

KIC 005523471

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})
005523471-01	OBS	No	388.579412	374.376339	2617.6	24.314	16.8	7.5	1.00	5596	6.32	0.93
005523471-02	OBS	No	491.737712	173.661557	755.6	3.977	16.9	6.7	1.00	5596	2.92	0.68
005523471-03	OBS	No	513.847734	469.745205	678.4	4.736	12.3	7.4	1.00	5596	2.66	0.64
005523471-04	OBS	No	583.275803	302.596897	720.4	2.799	10.9	7.1	1.00	5596	2.88	0.54
005523471-05	OBS	No	594.465836	191.037325	661.8	4.494	12.2	5.2	1.00	5596	2.69	0.53
005523471-06	OBS	No	293.536988	409.770885	1145.5	3.913	10.2	9.6	1.00	5596	3.75	1.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005523471-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005523471-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005523471-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005523471-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005523471-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005523471-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

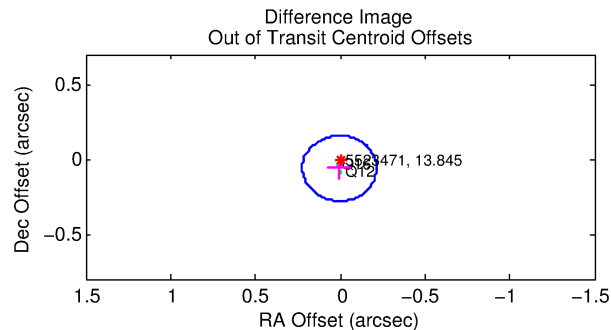
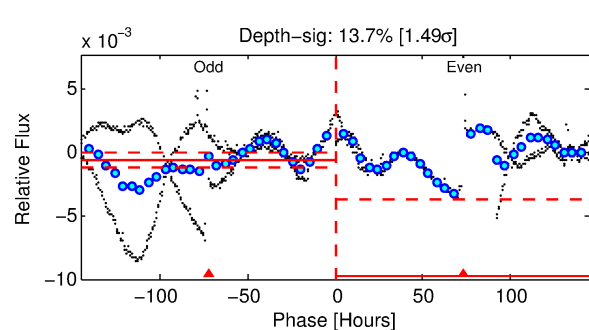
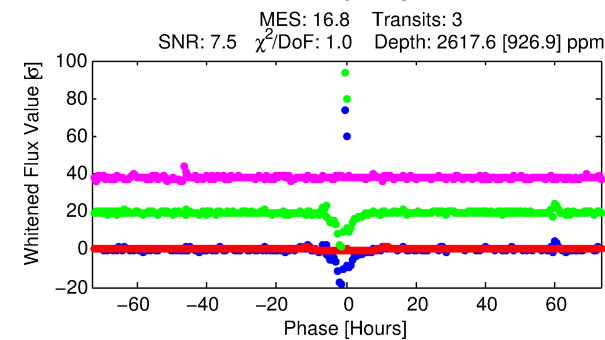
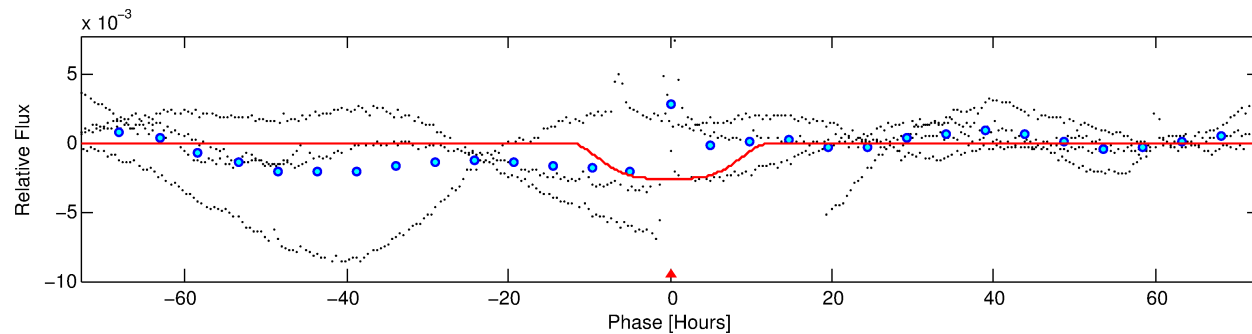
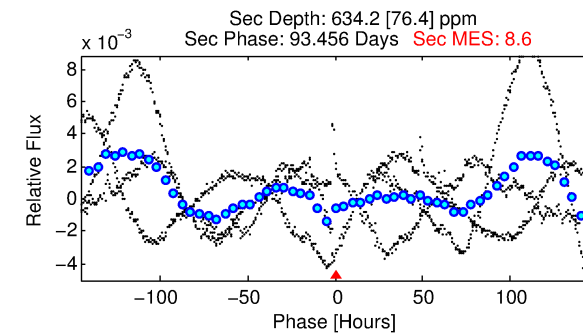
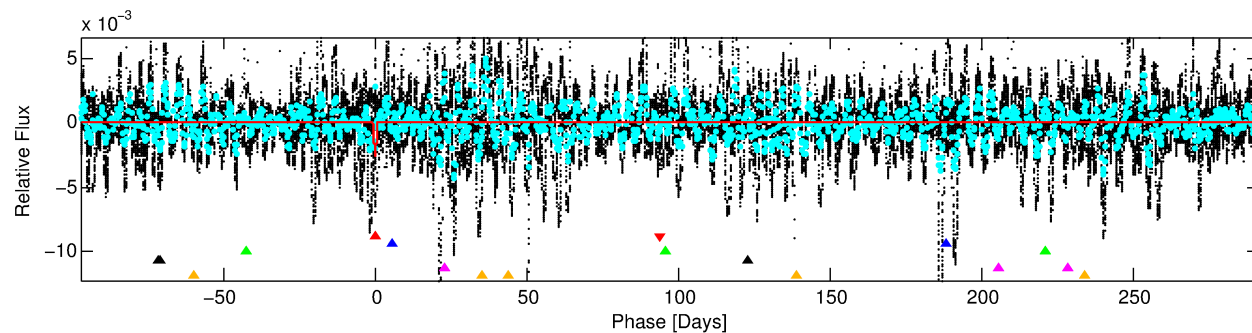
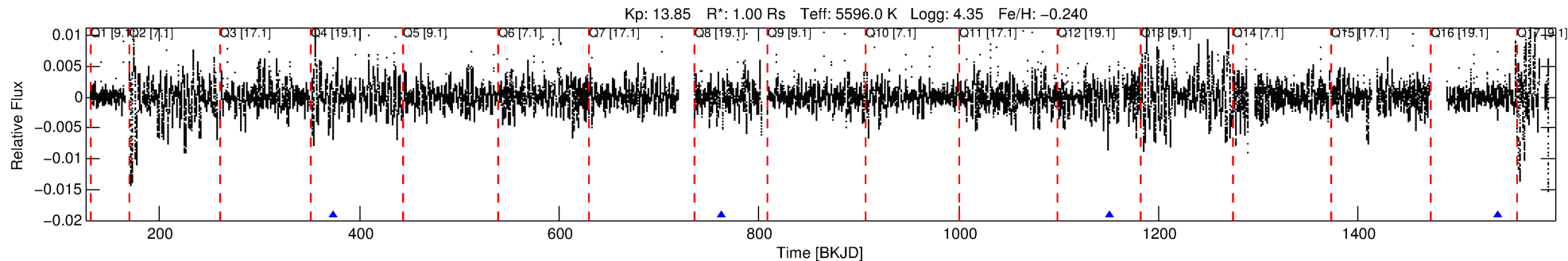
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005523471-01

No Significant Match Found

DV One-Page Summary

KIC: 5523471 Candidate: 1 of 6 Period: 388.579 d



DV Fit Results:

Period = 388.57941 [0.01805] d
Epoch = 374.3763 [0.0357] BKJD
Rp/R* = 0.0577 [0.0104]
a/R* = 62.69 [5.79]
b = 0.92 [0.02]
Seff = 0.93 [0.42]
Teq = 251 [28] K
Rp = 6.32 [2.50] Re
a = 0.9739 [0.2890] AU
Ag = 8273.47 [4771.85] [1.73σ]
Teffp = 3696 [369] K [9.31σ]

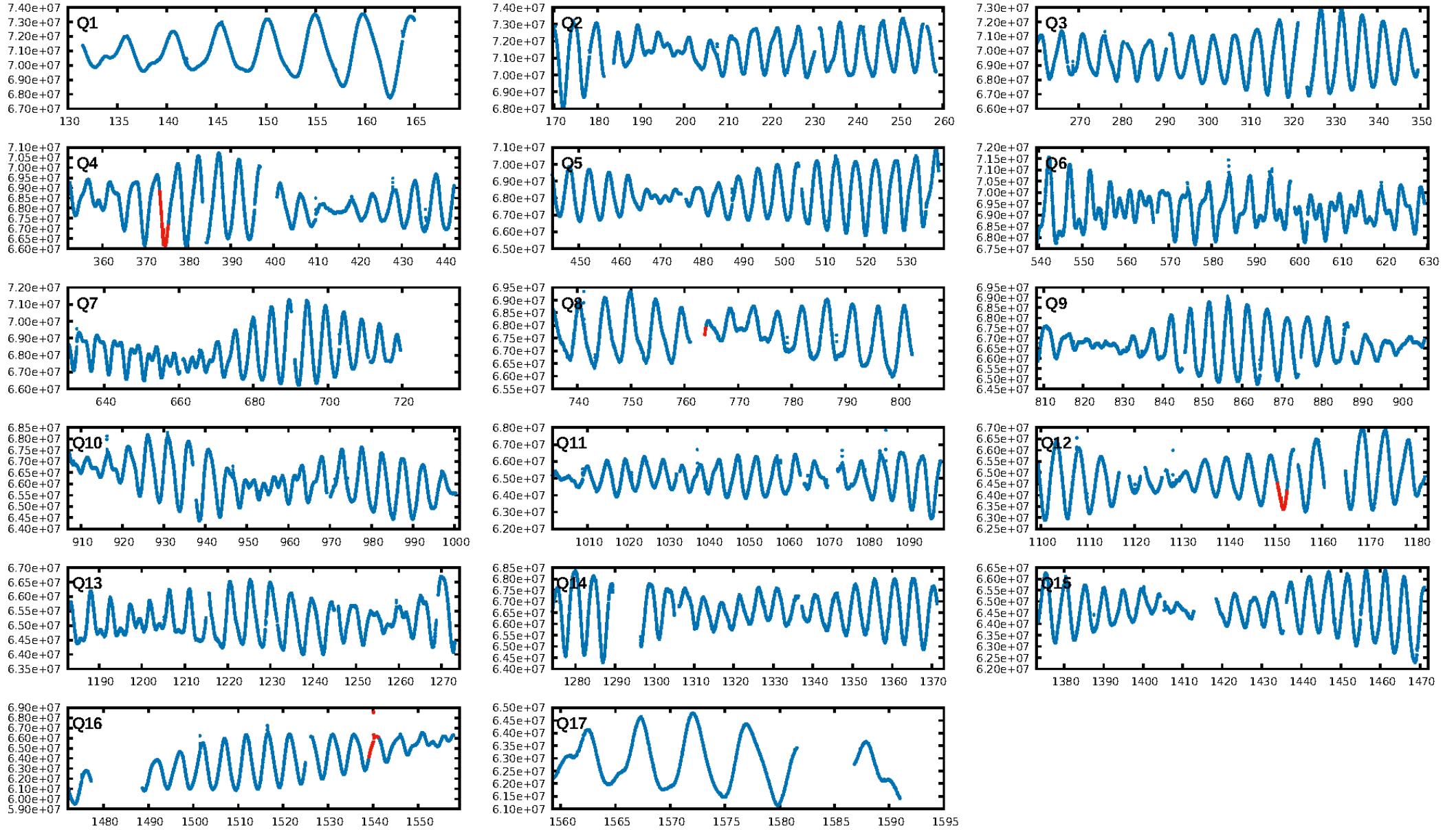
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [92.62σ]
LongPeriod-sig: 100.0% [100.49σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.69e-14
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.054
Centroid-sig: 50.2%
Centroid-so: 0.446 arcsec [0.71σ]
OotOffset-rm: 0.061 arcsec [0.84σ]
OotOffset-st: 0/0/2/0 [2]
KicOffset-rm: 0.146 arcsec [1.97σ]
KicOffset-st: 0/0/2/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [2/2]

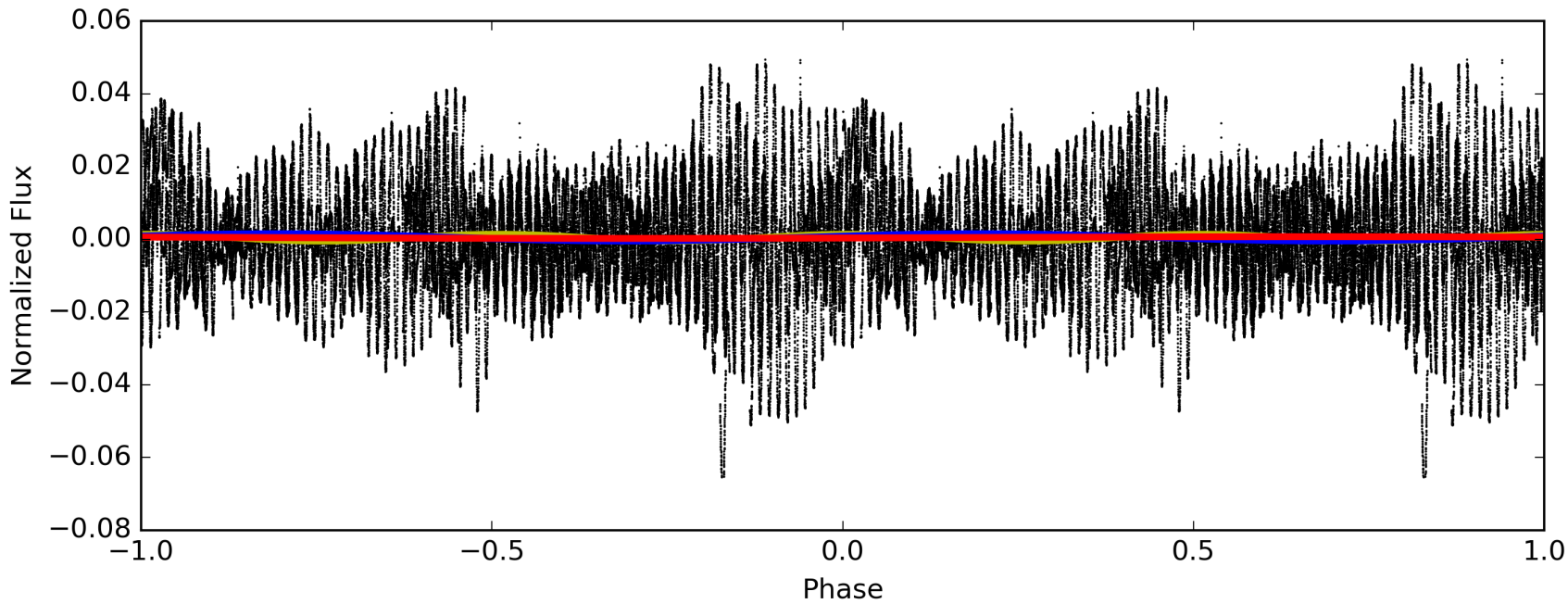
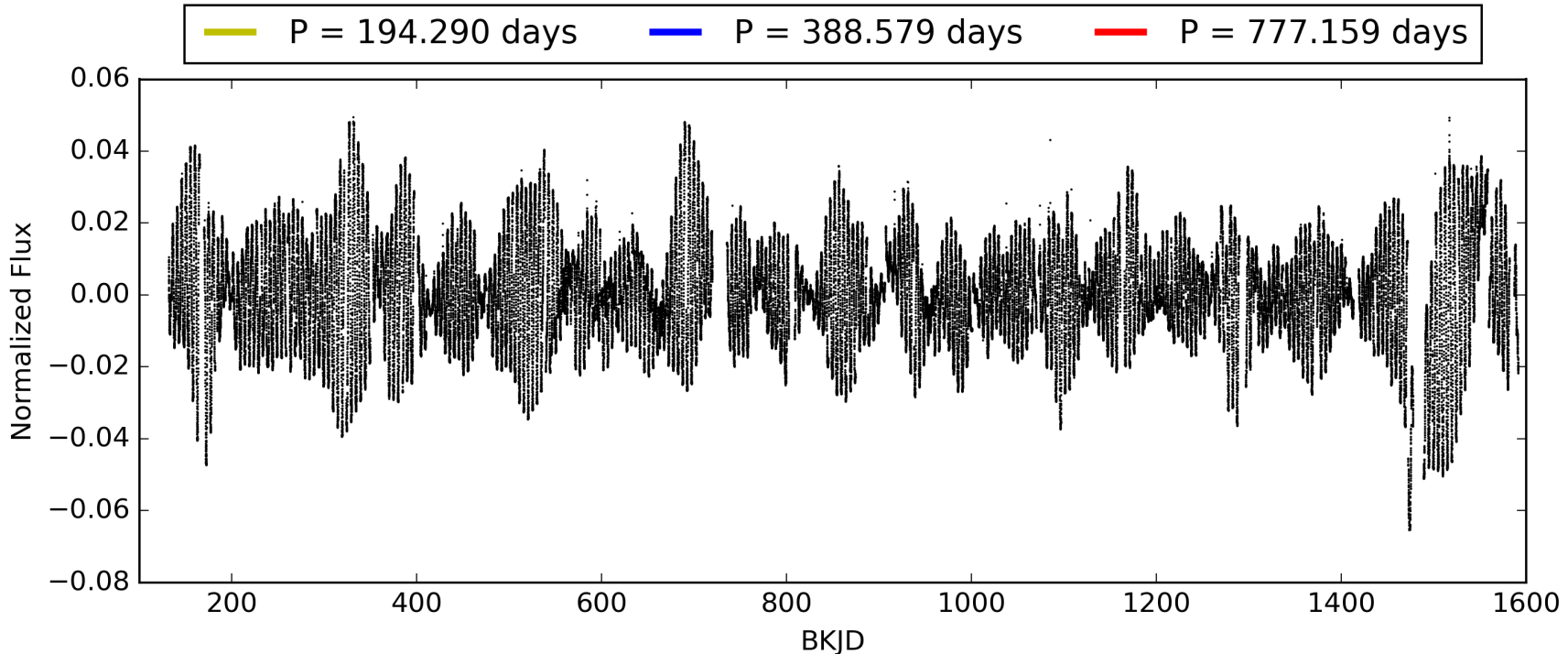
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:19:43 Z

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

TCE 005523471-01, PDC Light Curves

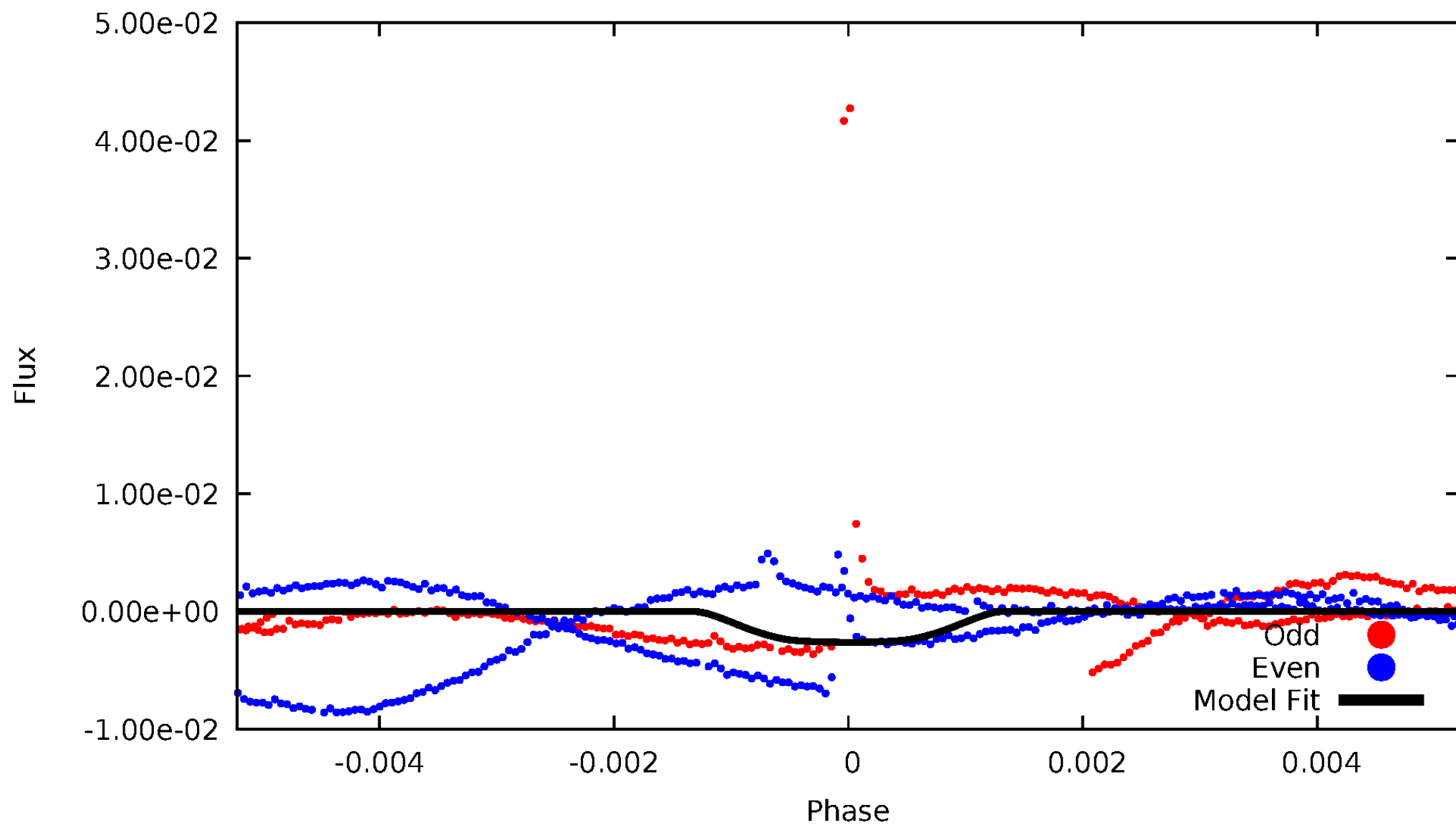


TCE 005523471-01



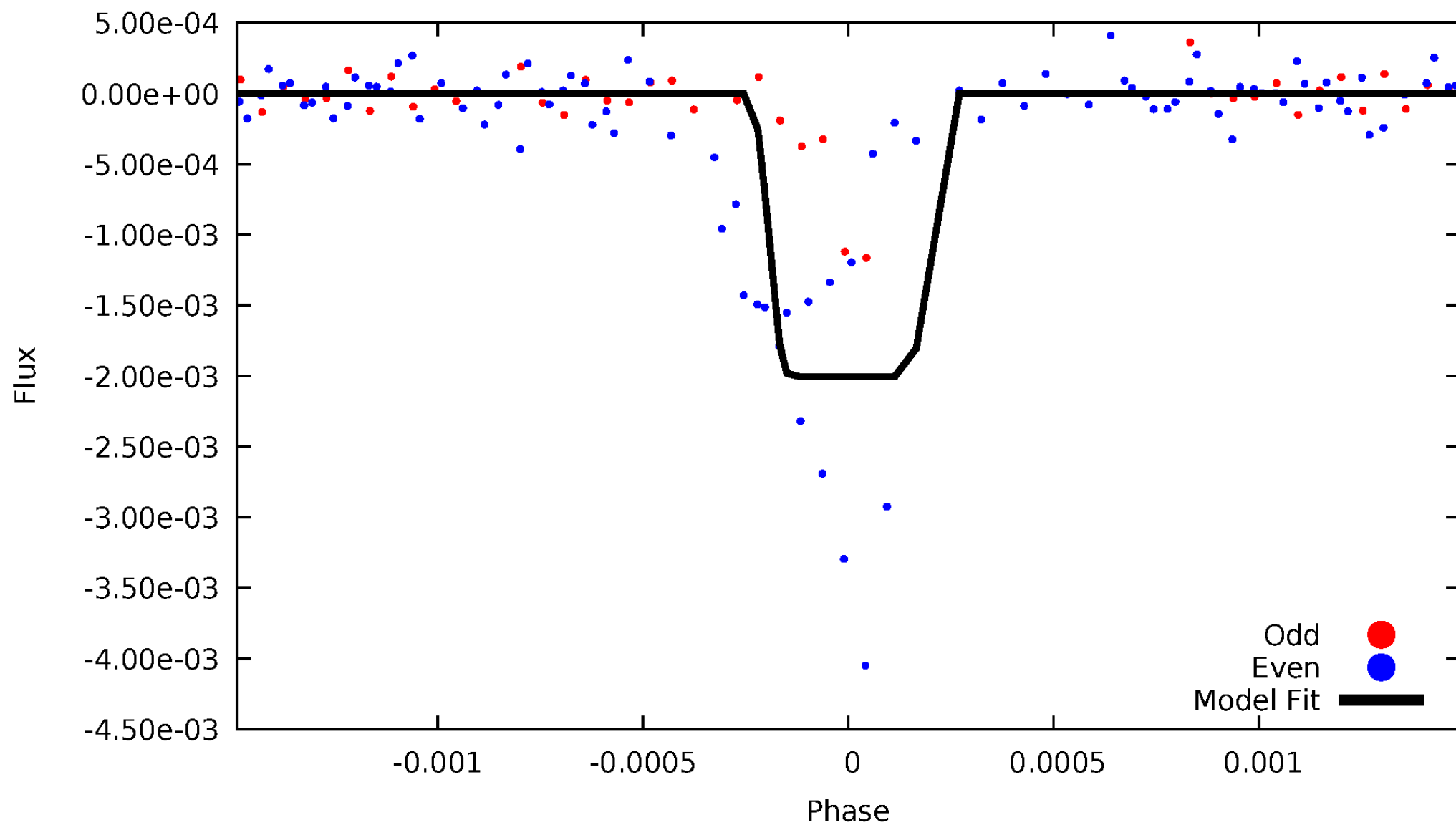
DV Odd/Even

TCE 005523471-01



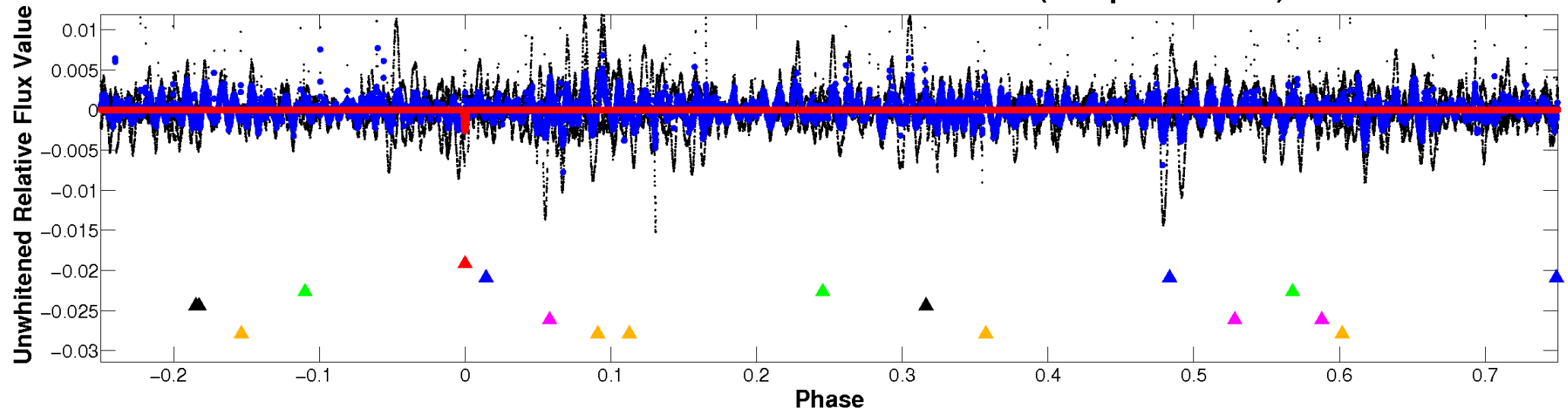
ALT Odd/Even

TCE 005523471-01

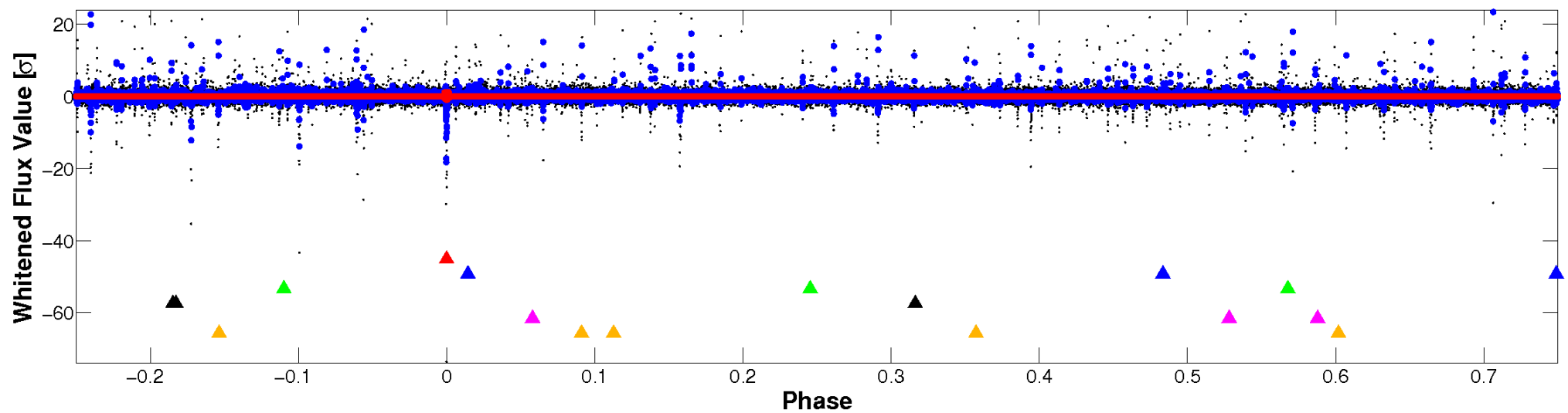


Non-Whitened Vs. Whitened Light Curve

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

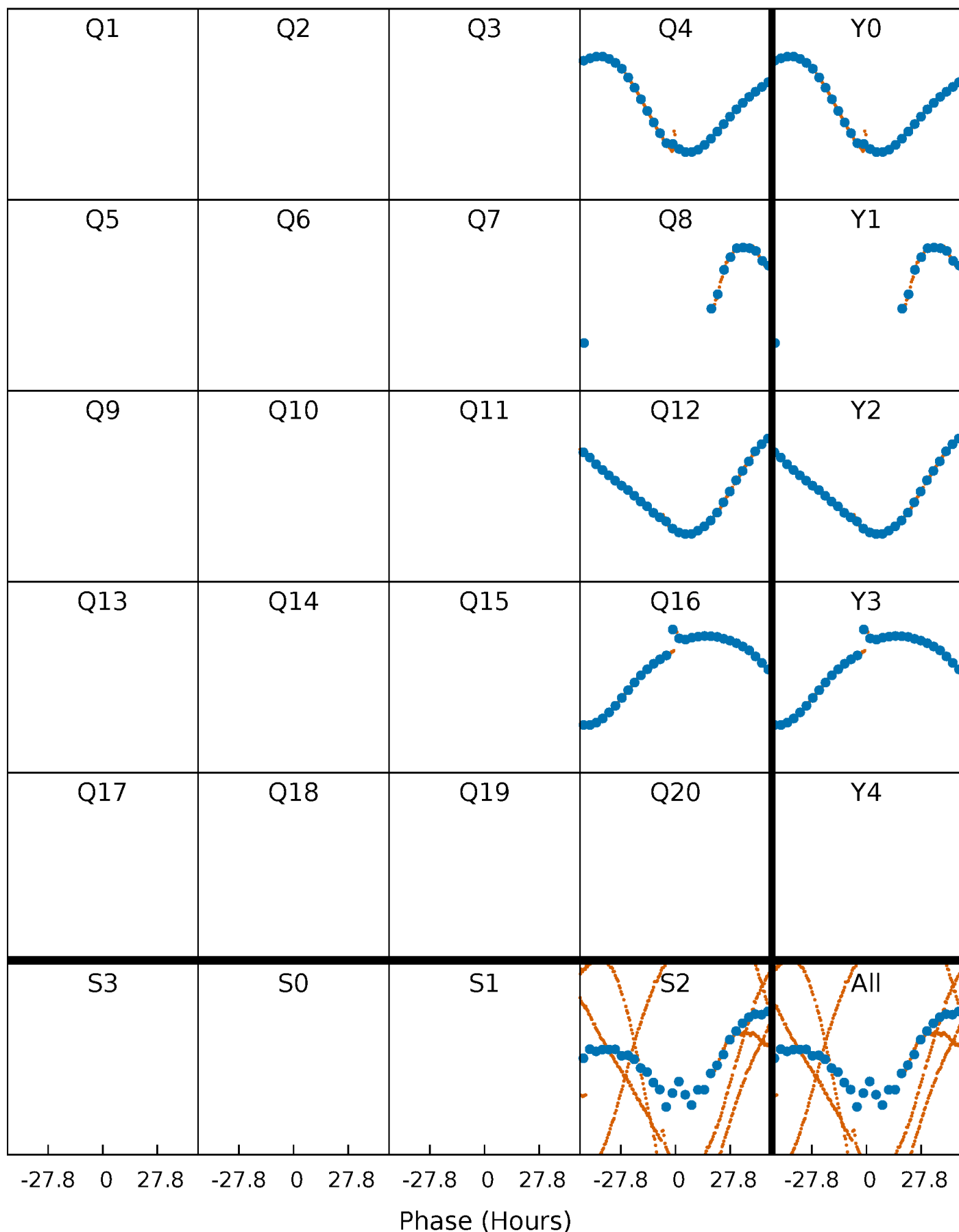


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



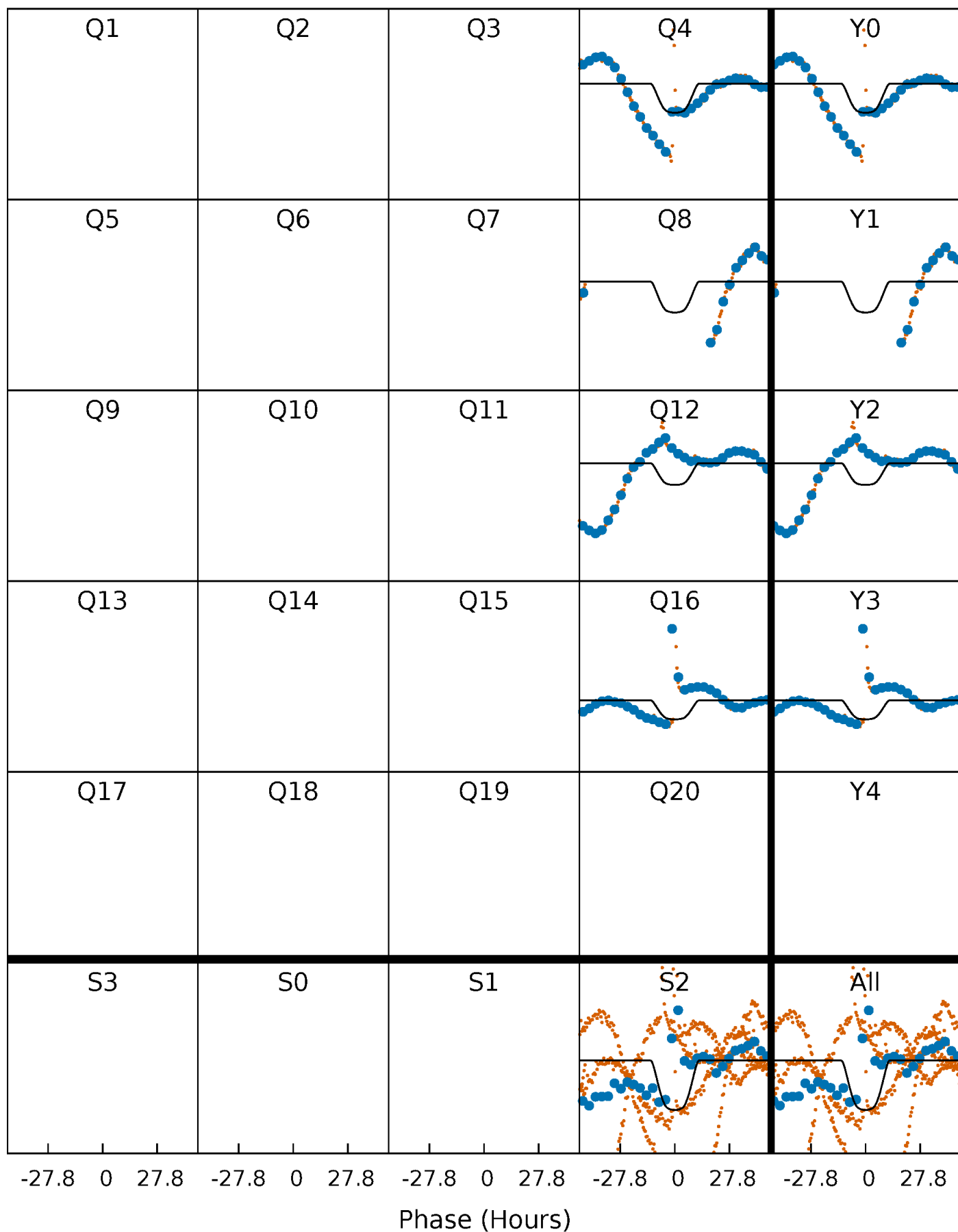
PDC Quarter-Phased Transit Curves

TCE 005523471-01 P=388.579412 Days $T_0=374.376339$ (BKJD)



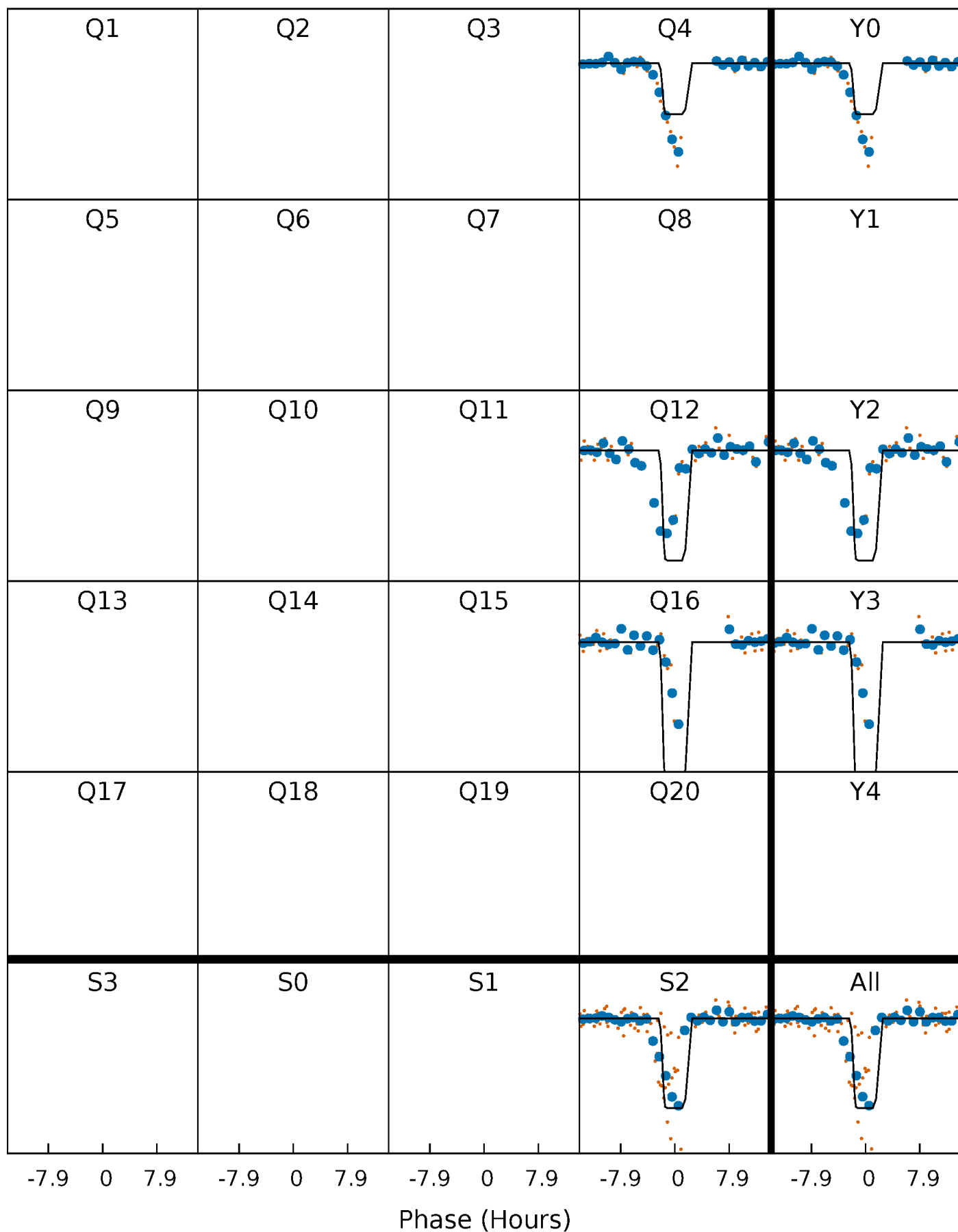
DV Quarter-Phased Transit Curves

TCE 005523471-01 P=388.579412 Days $T_0=374.376339$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

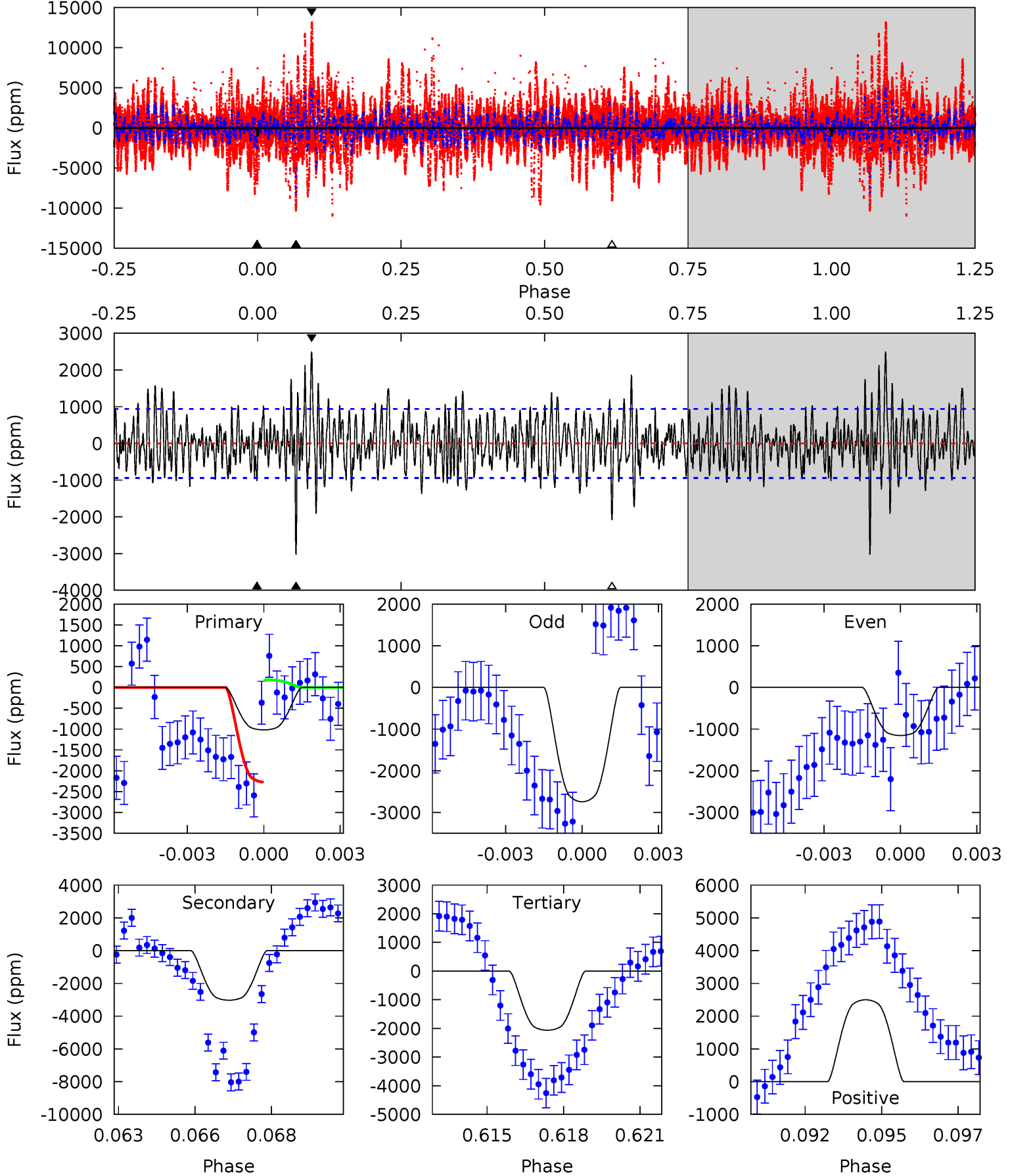
TCE 005523471-01 P=388.571942 Days $T_0=374.284982$ (BKJD)



DV Model-Shift Uniqueness Test

005523471-01, P = 388.579412 Days, E = 374.376339 Days

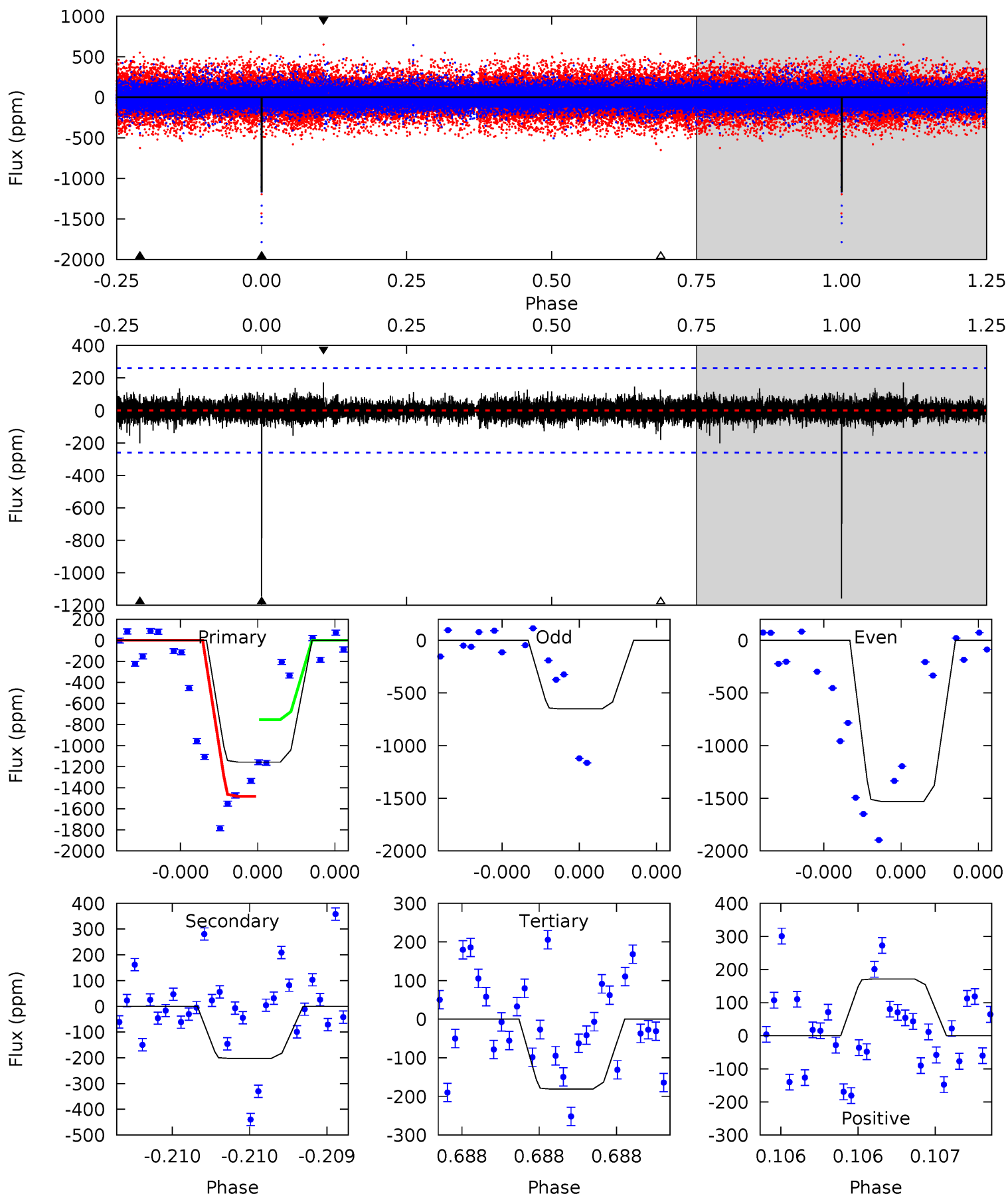
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.72	17.0	11.6	14.0	5.28	3.01	3.31	-5.86	-8.31	5.41	2.96	4.11	0.08	0.45	5.95



Alt Model-Shift Uniqueness Test

005523471-01, P = 388.571942 Days, E = 374.284982 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.0	4.37	3.92	3.71	5.62	3.55	0.67	21.1	21.3	0.46	0.66	11.6	1.52	0.13	7.77



Stellar Parameters For KIC 005523471

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5596^{+167}_{-150}	$4.346^{+0.194}_{-0.237}$	$-0.240^{+0.300}_{-0.250}$	$1.004^{+0.353}_{-0.218}$	$0.815^{+0.127}_{-0.063}$	$1.134^{+1.103}_{-0.630}$
	+3%/-3%	+4%/-5%	+125%/-104%	+35%/-22%	+16%/-8%	+97%/-56%
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 005523471-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-3027 ± 178	$6.45^{+1.61}_{-1.39}$	351^{+31}_{-23}	5476^{+562}_{-421}	38534^{+24609}_{-13792}
Alt.	-202 ± 46	$4.95^{+1.58}_{-1.31}$	353^{+30}_{-27}	3591^{+403}_{-249}	4274^{+4083}_{-1831}

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

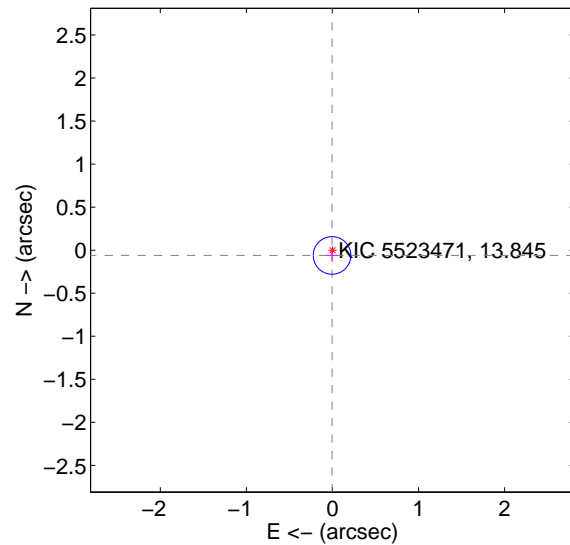
Supplemental centroid analysis for 005523471-01. Kepler magnitude: 13.85. Transit SNR 7.46

There are 1 quarters with good PRF difference image offsets

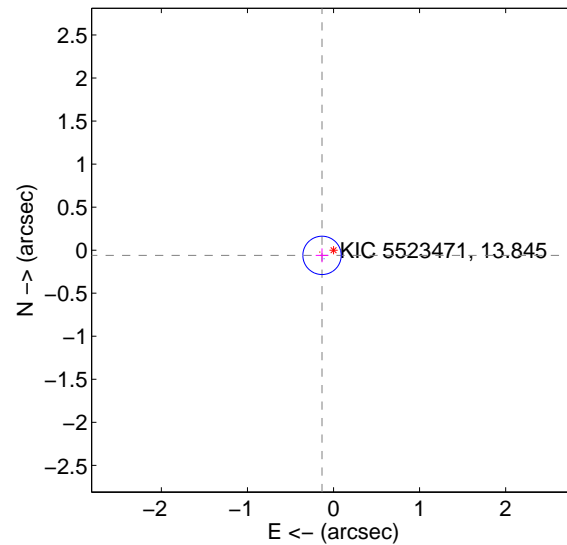
The direct PRF centroid is offset from the target star catalog position by about 0.15 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.061 ± 0.073	0.84	0.005 ± 0.067	-0.061 ± 0.073
PRF-fit source offset from KIC position	0.146 ± 0.074	1.97	0.133 ± 0.073	-0.060 ± 0.080
photometric centroid source offset	0.45 ± 0.63	0.71	0.44 ± 0.63	0.04 ± 0.49

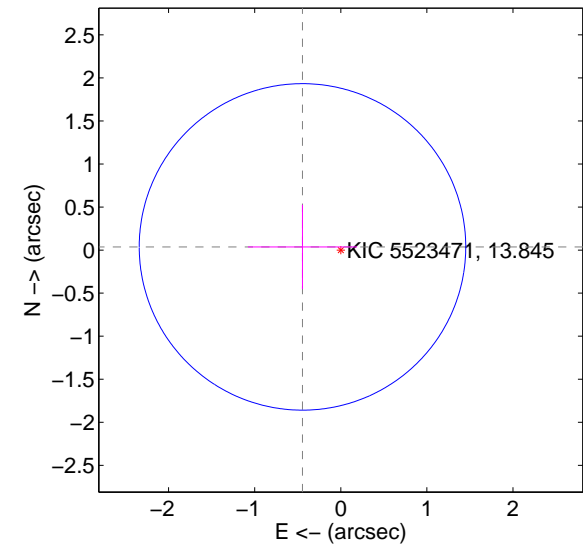
offset from difference PRF-fit to OOT PRF-fit



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.

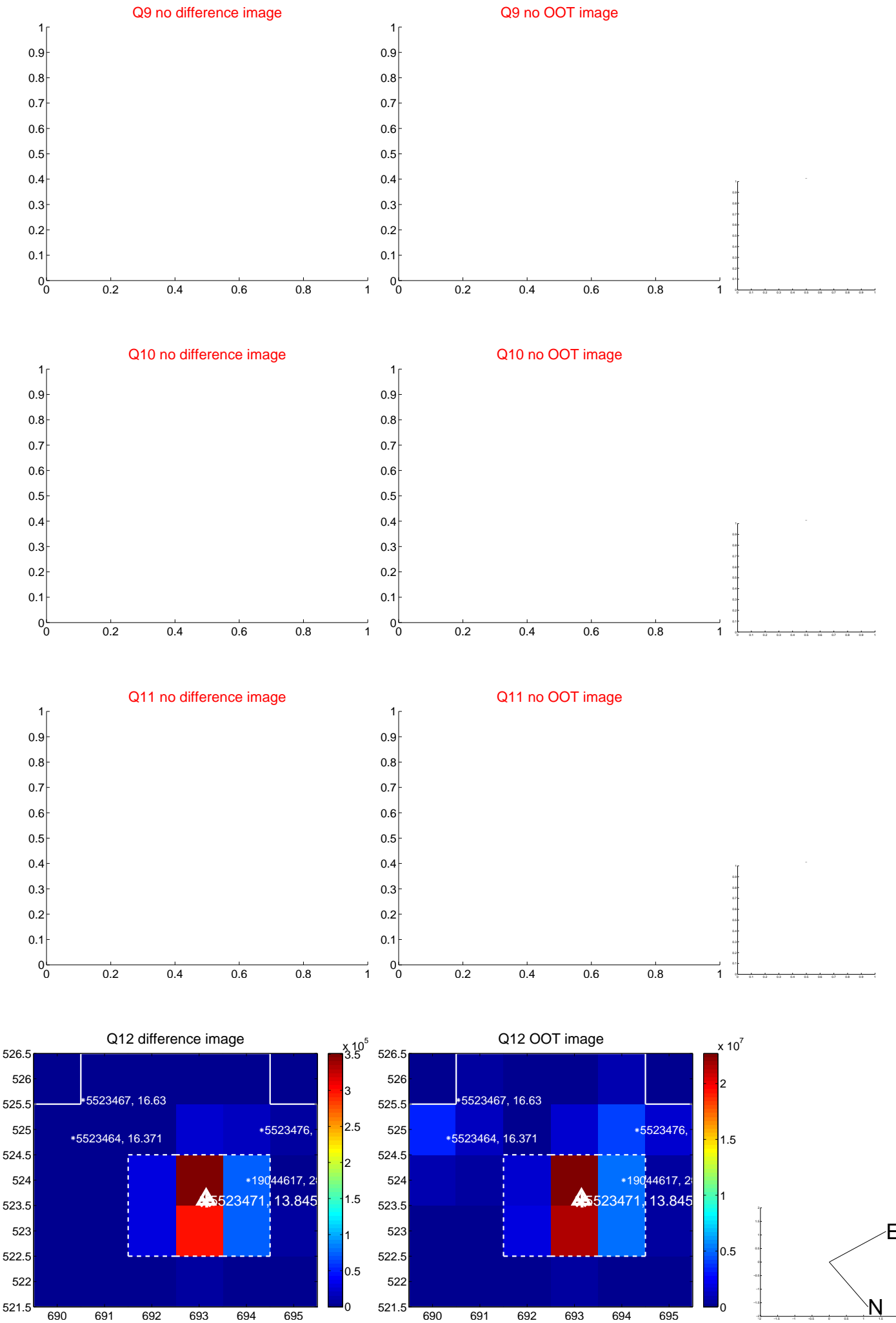
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



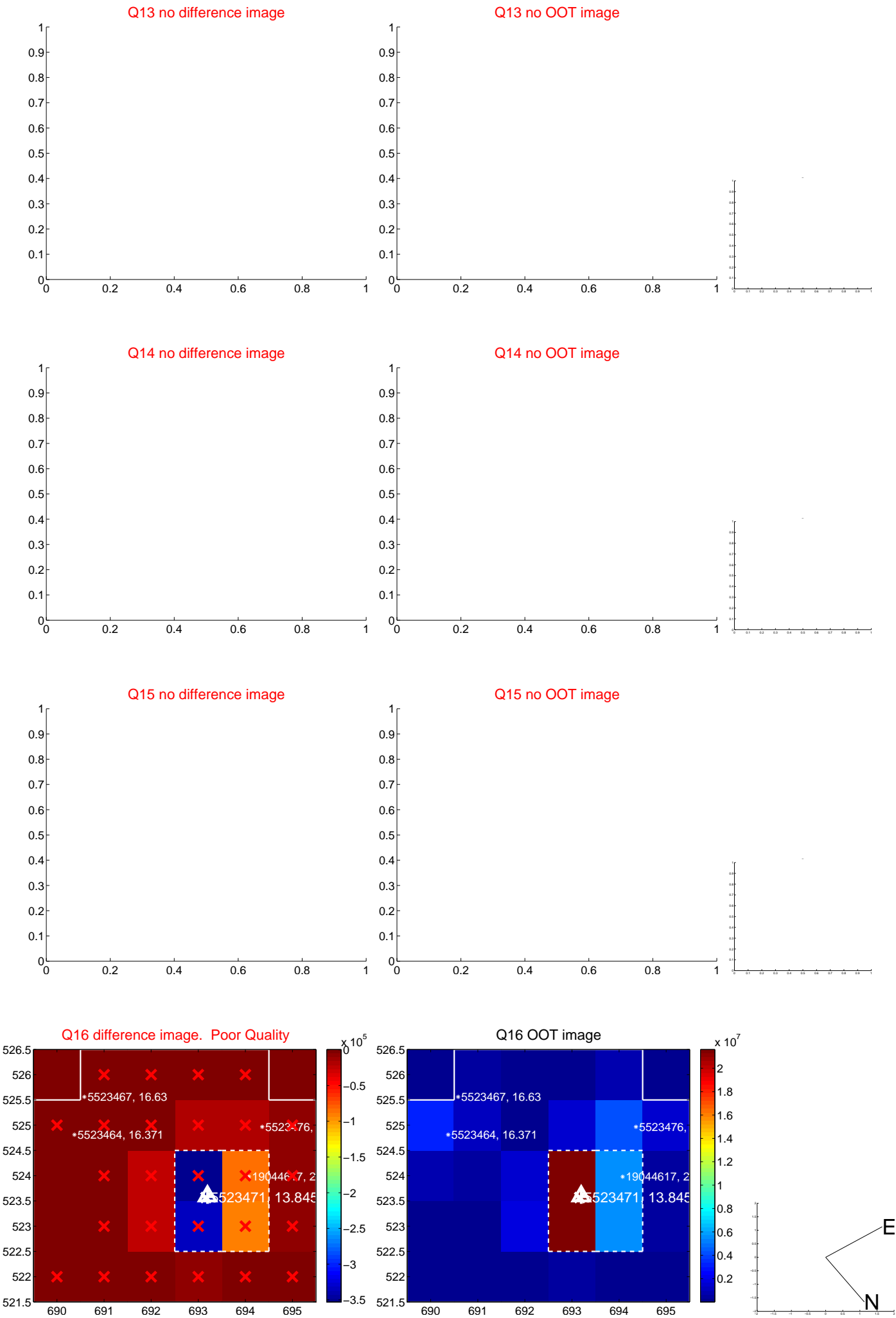
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



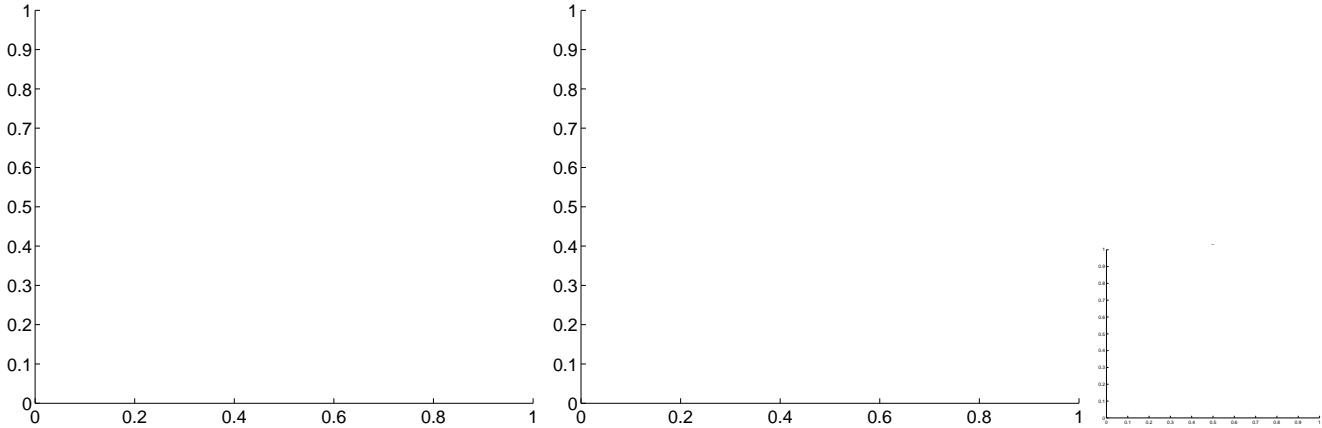
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



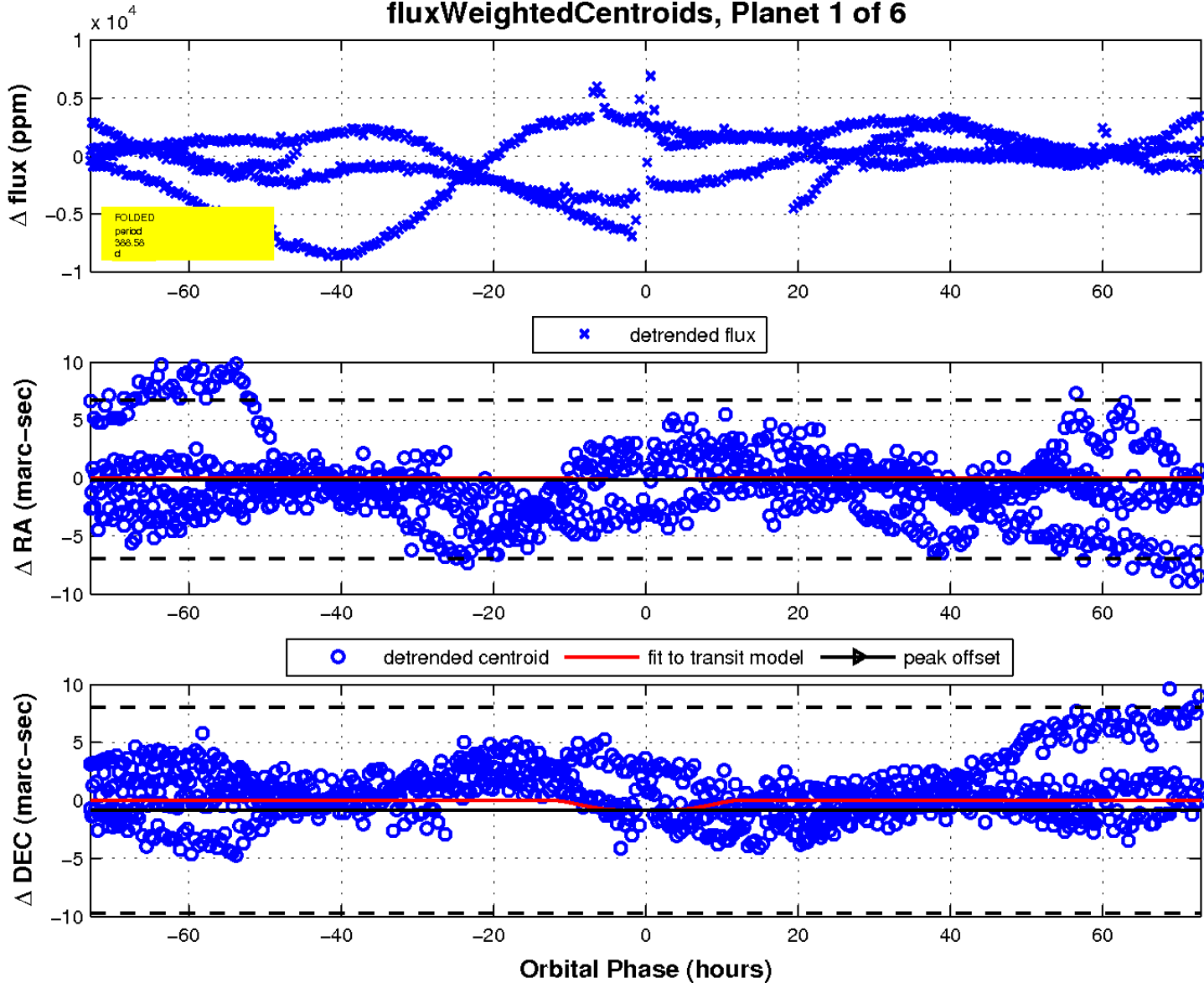
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q17 no difference image

Q17 no OOT image

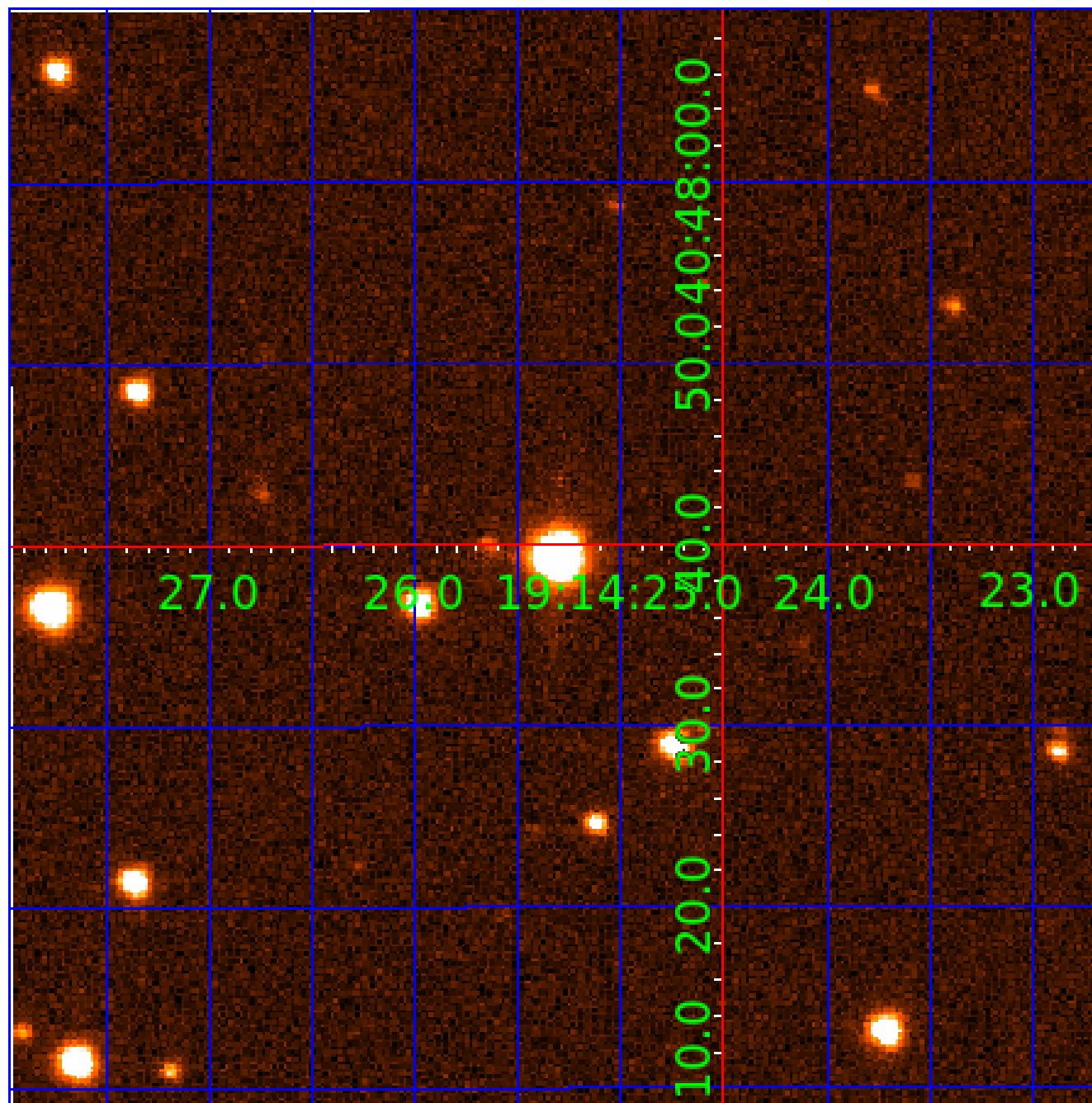


fluxWeightedCentroids, Planet 1 of 6



UKIRT Image

Declination



KIC 005523471

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005523471-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005523471-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005523471-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005523471-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005523471-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005523471-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

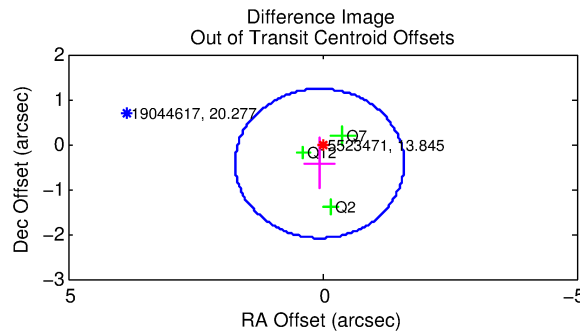
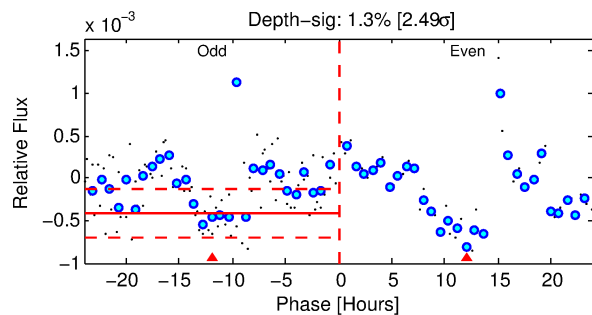
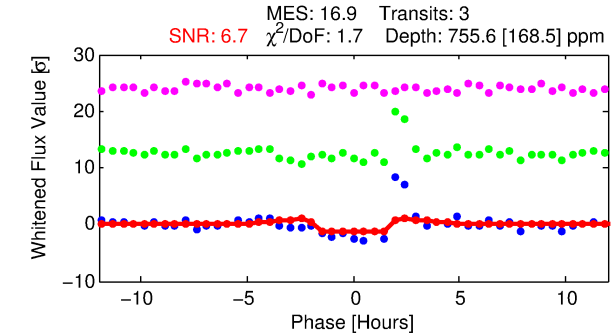
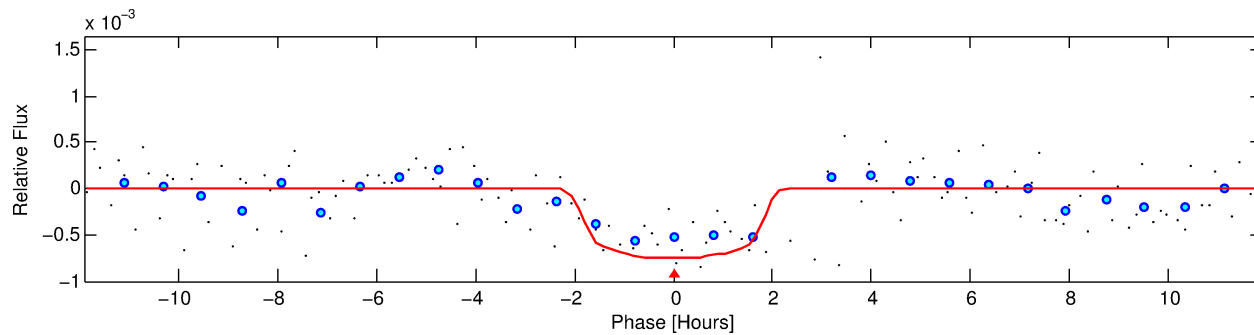
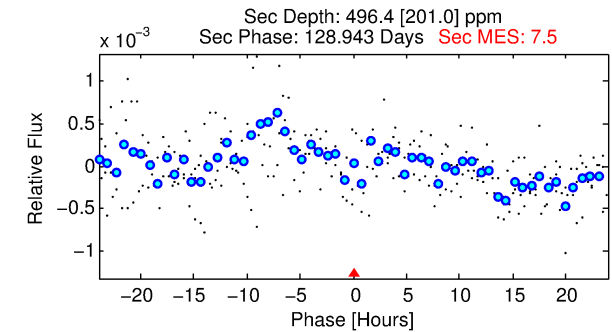
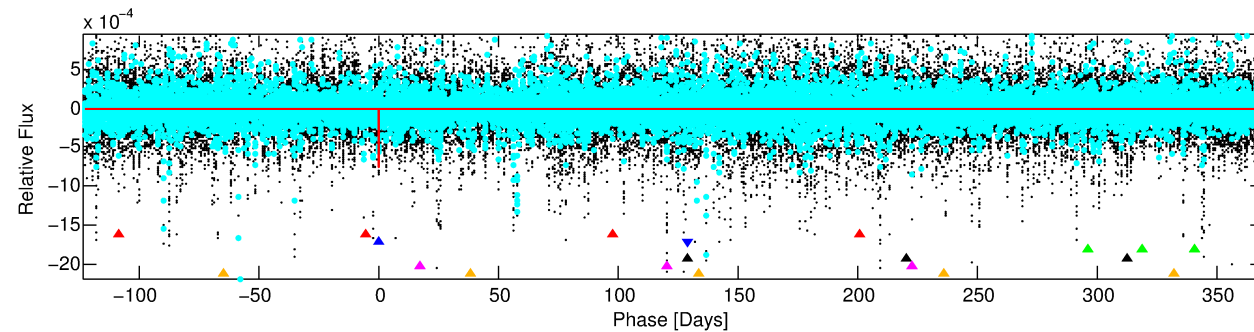
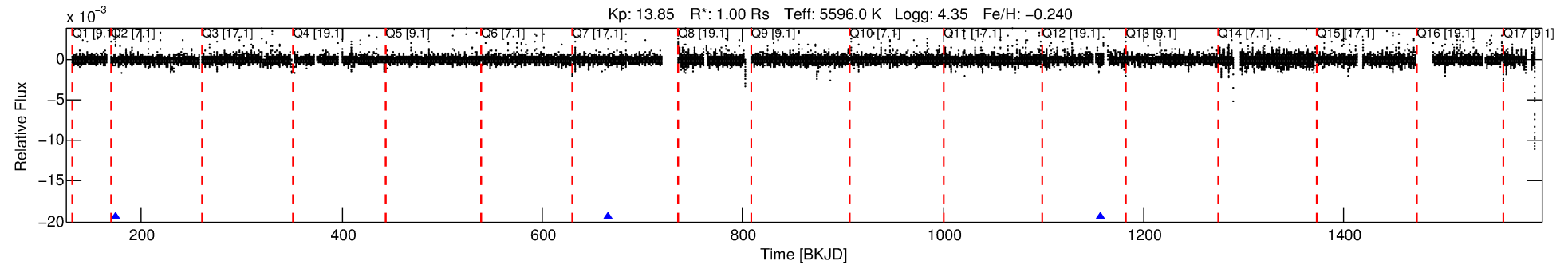
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005523471-02

No Significant Match Found

DV One-Page Summary

KIC: 5523471 Candidate: 2 of 6 Period: 491.738 d



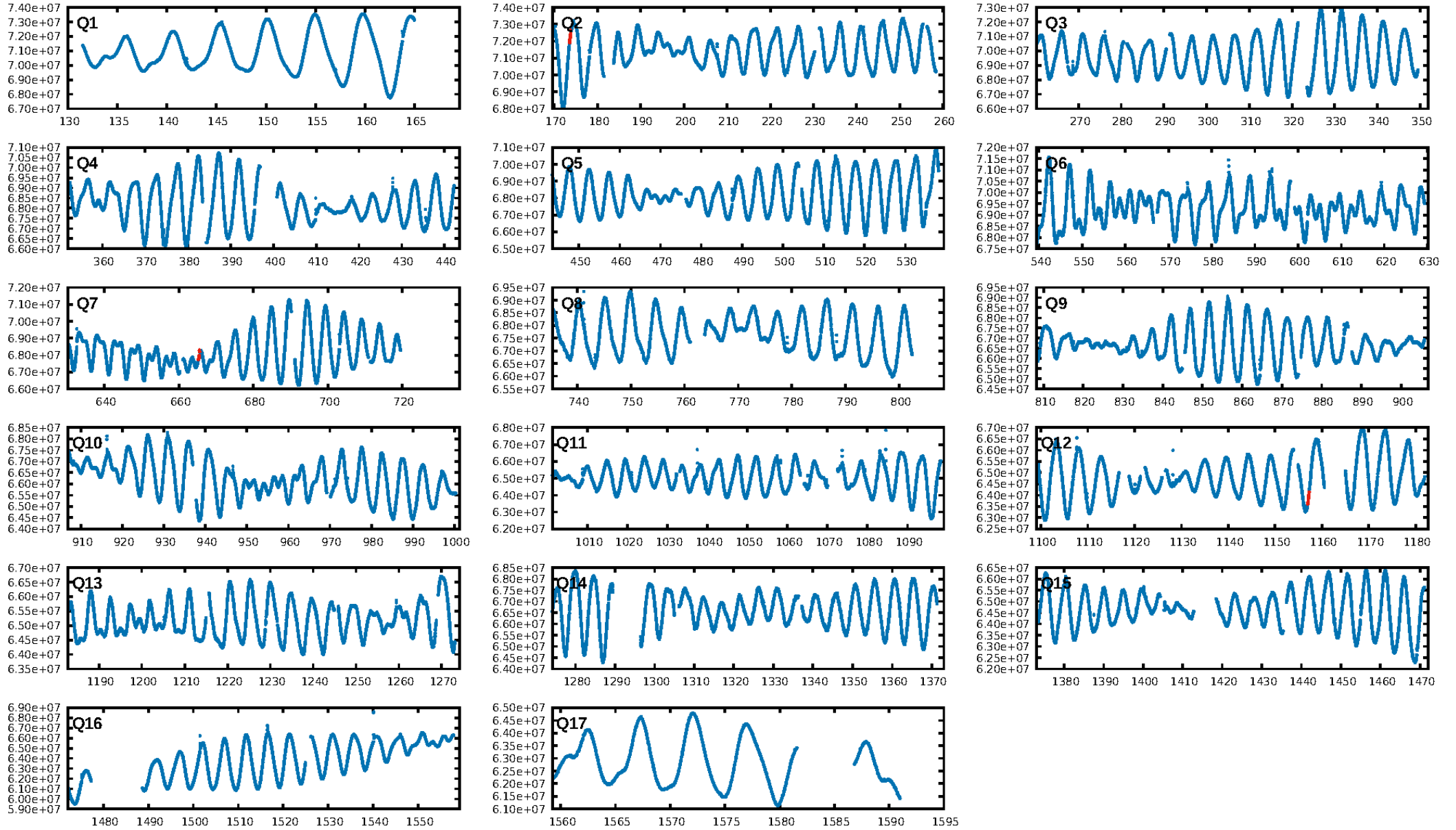
DV Fit Results:

Period = 491.73771 [0.00709] d
Epoch = 173.6616 [0.0089] BKJD
Rp/R* = 0.0267 [0.0368]
a/R* = 733.96 [4319.45]
b = 0.67 [4.88]
Seff = 0.68 [0.31]
Teff = 232 [26] K
Rp = 2.92 [4.16] Re
a = 1.1394 [0.3381] AU
Ag = 41532.38 [117207.31] [0.35 σ]
Teffp = 5115 [3569] K [1.37 σ]

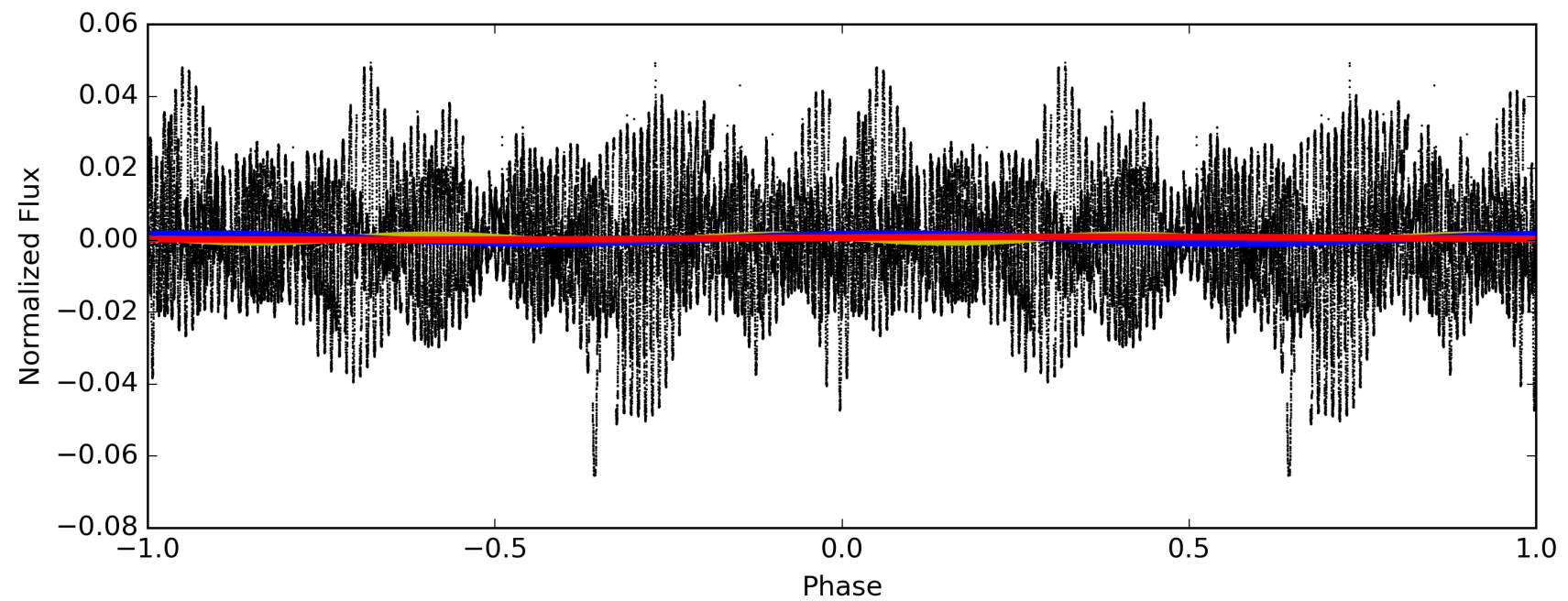
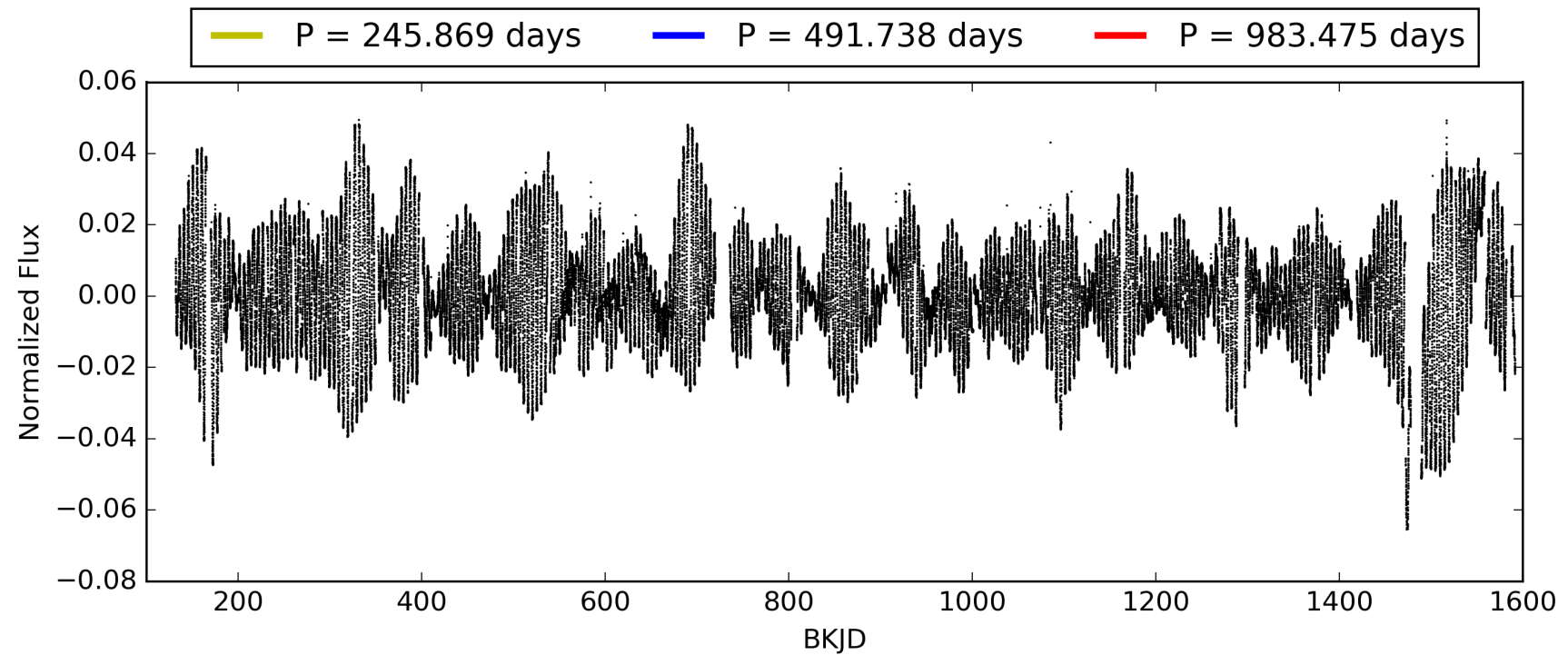
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [100.49 σ]
LongPeriod-sig: 100.0% [85.81 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 25.6%
Bootstrap-pfa: 1.93e-14
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -3.075
Centroid-sig: 86.1%
Centroid-so: 0.581 arcsec [0.56 σ]
OotOffset-rm: 0.432 arcsec [0.78 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.484 arcsec [0.97 σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 005523471-02, PDC Light Curves

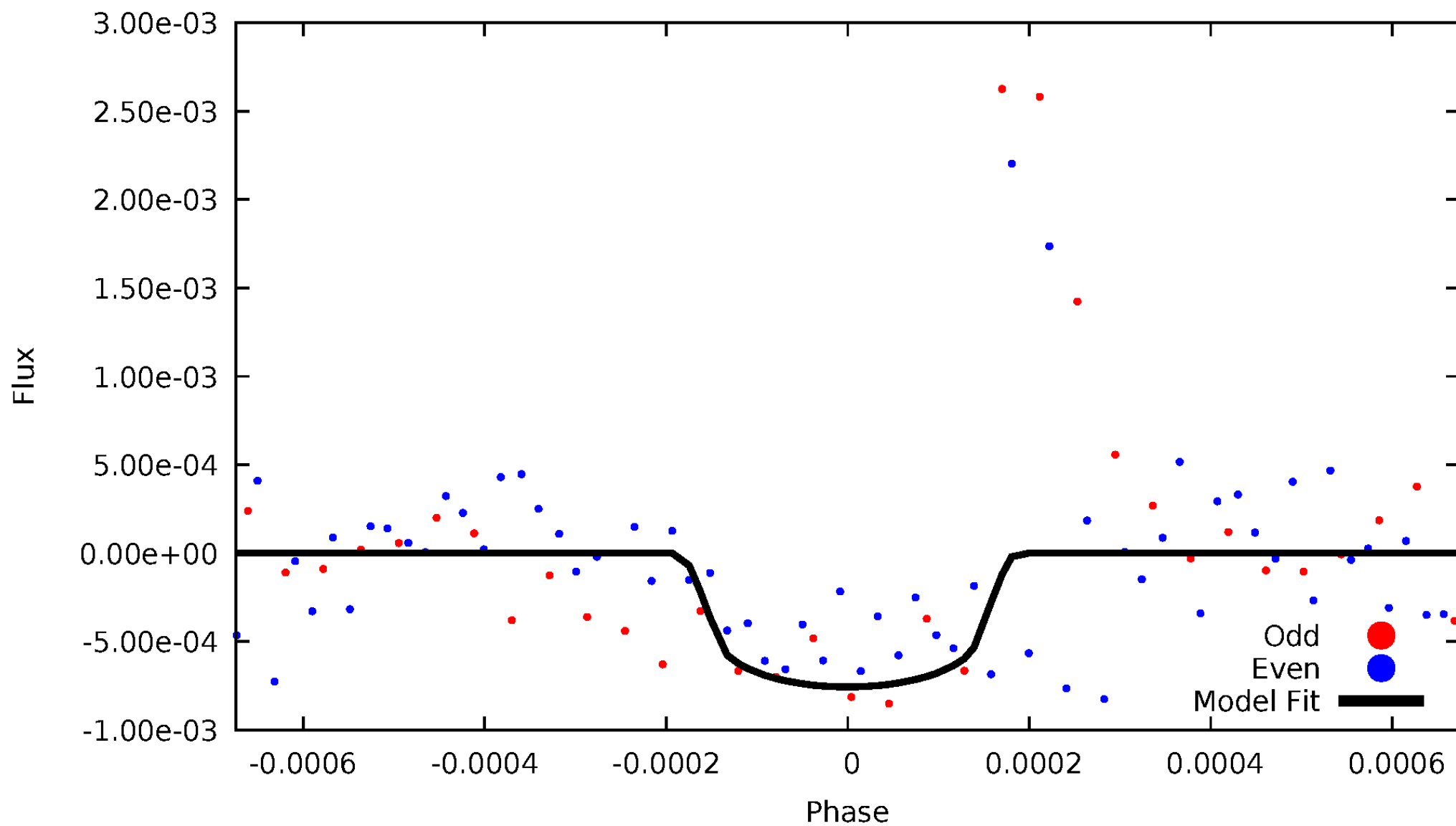


TCE 005523471-02



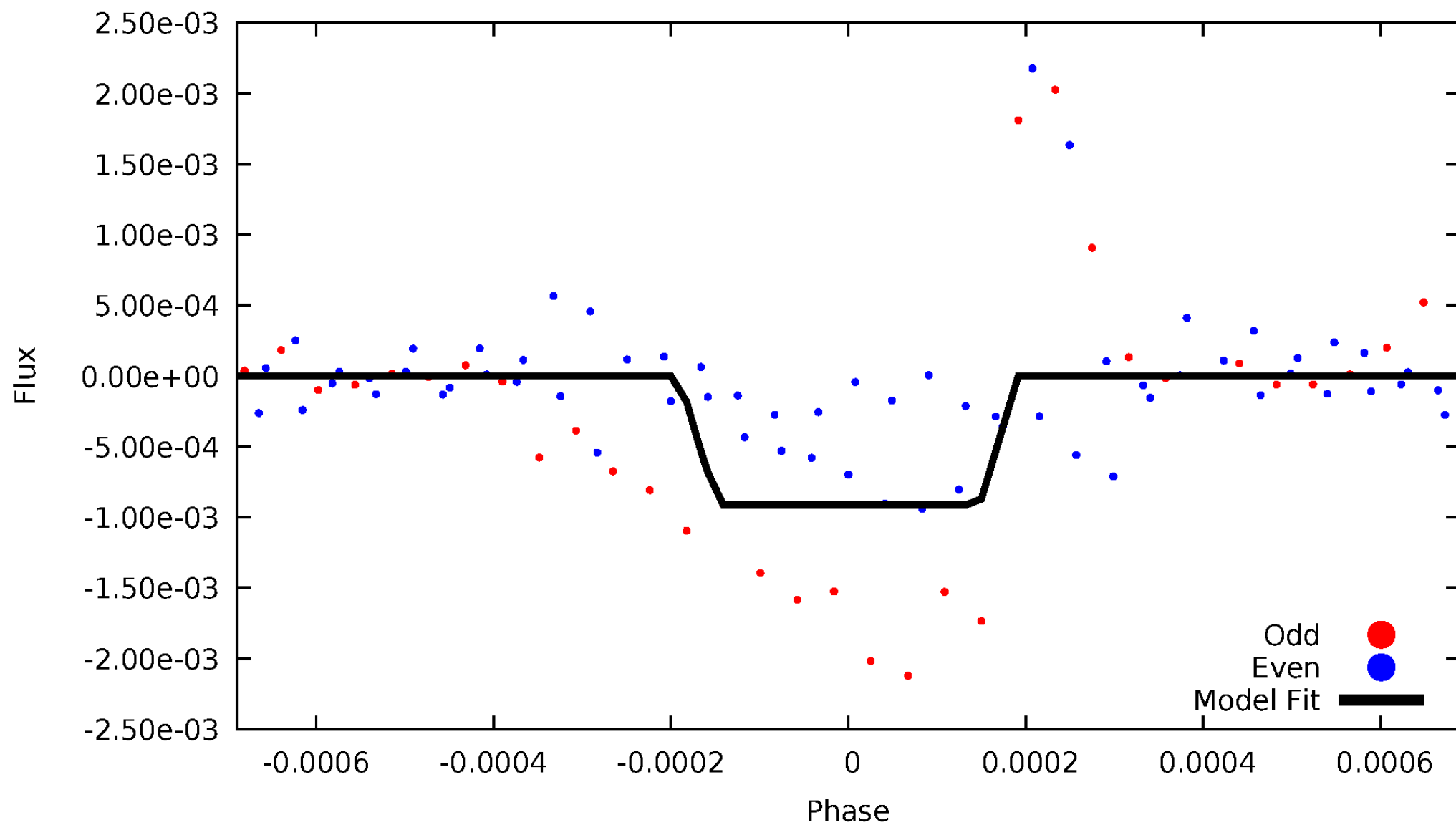
DV Odd/Even

TCE 005523471-02



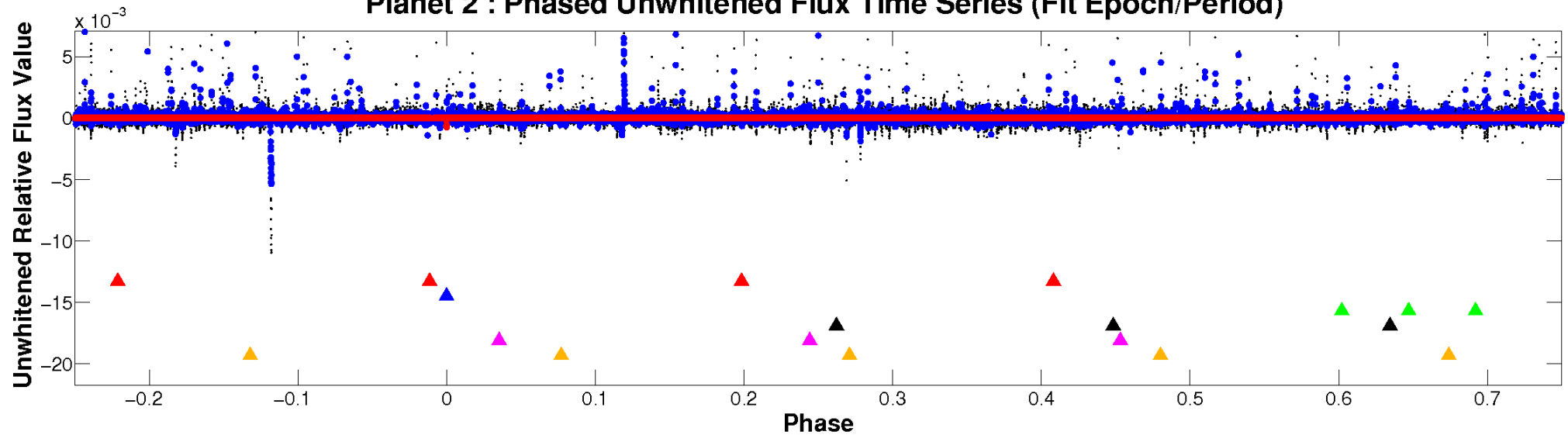
ALT Odd/Even

TCE 005523471-02

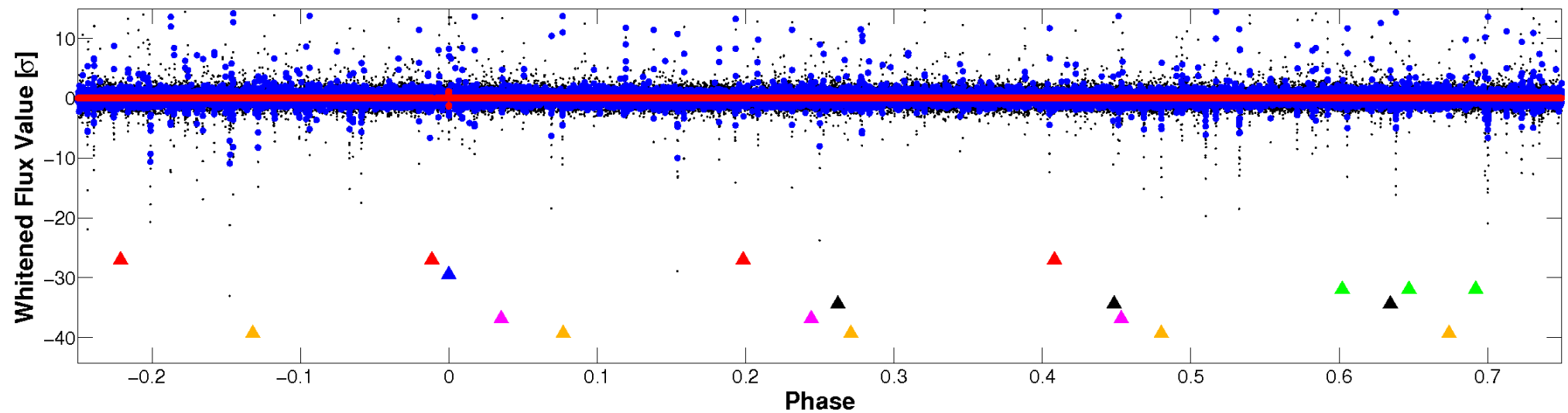


Non-Whitened Vs. Whitened Light Curve

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

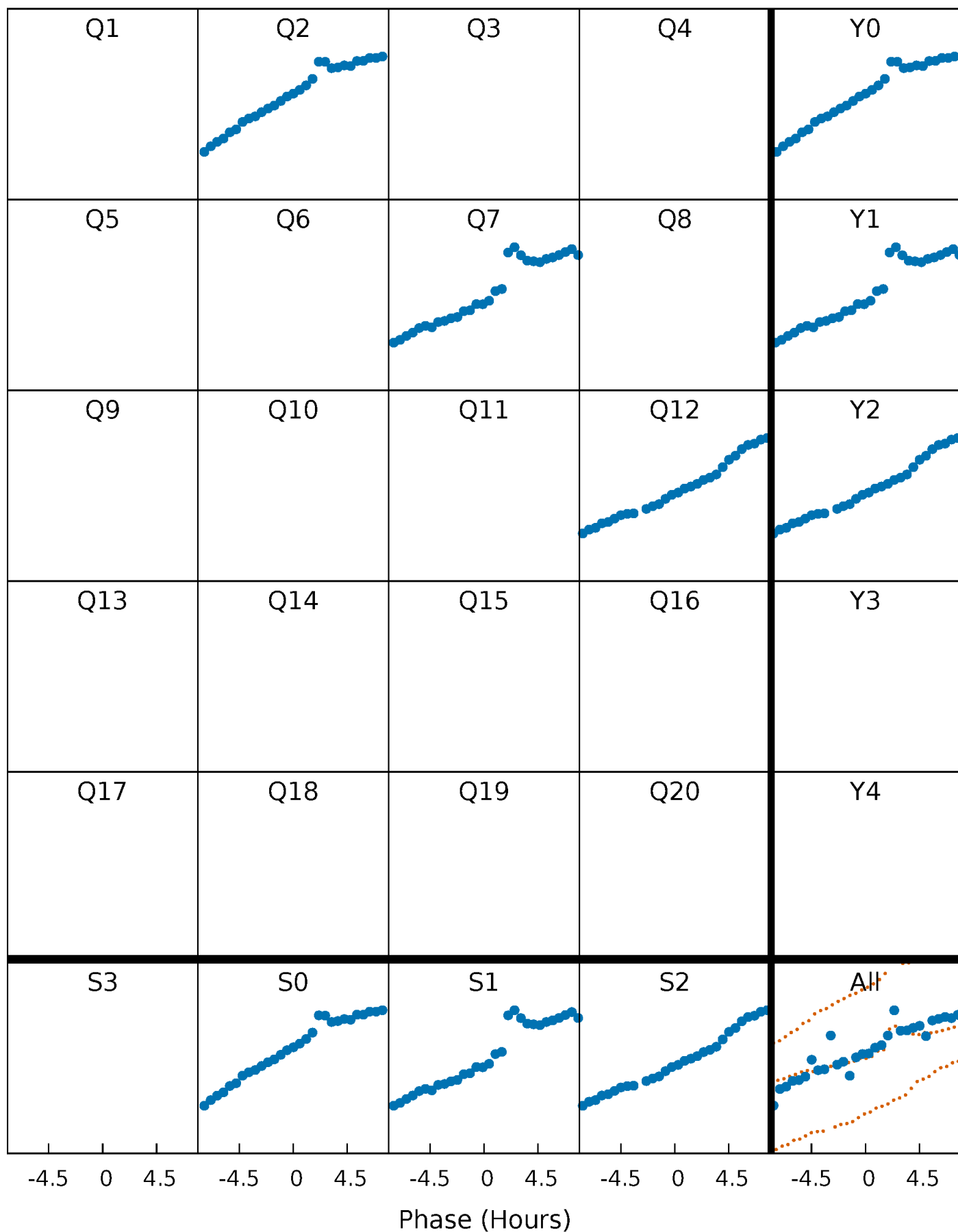


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



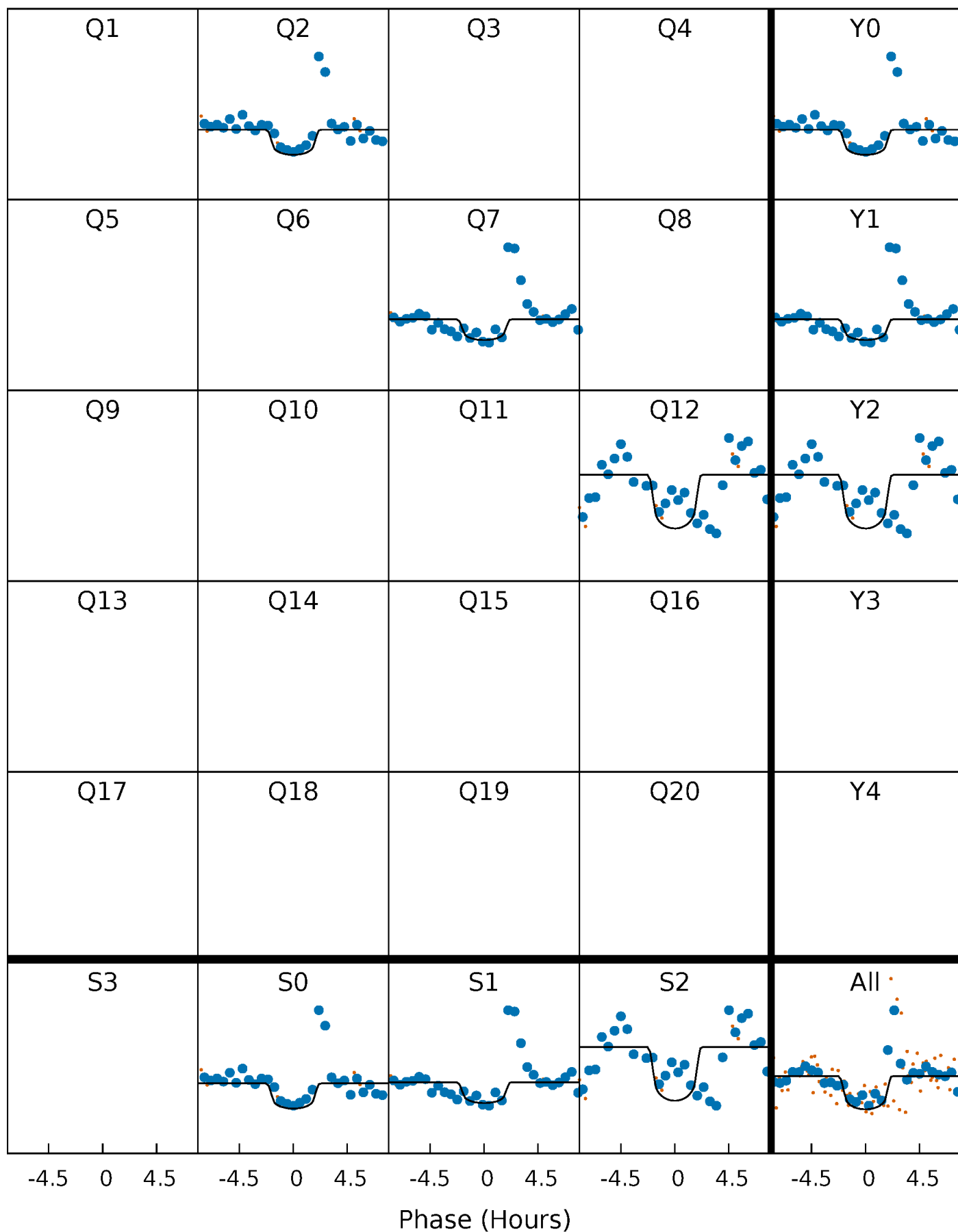
PDC Quarter-Phased Transit Curves

TCE 005523471-02 P=491.737712 Days $T_0=173.661557$ (BKJD)



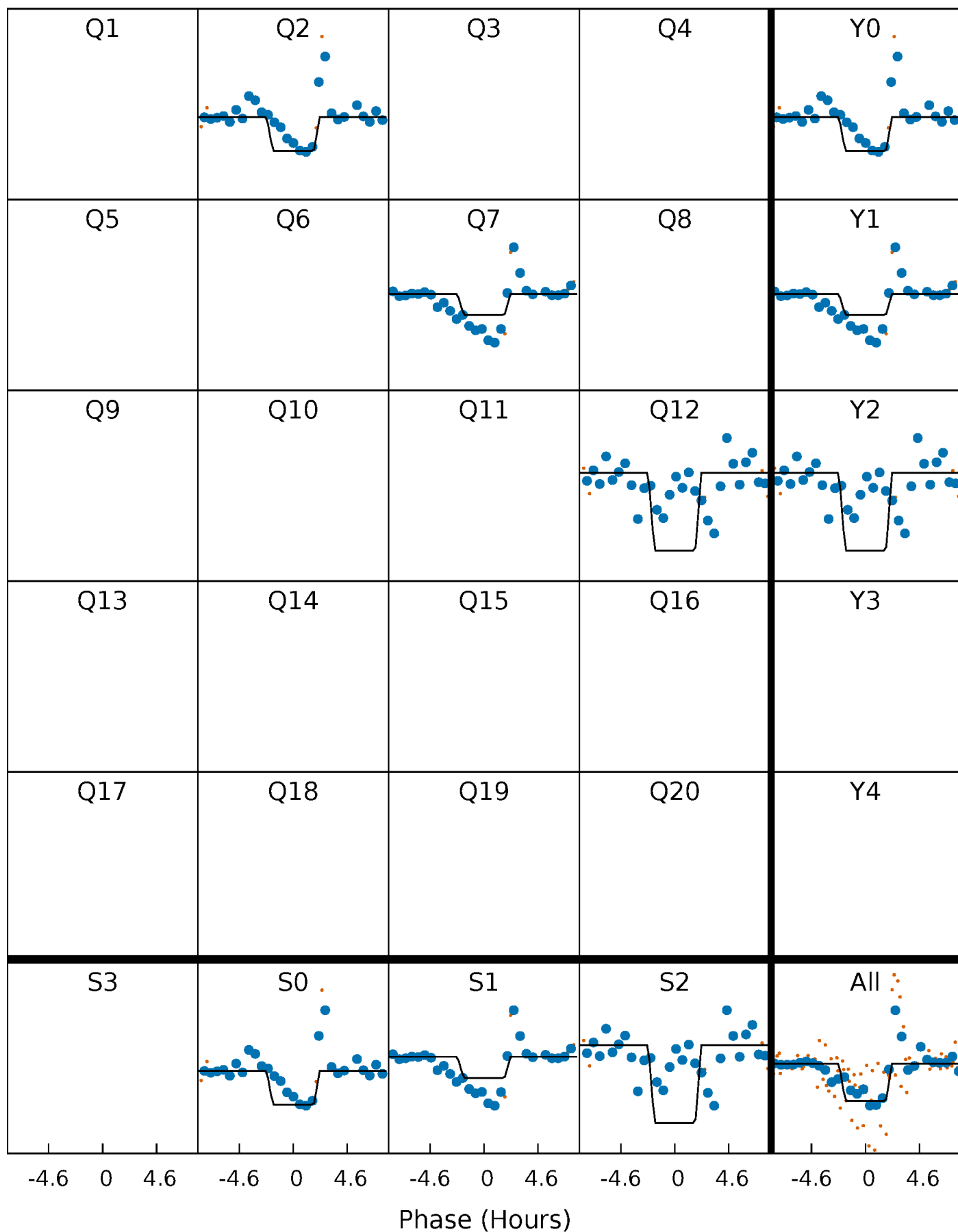
DV Quarter-Phased Transit Curves

TCE 005523471-02 P=491.737712 Days $T_0=173.661557$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

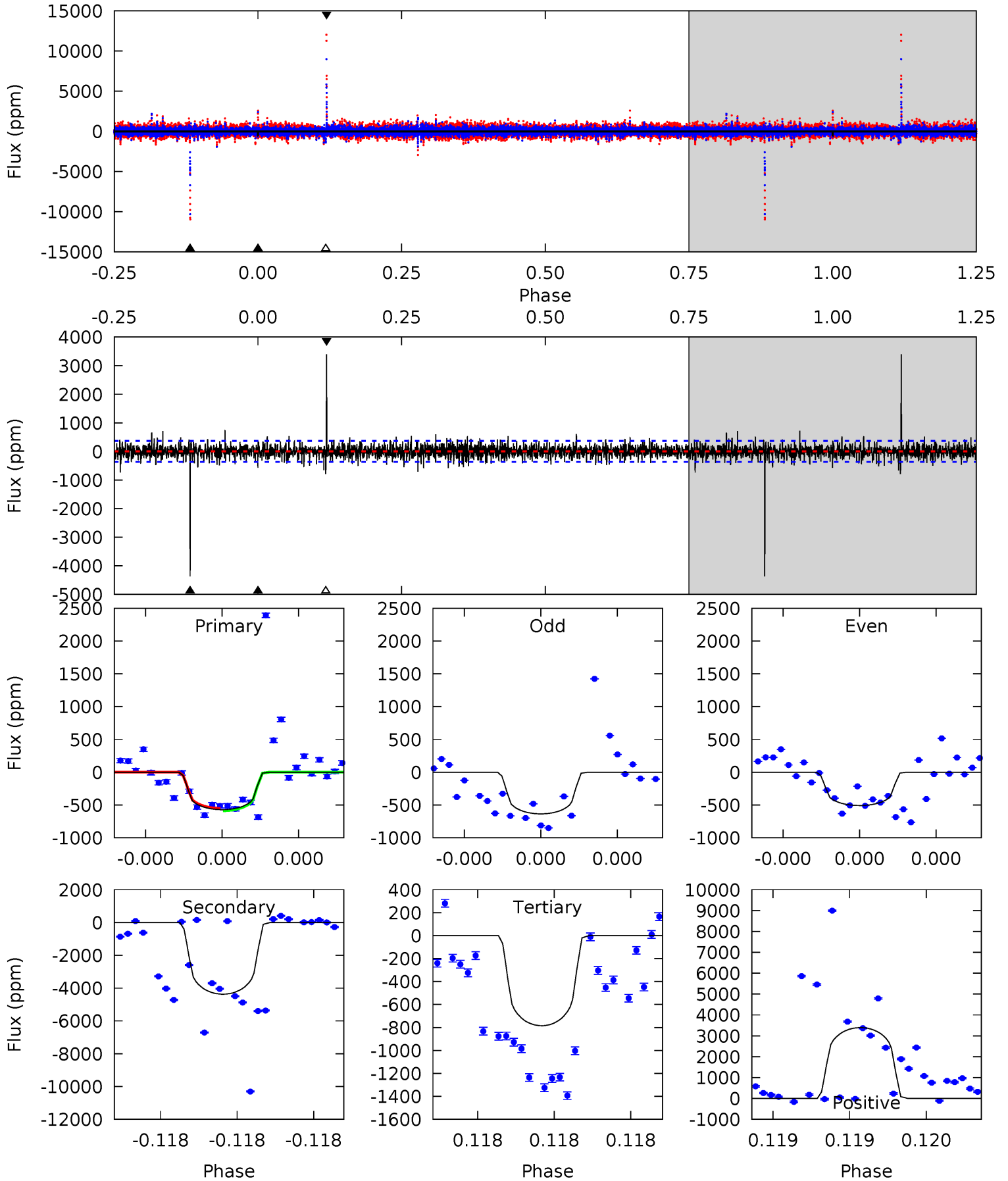
TCE 005523471-02 P=491.740433 Days $T_0=173.648210$ (BKJD)



DV Model-Shift Uniqueness Test

005523471-02, P = 491.737712 Days, E = 173.661557 Days

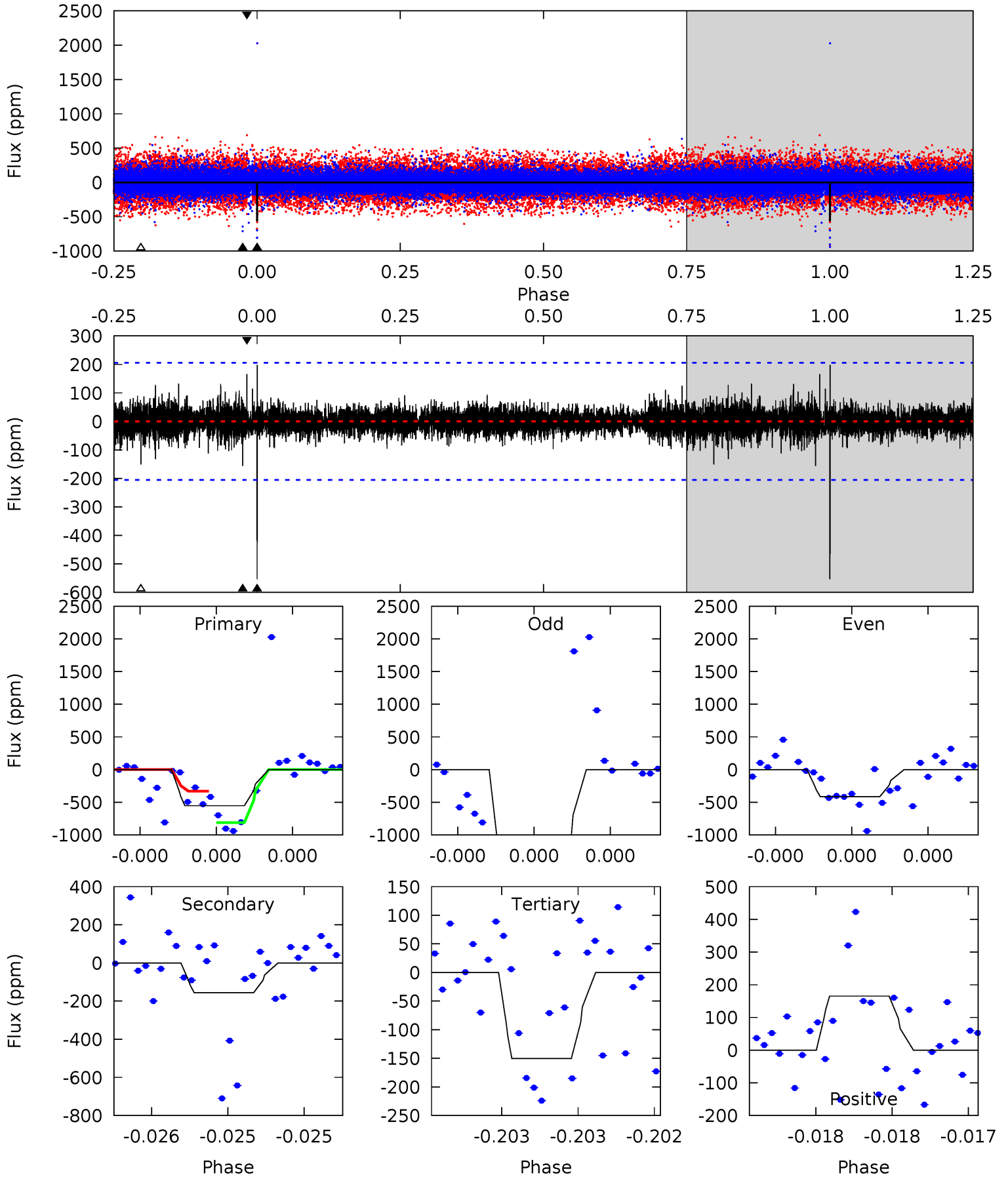
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.77	67.1	12.1	52.1	5.64	3.58	2.40	-3.28	-43.3	55.1	15.0	0.79	1.00	0.44	0.26



Alt Model-Shift Uniqueness Test

005523471-02, P = 491.740433 Days, E = 173.648210 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	4.27	4.12	4.54	5.64	3.58	0.66	11.0	10.6	0.15	-0.26	22.3	1.41	0.26	0



Stellar Parameters For KIC 005523471

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5596^{+167}_{-150}	$4.346^{+0.194}_{-0.237}$	$-0.240^{+0.300}_{-0.250}$	$1.004^{+0.353}_{-0.218}$	$0.815^{+0.127}_{-0.063}$	$1.134^{+1.103}_{-0.630}$
	+3%/-3%	+4%/-5%	+125%/-104%	+35%/-22%	+16%/-8%	+97%/-56%
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 005523471-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-4370 ± 65	$4.29^{+3.76}_{-2.92}$	324^{+30}_{-22}	7435^{+11576}_{-1912}	$169501^{+1520825}_{-118295}$
Alt.	-156 ± 36	$4.55^{+3.92}_{-2.96}$	324^{+28}_{-21}	3533^{+1785}_{-594}	5227^{+38988}_{-3758}

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

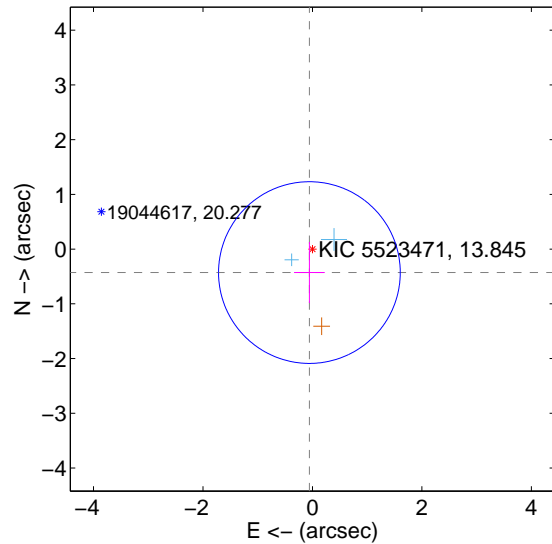
Supplemental centroid analysis for 005523471-02. Kepler magnitude: 13.85. Transit SNR 6.67

There are 2 quarters with good PRF difference image offsets

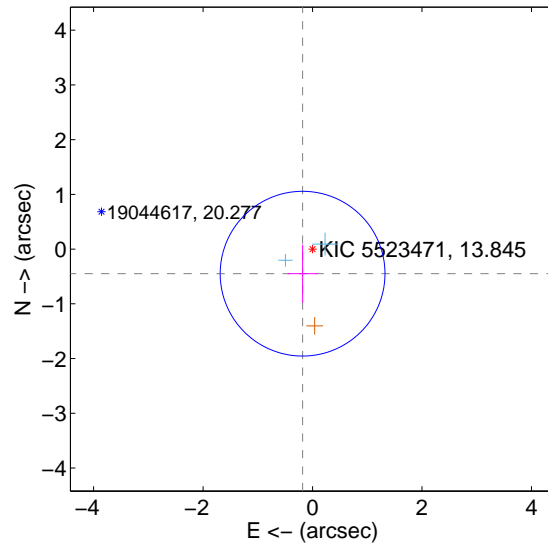
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.432 ± 0.553	0.78	0.055 ± 0.281	-0.429 ± 0.557
PRF-fit source offset from KIC position	0.484 ± 0.502	0.97	0.182 ± 0.274	-0.449 ± 0.530
photometric centroid source offset	0.58 ± 1.03	0.56	0.58 ± 1.03	-0.02 ± 1.03

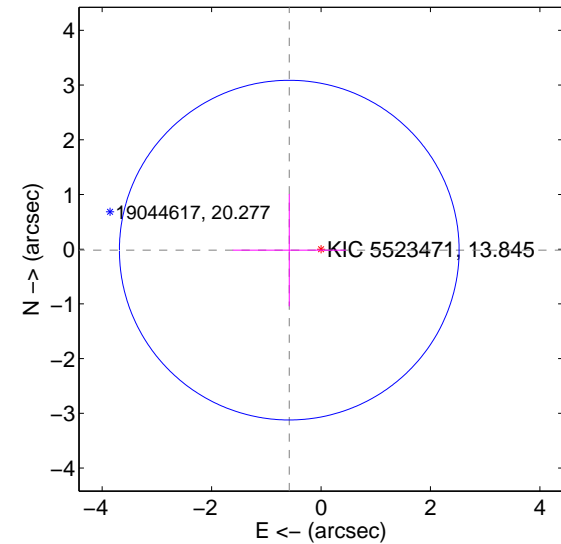
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

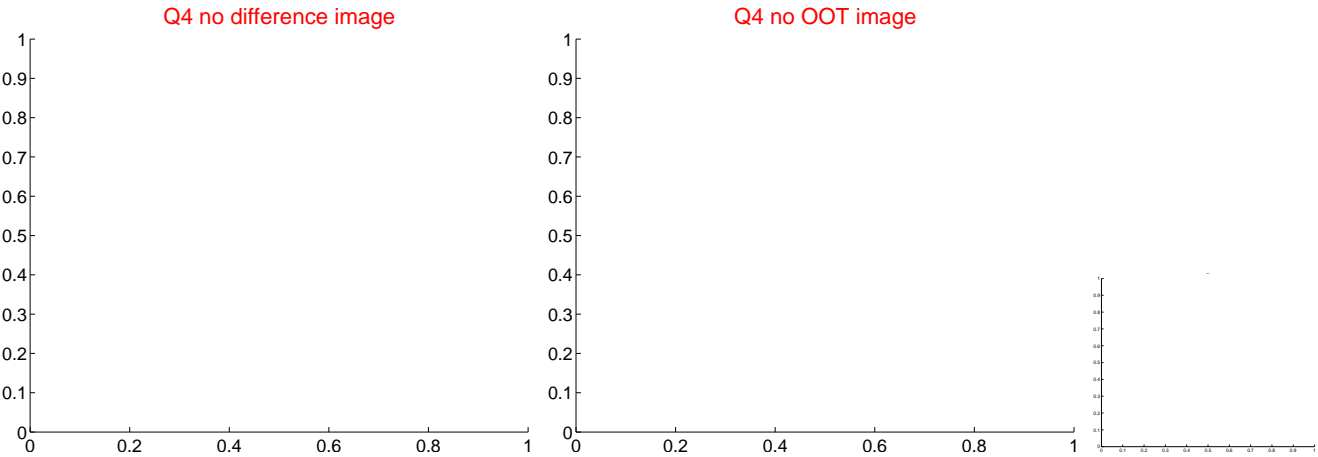
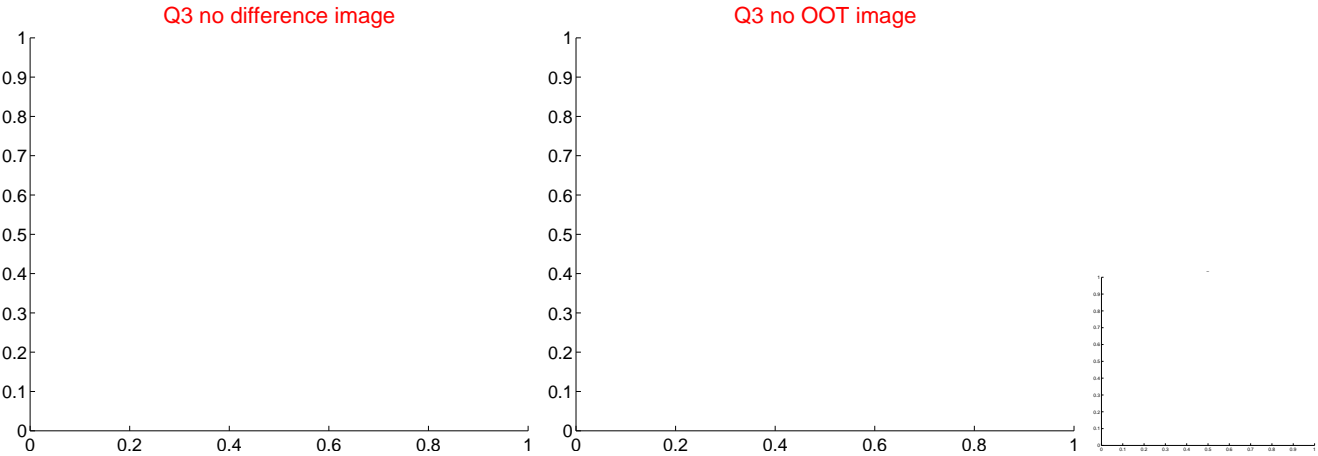
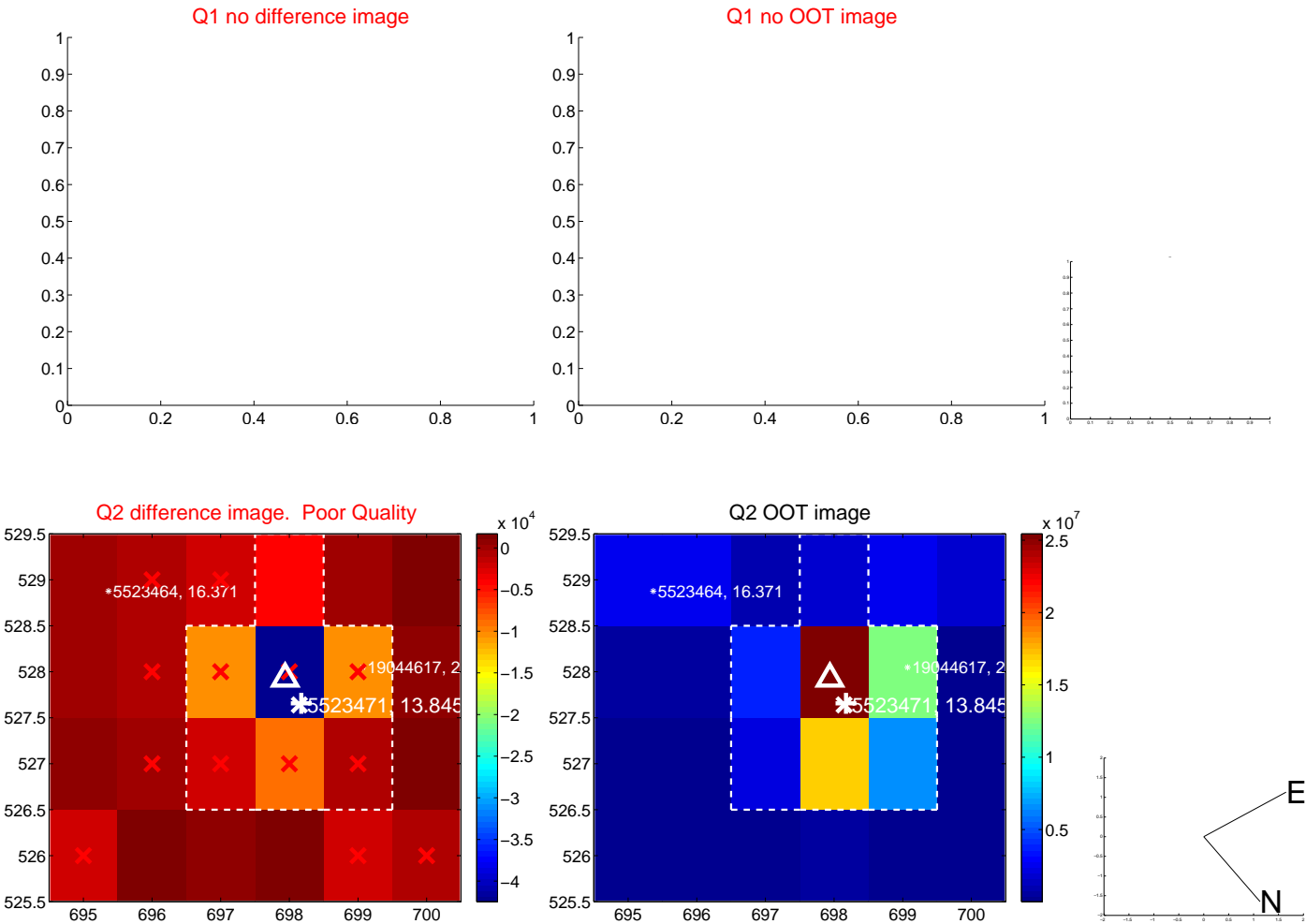


offset from photometric centroids

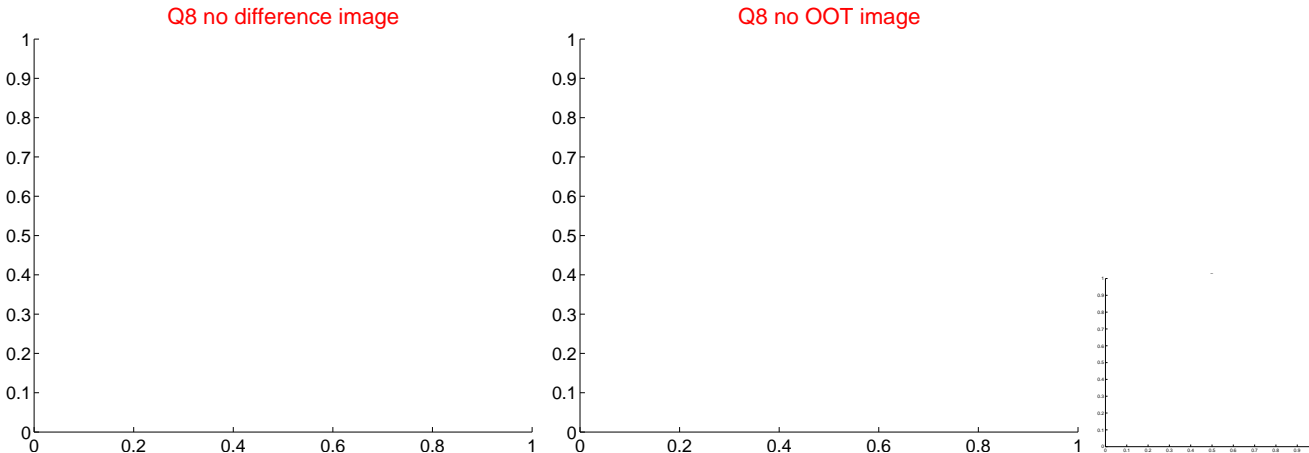
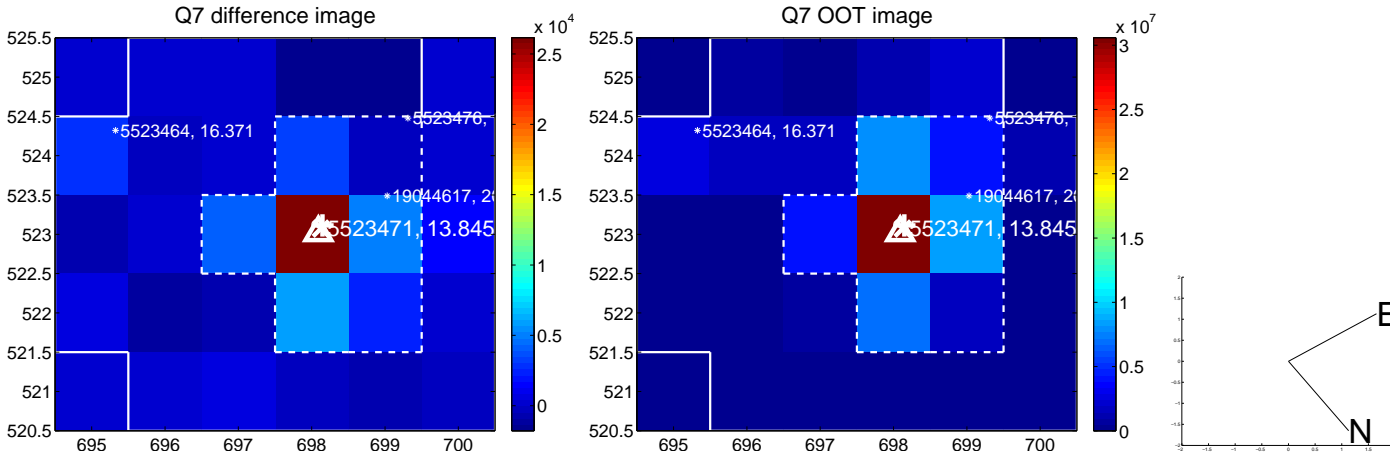
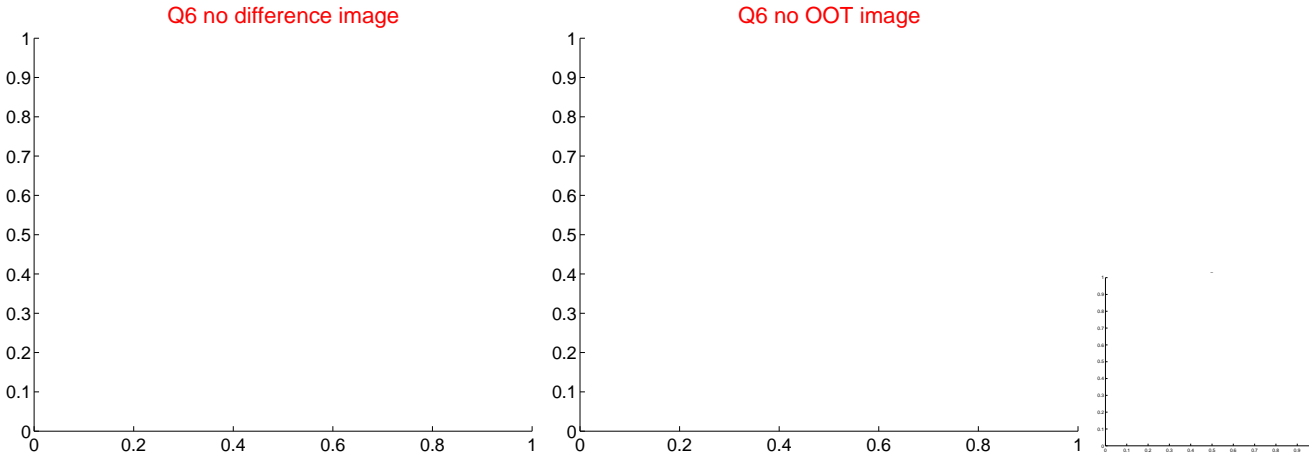
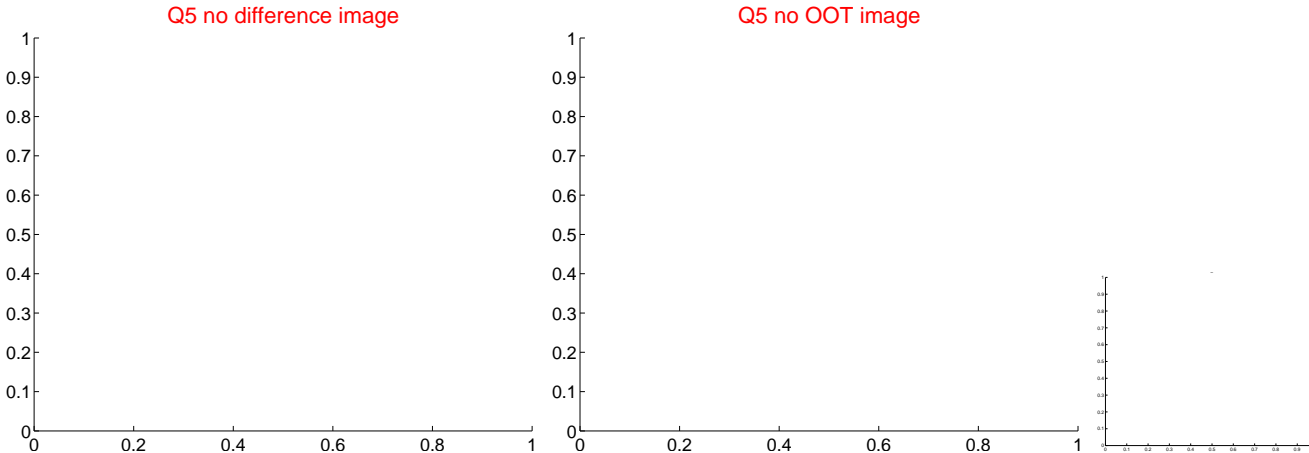


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

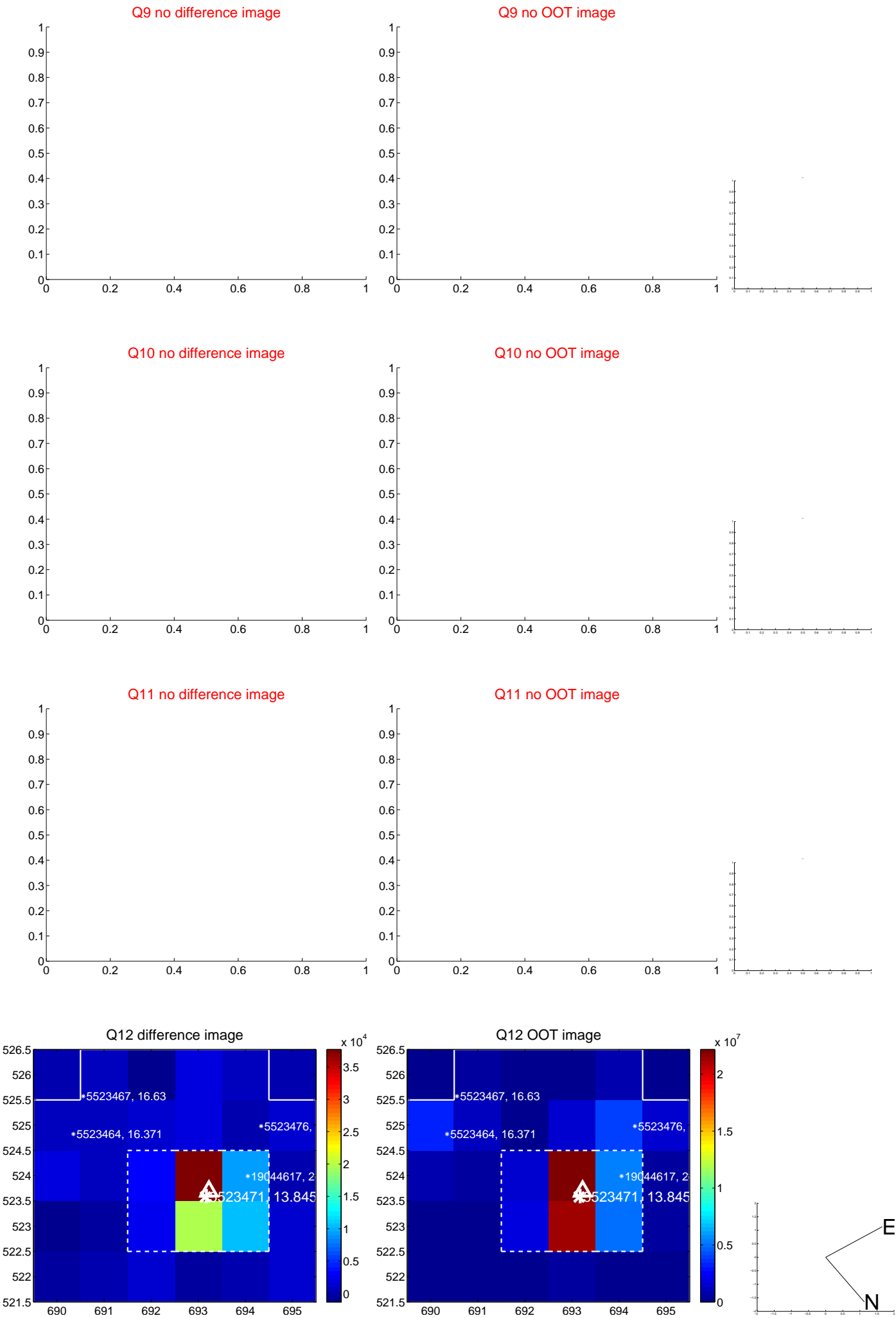
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



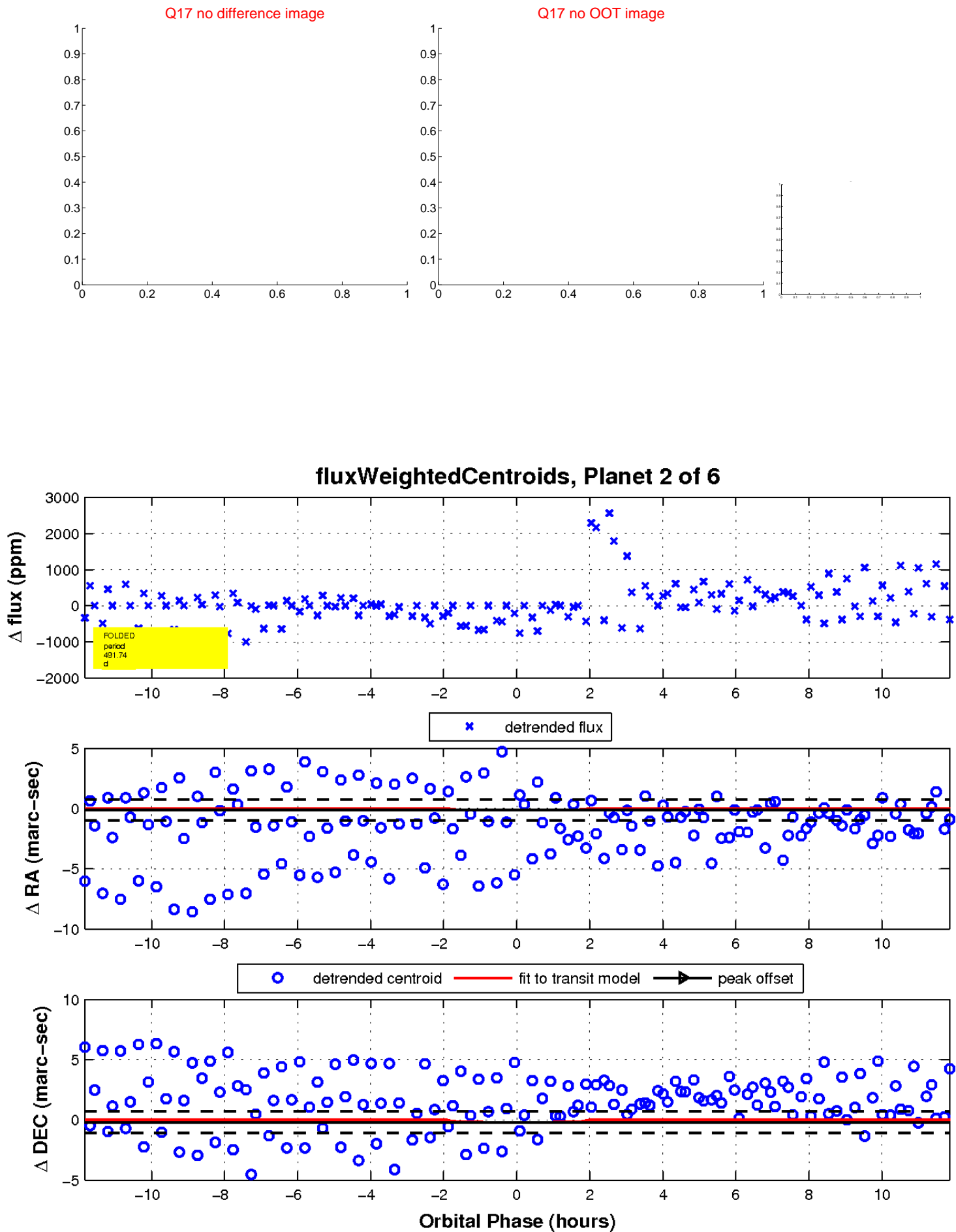
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

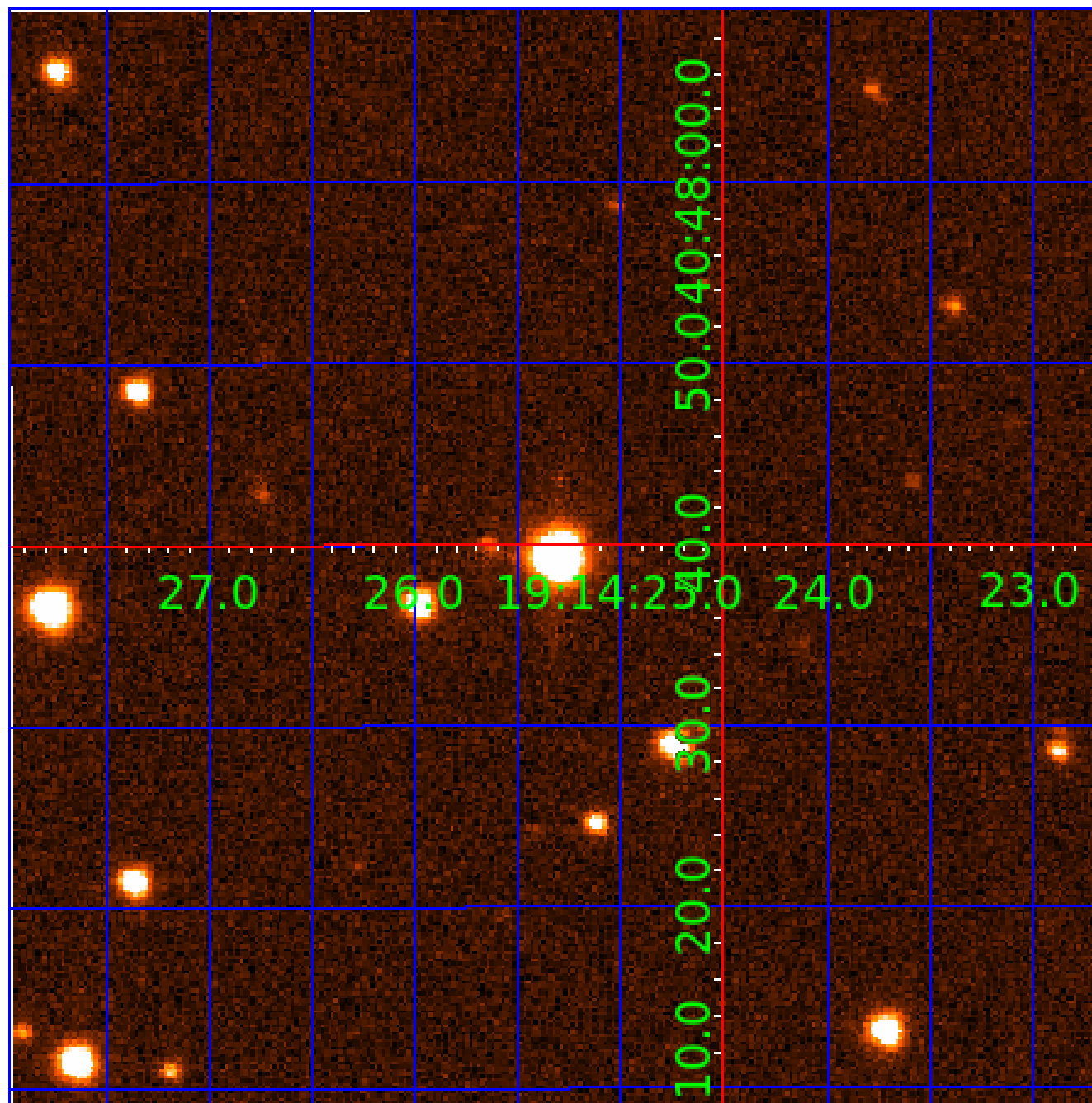


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005523471

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})
005523471-01	OBS	No	388.579412	374.376339	2617.6	24.314	16.8	7.5	1.00	5596	6.32	0.93
005523471-02	OBS	No	491.737712	173.661557	755.6	3.977	16.9	6.7	1.00	5596	2.92	0.68
005523471-03	OBS	No	513.847734	469.745205	678.4	4.736	12.3	7.4	1.00	5596	2.66	0.64
005523471-04	OBS	No	583.275803	302.596897	720.4	2.799	10.9	7.1	1.00	5596	2.88	0.54
005523471-05	OBS	No	594.465836	191.037325	661.8	4.494	12.2	5.2	1.00	5596	2.69	0.53
005523471-06	OBS	No	293.536988	409.770885	1145.5	3.913	10.2	9.6	1.00	5596	3.75	1.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005523471-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005523471-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005523471-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005523471-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005523471-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005523471-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

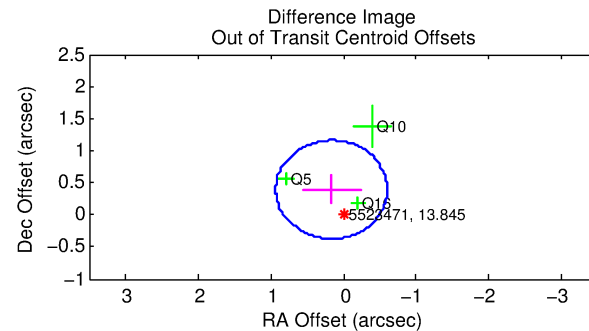
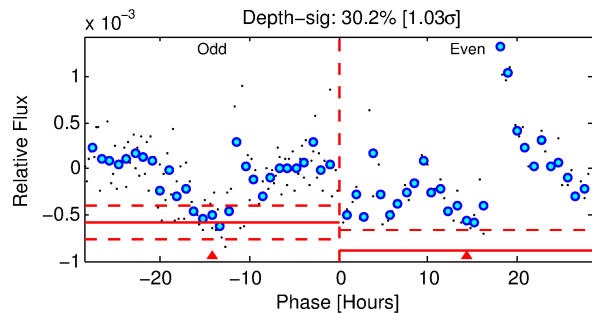
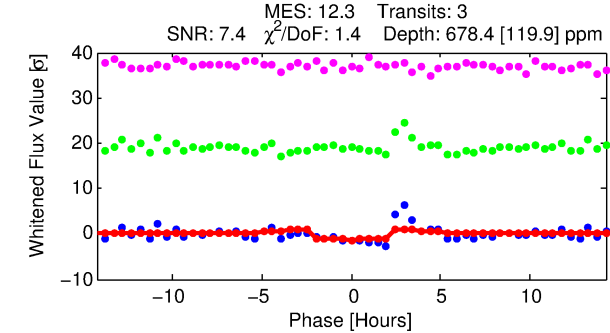
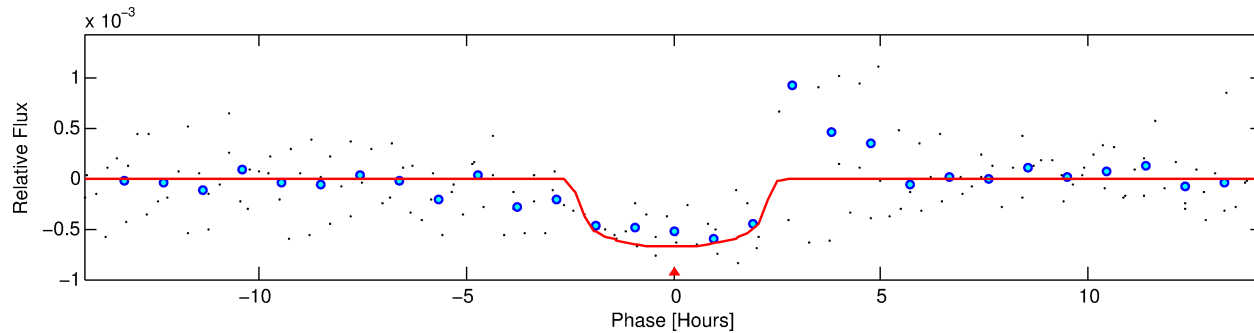
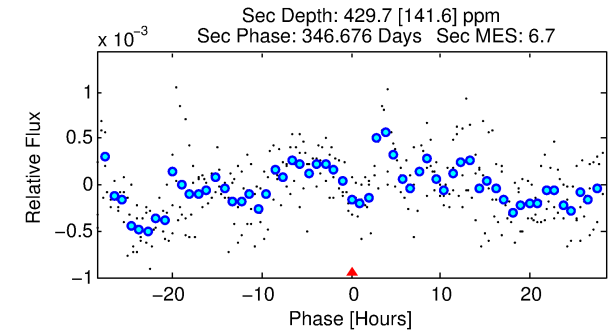
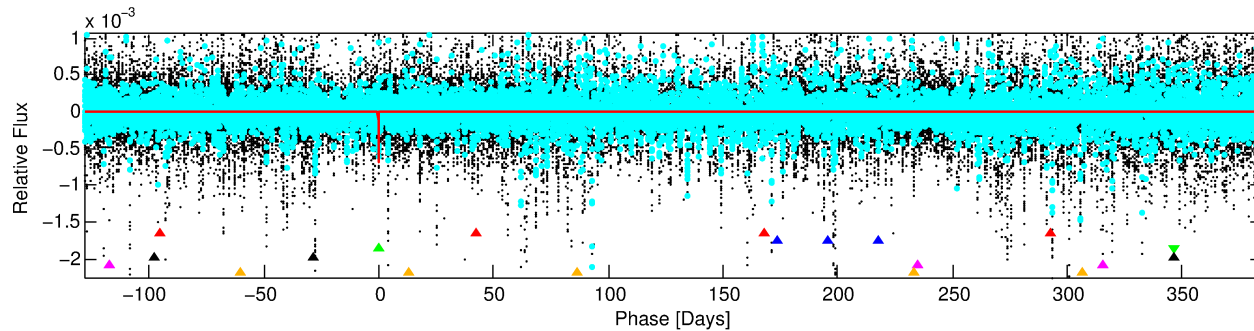
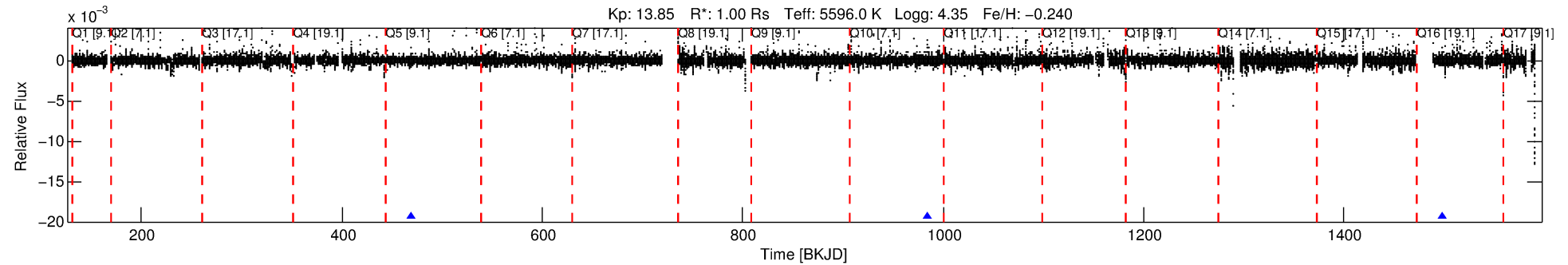
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005523471-03

No Significant Match Found

DV One-Page Summary

KIC: 5523471 Candidate: 3 of 6 Period: 513.848 d



DV Fit Results:

Period = 513.84773 [0.00688] d
Epoch = 469.7452 [0.0091] BKJD
Rp/R* = 0.0243 [0.0345]
a/R* = 749.10 [4511.61]
b = 0.48 [9.68]
Seff = 0.64 [0.29]
Teq = 228 [26] K
Rp = 2.66 [3.90] Re
a = 1.1733 [0.3481] AU
Ag = 45890.21 [132742.61] [0.35σ]
Teffp = 5168 [3698] K [1.34σ]

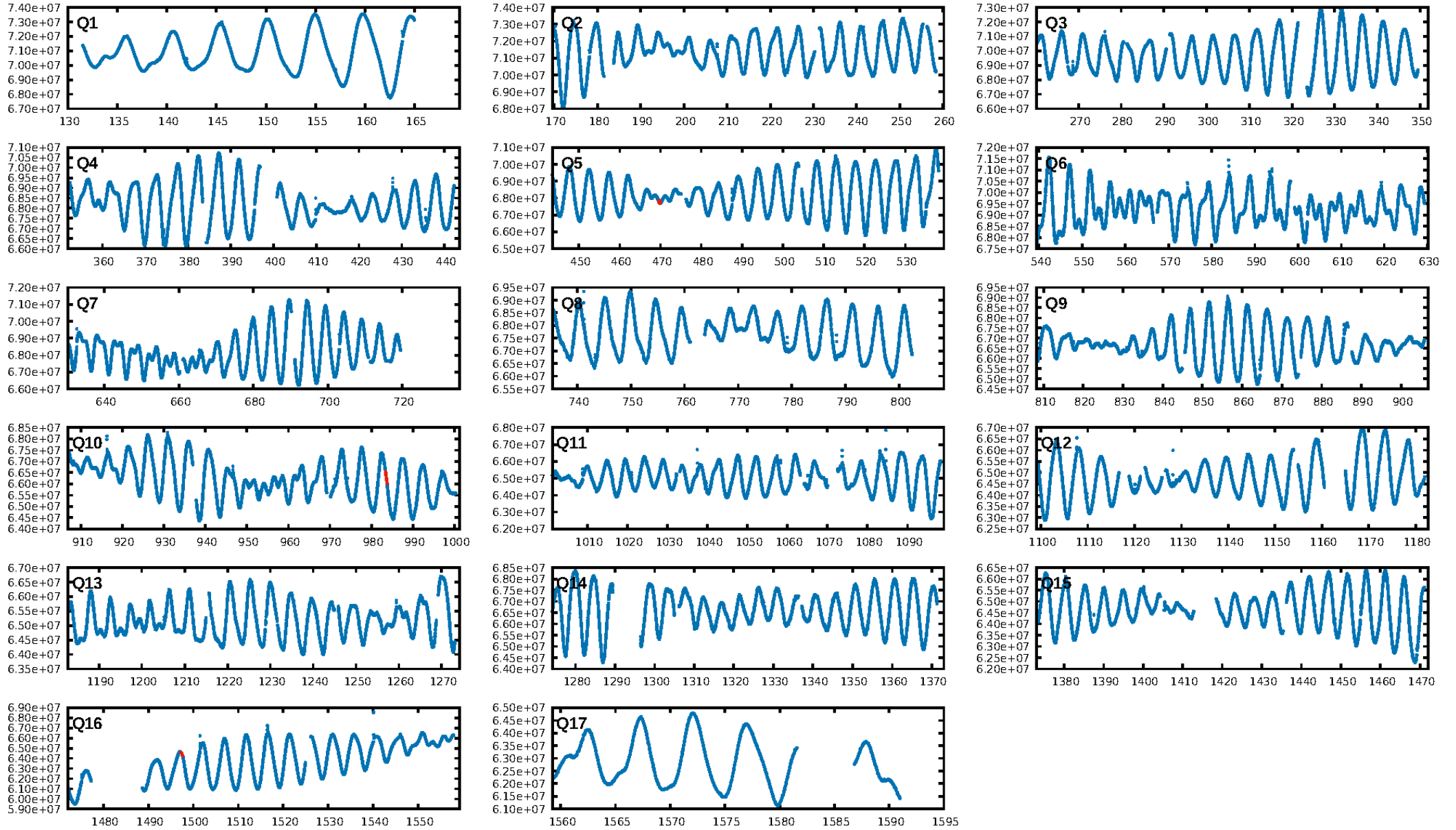
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [85.81σ]
LongPeriod-sig: 100.0% [302.90σ]
ModelChiSquare2-sig: 9.9%
ModelChiSquareGof-sig: 90.4%
Bootstrap-pfa: 5.10e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.1755
Centroid-sig: 8.9%
Centroid-so: 0.927 arcsec [0.95σ]
OotOffset-rm: 0.427 arcsec [1.67σ]
KicOffset-rm: 0.516 arcsec [1.62σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

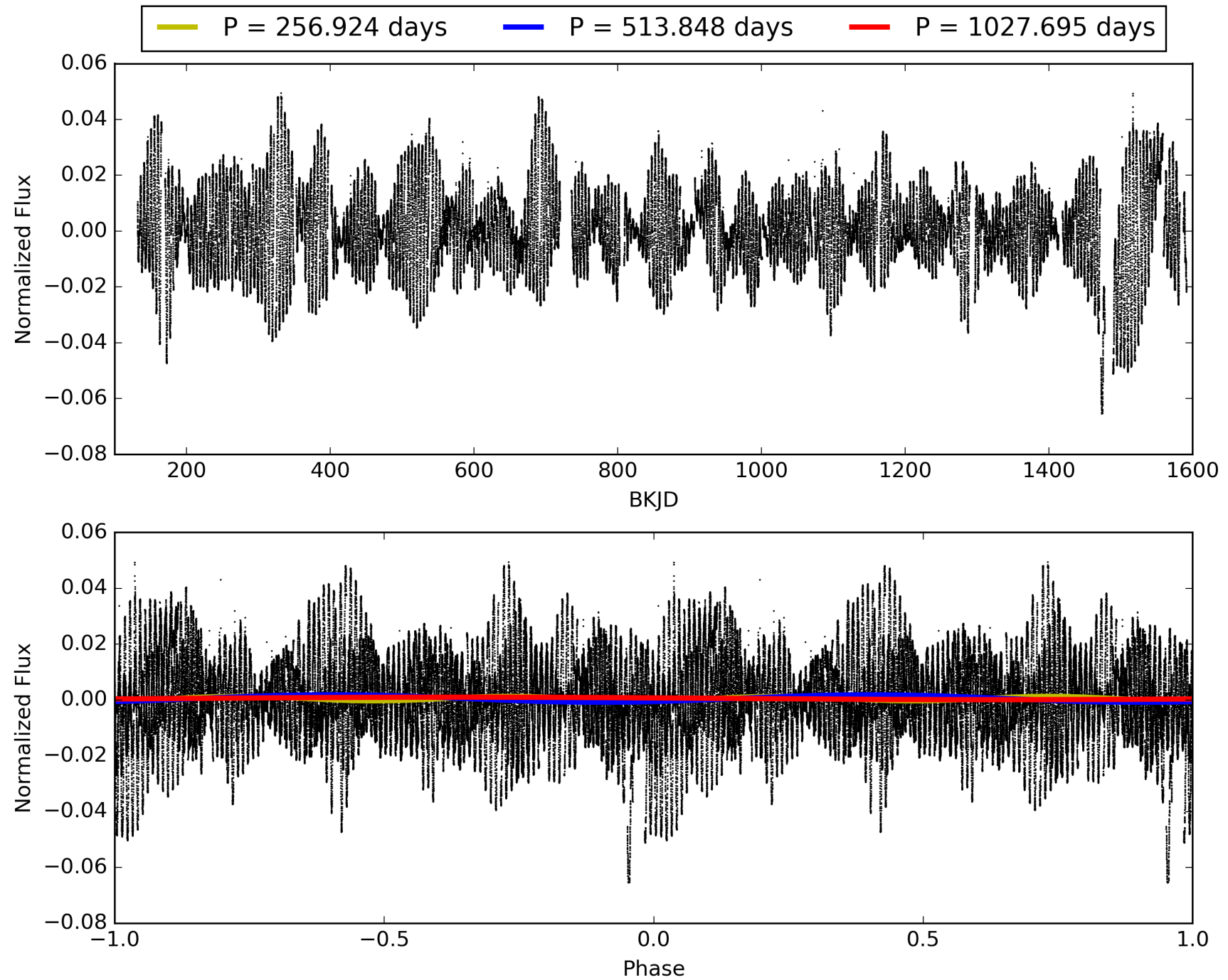
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:20:17 Z

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

TCE 005523471-03, PDC Light Curves

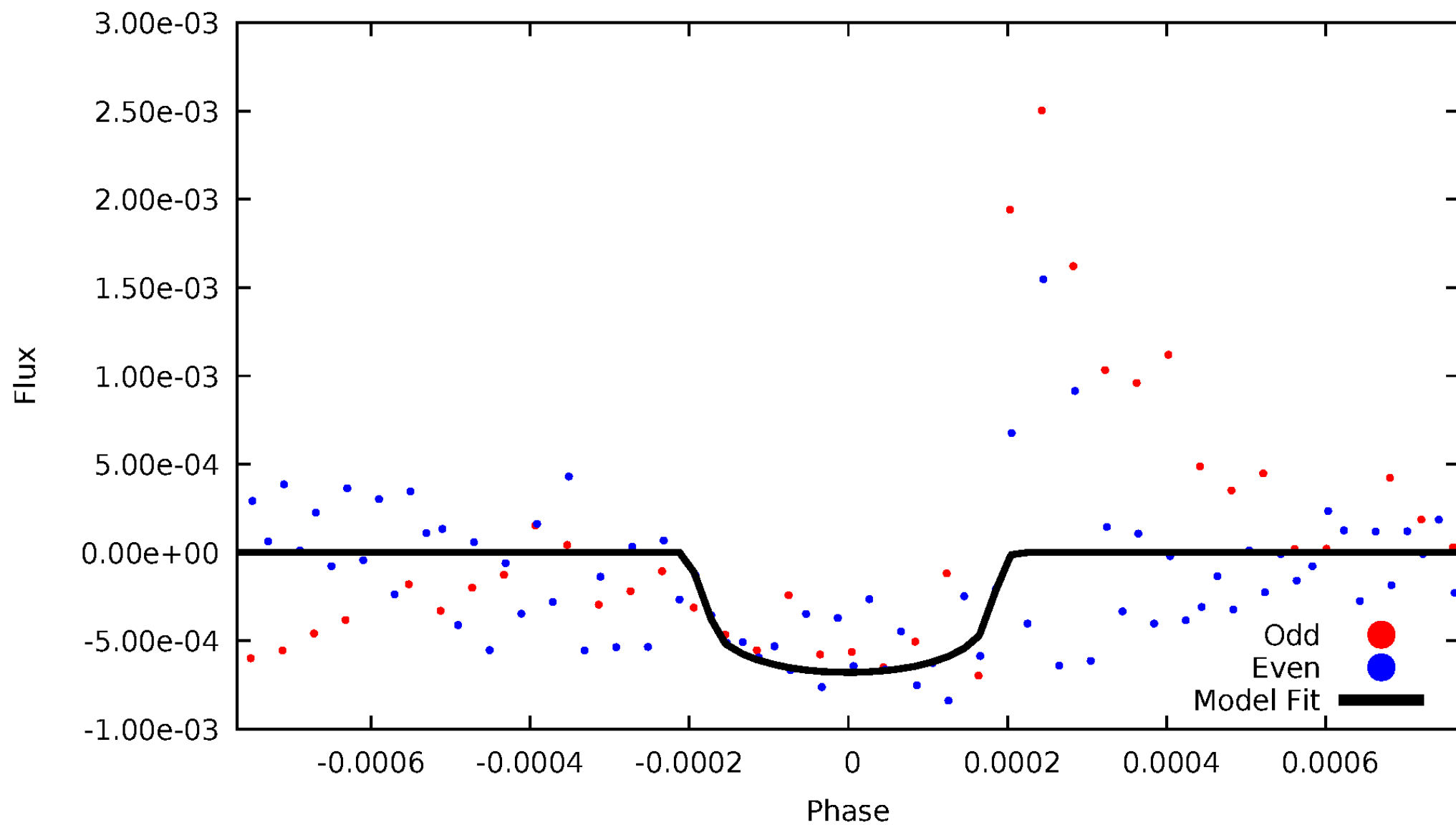


TCE 005523471-03



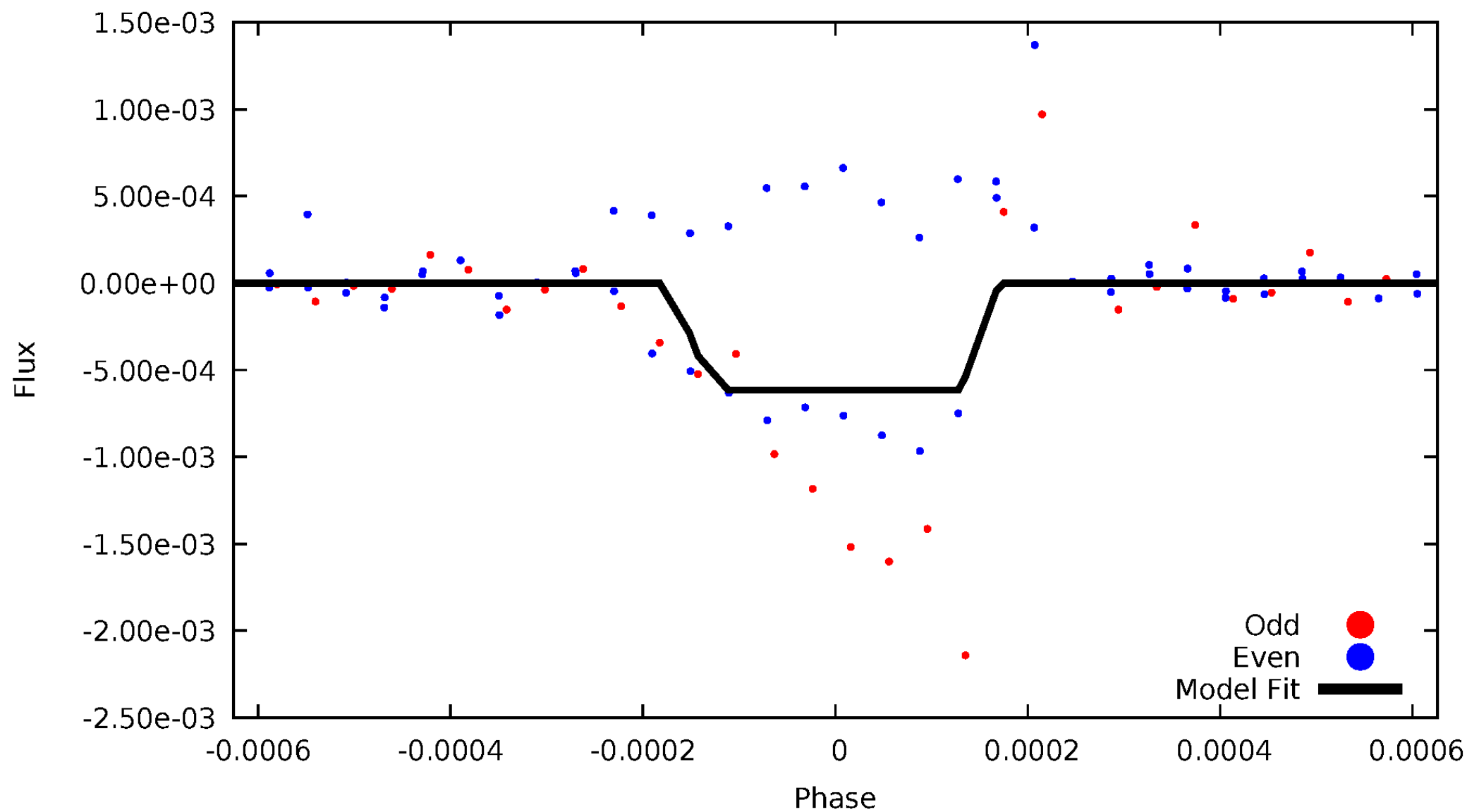
DV Odd/Even

TCE 005523471-03

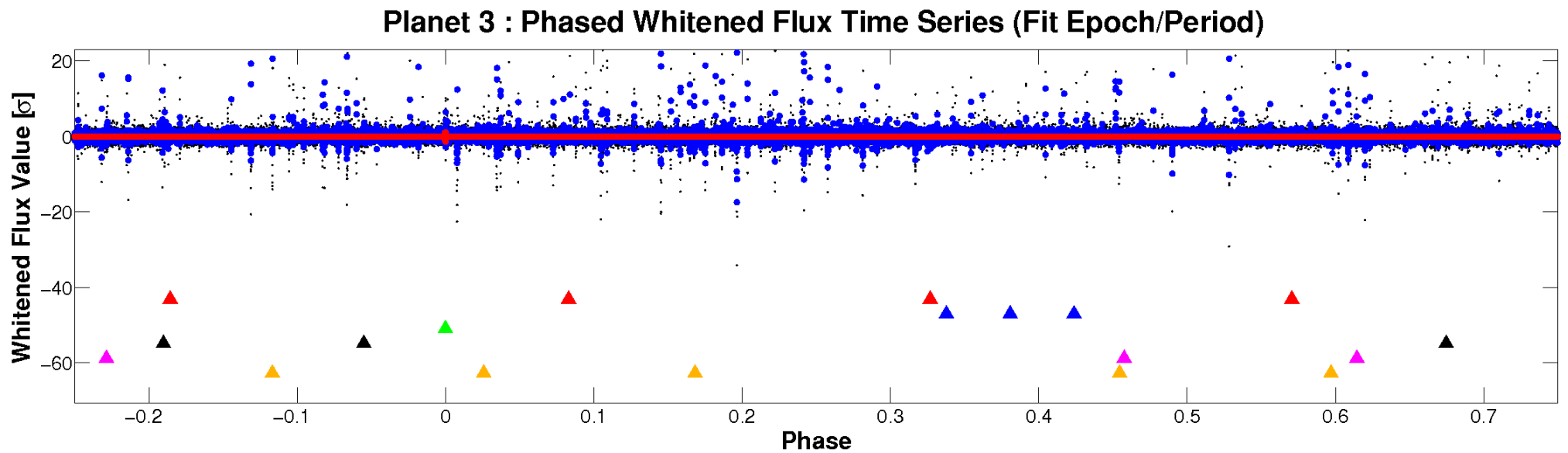
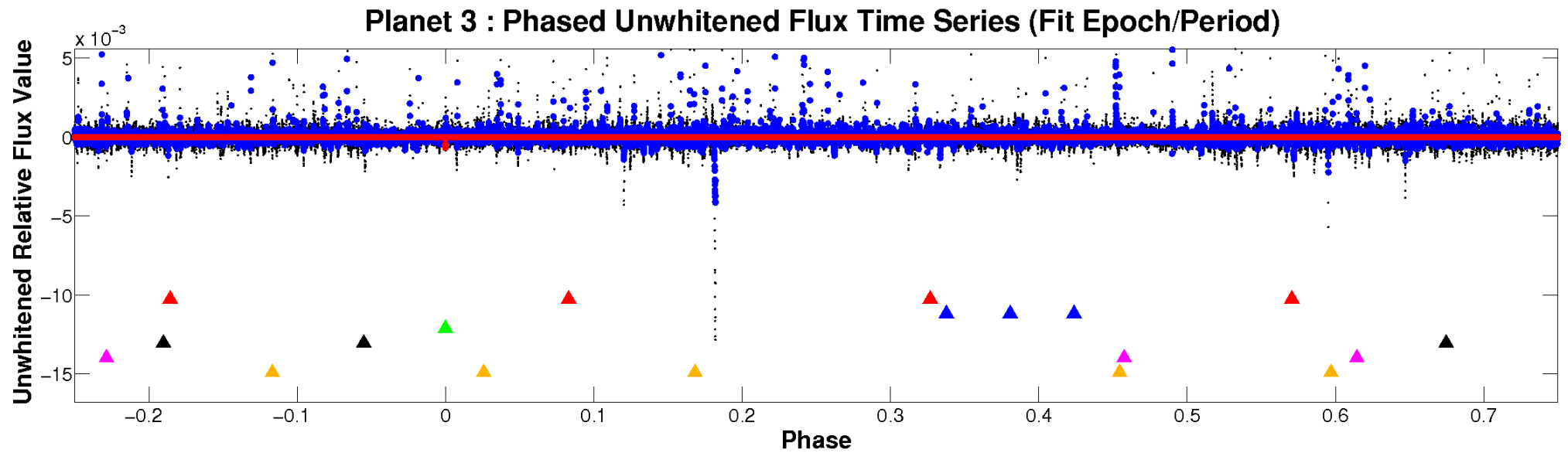


ALT Odd/Even

TCE 005523471-03

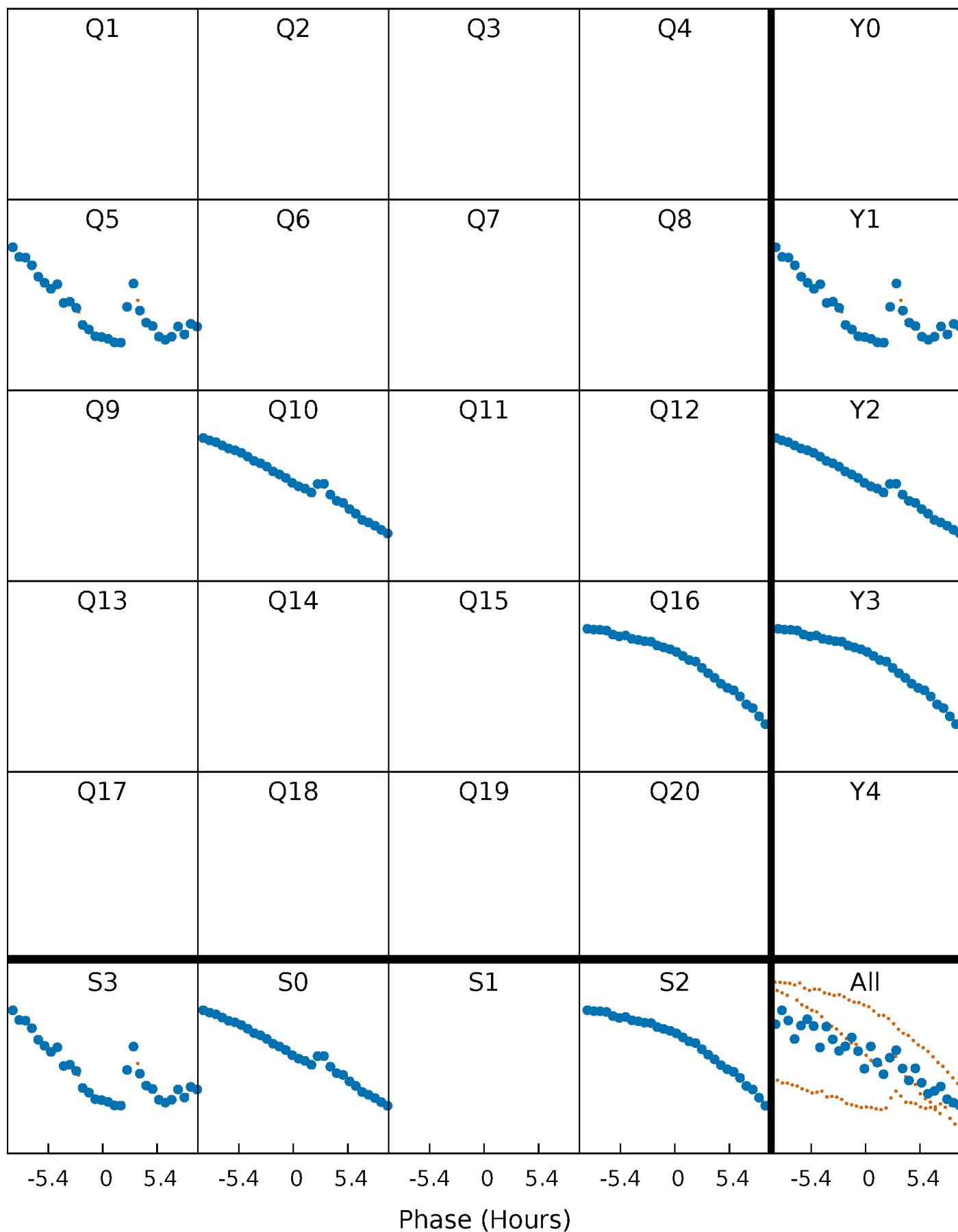


Non-Whitened Vs. Whitened Light Curve



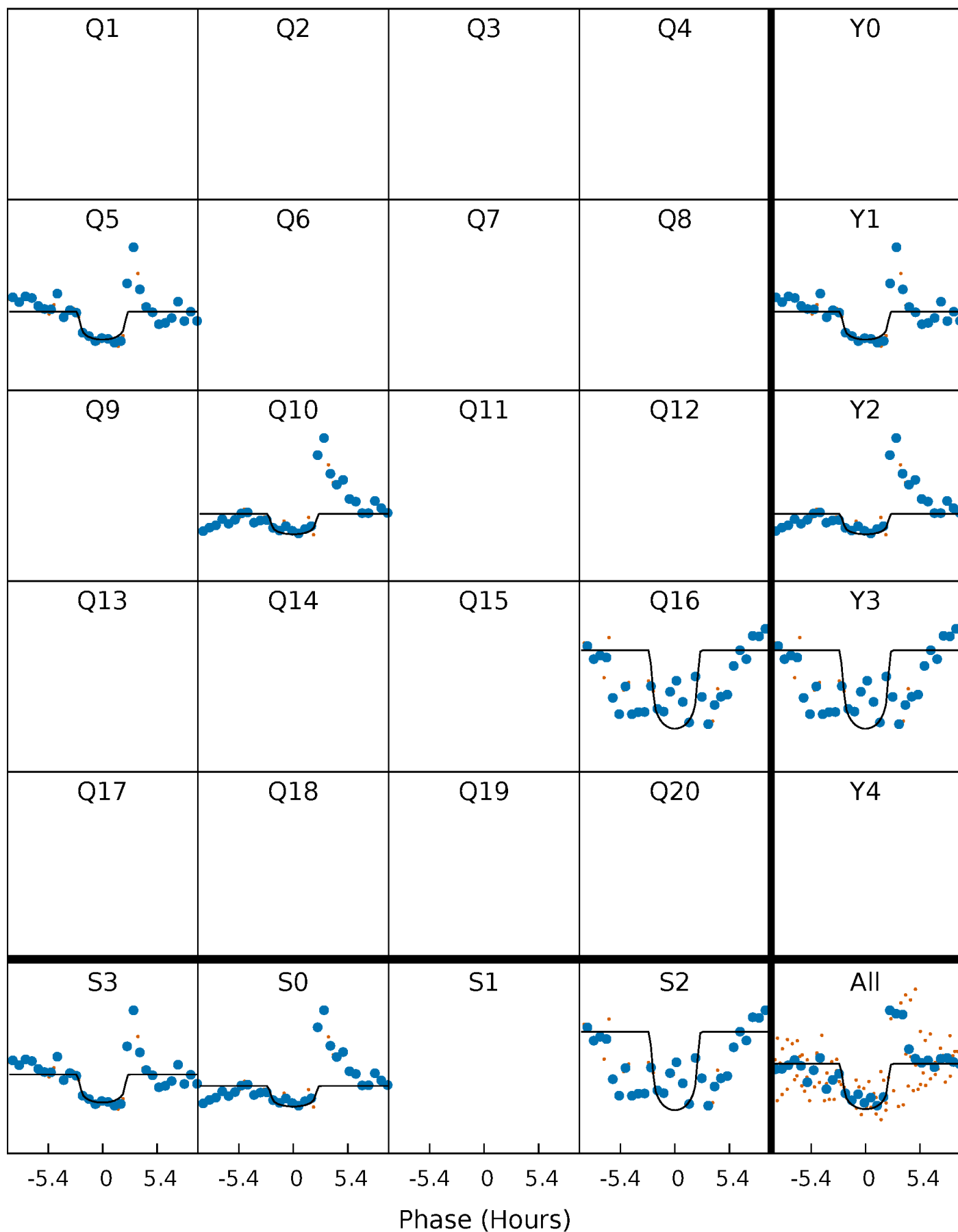
PDC Quarter-Phased Transit Curves

TCE 005523471-03 $P=513.847734$ Days $T_0=469.745205$ (BKJD)



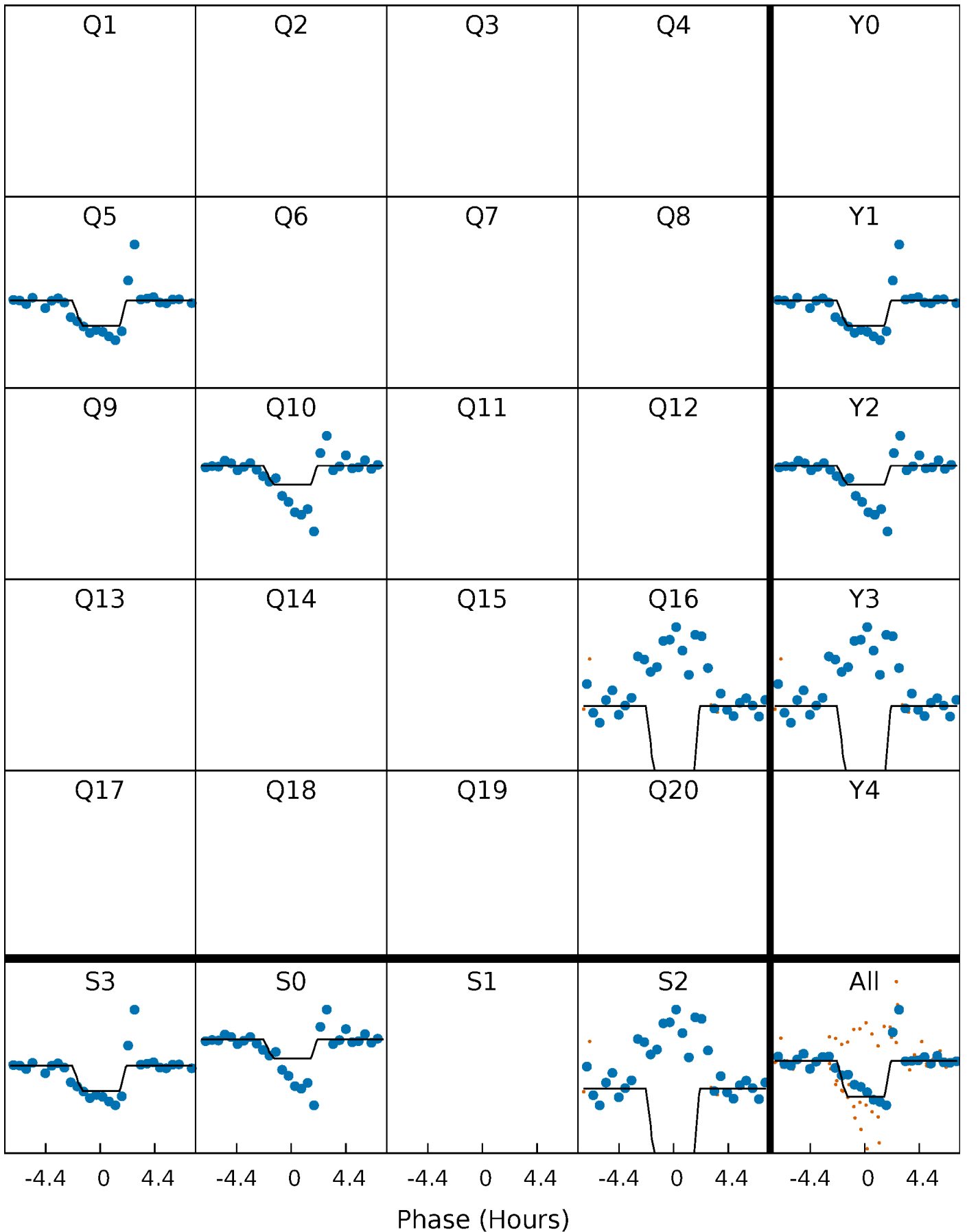
DV Quarter-Phased Transit Curves

TCE 005523471-03 $P=513.847734$ Days $T_0=469.745205$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

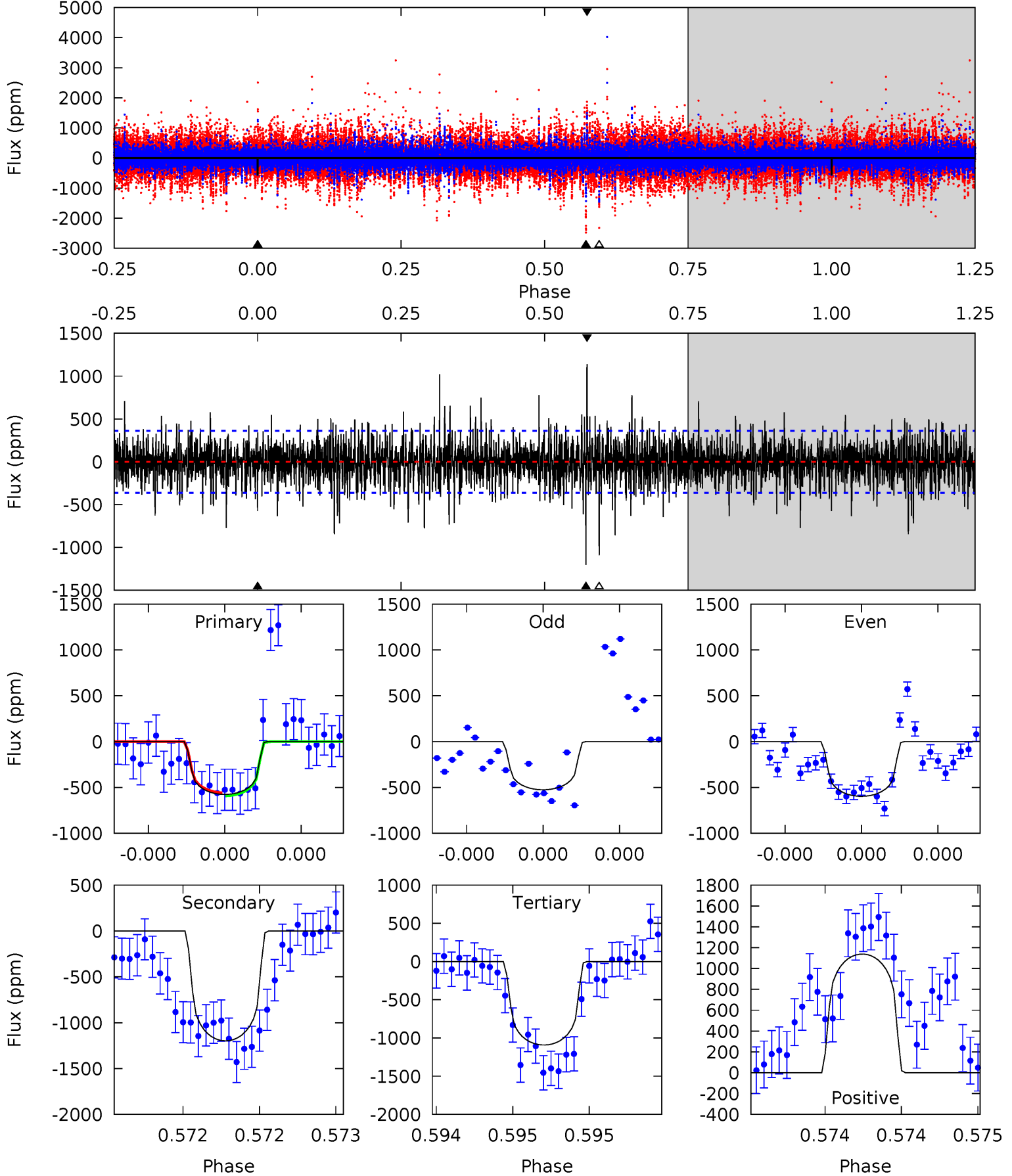
TCE 005523471-03 $P=513.842733$ Days $T_0=469.764707$ (BKJD)



DV Model-Shift Uniqueness Test

005523471-03, P = 513.847734 Days, E = 469.745205 Days

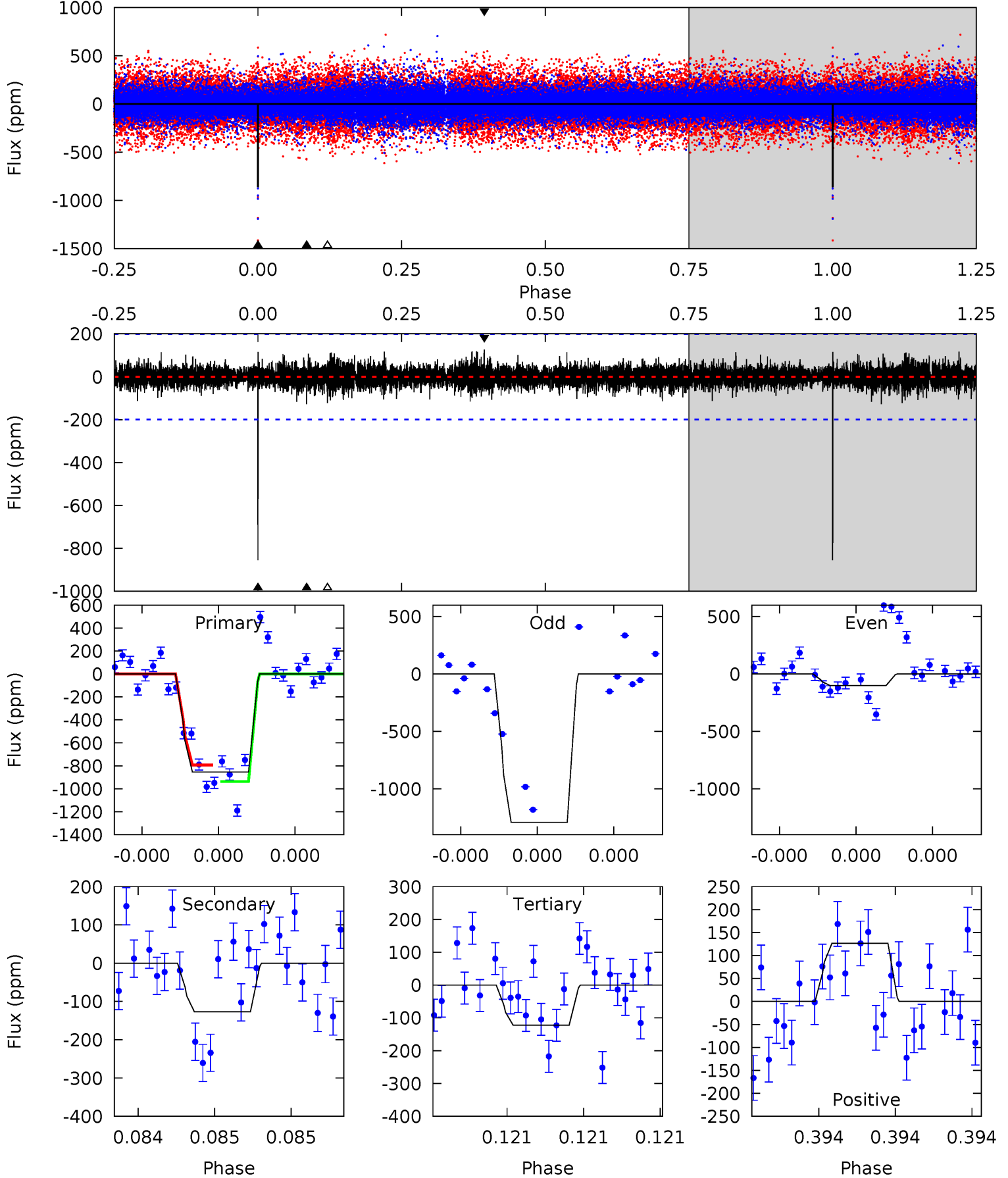
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.93	18.6	16.9	17.7	5.61	3.54	2.75	-8.00	-8.72	1.64	0.92	0.39	1.09	0.49	0.25



Alt Model-Shift Uniqueness Test

005523471-03, P = 513.842733 Days, E = 469.764707 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
24.3	3.61	3.48	3.59	5.65	3.59	0.71	20.8	20.7	0.13	0.01	17.5	0.67	0.13	2.04



Stellar Parameters For KIC 005523471

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5596^{+167}_{-150}	$4.346^{+0.194}_{-0.237}$	$-0.240^{+0.300}_{-0.250}$	$1.004^{+0.353}_{-0.218}$	$0.815^{+0.127}_{-0.063}$	$1.134^{+1.103}_{-0.630}$
	+3%/-3%	+4%/-5%	+125%/-104%	+35%/-22%	+16%/-8%	+97%/-56%
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 005523471-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1198 ± 65	$4.18^{+3.43}_{-2.78}$	321^{+29}_{-23}	5398^{+4519}_{-1124}	$54009^{+405873}_{-38207}$
Alt.	-127 ± 35	$3.88^{+3.57}_{-2.58}$	321^{+31}_{-24}	3612^{+1810}_{-641}	6291^{+48054}_{-4620}

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

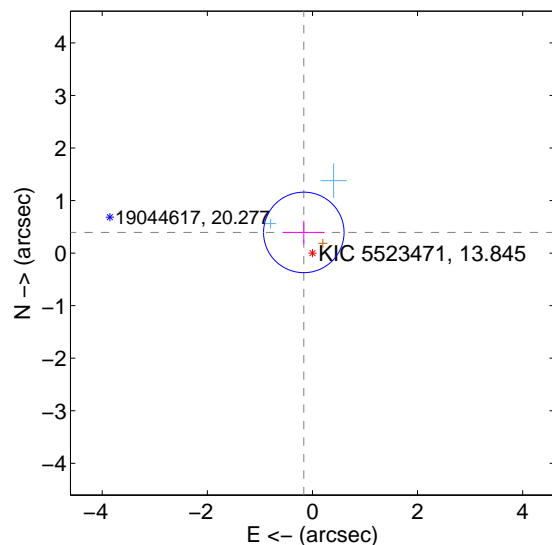
Supplemental centroid analysis for 005523471-03. Kepler magnitude: 13.85. Transit SNR 7.43

There are 2 quarters with good PRF difference image offsets

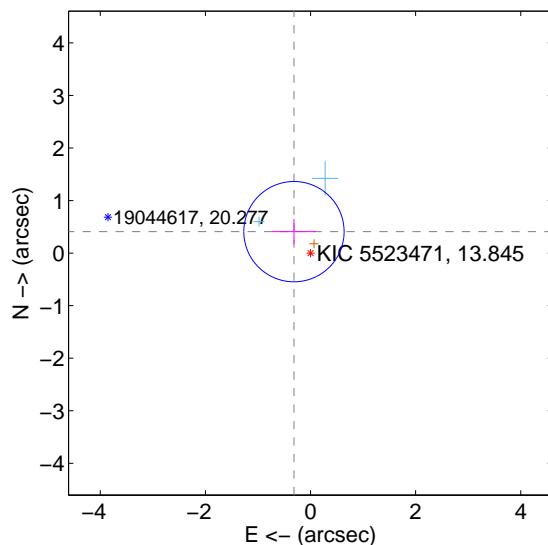
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.427 ± 0.255	1.67	0.164 ± 0.396	0.394 ± 0.222
PRF-fit source offset from KIC position	0.516 ± 0.318	1.62	0.315 ± 0.416	0.408 ± 0.241
photometric centroid source offset	0.93 ± 0.97	0.95	0.13 ± 1.42	0.92 ± 0.96

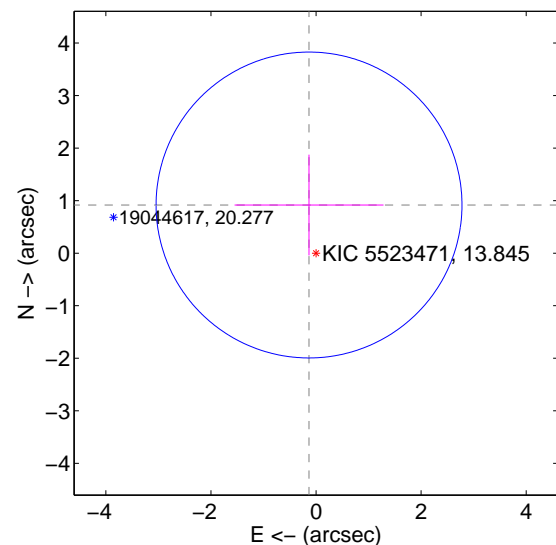
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

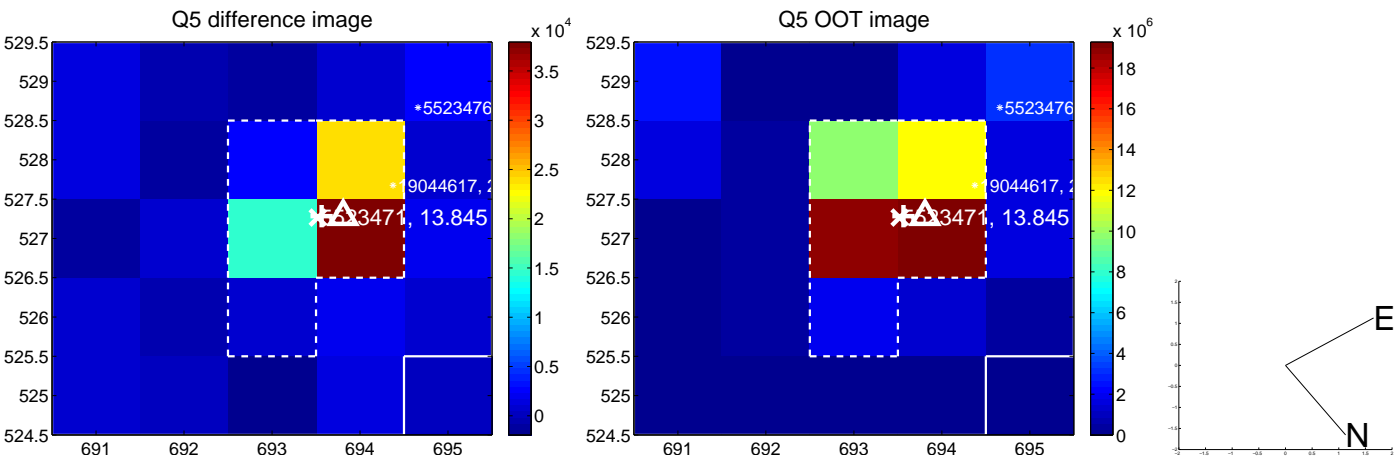


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

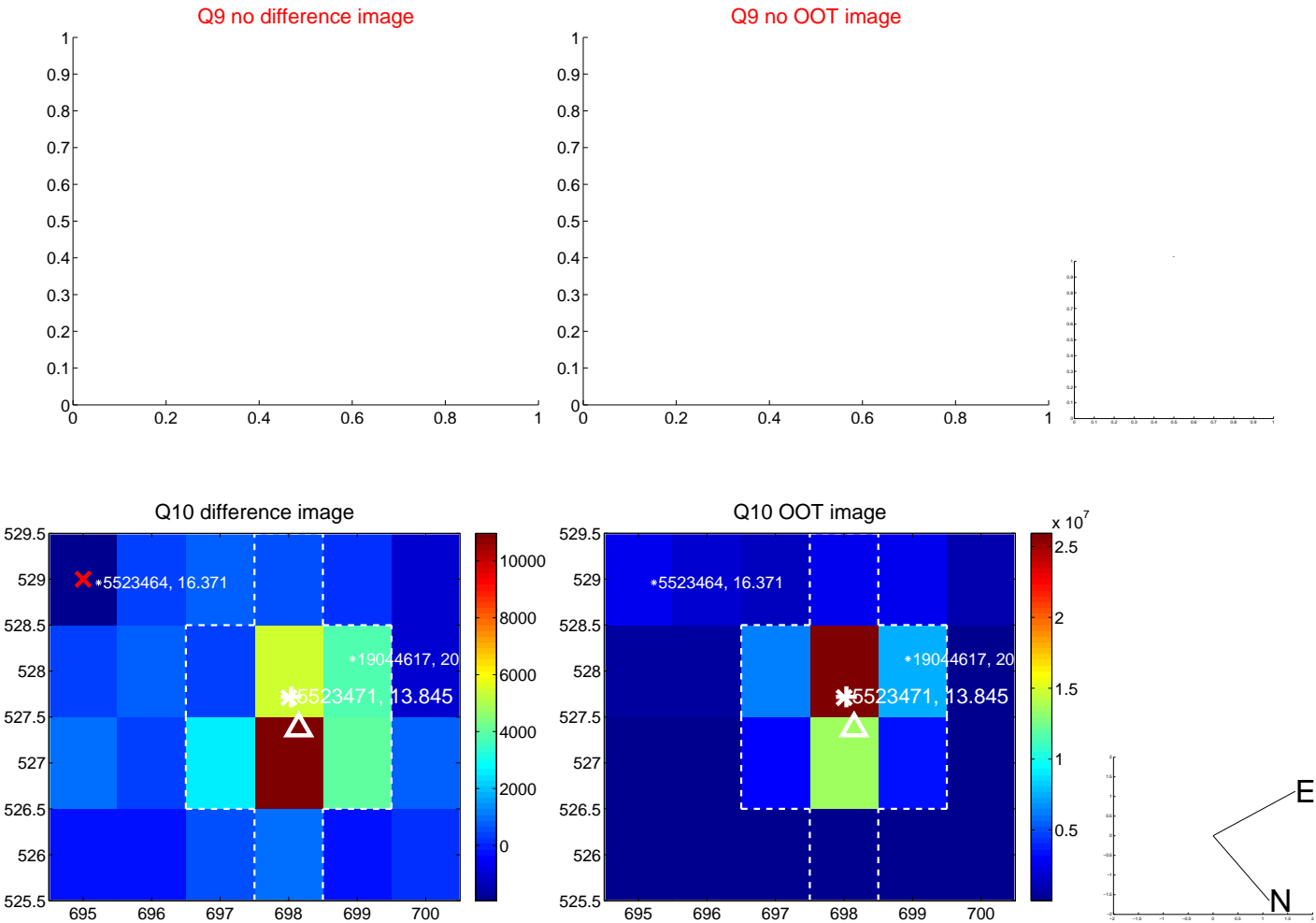
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



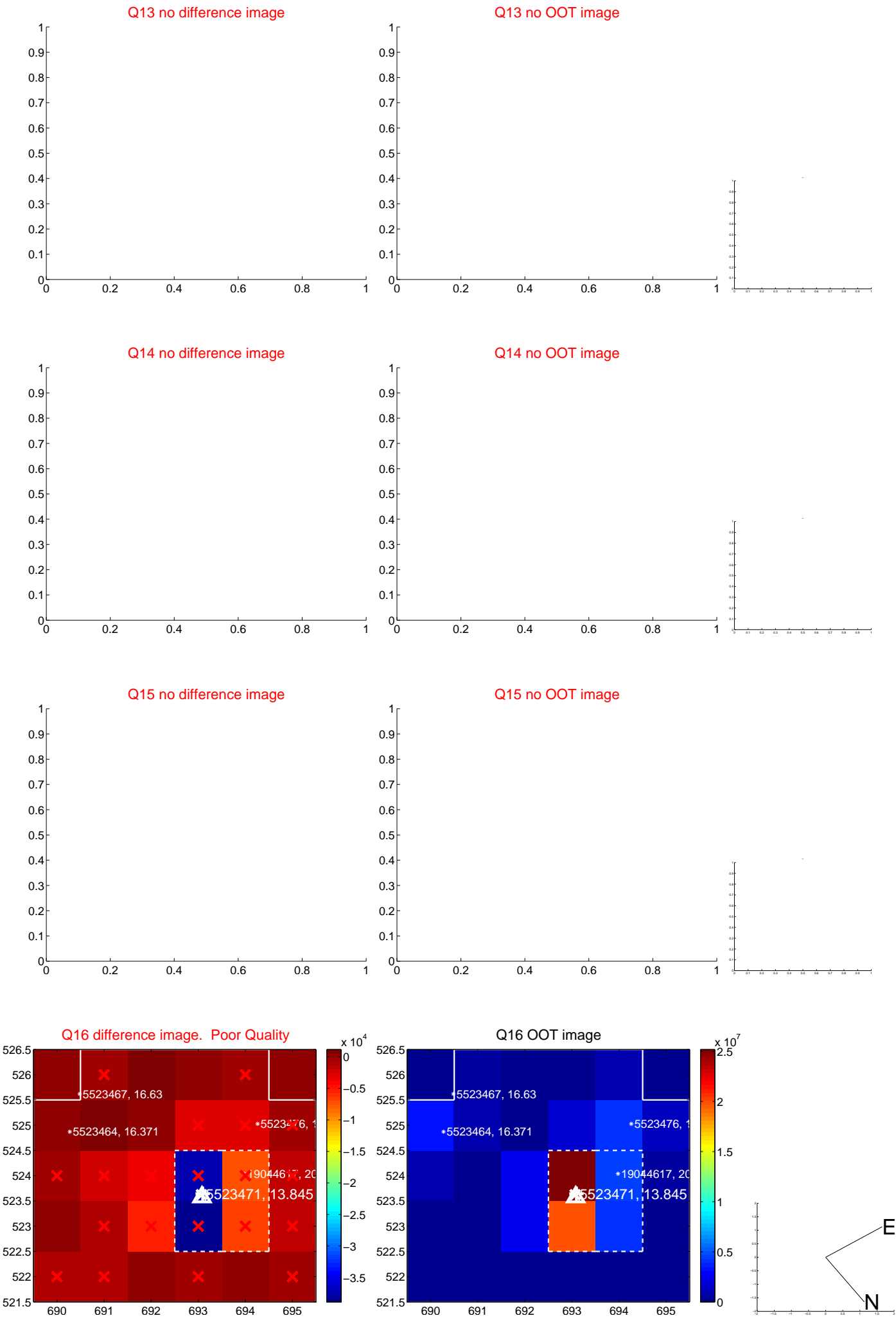
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



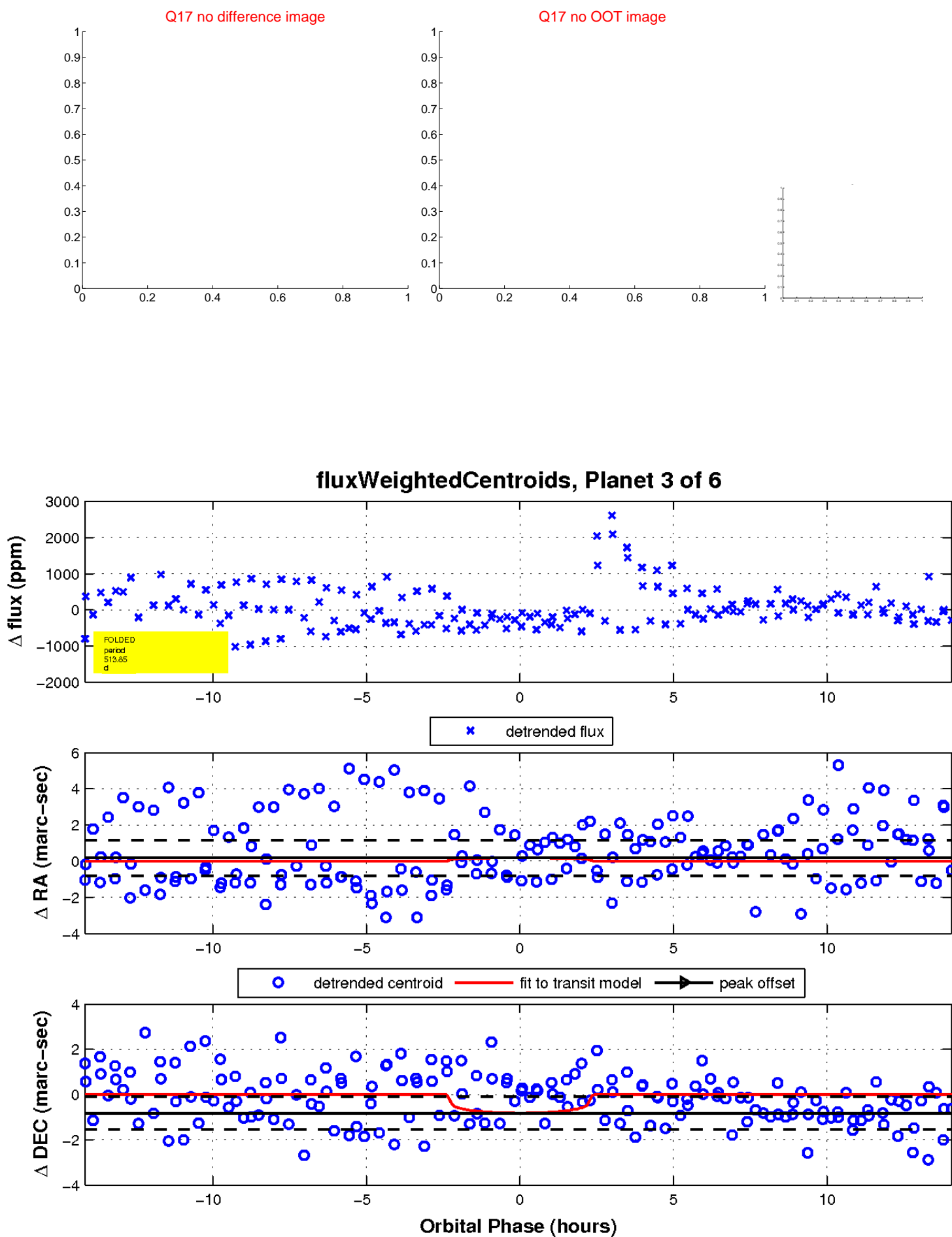
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

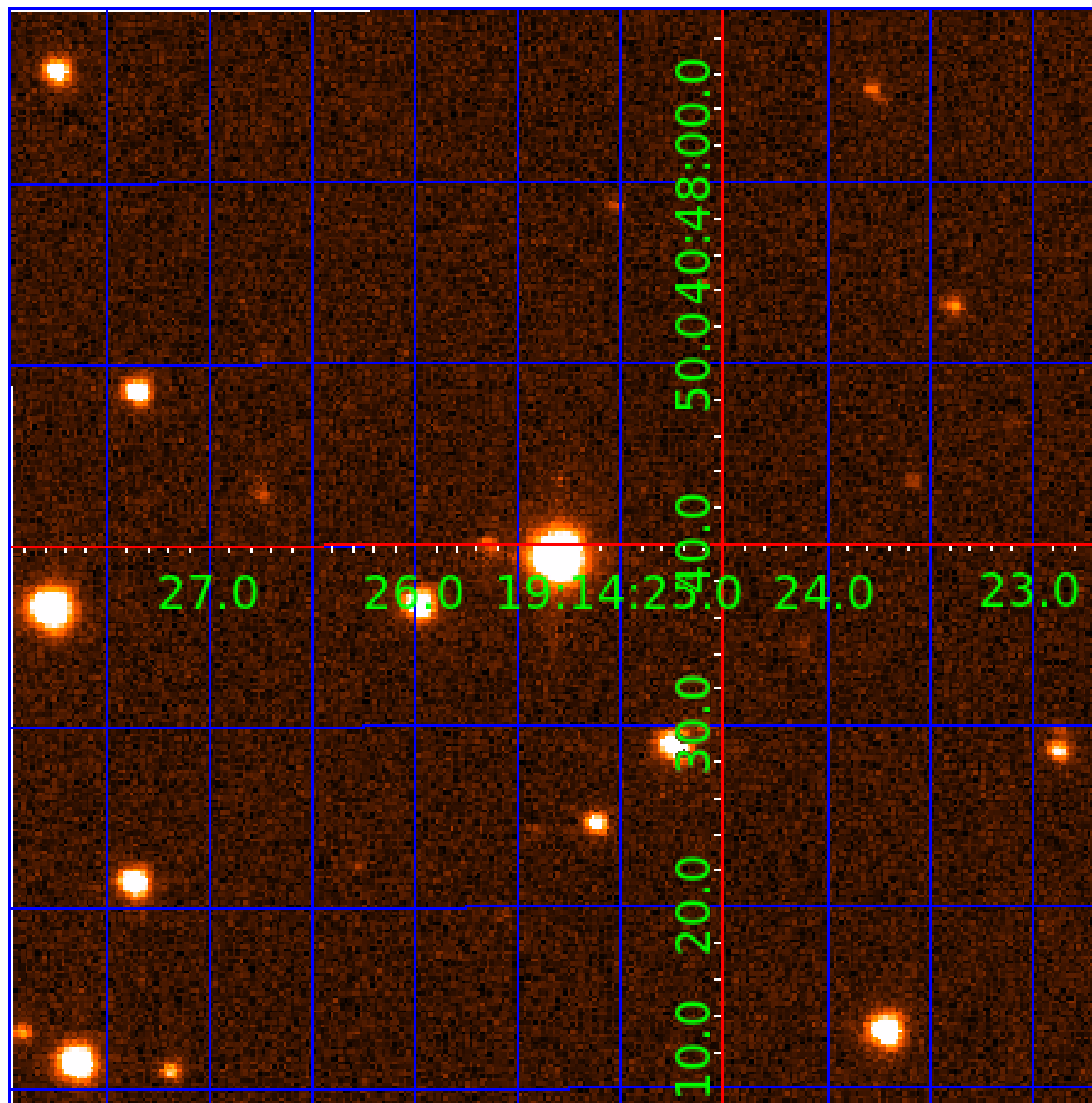


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005523471

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})
005523471-01	OBS	No	388.579412	374.376339	2617.6	24.314	16.8	7.5	1.00	5596	6.32	0.93
005523471-02	OBS	No	491.737712	173.661557	755.6	3.977	16.9	6.7	1.00	5596	2.92	0.68
005523471-03	OBS	No	513.847734	469.745205	678.4	4.736	12.3	7.4	1.00	5596	2.66	0.64
005523471-04	OBS	No	583.275803	302.596897	720.4	2.799	10.9	7.1	1.00	5596	2.88	0.54
005523471-05	OBS	No	594.465836	191.037325	661.8	4.494	12.2	5.2	1.00	5596	2.69	0.53
005523471-06	OBS	No	293.536988	409.770885	1145.5	3.913	10.2	9.6	1.00	5596	3.75	1.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005523471-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005523471-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005523471-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005523471-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005523471-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005523471-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

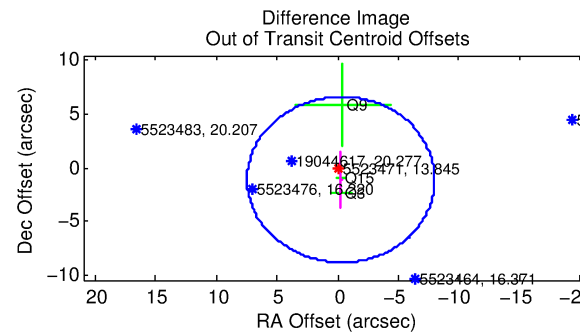
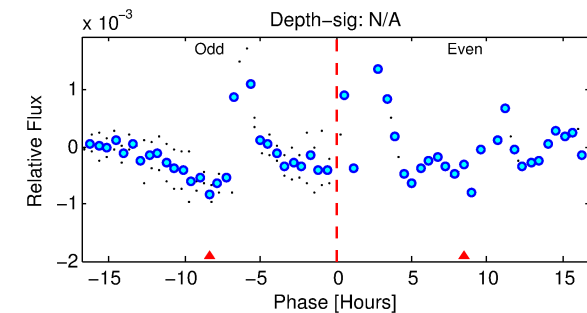
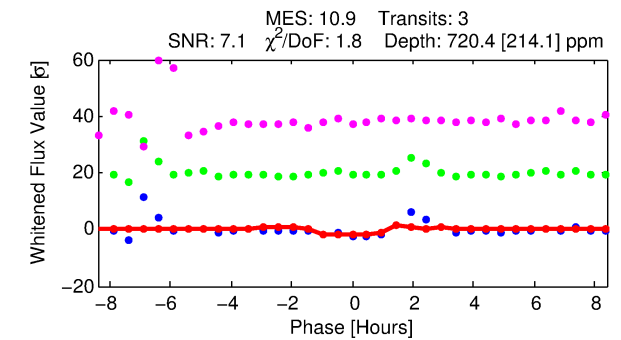
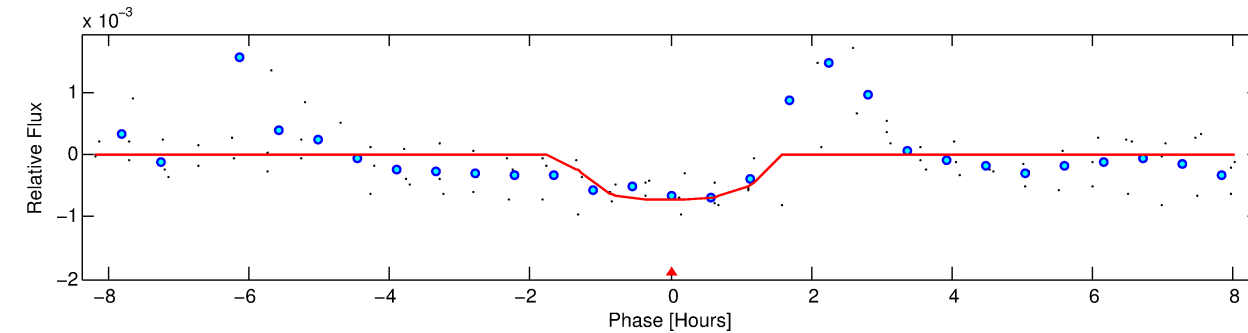
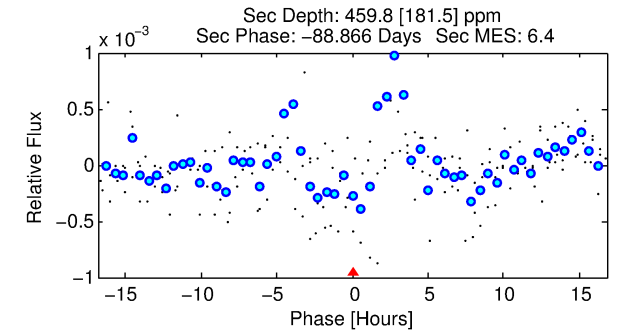
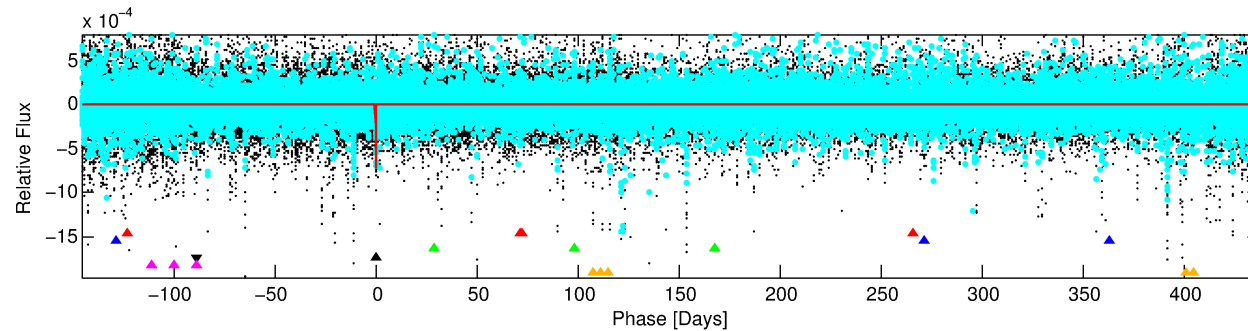
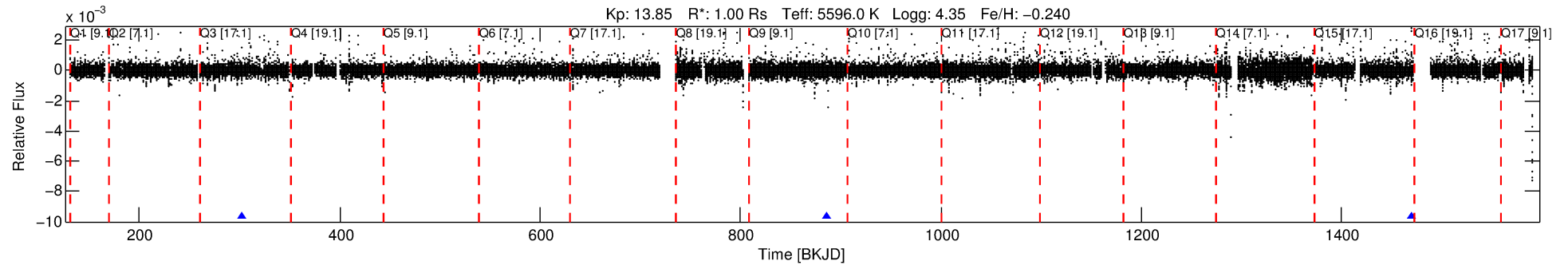
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005523471-04

No Significant Match Found

DV One-Page Summary

KIC: 5523471 Candidate: 4 of 6 Period: 583.276 d



DV Fit Results:

Period = 583.27580 [0.00798] d
Epoch = 302.5969 [0.0098] BKJD
Rp/R* = 0.0263 [0.0562]
a/R* = 1198.23 [10841.14]
b = 0.70 [6.75]
Seff = 0.54 [0.24]
Teff = 219 [25] K
Rp = 2.88 [6.24] Re
a = 1.2767 [0.3788] AU
Ag = 49698.35 [214554.61] [0.23] σ
Teffp = 5054 [5429] K [0.89] σ

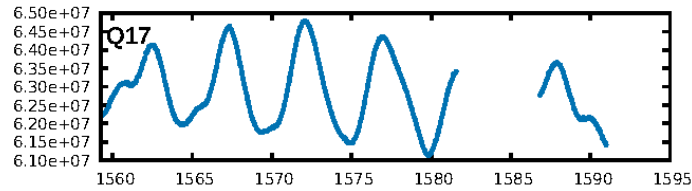
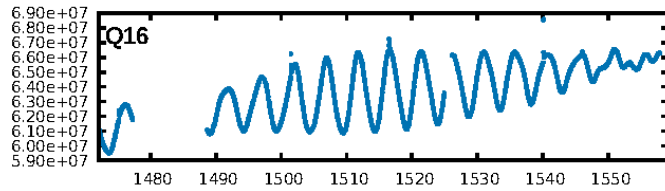
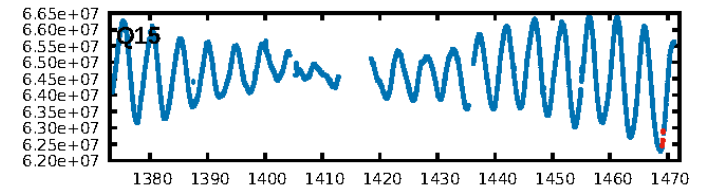
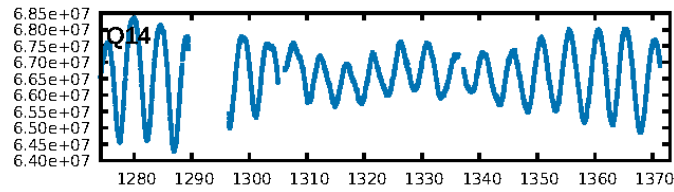
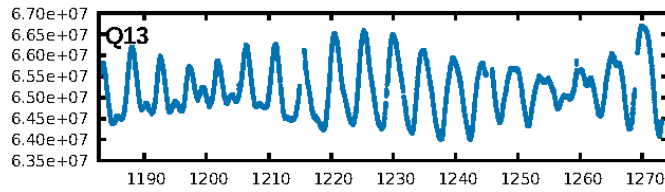
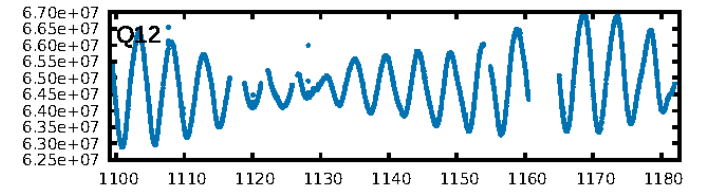
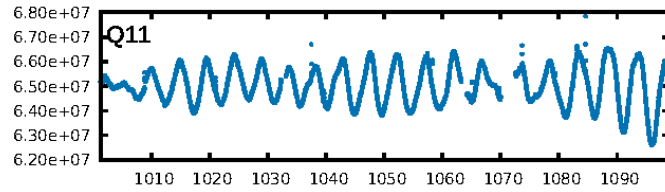
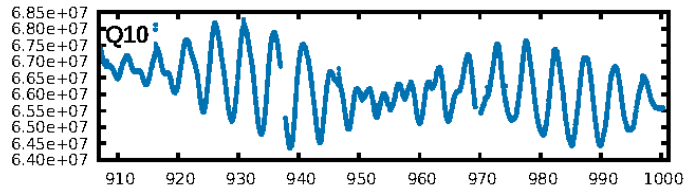
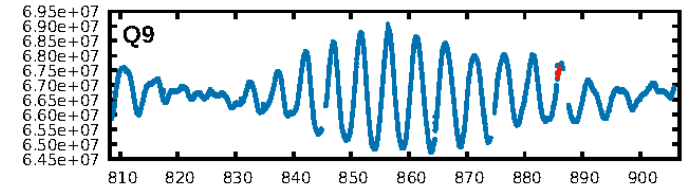
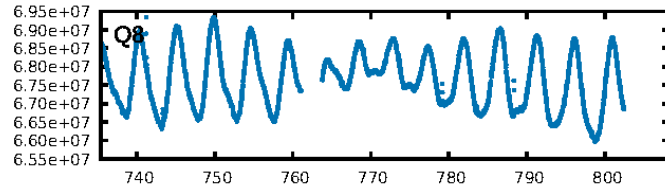
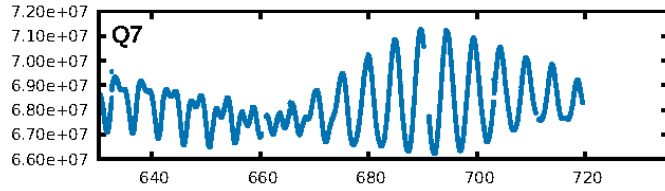
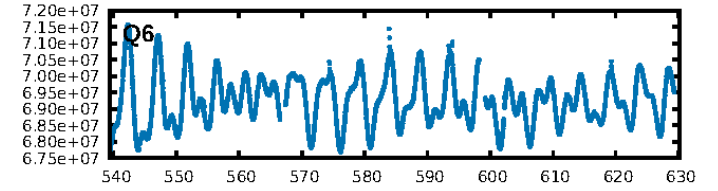
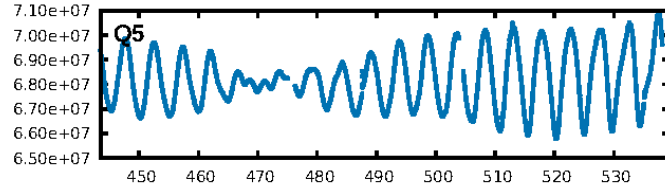
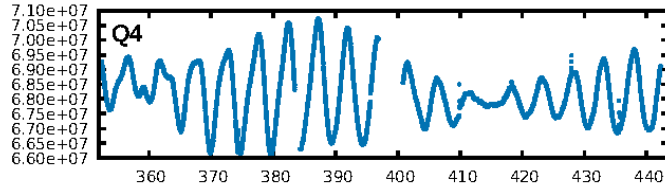
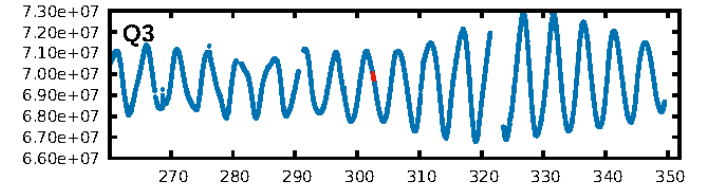
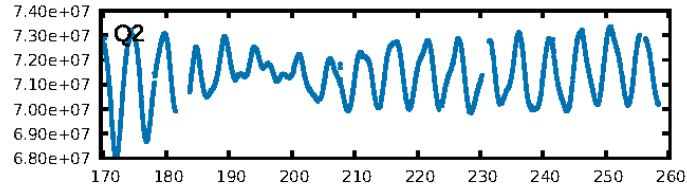
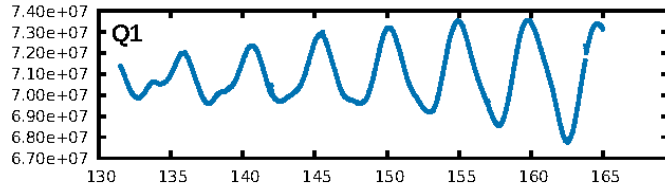
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [302.90] σ
LongPeriod-sig: 100.0% [50.72] σ
ModelChiSquare2-sig: 2.2%
ModelChiSquareGof-sig: 23.0%
Bootstrap-pfa: 2.85e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -1.107
Centroid-sig: 16.2%
Centroid-so: 1.136 arcsec [0.99] σ
OotOffset-rm: 1.159 arcsec [0.45] σ
OotOffset-st: 0/2/0/1 [3]
KicOffset-rm: 1.232 arcsec [0.93] σ
KicOffset-st: 0/2/0/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

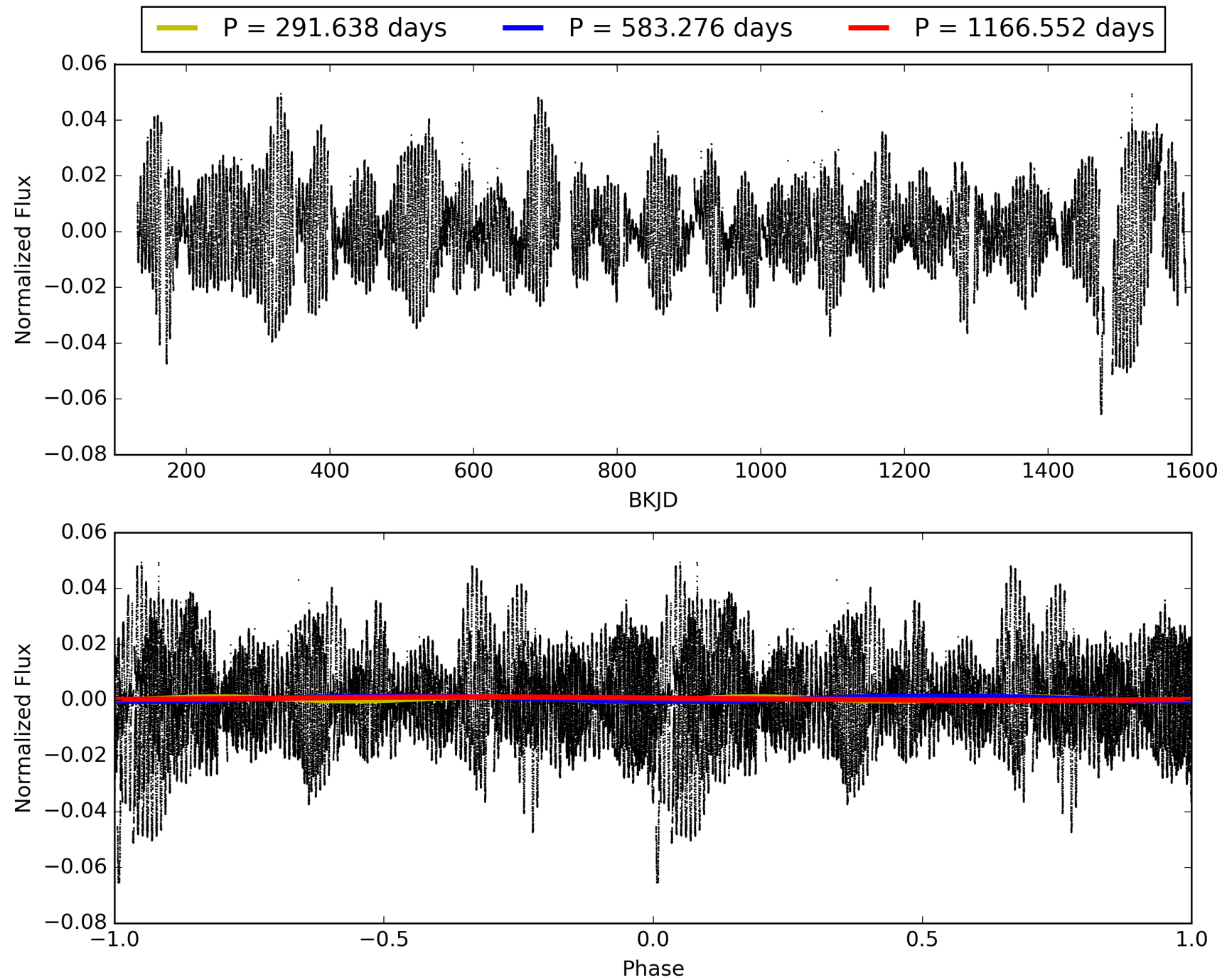
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:20:43 Z

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

TCE 005523471-04, PDC Light Curves

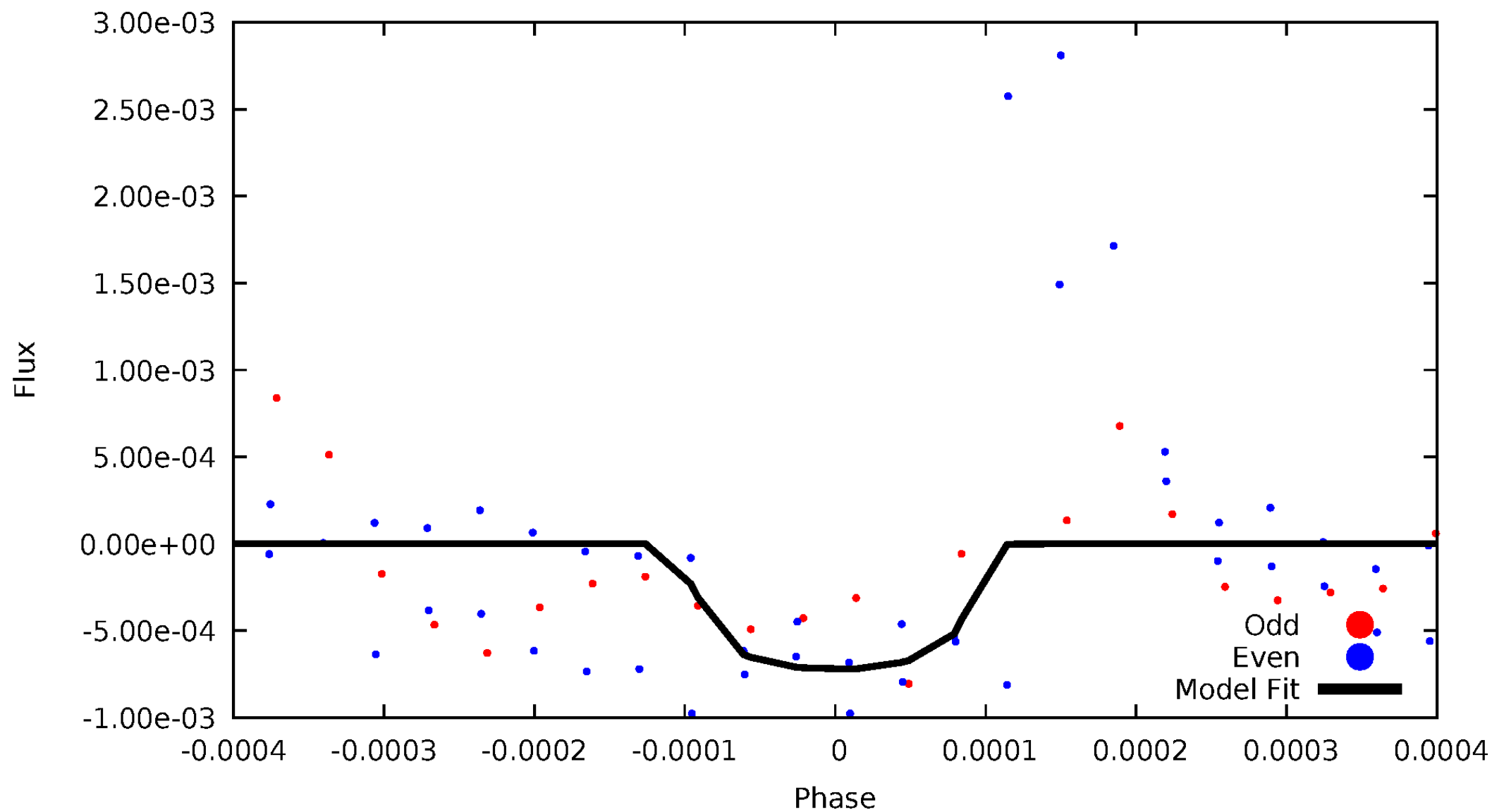


TCE 005523471-04



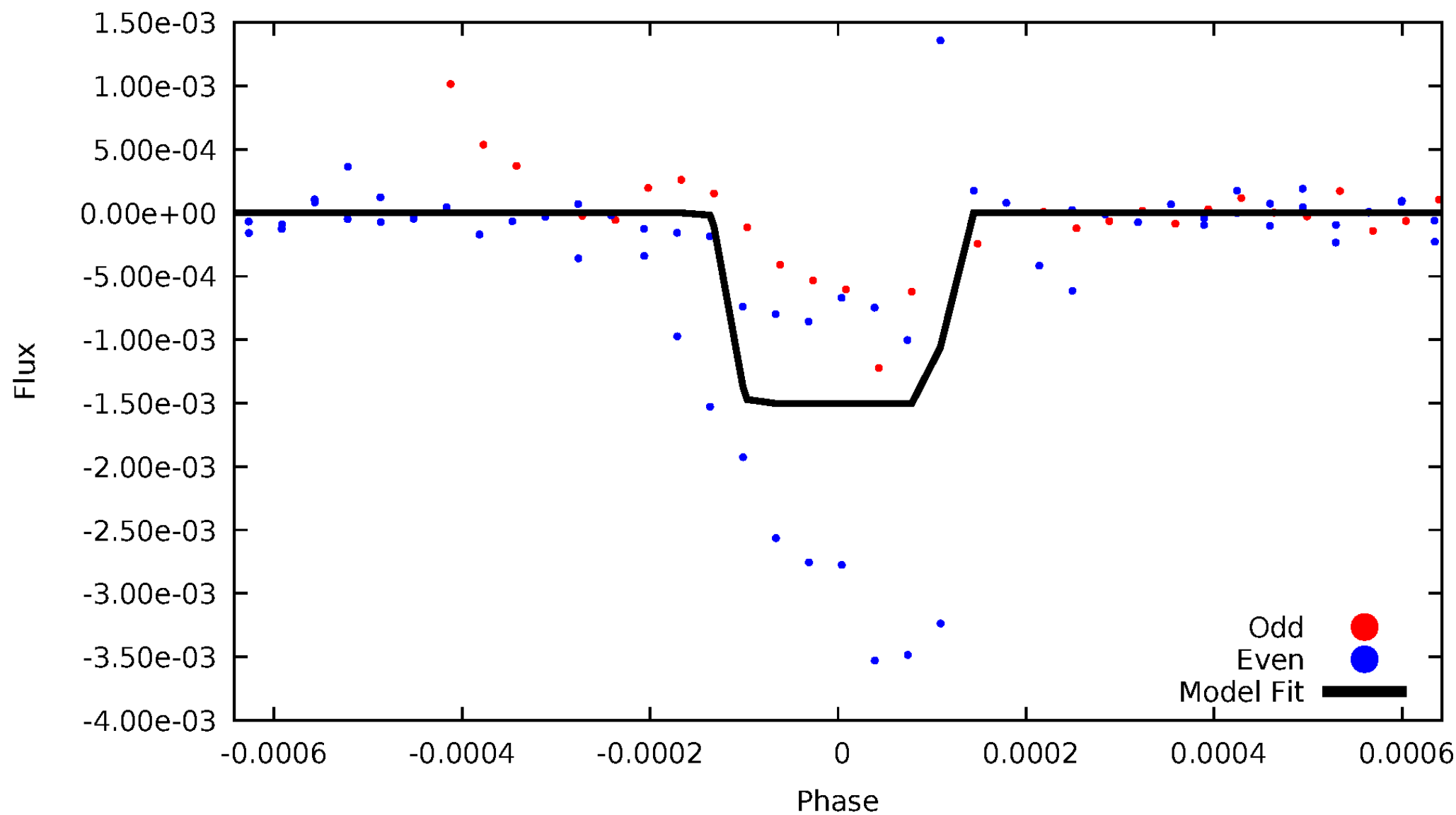
DV Odd/Even

TCE 005523471-04



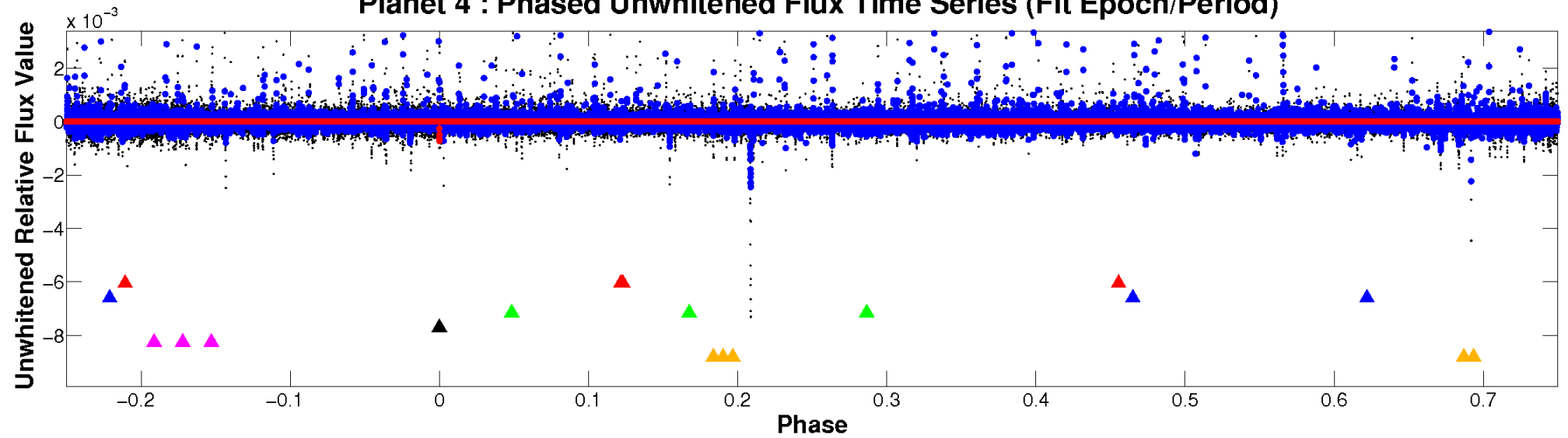
ALT Odd/Even

TCE 005523471-04

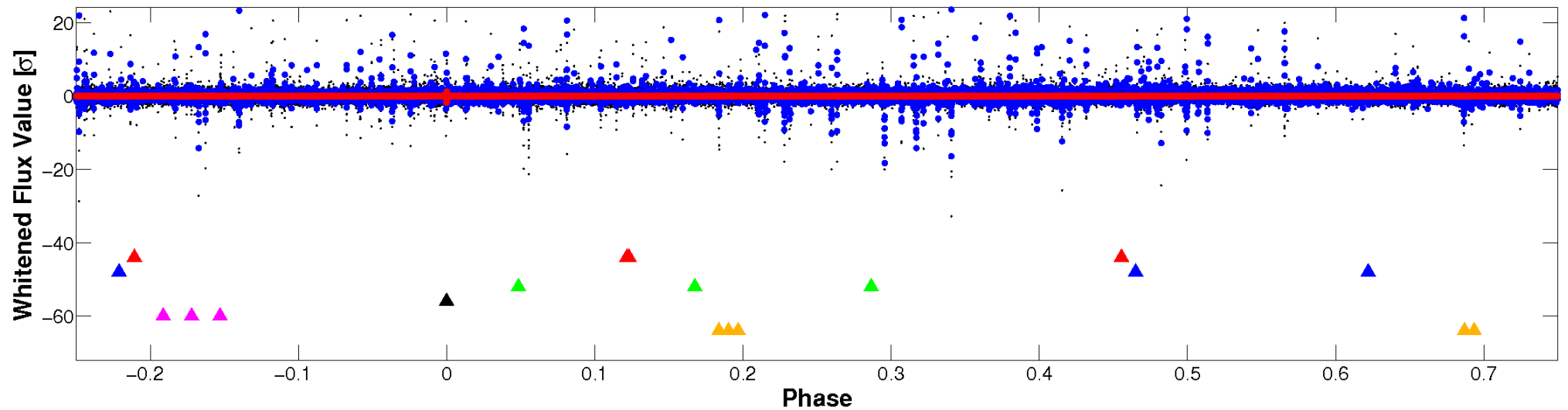


Non-Whitened Vs. Whitened Light Curve

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

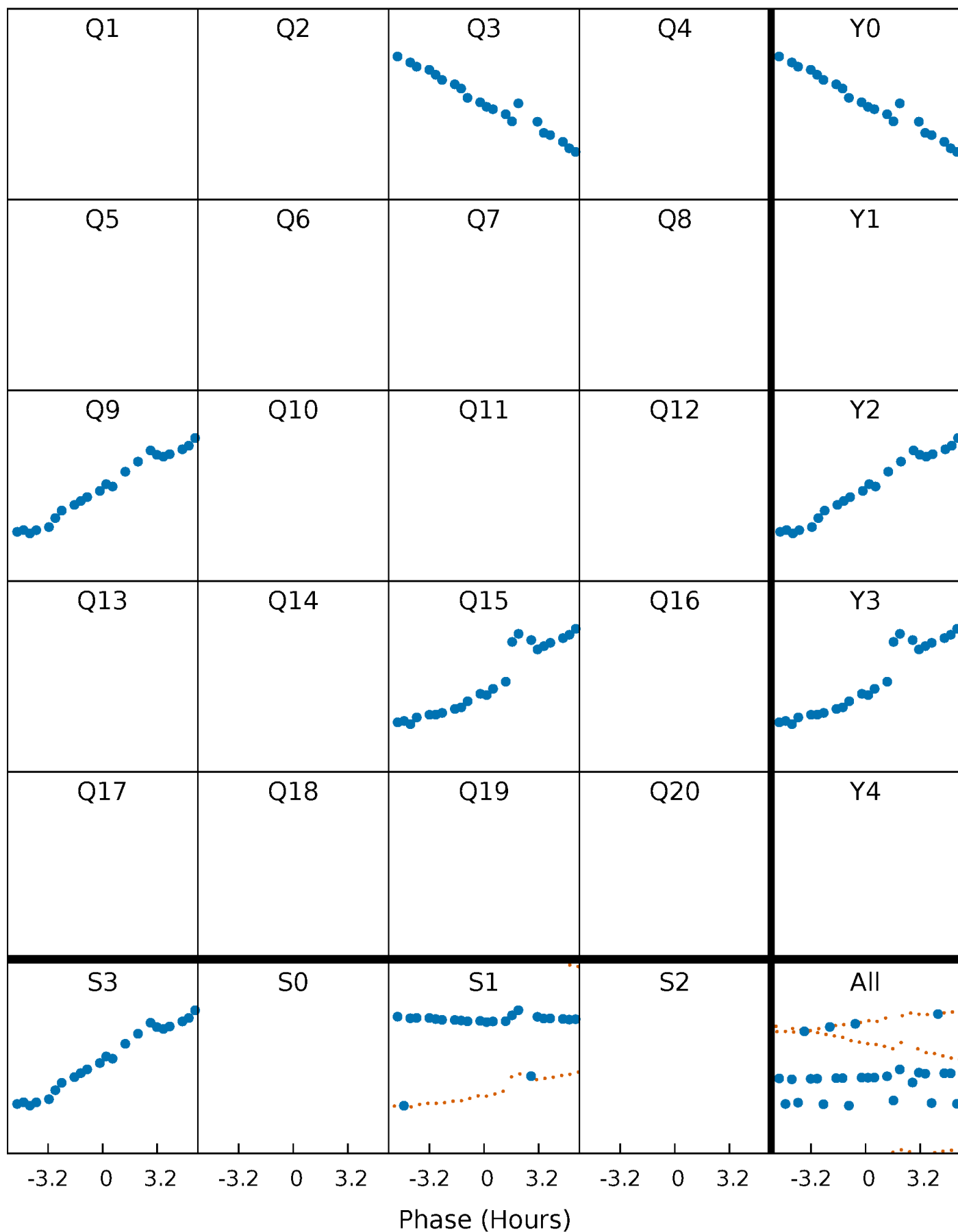


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



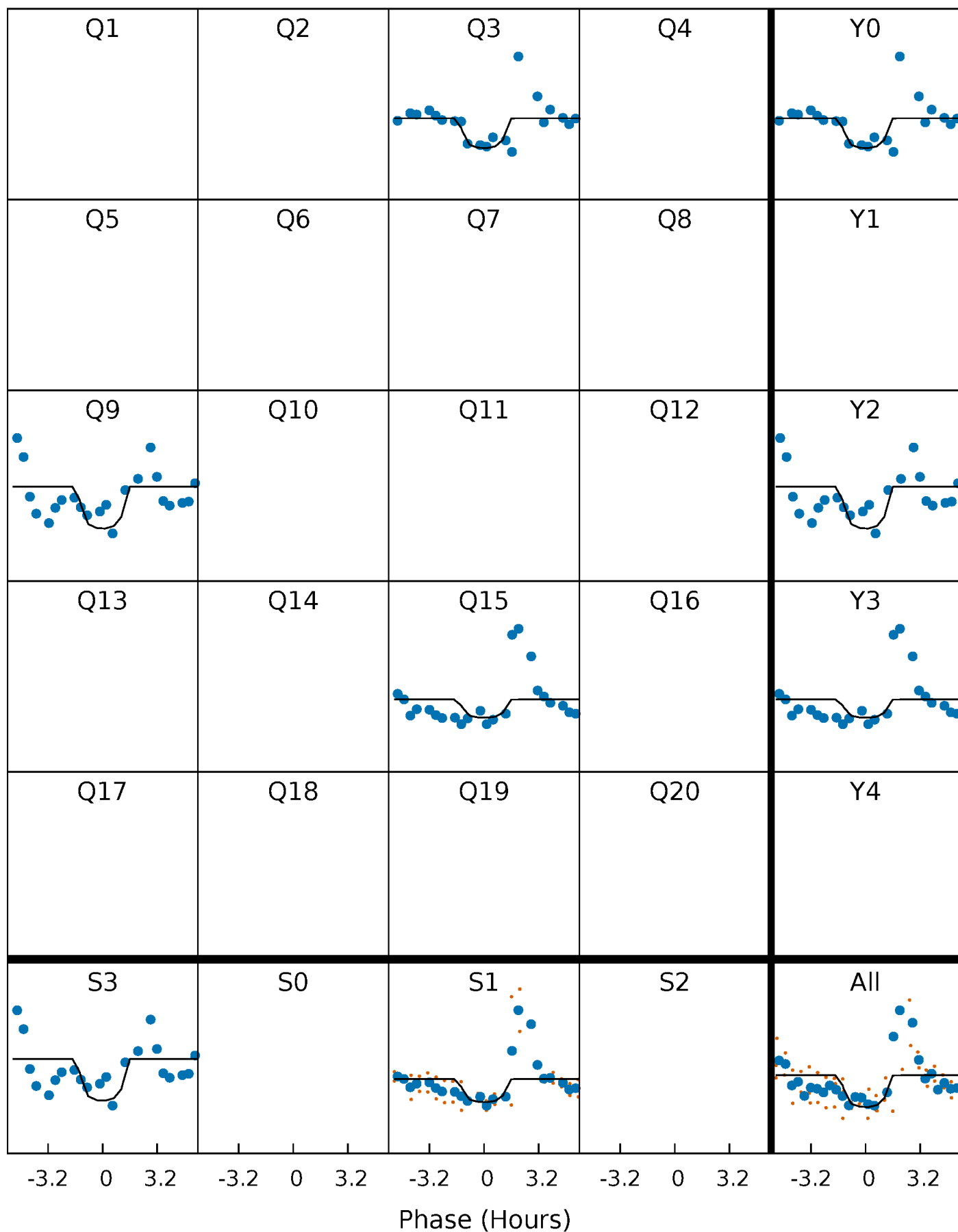
PDC Quarter-Phased Transit Curves

TCE 005523471-04 $P=583.275803$ Days $T_0=302.596897$ (BKJD)



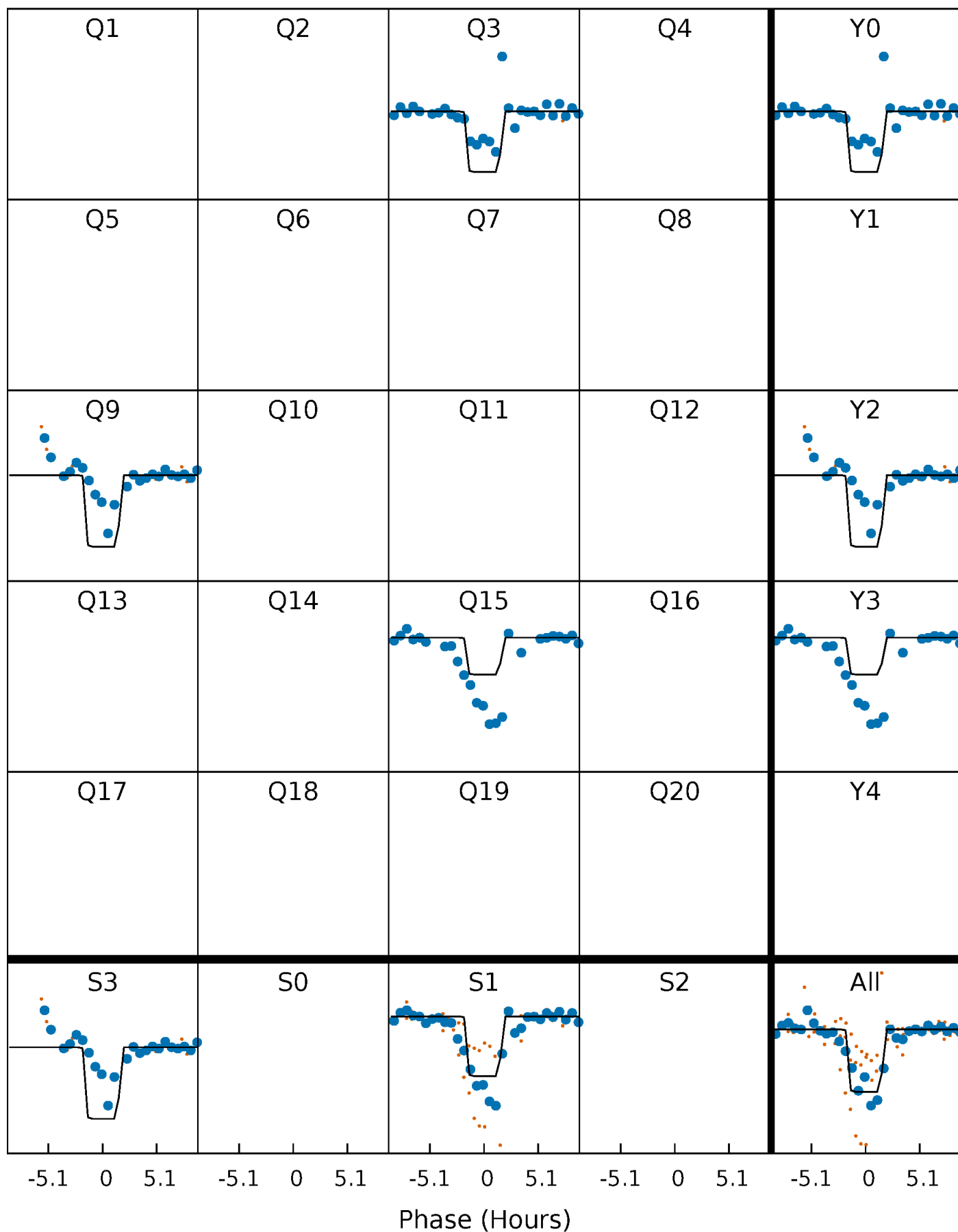
DV Quarter-Phased Transit Curves

TCE 005523471-04 $P=583.275803$ Days $T_0=302.596897$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

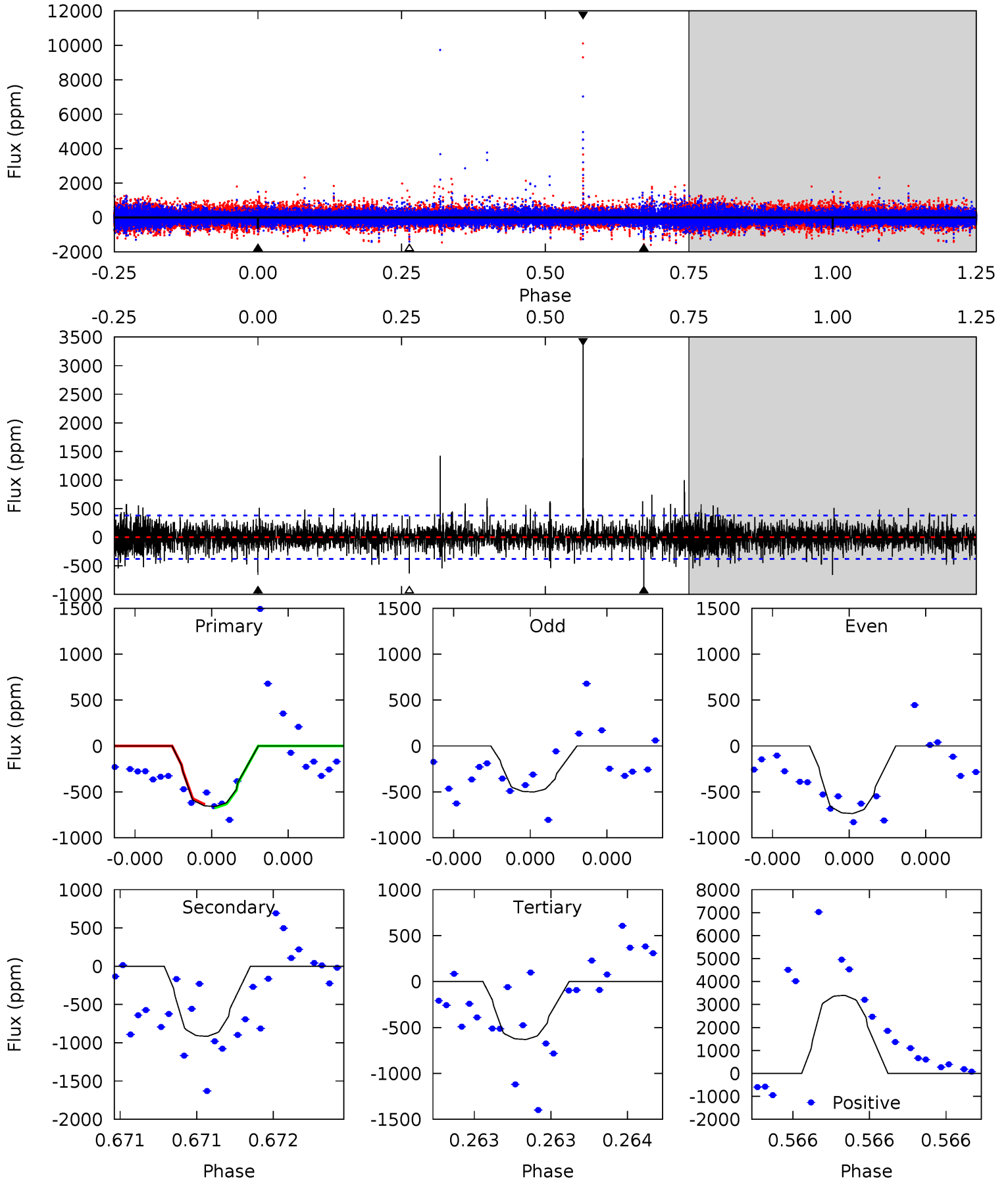
TCE 005523471-04 P=583.255537 Days $T_0=302.620389$ (BKJD)



DV Model-Shift Uniqueness Test

005523471-04, P = 583.275803 Days, E = 302.596897 Days

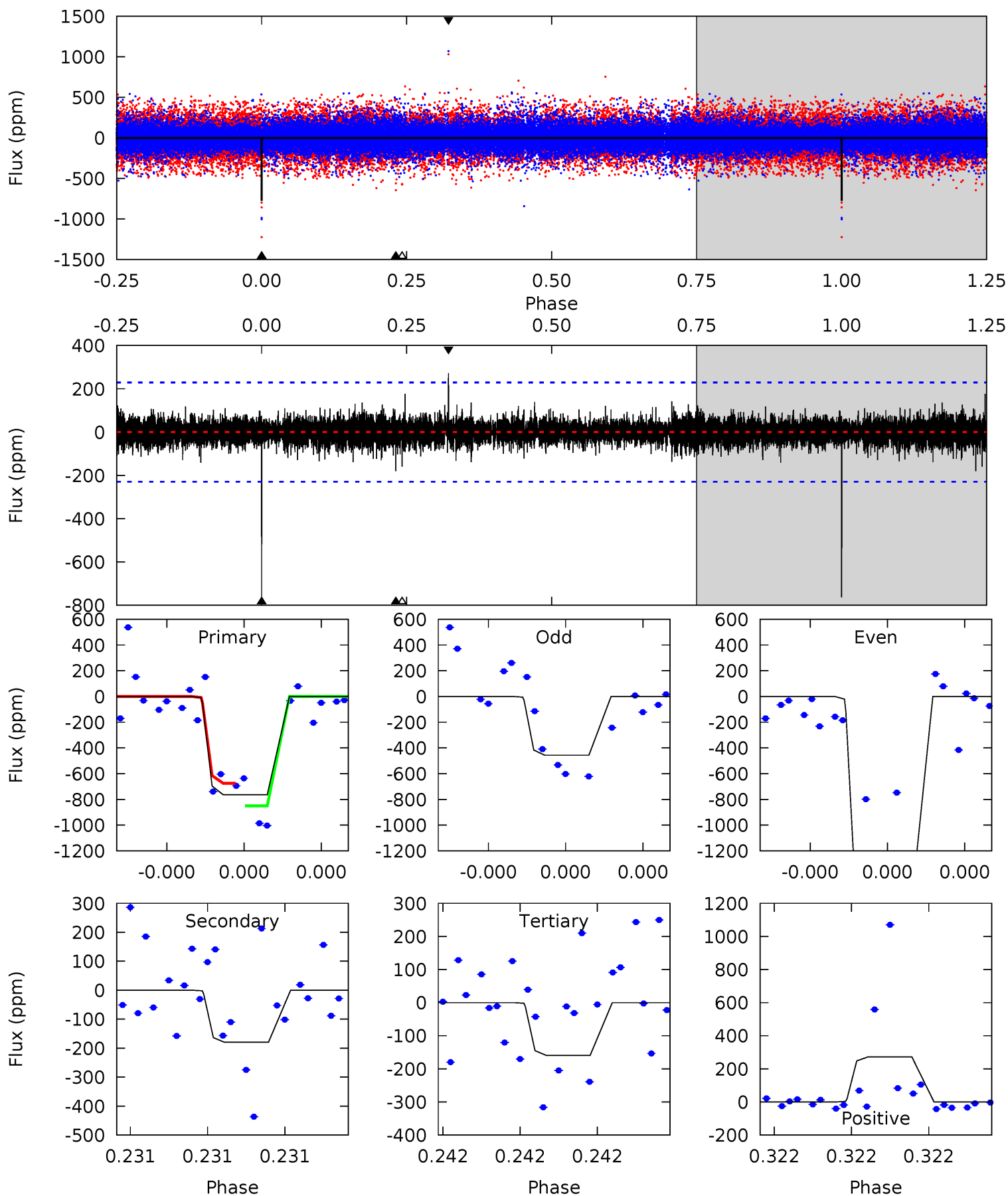
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.87	13.7	9.45	50.9	5.70	3.67	1.90	0.42	-41.1	4.28	-37.2	1.25	1.03	0.79	0.27



Alt Model-Shift Uniqueness Test

005523471-04, P = 583.255537 Days, E = 302.620389 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.9	4.45	3.95	6.75	5.70	3.67	0.73	15.0	12.2	0.51	-2.29	16.2	2.34	0.26	2.17



Stellar Parameters For KIC 005523471

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5596^{+167}_{-150}	$4.346^{+0.194}_{-0.237}$	$-0.240^{+0.300}_{-0.250}$	$1.004^{+0.353}_{-0.218}$	$0.815^{+0.127}_{-0.063}$	$1.134^{+1.103}_{-0.630}$
	+3%/-3%	+4%/-5%	+125%/-104%	+35%/-22%	+16%/-8%	+97%/-56%
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 005523471-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-916 ± 67	$5.79^{+5.18}_{-3.68}$	307^{+27}_{-23}	4449^{+2655}_{-894}	$24044^{+165099}_{-16973}$
Alt.	-179 ± 40	$6.46^{+5.20}_{-4.42}$	308^{+30}_{-22}	3265^{+1609}_{-512}	3840^{+34972}_{-2703}

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 $A_{obs} \gg 1.0$

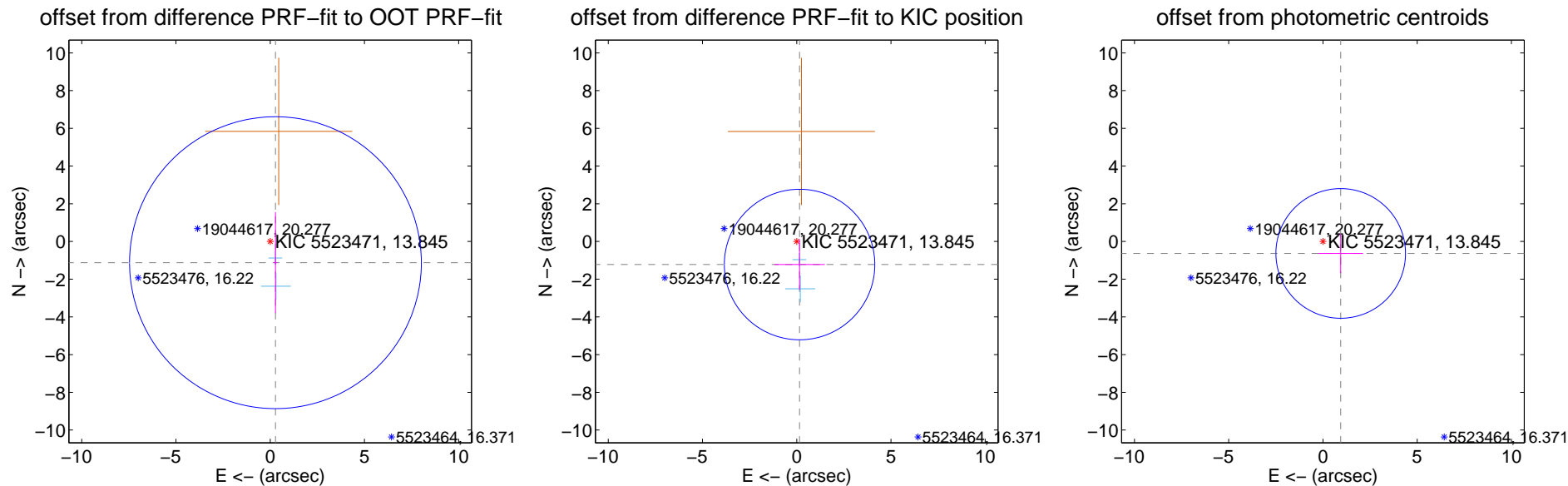
DV Centroid Data

Supplemental centroid analysis for 005523471-04. Kepler magnitude: 13.85. Transit SNR 7.12

There are 2 quarters with good PRF difference image offsets

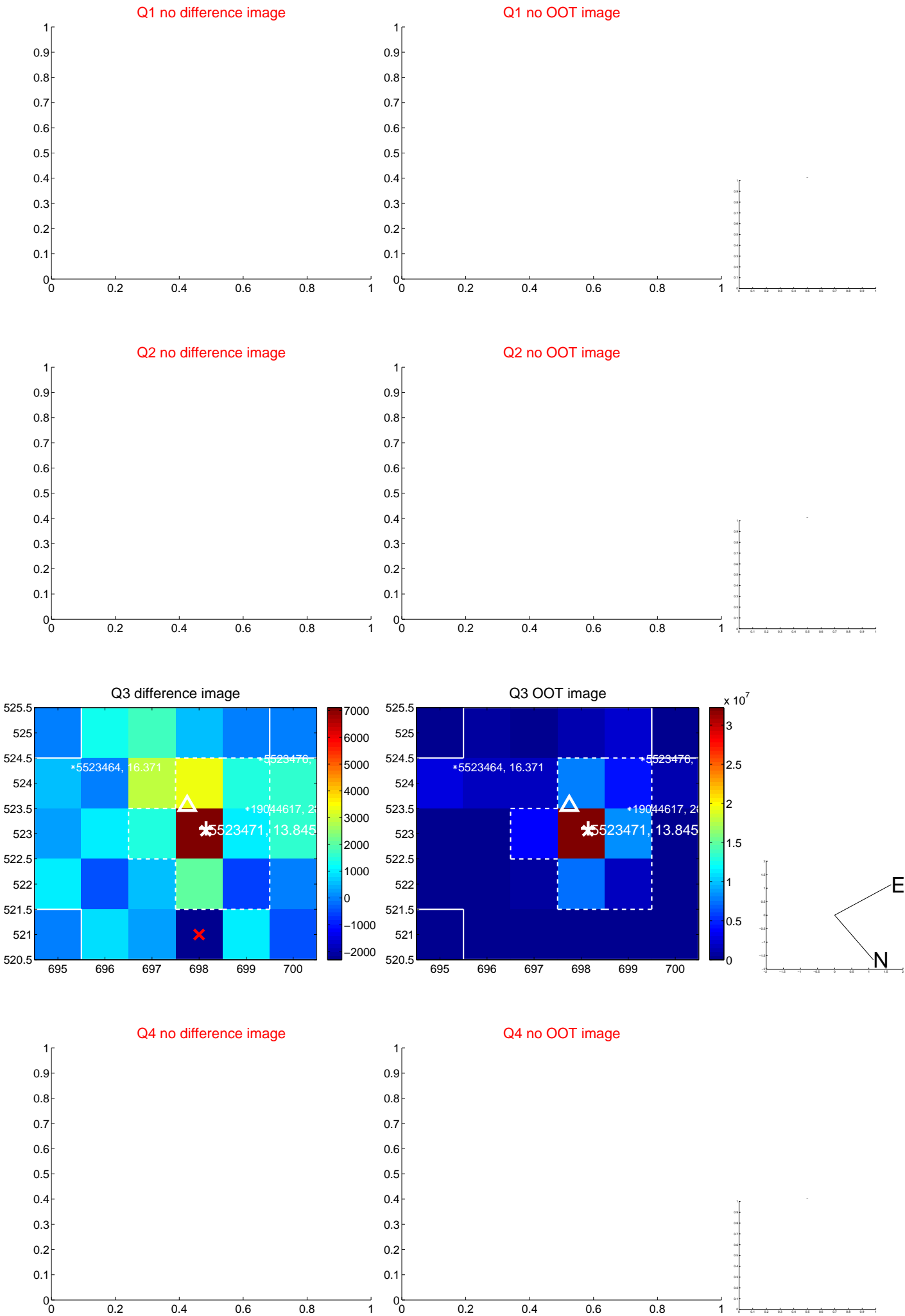
The direct PRF centroid is offset from the target star catalog position by about 0.16 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.159 ± 2.580	0.45	-0.279 ± 0.088	-1.124 ± 2.672
PRF-fit source offset from KIC position	1.232 ± 1.331	0.93	-0.151 ± 1.334	-1.222 ± 1.330
photometric centroid source offset	1.14 ± 1.15	0.99	-0.94 ± 1.19	-0.63 ± 1.05



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.

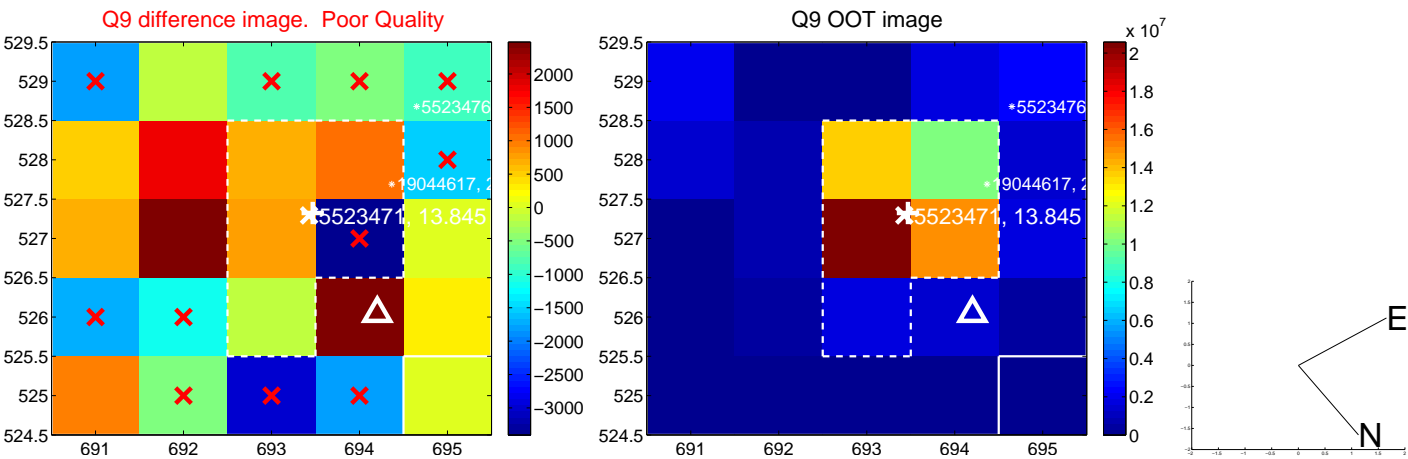
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



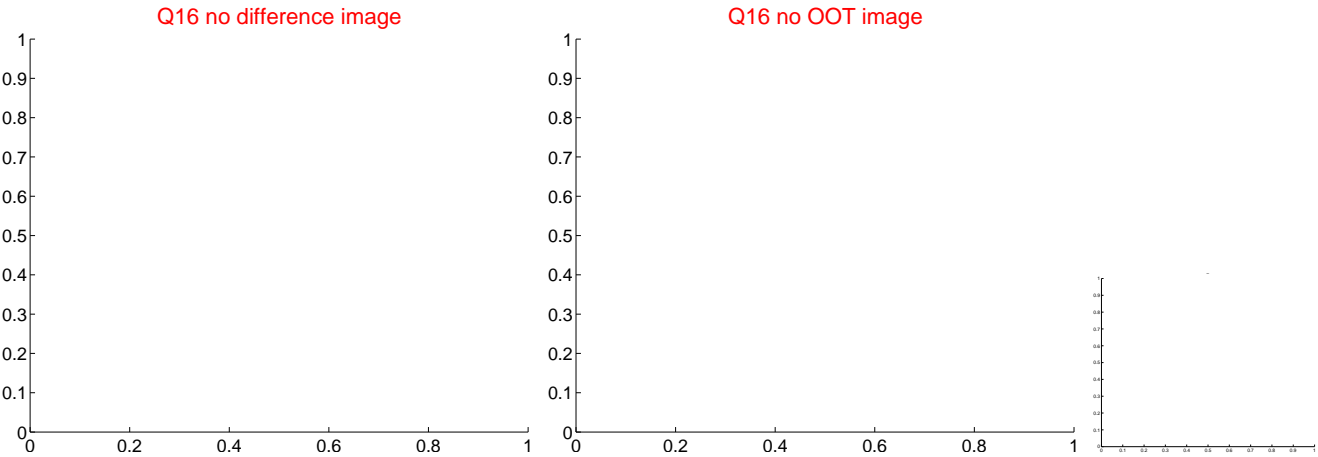
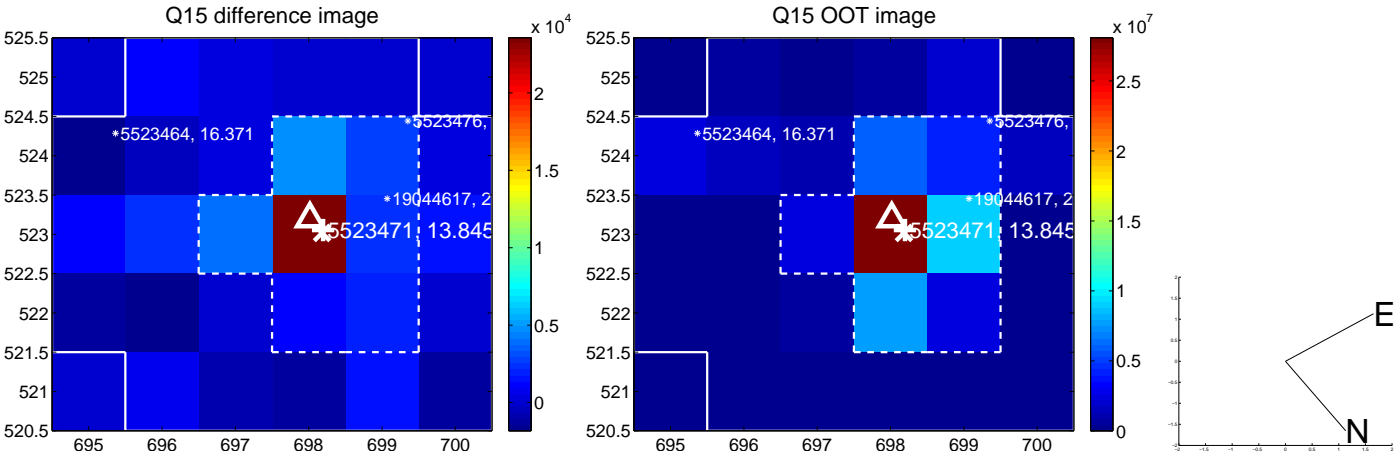
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



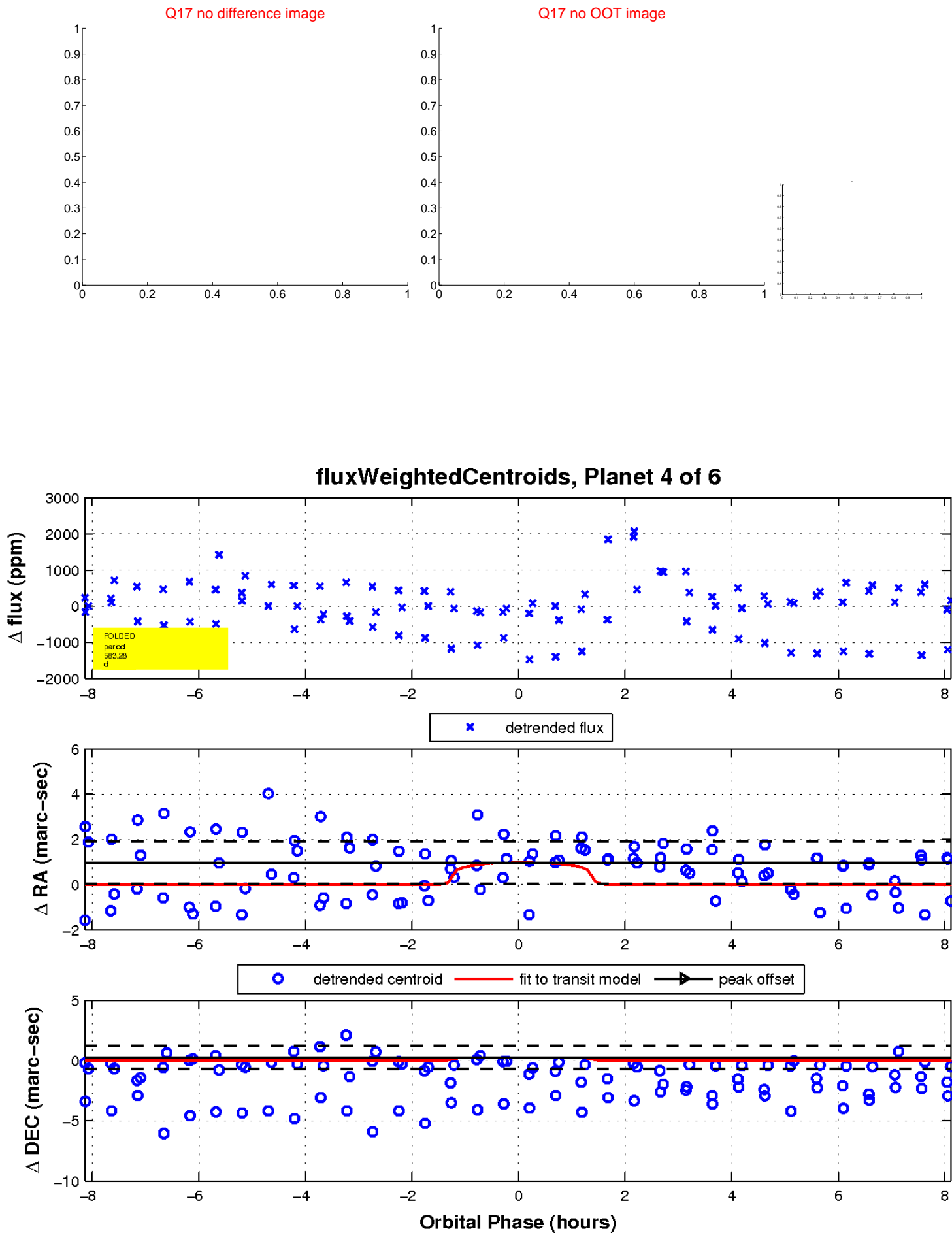
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

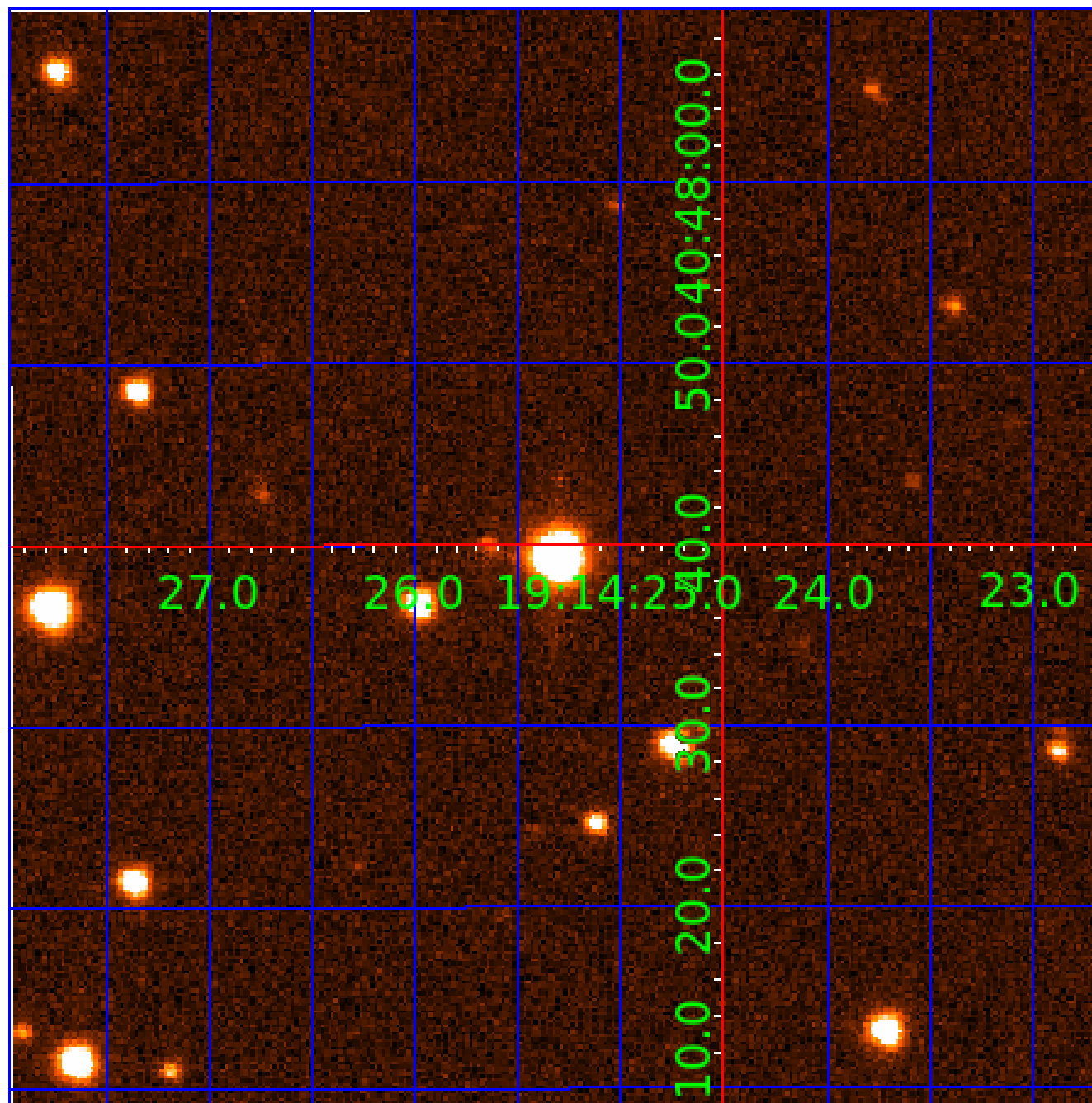


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005523471

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})
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005523471-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005523471-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005523471-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005523471-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005523471-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005523471-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

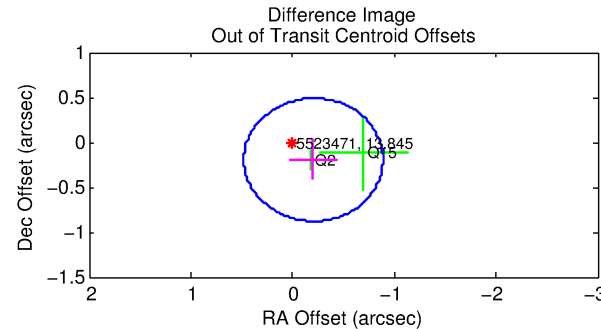
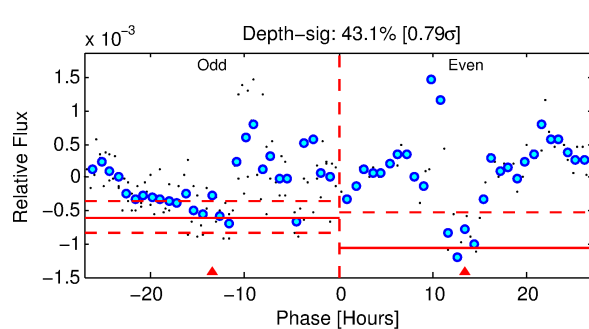
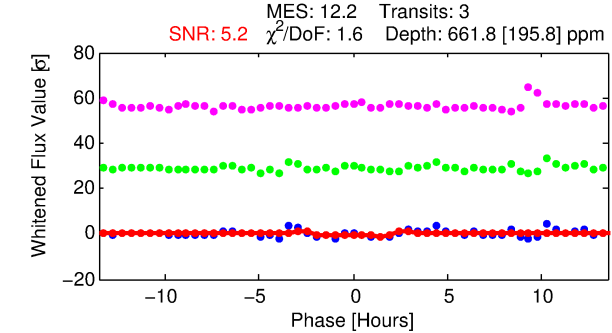
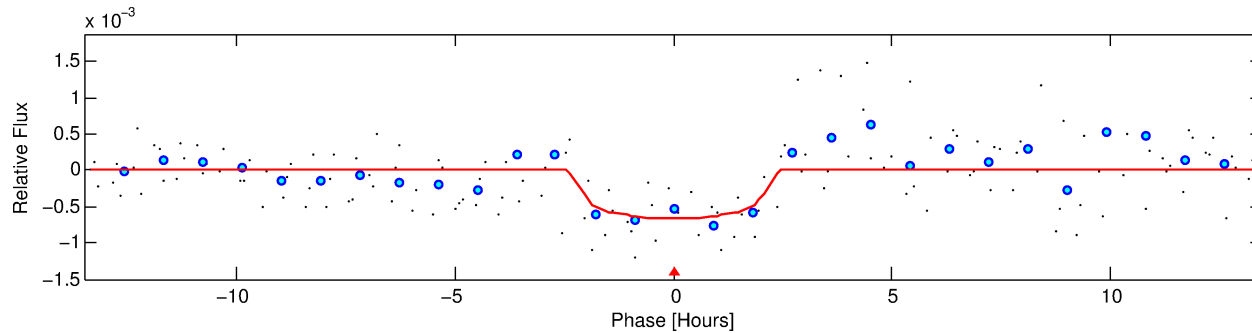
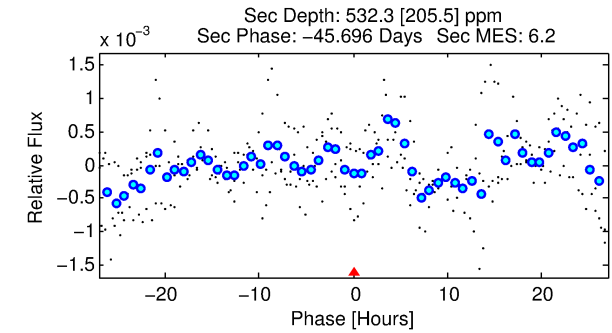
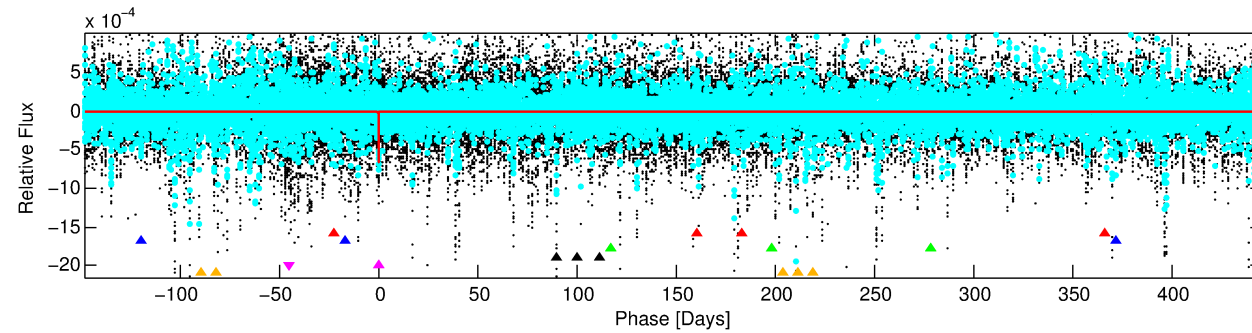
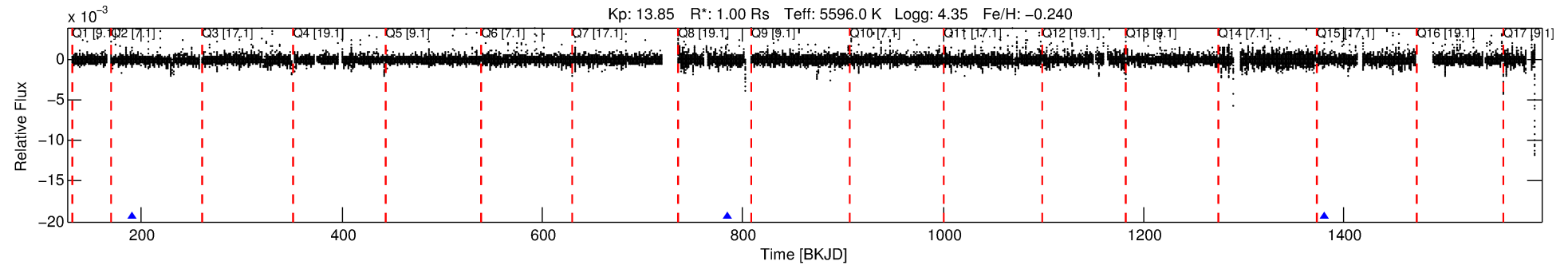
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005523471-05

No Significant Match Found

DV One-Page Summary

KIC: 5523471 Candidate: 5 of 6 Period: 594.466 d



DV Fit Results:

Period = 594.46584 [0.00853] d
Epoch = 191.0373 [0.0115] BKJD
Rp/R* = 0.0245 [0.0470]
a/R* = 839.56 [6738.34]
b = 0.60 [8.67]
Seff = 0.53 [0.24]
Teq = 218 [24] K
Rp = 2.69 [5.24] Re
a = 1.2930 [0.3836] AU
Ag = 67867.95 [263299.02] [0.26σ]
Teffp = 5429 [5235] K [1.00σ]

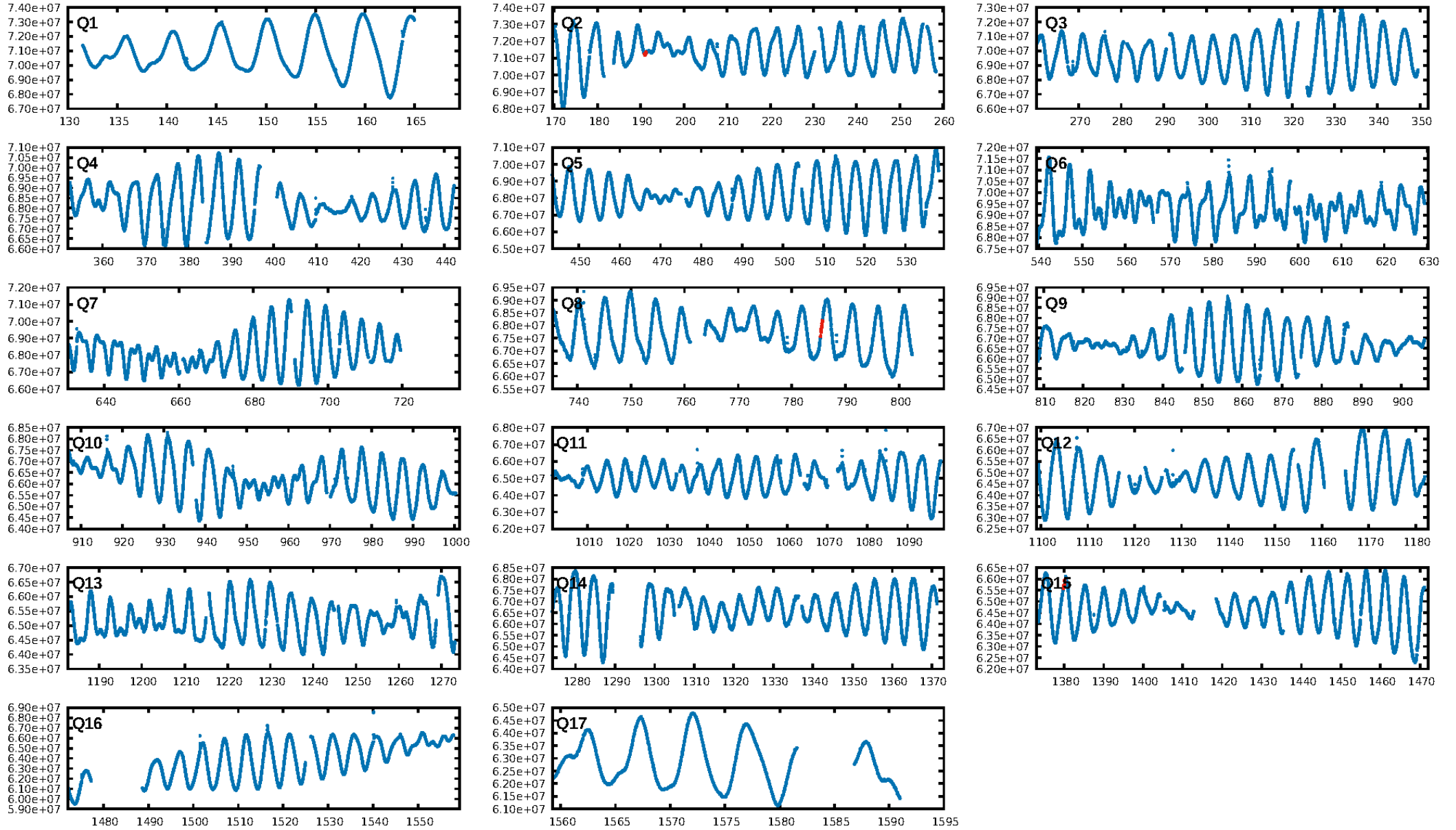
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [50.72σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 89.7%
ModelChiSquareGof-sig: 69.1%
Bootstrap-pfa: 7.77e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.465
Centroid-sig: 1.0%
Centroid-so: 1.911 arcsec [1.94σ]
OotOffset-rm: 0.283 arcsec [1.24σ]
OotOffset-st: 1/1/0/0 [2]
KicOffset-rm: 0.204 arcsec [0.92σ]
KicOffset-st: 1/1/0/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

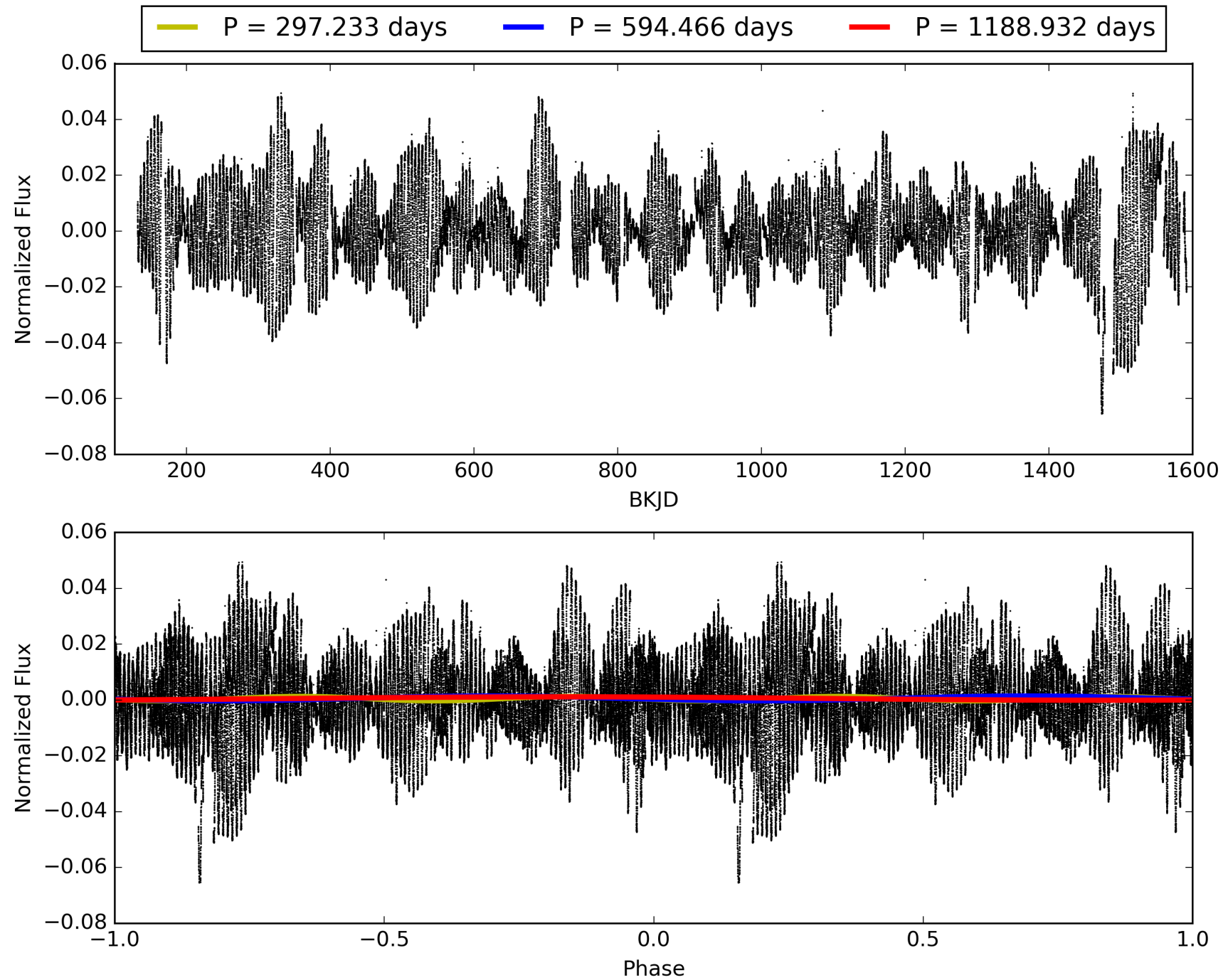
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:21:02 Z

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

TCE 005523471-05, PDC Light Curves

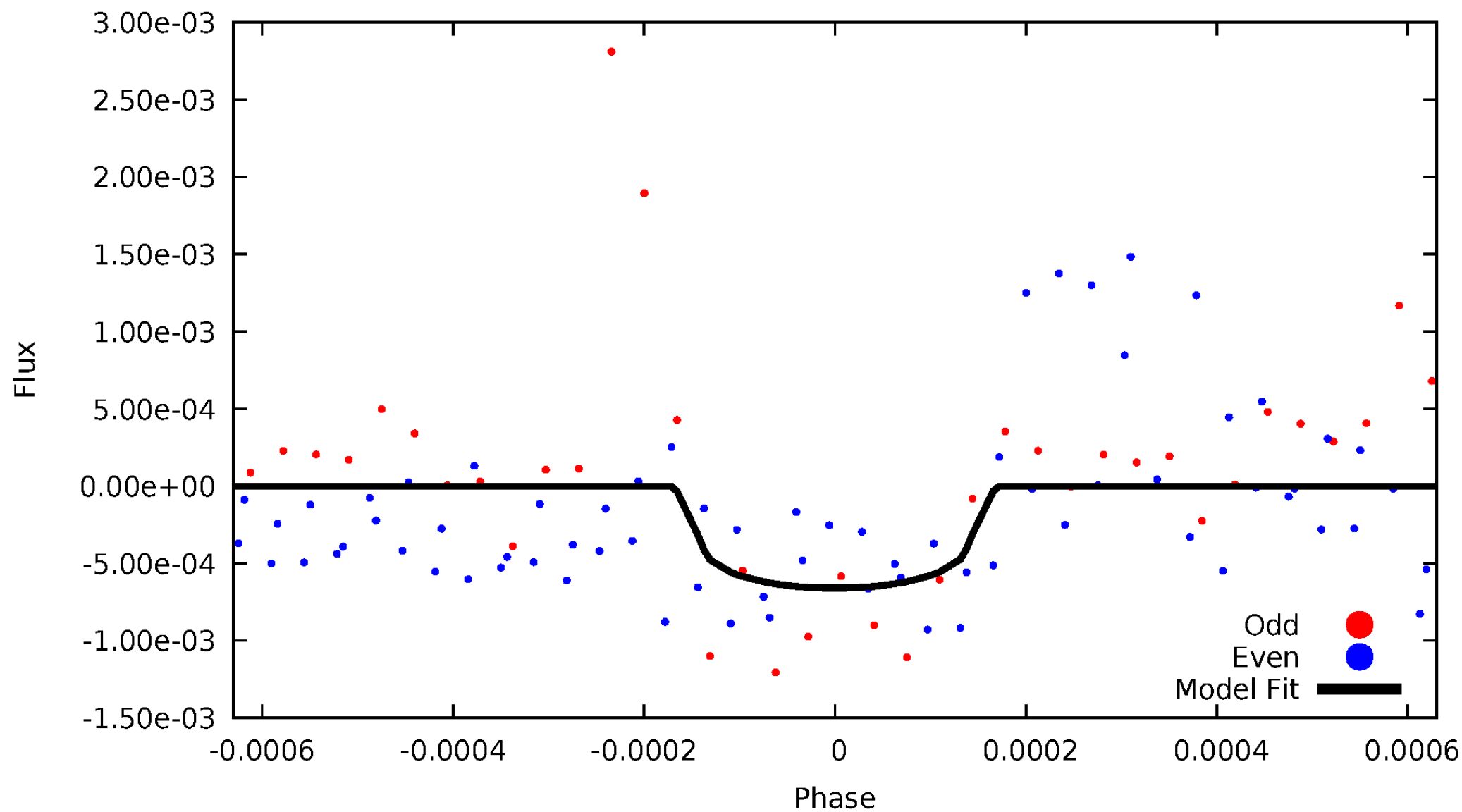


TCE 005523471-05



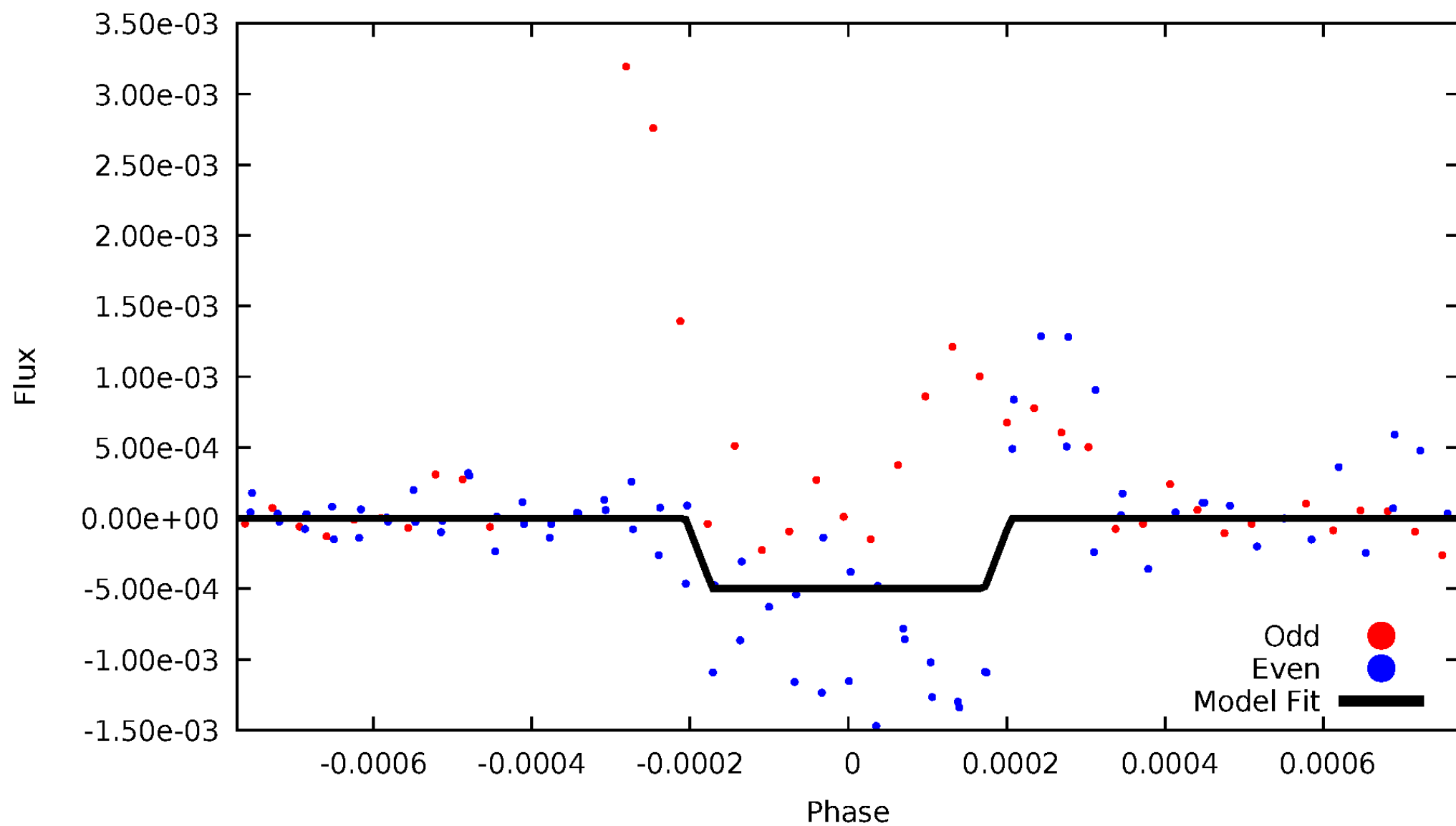
DV Odd/Even

TCE 005523471-05



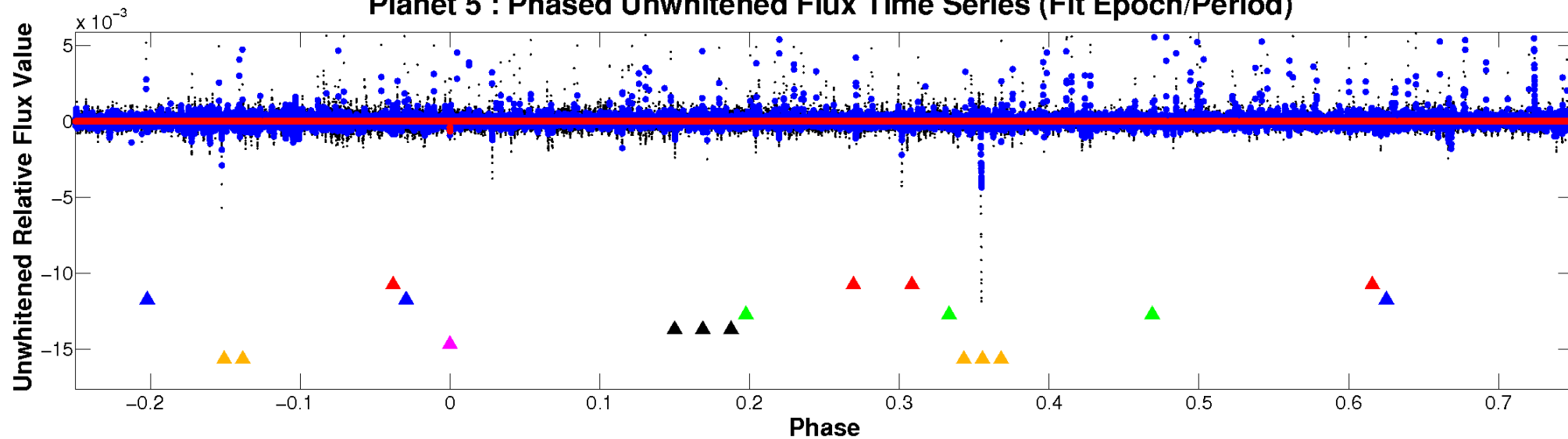
ALT Odd/Even

TCE 005523471-05

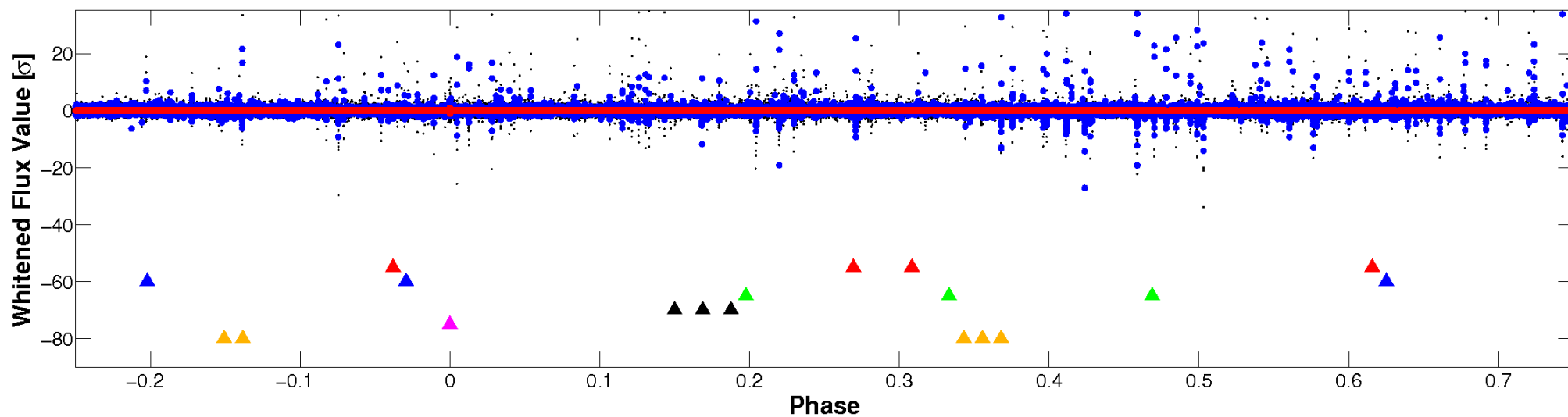


Non-Whitened Vs. Whitened Light Curve

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

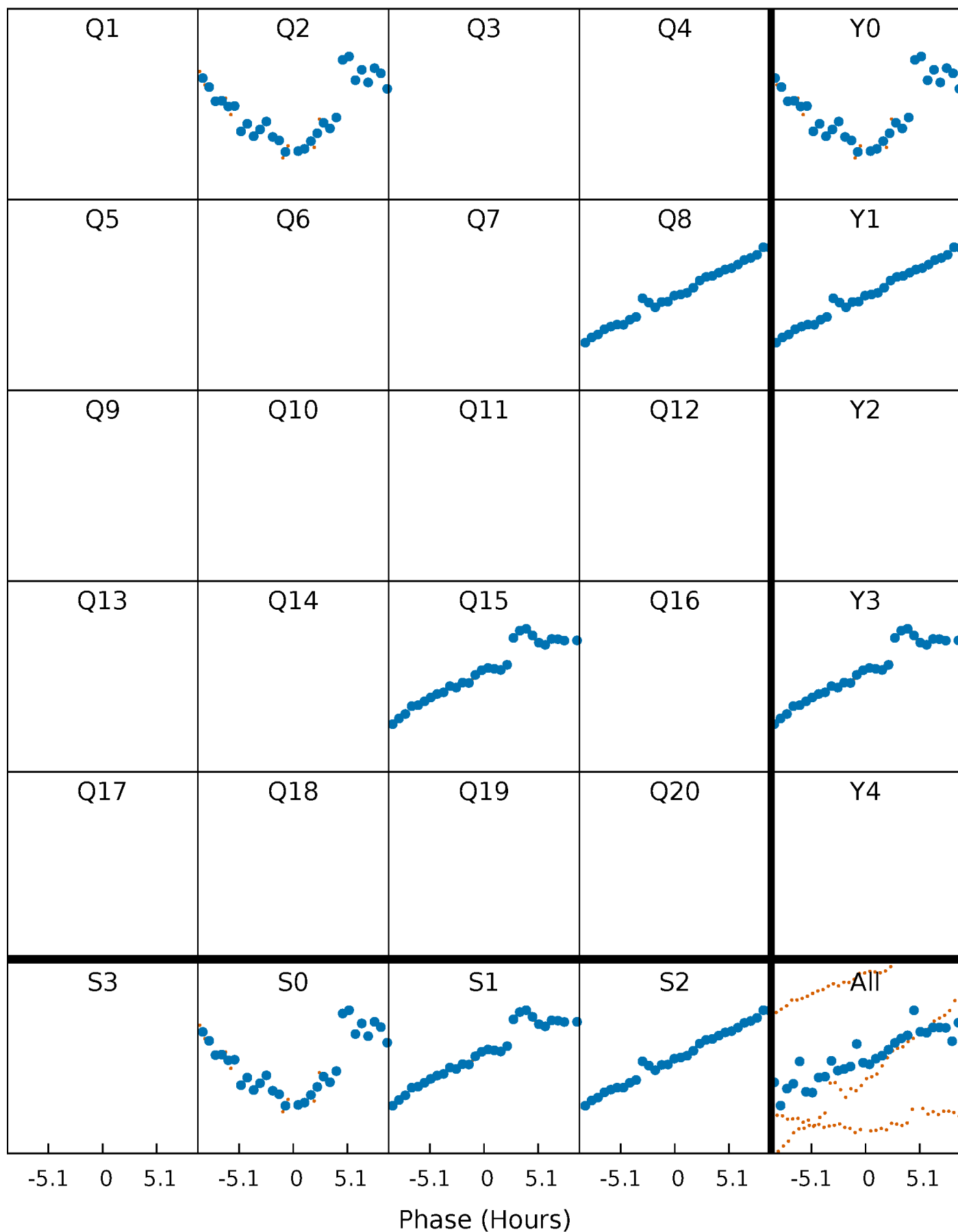


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



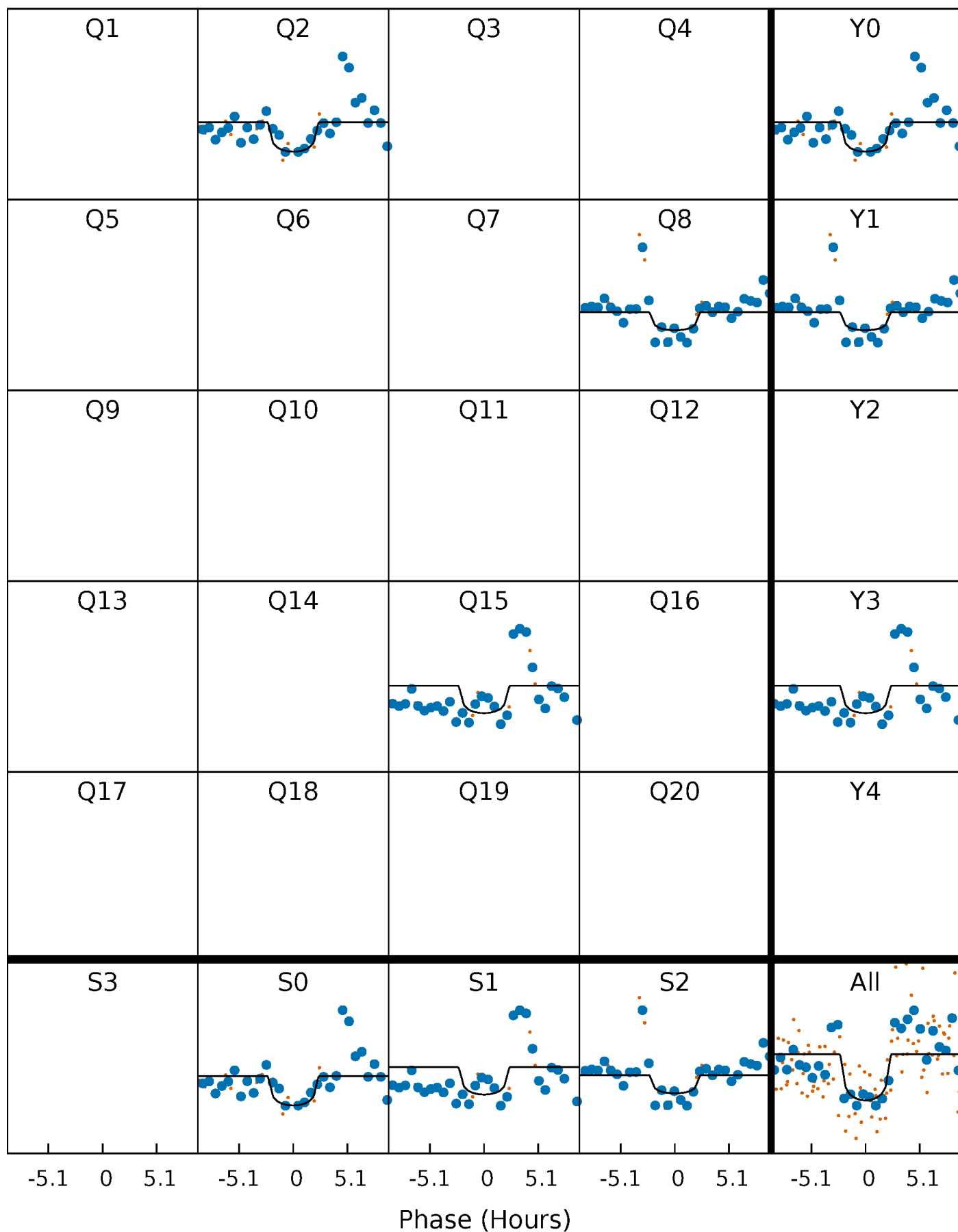
PDC Quarter-Phased Transit Curves

TCE 005523471-05 $P=594.465836$ Days $T_0=191.037325$ (BKJD)



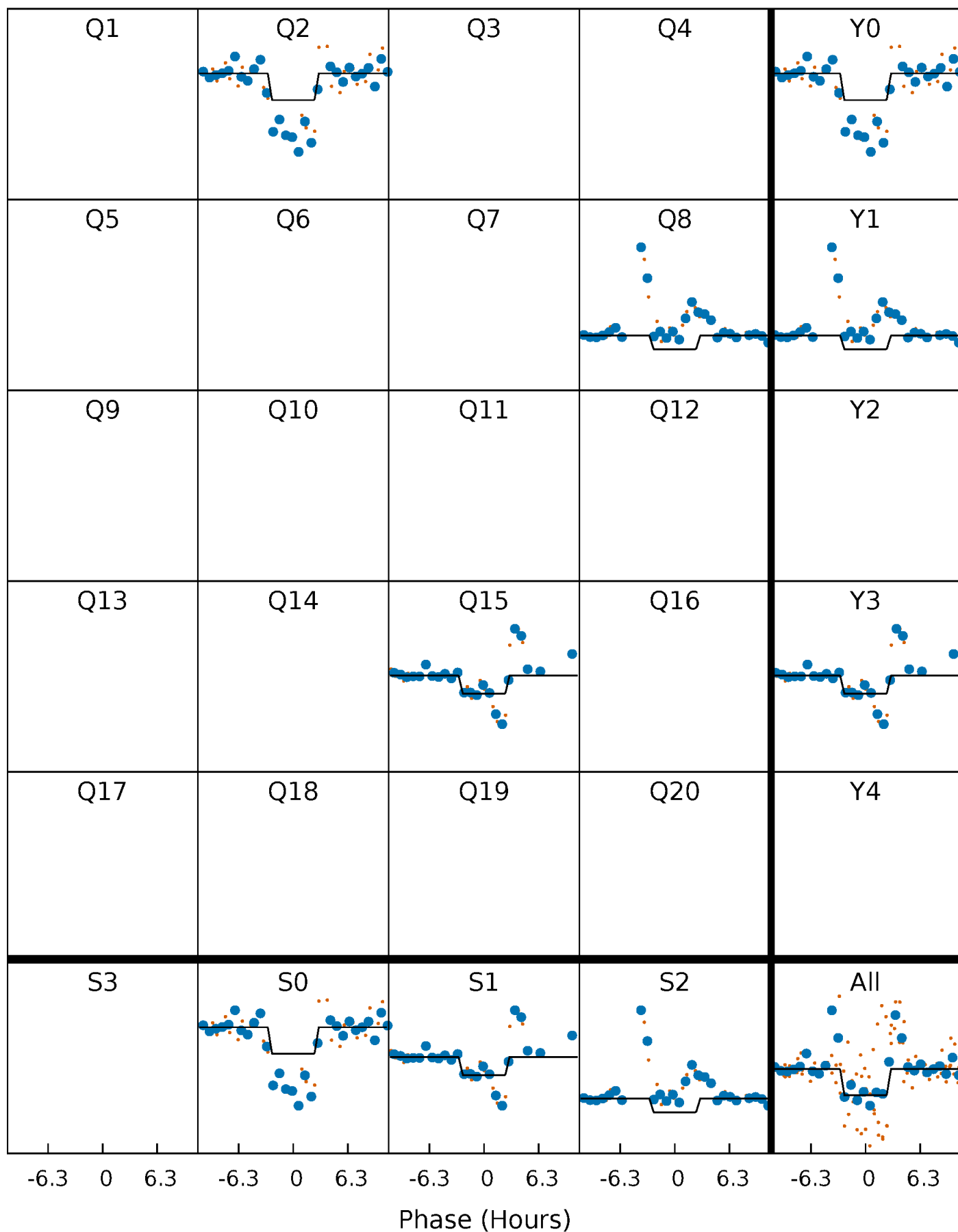
DV Quarter-Phased Transit Curves

TCE 005523471-05 $P=594.465836$ Days $T_0=191.037325$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

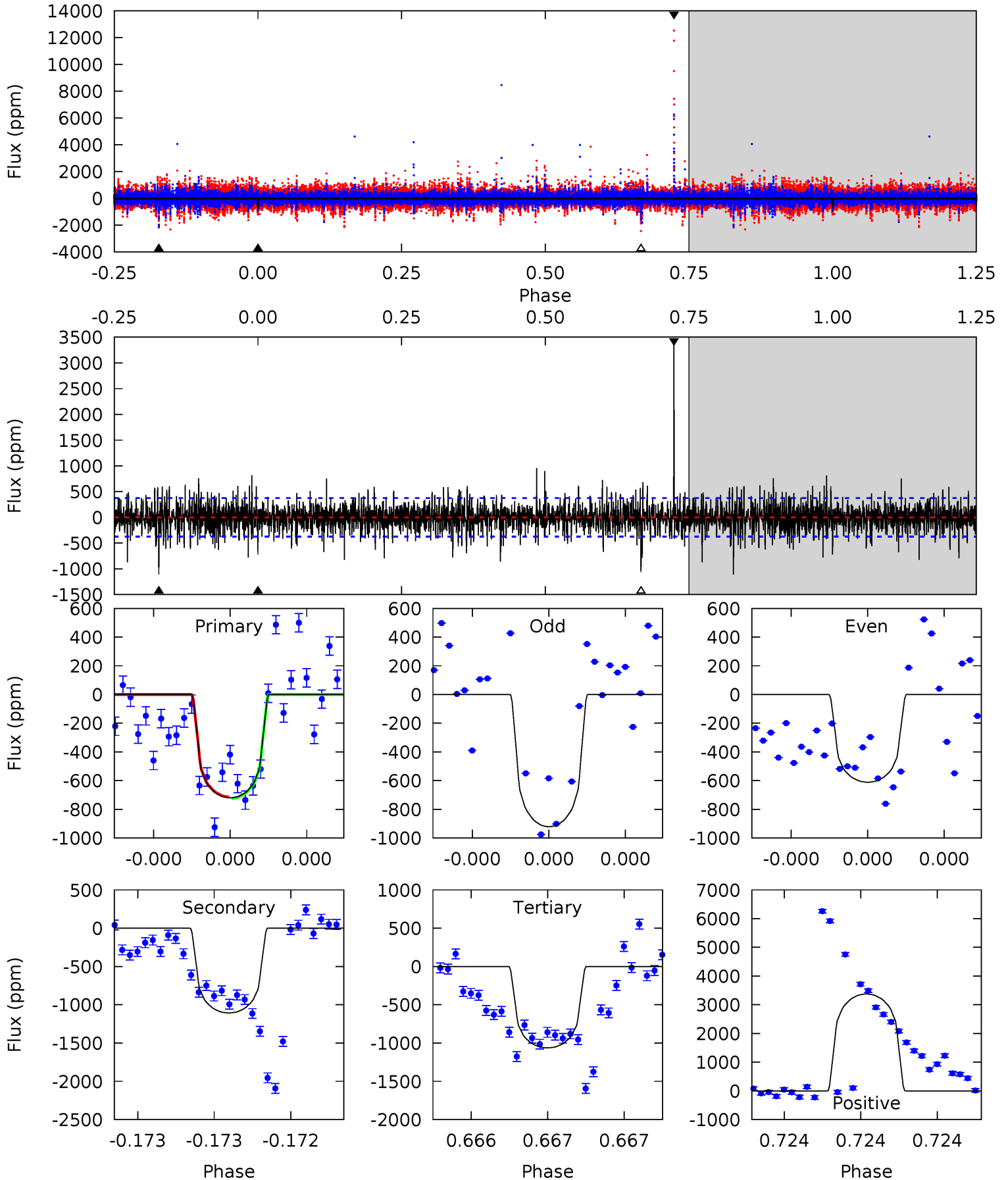
TCE 005523471-05 $P=594.432694$ Days $T_0=191.098310$ (BKJD)



DV Model-Shift Uniqueness Test

005523471-05, P = 594.465836 Days, E = 191.037325 Days

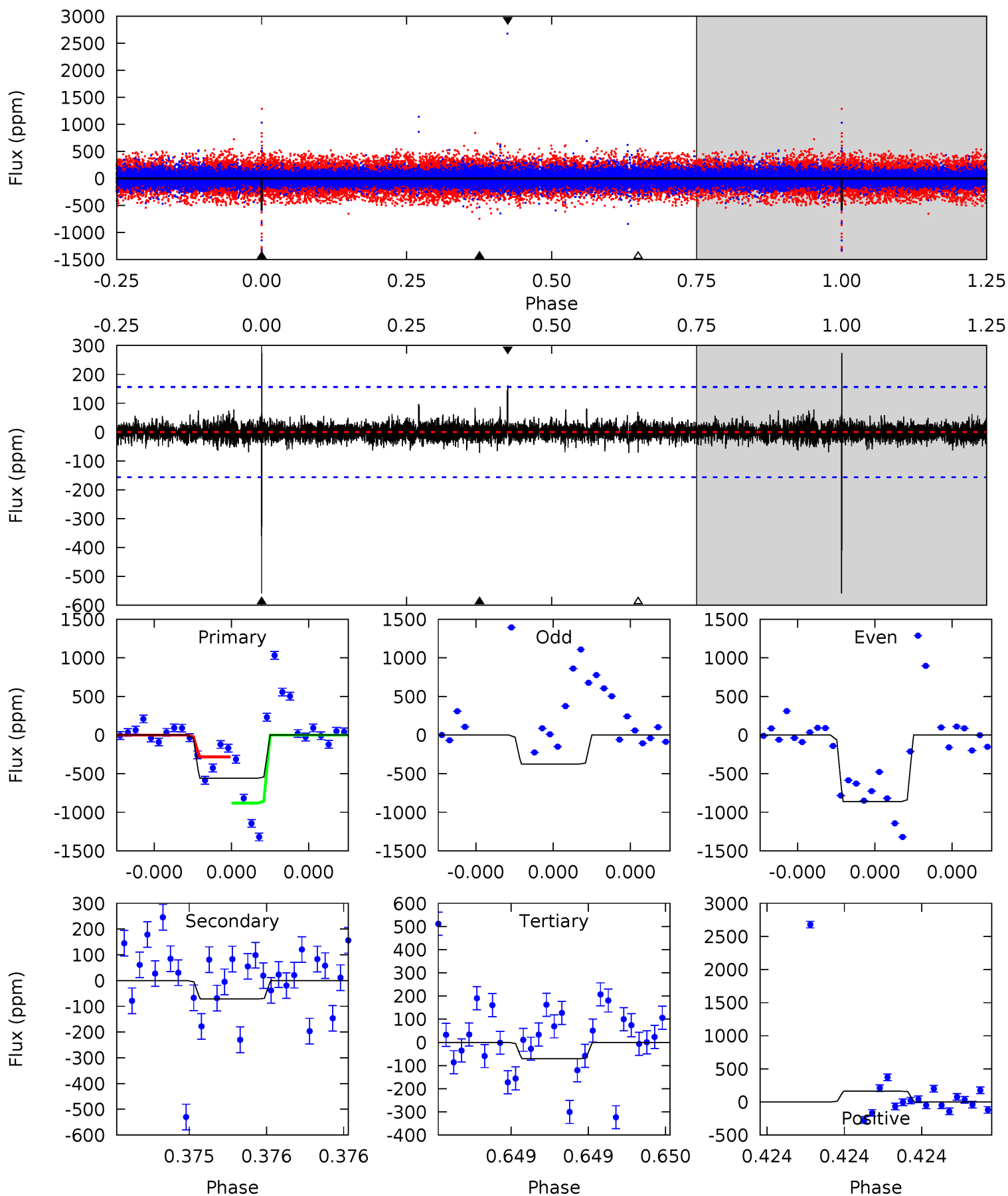
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.9	16.7	16.0	50.9	5.64	3.58	2.83	-5.18	-40.1	0.66	-34.2	1.80	1.12	0.75	0.07



Alt Model-Shift Uniqueness Test

005523471-05, P = 594.432694 Days, E = 191.098310 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.0	2.55	2.51	5.80	5.61	3.53	0.56	17.5	14.2	0.04	-3.25	9.12	0.70	0.33	11.0



Stellar Parameters For KIC 005523471

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5596^{+167}_{-150}	$4.346^{+0.194}_{-0.237}$	$-0.240^{+0.300}_{-0.250}$	$1.004^{+0.353}_{-0.218}$	$0.815^{+0.127}_{-0.063}$	$1.134^{+1.103}_{-0.630}$
	+3%/-3%	+4%/-5%	+125%/-104%	+35%/-22%	+16%/-8%	+97%/-56%
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 005523471-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-1107 ± 66	$4.59^{+4.92}_{-3.08}$	306^{+30}_{-23}	5101^{+4263}_{-1227}	$50538^{+407966}_{-38592}$
Alt.	-71 ± 28	$4.95^{+4.14}_{-3.45}$	306^{+30}_{-23}	3069^{+1391}_{-477}	2637^{+21542}_{-1946}

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 $A_{obs} \gg 1.0$

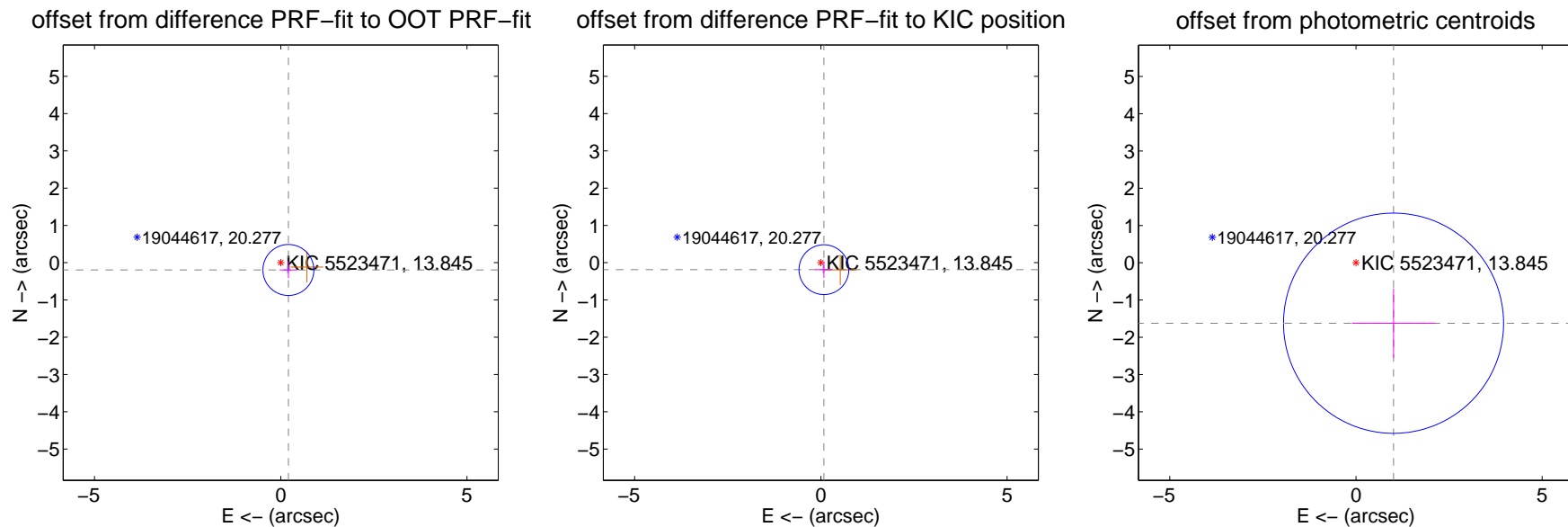
DV Centroid Data

Supplemental centroid analysis for 005523471-05. Kepler magnitude: 13.85. Transit SNR 5.21

There are 1 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.283 ± 0.228	1.24	-0.205 ± 0.235	-0.196 ± 0.220
PRF-fit source offset from KIC position	0.204 ± 0.223	0.92	-0.082 ± 0.235	-0.187 ± 0.220
photometric centroid source offset	1.91 ± 0.98	1.94	-1.01 ± 1.11	-1.62 ± 0.93



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

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

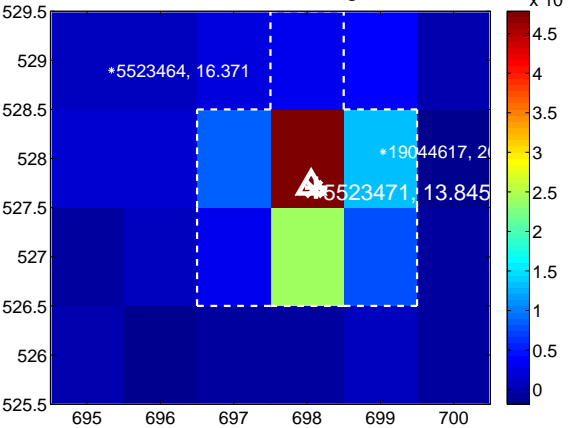
Q1 no difference image



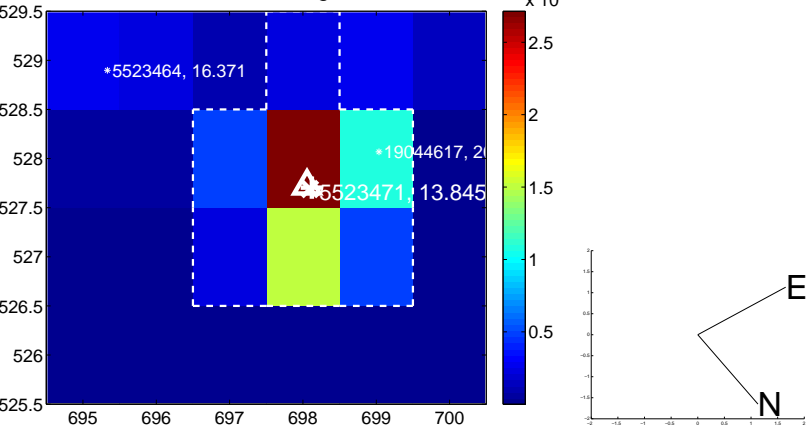
Q1 no OOT image



Q2 difference image



Q2 OOT image



Q3 no difference image



Q3 no OOT image



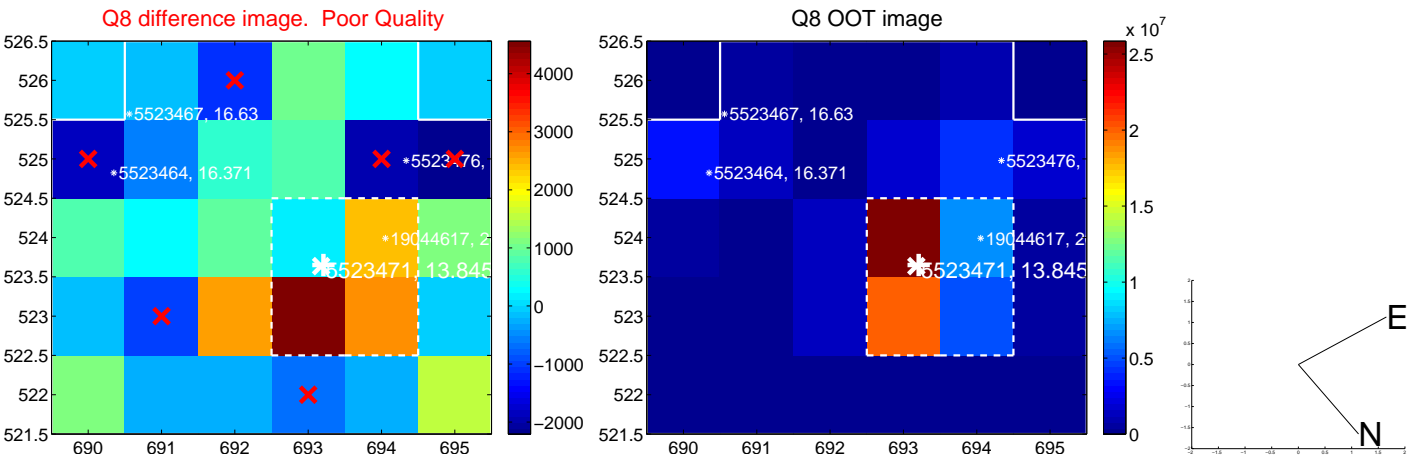
Q4 no difference image



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

Q13 no difference image



Q13 no OOT image



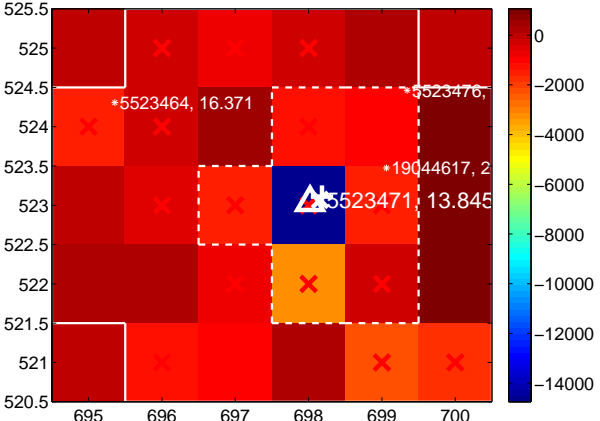
Q14 no difference image



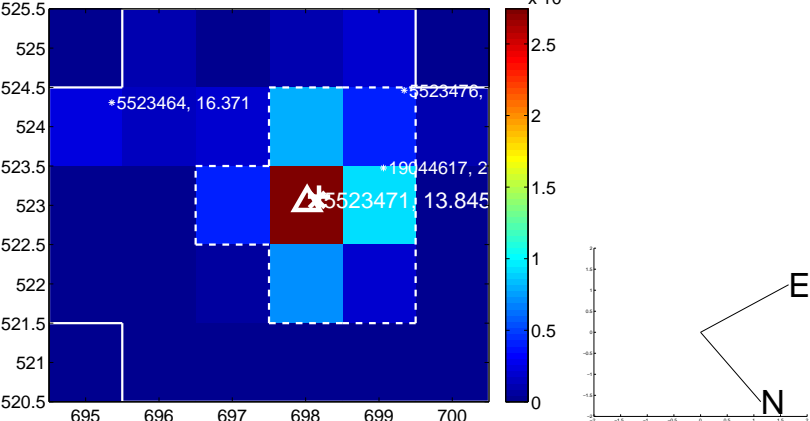
Q14 no OOT image



Q15 difference image. Poor Quality



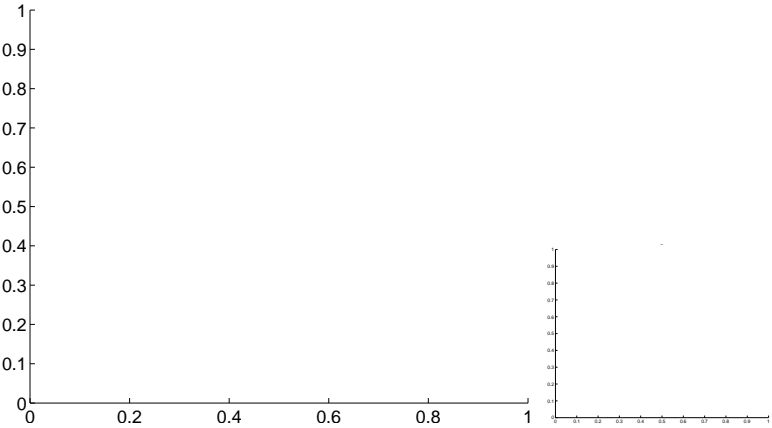
Q15 OOT image



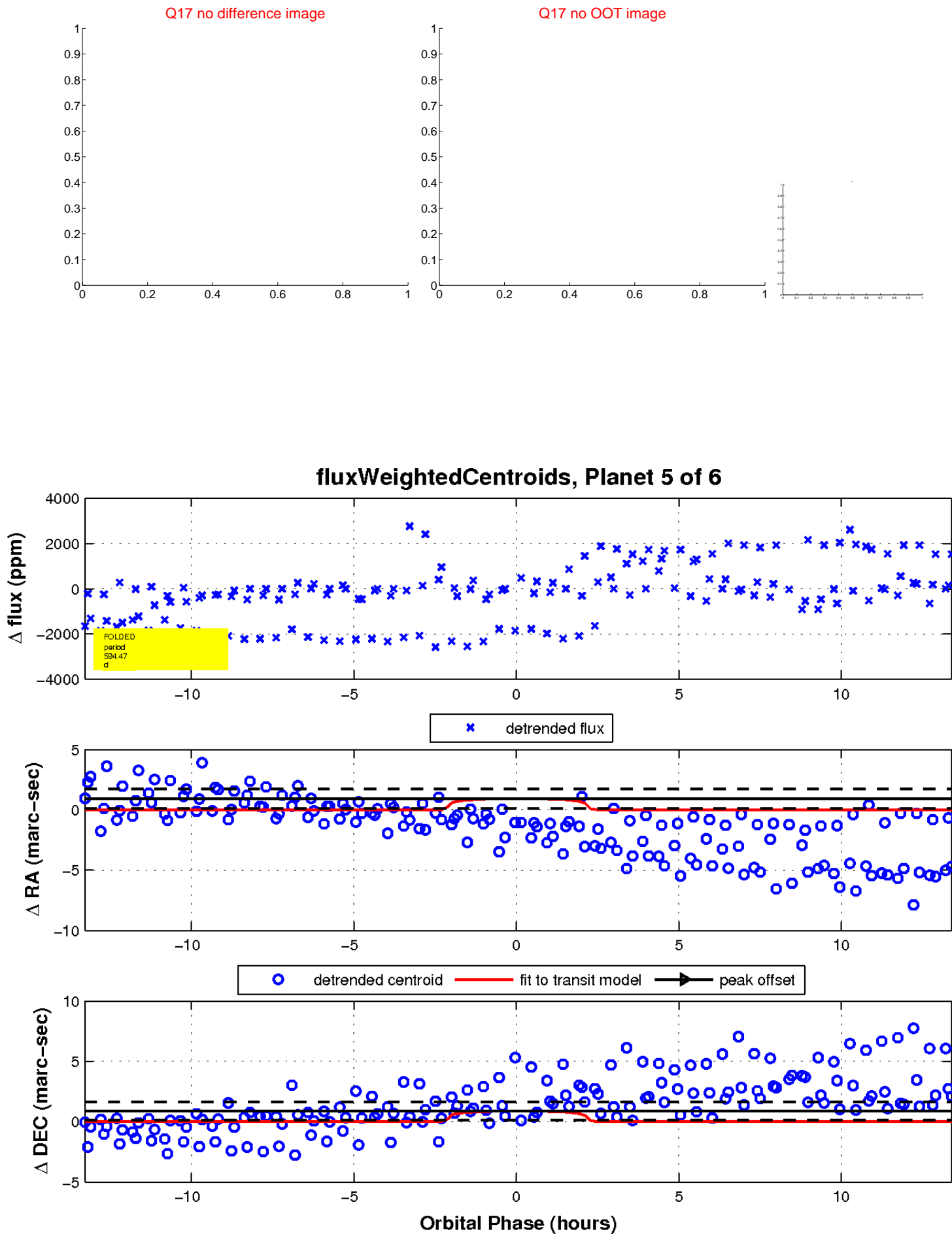
Q16 no difference image



Q16 no OOT image

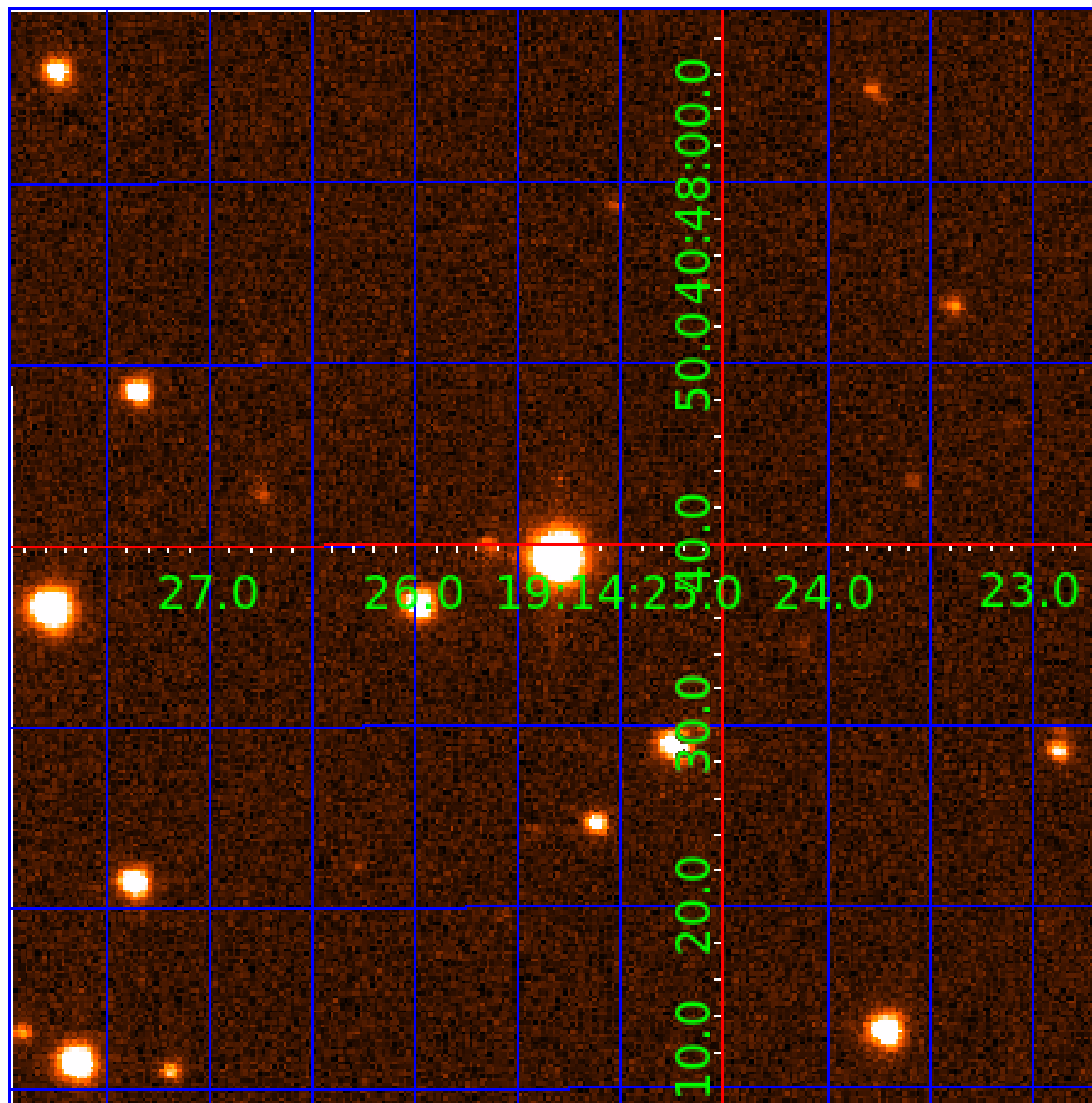


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005523471

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})
005523471-01	OBS	No	388.579412	374.376339	2617.6	24.314	16.8	7.5	1.00	5596	6.32	0.93
005523471-02	OBS	No	491.737712	173.661557	755.6	3.977	16.9	6.7	1.00	5596	2.92	0.68
005523471-03	OBS	No	513.847734	469.745205	678.4	4.736	12.3	7.4	1.00	5596	2.66	0.64
005523471-04	OBS	No	583.275803	302.596897	720.4	2.799	10.9	7.1	1.00	5596	2.88	0.54
005523471-05	OBS	No	594.465836	191.037325	661.8	4.494	12.2	5.2	1.00	5596	2.69	0.53
005523471-06	OBS	No	293.536988	409.770885	1145.5	3.913	10.2	9.6	1.00	5596	3.75	1.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005523471-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005523471-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005523471-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS—HALO_GHOST
005523471-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005523471-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—CENT_FEW_DIFFS
005523471-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—INCONSISTENT_TRANS

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

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

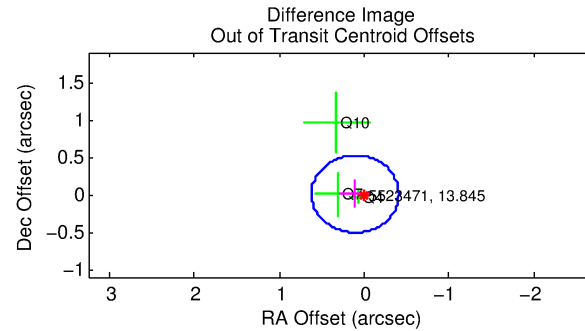
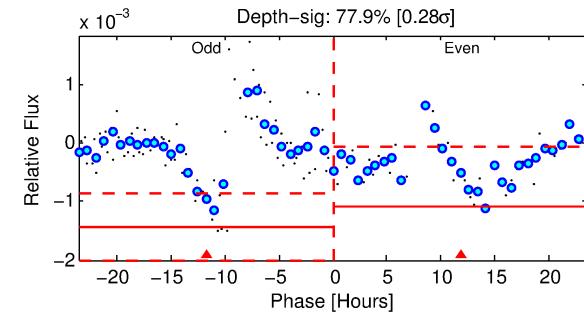
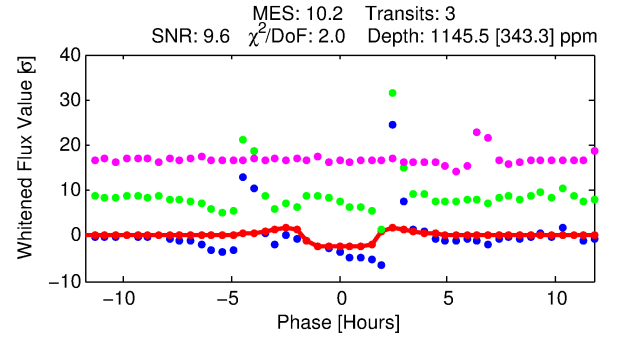
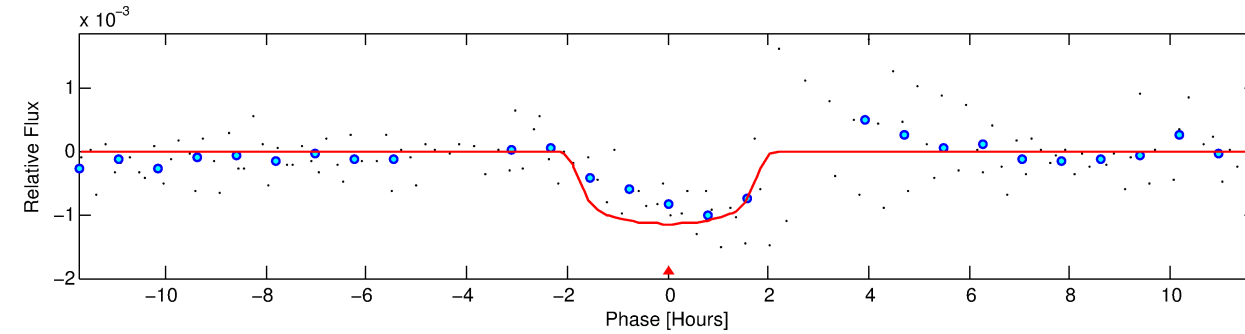
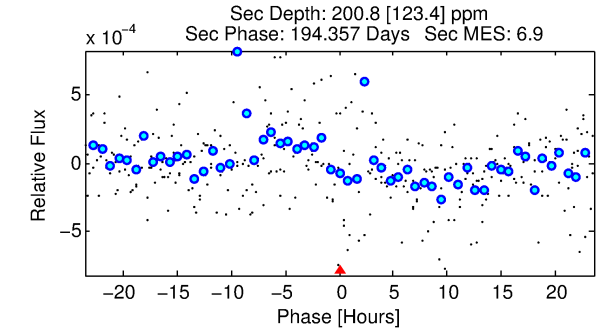
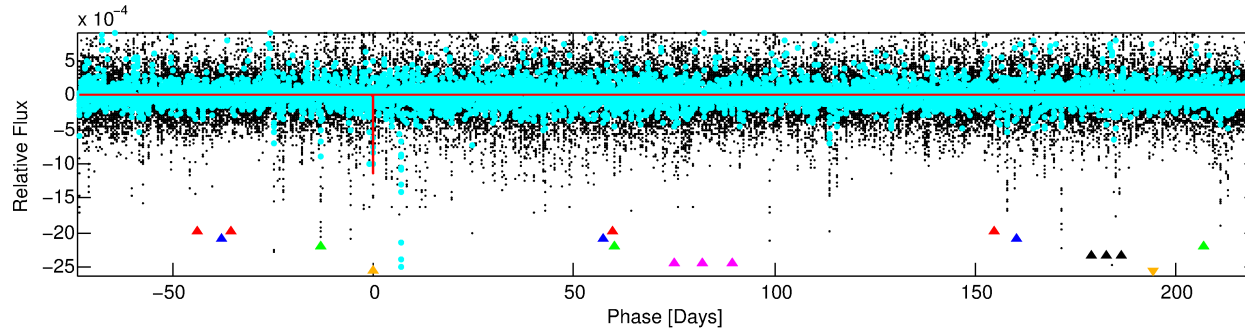
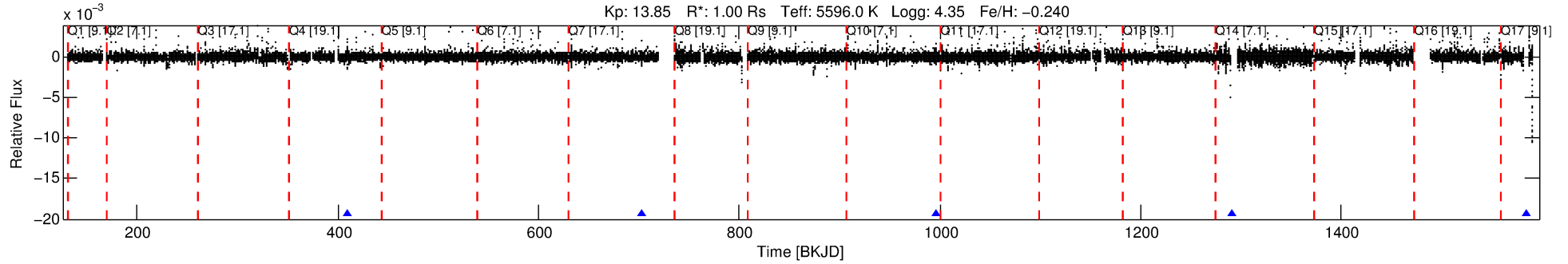
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005523471-06

No Significant Match Found

DV One-Page Summary

KIC: 5523471 Candidate: 6 of 6 Period: 293.537 d



DV Fit Results:

Period = 293.53699 [0.00935] d
Epoch = 409.7709 [0.0138] BKJD
Rp/R* = 0.0343 [0.0293]
a/R* = 384.60 [1361.88]
b = 0.79 [1.74]
Seff = 1.36 [0.61]
Teq = 275 [31] K
Rp = 3.75 [3.47] Re
a = 0.8078 [0.2397] AU
Ag = 5117.87 [9556.46] [0.54 σ]
Teffp = 3599 [1638] K [2.03 σ]

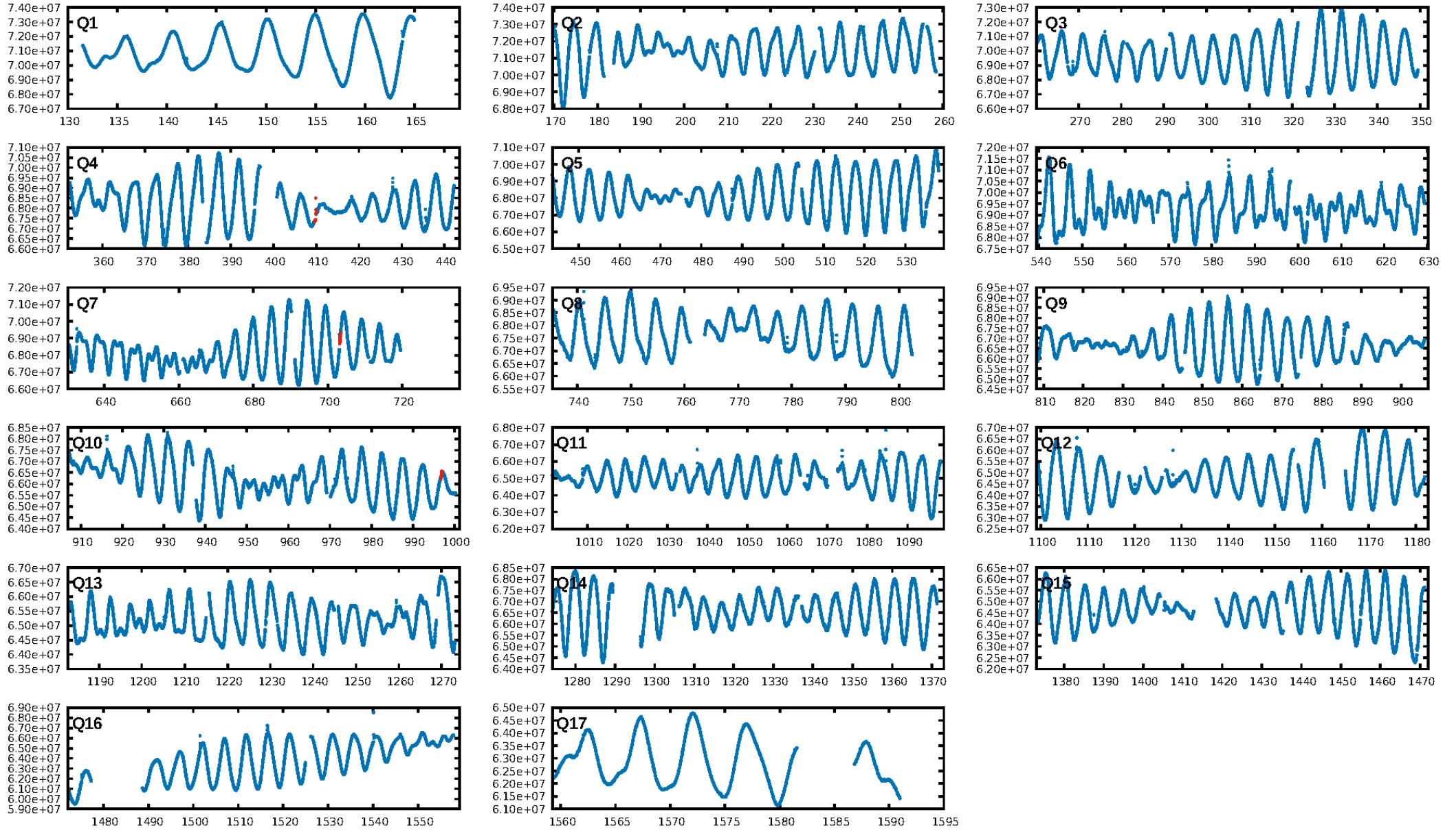
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [92.62 σ]
ModelChiSquare2-sig: 3.8%
ModelChiSquareGof-sig: 58.5%
Bootstrap-pfa: 2.44e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.32
Centroid-sig: 3.1%
Centroid-so: 0.758 arcsec [1.01 σ]
OotOffset-rm: 0.103 arcsec [0.60 σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-rm: 0.224 arcsec [1.30 σ]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

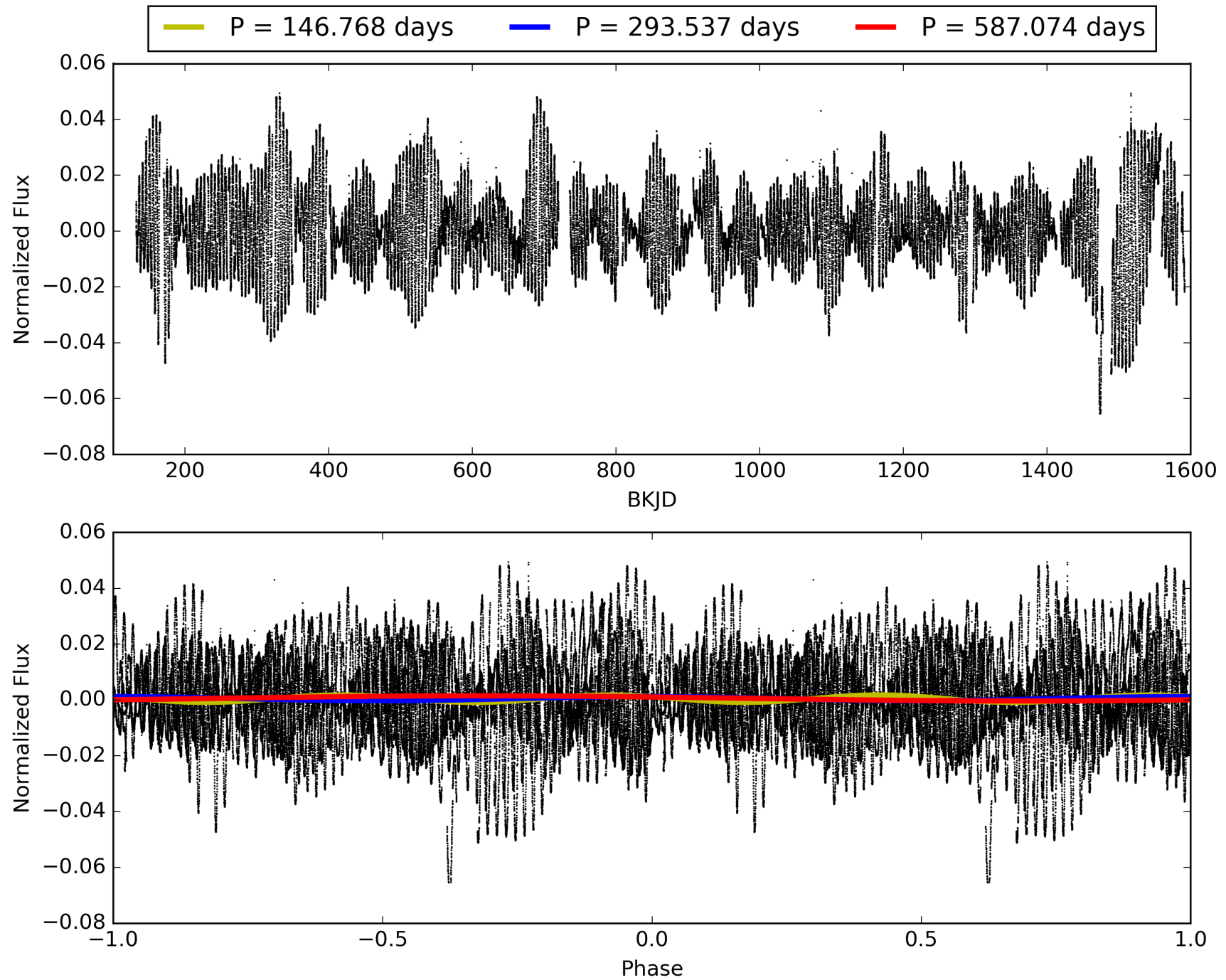
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 02-Feb-2016 00:21:16 Z

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

TCE 005523471-06, PDC Light Curves

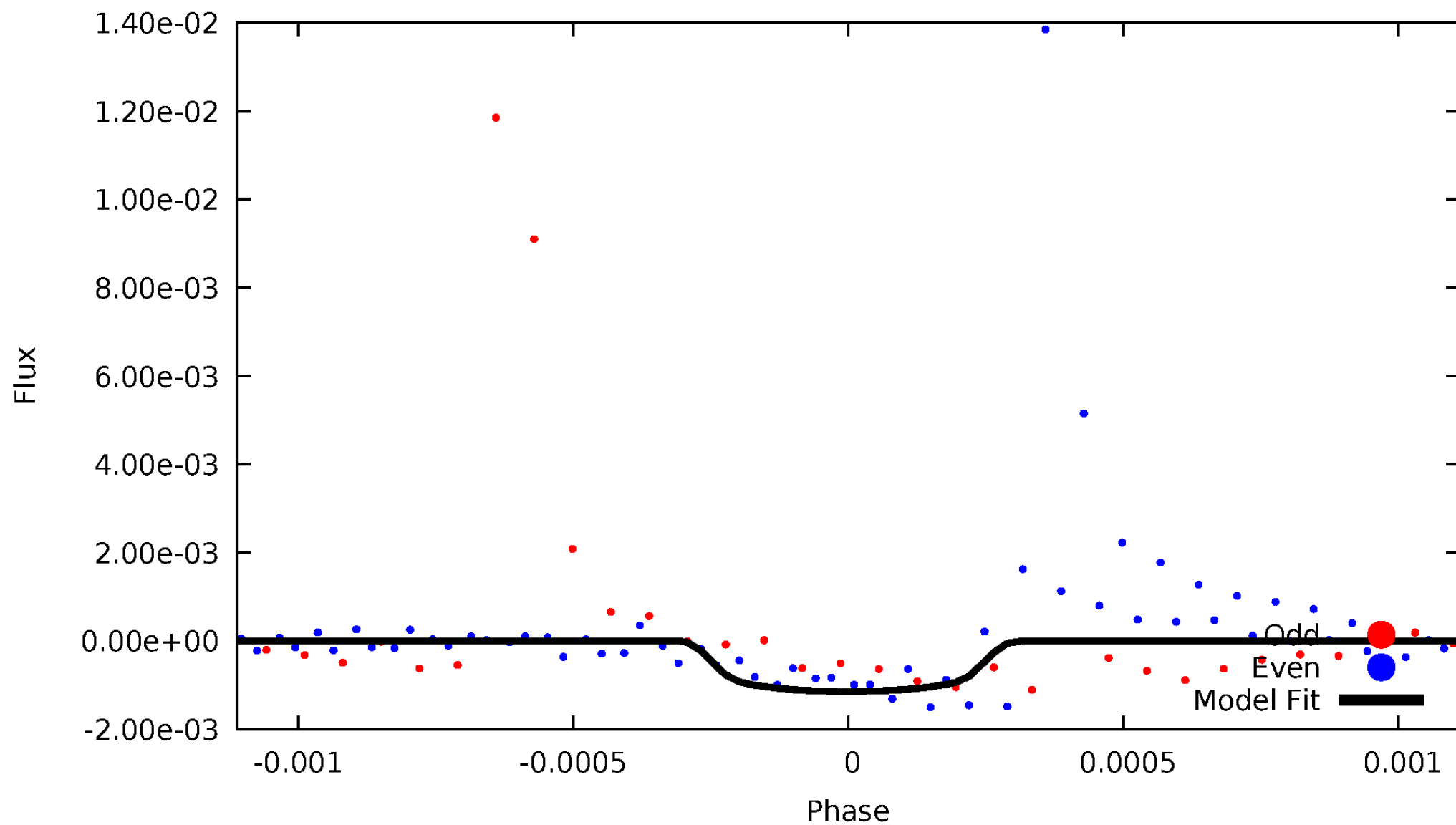


TCE 005523471-06



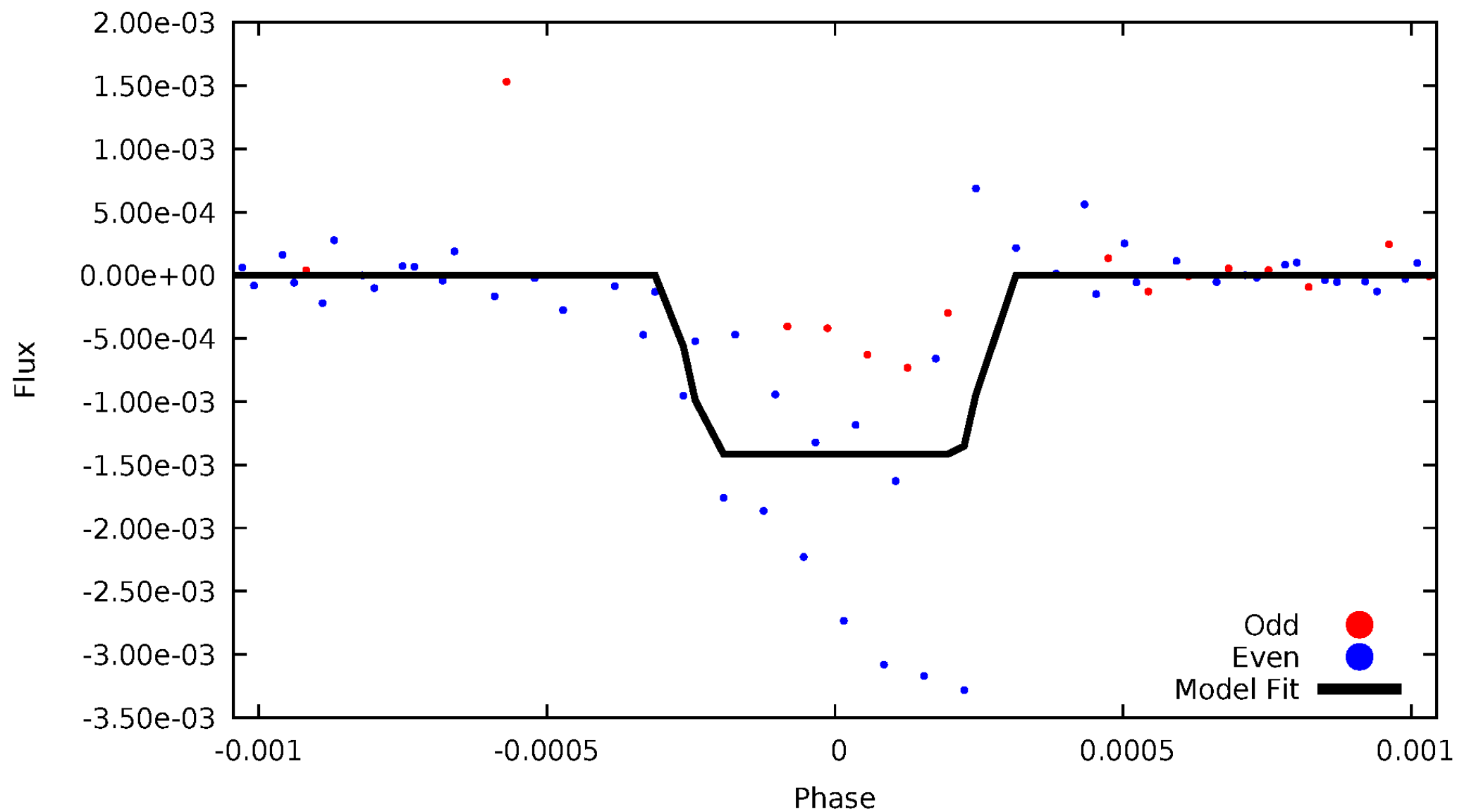
DV Odd/Even

TCE 005523471-06



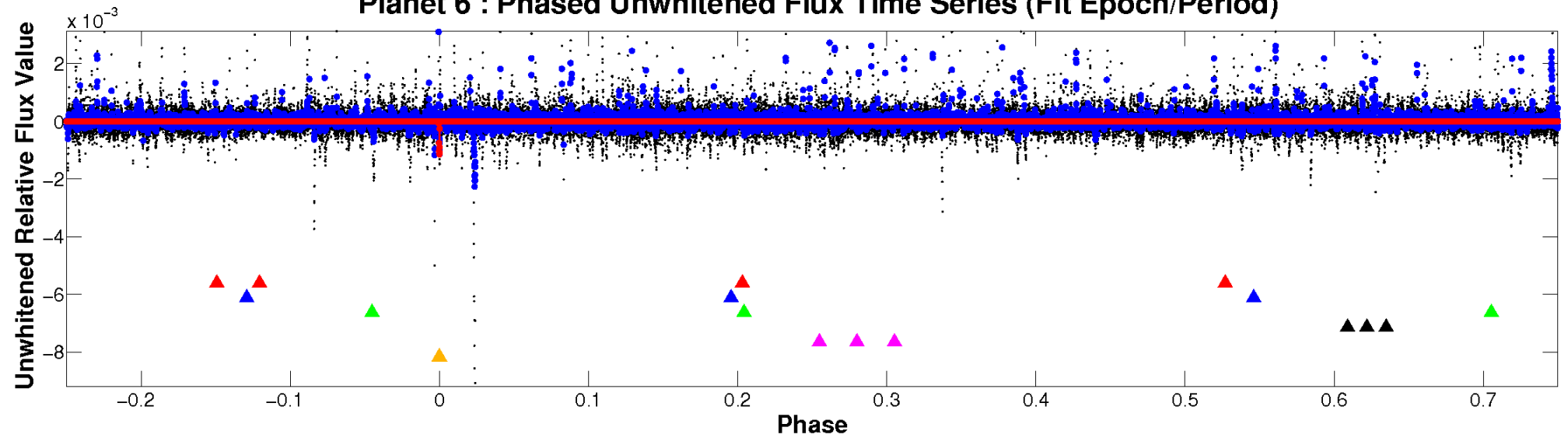
ALT Odd/Even

TCE 005523471-06

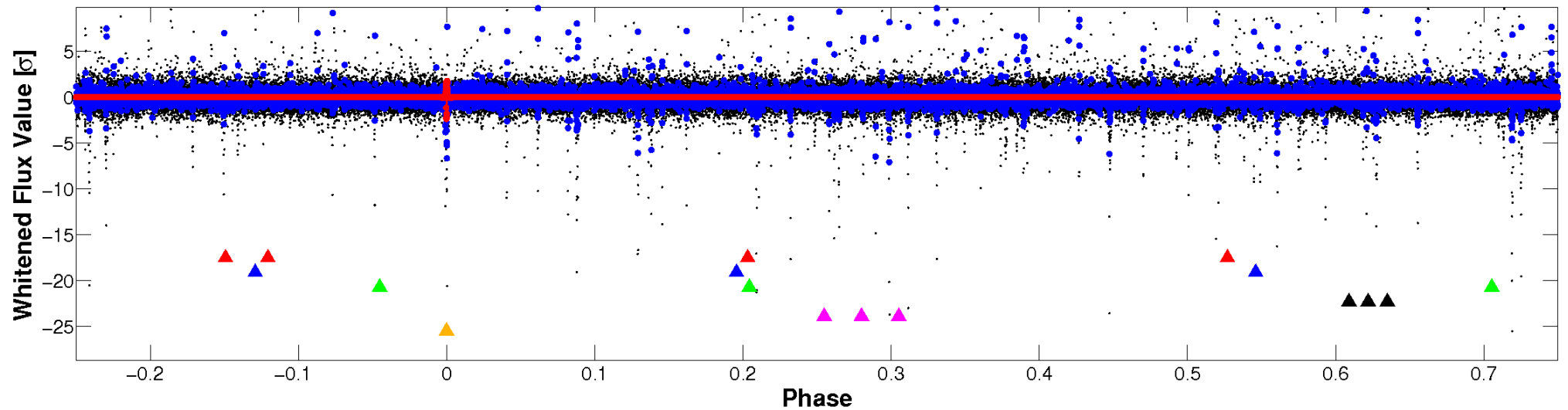


Non-Whitened Vs. Whitened Light Curve

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

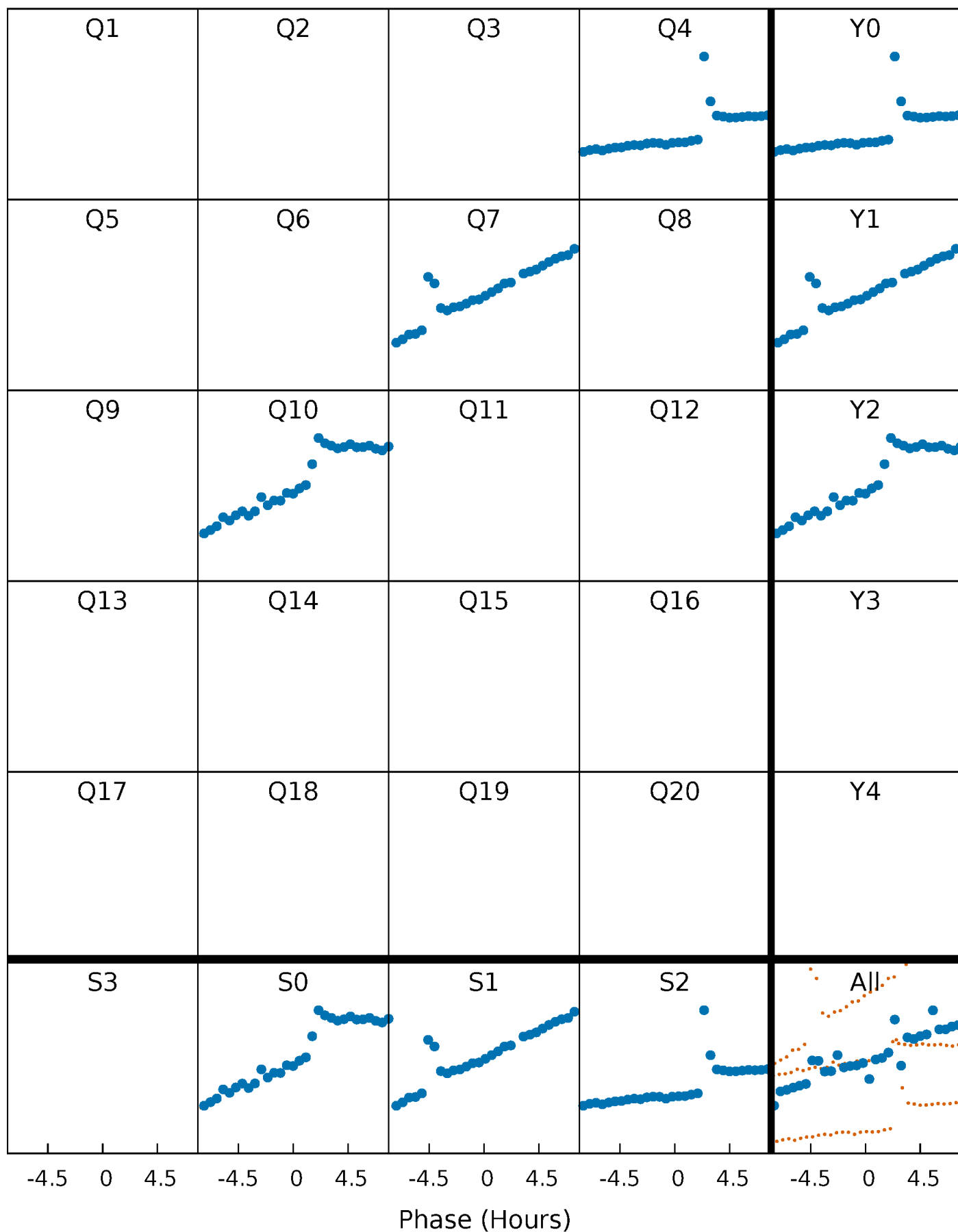


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



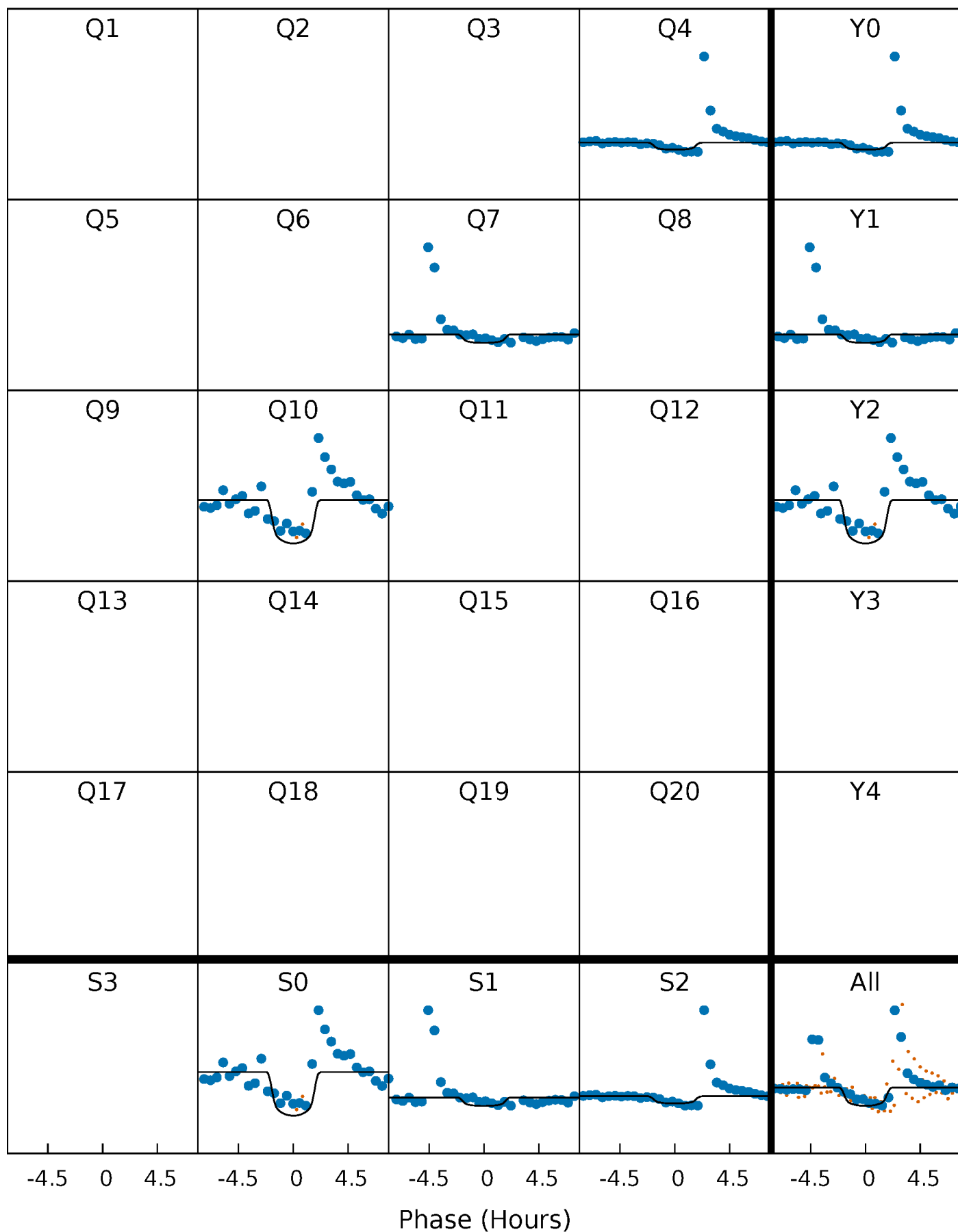
PDC Quarter-Phased Transit Curves

TCE 005523471-06 P=293.536988 Days $T_0=409.770885$ (BKJD)



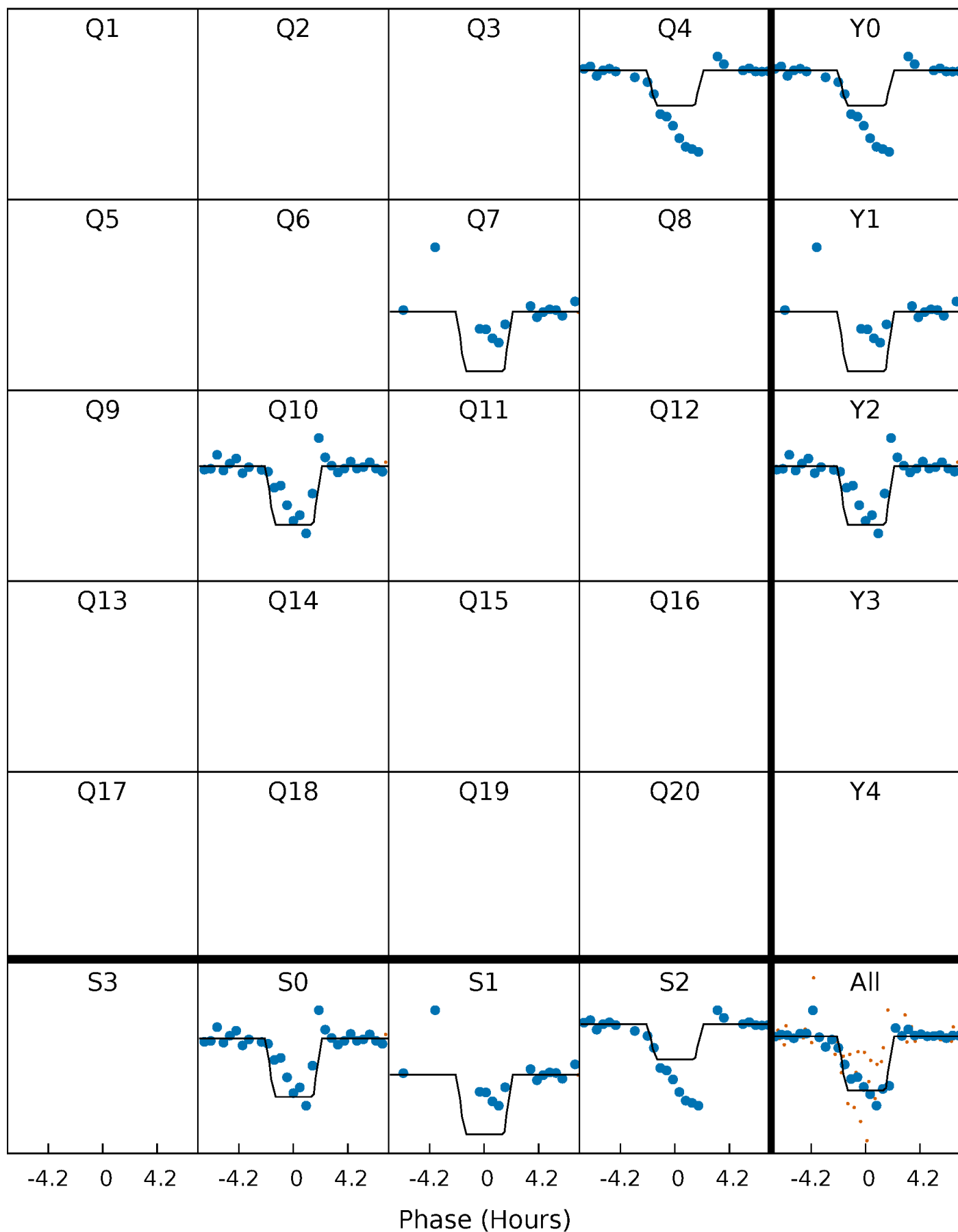
DV Quarter-Phased Transit Curves

TCE 005523471-06 P=293.536988 Days $T_0=409.770885$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

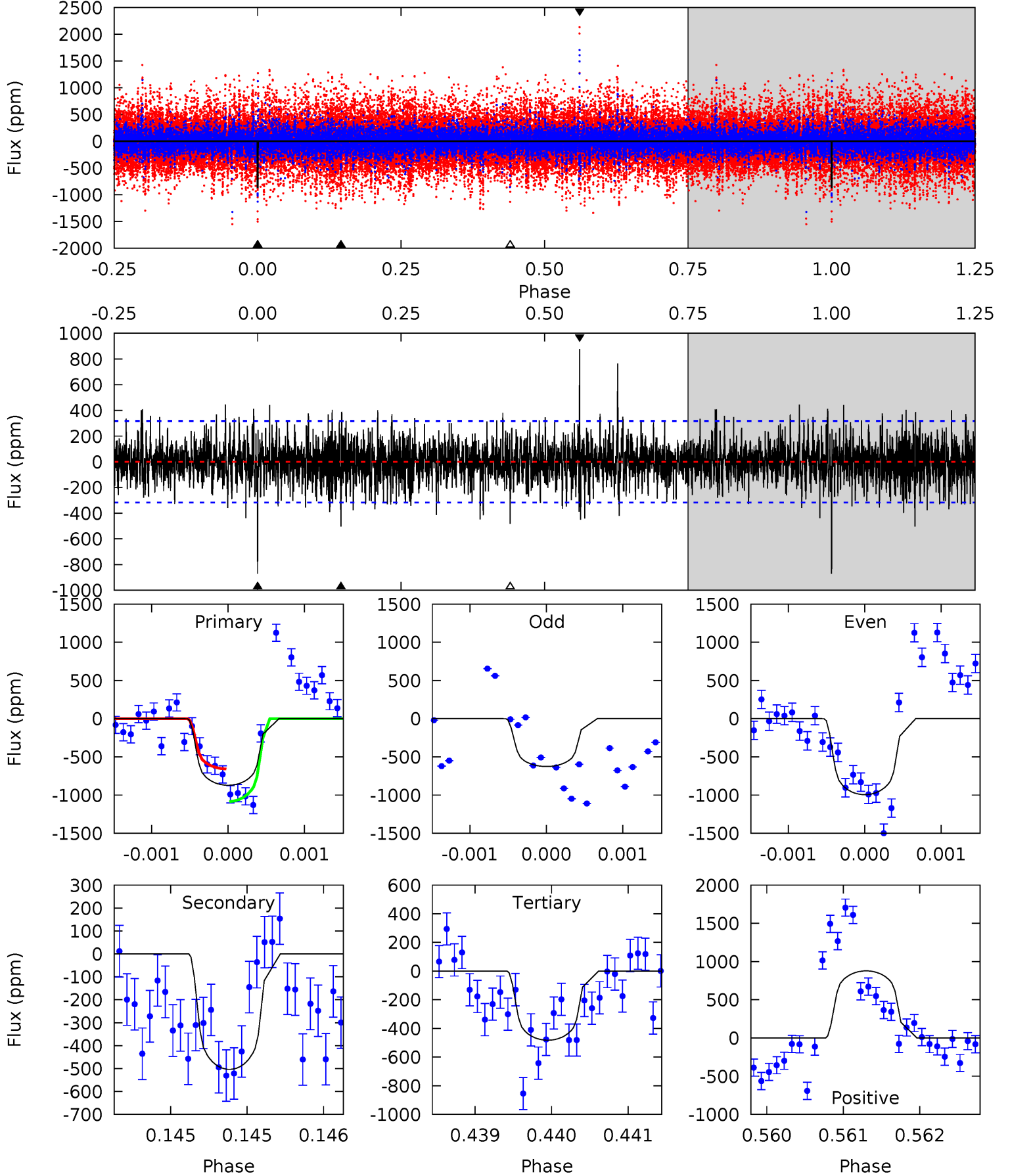
TCE 005523471-06 P=293.538170 Days $T_0=409.789850$ (BKJD)



DV Model-Shift Uniqueness Test

005523471-06, P = 293.536988 Days, E = 116.233897 Days

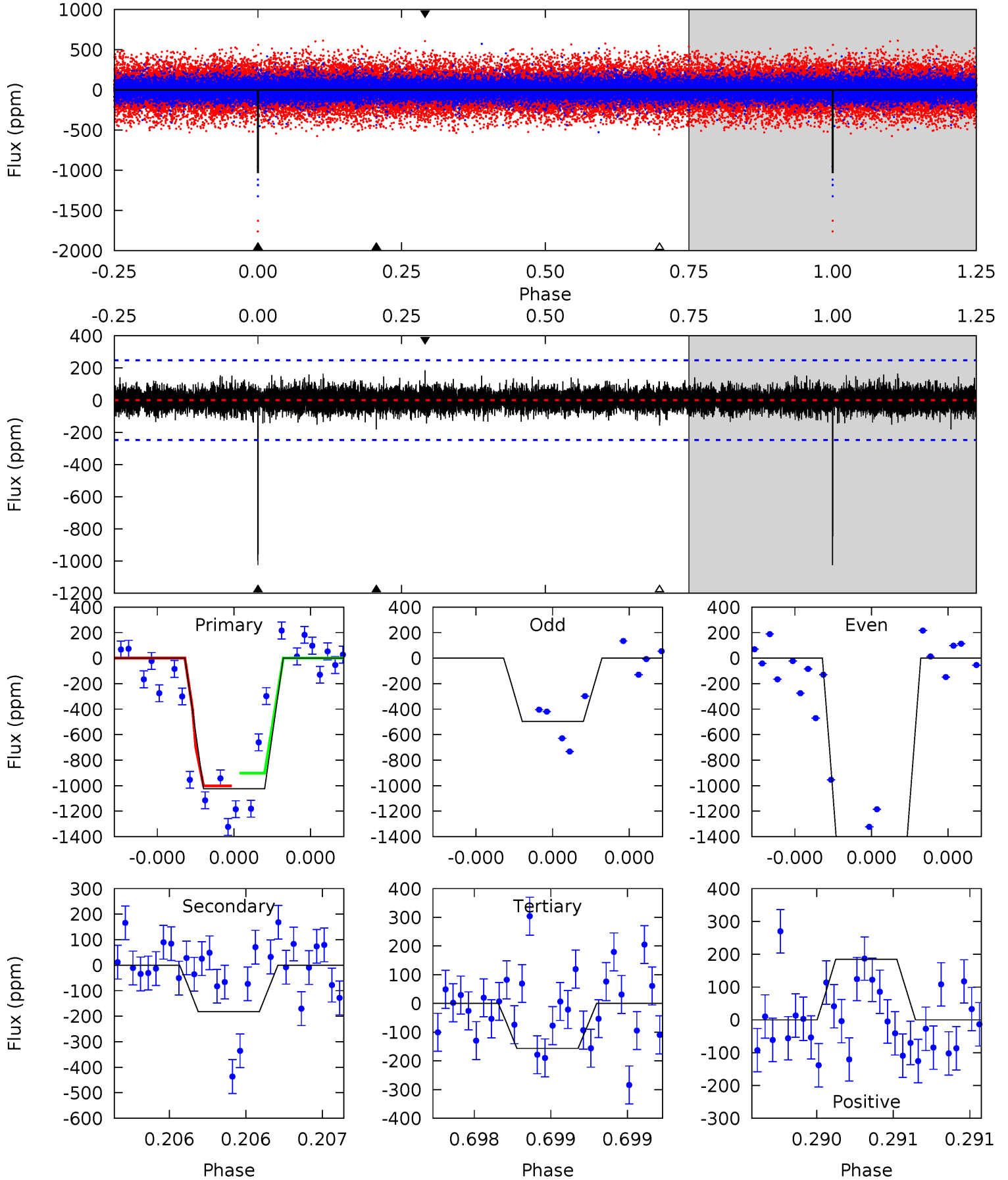
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.2	8.80	8.44	15.3	5.55	3.44	2.05	6.80	-0.11	0.37	-6.55	2.66	1.07	0.50	3.76



Alt Model-Shift Uniqueness Test

005523471-06, P = 293.538170 Days, E = 116.251680 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
23.1	4.09	3.52	4.15	5.58	3.49	0.83	19.5	18.9	0.57	-0.06	19.1	1.50	0.15	1.21



Stellar Parameters For KIC 005523471

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5596^{+167}_{-150}	$4.346^{+0.194}_{-0.237}$	$-0.240^{+0.300}_{-0.250}$	$1.004^{+0.353}_{-0.218}$	$0.815^{+0.127}_{-0.063}$	$1.134^{+1.103}_{-0.630}$
	+3%/-3%	+4%/-5%	+125%/-104%	+35%/-22%	+16%/-8%	+97%/-56%
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 005523471-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-503 ± 57	$4.46^{+3.23}_{-2.73}$	389^{+38}_{-29}	4382^{+2638}_{-739}	8997^{+54800}_{-5961}
Alt.	-182 ± 44	$4.59^{+3.33}_{-2.77}$	386^{+36}_{-29}	3632^{+1452}_{-560}	3147^{+16653}_{-2196}

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

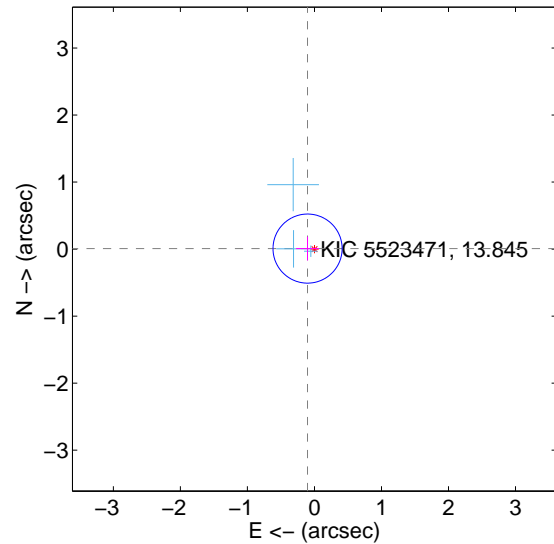
Supplemental centroid analysis for 005523471-06. Kepler magnitude: 13.85. Transit SNR 9.59

There are 3 quarters with good PRF difference image offsets

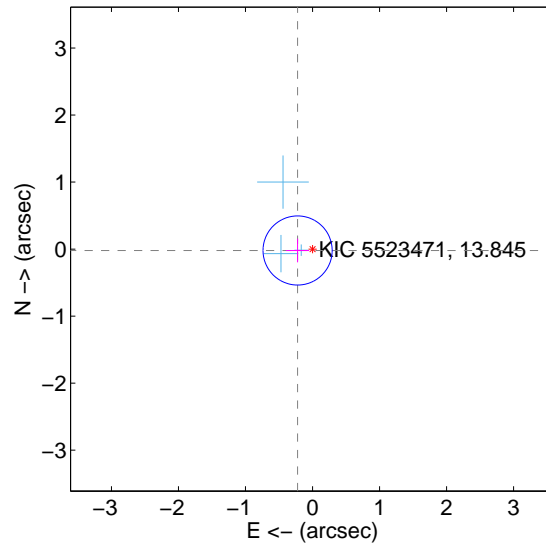
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.103 ± 0.172	0.60	0.103 ± 0.172	0.008 ± 0.177
PRF-fit source offset from KIC position	0.224 ± 0.172	1.30	0.223 ± 0.172	-0.021 ± 0.177
photometric centroid source offset	0.76 ± 0.75	1.01	0.07 ± 0.73	0.76 ± 0.75

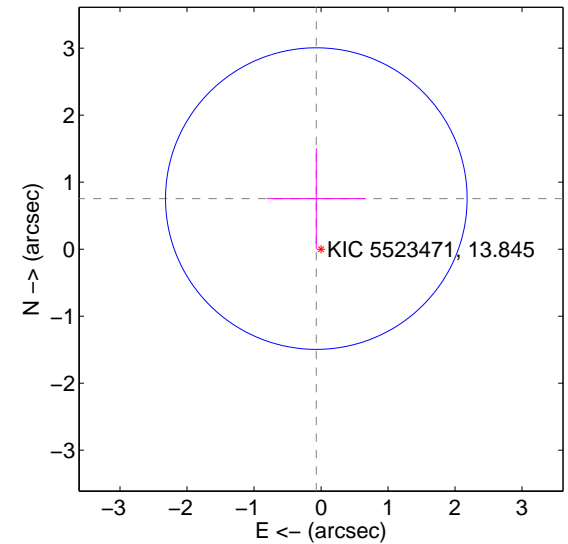
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

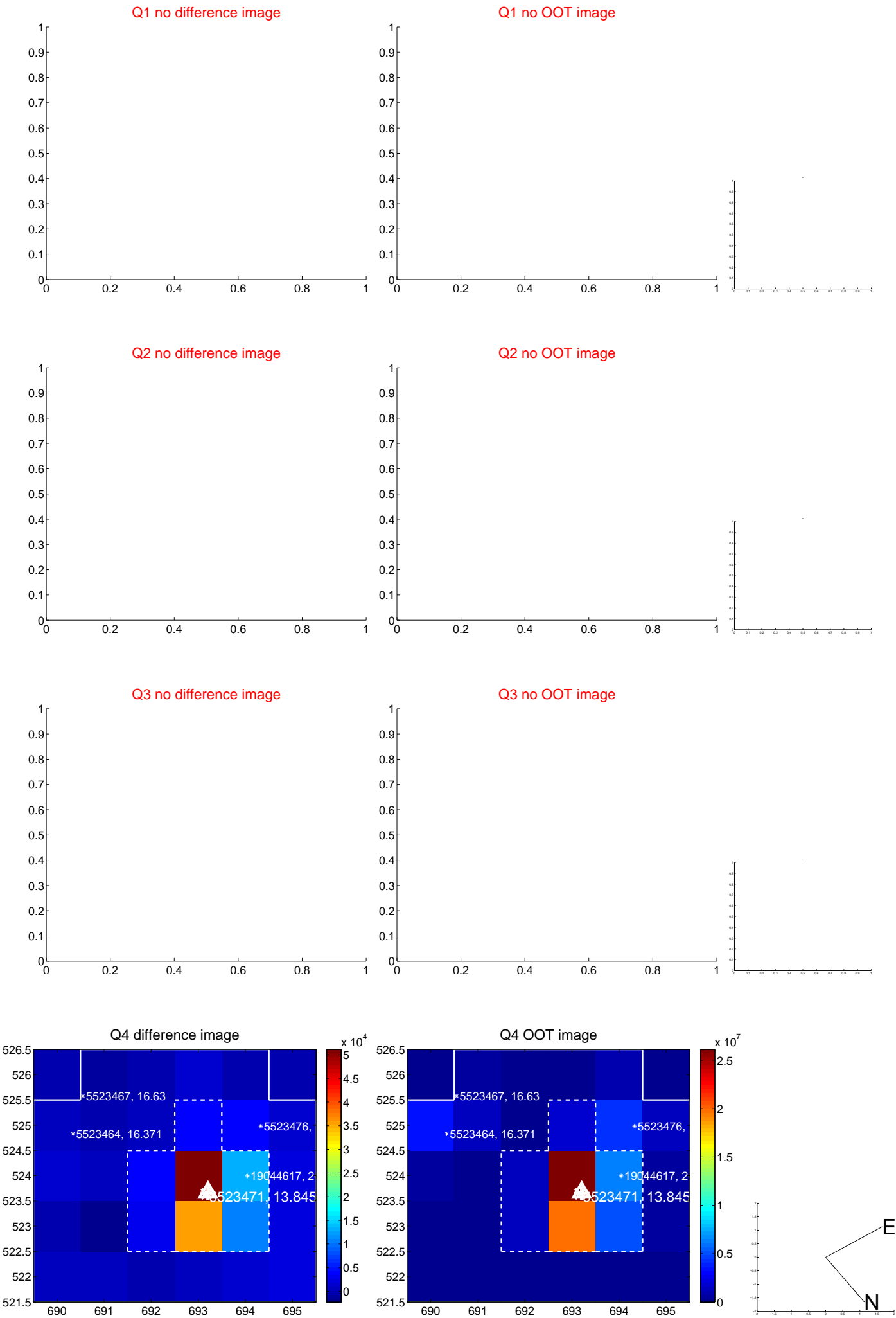


offset from photometric centroids

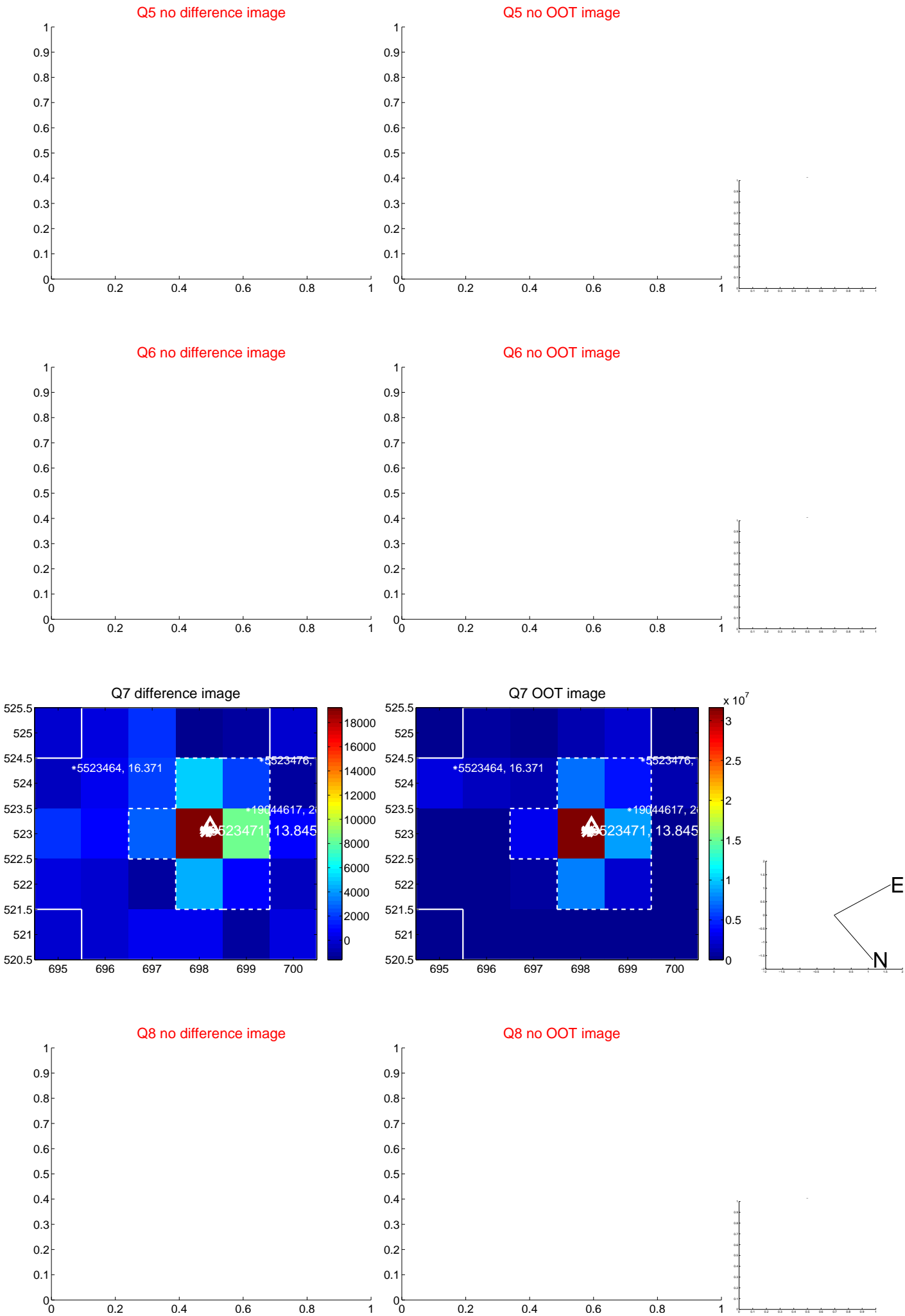


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

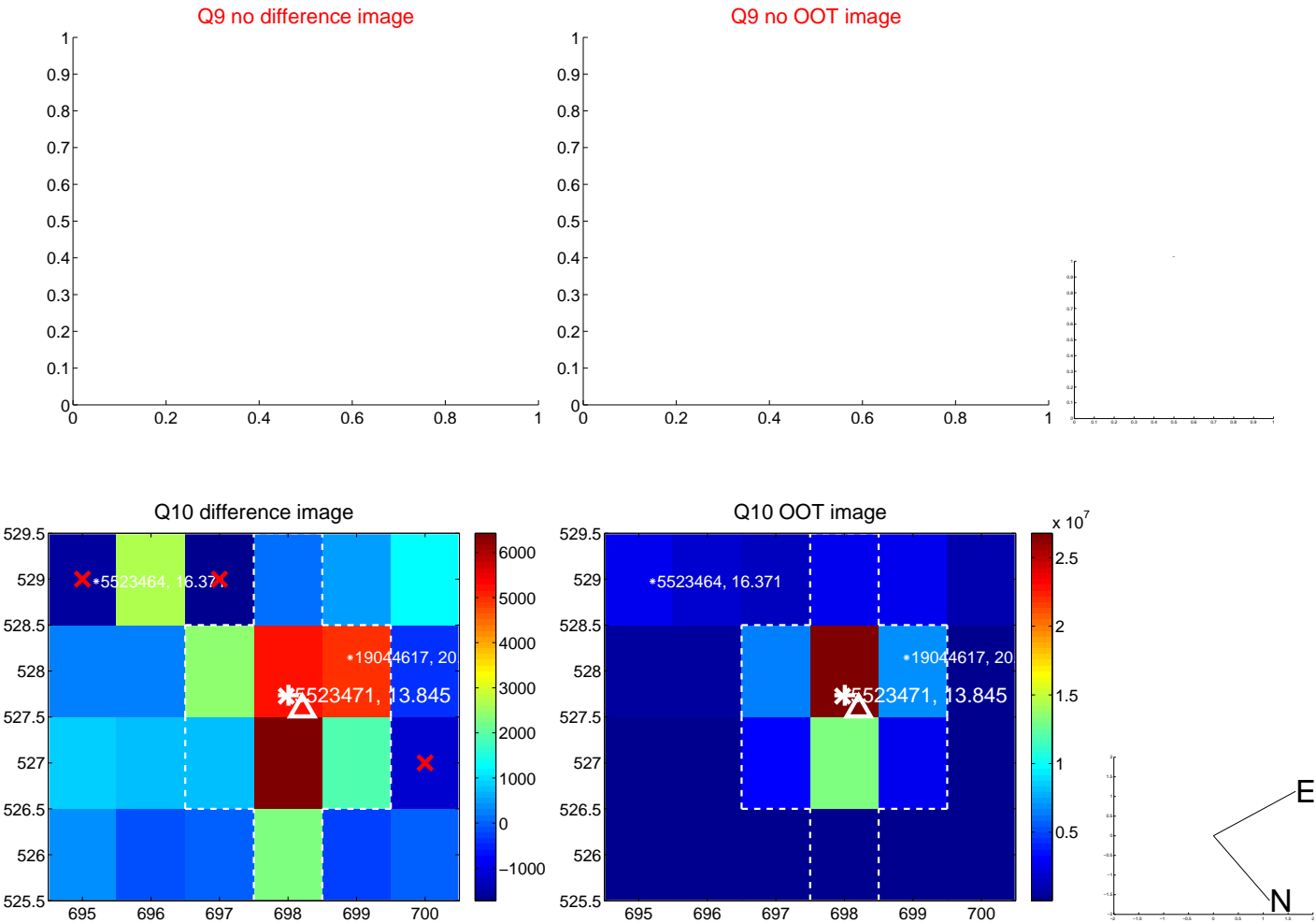
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



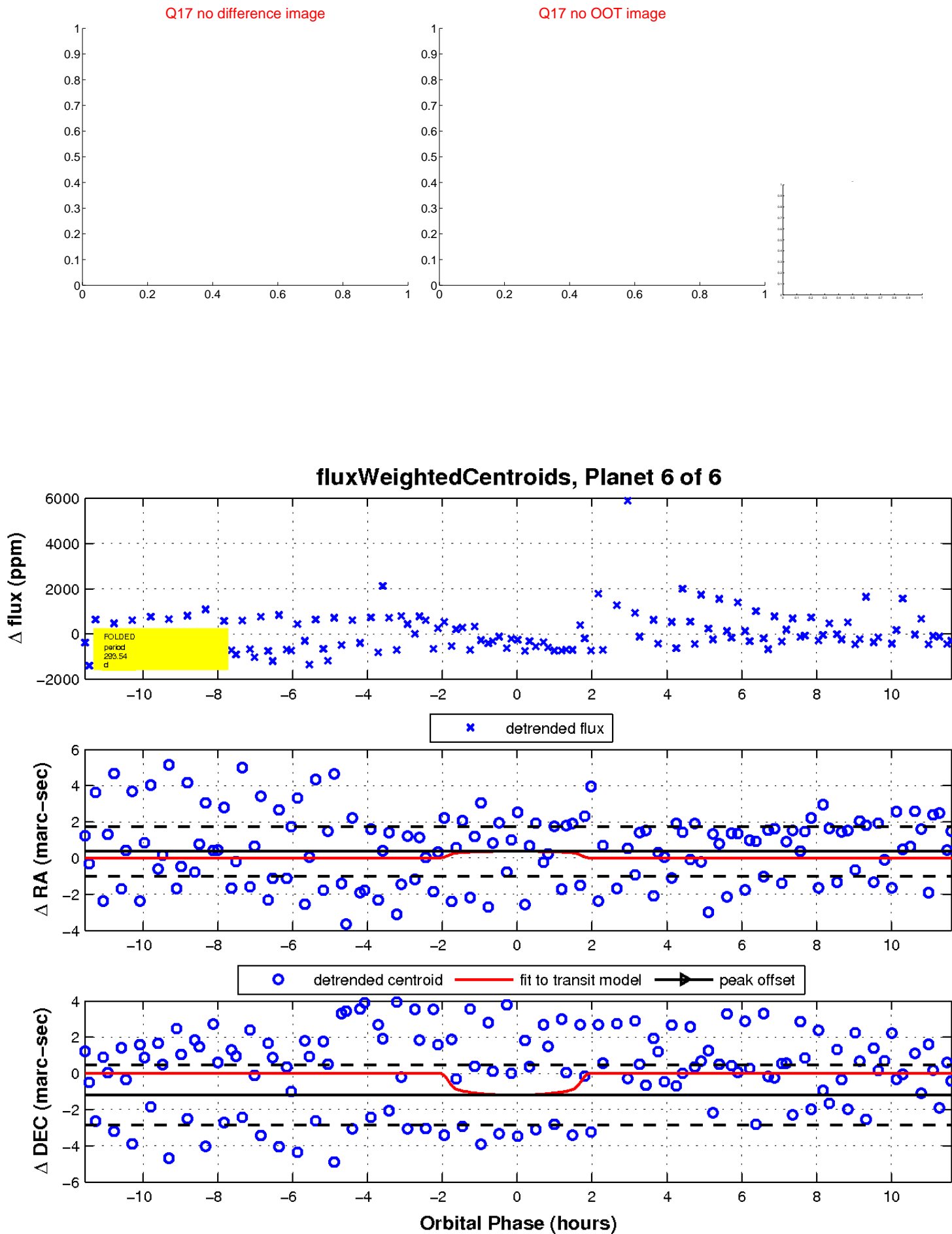
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

Declination

