

KIC 009588946

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})
009588946-01	OBS	No	171.169369	164.490515	54.5	1.804	30.3	16.7	4.09	5019	3.23	17.65
009588946-02	OBS	No	367.037397	158.183711	484.9	2.393	67.3	44.7	4.09	5019	10.57	6.38
009588946-03	OBS	No	385.860058	484.561019	348.8	1.521	115.4	32.9	4.09	5019	7.98	5.97
009588946-04	OBS	No	377.580422	483.684337	756.5	3.516	100.9	73.2	4.09	5019	10.95	6.15
009588946-05	OBS	No	366.126895	159.275673	259.5	1.908	89.5	22.3	4.09	5019	6.92	6.41
009588946-06	OBS	No	373.101870	137.577536	860.7	0.641	58.6	22.2	4.09	5019	12.63	6.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009588946-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009588946-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—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_SATURATED—HALO_GHOST
009588946-03	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_SATURATED
009588946-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
009588946-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—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_SATURATED
009588946-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

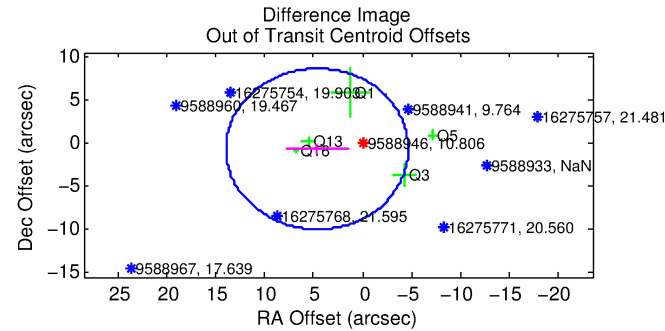
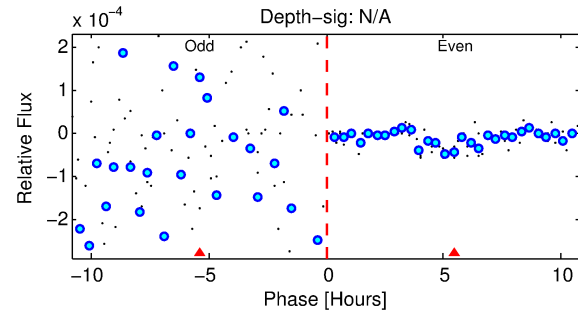
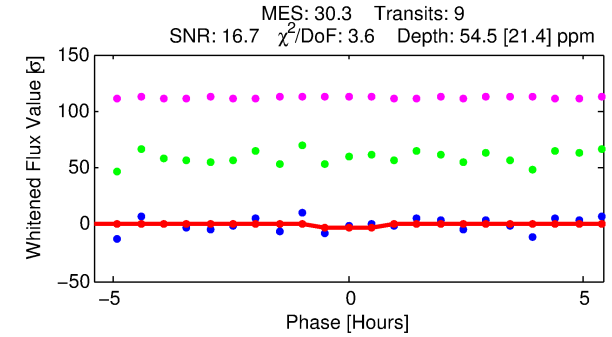
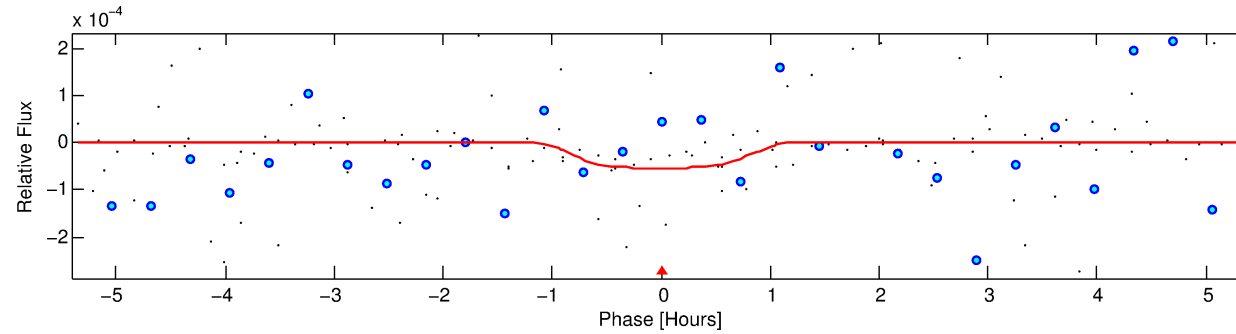
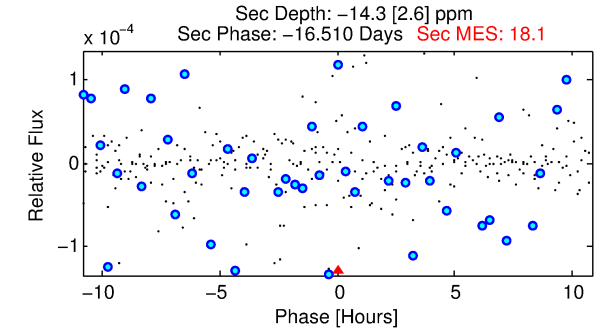
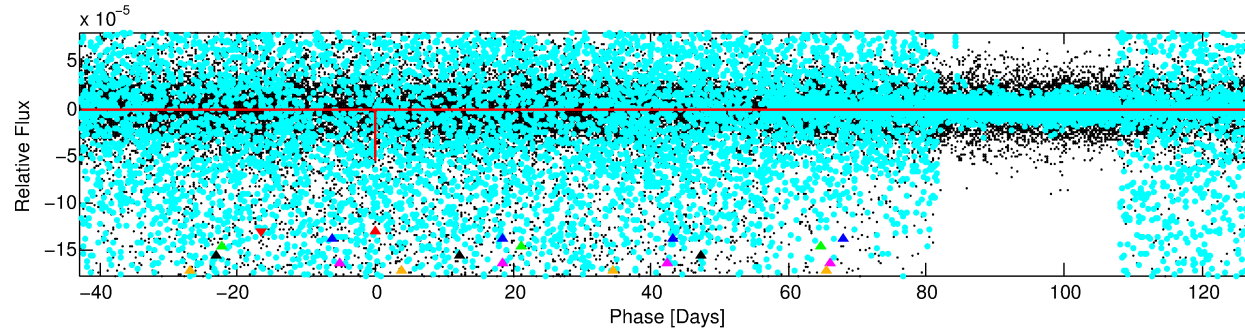
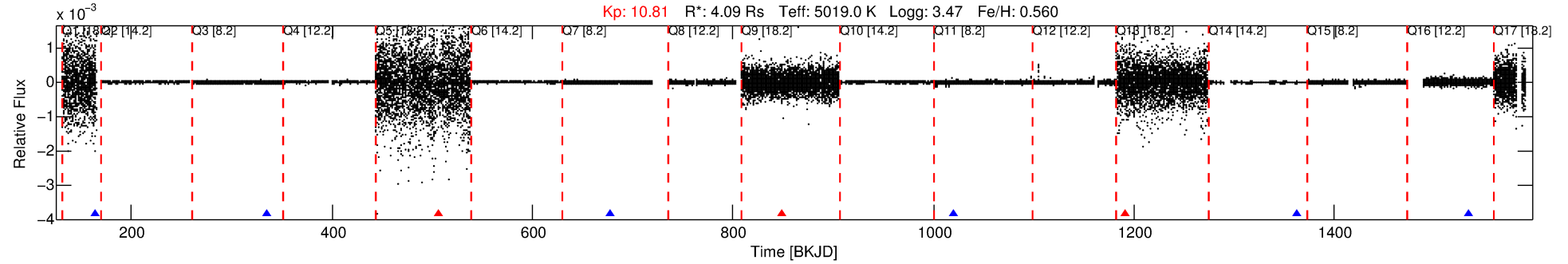
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009588946-01

No Significant Match Found

DV One-Page Summary

KIC: 9588946 Candidate: 1 of 6 Period: 171.169 d



DV Fit Results:

Period = 171.16937 [0.00375] d
Epoch = 164.4905 [0.0171] BKJD
Rp/R* = 0.0072 [0.0214]
a/R* = 524.48 [5156.18]
b = 0.70 [7.36]
Seff = 17.65 [24.31]
Teq = 523 [180] K
Rp = 3.23 [9.79] Re
a = 0.7345 [0.5704] AU
Ag = N/A
Teffp = N/A

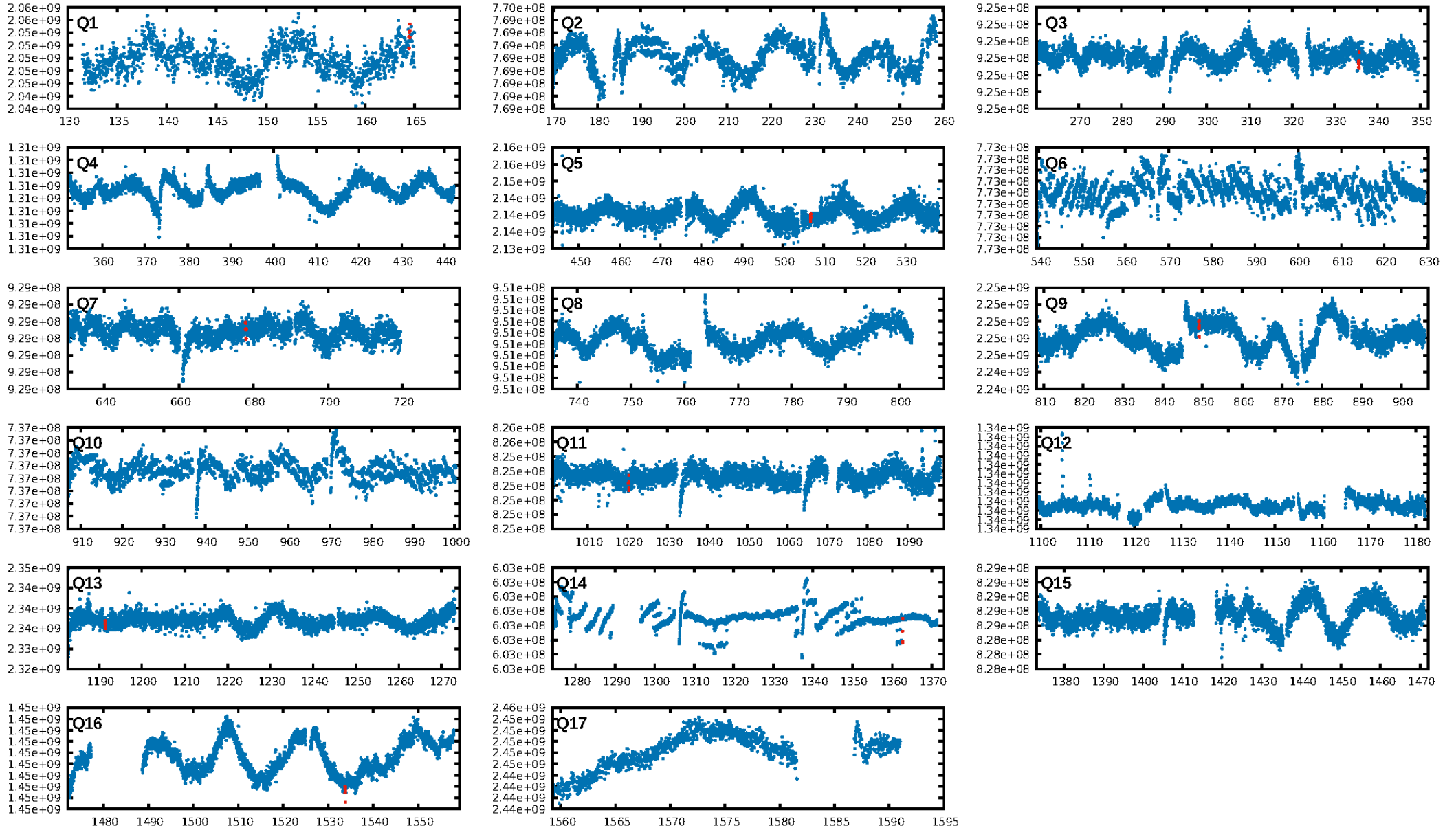
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [1781.92σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-ftg: 0.62 [5/8]
GhostDiagnostic-chr: -0.2846
Centroid-sig: 47.1%
Centroid-so: 1.733 arcsec [1.22σ]
OotOffset-rm: 4.700 arcsec [1.51σ]
OotOffset-st: 0/1/1/3 [5]
KicOffset-rm: 4.280 arcsec [1.73σ]
KicOffset-st: 0/1/1/3 [5]
DiffImageQuality-fgm: 0.20 [1/5]
DiffImageOverlap-fno: 1.00 [9/9]

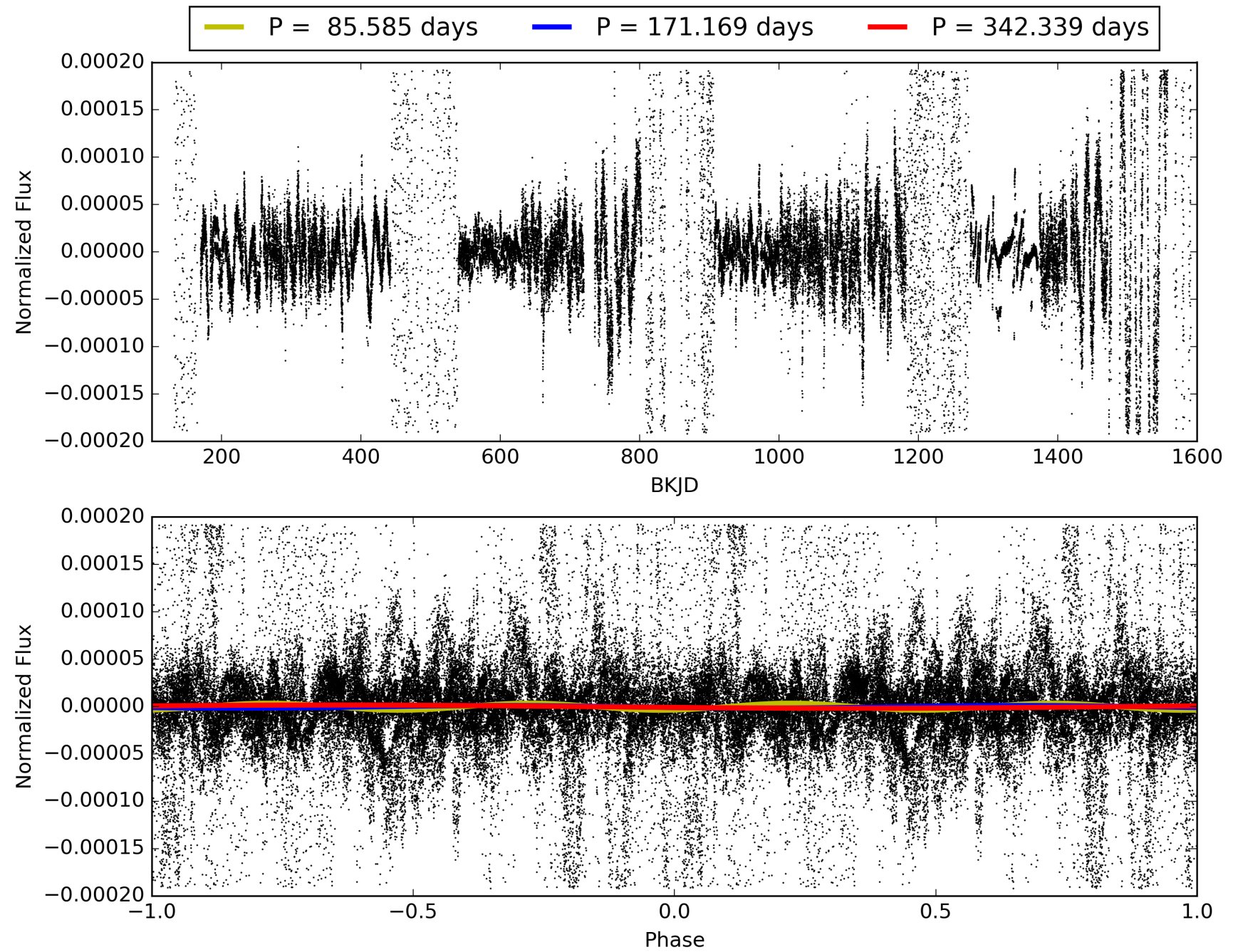
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:07:58 Z

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

TCE 009588946-01, PDC Light Curves

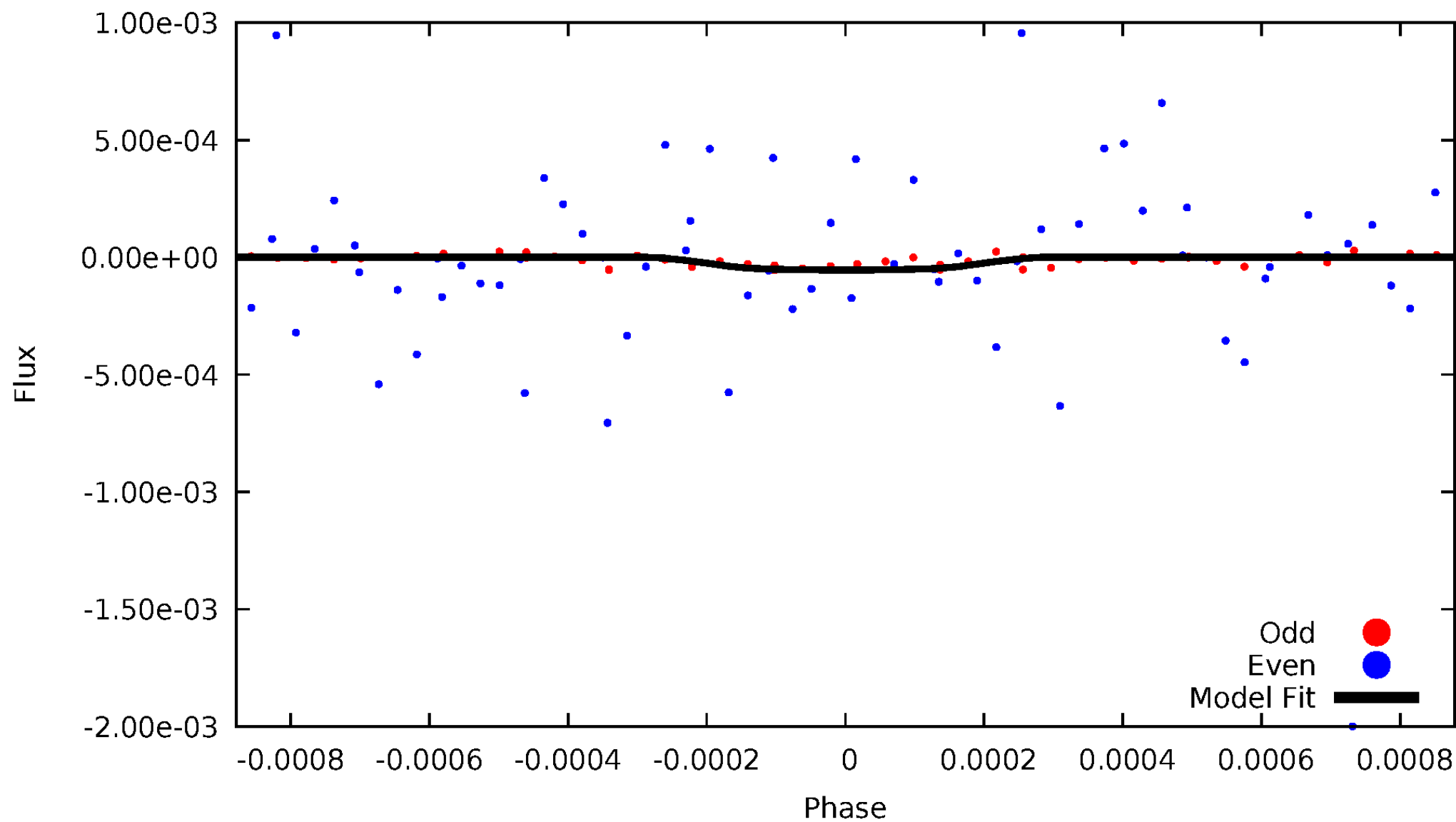


TCE 009588946-01



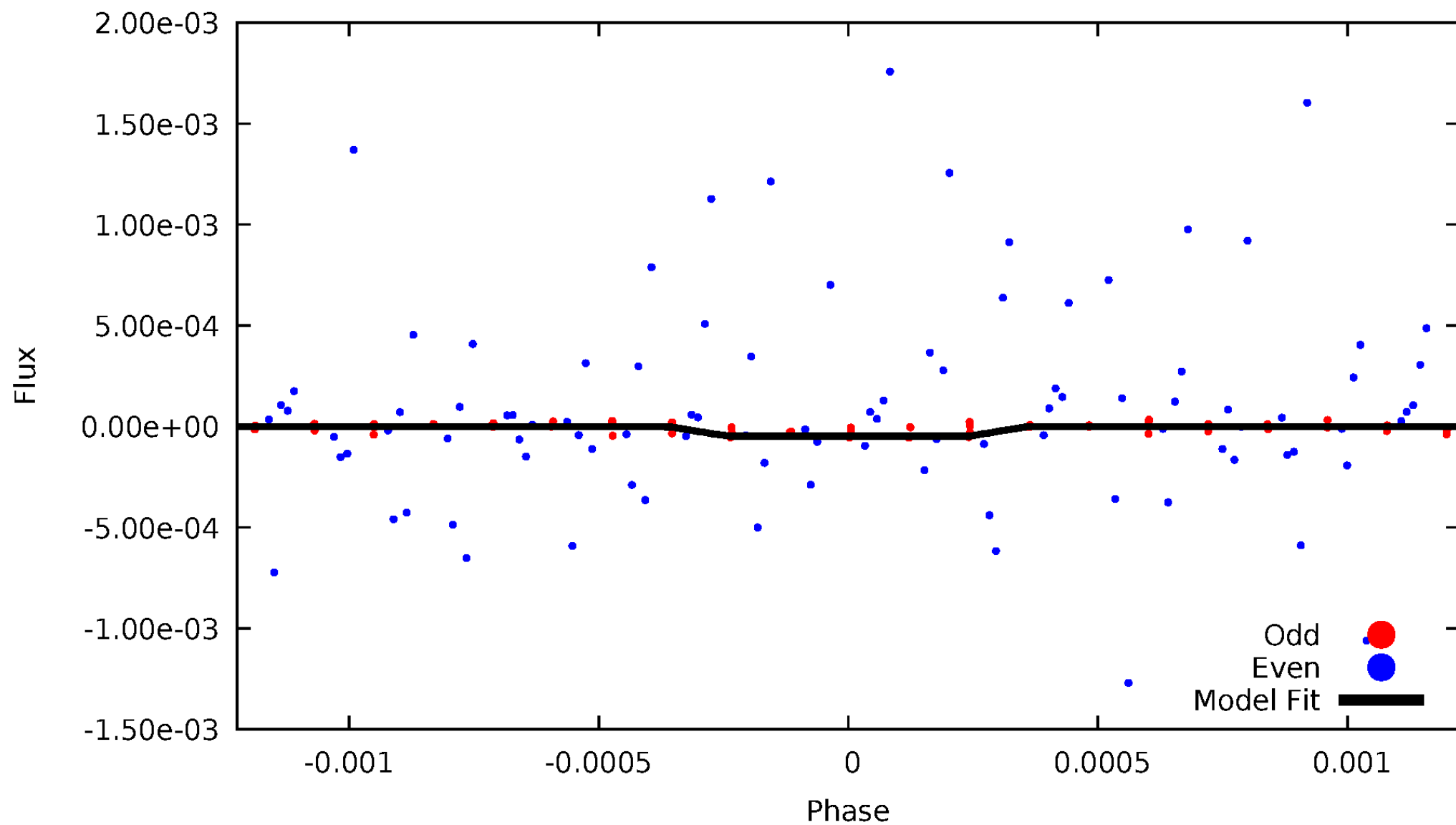
DV Odd/Even

TCE 009588946-01



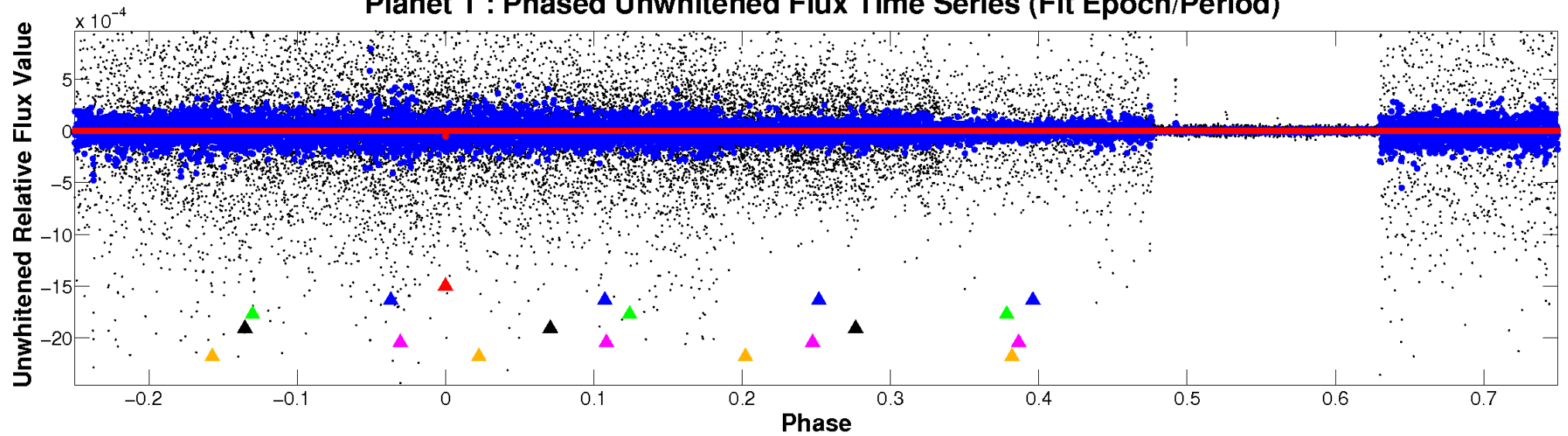
ALT Odd/Even

TCE 009588946-01

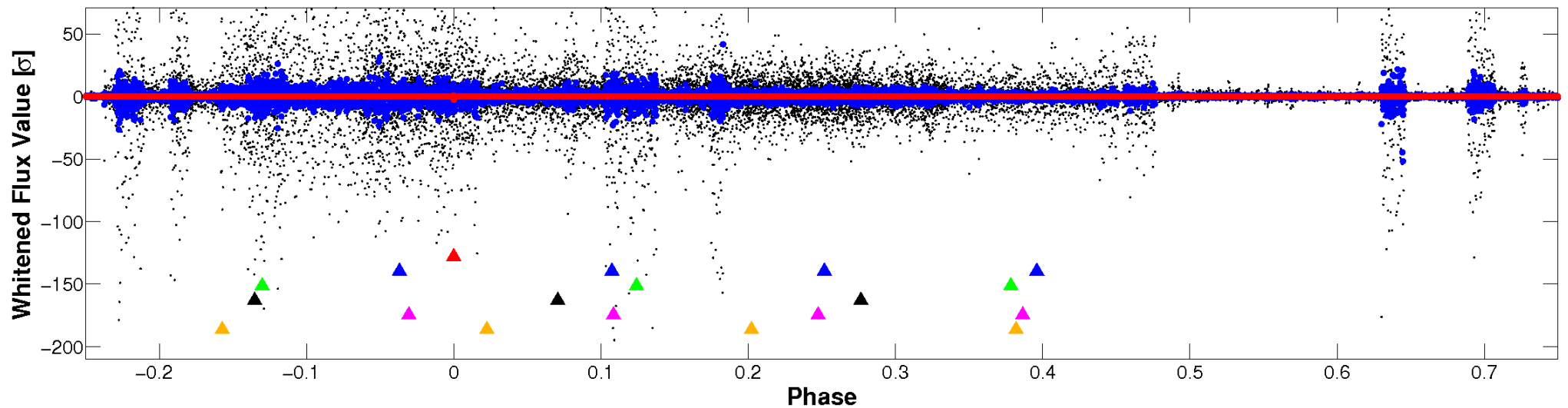


Non-Whitened Vs. Whitened Light Curve

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

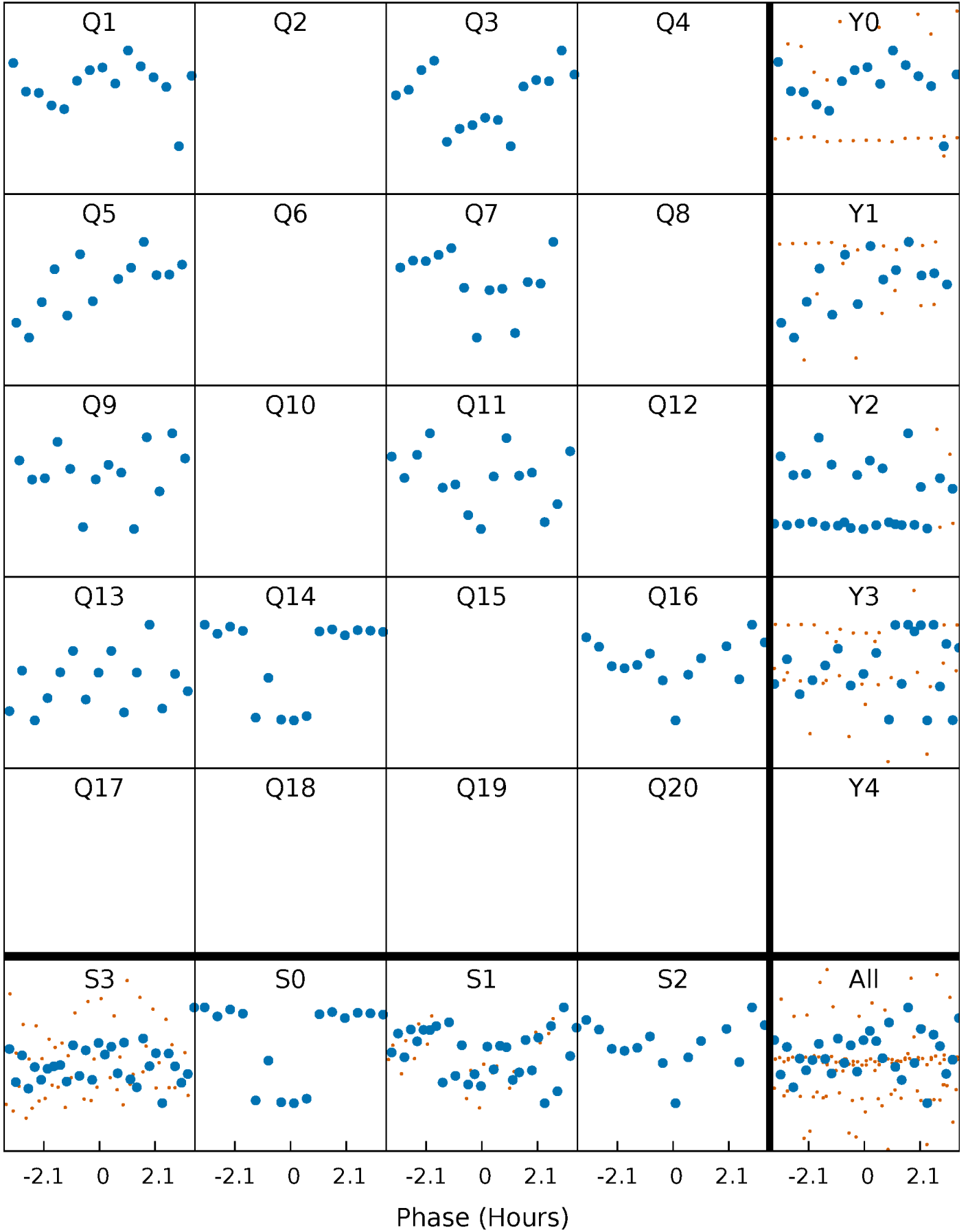


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



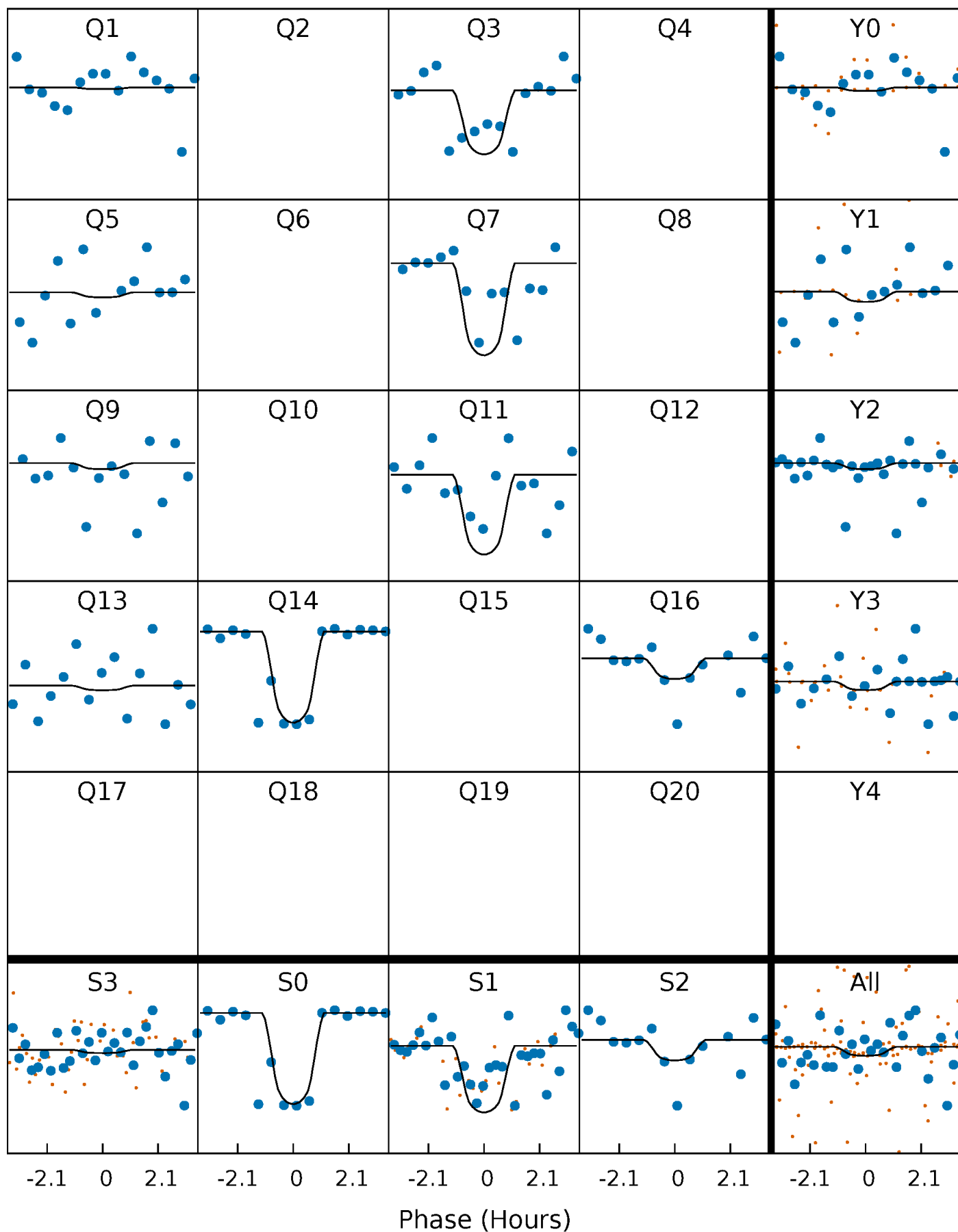
PDC Quarter-Phased Transit Curves

TCE 009588946-01 P=171.169369 Days $T_0=164.490515$ (BKJD)



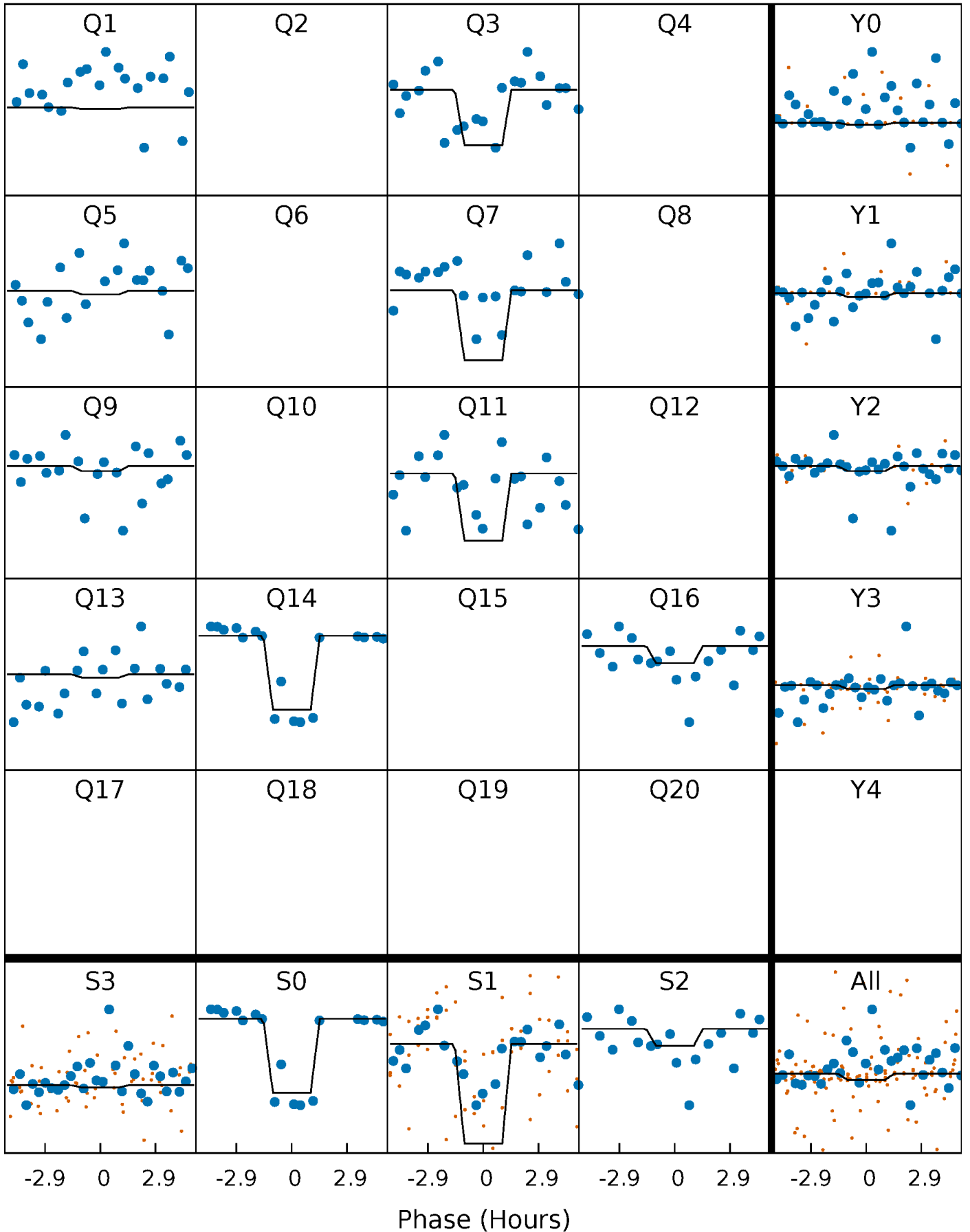
DV Quarter-Phased Transit Curves

TCE 009588946-01 P=171.169369 Days $T_0=164.490515$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

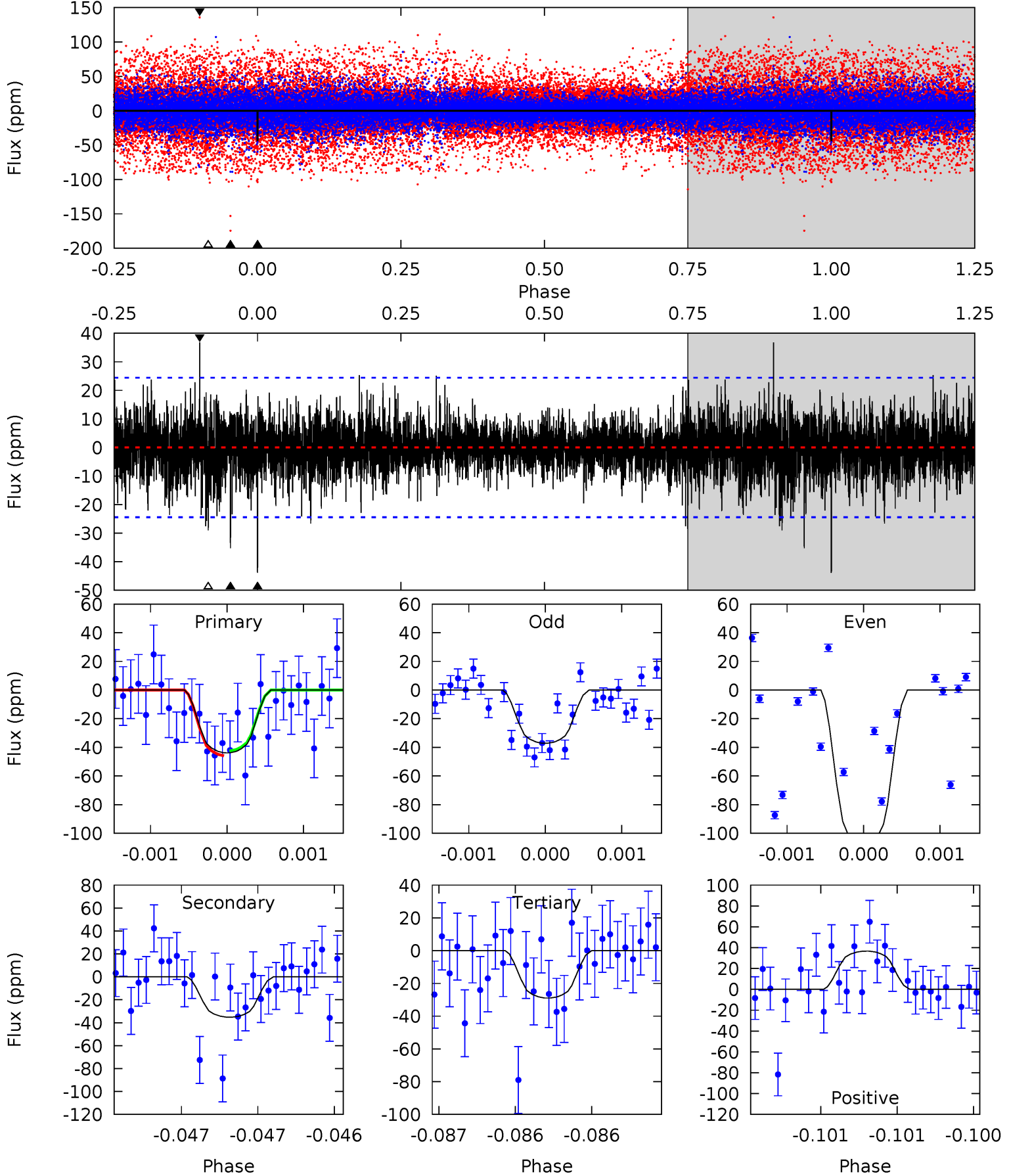
TCE 009588946-01 P=171.162644 Days $T_0=164.519719$ (BKJD)



DV Model-Shift Uniqueness Test

009588946-01, P = 171.169369 Days, E = 164.490515 Days

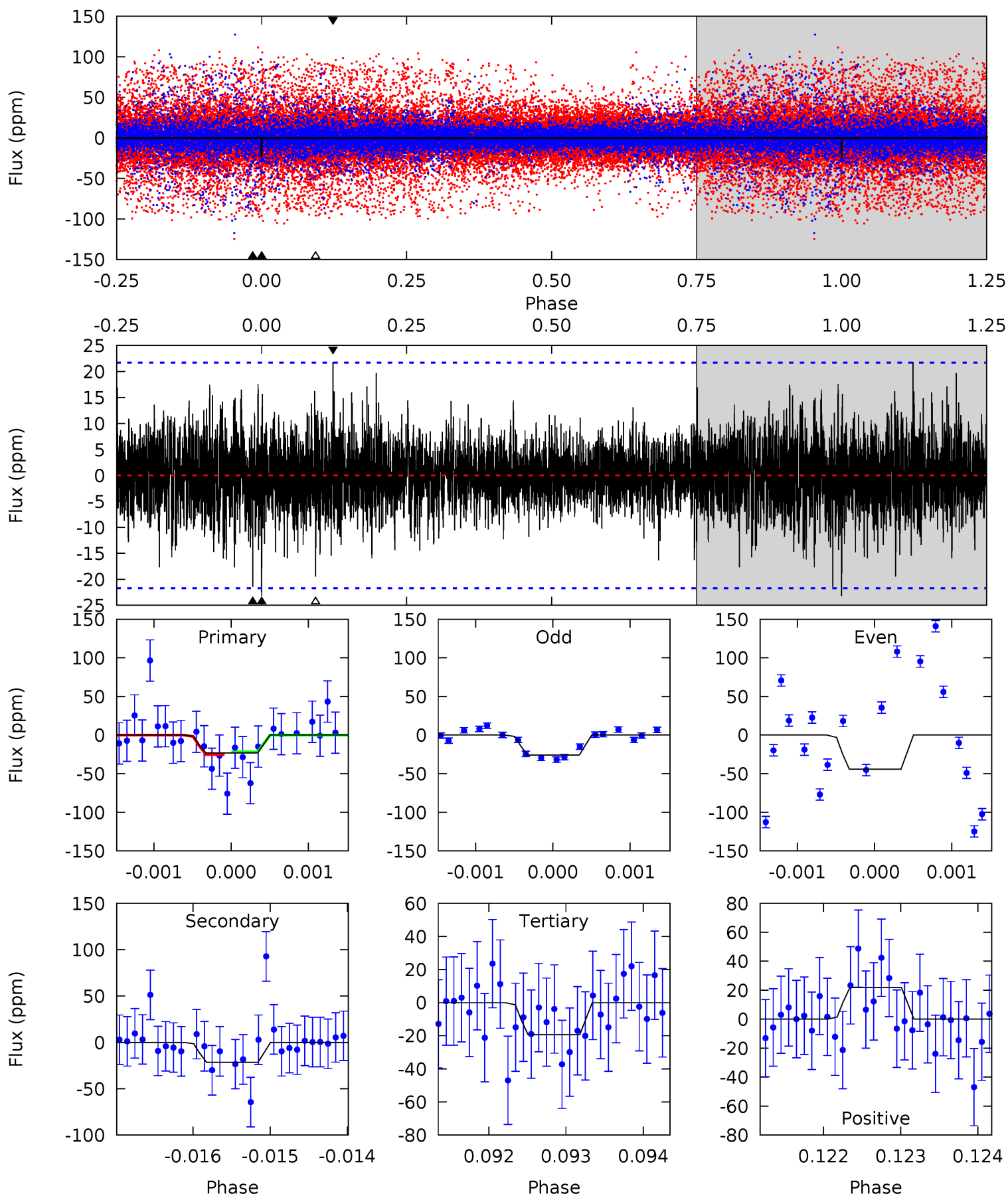
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.99	8.02	6.60	8.36	5.57	3.47	1.46	3.40	1.63	1.42	-0.34	3.63	0.21	0.46	0



Alt Model-Shift Uniqueness Test

009588946-01, P = 171.162644 Days, E = 164.519719 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
5.90	5.44	4.94	5.54	5.51	3.38	1.16	0.96	0.36	0.50	-0.10	0.96	-8.68	0.48	0



Stellar Parameters For KIC 009588946

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5019^{+173}_{-190}	$3.470^{+0.848}_{-0.212}$	$0.560^{+0.050}_{-0.350}$	$4.093^{+1.115}_{-2.601}$	$1.805^{+0.269}_{-0.808}$	$0.037^{+0.536}_{-0.018}$
	+3%/-4%	+24%/-6%	+9%/-62%	+27%/-64%	+15%/-45%	+1446%/-49%
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 009588946-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-35 ± 4	$6.45^{+7.94}_{-4.57}$	708^{+76}_{-124}	3357^{+1758}_{-577}	225^{+2586}_{-176}
Alt.	-21 ± 4	$6.43^{+7.87}_{-4.70}$	708^{+80}_{-131}	3187^{+1717}_{-600}	148^{+1849}_{-118}

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 $A_{obs} \gg 1.0$

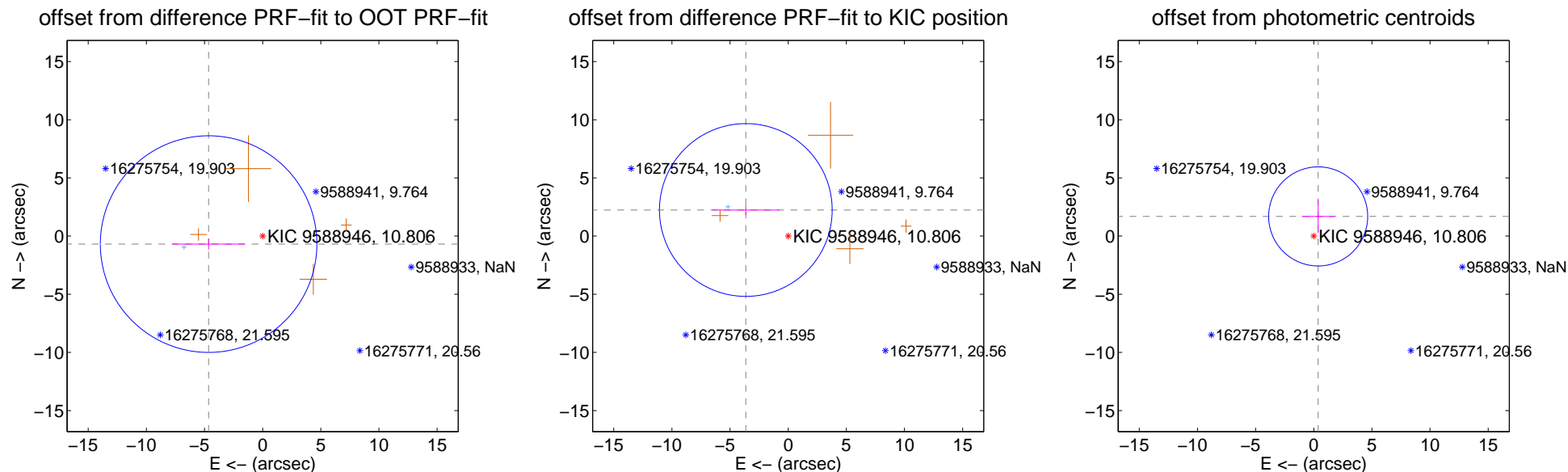
DV Centroid Data

Supplemental centroid analysis for 009588946-01. **Kepler magnitude: 10.81.** Transit SNR 16.65

There are 1 quarters with good PRF difference image offsets

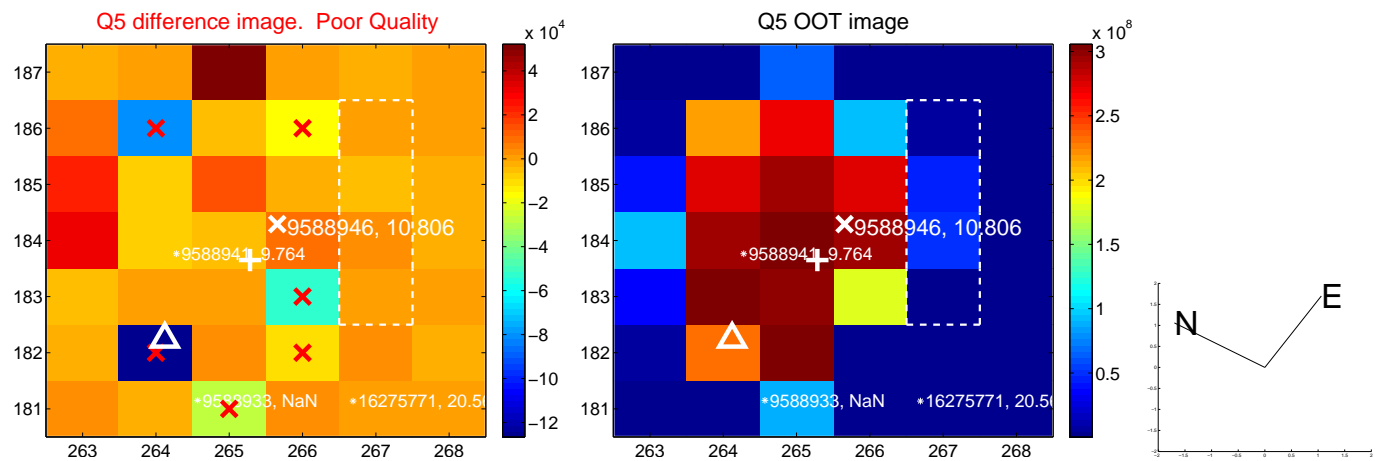
The OOT PRF centroid is offset from the target star catalog position by about 3.82 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.700 ± 3.104	1.51	4.649 ± 3.137	-0.689 ± 0.477
PRF-fit source offset from KIC position	4.280 ± 2.475	1.73	3.645 ± 2.894	2.242 ± 0.430
photometric centroid source offset	1.73 ± 1.42	1.22	-0.38 ± 1.40	1.69 ± 1.42

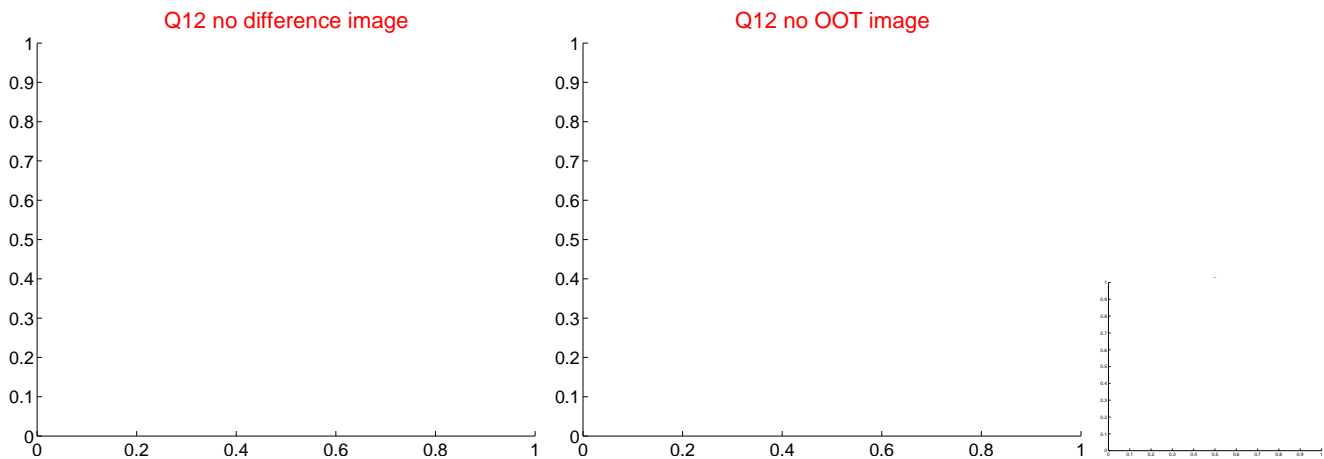
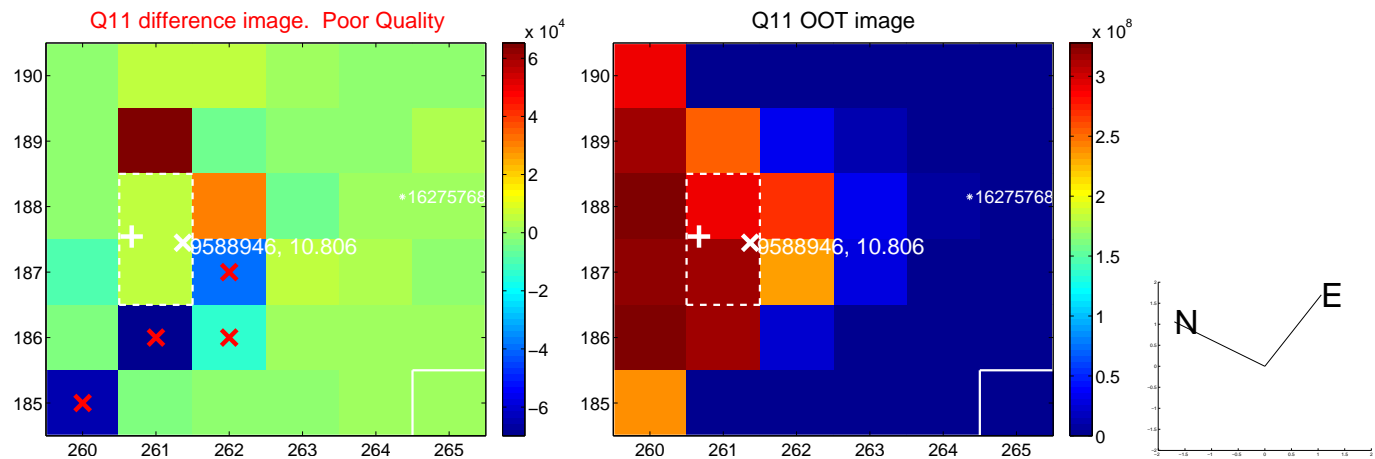
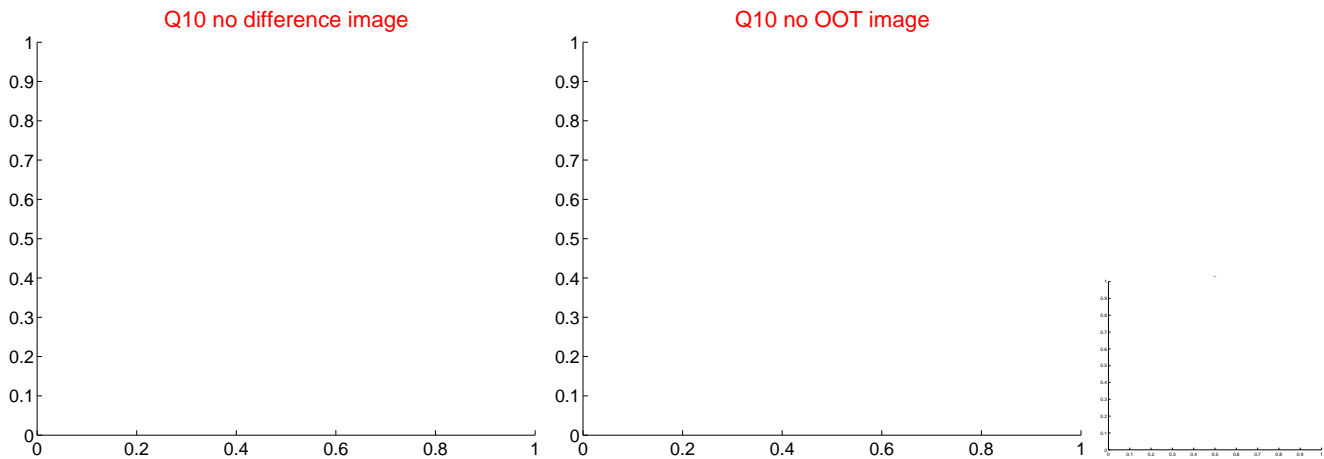
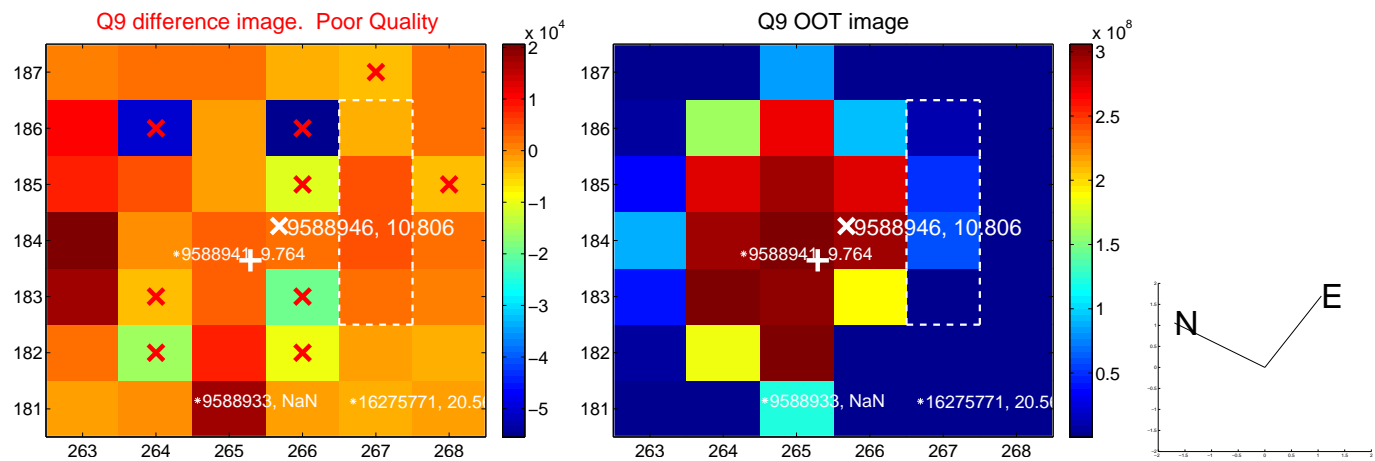


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

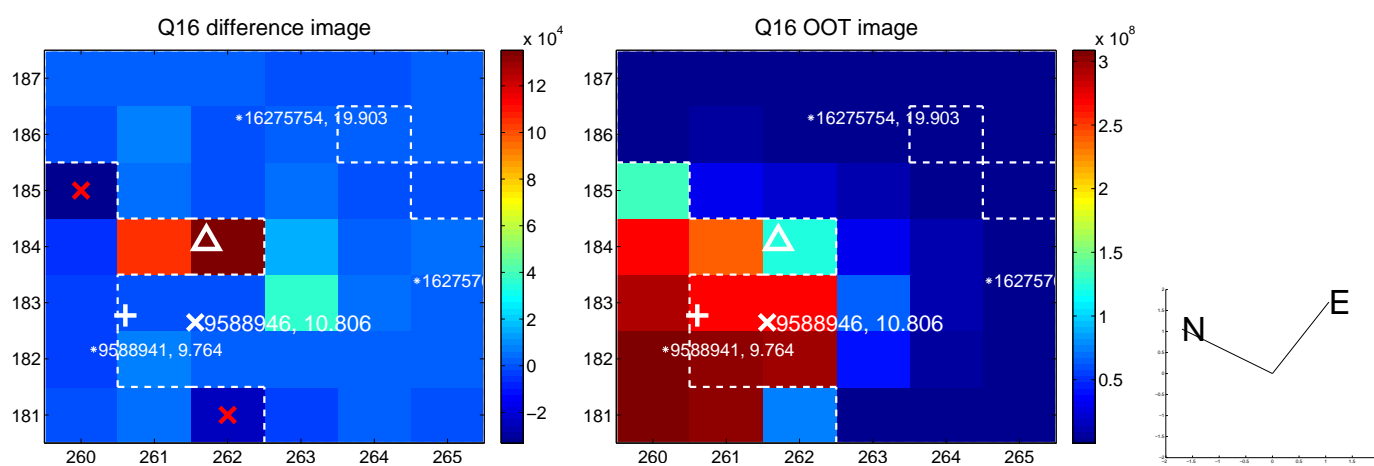
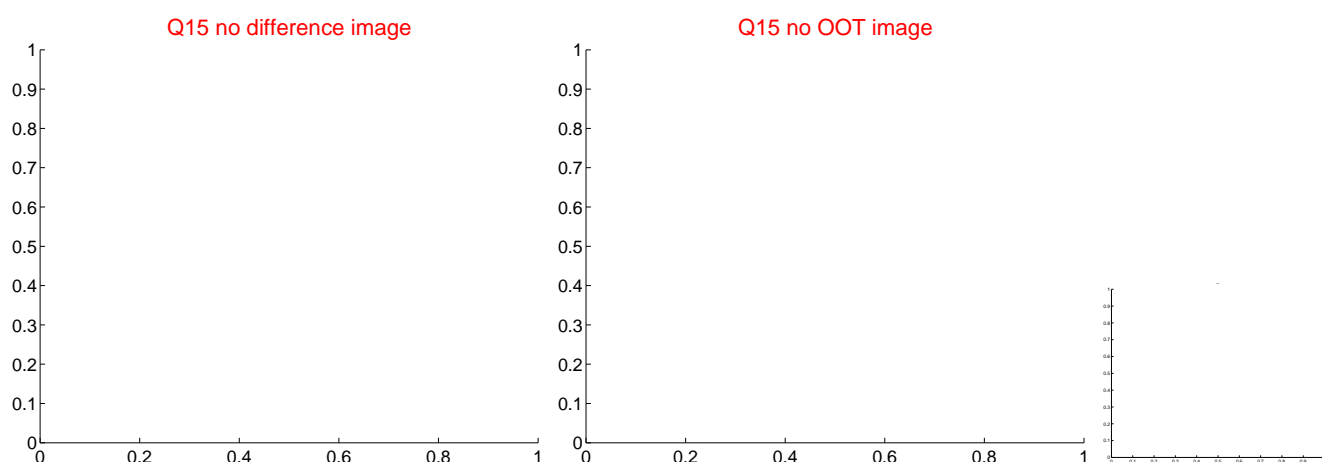
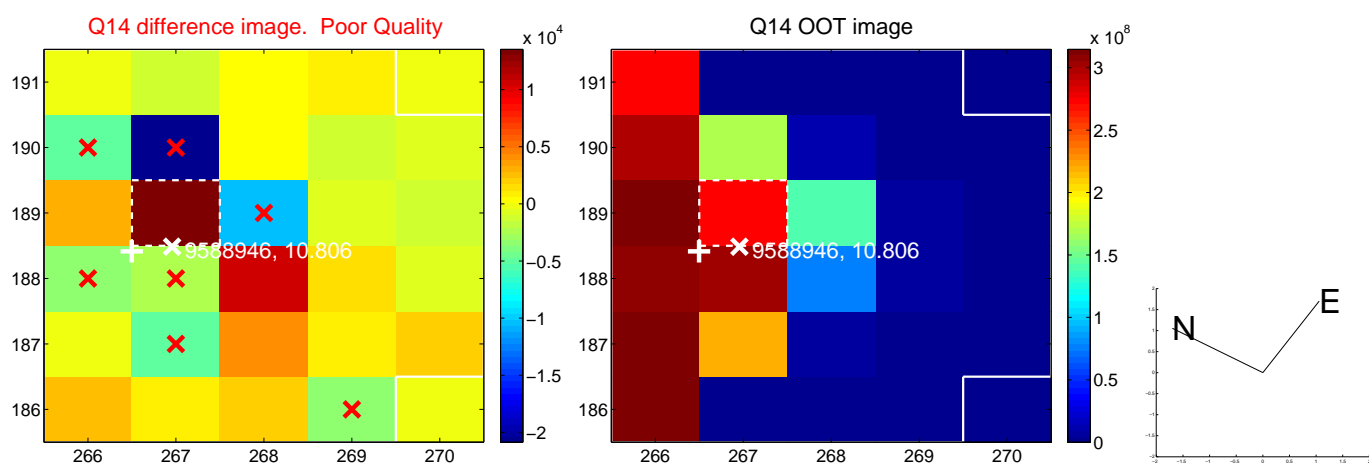
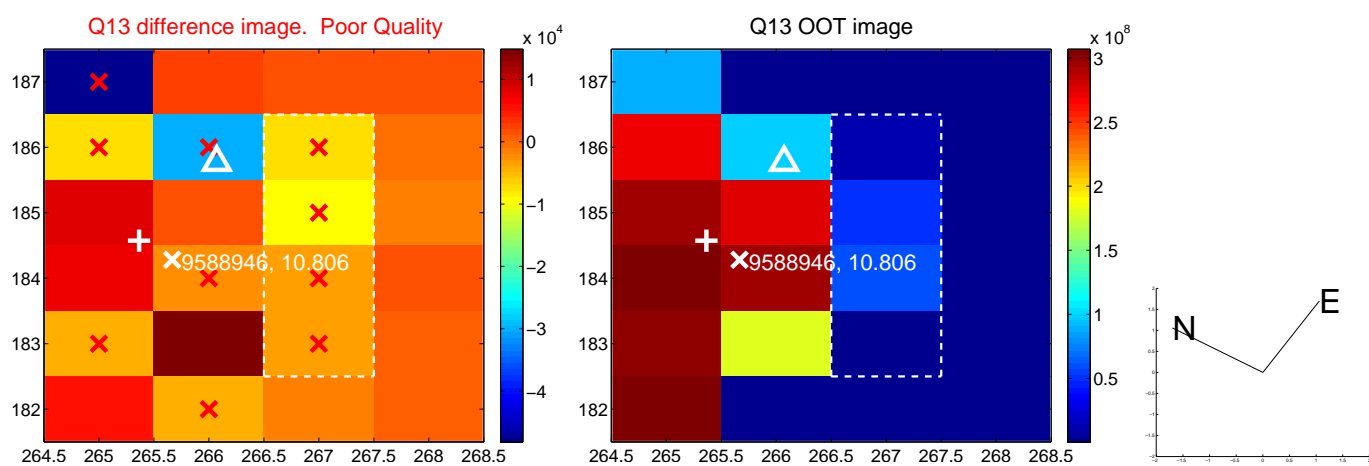
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



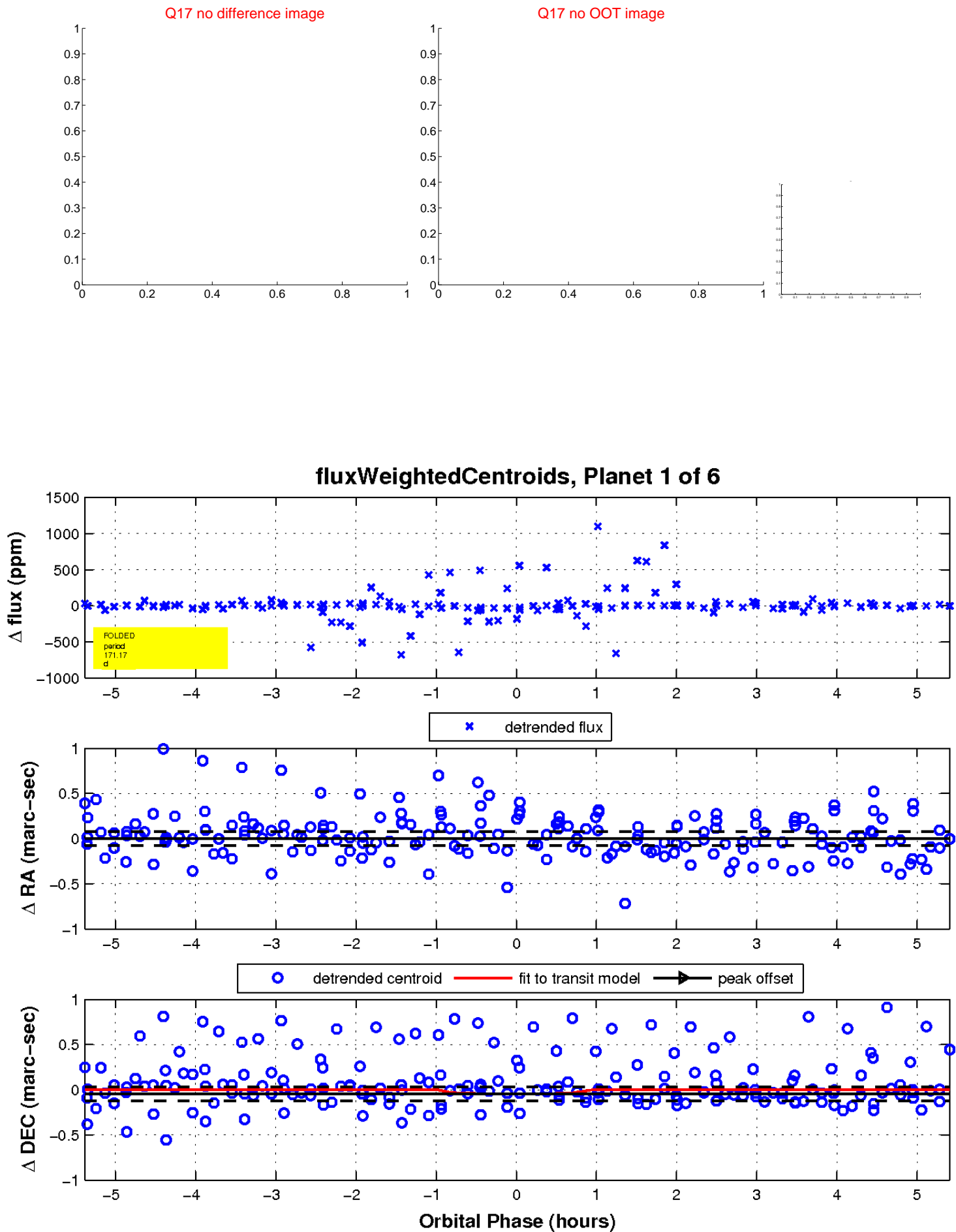
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



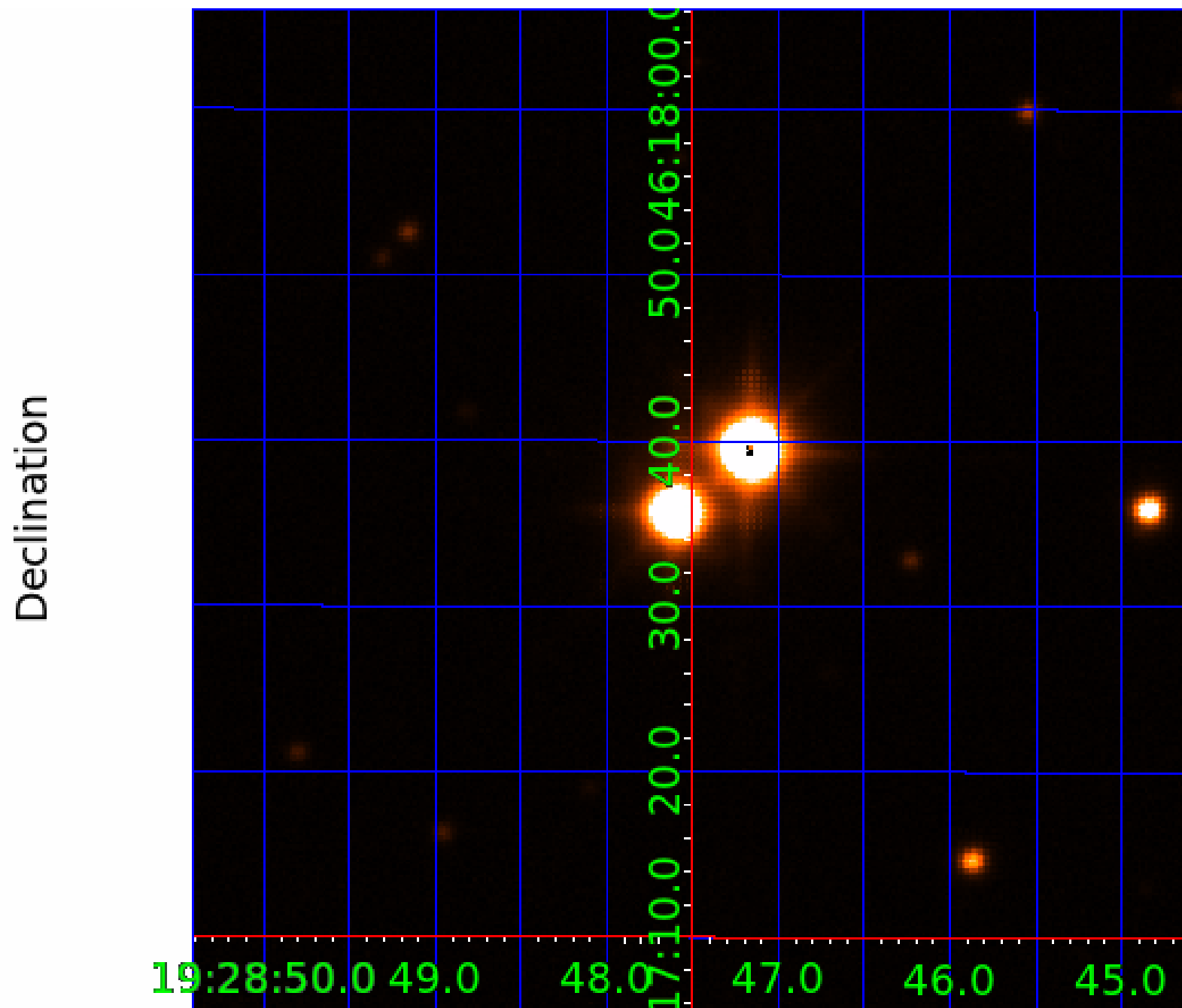
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009588946

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})
009588946-01	OBS	No	171.169369	164.490515	54.5	1.804	30.3	16.7	4.09	5019	3.23	17.65
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Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
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009588946-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—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_SATURATED—HALO_GHOST
009588946-03	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_SATURATED
009588946-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
009588946-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—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_SATURATED
009588946-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

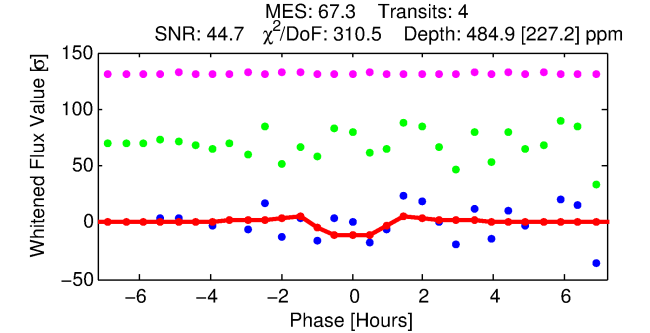
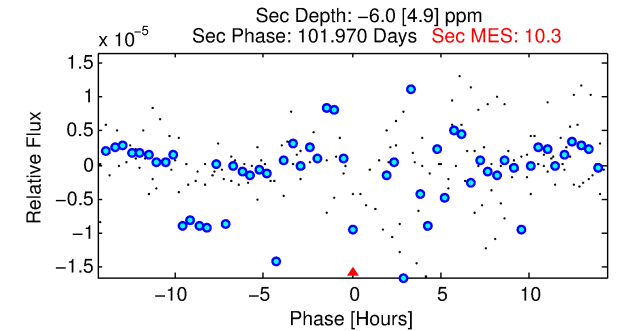
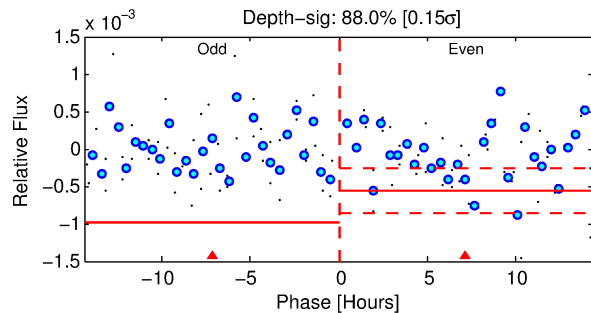
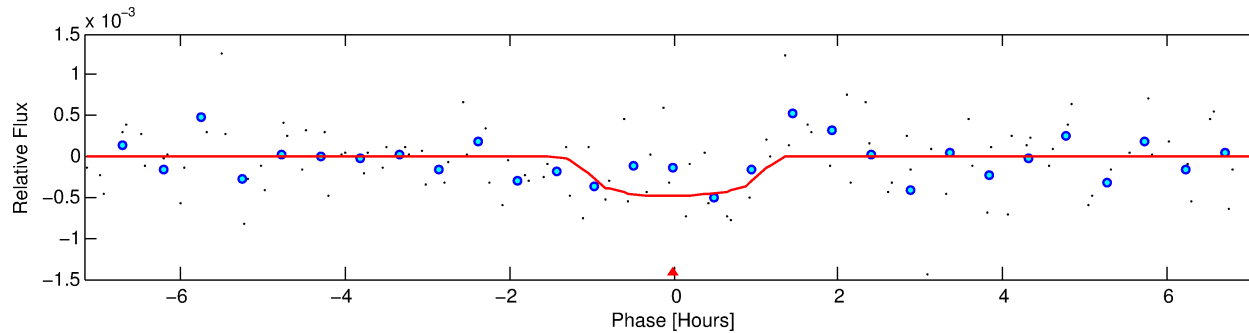
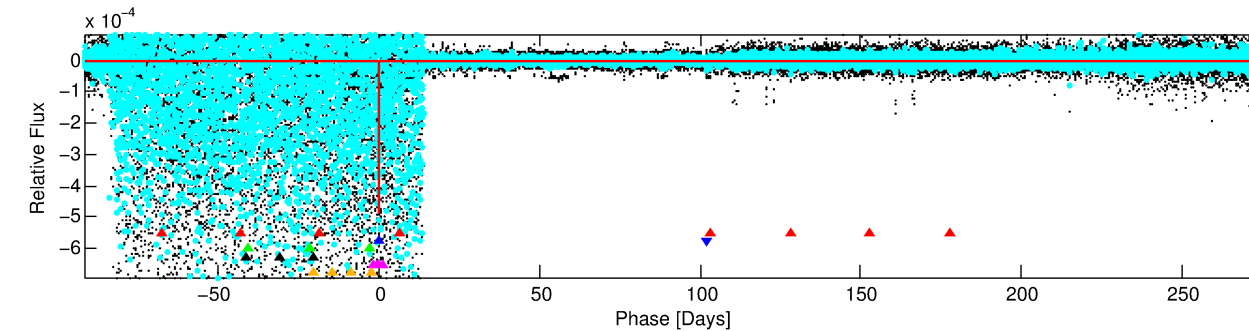
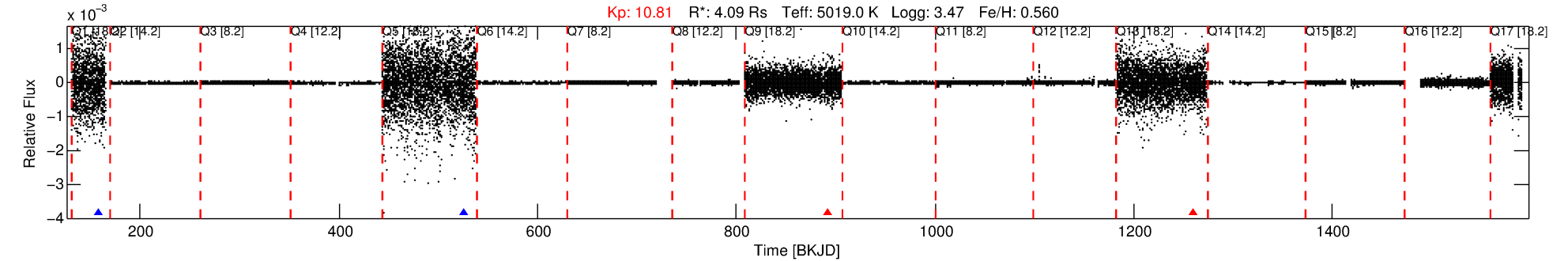
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009588946-02

No Significant Match Found

DV One-Page Summary

KIC: 9588946 Candidate: 2 of 6 Period: 367.037 d



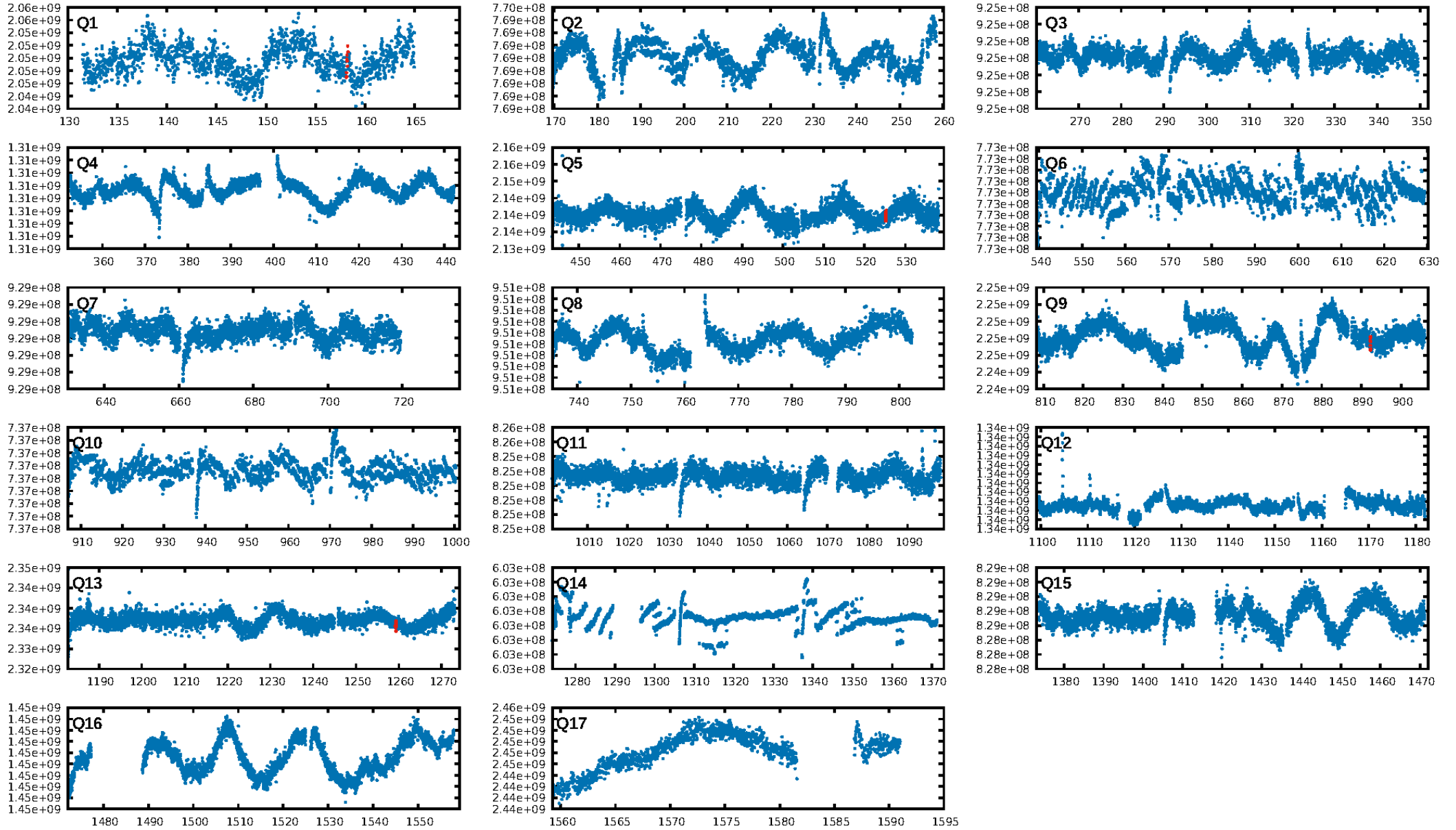
DV Fit Results:

Period = 367.03740 [0.00982] d
Epoch = 158.1837 [0.0143] BKJD
Rp/R* = 0.0237 [0.0431]
a/R* = 656.28 [4178.87]
b = 0.86 [2.02]
Seff = 6.38 [8.79]
Teq = 405 [140] K
Rp = 10.57 [20.37] Re
a = 1.2214 [0.9486] AU
Ag = N/A
Teffp = N/A

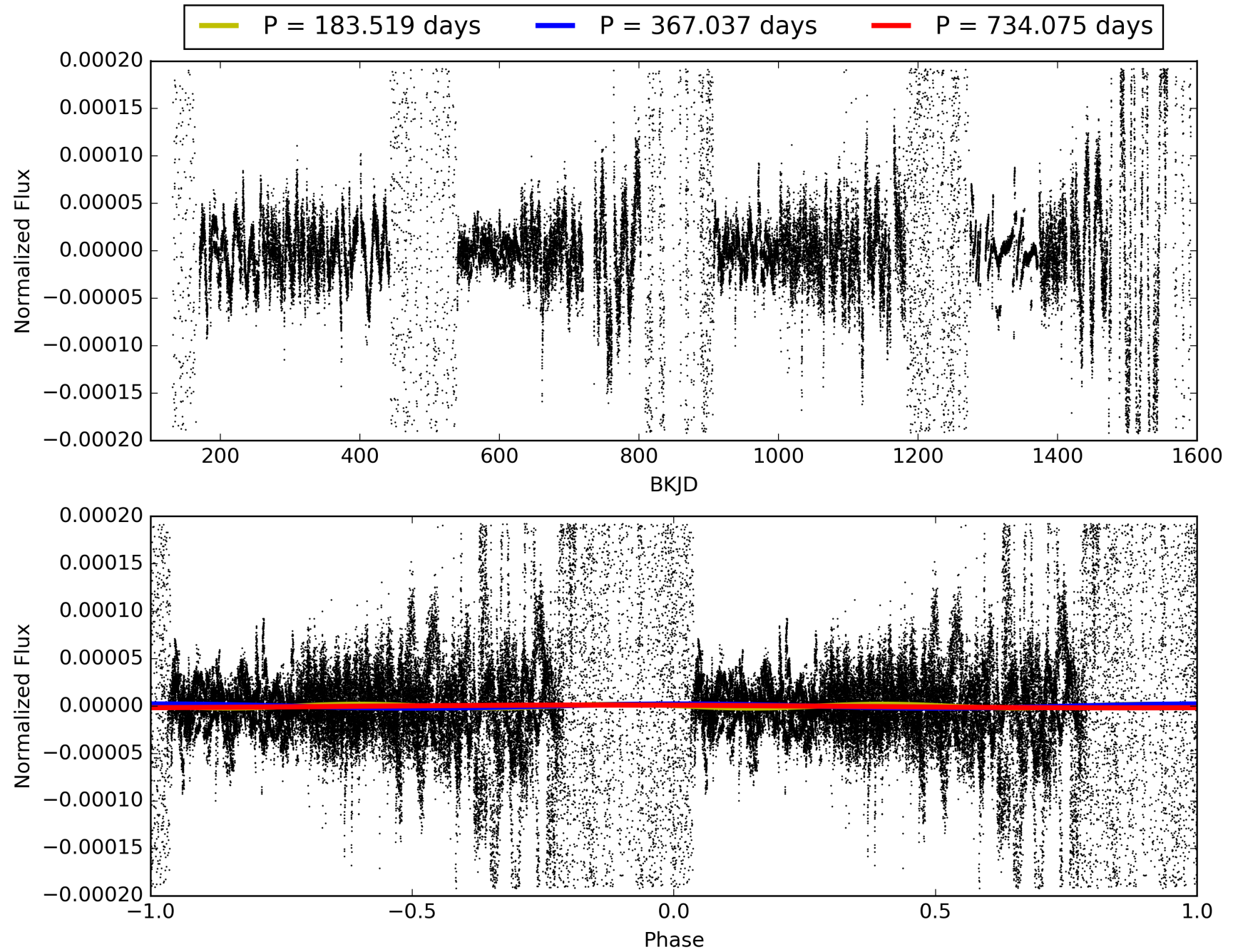
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [7.14 σ]
LongPeriod-sig: 100.0% [58.74 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.33 [1/3]
GhostDiagnostic-chr: 0.2426
Centroid-sig: 55.4%
Centroid-so: 0.986 arcsec [3.60 σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 0.75 [3/4]

TCE 009588946-02, PDC Light Curves

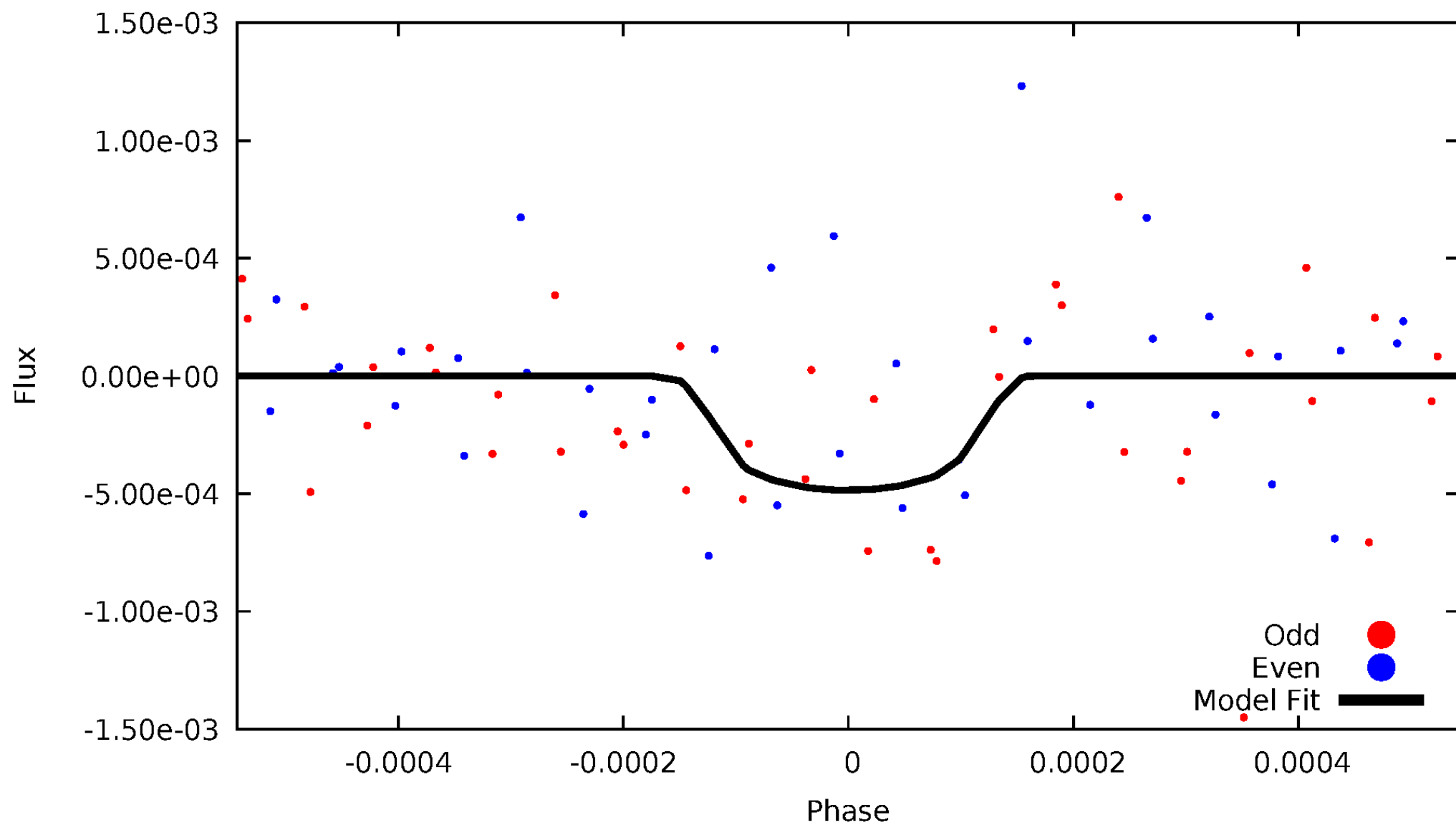


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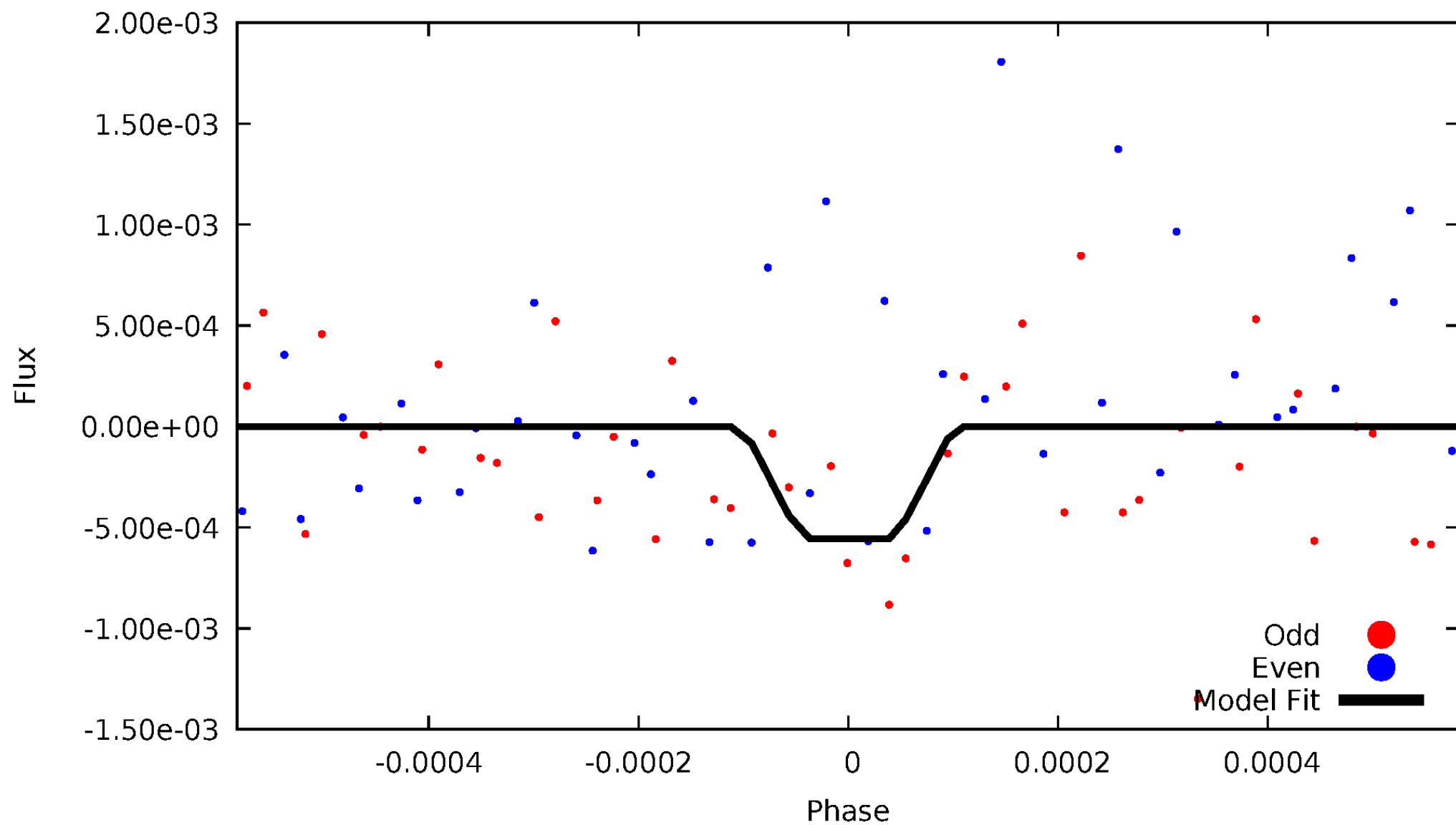
DV Odd/Even

TCE 009588946-02



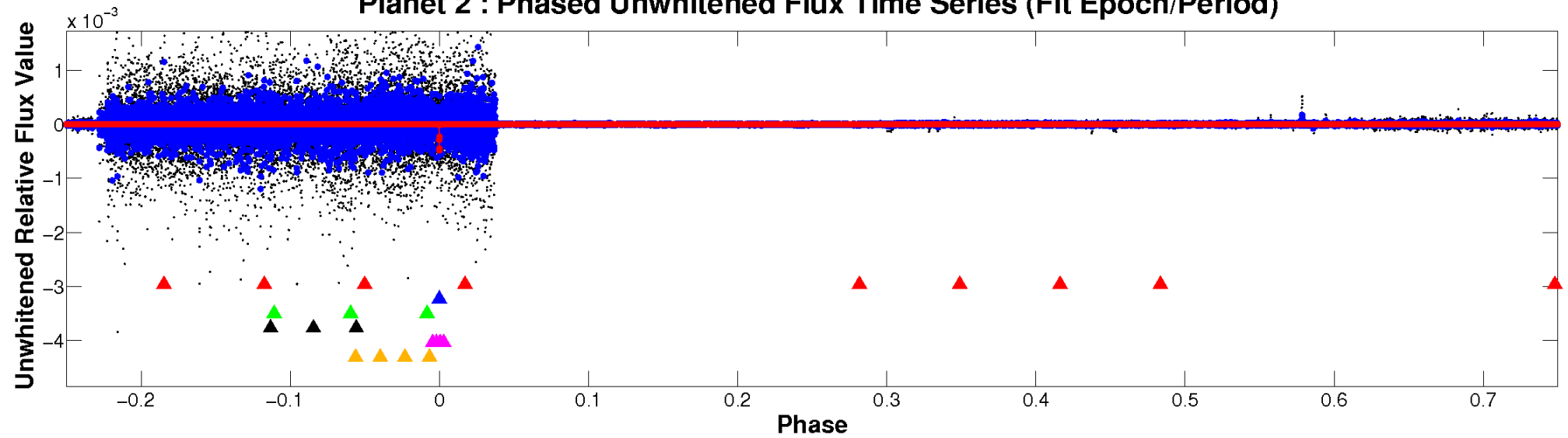
ALT Odd/Even

TCE 009588946-02

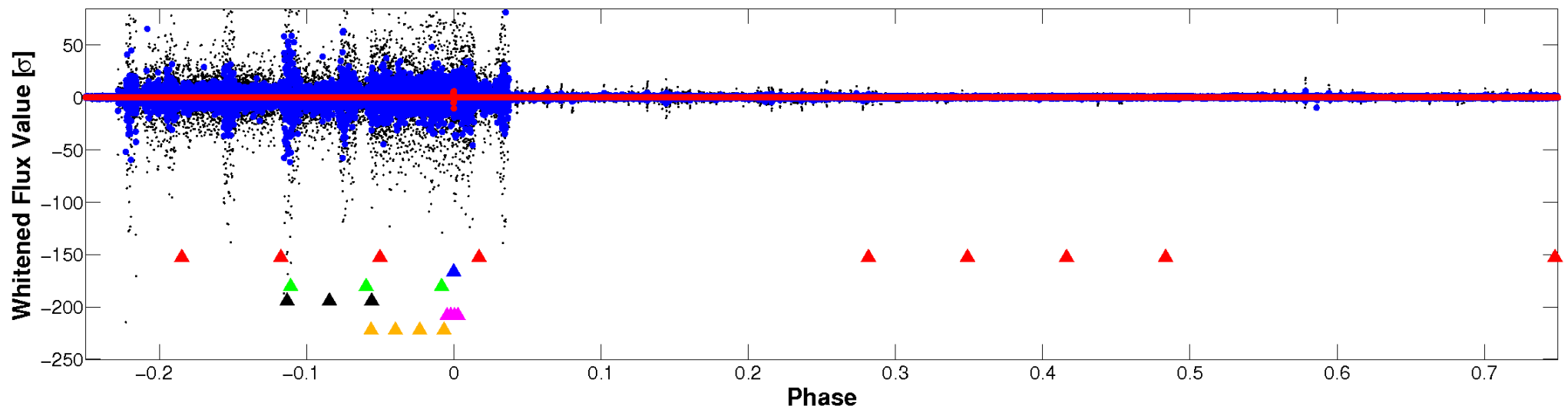


Non-Whitened Vs. Whitened Light Curve

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

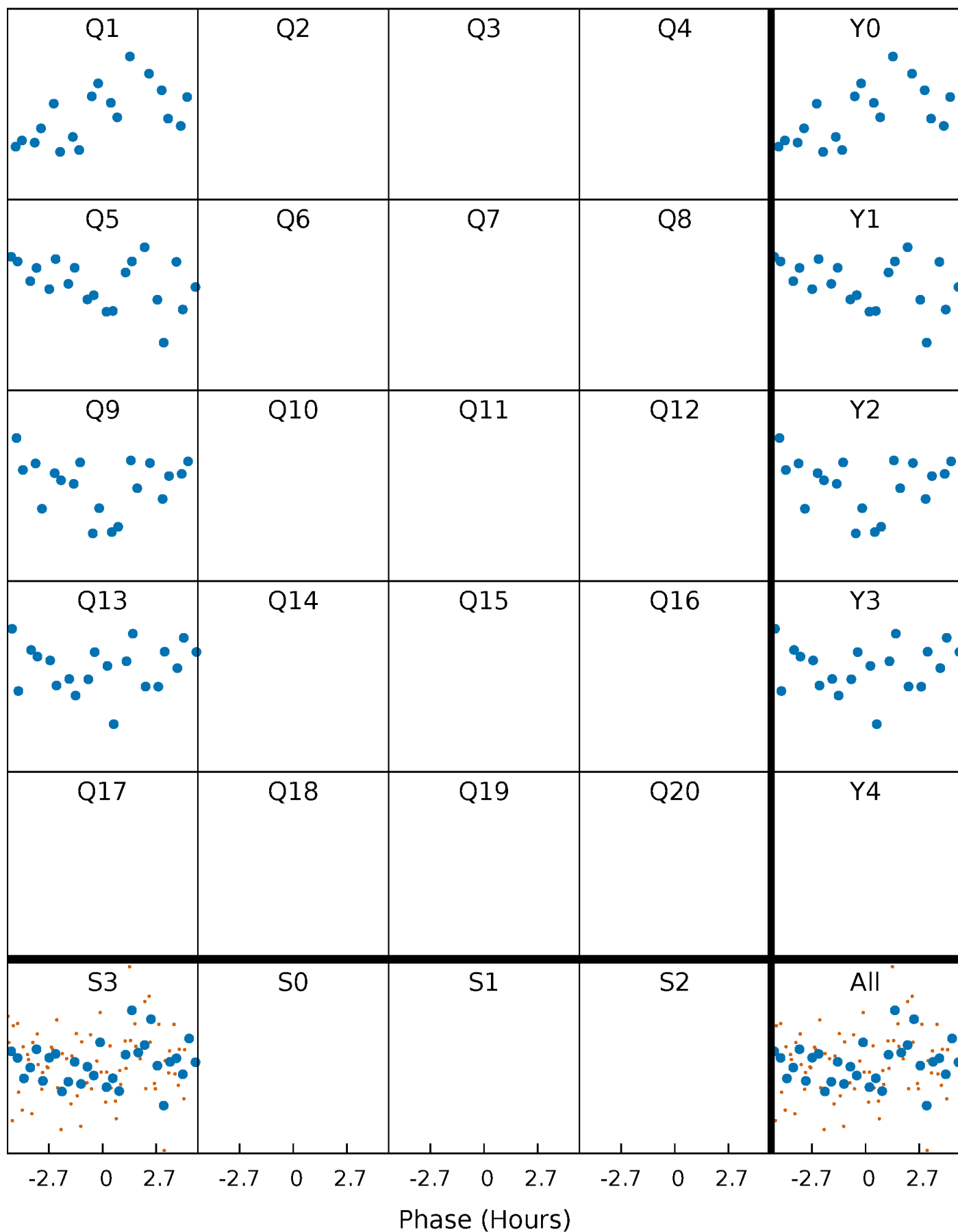


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



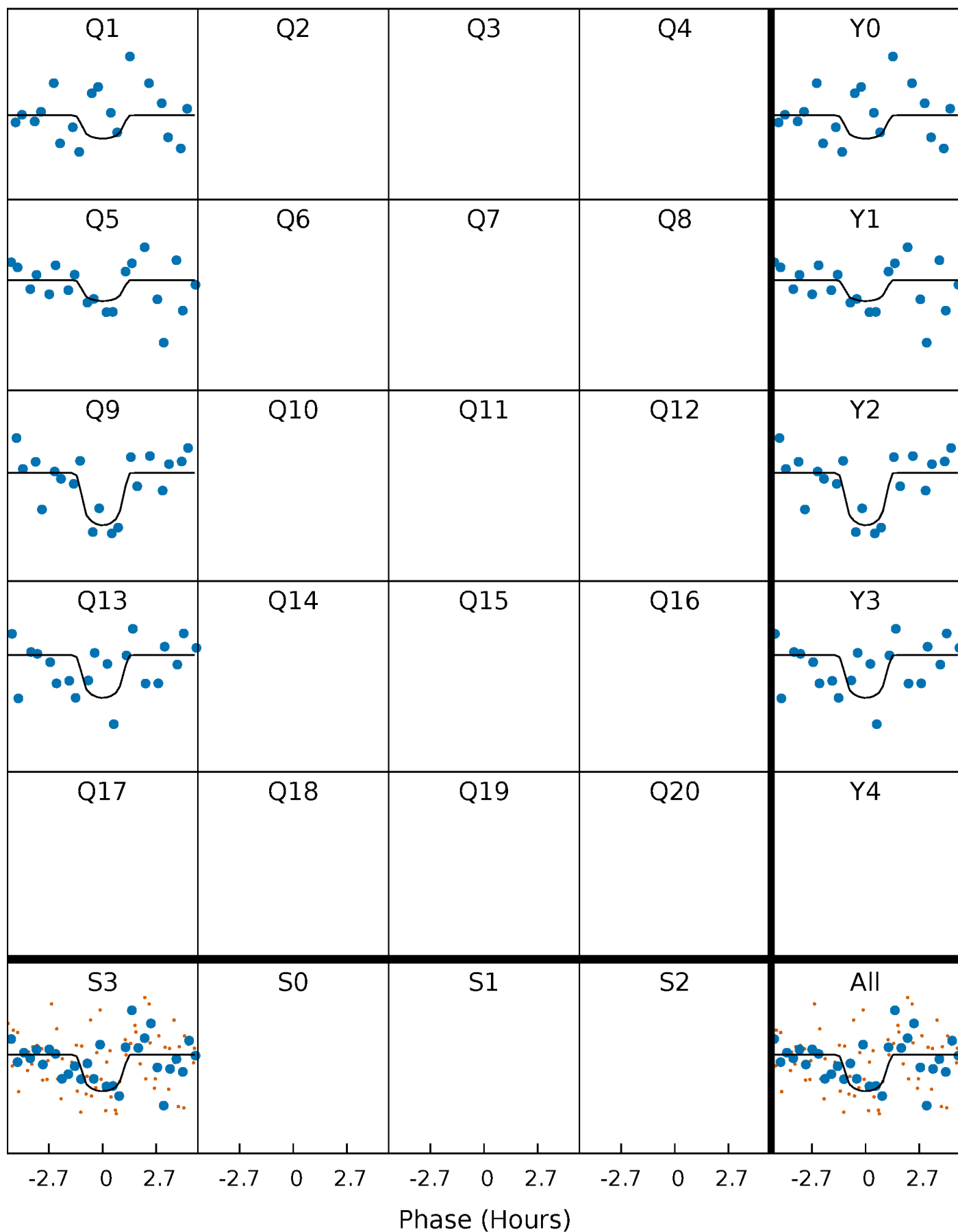
PDC Quarter-Phased Transit Curves

TCE 009588946-02 $P=367.037397$ Days $T_0=158.183711$ (BKJD)



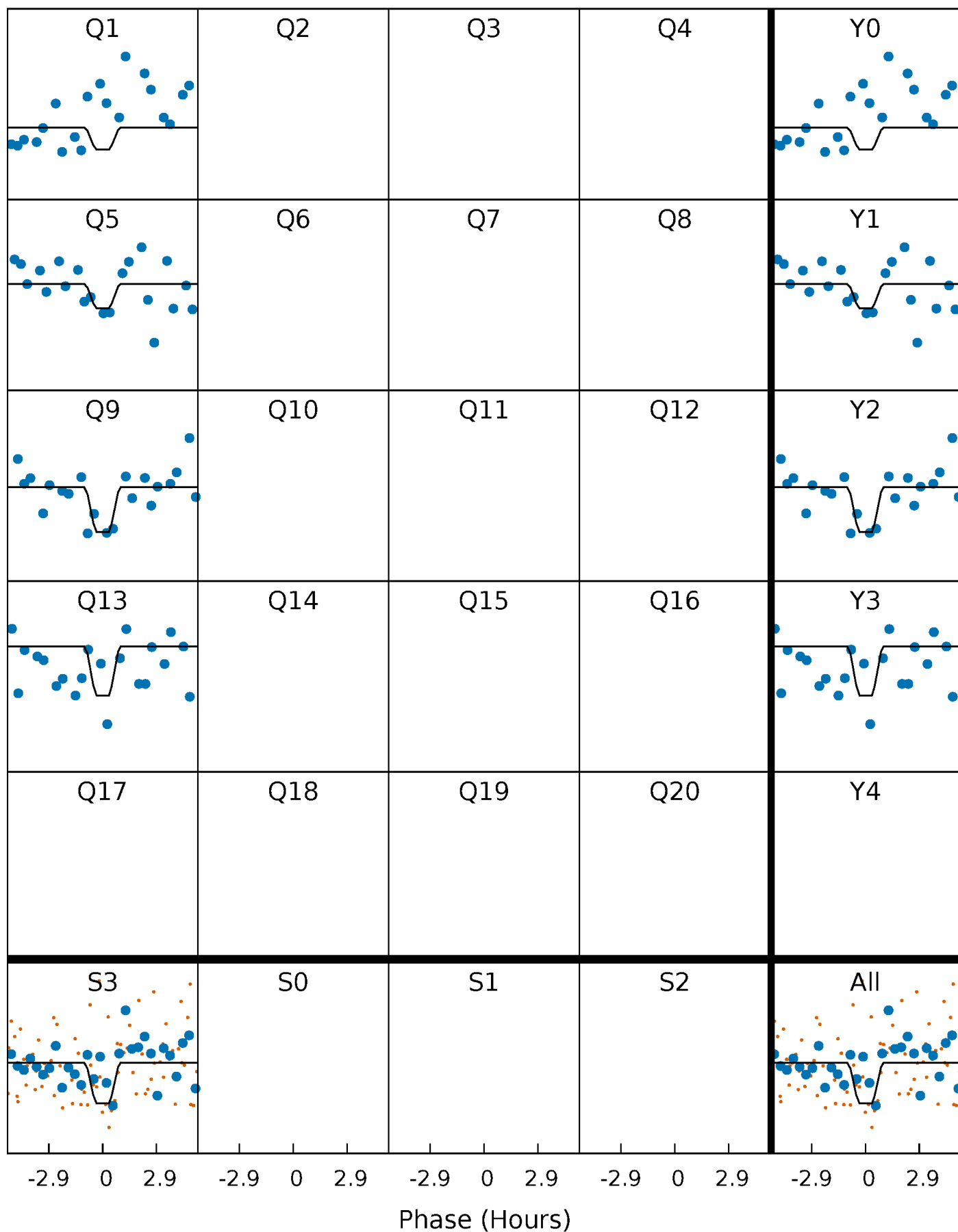
DV Quarter-Phased Transit Curves

TCE 009588946-02 P=367.037397 Days $T_0=158.183711$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

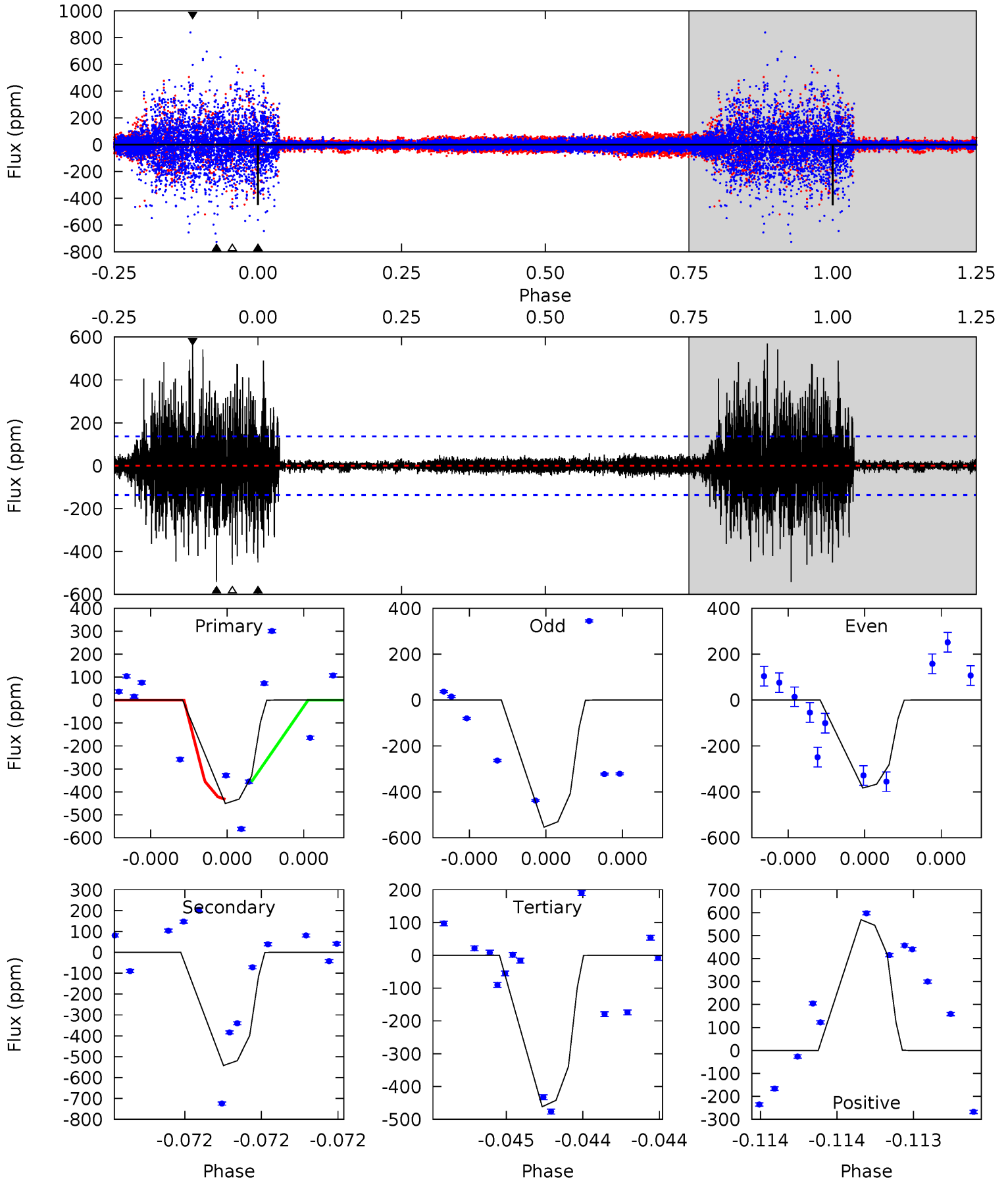
TCE 009588946-02 P=367.041227 Days $T_0=158.186716$ (BKJD)



DV Model-Shift Uniqueness Test

009588946-02, P = 367.037397 Days, E = 158.183711 Days

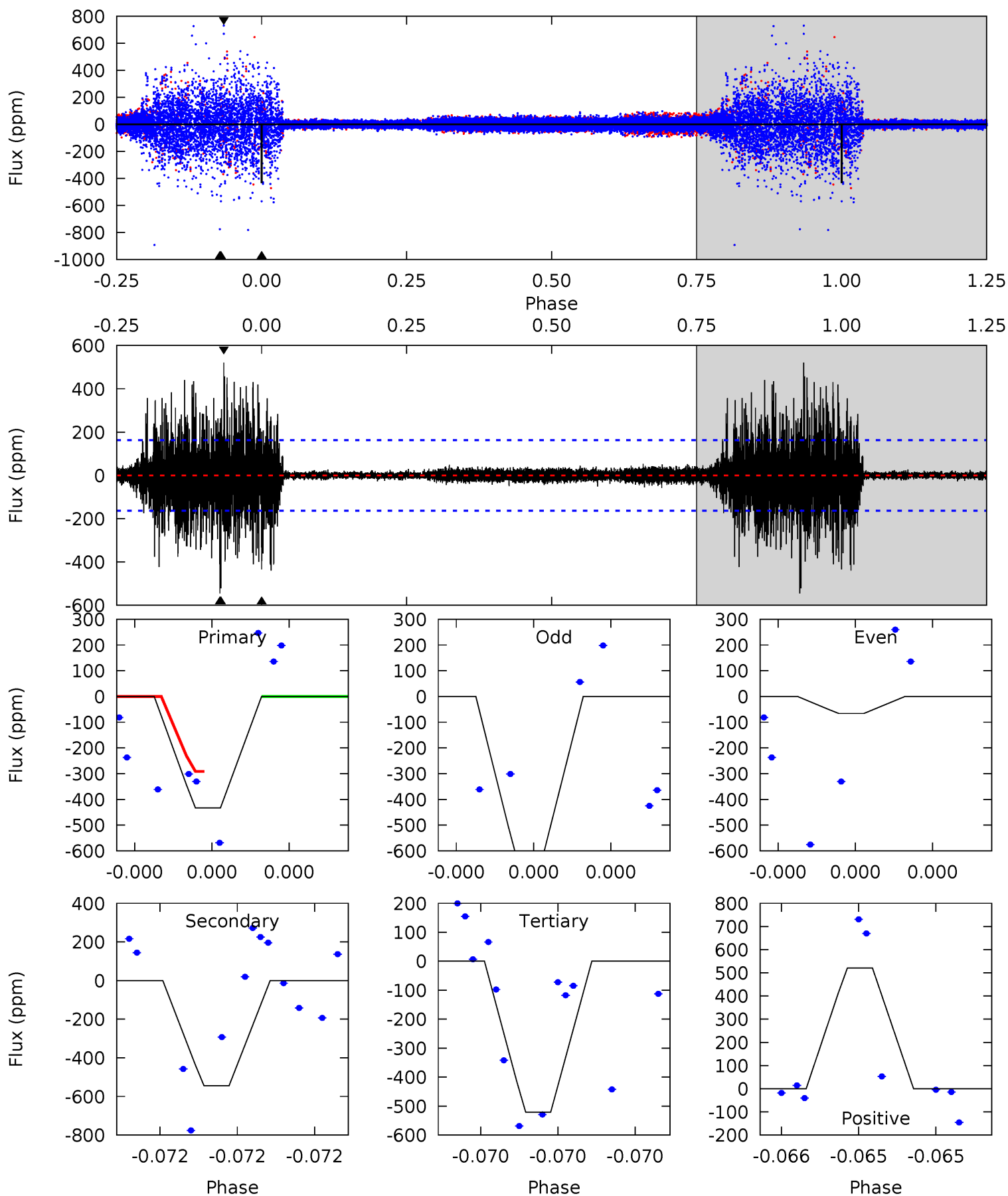
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.6	22.3	19.0	23.4	5.66	3.61	1.66	-0.45	-4.88	3.32	-1.11	2.18	0.80	0.51	1.53



Alt Model-Shift Uniqueness Test

009588946-02, P = 367.041227 Days, E = 158.186716 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	19.3	18.4	18.4	5.76	3.76	1.39	-3.10	-3.11	0.84	0.83	8.04	0.34	0.49	0



Stellar Parameters For KIC 009588946

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5019^{+173}_{-190}	$3.470^{+0.848}_{-0.212}$	$0.560^{+0.050}_{-0.350}$	$4.093^{+1.115}_{-2.601}$	$1.805^{+0.269}_{-0.808}$	$0.037^{+0.536}_{-0.018}$
	+3%/-4%	+24%/-6%	+9%/-62%	+27%/-64%	+15%/-45%	+1446%/-49%
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 009588946-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-542 ± 24	$14.59^{+17.44}_{-10.39}$	554^{+58}_{-105}	4146^{+2644}_{-855}	2025^{+22253}_{-1583}
Alt.	-545 ± 28	$15.24^{+15.71}_{-10.50}$	551^{+60}_{-99}	4066^{+2703}_{-747}	1842^{+17851}_{-1394}

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

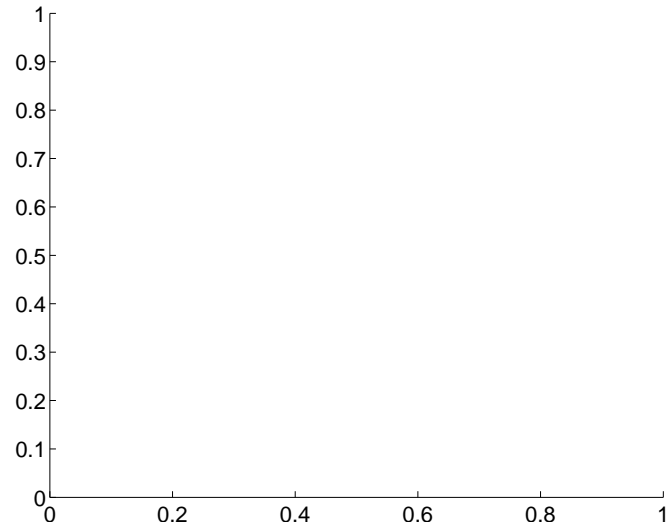
Supplemental centroid analysis for 009588946-02. **Kepler magnitude: 10.81.** Transit SNR 44.73

There are 0 quarters with good PRF difference image offsets

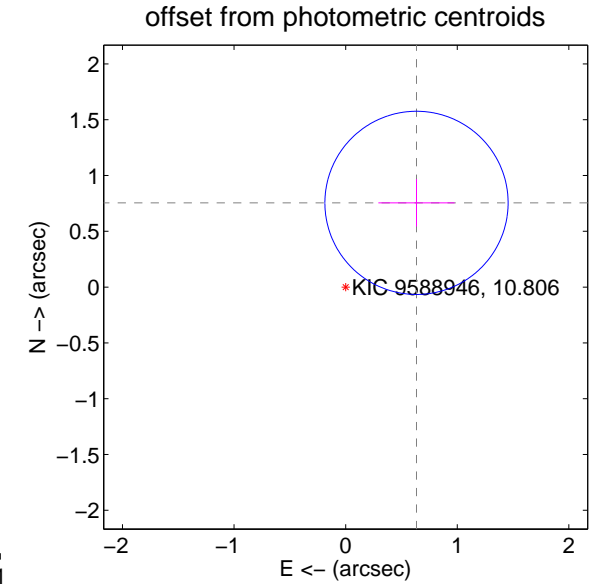
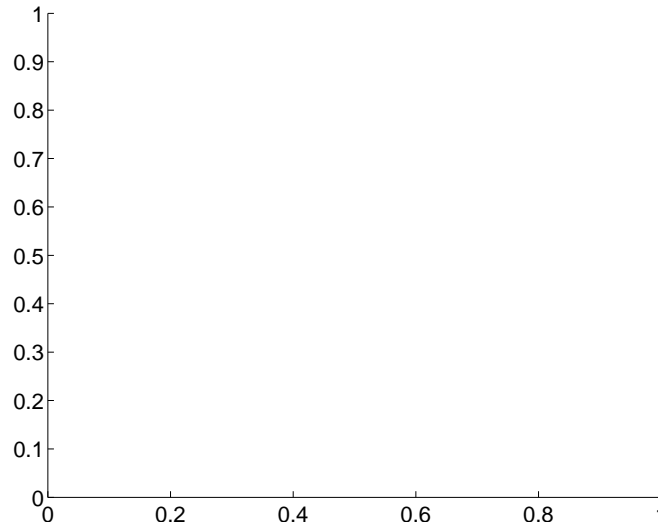
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	0.99 ± 0.27	3.60	-0.63 ± 0.34	0.75 ± 0.21

There is no PRF-fit offset from OOT-fit

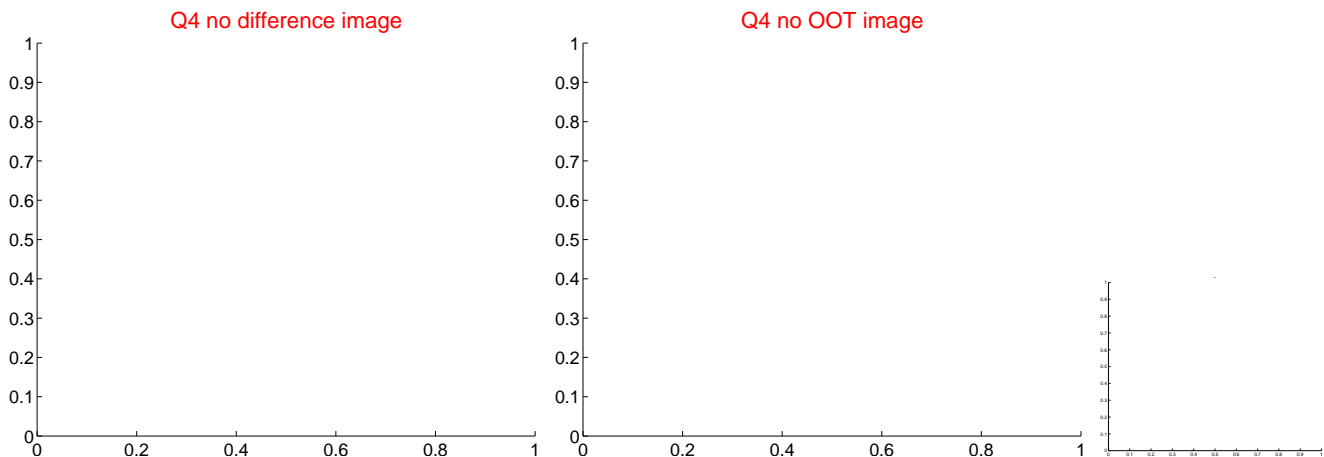
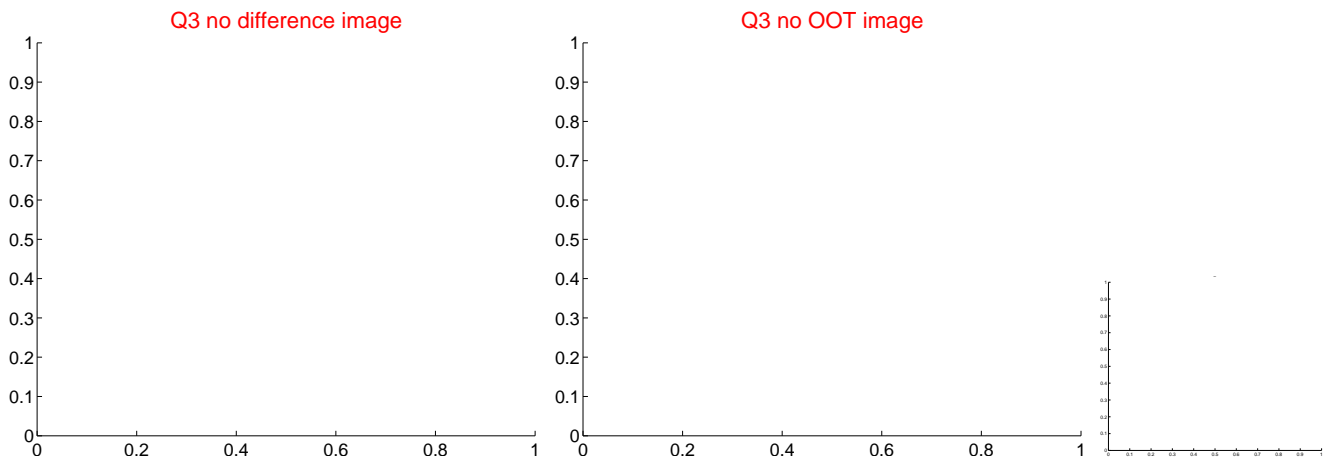
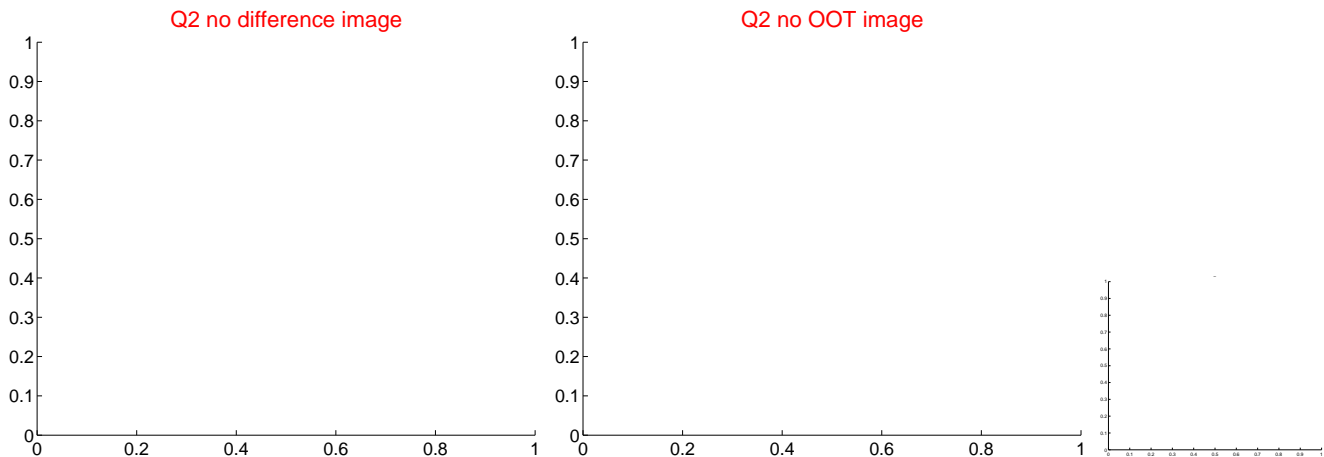
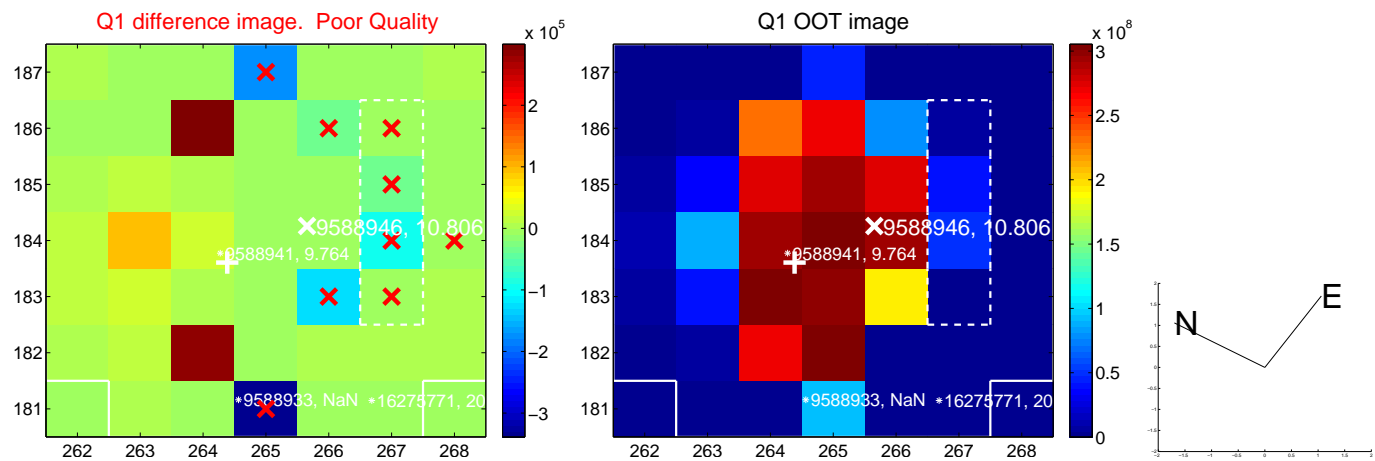


There is no PRF-fit offset from KIC

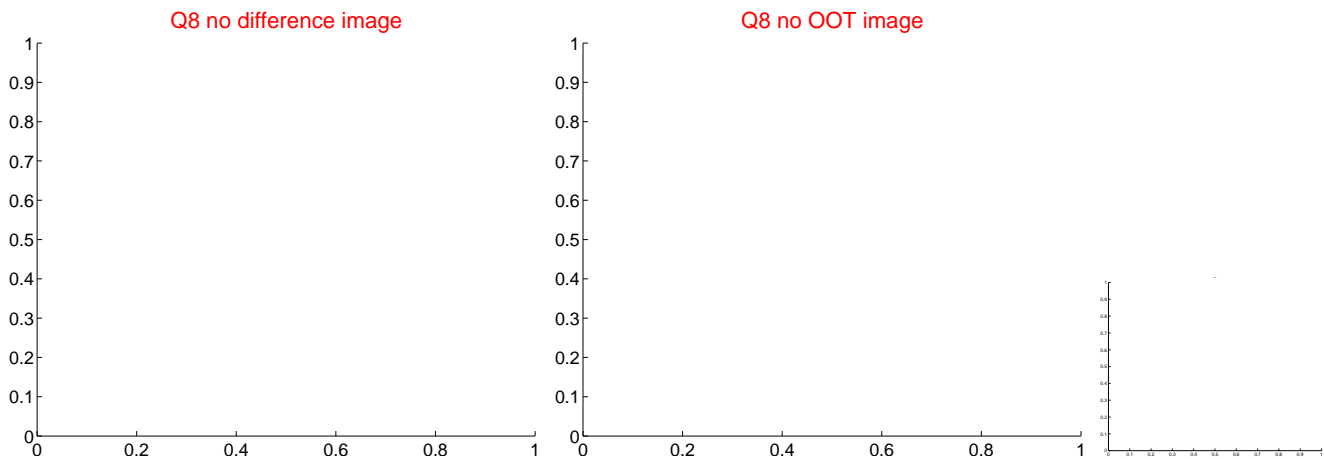
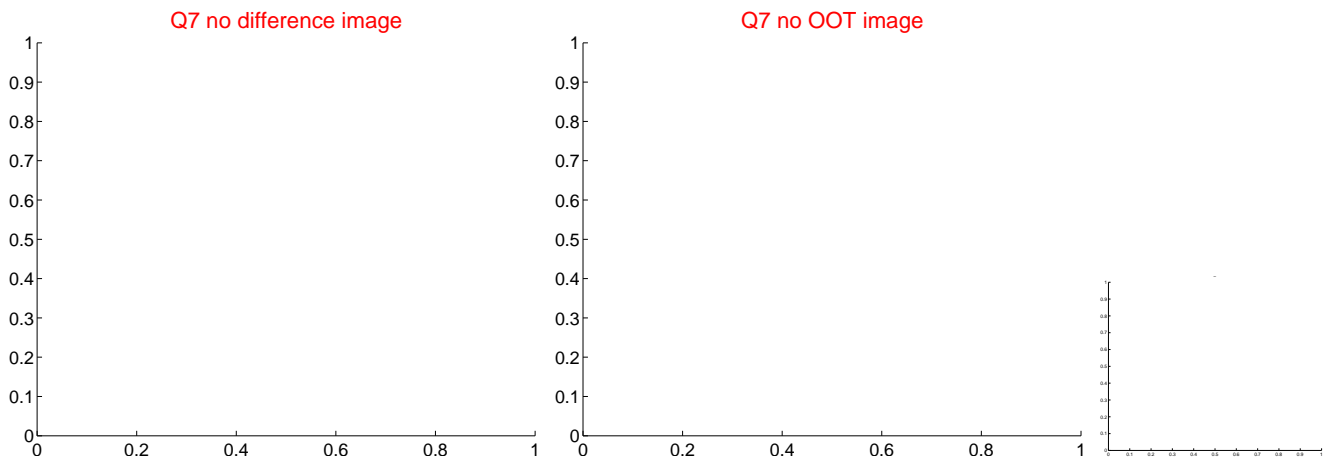
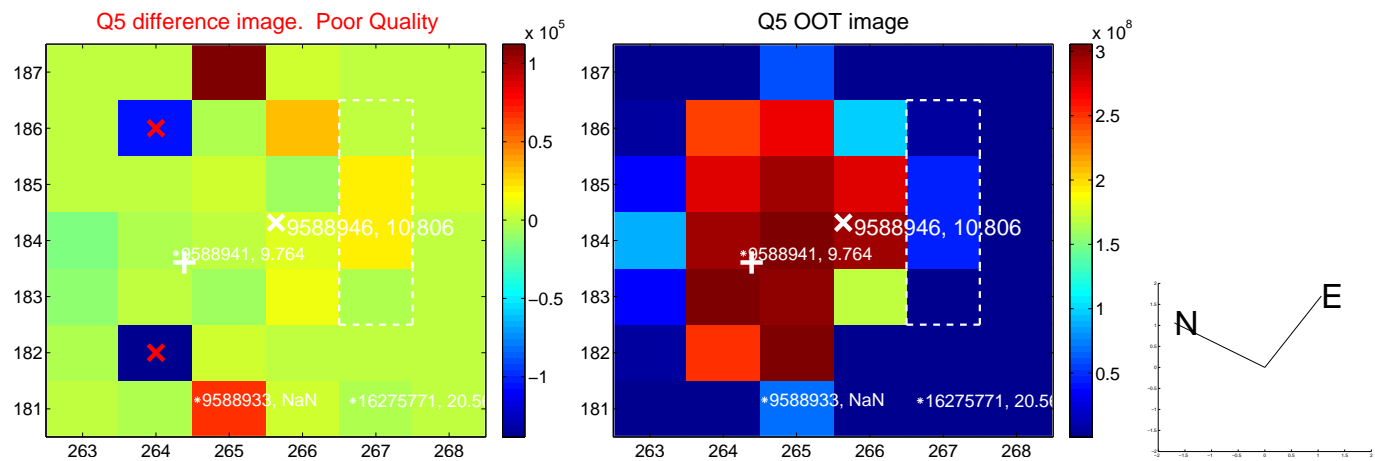


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

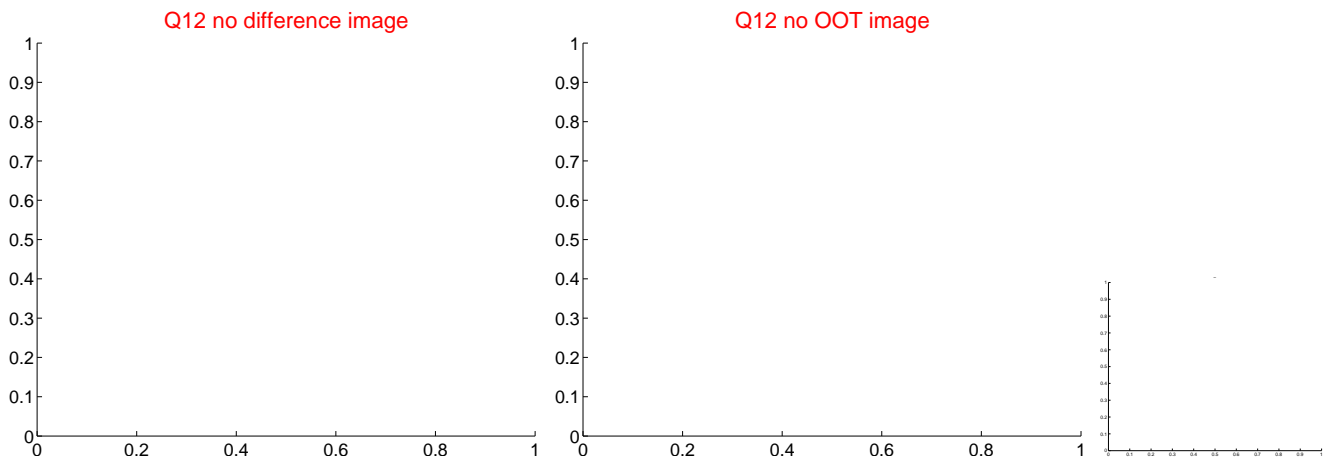
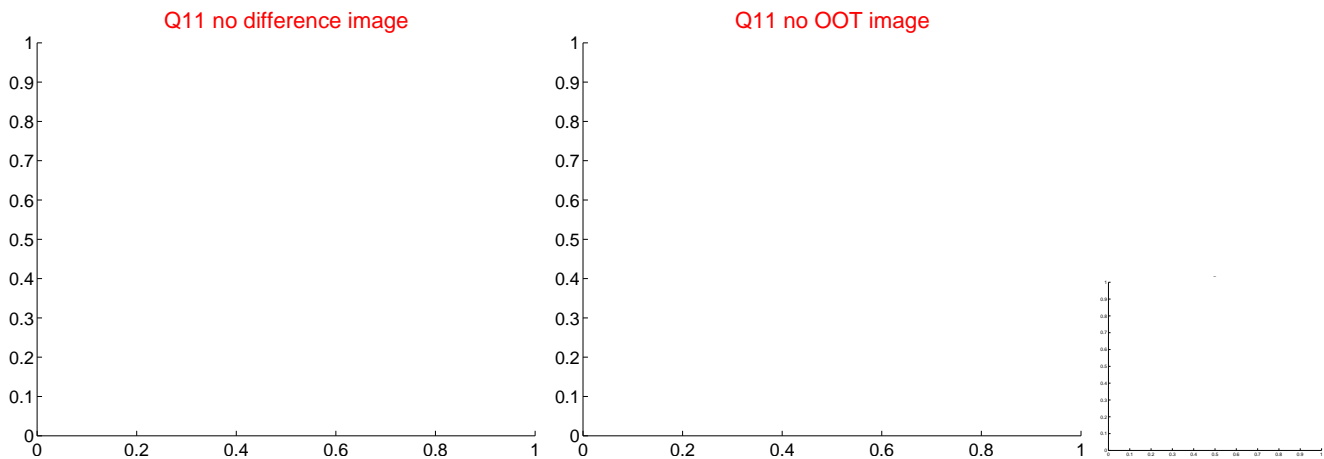
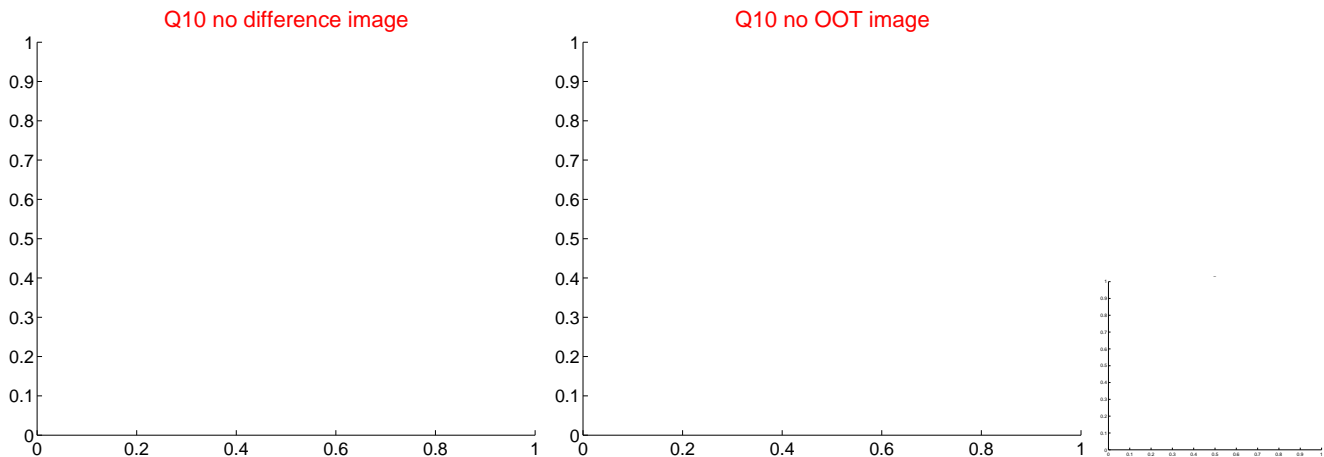
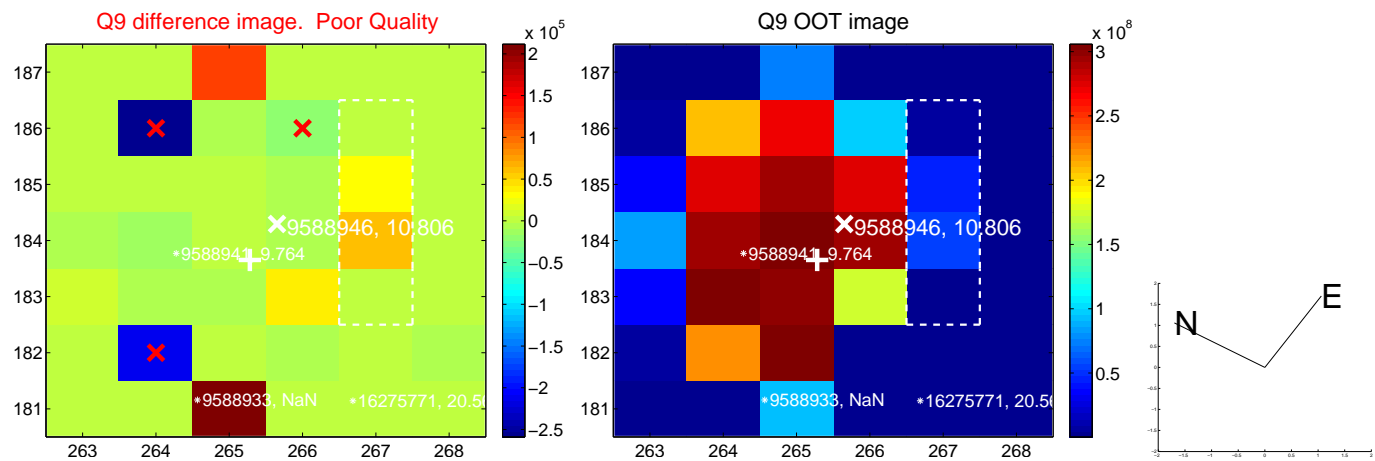
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



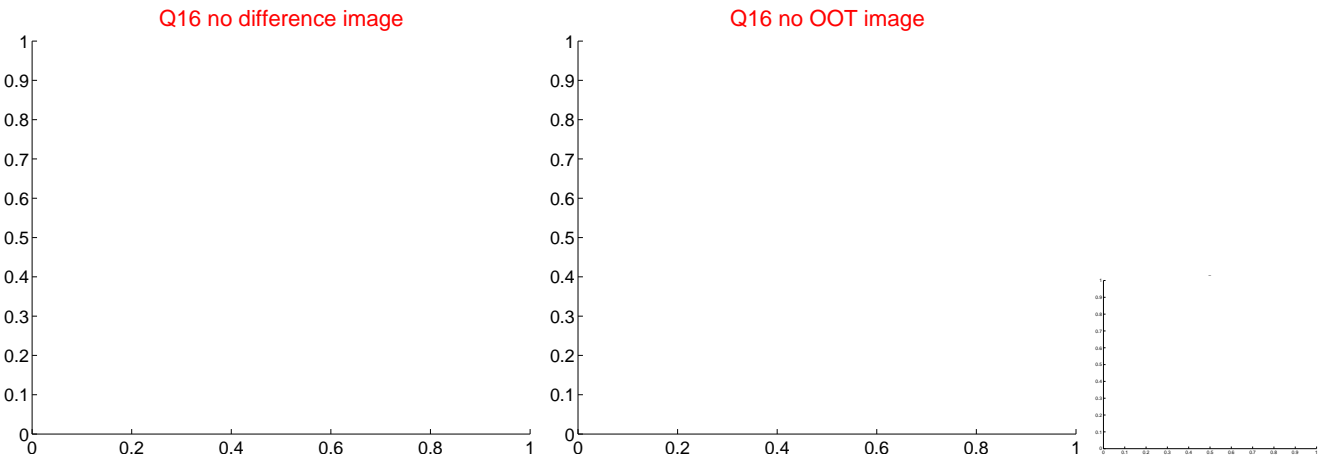
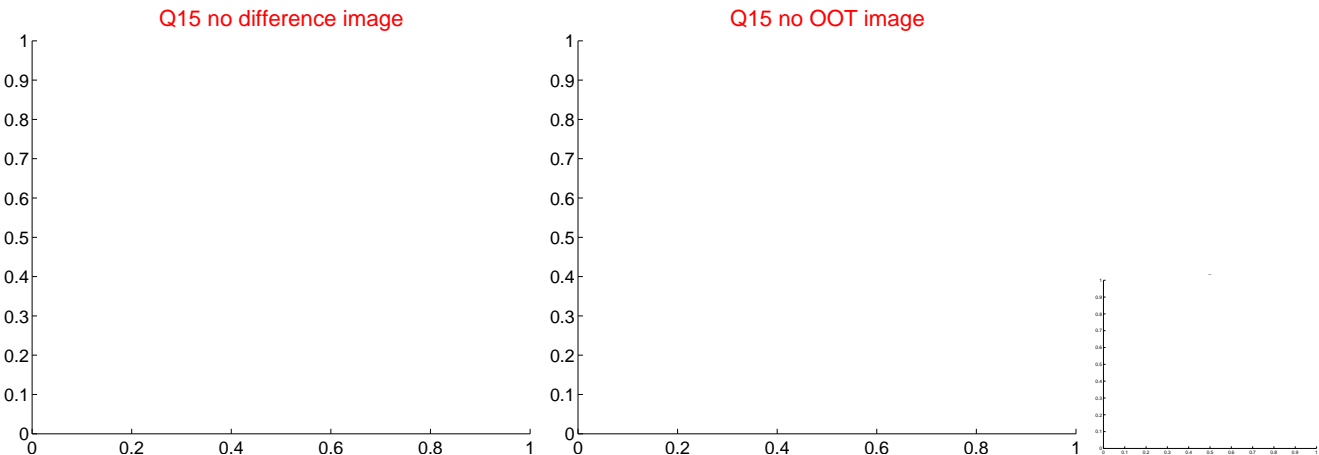
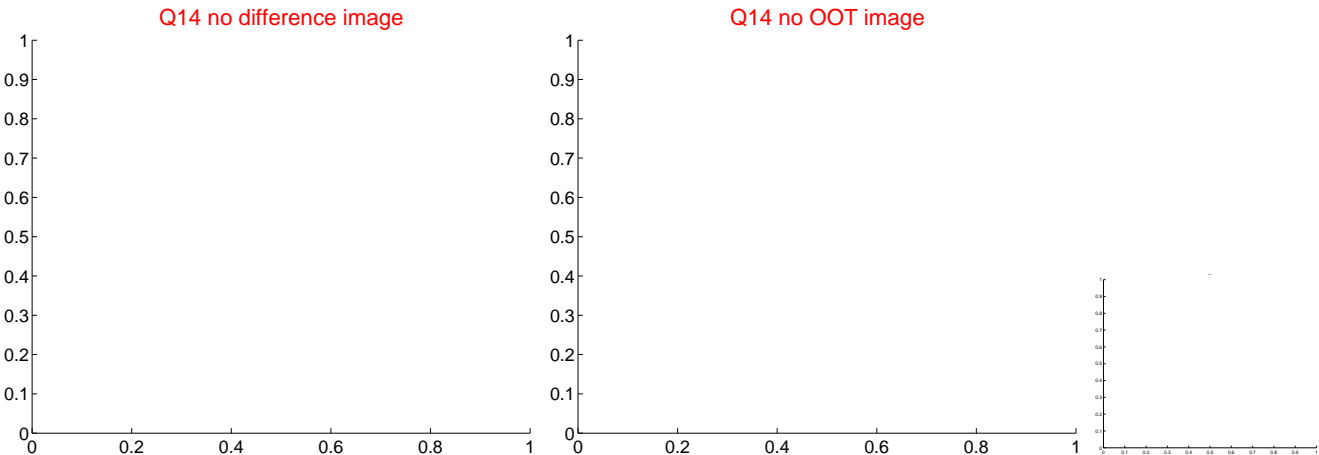
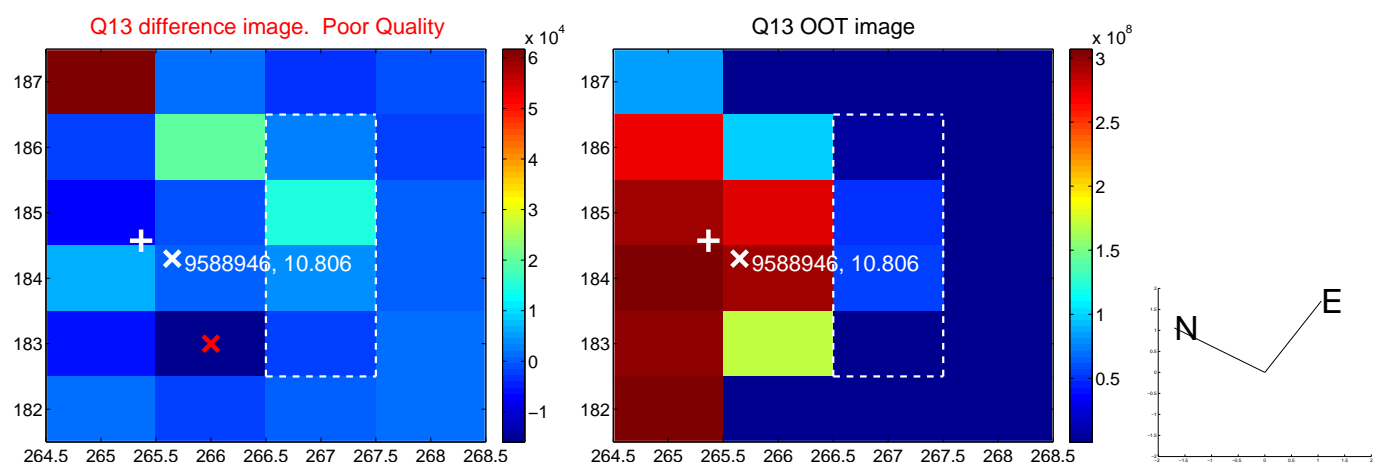
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



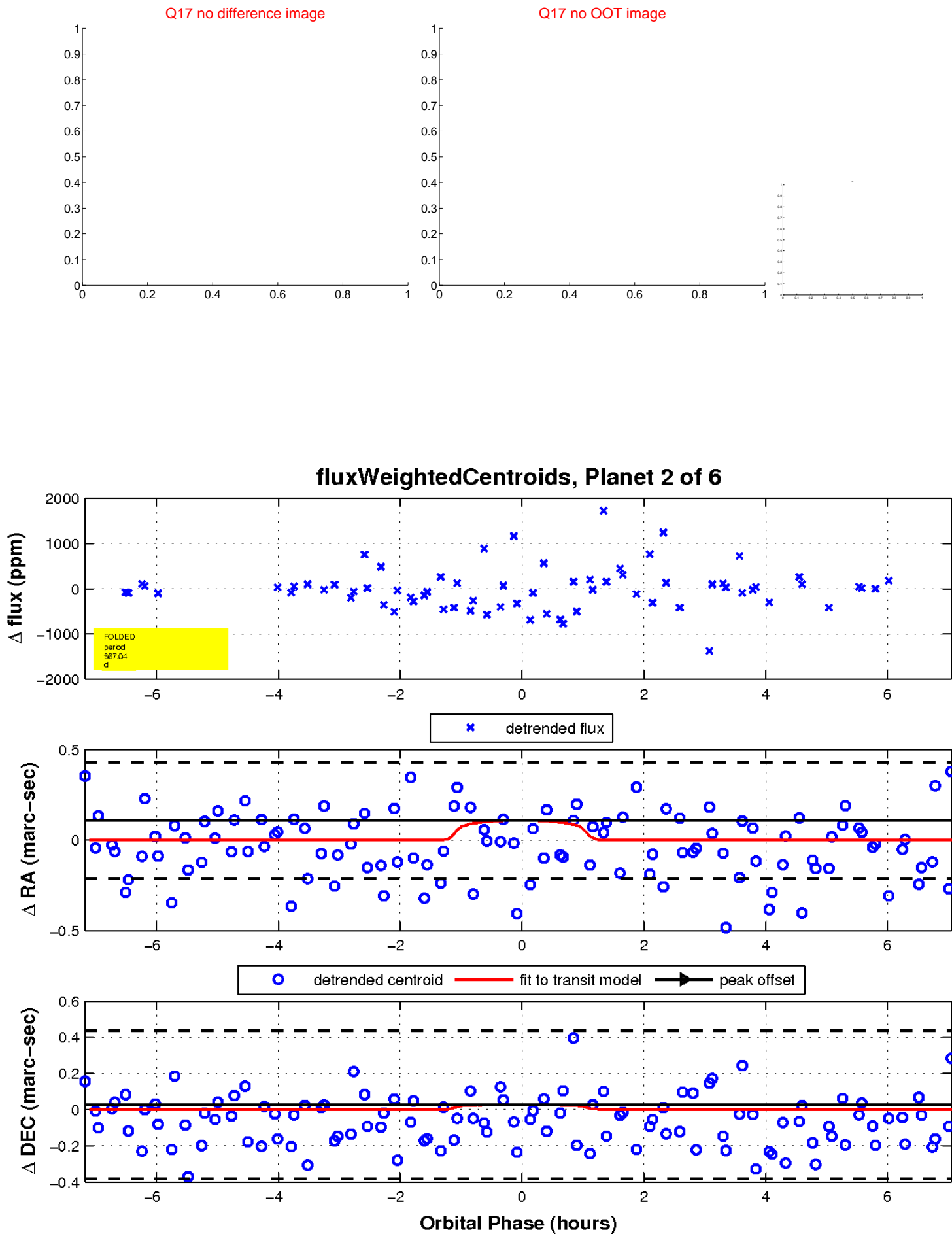
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



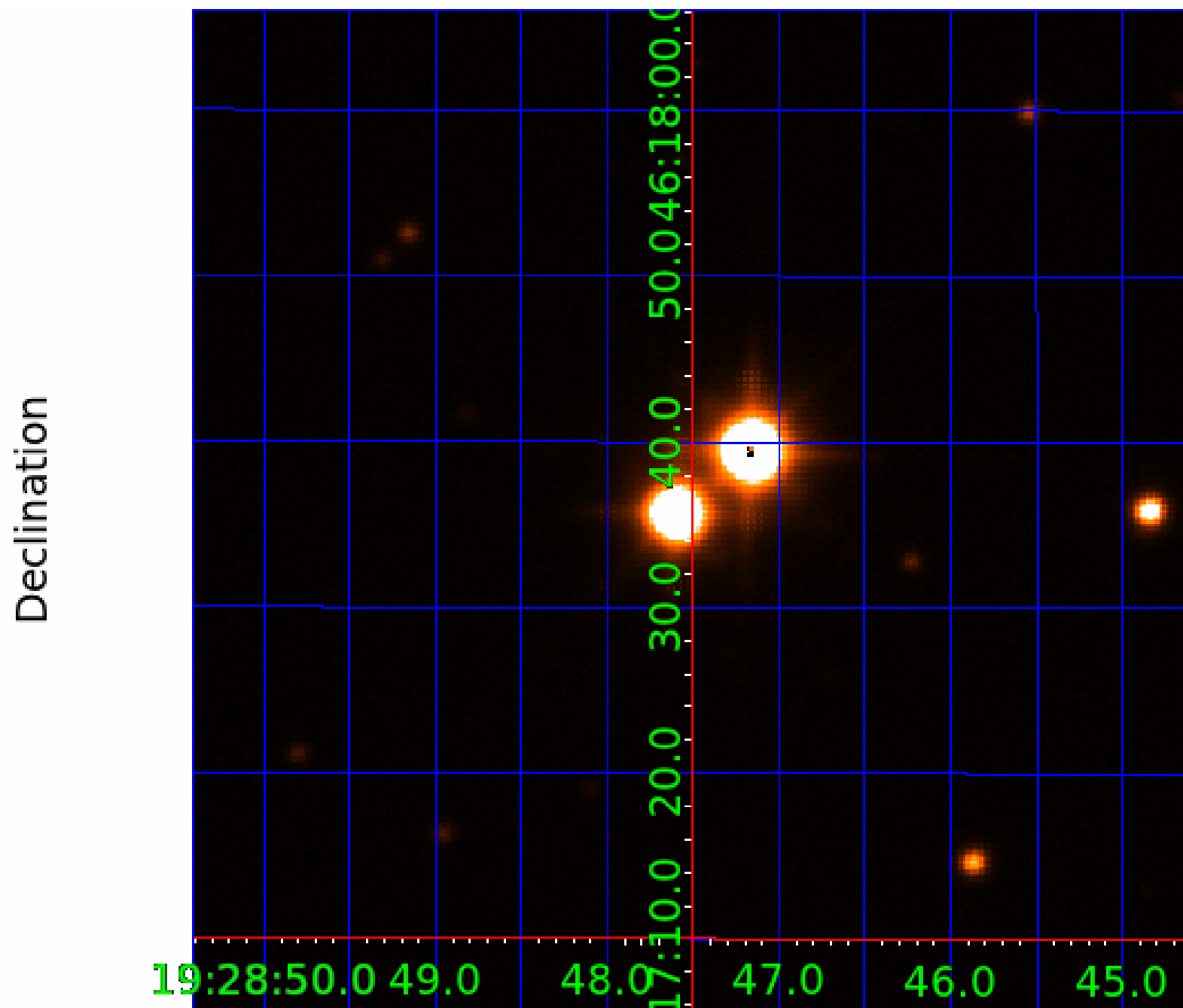
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



UKIRT Image



KIC 009588946

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})
009588946-01	OBS	No	171.169369	164.490515	54.5	1.804	30.3	16.7	4.09	5019	3.23	17.65
009588946-02	OBS	No	367.037397	158.183711	484.9	2.393	67.3	44.7	4.09	5019	10.57	6.38
009588946-03	OBS	No	385.860058	484.561019	348.8	1.521	115.4	32.9	4.09	5019	7.98	5.97
009588946-04	OBS	No	377.580422	483.684337	756.5	3.516	100.9	73.2	4.09	5019	10.95	6.15
009588946-05	OBS	No	366.126895	159.275673	259.5	1.908	89.5	22.3	4.09	5019	6.92	6.41
009588946-06	OBS	No	373.101870	137.577536	860.7	0.641	58.6	22.2	4.09	5019	12.63	6.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009588946-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009588946-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—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_SATURATED—HALO_GHOST
009588946-03	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_SATURATED
009588946-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
009588946-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—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_SATURATED
009588946-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

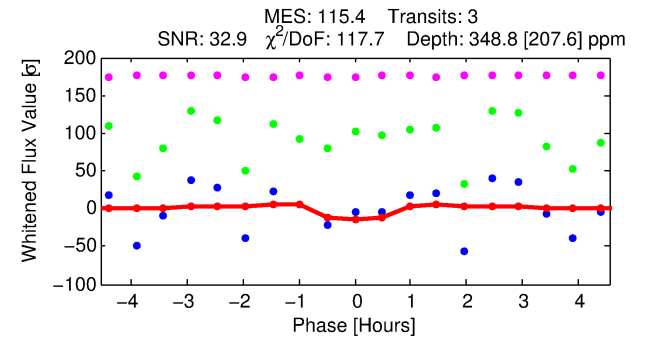
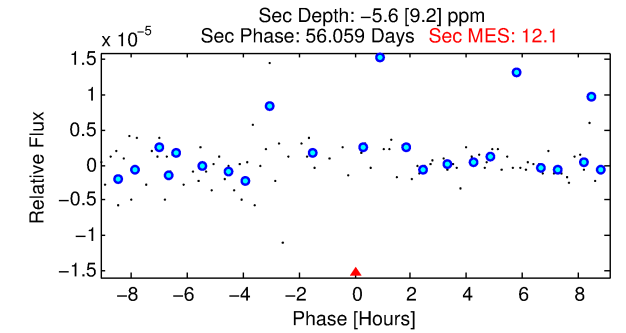
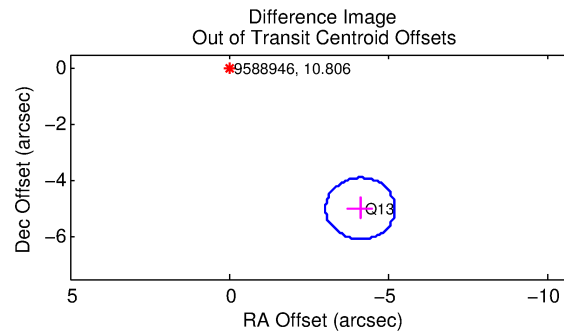
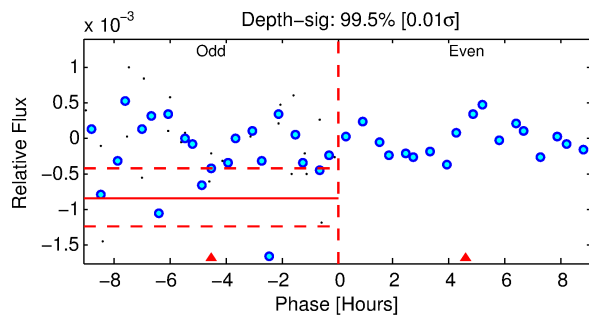
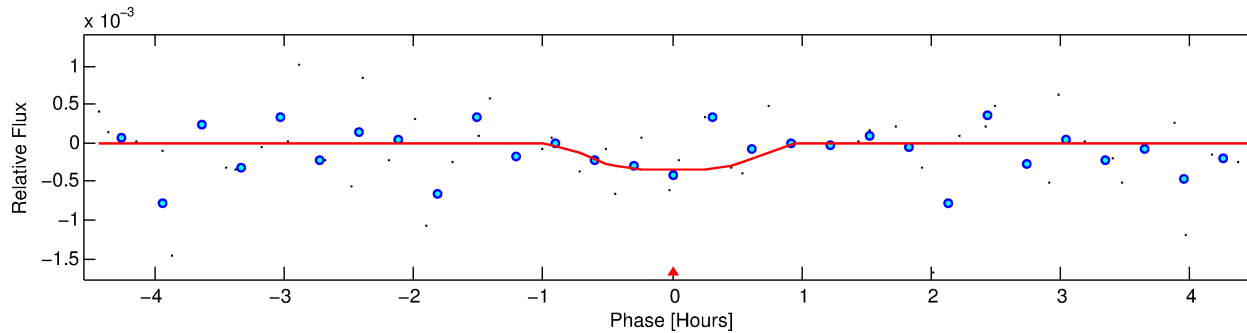
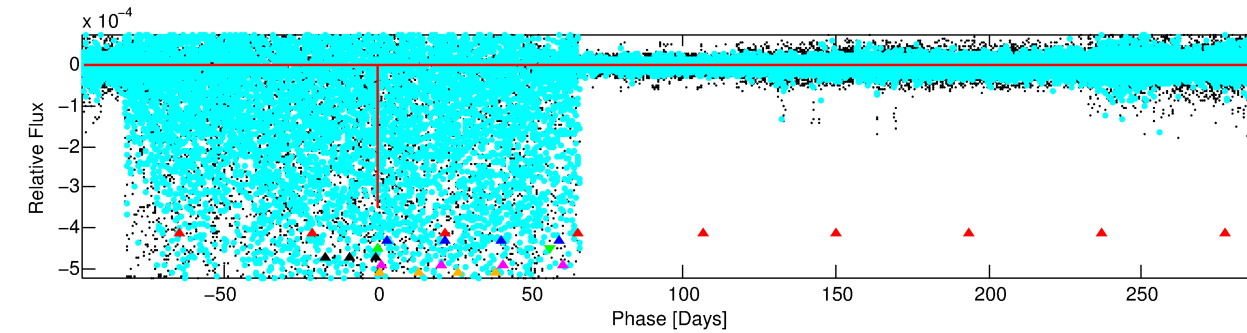
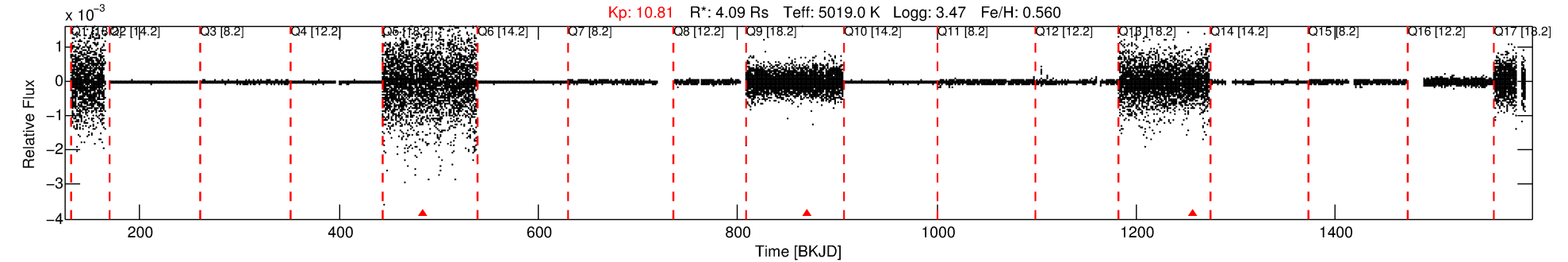
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009588946-03

No Significant Match Found

DV One-Page Summary

KIC: 9588946 Candidate: 3 of 6 Period: 385.860 d



DV Fit Results:

Period = 385.86006 [0.02076] d
Epoch = 484.5610 [0.0246] BKJD
Rp/R* = 0.0179 [0.1780]
a/R* = 1556.91 [49335.19]
b = 0.63 [31.85]
Seff = 5.97 [8.23]
Teq = 399 [137] K
Rp = 7.98 [79.65] Re
a = 1.2628 [0.9807] AU
Ag = N/A
Teffp = N/A

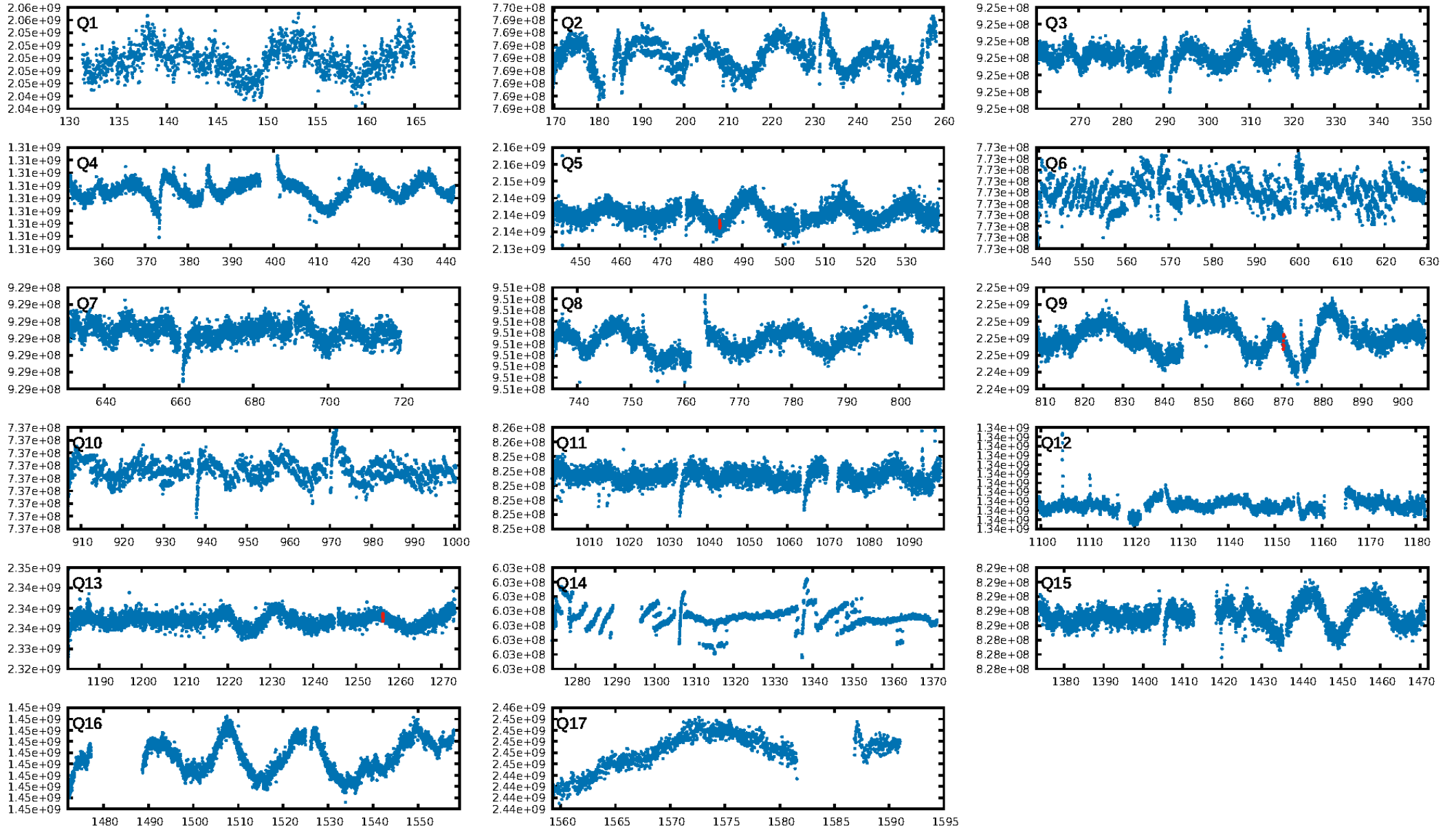
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [51.87 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.00 [0/3]
GhostDiagnostic-chr: 1.168
Centroid-sig: 21.4%
Centroid-so: 1.123 arcsec [2.58 σ]
OotOffset-rm: 6.479 arcsec [17.79 σ]
KicOffset-rm: 5.125 arcsec [13.98 σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

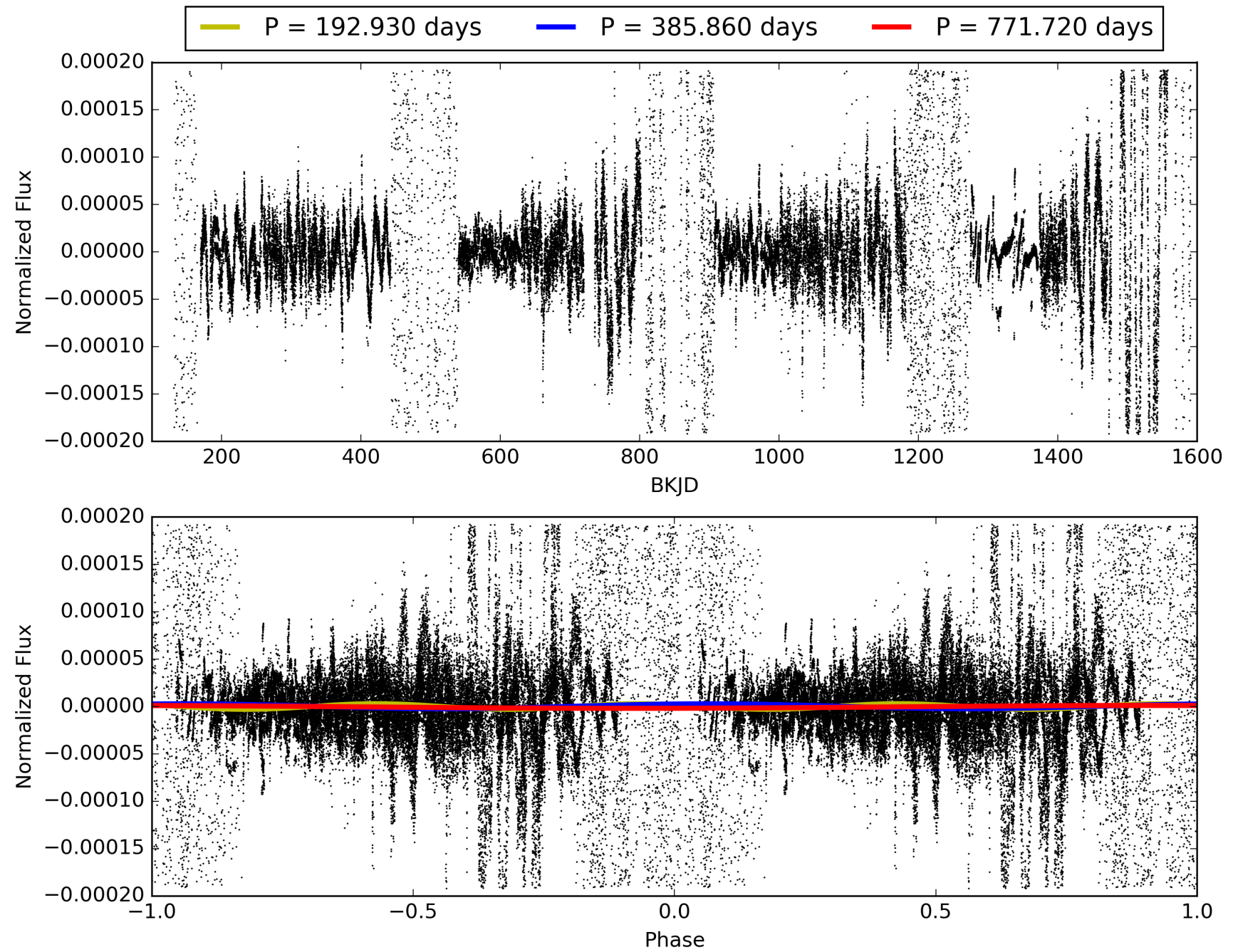
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:08:47 Z

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

TCE 009588946-03, PDC Light Curves

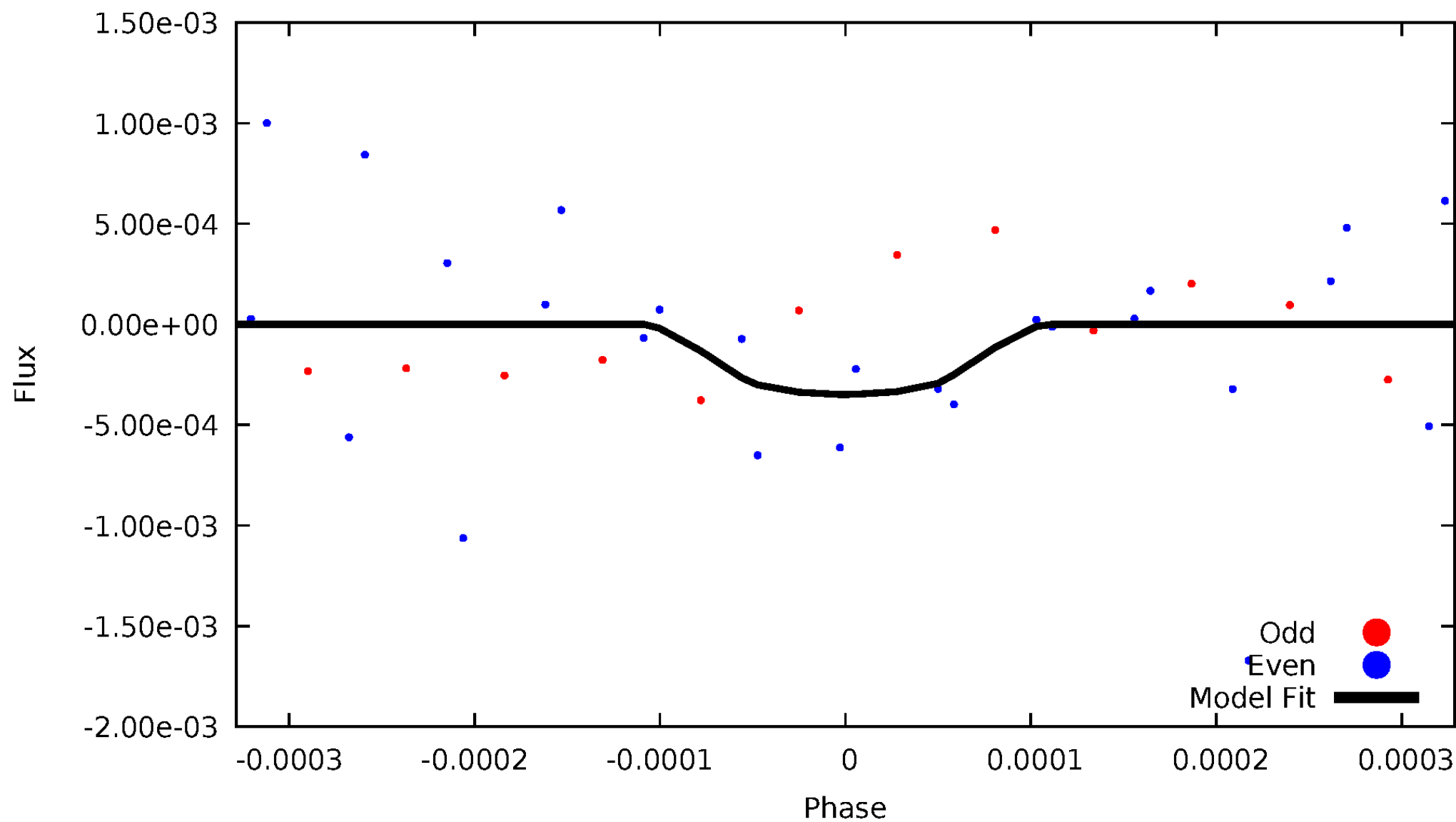


TCE 009588946-03



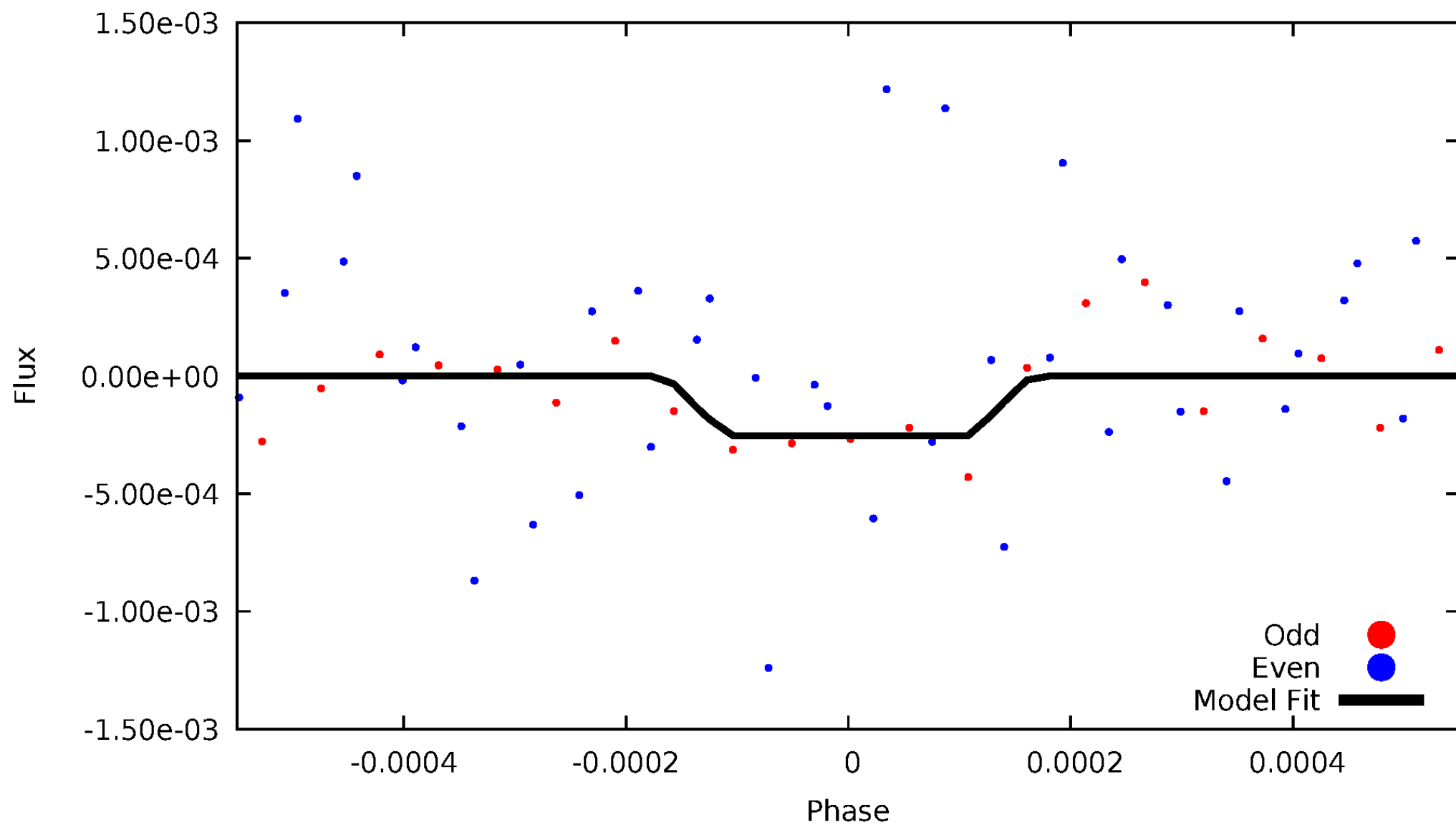
DV Odd/Even

TCE 009588946-03



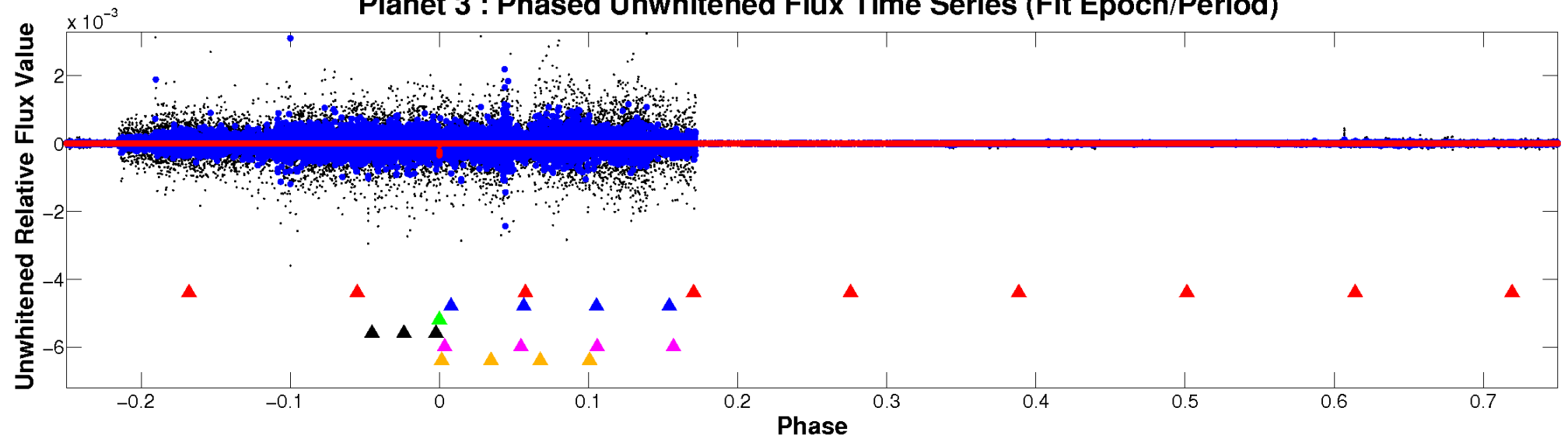
ALT Odd/Even

TCE 009588946-03

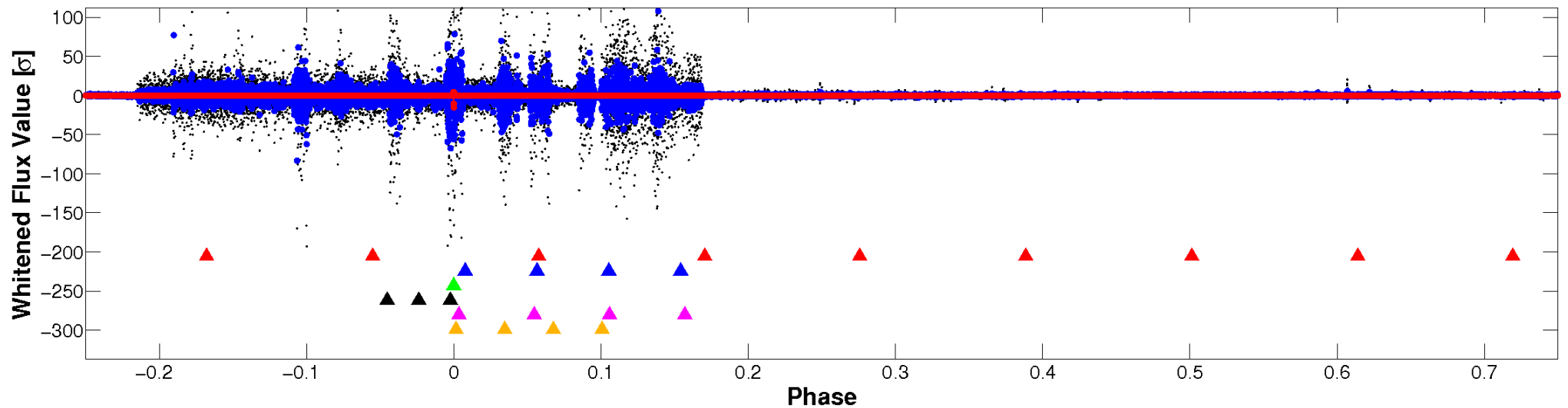


Non-Whitened Vs. Whitened Light Curve

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

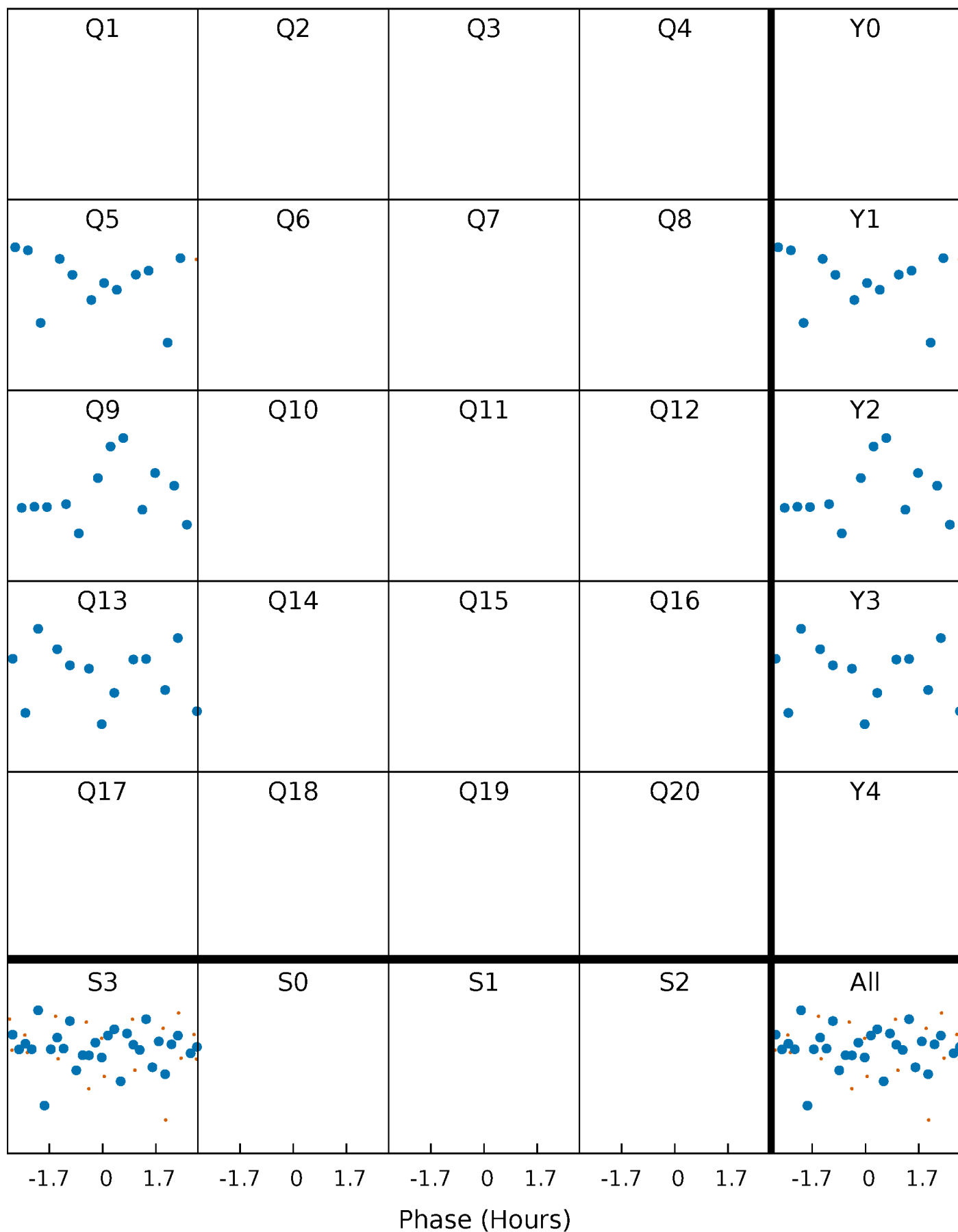


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



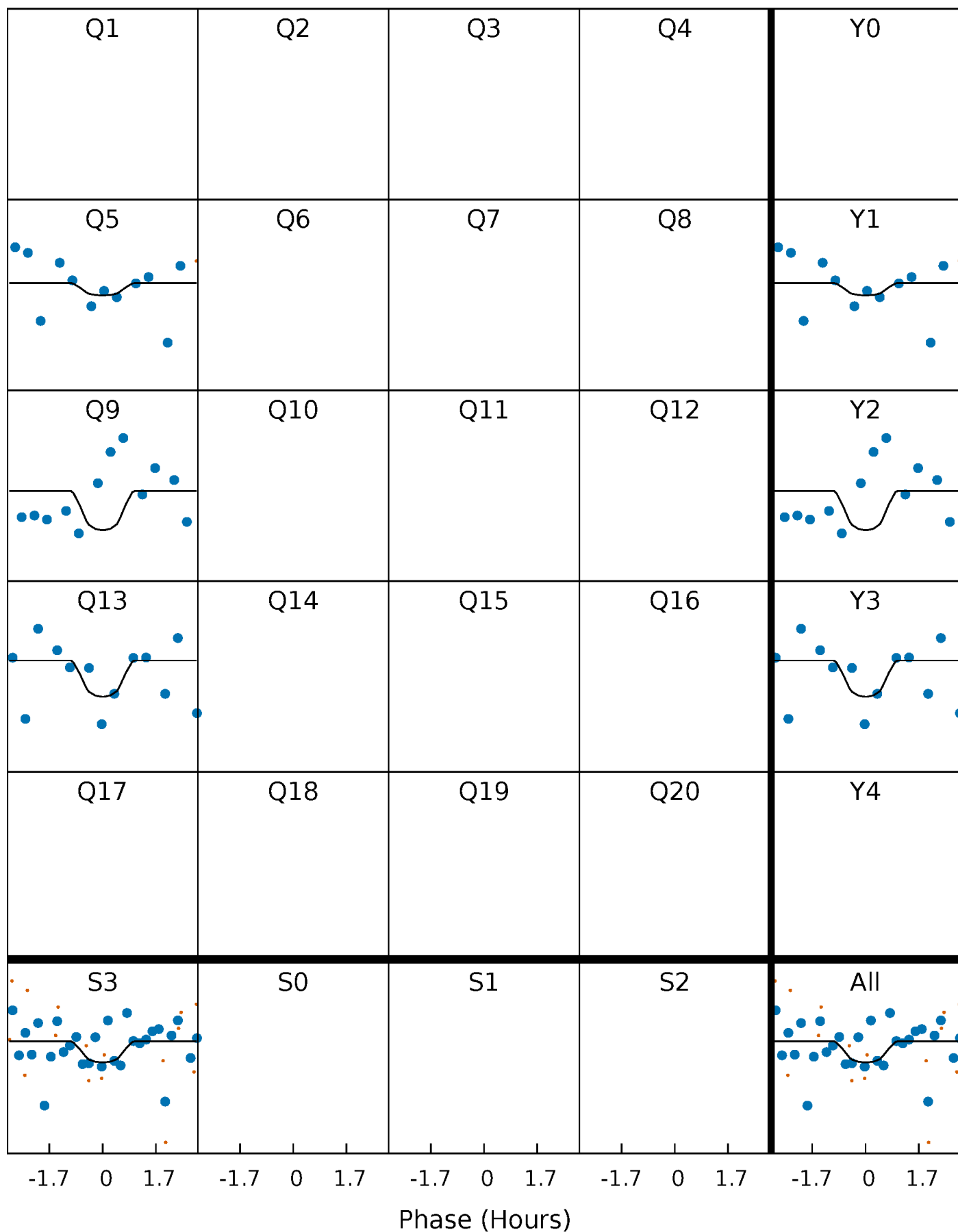
PDC Quarter-Phased Transit Curves

TCE 009588946-03 $P=385.860058$ Days $T_0=484.561019$ (BKJD)



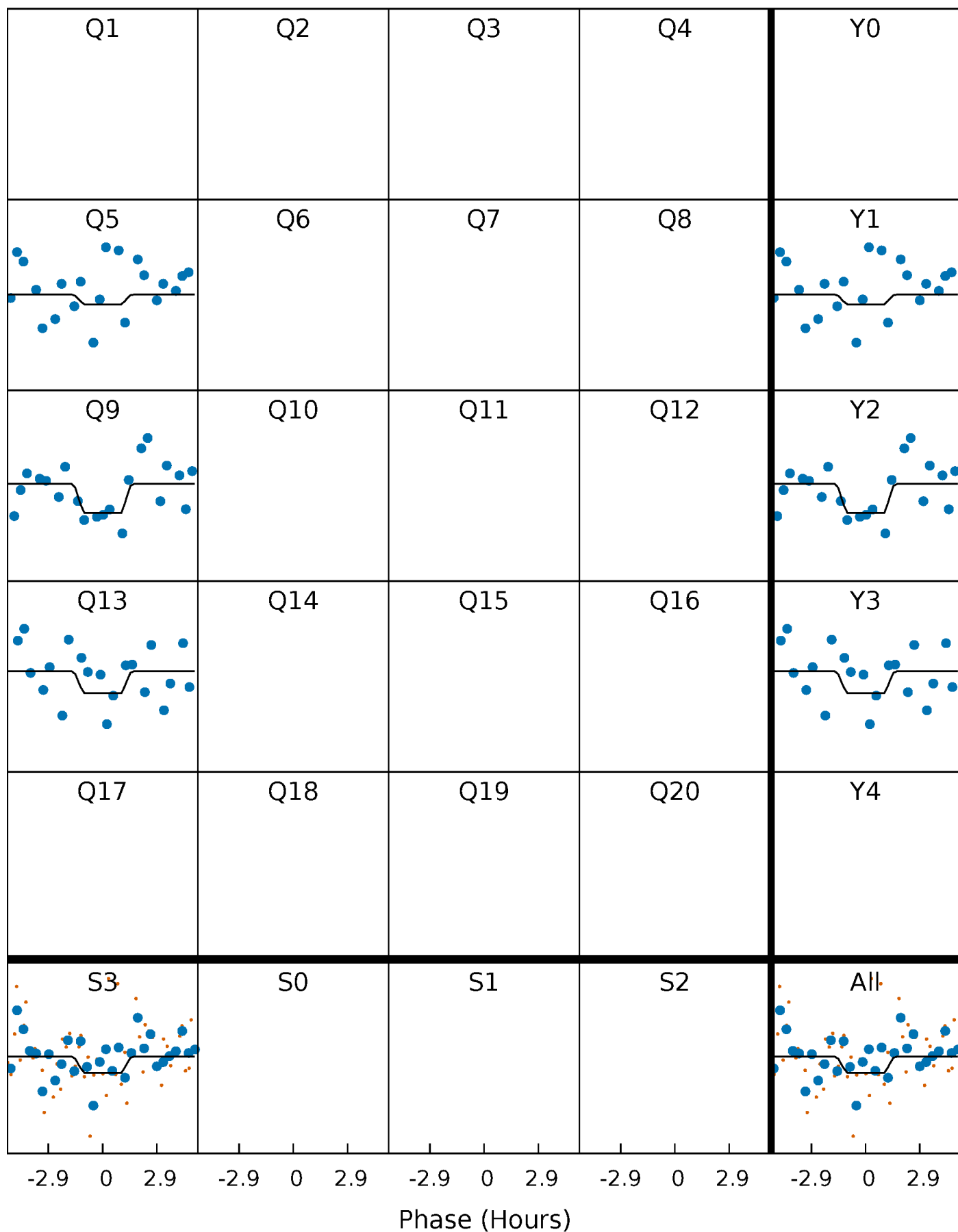
DV Quarter-Phased Transit Curves

TCE 009588946-03 $P=385.860058$ Days $T_0=484.561019$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

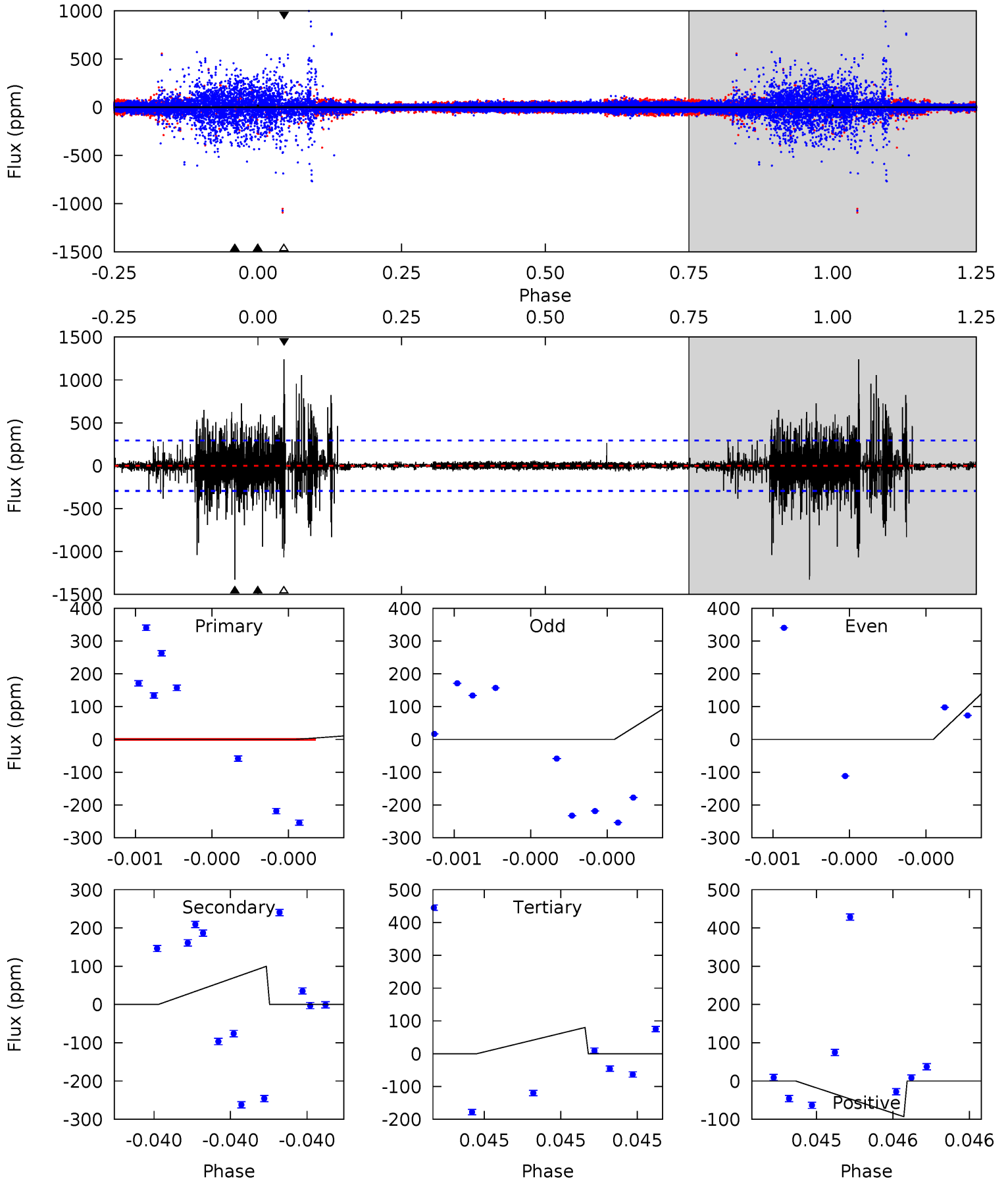
TCE 009588946-03 $P=385.921942$ Days $T_0=484.427392$ (BKJD)



DV Model-Shift Uniqueness Test

009588946-03, P = 385.860058 Days, E = 98.700961 Days

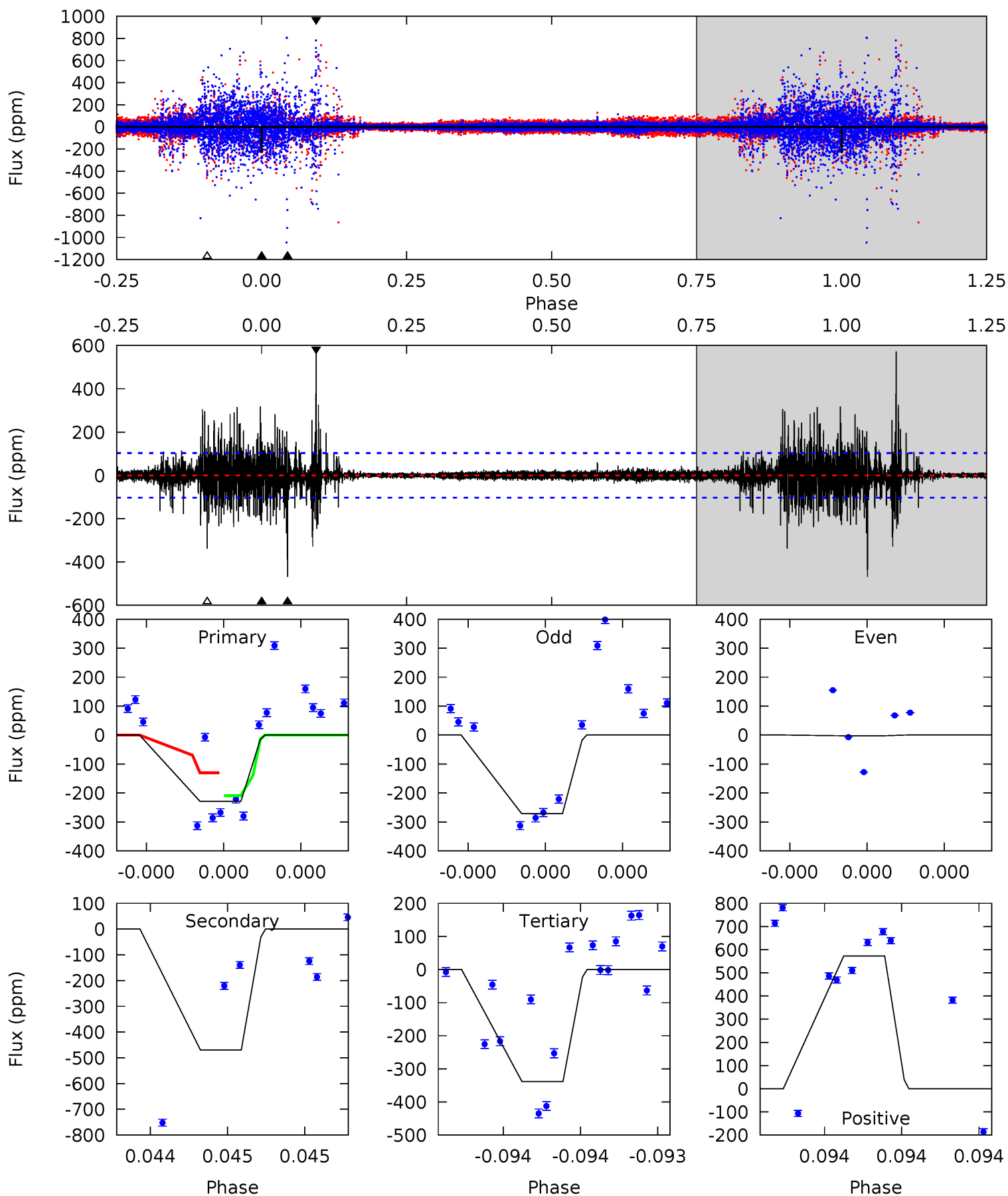
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.11	25.9	20.8	24.2	5.73	3.71	1.24	-14.7	-18.1	5.09	1.69	1.57	0.56	0.48	0



Alt Model-Shift Uniqueness Test

009588946-03, P = 385.921942 Days, E = 98.505450 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.6	25.8	18.6	31.4	5.64	3.58	1.41	-6.04	-18.9	7.17	-5.67	4.94	0.55	0.55	2.65



Stellar Parameters For KIC 009588946

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5019^{+173}_{-190}	$3.470^{+0.848}_{-0.212}$	$0.560^{+0.050}_{-0.350}$	$4.093^{+1.115}_{-2.601}$	$1.805^{+0.269}_{-0.808}$	$0.037^{+0.536}_{-0.018}$
	+3%/-4%	+24%/-6%	+9%/-62%	+27%/-64%	+15%/-45%	+1446%/-49%
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 009588946-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-100 ± 51	$47.21^{+61.37}_{-34.16}$	543^{+56}_{-101}	2263^{+884}_{-355}	32^{+443}_{-26}
Alt.	-469 ± 18	$49.57^{+59.84}_{-35.82}$	542^{+56}_{-95}	2746^{+1202}_{-422}	162^{+1952}_{-128}

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

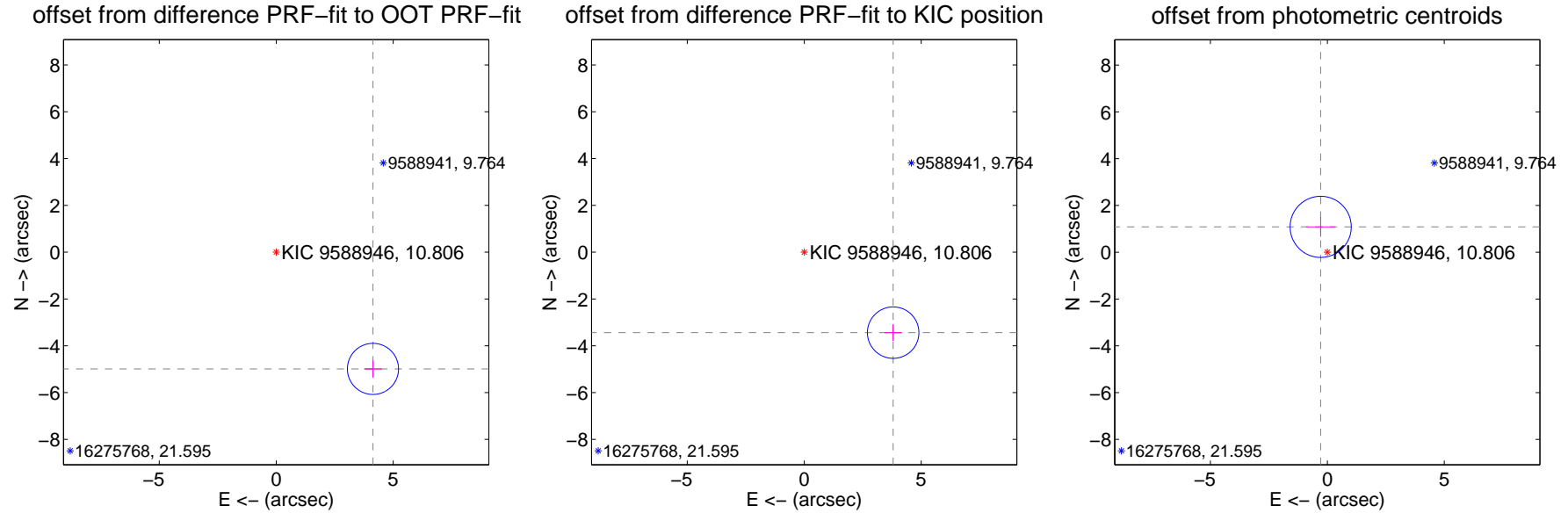
DV Centroid Data

Supplemental centroid analysis for 009588946-03. **Kepler magnitude: 10.81.** Transit SNR 32.90

There are 0 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 1.59 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	6.479 ± 0.364	17.79	-4.135 ± 0.374	-4.988 ± 0.357
PRF-fit source offset from KIC position	5.125 ± 0.367	13.98	-3.801 ± 0.374	-3.438 ± 0.357
photometric centroid source offset	1.12 ± 0.44	2.58	0.28 ± 0.62	1.09 ± 0.42

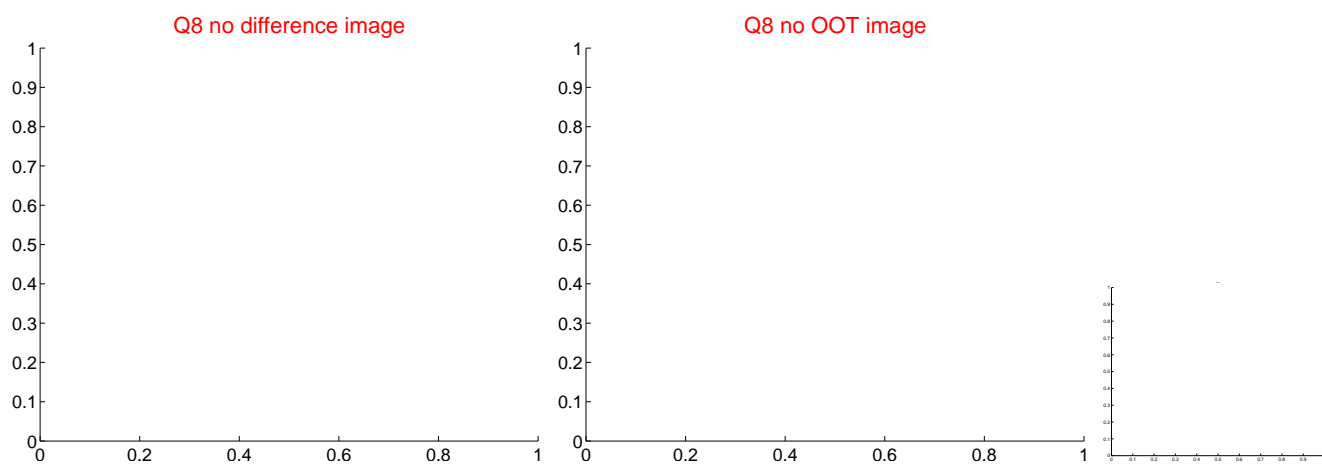
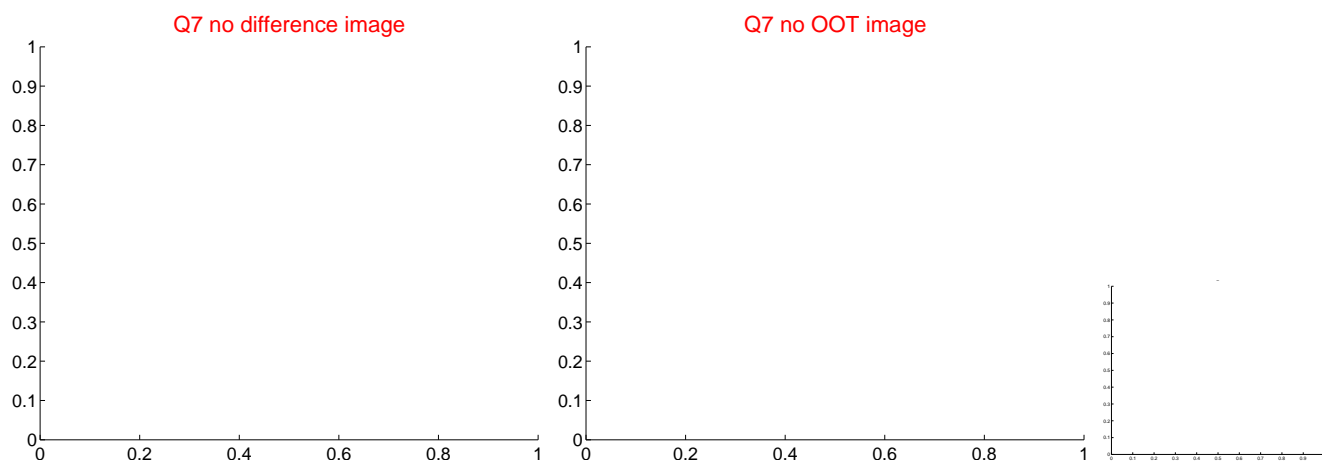
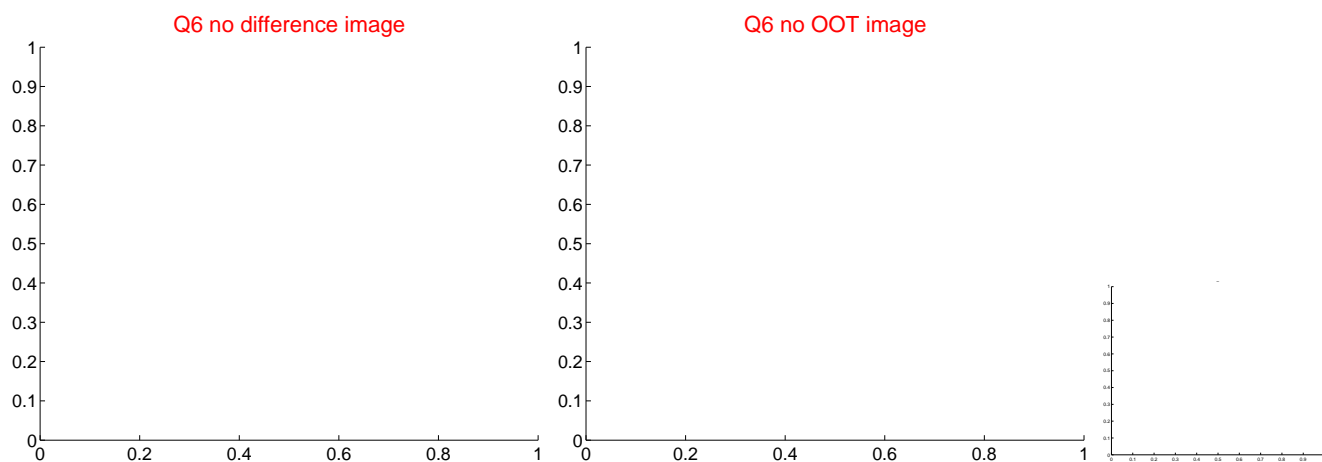
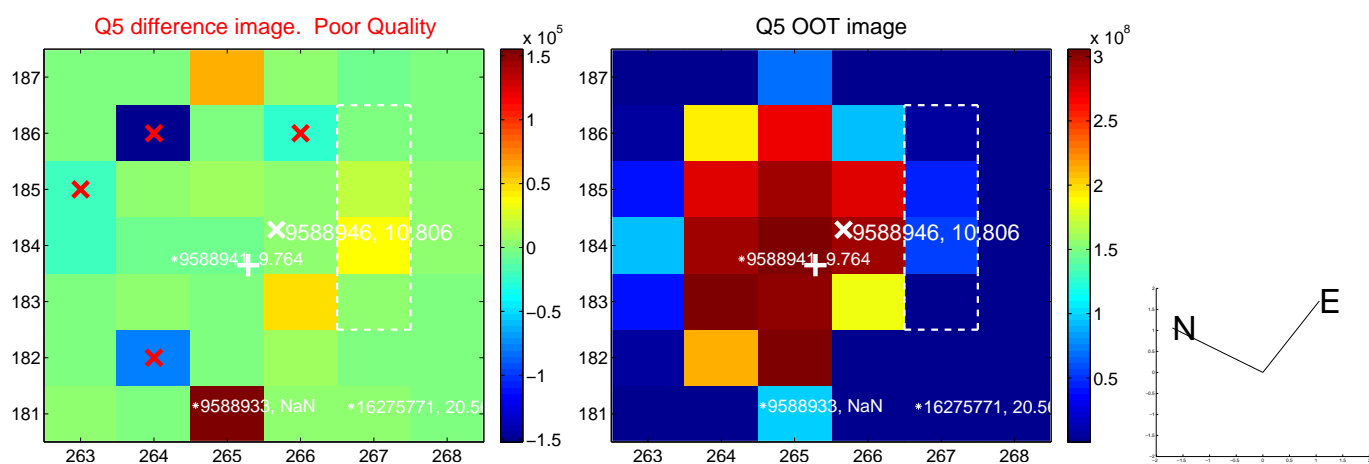


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

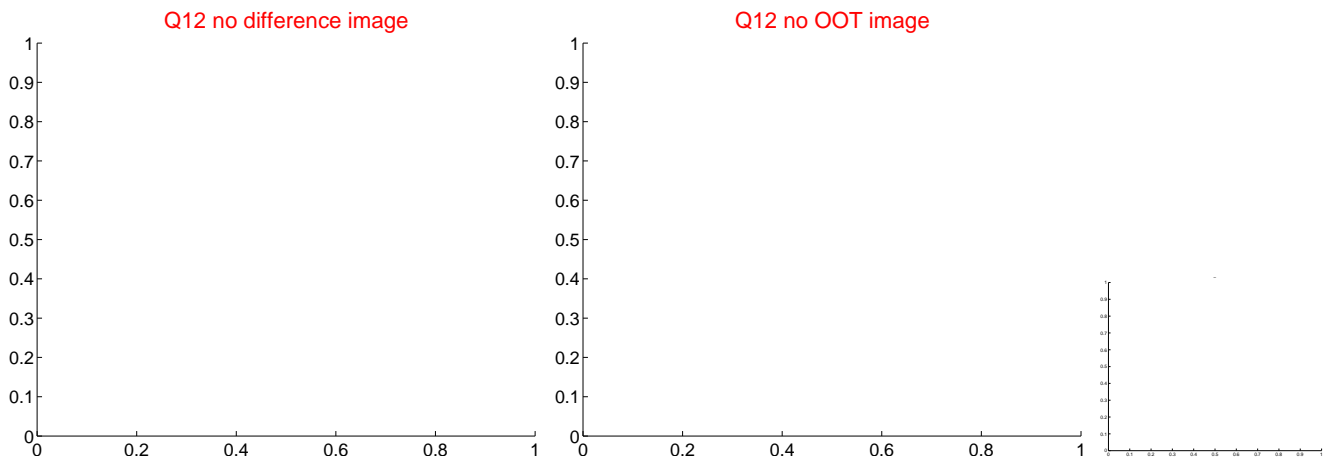
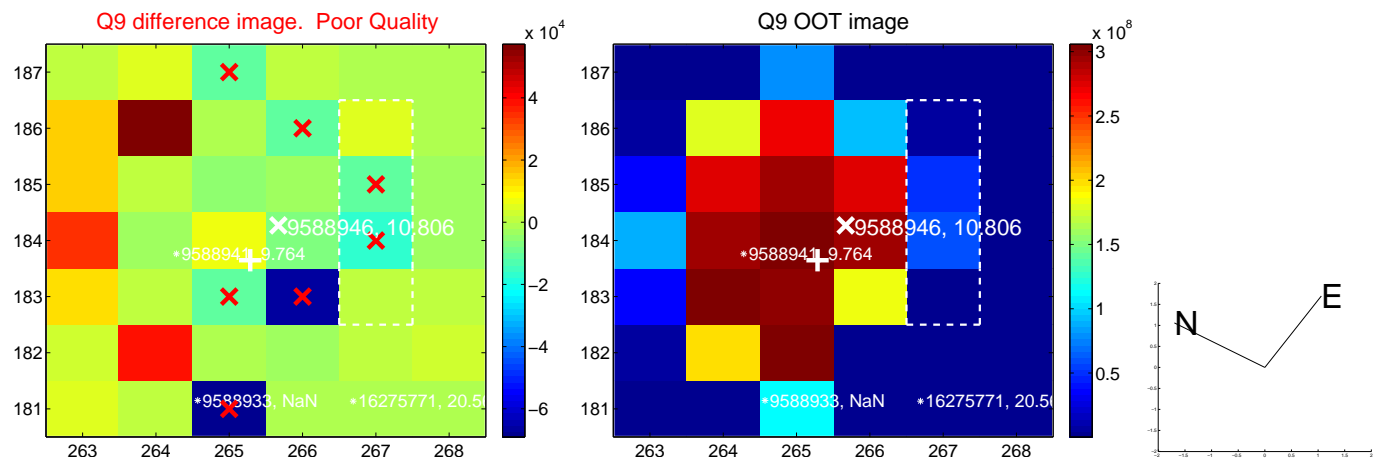
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



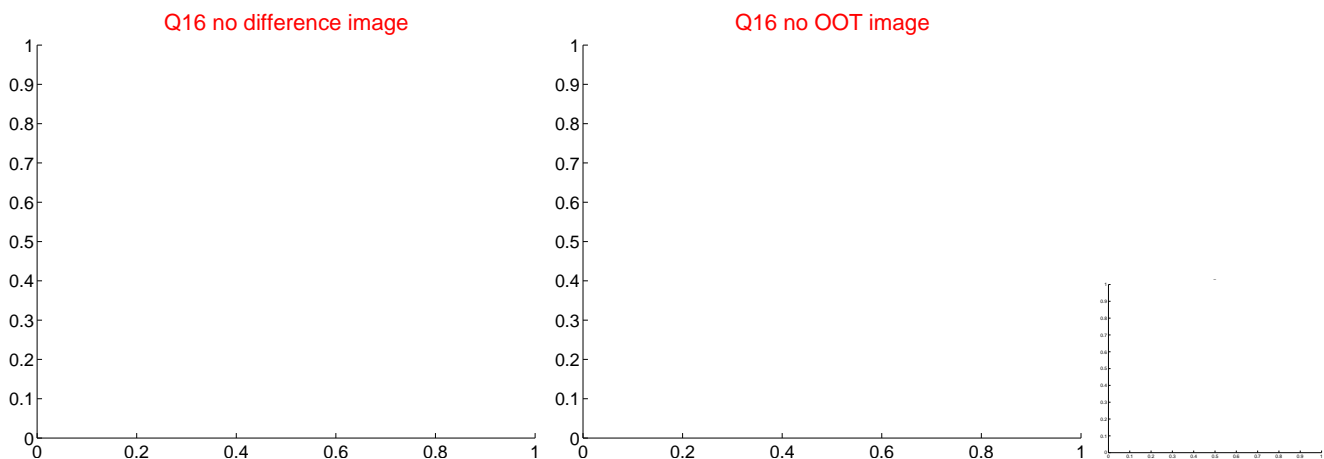
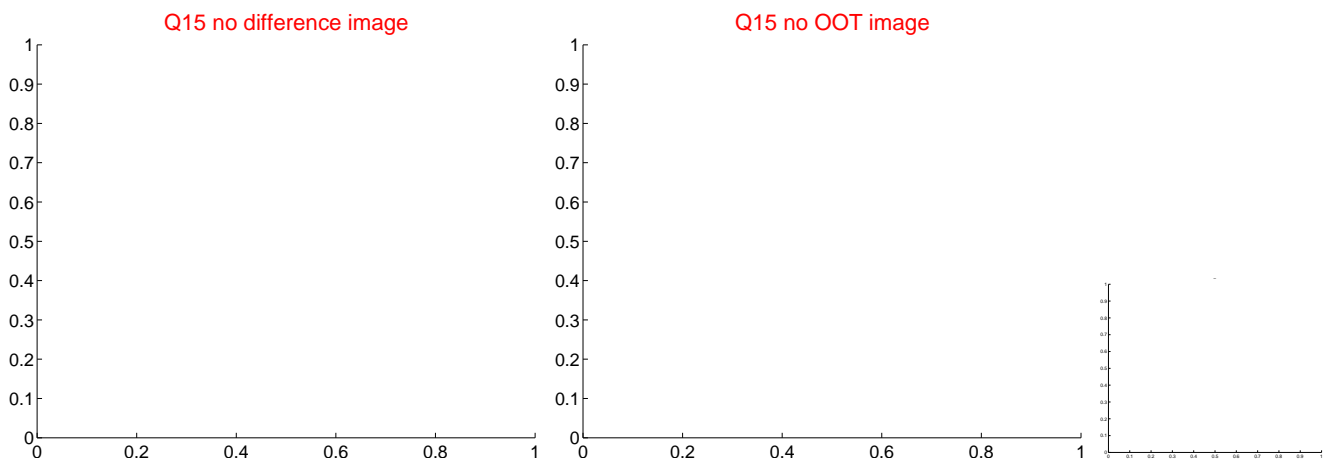
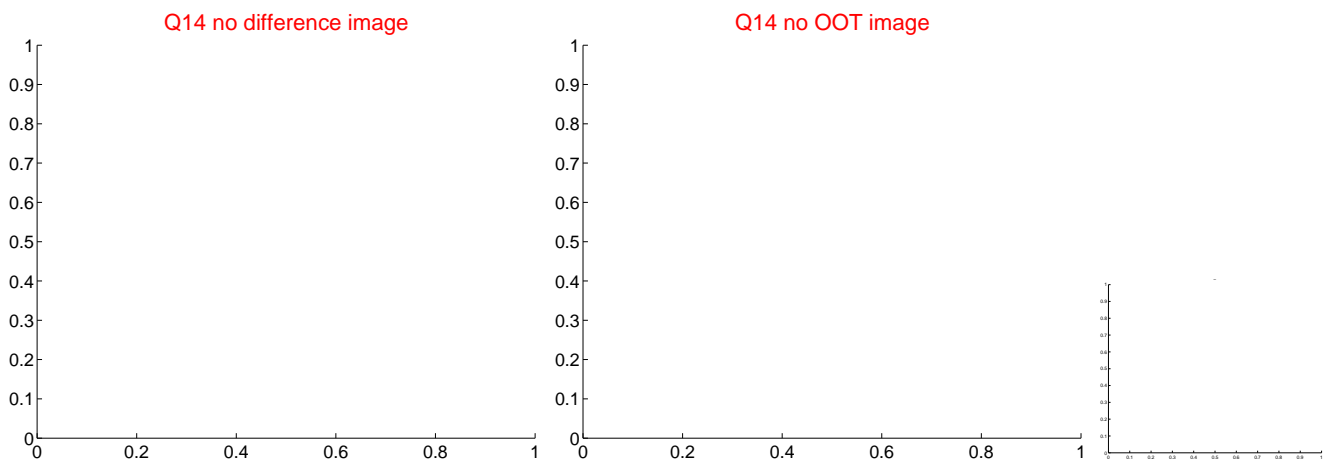
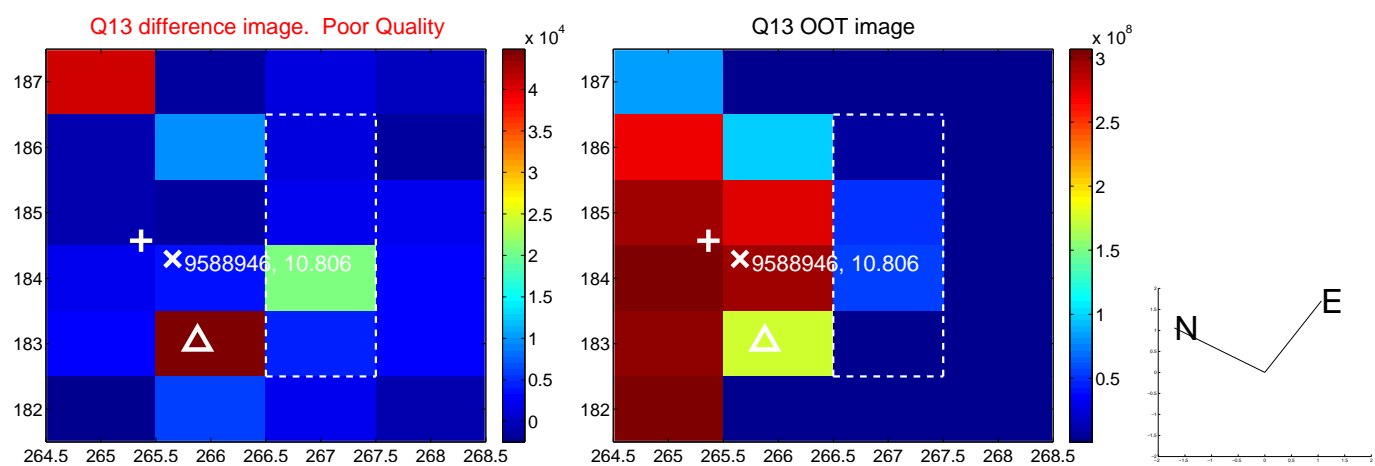
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



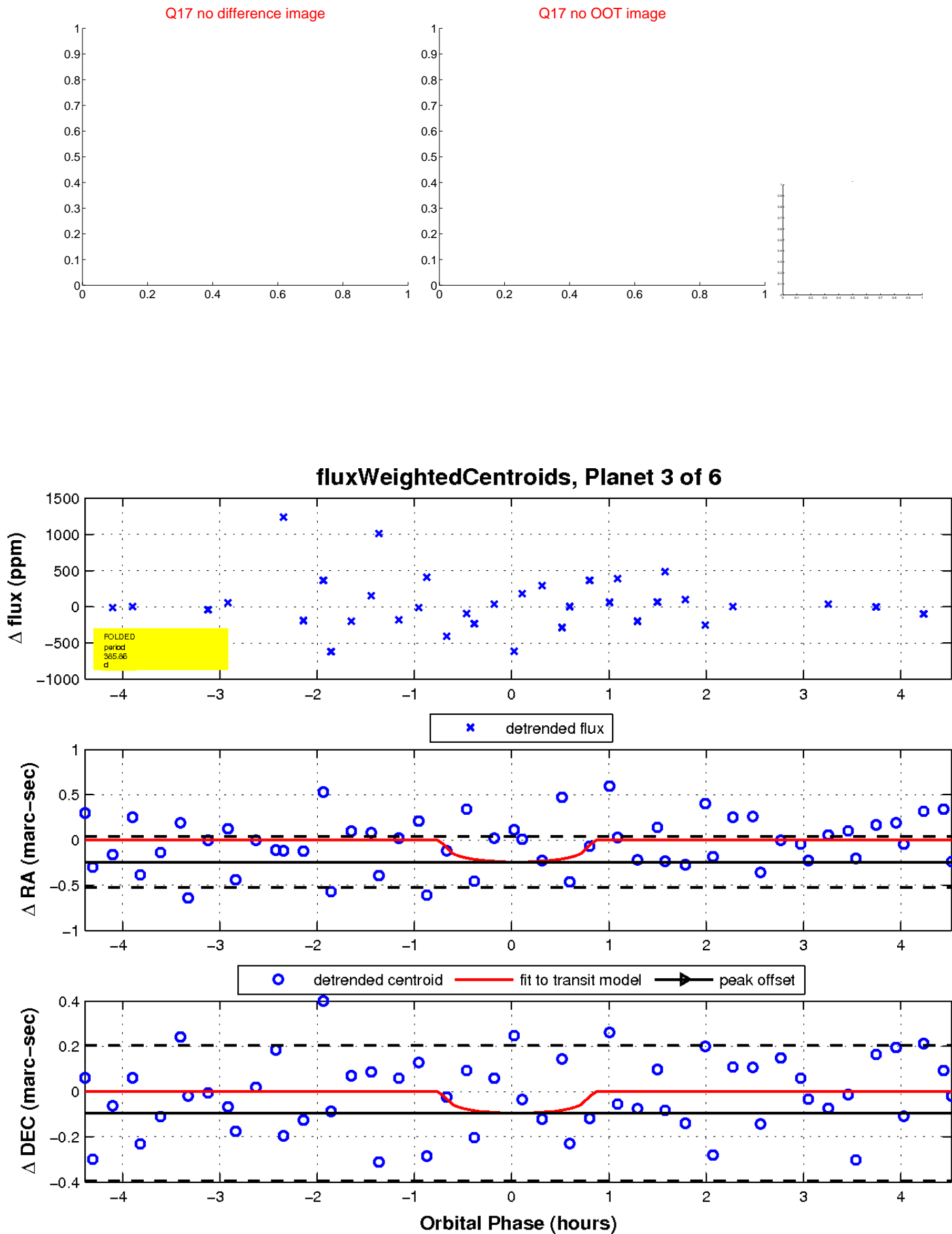
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



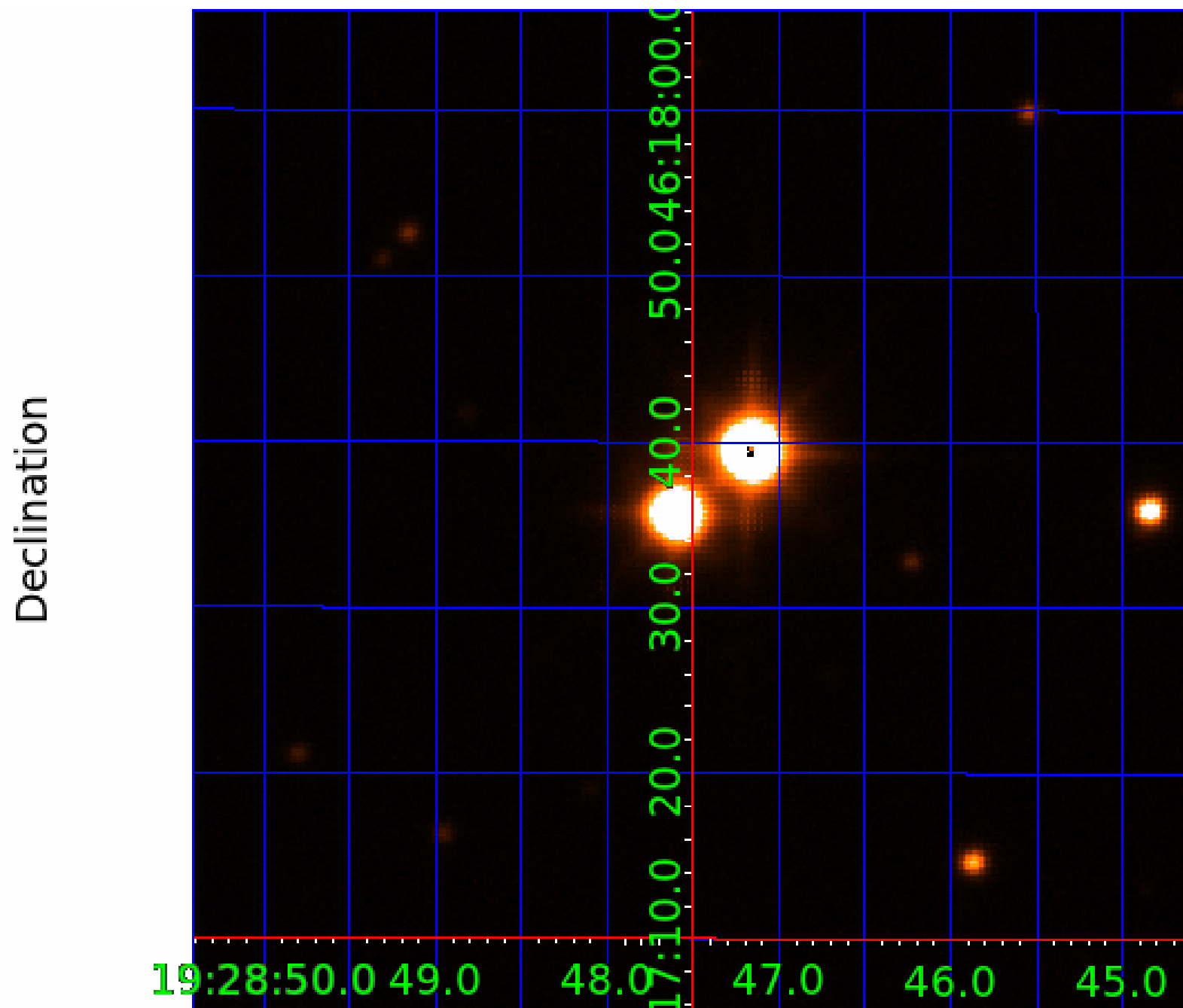
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 009588946

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})
009588946-01	OBS	No	171.169369	164.490515	54.5	1.804	30.3	16.7	4.09	5019	3.23	17.65
009588946-02	OBS	No	367.037397	158.183711	484.9	2.393	67.3	44.7	4.09	5019	10.57	6.38
009588946-03	OBS	No	385.860058	484.561019	348.8	1.521	115.4	32.9	4.09	5019	7.98	5.97
009588946-04	OBS	No	377.580422	483.684337	756.5	3.516	100.9	73.2	4.09	5019	10.95	6.15
009588946-05	OBS	No	366.126895	159.275673	259.5	1.908	89.5	22.3	4.09	5019	6.92	6.41
009588946-06	OBS	No	373.101870	137.577536	860.7	0.641	58.6	22.2	4.09	5019	12.63	6.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009588946-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009588946-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—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_SATURATED—HALO_GHOST
009588946-03	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_SATURATED
009588946-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
009588946-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—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_SATURATED
009588946-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

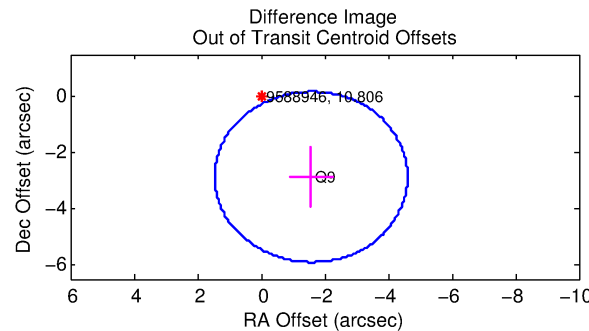
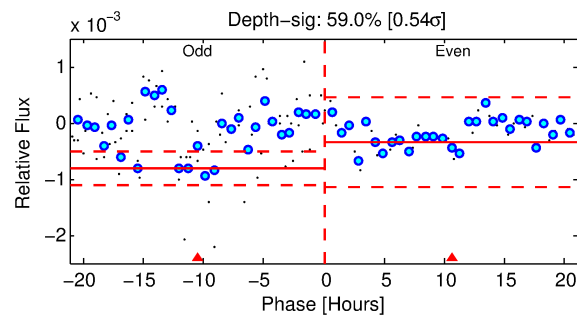
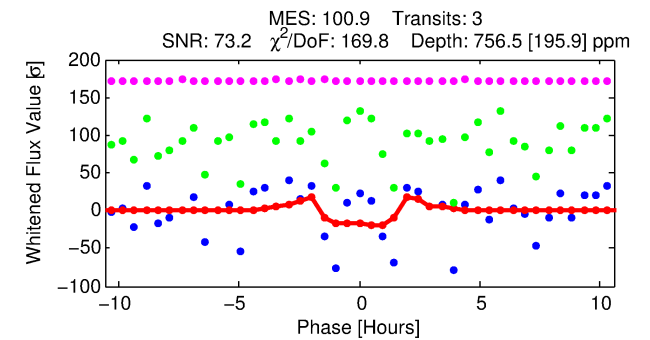
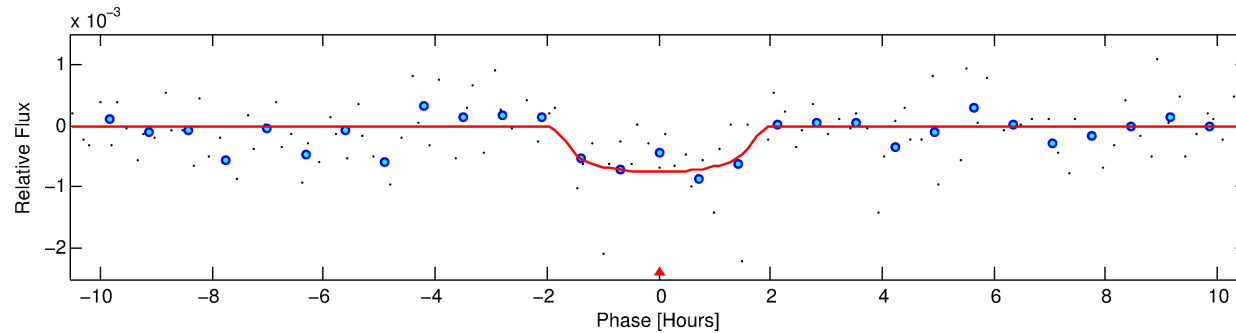
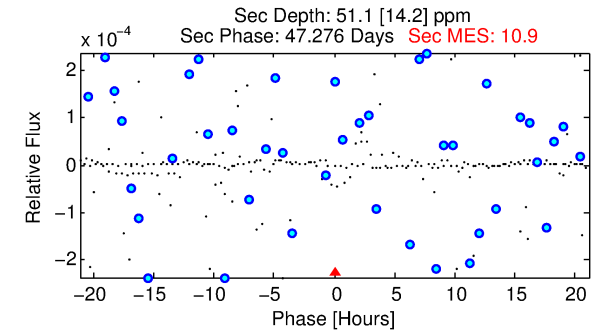
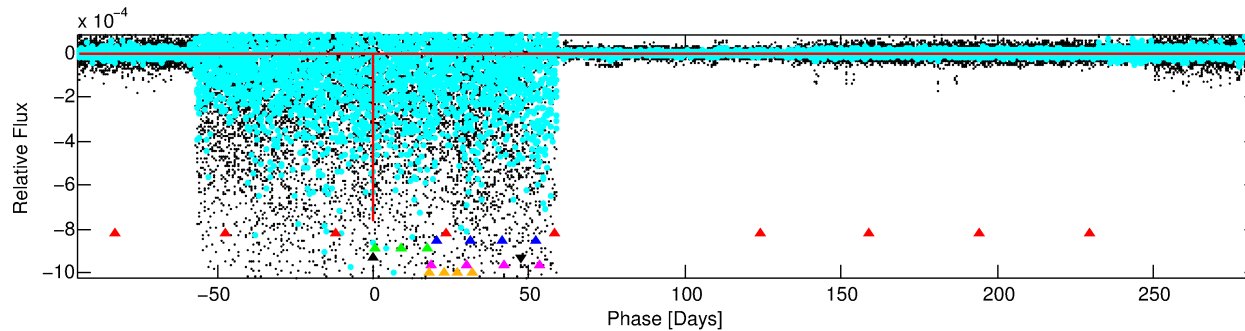
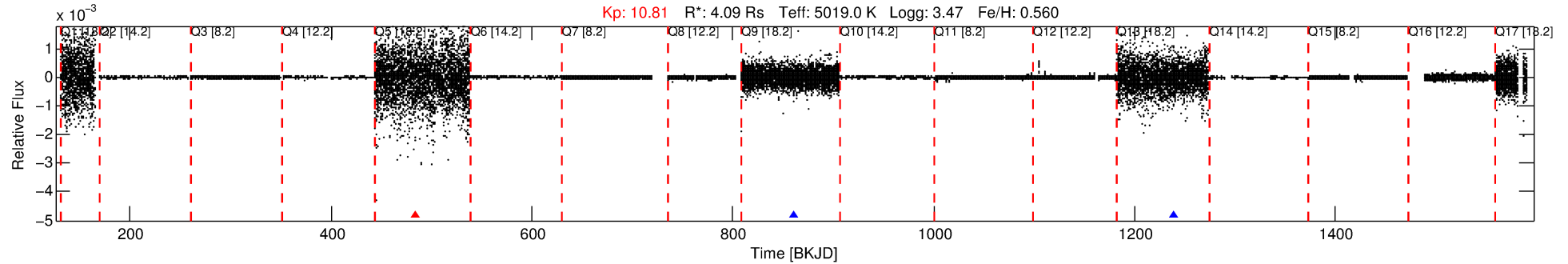
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009588946-04

No Significant Match Found

DV One-Page Summary

KIC: 9588946 Candidate: 4 of 6 Period: 377.580 d



DV Fit Results:

Period = 377.58042 [0.01076] d
Epoch = 483.6843 [0.0072] BKJD
Rp/R* = 0.0245 [0.1060]
a/R* = 813.37 [11032.29]
b = 0.26 [50.00]
Seff = 6.15 [8.47]
Teq = 402 [138] K
Rp = 10.95 [47.86] Re
a = 1.2447 [0.9666] AU
Ag = 363.06 [3180.18] [0.11σ]
Teffp = 2710 [5862] K [0.39σ]

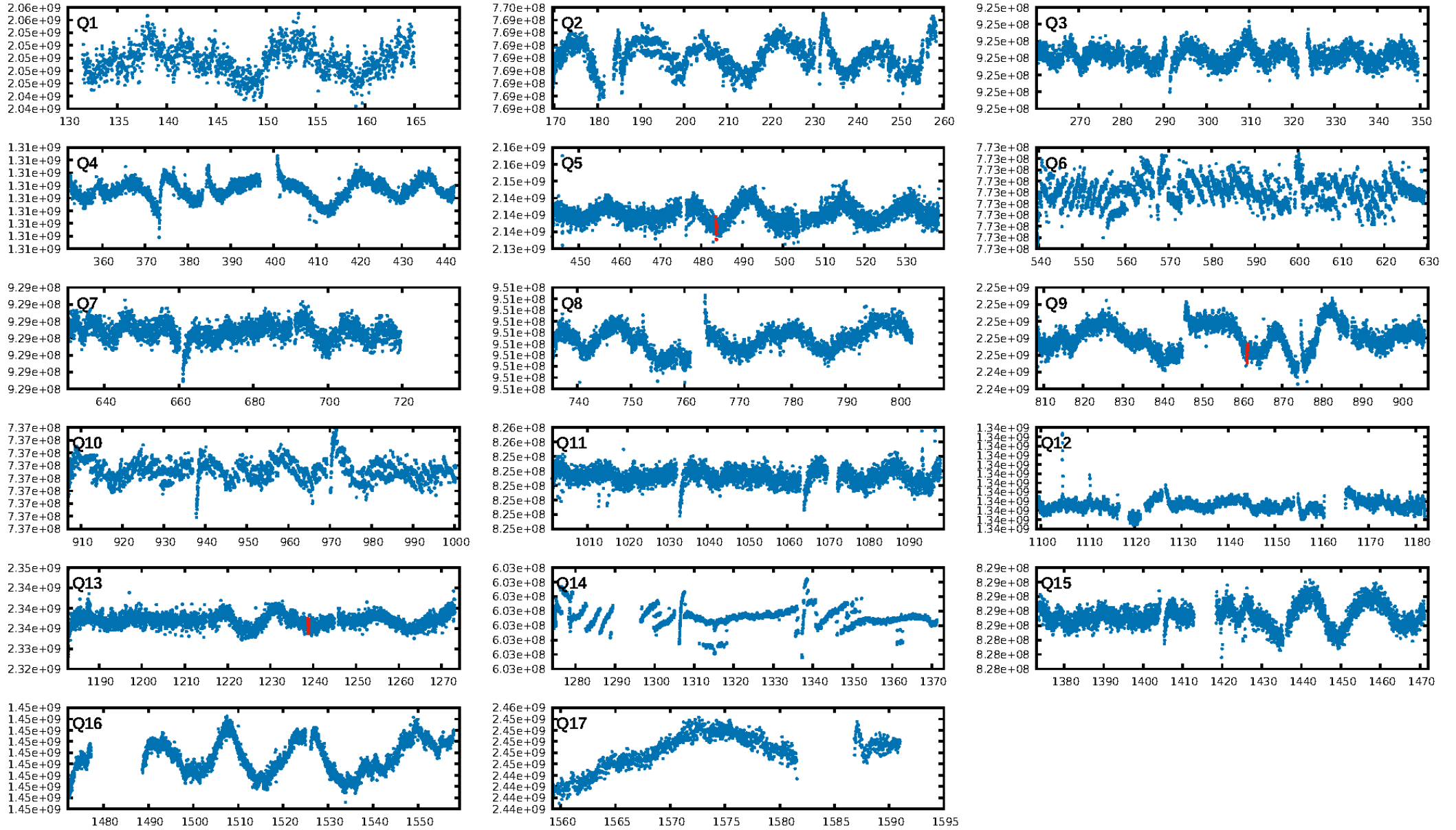
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [30.08σ]
LongPeriod-sig: 100.0% [51.87σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.67 [2/3]
GhostDiagnostic-chr: -0.19
Centroid-sig: 17.8%
Centroid-so: 0.899 arcsec [5.60σ]
OotOffset-rm: 3.271 arcsec [3.23σ]
KicOffset-rm: 5.293 arcsec [6.39σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 1.00 [3/3]

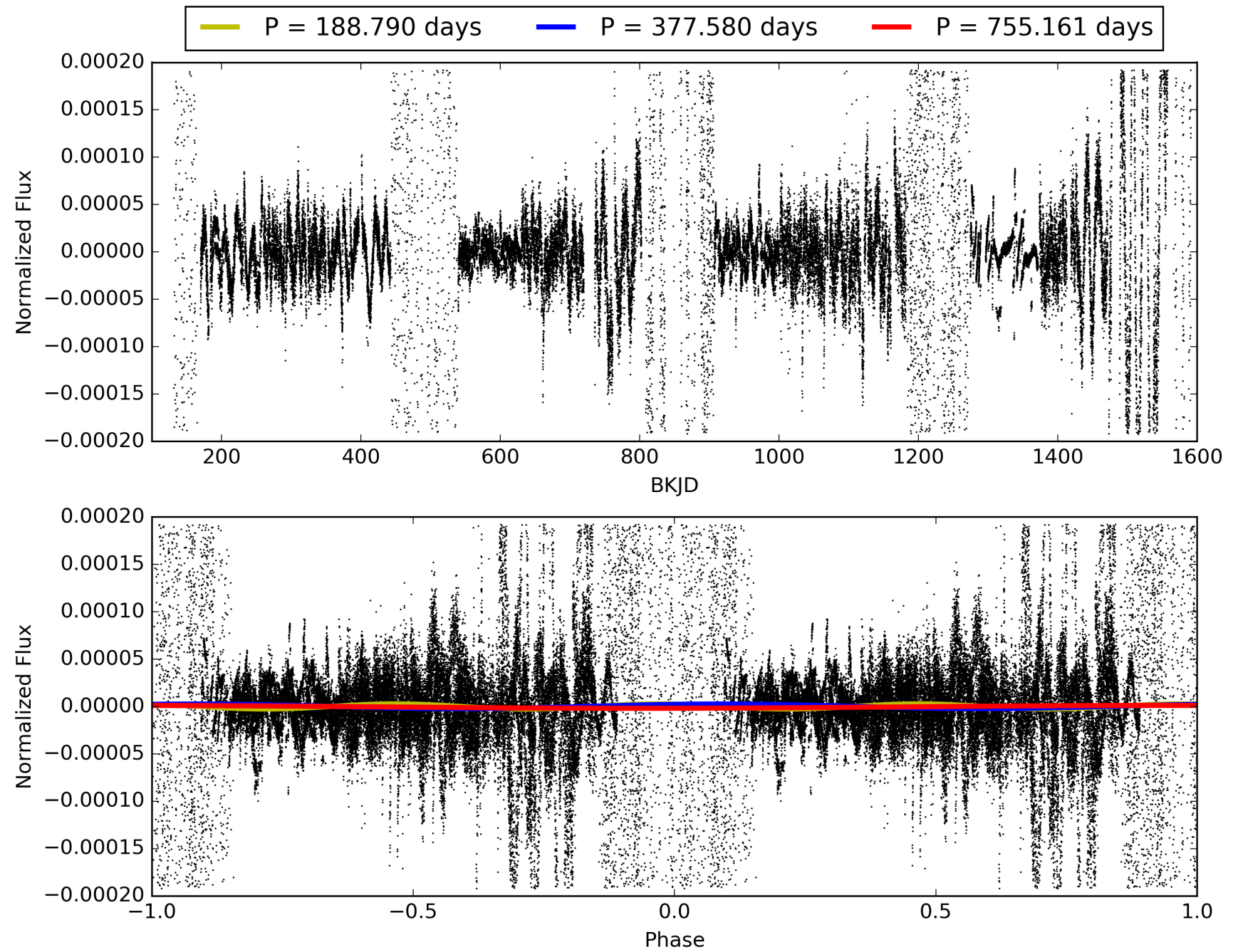
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:09:04 Z

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

TCE 009588946-04, PDC Light Curves

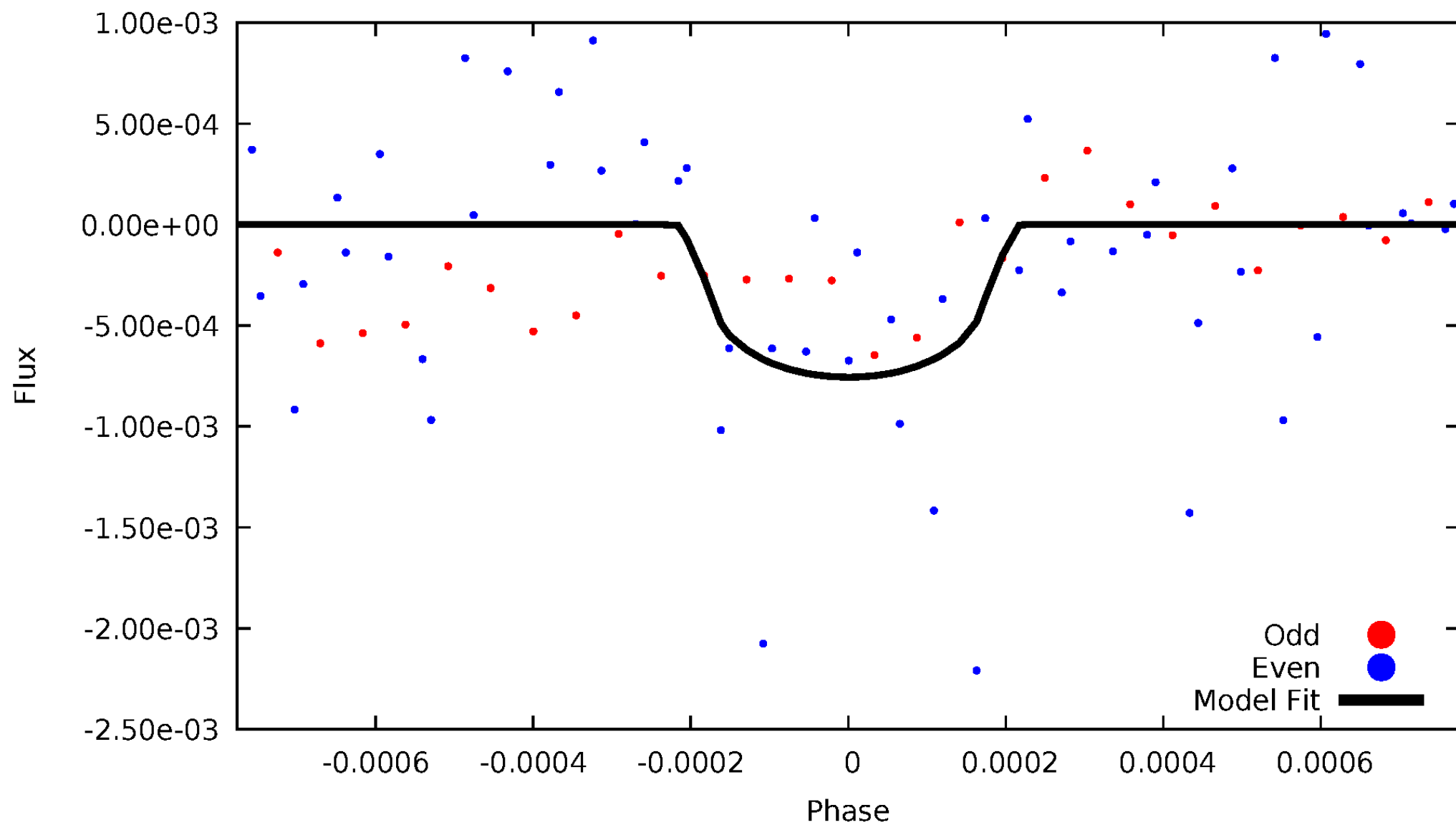


TCE 009588946-04



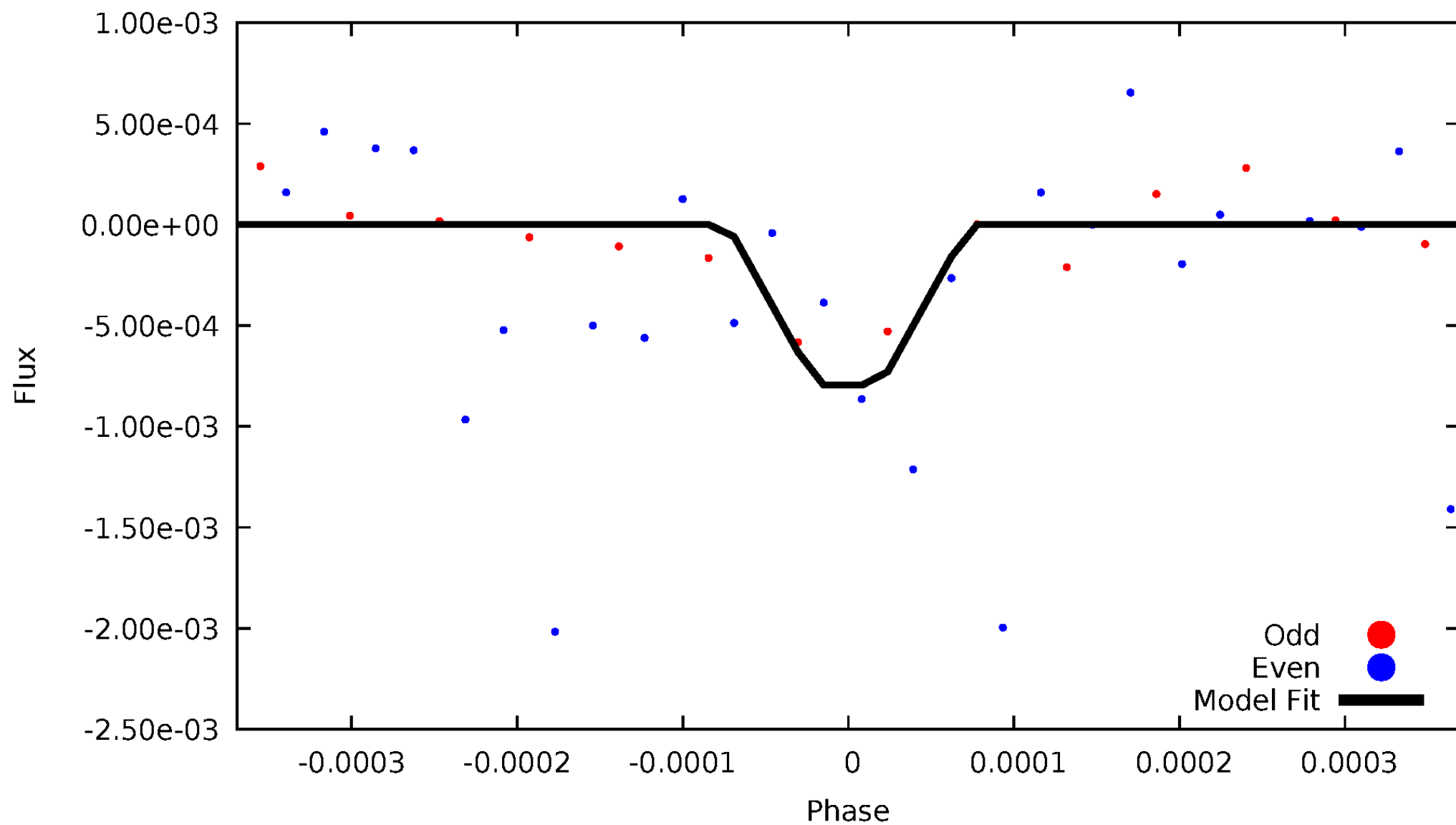
DV Odd/Even

TCE 009588946-04



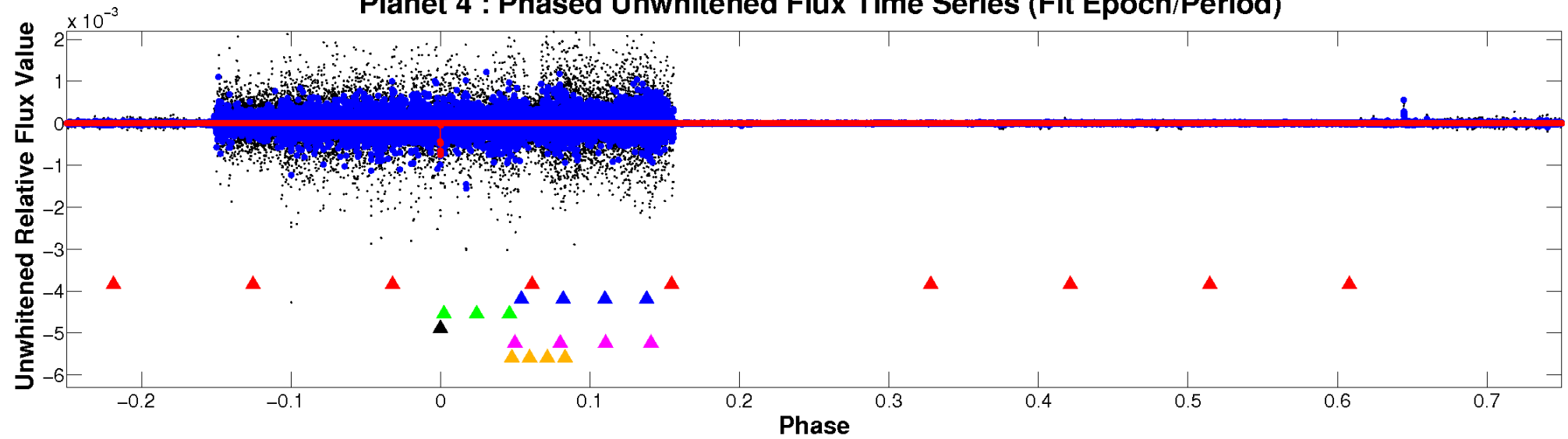
ALT Odd/Even

TCE 009588946-04

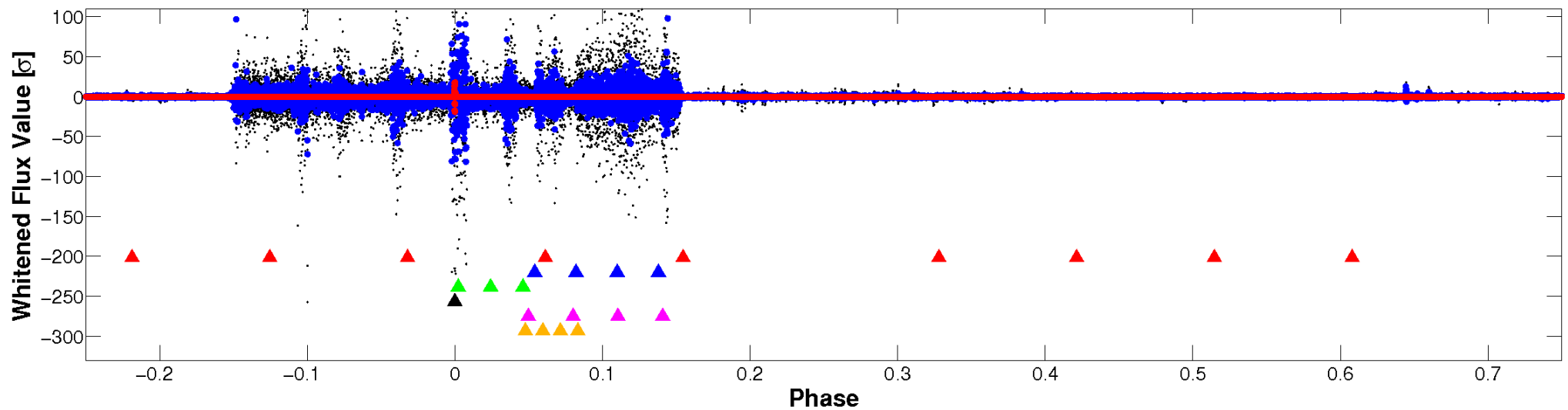


Non-Whitened Vs. Whitened Light Curve

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

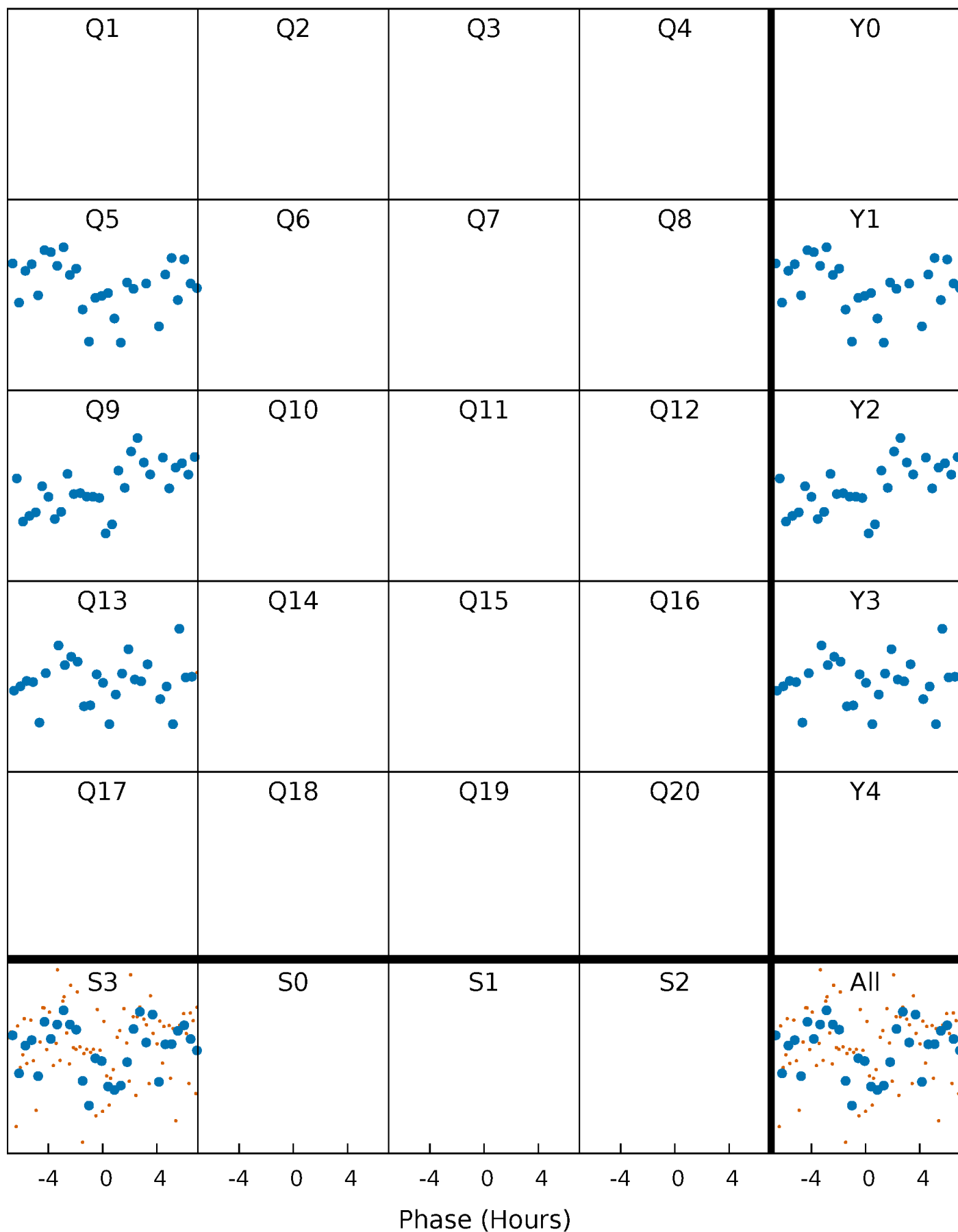


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



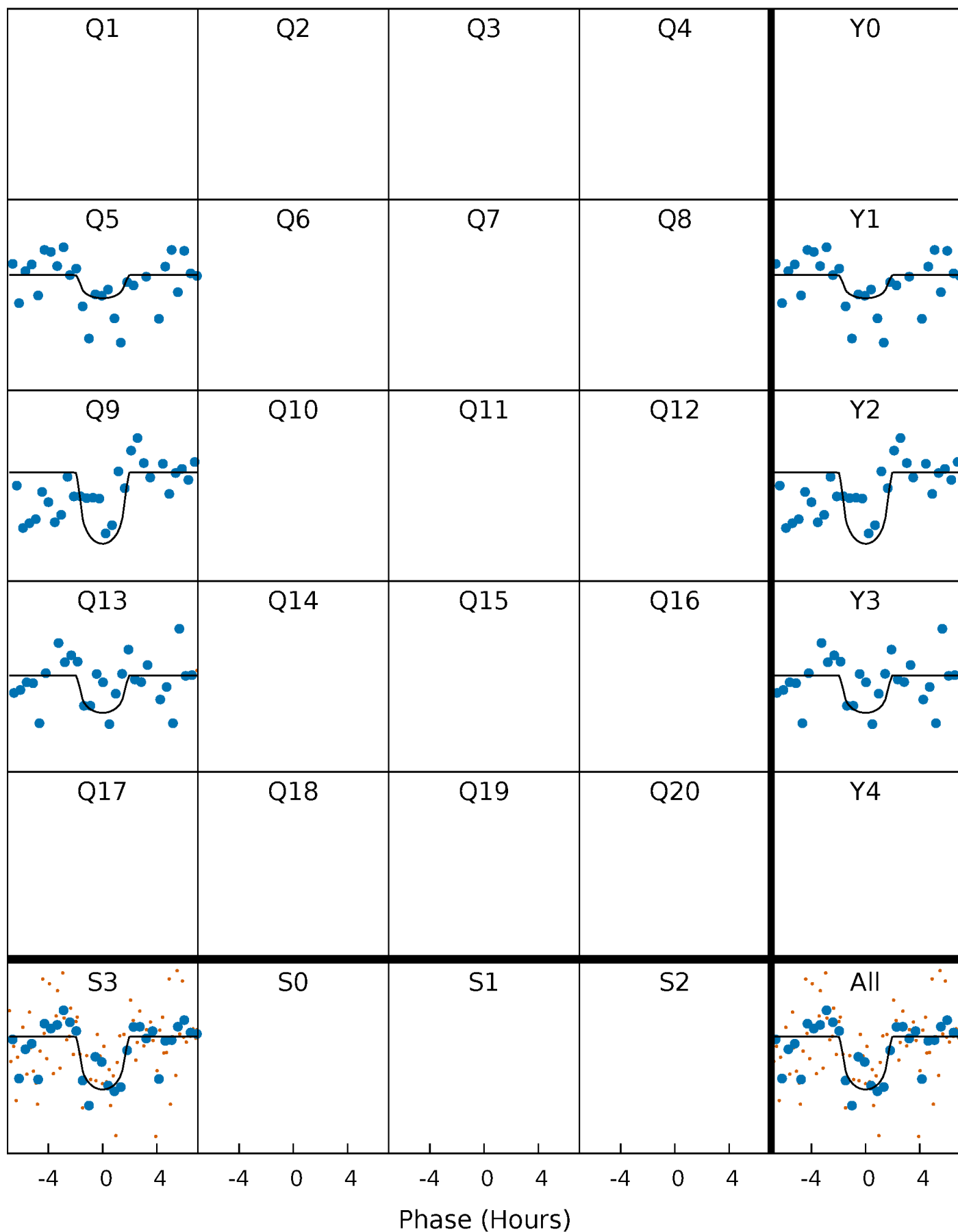
PDC Quarter-Phased Transit Curves

TCE 009588946-04 $P=377.580422$ Days $T_0=483.684337$ (BKJD)



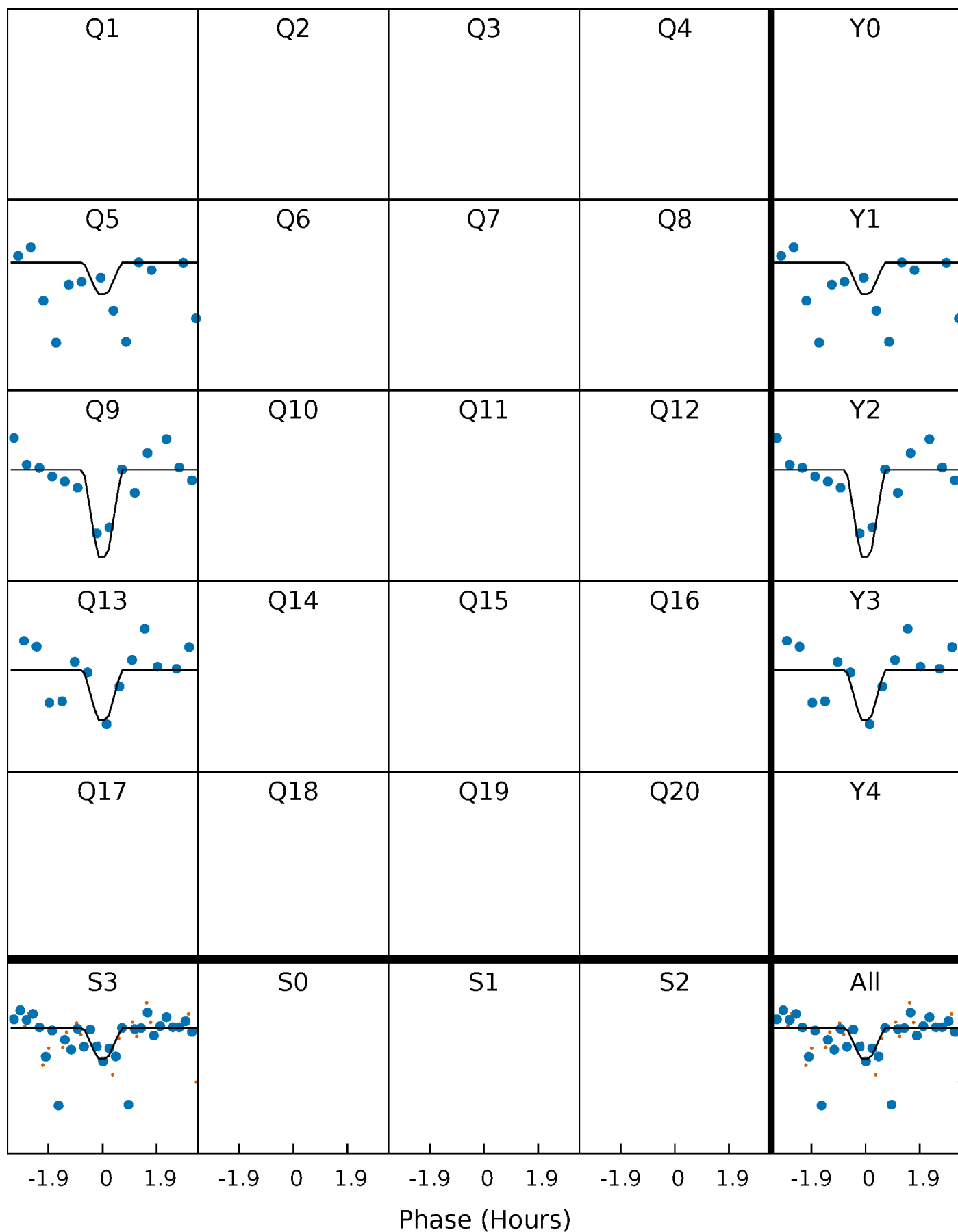
DV Quarter-Phased Transit Curves

TCE 009588946-04 $P=377.580422$ Days $T_0=483.684337$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

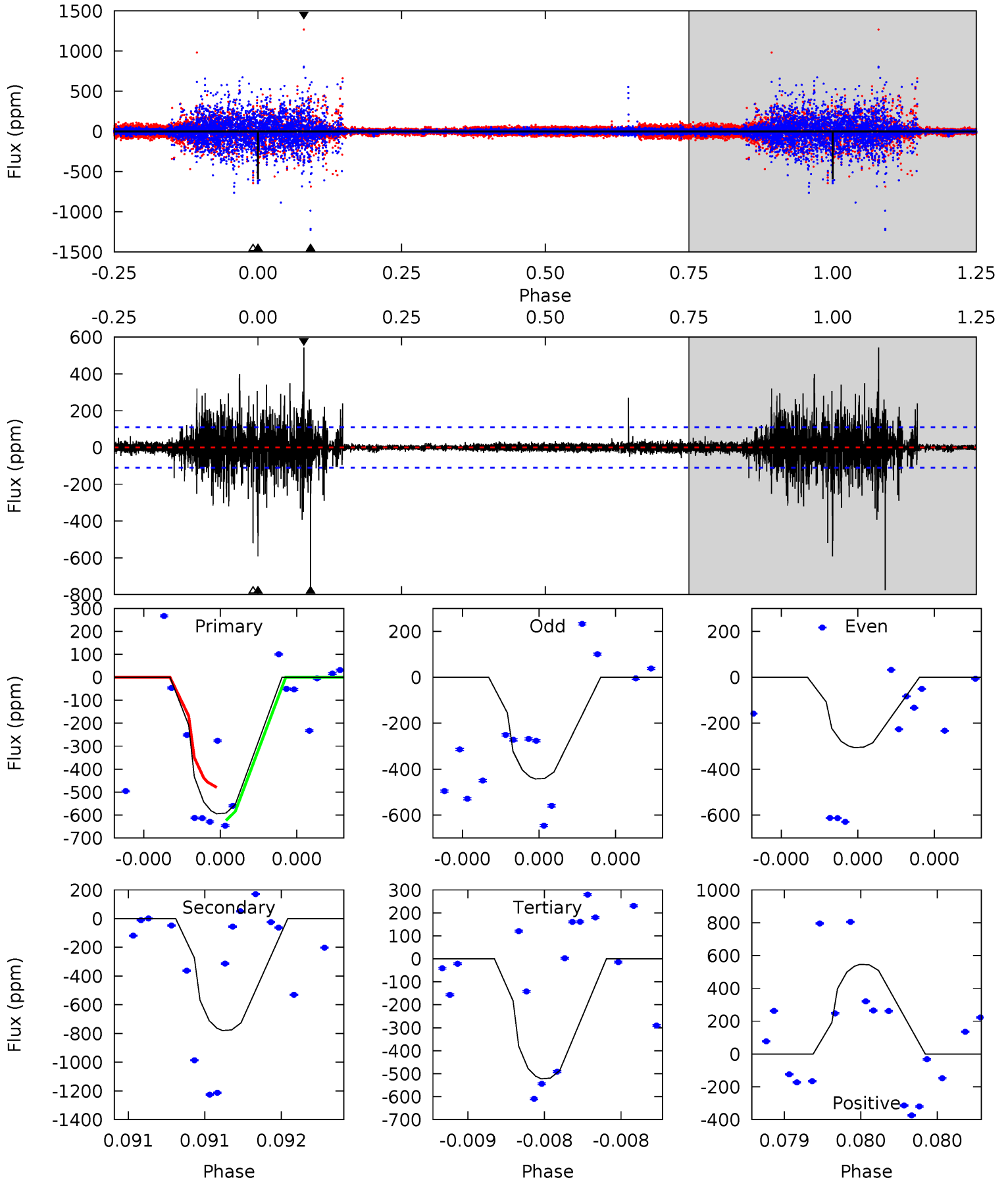
TCE 009588946-04 $P=377.578133$ Days $T_0=483.710567$ (BKJD)



DV Model-Shift Uniqueness Test

009588946-04, P = 377.580422 Days, E = 106.103915 Days

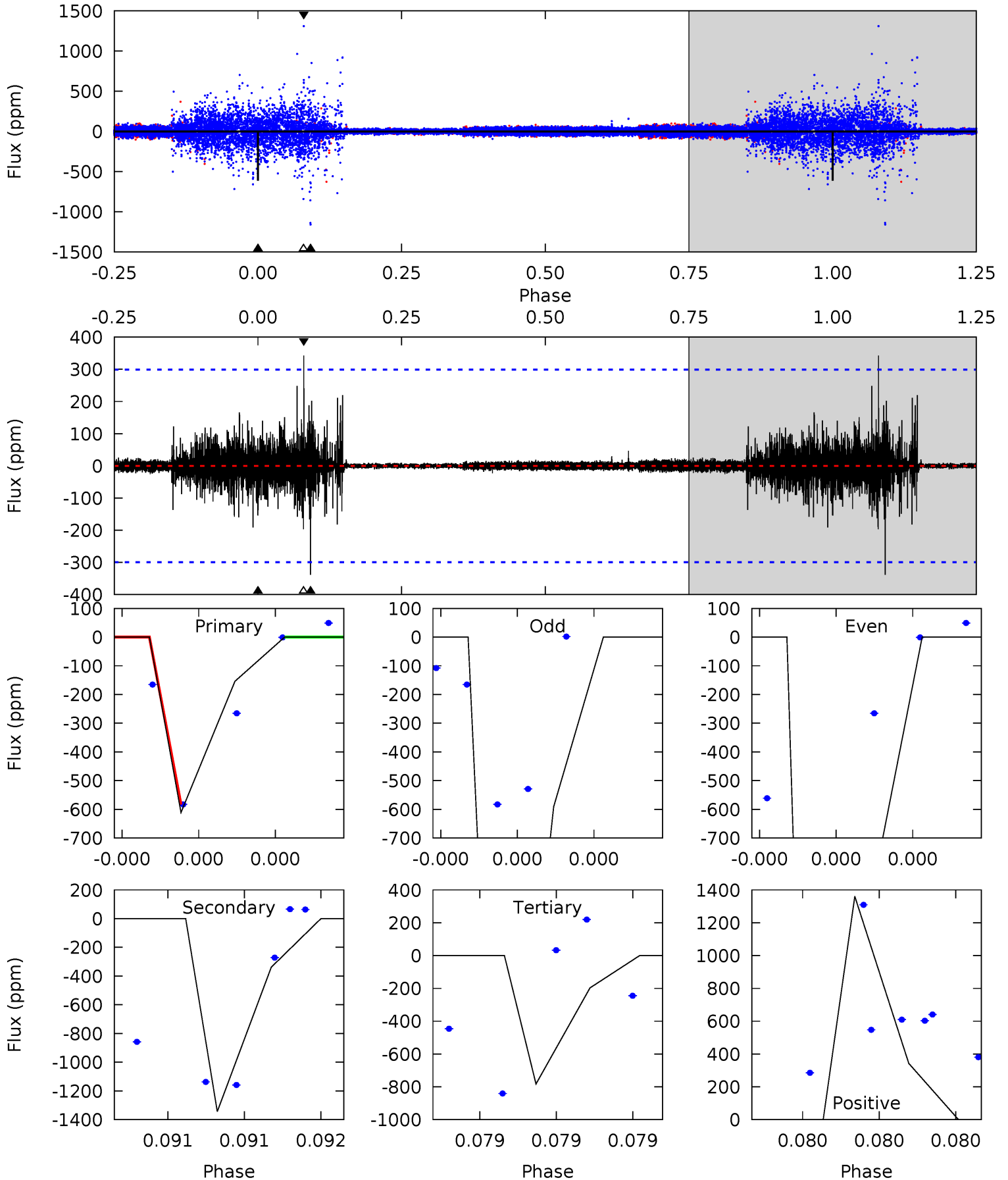
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
30.1	39.5	26.5	27.7	5.59	3.51	1.61	3.67	2.44	13.0	11.8	2.66	1.60	0.41	3.52



Alt Model-Shift Uniqueness Test

009588946-04, P = 377.578133 Days, E = 106.132434 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.98	6.56	3.82	6.64	5.80	3.82	0.26	-0.84	-3.66	2.74	-0.08	2.84	1.02	0.50	0



Stellar Parameters For KIC 009588946

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5019^{+173}_{-190}	$3.470^{+0.848}_{-0.212}$	$0.560^{+0.050}_{-0.350}$	$4.093^{+1.115}_{-2.601}$	$1.805^{+0.269}_{-0.808}$	$0.037^{+0.536}_{-0.018}$
	+3%/-4%	+24%/-6%	+9%/-62%	+27%/-64%	+15%/-45%	+1446%/-49%
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 009588946-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-775 ± 20	$29.38^{+35.60}_{-21.46}$	546^{+60}_{-103}	3416^{+1941}_{-596}	763^{+8235}_{-609}
Alt.	-338 ± 52	$29.46^{+38.40}_{-21.35}$	545^{+61}_{-95}	3031^{+1583}_{-532}	316^{+3808}_{-253}

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 $A_{obs} \gg 1.0$

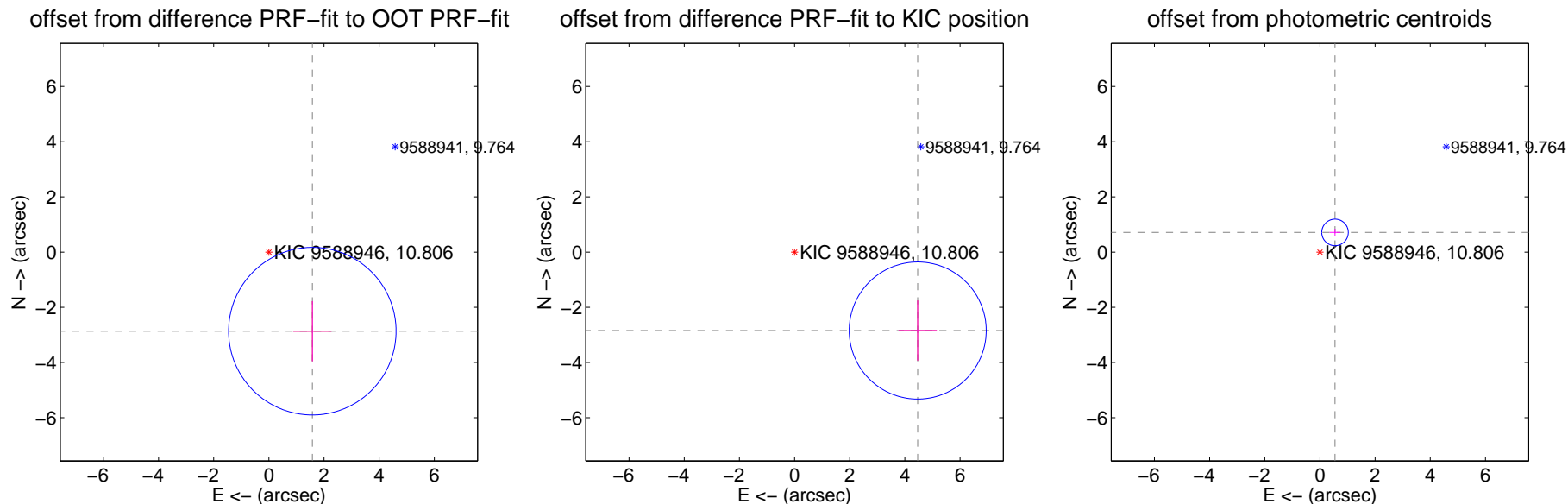
DV Centroid Data

Supplemental centroid analysis for 009588946-04. **Kepler magnitude: 10.81.** Transit SNR 73.21

There are 0 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 2.89 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.271 ± 1.012	3.23	-1.577 ± 0.694	-2.866 ± 1.090
PRF-fit source offset from KIC position	5.293 ± 0.828	6.39	-4.465 ± 0.694	-2.842 ± 1.090
photometric centroid source offset	0.90 ± 0.16	5.60	-0.55 ± 0.20	0.71 ± 0.13

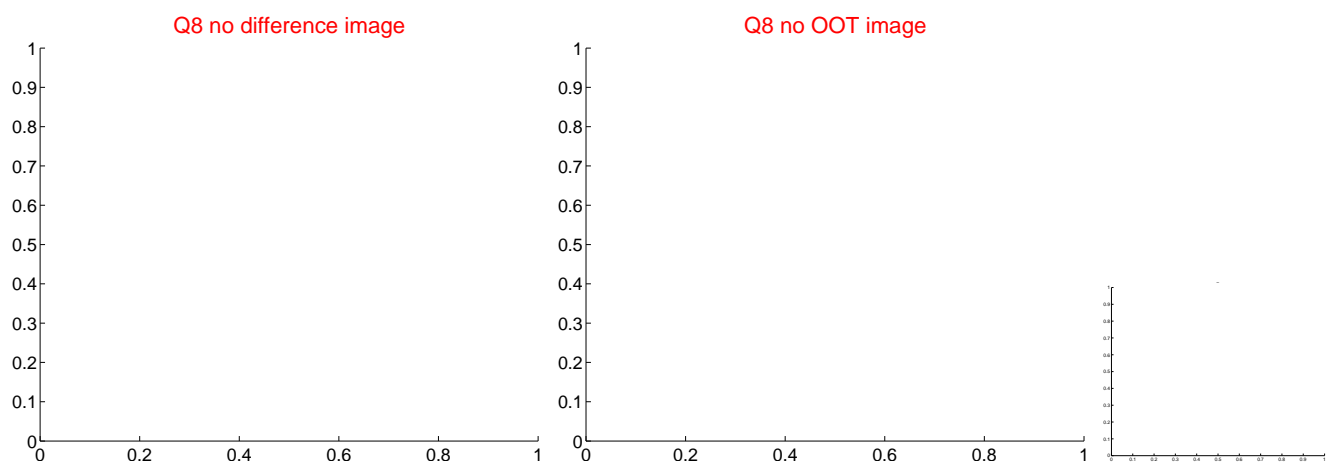
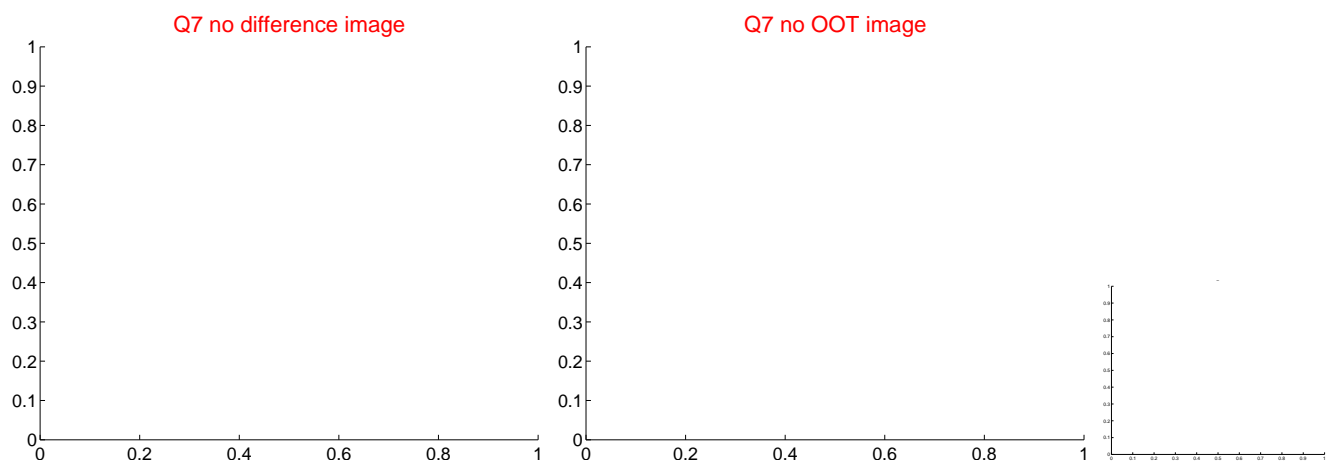
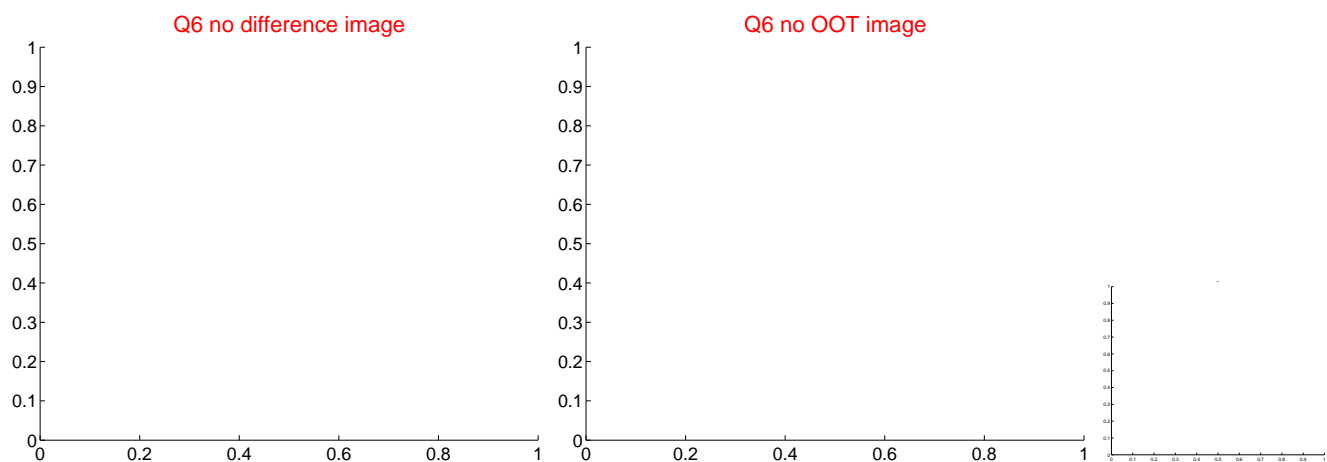
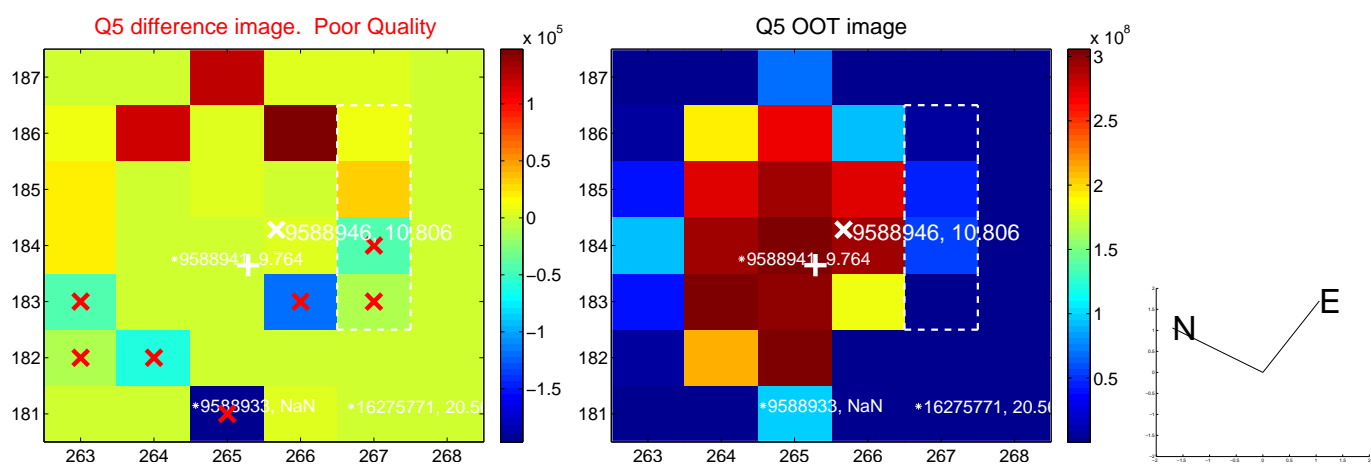


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

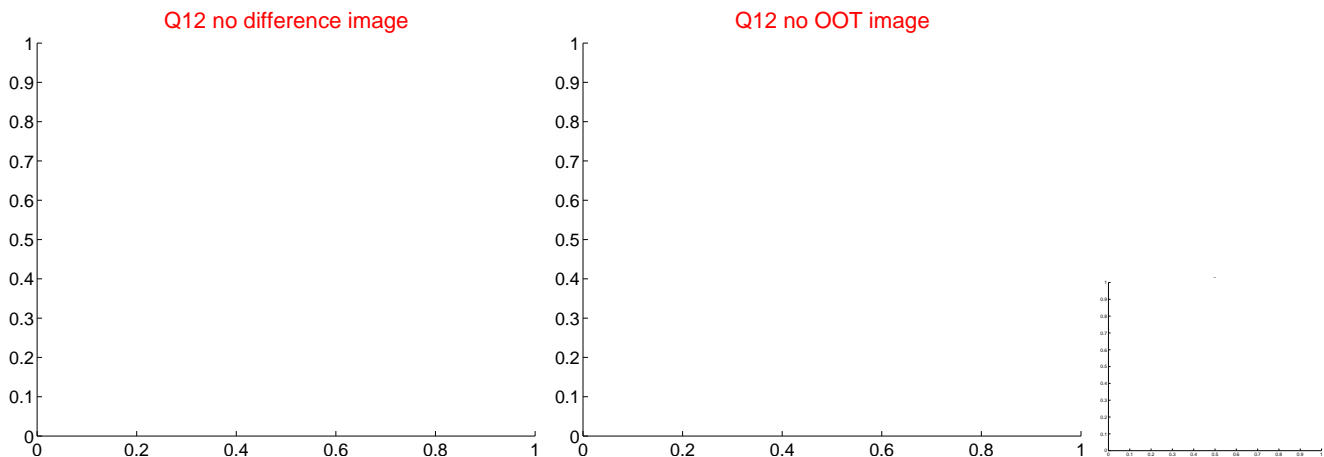
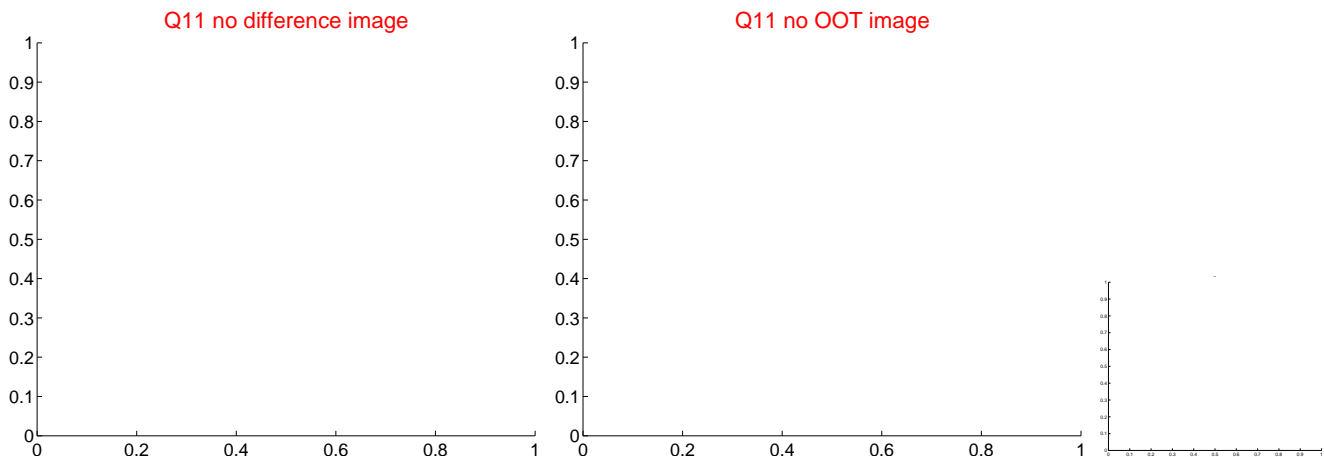
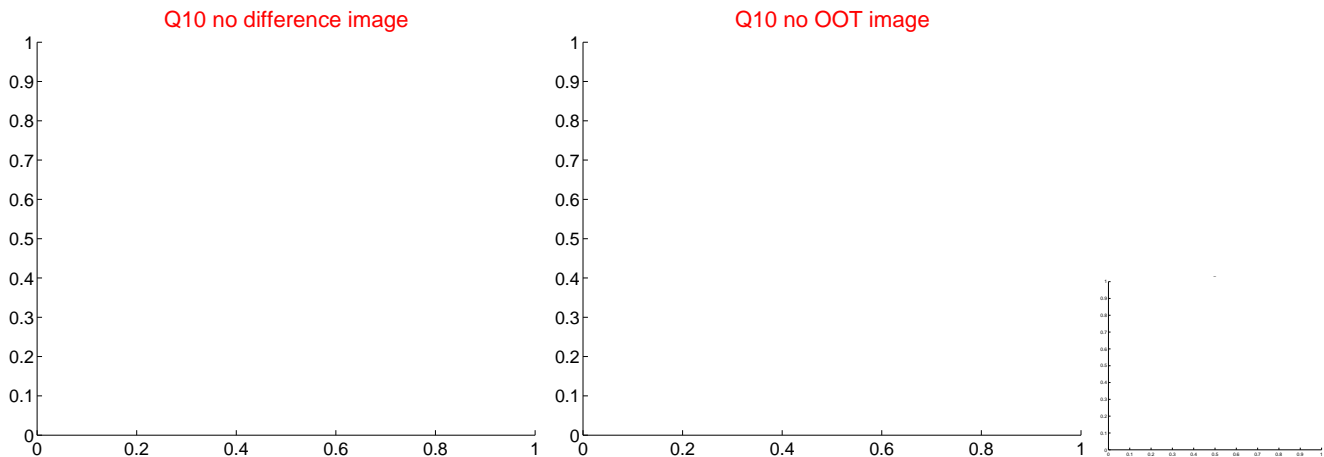
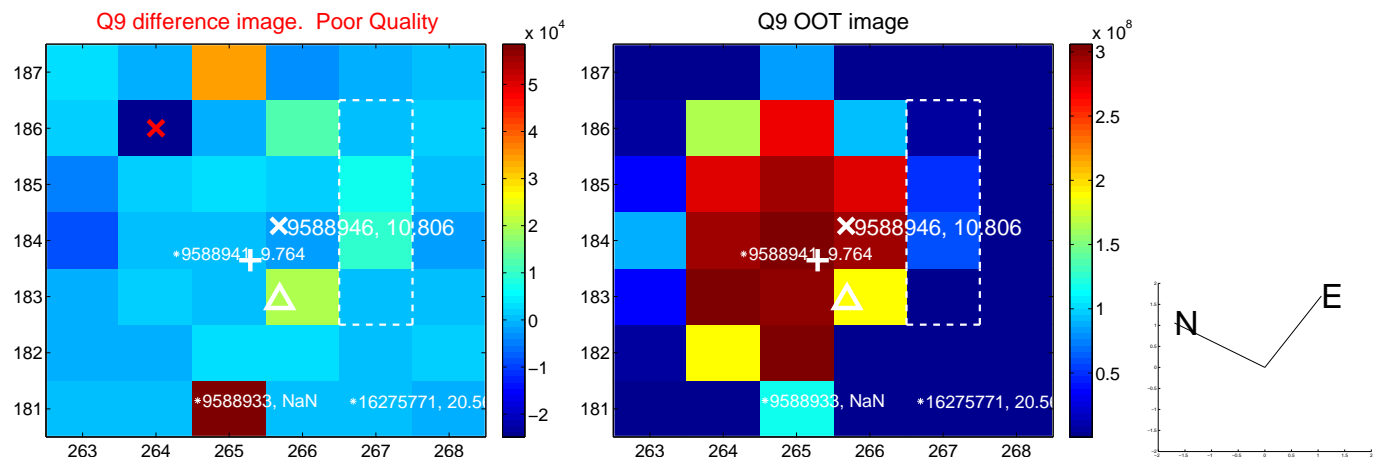
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



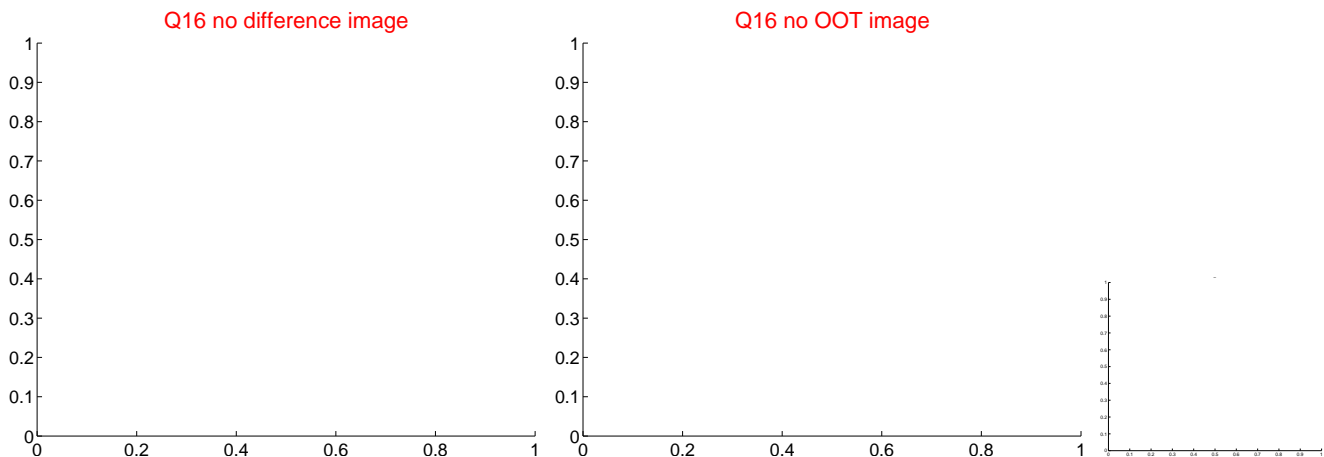
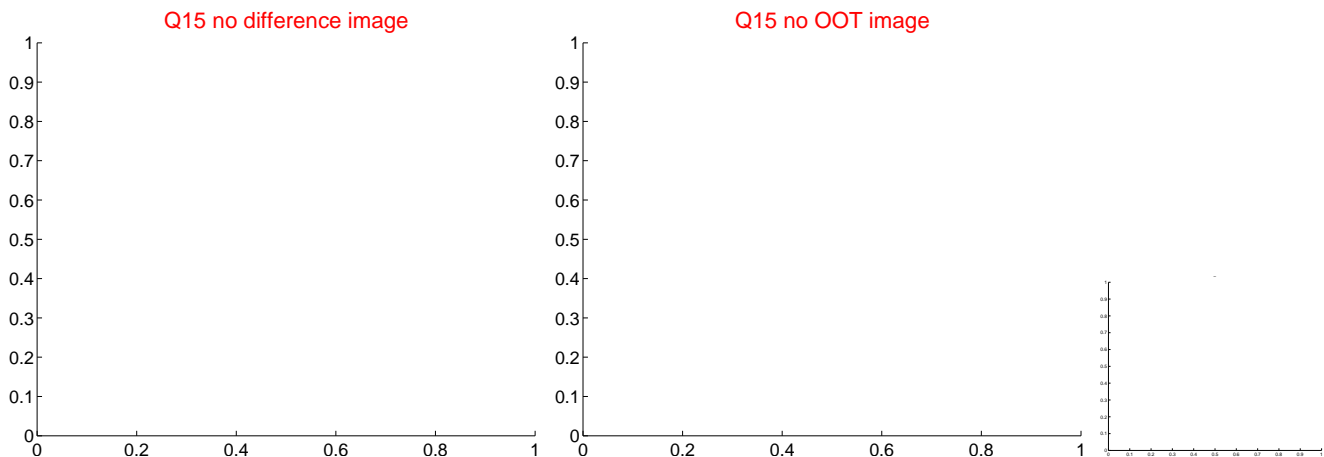
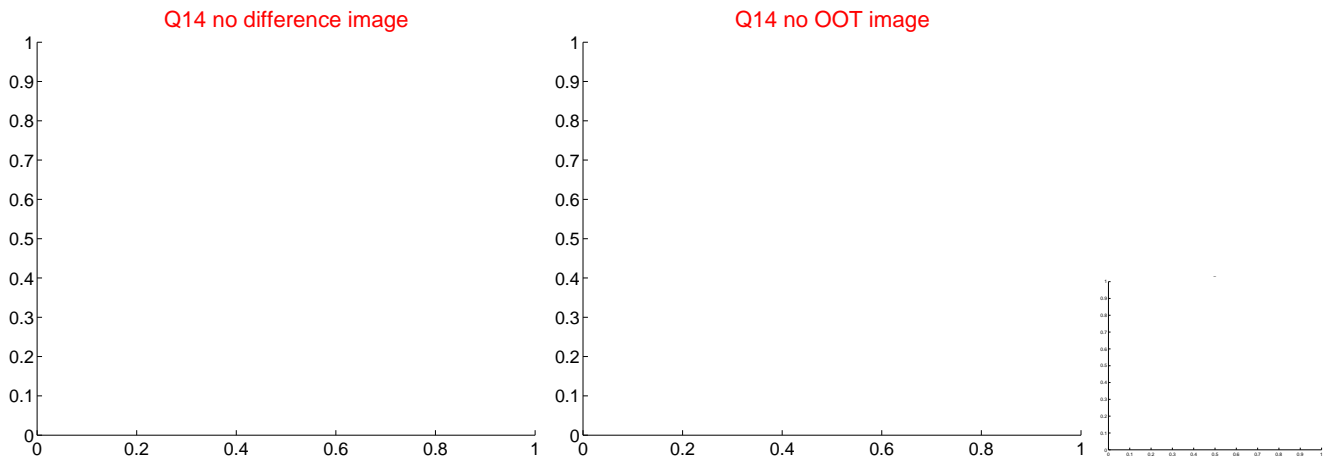
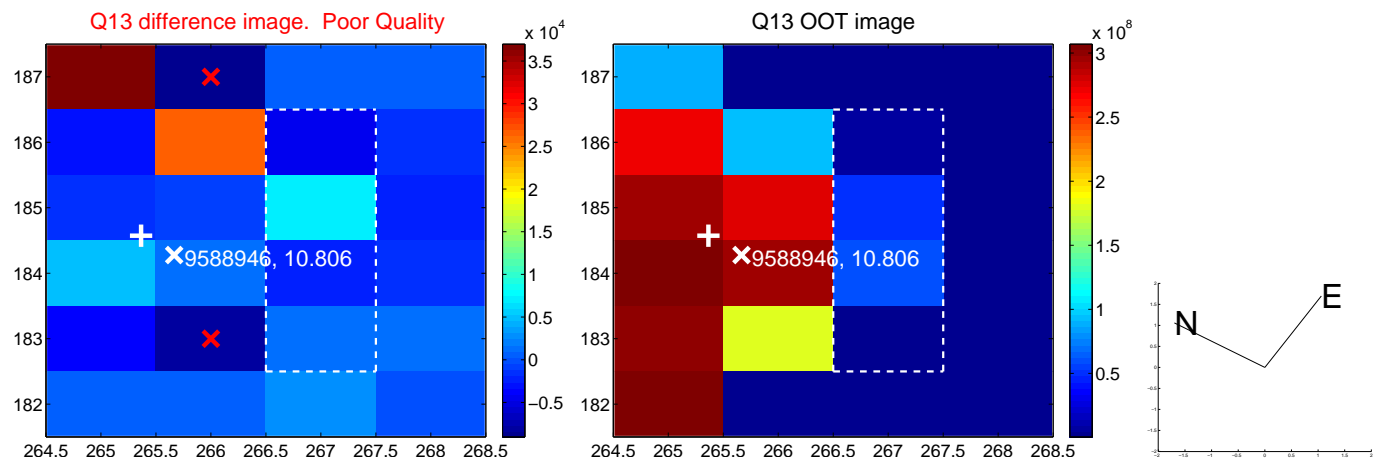
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value



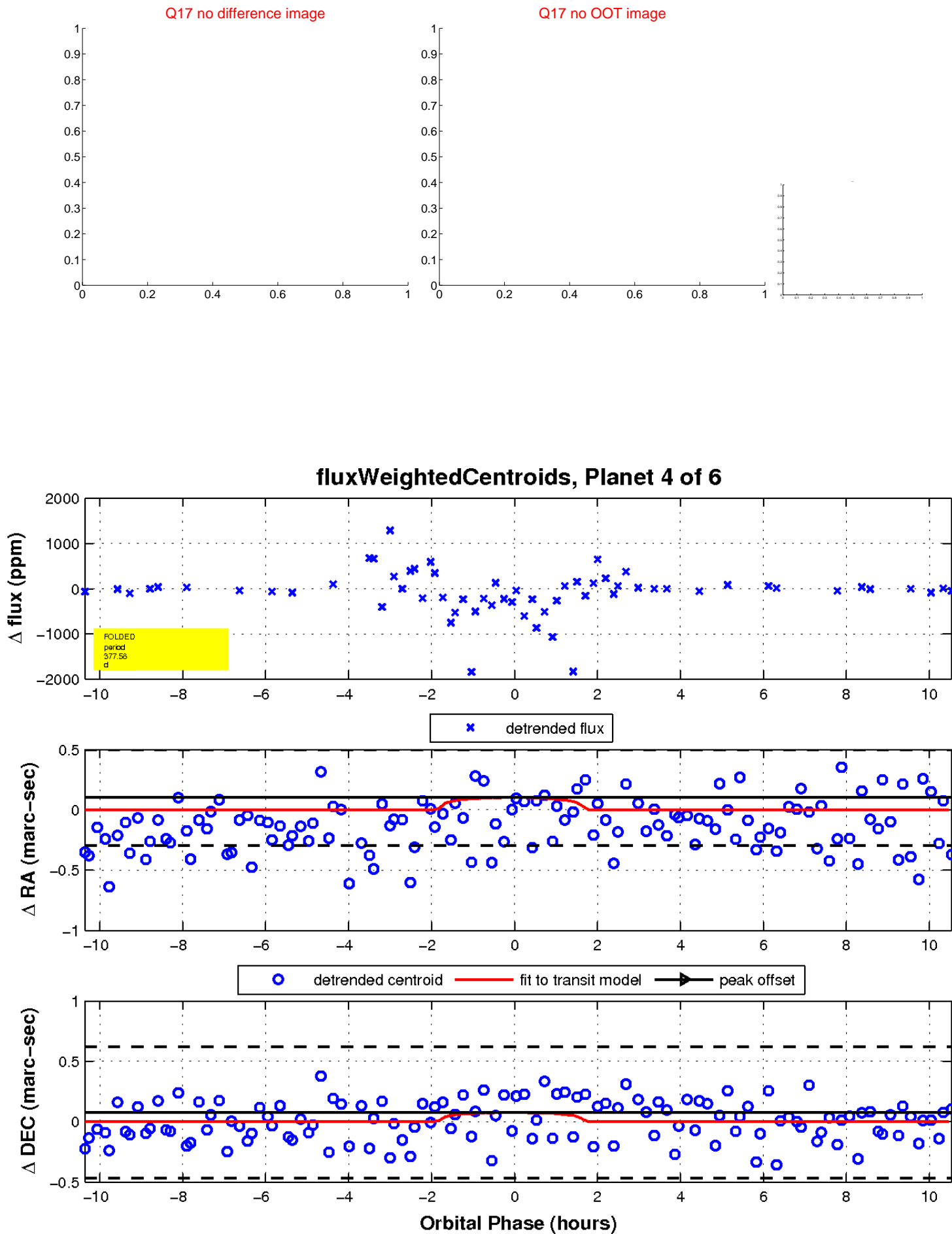
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



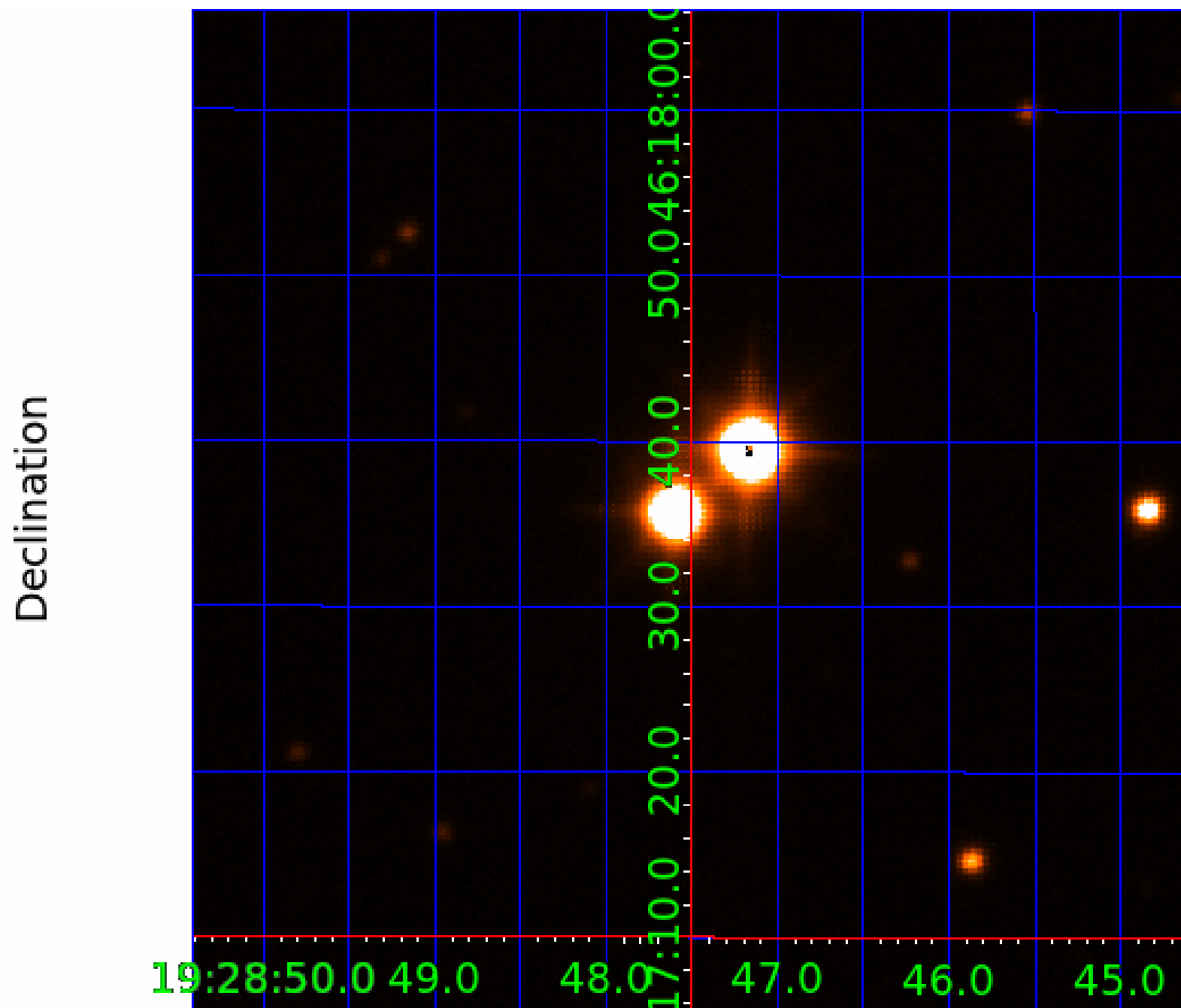
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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



UKIRT Image



KIC 009588946

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})
009588946-01	OBS	No	171.169369	164.490515	54.5	1.804	30.3	16.7	4.09	5019	3.23	17.65
009588946-02	OBS	No	367.037397	158.183711	484.9	2.393	67.3	44.7	4.09	5019	10.57	6.38
009588946-03	OBS	No	385.860058	484.561019	348.8	1.521	115.4	32.9	4.09	5019	7.98	5.97
009588946-04	OBS	No	377.580422	483.684337	756.5	3.516	100.9	73.2	4.09	5019	10.95	6.15
009588946-05	OBS	No	366.126895	159.275673	259.5	1.908	89.5	22.3	4.09	5019	6.92	6.41
009588946-06	OBS	No	373.101870	137.577536	860.7	0.641	58.6	22.2	4.09	5019	12.63	6.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009588946-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009588946-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—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_SATURATED—HALO_GHOST
009588946-03	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_SATURATED
009588946-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
009588946-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—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_SATURATED
009588946-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

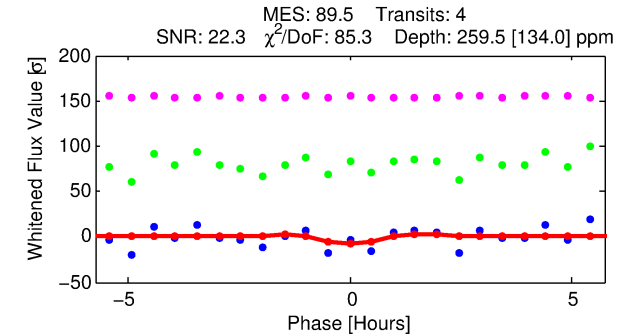
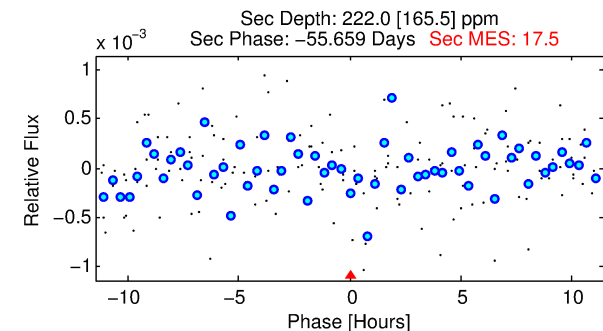
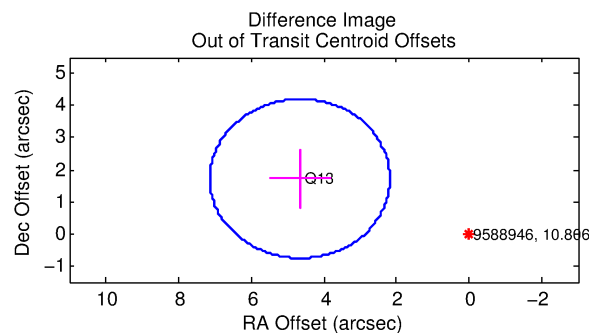
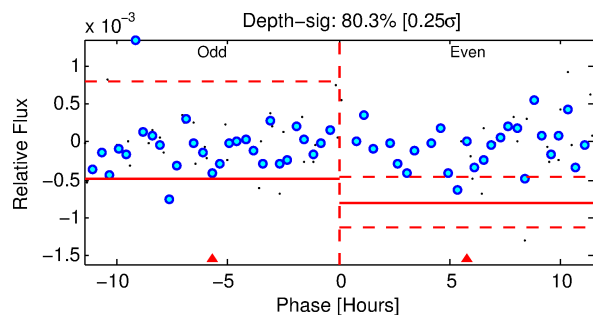
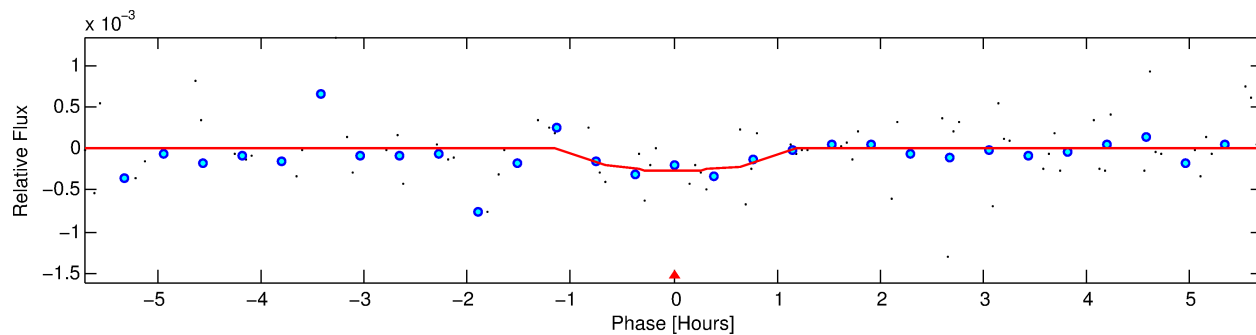
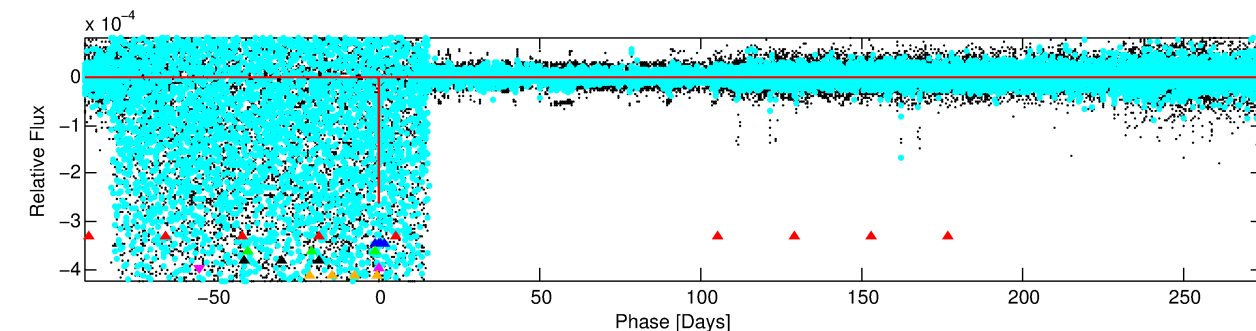
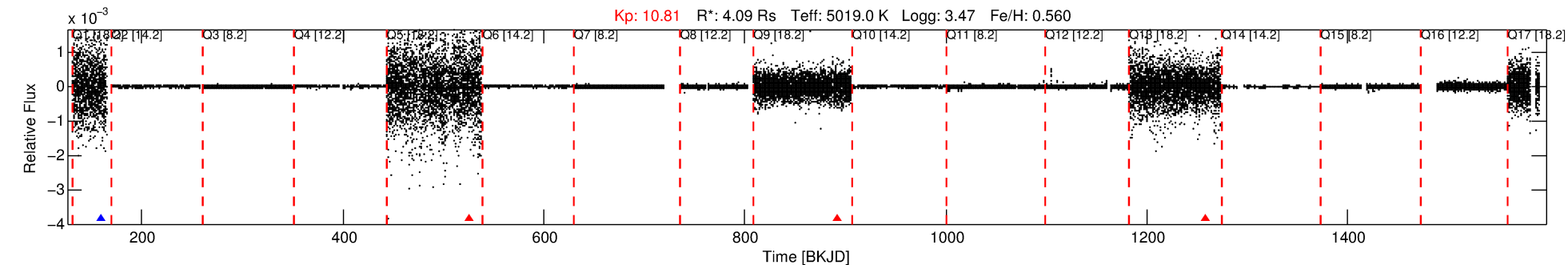
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009588946-05

No Significant Match Found

DV One-Page Summary

KIC: 9588946 Candidate: 5 of 6 Period: 366.127 d



DV Fit Results:

Period = 366.12689 [0.01123] d
Epoch = 159.2757 [0.0210] BKJD
Rp/R* = 0.0155 [0.1178]
a/R* = 1160.90 [28391.73]
b = 0.64 [23.69]
Seff = 6.41 [8.82]
Teq = 406 [140] K
Rp = 6.92 [52.81] Re
a = 1.2194 [0.9470] AU
Ag = 3790.95 [57948.47] [0.07 σ]
Teffp = 4921 [18733] K [0.24 σ]

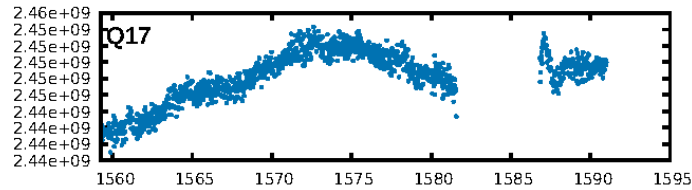
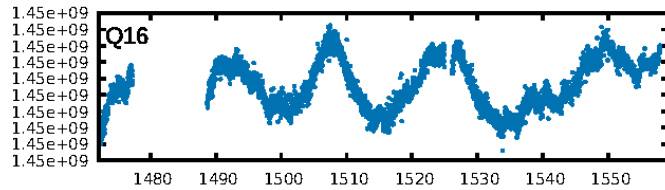
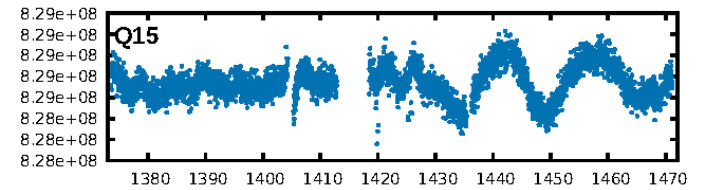
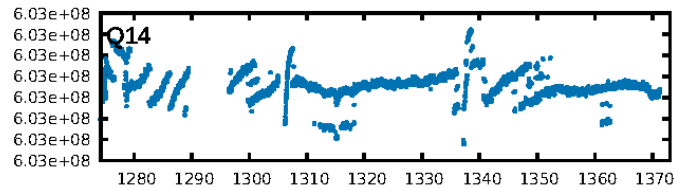
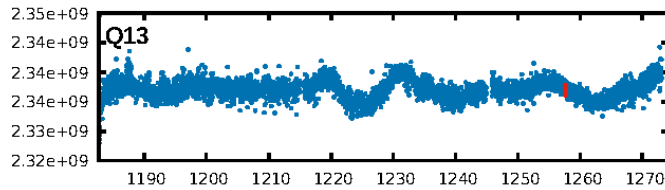
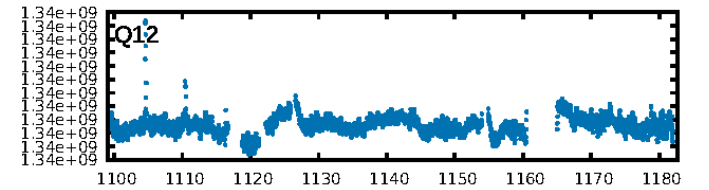
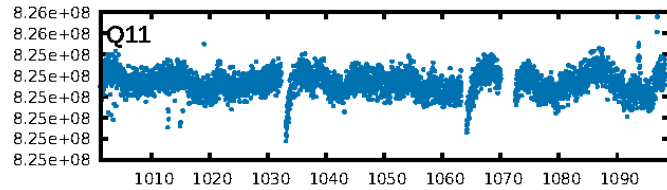
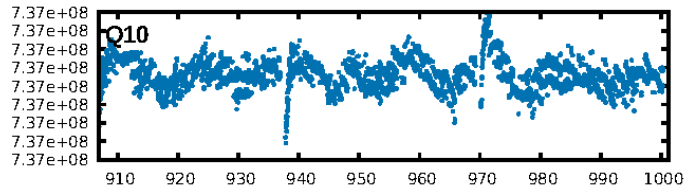
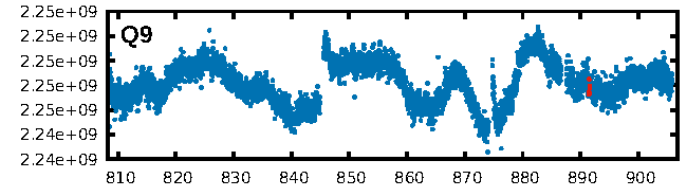
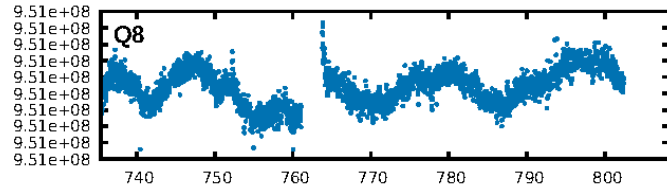
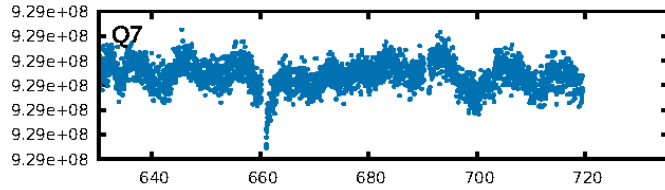
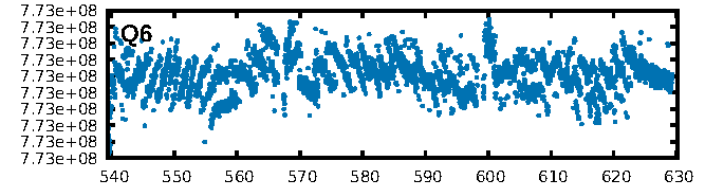
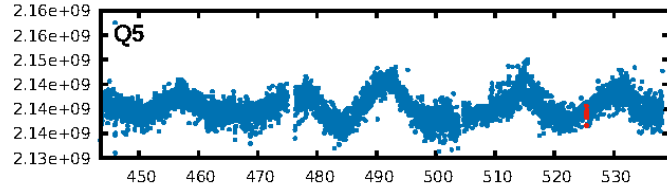
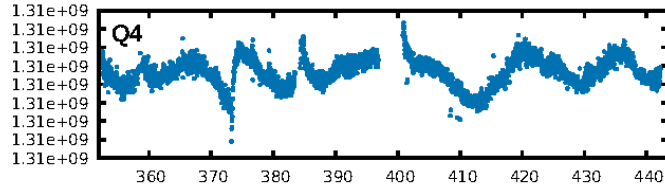
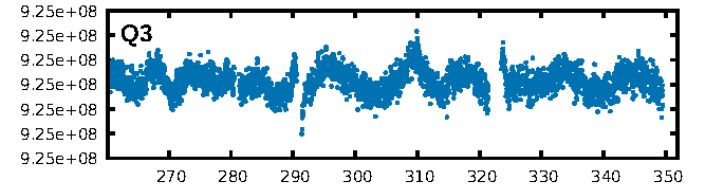
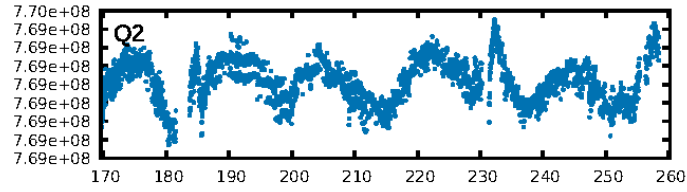
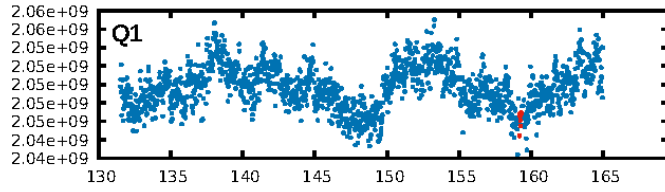
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [1781.92 σ]
LongPeriod-sig: 100.0% [7.14 σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.00 [0/3]
GhostDiagnostic-chr: -1.139
Centroid-sig: 73.0%
Centroid-so: 0.733 arcsec [1.44 σ]
OotOffset-rm: 4.965 arcsec [6.01 σ]
KicOffset-rm: 5.960 arcsec [7.06 σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 0.00 [0/1]
DiffImageOverlap-fno: 0.75 [3/4]

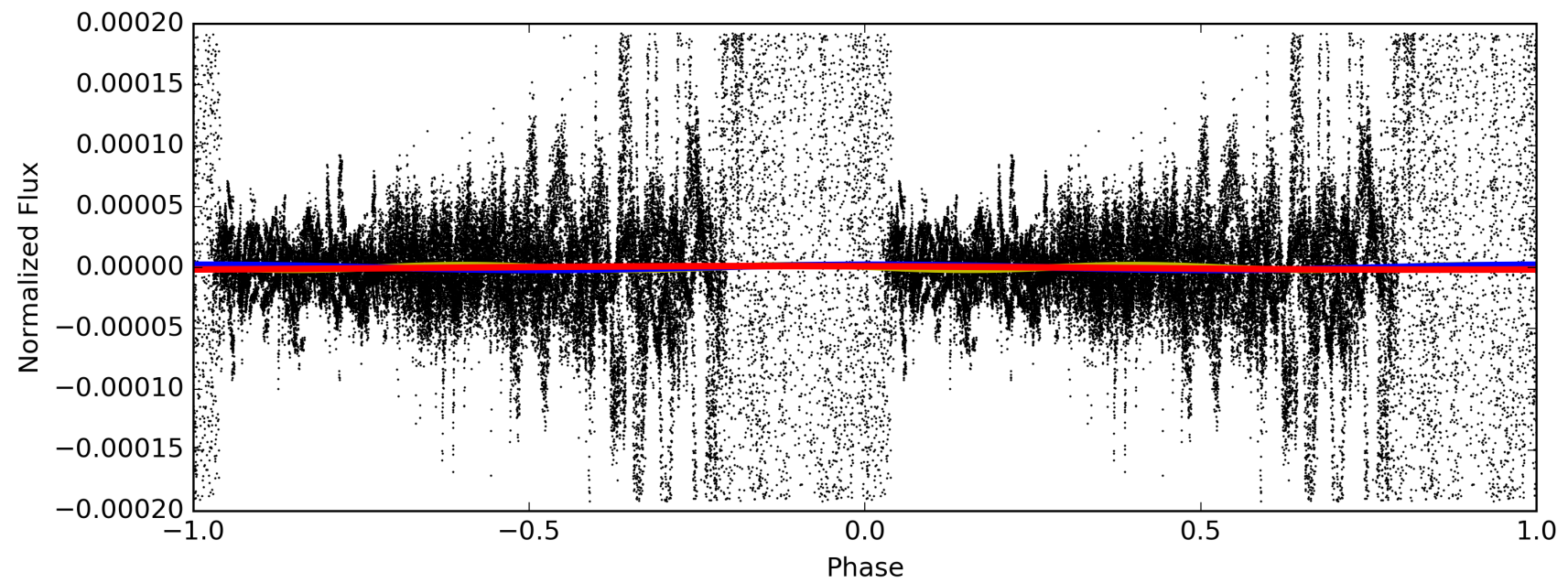
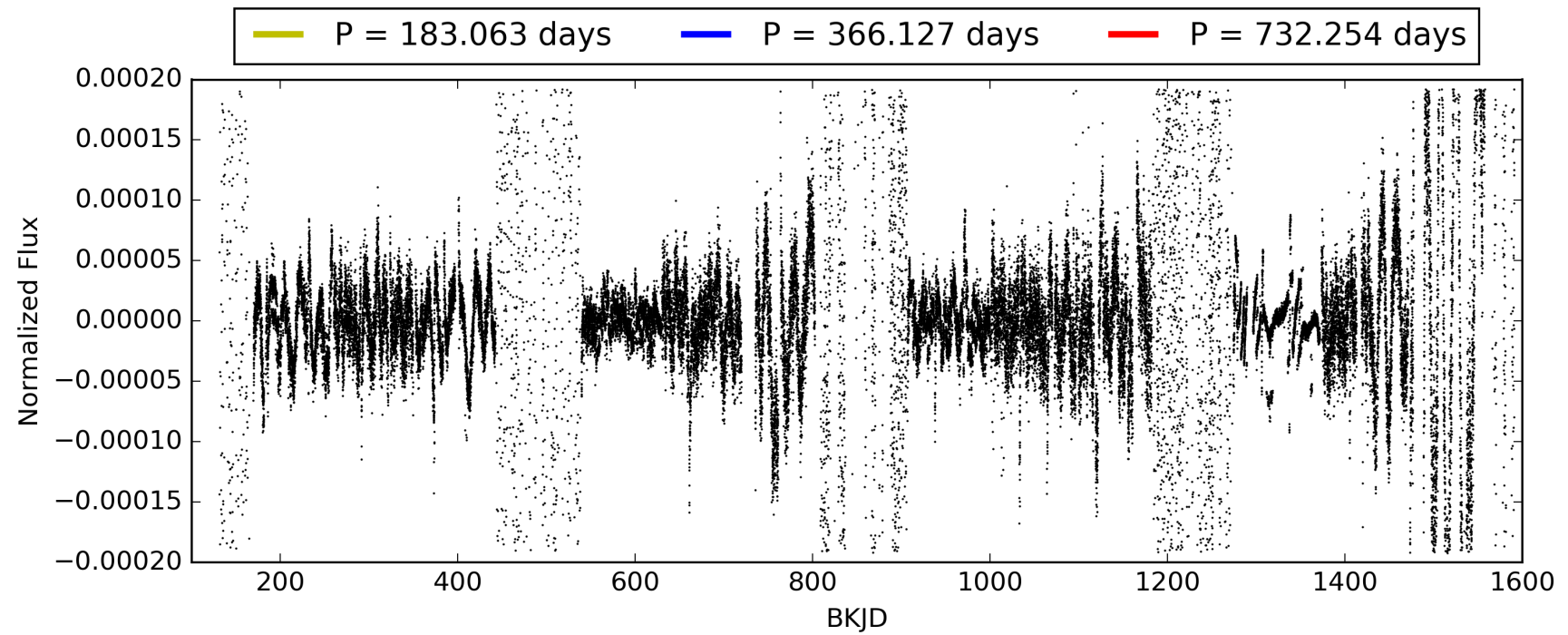
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 22:09:27 Z

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

TCE 009588946-05, PDC Light Curves

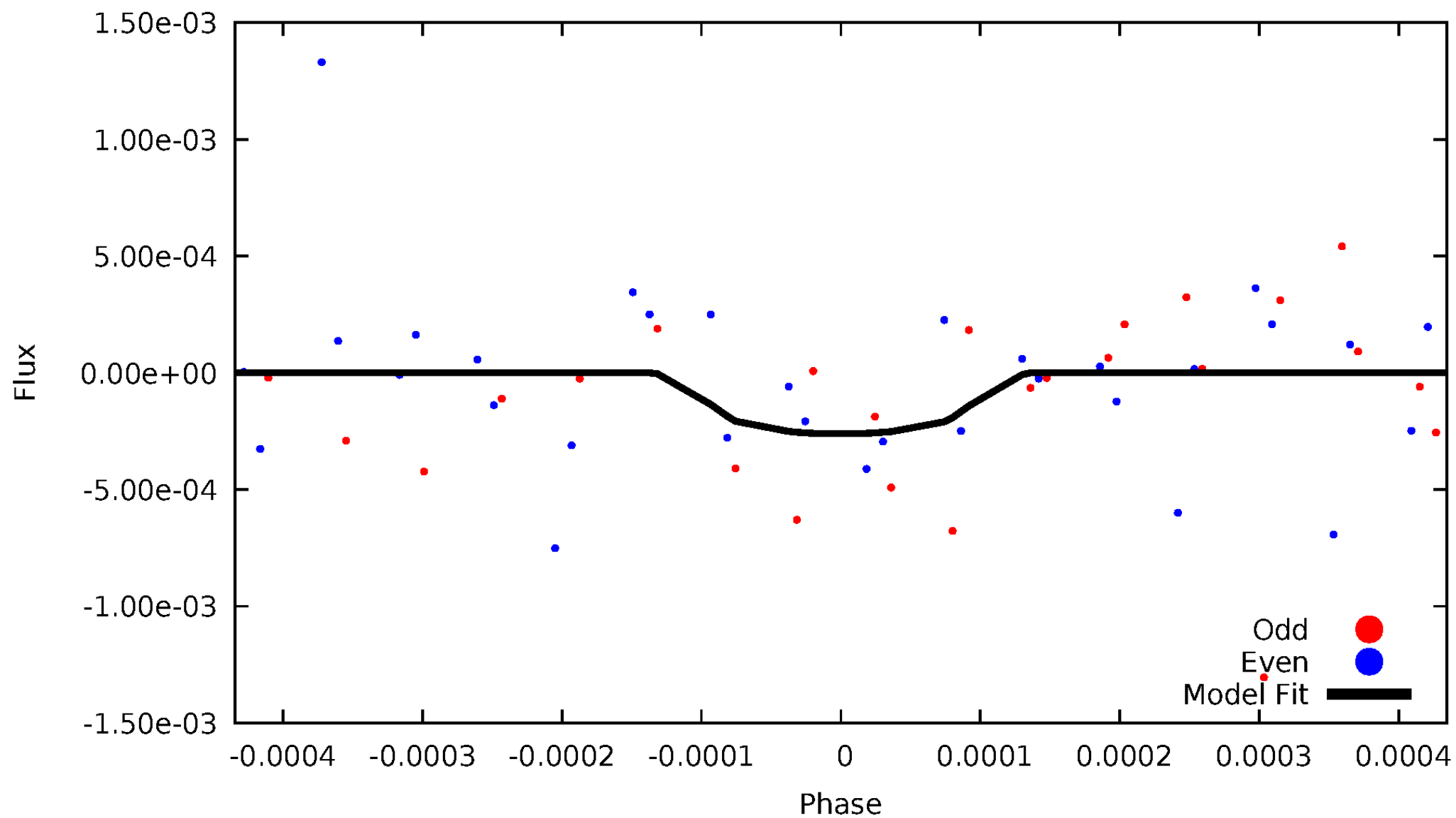


TCE 009588946-05



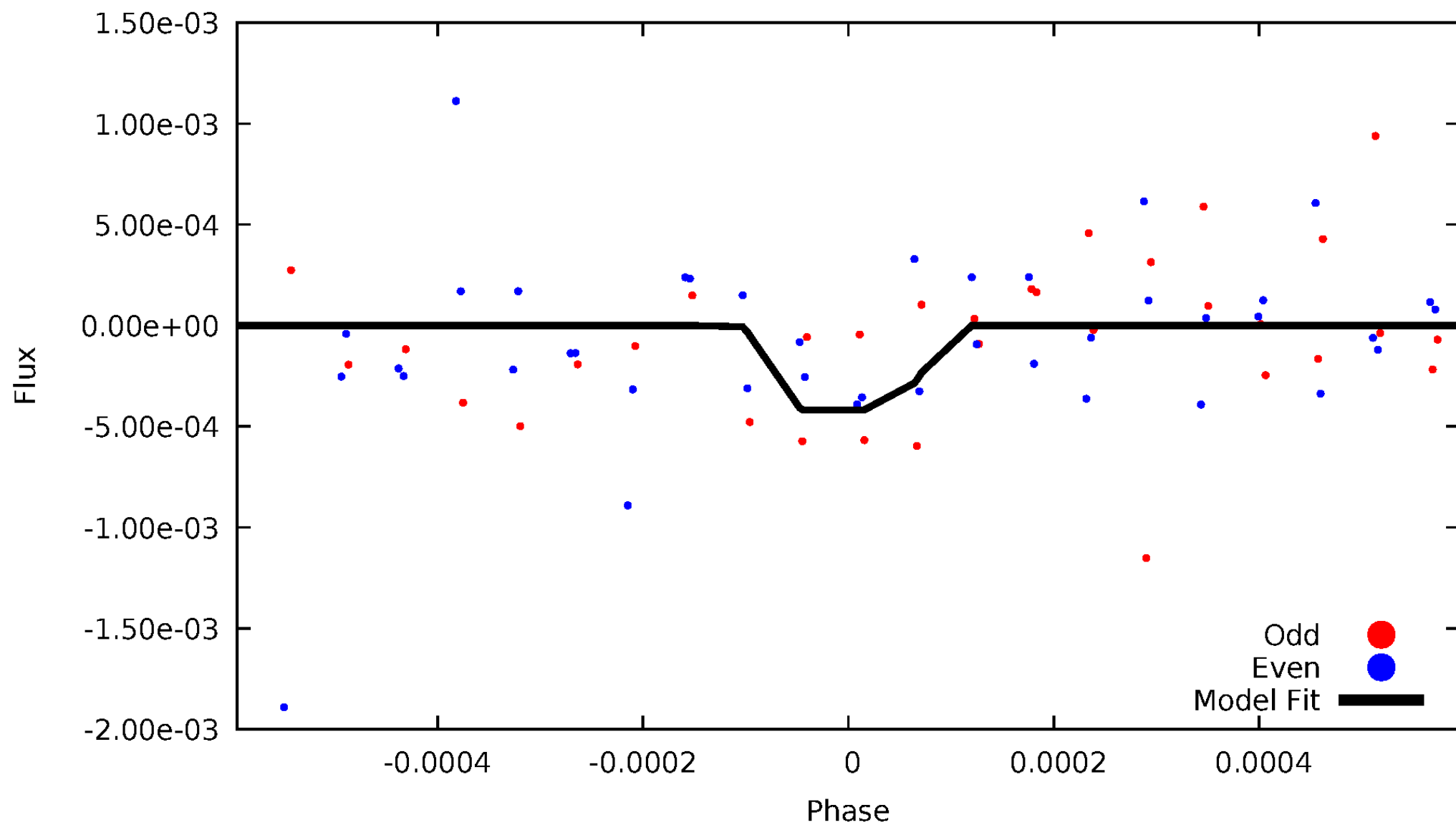
DV Odd/Even

TCE 009588946-05



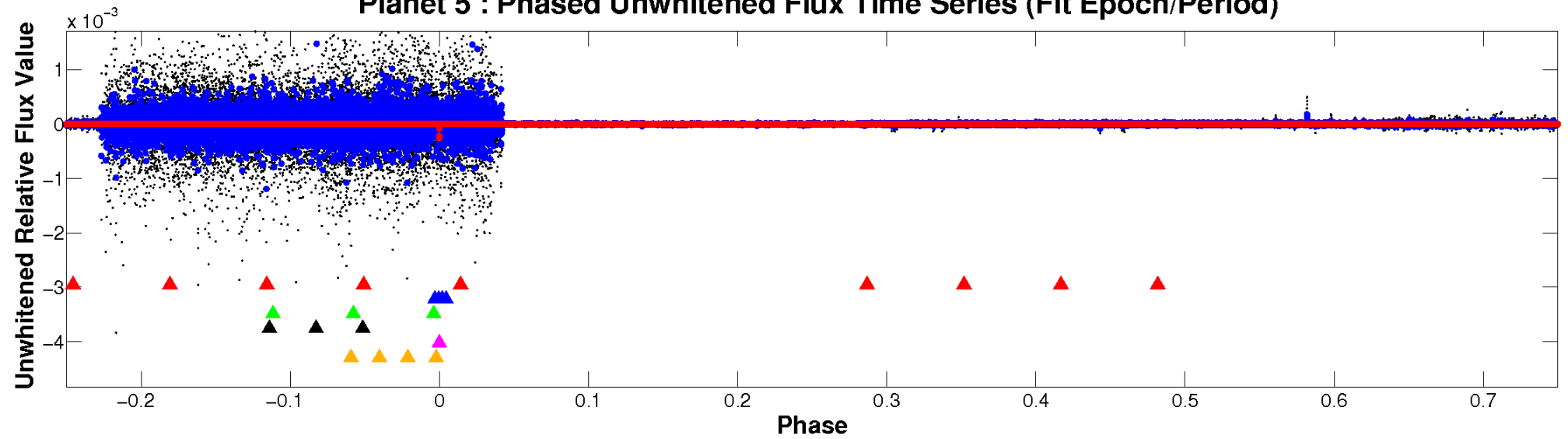
ALT Odd/Even

TCE 009588946-05

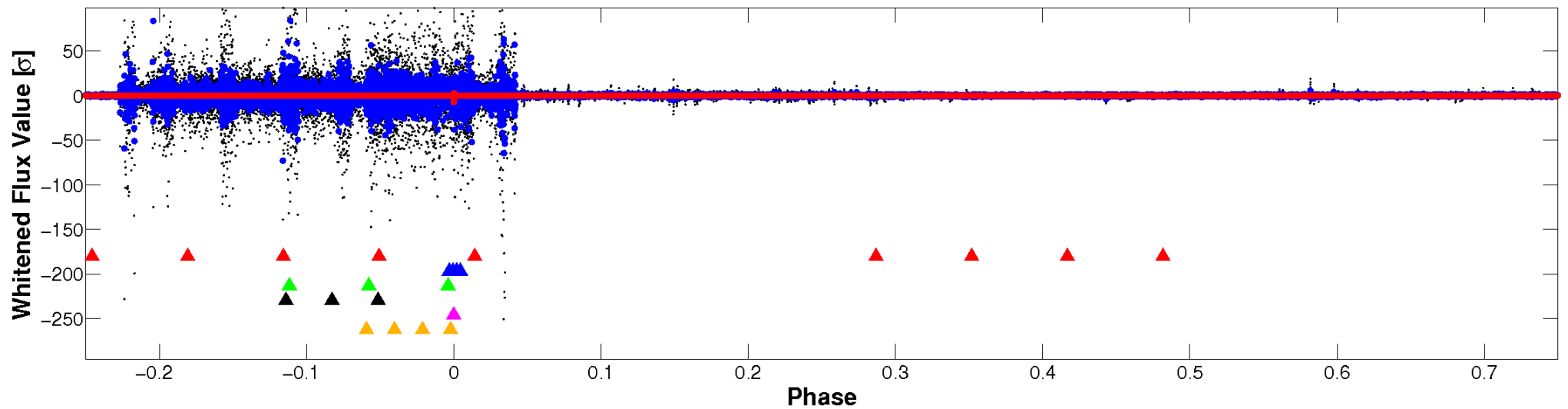


Non-Whitened Vs. Whitened Light Curve

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

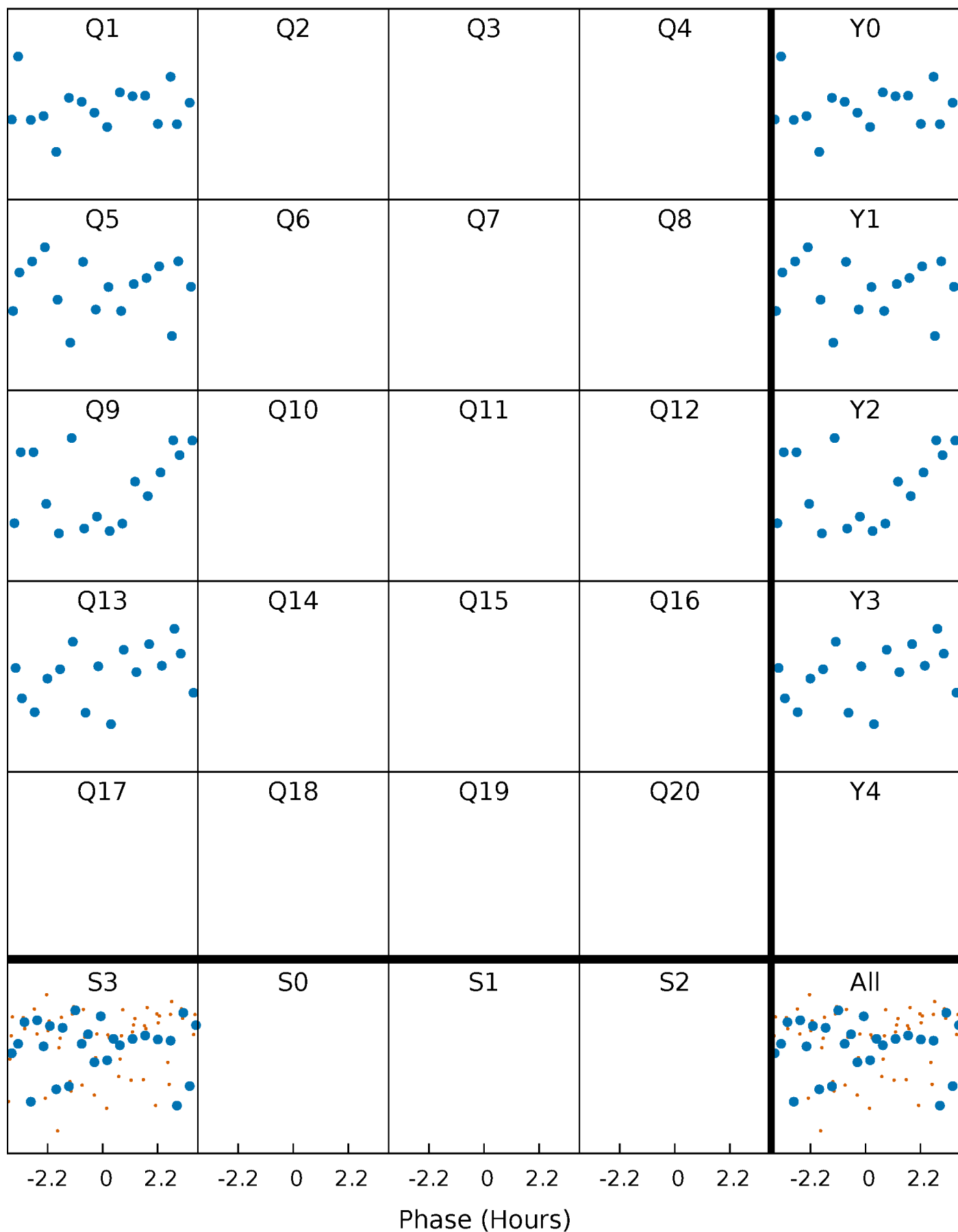


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



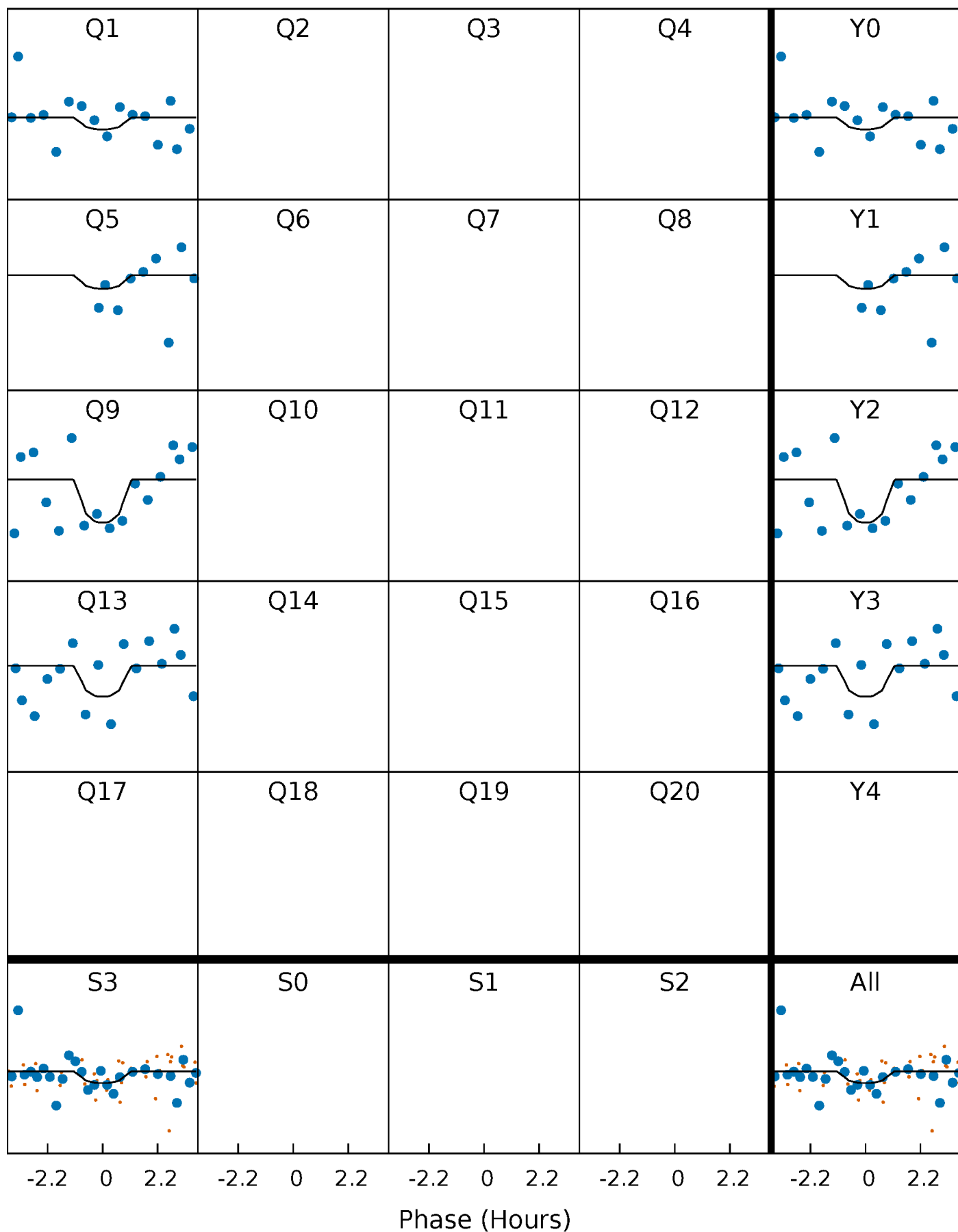
PDC Quarter-Phased Transit Curves

TCE 009588946-05 $P=366.126895$ Days $T_0=159.275673$ (BKJD)



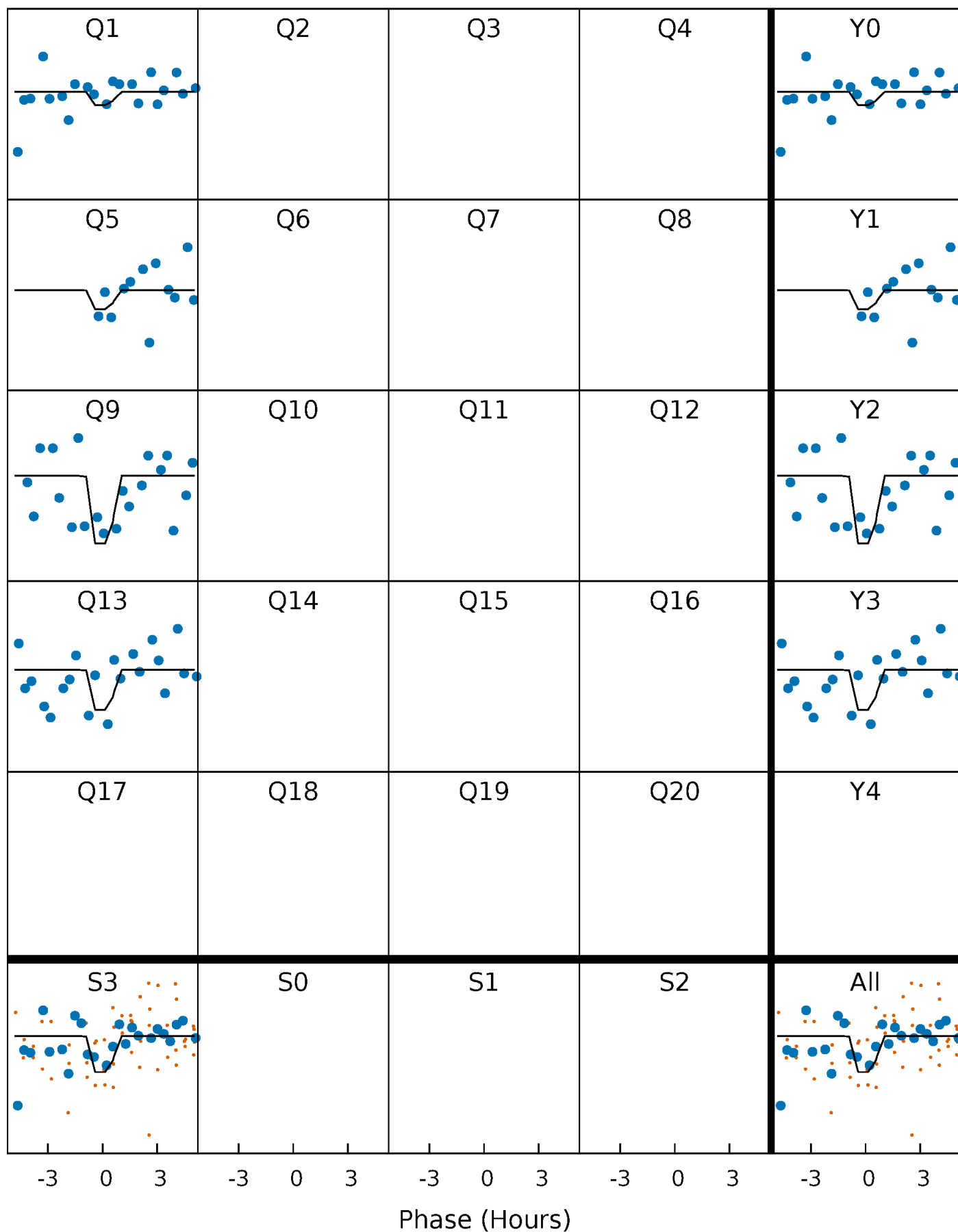
DV Quarter-Phased Transit Curves

TCE 009588946-05 $P=366.126895$ Days $T_0=159.275673$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

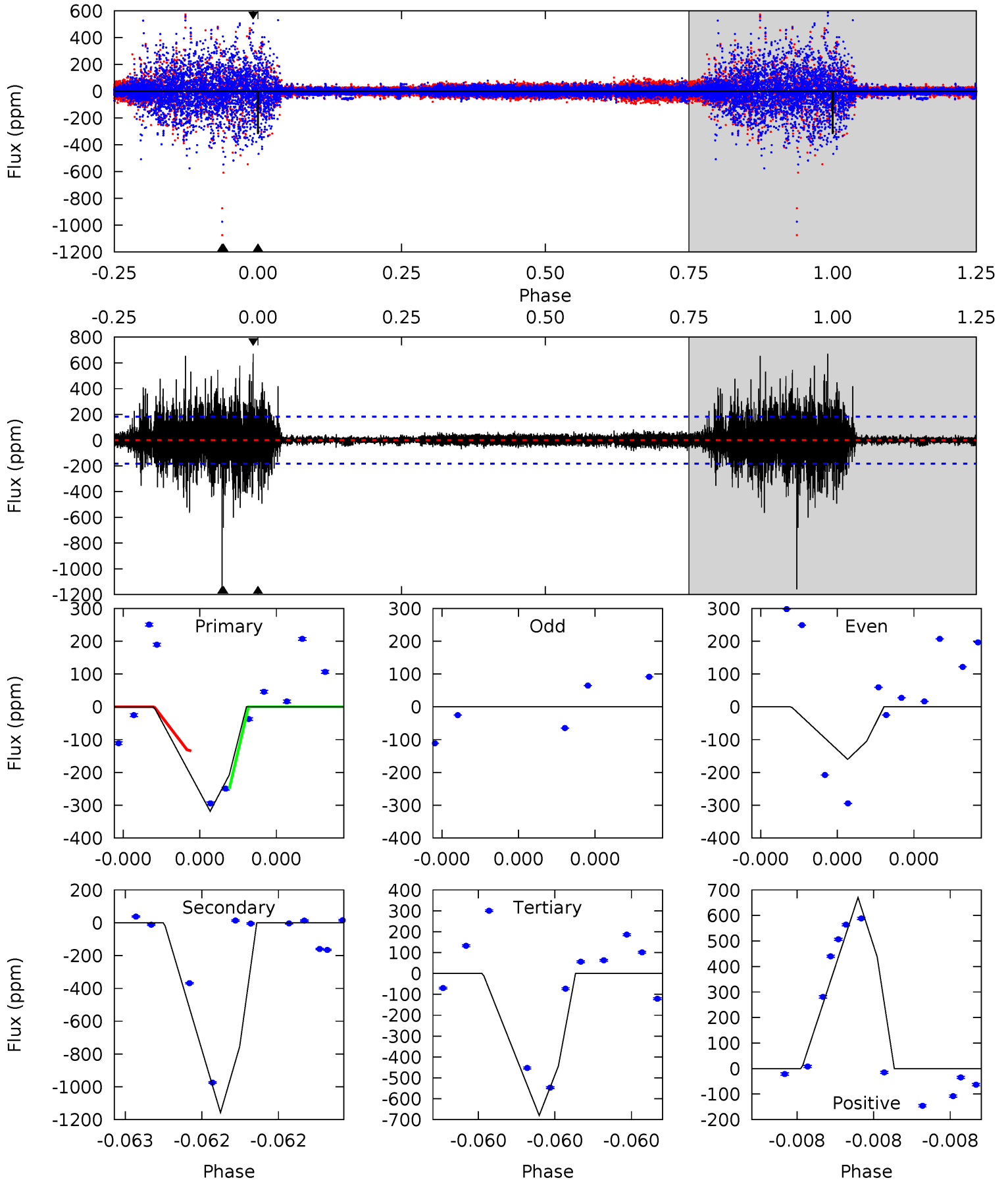
TCE 009588946-05 $P=366.128187$ Days $T_0=159.279266$ (BKJD)



DV Model-Shift Uniqueness Test

009588946-05, P = 366.126895 Days, E = 159.275673 Days

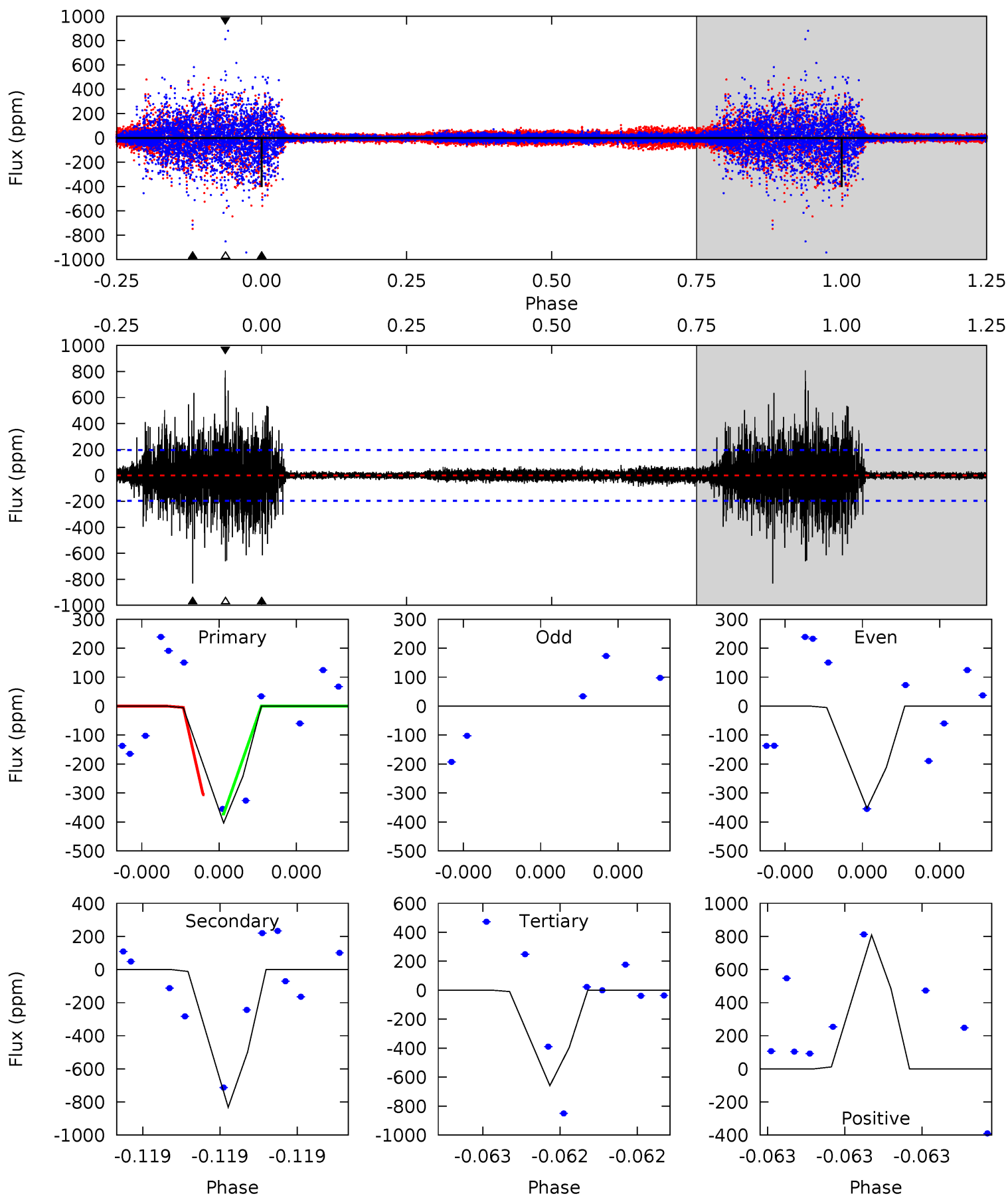
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.95	36.2	21.3	21.0	5.71	3.69	1.38	-11.3	-11.0	14.9	15.2	0	1.03	0.37	0



Alt Model-Shift Uniqueness Test

009588946-05, P = 366.128187 Days, E = 159.279266 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.8	24.3	19.3	23.7	5.71	3.69	1.42	-7.49	-11.9	5.06	0.69	0	0.92	0.49	0



Stellar Parameters For KIC 009588946

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5019^{+173}_{-190}	$3.470^{+0.848}_{-0.212}$	$0.560^{+0.050}_{-0.350}$	$4.093^{+1.115}_{-2.601}$	$1.805^{+0.269}_{-0.808}$	$0.037^{+0.536}_{-0.018}$
	+3%/-4%	+24%/-6%	+9%/-62%	+27%/-64%	+15%/-45%	+1446%/-49%
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 009588946-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1158 ± 32	$33.41^{+40.01}_{-24.42}$	553^{+57}_{-94}	3571^{+2060}_{-705}	812^{+10686}_{-642}
Alt.	-832 ± 34	$32.58^{+37.31}_{-23.83}$	556^{+58}_{-96}	3412^{+1980}_{-620}	630^{+7632}_{-499}

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 $A_{obs} \gg 1.0$

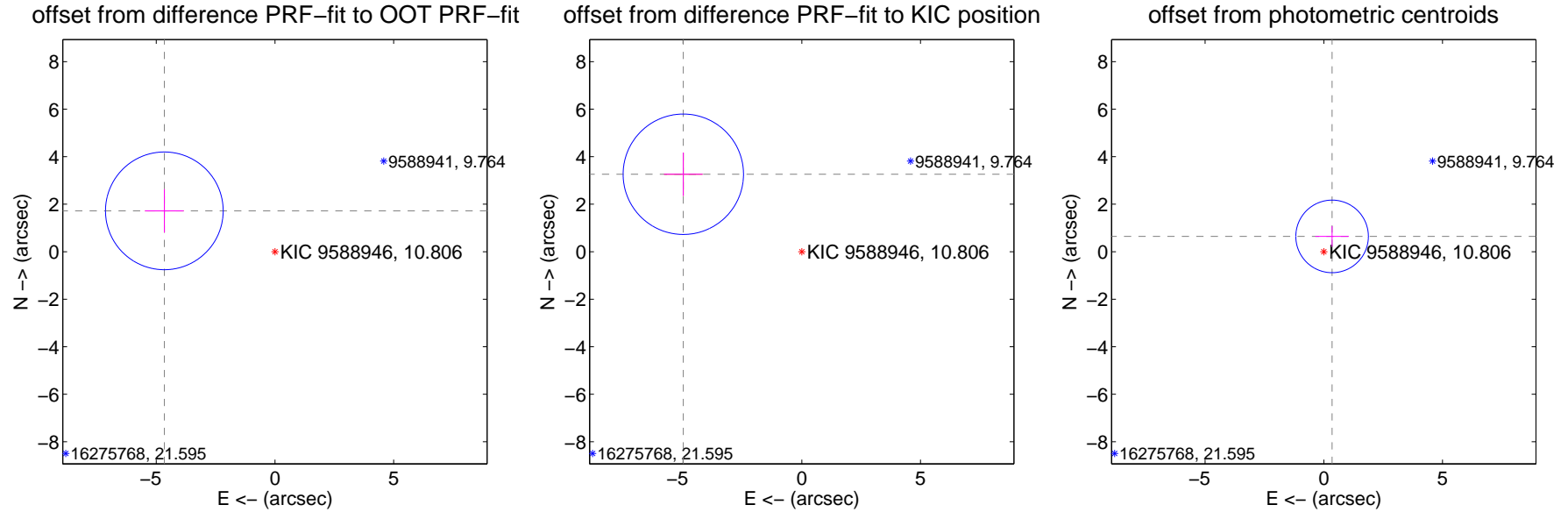
DV Centroid Data

Supplemental centroid analysis for 009588946-05. **Kepler magnitude: 10.81.** Transit SNR 22.27

There are 0 quarters with good PRF difference image offsets

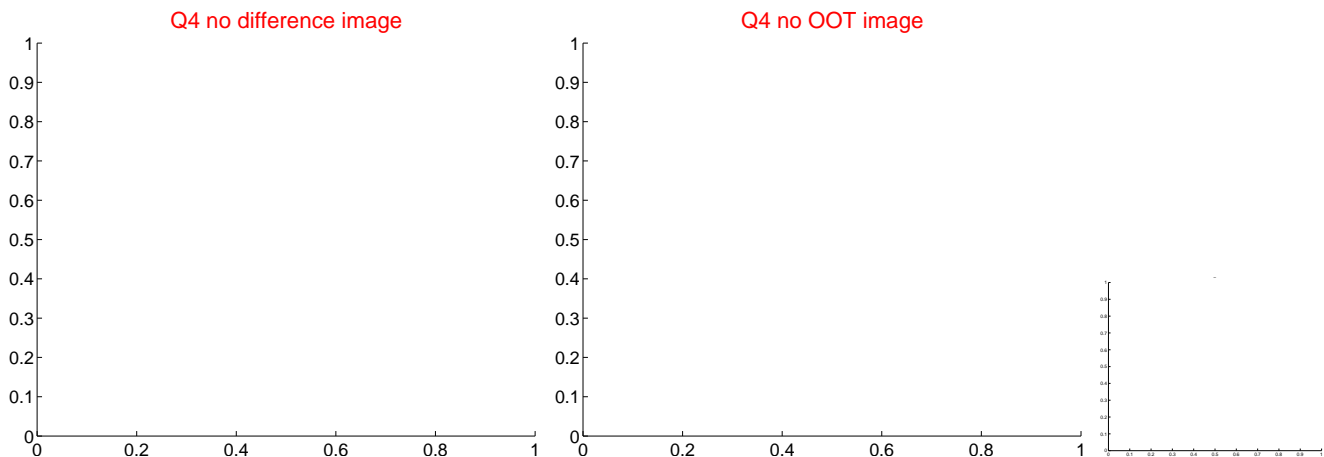
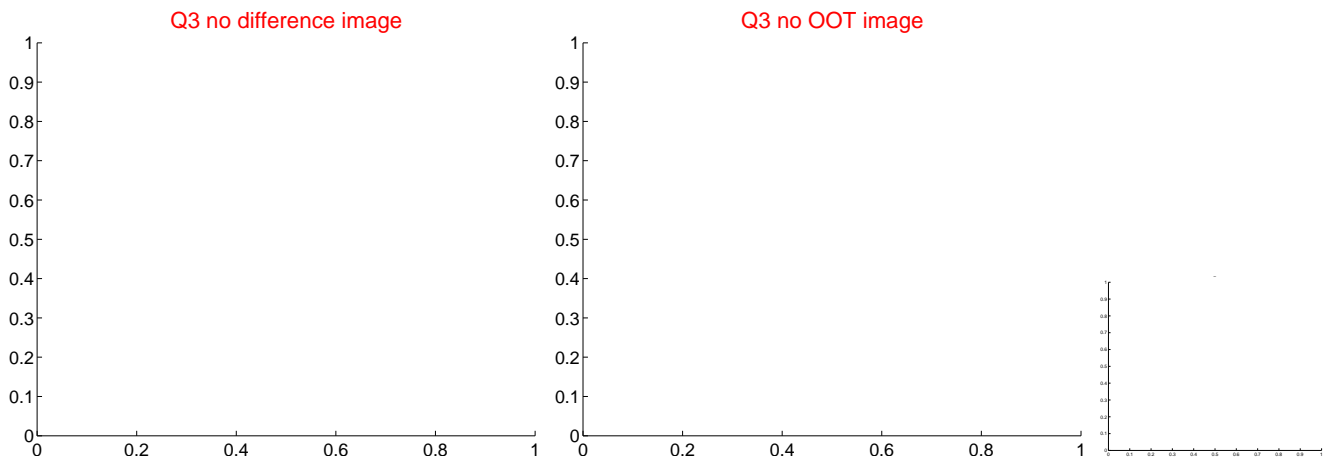
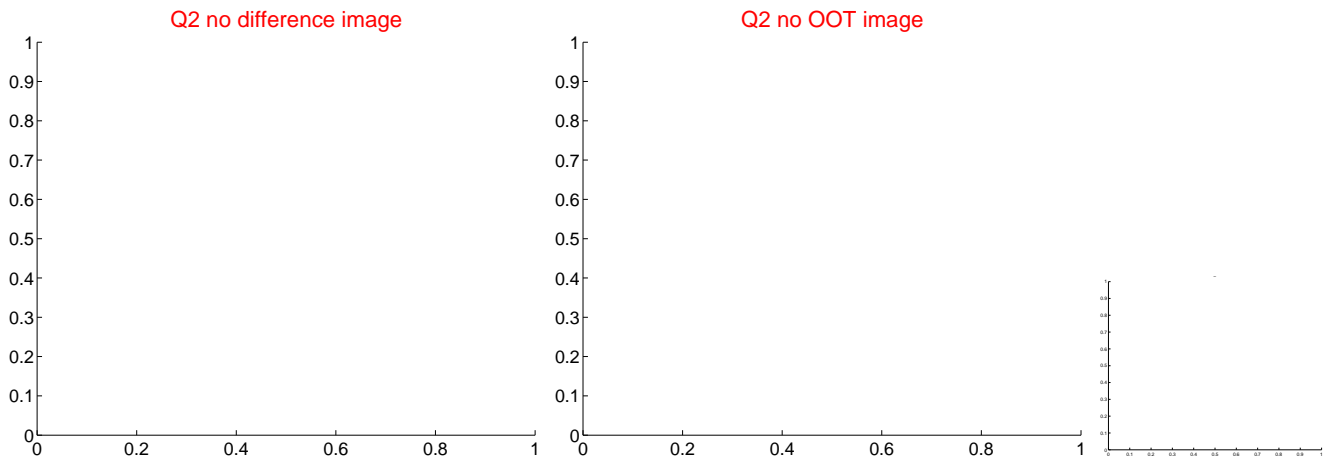
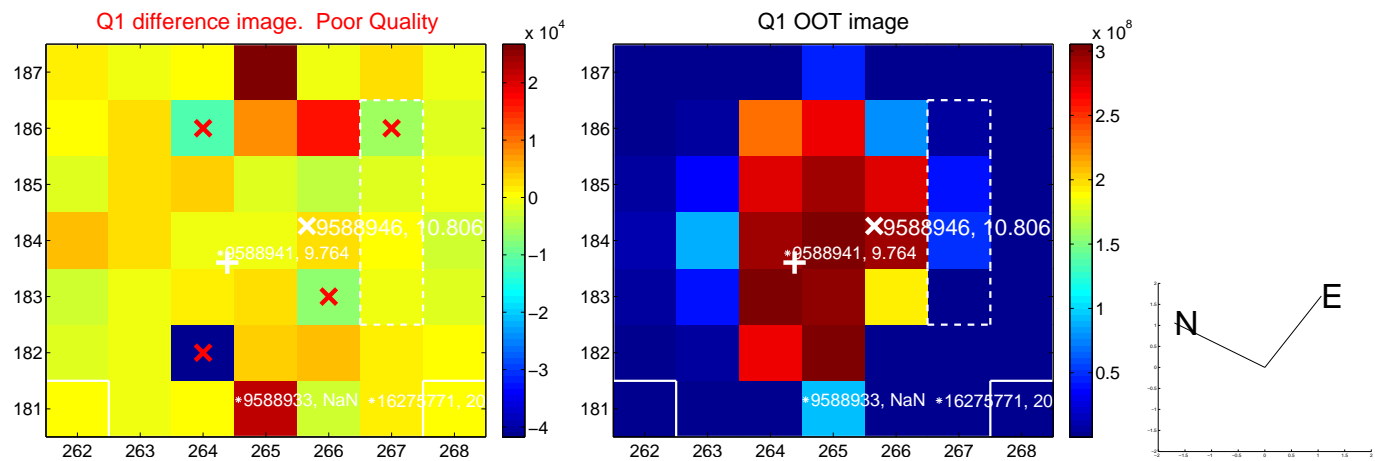
The direct PRF centroid is offset from the target star catalog position by about 1.58 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.965 ± 0.826	6.01	4.658 ± 0.813	1.720 ± 0.914
PRF-fit source offset from KIC position	5.960 ± 0.845	7.06	4.989 ± 0.813	3.261 ± 0.914
photometric centroid source offset	0.73 ± 0.51	1.44	-0.35 ± 0.71	0.64 ± 0.43

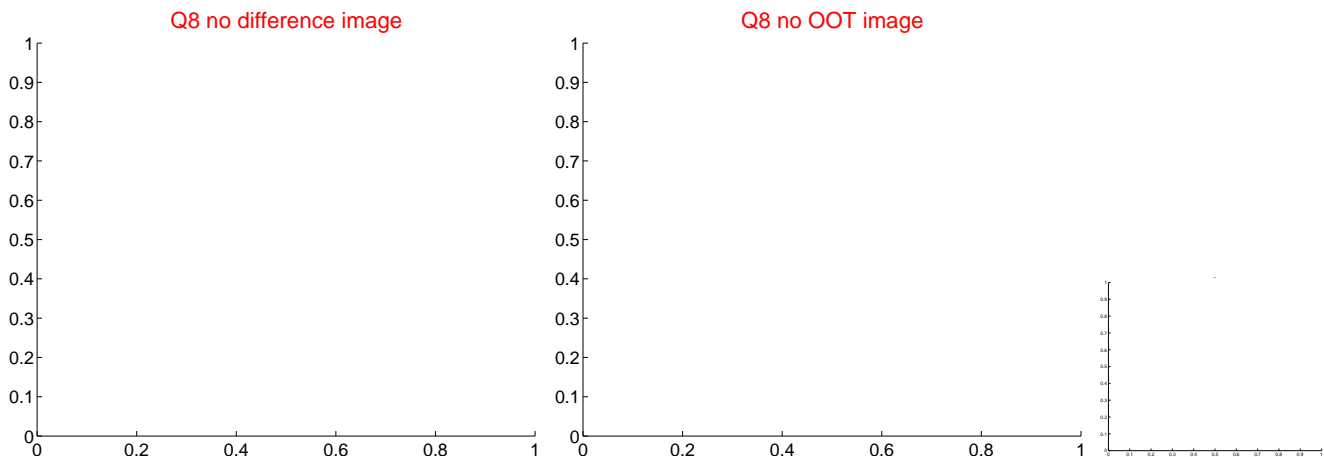
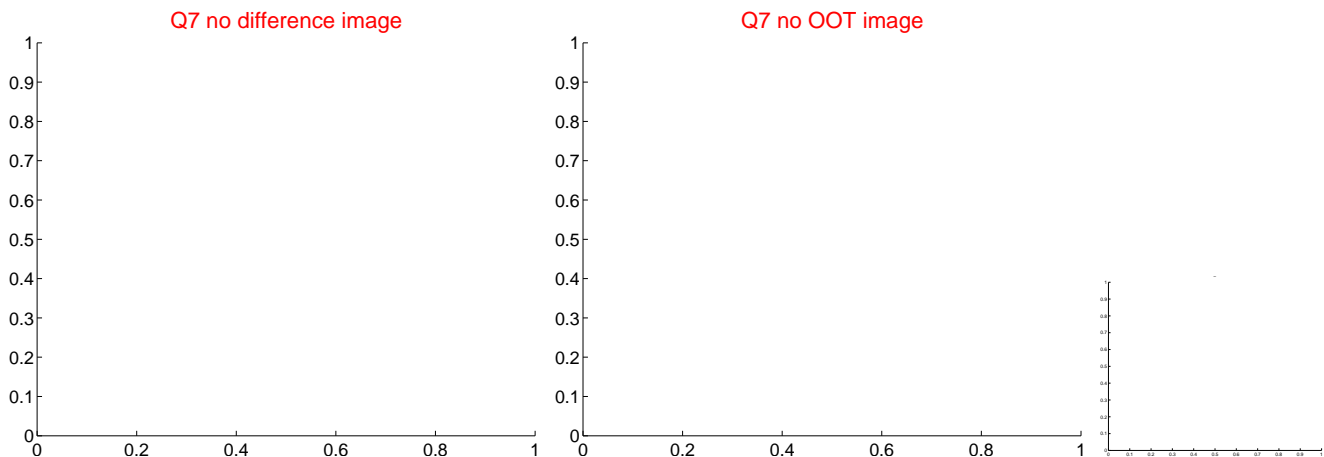
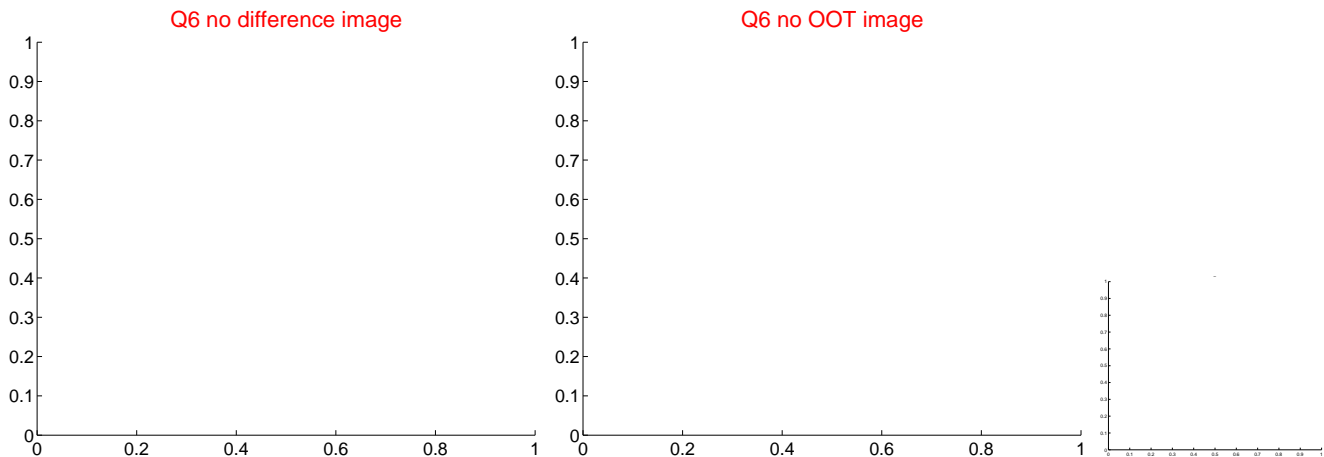
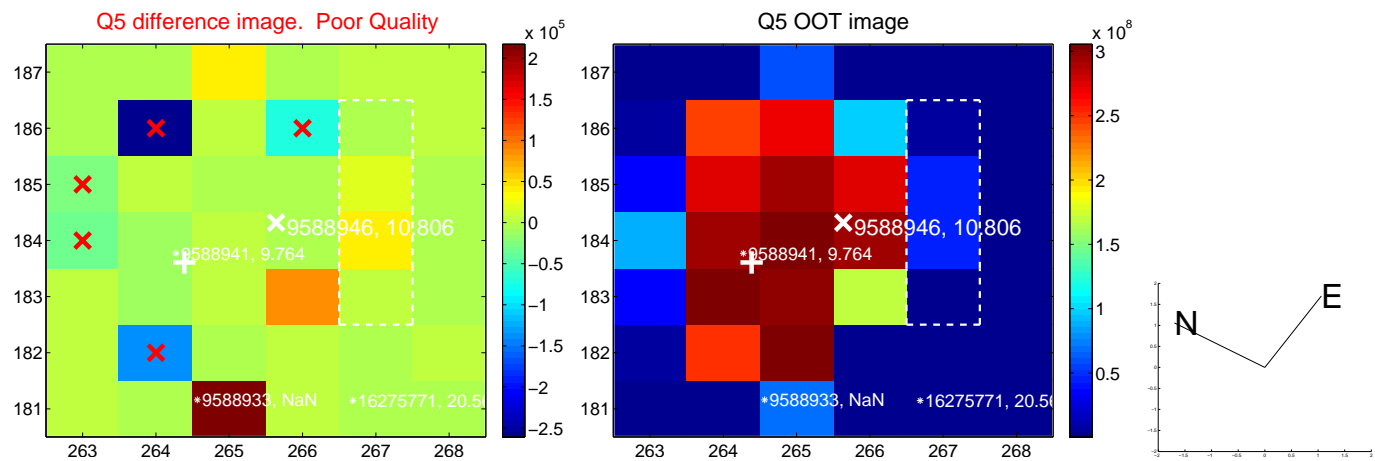


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

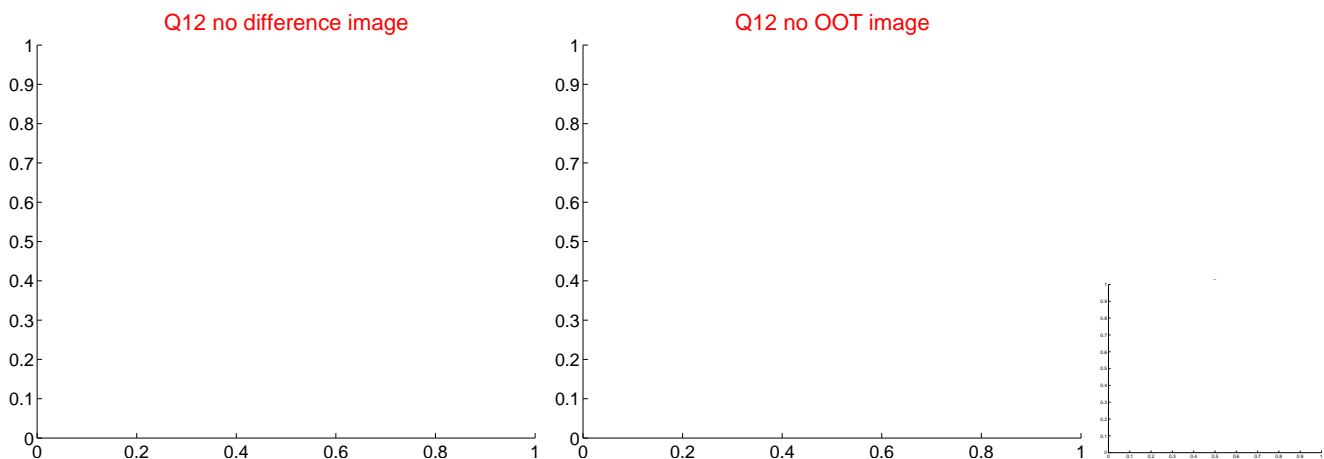
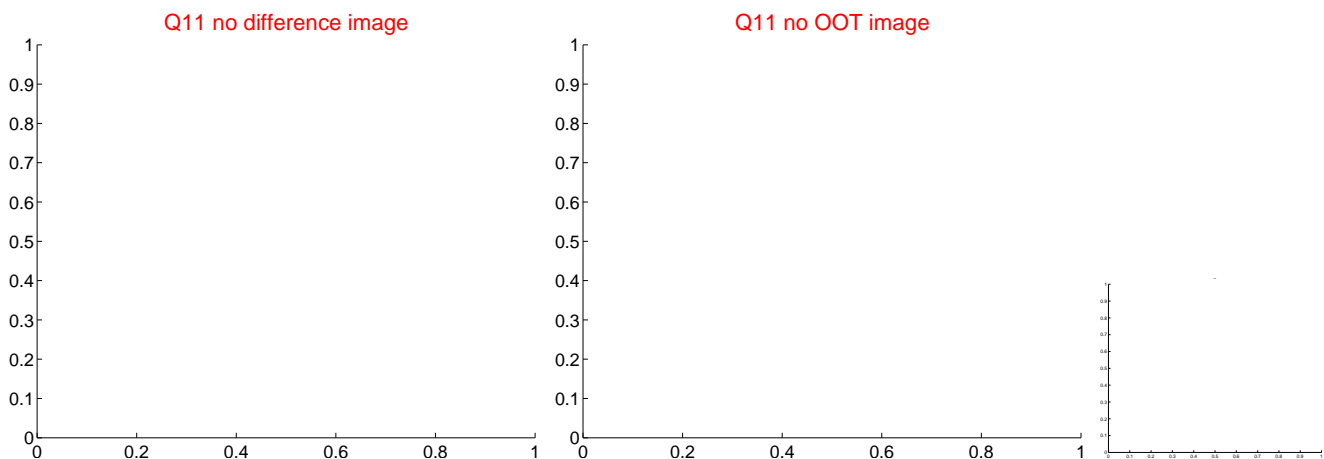
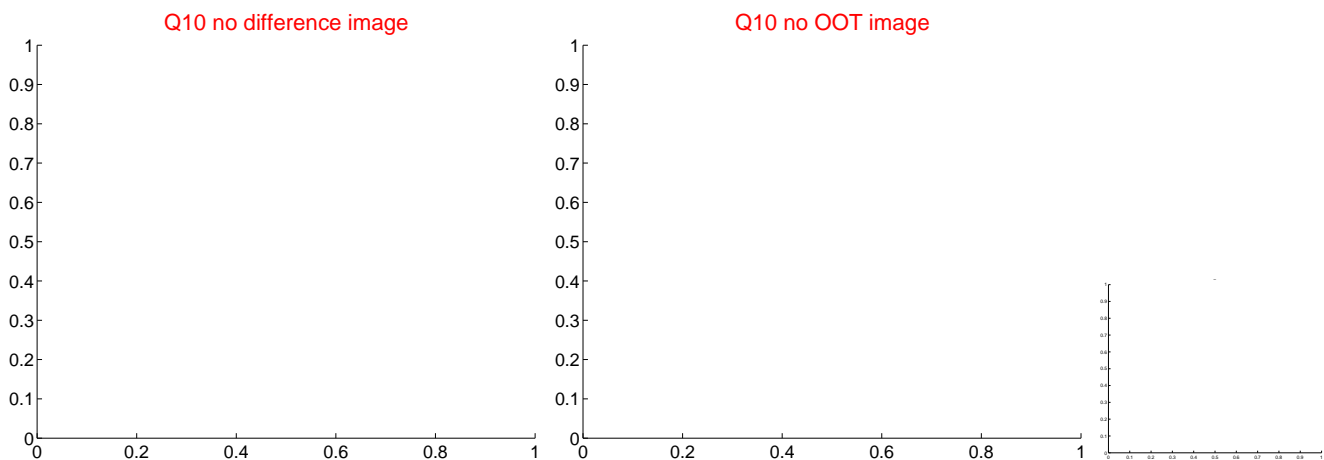
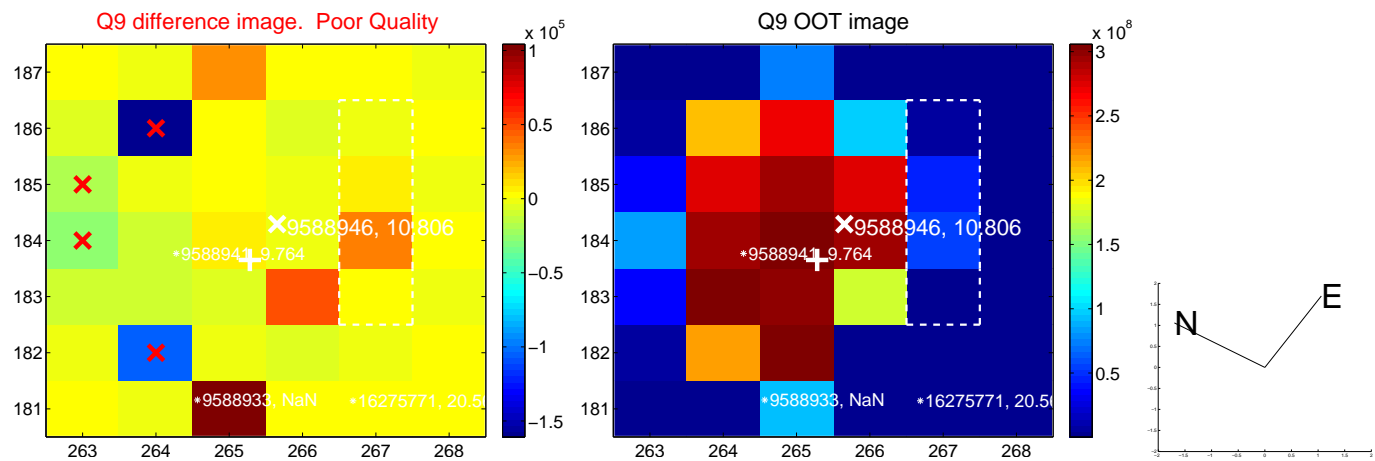
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



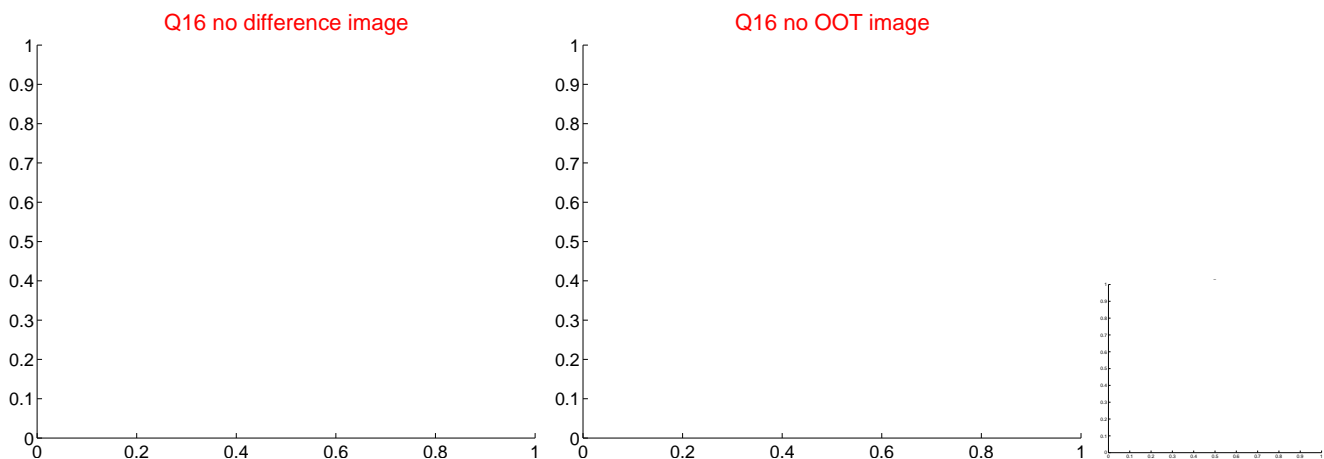
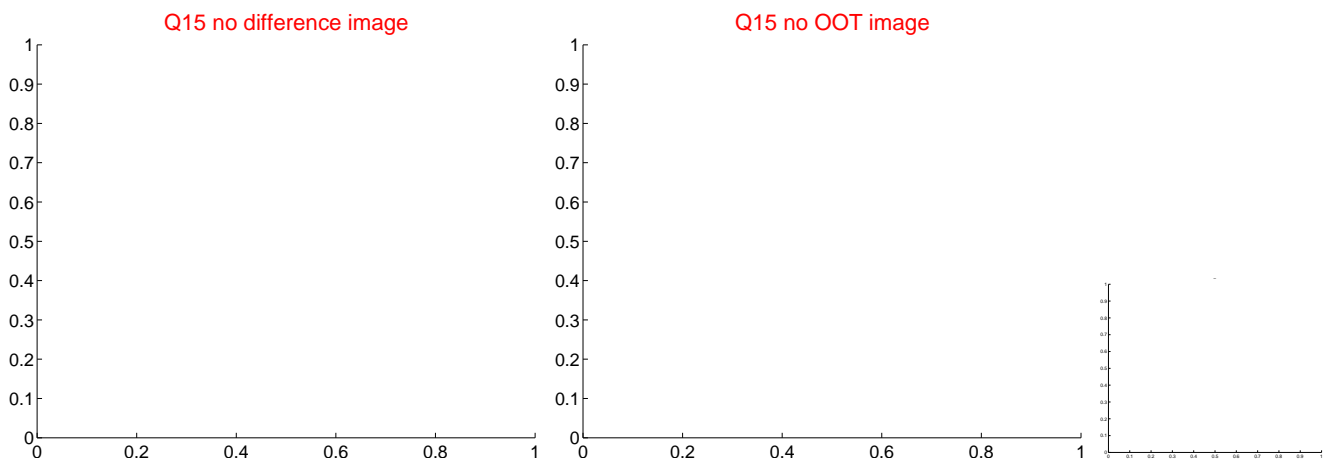
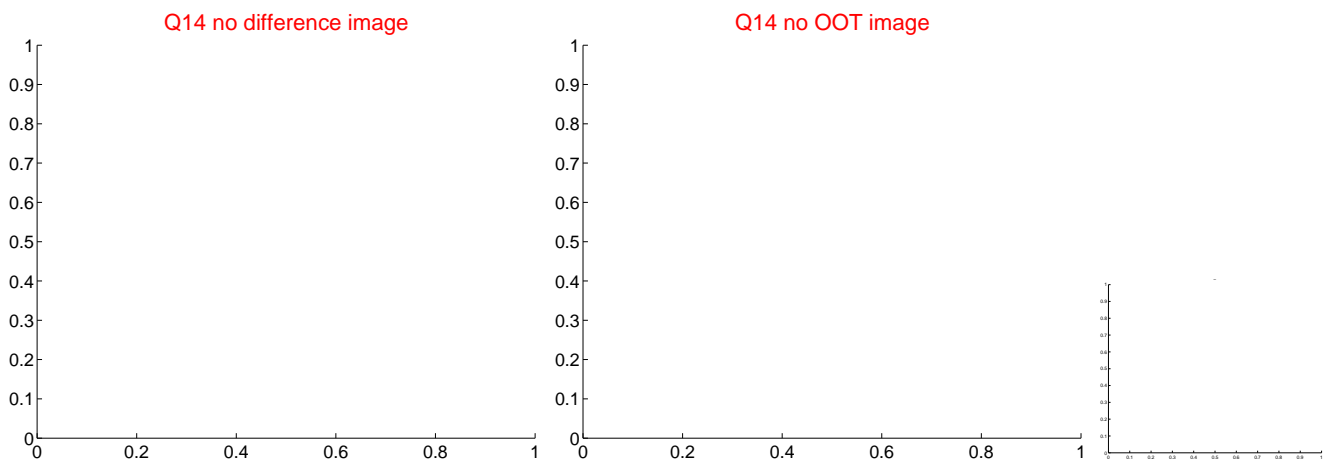
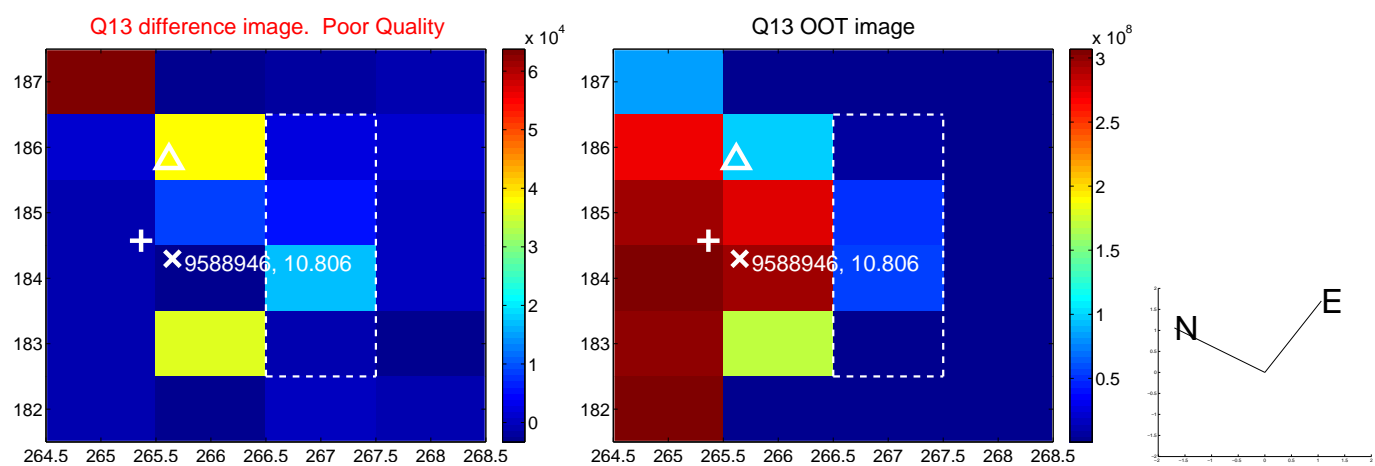
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



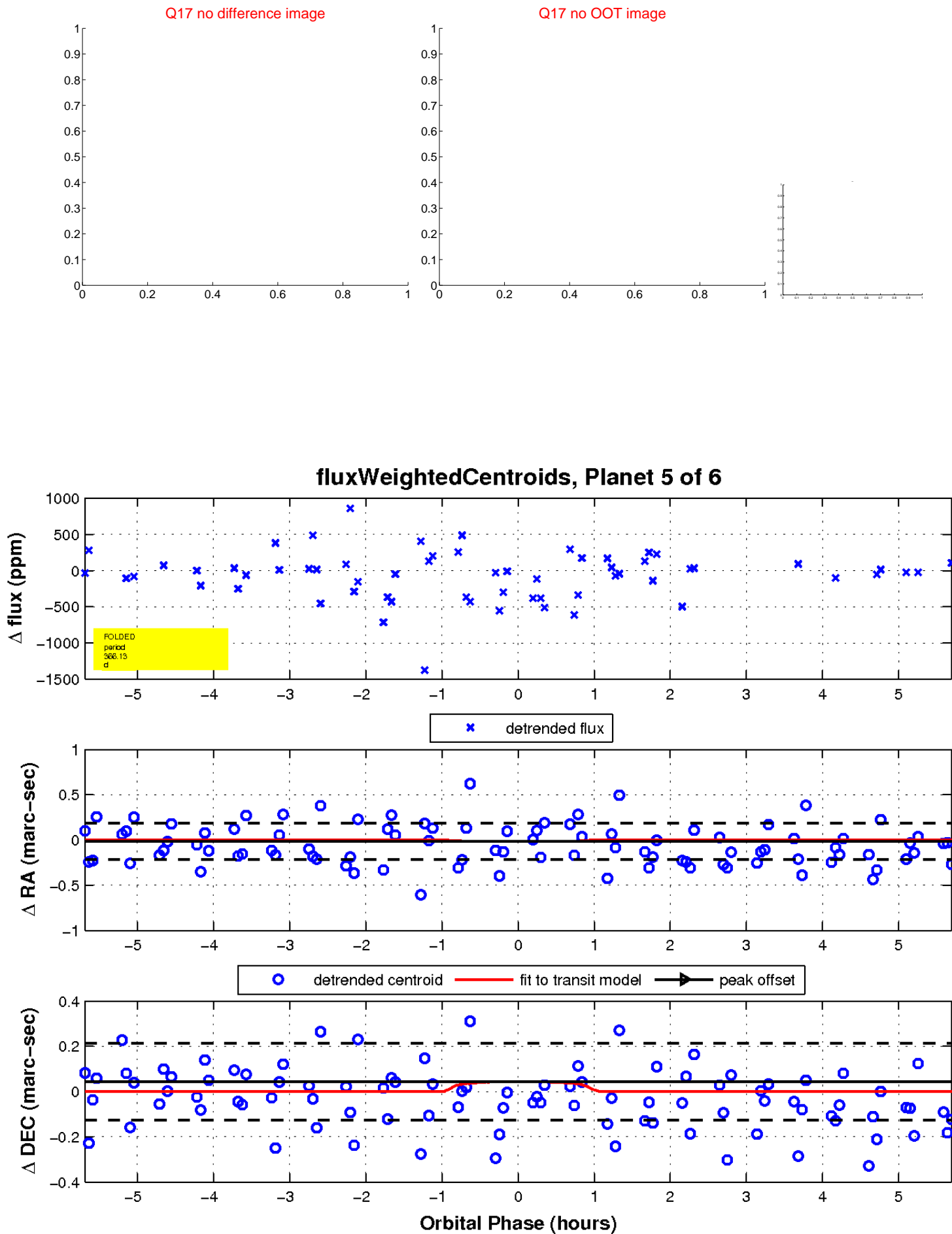
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



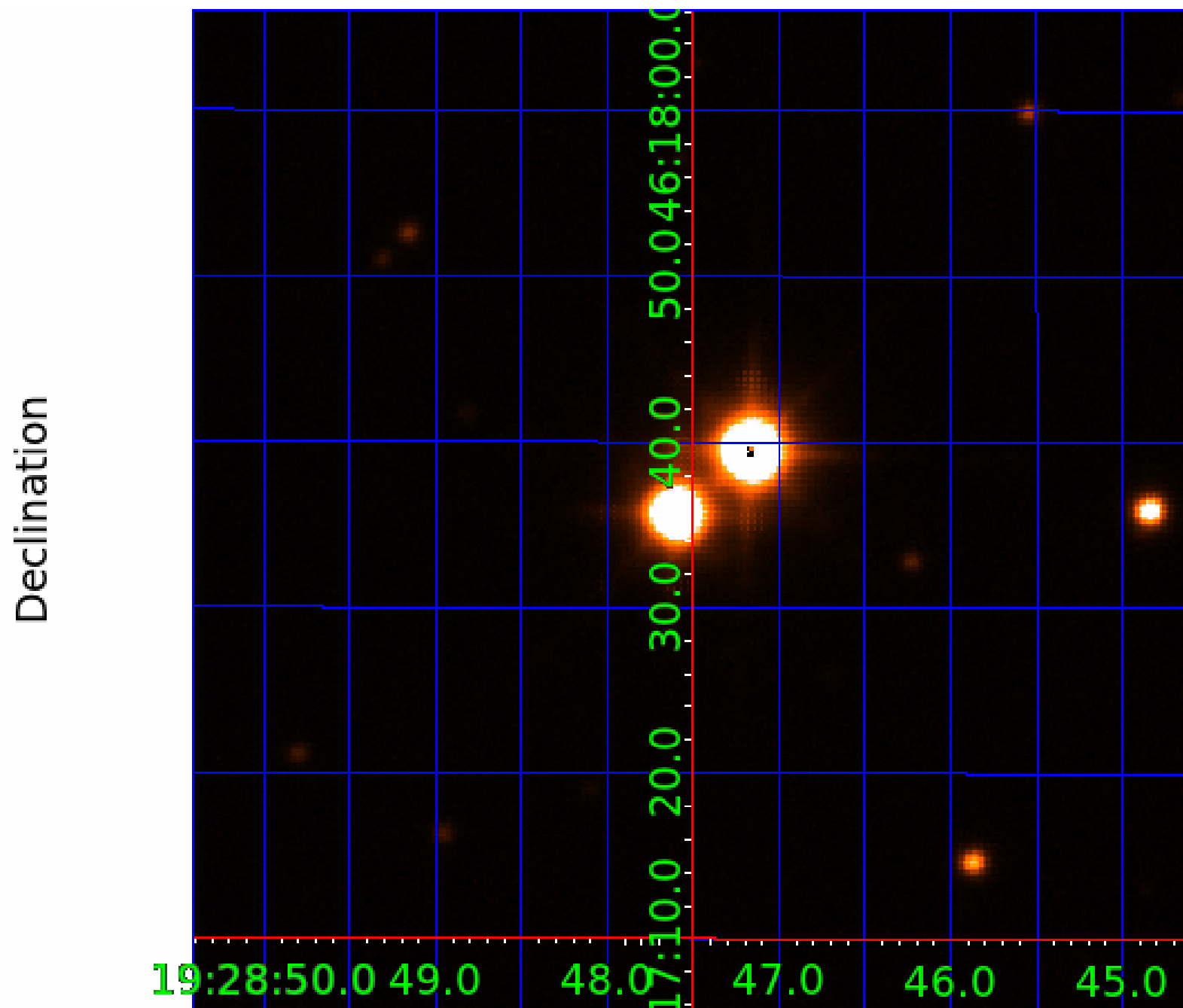
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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



UKIRT Image



KIC 009588946

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})
009588946-01	OBS	No	171.169369	164.490515	54.5	1.804	30.3	16.7	4.09	5019	3.23	17.65
009588946-02	OBS	No	367.037397	158.183711	484.9	2.393	67.3	44.7	4.09	5019	10.57	6.38
009588946-03	OBS	No	385.860058	484.561019	348.8	1.521	115.4	32.9	4.09	5019	7.98	5.97
009588946-04	OBS	No	377.580422	483.684337	756.5	3.516	100.9	73.2	4.09	5019	10.95	6.15
009588946-05	OBS	No	366.126895	159.275673	259.5	1.908	89.5	22.3	4.09	5019	6.92	6.41
009588946-06	OBS	No	373.101870	137.577536	860.7	0.641	58.6	22.2	4.09	5019	12.63	6.25

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
009588946-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE_ZUMA_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED
009588946-02	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—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_SATURATED—HALO_GHOST
009588946-03	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_SATURATED
009588946-04	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED—HALO_GHOST
009588946-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL_SKYE—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_SATURATED
009588946-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_SATURATED

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

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

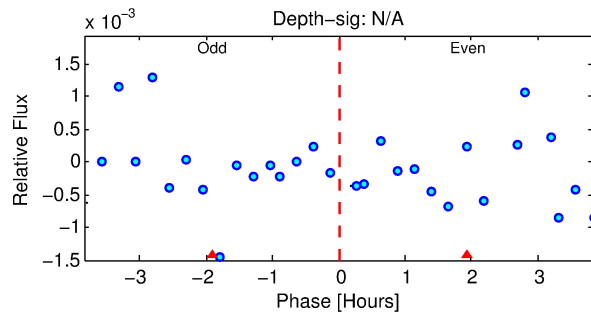
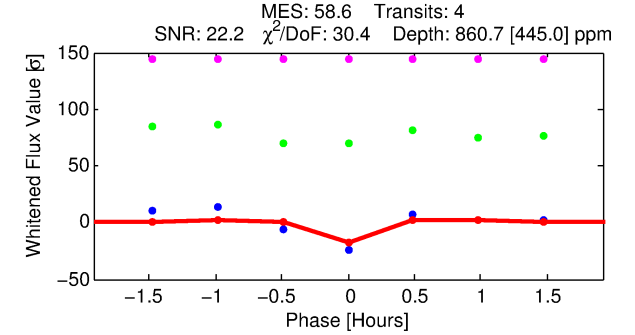
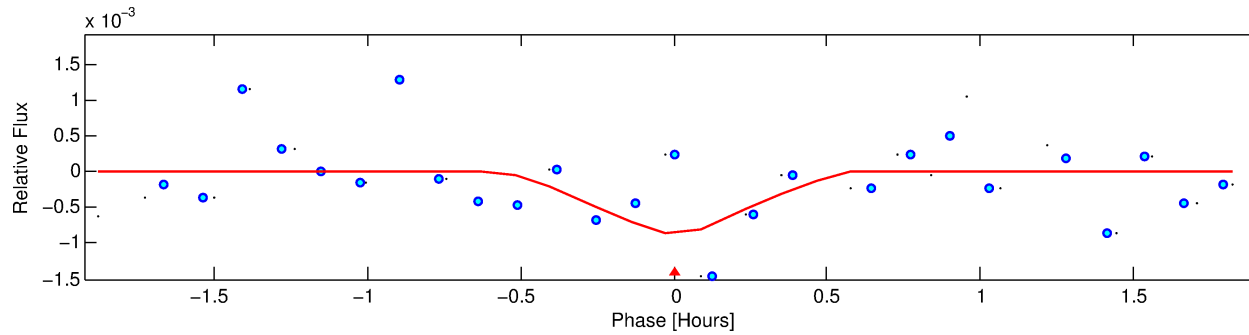
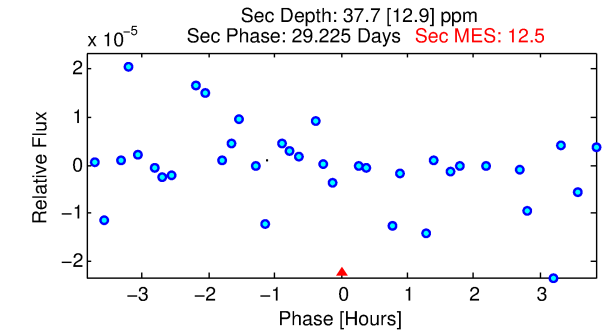
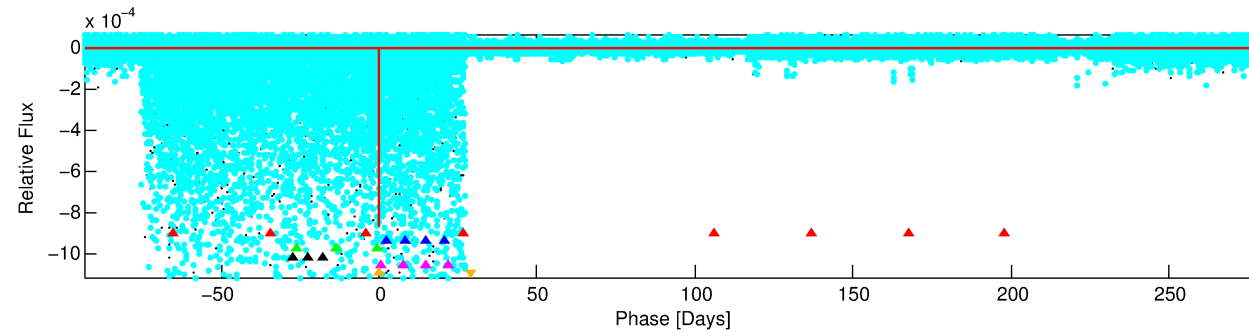
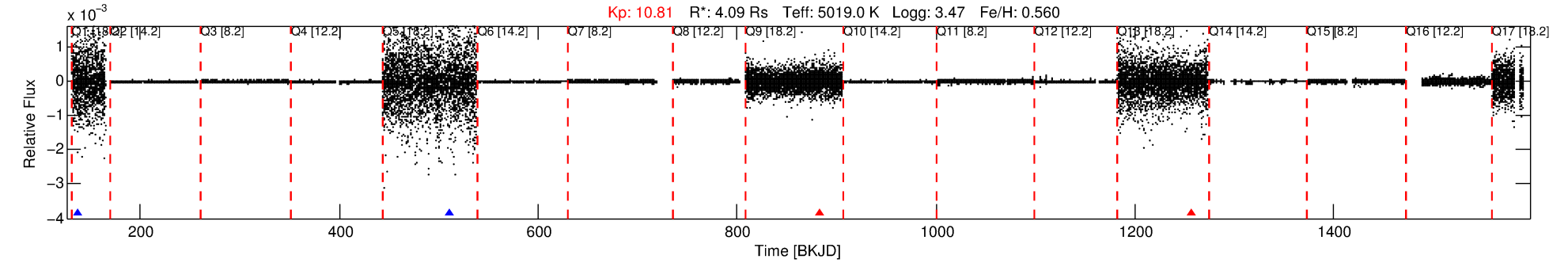
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 009588946-06

No Significant Match Found

DV One-Page Summary

KIC: 9588946 Candidate: 6 of 6 Period: 373.102 d



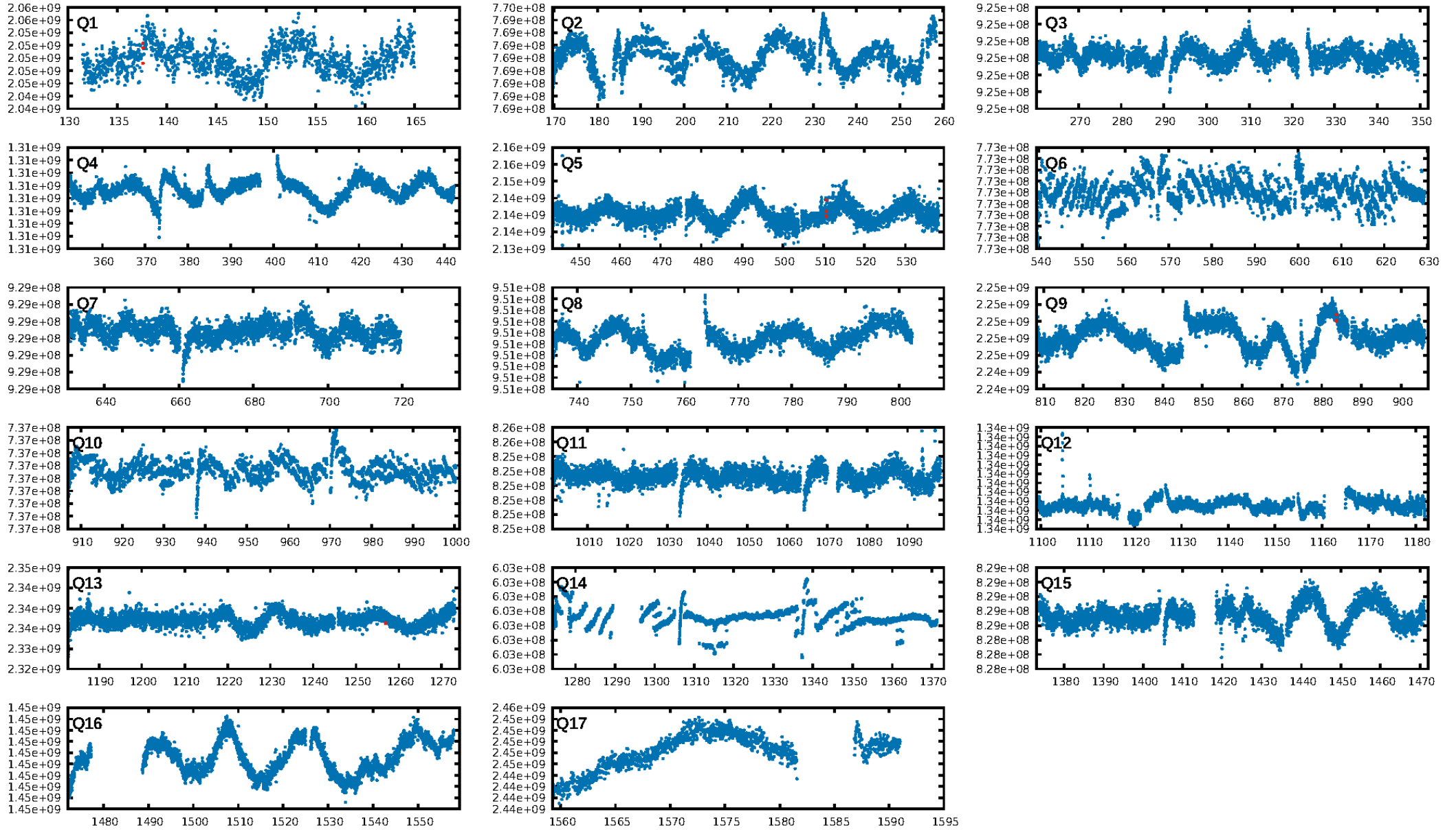
DV Fit Results:

Period = 373.10187 [0.00504] d
Epoch = 137.5775 [0.0116] BKJD
Rp/R* = 0.0283 [0.1478]
a/R* = 3935.32 [71216.21]
b = 0.52 [25.06]
Seff = 6.25 [8.60]
Teq = 403 [139] K
Rp = 12.63 [66.52] Re
a = 1.2348 [0.9590] AU
Ag = 198.01 [2088.53] [0.09σ]
Teffp = 2338 [6114] K [0.32σ]

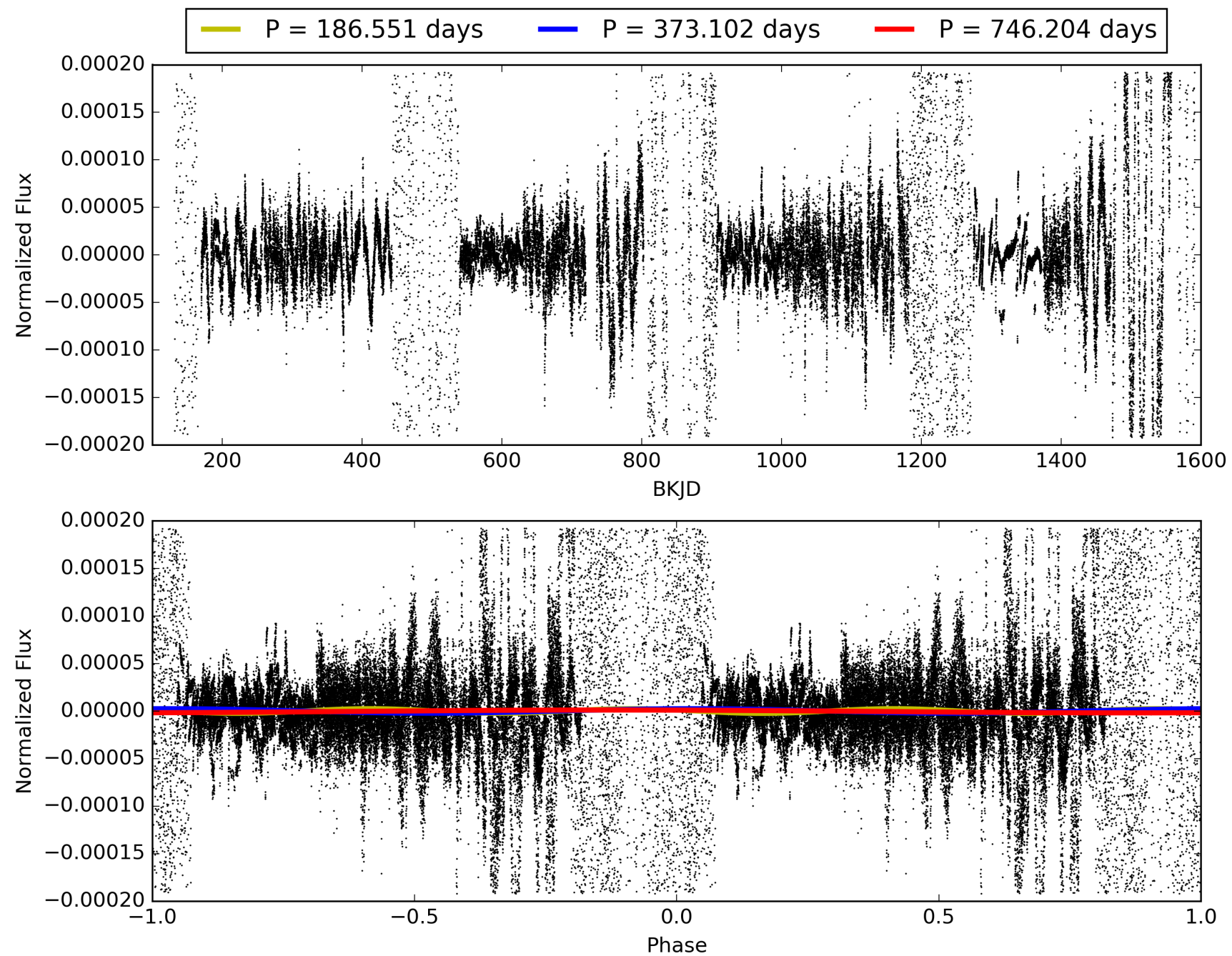
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [58.74σ]
LongPeriod-sig: 100.0% [30.08σ]
ModelChiSquare2-sig: 0.2%
ModelChiSquareGof-sig: 0.4%
Bootstrap-pfa: N/A
RollingBand-fgt: 0.33 [1/3]
GhostDiagnostic-chr: 6.435
Centroid-sig: 31.5%
Centroid-so: 0.780 arcsec [3.39σ]
OotOffset-rm: N/A
KicOffset-rm: N/A
OotOffset-st: 0/0/0/0 [0]
KicOffset-st: 0/0/0/0 [0]
DiffImageQuality-fgm: N/A
DiffImageOverlap-fno: 1.00 [3/3]

TCE 009588946-06, PDC Light Curves

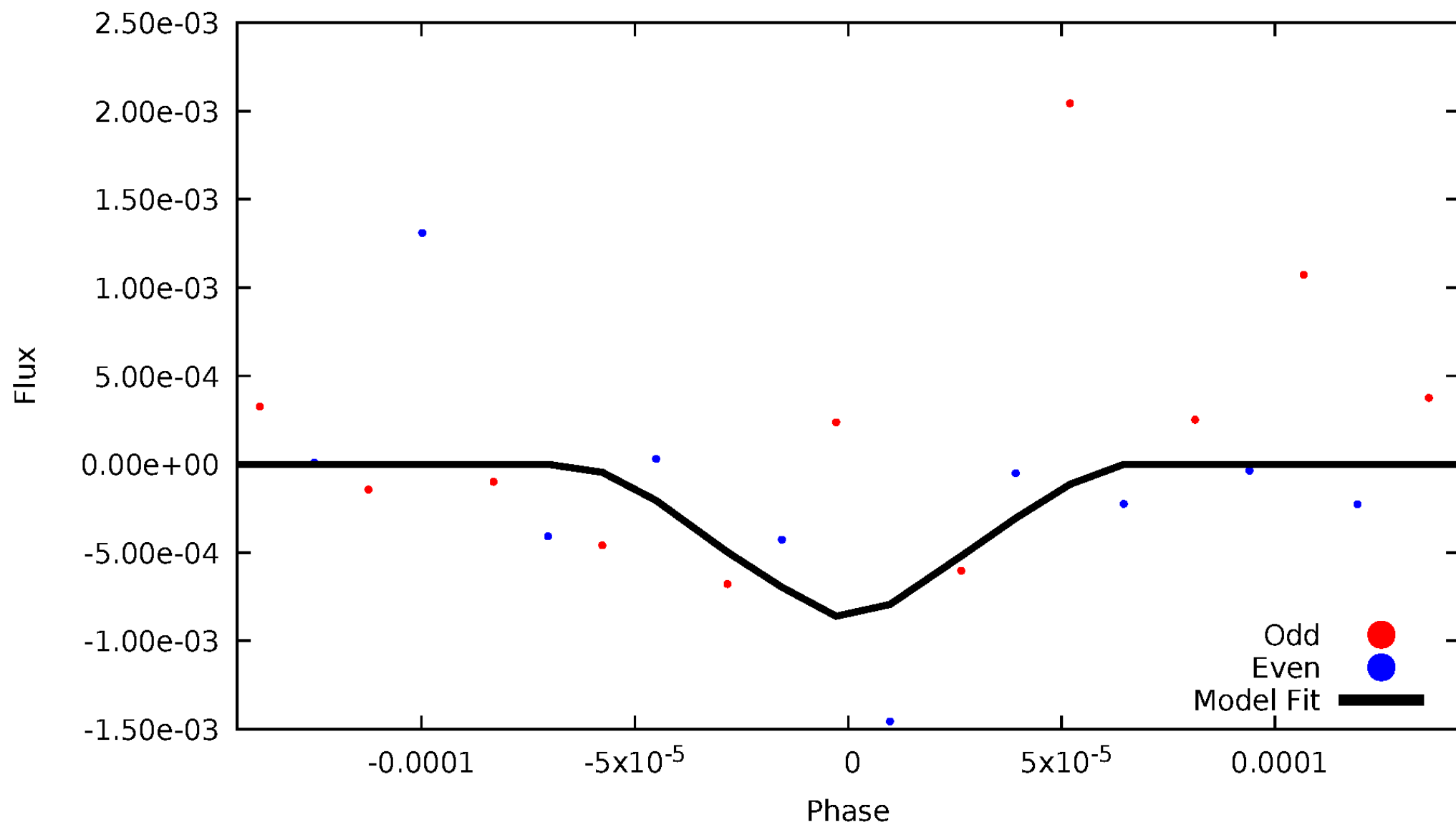


TCE 009588946-06



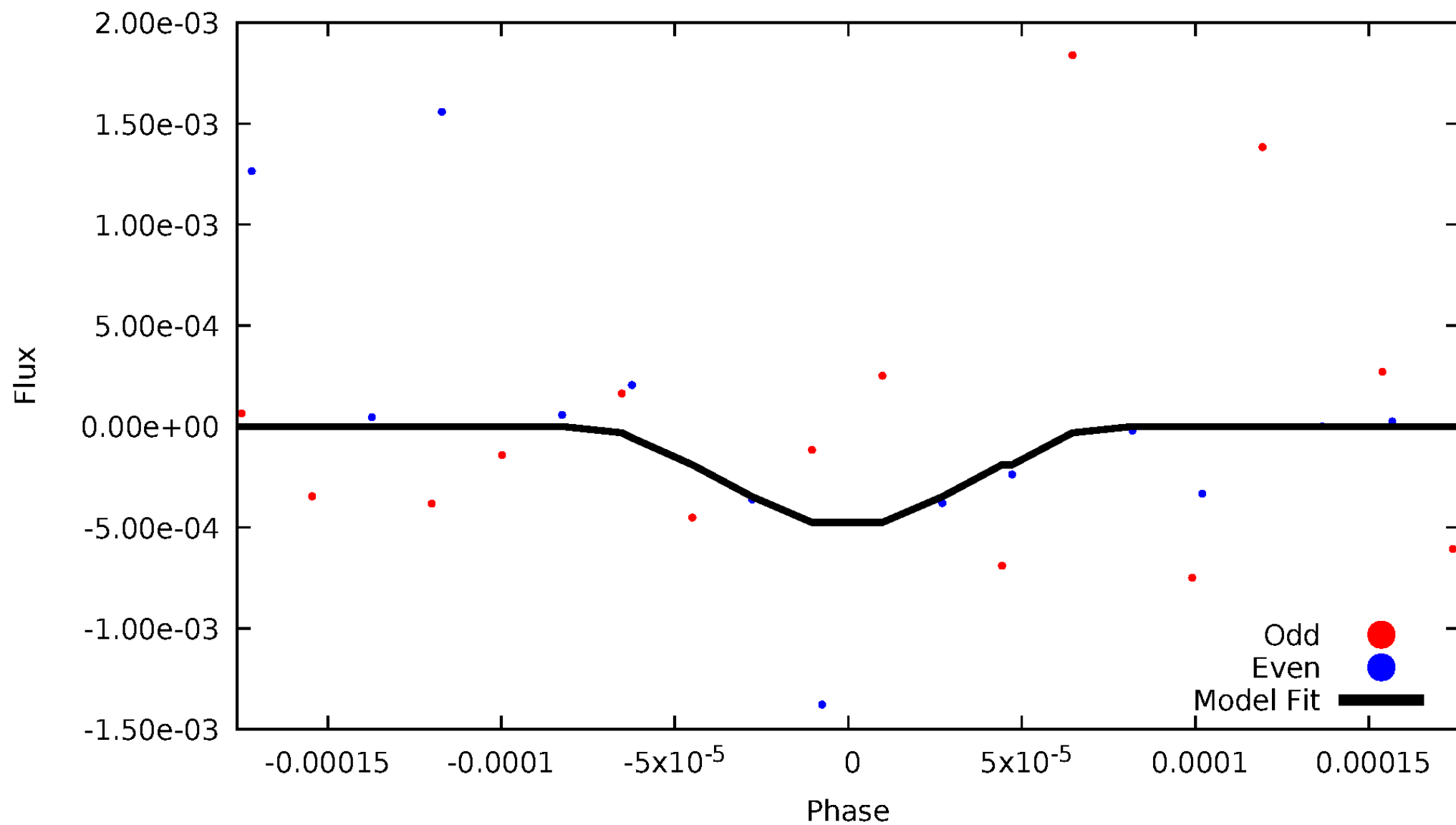
DV Odd/Even

TCE 009588946-06



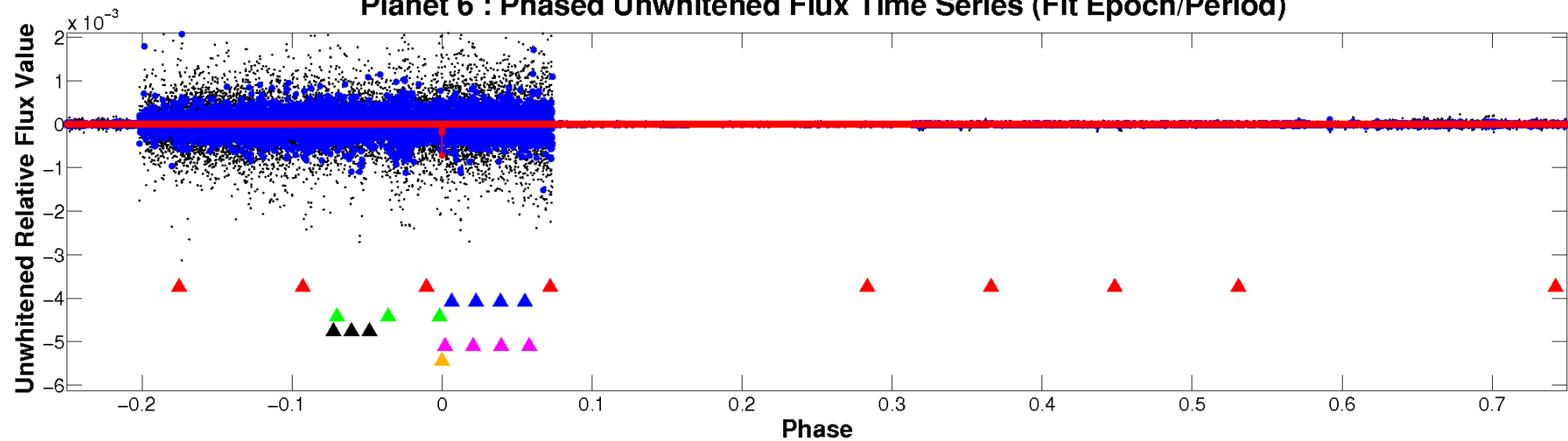
ALT Odd/Even

TCE 009588946-06

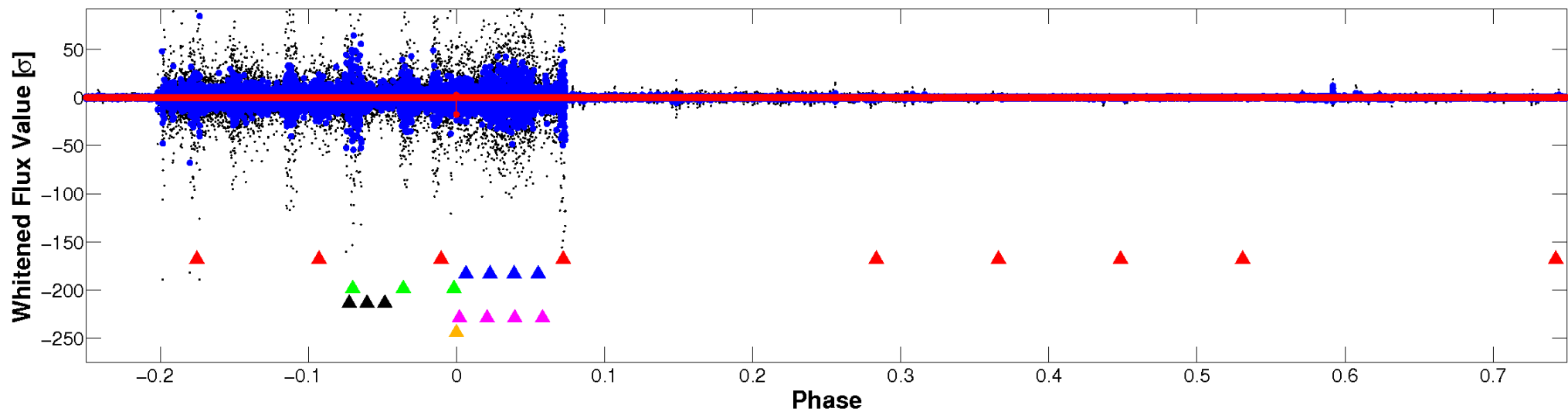


Non-Whitened Vs. Whitened Light Curve

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

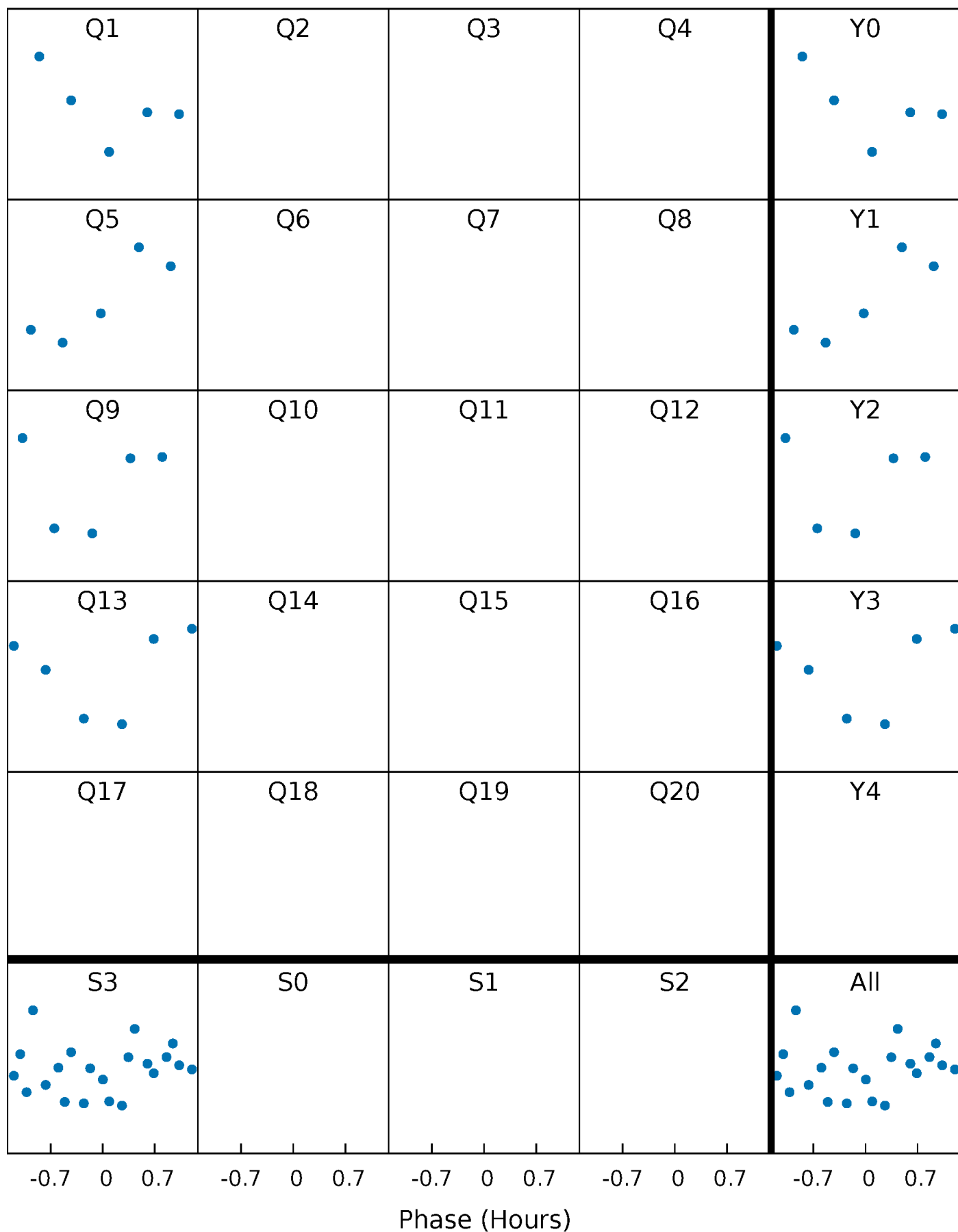


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



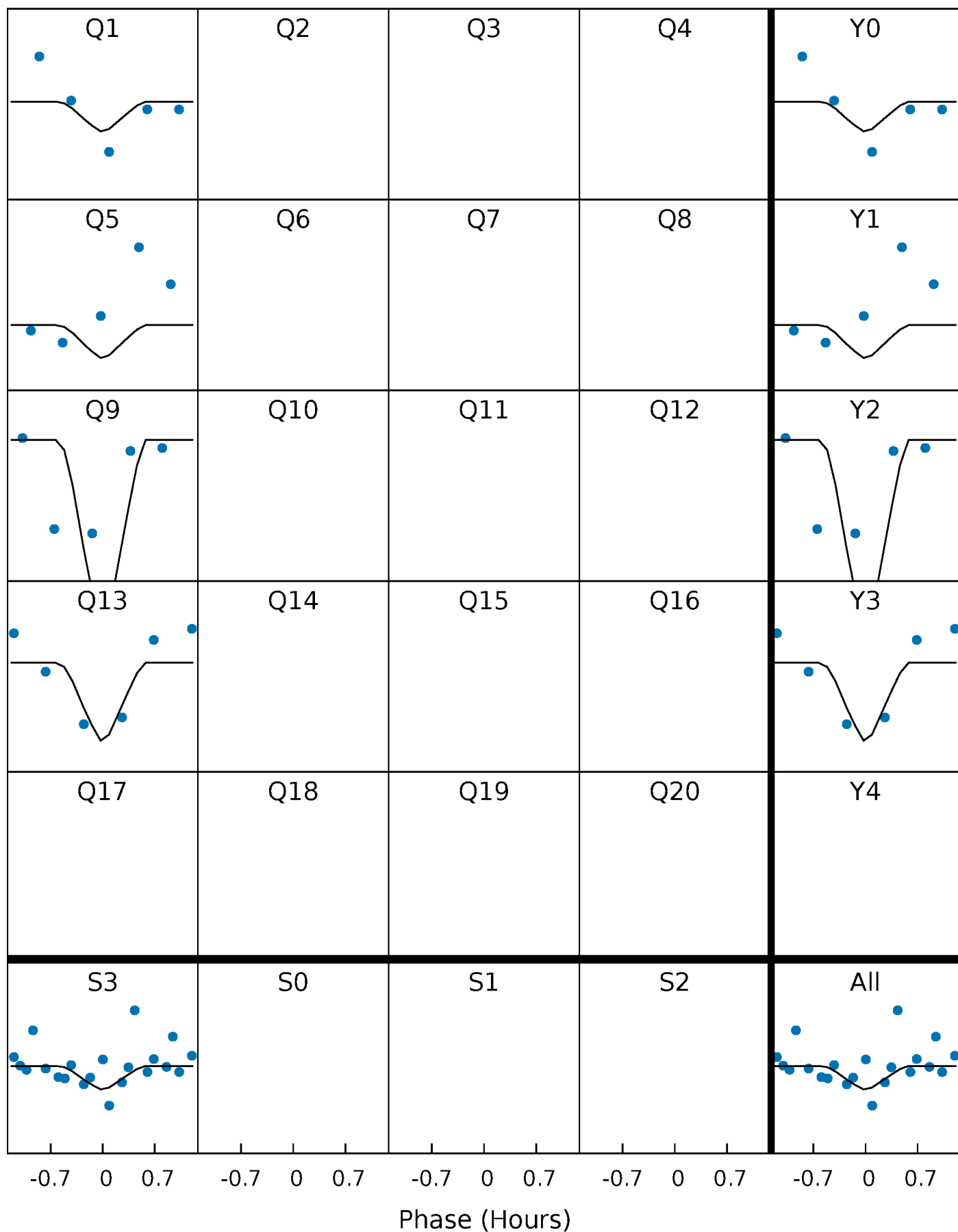
PDC Quarter-Phased Transit Curves

TCE 009588946-06 P=373.101870 Days $T_0=137.577536$ (BKJD)



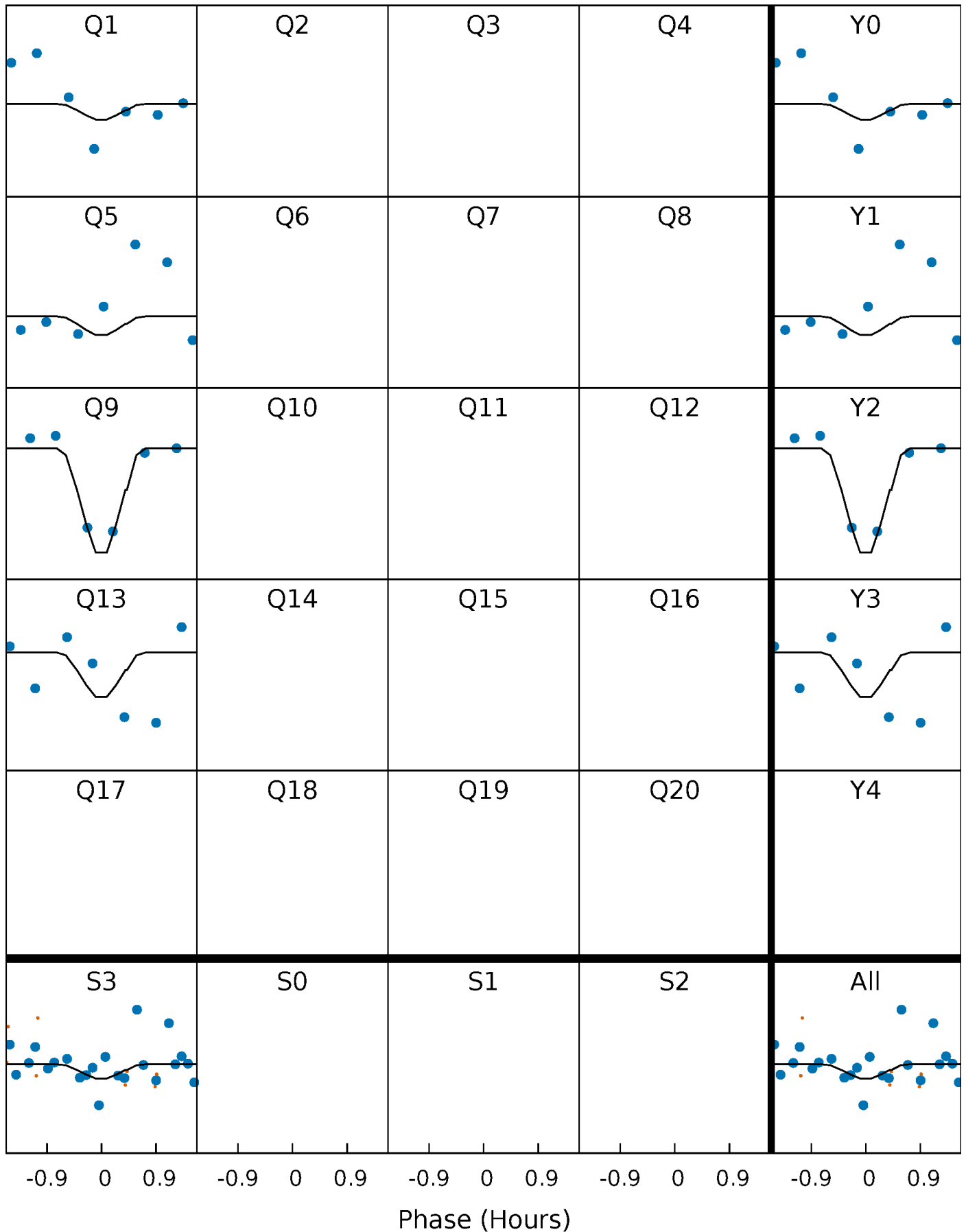
DV Quarter-Phased Transit Curves

TCE 009588946-06 P=373.101870 Days $T_0=137.577536$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

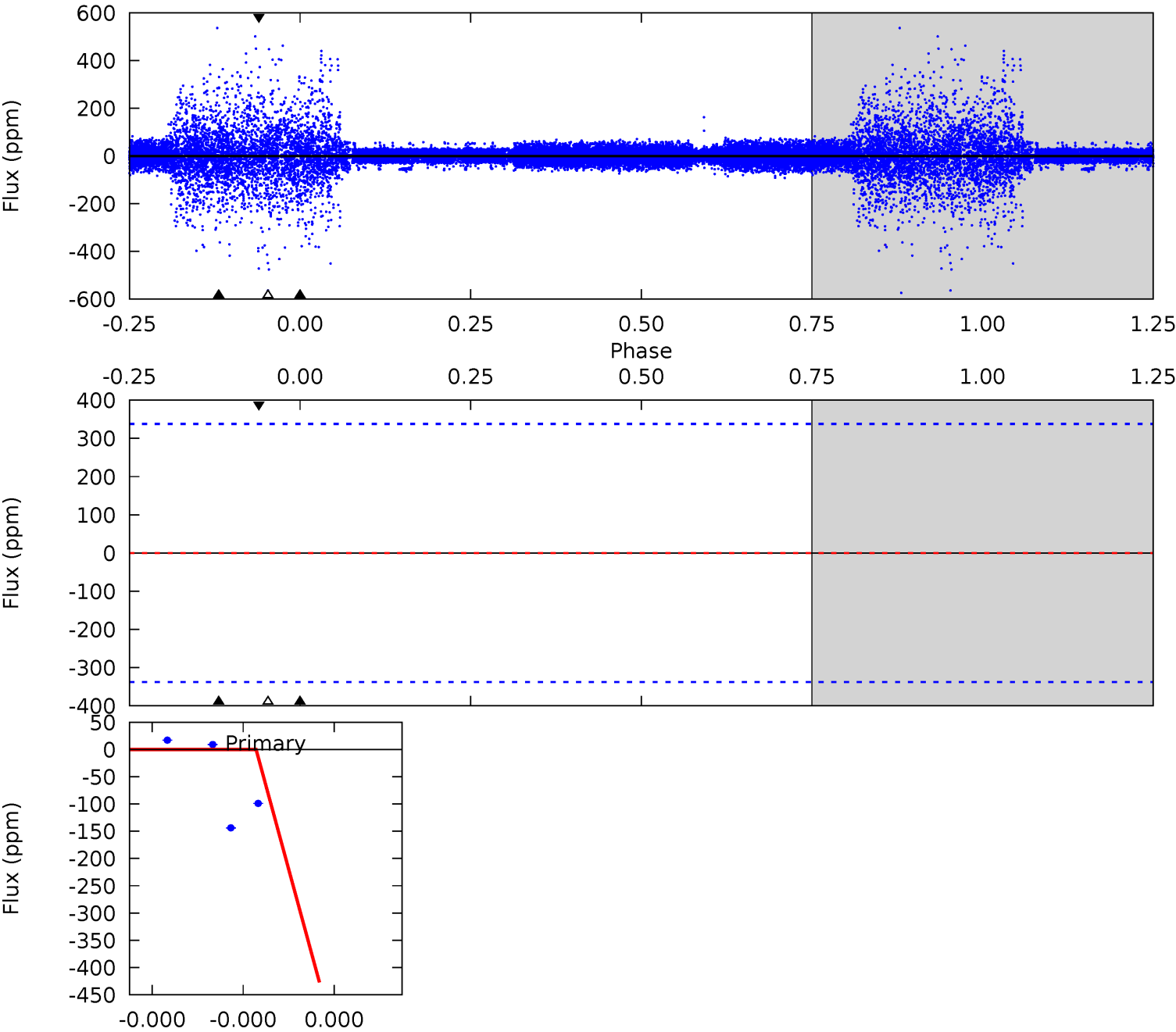
TCE 009588946-06 P=373.090689 Days $T_0=137.583992$ (BKJD)



DV Model-Shift Uniqueness Test

009588946-06, P = 373.101870 Days, E = 137.577536 Days

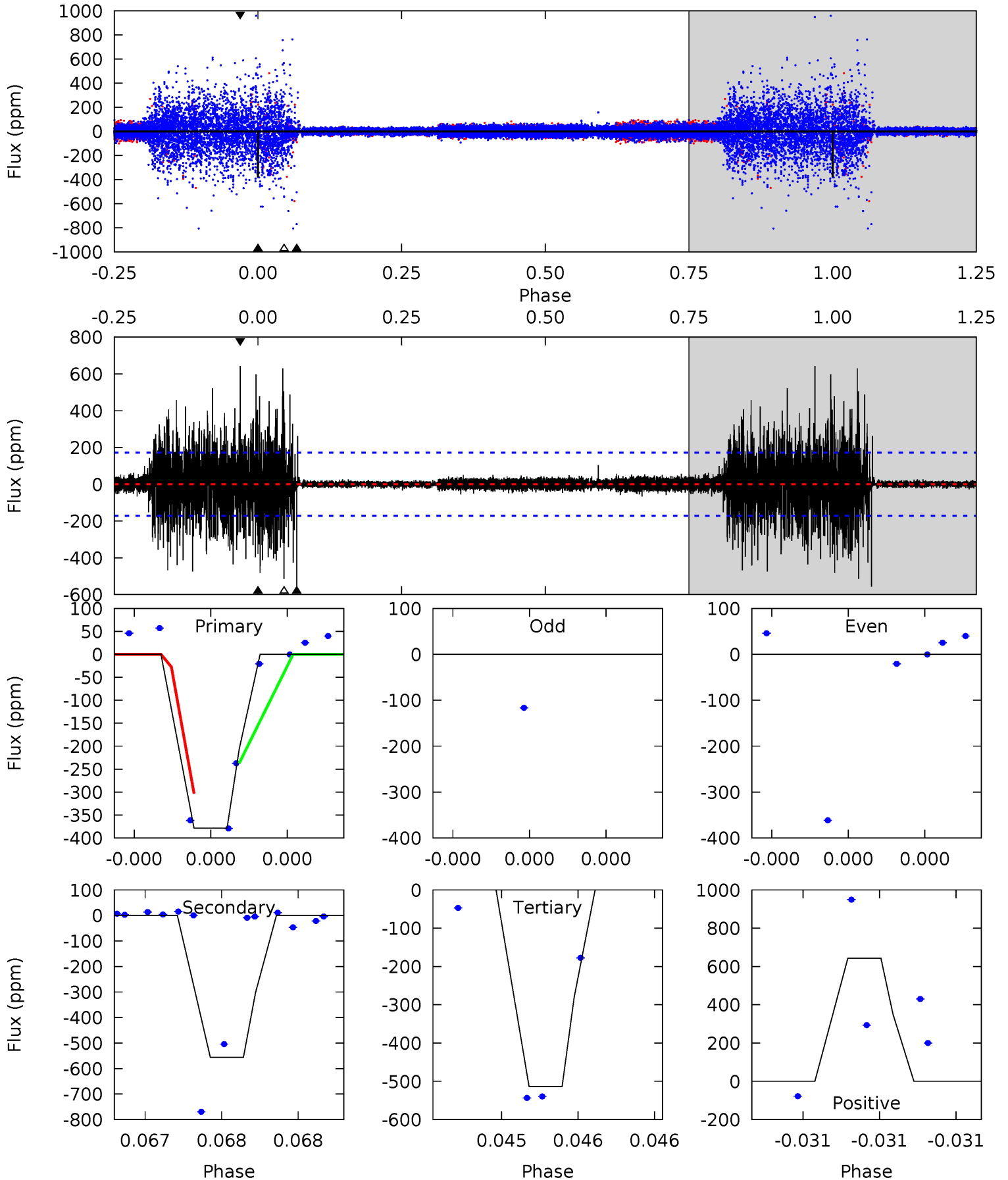
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	5.85	3.90	0	0	0	0	0	0	0.82	0	0



Alt Model-Shift Uniqueness Test

009588946-06, P = 373.090689 Days, E = 137.583992 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	18.9	17.4	21.8	5.81	3.83	1.45	-4.57	-8.96	1.46	-2.94	0	1.14	0.54	0



Stellar Parameters For KIC 009588946

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5019^{+173}_{-190}	$3.470^{+0.848}_{-0.212}$	$0.560^{+0.050}_{-0.350}$	$4.093^{+1.115}_{-2.601}$	$1.805^{+0.269}_{-0.808}$	$0.037^{+0.536}_{-0.018}$
	+3%/-4%	+24%/-6%	+9%/-62%	+27%/-64%	+15%/-45%	+1446%/-49%
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 009588946-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-0 ± 58	$41.16^{+47.12}_{-29.57}$	549^{+59}_{-106}	-1553^{+3919}_{-916}	$-0.243^{+45.691}_{-58.684}$
Alt.	-556 ± 30	$41.78^{+48.45}_{-29.35}$	551^{+58}_{-113}	2962^{+1326}_{-483}	261^{+2653}_{-205}

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 $A_{obs} \gg 1.0$

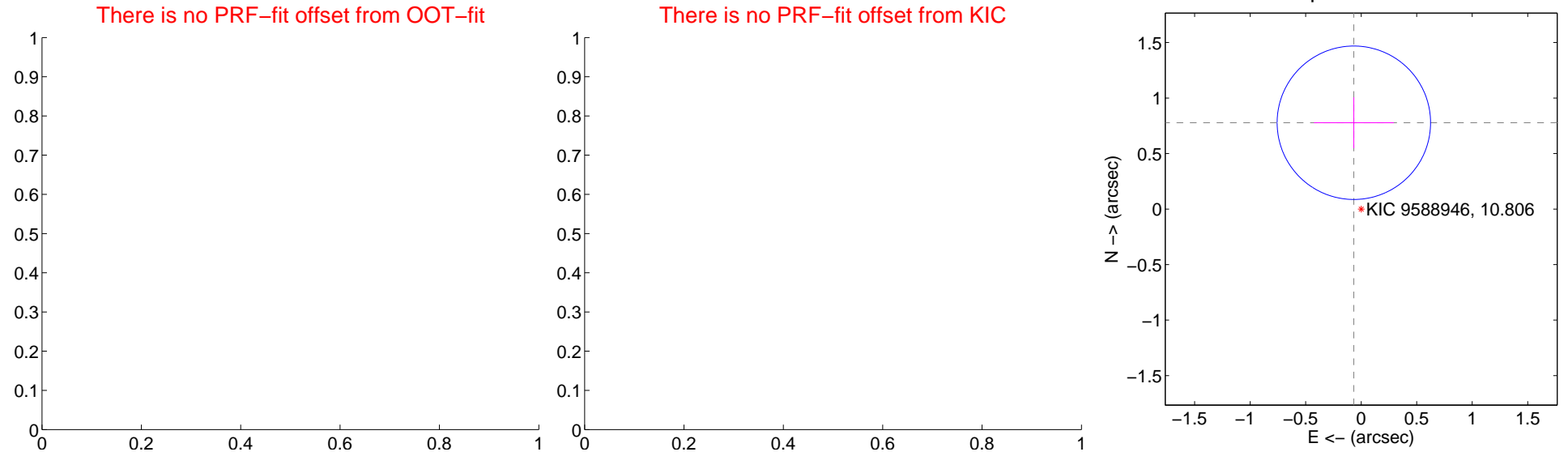
DV Centroid Data

Supplemental centroid analysis for 009588946-06. **Kepler magnitude: 10.81.** Transit SNR 22.21

There are 0 quarters with good PRF difference image offsets

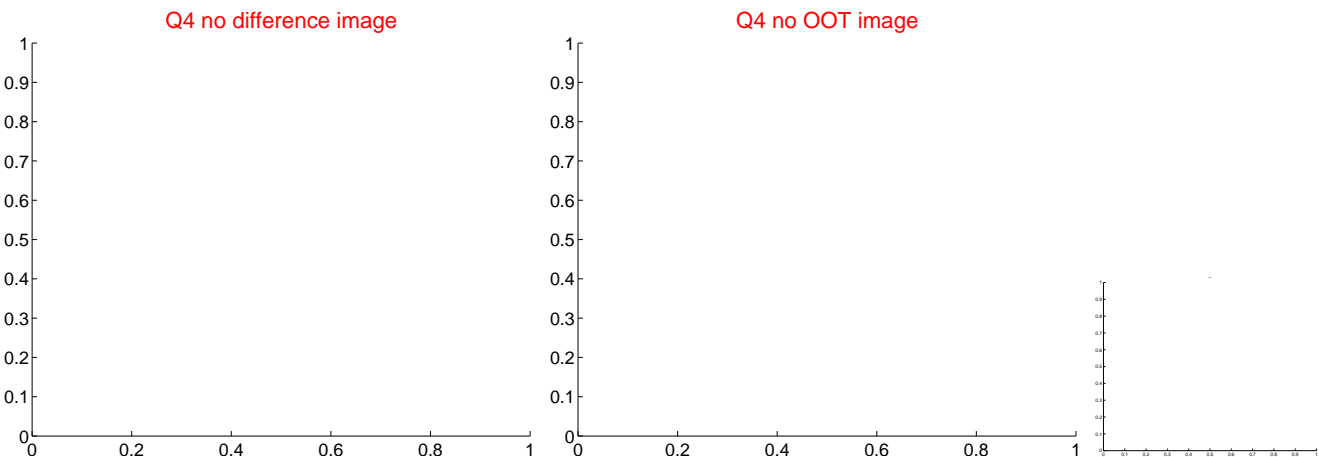
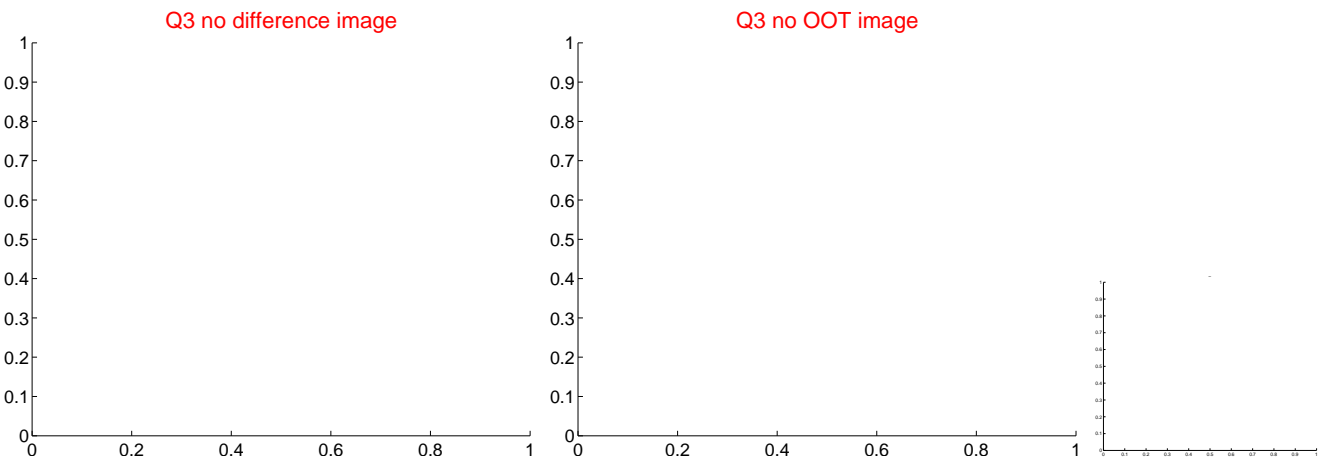
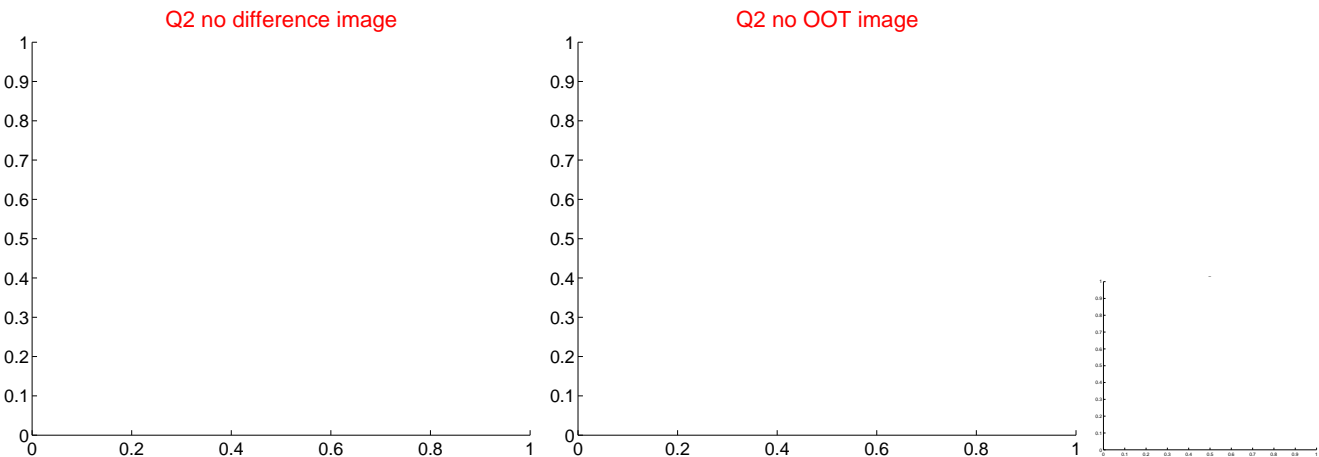
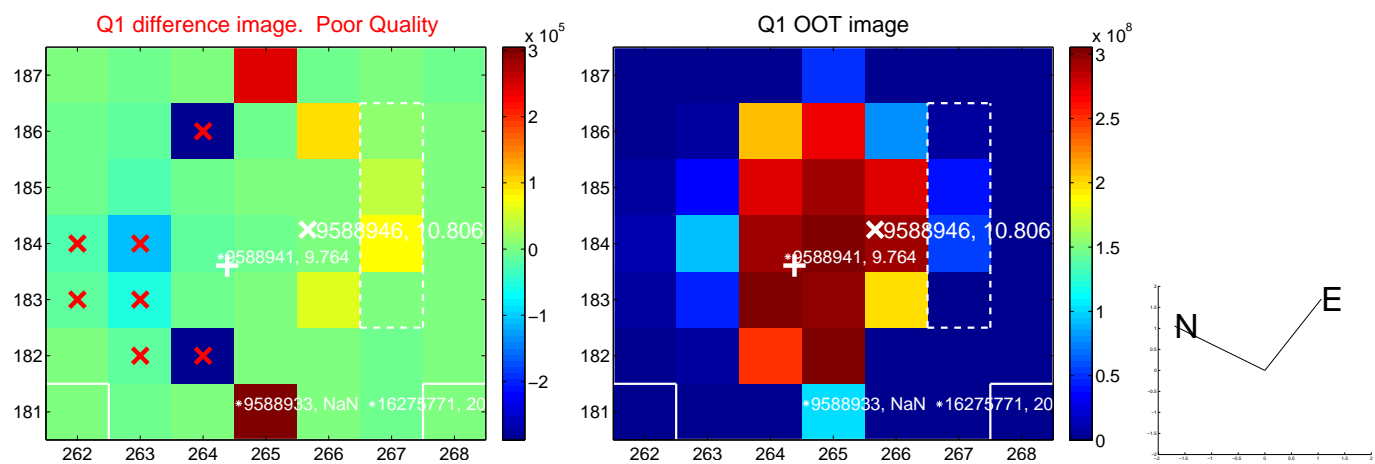
The direct PRF centroid is offset from the target star catalog position by about NaN arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	—	—	—	—
PRF-fit source offset from KIC position	—	—	—	—
photometric centroid source offset	0.78 ± 0.23	3.39	0.07 ± 0.36	0.78 ± 0.23

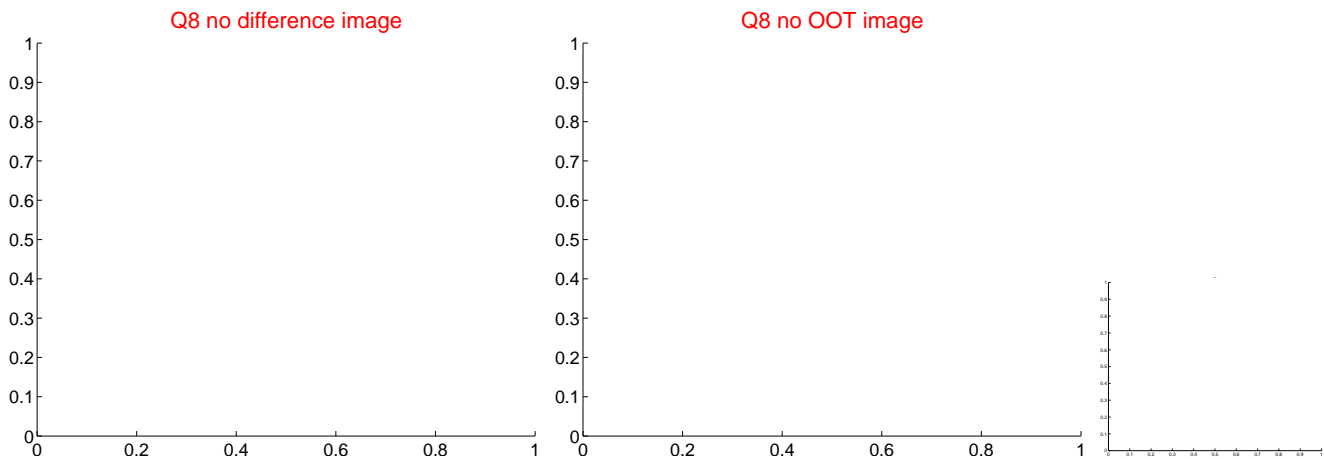
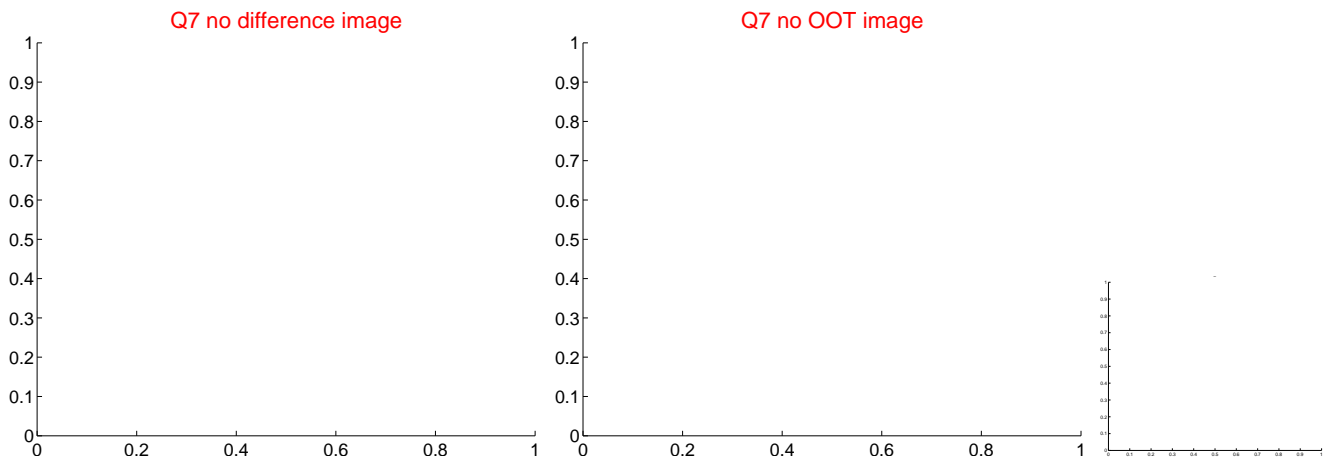
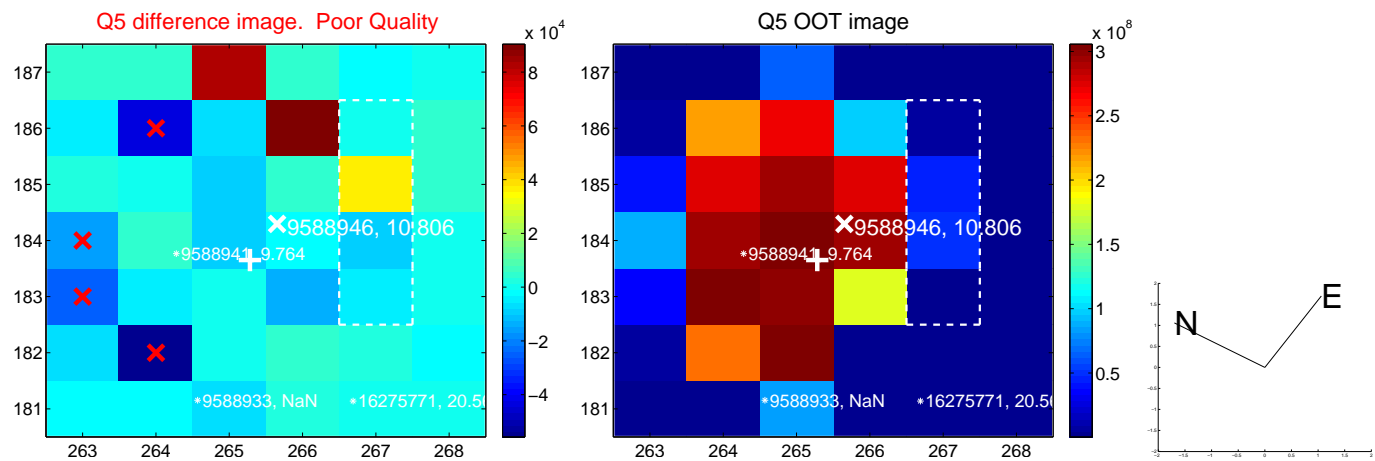


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

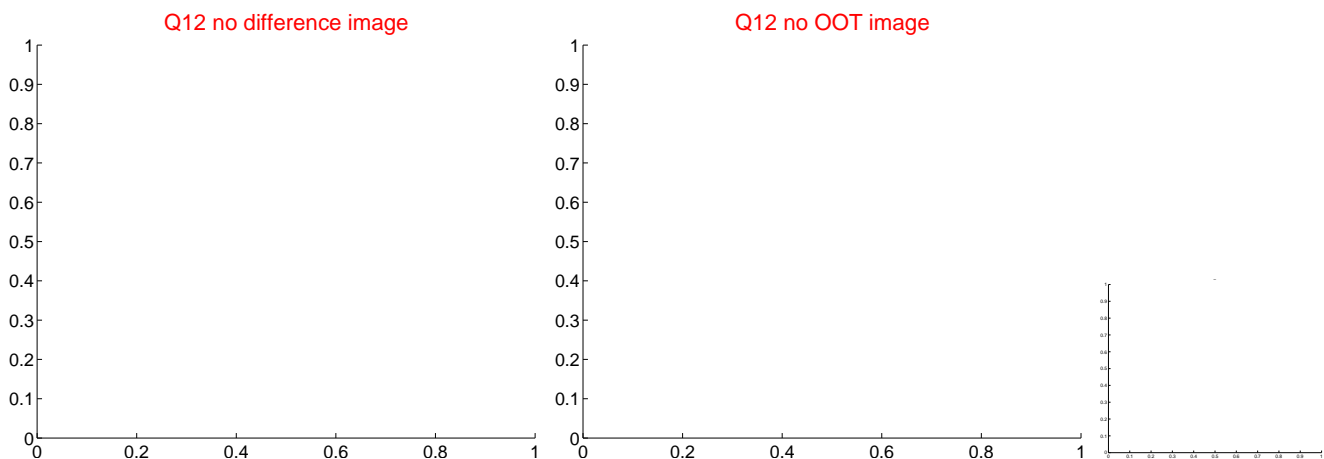
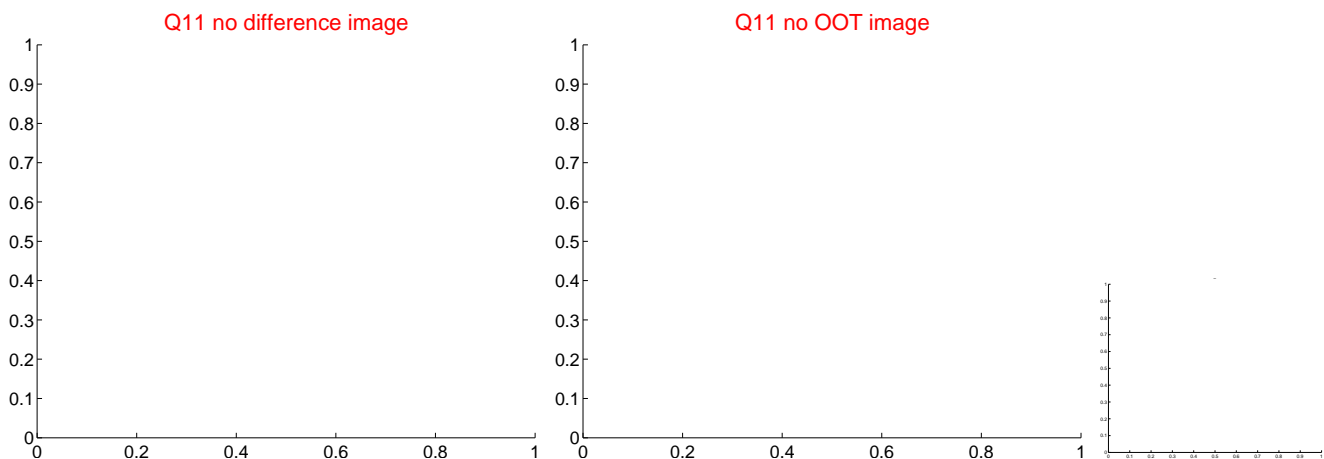
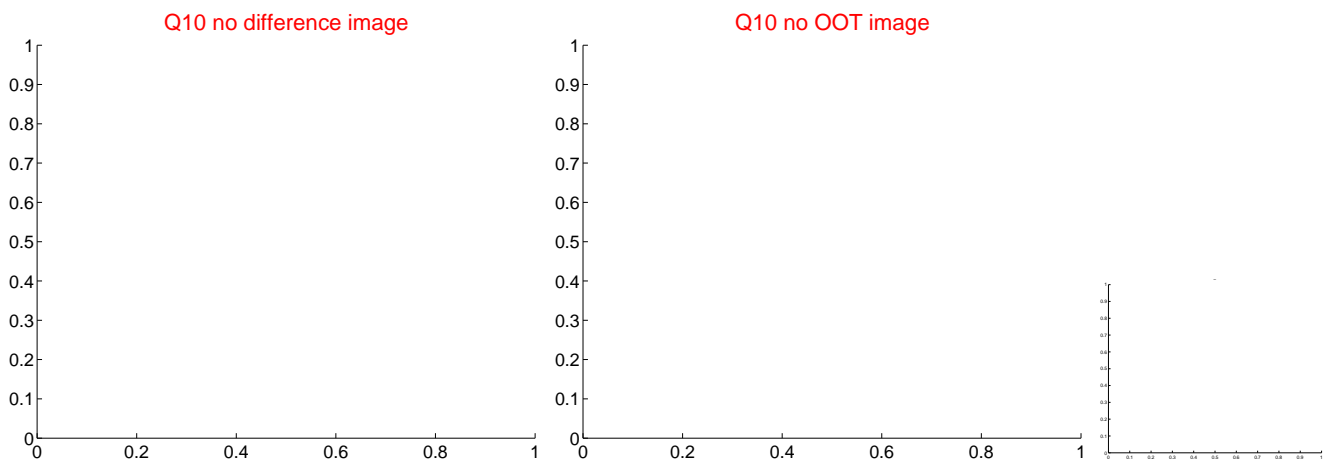
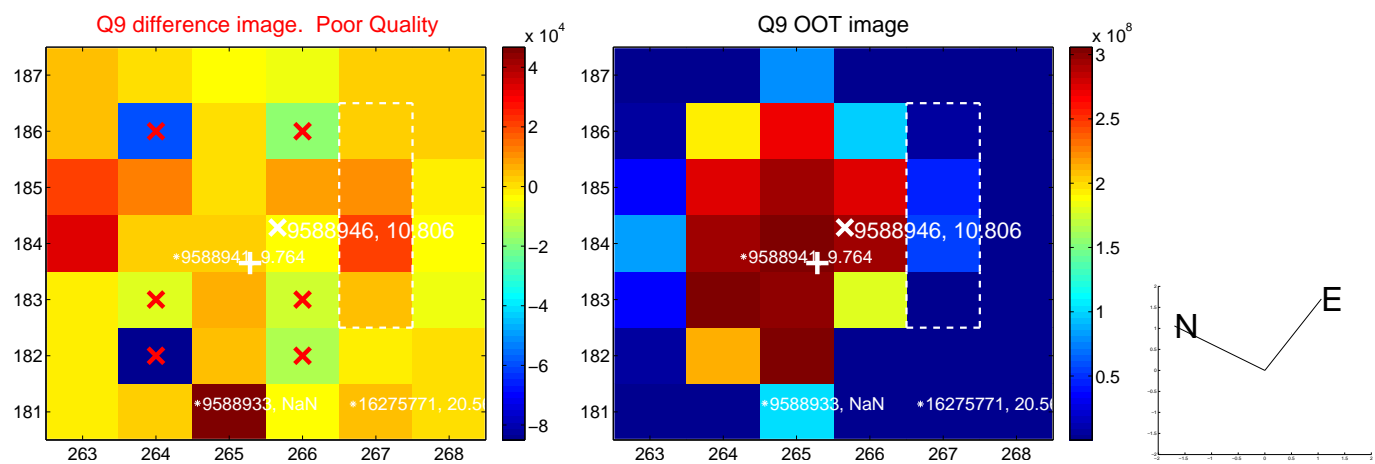
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



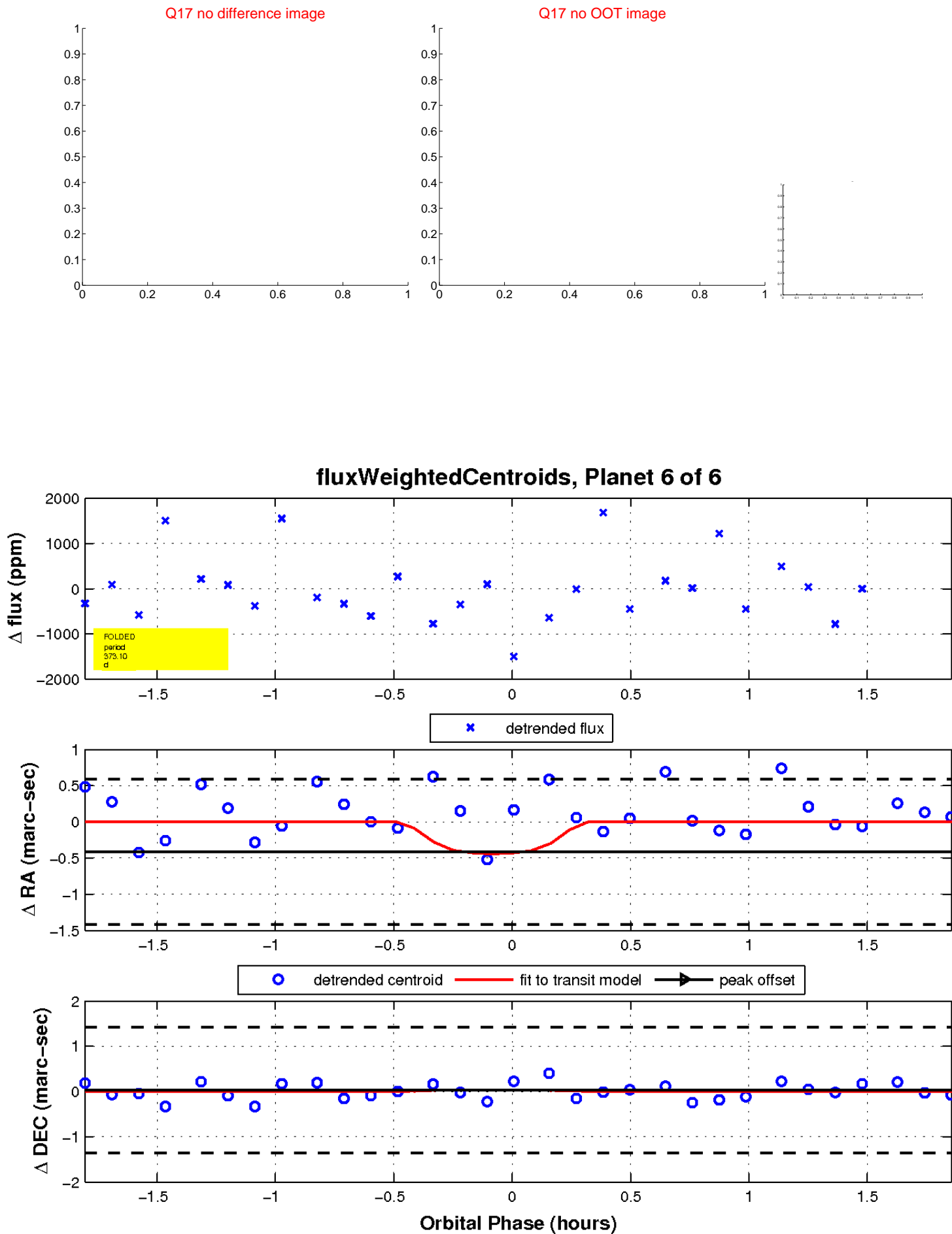
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

