

KIC 005456023

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})
005456023-01	OBS	3521.01	131.978586	179.584349	345710.4	3.500	4448.3	-1.0	2.18	4916	98.42	10.34
005456023-02	OBS	No	131.978206	243.181247	22096.5	9.848	723.9	697.0	2.18	4916	53.07	10.34
005456023-03	OBS	No	532.198881	175.068533	16423.6	15.000	258.7	-1.0	2.18	4916	27.06	1.61
005456023-05	OBS	No	269.831971	294.182565	16423.6	15.000	203.0	-1.0	2.18	4916	27.06	3.98
005456023-06	OBS	No	651.523423	189.132663	66.1	0.702	256.8	0.4	2.18	4916	2.18	1.23
005456023-07	OBS	No	651.510438	188.214123	16422.9	15.000	257.4	-1.0	2.18	4916	27.06	1.23
005456023-08	OBS	No	264.588640	178.801063	2785.6	3.500	25.8	-1.0	2.18	4916	11.15	4.09
005456023-09	OBS	No	306.667400	313.444601	1448.1	3.500	13.4	-1.0	2.18	4916	8.04	3.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005456023-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
005456023-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005456023-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005456023-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005456023-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005456023-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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 005456023-01

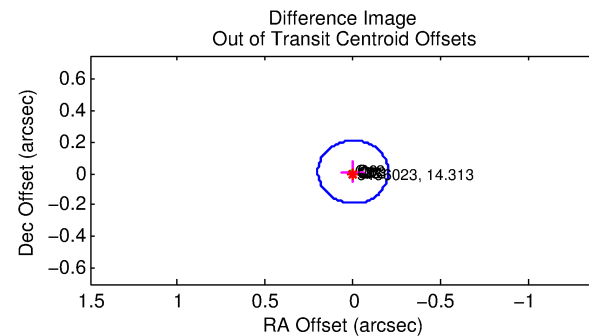
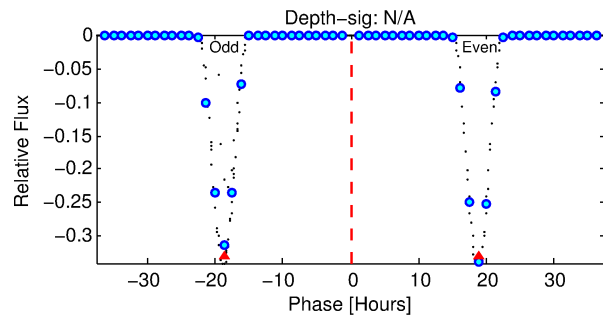
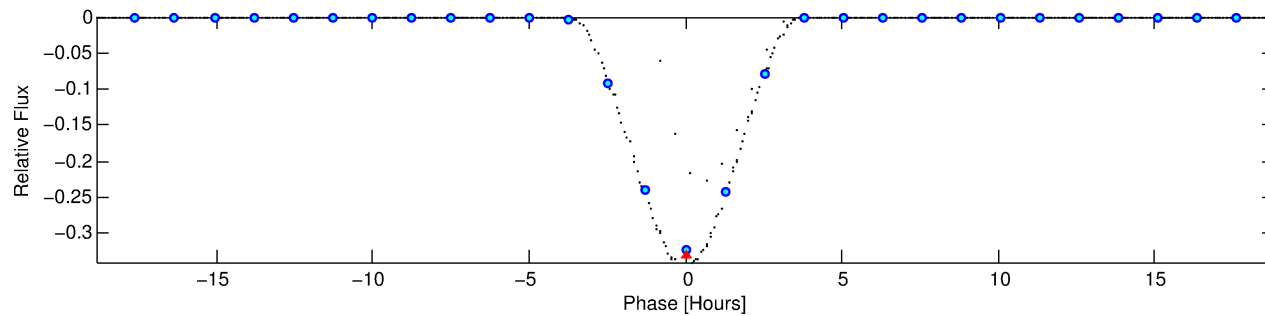
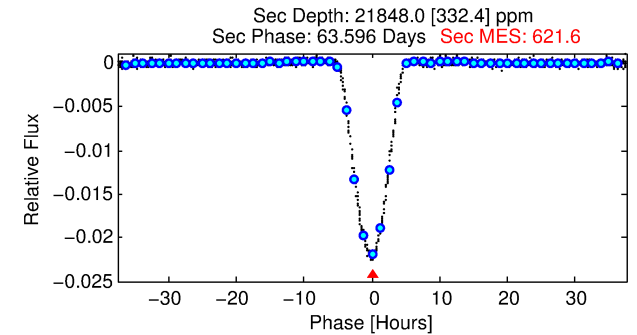
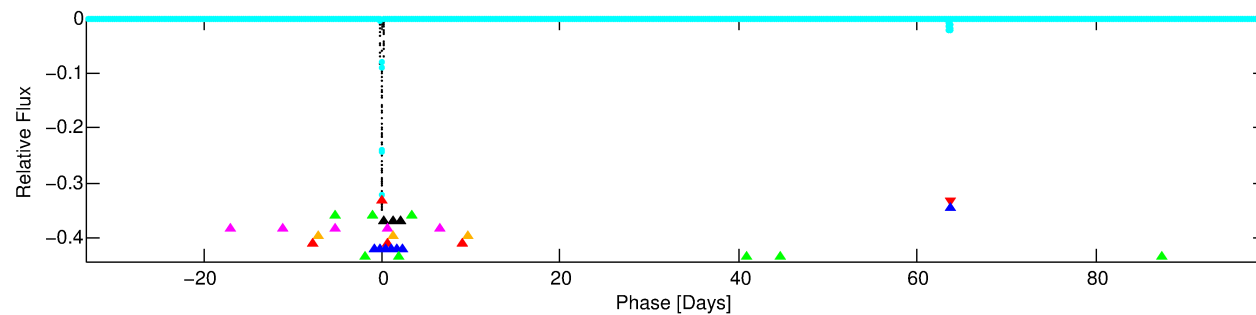
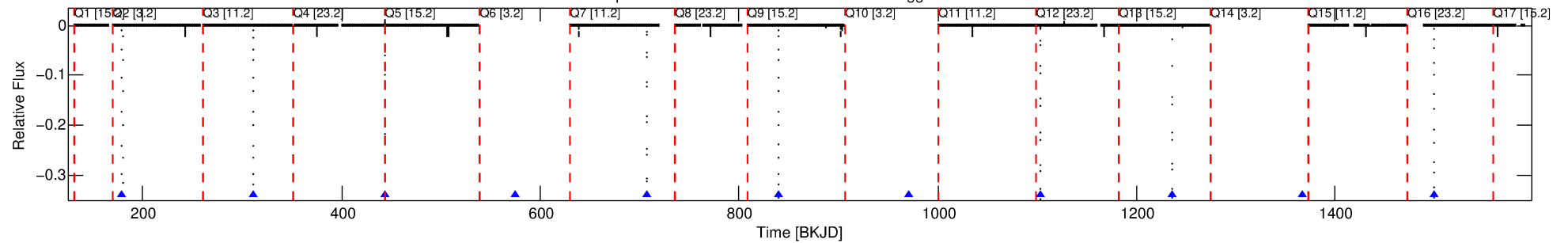
No Significant Match Found

DV One-Page Summary

KIC: 5456023 Candidate: 1 of 9 Period: 131.979 d

KOI: K03521 Corr: No Ephemeris Match

Kp: 14.31 R*: 2.18 Rs Teff: 4916.0 K Logg: 3.72 Fe/H: -0.080



TPS TCE Results:

Period = 131.97859 d
Epoch = 179.5843 BKJD

DV fit results are unavailable

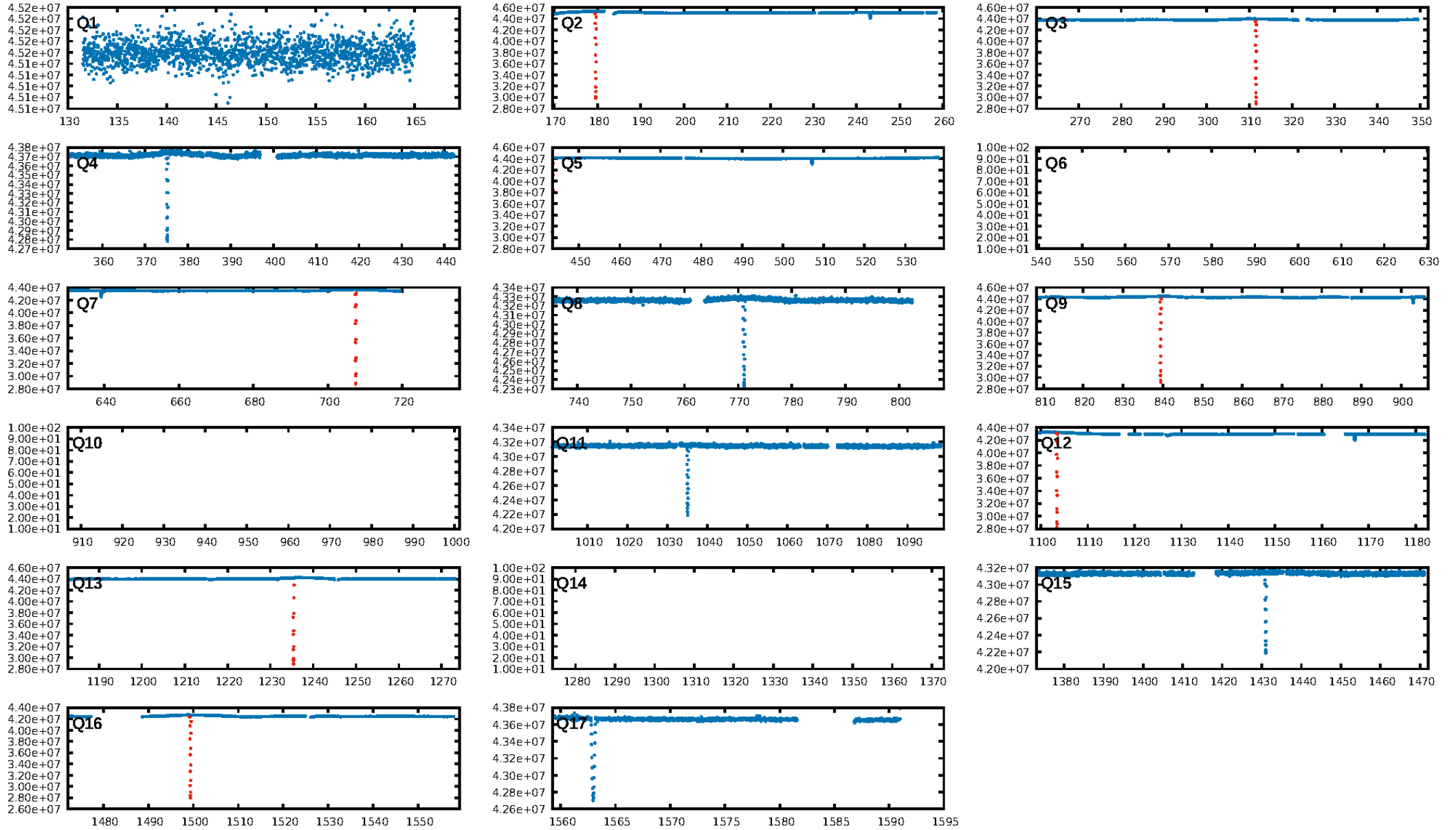
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: 100.0% [642.99σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [8/8]
GhostDiagnostic-chr: 5.784
Centroid-sig: 0.0%
Centroid-so: 0.278 arcsec [196.48σ]
OotOffset-rm: 0.011 arcsec [0.17σ]
KicOffset-rm: 0.316 arcsec [4.61σ]
OotOffset-st: 1/2/1/2 [6]
KicOffset-st: 1/2/1/2 [6]
DiffImageQuality-fgm: 1.00 [6/6]
DiffImageOverlap-fno: 0.67 [4/6]

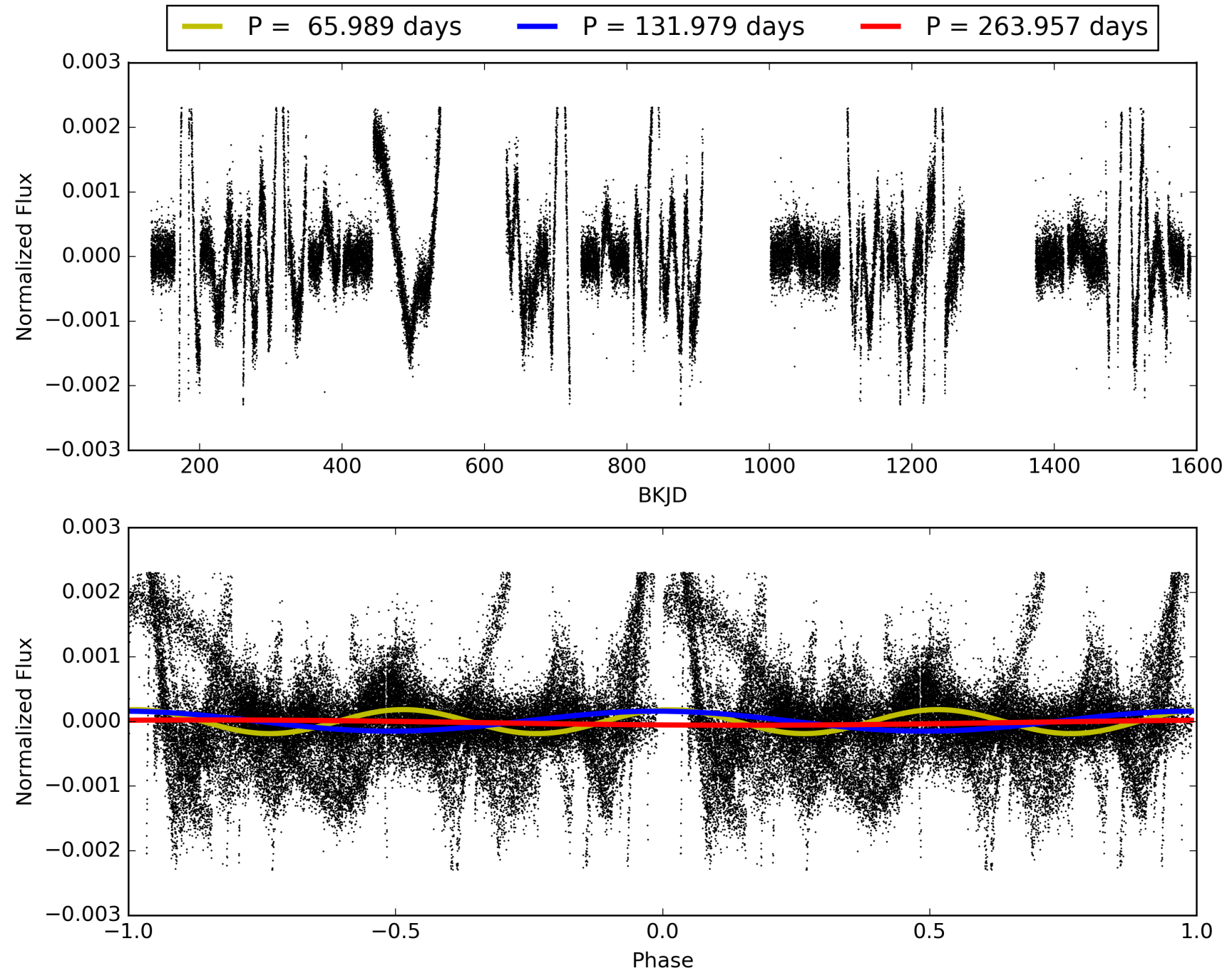
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:25:58 Z

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

TCE 005456023-01, PDC Light Curves

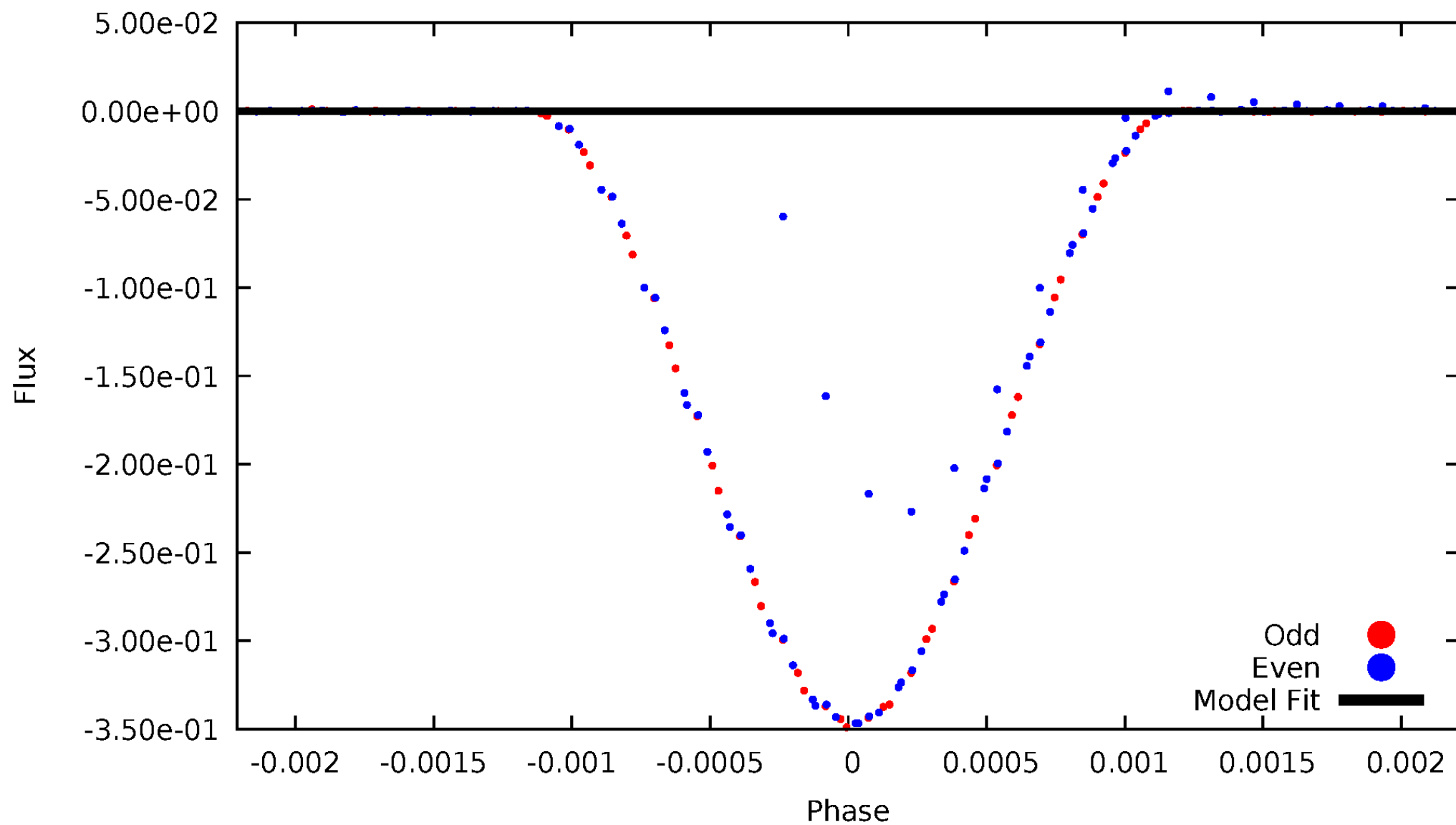


TCE 005456023-01



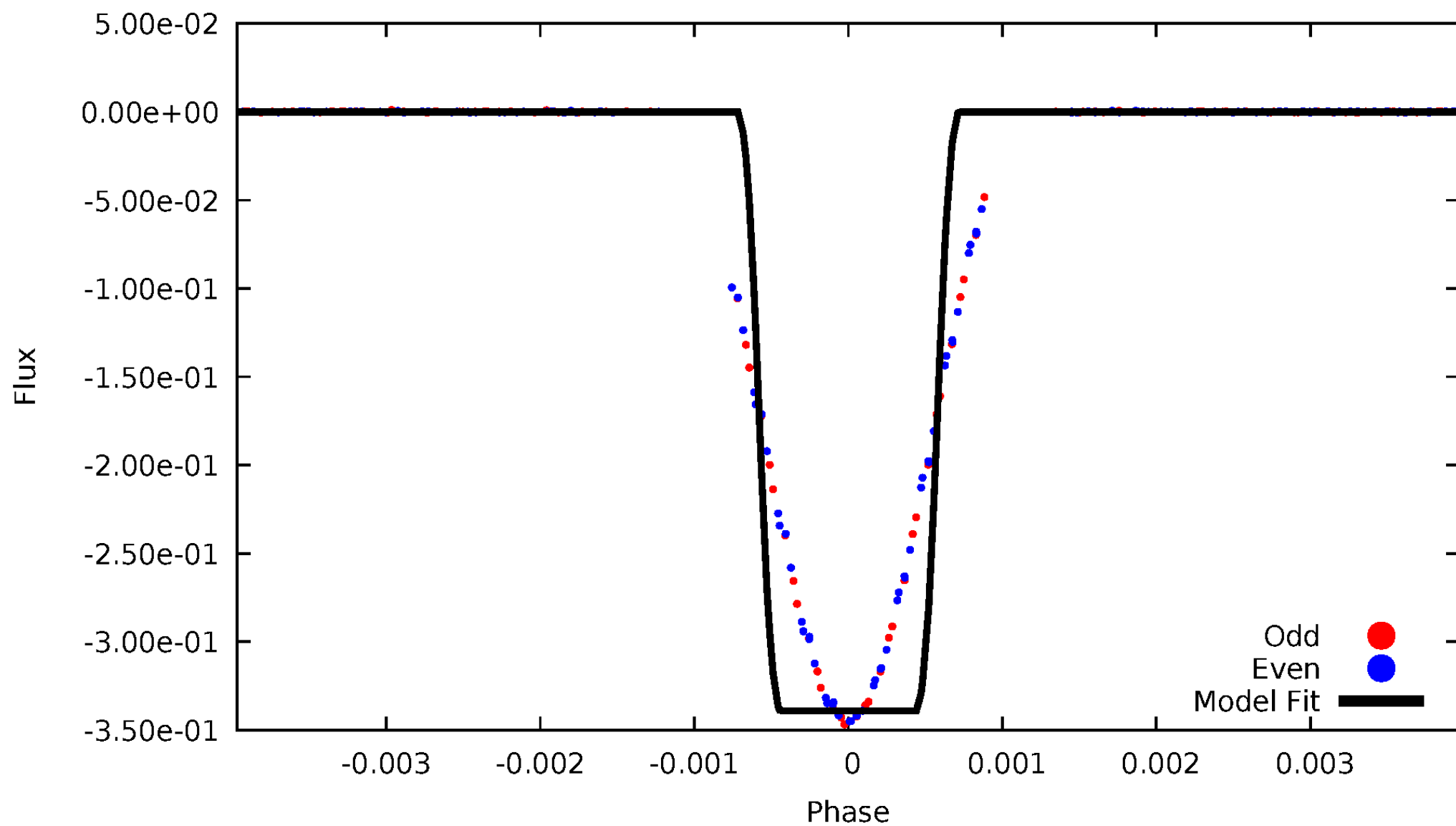
DV Odd/Even

TCE 005456023-01



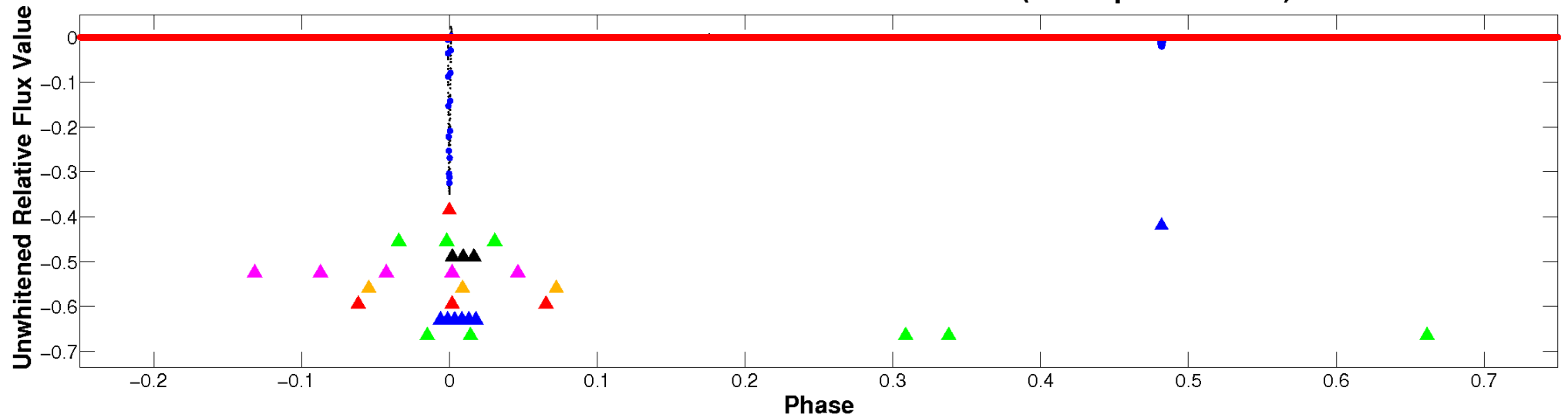
ALT Odd/Even

TCE 005456023-01



Non-Whitened Vs. Whitened Light Curve

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

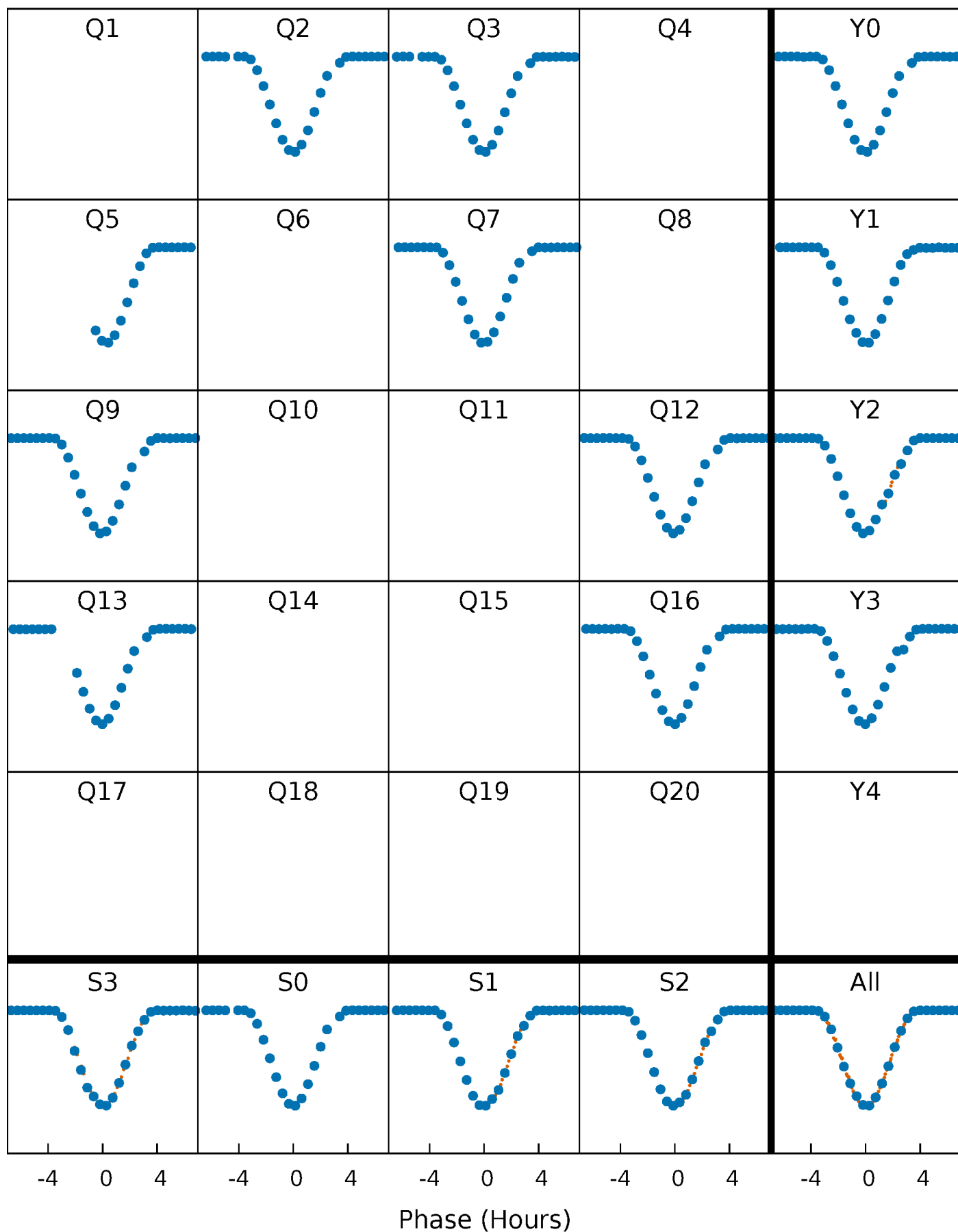


Planet 1 : Phased Whitened Flux Time Series (TPS Epoch/Period)



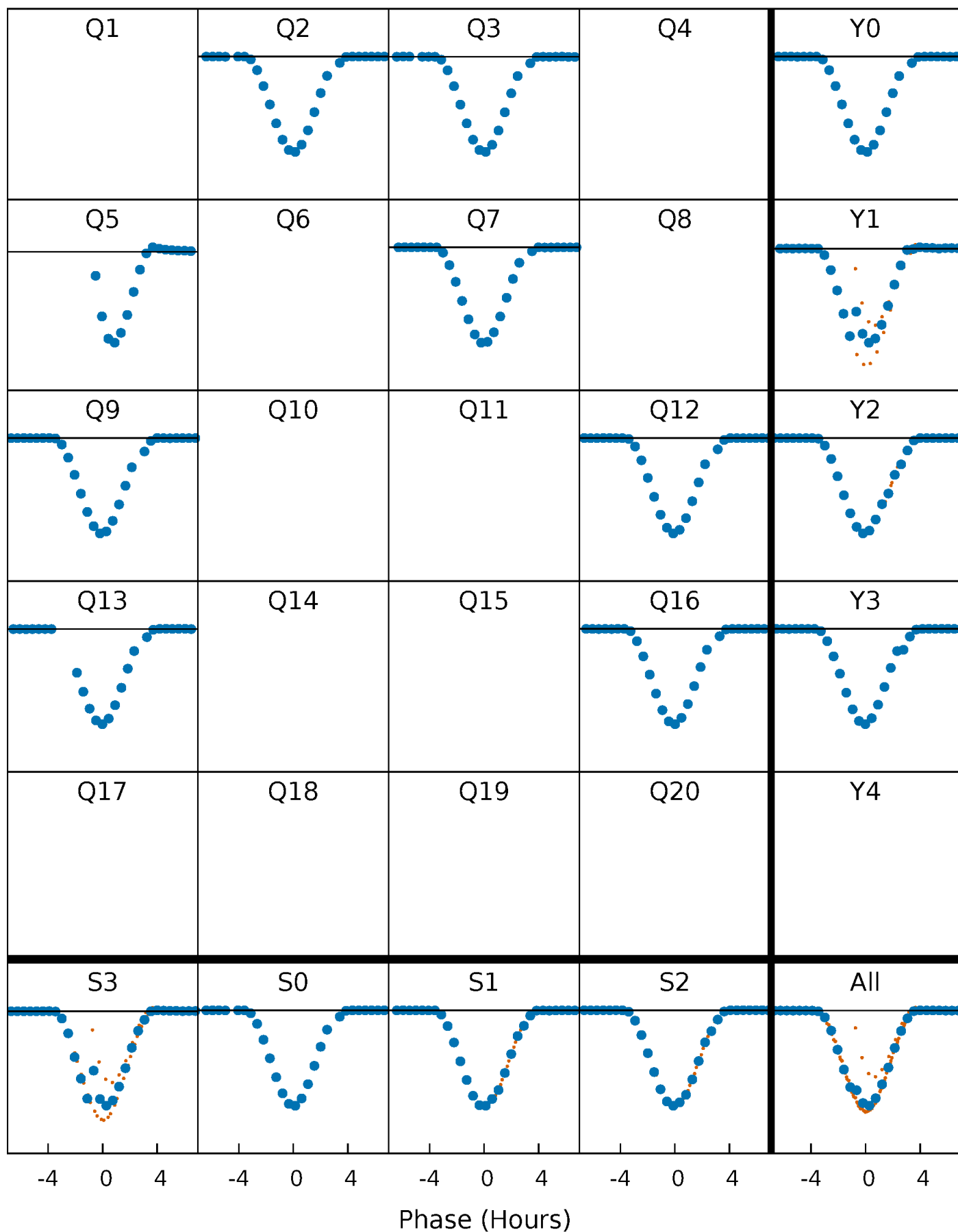
PDC Quarter-Phased Transit Curves

TCE 005456023-01 P=131.978586 Days $T_0=179.584349$ (BKJD)



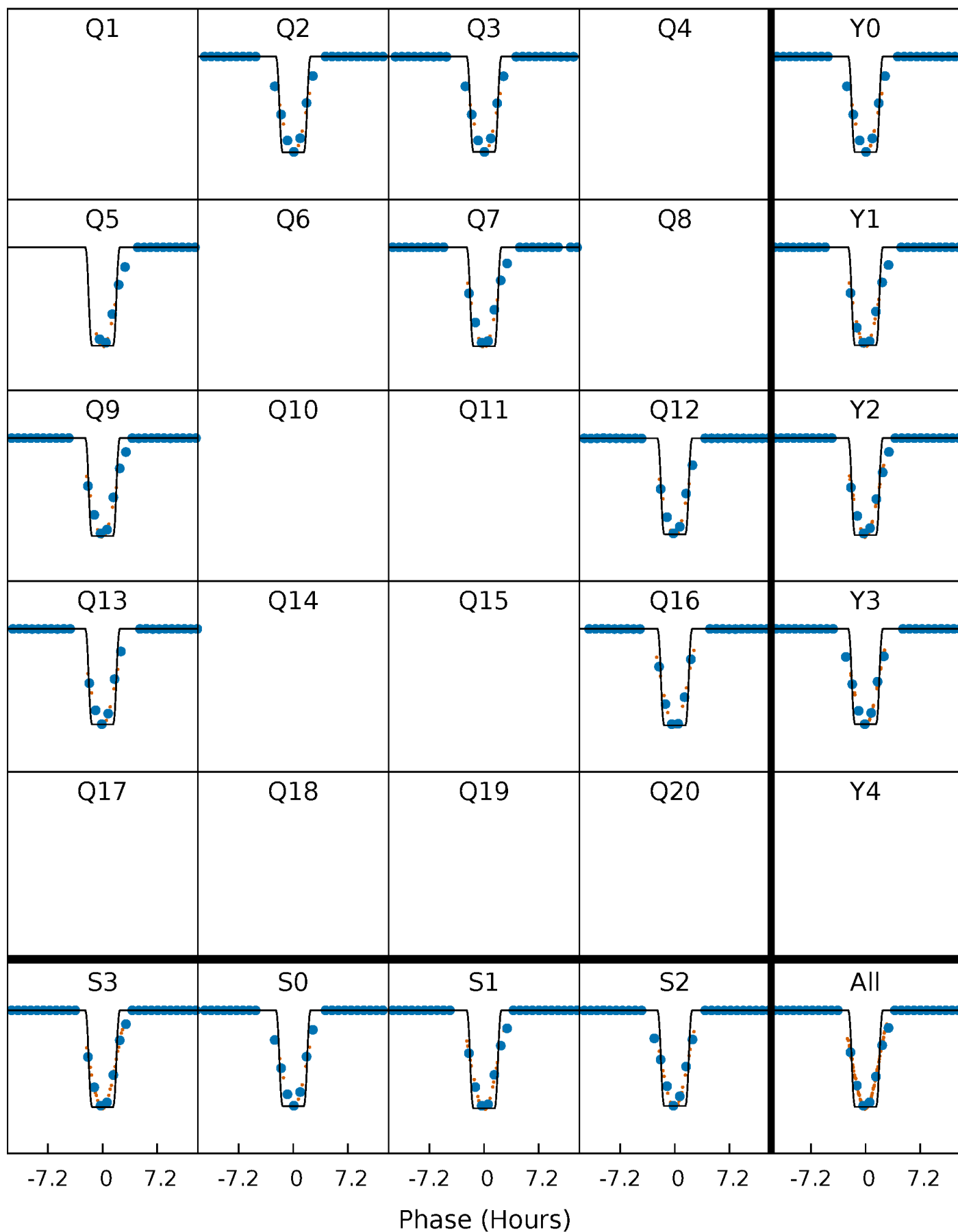
DV Quarter-Phased Transit Curves

TCE 005456023-01 P=131.978586 Days $T_0=179.584349$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

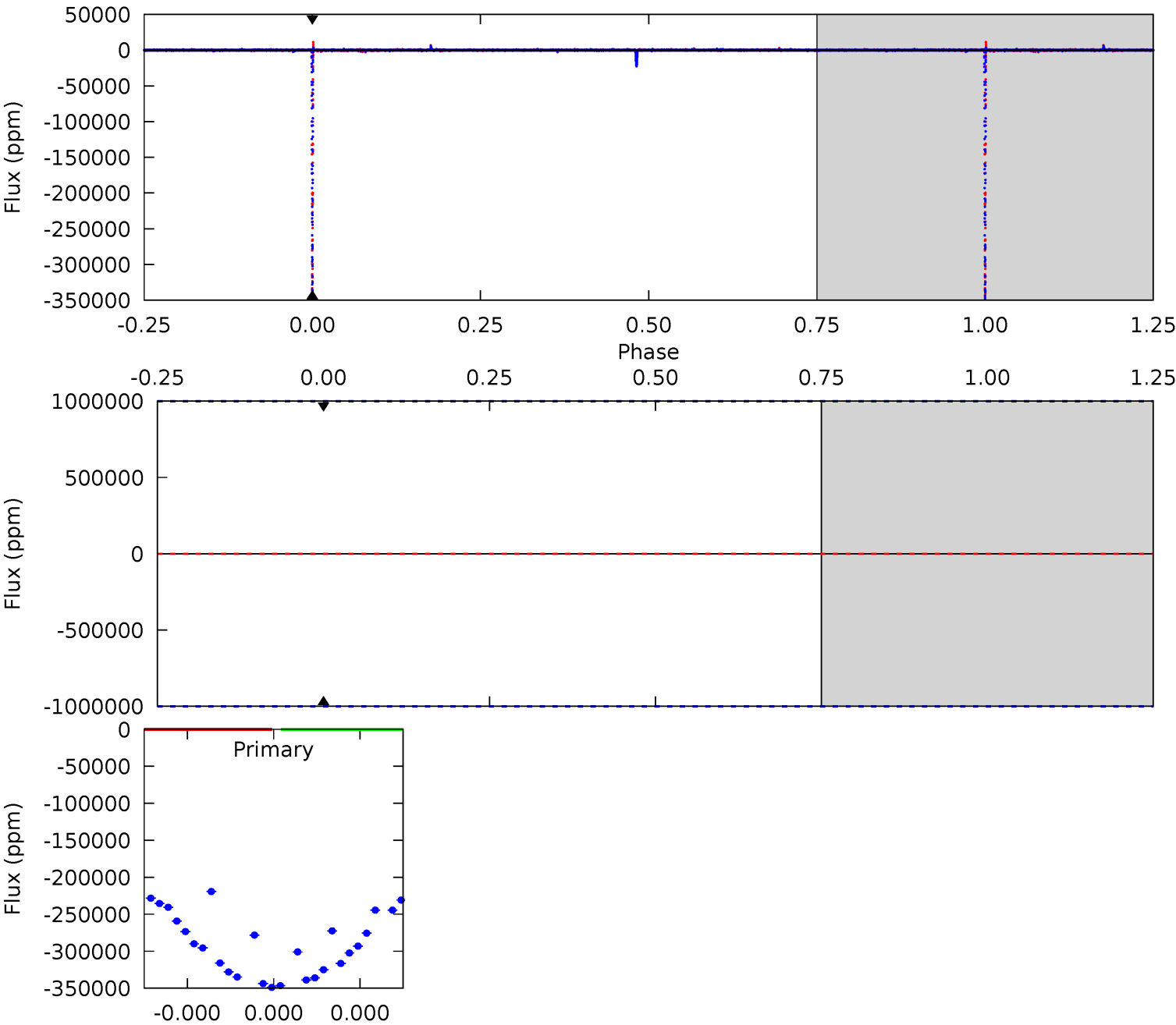
TCE 005456023-01 P=131.978586 Days $T_0=179.586764$ (BKJD)



DV Model-Shift Uniqueness Test

005456023-01, P = 131.978586 Days, E = 47.605763 Days

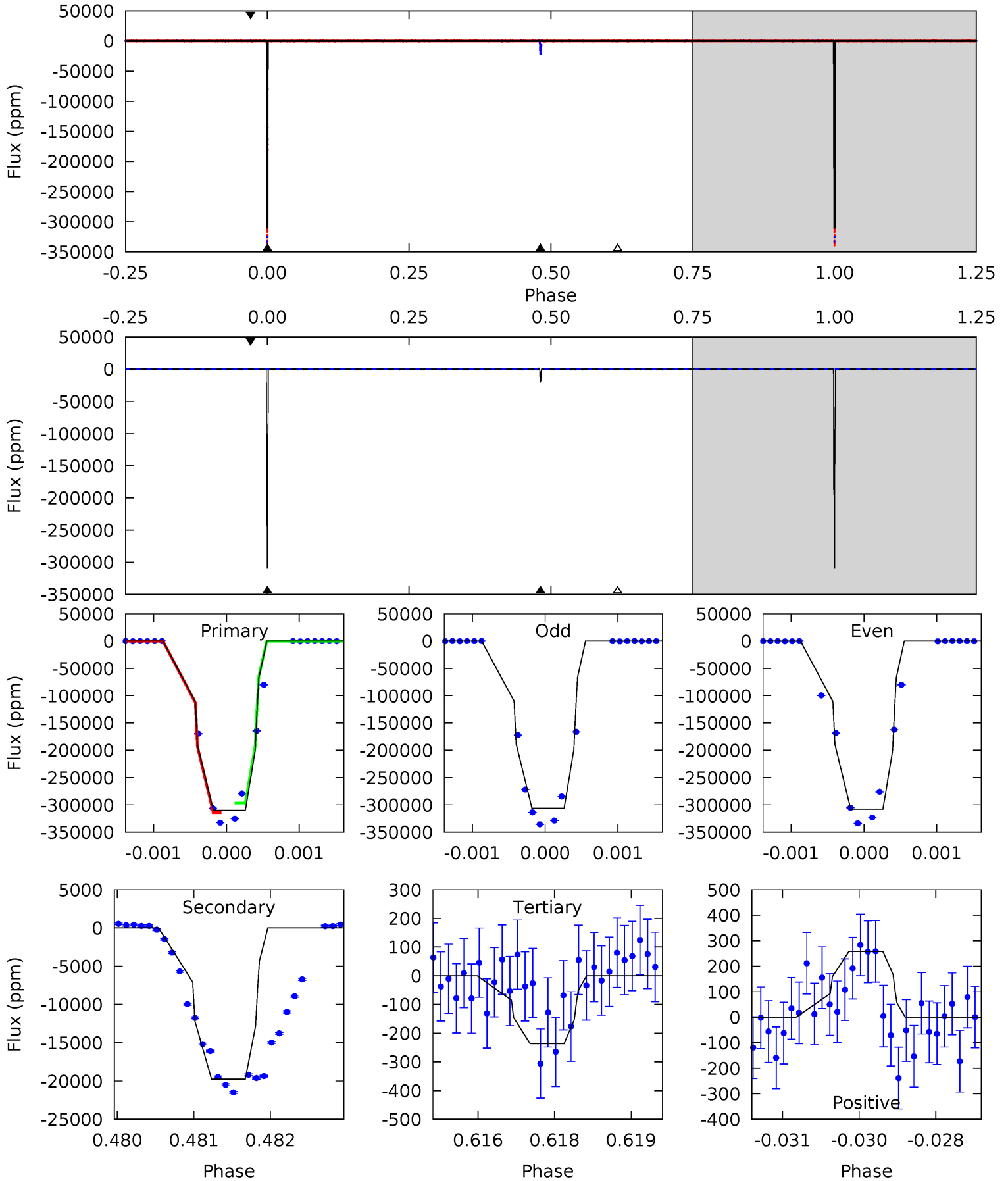
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

005456023-01, P = 131.978586 Days, E = 47.608178 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7546	480.8	5.76	6.29	5.39	3.19	43.0	7541	7540	475.1	474.5	22.8	1.00	0.00	0



Stellar Parameters For KIC 005456023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4916^{+122}_{-146}	$3.717^{+0.900}_{-0.300}$	$-0.080^{+0.300}_{-0.300}$	$2.182^{+1.179}_{-1.441}$	$0.905^{+0.232}_{-0.190}$	$0.123^{+3.024}_{-0.081}$
	+2%/-3%	+24%/-8%	+375%/-375%	+54%/-66%	+26%/-21%	+2465%/-66%
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 005456023-01 / KOI 3521.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$90.11^{+42.65}_{-37.06}$	624^{+98}_{-122}	2977^{+1648}_{-7254}	137^{+1986}_{-1691}
Alt.	-19743 ± 41	$129.85^{+51.48}_{-48.85}$	624^{+95}_{-125}	3030^{+173}_{-142}	159^{+236}_{-74}

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 $A_{obs} \gg 1.0$

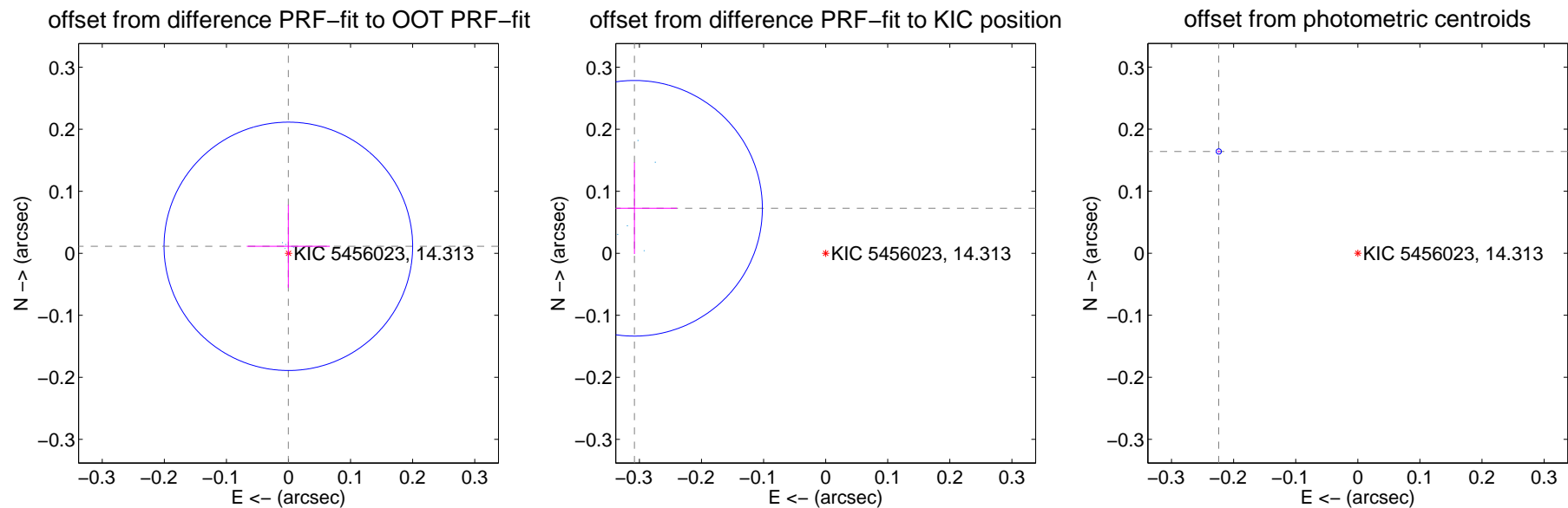
DV Centroid Data

Supplemental centroid analysis for 005456023-01. Kepler magnitude: 14.31. Transit SNR -1.00

There are 6 quarters with good PRF difference image offsets

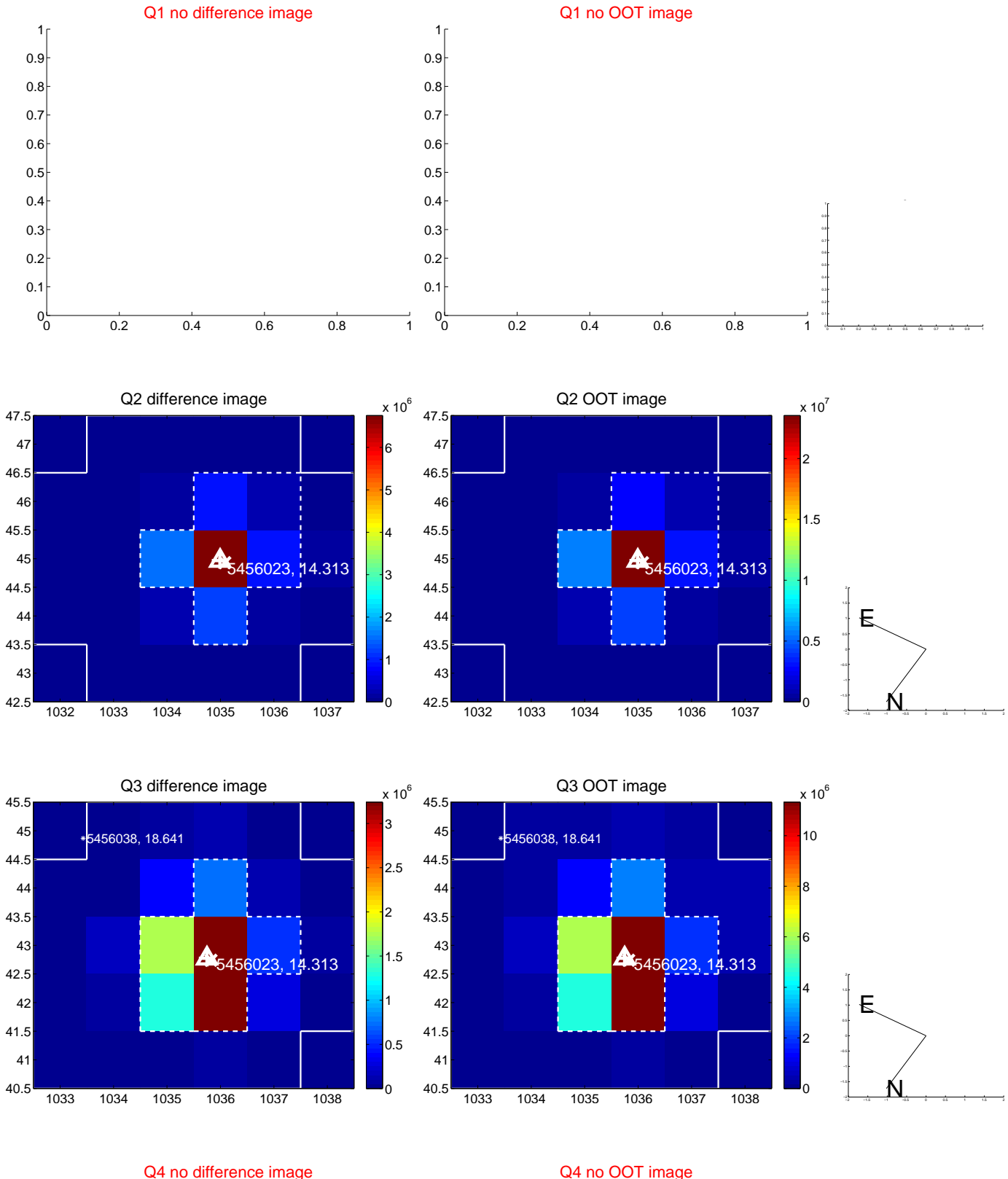
The direct PRF centroid is offset from the target star catalog position by about 0.34 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.011 ± 0.067	0.17	0.000 ± 0.067	0.011 ± 0.067
PRF-fit source offset from KIC position	0.316 ± 0.069	4.61	0.308 ± 0.068	0.073 ± 0.074
photometric centroid source offset	0.28 ± 0.00	196.48	0.22 ± 0.00	0.16 ± 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



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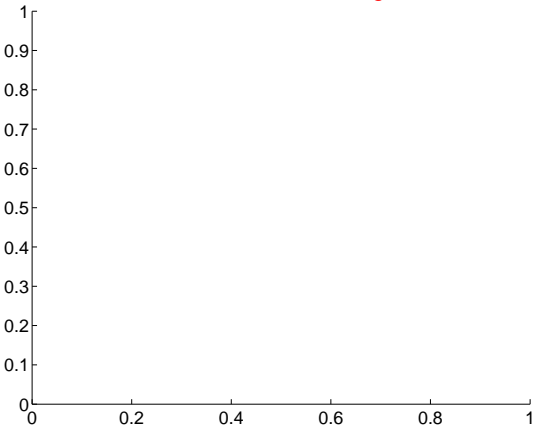
Q5 no difference image



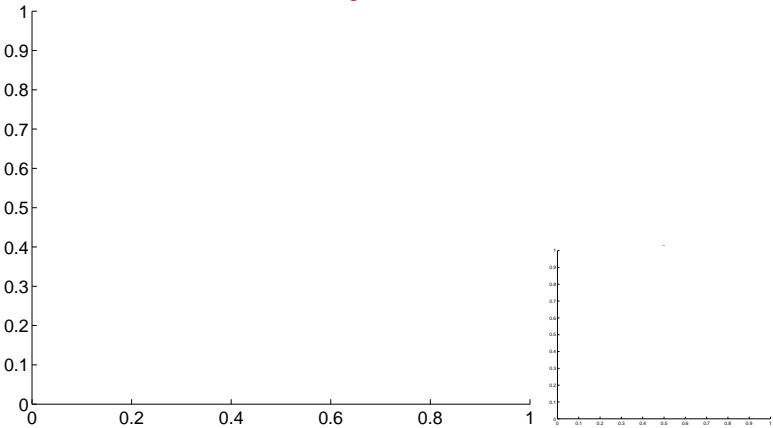
Q5 no OOT image



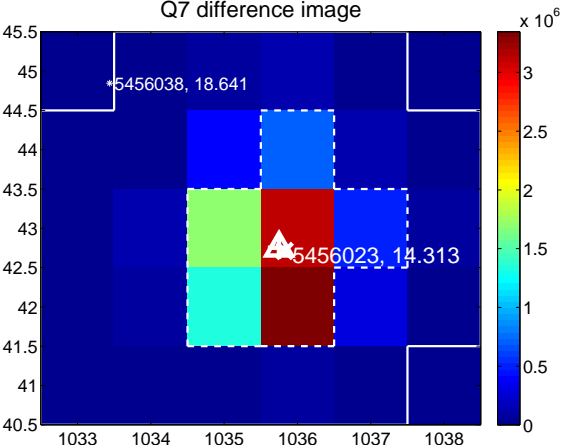
Q6 no difference image



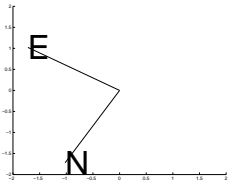
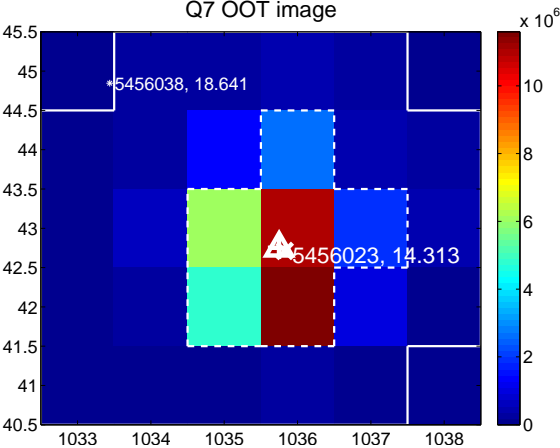
Q6 no OOT image



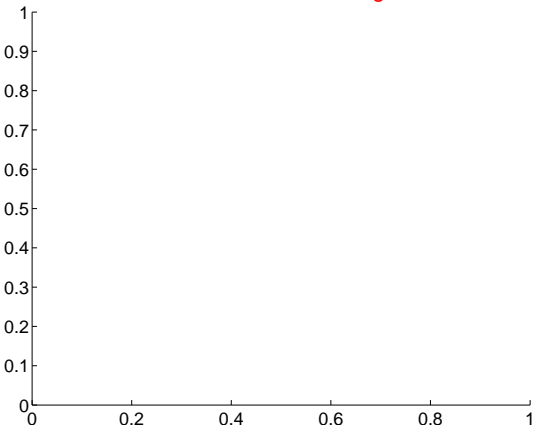
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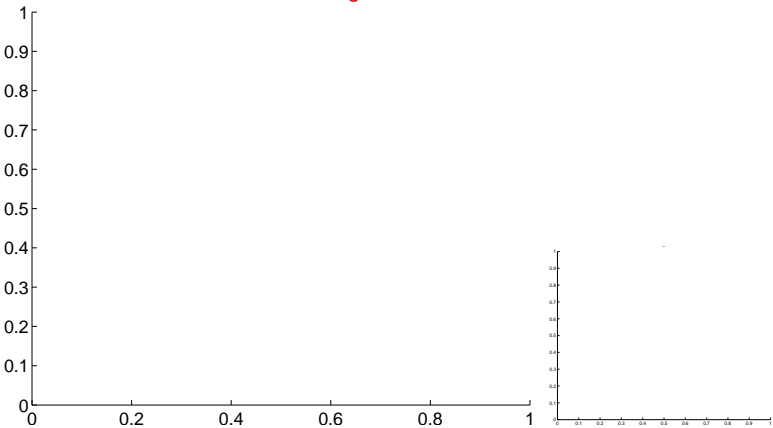
Q7 OOT image



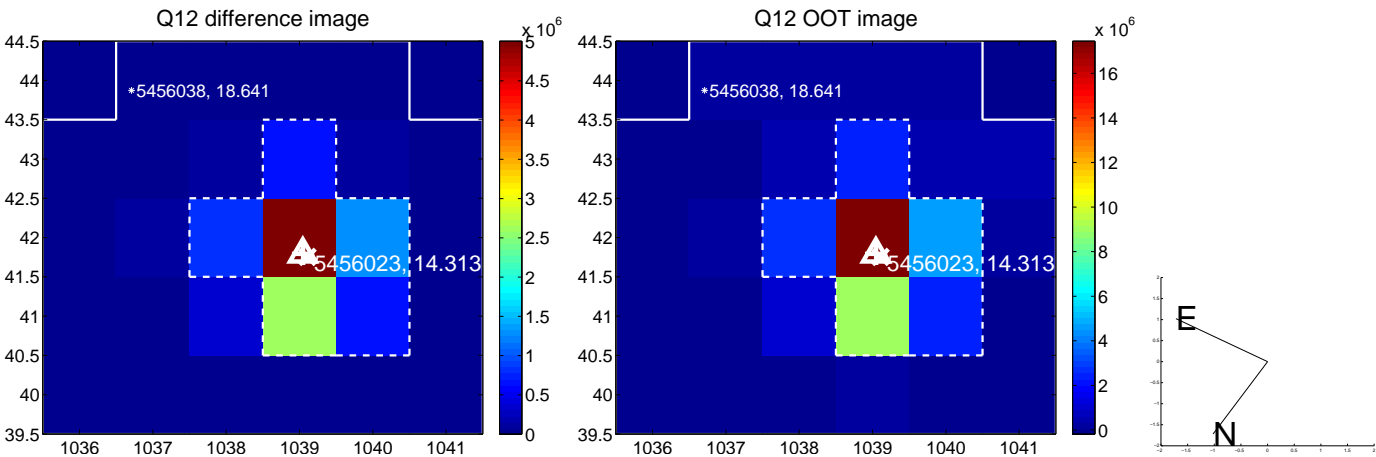
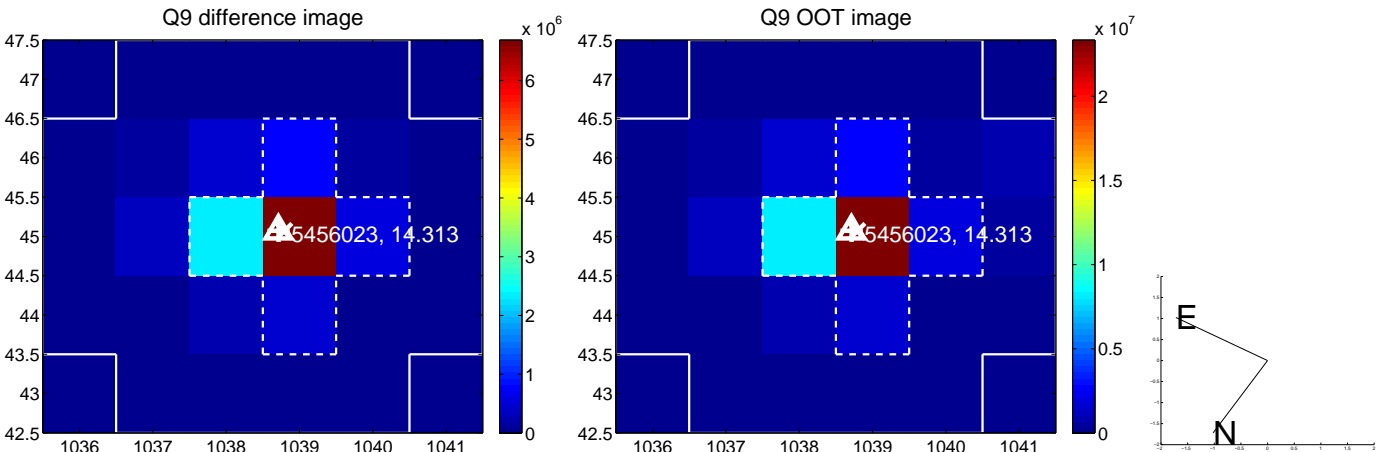
Q8 no difference image



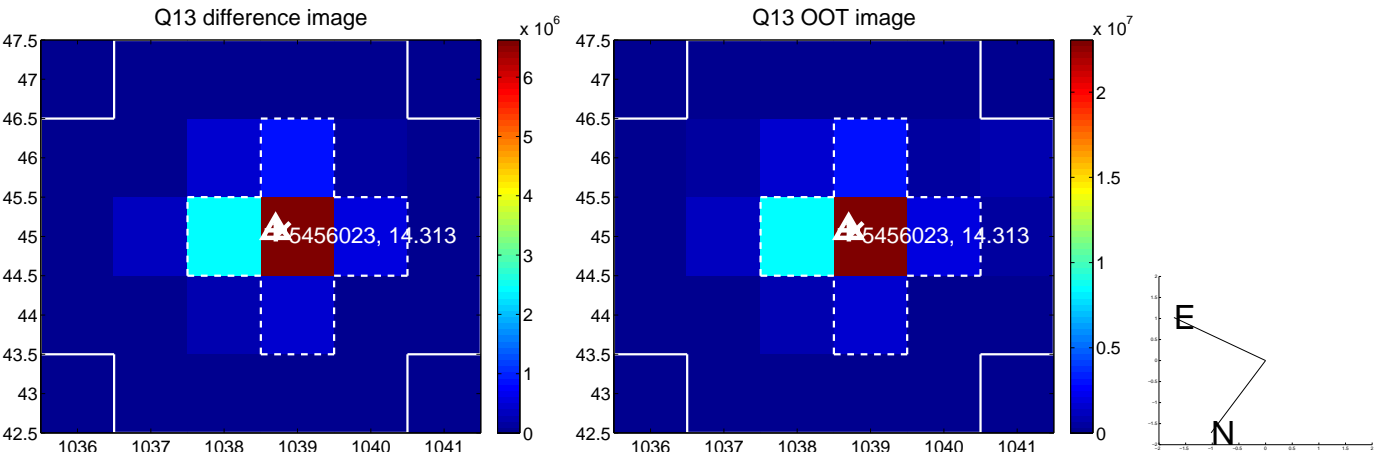
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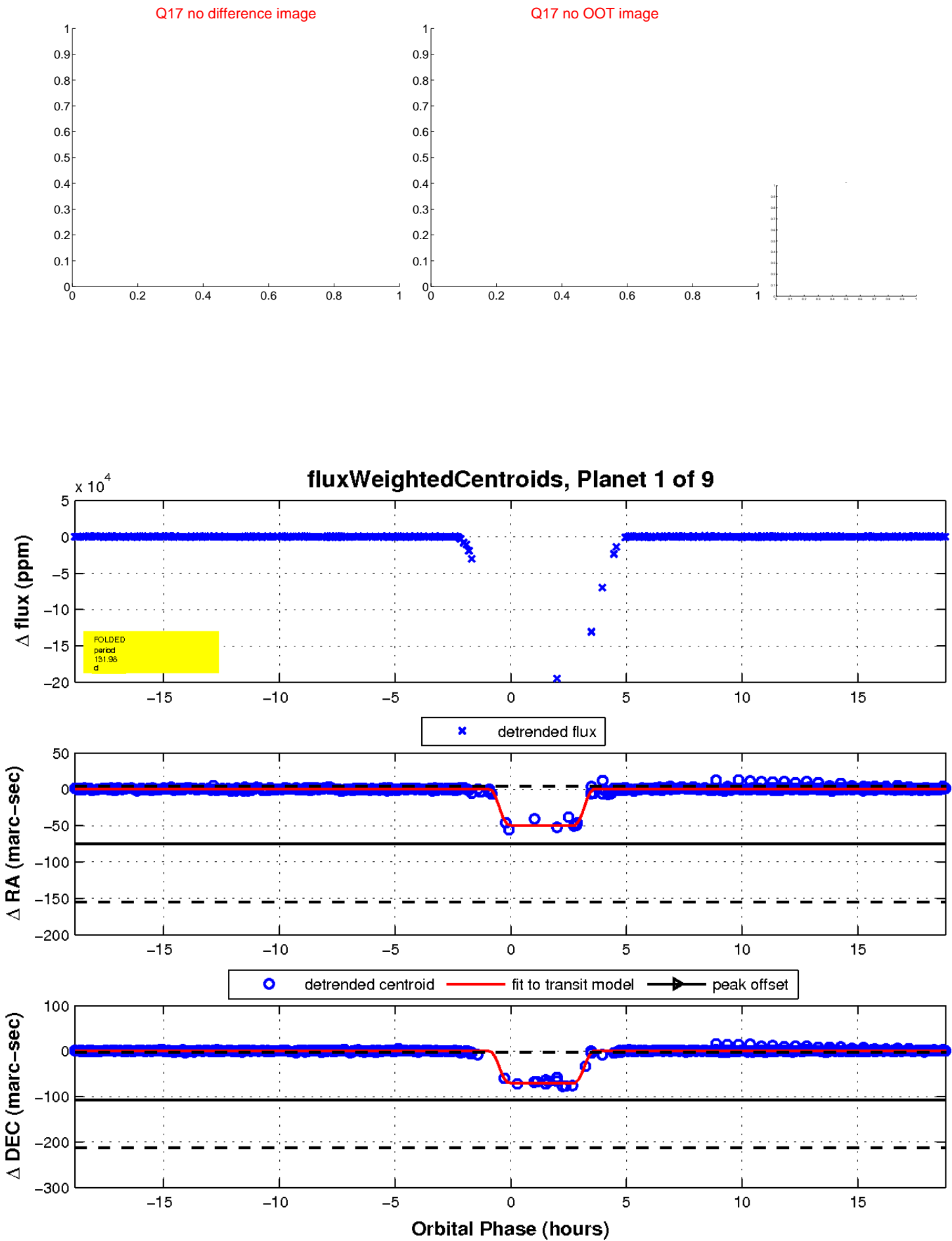
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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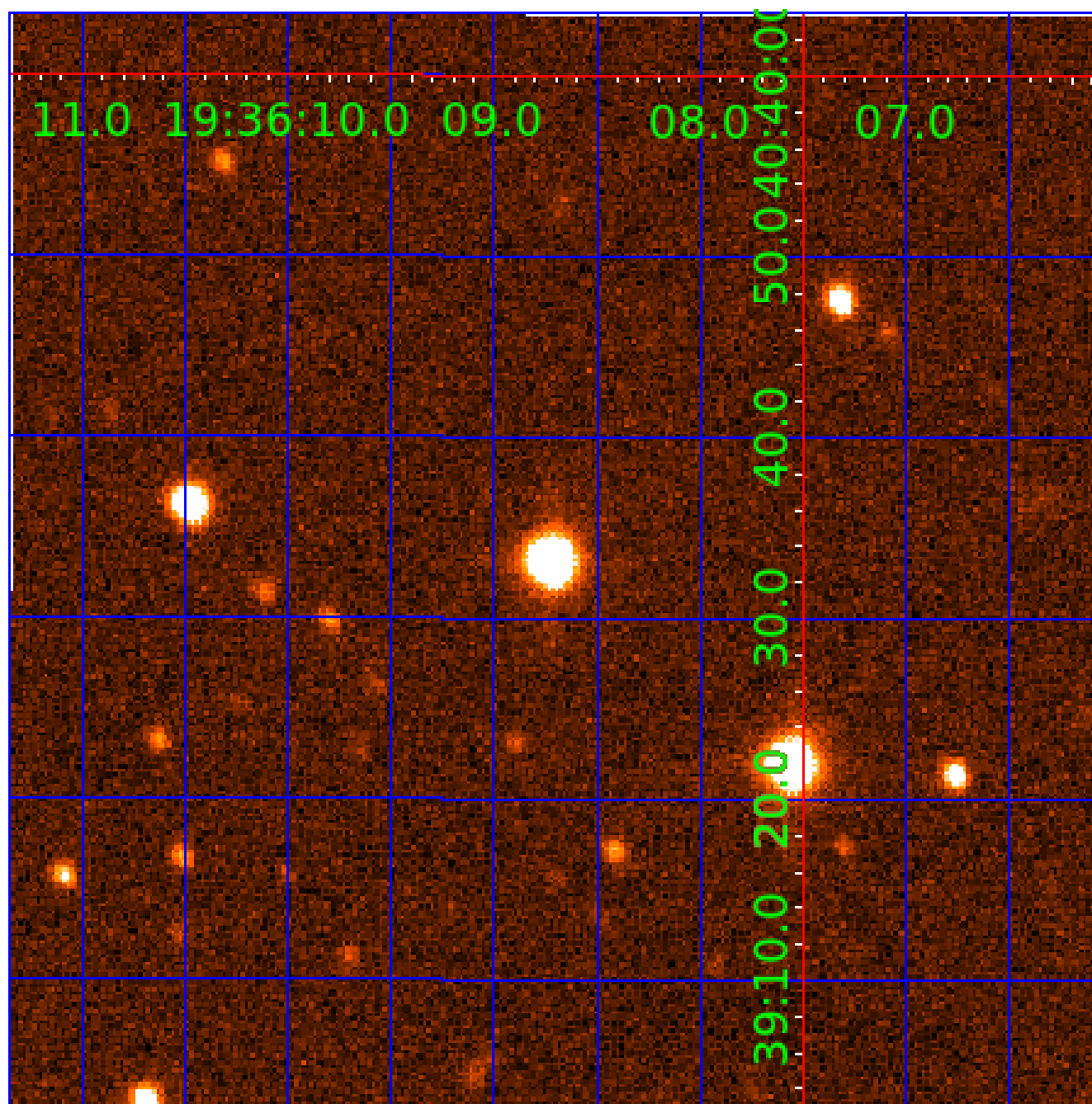


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UKIRT Image

Declination



KIC 005456023

Q1-17 DR25 TCE Parameters

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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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005456023-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005456023-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005456023-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005456023-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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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 005456023-02

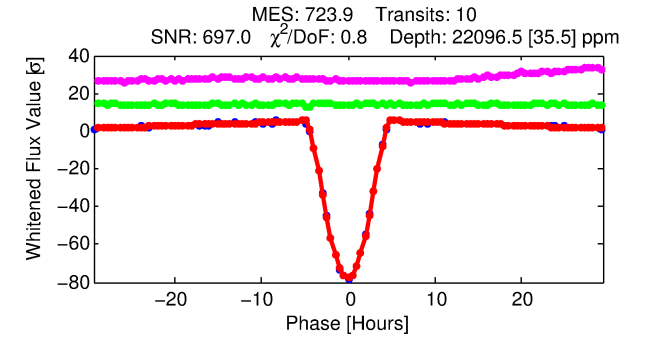
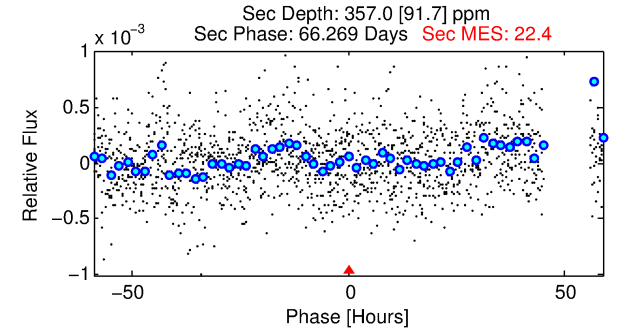
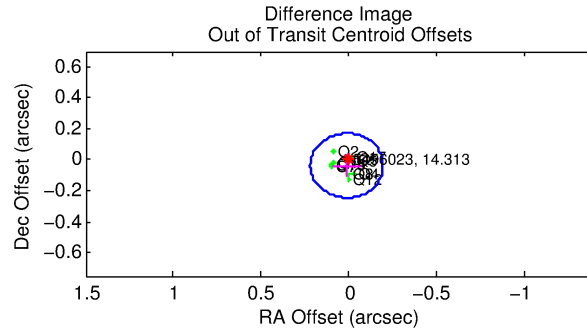
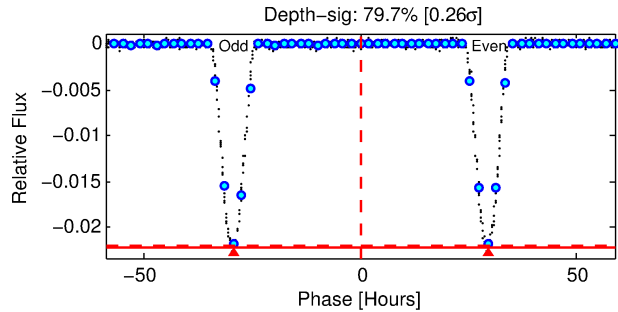
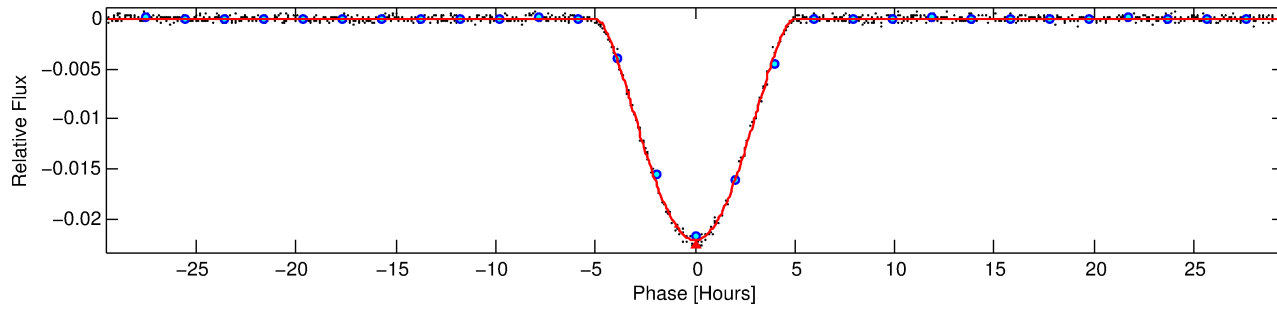
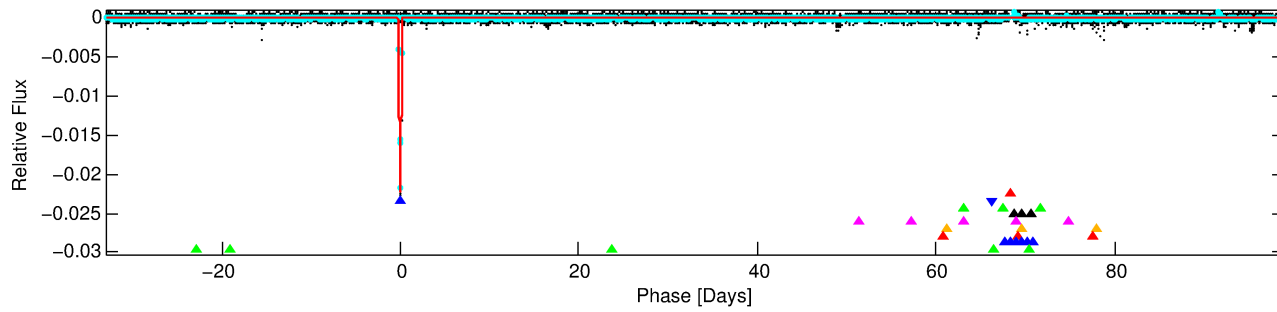
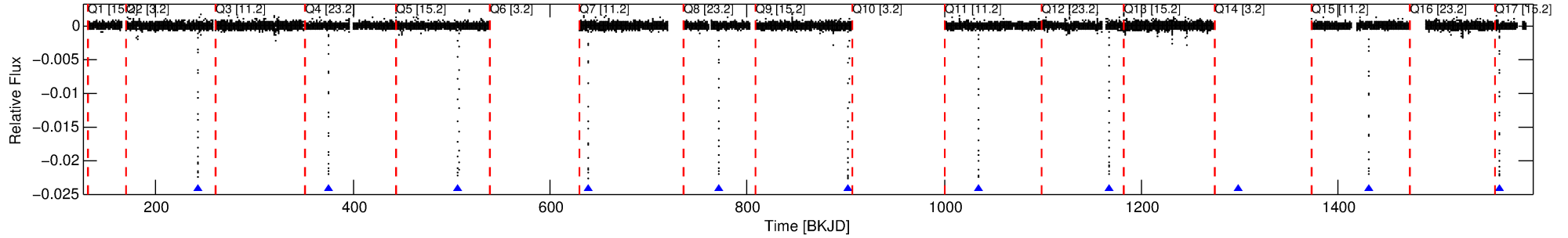
No Significant Match Found

DV One-Page Summary

KIC: 5456023 Candidate: 2 of 9 Period: 131.978 d

KOI: K03521 Corr: No Ephemeris Match

Kp: 14.31 R*: 2.18 Rs Teff: 4916.0 K Logg: 3.72 Fe/H: -0.080



DV Fit Results:

Period = 131.97821 [0.00005] d
Epoch = 243.1812 [0.0003] BKJD
Rp/R* = 0.2229 [0.0140]
a/R* = 76.57 [0.55]
b = 0.97 [0.02]
Seff = 10.34 [15.05]
Teq = 457 [166] K
Rp = 53.07 [35.21] Re
a = 0.4908 [0.4021] AU
Ag = 16.80 [24.83] [0.64σ]
Teffp = 1431 [111] K [4.87σ]

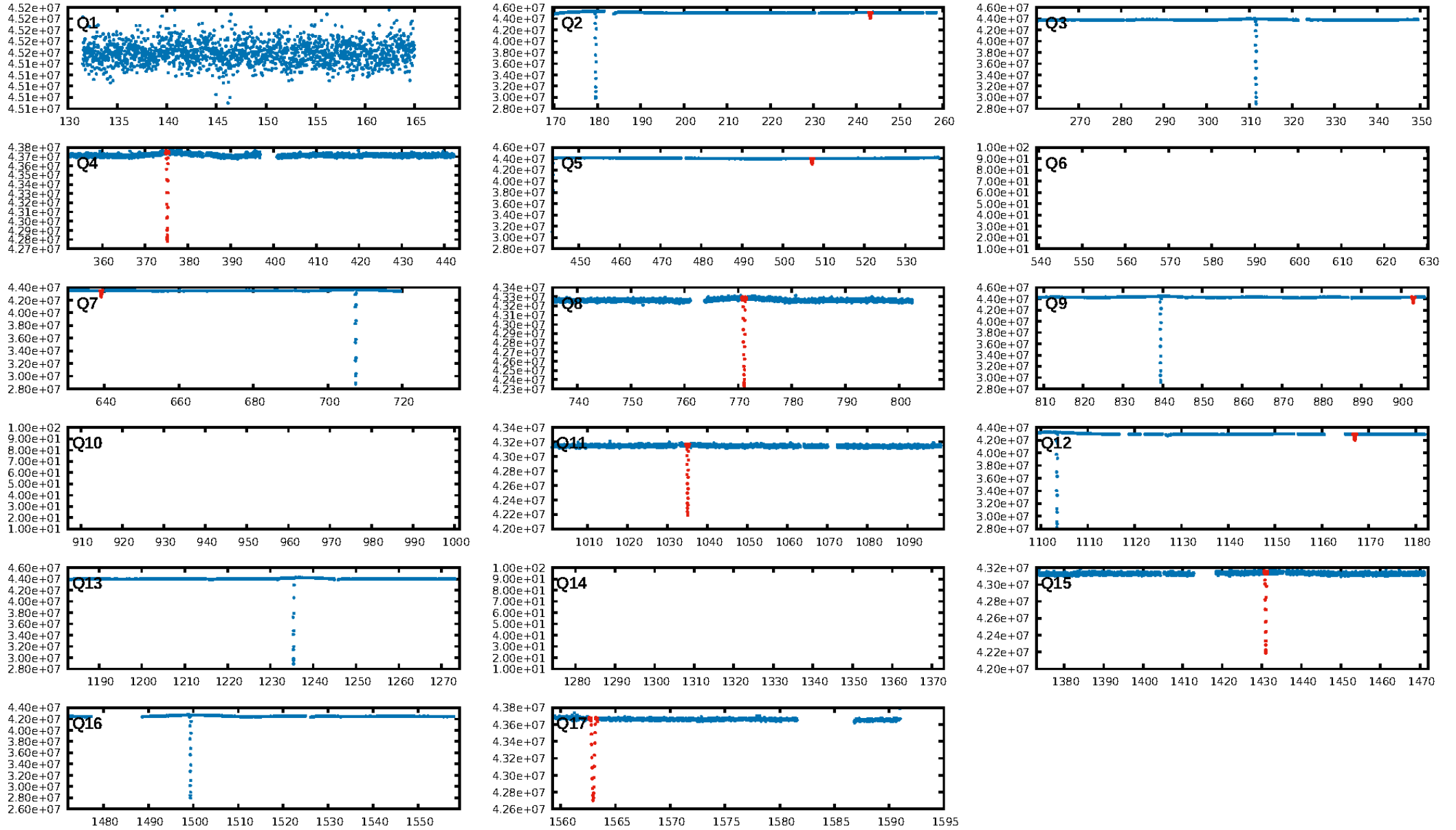
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 77.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 7.378
Centroid-sig: 0.0%
Centroid-so: 0.205 arcsec [11.59σ]
OotOffset-rm: 0.039 arcsec [0.57σ]
OotOffset-st: 1/3/3/3 [10]
KicOffset-st: 1/3/3/3 [10]
DiffImageQuality-fgm: 1.00 [10/10]
DiffImageOverlap-fno: 1.00 [10/10]

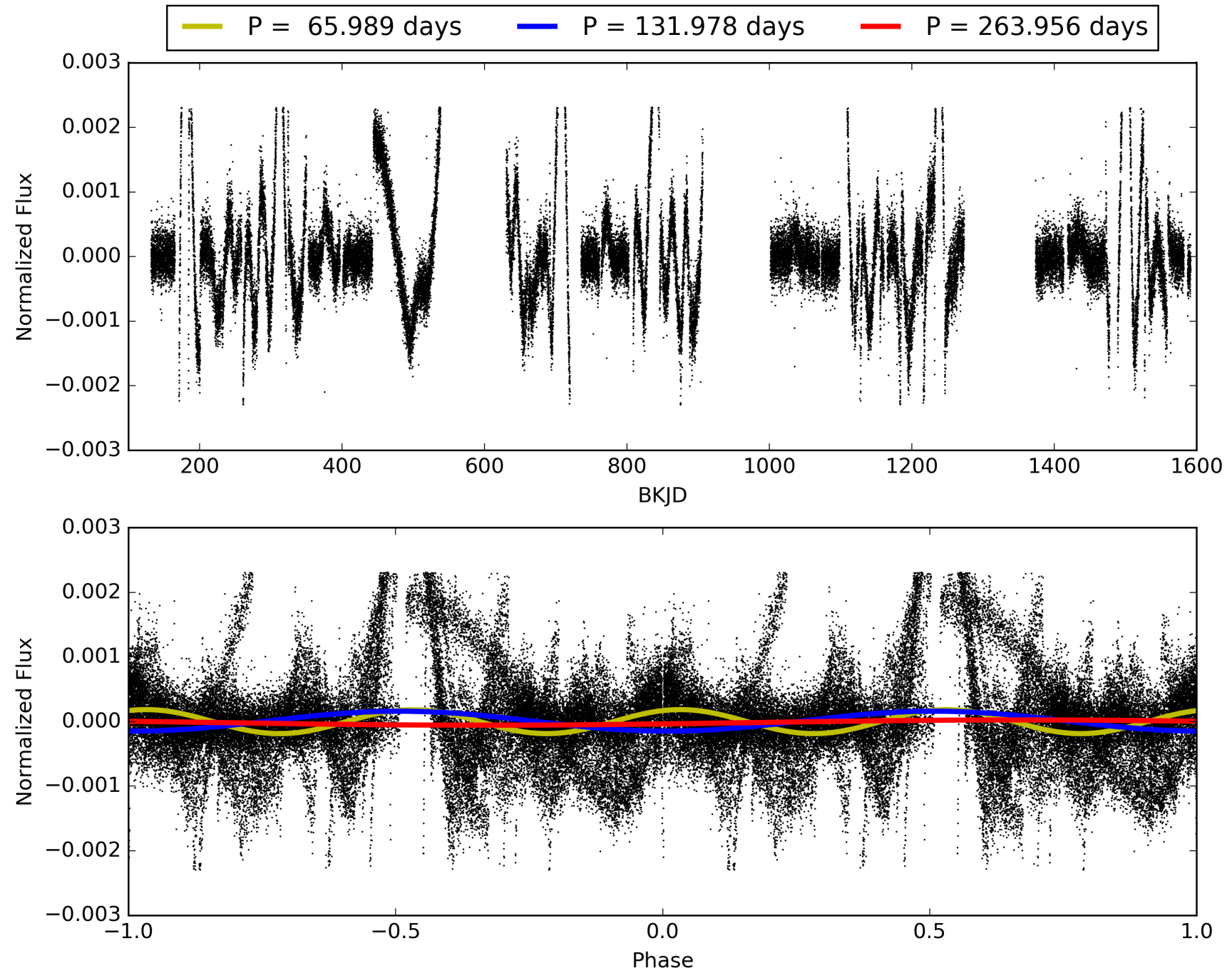
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:26:02 Z

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

TCE 005456023-02, PDC Light Curves

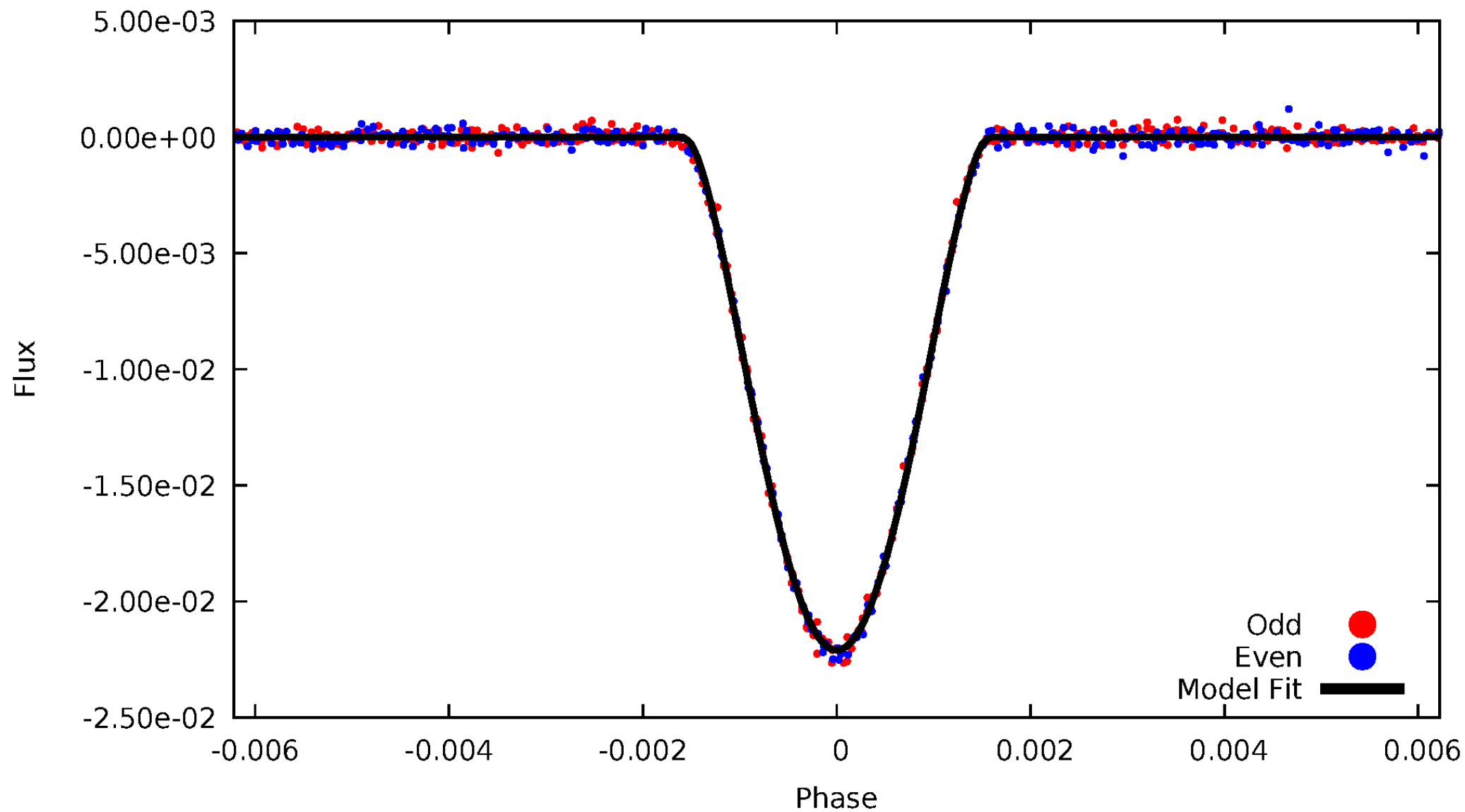


TCE 005456023-02



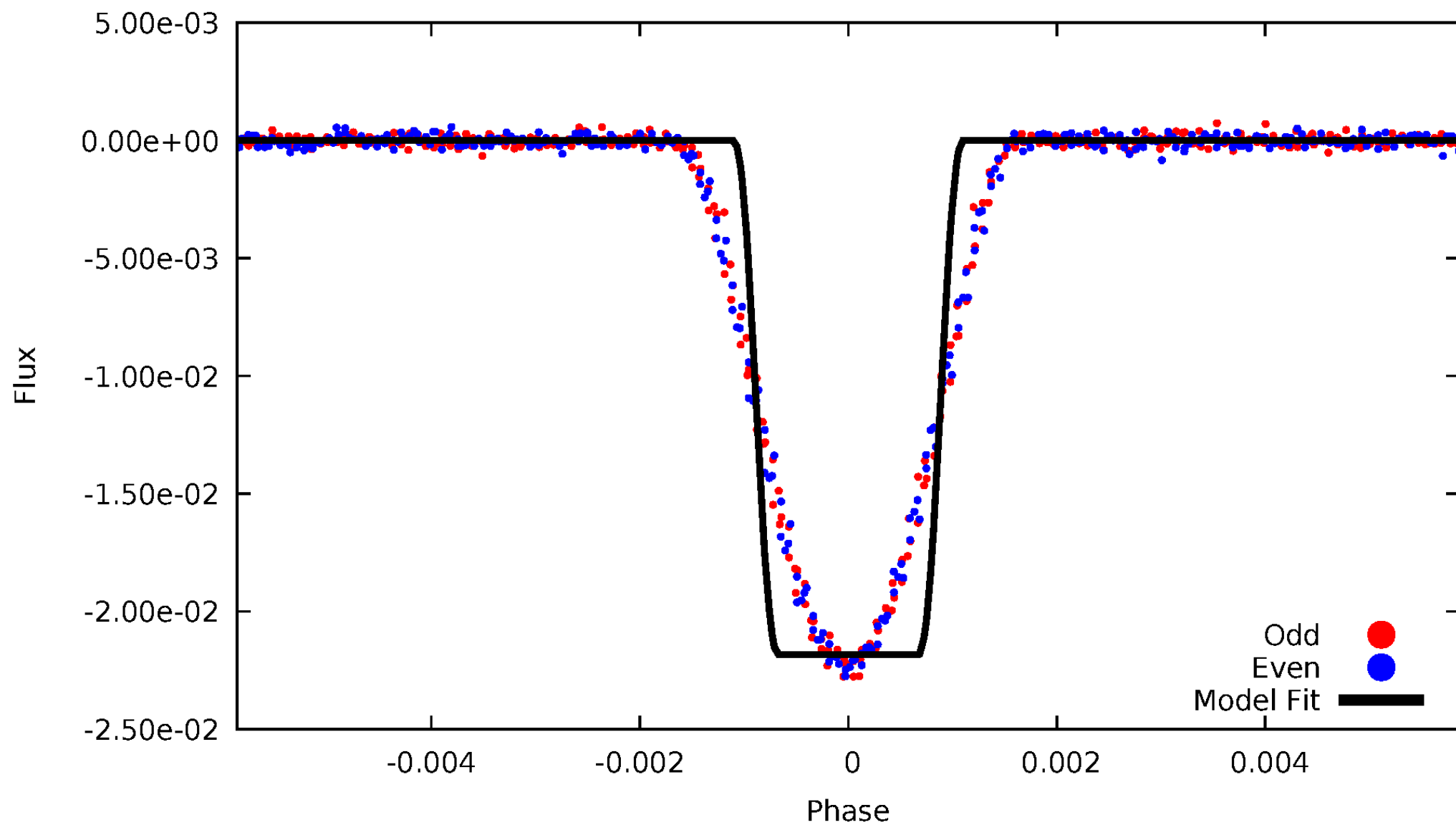
DV Odd/Even

TCE 005456023-02



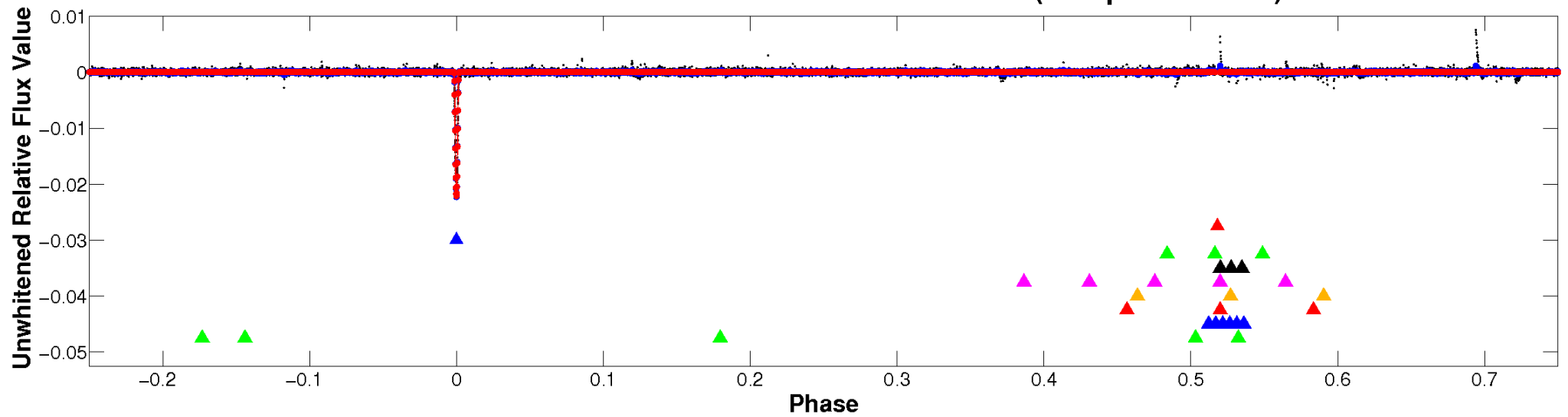
ALT Odd/Even

TCE 005456023-02

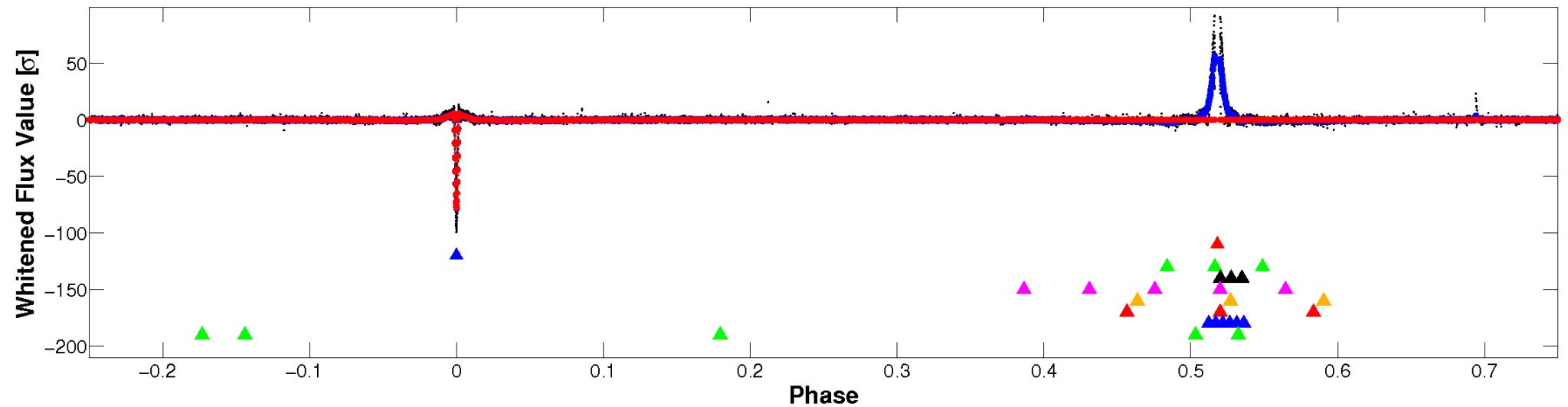


Non-Whitened Vs. Whitened Light Curve

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

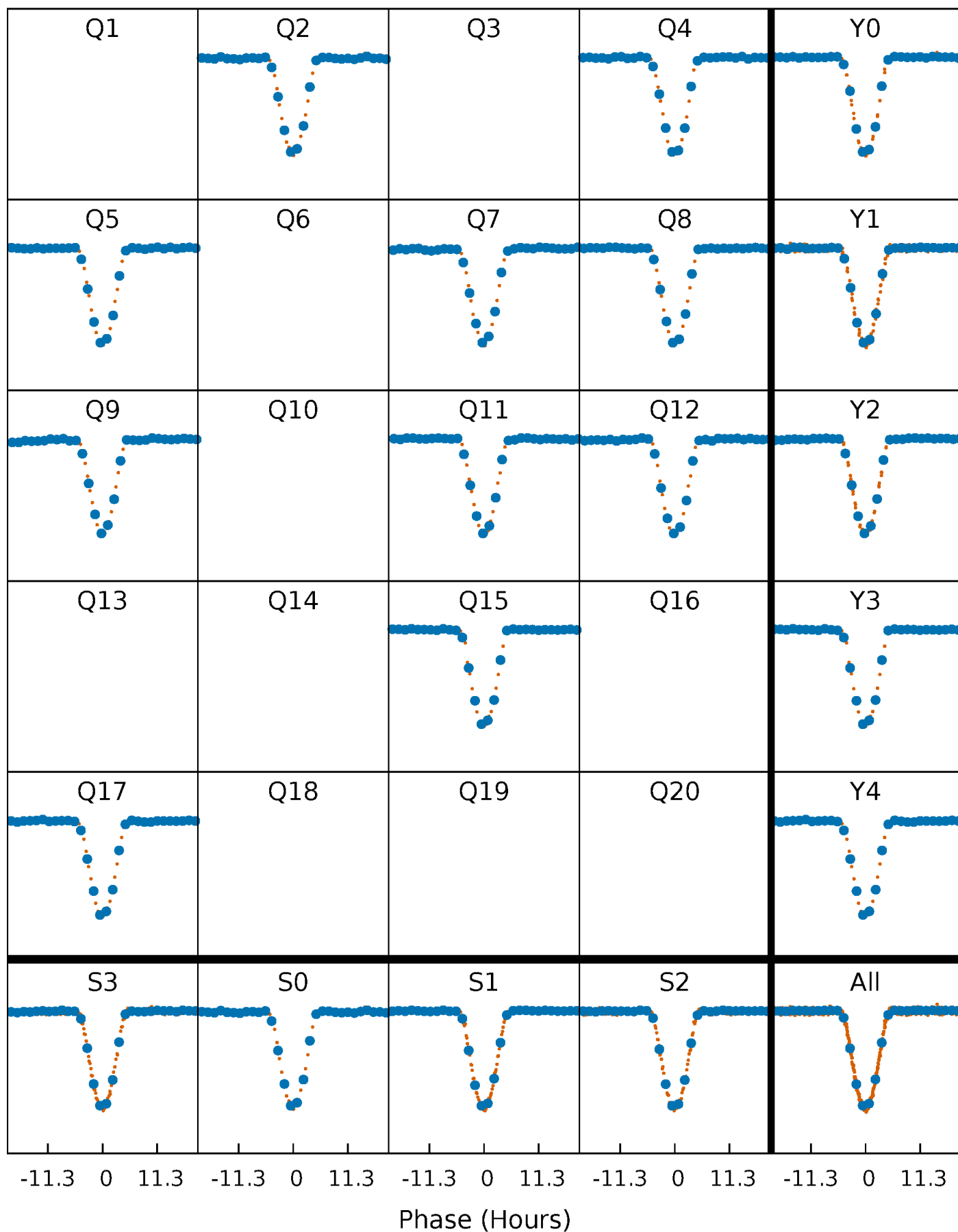


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



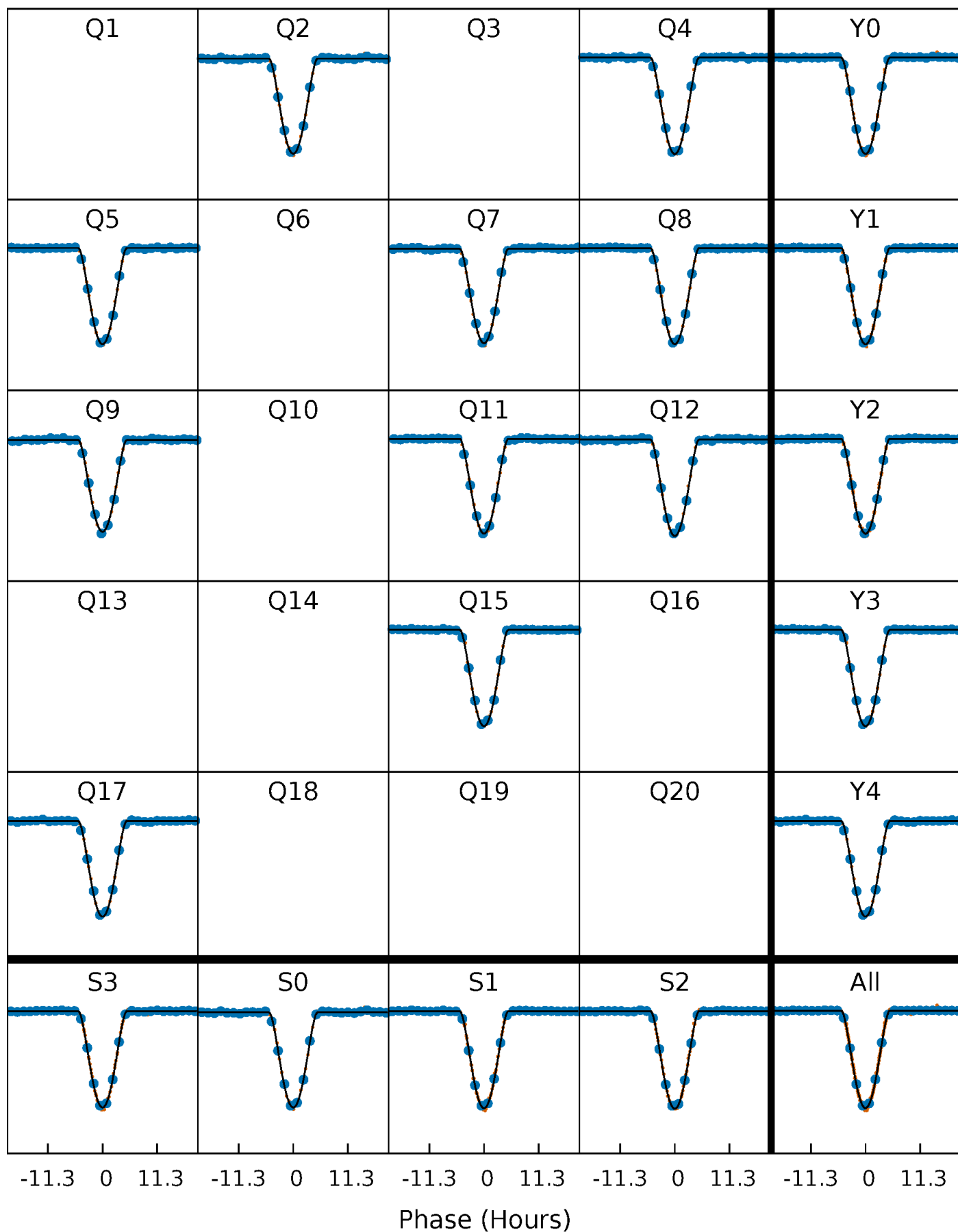
PDC Quarter-Phased Transit Curves

TCE 005456023-02 P=131.978206 Days $T_0=243.181247$ (BKJD)



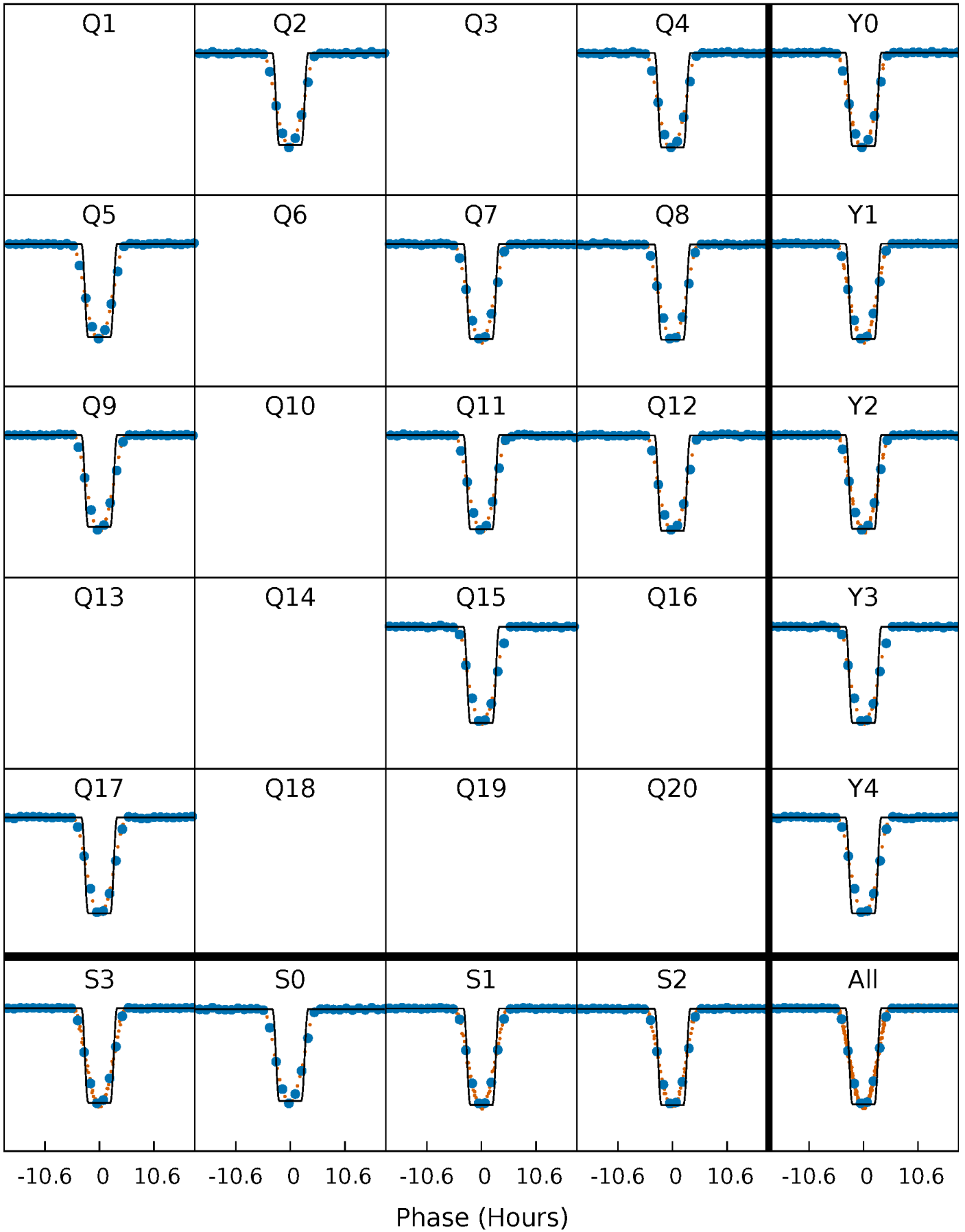
DV Quarter-Phased Transit Curves

TCE 005456023-02 P=131.978206 Days $T_0=243.181247$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

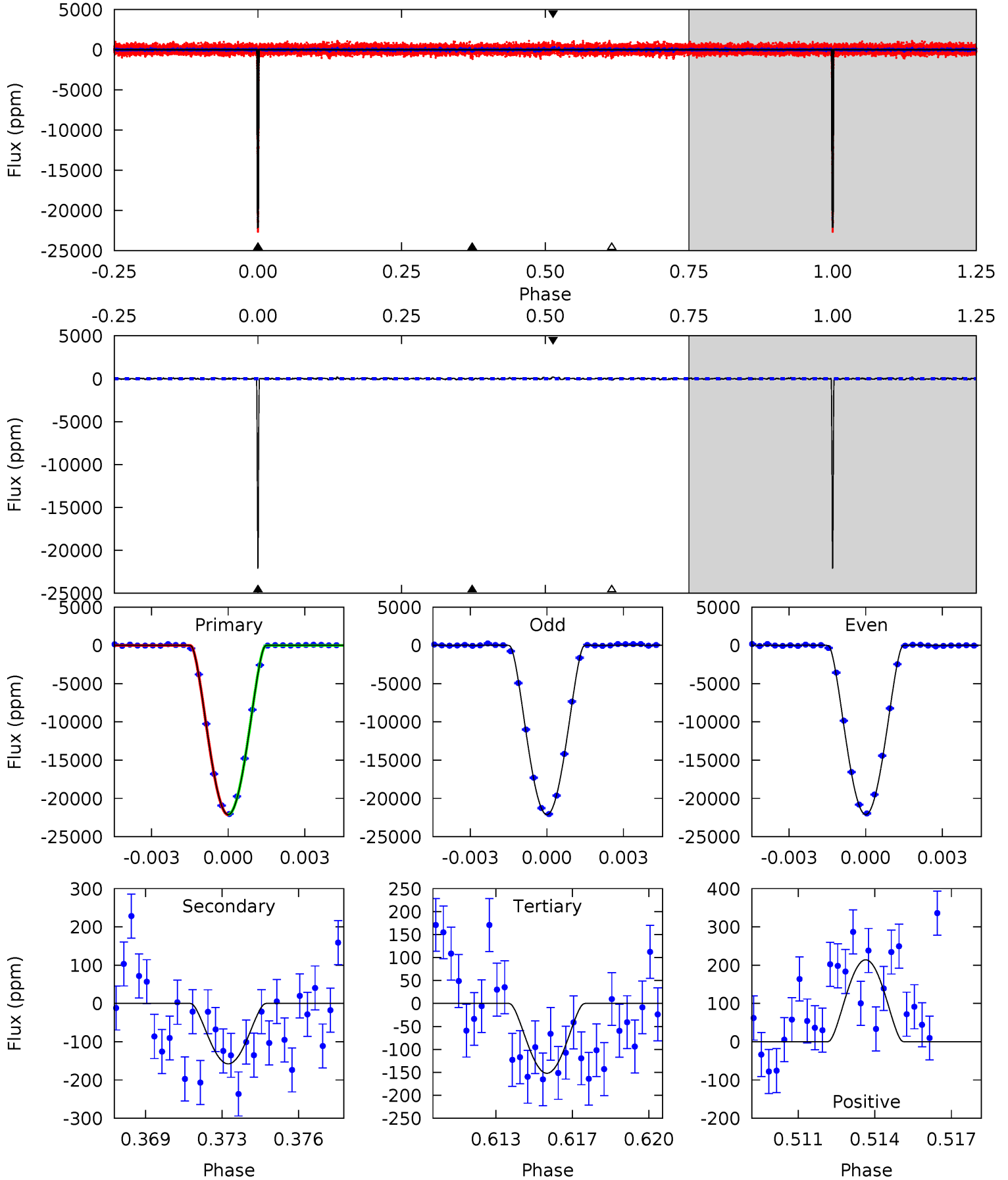
TCE 005456023-02 P=131.976897 Days $T_0=243.187634$ (BKJD)



DV Model-Shift Uniqueness Test

005456023-02, P = 131.978206 Days, E = 111.203041 Days

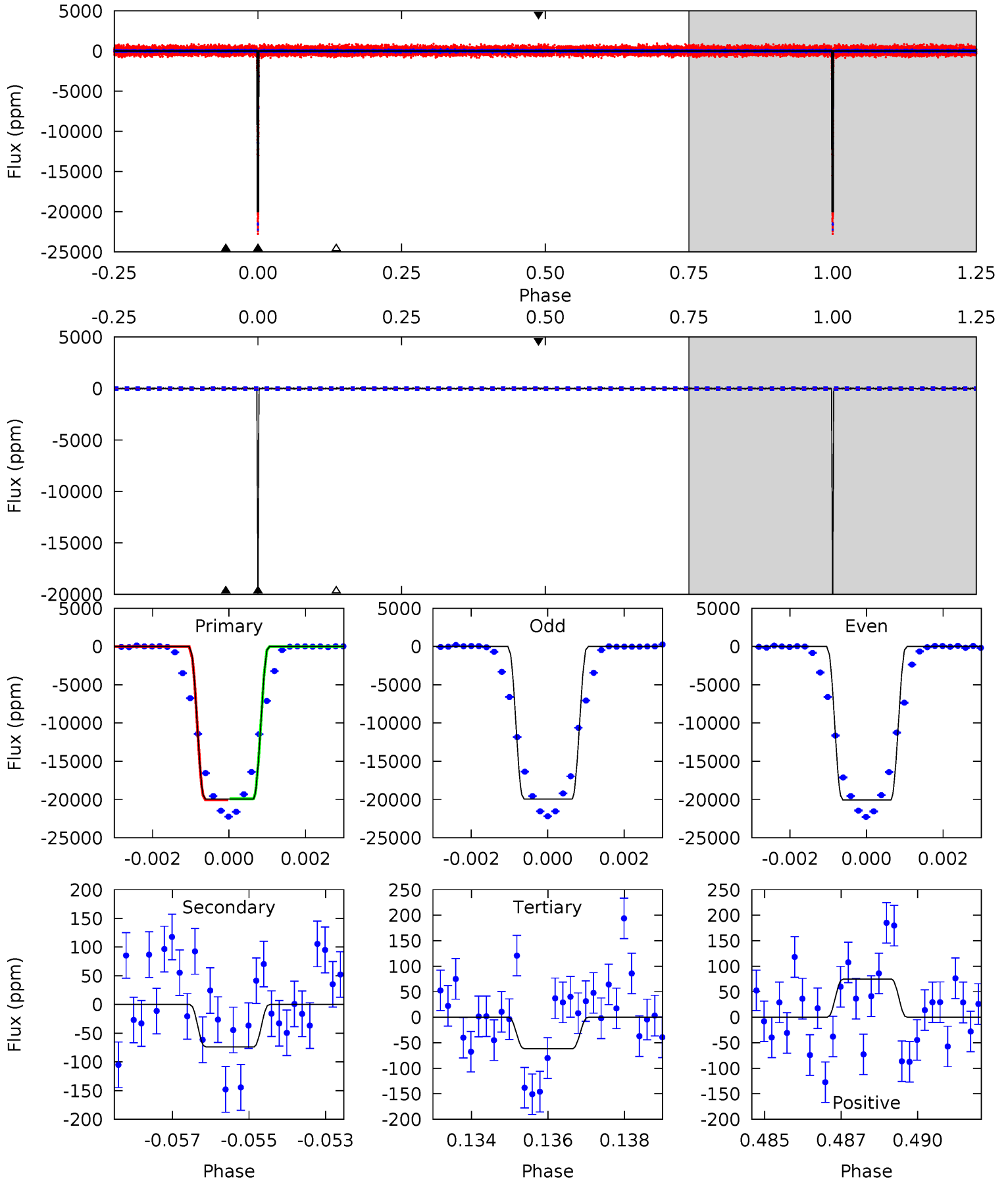
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1274	9.09	8.76	12.3	5.24	2.95	2.59	1265	1262	0.34	-3.24	0.43	1.00	0.01	1.31



Alt Model-Shift Uniqueness Test

005456023-02, P = 131.976897 Days, E = 111.210737 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
944.5	3.50	2.92	3.55	5.32	3.07	0.82	941.5	940.9	0.58	-0.05	2.74	1.00	0.00	2.89



Stellar Parameters For KIC 005456023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4916^{+122}_{-146}	$3.717^{+0.900}_{-0.300}$	$-0.080^{+0.300}_{-0.300}$	$2.182^{+1.179}_{-1.441}$	$0.905^{+0.232}_{-0.190}$	$0.123^{+3.024}_{-0.081}$
	+2%/-3%	+24%/-8%	+375%/-375%	+54%/-66%	+26%/-21%	+2465%/-66%
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 005456023-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-158 ± 17	$52.03^{+16.00}_{-17.79}$	625^{+92}_{-109}	2109^{+48}_{-52}	$8.001^{+10.348}_{-3.373}$
Alt.	-74 ± 21	$32.59^{+12.91}_{-10.94}$	620^{+90}_{-116}	2119^{+90}_{-90}	$8.946^{+12.789}_{-4.422}$

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 $A_{obs} \gg 1.0$

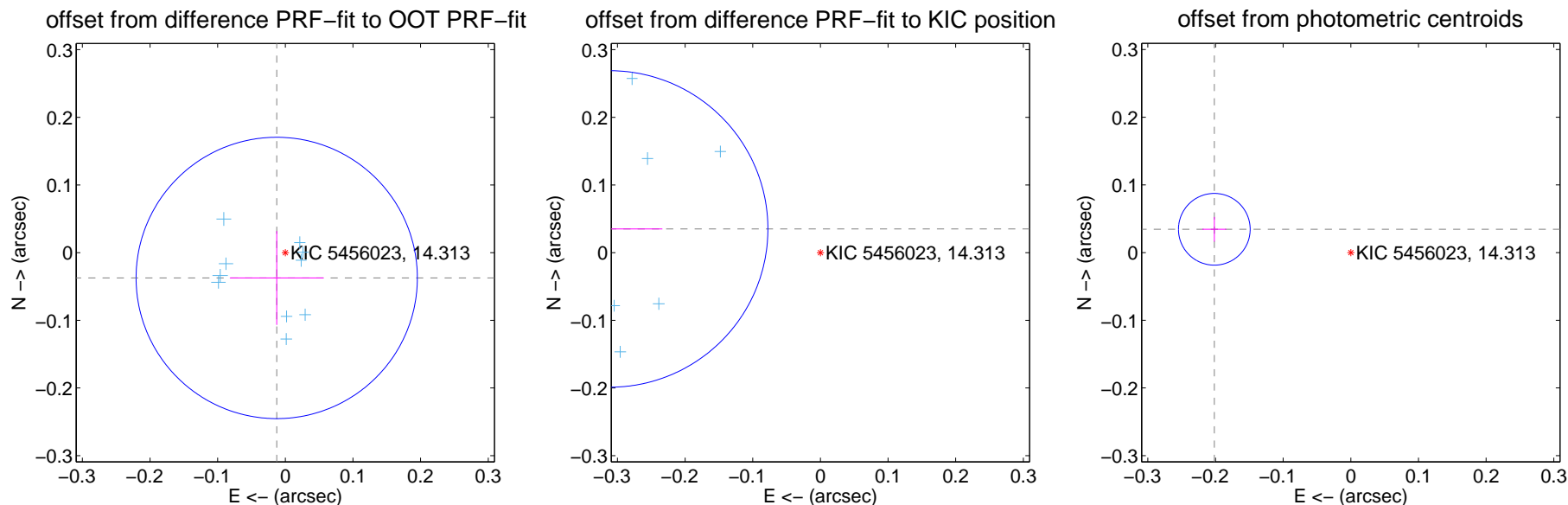
DV Centroid Data

Supplemental centroid analysis for 005456023-02. Kepler magnitude: 14.31. Transit SNR 697.05

There are 10 quarters with good PRF difference image offsets

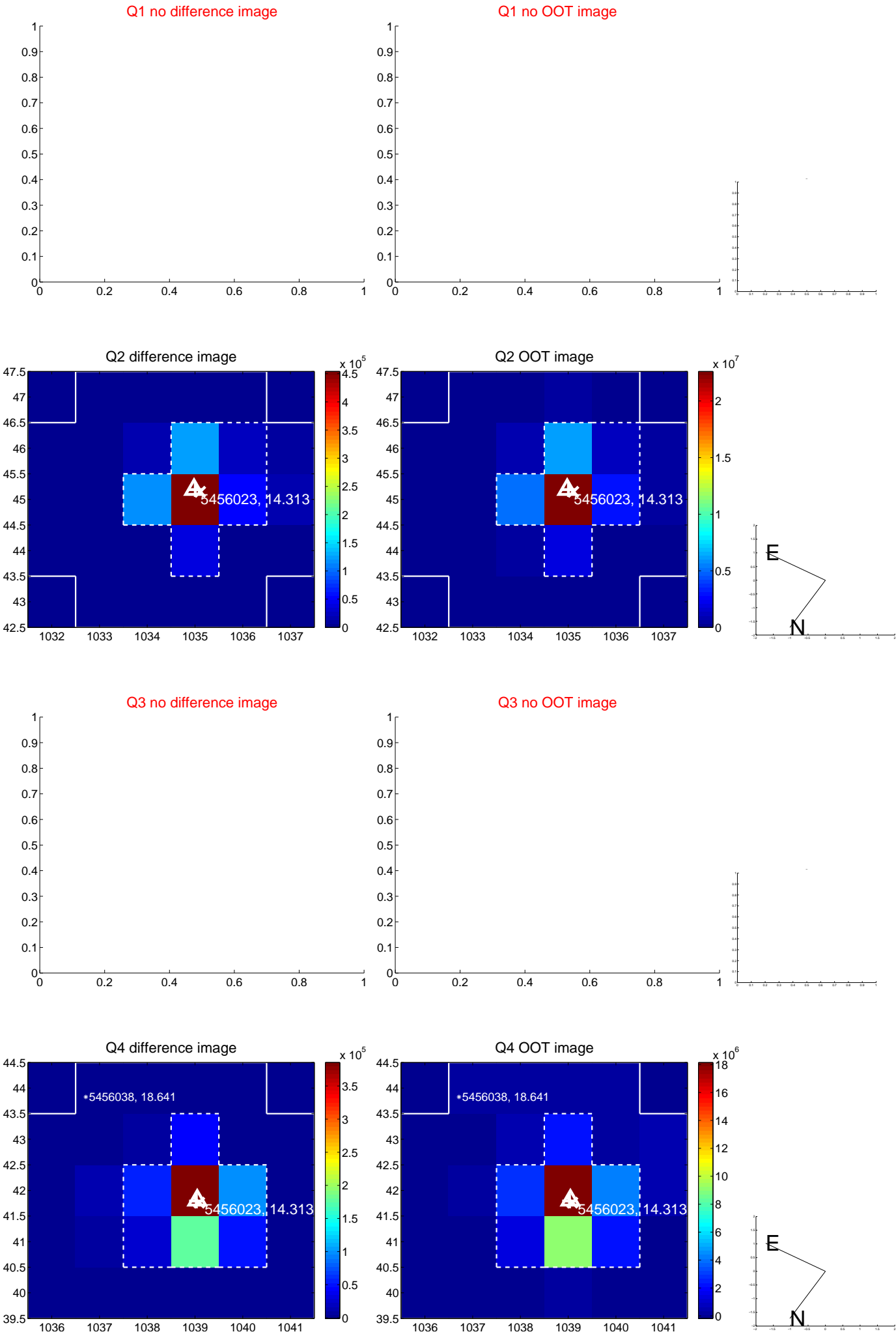
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.039 ± 0.069	0.57	0.013 ± 0.069	-0.037 ± 0.069
PRF-fit source offset from KIC position	0.313 ± 0.078	4.02	0.312 ± 0.078	0.035 ± 0.079
photometric centroid source offset	0.20 ± 0.02	11.59	0.20 ± 0.02	0.03 ± 0.02

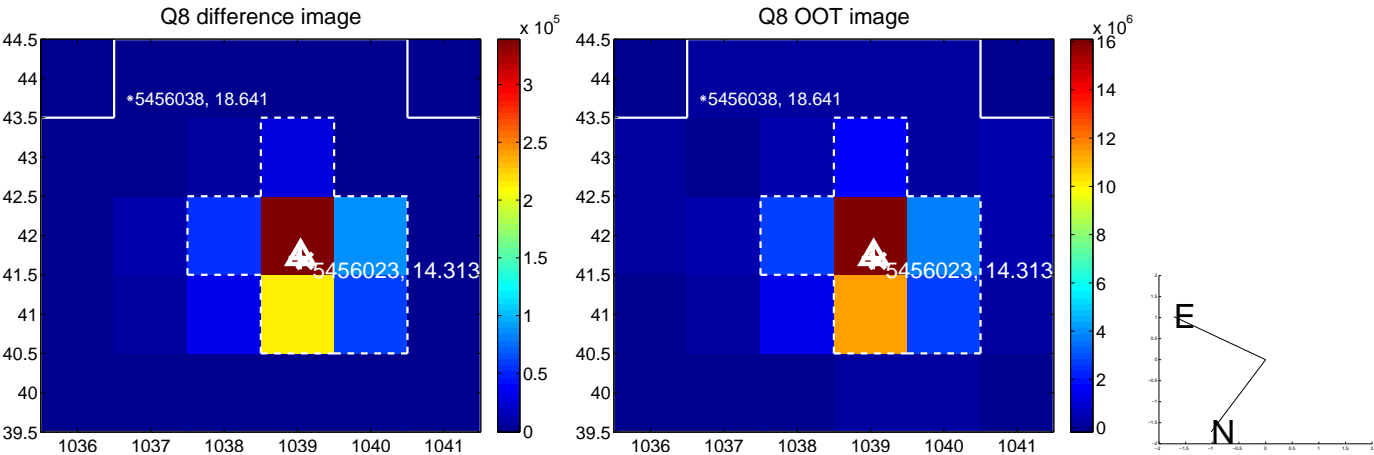
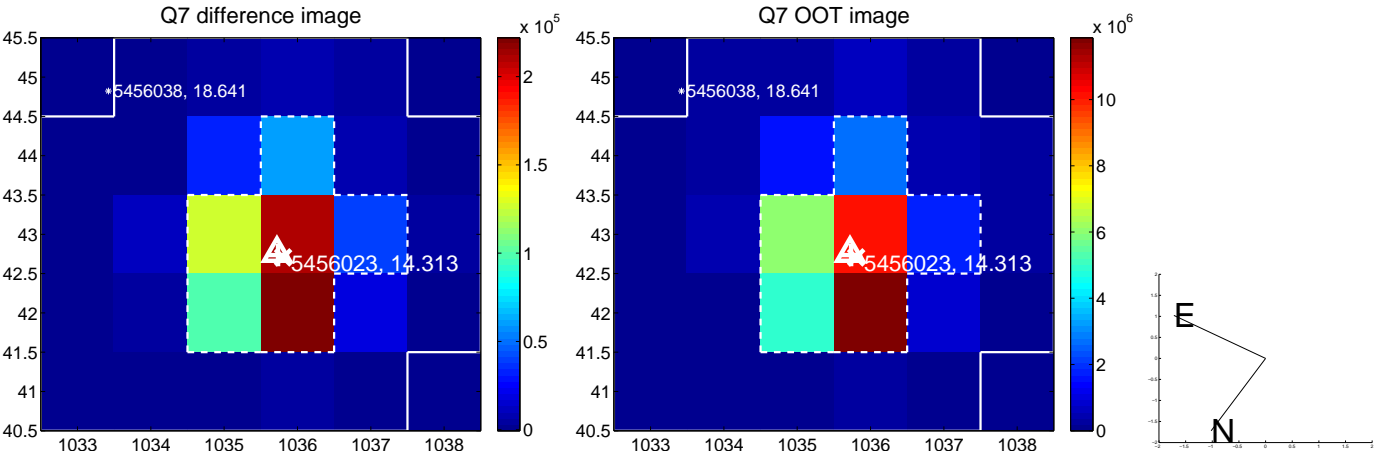
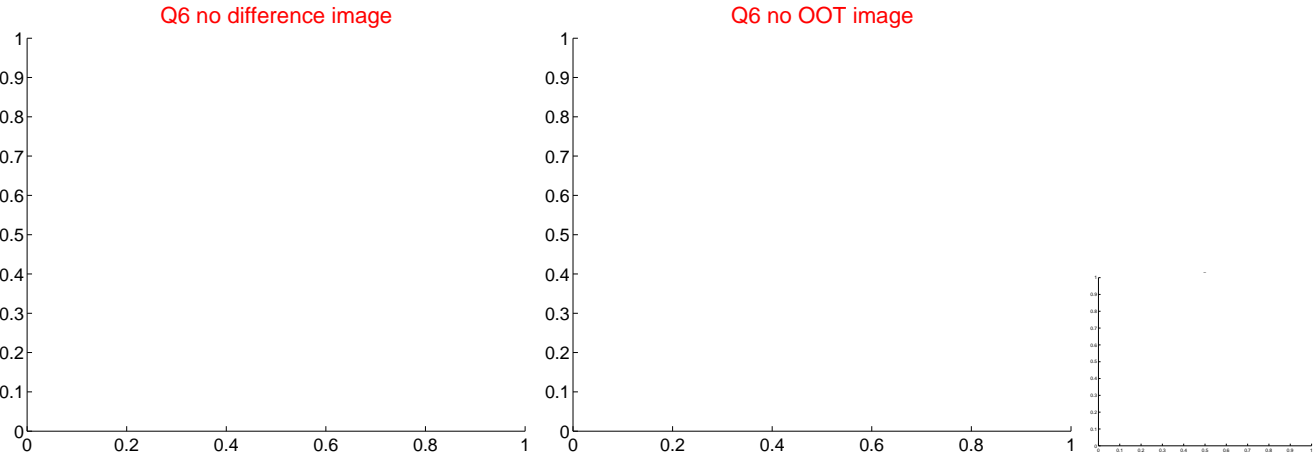
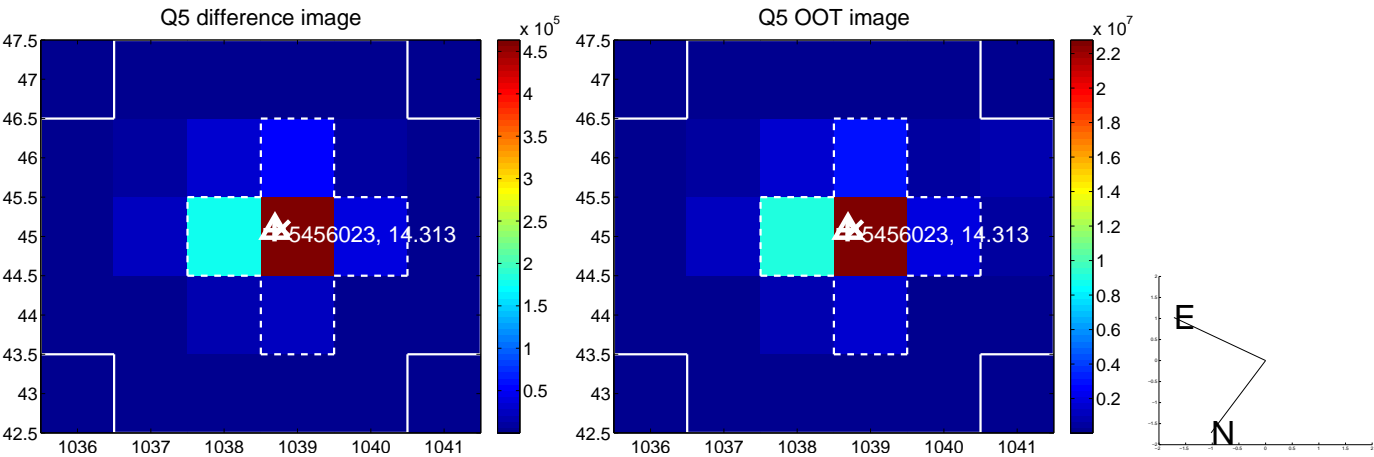


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

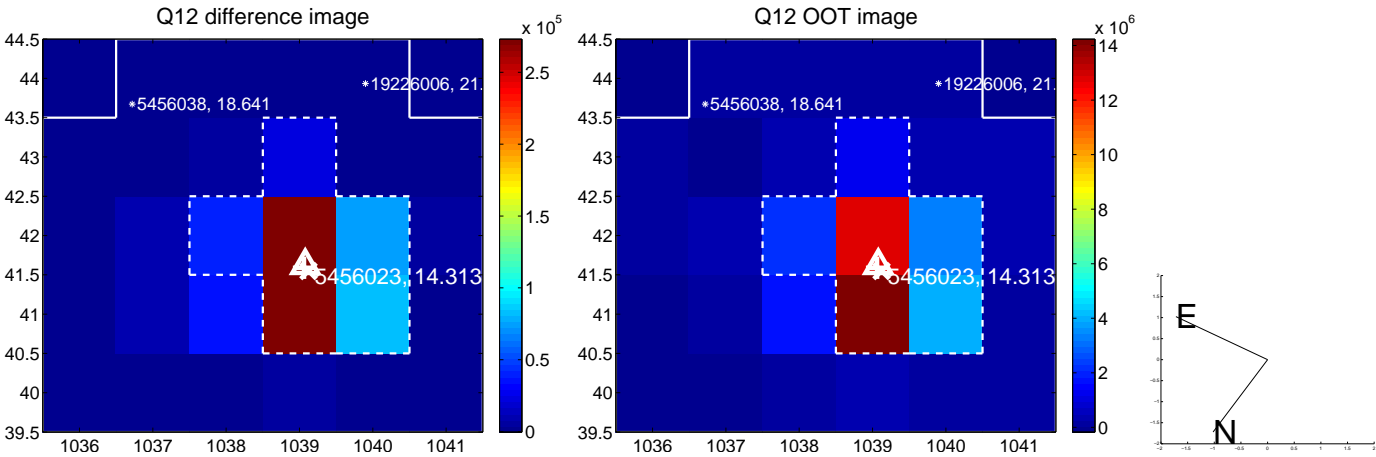
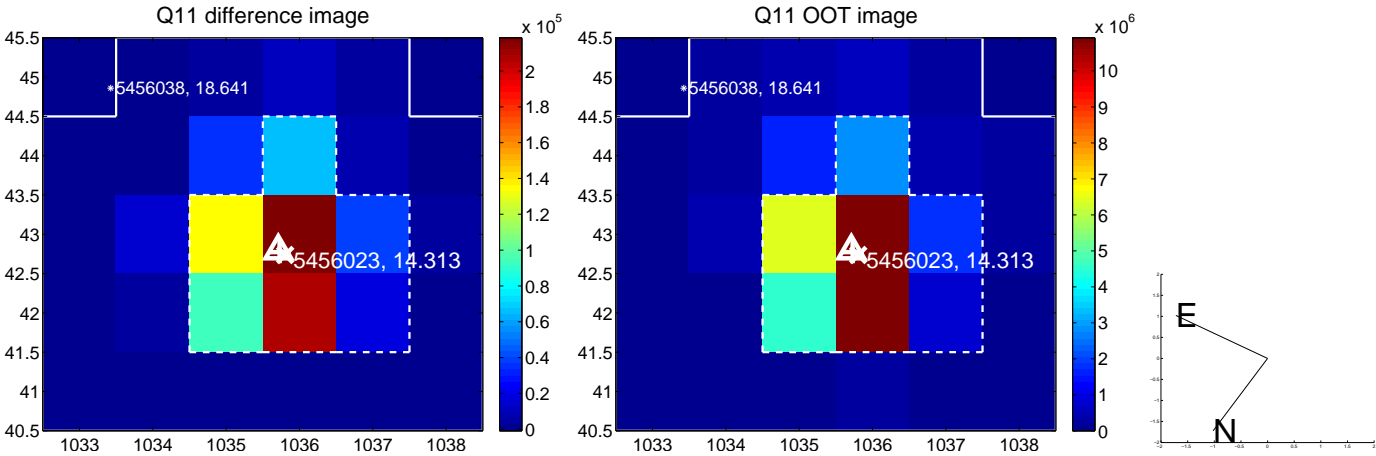
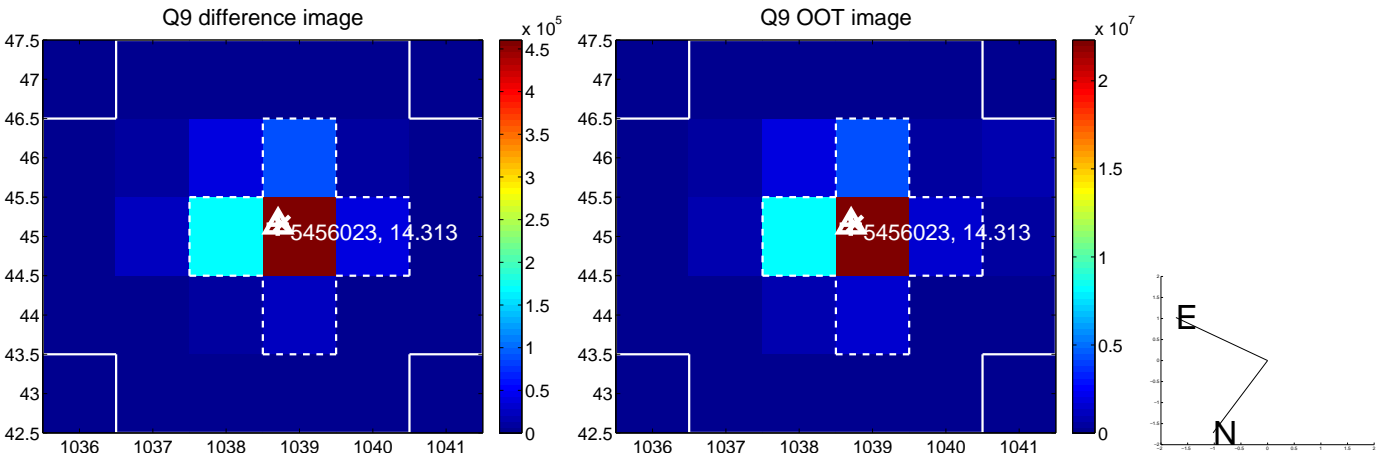
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



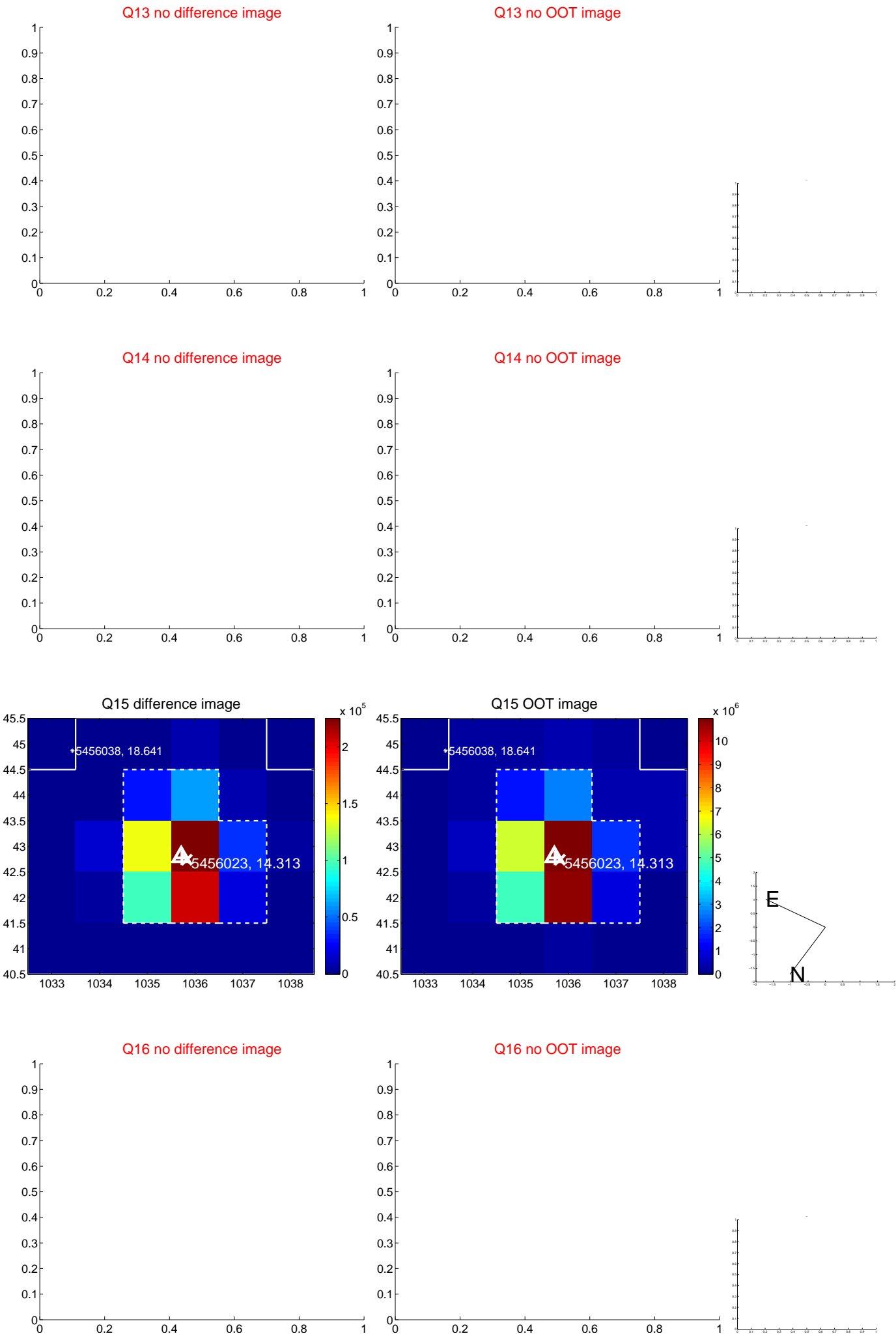
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



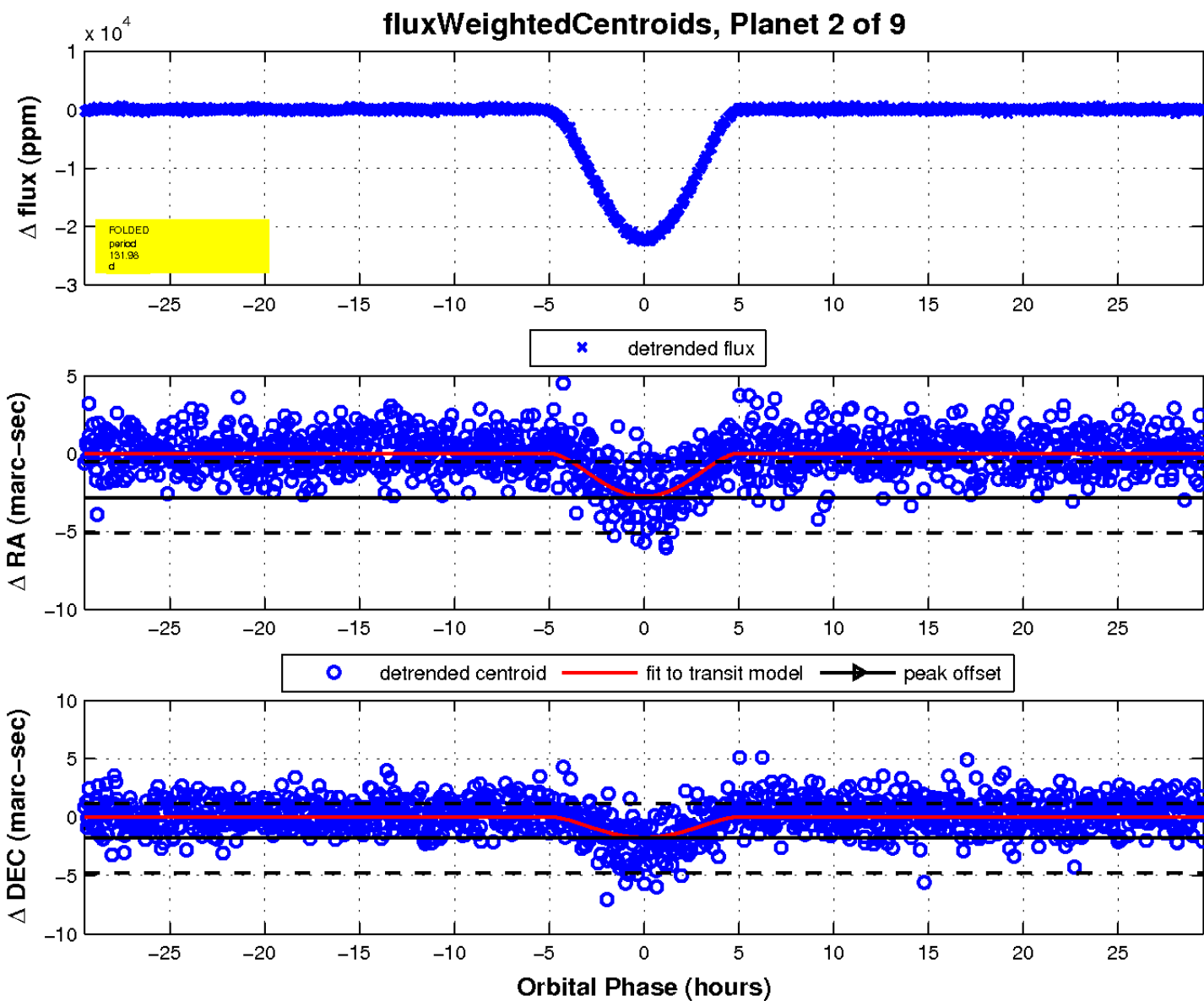
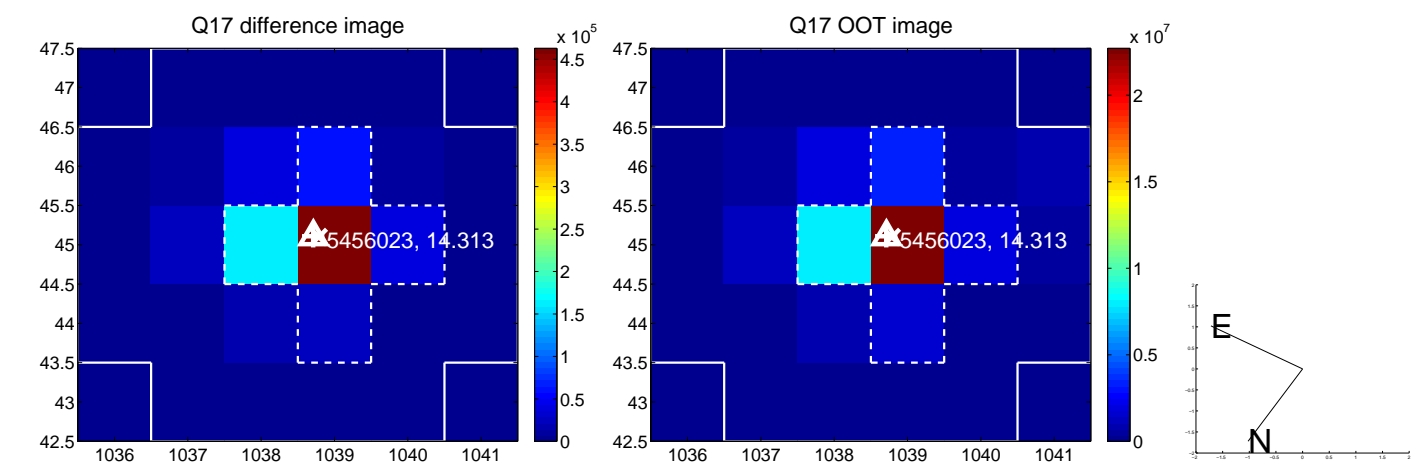
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

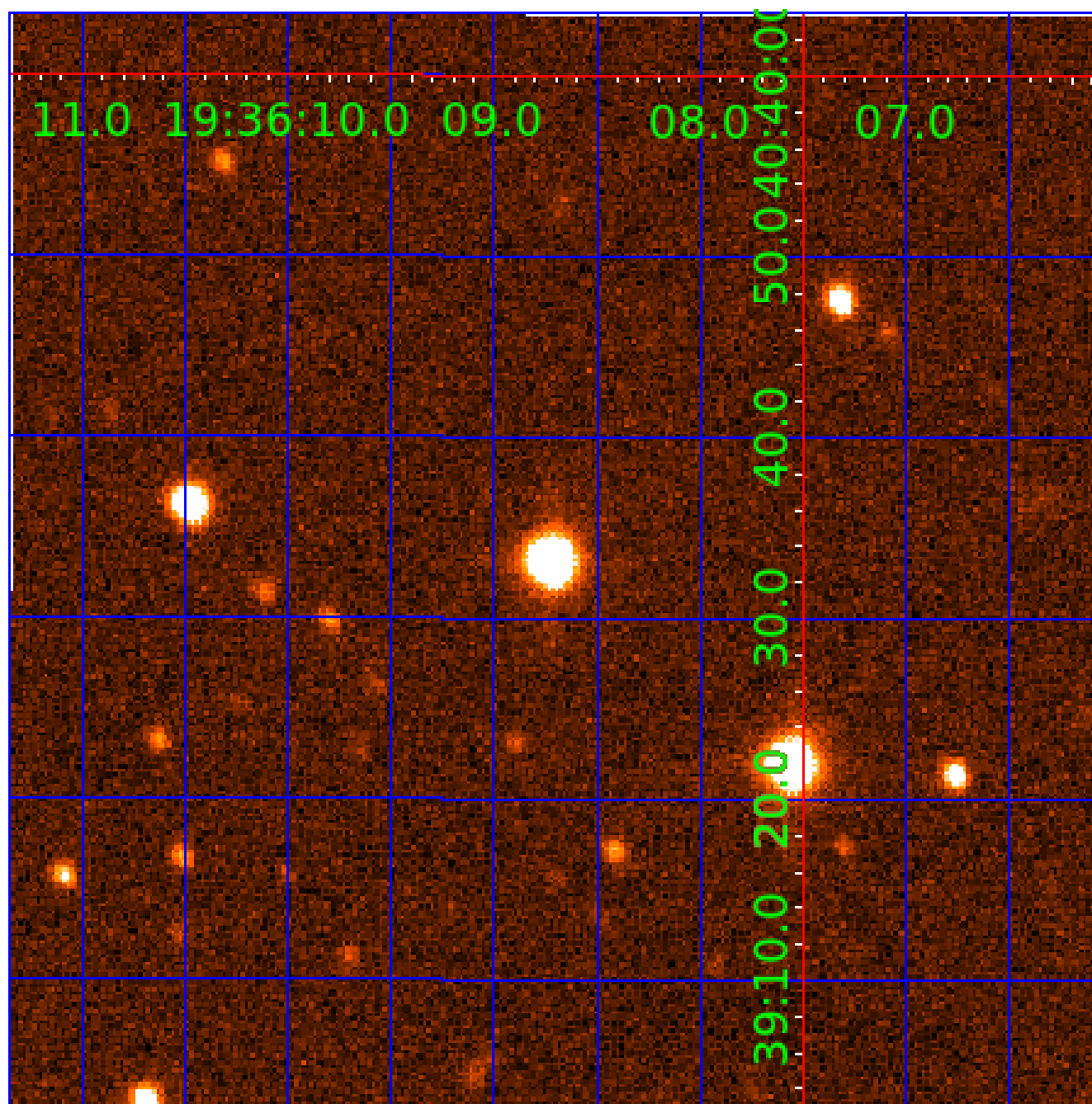


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
005456023-01	OBS	3521.01	131.978586	179.584349	345710.4	3.500	4448.3	-1.0	2.18	4916	98.42	10.34
005456023-02	OBS	No	131.978206	243.181247	22096.5	9.848	723.9	697.0	2.18	4916	53.07	10.34
005456023-03	OBS	No	532.198881	175.068533	16423.6	15.000	258.7	-1.0	2.18	4916	27.06	1.61
005456023-05	OBS	No	269.831971	294.182565	16423.6	15.000	203.0	-1.0	2.18	4916	27.06	3.98
005456023-06	OBS	No	651.523423	189.132663	66.1	0.702	256.8	0.4	2.18	4916	2.18	1.23
005456023-07	OBS	No	651.510438	188.214123	16422.9	15.000	257.4	-1.0	2.18	4916	27.06	1.23
005456023-08	OBS	No	264.588640	178.801063	2785.6	3.500	25.8	-1.0	2.18	4916	11.15	4.09
005456023-09	OBS	No	306.667400	313.444601	1448.1	3.500	13.4	-1.0	2.18	4916	8.04	3.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005456023-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
005456023-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005456023-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005456023-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005456023-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005456023-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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 005456023-03

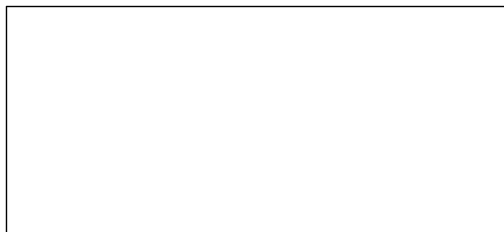
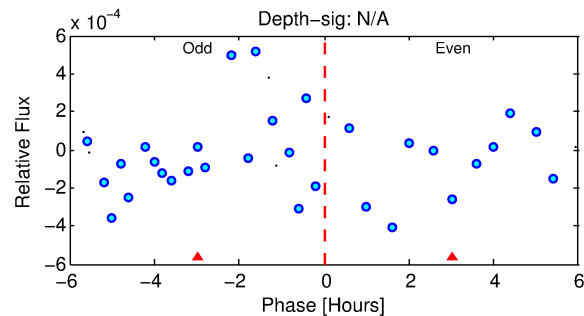
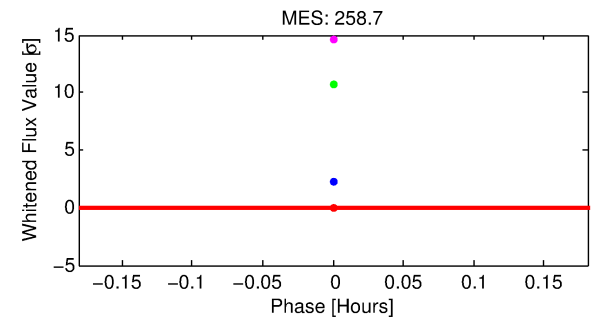
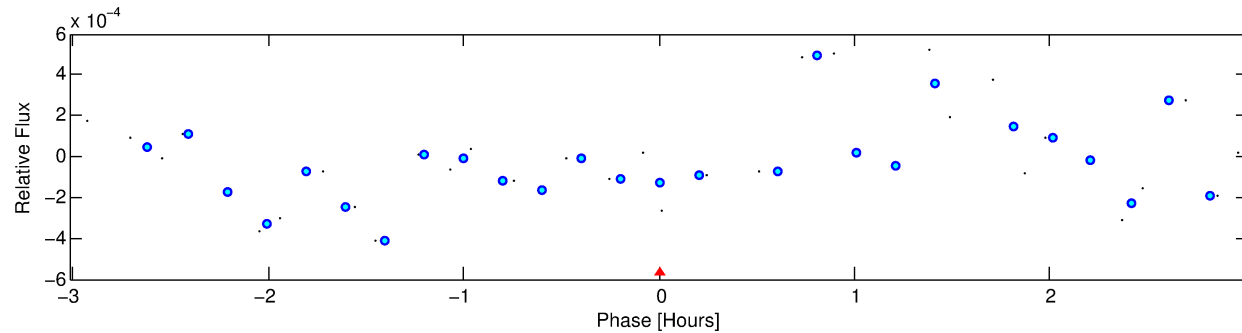
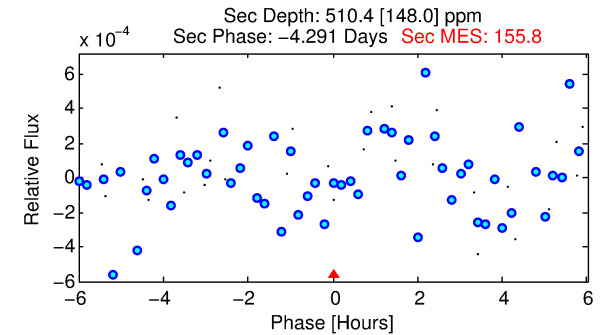
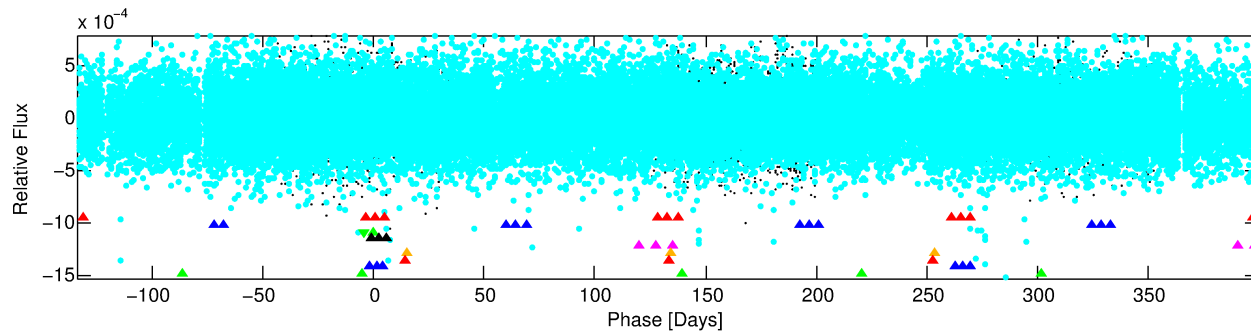
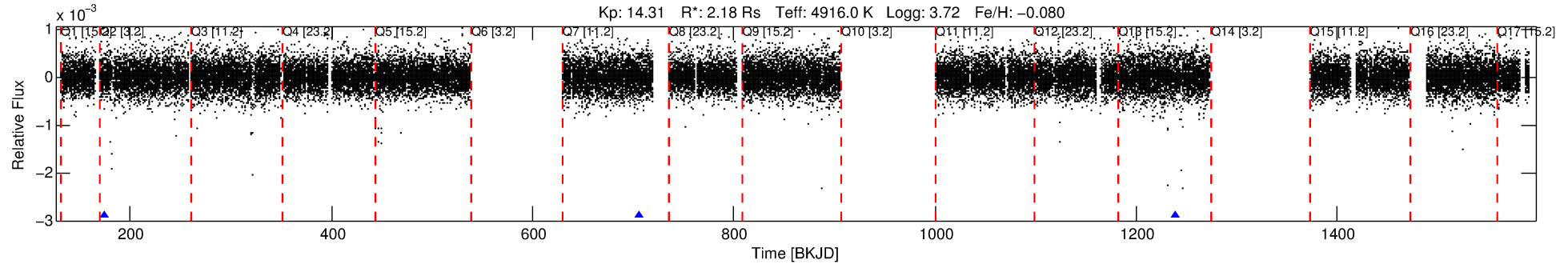
No Significant Match Found

DV One-Page Summary

KIC: 5456023 Candidate: 3 of 9 Period: 532.199 d

KOI: K03521 Corr: No Ephemeris Match

Kp: 14.31 R*: 2.18 Rs Teff: 4916.0 K Logg: 3.72 Fe/H: -0.080



TPS TCE Results:

Period = 532.19888 d
Epoch = 175.0685 BKJD

DV fit results are unavailable

DV Diagnostic Results:

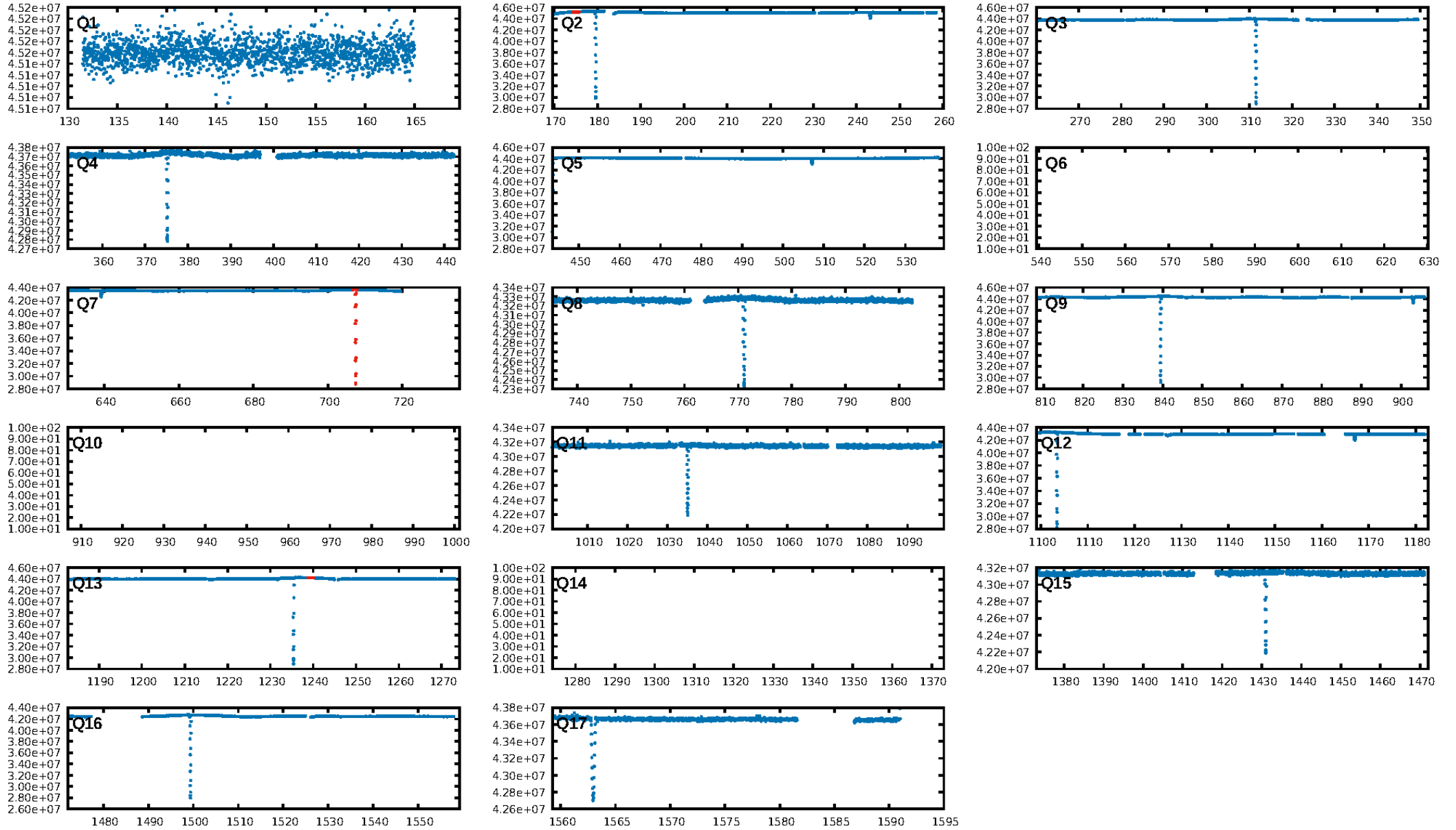
ShortPeriod-sig: 100.0% [5.16 σ]
LongPeriod-sig: 100.0% [134.99 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -5.665

Centroid-sig: 2.3%
Centroid-so: 14.112 arcsec [1.26 σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [2/2]

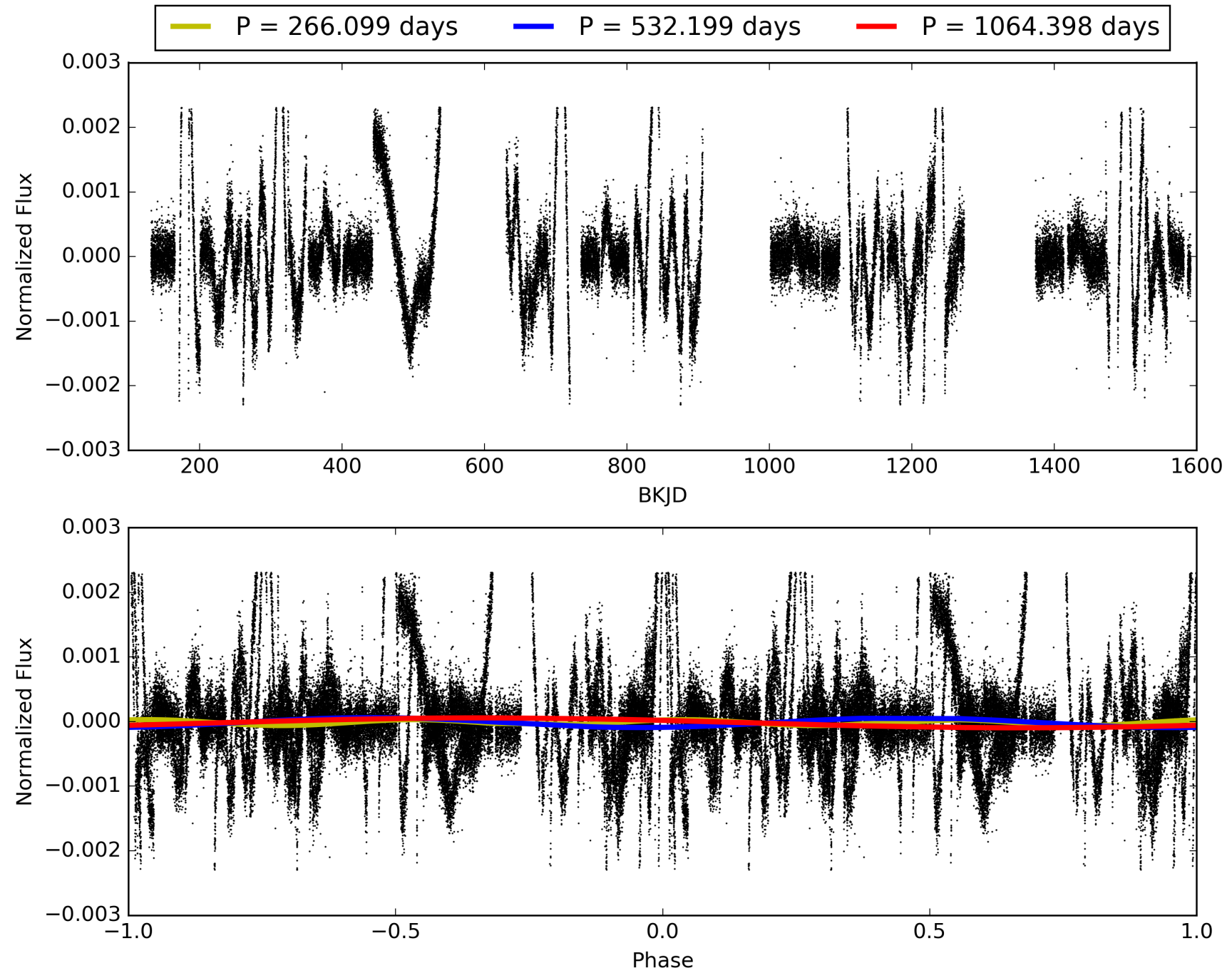
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:26:48 Z

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

TCE 005456023-03, PDC Light Curves

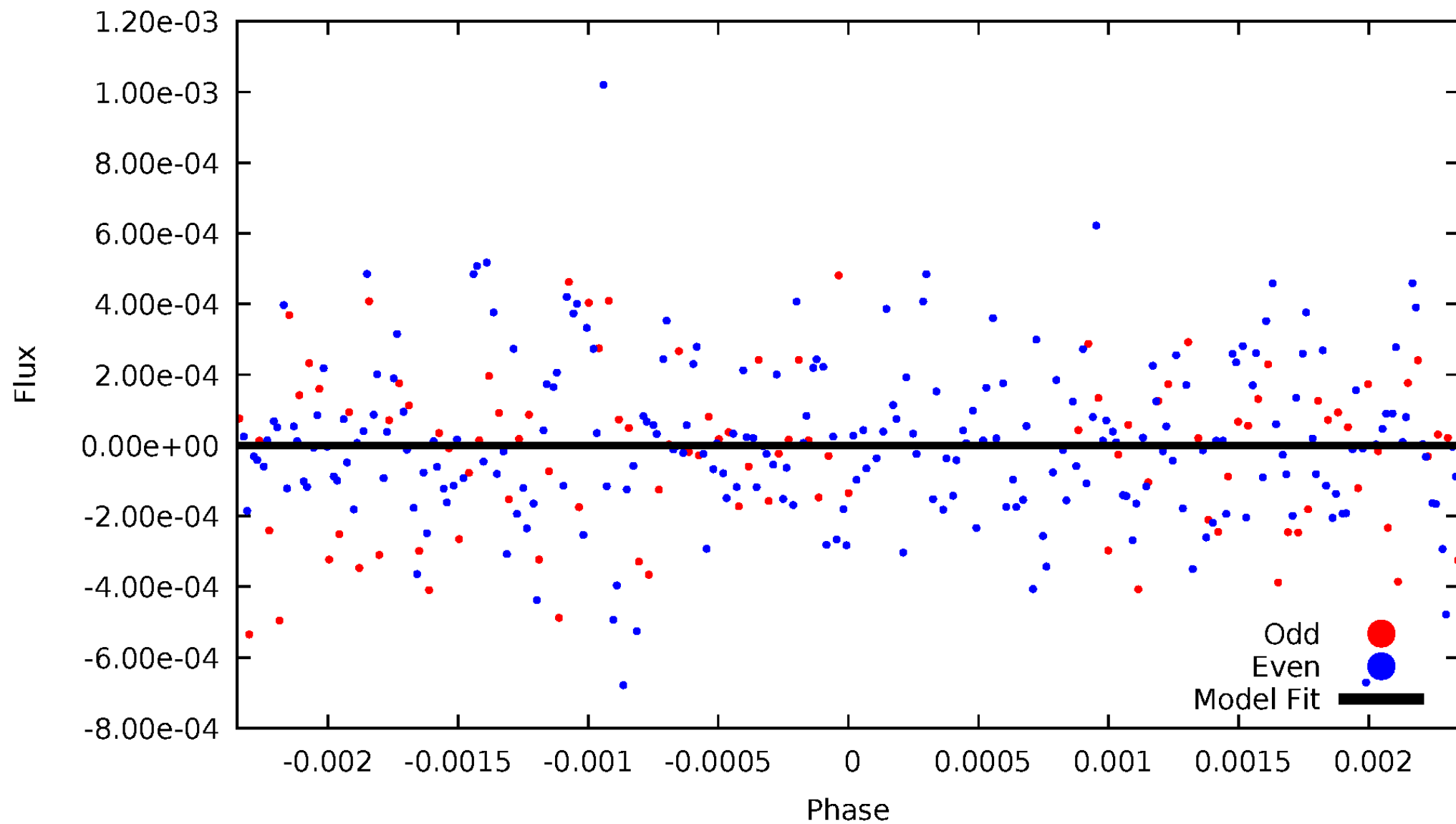


TCE 005456023-03



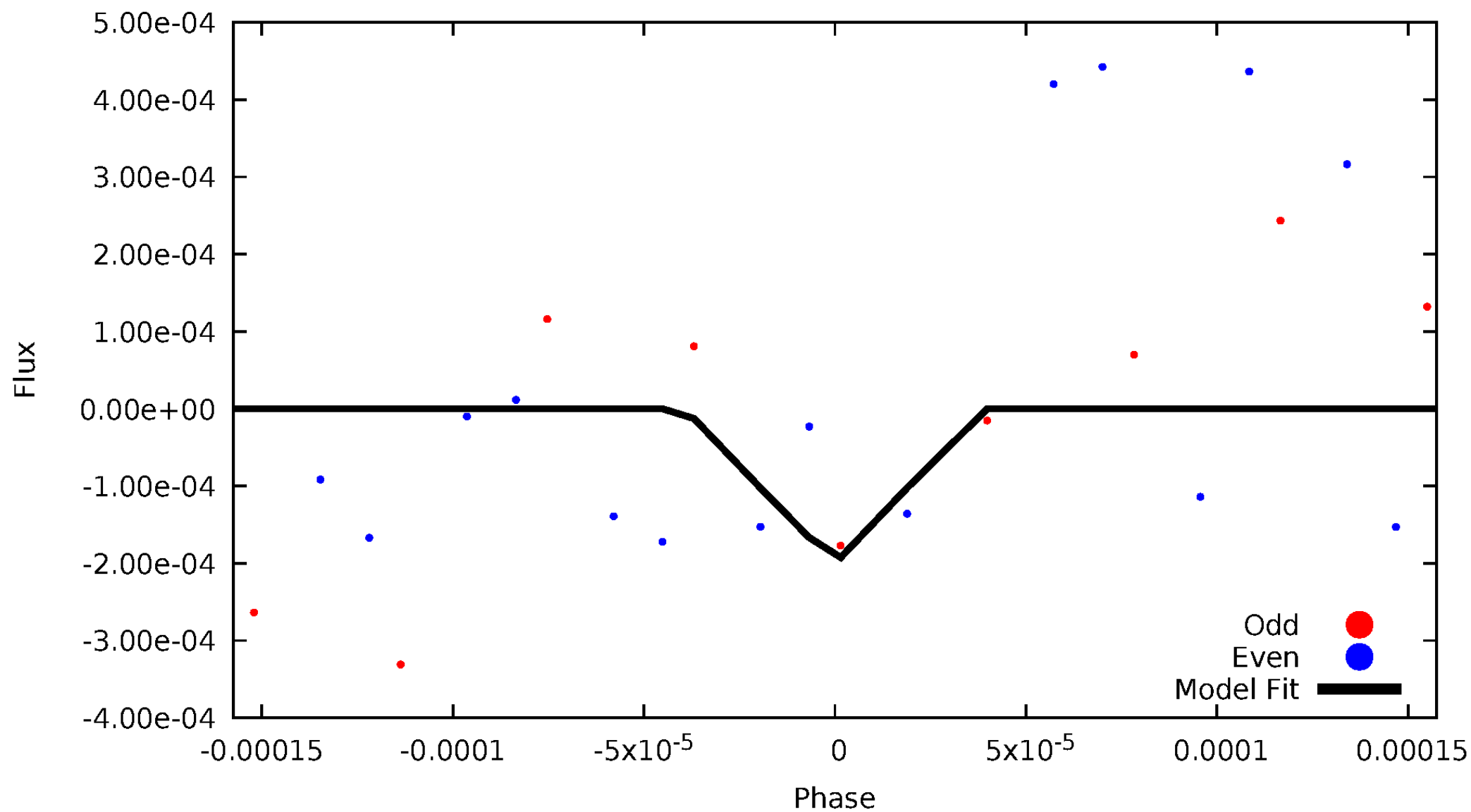
DV Odd/Even

TCE 005456023-03

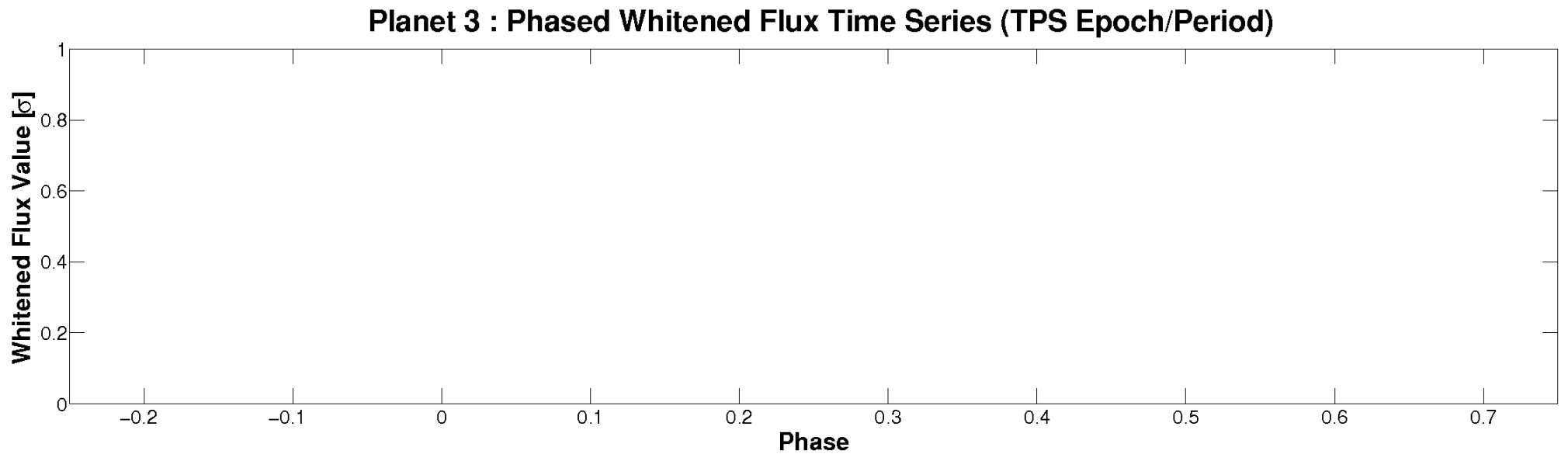
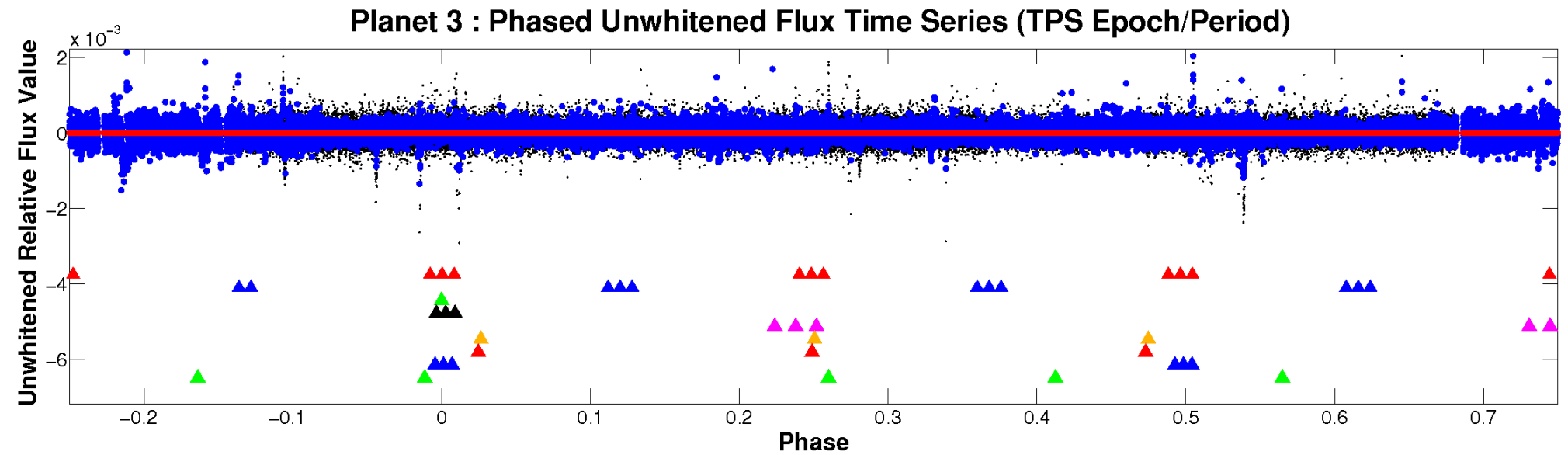


ALT Odd/Even

TCE 005456023-03

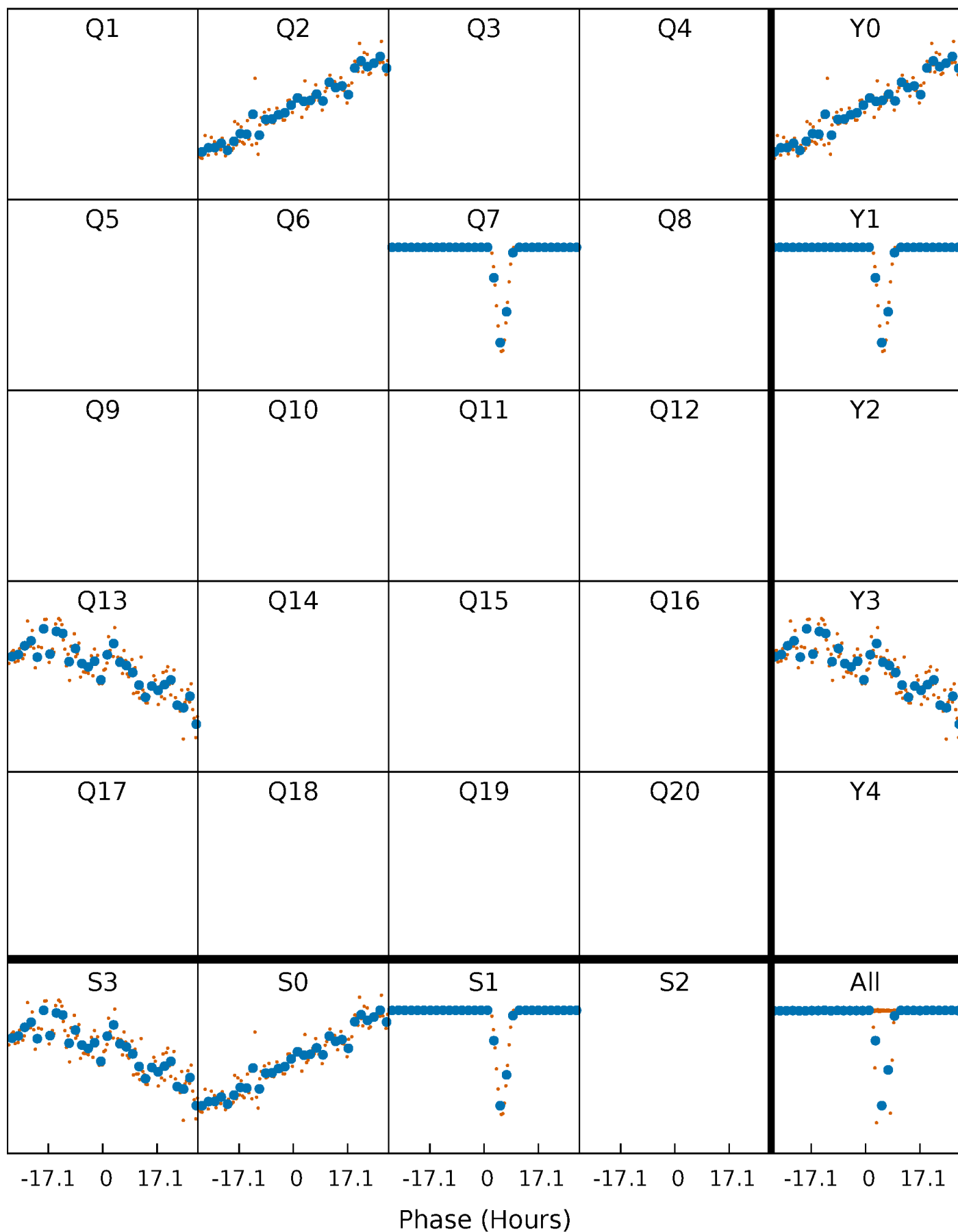


Non-Whitened Vs. Whitened Light Curve



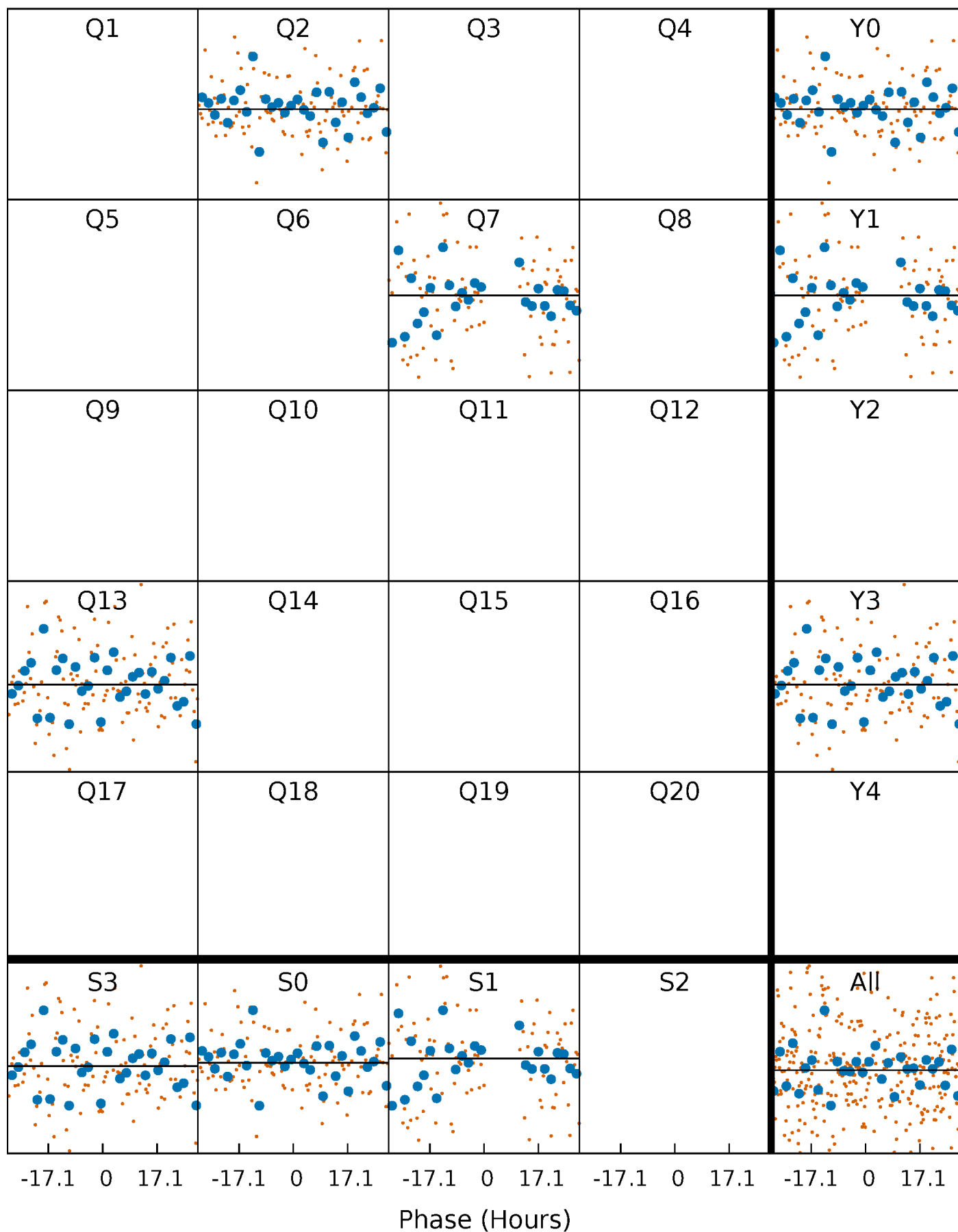
PDC Quarter-Phased Transit Curves

TCE 005456023-03 $P=532.198881$ Days $T_0=175.068533$ (BKJD)



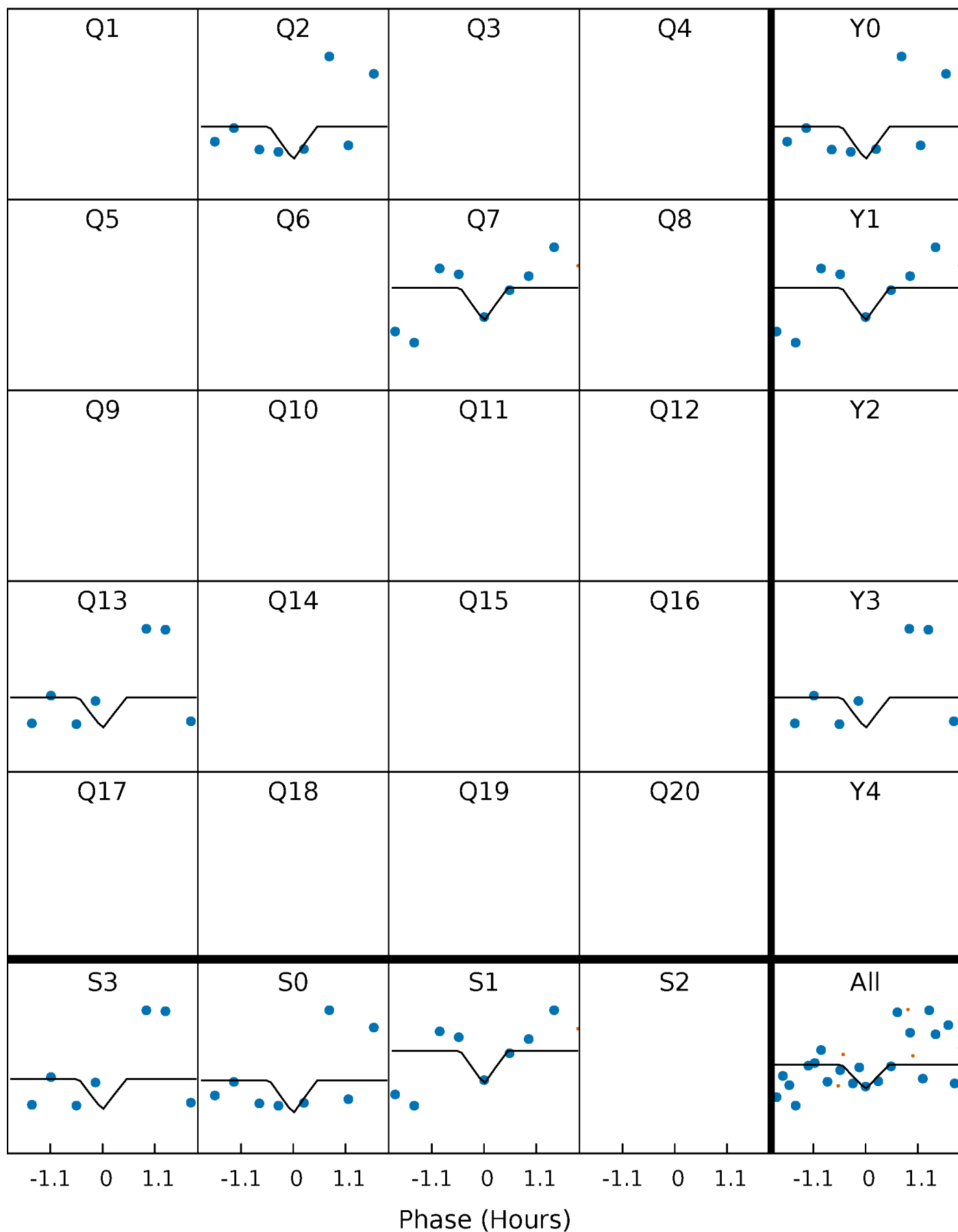
DV Quarter-Phased Transit Curves

TCE 005456023-03 $P=532.198881$ Days $T_0=175.068533$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

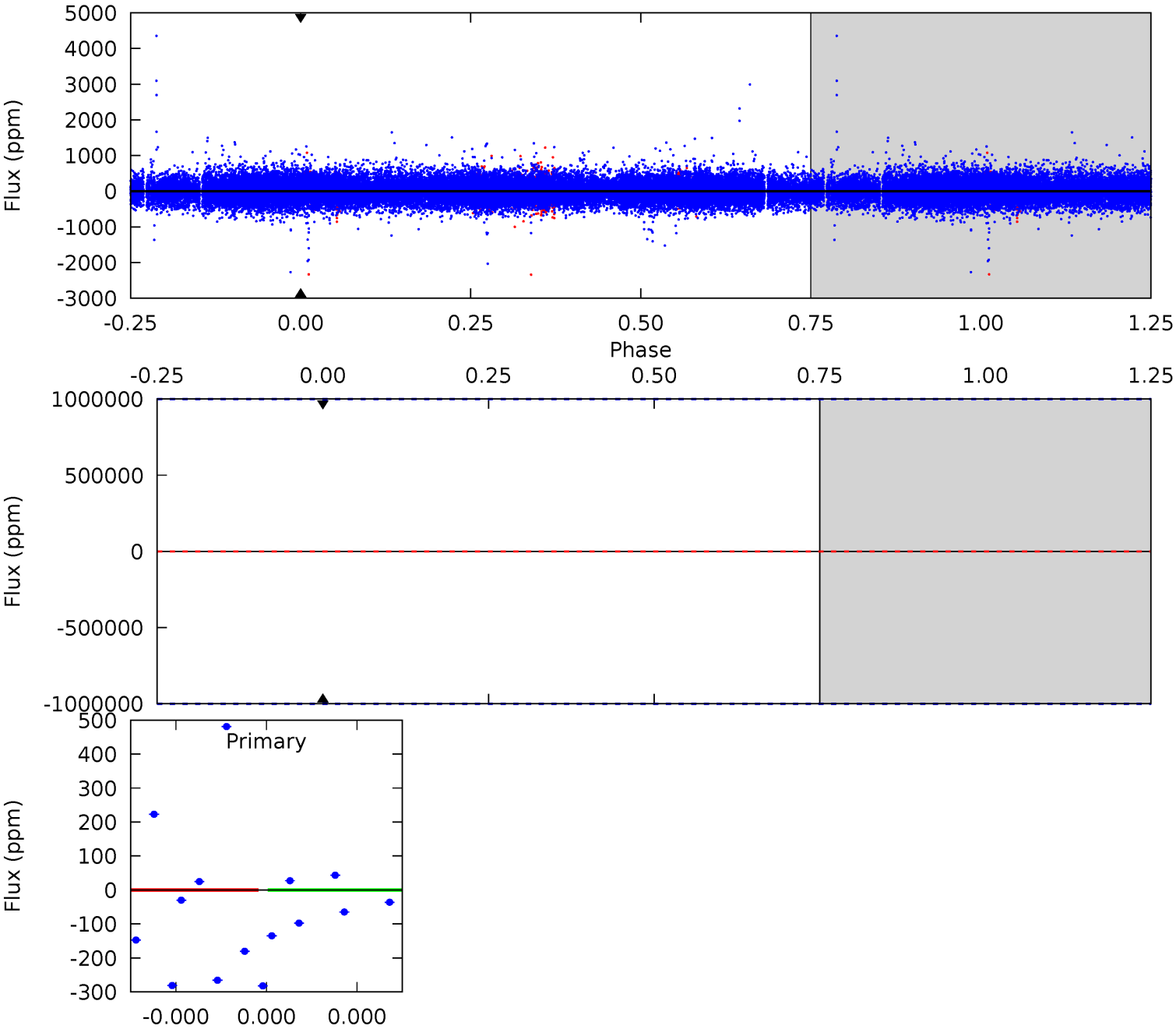
TCE 005456023-03 P=532.198881 Days $T_0=174.271458$ (BKJD)



DV Model-Shift Uniqueness Test

005456023-03, P = 532.198881 Days, E = 175.068533 Days

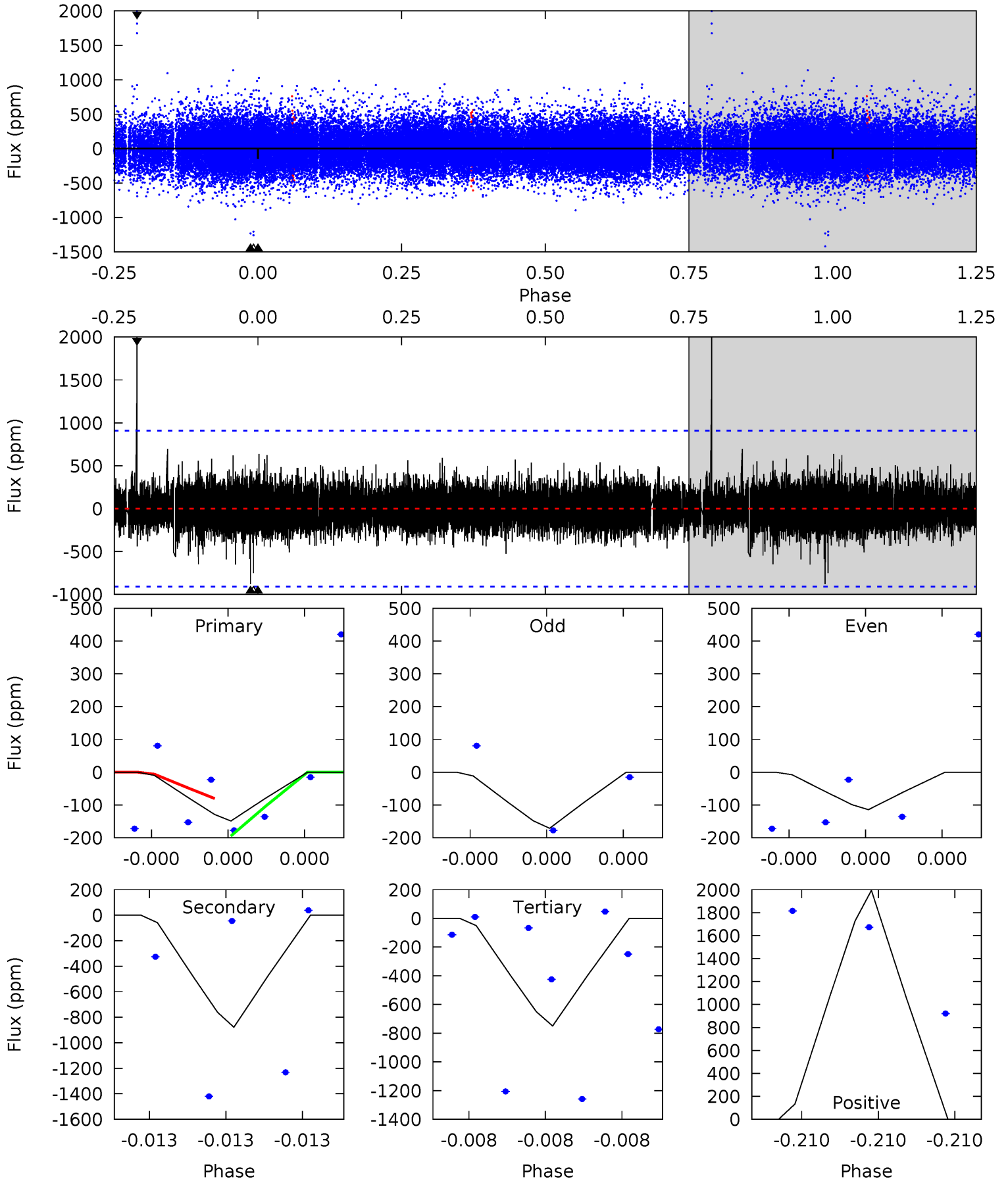
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

005456023-03, P = 532.198881 Days, E = 174.271458 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.98	5.80	4.95	13.2	6.00	4.12	0.89	-3.97	-12.2	0.85	-7.37	0.23	1.00	0.69	0.38



Stellar Parameters For KIC 005456023

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4916^{+122}_{-146}	$3.717^{+0.900}_{-0.300}$	$-0.080^{+0.300}_{-0.300}$	$2.182^{+1.179}_{-1.441}$	$0.905^{+0.232}_{-0.190}$	$0.123^{+3.024}_{-0.081}$
	+2%/-3%	+24%/-8%	+375%/-375%	+54%/-66%	+26%/-21%	+2465%/-66%
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 005456023-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$27.43^{+24.36}_{-17.17}$	388^{+60}_{-76}	3746^{+4604}_{-11555}	$3920^{+196708}_{-149376}$
Alt.	-879 ± 151	$15.92^{+20.75}_{-11.50}$	392^{+54}_{-77}	3491^{+1887}_{-654}	3062^{+34171}_{-2470}

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

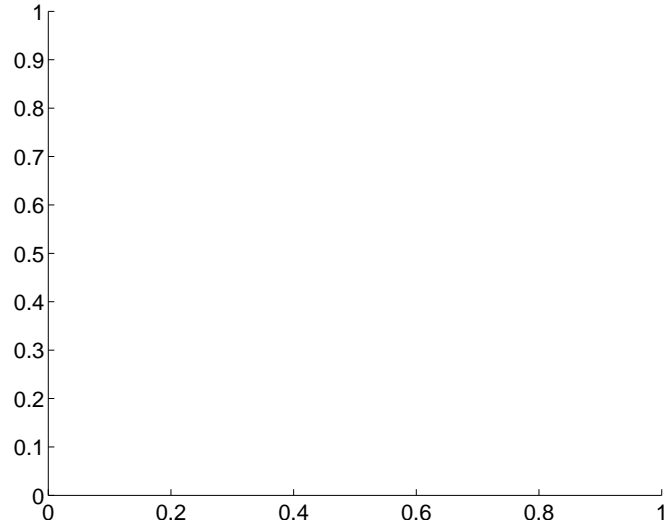
Supplemental centroid analysis for 005456023-03. Kepler magnitude: 14.31. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

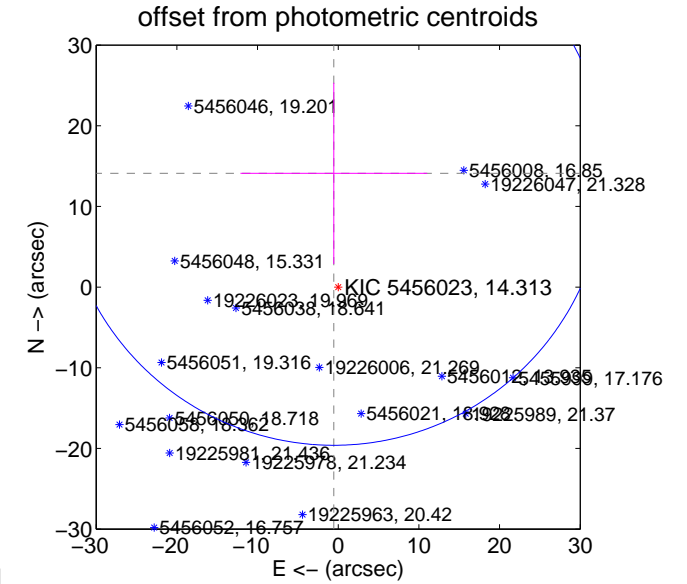
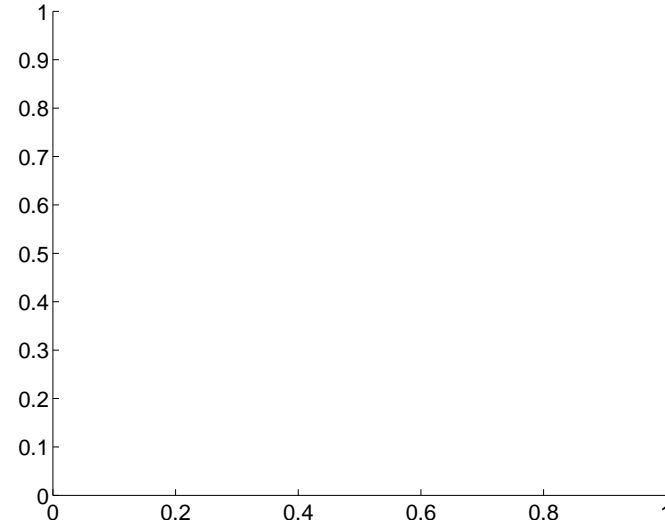
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	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	14.11 ± 11.24	1.26	0.54 ± 11.58	14.10 ± 11.24

There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC



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

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



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

Q5 no difference image



Q5 no OOT image



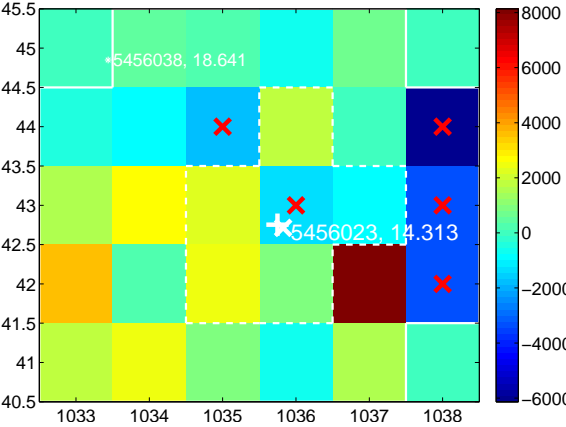
Q6 no difference image



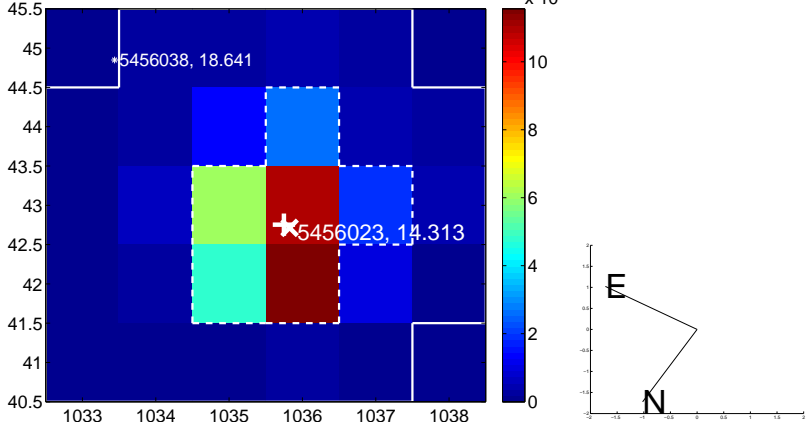
Q6 no OOT image



Q7 difference image. Poor Quality



Q7 OOT image



Q8 no difference image



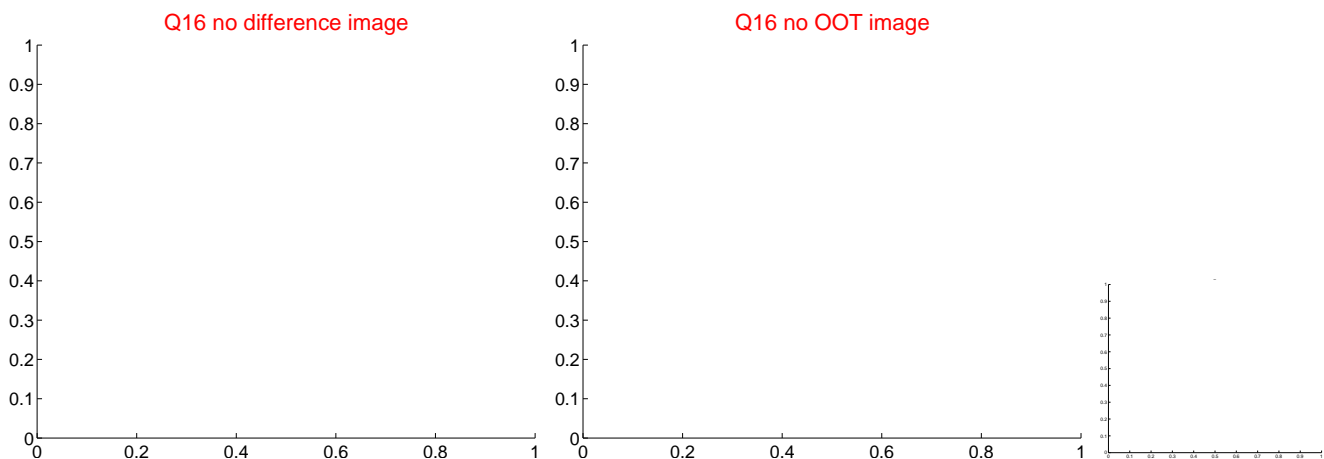
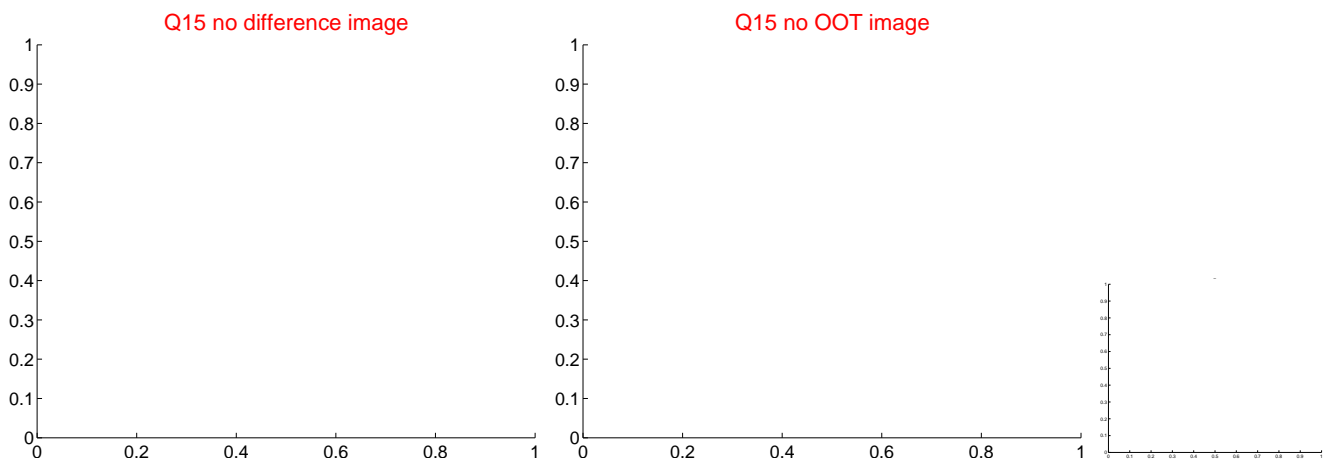
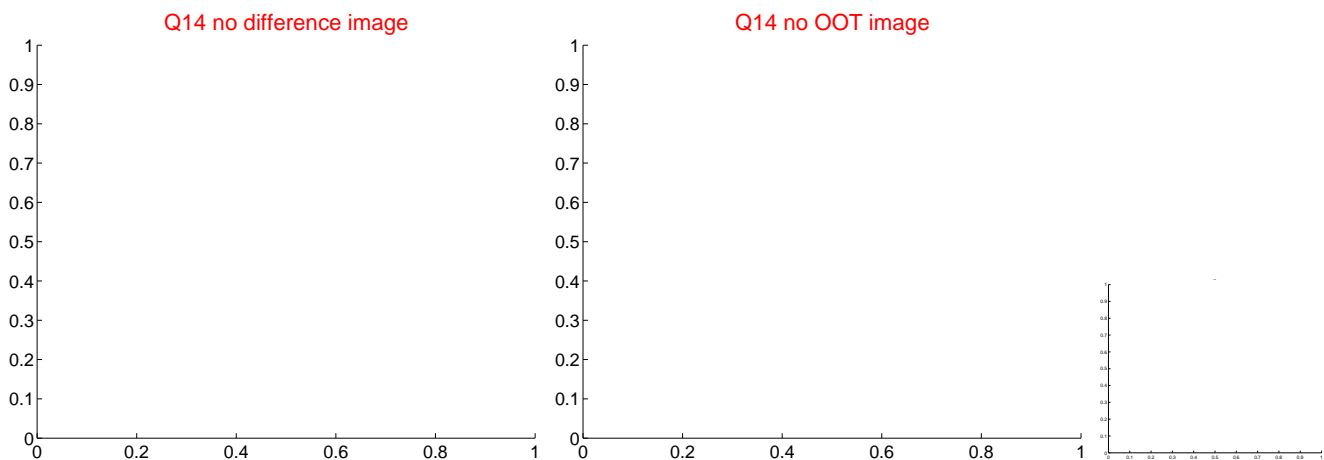
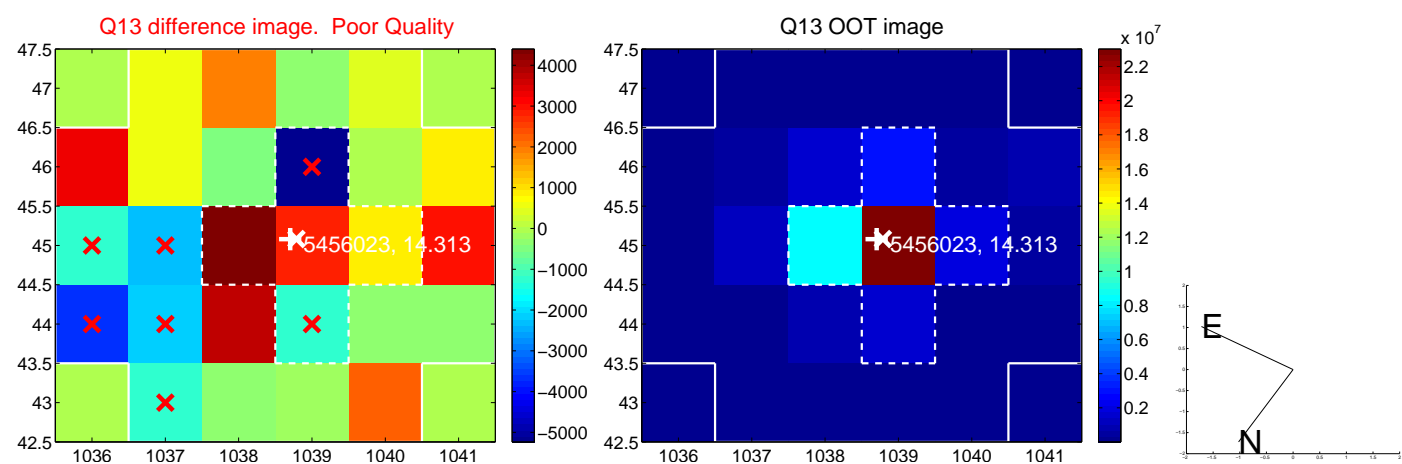
Q8 no OOT image



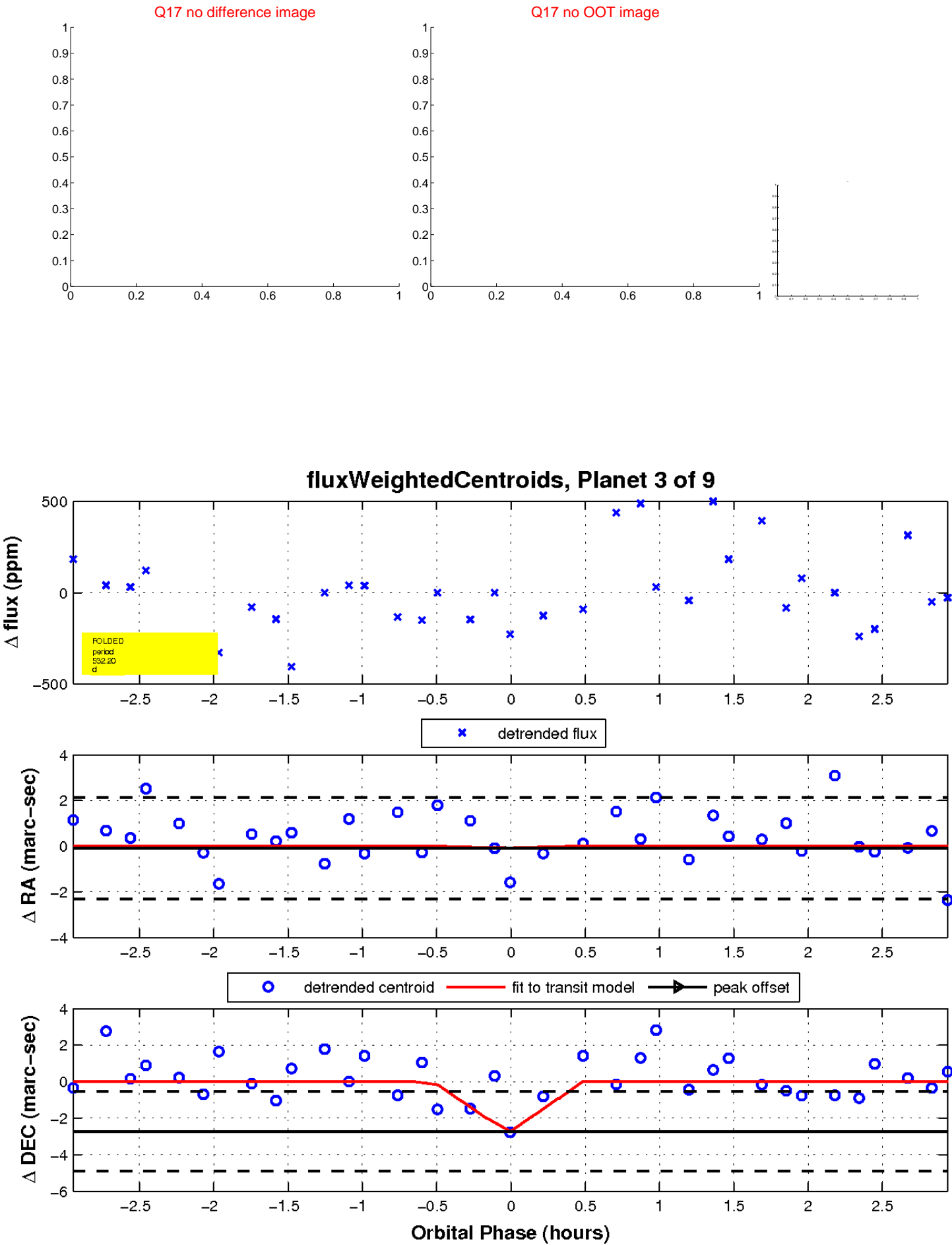
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

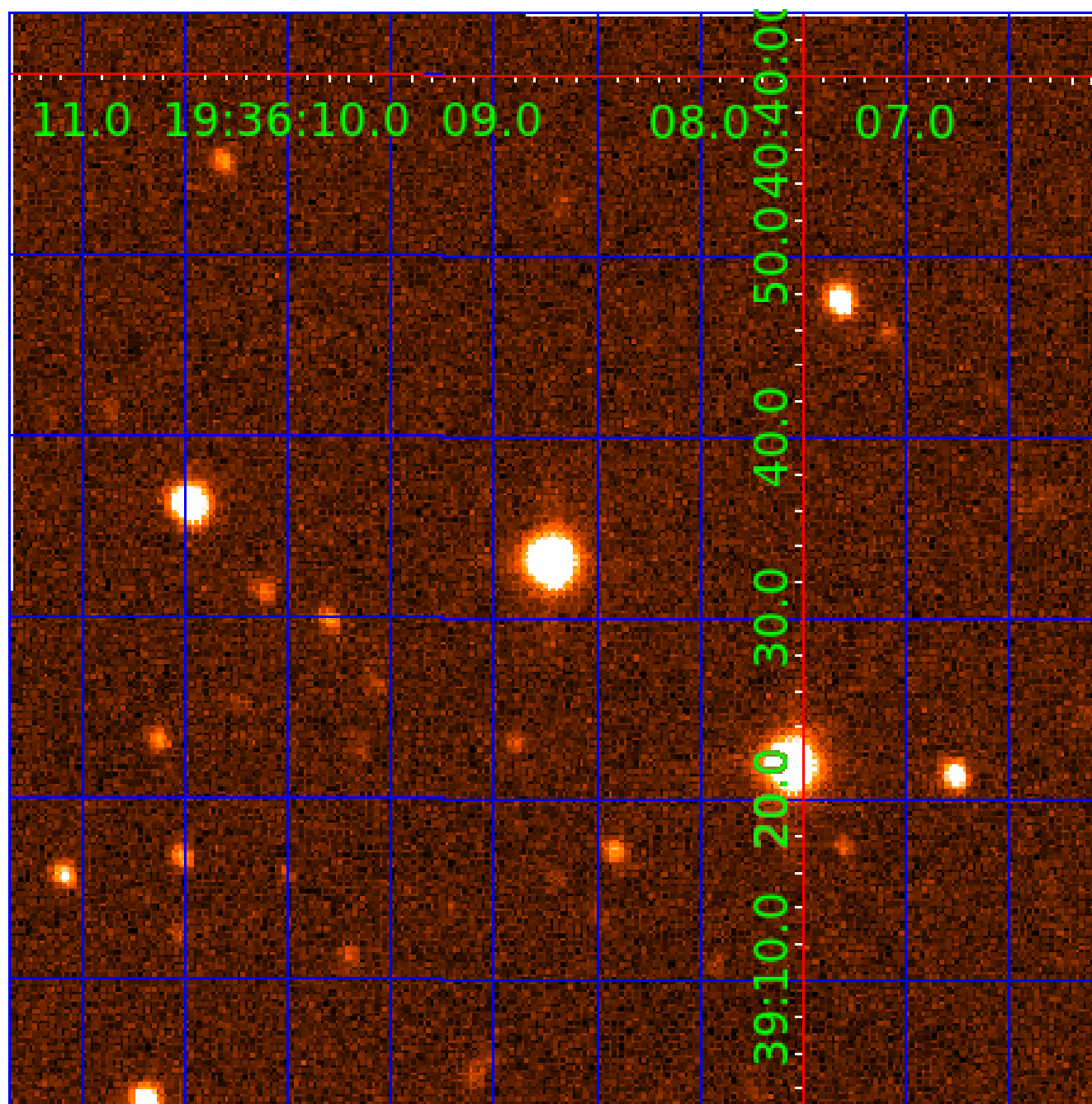


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
005456023-01	OBS	3521.01	131.978586	179.584349	345710.4	3.500	4448.3	-1.0	2.18	4916	98.42	10.34
005456023-02	OBS	No	131.978206	243.181247	22096.5	9.848	723.9	697.0	2.18	4916	53.07	10.34
005456023-03	OBS	No	532.198881	175.068533	16423.6	15.000	258.7	-1.0	2.18	4916	27.06	1.61
005456023-05	OBS	No	269.831971	294.182565	16423.6	15.000	203.0	-1.0	2.18	4916	27.06	3.98
005456023-06	OBS	No	651.523423	189.132663	66.1	0.702	256.8	0.4	2.18	4916	2.18	1.23
005456023-07	OBS	No	651.510438	188.214123	16422.9	15.000	257.4	-1.0	2.18	4916	27.06	1.23
005456023-08	OBS	No	264.588640	178.801063	2785.6	3.500	25.8	-1.0	2.18	4916	11.15	4.09
005456023-09	OBS	No	306.667400	313.444601	1448.1	3.500	13.4	-1.0	2.18	4916	8.04	3.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005456023-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
005456023-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005456023-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005456023-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005456023-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005456023-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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.

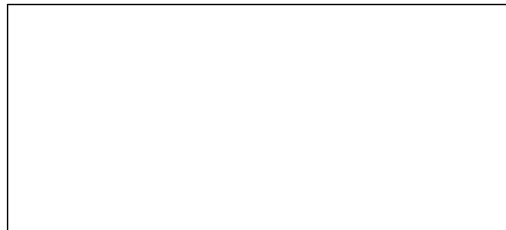
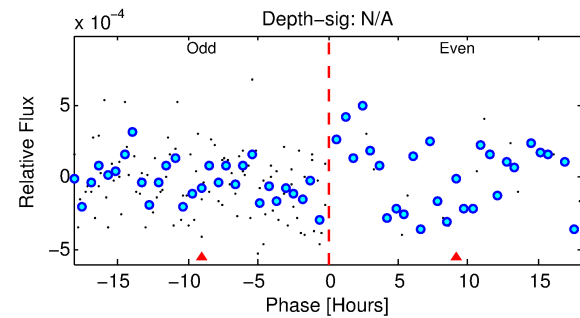
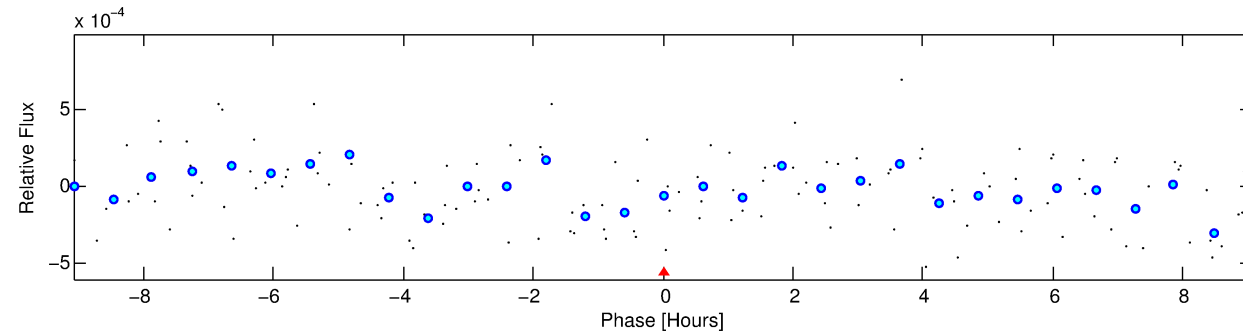
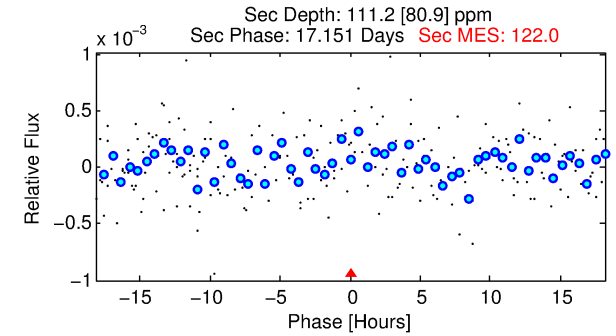
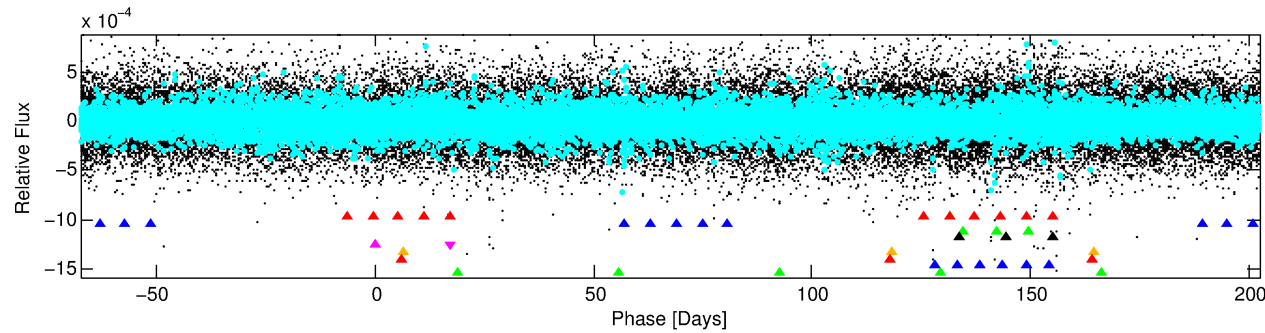
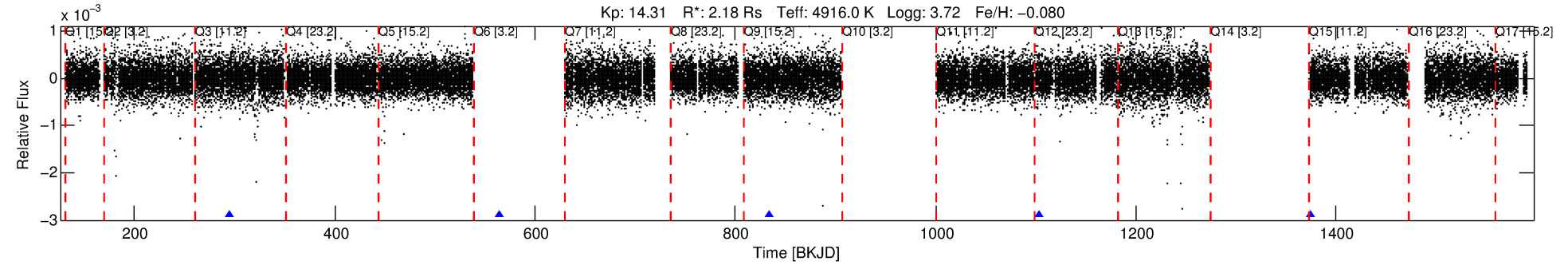
Ephemeris Match Information For 005456023-05

No Significant Match Found

DV One-Page Summary

KIC: 5456023 Candidate: 5 of 9 Period: 269.832 d
KOI: K03521 Corr: No Ephemeris Match

Kp: 14.31 R*: 2.18 Rs Teff: 4916.0 K Logg: 3.72 Fe/H: -0.080



TPS TCE Results:

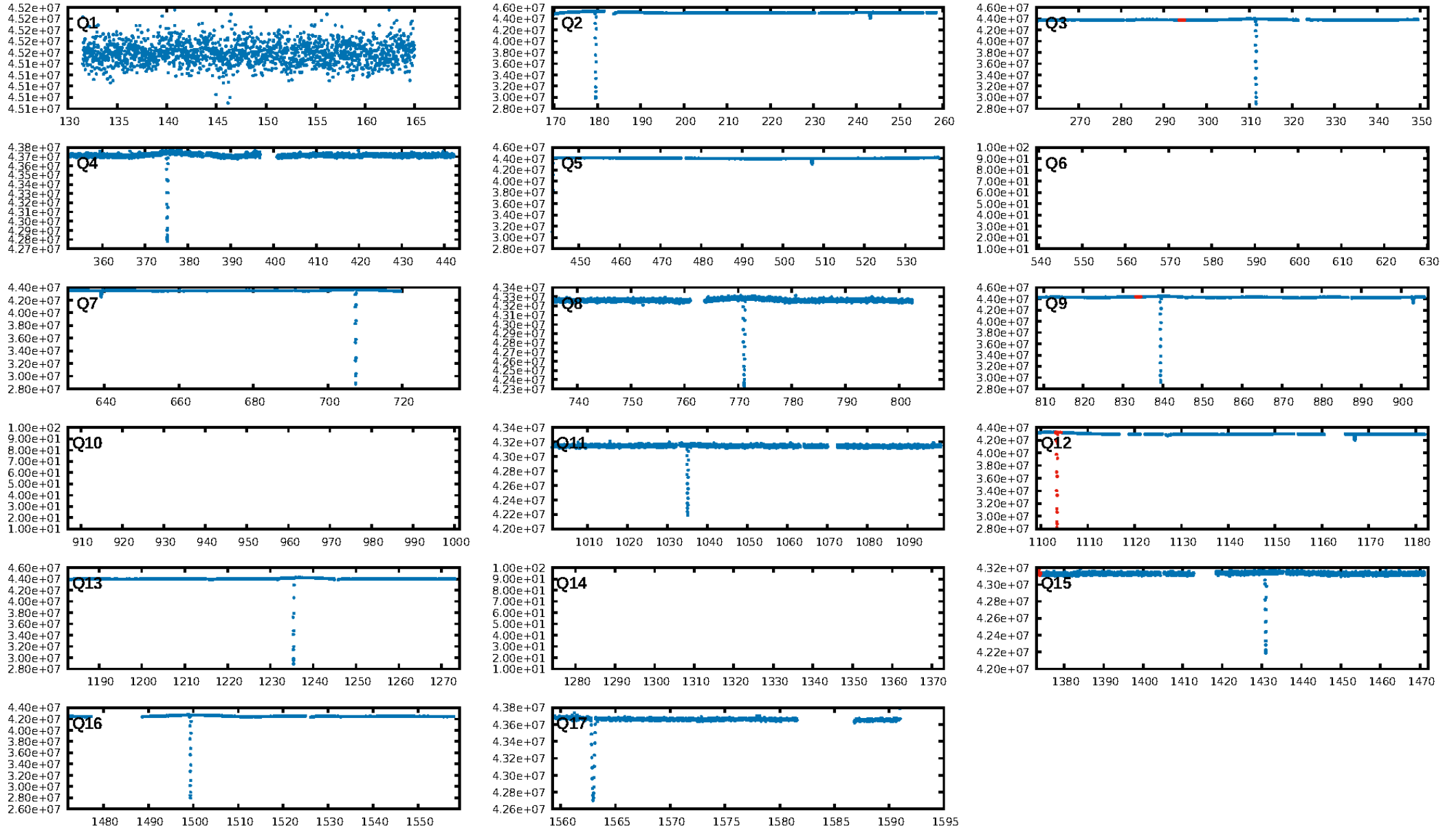
Period = 269.83197 d
Epoch = 294.1826 BKJD

DV fit results are unavailable

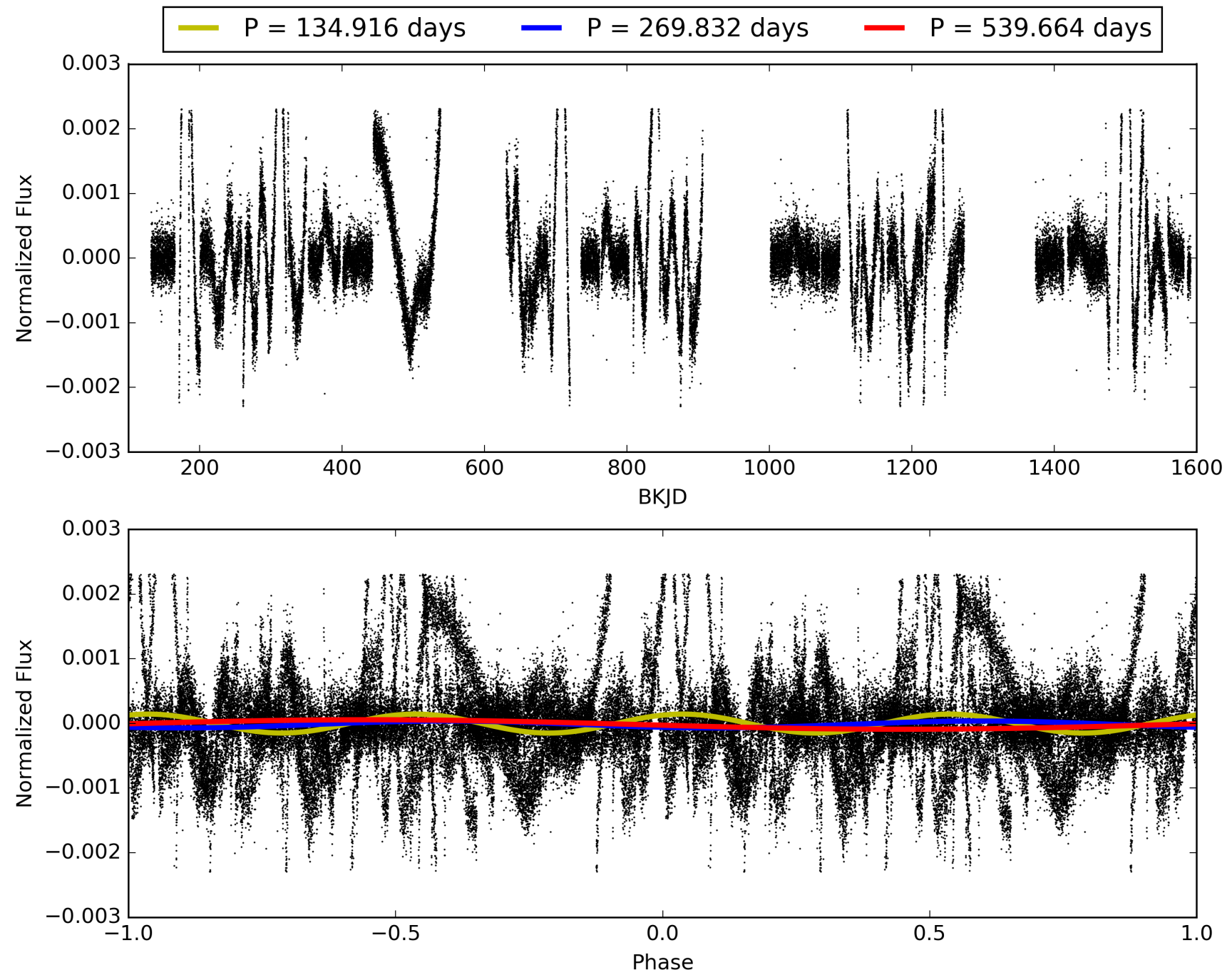
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.17 σ]
LongPeriod-sig: 100.0% [57.39 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.09863
Centroid-sig: 24.3%
Centroid-so: 6.263 arcsec [1.12 σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0 [0]
KicOffset-st: 0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [2/2]

TCE 005456023-05, PDC Light Curves

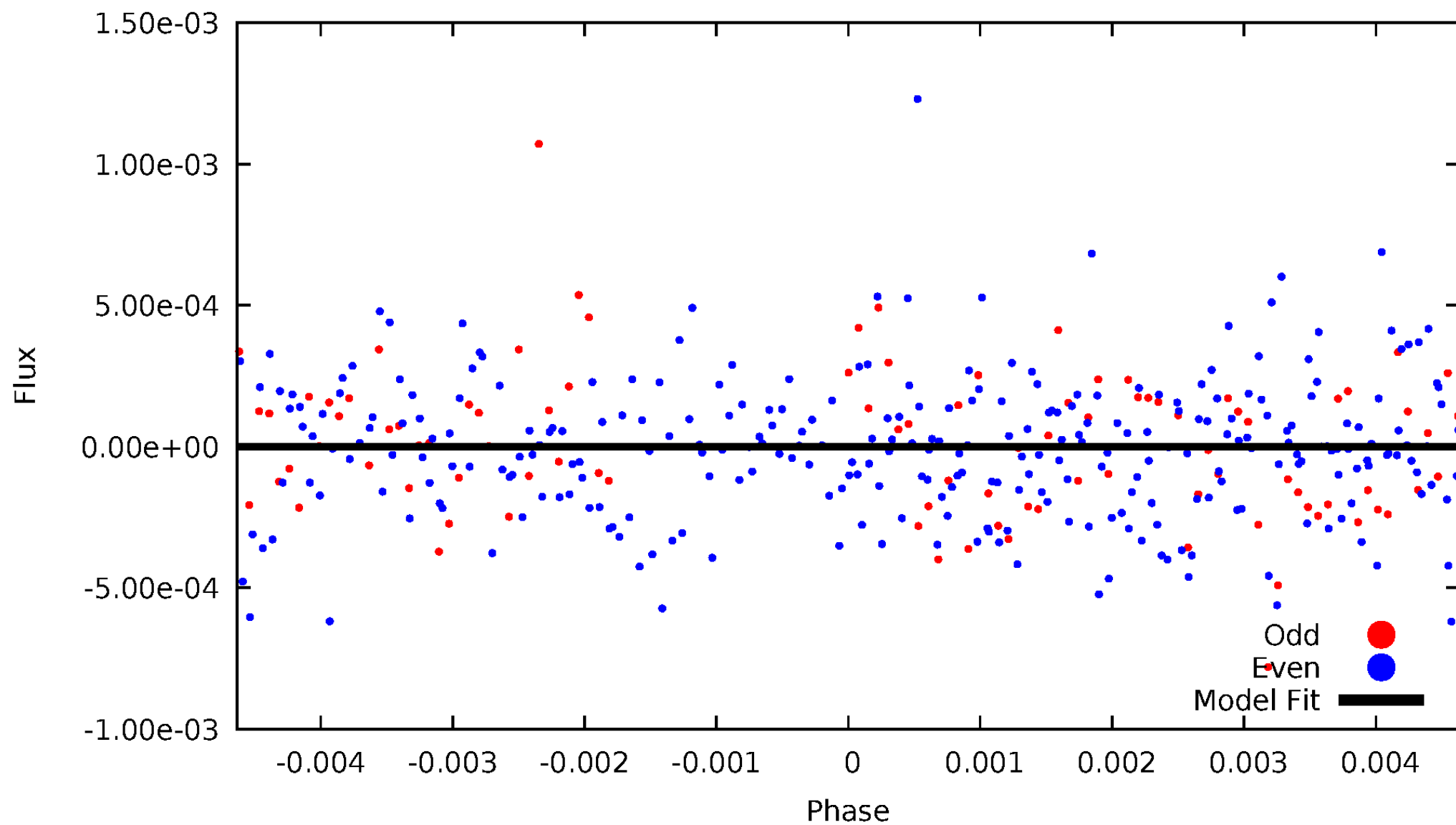


TCE 005456023-05



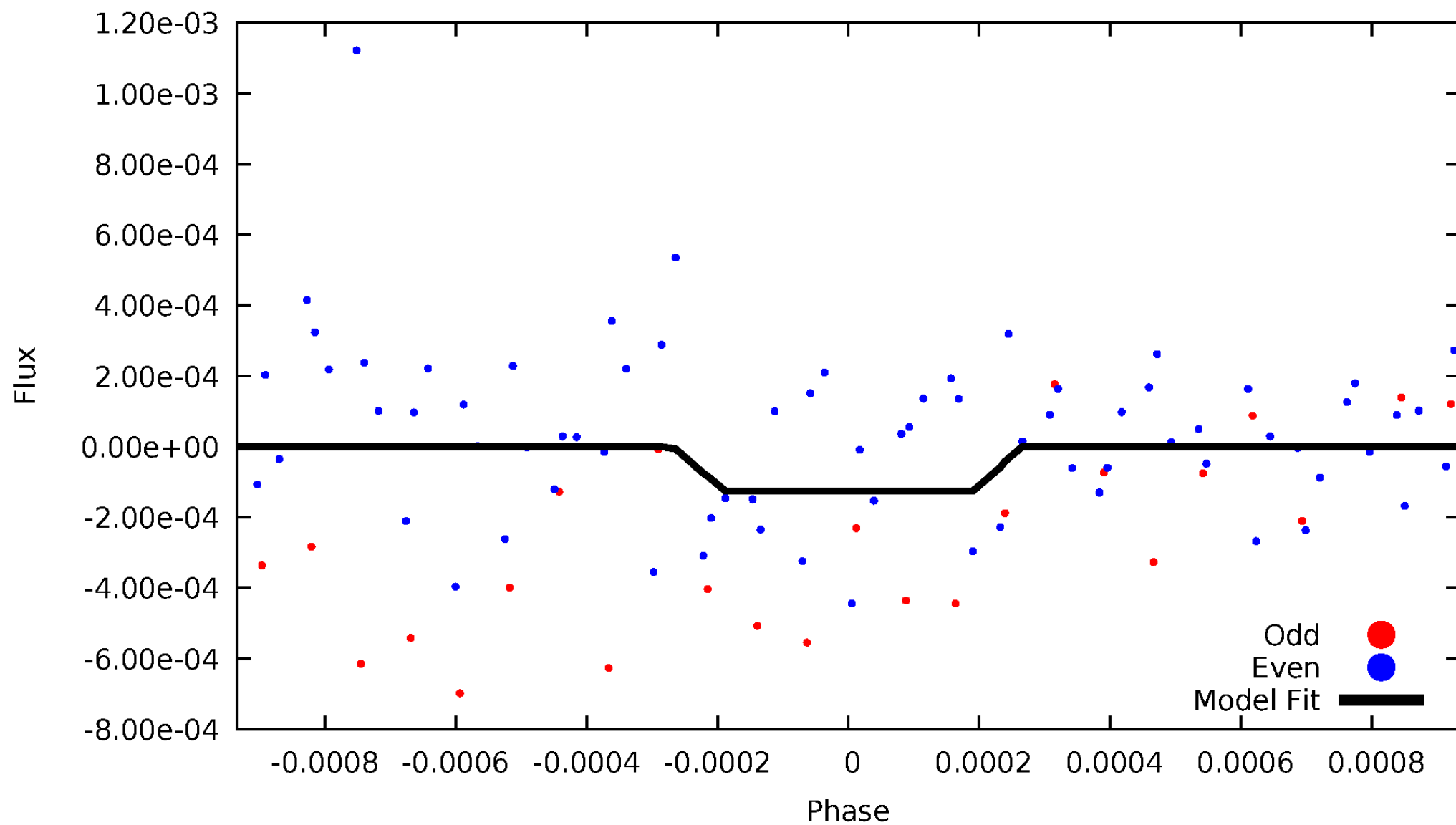
DV Odd/Even

TCE 005456023-05



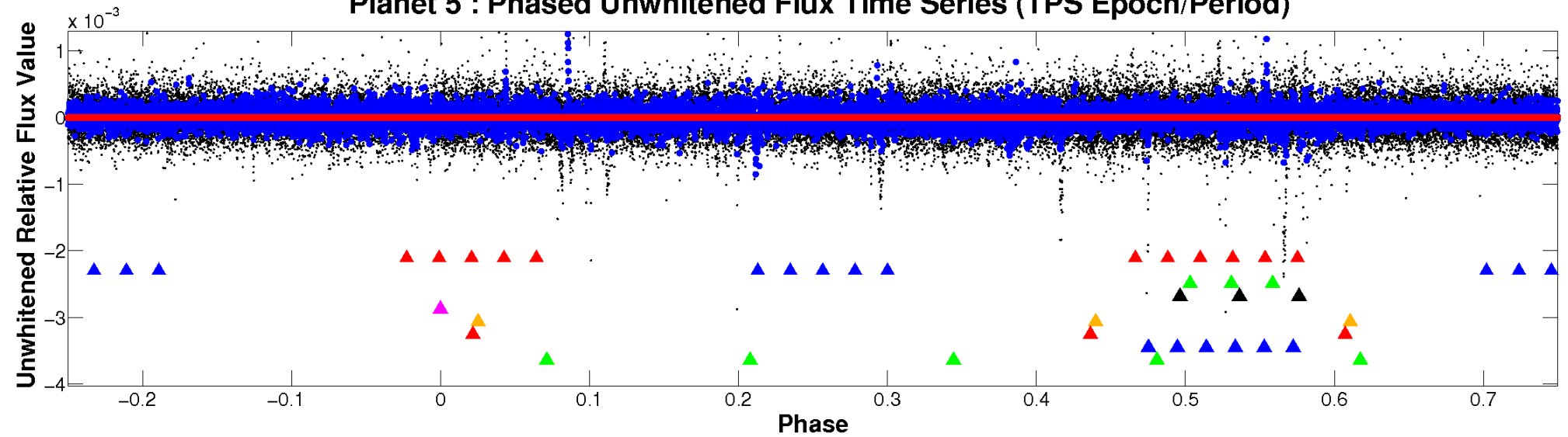
ALT Odd/Even

TCE 005456023-05



Non-Whitened Vs. Whitened Light Curve

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

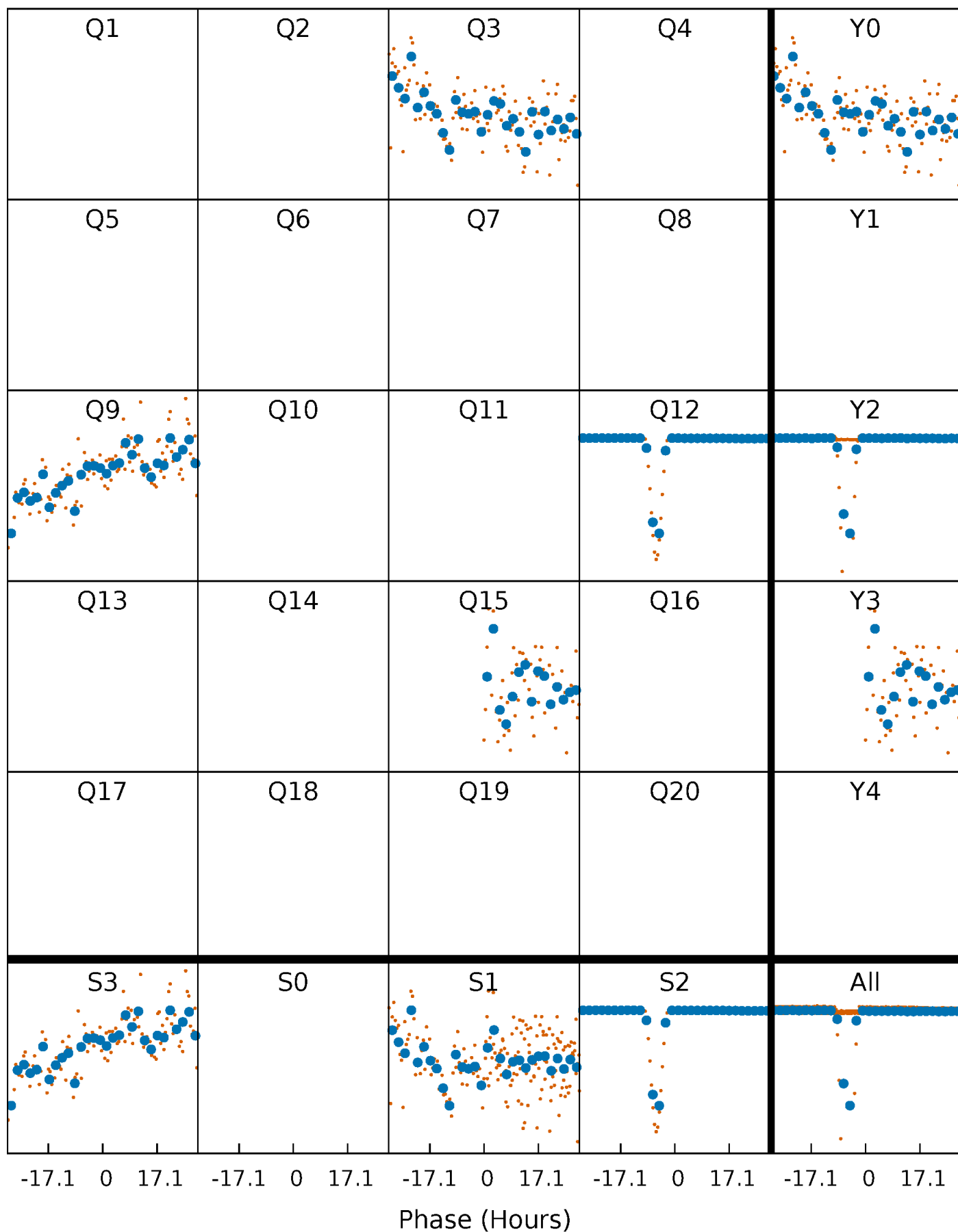


Planet 5 : Phased Whitened Flux Time Series (TPS Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 005456023-05 P=269.831971 Days $T_0=294.182565$ (BKJD)



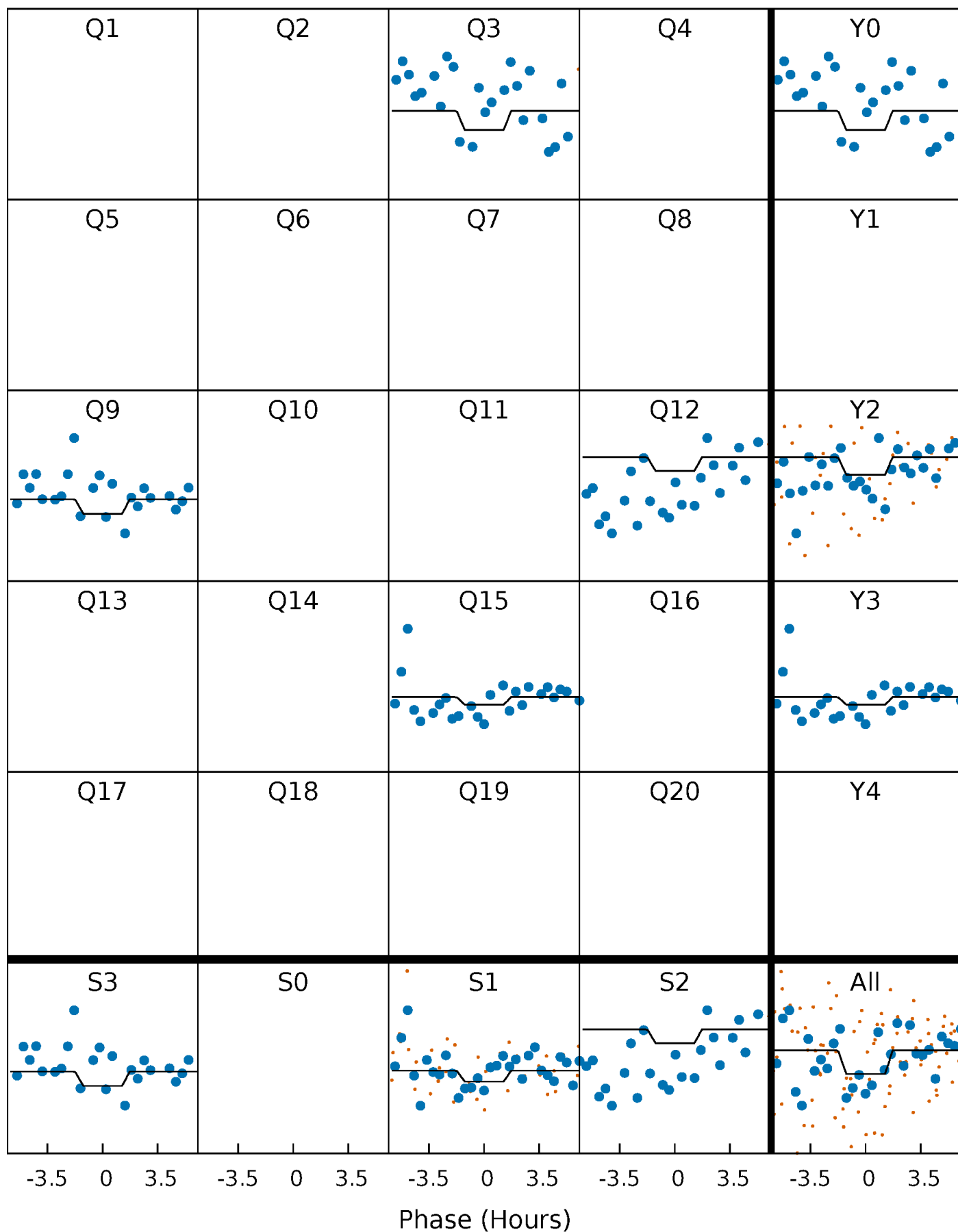
DV Quarter-Phased Transit Curves

TCE 005456023-05 $P=269.831971$ Days $T_0=294.182565$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

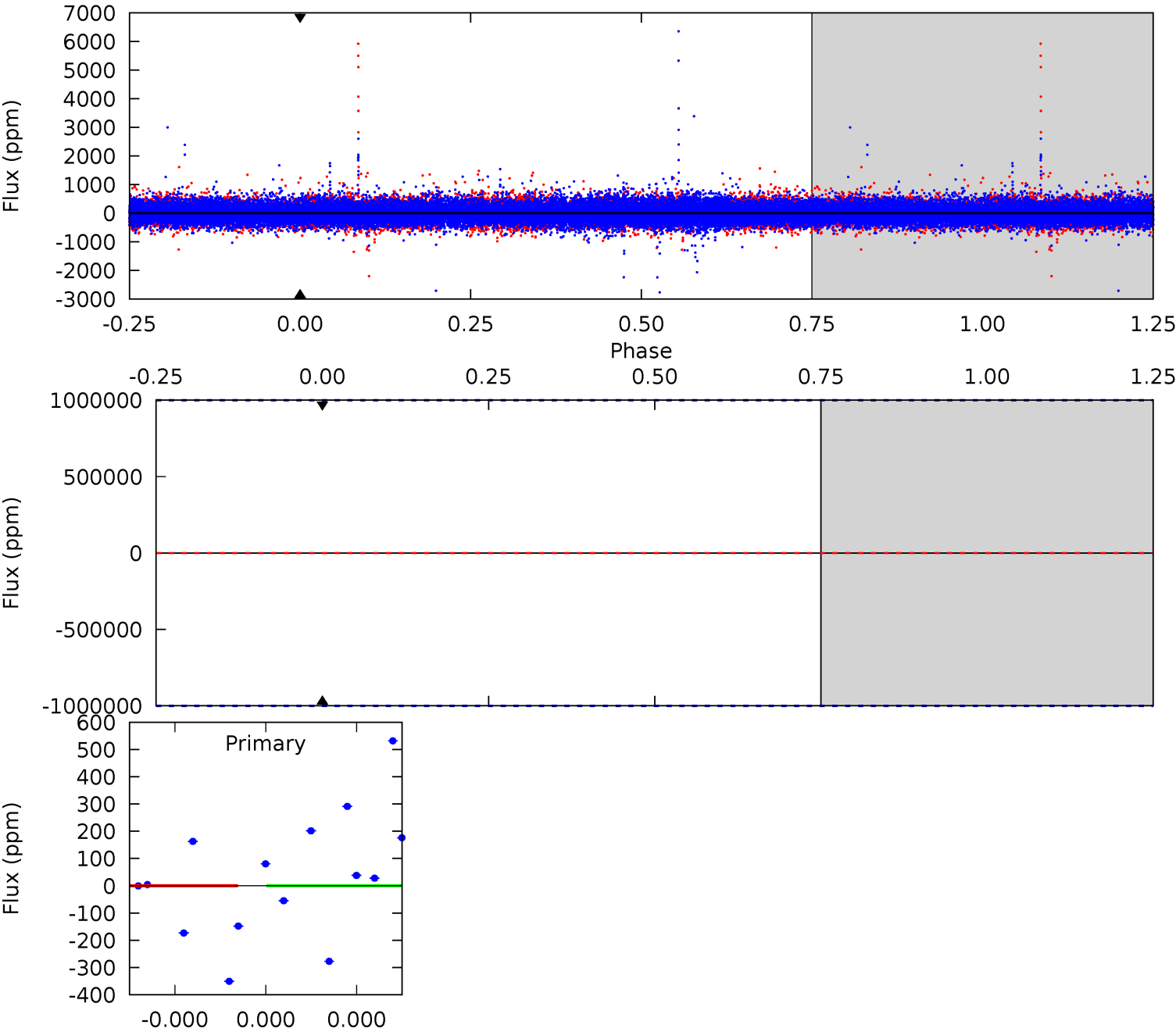
TCE 005456023-05 P=269.831971 Days $T_0=294.527014$ (BKJD)



DV Model-Shift Uniqueness Test

005456023-05, P = 269.831971 Days, E = 24.350594 Days

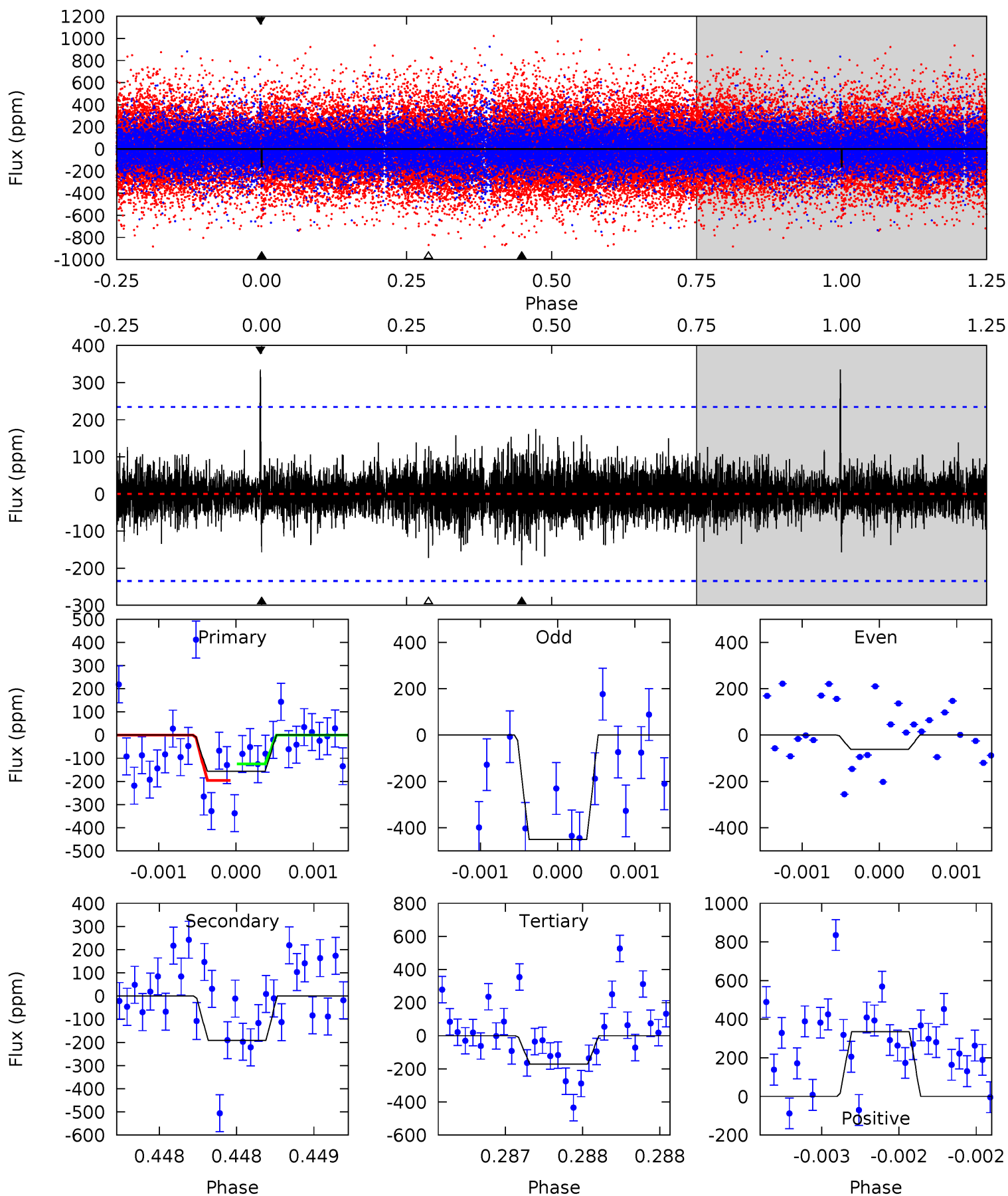
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

005456023-05, P = 269.831971 Days, E = 24.695043 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.73	4.56	4.09	7.97	5.57	3.48	0.97	-0.36	-4.23	0.47	-3.40	4.06	1.63	0.64	0.85



Stellar Parameters For KIC 005456023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4916^{+122}_{-146}	$3.717^{+0.900}_{-0.300}$	$-0.080^{+0.300}_{-0.300}$	$2.182^{+1.179}_{-1.441}$	$0.905^{+0.232}_{-0.190}$	$0.123^{+3.024}_{-0.081}$
	+2%/-3%	+24%/-8%	+375%/-375%	+54%/-66%	+26%/-21%	+2465%/-66%
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 005456023-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$27.31^{+26.32}_{-17.86}$	489^{+78}_{-98}	2797^{+6204}_{-11211}	162^{+92273}_{-64045}
Alt.	-192 ± 42	$16.07^{+19.75}_{-11.05}$	485^{+80}_{-96}	2794^{+1052}_{-463}	267^{+2319}_{-218}

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

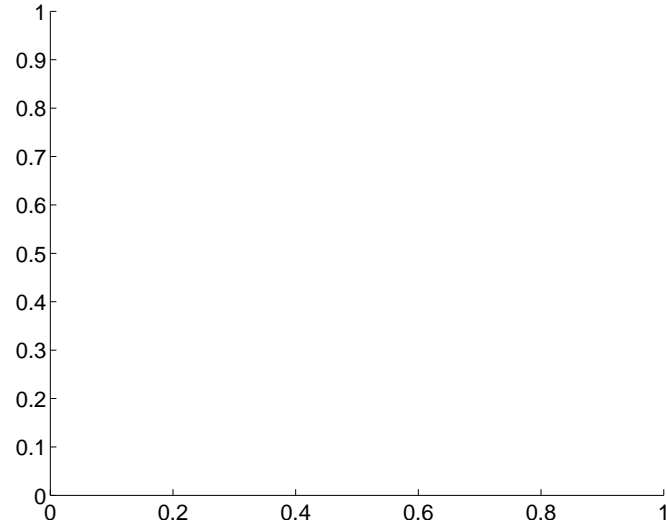
Supplemental centroid analysis for 005456023-05. Kepler magnitude: 14.31. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

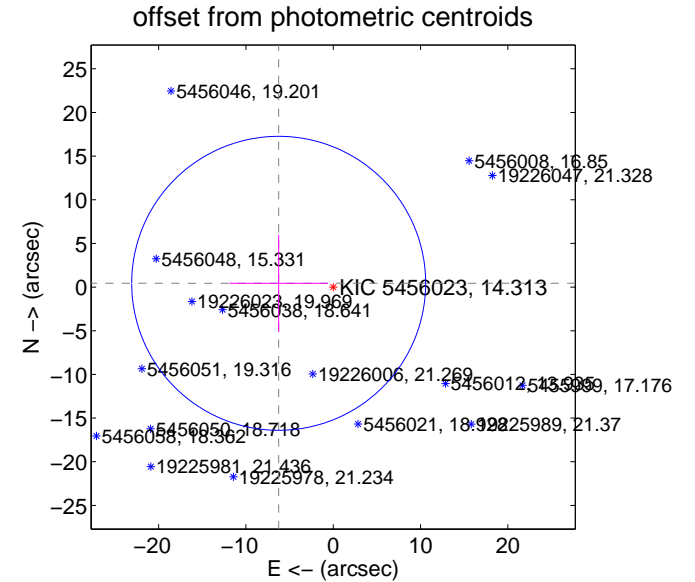
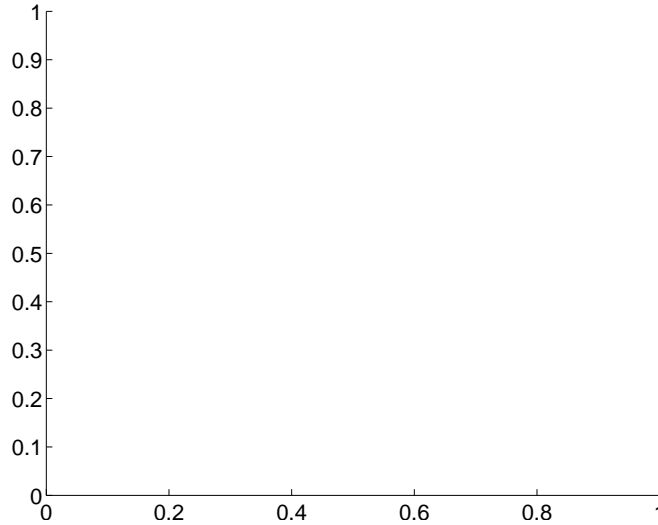
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	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	6.26 ± 5.61	1.12	6.25 ± 5.61	0.43 ± 5.57

There is no PRF-fit offset from OOT-fit



There is no PRF-fit offset from KIC



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

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

Q1 no difference image



Q1 no OOT image



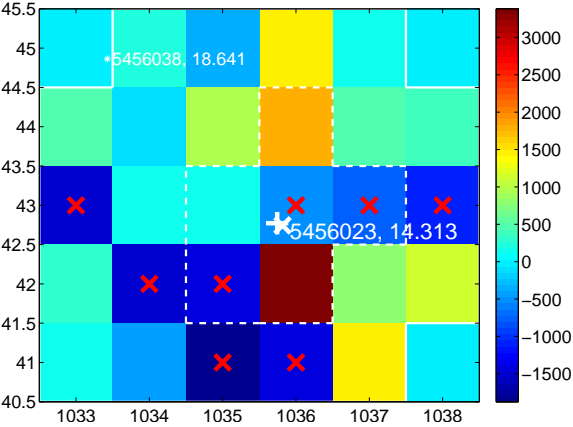
Q2 no difference image



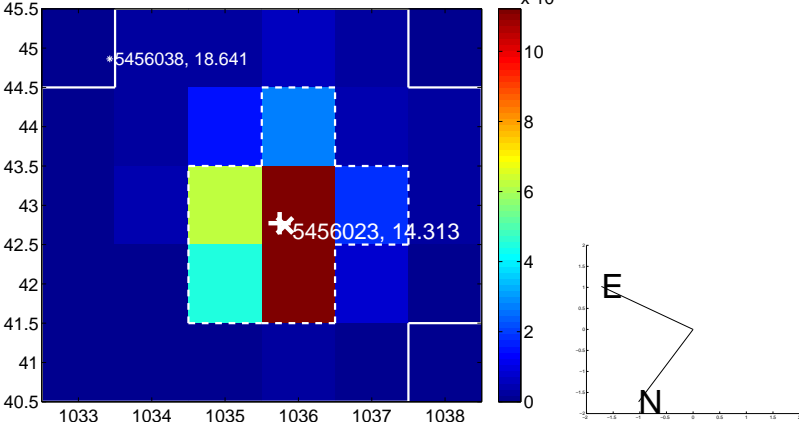
Q2 no OOT image



Q3 difference image. Poor Quality



Q3 OOT image



Q4 no difference image



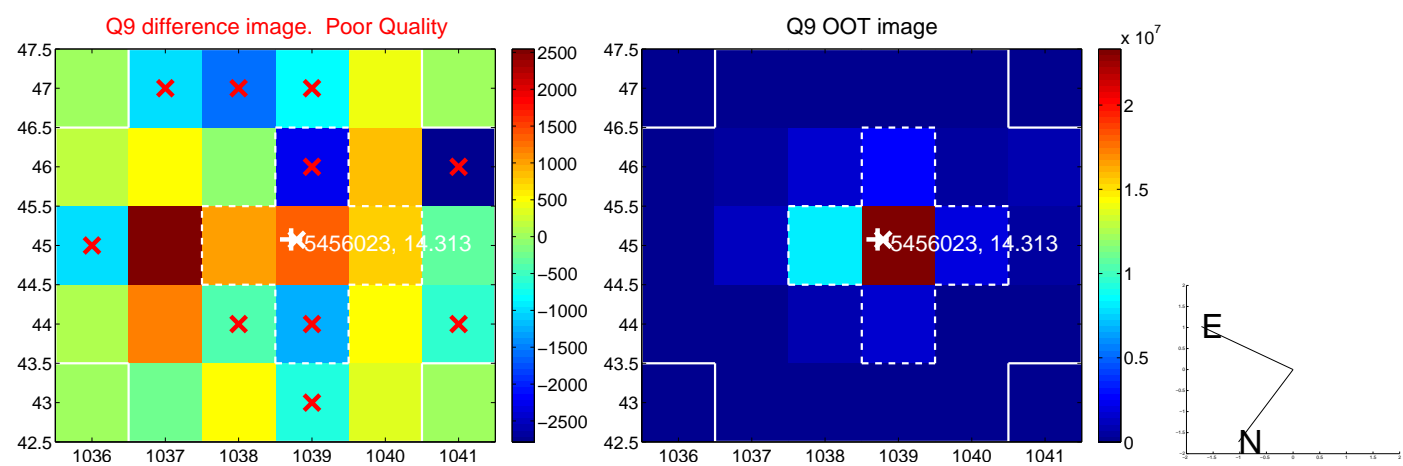
Q4 no OOT image



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



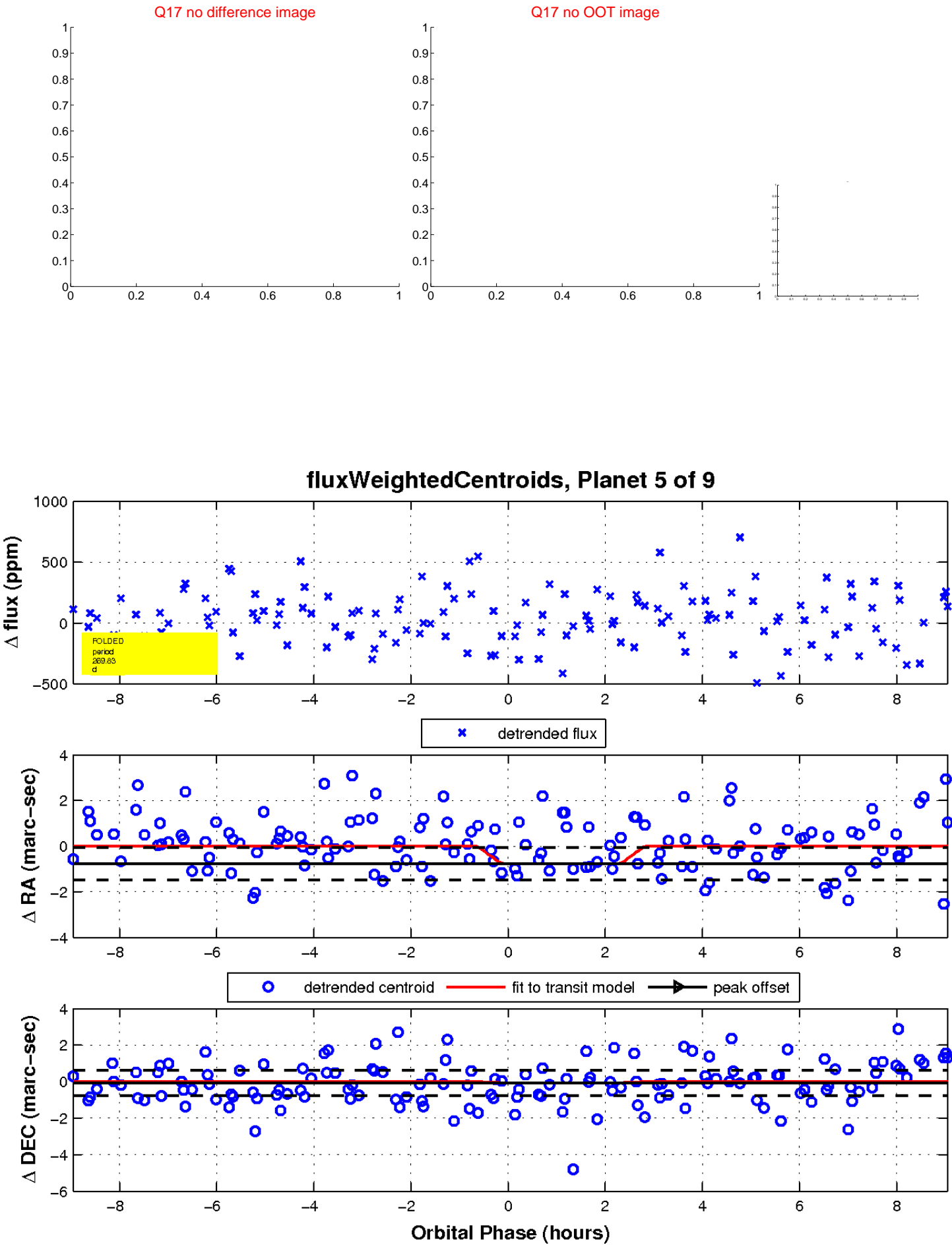
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

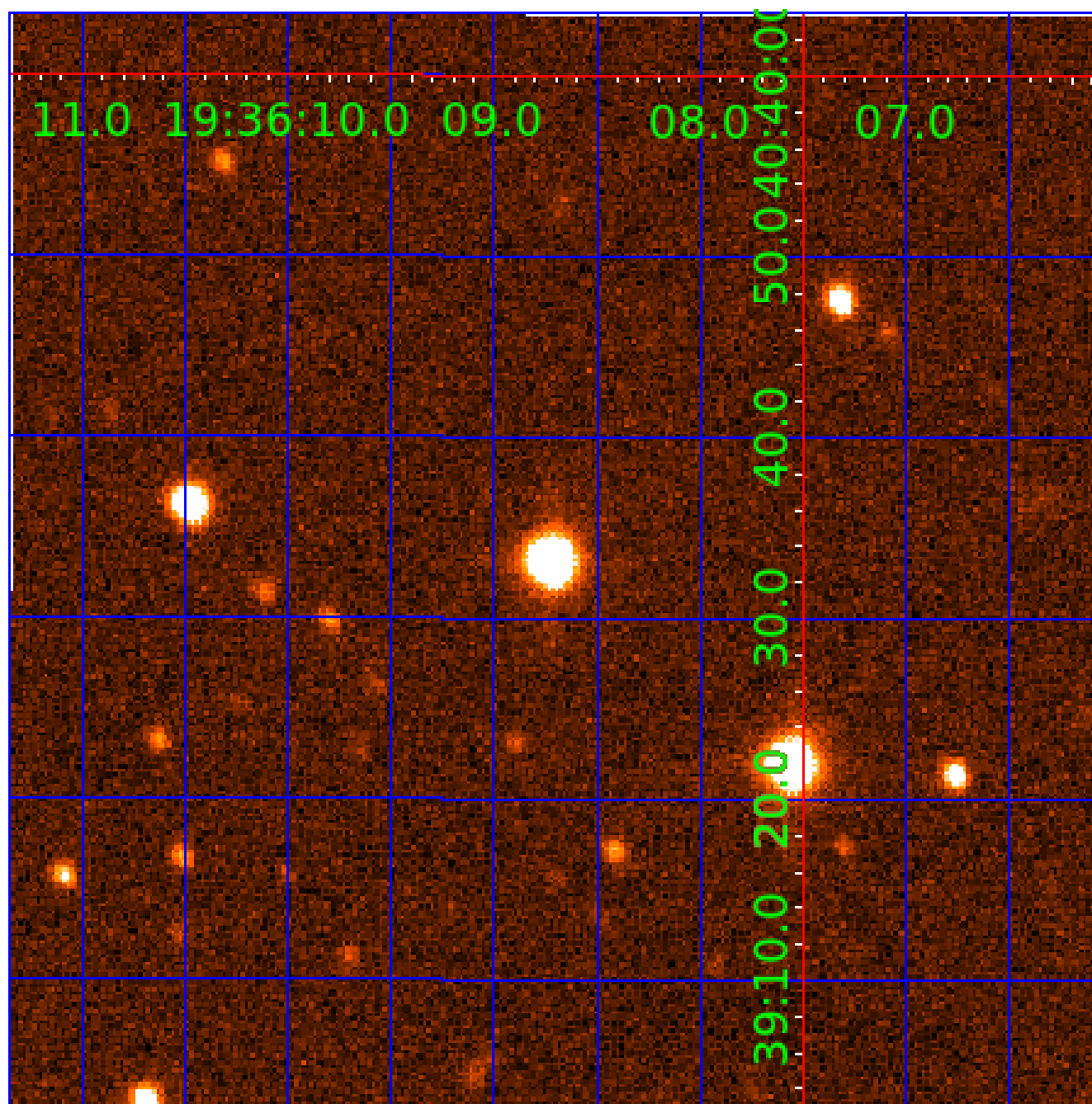


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
005456023-01	OBS	3521.01	131.978586	179.584349	345710.4	3.500	4448.3	-1.0	2.18	4916	98.42	10.34
005456023-02	OBS	No	131.978206	243.181247	22096.5	9.848	723.9	697.0	2.18	4916	53.07	10.34
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005456023-06	OBS	No	651.523423	189.132663	66.1	0.702	256.8	0.4	2.18	4916	2.18	1.23
005456023-07	OBS	No	651.510438	188.214123	16422.9	15.000	257.4	-1.0	2.18	4916	27.06	1.23
005456023-08	OBS	No	264.588640	178.801063	2785.6	3.500	25.8	-1.0	2.18	4916	11.15	4.09
005456023-09	OBS	No	306.667400	313.444601	1448.1	3.500	13.4	-1.0	2.18	4916	8.04	3.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005456023-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
005456023-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005456023-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005456023-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005456023-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005456023-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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 005456023-06

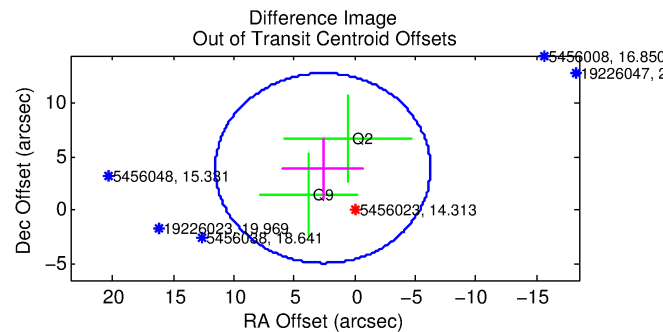
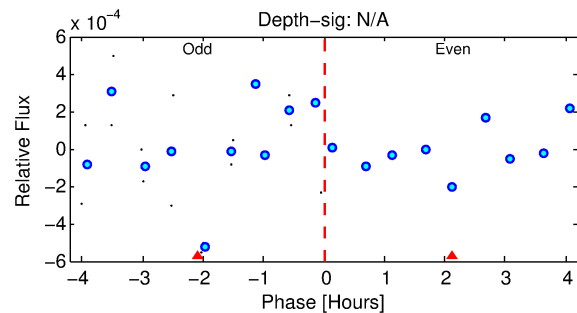
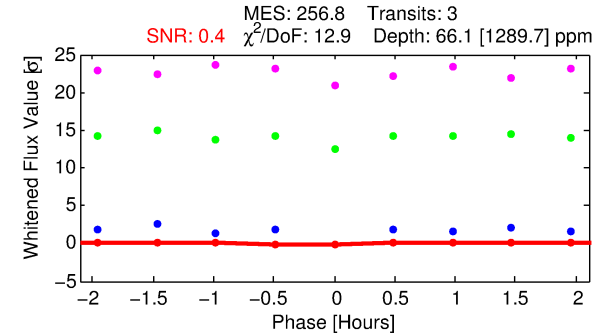
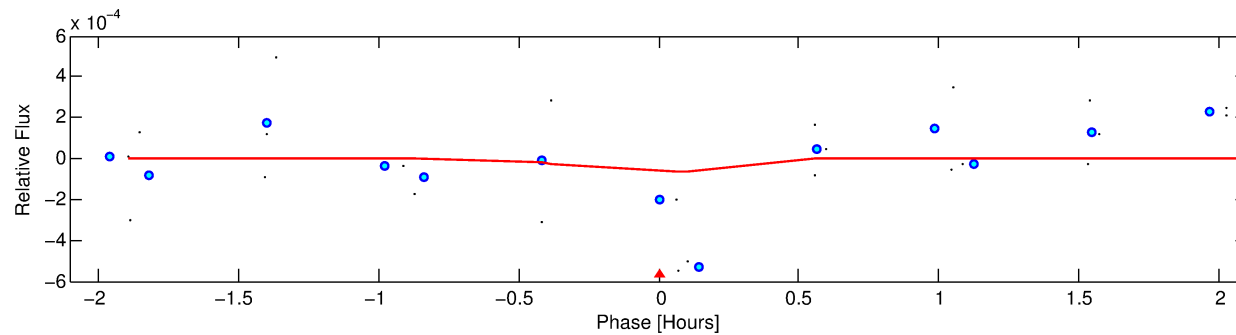
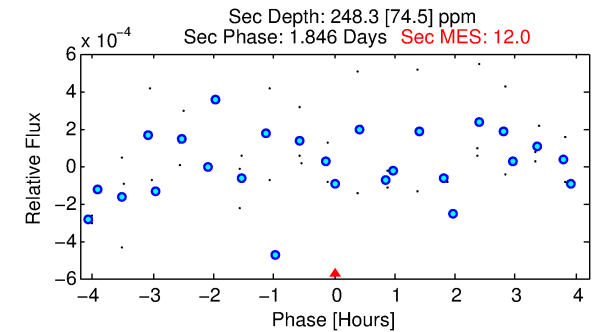
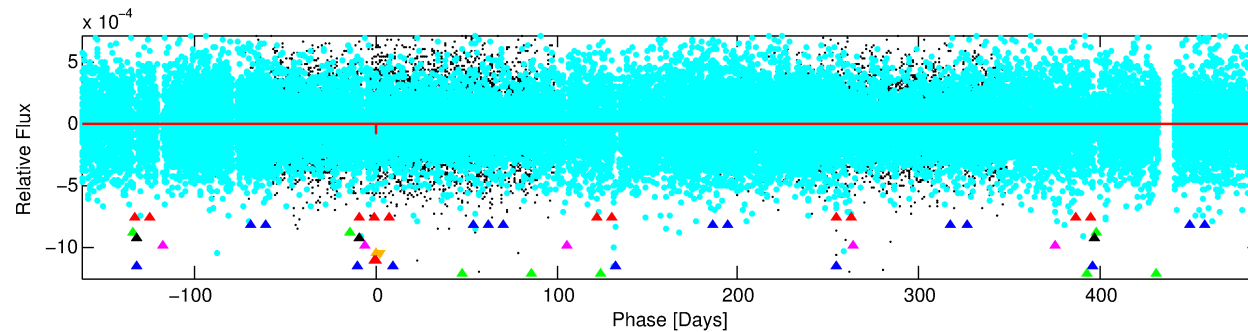
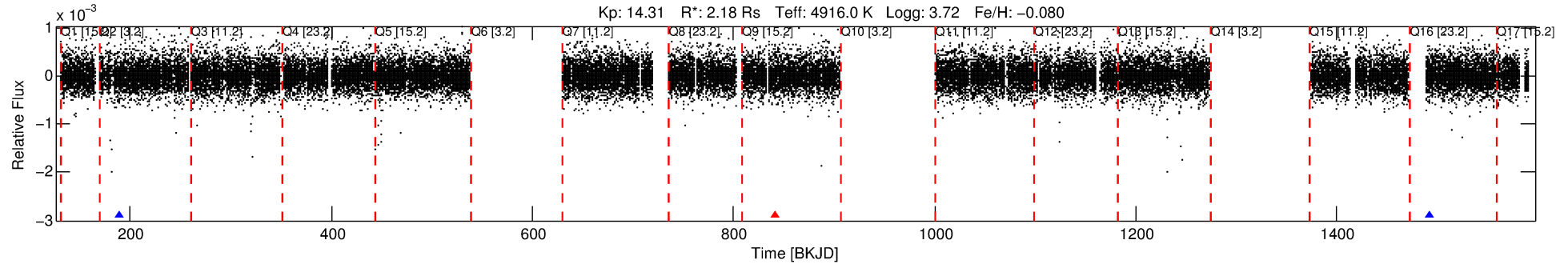
No Significant Match Found

DV One-Page Summary

KIC: 5456023 Candidate: 6 of 9 Period: 651.523 d

KOI: K03521 Corr: No Ephemeris Match

Kp: 14.31 R*: 2.18 Rs Teff: 4916.0 K Logg: 3.72 Fe/H: -0.080



DV Fit Results:

Period = 651.52342 [0.19411] d
Epoch = 189.1327 [0.4068] BKJD
Rp/R* = 0.0091 [1.0028]
a/R* = 3562.44 [1534014.00]
b = 0.88 [115.26]
Seff = 1.23 [1.79]
Teq = 269 [98] K
Rp = 2.18 [238.79] Re
a = 1.4231 [1.1657] AU
Ag = 58390.64 [12812716.96] [0.00σ]
Teffp = 6454 [354064] K [0.02σ]

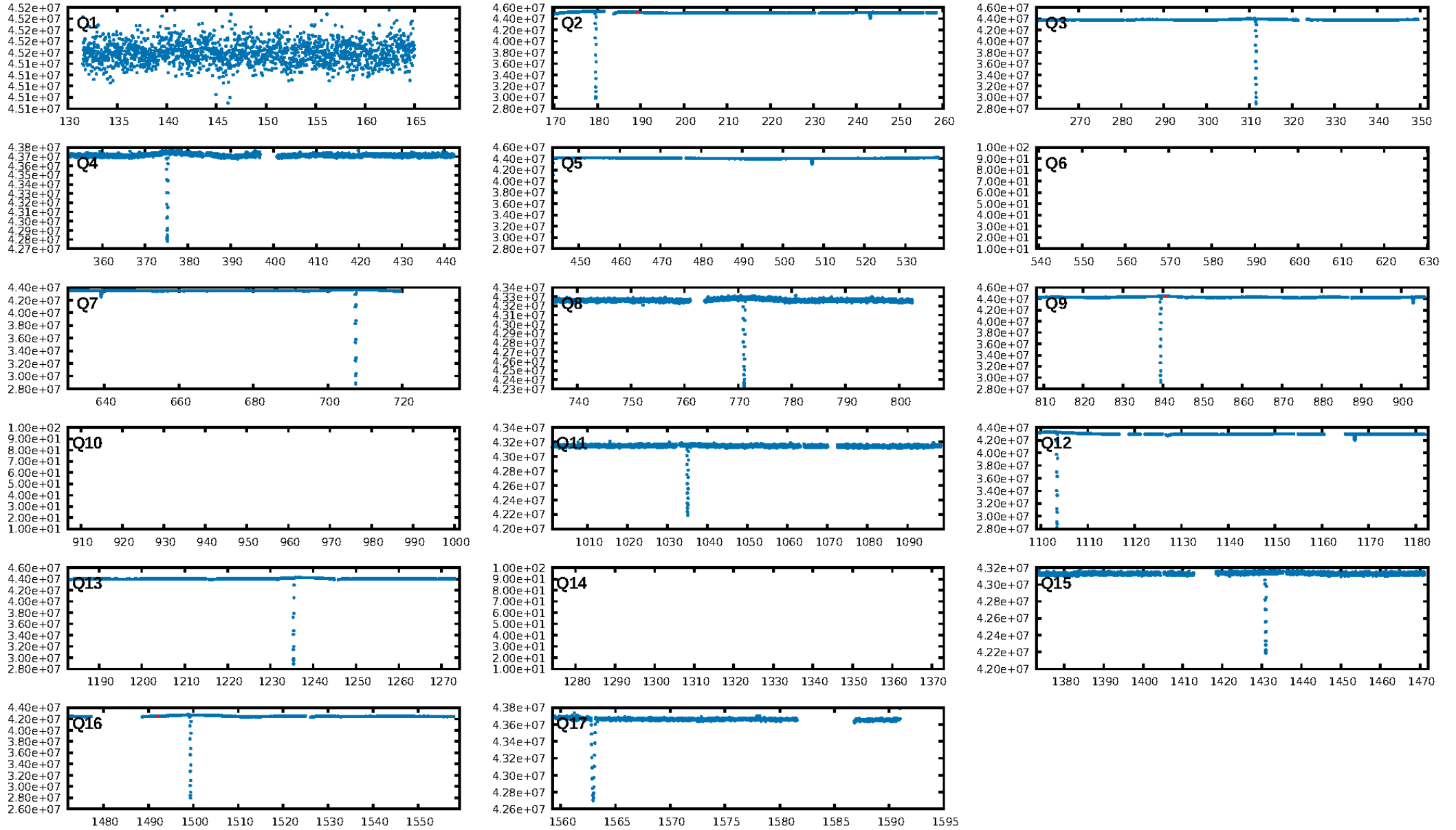
DV Diagnostic Results:

ShortPeriod-sig: 1.7% [0.02σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: 0.8105
Centroid-sig: 55.6%
Centroid-so: 16.896 arcsec [0.64σ]
OotOffset-rm: 4.751 arcsec [1.61σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-rm: 5.009 arcsec [1.68σ]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 1.00 [3/3]

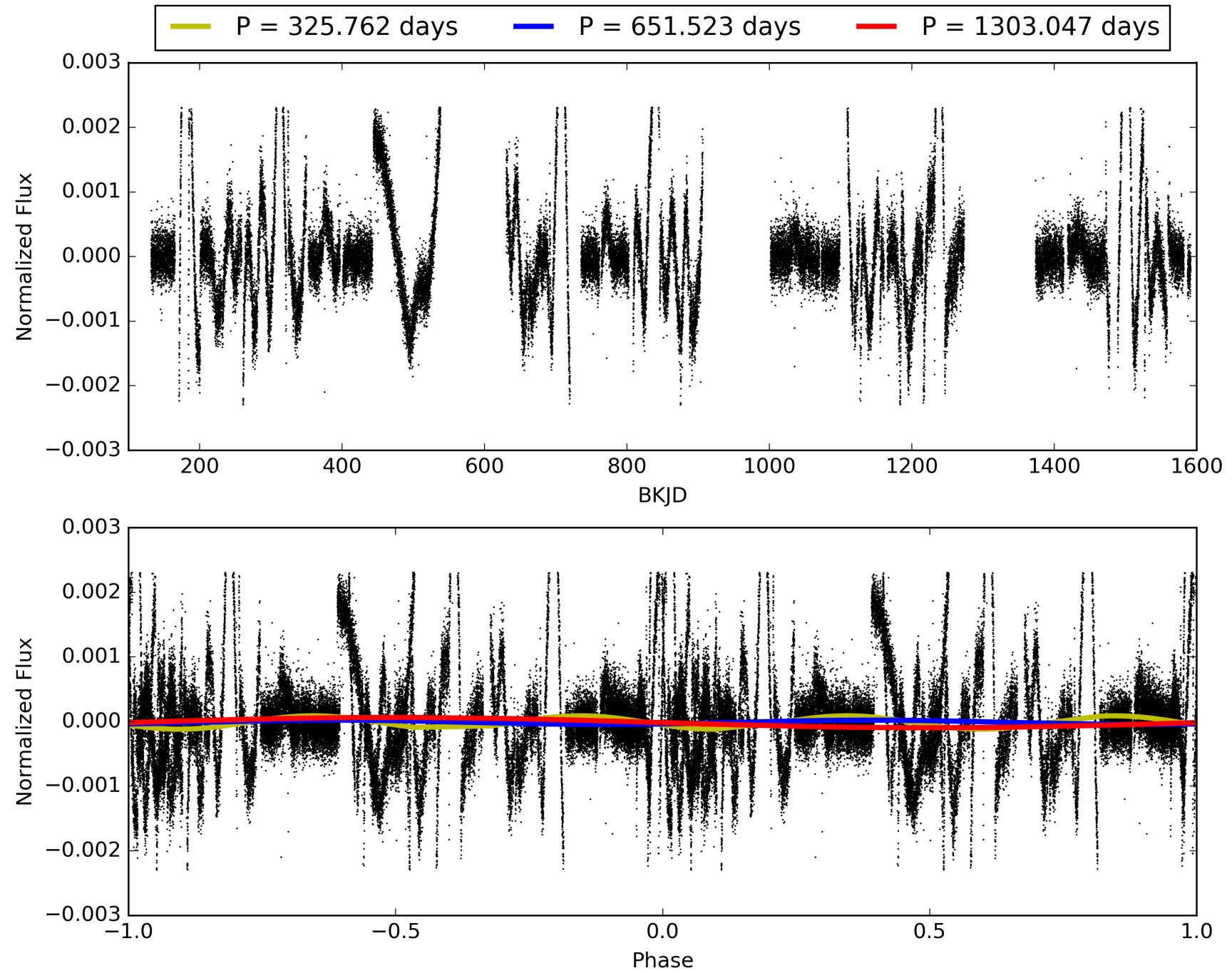
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:28:37 Z

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

TCE 005456023-06, PDC Light Curves

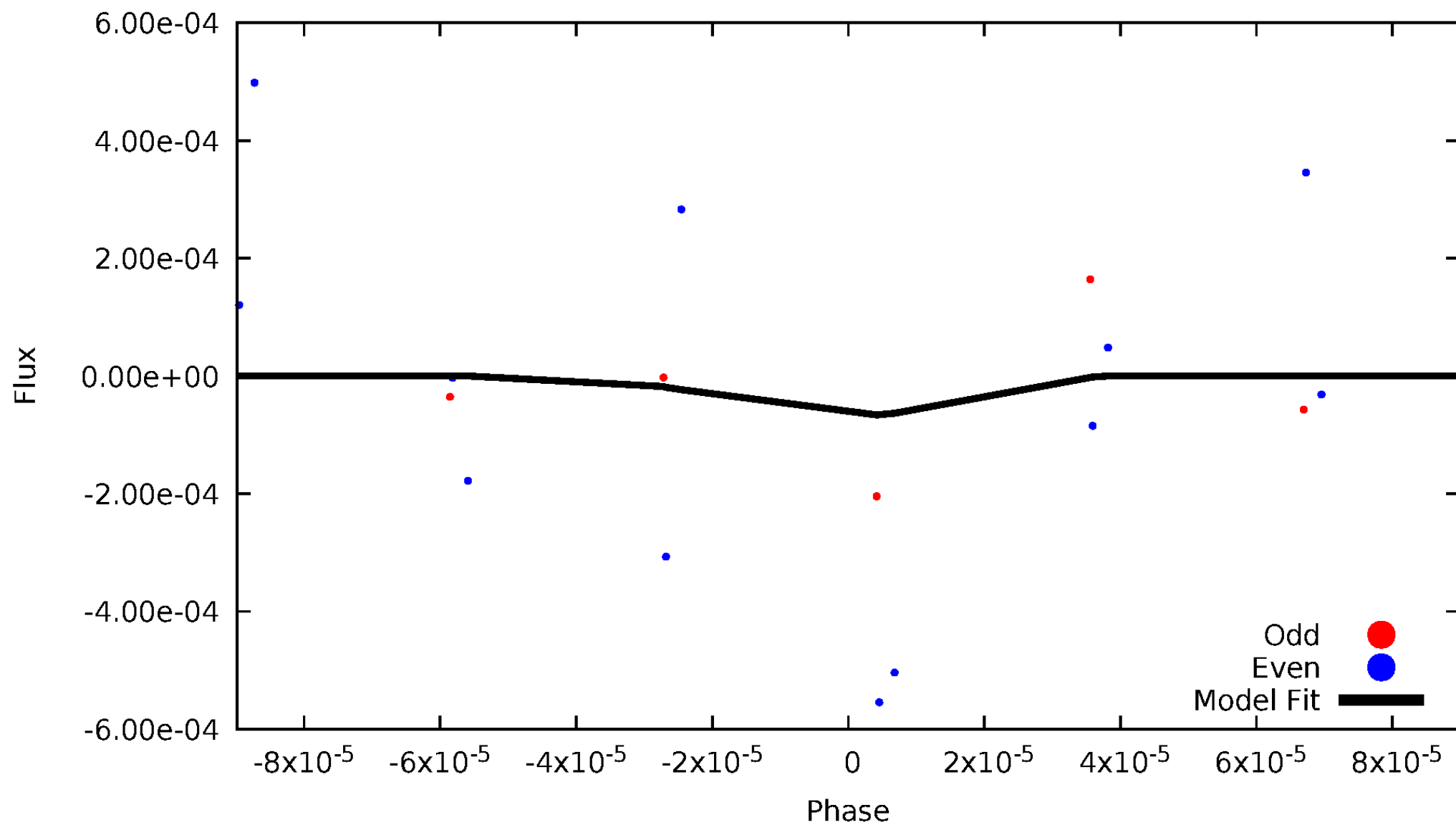


TCE 005456023-06



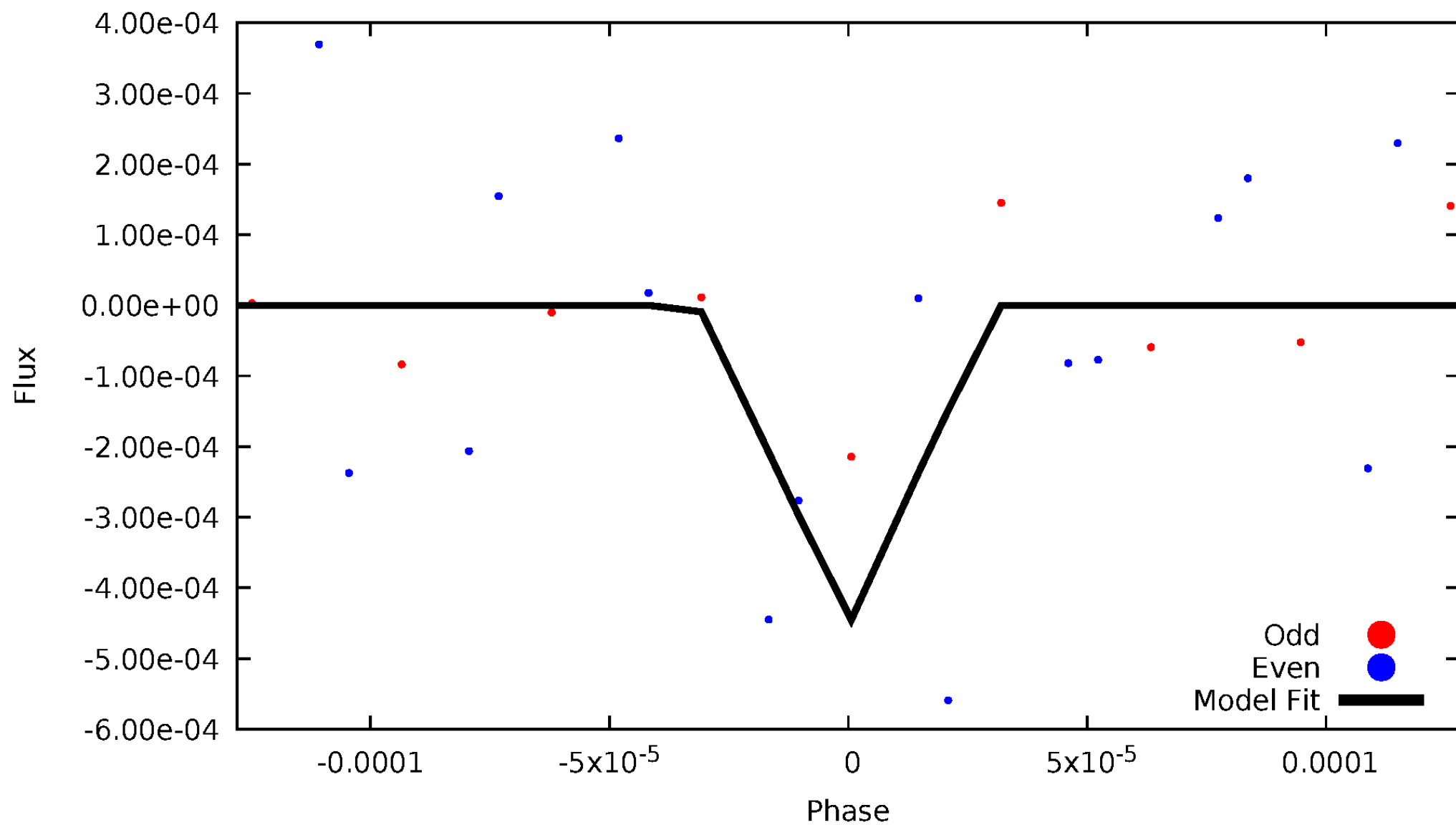
DV Odd/Even

TCE 005456023-06



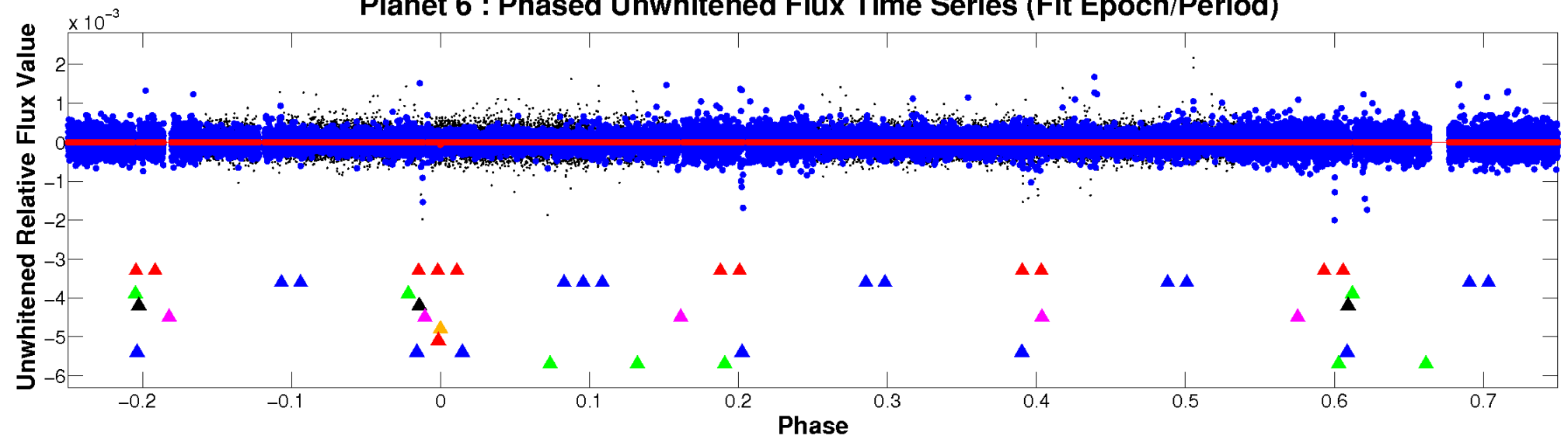
ALT Odd/Even

TCE 005456023-06

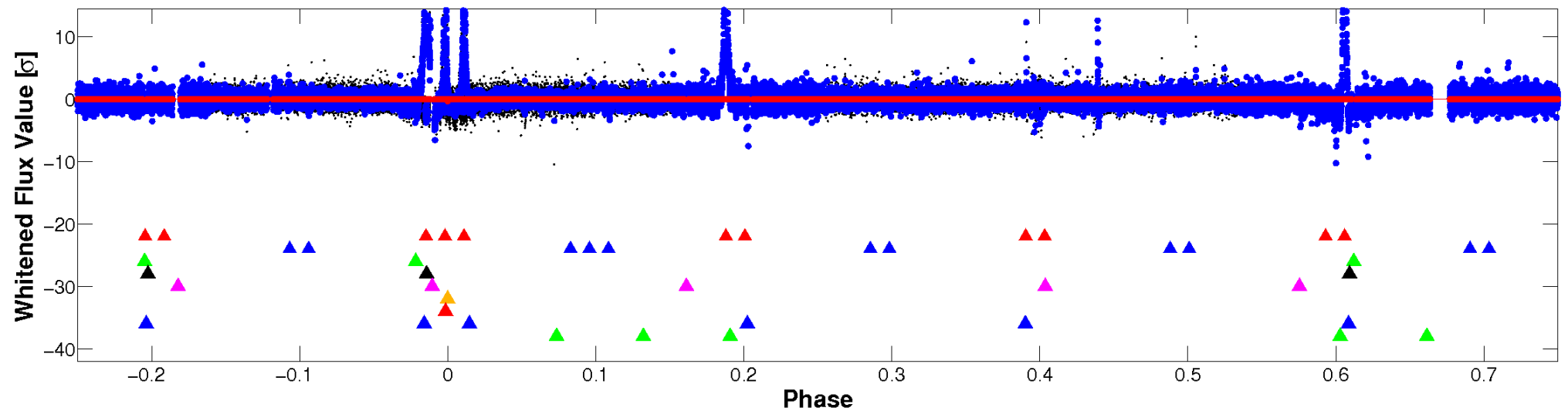


Non-Whitened Vs. Whitened Light Curve

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

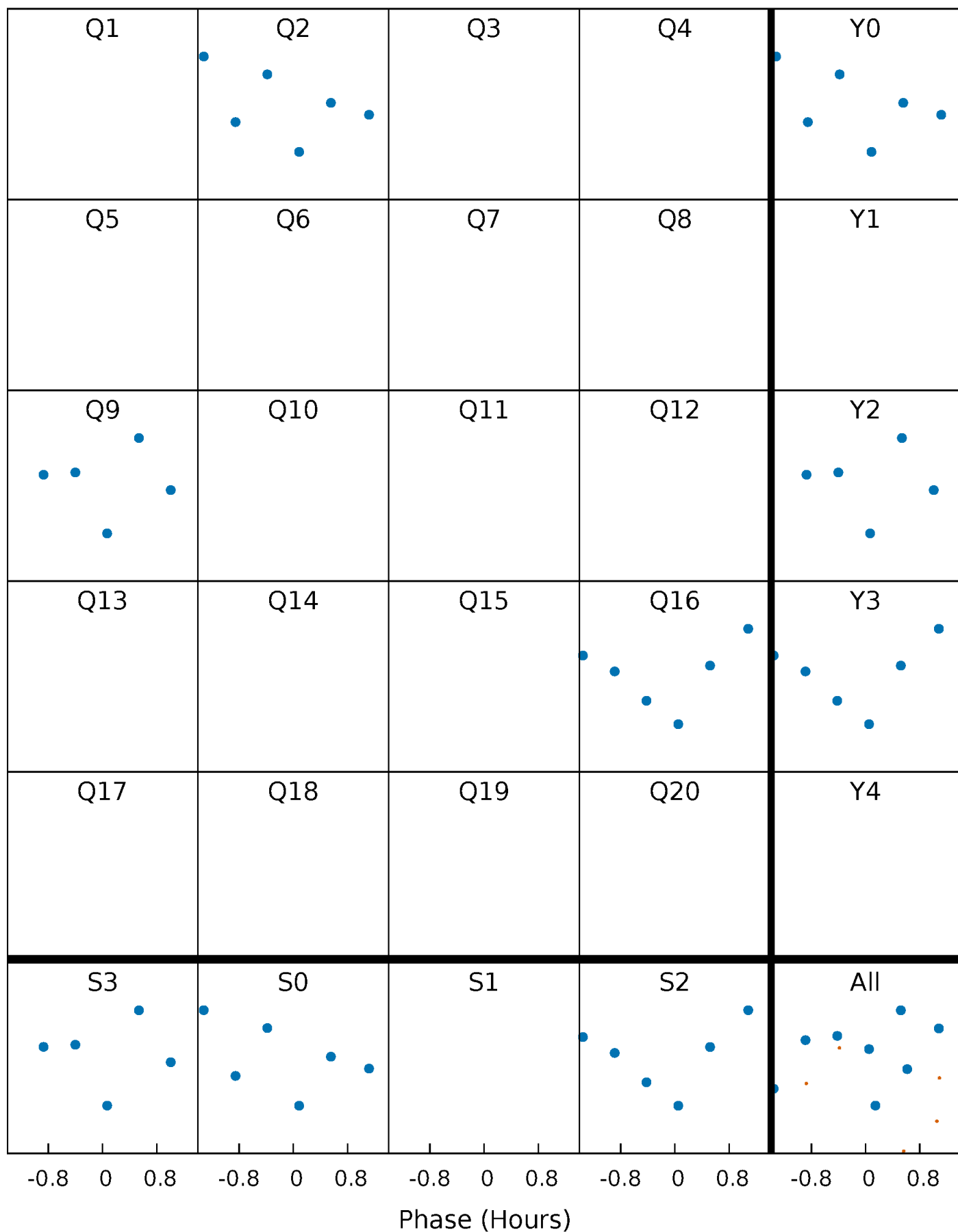


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



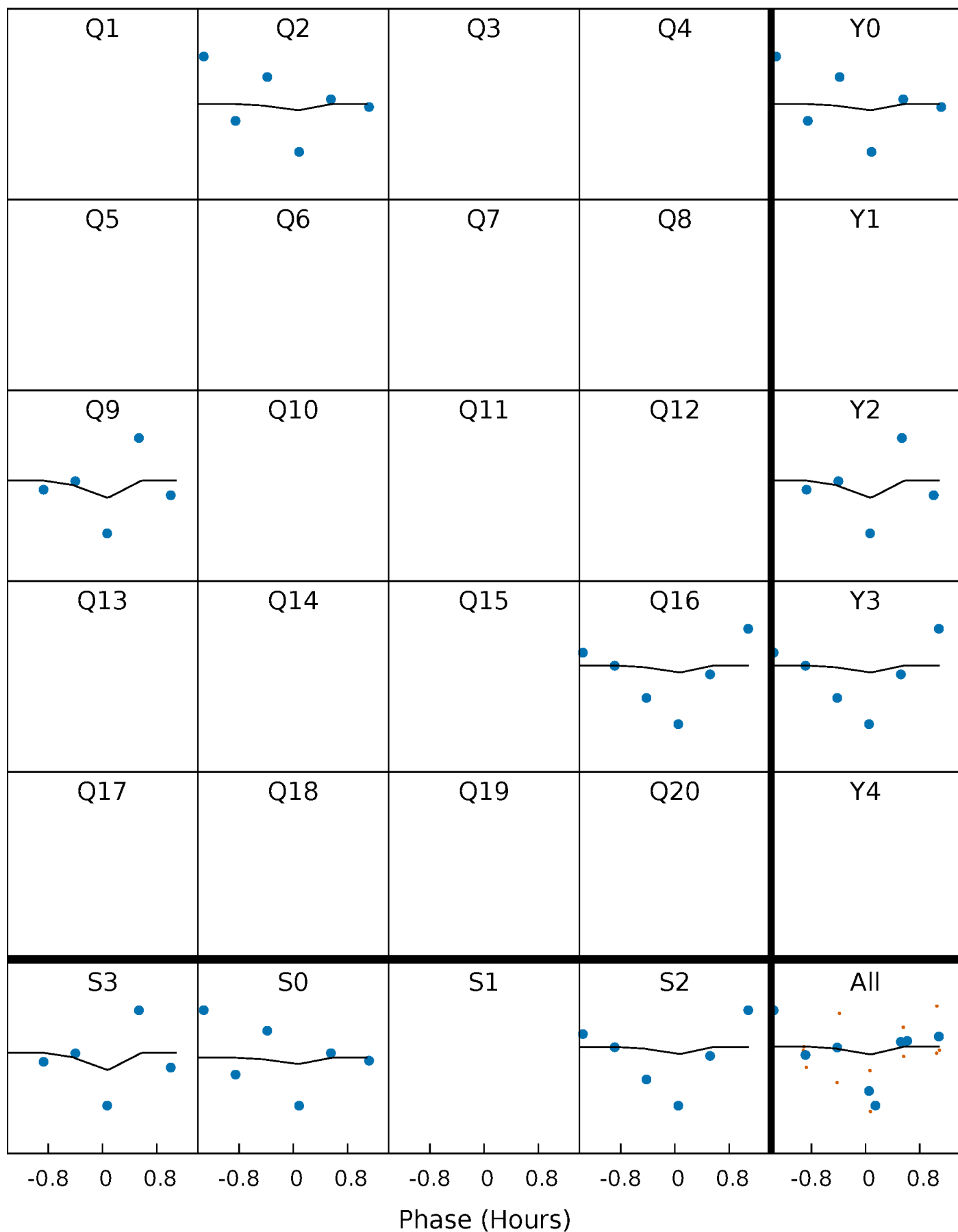
PDC Quarter-Phased Transit Curves

TCE 005456023-06 P=651.523423 Days $T_0=189.132663$ (BKJD)



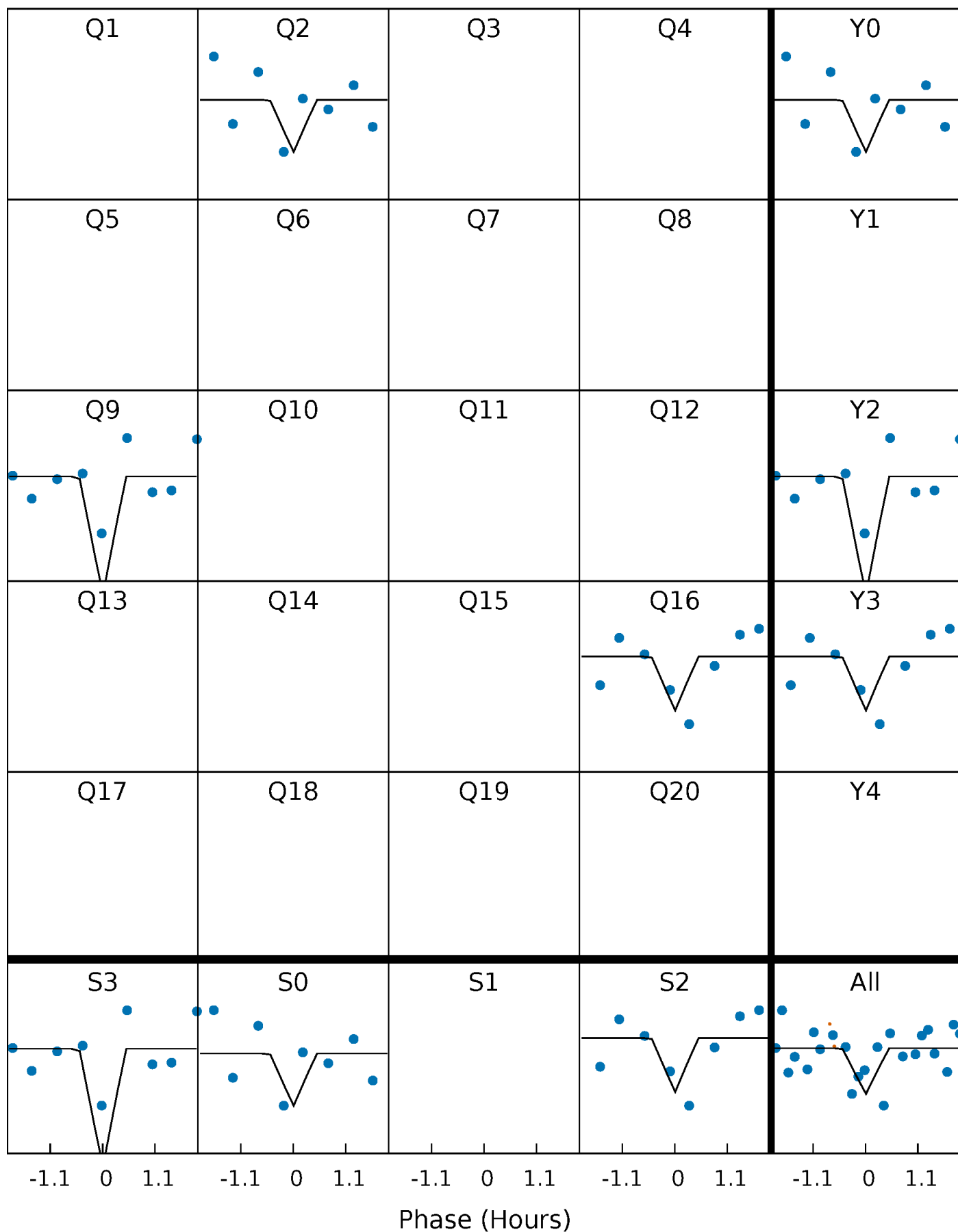
DV Quarter-Phased Transit Curves

TCE 005456023-06 P=651.523423 Days $T_0=189.132663$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

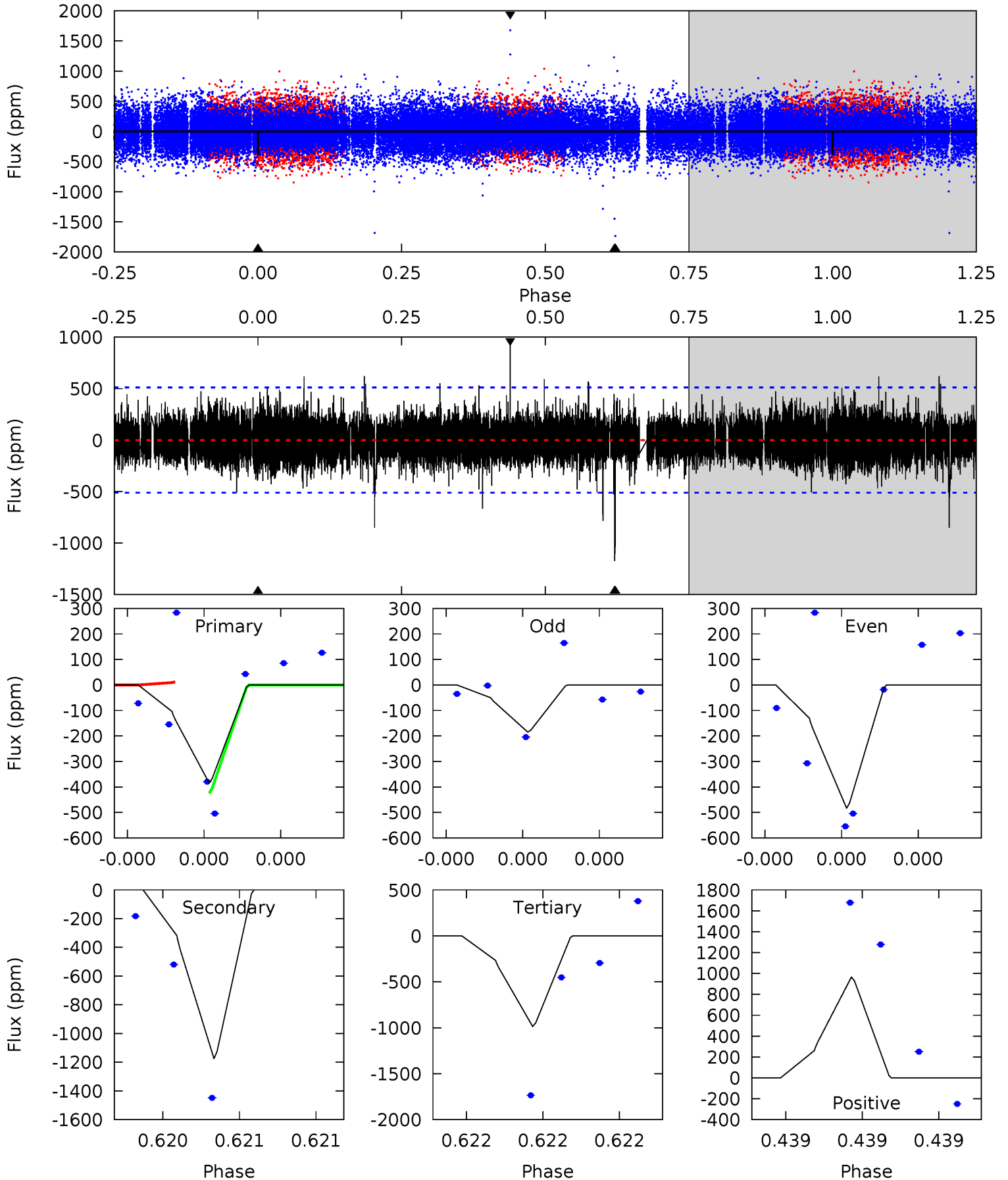
TCE 005456023-06 P=651.510438 Days $T_0=189.147973$ (BKJD)



DV Model-Shift Uniqueness Test

005456023-06, P = 651.523423 Days, E = 189.132663 Days

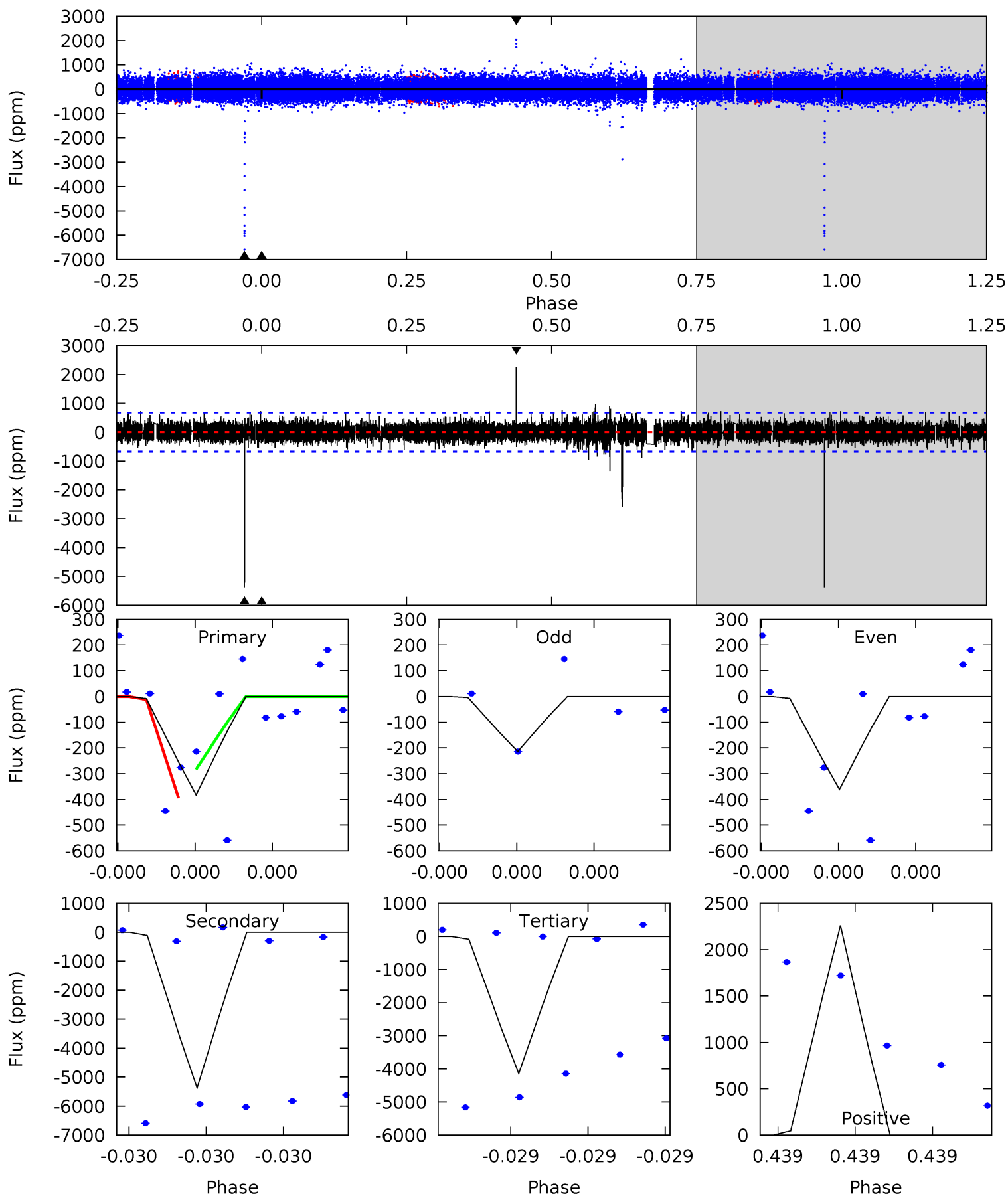
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.44	13.6	11.4	11.2	5.92	3.99	1.27	-6.97	-6.73	2.17	2.41	1.62	1.04	0.45	1.78



Alt Model-Shift Uniqueness Test

005456023-06, P = 651.510438 Days, E = 189.147973 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.39	47.6	36.7	20.0	5.97	4.06	1.48	-33.3	-16.6	10.9	27.6	0.57	1.06	0.30	0.40



Stellar Parameters For KIC 005456023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4916^{+122}_{-146}	$3.717^{+0.900}_{-0.300}$	$-0.080^{+0.300}_{-0.300}$	$2.182^{+1.179}_{-1.441}$	$0.905^{+0.232}_{-0.190}$	$0.123^{+3.024}_{-0.081}$
	+2%/-3%	+24%/-8%	+375%/-375%	+54%/-66%	+26%/-21%	+2465%/-66%
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 005456023-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1173 ± 86	$141.93^{+200.84}_{-101.54}$	368^{+53}_{-71}	2065^{+700}_{-276}	67^{+744}_{-56}
Alt.	-5377 ± 113	$136.14^{+190.03}_{-101.13}$	365^{+55}_{-70}	2471^{+1013}_{-397}	334^{+4793}_{-276}

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

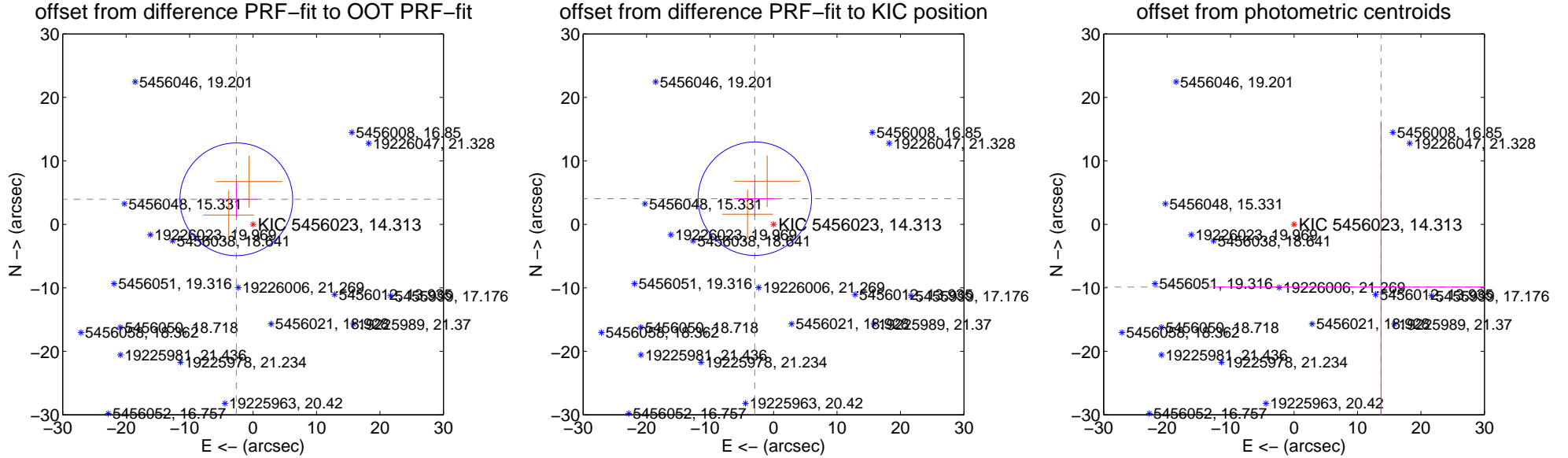
DV Centroid Data

Supplemental centroid analysis for 005456023-06. Kepler magnitude: 14.31. Transit SNR 0.39

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.751 ± 2.960	1.61	2.639 ± 3.288	3.950 ± 2.801
PRF-fit source offset from KIC position	5.009 ± 2.979	1.68	2.954 ± 3.288	4.045 ± 2.801
photometric centroid source offset	16.90 ± 26.34	0.64	-13.71 ± 26.46	-9.87 ± 26.11



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.

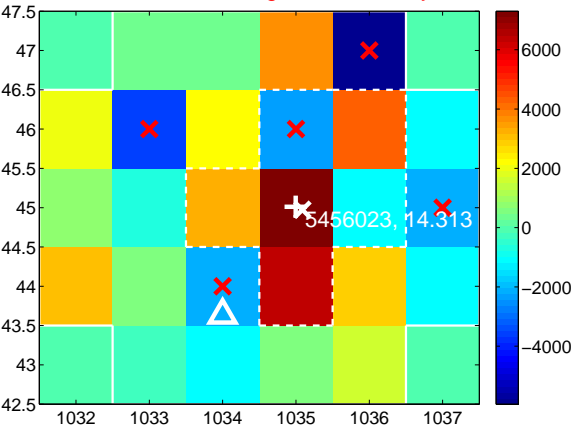
Q1 no difference image



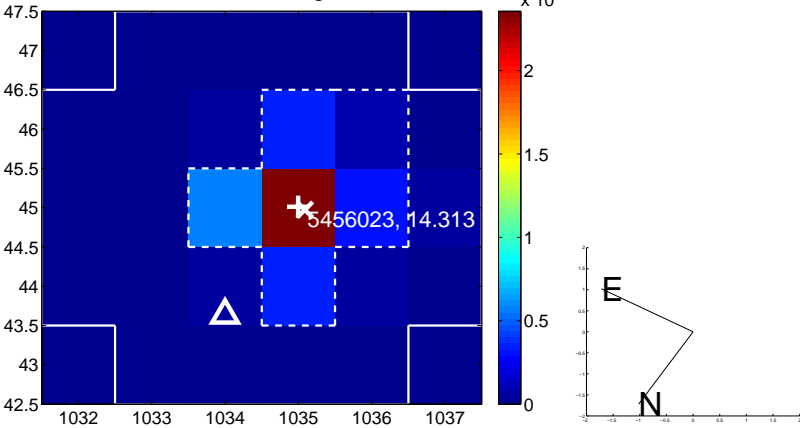
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



Q3 no OOT image



Q4 no difference image



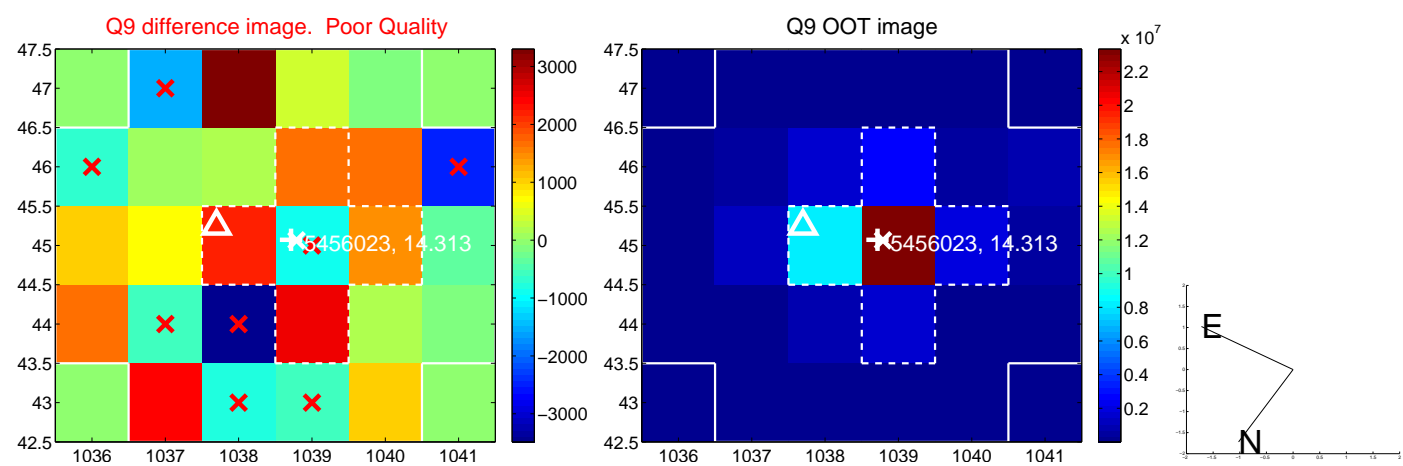
Q4 no OOT image



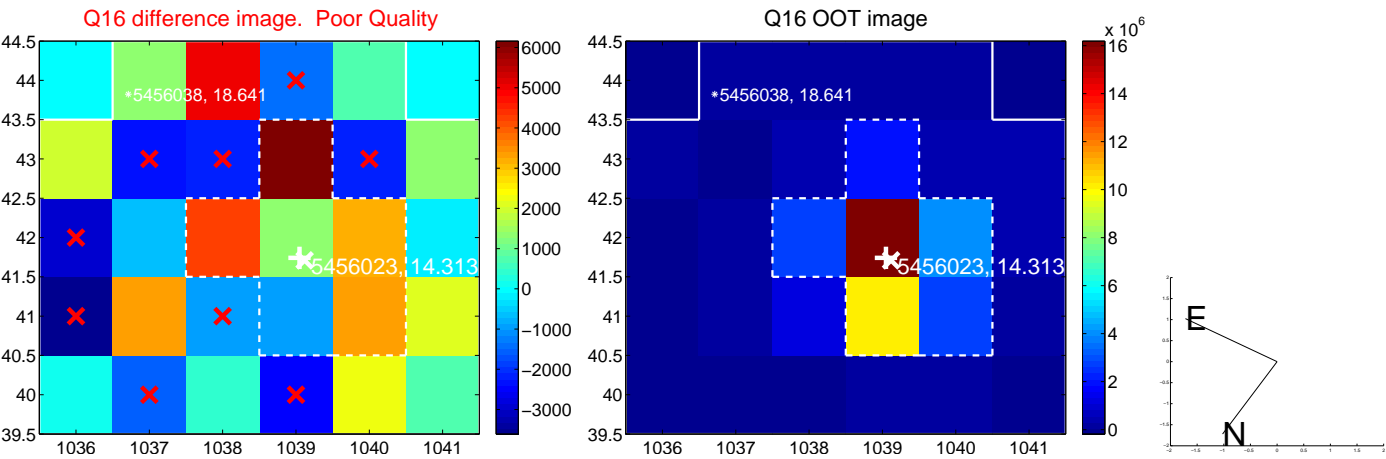
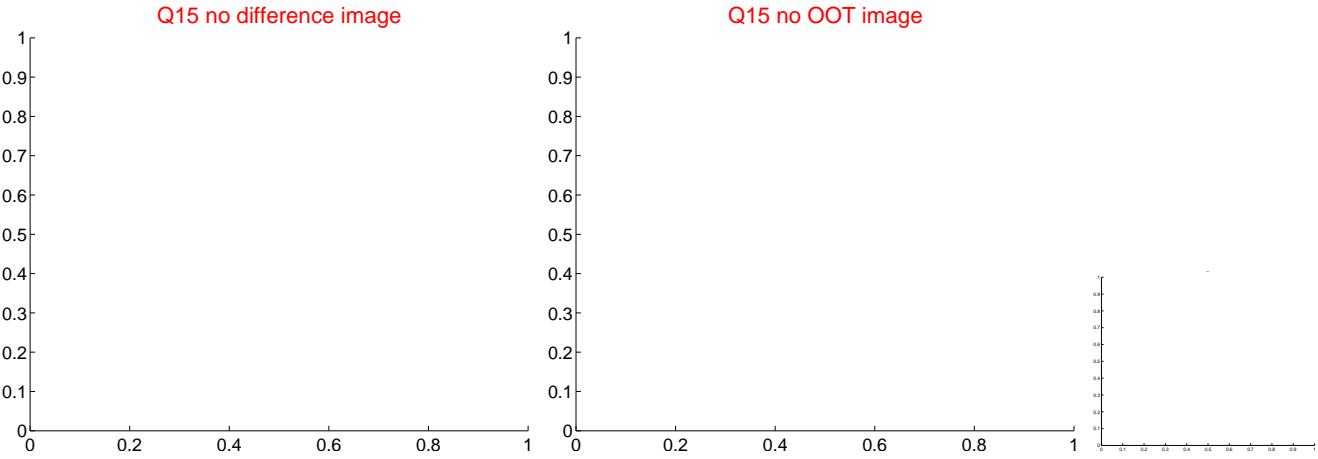
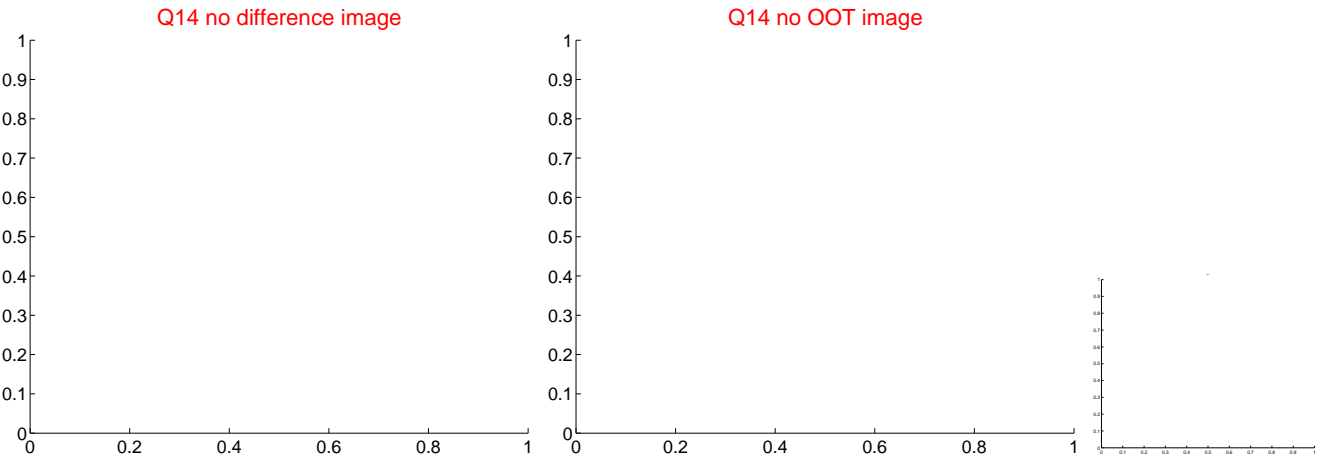
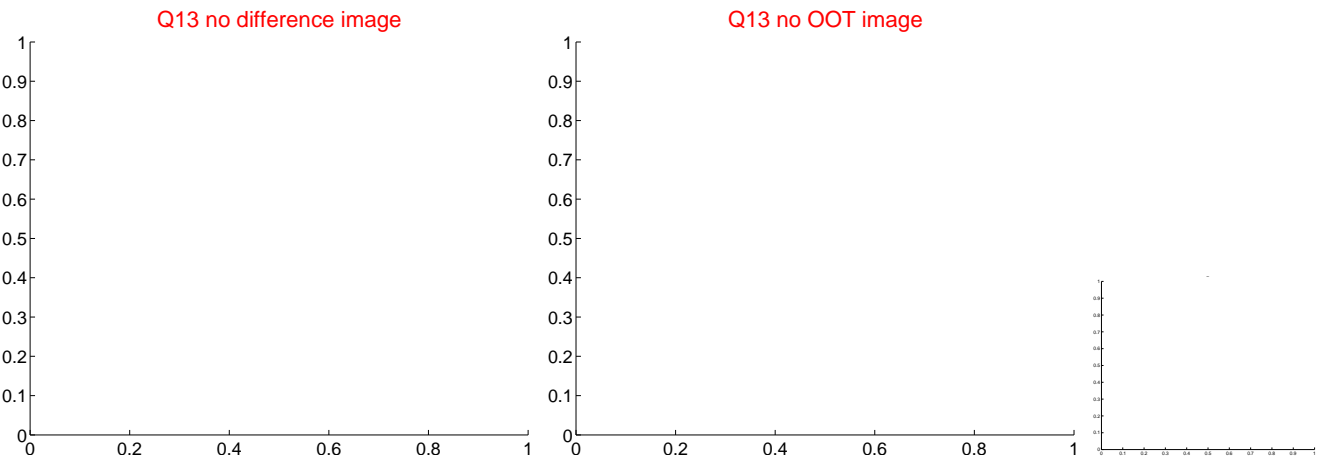
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



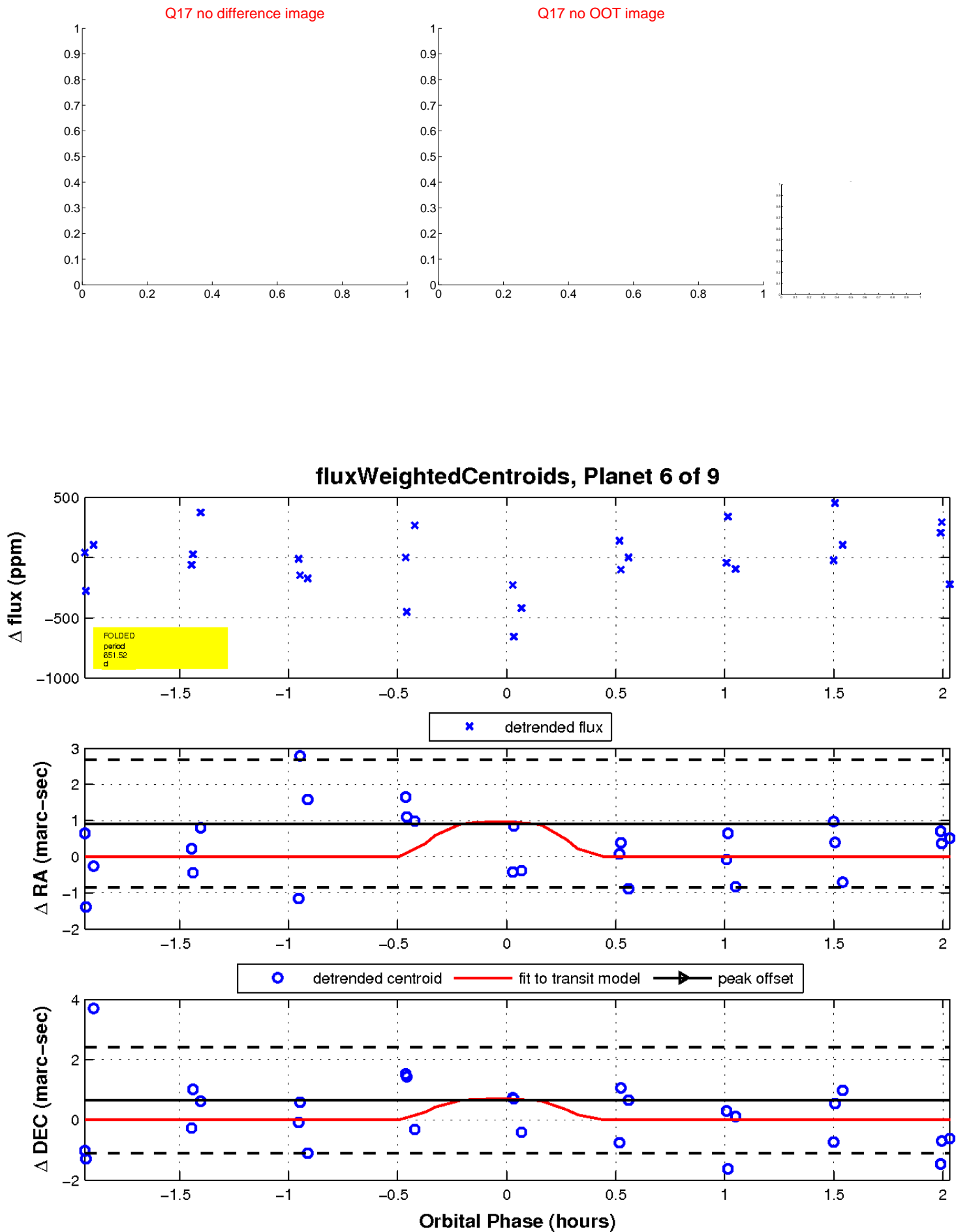
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

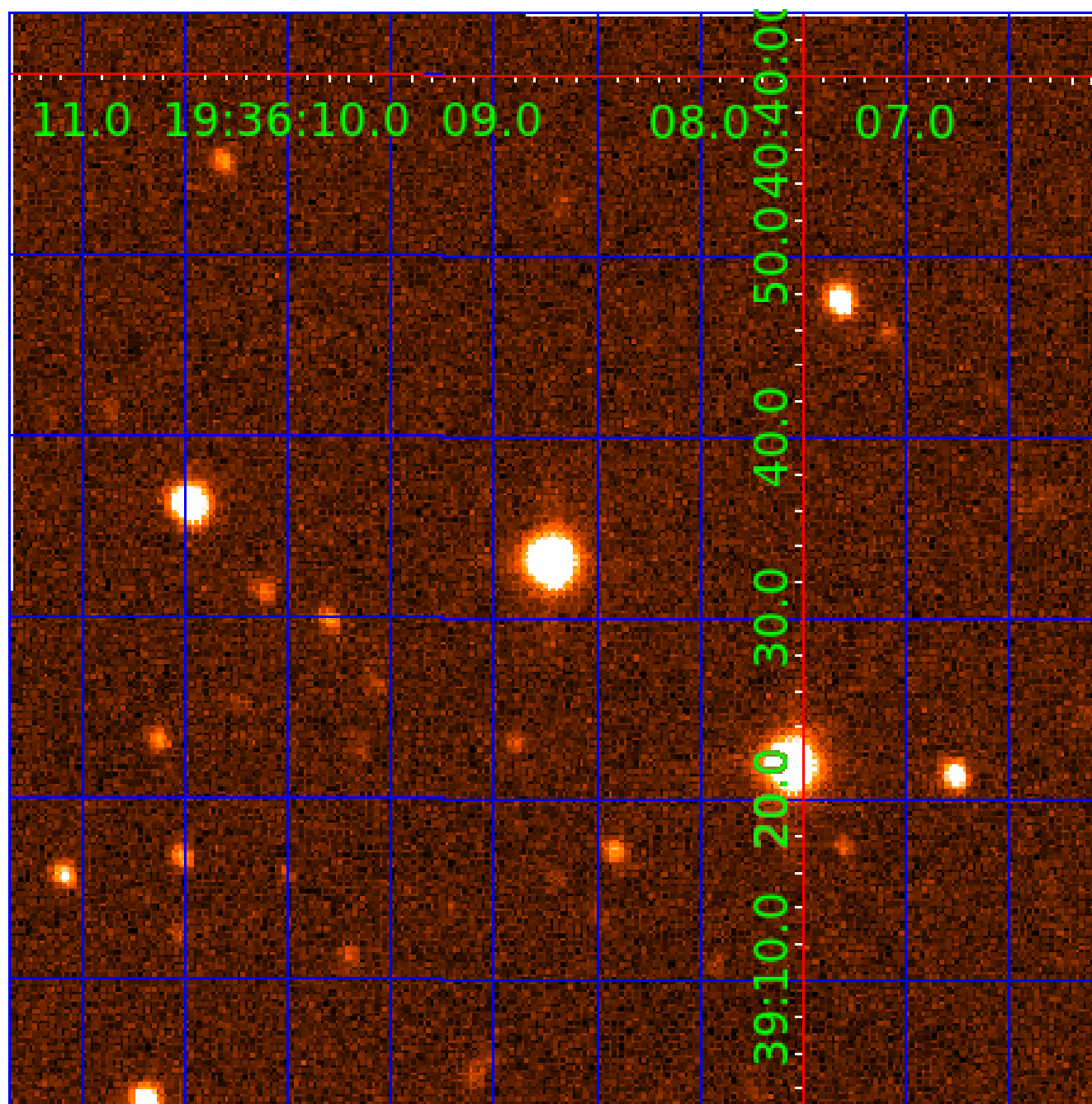


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005456023

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})
005456023-01	OBS	3521.01	131.978586	179.584349	345710.4	3.500	4448.3	-1.0	2.18	4916	98.42	10.34
005456023-02	OBS	No	131.978206	243.181247	22096.5	9.848	723.9	697.0	2.18	4916	53.07	10.34
005456023-03	OBS	No	532.198881	175.068533	16423.6	15.000	258.7	-1.0	2.18	4916	27.06	1.61
005456023-05	OBS	No	269.831971	294.182565	16423.6	15.000	203.0	-1.0	2.18	4916	27.06	3.98
005456023-06	OBS	No	651.523423	189.132663	66.1	0.702	256.8	0.4	2.18	4916	2.18	1.23
005456023-07	OBS	No	651.510438	188.214123	16422.9	15.000	257.4	-1.0	2.18	4916	27.06	1.23
005456023-08	OBS	No	264.588640	178.801063	2785.6	3.500	25.8	-1.0	2.18	4916	11.15	4.09
005456023-09	OBS	No	306.667400	313.444601	1448.1	3.500	13.4	-1.0	2.18	4916	8.04	3.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005456023-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
005456023-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005456023-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005456023-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005456023-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005456023-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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 005456023-07

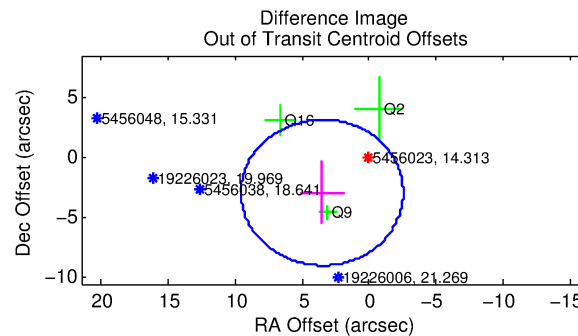
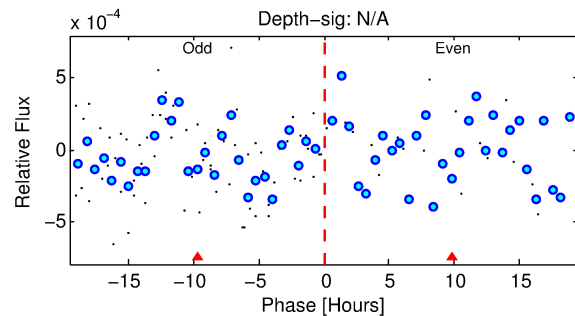
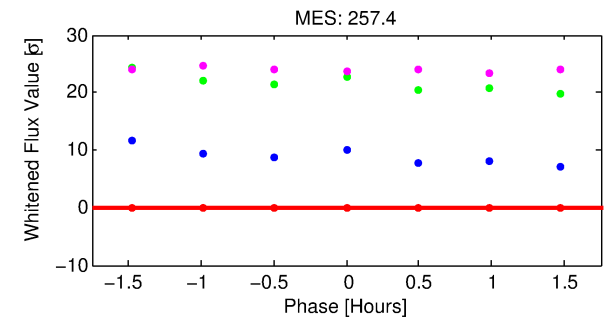
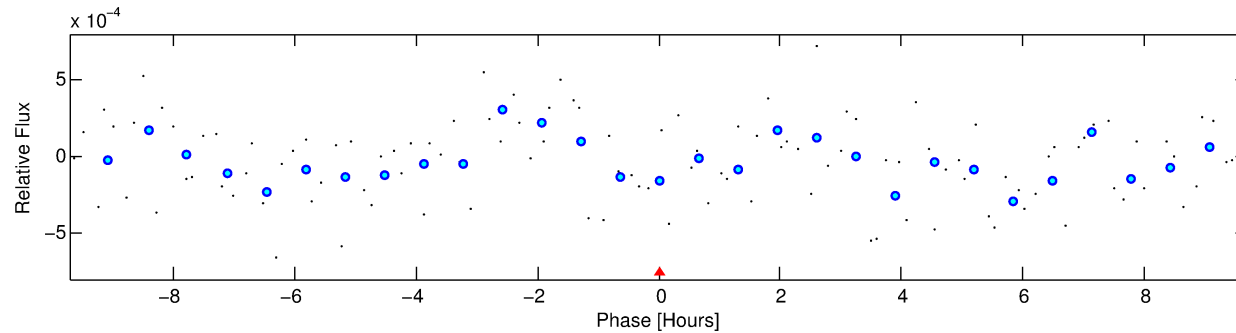
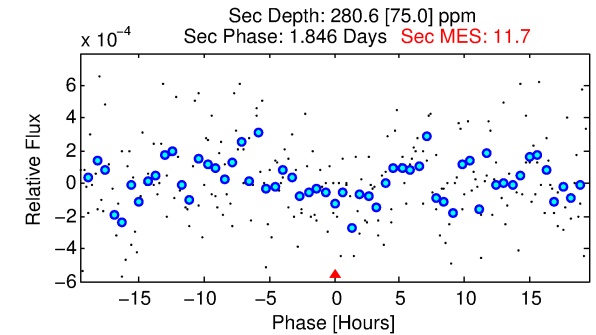
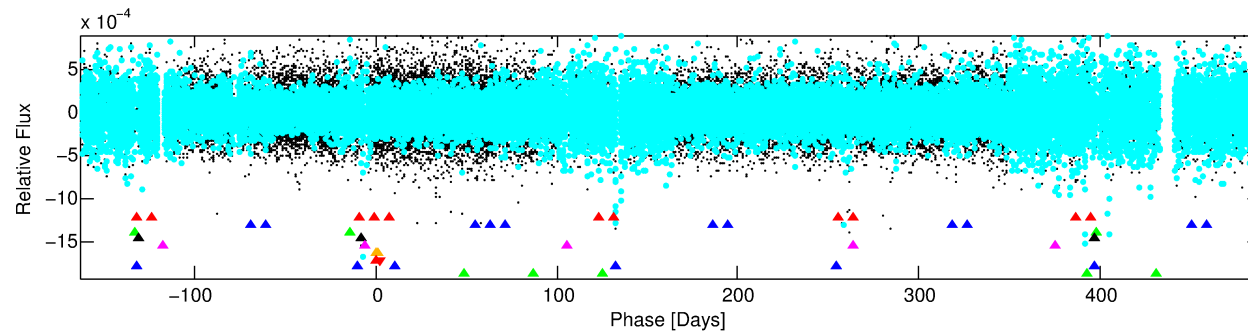
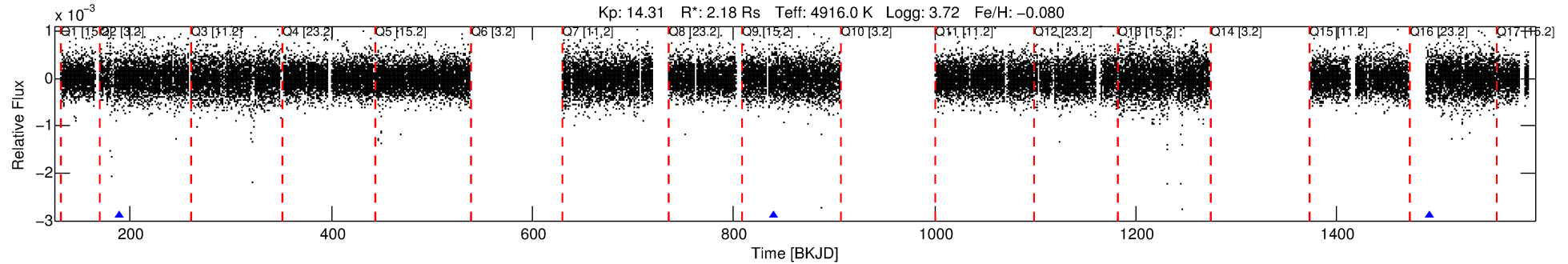
No Significant Match Found

DV One-Page Summary

KIC: 5456023 Candidate: 7 of 9 Period: 651.510 d

KOI: K03521 Corr: No Ephemeris Match

Kp: 14.31 R*: 2.18 Rs Teff: 4916.0 K Logg: 3.72 Fe/H: -0.080



TPS TCE Results:

Period = 651.51044 d

Epoch = 188.2141 BKJD

DV fit results are unavailable

DV Diagnostic Results:

ShortPeriod-sig: 100.0% [134.99σ]

LongPeriod-sig: 1.7% [0.02σ]

ModelChiSquare2-sig: N/A

ModelChiSquareGof-sig: N/A

Bootstrap-pfa: N/A

RollingBand-fgt: 1.00 [3/3]

GhostDiagnostic-chr: -0.2975

Centroid-sig: 5.4%

Centroid-so: 3.984 arcsec [1.43σ]

OotOffset-rm: 4.551 arcsec [2.25σ]

KicOffset-rm: 4.707 arcsec [1.90σ]

OotOffset-st: 1/0/1/1 [3]

KicOffset-st: 1/0/1/1 [3]

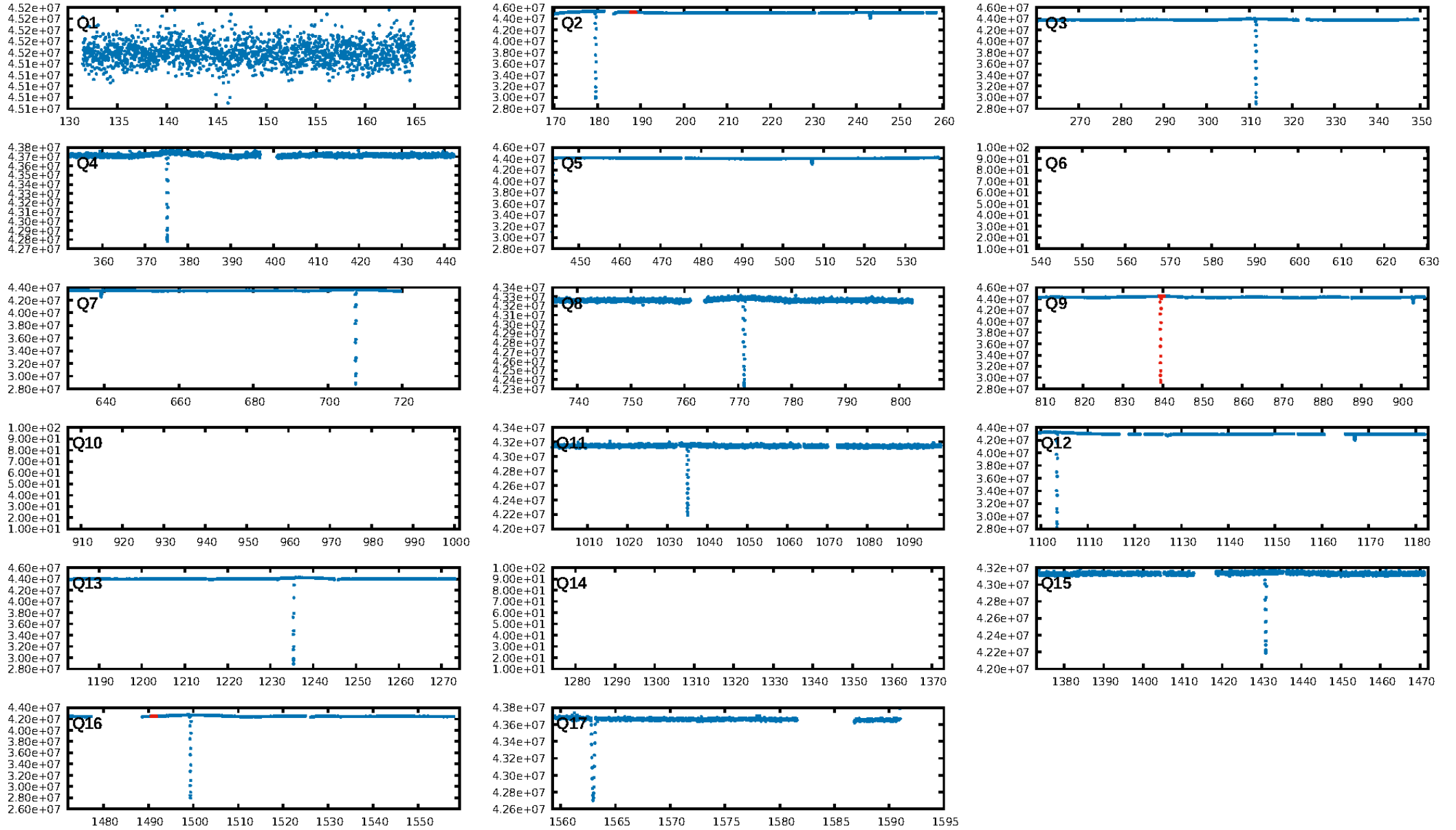
DiffImageQuality-fgm: 0.00 [0/3]

DiffImageOverlap-fno: 1.00 [3/3]

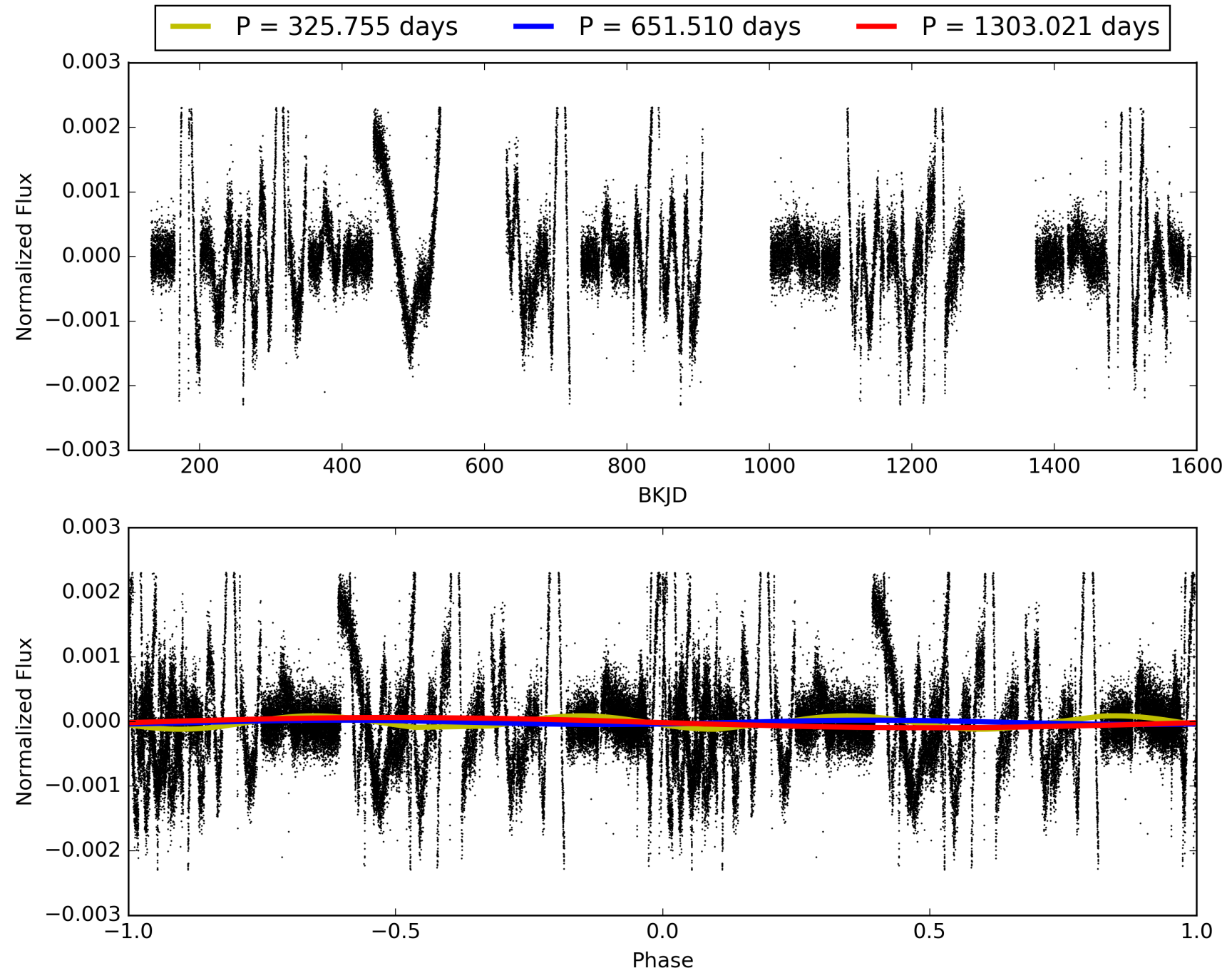
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:28:59 Z

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

TCE 005456023-07, PDC Light Curves

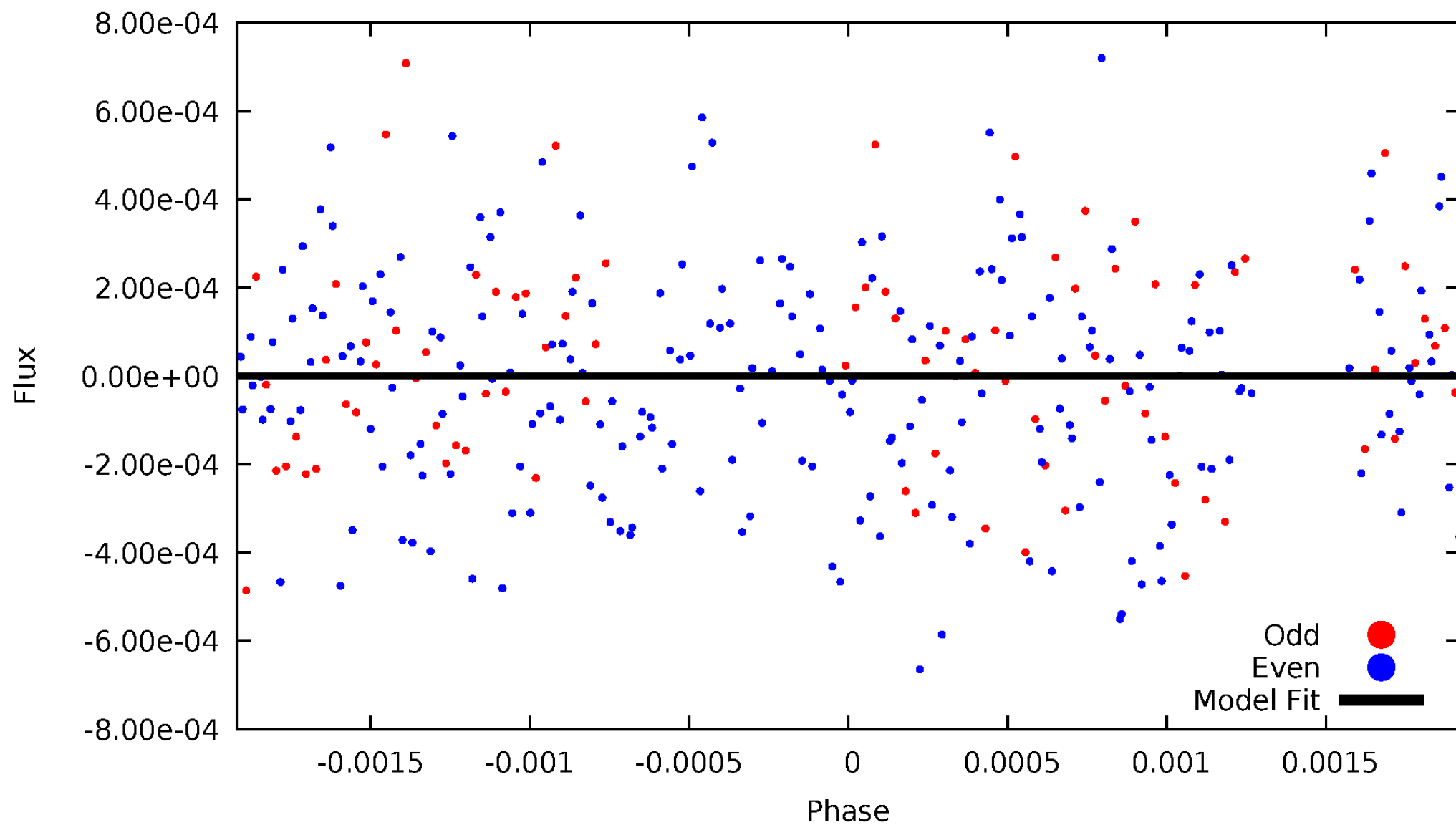


TCE 005456023-07



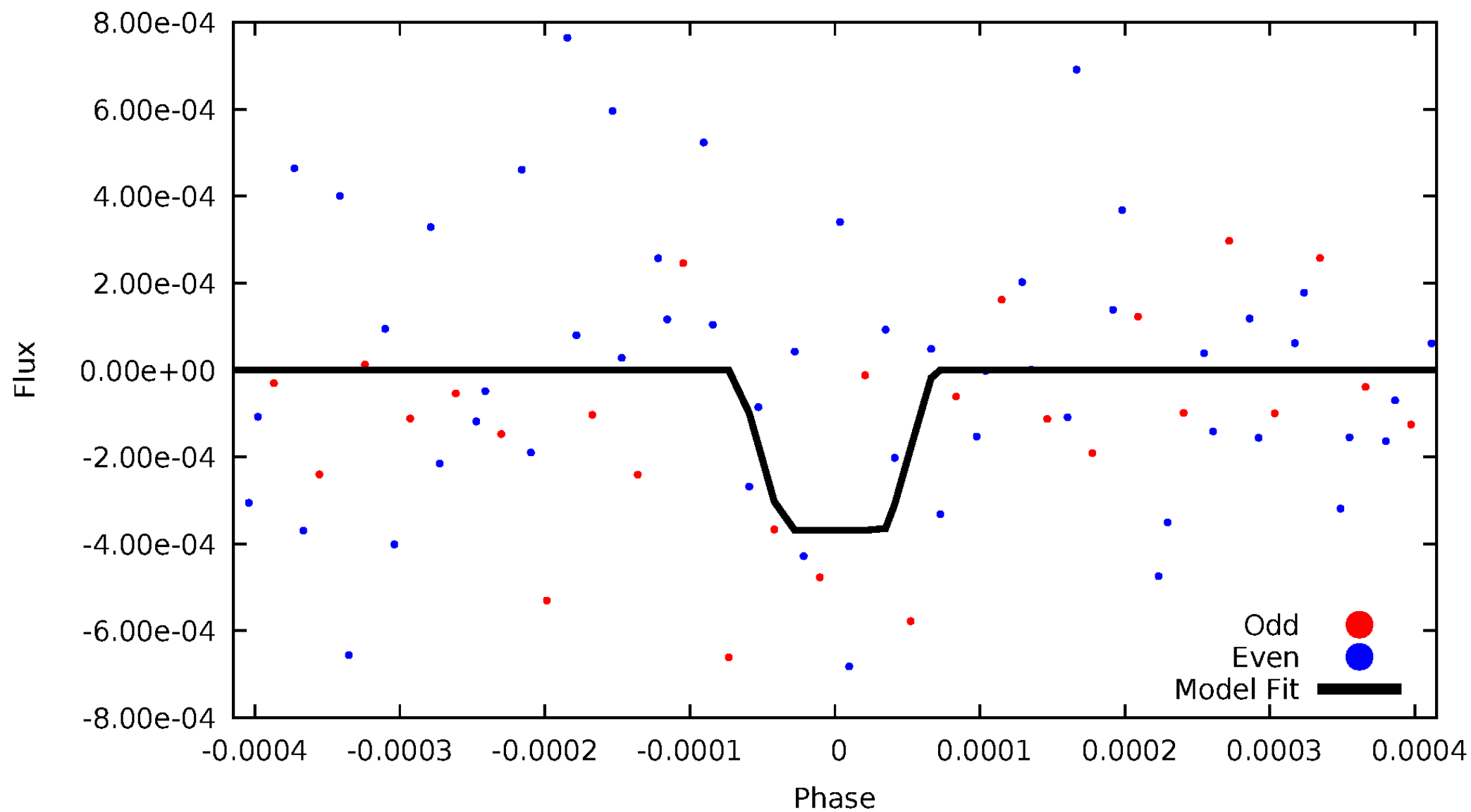
DV Odd/Even

TCE 005456023-07



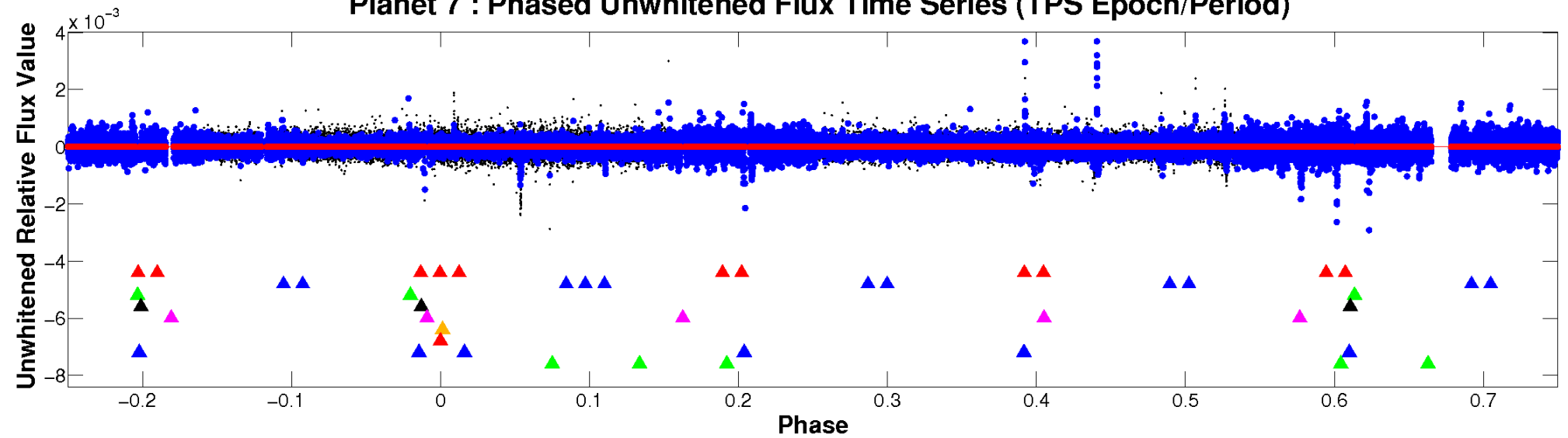
ALT Odd/Even

TCE 005456023-07



Non-Whitened Vs. Whitened Light Curve

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

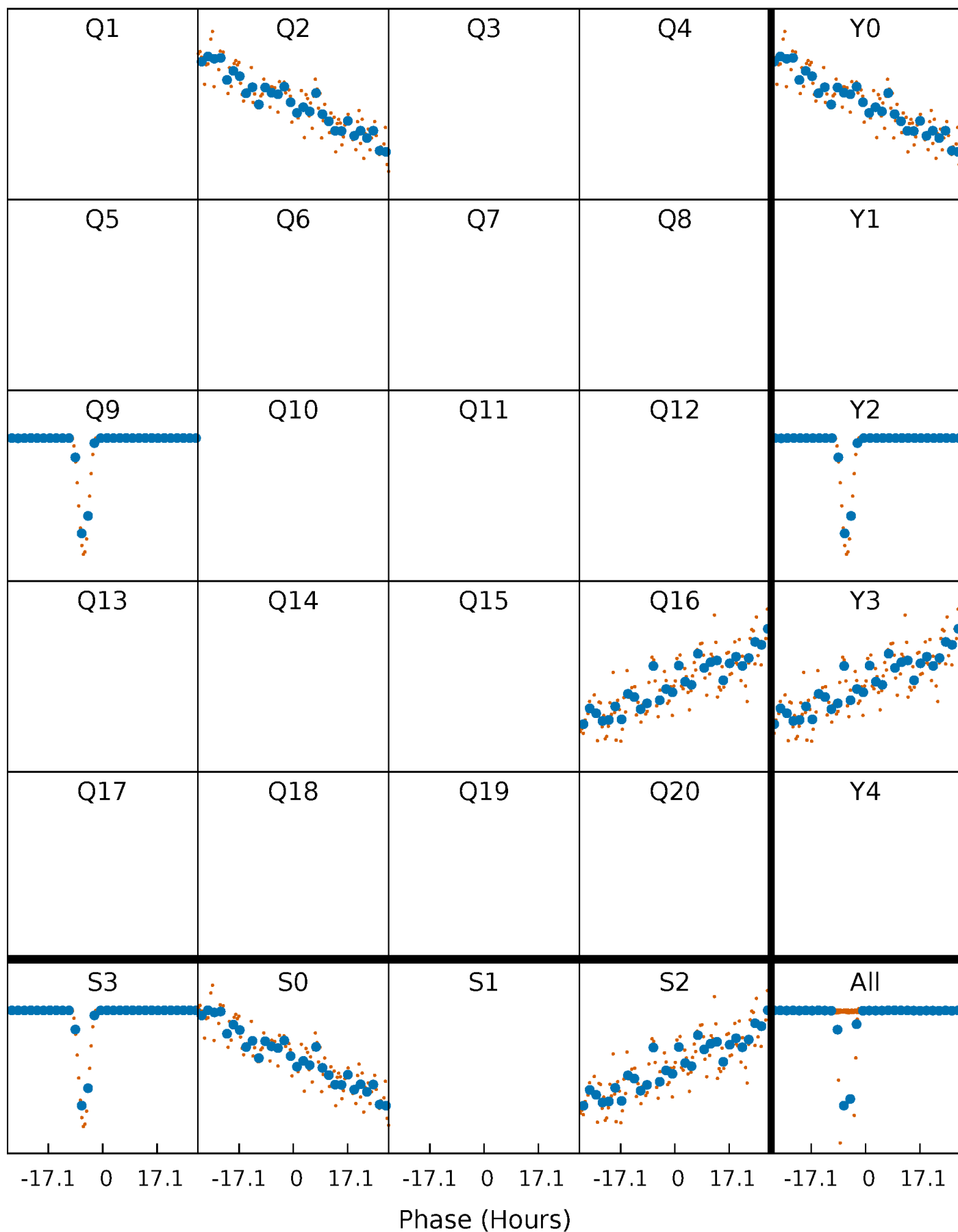


Planet 7 : Phased Whitened Flux Time Series (TPS Epoch/Period)



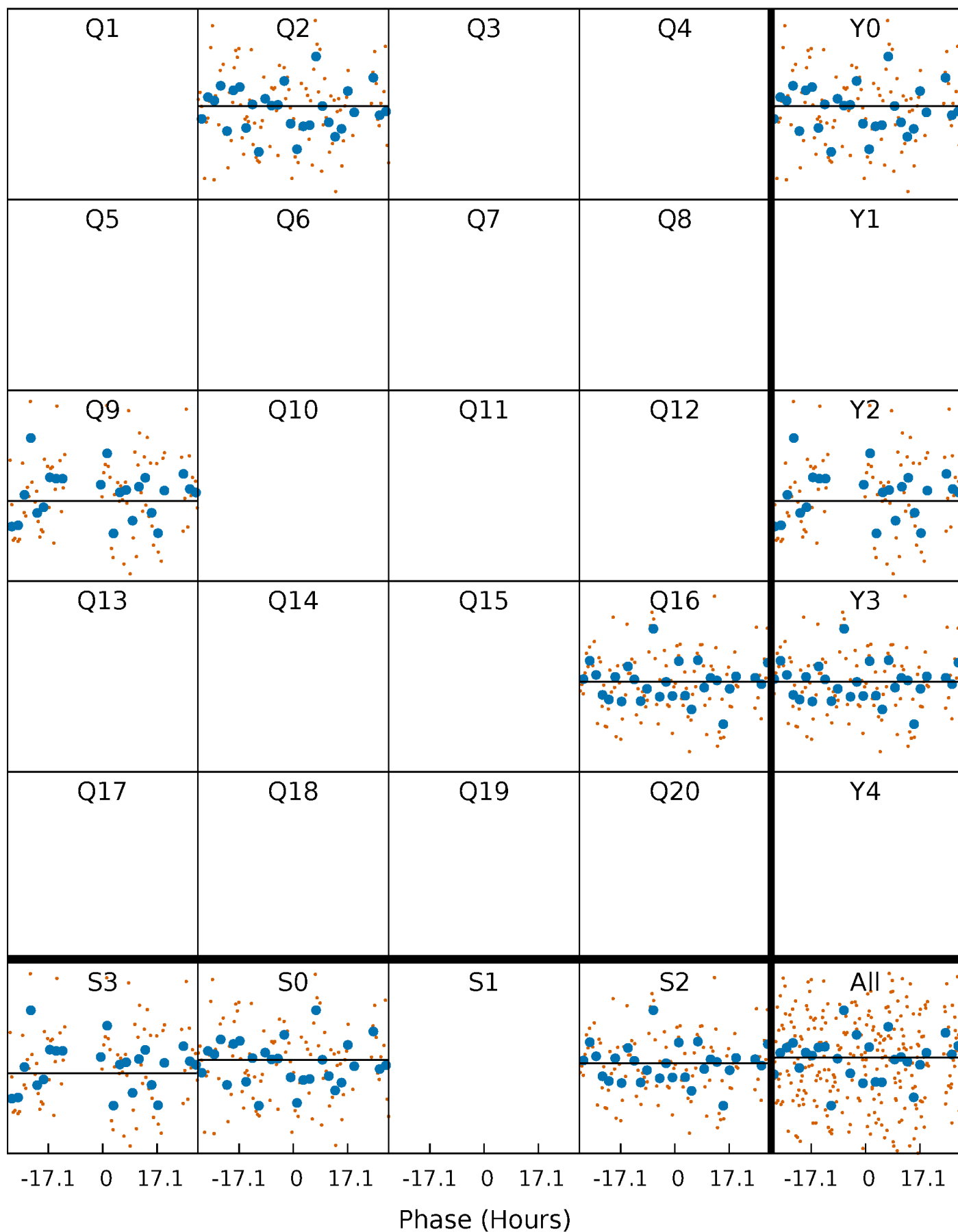
PDC Quarter-Phased Transit Curves

TCE 005456023-07 $P=651.510438$ Days $T_0=188.214123$ (BKJD)



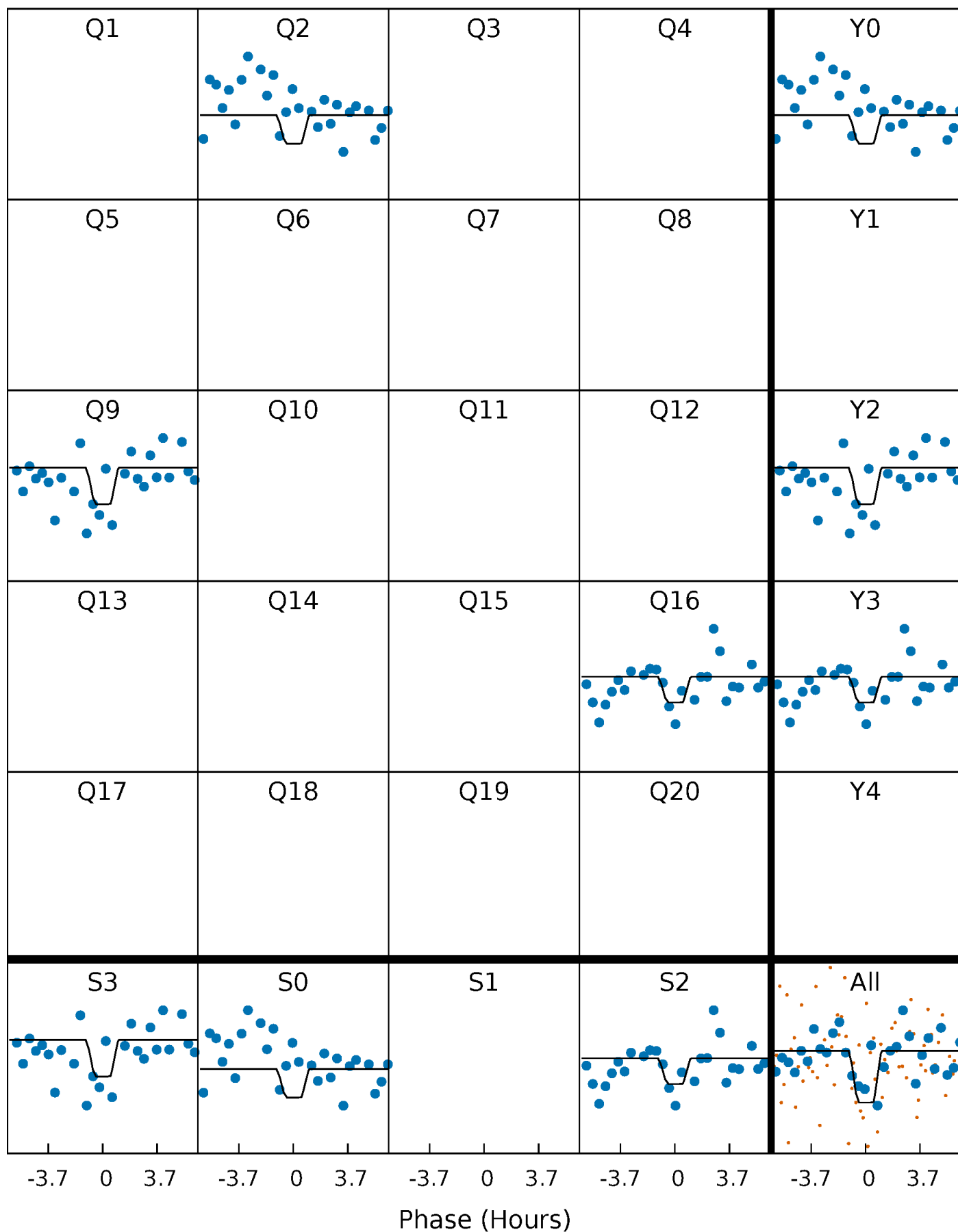
DV Quarter-Phased Transit Curves

TCE 005456023-07 P=651.510438 Days $T_0=188.214123$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

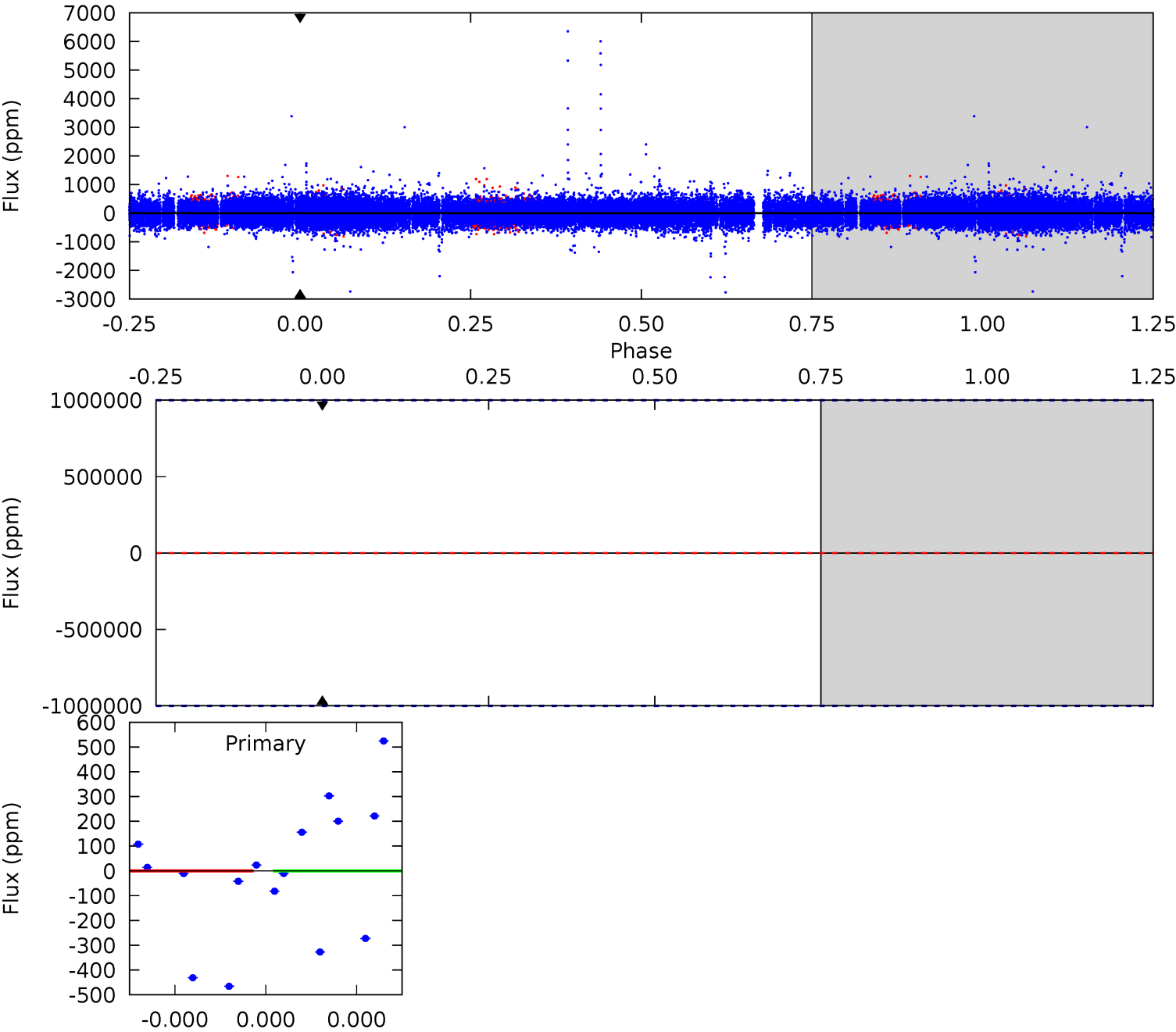
TCE 005456023-07 $P=651.510438$ Days $T_0=188.623895$ (BKJD)



DV Model-Shift Uniqueness Test

005456023-07, P = 651.510438 Days, E = 188.214123 Days

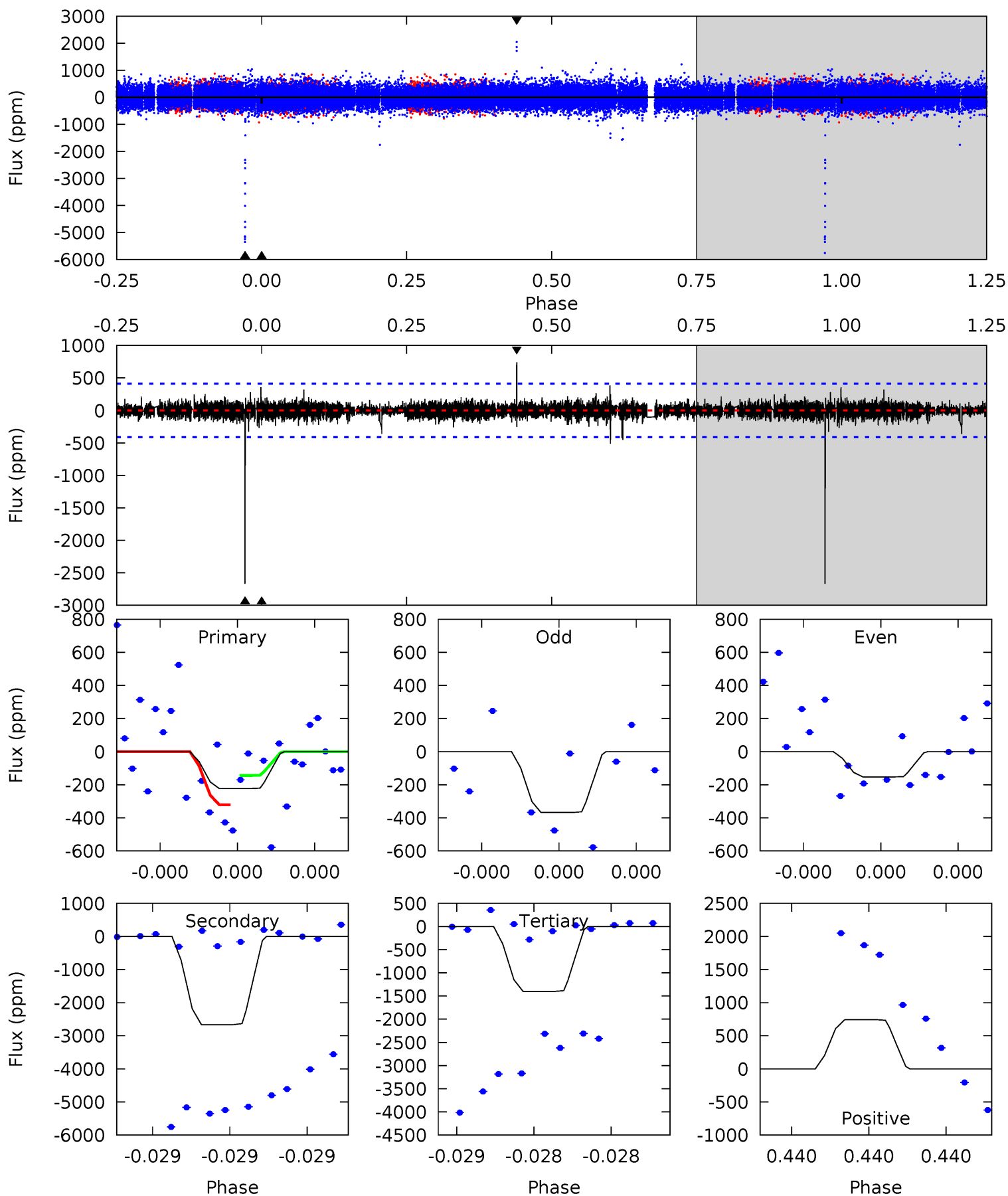
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

005456023-07, P = 651.510438 Days, E = 188.623895 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.16	37.7	19.8	10.5	5.82	3.85	0.95	-16.7	-7.34	17.9	27.2	1.50	0.62	0.22	1.21



Stellar Parameters For KIC 005456023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4916^{+122}_{-146}	$3.717^{+0.900}_{-0.300}$	$-0.080^{+0.300}_{-0.300}$	$2.182^{+1.179}_{-1.441}$	$0.905^{+0.232}_{-0.190}$	$0.123^{+3.024}_{-0.081}$
	+2%/-3%	+24%/-8%	+375%/-375%	+54%/-66%	+26%/-21%	+2465%/-66%
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 005456023-07 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$27.19^{+26.37}_{-17.29}$	365^{+55}_{-75}	-4067^{+11939}_{-5123}	$-7529.504^{+217187.237}_{-299532.857}$
Alt.	-2666 ± 71	$15.51^{+19.56}_{-11.02}$	365^{+53}_{-67}	4266^{+2919}_{-916}	$12479^{+135678}_{-9995}$

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 $A_{obs} \gg 1.0$

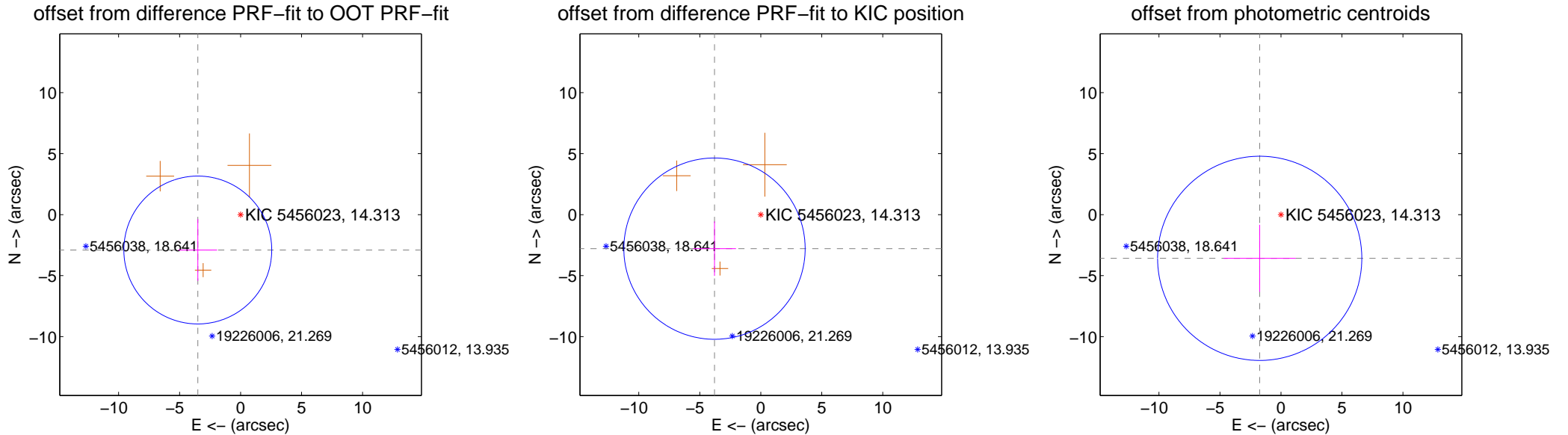
DV Centroid Data

Supplemental centroid analysis for 005456023-07. Kepler magnitude: 14.31. 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 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.551 ± 2.021	2.25	3.508 ± 1.581	-2.900 ± 2.530
PRF-fit source offset from KIC position	4.707 ± 2.477	1.90	3.793 ± 1.762	-2.788 ± 2.231
photometric centroid source offset	3.98 ± 2.79	1.43	1.74 ± 2.95	-3.58 ± 2.75



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.

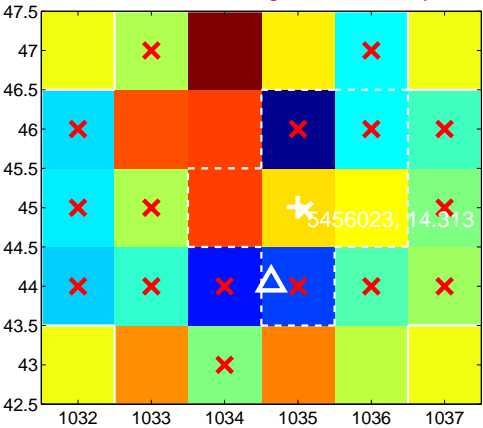
Q1 no difference image



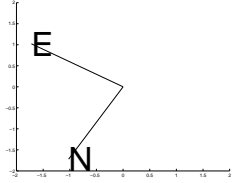
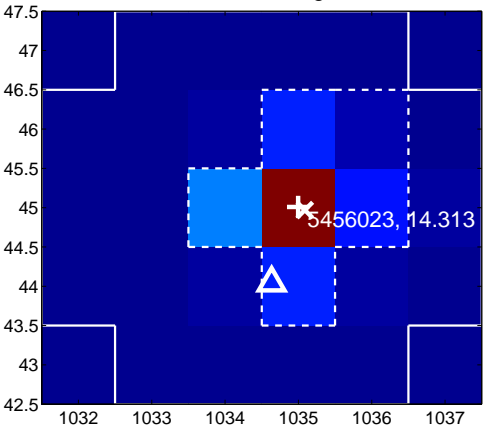
Q1 no OOT image



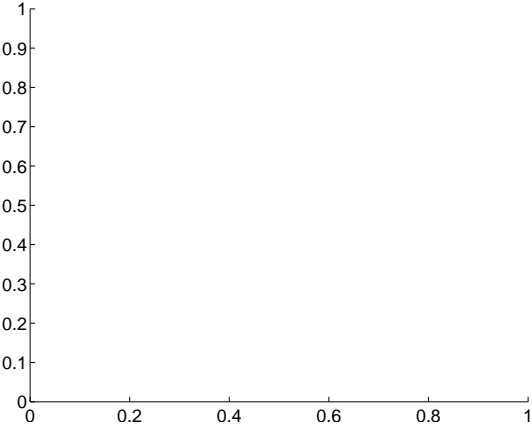
Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



Q3 no OOT image



Q4 no difference image



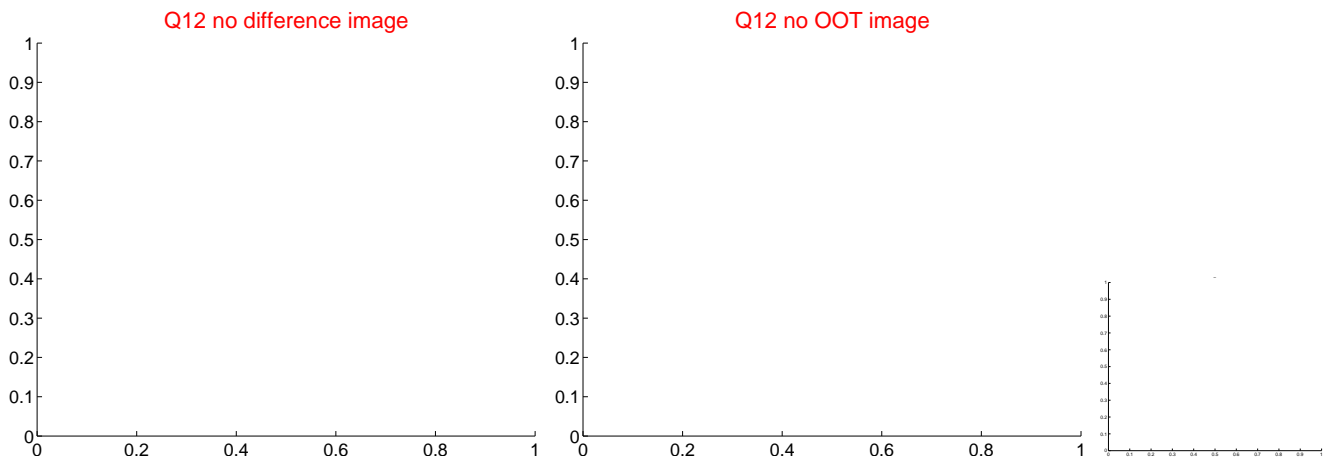
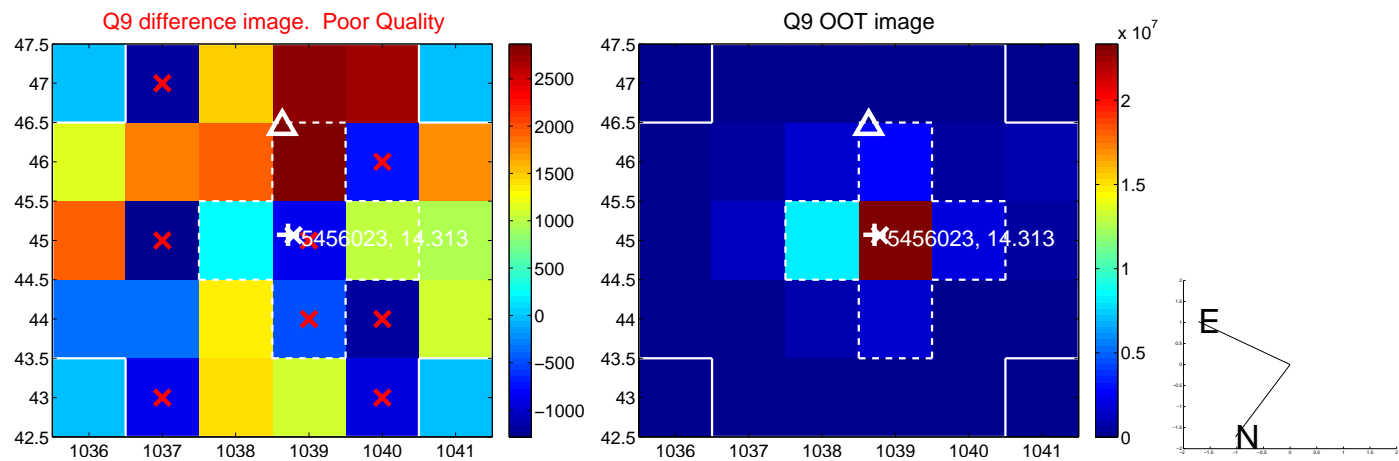
Q4 no OOT image



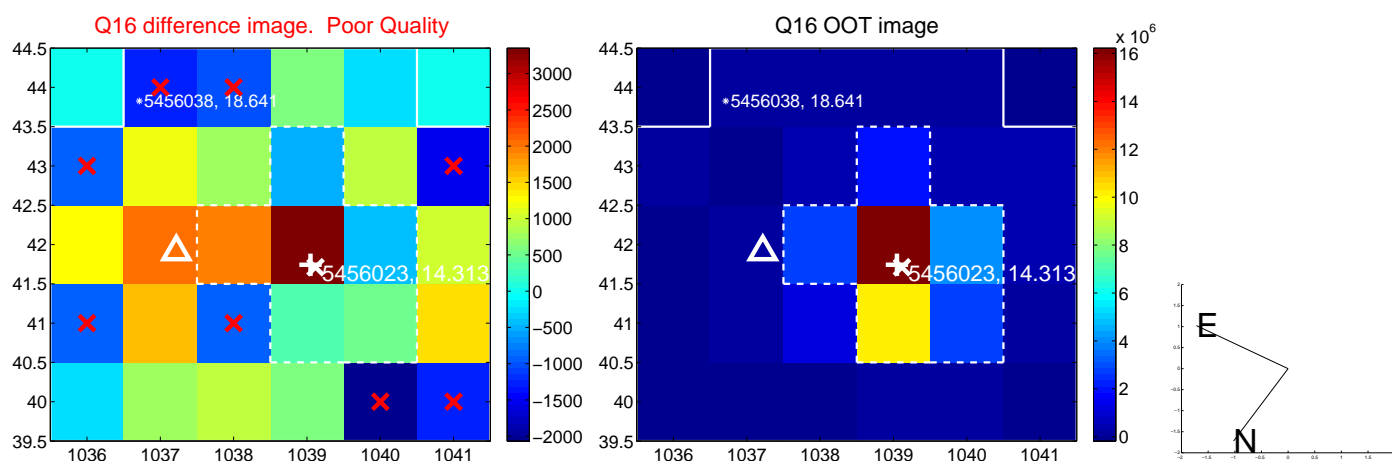
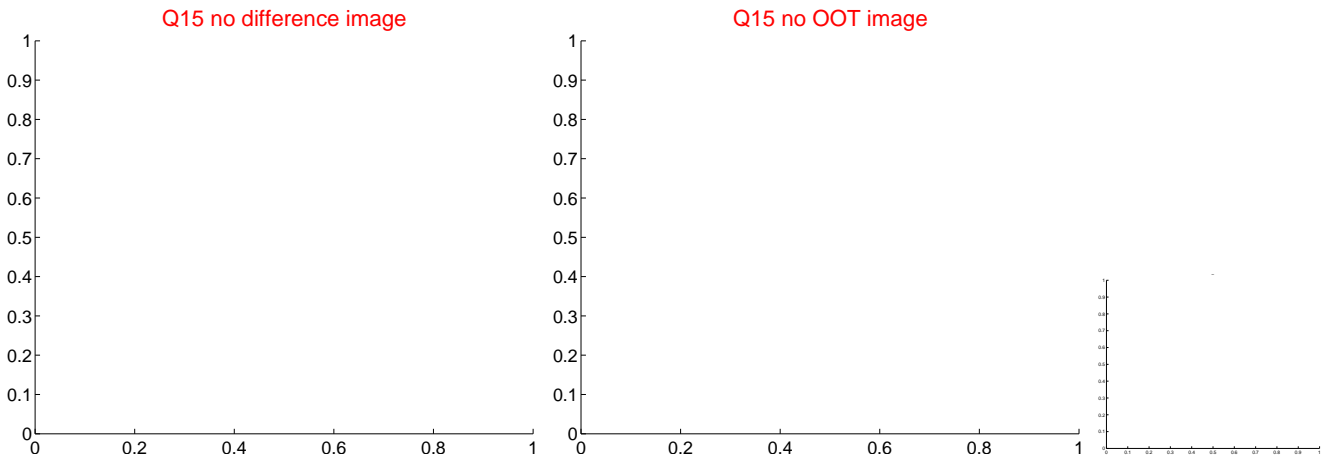
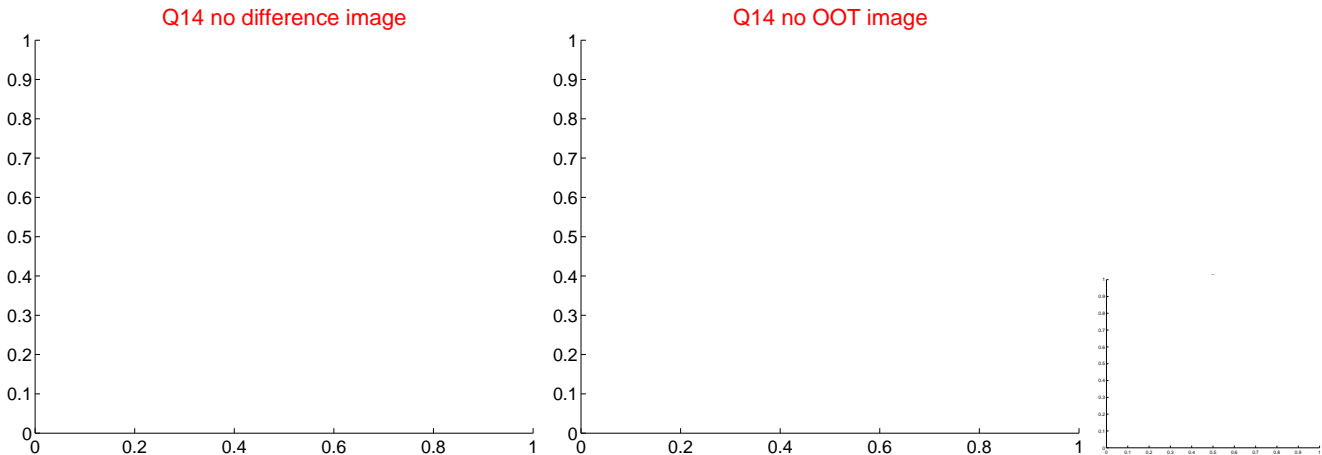
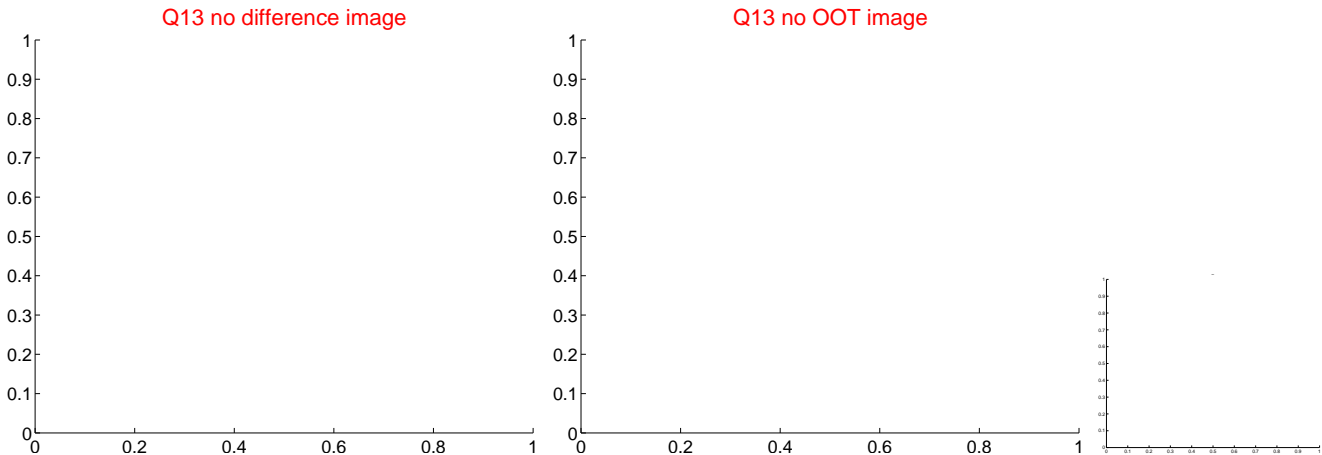
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



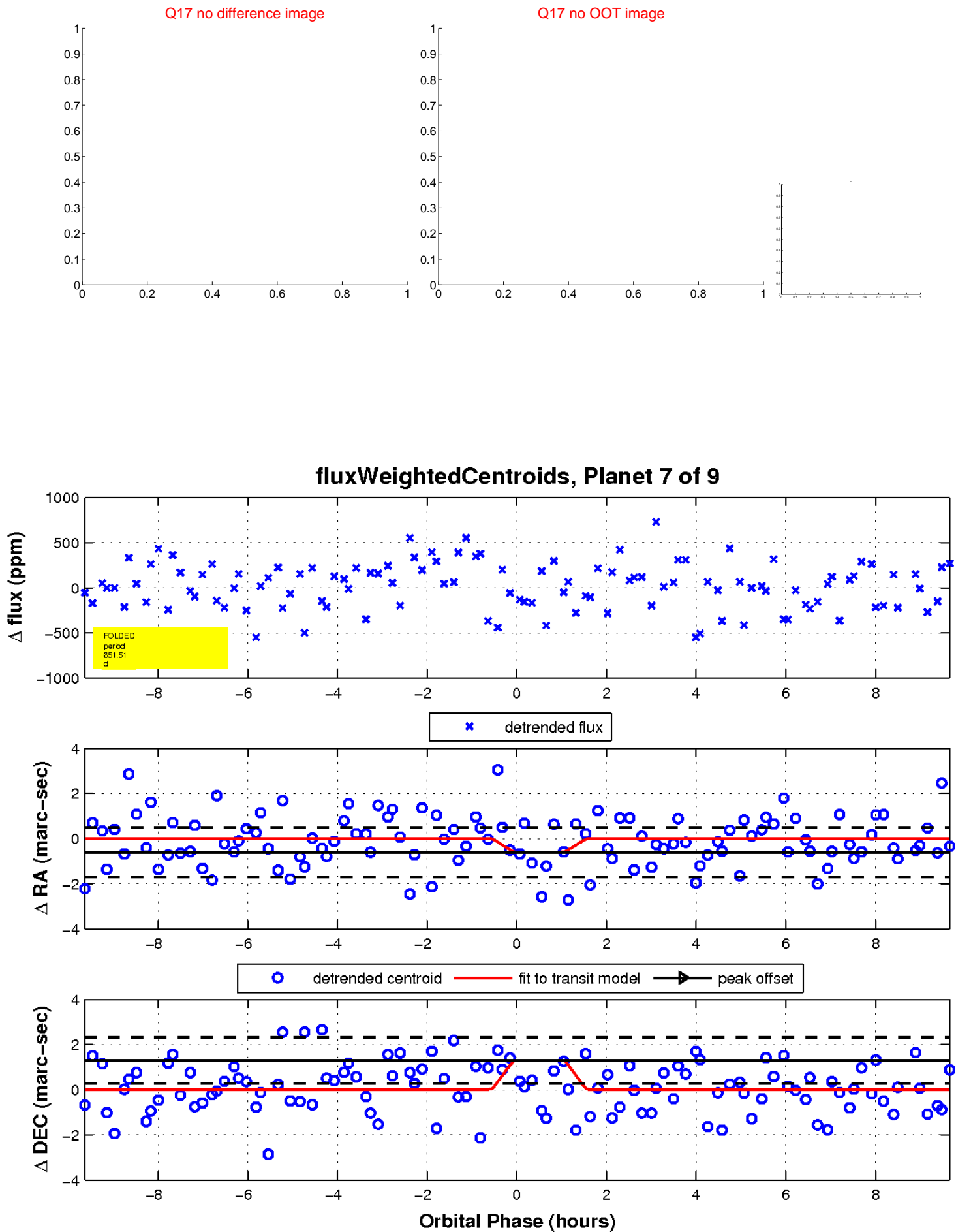
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

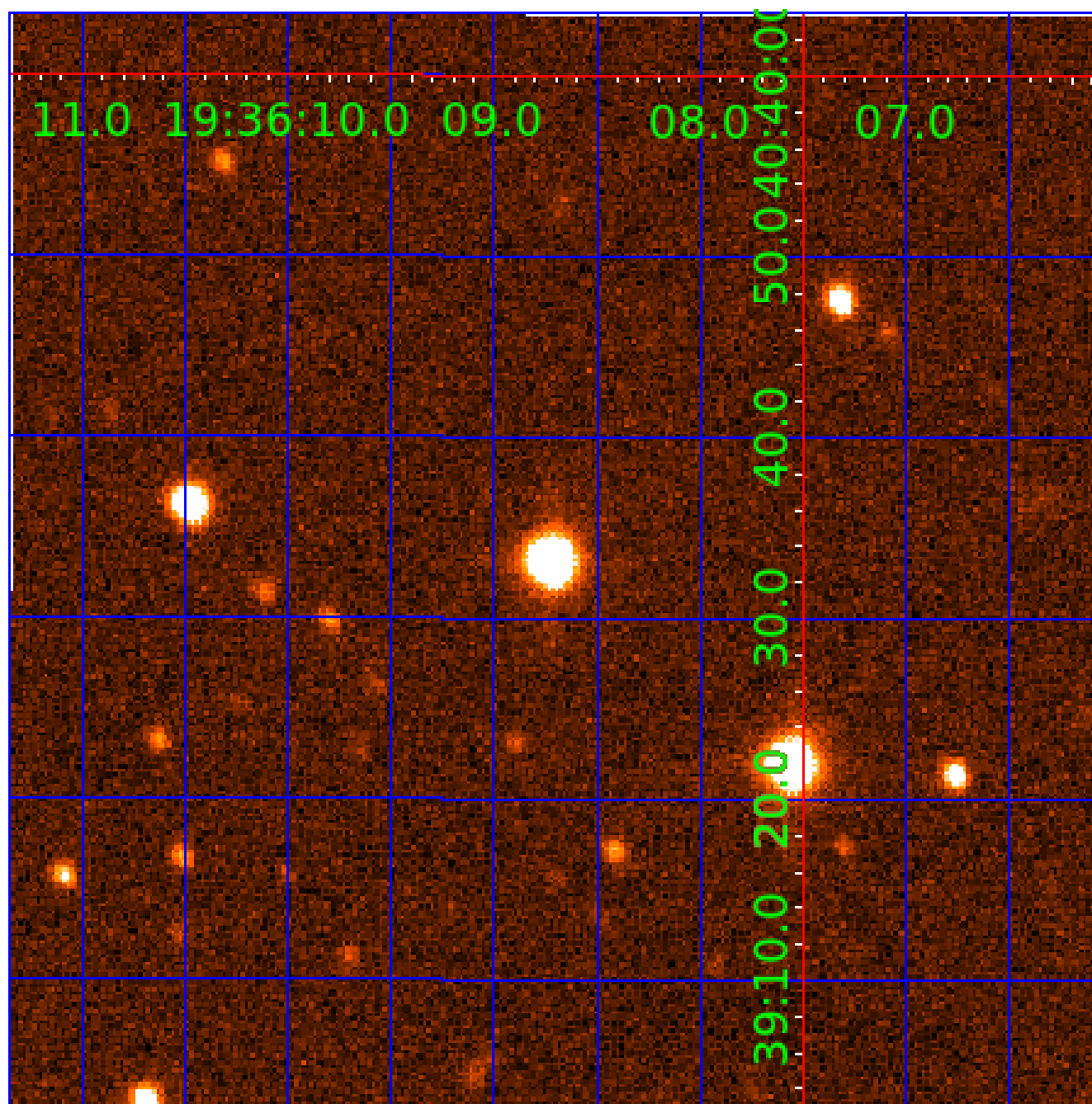


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



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})
005456023-01	OBS	3521.01	131.978586	179.584349	345710.4	3.500	4448.3	-1.0	2.18	4916	98.42	10.34
005456023-02	OBS	No	131.978206	243.181247	22096.5	9.848	723.9	697.0	2.18	4916	53.07	10.34
005456023-03	OBS	No	532.198881	175.068533	16423.6	15.000	258.7	-1.0	2.18	4916	27.06	1.61
005456023-05	OBS	No	269.831971	294.182565	16423.6	15.000	203.0	-1.0	2.18	4916	27.06	3.98
005456023-06	OBS	No	651.523423	189.132663	66.1	0.702	256.8	0.4	2.18	4916	2.18	1.23
005456023-07	OBS	No	651.510438	188.214123	16422.9	15.000	257.4	-1.0	2.18	4916	27.06	1.23
005456023-08	OBS	No	264.588640	178.801063	2785.6	3.500	25.8	-1.0	2.18	4916	11.15	4.09
005456023-09	OBS	No	306.667400	313.444601	1448.1	3.500	13.4	-1.0	2.18	4916	8.04	3.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005456023-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
005456023-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005456023-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005456023-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005456023-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005456023-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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.

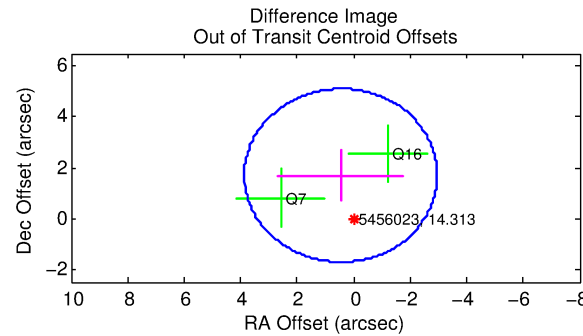
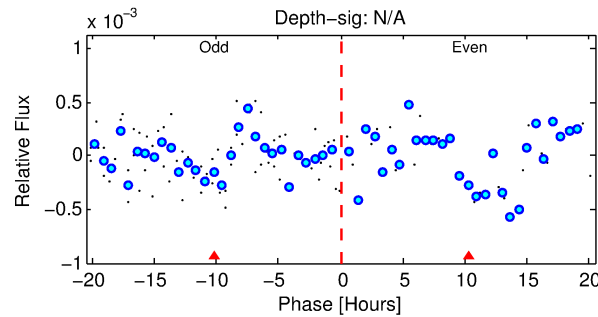
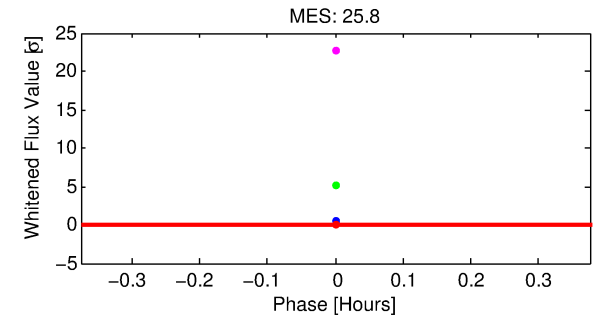
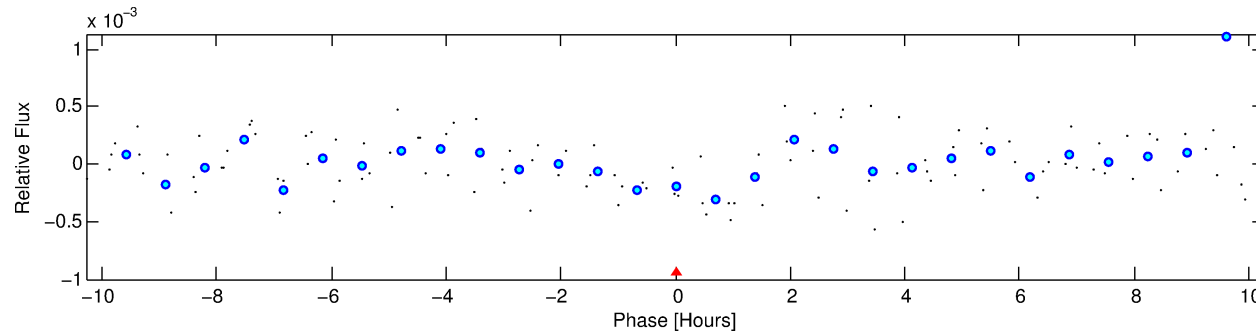
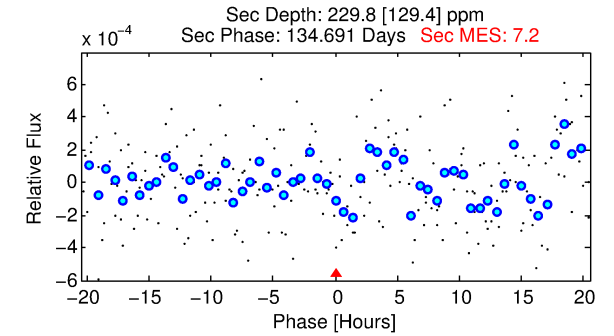
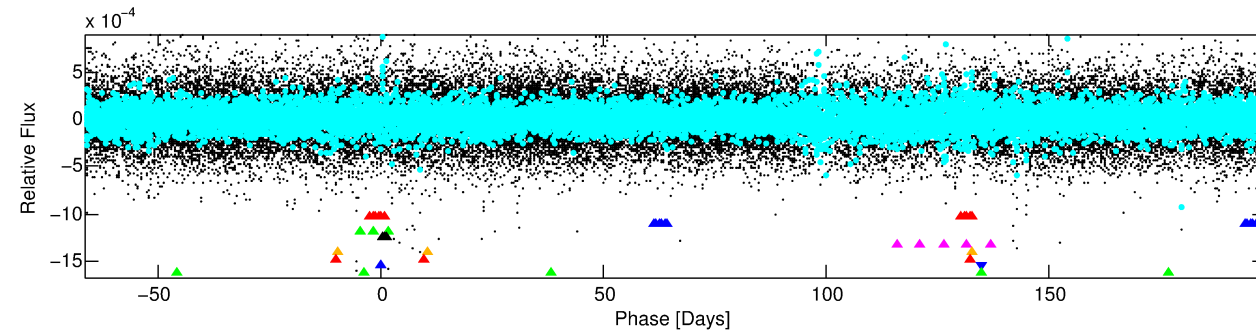
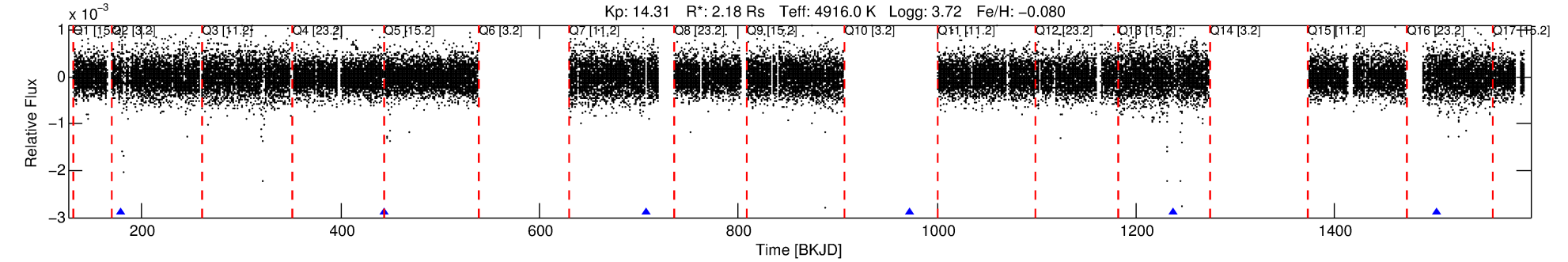
Ephemeris Match Information For 005456023-08

No Significant Match Found

DV One-Page Summary

KIC: 5456023 Candidate: 8 of 9 Period: 264.589 d
KOI: K03521 Corr: No Ephemeris Match

Kp: 14.31 R*: 2.18 Rs Teff: 4916.0 K Logg: 3.72 Fe/H: -0.080



TPS TCE Results:

Period = 264.58864 d
Epoch = 178.8011 BKJD

DV fit results are unavailable

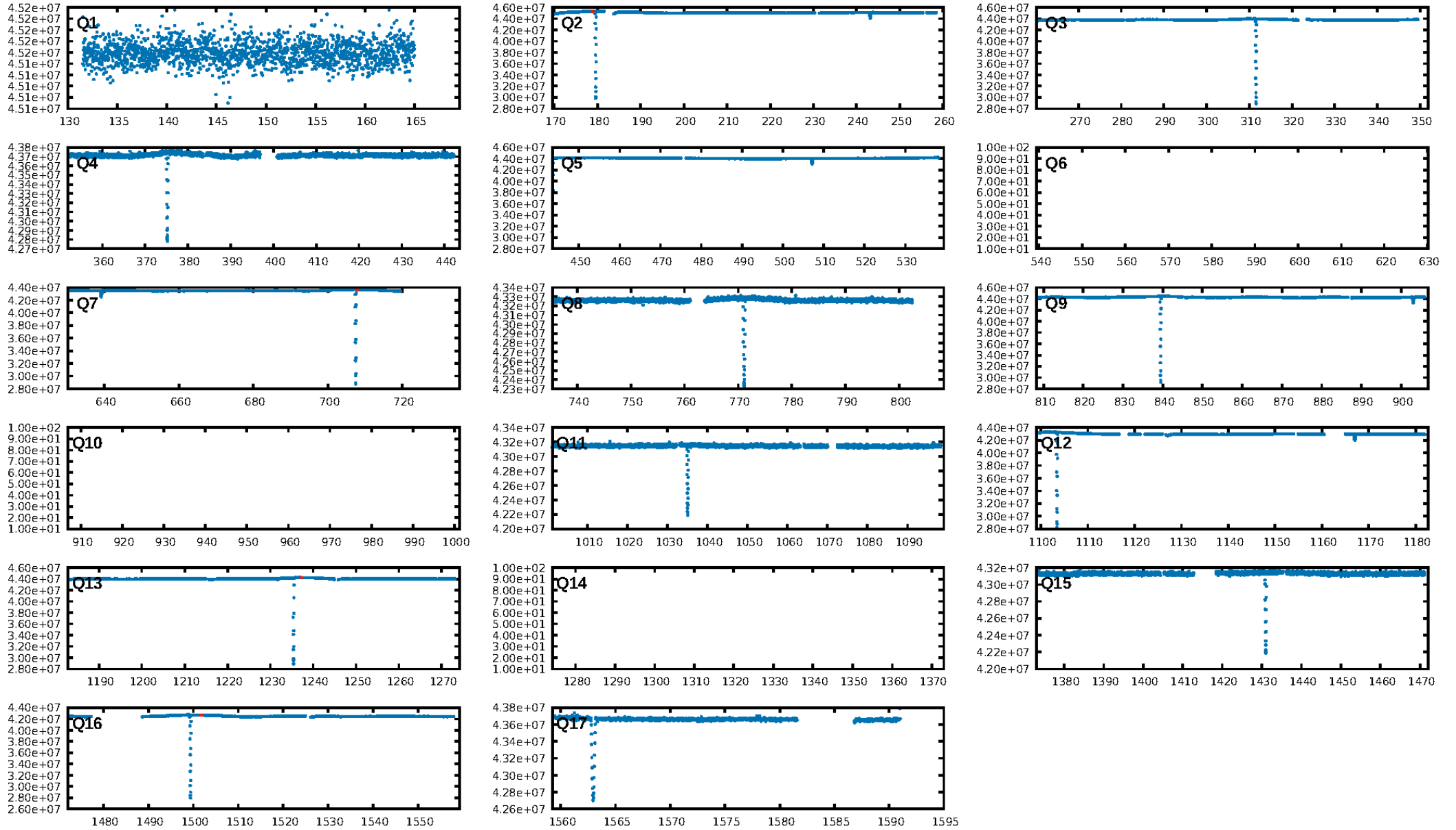
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [642.99σ]
LongPeriod-sig: 100.0% [8.17σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -0.2011
Centroid-sig: 47.0%
Centroid-so: 4.853 arcsec [0.83σ]
OotOffset-rm: 1.759 arcsec [1.54σ]
KicOffset-rm: 1.890 arcsec [1.44σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 0.00 [0/2]
DiffImageOverlap-fno: 0.75 [3/4]

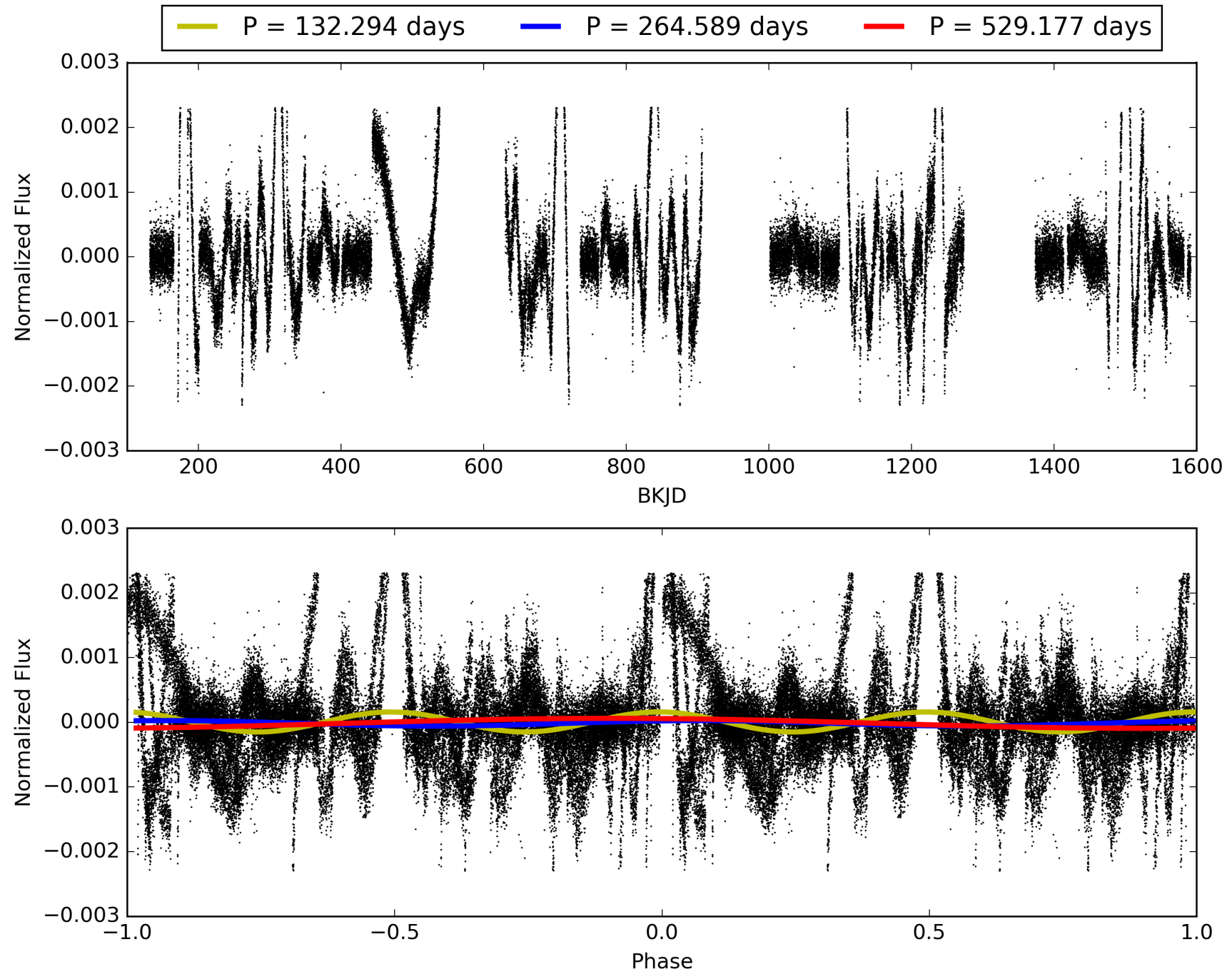
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:29:11 Z

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

TCE 005456023-08, PDC Light Curves

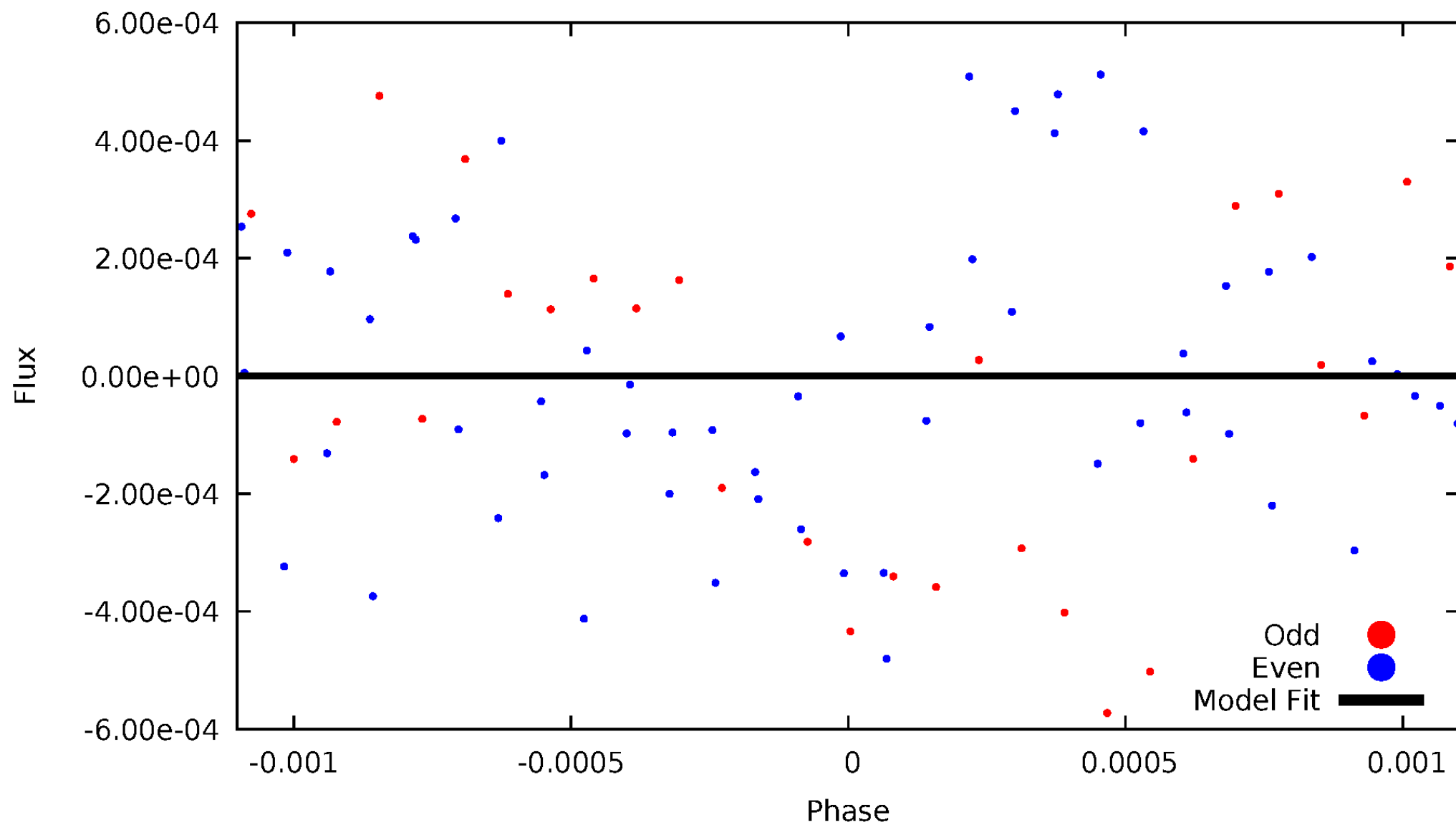


TCE 005456023-08



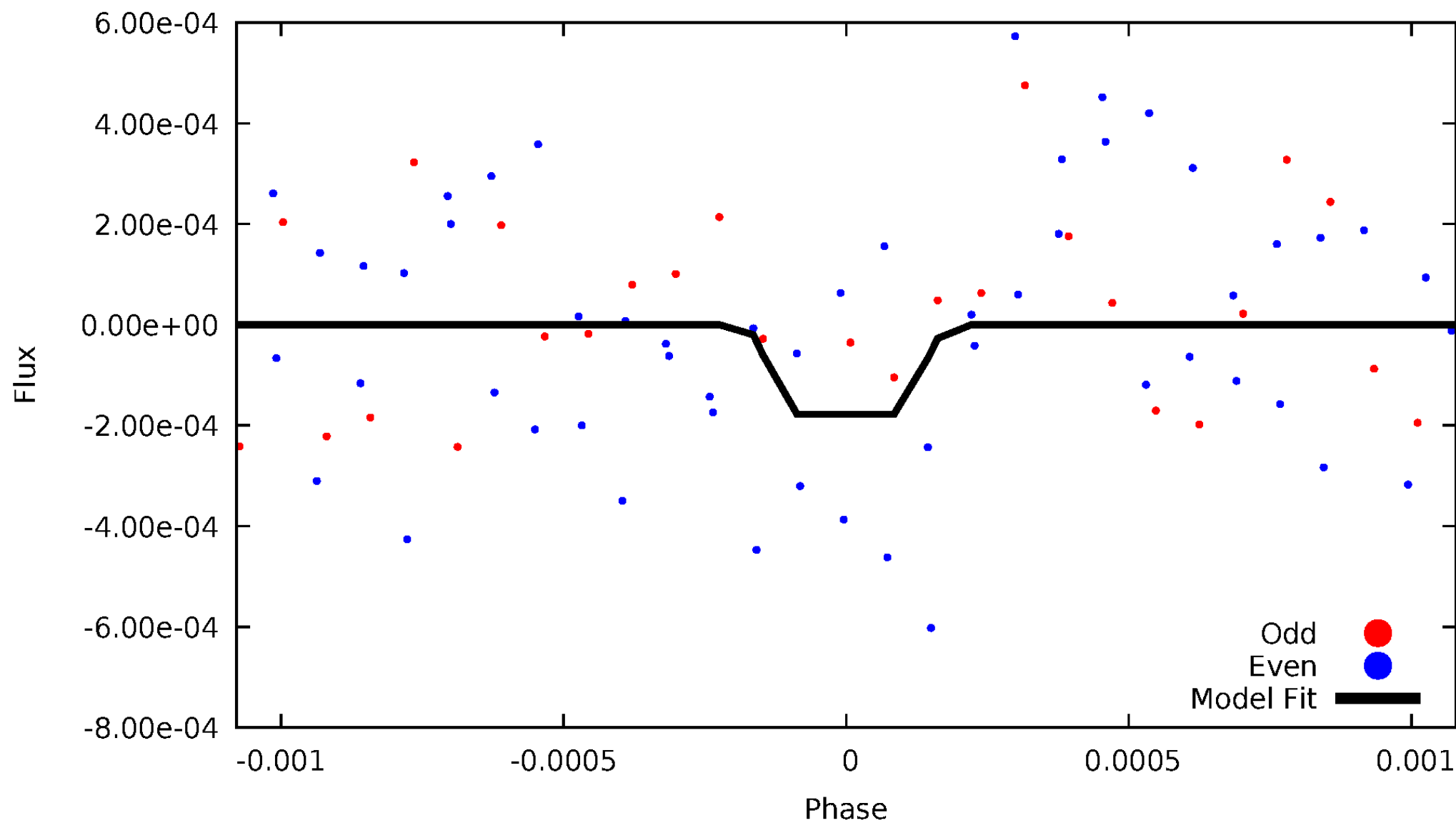
DV Odd/Even

TCE 005456023-08



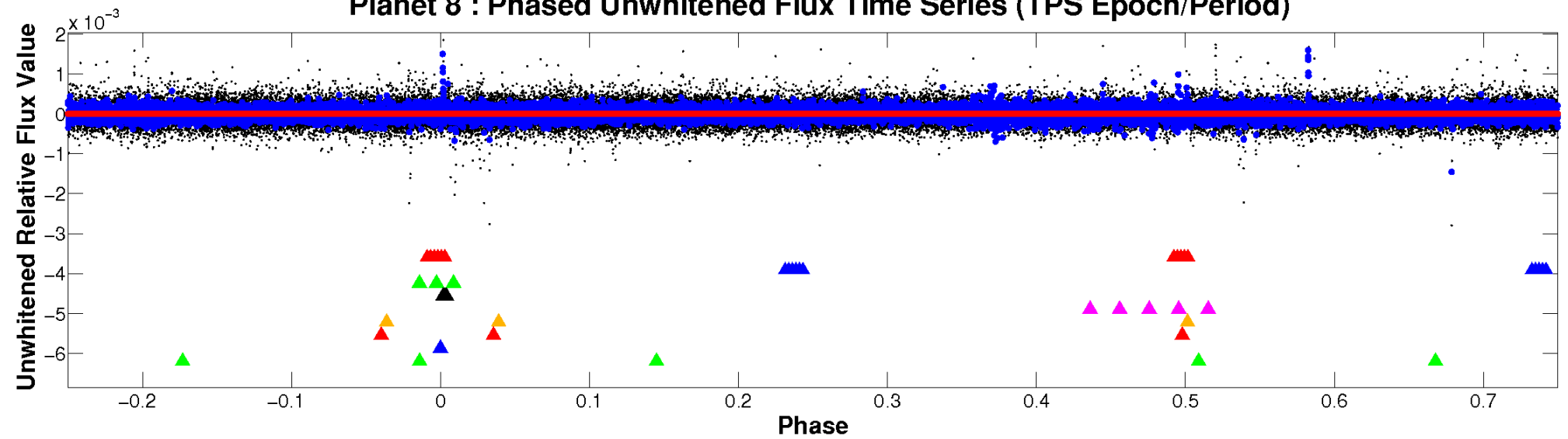
ALT Odd/Even

TCE 005456023-08



Non-Whitened Vs. Whitened Light Curve

Planet 8 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

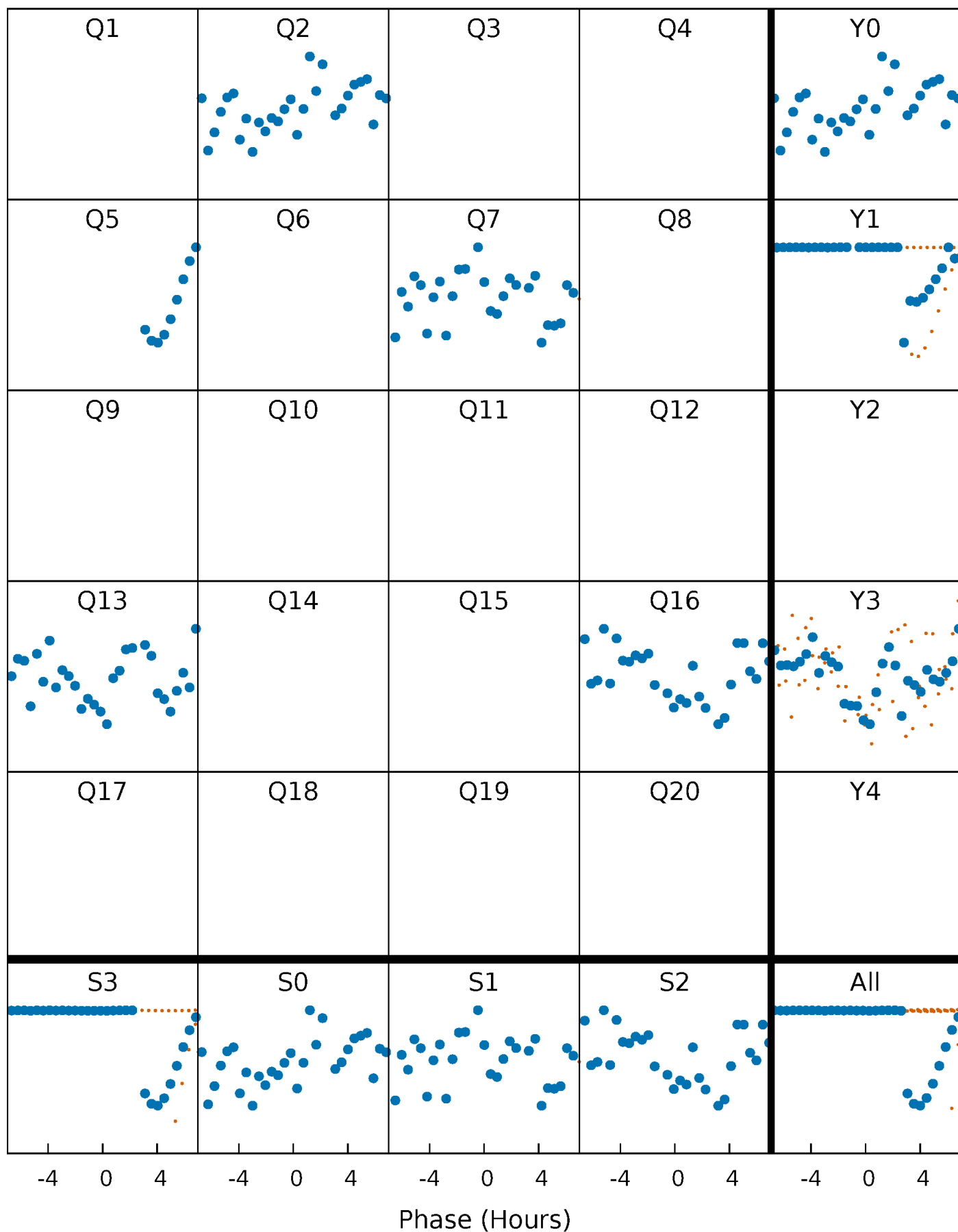


Planet 8 : Phased Whitened Flux Time Series (TPS Epoch/Period)



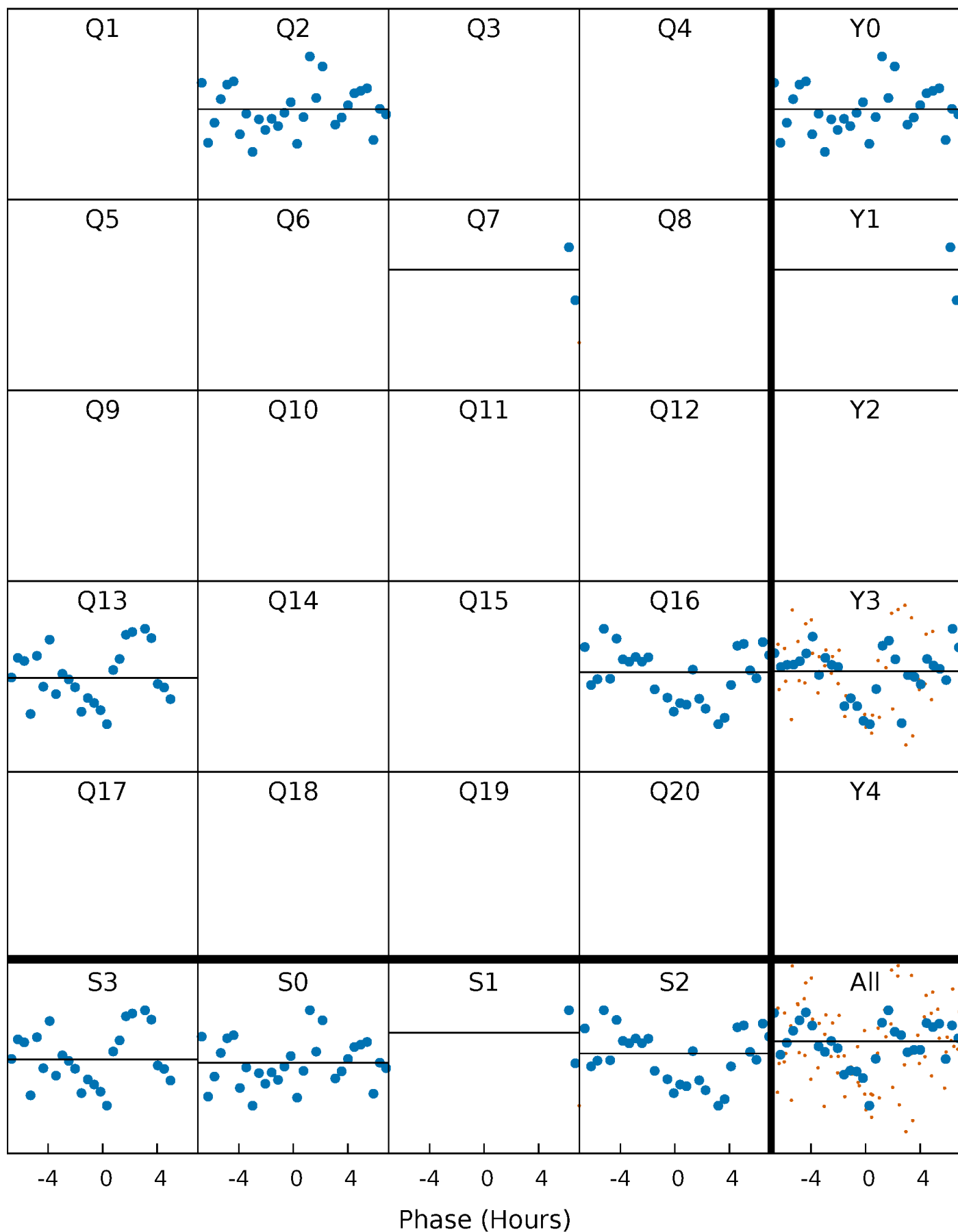
PDC Quarter-Phased Transit Curves

TCE 005456023-08 P=264.588640 Days $T_0=178.801063$ (BKJD)



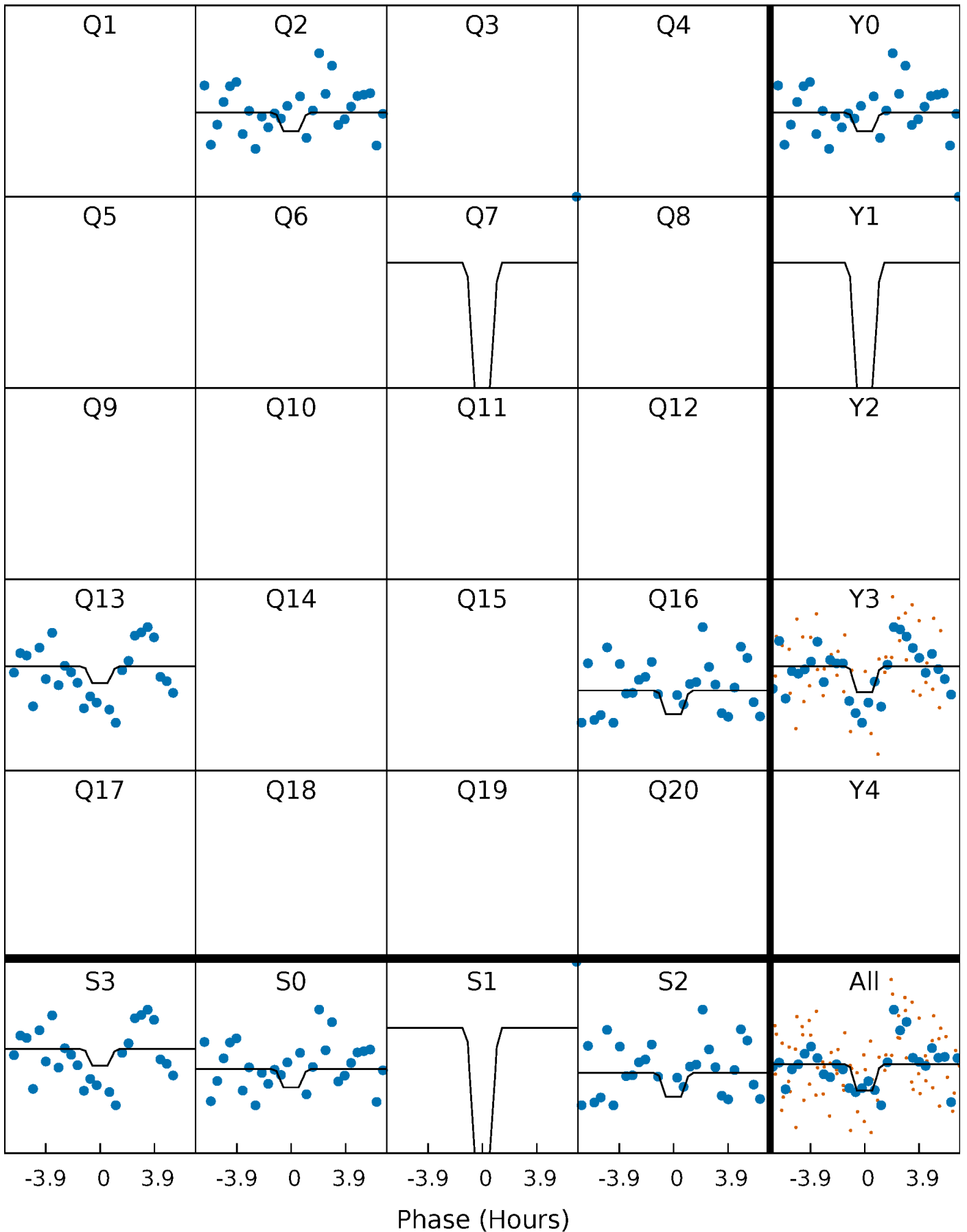
DV Quarter-Phased Transit Curves

TCE 005456023-08 $P=264.588640$ Days $T_0=178.801063$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

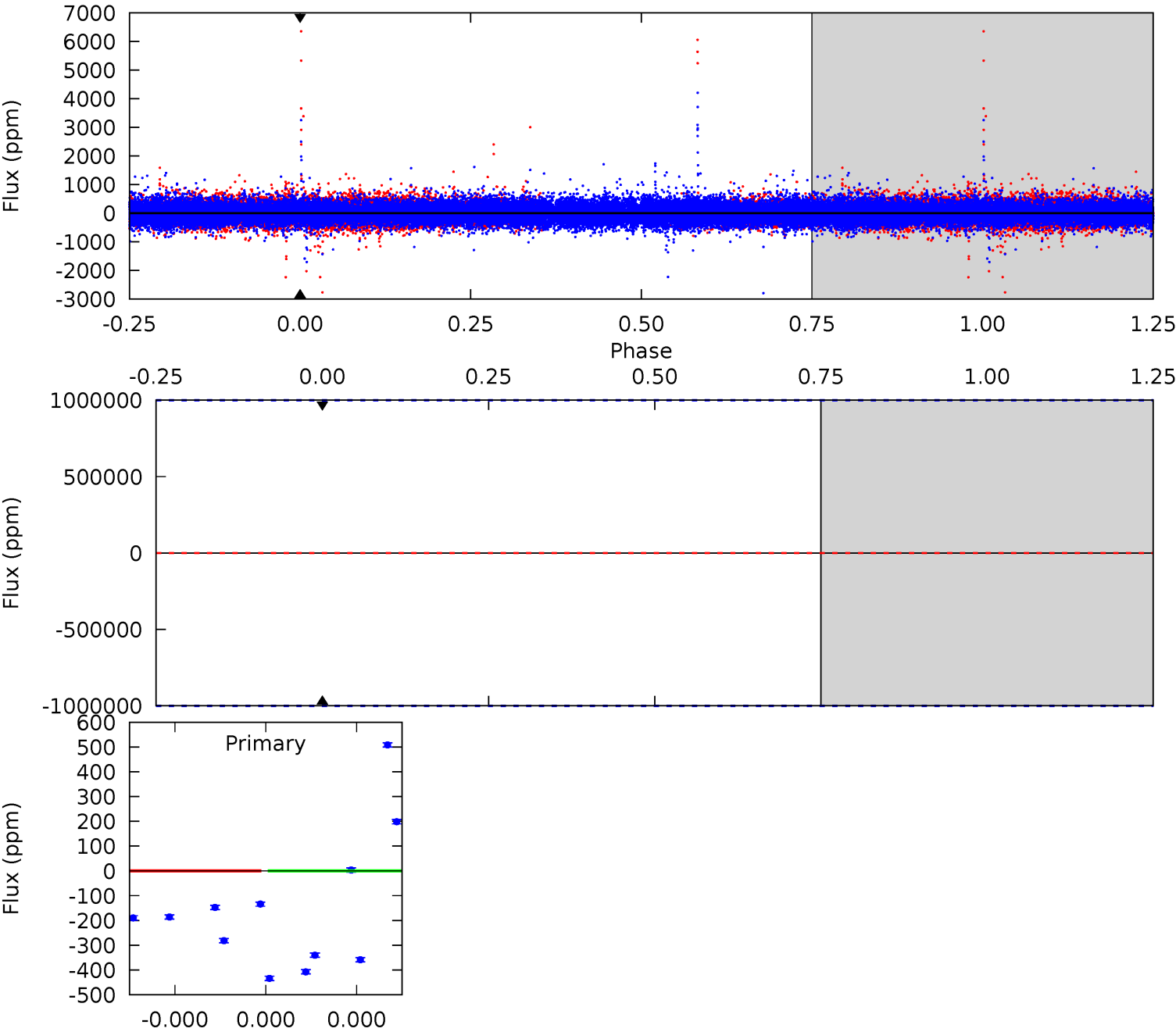
TCE 005456023-08 $P=264.588640$ Days $T_0=178.779704$ (BKJD)



DV Model-Shift Uniqueness Test

005456023-08, P = 264.588640 Days, E = 178.801063 Days

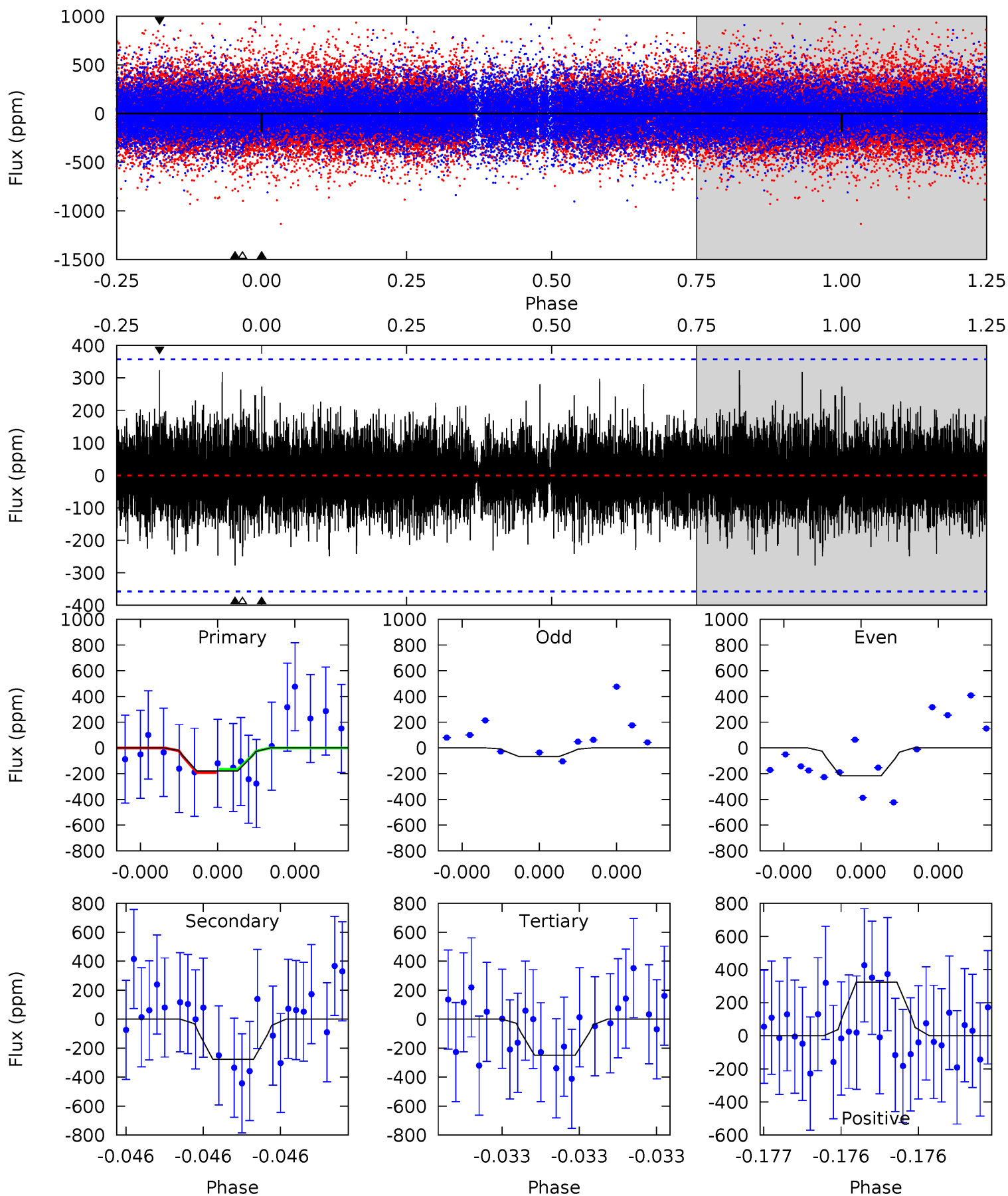
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

005456023-08, P = 264.588640 Days, E = 178.779704 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.83	4.38	3.93	5.12	5.65	3.59	1.06	-1.10	-2.29	0.46	-0.73	1.05	2.52	0.54	0.18



Stellar Parameters For KIC 005456023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4916^{+122}_{-146}	$3.717^{+0.900}_{-0.300}$	$-0.080^{+0.300}_{-0.300}$	$2.182^{+1.179}_{-1.441}$	$0.905^{+0.232}_{-0.190}$	$0.123^{+3.024}_{-0.081}$
	+2%/-3%	+24%/-8%	+375%/-375%	+54%/-66%	+26%/-21%	+2465%/-66%
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 005456023-08 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$17.48^{+21.54}_{-11.90}$	489^{+69}_{-90}	4407^{+10248}_{-15054}	$4208^{+264385}_{-144405}$
Alt.	-277 ± 63	$14.42^{+19.83}_{-10.36}$	495^{+74}_{-98}	3050^{+1458}_{-572}	477^{+5221}_{-399}

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

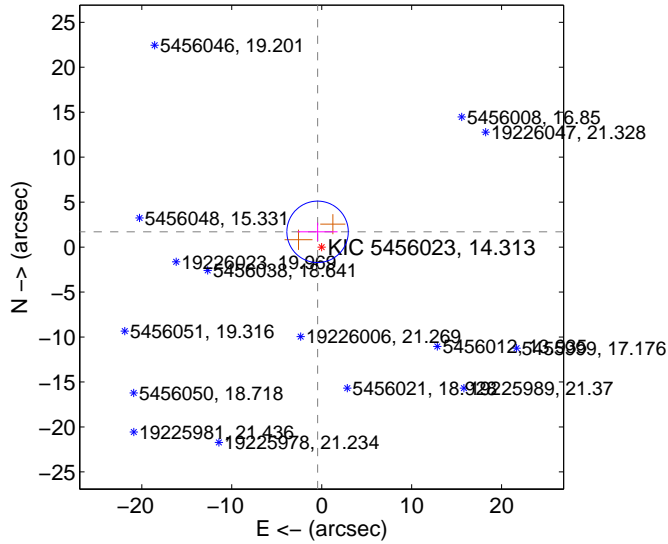
Supplemental centroid analysis for 005456023-08. Kepler magnitude: 14.31. Transit SNR -1.00

There are 0 quarters with good PRF difference image offsets

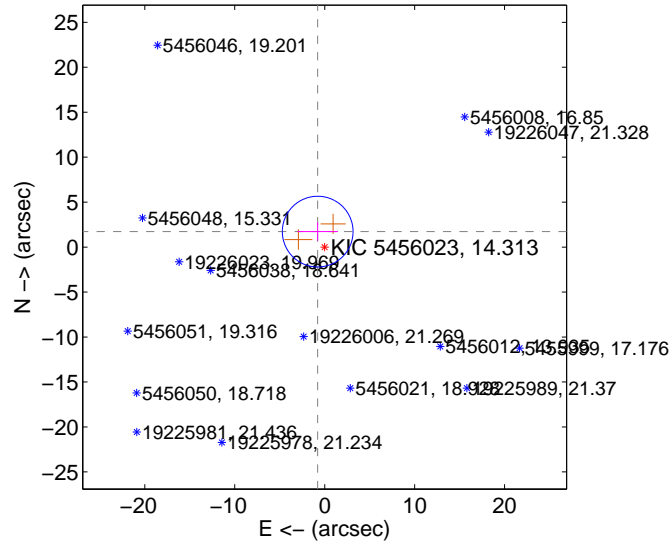
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.759 ± 1.139	1.54	0.459 ± 2.219	1.698 ± 1.016
PRF-fit source offset from KIC position	1.890 ± 1.311	1.44	0.778 ± 2.244	1.723 ± 1.021
photometric centroid source offset	4.85 ± 5.86	0.83	4.70 ± 5.87	1.22 ± 5.69

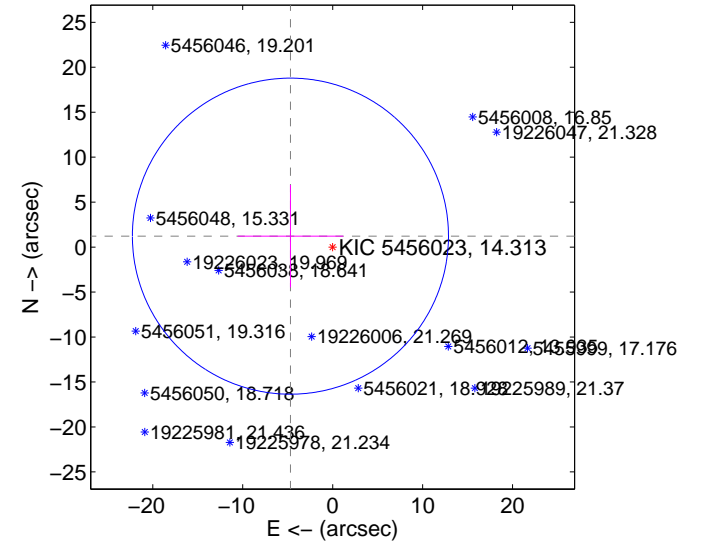
offset from difference PRF-fit to OOT PRF-fit



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.

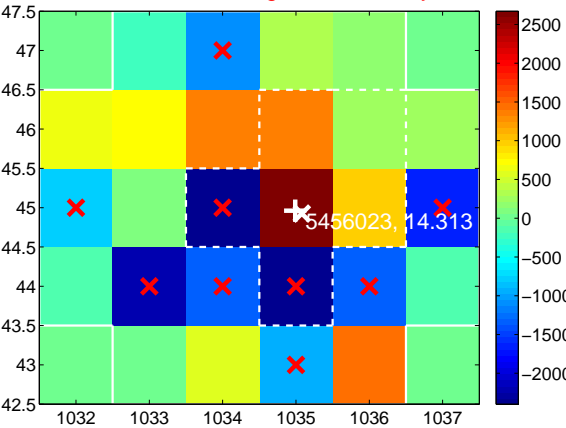
Q1 no difference image



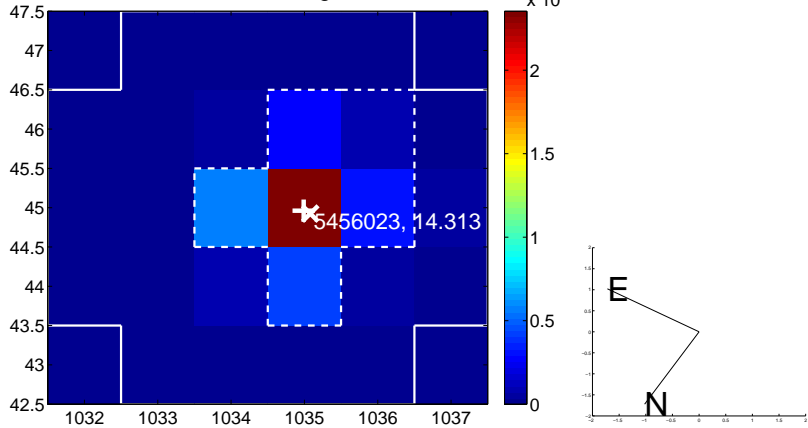
Q1 no OOT image



Q2 difference image. Poor Quality



Q2 OOT image



Q3 no difference image



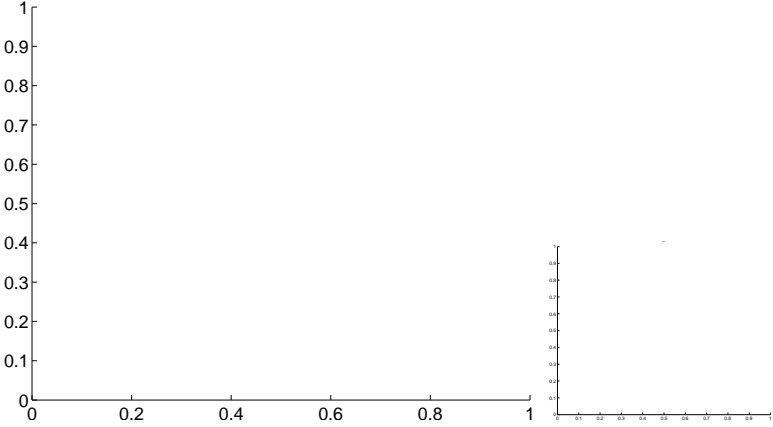
Q3 no OOT image



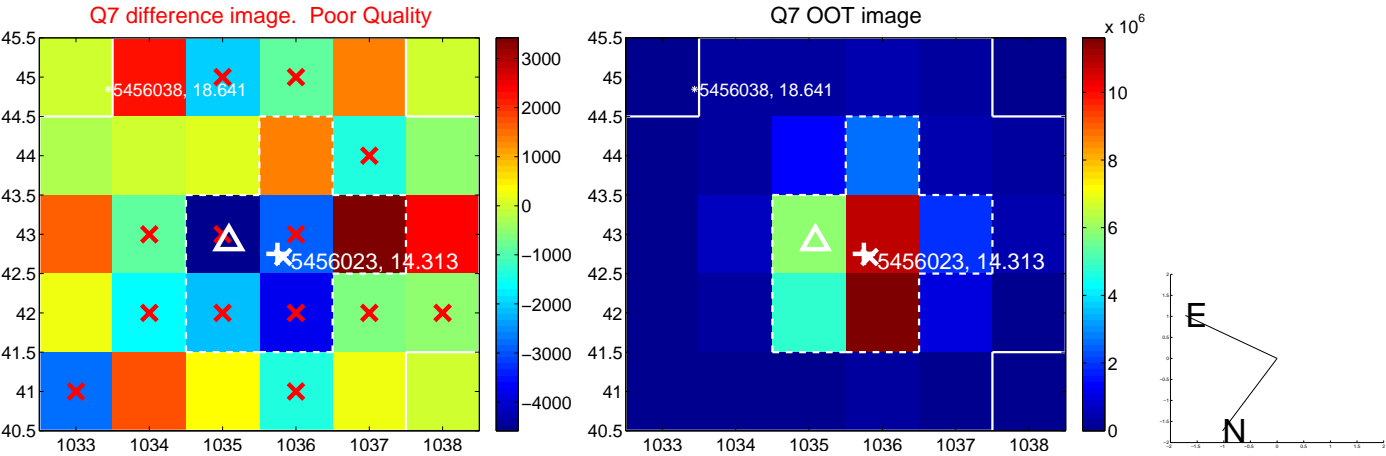
Q4 no difference image



Q4 no OOT image



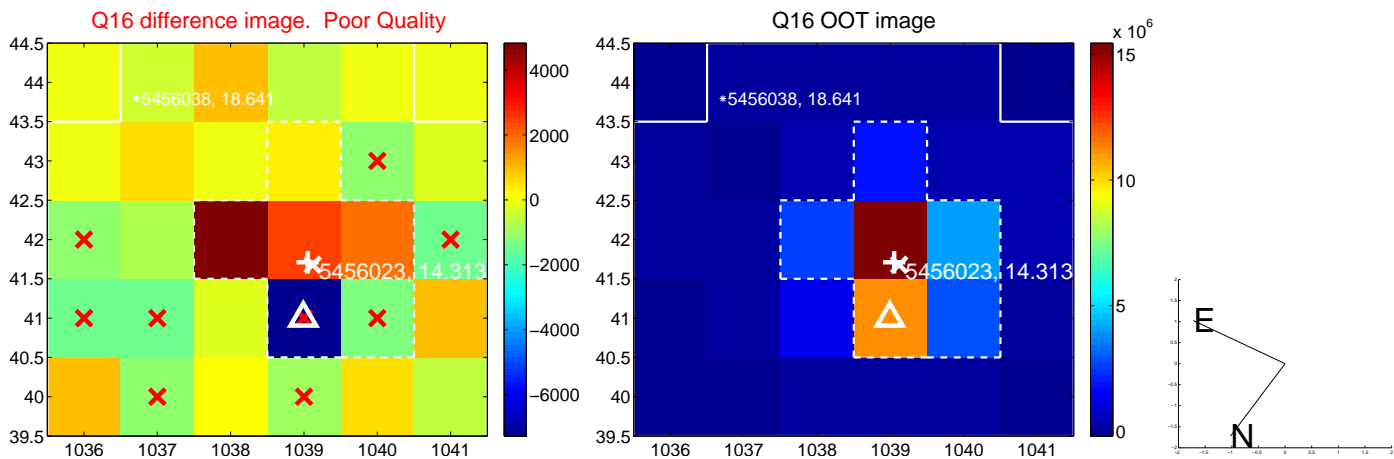
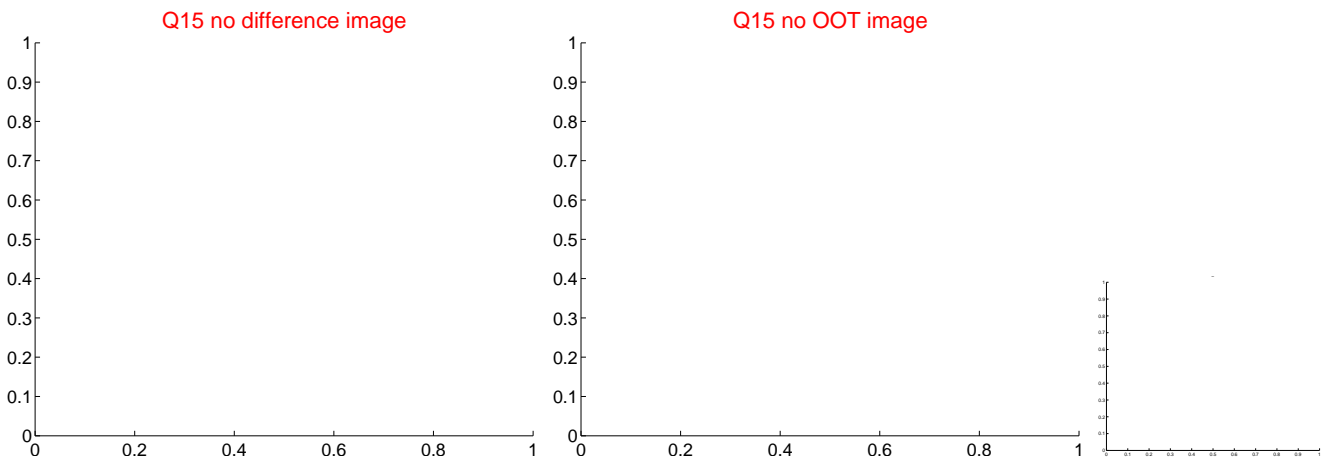
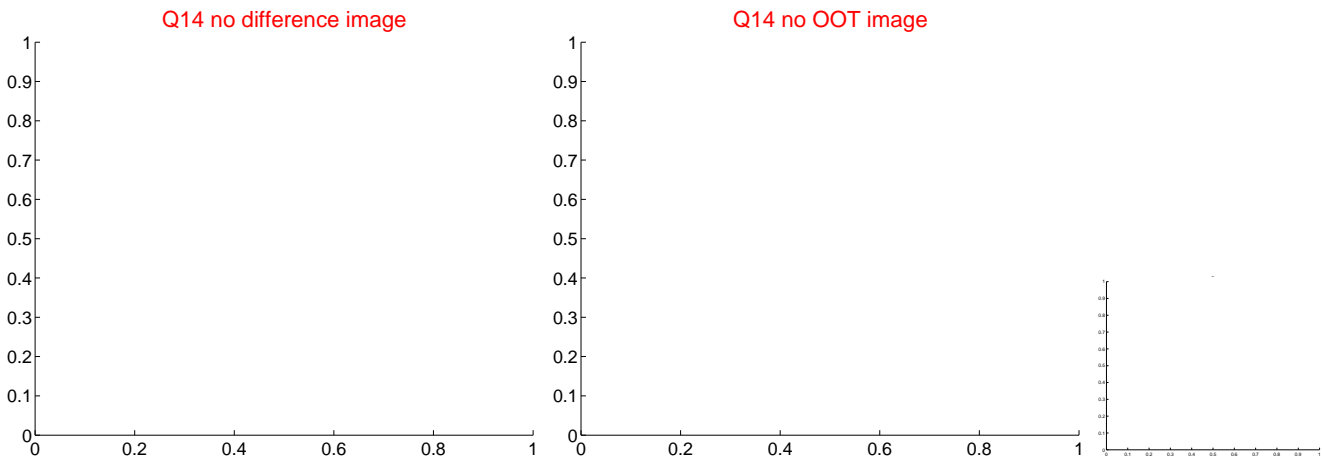
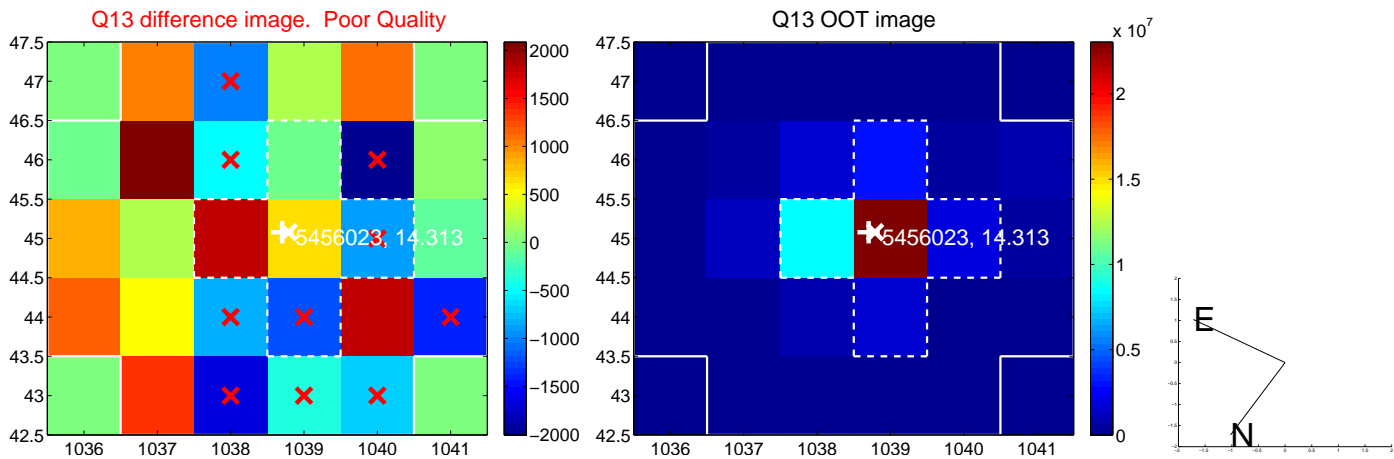
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



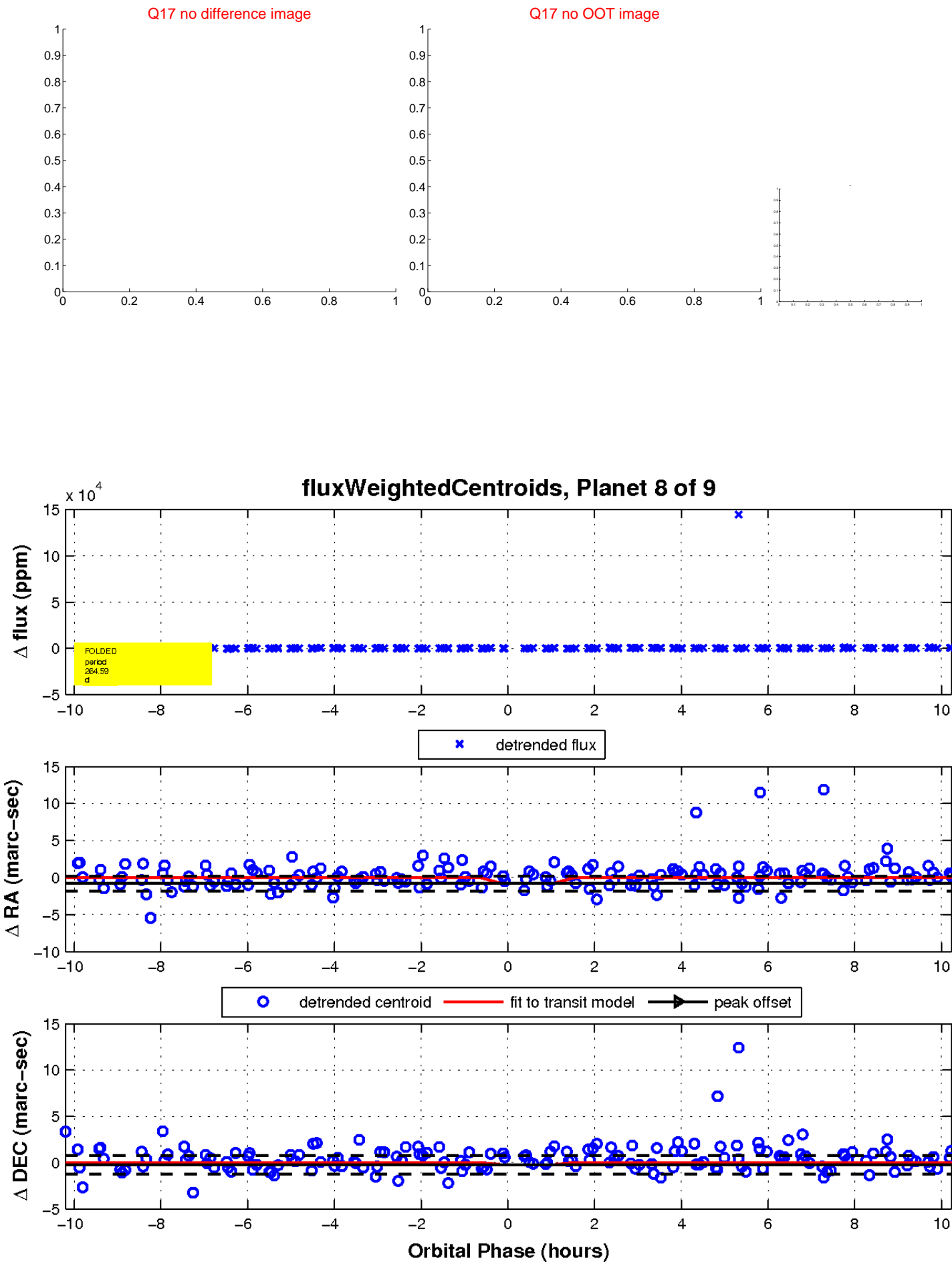
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

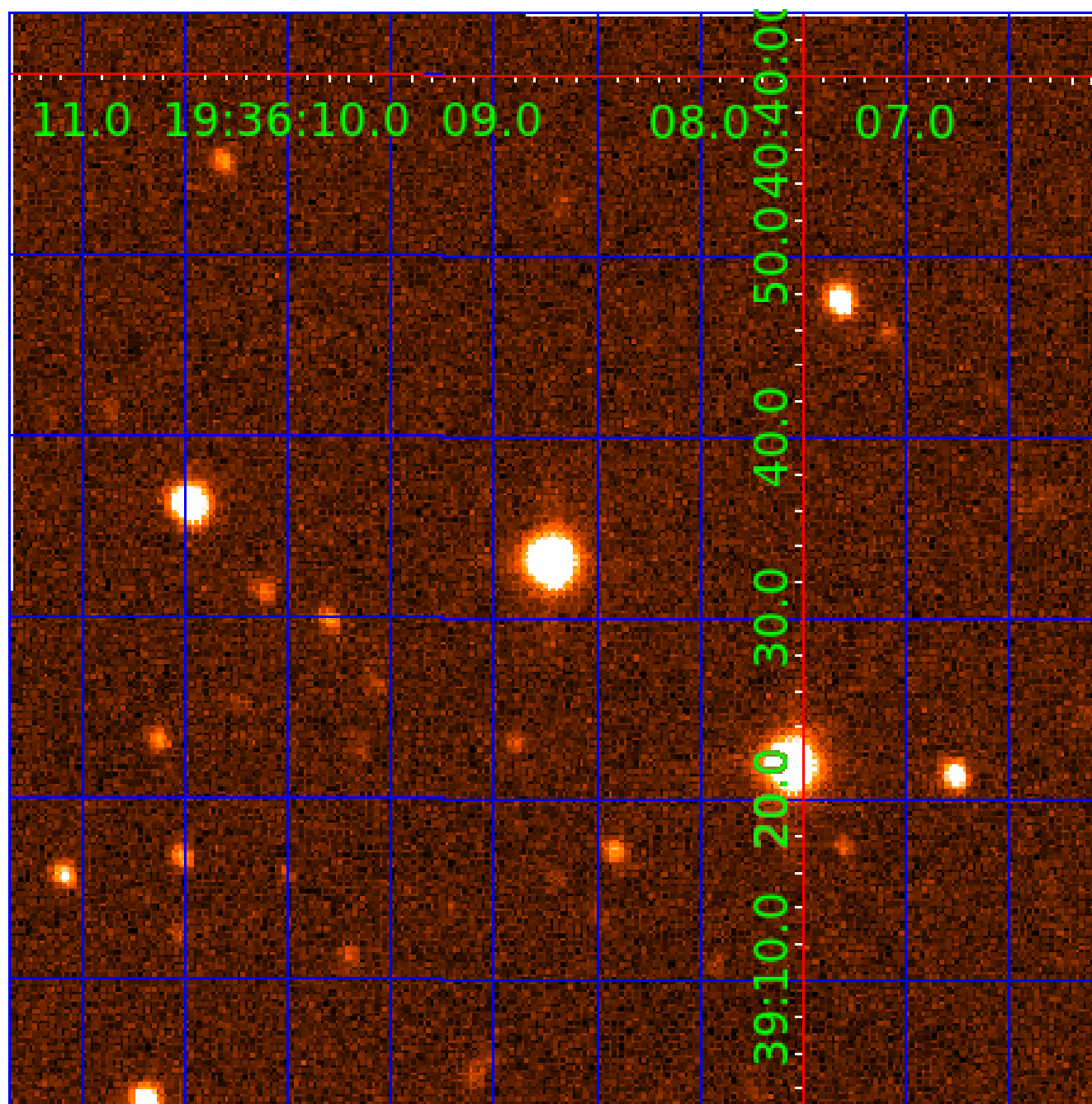


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005456023

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})
005456023-01	OBS	3521.01	131.978586	179.584349	345710.4	3.500	4448.3	-1.0	2.18	4916	98.42	10.34
005456023-02	OBS	No	131.978206	243.181247	22096.5	9.848	723.9	697.0	2.18	4916	53.07	10.34
005456023-03	OBS	No	532.198881	175.068533	16423.6	15.000	258.7	-1.0	2.18	4916	27.06	1.61
005456023-05	OBS	No	269.831971	294.182565	16423.6	15.000	203.0	-1.0	2.18	4916	27.06	3.98
005456023-06	OBS	No	651.523423	189.132663	66.1	0.702	256.8	0.4	2.18	4916	2.18	1.23
005456023-07	OBS	No	651.510438	188.214123	16422.9	15.000	257.4	-1.0	2.18	4916	27.06	1.23
005456023-08	OBS	No	264.588640	178.801063	2785.6	3.500	25.8	-1.0	2.18	4916	11.15	4.09
005456023-09	OBS	No	306.667400	313.444601	1448.1	3.500	13.4	-1.0	2.18	4916	8.04	3.36

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005456023-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_ALT—HAS_SEC_TCE—CENT_NOFITS
005456023-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE
005456023-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
005456023-05	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
005456023-07	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_SKYE—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—SAME_NTL_PERIOD—CENT_NOFITS
005456023-08	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS—HALO_GHOST
005456023-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS

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 005456023-09

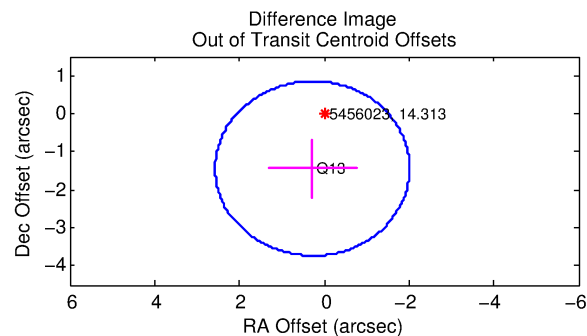
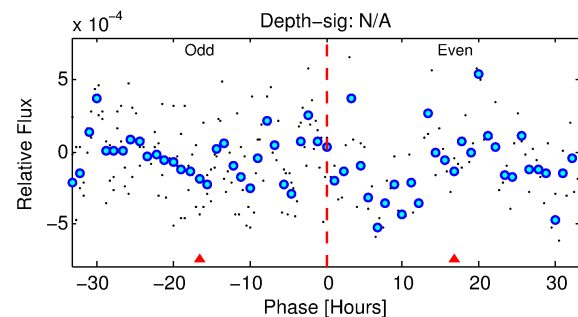
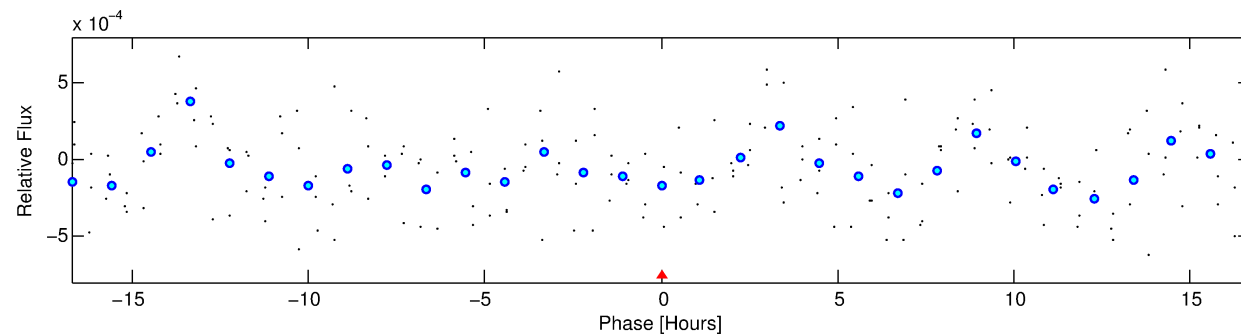
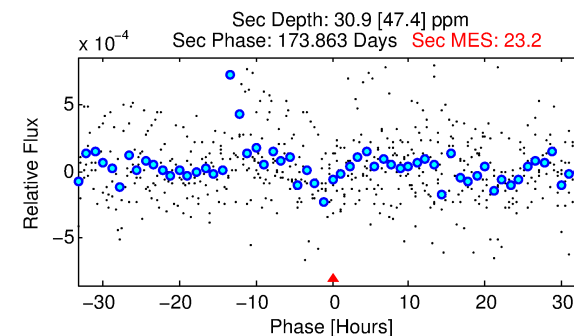
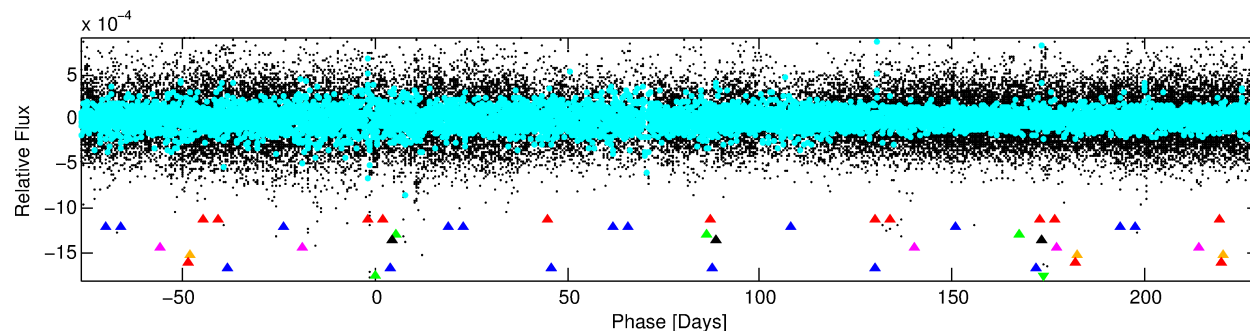
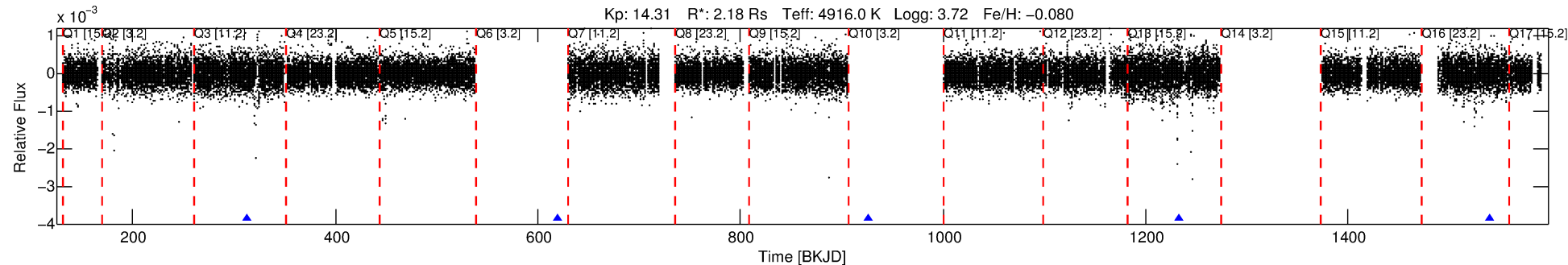
No Significant Match Found

DV One-Page Summary

KIC: 5456023 Candidate: 9 of 9 Period: 306.667 d

KOI: K03521 Corr: No Ephemeris Match

Kp: 14.31 R*: 2.18 Rs Teff: 4916.0 K Logg: 3.72 Fe/H: -0.080



TPS TCE Results:

Period = 306.66740 d
Epoch = 313.4446 BKJD

DV fit results are unavailable

DV Diagnostic Results:

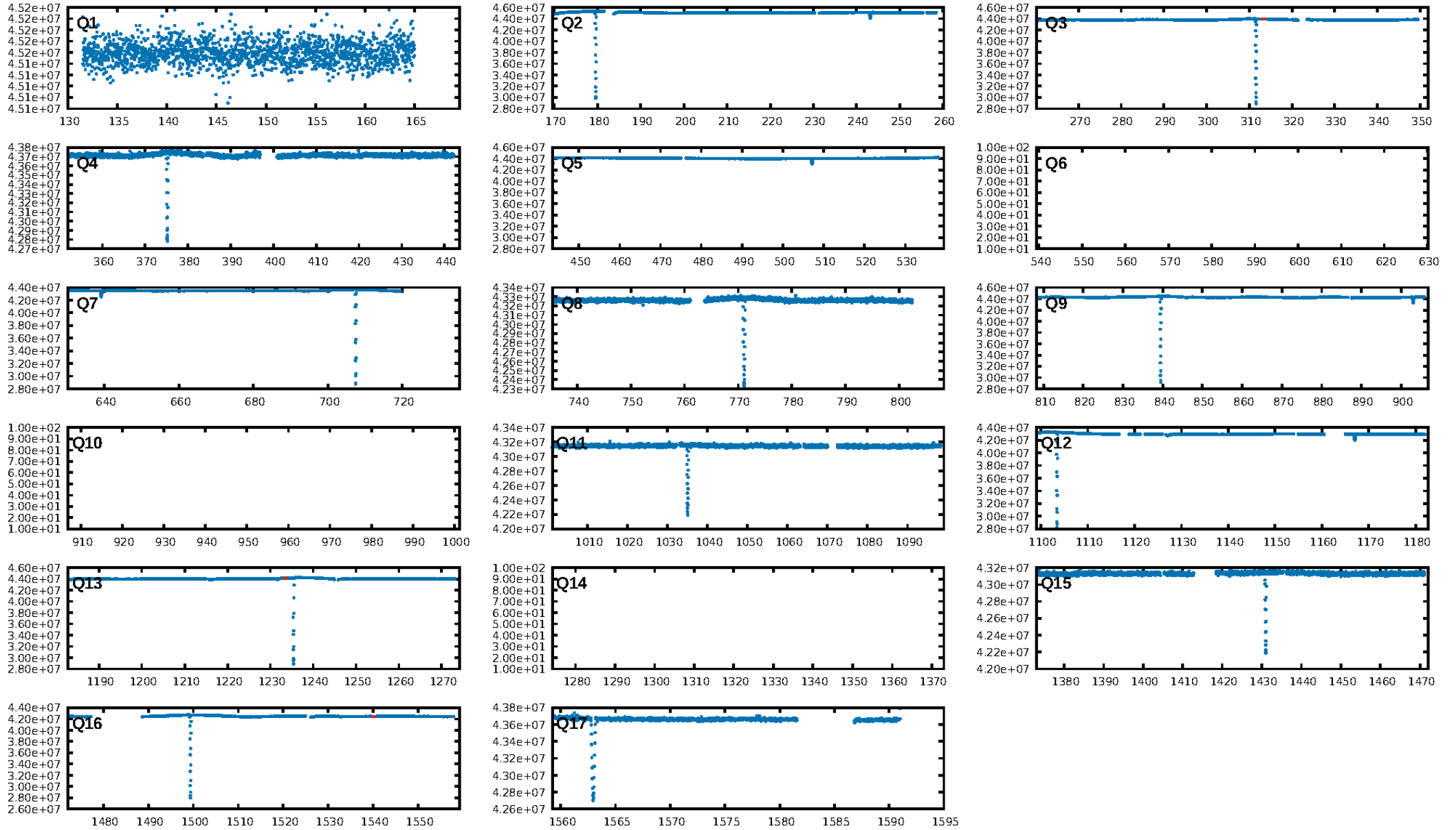
ShortPeriod-sig: 100.0% [57.39σ]
LongPeriod-sig: 100.0% [1052.42σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.767

Centroid-sig: 24.1%
Centroid-so: 3.293 arcsec [1.17σ]
OotOffset-rm: 1.466 arcsec [1.92σ]
KicOffset-rm: 1.391 arcsec [1.72σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

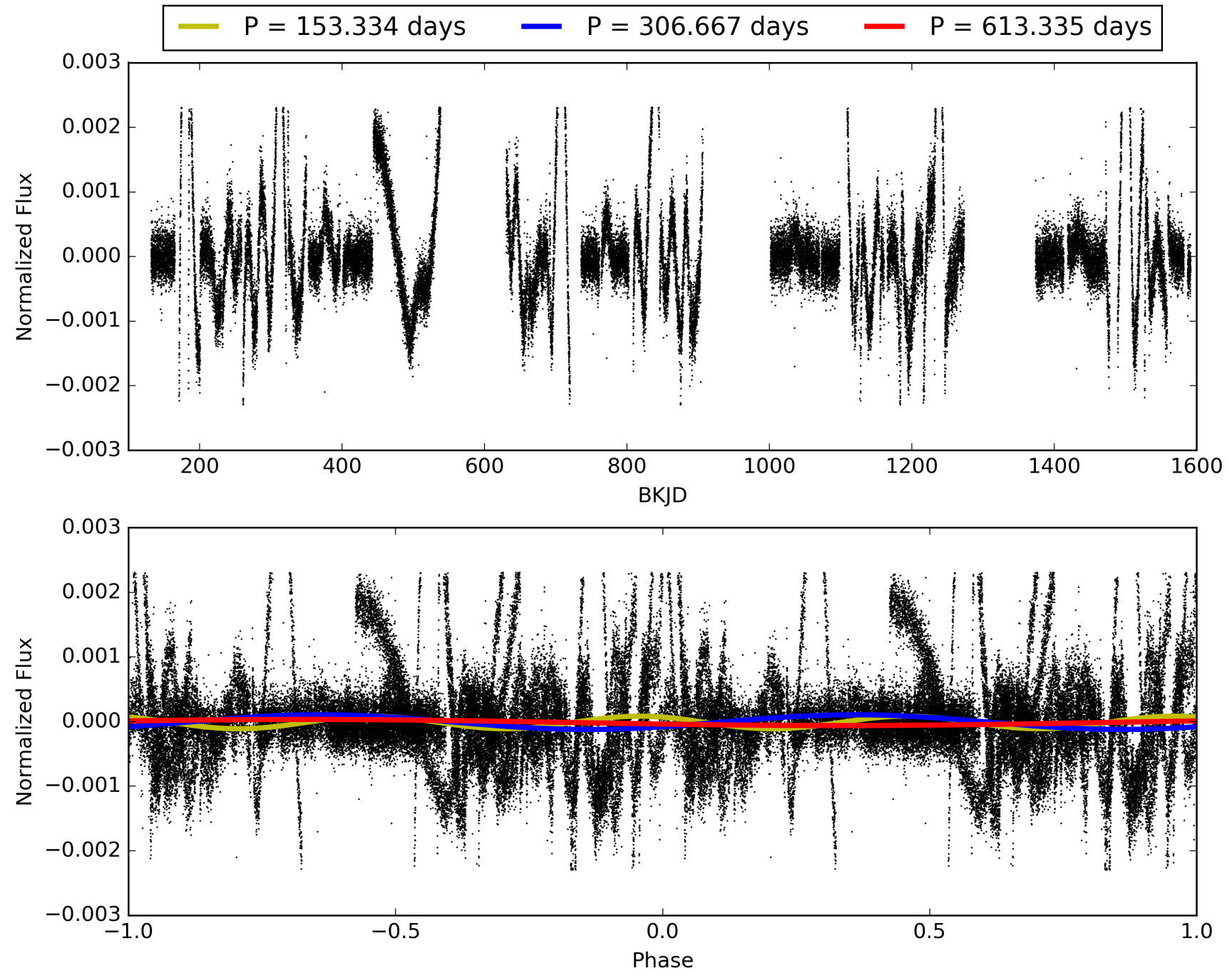
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 05:29:21 Z

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

TCE 005456023-09, PDC Light Curves

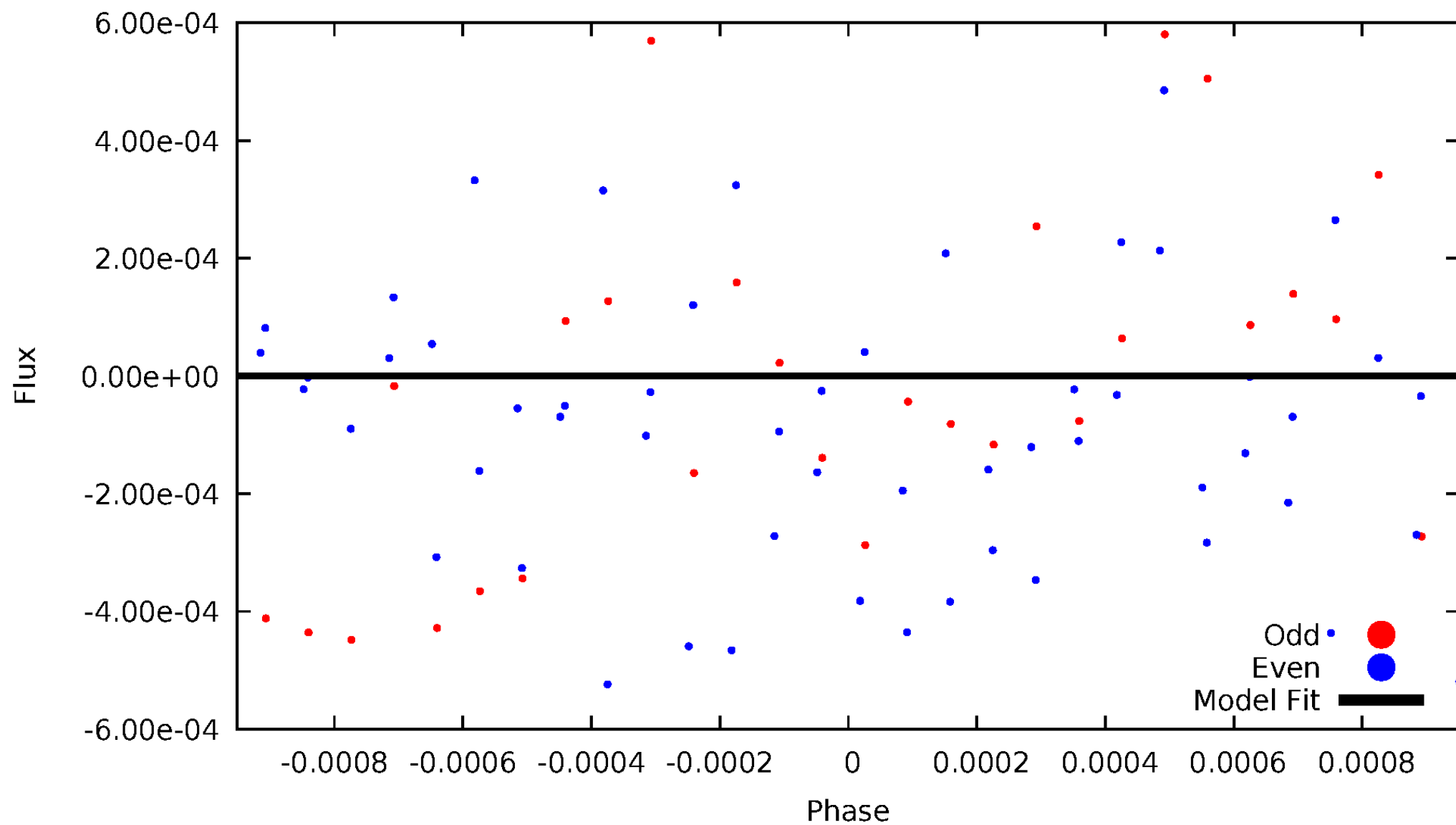


TCE 005456023-09



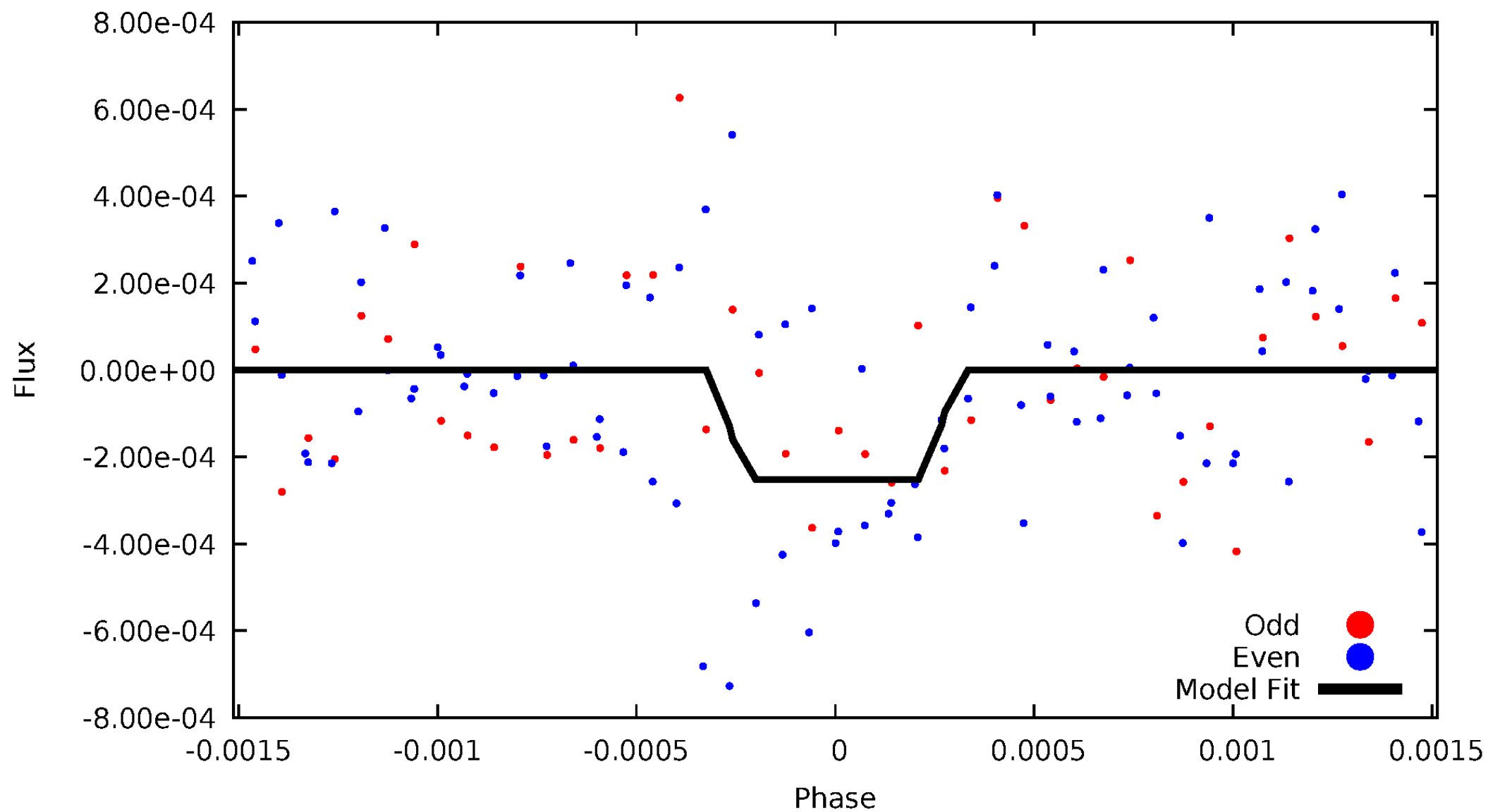
DV Odd/Even

TCE 005456023-09



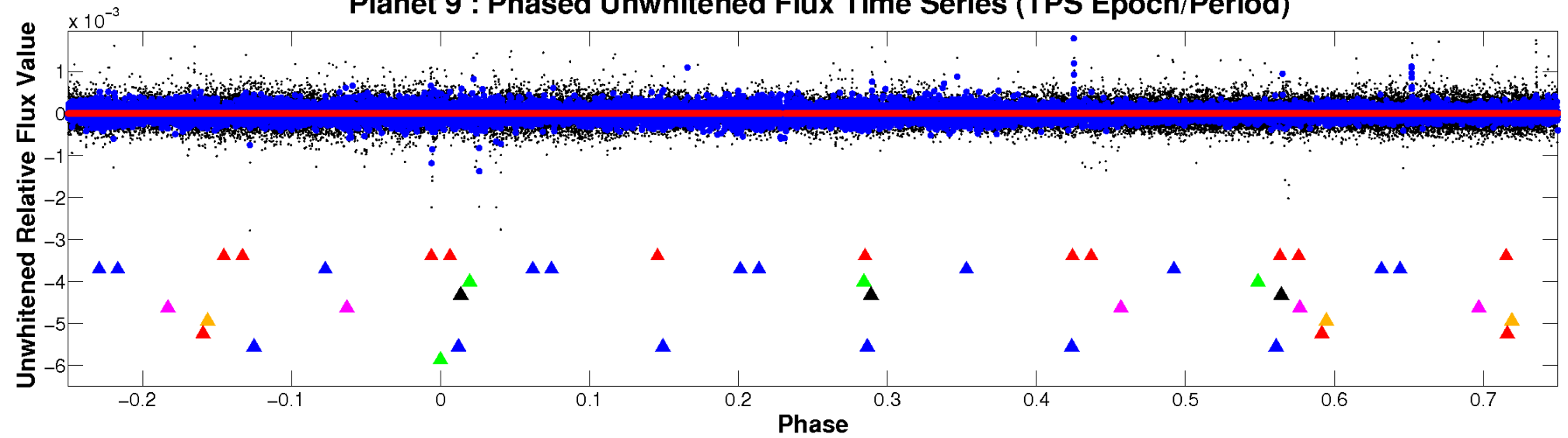
ALT Odd/Even

TCE 005456023-09



Non-Whitened Vs. Whitened Light Curve

Planet 9 : Phased Unwhitened Flux Time Series (TPS Epoch/Period)

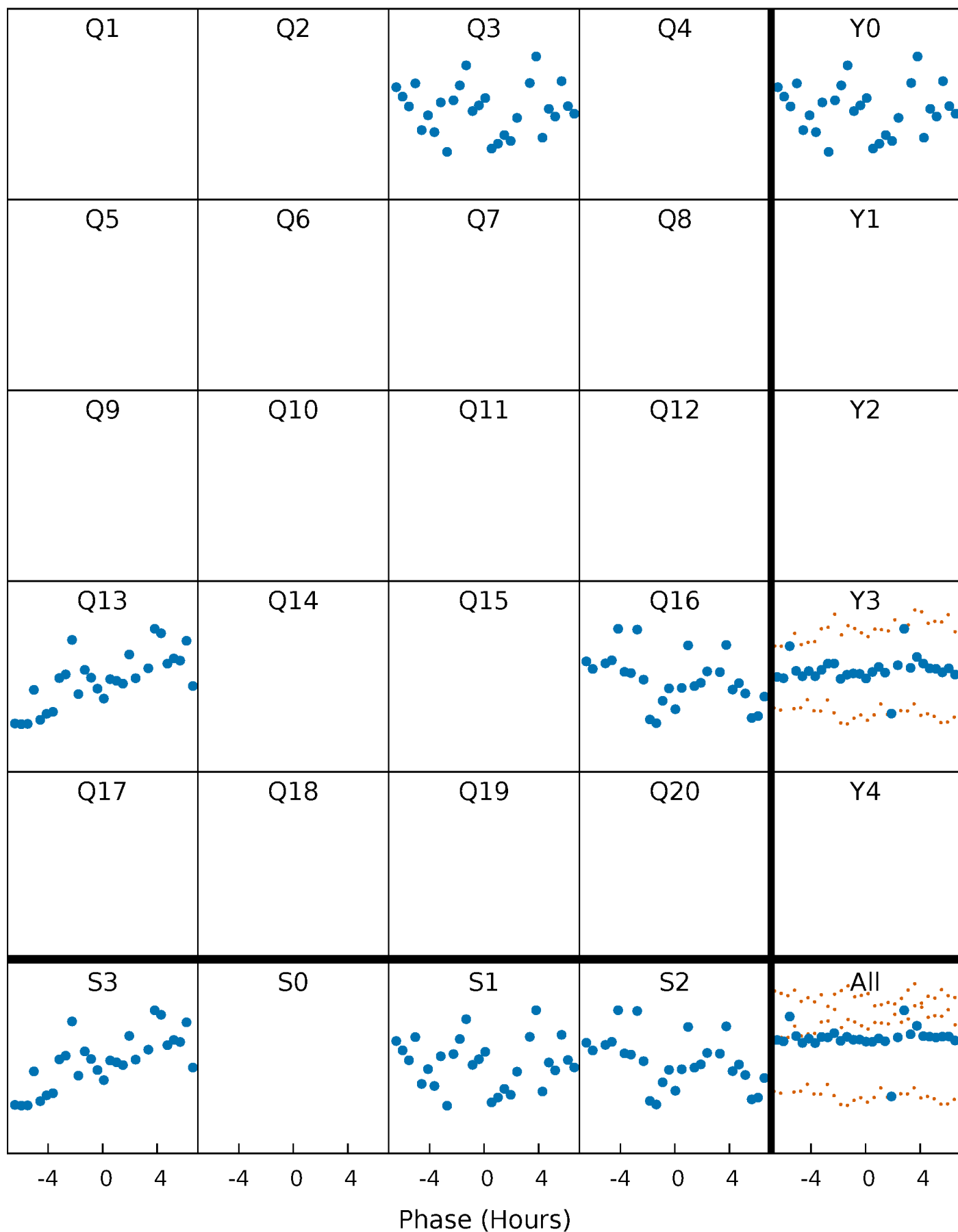


Planet 9 : Phased Whitened Flux Time Series (TPS Epoch/Period)



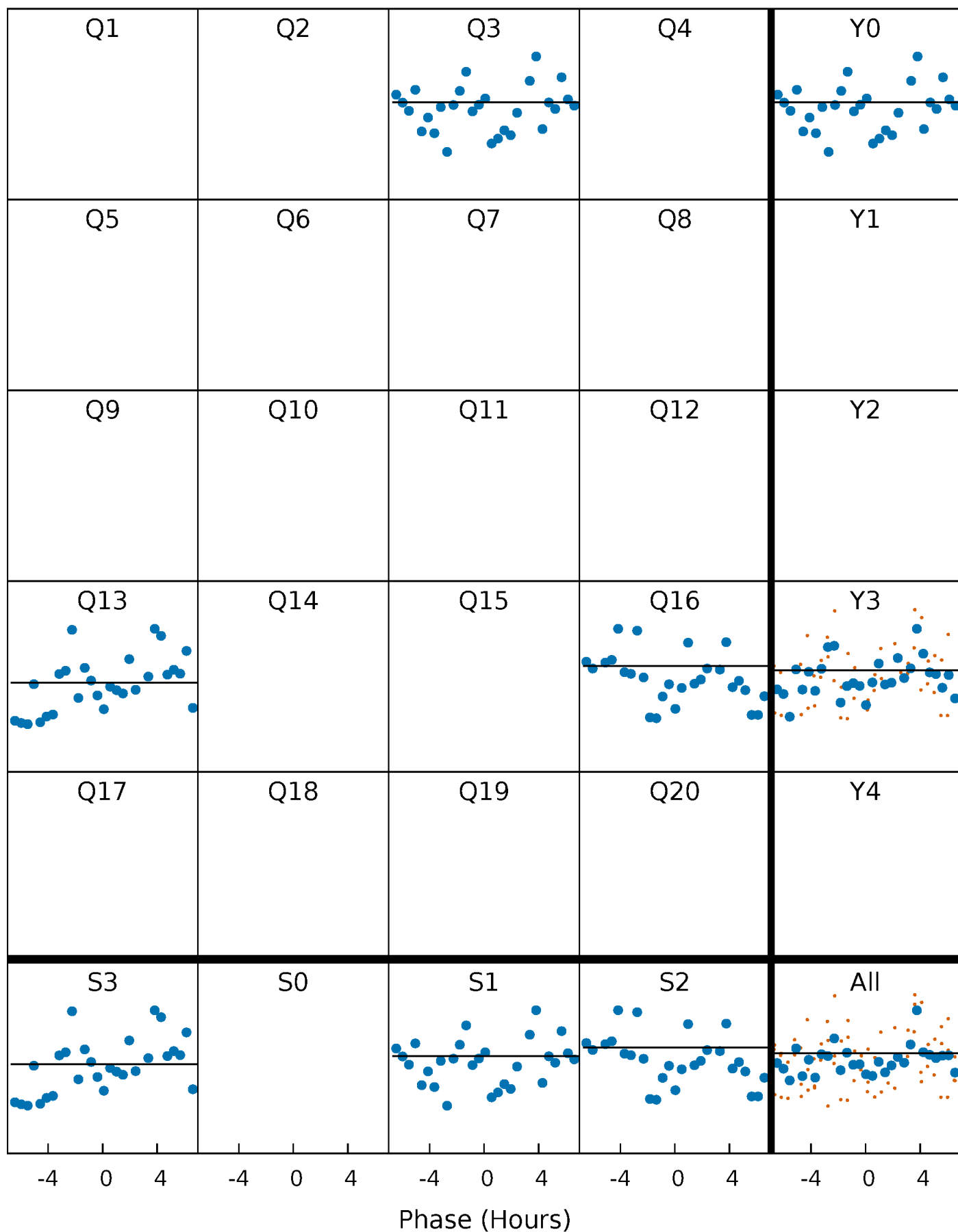
PDC Quarter-Phased Transit Curves

TCE 005456023-09 P=306.667400 Days $T_0=313.444601$ (BKJD)



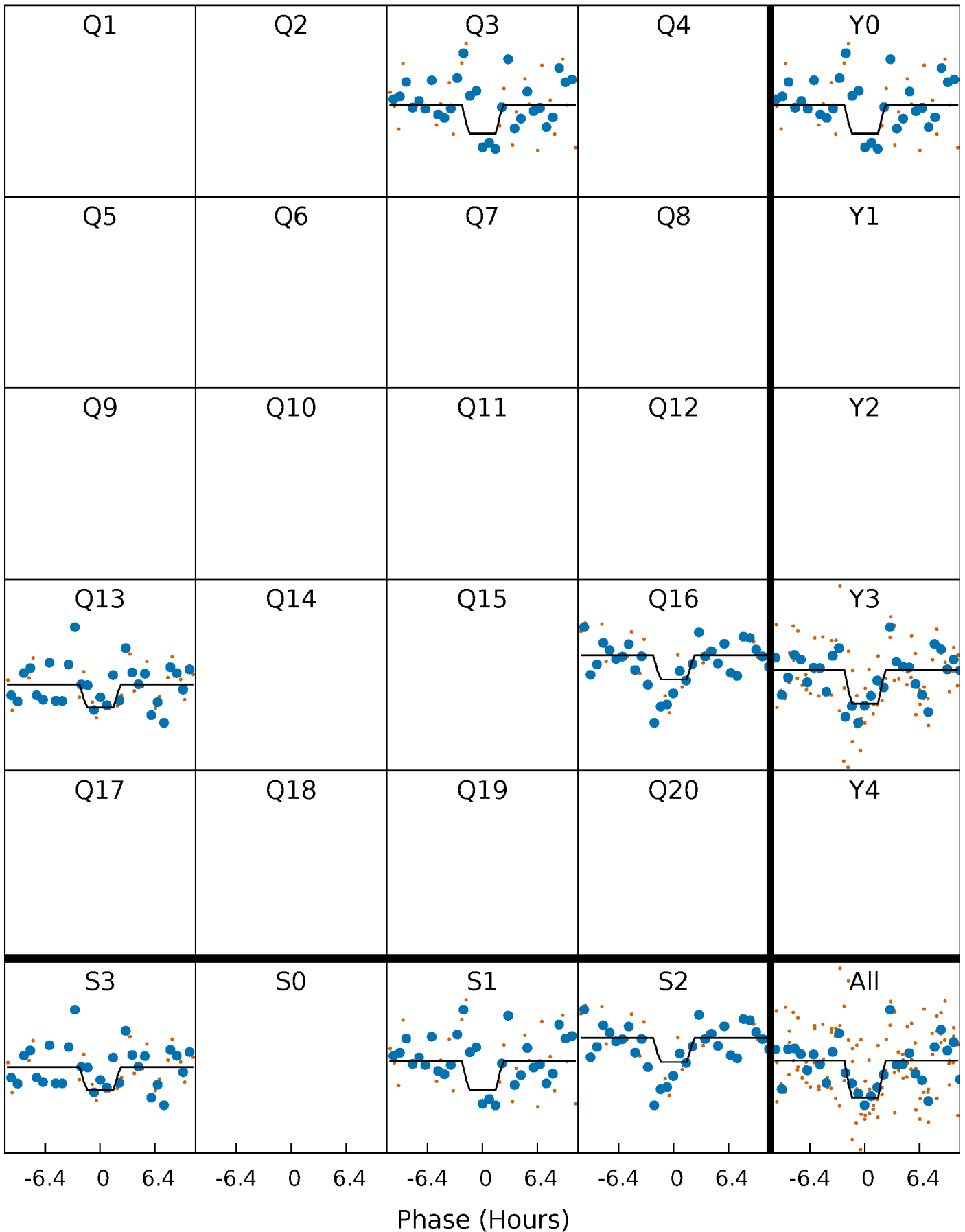
DV Quarter-Phased Transit Curves

TCE 005456023-09 $P=306.667400$ Days $T_0=313.444601$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

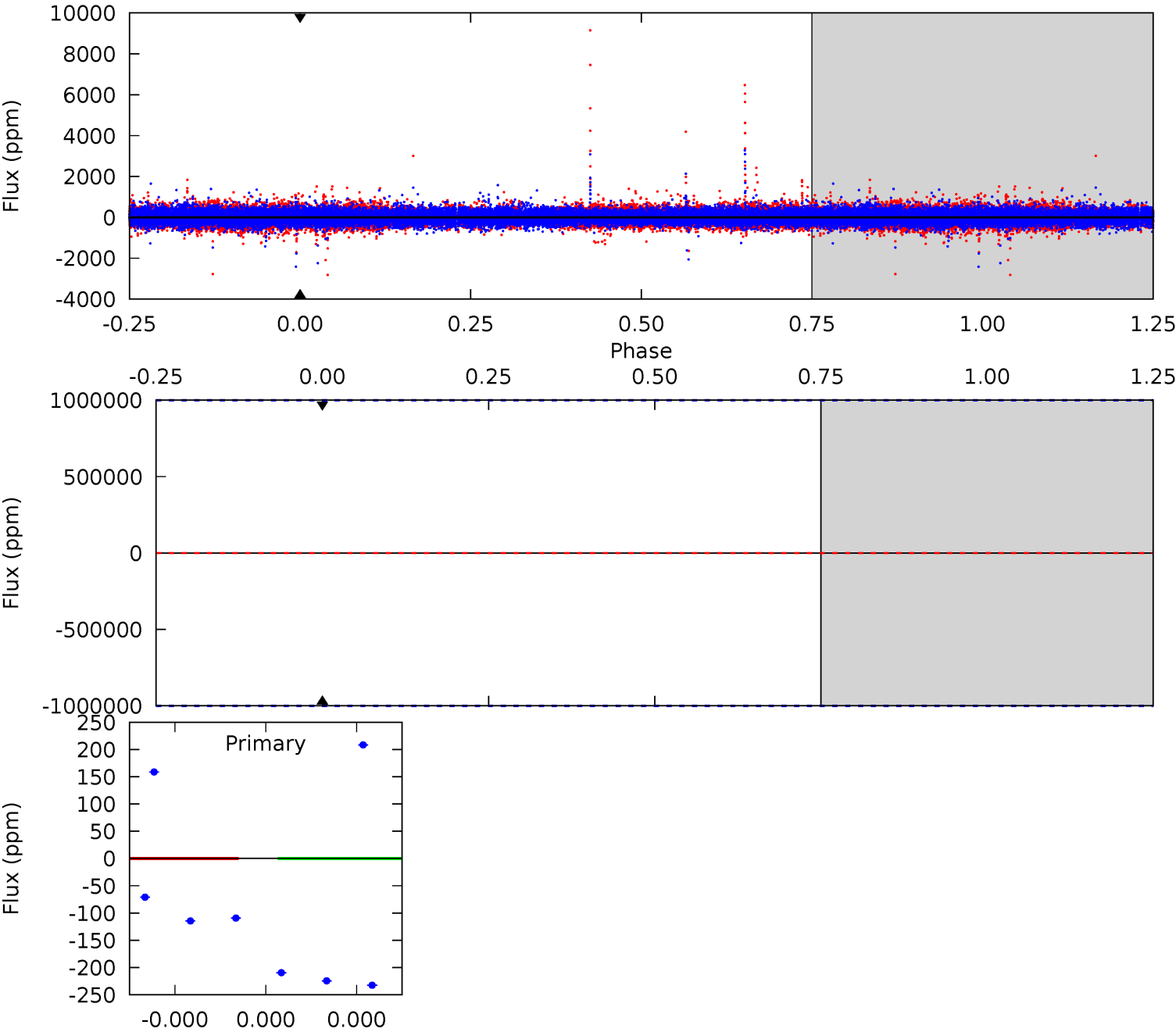
TCE 005456023-09 P=306.667400 Days $T_0=313.470497$ (BKJD)



DV Model-Shift Uniqueness Test

005456023-09, P = 306.667400 Days, E = 6.777201 Days

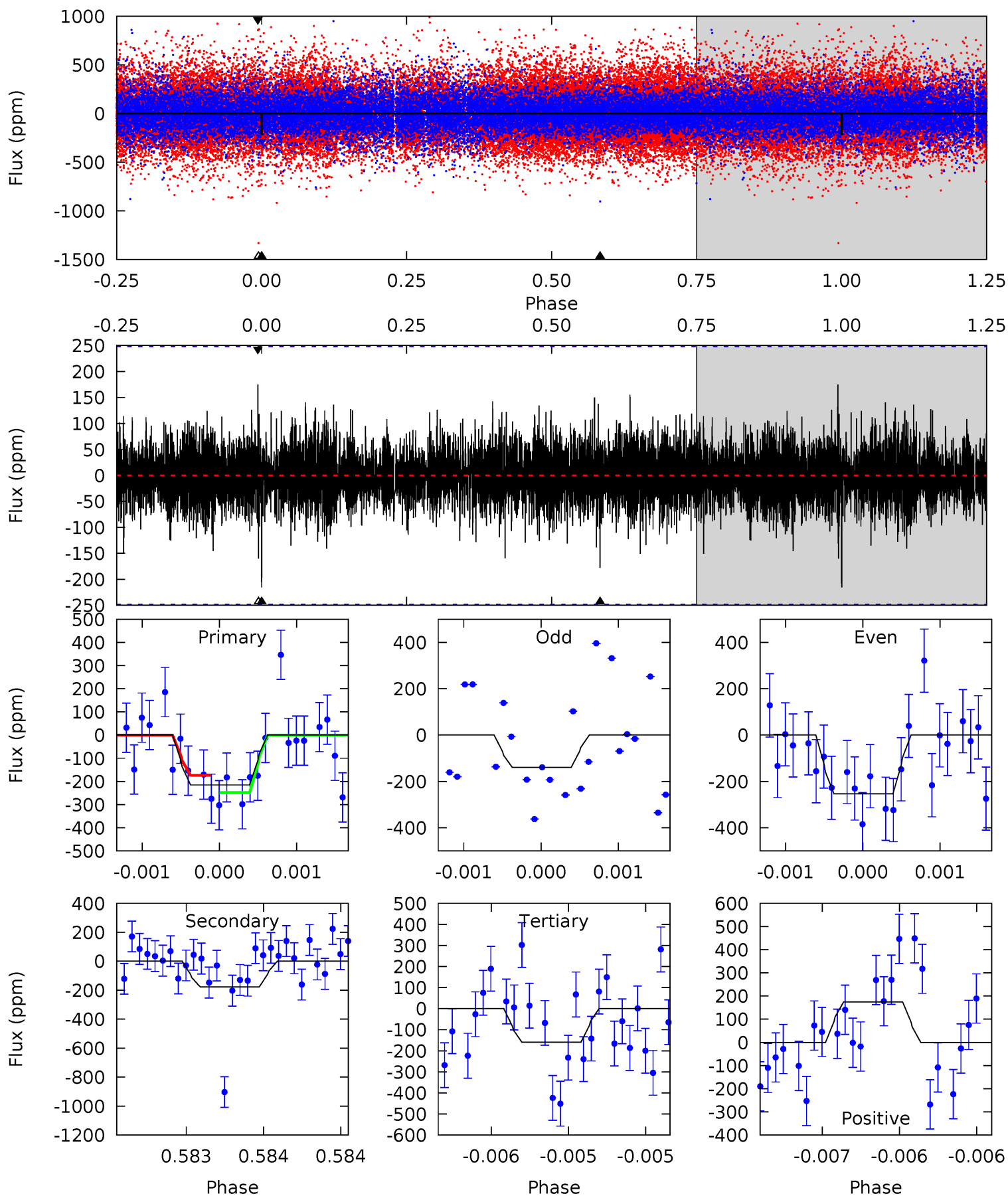
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

005456023-09, P = 306.667400 Days, E = 6.803097 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
4.82	3.98	3.58	3.90	5.56	3.46	0.89	1.24	0.91	0.40	0.07	1.20	1.55	0.45	0.82



Stellar Parameters For KIC 005456023

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4916^{+122}_{-146}	$3.717^{+0.900}_{-0.300}$	$-0.080^{+0.300}_{-0.300}$	$2.182^{+1.179}_{-1.441}$	$0.905^{+0.232}_{-0.190}$	$0.123^{+3.024}_{-0.081}$
	+2%/-3%	+24%/-8%	+375%/-375%	+54%/-66%	+26%/-21%	+2465%/-66%
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 005456023-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$16.70^{+20.49}_{-12.10}$	470^{+70}_{-93}	3655^{+12022}_{-16597}	$1285^{+369426}_{-303713}$
Alt.	-178 ± 45	$15.90^{+19.27}_{-11.18}$	470^{+67}_{-92}	2774^{+1184}_{-444}	279^{+2860}_{-222}

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 $A_{obs} \gg 1.0$

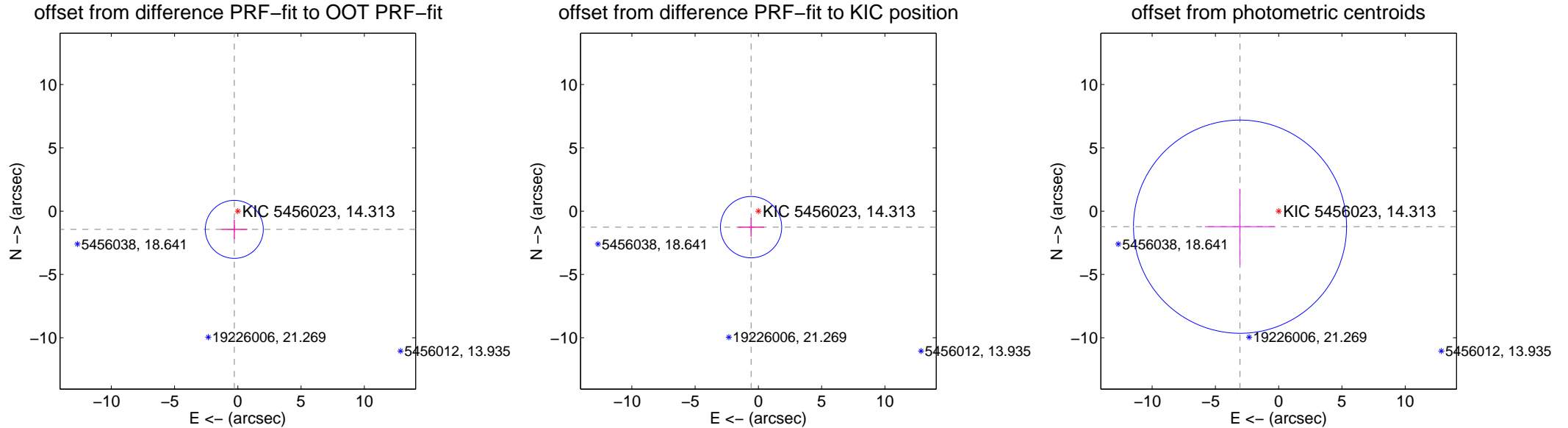
DV Centroid Data

Supplemental centroid analysis for 005456023-09. Kepler magnitude: 14.31. 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 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.466 ± 0.764	1.92	0.278 ± 1.031	-1.440 ± 0.752
PRF-fit source offset from KIC position	1.391 ± 0.807	1.72	0.577 ± 1.031	-1.265 ± 0.752
photometric centroid source offset	3.29 ± 2.81	1.17	3.06 ± 2.78	-1.23 ± 2.98



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

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

Q1 no difference image



Q1 no OOT image



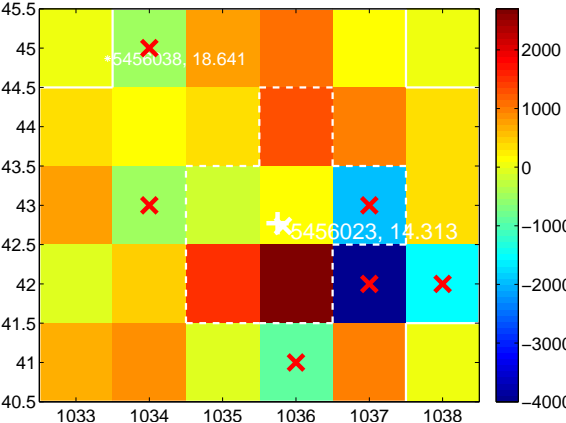
Q2 no difference image



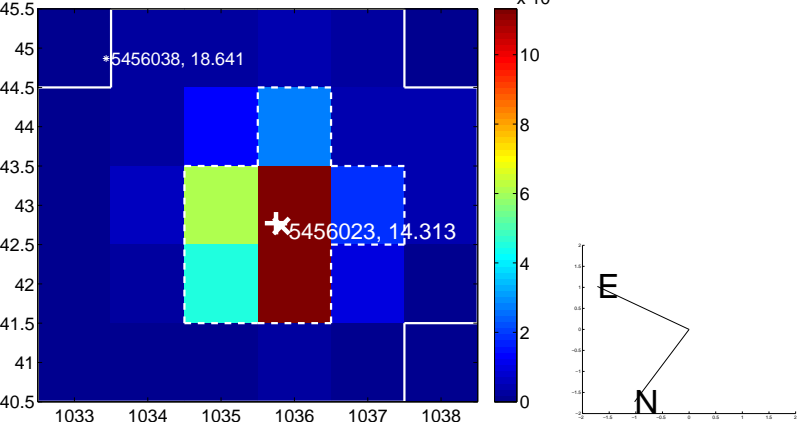
Q2 no OOT image



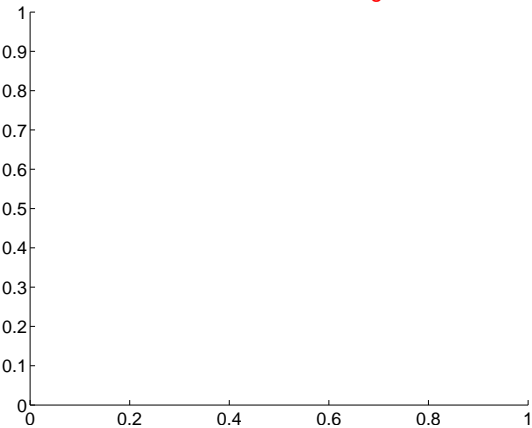
Q3 difference image. Poor Quality



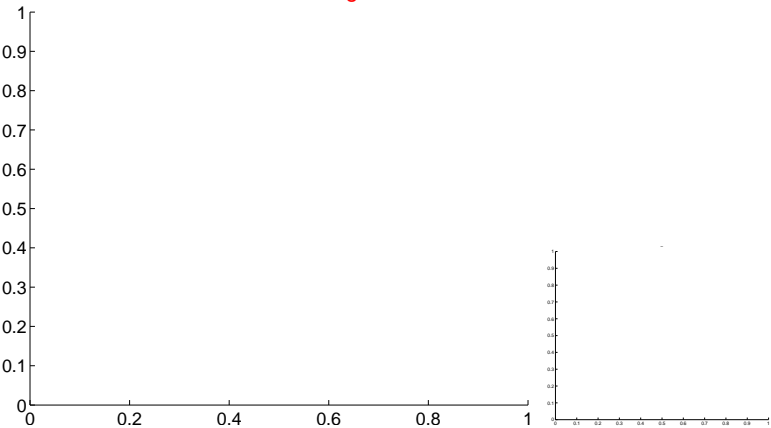
Q3 OOT image



Q4 no difference image



Q4 no OOT image



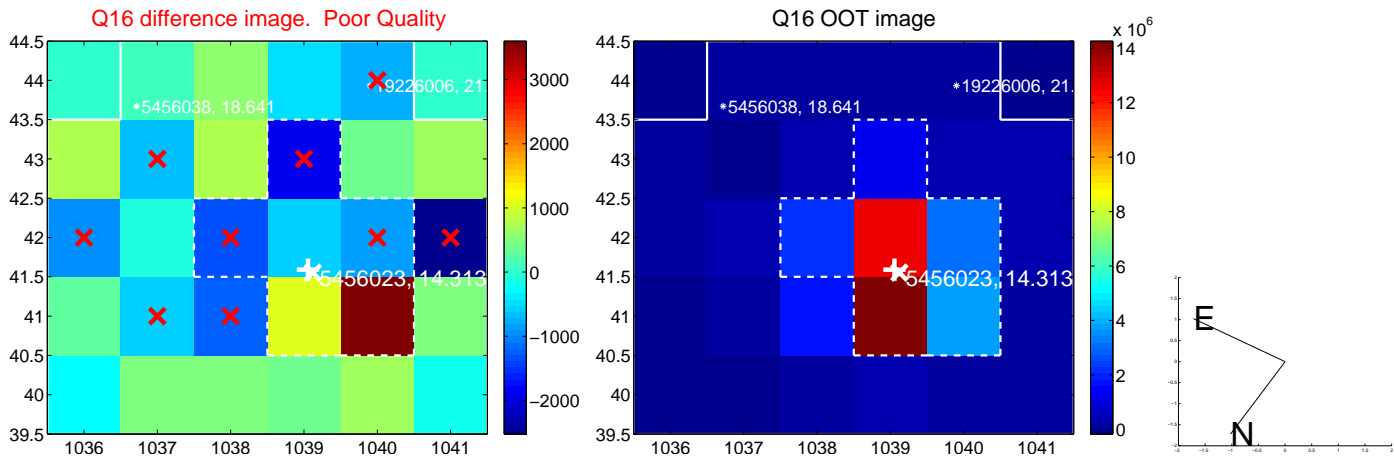
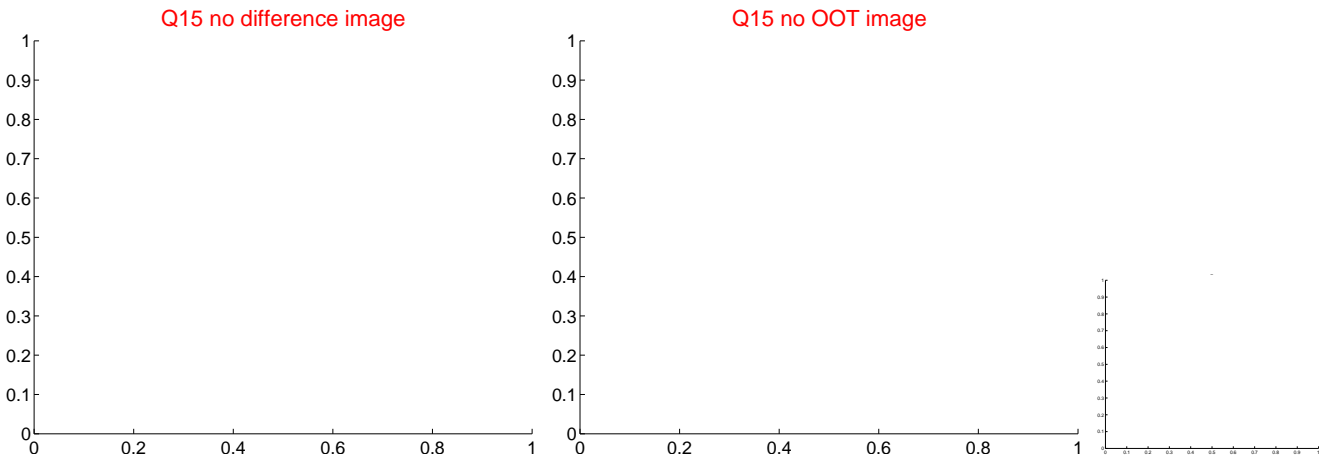
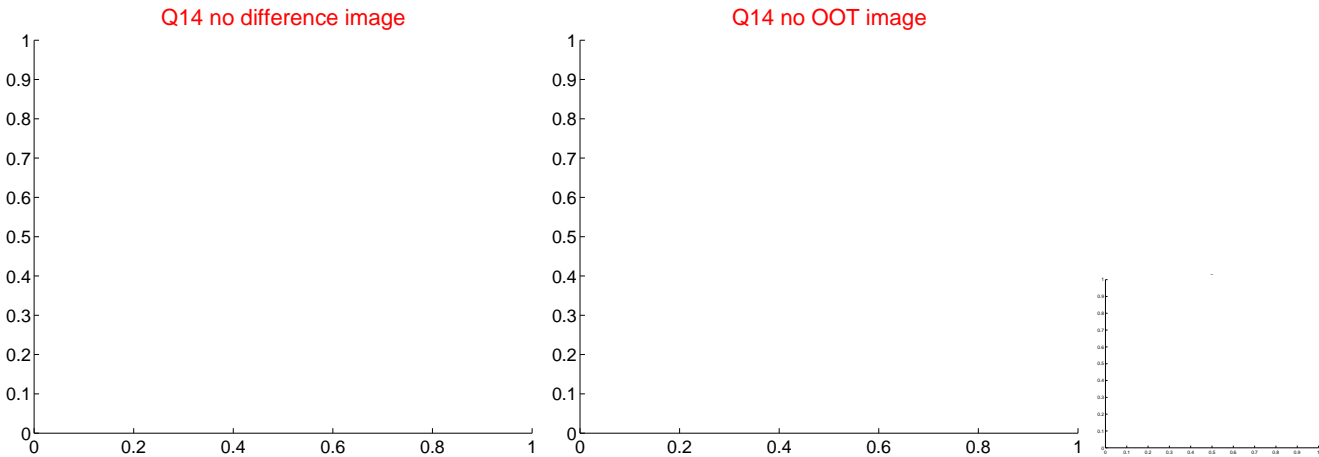
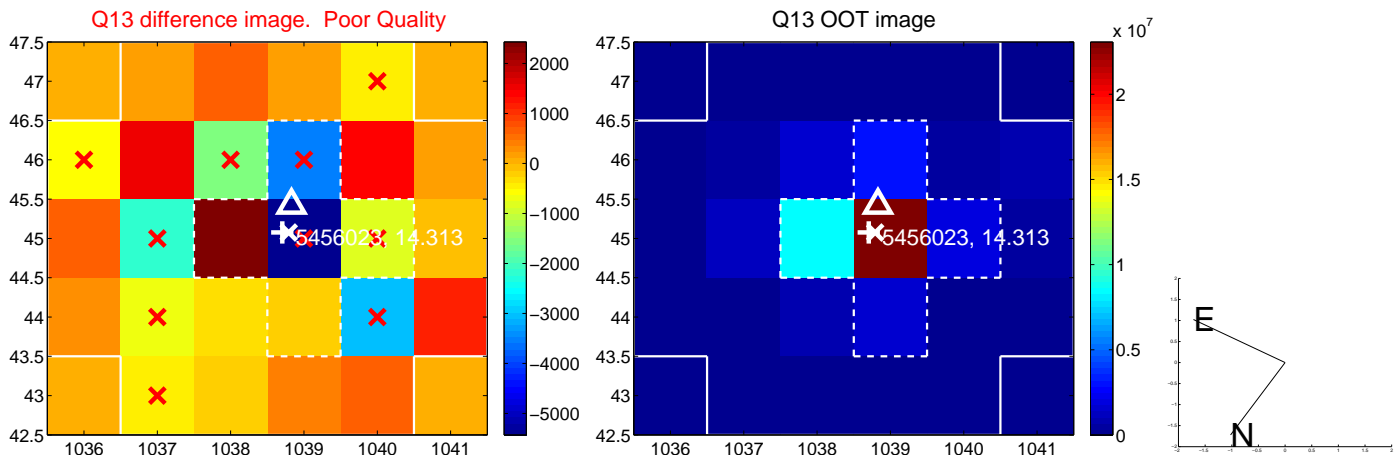
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



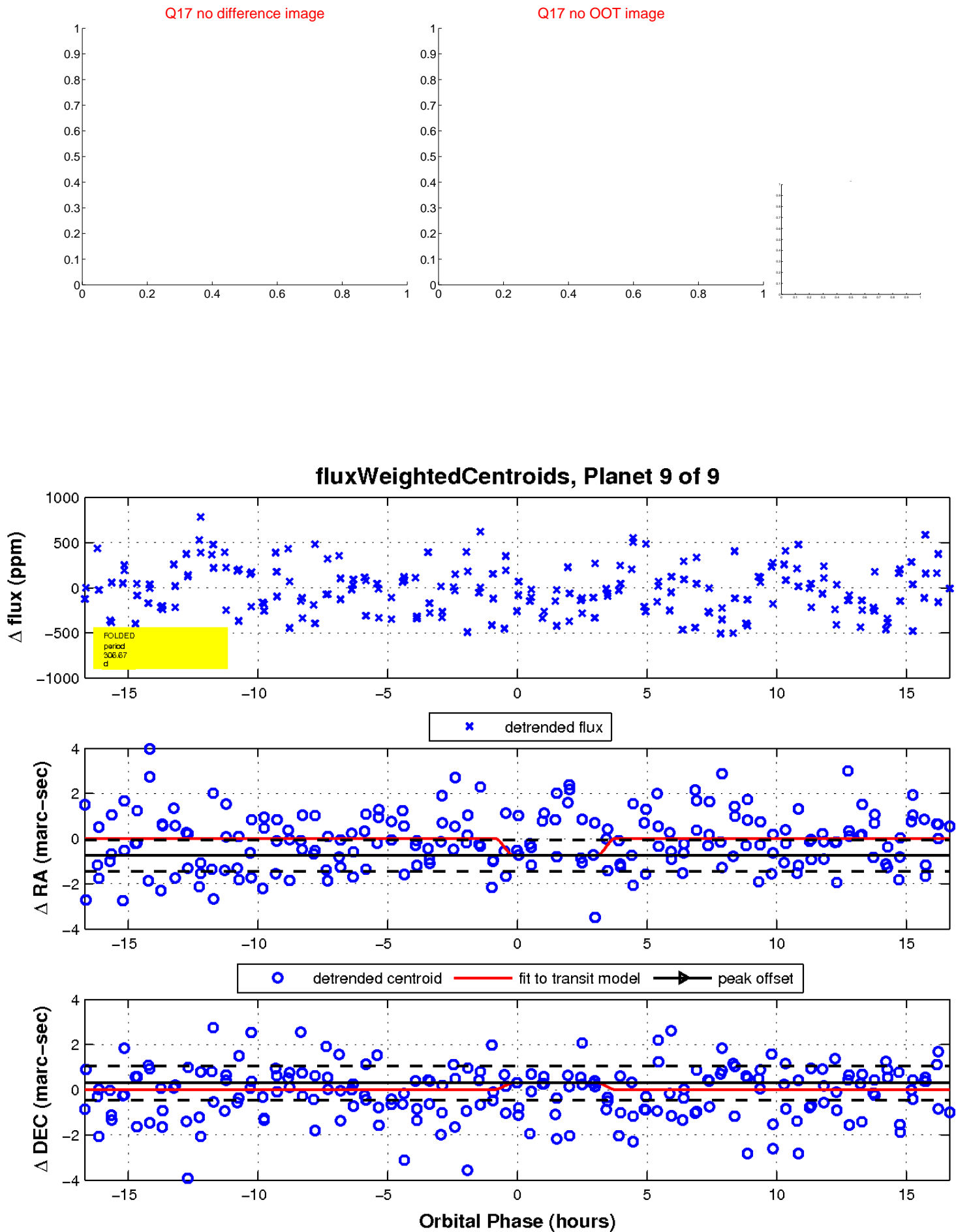
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



UKIRT Image

Declination

