

KIC 004929016

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})
004929016-01	OBS	No	546.515996	470.891992	560.7	10.500	16.0	-1.0	0.62	4090	1.42	0.08
004929016-02	OBS	No	289.283172	198.911604	798.8	7.630	15.1	4.6	0.62	4090	2.34	0.18
004929016-03	OBS	No	313.930962	226.350204	1767.2	10.088	14.2	9.5	0.62	4090	2.76	0.16
004929016-04	OBS	No	182.550730	204.069750	522.3	7.527	15.6	2.7	0.62	4090	1.63	0.34
004929016-05	OBS	No	398.941160	310.972128	1183.9	1.352	14.4	7.4	0.62	4090	2.27	0.12
004929016-06	OBS	No	169.559378	294.340992	1501.0	7.543	14.0	9.6	0.62	4090	2.48	0.37
004929016-09	OBS	No	221.143525	297.651451	845.4	21.195	15.2	4.6	0.62	4090	2.11	0.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004929016-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
004929016-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS
004929016-04	OBS	FP	0.00	1	0	0	0	LPP_DV—INCONSISTENT_TRANS
004929016-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
004929016-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

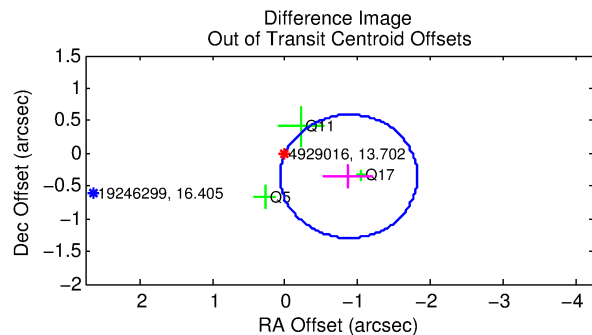
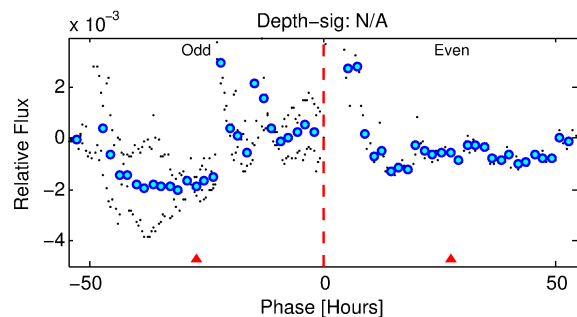
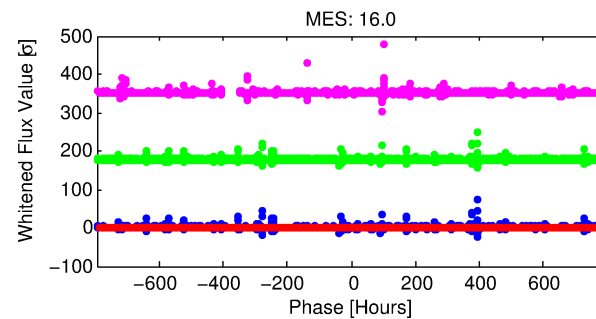
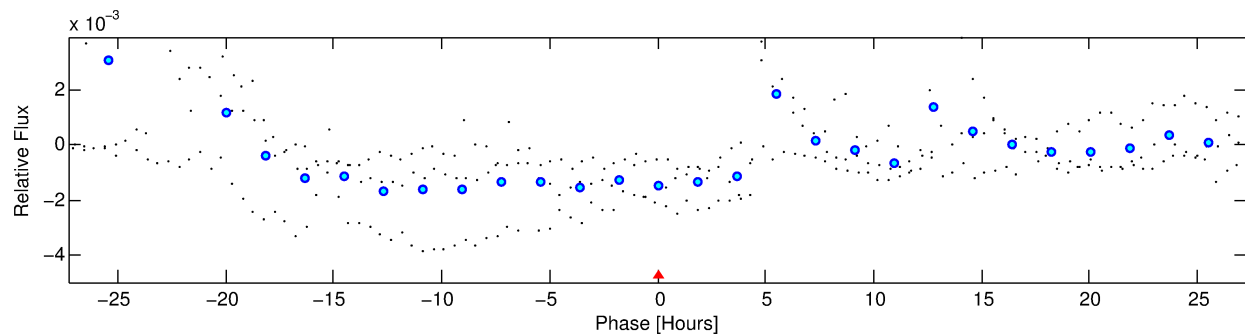
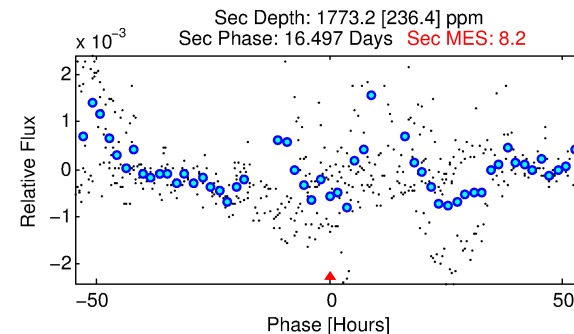
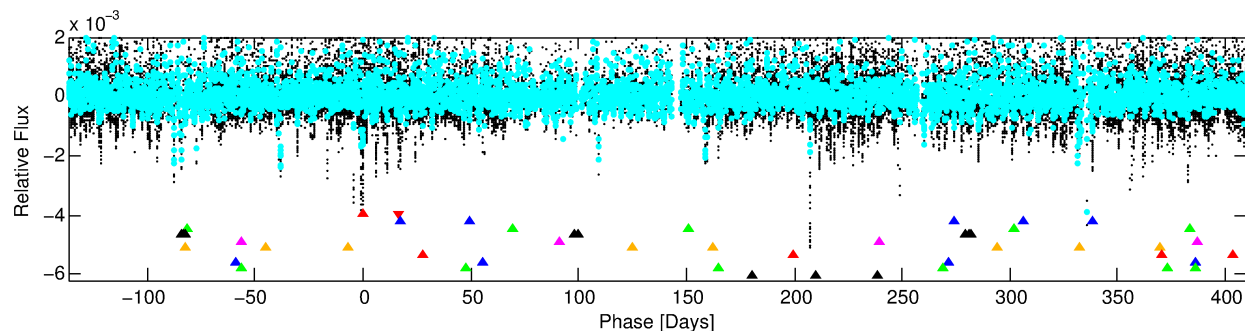
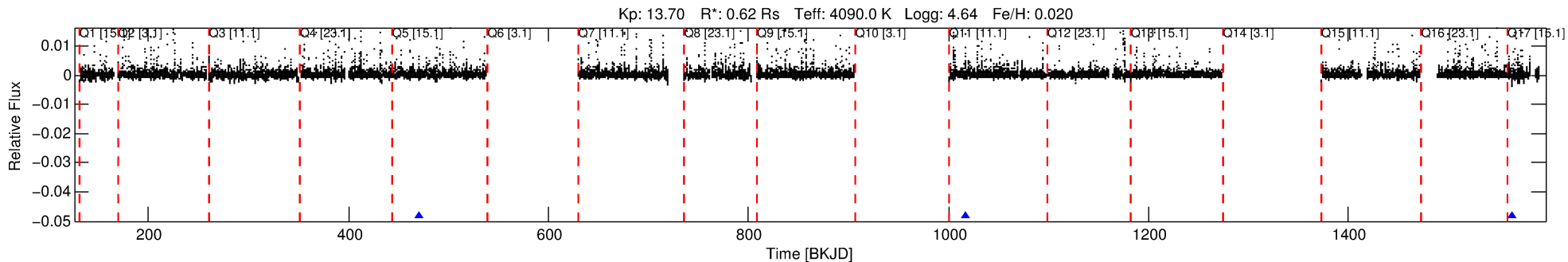
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004929016-01

No Significant Match Found

DV One-Page Summary

KIC: 4929016 Candidate: 1 of 10 Period: 546.516 d



TPS TCE Results:

Period = 546.51600 d
Epoch = 470.8920 BKJD

DV fit results are unavailable

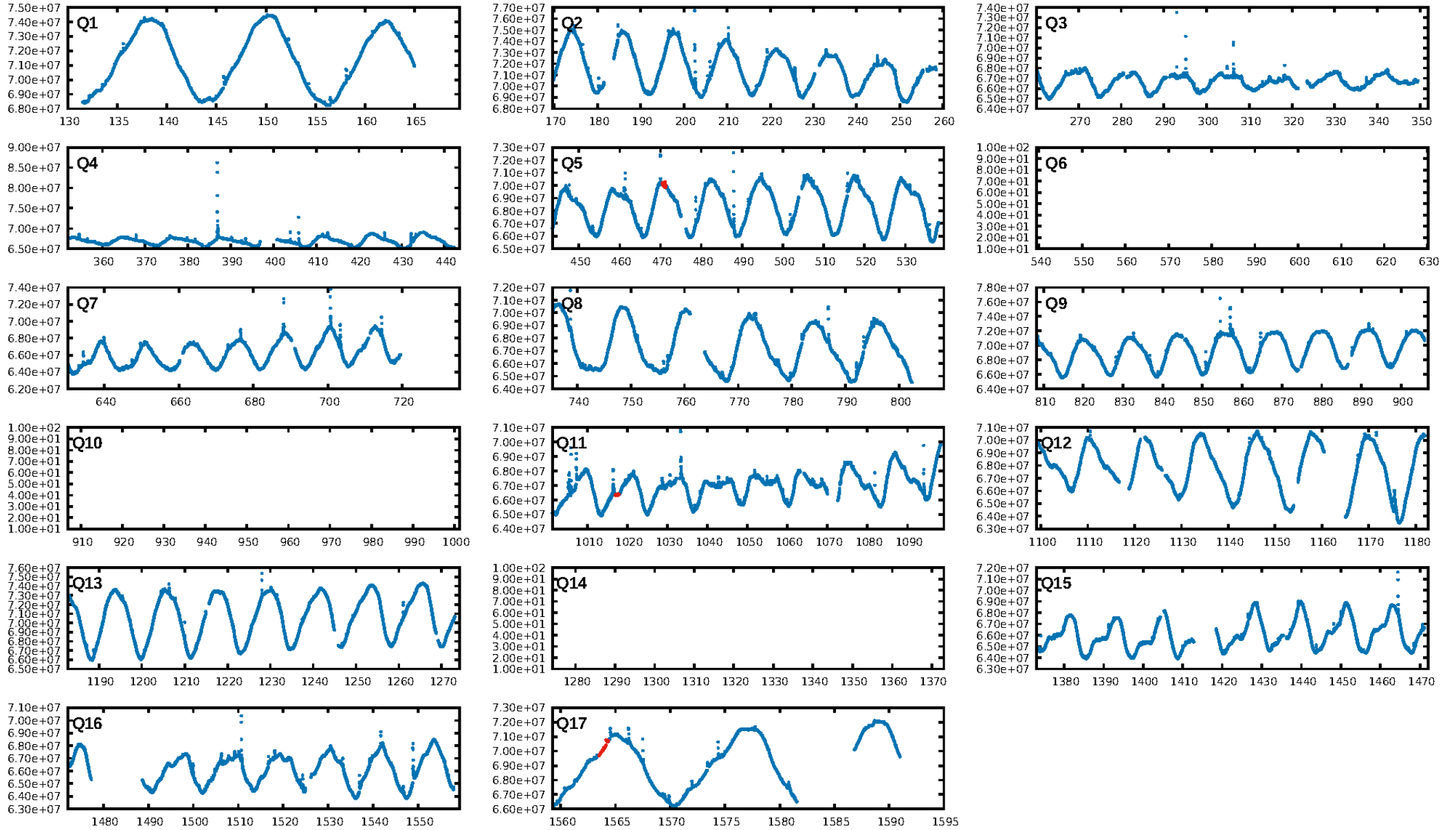
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [61.69σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [2/2]
GhostDiagnostic-chr: 0.8413
Centroid-sig: 71.3%
Centroid-so: 0.413 arcsec [1.65σ]
OotOffset-rm: 0.944 arcsec [3.00σ]
KicOffset-rm: 0.803 arcsec [2.69σ]
OotOffset-st: 0/1/0/2 [3]
KicOffset-st: 0/1/0/2 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

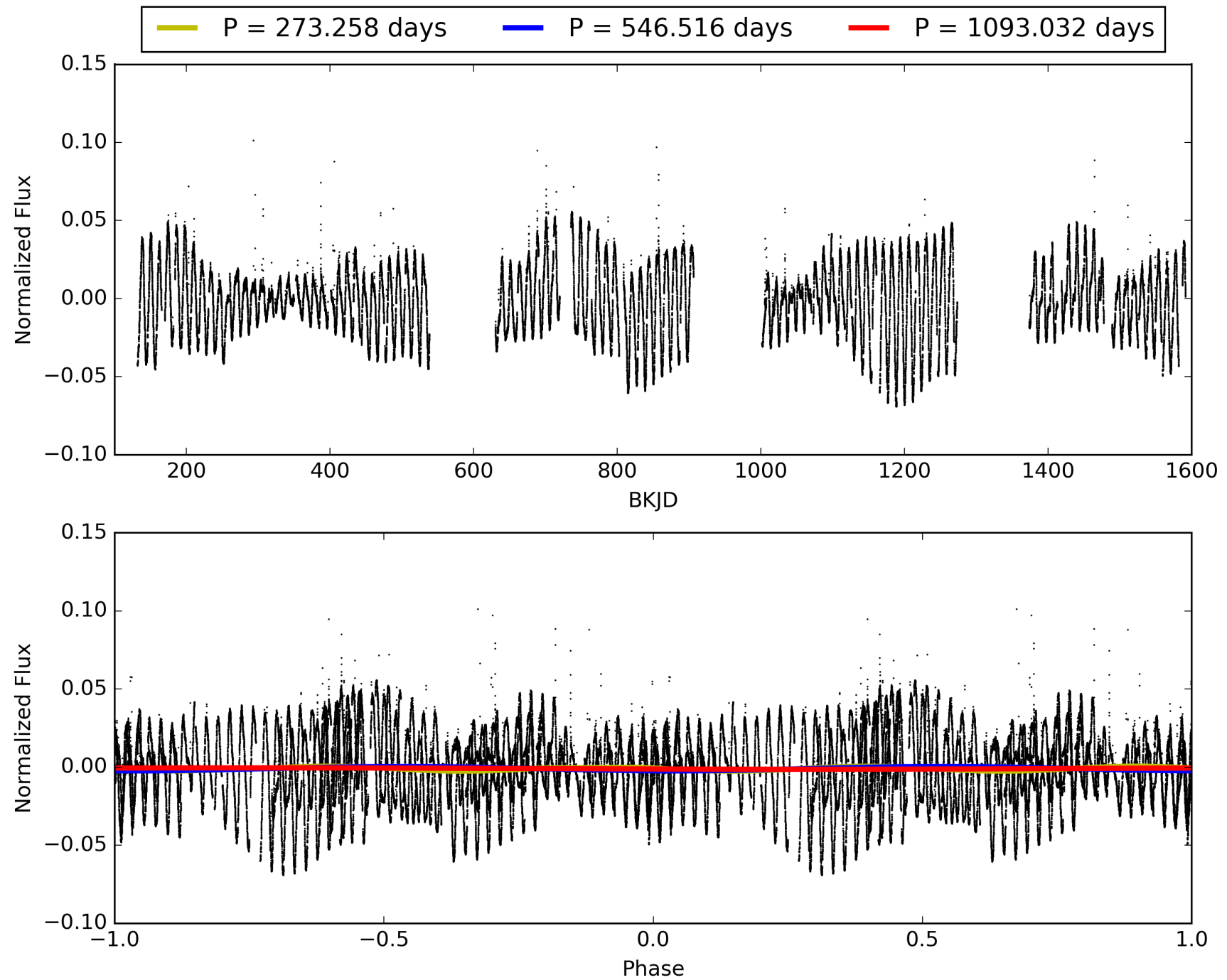
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:56:33 Z

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

TCE 004929016-01, PDC Light Curves

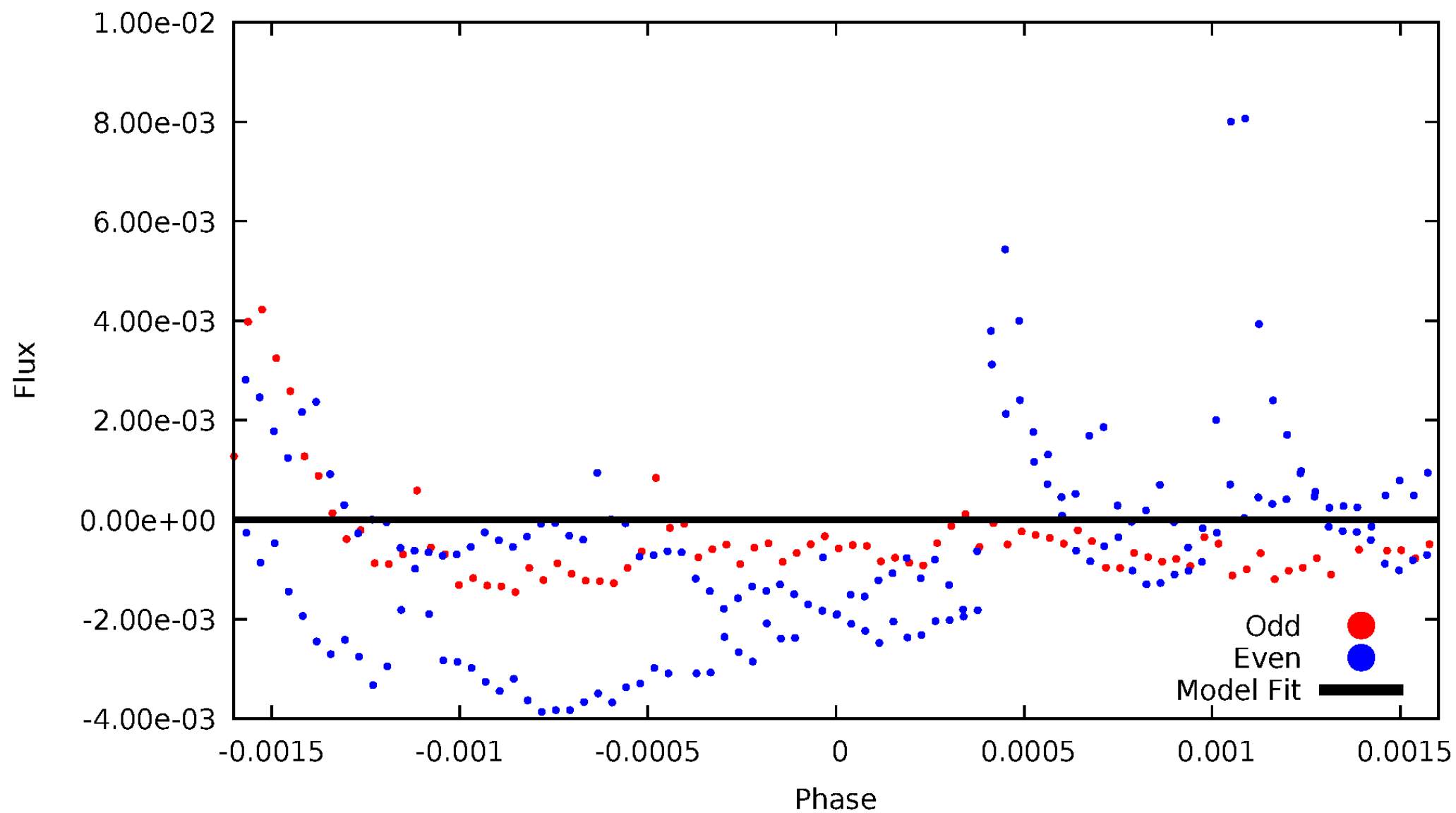


TCE 004929016-01



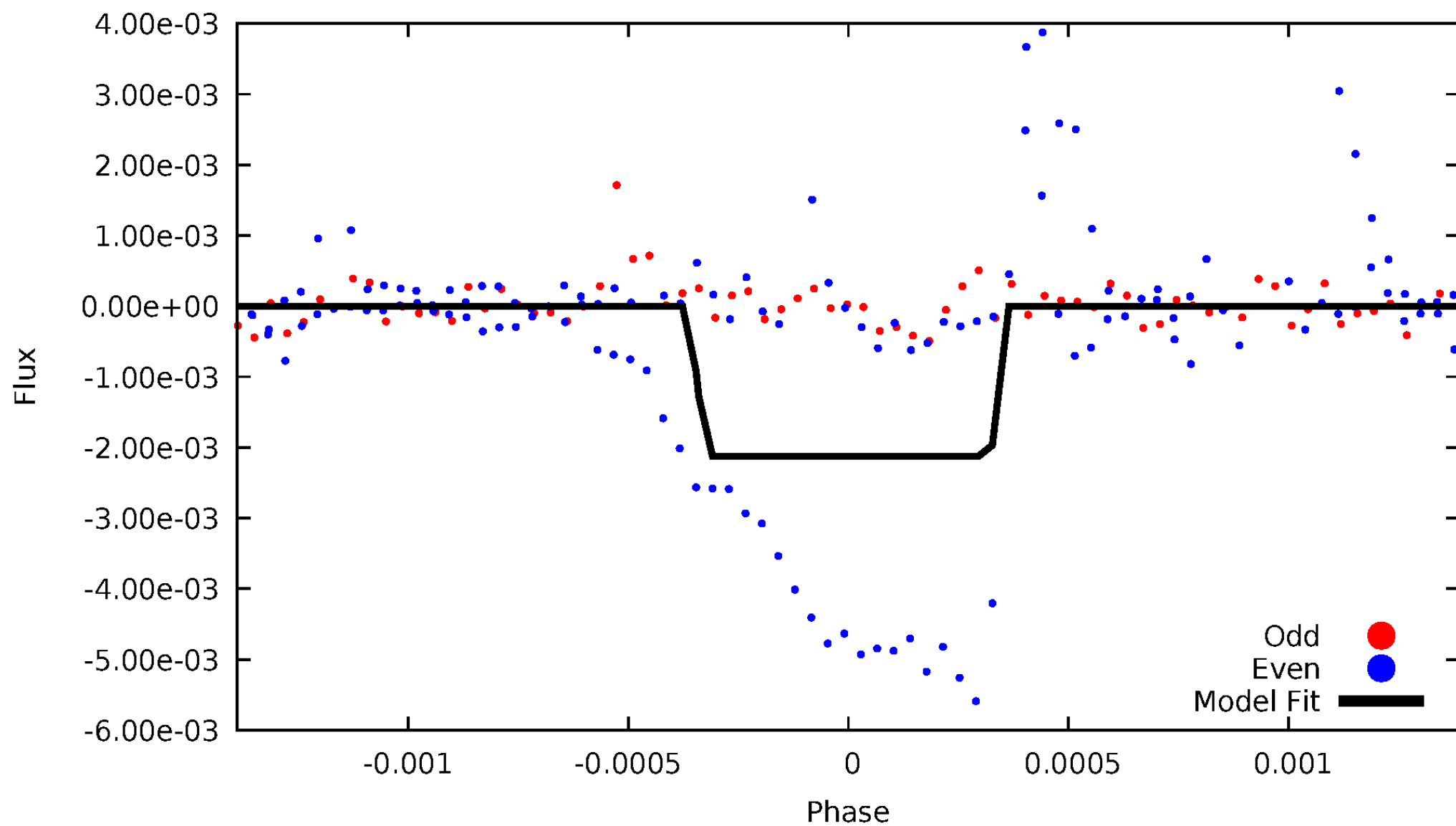
DV Odd/Even

TCE 004929016-01

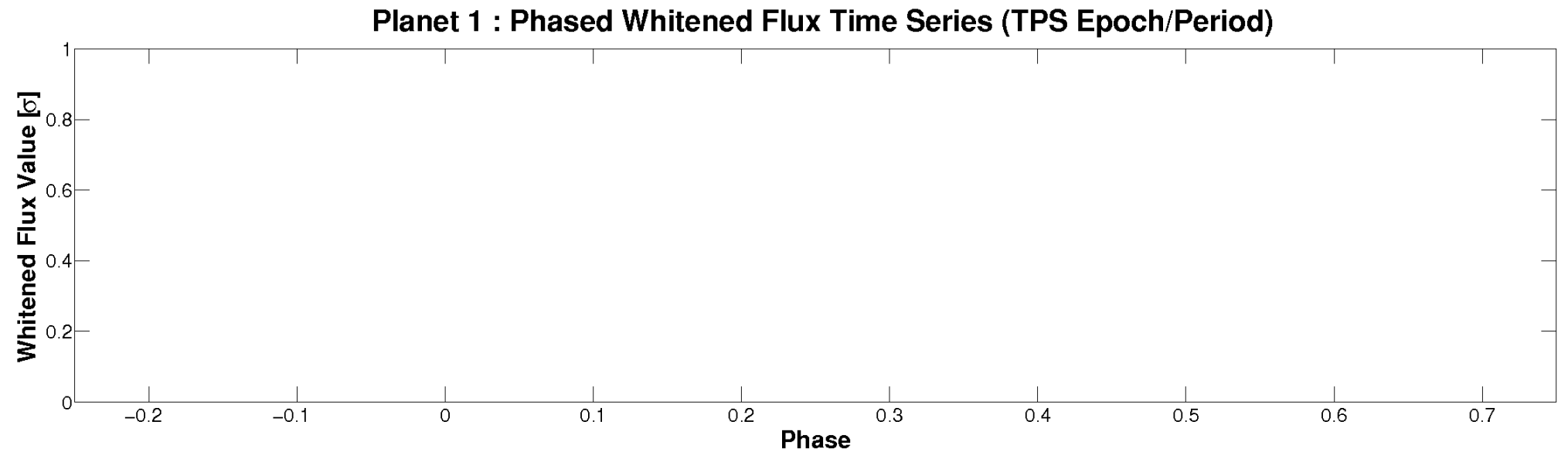
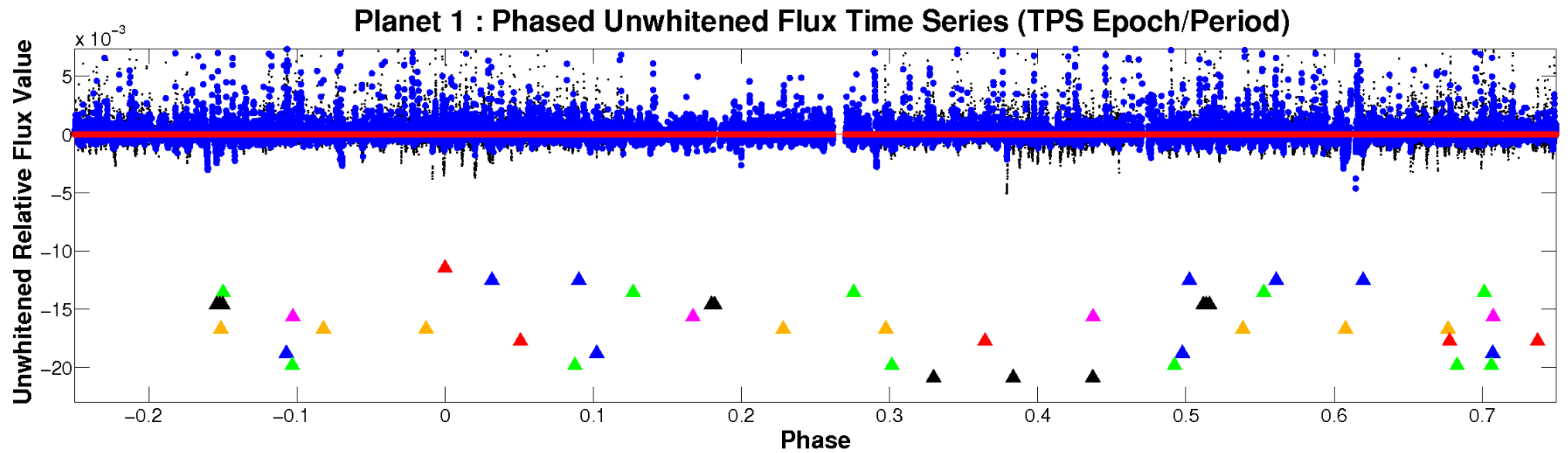


ALT Odd/Even

TCE 004929016-01

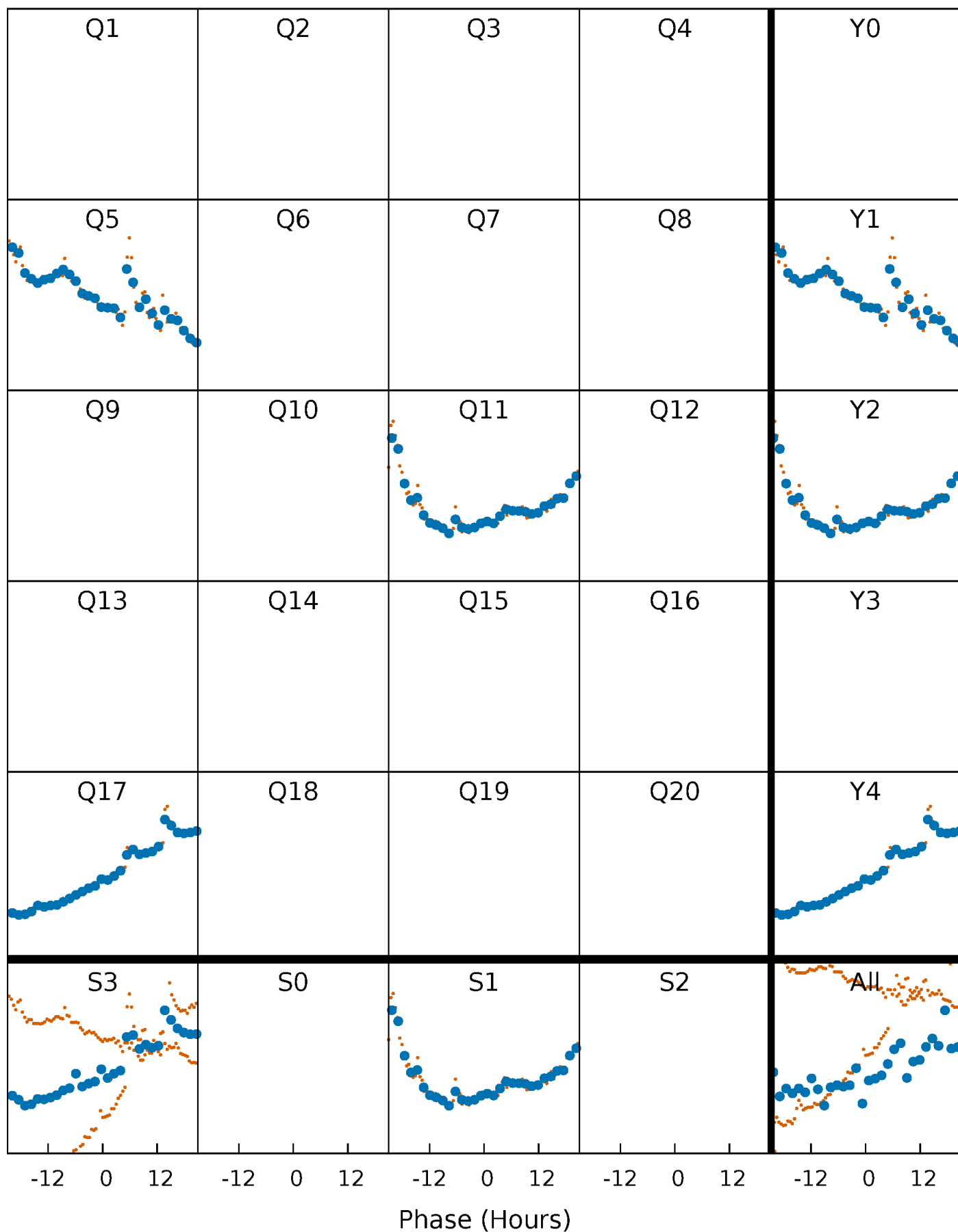


Non-Whitened Vs. Whitened Light Curve



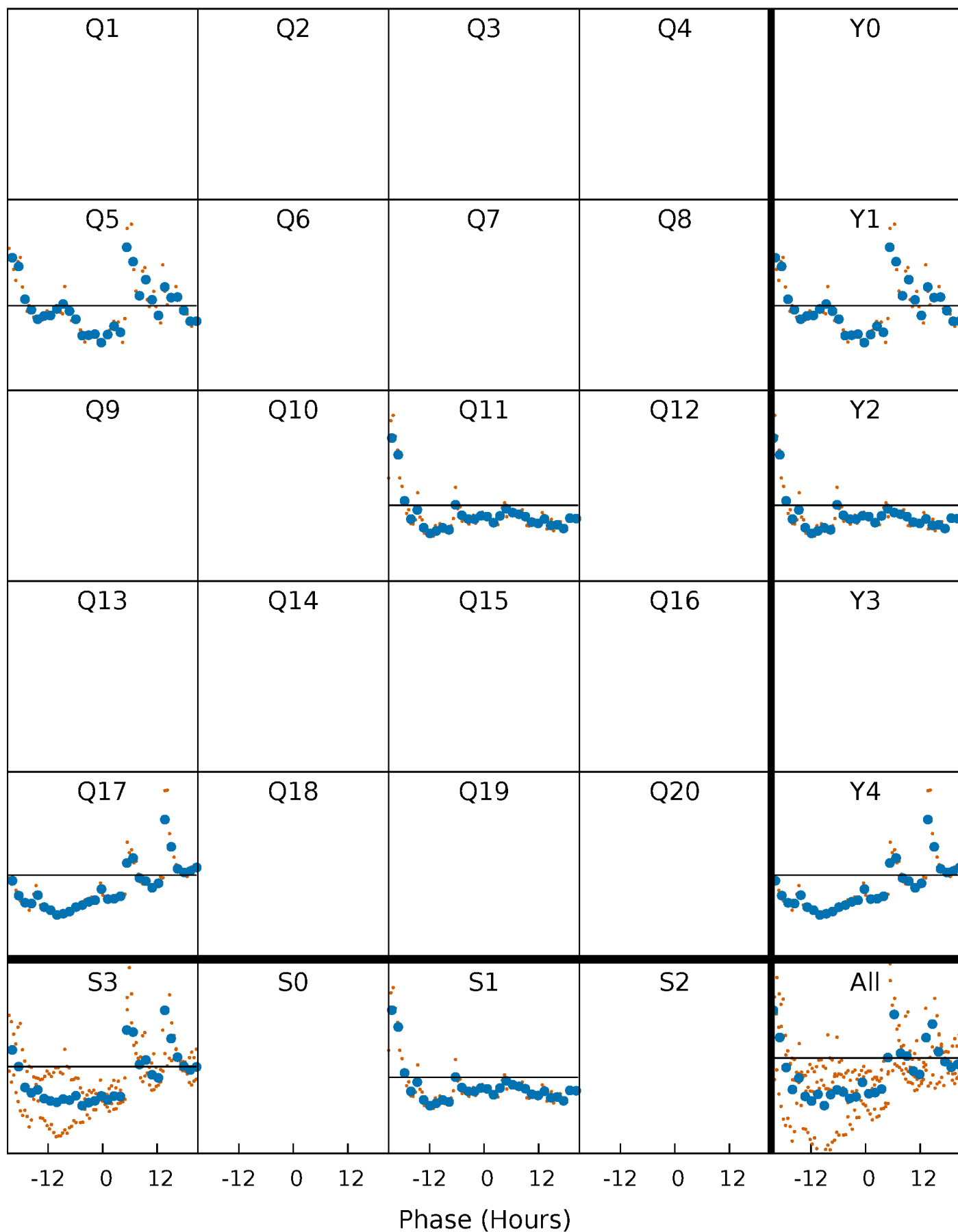
PDC Quarter-Phased Transit Curves

TCE 004929016-01 P=546.515996 Days $T_0=470.891992$ (BKJD)



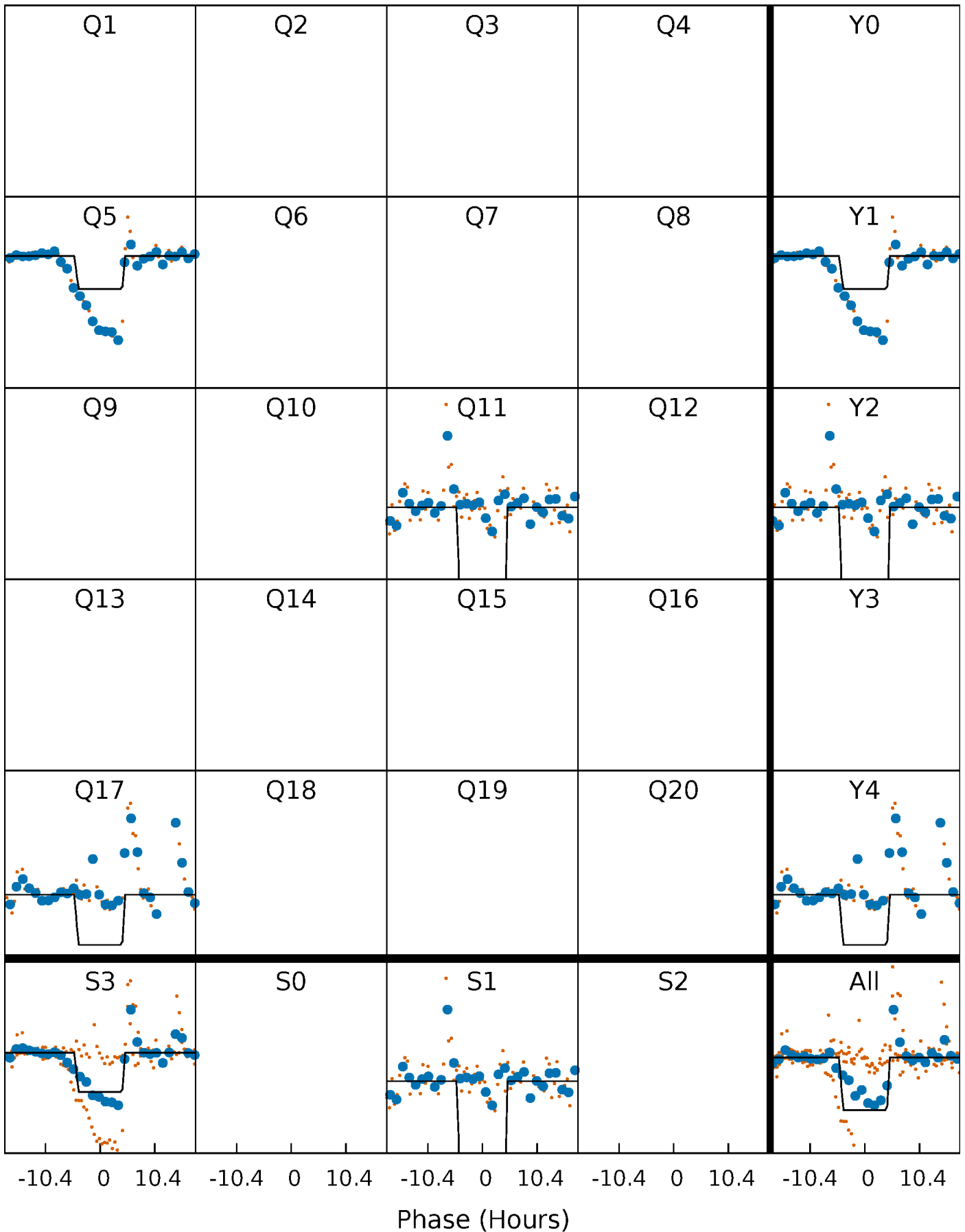
DV Quarter-Phased Transit Curves

TCE 004929016-01 $P=546.515996$ Days $T_0=470.891992$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

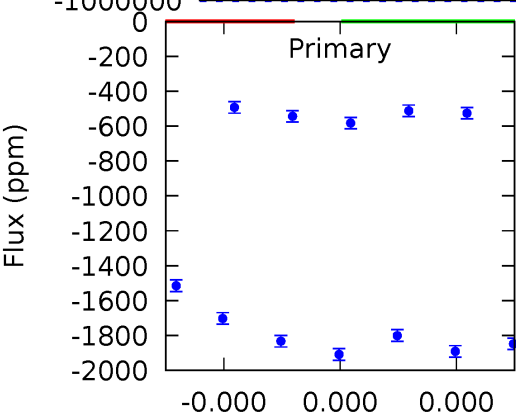
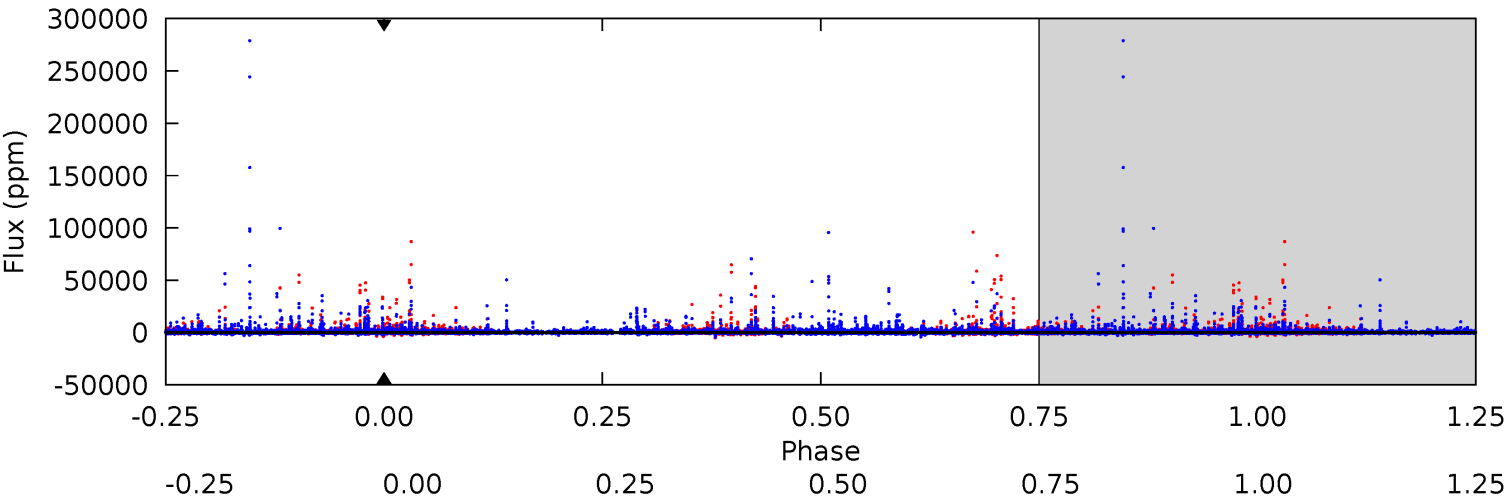
TCE 004929016-01 $P=546.515996$ Days $T_0=470.918061$ (BKJD)



DV Model-Shift Uniqueness Test

004929016-01, P = 546.515996 Days, E = 470.891992 Days

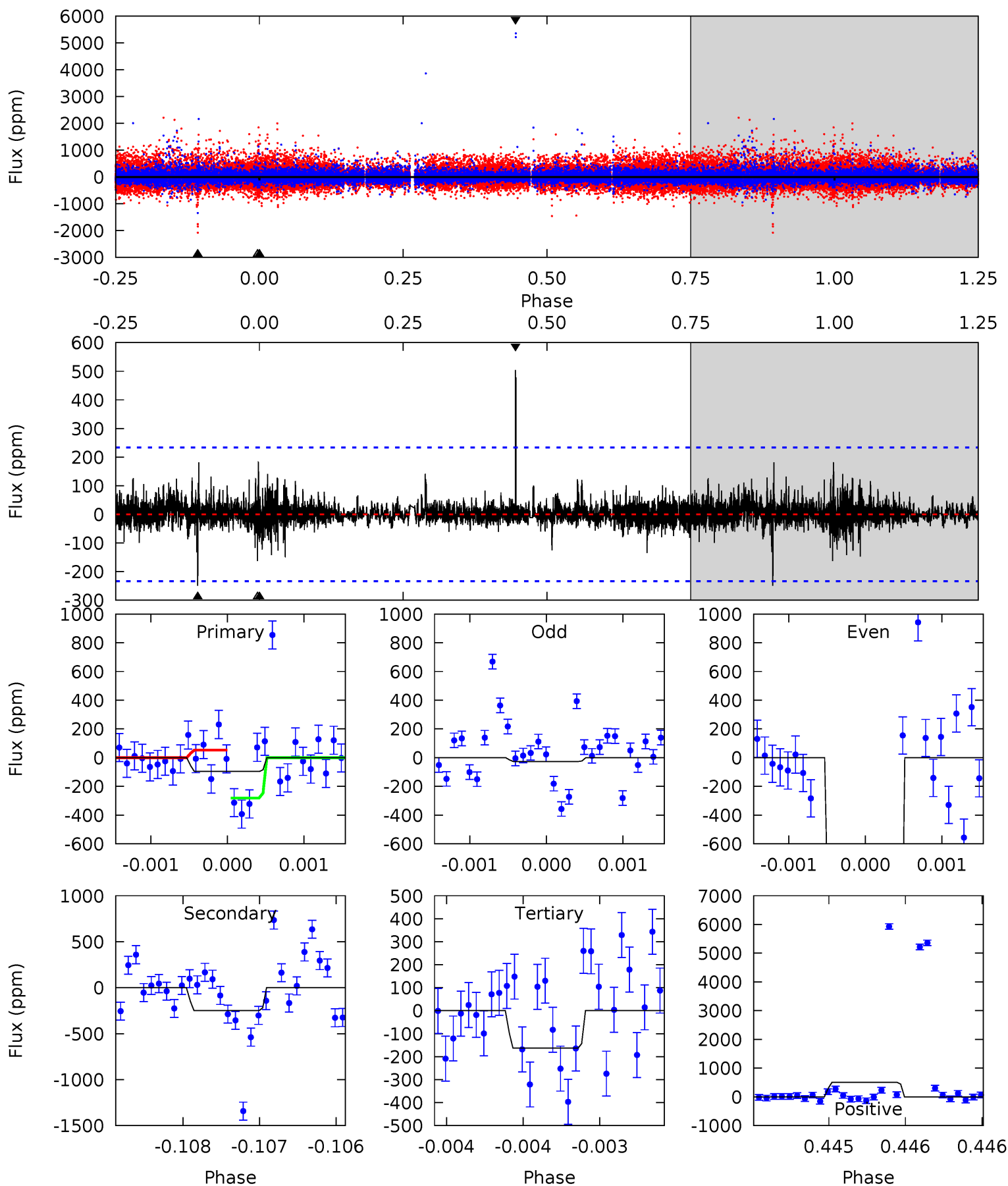
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

004929016-01, P = 546.515996 Days, E = 470.918061 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.26	5.87	3.84	11.9	5.51	3.39	0.70	-1.58	-9.64	2.03	-6.03	25.3	26.3	0.67	2.68



Stellar Parameters For KIC 004929016

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4090^{+123}_{-123}	$4.642^{+0.056}_{-0.018}$	$0.020^{+0.250}_{-0.300}$	$0.618^{+0.034}_{-0.063}$	$0.611^{+0.051}_{-0.057}$	$3.641^{+0.913}_{-0.311}$
	+3%/-3%	+1%/-0%	+1250%/-1500%	+6%/-10%	+8%/-9%	+25%/-9%
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 004929016-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	0 ± 1000000	$5.40^{+4.79}_{-3.70}$	186^{+6}_{-6}	-2935^{+12136}_{-6076}	$-19109.947^{+4212297.484}_{-4229632.520}$
Alt.	-249 ± 42	$5.83^{+5.66}_{-3.99}$	187^{+6}_{-6}	2489^{+889}_{-371}	5088^{+46548}_{-3796}

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 $A_{obs} \gg 1.0$

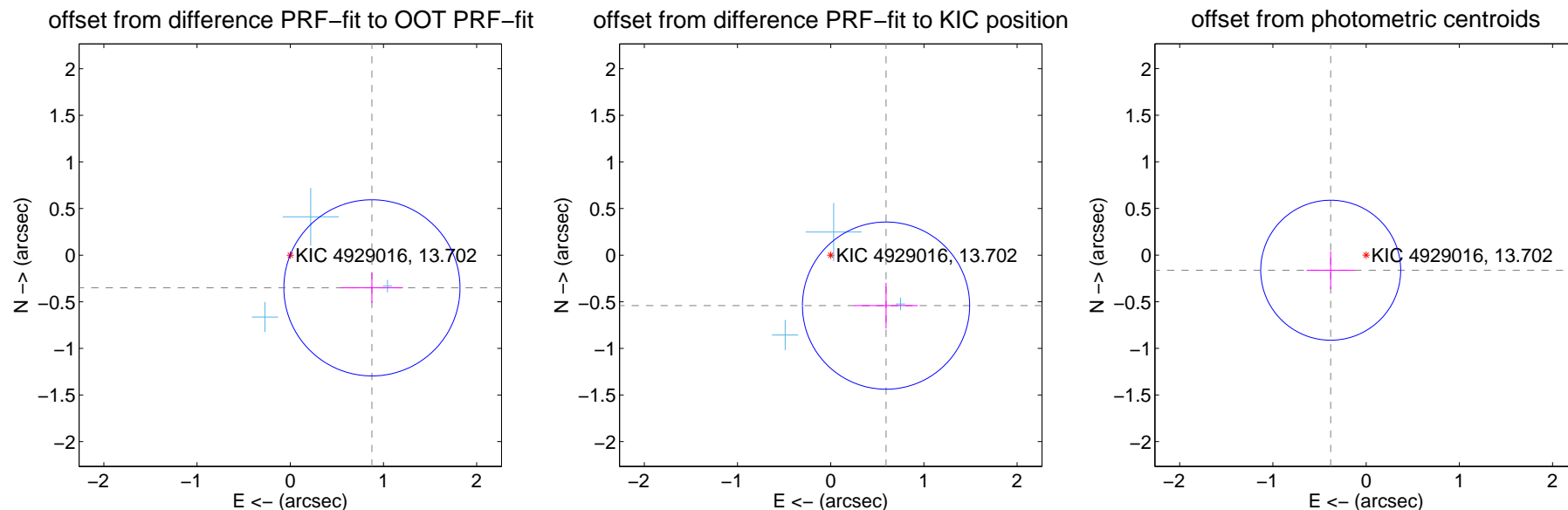
DV Centroid Data

Supplemental centroid analysis for 004929016-01. Kepler magnitude: 13.70. Transit SNR -1.00

There are 3 quarters with good PRF difference image offsets

The direct PRF centroid is offset from the target star catalog position by about 0.35 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.944 ± 0.315	3.00	-0.876 ± 0.333	-0.351 ± 0.162
PRF-fit source offset from KIC position	0.803 ± 0.299	2.69	-0.594 ± 0.341	-0.541 ± 0.246
photometric centroid source offset	0.41 ± 0.25	1.65	0.38 ± 0.26	-0.16 ± 0.20

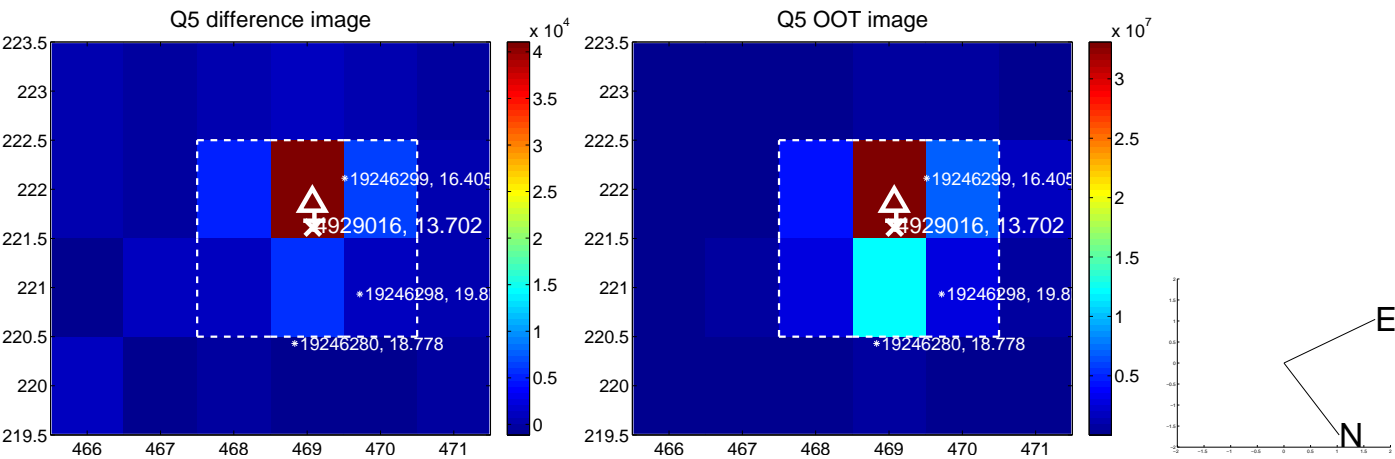


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

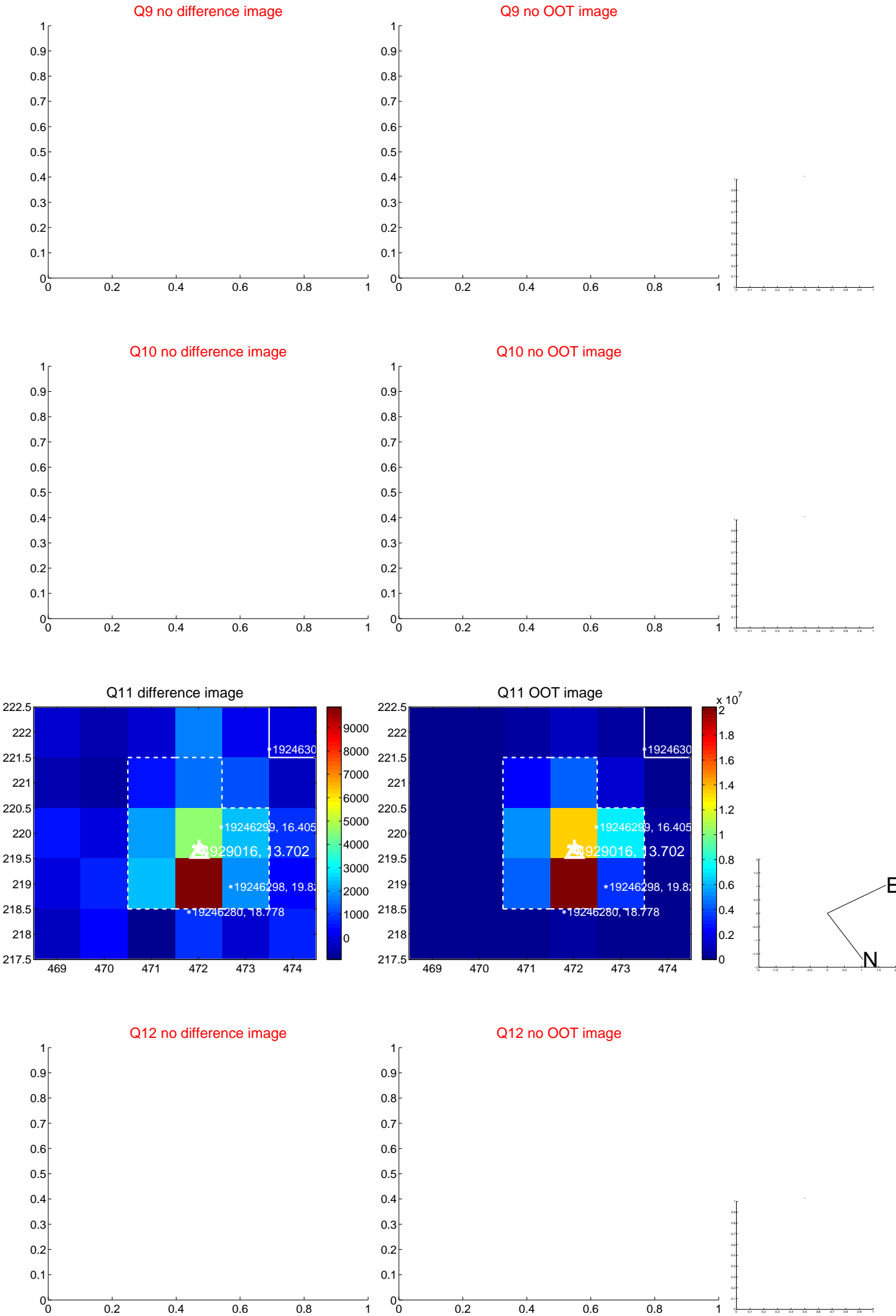
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



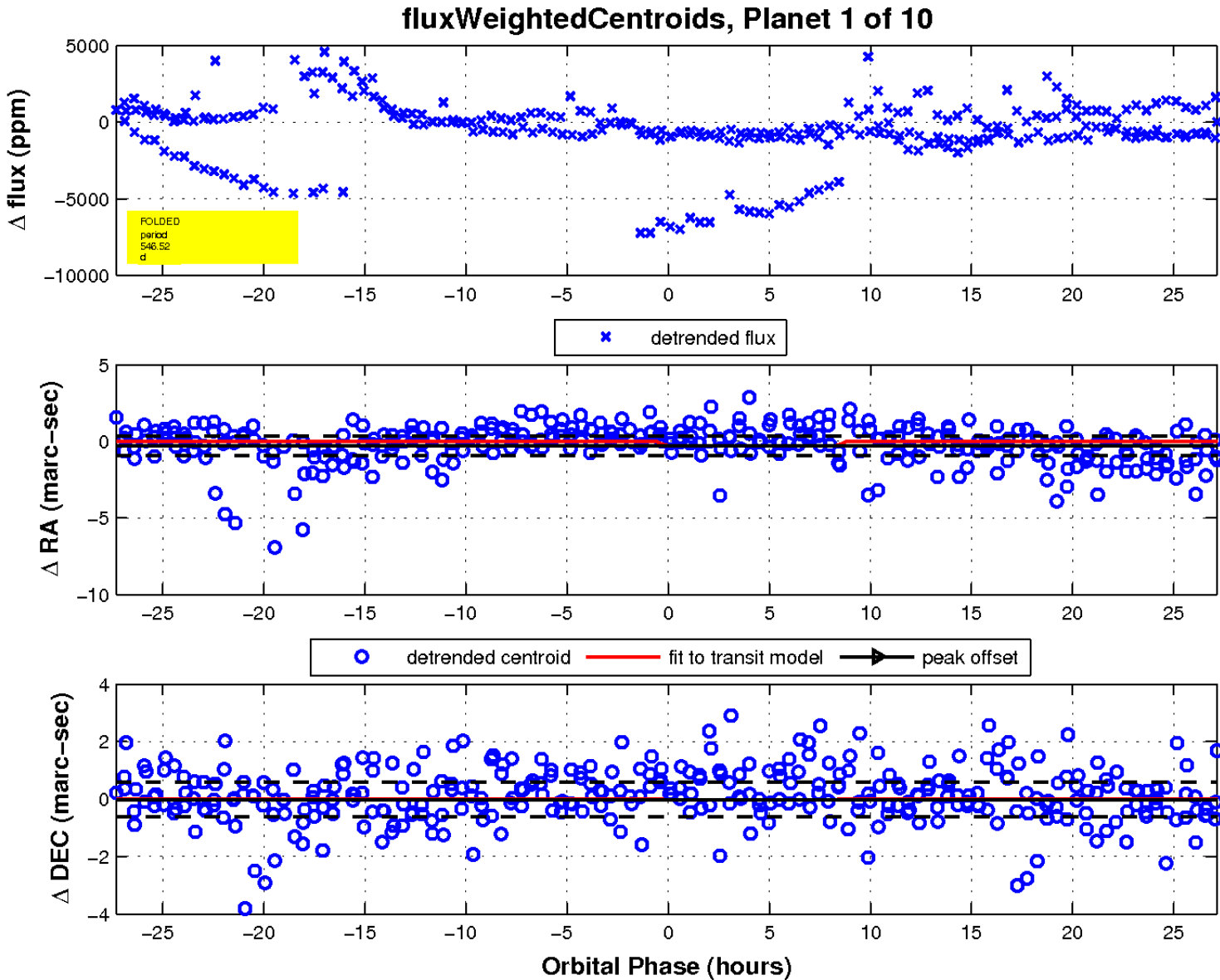
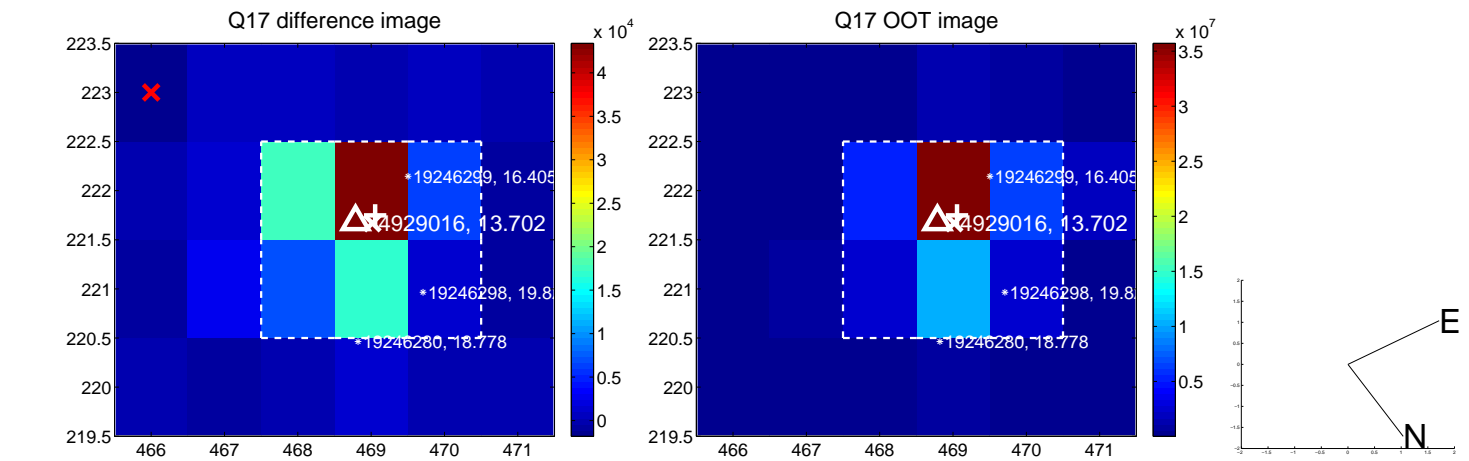
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white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

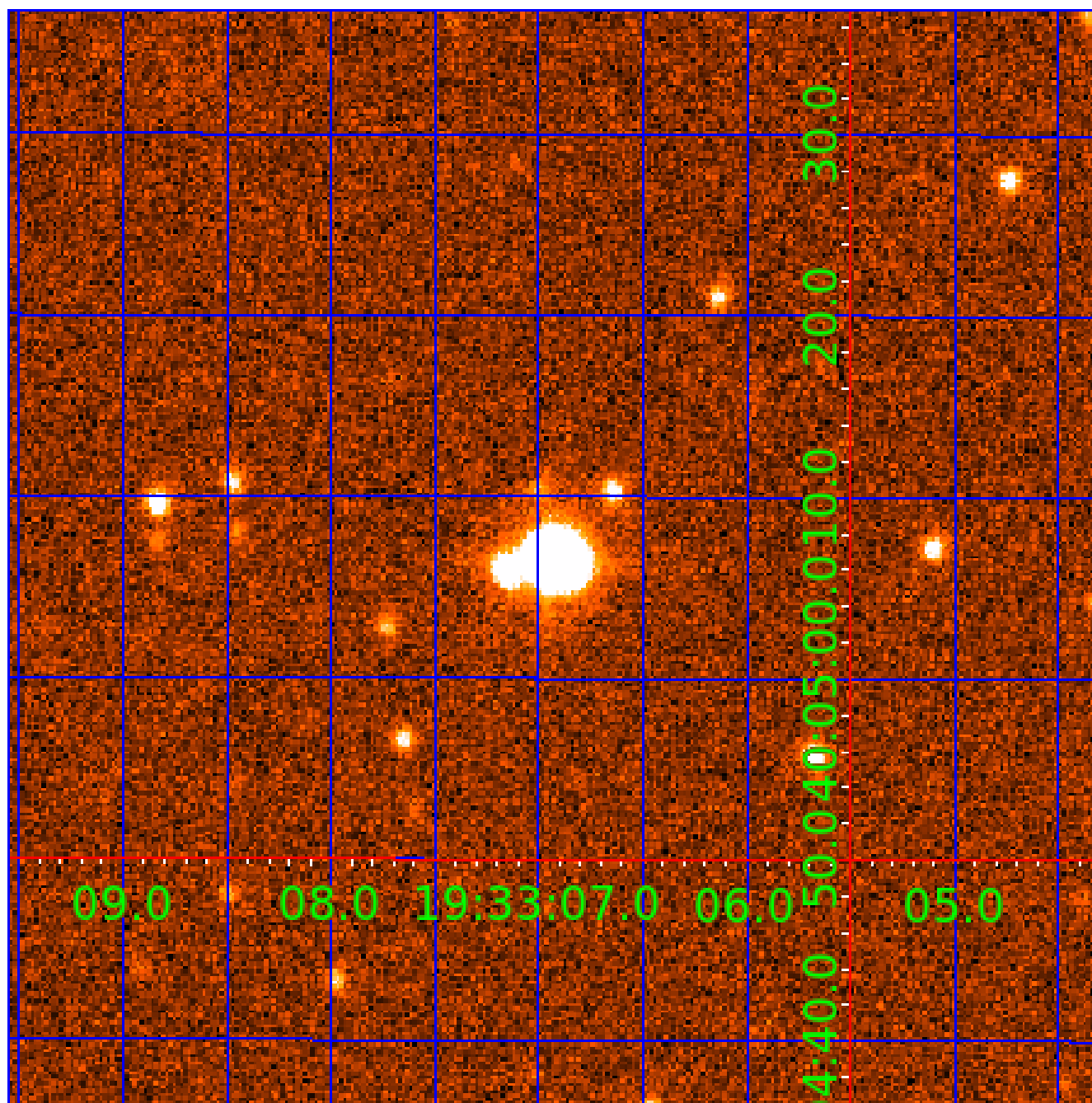


white \times : KIC target position; $+$: OOT centroid; Δ : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004929016

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})
004929016-01	OBS	No	546.515996	470.891992	560.7	10.500	16.0	-1.0	0.62	4090	1.42	0.08
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Robovetter Results

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004929016-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS
004929016-04	OBS	FP	0.00	1	0	0	0	LPP_DV—INCONSISTENT_TRANS
004929016-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
004929016-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

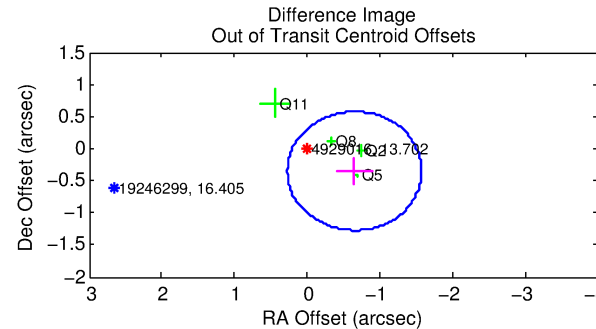
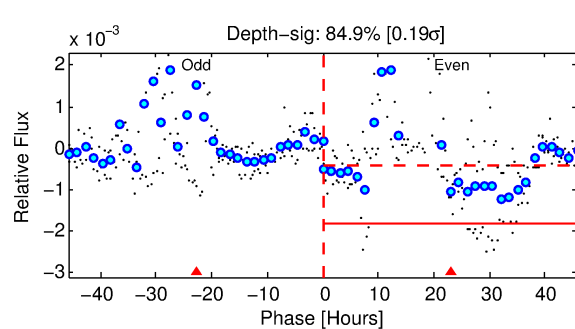
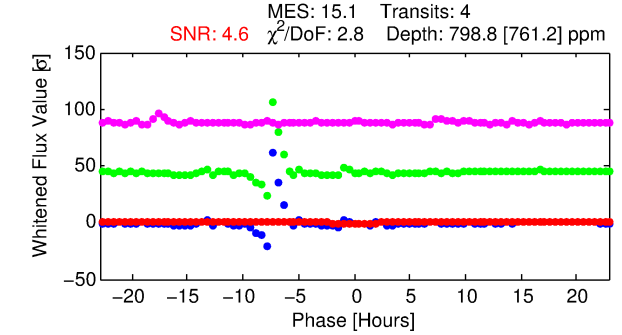
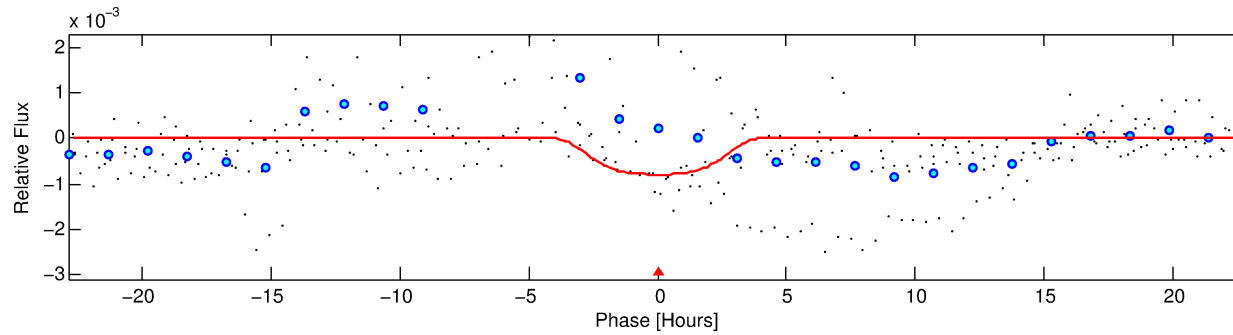
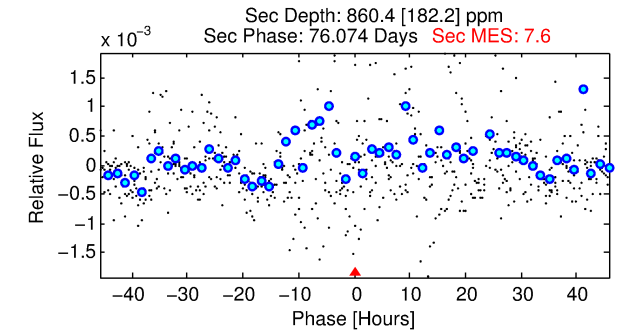
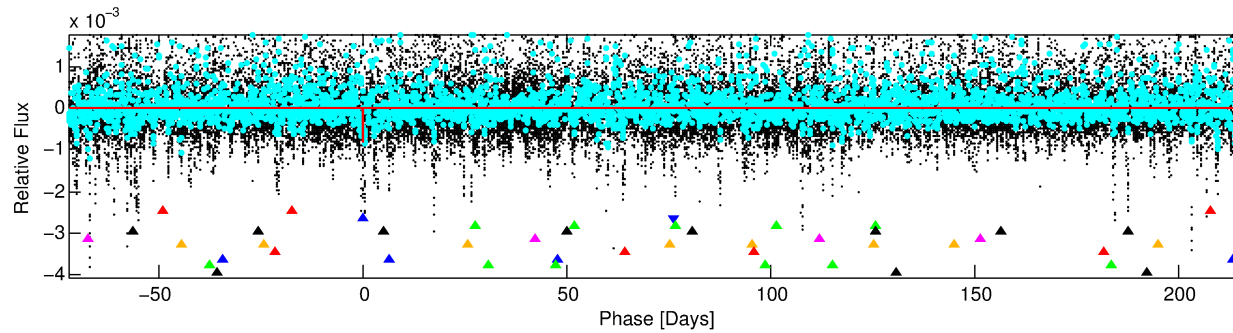
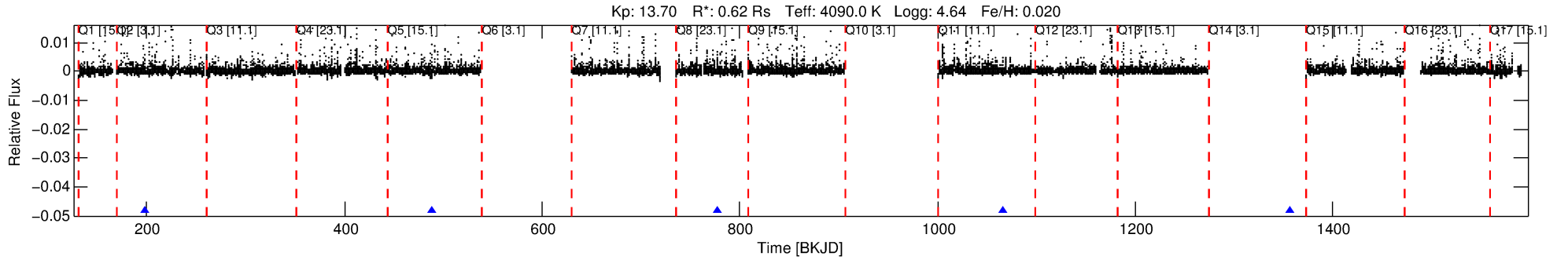
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004929016-02

No Significant Match Found

DV One-Page Summary

KIC: 4929016 Candidate: 2 of 10 Period: 289.283 d



DV Fit Results:

Period = 289.28317 [0.04219] d
Epoch = 198.9116 [0.0819] BKJD
Rp/R* = 0.0347 [0.0202]
a/R* = 114.76 [94.82]
b = 0.96 [0.09]
Seff = 0.18 [0.03]
Teq = 166 [7] K
Rp = 2.34 [1.38] Re
a = 0.7265 [0.0584] AU
Ag = 45661.25 [54356.39] [0.84σ]
Teffp = 3761 [1120] K [3.21σ]

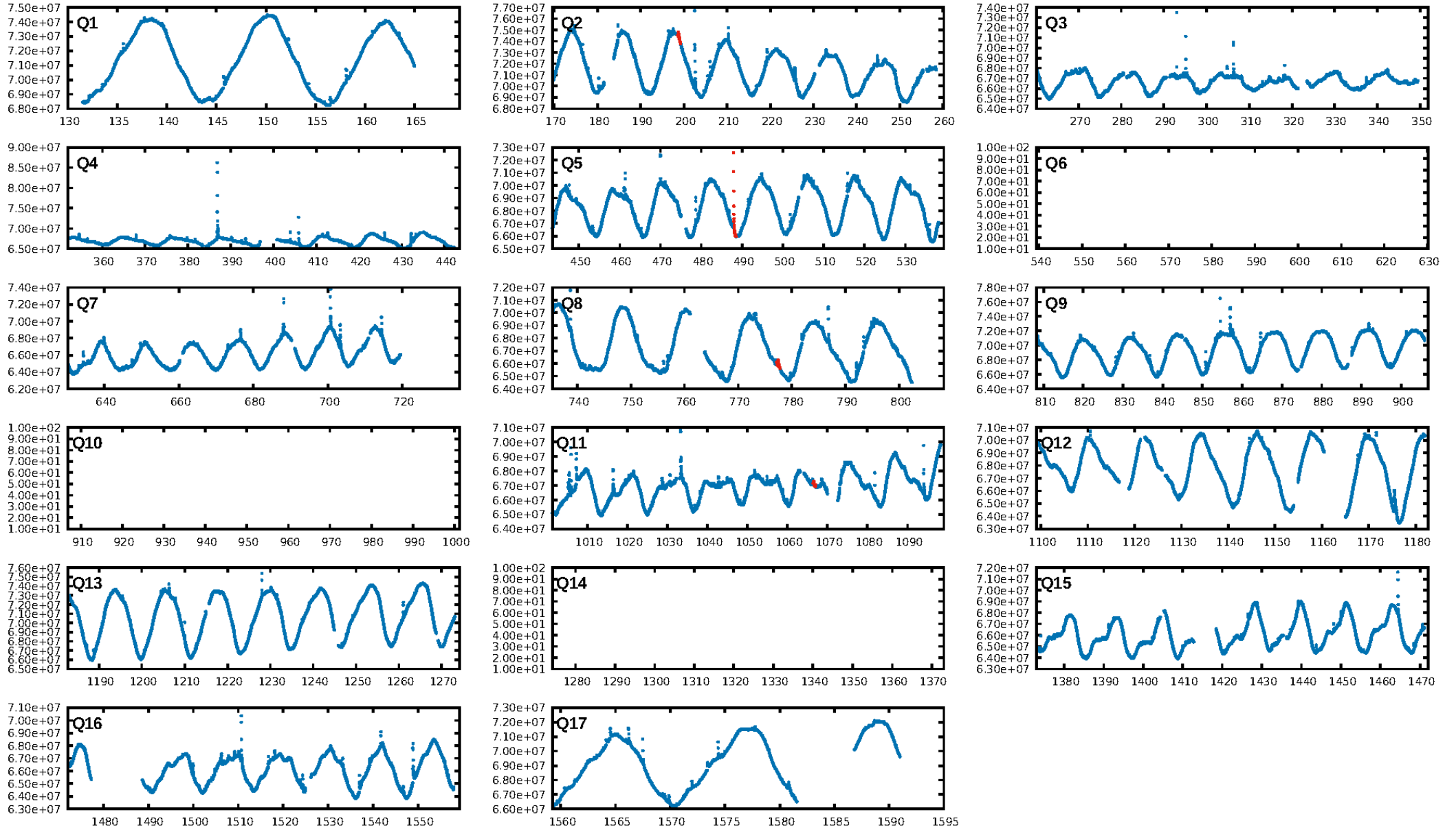
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [72.60σ]
LongPeriod-sig: 100.0% [46.77σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.6%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -2.285
Centroid-sig: 99.7%
Centroid-so: 0.305 arcsec [0.44σ]
OotOffset-rm: 0.739 arcsec [2.40σ]
KicOffset-rm: 0.701 arcsec [2.30σ]
OotOffset-st: 1/1/1/1 [4]
KicOffset-st: 1/1/1/1 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

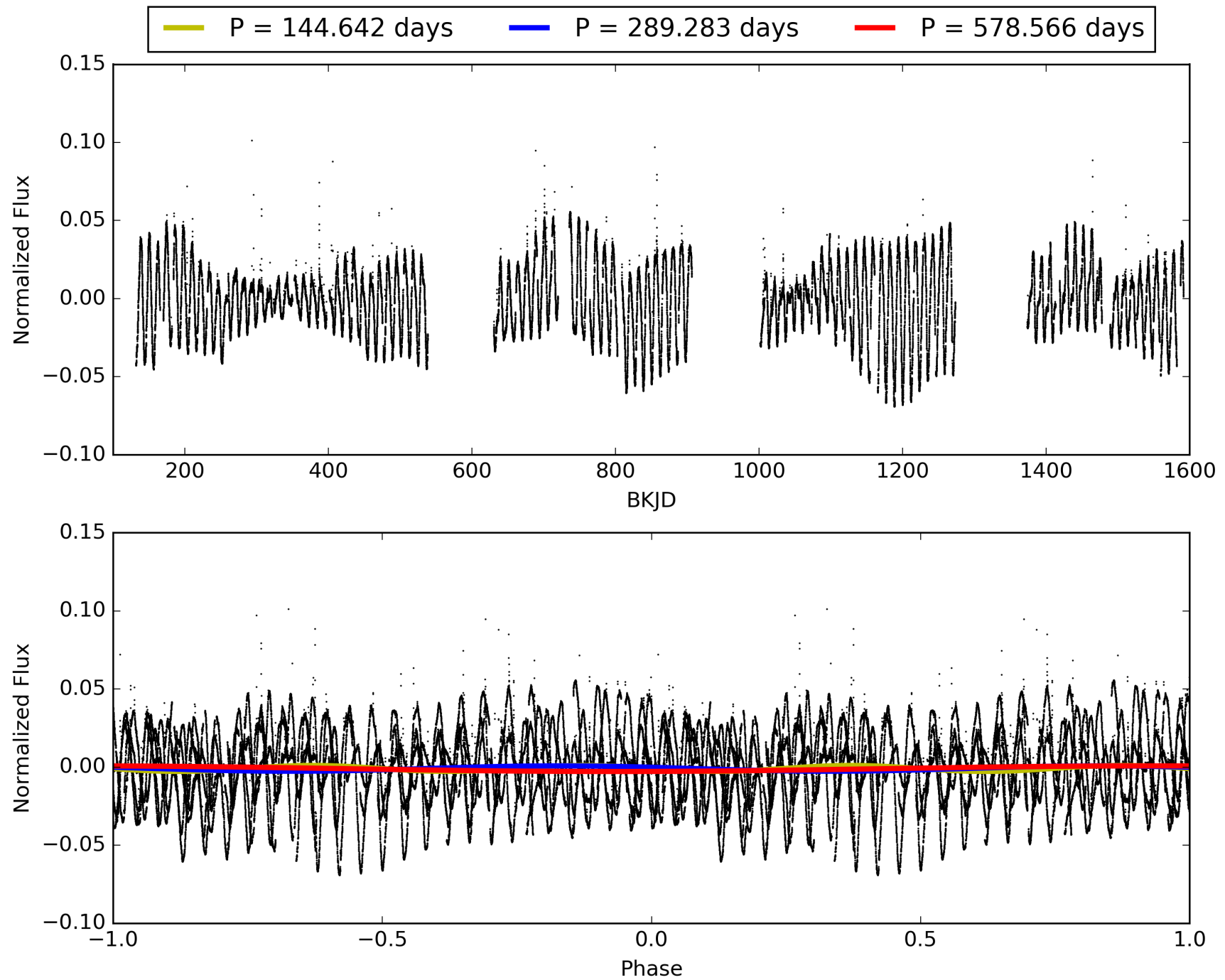
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:56:41 Z

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

TCE 004929016-02, PDC Light Curves

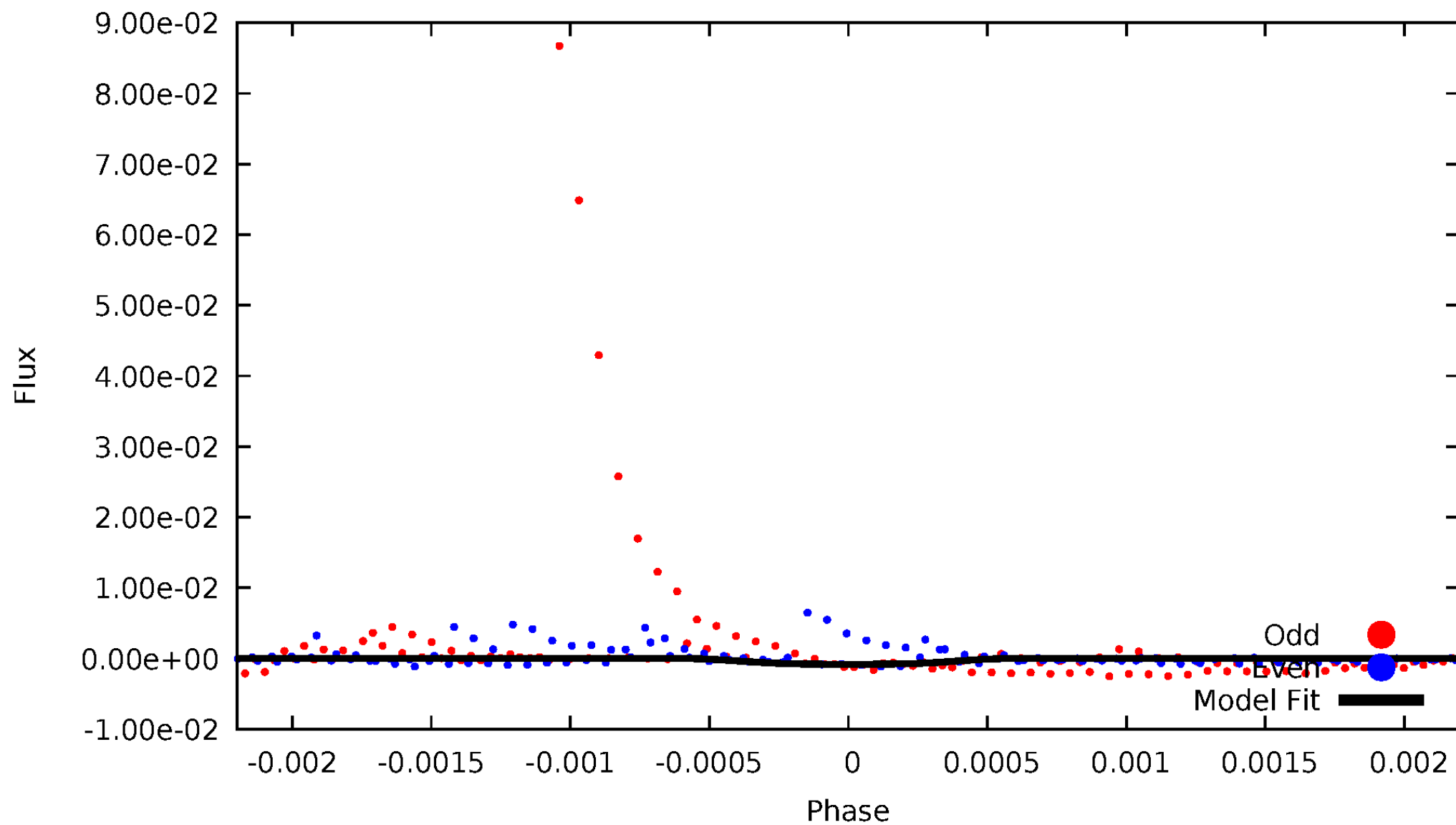


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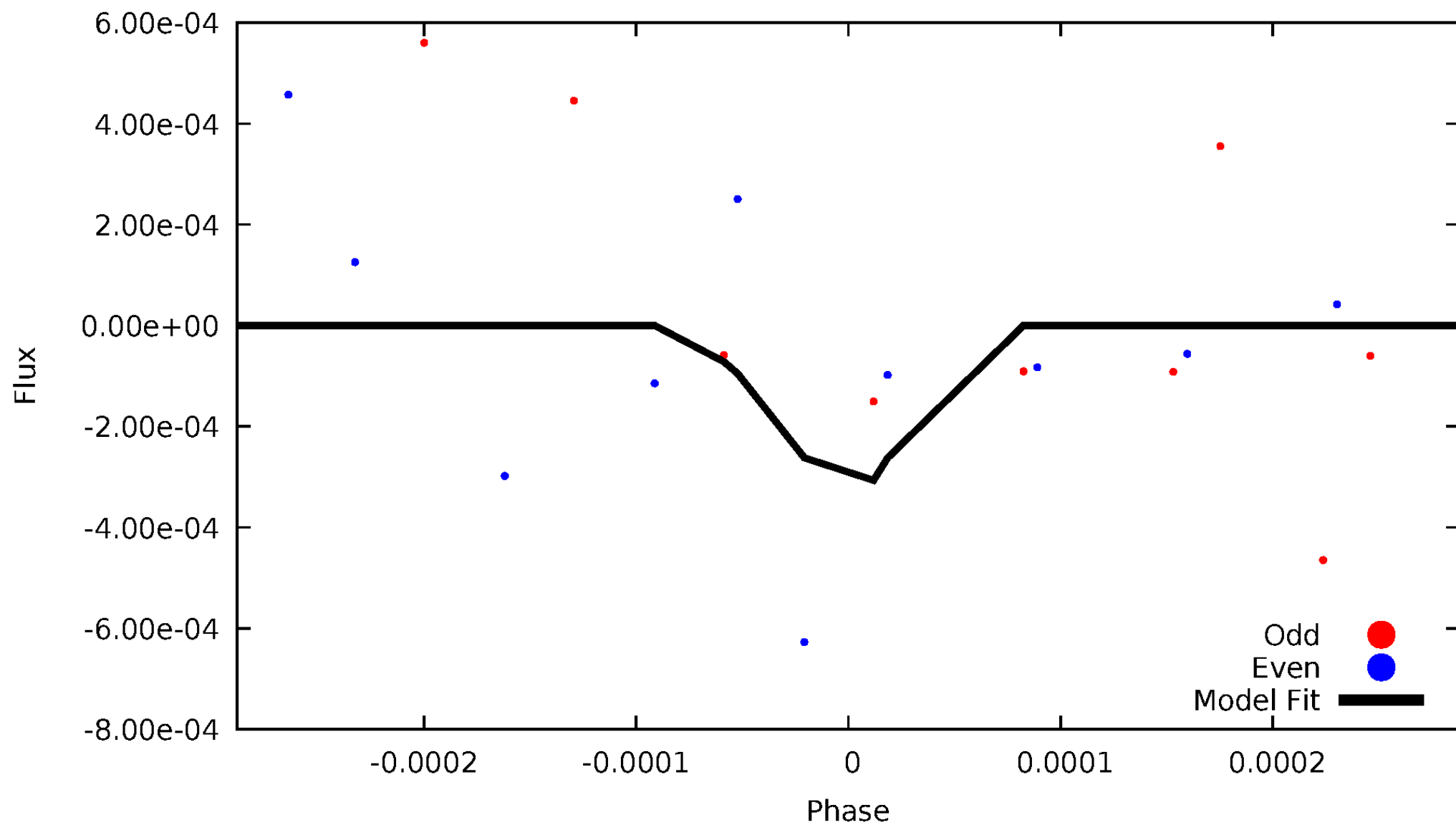
DV Odd/Even

TCE 004929016-02



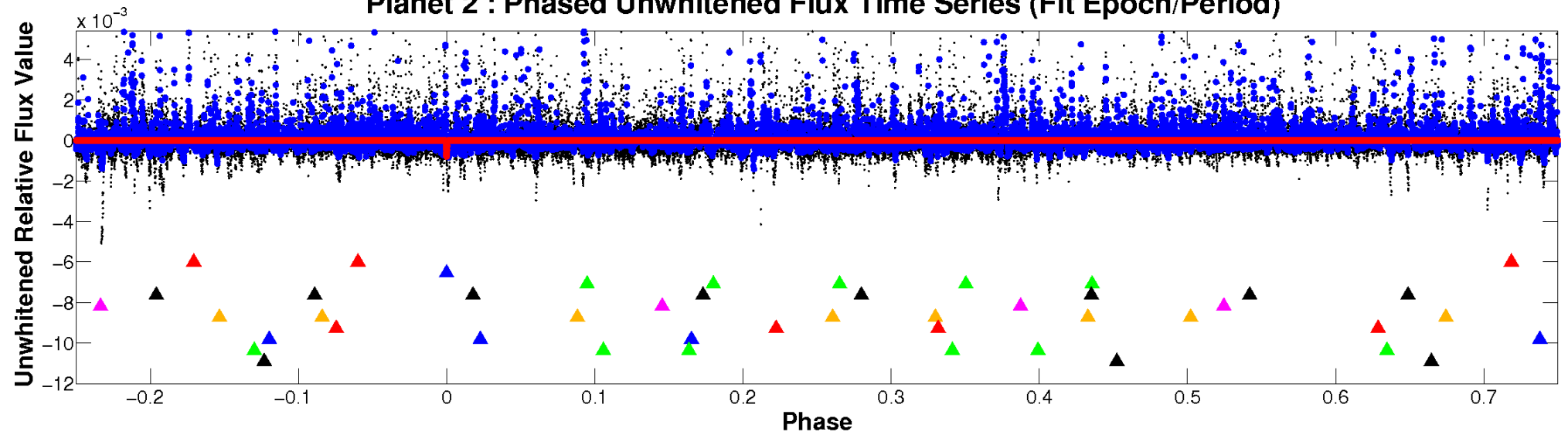
ALT Odd/Even

TCE 004929016-02

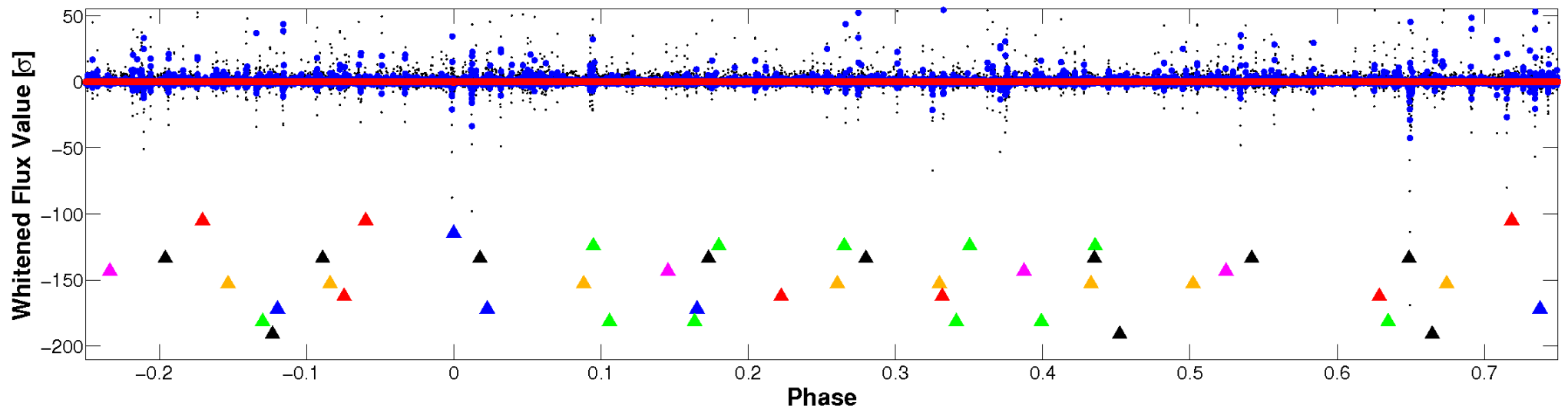


Non-Whitened Vs. Whitened Light Curve

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

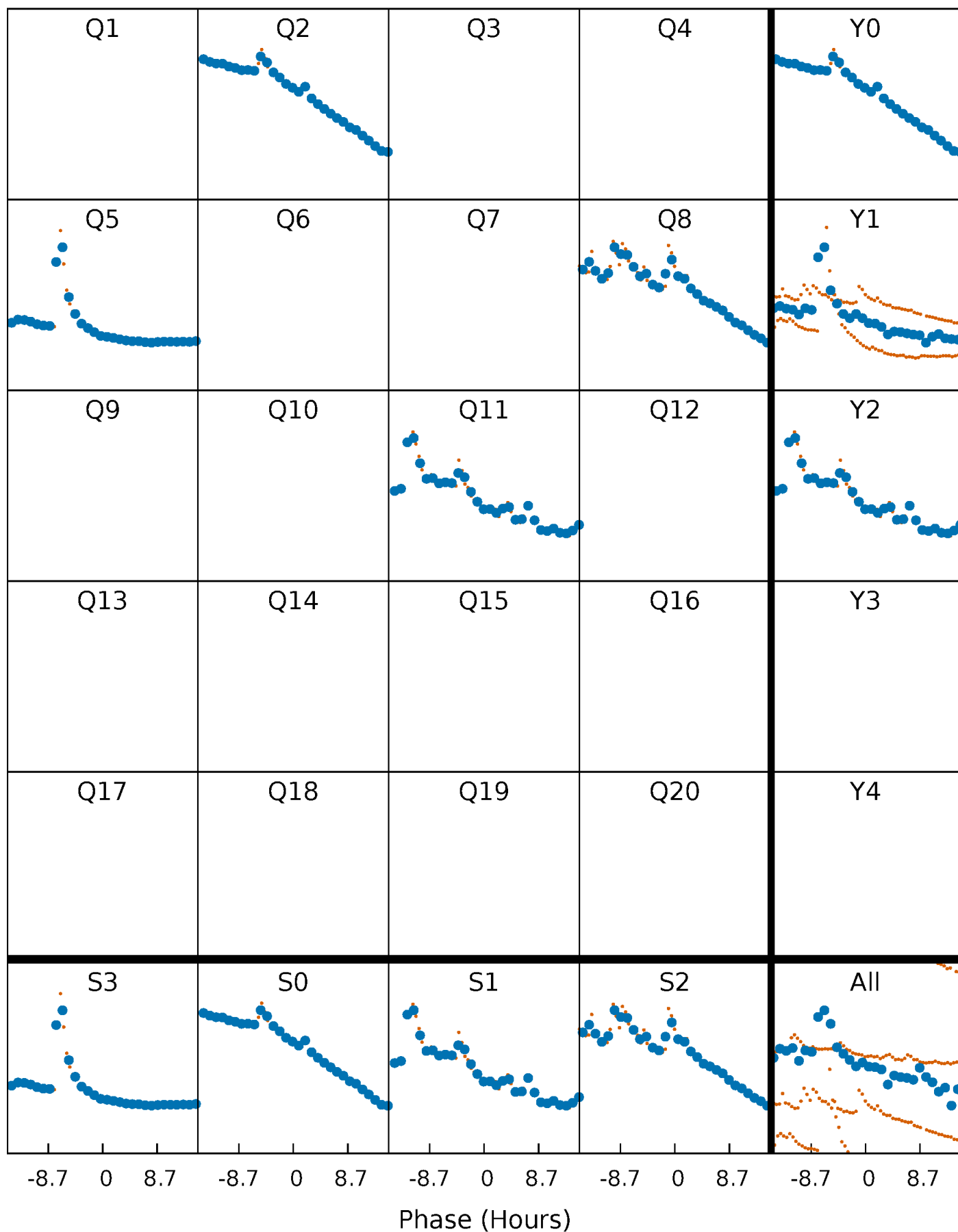


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



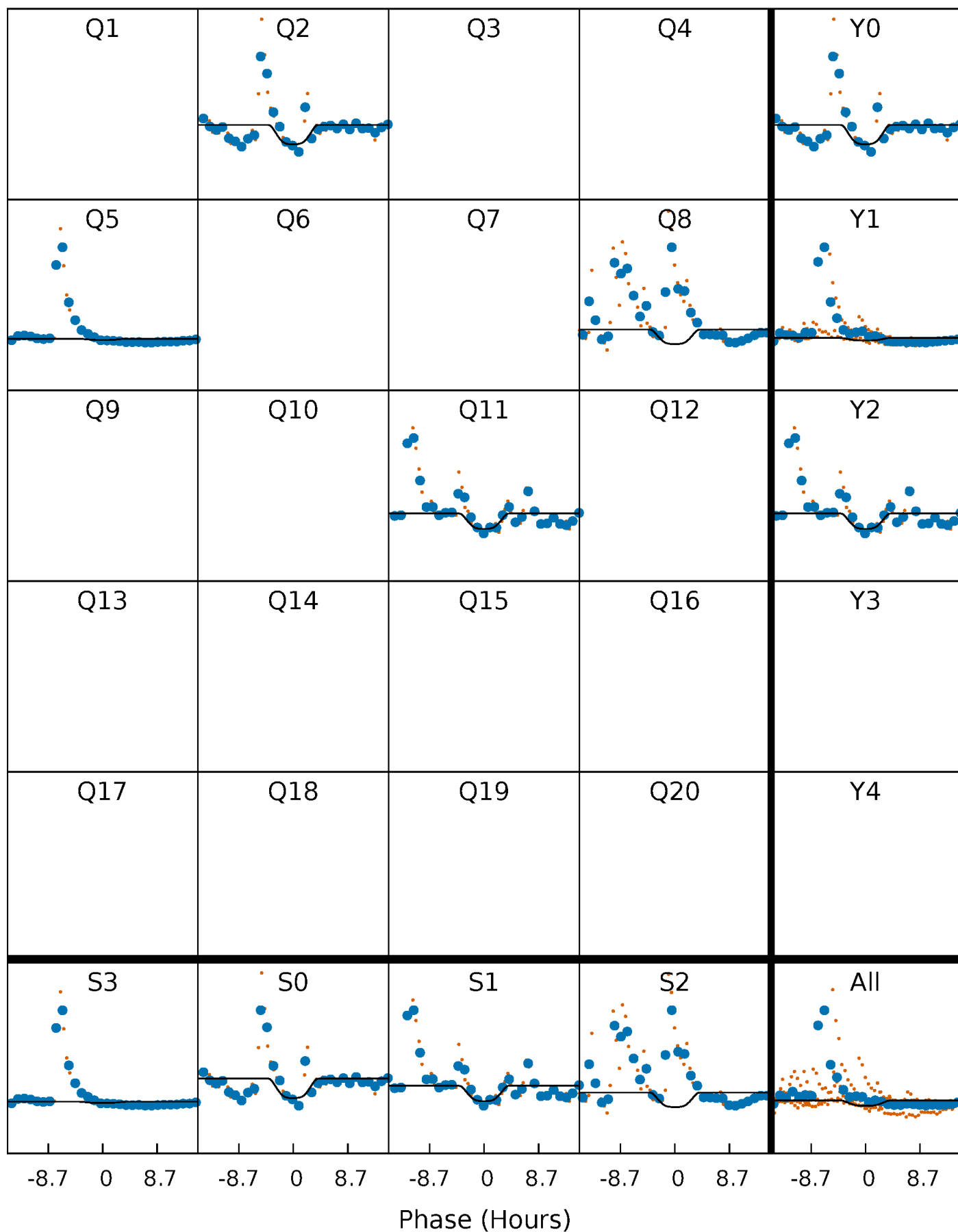
PDC Quarter-Phased Transit Curves

TCE 004929016-02 P=289.283172 Days $T_0=198.911604$ (BKJD)



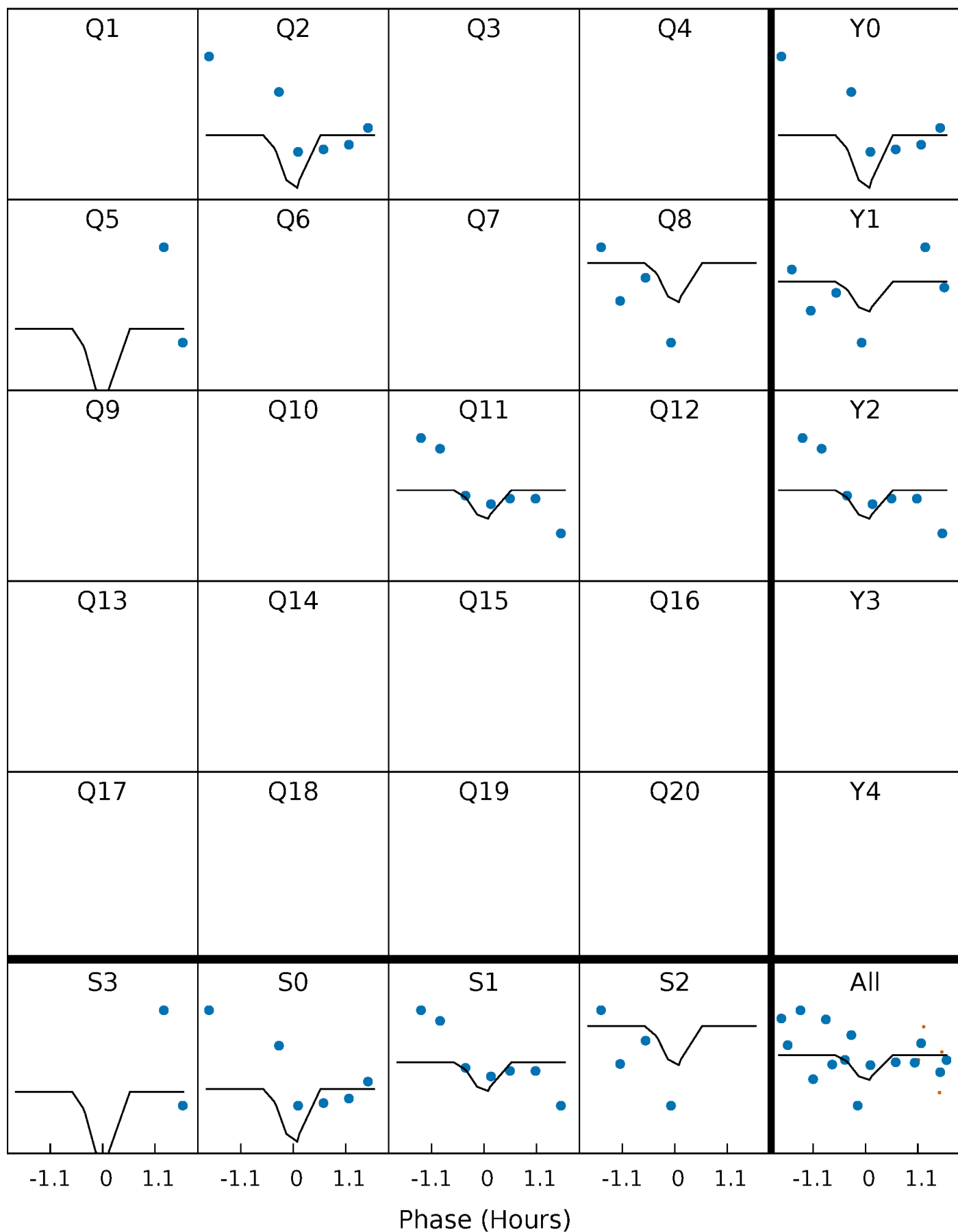
DV Quarter-Phased Transit Curves

TCE 004929016-02 P=289.283172 Days $T_0=198.911604$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

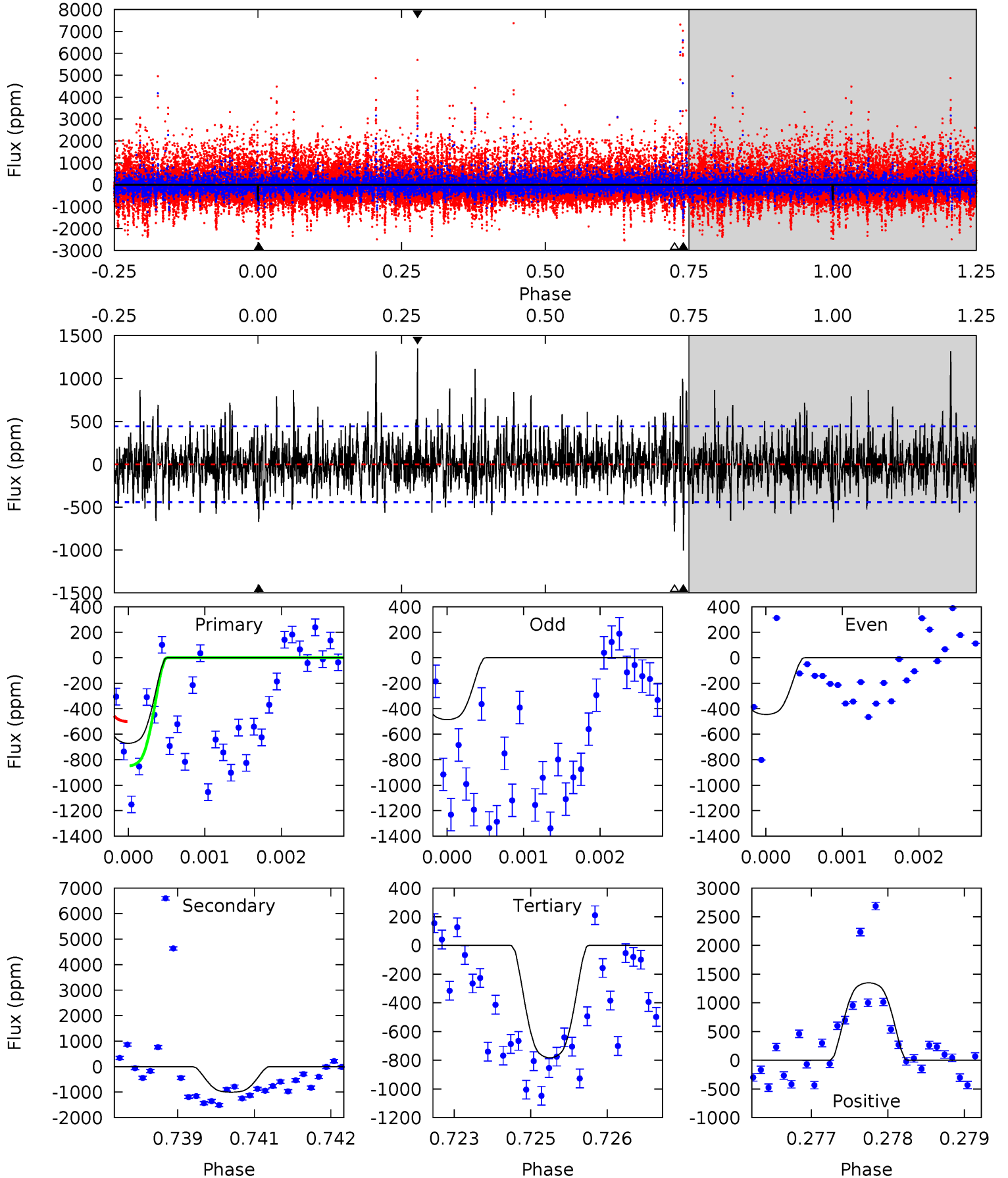
TCE 004929016-02 P=289.311965 Days $T_0=198.756183$ (BKJD)



DV Model-Shift Uniqueness Test

004929016-02, P = 289.283172 Days, E = 198.911604 Days

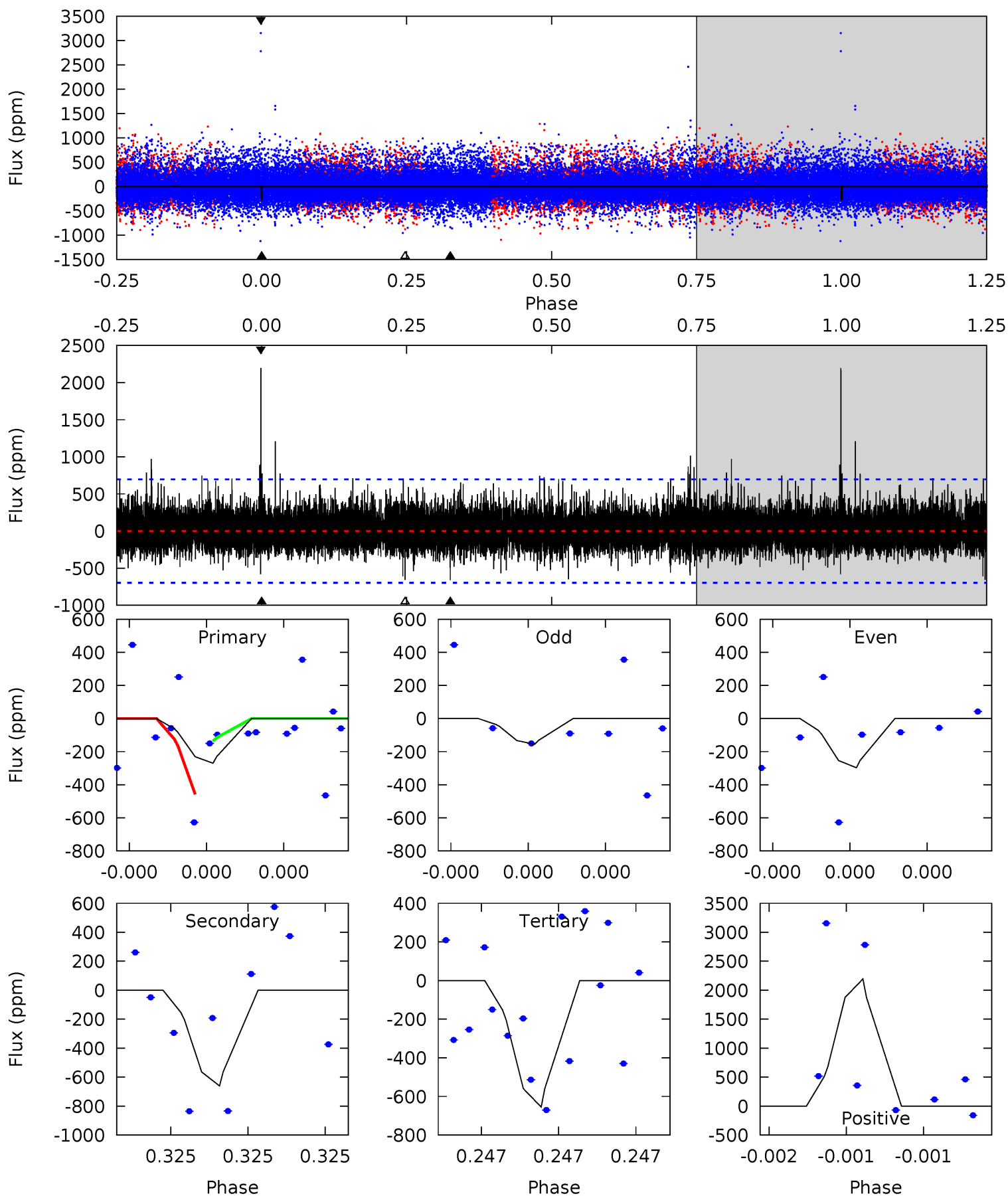
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.21	12.3	9.58	16.5	5.43	3.25	2.52	-1.36	-8.29	2.69	-4.23	0.17	-0.75	0.57	0



Alt Model-Shift Uniqueness Test

004929016-02, P = 289.311965 Days, E = 198.756183 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.25	5.49	5.44	18.2	5.79	3.81	1.28	-3.19	-16.0	0.05	-12.7	0.44	1.00	0.77	1.35



Stellar Parameters For KIC 004929016

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4090^{+123}_{-123}	$4.642^{+0.056}_{-0.018}$	$0.020^{+0.250}_{-0.300}$	$0.618^{+0.034}_{-0.063}$	$0.611^{+0.051}_{-0.057}$	$3.641^{+0.913}_{-0.311}$
	+3%/-3%	+1%/-0%	+1250%/-1500%	+6%/-10%	+8%/-9%	+25%/-9%
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 004929016-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1003 ± 82	$2.39^{+1.37}_{-1.20}$	230^{+8}_{-8}	3912^{+1237}_{-522}	$52360^{+157722}_{-31273}$
Alt.	-661 ± 120	$1.55^{+1.24}_{-0.96}$	230^{+8}_{-8}	4221^{+2410}_{-785}	$80907^{+492303}_{-57342}$

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

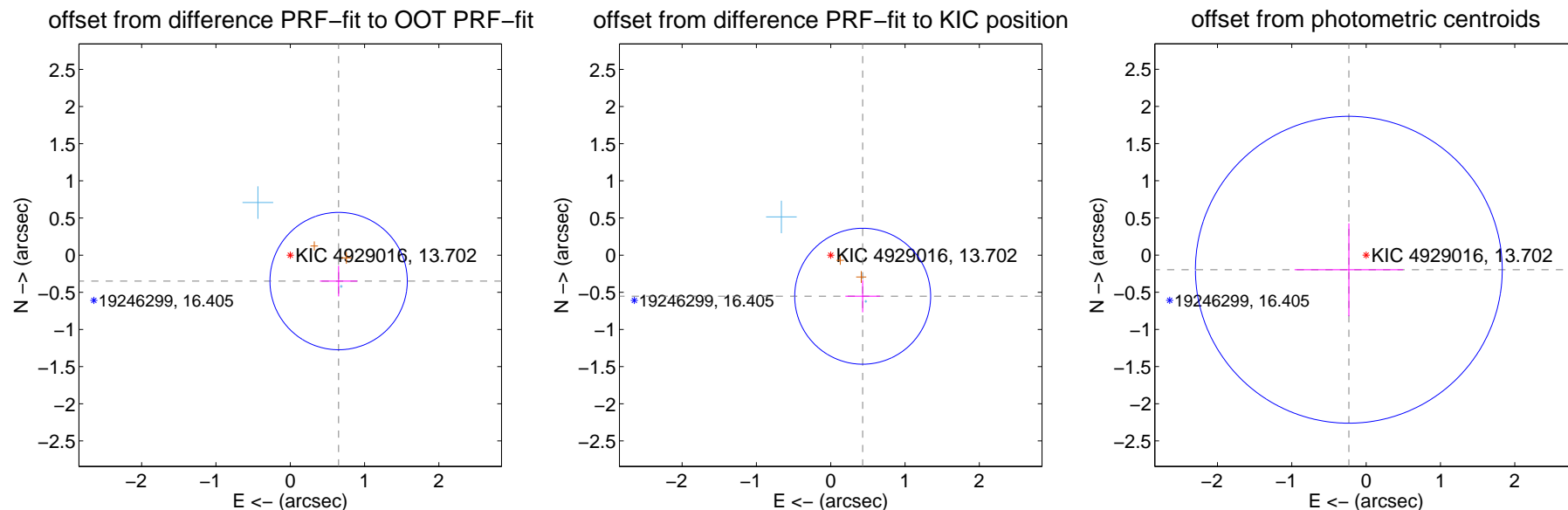
DV Centroid Data

Supplemental centroid analysis for 004929016-02. Kepler magnitude: 13.70. Transit SNR 4.64

There are 2 quarters with good PRF difference image offsets

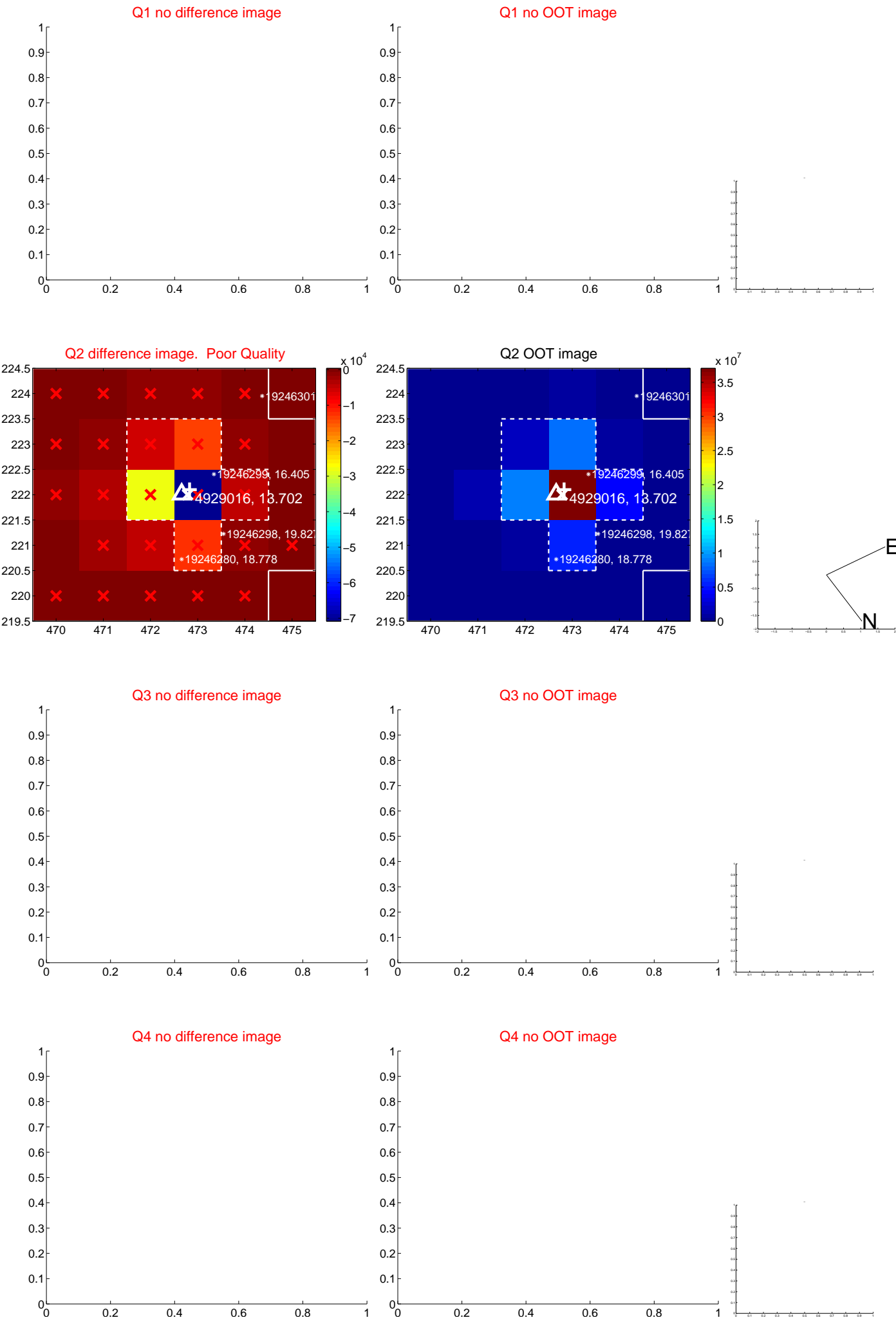
The direct PRF centroid is offset from the target star catalog position by about 0.30 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.739 ± 0.308	2.40	-0.651 ± 0.252	-0.349 ± 0.206
PRF-fit source offset from KIC position	0.701 ± 0.305	2.30	-0.430 ± 0.233	-0.553 ± 0.216
photometric centroid source offset	0.31 ± 0.69	0.44	0.23 ± 0.73	-0.20 ± 0.62

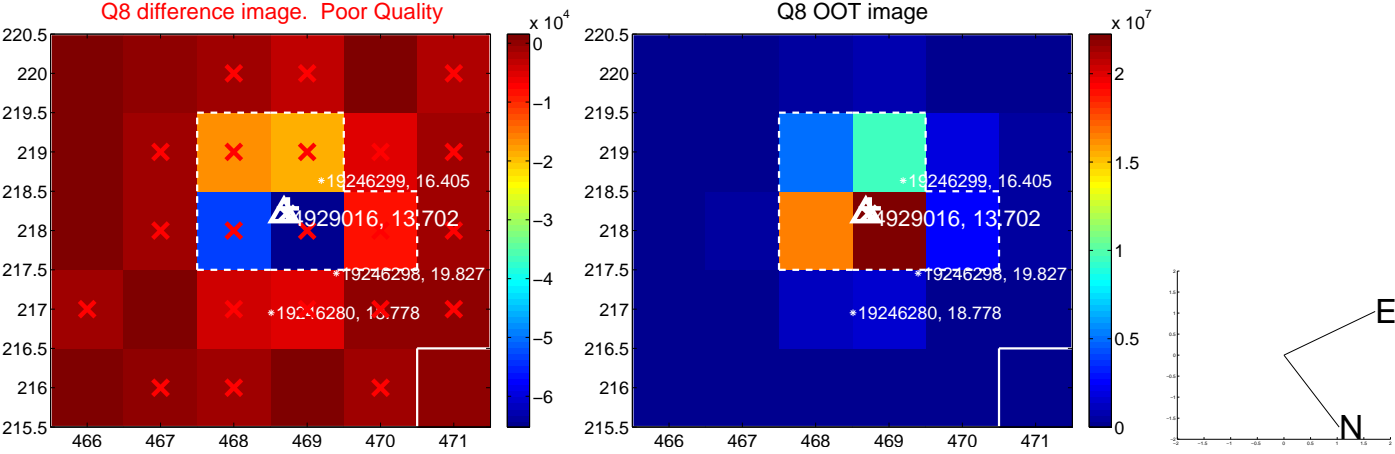
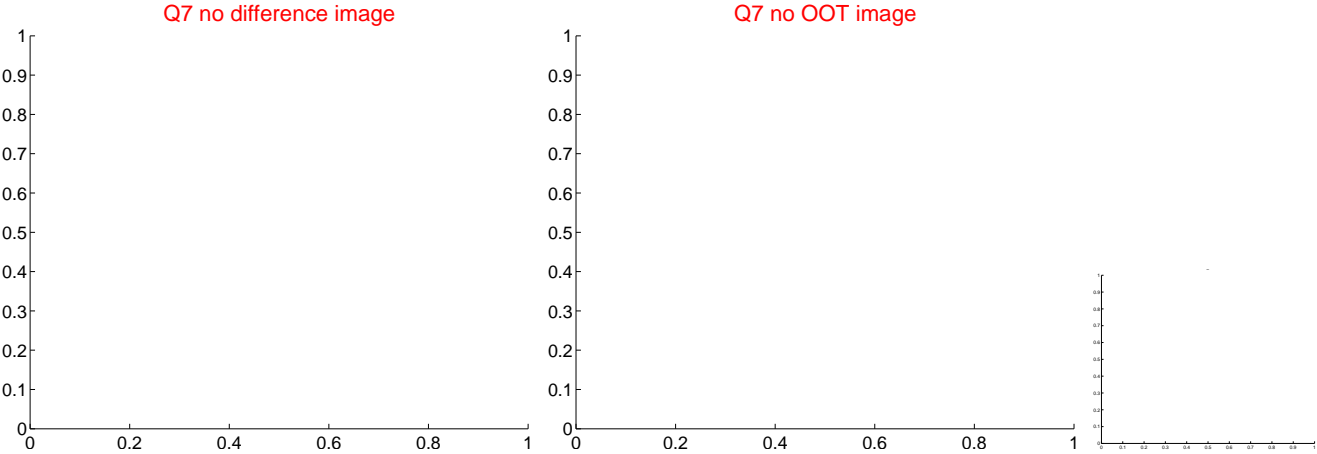
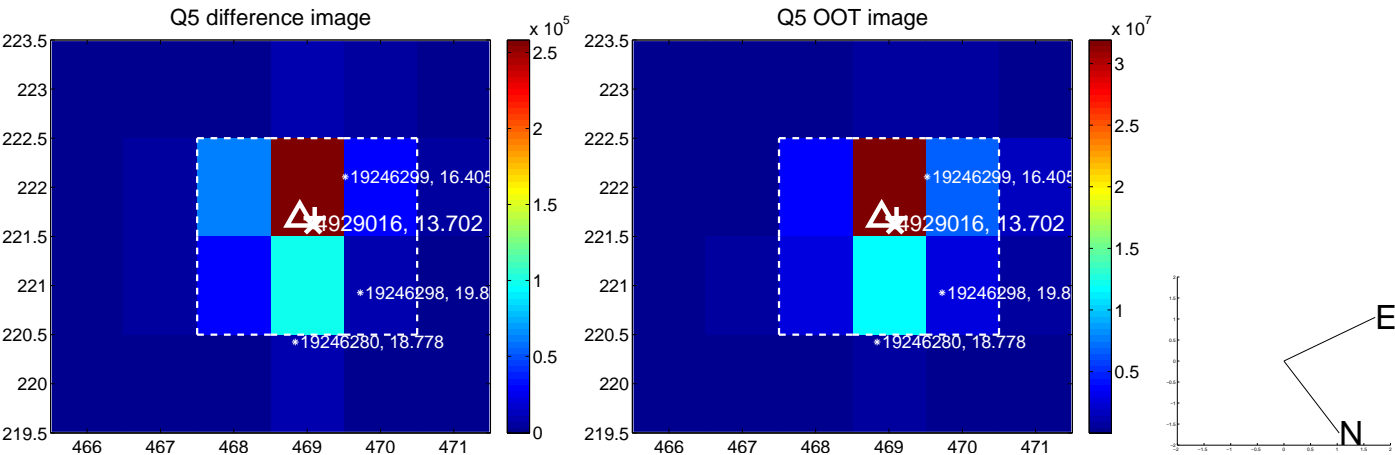


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

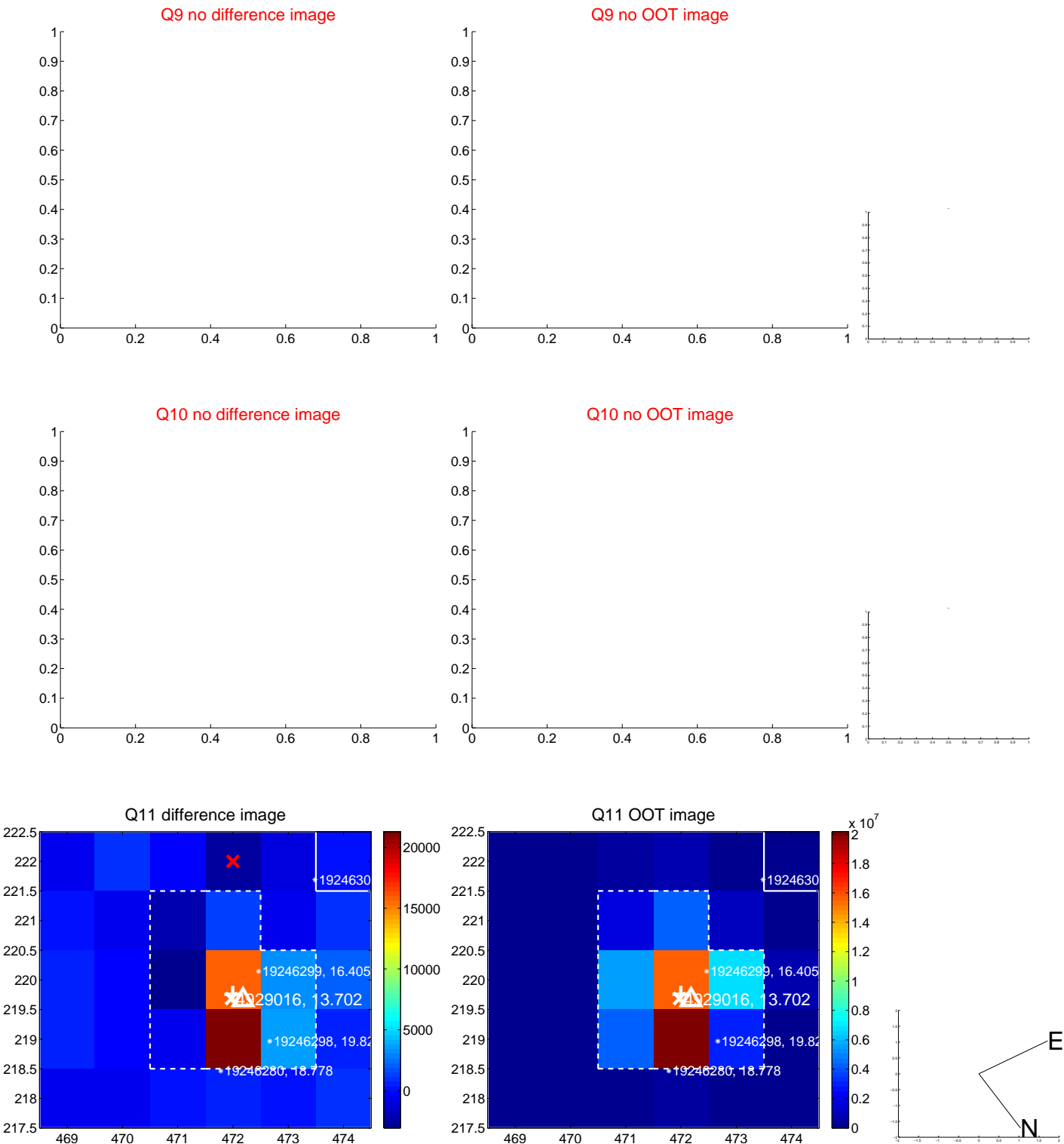
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



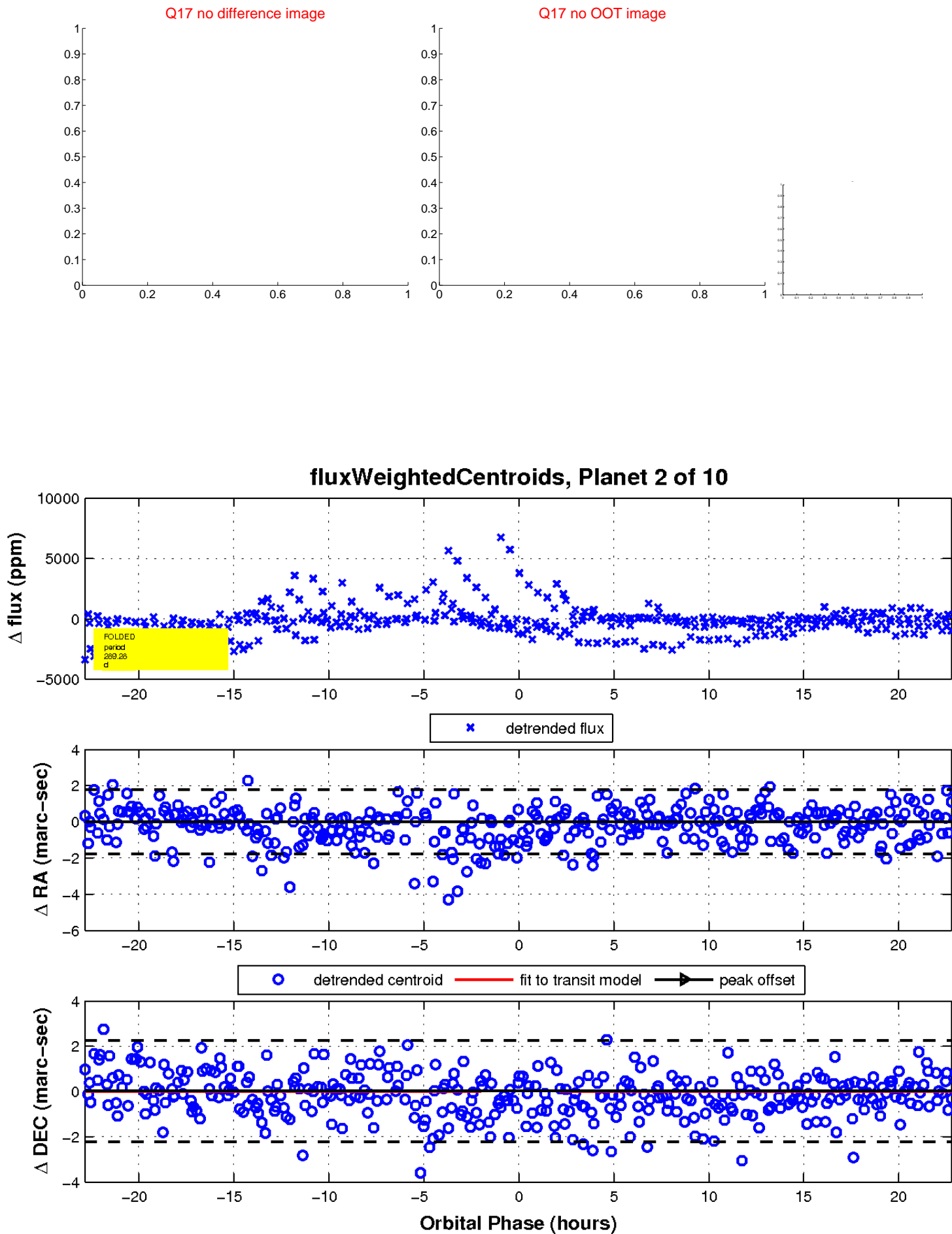
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

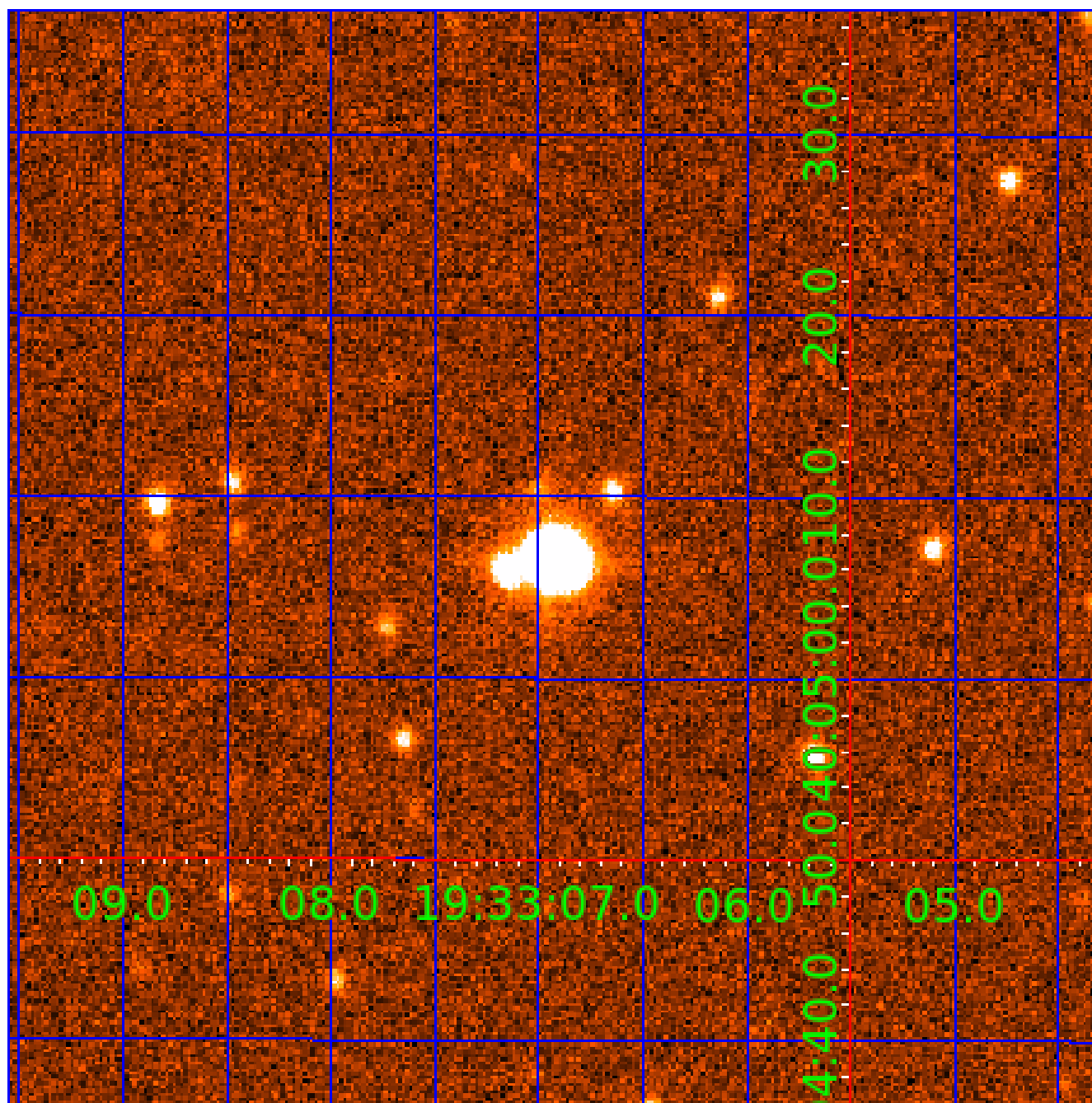


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004929016

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})
004929016-01	OBS	No	546.515996	470.891992	560.7	10.500	16.0	-1.0	0.62	4090	1.42	0.08
004929016-02	OBS	No	289.283172	198.911604	798.8	7.630	15.1	4.6	0.62	4090	2.34	0.18
004929016-03	OBS	No	313.930962	226.350204	1767.2	10.088	14.2	9.5	0.62	4090	2.76	0.16
004929016-04	OBS	No	182.550730	204.069750	522.3	7.527	15.6	2.7	0.62	4090	1.63	0.34
004929016-05	OBS	No	398.941160	310.972128	1183.9	1.352	14.4	7.4	0.62	4090	2.27	0.12
004929016-06	OBS	No	169.559378	294.340992	1501.0	7.543	14.0	9.6	0.62	4090	2.48	0.37
004929016-09	OBS	No	221.143525	297.651451	845.4	21.195	15.2	4.6	0.62	4090	2.11	0.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004929016-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
004929016-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS
004929016-04	OBS	FP	0.00	1	0	0	0	LPP_DV—INCONSISTENT_TRANS
004929016-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
004929016-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

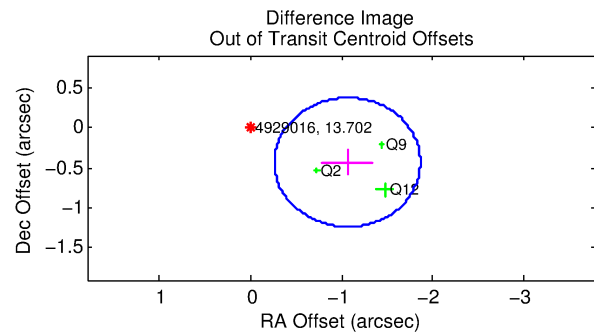
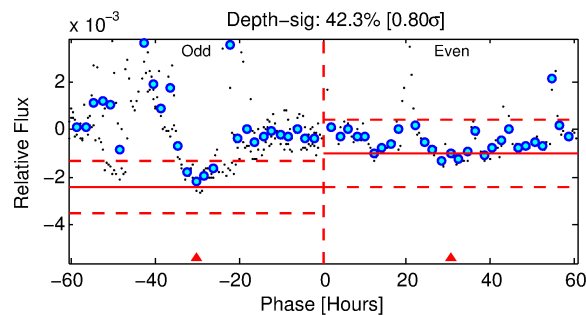
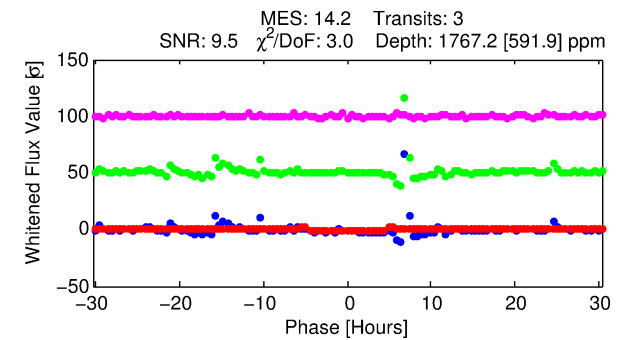
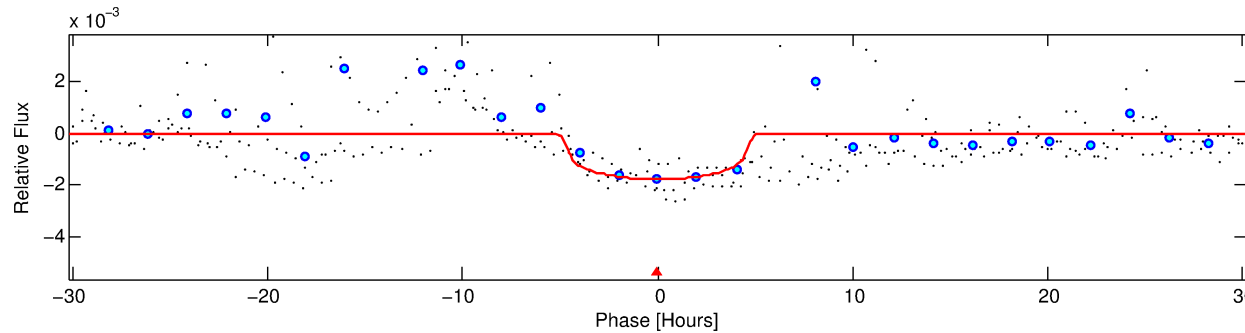
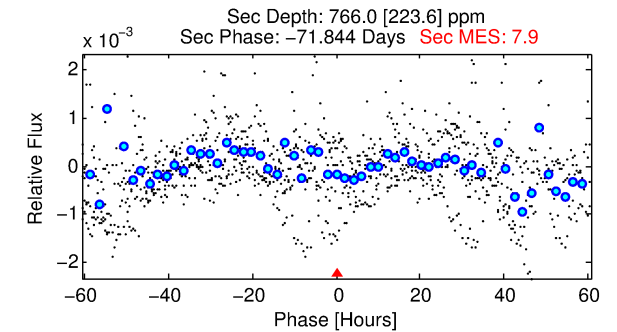
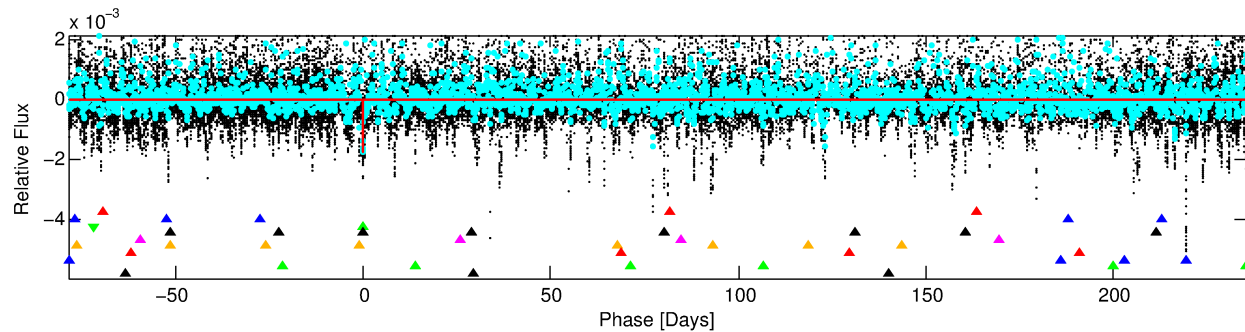
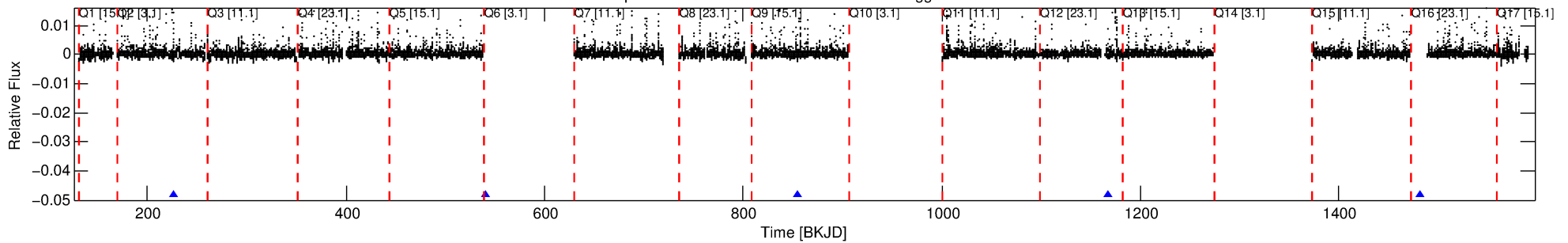
Ephemeris Match Information For 004929016-03

No Significant Match Found

DV One-Page Summary

KIC: 4929016 Candidate: 3 of 10 Period: 313.931 d

Kp: 13.70 R*: 0.62 Rs Teff: 4090.0 K Logg: 4.64 Fe/H: 0.020



DV Fit Results:

Period = 313.93096 [0.00965] d
Epoch = 226.3502 [0.0204] BKJD
Rp/R* = 0.0410 [0.0138]
a/R* = 184.76 [173.43]
b = 0.69 [0.71]
Seff = 0.16 [0.03]
Teq = 162 [7] K
Rp = 2.76 [0.97] Re
a = 0.7672 [0.0617] AU
Ag = 32476.55 [24059.88] [1.35σ]
Teffp = 3361 [624] K [5.13σ]

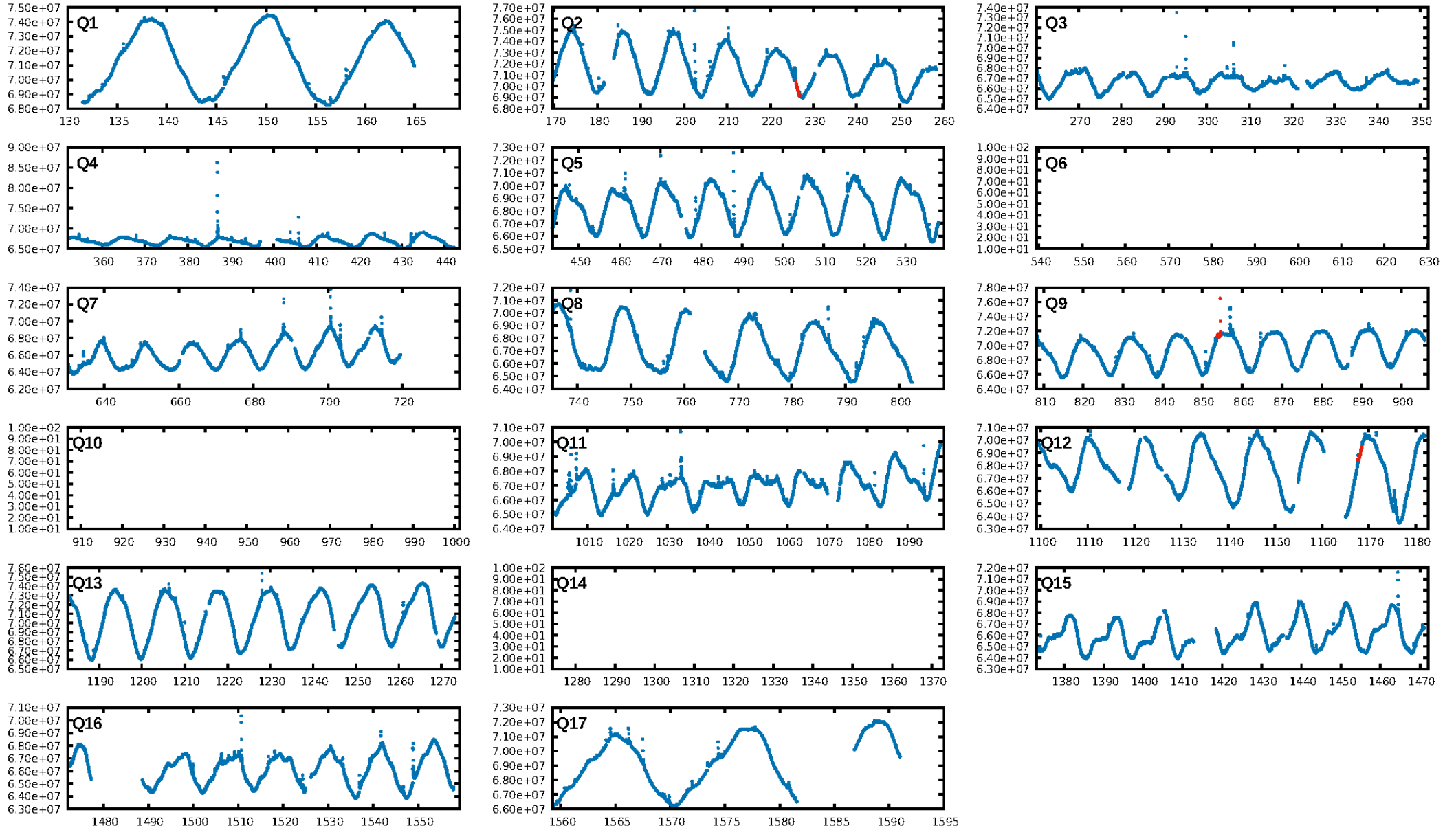
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [46.77σ]
LongPeriod-sig: 100.0% [35.66σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 0.2%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.6051
Centroid-sig: 0.0%
Centroid-so: 0.967 arcsec [3.00σ]
OotOffset-rm: 1.149 arcsec [4.28σ]
OotOffset-st: 1/0/1/1 [3]
KicOffset-rm: 1.034 arcsec [3.94σ]
KicOffset-st: 1/0/1/1 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

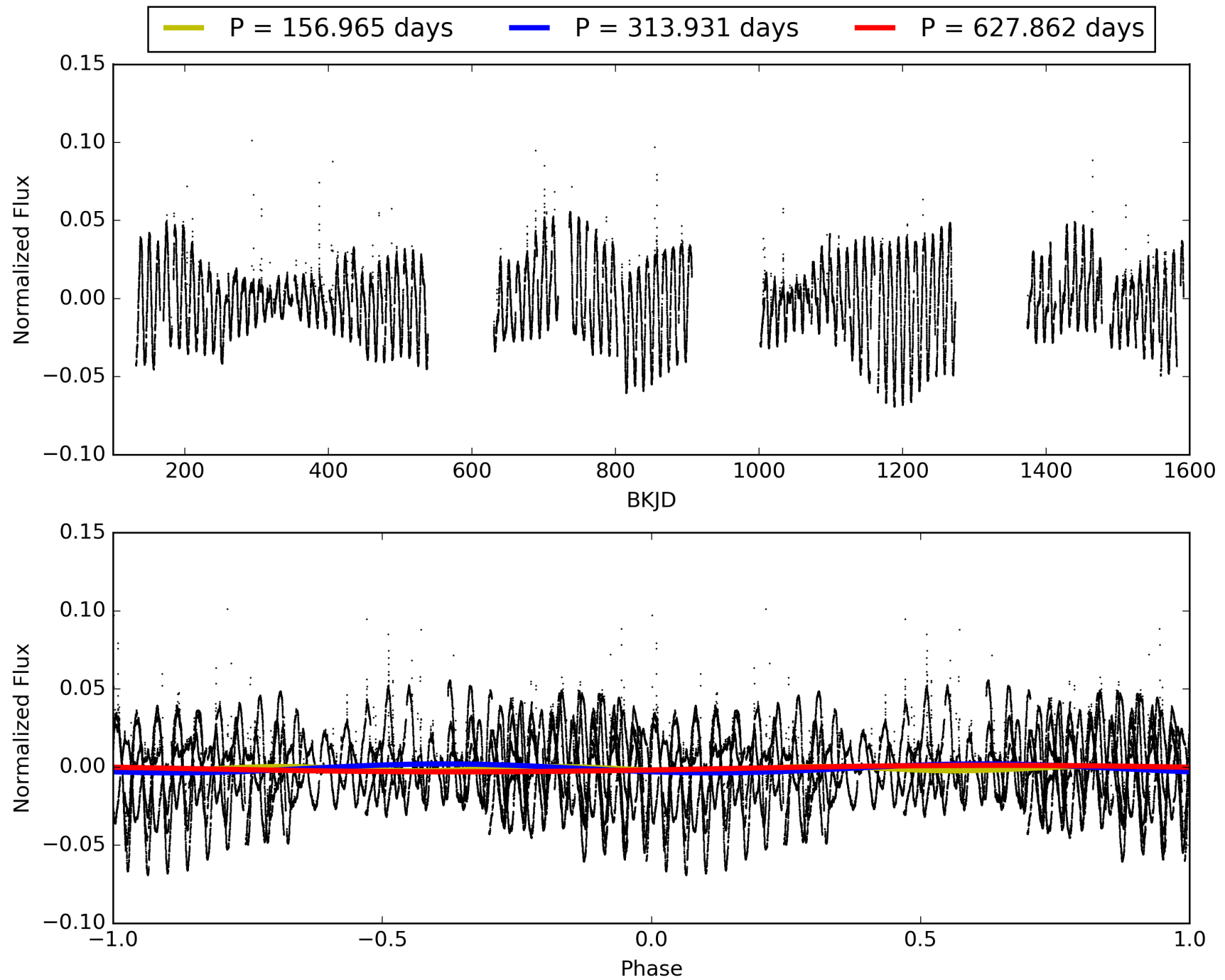
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:56:48 Z

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

TCE 004929016-03, PDC Light Curves

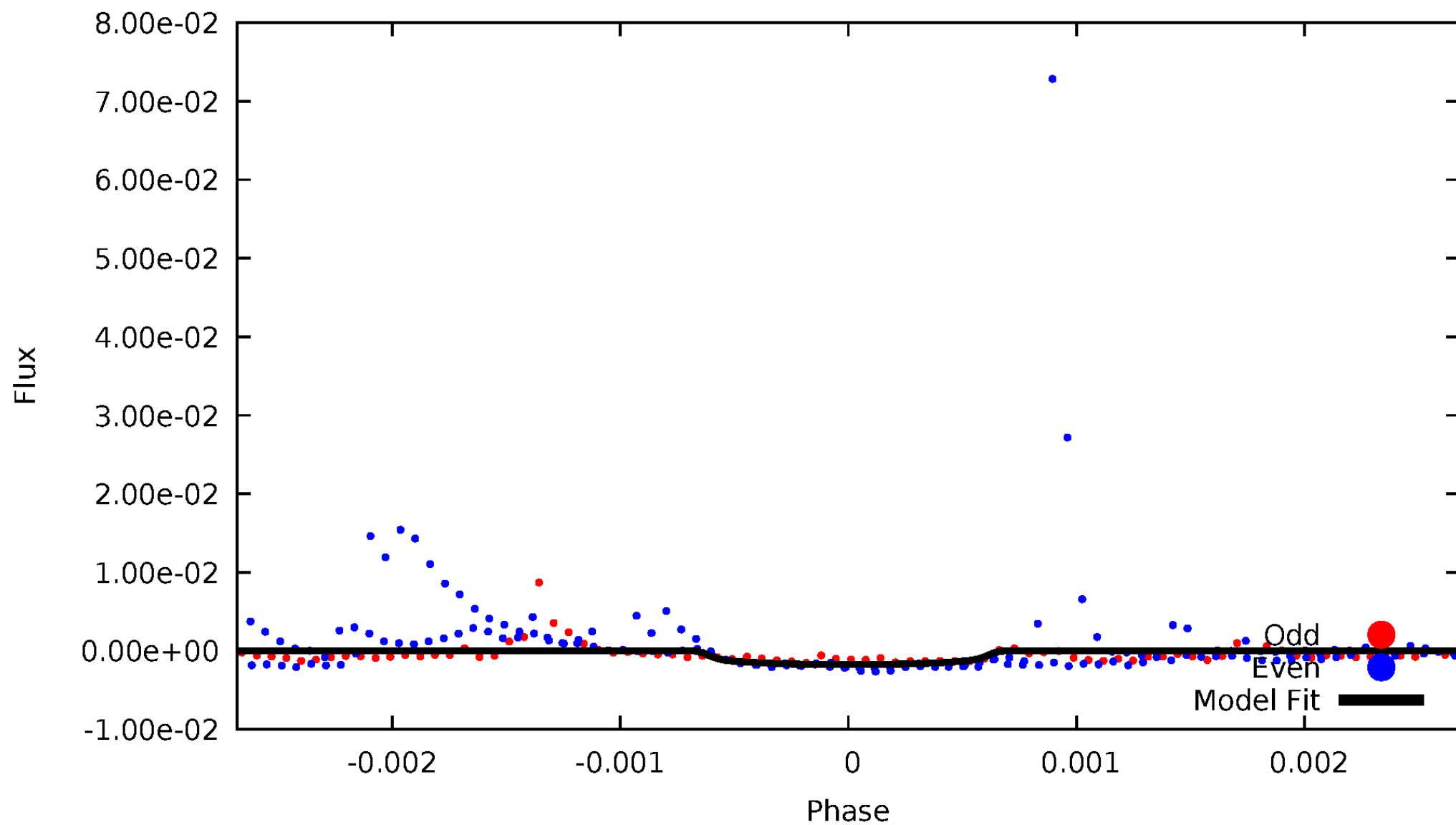


TCE 004929016-03



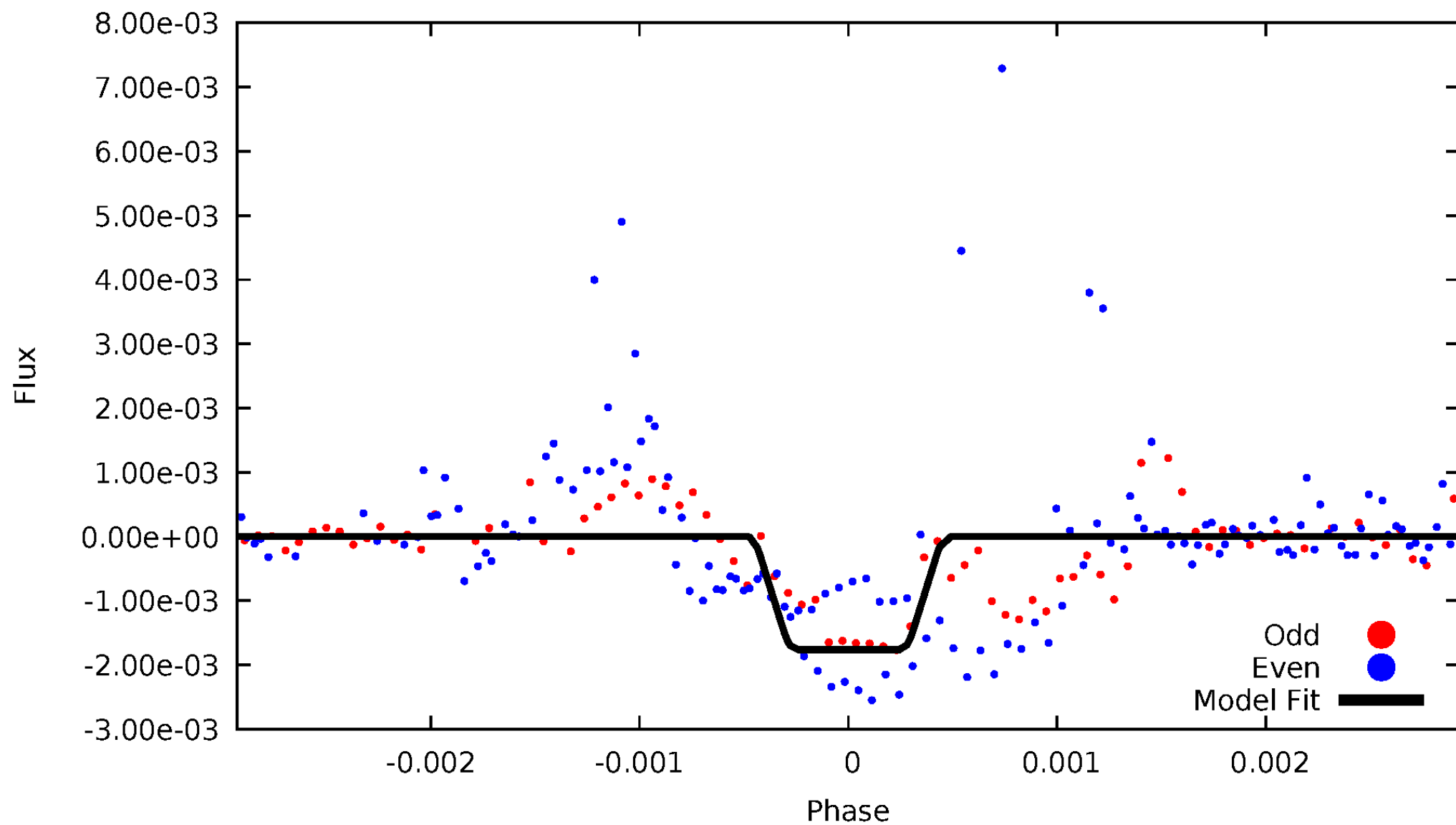
DV Odd/Even

TCE 004929016-03



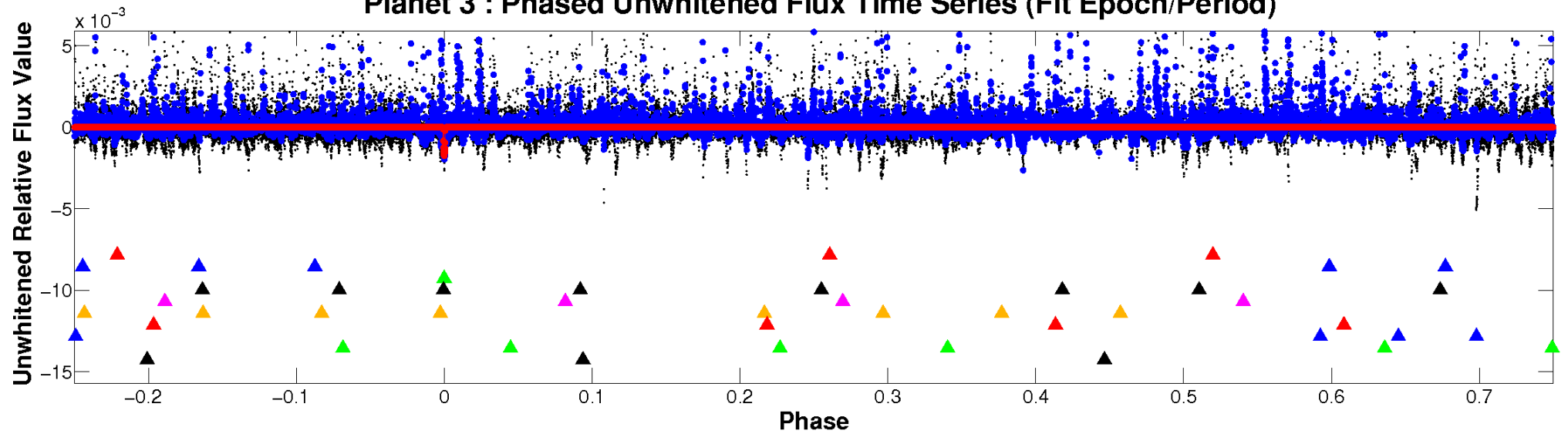
ALT Odd/Even

TCE 004929016-03

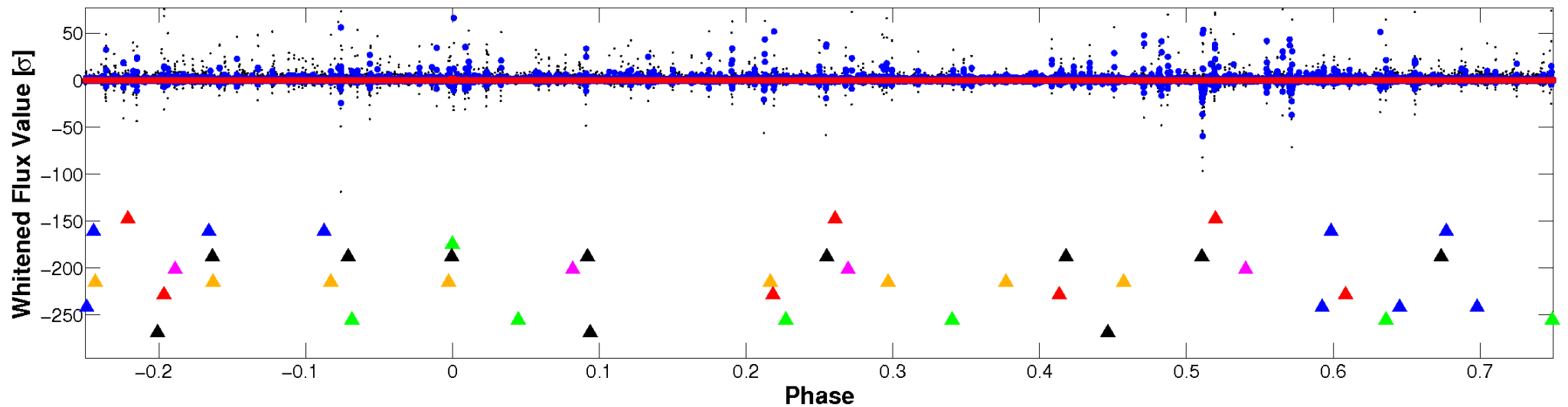


Non-Whitened Vs. Whitened Light Curve

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

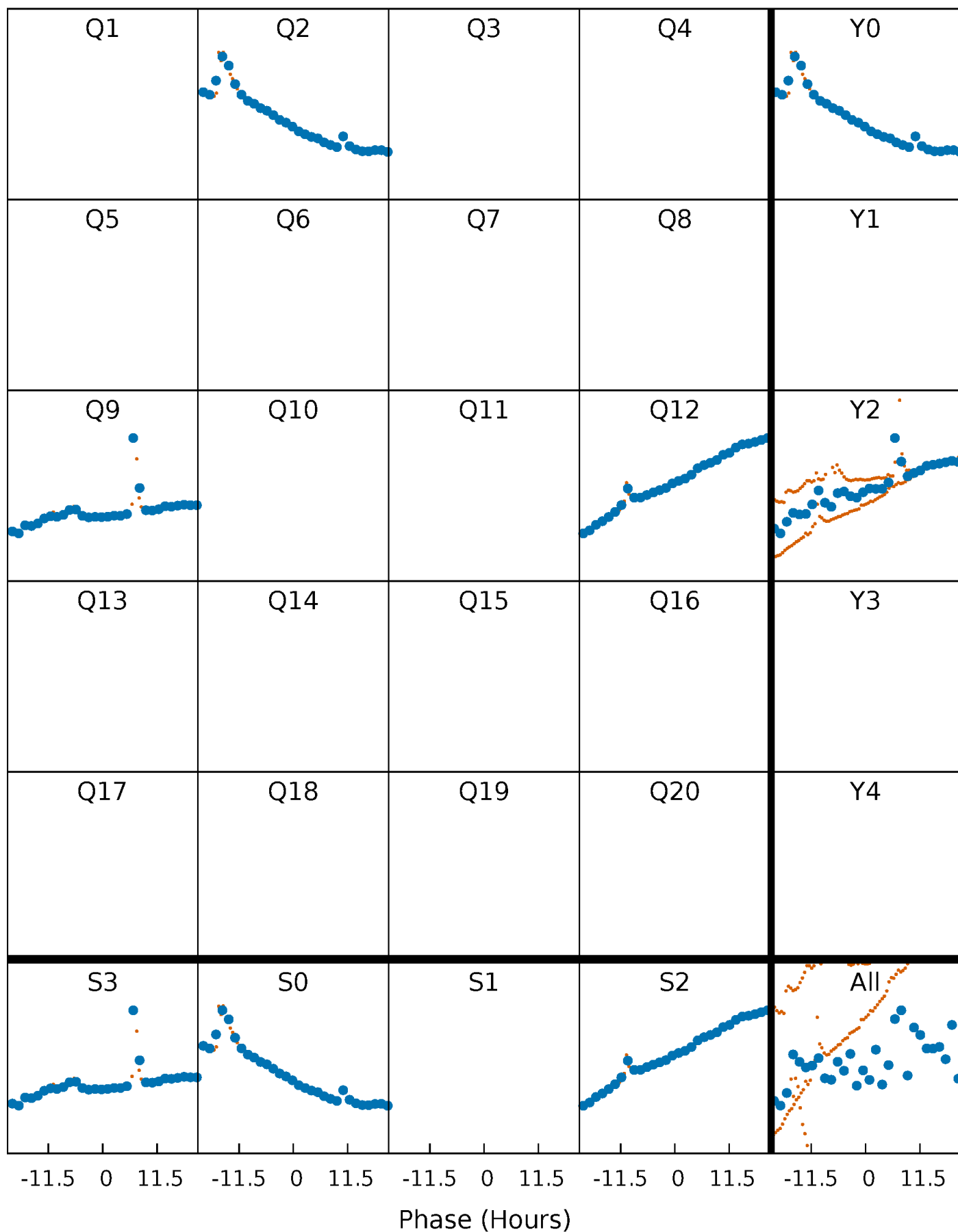


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



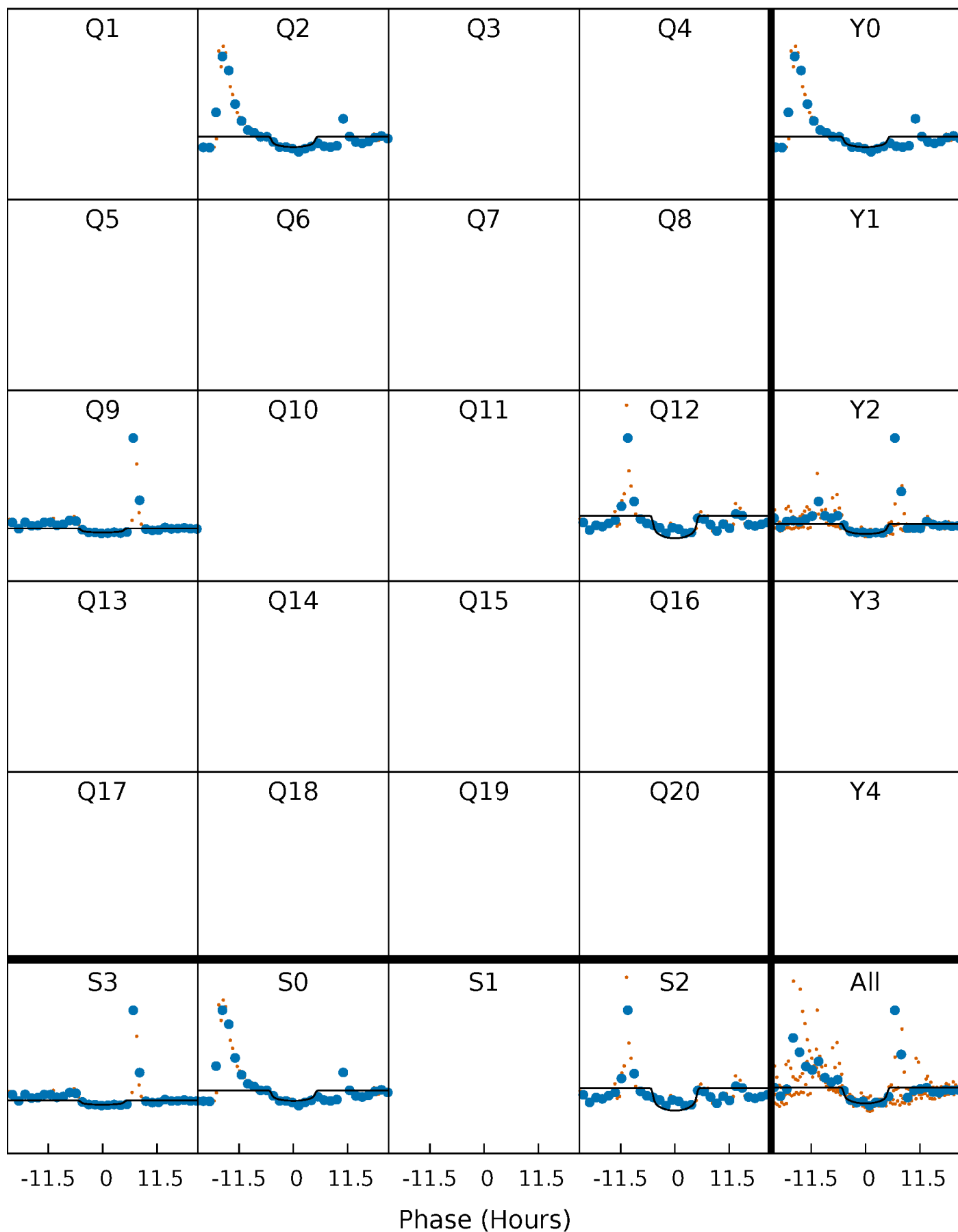
PDC Quarter-Phased Transit Curves

TCE 004929016-03 P=313.930962 Days $T_0=226.350204$ (BKJD)



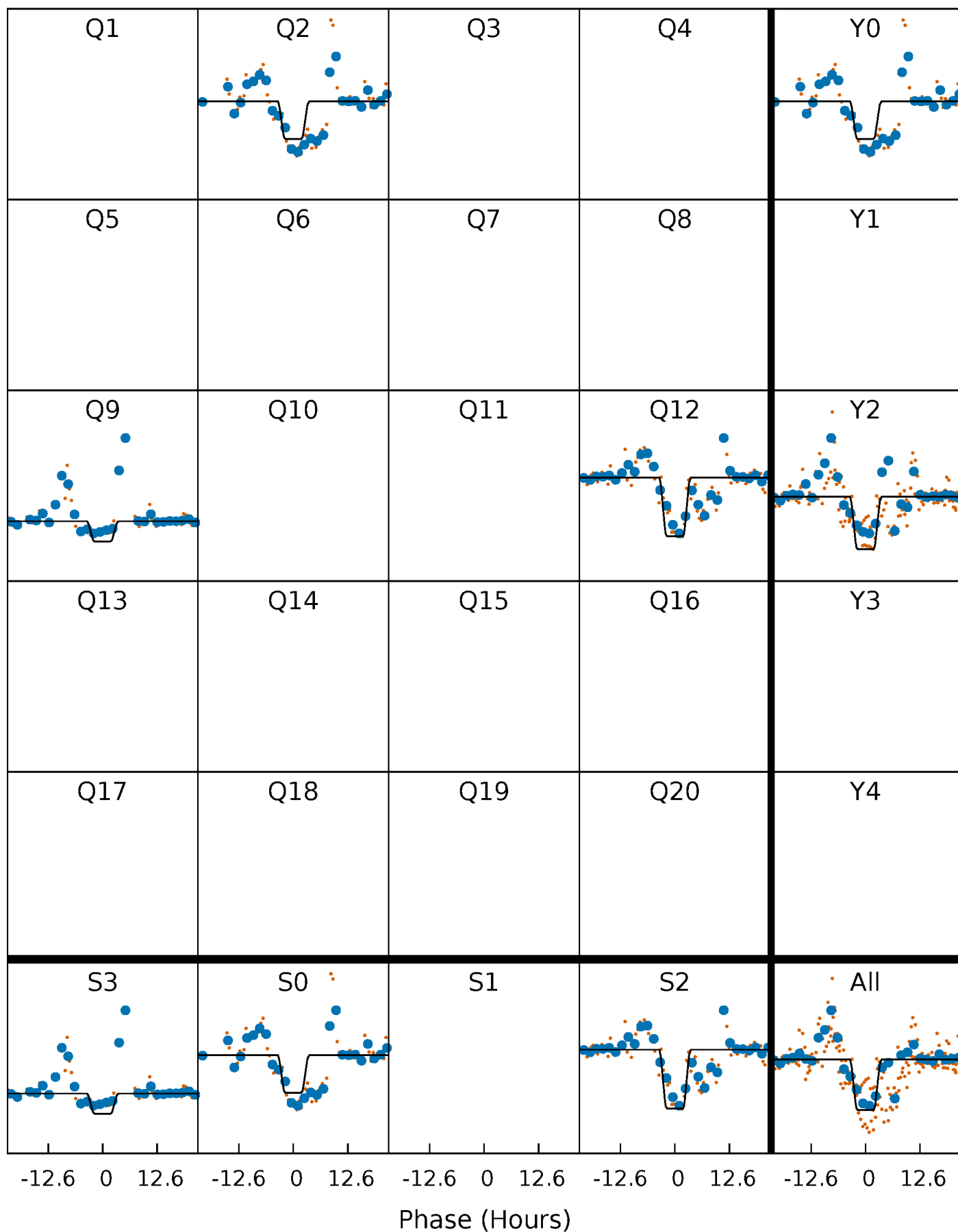
DV Quarter-Phased Transit Curves

TCE 004929016-03 P=313.930962 Days $T_0=226.350204$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

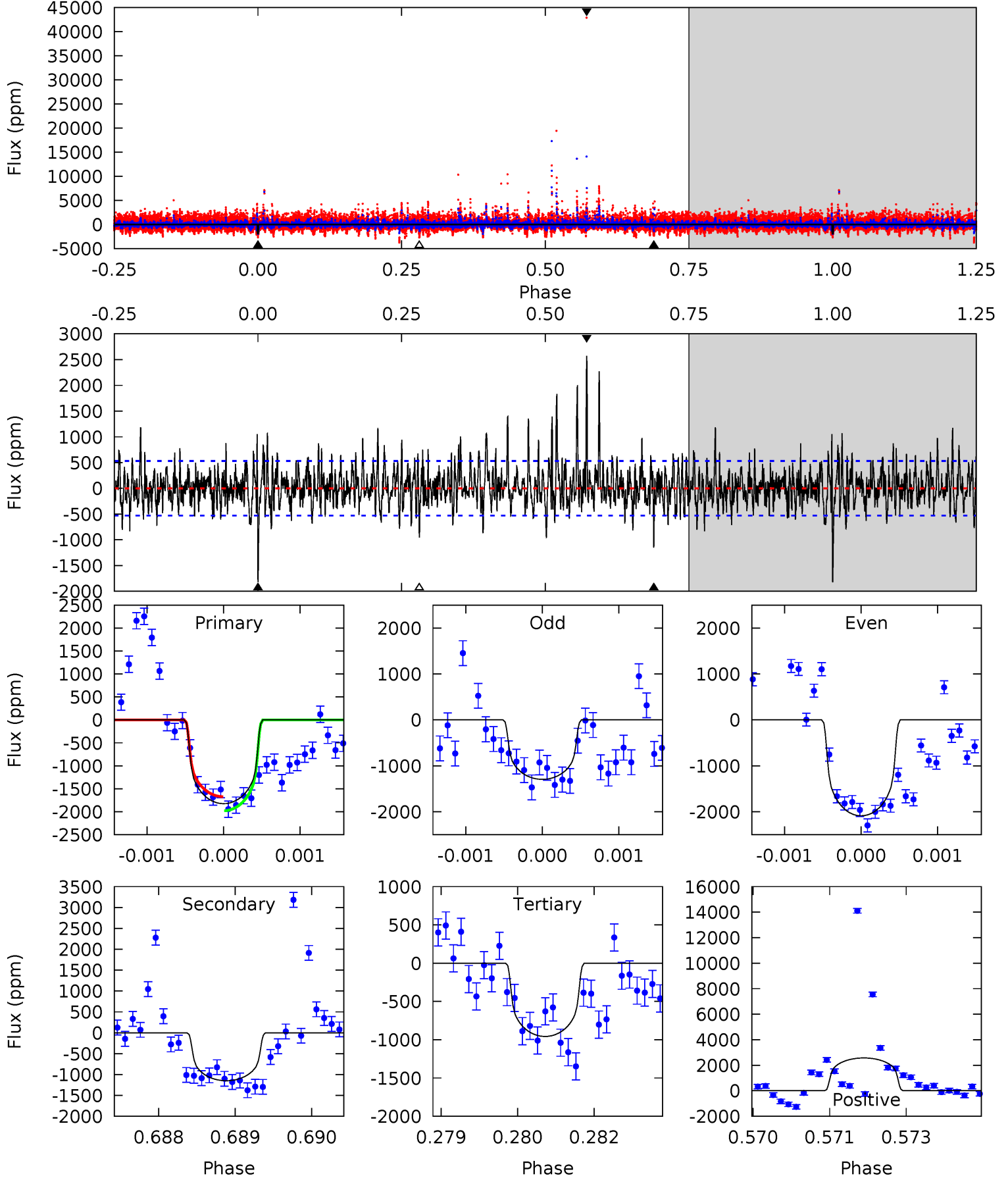
TCE 004929016-03 P=313.934405 Days $T_0=226.433999$ (BKJD)



DV Model-Shift Uniqueness Test

004929016-03, P = 313.930962 Days, E = 226.350204 Days

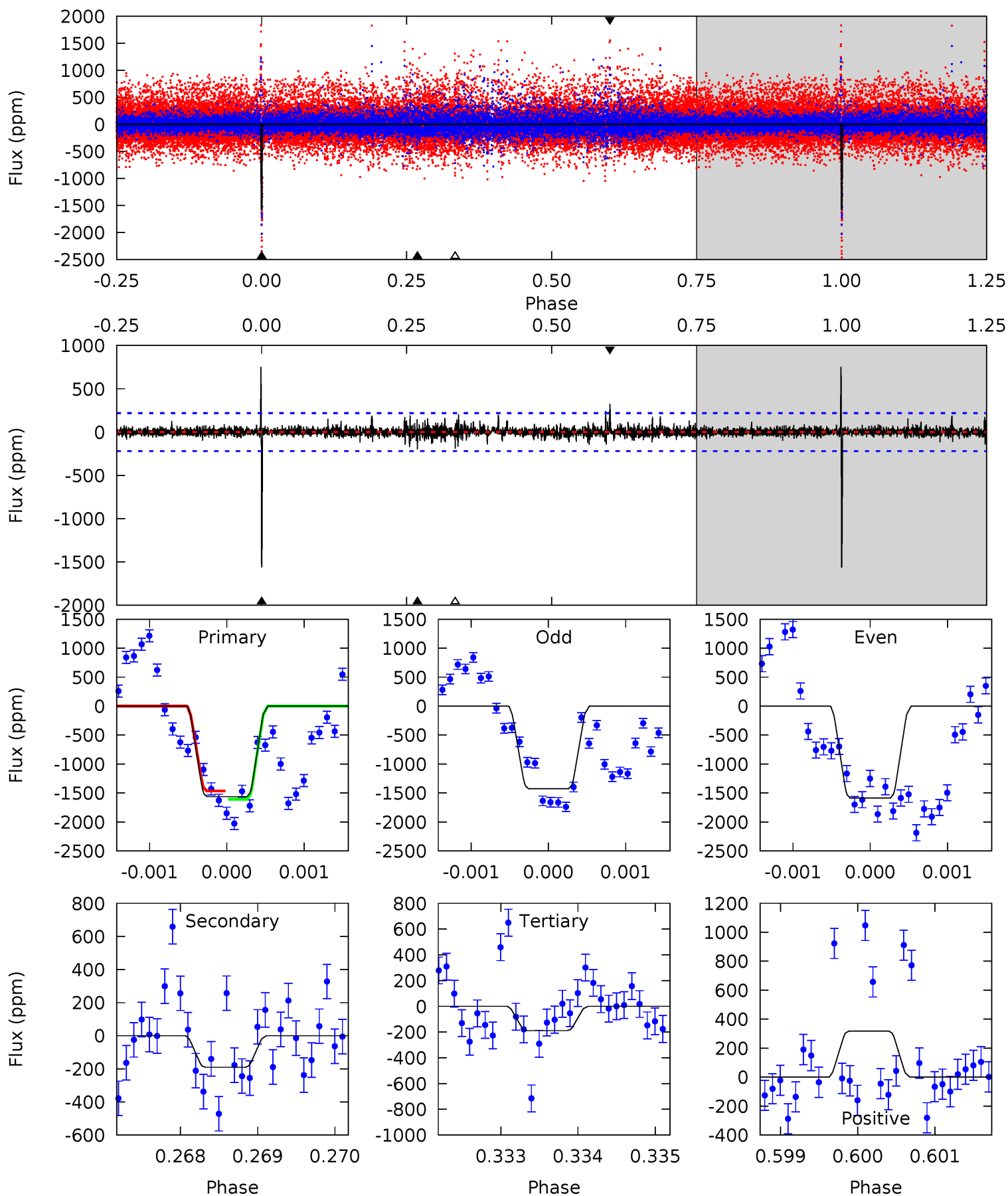
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.5	11.7	9.72	26.1	5.40	3.20	3.30	8.81	-7.61	1.94	-14.5	2.64	0.90	0.59	1.58



Alt Model-Shift Uniqueness Test

004929016-03, P = 313.934405 Days, E = 226.433999 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
38.9	4.73	4.69	7.89	5.46	3.31	0.95	34.2	31.0	0.04	-3.15	1.91	1.06	0.32	1.77



Stellar Parameters For KIC 004929016

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4090^{+123}_{-123}	$4.642^{+0.056}_{-0.018}$	$0.020^{+0.250}_{-0.300}$	$0.618^{+0.034}_{-0.063}$	$0.611^{+0.051}_{-0.057}$	$3.641^{+0.913}_{-0.311}$
	+3%/-3%	+1%/-0%	+1250%/-1500%	+6%/-10%	+8%/-9%	+25%/-9%
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 004929016-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1148 ± 98	$2.74^{+0.93}_{-0.85}$	224^{+8}_{-7}	3815^{+555}_{-350}	50640^{+54711}_{-22609}
Alt.	-190 ± 40	$2.74^{+1.00}_{-0.90}$	224^{+8}_{-7}	2886^{+379}_{-238}	7992^{+10481}_{-3735}

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 $A_{obs} \gg 1.0$

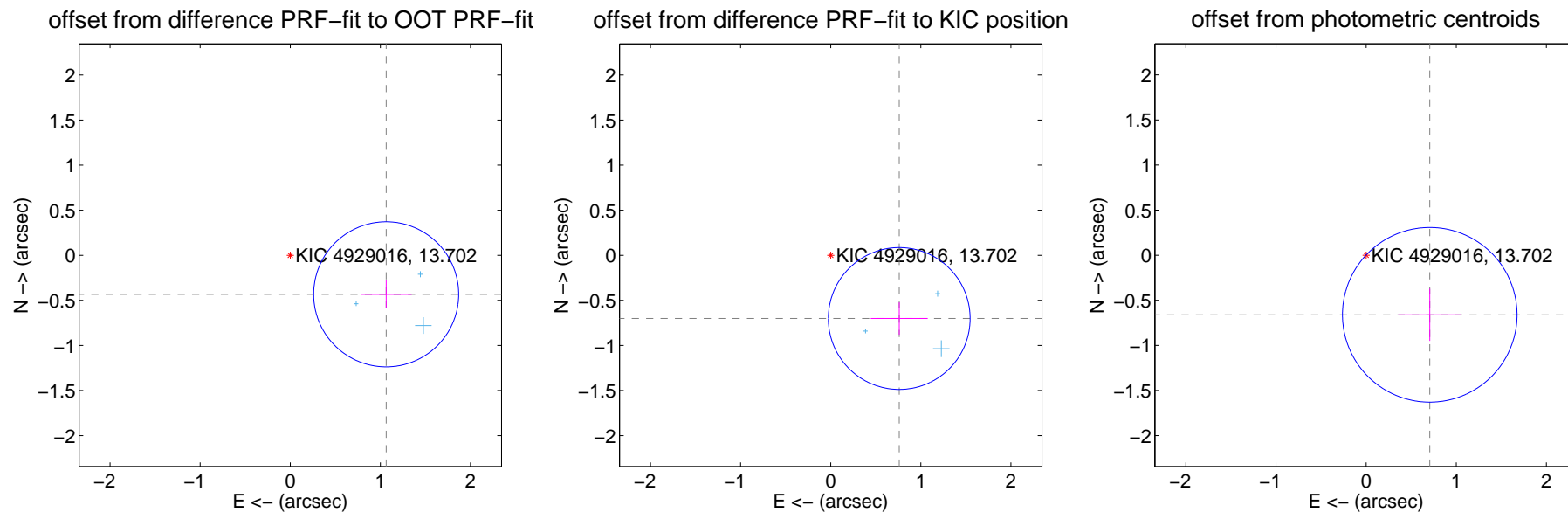
DV Centroid Data

Supplemental centroid analysis for 004929016-03. Kepler magnitude: 13.70. Transit SNR 9.46

There are 3 quarters with good PRF difference image offsets

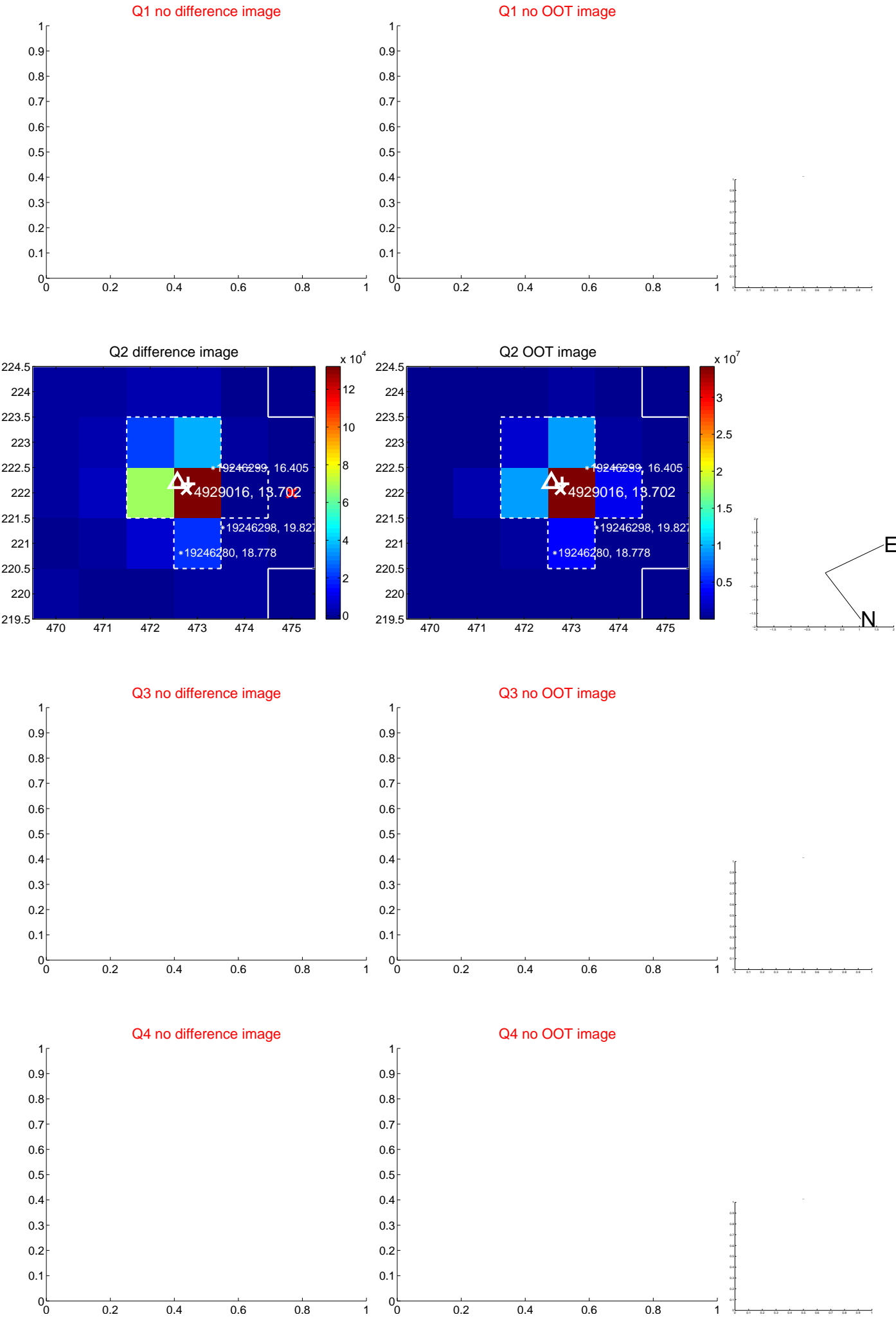
The direct PRF centroid is offset from the target star catalog position by about 0.36 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.149 ± 0.268	4.28	-1.064 ± 0.283	-0.433 ± 0.155
PRF-fit source offset from KIC position	1.034 ± 0.262	3.94	-0.760 ± 0.316	-0.701 ± 0.179
photometric centroid source offset	0.97 ± 0.32	3.00	-0.71 ± 0.35	-0.66 ± 0.29



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

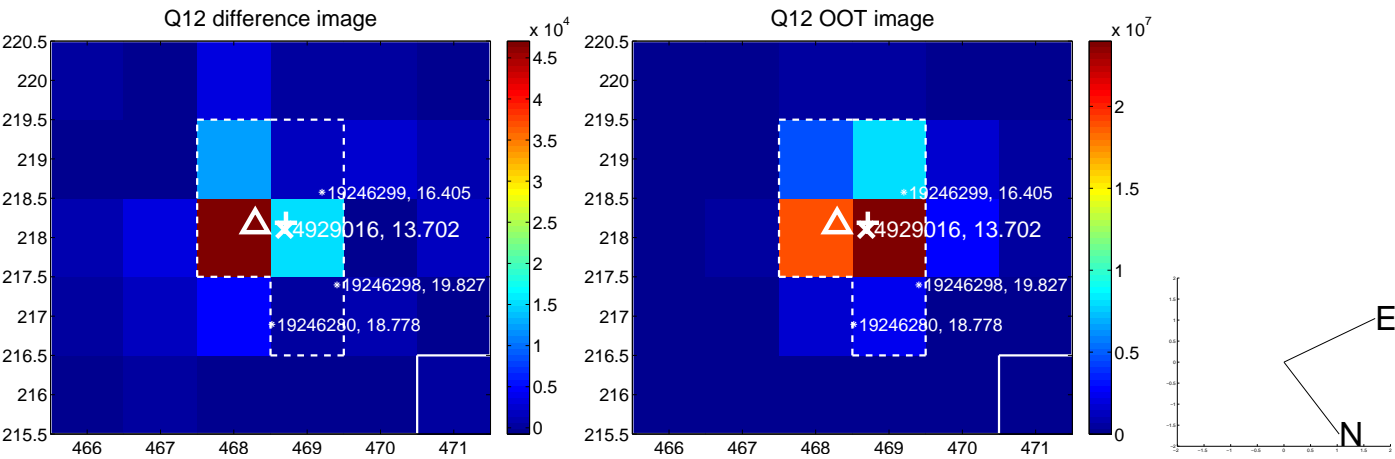
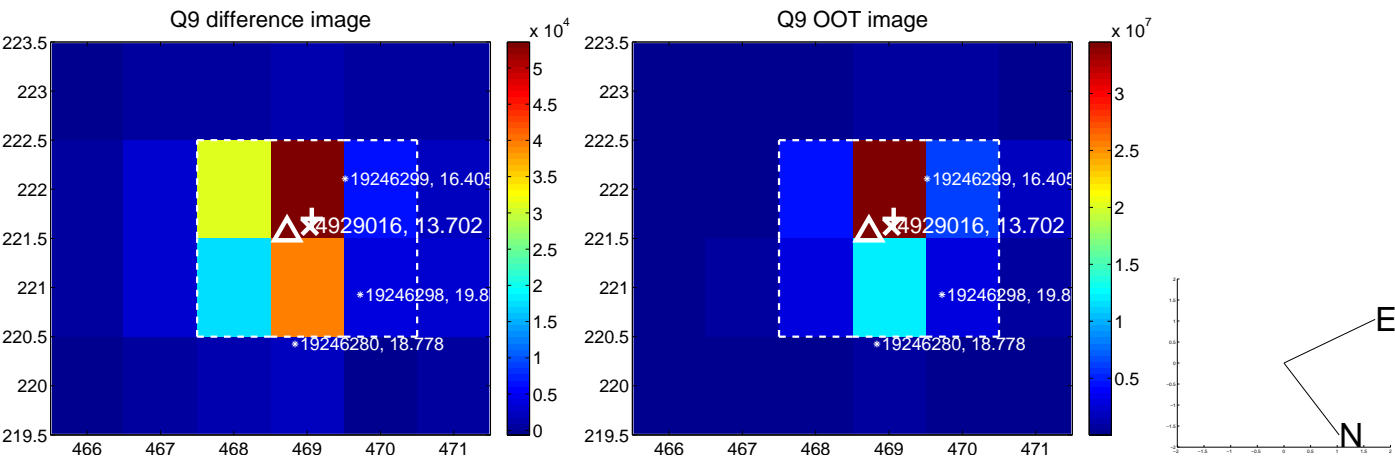
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



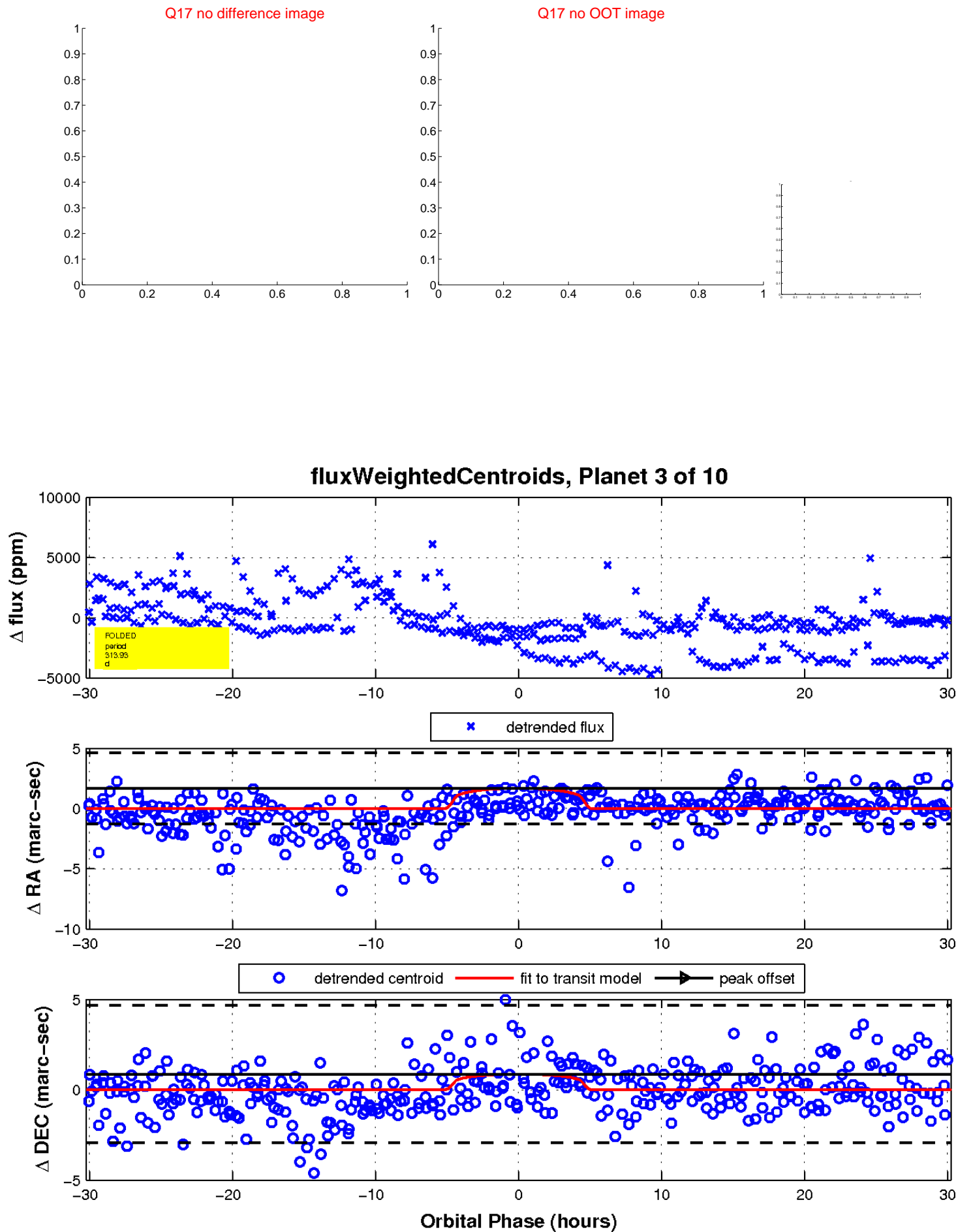
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

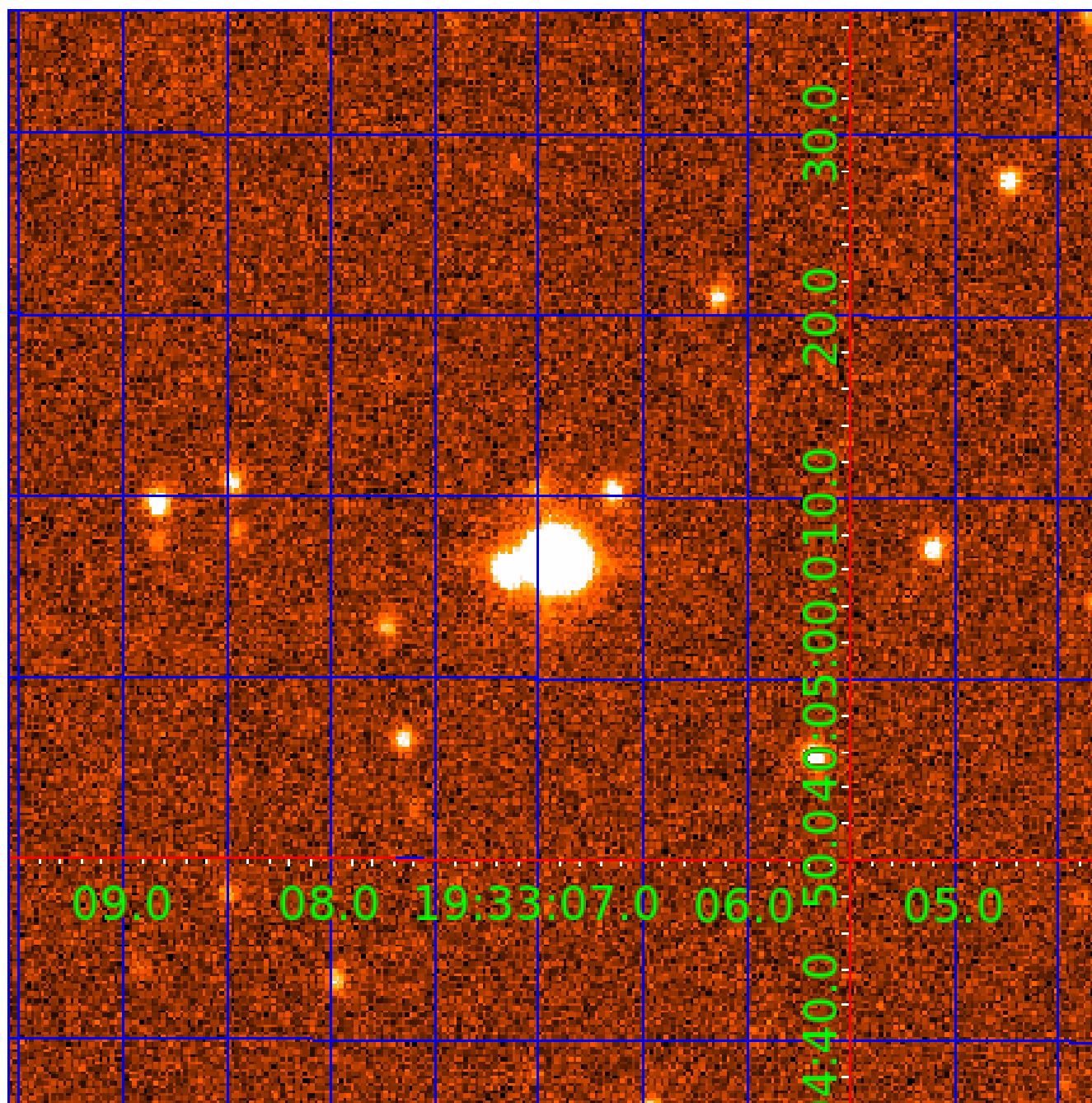


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004929016

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})
004929016-01	OBS	No	546.515996	470.891992	560.7	10.500	16.0	-1.0	0.62	4090	1.42	0.08
004929016-02	OBS	No	289.283172	198.911604	798.8	7.630	15.1	4.6	0.62	4090	2.34	0.18
004929016-03	OBS	No	313.930962	226.350204	1767.2	10.088	14.2	9.5	0.62	4090	2.76	0.16
004929016-04	OBS	No	182.550730	204.069750	522.3	7.527	15.6	2.7	0.62	4090	1.63	0.34
004929016-05	OBS	No	398.941160	310.972128	1183.9	1.352	14.4	7.4	0.62	4090	2.27	0.12
004929016-06	OBS	No	169.559378	294.340992	1501.0	7.543	14.0	9.6	0.62	4090	2.48	0.37
004929016-09	OBS	No	221.143525	297.651451	845.4	21.195	15.2	4.6	0.62	4090	2.11	0.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004929016-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
004929016-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS
004929016-04	OBS	FP	0.00	1	0	0	0	LPP_DV—INCONSISTENT_TRANS
004929016-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
004929016-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

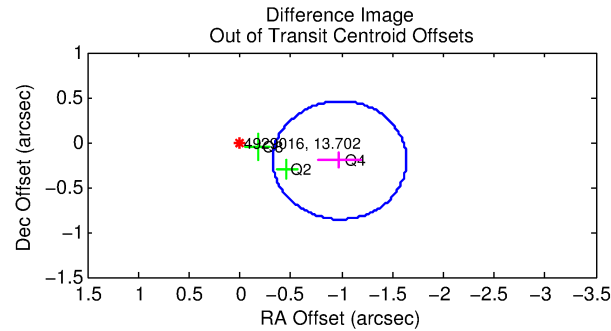
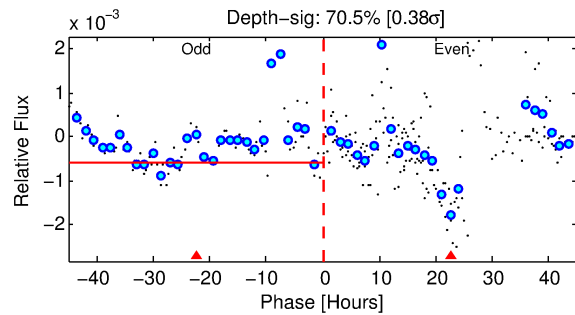
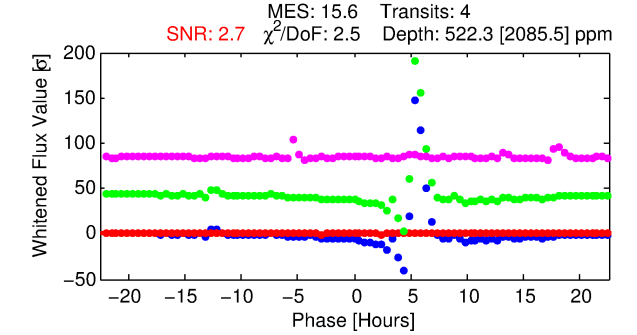
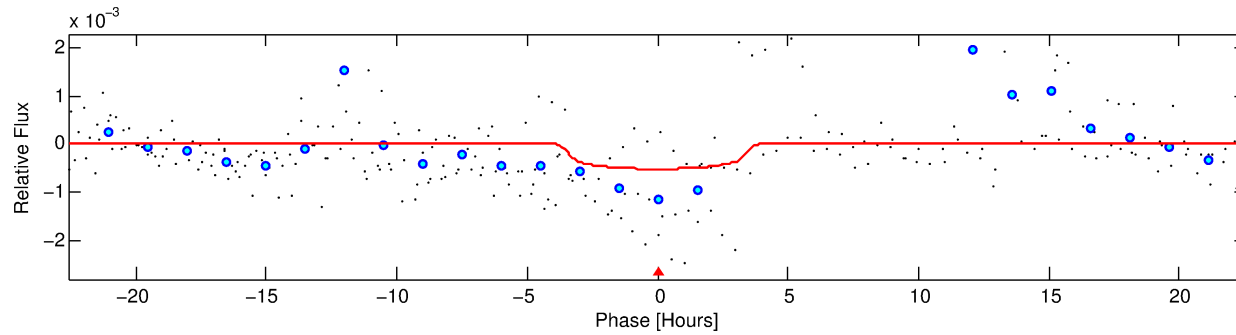
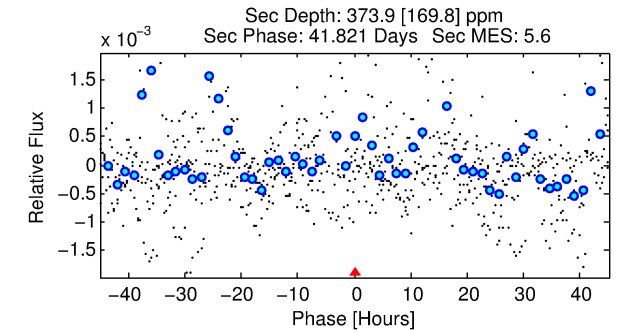
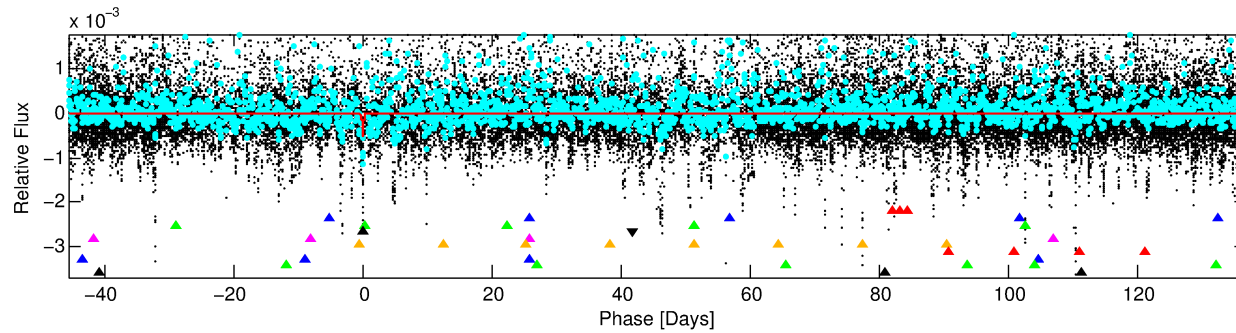
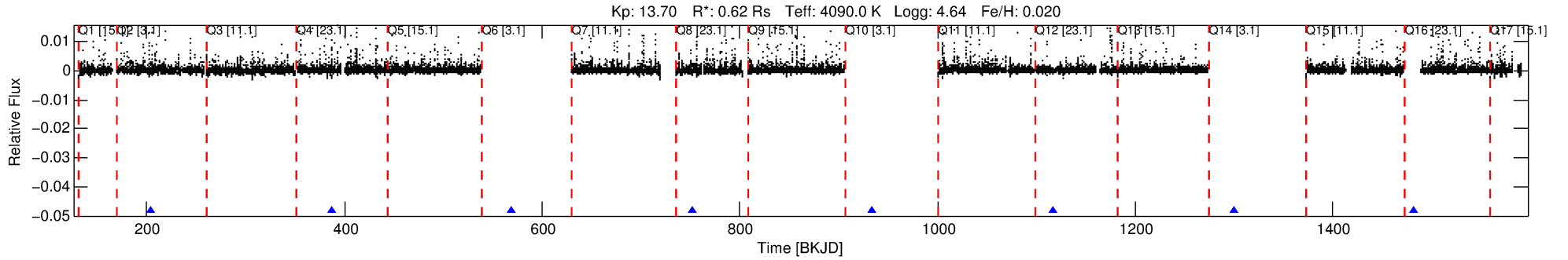
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004929016-04

No Significant Match Found

DV One-Page Summary

KIC: 4929016 Candidate: 4 of 10 Period: 182.551 d



DV Fit Results:

Period = 182.55073 [0.07446] d
Epoch = 204.0698 [0.1896] BKJD
Rp/R* = 0.0242 [0.1165]
a/R* = 106.71 [1625.09]
b = 0.85 [5.17]
Seff = 0.34 [0.05]
Teq = 194 [8] K
Rp = 1.63 [7.86] Re
a = 0.5345 [0.0430] AU
Ag = 22034.85 [212223.59] [0.10σ]
Teffp = 3655 [8800] K [0.39σ]

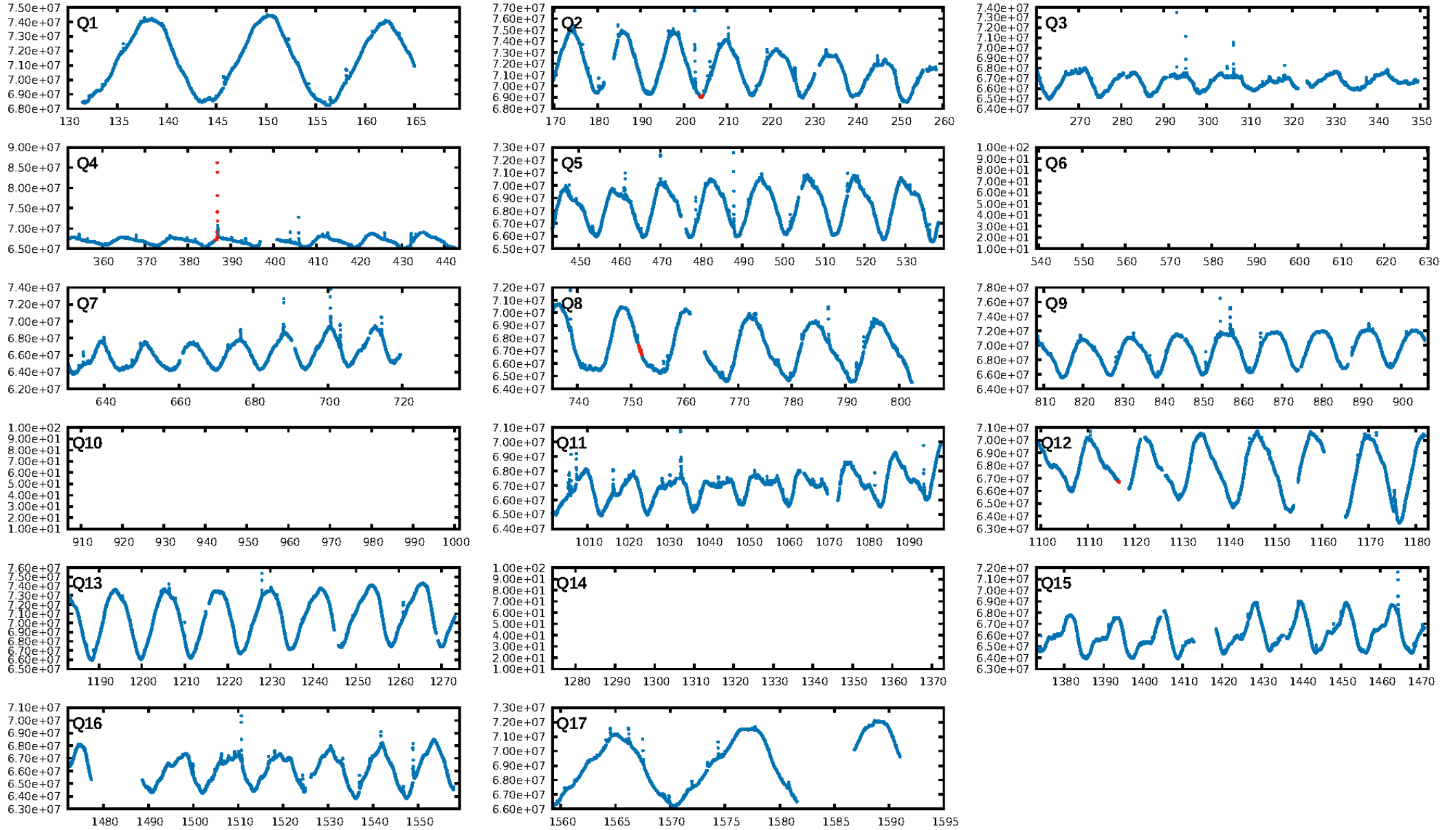
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [29.26σ]
LongPeriod-sig: 100.0% [41.18σ]
ModelChiSquare2-sig: 0.9%
ModelChiSquareGof-sig: 86.8%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 4.534
Centroid-sig: 3.9%
Centroid-so: 1.912 arcsec [1.77σ]
OotOffset-rm: 1.001 arcsec [4.57σ]
KicOffset-rm: 0.915 arcsec [5.02σ]
OotOffset-st: 1/0/2/0 [3]
KicOffset-st: 1/0/2/0 [3]
DiffImageQuality-fgm: 1.00 [3/3]
DiffImageOverlap-fno: 1.00 [3/3]

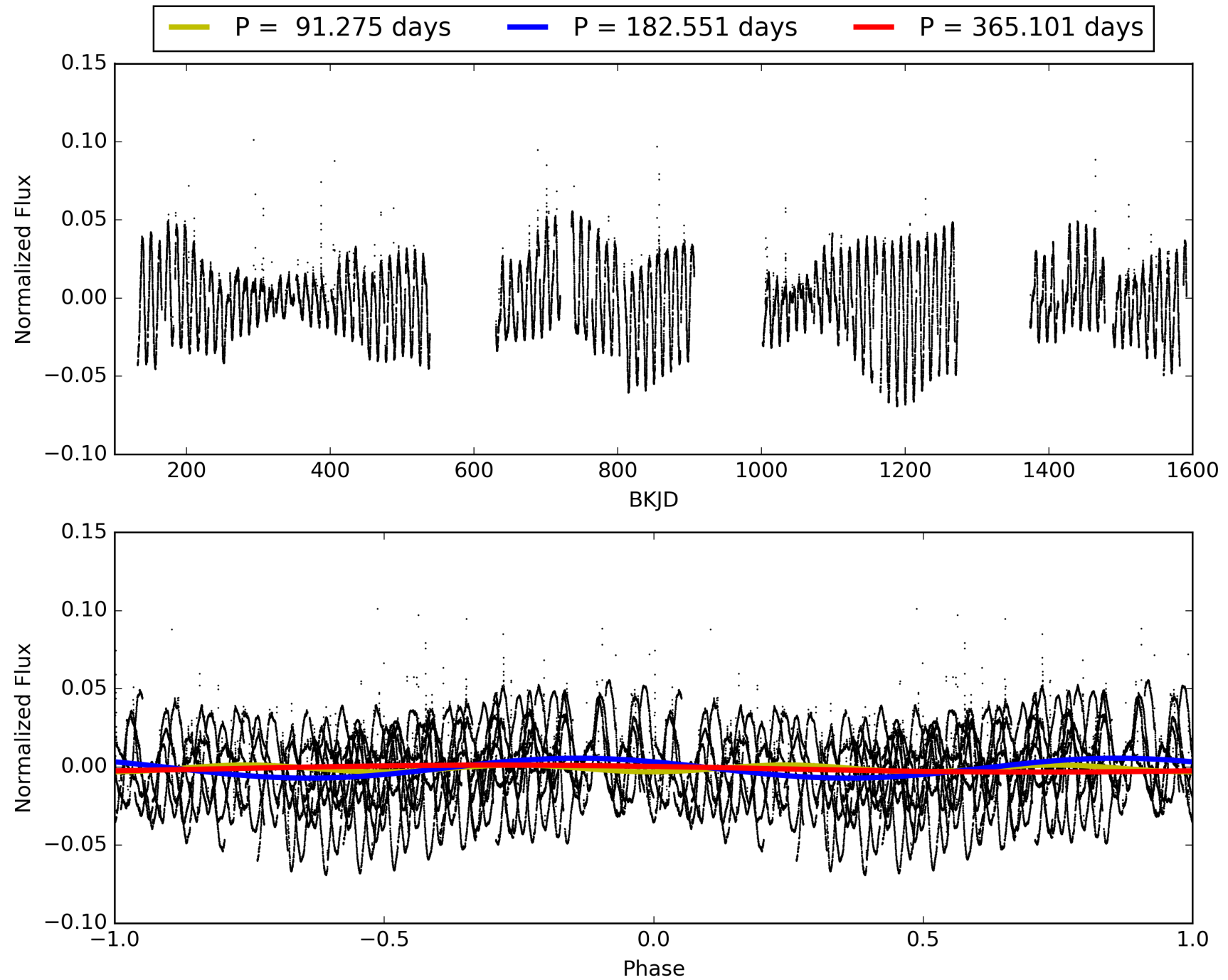
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:56:55 Z

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

TCE 004929016-04, PDC Light Curves

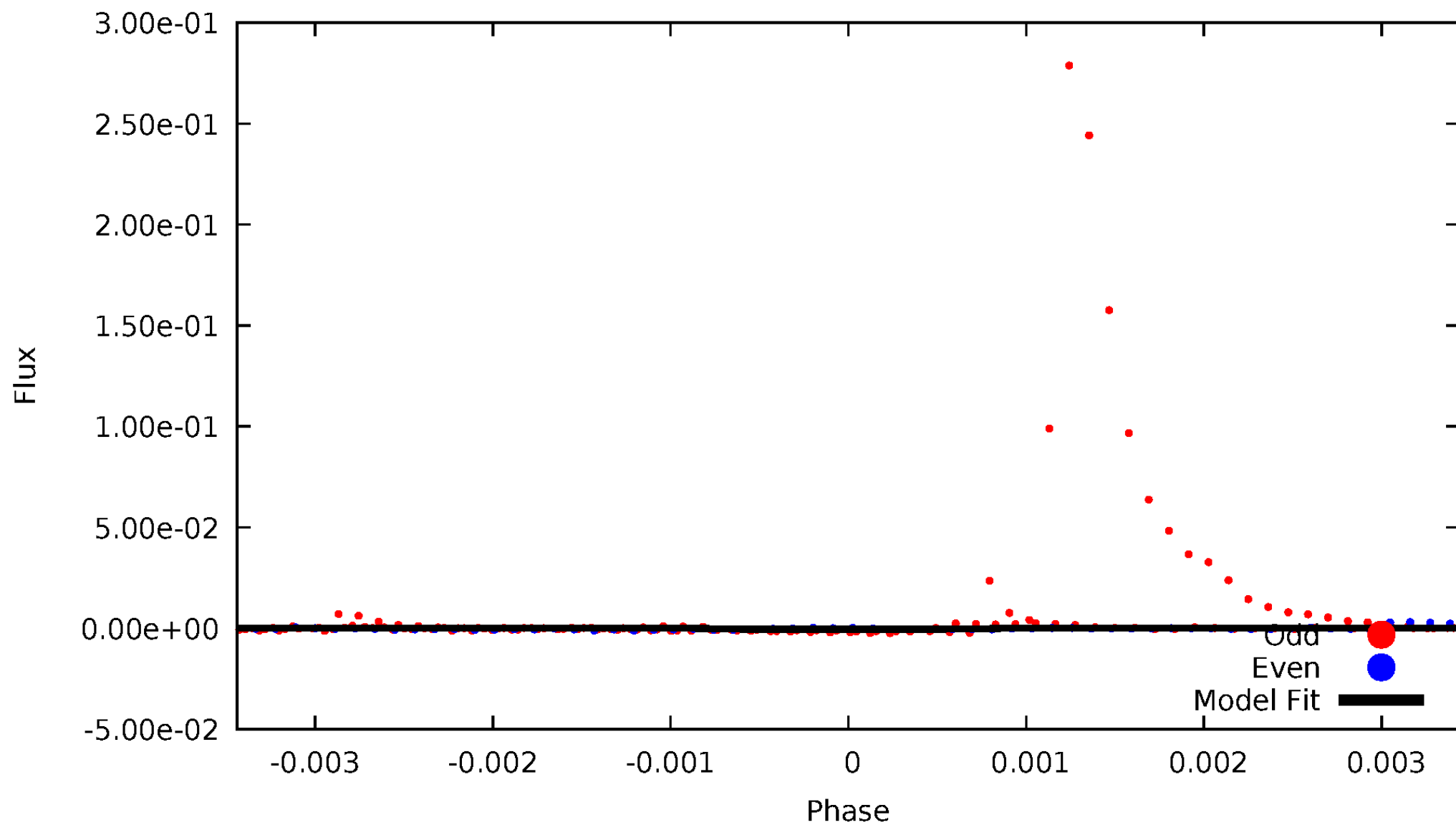


TCE 004929016-04



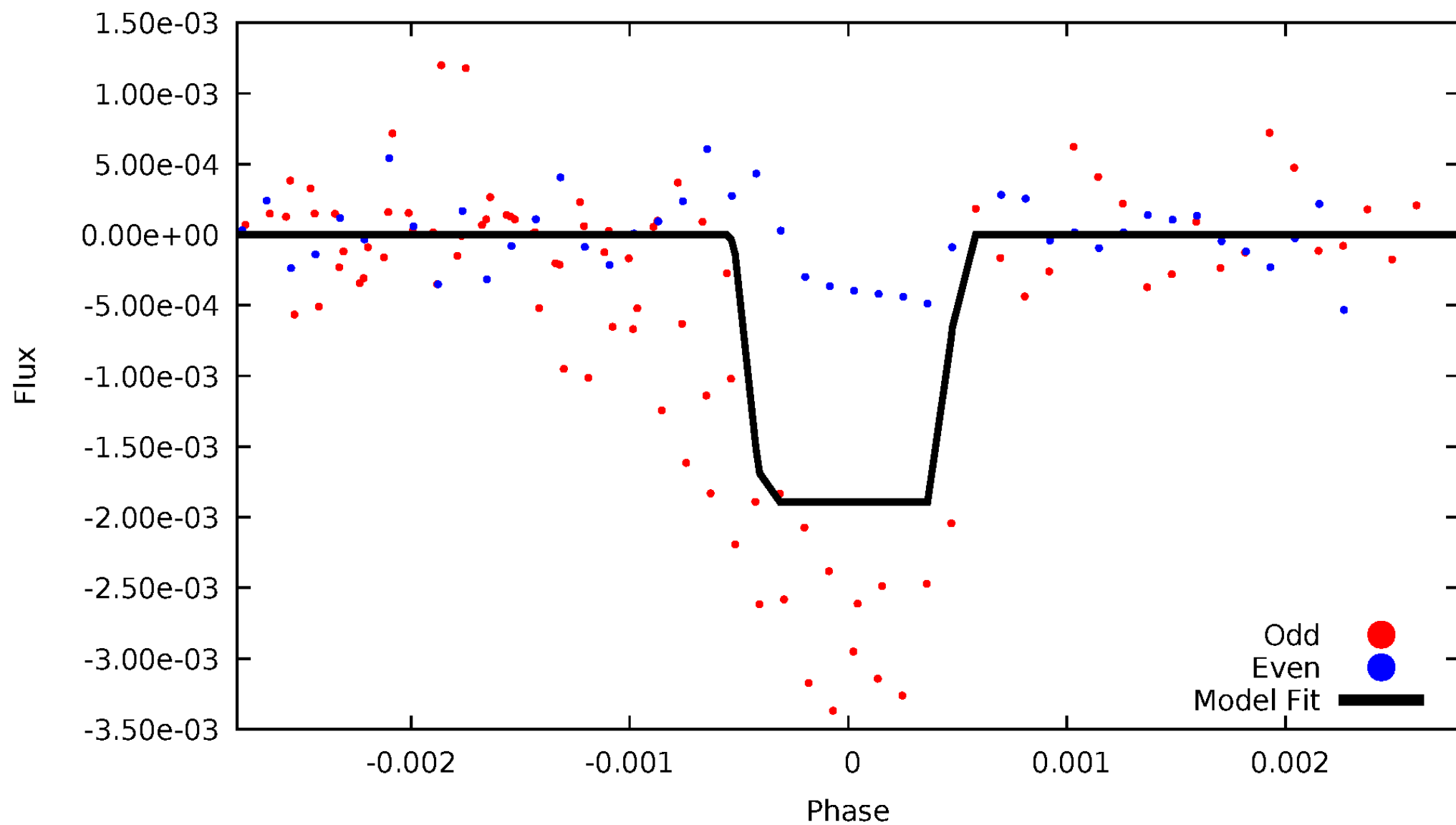
DV Odd/Even

TCE 004929016-04



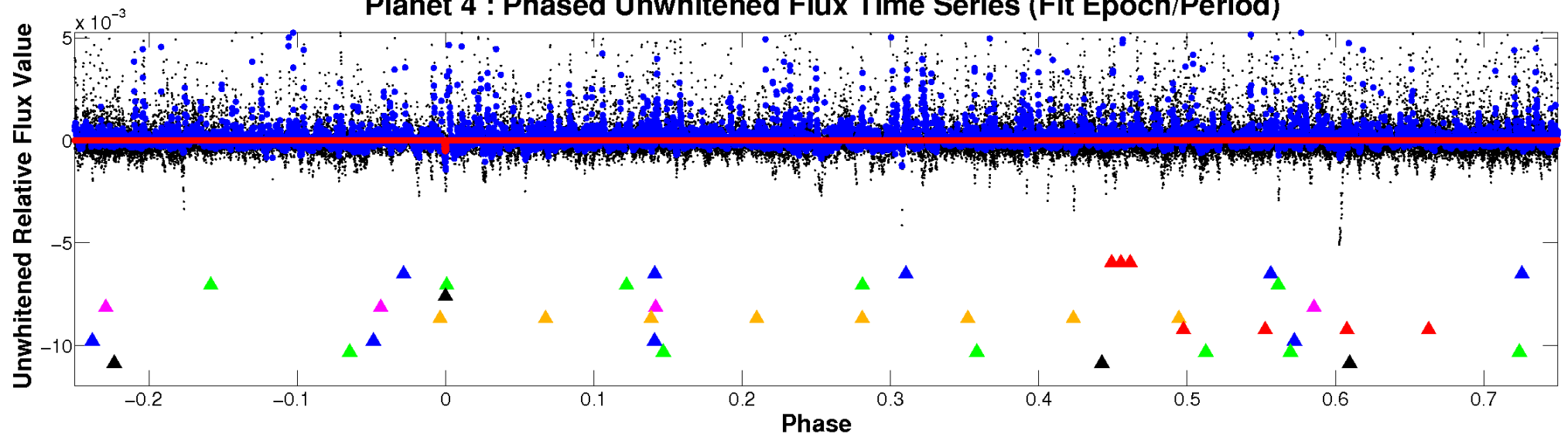
ALT Odd/Even

TCE 004929016-04

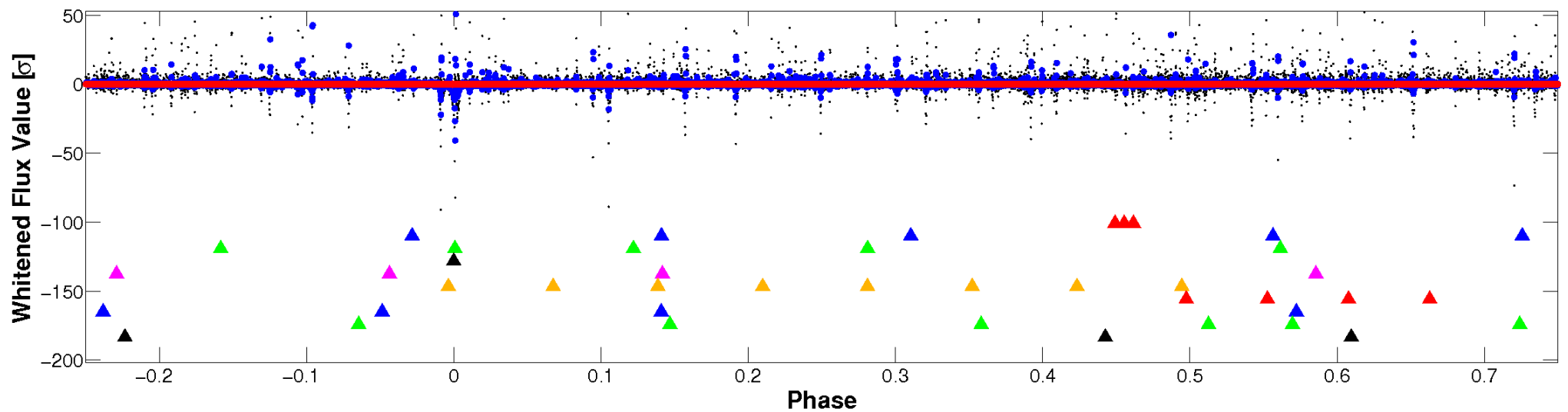


Non-Whitened Vs. Whitened Light Curve

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

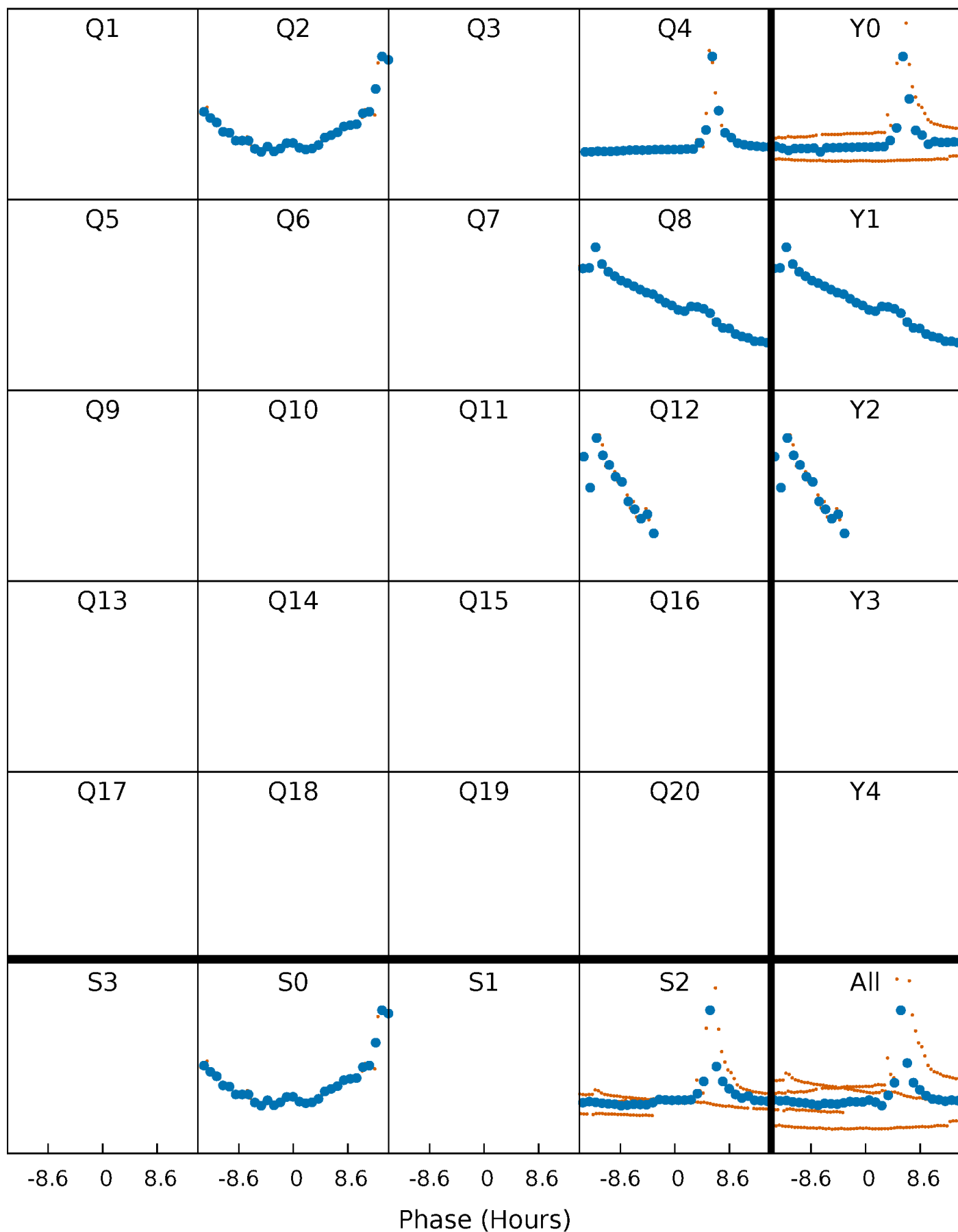


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



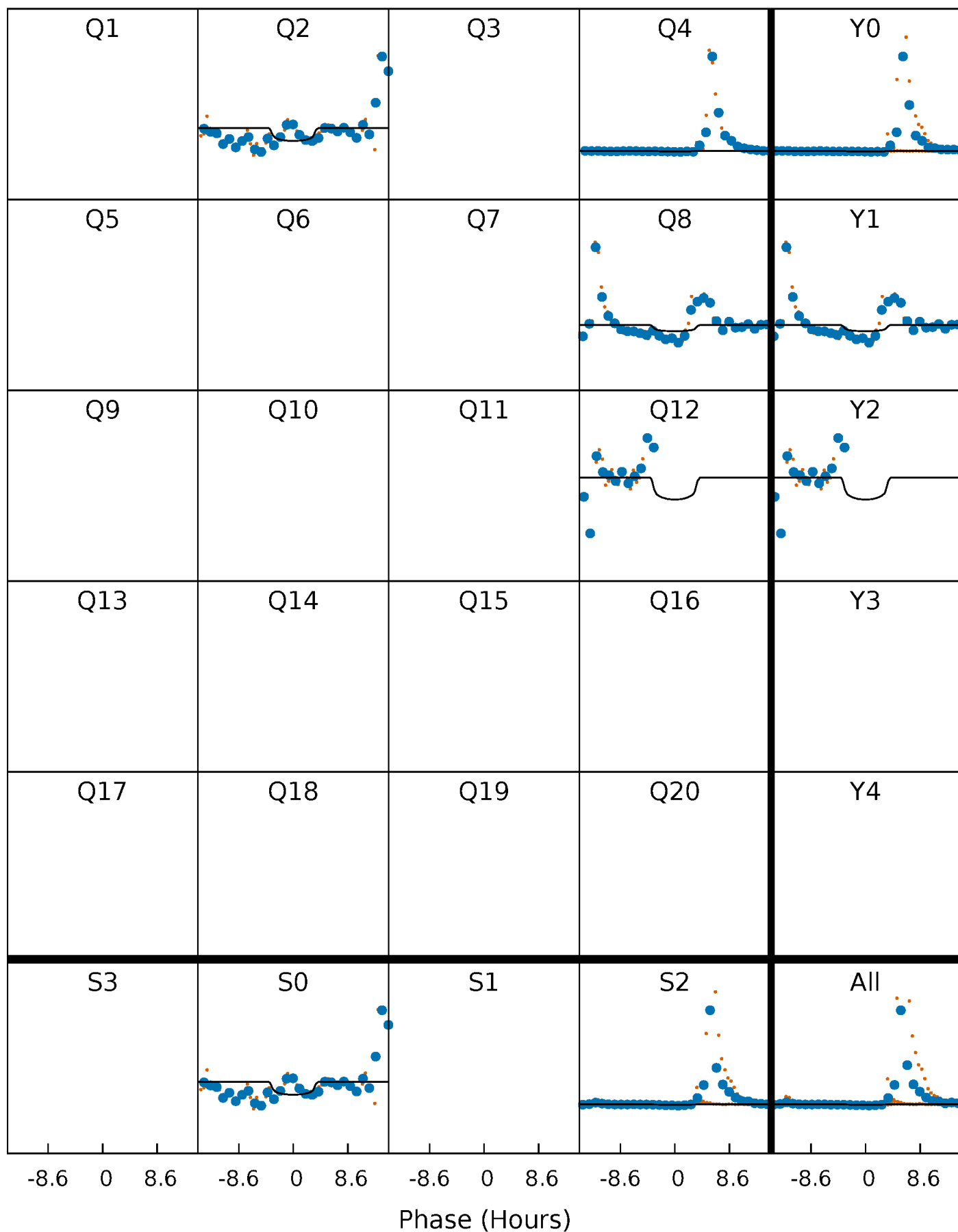
PDC Quarter-Phased Transit Curves

TCE 004929016-04 P=182.550730 Days $T_0=204.069750$ (BKJD)



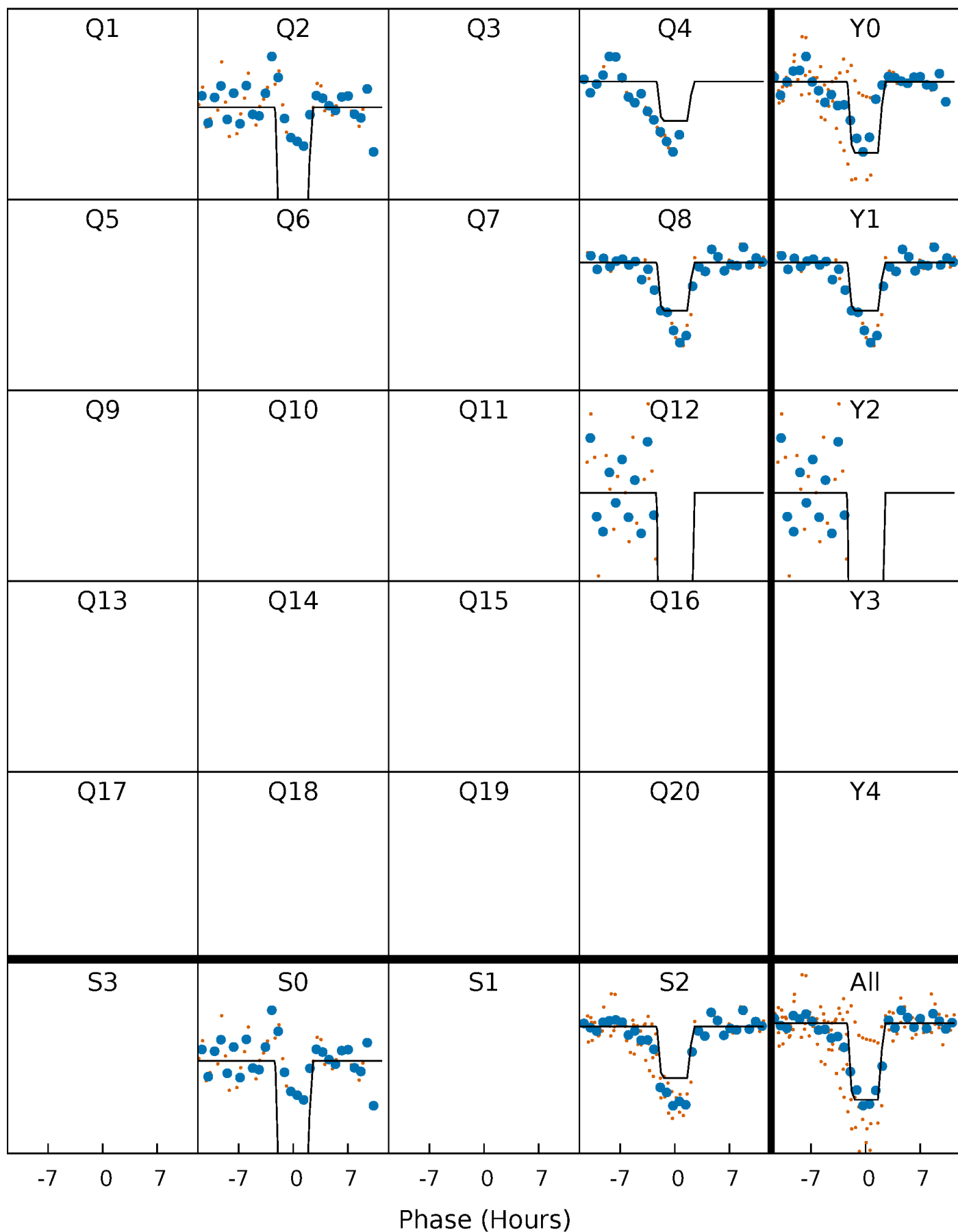
DV Quarter-Phased Transit Curves

TCE 004929016-04 $P=182.550730$ Days $T_0=204.069750$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

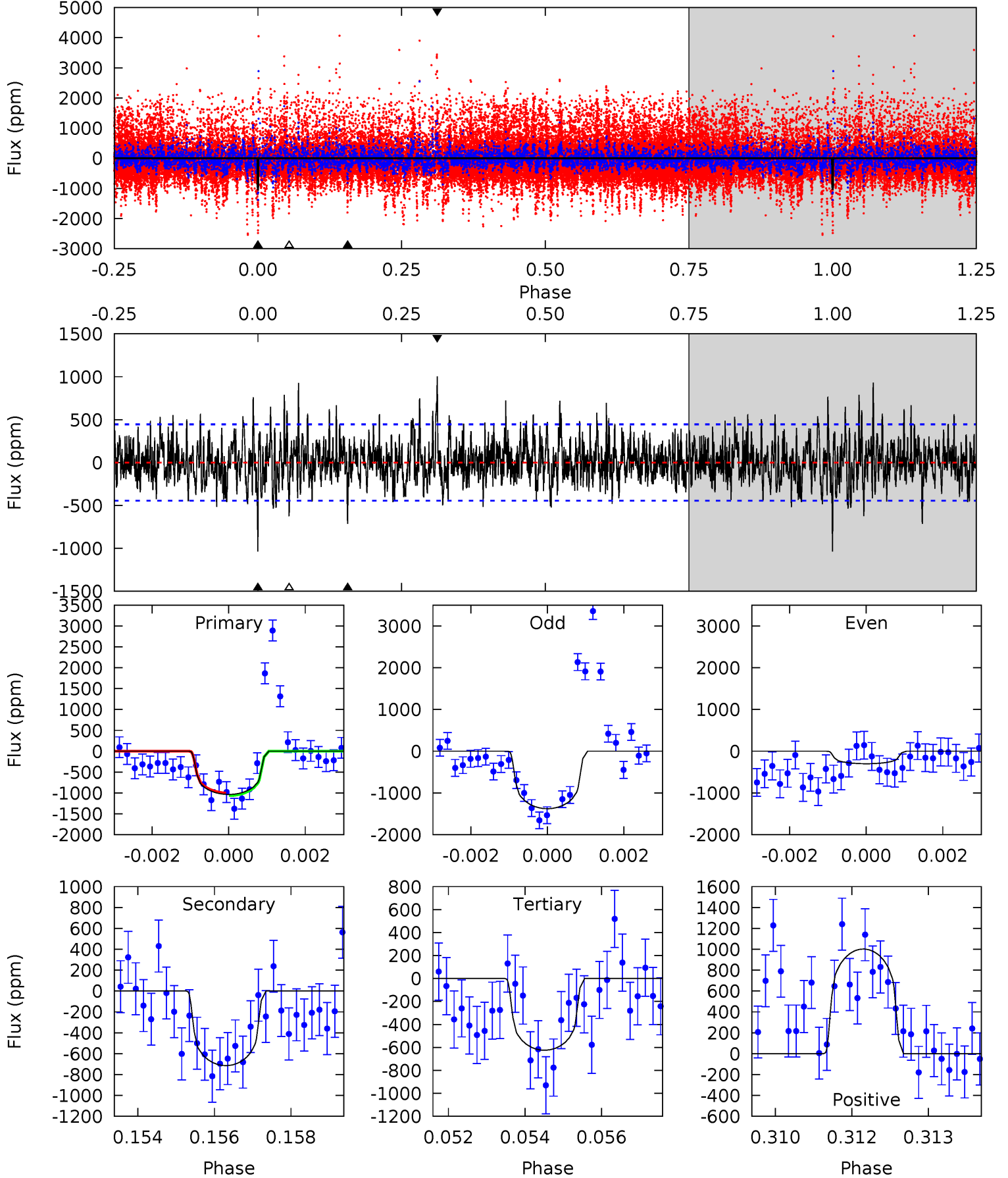
TCE 004929016-04 P=182.524899 Days $T_0=204.151153$ (BKJD)



DV Model-Shift Uniqueness Test

004929016-04, P = 182.550730 Days, E = 21.519020 Days

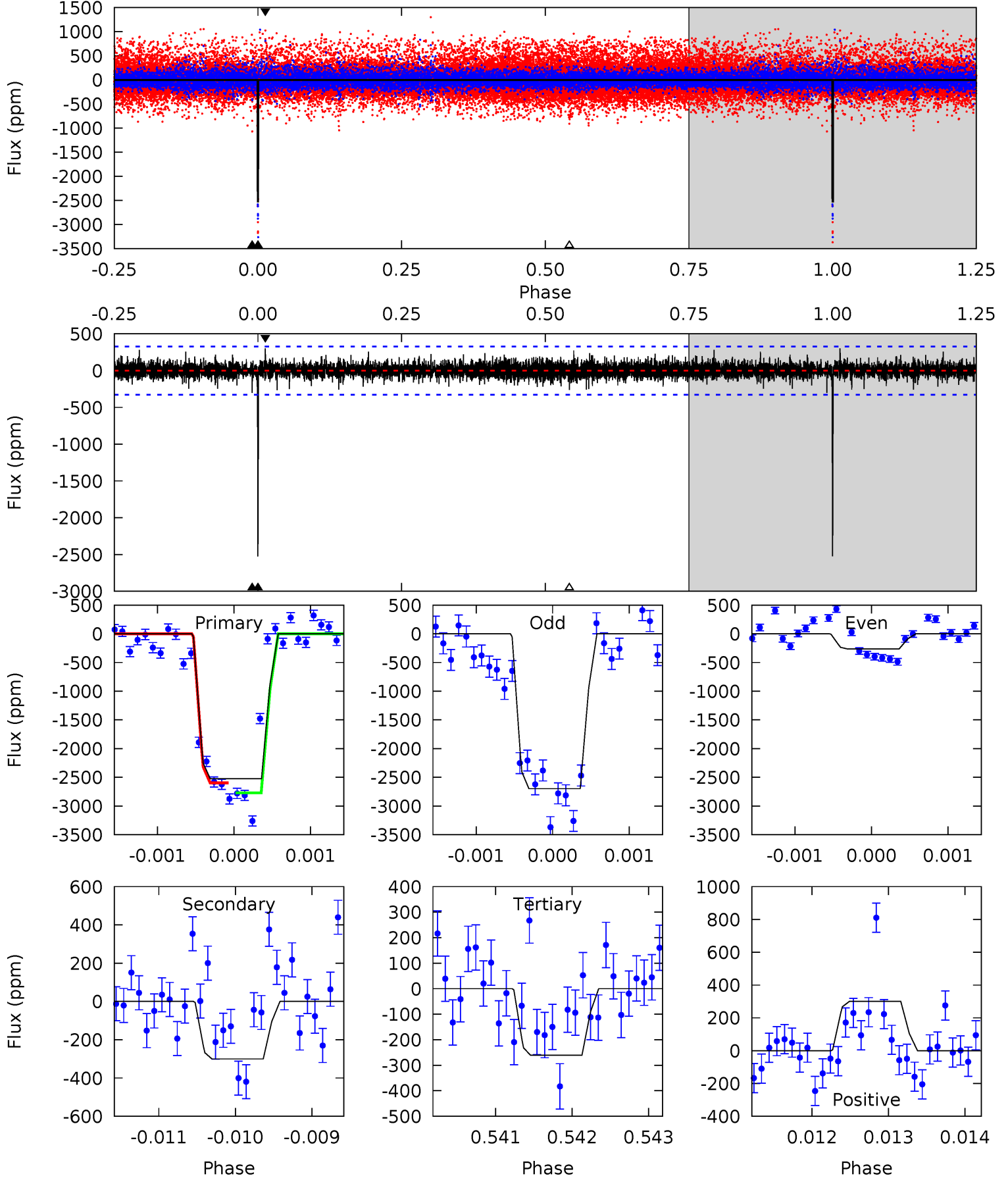
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.5	8.59	7.51	12.1	5.35	3.12	2.38	4.94	0.40	1.08	-3.46	4.46	1.13	0.49	0.36



Alt Model-Shift Uniqueness Test

004929016-04, P = 182.524899 Days, E = 21.626254 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
41.9	4.98	4.33	4.99	5.45	3.29	1.03	37.6	36.9	0.66	-0.01	23.2	0.73	0.11	1.38



Stellar Parameters For KIC 004929016

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4090^{+123}_{-123}	$4.642^{+0.056}_{-0.018}$	$0.020^{+0.250}_{-0.300}$	$0.618^{+0.034}_{-0.063}$	$0.611^{+0.051}_{-0.057}$	$3.641^{+0.913}_{-0.311}$
	+3%/-3%	+1%/-0%	+1250%/-1500%	+6%/-10%	+8%/-9%	+25%/-9%
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 004929016-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-714 ± 83	$5.61^{+6.55}_{-3.92}$	269^{+9}_{-9}	2867^{+1315}_{-514}	3669^{+37106}_{-2899}
Alt.	-300 ± 60	$6.25^{+6.16}_{-4.51}$	269^{+9}_{-9}	2509^{+1039}_{-390}	1254^{+13136}_{-946}

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 $A_{obs} \gg 1.0$

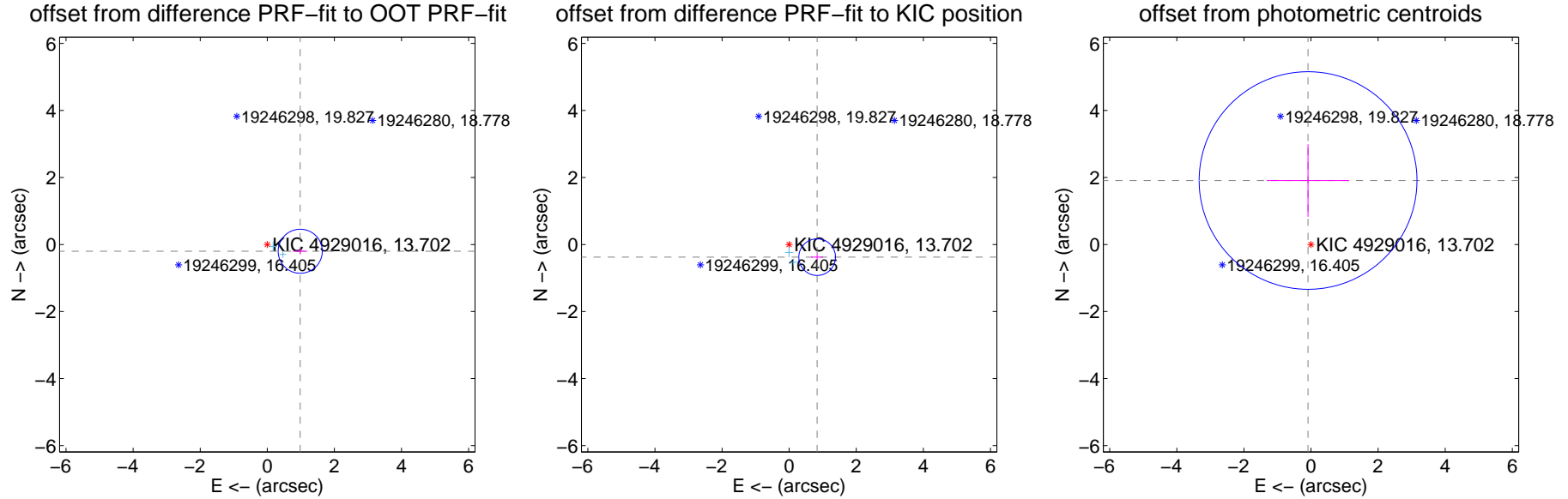
DV Centroid Data

Supplemental centroid analysis for 004929016-04. Kepler magnitude: 13.70. Transit SNR 2.73

There are 3 quarters with good PRF difference image offsets

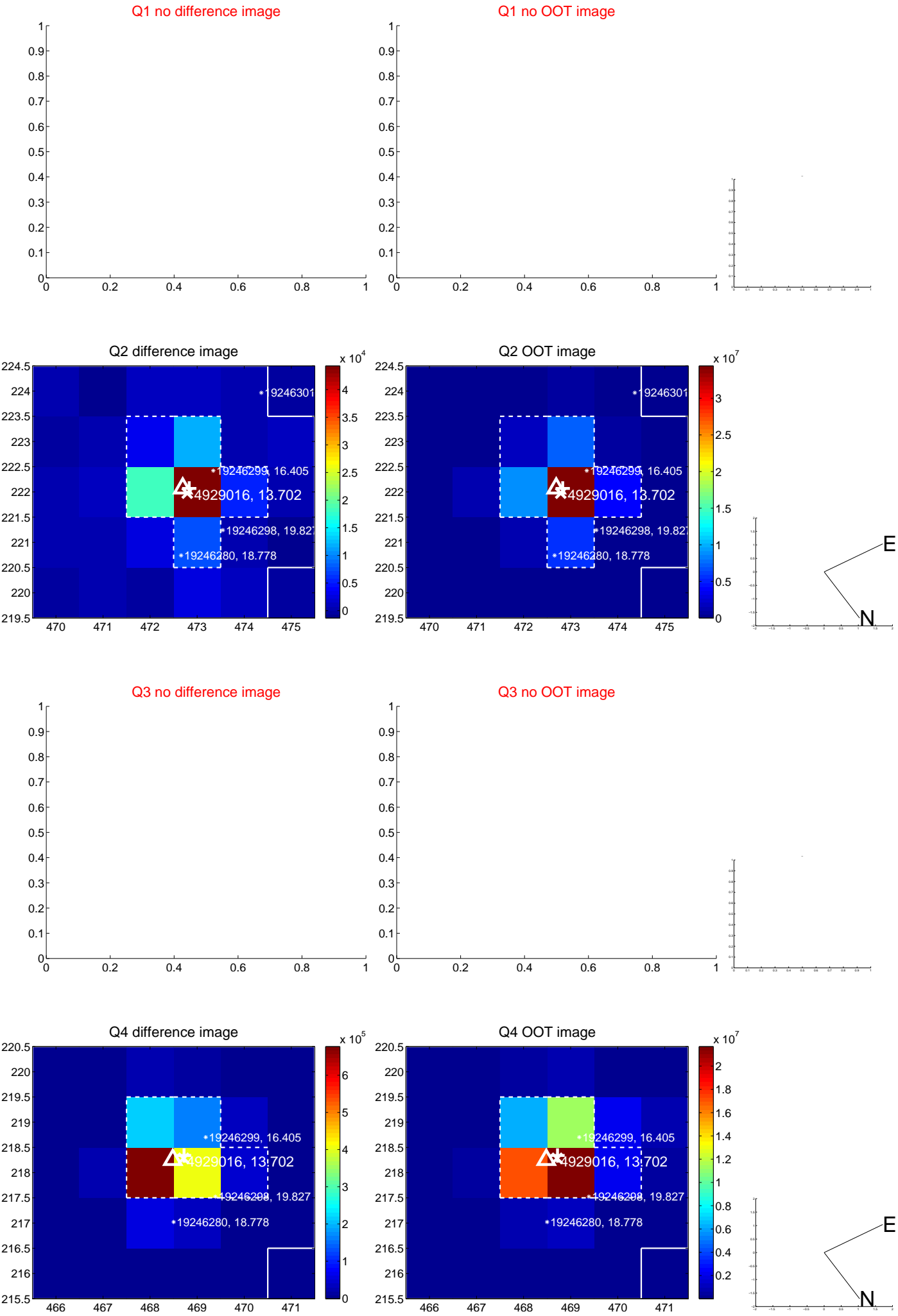
The direct PRF centroid is offset from the target star catalog position by about 0.25 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.001 ± 0.219	4.57	-0.981 ± 0.214	-0.201 ± 0.088
PRF-fit source offset from KIC position	0.915 ± 0.182	5.02	-0.834 ± 0.181	-0.377 ± 0.098
photometric centroid source offset	1.91 ± 1.08	1.77	0.09 ± 1.23	1.91 ± 1.08



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

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



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

Q5 no difference image



Q5 no OOT image



Q6 no difference image



Q6 no OOT image



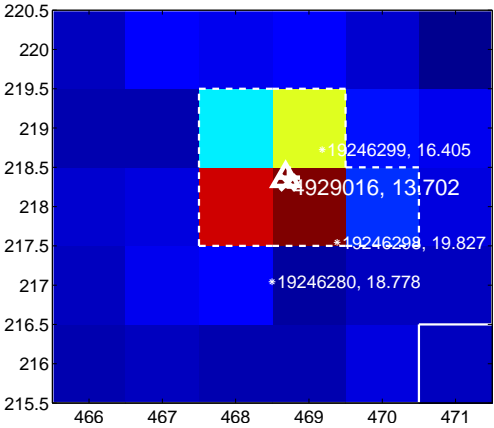
Q7 no difference image



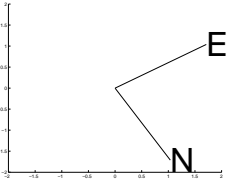
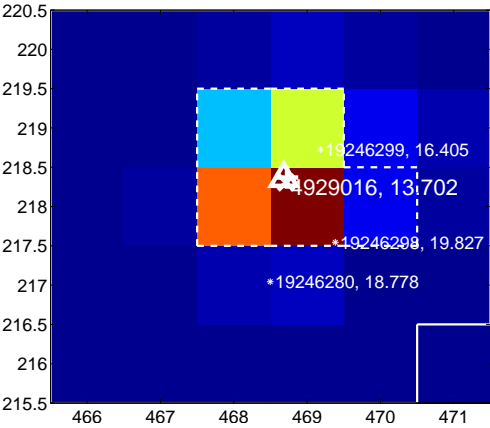
Q7 no OOT image



Q8 difference image



Q8 OOT image



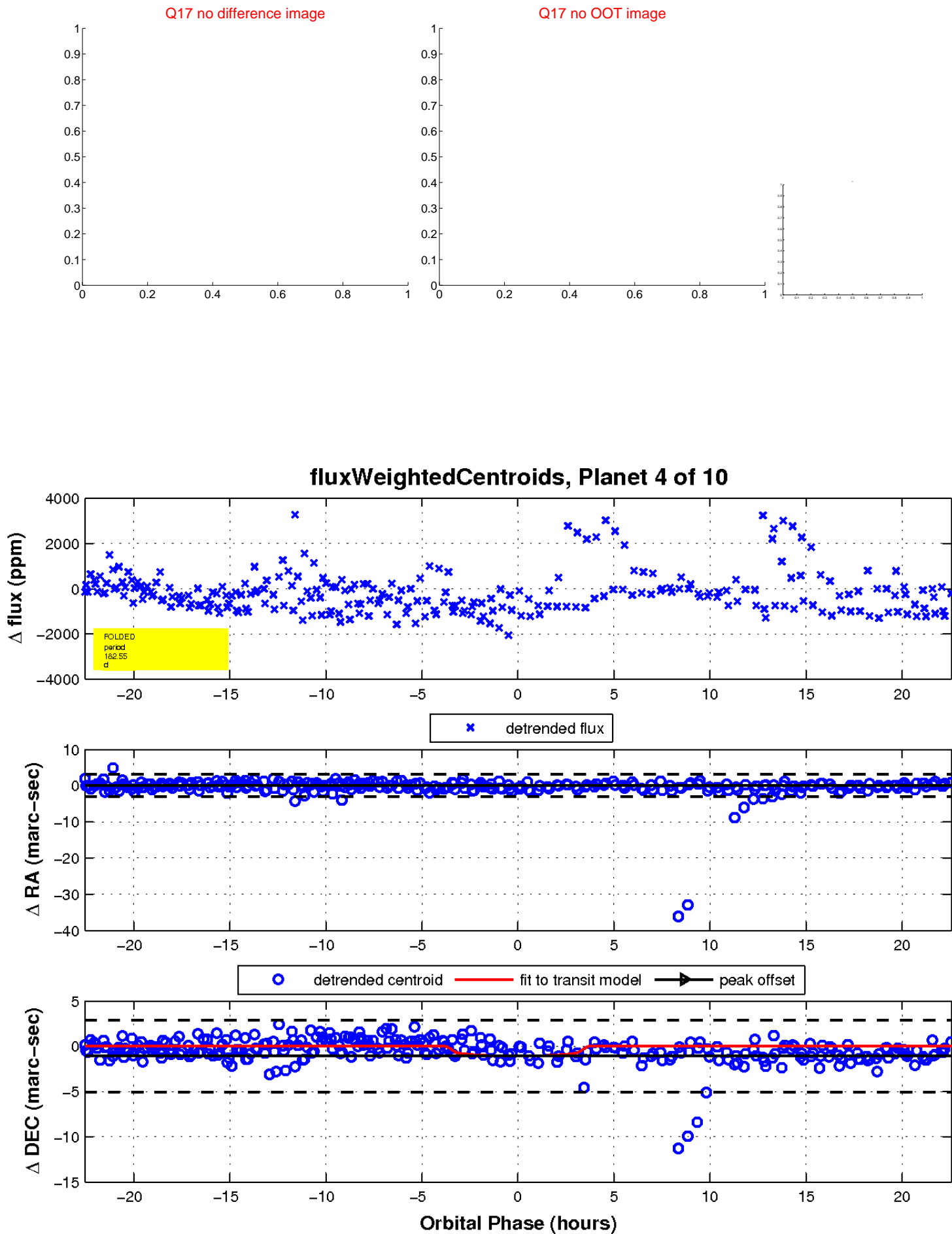
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

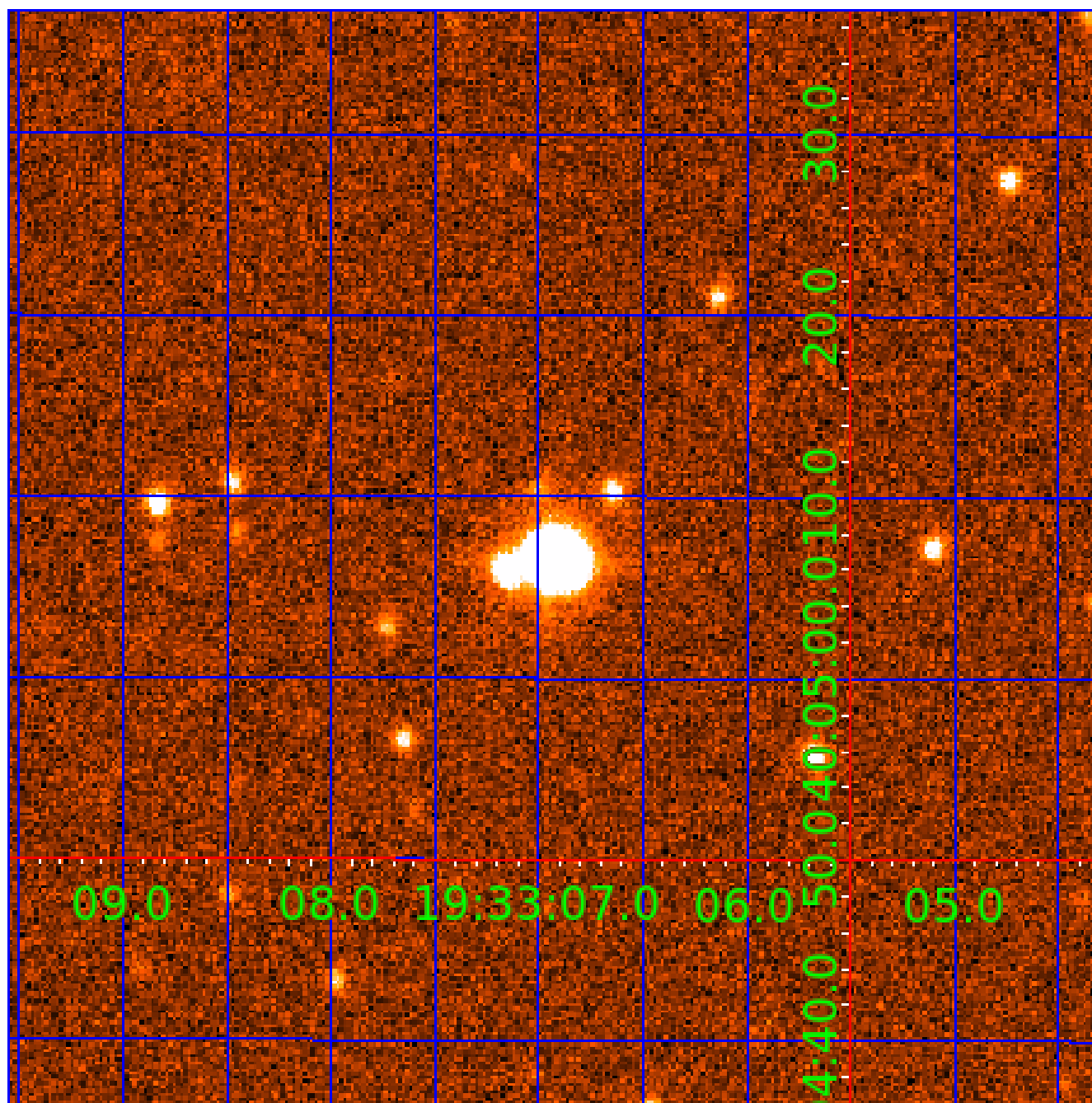


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004929016

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})
004929016-01	OBS	No	546.515996	470.891992	560.7	10.500	16.0	-1.0	0.62	4090	1.42	0.08
004929016-02	OBS	No	289.283172	198.911604	798.8	7.630	15.1	4.6	0.62	4090	2.34	0.18
004929016-03	OBS	No	313.930962	226.350204	1767.2	10.088	14.2	9.5	0.62	4090	2.76	0.16
004929016-04	OBS	No	182.550730	204.069750	522.3	7.527	15.6	2.7	0.62	4090	1.63	0.34
004929016-05	OBS	No	398.941160	310.972128	1183.9	1.352	14.4	7.4	0.62	4090	2.27	0.12
004929016-06	OBS	No	169.559378	294.340992	1501.0	7.543	14.0	9.6	0.62	4090	2.48	0.37
004929016-09	OBS	No	221.143525	297.651451	845.4	21.195	15.2	4.6	0.62	4090	2.11	0.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004929016-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
004929016-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS
004929016-04	OBS	FP	0.00	1	0	0	0	LPP_DV—INCONSISTENT_TRANS
004929016-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
004929016-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

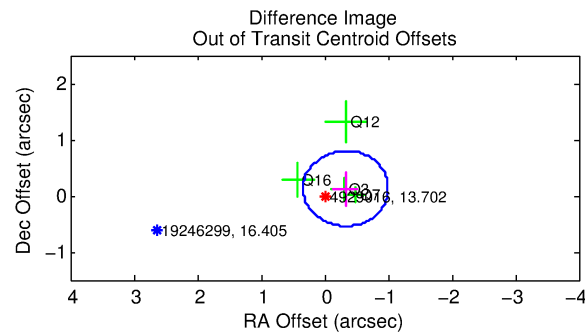
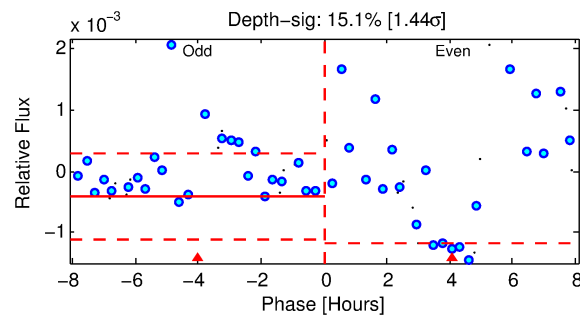
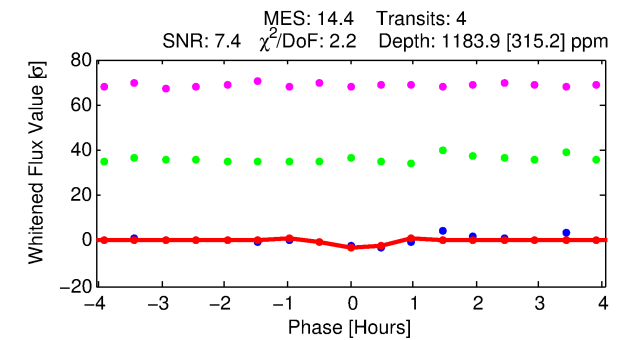
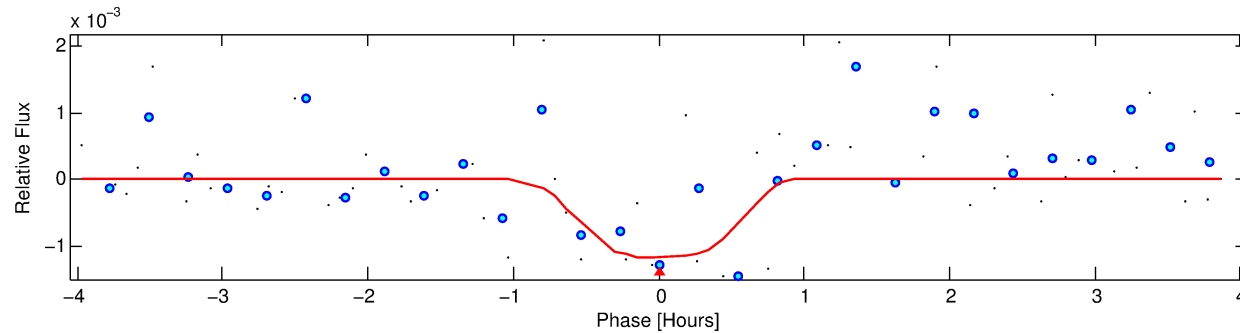
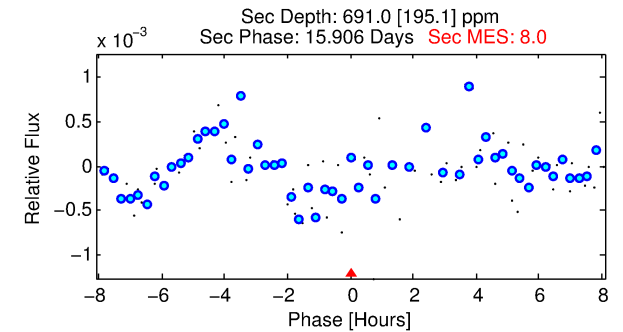
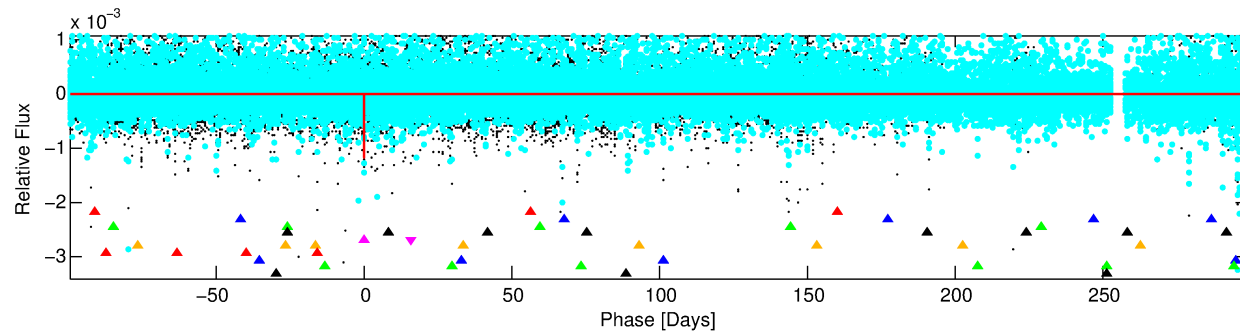
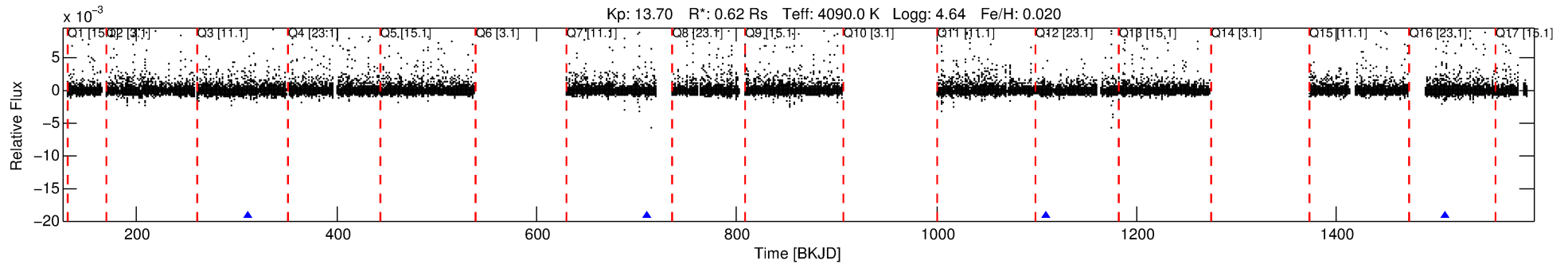
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004929016-05

No Significant Match Found

DV One-Page Summary

KIC: 4929016 Candidate: 5 of 10 Period: 398.941 d



DV Fit Results:

Period = 398.94116 [0.00367] d
Epoch = 310.9721 [0.0086] BKJD
Rp/R* = 0.0337 [0.2327]
a/R* = 1745.01 [41304.88]
b = 0.69 [18.94]
Seff = 0.12 [0.02]
Teq = 150 [6] K
Rp = 2.27 [15.69] Re
a = 0.9001 [0.0724] AU
Ag = 59558.74 [822195.33] [0.07 σ]
Teffp = 3611 [12463] K [0.28 σ]

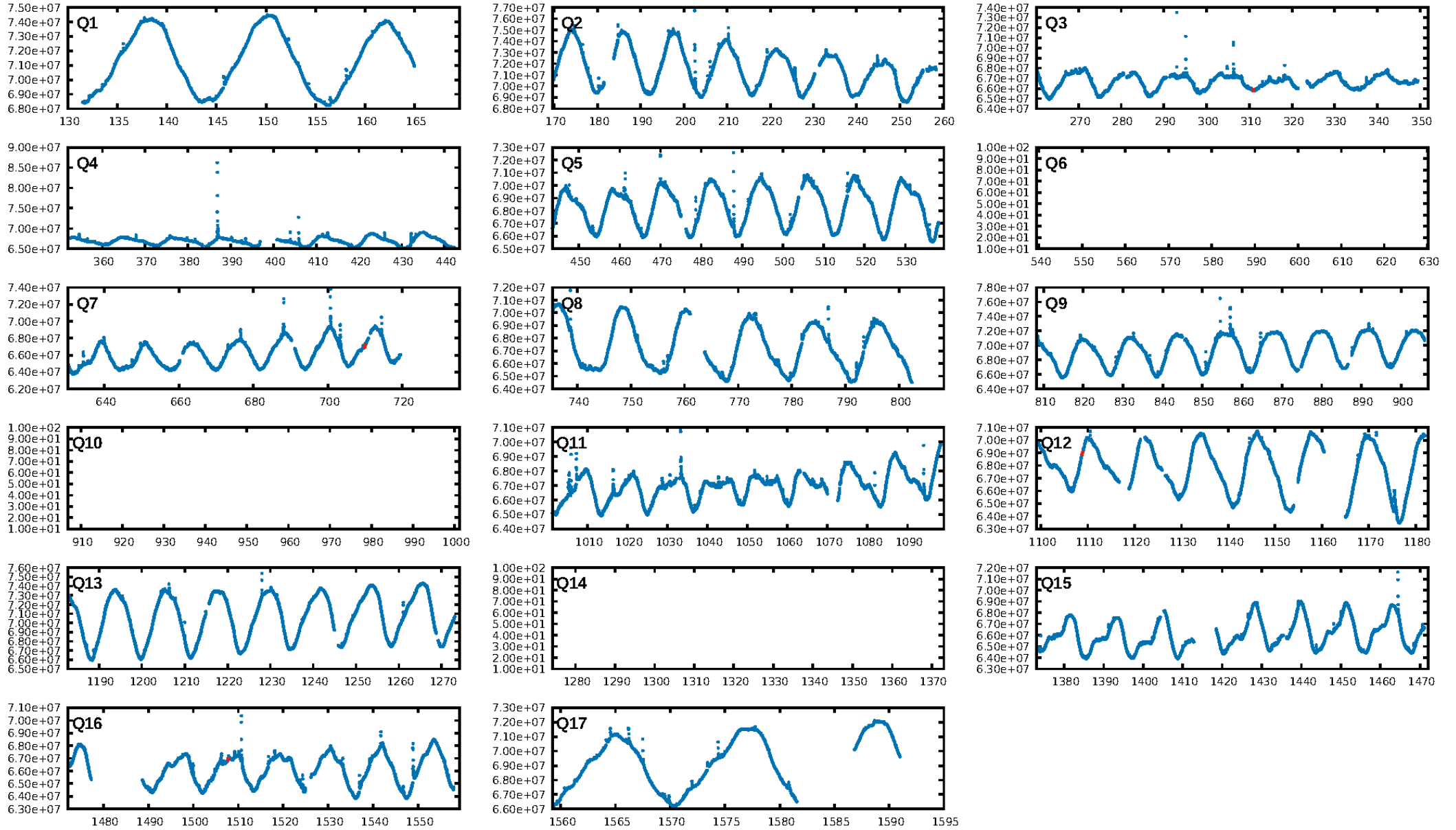
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [91.08 σ]
LongPeriod-sig: 100.0% [604.01 σ]
ModelChiSquare2-sig: 2.0%
ModelChiSquareGof-sig: 25.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: -0.5641
Centroid-sig: 86.9%
Centroid-so: 0.595 arcsec [0.70 σ]
OotOffset-rm: 0.355 arcsec [1.59 σ]
OotOffset-st: 0/2/2/0 [4]
KicOffset-rm: 0.135 arcsec [0.54 σ]
KicOffset-st: 0/2/2/0 [4]
DiffImageQuality-fgm: 0.50 [2/4]
DiffImageOverlap-fno: 1.00 [4/4]

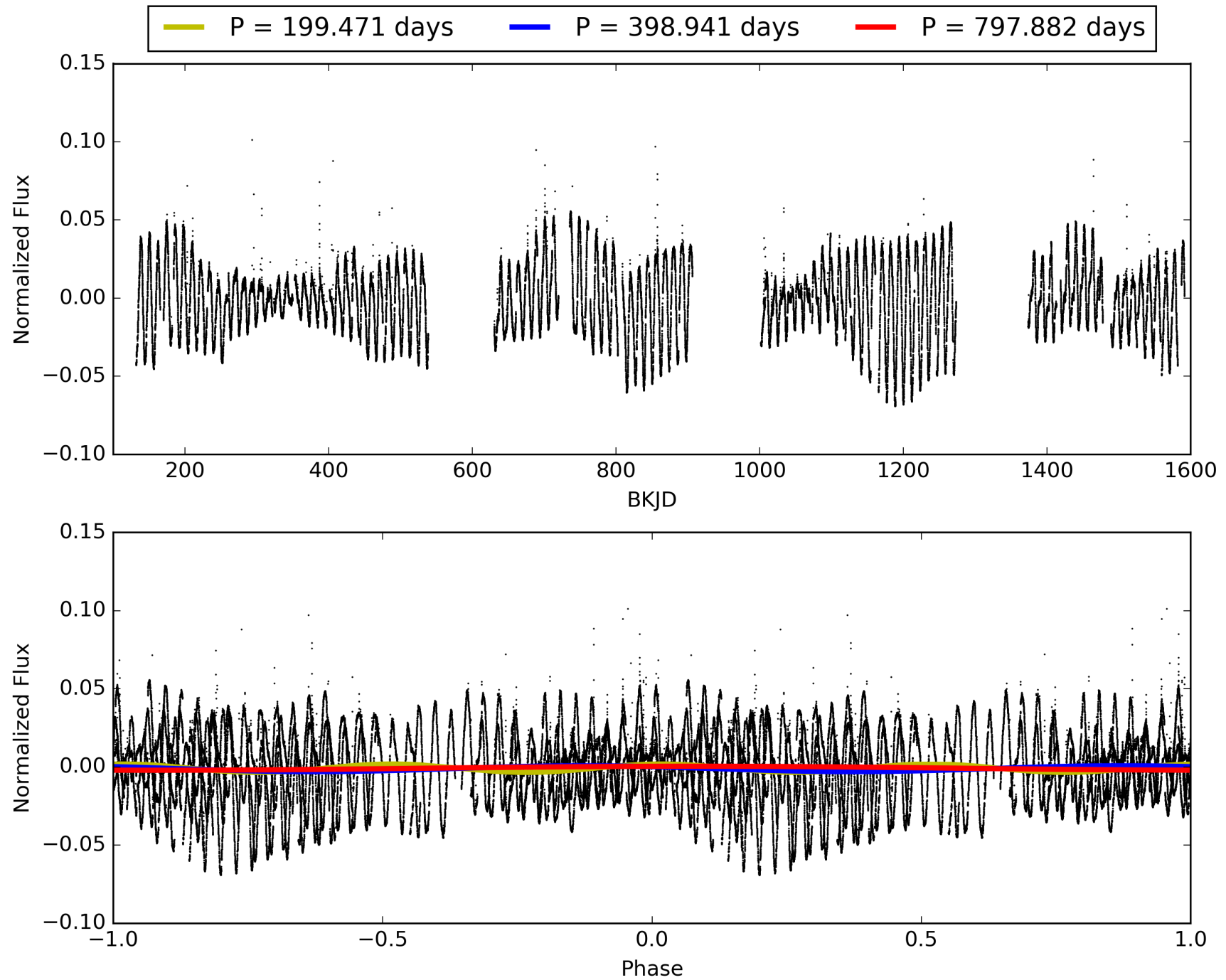
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:57:22 Z

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

TCE 004929016-05, PDC Light Curves

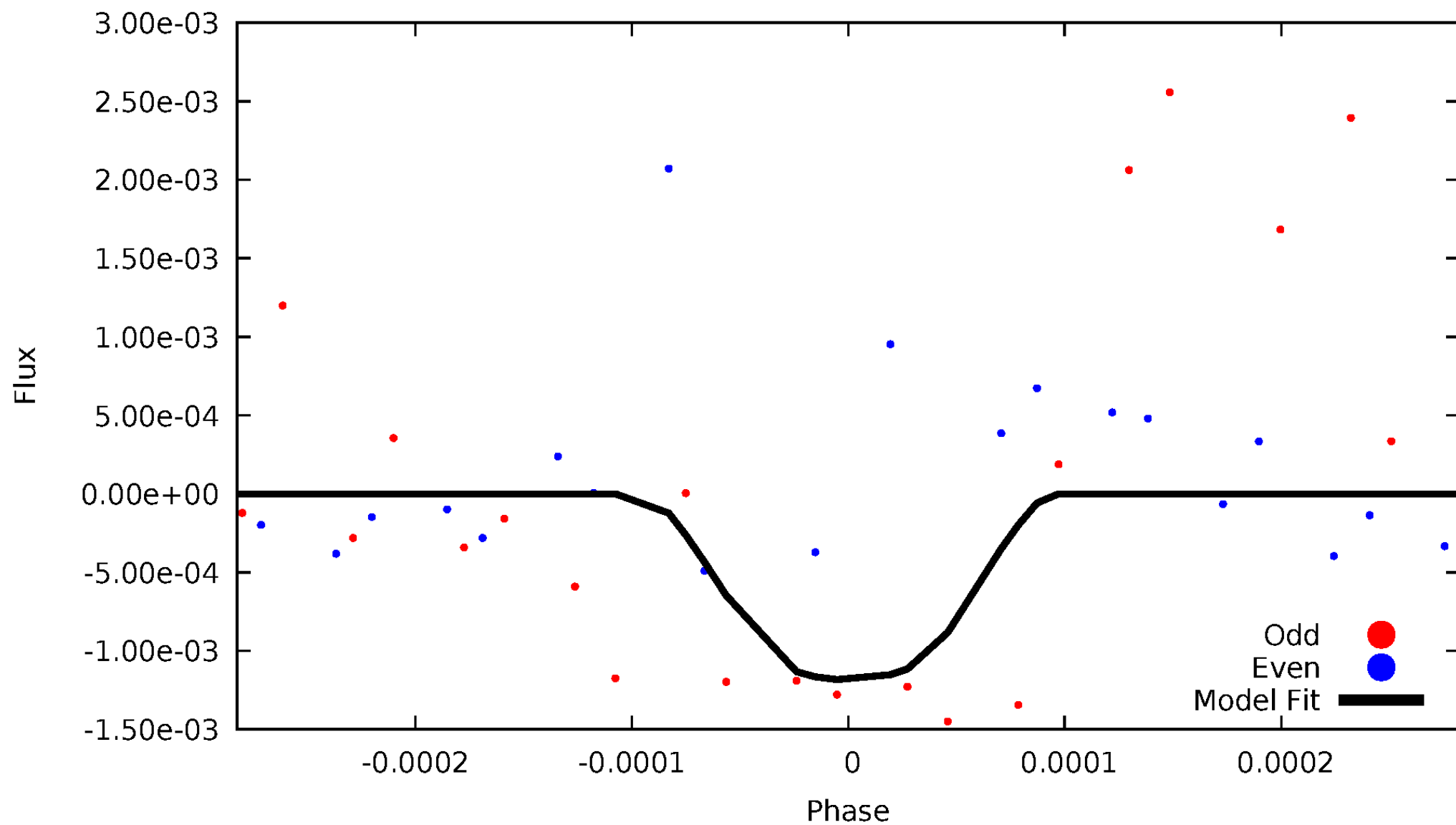


TCE 004929016-05



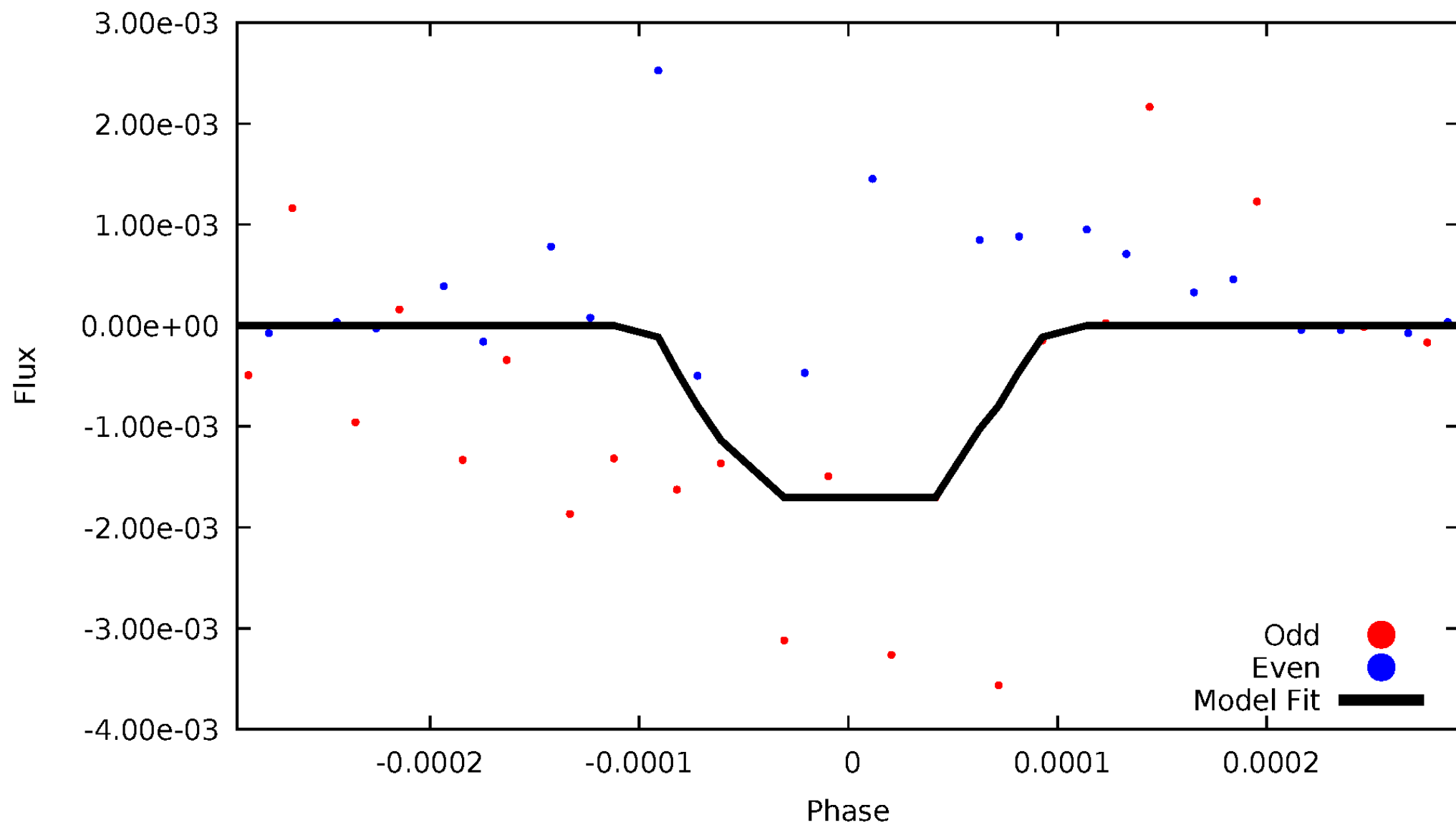
DV Odd/Even

TCE 004929016-05



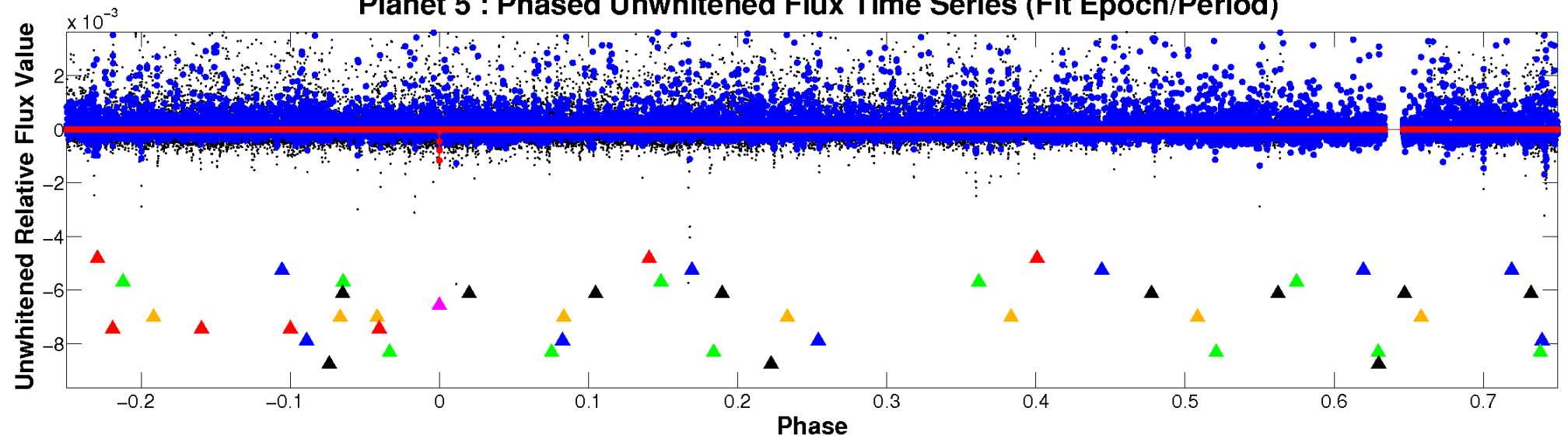
ALT Odd/Even

TCE 004929016-05

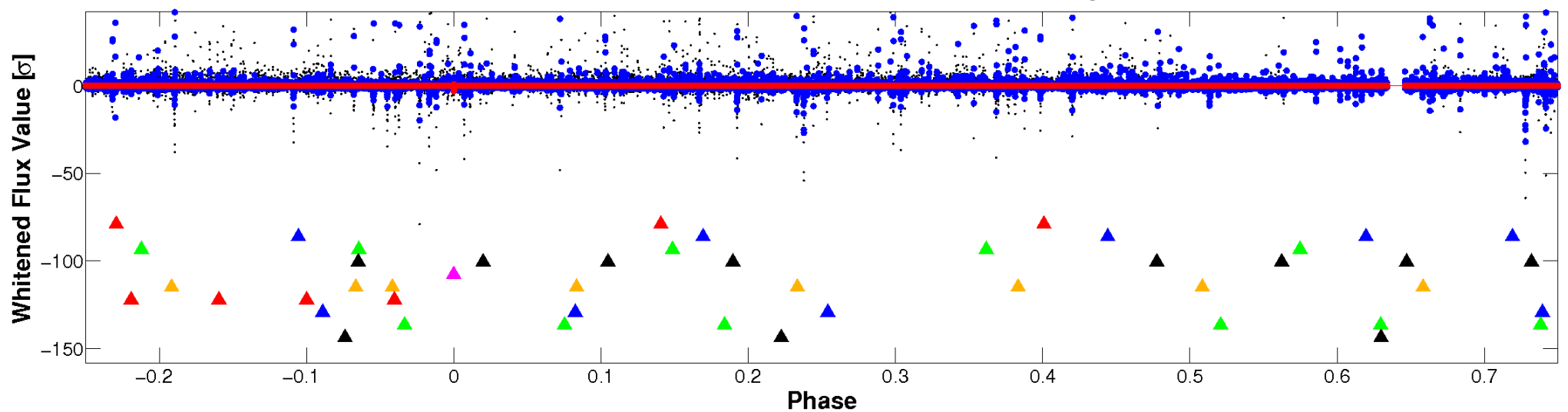


Non-Whitened Vs. Whitened Light Curve

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

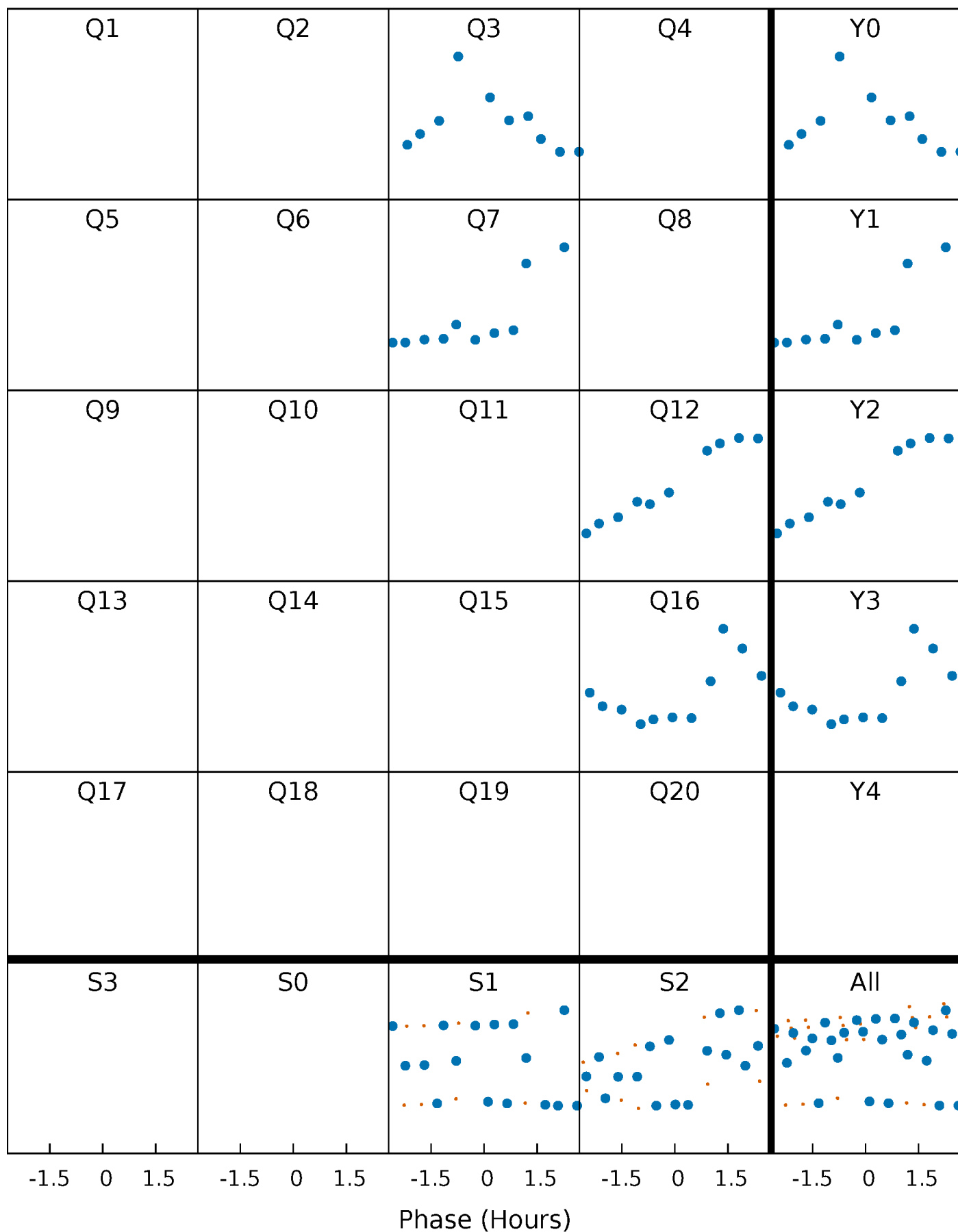


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



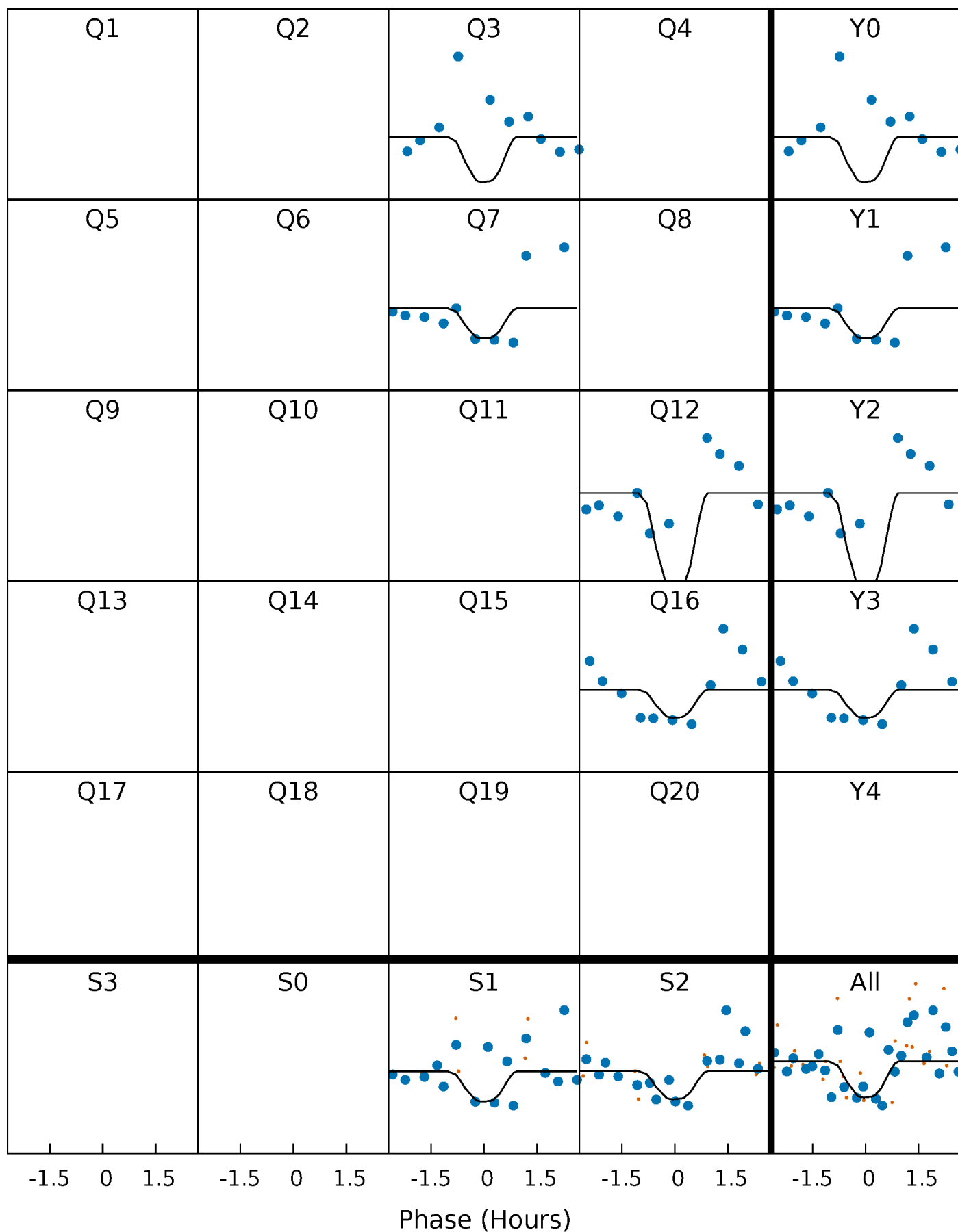
PDC Quarter-Phased Transit Curves

TCE 004929016-05 $P=398.941161$ Days $T_0=310.972128$ (BKJD)



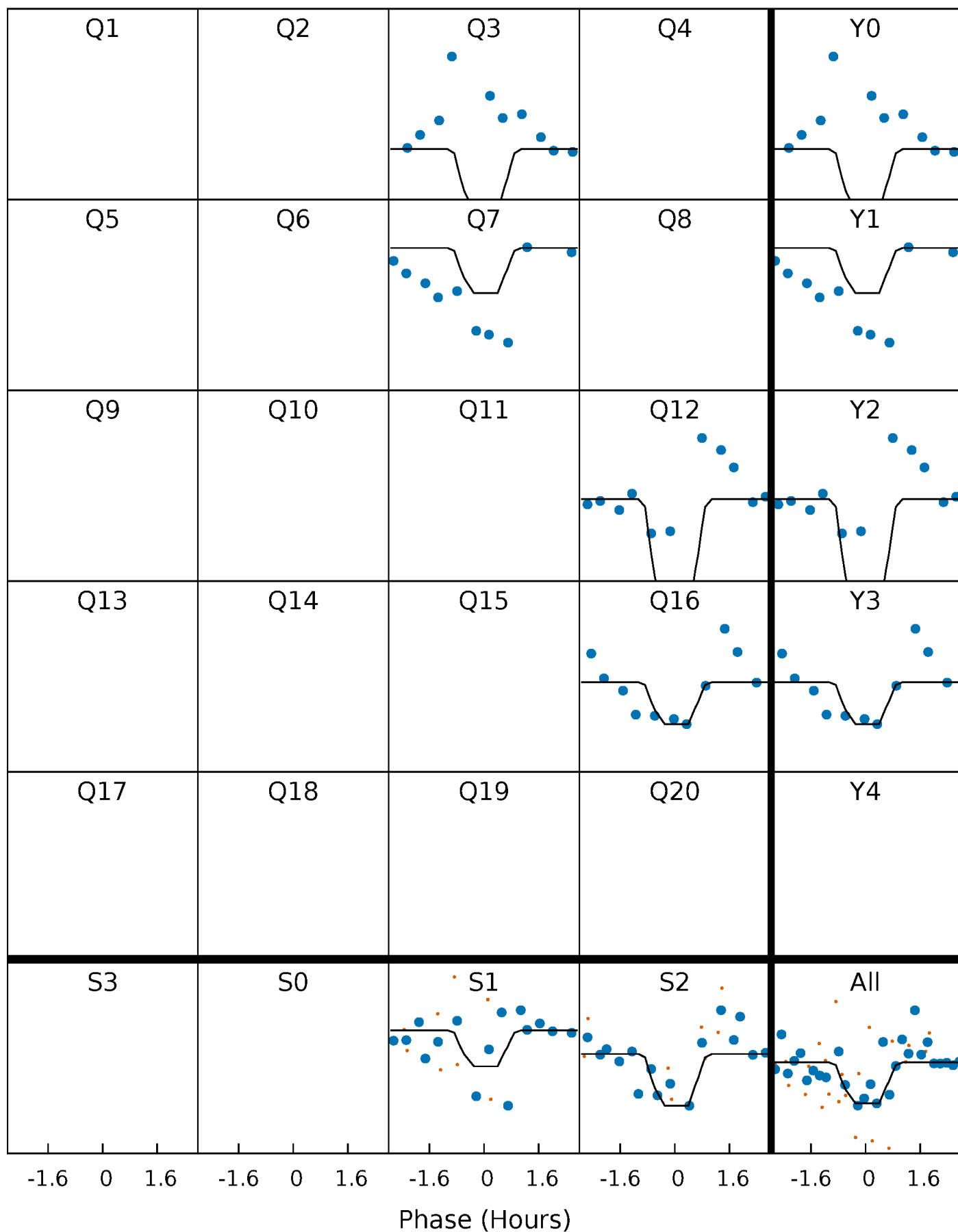
DV Quarter-Phased Transit Curves

TCE 004929016-05 $P=398.941161$ Days $T_0=310.972128$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

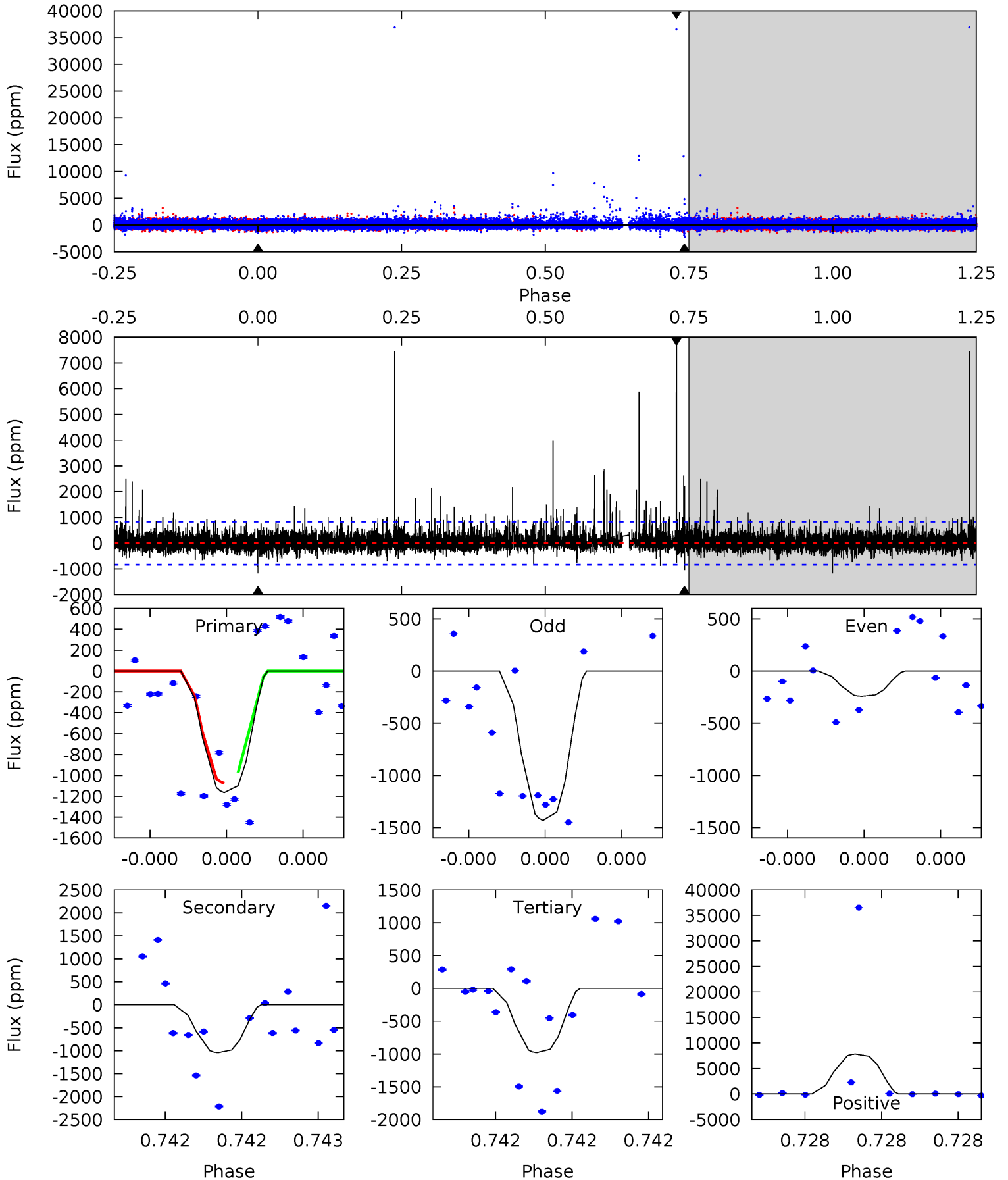
TCE 004929016-05 $P=398.940695$ Days $T_0=310.975283$ (BKJD)



DV Model-Shift Uniqueness Test

004929016-05, P = 398.941161 Days, E = 310.972128 Days

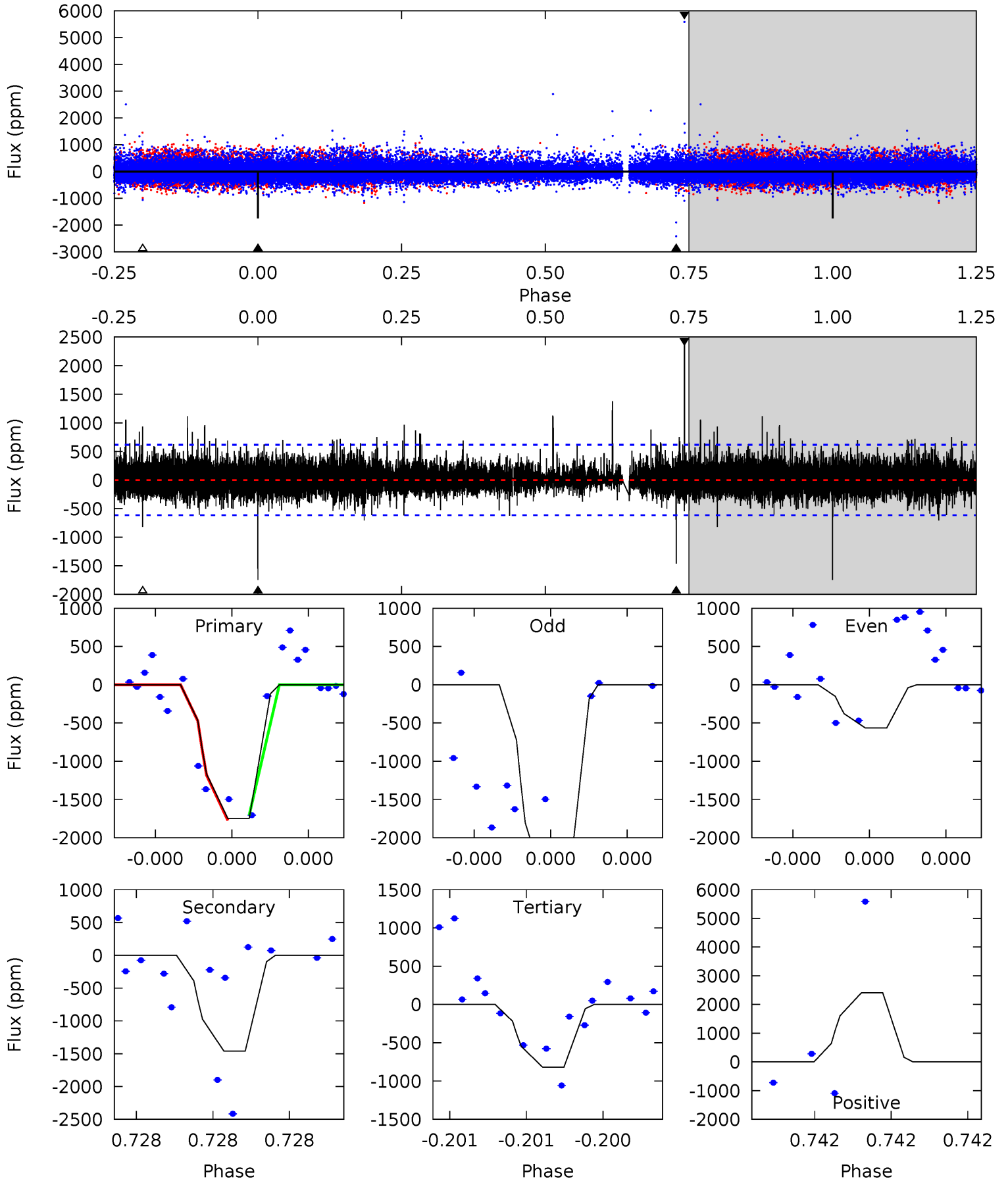
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.01	7.17	6.75	53.9	5.75	3.75	1.77	1.26	-45.9	0.43	-46.8	2.85	0.62	0.87	0.32



Alt Model-Shift Uniqueness Test

004929016-05, P = 398.940695 Days, E = 310.975283 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.3	13.6	7.65	22.5	5.75	3.74	1.39	8.68	-6.17	5.99	-8.86	11.9	1.02	0.58	0.26



Stellar Parameters For KIC 004929016

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4090^{+123}_{-123}	$4.642^{+0.056}_{-0.018}$	$0.020^{+0.250}_{-0.300}$	$0.618^{+0.034}_{-0.063}$	$0.611^{+0.051}_{-0.057}$	$3.641^{+0.913}_{-0.311}$
	+3%/-3%	+1%/-0%	+1250%/-1500%	+6%/-10%	+8%/-9%	+25%/-9%
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 004929016-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-1043 ± 145	$10.44^{+13.17}_{-7.28}$	207^{+7}_{-7}	2553^{+1029}_{-443}	4374^{+42270}_{-3502}
Alt.	-1460 ± 107	$11.53^{+12.09}_{-7.87}$	207^{+7}_{-7}	2613^{+1048}_{-409}	5039^{+47085}_{-3856}

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 $A_{obs} \gg 1.0$

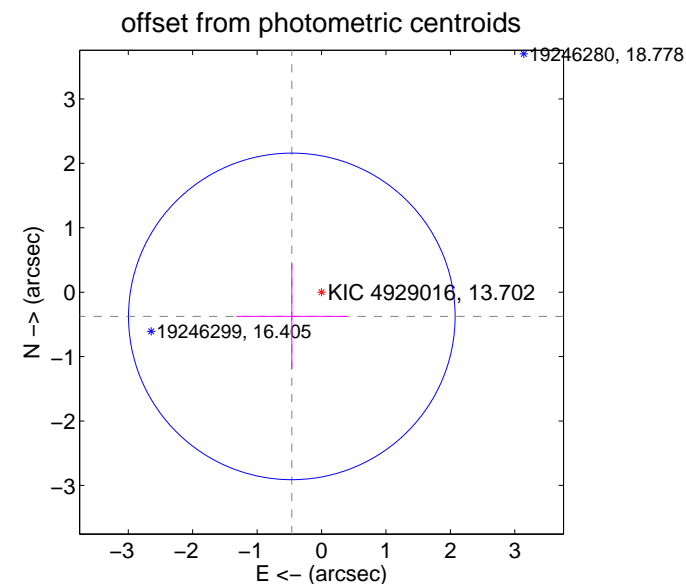
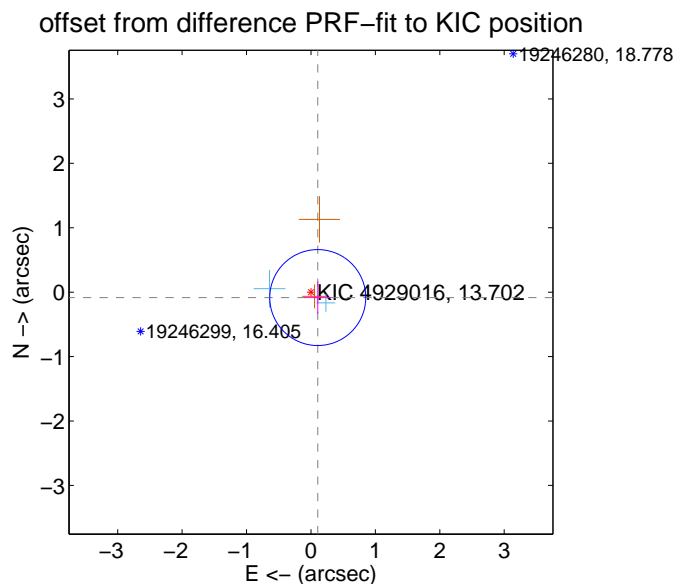
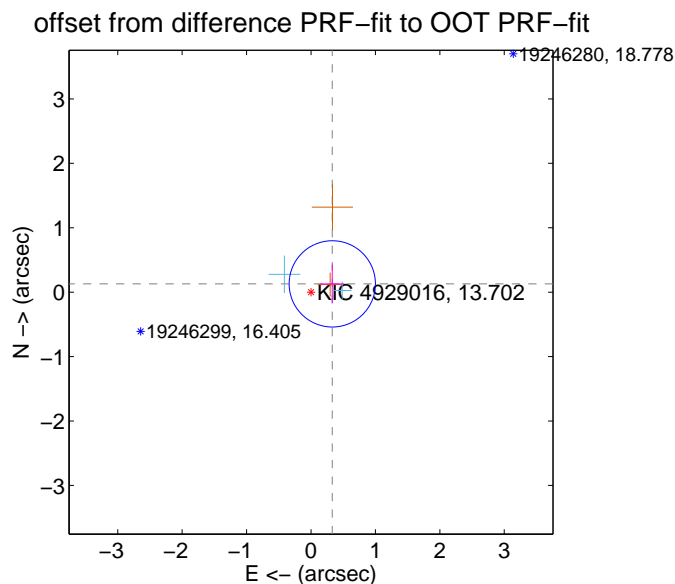
DV Centroid Data

Supplemental centroid analysis for 004929016-05. Kepler magnitude: 13.70. Transit SNR 7.41

There are 2 quarters with good PRF difference image offsets

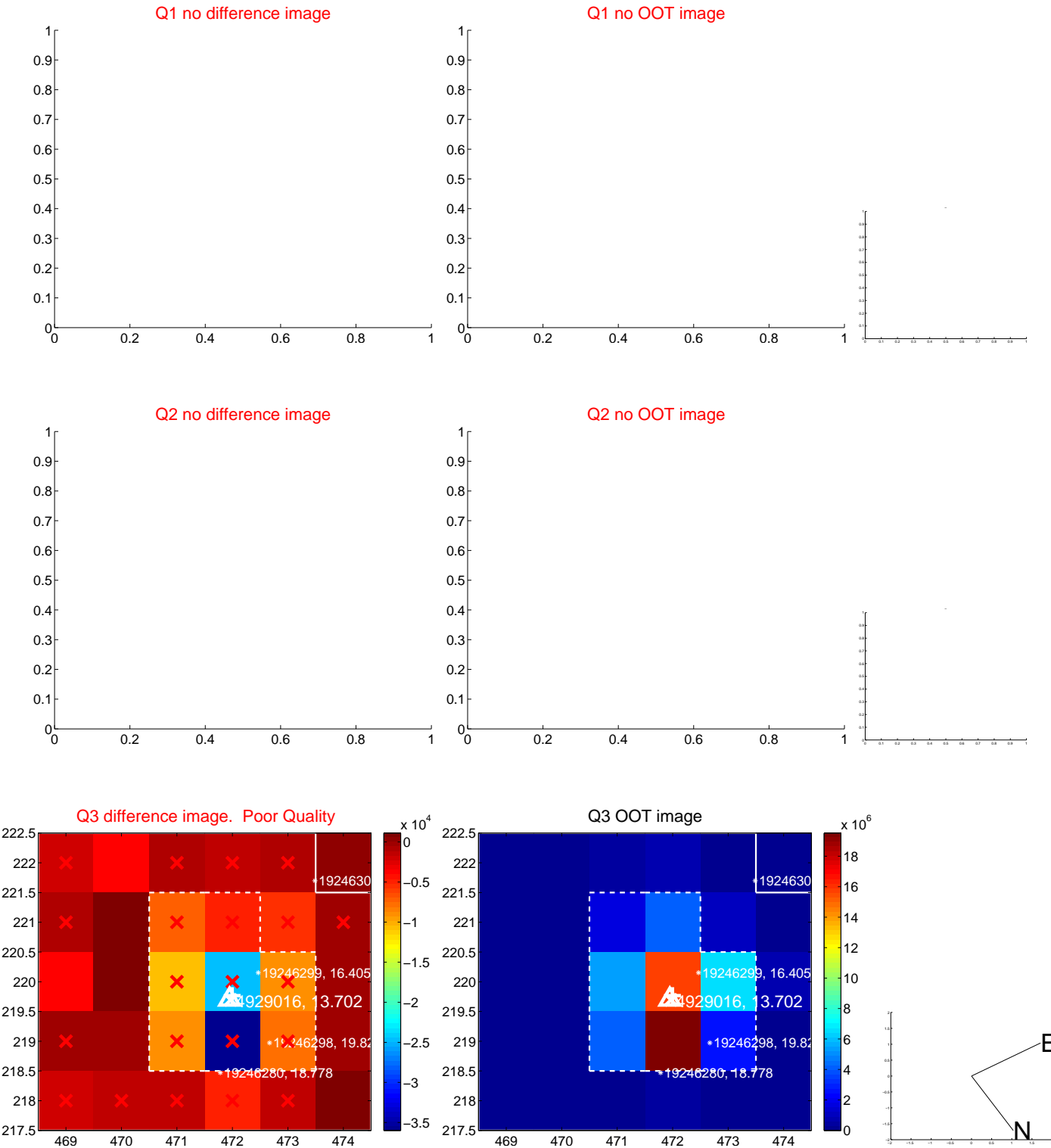
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.355 ± 0.223	1.59	-0.330 ± 0.184	0.129 ± 0.300
PRF-fit source offset from KIC position	0.135 ± 0.248	0.54	-0.106 ± 0.207	-0.084 ± 0.252
photometric centroid source offset	0.60 ± 0.84	0.70	0.46 ± 0.86	-0.38 ± 0.82

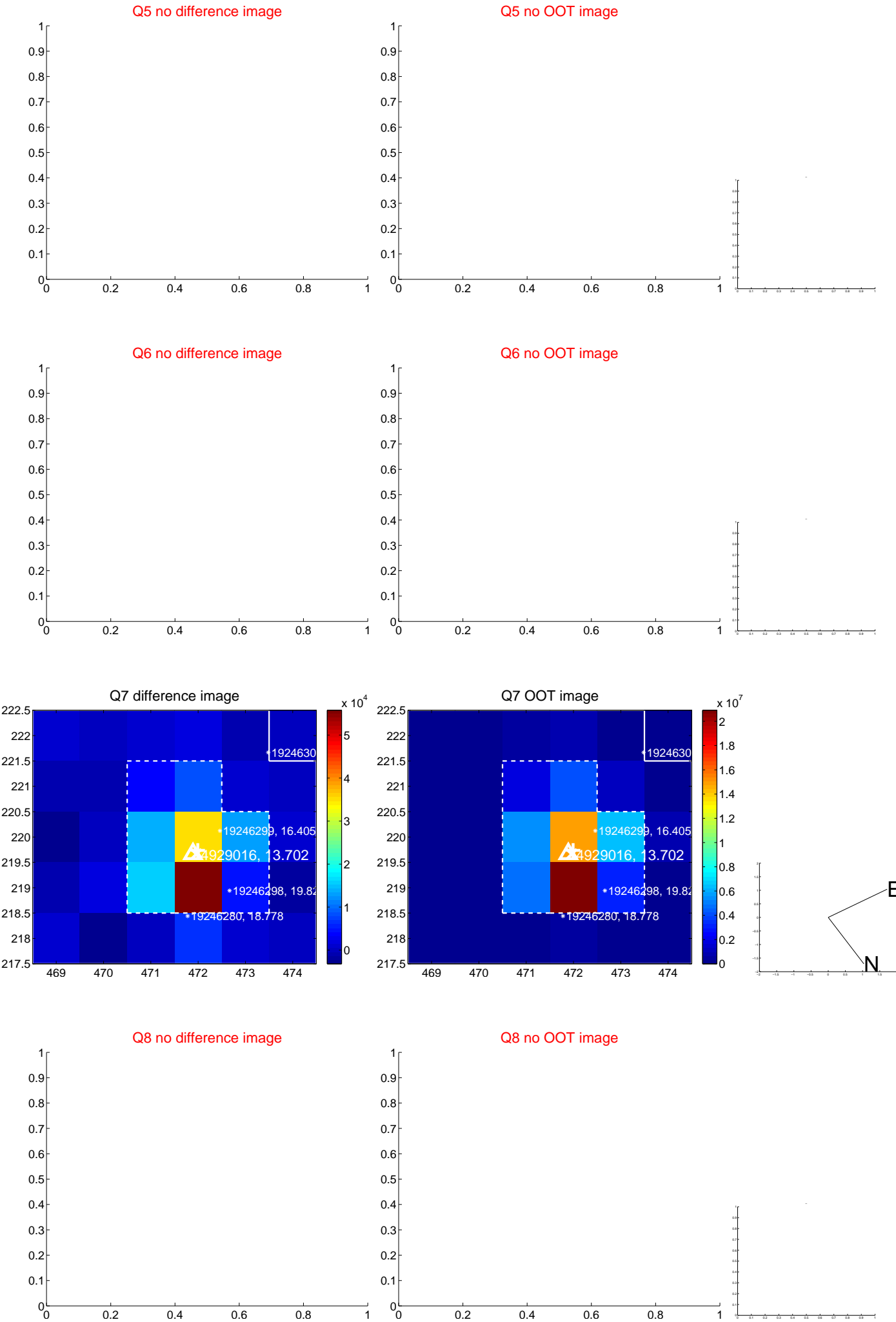


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

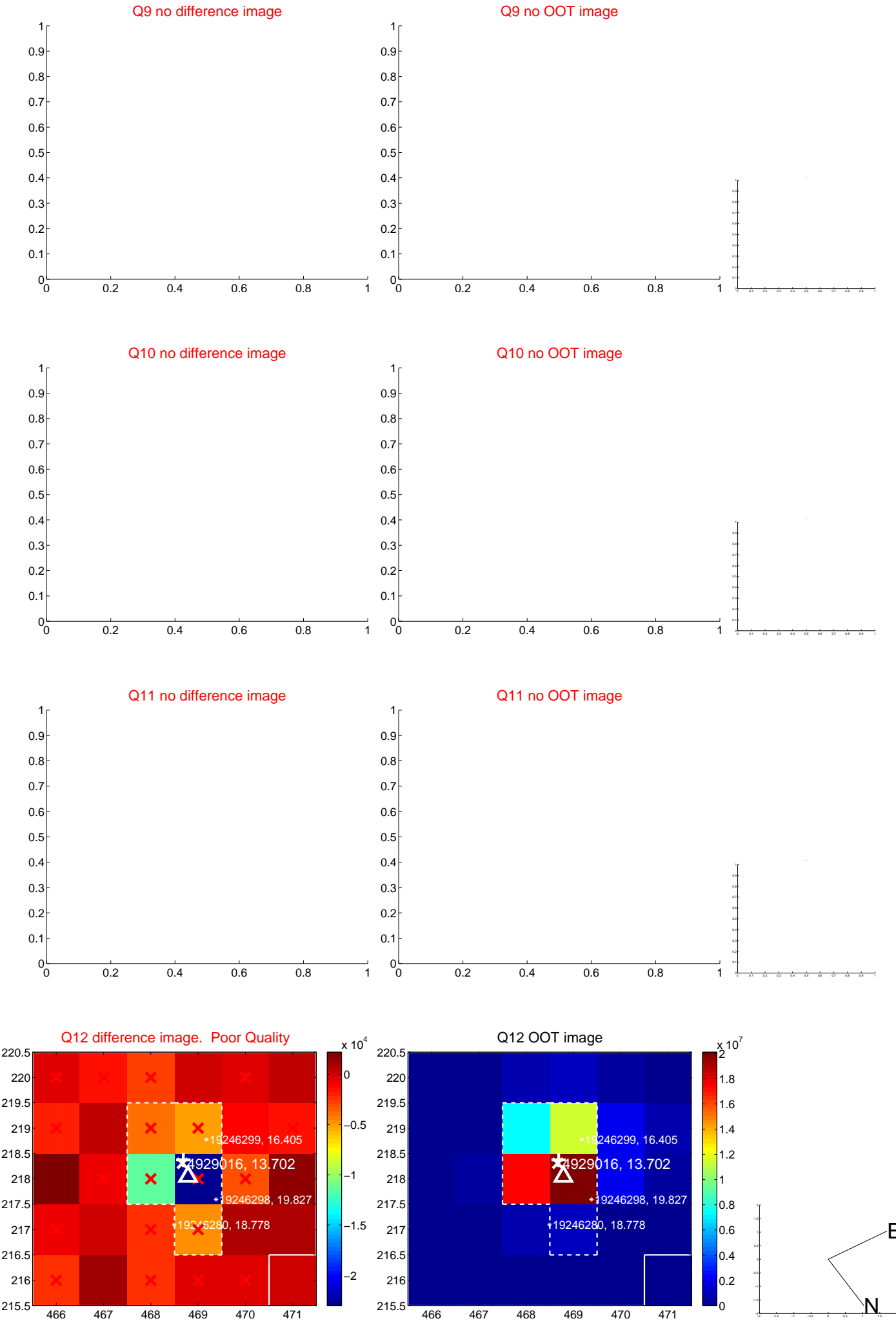
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



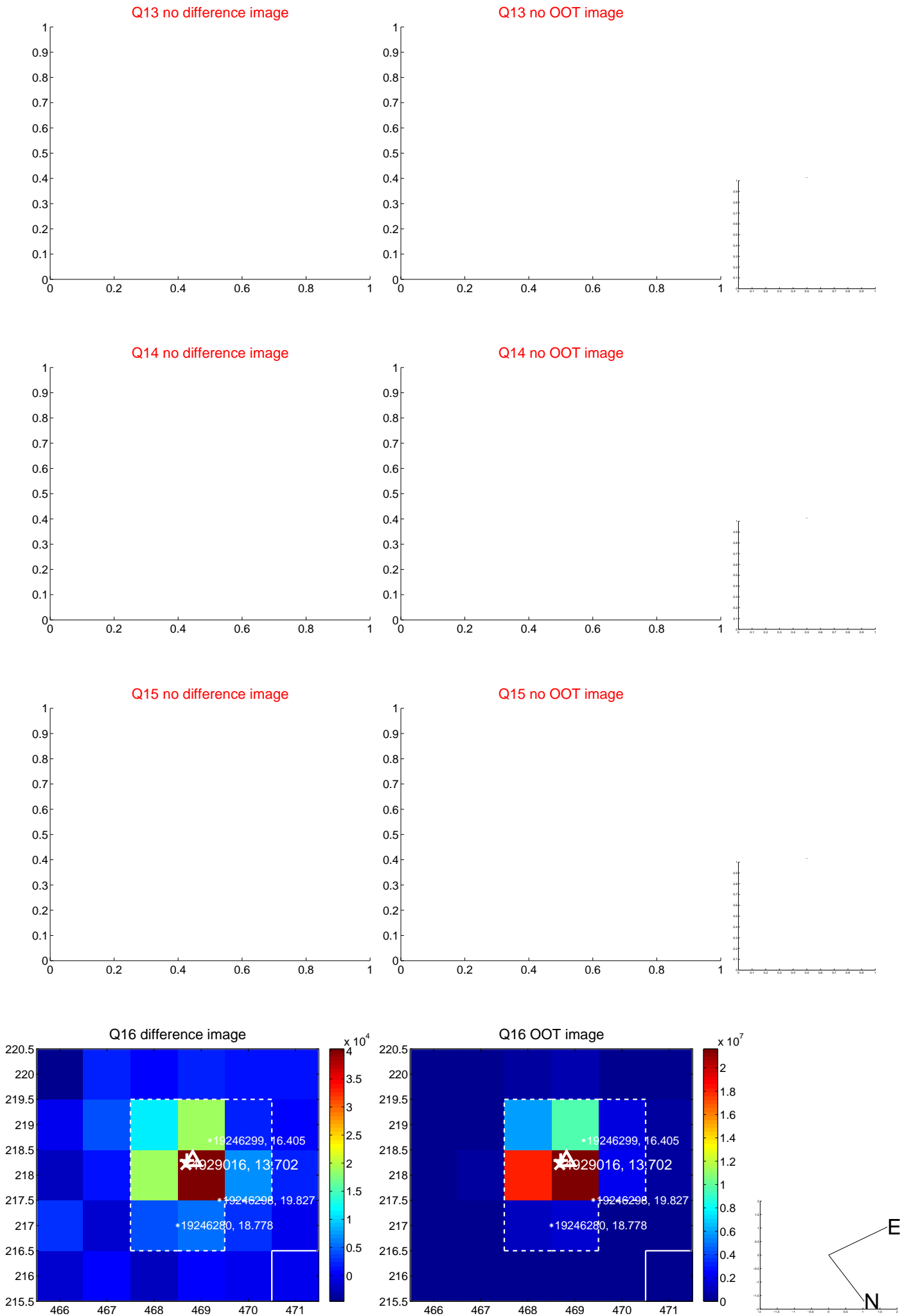
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



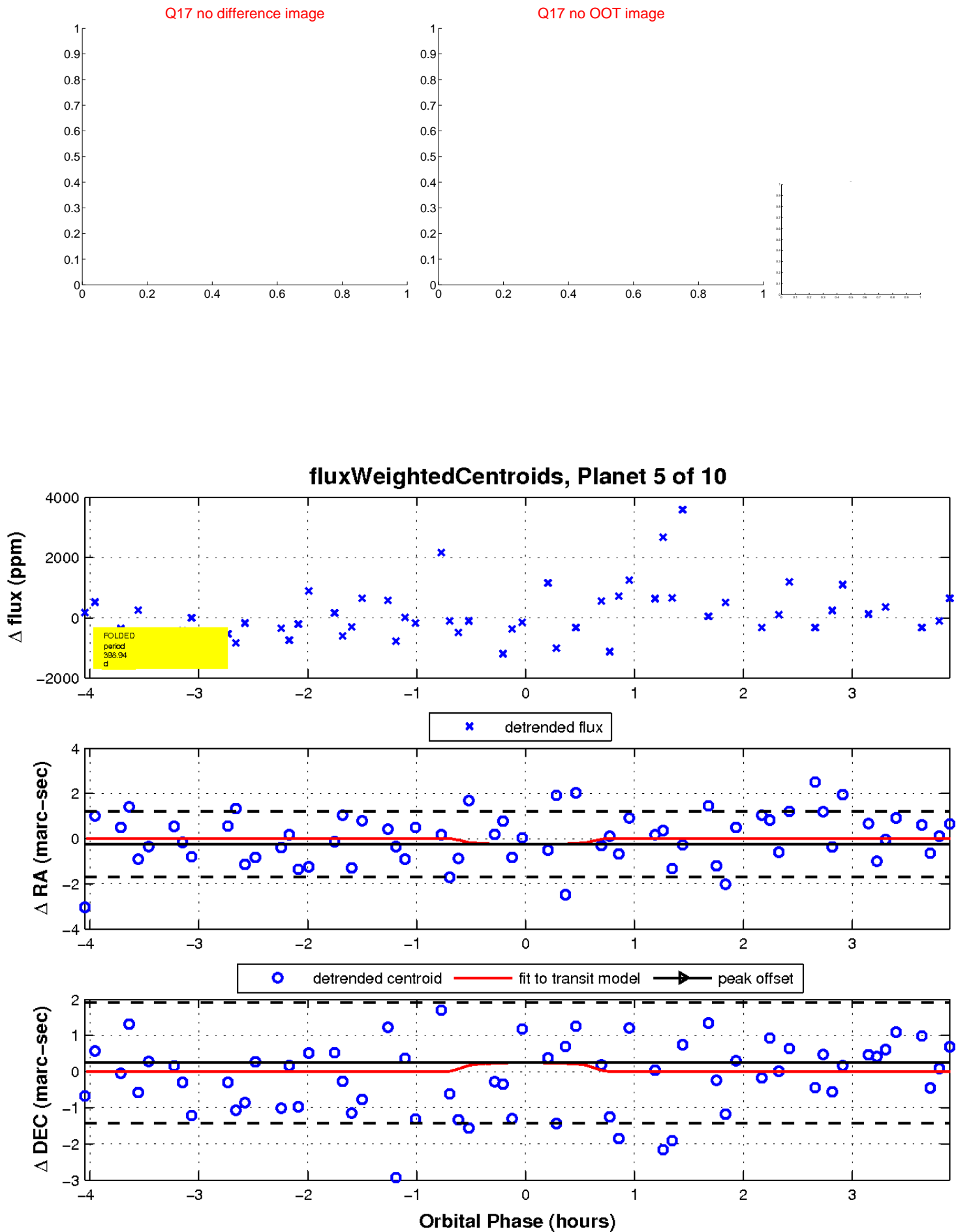
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

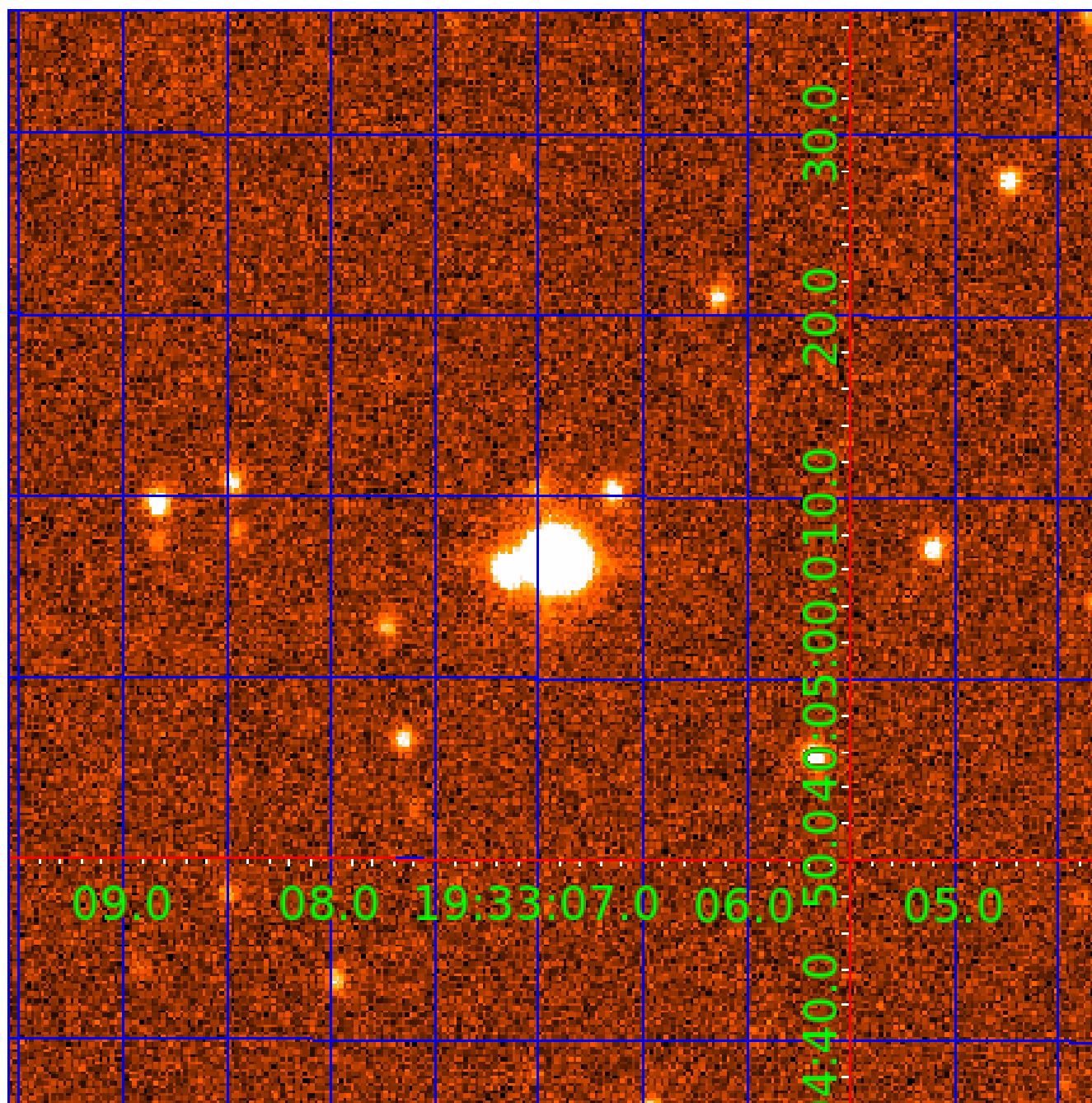


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004929016

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})
004929016-01	OBS	No	546.515996	470.891992	560.7	10.500	16.0	-1.0	0.62	4090	1.42	0.08
004929016-02	OBS	No	289.283172	198.911604	798.8	7.630	15.1	4.6	0.62	4090	2.34	0.18
004929016-03	OBS	No	313.930962	226.350204	1767.2	10.088	14.2	9.5	0.62	4090	2.76	0.16
004929016-04	OBS	No	182.550730	204.069750	522.3	7.527	15.6	2.7	0.62	4090	1.63	0.34
004929016-05	OBS	No	398.941160	310.972128	1183.9	1.352	14.4	7.4	0.62	4090	2.27	0.12
004929016-06	OBS	No	169.559378	294.340992	1501.0	7.543	14.0	9.6	0.62	4090	2.48	0.37
004929016-09	OBS	No	221.143525	297.651451	845.4	21.195	15.2	4.6	0.62	4090	2.11	0.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004929016-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
004929016-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS
004929016-04	OBS	FP	0.00	1	0	0	0	LPP_DV—INCONSISTENT_TRANS
004929016-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
004929016-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

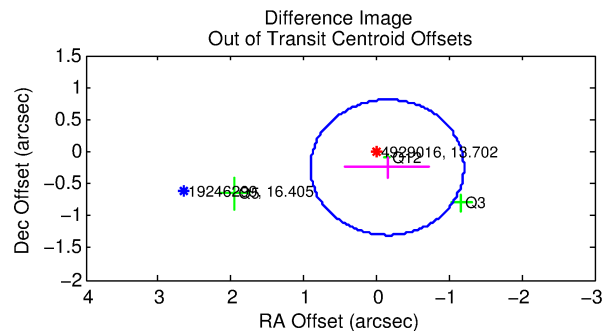
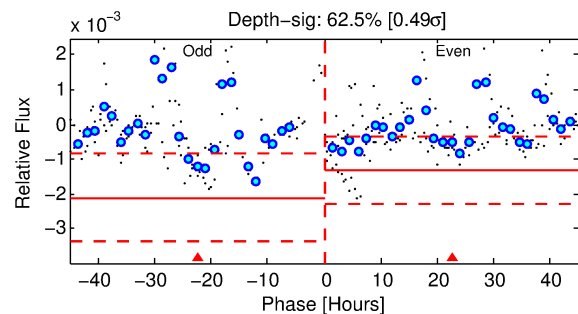
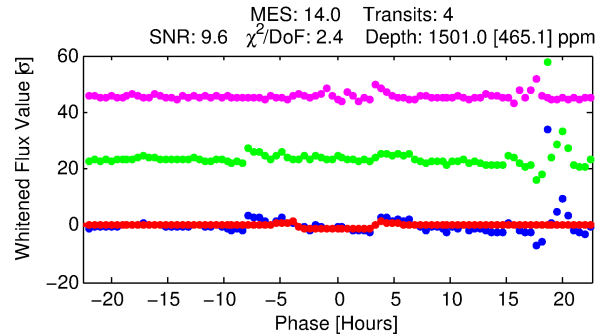
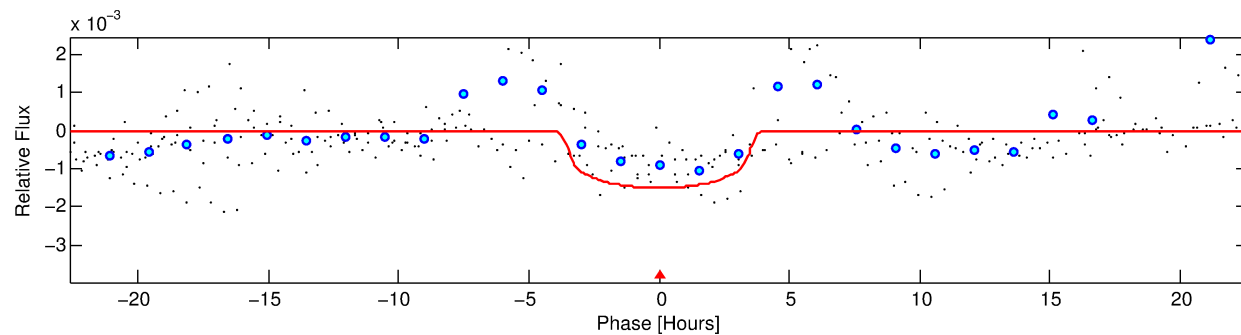
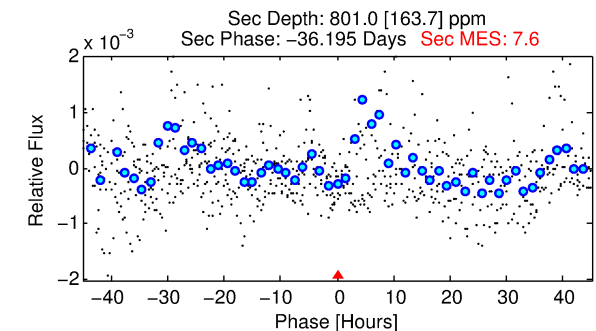
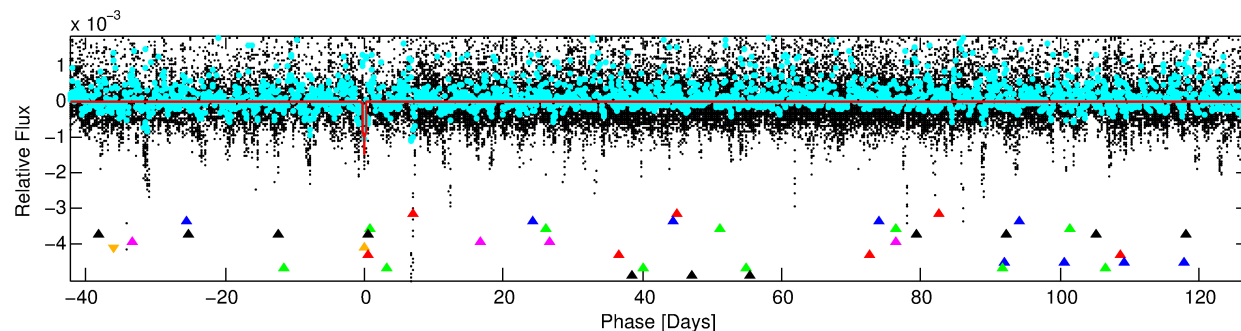
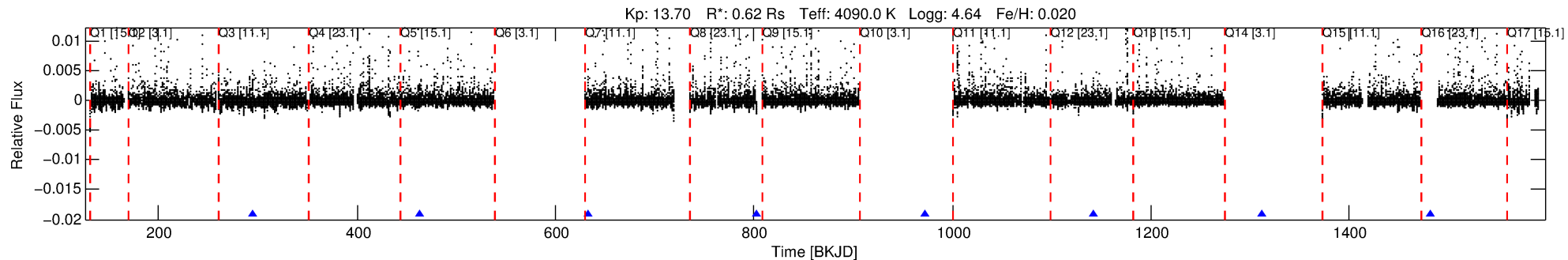
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004929016-06

No Significant Match Found

DV One-Page Summary

KIC: 4929016 Candidate: 6 of 10 Period: 169.559 d



DV Fit Results:

Period = 169.55938 [0.00683] d
Epoch = 294.3410 [0.0192] BKJD
Rp/R* = 0.0368 [0.0267]
a/R* = 143.11 [342.62]
b = 0.62 [2.43]
Seff = 0.37 [0.06]
Teq = 199 [8] K
Rp = 2.48 [1.82] Re
a = 0.5088 [0.0409] AU
Ag = 18495.15 [27115.41] [0.68σ]
Teff = 3585 [1315] K [2.58σ]

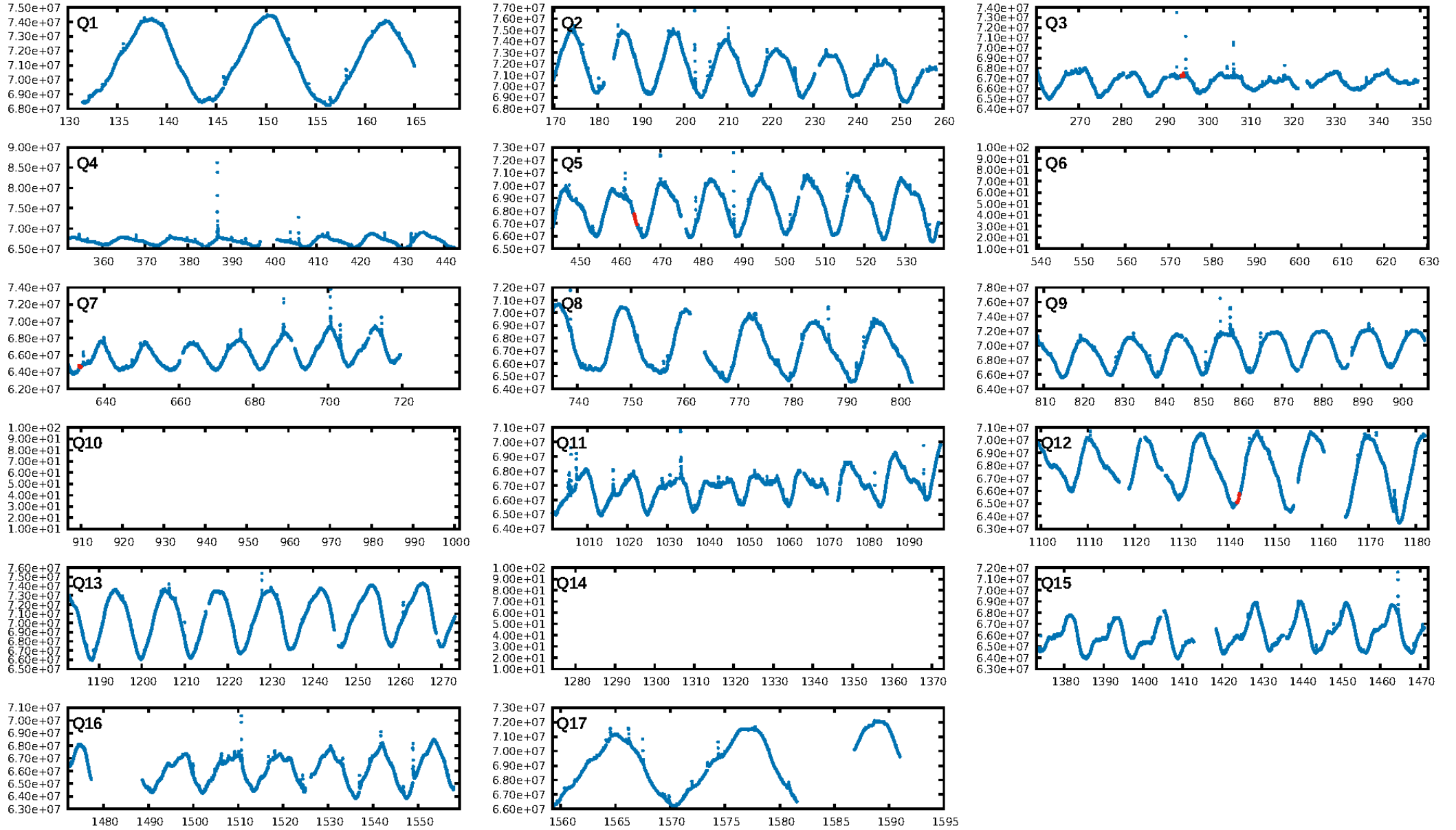
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [29.26σ]
ModelChiSquare2-sig: 1.4%
ModelChiSquareGof-sig: 43.5%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.8727
Centroid-sig: 18.3%
Centroid-so: 0.618 arcsec [1.65σ]
OotOffset-rm: 0.287 arcsec [0.82σ]
KicOffset-rm: 0.471 arcsec [2.21σ]
OotOffset-st: 0/1/1/1 [3]
KicOffset-st: 0/1/1/1 [3]
DiffImageQuality-fgm: 0.67 [2/3]
DiffImageOverlap-fno: 0.67 [2/3]

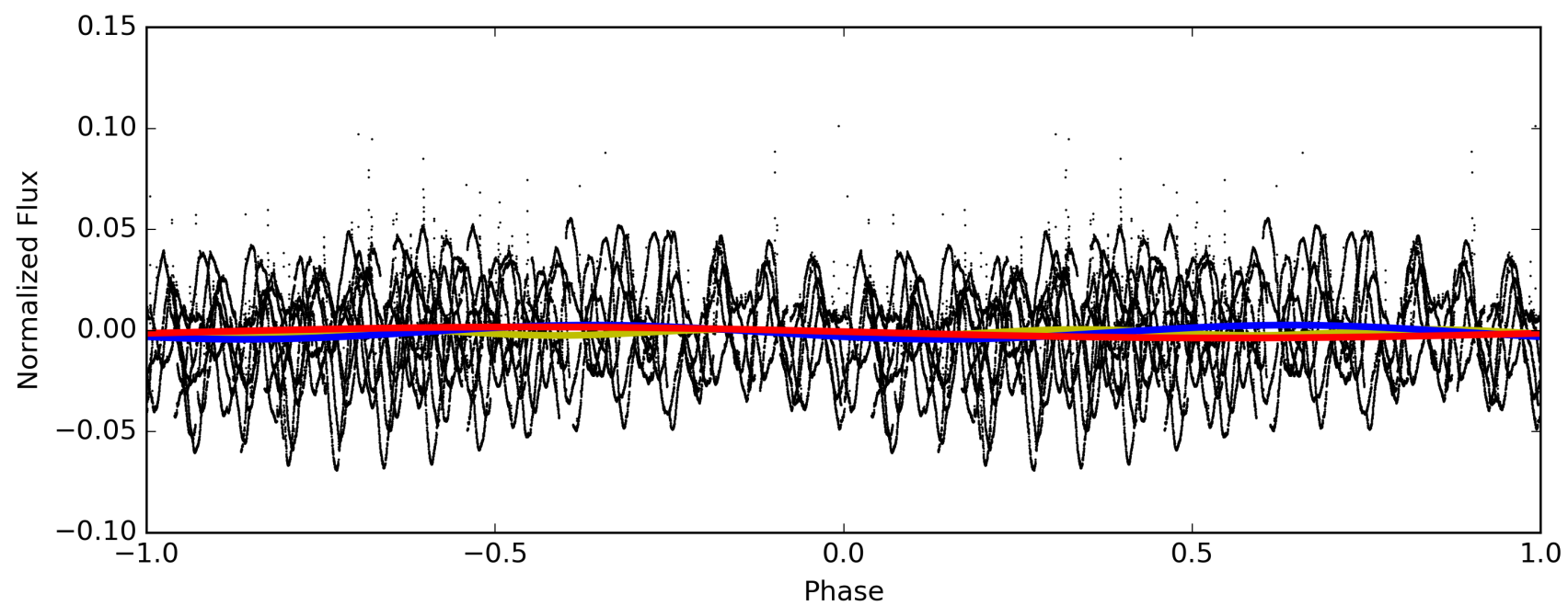
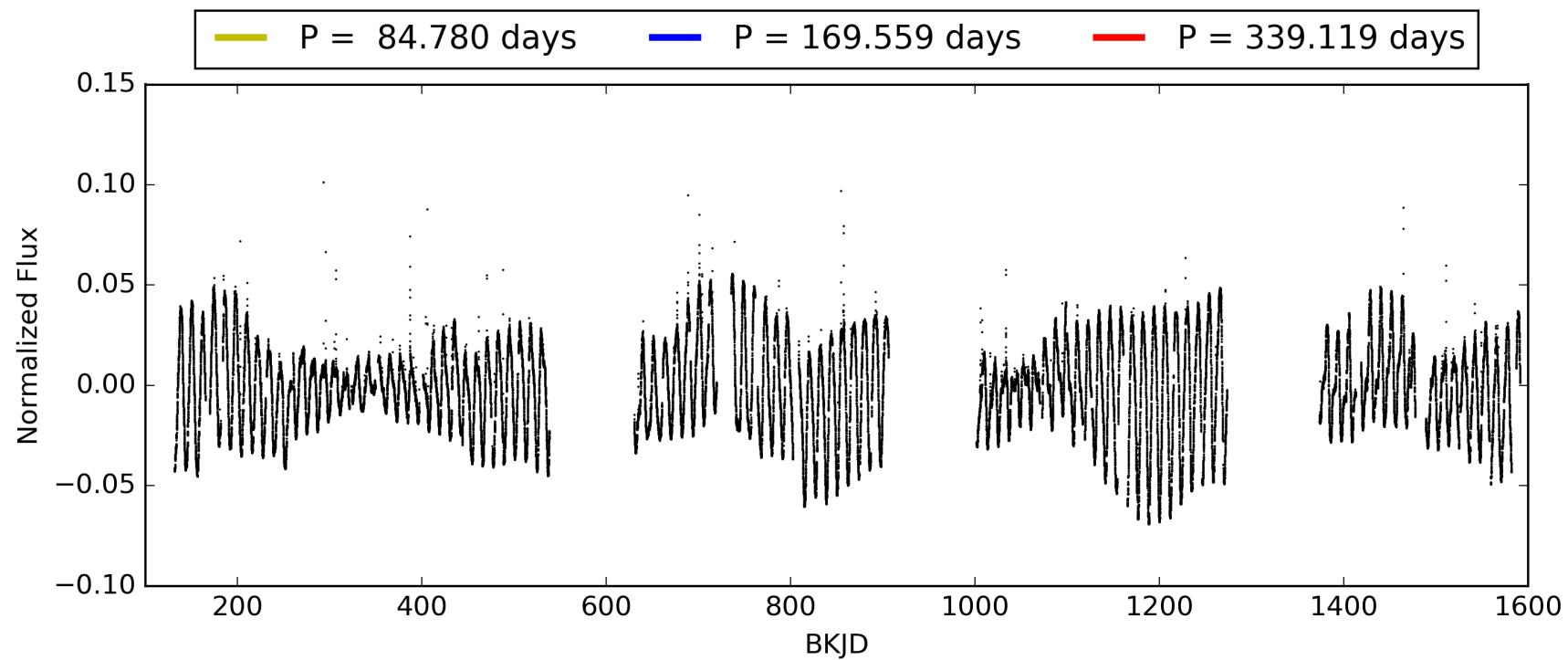
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:57:30 Z

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

TCE 004929016-06, PDC Light Curves

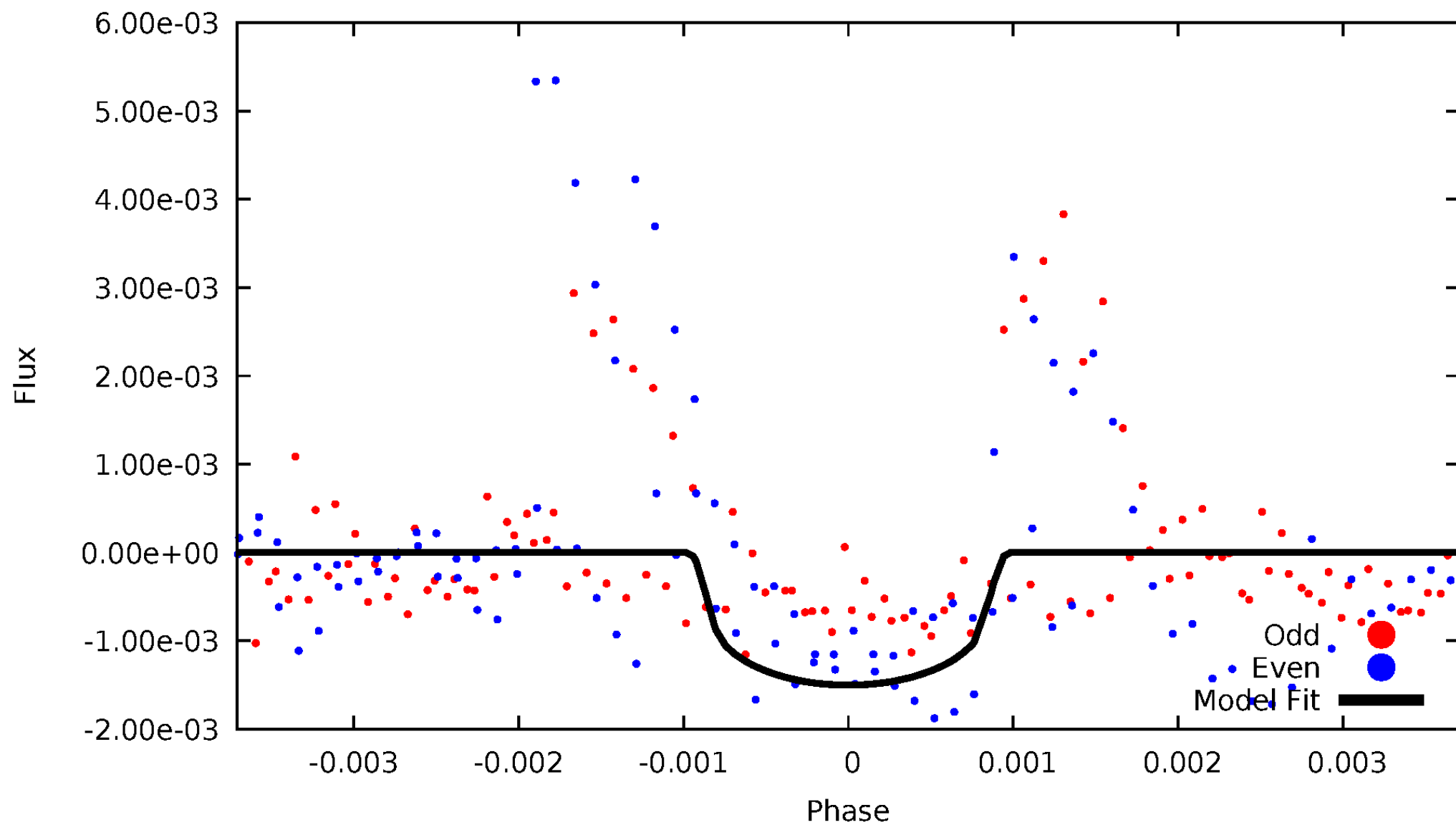


TCE 004929016-06



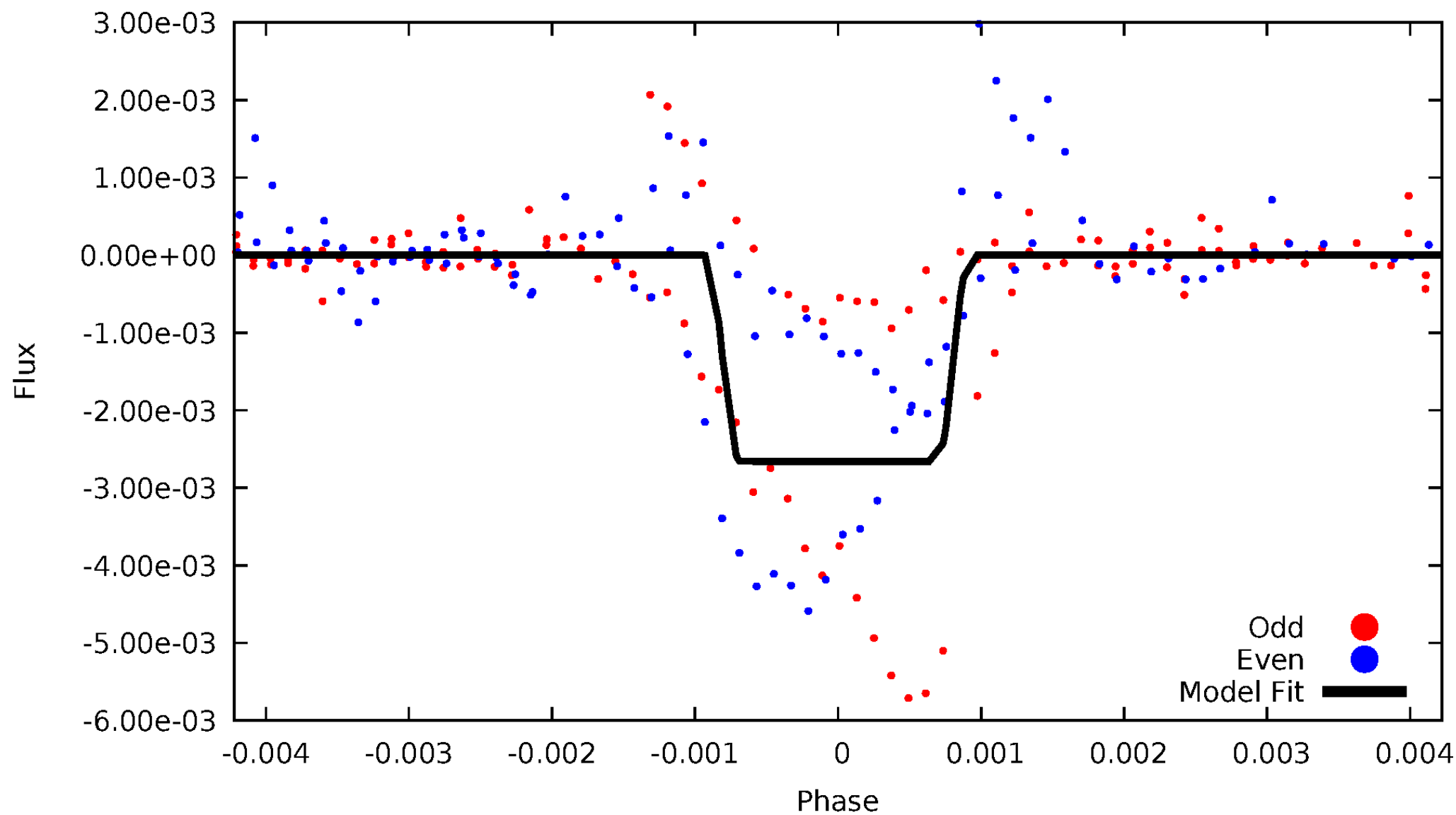
DV Odd/Even

TCE 004929016-06



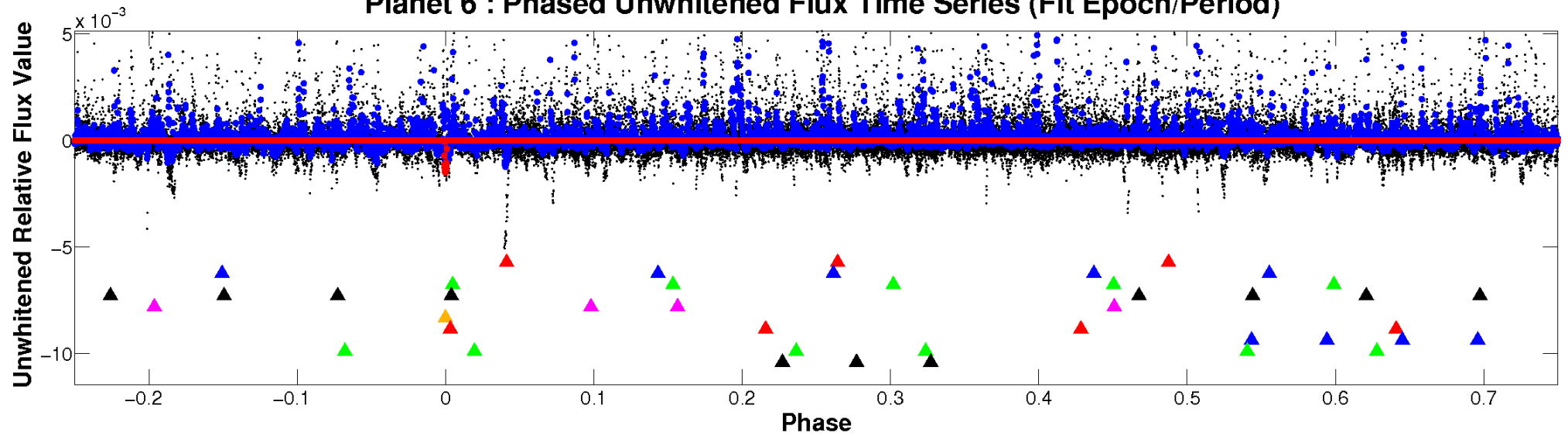
ALT Odd/Even

TCE 004929016-06

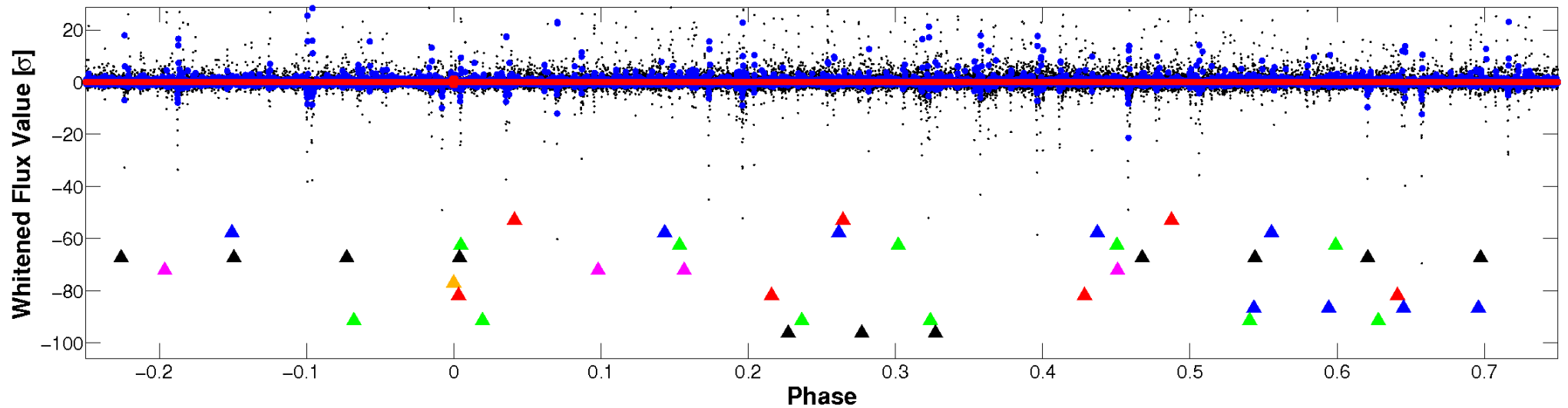


Non-Whitened Vs. Whitened Light Curve

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

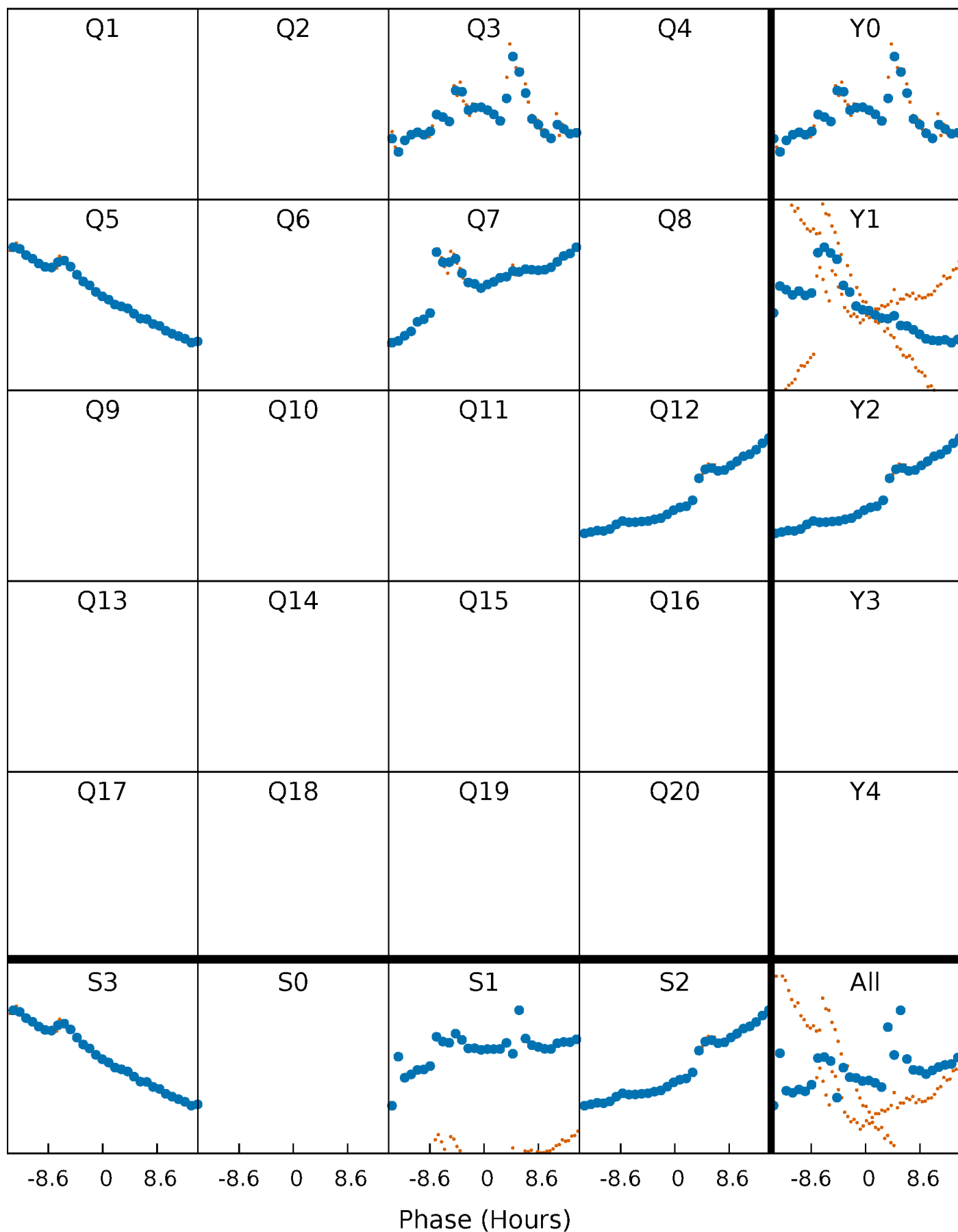


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



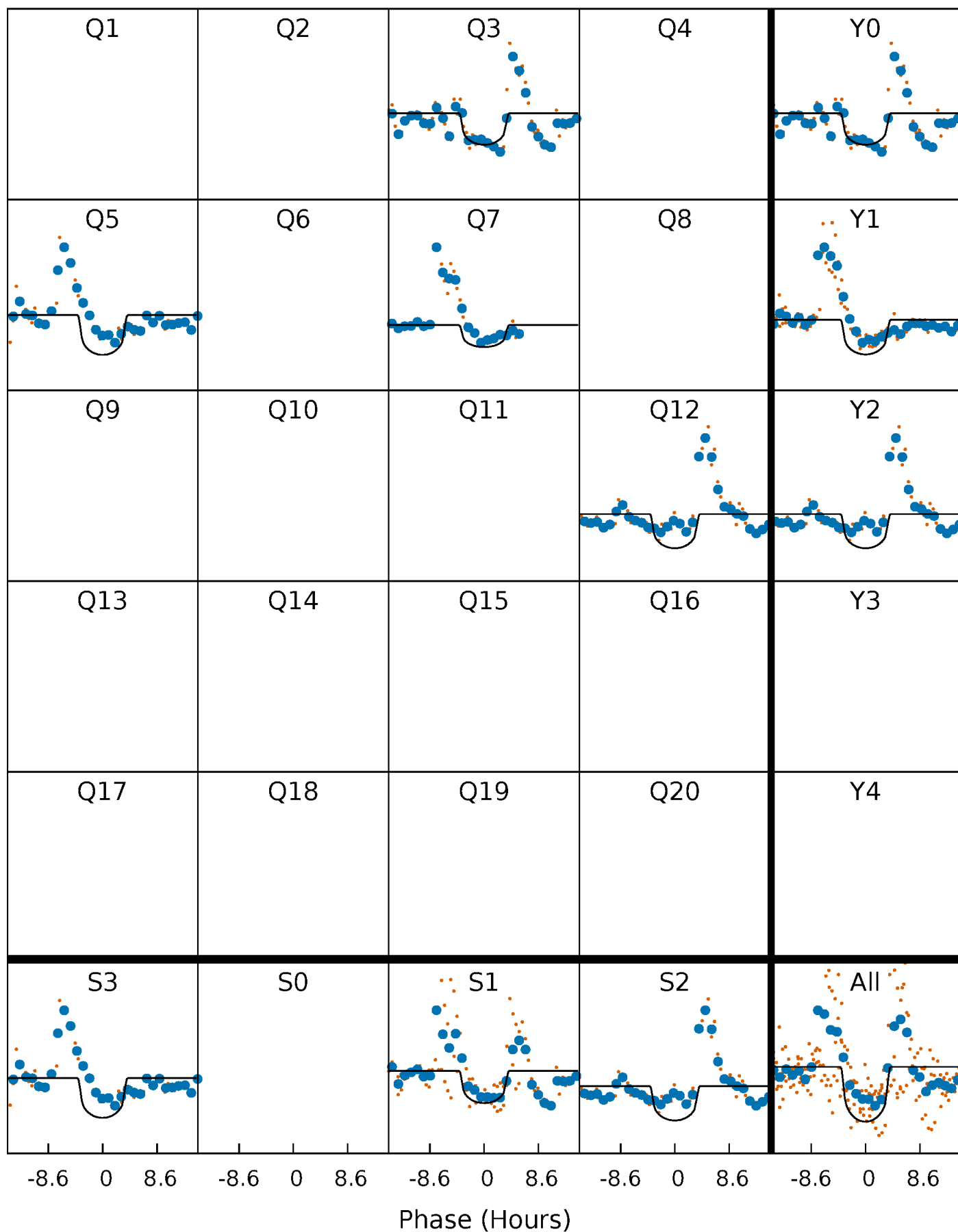
PDC Quarter-Phased Transit Curves

TCE 004929016-06 $P=169.559378$ Days $T_0=294.340992$ (BKJD)



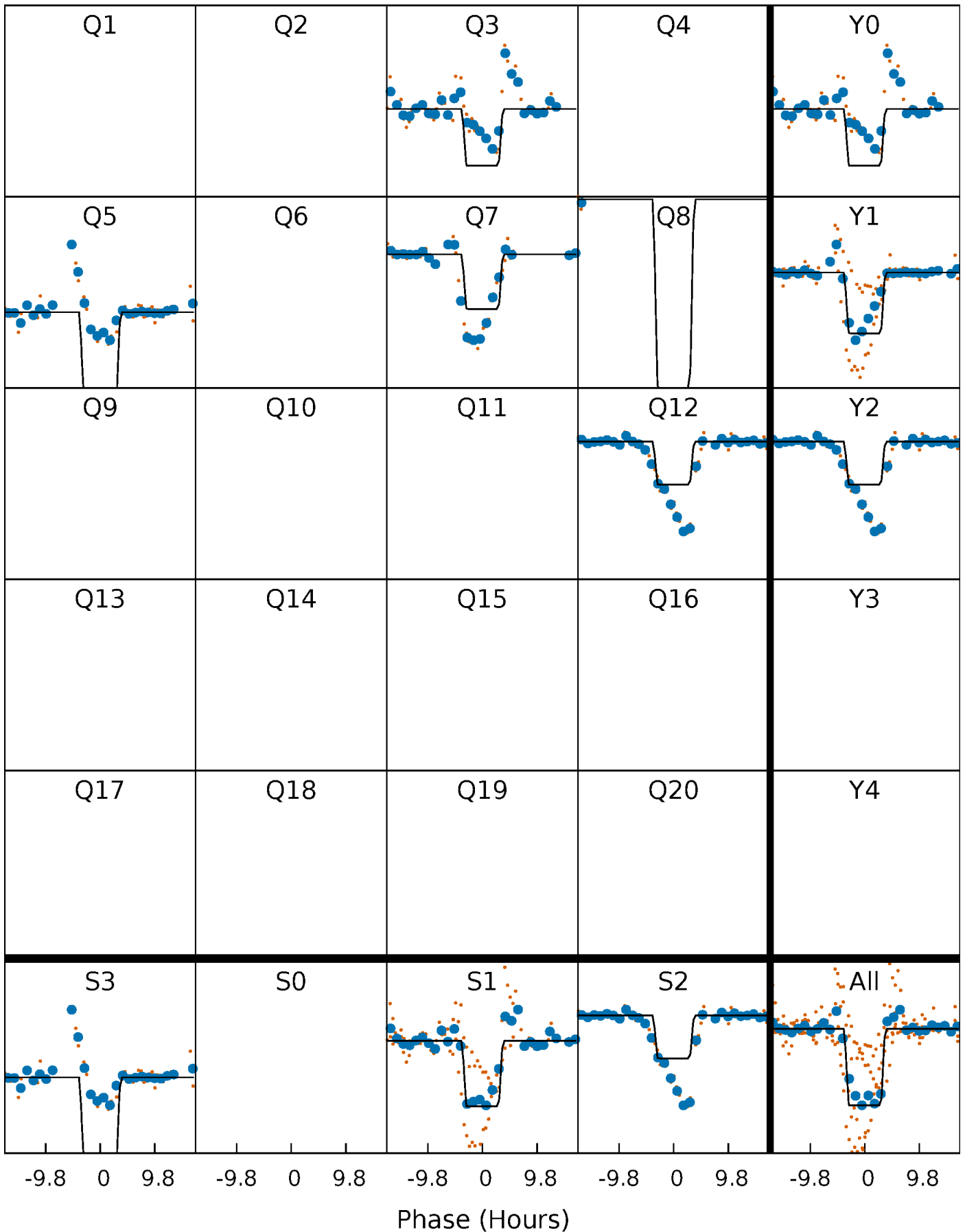
DV Quarter-Phased Transit Curves

TCE 004929016-06 $P=169.559378$ Days $T_0=294.340992$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

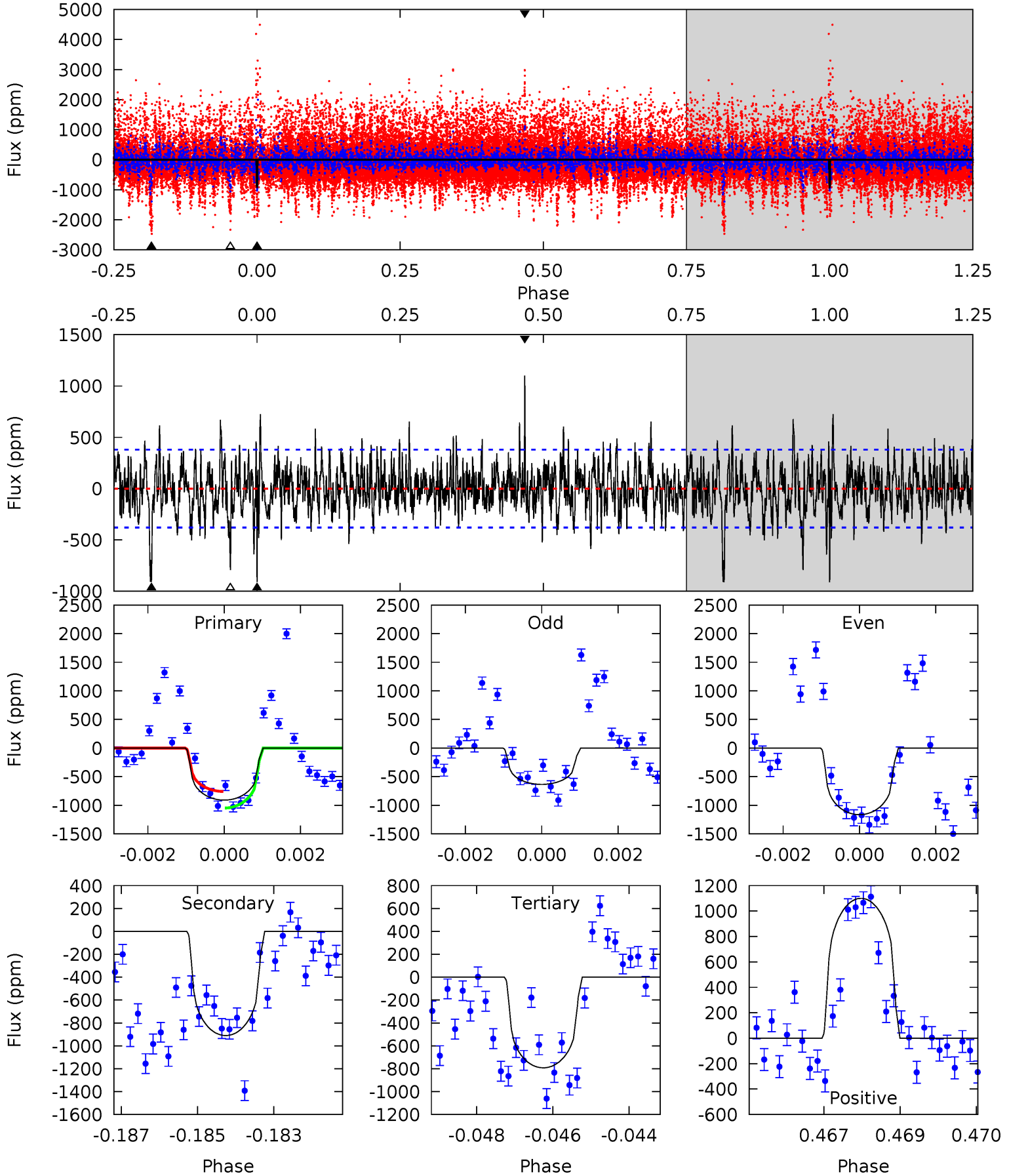
TCE 004929016-06 P=169.557681 Days $T_0=294.344141$ (BKJD)



DV Model-Shift Uniqueness Test

004929016-06, P = 169.559378 Days, E = 124.781614 Days

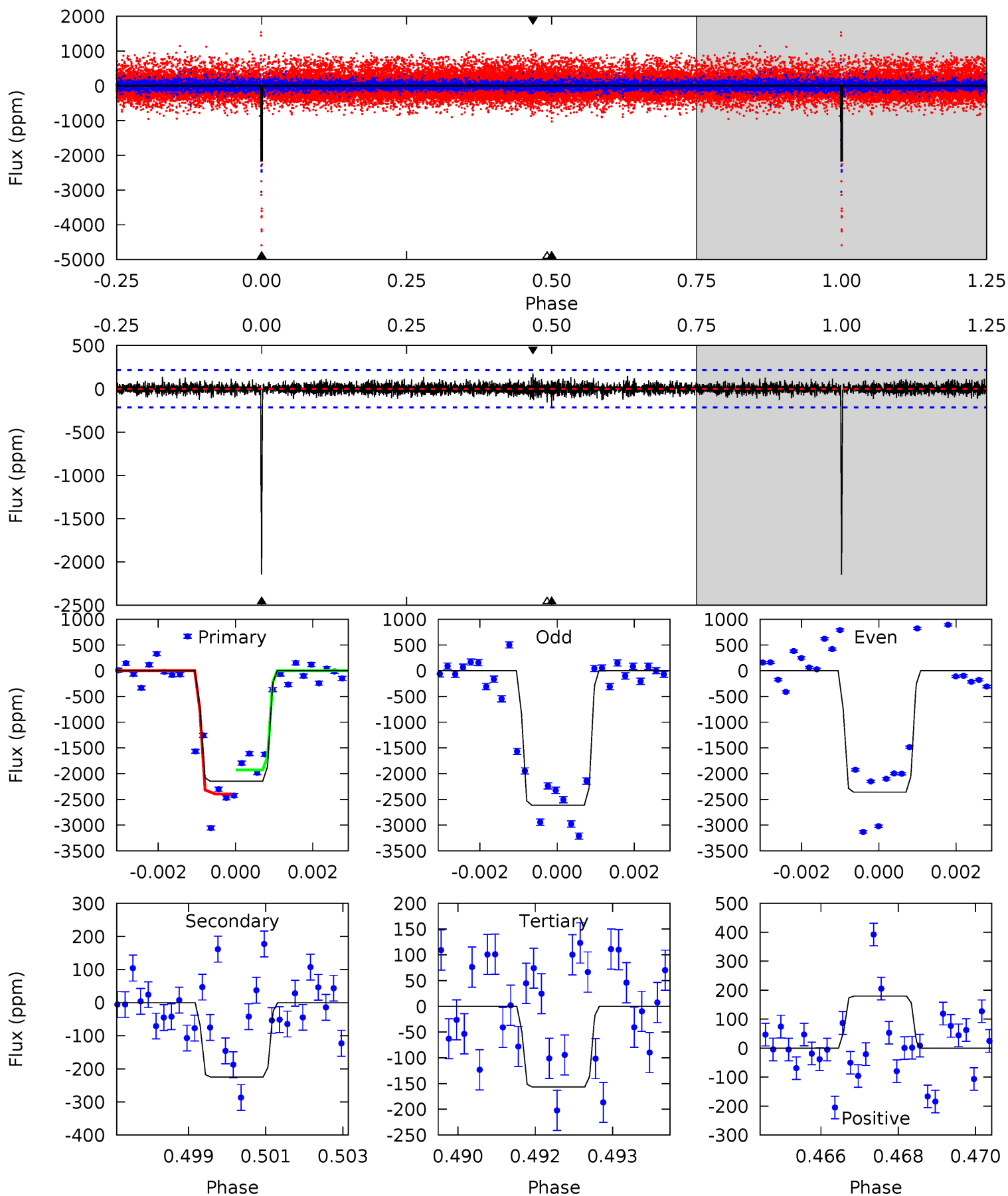
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.8	12.8	11.1	15.5	5.33	3.10	2.61	1.66	-2.67	1.66	-2.67	3.36	1.23	0.55	2.05



Alt Model-Shift Uniqueness Test

004929016-06, P = 169.557681 Days, E = 124.786460 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
53.4	5.59	3.89	4.47	5.35	3.12	0.91	49.5	48.9	1.70	1.12	3.60	1.01	0.08	5.26



Stellar Parameters For KIC 004929016

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4090^{+123}_{-123}	$4.642^{+0.056}_{-0.018}$	$0.020^{+0.250}_{-0.300}$	$0.618^{+0.034}_{-0.063}$	$0.611^{+0.051}_{-0.057}$	$3.641^{+0.913}_{-0.311}$
	+3%/-3%	+1%/-0%	+1250%/-1500%	+6%/-10%	+8%/-9%	+25%/-9%
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 004929016-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-910 ± 71	$2.72^{+1.72}_{-1.60}$	276^{+10}_{-10}	3687^{+1484}_{-520}	17531^{+89604}_{-11102}
Alt.	-225 ± 40	$3.49^{+1.65}_{-1.79}$	276^{+9}_{-10}	2775^{+617}_{-272}	2632^{+7735}_{-1461}

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

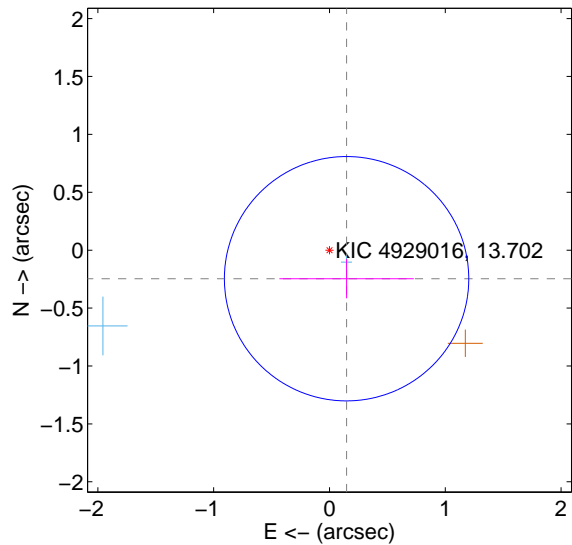
Supplemental centroid analysis for 004929016-06. Kepler magnitude: 13.70. Transit SNR 9.56

There are 2 quarters with good PRF difference image offsets

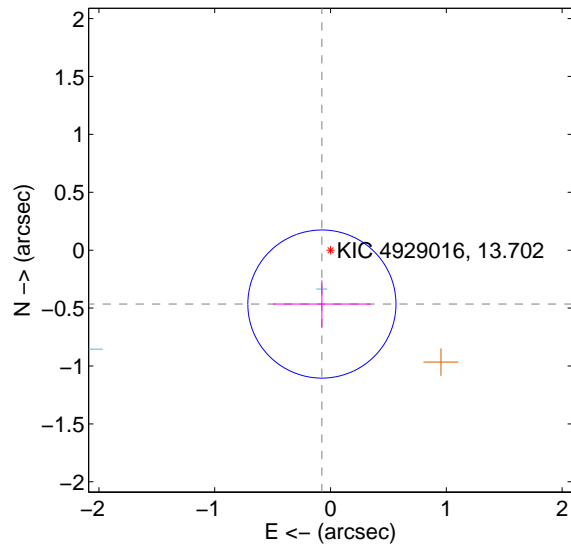
The direct PRF centroid is offset from the target star catalog position by about 0.32 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.287 ± 0.352	0.82	-0.148 ± 0.580	-0.246 ± 0.169
PRF-fit source offset from KIC position	0.471 ± 0.213	2.21	0.074 ± 0.421	-0.465 ± 0.205
photometric centroid source offset	0.62 ± 0.37	1.65	0.62 ± 0.37	0.05 ± 0.35

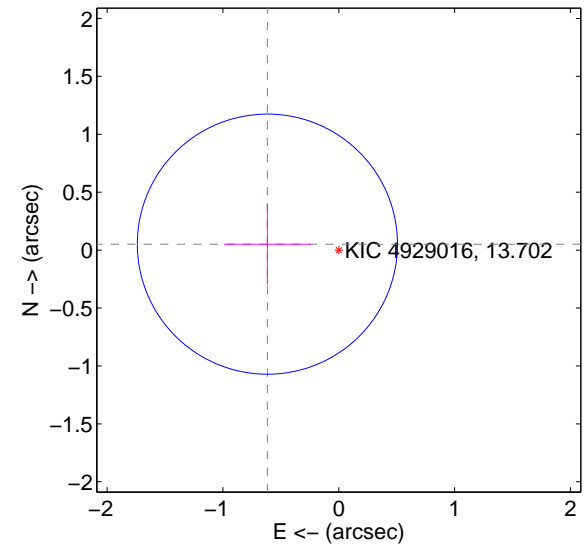
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



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

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

Q1 no difference image



Q1 no OOT image



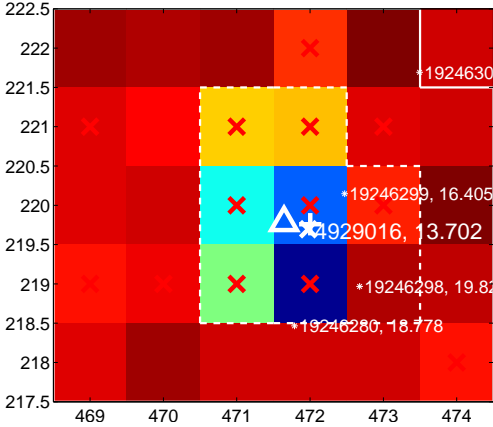
Q2 no difference image



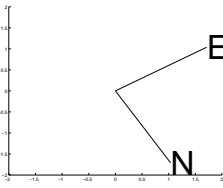
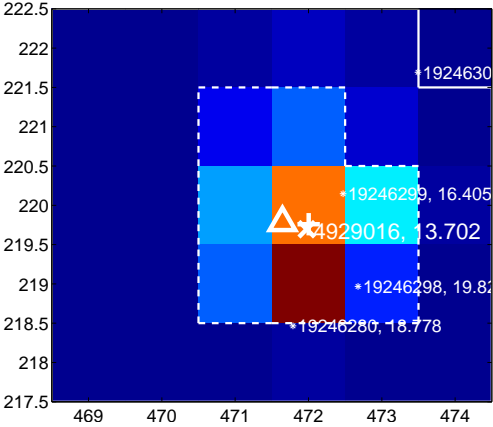
Q2 no OOT image



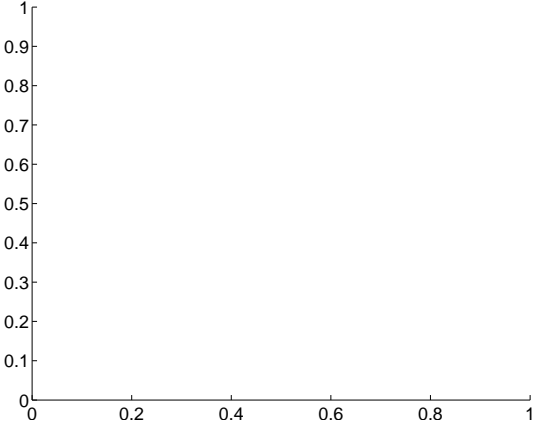
Q3 difference image. Poor Quality



Q3 OOT image



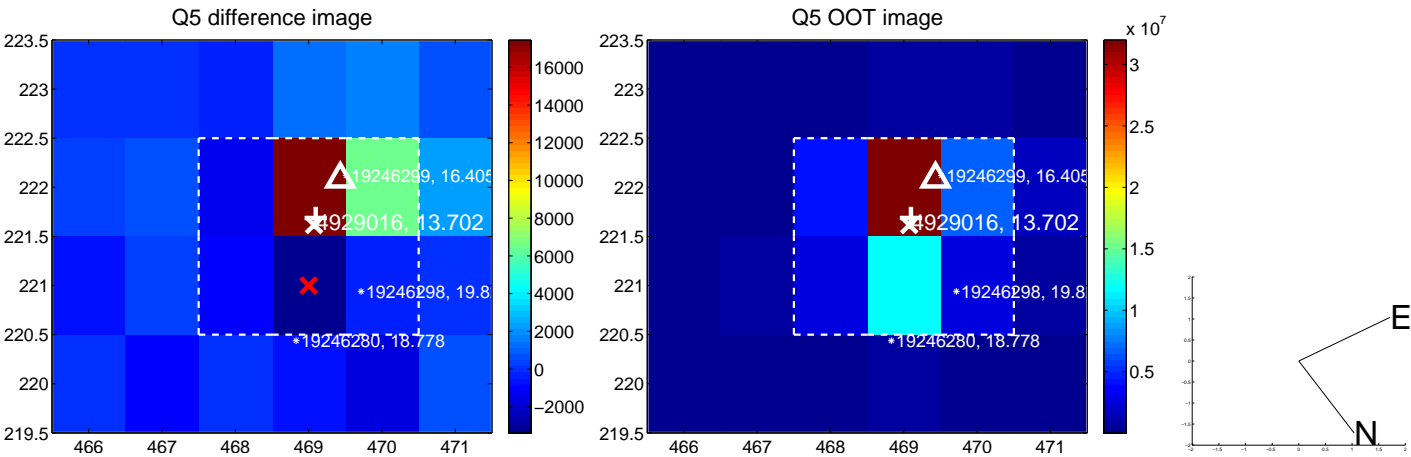
Q4 no difference image



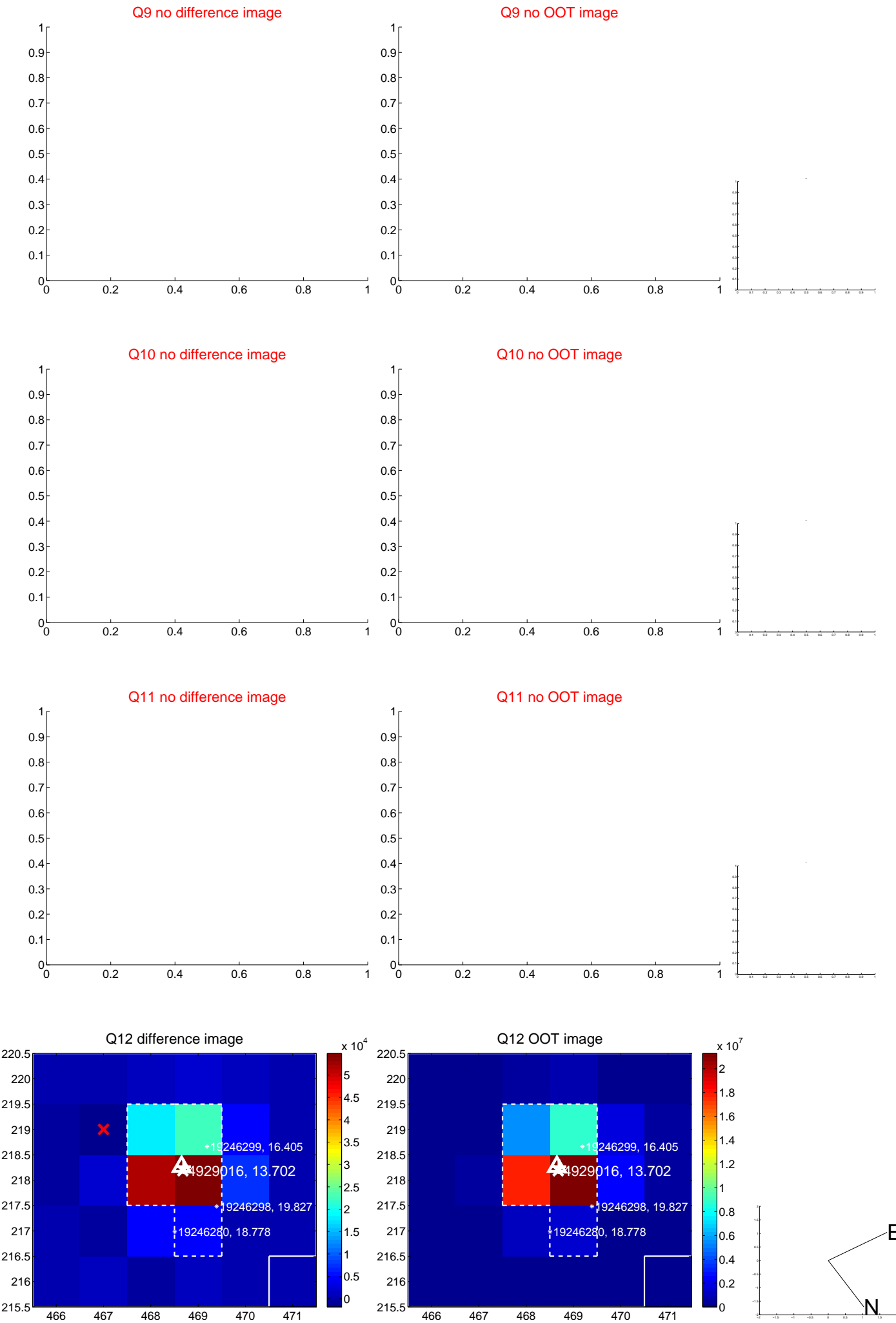
Q4 no OOT image



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



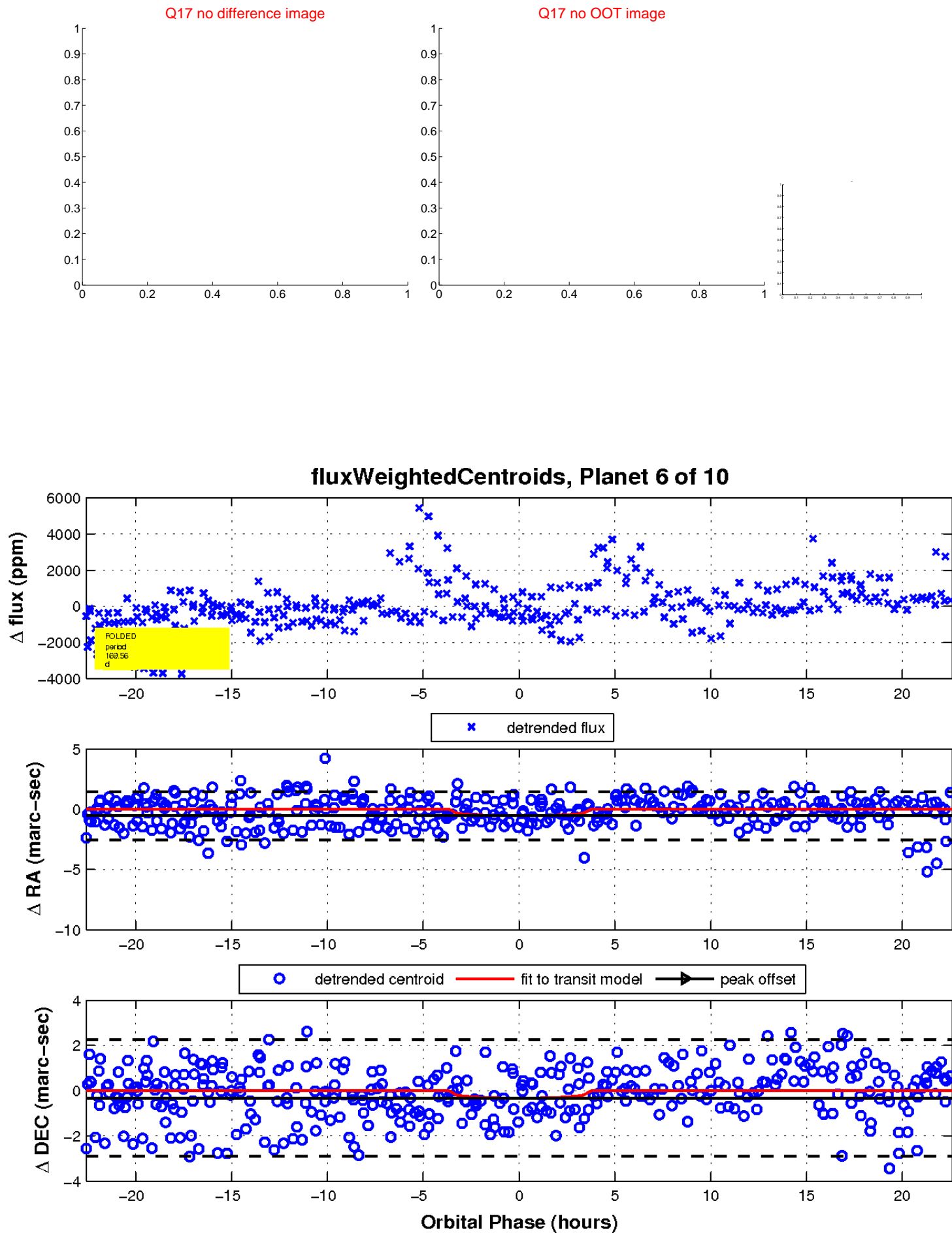
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

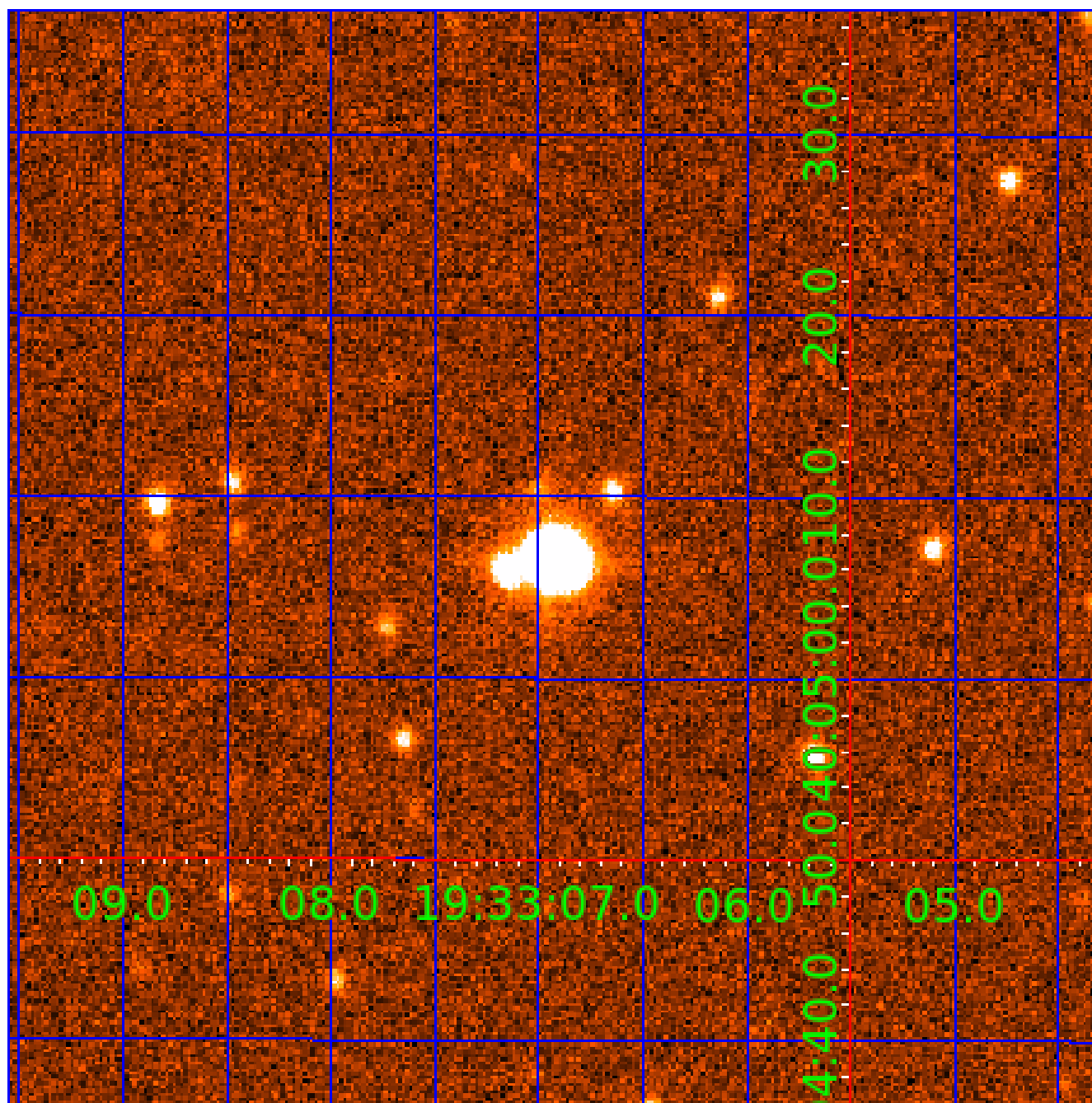


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004929016

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})
004929016-01	OBS	No	546.515996	470.891992	560.7	10.500	16.0	-1.0	0.62	4090	1.42	0.08
004929016-02	OBS	No	289.283172	198.911604	798.8	7.630	15.1	4.6	0.62	4090	2.34	0.18
004929016-03	OBS	No	313.930962	226.350204	1767.2	10.088	14.2	9.5	0.62	4090	2.76	0.16
004929016-04	OBS	No	182.550730	204.069750	522.3	7.527	15.6	2.7	0.62	4090	1.63	0.34
004929016-05	OBS	No	398.941160	310.972128	1183.9	1.352	14.4	7.4	0.62	4090	2.27	0.12
004929016-06	OBS	No	169.559378	294.340992	1501.0	7.543	14.0	9.6	0.62	4090	2.48	0.37
004929016-09	OBS	No	221.143525	297.651451	845.4	21.195	15.2	4.6	0.62	4090	2.11	0.26

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004929016-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—LPP_DV—LPP_ALT—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_NOFITS
004929016-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_TRACKER—LPP_DV—LPP_ALT—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-03	OBS	FP	0.00	1	0	0	0	LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_POS_DV—INCONSISTENT_TRANS—CENT_KIC_POS
004929016-04	OBS	FP	0.00	1	0	0	0	LPP_DV—INCONSISTENT_TRANS
004929016-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004929016-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—LPP_DV—ALL_TRANS_CHASES—MOD_POS_DV—CENT_FEW_DIFFS
004929016-09	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

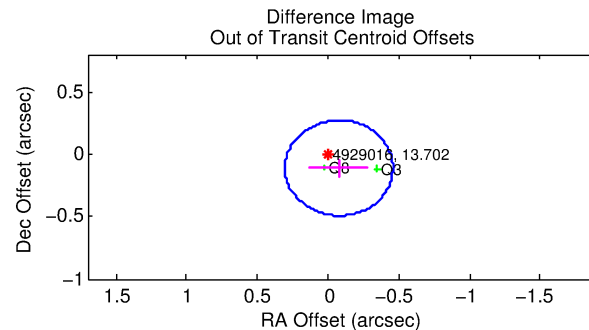
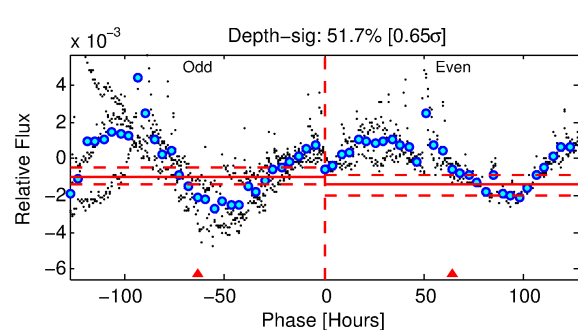
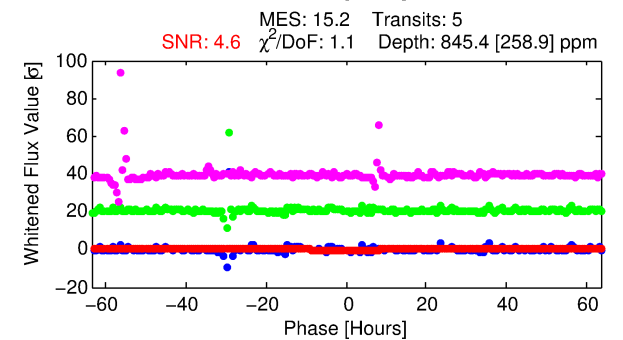
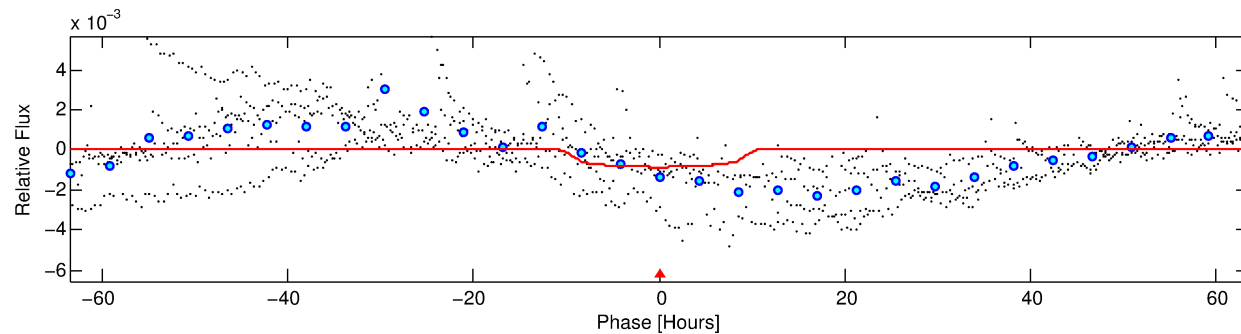
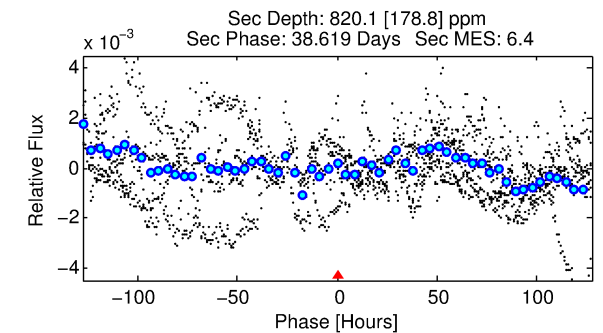
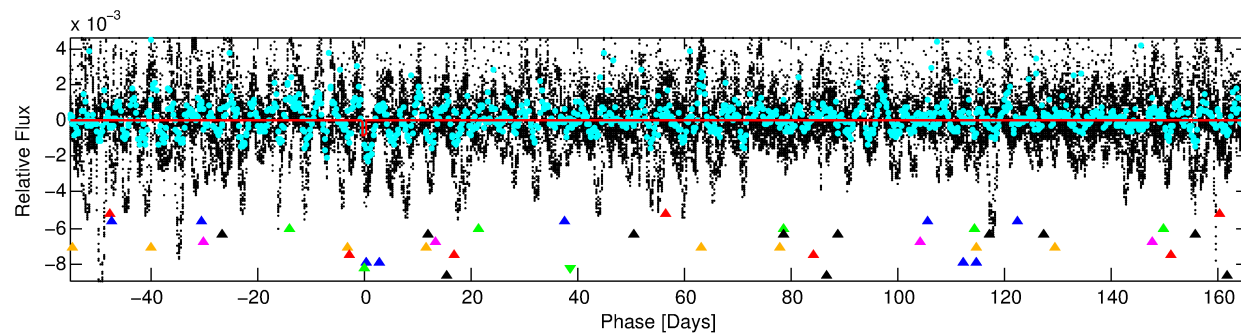
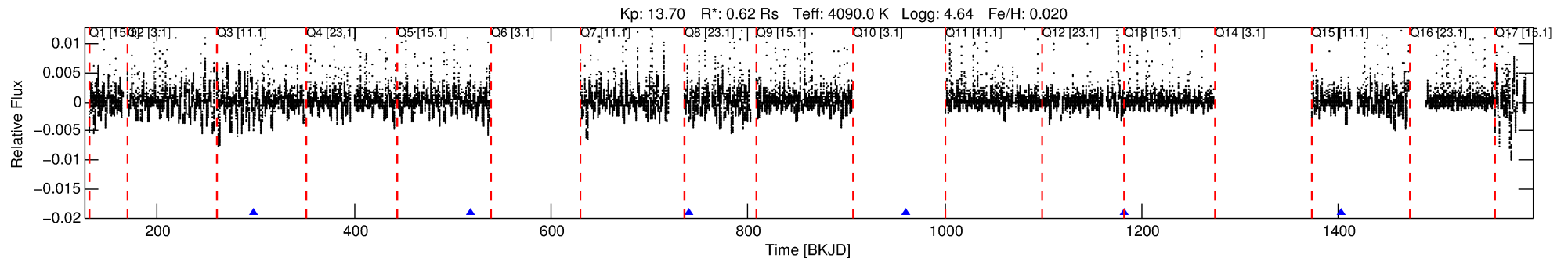
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004929016-09

No Significant Match Found

DV One-Page Summary

KIC: 4929016 Candidate: 9 of 10 Period: 221.144 d



DV Fit Results:

Period = 221.14353 [0.01397] d
Epoch = 297.6515 [0.0337] BKJD
Rp/R* = 0.0313 [0.0056]
a/R* = 44.53 [14.02]
b = 0.87 [0.09]
Seff = 0.26 [0.04]
Teq = 182 [7] K
Rp = 2.11 [0.44] Re
a = 0.6074 [0.0488] AU
Ag = 37281.13 [16215.14] [2.30σ]
Teff = 3910 [428] K [8.71σ]

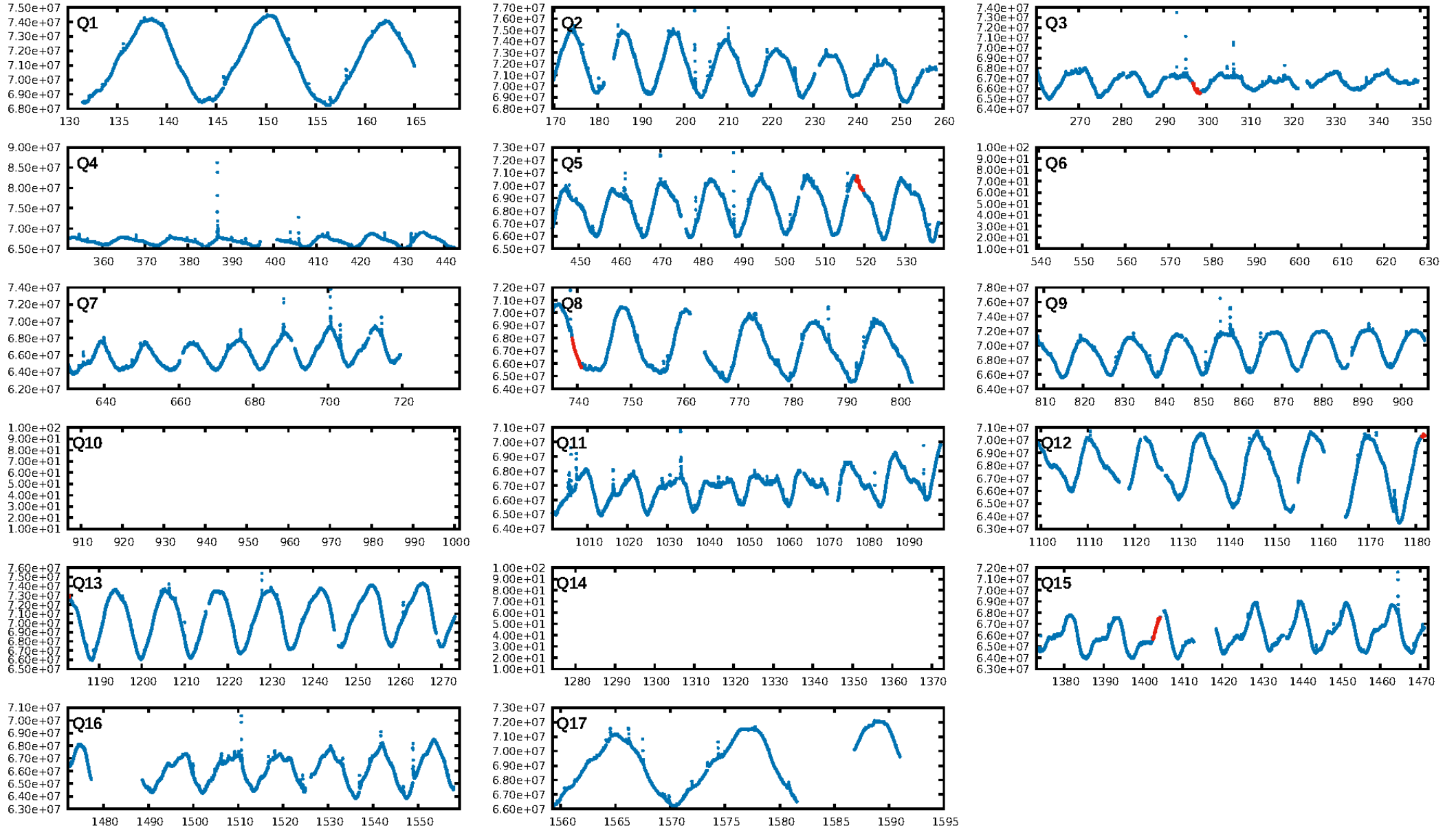
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [41.18σ]
LongPeriod-sig: 100.0% [72.60σ]
ModelChiSquare2-sig: 18.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -2.371
Centroid-sig: 1.4%
Centroid-so: 1.264 arcsec [2.68σ]
OotOffset-rm: 0.135 arcsec [1.06σ]
KicOffset-rm: 0.309 arcsec [3.36σ]
OotOffset-st: 0/1/1/0 [2]
KicOffset-st: 0/1/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 1.00 [3/3]

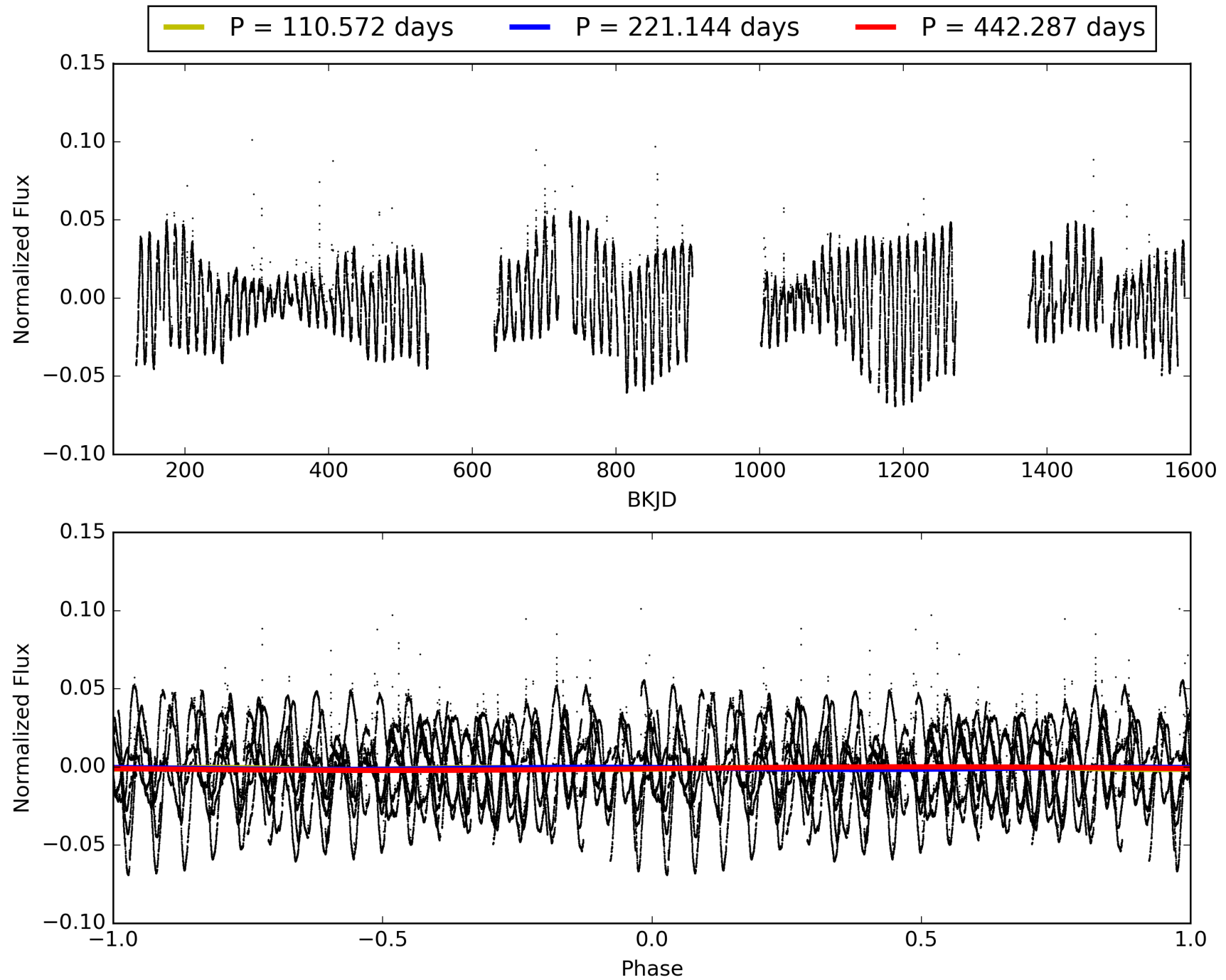
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 12:57:57 Z

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

TCE 004929016-09, PDC Light Curves

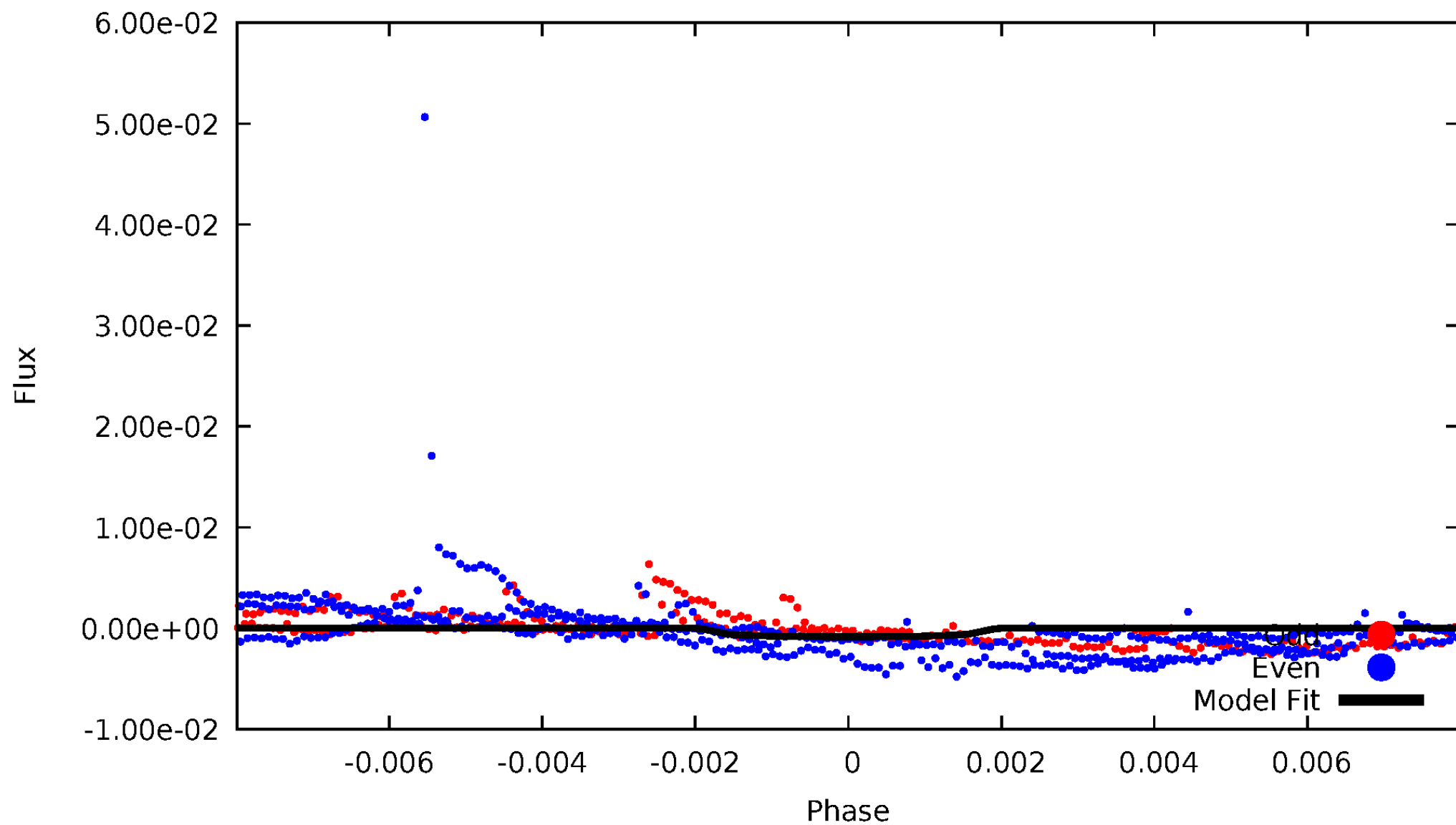


TCE 004929016-09



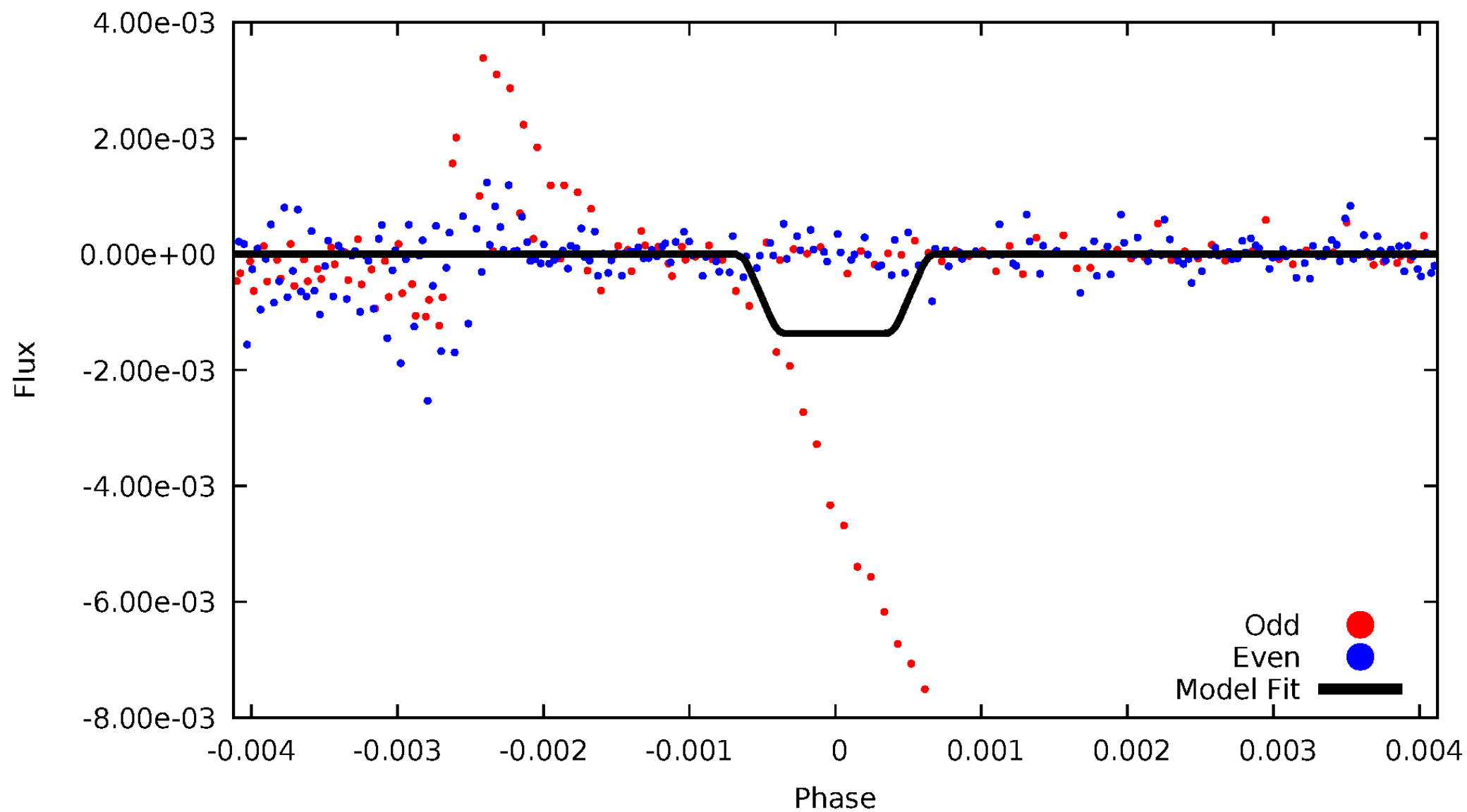
DV Odd/Even

TCE 004929016-09



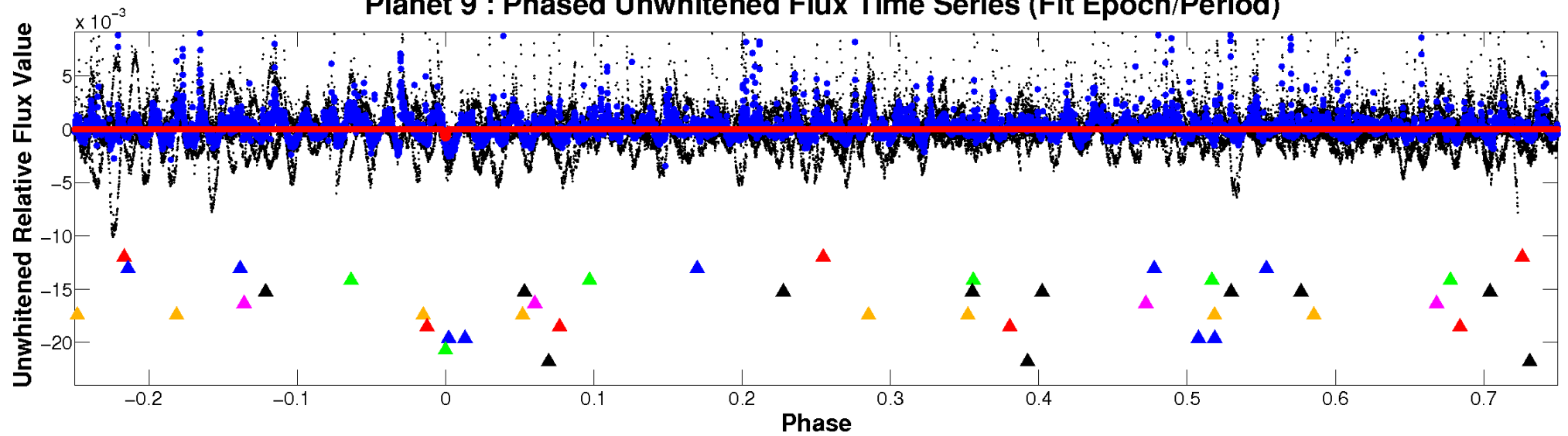
ALT Odd/Even

TCE 004929016-09

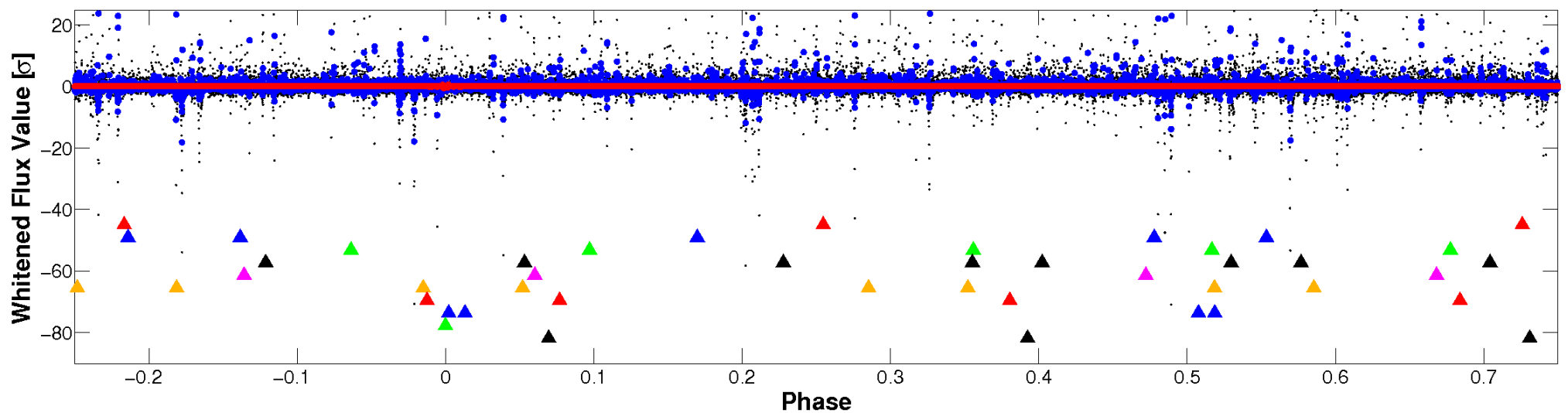


Non-Whitened Vs. Whitened Light Curve

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

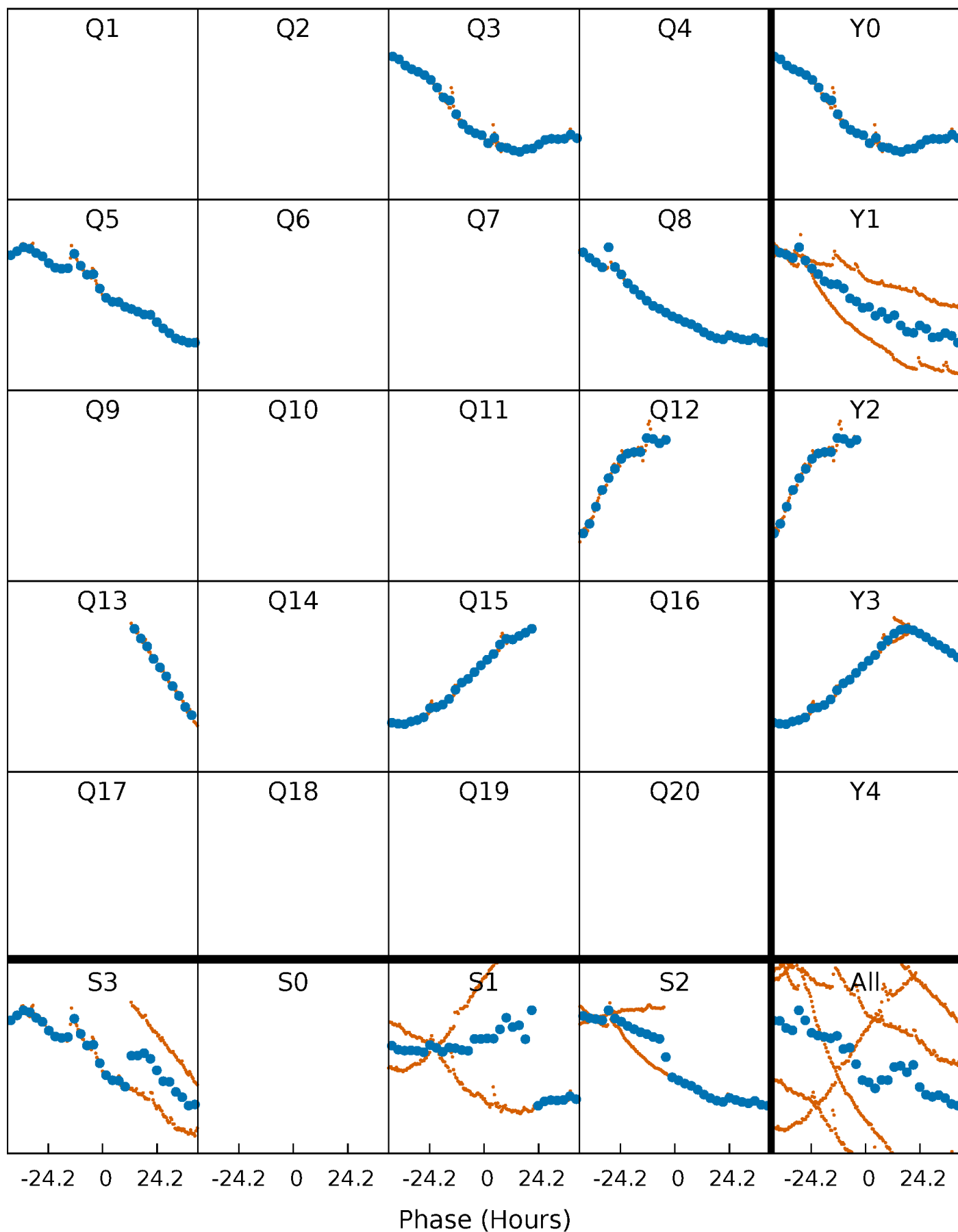


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



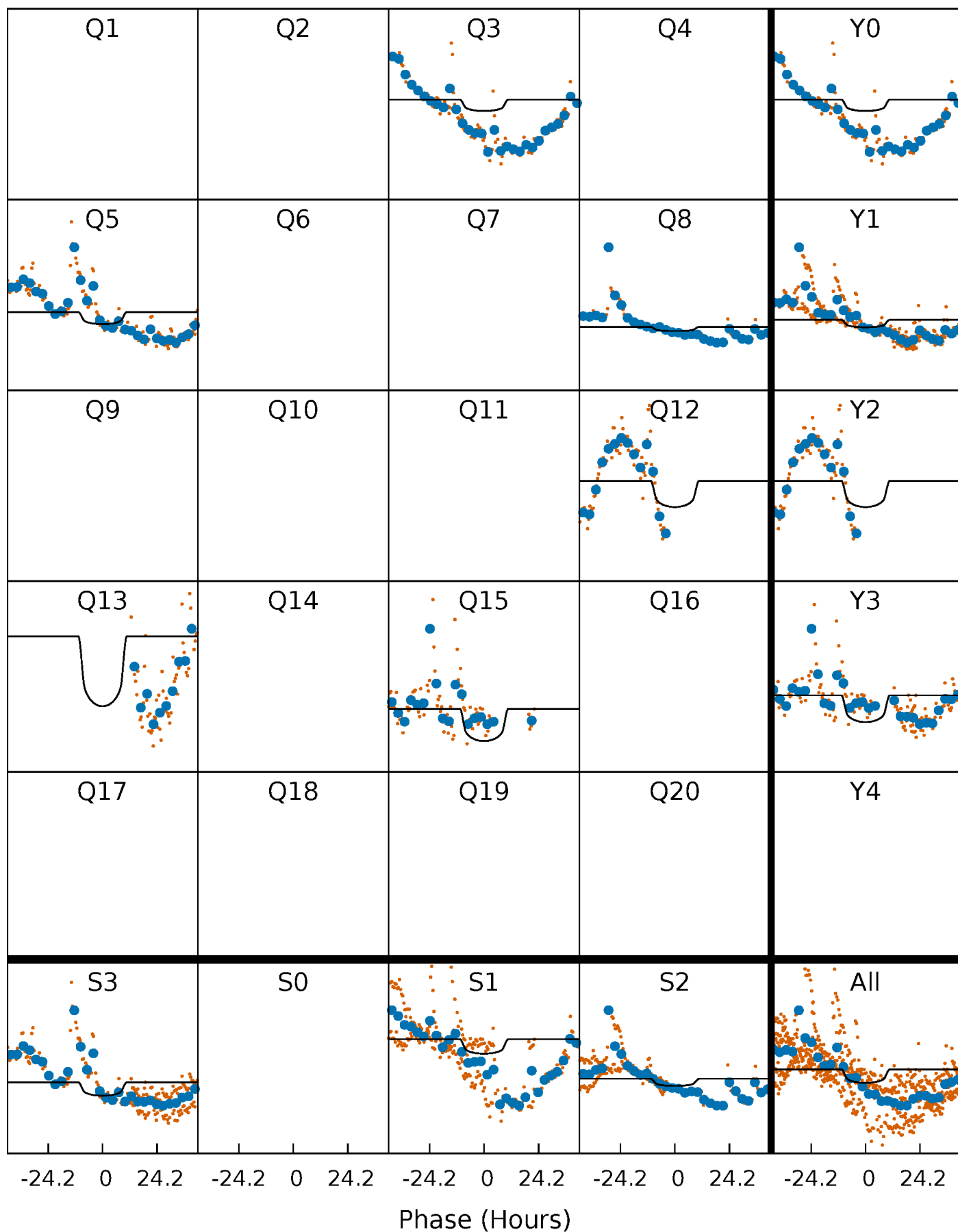
PDC Quarter-Phased Transit Curves

TCE 004929016-09 $P=221.143525$ Days $T_0=297.651451$ (BKJD)



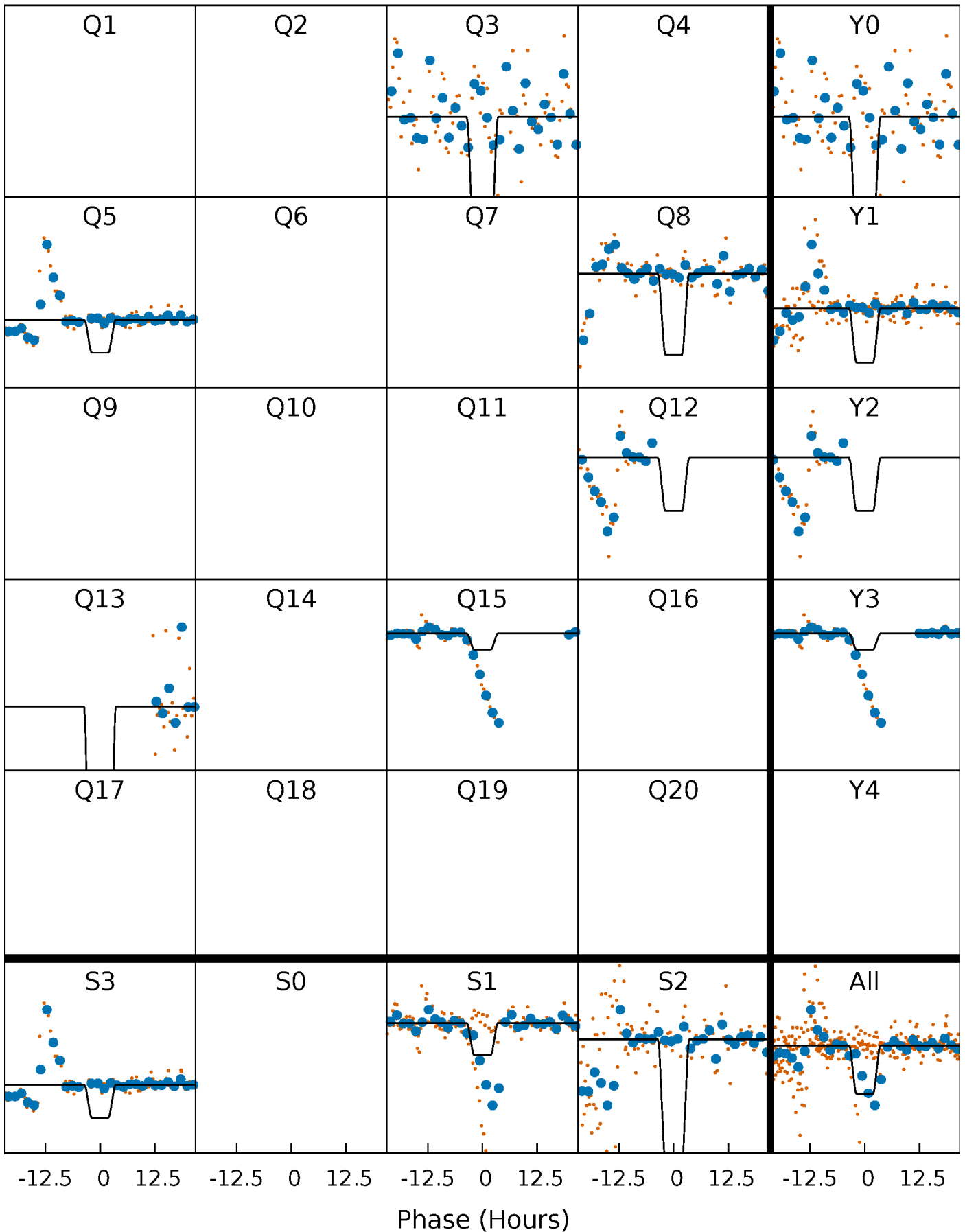
DV Quarter-Phased Transit Curves

TCE 004929016-09 $P=221.143525$ Days $T_0=297.651451$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

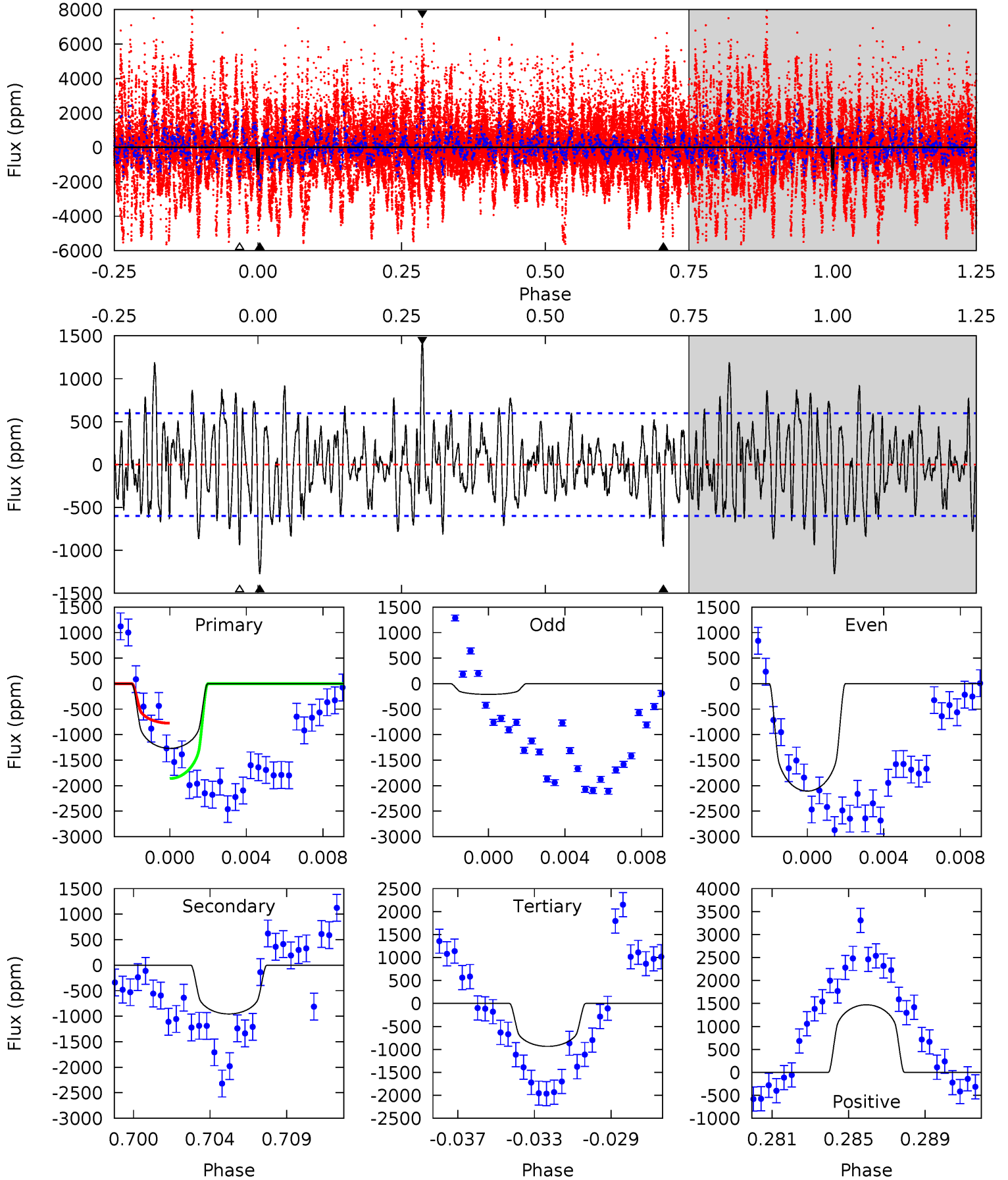
TCE 004929016-09 $P=221.159231$ Days $T_0=297.613647$ (BKJD)



DV Model-Shift Uniqueness Test

004929016-09, P = 221.143525 Days, E = 76.507926 Days

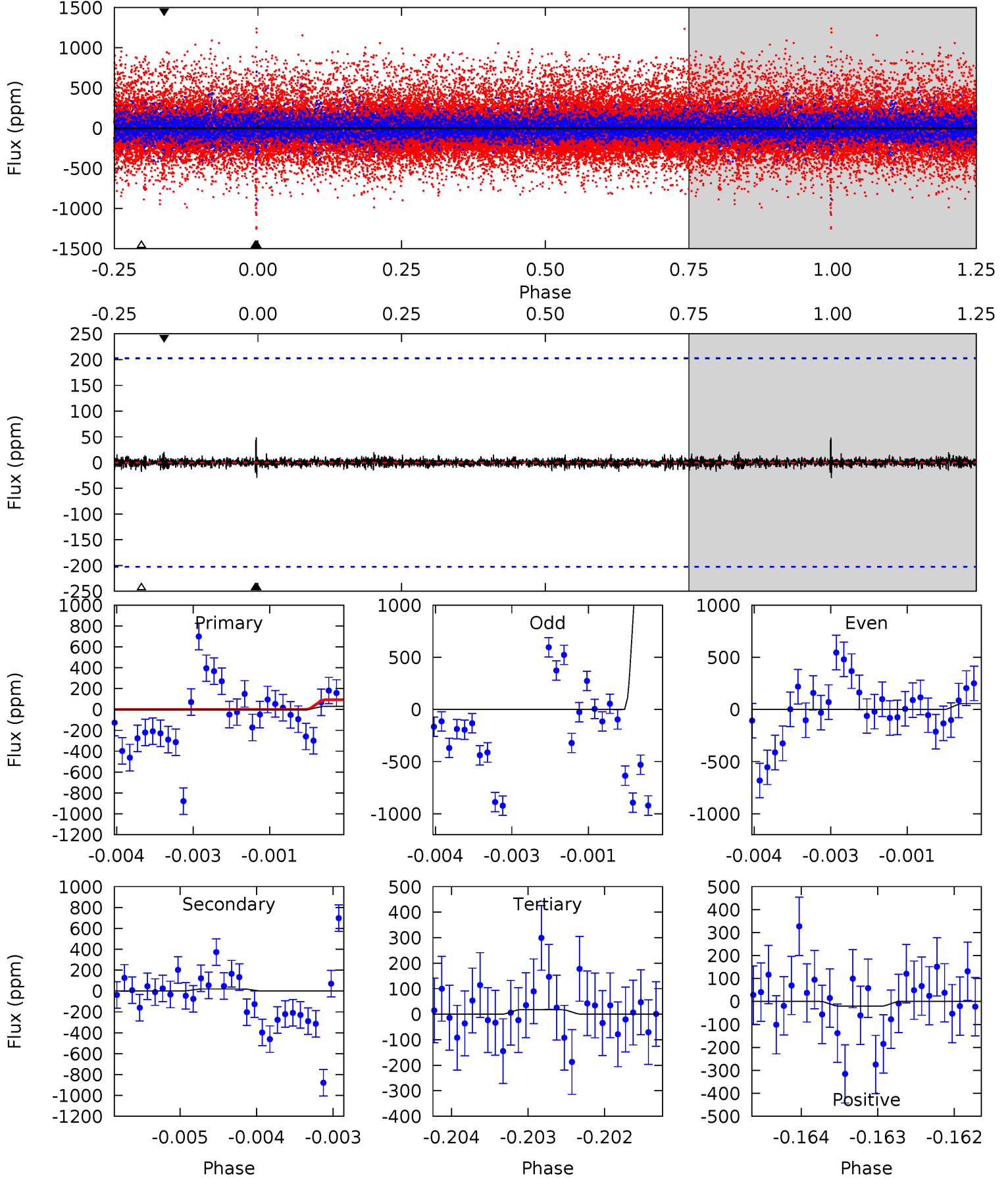
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	8.30	8.12	12.8	5.20	2.87	2.98	2.90	-1.75	0.18	-4.48	7.33	1.10	0.54	4.71



Alt Model-Shift Uniqueness Test

004929016-09, P = 221.159231 Days, E = 76.454416 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0.80	0.51	0.47	0.55	5.41	3.22	0.11	0.33	0.25	0.05	-0.04	28.6	-1892	0.62	0



Stellar Parameters For KIC 004929016

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	4090^{+123}_{-123}	$4.642^{+0.056}_{-0.018}$	$0.020^{+0.250}_{-0.300}$	$0.618^{+0.034}_{-0.063}$	$0.611^{+0.051}_{-0.057}$	$3.641^{+0.913}_{-0.311}$
	+3%/-3%	+1%/-0%	+1250%/-1500%	+6%/-10%	+8%/-9%	+25%/-9%
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 004929016-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-955 ± 115	$2.10^{+0.41}_{-0.42}$	252^{+9}_{-9}	4057^{+371}_{-249}	44233^{+23164}_{-13382}
Alt.	-19 ± 37	$2.43^{+0.45}_{-0.35}$	252^{+9}_{-9}	2258^{+316}_{-4488}	714^{+1338}_{-1312}

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

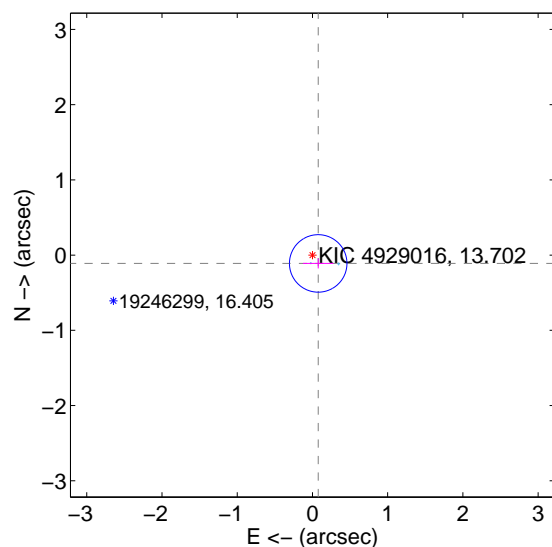
Supplemental centroid analysis for 004929016-09. Kepler magnitude: 13.70. Transit SNR 4.58

There are 2 quarters with good PRF difference image offsets

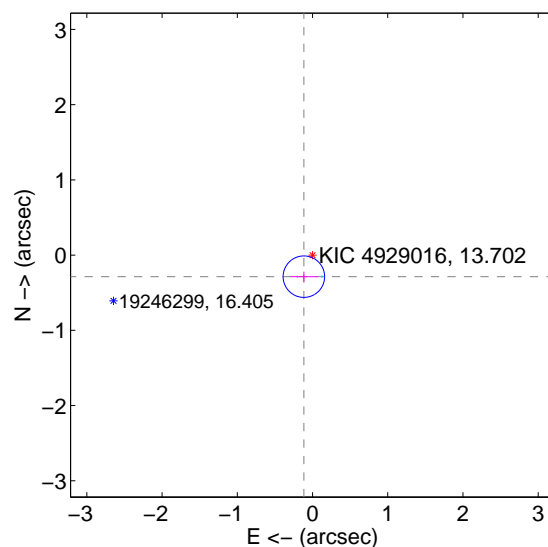
The direct PRF centroid is offset from the target star catalog position by about 0.26 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.135 ± 0.127	1.06	-0.077 ± 0.202	-0.111 ± 0.067
PRF-fit source offset from KIC position	0.309 ± 0.092	3.36	0.115 ± 0.182	-0.287 ± 0.067
photometric centroid source offset	1.26 ± 0.47	2.68	1.15 ± 0.47	-0.54 ± 0.47

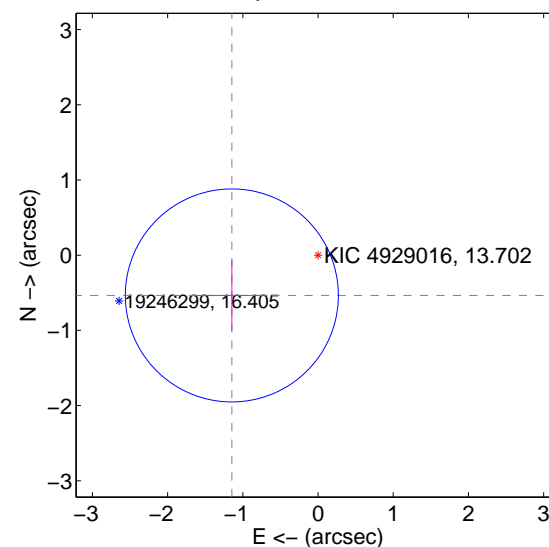
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

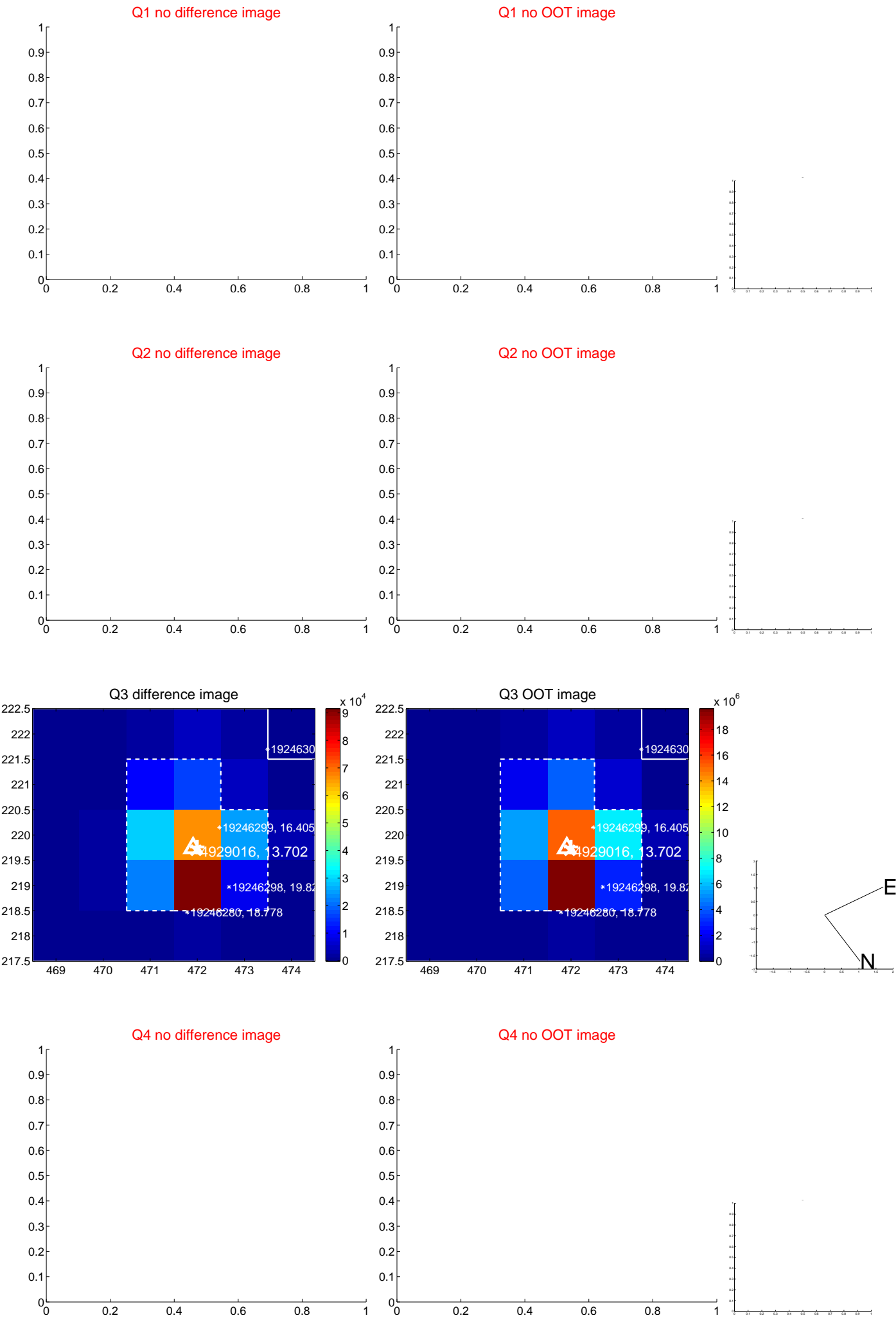


offset from photometric centroids

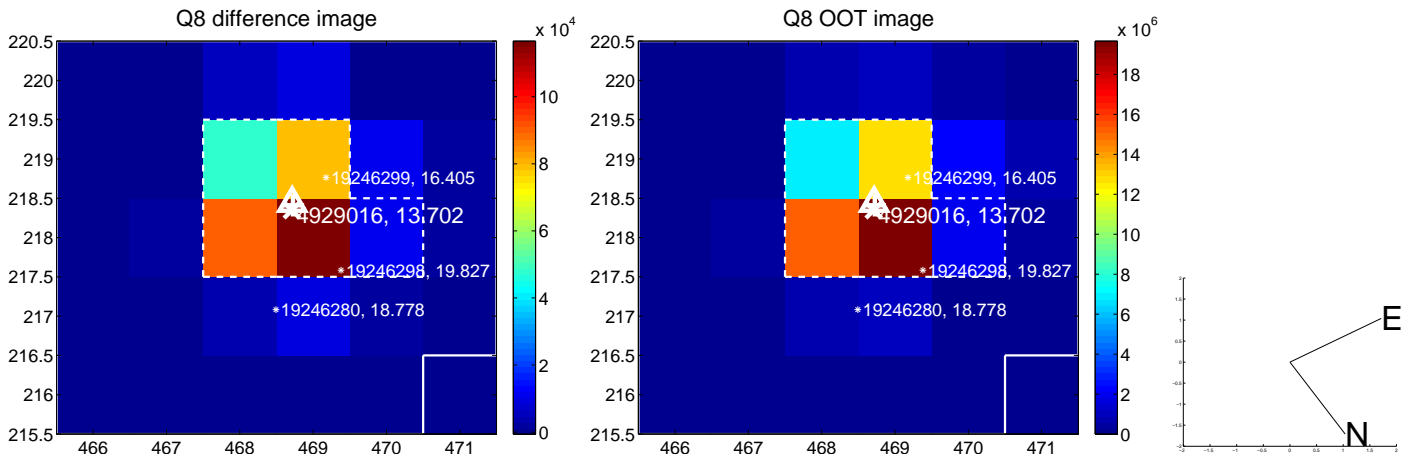
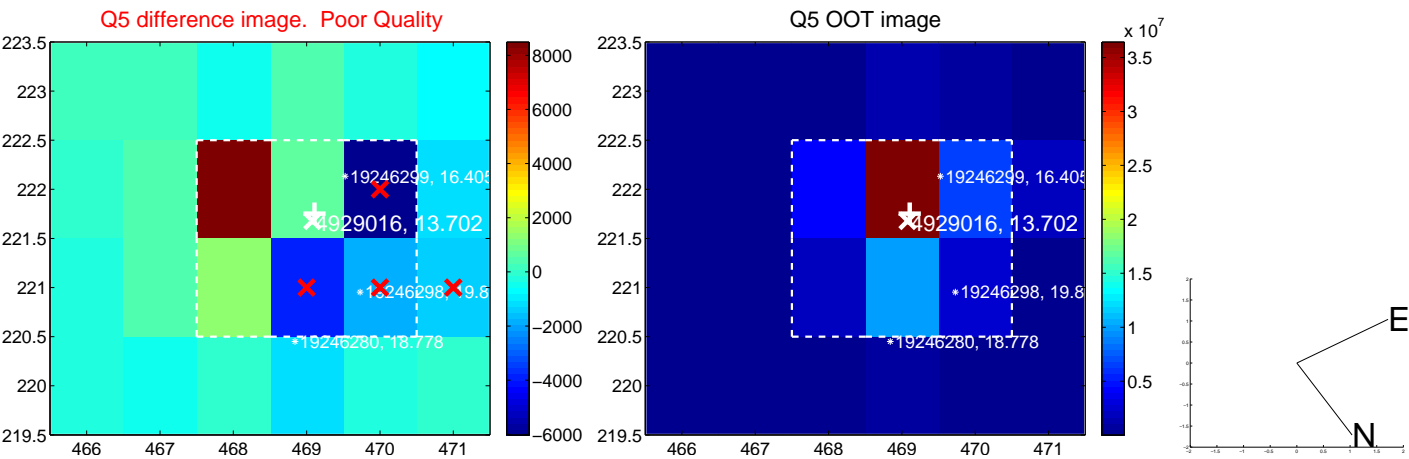


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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



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



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



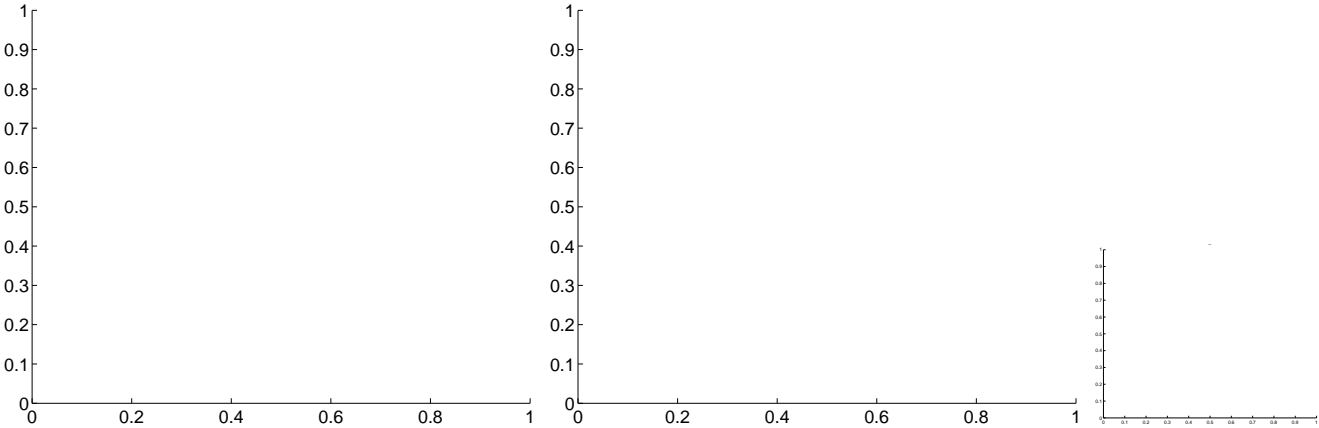
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



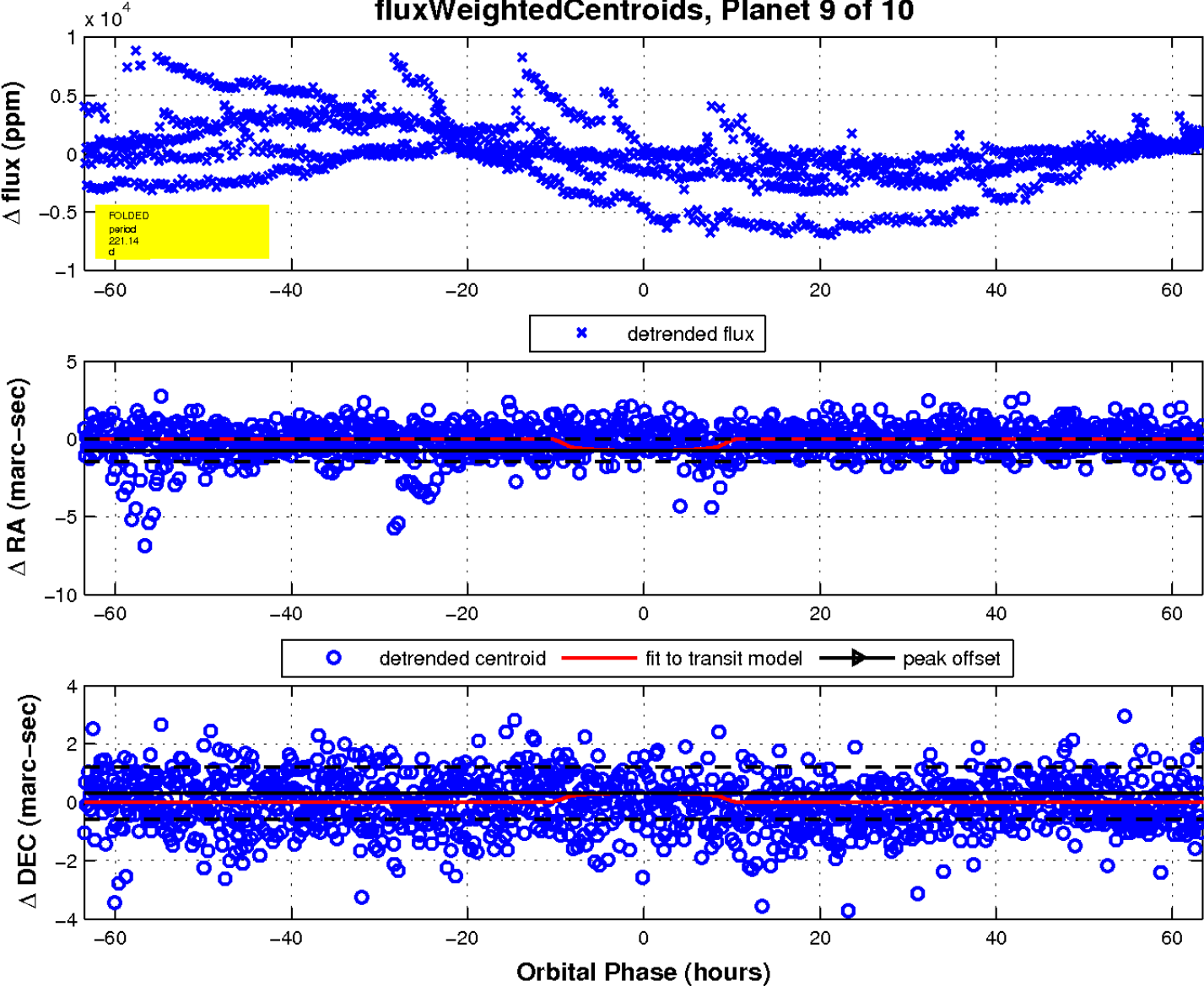
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

Q17 no difference image

Q17 no OOT image



fluxWeightedCentroids, Planet 9 of 10



UKIRT Image

Declination

