

KIC 010146539

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})
010146539-01	OBS	No	363.847151	273.291903	1884.4	9.869	17.4	7.8	0.30	3373	1.29	0.02
010146539-02	OBS	No	462.029001	486.260744	2357.2	11.315	12.1	9.1	0.30	3373	1.42	0.02
010146539-03	OBS	No	462.225677	218.687670	2116.9	5.236	13.2	7.9	0.30	3373	1.44	0.02
010146539-04	OBS	No	236.872040	277.556708	1206.1	7.427	10.6	7.0	0.30	3373	1.07	0.04
010146539-05	OBS	No	546.674760	225.736562	1626.4	5.362	10.0	6.6	0.30	3373	1.19	0.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010146539-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_DIFFS
010146539-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
010146539-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_KIC_POS
010146539-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_KIC_POS
010146539-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

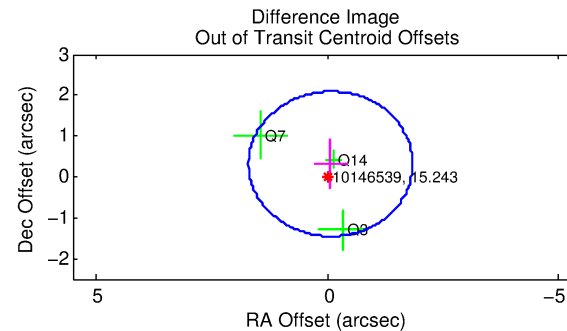
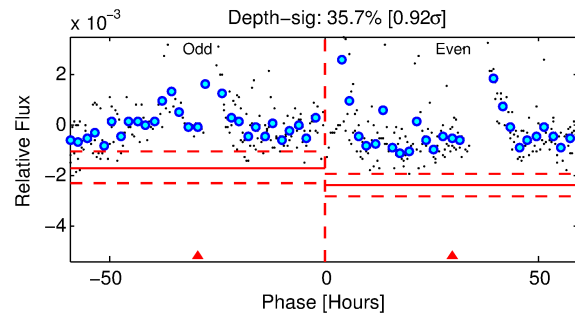
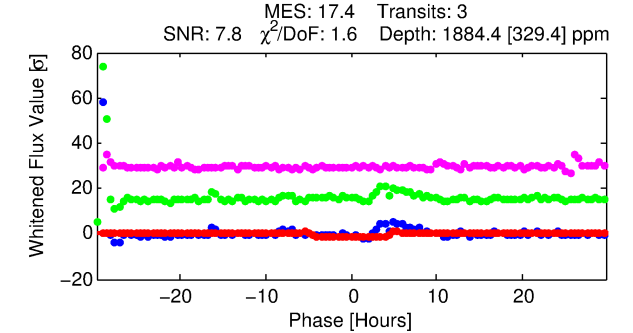
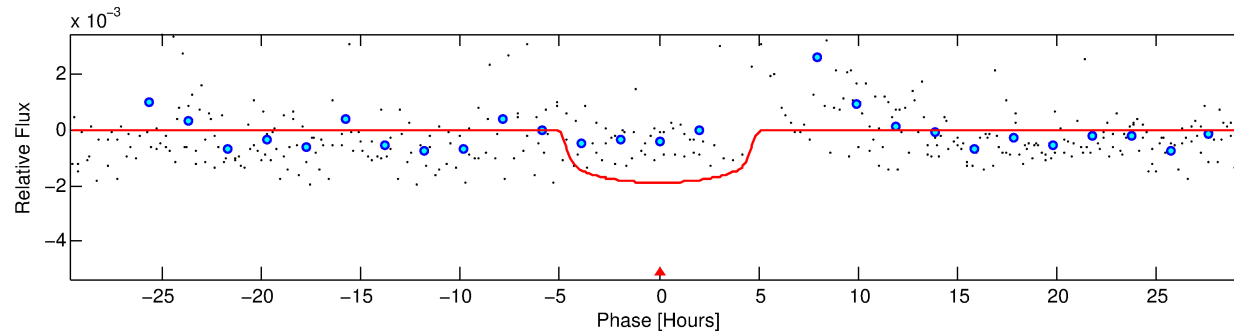
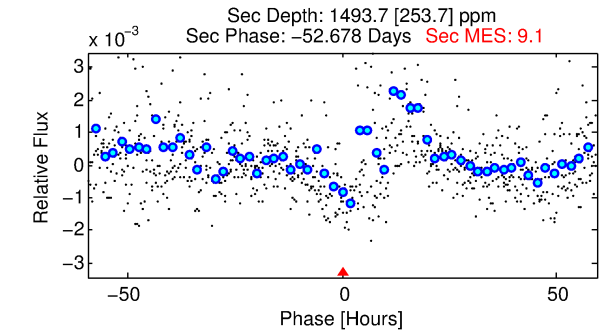
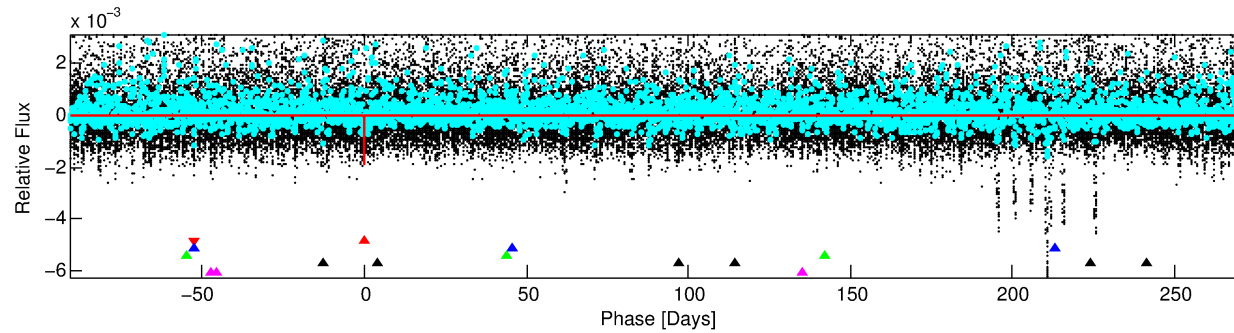
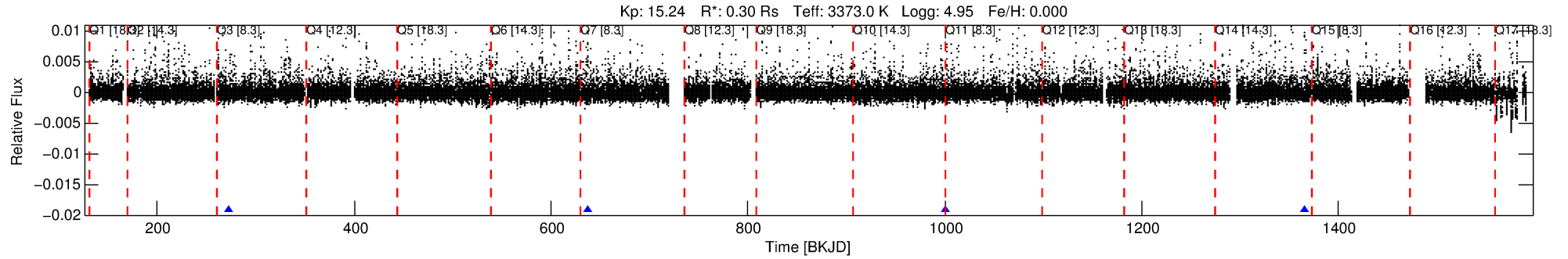
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010146539-01

No Significant Match Found

DV One-Page Summary

KIC: 10146539 Candidate: 1 of 5 Period: 363.847 d



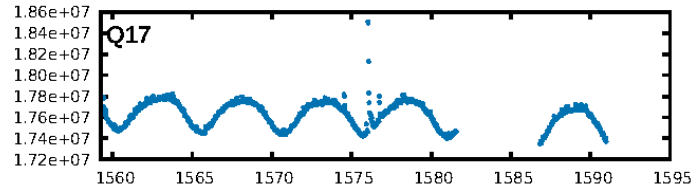
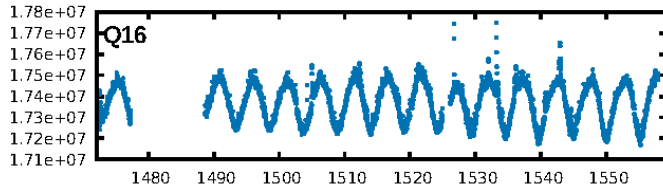
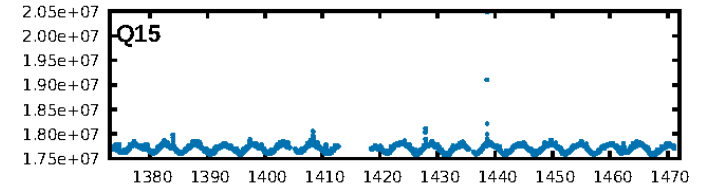
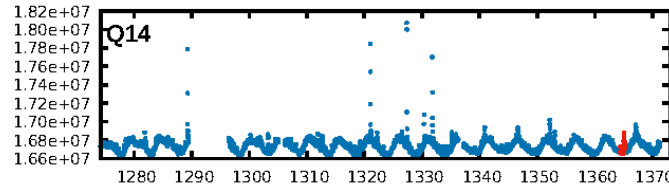
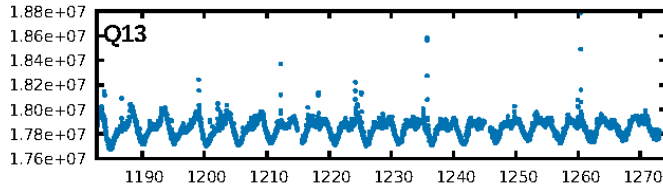
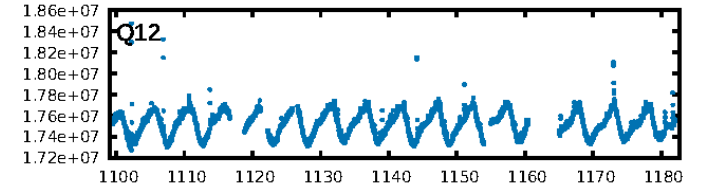
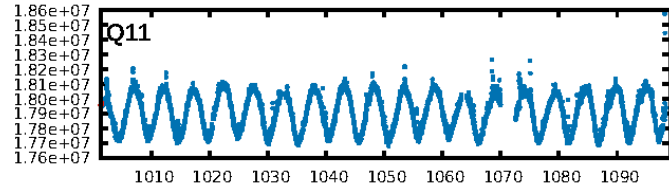
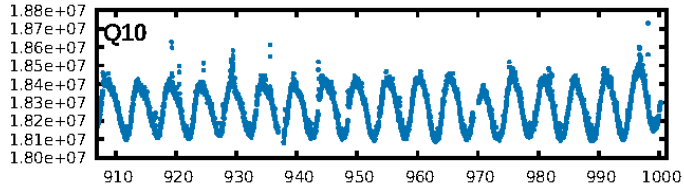
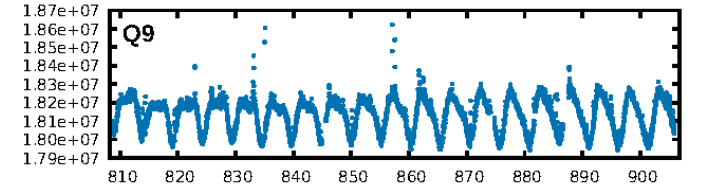
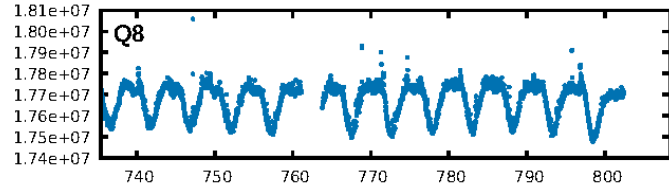
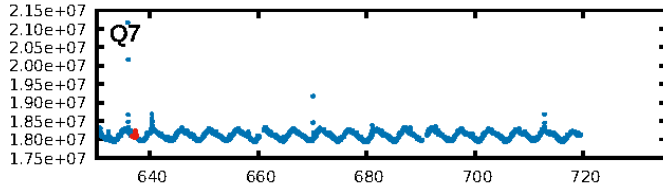
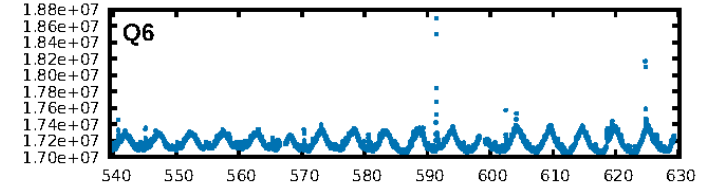
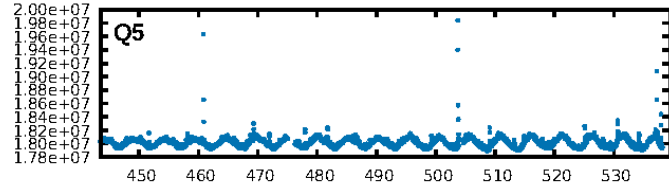
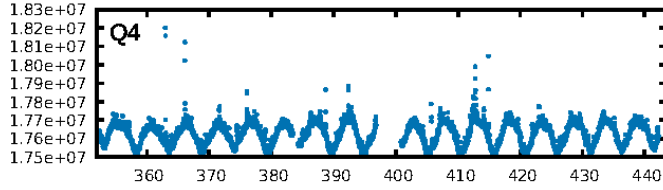
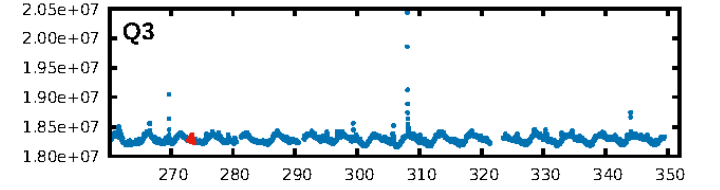
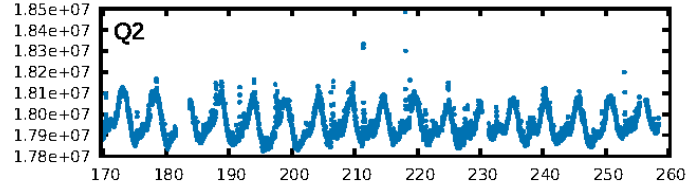
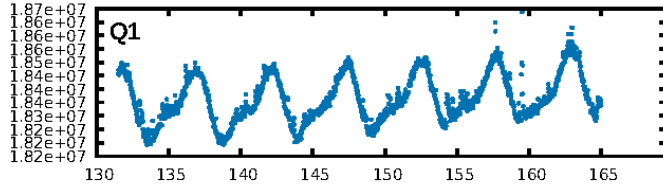
DV Fit Results:

Period = 363.84715 [0.00517] d
Epoch = 273.2919 [0.0101] BKJD
Rp/R* = 0.0400 [0.0252]
a/R* = 269.57 [706.42]
b = 0.41 [5.40]
Seff = 0.02 [0.00]
Teq = 100 [3] K
Rp = 1.29 [0.83] Re
a = 0.6574 [0.0598] AU
Ag = 212511.19 [271094.17] [0.78σ]
Teffp = 3315 [1054] K [3.05σ]

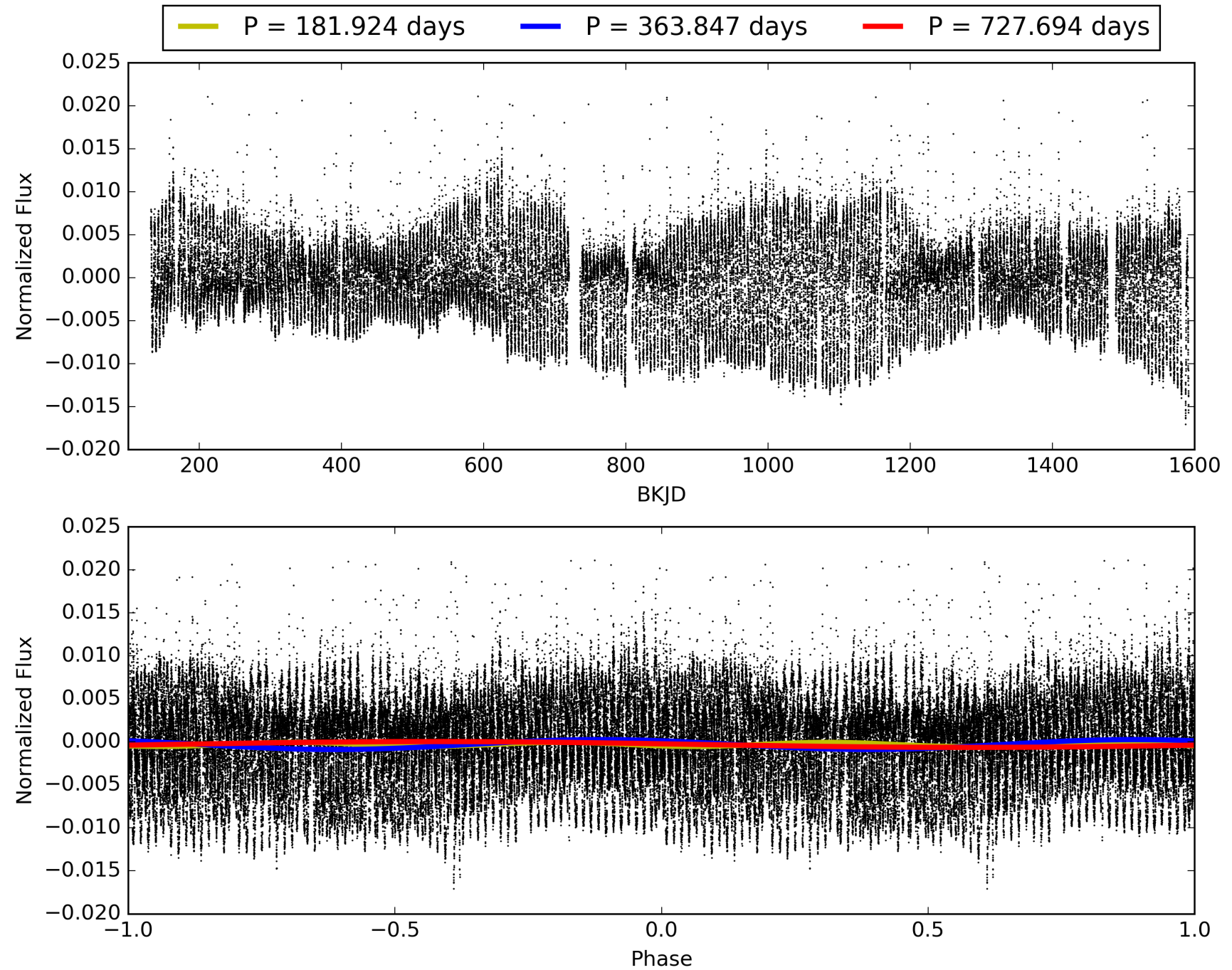
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [246.73σ]
LongPeriod-sig: 100.0% [156.94σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 91.1%
Bootstrap-pfa: 1.62e-17
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.301
Centroid-sig: 13.0%
Centroid-so: 0.297 arcsec [0.69σ]
OotOffset-rm: 0.325 arcsec [0.55σ]
KicOffset-rm: 0.155 arcsec [0.34σ]
OotOffset-st: 1/2/0/0 [3]
KicOffset-st: 1/2/0/0 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 1.00 [3/3]

TCE 010146539-01, PDC Light Curves

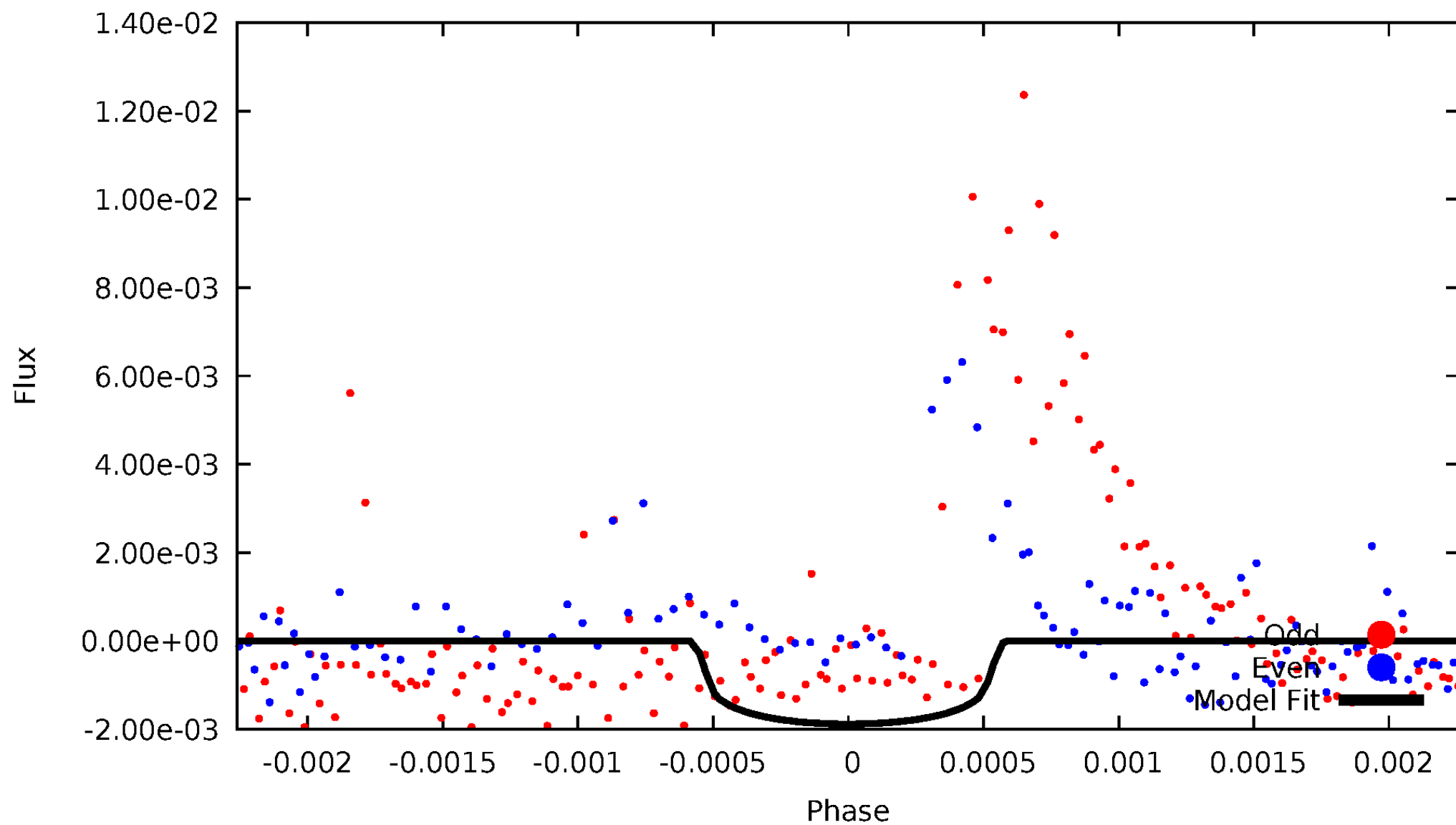


TCE 010146539-01



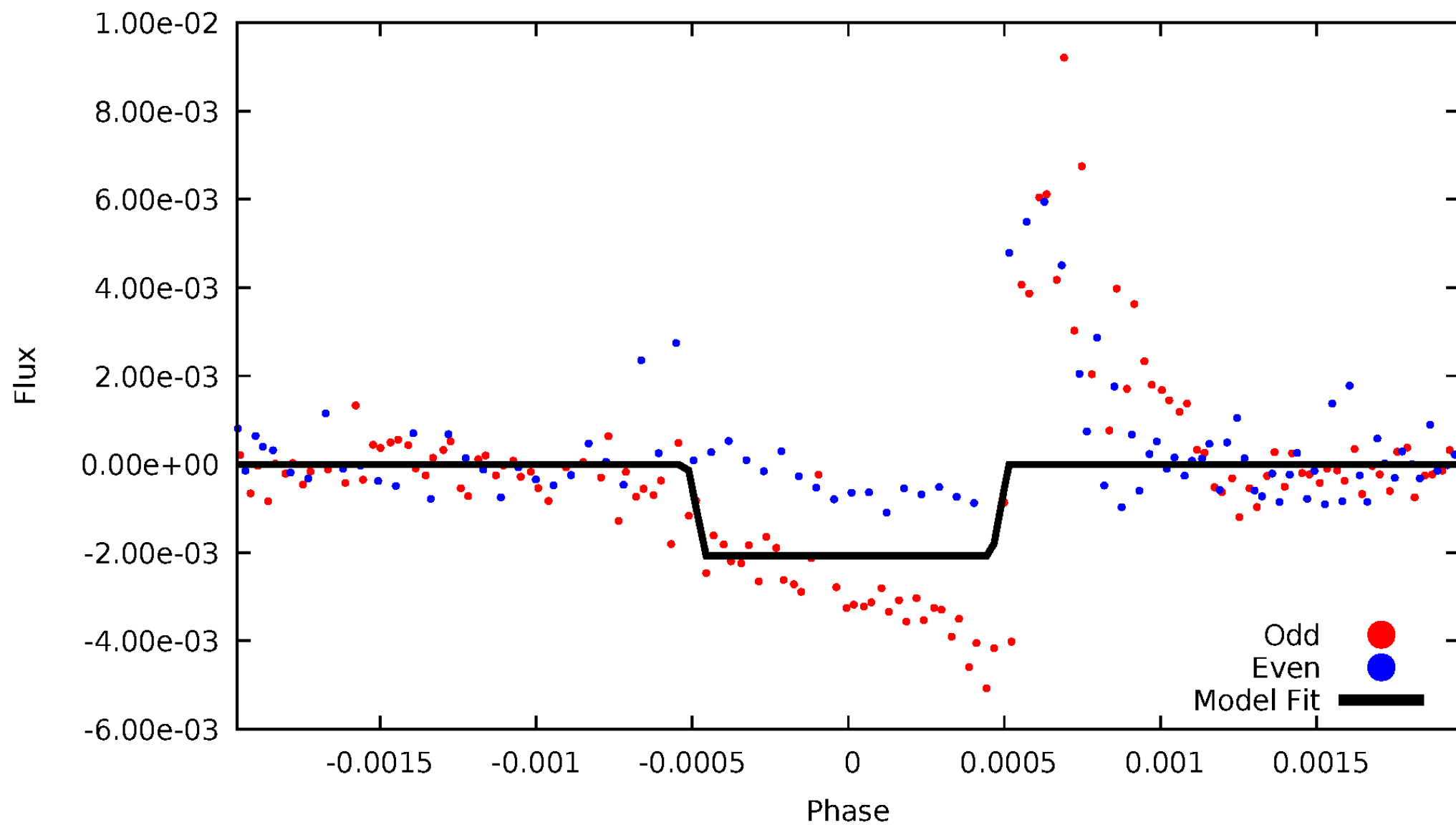
DV Odd/Even

TCE 010146539-01



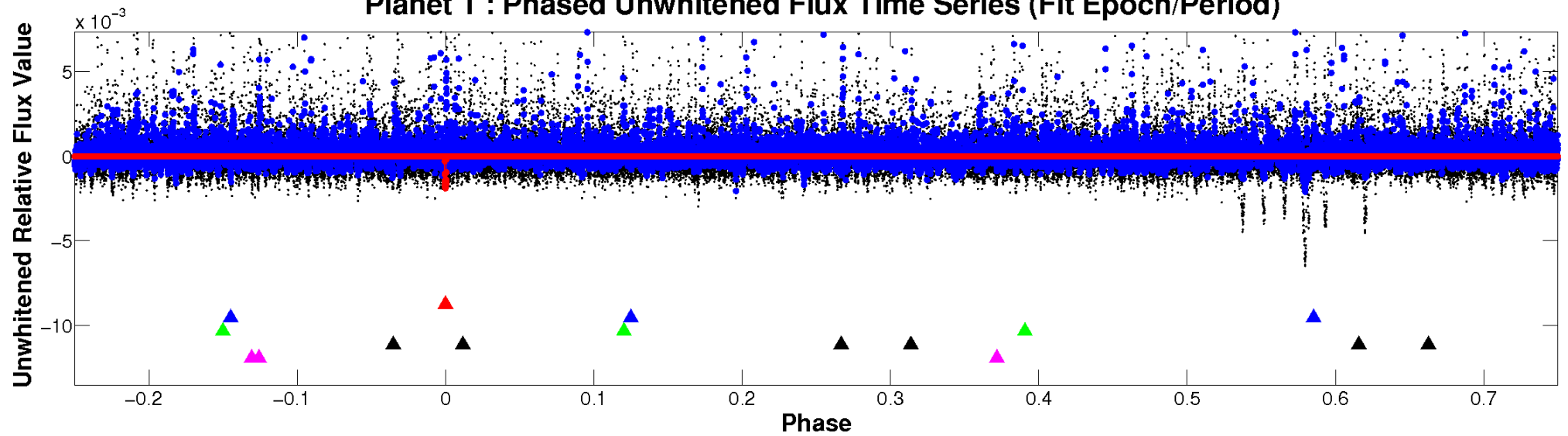
ALT Odd/Even

TCE 010146539-01

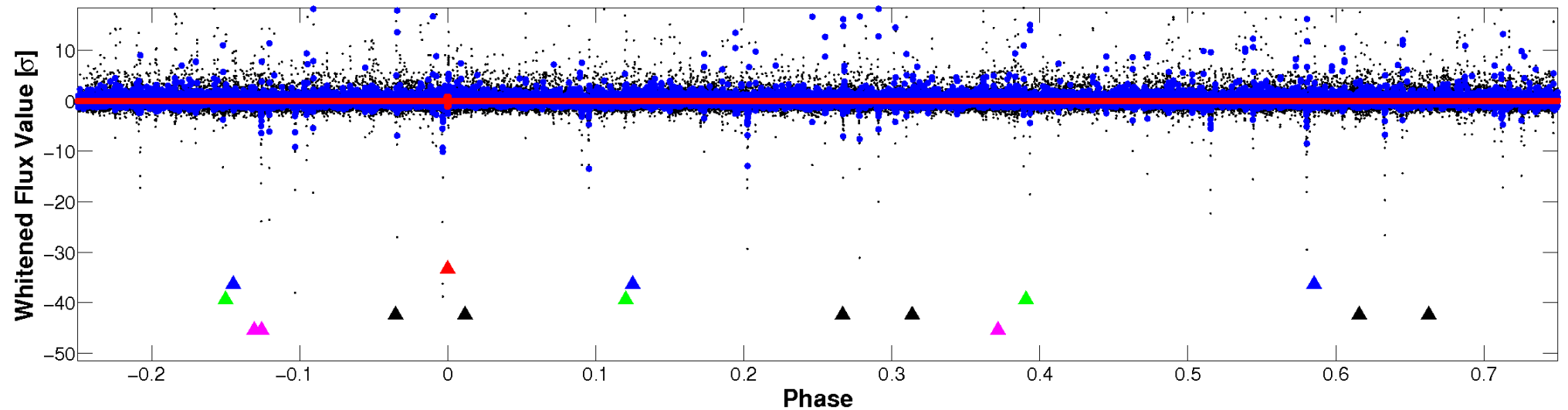


Non-Whitened Vs. Whitened Light Curve

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

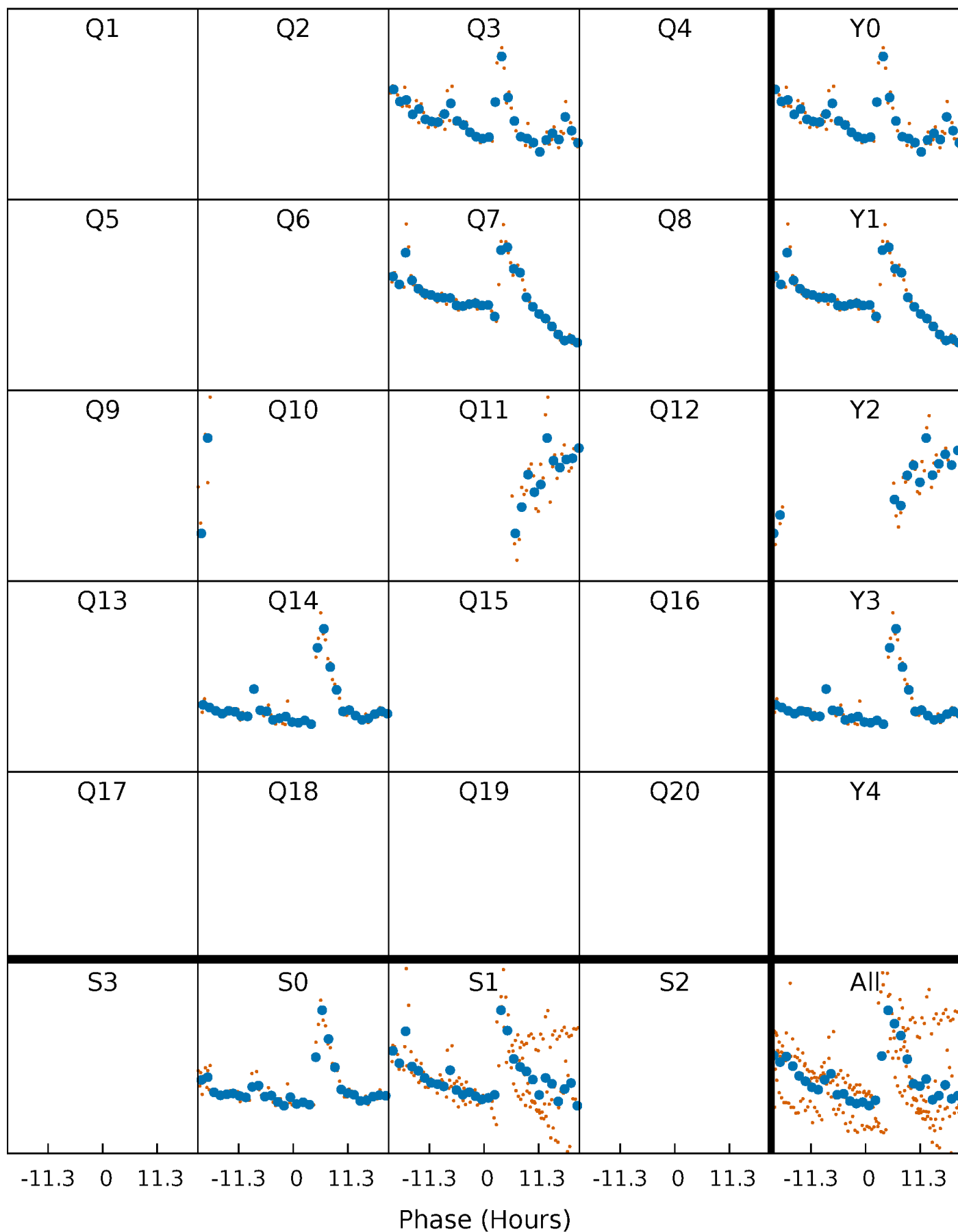


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



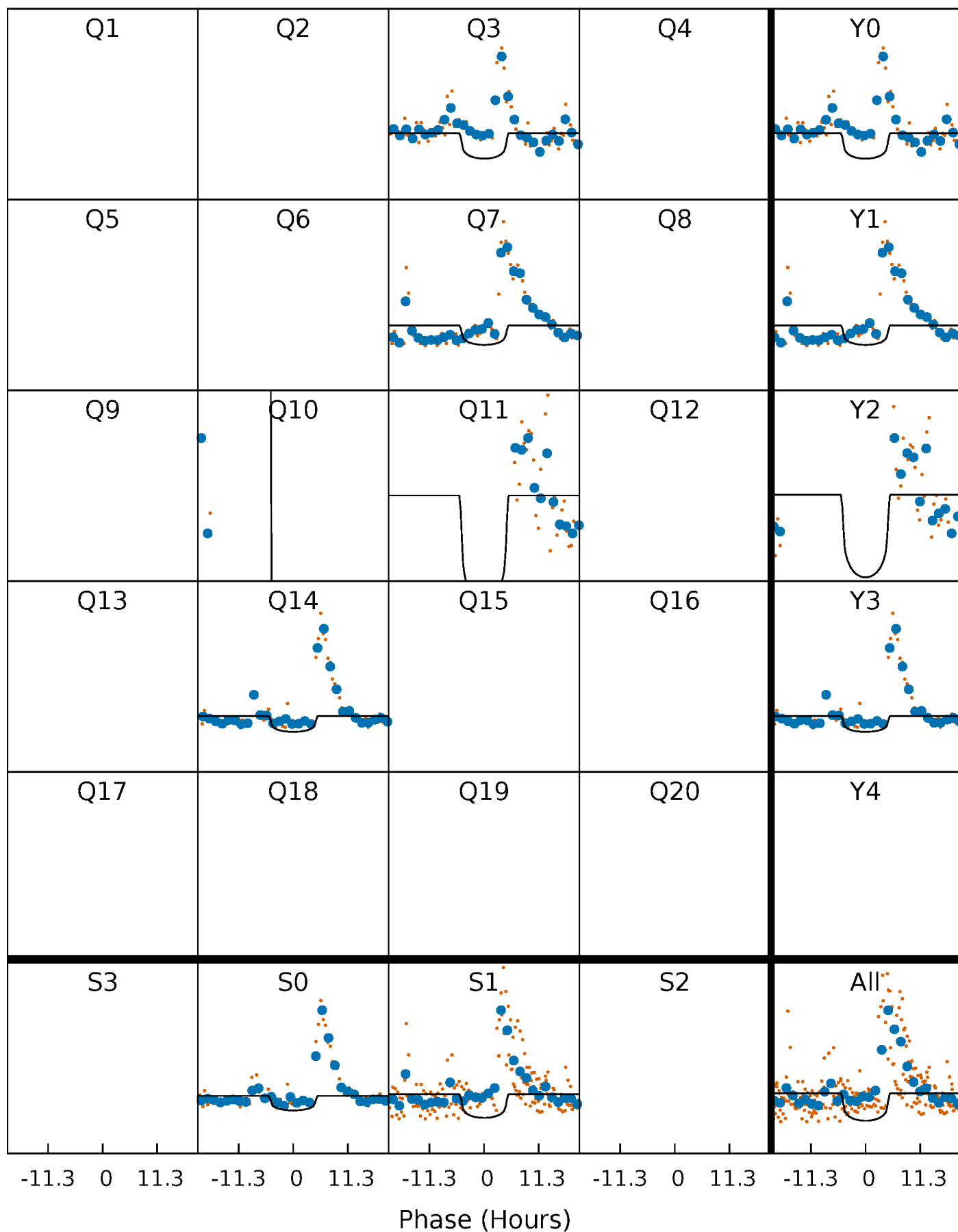
PDC Quarter-Phased Transit Curves

TCE 010146539-01 P=363.847151 Days $T_0=273.291903$ (BKJD)



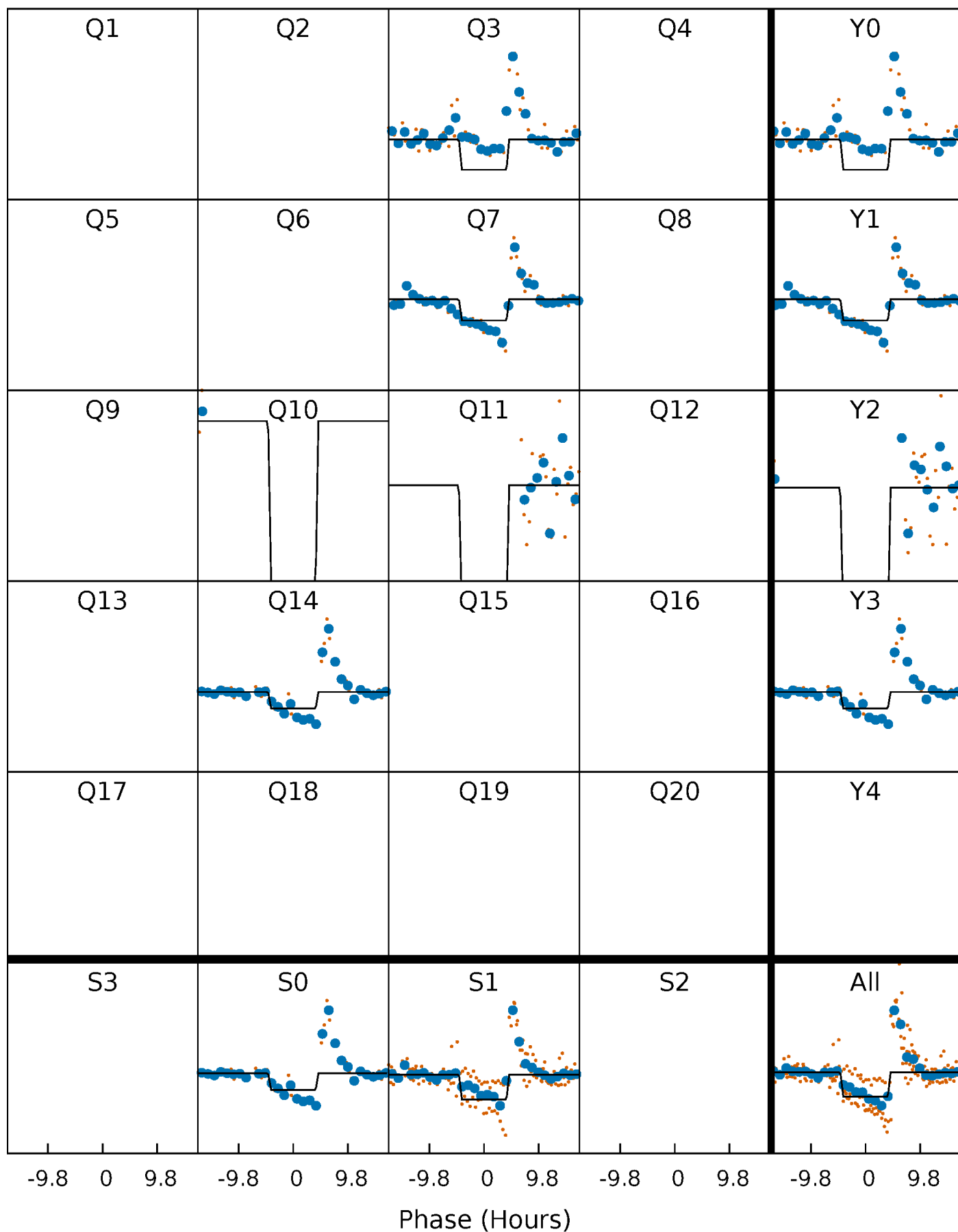
DV Quarter-Phased Transit Curves

TCE 010146539-01 P=363.847151 Days $T_0=273.291903$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

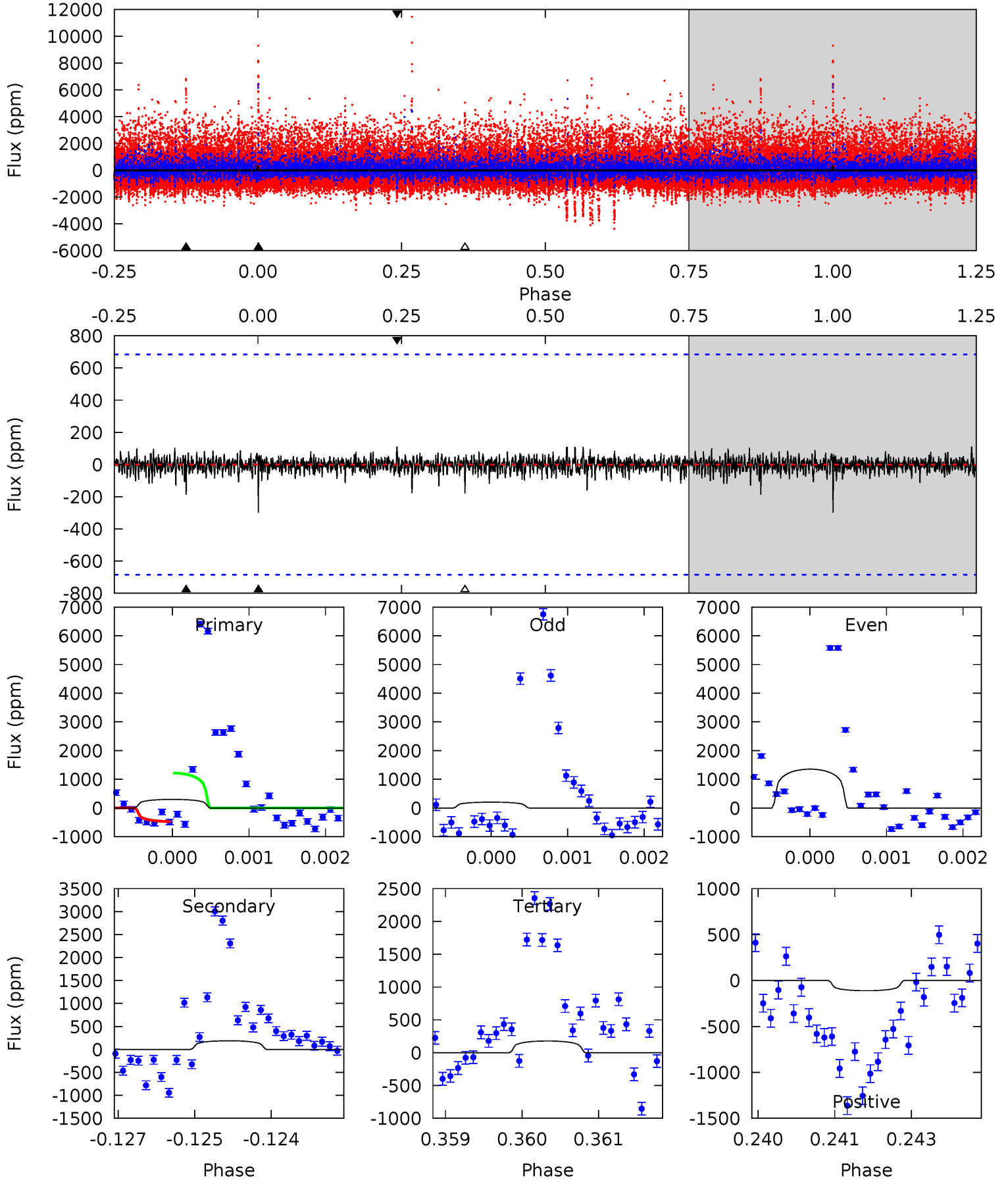
TCE 010146539-01 P=363.867214 Days $T_0=273.216569$ (BKJD)



DV Model-Shift Uniqueness Test

010146539-01, P = 363.847151 Days, E = 273.291903 Days

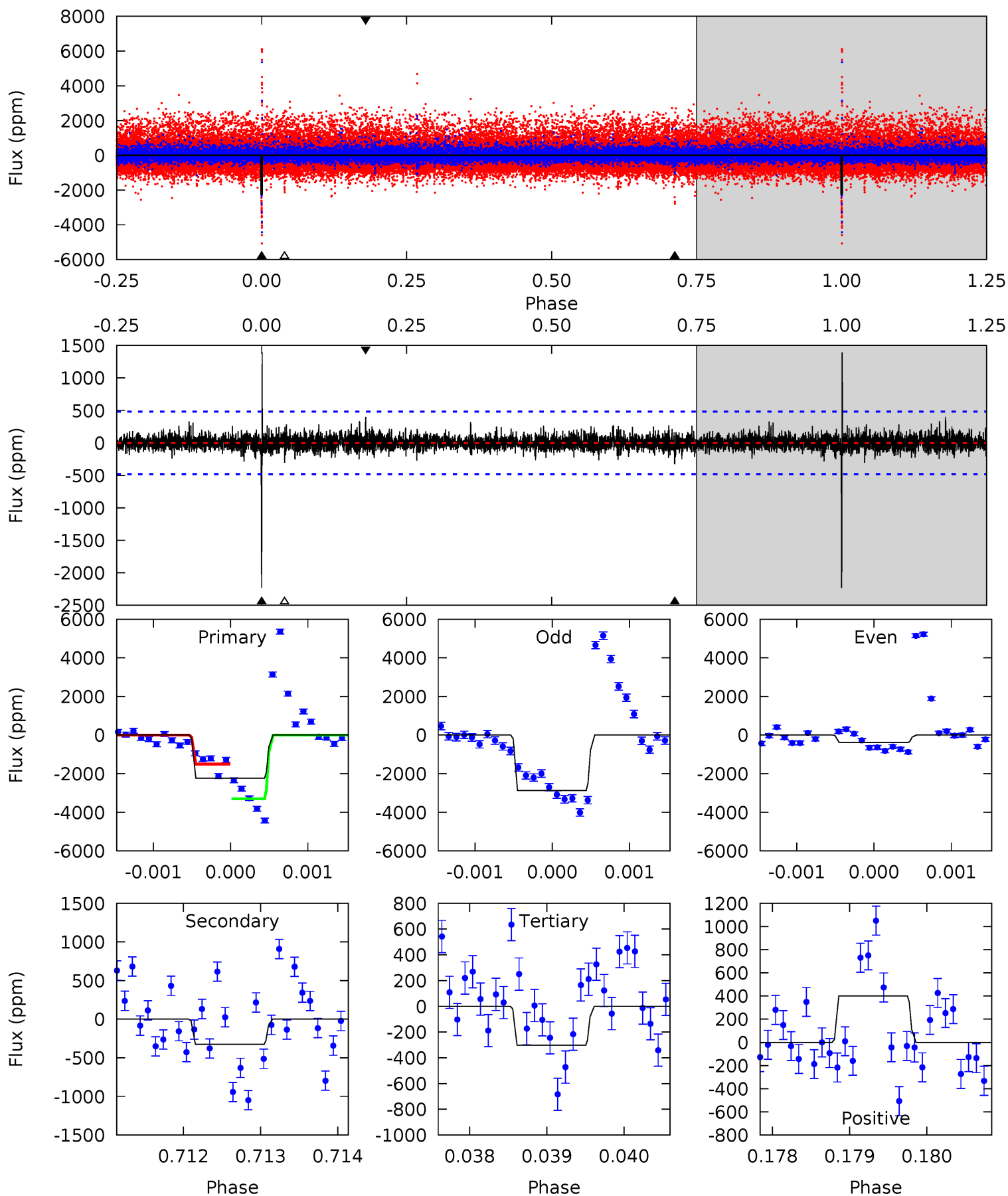
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.37	1.48	1.41	0.88	5.42	3.24	0.27	0.96	1.49	0.07	0.60	3.72	0.59	0.27	3.00



Alt Model-Shift Uniqueness Test

010146539-01, P = 363.867214 Days, E = 273.216569 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.3	3.69	3.43	4.54	5.45	3.29	0.85	21.9	20.7	0.26	-0.85	13.6	0.73	0.38	10.1



Stellar Parameters For KIC 010146539

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3373^{+43}_{-37}	$4.952^{+0.040}_{-0.040}$	$0.000^{+0.100}_{-0.100}$	$0.296^{+0.038}_{-0.031}$	$0.286^{+0.048}_{-0.035}$	$15.560^{+3.608}_{-3.194}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+13%/-10%	+17%/-12%	+23%/-21%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010146539-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-187 ± 126	$1.35^{+0.82}_{-0.76}$	140^{+3}_{-3}	2452^{+615}_{-378}	$22190^{+103527}_{-17379}$
Alt.	-325 ± 88	$1.45^{+0.82}_{-0.73}$	140^{+3}_{-3}	2596^{+568}_{-257}	$34736^{+117965}_{-20095}$

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

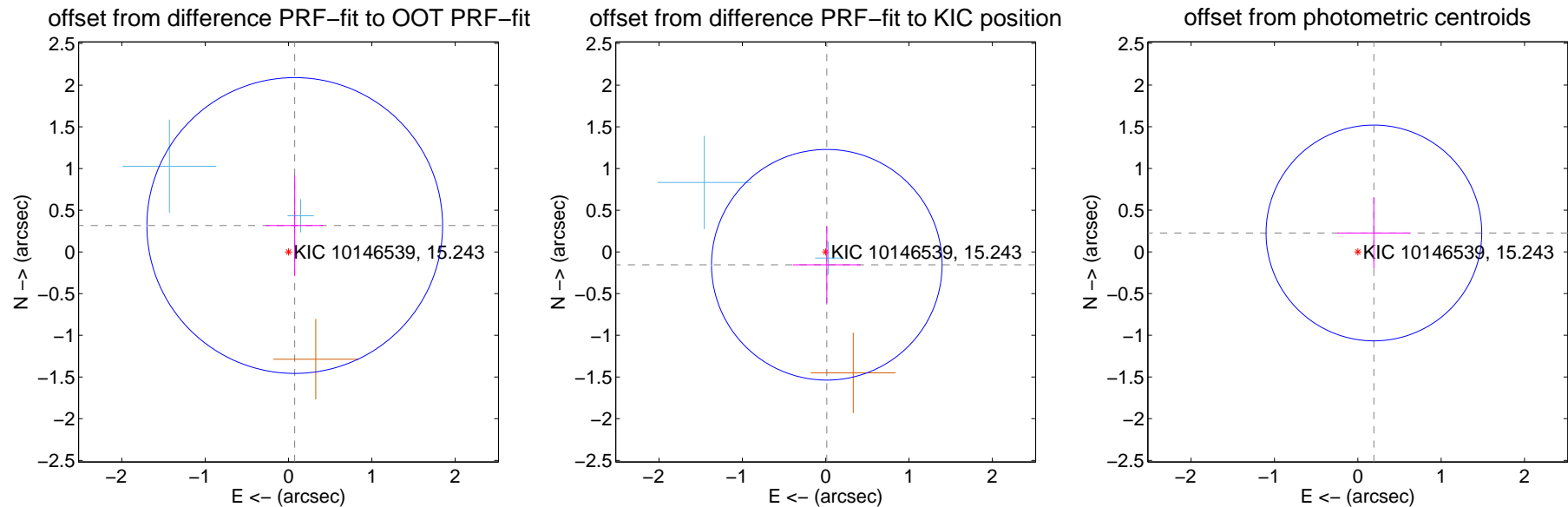
DV Centroid Data

Supplemental centroid analysis for 010146539-01. Kepler magnitude: 15.24. Transit SNR 7.82

There are 2 quarters with good PRF difference image offsets

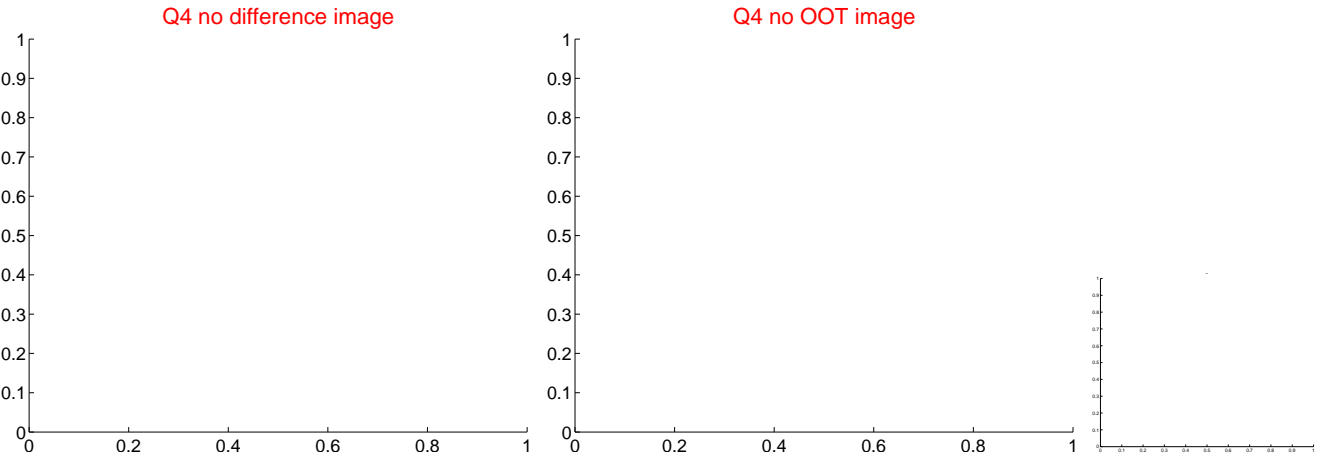
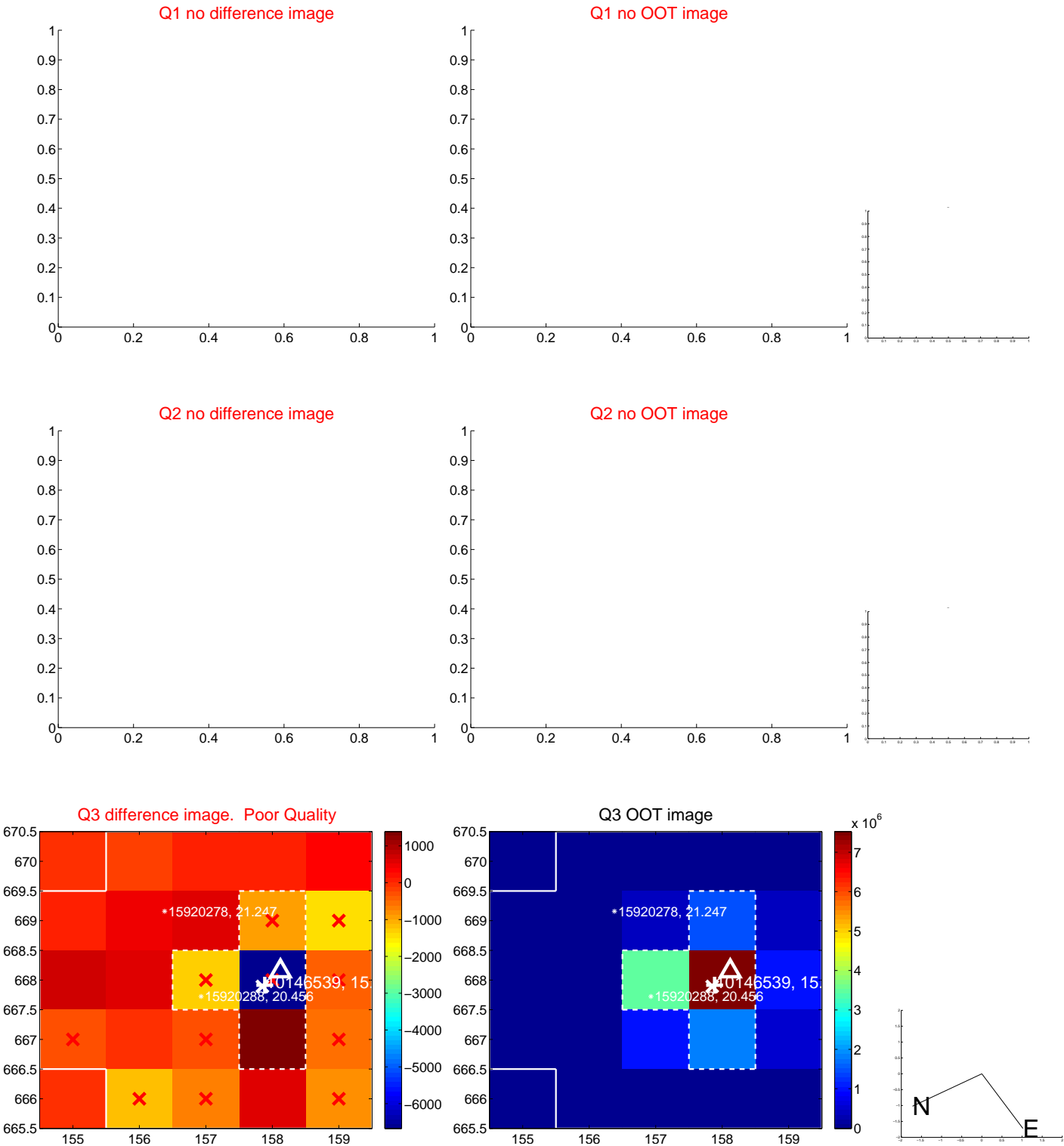
The direct PRF centroid is offset from the target star catalog position by about 0.52 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.325 ± 0.591	0.55	-0.075 ± 0.345	0.317 ± 0.602
PRF-fit source offset from KIC position	0.155 ± 0.461	0.34	-0.014 ± 0.406	-0.154 ± 0.461
photometric centroid source offset	0.30 ± 0.43	0.69	-0.19 ± 0.44	0.23 ± 0.43

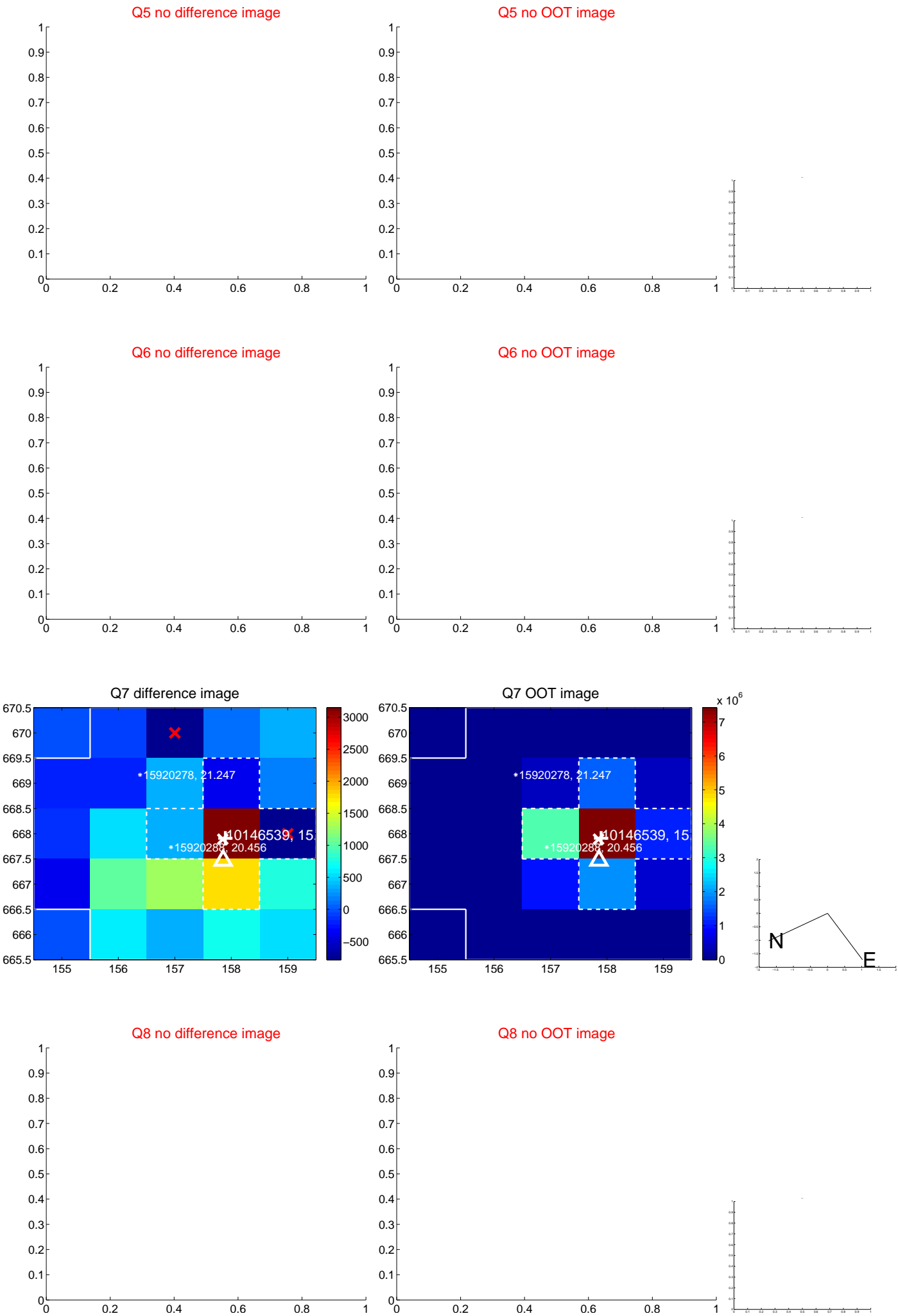


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ . 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 ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

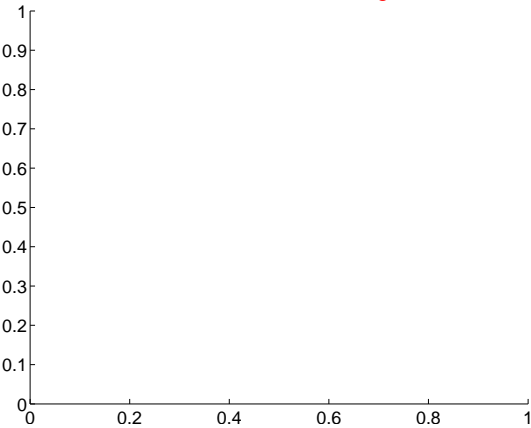


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

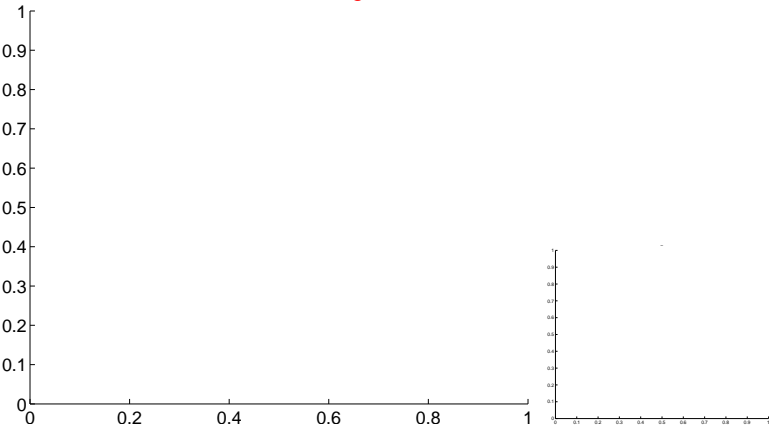


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

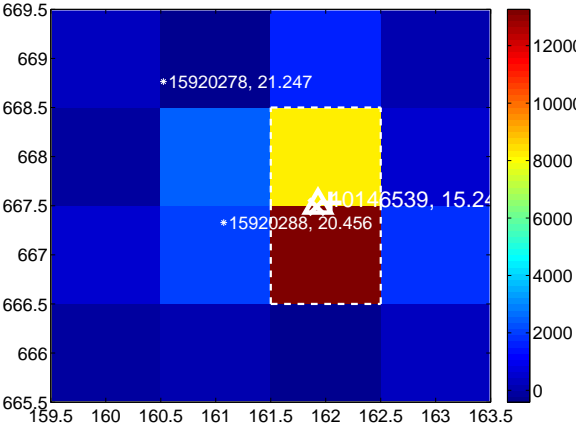
Q13 no difference image



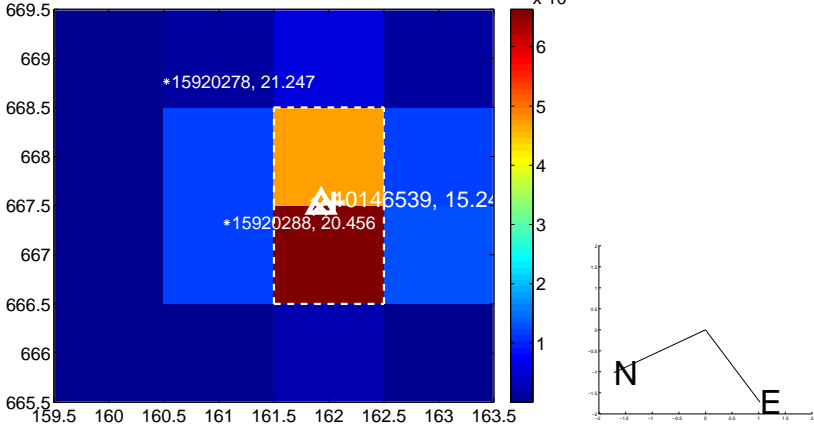
Q13 no OOT image



Q14 difference image



Q14 OOT image



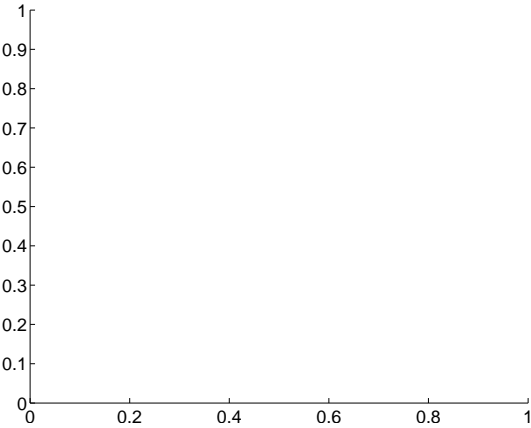
Q15 no difference image



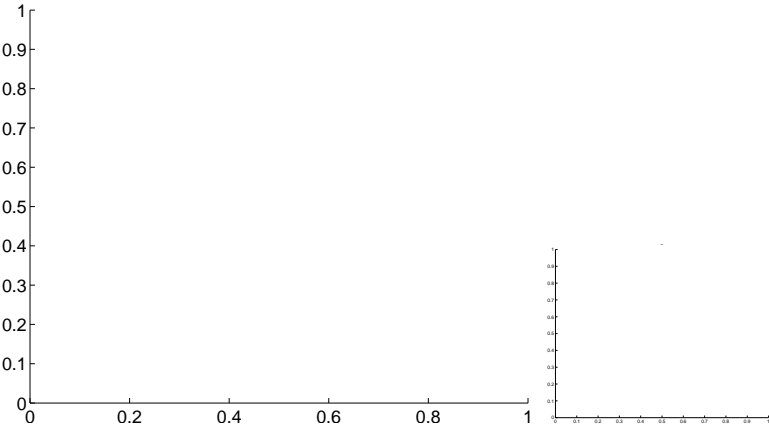
Q15 no OOT image



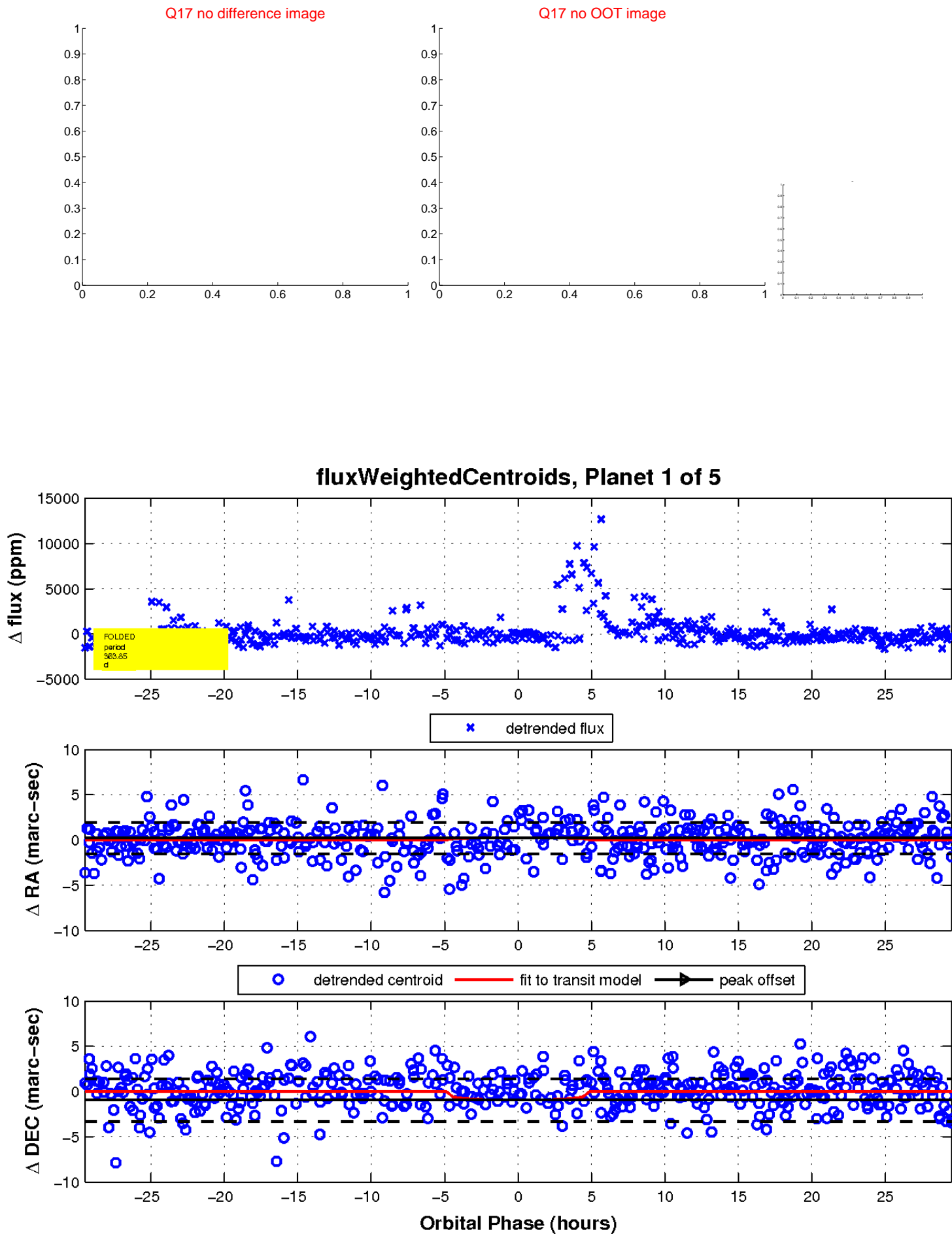
Q16 no difference image



Q16 no OOT image

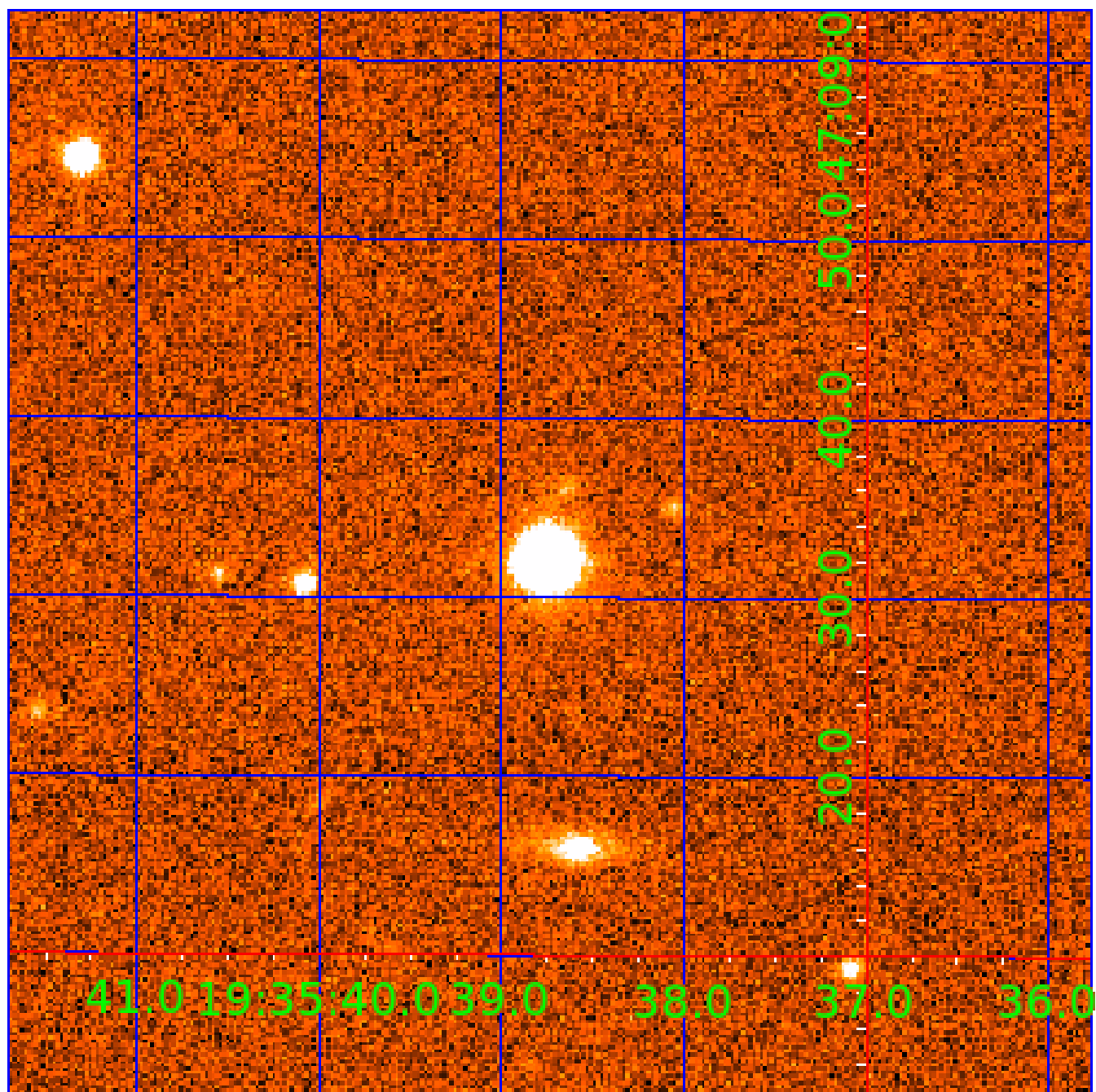


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010146539

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})
010146539-01	OBS	No	363.847151	273.291903	1884.4	9.869	17.4	7.8	0.30	3373	1.29	0.02
010146539-02	OBS	No	462.029001	486.260744	2357.2	11.315	12.1	9.1	0.30	3373	1.42	0.02
010146539-03	OBS	No	462.225677	218.687670	2116.9	5.236	13.2	7.9	0.30	3373	1.44	0.02
010146539-04	OBS	No	236.872040	277.556708	1206.1	7.427	10.6	7.0	0.30	3373	1.07	0.04
010146539-05	OBS	No	546.674760	225.736562	1626.4	5.362	10.0	6.6	0.30	3373	1.19	0.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010146539-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_DIFFS
010146539-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
010146539-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_KIC_POS
010146539-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_KIC_POS
010146539-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

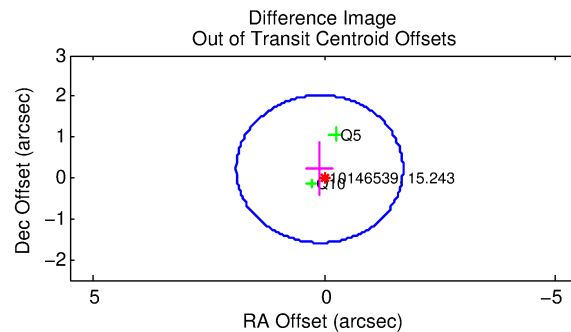
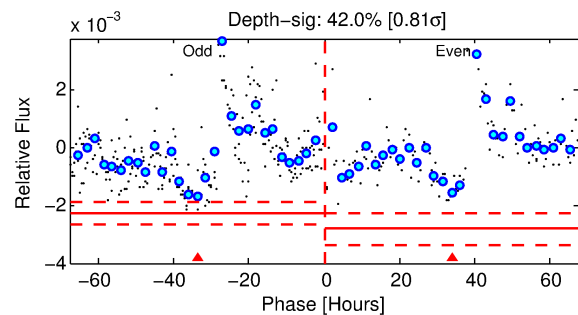
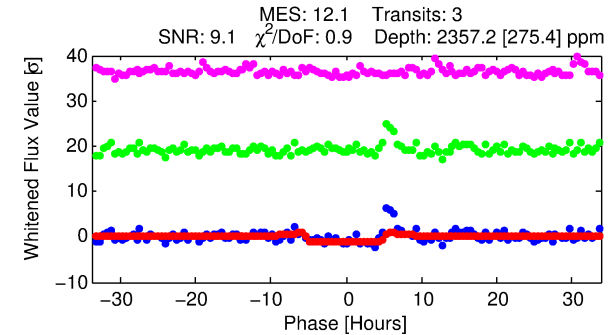
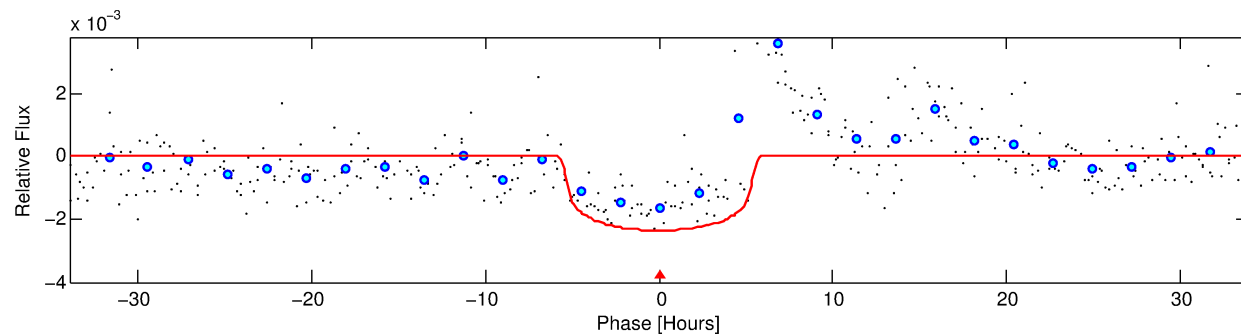
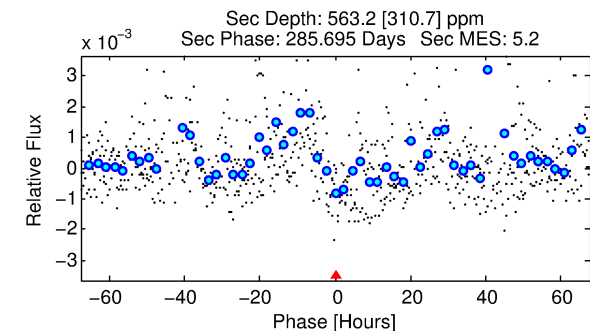
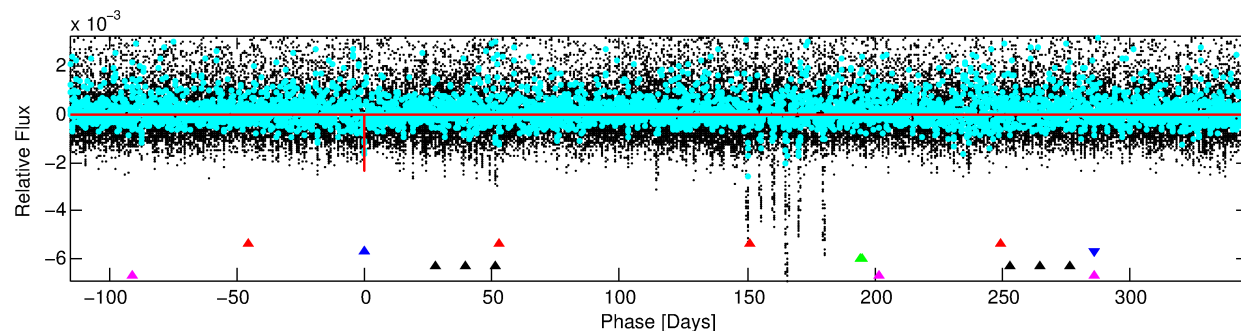
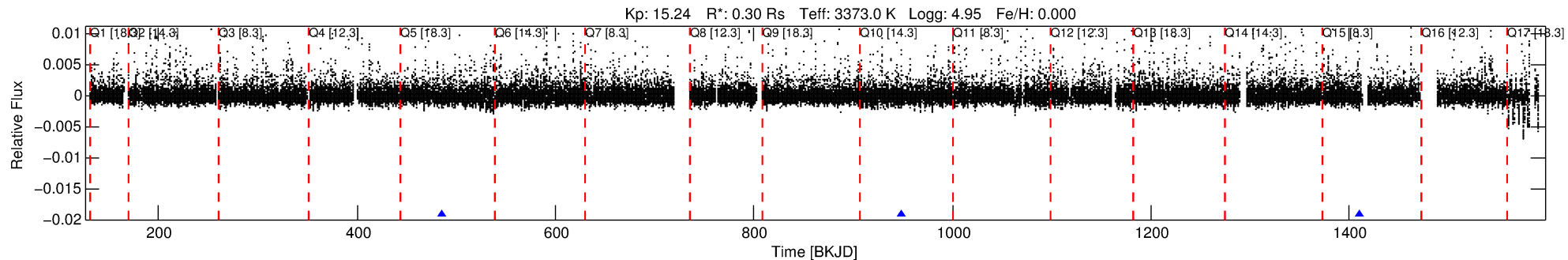
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010146539-02

No Significant Match Found

DV One-Page Summary

KIC: 10146539 Candidate: 2 of 5 Period: 462.029 d



DV Fit Results:

Period = 462.02900 [0.00645] d
Epoch = 486.2607 [0.0076] BKJD
Rp/R* = 0.0438 [0.0115]
a/R* = 325.62 [346.10]
b = 0.00 [8733.16]
Seff = 0.02 [0.00]
Teq = 92 [3] K
Rp = 1.42 [0.41] Re
a = 0.7709 [0.0701] AU
Ag = 91809.53 [70682.10] [1.30σ]
Teff = 2482 [474] K [5.04σ]

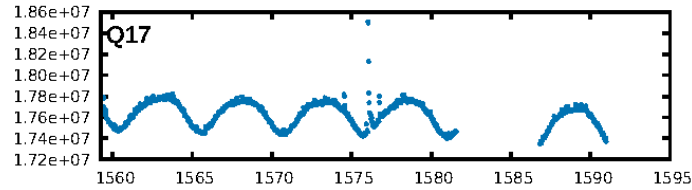
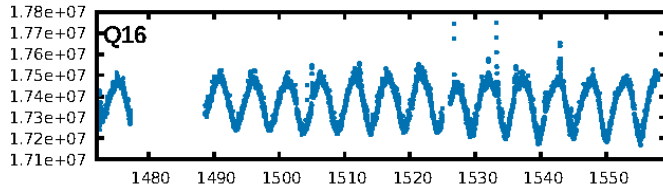
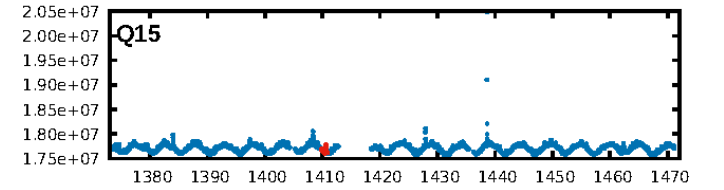
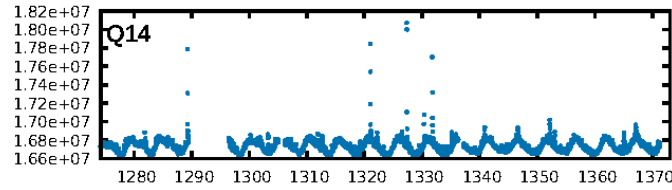
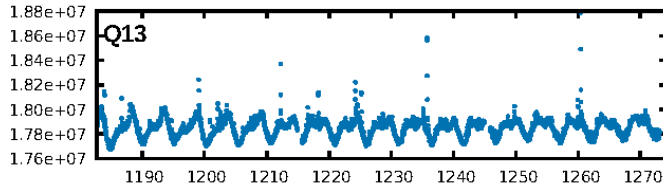
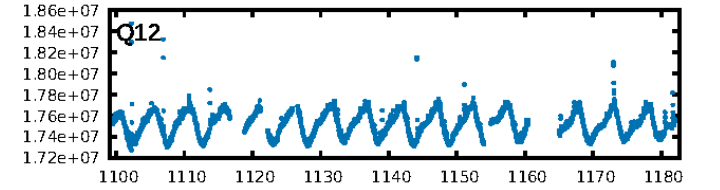
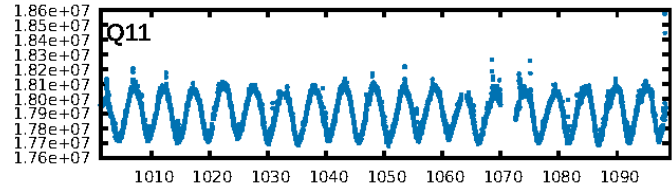
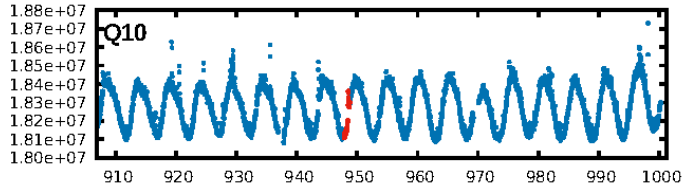
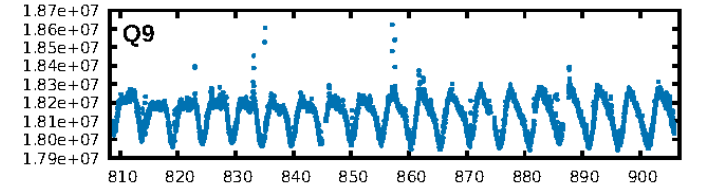
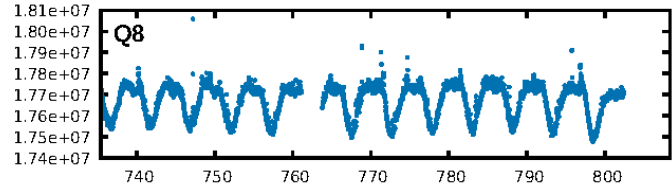
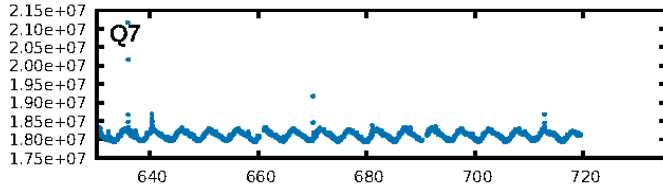
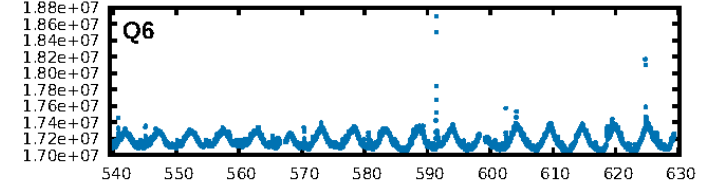
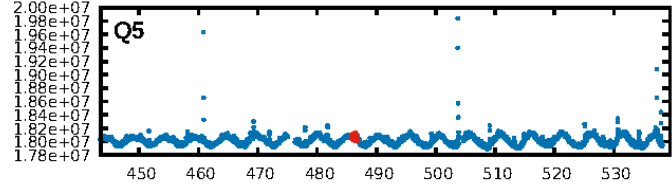
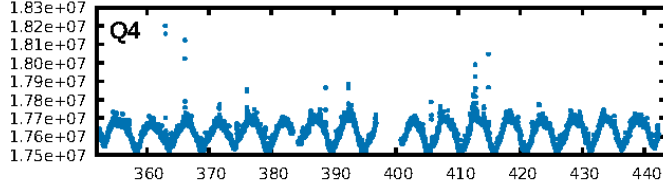
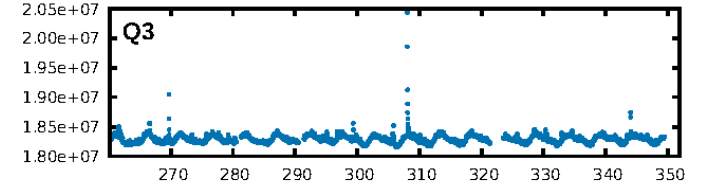
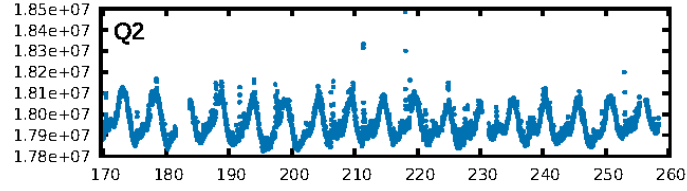
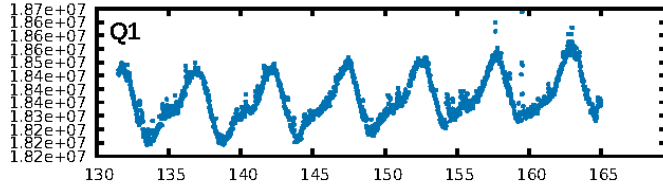
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [156.94σ]
LongPeriod-sig: 29.5% [0.38σ]
ModelChiSquare2-sig: 75.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 2.52e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.065
Centroid-sig: 35.5%
Centroid-so: 0.535 arcsec [1.56σ]
OotOffset-rm: 0.237 arcsec [0.39σ]
KicOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [2/2]

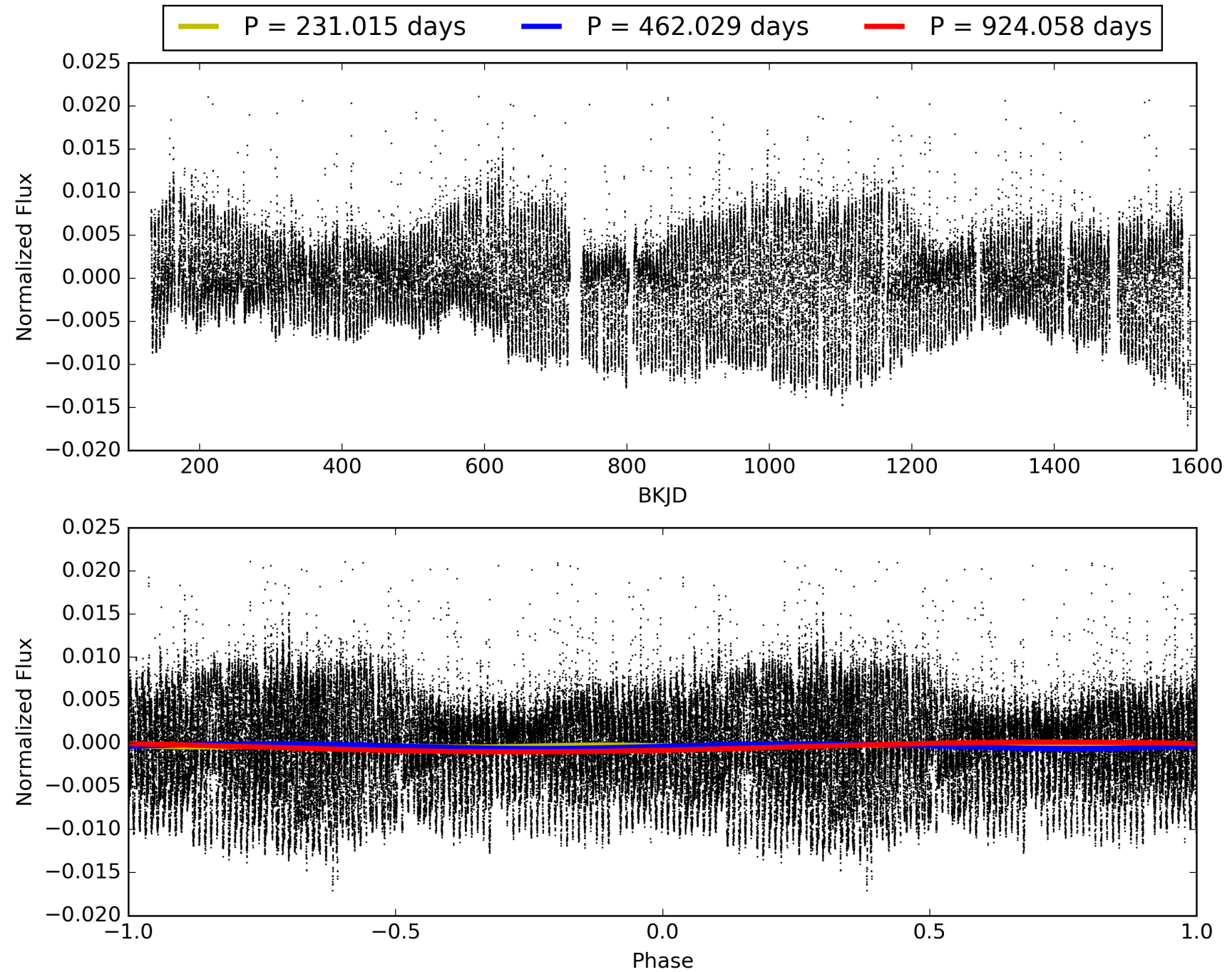
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:30:36 Z

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

TCE 010146539-02, PDC Light Curves

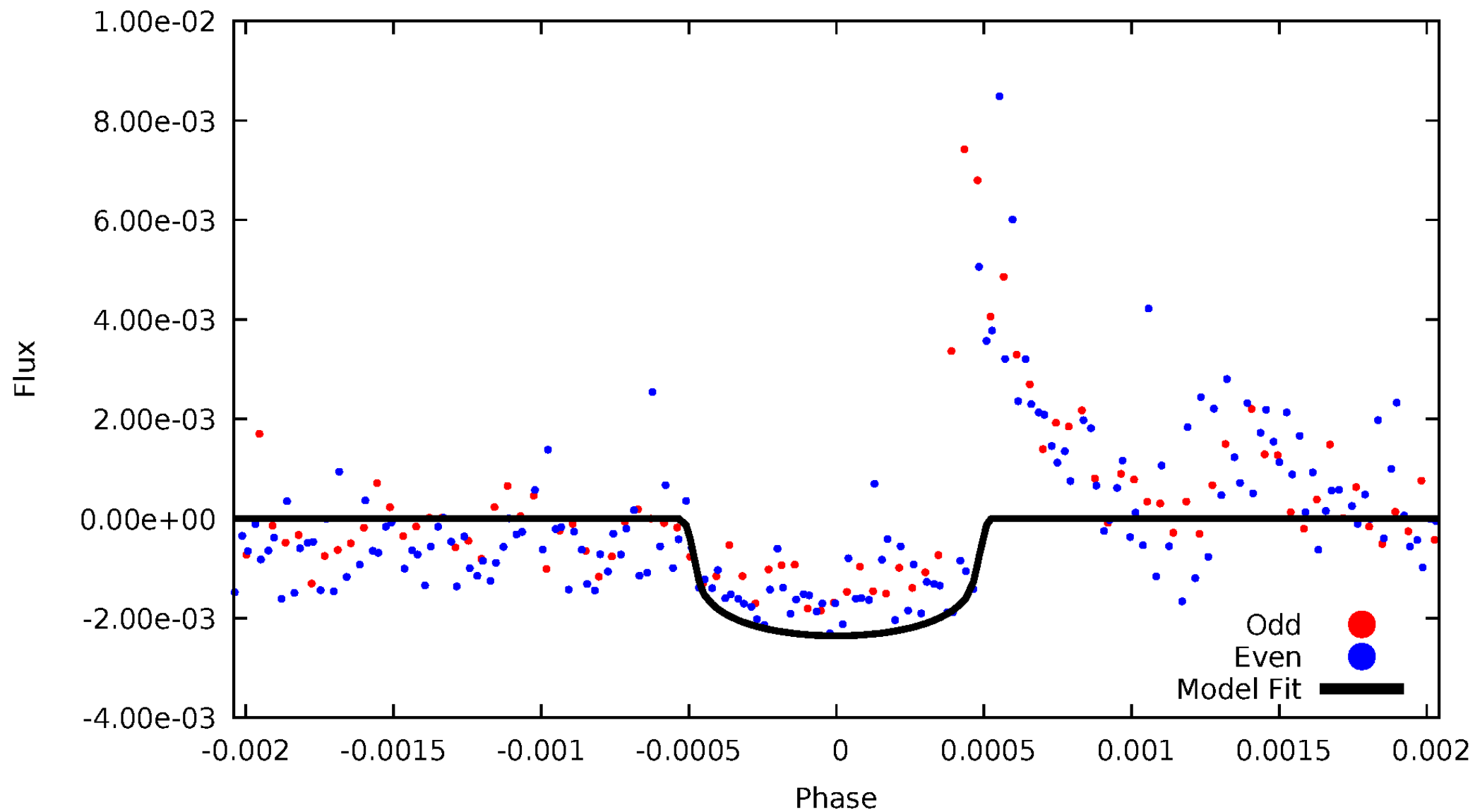


TCE 010146539-02



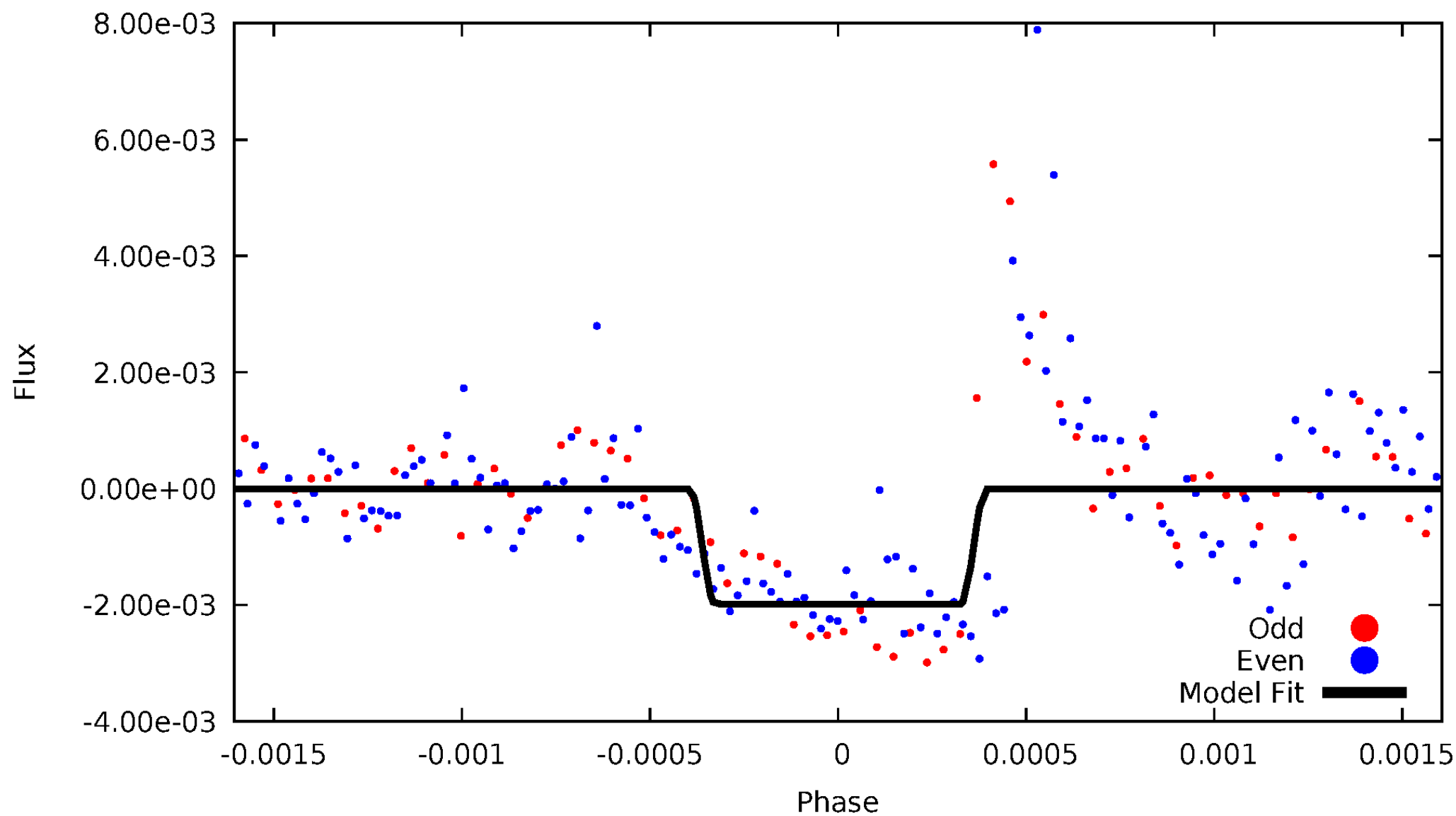
DV Odd/Even

TCE 010146539-02



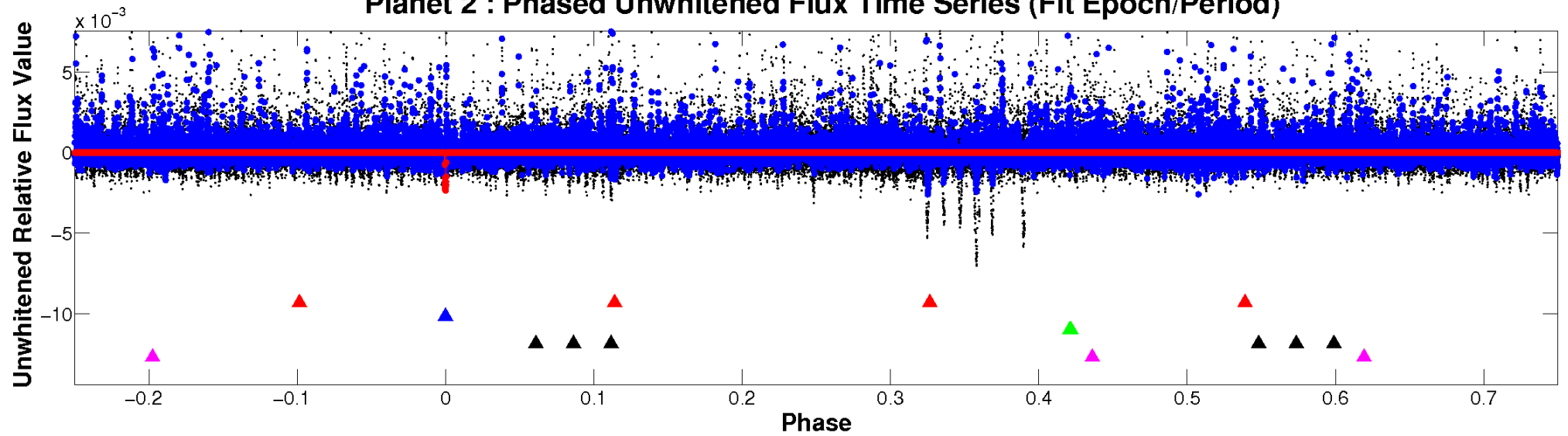
ALT Odd/Even

TCE 010146539-02

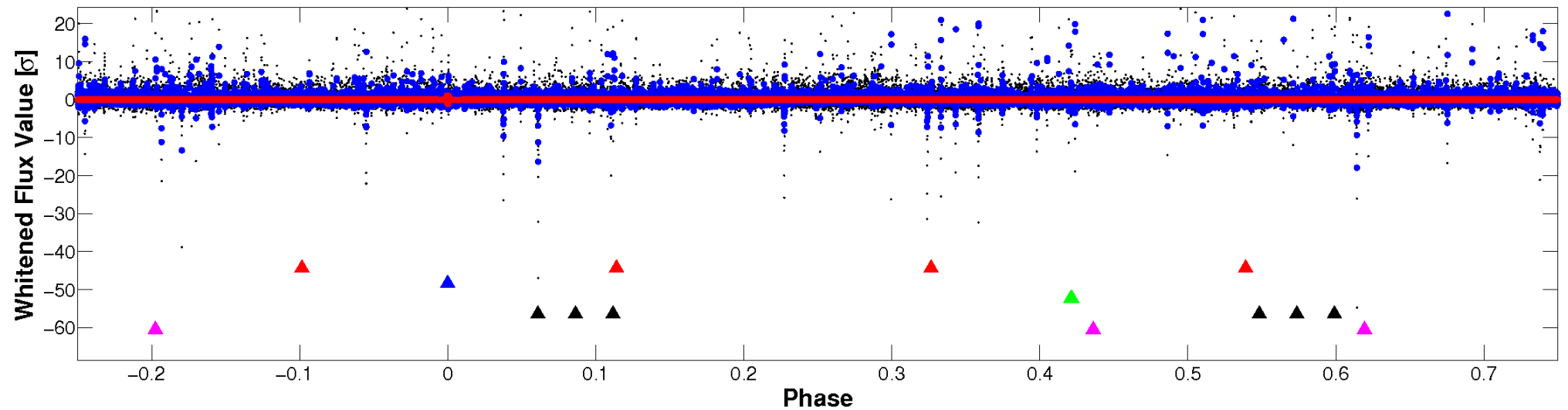


Non-Whitened Vs. Whitened Light Curve

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

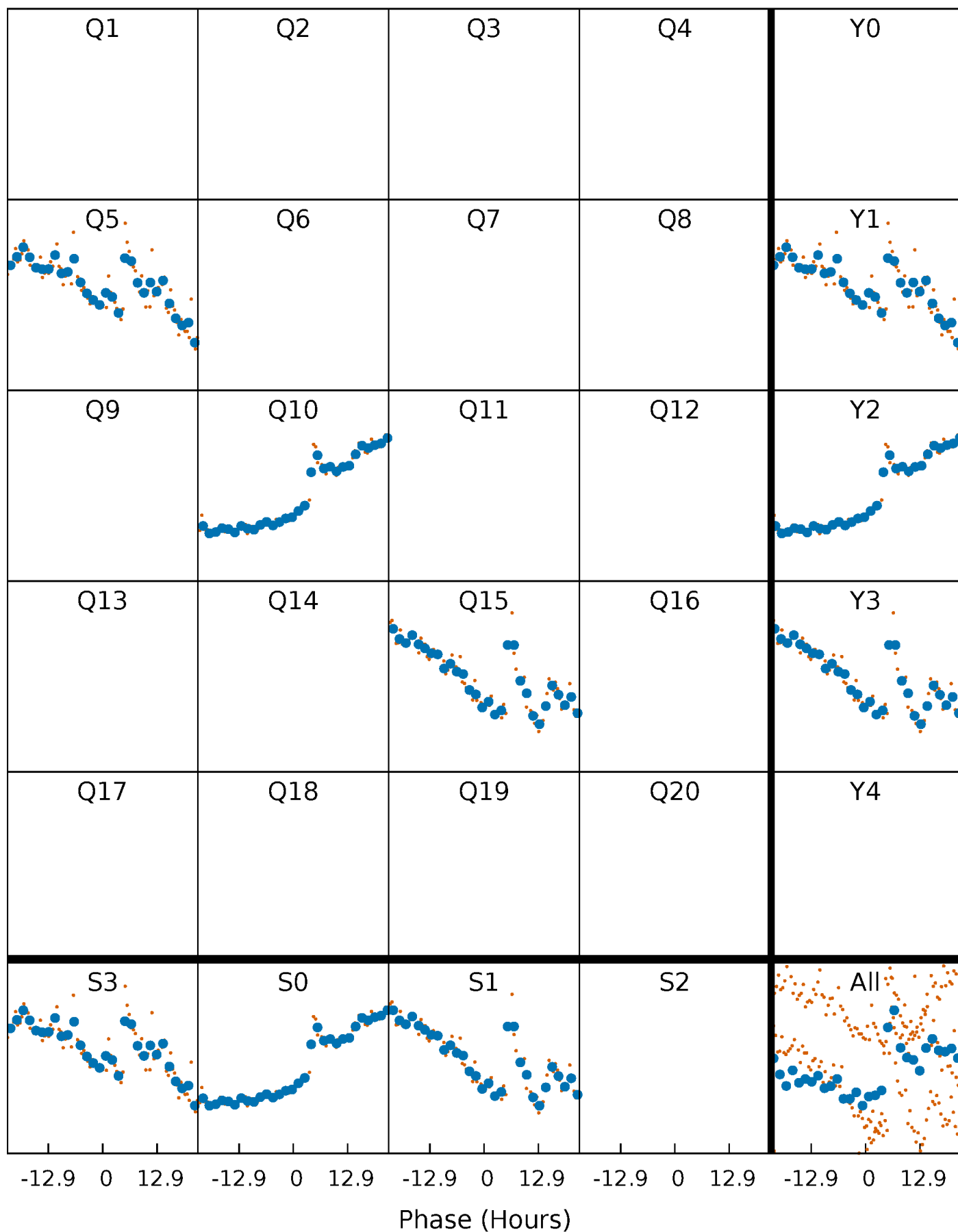


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



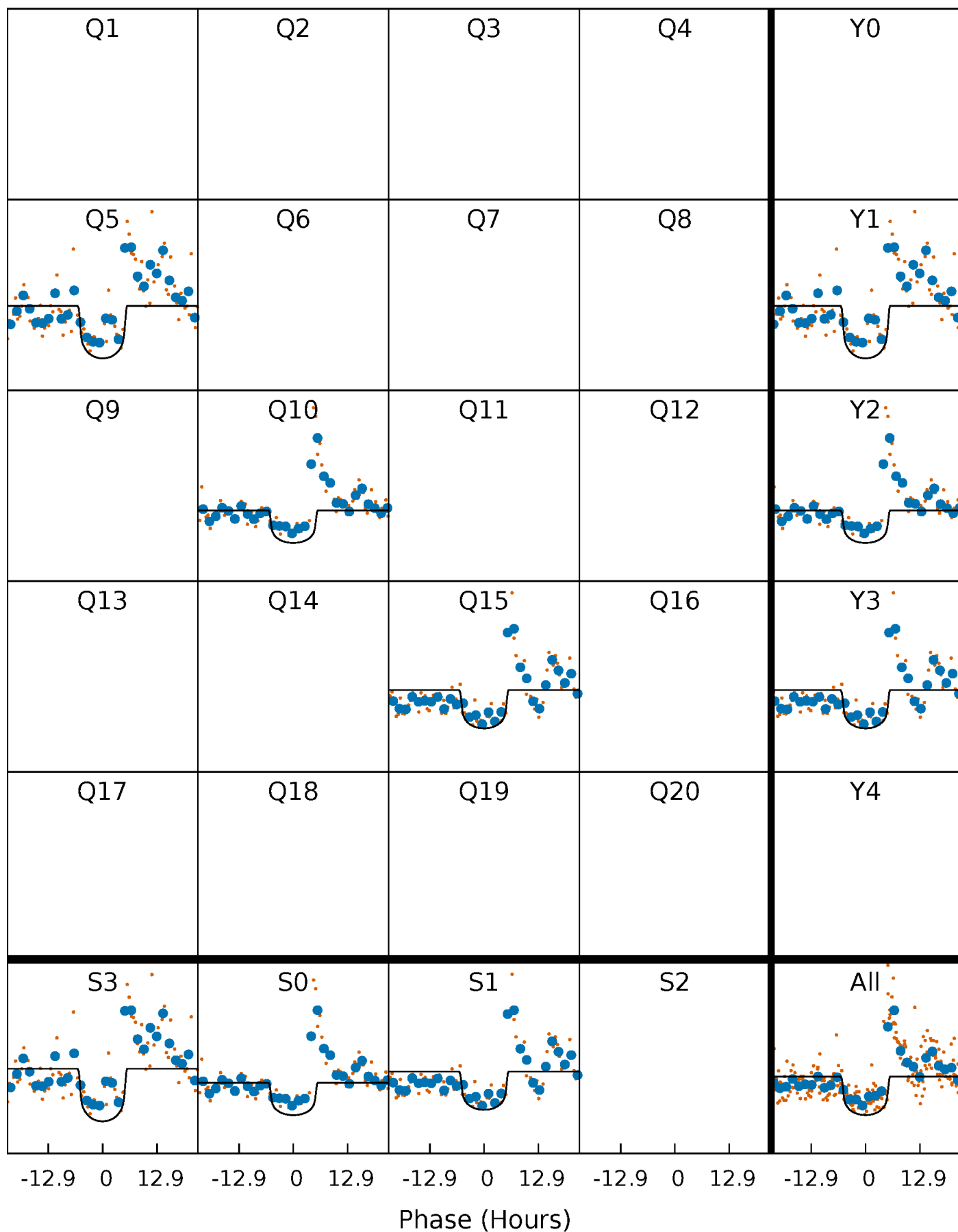
PDC Quarter-Phased Transit Curves

TCE 010146539-02 P=462.029001 Days $T_0=486.260744$ (BKJD)



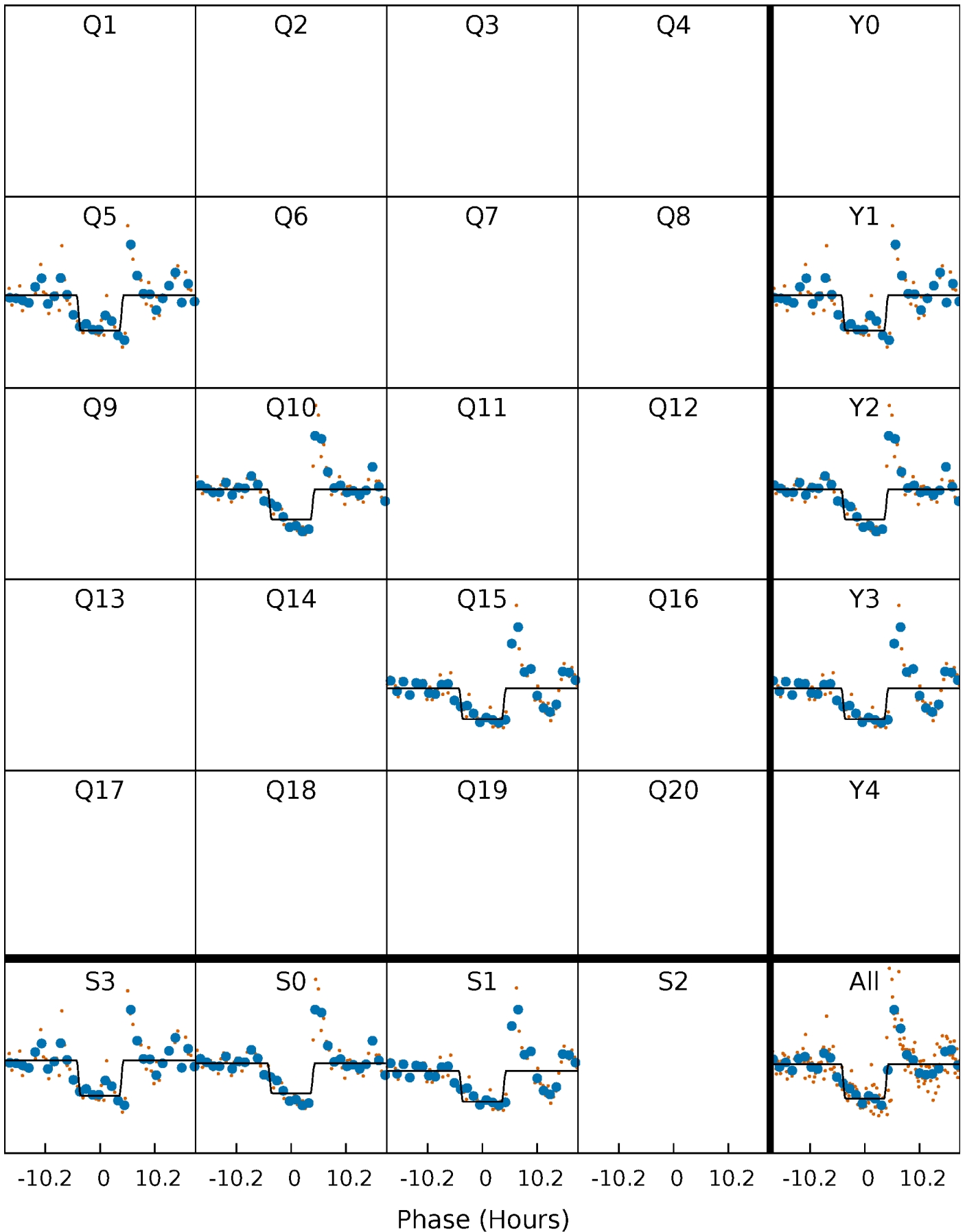
DV Quarter-Phased Transit Curves

TCE 010146539-02 P=462.029001 Days $T_0=486.260744$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

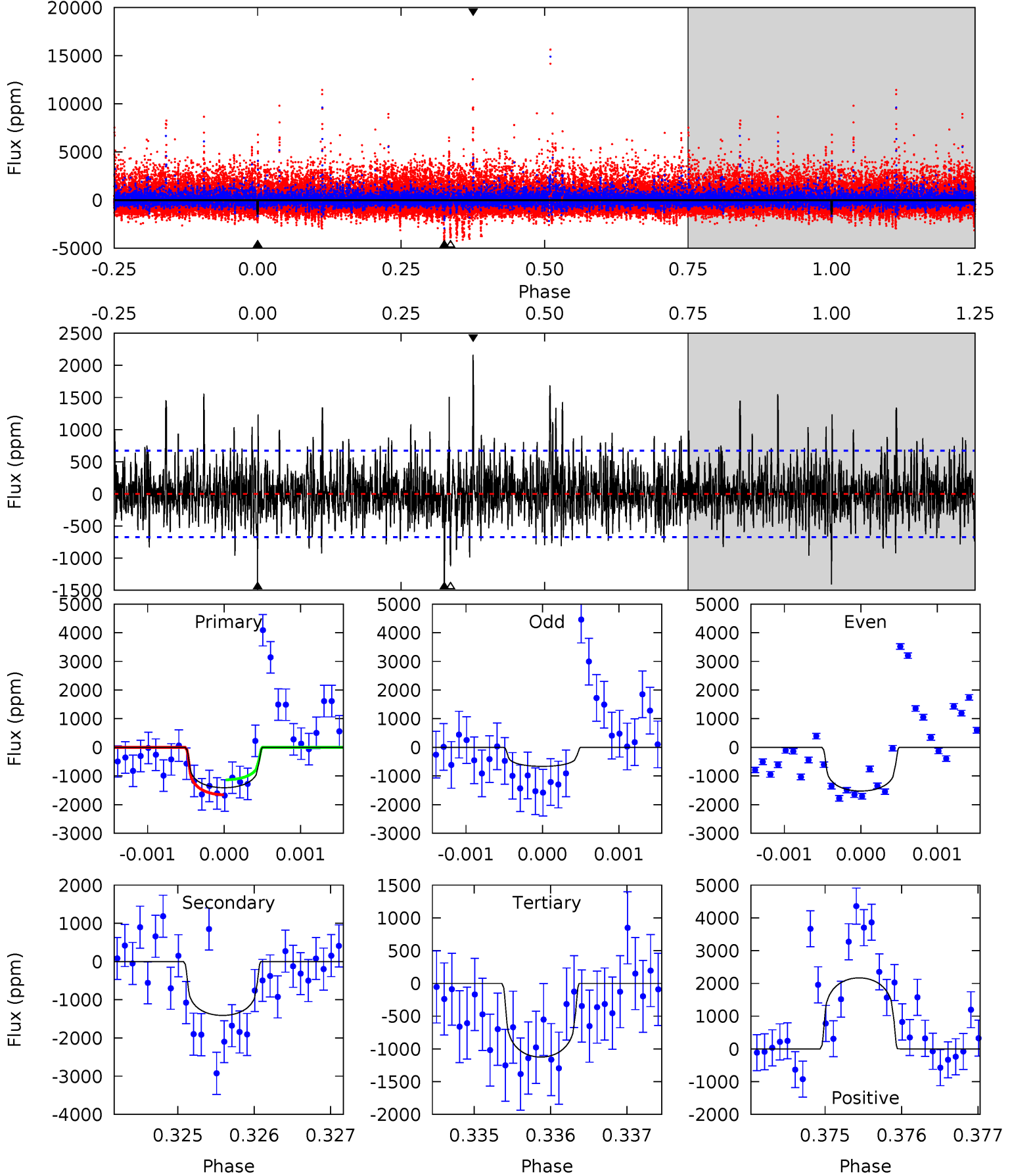
TCE 010146539-02 P=462.030036 Days $T_0=486.269312$ (BKJD)



DV Model-Shift Uniqueness Test

010146539-02, P = 462.029001 Days, E = 24.231743 Days

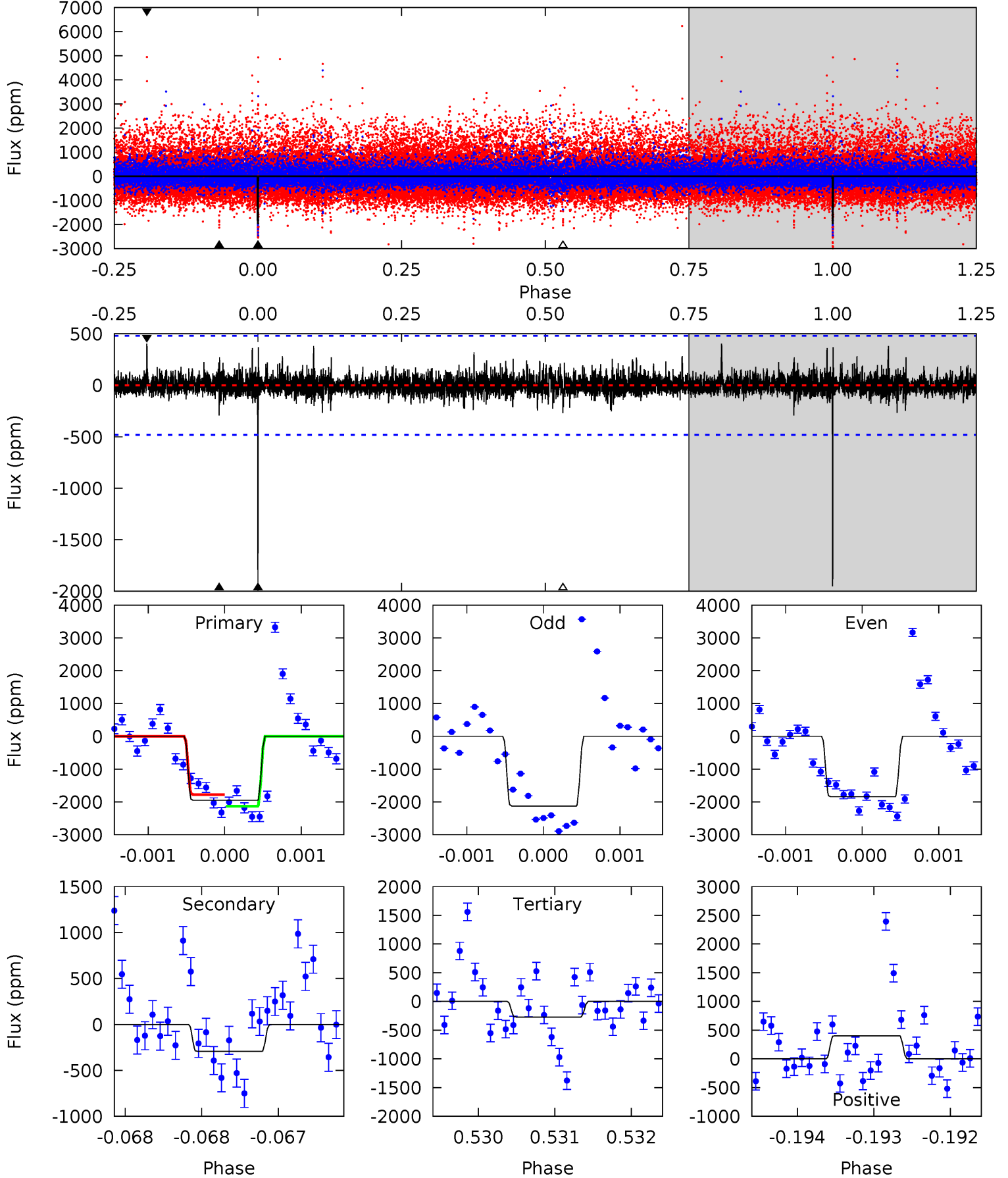
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.4	11.4	9.09	17.5	5.44	3.28	2.60	2.31	-6.12	2.31	-6.12	2.76	0.99	0.61	2.12



Alt Model-Shift Uniqueness Test

010146539-02, P = 462.030036 Days, E = 24.239276 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.3	3.35	3.10	4.61	5.50	3.37	0.73	19.2	17.7	0.25	-1.26	1.55	1.02	0.17	2.02



Stellar Parameters For KIC 010146539

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3373^{+43}_{-37}	$4.952^{+0.040}_{-0.040}$	$0.000^{+0.100}_{-0.100}$	$0.296^{+0.038}_{-0.031}$	$0.286^{+0.048}_{-0.035}$	$15.560^{+3.608}_{-3.194}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+13%/-10%	+17%/-12%	+23%/-21%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010146539-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1411 ± 124	$1.42^{+0.38}_{-0.39}$	129^{+3}_{-3}	3235^{+319}_{-234}	$232098^{+190081}_{-90634}$
Alt.	-293 ± 87	$1.44^{+0.39}_{-0.39}$	129^{+3}_{-3}	2583^{+229}_{-168}	45712^{+41177}_{-19350}

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

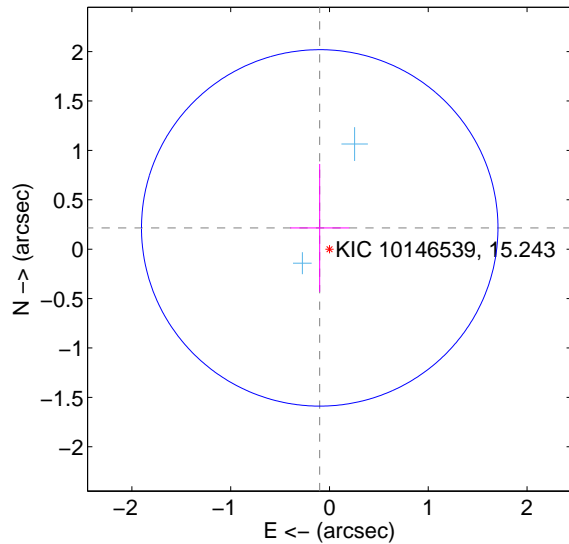
Supplemental centroid analysis for 010146539-02. Kepler magnitude: 15.24. Transit SNR 9.08

There are 2 quarters with good PRF difference image offsets

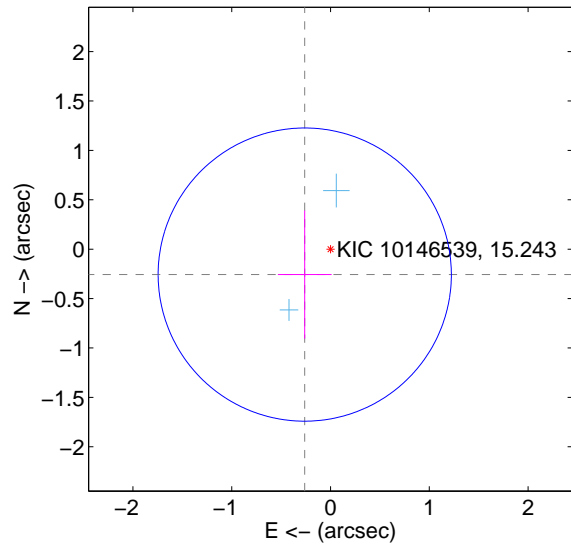
The direct PRF centroid is offset from the target star catalog position by about 0.50 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.237 ± 0.601	0.39	0.099 ± 0.299	0.215 ± 0.647
PRF-fit source offset from KIC position	0.366 ± 0.495	0.74	0.261 ± 0.272	-0.257 ± 0.648
photometric centroid source offset	0.53 ± 0.34	1.56	0.16 ± 0.36	-0.51 ± 0.34

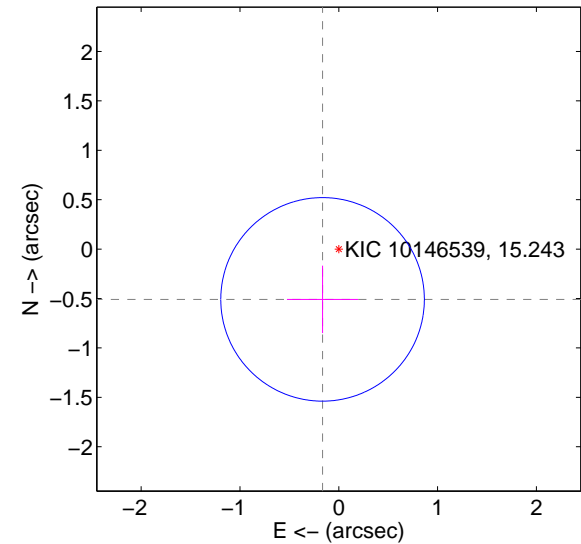
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids

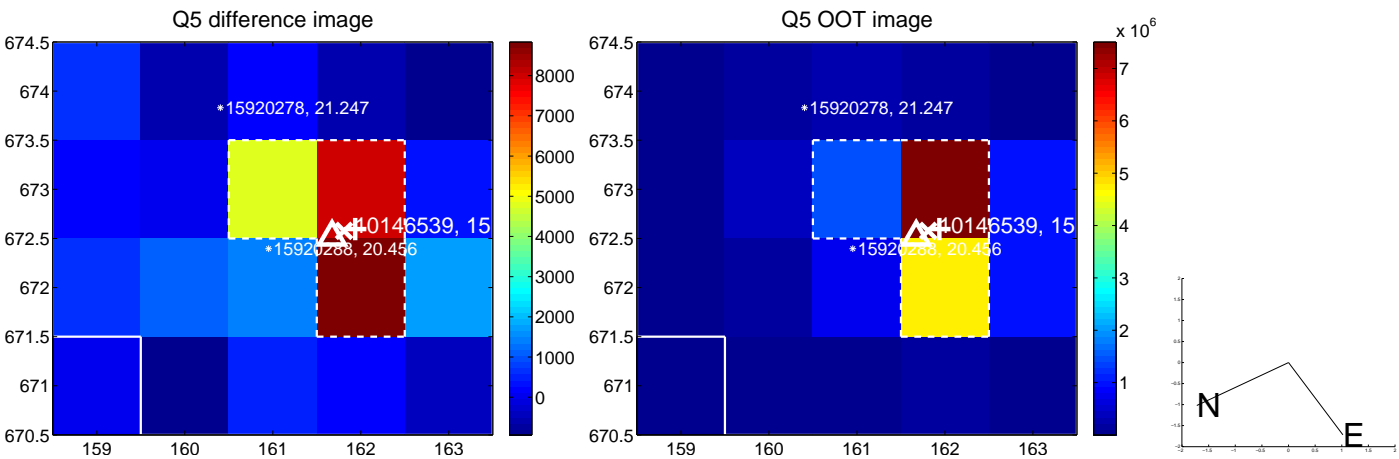


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

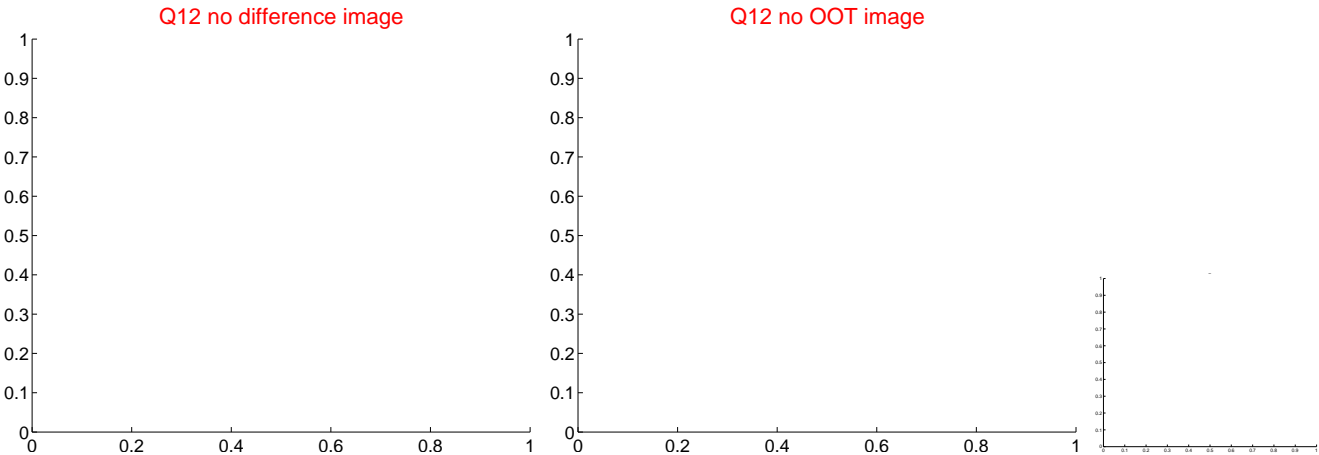
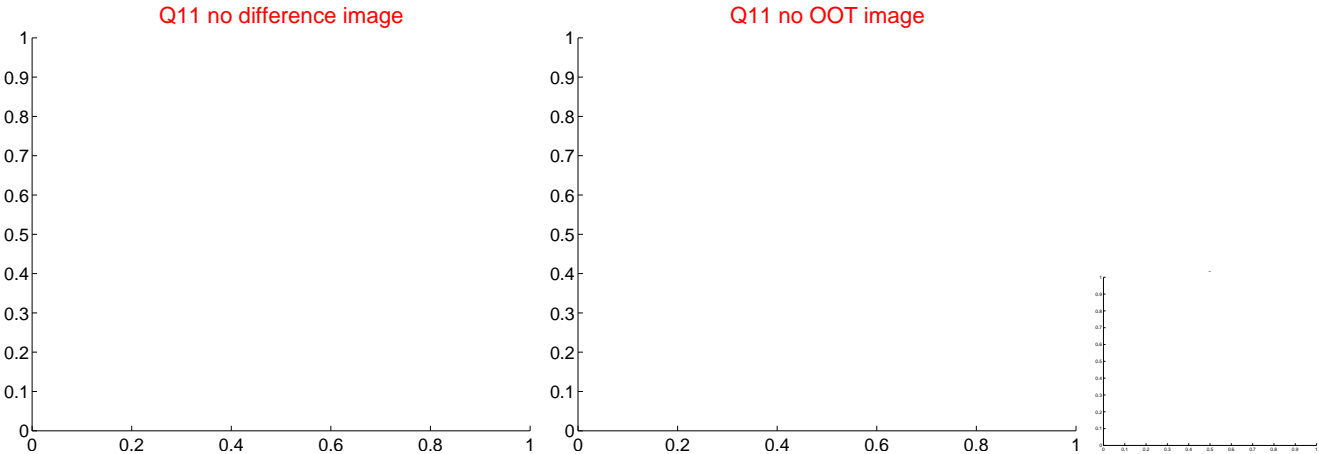
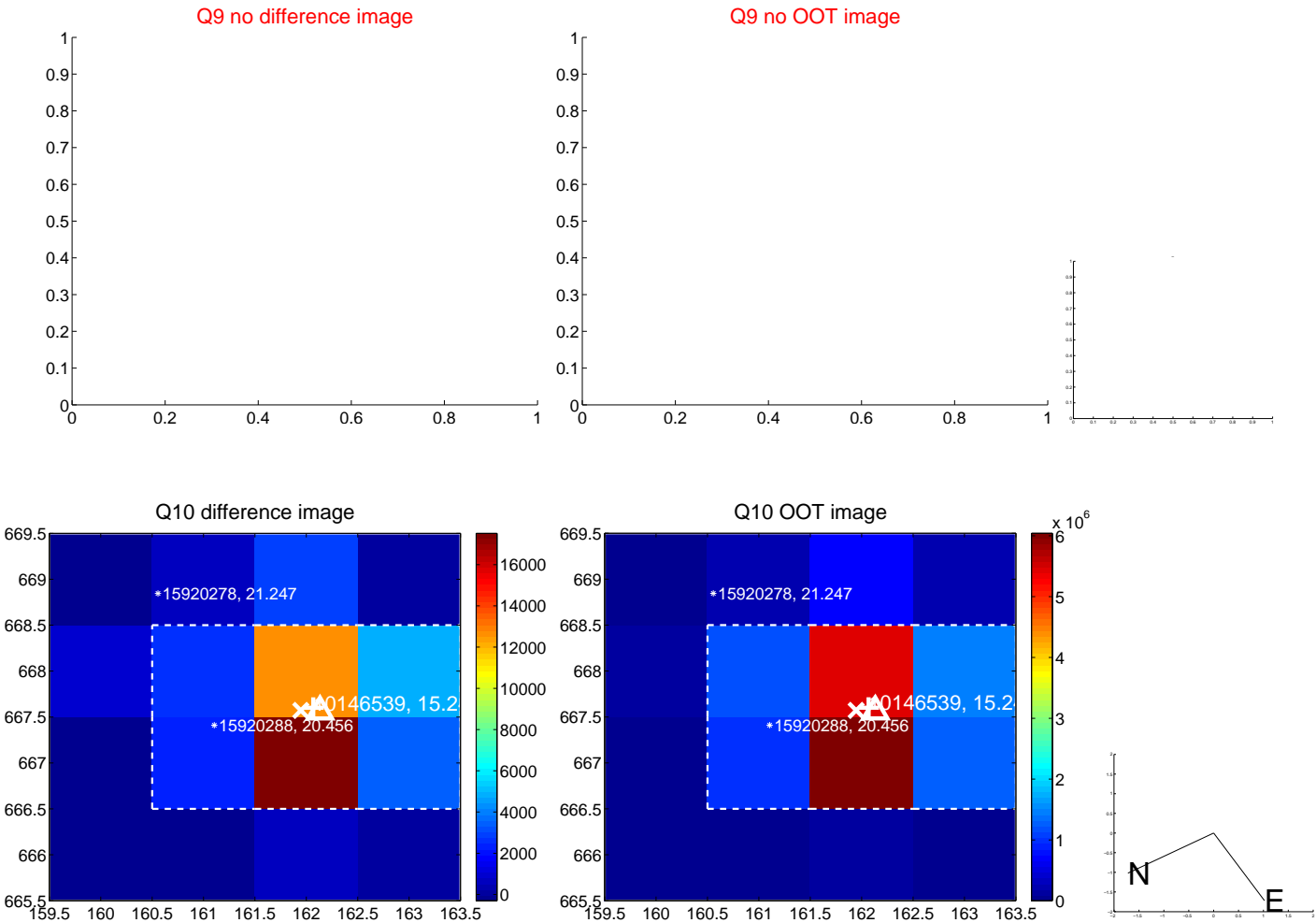
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



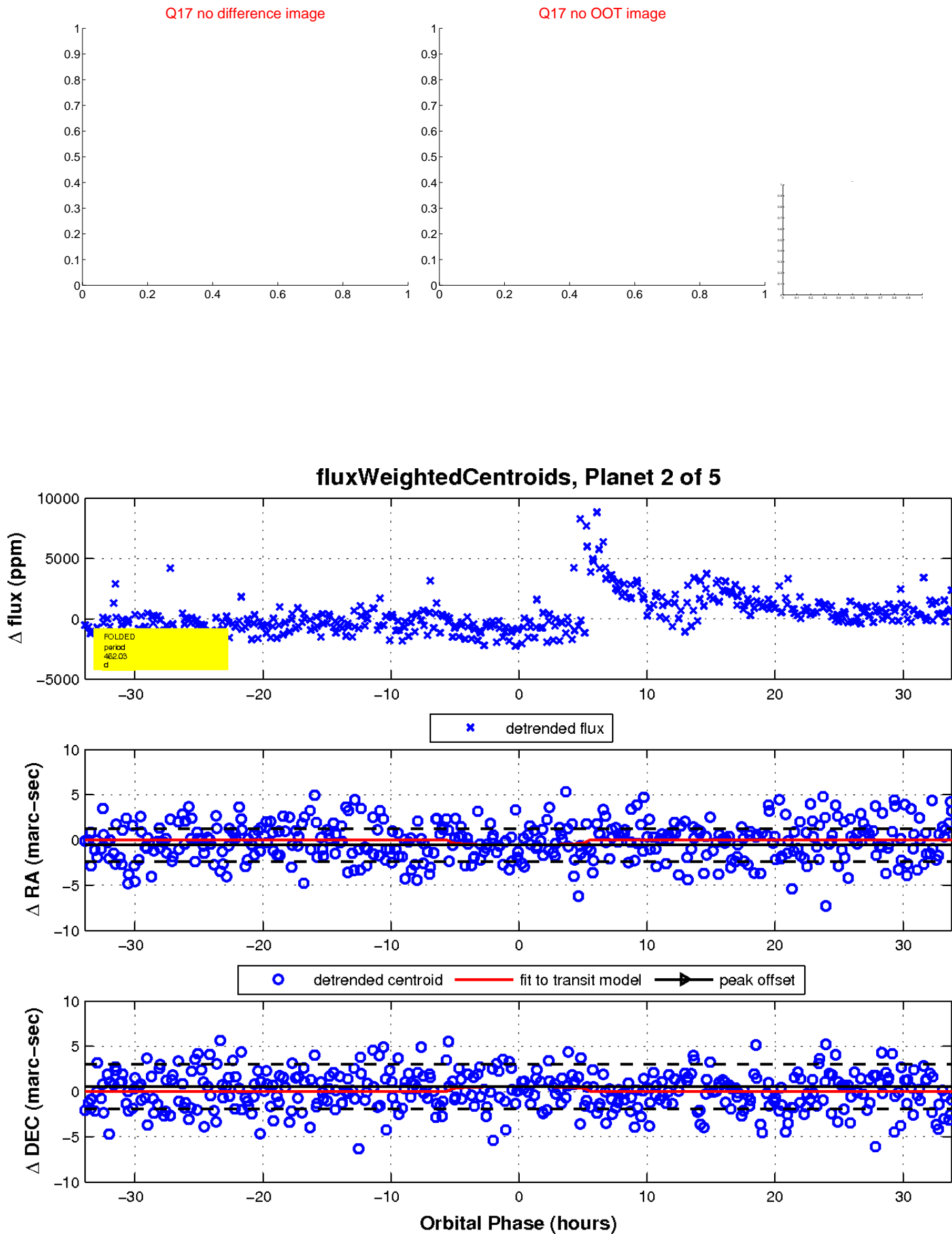
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

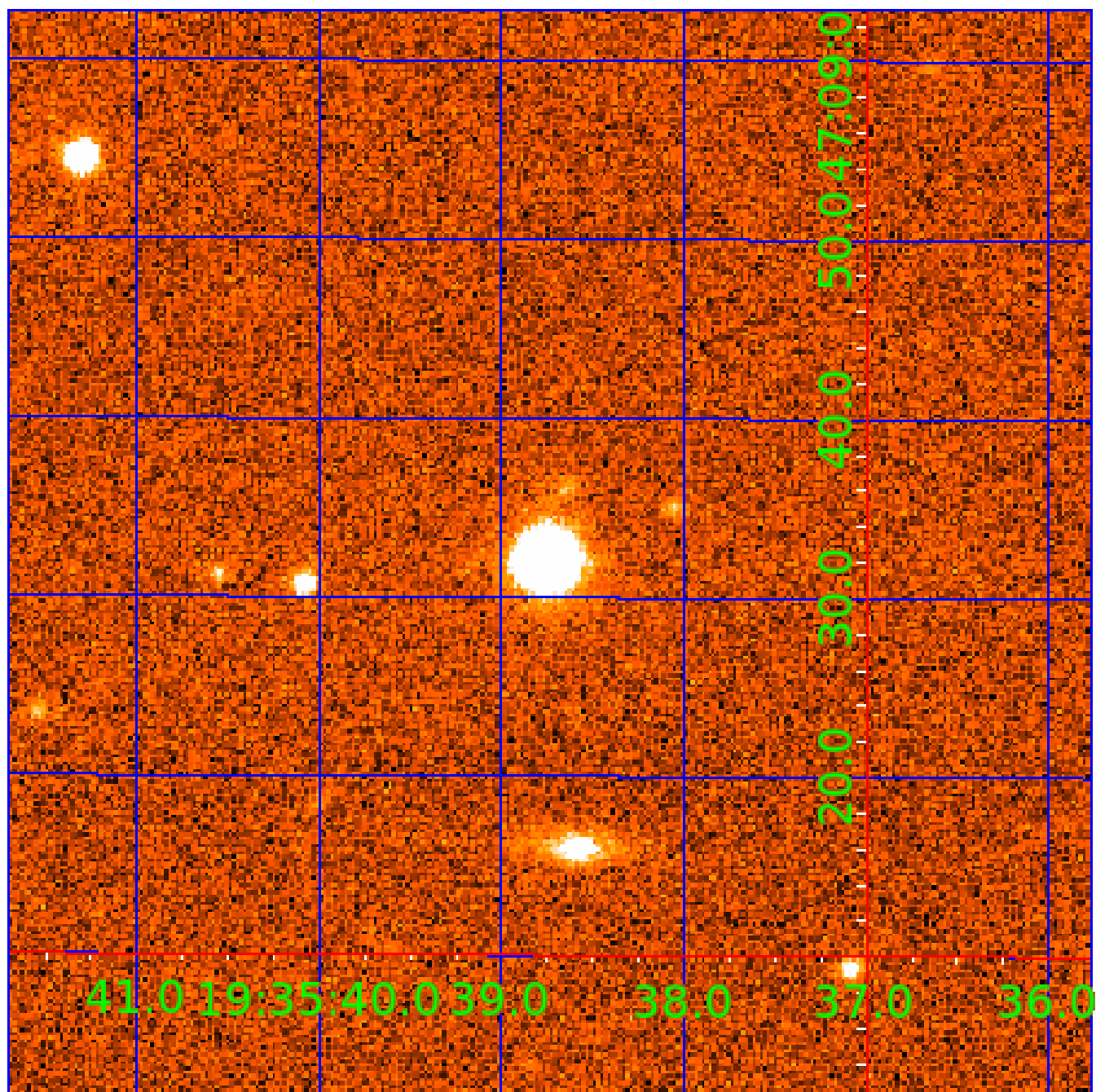


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010146539

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})
010146539-01	OBS	No	363.847151	273.291903	1884.4	9.869	17.4	7.8	0.30	3373	1.29	0.02
010146539-02	OBS	No	462.029001	486.260744	2357.2	11.315	12.1	9.1	0.30	3373	1.42	0.02
010146539-03	OBS	No	462.225677	218.687670	2116.9	5.236	13.2	7.9	0.30	3373	1.44	0.02
010146539-04	OBS	No	236.872040	277.556708	1206.1	7.427	10.6	7.0	0.30	3373	1.07	0.04
010146539-05	OBS	No	546.674760	225.736562	1626.4	5.362	10.0	6.6	0.30	3373	1.19	0.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010146539-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_DIFFS
010146539-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
010146539-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_KIC_POS
010146539-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_KIC_POS
010146539-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

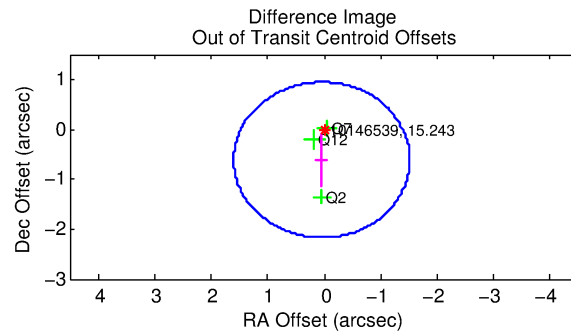
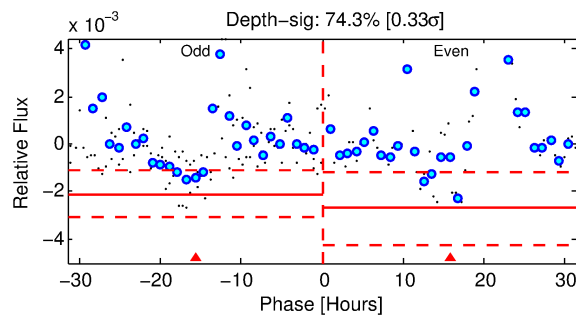
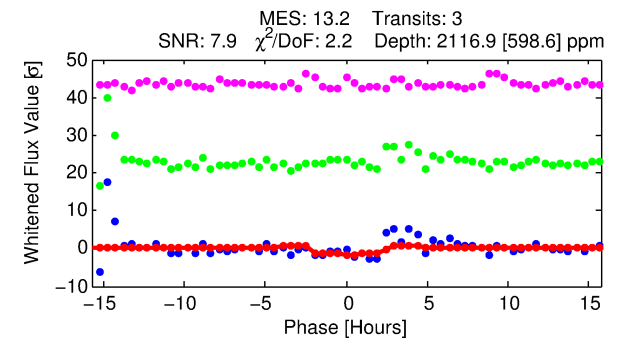
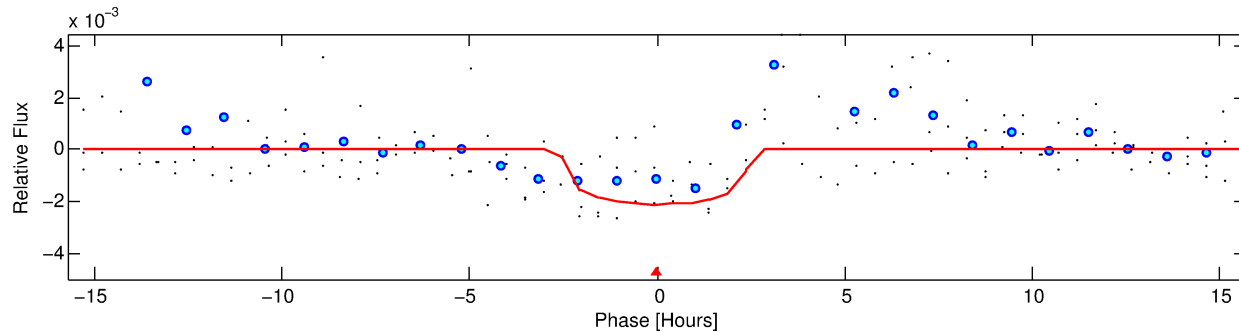
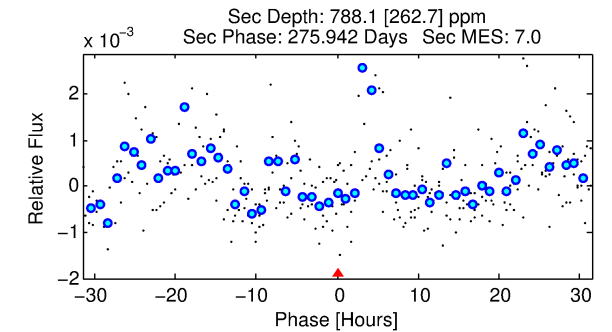
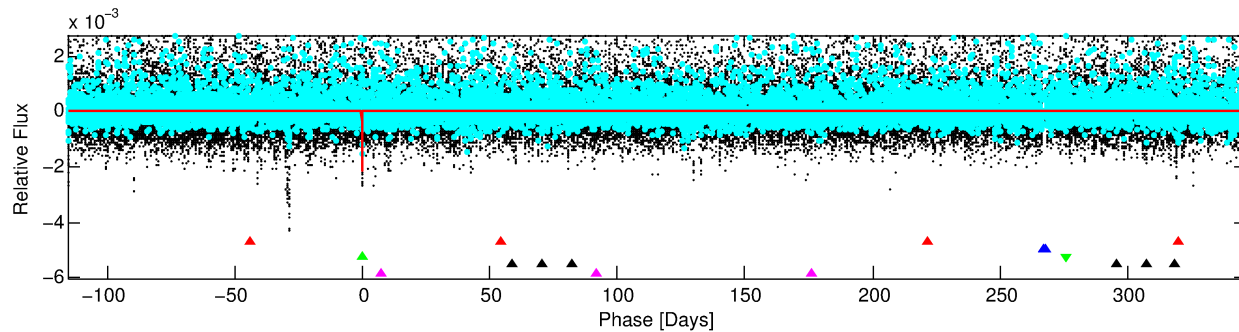
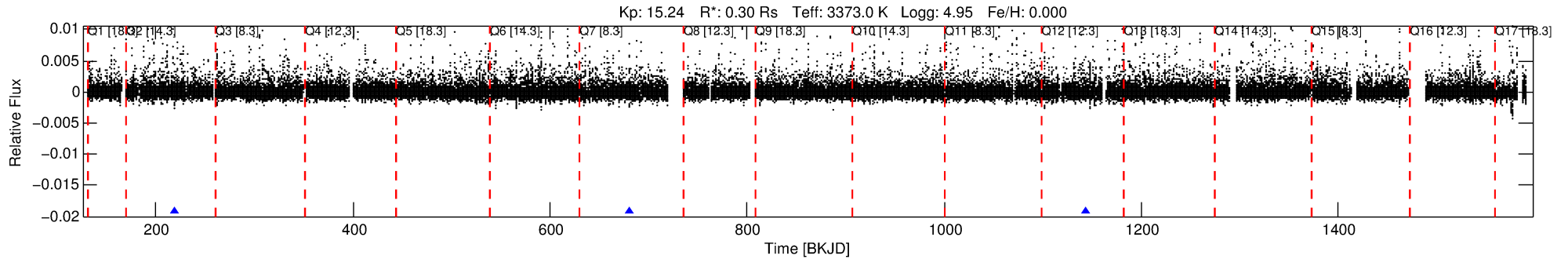
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010146539-03

No Significant Match Found

DV One-Page Summary

KIC: 10146539 Candidate: 3 of 5 Period: 462.226 d



DV Fit Results:

Period = 462.22568 [0.01015] d
Epoch = 218.6877 [0.0148] BKJD
Rp/R* = 0.0444 [0.0414]
a/R* = 544.22 [2035.79]
b = 0.66 [3.22]
Seff = 0.02 [0.00]
Teq = 92 [3] K
Rp = 1.44 [1.35] Re
a = 0.7711 [0.0701] AU
Ag = 125177.27 [237124.68] [0.53σ]
Teff = 2681 [1268] K [2.04σ]

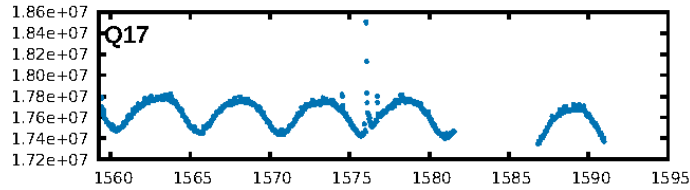
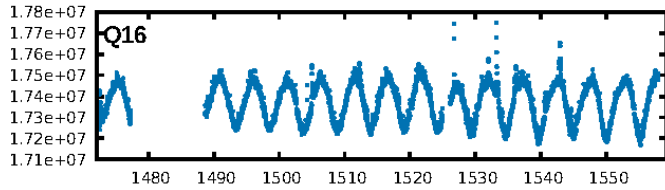
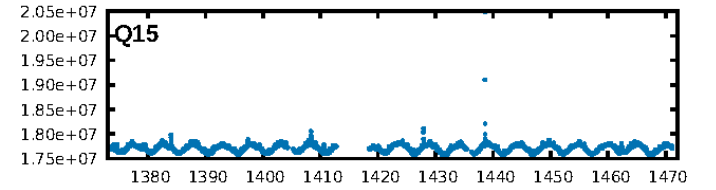
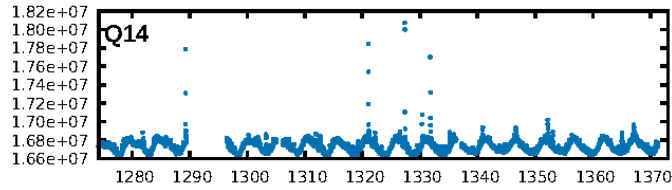
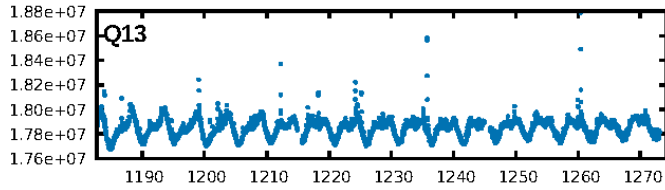
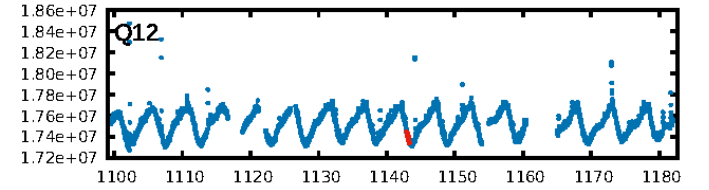
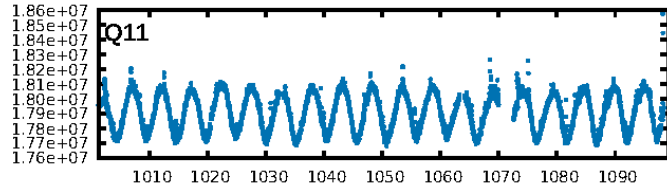
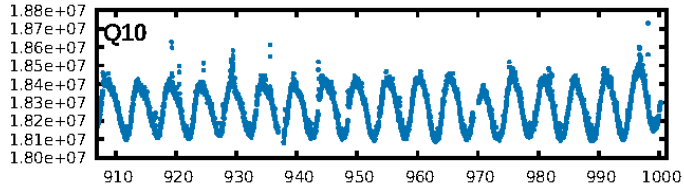
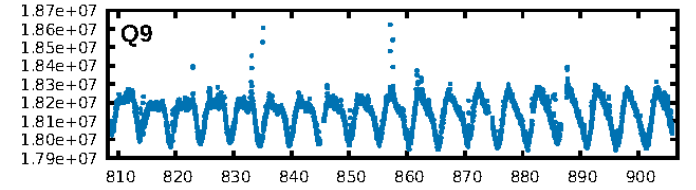
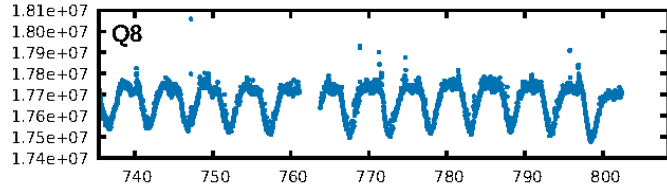
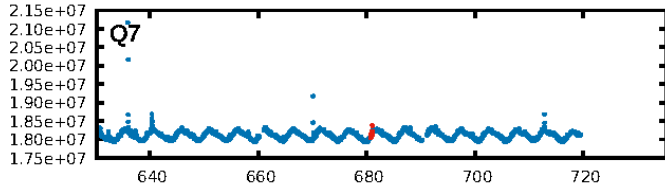
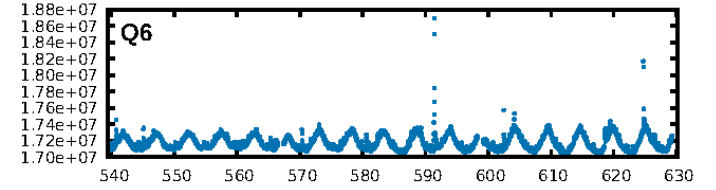
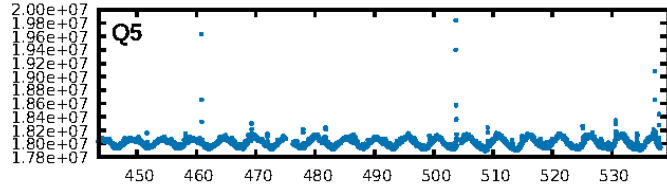
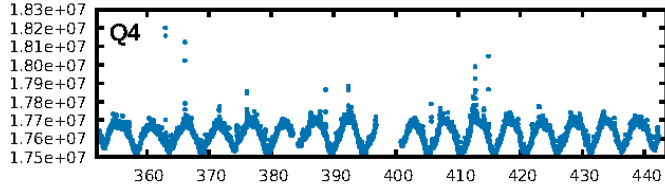
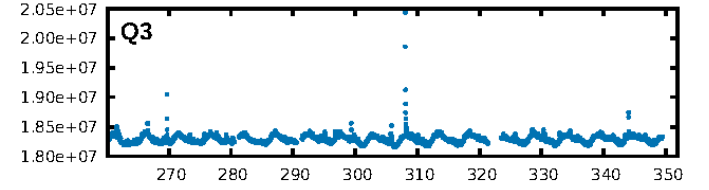
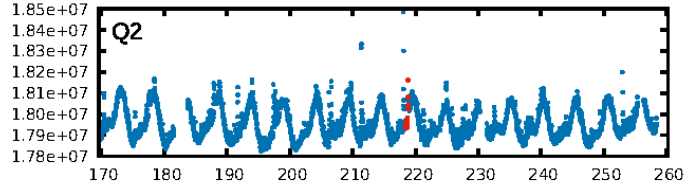
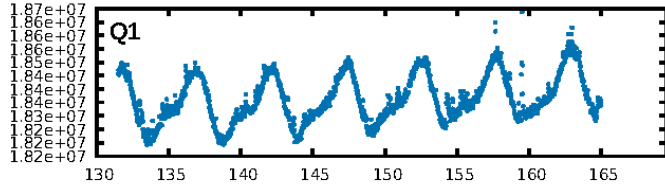
DV Diagnostic Results:

ShortPeriod-sig: 29.5% [0.38σ]
LongPeriod-sig: 100.0% [270.45σ]
ModelChiSquare2-sig: 1.4%
ModelChiSquareGof-sig: 6.8%
Bootstrap-pfa: 2.02e-11
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.011
Centroid-sig: 0.8%
Centroid-so: 1.238 arcsec [2.41σ]
OotOffset-rm: 0.616 arcsec [1.19σ]
KicOffset-rm: 0.959 arcsec [1.77σ]
OotOffset-st: 1/1/1/0 [3]
KicOffset-st: 1/1/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

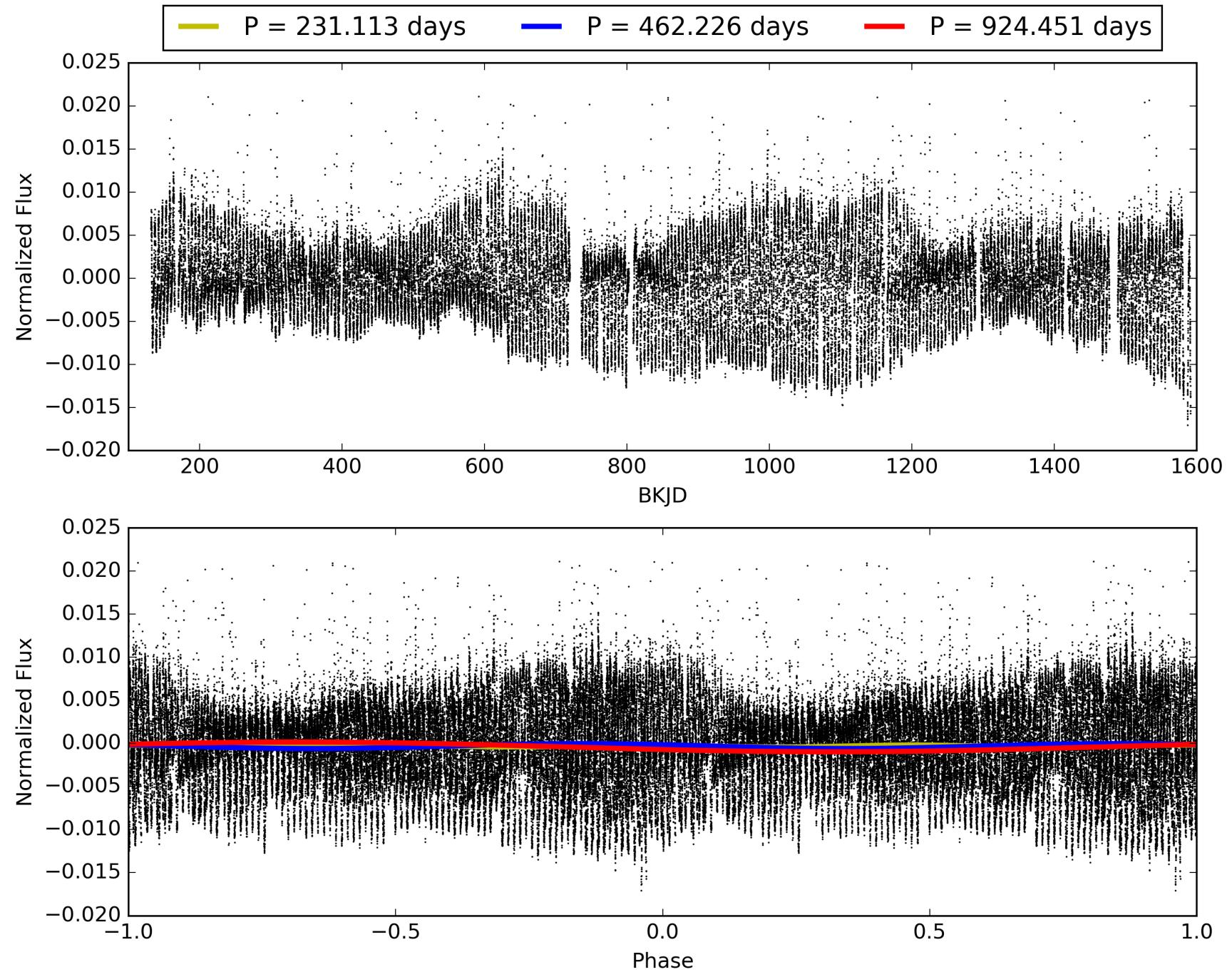
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:30:50 Z

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

TCE 010146539-03, PDC Light Curves

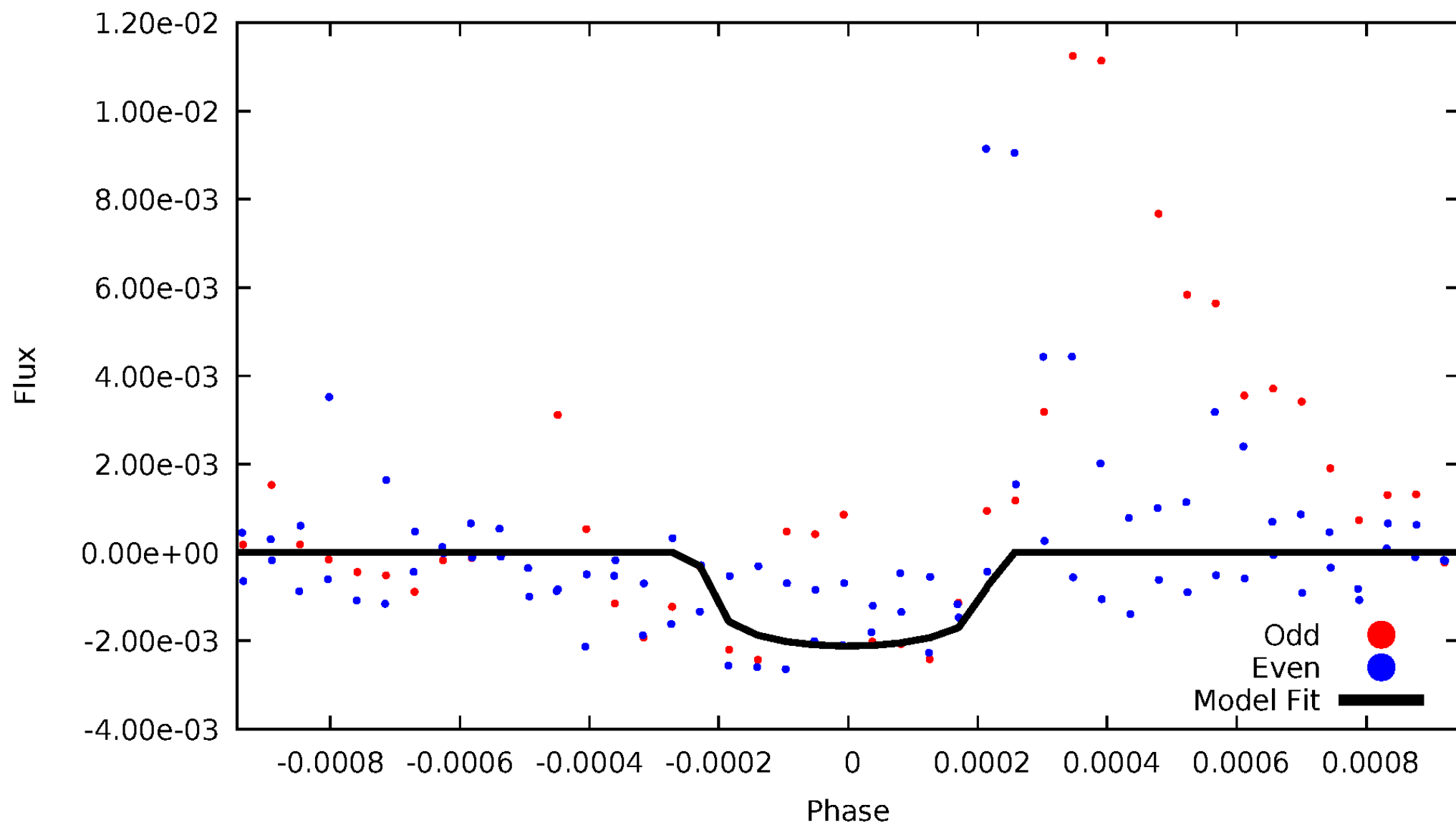


TCE 010146539-03



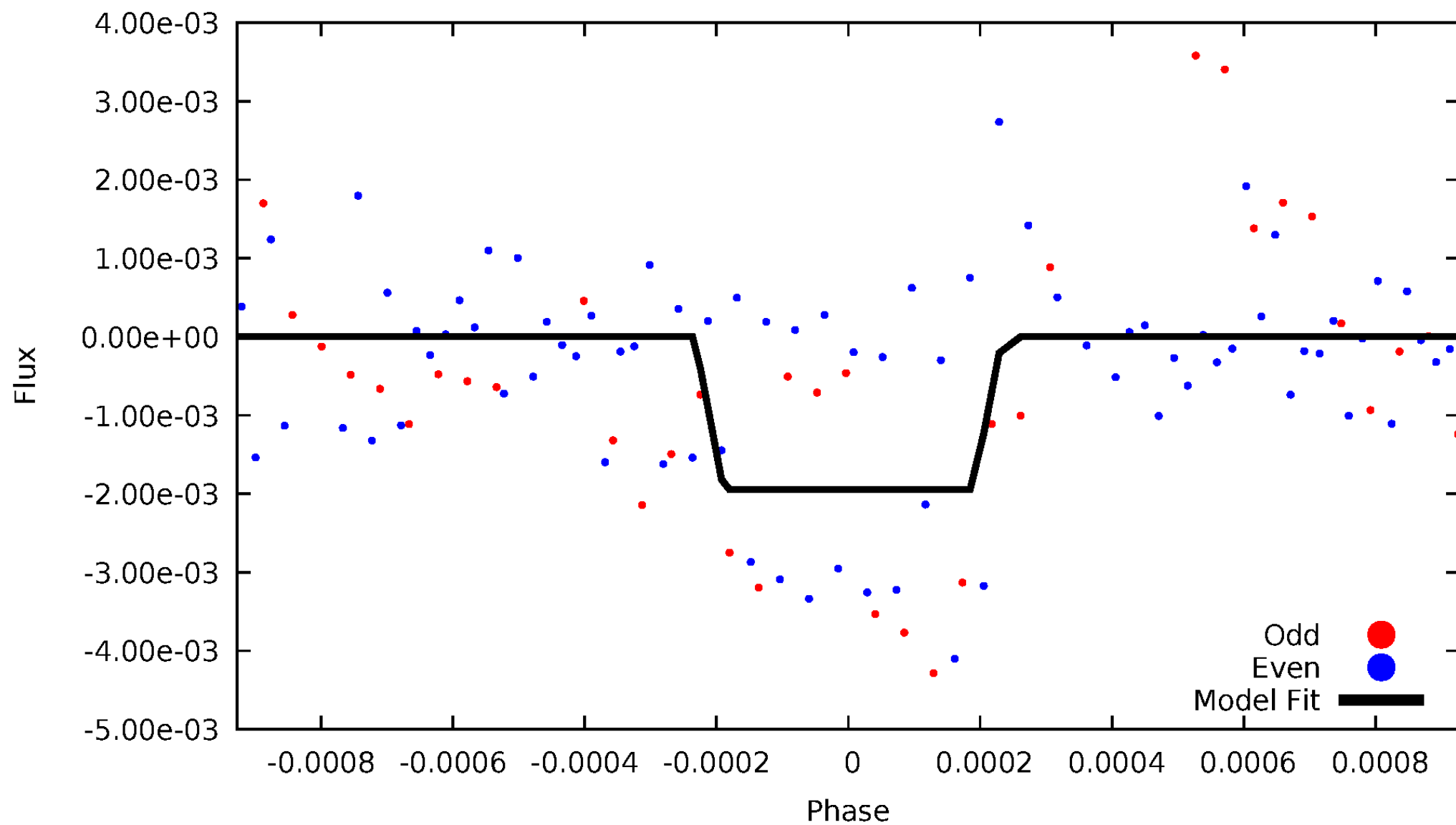
DV Odd/Even

TCE 010146539-03

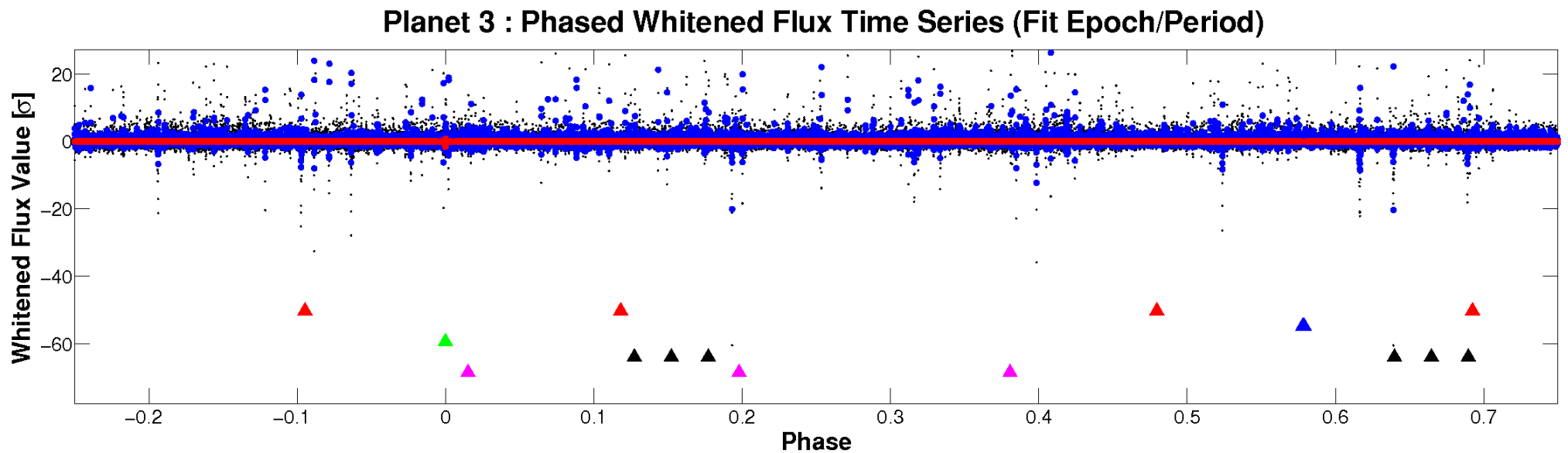
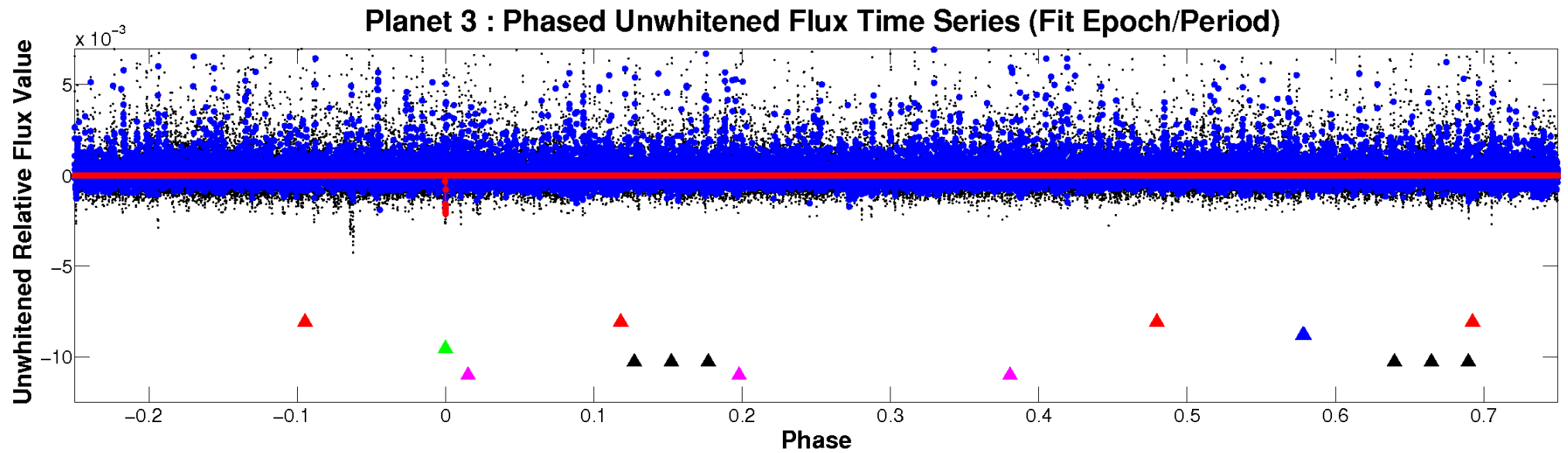


ALT Odd/Even

TCE 010146539-03

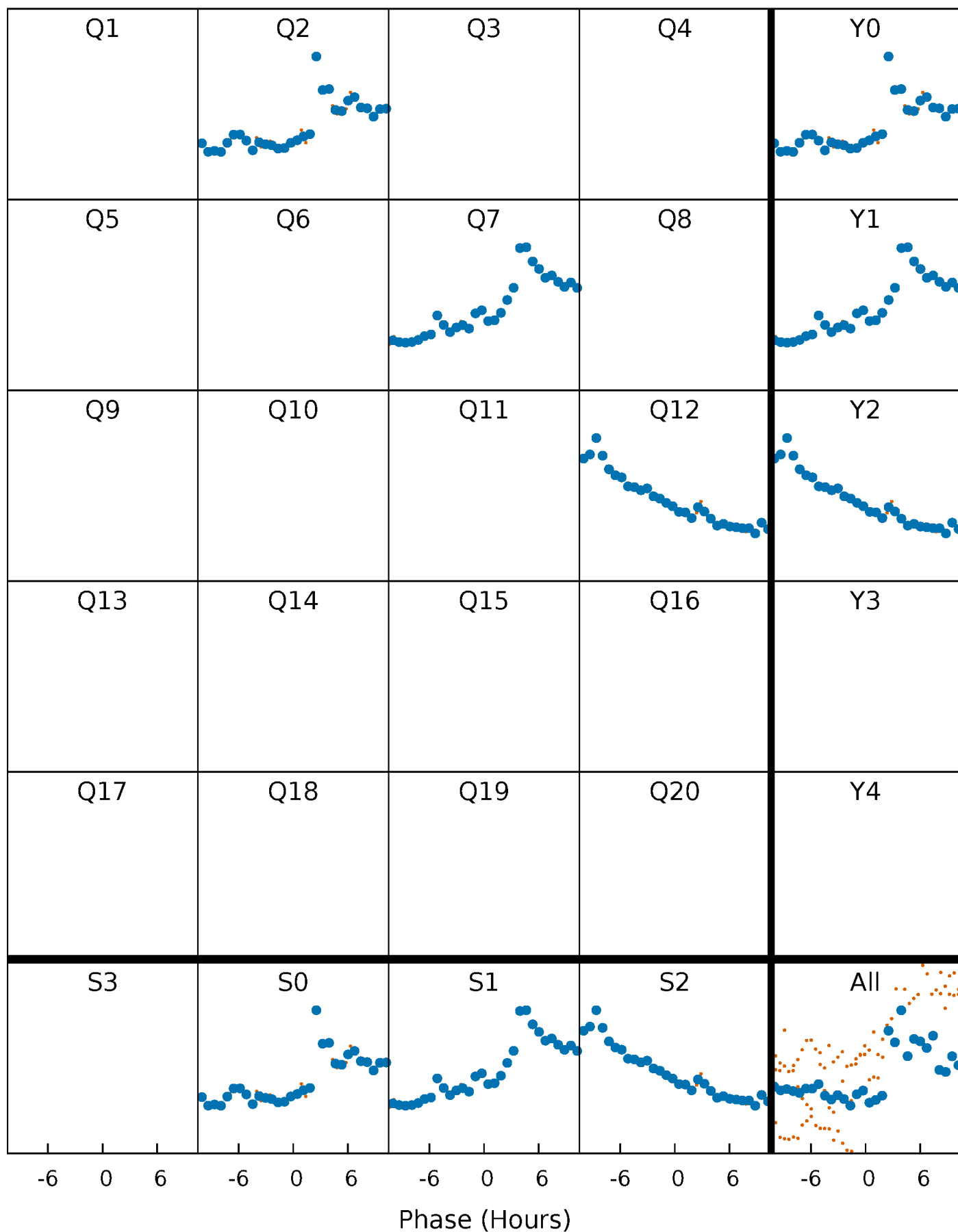


Non-Whitened Vs. Whitened Light Curve



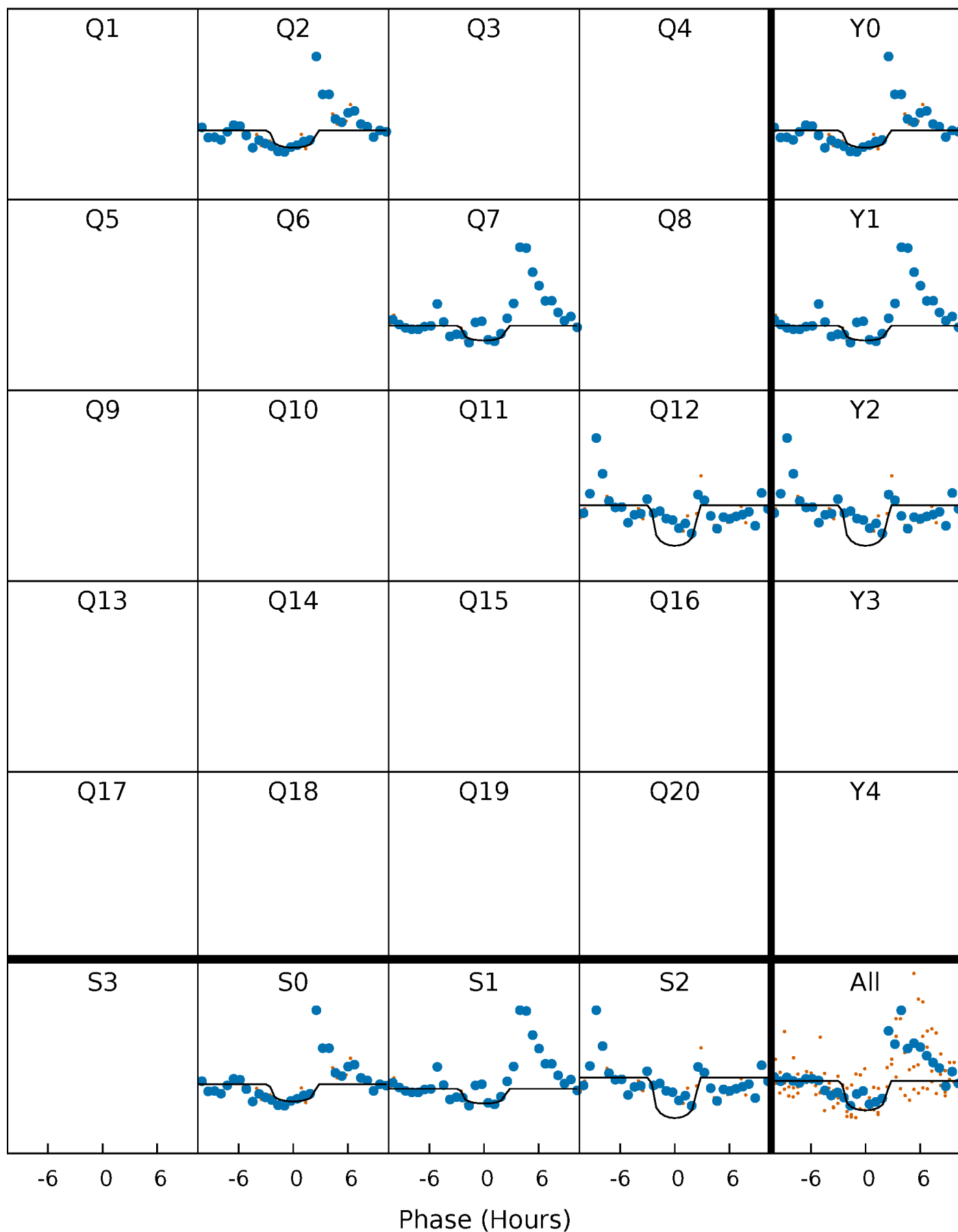
PDC Quarter-Phased Transit Curves

TCE 010146539-03 P=462.225677 Days $T_0=218.687670$ (BKJD)



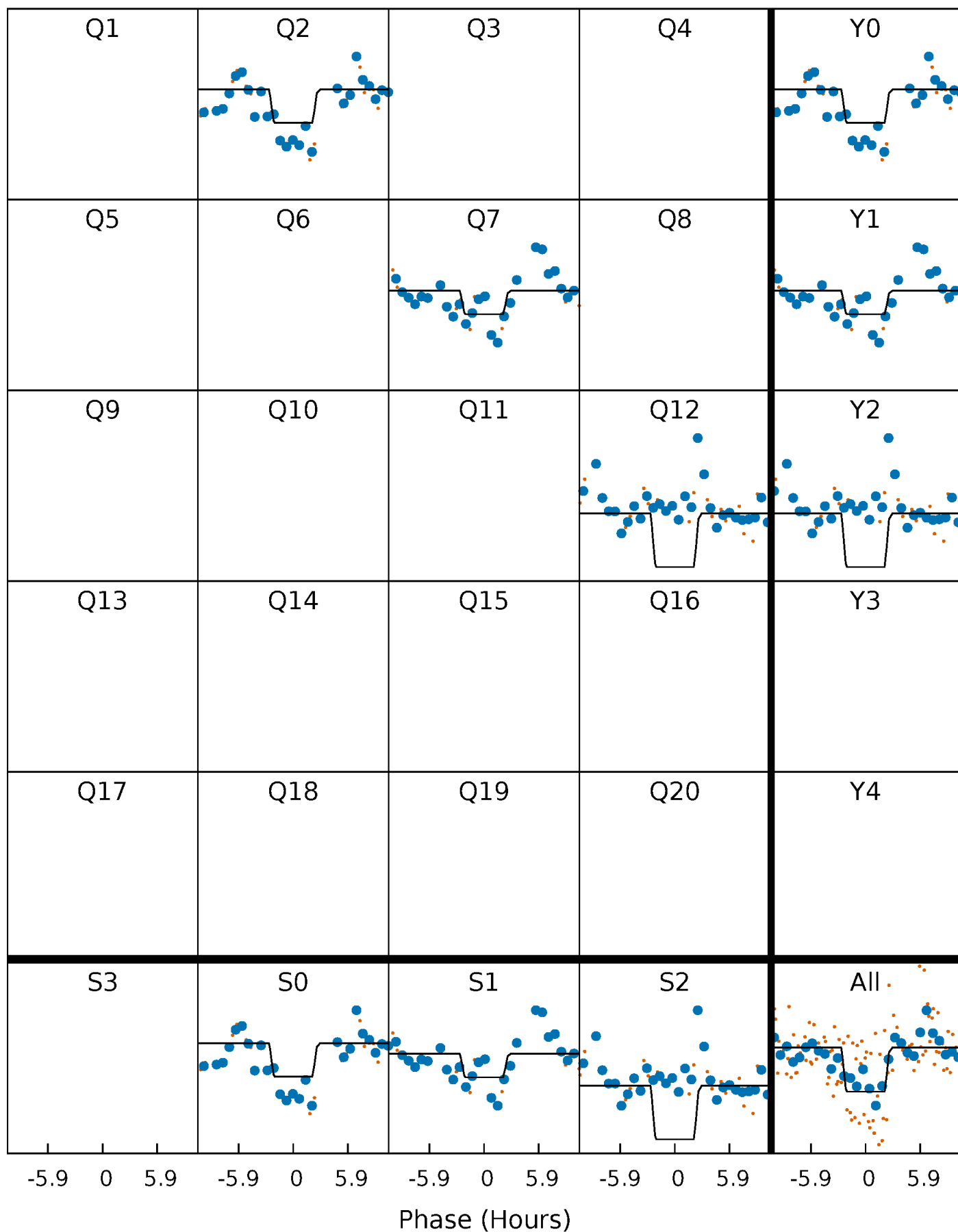
DV Quarter-Phased Transit Curves

TCE 010146539-03 P=462.225677 Days $T_0=218.687670$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

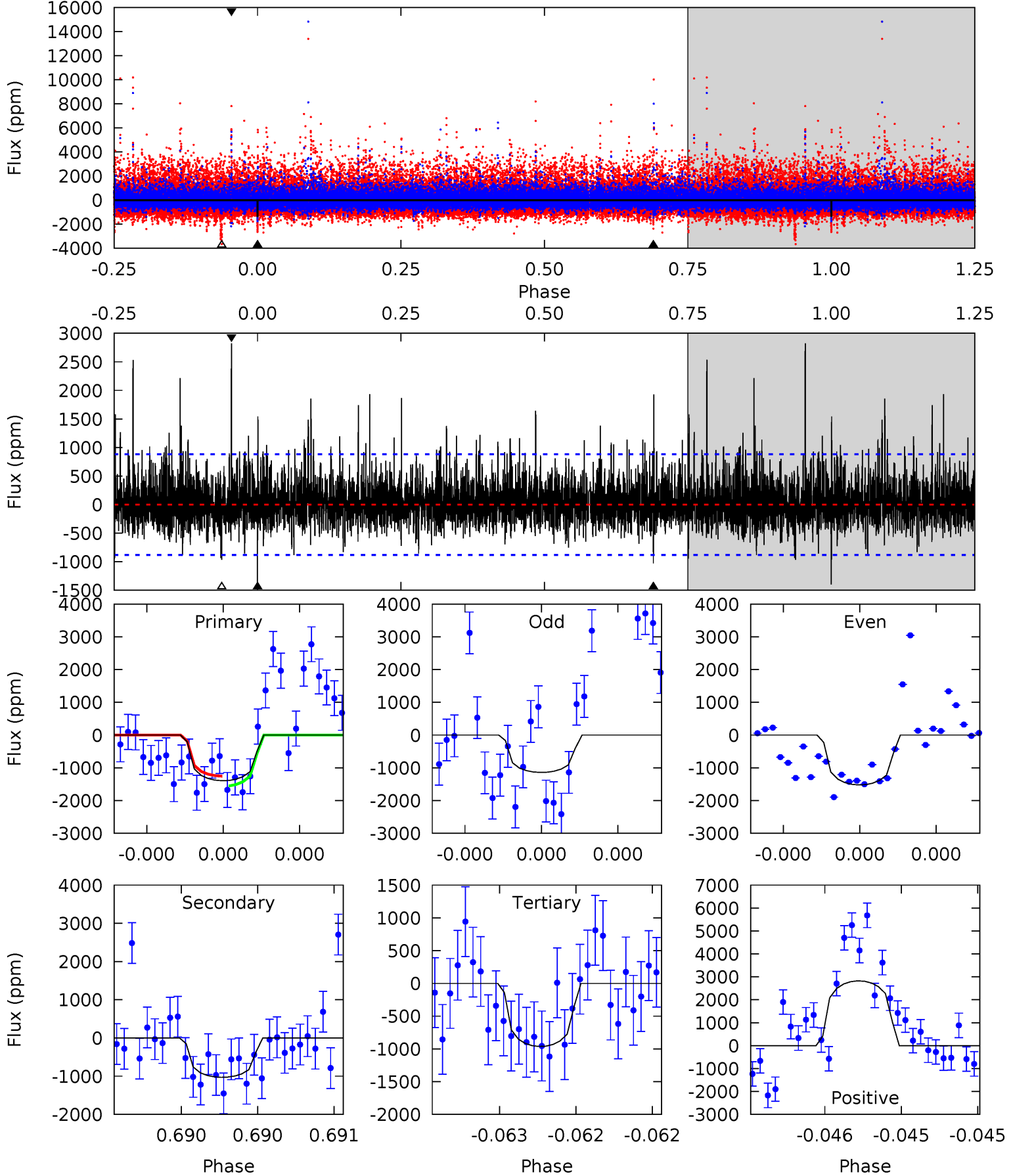
TCE 010146539-03 P=462.241183 Days $T_0=218.670513$ (BKJD)



DV Model-Shift Uniqueness Test

010146539-03, P = 462.225677 Days, E = 218.687670 Days

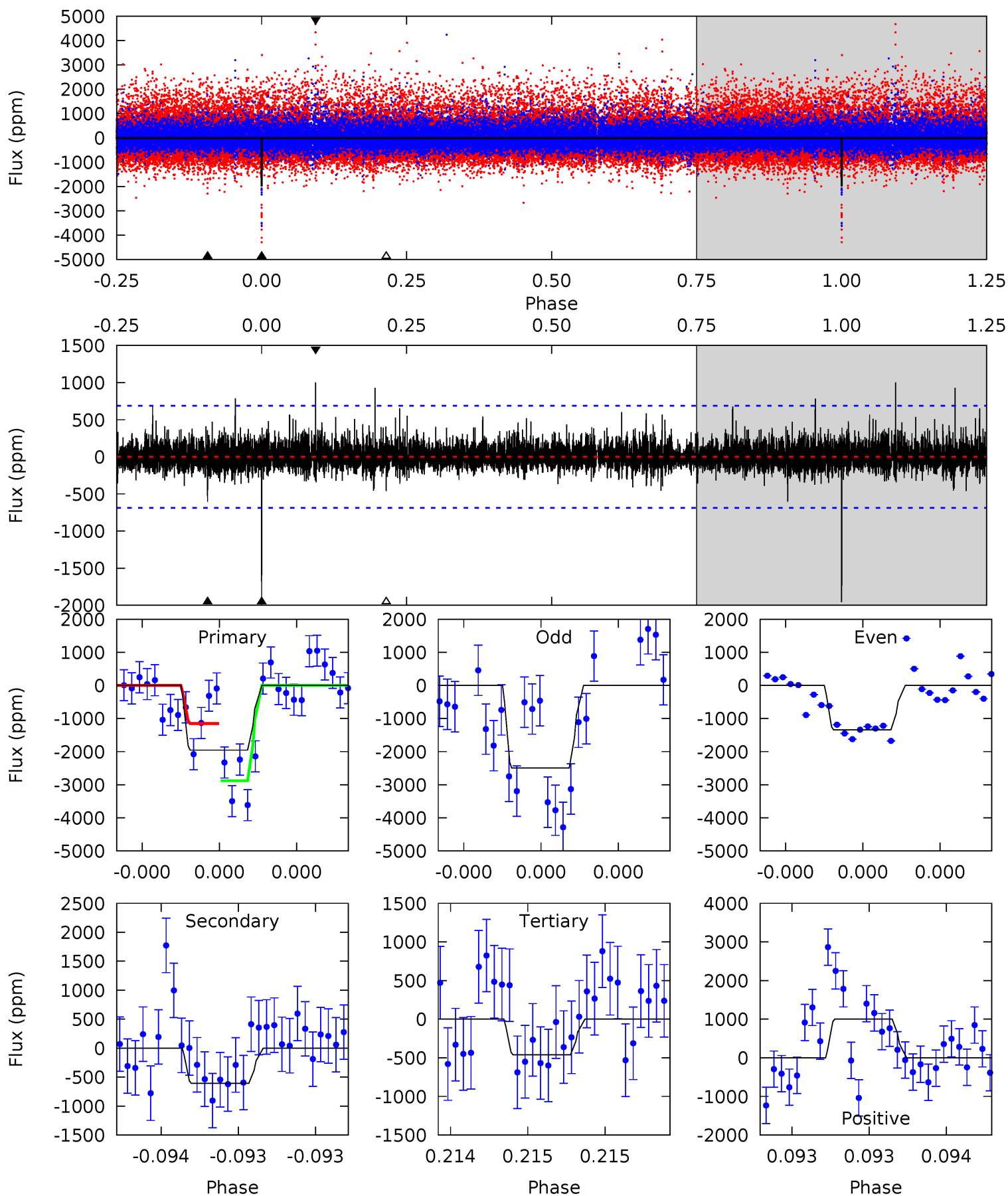
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.83	6.52	6.10	17.9	5.58	3.49	2.07	2.73	-9.04	0.42	-11.4	0.95	1.08	0.67	0.95



Alt Model-Shift Uniqueness Test

010146539-03, P = 462.241183 Days, E = 218.670513 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.9	4.93	3.74	8.12	5.58	3.49	0.99	12.1	7.75	1.19	-3.19	4.70	0.71	0.34	7.06



Stellar Parameters For KIC 010146539

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3373^{+43}_{-37}	$4.952^{+0.040}_{-0.040}$	$0.000^{+0.100}_{-0.100}$	$0.296^{+0.038}_{-0.031}$	$0.286^{+0.048}_{-0.035}$	$15.560^{+3.608}_{-3.194}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+13%/-10%	+17%/-12%	+23%/-21%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010146539-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1029 ± 158	$1.63^{+1.19}_{-1.01}$	129^{+3}_{-3}	2956^{+1070}_{-395}	$125605^{+773399}_{-84255}$
Alt.	-607 ± 123	$1.68^{+1.26}_{-1.06}$	129^{+3}_{-3}	2724^{+905}_{-344}	$69738^{+442093}_{-46890}$

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

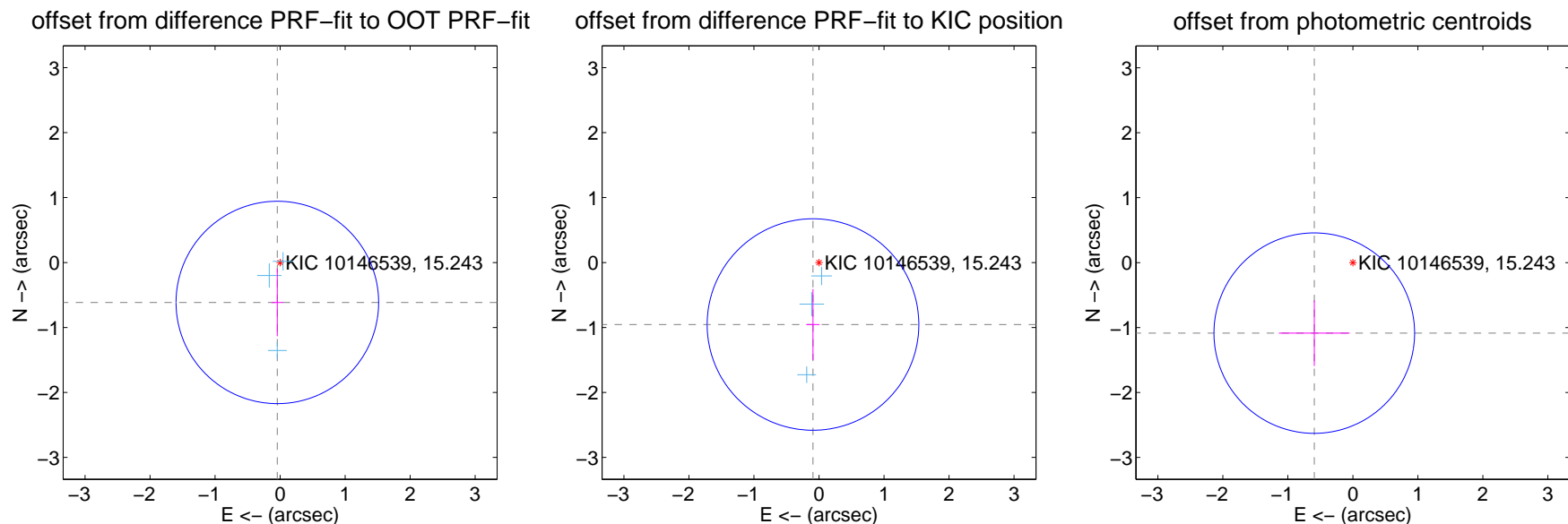
DV Centroid Data

Supplemental centroid analysis for 010146539-03. Kepler magnitude: 15.24. Transit SNR 7.94

There are 3 quarters with good PRF difference image offsets

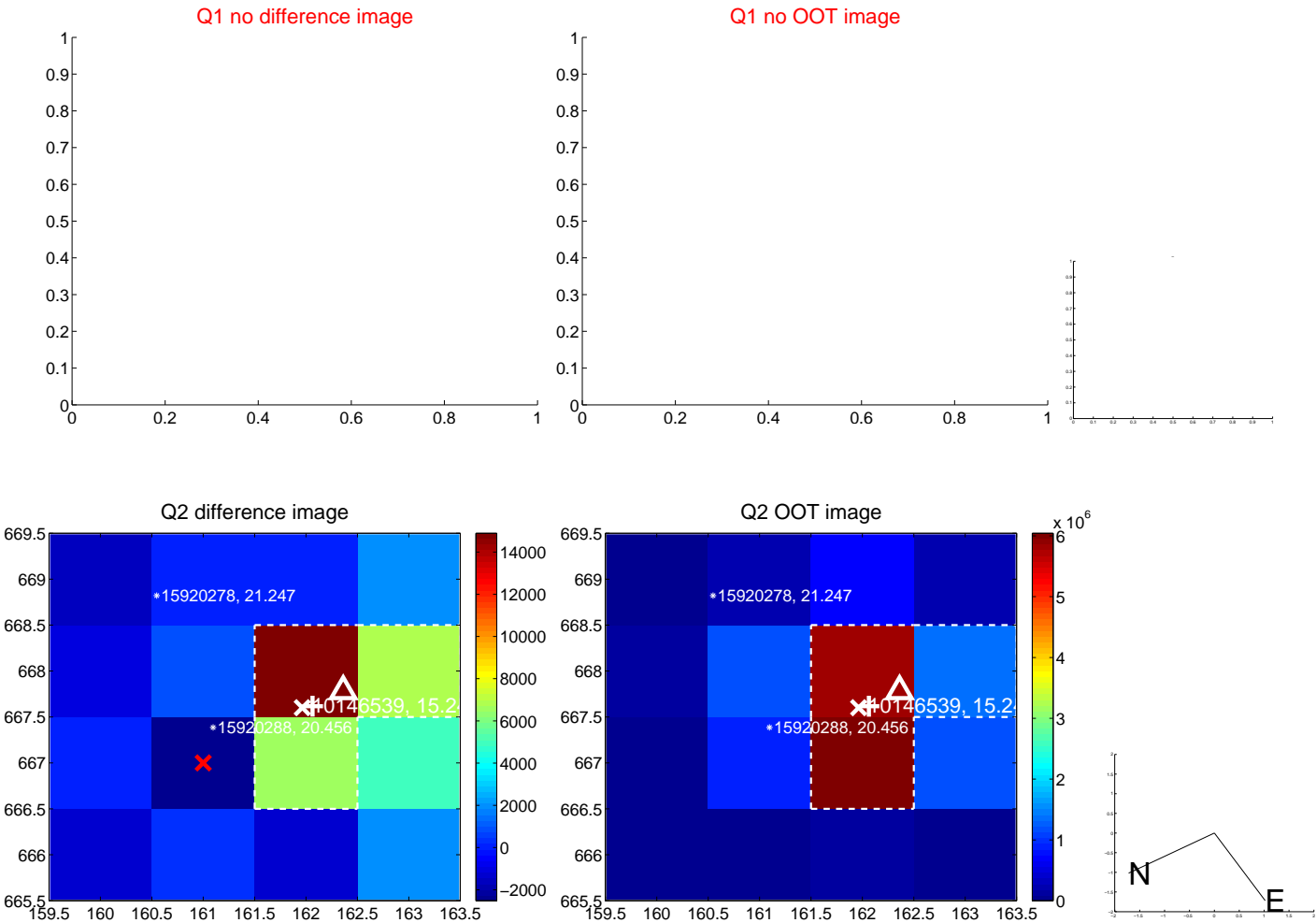
The direct PRF centroid is offset from the target star catalog position by about 0.44 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.616 ± 0.519	1.19	0.043 ± 0.090	-0.615 ± 0.521
PRF-fit source offset from KIC position	0.959 ± 0.543	1.77	0.092 ± 0.102	-0.954 ± 0.545
photometric centroid source offset	1.24 ± 0.51	2.41	0.59 ± 0.55	-1.09 ± 0.50

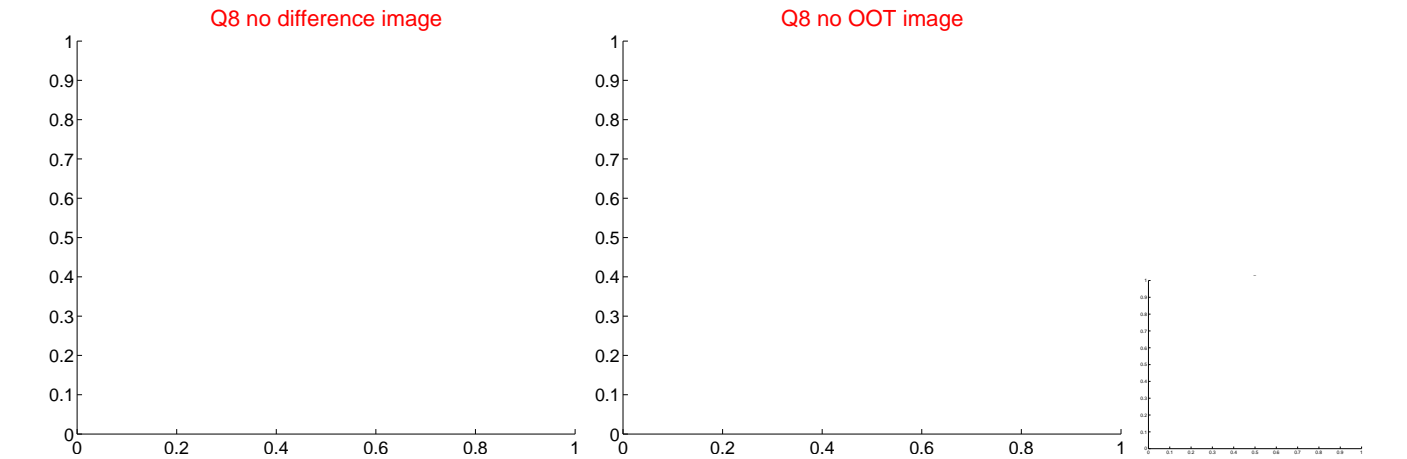
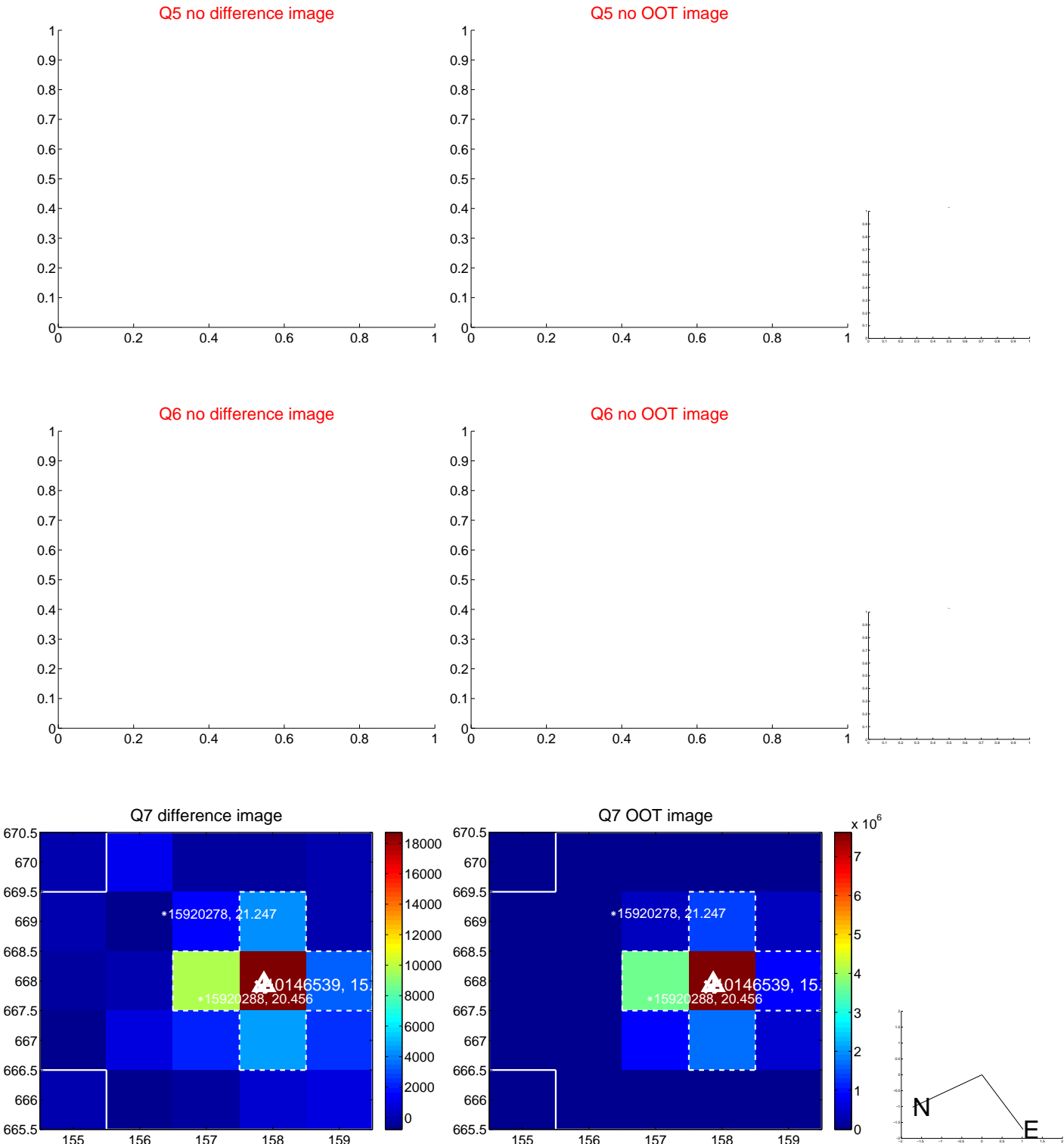


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

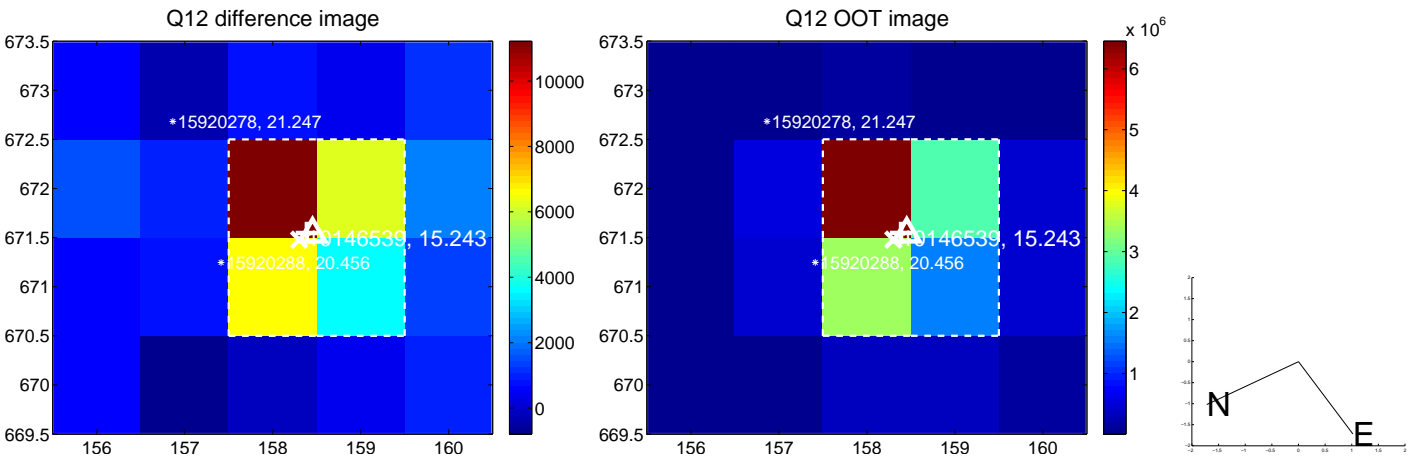
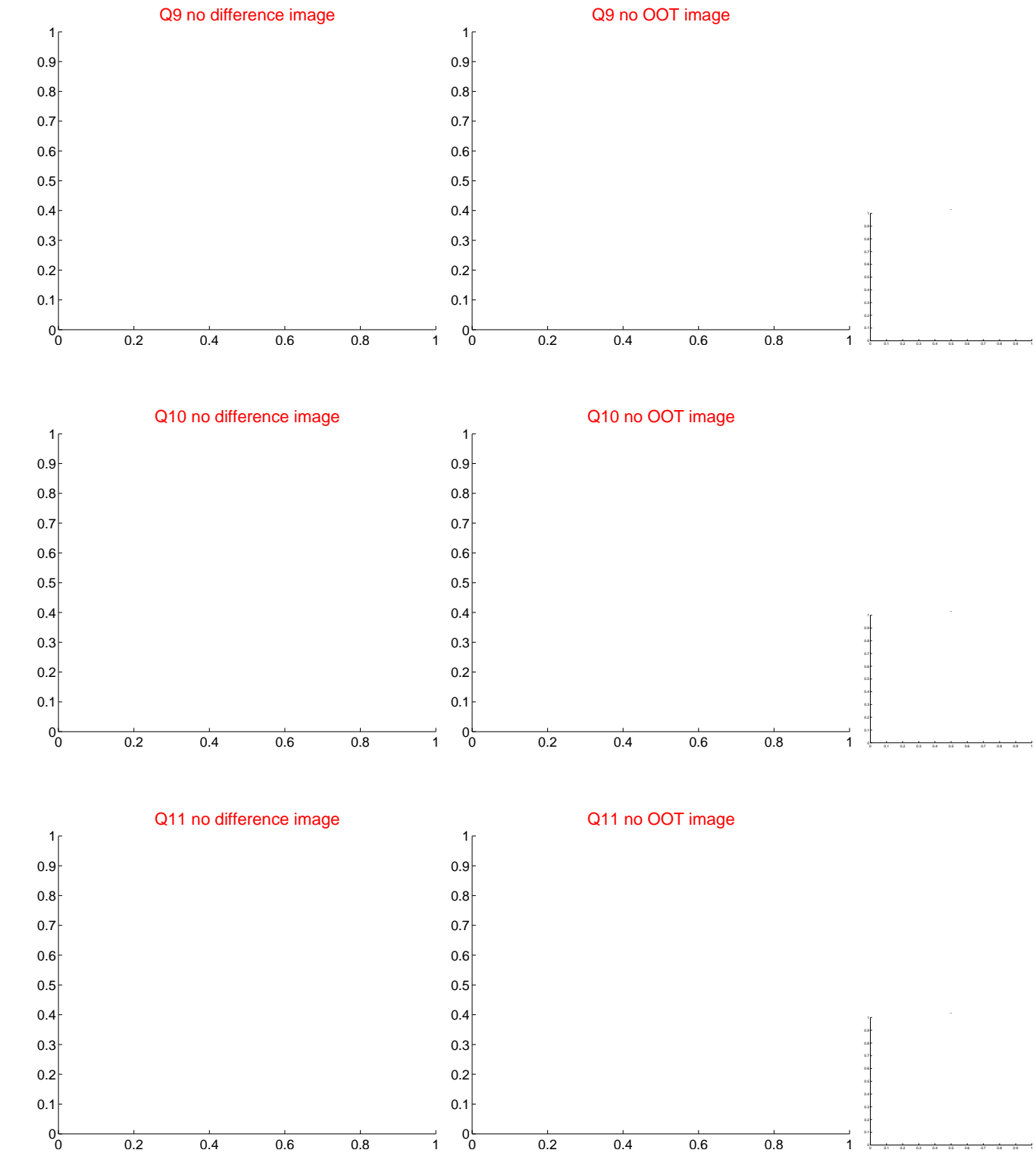
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



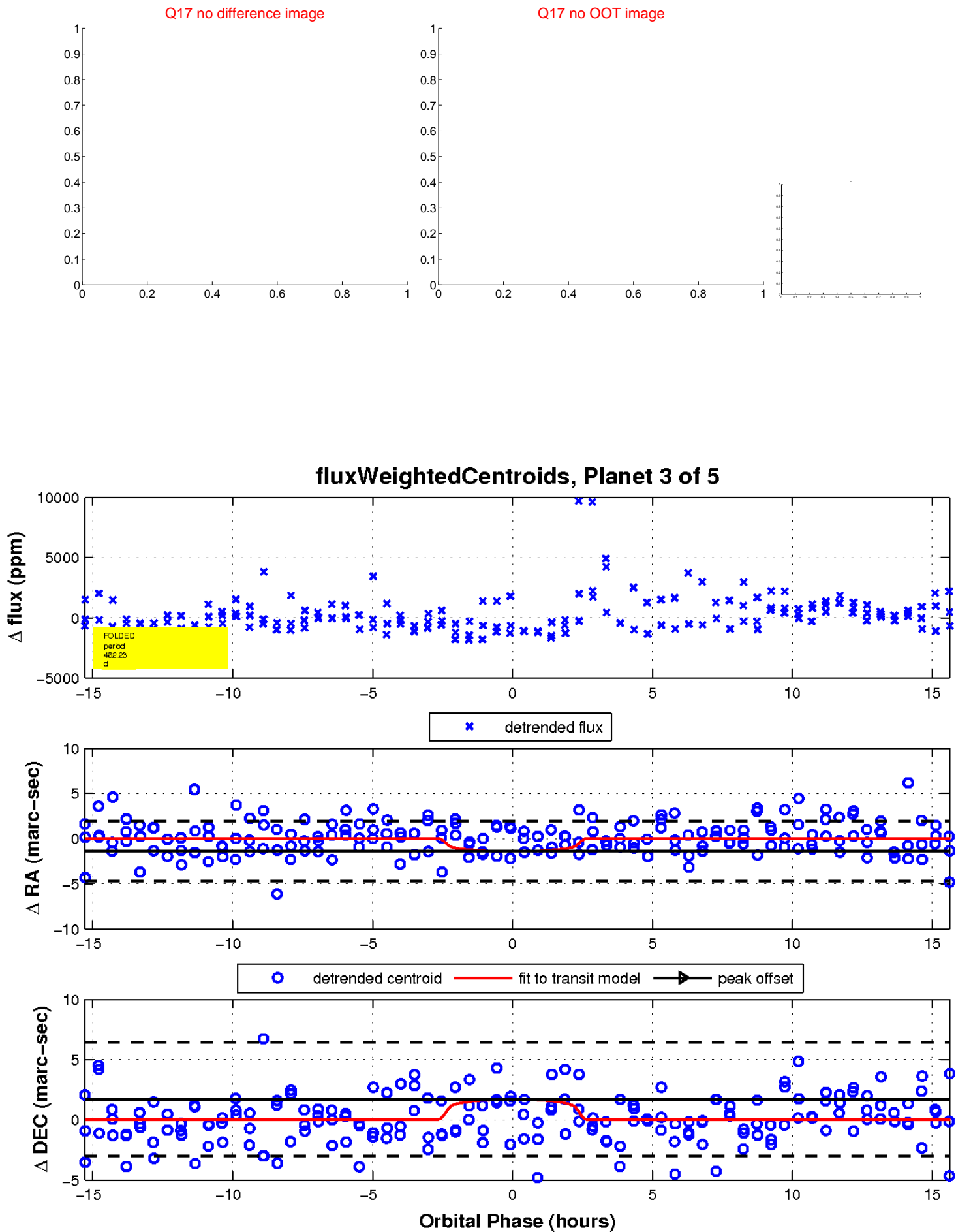
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



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

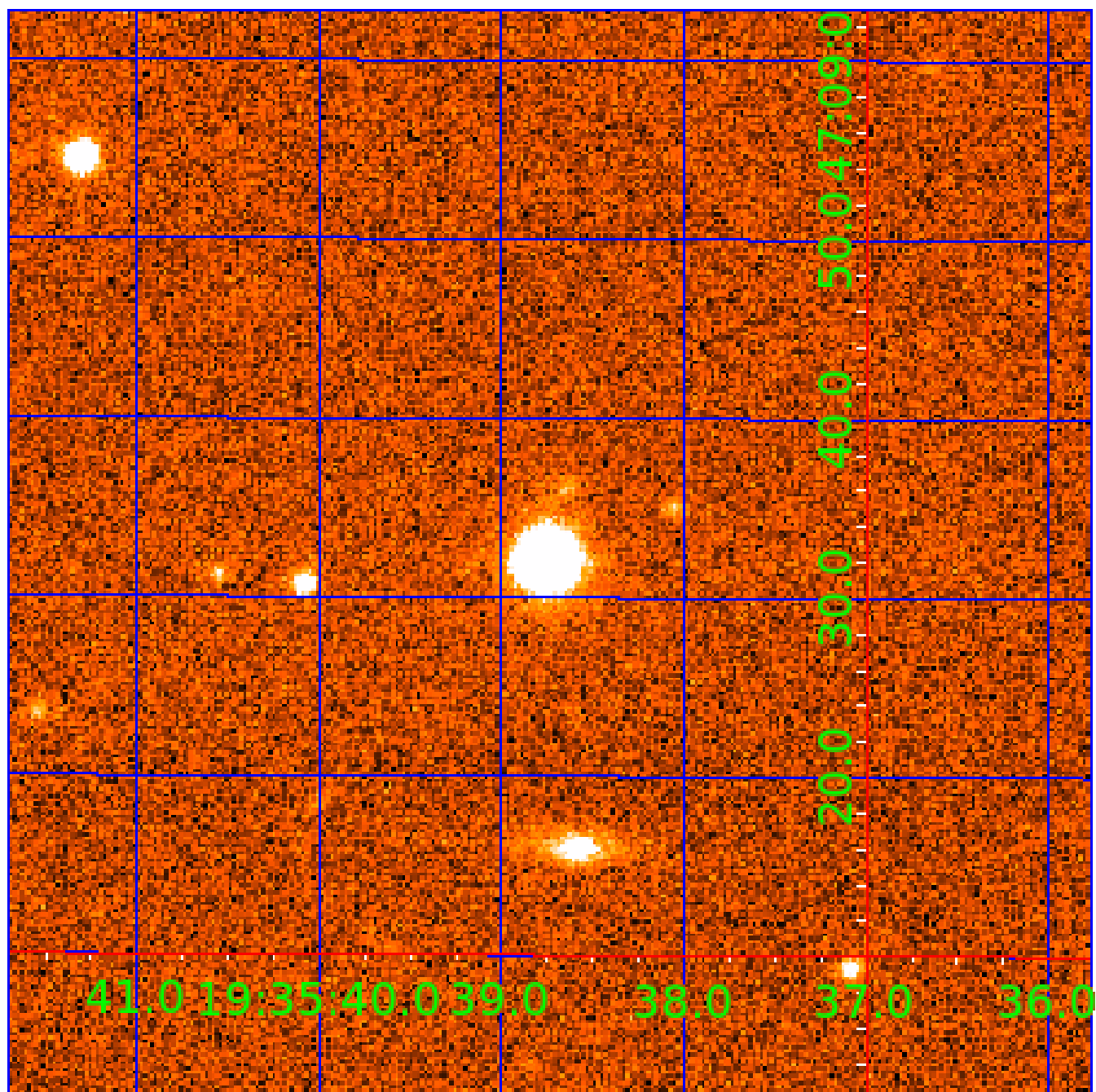


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010146539

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})
010146539-01	OBS	No	363.847151	273.291903	1884.4	9.869	17.4	7.8	0.30	3373	1.29	0.02
010146539-02	OBS	No	462.029001	486.260744	2357.2	11.315	12.1	9.1	0.30	3373	1.42	0.02
010146539-03	OBS	No	462.225677	218.687670	2116.9	5.236	13.2	7.9	0.30	3373	1.44	0.02
010146539-04	OBS	No	236.872040	277.556708	1206.1	7.427	10.6	7.0	0.30	3373	1.07	0.04
010146539-05	OBS	No	546.674760	225.736562	1626.4	5.362	10.0	6.6	0.30	3373	1.19	0.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010146539-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_DIFFS
010146539-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
010146539-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_KIC_POS
010146539-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_KIC_POS
010146539-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

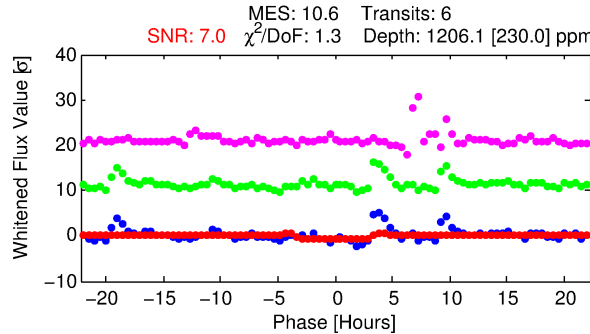
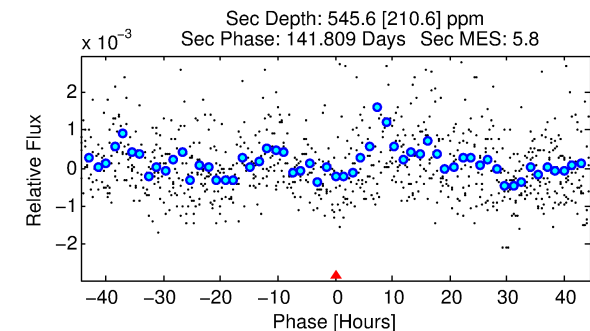
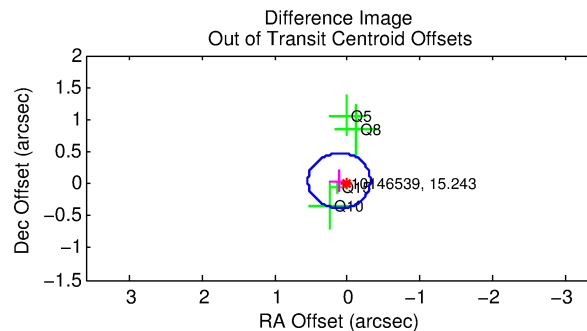
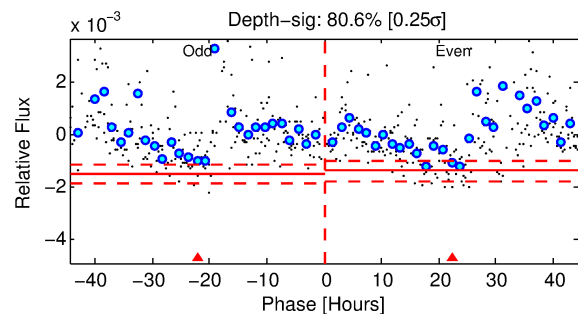
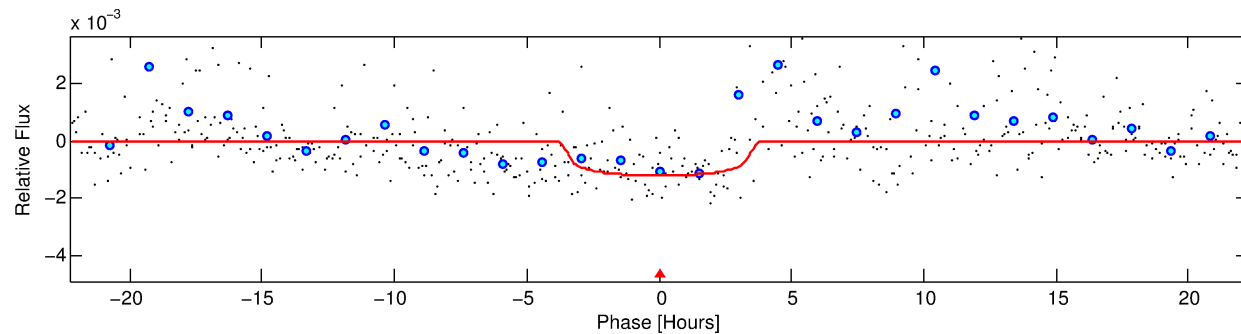
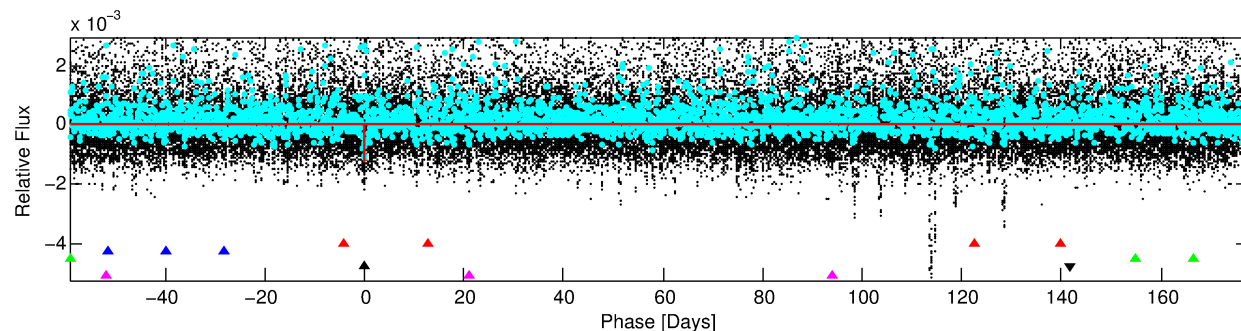
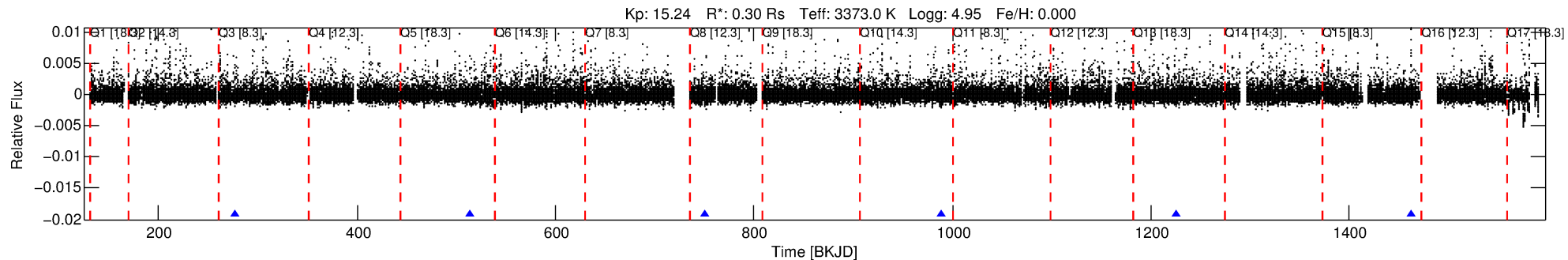
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010146539-04

No Significant Match Found

DV One-Page Summary

KIC: 10146539 Candidate: 4 of 5 Period: 236.872 d



DV Fit Results:

Period = 236.87204 [0.00441] d
Epoch = 277.5567 [0.0126] BKJD
Rp/R* = 0.0333 [0.0164]
a/R* = 198.81 [397.41]
b = 0.63 [1.89]
Seff = 0.04 [0.00]
Teq = 115 [3] K
Rp = 1.07 [0.55] Re
a = 0.4938 [0.0449] AU
Ag = 63377.60 [67515.58] [0.94σ]
Teff = 2826 [750] K [3.62σ]

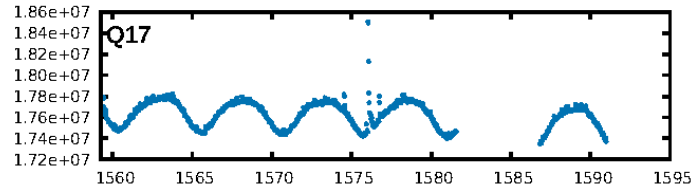
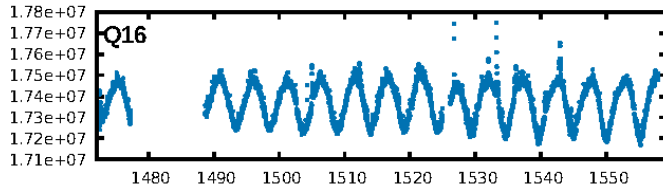
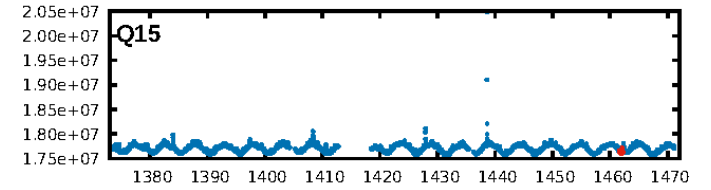
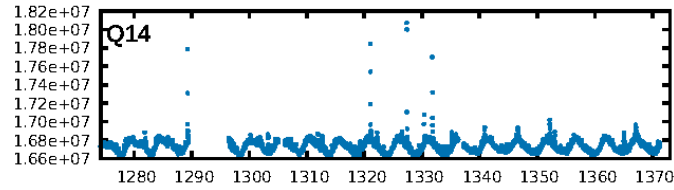
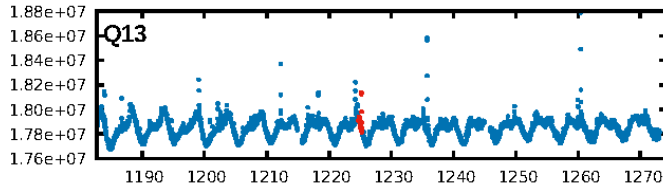
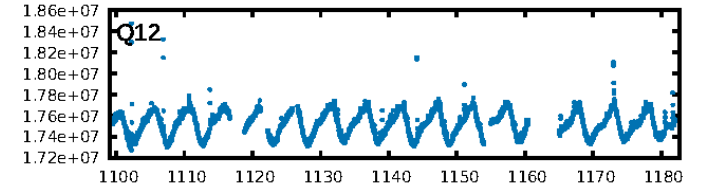
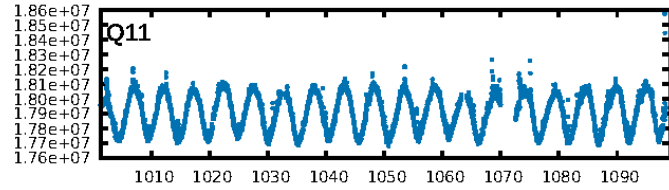
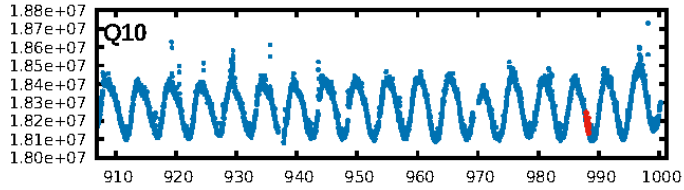
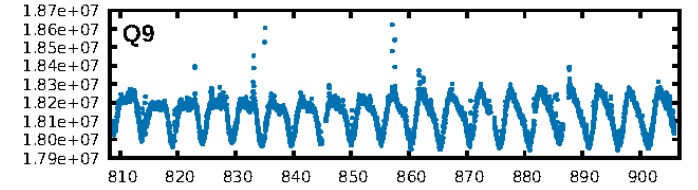
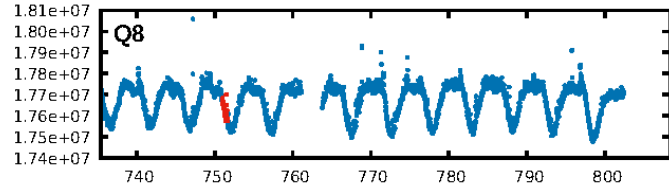
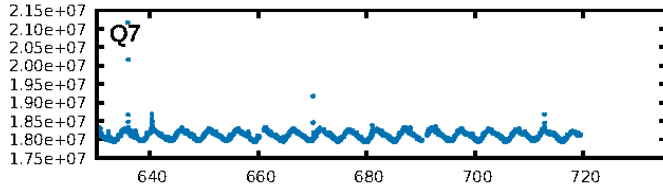
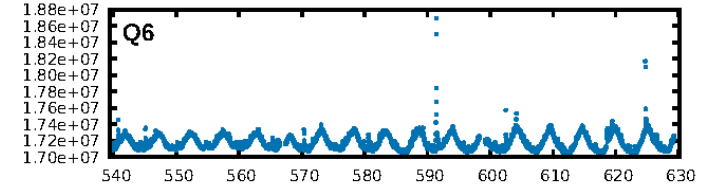
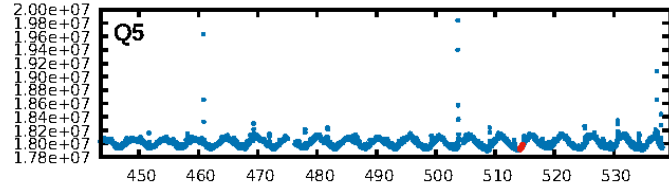
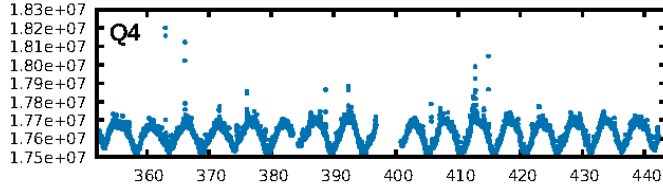
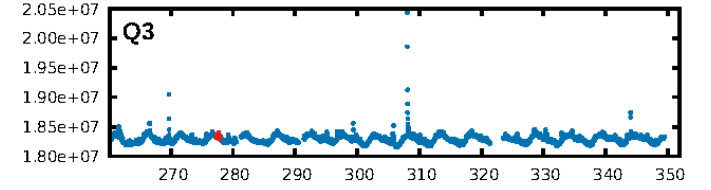
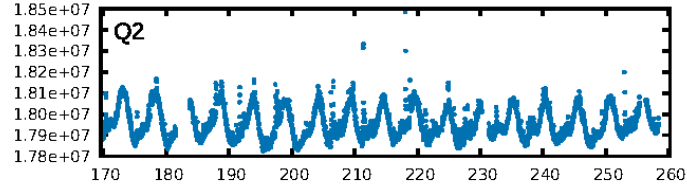
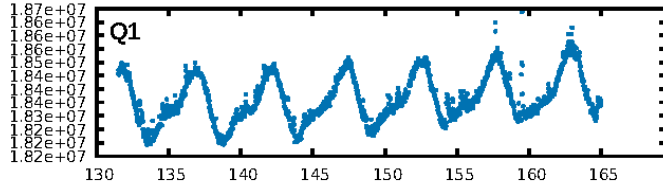
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [246.73σ]
ModelChiSquare2-sig: 59.9%
ModelChiSquareGof-sig: 91.2%
Bootstrap-pfa: 3.99e-09
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 25.37
Centroid-sig: 0.3%
Centroid-so: 1.509 arcsec [2.51σ]
OotOffset-rm: 0.122 arcsec [0.85σ]
KicOffset-rm: 0.329 arcsec [1.06σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 1.00 [6/6]

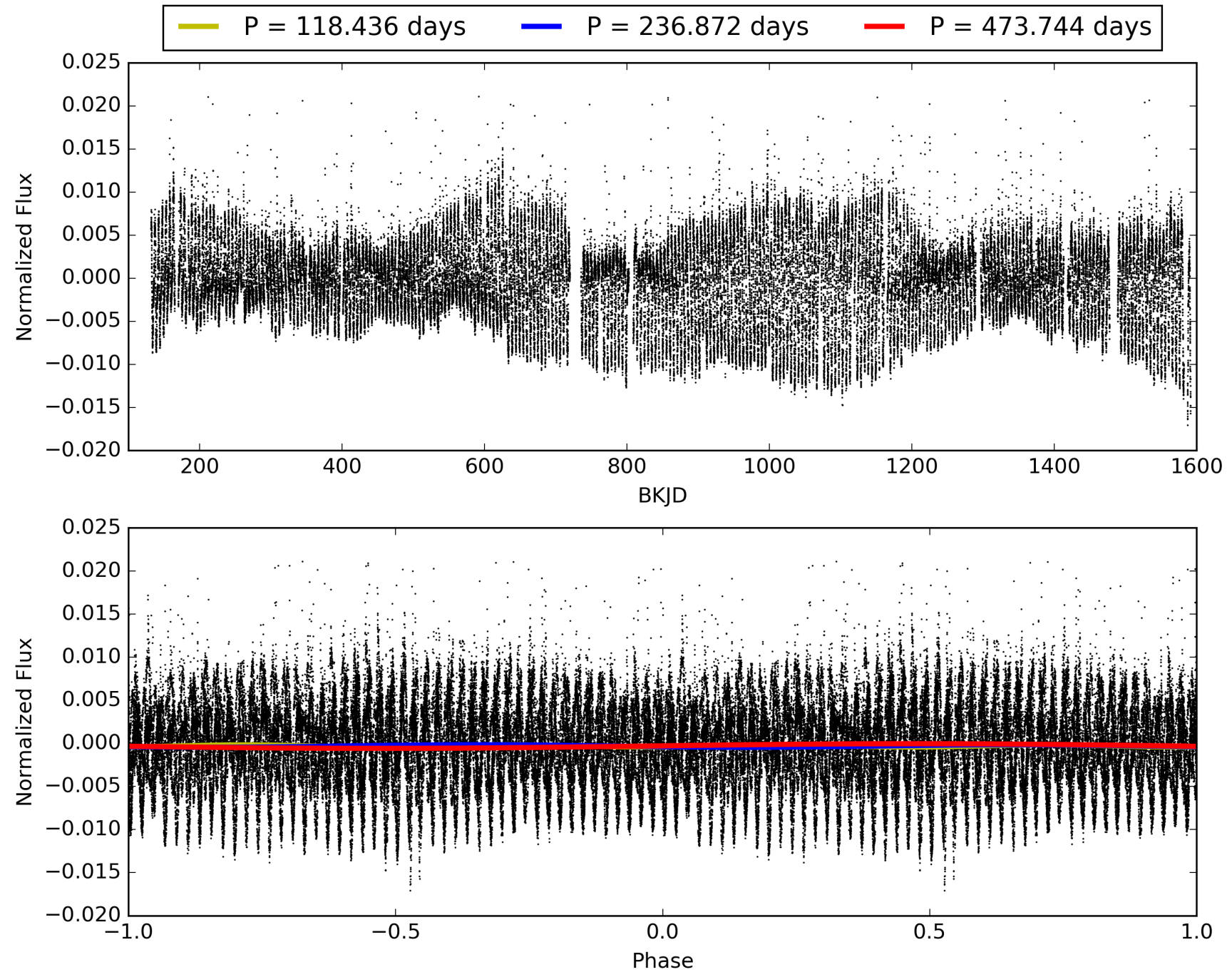
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:30:59 Z

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

TCE 010146539-04, PDC Light Curves

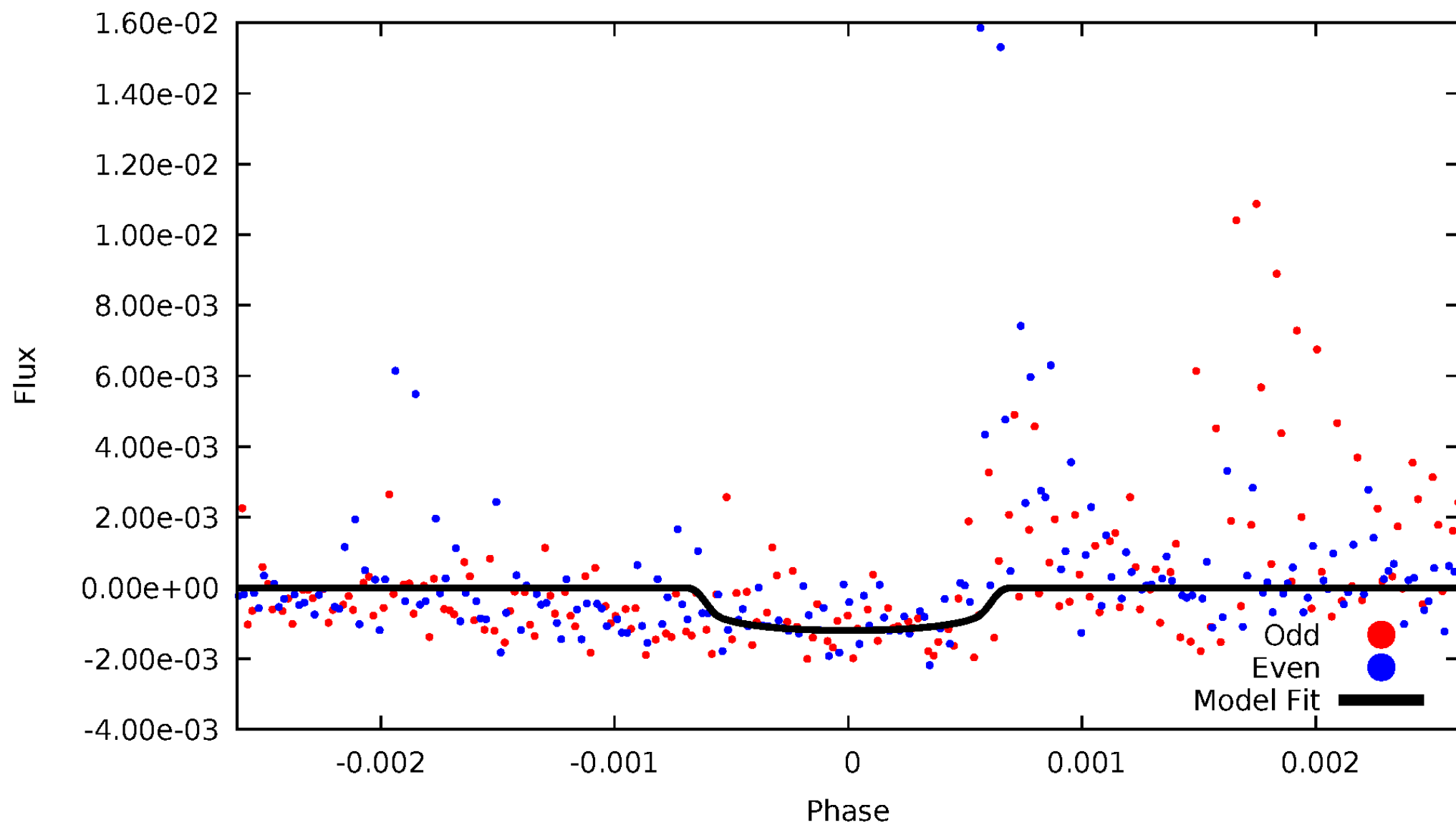


TCE 010146539-04



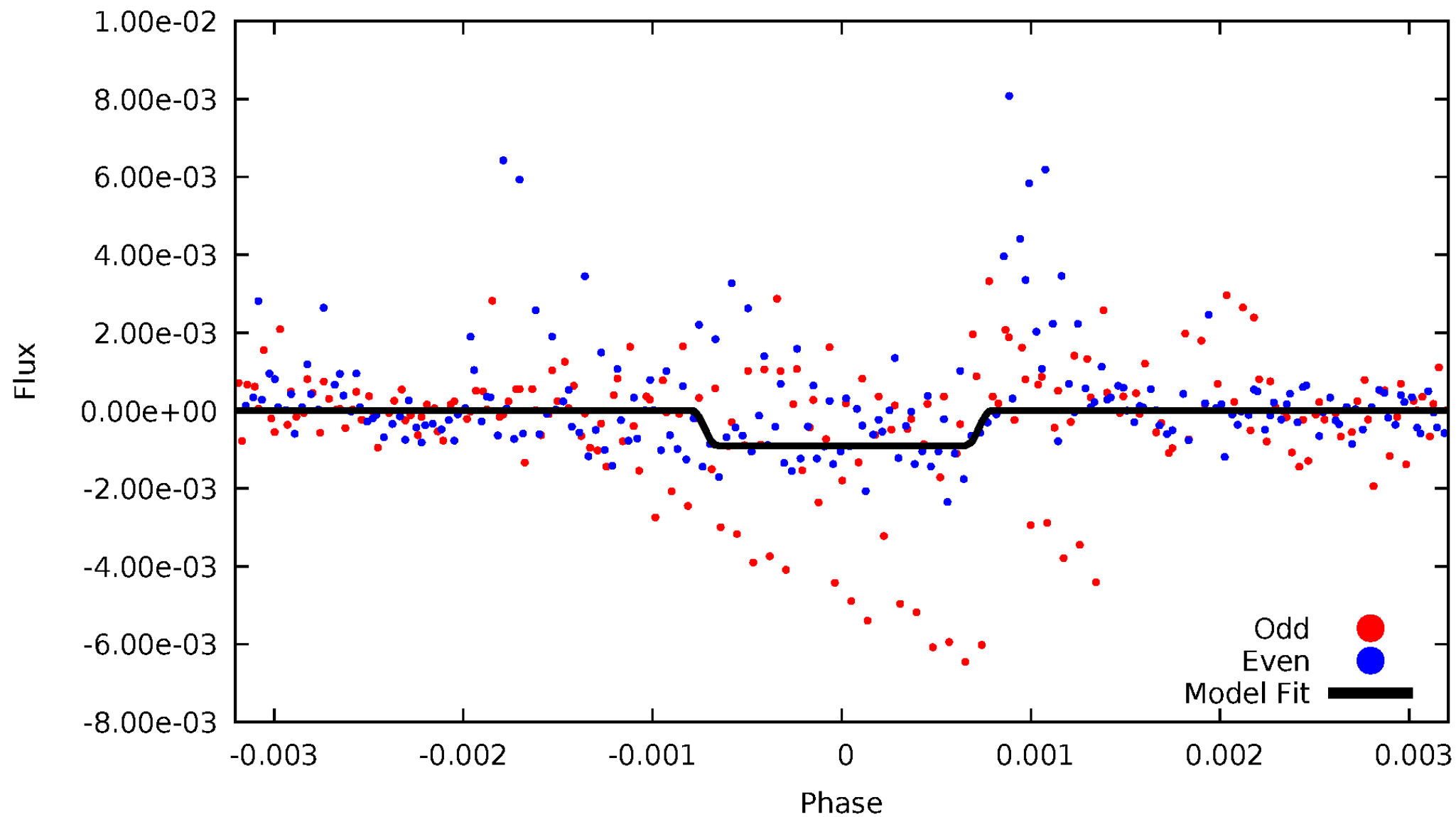
DV Odd/Even

TCE 010146539-04



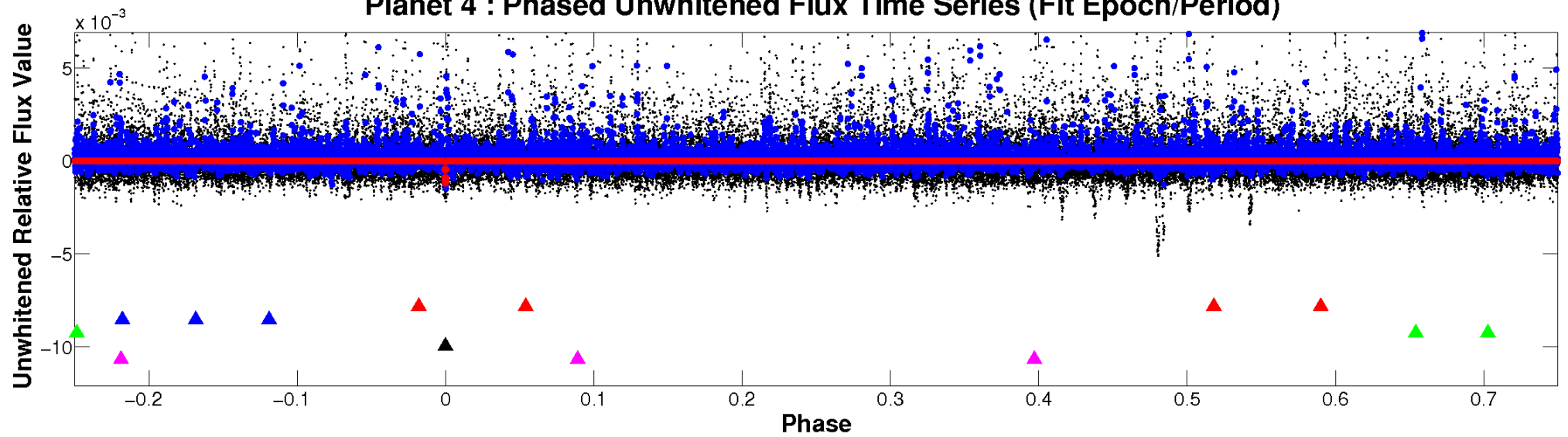
ALT Odd/Even

TCE 010146539-04

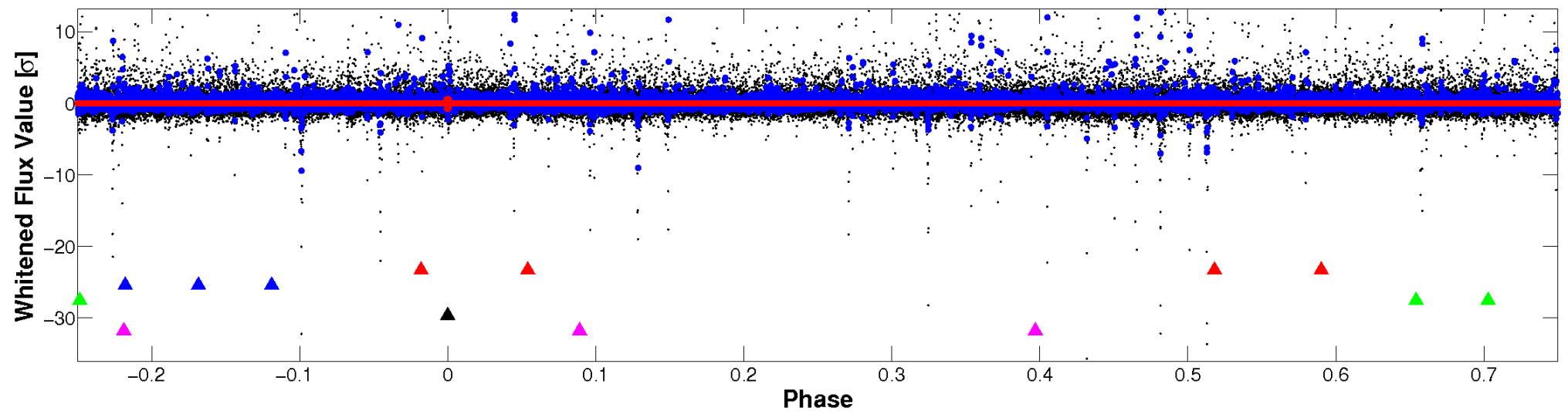


Non-Whitened Vs. Whitened Light Curve

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

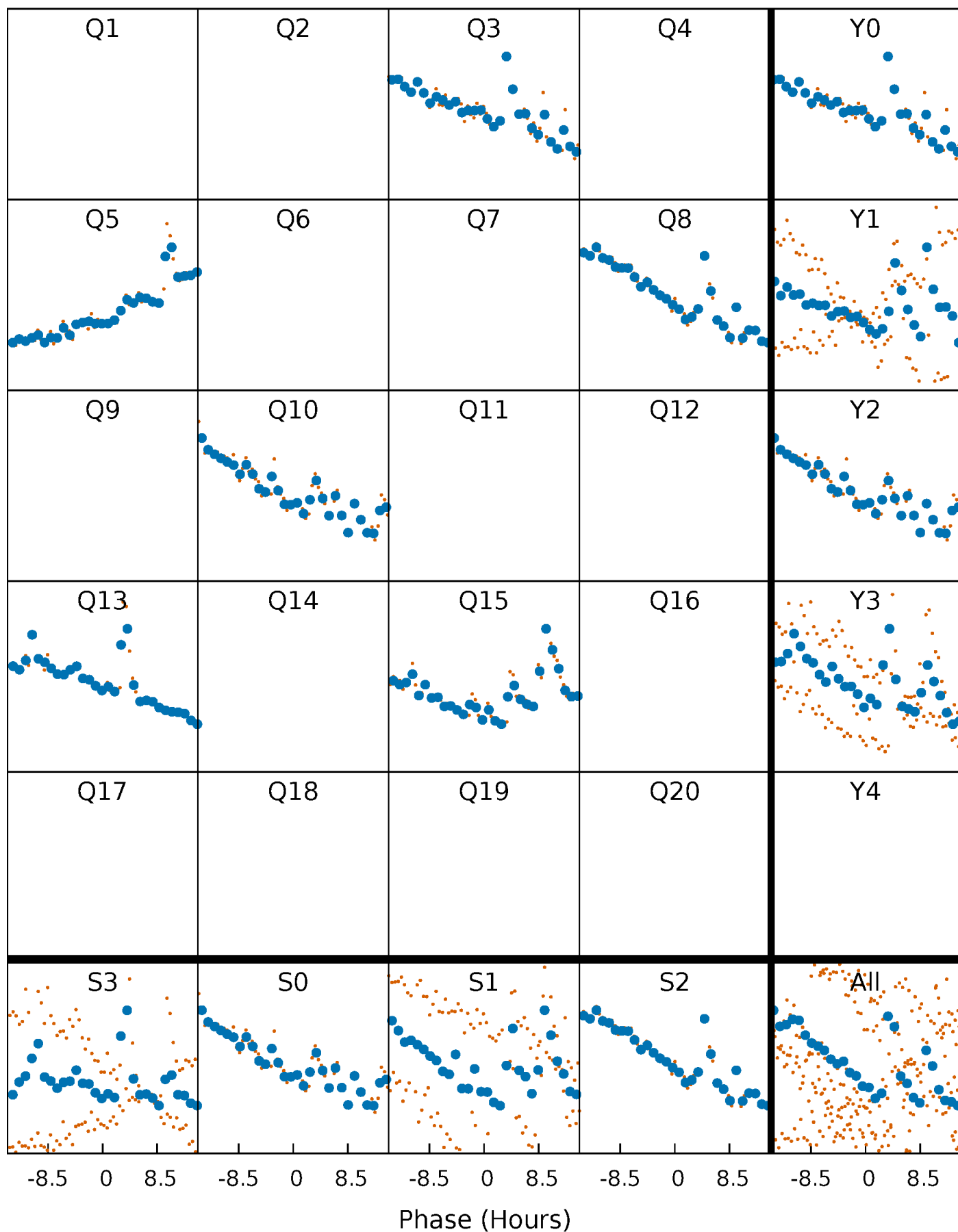


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



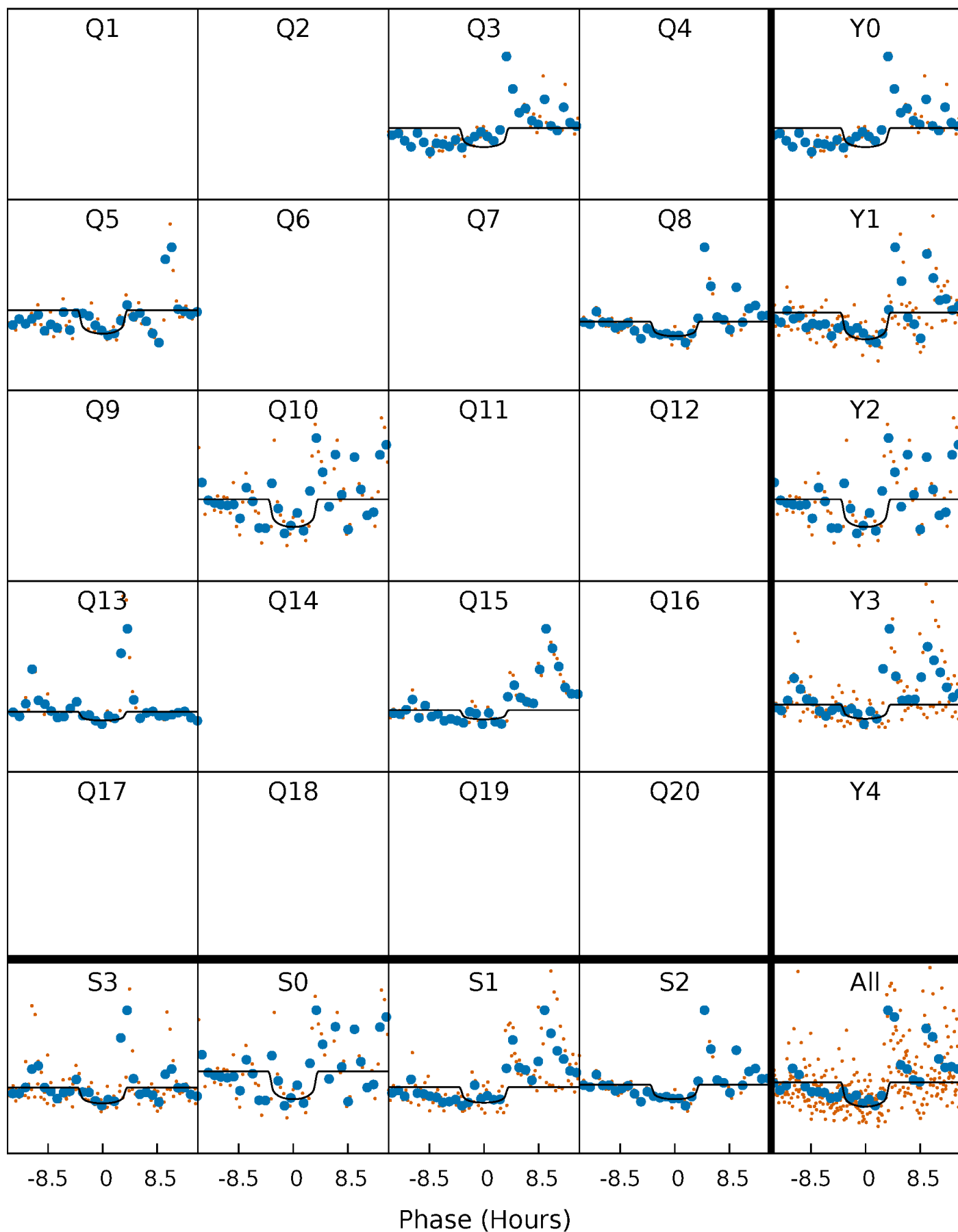
PDC Quarter-Phased Transit Curves

TCE 010146539-04 $P=236.872040$ Days $T_0=277.556708$ (BKJD)



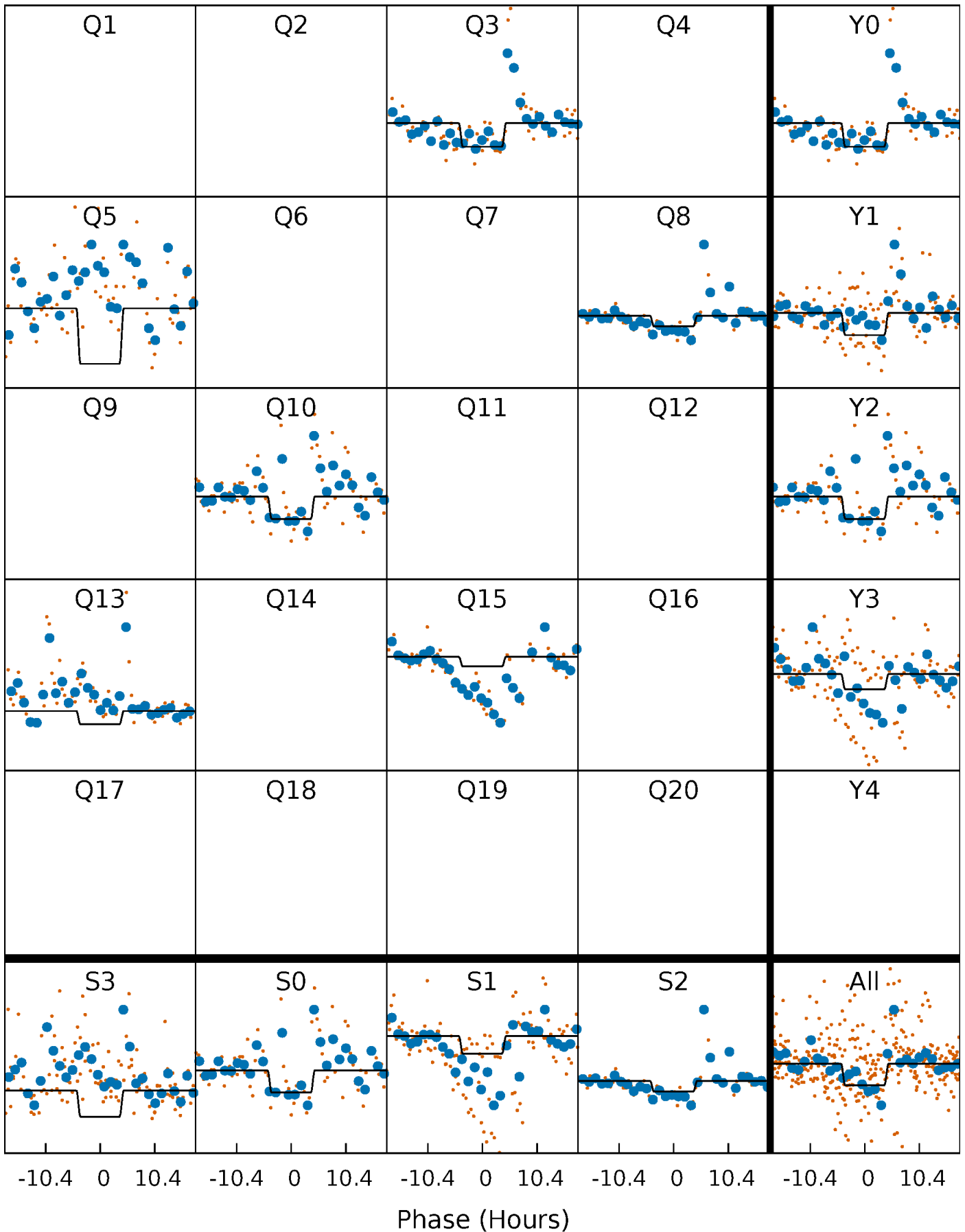
DV Quarter-Phased Transit Curves

TCE 010146539-04 P=236.872040 Days $T_0=277.556708$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

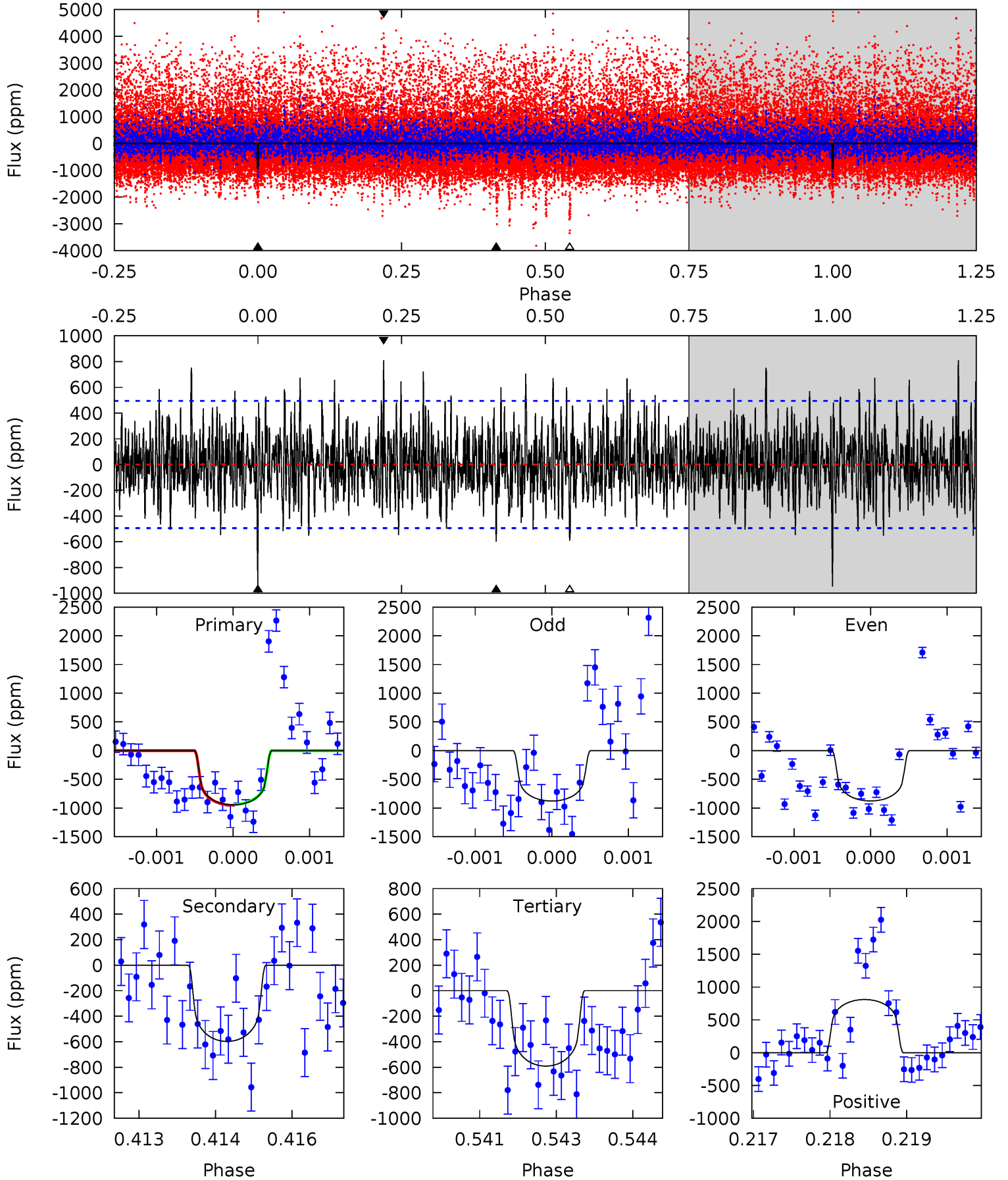
TCE 010146539-04 P=236.879450 Days $T_0=277.492082$ (BKJD)



DV Model-Shift Uniqueness Test

010146539-04, P = 236.872040 Days, E = 40.684668 Days

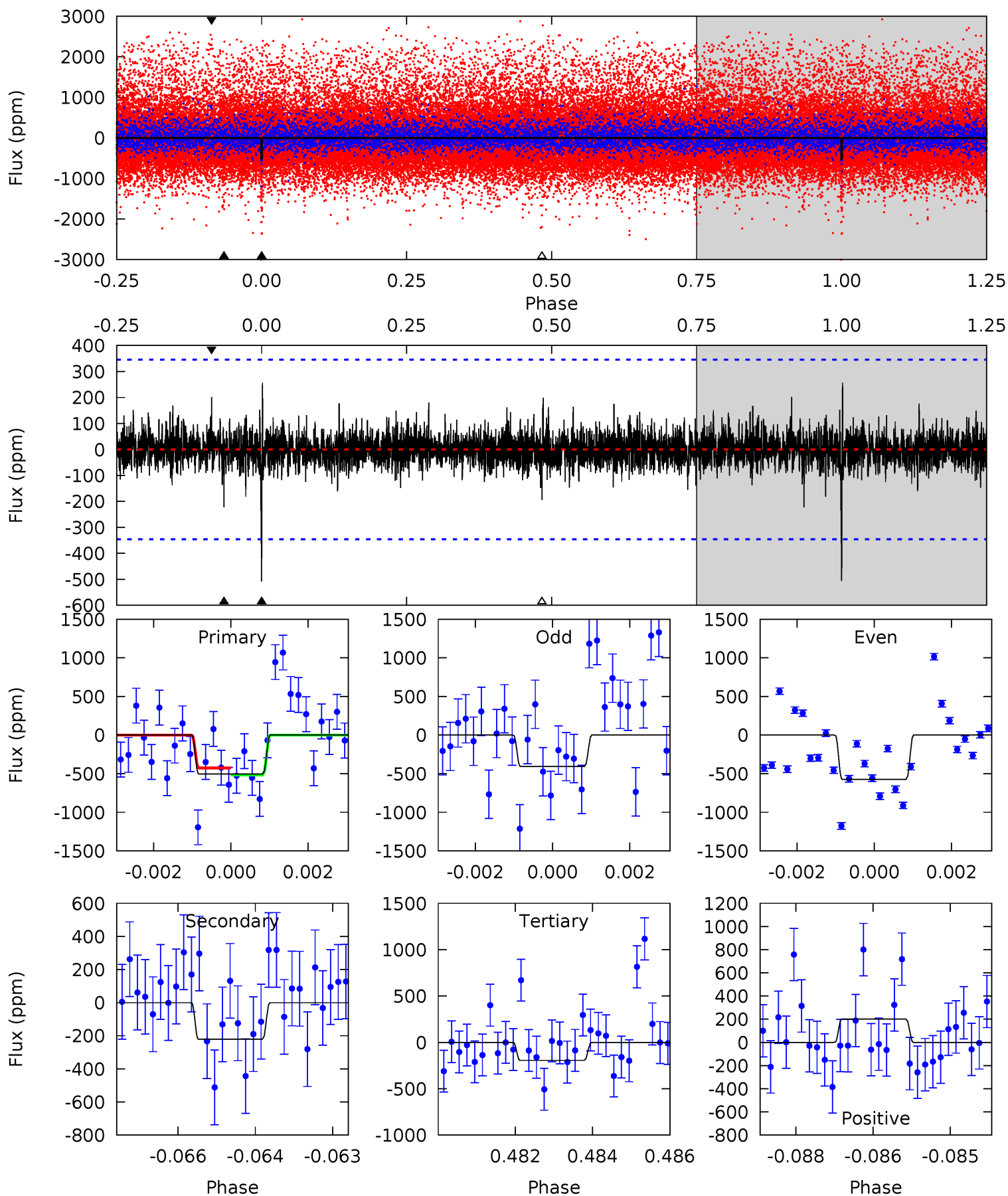
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.3	6.52	6.45	8.83	5.40	3.20	2.21	3.87	1.49	0.07	-2.31	0.00	0.99	0.46	0.08



Alt Model-Shift Uniqueness Test

010146539-04, P = 236.879450 Days, E = 40.612632 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.85	3.44	3.02	3.13	5.37	3.16	0.71	4.83	4.72	0.42	0.31	1.28	1.50	0.34	0.71



Stellar Parameters For KIC 010146539

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3373^{+43}_{-37}	$4.952^{+0.040}_{-0.040}$	$0.000^{+0.100}_{-0.100}$	$0.296^{+0.038}_{-0.031}$	$0.286^{+0.048}_{-0.035}$	$15.560^{+3.608}_{-3.194}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+13%/-10%	+17%/-12%	+23%/-21%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010146539-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-598 ± 92	$1.09^{+0.53}_{-0.51}$	161^{+4}_{-4}	3072^{+709}_{-329}	$67416^{+187132}_{-37503}$
Alt.	-222 ± 64	$0.99^{+0.53}_{-0.47}$	161^{+4}_{-4}	2750^{+545}_{-307}	29425^{+82062}_{-17138}

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

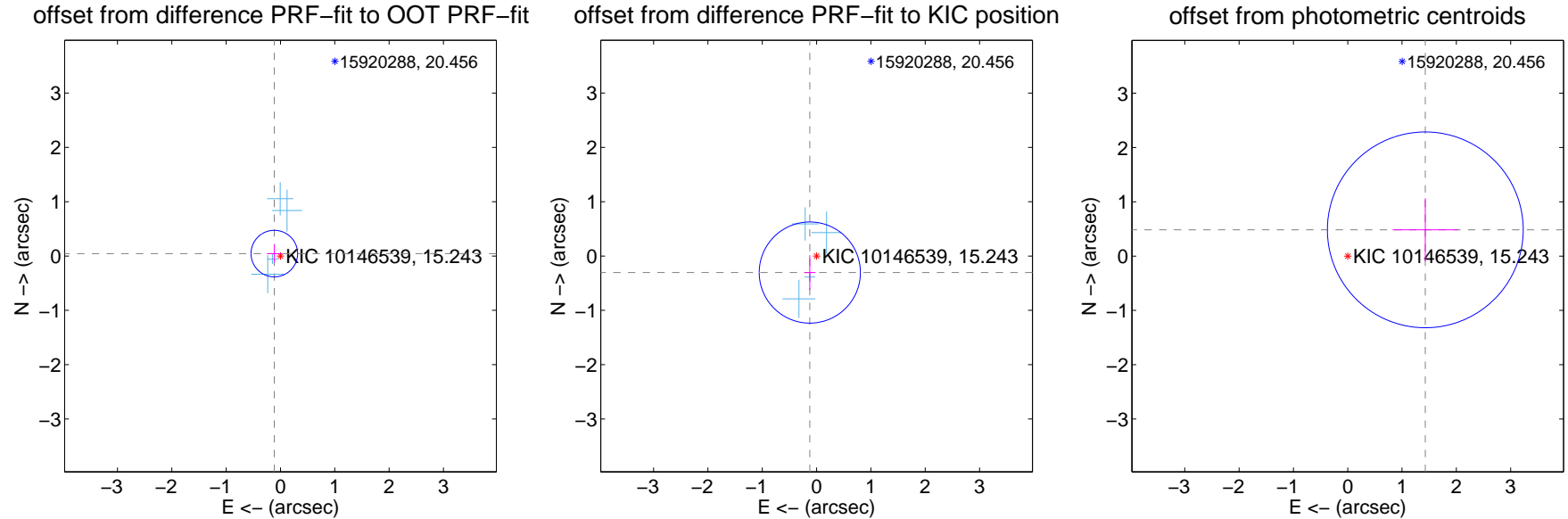
DV Centroid Data

Supplemental centroid analysis for 010146539-04. Kepler magnitude: 15.24. Transit SNR 6.96

There are 4 quarters with good PRF difference image offsets

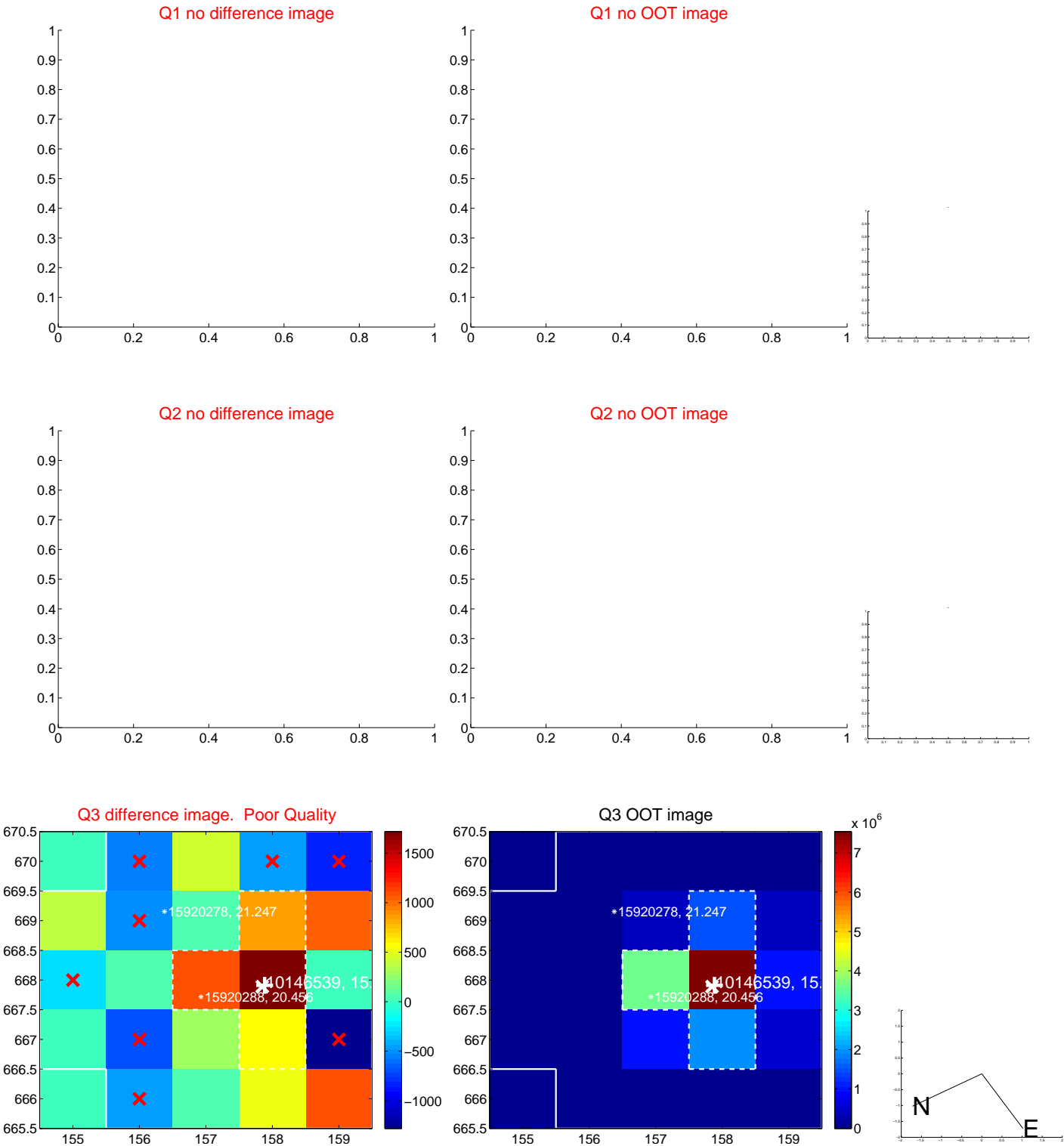
The direct PRF centroid is offset from the target star catalog position by about 0.33 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.122 ± 0.143	0.85	0.113 ± 0.139	0.045 ± 0.167
PRF-fit source offset from KIC position	0.329 ± 0.310	1.06	0.125 ± 0.104	-0.304 ± 0.320
photometric centroid source offset	1.51 ± 0.60	2.51	-1.43 ± 0.60	0.48 ± 0.58

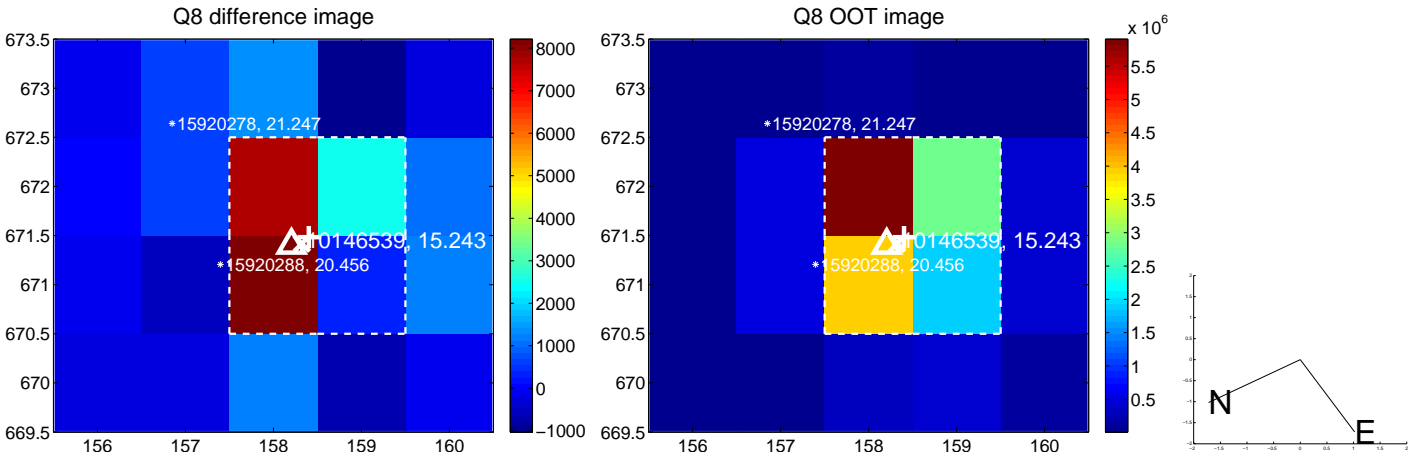
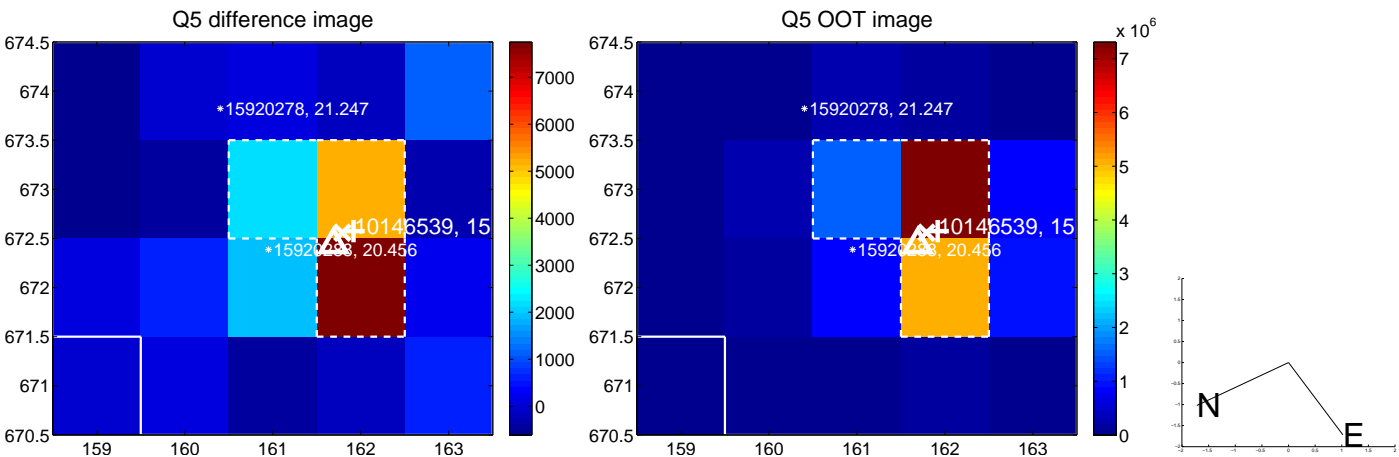


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

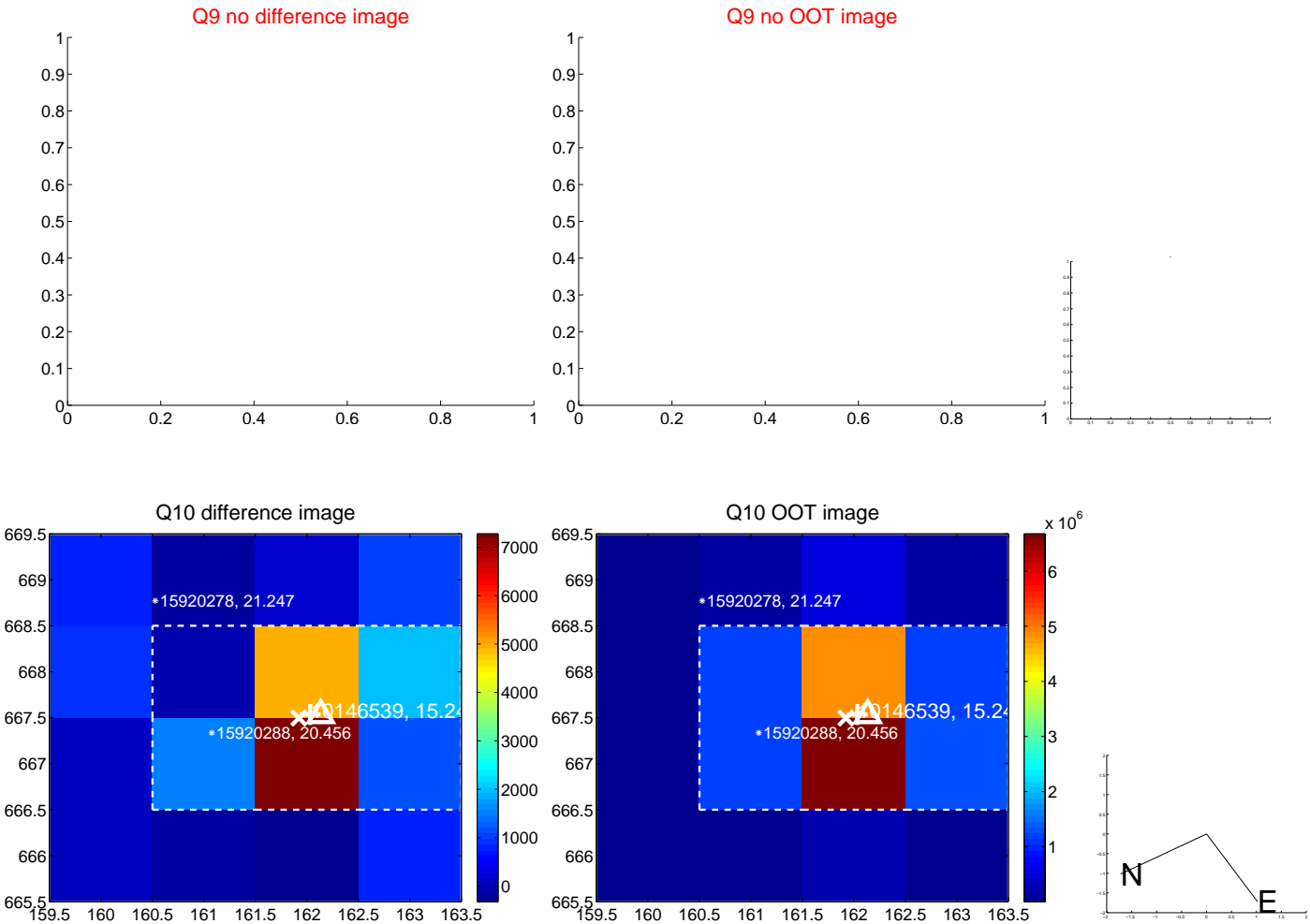
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



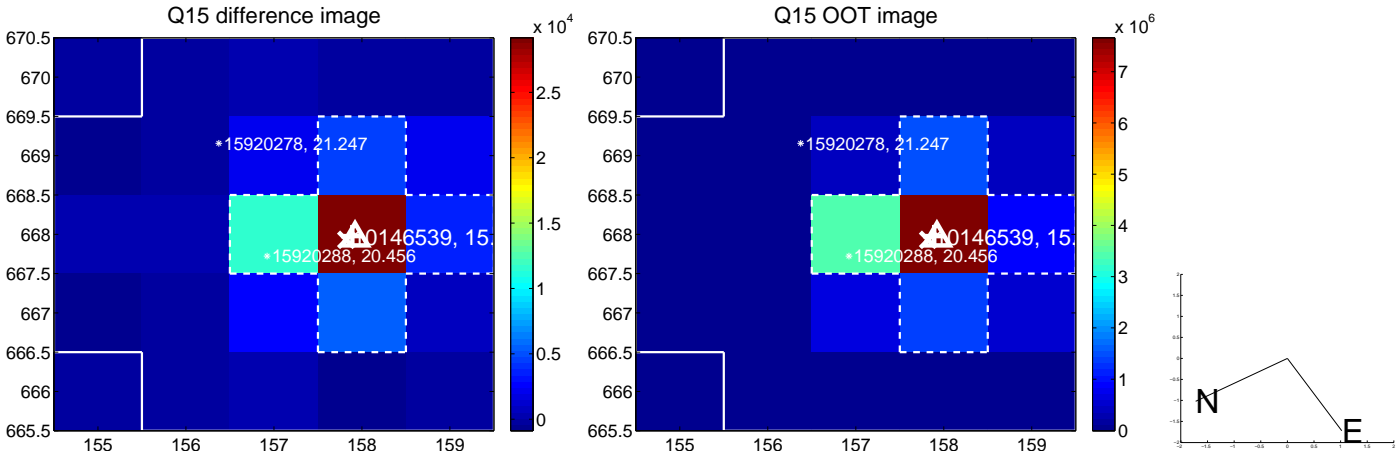
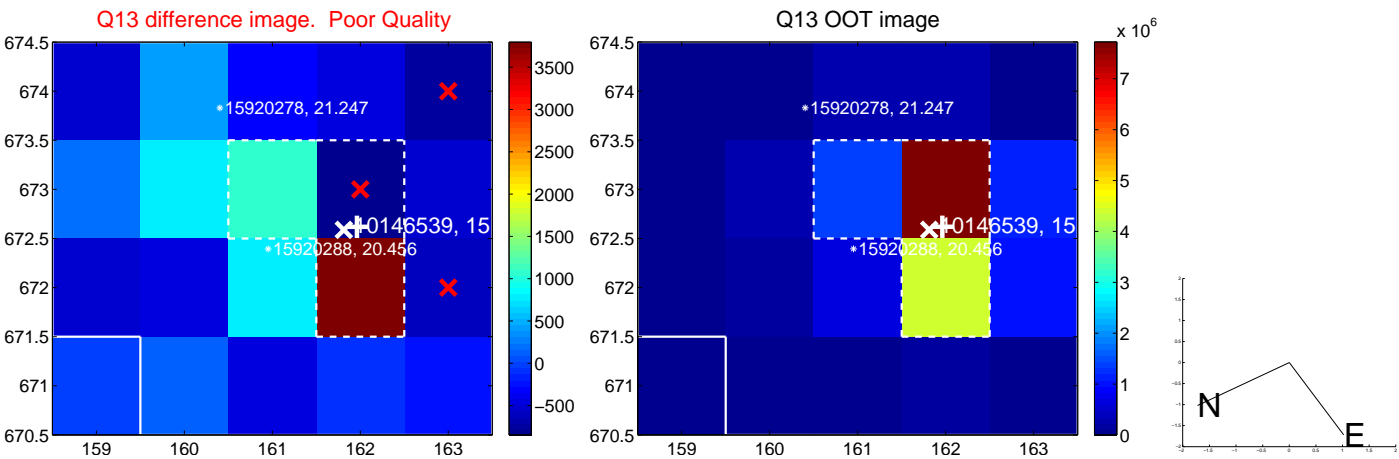
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



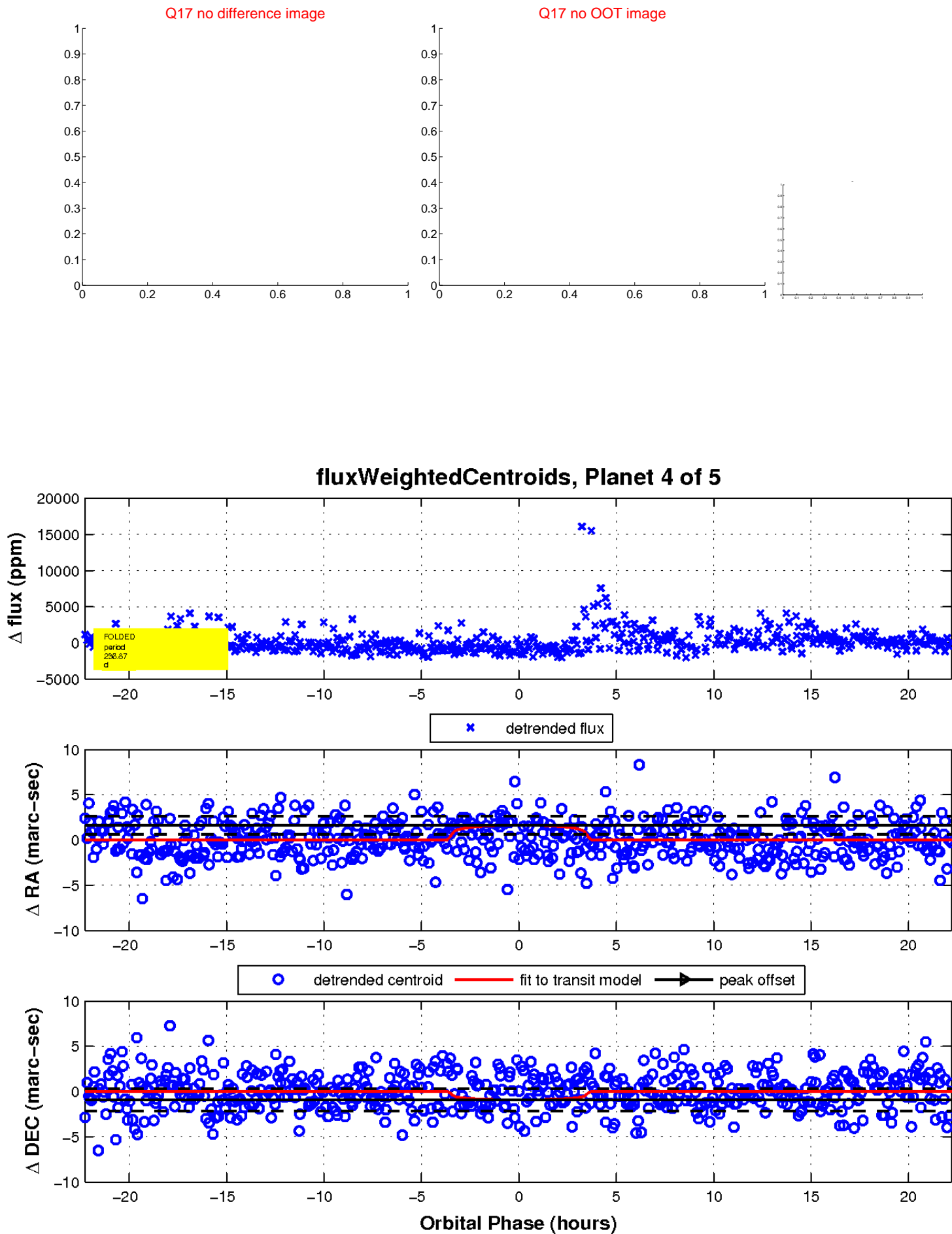
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

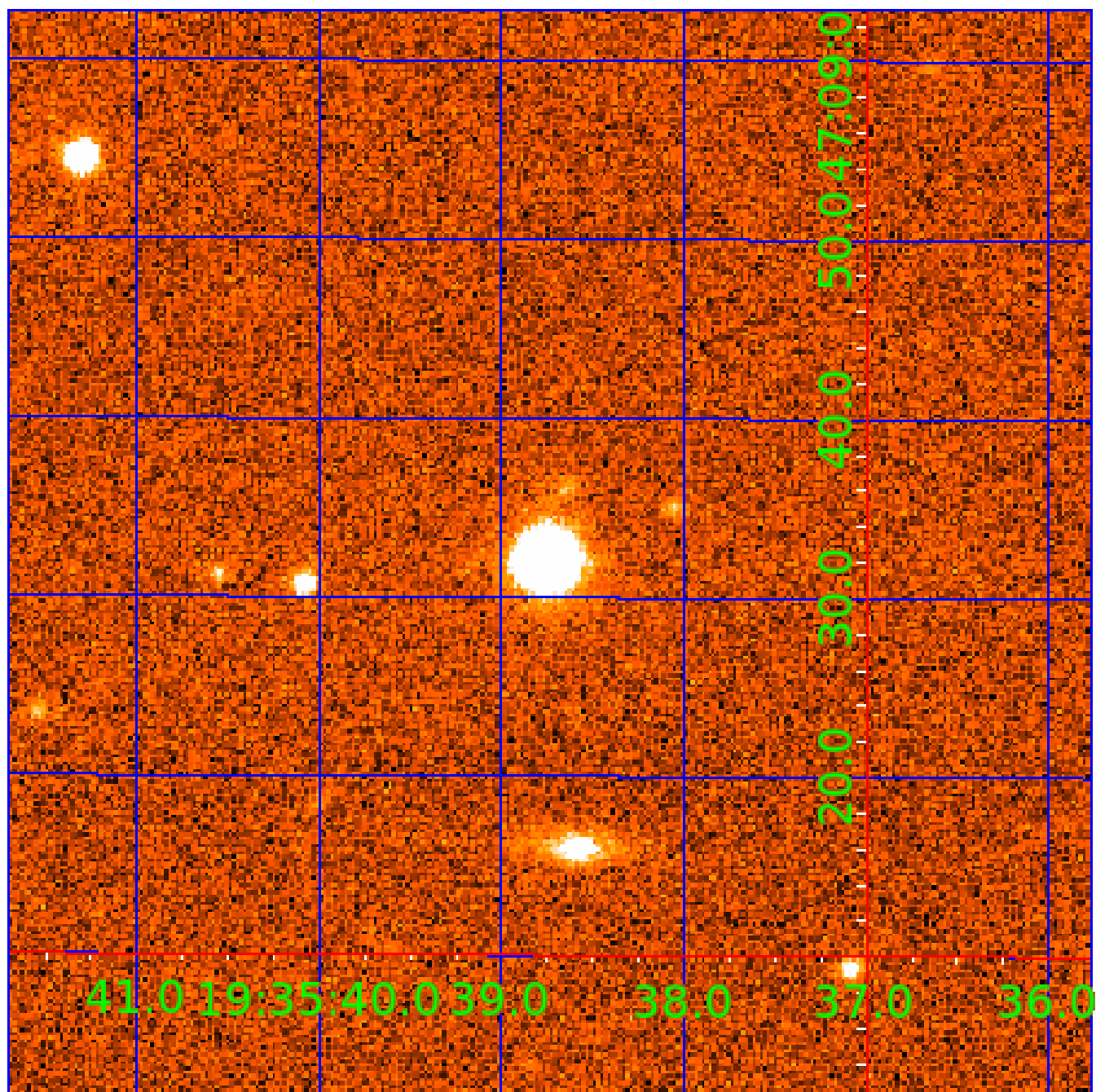


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010146539

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})
010146539-01	OBS	No	363.847151	273.291903	1884.4	9.869	17.4	7.8	0.30	3373	1.29	0.02
010146539-02	OBS	No	462.029001	486.260744	2357.2	11.315	12.1	9.1	0.30	3373	1.42	0.02
010146539-03	OBS	No	462.225677	218.687670	2116.9	5.236	13.2	7.9	0.30	3373	1.44	0.02
010146539-04	OBS	No	236.872040	277.556708	1206.1	7.427	10.6	7.0	0.30	3373	1.07	0.04
010146539-05	OBS	No	546.674760	225.736562	1626.4	5.362	10.0	6.6	0.30	3373	1.19	0.01

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010146539-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_DV—CENT_FEW_DIFFS
010146539-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—MOD_NONUNIQ_DV—MOD_POS_DV—CENT_FEW_DIFFS
010146539-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—SAME_NTL_PERIOD—CENT_KIC_POS
010146539-04	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—CENT_KIC_POS
010146539-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS

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

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

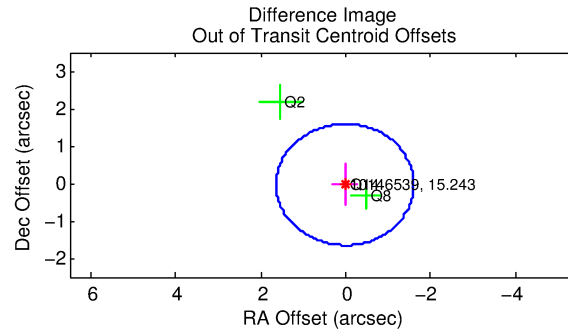
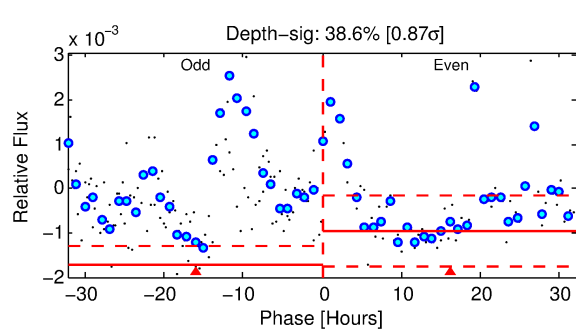
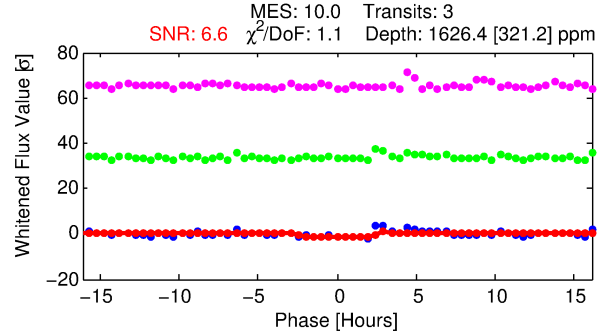
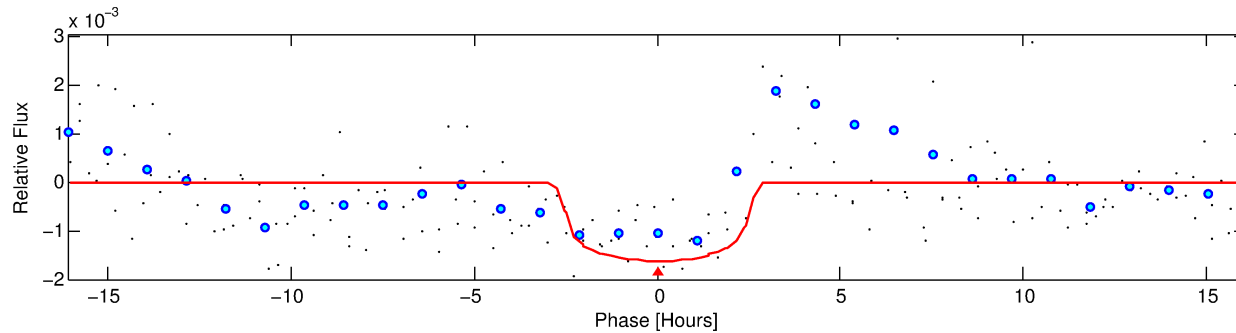
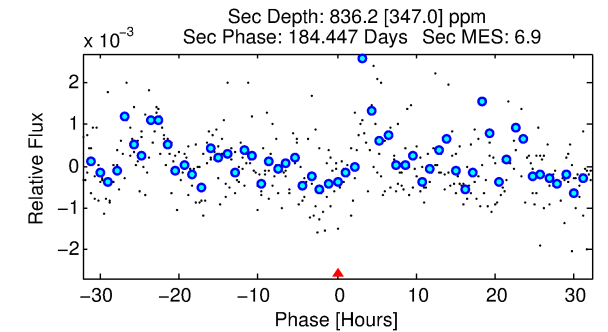
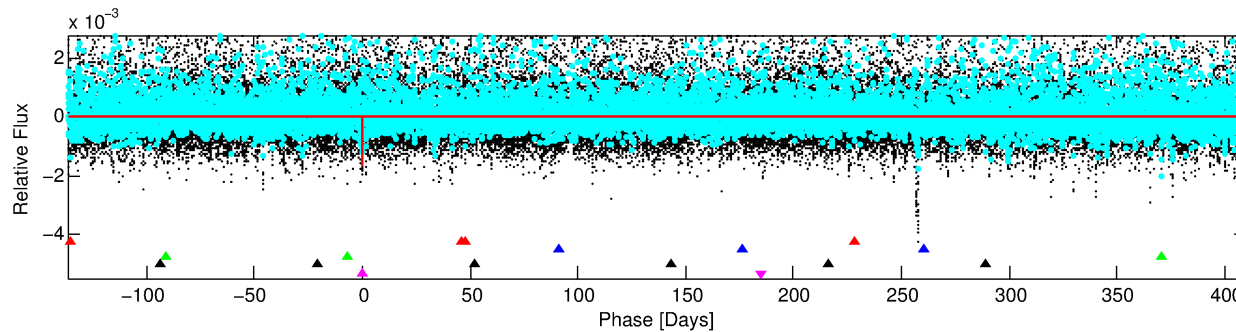
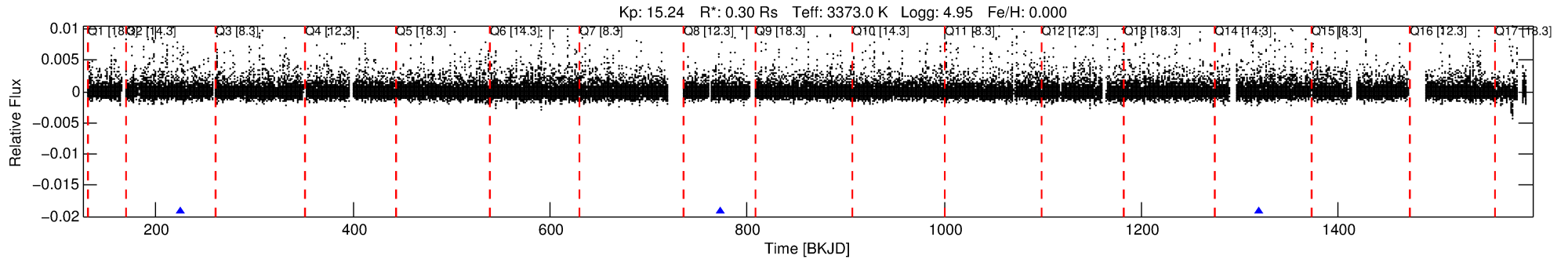
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010146539-05

No Significant Match Found

DV One-Page Summary

KIC: 10146539 Candidate: 5 of 5 Period: 546.675 d



DV Fit Results:

Period = 546.67476 [0.00793] d
Epoch = 225.7366 [0.0095] BKJD
Rp/R* = 0.0367 [0.0634]
a/R* = 784.42 [5794.67]
b = 0.25 [28.22]
Seff = 0.01 [0.00]
Teq = 87 [3] K
Rp = 1.19 [2.05] Re
a = 0.8624 [0.0784] AU
Ag = 243589.49 [848251.33] [0.29σ]
Teff = 2994 [2606] K [1.12σ]

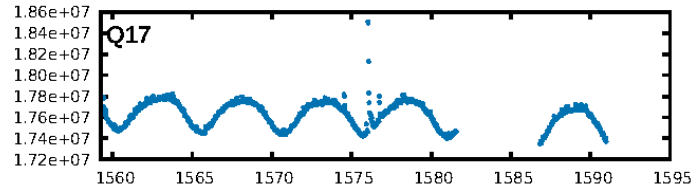
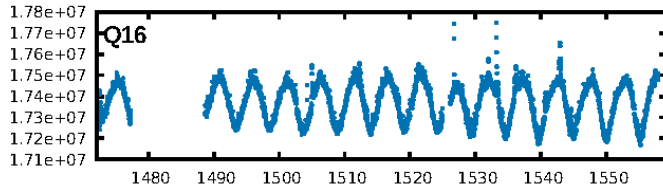
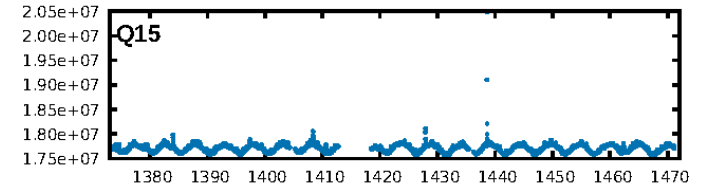
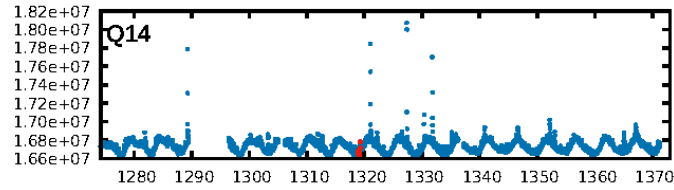
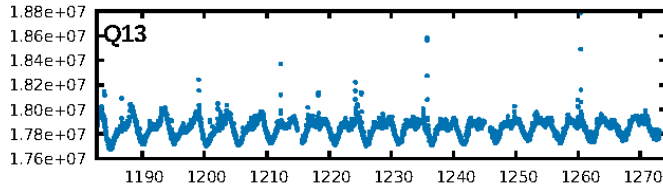
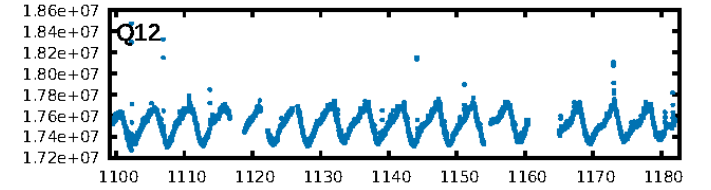
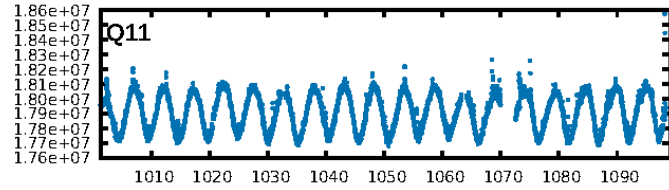
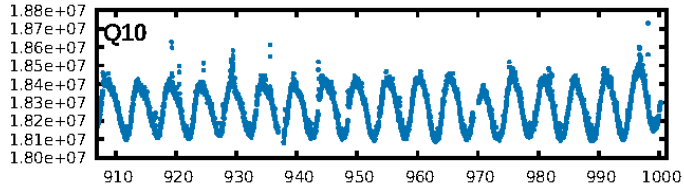
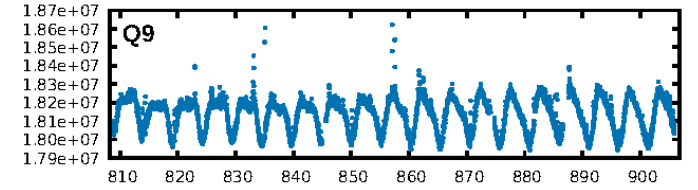
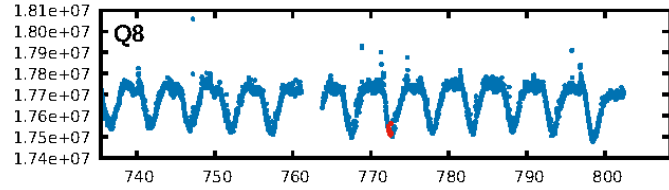
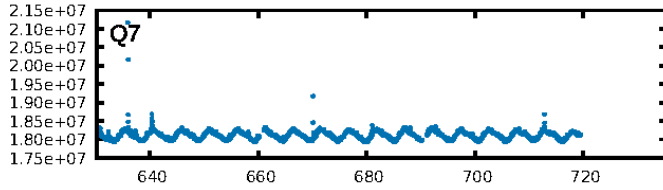
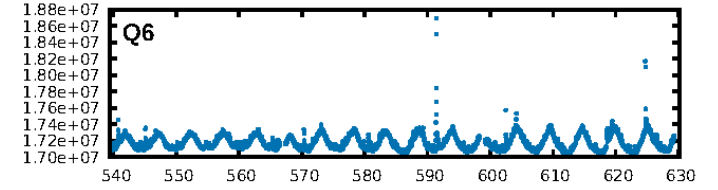
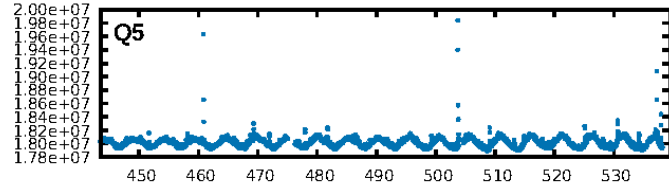
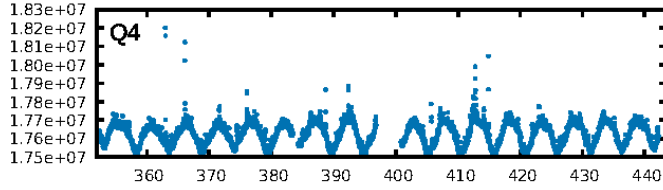
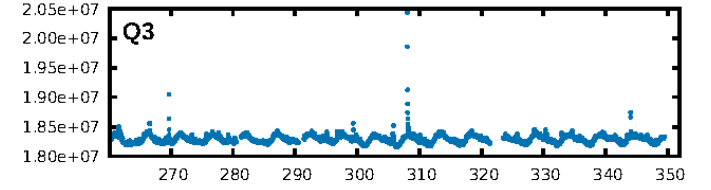
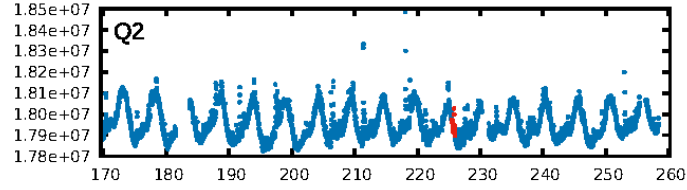
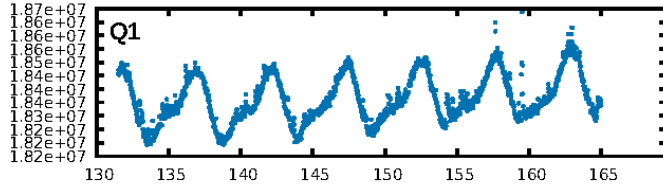
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [270.45σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 58.7%
ModelChiSquareGof-sig: 99.6%
Bootstrap-pfa: 7.66e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.5958
Centroid-sig: 26.6%
Centroid-so: 0.863 arcsec [1.42σ]
OotOffset-rm: 0.035 arcsec [0.07σ]
OotOffset-st: 2/0/1/0 [3]
KicOffset-rm: 0.613 arcsec [1.61σ]
KicOffset-st: 2/0/1/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

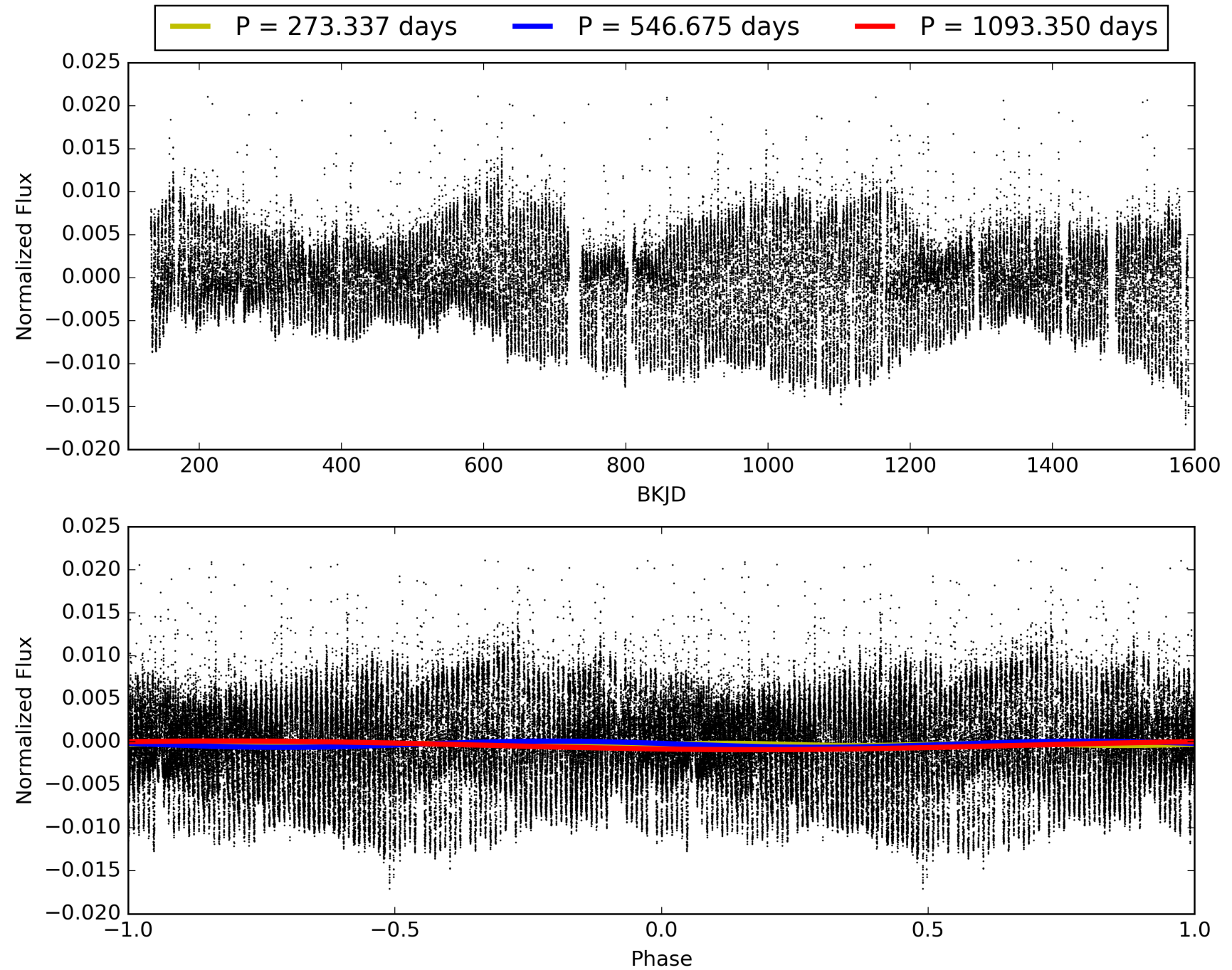
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 23:31:15 Z

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

TCE 010146539-05, PDC Light Curves

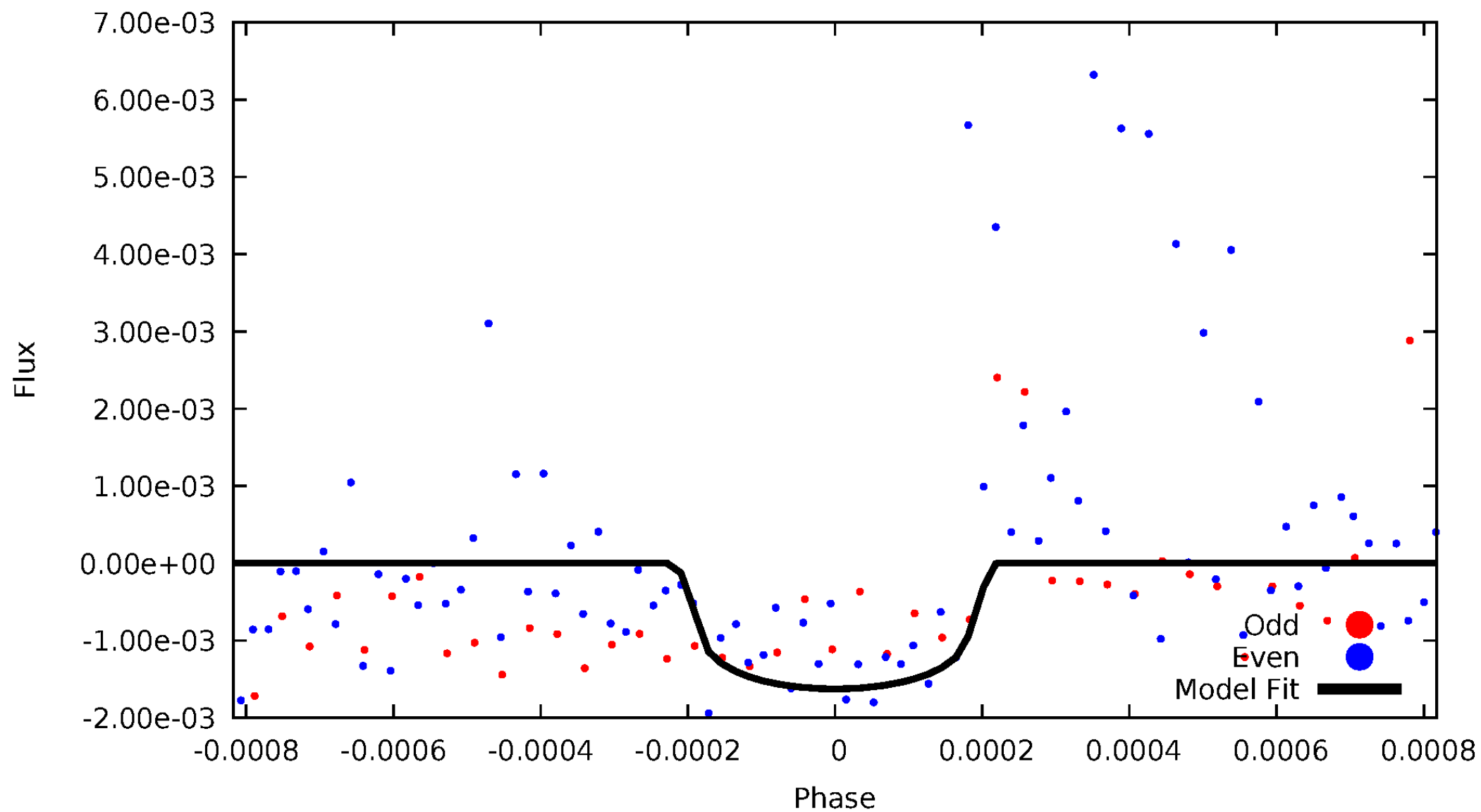


TCE 010146539-05



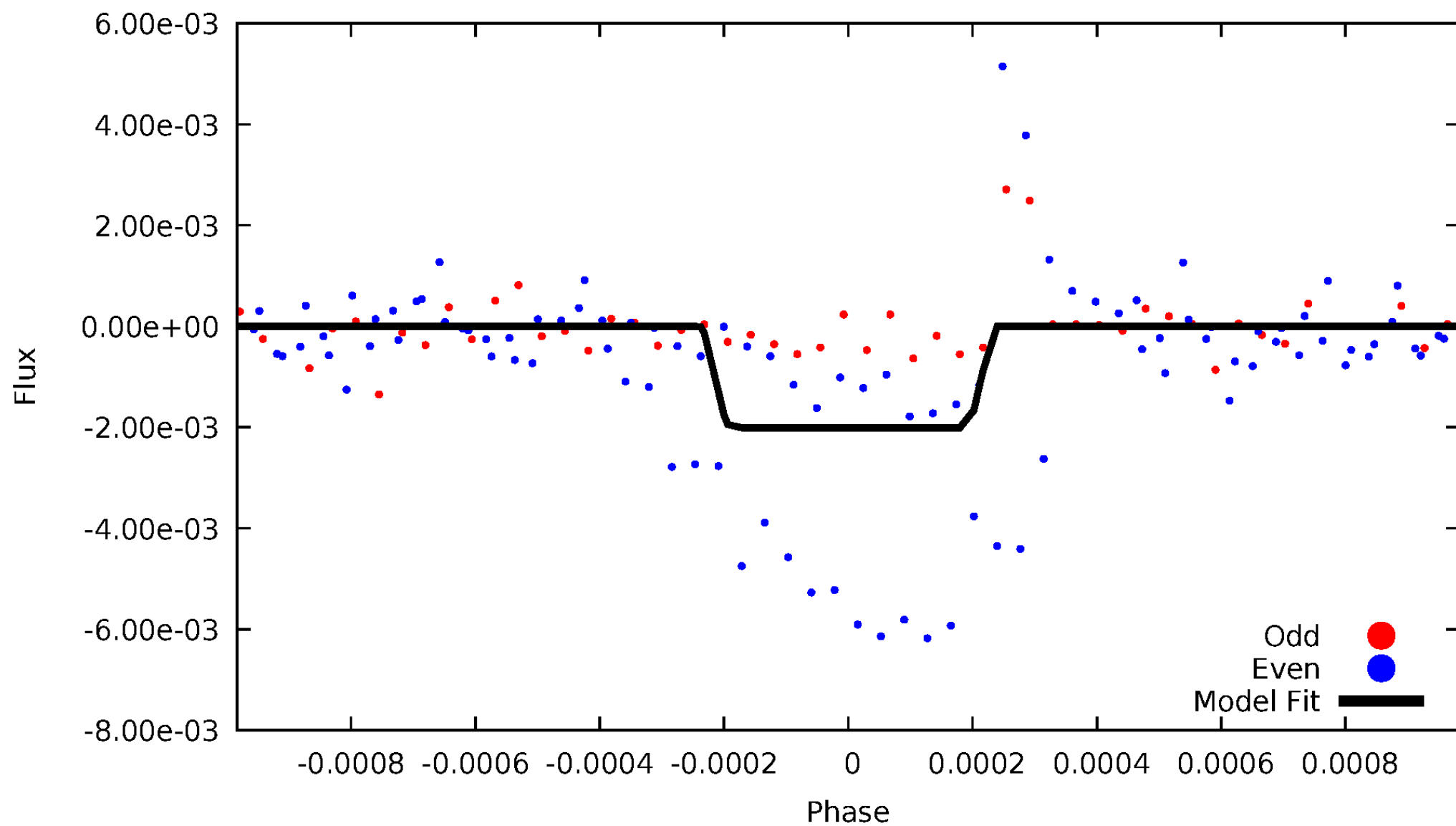
DV Odd/Even

TCE 010146539-05



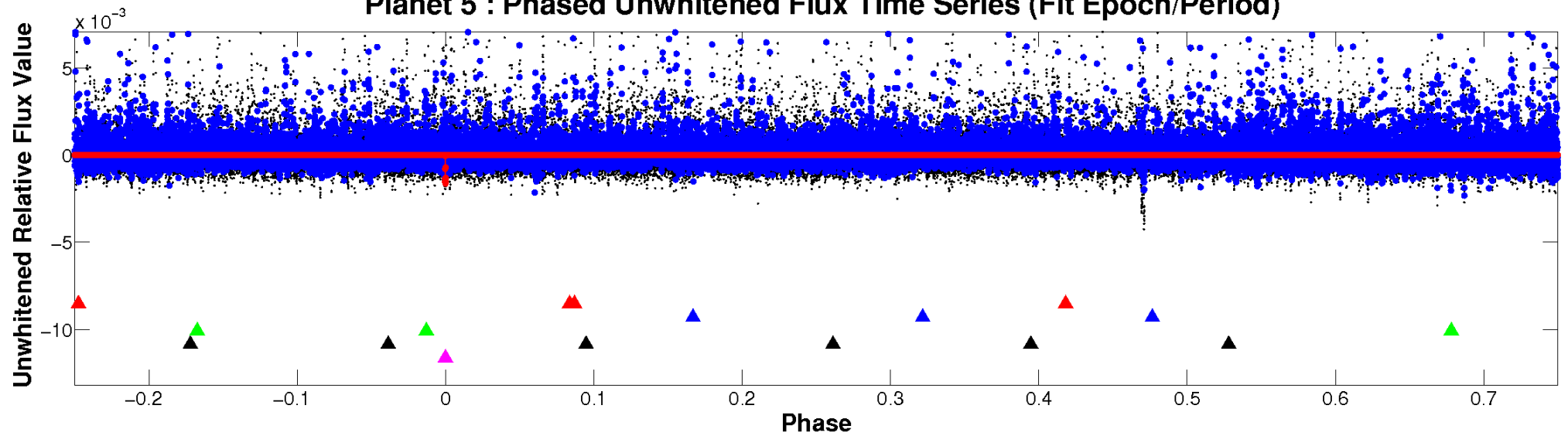
ALT Odd/Even

TCE 010146539-05

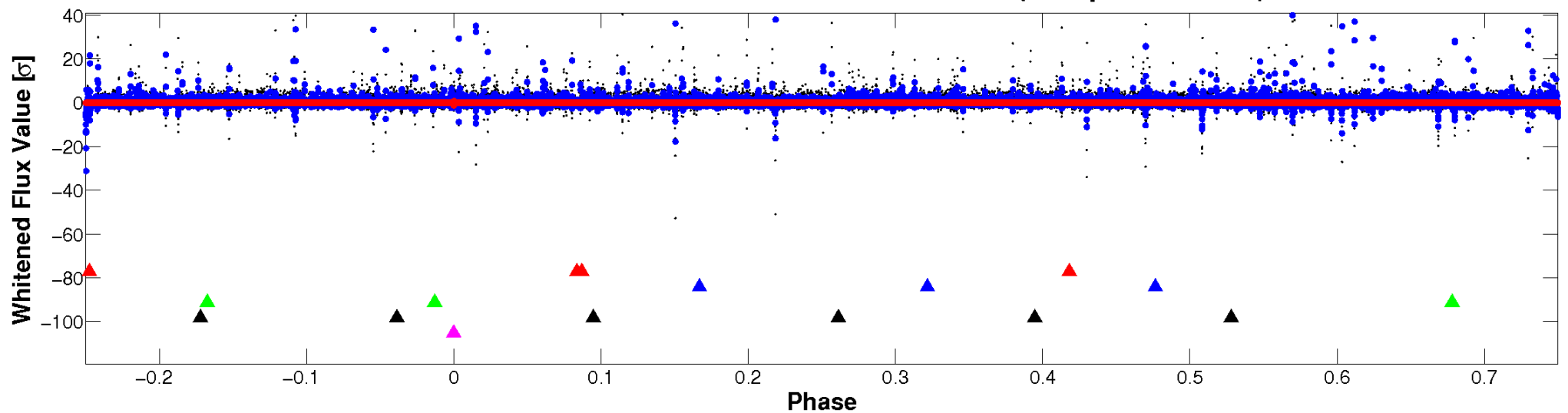


Non-Whitened Vs. Whitened Light Curve

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

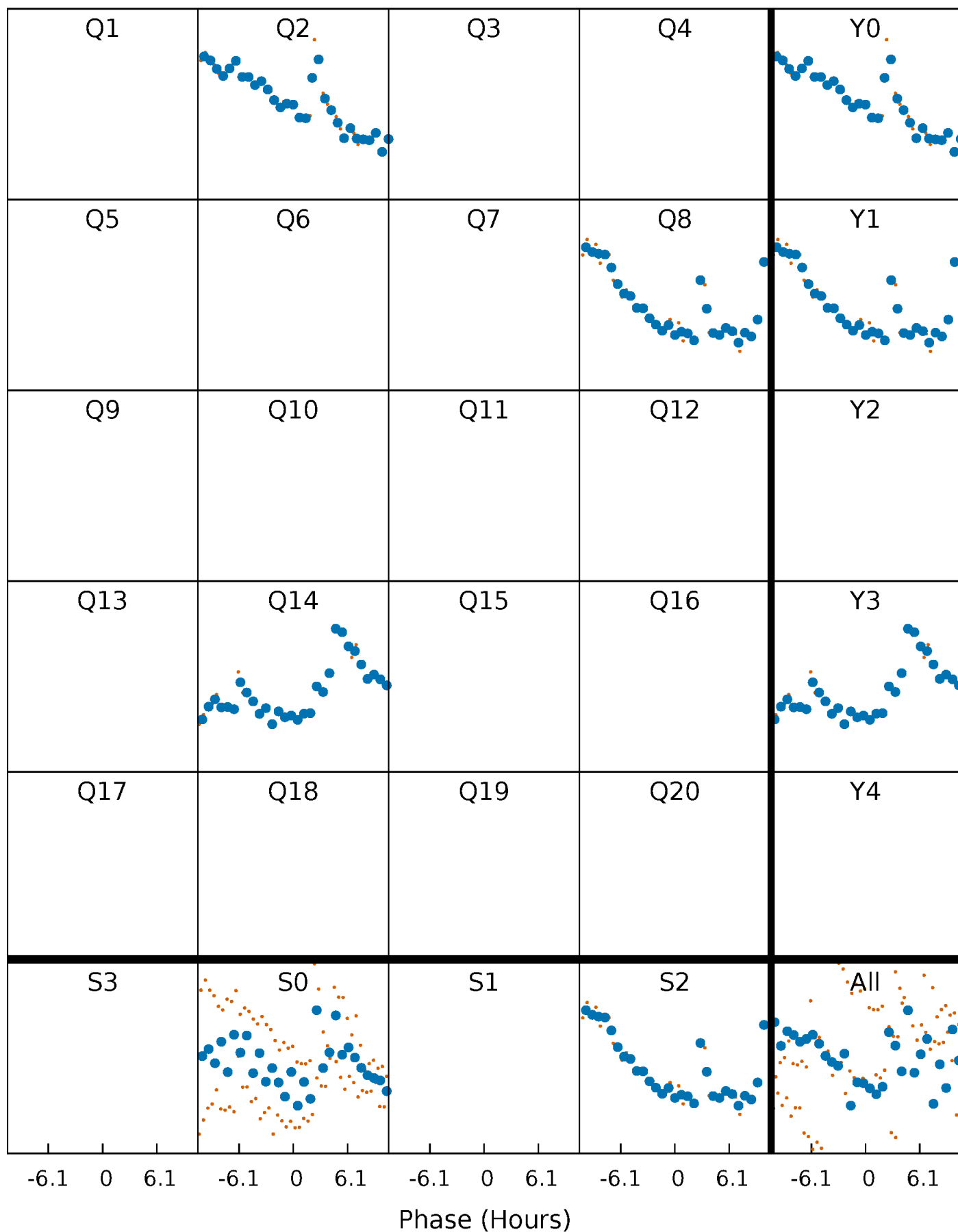


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



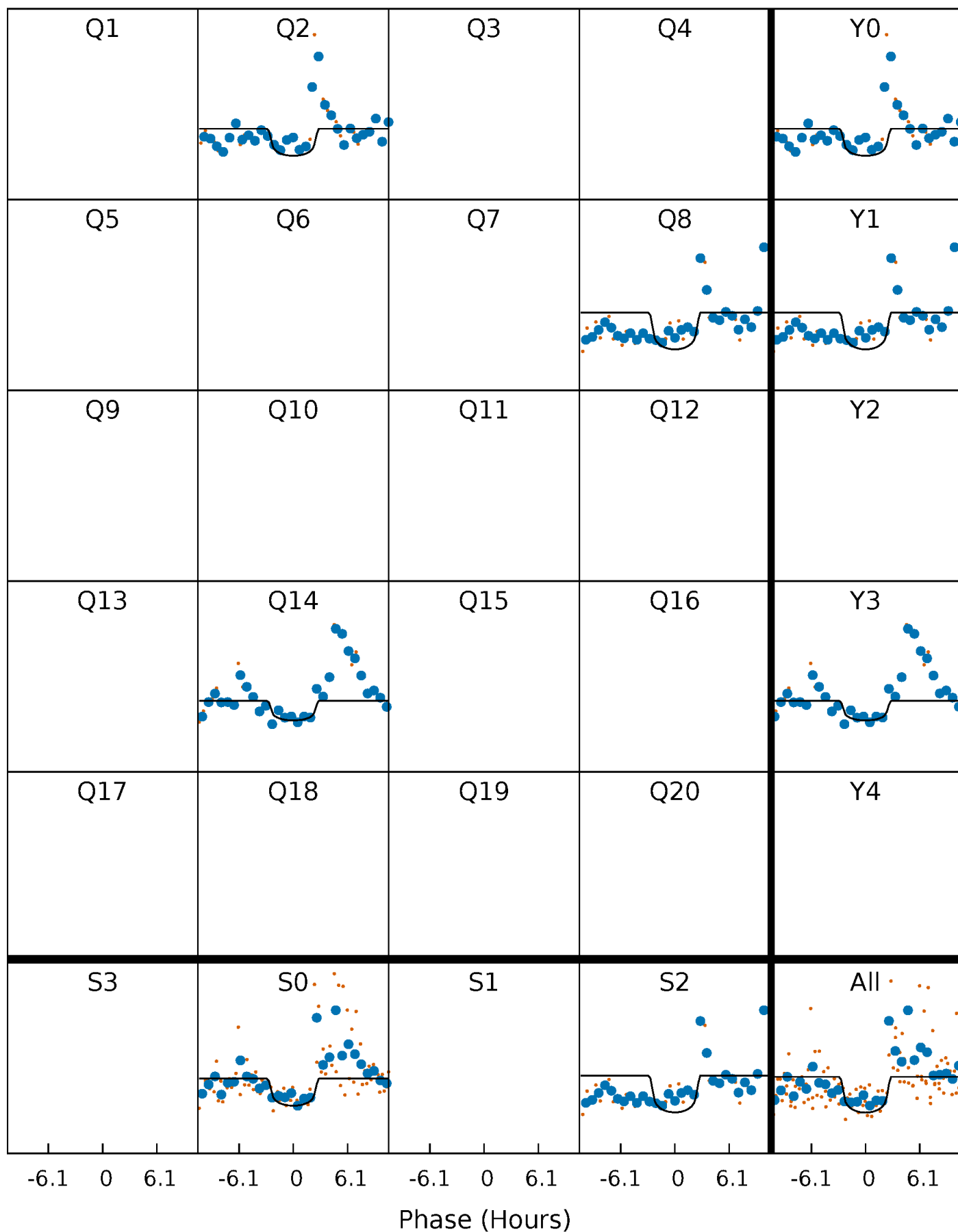
PDC Quarter-Phased Transit Curves

TCE 010146539-05 $P=546.674760$ Days $T_0=225.736562$ (BKJD)



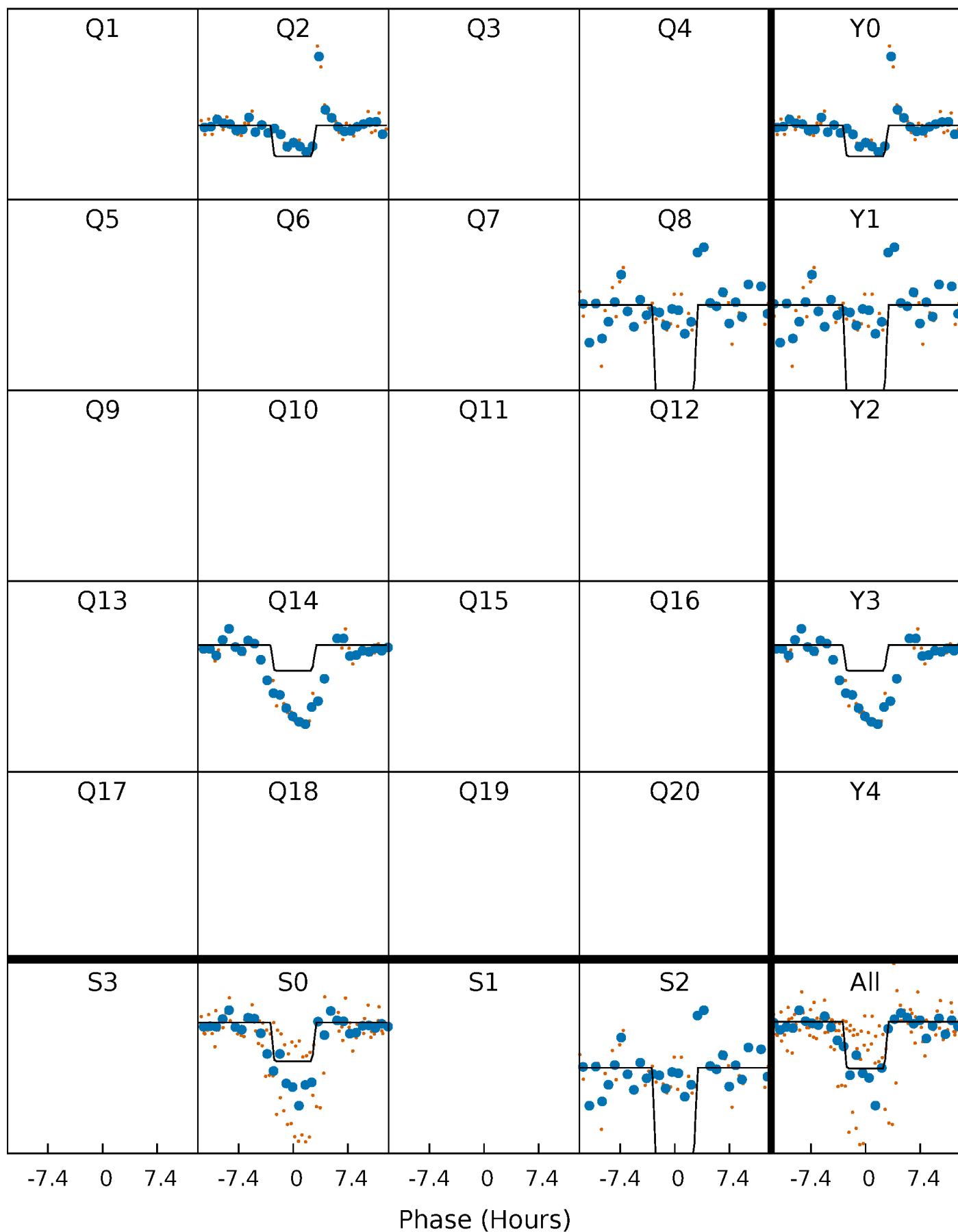
DV Quarter-Phased Transit Curves

TCE 010146539-05 $P=546.674760$ Days $T_0=225.736562$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

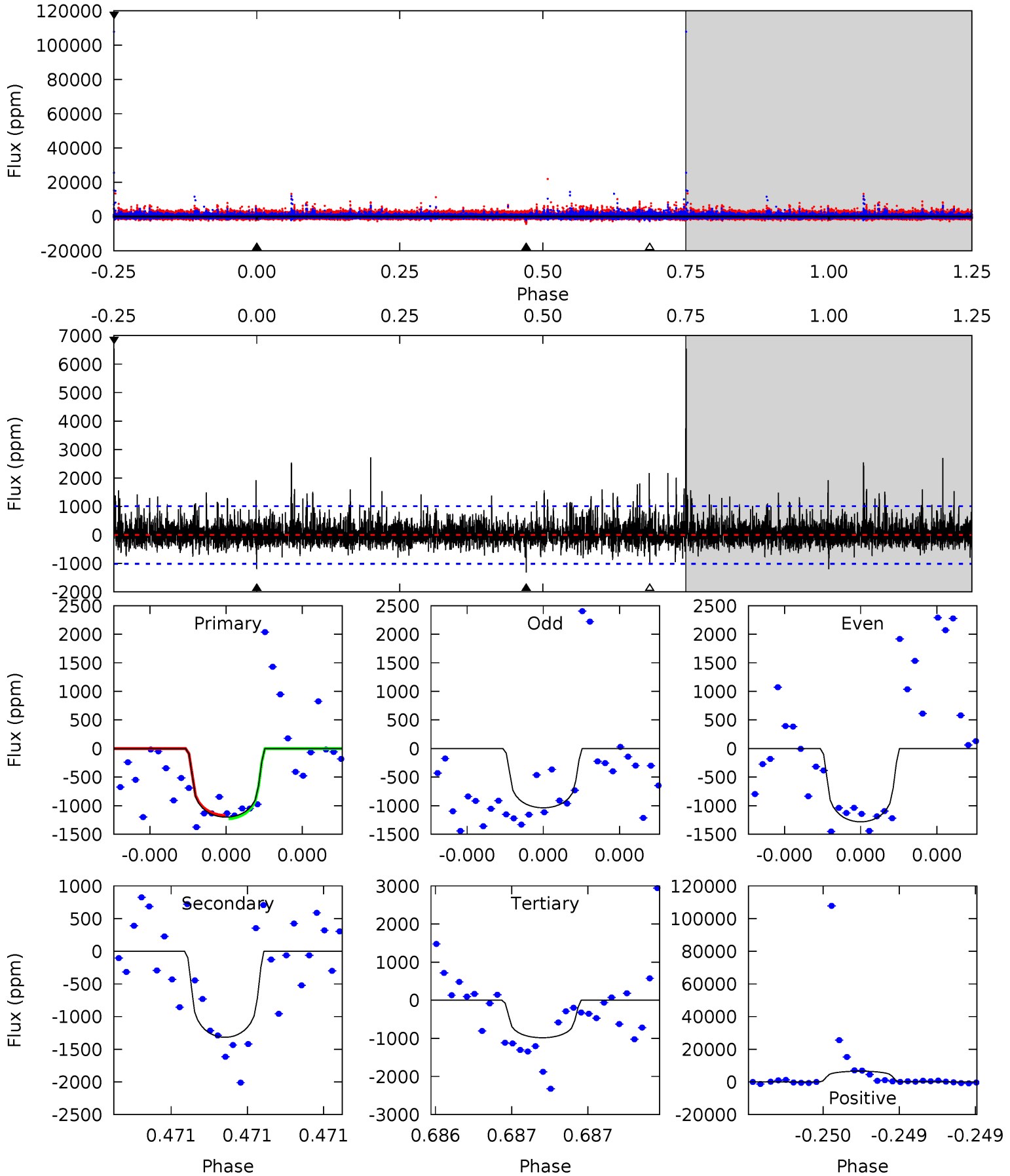
TCE 010146539-05 $P=546.693087$ Days $T_0=225.699830$ (BKJD)



DV Model-Shift Uniqueness Test

010146539-05, P = 546.674760 Days, E = 225.736562 Days

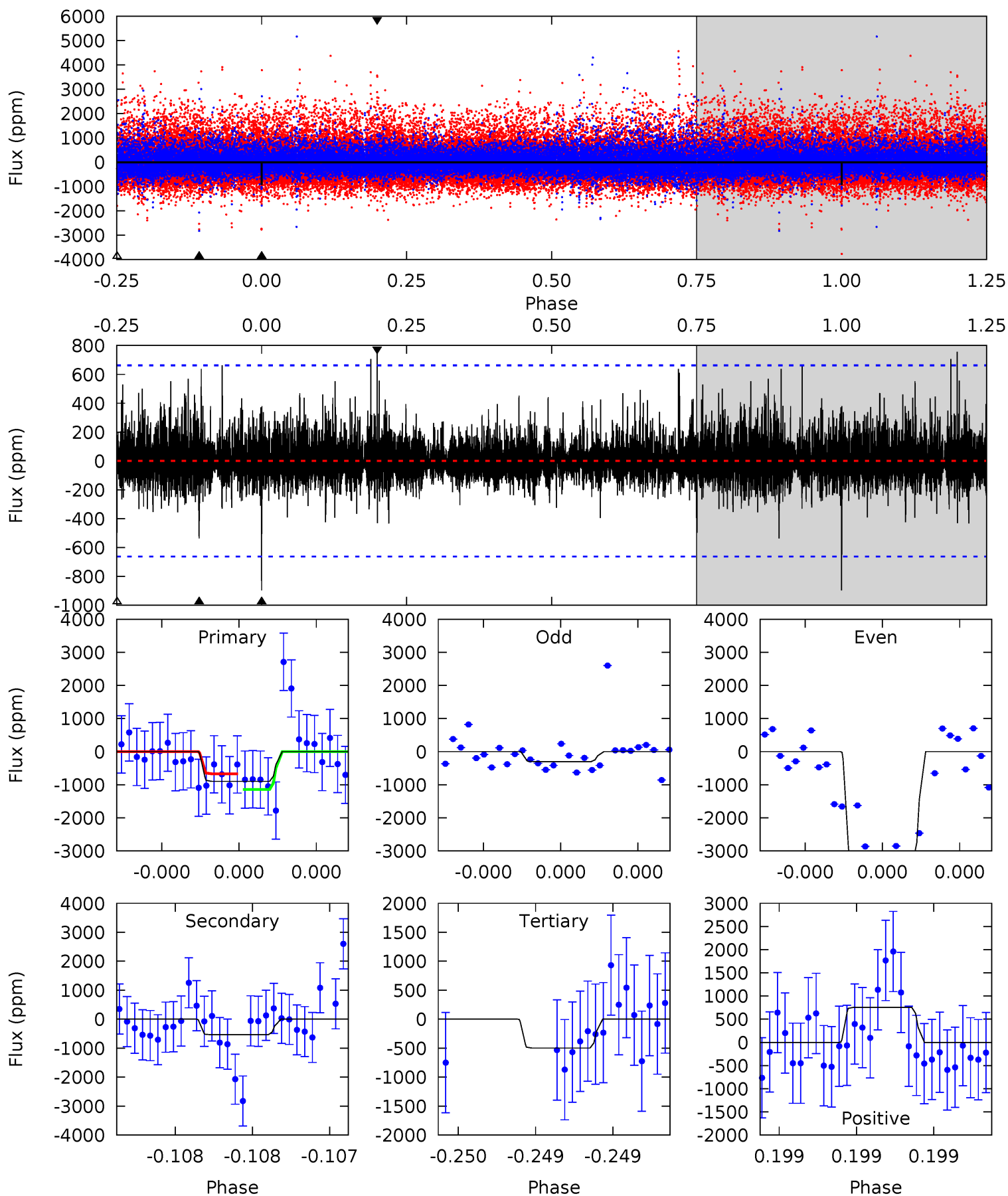
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.65	7.30	5.45	36.2	5.60	3.52	1.98	1.20	-29.6	1.85	-29.0	0.43	1.01	0.83	0.16



Alt Model-Shift Uniqueness Test

010146539-05, P = 546.693087 Days, E = 225.699830 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.57	4.53	4.20	6.38	5.59	3.51	0.93	3.37	1.19	0.33	-1.86	13.5	1.96	0.46	2.00



Stellar Parameters For KIC 010146539

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3373^{+43}_{-37}	$4.952^{+0.040}_{-0.040}$	$0.000^{+0.100}_{-0.100}$	$0.296^{+0.038}_{-0.031}$	$0.286^{+0.048}_{-0.035}$	$15.560^{+3.608}_{-3.194}$
	+1%/-1%	+1%/-1%	+inf%/-inf%	+13%/-10%	+17%/-12%	+23%/-21%
Source	PHO2	PHO2	PHO2	DSEP		

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

Secondary Eclipse Parameters for KIC 010146539-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1317 ± 181	$1.79^{+1.80}_{-1.17}$	122^{+3}_{-3}	2964^{+1226}_{-476}	$163189^{+1209560}_{-122223}$
Alt.	-536 ± 118	$2.08^{+1.83}_{-1.32}$	122^{+2}_{-3}	2536^{+828}_{-348}	$50495^{+323738}_{-36685}$

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

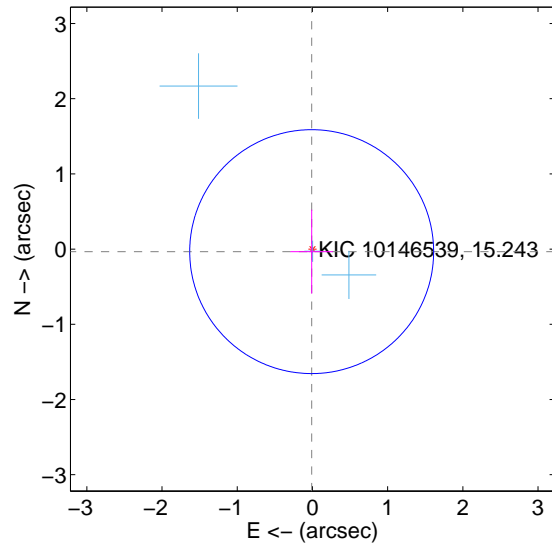
Supplemental centroid analysis for 010146539-05. Kepler magnitude: 15.24. Transit SNR 6.65

There are 3 quarters with good PRF difference image offsets

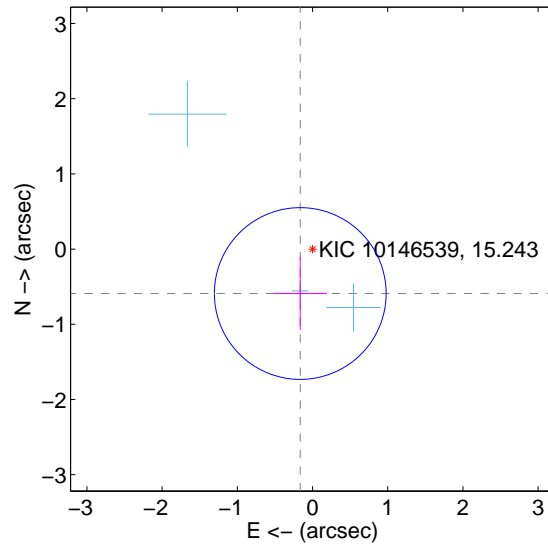
The direct PRF centroid is offset from the target star catalog position by about 0.55 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.035 ± 0.541	0.07	0.010 ± 0.283	-0.034 ± 0.558
PRF-fit source offset from KIC position	0.613 ± 0.381	1.61	0.163 ± 0.356	-0.591 ± 0.485
photometric centroid source offset	0.86 ± 0.61	1.42	0.69 ± 0.63	-0.52 ± 0.57

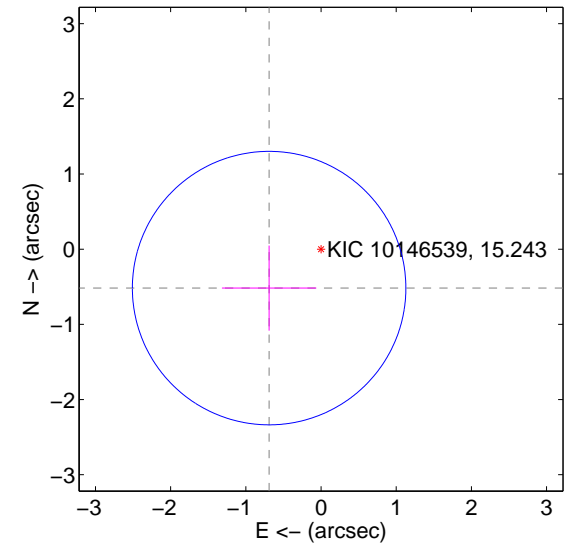
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

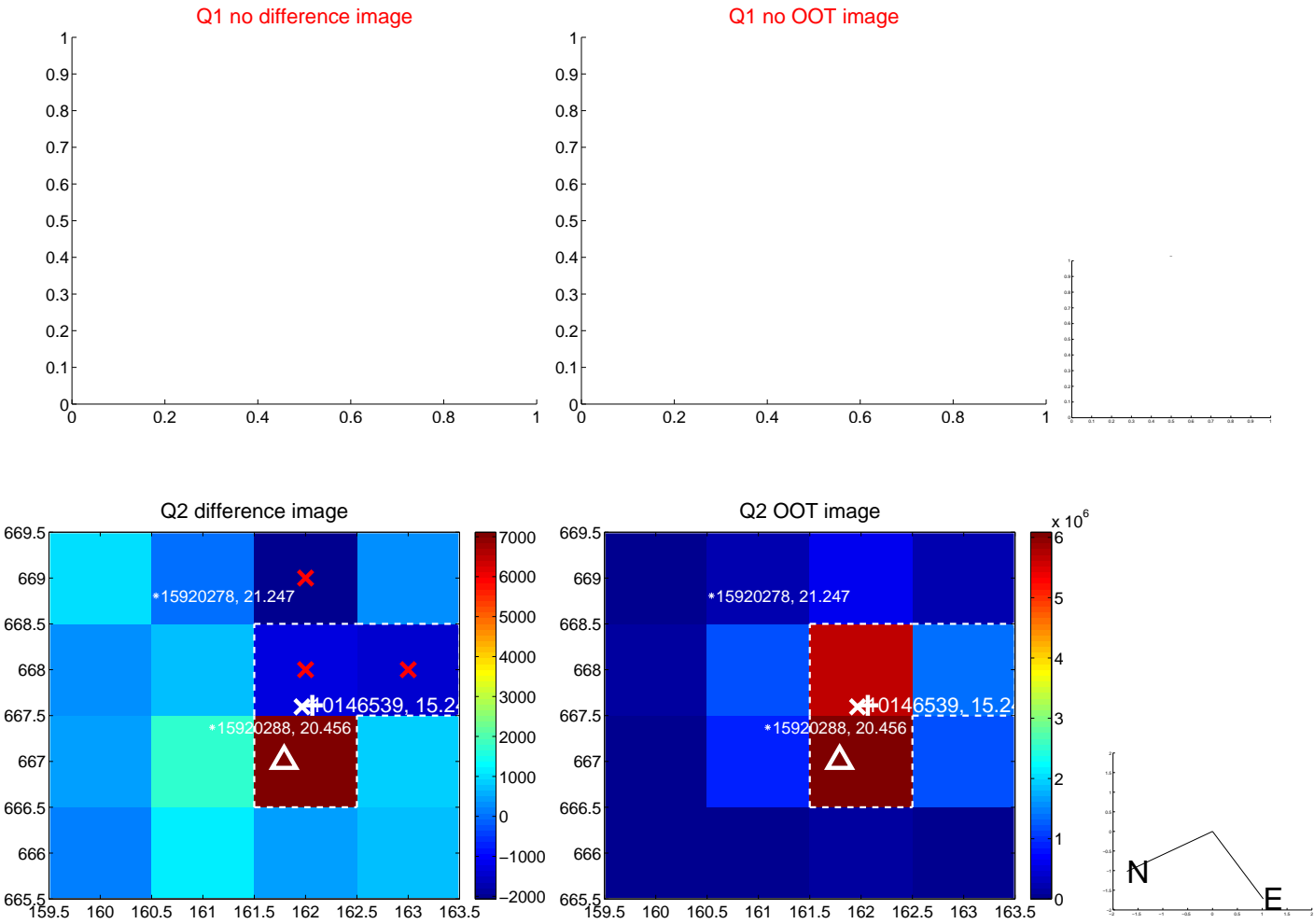


offset from photometric centroids

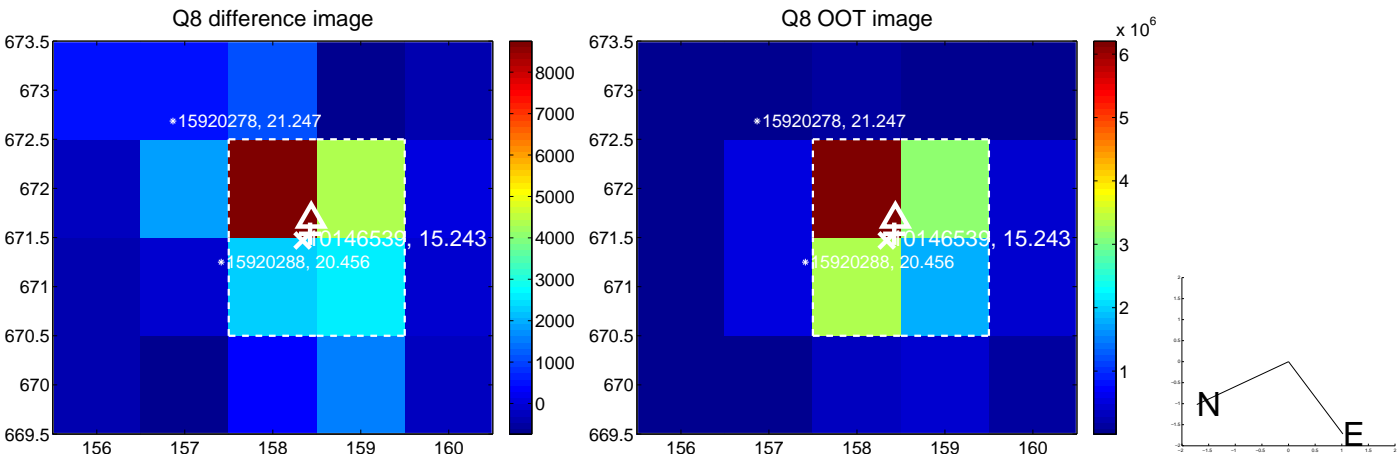
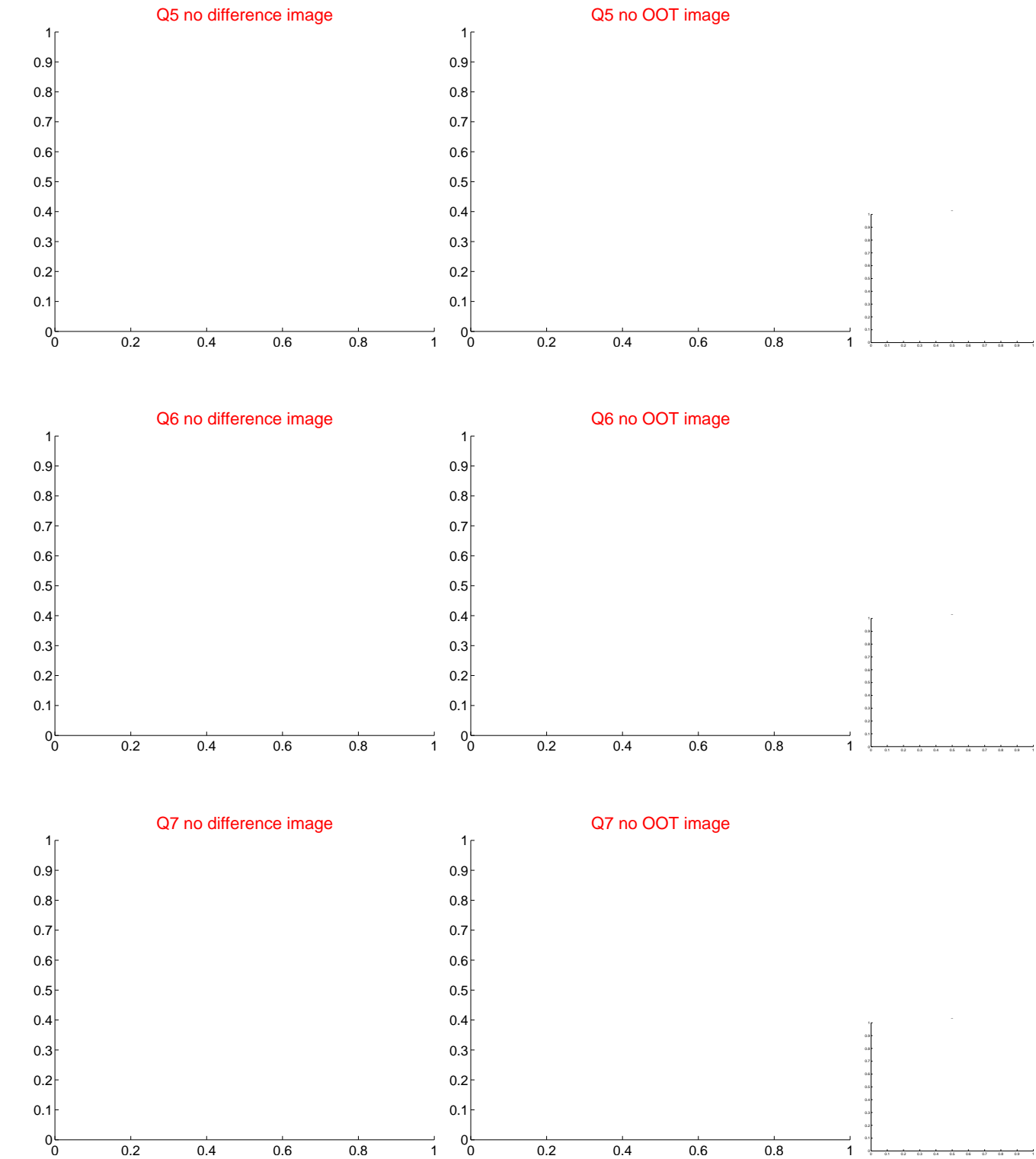


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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



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



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



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

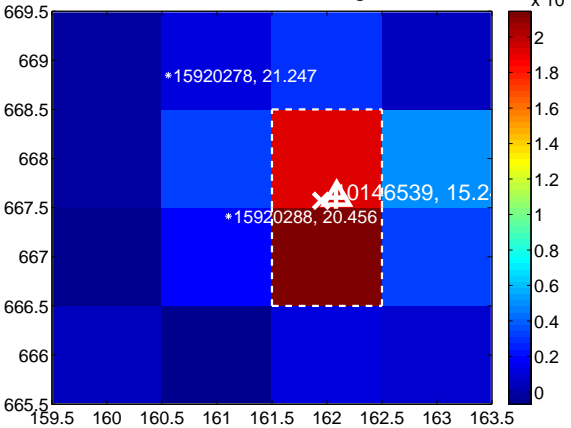
Q13 no difference image



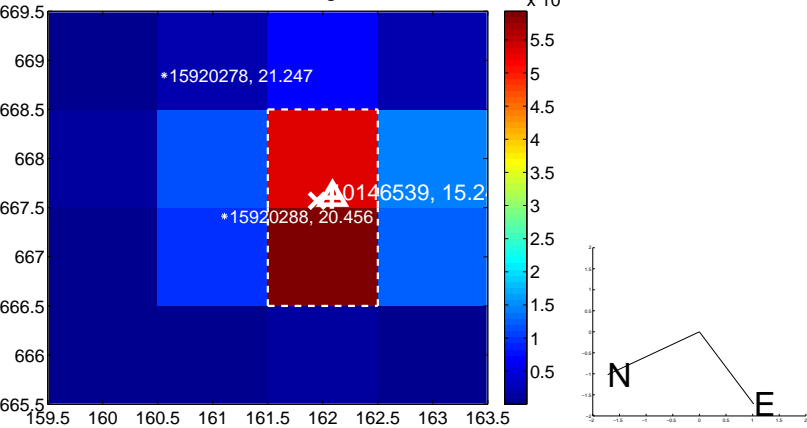
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



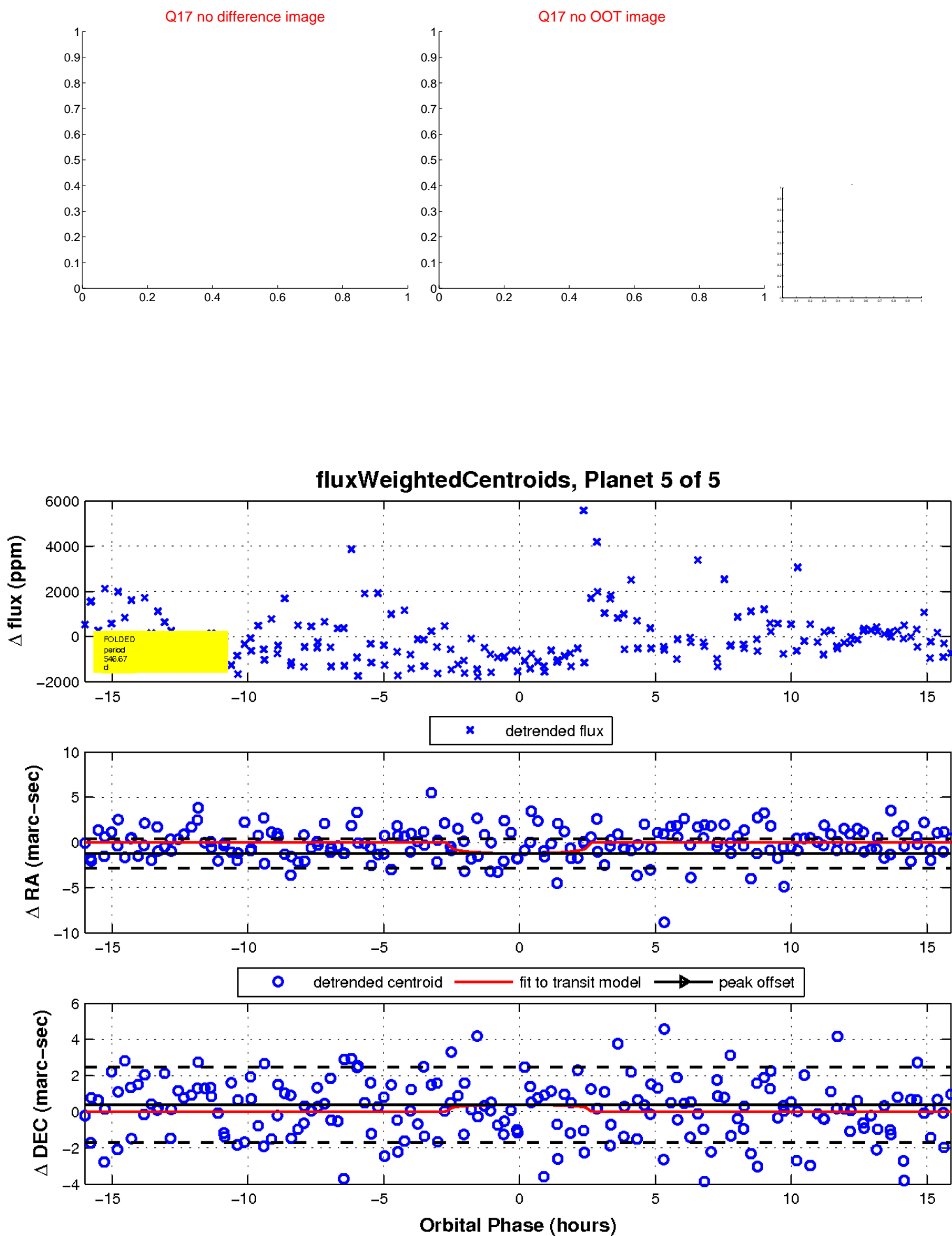
Q16 no difference image



Q16 no OOT image



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



UKIRT Image

Declination

