

KIC 003757590

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})
003757590-01	OBS	3520.01	135.586857	177.922420	367557.0	3.500	6199.9	-1.0	1.30	6401	59.07	8.00
003757590-02	OBS	No	271.670991	177.670406	5662.2	15.000	439.7	-1.0	1.30	6401	9.80	3.17
003757590-03	OBS	No	404.460405	451.458565	1202.2	41.594	317.8	13.4	1.30	6401	5.40	1.86
003757590-04	OBS	No	202.267945	320.086274	1517.5	42.794	207.7	25.0	1.30	6401	9.54	4.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003757590-01	OBS	PC	0.69	0	0	0	0	CENT_NOFITS
003757590-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
003757590-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003757590-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—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.

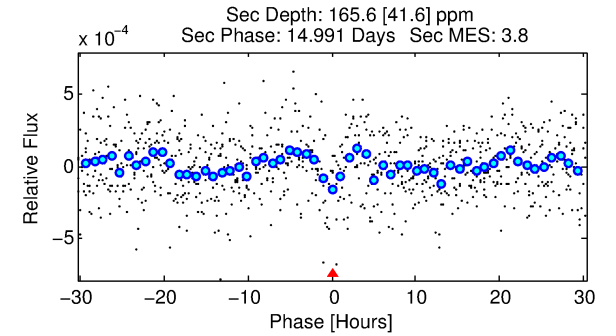
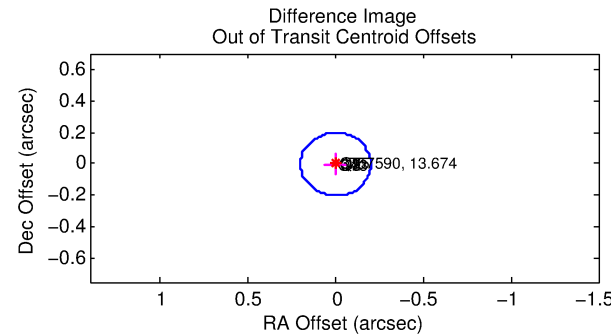
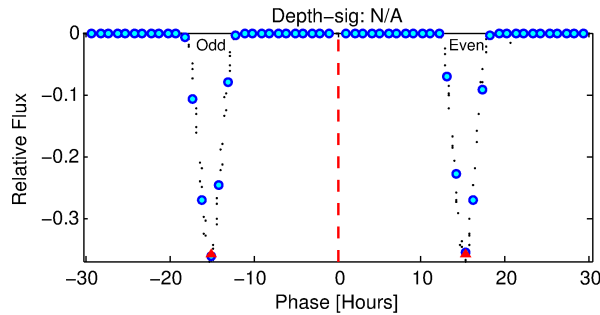
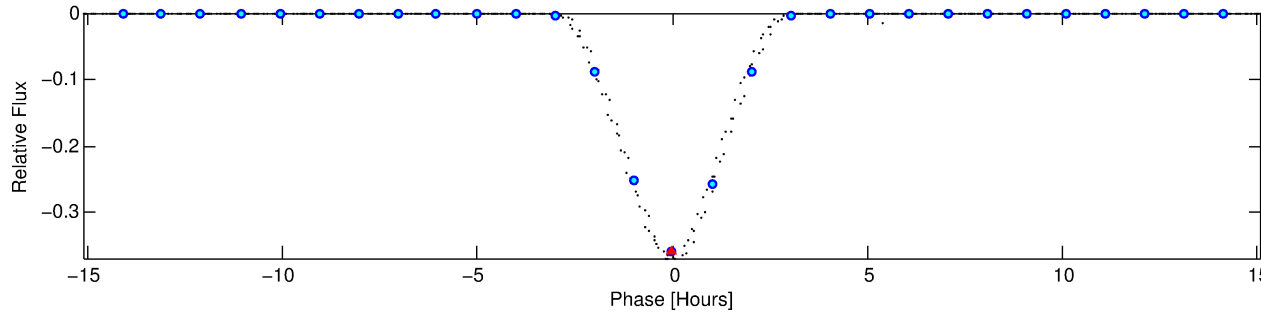
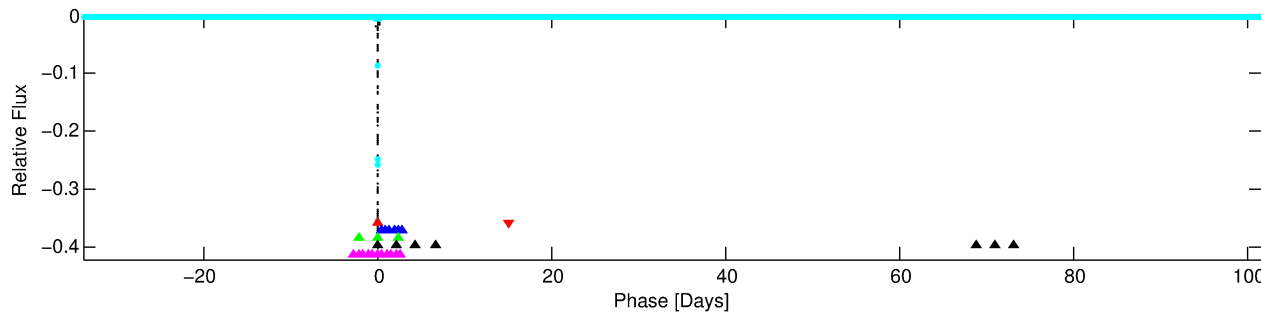
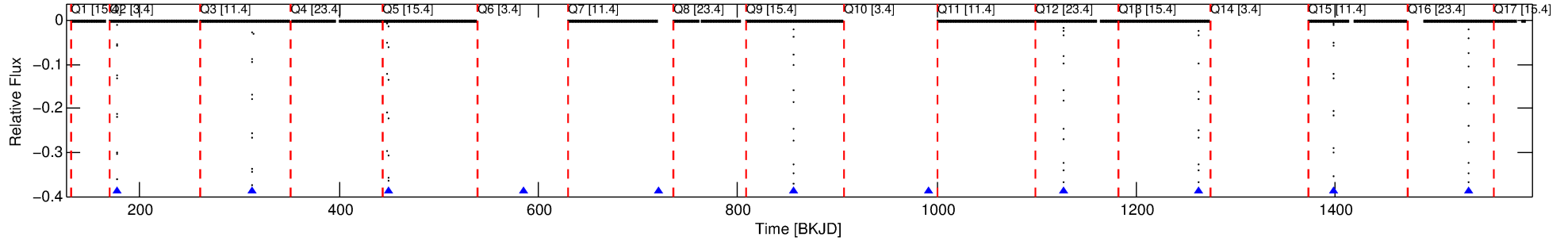
Ephemeris Match Information For 003757590-01

No Significant Match Found

DV One-Page Summary

KIC: 3757590 Candidate: 1 of 5 Period: 135.587 d
KOI: K03520.01 Corr: 0.792

Kp: 13.67 R*: 1.30 Rs Teff: 6401.0 K Logg: 4.32 Fe/H: 0.240



TPS TCE Results:

Period = 135.58686 d
Epoch = 177.9224 BKJD

DV fit results are unavailable

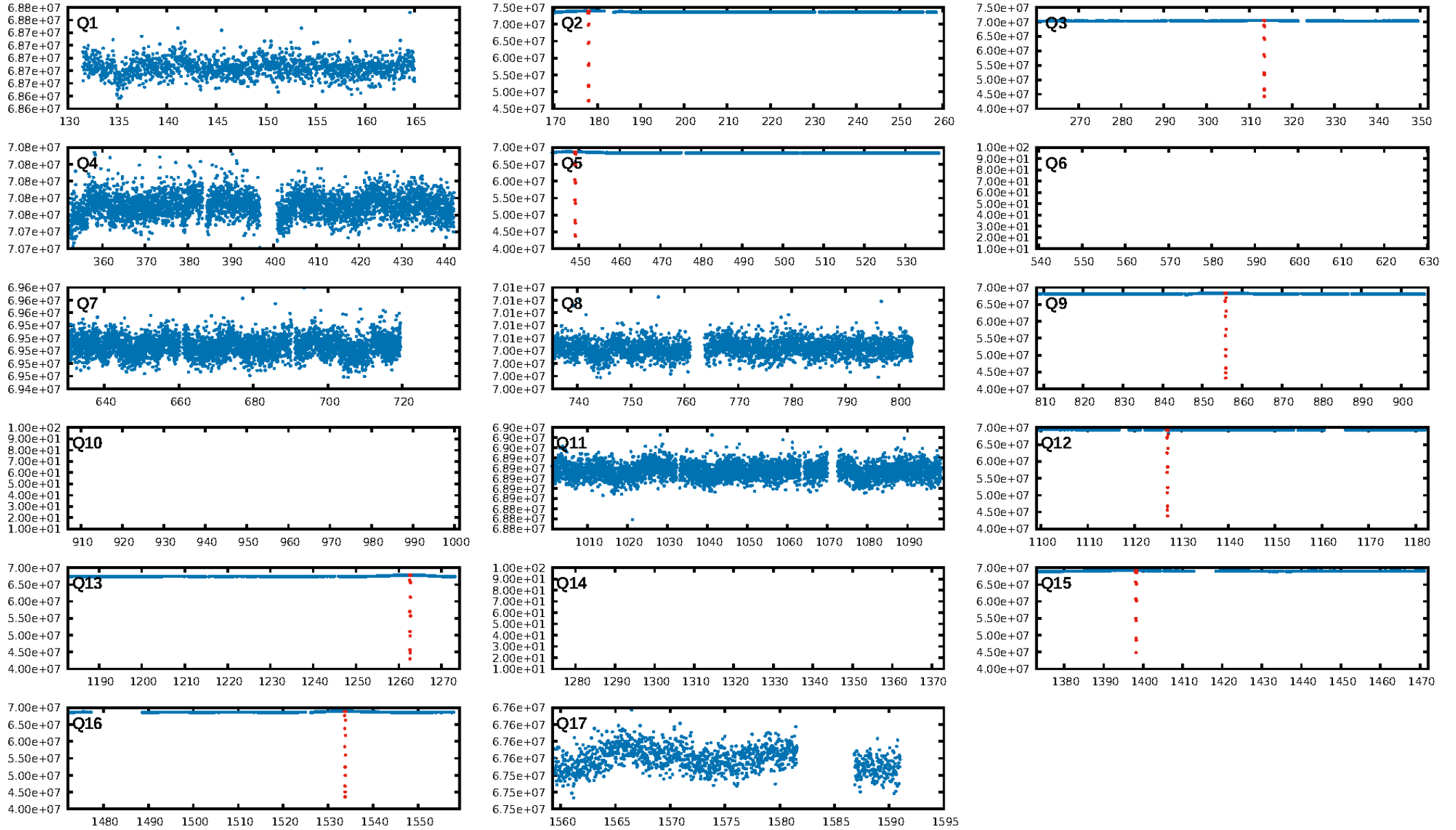
DV Diagnostic Results:

ShortPeriod-sig: 26.1% [0.33 σ]
LongPeriod-sig: 100.0% [37.27 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 2.482
Centroid-sig: 0.0%
Centroid-so: 0.239 arcsec [170.38 σ]
OotOffset-rm: 0.003 arcsec [0.04 σ]
KicOffset-rm: 0.110 arcsec [1.63 σ]
OotOffset-st: 1/2/0/3 [6]
KicOffset-st: 1/2/0/3 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 0.67 [4/6]

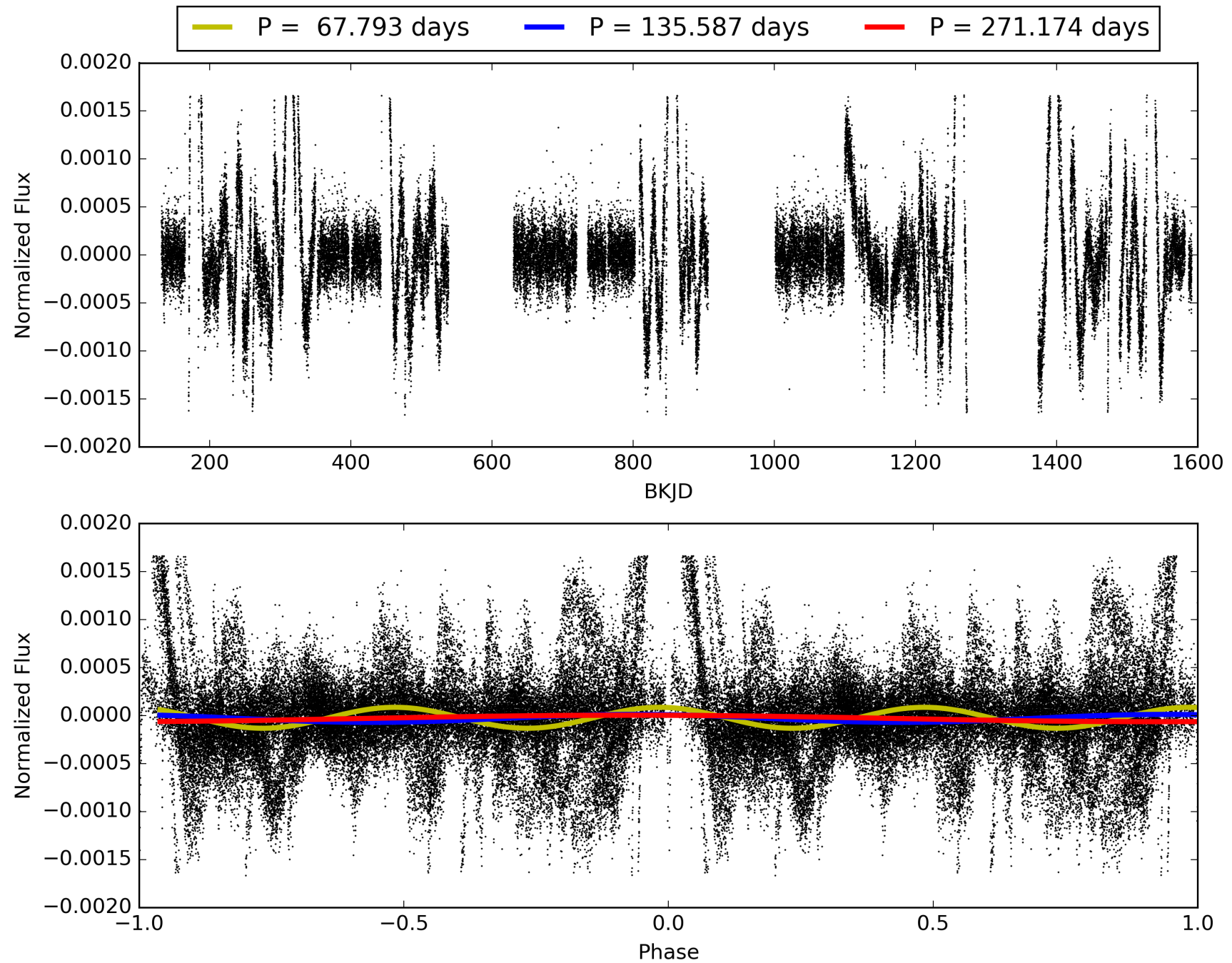
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 003757590-01, PDC Light Curves

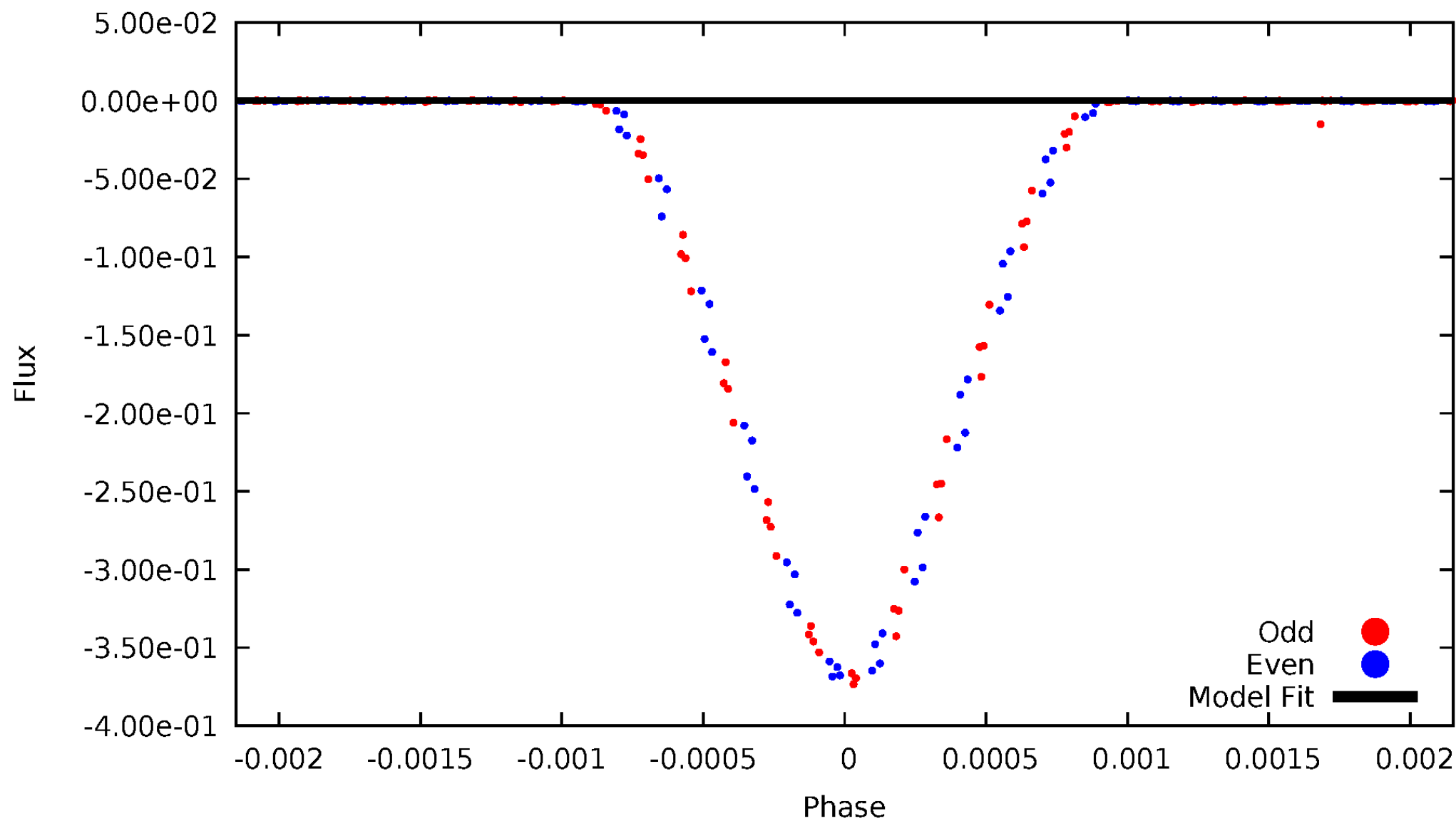


TCE 003757590-01



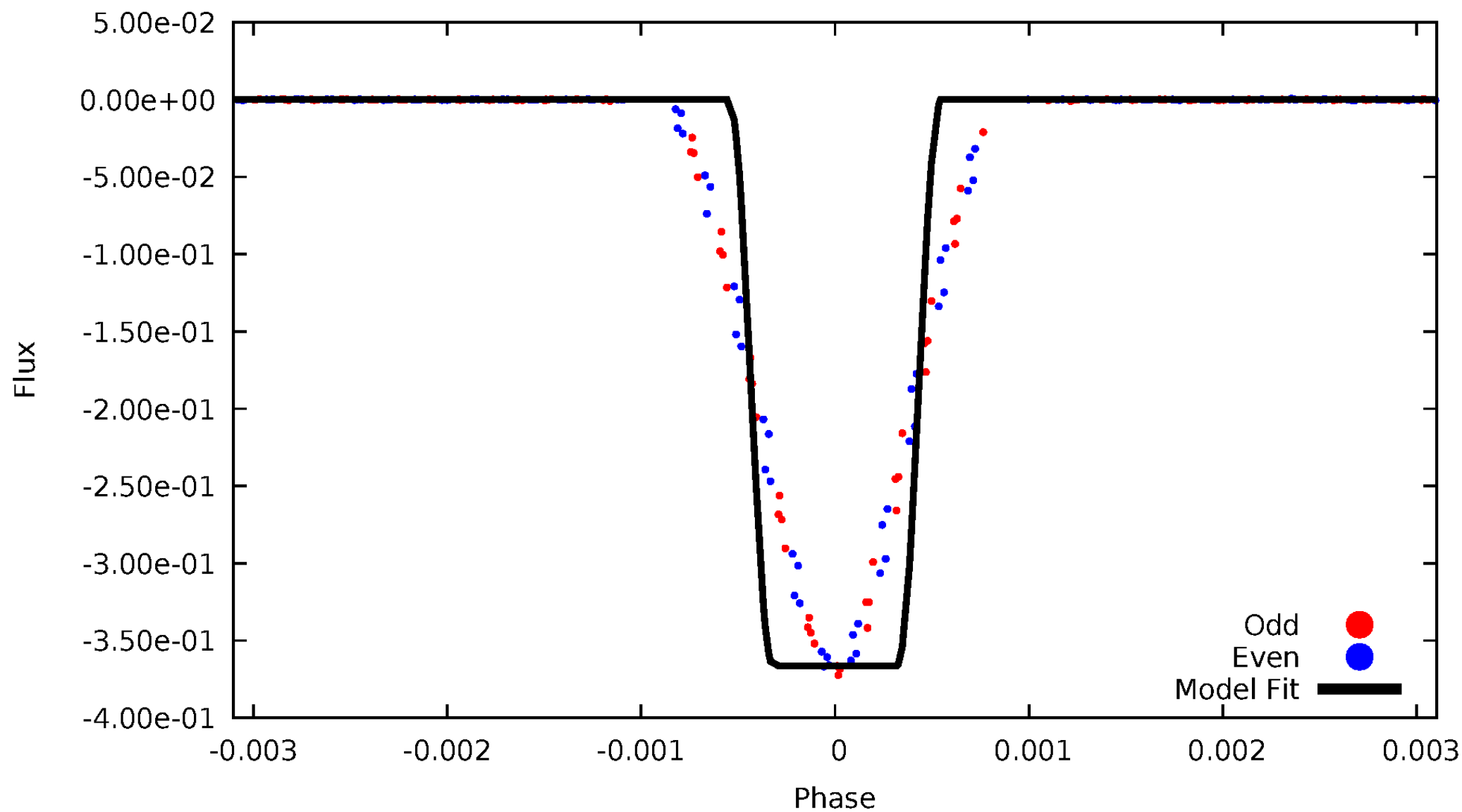
DV Odd/Even

TCE 003757590-01



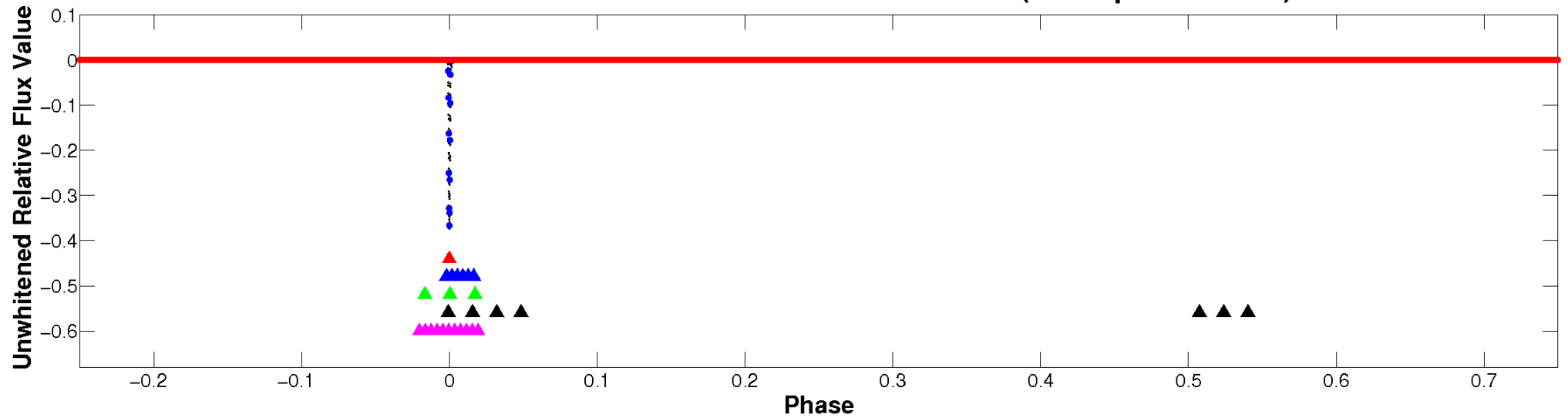
ALT Odd/Even

TCE 003757590-01



Non-Whitened Vs. Whitened Light Curve

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

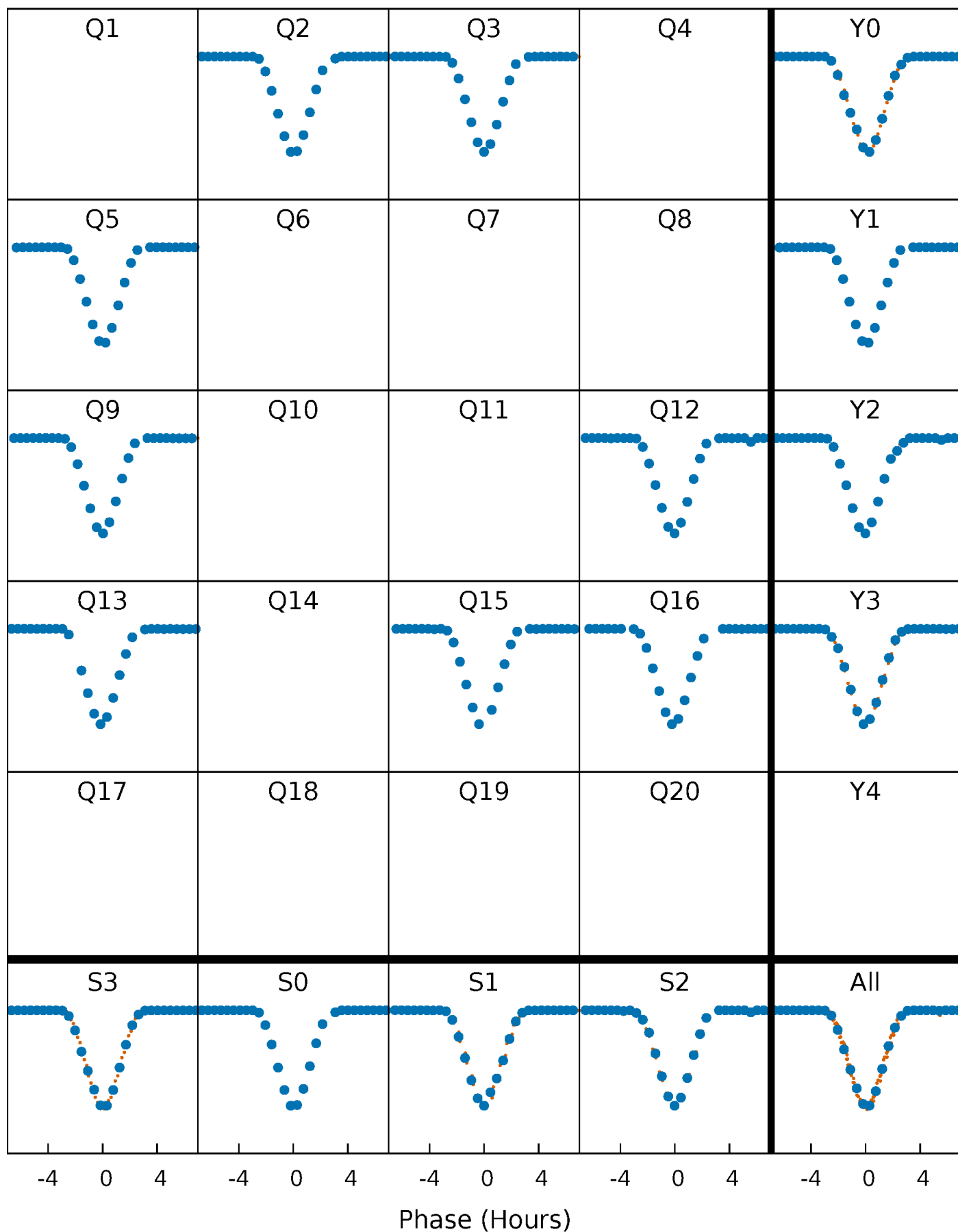


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



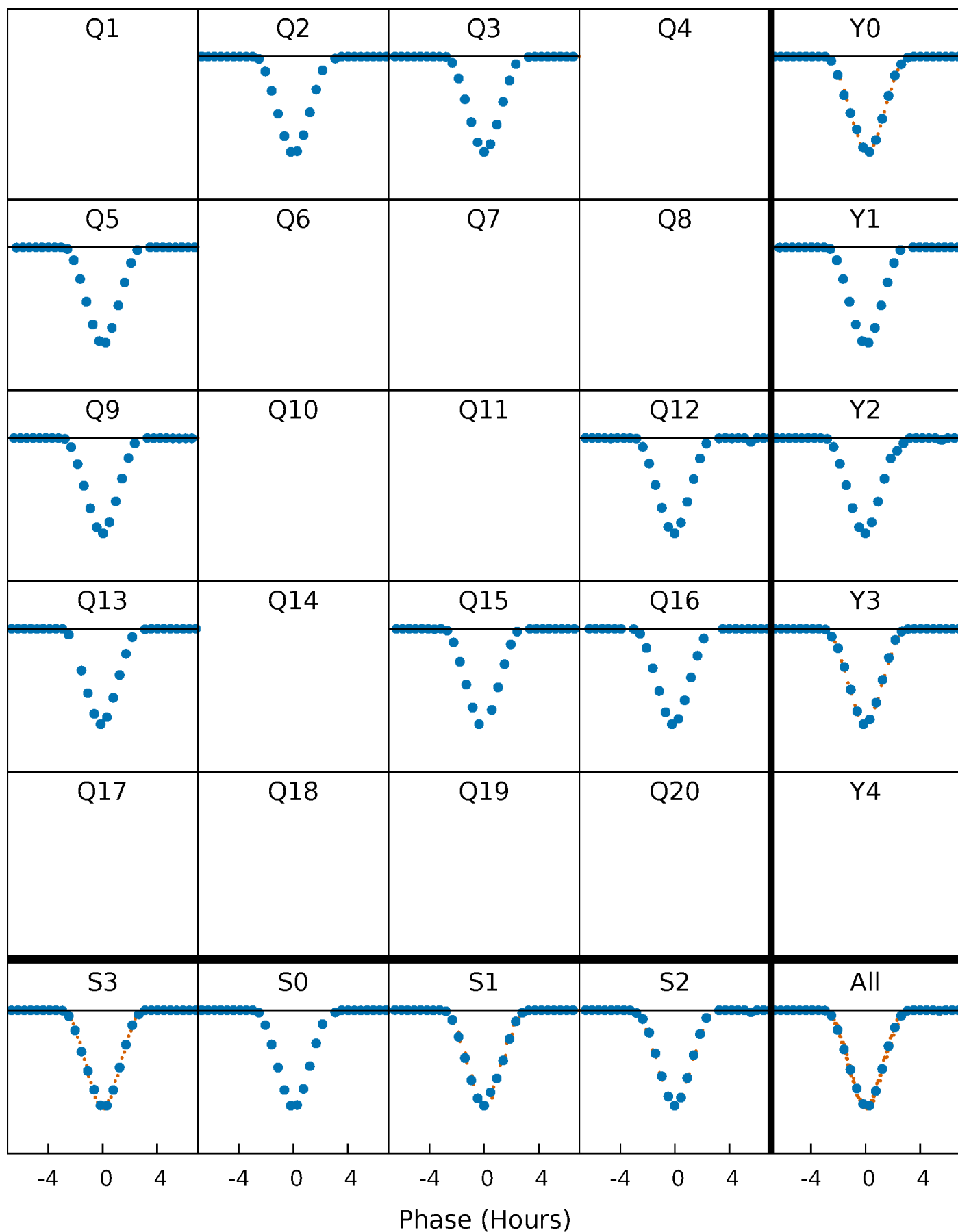
PDC Quarter-Phased Transit Curves

TCE 003757590-01 P=135.586857 Days $T_0=177.922420$ (BKJD)



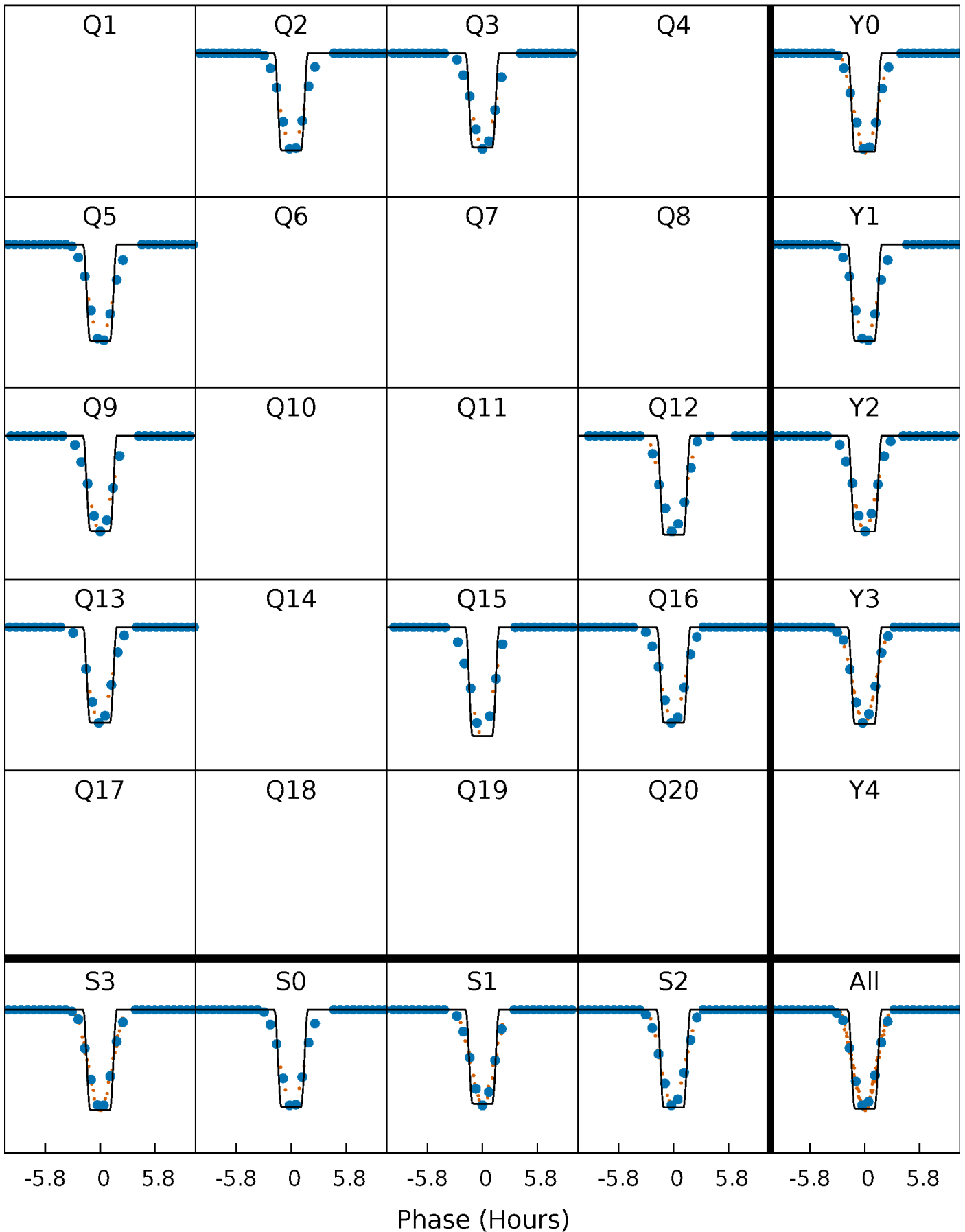
DV Quarter-Phased Transit Curves

TCE 003757590-01 P=135.586857 Days $T_0=177.922420$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

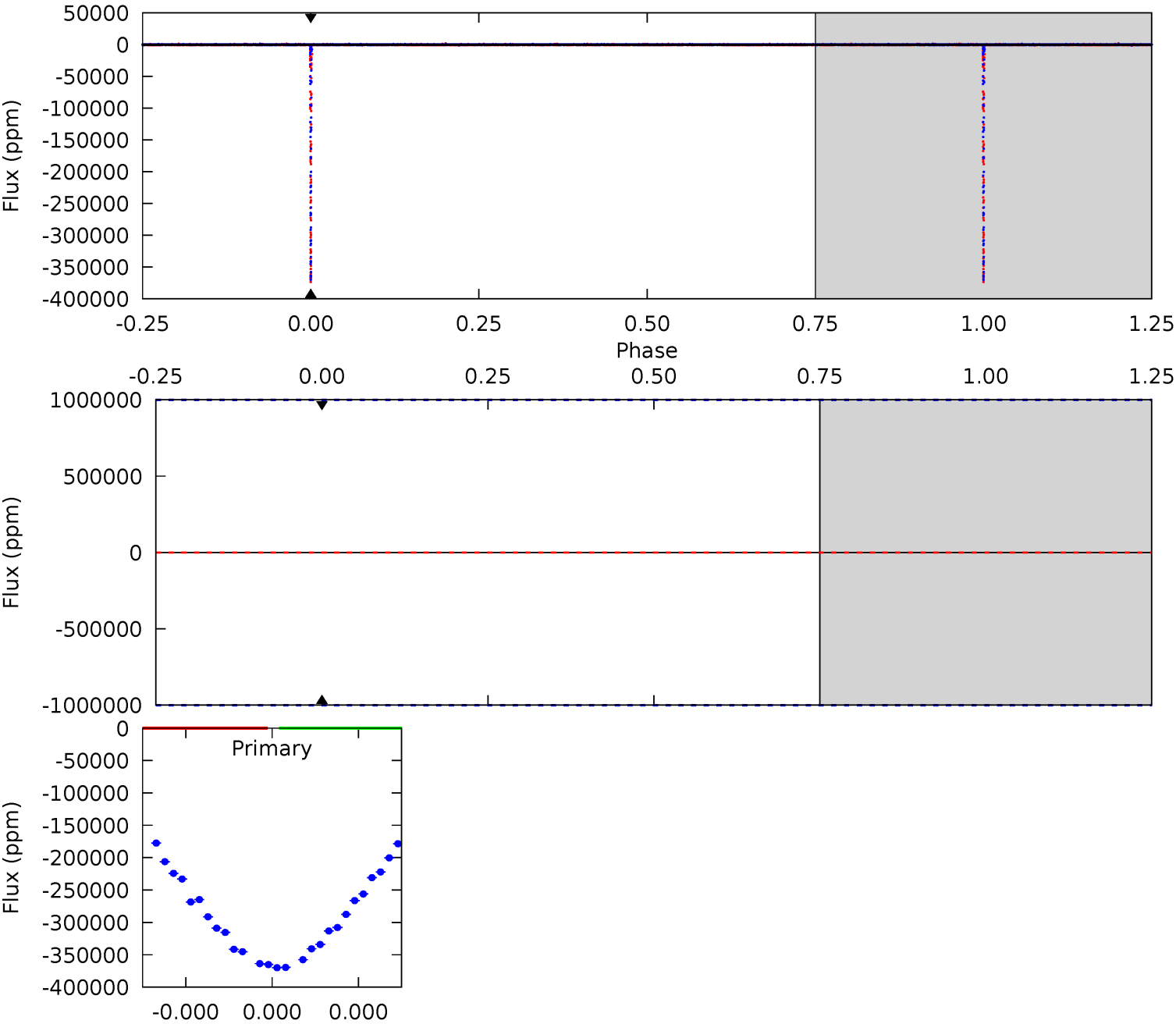
TCE 003757590-01 P=135.586857 Days $T_0=177.924402$ (BKJD)



DV Model-Shift Uniqueness Test

003757590-01, P = 135.586857 Days, E = 42.335563 Days

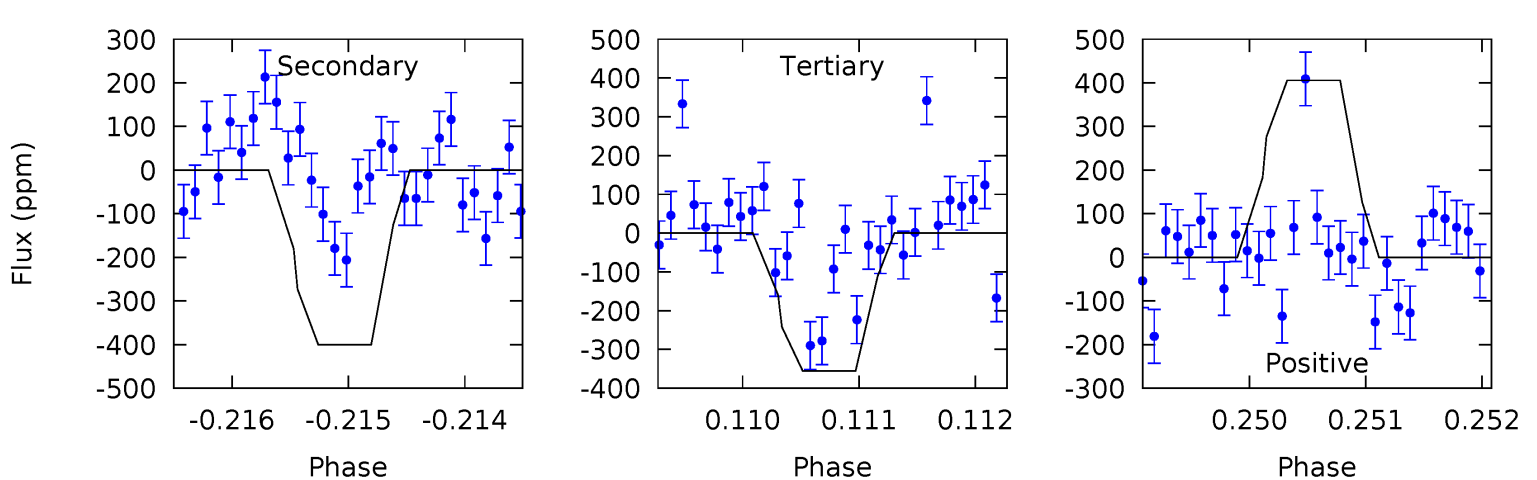
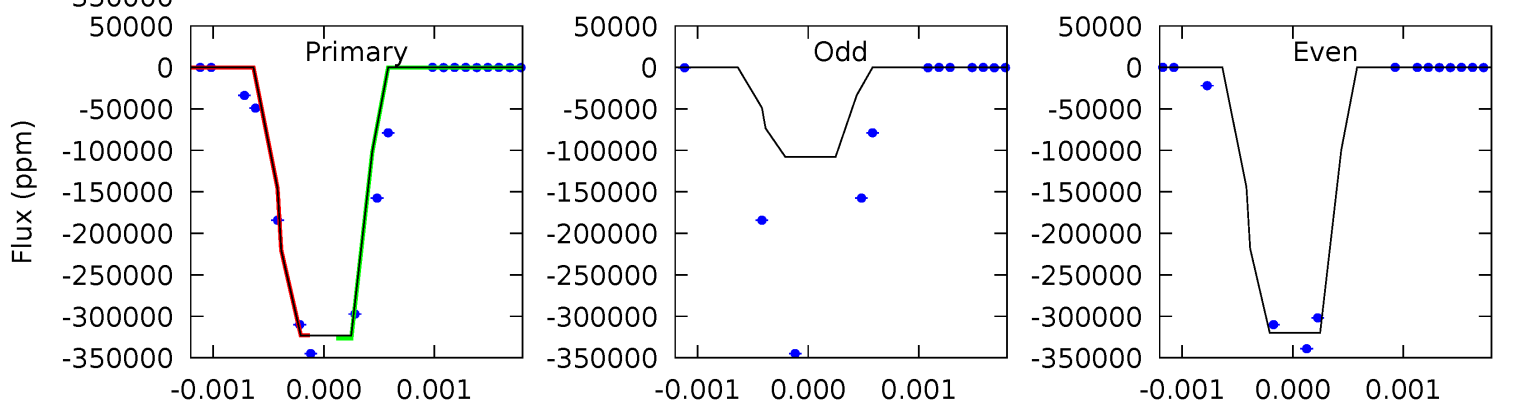
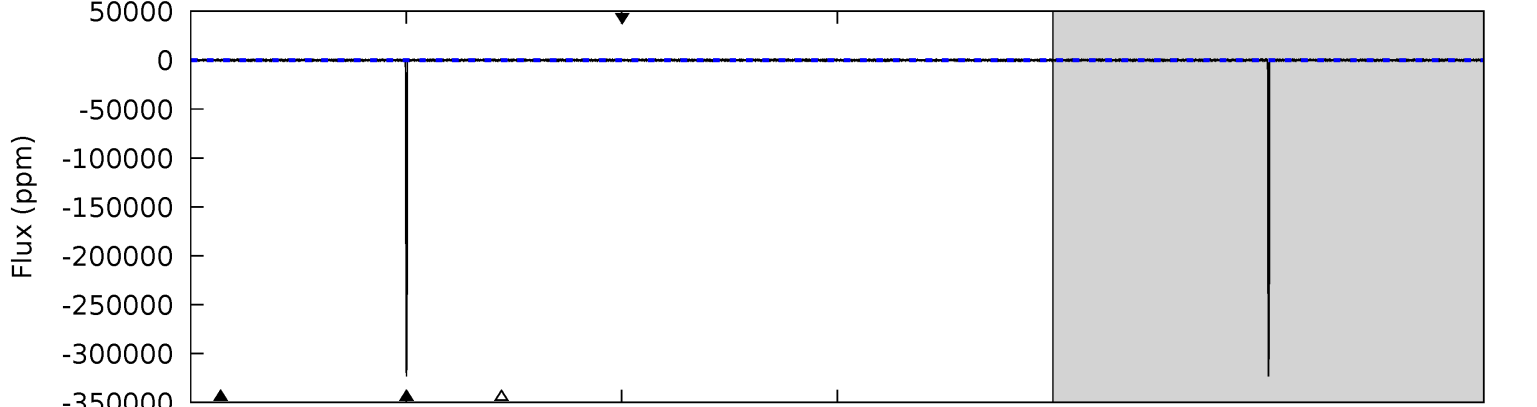
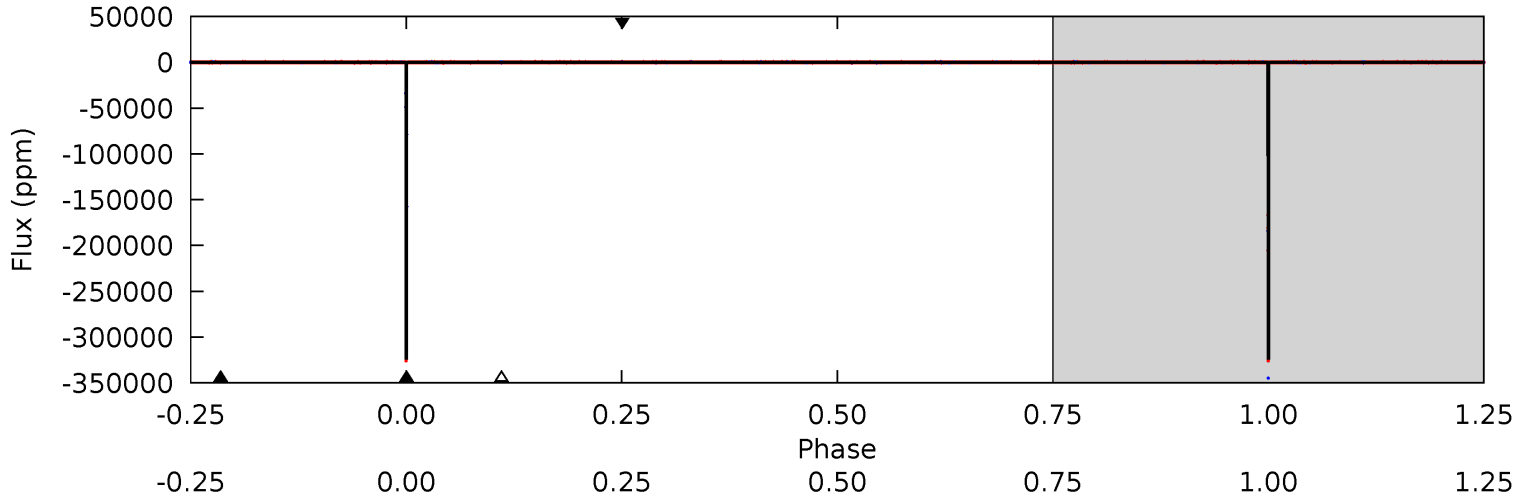
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

003757590-01, P = 135.586857 Days, E = 42.337545 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4968	6.15	5.46	6.24	5.44	3.28	1.32	4962	4962	0.69	-0.08	1886	1.00	0.00	0



Stellar Parameters For KIC 003757590

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6401^{+69}_{-88}	$4.324^{+0.040}_{-0.112}$	$0.240^{+0.150}_{-0.200}$	$1.301^{+0.222}_{-0.089}$	$1.304^{+0.078}_{-0.086}$	$0.834^{+0.129}_{-0.291}$
	+1%/-1%	+1%/-3%	+62%/-83%	+17%/-7%	+6%/-7%	+15%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 003757590-01 / KOI 3520.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$59.68^{+15.06}_{-14.88}$	602^{+25}_{-13}	2101^{+3750}_{-7754}	$9.953^{+5840.005}_{-5078.861}$
Alt.	-400 ± 65	$87.83^{+16.38}_{-14.58}$	603^{+25}_{-15}	2127^{+87}_{-82}	$8.967^{+4.261}_{-2.835}$

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

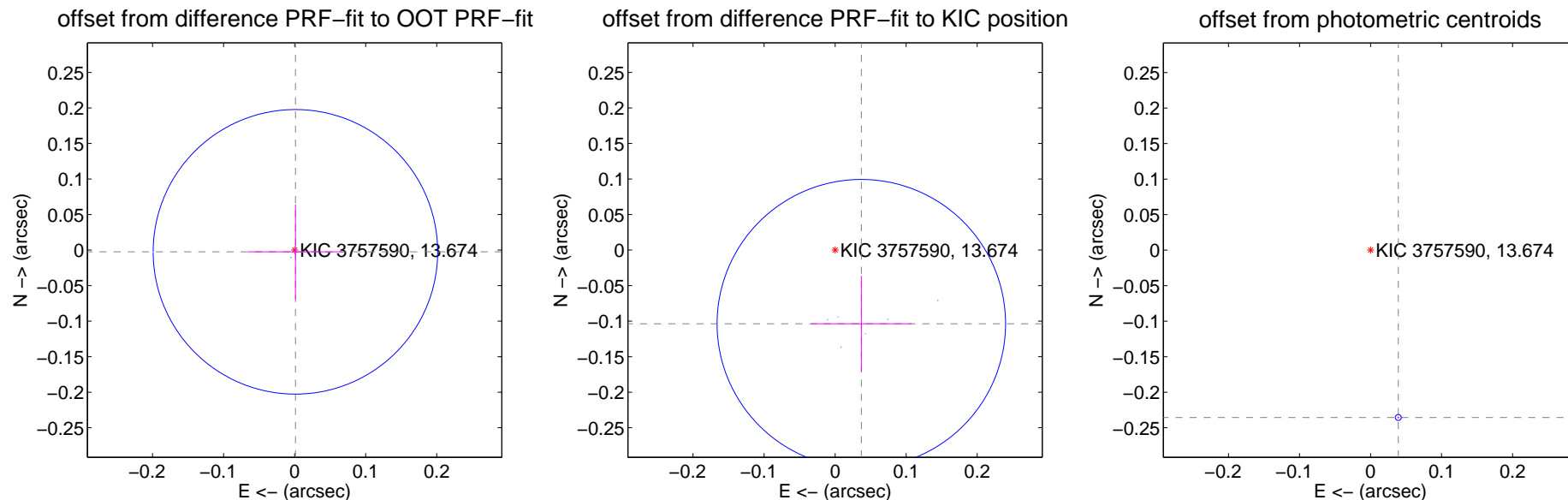
DV Centroid Data

Supplemental centroid analysis for 003757590-01. Kepler magnitude: 13.67. Transit SNR -1.00

There are 6 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.003 ± 0.067	0.04	-0.001 ± 0.067	-0.002 ± 0.067
PRF-fit source offset from KIC position	0.110 ± 0.068	1.63	-0.037 ± 0.071	-0.104 ± 0.067
photometric centroid source offset	0.24 ± 0.00	170.38	-0.04 ± 0.00	-0.24 ± 0.00



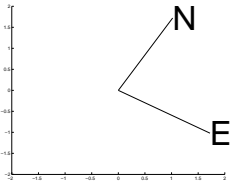
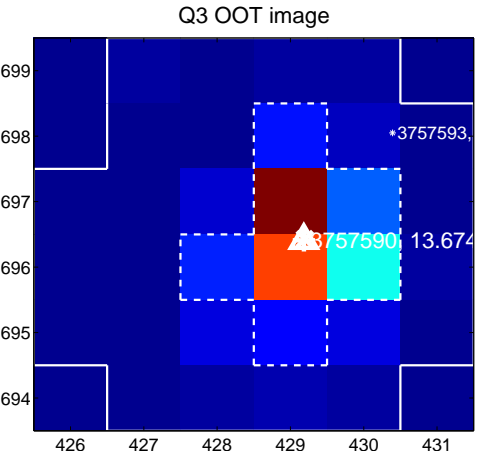
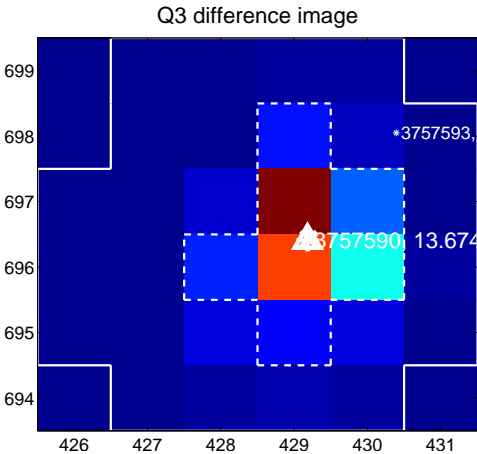
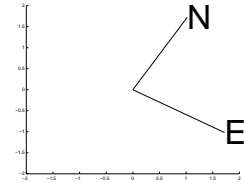
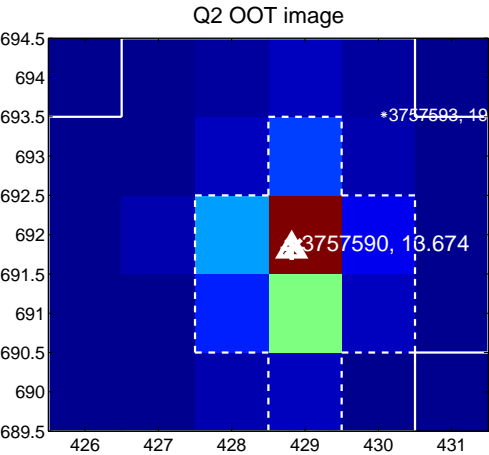
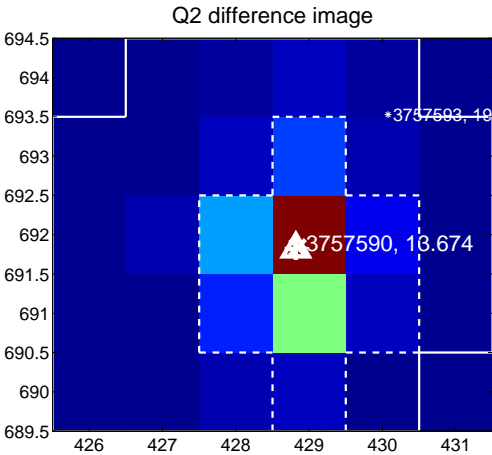
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

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

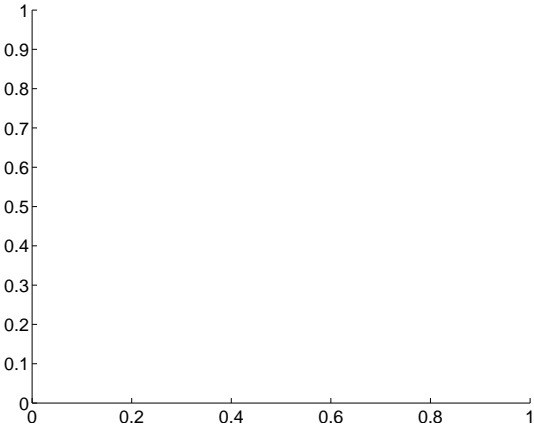
Q1 no difference image



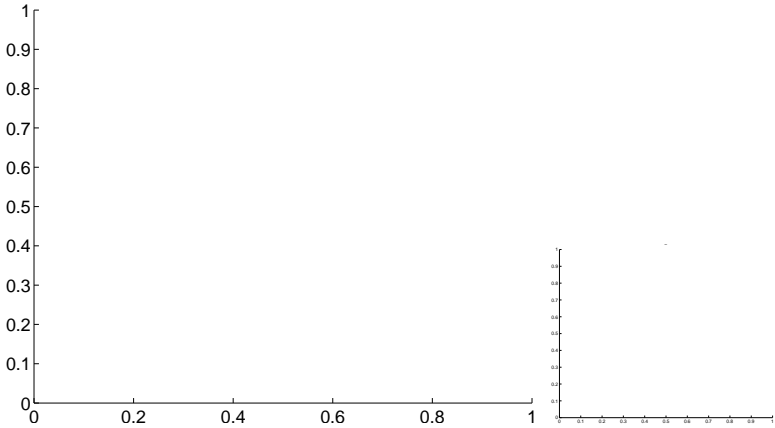
Q1 no OOT image



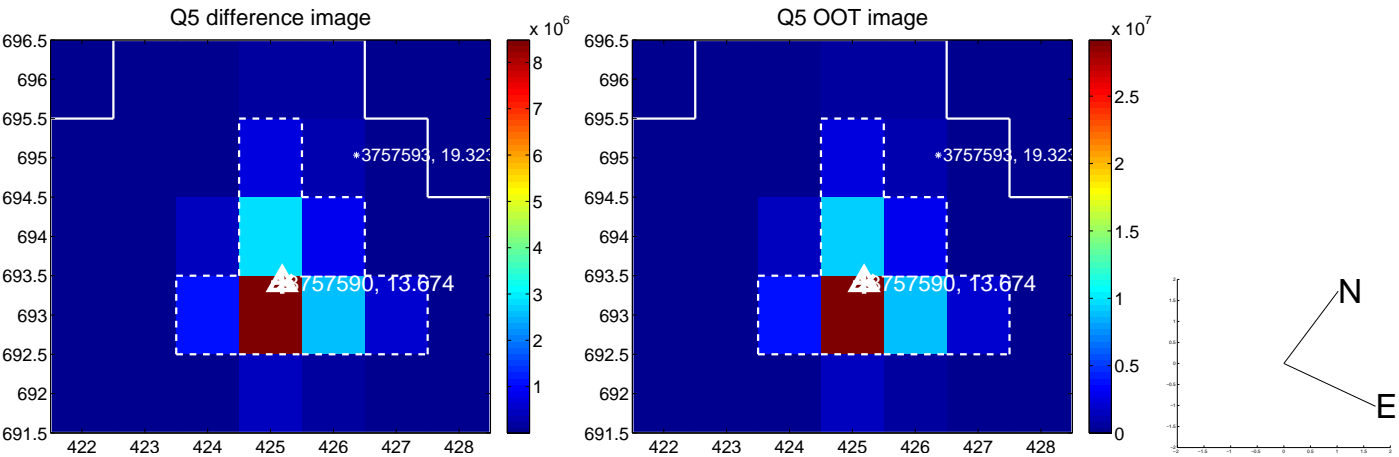
Q4 no difference image



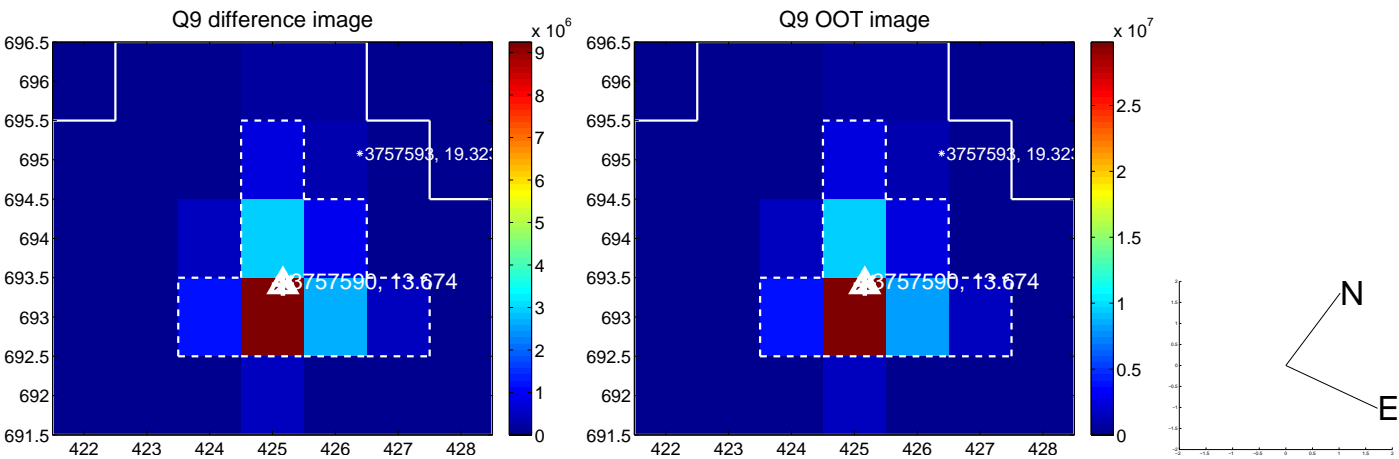
Q4 no OOT image



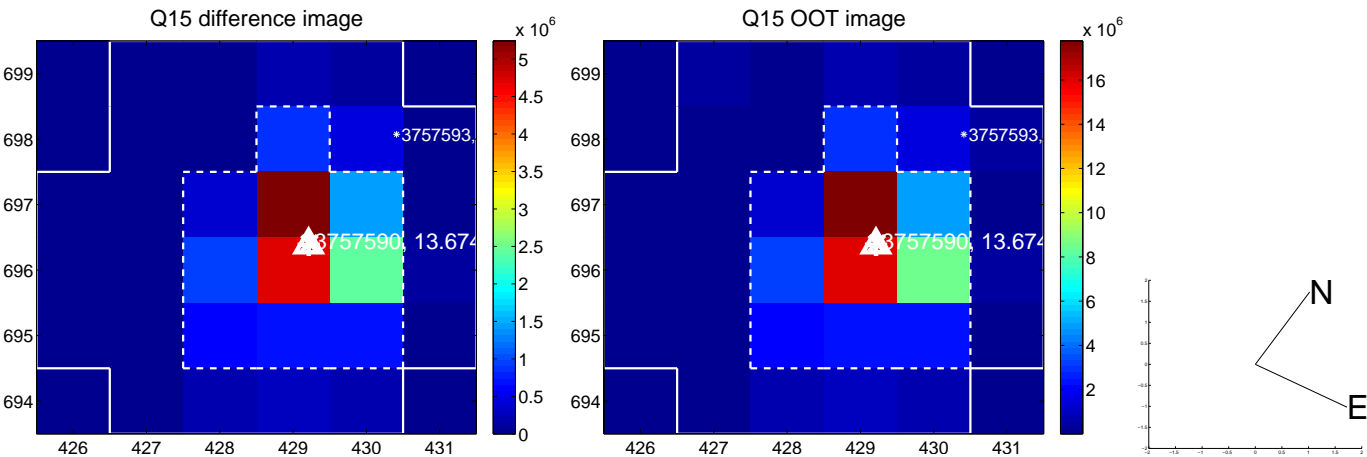
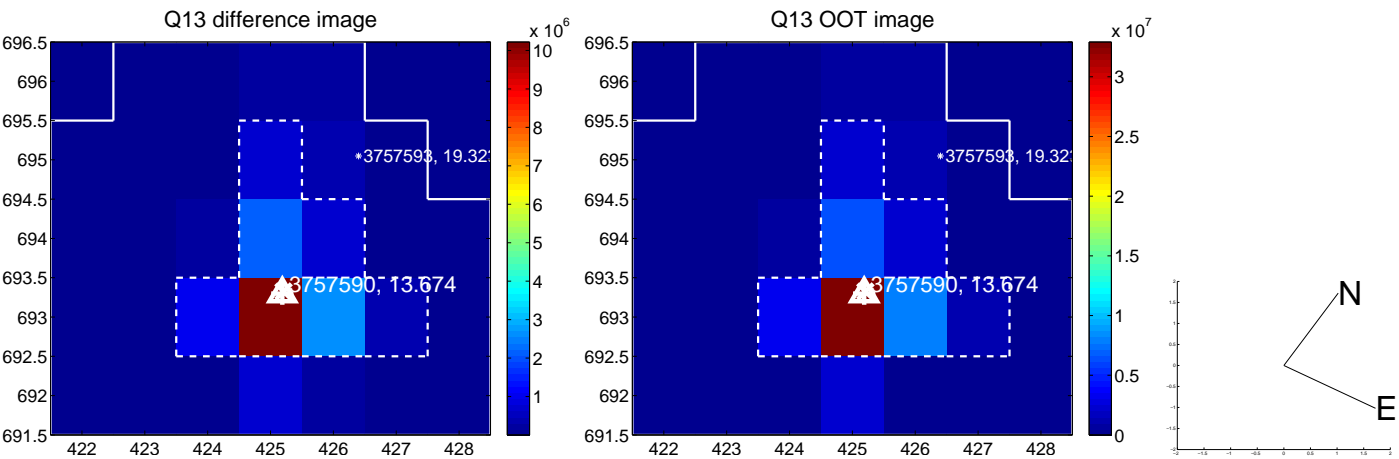
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



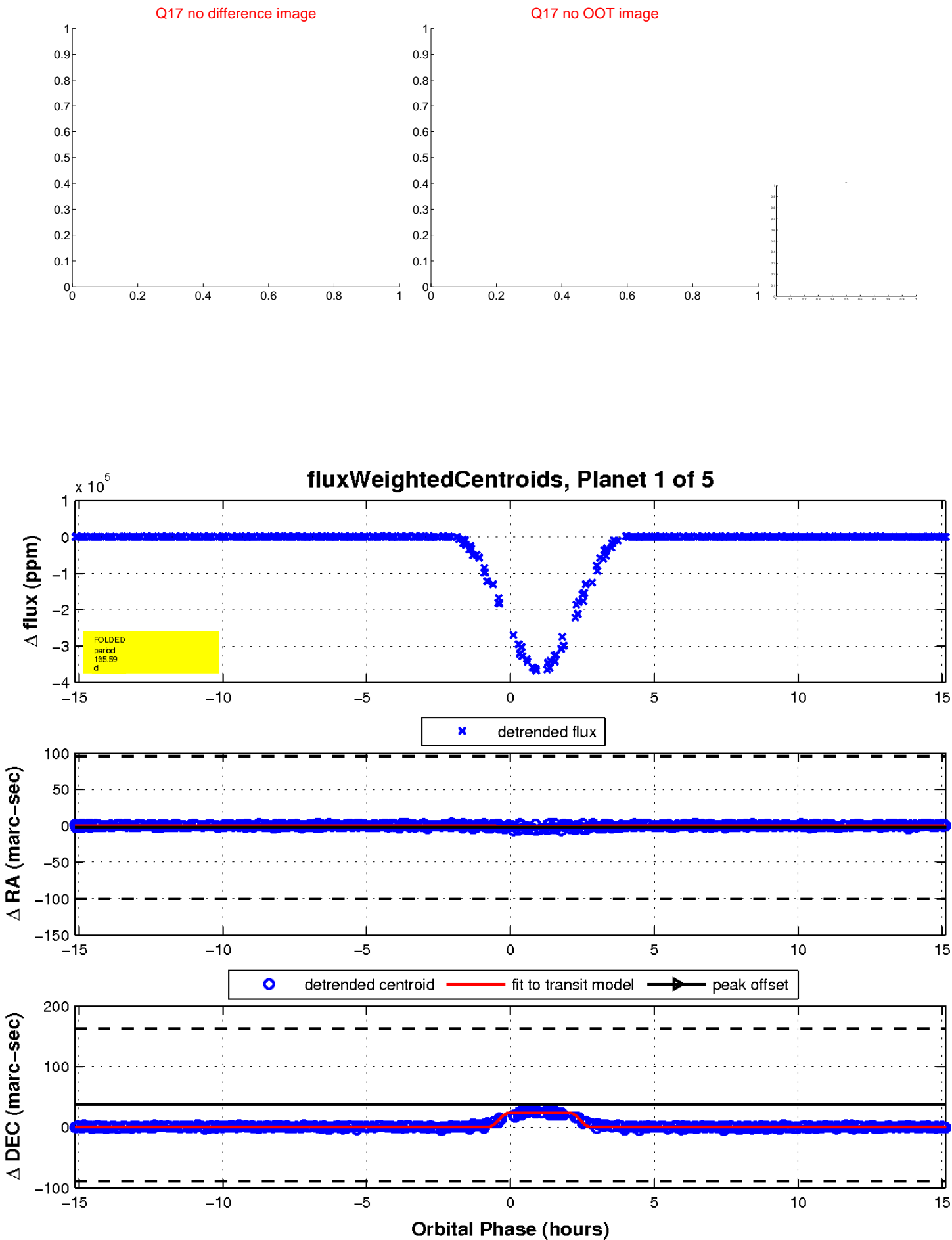
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

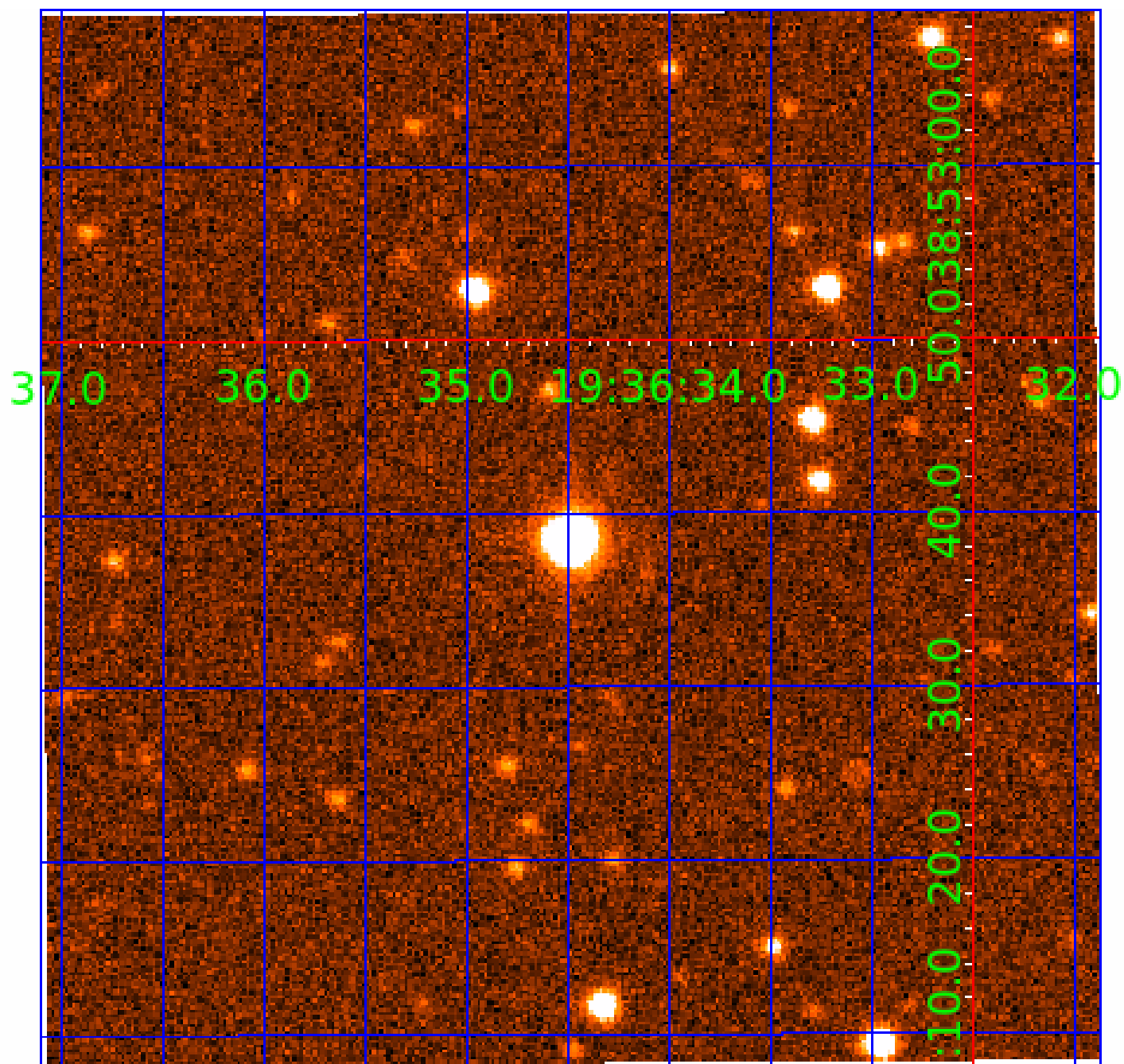


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003757590

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})
003757590-01	OBS	3520.01	135.586857	177.922420	367557.0	3.500	6199.9	-1.0	1.30	6401	59.07	8.00
003757590-02	OBS	No	271.670991	177.670406	5662.2	15.000	439.7	-1.0	1.30	6401	9.80	3.17
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003757590-04	OBS	No	202.267945	320.086274	1517.5	42.794	207.7	25.0	1.30	6401	9.54	4.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003757590-01	OBS	PC	0.69	0	0	0	0	CENT_NOFITS
003757590-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
003757590-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003757590-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—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.

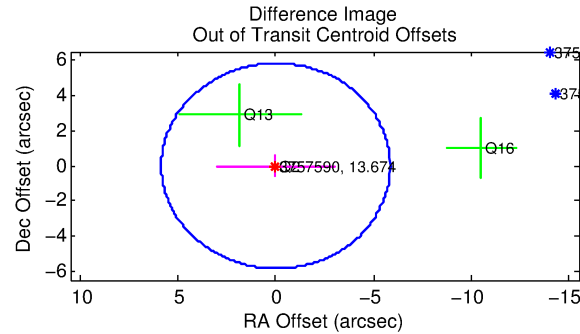
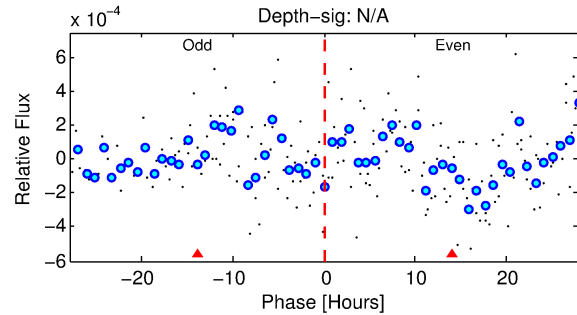
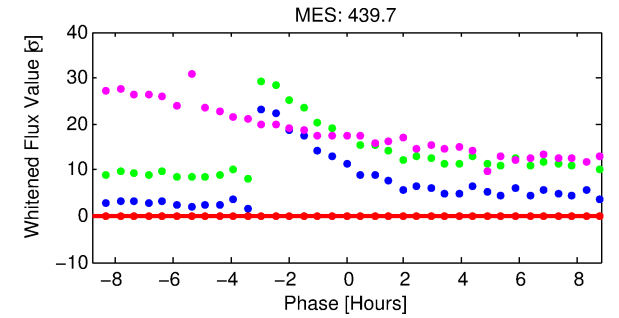
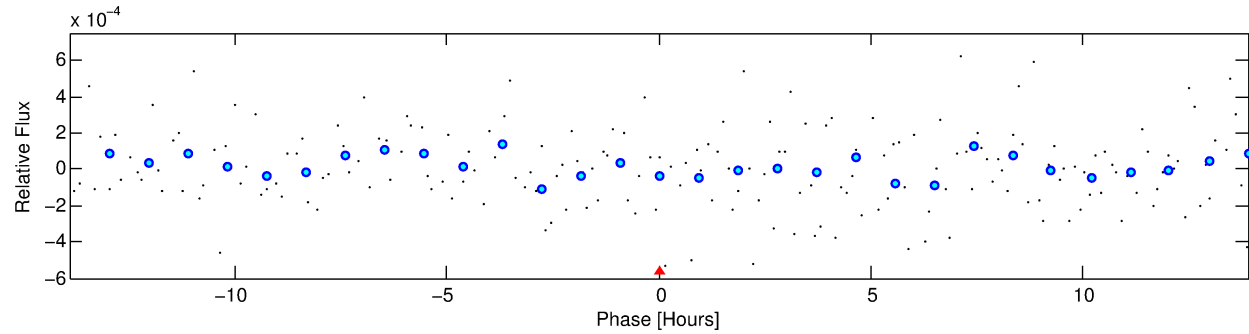
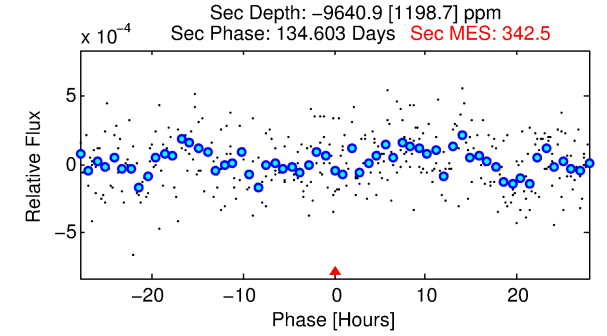
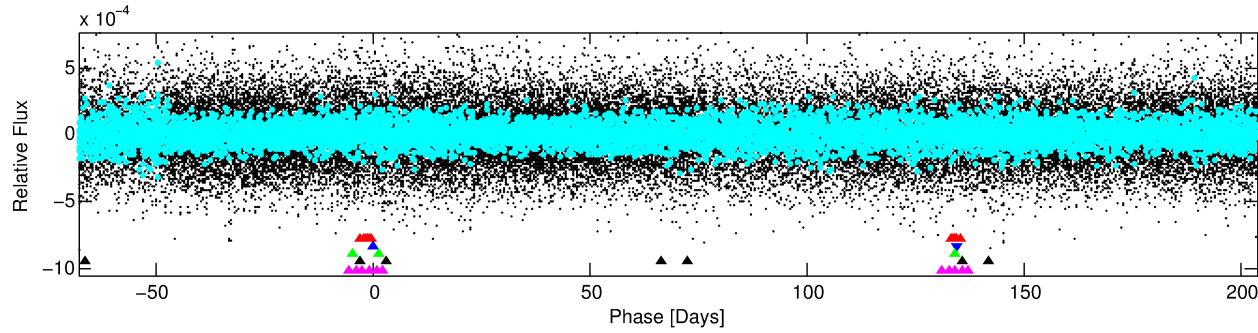
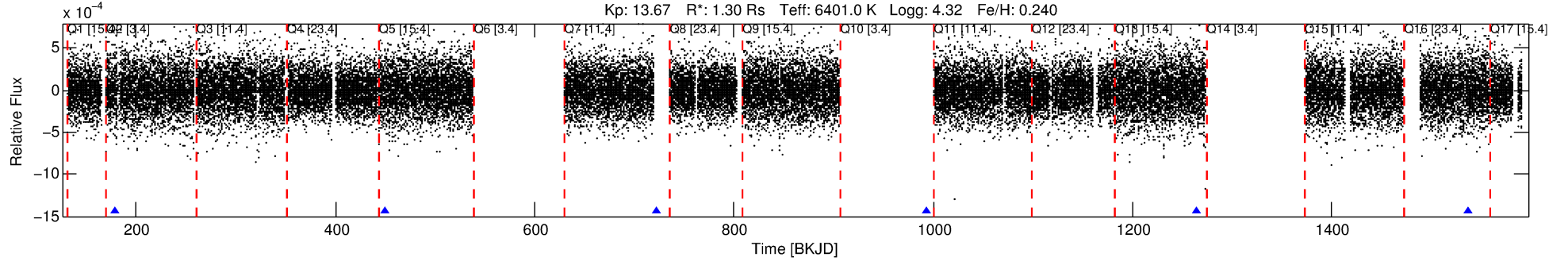
Ephemeris Match Information For 003757590-02

No Significant Match Found

DV One-Page Summary

KIC: 3757590 Candidate: 2 of 5 Period: 271.671 d
KOI: K03520 Corr: No Ephemeris Match

Kp: 13.67 R*: 1.30 Rs Teff: 6401.0 K Logg: 4.32 Fe/H: 0.240



TPS TCE Results:

Period = 271.67099 d
Epoch = 177.6704 BKJD

DV fit results are unavailable

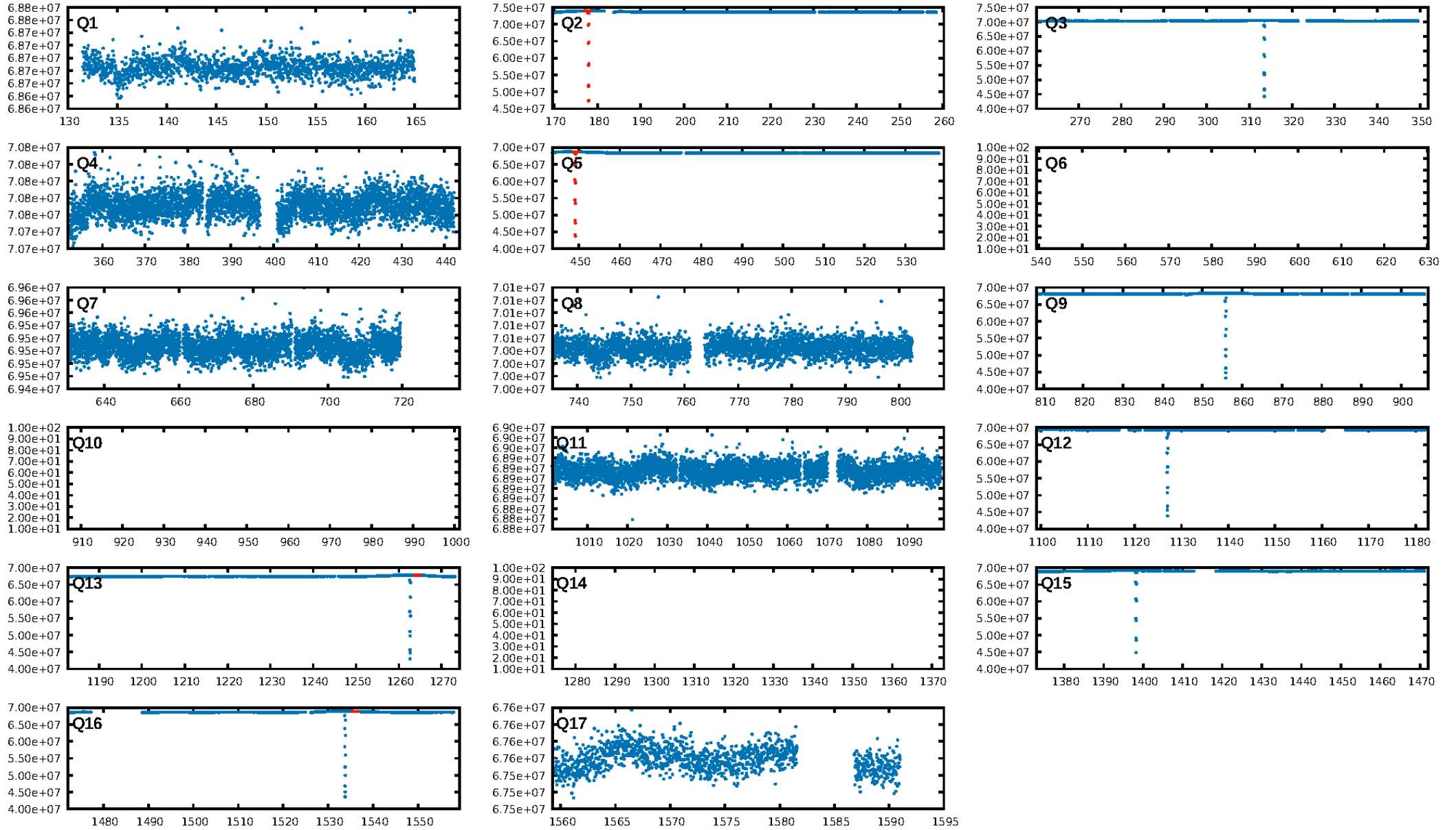
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [36.73σ]
LongPeriod-sig: 100.0% [72.08σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.6659
Centroid-sig: 3.4%
Centroid-so: 19.975 arcsec [1.34σ]
OotOffset-rm: 0.010 arcsec [0.01σ]
KicOffset-rm: 0.128 arcsec [0.11σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
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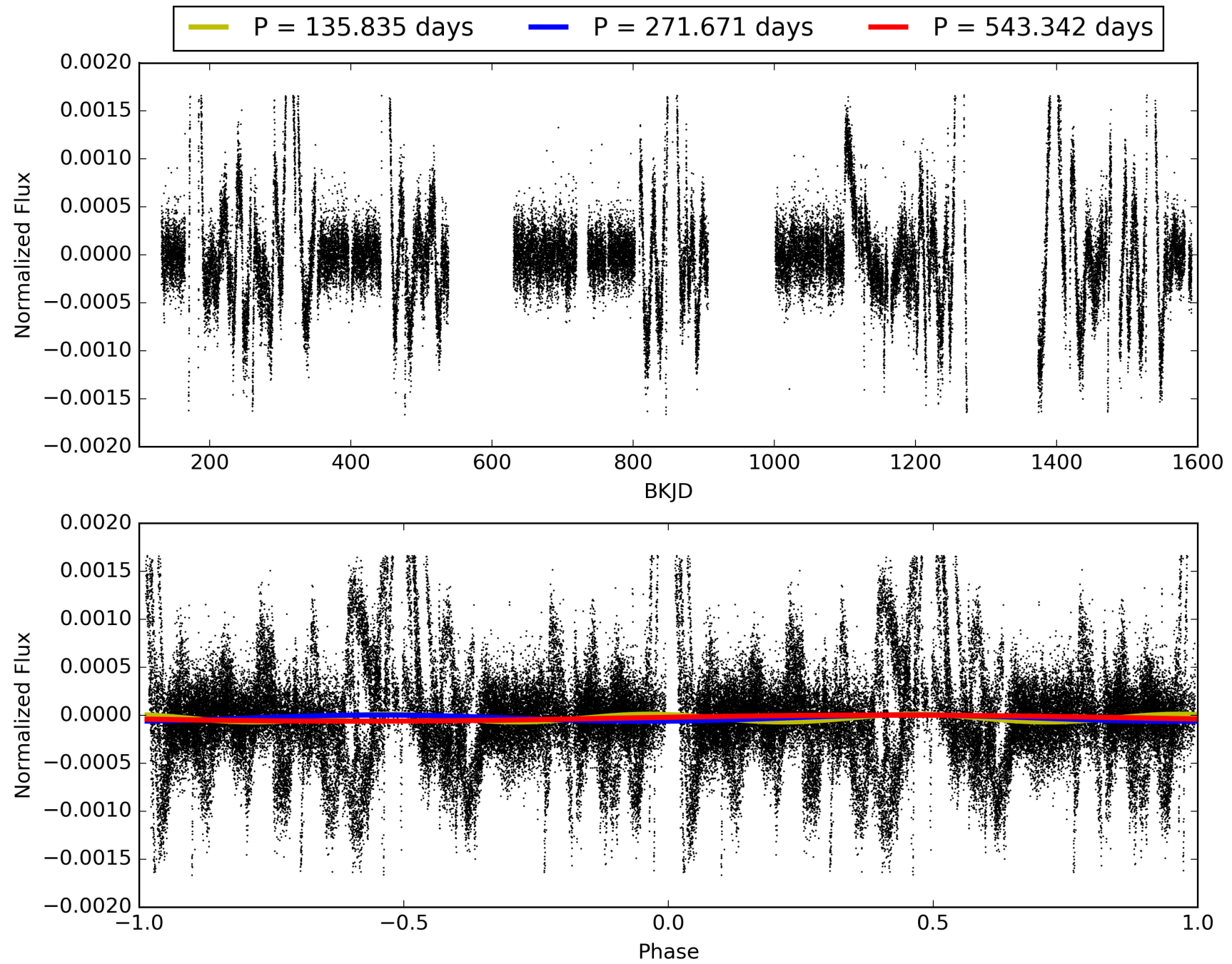
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:38:08 Z

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

TCE 003757590-02, PDC Light Curves

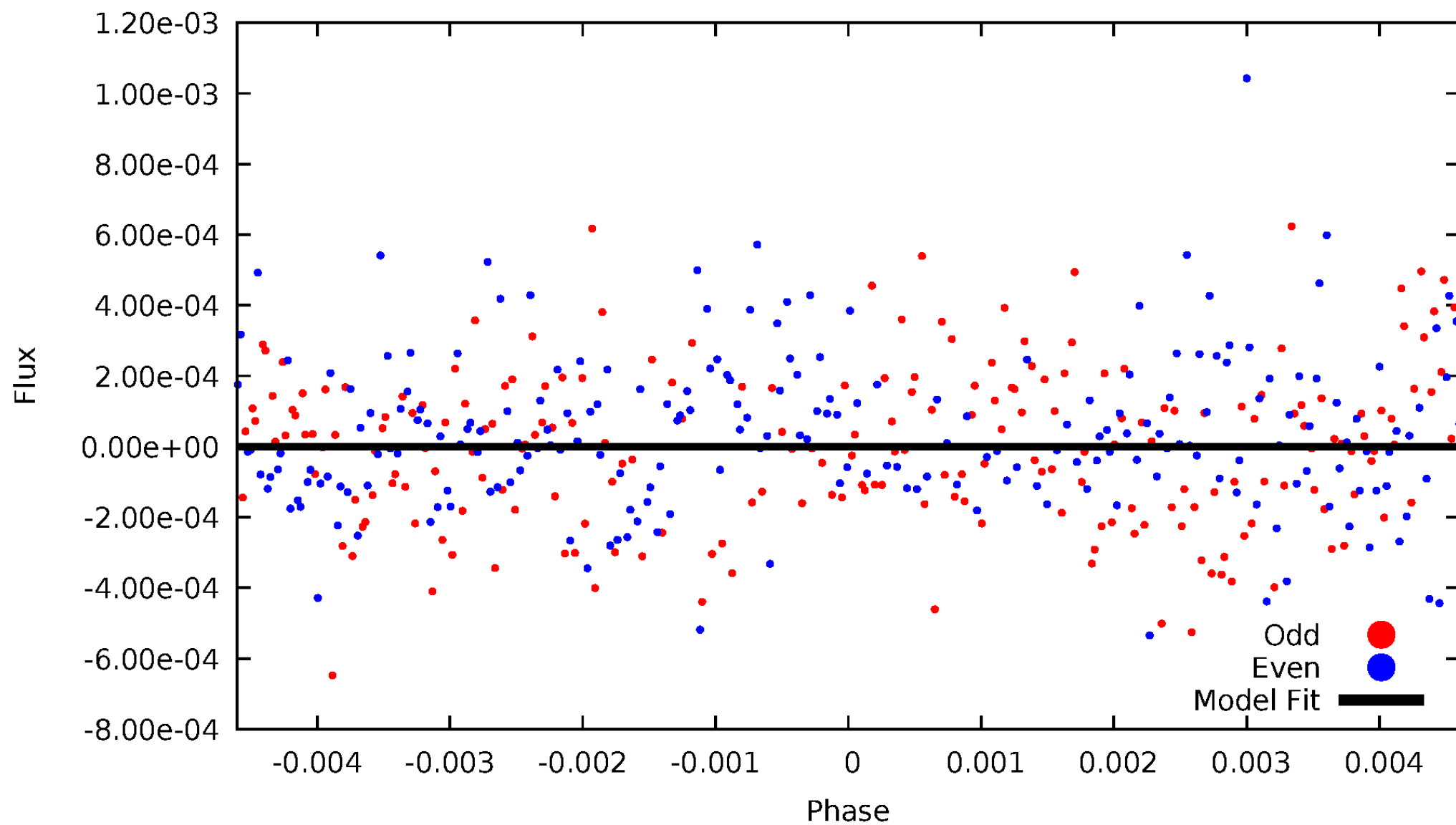


TCE 003757590-02



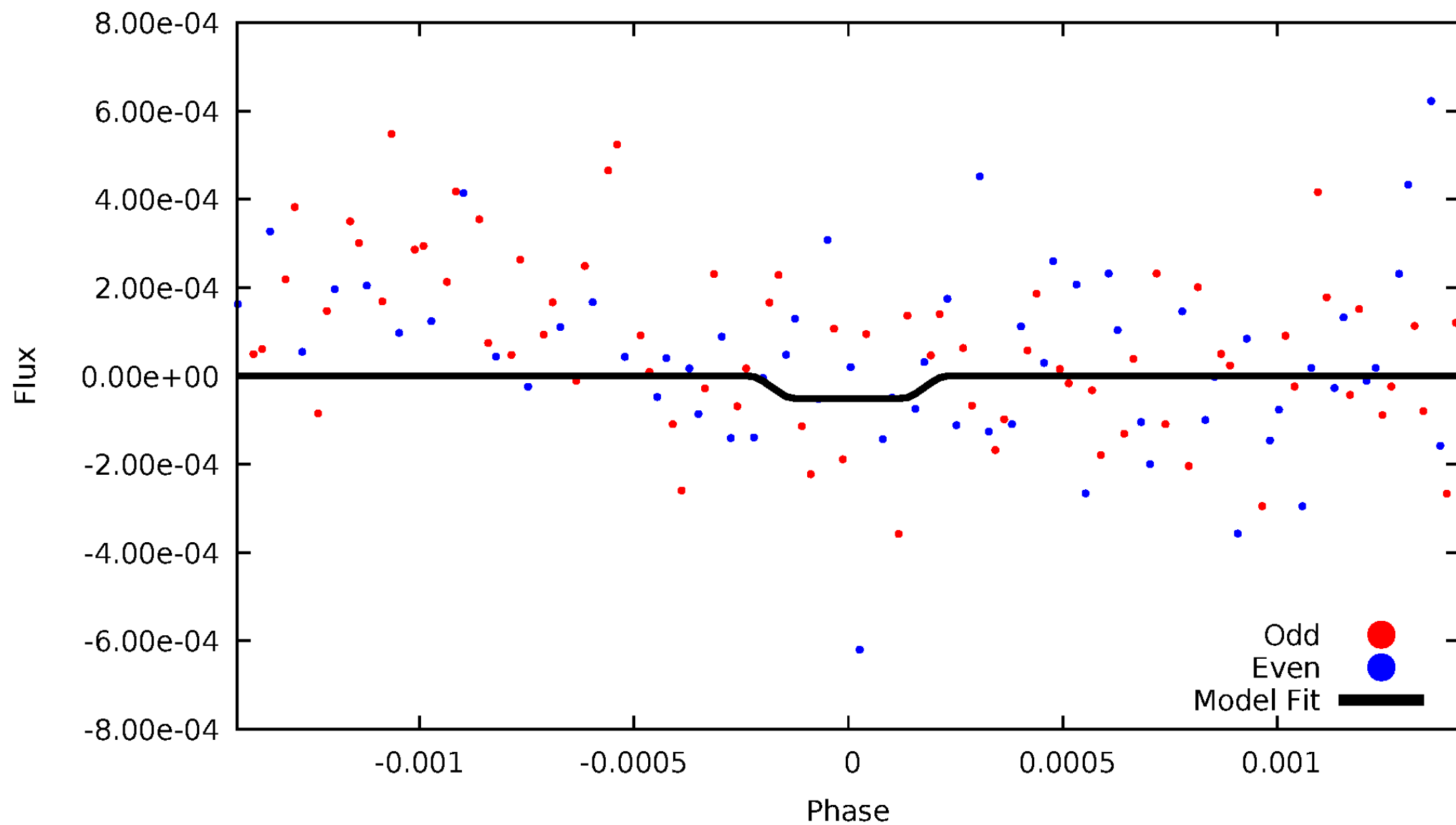
DV Odd/Even

TCE 003757590-02



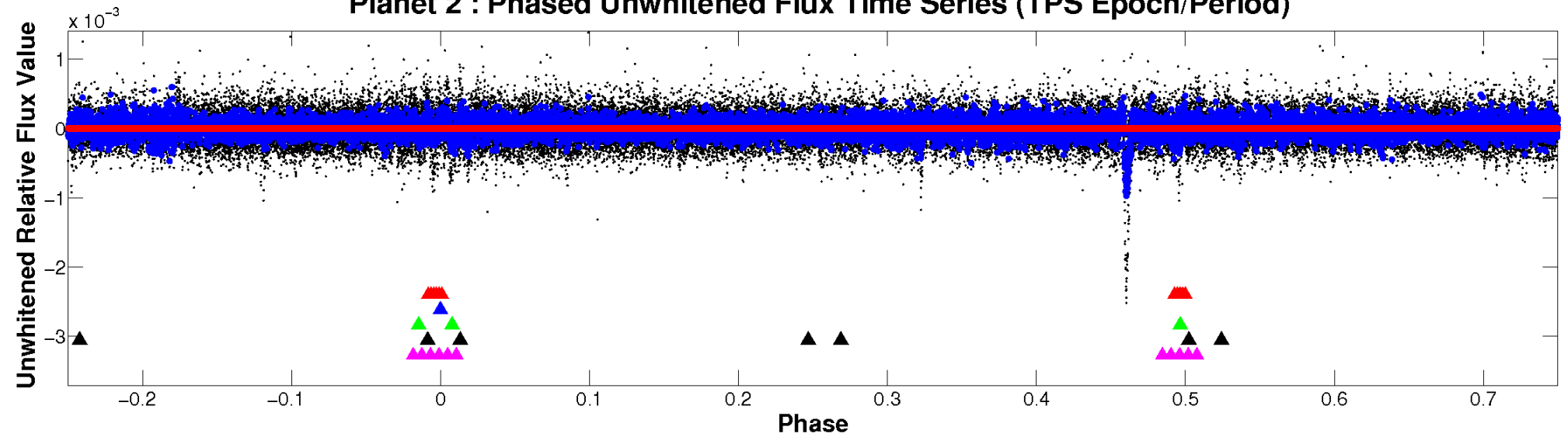
ALT Odd/Even

TCE 003757590-02



Non-Whitened Vs. Whitened Light Curve

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

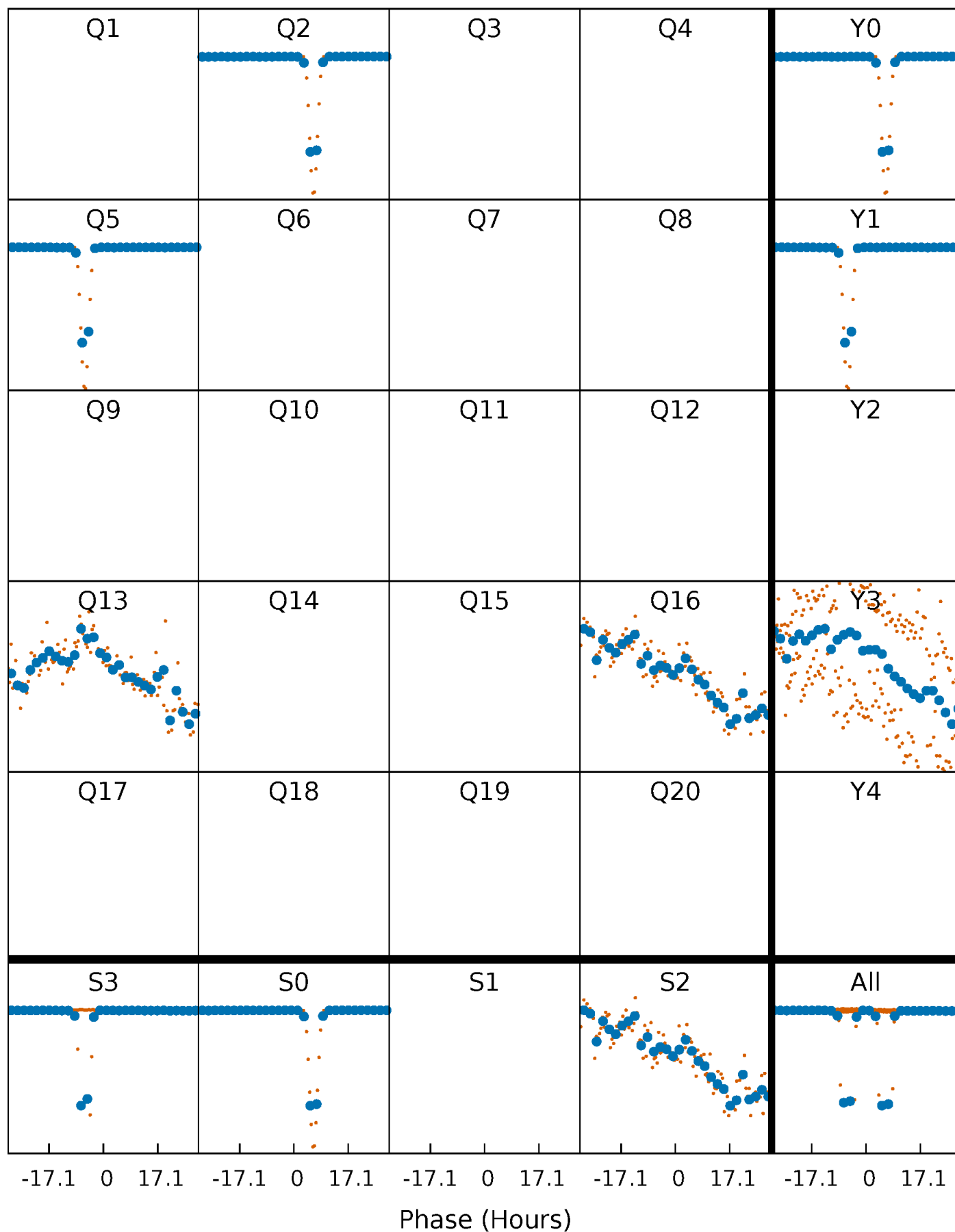


Planet 2 : Phased Whitened Flux Time Series (TPS Epoch/Period)



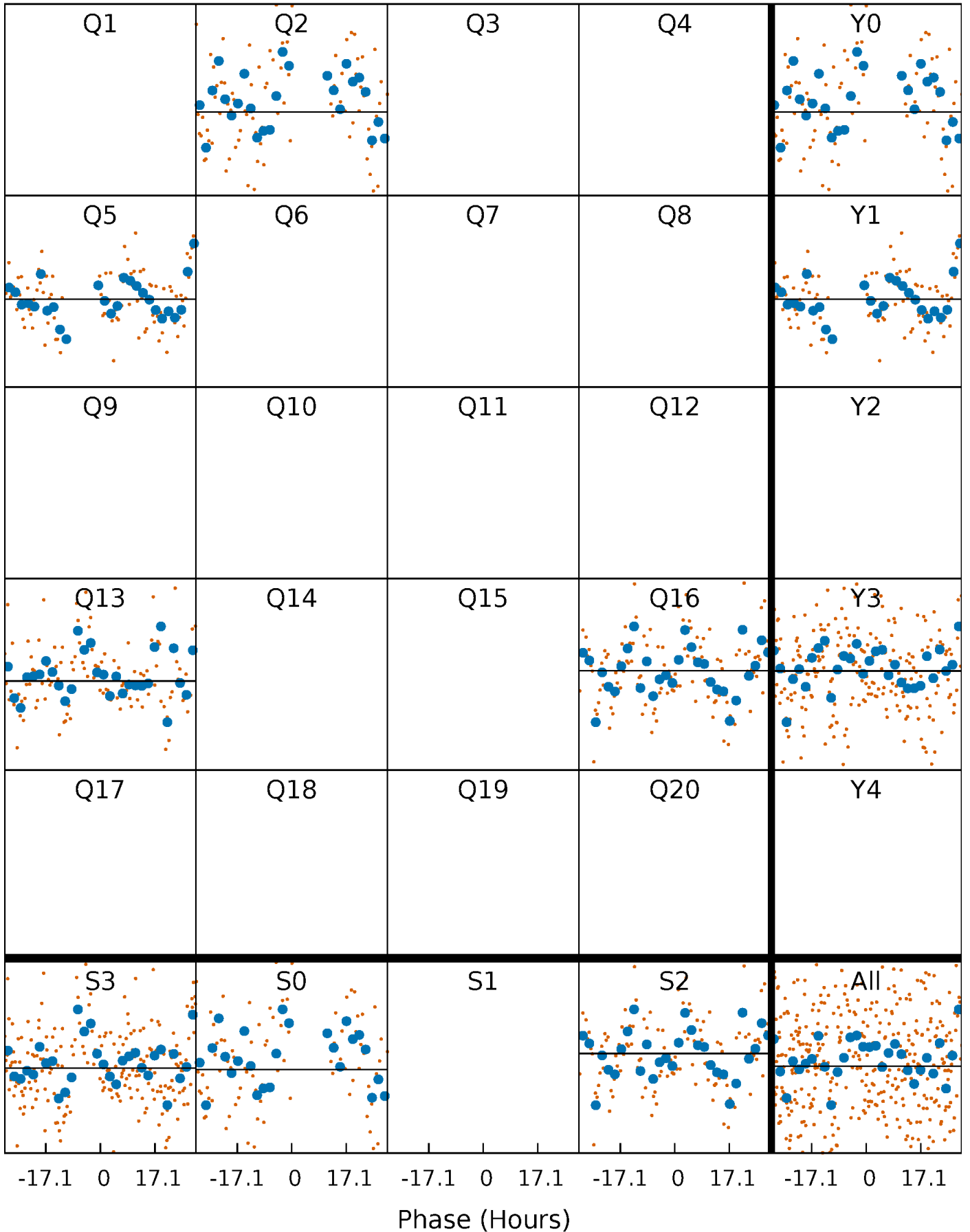
PDC Quarter-Phased Transit Curves

TCE 003757590-02 P=271.670991 Days $T_0=177.670406$ (BKJD)



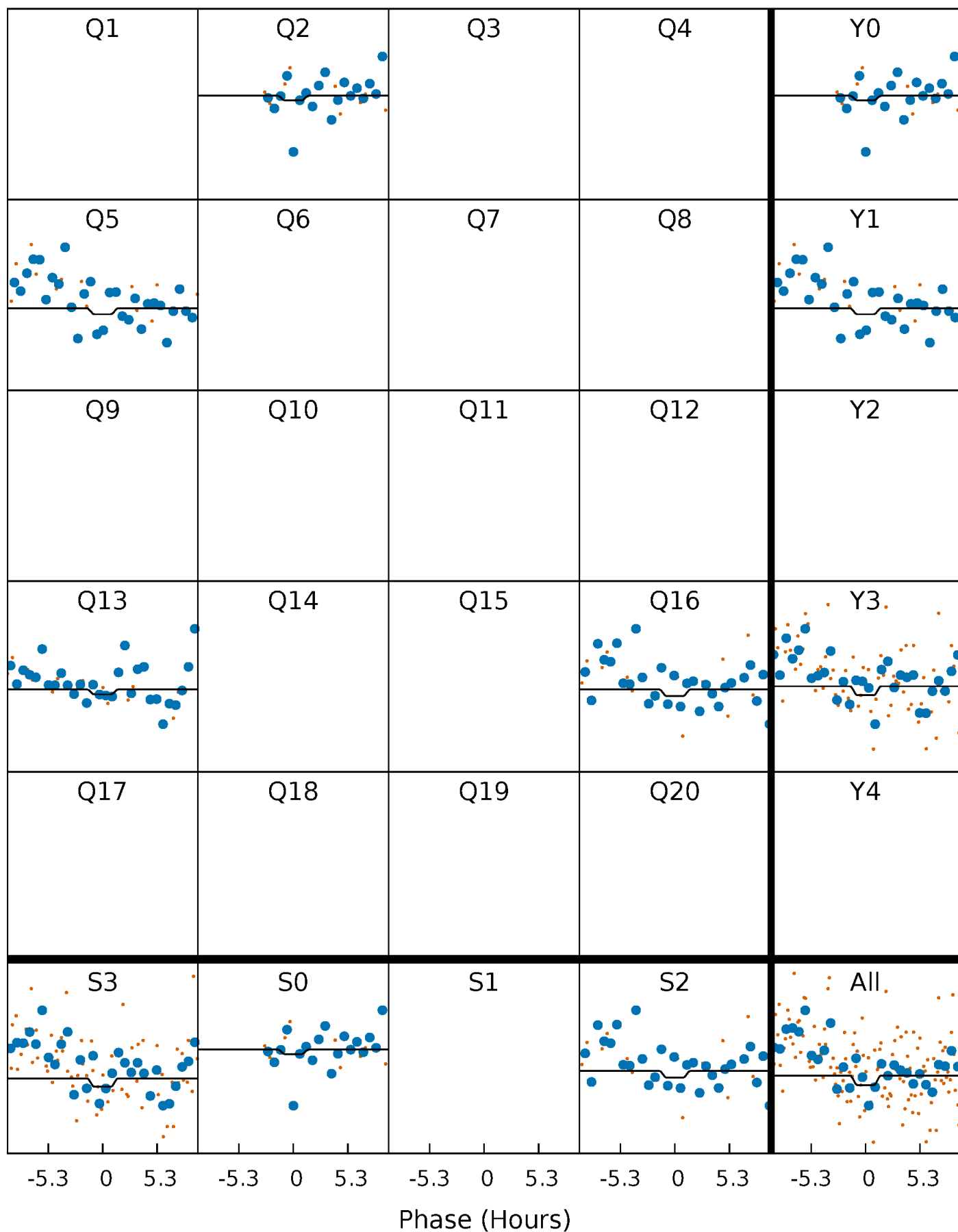
DV Quarter-Phased Transit Curves

TCE 003757590-02 $P=271.670991$ Days $T_0=177.670406$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

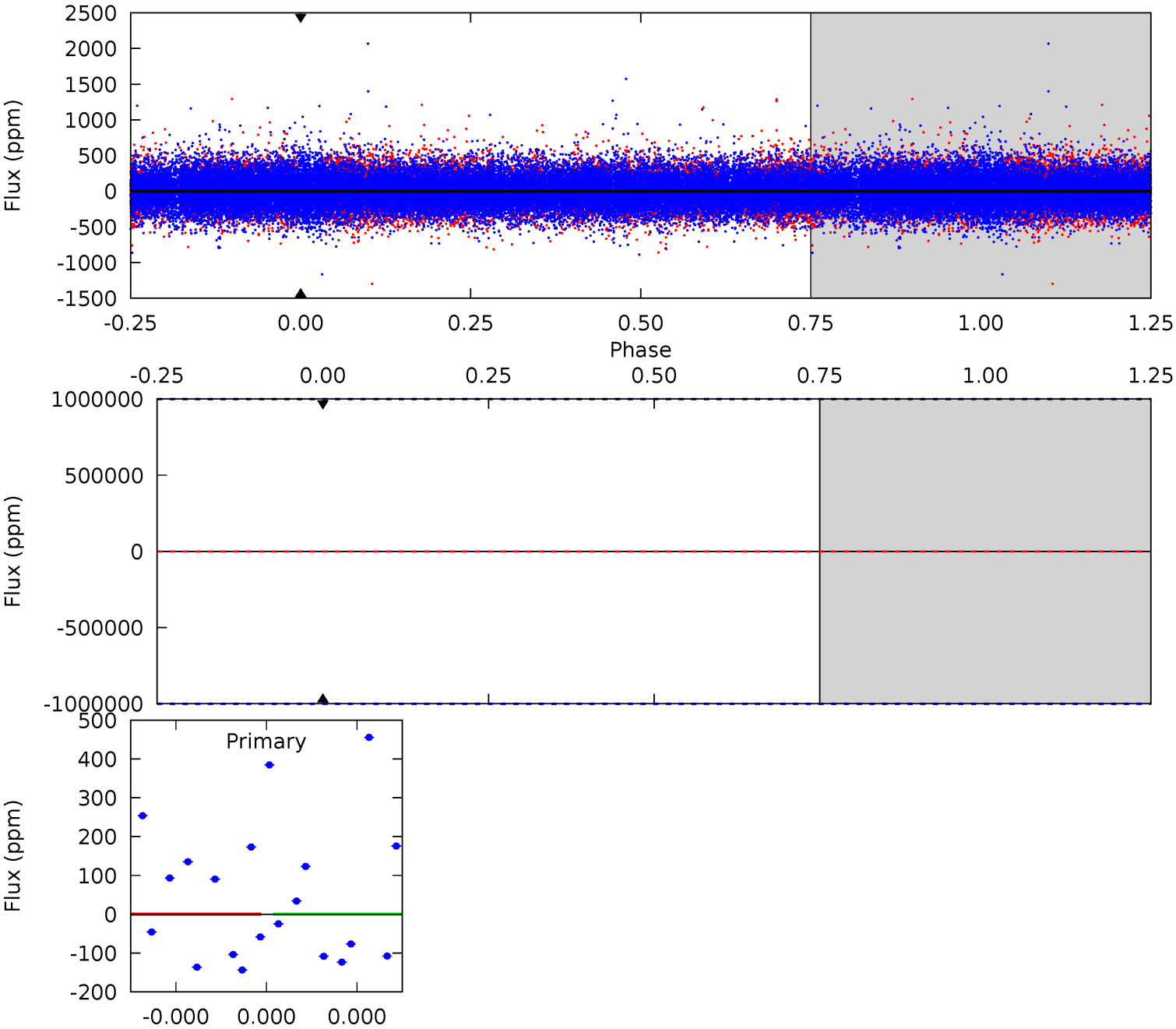
TCE 003757590-02 P=271.670991 Days $T_0=178.279552$ (BKJD)



DV Model-Shift Uniqueness Test

003757590-02, P = 271.670991 Days, E = 177.670406 Days

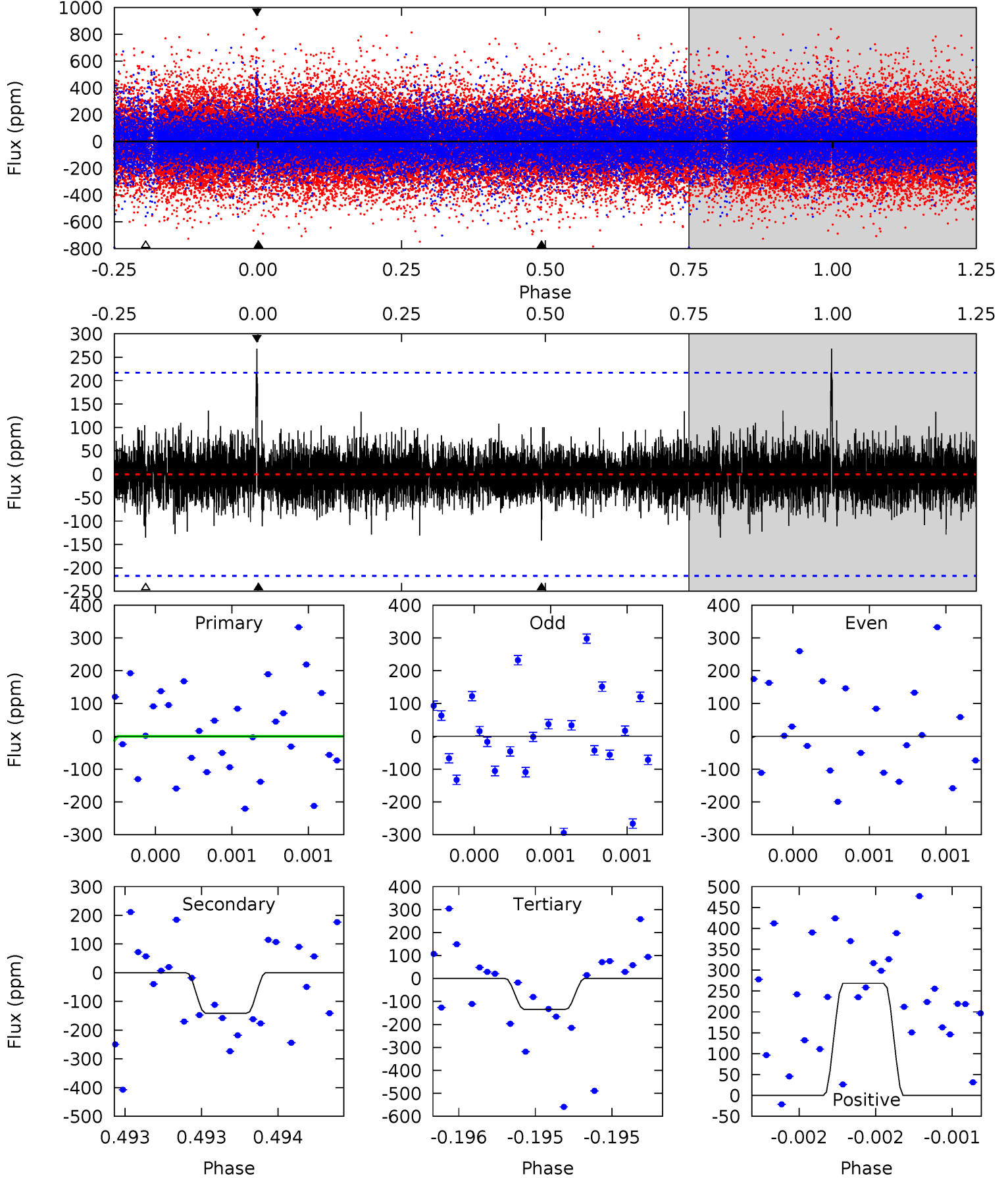
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

003757590-02, P = 271.670991 Days, E = 178.279552 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.10	3.64	3.47	6.91	5.59	3.51	0.86	-2.38	-5.81	0.17	-3.27	0.11	0.97	0.65	1.18



Stellar Parameters For KIC 003757590

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6401^{+69}_{-88}	$4.324^{+0.040}_{-0.112}$	$0.240^{+0.150}_{-0.200}$	$1.301^{+0.222}_{-0.089}$	$1.304^{+0.078}_{-0.086}$	$0.834^{+0.129}_{-0.291}$
	+1%/-1%	+1%/-3%	+62%/-83%	+17%/-7%	+6%/-7%	+15%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 003757590-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$15.04^{+12.52}_{-9.02}$	478^{+21}_{-12}	-3476^{+20607}_{-12664}	$-1099.257^{+305832.722}_{-260717.677}$
Alt.	-141 ± 39	$10.28^{+10.54}_{-7.34}$	479^{+19}_{-13}	3207^{+1746}_{-579}	584^{+6252}_{-441}

T_{max} = Theoretical Maximum Planetary Temperature

T_{obs} = Observed Planetary Temperature (Assuming $A=0.3$)

A_{obs} = Observed Albedo (Assuming $T=0$)

If a secondary eclipse is present, the system is likely an EB if $T_{obs} \gg T_{max}$ AND $A_{obs} \gg 1.0$

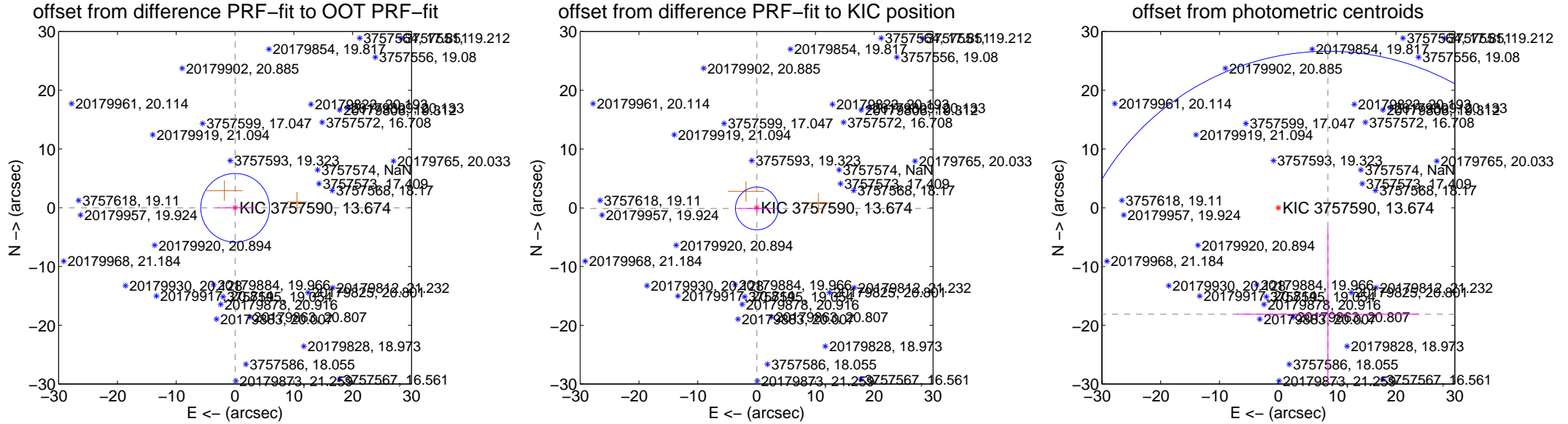
DV Centroid Data

Supplemental centroid analysis for 003757590-02. Kepler magnitude: 13.67. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

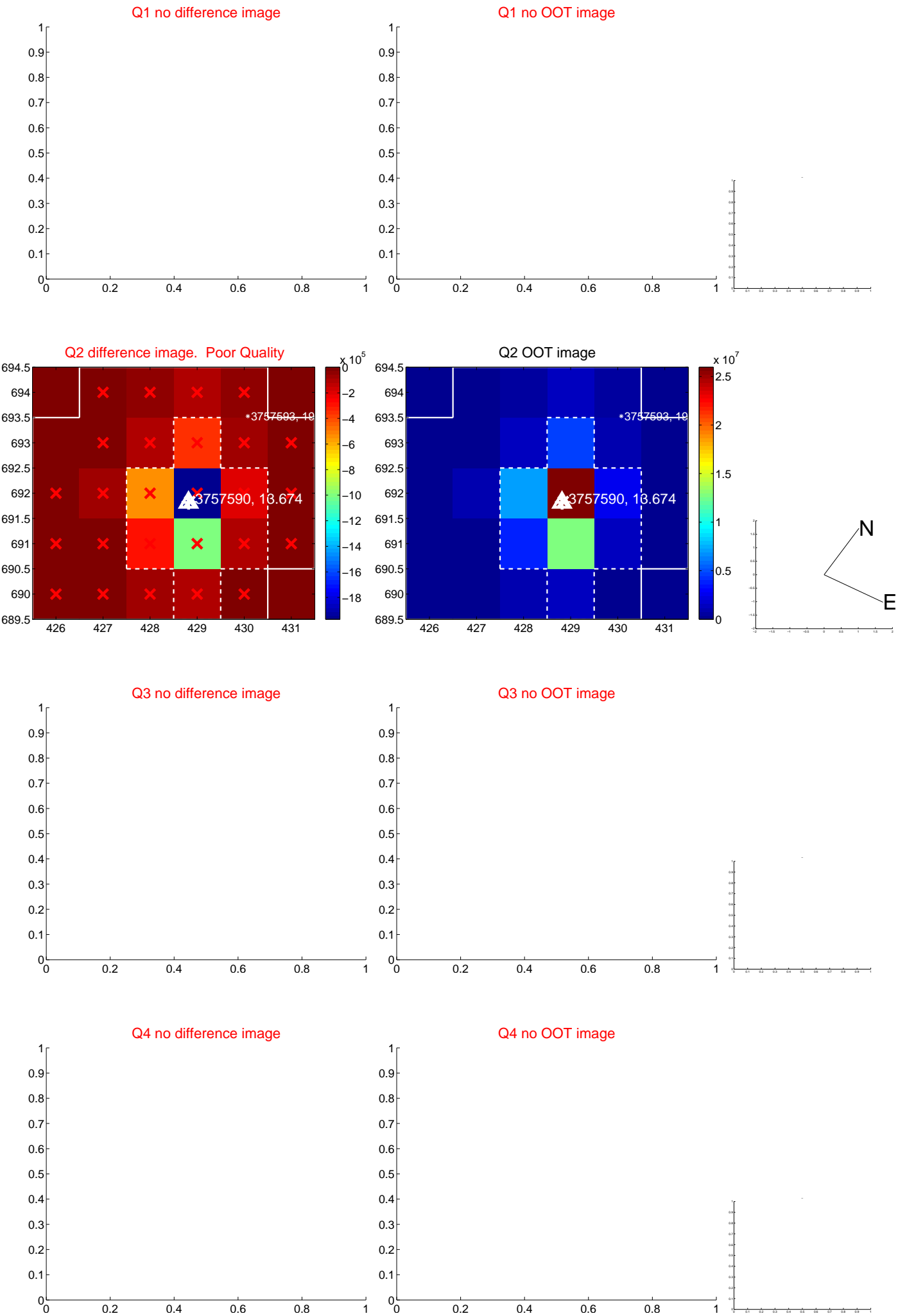
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.010 ± 1.948	0.01	-0.006 ± 3.045	-0.009 ± 0.549
PRF-fit source offset from KIC position	0.128 ± 1.212	0.11	-0.049 ± 3.054	-0.118 ± 0.743
photometric centroid source offset	19.98 ± 14.91	1.34	-8.43 ± 15.55	-18.11 ± 14.77

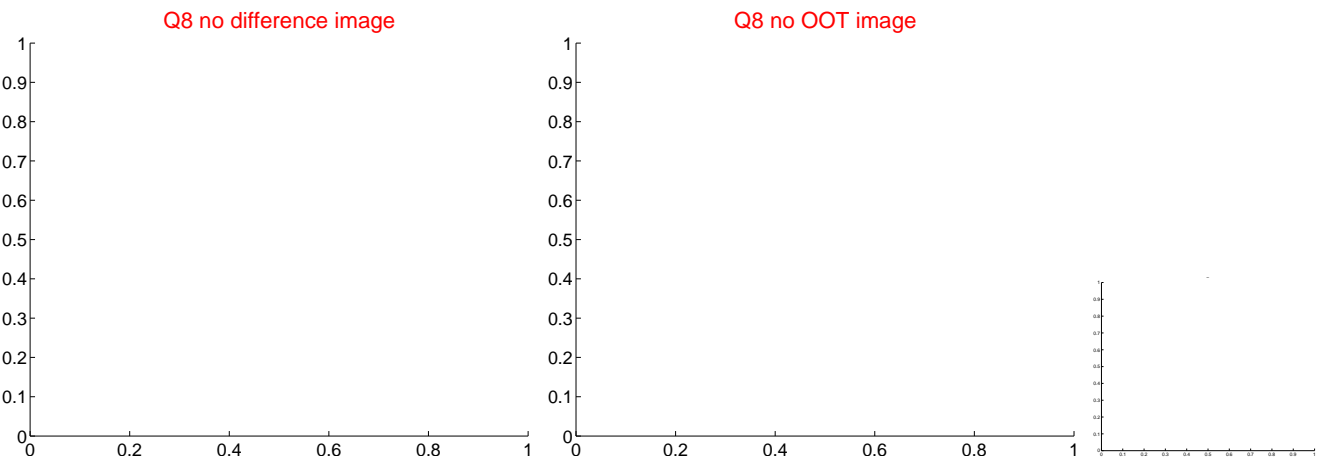
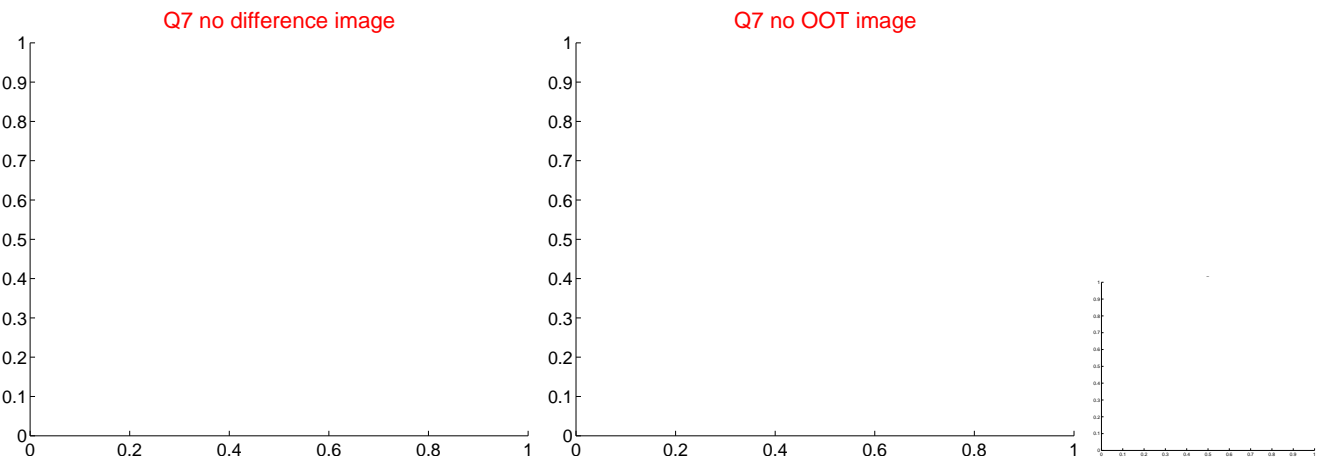
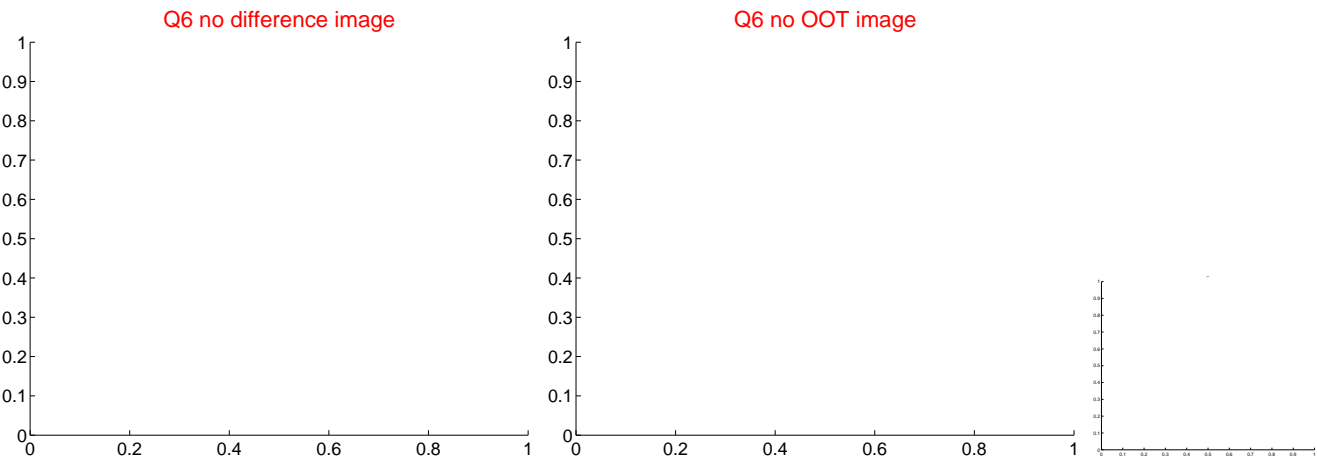
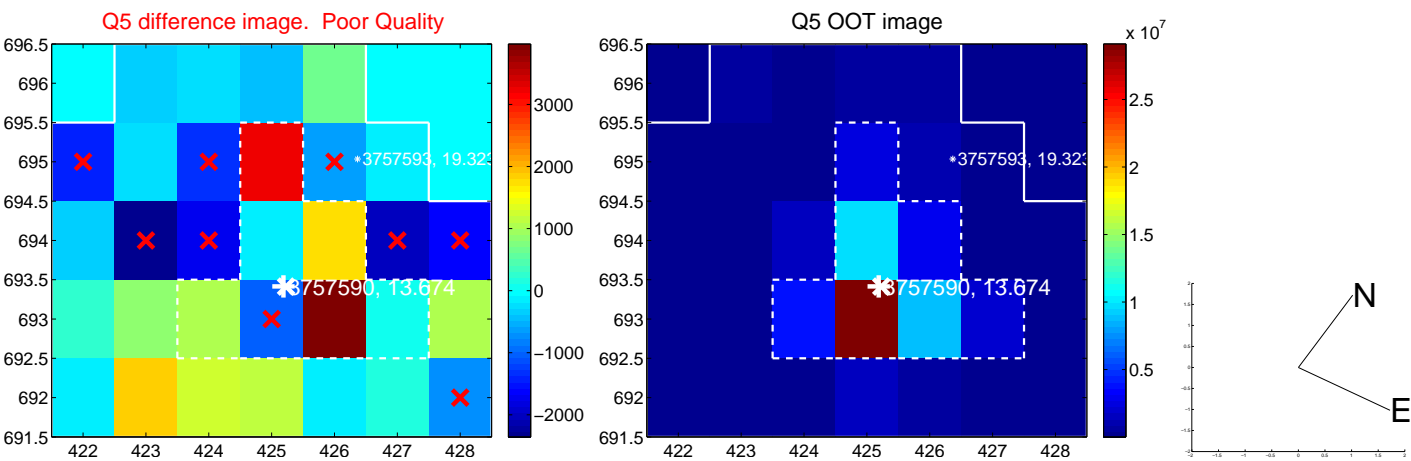


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



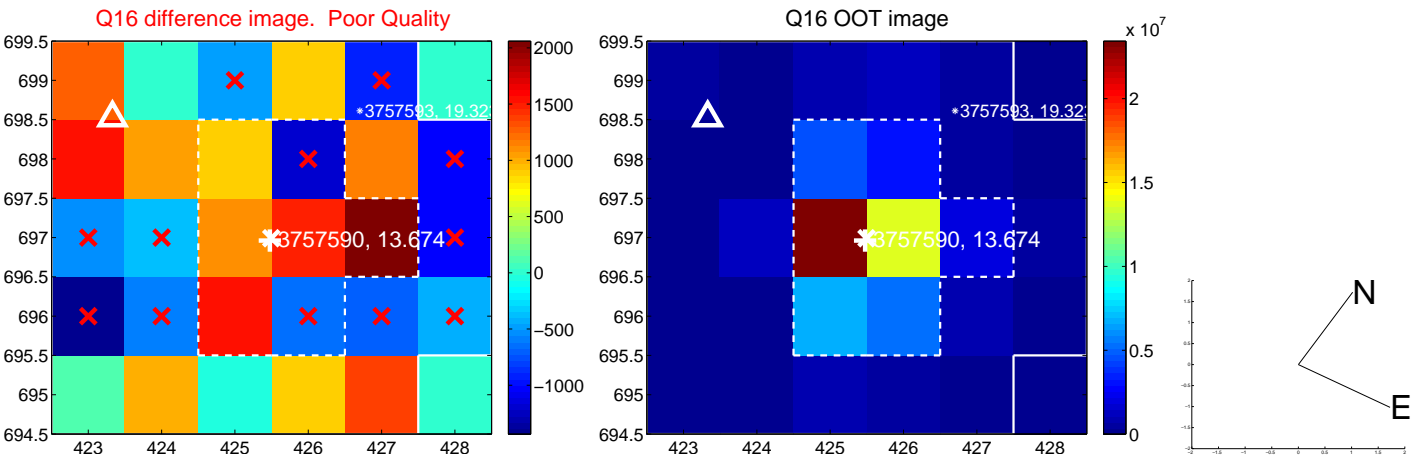
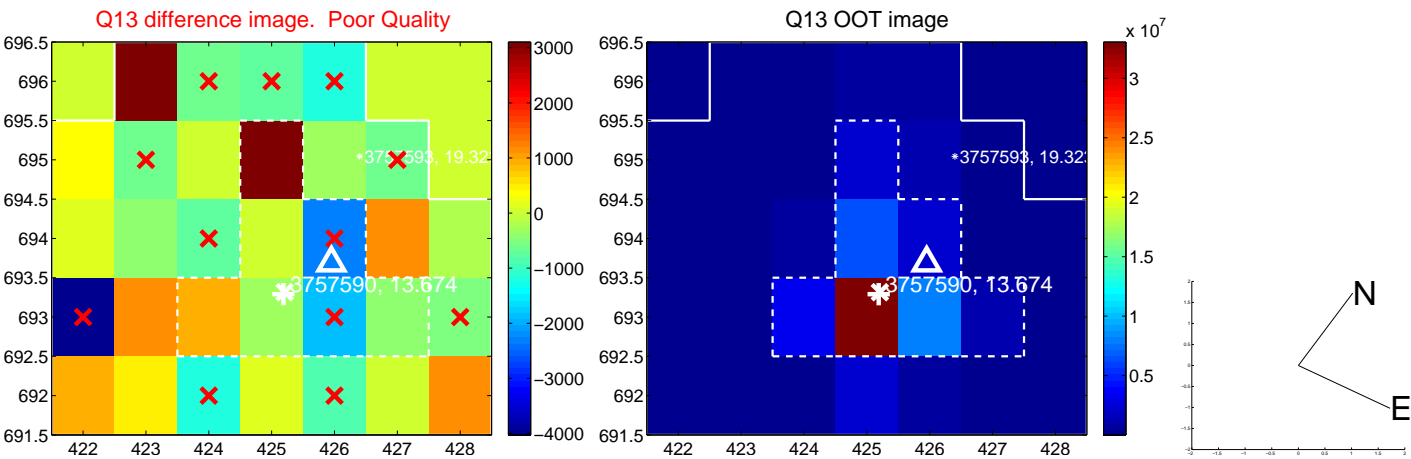
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



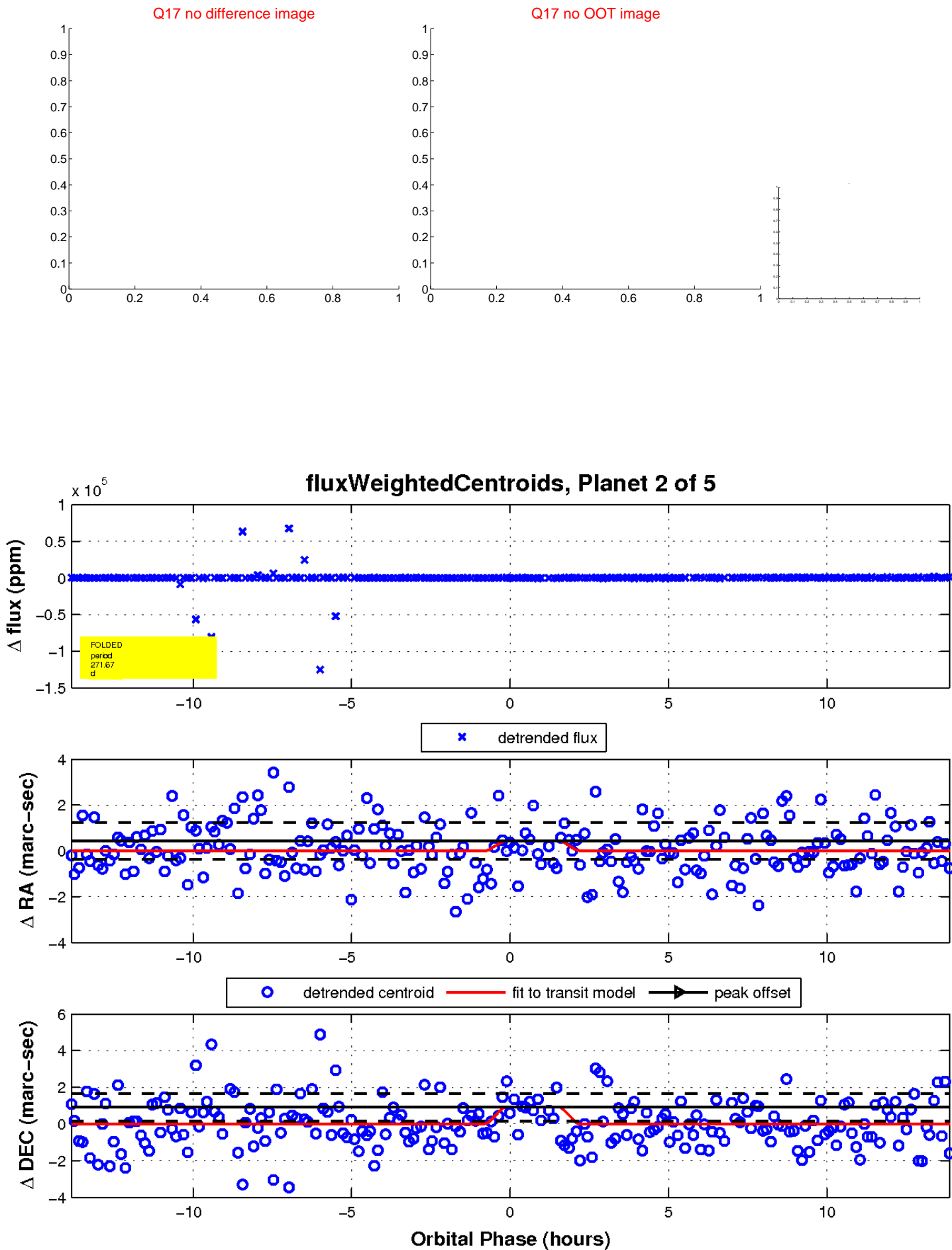
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

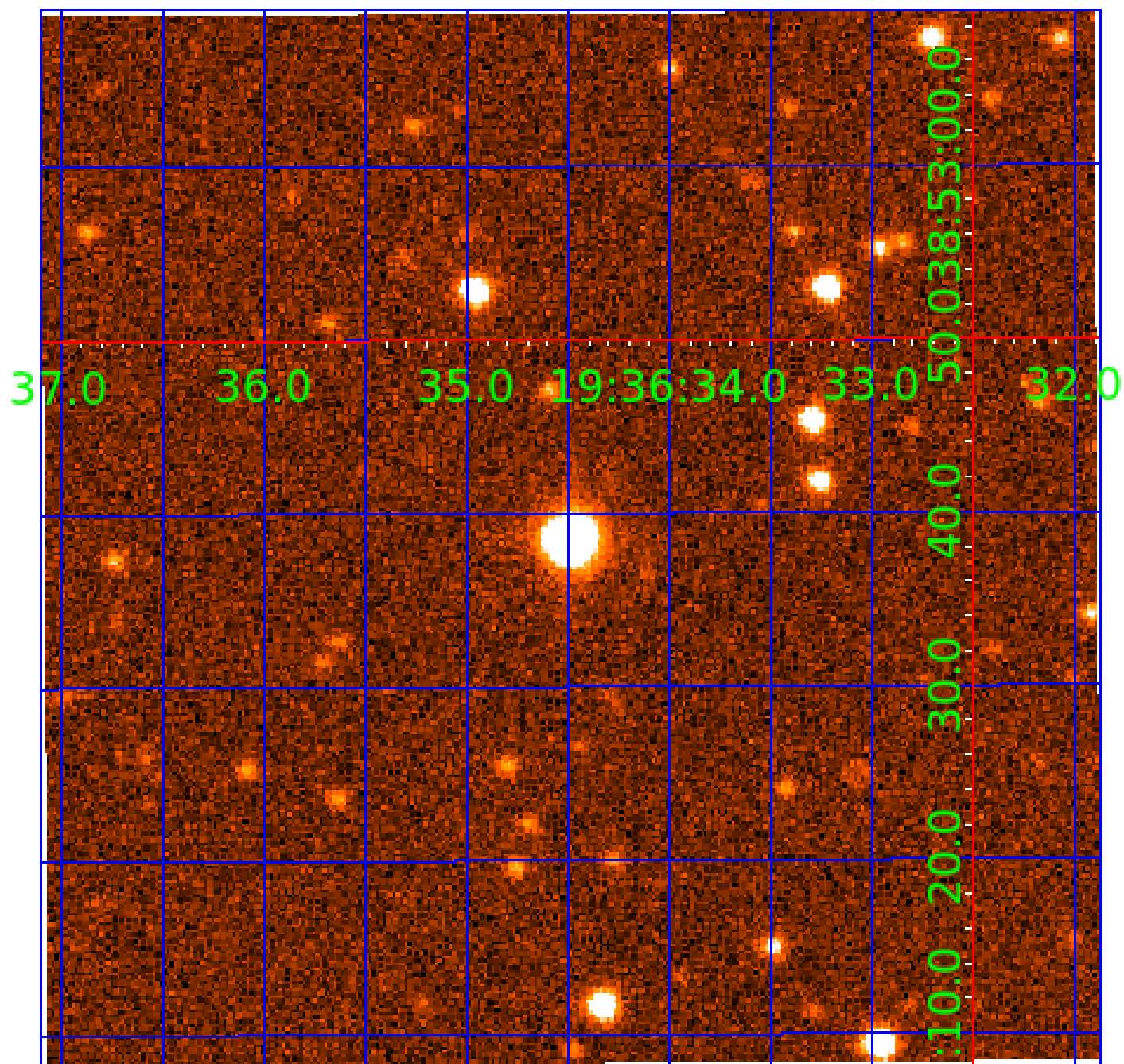


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003757590

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})
003757590-01	OBS	3520.01	135.586857	177.922420	367557.0	3.500	6199.9	-1.0	1.30	6401	59.07	8.00
003757590-02	OBS	No	271.670991	177.670406	5662.2	15.000	439.7	-1.0	1.30	6401	9.80	3.17
003757590-03	OBS	No	404.460405	451.458565	1202.2	41.594	317.8	13.4	1.30	6401	5.40	1.86
003757590-04	OBS	No	202.267945	320.086274	1517.5	42.794	207.7	25.0	1.30	6401	9.54	4.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003757590-01	OBS	PC	0.69	0	0	0	0	CENT_NOFITS
003757590-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
003757590-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003757590-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—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.

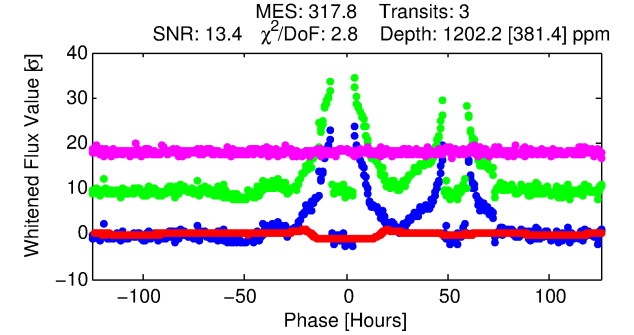
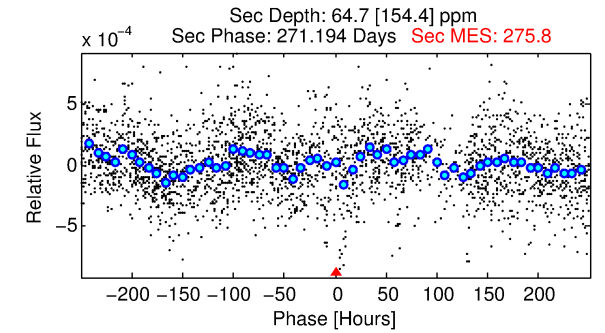
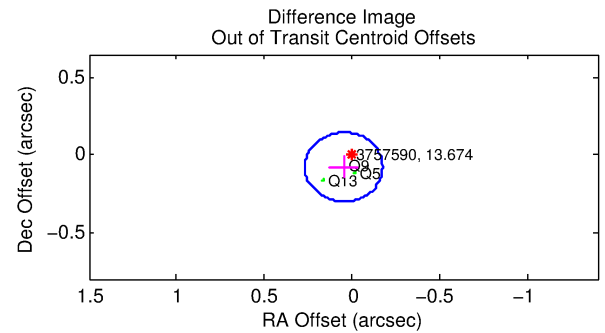
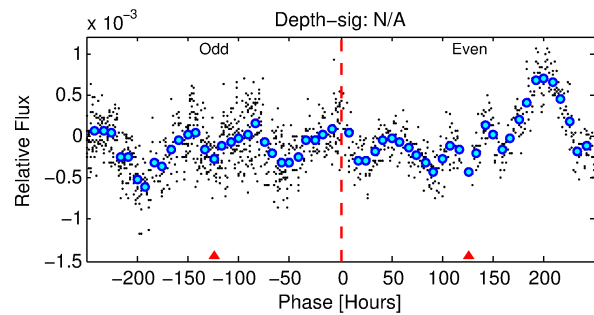
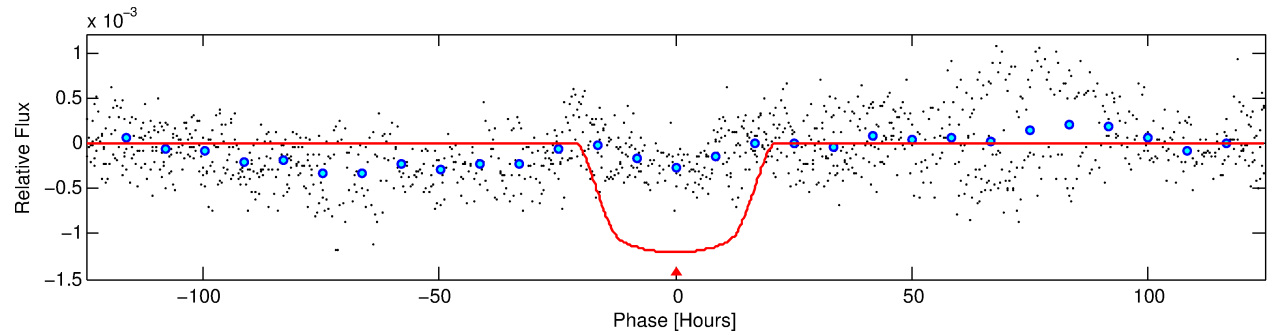
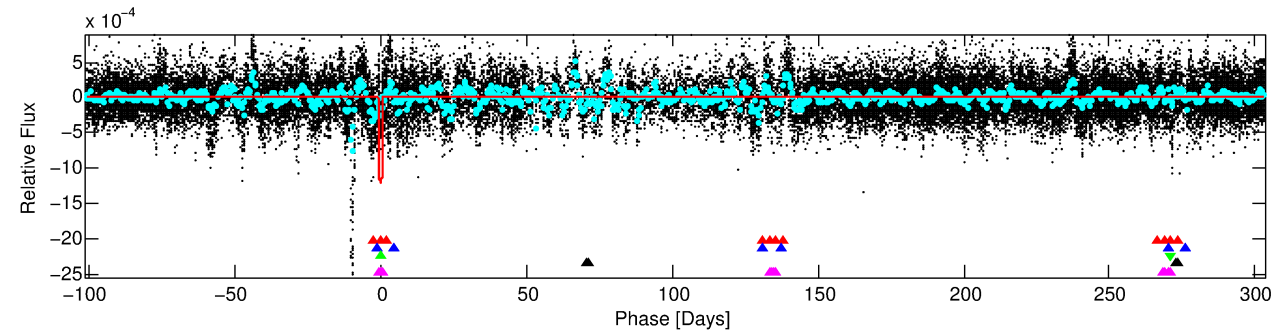
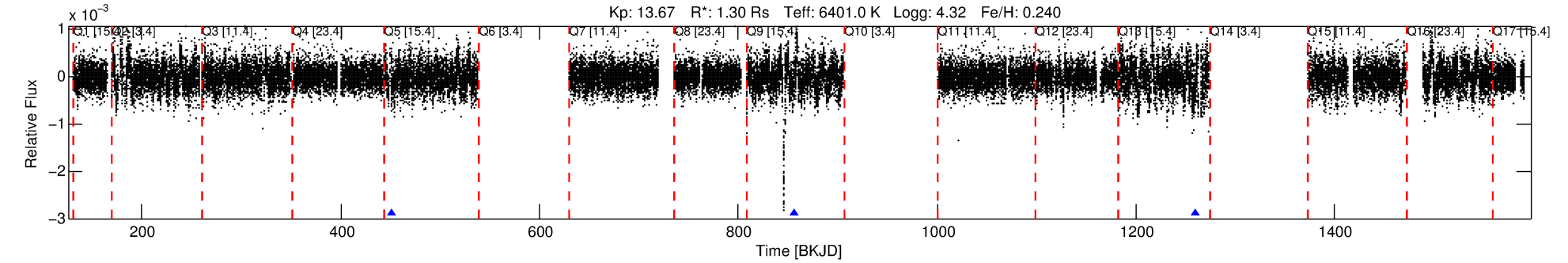
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003757590-03

No Significant Match Found

DV One-Page Summary

KIC: 3757590 Candidate: 3 of 5 Period: 404.460 d
KOI: K03520 Corr: No Ephemeris Match



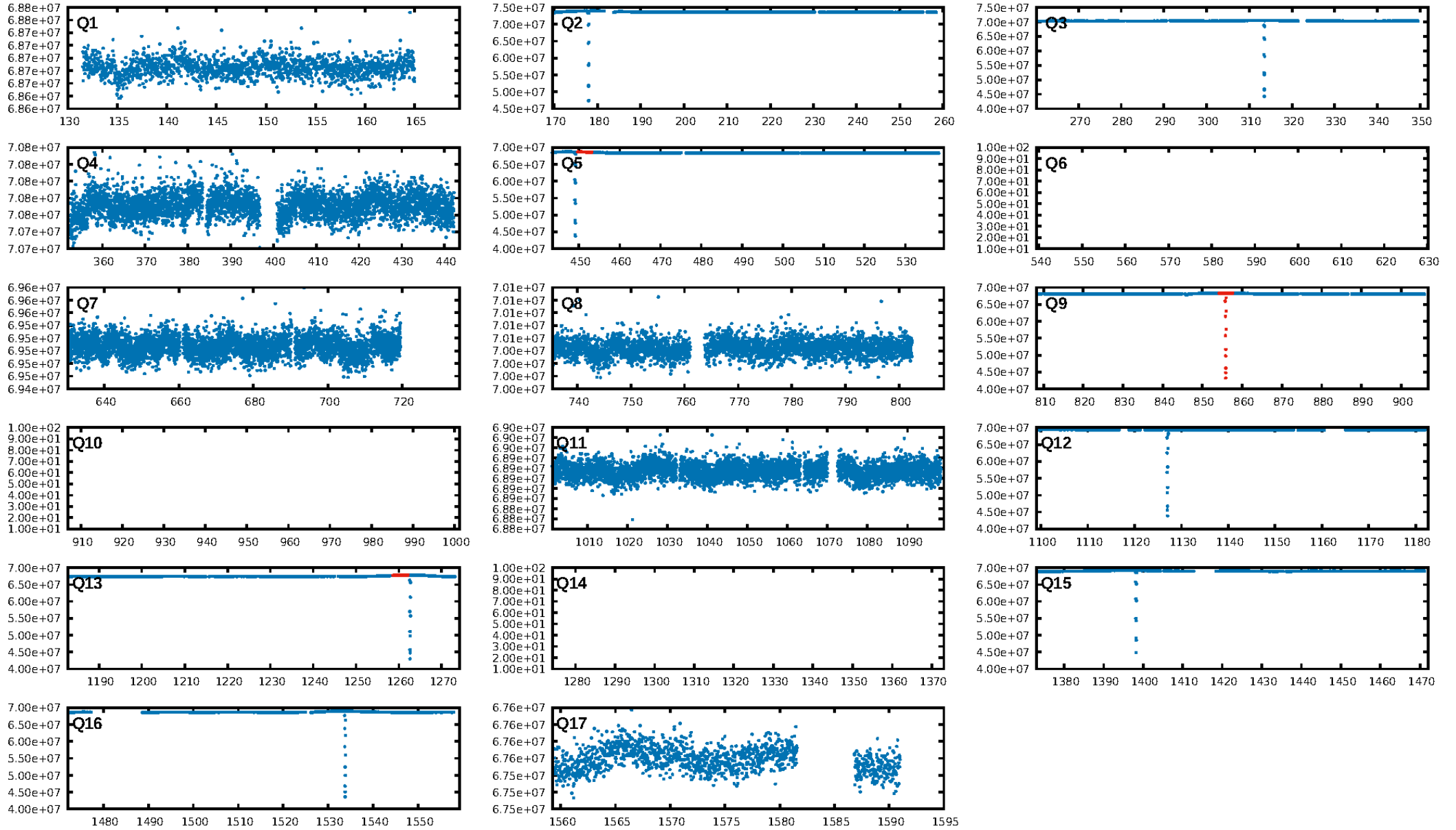
DV Fit Results:

Period = 404.46041 [0.09220] d
Epoch = 451.4586 [0.1079] BKJD
Rp/R* = 0.0380 [0.0069]
a/R* = 35.92 [11.95]
b = 0.92 [0.06]
Seff = 1.86 [0.40]
Teff = 298 [16] K
Rp = 5.40 [1.34] Re
a = 1.1690 [0.1667] AU
Ag = 1668.85 [4042.91] [0.41σ]
Teffp = 2944 [1777] K [1.49σ]

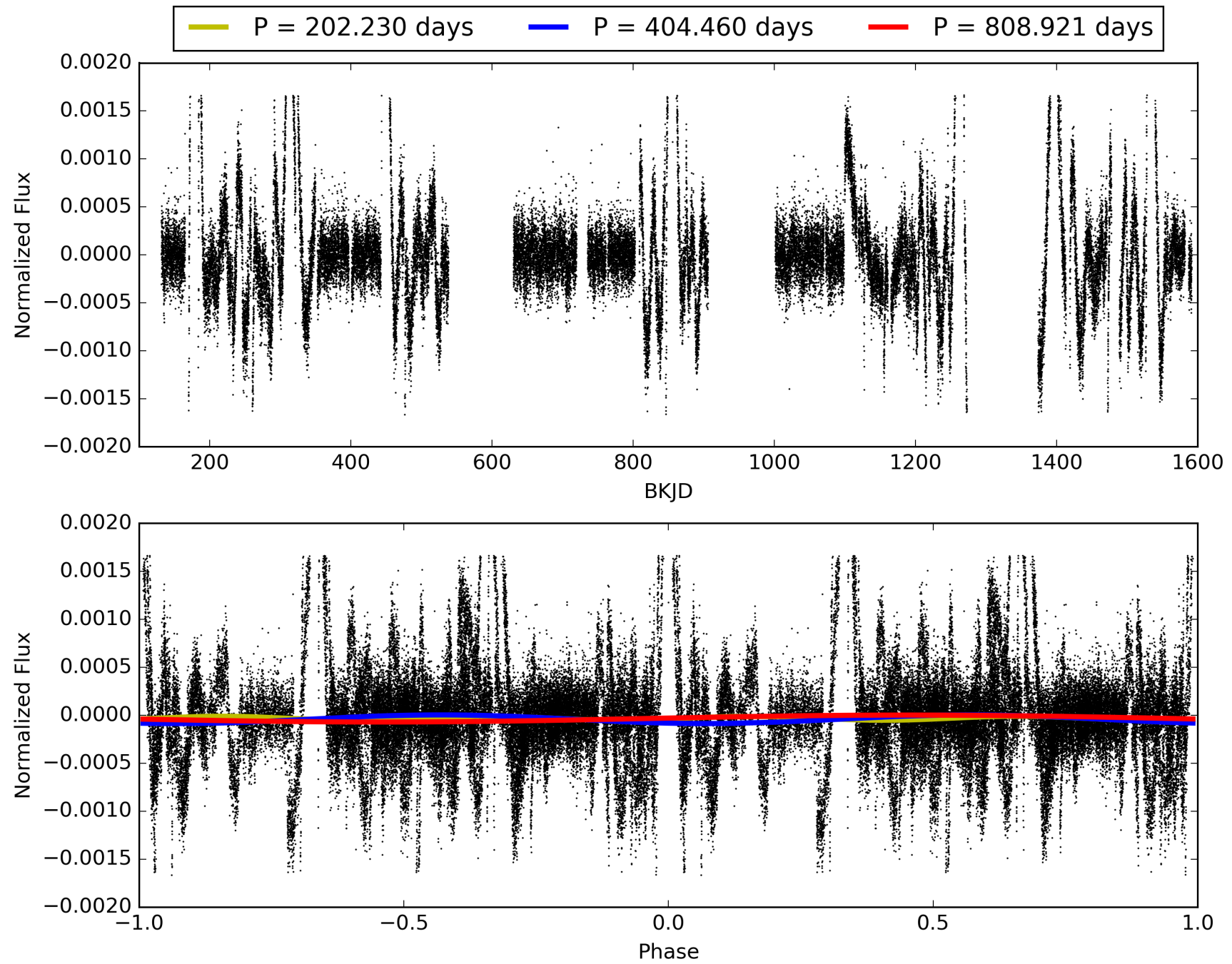
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [72.08σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 4.9%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.7463
Centroid-sig: 41.0%
Centroid-so: 0.309 arcsec [0.95σ]
OotOffset-rm: 0.091 arcsec [1.23σ]
KicOffset-rm: 0.180 arcsec [2.52σ]
OotOffset-st: 0/0/0/3 [3]
KicOffset-st: 0/0/0/3 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.00 [0/3]

TCE 003757590-03, PDC Light Curves

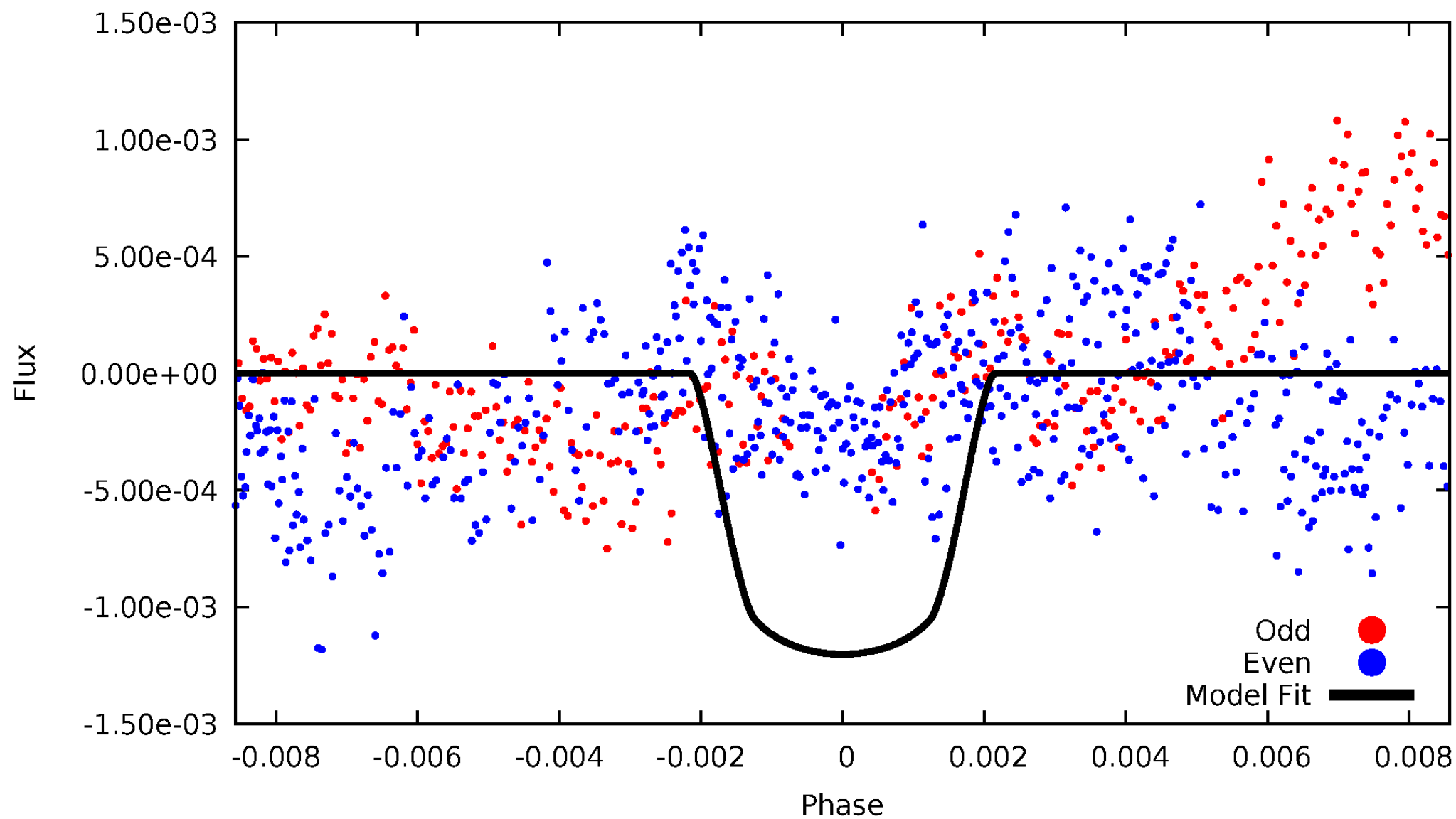


TCE 003757590-03



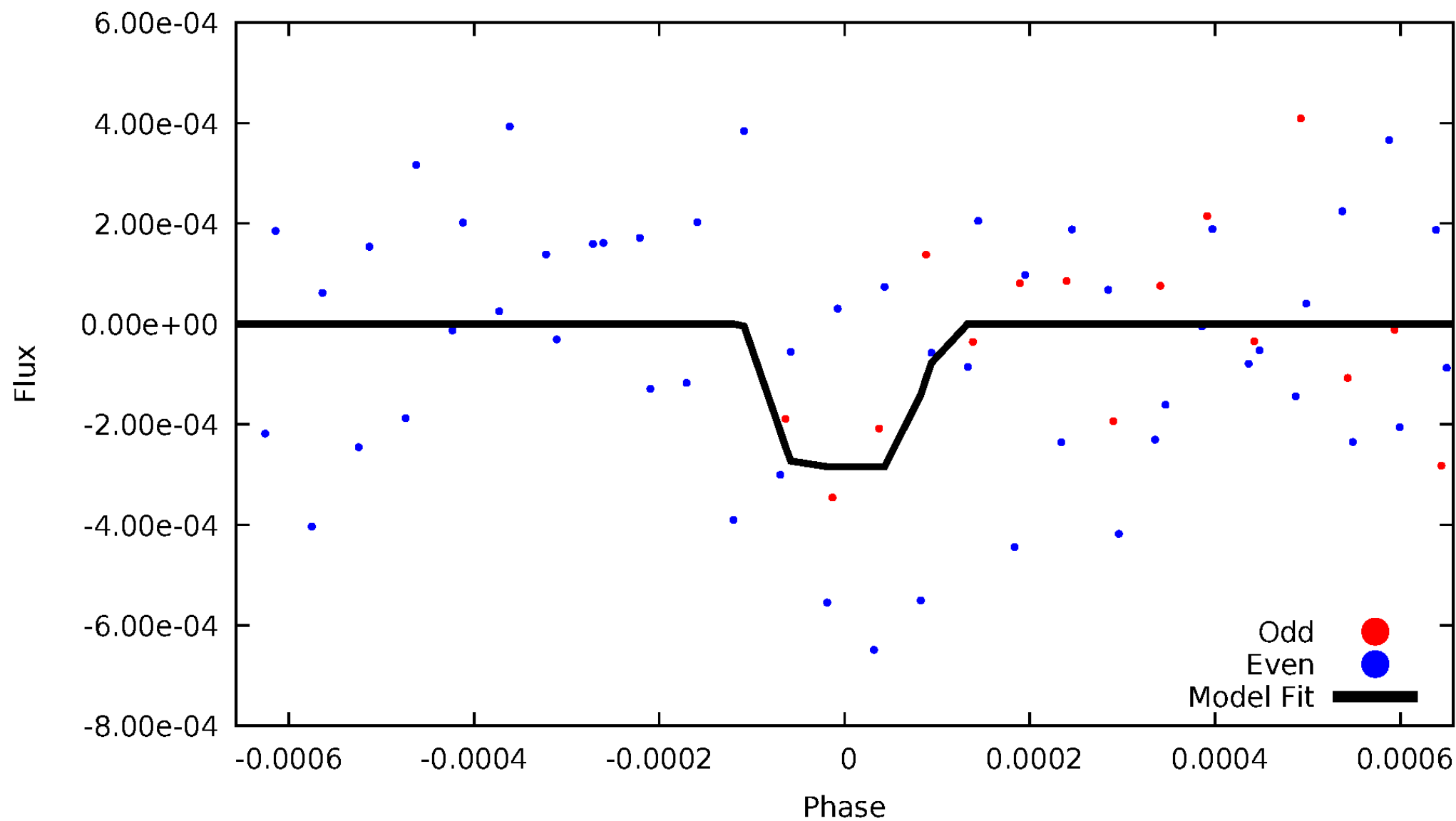
DV Odd/Even

TCE 003757590-03



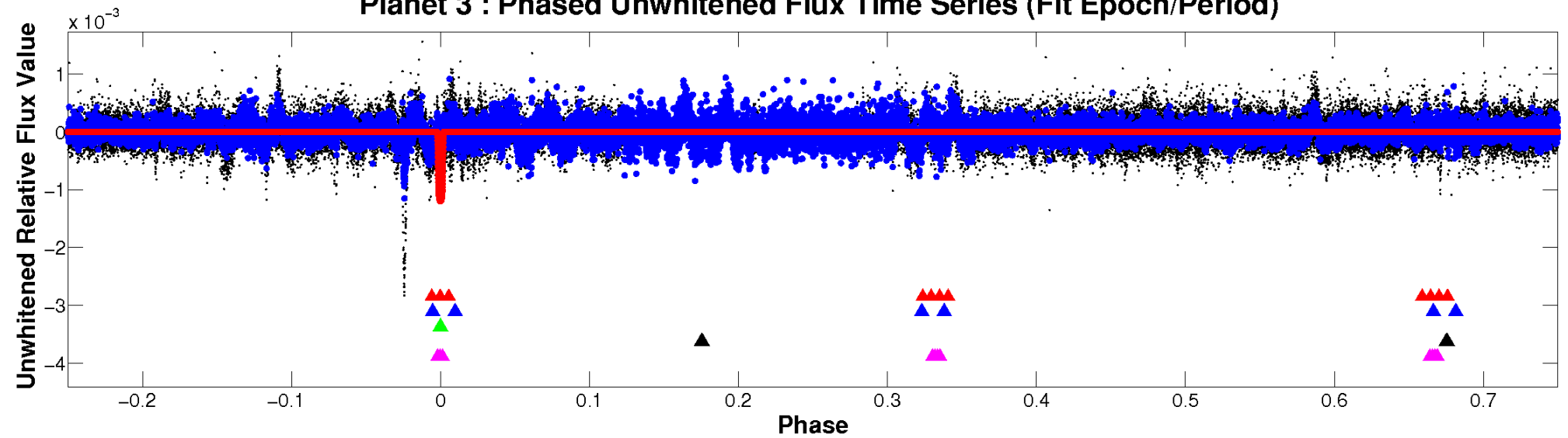
ALT Odd/Even

TCE 003757590-03

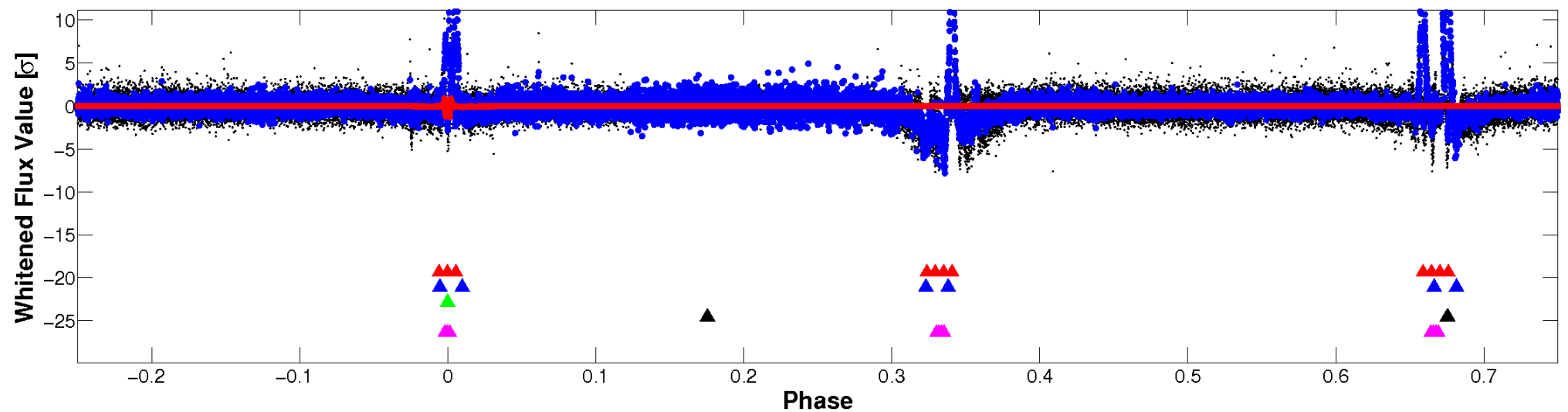


Non-Whitened Vs. Whitened Light Curve

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

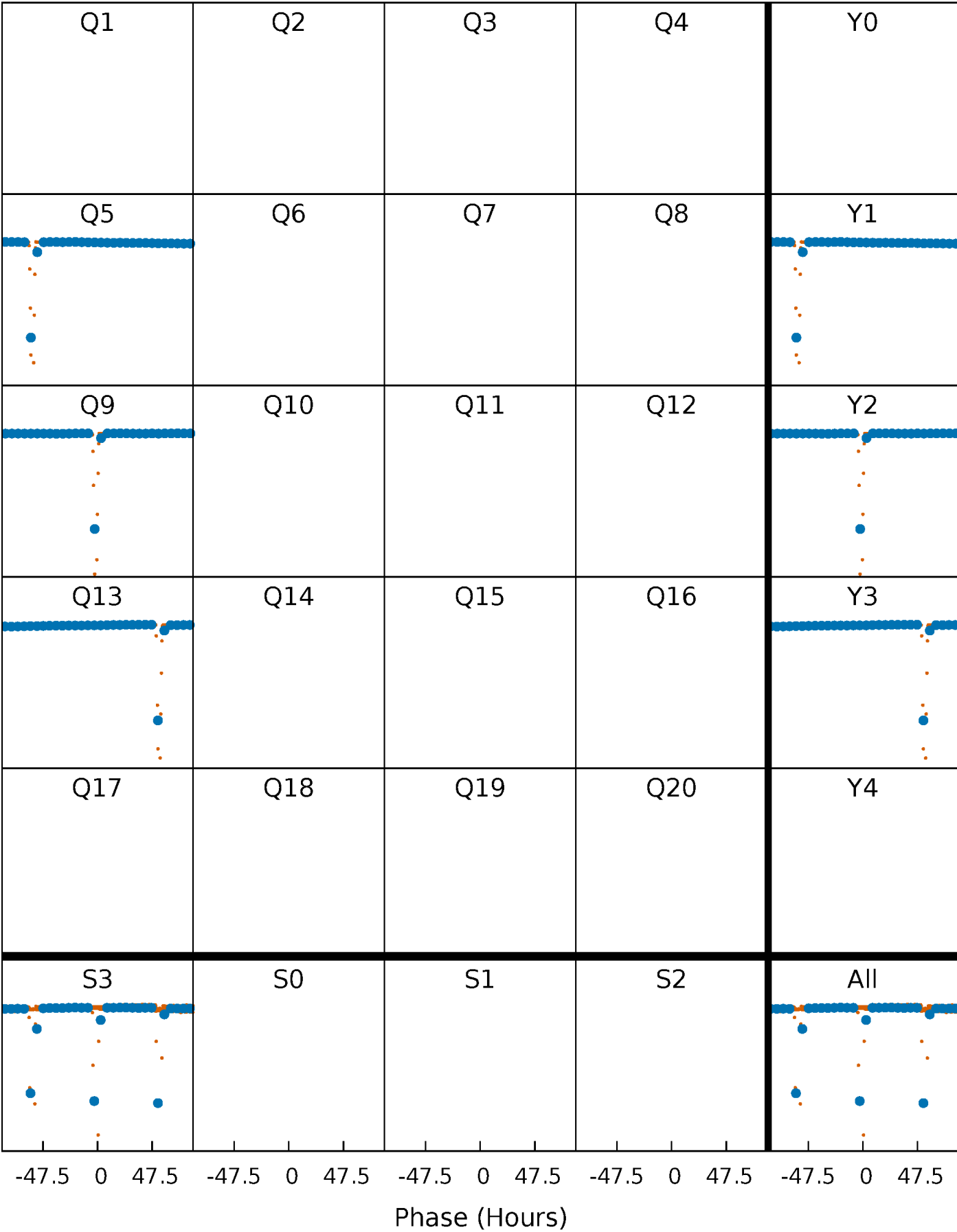


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



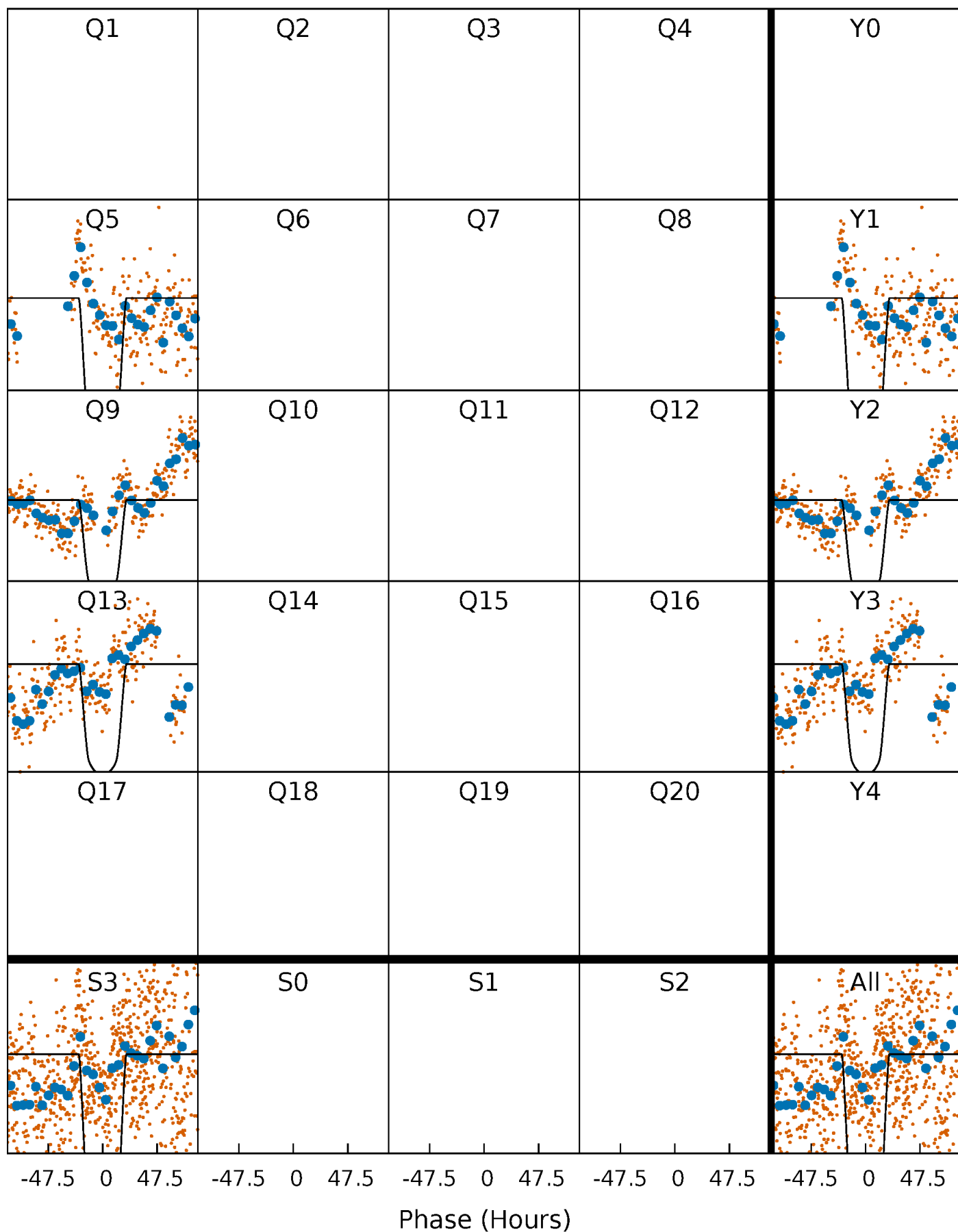
PDC Quarter-Phased Transit Curves

TCE 003757590-03 P=404.460405 Days T₀=451.458565 (BKJD)



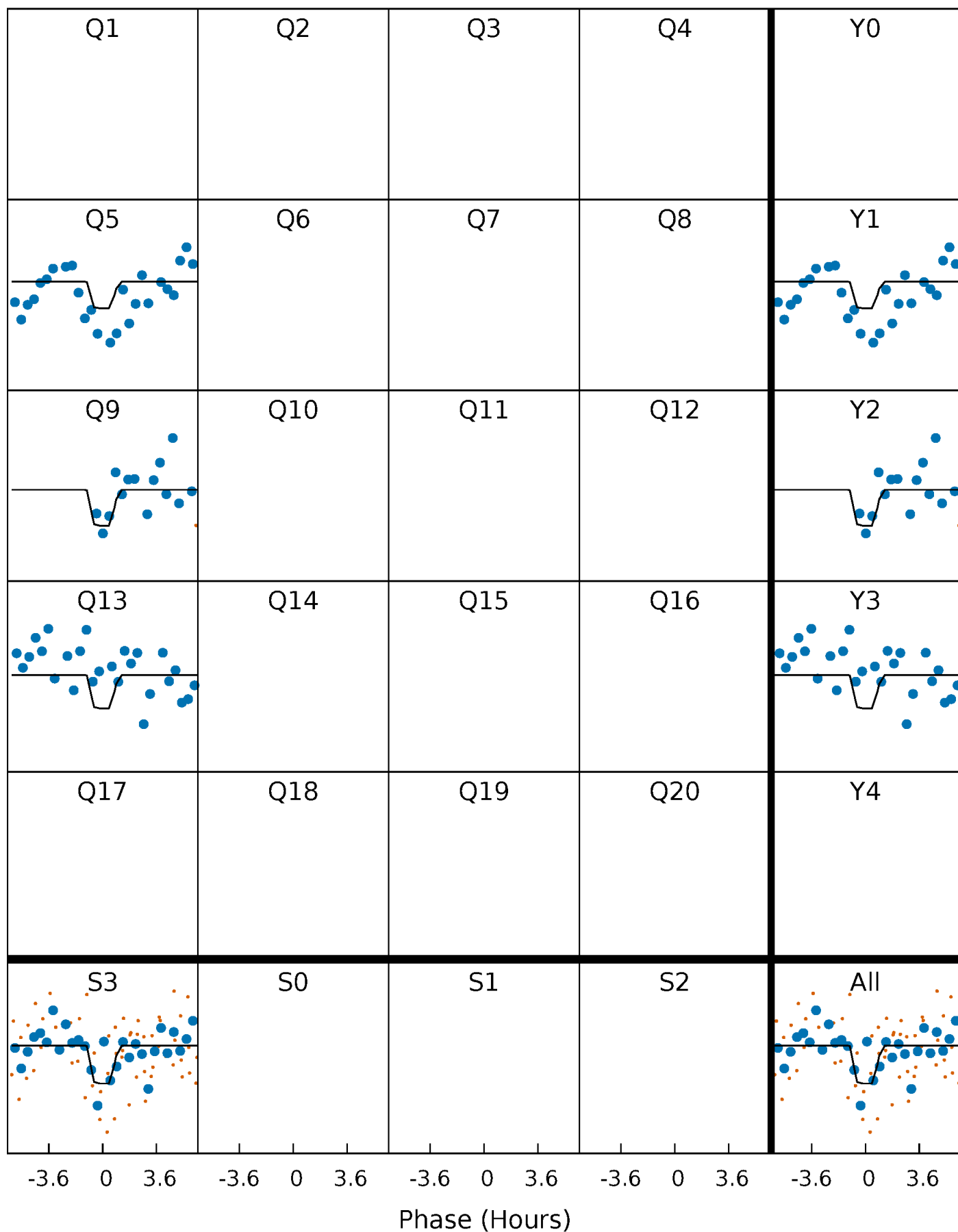
DV Quarter-Phased Transit Curves

TCE 003757590-03 $P=404.460405$ Days $T_0=451.458565$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

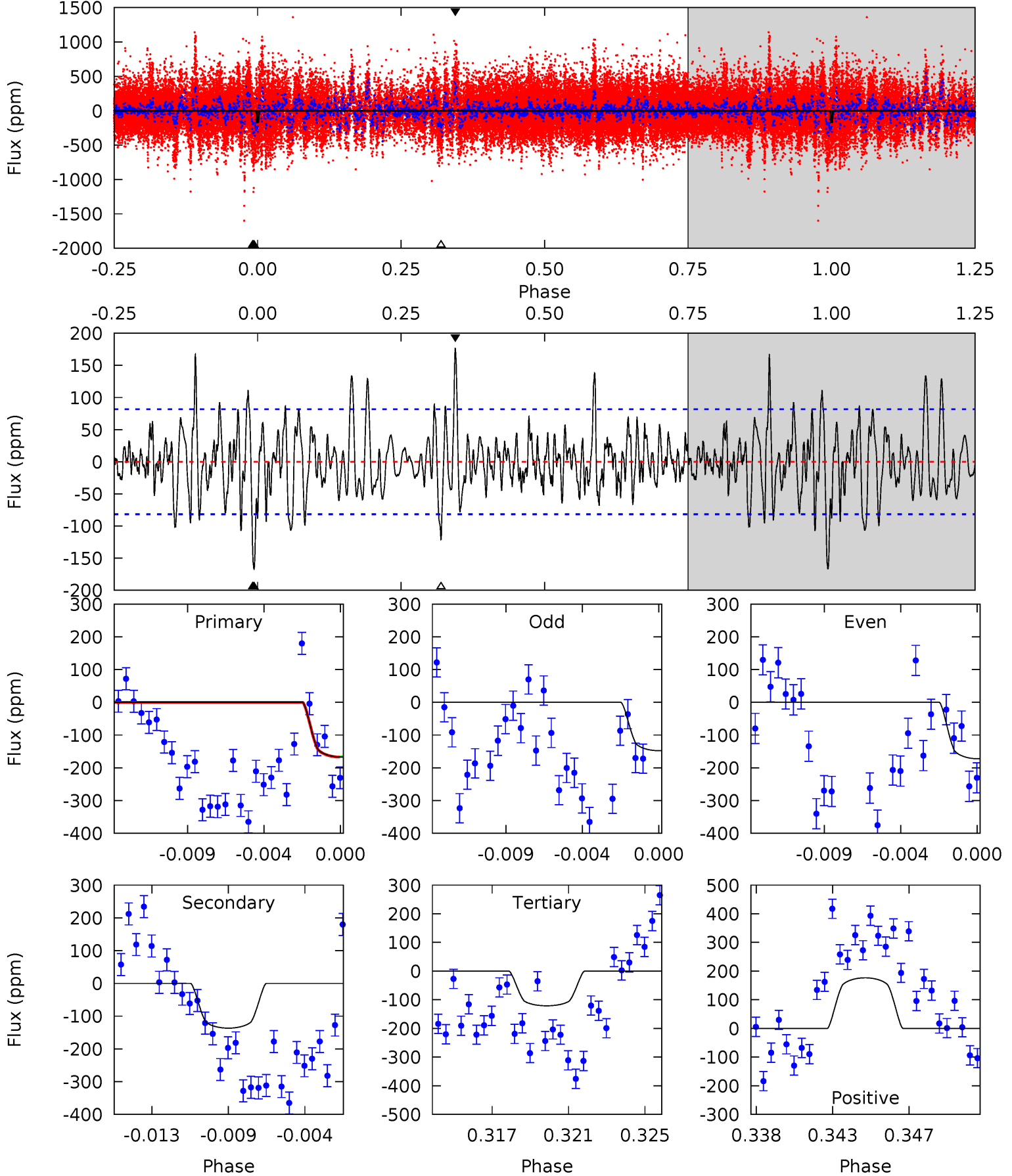
TCE 003757590-03 $P=404.134950$ Days $T_0=451.977738$ (BKJD)



DV Model-Shift Uniqueness Test

003757590-03, P = 404.460405 Days, E = 46.998160 Days

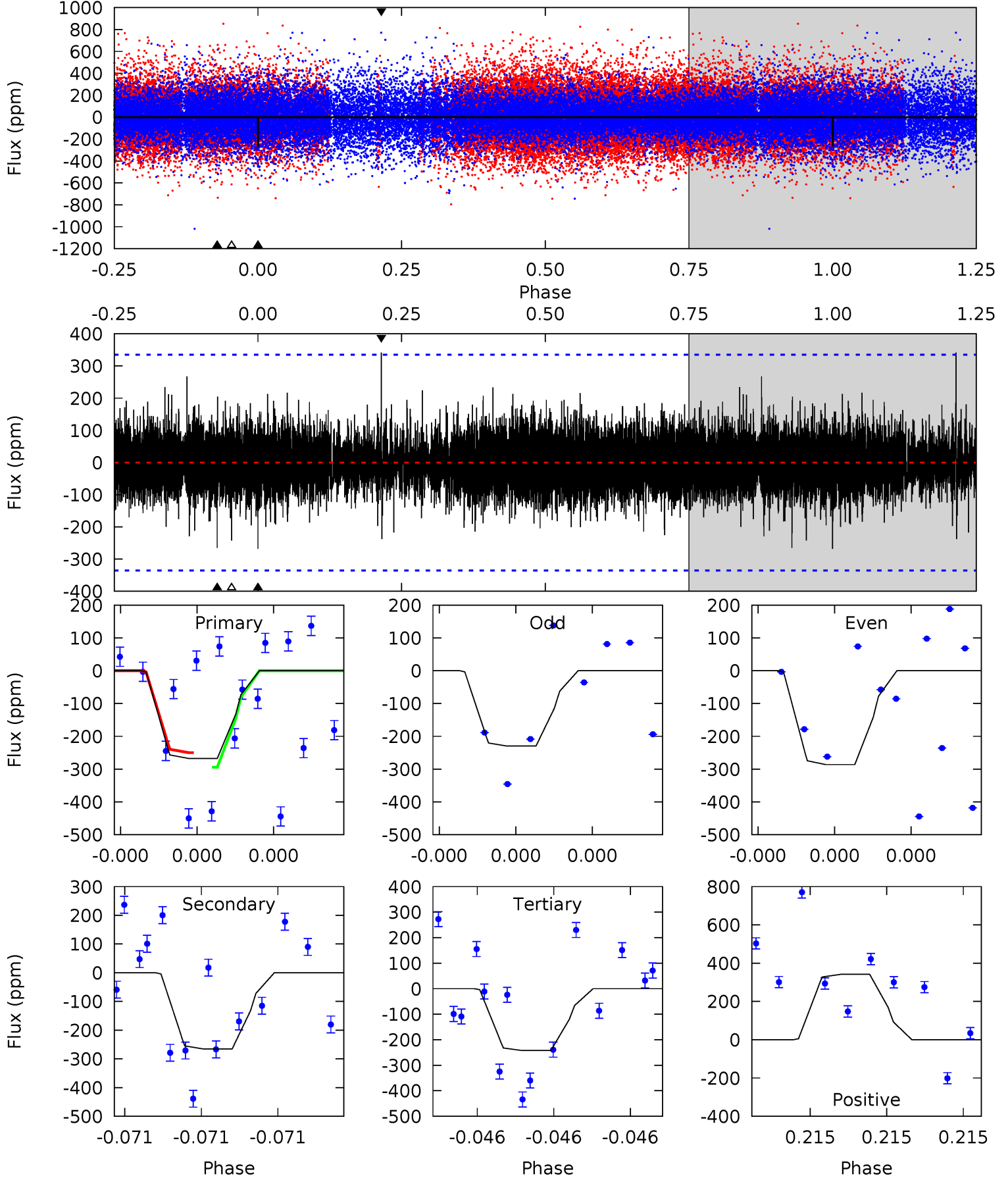
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	8.67	7.68	11.2	5.18	2.85	2.51	2.90	-0.61	0.99	-2.53	0.69	1.09	0.51	0.03



Alt Model-Shift Uniqueness Test

003757590-03, P = 404.134950 Days, E = 47.842788 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.60	4.56	4.16	5.88	5.77	3.77	0.97	0.44	-1.28	0.40	-1.32	0.49	1.19	0.56	0.38



Stellar Parameters For KIC 003757590

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6401^{+69}_{-88}	$4.324^{+0.040}_{-0.112}$	$0.240^{+0.150}_{-0.200}$	$1.301^{+0.222}_{-0.089}$	$1.304^{+0.078}_{-0.086}$	$0.834^{+0.129}_{-0.291}$
	+1%/-1%	+1%/-3%	+62%/-83%	+17%/-7%	+6%/-7%	+15%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 003757590-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-137 ± 16	$5.47^{+1.13}_{-0.98}$	420^{+17}_{-11}	3909^{+297}_{-235}	3404^{+1710}_{-1104}
Alt.	-265 ± 58	$2.43^{+1.05}_{-0.90}$	419^{+17}_{-10}	6267^{+1936}_{-975}	32637^{+50892}_{-16790}

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

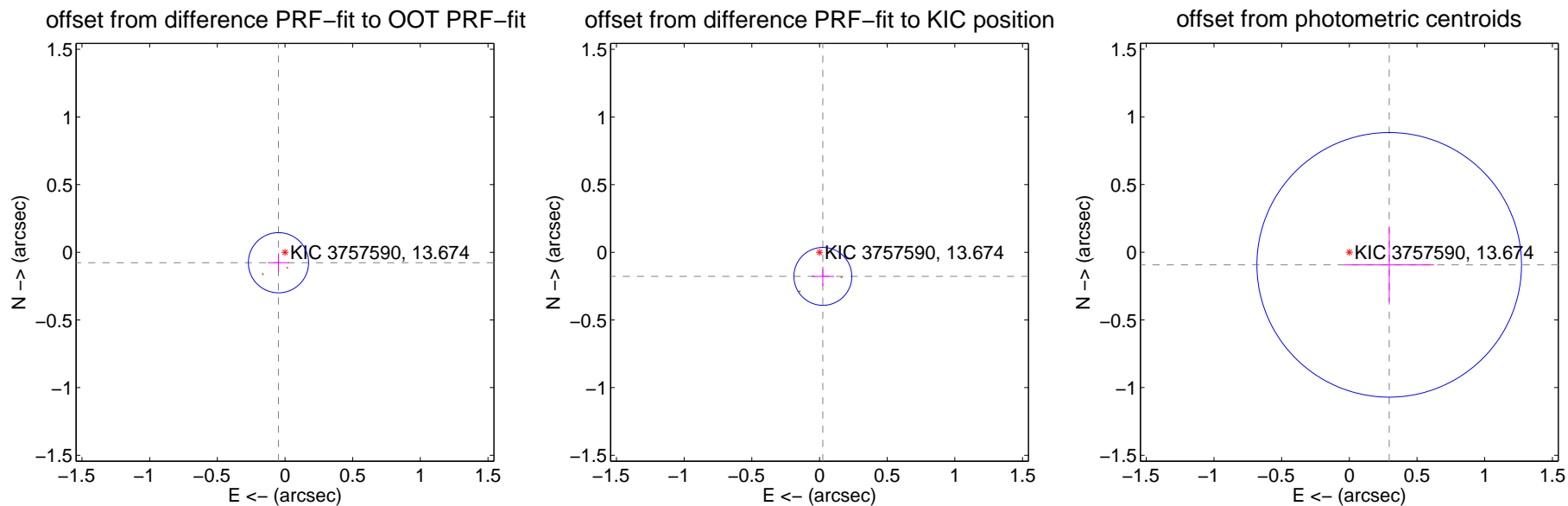
DV Centroid Data

Supplemental centroid analysis for 003757590-03. Kepler magnitude: 13.67. Transit SNR 13.40

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.091 ± 0.074	1.23	0.048 ± 0.079	-0.077 ± 0.069
PRF-fit source offset from KIC position	0.180 ± 0.071	2.52	-0.025 ± 0.083	-0.178 ± 0.071
photometric centroid source offset	0.31 ± 0.33	0.95	-0.29 ± 0.33	-0.09 ± 0.28

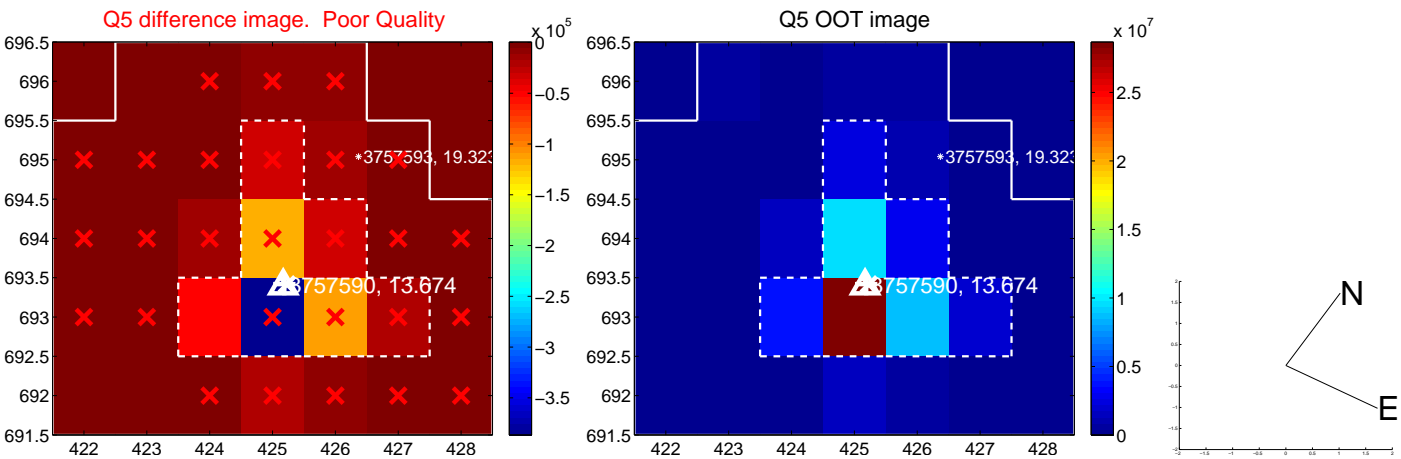


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

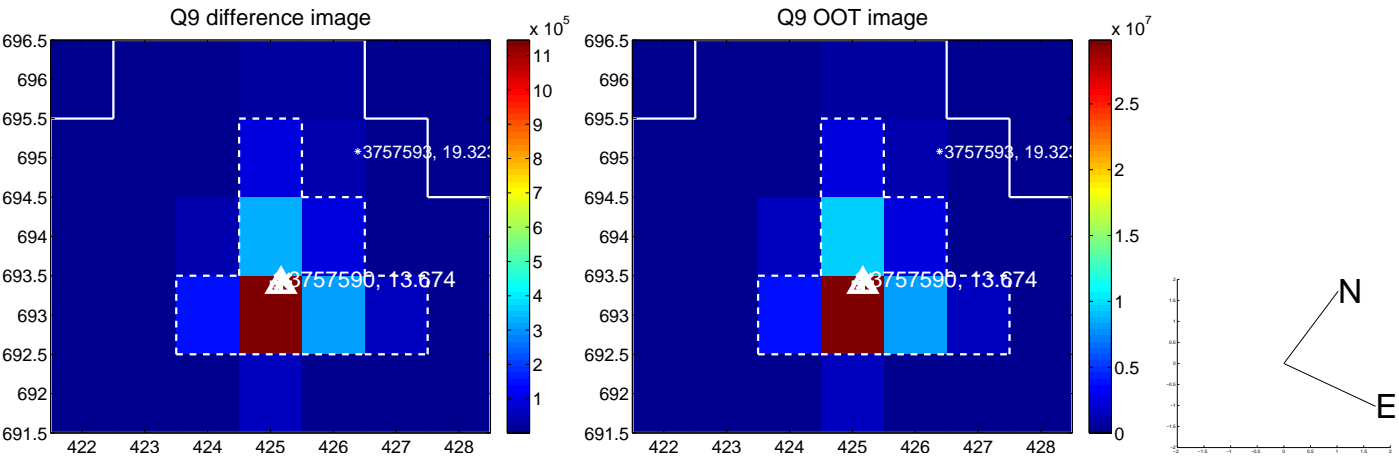
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



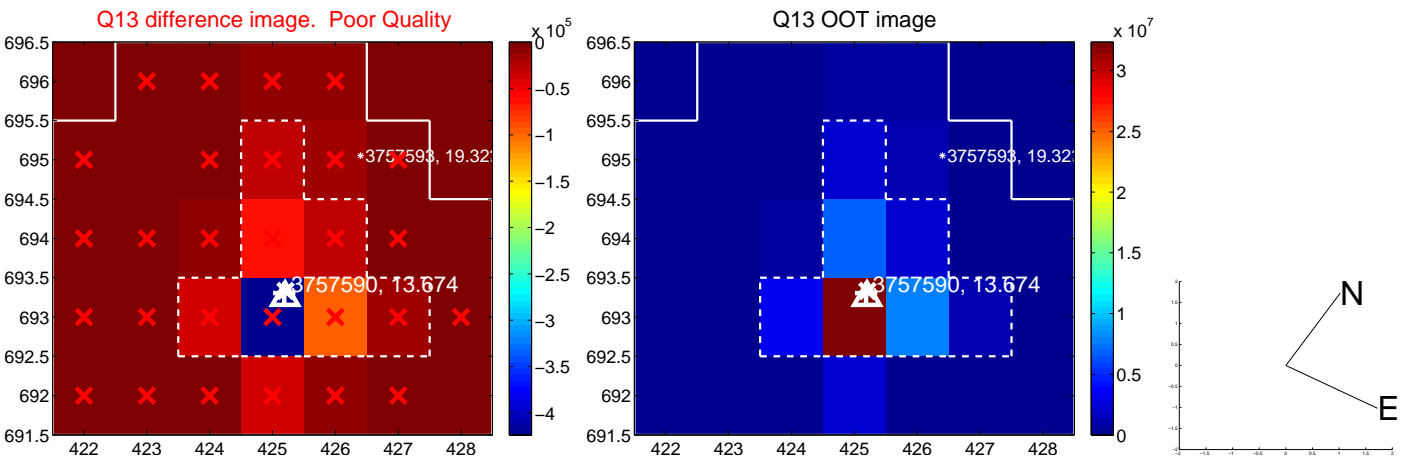
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



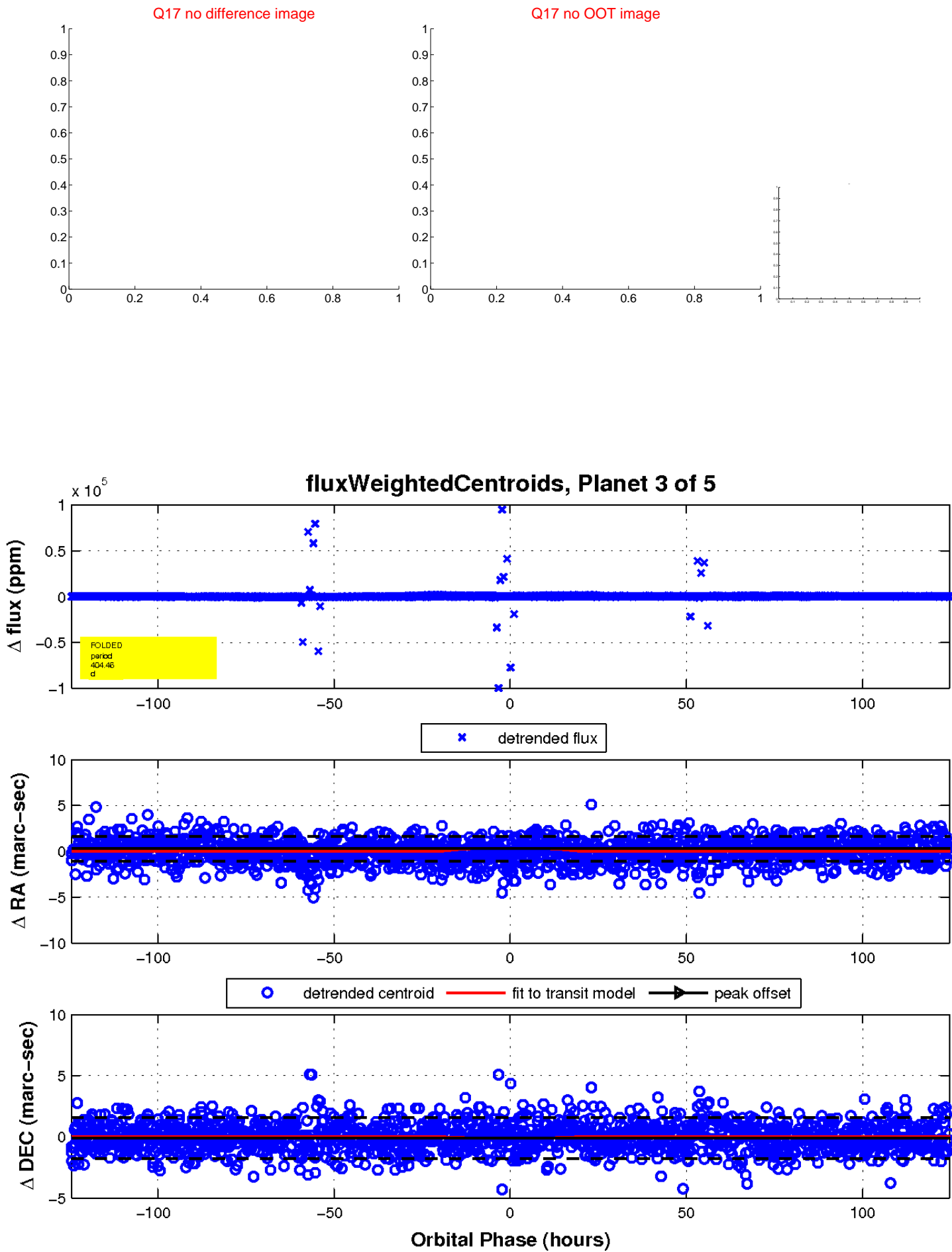
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

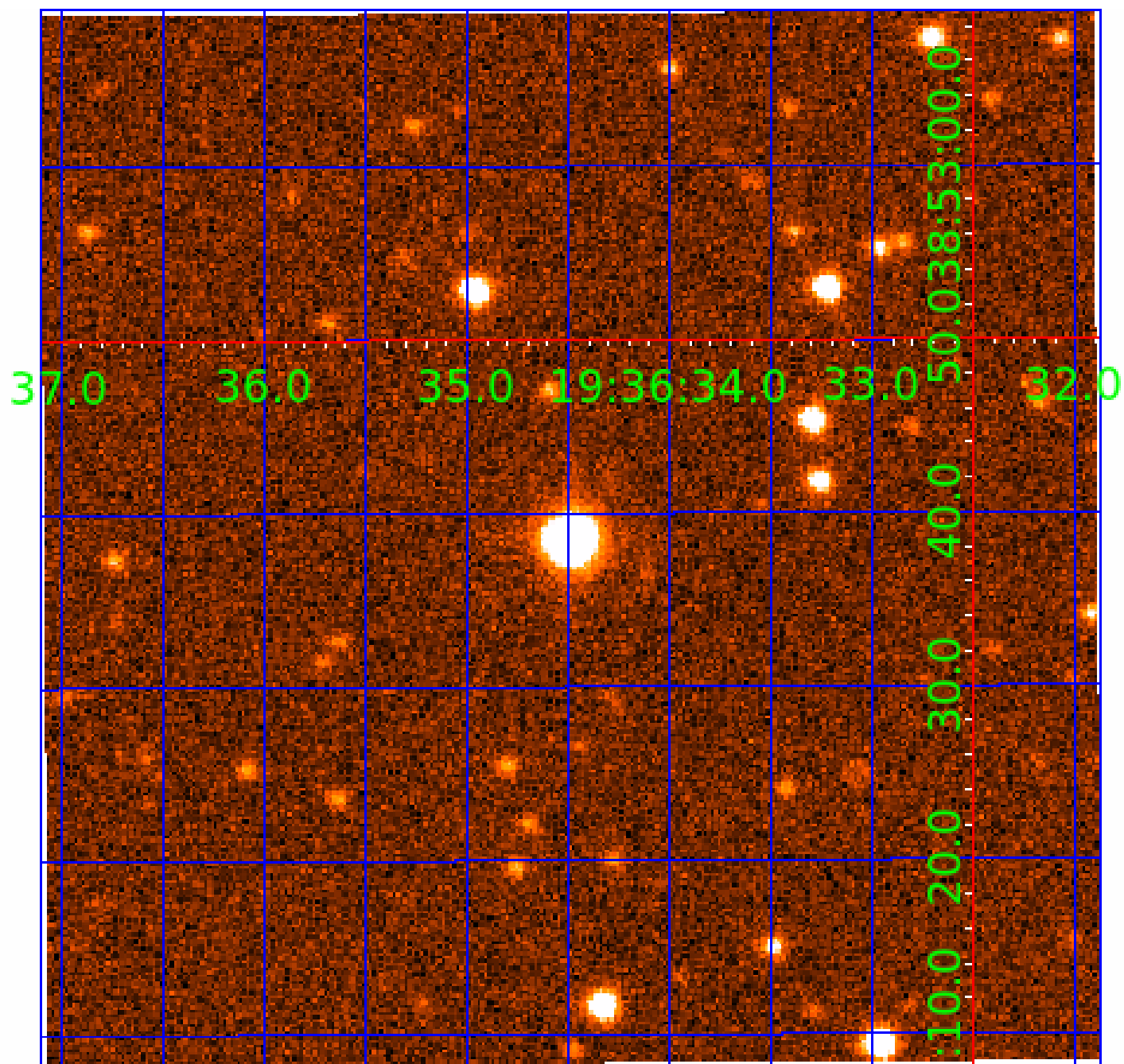


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003757590

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})
003757590-01	OBS	3520.01	135.586857	177.922420	367557.0	3.500	6199.9	-1.0	1.30	6401	59.07	8.00
003757590-02	OBS	No	271.670991	177.670406	5662.2	15.000	439.7	-1.0	1.30	6401	9.80	3.17
003757590-03	OBS	No	404.460405	451.458565	1202.2	41.594	317.8	13.4	1.30	6401	5.40	1.86
003757590-04	OBS	No	202.267945	320.086274	1517.5	42.794	207.7	25.0	1.30	6401	9.54	4.69

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003757590-01	OBS	PC	0.69	0	0	0	0	CENT_NOFITS
003757590-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
003757590-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
003757590-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—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 003757590-04

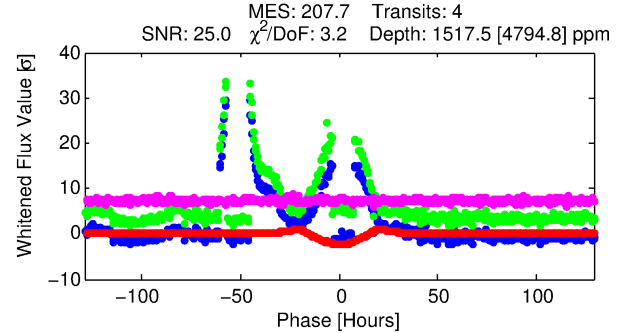
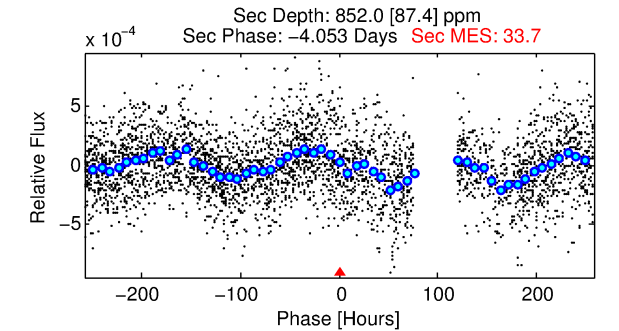
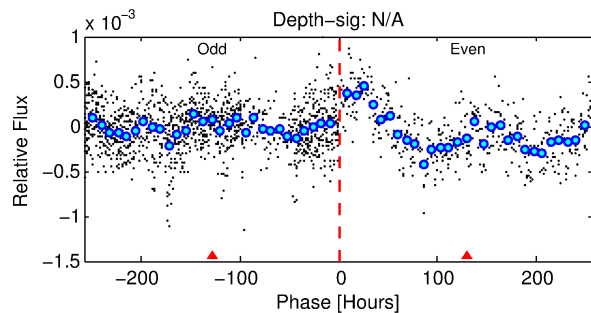
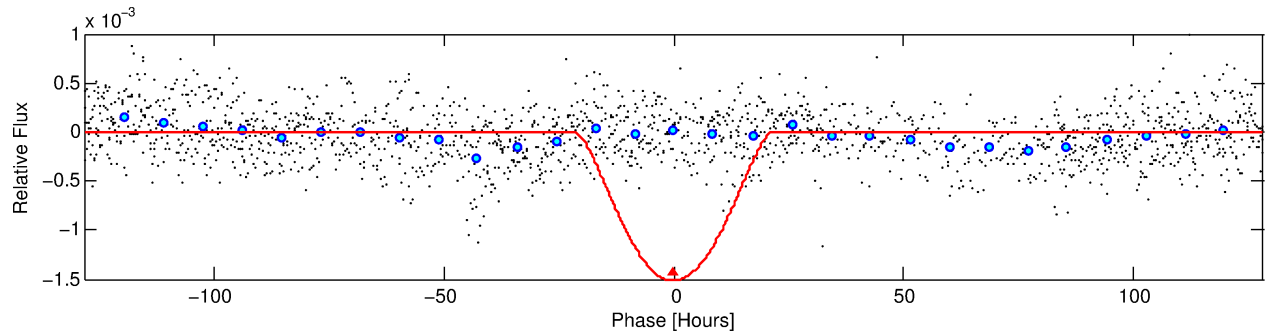
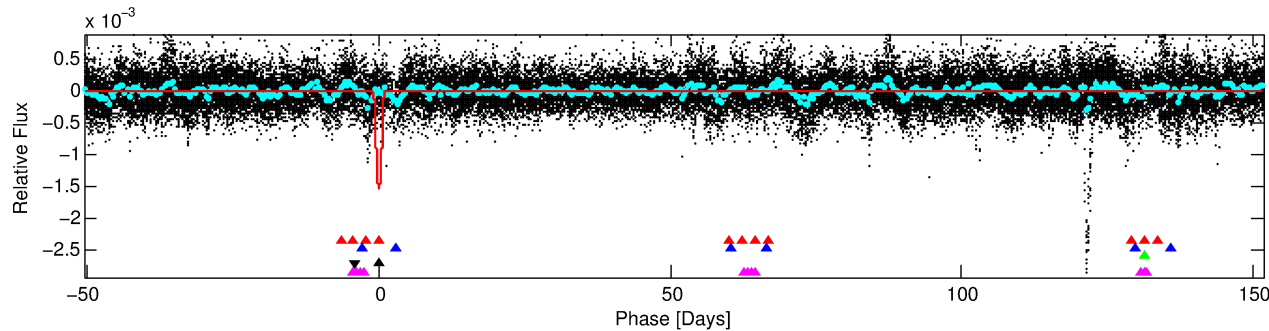
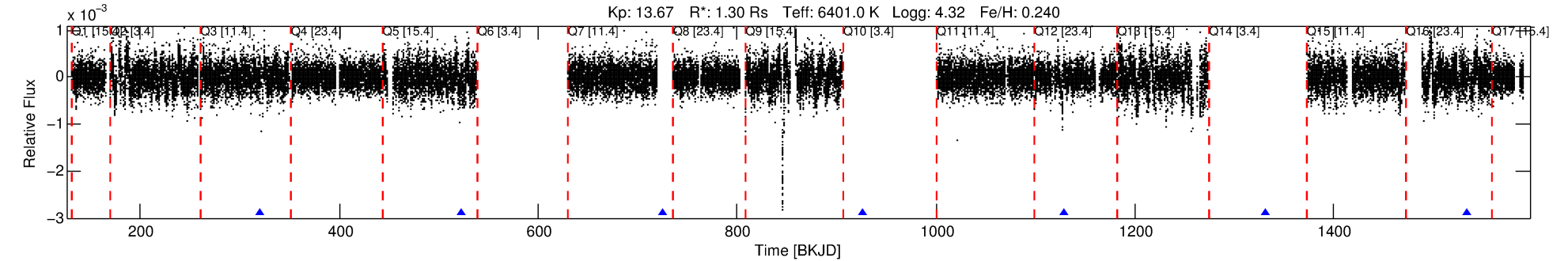
No Significant Match Found

DV One-Page Summary

KIC: 3757590 Candidate: 4 of 5 Period: 202.268 d

KOI: K03520 Corr: No Ephemeris Match

Kp: 13.67 R*: 1.30 Rs Teff: 6401.0 K Logg: 4.32 Fe/H: 0.240



DV Fit Results:

Period = 202.26794 [0.02069] d
Epoch = 320.0863 [0.0740] BKJD
Rp/R* = 0.0672 [0.1544]
a/R* = 13.50 [6.92]
b = 1.00 [0.08]
Seff = 4.69 [1.00]
Teq = 375 [20] K
Rp = 9.54 [21.97] Re
a = 0.7365 [0.1050] AU
Ag = 2791.70 [12837.50] [0.22σ]
Teffp = 4218 [4845] K [0.79σ]

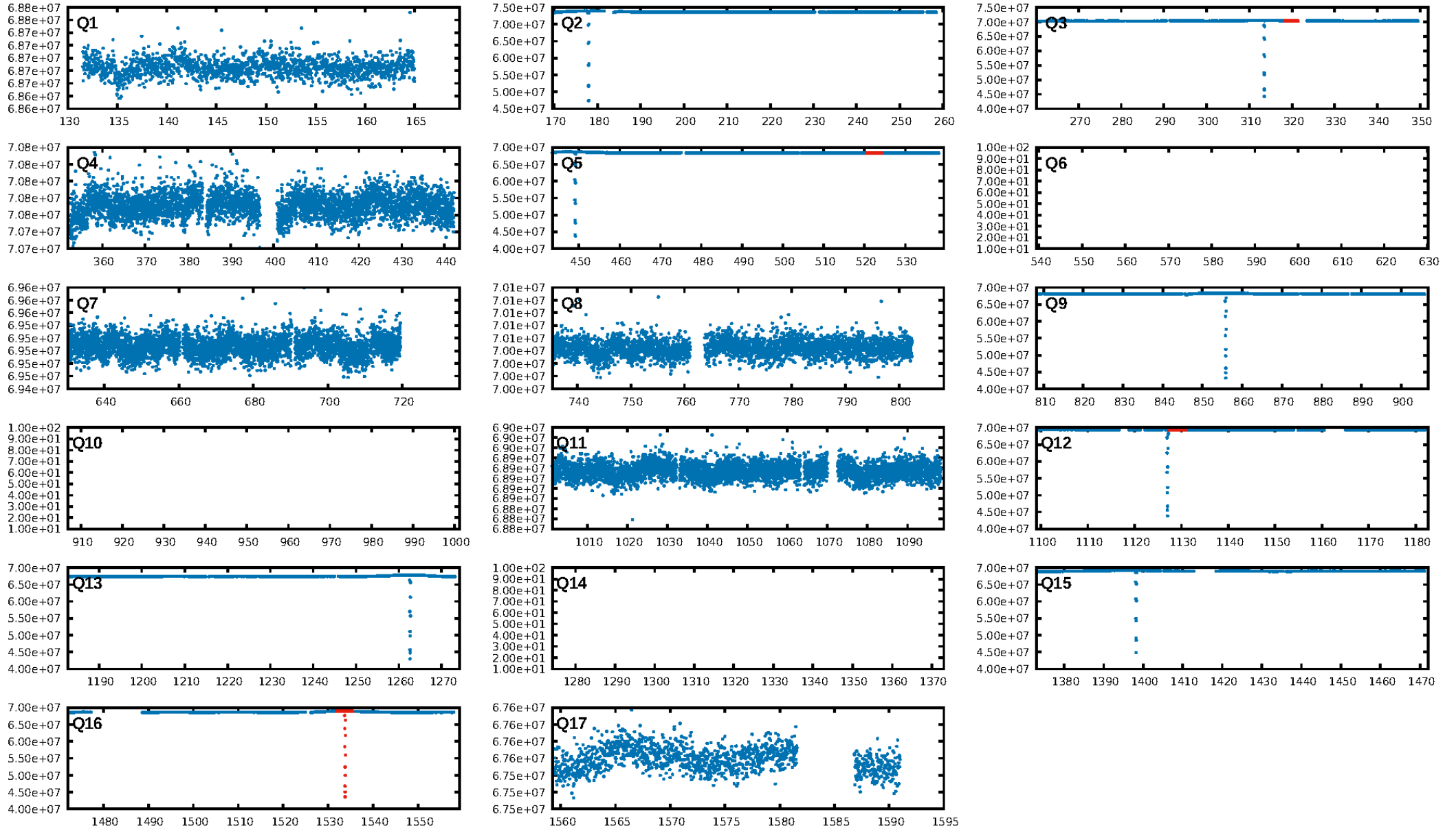
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [37.27σ]
LongPeriod-sig: 100.0% [36.73σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.3297
Centroid-sig: 14.6%
Centroid-so: 0.201 arcsec [0.95σ]
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 [1/1]

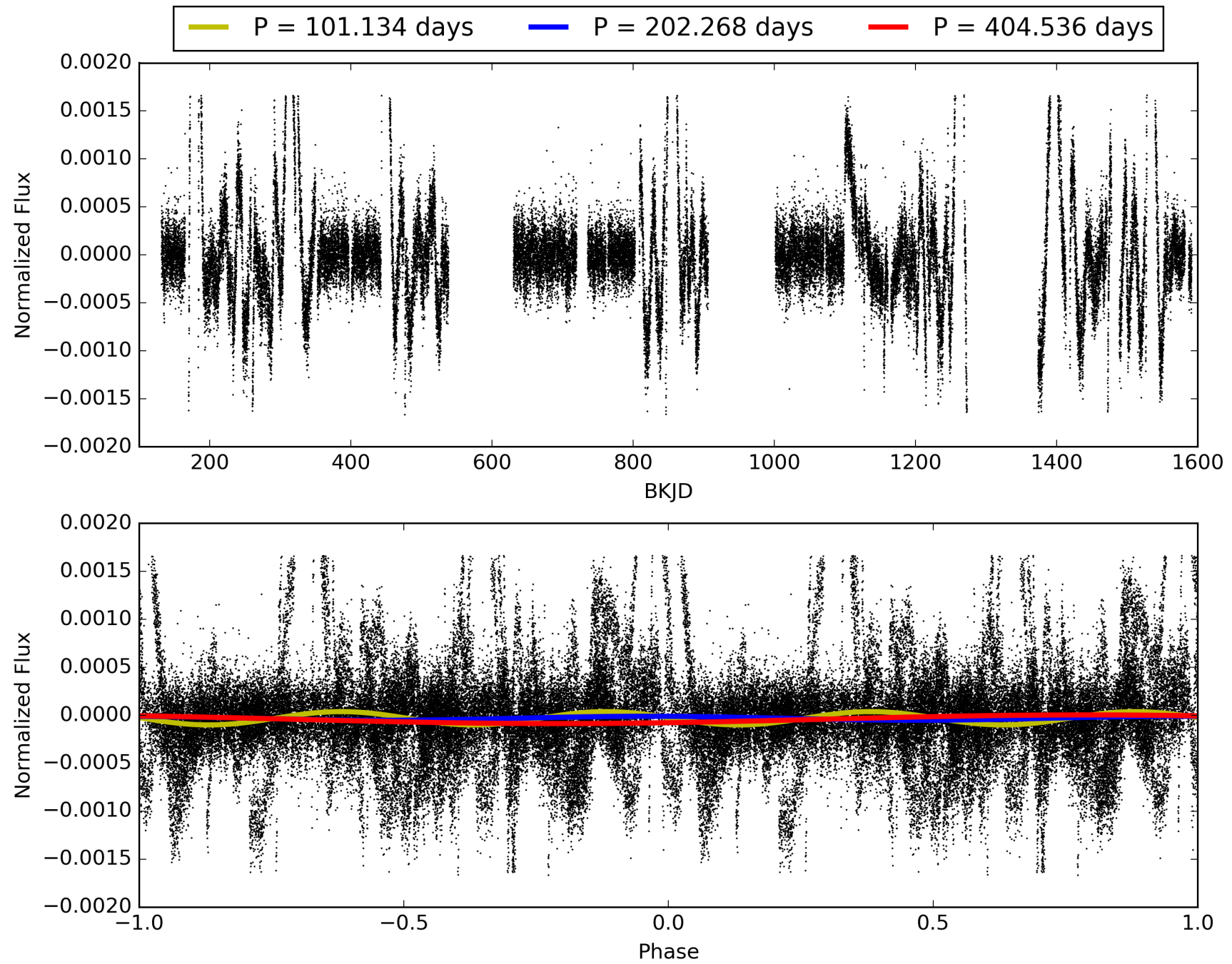
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 02:38:22 Z

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

TCE 003757590-04, PDC Light Curves

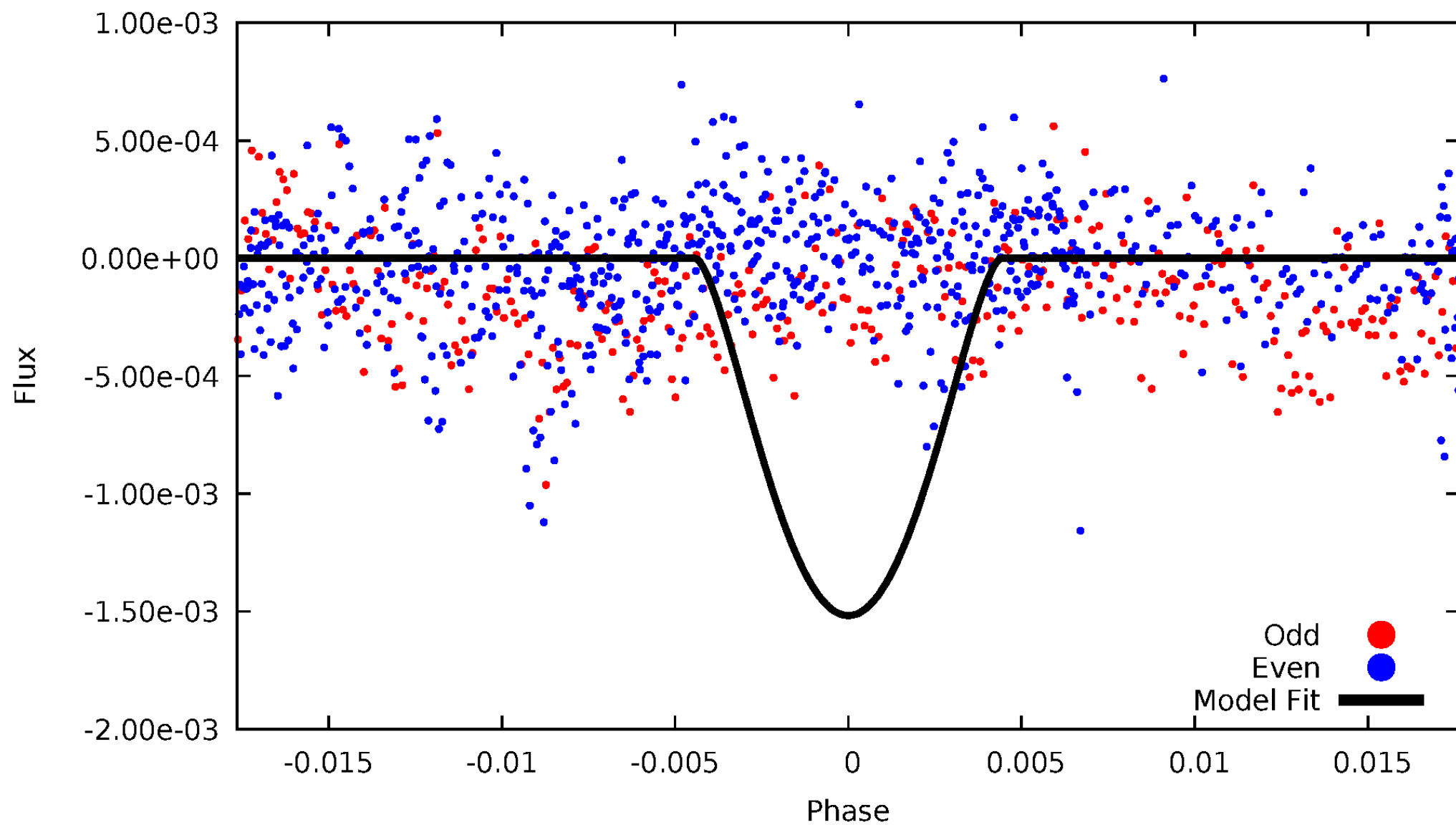


TCE 003757590-04



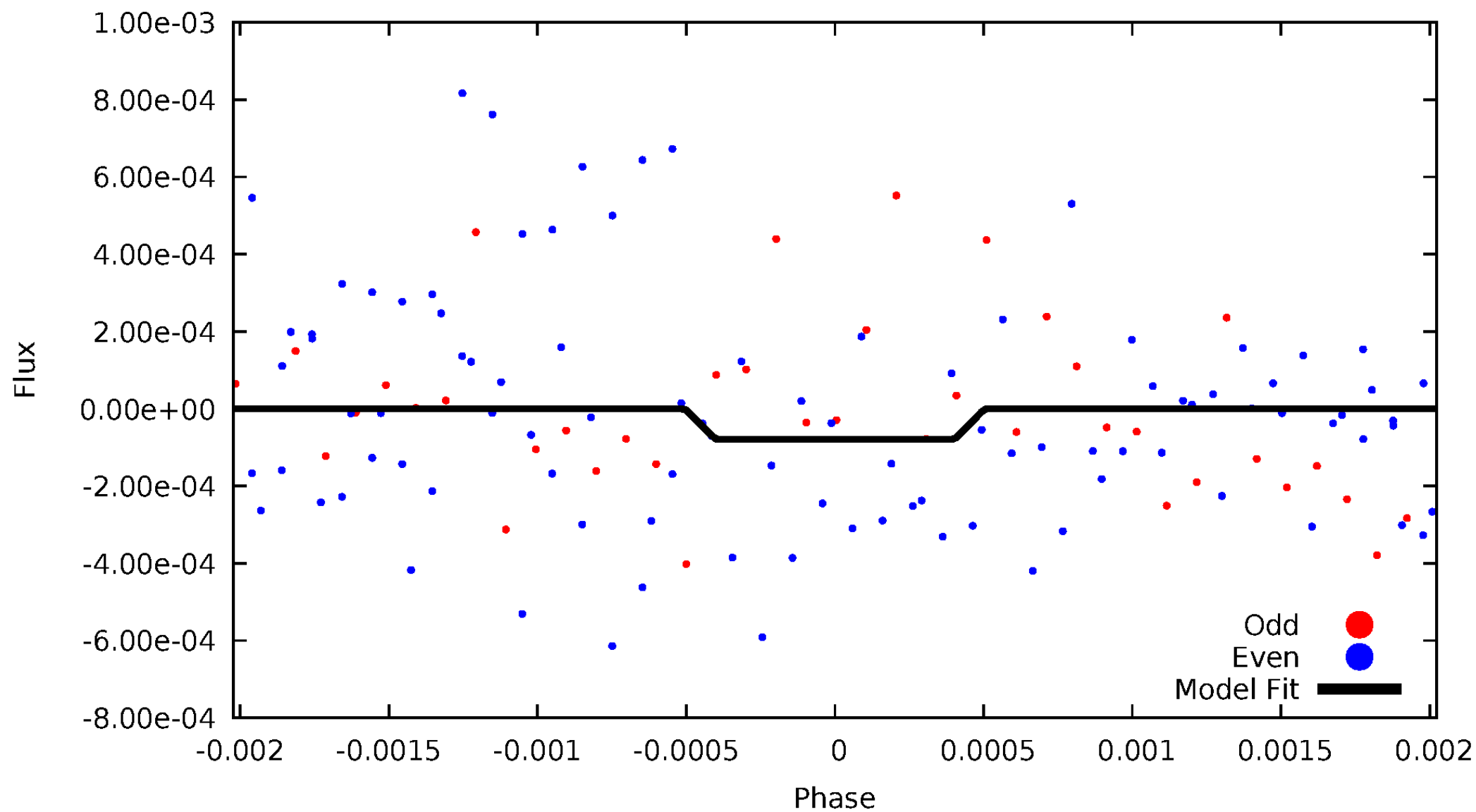
DV Odd/Even

TCE 003757590-04



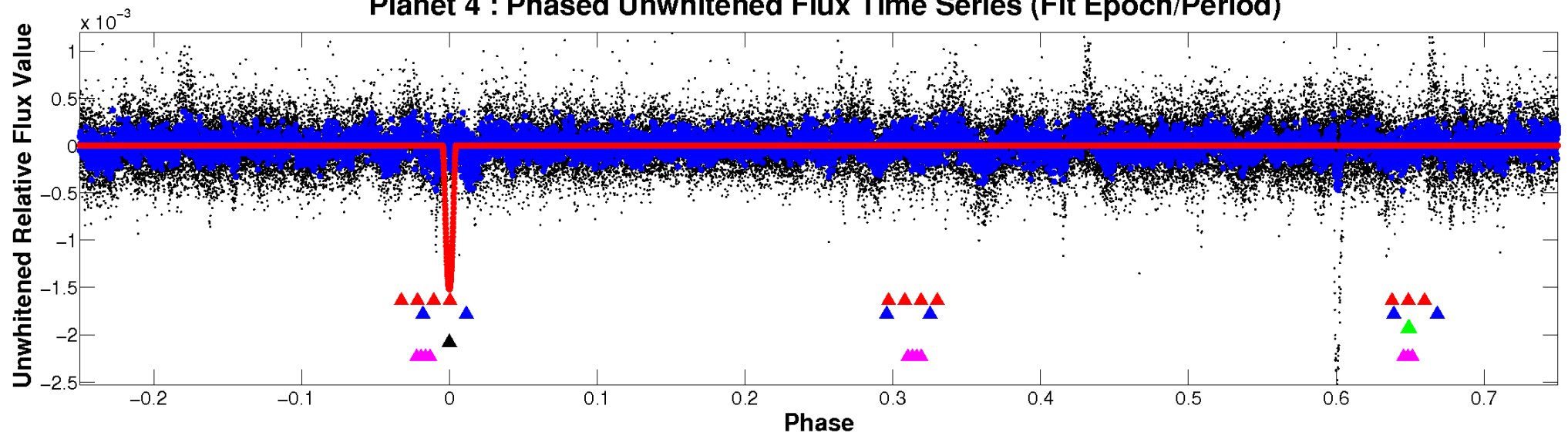
ALT Odd/Even

TCE 003757590-04

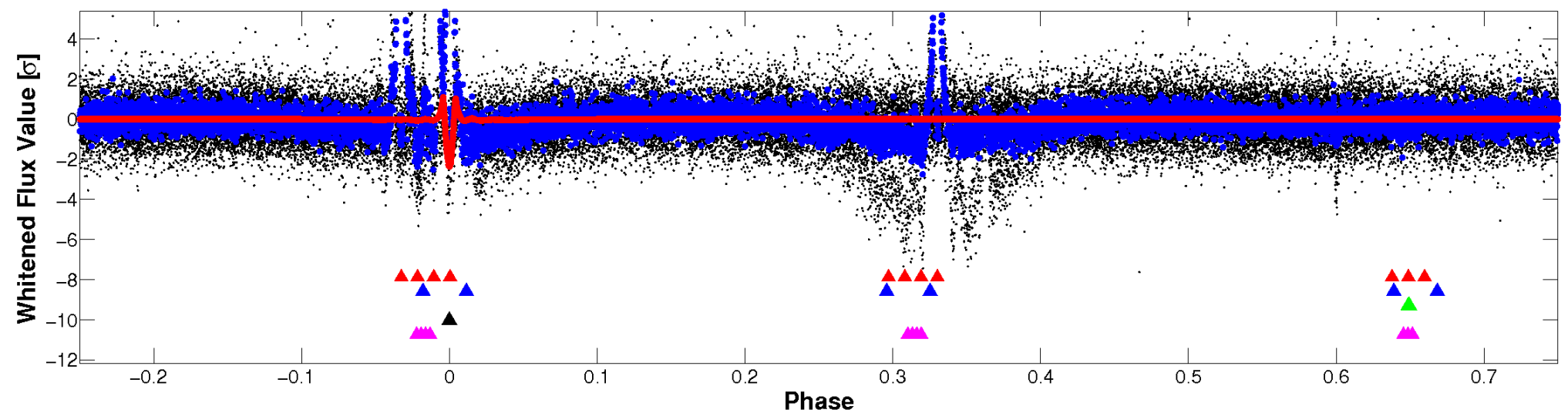


Non-Whitened Vs. Whitened Light Curve

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

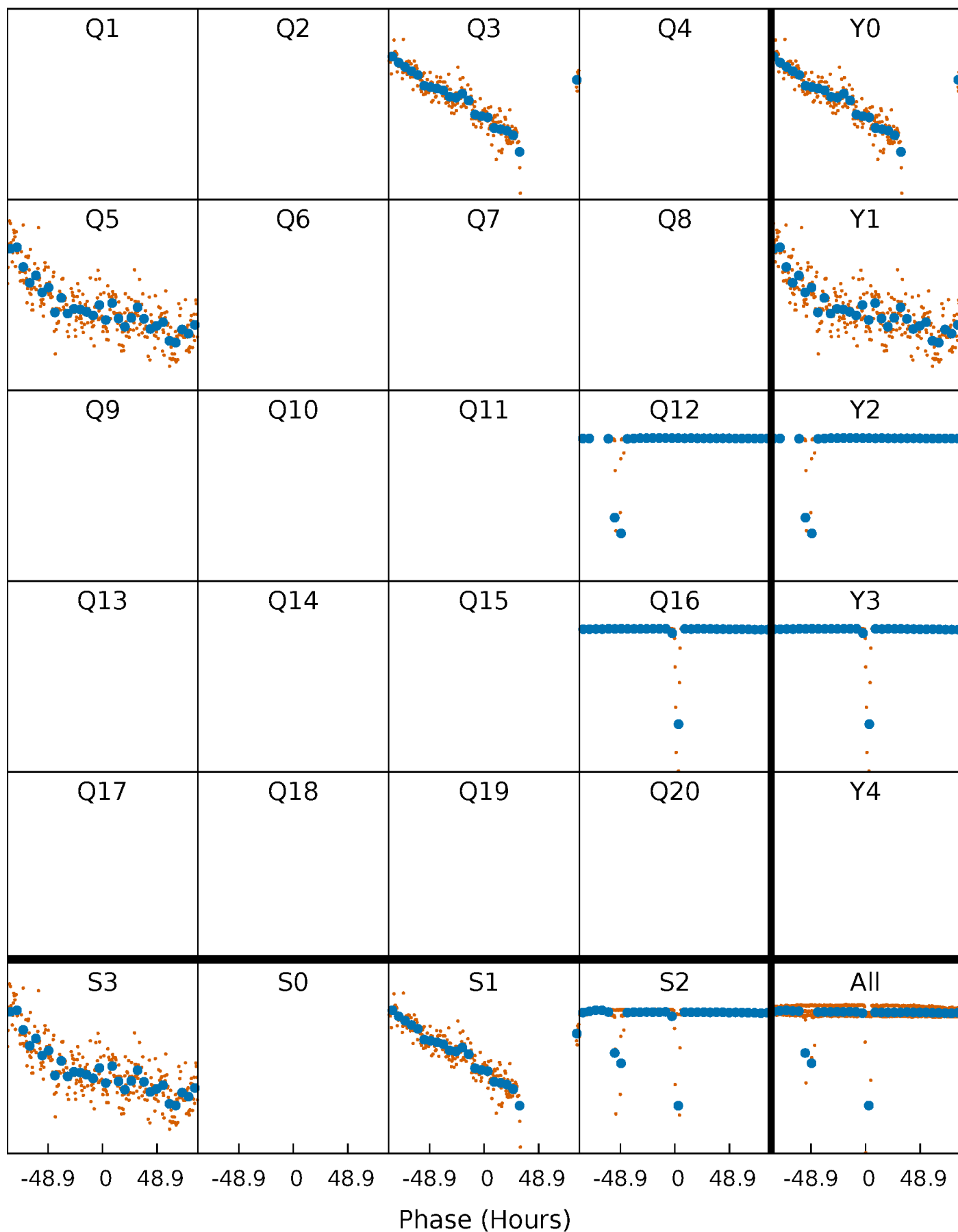


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



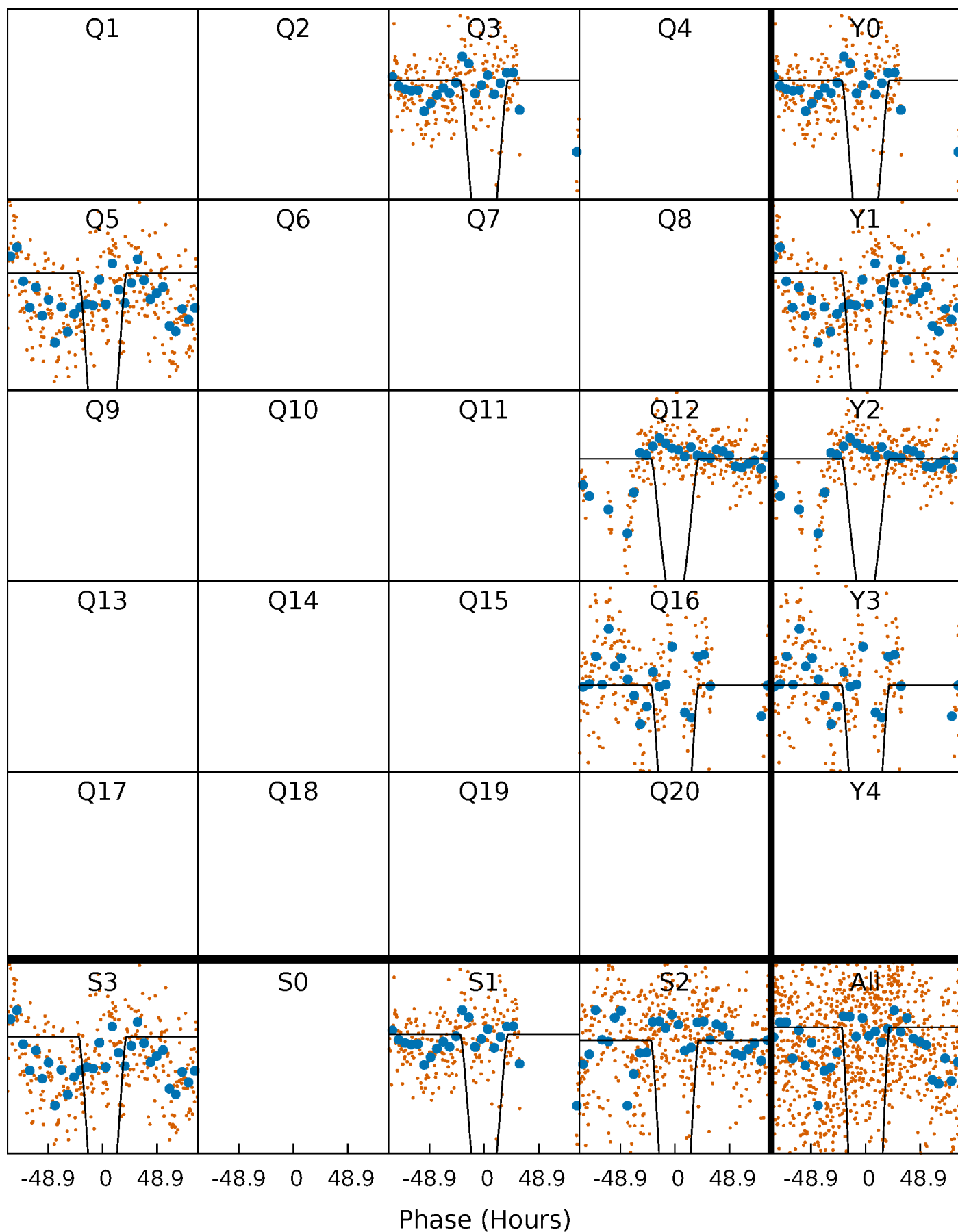
PDC Quarter-Phased Transit Curves

TCE 003757590-04 $P=202.267945$ Days $T_0=320.086274$ (BKJD)



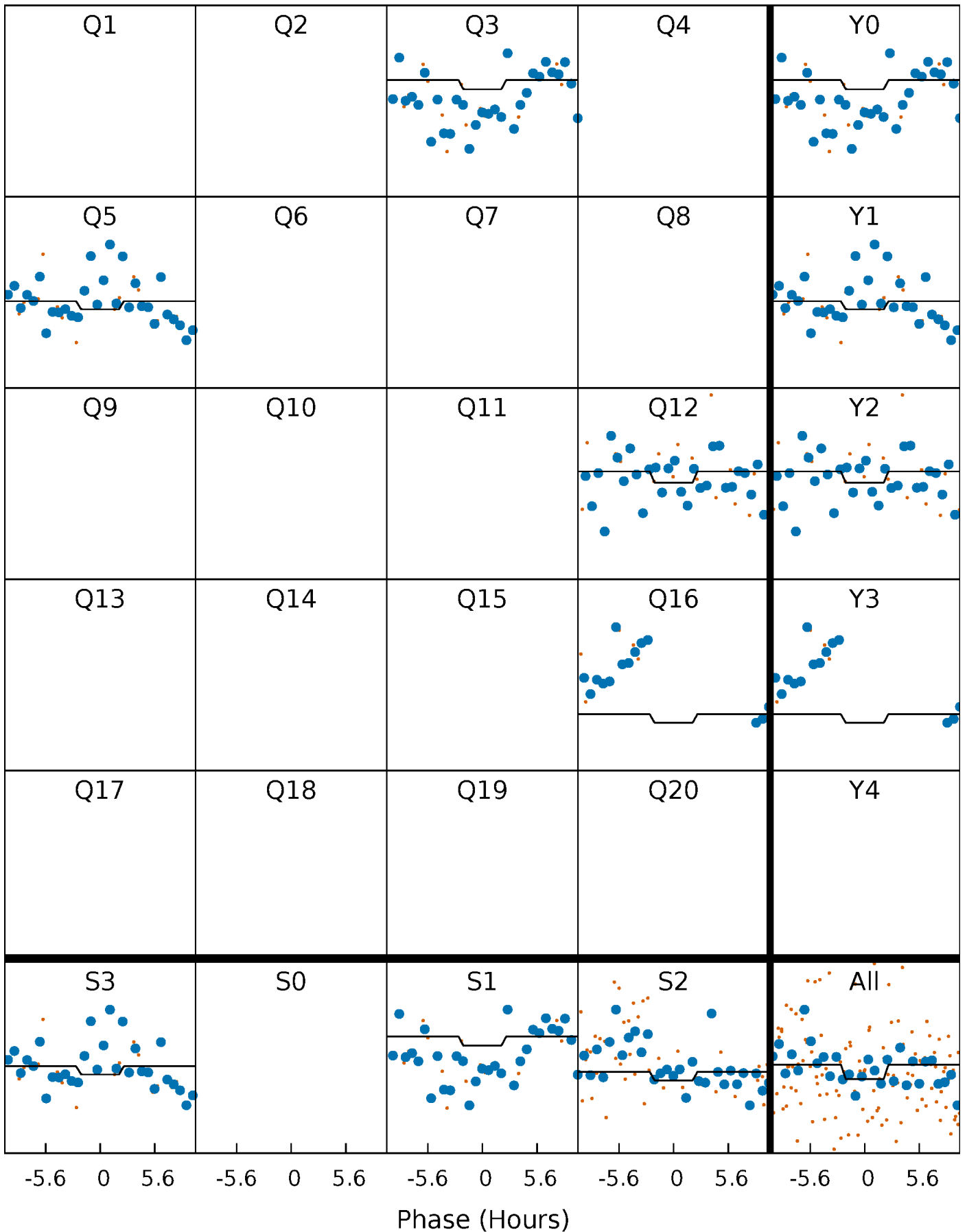
DV Quarter-Phased Transit Curves

TCE 003757590-04 $P=202.267945$ Days $T_0=320.086274$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

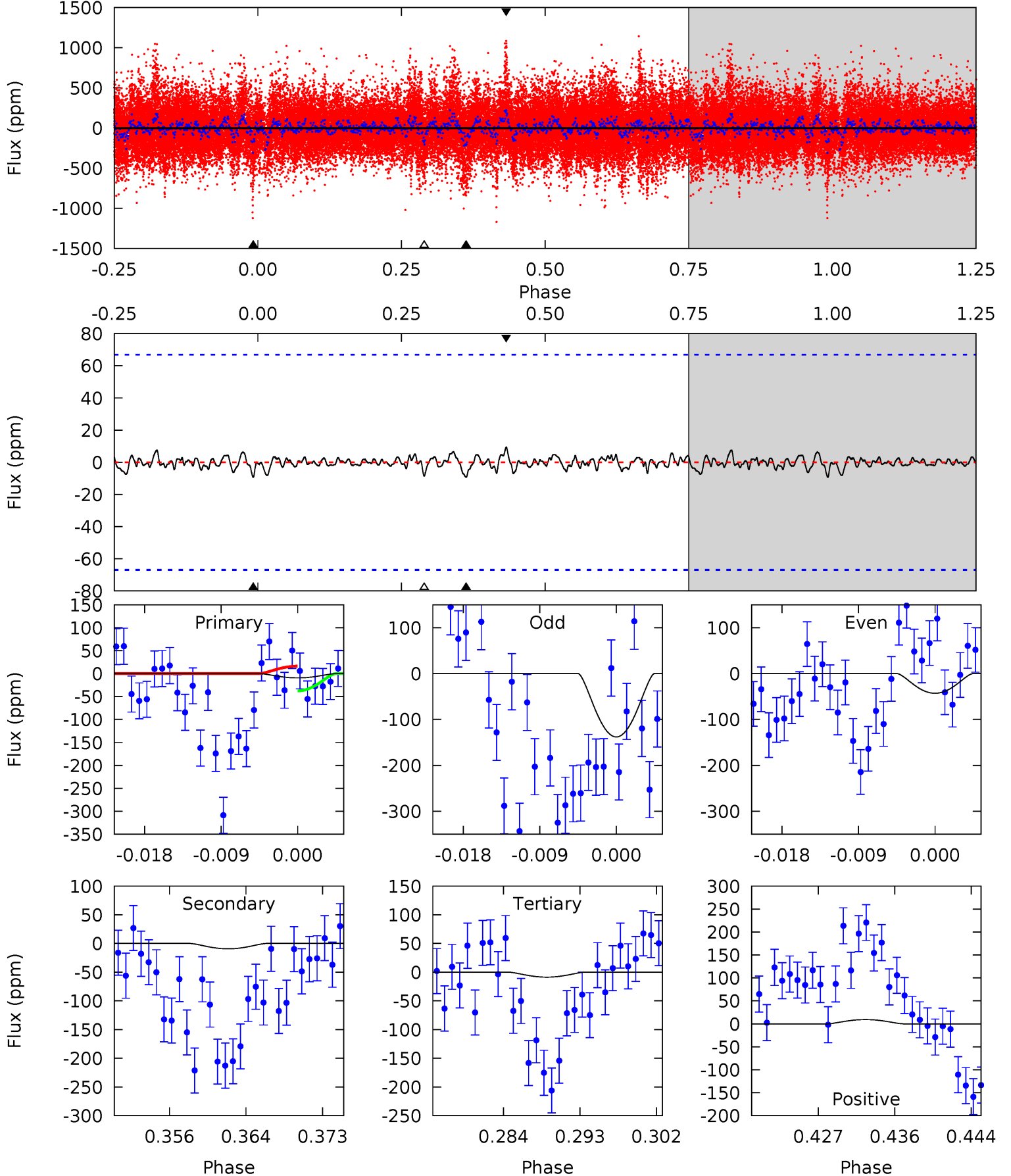
TCE 003757590-04 P=202.305866 Days $T_0=319.835617$ (BKJD)



DV Model-Shift Uniqueness Test

003757590-04, P = 202.267945 Days, E = 117.818329 Days

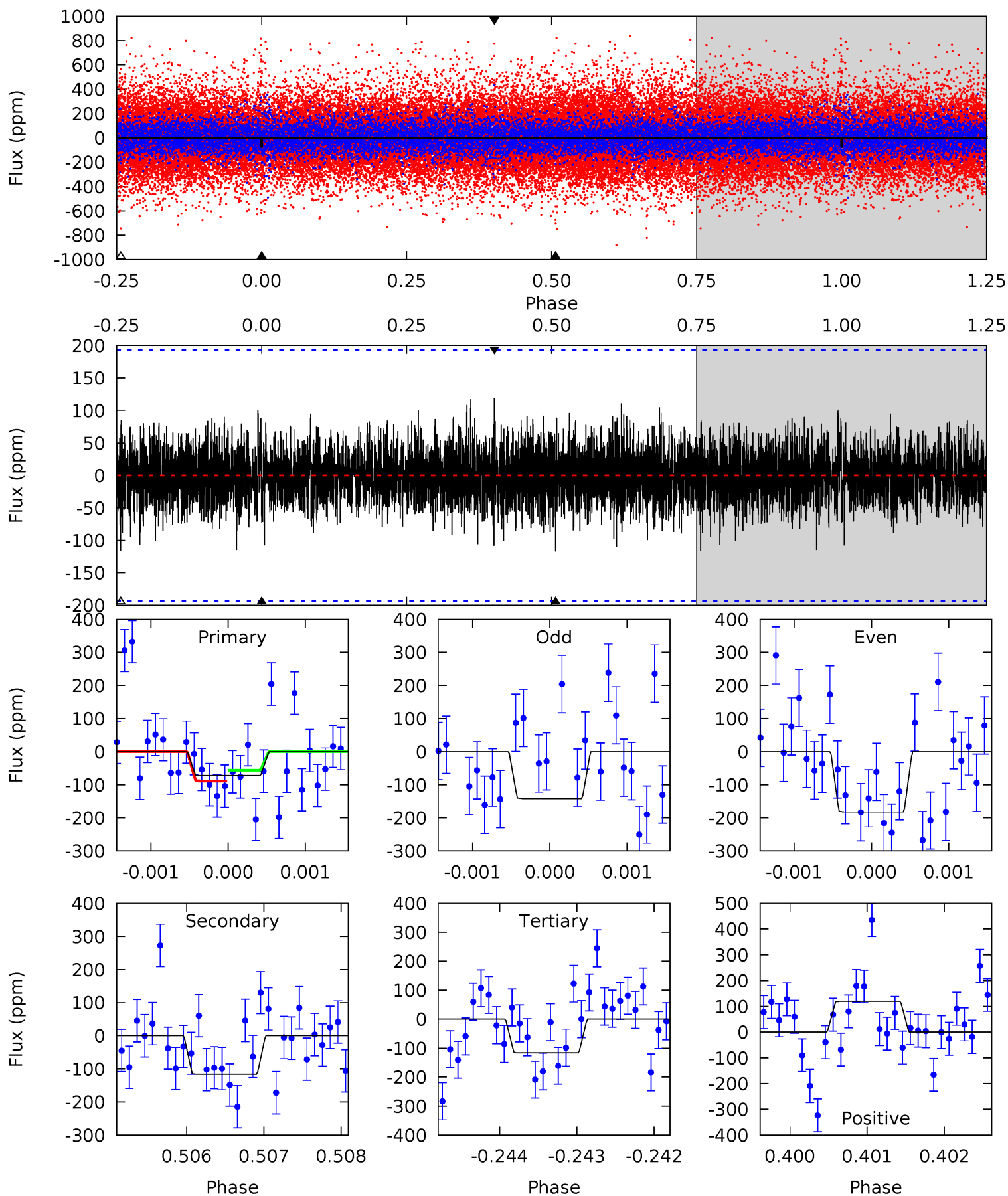
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.71	0.70	0.65	0.70	5.05	2.62	0.21	0.06	0.01	0.05	-0.00	3.02	0.55	0.50	0.82



Alt Model-Shift Uniqueness Test

003757590-04, P = 202.305866 Days, E = 117.529751 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.04	3.30	3.27	3.36	5.46	3.30	0.87	-1.23	-1.31	0.02	-0.06	0.53	3.16	0.50	0.46



Stellar Parameters For KIC 003757590

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	6401^{+69}_{-88}	$4.324^{+0.040}_{-0.112}$	$0.240^{+0.150}_{-0.200}$	$1.301^{+0.222}_{-0.089}$	$1.304^{+0.078}_{-0.086}$	$0.834^{+0.129}_{-0.291}$
	+1%/-1%	+1%/-3%	+62%/-83%	+17%/-7%	+6%/-7%	+15%/-35%
Source	SPE68	SPE68	SPE68	DSEP		

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

Secondary Eclipse Parameters for KIC 003757590-04 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-9 ± 13	$18.63^{+18.40}_{-12.27}$	528^{+19}_{-13}	1902^{+593}_{-3695}	$5.316^{+53.840}_{-7.553}$
Alt.	-117 ± 35	$15.85^{+16.26}_{-10.74}$	528^{+20}_{-13}	2756^{+1195}_{-459}	130^{+1218}_{-100}

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

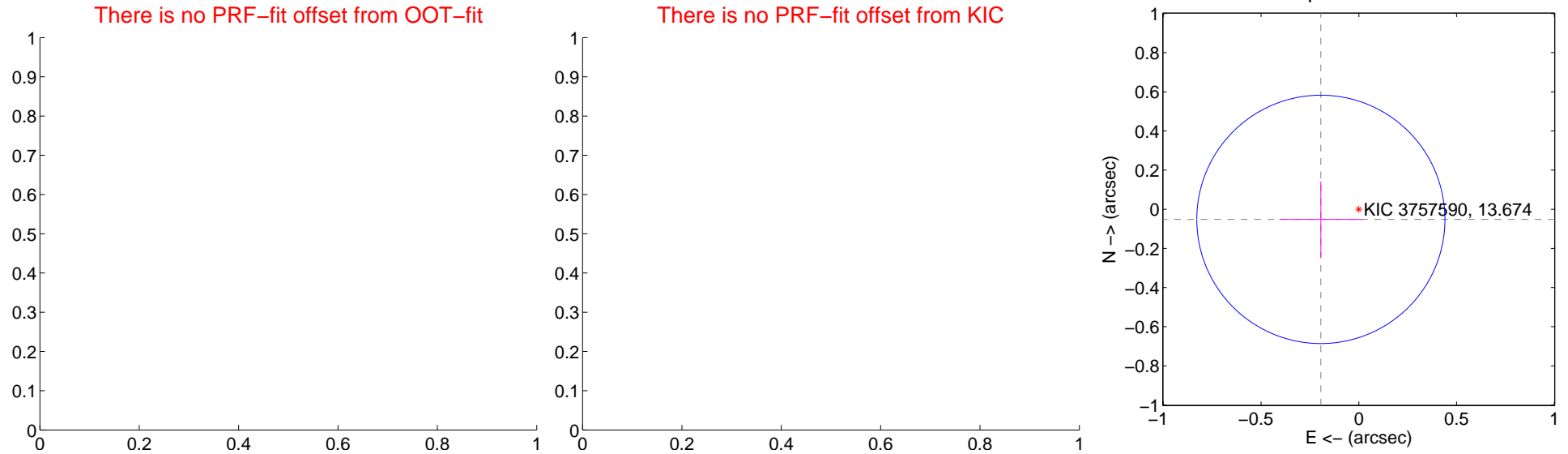
DV Centroid Data

Supplemental centroid analysis for 003757590-04. Kepler magnitude: 13.67. Transit SNR 24.99

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	0.20 ± 0.21	0.95	0.19 ± 0.21	-0.05 ± 0.19

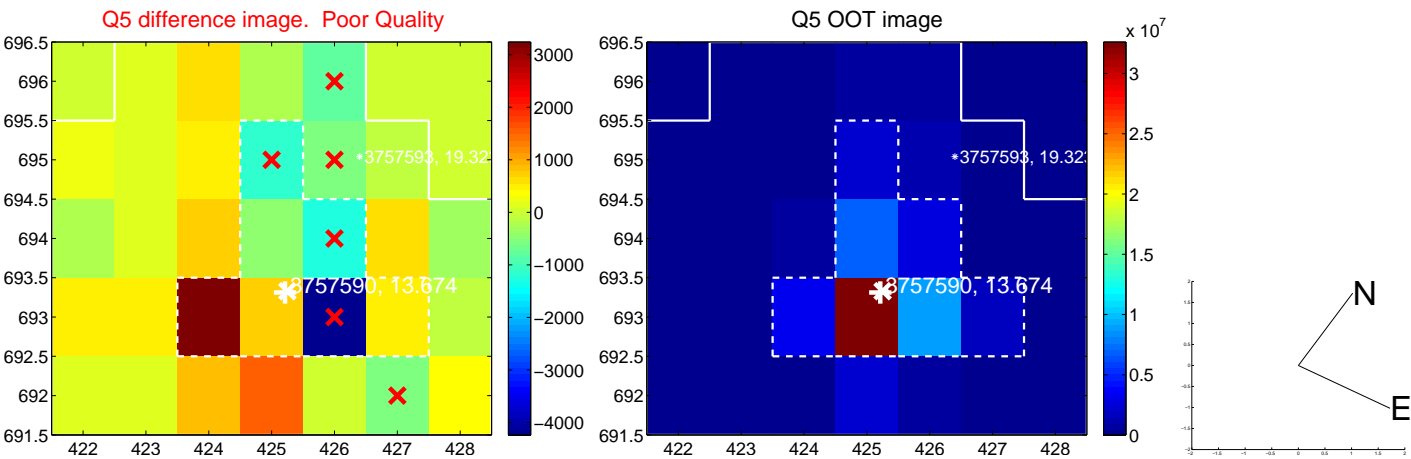


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



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



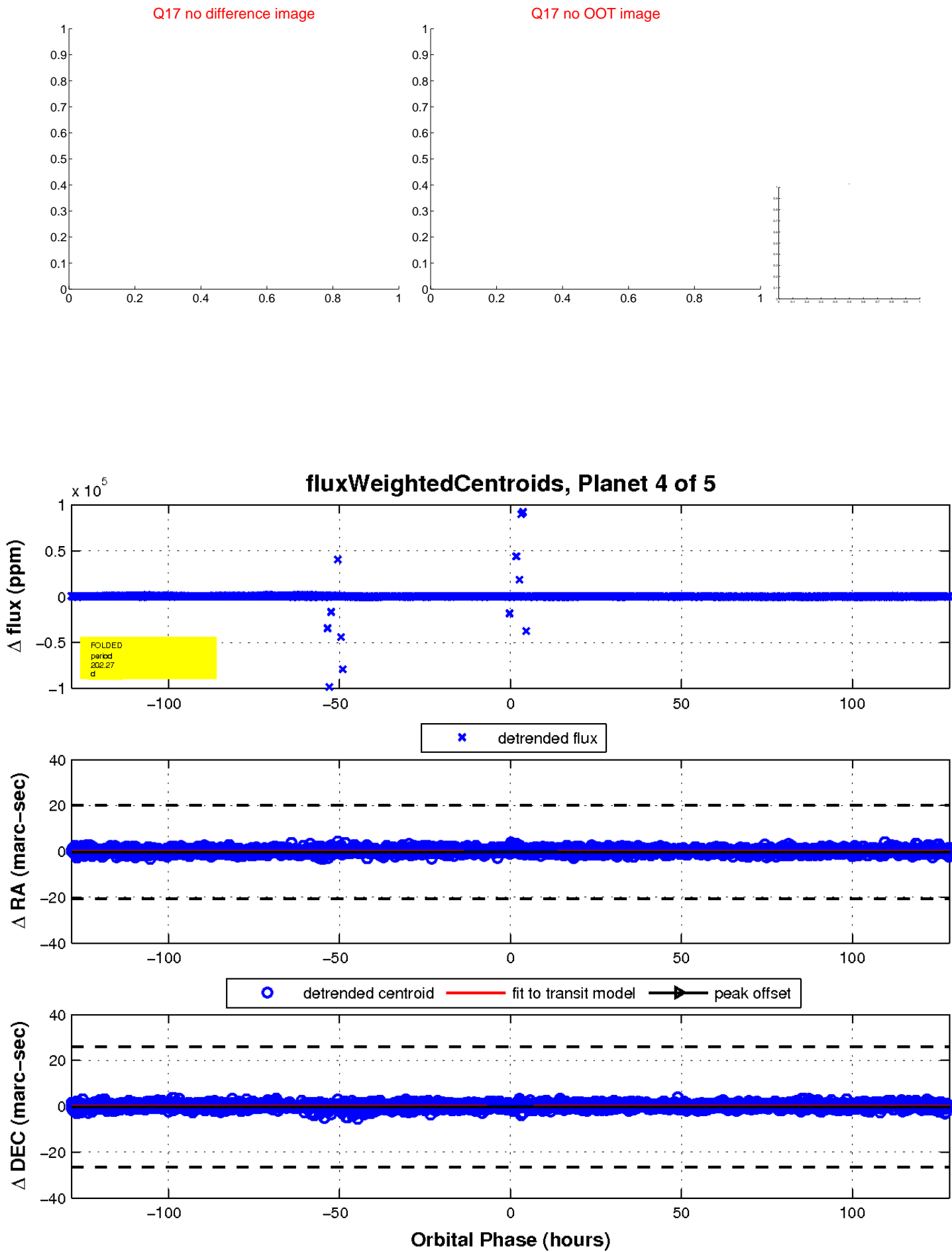
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

