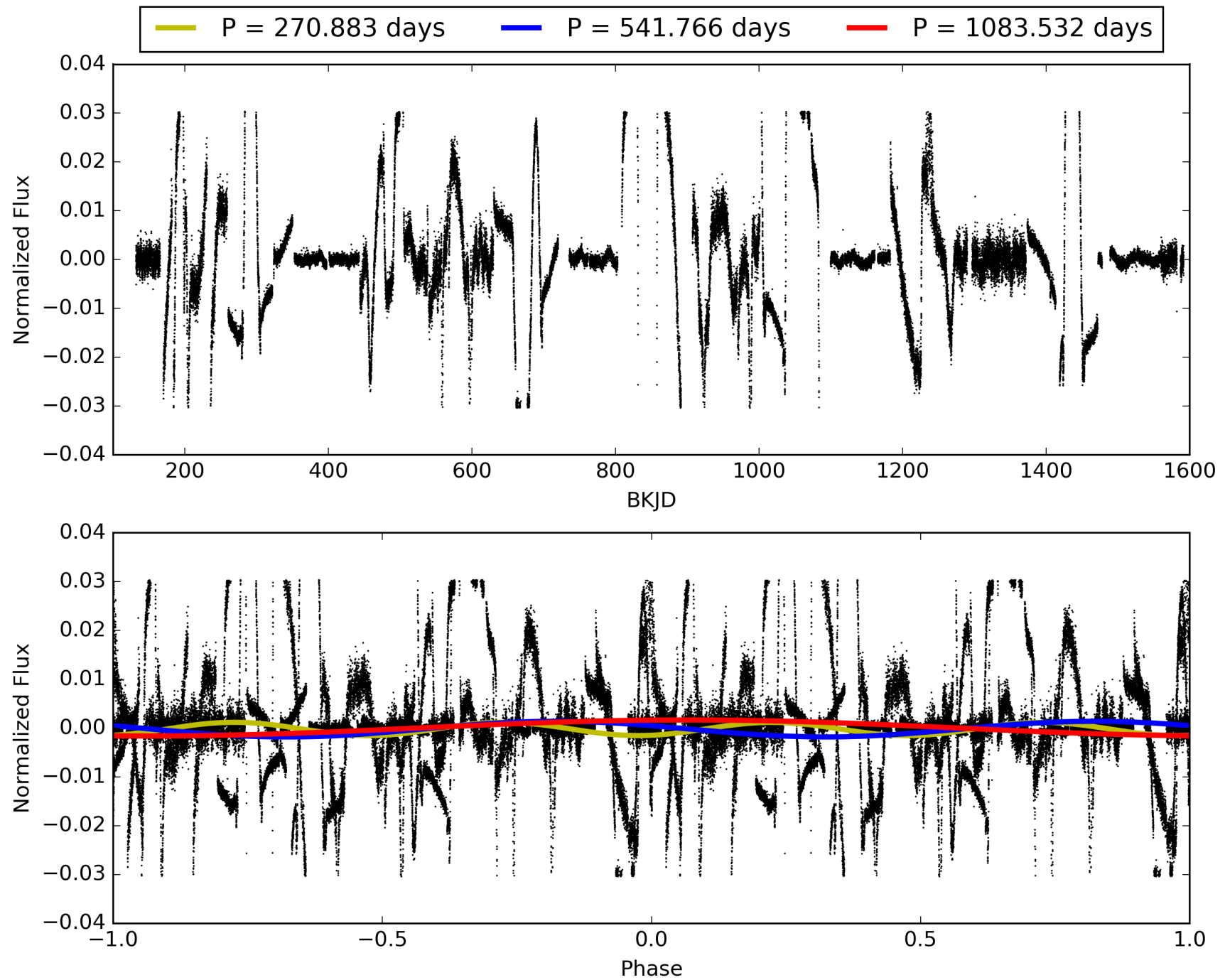
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:26:51 Z

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

TCE 009590158-02, PDC Light Curves

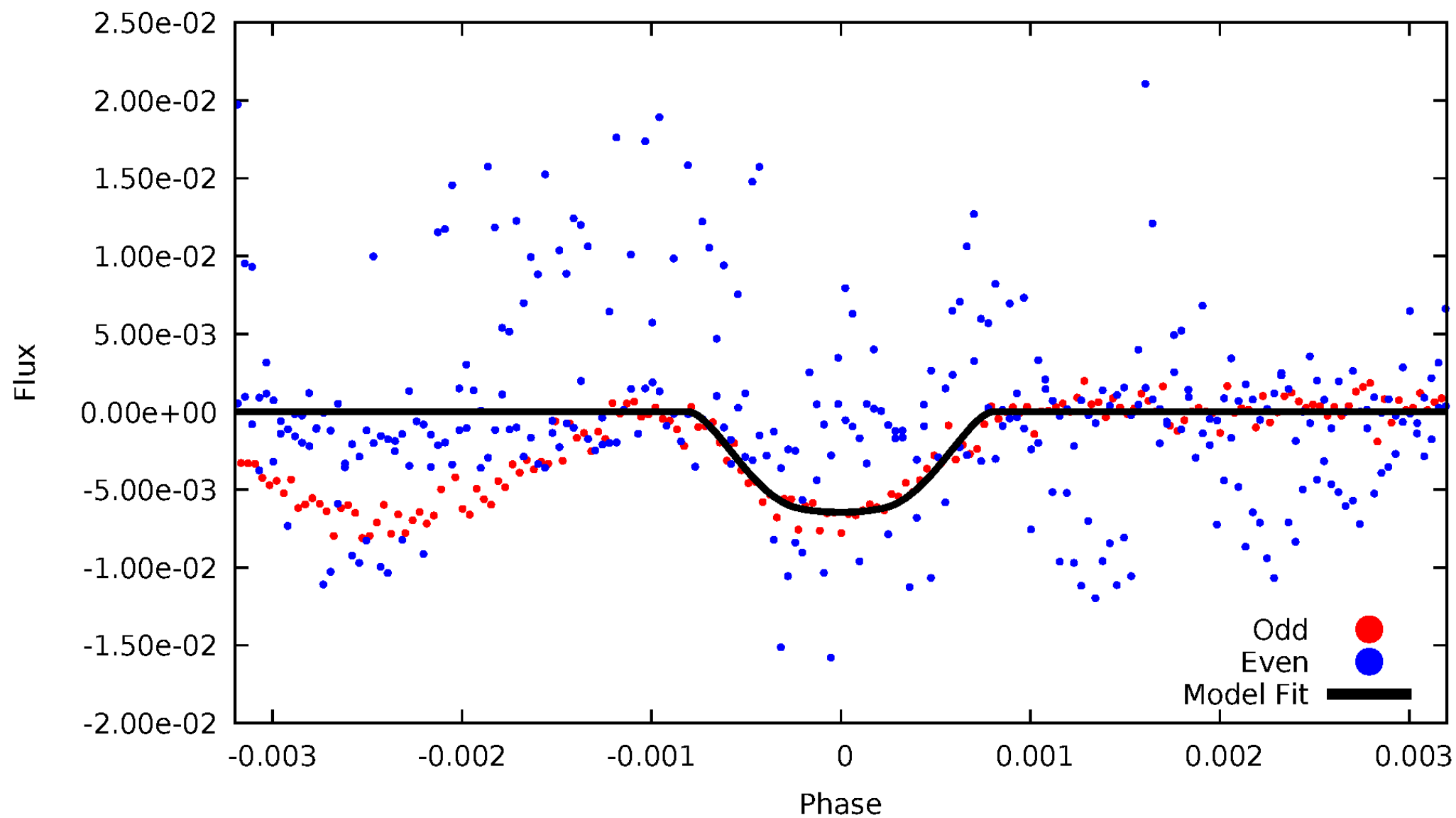


TCE 009590158-02



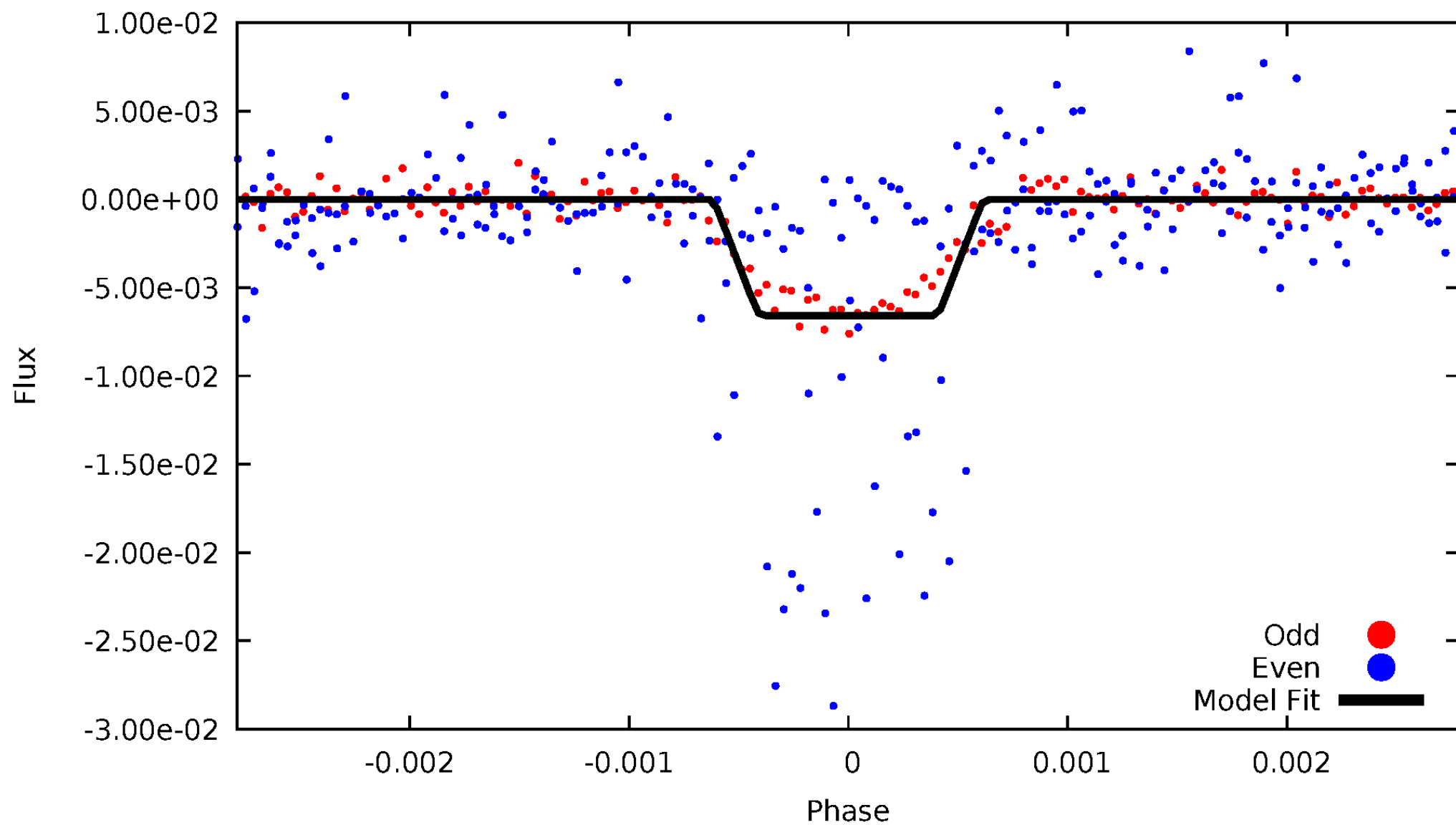
DV Odd/Even

TCE 009590158-02



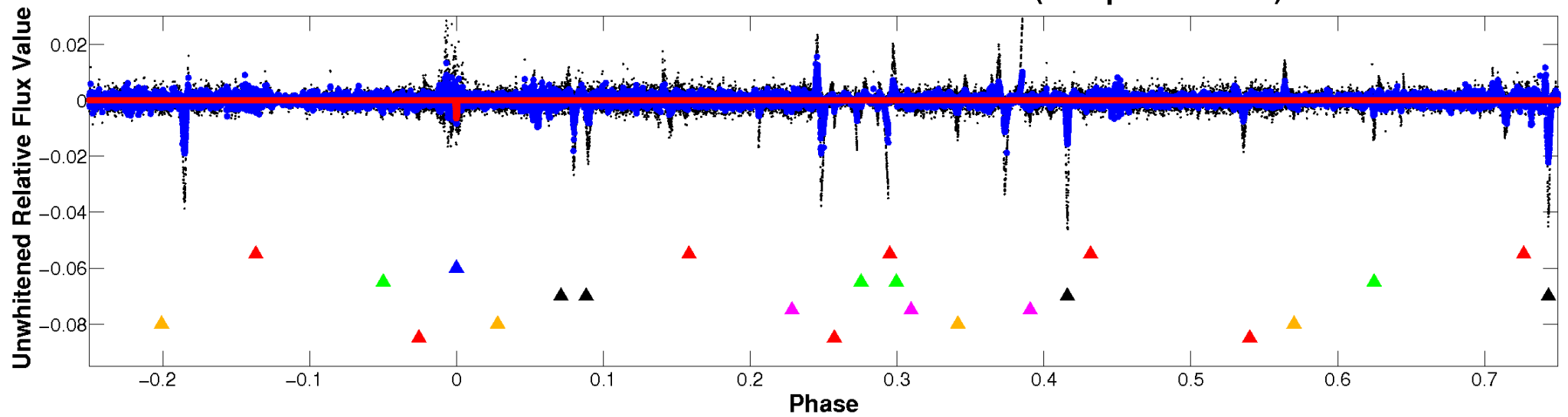
ALT Odd/Even

TCE 009590158-02

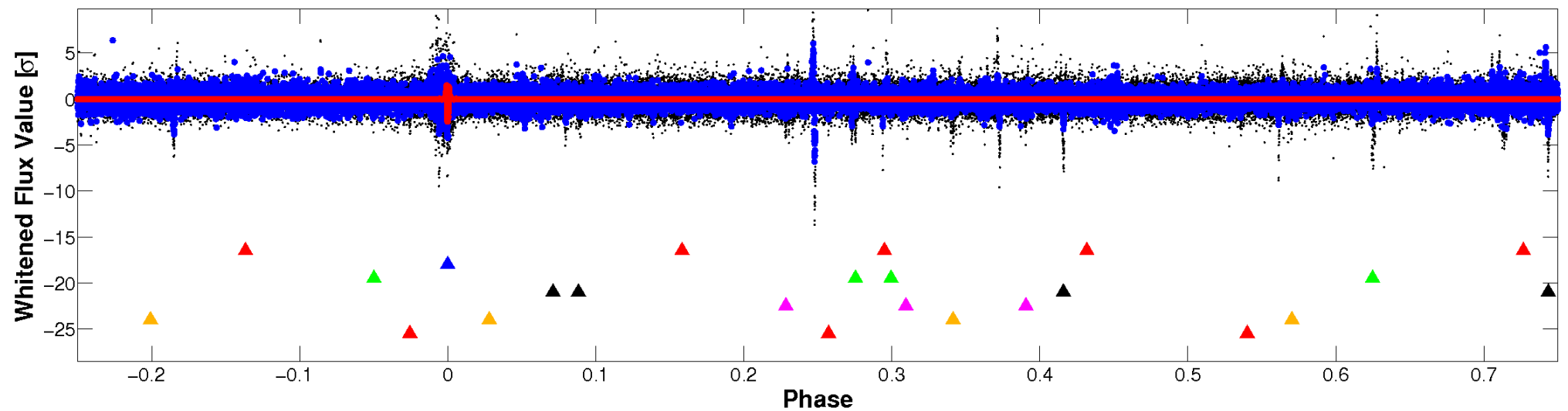


Non-Whitened Vs. Whitened Light Curve

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

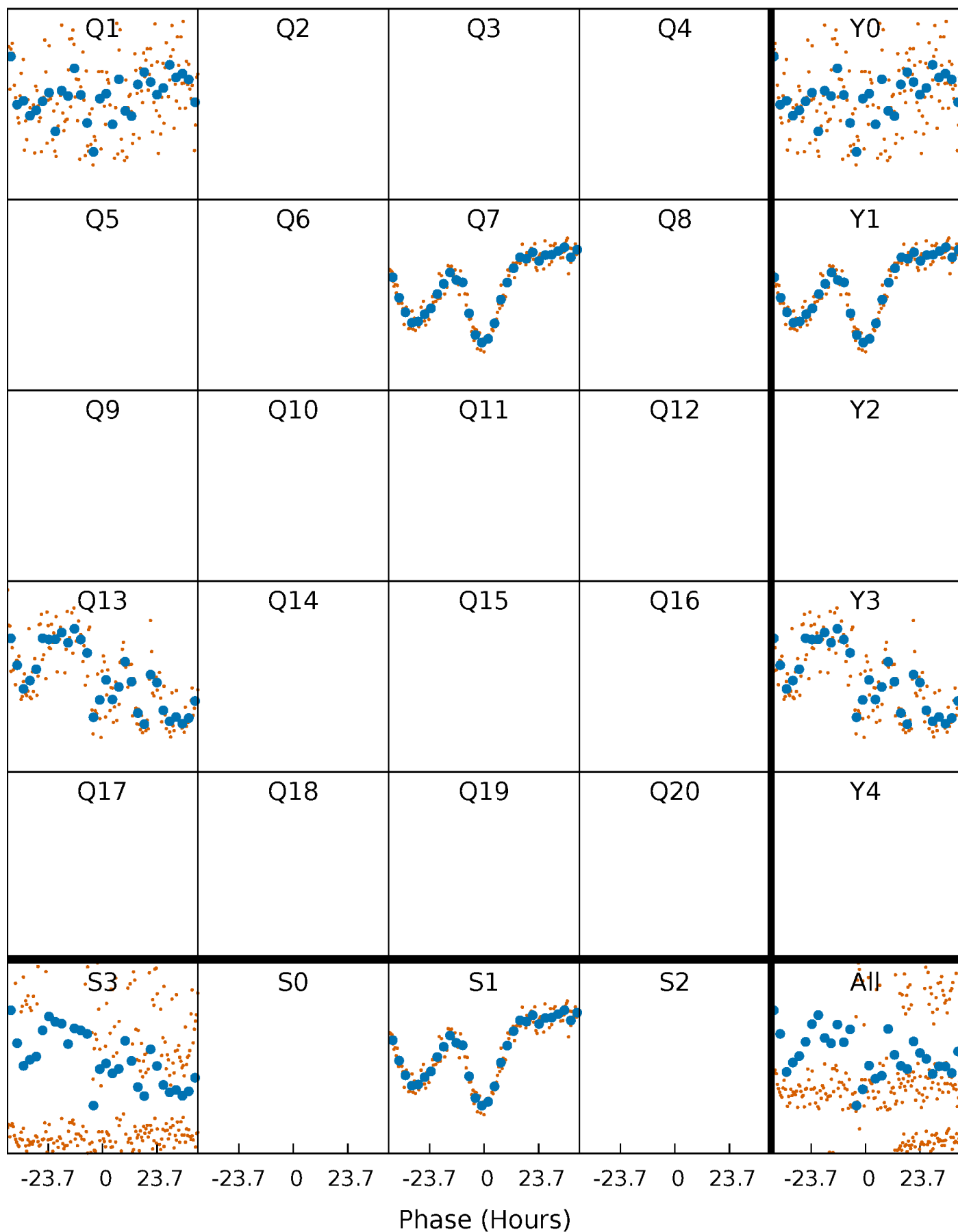


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



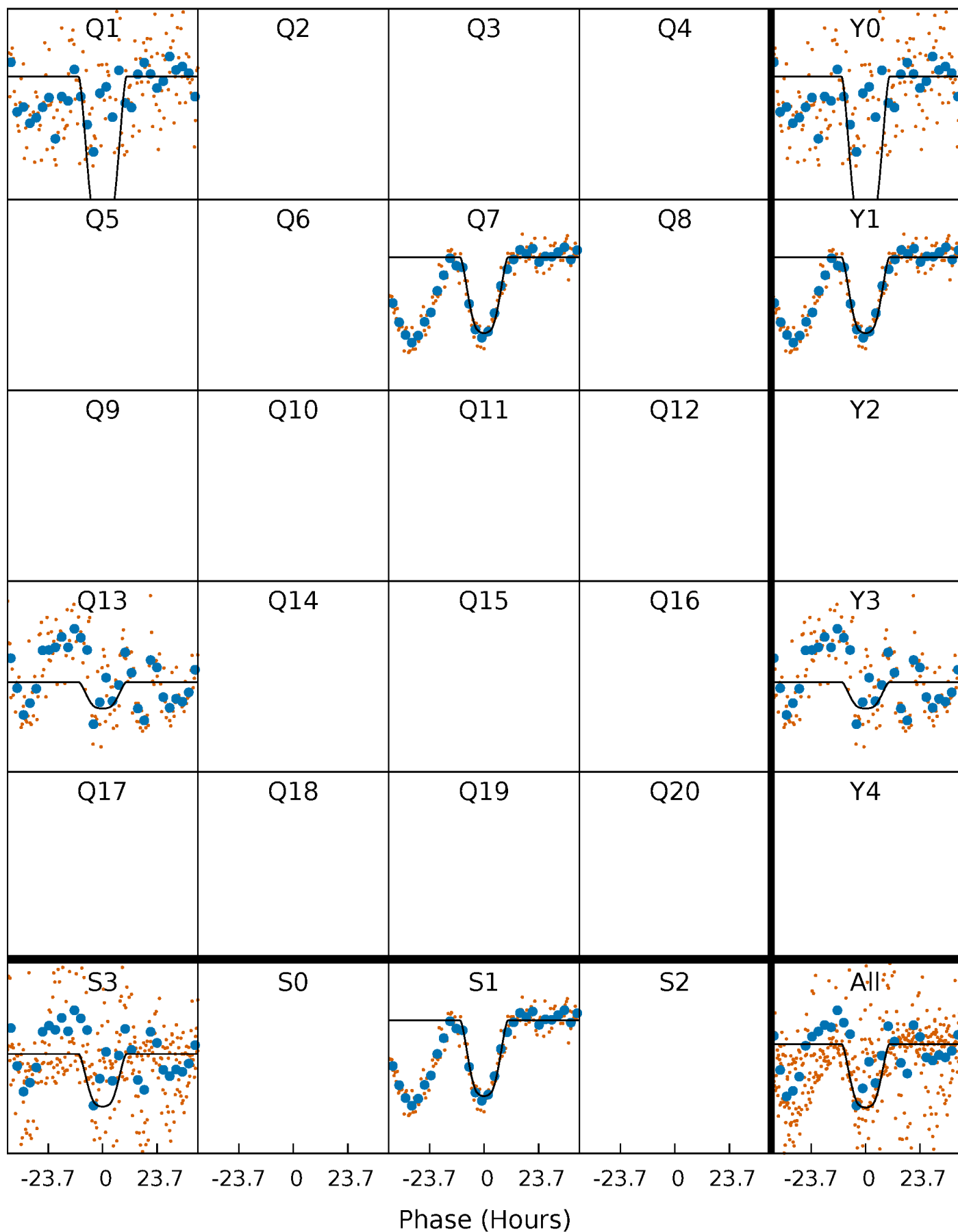
PDC Quarter-Phased Transit Curves

TCE 009590158-02 P=541.765859 Days $T_0=155.366599$ (BKJD)



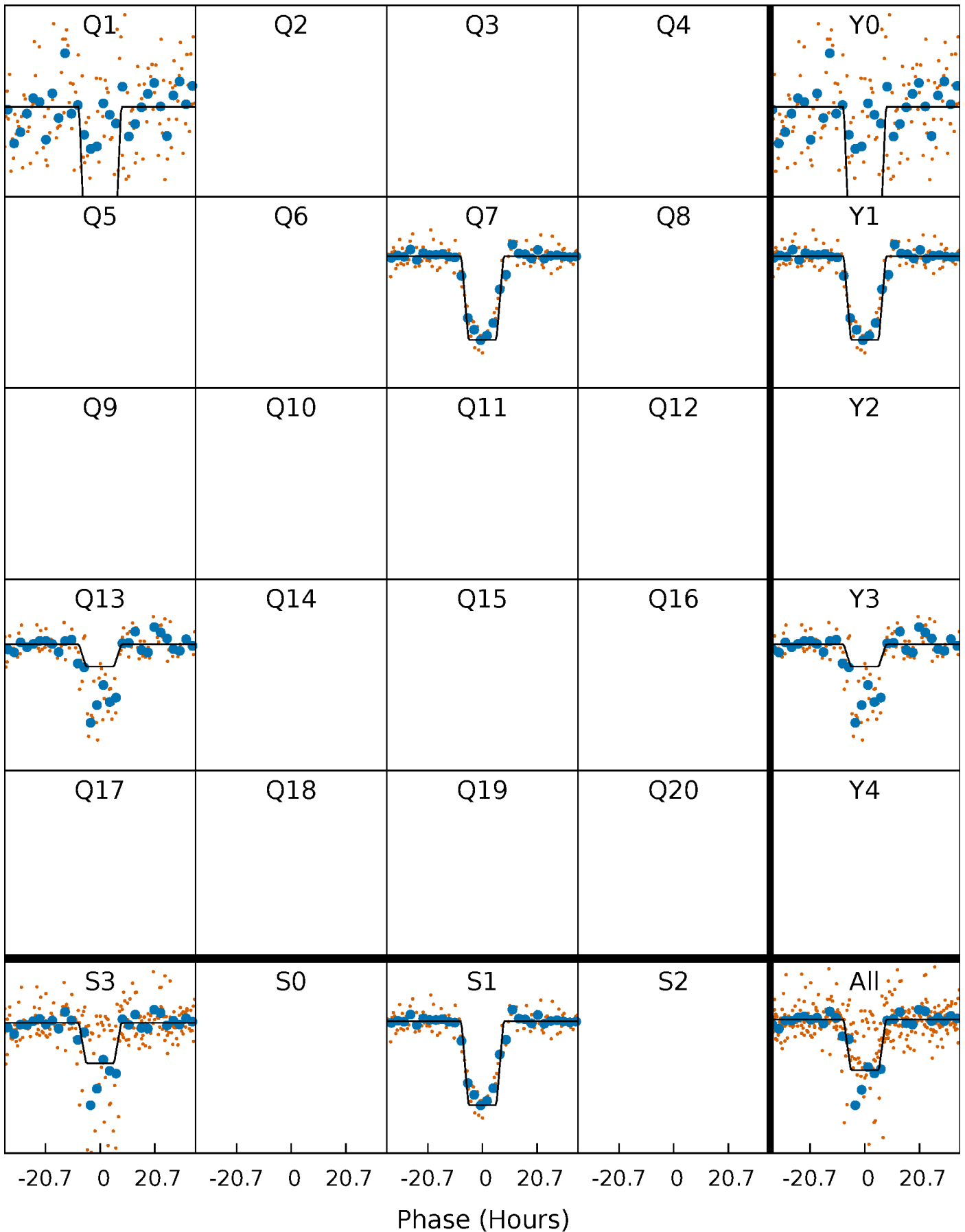
DV Quarter-Phased Transit Curves

TCE 009590158-02 $P=541.765859$ Days $T_0=155.366599$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

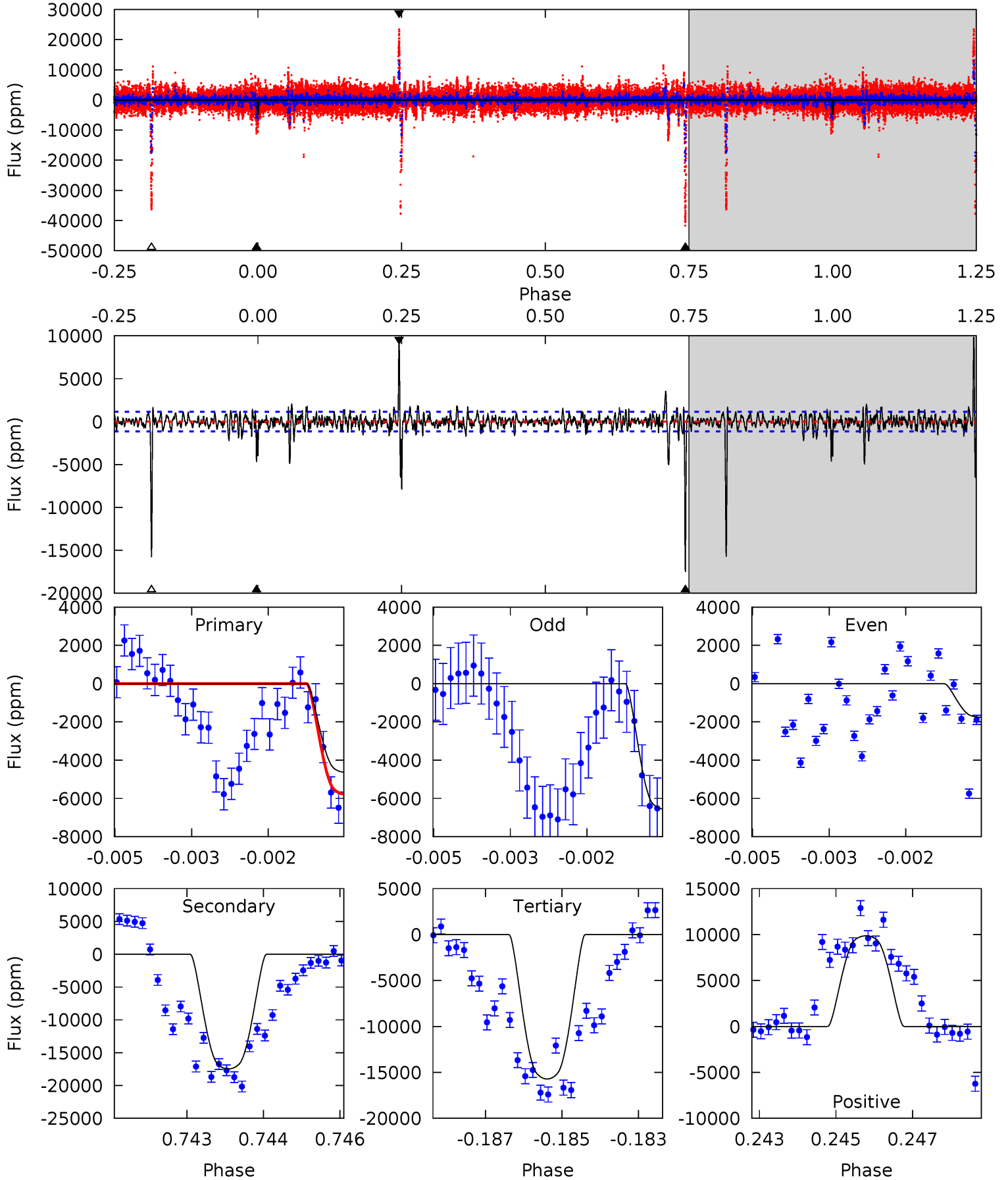
TCE 009590158-02 P=541.775410 Days $T_0=155.355876$ (BKJD)



DV Model-Shift Uniqueness Test

009590158-02, P = 541.765859 Days, E = 155.366599 Days

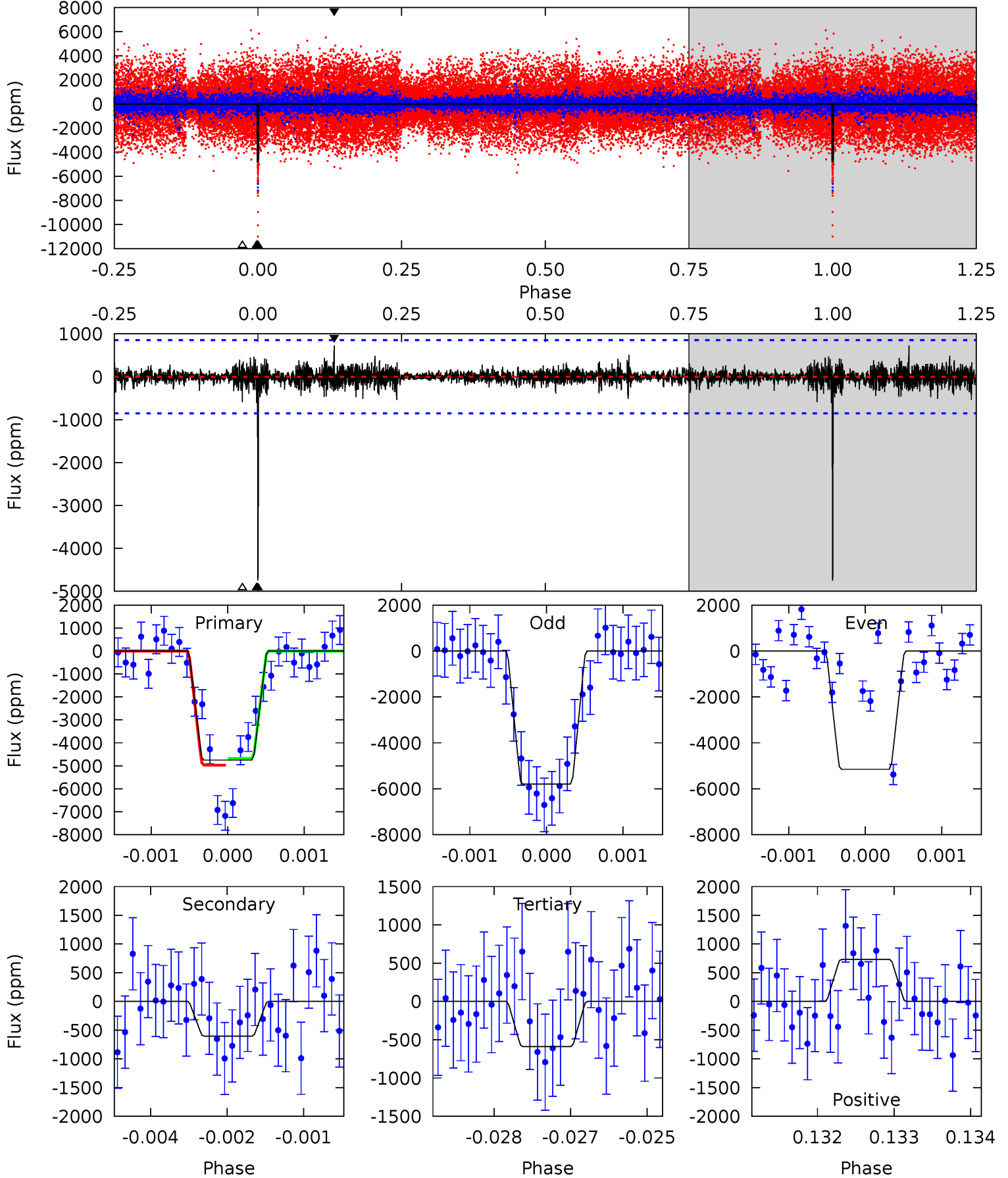
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.7	82.0	73.7	46.3	5.36	3.15	4.62	-52.0	-24.6	8.26	35.7	7.50	1.28	0.36	5.20



Alt Model-Shift Uniqueness Test

009590158-02, P = 541.775410 Days, E = 155.355876 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.2	3.84	3.75	4.65	5.42	3.24	0.69	26.5	25.6	0.09	-0.81	2.21	1.36	0.13	0.96



Stellar Parameters For KIC 009590158

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5824^{+182}_{-223}	$4.420^{+0.067}_{-0.202}$	$0.400^{+0.050}_{-0.300}$	$1.082^{+0.315}_{-0.135}$	$1.123^{+0.122}_{-0.150}$	$1.248^{+0.446}_{-0.637}$
	+3%/-4%	+2%/-5%	+12%/-75%	+29%/-12%	+11%/-13%	+36%/-51%
Source	PHO1	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 009590158-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-17475 ± 213	$10.77^{+1.82}_{-1.25}$	328^{+24}_{-17}	7226^{+458}_{-405}	153561^{+39105}_{-40762}
Alt.	-604 ± 157	$9.82^{+1.72}_{-1.17}$	326^{+24}_{-17}	3627^{+207}_{-213}	5979^{+2430}_{-2090}

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

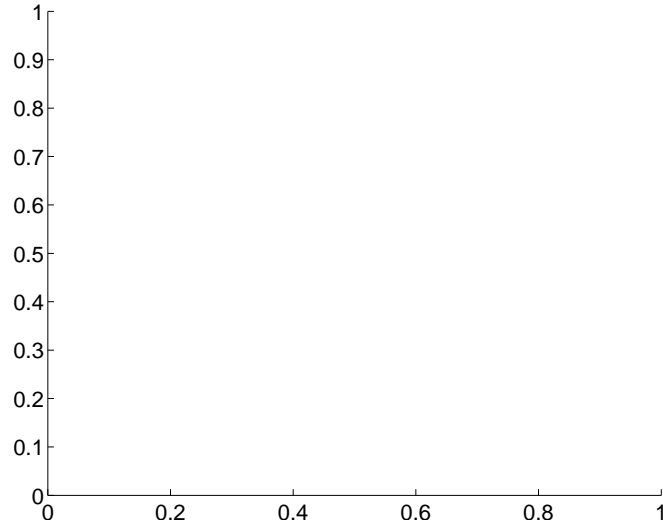
Supplemental centroid analysis for 009590158-02. Kepler magnitude: 15.26. Transit SNR 20.05

There are 0 quarters with good PRF difference image offsets

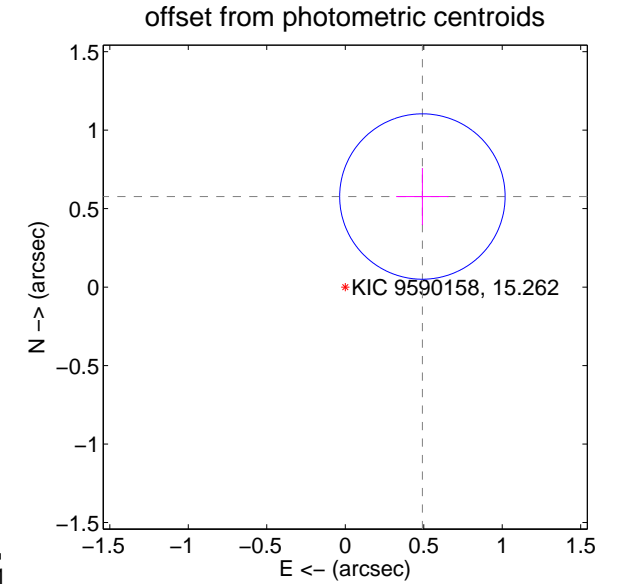
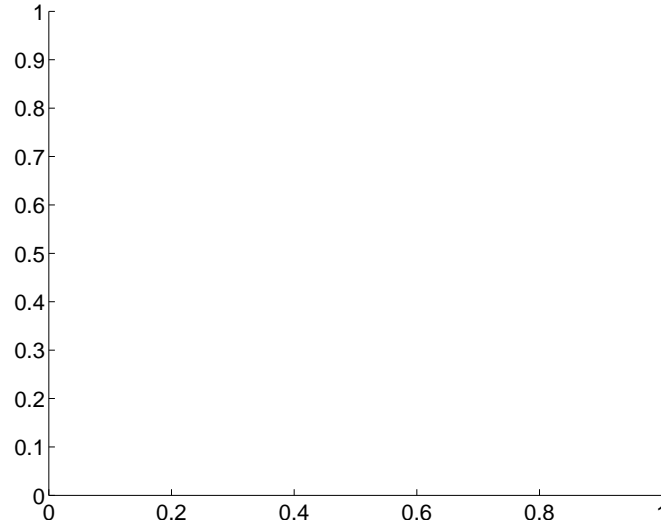
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	0.76 ± 0.18	4.32	-0.49 ± 0.17	0.58 ± 0.18

There is no PRF-fit offset from OOT-fit

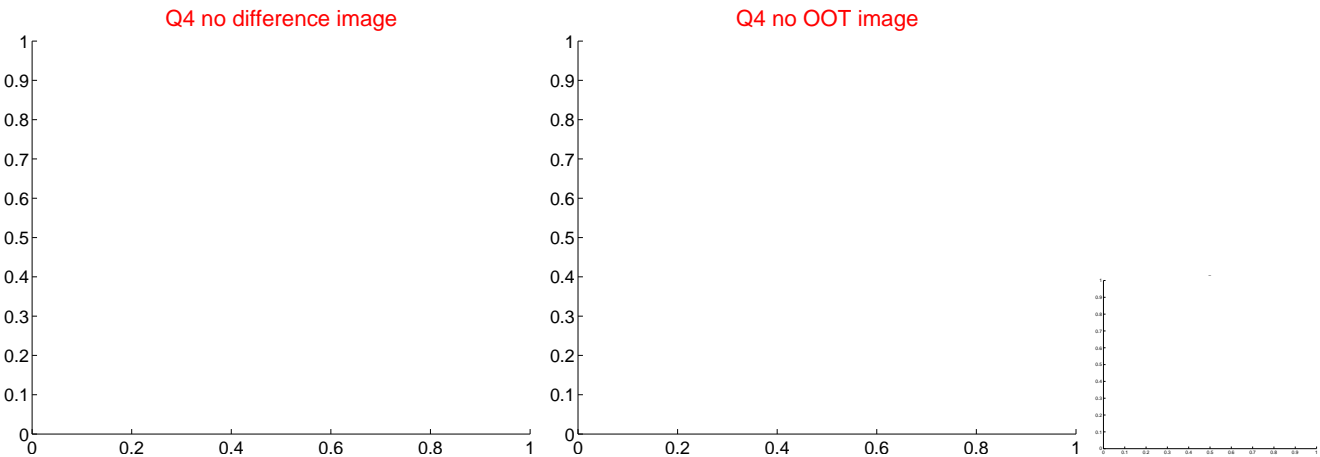
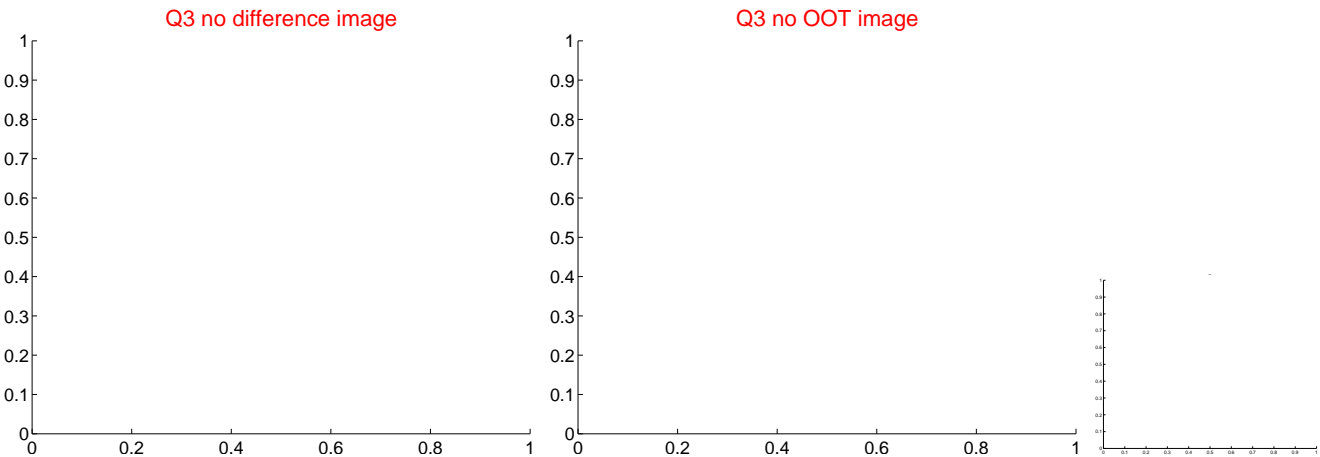
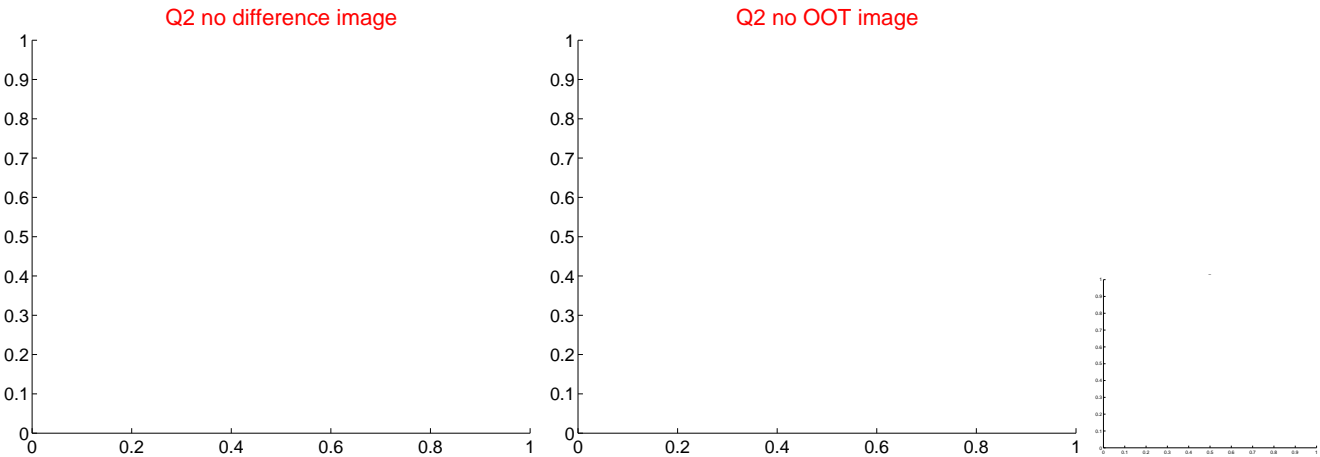
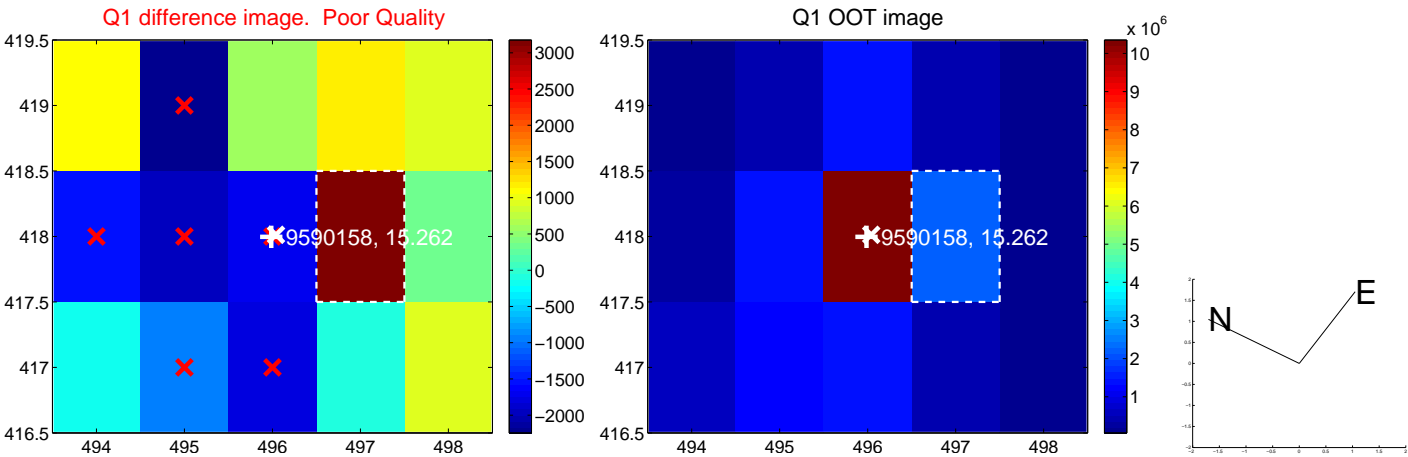


There is no PRF-fit offset from KIC



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

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



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

Q5 no difference image



Q5 no OOT image



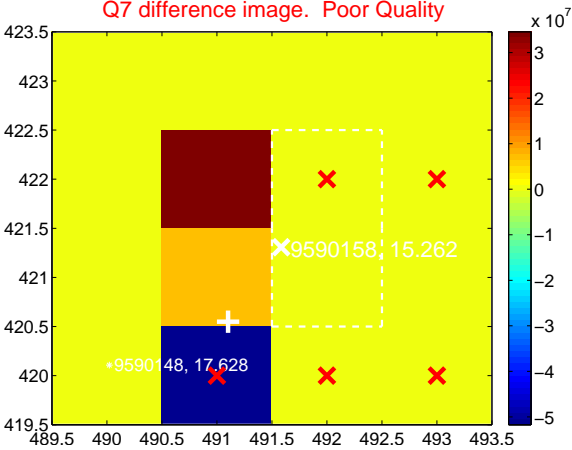
Q6 no difference image



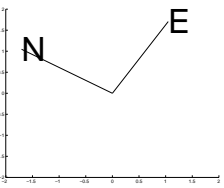
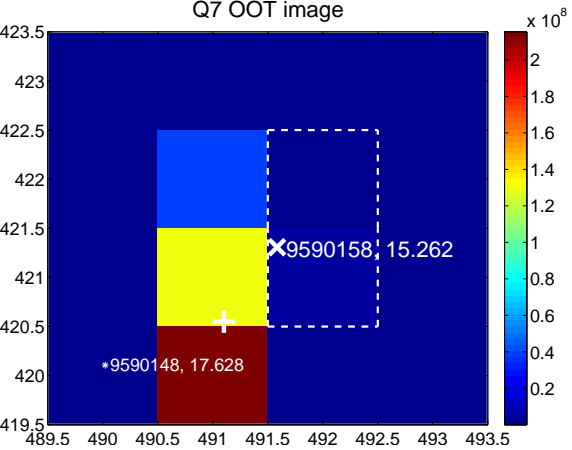
Q6 no OOT image



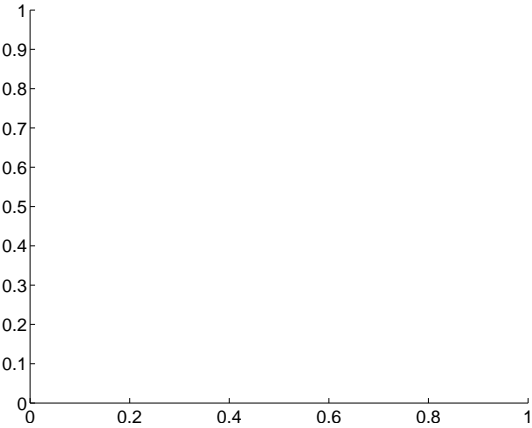
Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



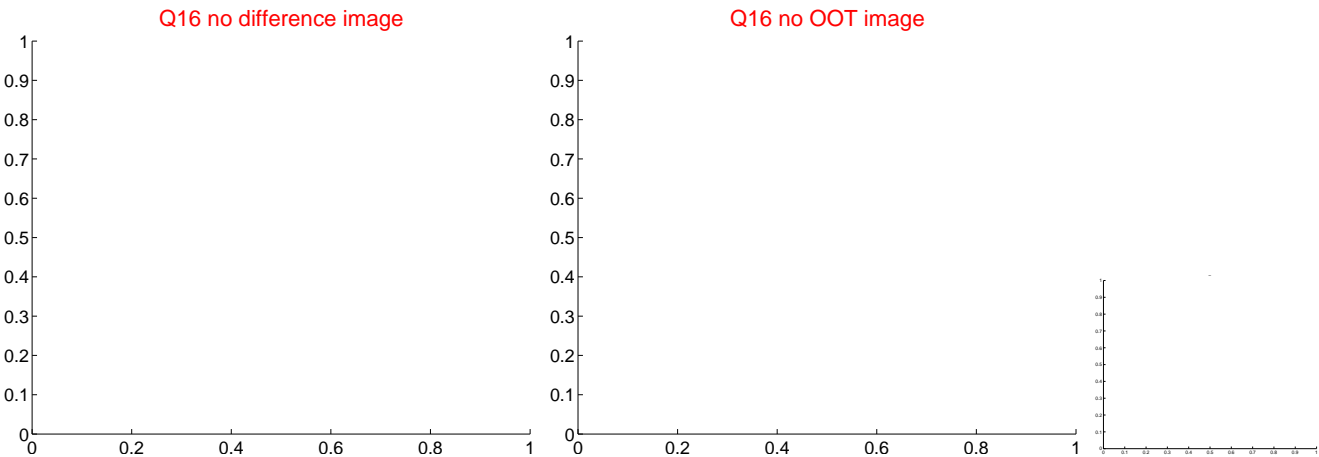
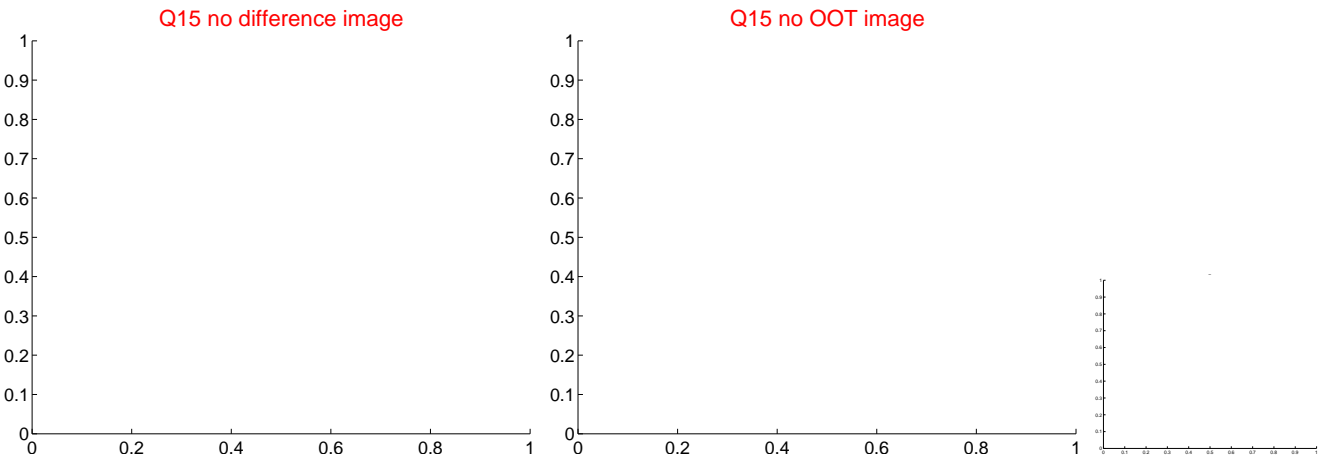
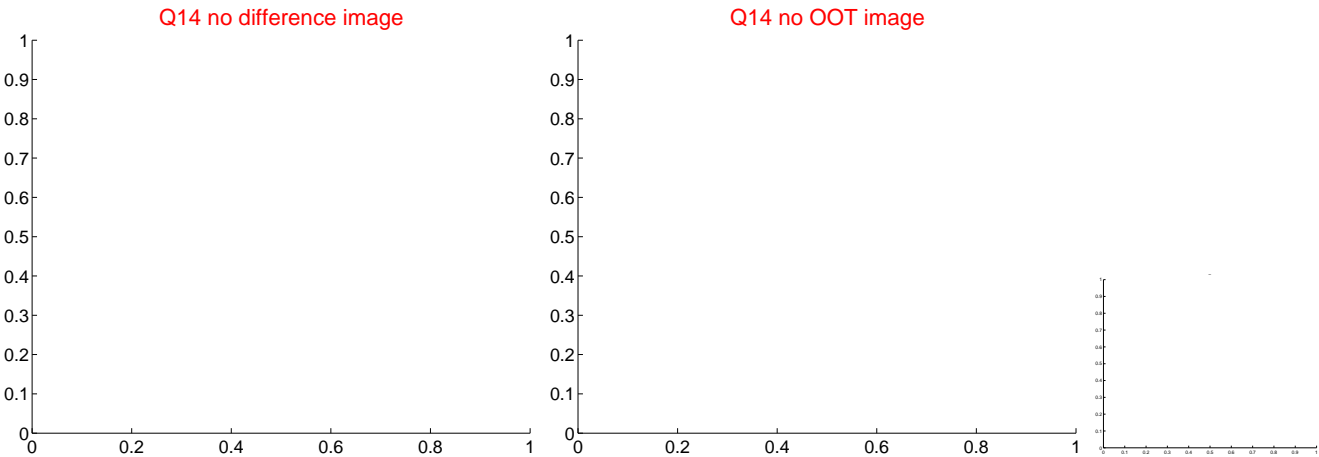
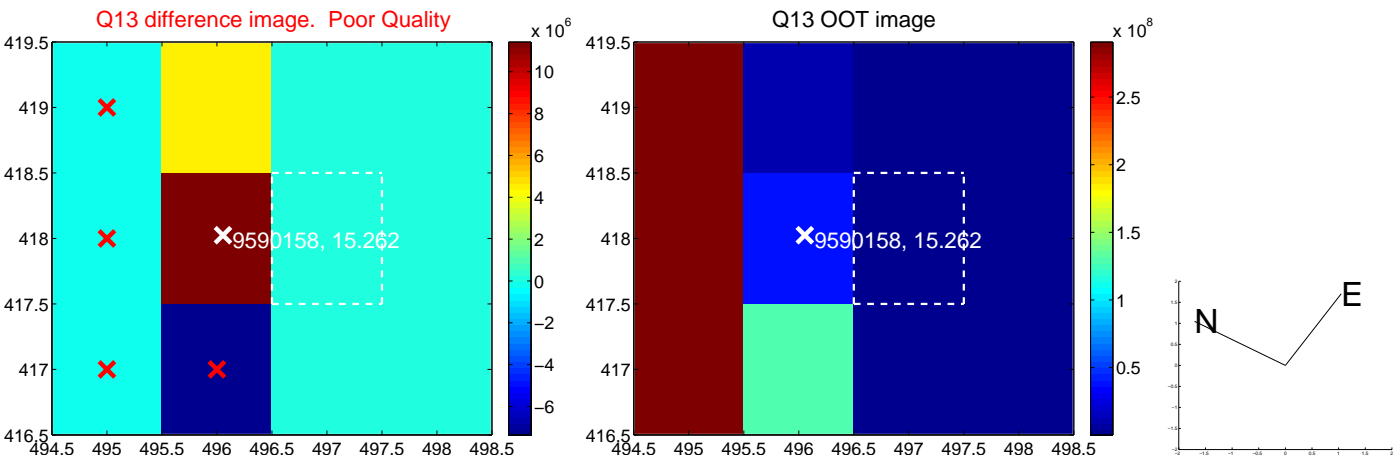
Q8 no OOT image



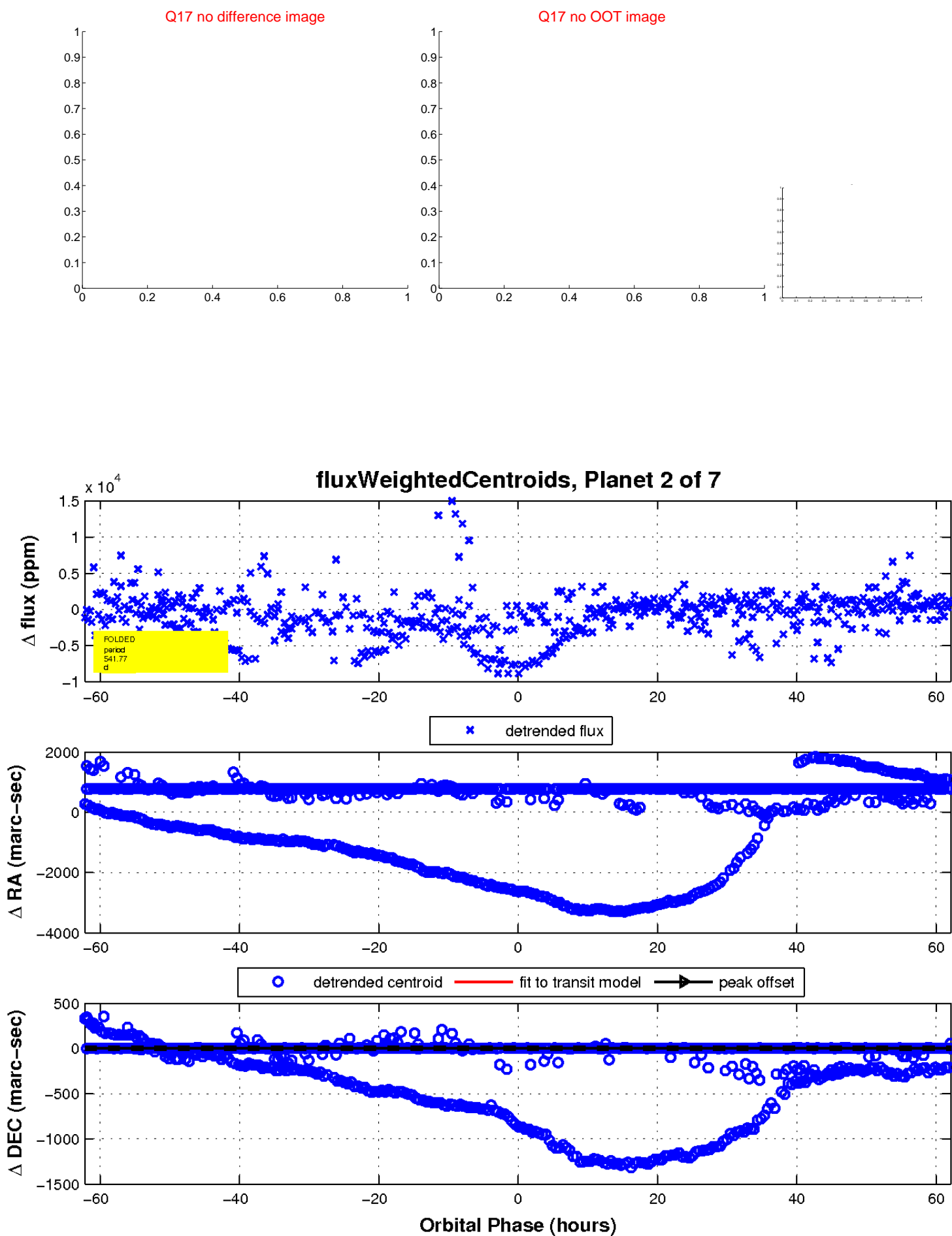
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



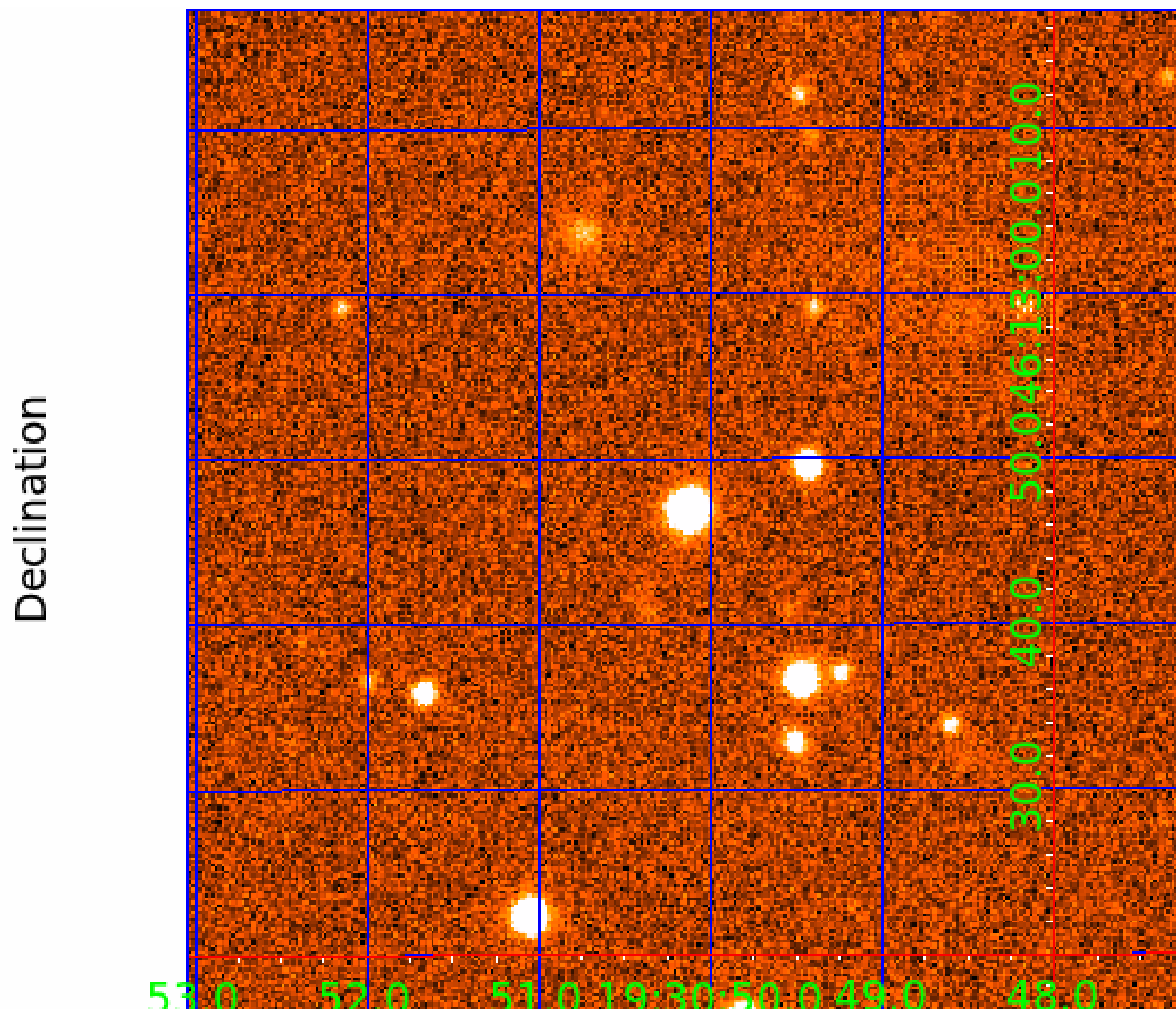
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



UKIRT Image



KIC 009590158

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})
009590158-01	OBS	No	307.922795	241.128520	1489.7	7.839	25.4	2.5	1.08	5824	4.30	1.40
009590158-02	OBS	No	541.765859	155.366599	6462.8	20.779	21.7	20.1	1.08	5824	10.37	0.66
009590158-03	OBS	No	365.508227	304.626204	3479.3	27.535	20.7	15.7	1.08	5824	7.94	1.11
009590158-04	OBS	No	364.278043	193.910444	12839.3	40.056	25.3	21.0	1.08	5824	22.06	1.12
009590158-05	OBS	No	585.692415	279.142242	5832.3	27.331	18.5	20.3	1.08	5824	15.10	0.59
009590158-06	OBS	No	417.765963	170.578776	3903.7	21.264	14.1	13.2	1.08	5824	10.25	0.93
009590158-07	OBS	No	388.530072	448.006998	6062.9	21.343	10.3	11.3	1.08	5824	12.37	1.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009590158-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009590158-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
009590158-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

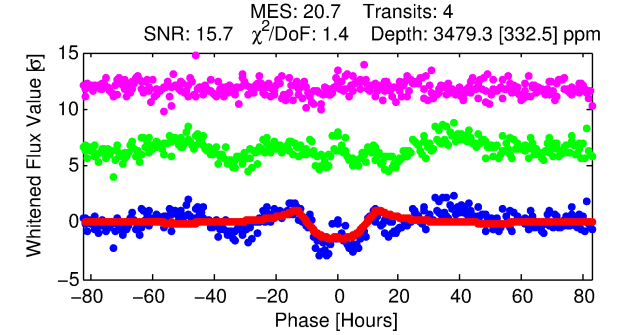
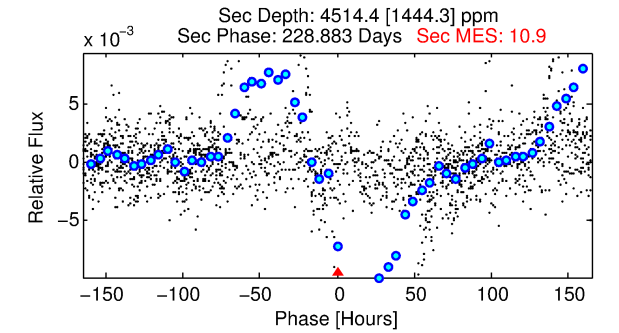
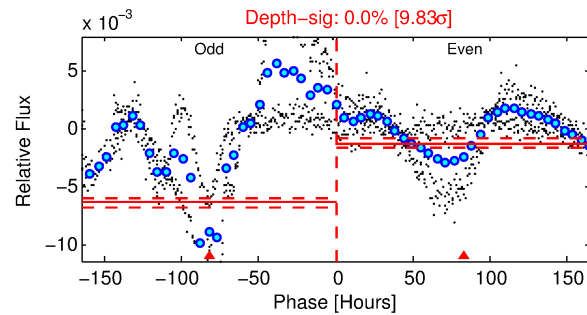
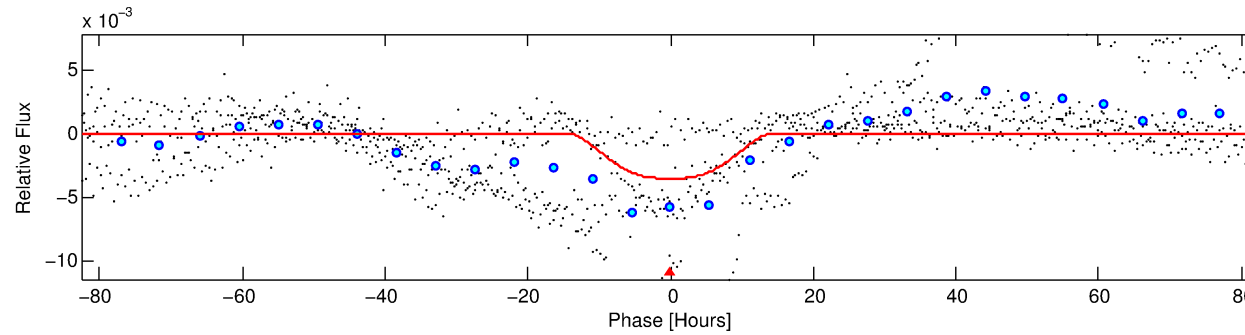
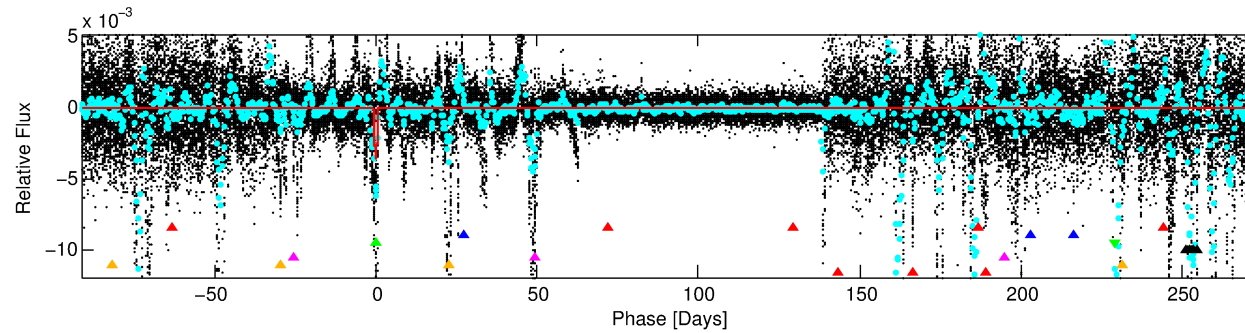
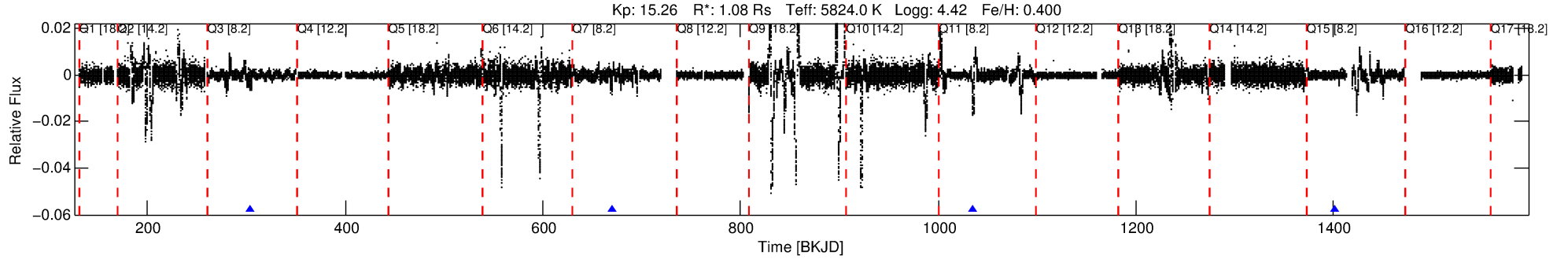
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009590158-03

No Significant Match Found

DV One-Page Summary

KIC: 9590158 Candidate: 3 of 7 Period: 365.508 d



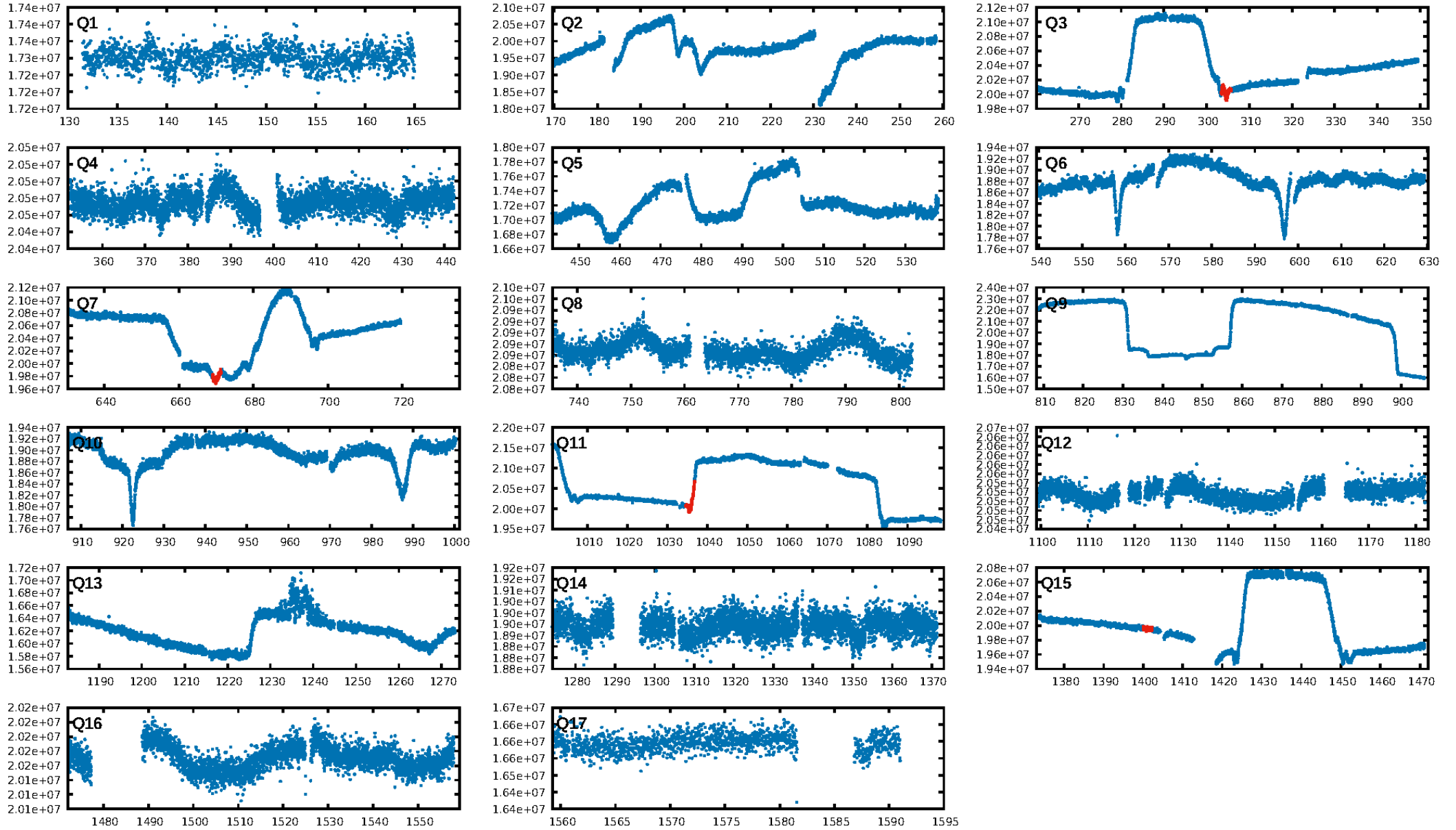
DV Fit Results:

Period = 365.50823 [0.01324] d
Epoch = 304.6262 [0.0256] BKJD
Rp/R* = 0.0673 [0.0041]
a/R* = 53.51 [3.82]
b = 0.93 [0.01]
Seff = 1.12 [0.44]
Teq = 262 [26] K
Rp = 7.94 [2.36] Re
a = 1.0402 [0.2584] AU
Ag = 42580.74 [21337.36] [2.00σ]
Teffp = 5820 [546] K [10.17σ]

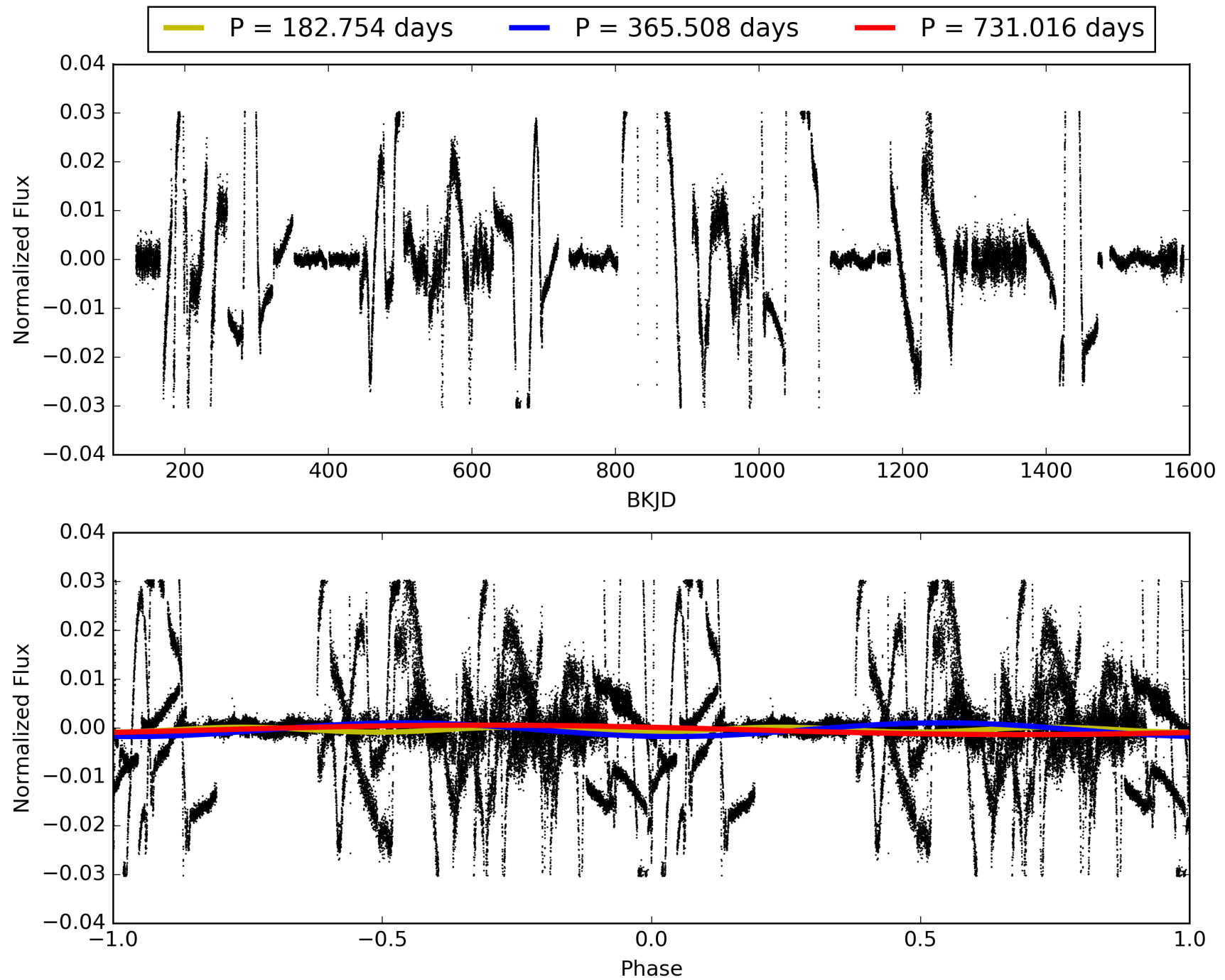
DV Diagnostic Results:

ShortPeriod-sig: 45.6% [0.61σ]
LongPeriod-sig: 100.0% [15.86σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 24.0%
Bootstrap-pfa: 1.19e-14
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.702
Centroid-sig: N/A
Centroid-so: 44.382 arcsec [0.87σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009590158-03, PDC Light Curves

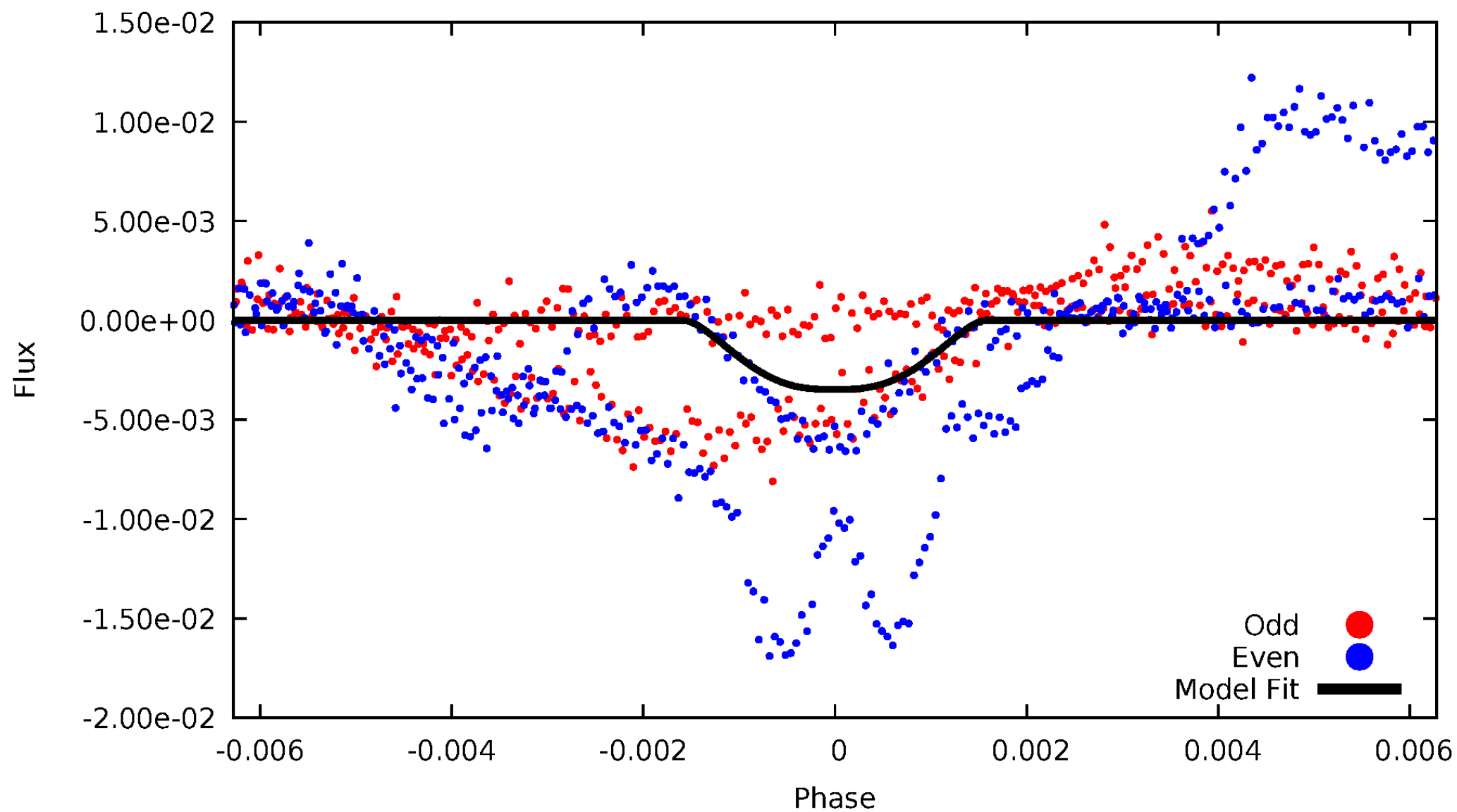


TCE 009590158-03



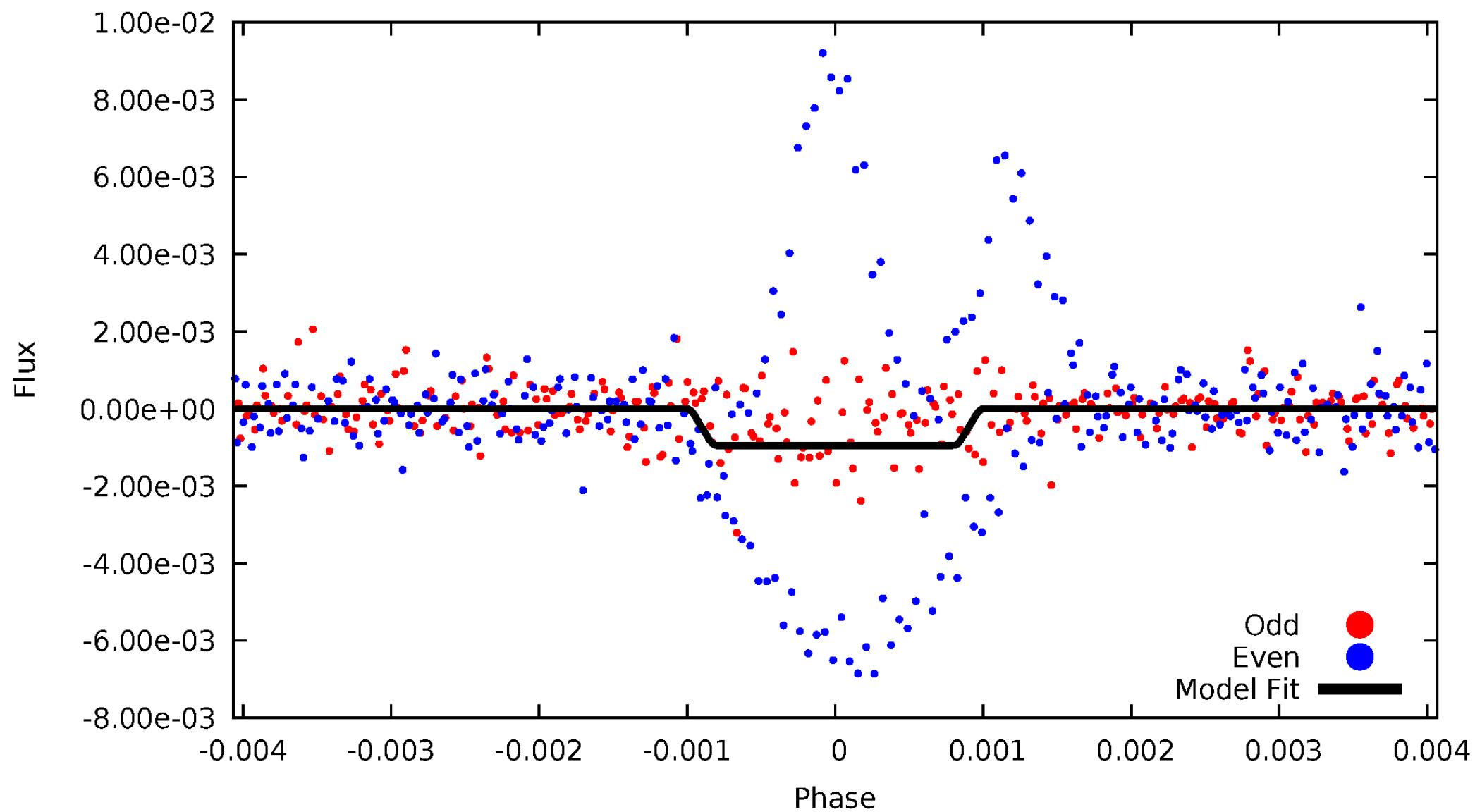
DV Odd/Even

TCE 009590158-03



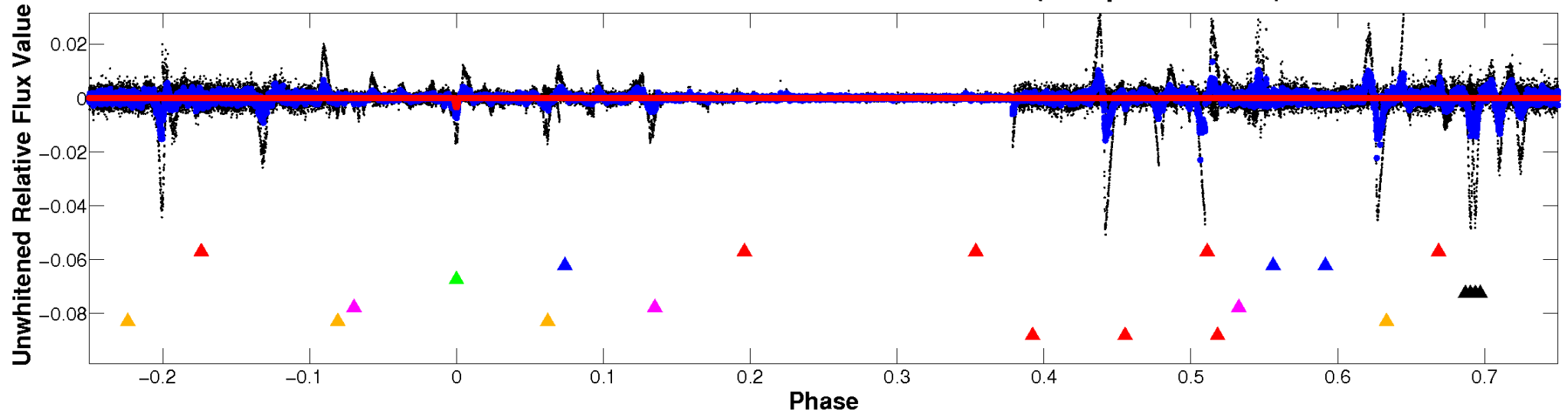
ALT Odd/Even

TCE 009590158-03

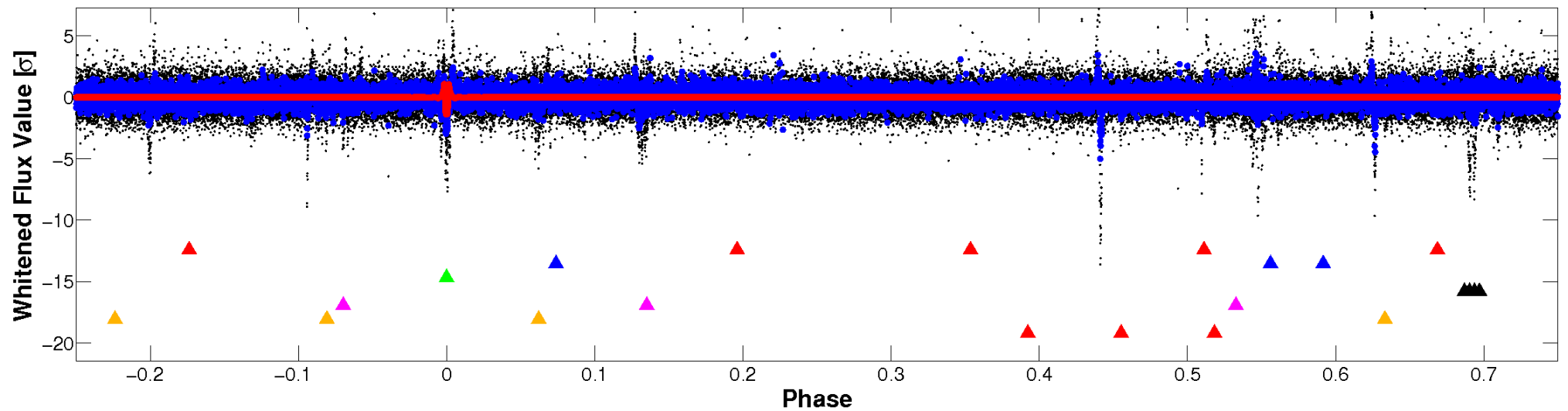


Non-Whitened Vs. Whitened Light Curve

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

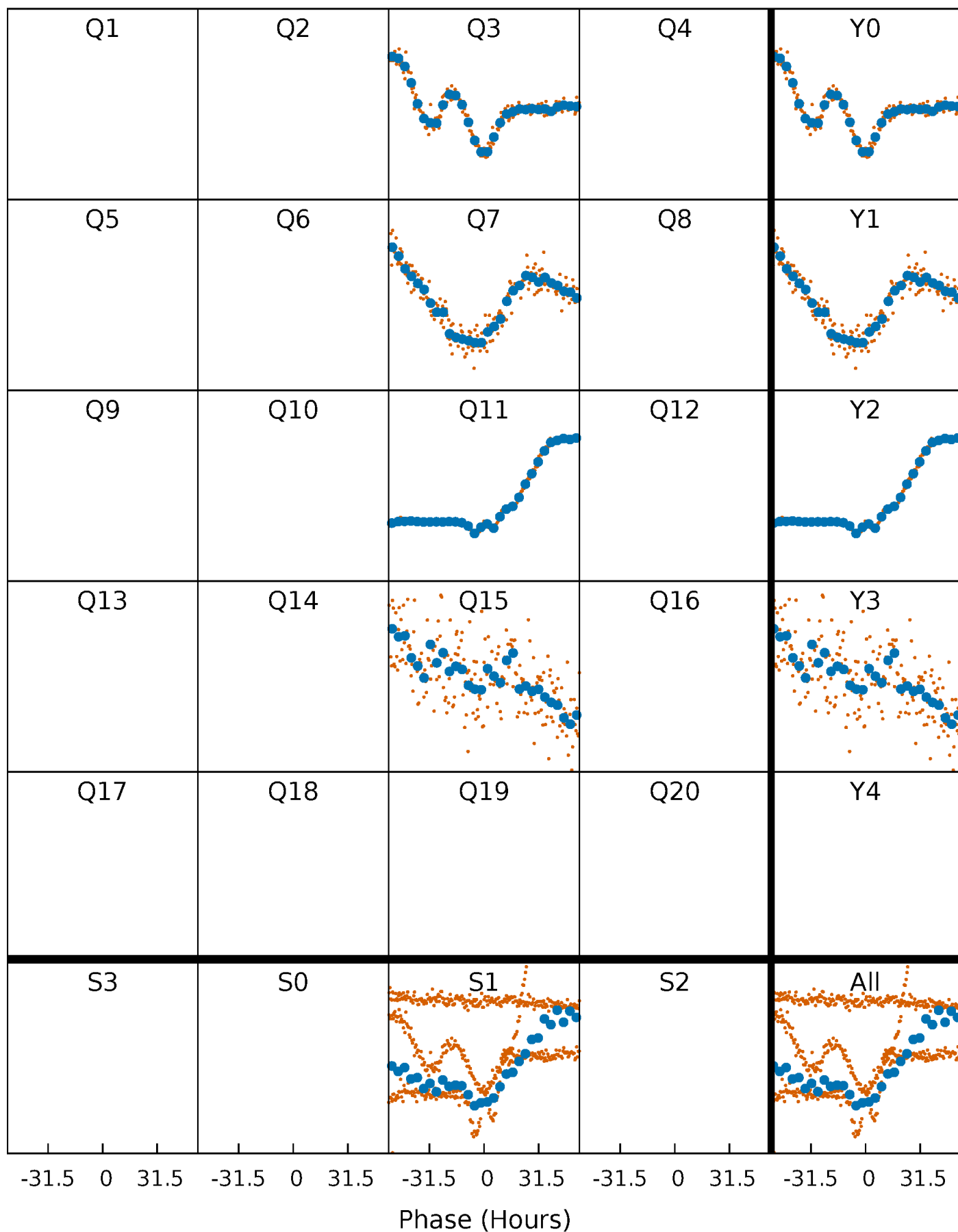


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



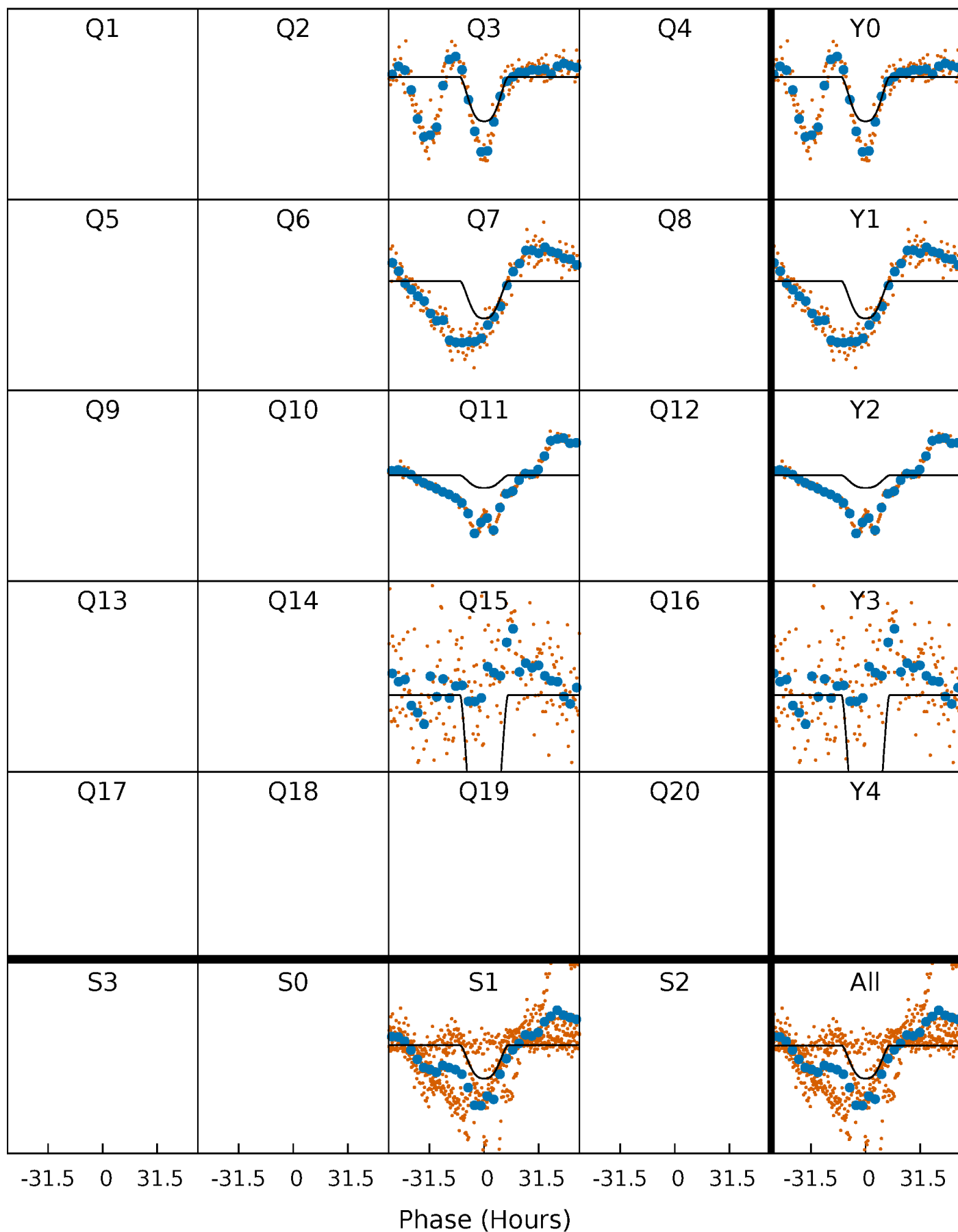
PDC Quarter-Phased Transit Curves

TCE 009590158-03 P=365.508227 Days $T_0=304.626204$ (BKJD)



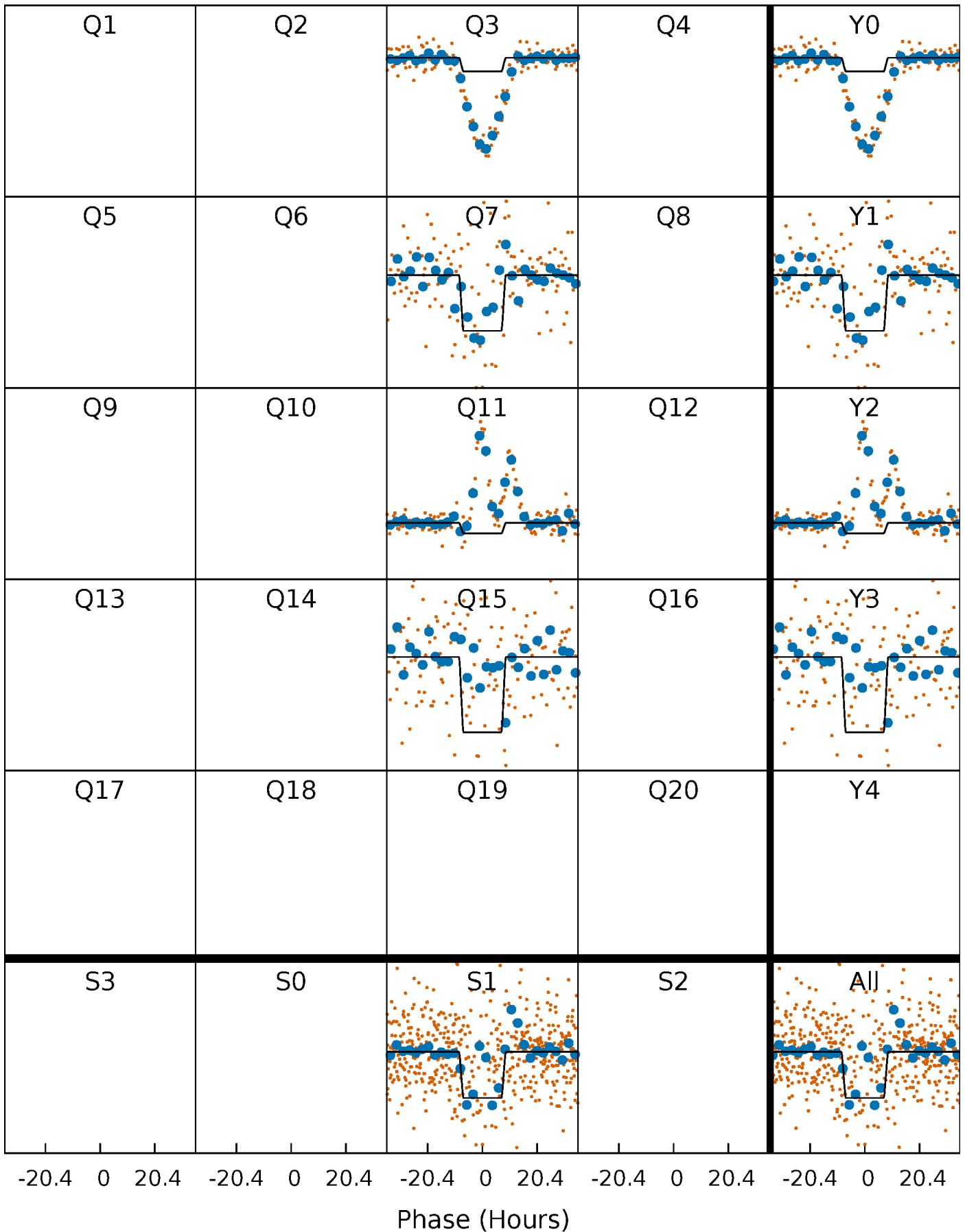
DV Quarter-Phased Transit Curves

TCE 009590158-03 $P=365.508227$ Days $T_0=304.626204$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

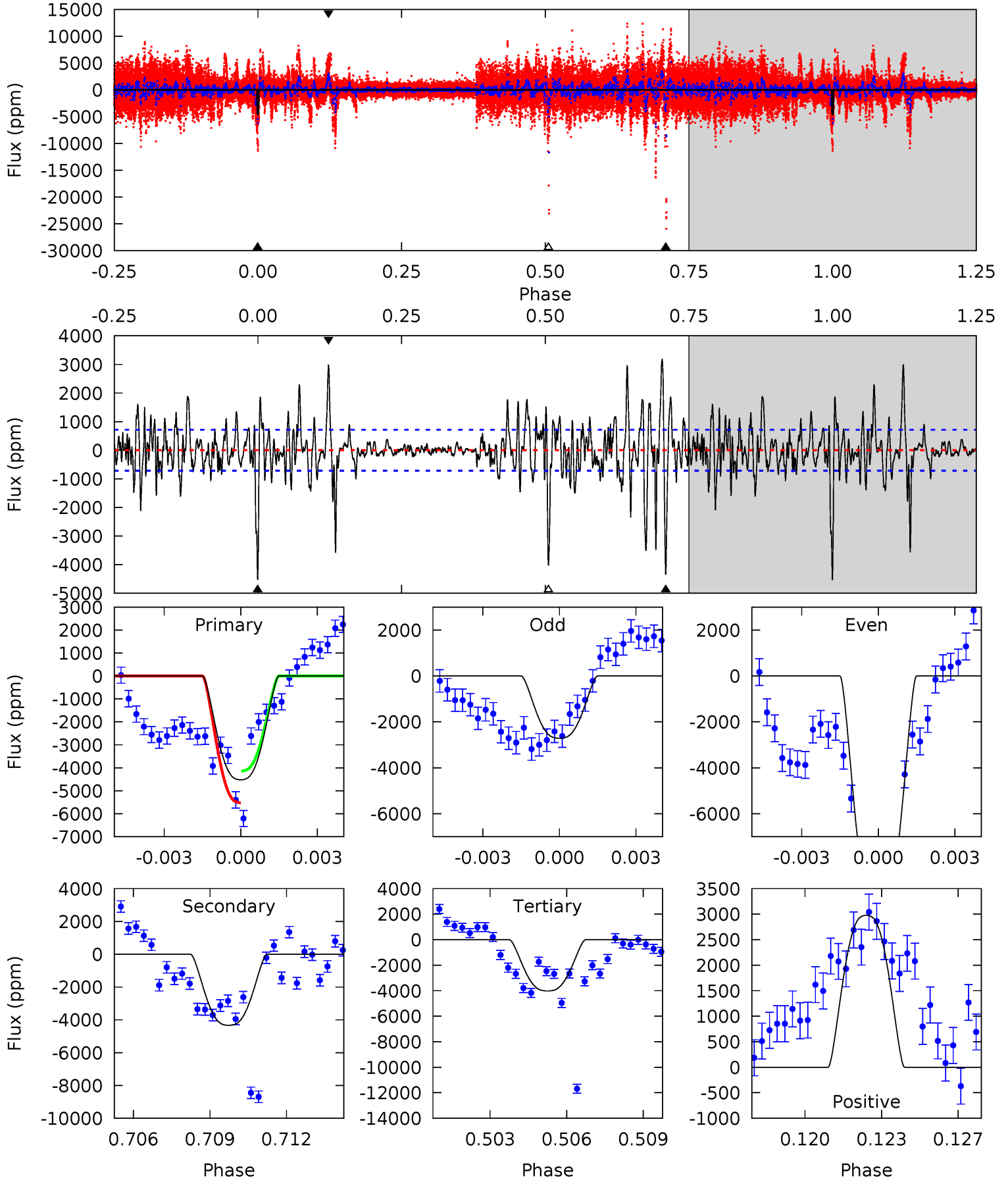
TCE 009590158-03 $P=365.529144$ Days $T_0=304.610152$ (BKJD)



DV Model-Shift Uniqueness Test

009590158-03, P = 365.508227 Days, E = 304.626204 Days

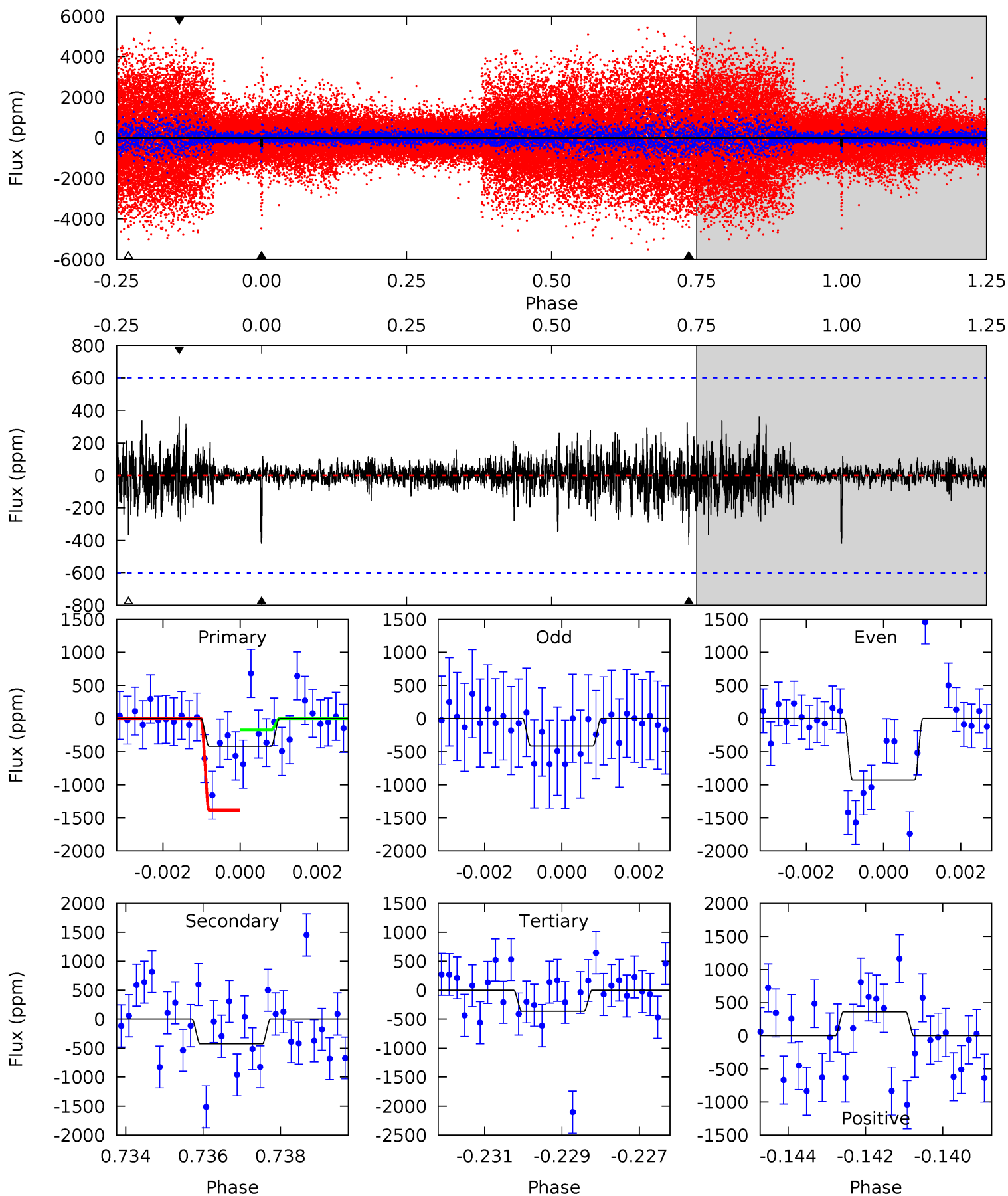
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.2	31.8	29.5	21.9	5.24	2.95	5.44	3.67	11.3	2.29	9.95	15.7	1.23	0.41	4.83



Alt Model-Shift Uniqueness Test

009590158-03, P = 365.529144 Days, E = 304.610152 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.71	3.76	3.22	3.20	5.33	3.09	0.64	0.49	0.51	0.54	0.56	2.61	1.63	0.46	5.32



Stellar Parameters For KIC 009590158

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5824^{+182}_{-223}	$4.420^{+0.067}_{-0.202}$	$0.400^{+0.050}_{-0.300}$	$1.082^{+0.315}_{-0.135}$	$1.123^{+0.122}_{-0.150}$	$1.248^{+0.446}_{-0.637}$
	+3%/-4%	+2%/-5%	+12%/-75%	+29%/-12%	+11%/-13%	+36%/-51%
Source	PHO1	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 009590158-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-4335 ± 136	$8.23^{+1.29}_{-0.90}$	373^{+27}_{-20}	5775^{+263}_{-280}	37799^{+8642}_{-9218}
Alt.	-425 ± 113	$3.80^{+0.75}_{-0.58}$	373^{+27}_{-20}	4835^{+414}_{-411}	16939^{+8502}_{-6552}

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

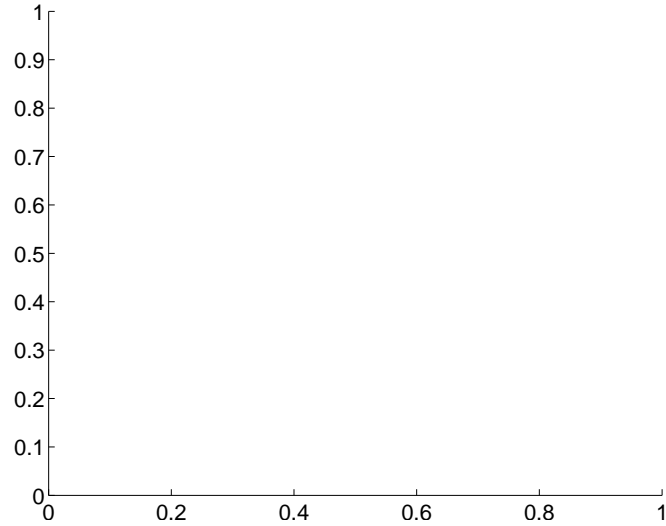
Supplemental centroid analysis for 009590158-03. Kepler magnitude: 15.26. Transit SNR 15.75

There are 0 quarters with good PRF difference image offsets

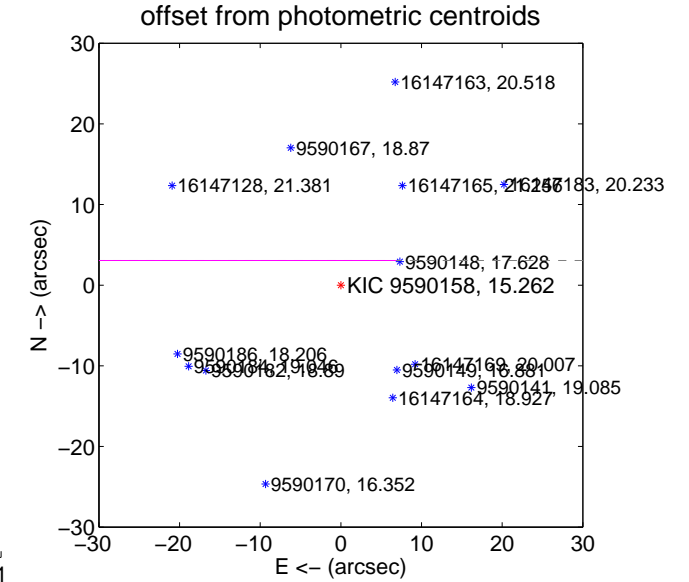
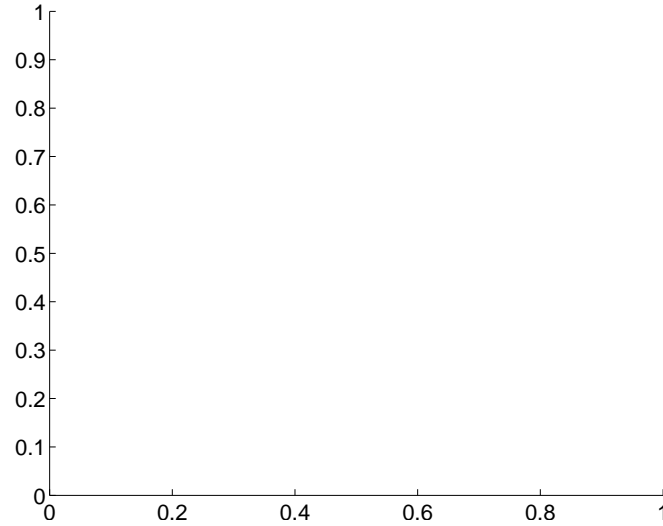
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	44.38 ± 51.05	0.87	44.28 ± 51.14	3.06 ± 27.51

There is no PRF-fit offset from OOT-fit

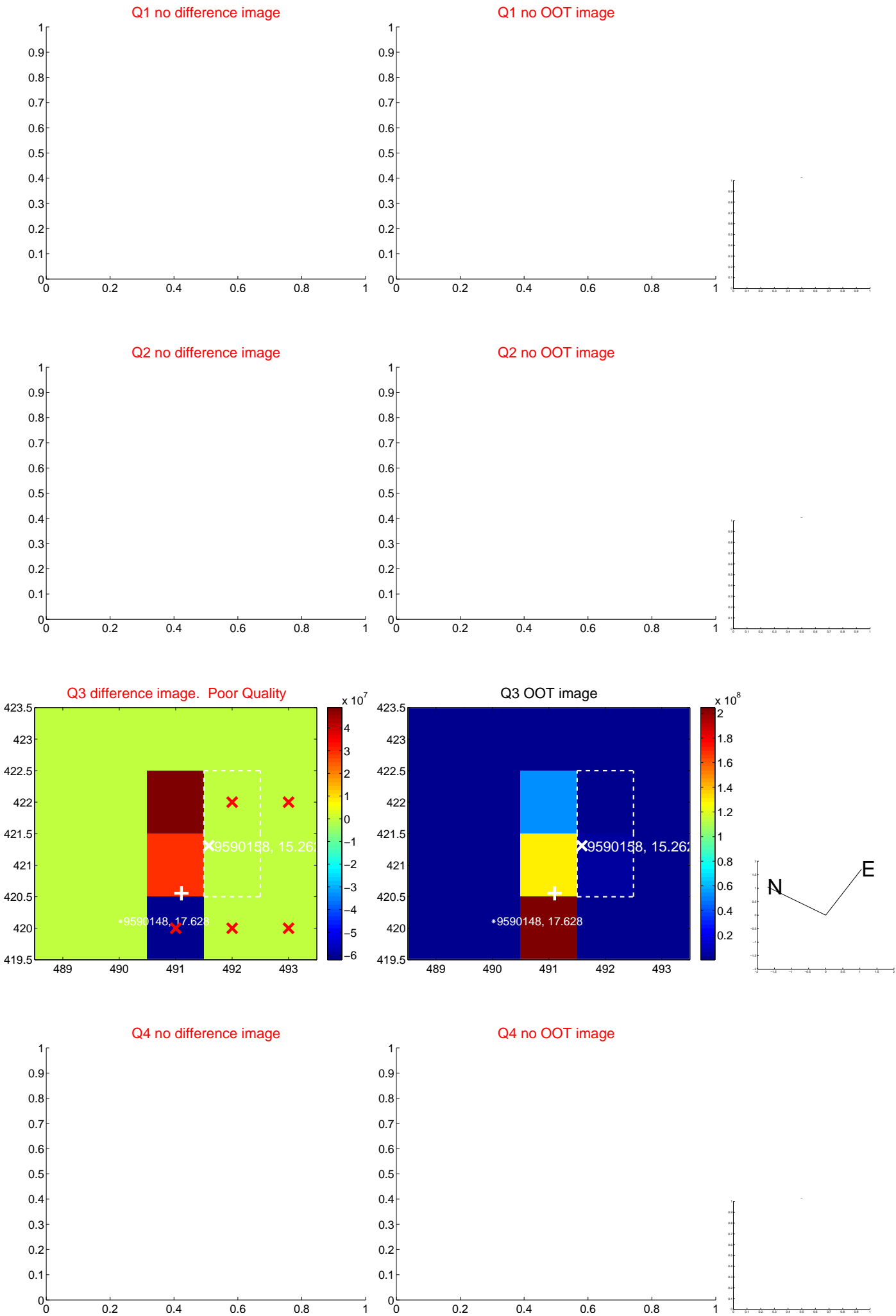


There is no PRF-fit offset from KIC

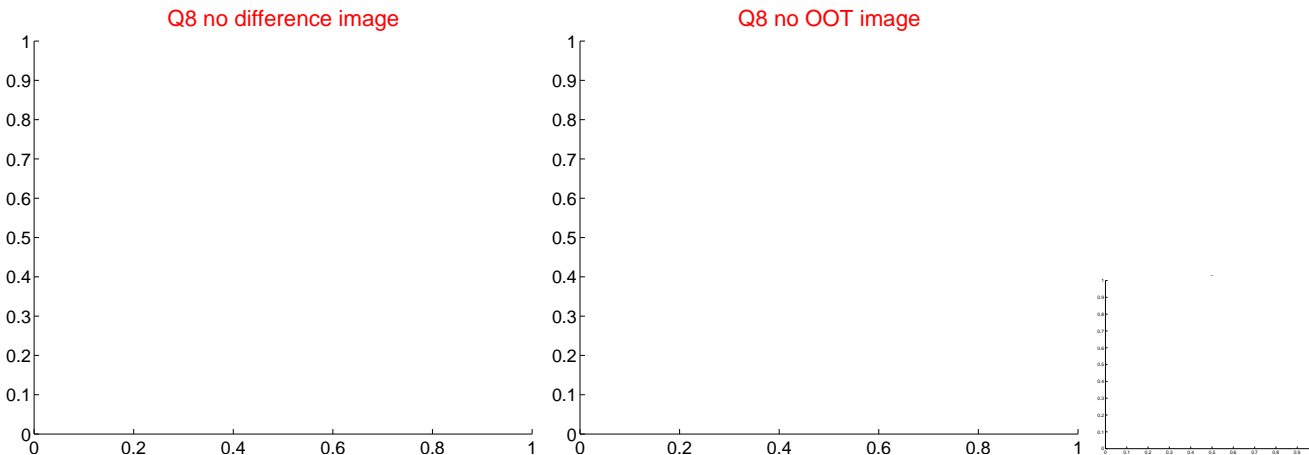
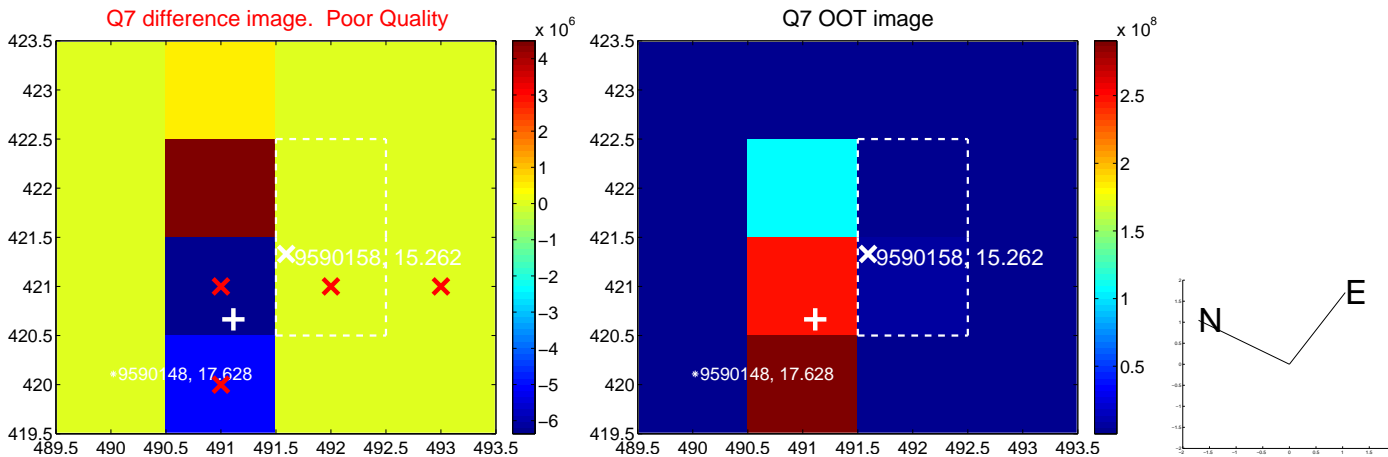
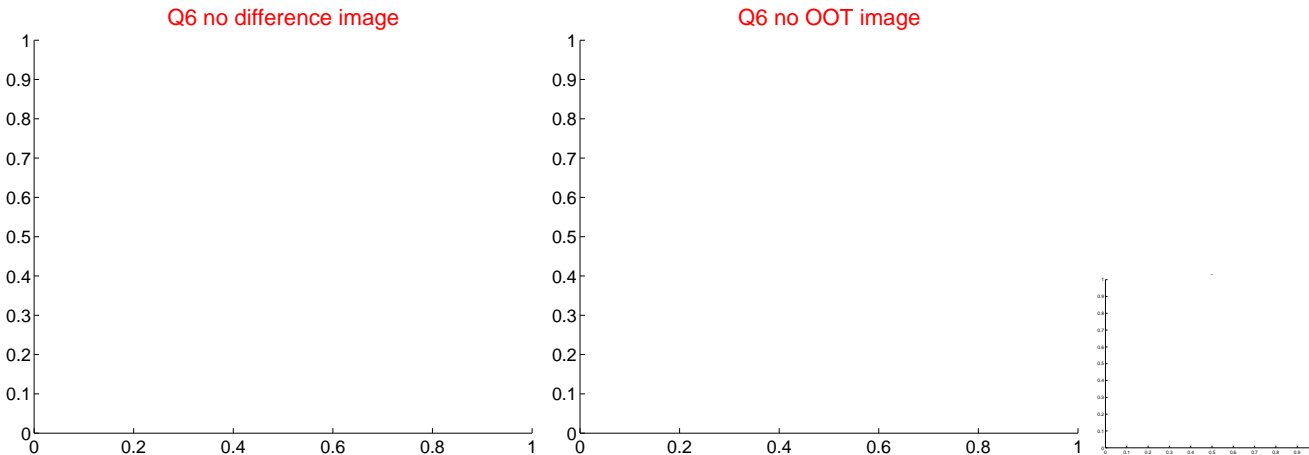
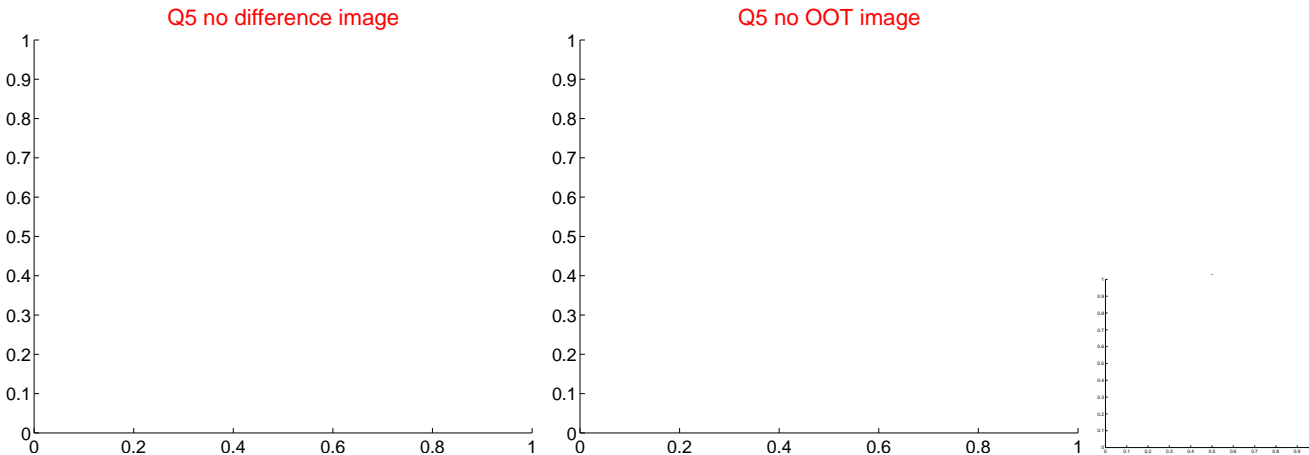


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



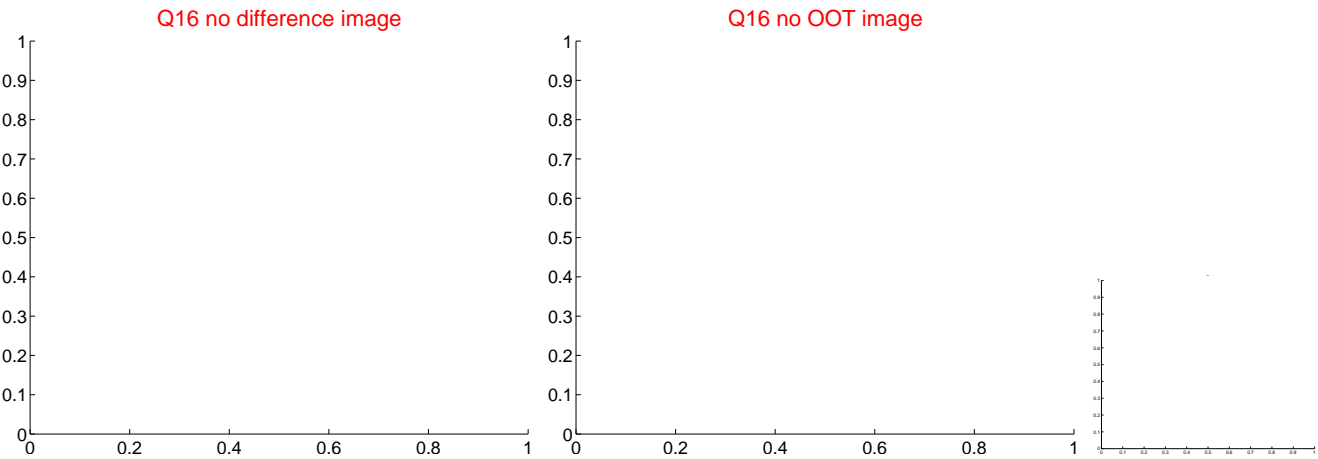
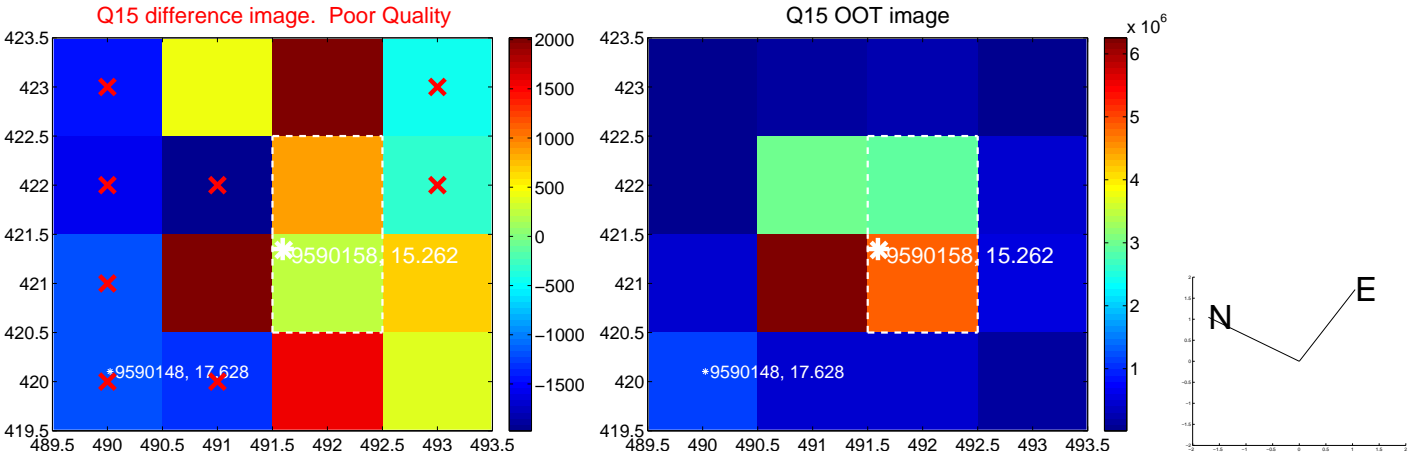
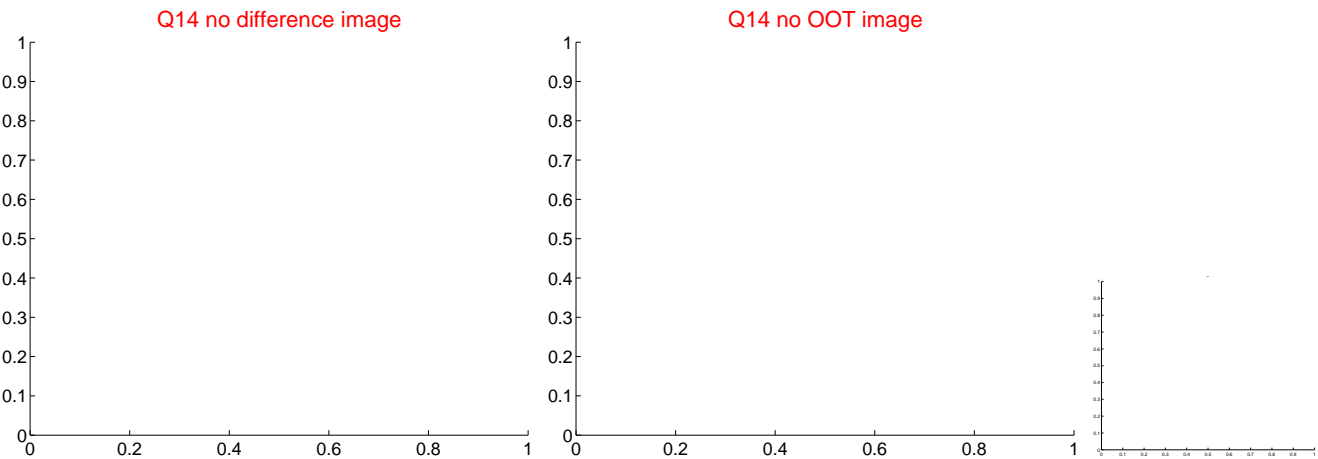
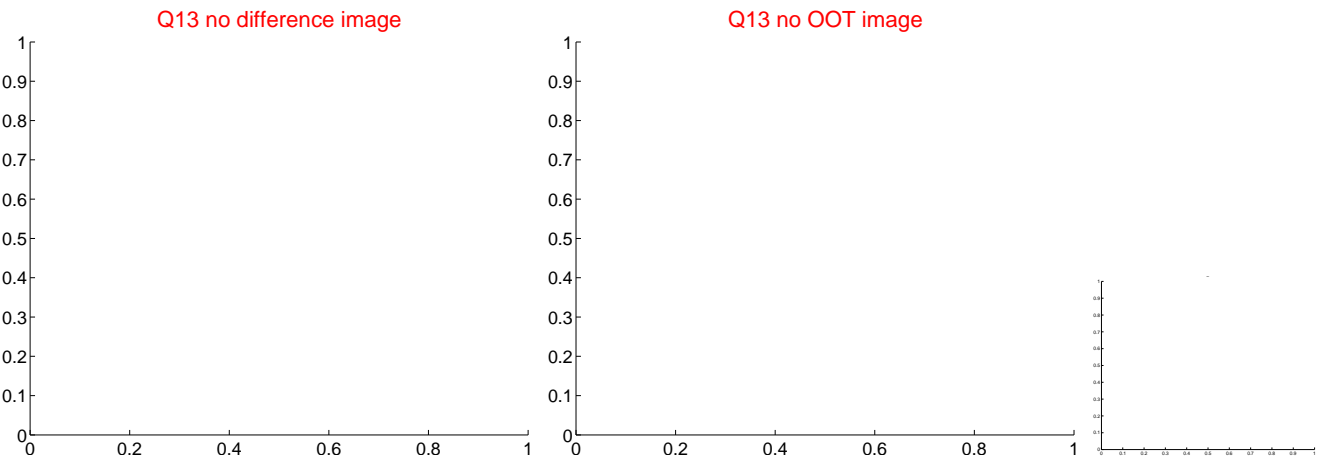
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



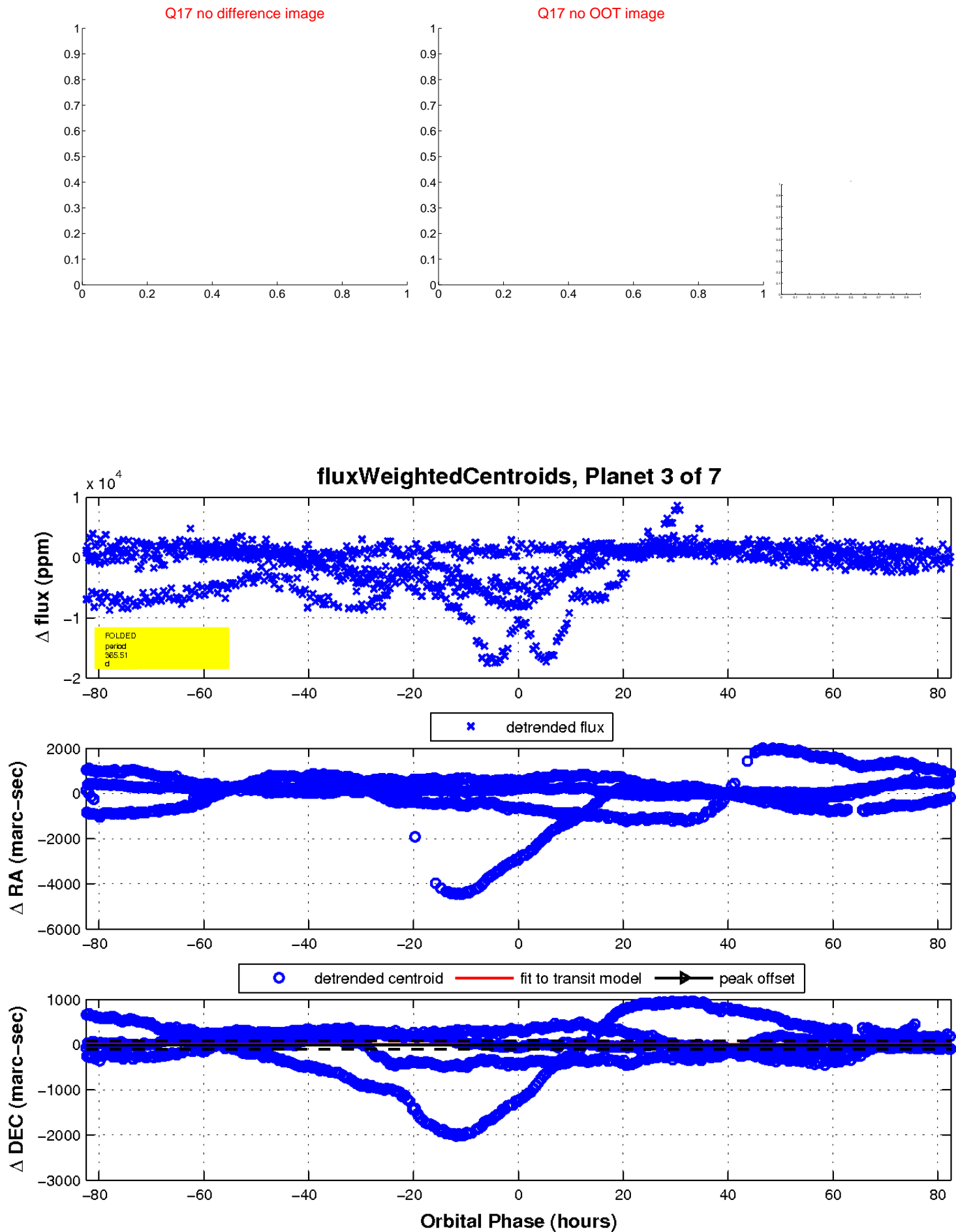
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



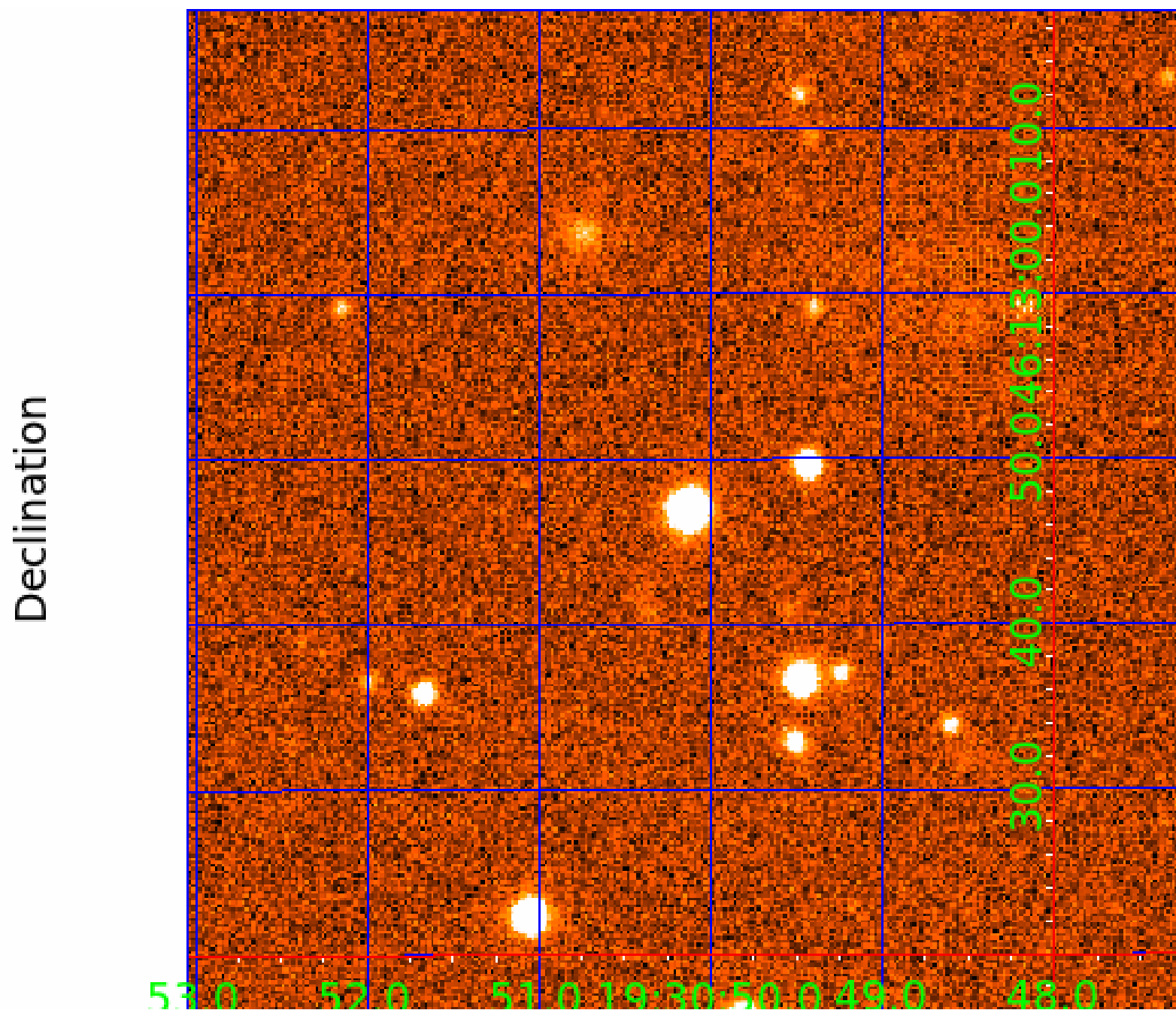
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



UKIRT Image



KIC 009590158

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})
009590158-01	OBS	No	307.922795	241.128520	1489.7	7.839	25.4	2.5	1.08	5824	4.30	1.40
009590158-02	OBS	No	541.765859	155.366599	6462.8	20.779	21.7	20.1	1.08	5824	10.37	0.66
009590158-03	OBS	No	365.508227	304.626204	3479.3	27.535	20.7	15.7	1.08	5824	7.94	1.11
009590158-04	OBS	No	364.278043	193.910444	12839.3	40.056	25.3	21.0	1.08	5824	22.06	1.12
009590158-05	OBS	No	585.692415	279.142242	5832.3	27.331	18.5	20.3	1.08	5824	15.10	0.59
009590158-06	OBS	No	417.765963	170.578776	3903.7	21.264	14.1	13.2	1.08	5824	10.25	0.93
009590158-07	OBS	No	388.530072	448.006998	6062.9	21.343	10.3	11.3	1.08	5824	12.37	1.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009590158-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009590158-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
009590158-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

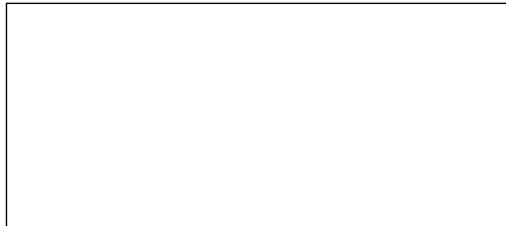
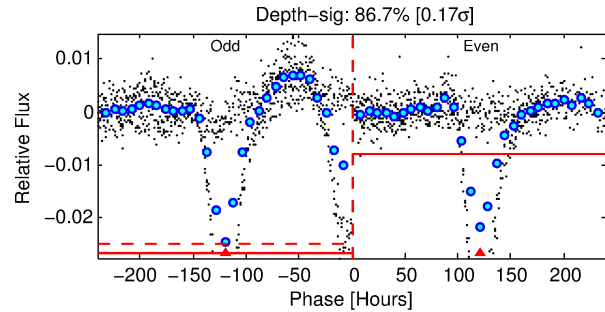
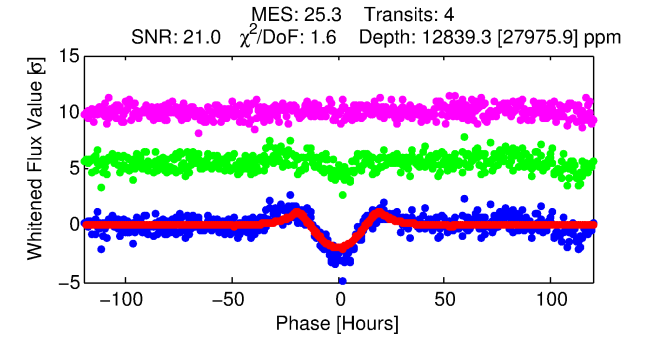
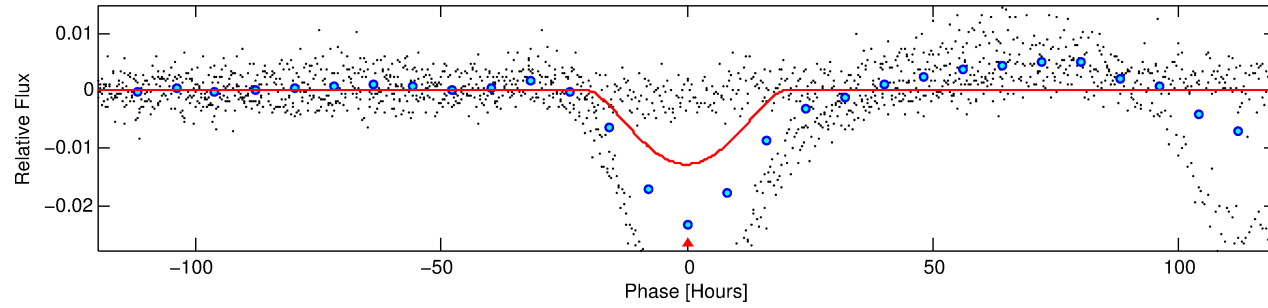
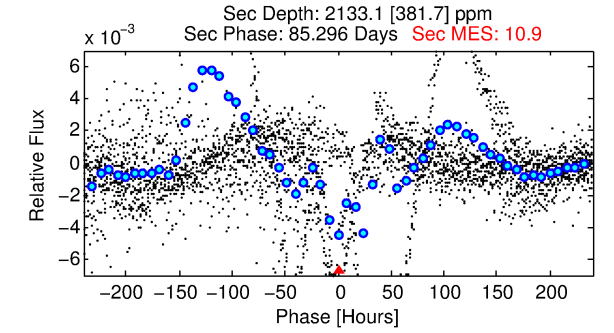
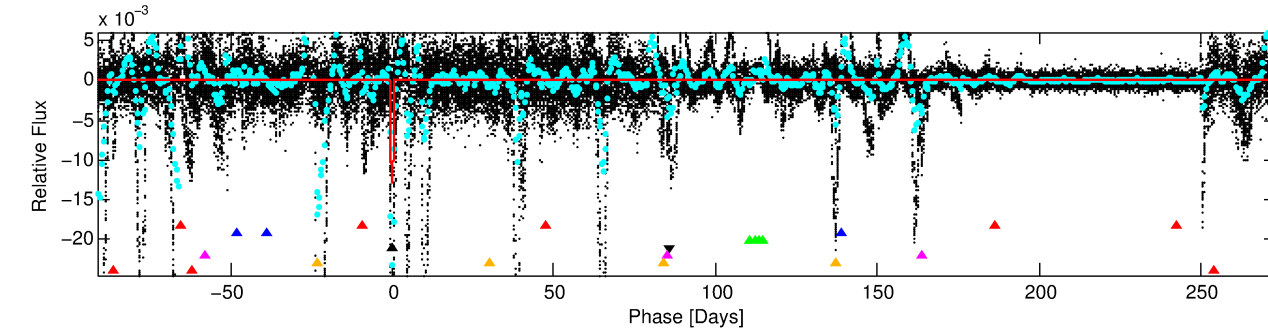
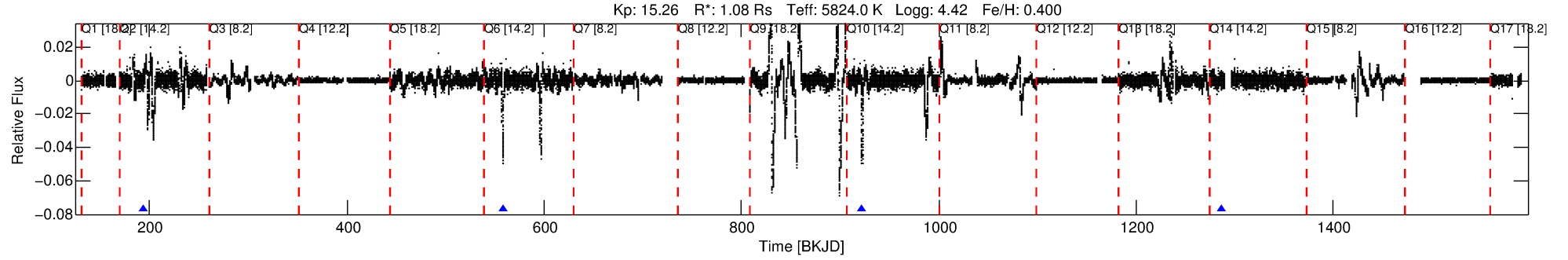
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009590158-04

No Significant Match Found

DV One-Page Summary

KIC: 9590158 Candidate: 4 of 7 Period: 364.278 d



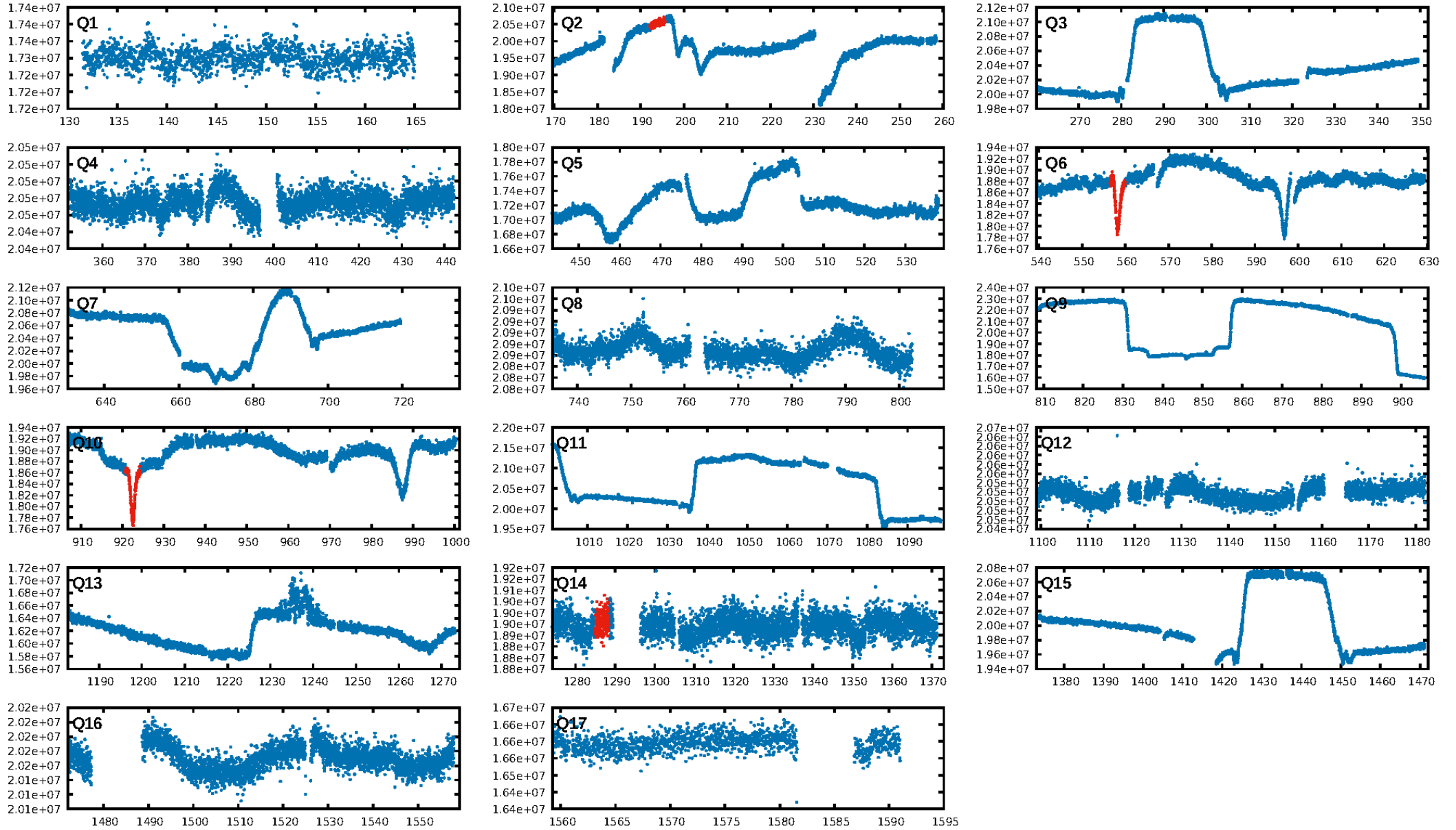
DV Fit Results:

Period = 364.27804 [0.01628] d
Epoch = 193.9104 [0.0359] BKJD
Rp/R* = 0.1868 [0.2413]
a/R* = 44.42 [7.20]
b = 1.00 [0.07]
Seff = 1.12 [0.44]
Teq = 262 [26] K
Rp = 22.06 [29.21] Re
a = 1.0379 [0.2578] AU
Ag = 2597.40 [6791.86] [0.38σ]
Teffp = 2896 [1878] K [1.40σ]

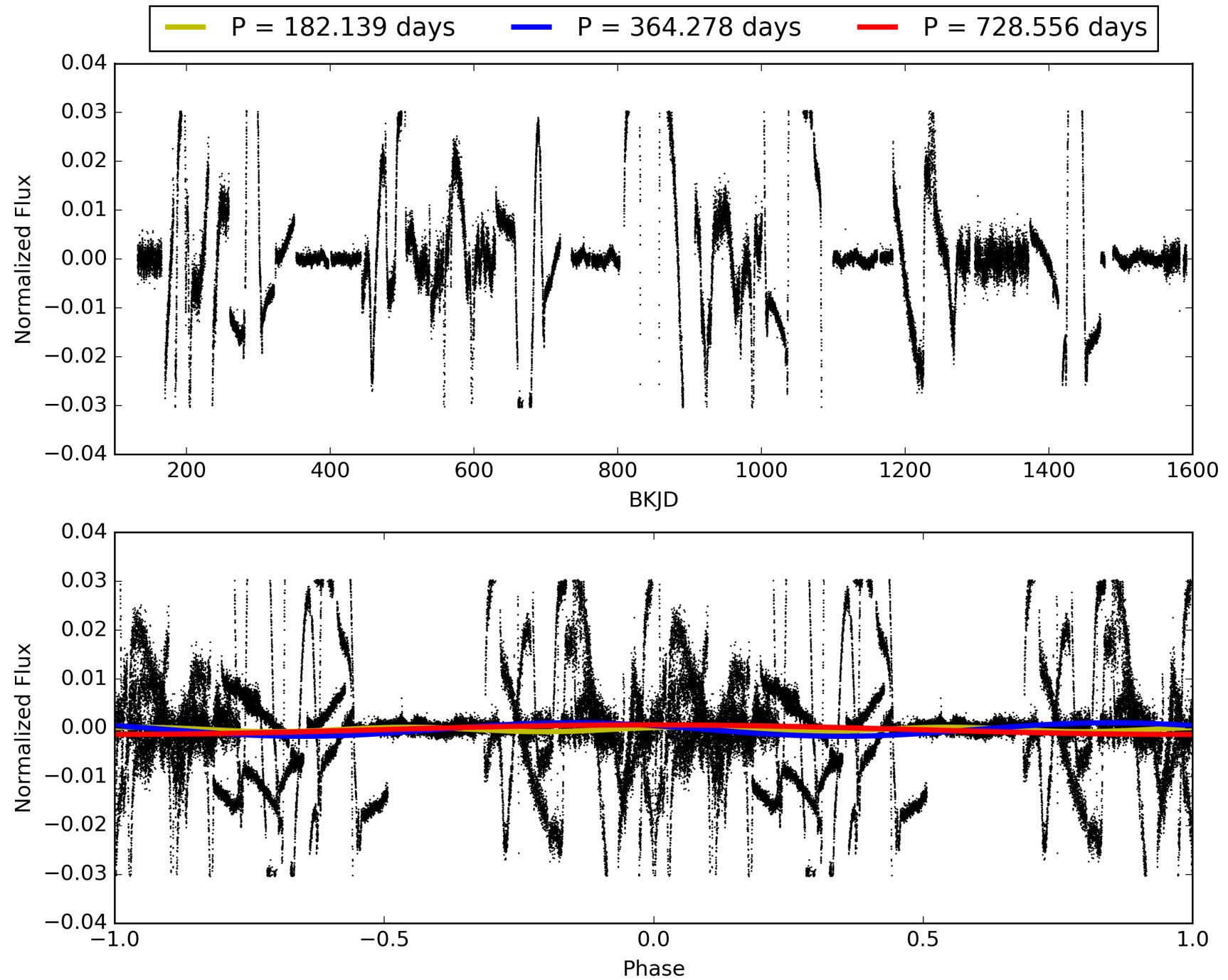
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [33.14σ]
LongPeriod-sig: 45.6% [0.61σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 1.89e-19
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -2.651
Centroid-sig: N/A
Centroid-so: 0.820 arcsec [5.44σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [4/4]

TCE 009590158-04, PDC Light Curves

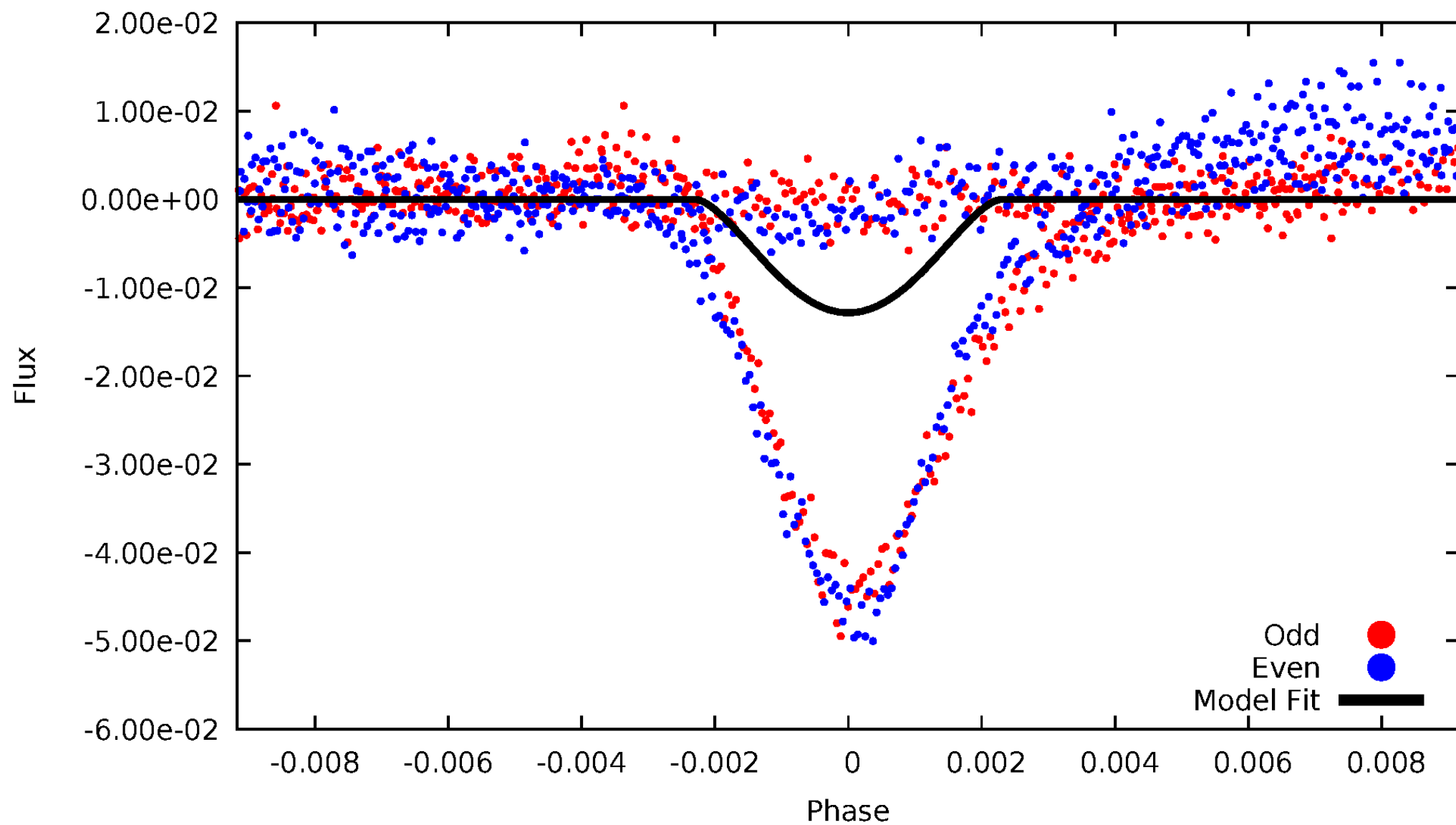


TCE 009590158-04



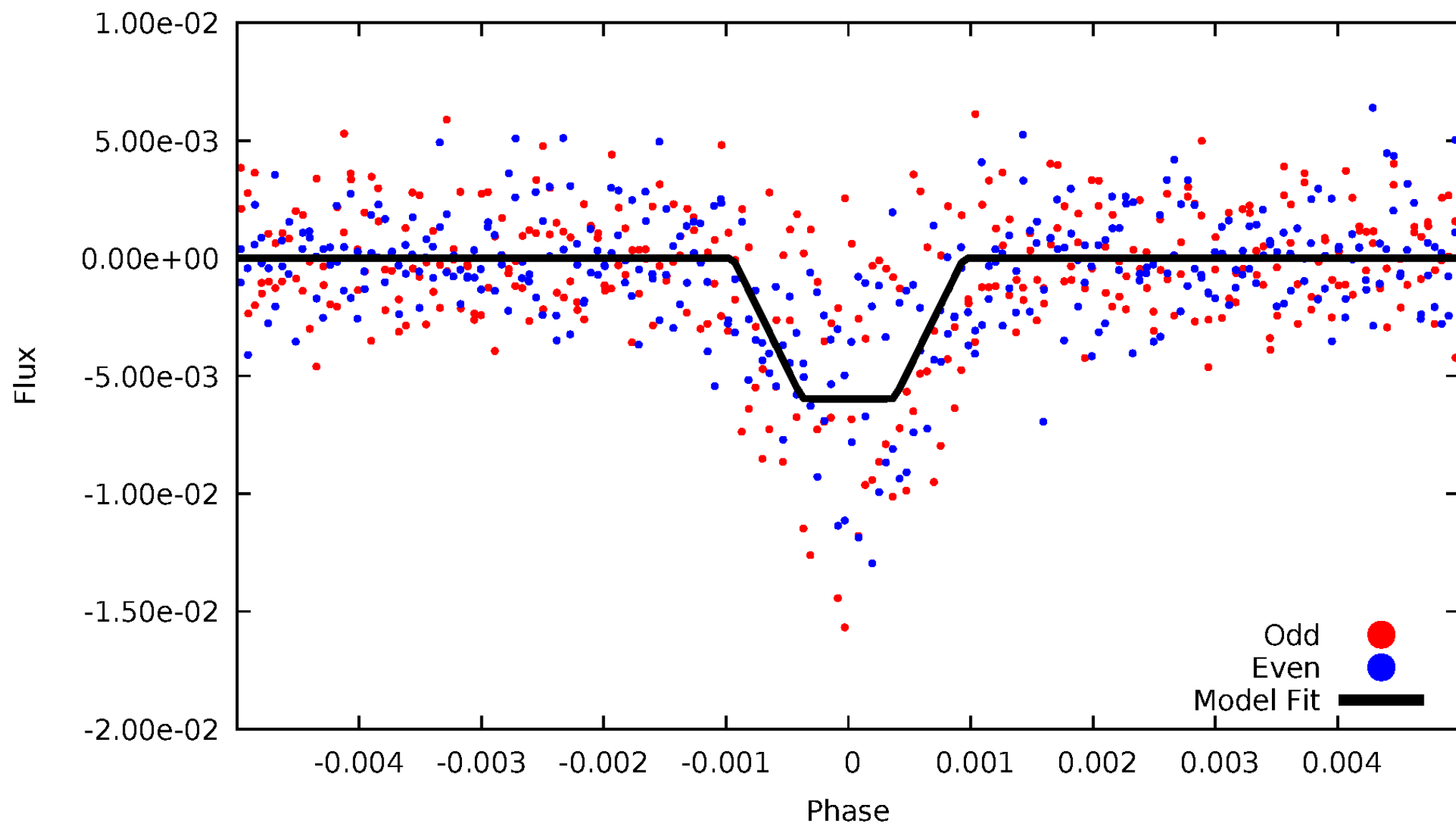
DV Odd/Even

TCE 009590158-04



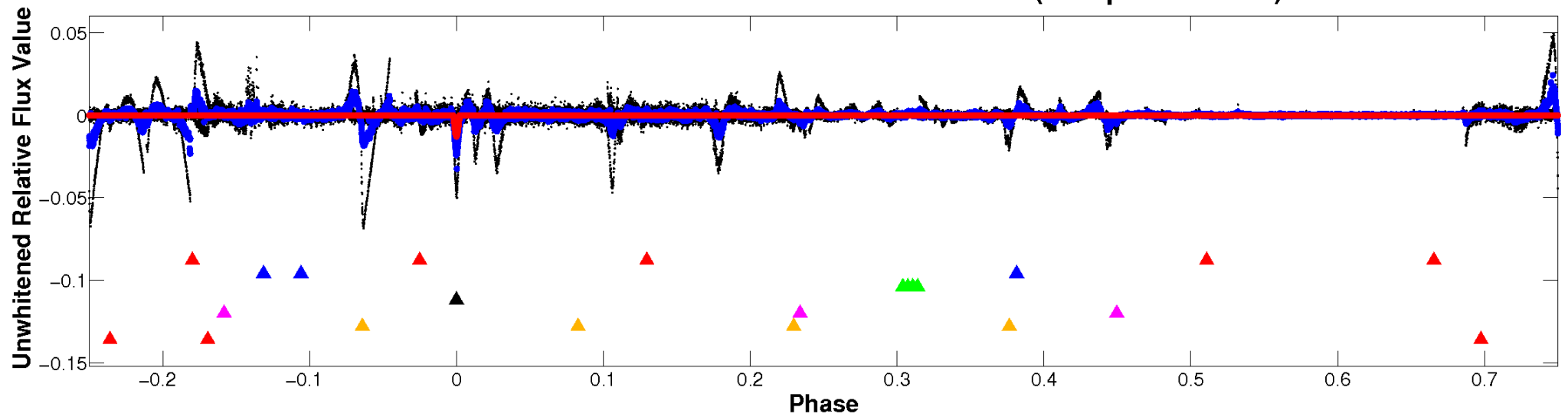
ALT Odd/Even

TCE 009590158-04

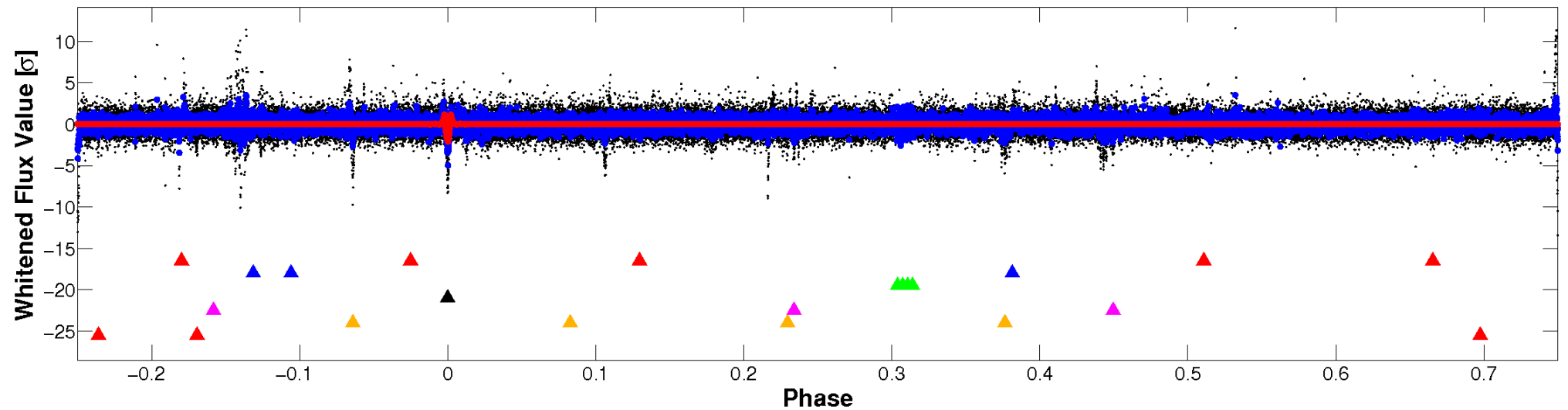


Non-Whitened Vs. Whitened Light Curve

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

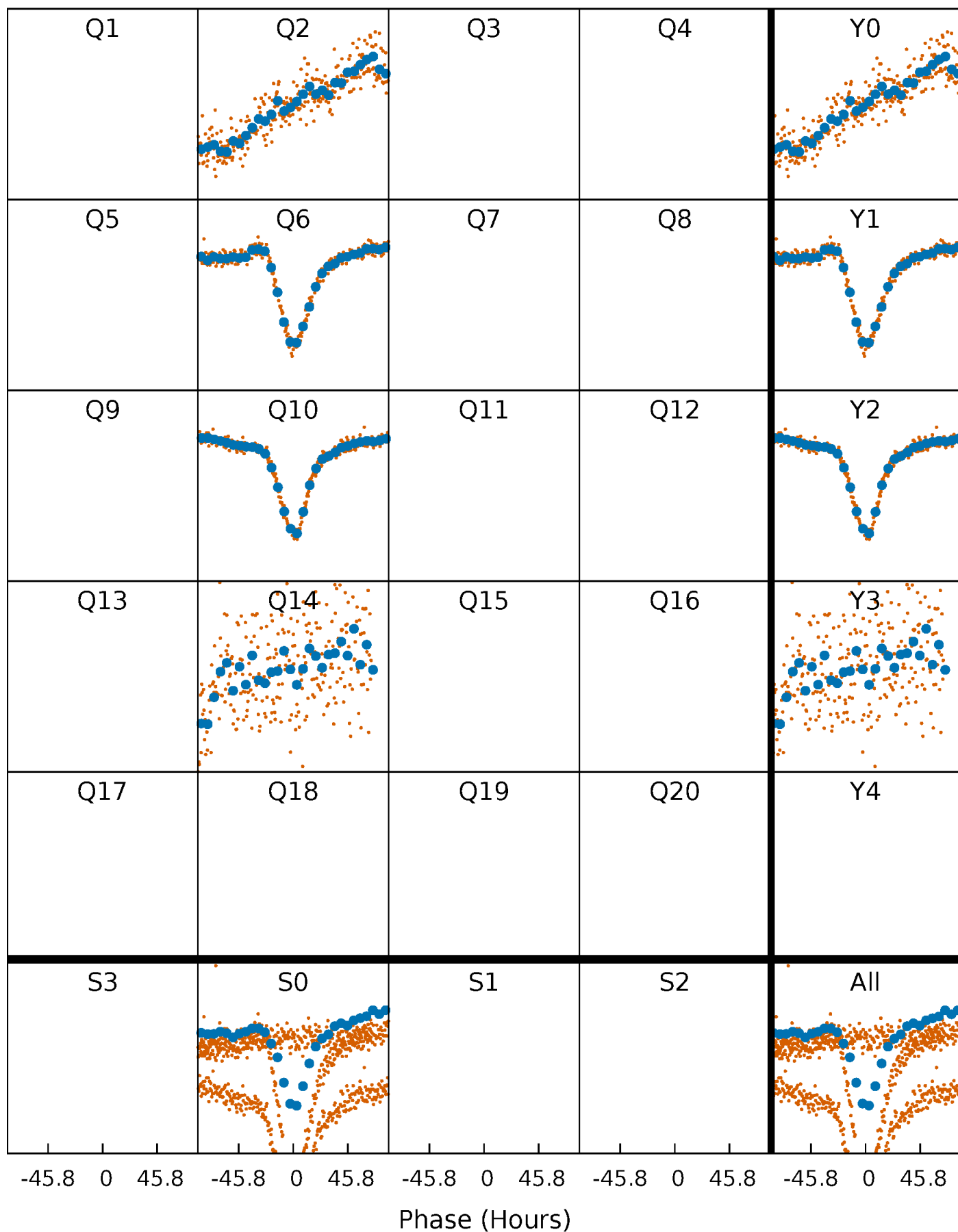


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



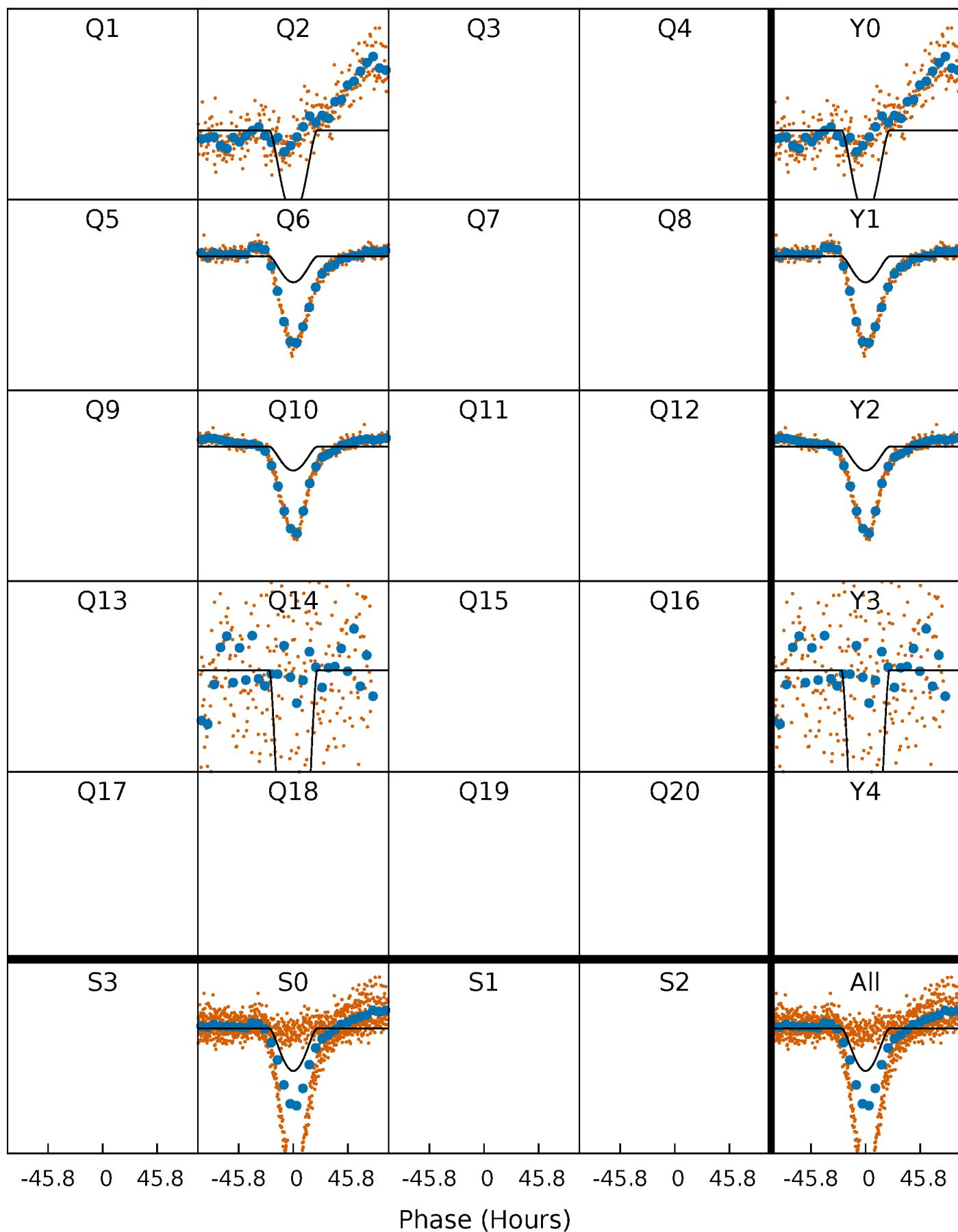
PDC Quarter-Phased Transit Curves

TCE 009590158-04 P=364.278043 Days $T_0=193.910444$ (BKJD)



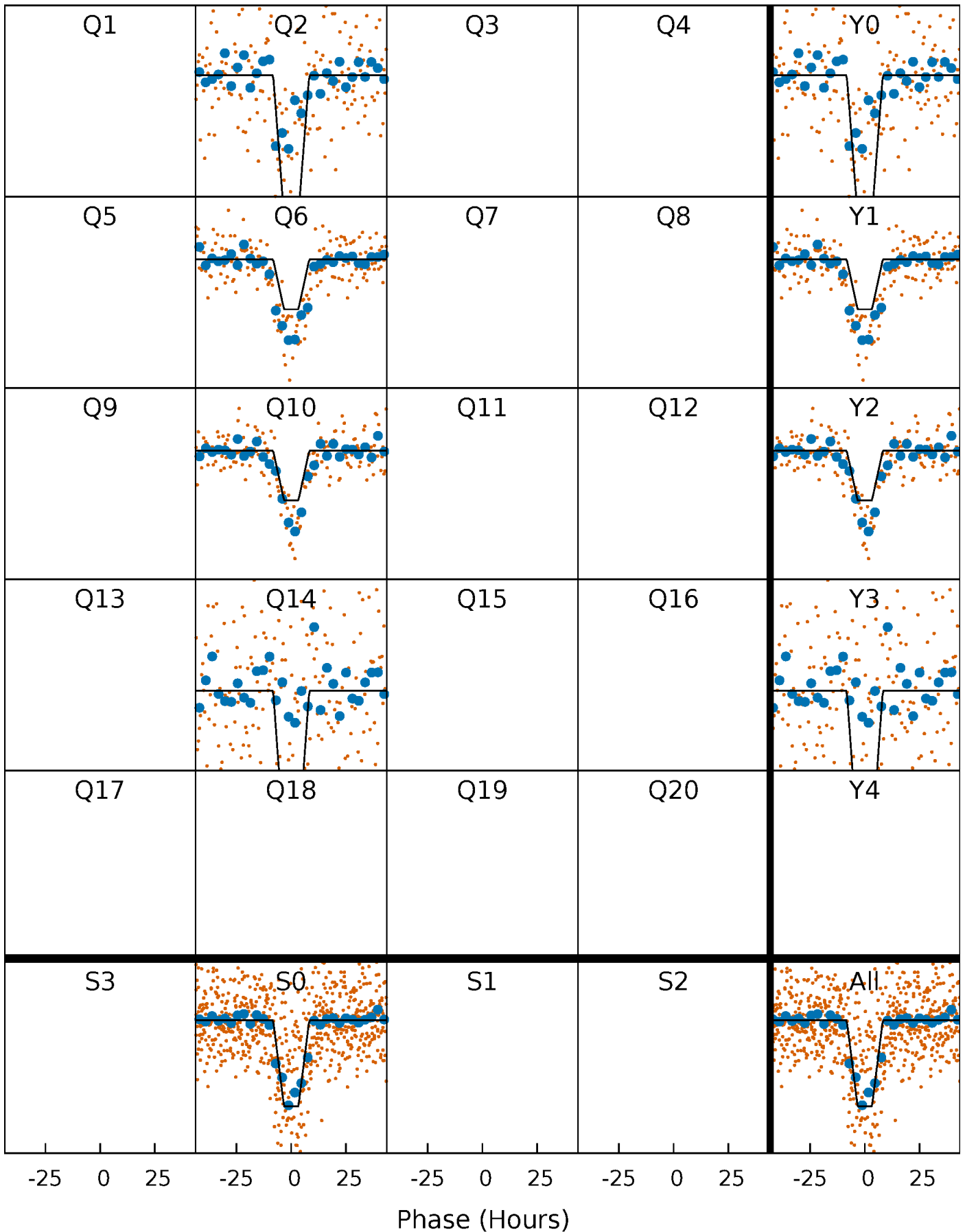
DV Quarter-Phased Transit Curves

TCE 009590158-04 P=364.278043 Days $T_0=193.910444$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

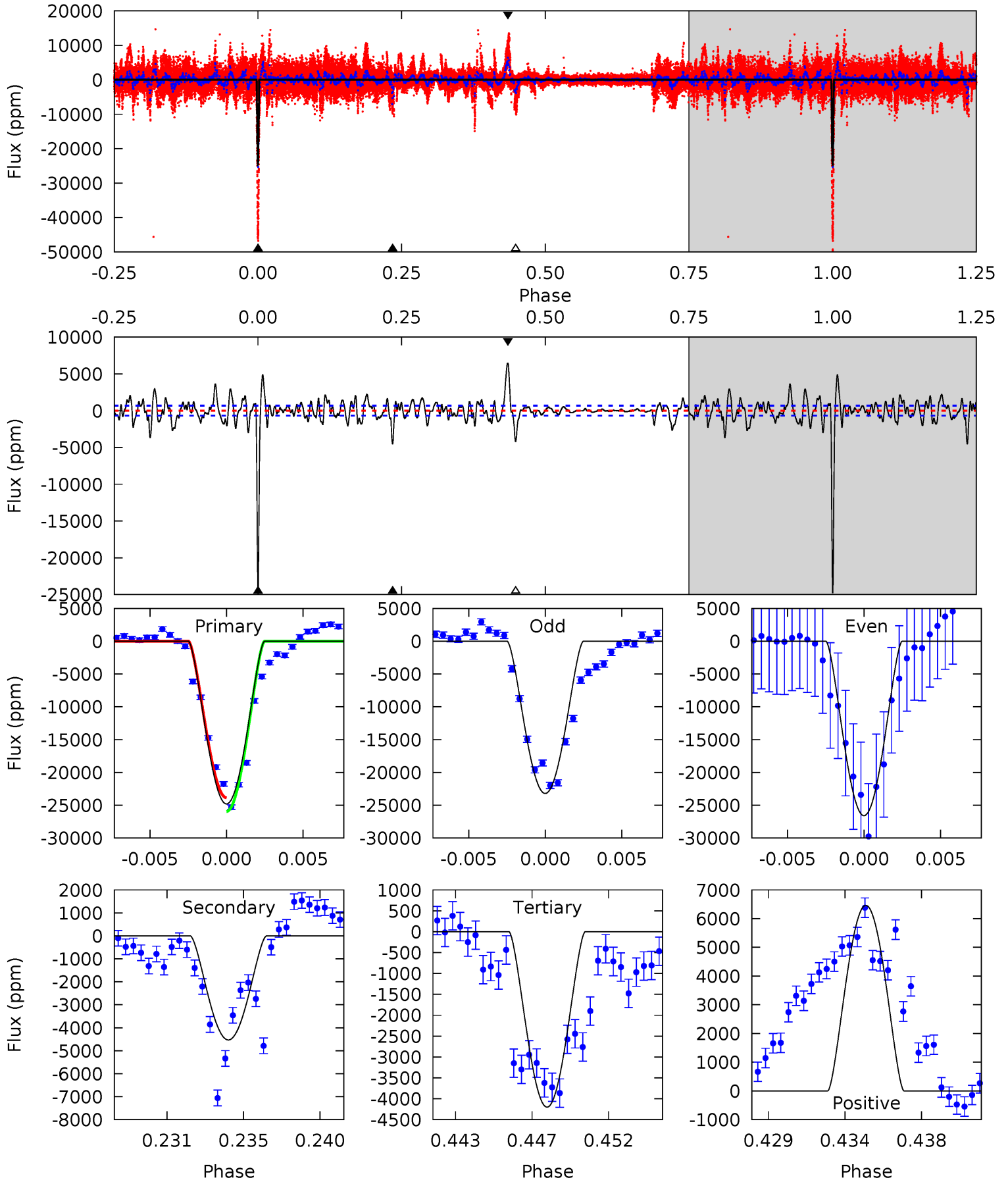
TCE 009590158-04 P=364.371242 Days $T_0=193.786615$ (BKJD)



DV Model-Shift Uniqueness Test

009590158-04, P = 364.278043 Days, E = 193.910444 Days

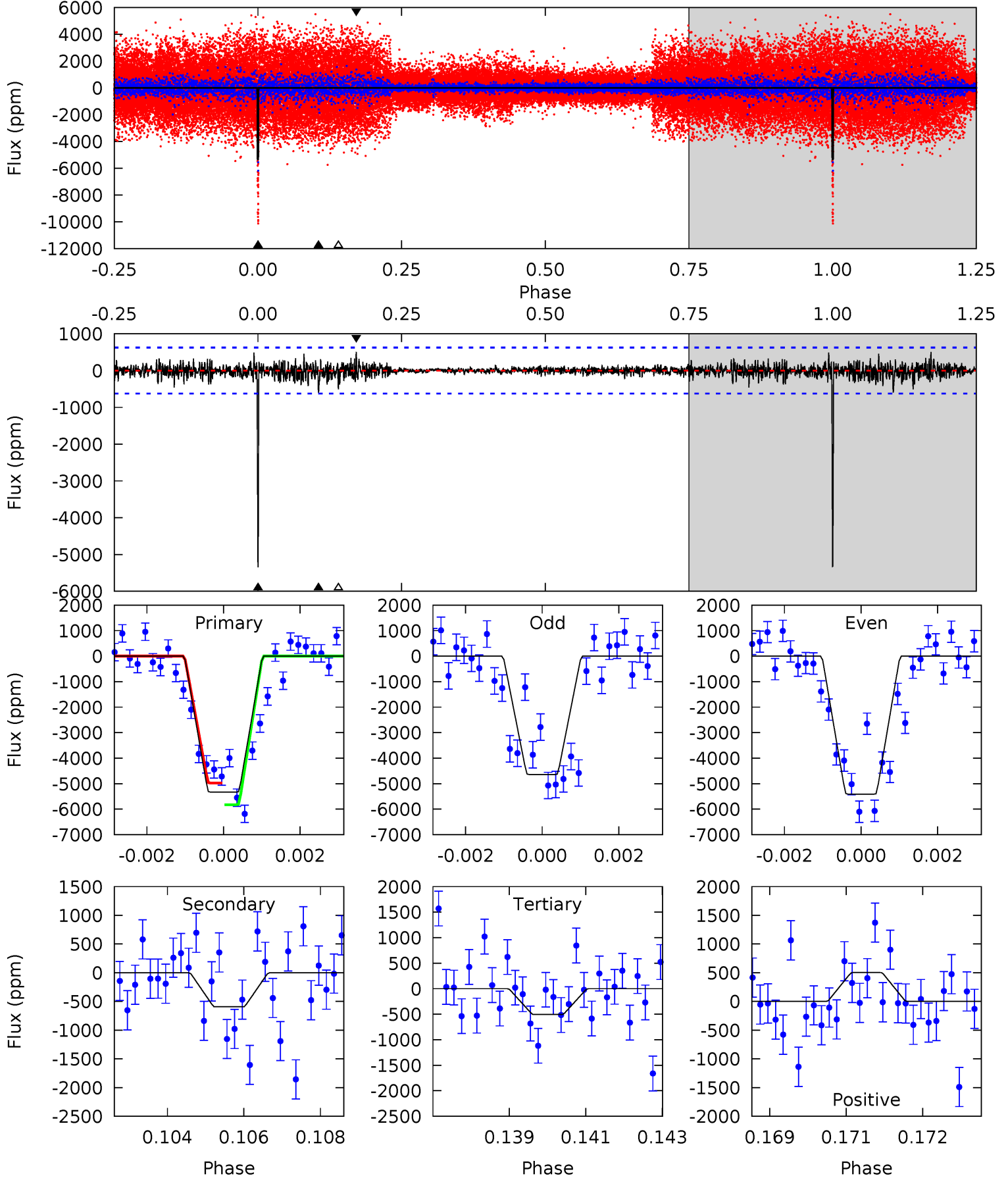
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
189.0	34.5	32.0	49.2	5.17	2.83	8.44	157.0	139.8	2.53	-14.7	6.04	1.01	0.21	7.74



Alt Model-Shift Uniqueness Test

009590158-04, P = 364.371242 Days, E = 193.786615 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
45.6	5.06	4.31	4.30	5.34	3.11	0.81	41.3	41.3	0.75	0.76	3.45	0.98	0.09	0



Stellar Parameters For KIC 009590158

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5824^{+182}_{-223}	$4.420^{+0.067}_{-0.202}$	$0.400^{+0.050}_{-0.300}$	$1.082^{+0.315}_{-0.135}$	$1.123^{+0.122}_{-0.150}$	$1.248^{+0.446}_{-0.637}$
	+3%/-4%	+2%/-5%	+12%/-75%	+29%/-12%	+11%/-13%	+36%/-51%
Source	PHO1	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 009590158-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-4532 ± 131	$31.54^{+28.38}_{-20.25}$	373^{+25}_{-19}	3464^{+1602}_{-573}	2641^{+17366}_{-1910}
Alt.	-592 ± 117	$24.40^{+24.97}_{-16.67}$	374^{+27}_{-21}	2785^{+1146}_{-437}	588^{+4812}_{-447}

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

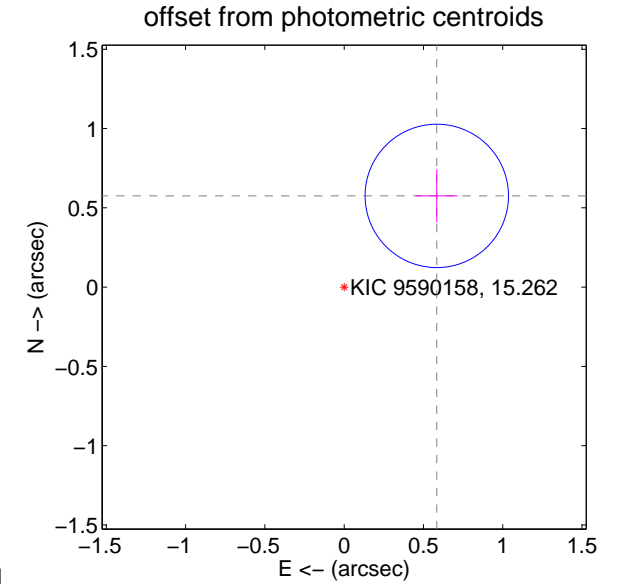
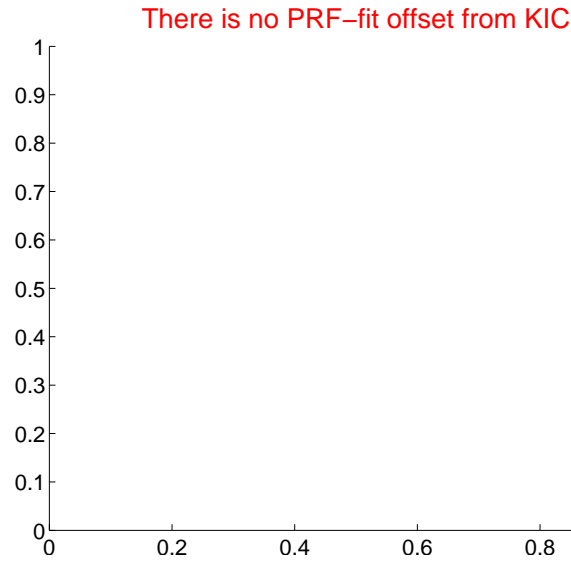
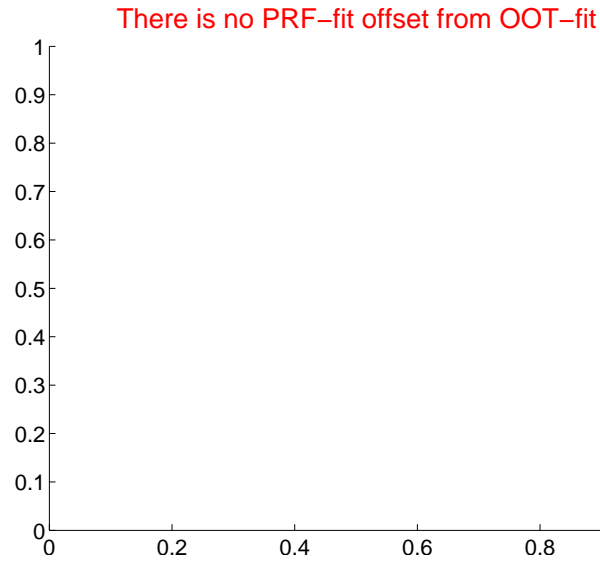
DV Centroid Data

Supplemental centroid analysis for 009590158-04. Kepler magnitude: 15.26. Transit SNR 20.96

There are 0 quarters with good PRF difference image offsets

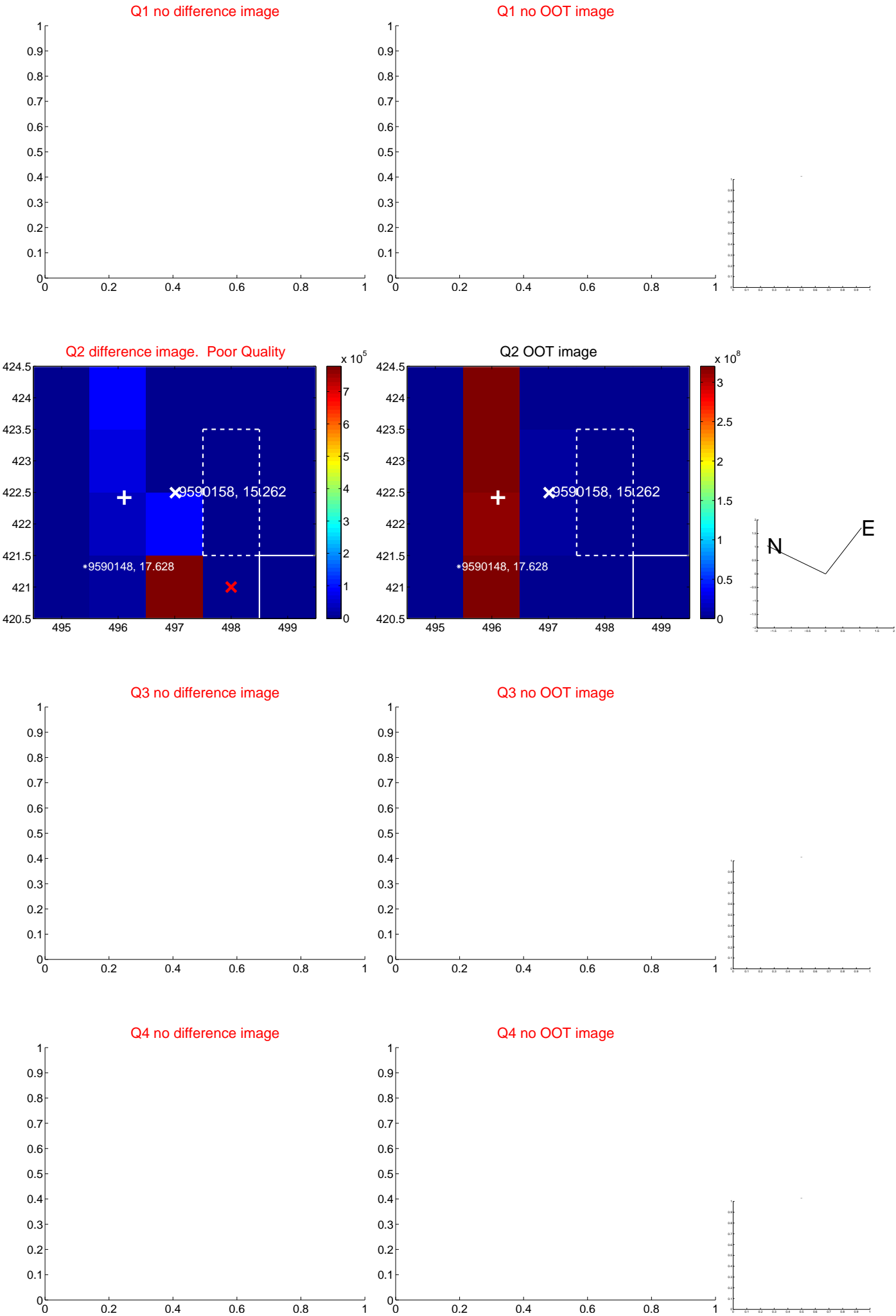
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	0.82 ± 0.15	5.44	-0.58 ± 0.13	0.58 ± 0.17

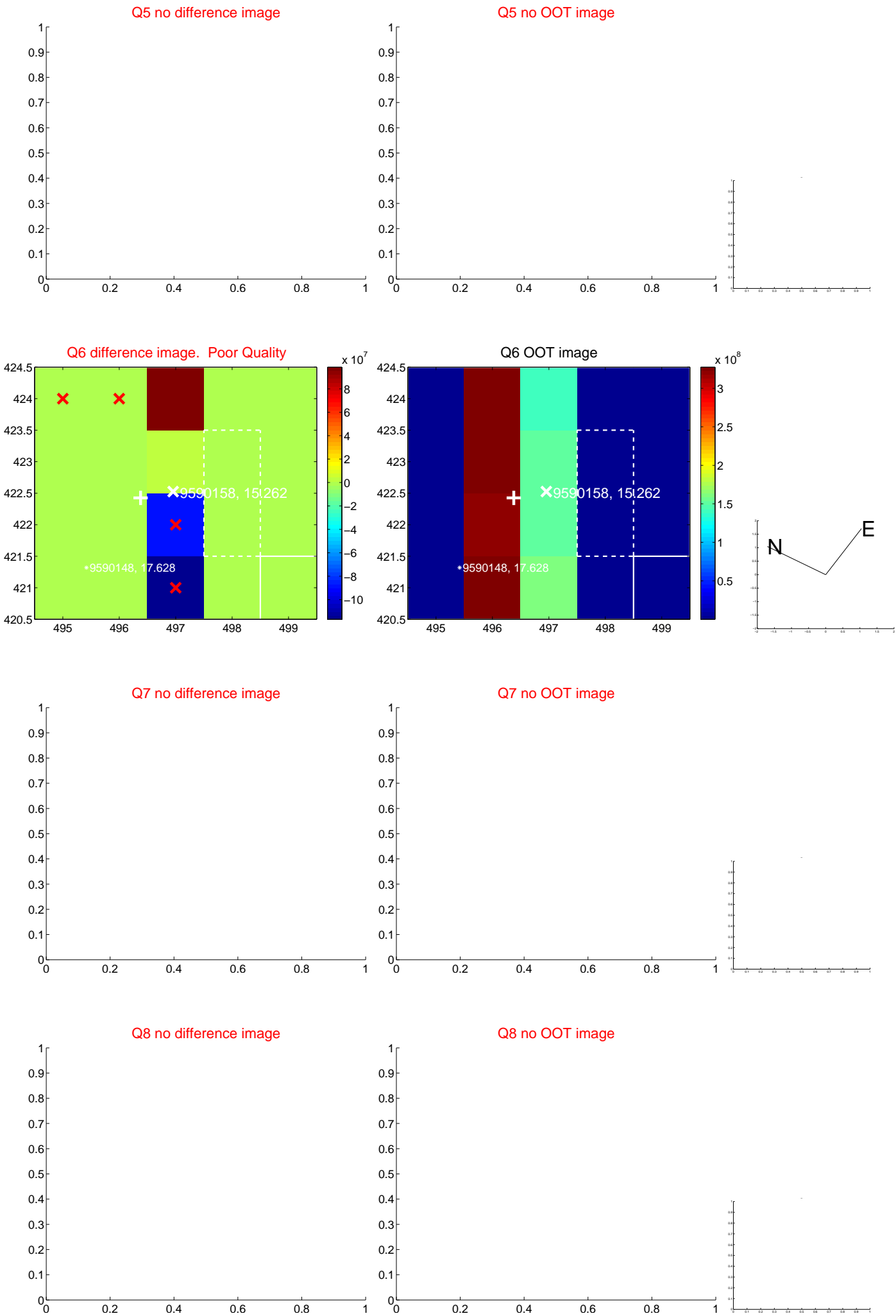


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

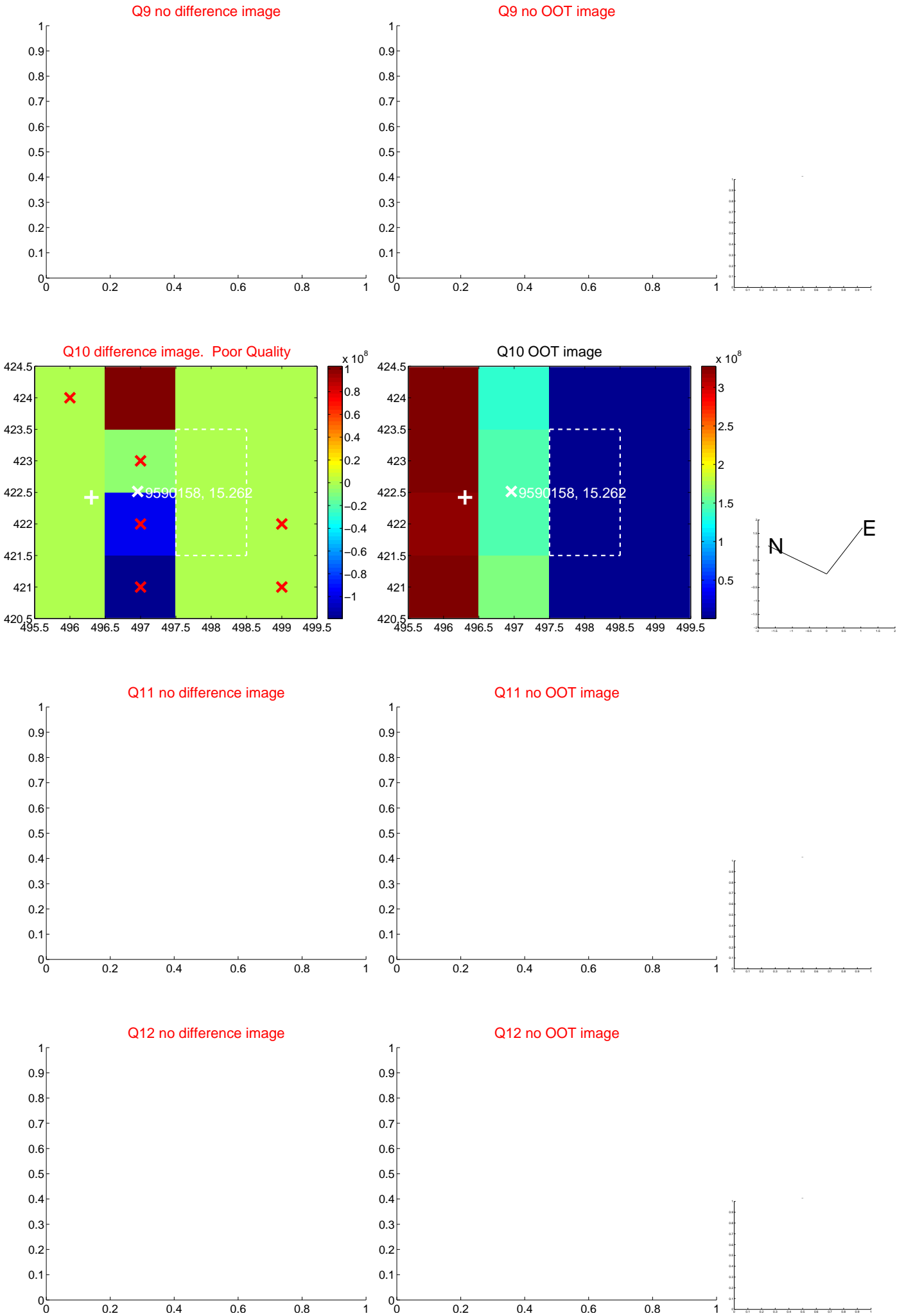
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



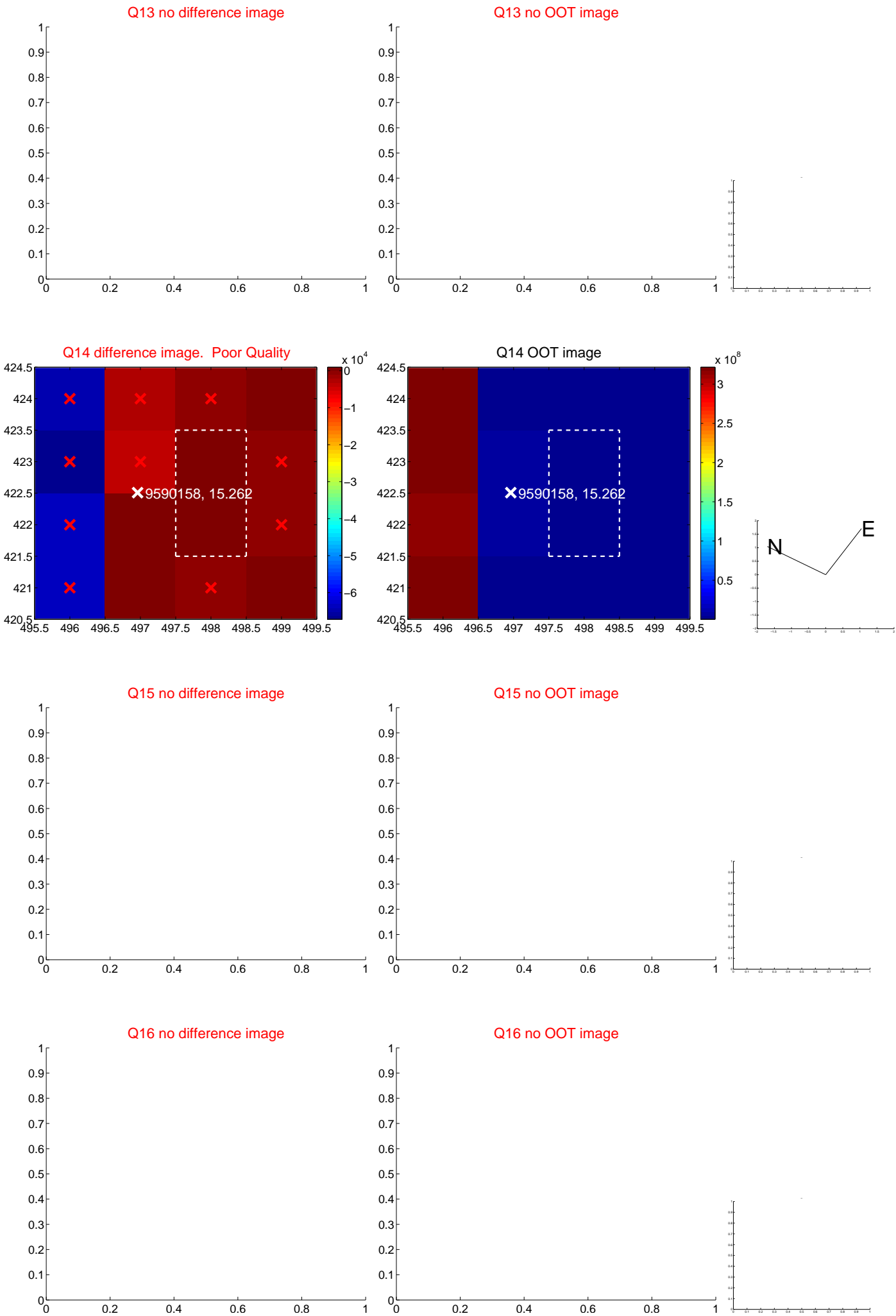
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



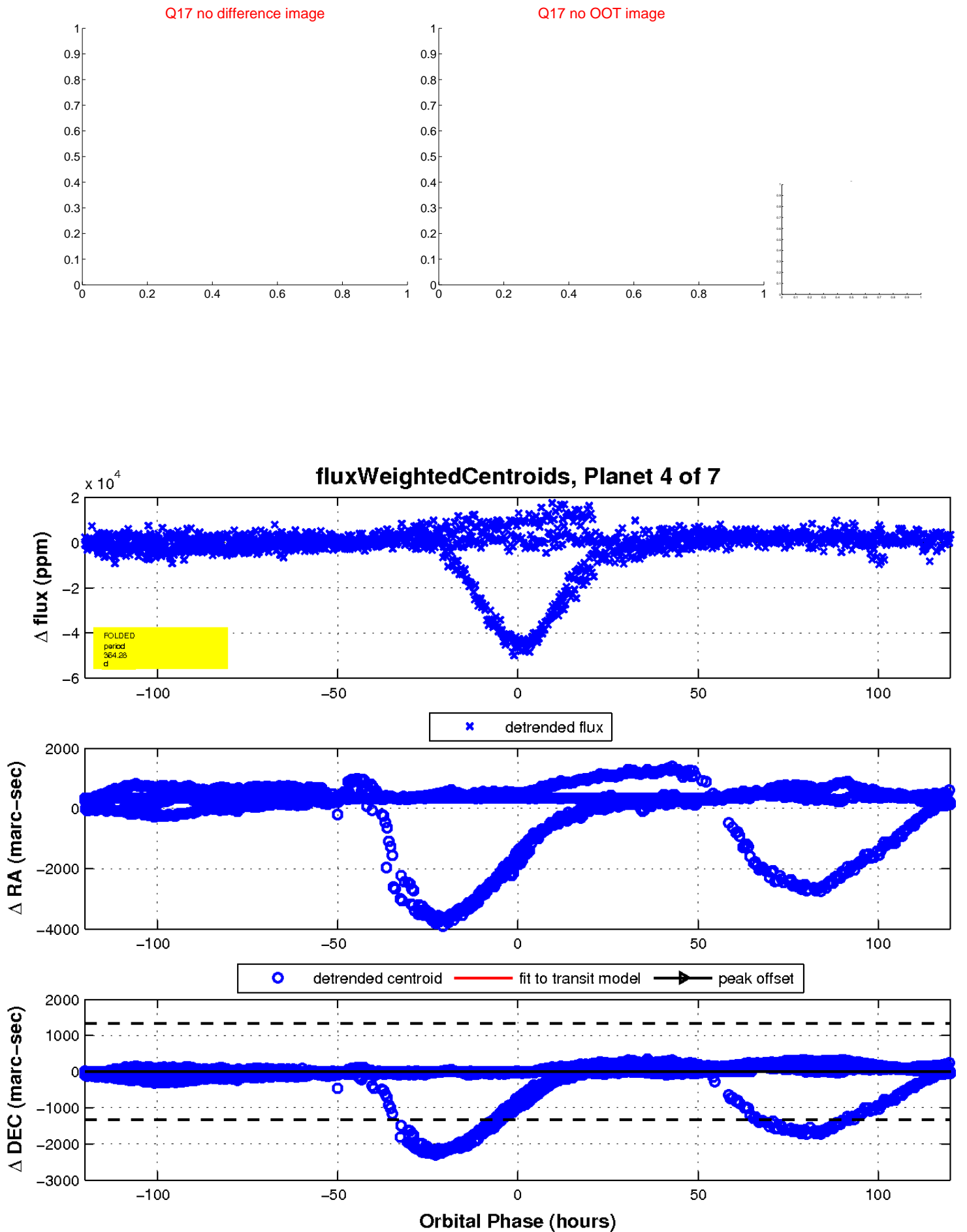
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



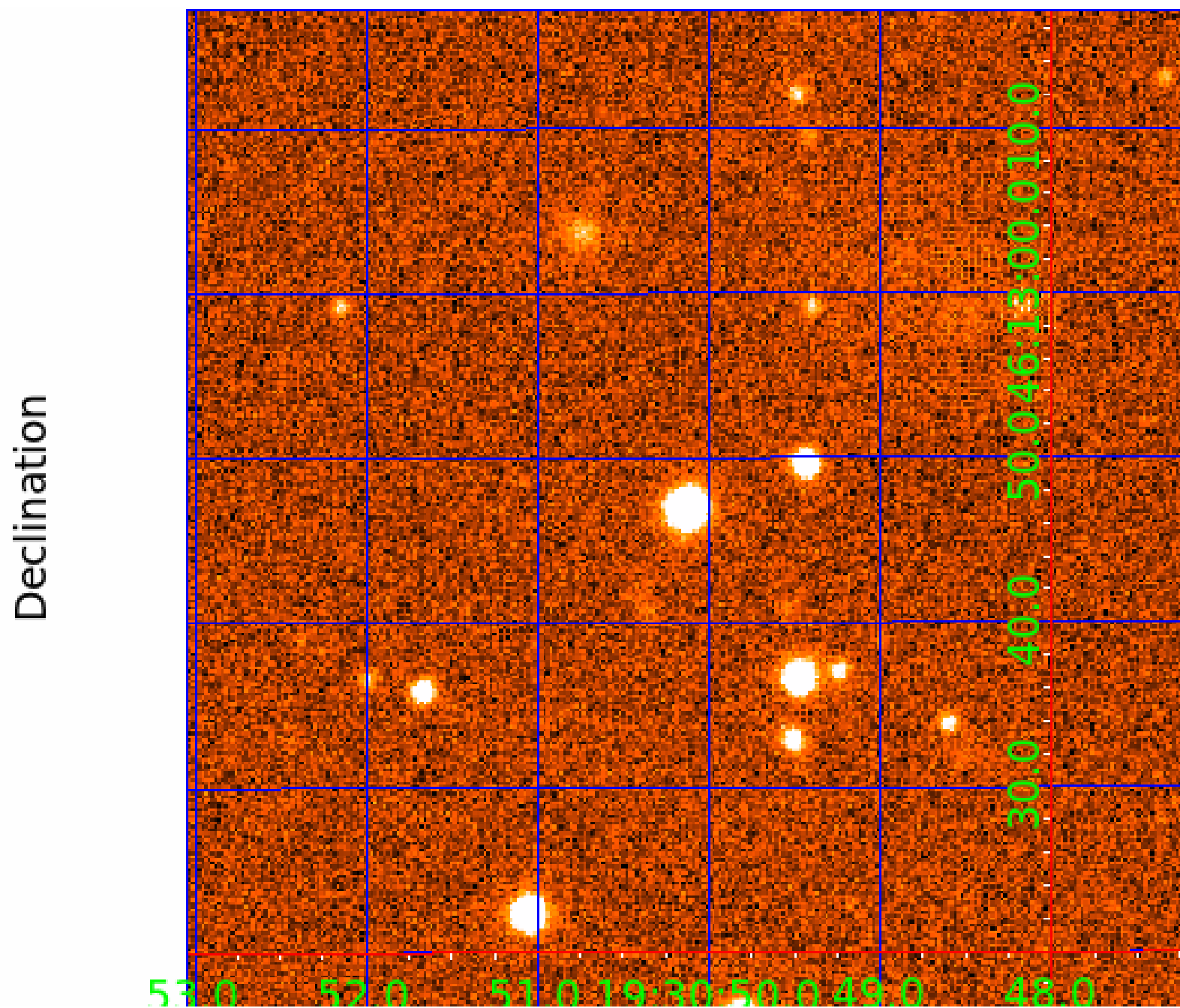
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



UKIRT Image



KIC 009590158

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})
009590158-01	OBS	No	307.922795	241.128520	1489.7	7.839	25.4	2.5	1.08	5824	4.30	1.40
009590158-02	OBS	No	541.765859	155.366599	6462.8	20.779	21.7	20.1	1.08	5824	10.37	0.66
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009590158-05	OBS	No	585.692415	279.142242	5832.3	27.331	18.5	20.3	1.08	5824	15.10	0.59
009590158-06	OBS	No	417.765963	170.578776	3903.7	21.264	14.1	13.2	1.08	5824	10.25	0.93
009590158-07	OBS	No	388.530072	448.006998	6062.9	21.343	10.3	11.3	1.08	5824	12.37	1.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009590158-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009590158-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
009590158-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

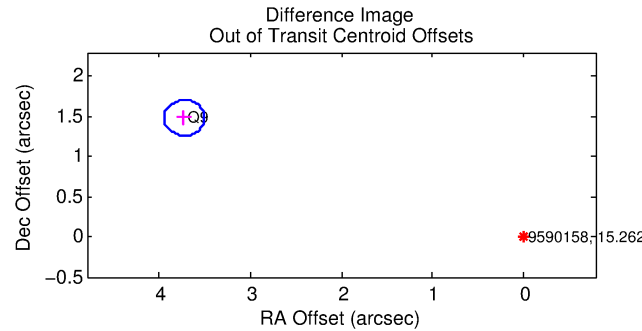
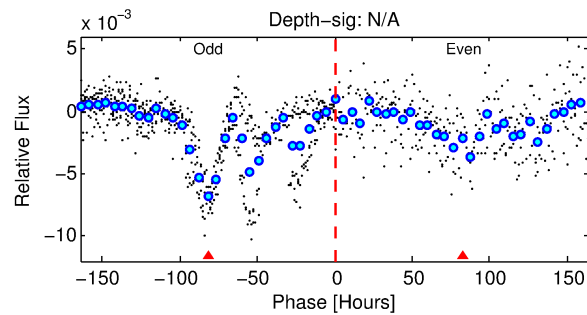
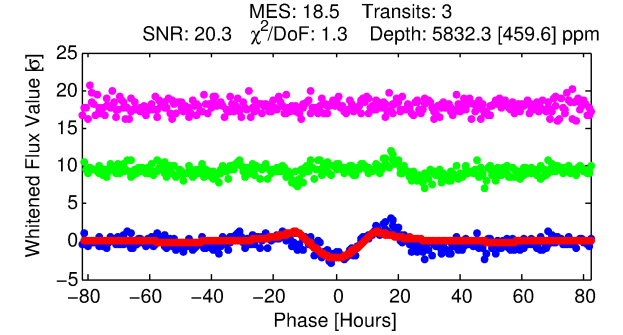
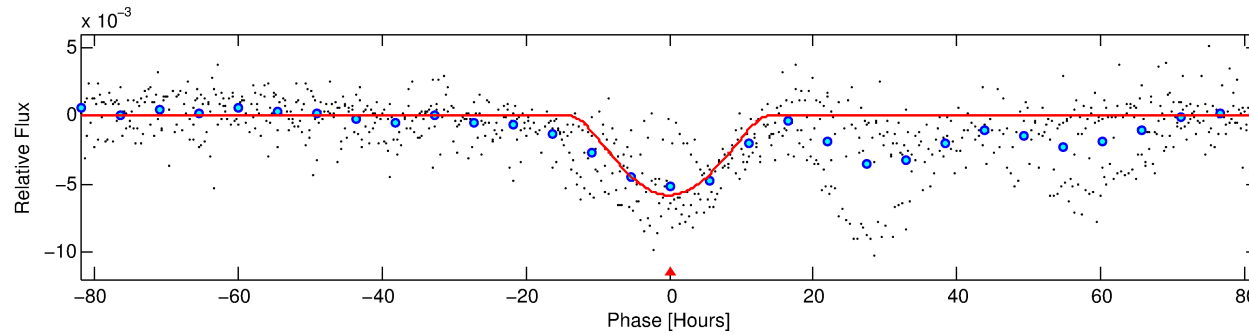
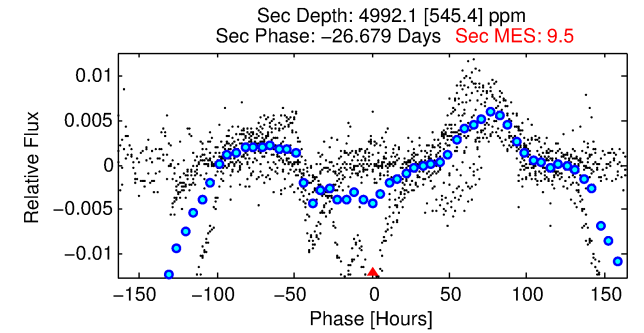
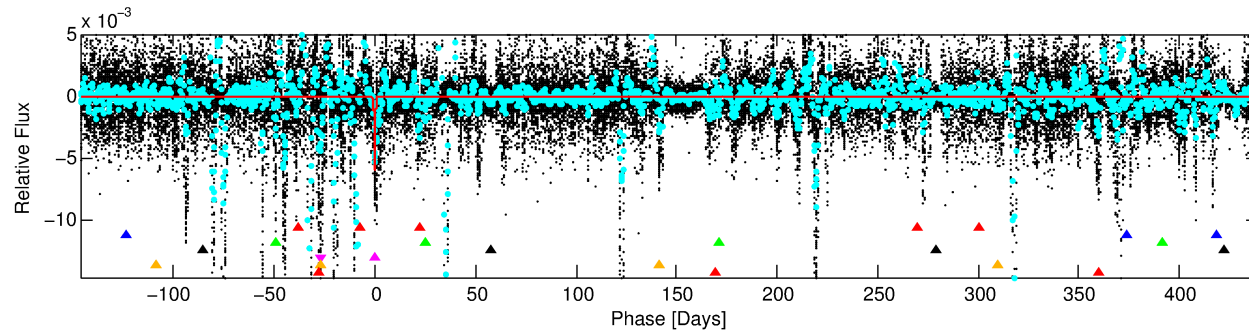
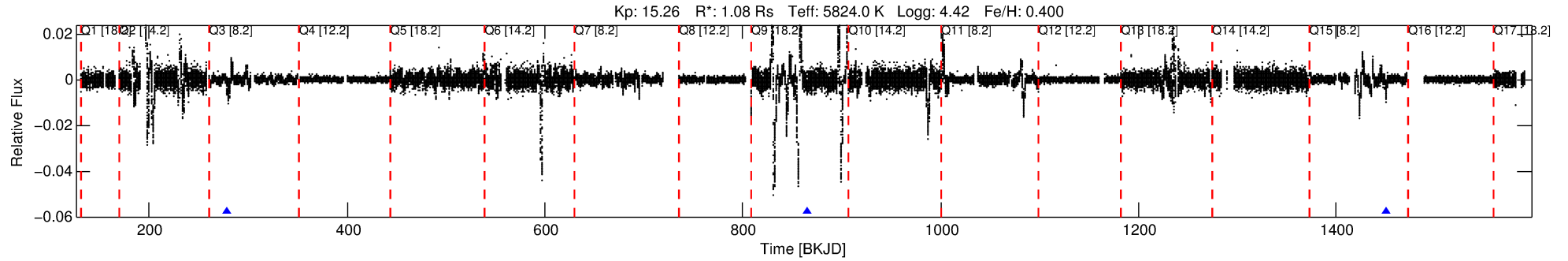
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009590158-05

No Significant Match Found

DV One-Page Summary

KIC: 9590158 Candidate: 5 of 7 Period: 585.692 d



DV Fit Results:

Period = 585.69242 [0.01375] d
Epoch = 279.1422 [0.0164] BKJD
Rp/R* = 0.1279 [0.1667]
a/R* = 86.09 [19.47]
b = 1.00 [0.24]
Seff = 0.59 [0.24]
Teff = 224 [22] K
Rp = 15.10 [20.17] Re
a = 1.4244 [0.3538] AU
Ag = 24440.54 [64409.55] [0.38] σ
Teffp = 4329 [2829] K [1.45] σ

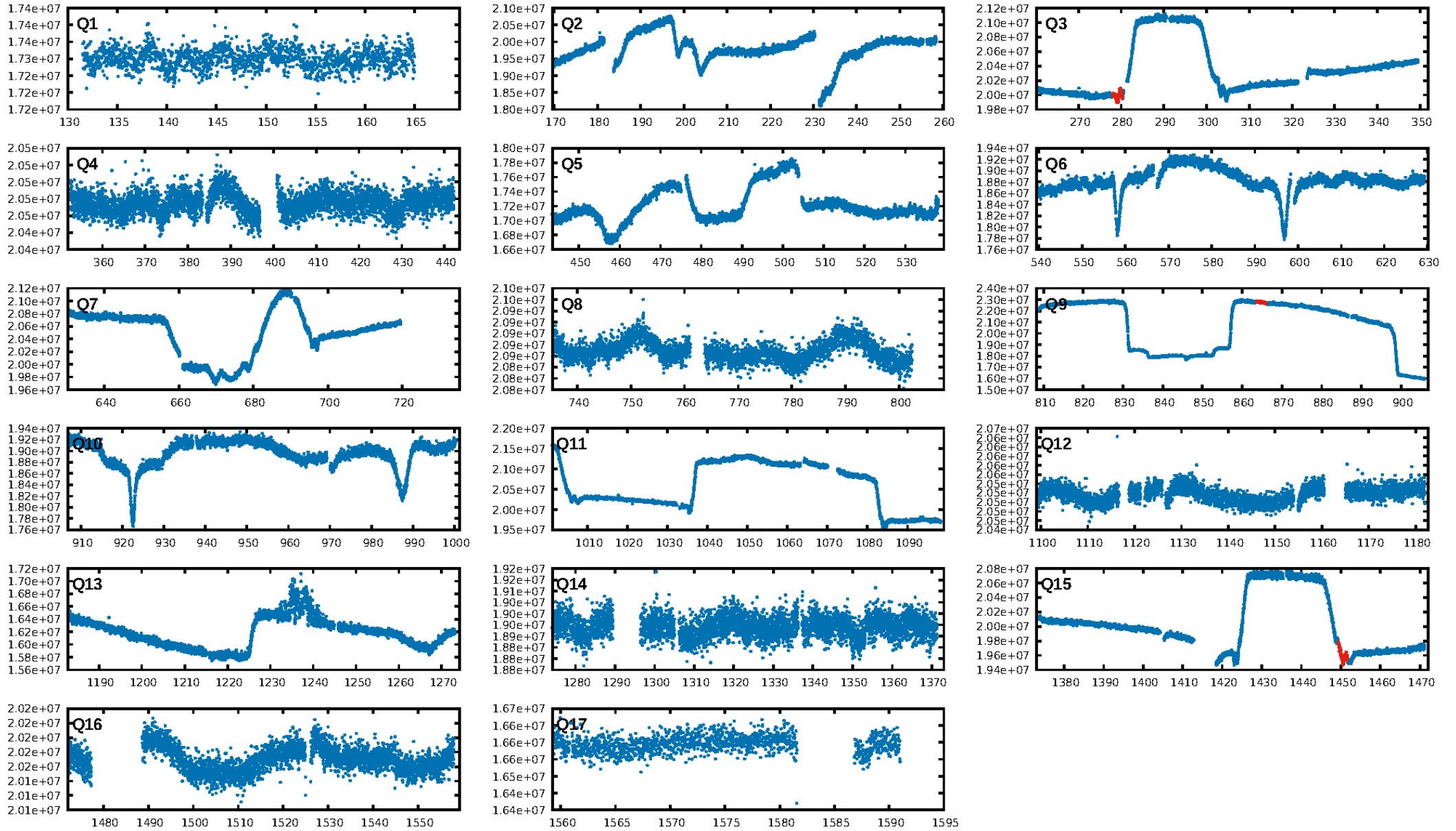
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [30.71 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 93.0%
Bootstrap-pfa: 1.35e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.202
Centroid-sig: N/A
Centroid-so: 19.363 arcsec [0.55 σ]
OotOffset-rm: 4.015 arcsec [54.32 σ]
KicOffset-rm: 2.847 arcsec [38.05 σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [1/1]

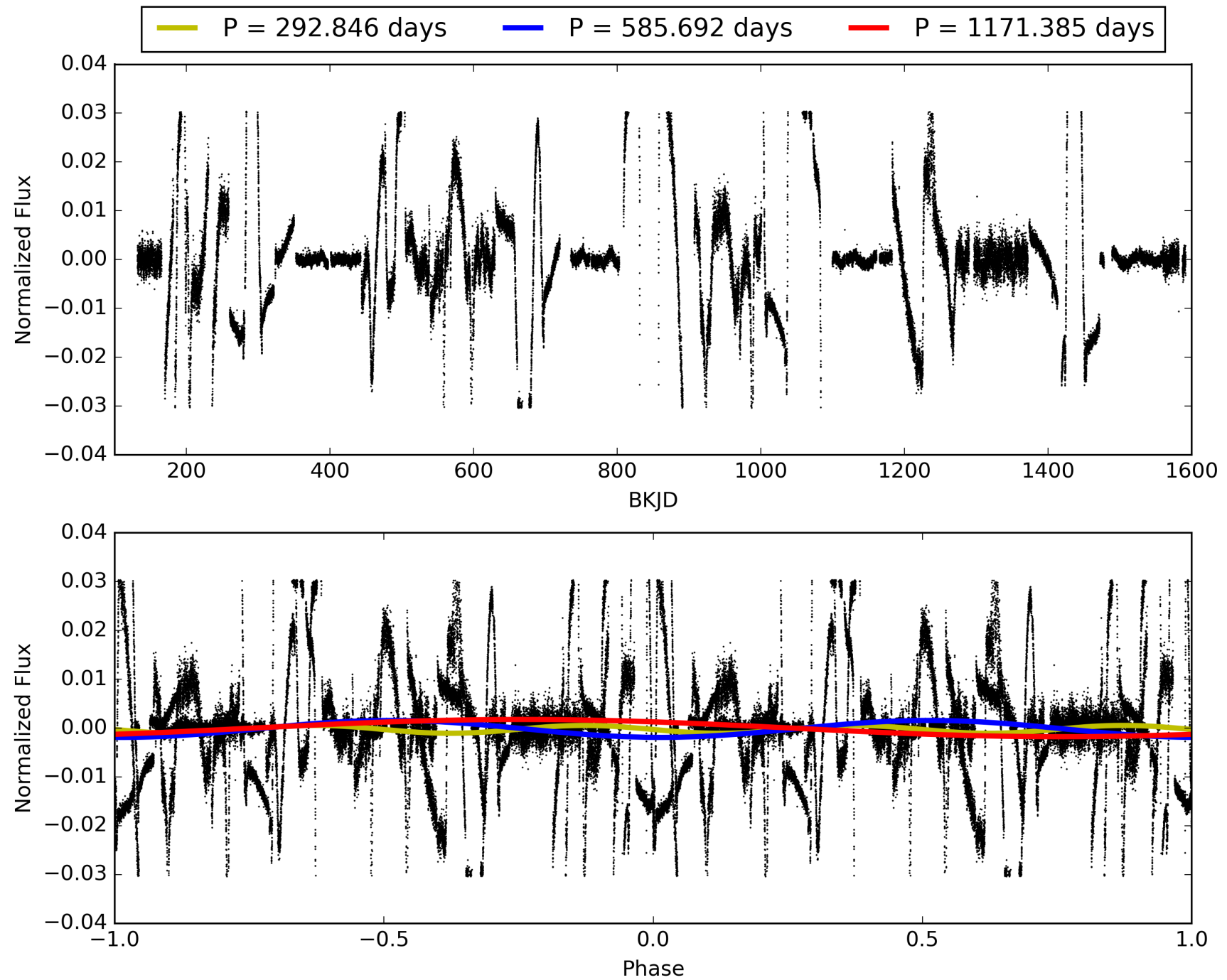
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:27:13 Z

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

TCE 009590158-05, PDC Light Curves

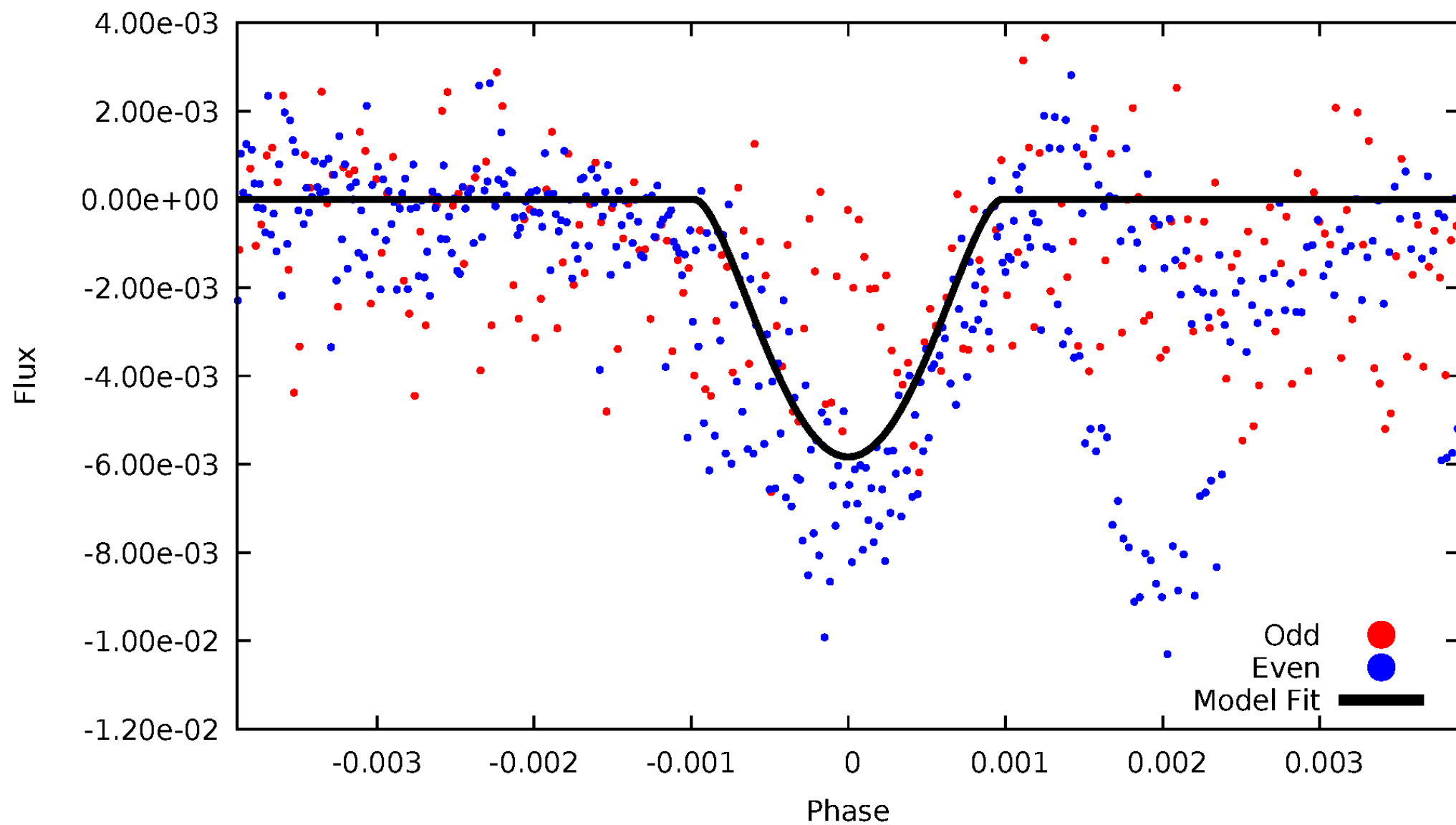


TCE 009590158-05



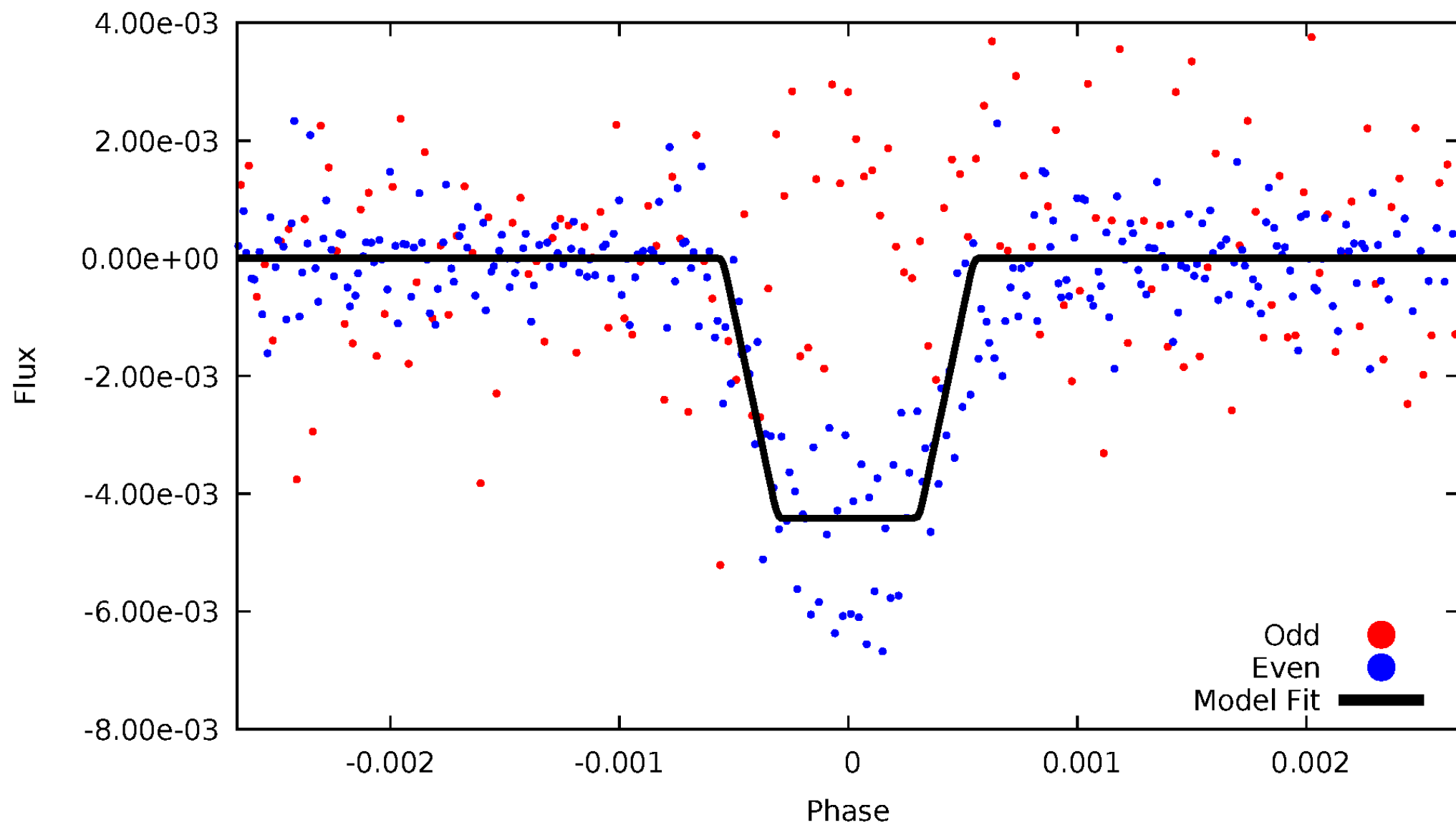
DV Odd/Even

TCE 009590158-05



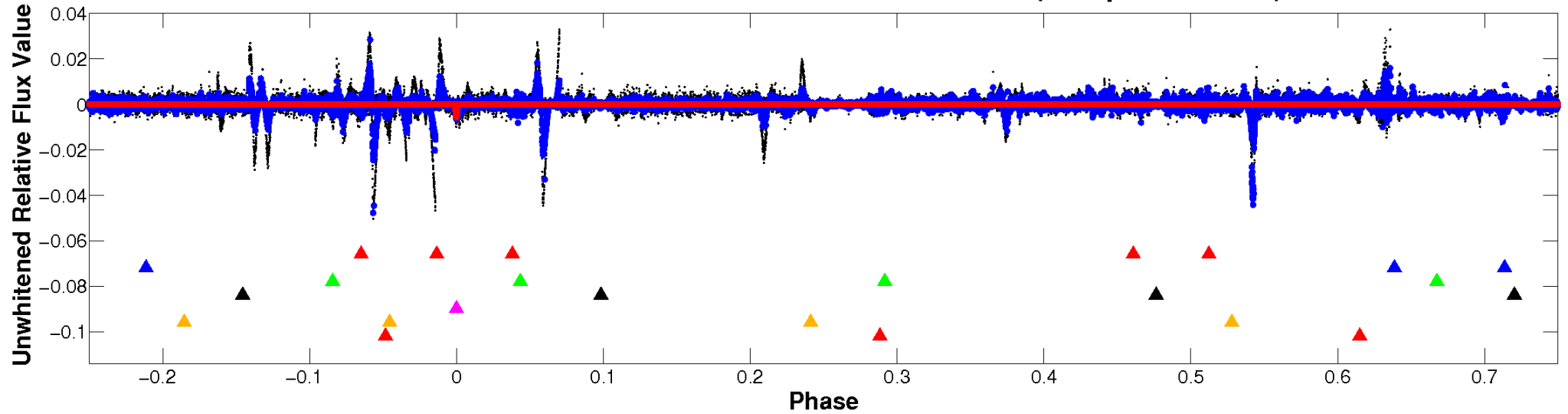
ALT Odd/Even

TCE 009590158-05

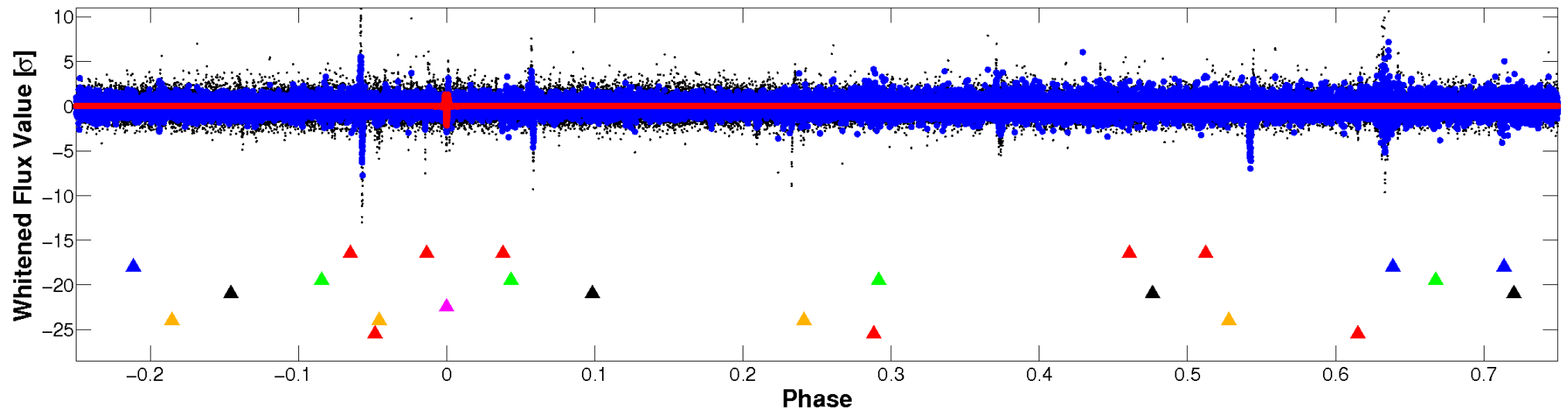


Non-Whitened Vs. Whitened Light Curve

Planet 5 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

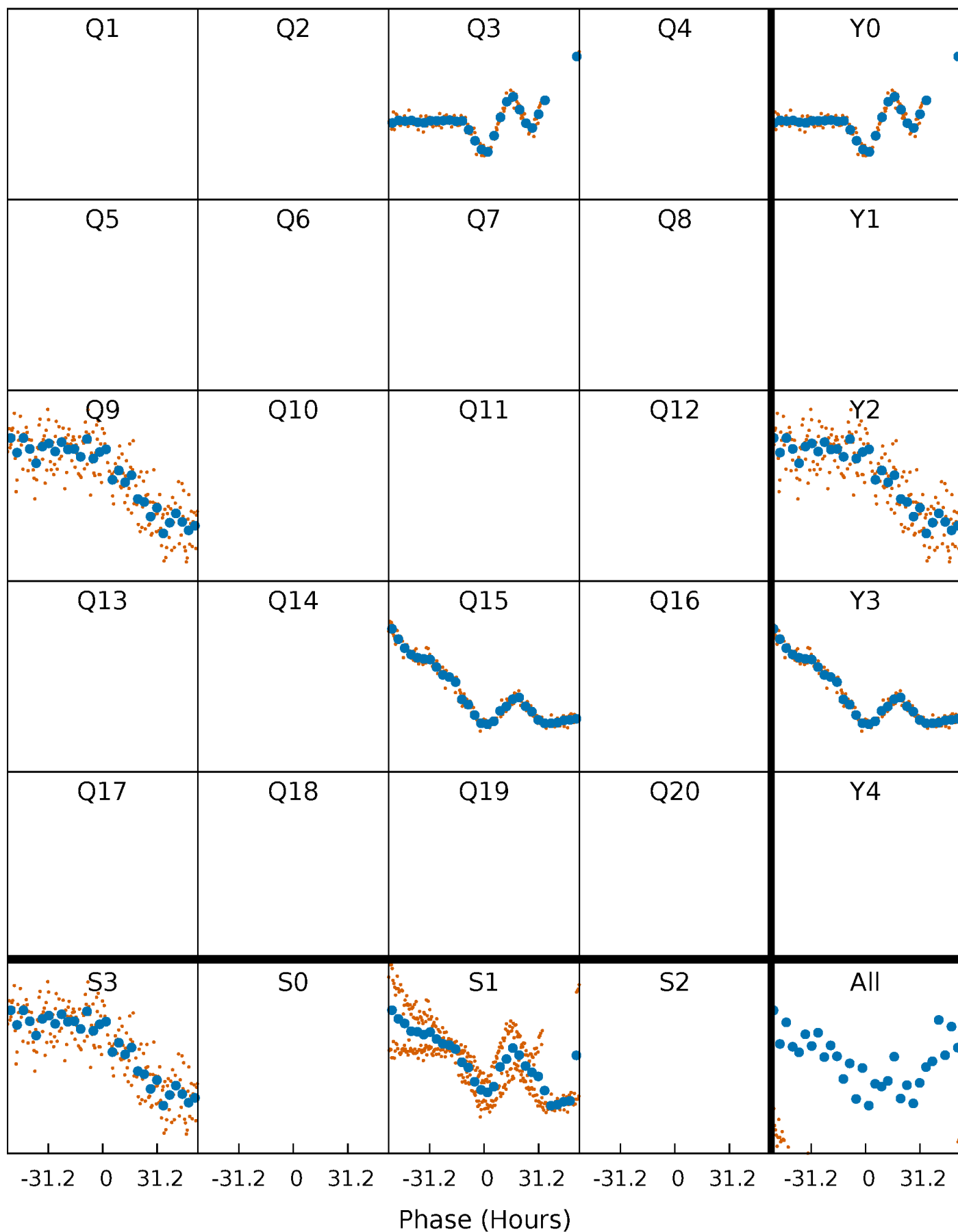


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



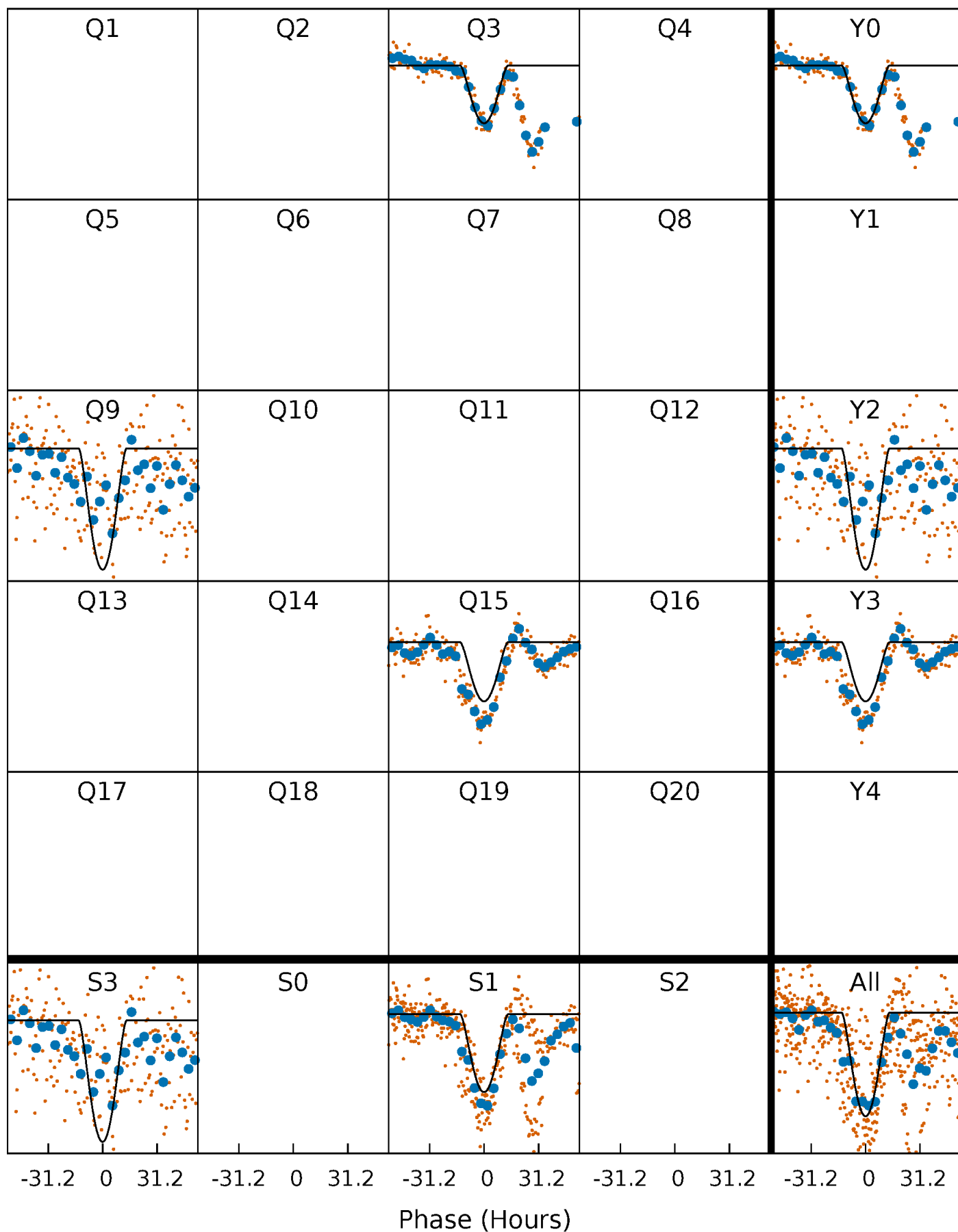
PDC Quarter-Phased Transit Curves

TCE 009590158-05 $P=585.692415$ Days $T_0=279.142242$ (BKJD)



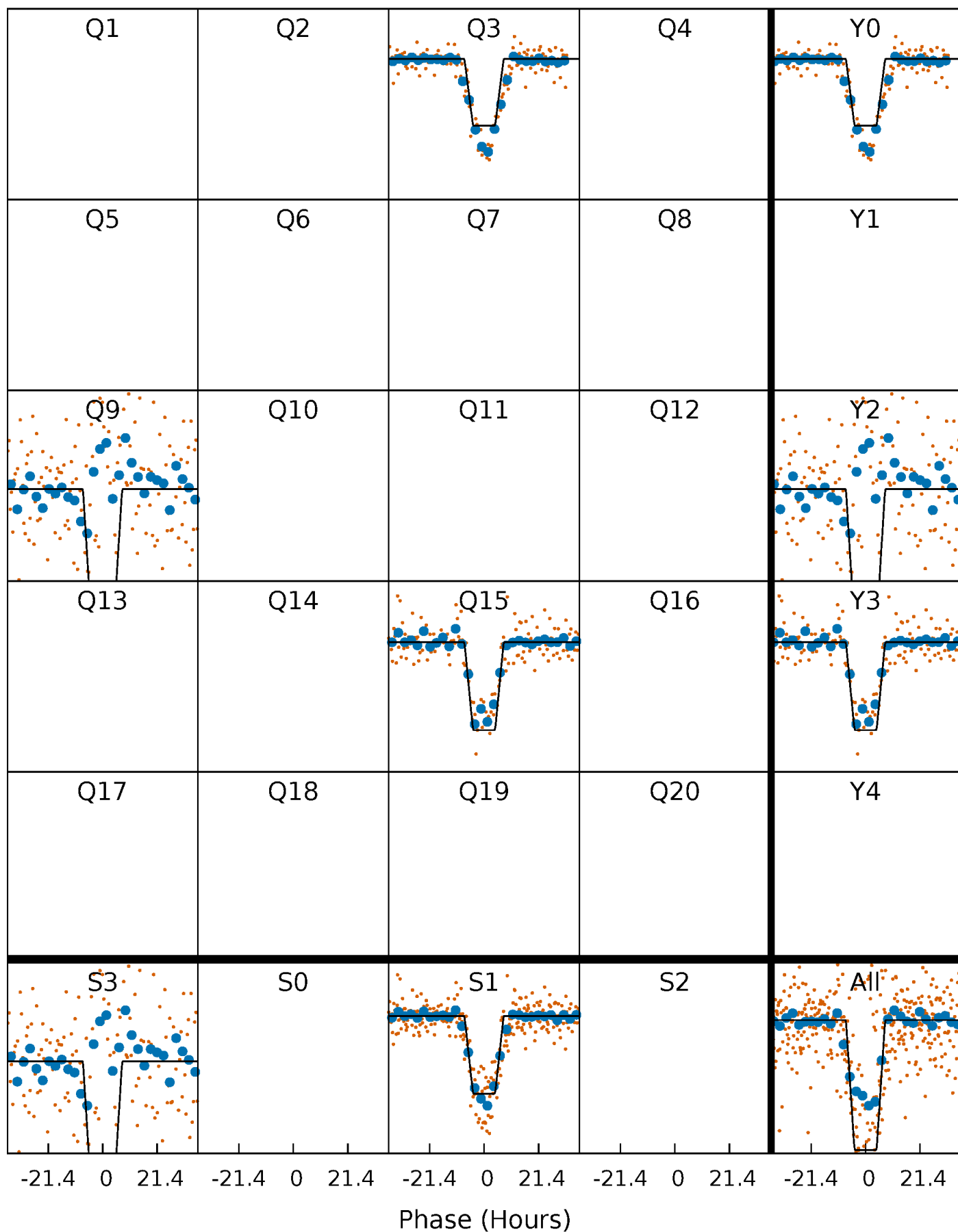
DV Quarter-Phased Transit Curves

TCE 009590158-05 $P=585.692415$ Days $T_0=279.142242$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

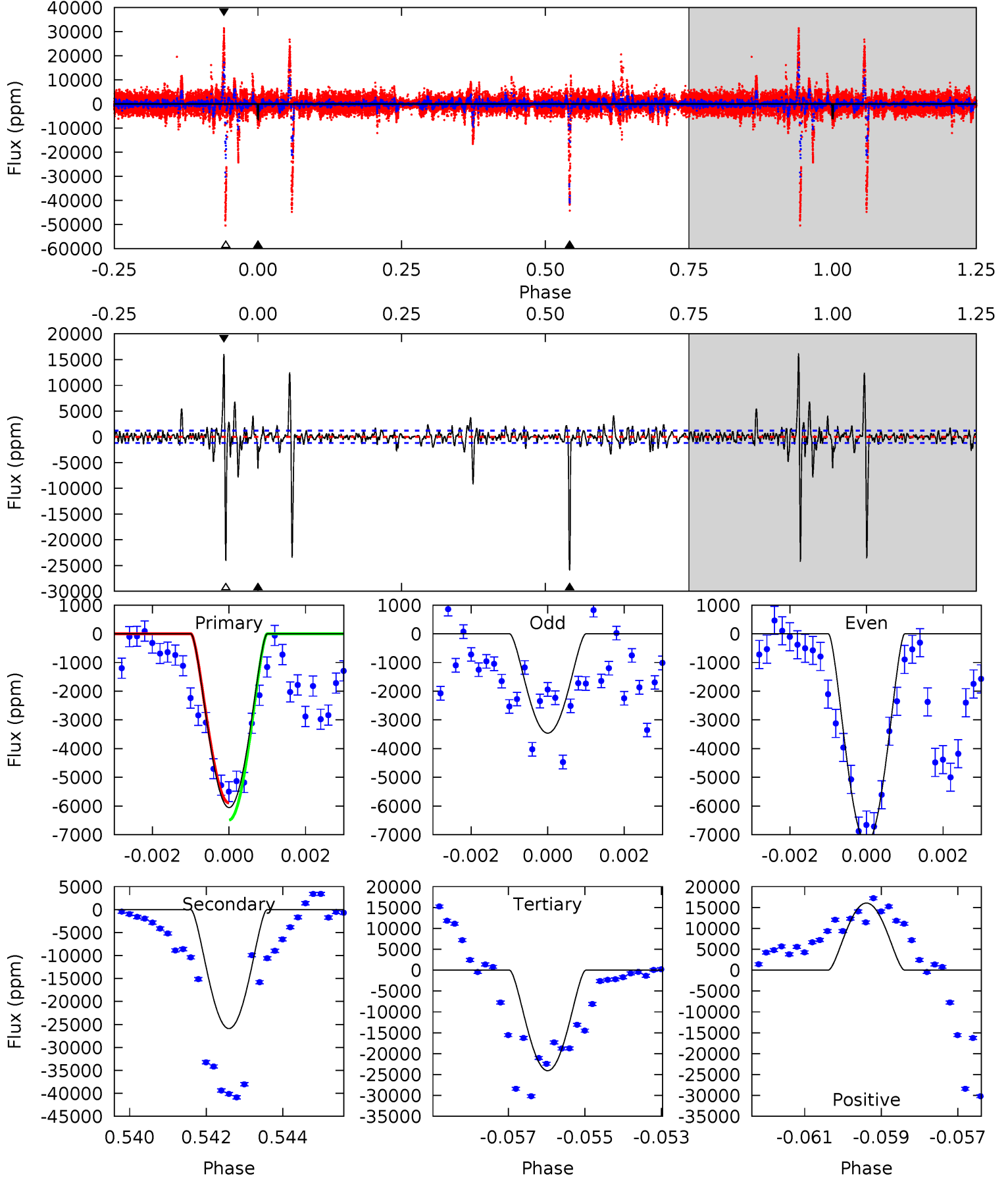
TCE 009590158-05 $P=585.693941$ Days $T_0=279.180410$ (BKJD)



DV Model-Shift Uniqueness Test

009590158-05, P = 585.692415 Days, E = 279.142242 Days

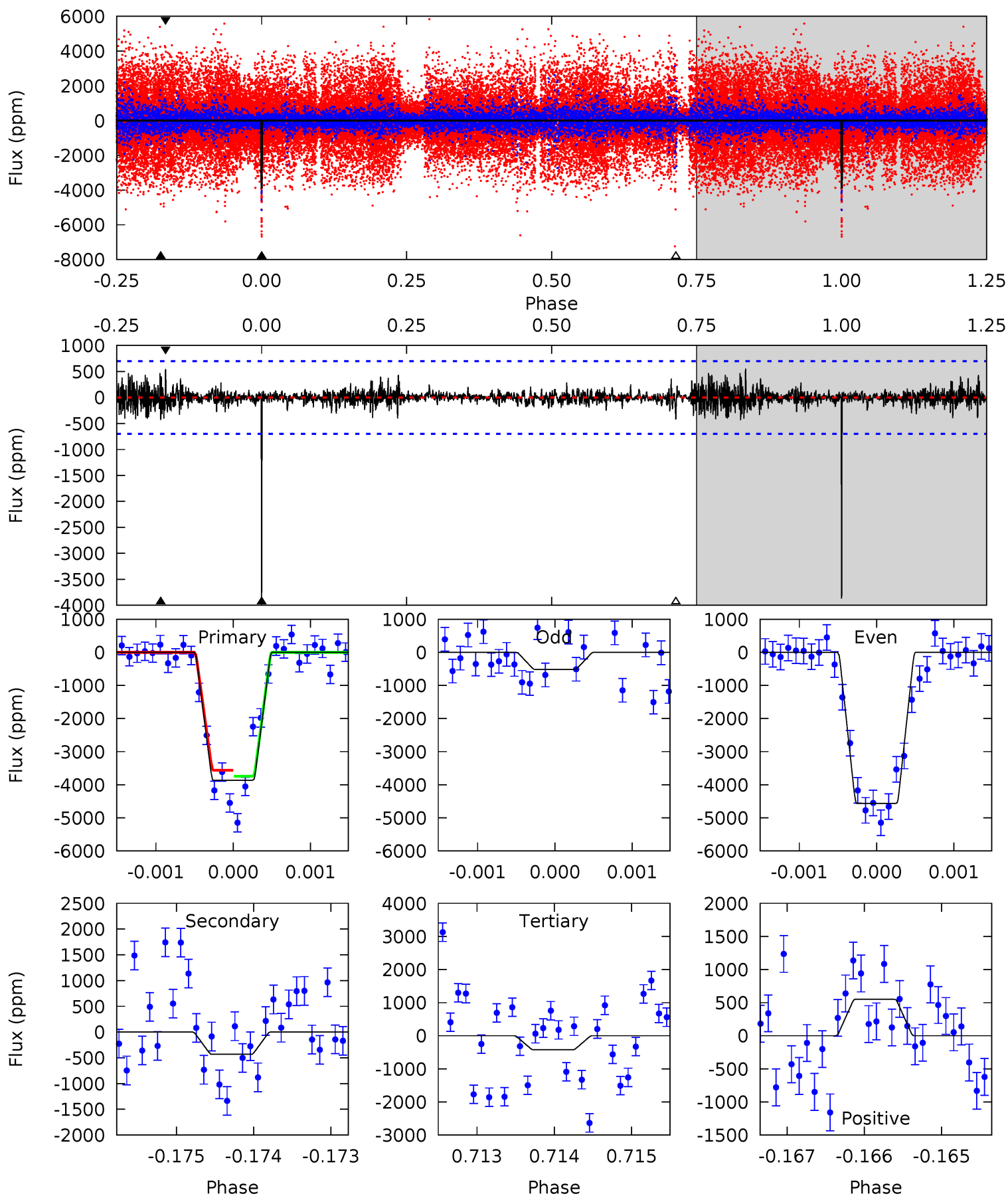
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.1	116.0	107.8	71.9	5.33	3.10	8.93	-80.7	-44.8	8.20	44.1	5.64	1.02	0.38	1.45



Alt Model-Shift Uniqueness Test

009590158-05, $P = 585.693941$ Days, $E = 279.180410$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.1	3.35	3.28	4.27	5.43	3.26	0.73	26.8	25.8	0.07	-0.92	15.9	0.78	0.12	0.70



Stellar Parameters For KIC 009590158

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5824^{+182}_{-223}	$4.420^{+0.067}_{-0.202}$	$0.400^{+0.050}_{-0.300}$	$1.082^{+0.315}_{-0.135}$	$1.123^{+0.122}_{-0.150}$	$1.248^{+0.446}_{-0.637}$
	+3%/-4%	+2%/-5%	+12%/-75%	+29%/-12%	+11%/-13%	+36%/-51%
Source	PHO1	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 009590158-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-25908 ± 223	$21.73^{+18.39}_{-14.19}$	318^{+25}_{-18}	5608^{+4977}_{-1308}	$62647^{+445700}_{-44840}$
Alt.	-432 ± 129	$17.45^{+17.40}_{-12.48}$	318^{+23}_{-17}	2897^{+1429}_{-469}	1515^{+16103}_{-1170}

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

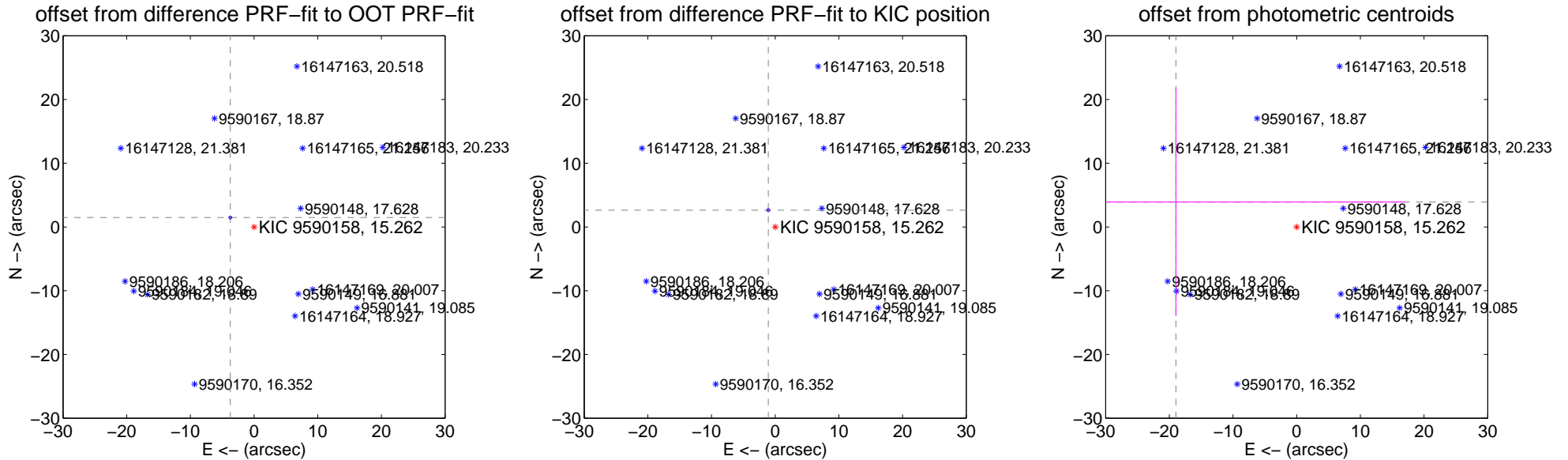
DV Centroid Data

Supplemental centroid analysis for 009590158-05. Kepler magnitude: 15.26. Transit SNR 20.35

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 2.88 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	4.015 \pm 0.074	54.32	3.730 \pm 0.074	1.484 \pm 0.075
PRF-fit source offset from KIC position	2.847 \pm 0.075	38.05	1.088 \pm 0.074	2.631 \pm 0.075
photometric centroid source offset	19.36 \pm 35.42	0.55	18.96 \pm 35.97	3.91 \pm 17.91



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.

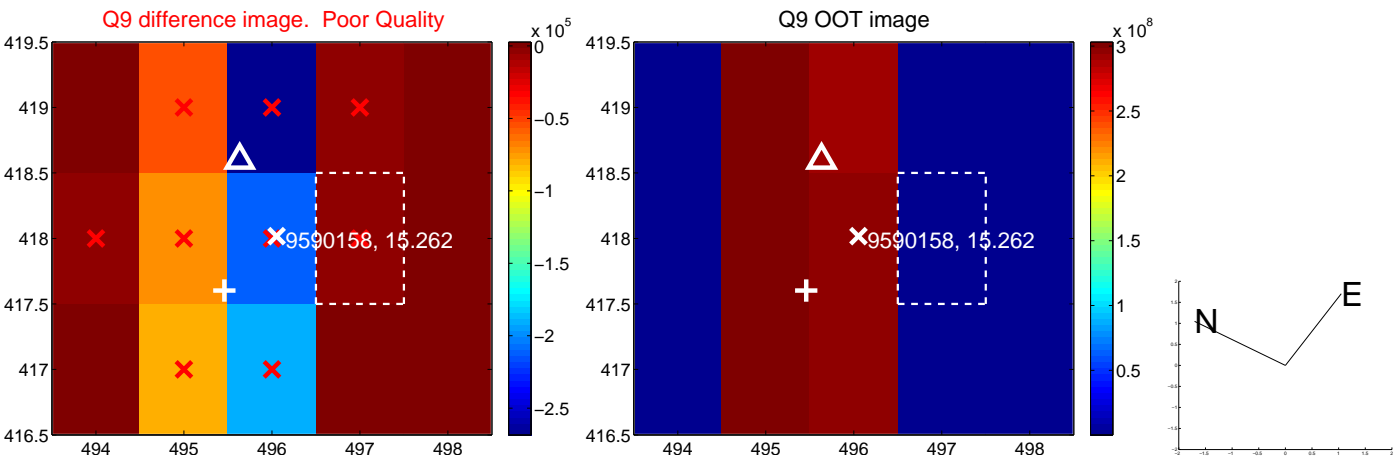
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



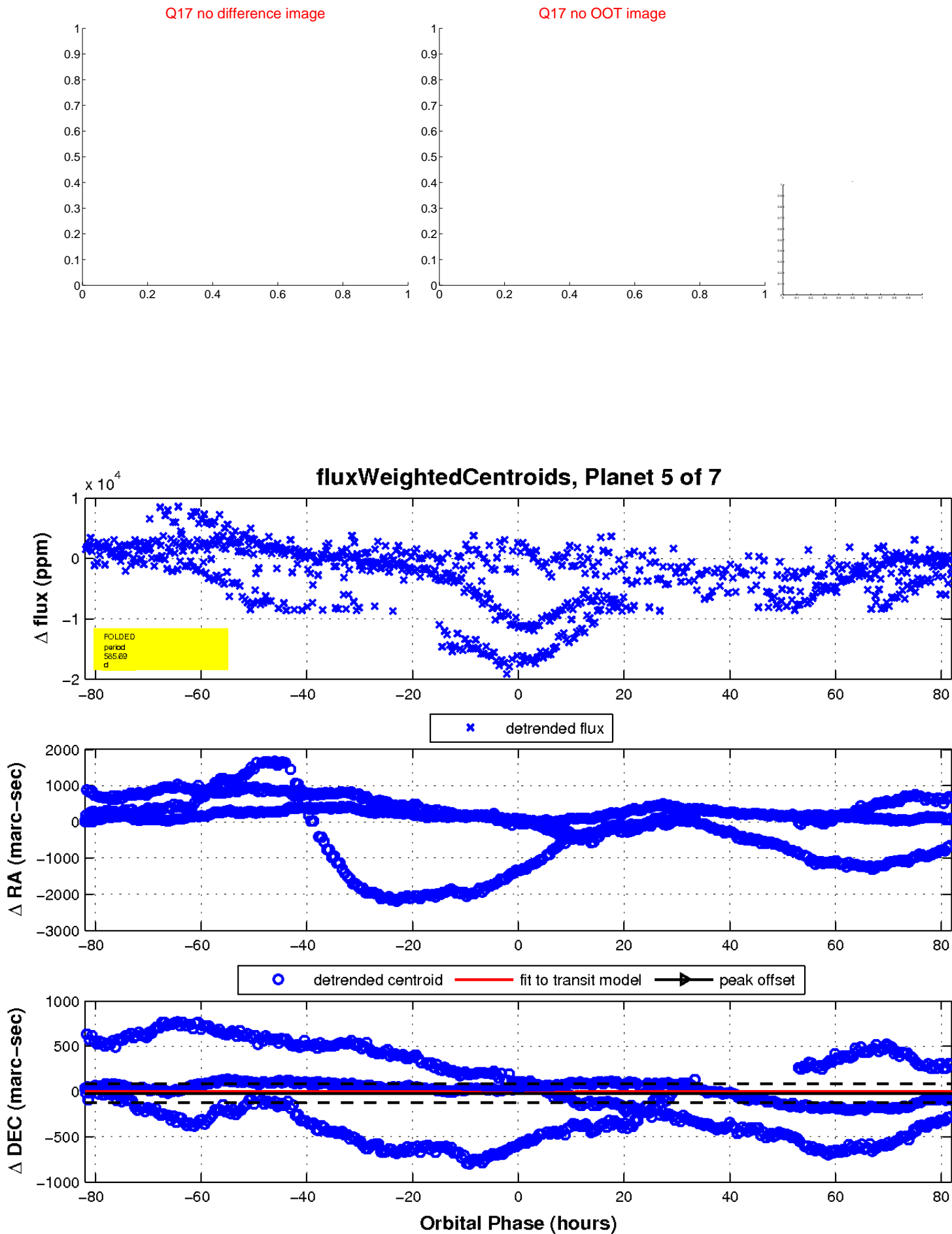
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



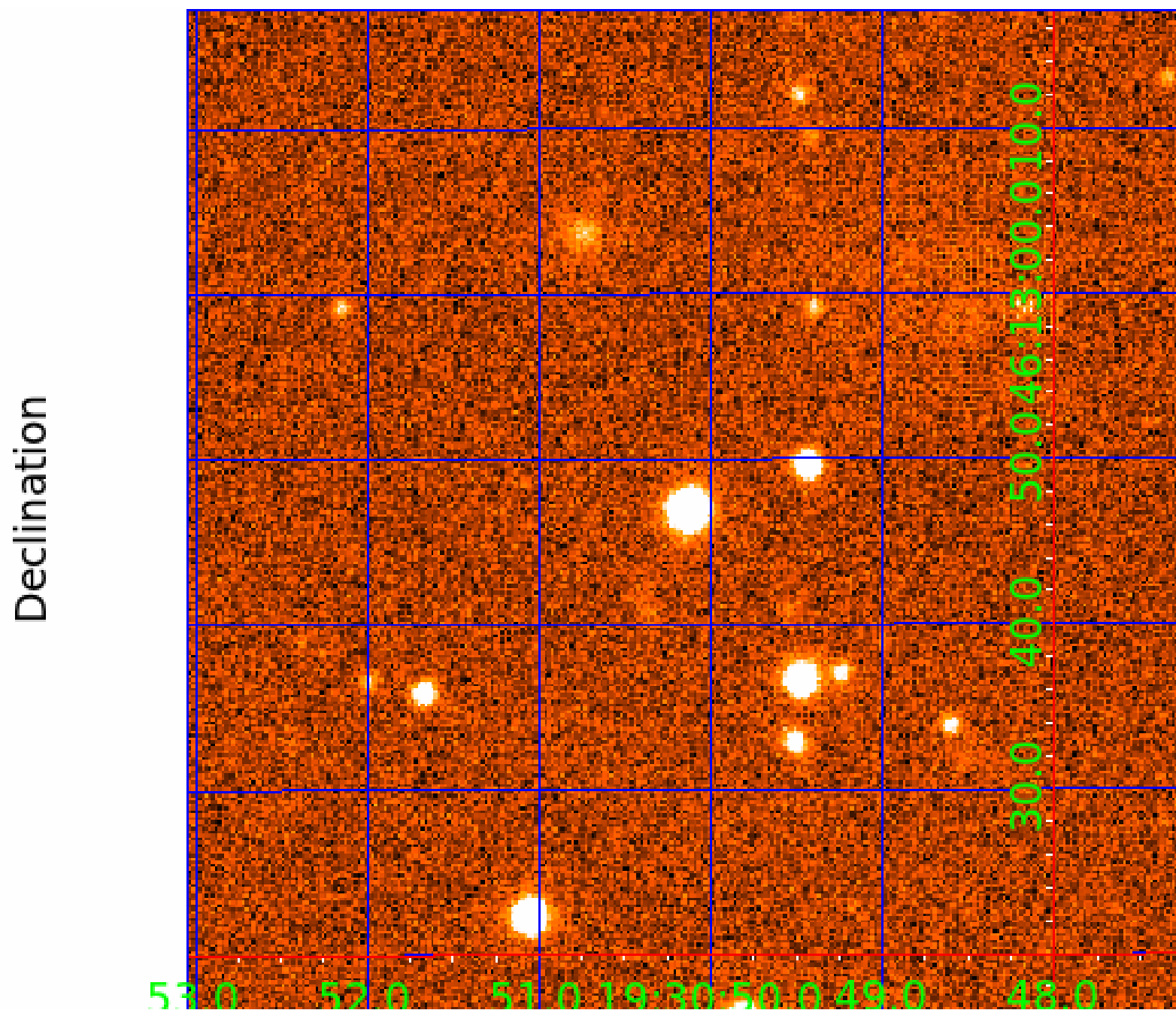
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009590158

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})
009590158-01	OBS	No	307.922795	241.128520	1489.7	7.839	25.4	2.5	1.08	5824	4.30	1.40
009590158-02	OBS	No	541.765859	155.366599	6462.8	20.779	21.7	20.1	1.08	5824	10.37	0.66
009590158-03	OBS	No	365.508227	304.626204	3479.3	27.535	20.7	15.7	1.08	5824	7.94	1.11
009590158-04	OBS	No	364.278043	193.910444	12839.3	40.056	25.3	21.0	1.08	5824	22.06	1.12
009590158-05	OBS	No	585.692415	279.142242	5832.3	27.331	18.5	20.3	1.08	5824	15.10	0.59
009590158-06	OBS	No	417.765963	170.578776	3903.7	21.264	14.1	13.2	1.08	5824	10.25	0.93
009590158-07	OBS	No	388.530072	448.006998	6062.9	21.343	10.3	11.3	1.08	5824	12.37	1.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009590158-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009590158-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
009590158-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

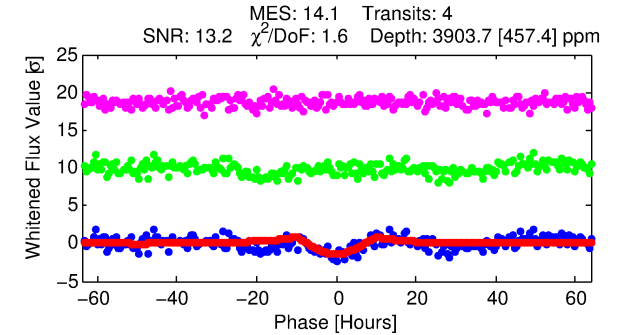
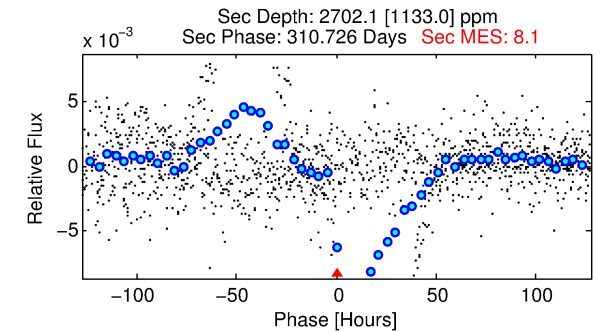
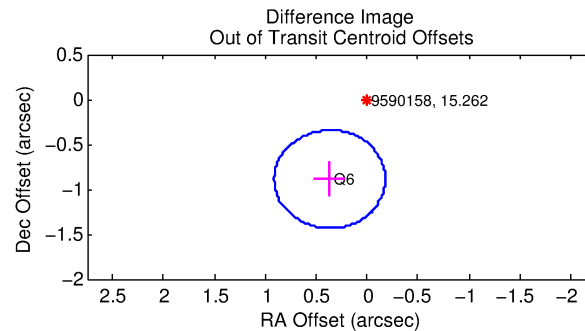
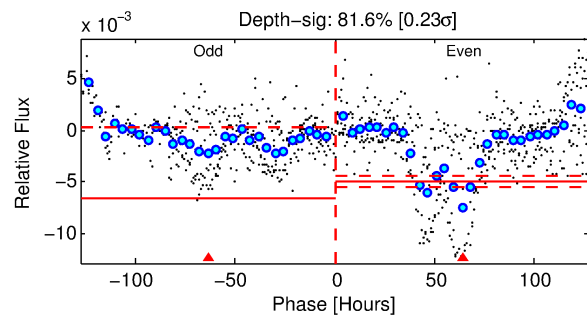
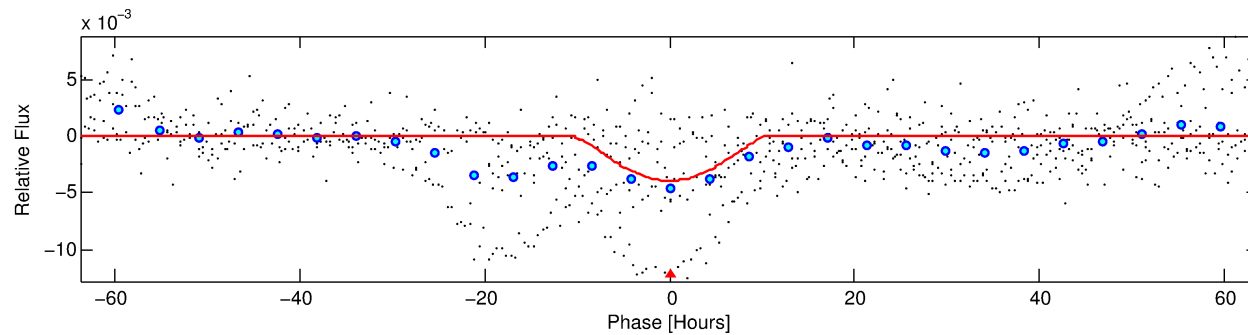
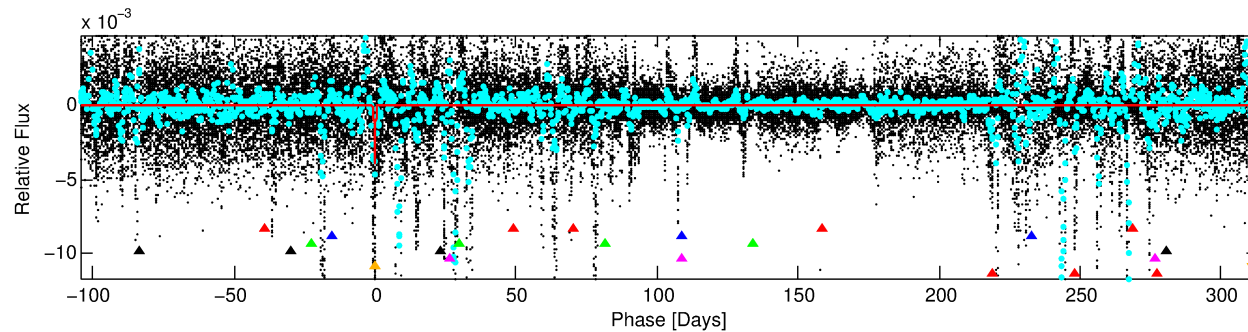
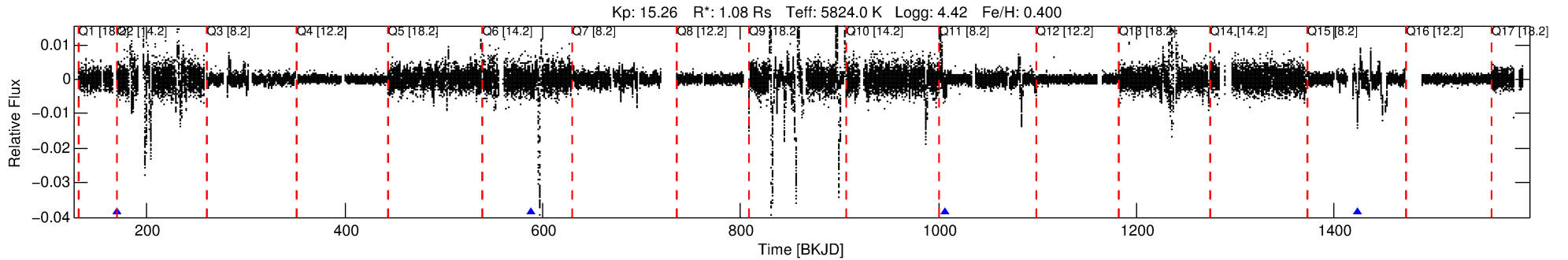
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009590158-06

No Significant Match Found

DV One-Page Summary

KIC: 9590158 Candidate: 6 of 7 Period: 417.766 d



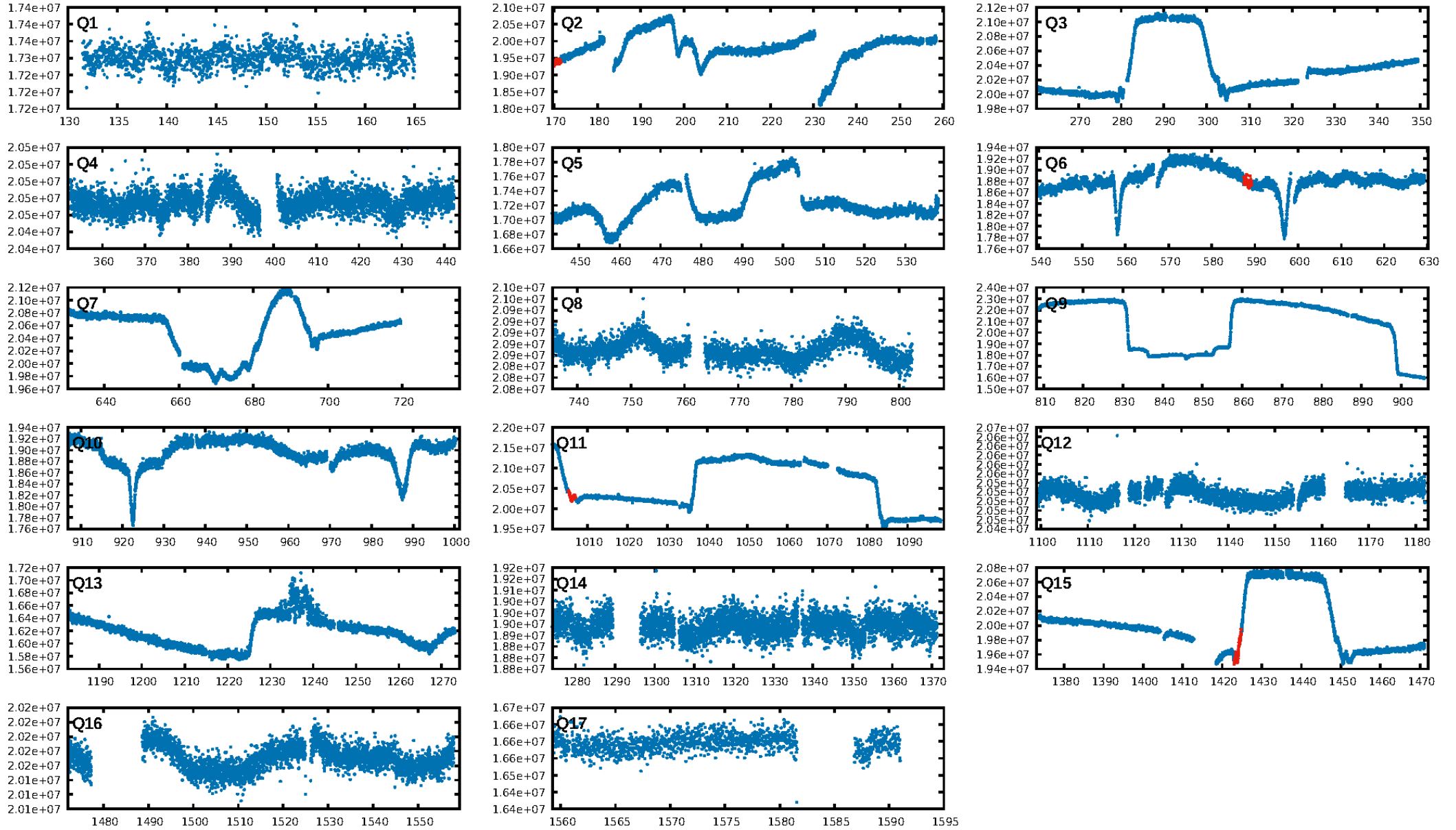
DV Fit Results:

Period = 417.76596 [0.02195] d
Epoch = 170.5788 [0.0505] BKJD
Rp/R* = 0.0868 [0.0882]
a/R* = 74.39 [23.10]
b = 0.97 [0.16]
Seff = 0.93 [0.37]
Teff = 251 [25] K
Rp = 10.25 [10.83] Re
a = 1.1371 [0.2825] AU
Ag = 18300.95 [38551.41] [0.47 σ]
Teffp = 4507 [2344] K [1.82 σ]

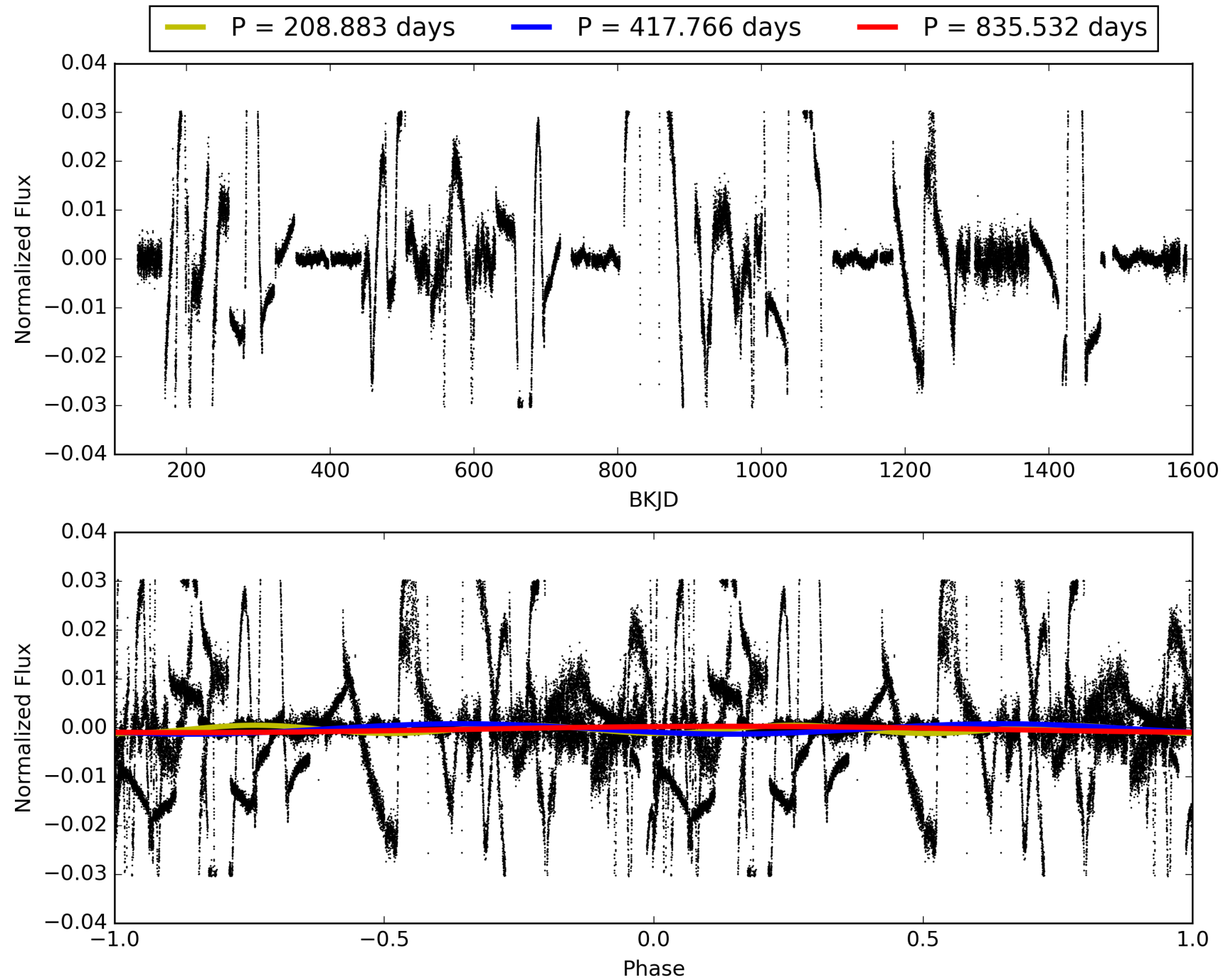
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [23.29 σ]
LongPeriod-sig: 100.0% [100.10 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 51.3%
Bootstrap-pfa: 3.28e-09
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -1.021
Centroid-sig: N/A
Centroid-so: 11.132 arcsec [0.29 σ]
OotOffset-rm: 0.963 arcsec [5.29 σ]
KicOffset-rm: 1.114 arcsec [7.06 σ]
OotOffset-st: 1/0/0/0 [1]
KicOffset-st: 1/0/0/0 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009590158-06, PDC Light Curves

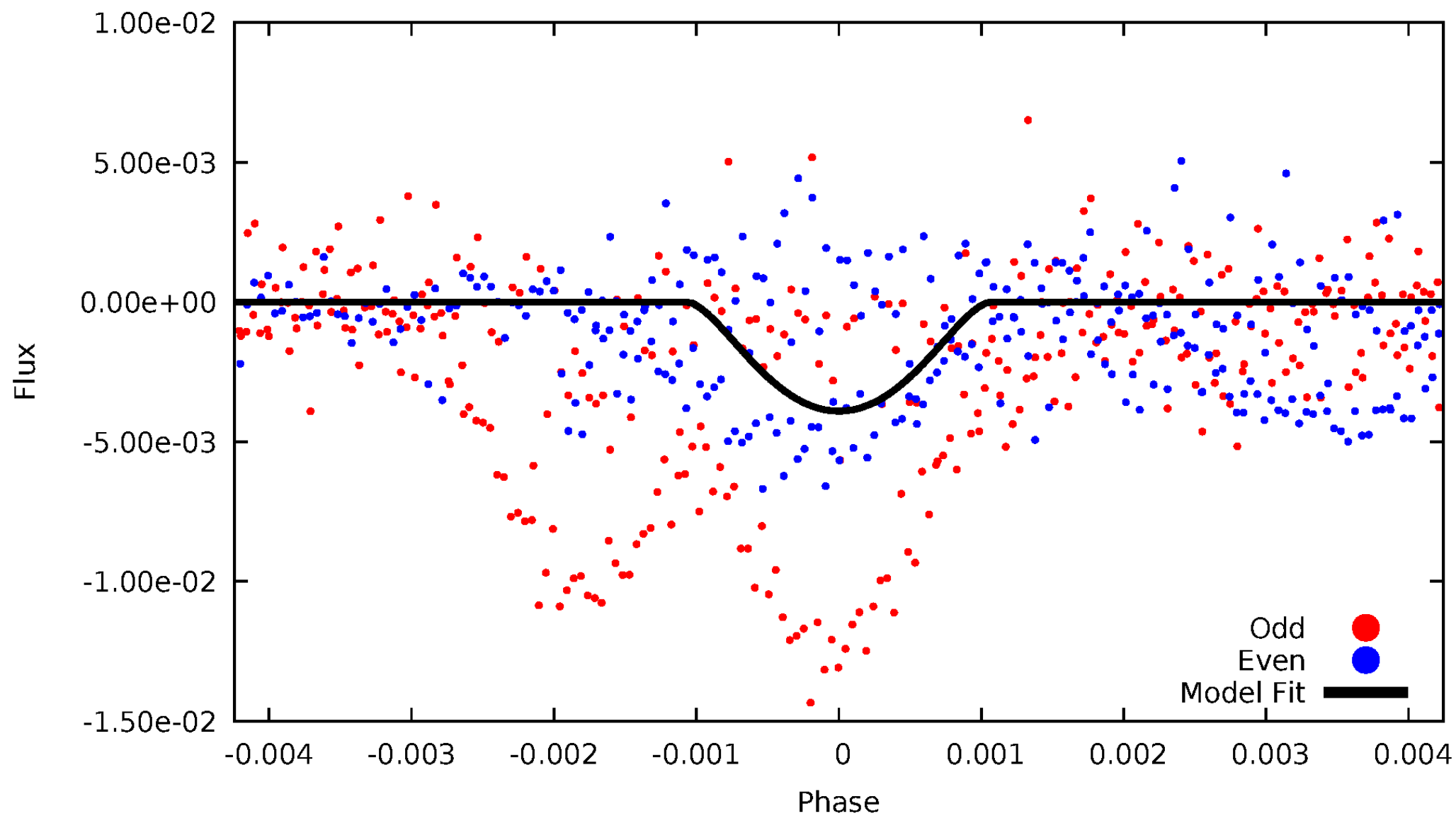


TCE 009590158-06



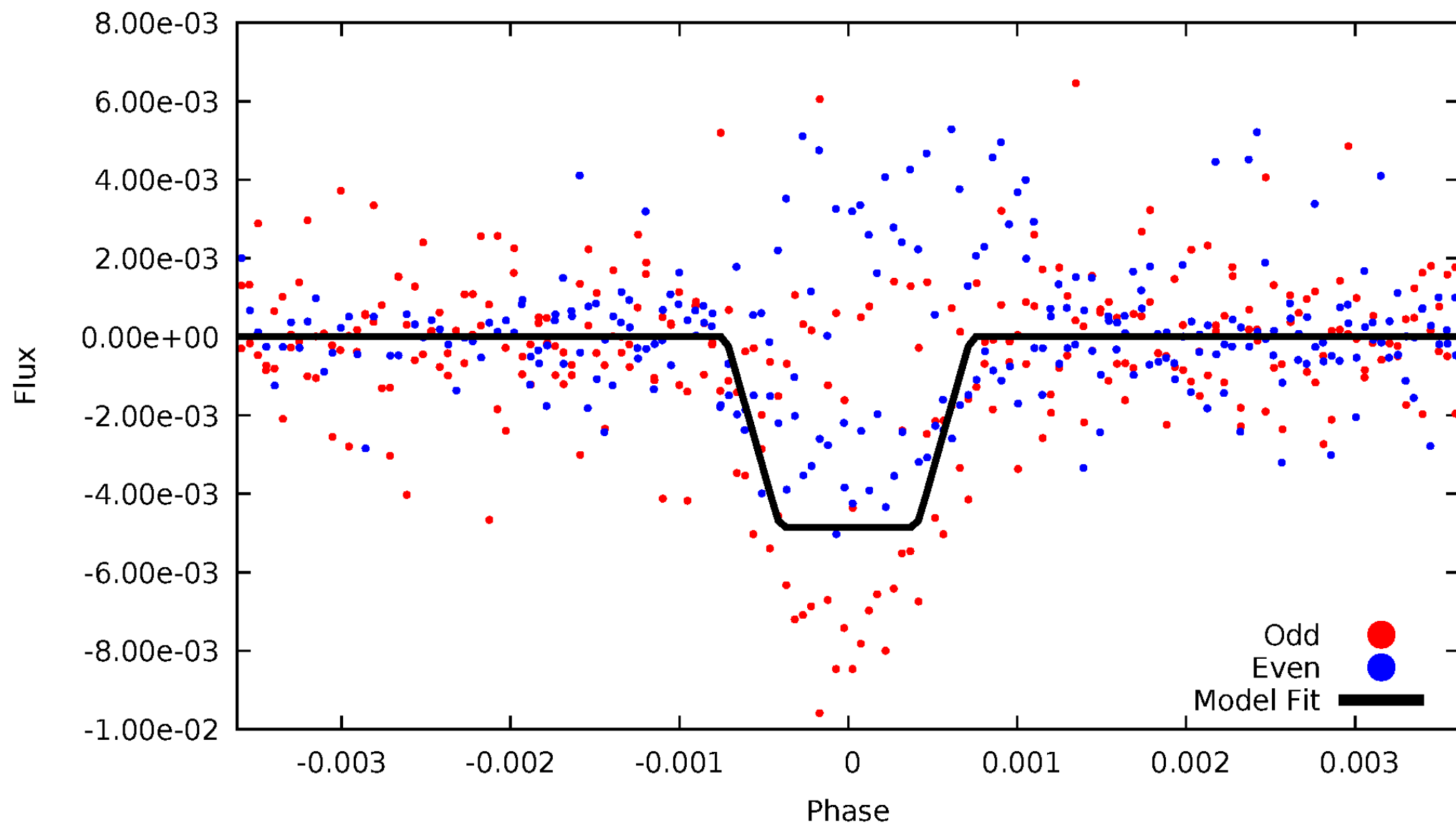
DV Odd/Even

TCE 009590158-06



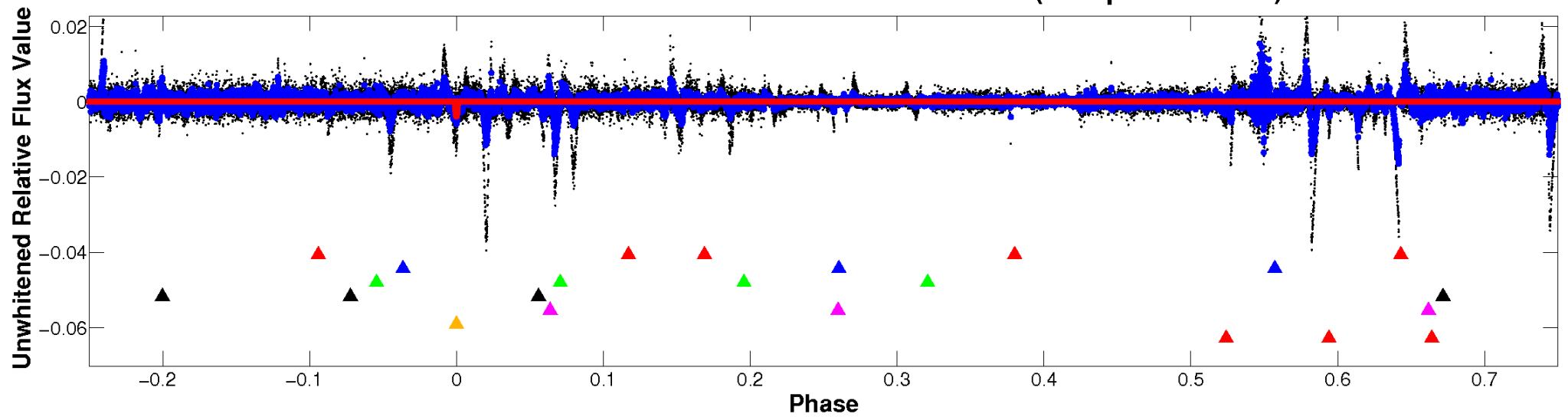
ALT Odd/Even

TCE 009590158-06

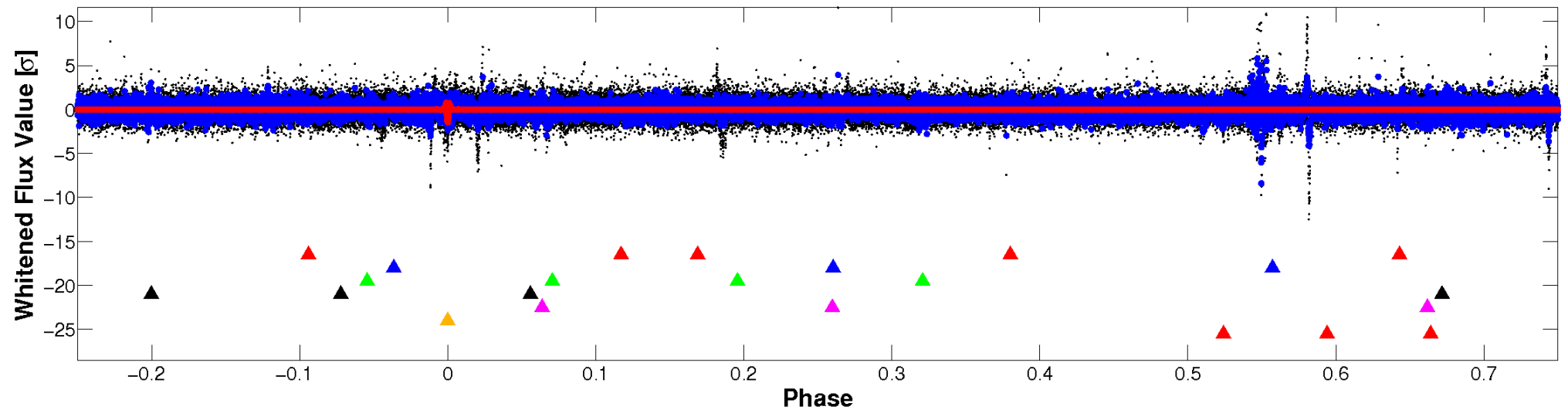


Non-Whitened Vs. Whitened Light Curve

Planet 6 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

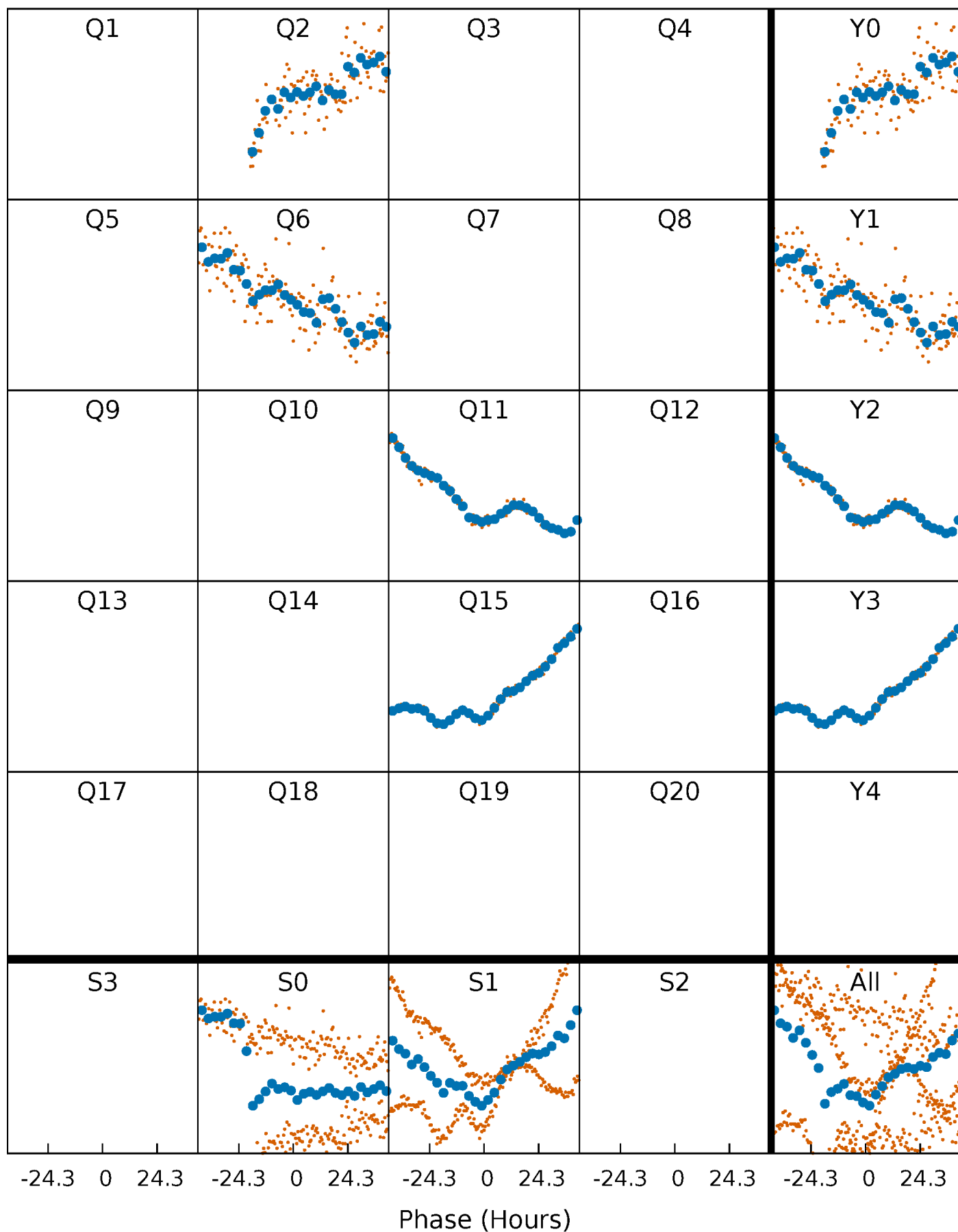


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



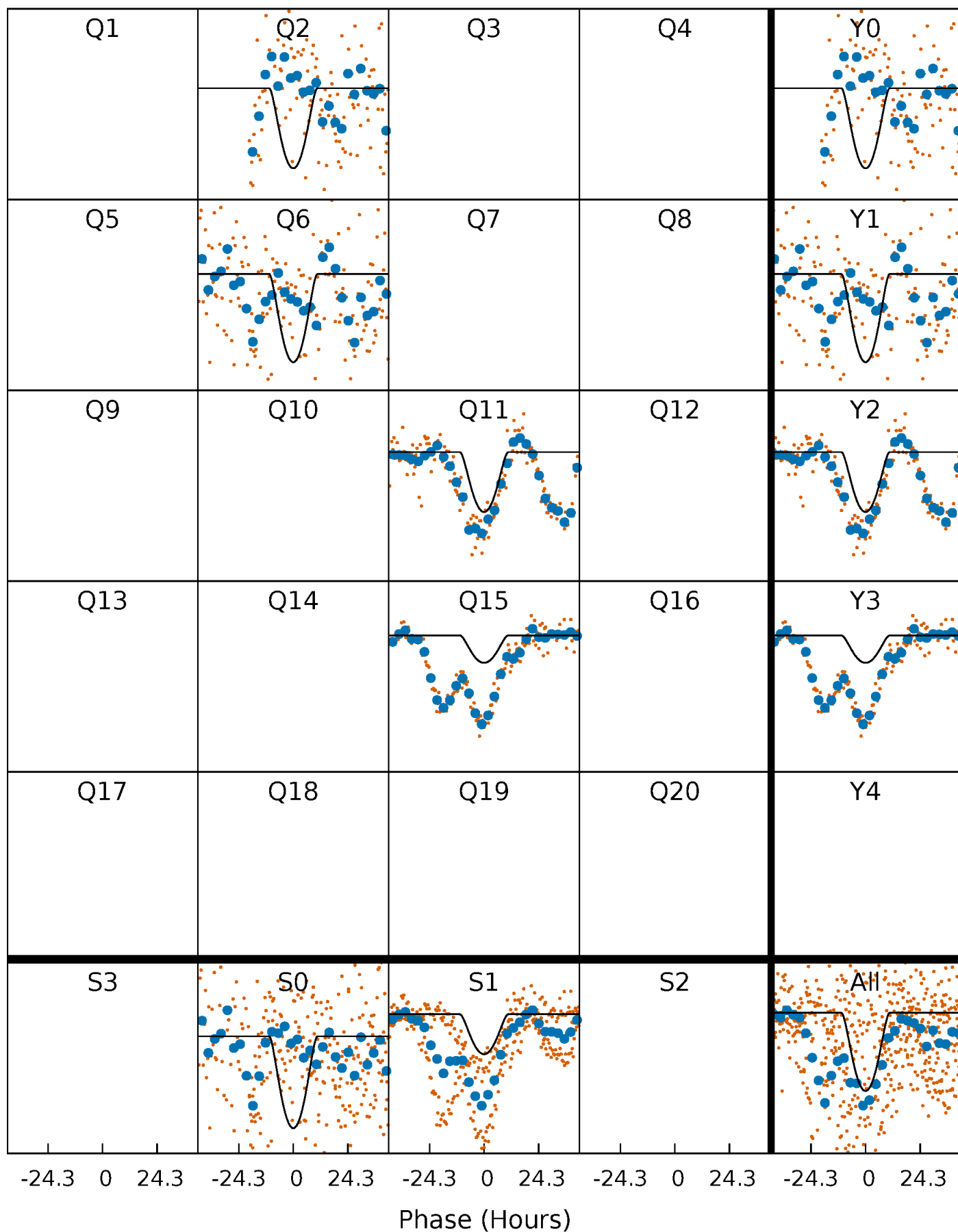
PDC Quarter-Phased Transit Curves

TCE 009590158-06 P=417.765963 Days $T_0=170.578777$ (BKJD)



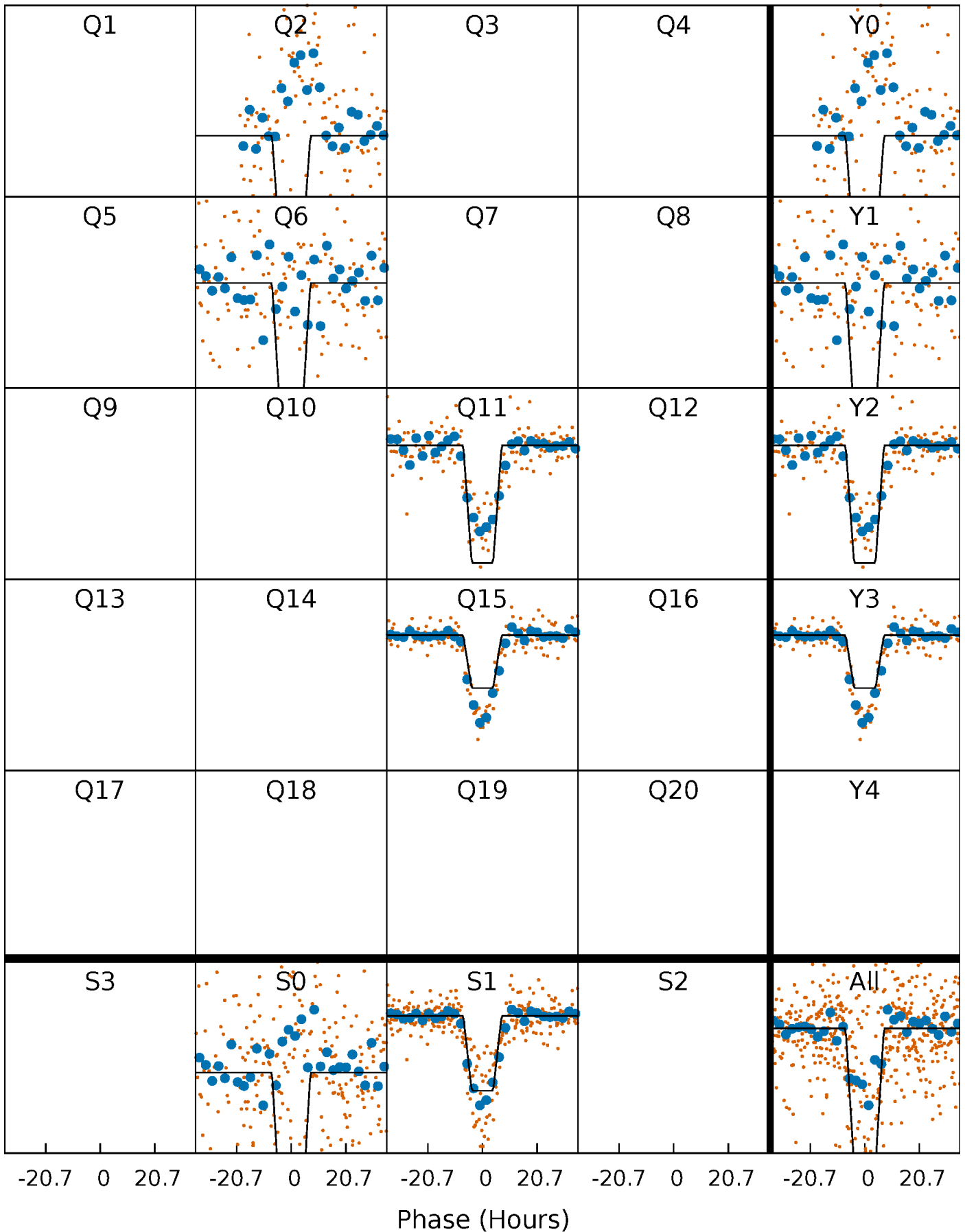
DV Quarter-Phased Transit Curves

TCE 009590158-06 P=417.765963 Days $T_0=170.578777$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

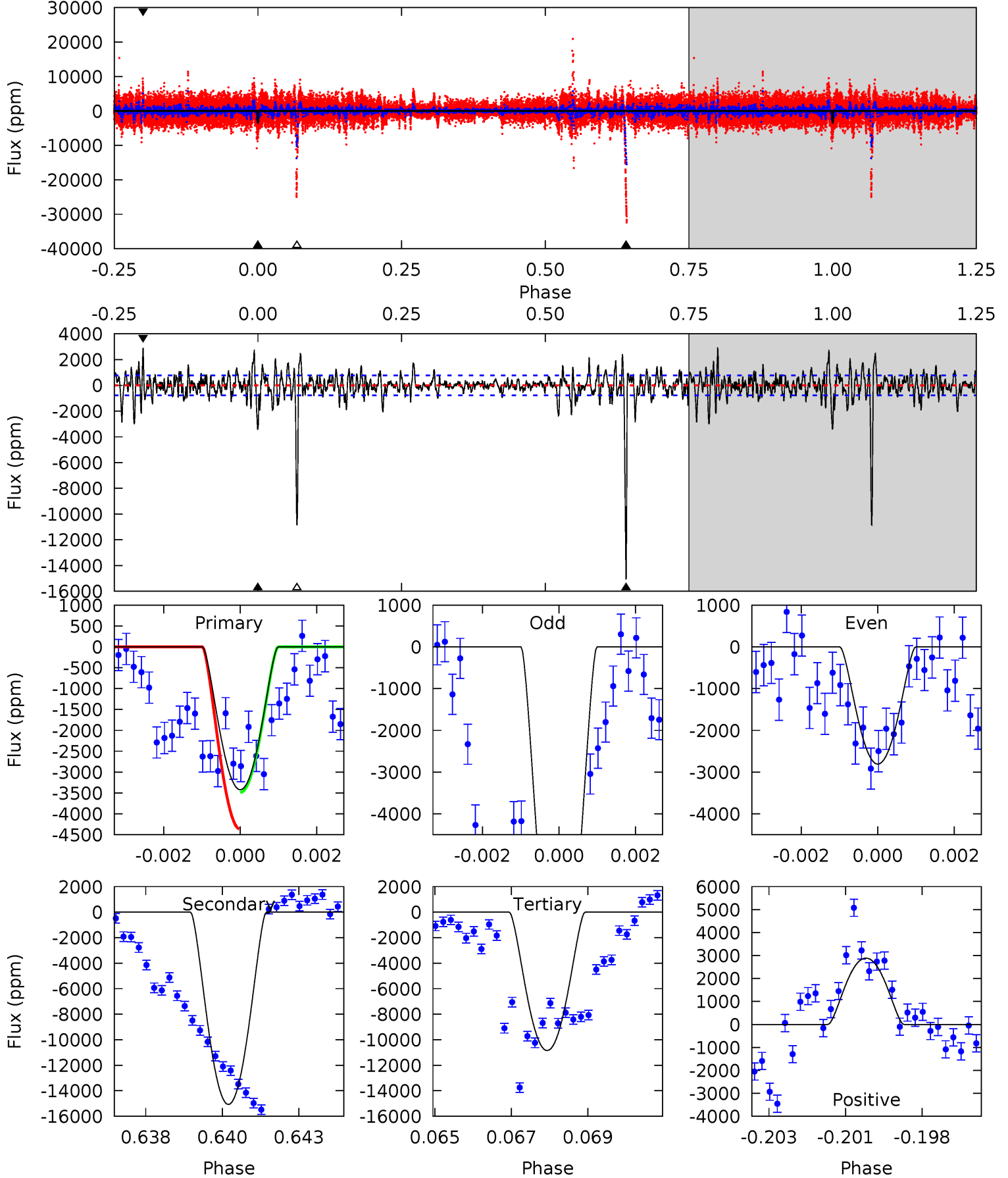
TCE 009590158-06 P=417.764134 Days $T_0=170.573057$ (BKJD)



DV Model-Shift Uniqueness Test

009590158-06, P = 417.765963 Days, E = 170.578777 Days

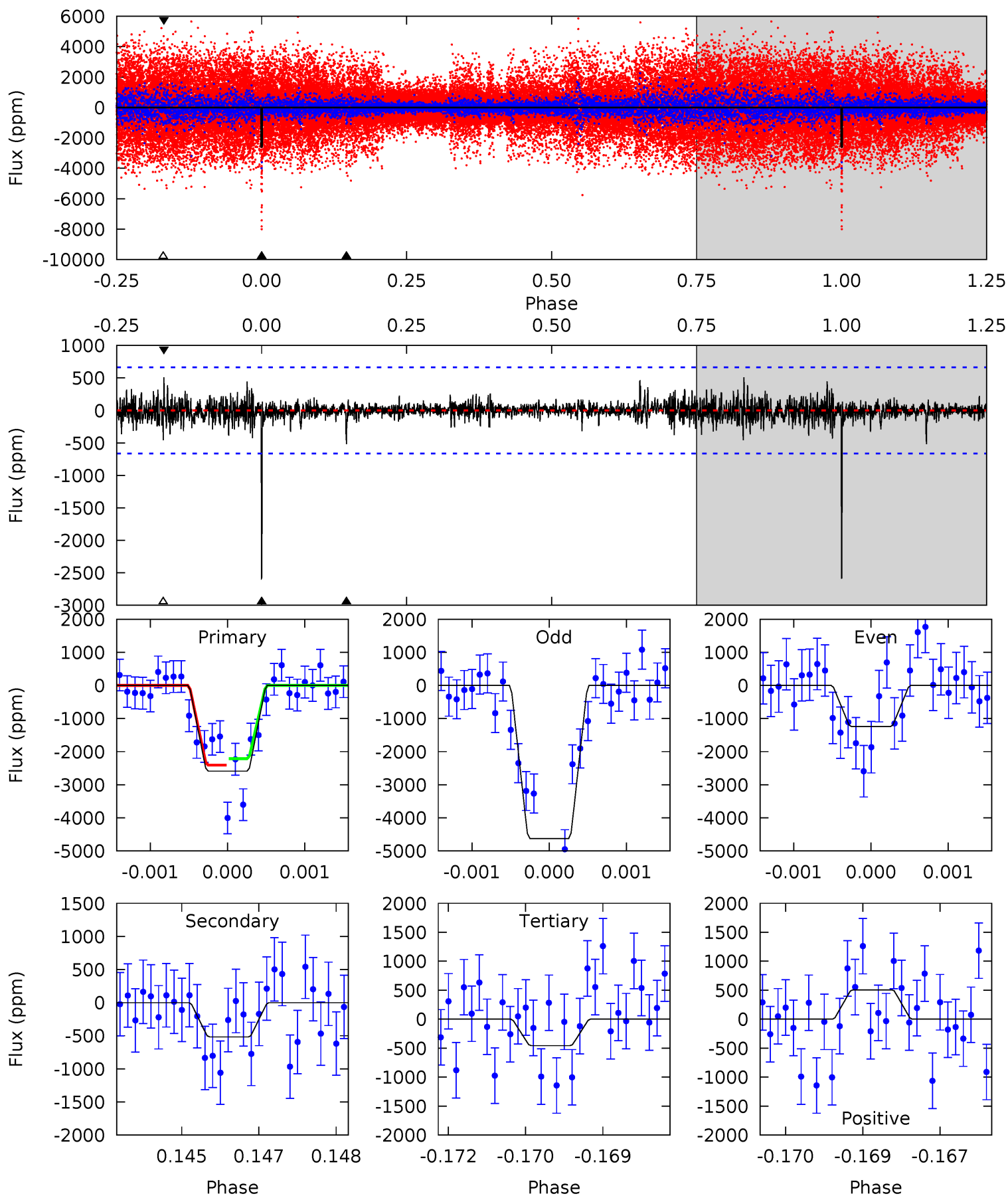
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.4	102.8	74.0	19.7	5.31	3.07	5.49	-50.7	3.66	28.8	83.1	14.2	1.36	0.16	0



Alt Model-Shift Uniqueness Test

009590158-06, P = 417.764134 Days, E = 170.573057 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
21.0	4.20	3.70	4.12	5.38	3.18	0.73	17.3	16.9	0.50	0.09	14.4	1.15	0.16	0.76



Stellar Parameters For KIC 009590158

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5824^{+182}_{-223}	$4.420^{+0.067}_{-0.202}$	$0.400^{+0.050}_{-0.300}$	$1.082^{+0.315}_{-0.135}$	$1.123^{+0.122}_{-0.150}$	$1.248^{+0.446}_{-0.637}$
	+3%/-4%	+2%/-5%	+12%/-75%	+29%/-12%	+11%/-13%	+36%/-51%
Source	PHO1	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 009590158-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-15074 ± 147	$12.60^{+10.52}_{-7.58}$	358^{+26}_{-20}	6439^{+5035}_{-1626}	$67484^{+358292}_{-47495}$
Alt.	-518 ± 123	$11.58^{+9.85}_{-7.79}$	357^{+27}_{-20}	3379^{+1659}_{-554}	2679^{+22271}_{-1919}

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

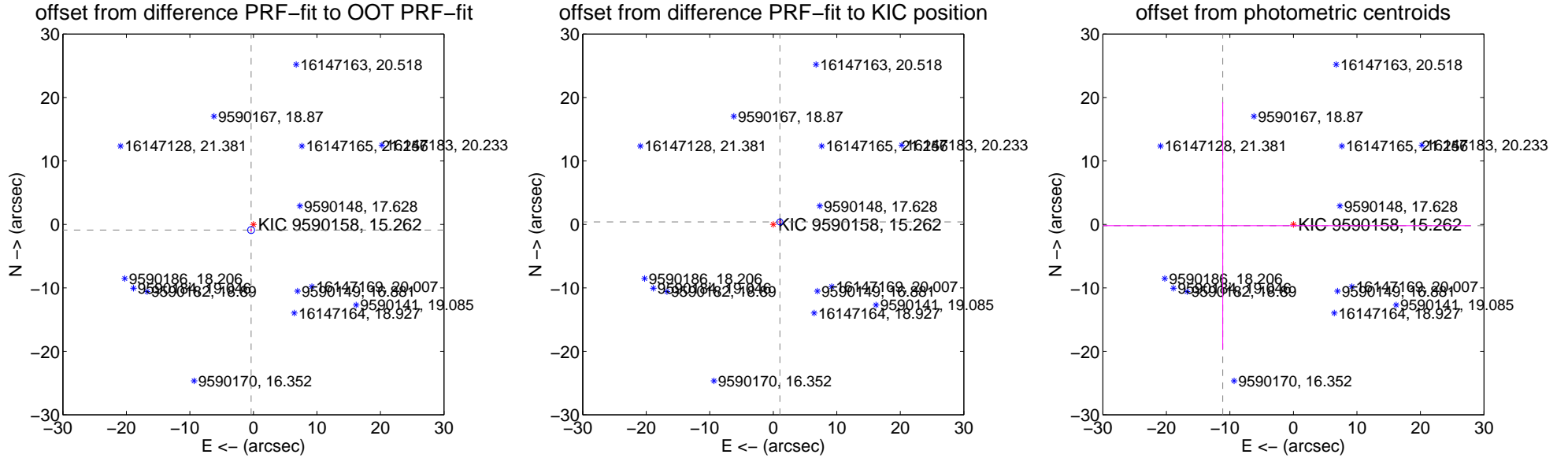
DV Centroid Data

Supplemental centroid analysis for 009590158-06. Kepler magnitude: 15.26. Transit SNR 13.20

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.90 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.963 ± 0.182	5.29	0.367 ± 0.154	-0.891 ± 0.186
PRF-fit source offset from KIC position	1.114 ± 0.158	7.06	-1.045 ± 0.154	0.387 ± 0.186
photometric centroid source offset	11.13 ± 39.06	0.29	11.13 ± 39.06	-0.21 ± 19.46

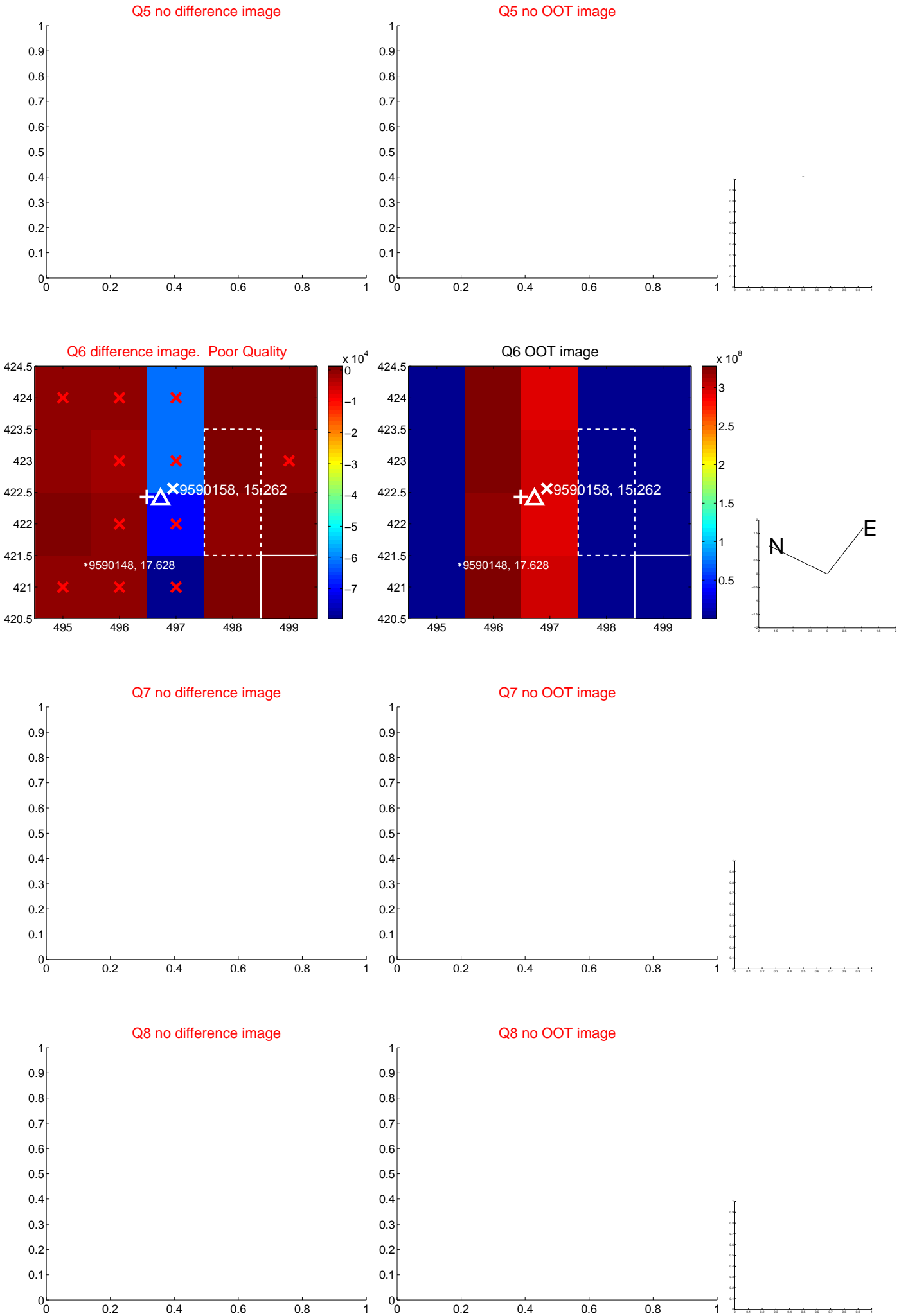


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

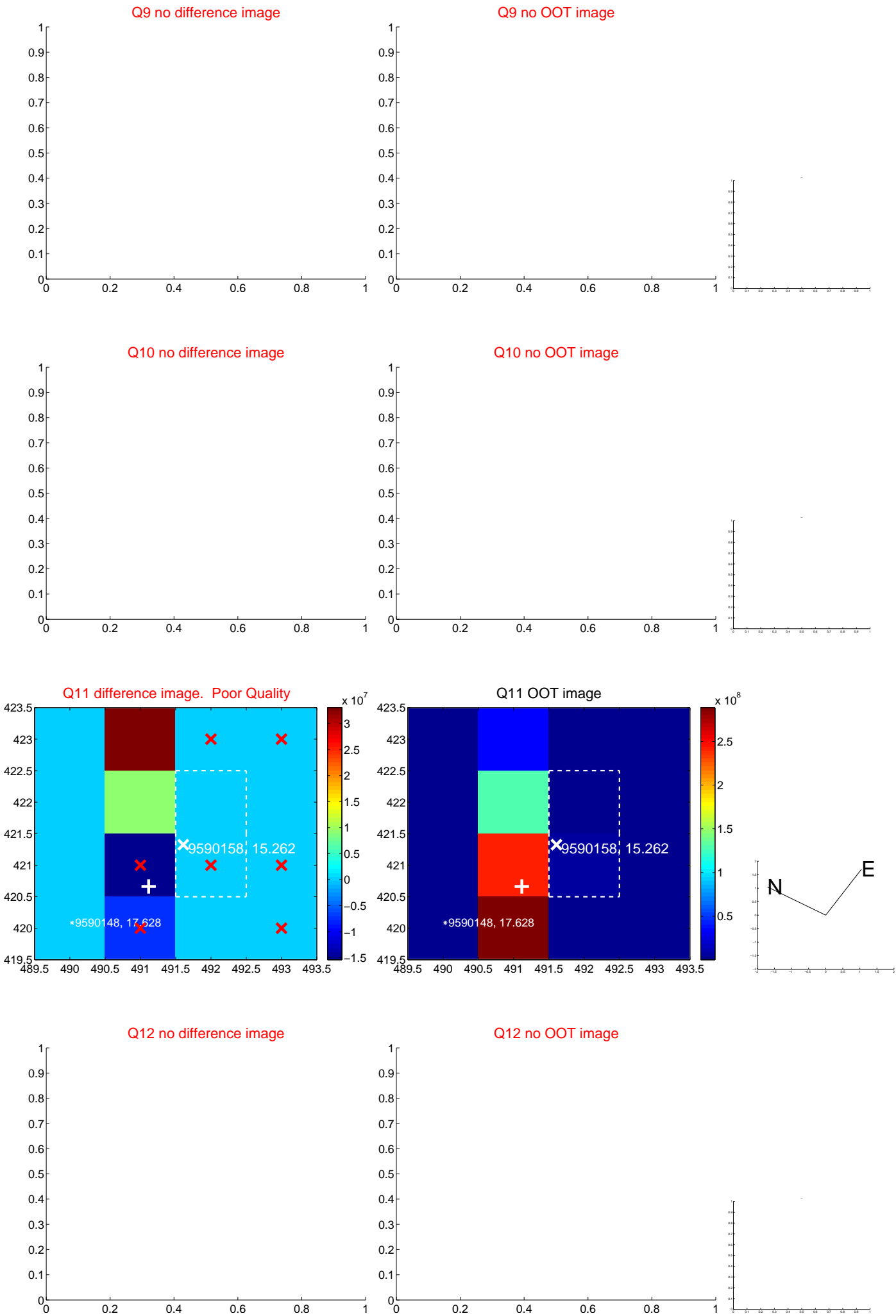
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

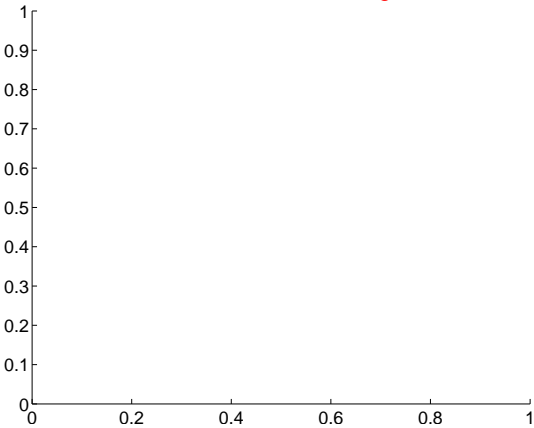


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

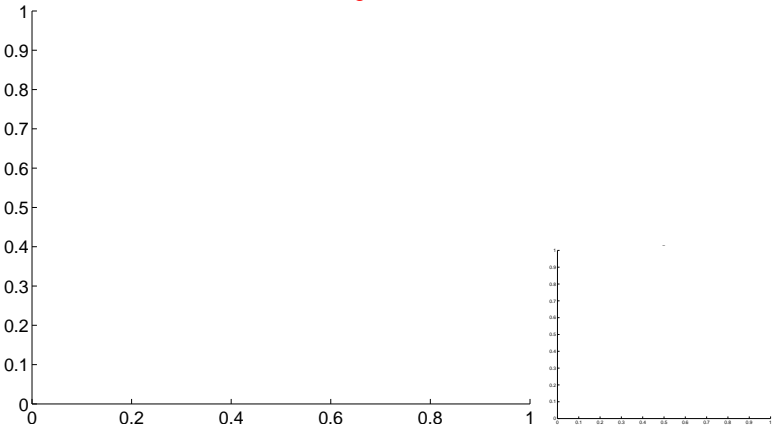


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

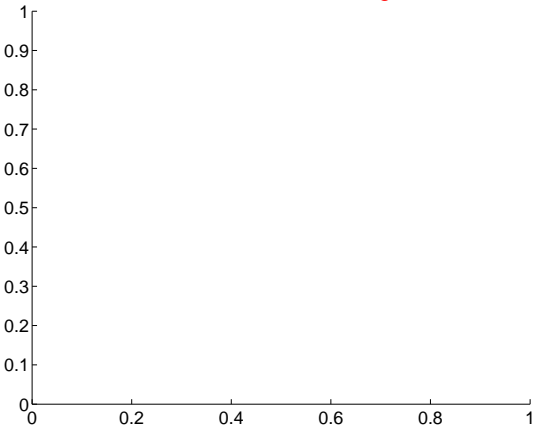
Q13 no difference image



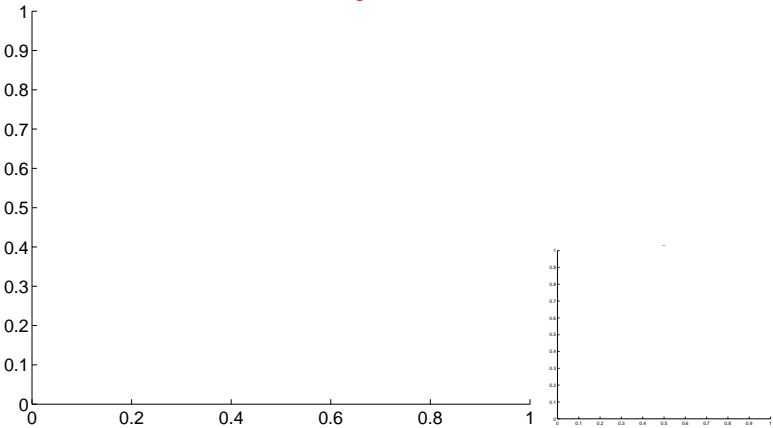
Q13 no OOT image



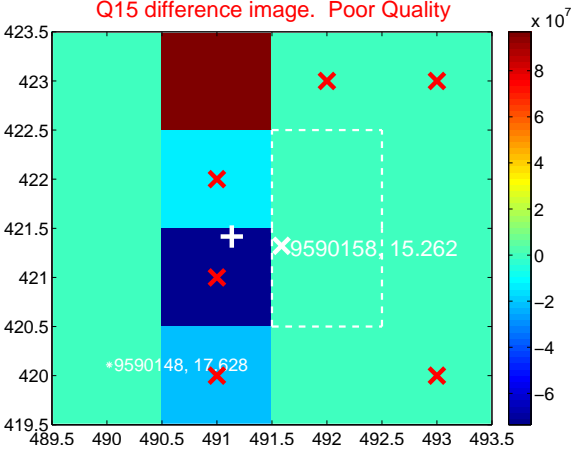
Q14 no difference image



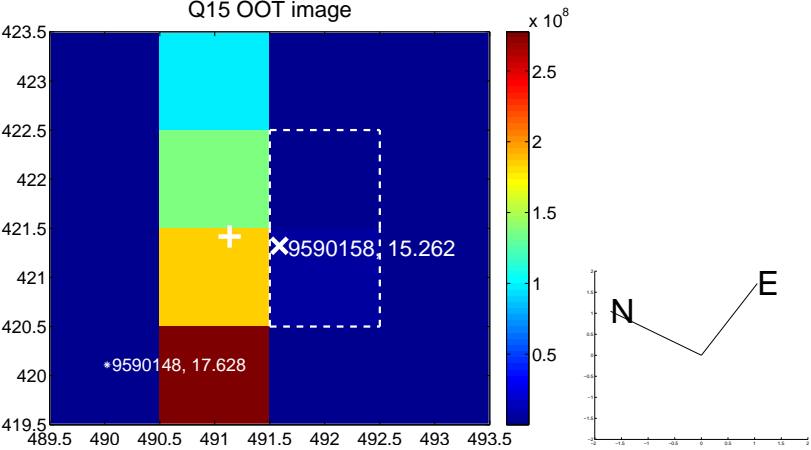
Q14 no OOT image



Q15 difference image. Poor Quality



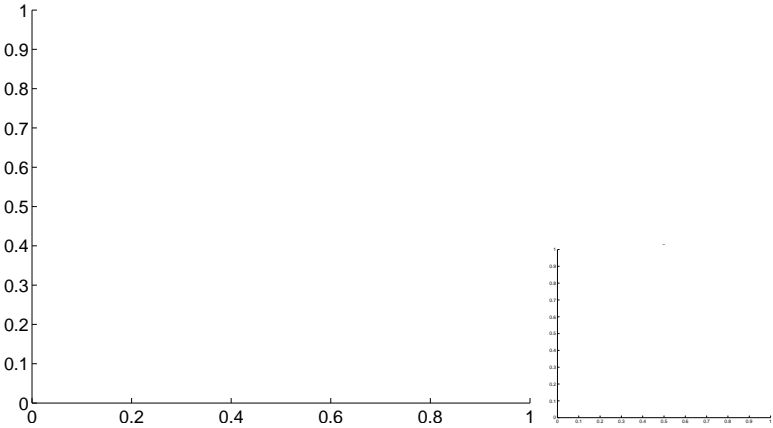
Q15 OOT image



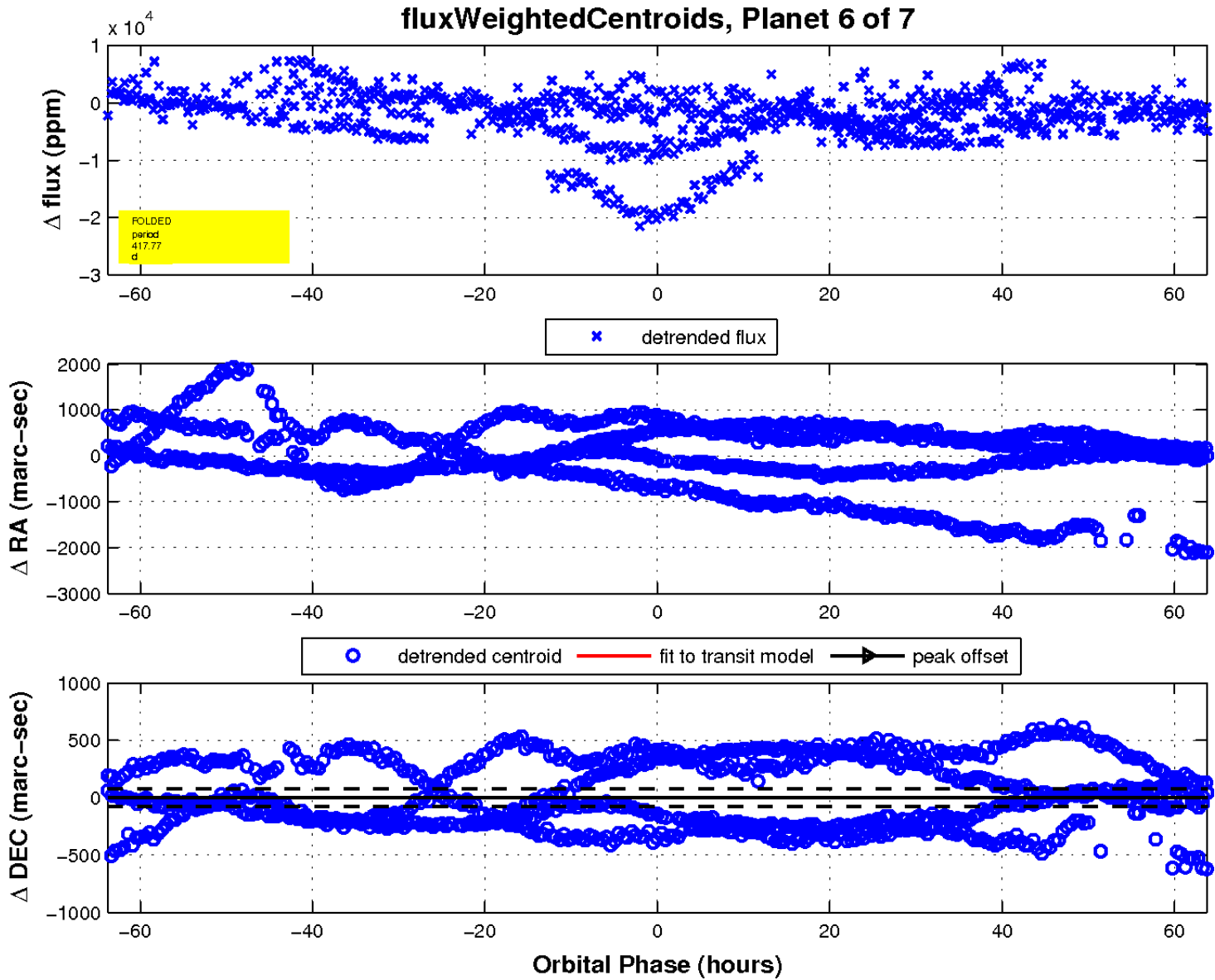
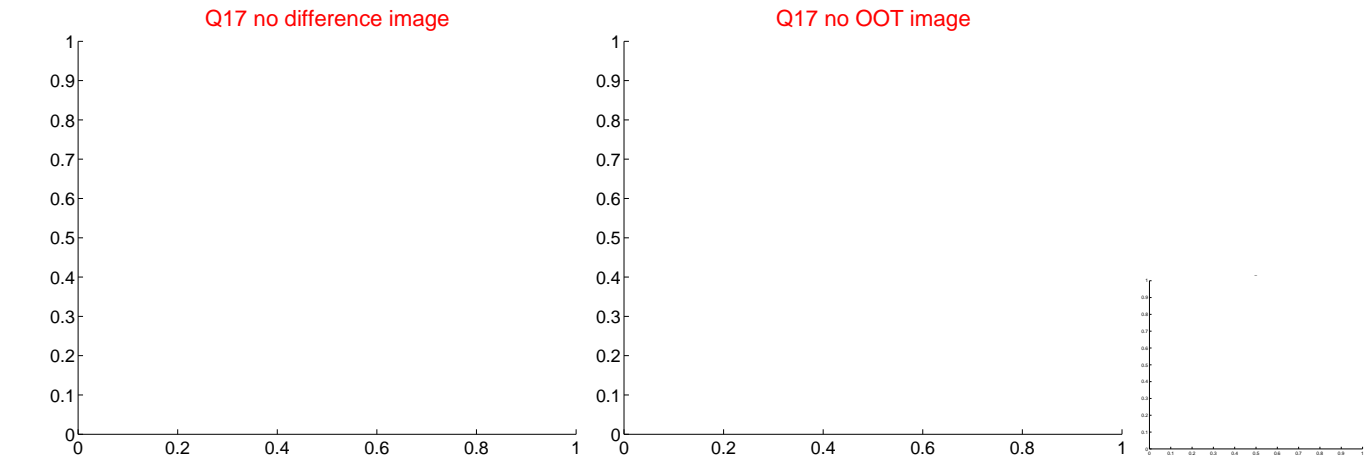
Q16 no difference image



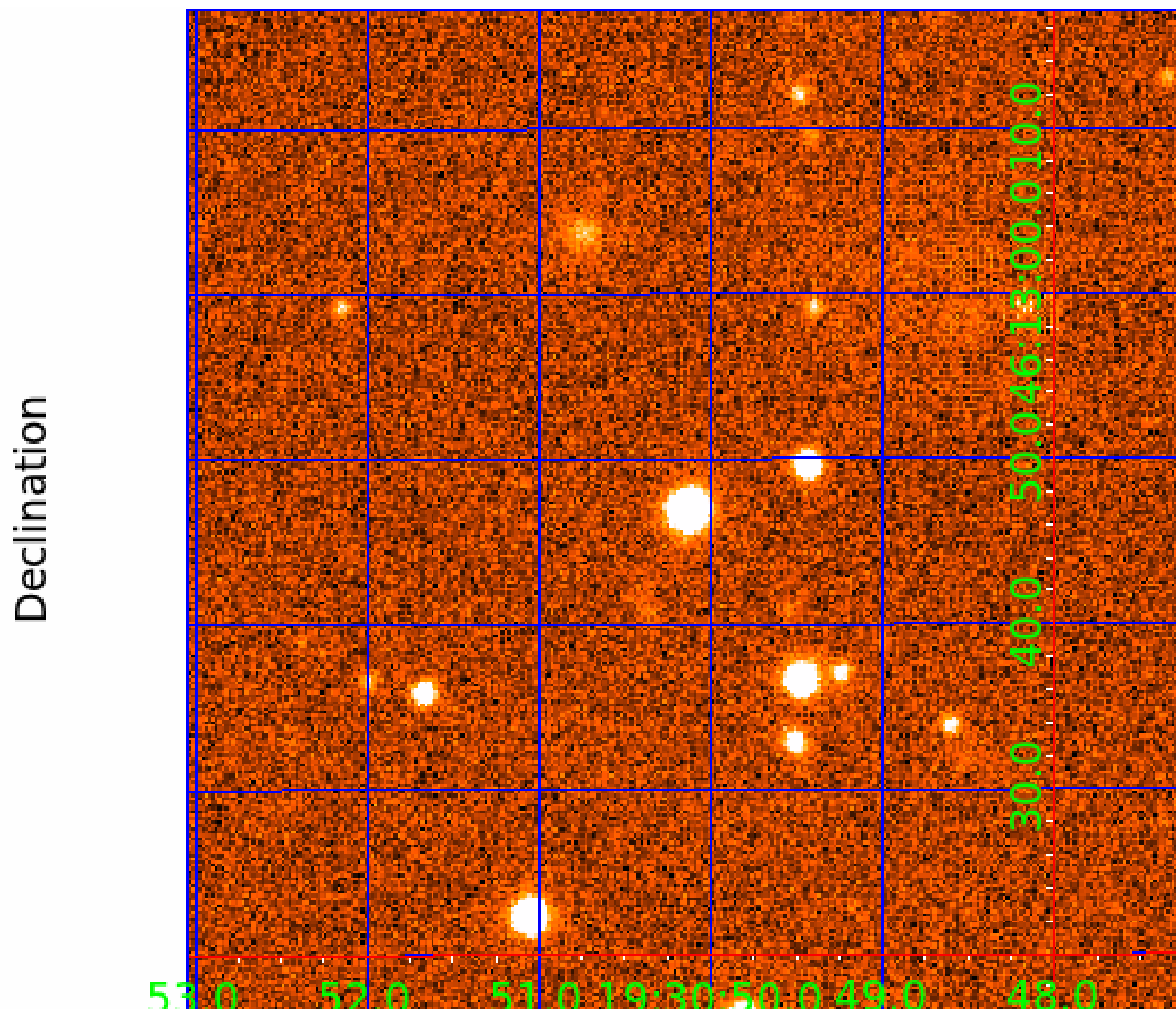
Q16 no OOT image



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



UKIRT Image



KIC 009590158

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})
009590158-01	OBS	No	307.922795	241.128520	1489.7	7.839	25.4	2.5	1.08	5824	4.30	1.40
009590158-02	OBS	No	541.765859	155.366599	6462.8	20.779	21.7	20.1	1.08	5824	10.37	0.66
009590158-03	OBS	No	365.508227	304.626204	3479.3	27.535	20.7	15.7	1.08	5824	7.94	1.11
009590158-04	OBS	No	364.278043	193.910444	12839.3	40.056	25.3	21.0	1.08	5824	22.06	1.12
009590158-05	OBS	No	585.692415	279.142242	5832.3	27.331	18.5	20.3	1.08	5824	15.10	0.59
009590158-06	OBS	No	417.765963	170.578776	3903.7	21.264	14.1	13.2	1.08	5824	10.25	0.93
009590158-07	OBS	No	388.530072	448.006998	6062.9	21.343	10.3	11.3	1.08	5824	12.37	1.03

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009590158-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
009590158-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
009590158-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—CENT_FEW_DIFFS
009590158-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—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.

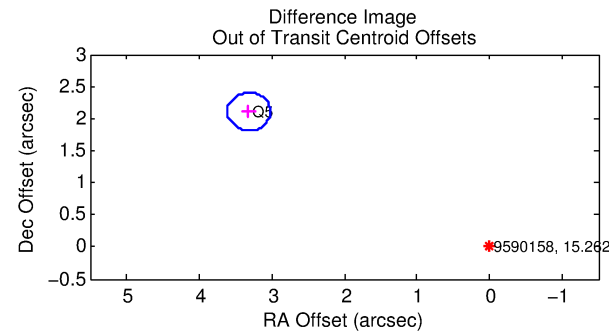
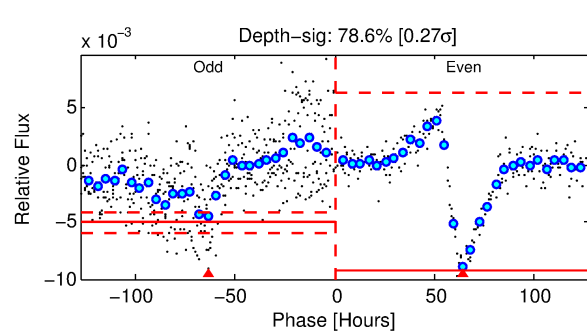
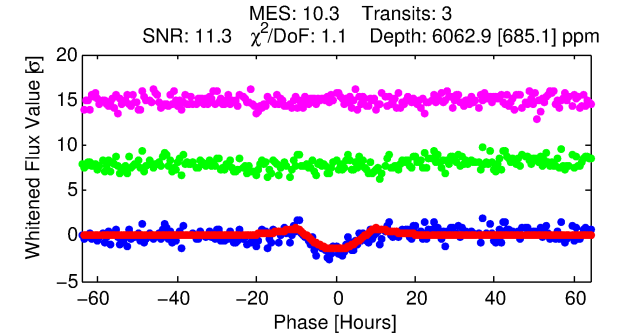
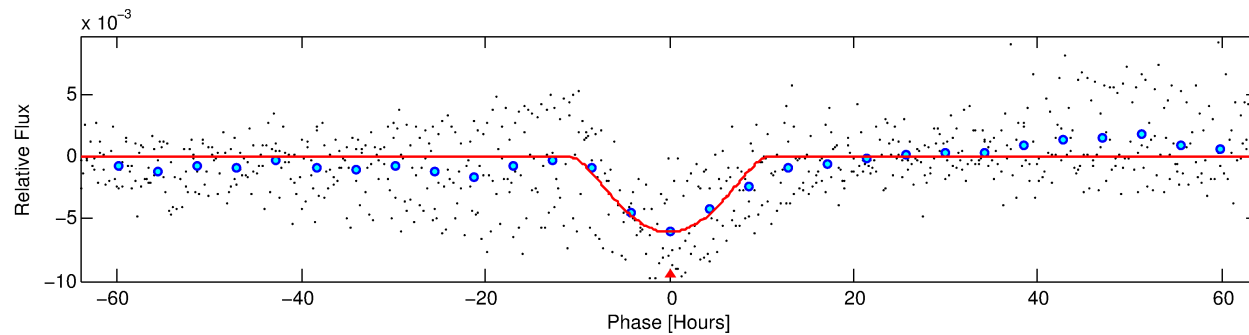
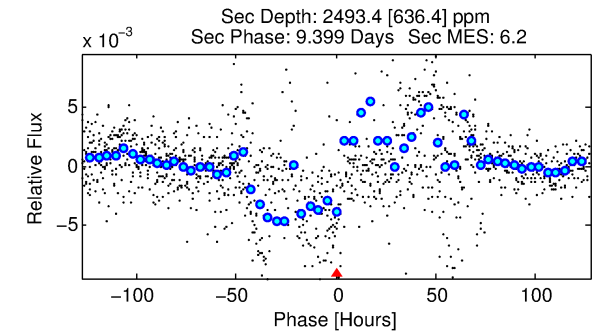
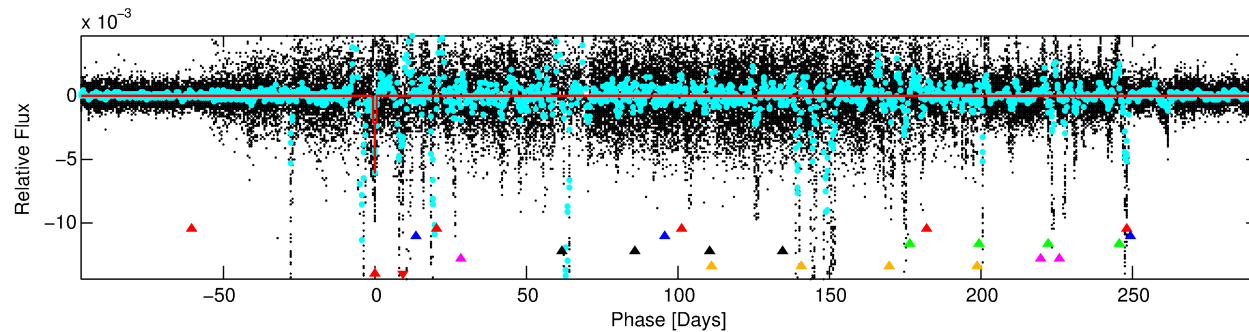
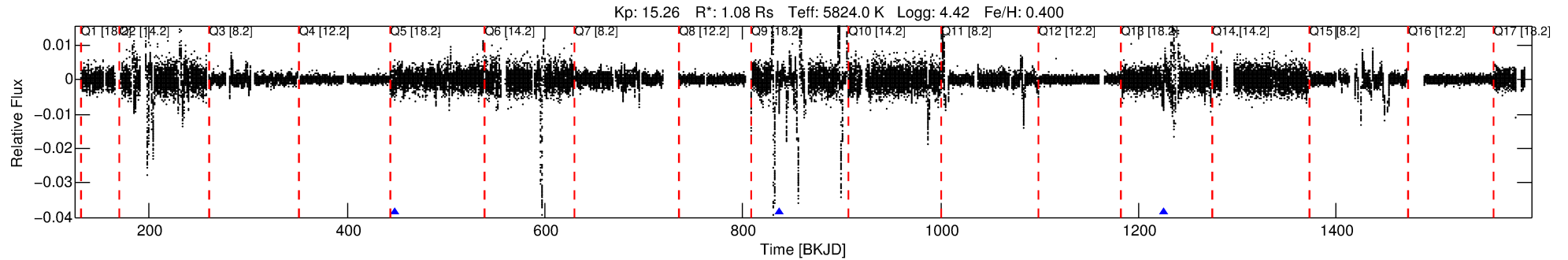
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009590158-07

No Significant Match Found

DV One-Page Summary

KIC: 9590158 Candidate: 7 of 7 Period: 388.530 d



DV Fit Results:

Period = 388.53007 [0.02086] d
Epoch = 448.0070 [0.0273] BKJD
Rp/R* = 0.1048 [0.0878]
a/R* = 76.77 [19.04]
b = 0.96 [0.16]
Seff = 1.03 [0.41]
Teff = 257 [25] K
Rp = 12.37 [10.97] Re
a = 1.0834 [0.2691] AU
Ag = 10519.68 [18242.83] [0.58σ]
Teffp = 4020 [1711] K [2.20σ]

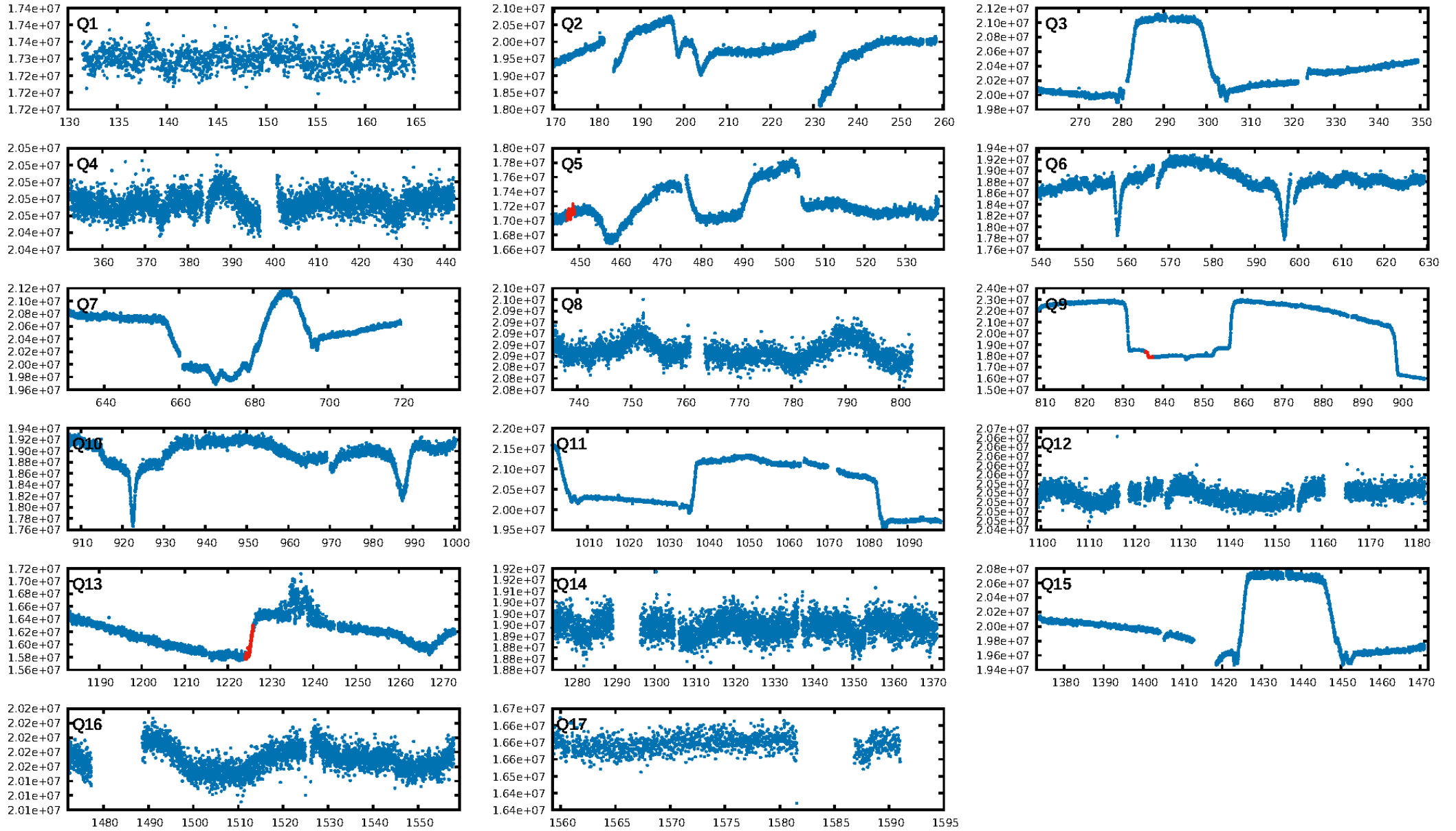
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [15.86σ]
LongPeriod-sig: 100.0% [23.29σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 91.7%
Bootstrap-pfa: 4.02e-05
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.4995
Centroid-sig: N/A
Centroid-so: 3.580 arcsec [1.75σ]
OotOffset-rm: 3.927 arcsec [40.12σ]
KicOffset-rm: 4.919 arcsec [53.29σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

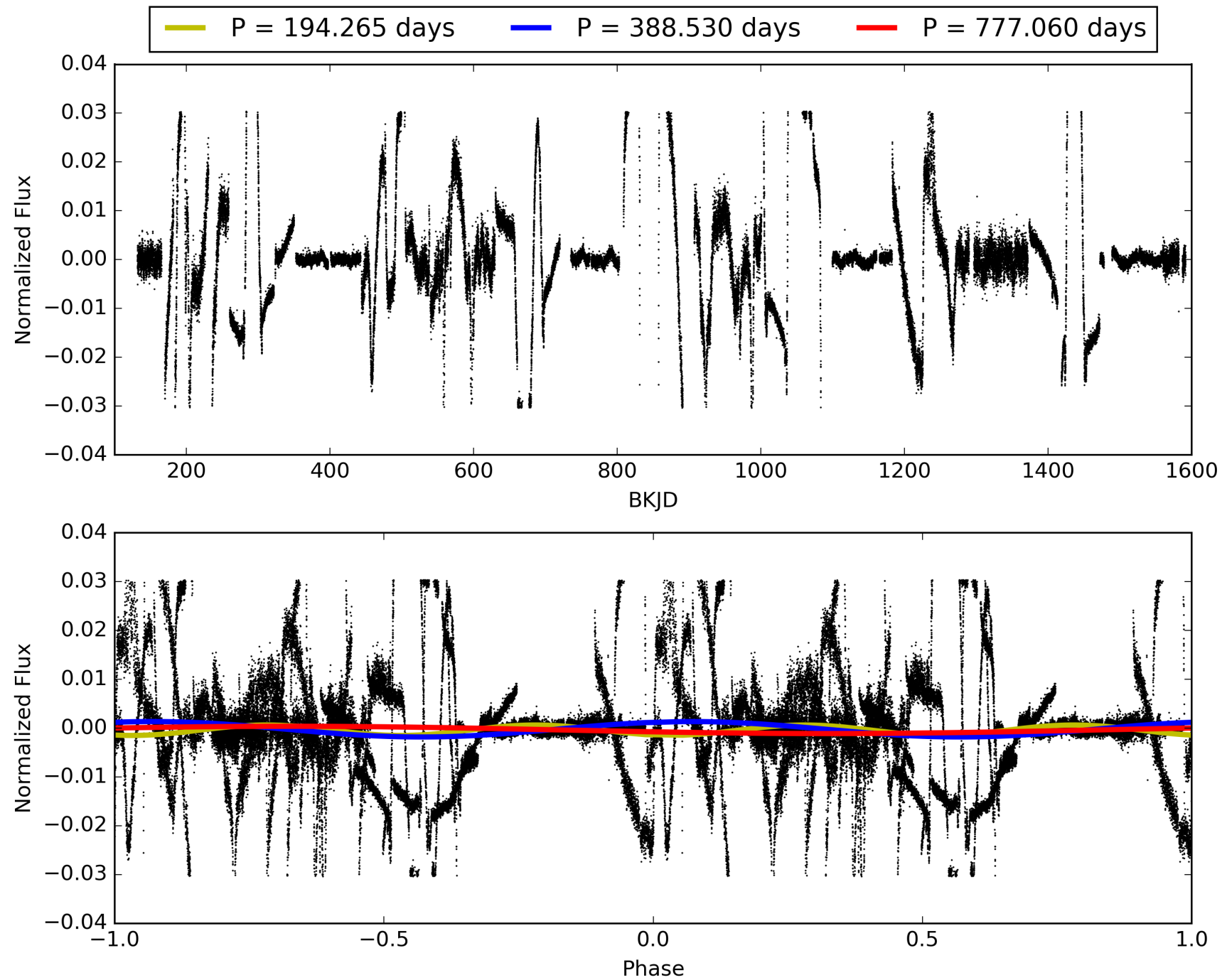
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:27:28 Z

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

TCE 009590158-07, PDC Light Curves

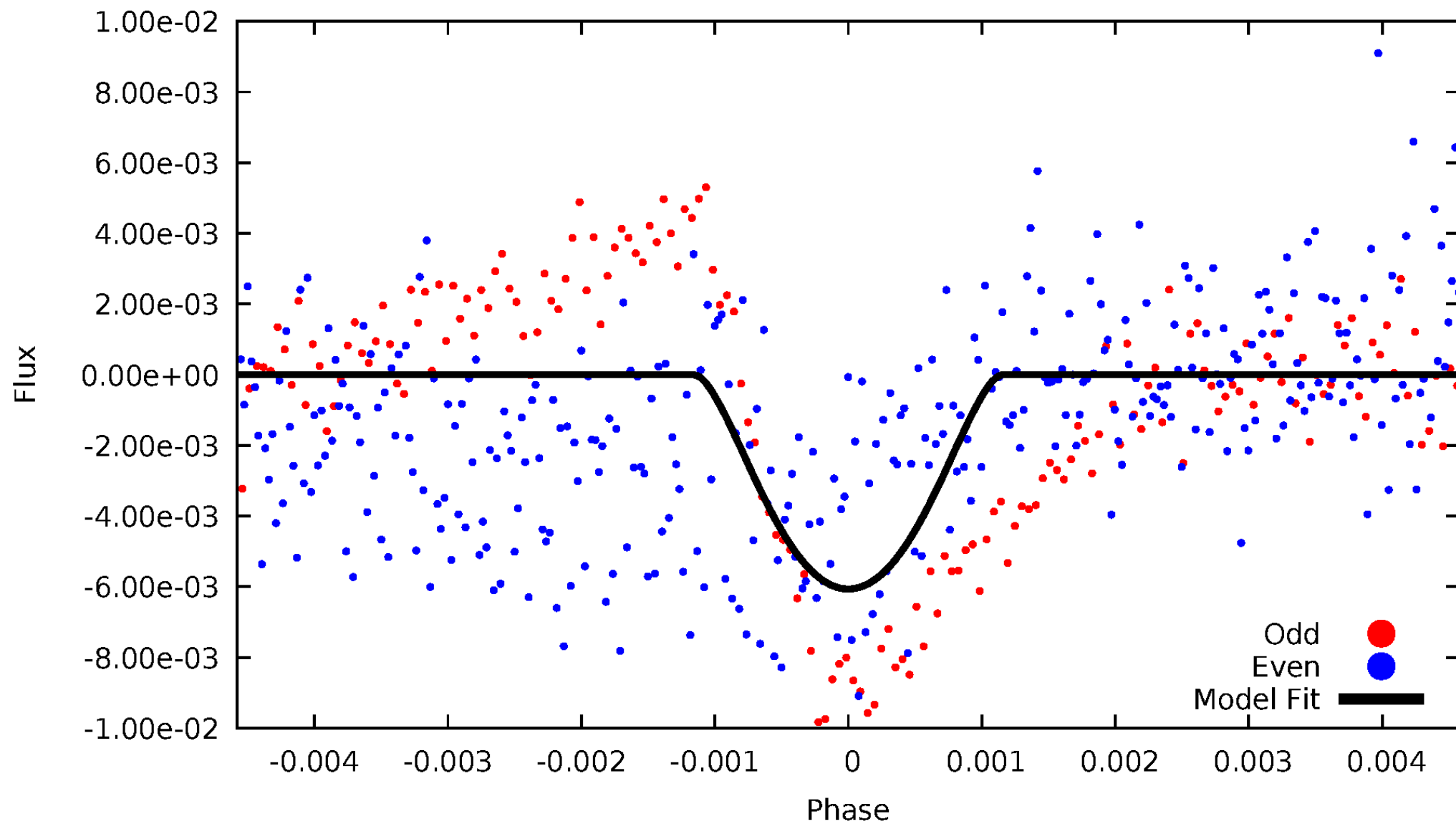


TCE 009590158-07



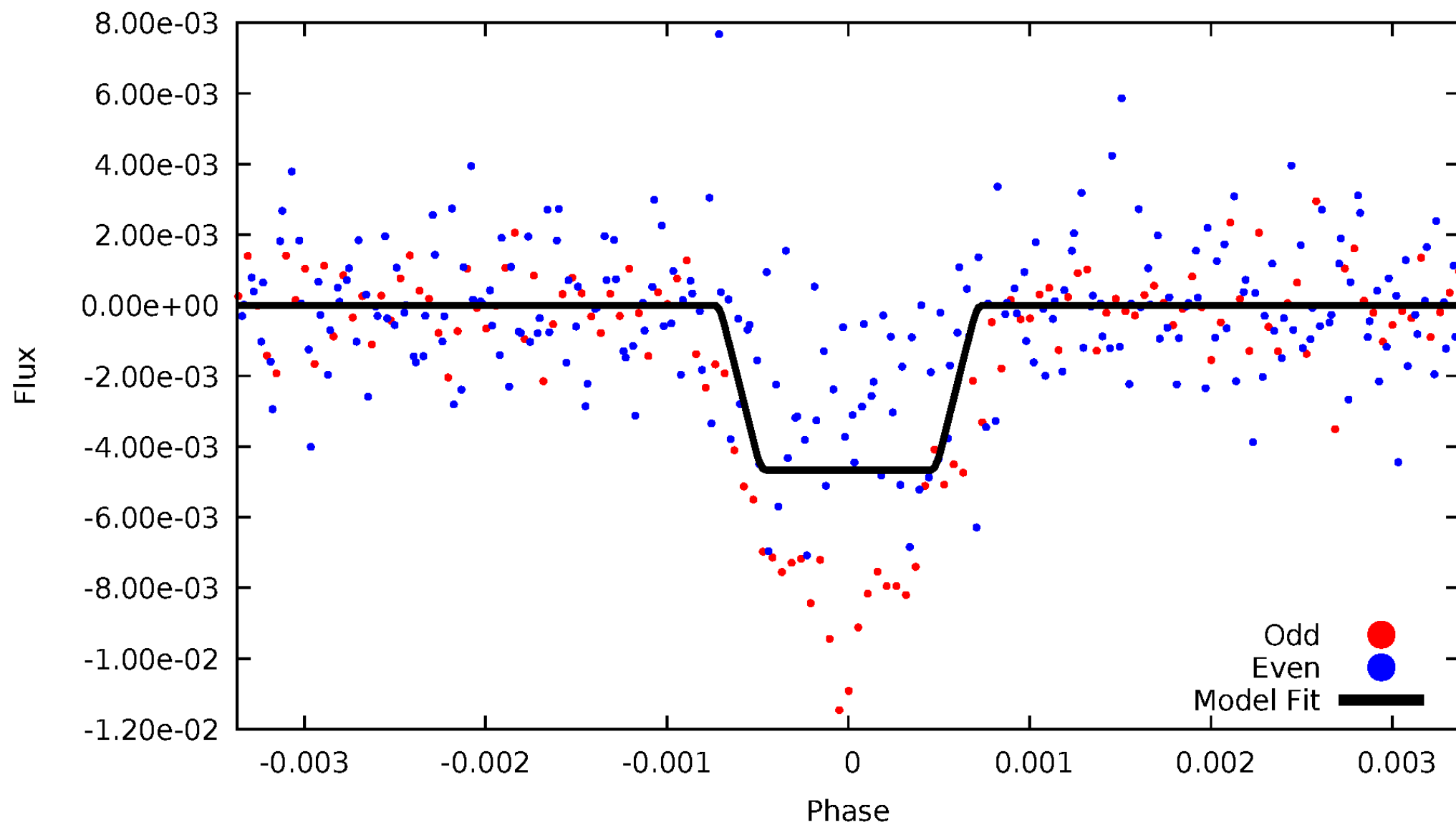
DV Odd/Even

TCE 009590158-07



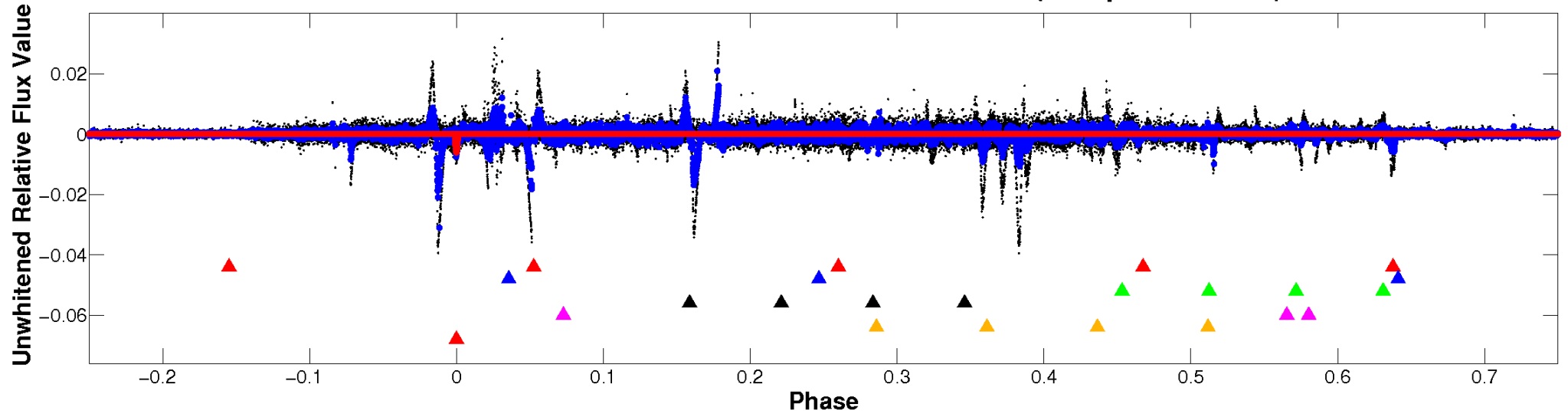
ALT Odd/Even

TCE 009590158-07

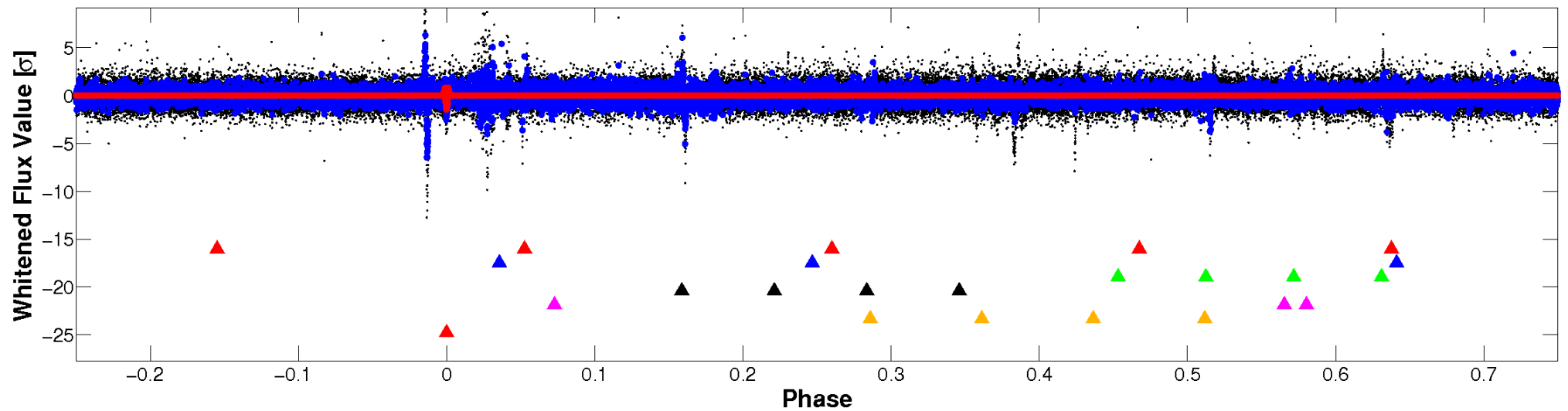


Non-Whitened Vs. Whitened Light Curve

Planet 7 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

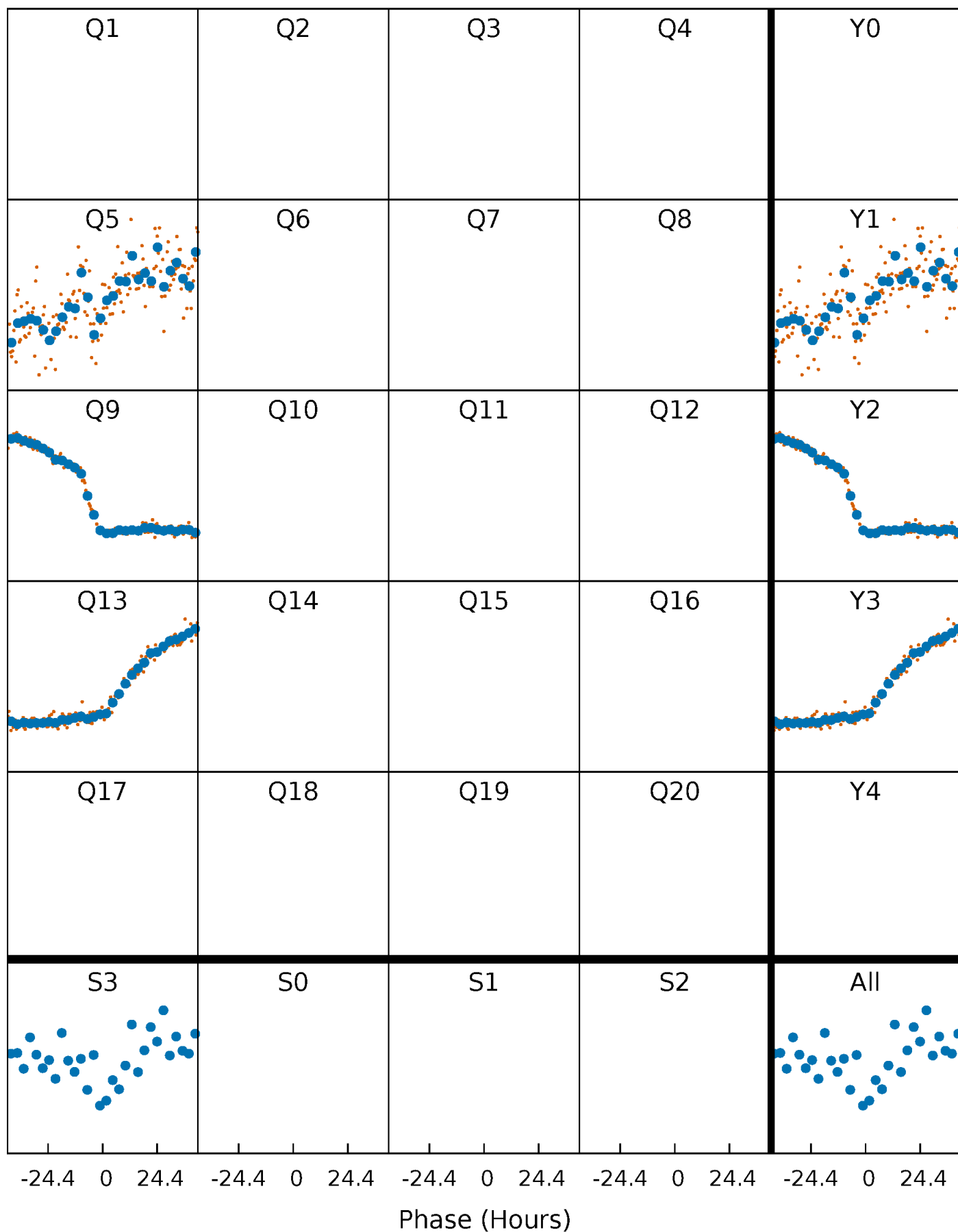


Planet 7 : Phased Whitened Flux Time Series (Fit Epoch/Period)



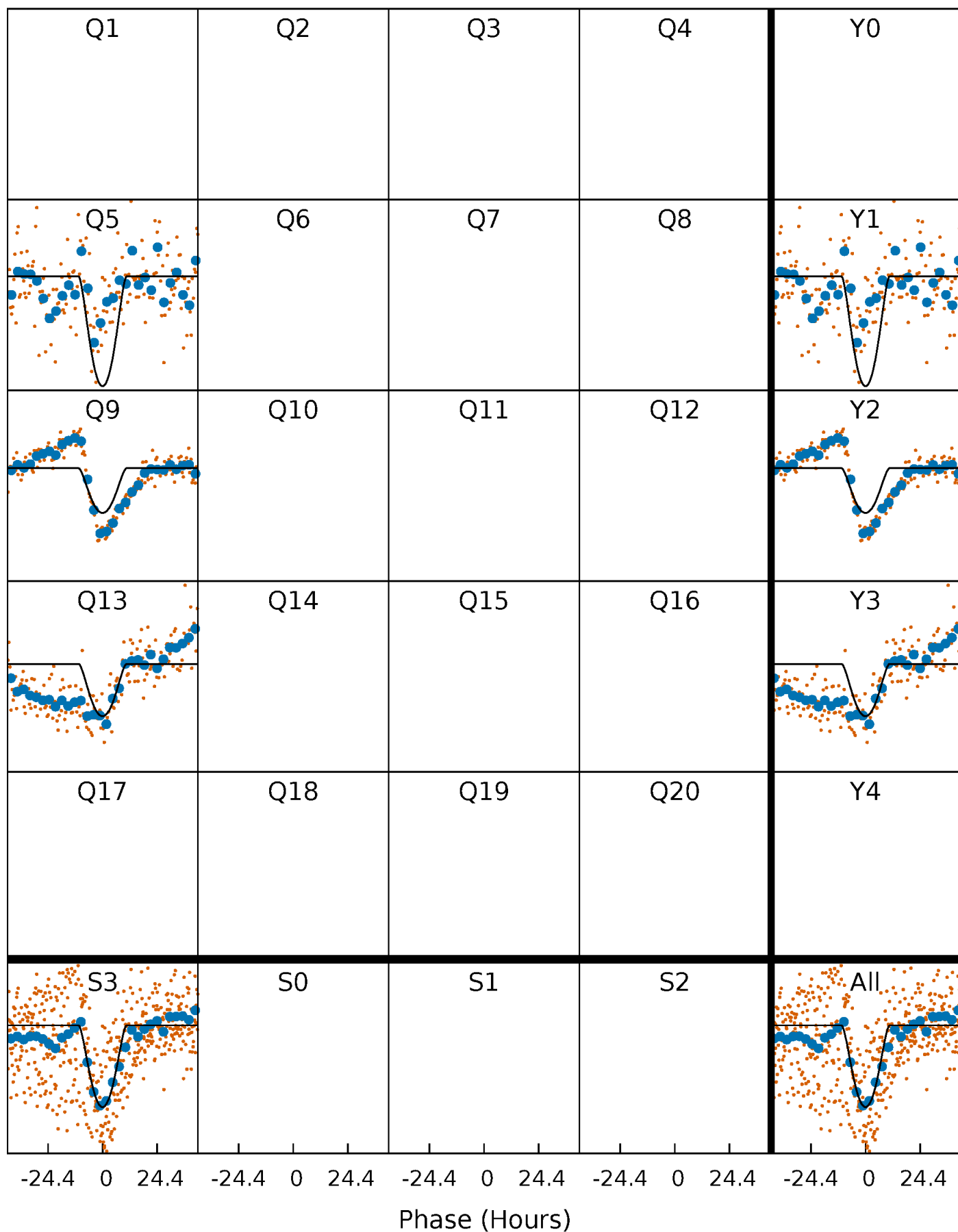
PDC Quarter-Phased Transit Curves

TCE 009590158-07 $P=388.530072$ Days $T_0=448.006998$ (BKJD)



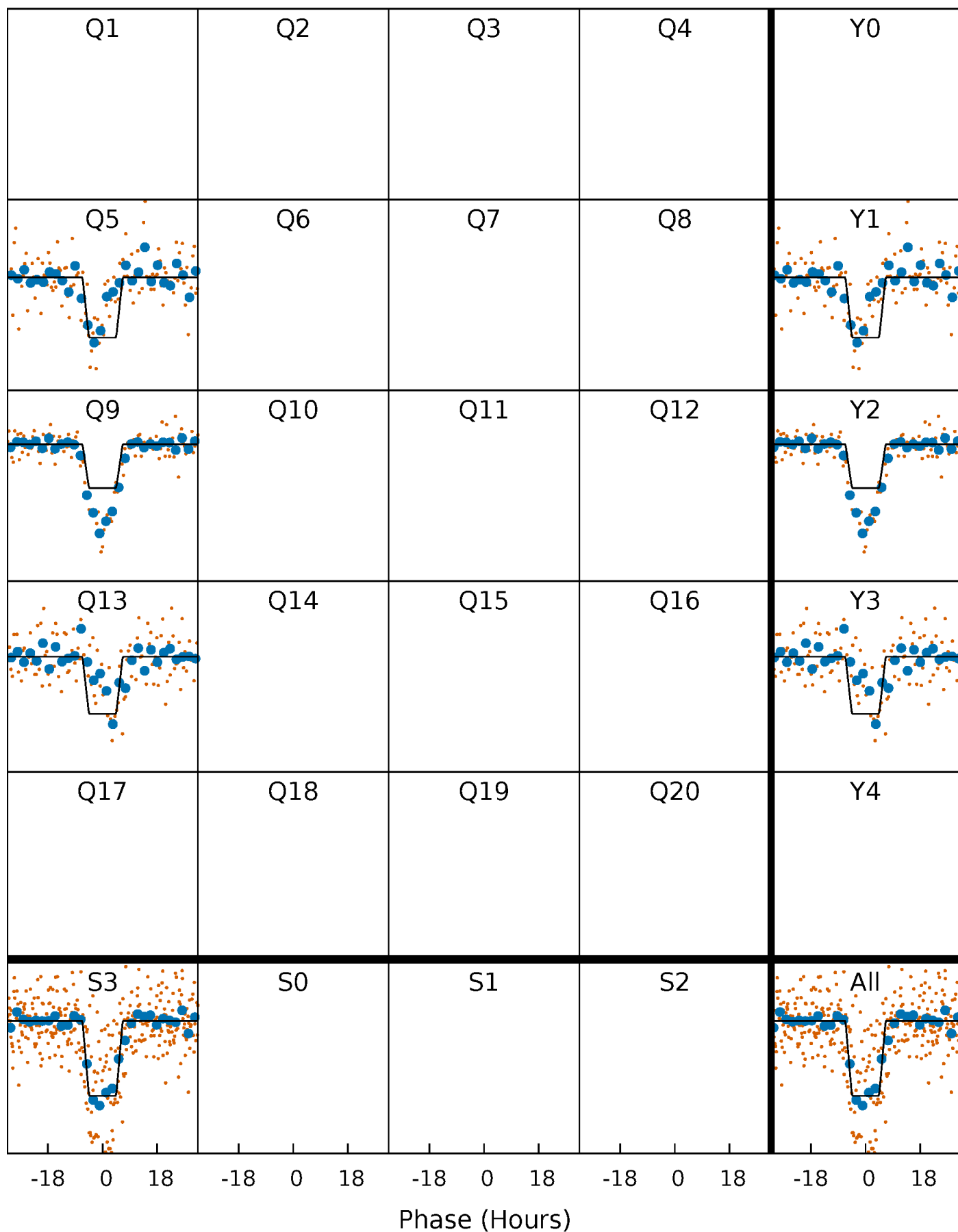
DV Quarter-Phased Transit Curves

TCE 009590158-07 $P=388.530072$ Days $T_0=448.006998$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

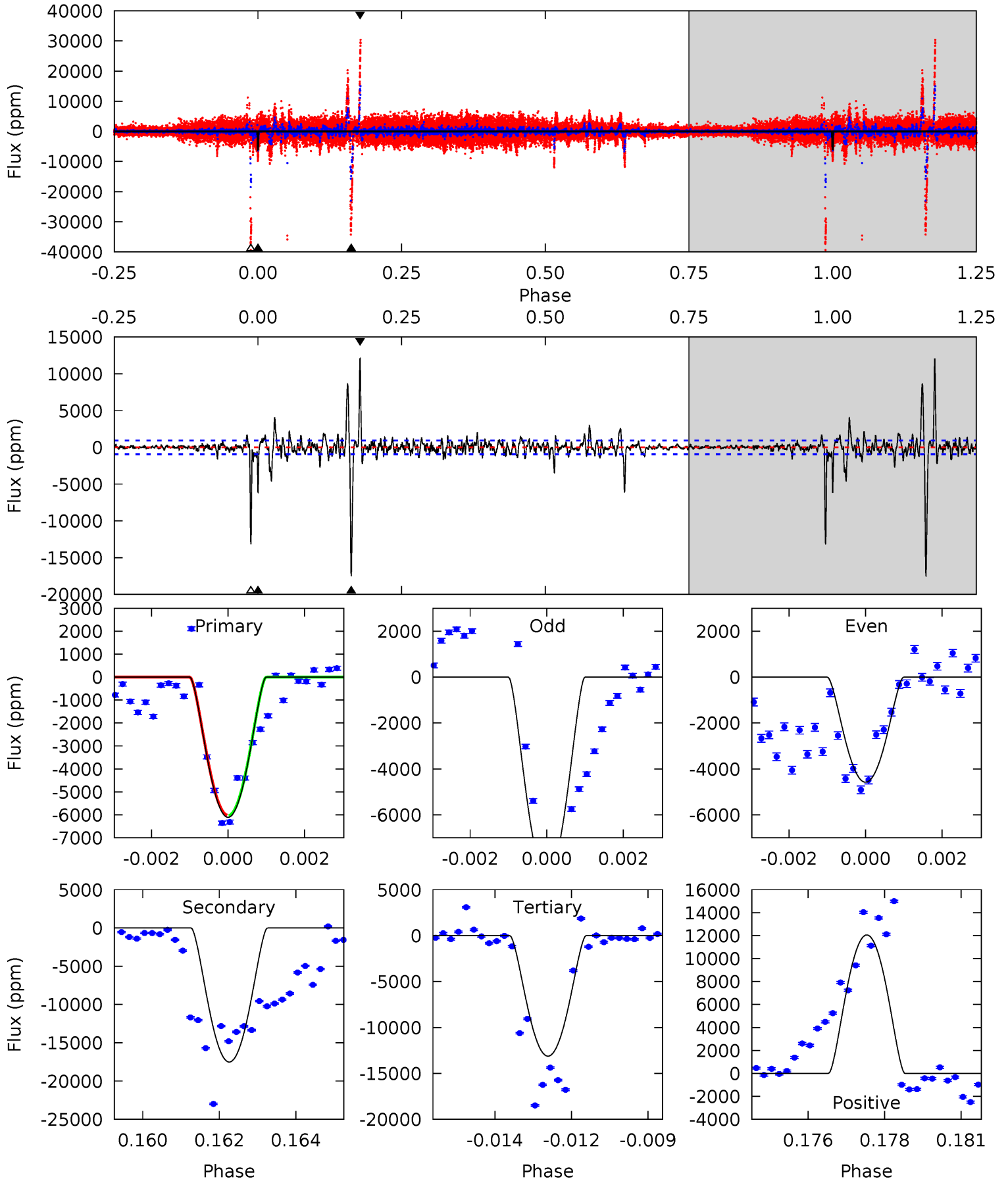
TCE 009590158-07 $P=388.496465$ Days $T_0=447.972488$ (BKJD)



DV Model-Shift Uniqueness Test

009590158-07, P = 388.530072 Days, E = 59.476926 Days

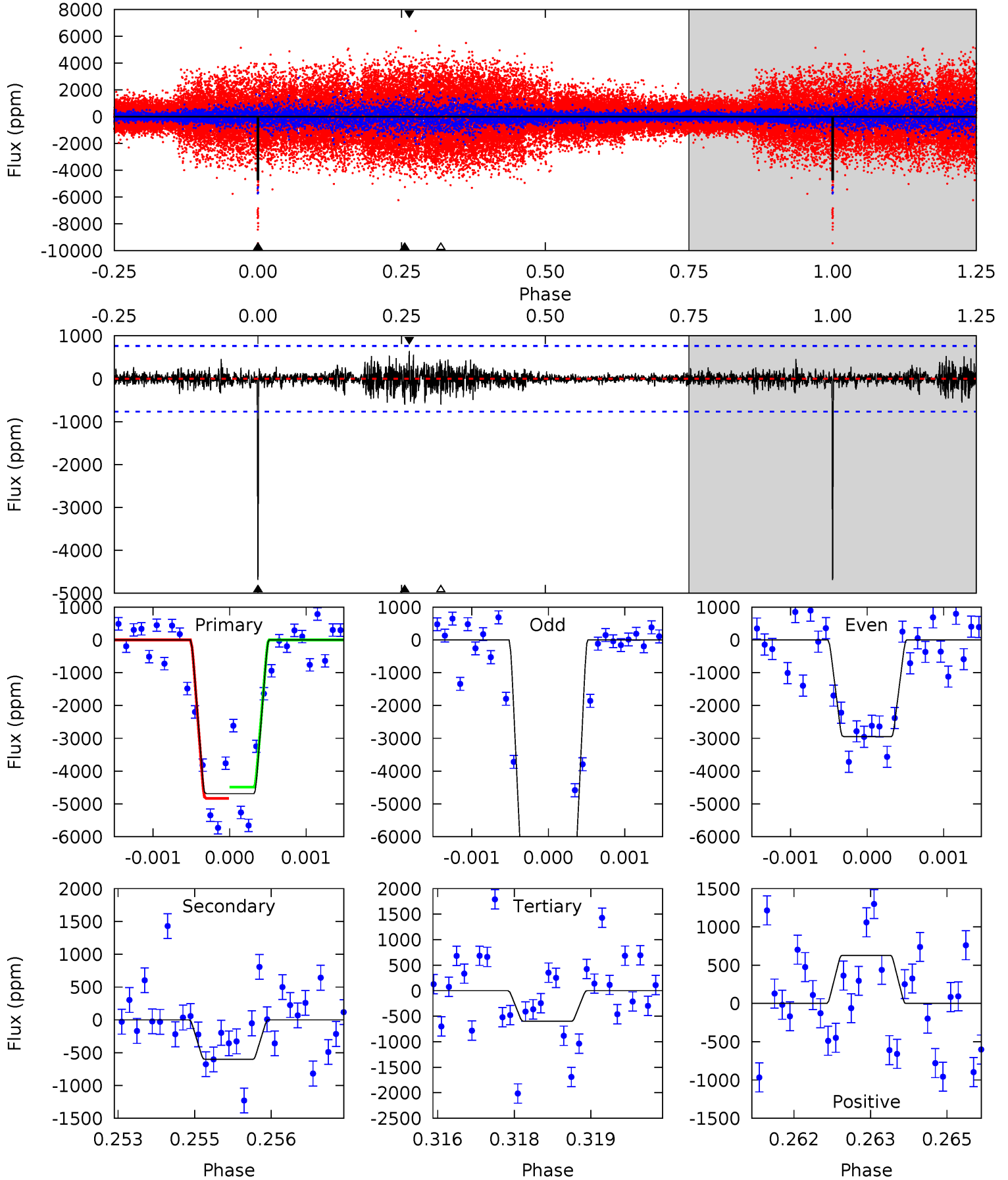
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.6	99.3	74.4	68.3	5.30	3.05	5.55	-39.8	-33.7	24.9	30.9	7.64	0.87	0.41	0



Alt Model-Shift Uniqueness Test

009590158-07, $P = 388.496465$ Days, $E = 59.476023$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
33.0	4.23	4.21	4.43	5.39	3.19	0.77	28.8	28.6	0.02	-0.19	17.0	1.47	0.12	1.17



Stellar Parameters For KIC 009590158

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5824^{+182}_{-223}	$4.420^{+0.067}_{-0.202}$	$0.400^{+0.050}_{-0.300}$	$1.082^{+0.315}_{-0.135}$	$1.123^{+0.122}_{-0.150}$	$1.248^{+0.446}_{-0.637}$
	+3%/-4%	+2%/-5%	+12%/-75%	+29%/-12%	+11%/-13%	+36%/-51%
Source	PHO1	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 009590158-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-17516 ± 176	$14.15^{+10.92}_{-8.43}$	365^{+25}_{-19}	6248^{+4717}_{-1401}	$55909^{+288203}_{-38145}$
Alt.	-601 ± 142	$11.65^{+9.77}_{-7.19}$	365^{+27}_{-19}	3456^{+1426}_{-560}	2716^{+16802}_{-1936}

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

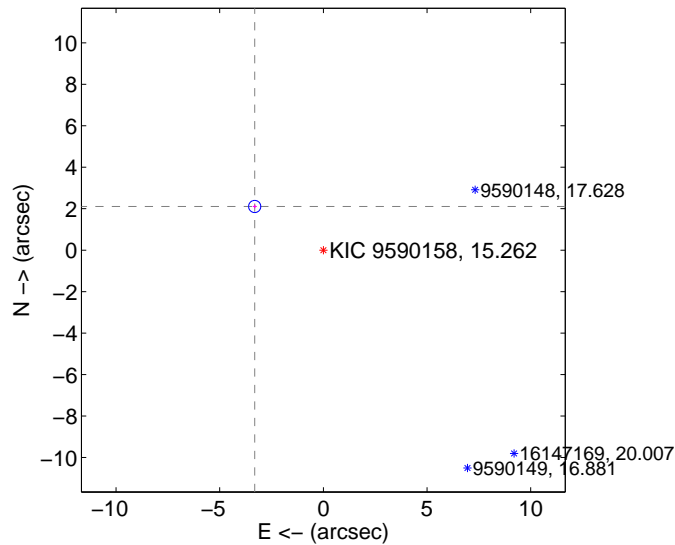
Supplemental centroid analysis for 009590158-07. Kepler magnitude: 15.26. Transit SNR 11.29

There are 0 quarters with good PRF difference image offsets

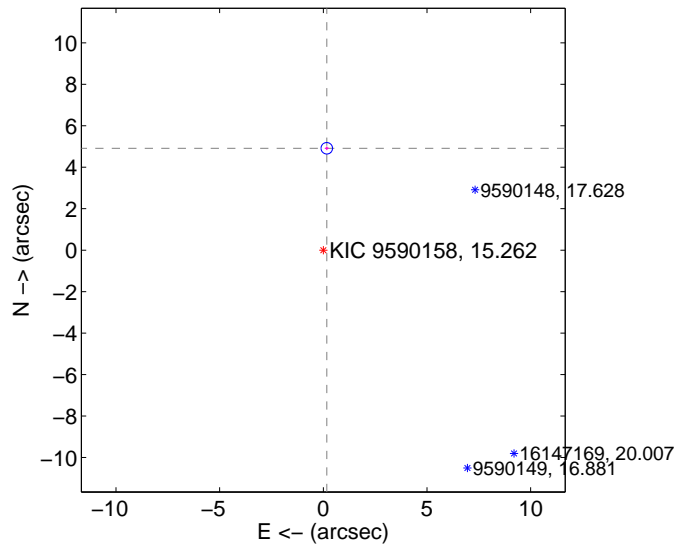
The OOT PRF centroid is offset from the target star catalog position by about 4.47 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.927 ± 0.098	40.12	3.314 ± 0.100	2.108 ± 0.092
PRF-fit source offset from KIC position	4.919 ± 0.092	53.29	-0.167 ± 0.100	4.916 ± 0.092
photometric centroid source offset	3.58 ± 2.05	1.75	2.46 ± 2.16	2.60 ± 1.94

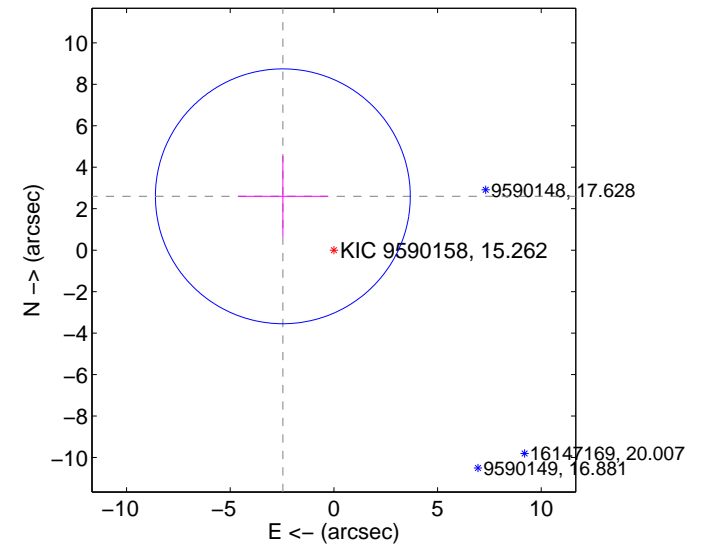
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

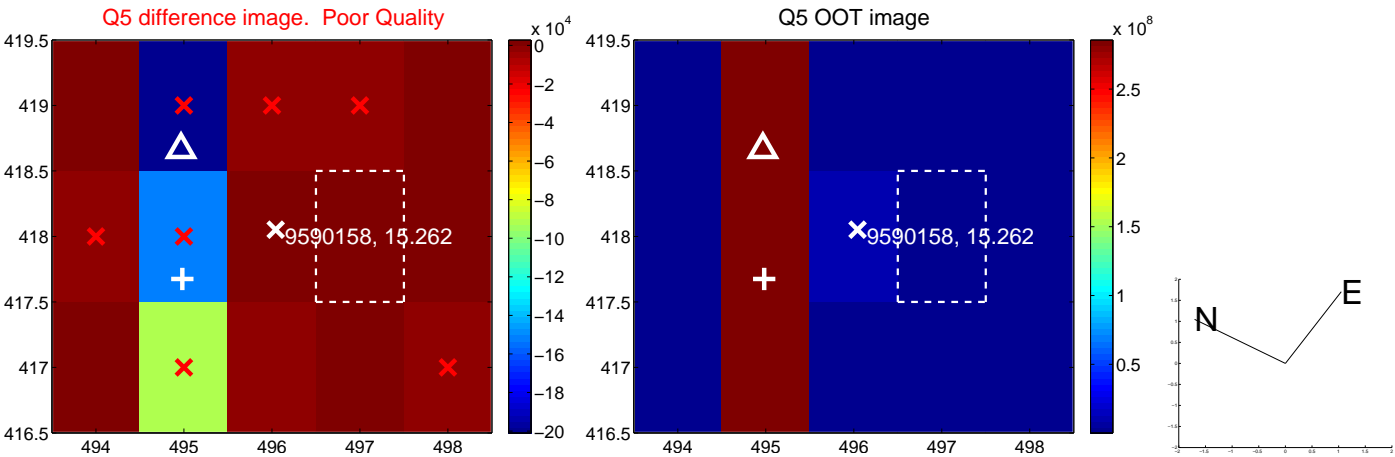


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

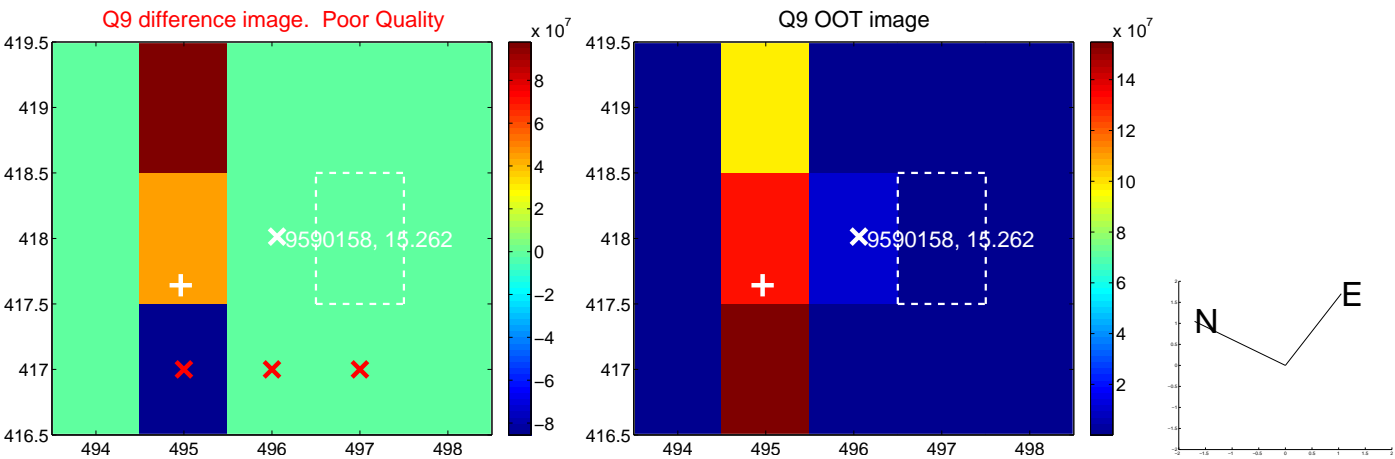
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



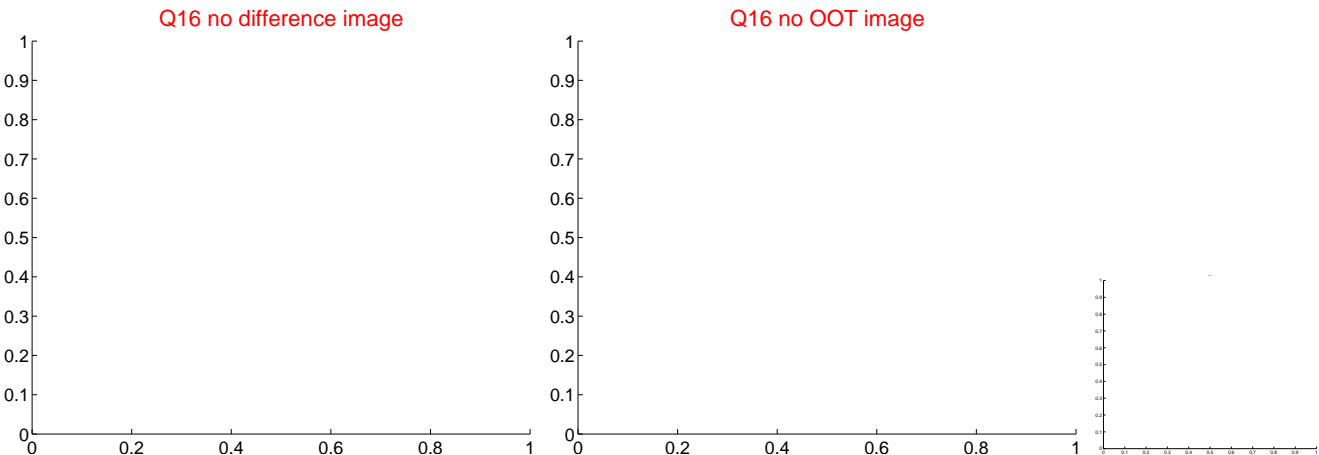
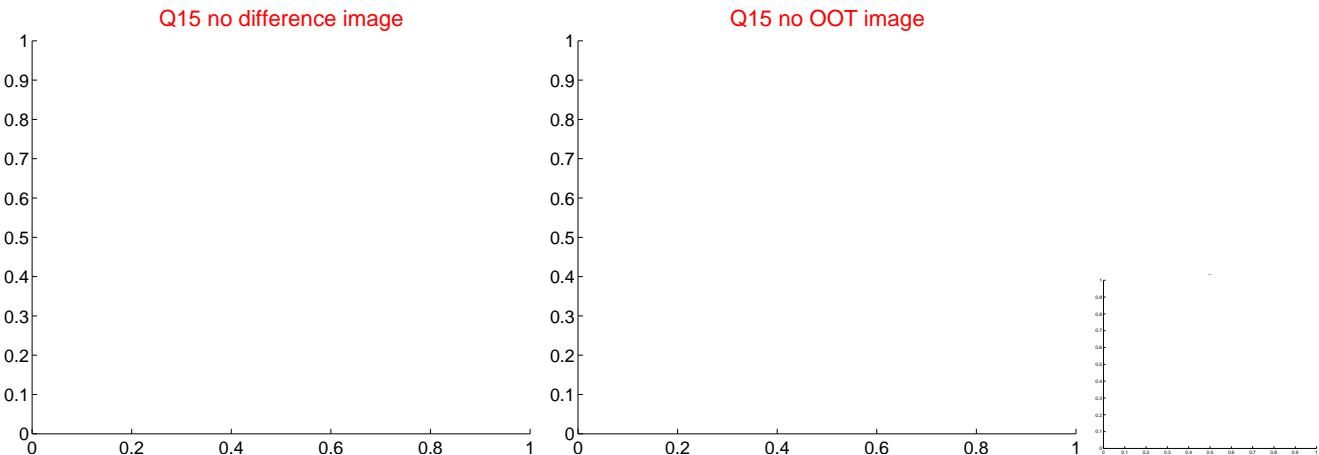
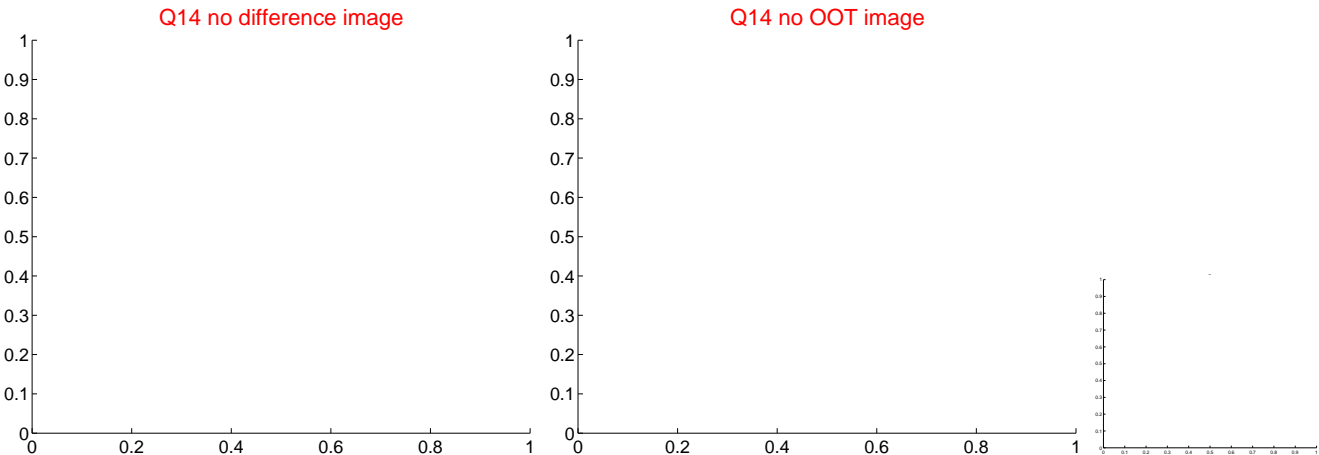
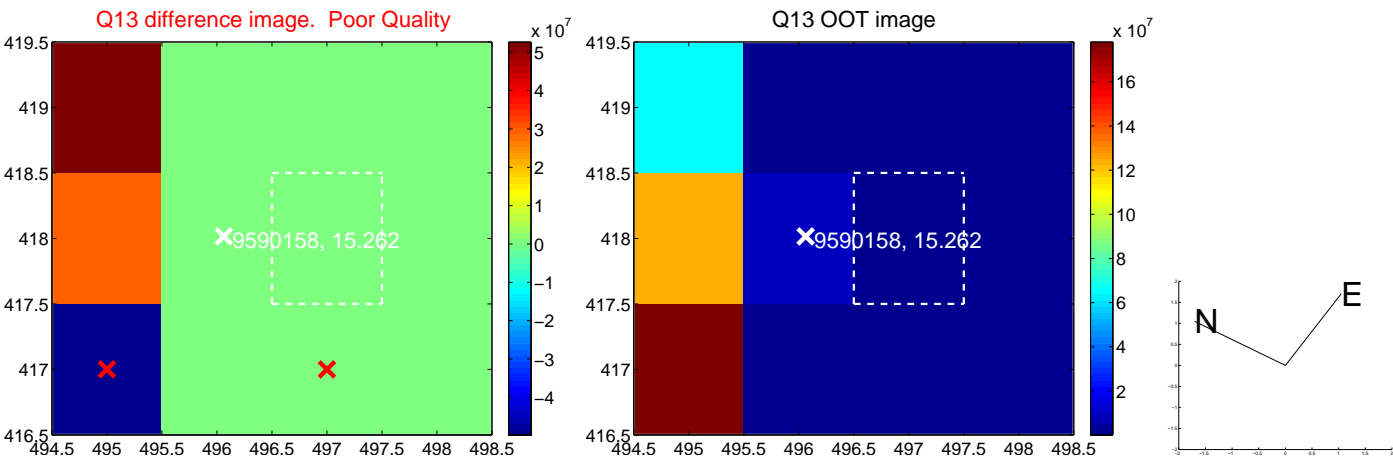
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



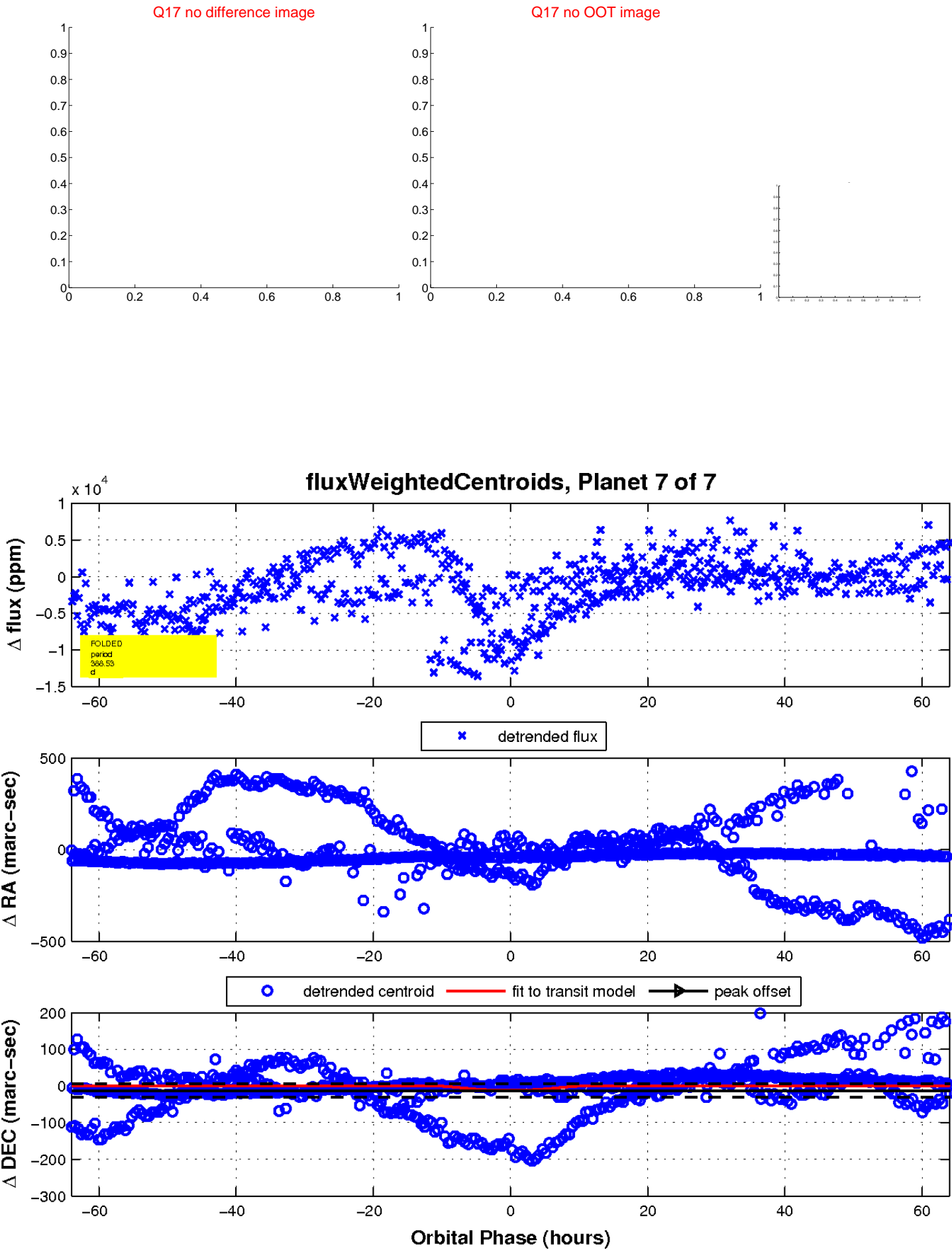
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

