

KIC 004846150

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})
004846150-01	OBS	No	3.656885	134.105674	72.2	14.049	7.7	7.8	0.84	5018	0.71	215.29
004846150-02	OBS	No	363.847918	353.900675	1032.3	1.171	17.9	4.6	0.84	5018	3.10	0.47
004846150-04	OBS	No	334.301795	199.952230	607.6	12.605	8.3	6.8	0.84	5018	2.11	0.52
004846150-05	OBS	No	215.030176	283.315510	736.7	4.201	7.5	7.4	0.84	5018	2.74	0.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004846150-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
004846150-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004846150-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004846150-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—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.

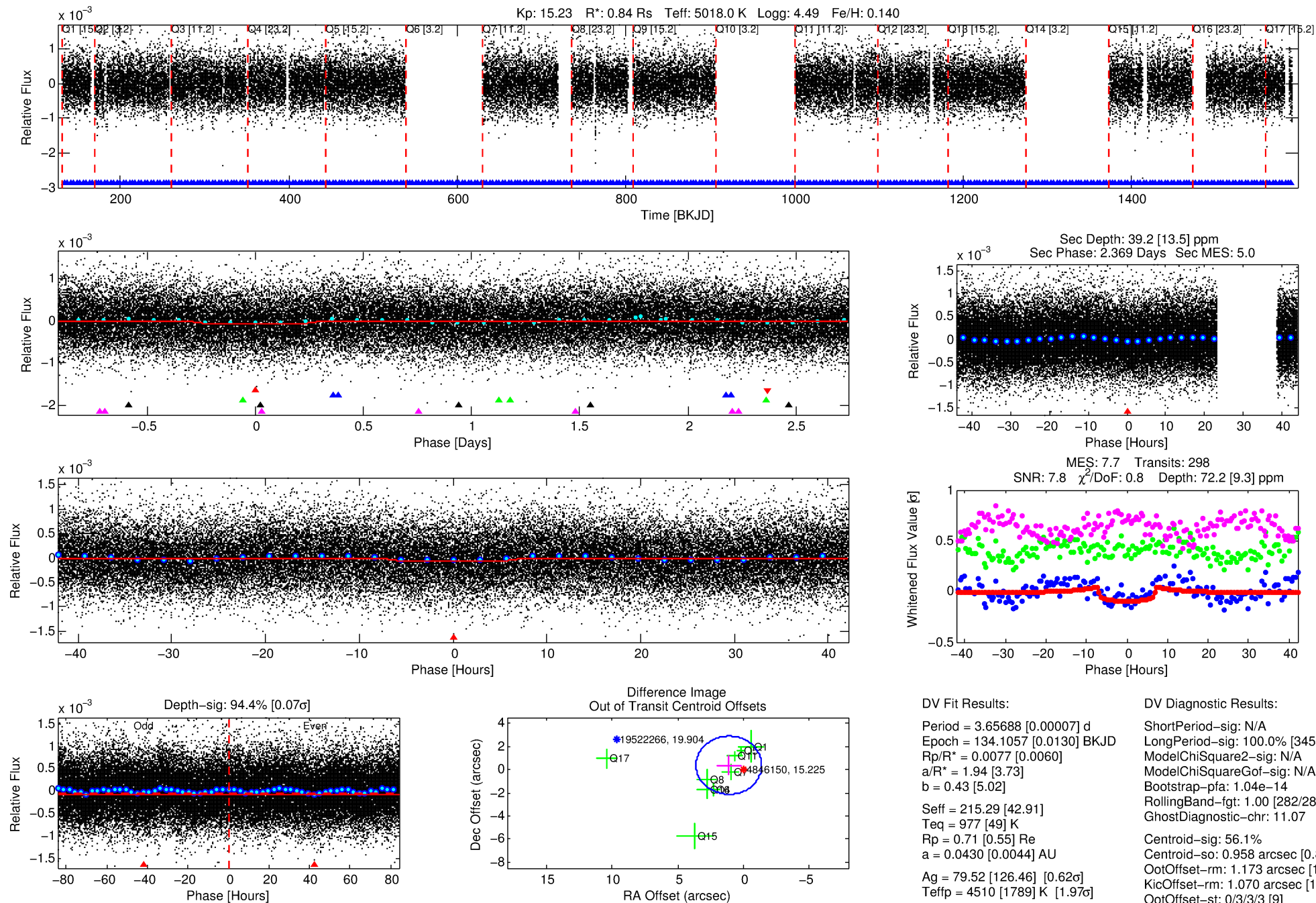
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004846150-01

No Significant Match Found

DV One-Page Summary

KIC: 4846150 Candidate: 1 of 5 Period: 3.657 d



DV Fit Results:

Period = 3.65688 [0.00007] d
Epoch = 134.1057 [0.0130] BKJD
Rp/R* = 0.0077 [0.0060]
a/R* = 1.94 [3.73]
b = 0.43 [5.02]
Seff = 215.29 [42.91]
Teff = 977 [49] K
Rp = 0.71 [0.55] Re
a = 0.0430 [0.0044] AU
Ag = 79.52 [126.46] [0.62 σ]
Teffp = 4510 [1789] K [1.97 σ]

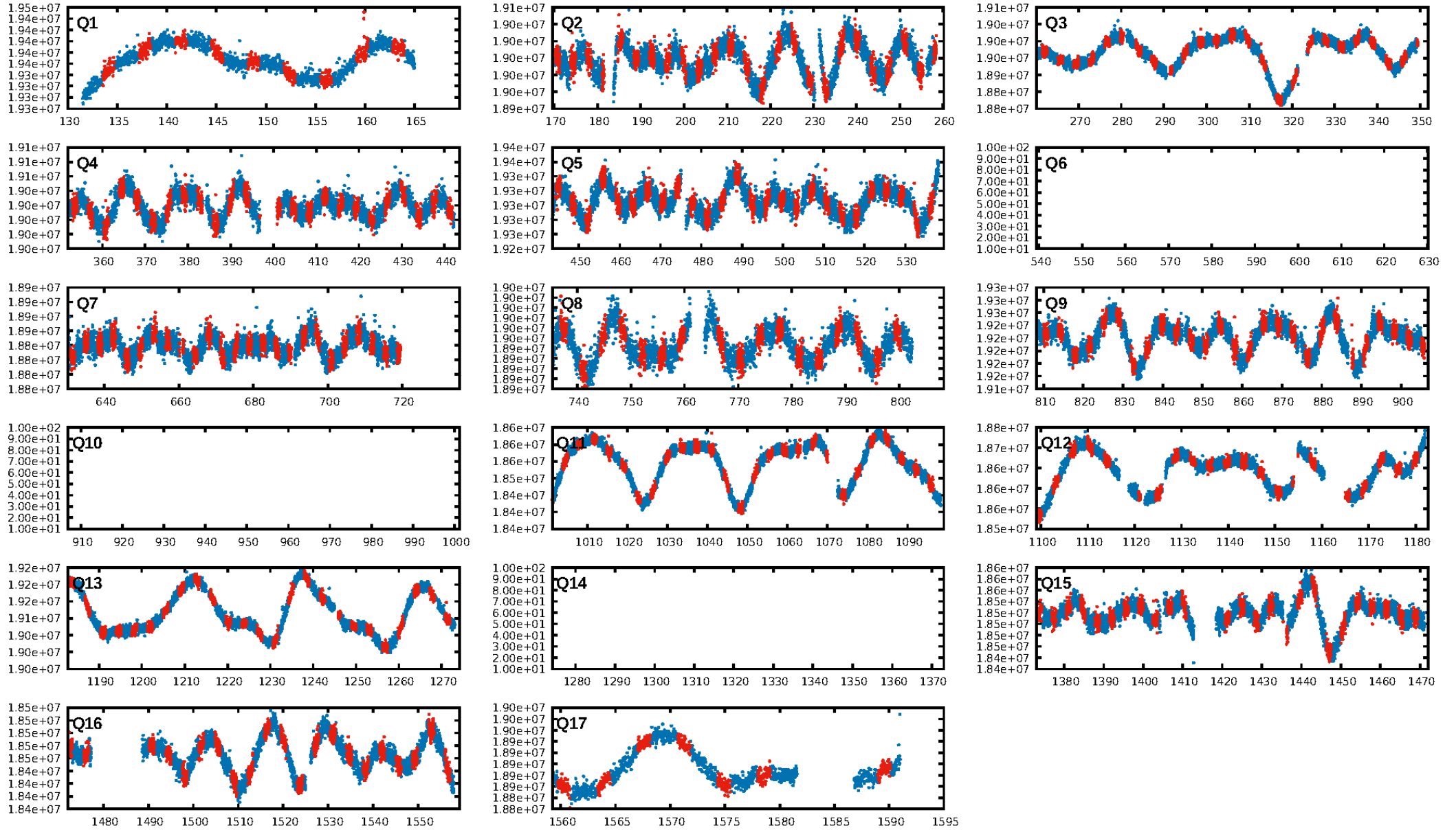
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [345.96 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.04e-14
RollingBand-fgt: 1.00 [282/282]
GhostDiagnostic-chr: 11.07
Centroid-sig: 56.1%
Centroid-so: 0.958 arcsec [0.81 σ]
OotOffset-rm: 1.173 arcsec [1.40 σ]
KicOffset-rm: 1.070 arcsec [1.05 σ]
OotOffset-st: 0/3/3/3 [9]
KicOffset-st: 0/3/3/3 [9]
DiffImageQuality-fgm: 0.44 [4/9]
DiffImageOverlap-fno: 1.00 [14/14]

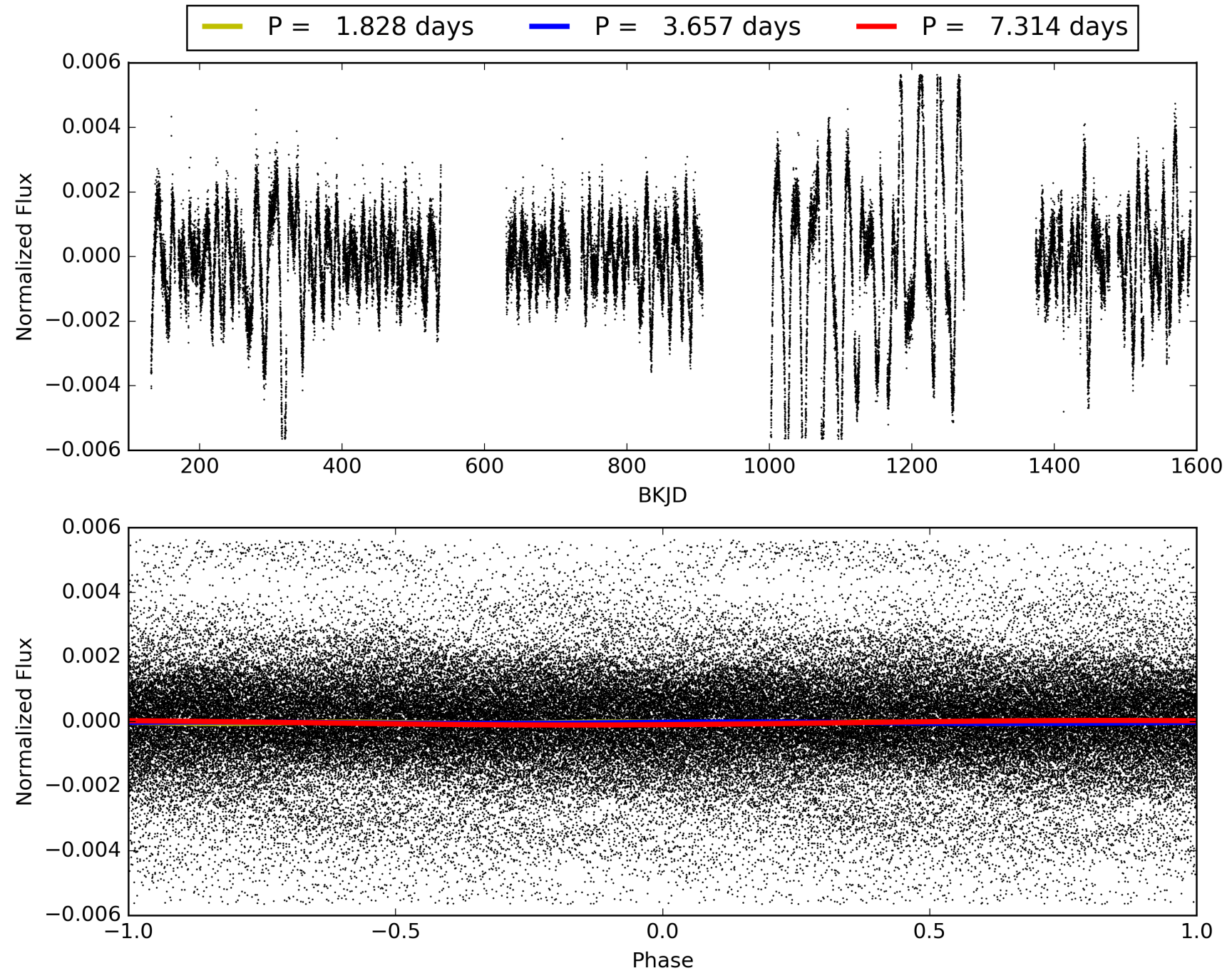
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:04:21 Z

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

TCE 004846150-01, PDC Light Curves

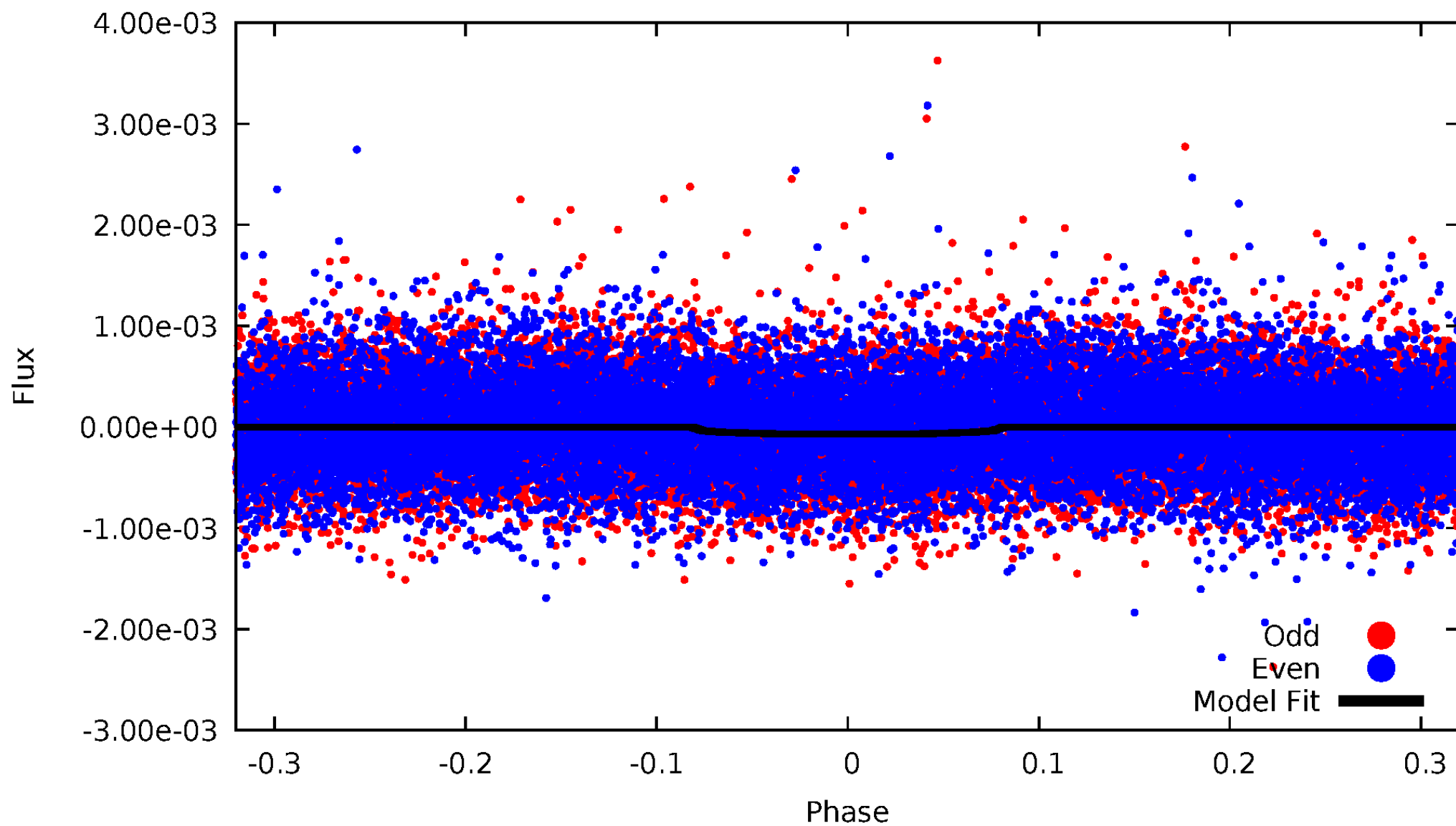


TCE 004846150-01



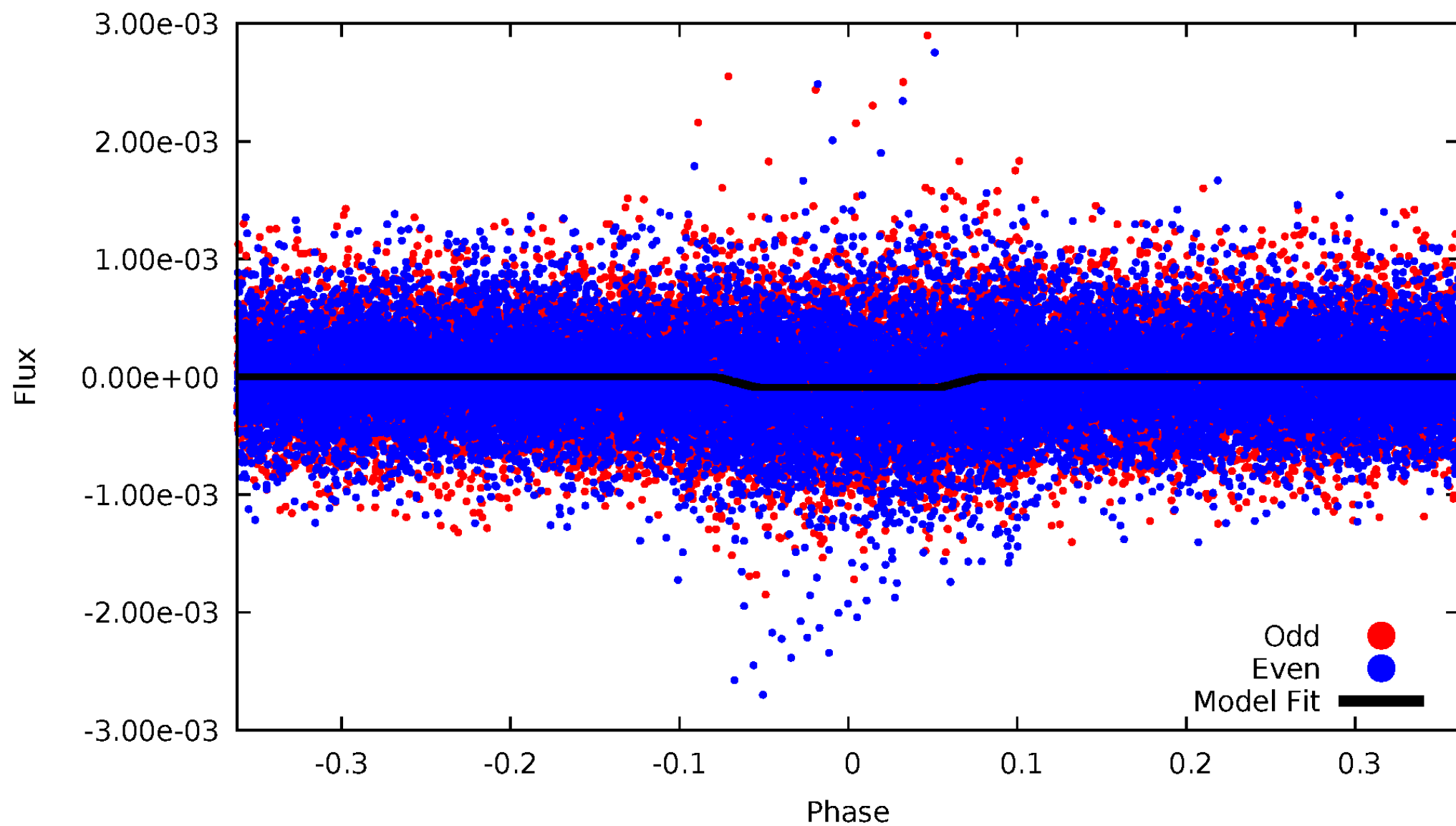
DV Odd/Even

TCE 004846150-01

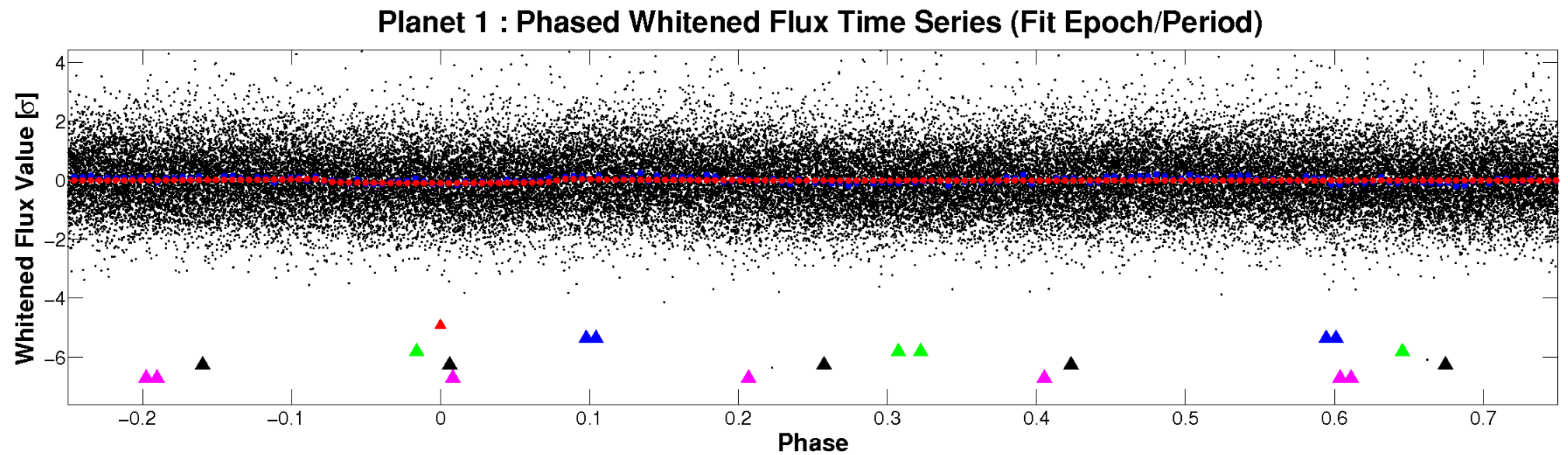
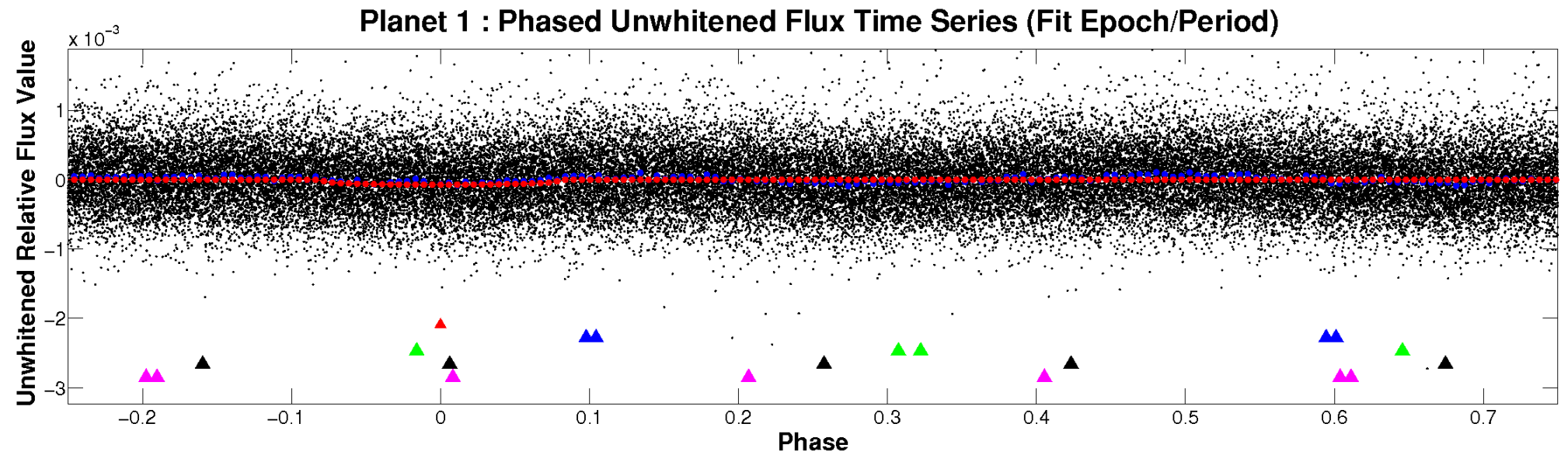


ALT Odd/Even

TCE 004846150-01

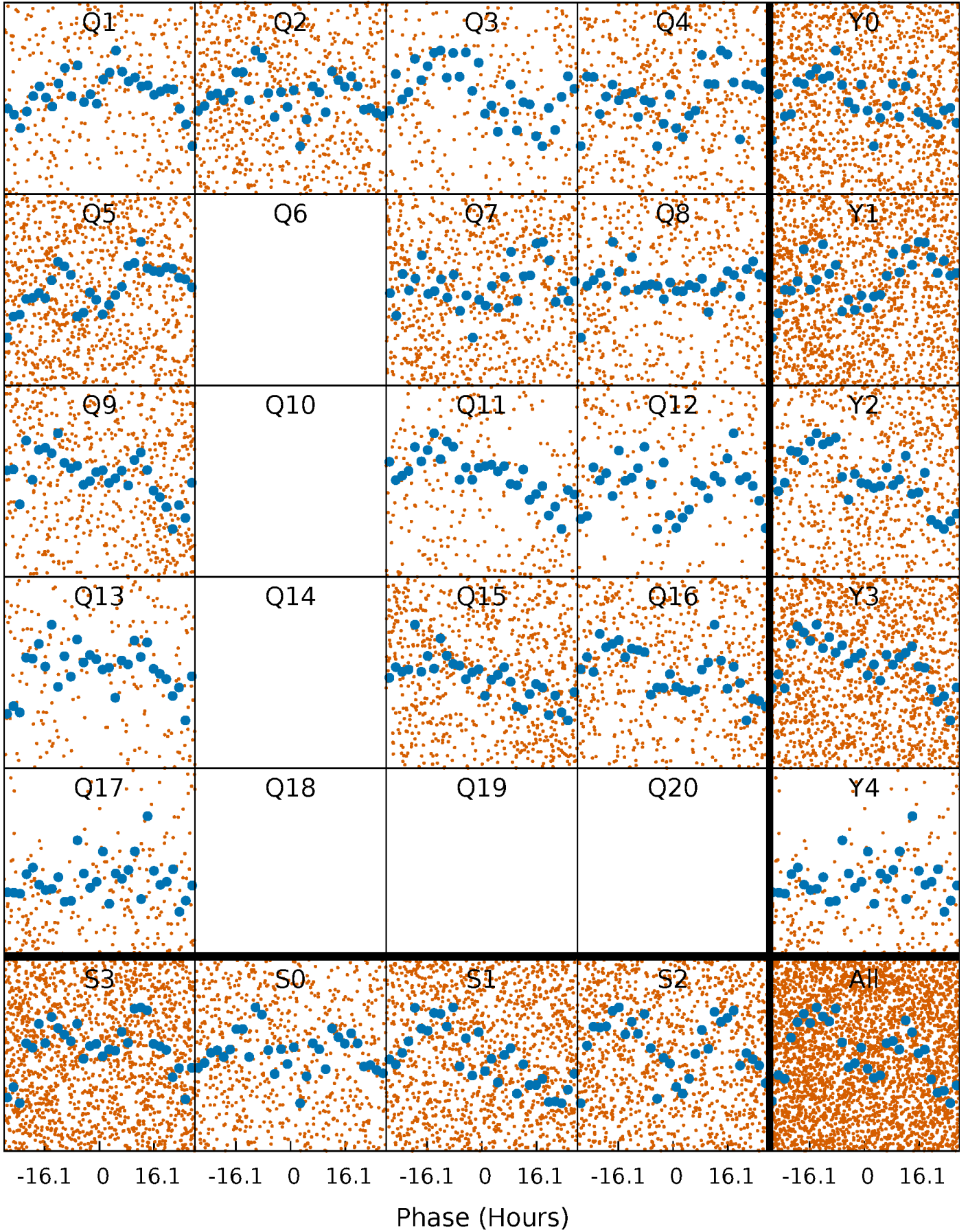


Non-Whitened Vs. Whitened Light Curve



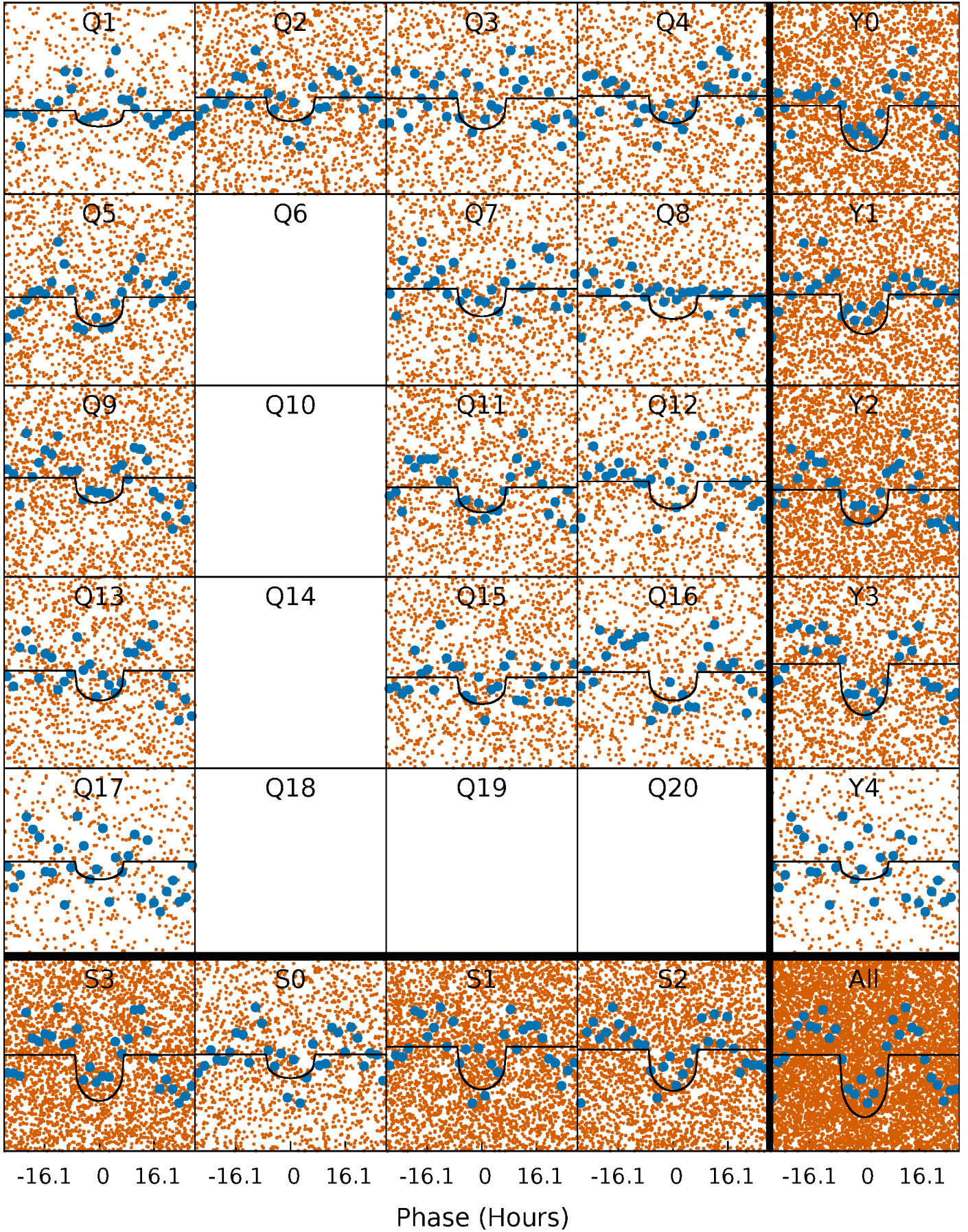
PDC Quarter-Phased Transit Curves

TCE 004846150-01 P= 3.656885 Days $T_0=134.105674$ (BKJD)



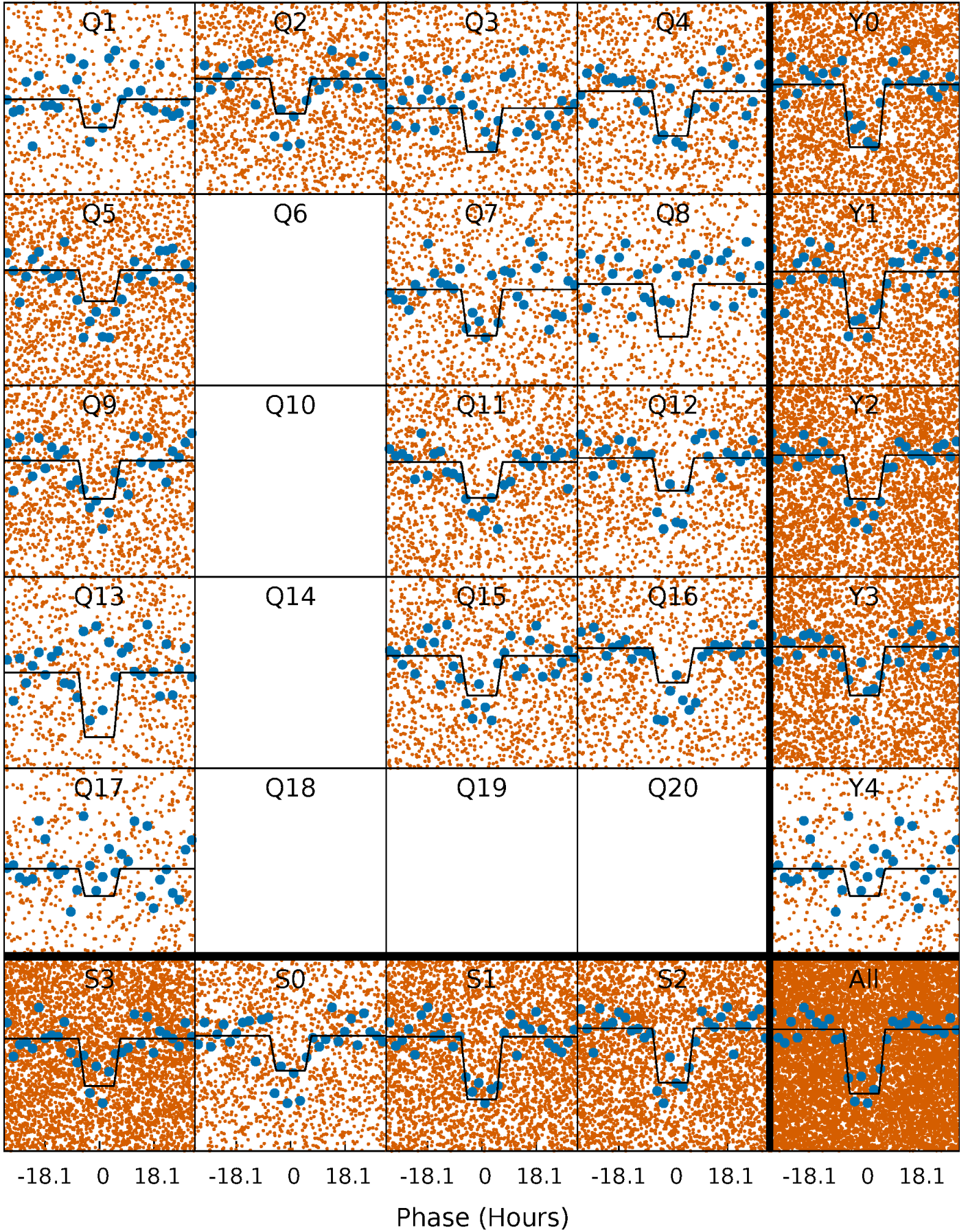
DV Quarter-Phased Transit Curves

TCE 004846150-01 P= 3.656885 Days $T_0=134.105674$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

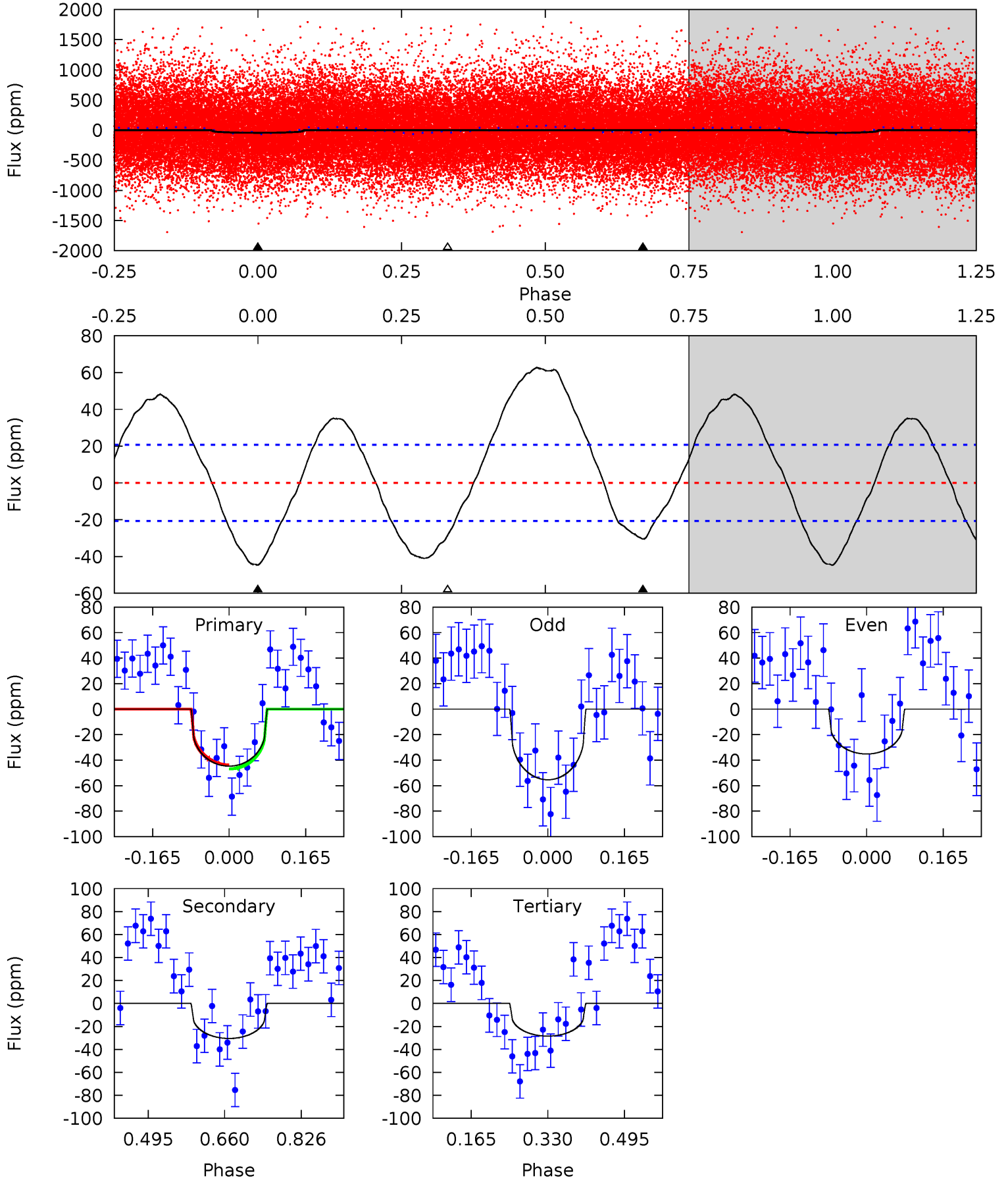
TCE 004846150-01 P= 3.656812 Days $T_0=134.086181$ (BKJD)



DV Model-Shift Uniqueness Test

004846150-01, P = 3.656885 Days, E = 130.448789 Days

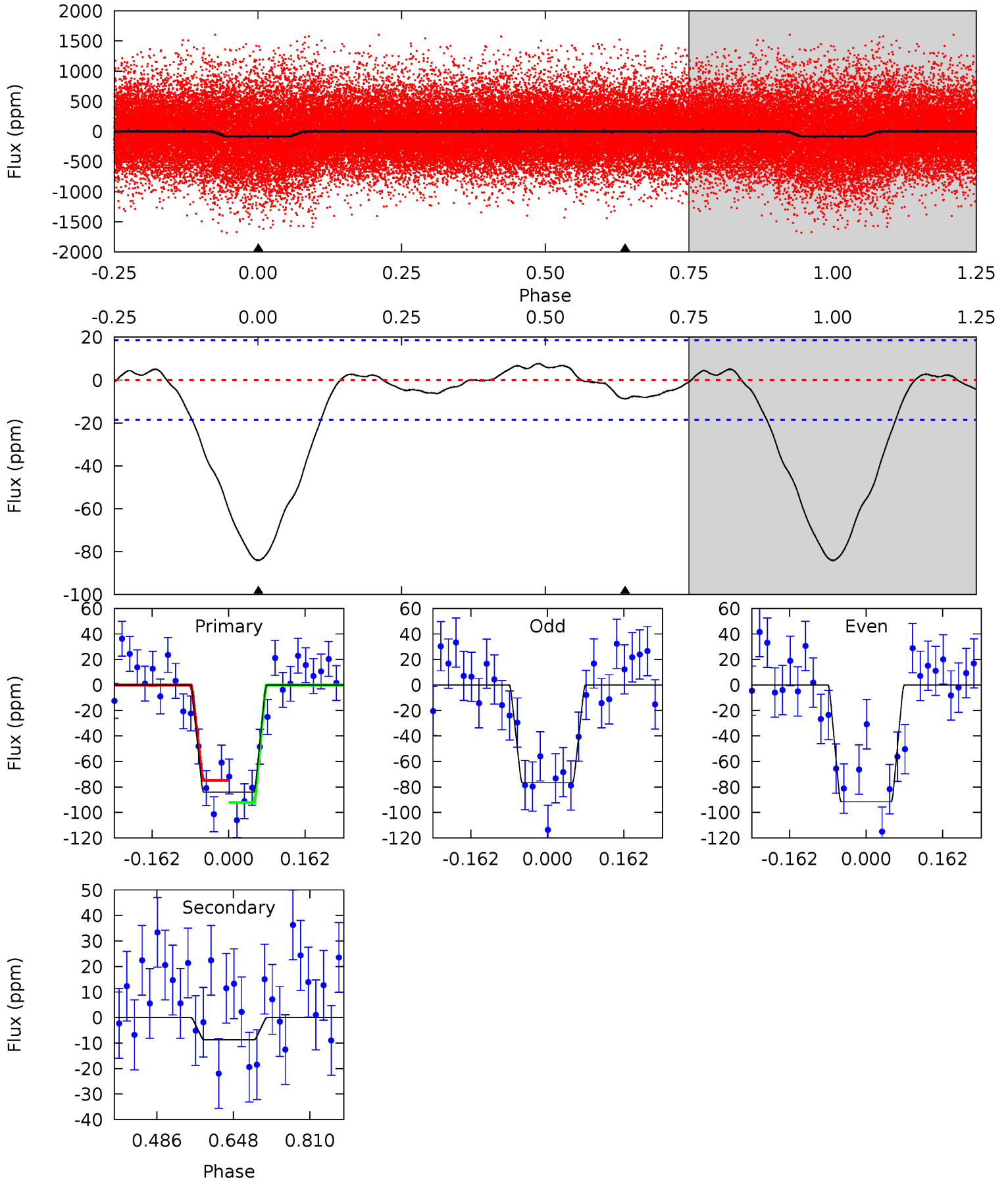
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.61	6.56	6.12	0	4.46	1.39	7.51	3.49	9.61	0.44	6.56	2.19	0.98	0.58	0.34



Alt Model-Shift Uniqueness Test

004846150-01, P = 3.656812 Days, E = 130.429369 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
20.2	2.09	0	0	4.46	1.40	0.92	20.2	20.2	2.09	2.09	1.78	0.97	0.08	2.07



Stellar Parameters For KIC 004846150

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5018^{+149}_{-149}	$4.492^{+0.093}_{-0.085}$	$0.140^{+0.250}_{-0.300}$	$0.838^{+0.083}_{-0.091}$	$0.795^{+0.080}_{-0.055}$	$1.899^{+0.696}_{-0.466}$
	+3%/-3%	+2%/-2%	+179%/-214%	+10%/-11%	+10%/-7%	+37%/-25%
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 004846150-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-30 ± 5	$0.76^{+0.49}_{-0.43}$	1366^{+62}_{-62}	4298^{+1760}_{-752}	56^{+228}_{-36}
Alt.	-9 ± 4	$0.88^{+0.51}_{-0.50}$	1367^{+49}_{-60}	3271^{+1177}_{-521}	11^{+57}_{-7}

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 $A_{obs} \gg 1.0$

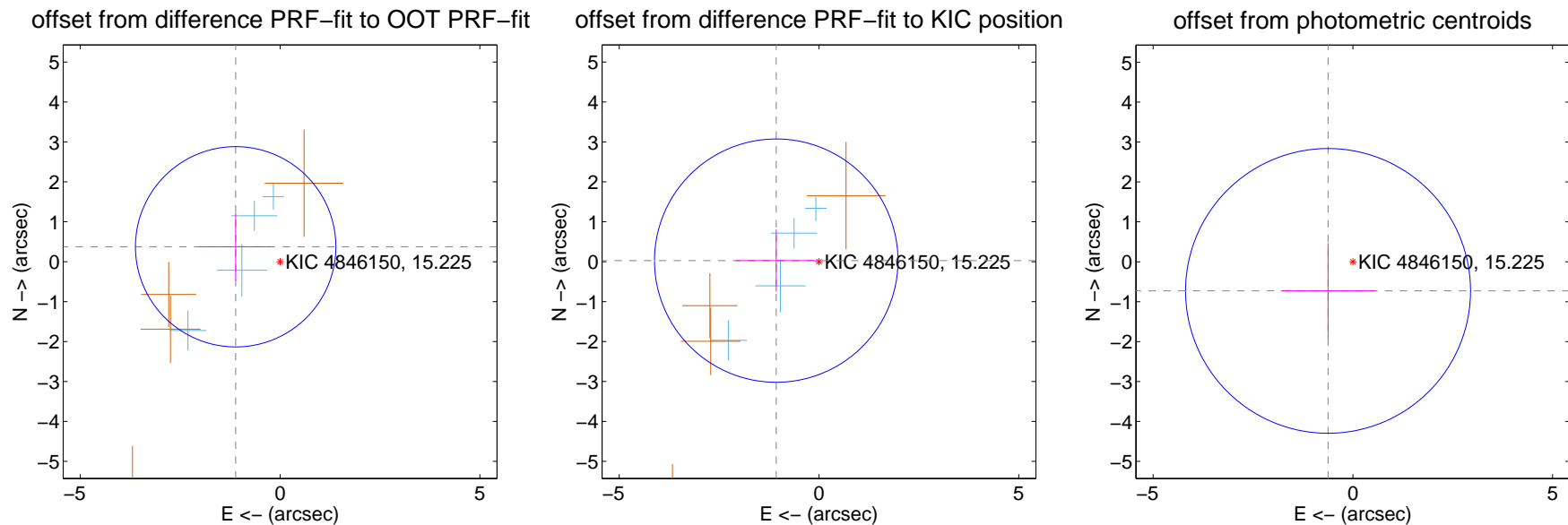
DV Centroid Data

Supplemental centroid analysis for 004846150-01. Kepler magnitude: 15.22. Transit SNR 7.77

There are 4 quarters with good PRF difference image offsets

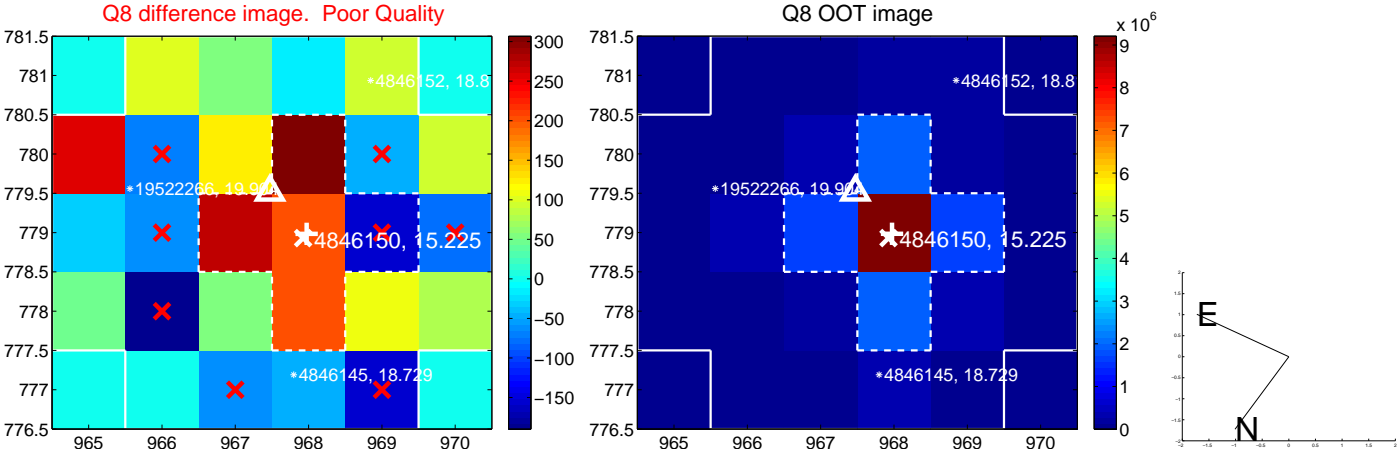
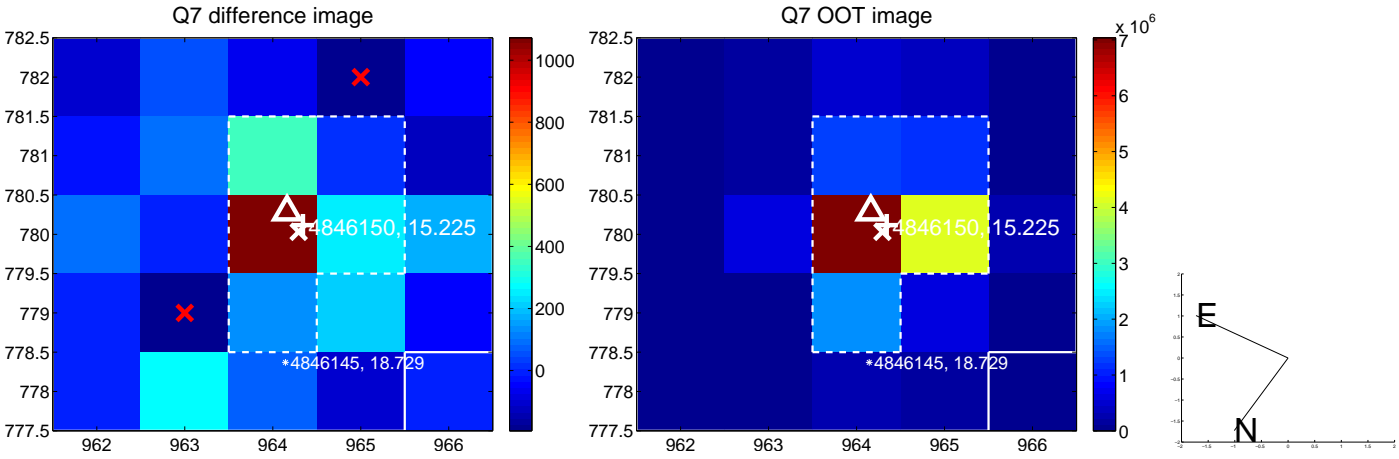
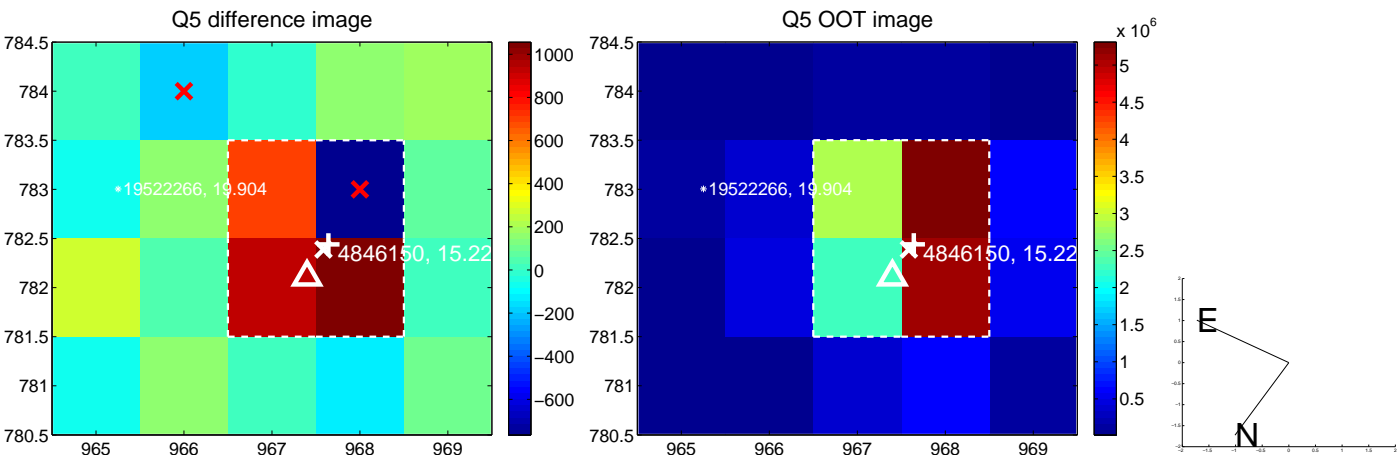
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.173 ± 0.836	1.40	1.112 ± 0.903	0.373 ± 0.849
PRF-fit source offset from KIC position	1.070 ± 1.015	1.05	1.070 ± 1.017	0.027 ± 0.775
photometric centroid source offset	0.96 ± 1.19	0.81	0.62 ± 1.17	-0.73 ± 1.20

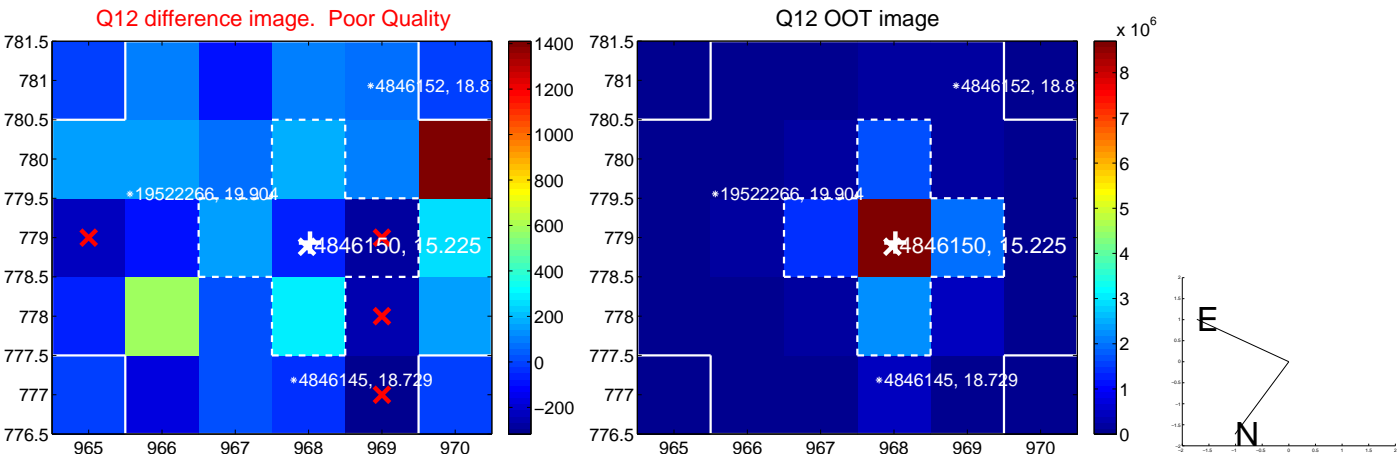
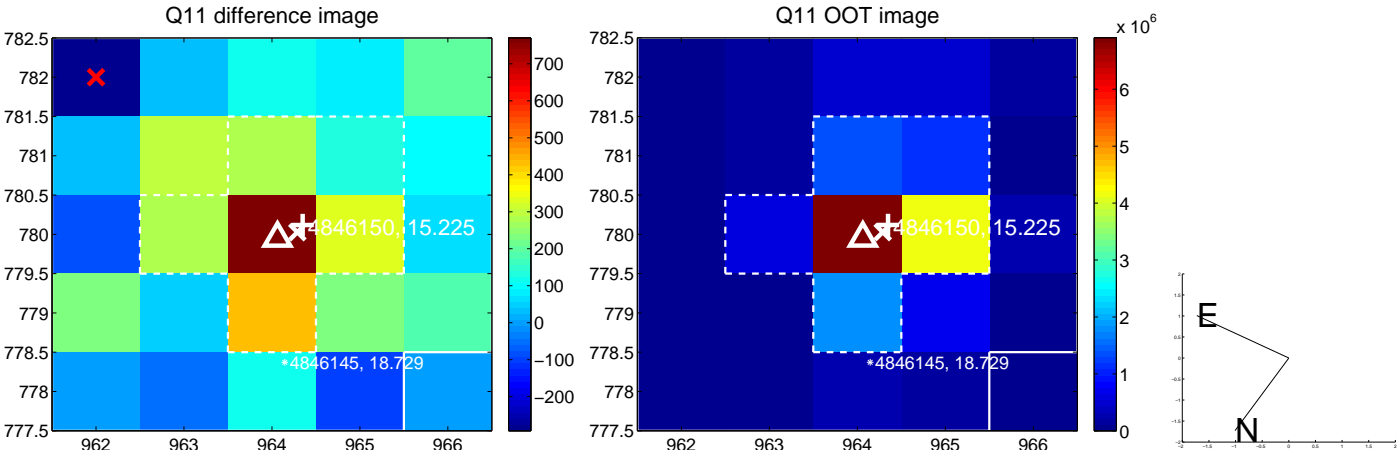
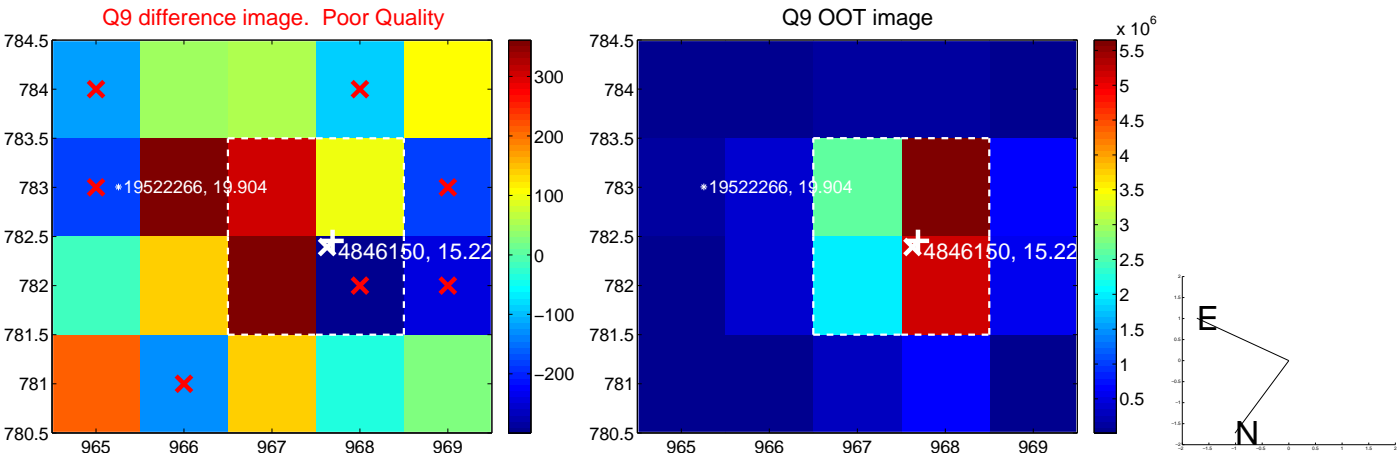


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

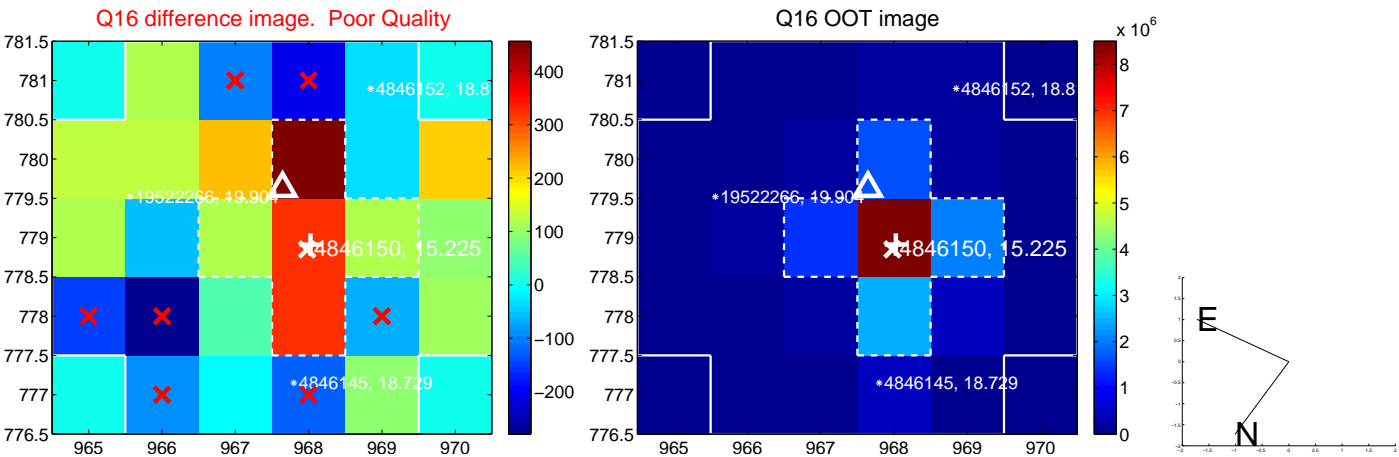
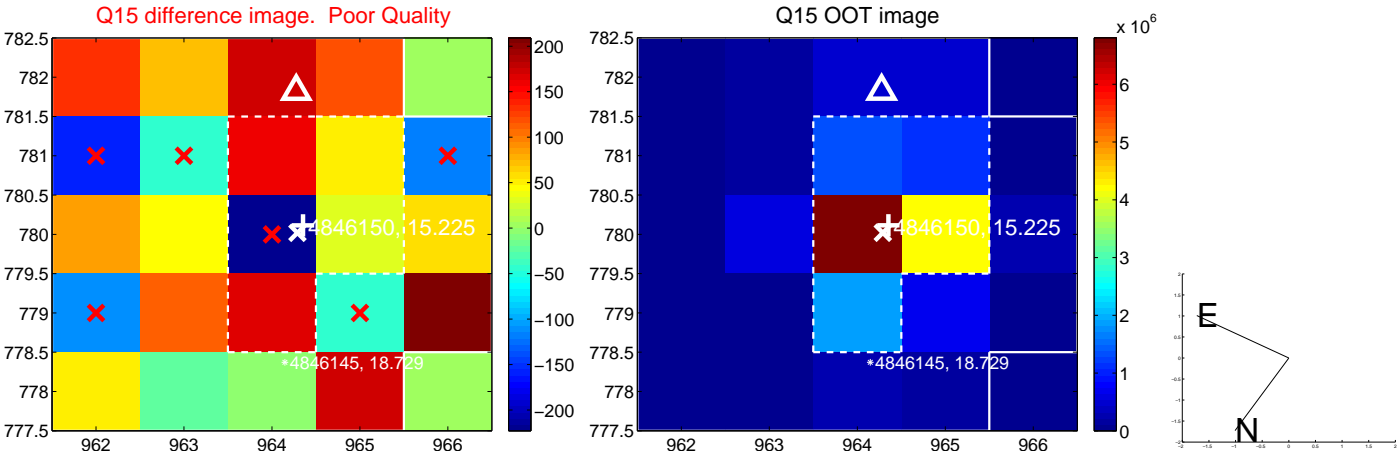
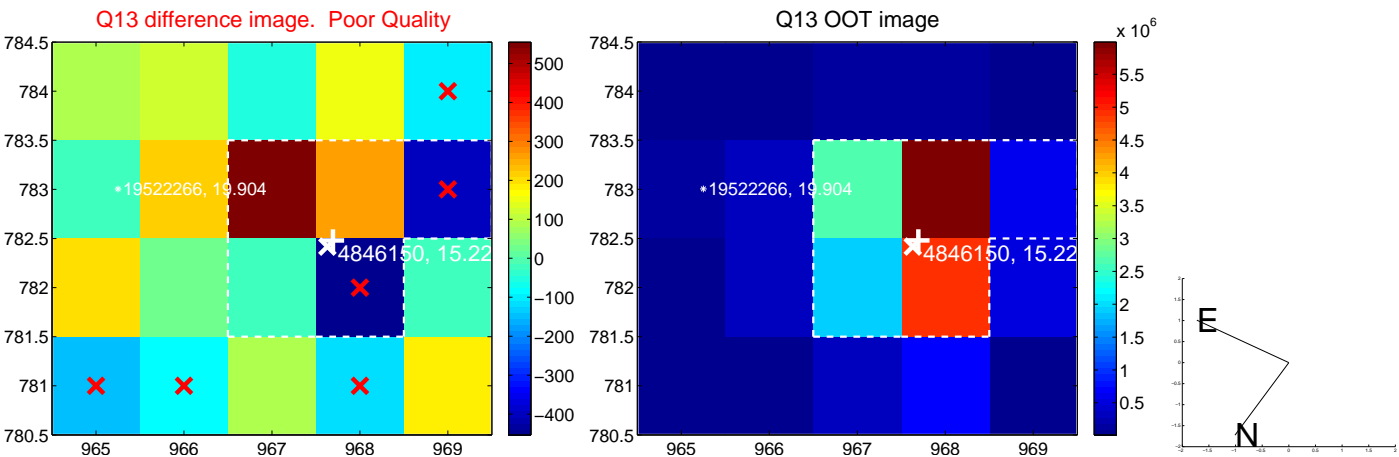
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



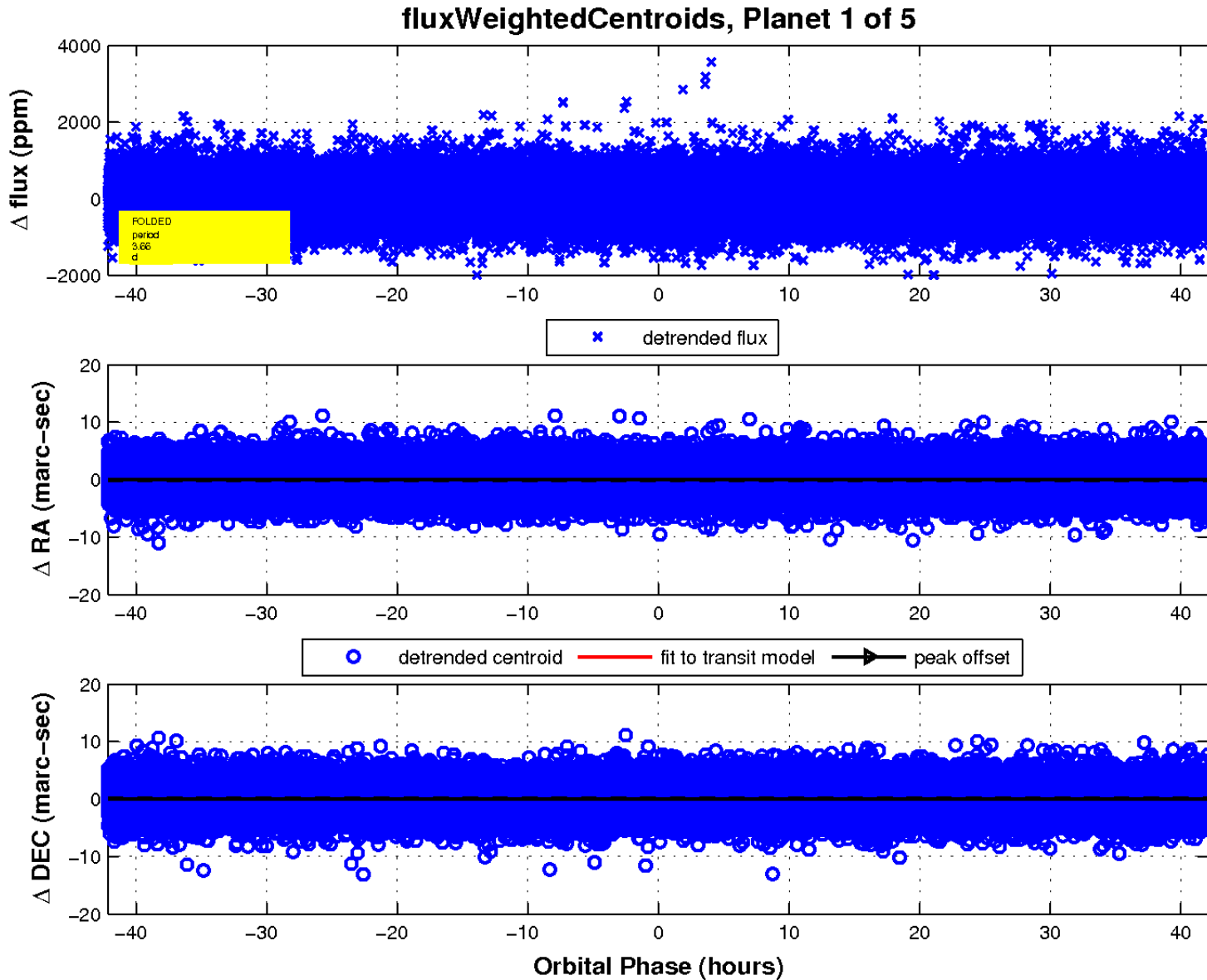
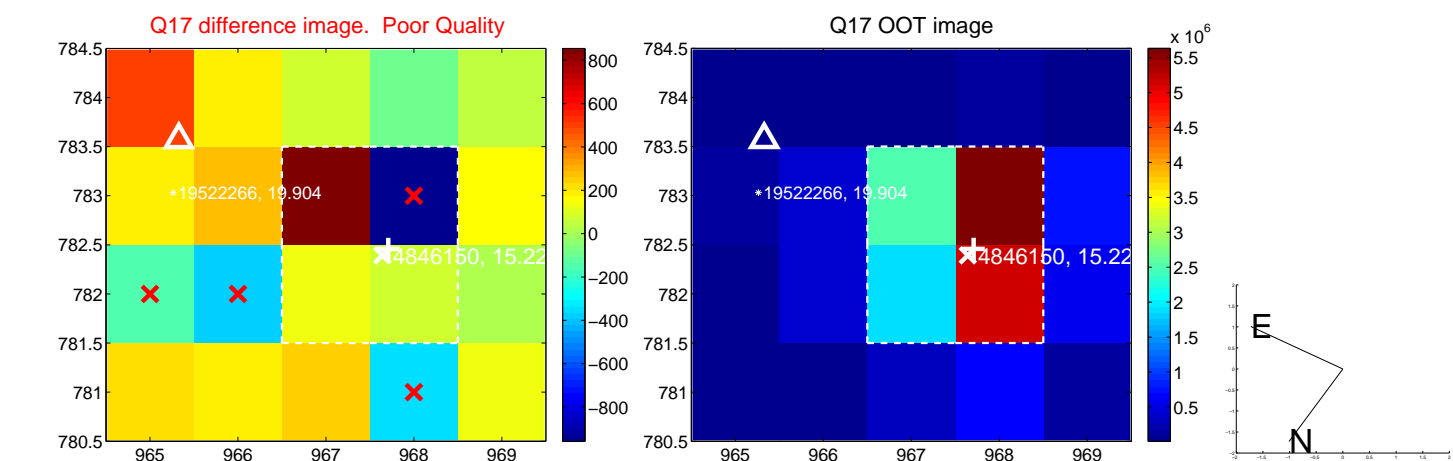
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white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

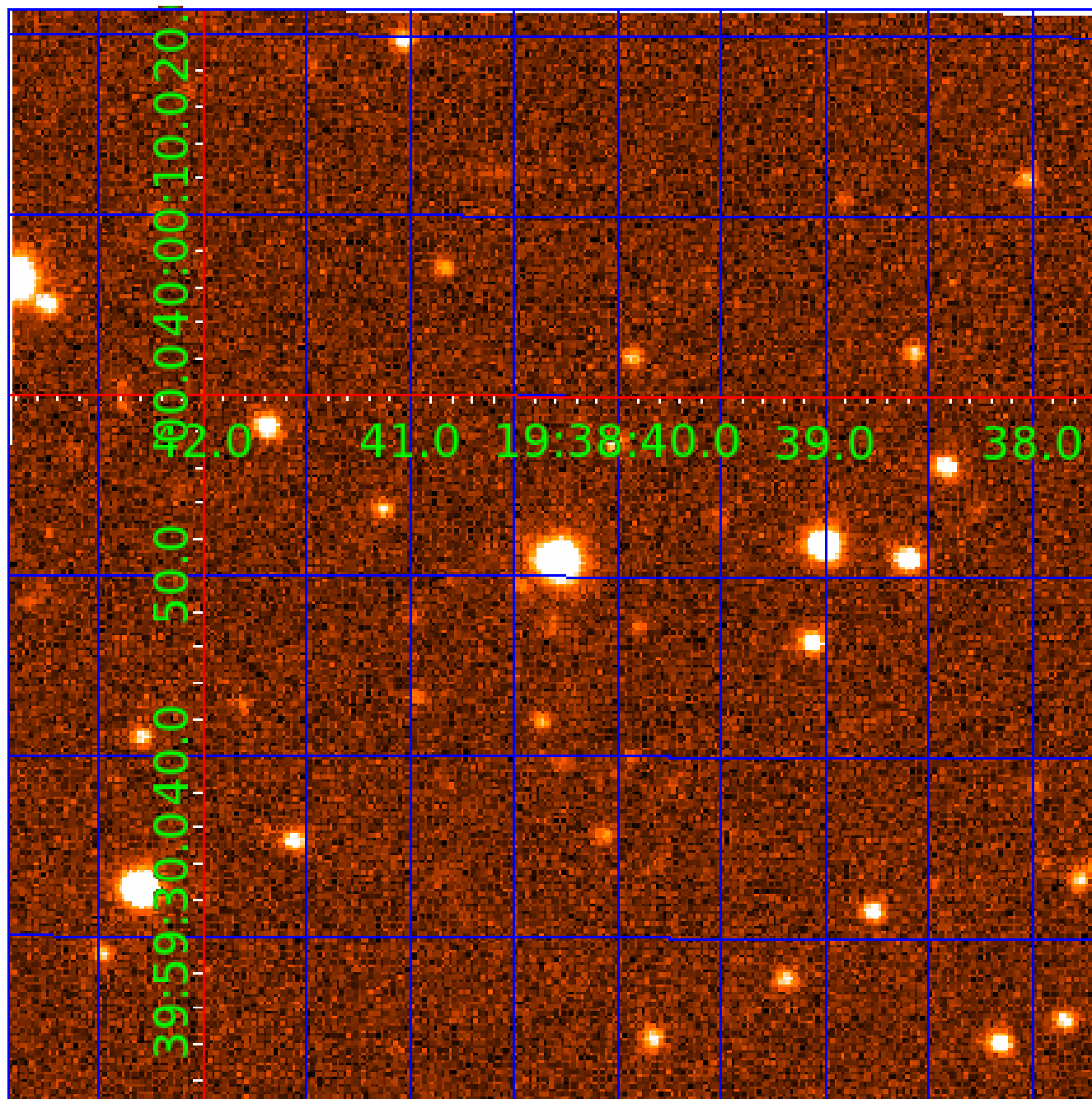


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004846150

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})
004846150-01	OBS	No	3.656885	134.105674	72.2	14.049	7.7	7.8	0.84	5018	0.71	215.29
004846150-02	OBS	No	363.847918	353.900675	1032.3	1.171	17.9	4.6	0.84	5018	3.10	0.47
004846150-04	OBS	No	334.301795	199.952230	607.6	12.605	8.3	6.8	0.84	5018	2.11	0.52
004846150-05	OBS	No	215.030176	283.315510	736.7	4.201	7.5	7.4	0.84	5018	2.74	0.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004846150-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
004846150-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004846150-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004846150-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—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.

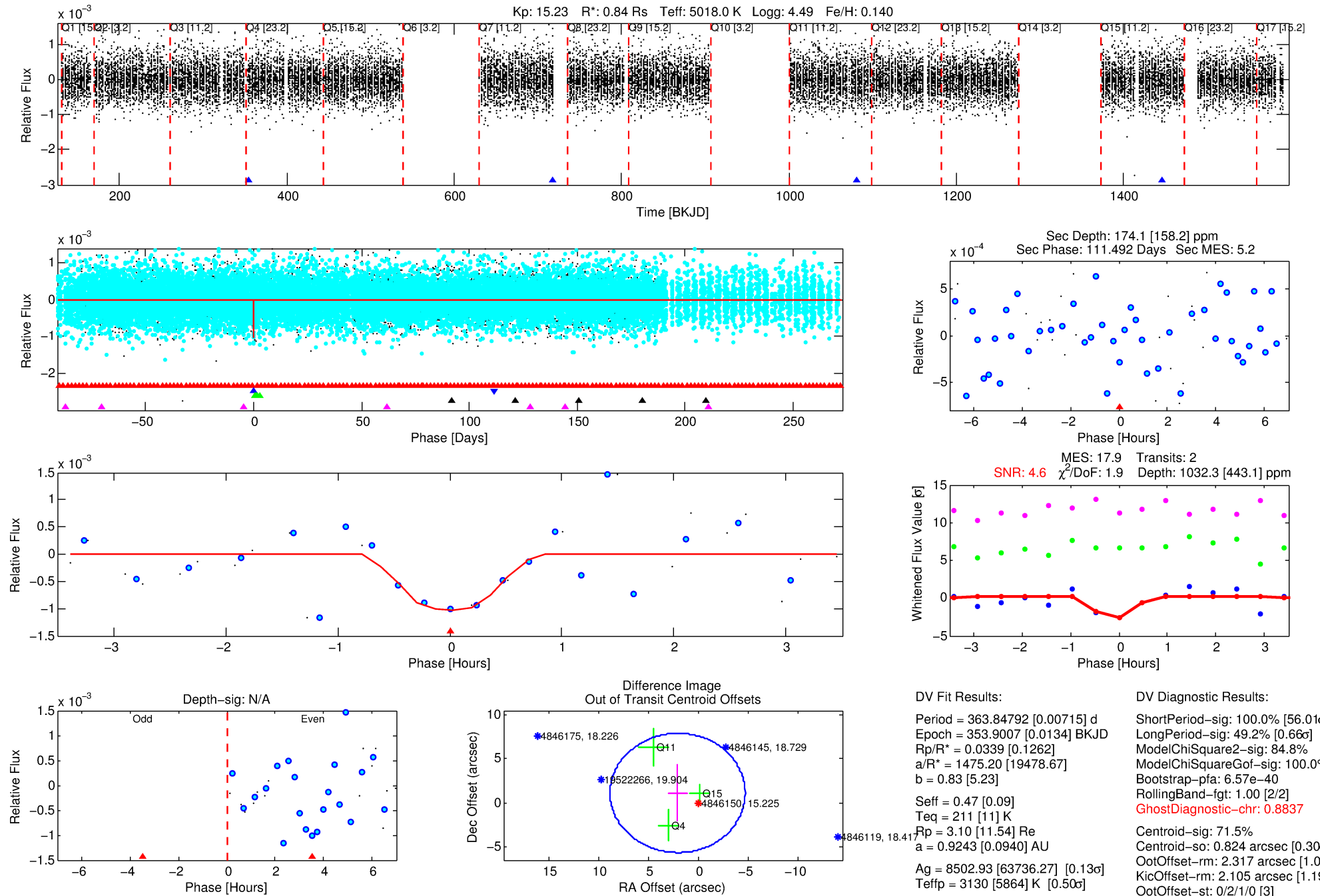
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004846150-02

No Significant Match Found

DV One-Page Summary

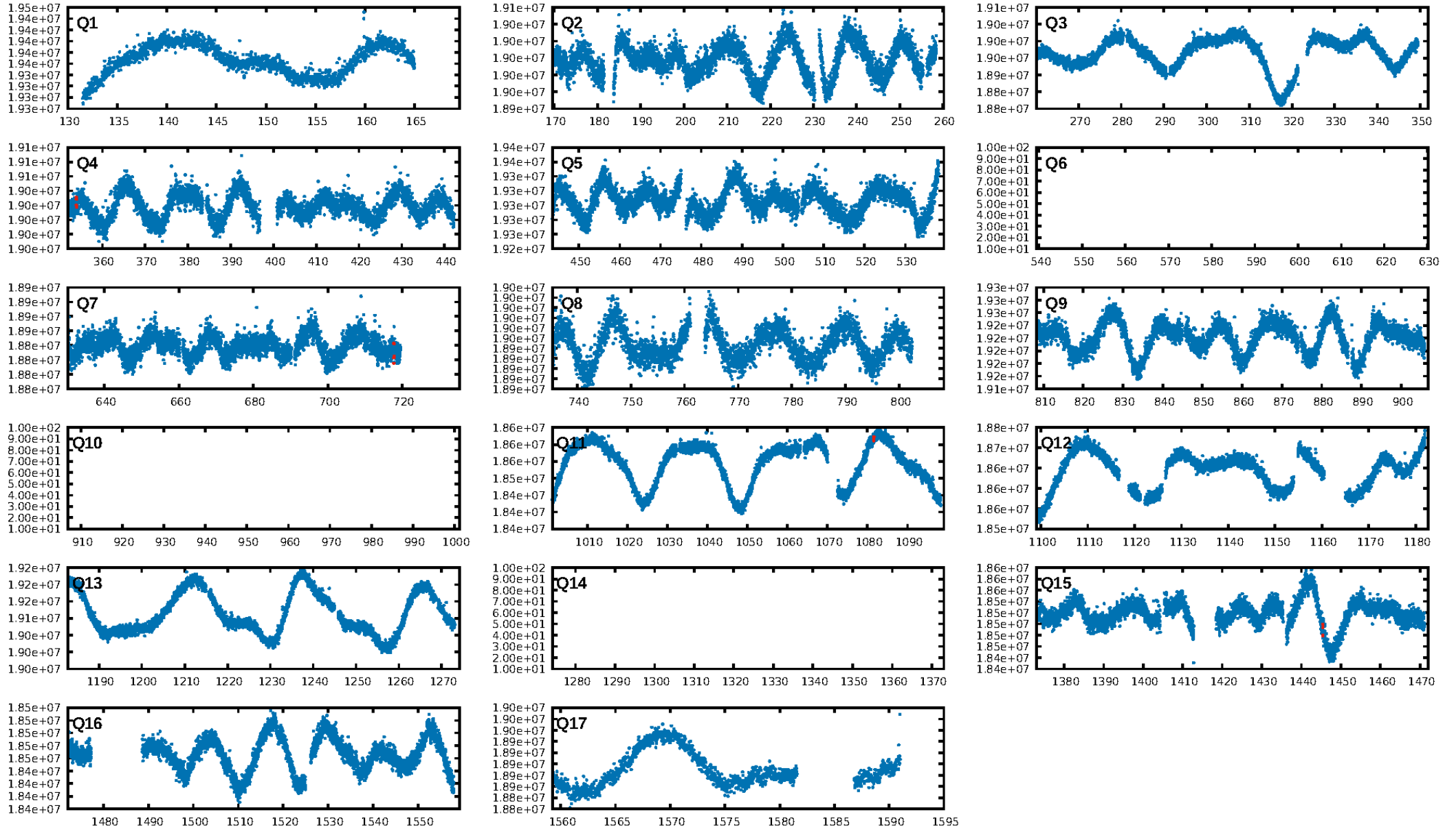
KIC: 4846150 Candidate: 2 of 5 Period: 363.848 d



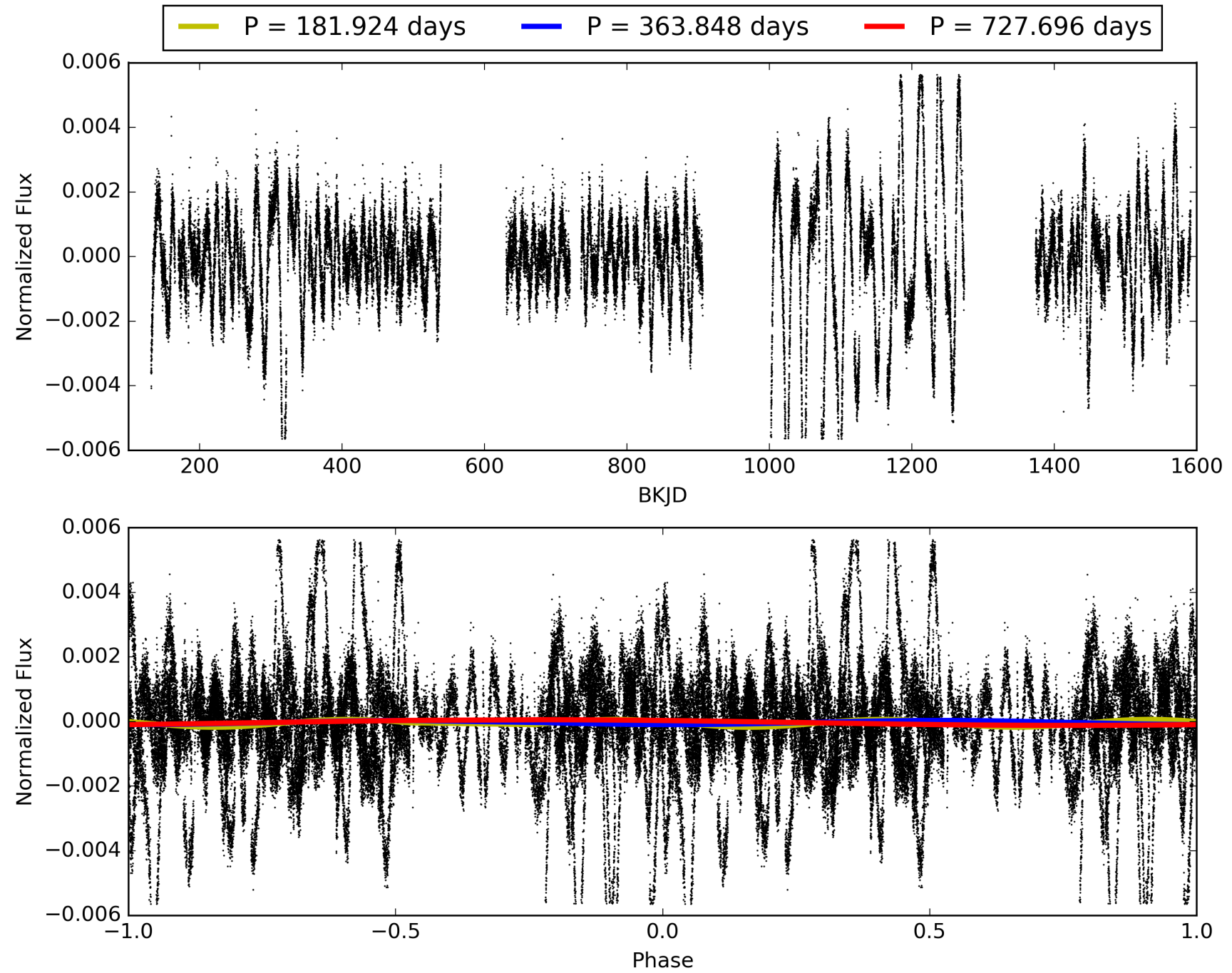
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:04:43 Z

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

TCE 004846150-02, PDC Light Curves

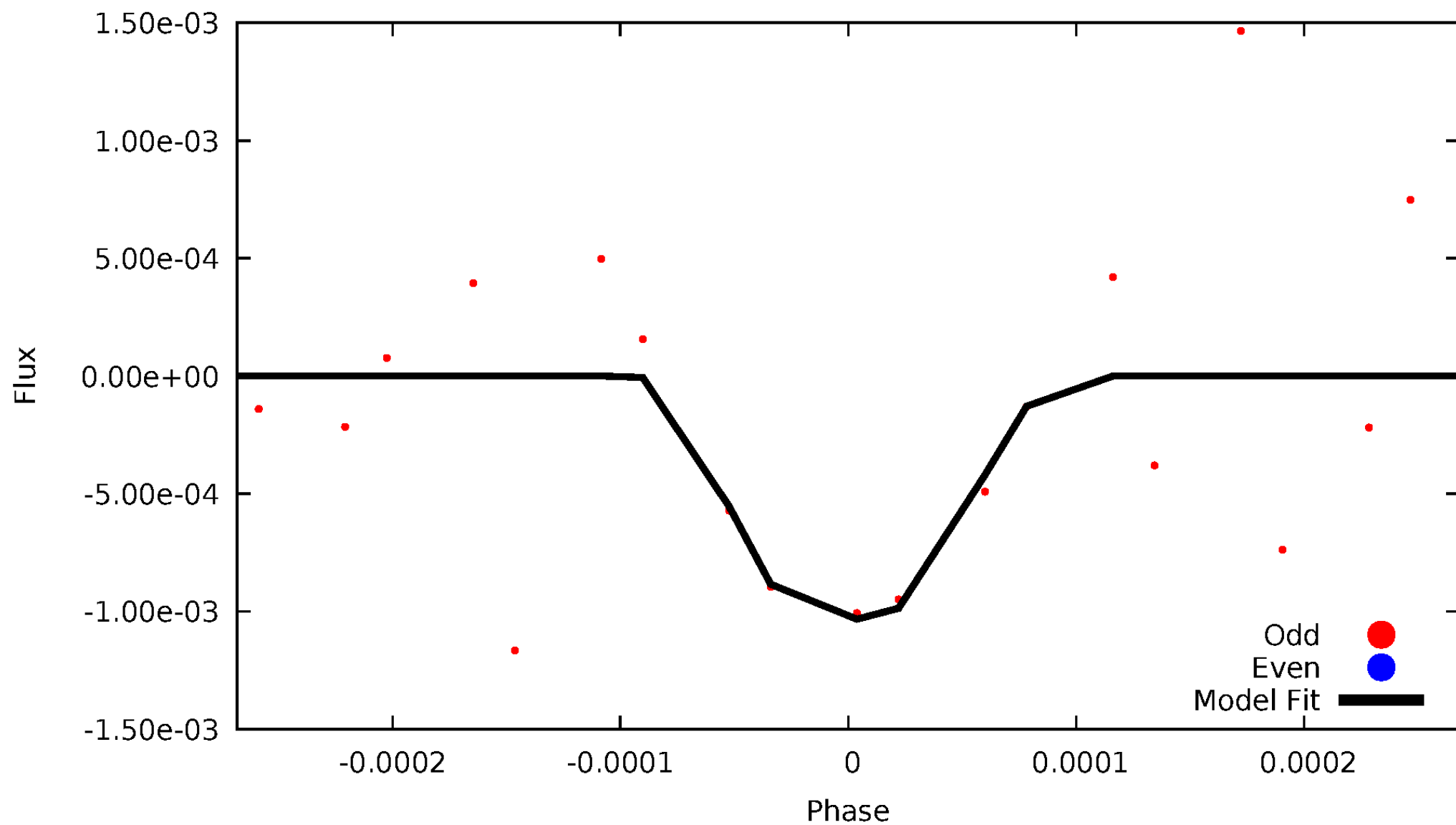


TCE 004846150-02



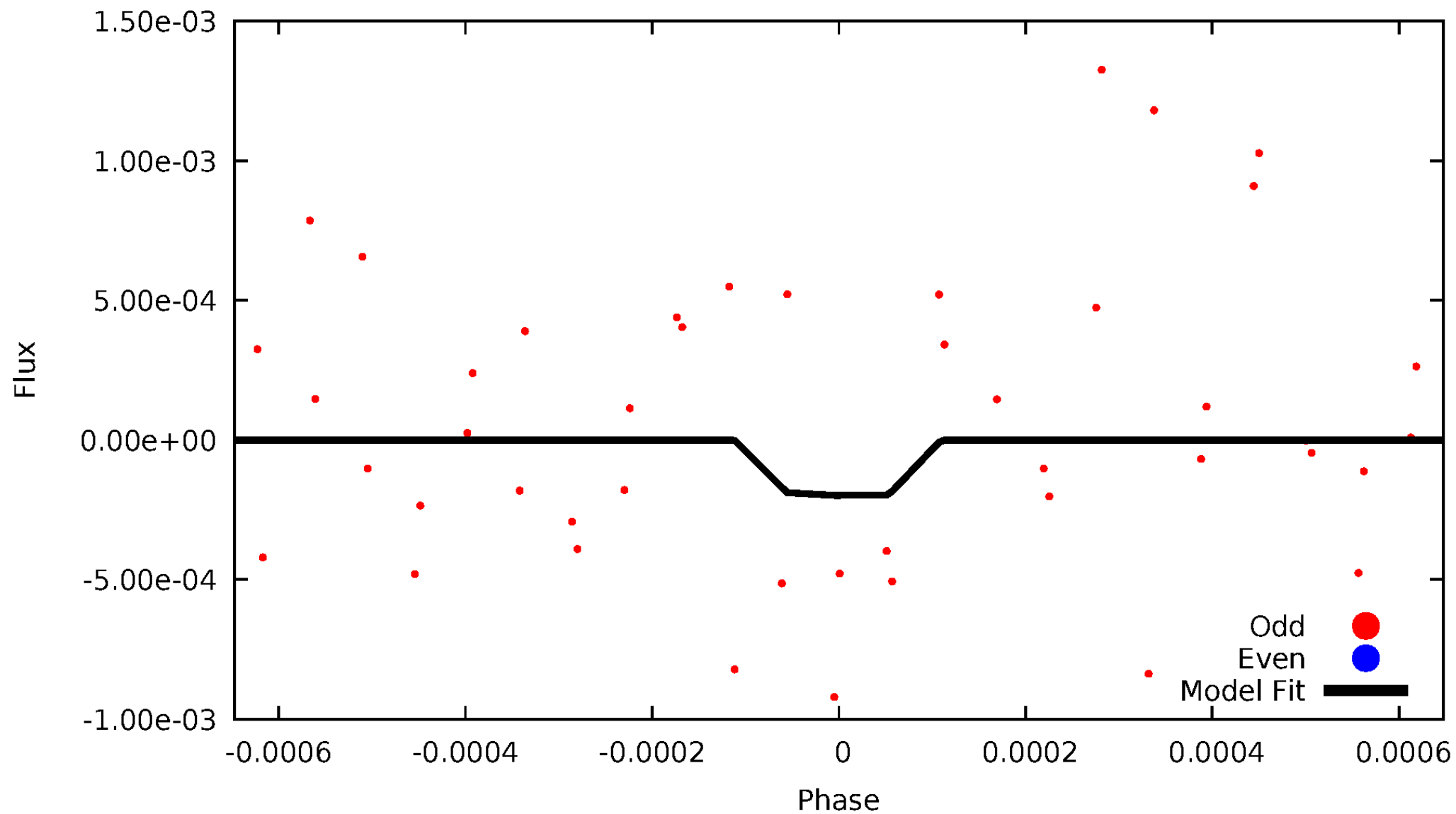
DV Odd/Even

TCE 004846150-02



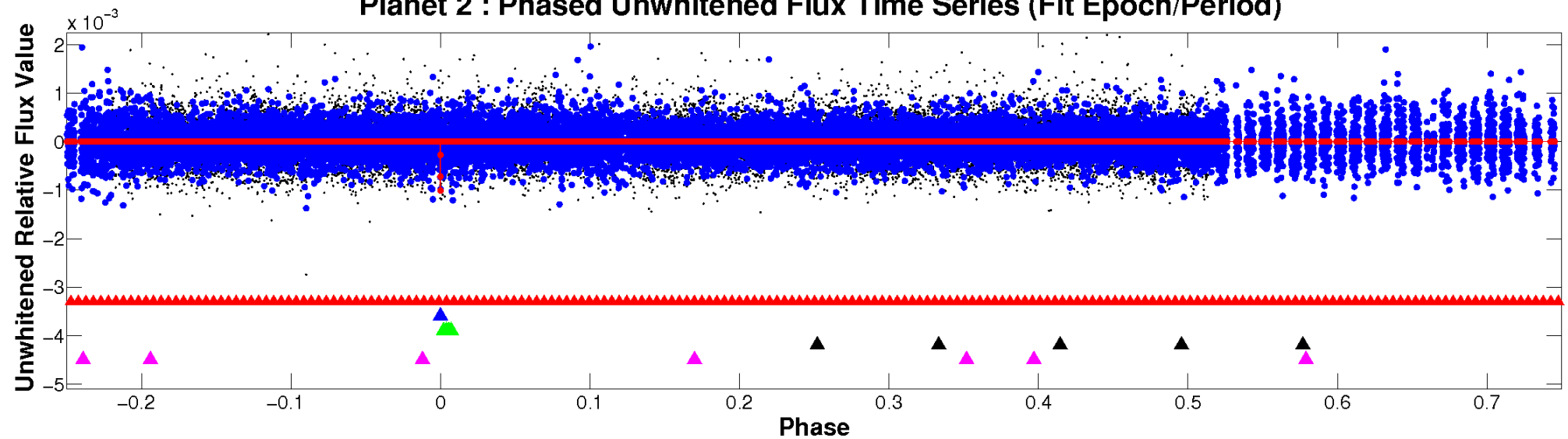
ALT Odd/Even

TCE 004846150-02

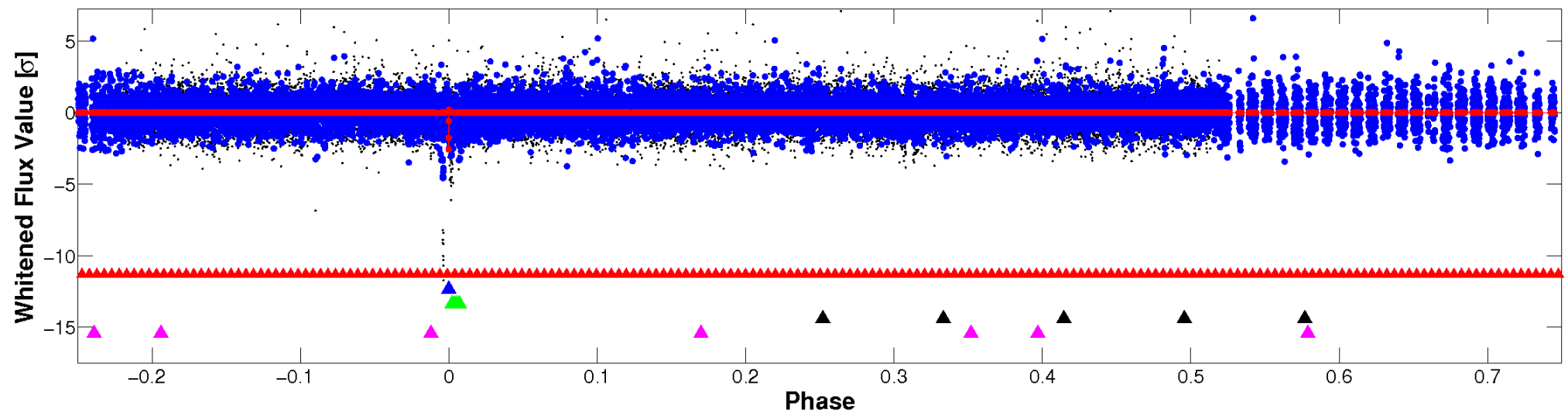


Non-Whitened Vs. Whitened Light Curve

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

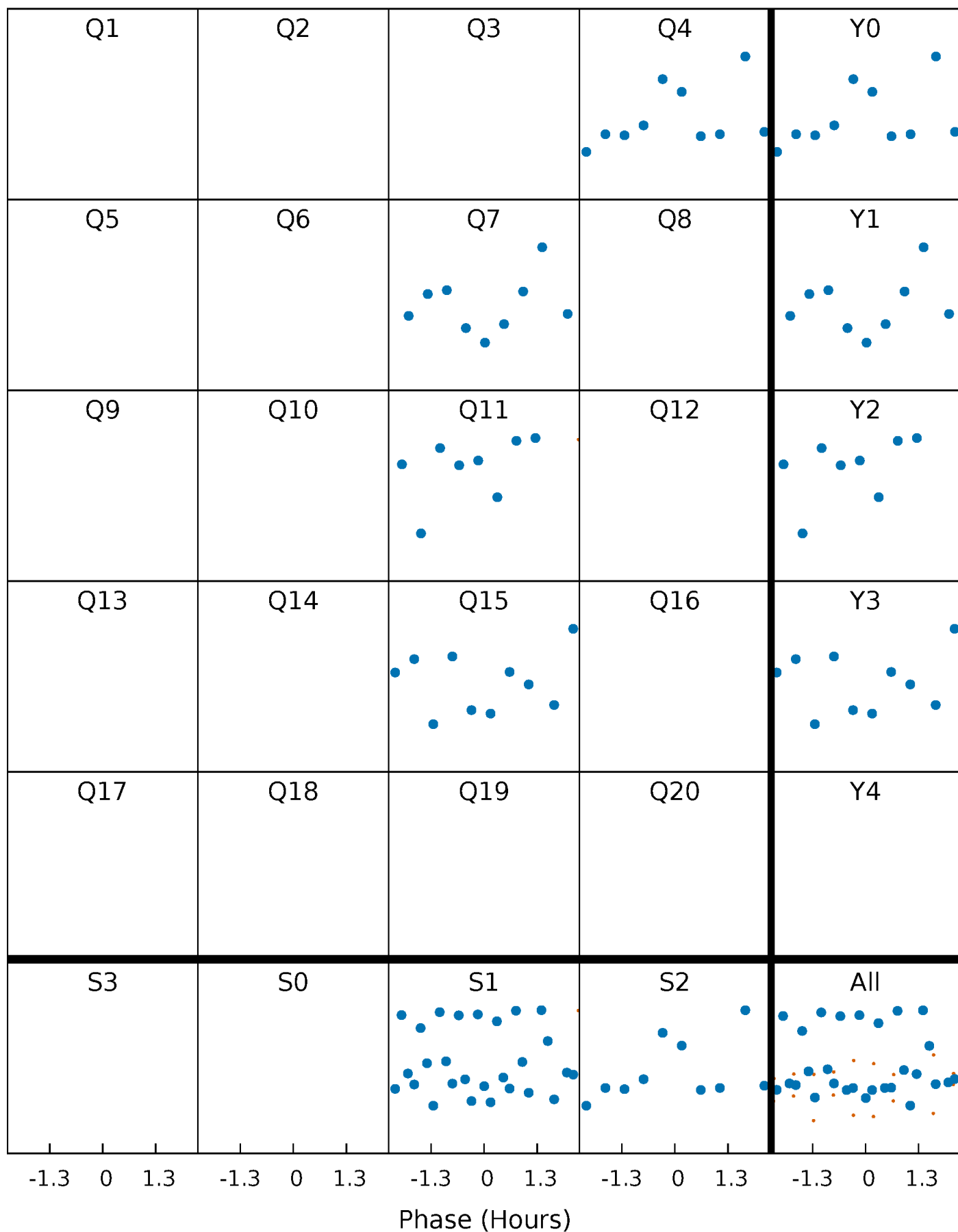


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 004846150-02 P=363.847918 Days $T_0=353.900675$ (BKJD)



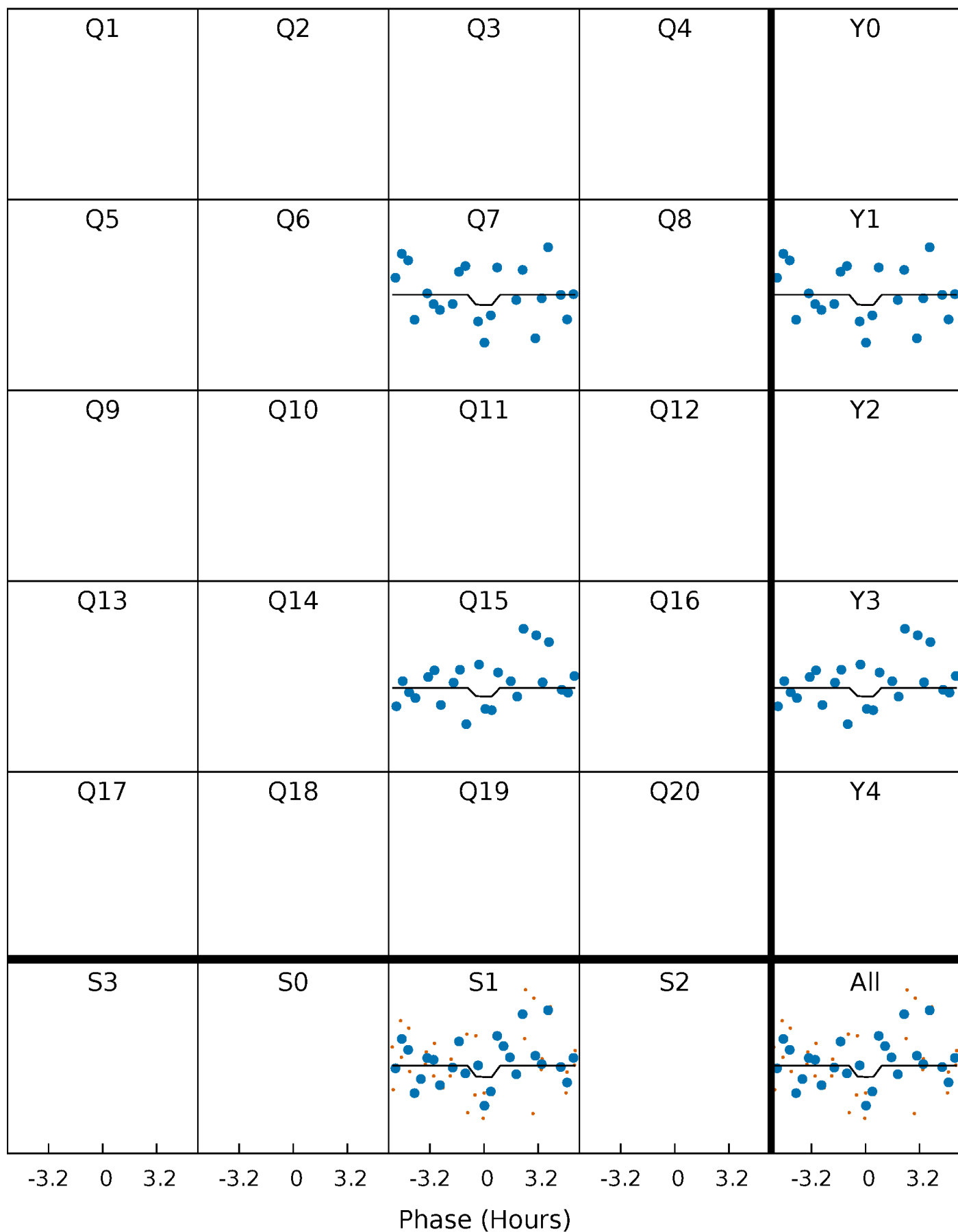
DV Quarter-Phased Transit Curves

TCE 004846150-02 $P=363.847918$ Days $T_0=353.900675$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

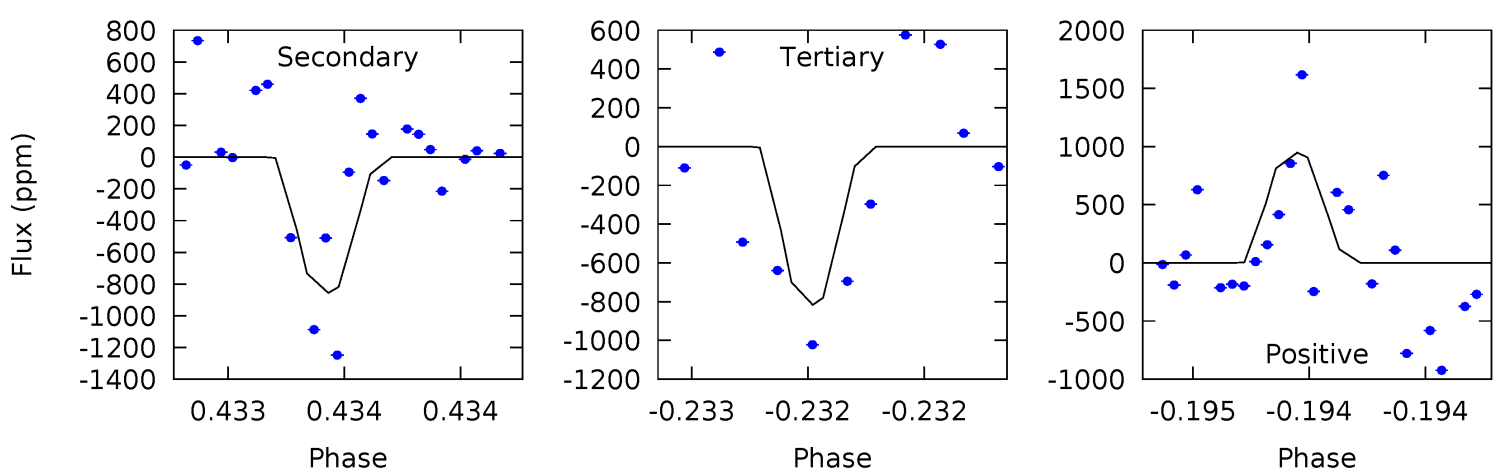
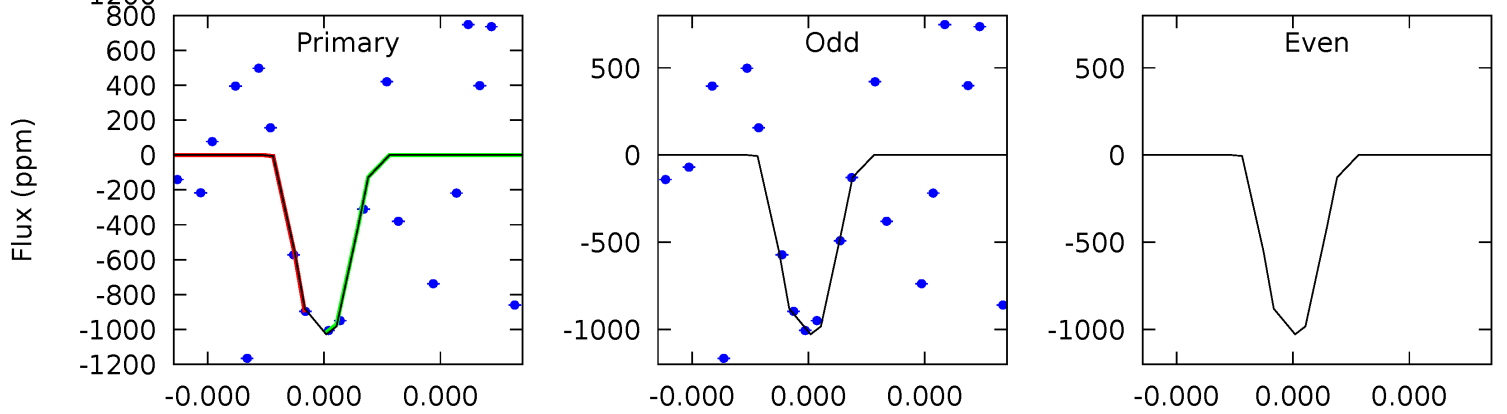
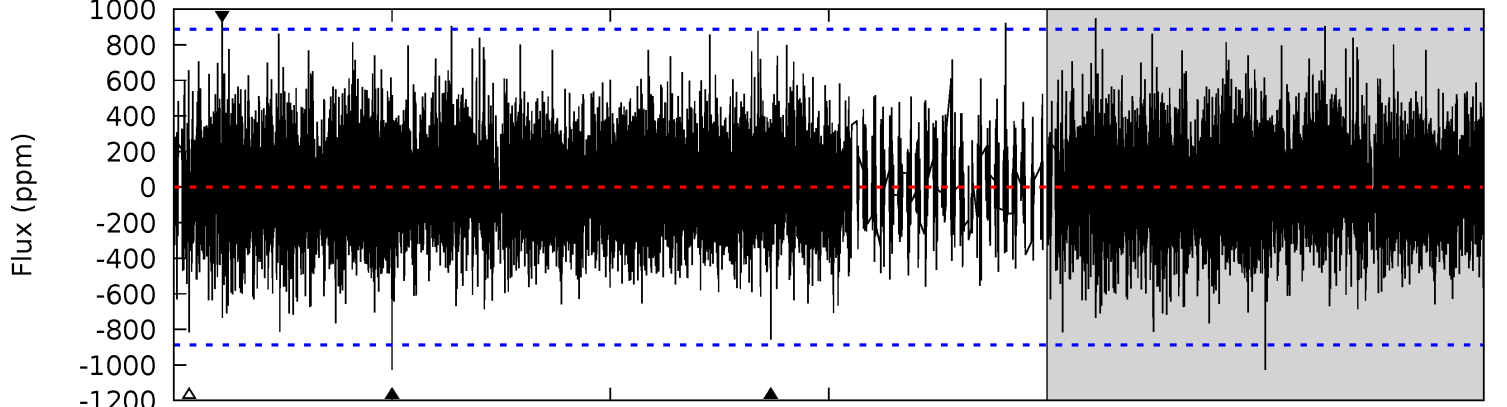
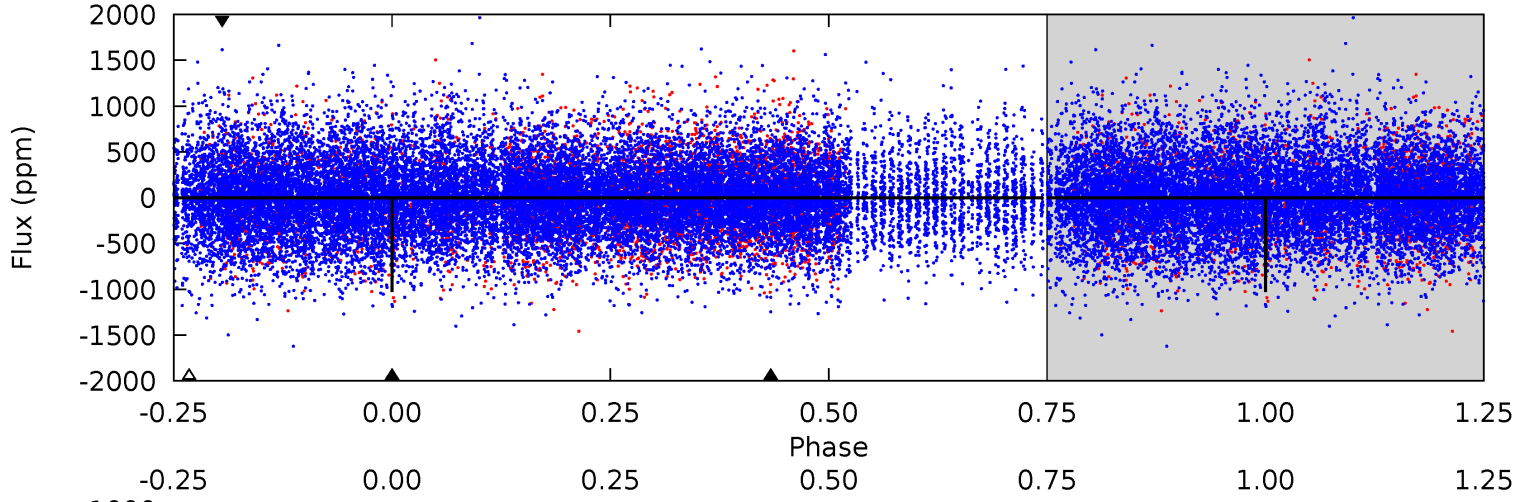
TCE 004846150-02 P=363.839969 Days $T_0=353.911826$ (BKJD)



DV Model-Shift Uniqueness Test

004846150-02, P = 363.847918 Days, E = 353.900675 Days

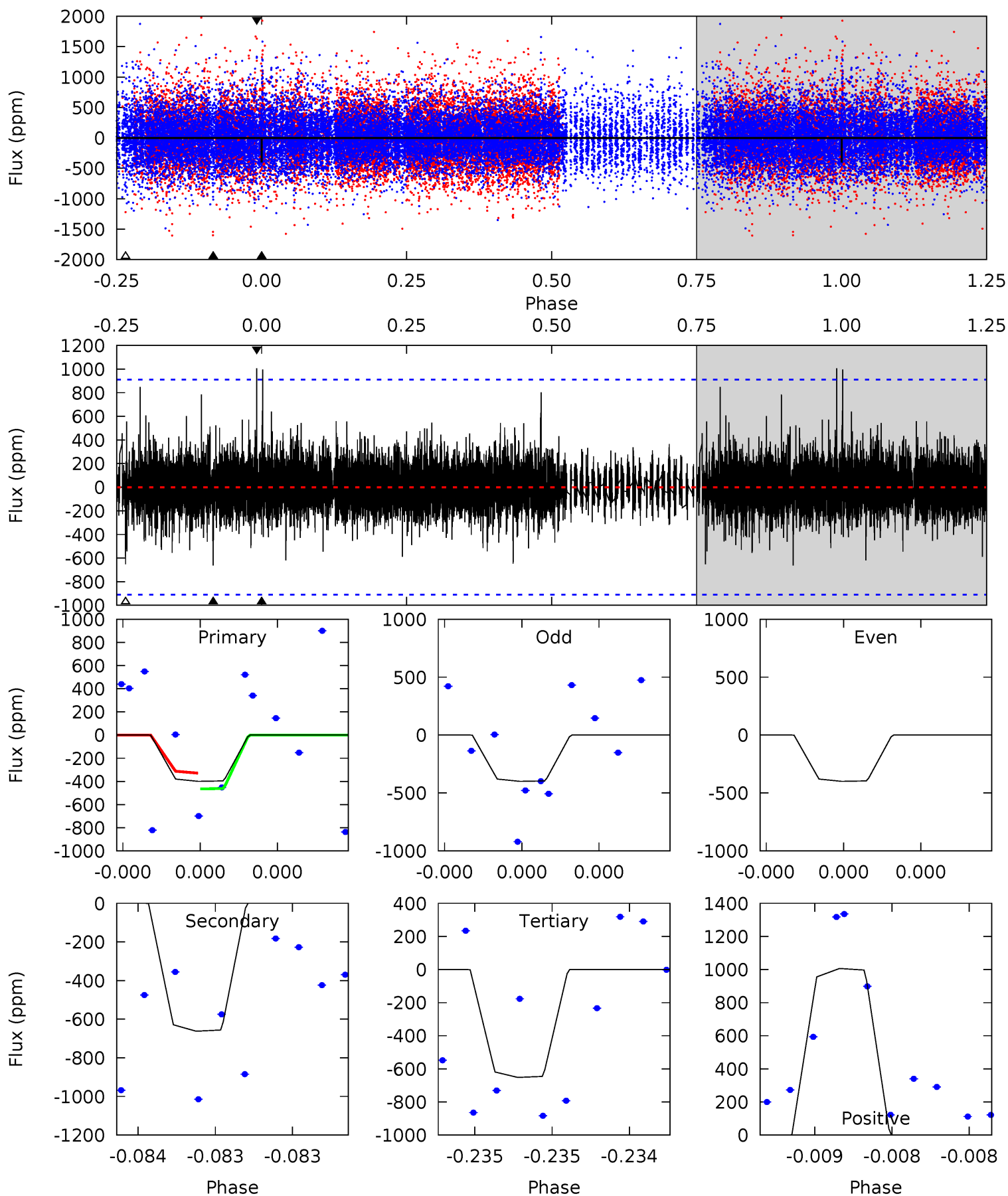
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.63	5.52	5.26	6.11	5.73	3.71	1.35	1.37	0.52	0.26	-0.59	0	1.00	0.48	0.35



Alt Model-Shift Uniqueness Test

004846150-02, P = 363.839969 Days, E = 353.911826 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2.52	4.18	4.12	6.35	5.75	3.75	0.94	-1.59	-3.83	0.07	-2.17	0	1.00	0.60	0.40



Stellar Parameters For KIC 004846150

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5018^{+149}_{-149}	$4.492^{+0.093}_{-0.085}$	$0.140^{+0.250}_{-0.300}$	$0.838^{+0.083}_{-0.091}$	$0.795^{+0.080}_{-0.055}$	$1.899^{+0.696}_{-0.466}$
	+3%/-3%	+2%/-2%	+179%/-214%	+10%/-11%	+10%/-7%	+37%/-25%
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 004846150-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-856 ± 155	$9.27^{+9.50}_{-6.37}$	295^{+12}_{-13}	3239^{+1700}_{-584}	4695^{+44645}_{-3569}
Alt.	-662 ± 158	$8.60^{+9.14}_{-6.35}$	294^{+13}_{-12}	3175^{+1908}_{-580}	4199^{+55541}_{-3246}

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

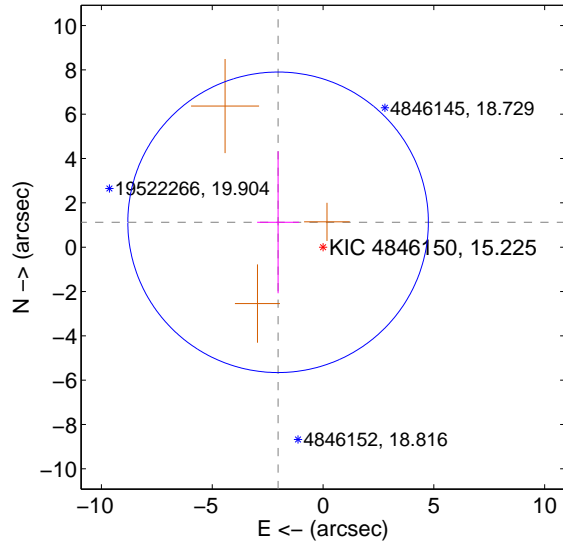
Supplemental centroid analysis for 004846150-02. Kepler magnitude: 15.22. Transit SNR 4.61

There are 0 quarters with good PRF difference image offsets

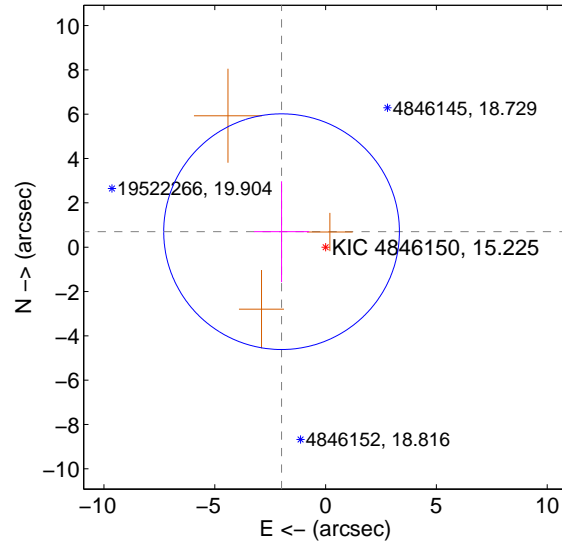
The direct PRF centroid is offset from the target star catalog position by about 0.46 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.317 ± 2.260	1.03	2.027 ± 0.947	1.122 ± 3.203
PRF-fit source offset from KIC position	2.105 ± 1.772	1.19	1.986 ± 1.247	0.699 ± 2.277
photometric centroid source offset	0.82 ± 2.75	0.30	0.28 ± 2.54	0.78 ± 2.77

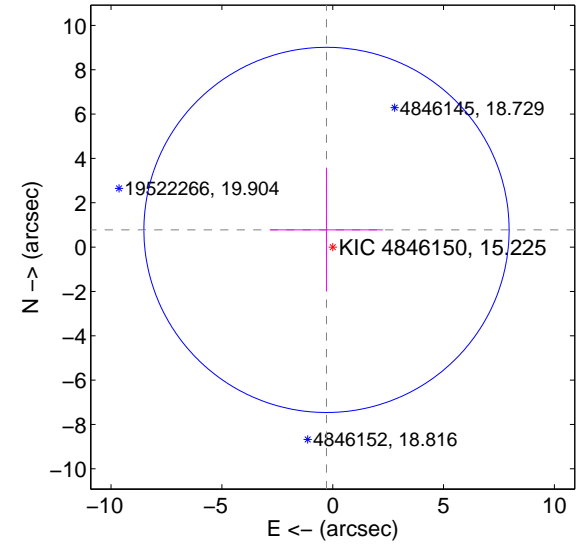
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

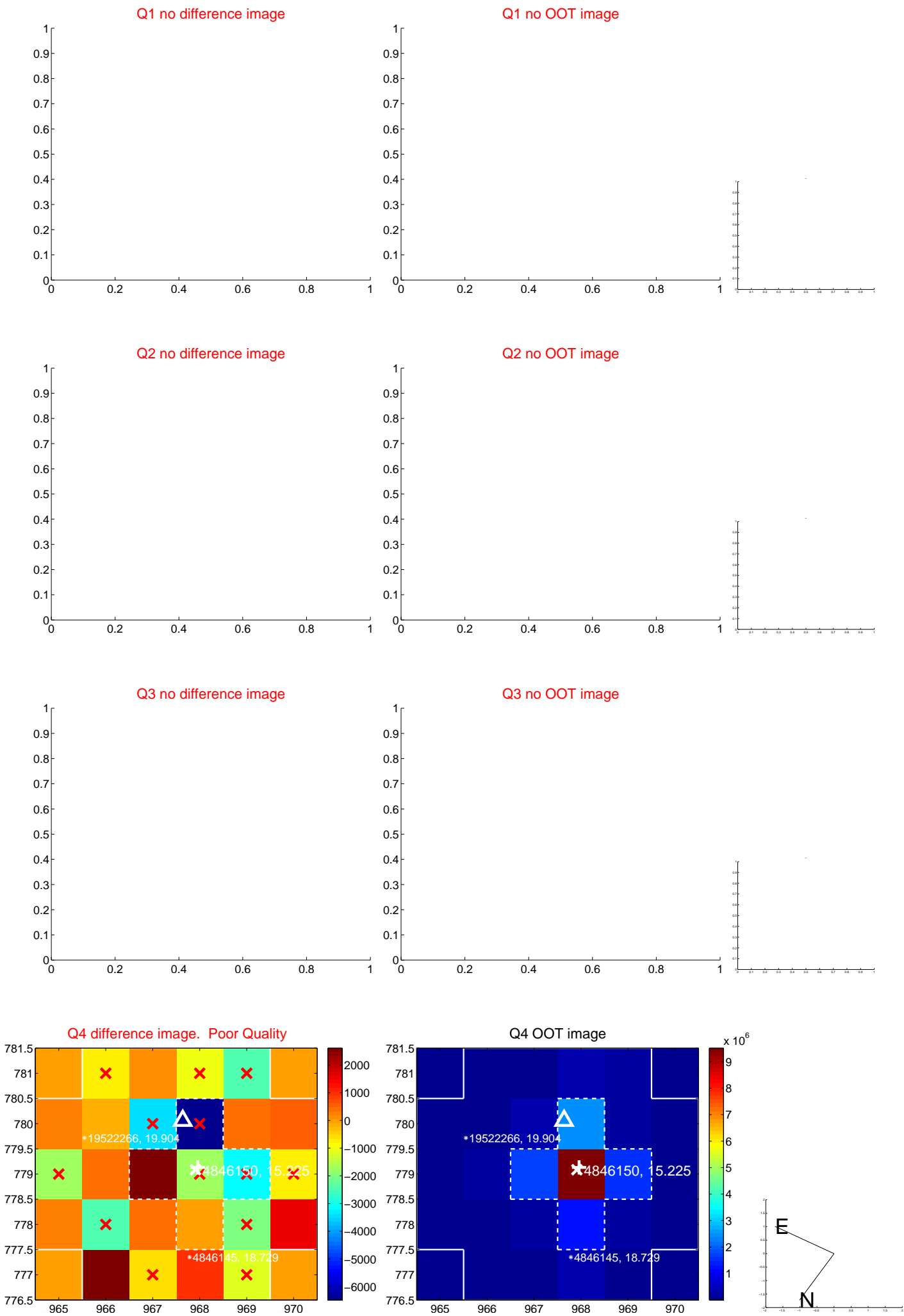


offset from photometric centroids

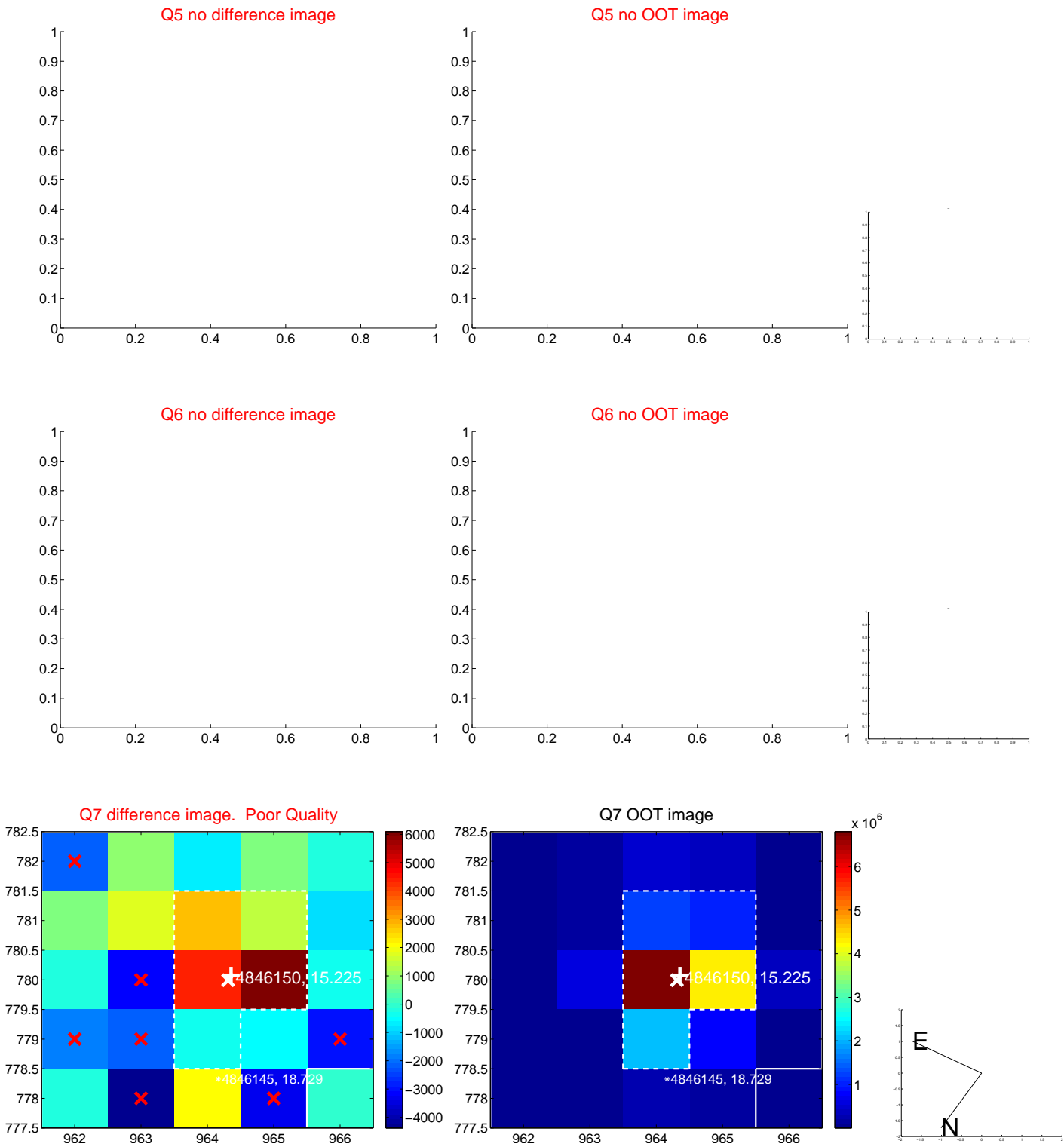


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

Q9 no difference image



Q9 no OOT image



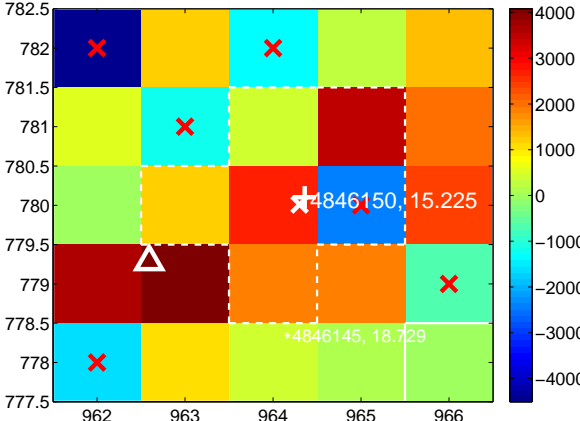
Q10 no difference image



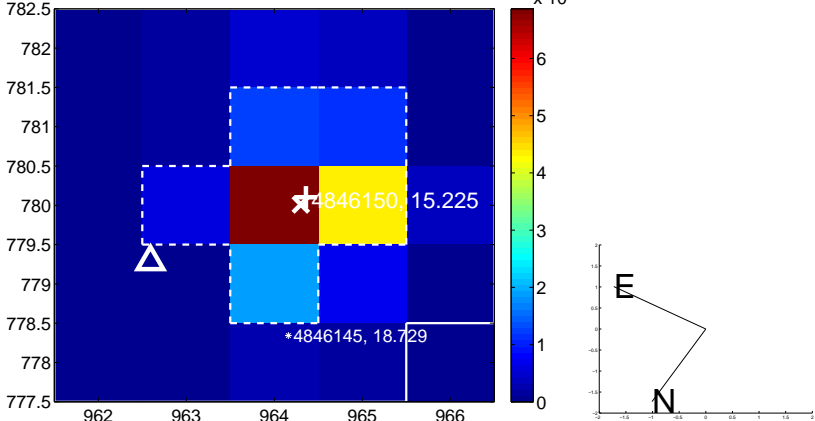
Q10 no OOT image



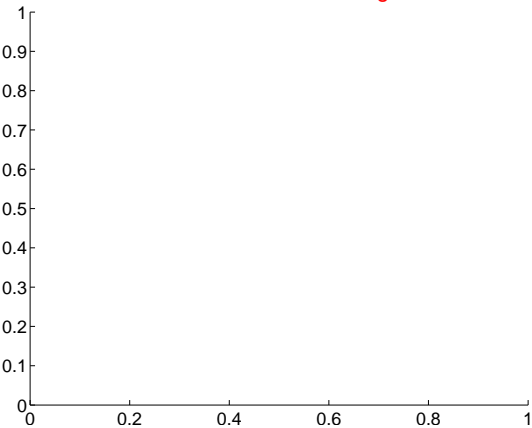
Q11 difference image. Poor Quality



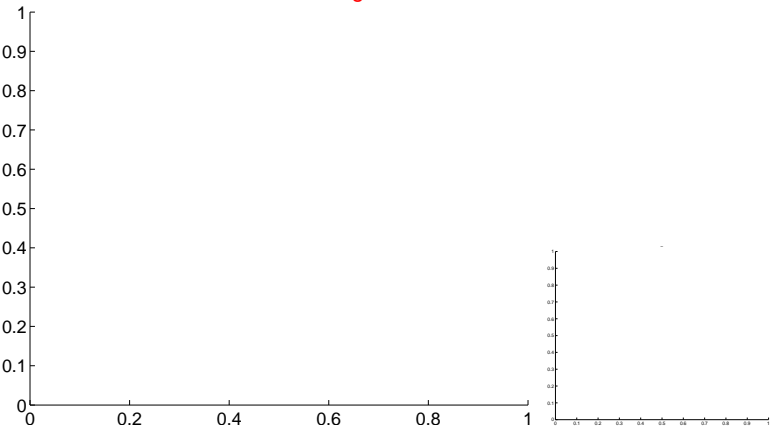
Q11 OOT image



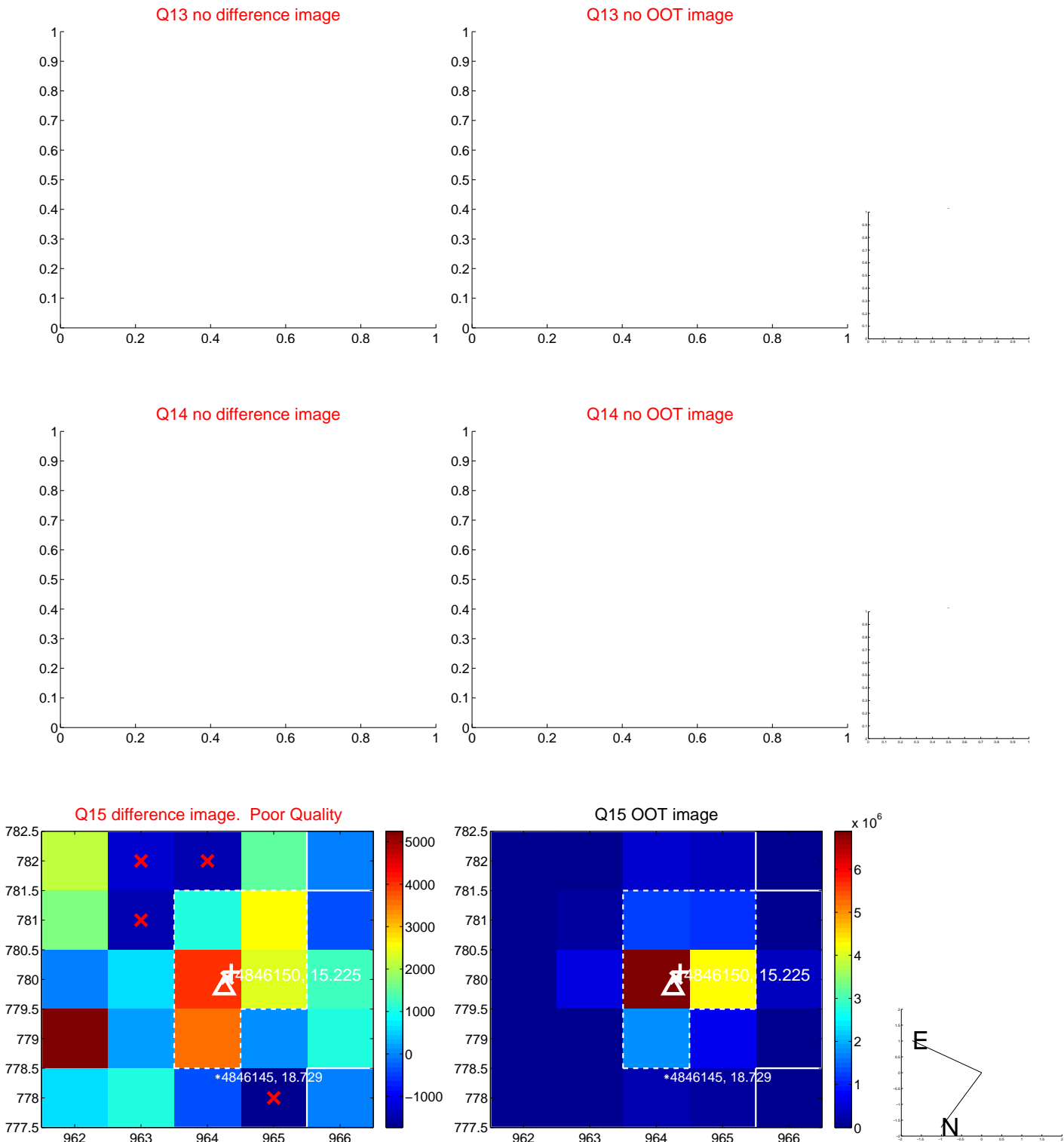
Q12 no difference image



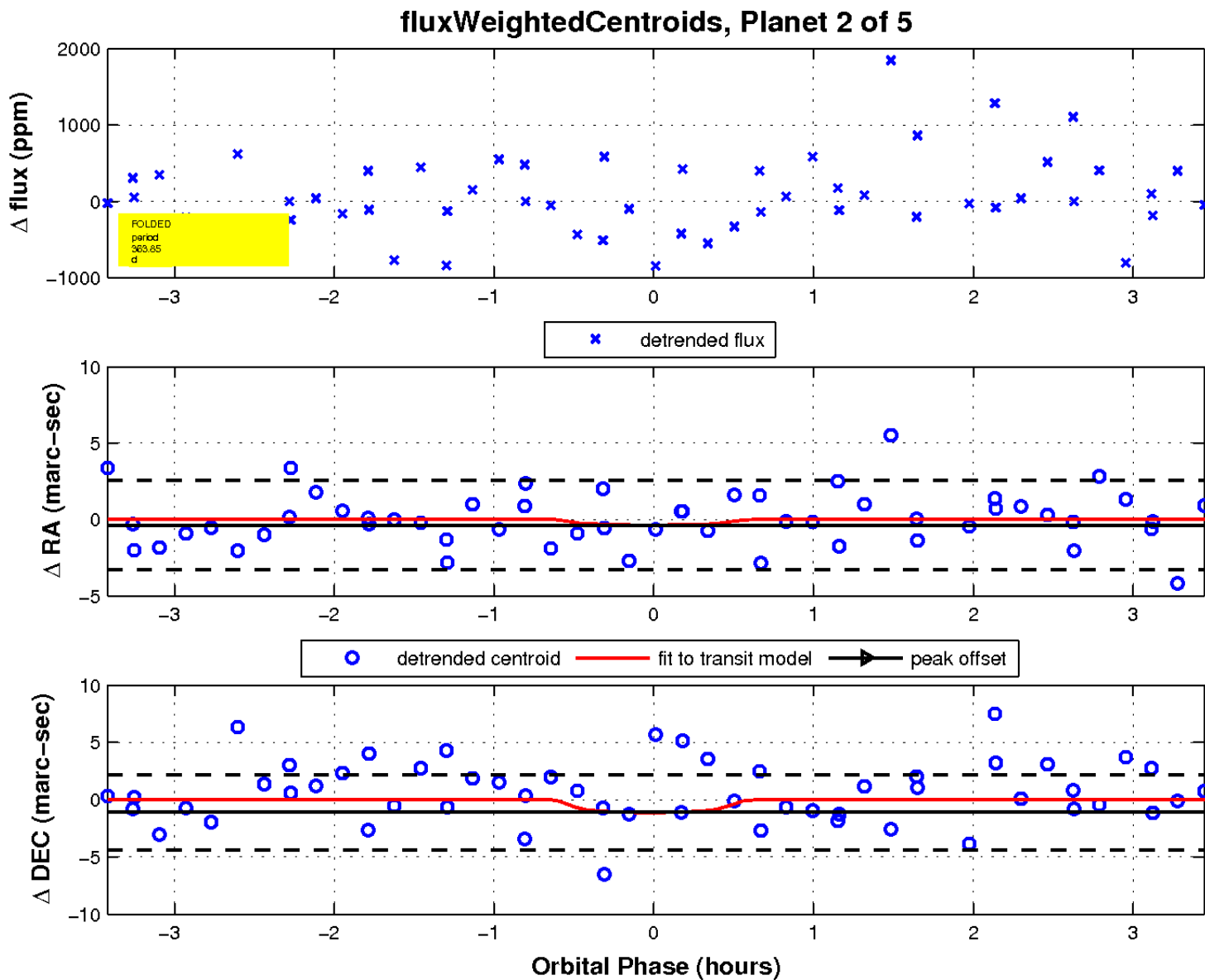
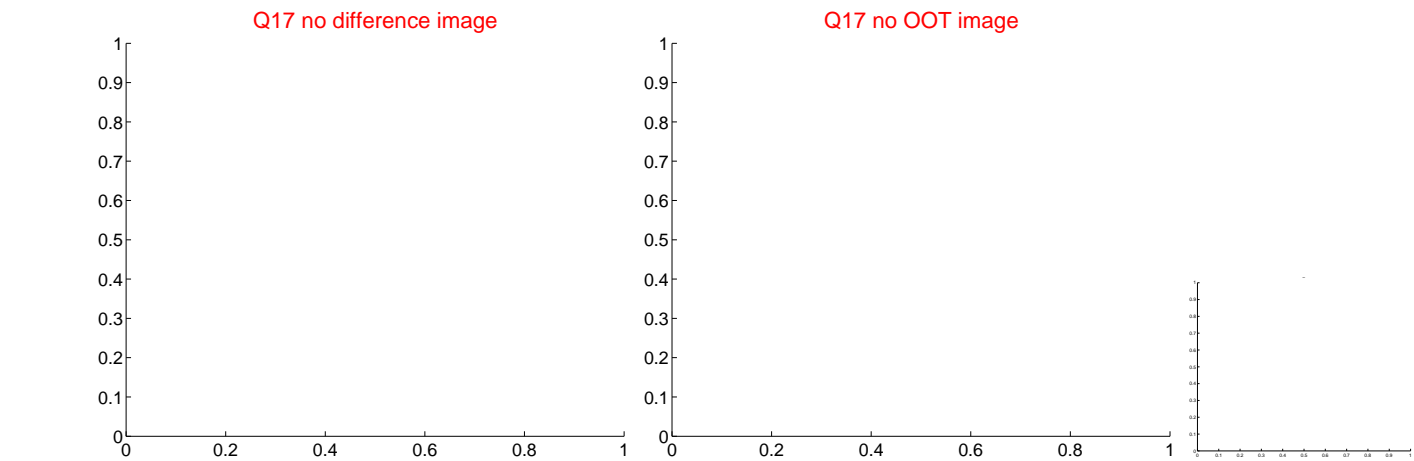
Q12 no OOT image



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

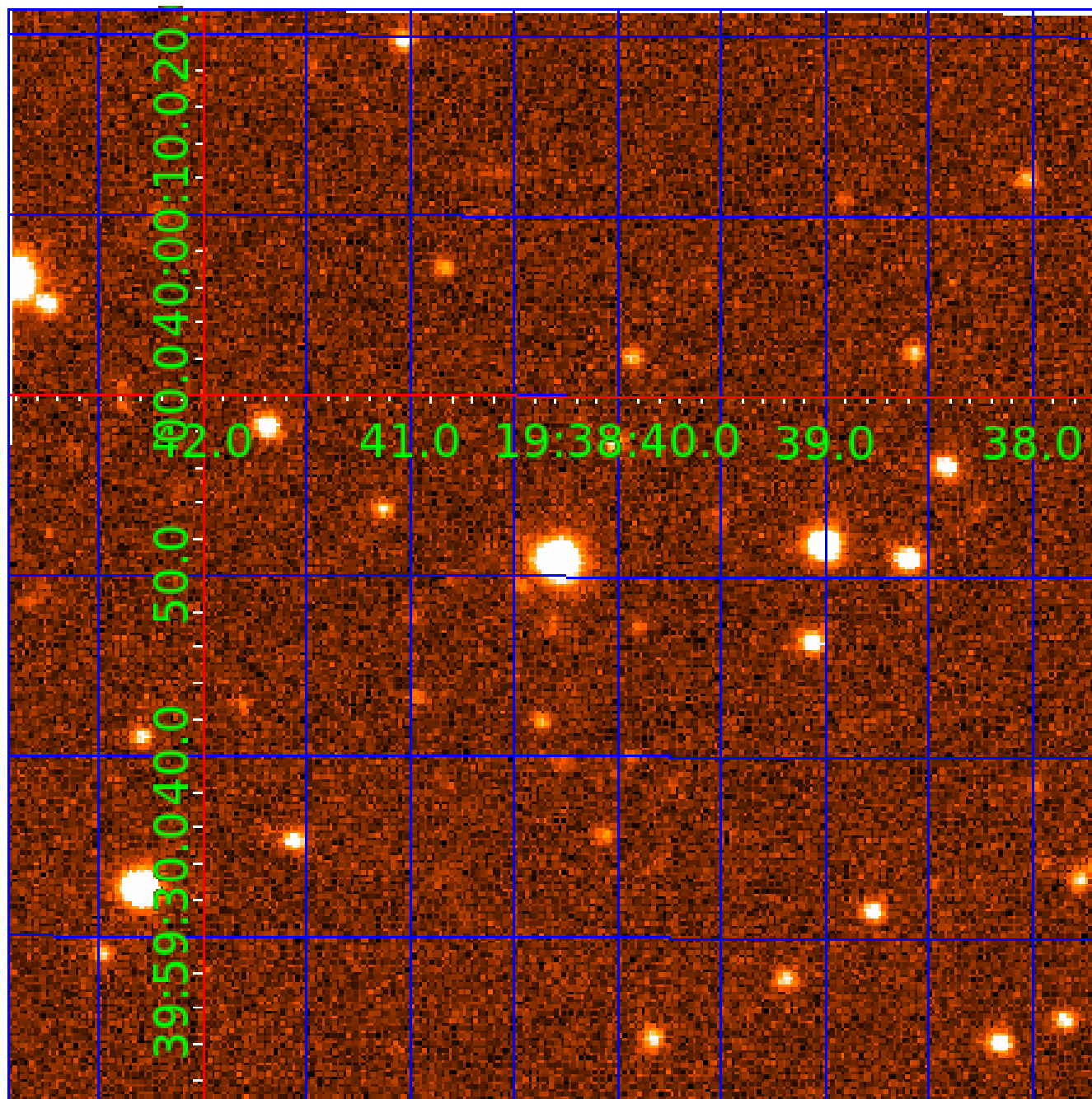


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004846150

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})
004846150-01	OBS	No	3.656885	134.105674	72.2	14.049	7.7	7.8	0.84	5018	0.71	215.29
004846150-02	OBS	No	363.847918	353.900675	1032.3	1.171	17.9	4.6	0.84	5018	3.10	0.47
004846150-04	OBS	No	334.301795	199.952230	607.6	12.605	8.3	6.8	0.84	5018	2.11	0.52
004846150-05	OBS	No	215.030176	283.315510	736.7	4.201	7.5	7.4	0.84	5018	2.74	0.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004846150-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
004846150-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004846150-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004846150-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—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.

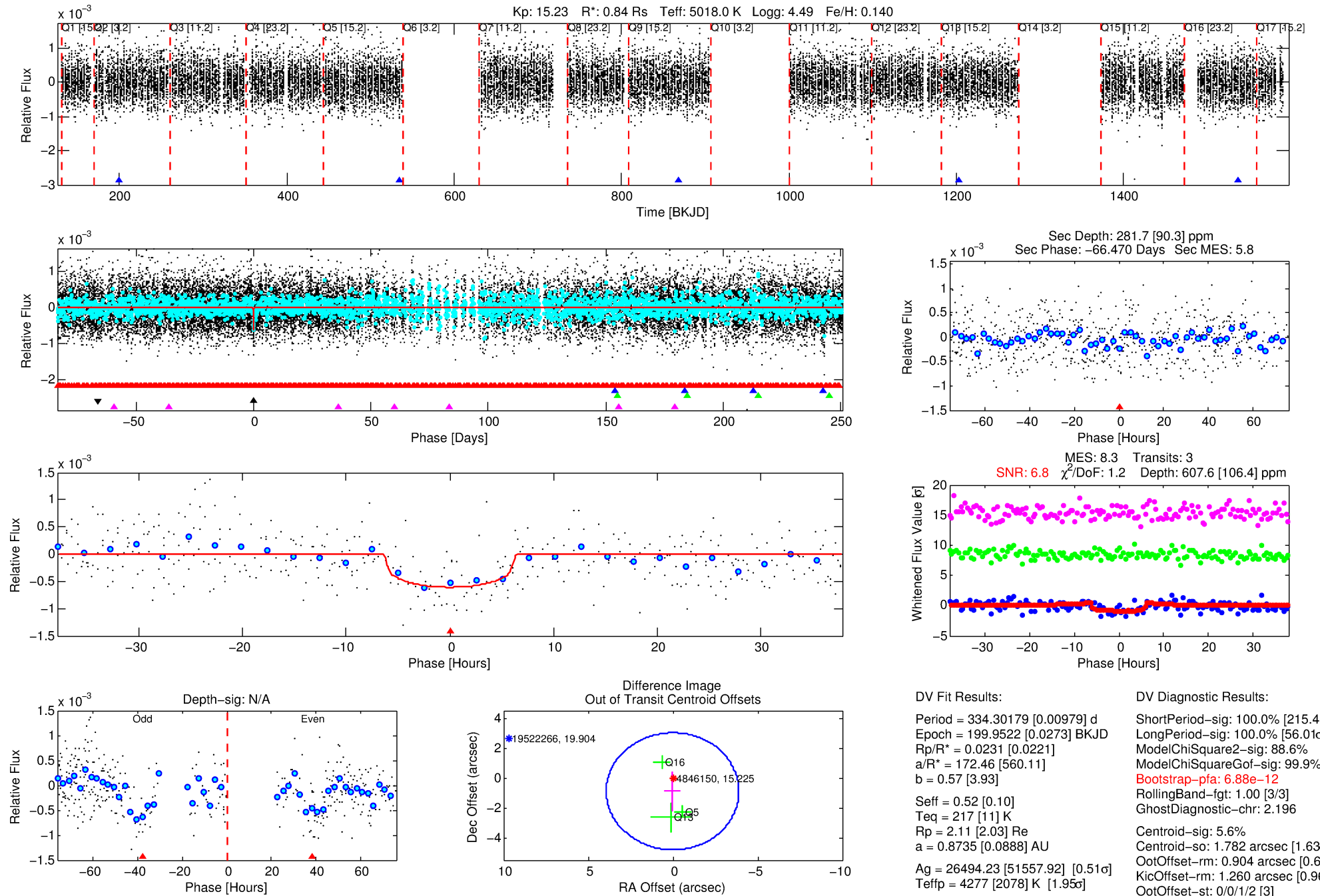
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004846150-04

No Significant Match Found

DV One-Page Summary

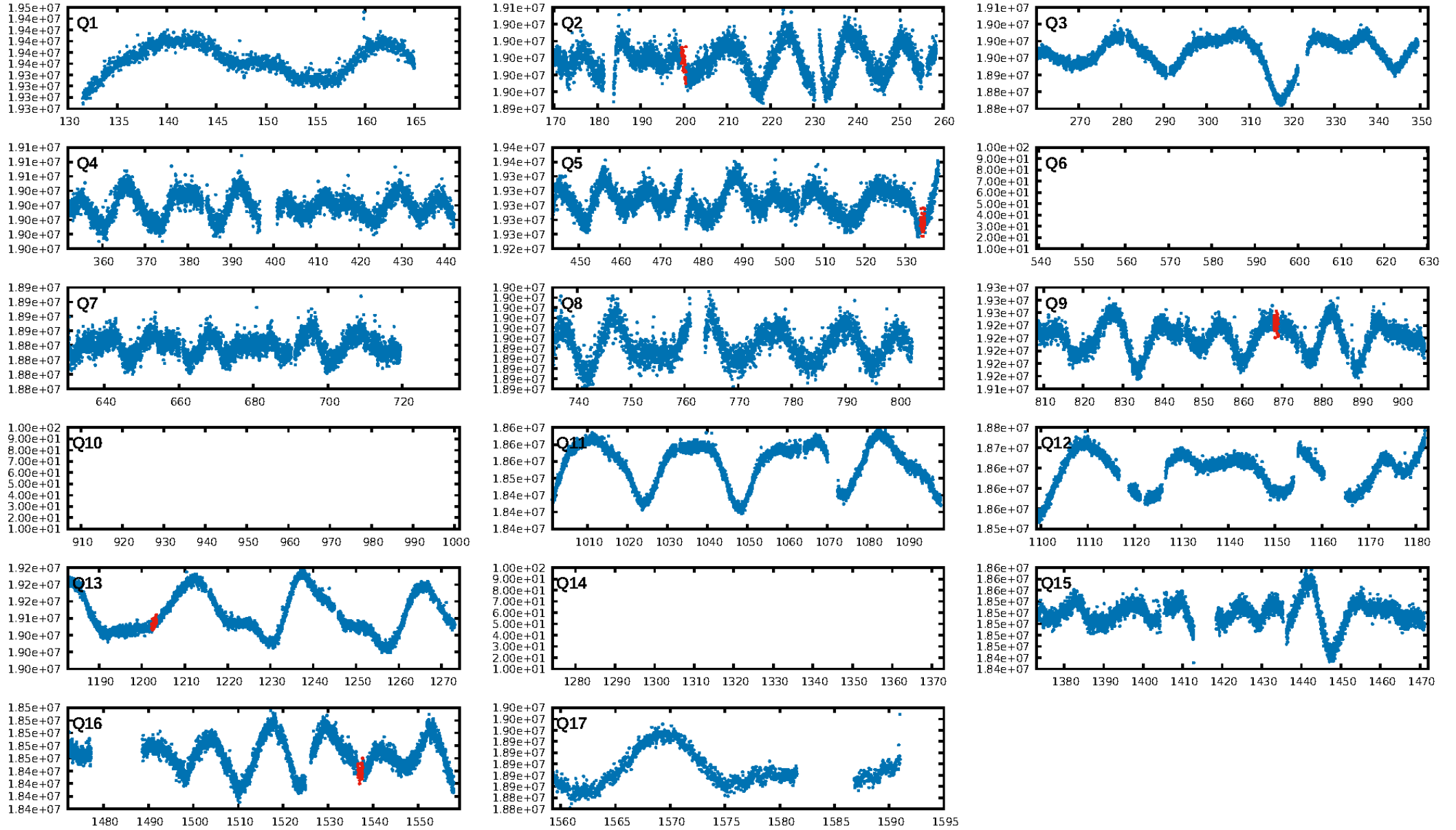
KIC: 4846150 Candidate: 4 of 5 Period: 334.302 d



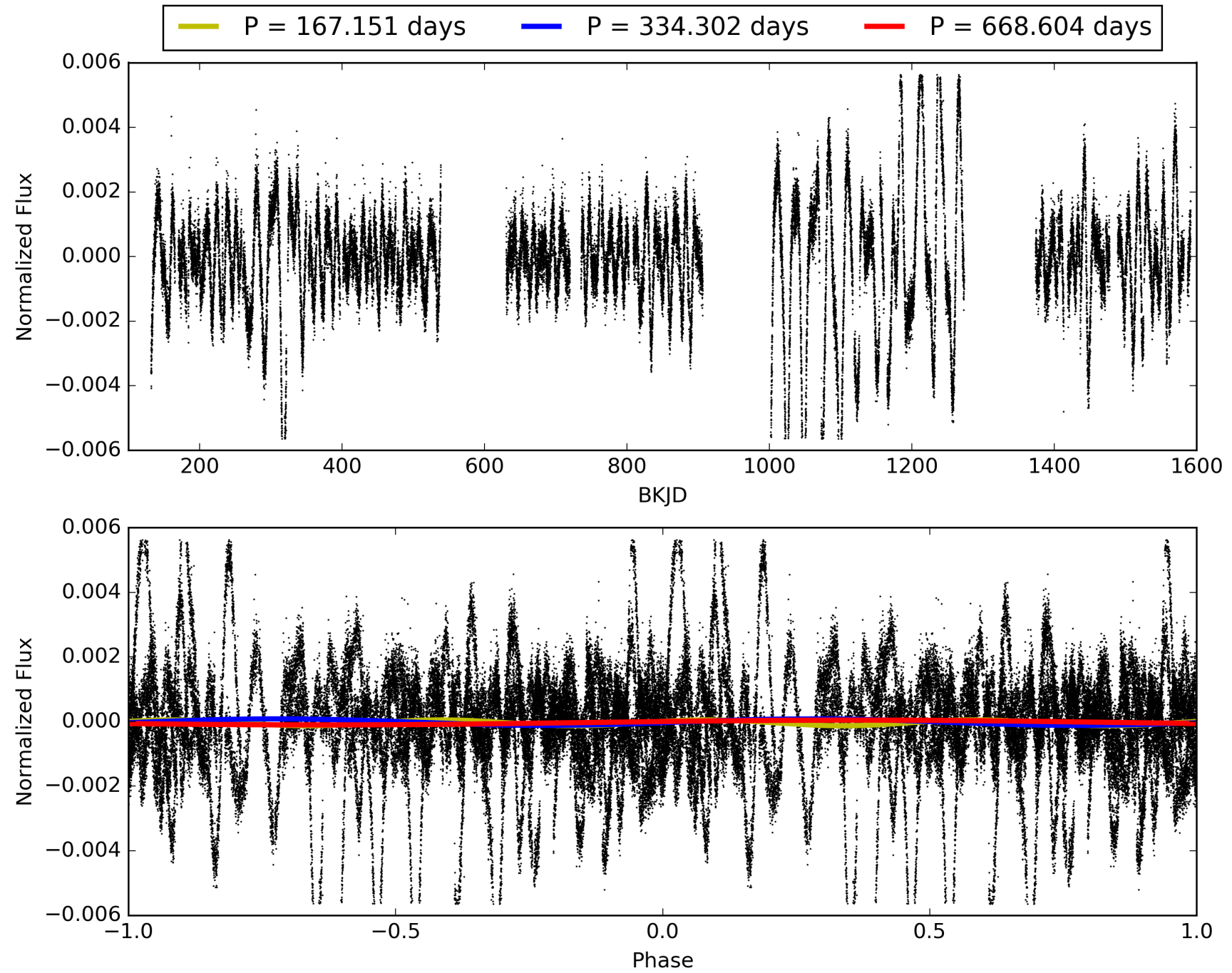
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 09:04:55 Z

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

TCE 004846150-04, PDC Light Curves

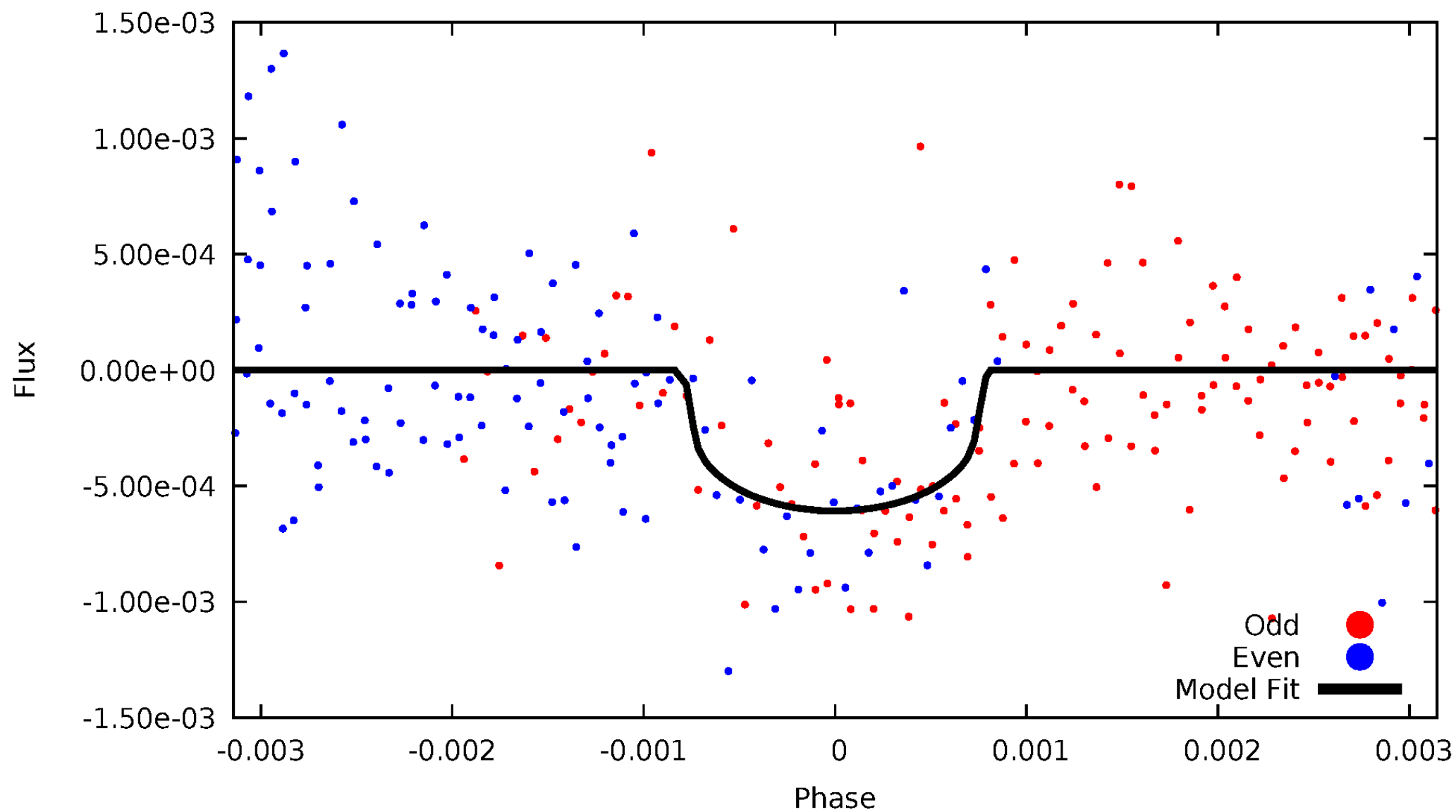


TCE 004846150-04



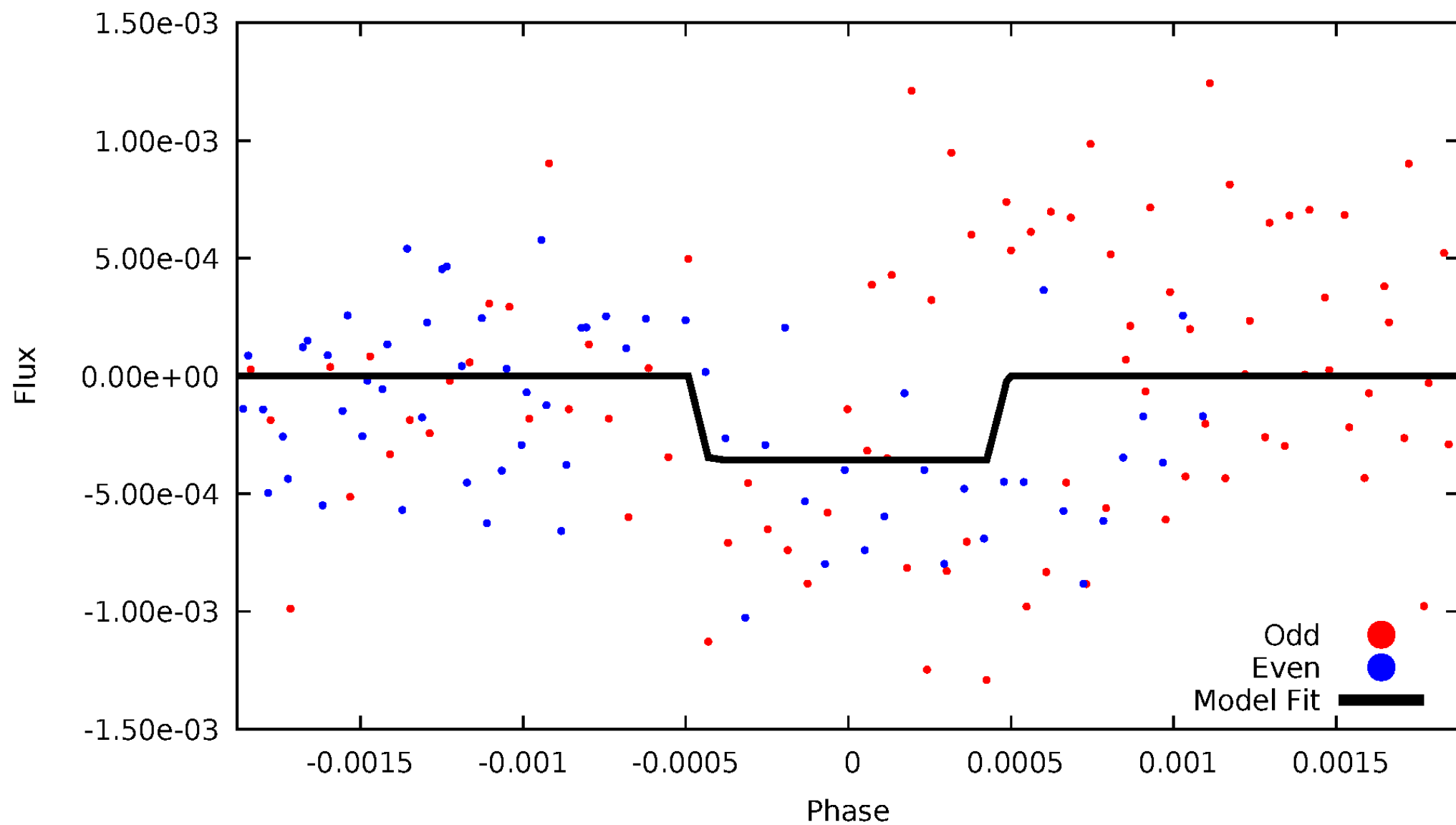
DV Odd/Even

TCE 004846150-04



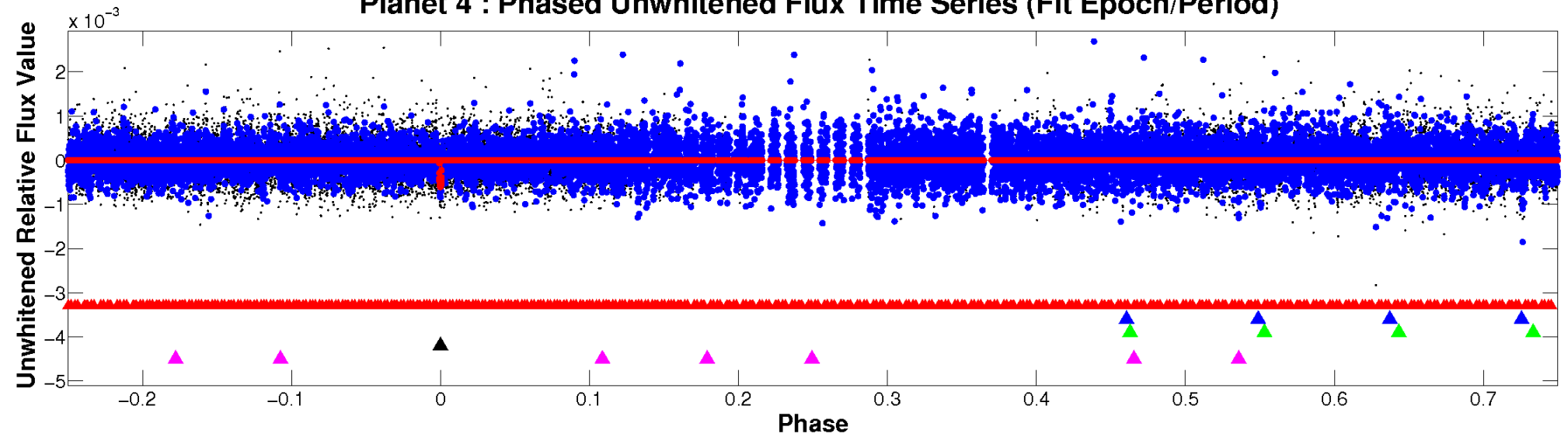
ALT Odd/Even

TCE 004846150-04

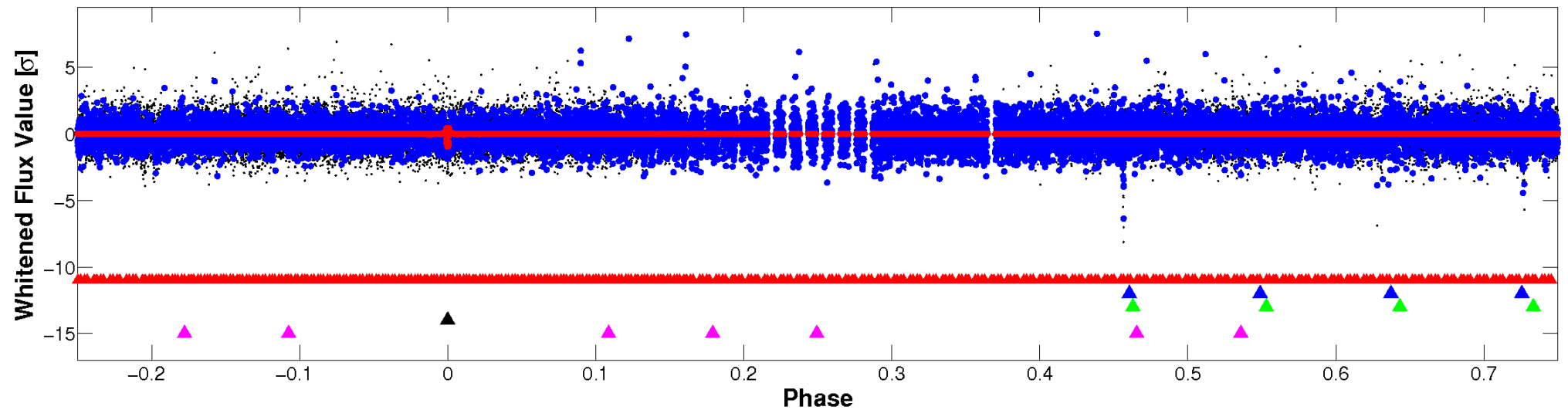


Non-Whitened Vs. Whitened Light Curve

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

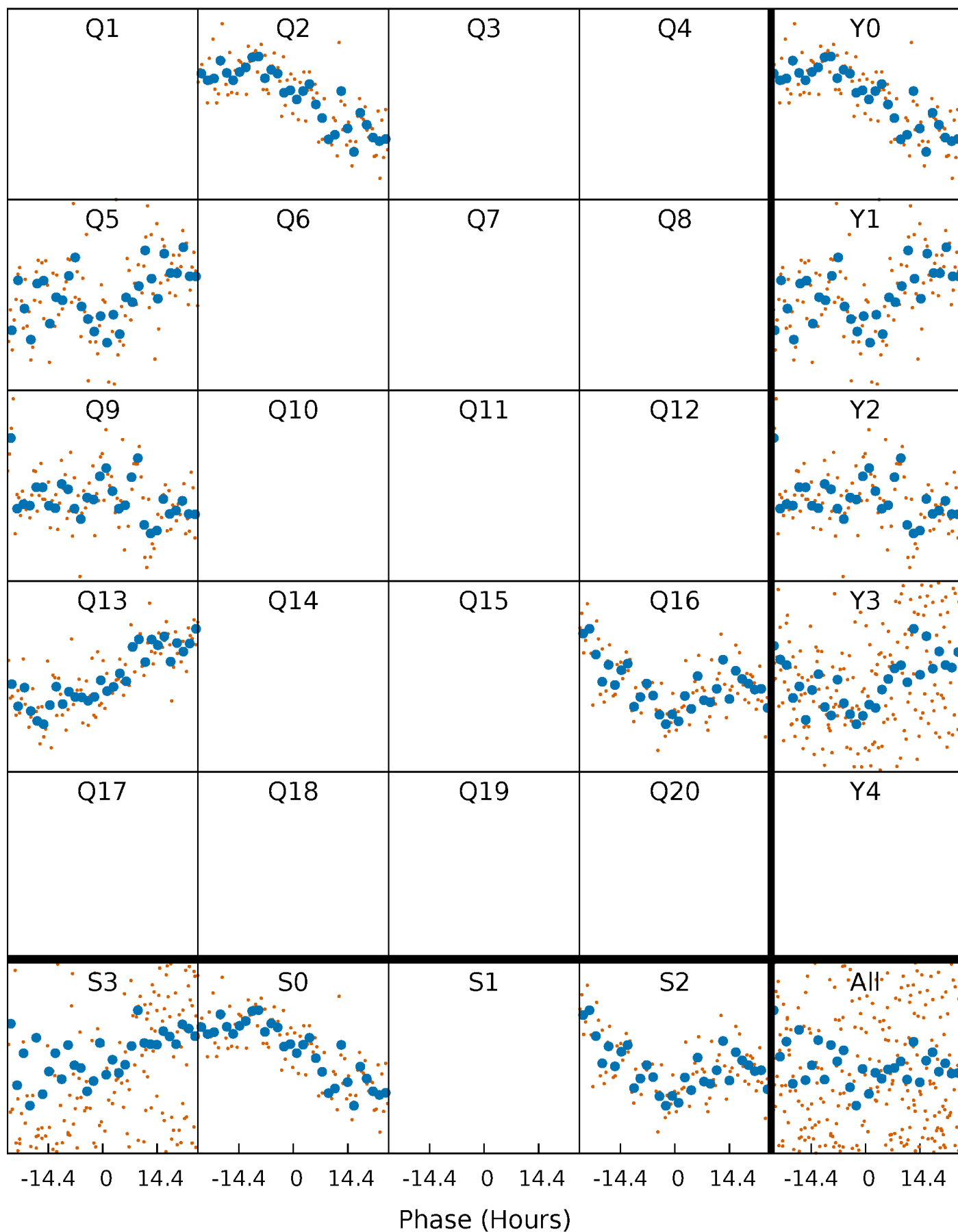


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



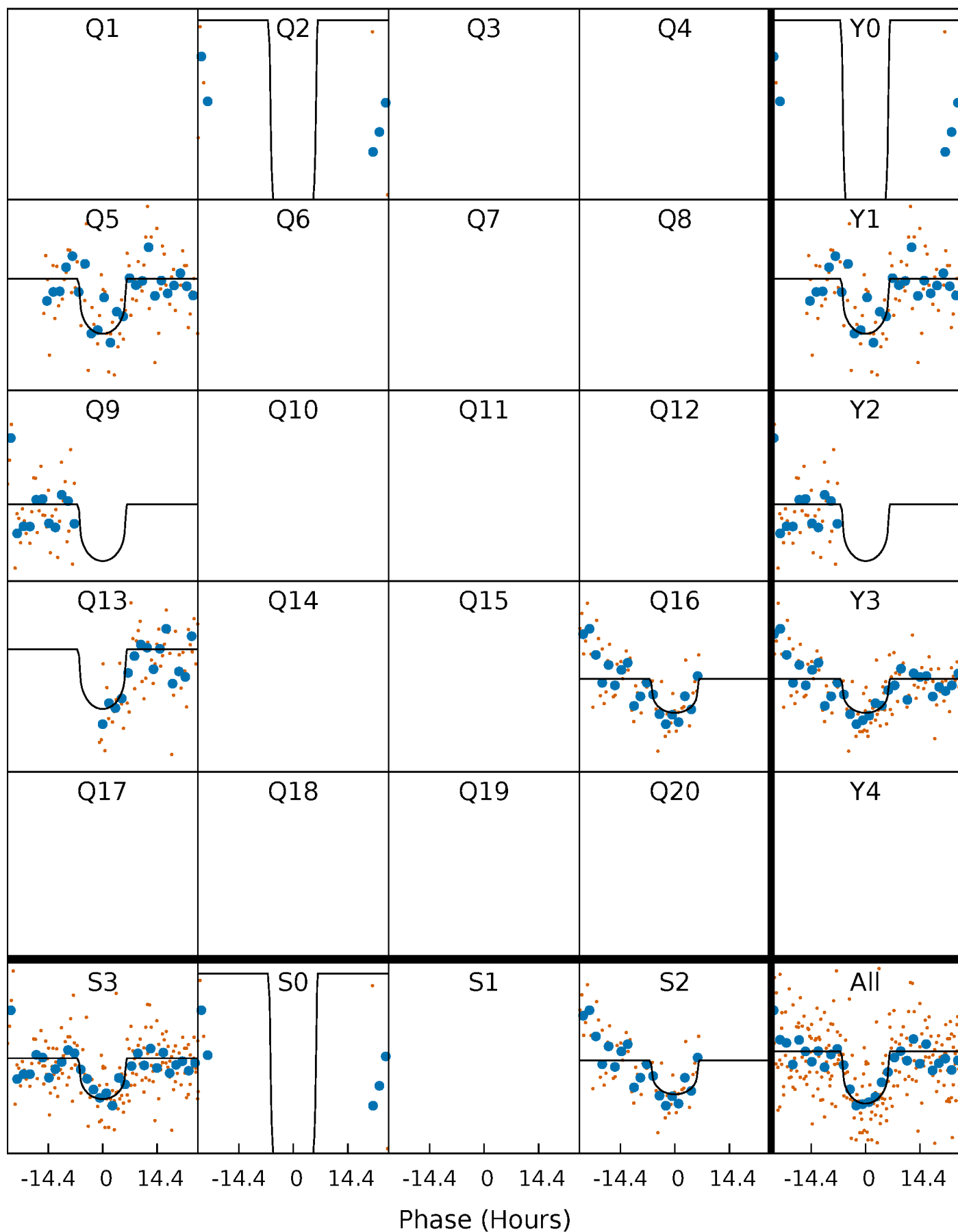
PDC Quarter-Phased Transit Curves

TCE 004846150-04 $P=334.301795$ Days $T_0=199.952230$ (BKJD)



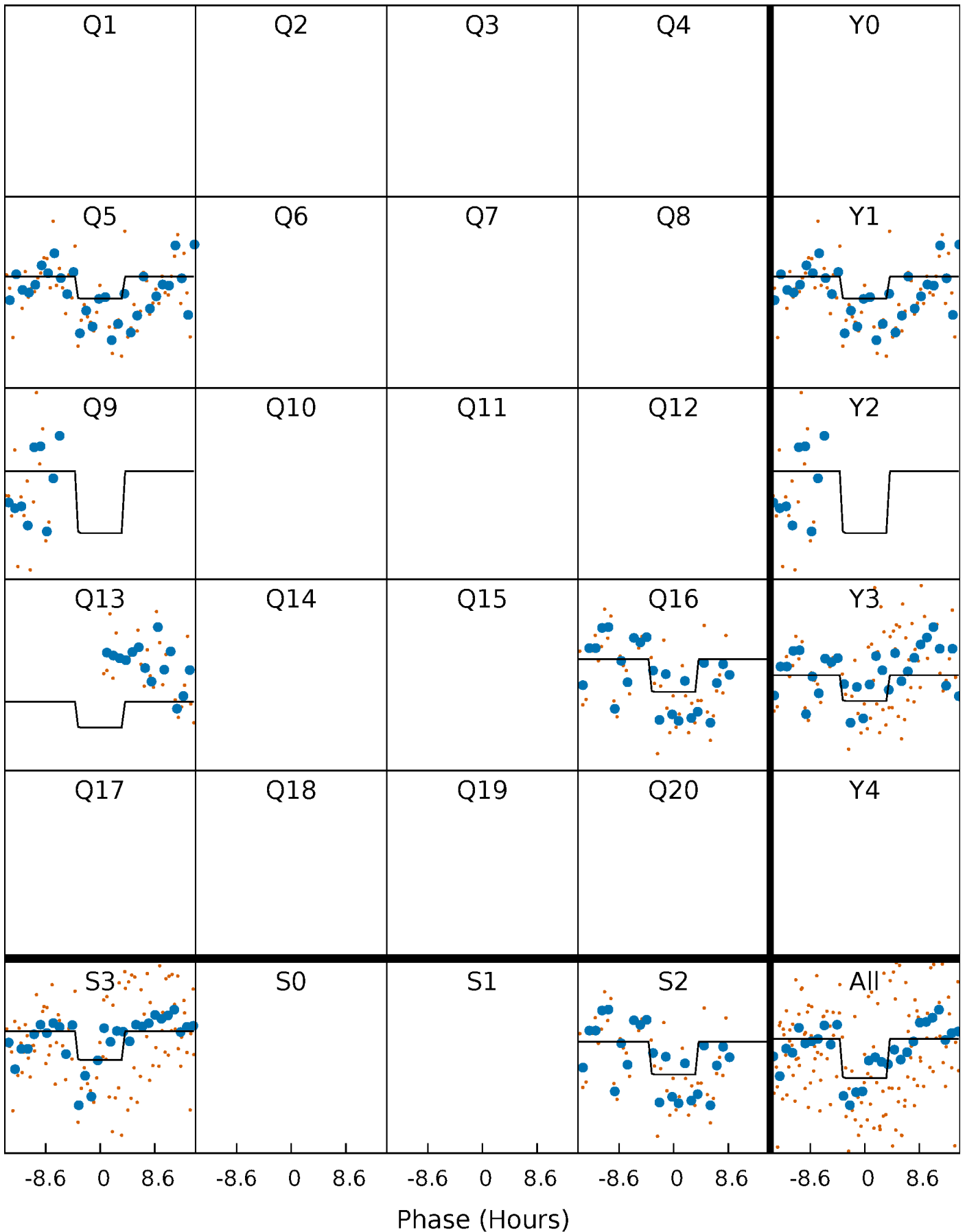
DV Quarter-Phased Transit Curves

TCE 004846150-04 P=334.301795 Days $T_0=199.952230$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

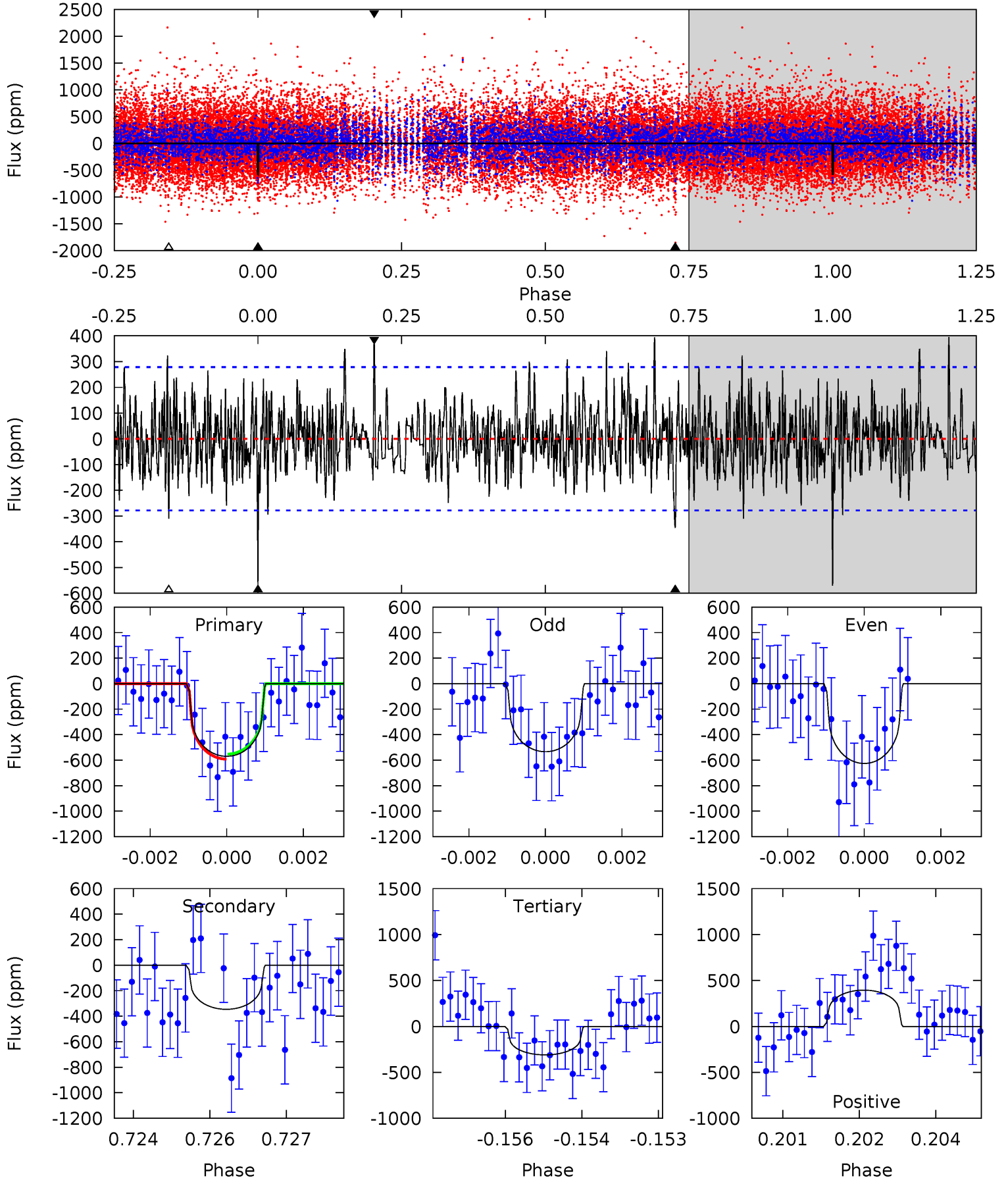
TCE 004846150-04 P=334.279419 Days $T_0=199.961016$ (BKJD)



DV Model-Shift Uniqueness Test

004846150-04, P = 334.301795 Days, E = 199.952230 Days

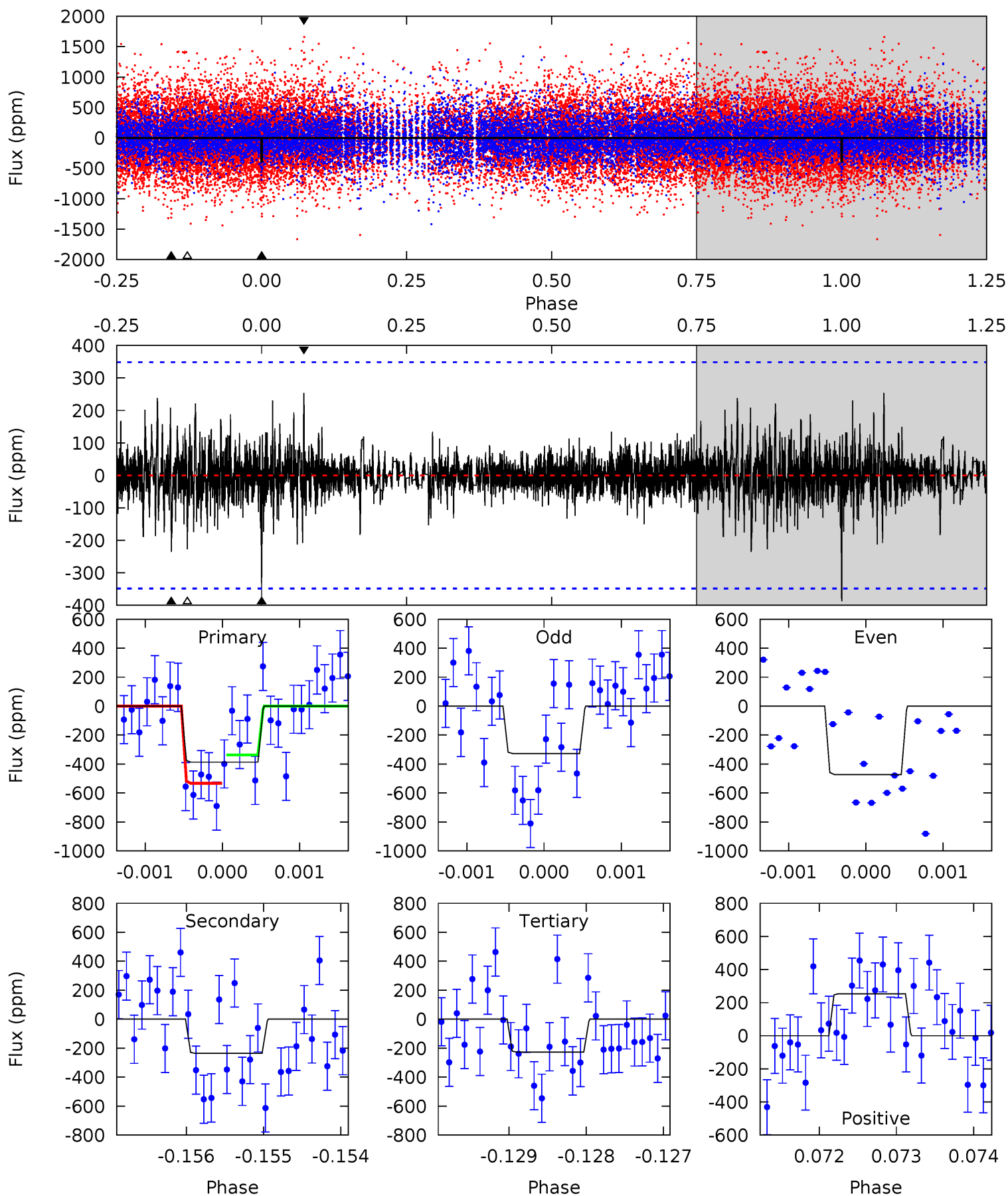
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	6.67	5.98	7.62	5.37	3.16	1.95	5.01	3.38	0.69	-0.94	0.87	0.94	0.41	0.37



Alt Model-Shift Uniqueness Test

004846150-04, P = 334.279419 Days, E = 199.961016 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
6.07	3.70	3.56	3.98	5.47	3.31	0.80	2.51	2.09	0.14	-0.28	1.12	0.38	0.40	1.51



Stellar Parameters For KIC 004846150

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5018^{+149}_{-149}	$4.492^{+0.093}_{-0.085}$	$0.140^{+0.250}_{-0.300}$	$0.838^{+0.083}_{-0.091}$	$0.795^{+0.080}_{-0.055}$	$1.899^{+0.696}_{-0.466}$
	+3%/-3%	+2%/-2%	+179%/-214%	+10%/-11%	+10%/-7%	+37%/-25%
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 004846150-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-346 ± 52	$2.55^{+1.93}_{-1.51}$	302^{+14}_{-13}	4282^{+2019}_{-755}	$23290^{+116592}_{-15955}$
Alt.	-236 ± 64	$2.27^{+1.79}_{-1.46}$	304^{+13}_{-13}	4128^{+2523}_{-736}	$18465^{+149114}_{-12877}$

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 $A_{obs} \gg 1.0$

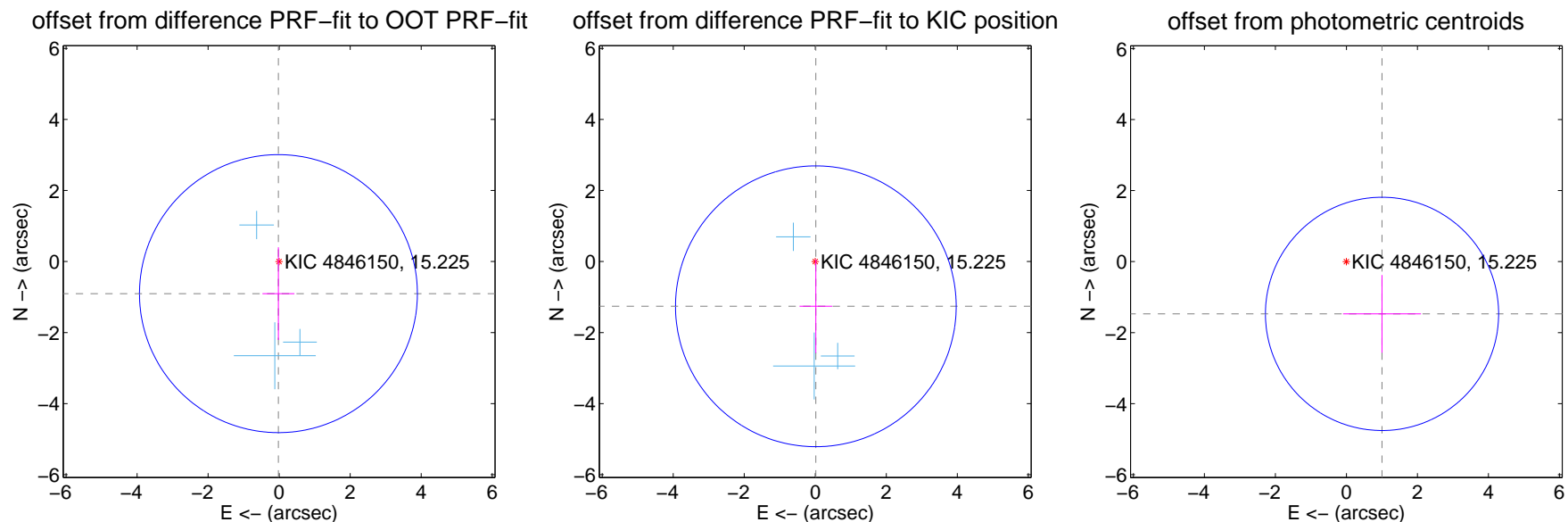
DV Centroid Data

Supplemental centroid analysis for 004846150-04. Kepler magnitude: 15.22. Transit SNR 6.84

There are 3 quarters with good PRF difference image offsets

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

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.904 ± 1.305	0.69	0.020 ± 0.451	-0.904 ± 1.305
PRF-fit source offset from KIC position	1.260 ± 1.318	0.96	-0.017 ± 0.461	-1.260 ± 1.318
photometric centroid source offset	1.78 ± 1.10	1.63	-1.00 ± 1.10	-1.47 ± 1.09

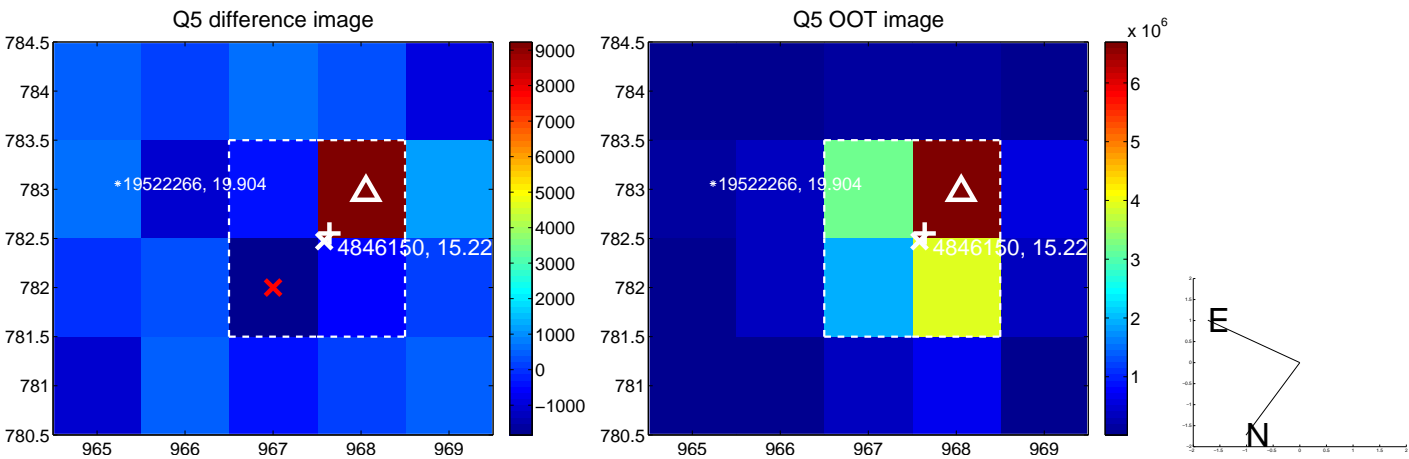


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

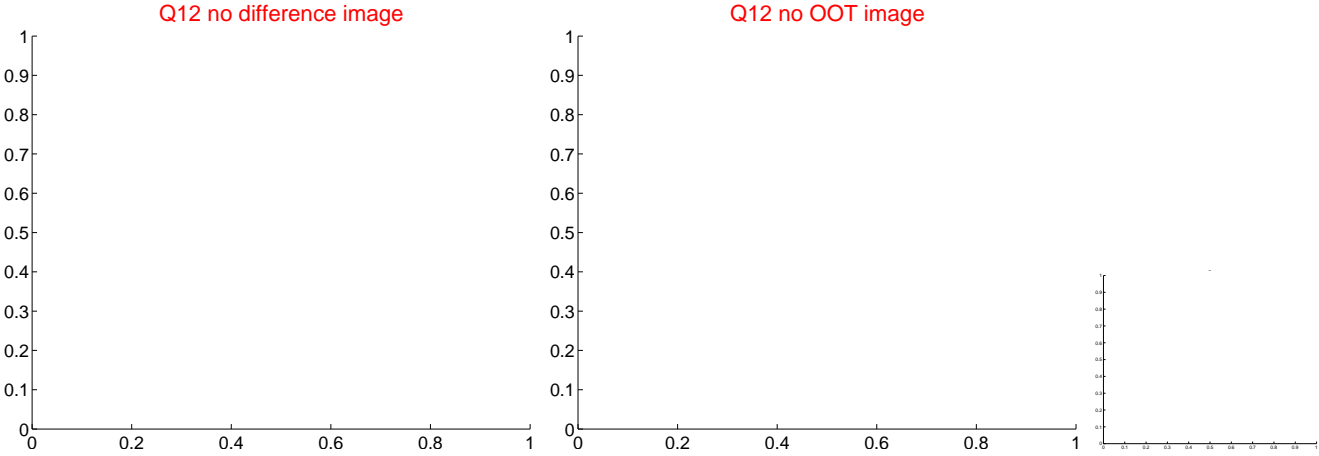
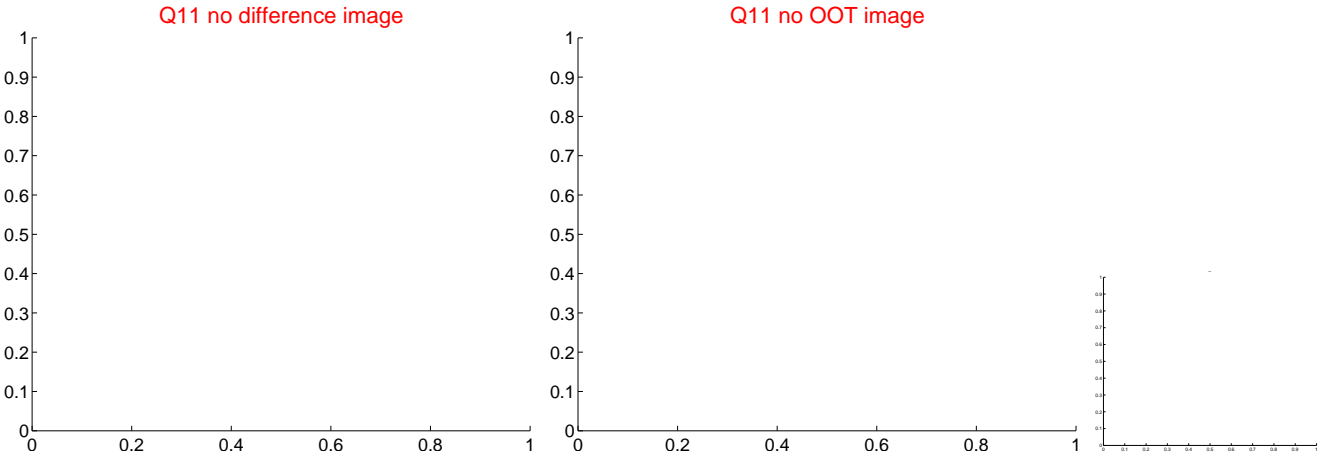
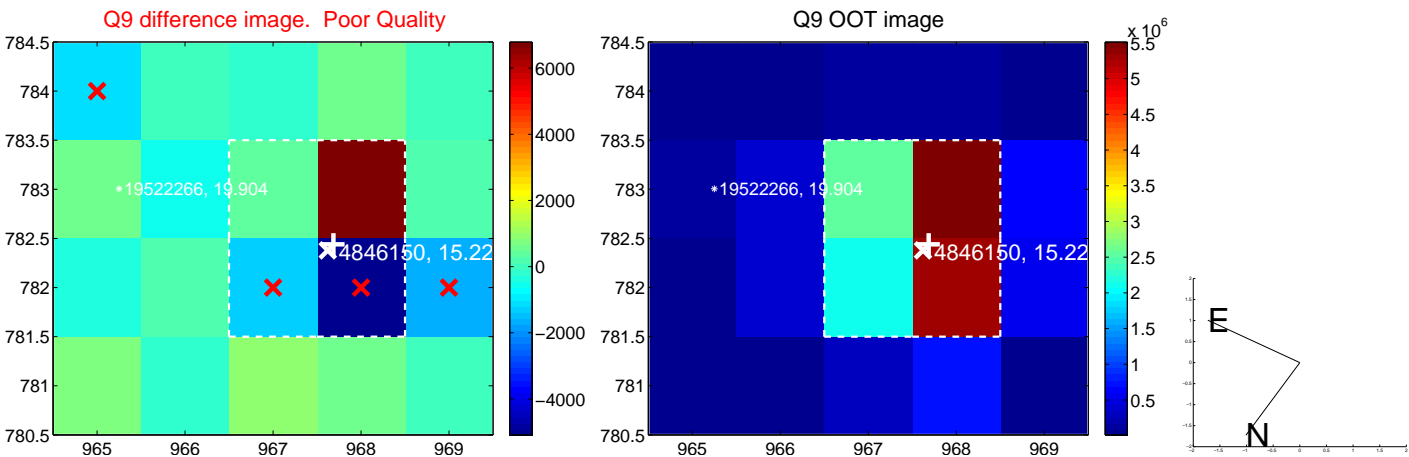
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



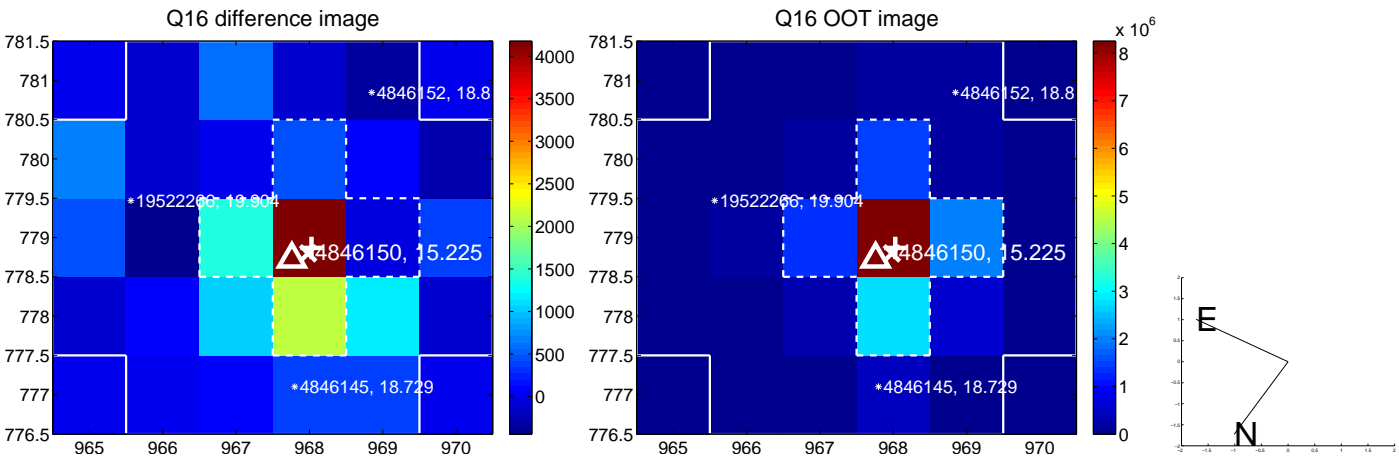
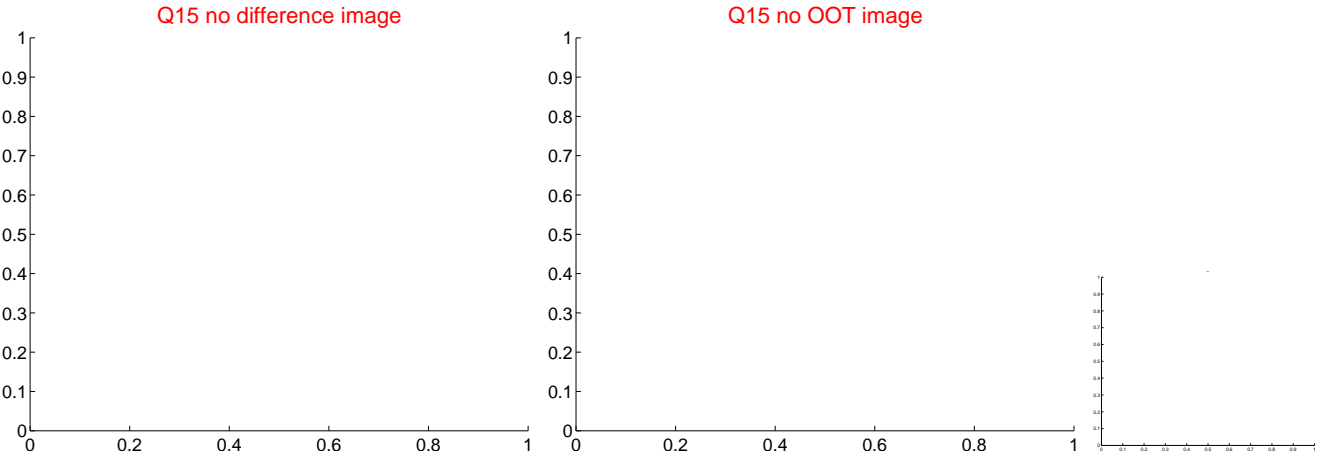
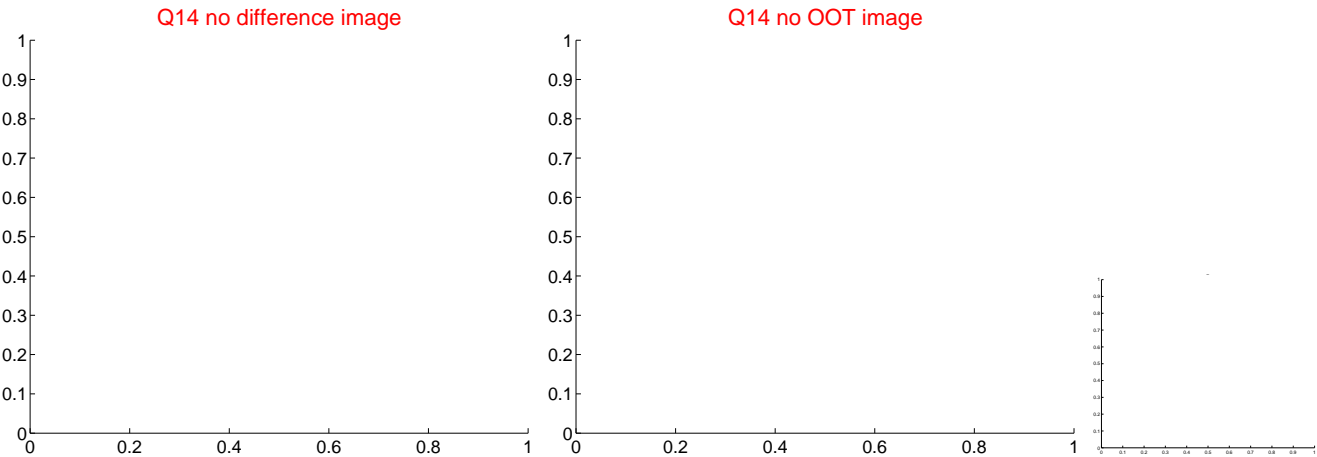
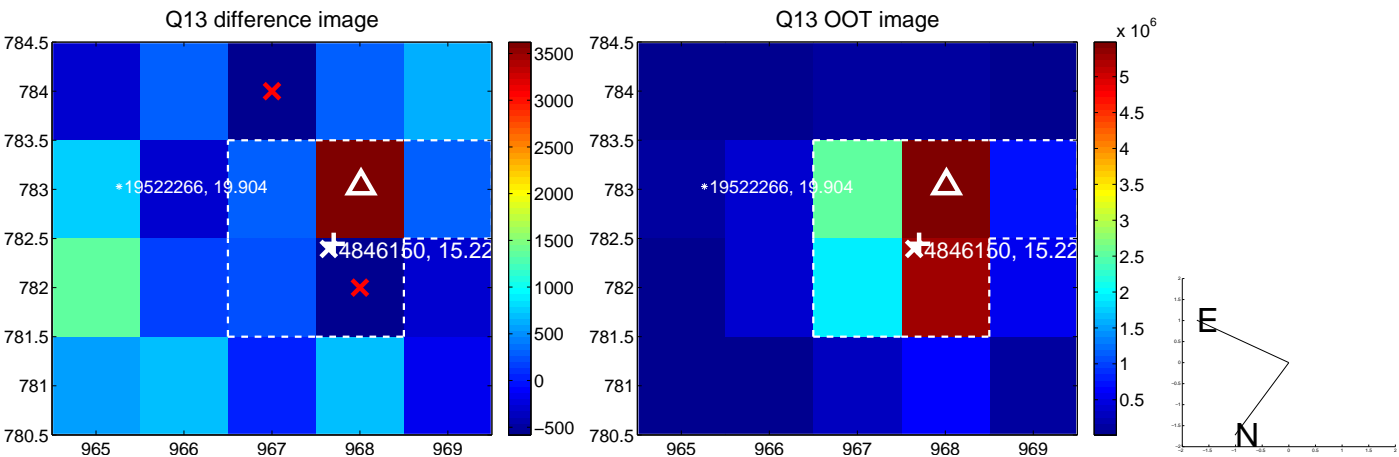
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



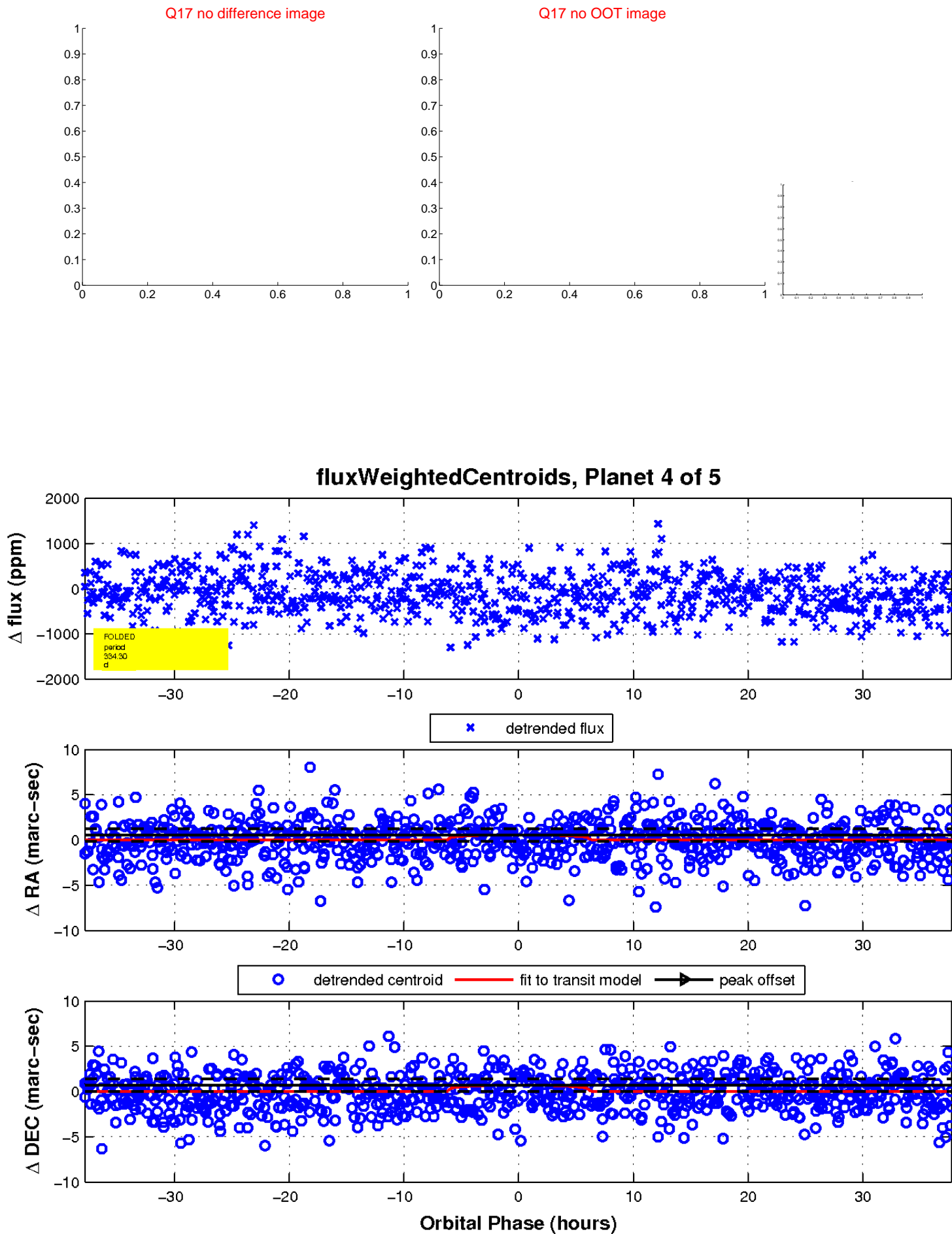
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

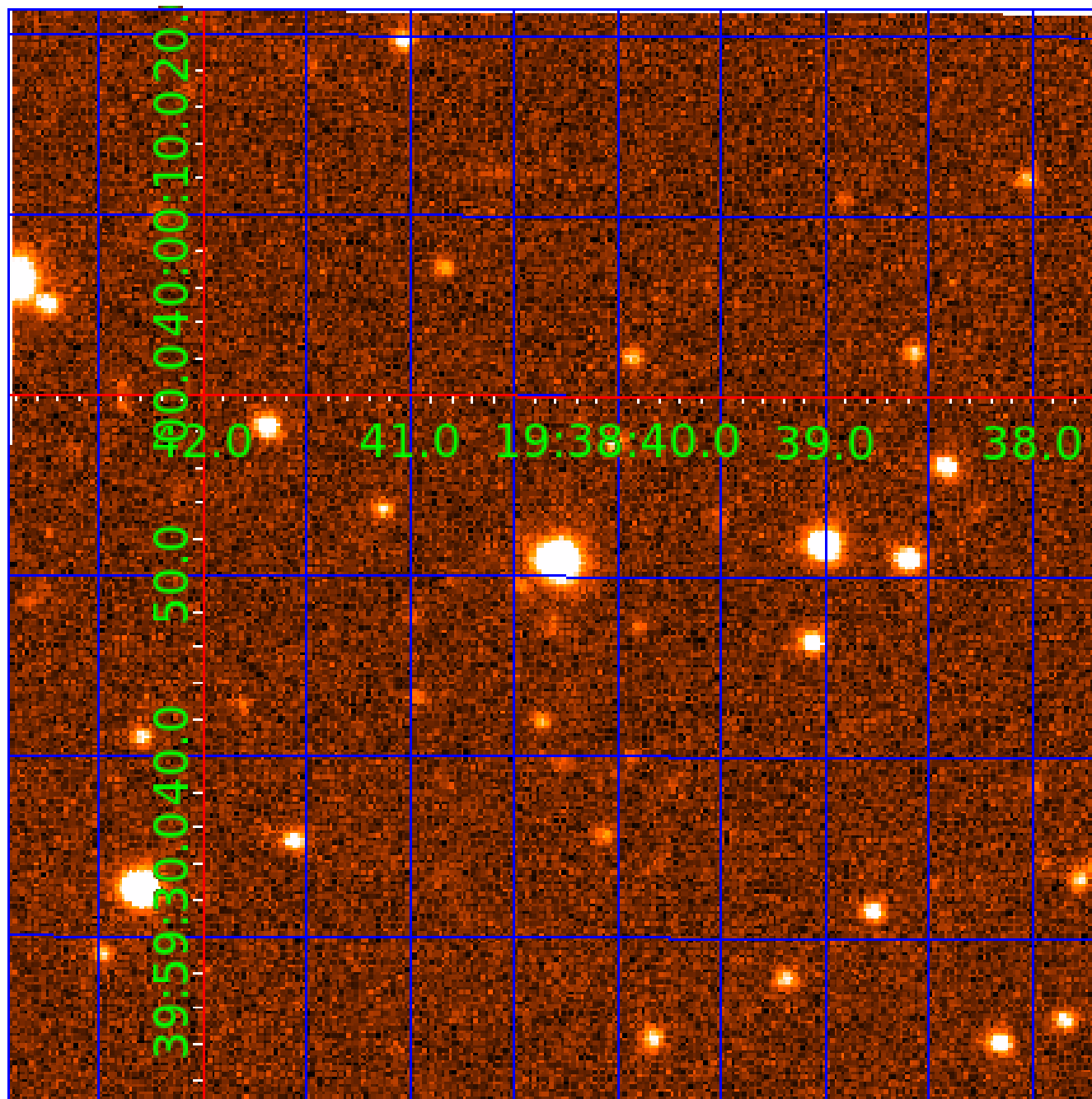


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004846150

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})
004846150-01	OBS	No	3.656885	134.105674	72.2	14.049	7.7	7.8	0.84	5018	0.71	215.29
004846150-02	OBS	No	363.847918	353.900675	1032.3	1.171	17.9	4.6	0.84	5018	3.10	0.47
004846150-04	OBS	No	334.301795	199.952230	607.6	12.605	8.3	6.8	0.84	5018	2.11	0.52
004846150-05	OBS	No	215.030176	283.315510	736.7	4.201	7.5	7.4	0.84	5018	2.74	0.94

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004846150-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
004846150-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—MARSHALL_ZUMA_TRACKER—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV— MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
004846150-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_ALT—CENT_FEW_DIFFS
004846150-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—MOD_NONUNIQ_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

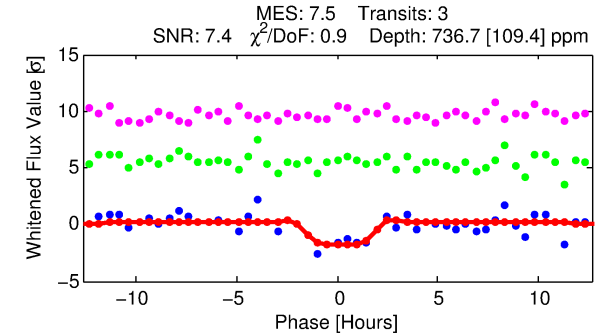
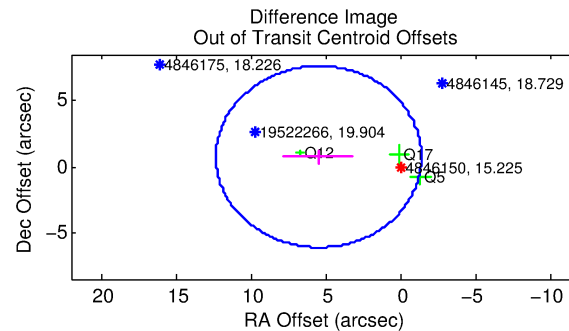
N = Not Transit-Like. S = Stellar Eclipse. C = Centroid Offset. E = Ephemeris Match.

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

Ephemeris Match Information For 004846150-05

No Significant Match Found

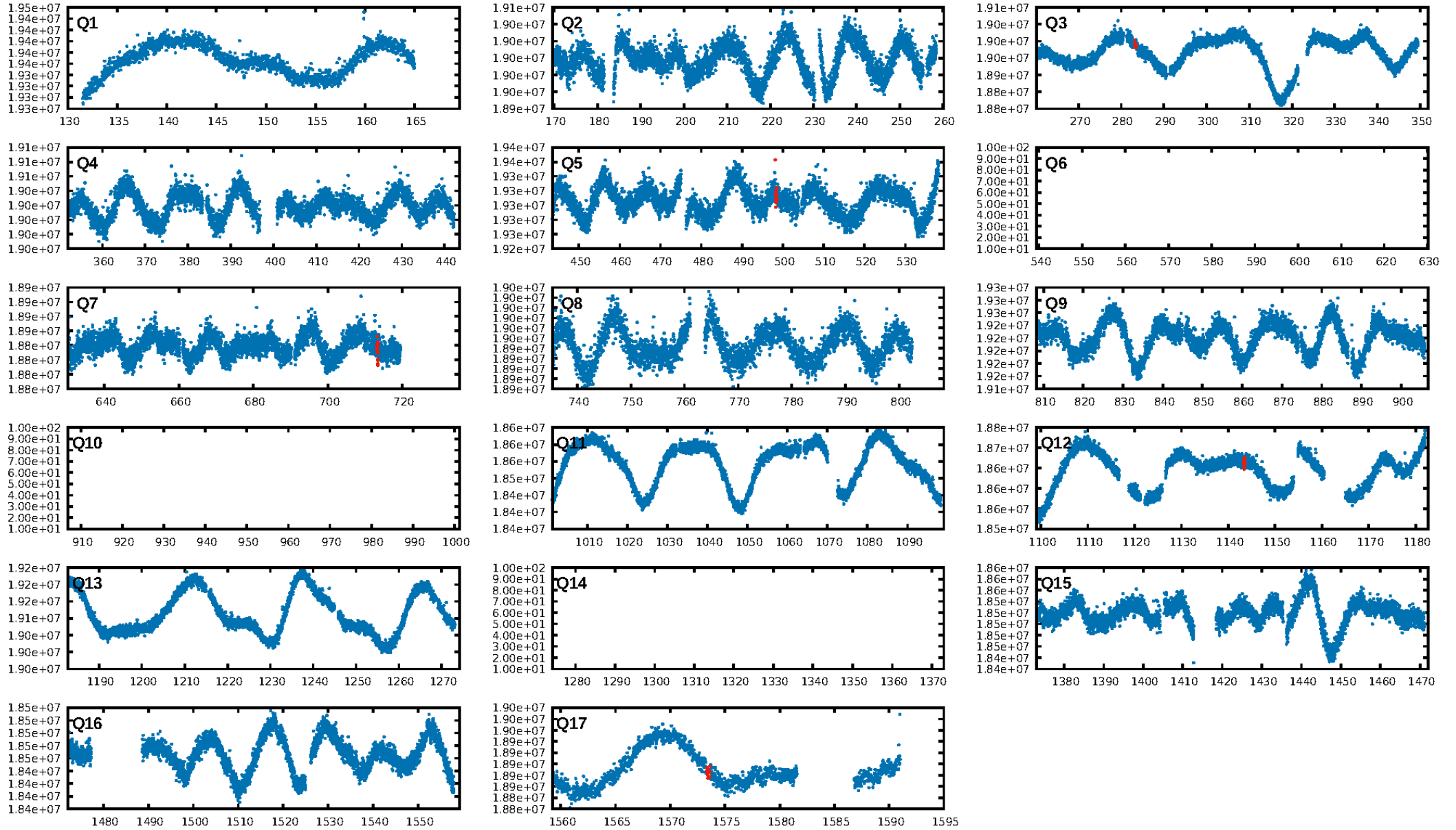
KIC: 4846150 Candidate: 5 of 5 Period: 215.030 d



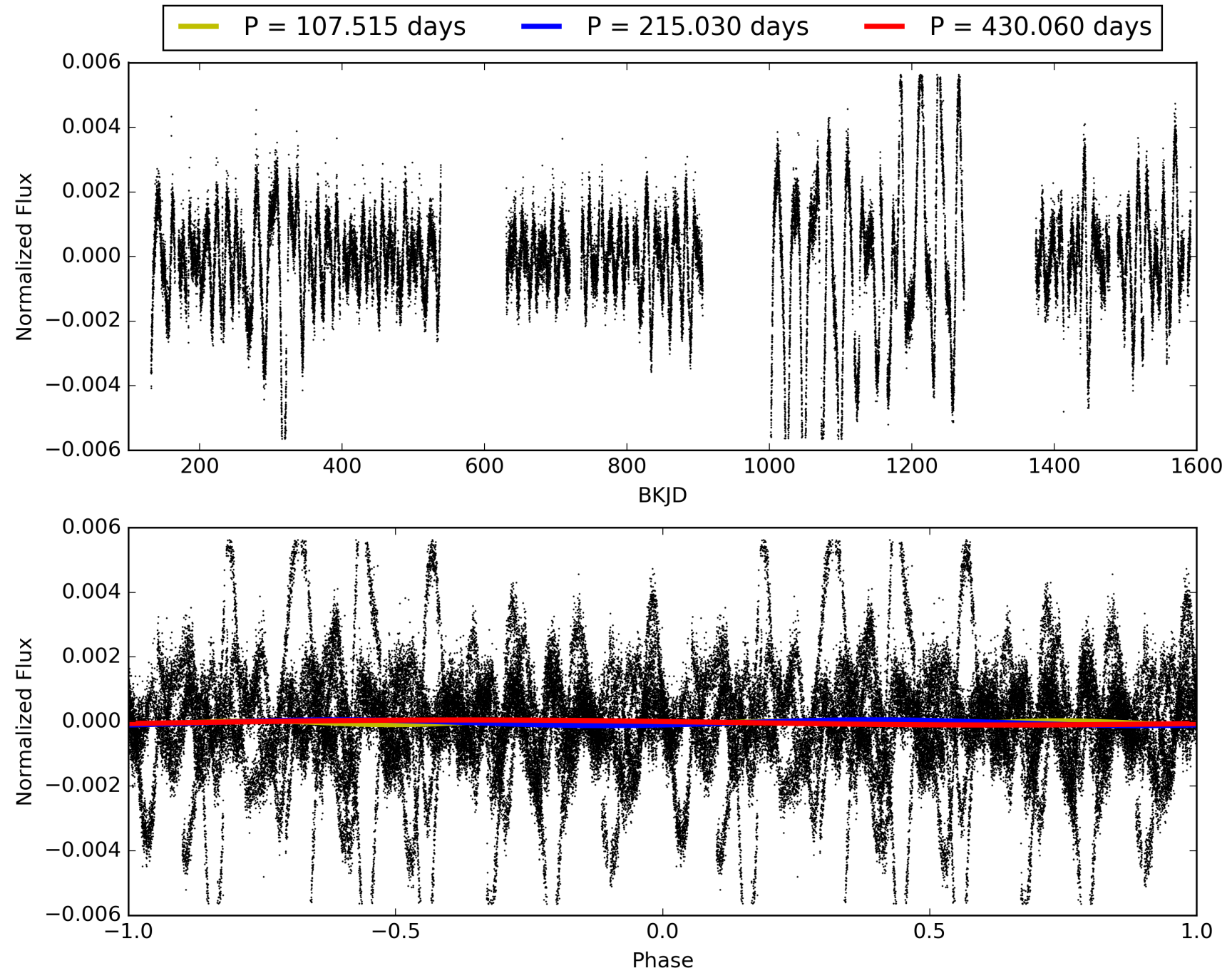
ShortPeriod-sig: 100.0% [345.96σ]
 LongPeriod-sig: 100.0% [215.44σ]
 ModelChiSquare2-sig: 7.3%
 ModelChiSquareGof-sig: 99.5%
Bootstrap-pfa: 1.59e-11
 RollingBand-fgt: 1.00 [2/2]
 GhostDiagnostic-chr: 0.5197

Centroid-sig: 43.1%
 Centroid-so: 0.781 arcsec [0.49σ]
 OotOffset-rm: 5.500 arcsec [2.40σ]
 KicOffset-rm: 5.455 arcsec [2.34σ]
 OotOffset-st: 0/0/1/2 [3]
 KicOffset-st: 0/0/1/2 [3]
 DiffImageQuality-fgm: 0.33 [1/3]
 DiffImageOverlap-fno: 0.80 [4/5]

TCE 004846150-05, PDC Light Curves

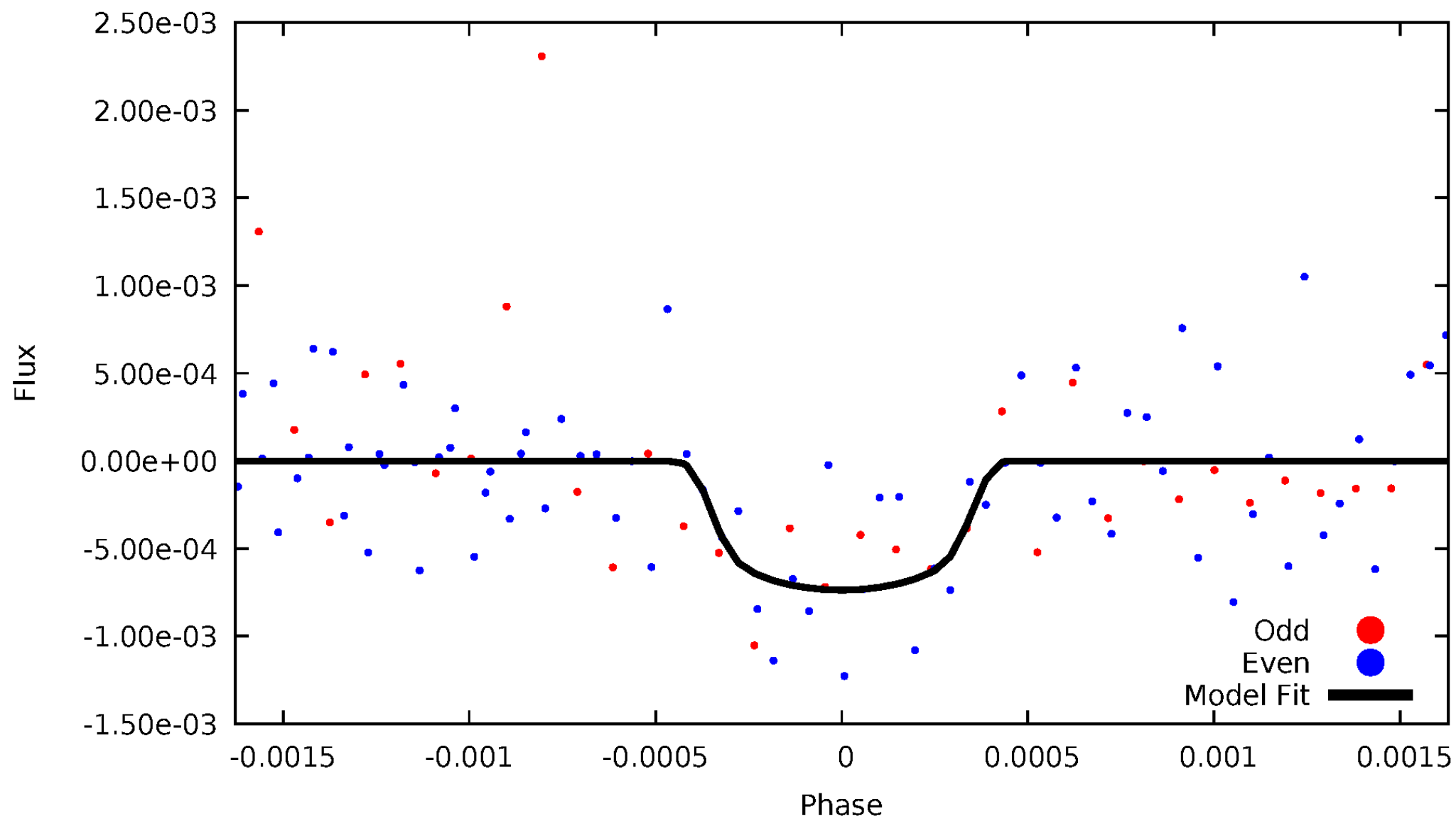


TCE 004846150-05



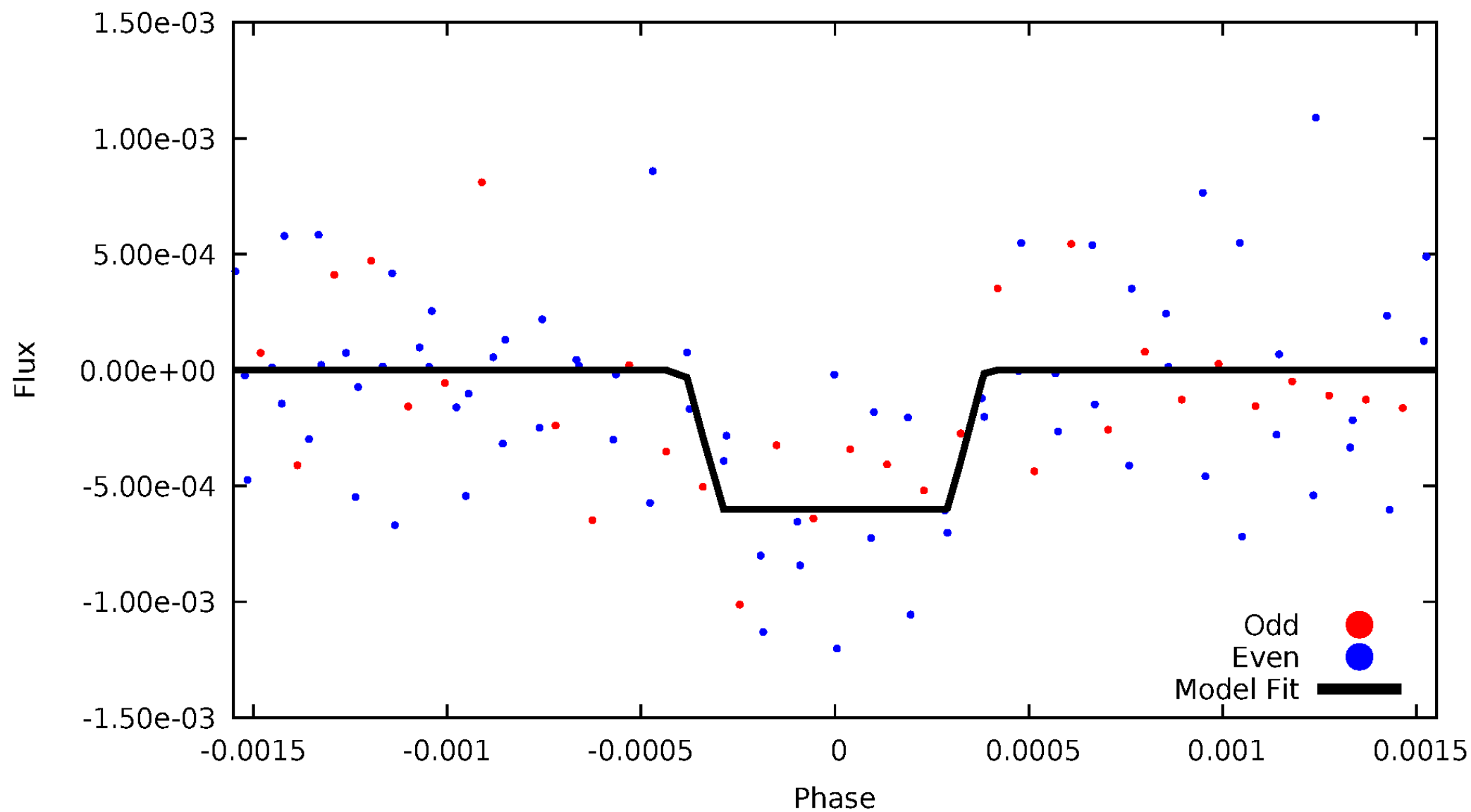
DV Odd/Even

TCE 004846150-05



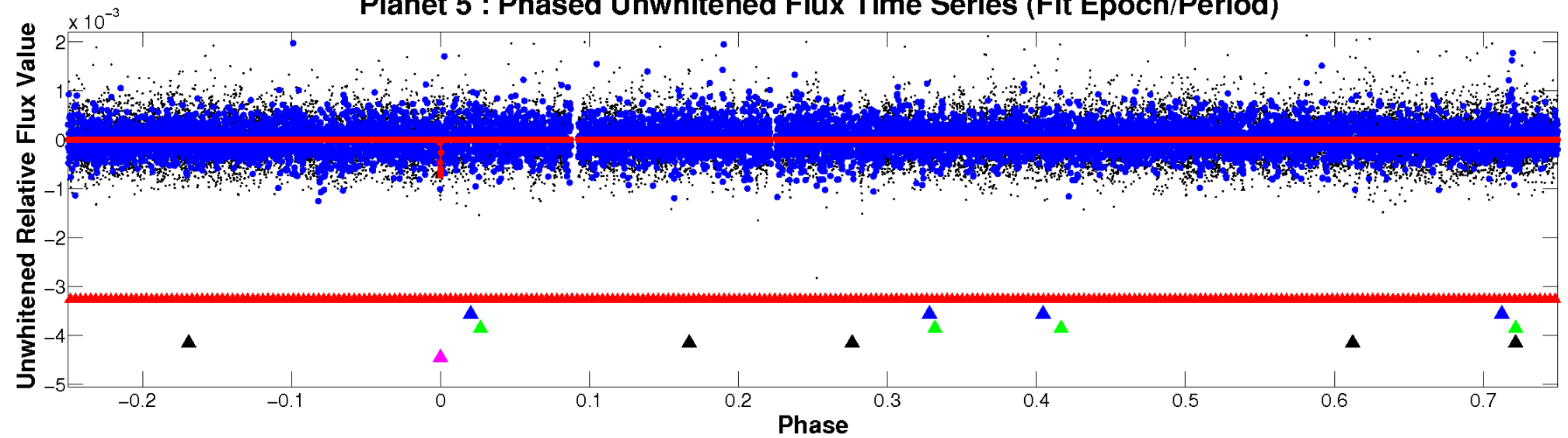
ALT Odd/Even

TCE 004846150-05

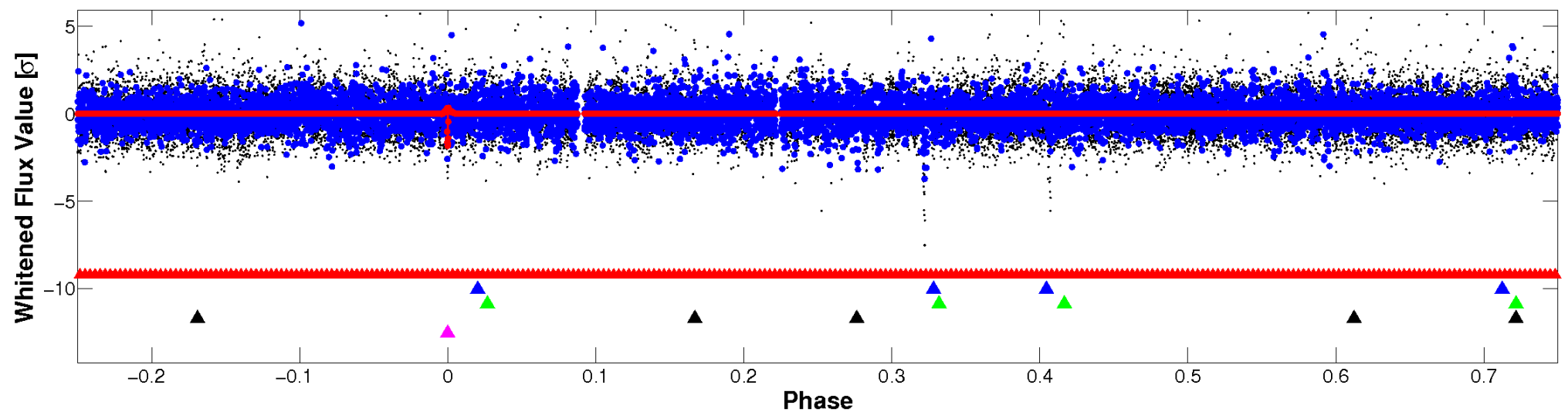


Non-Whitened Vs. Whitened Light Curve

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

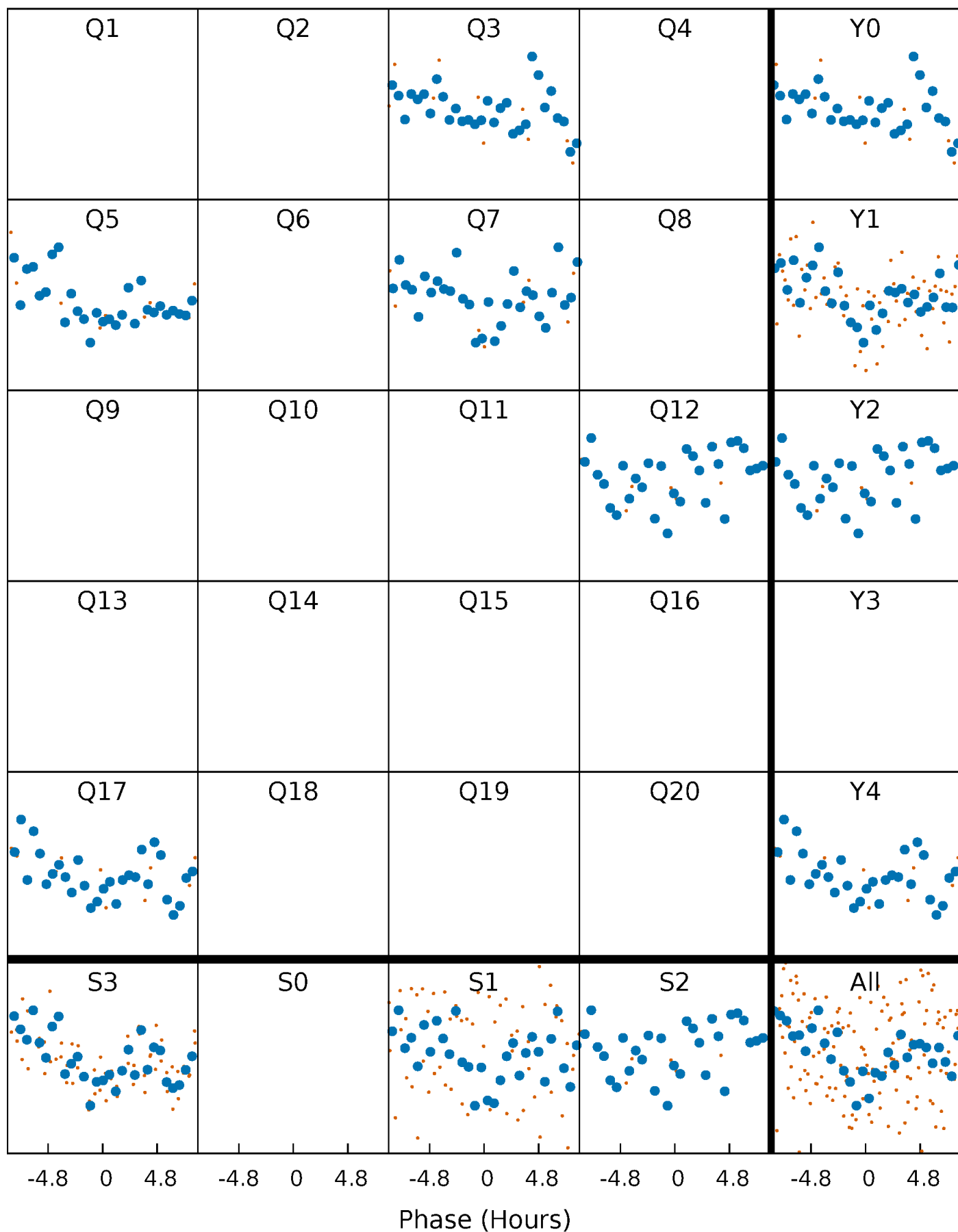


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



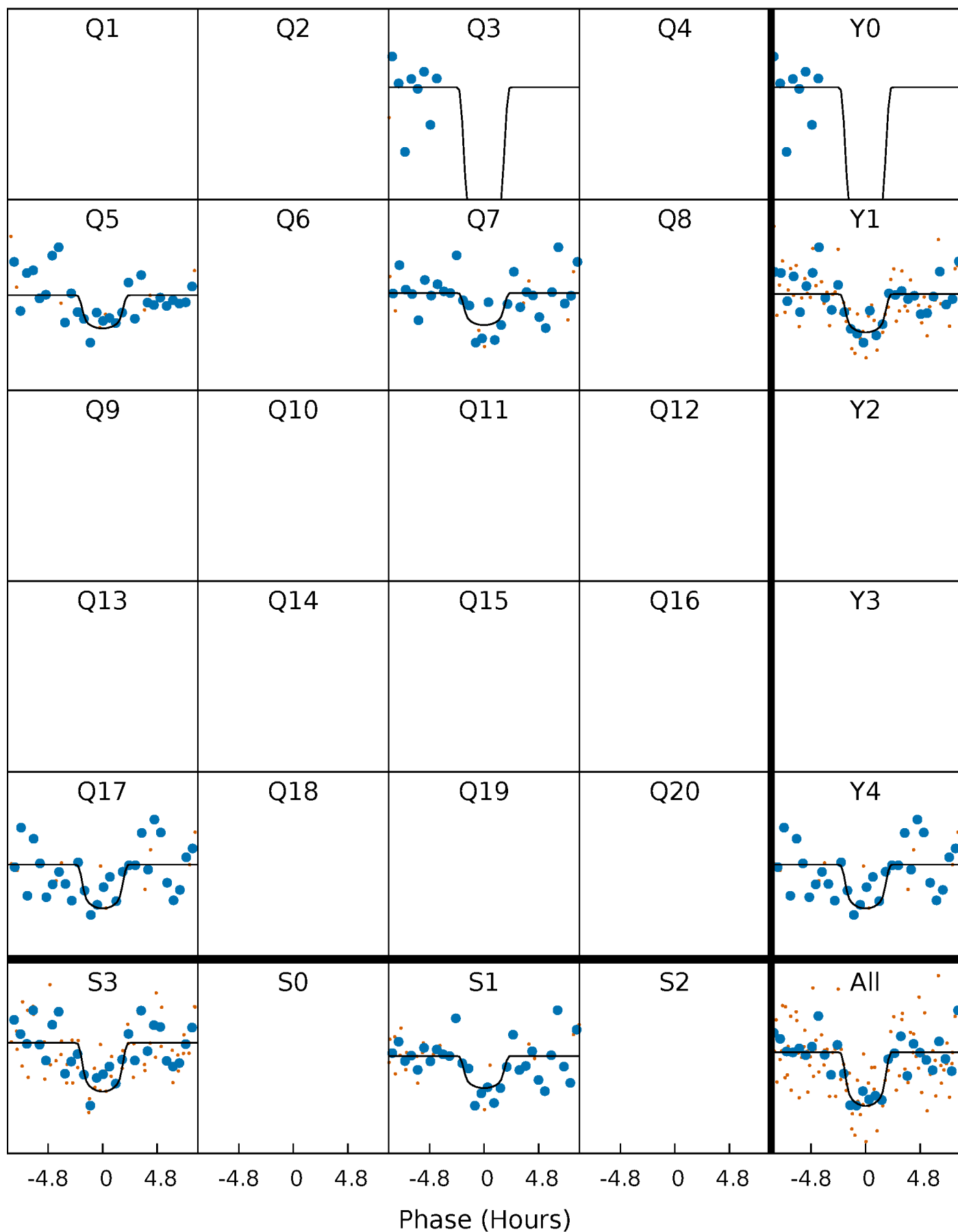
PDC Quarter-Phased Transit Curves

TCE 004846150-05 $P=215.030176$ Days $T_0=283.315510$ (BKJD)



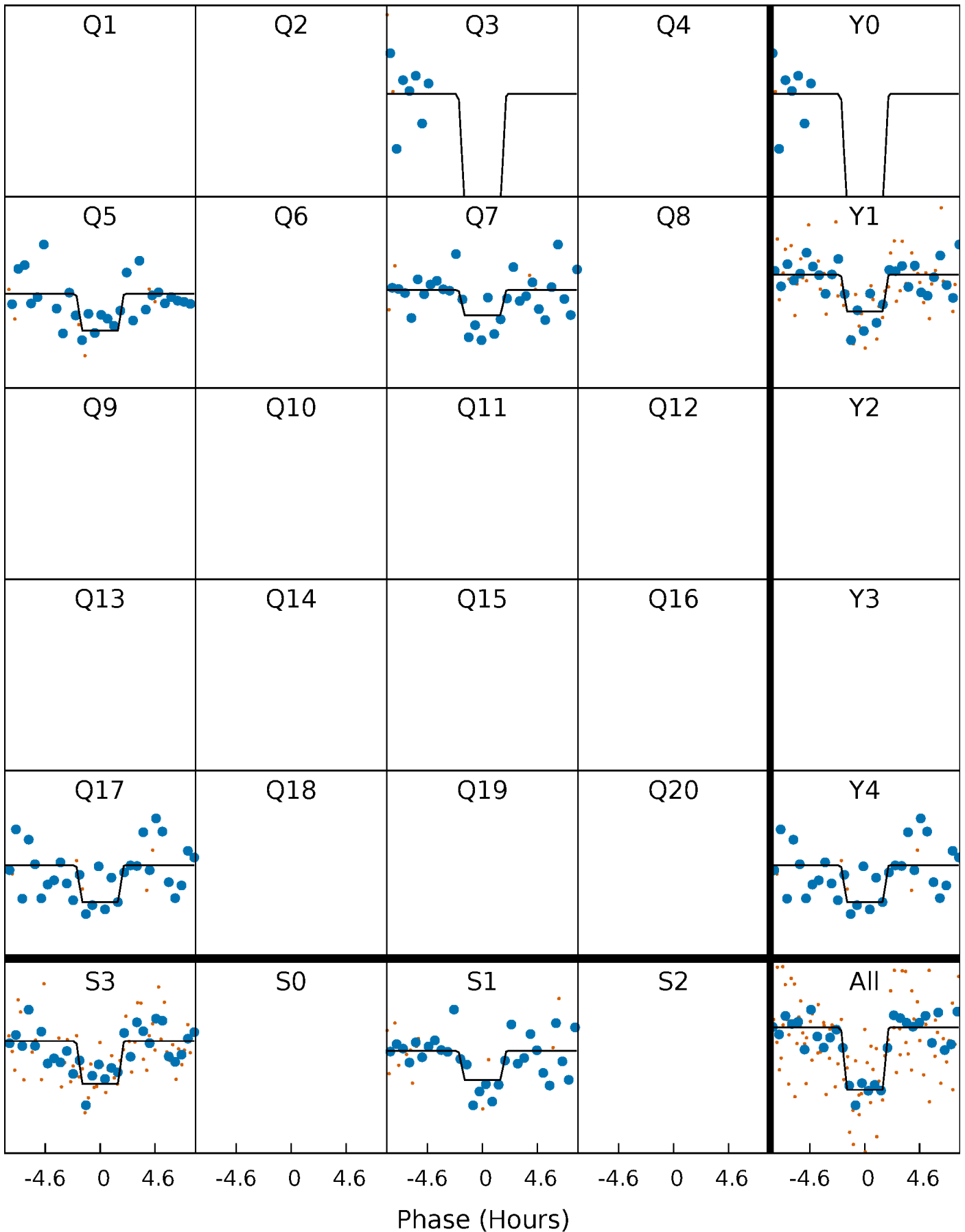
DV Quarter-Phased Transit Curves

TCE 004846150-05 $P=215.030176$ Days $T_0=283.315510$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

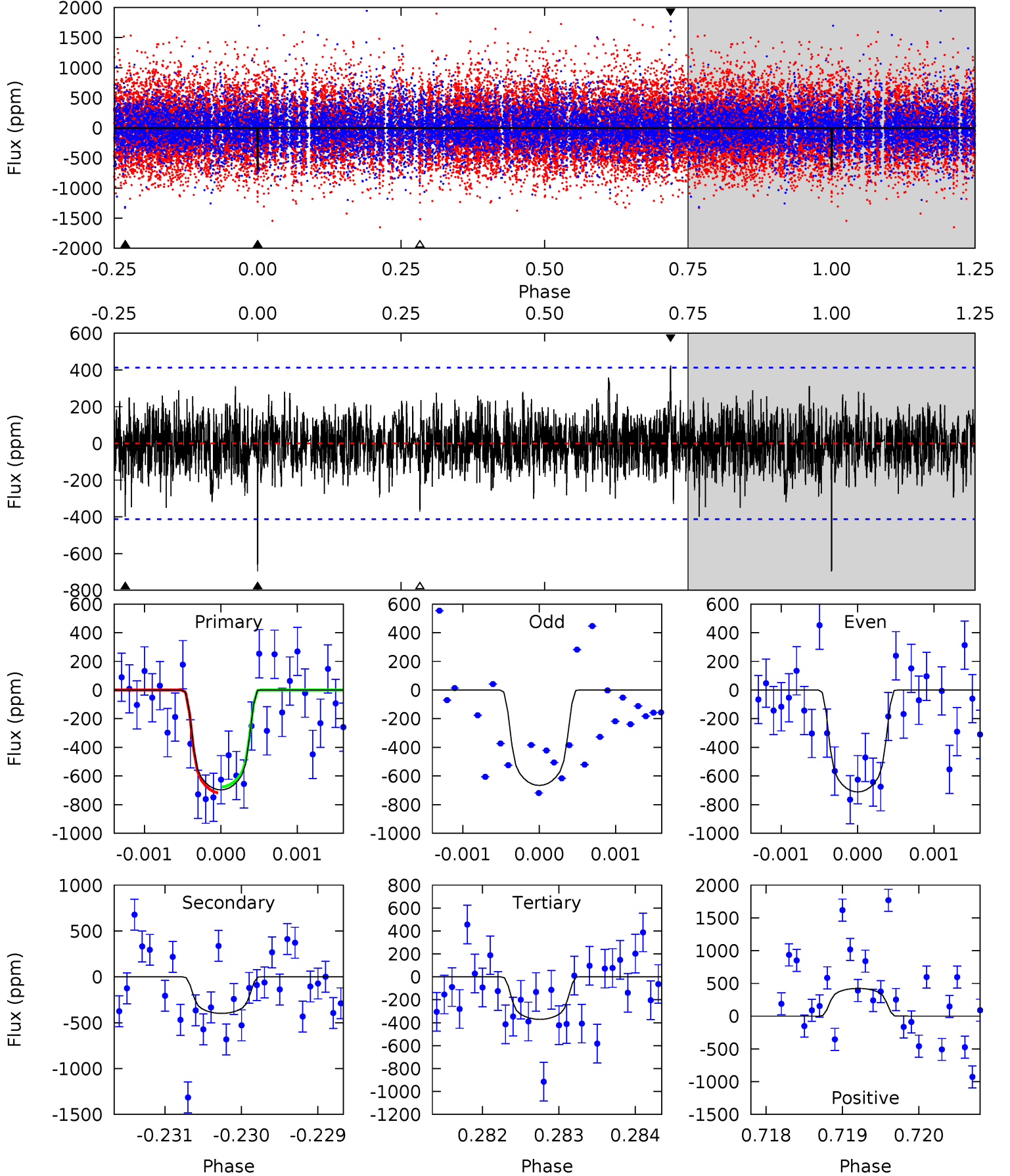
TCE 004846150-05 $P=215.028211$ Days $T_0=283.319840$ (BKJD)



DV Model-Shift Uniqueness Test

004846150-05, $P = 215.030176$ Days, $E = 68.285334$ Days

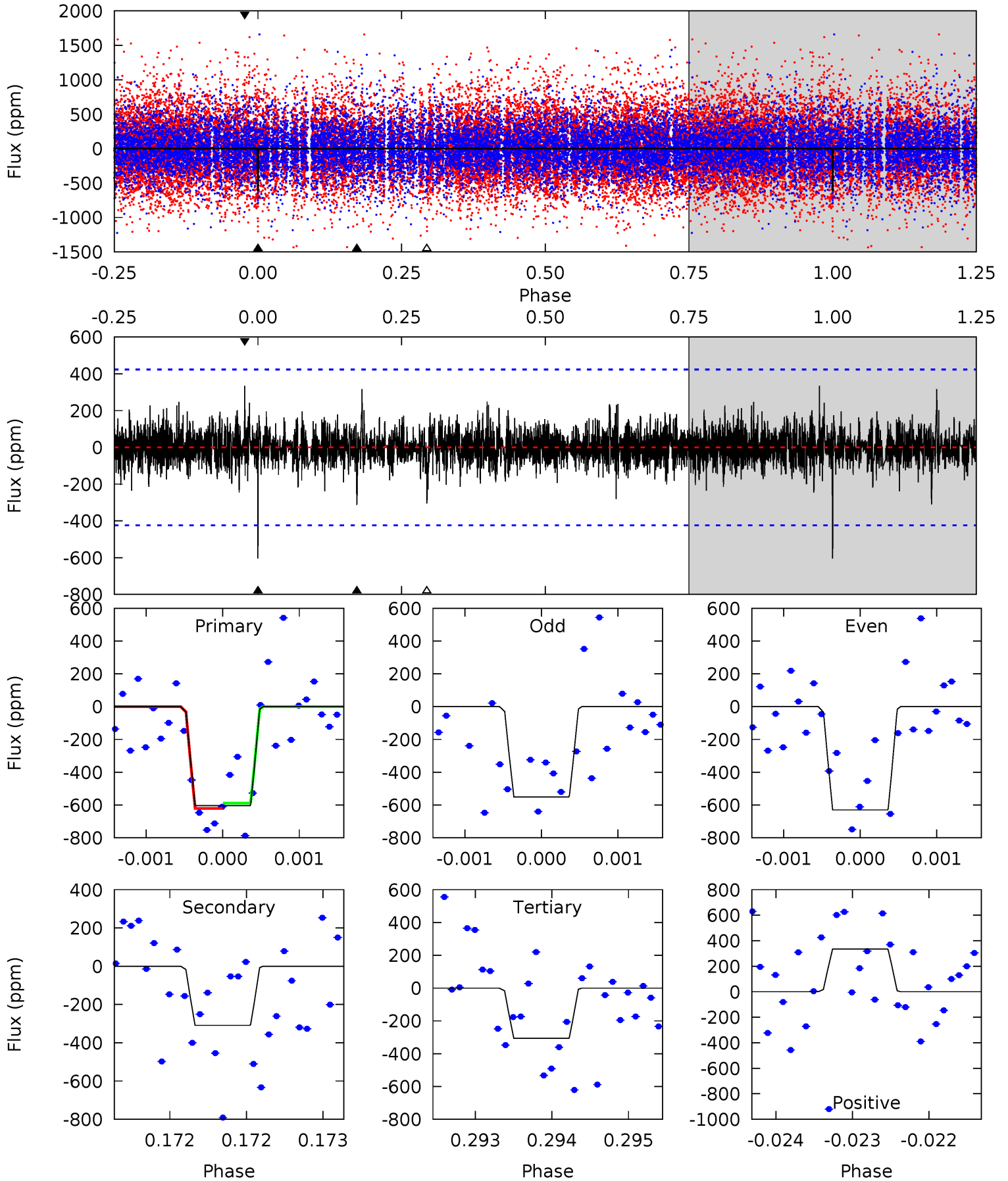
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.25	5.29	4.92	5.62	5.47	3.32	1.28	4.33	3.63	0.37	-0.33	0.28	1.04	0.38	0.28



Alt Model-Shift Uniqueness Test

004846150-05, $P = 215.028211$ Days, $E = 68.291629$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.84	4.01	3.96	4.34	5.49	3.35	0.87	3.88	3.50	0.04	-0.33	0.49	1.10	0.36	0.20



Stellar Parameters For KIC 004846150

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5018^{+149}_{-149}	$4.492^{+0.093}_{-0.085}$	$0.140^{+0.250}_{-0.300}$	$0.838^{+0.083}_{-0.091}$	$0.795^{+0.080}_{-0.055}$	$1.899^{+0.696}_{-0.466}$
	+3%/-3%	+2%/-2%	+179%/-214%	+10%/-11%	+10%/-7%	+37%/-25%
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 004846150-05 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-399 ± 75	$2.78^{+1.30}_{-1.17}$	351^{+15}_{-16}	4239^{+1116}_{-550}	12084^{+25786}_{-6676}
Alt.	-309 ± 77	$2.27^{+1.31}_{-1.16}$	351^{+16}_{-14}	4376^{+1548}_{-686}	14255^{+43834}_{-8769}

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 $A_{obs} \gg 1.0$

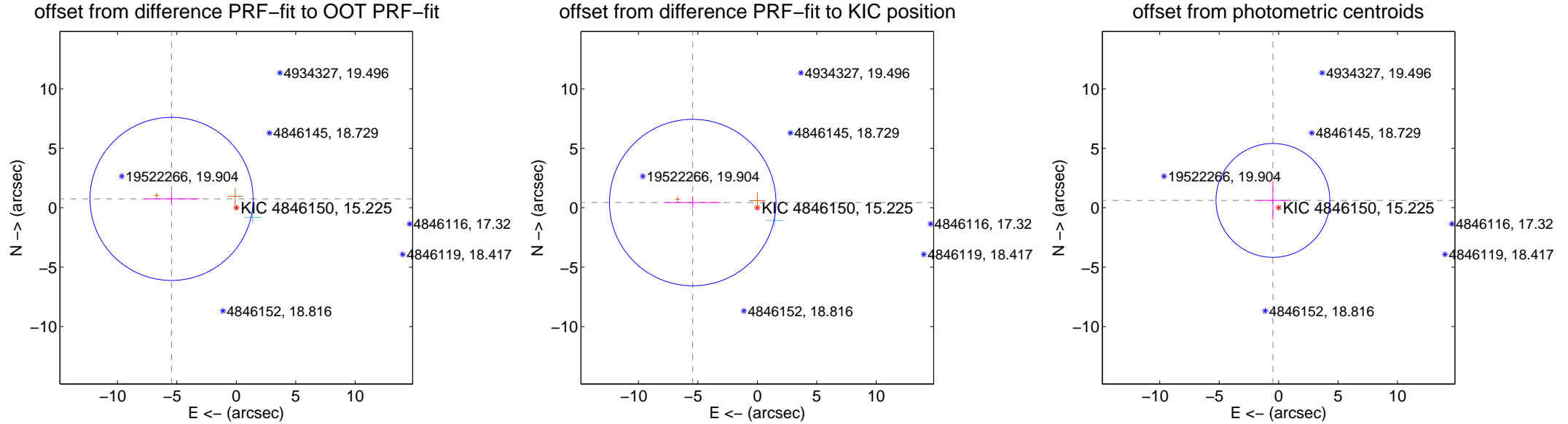
DV Centroid Data

Supplemental centroid analysis for 004846150-05. Kepler magnitude: 15.22. Transit SNR 7.41

There are 1 quarters with good PRF difference image offsets

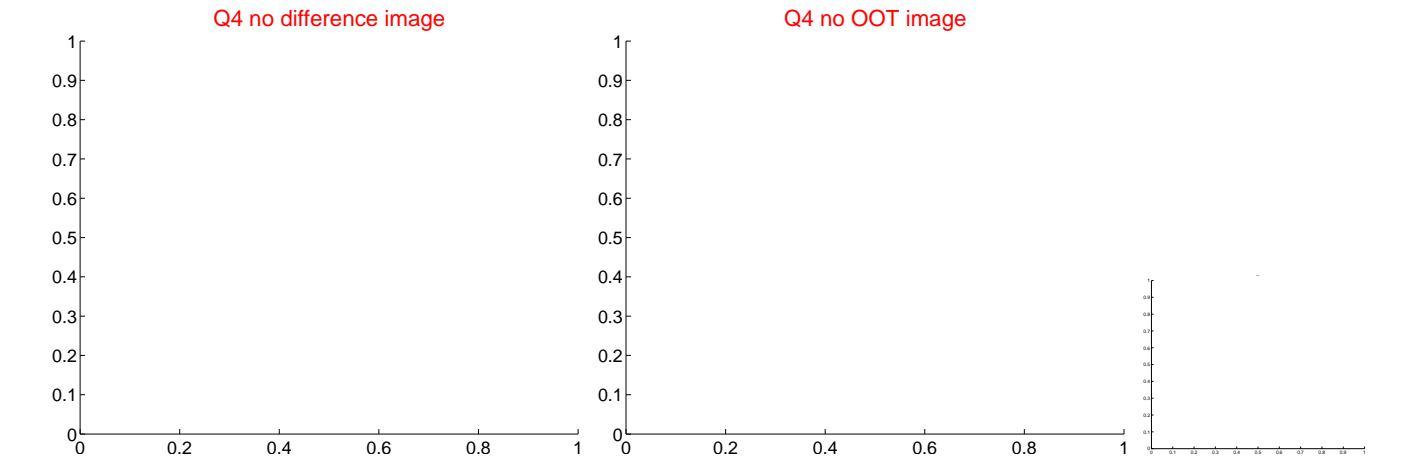
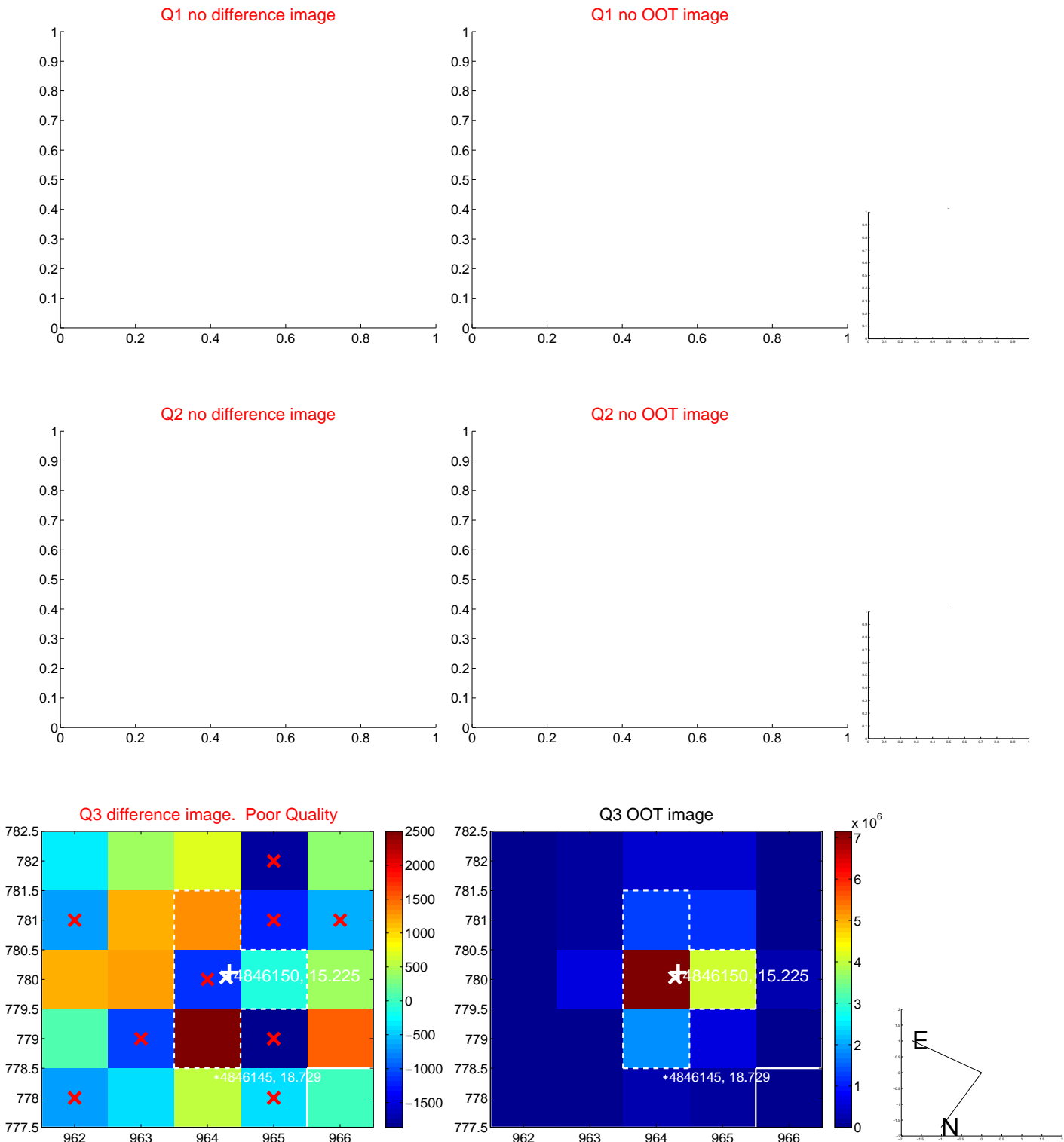
The direct PRF centroid is offset from the target star catalog position by about 0.37 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.500 ± 2.288	2.40	5.449 ± 2.308	0.746 ± 0.519
PRF-fit source offset from KIC position	5.455 ± 2.335	2.34	5.437 ± 2.342	0.438 ± 0.508
photometric centroid source offset	0.78 ± 1.60	0.49	0.48 ± 1.55	0.62 ± 1.62

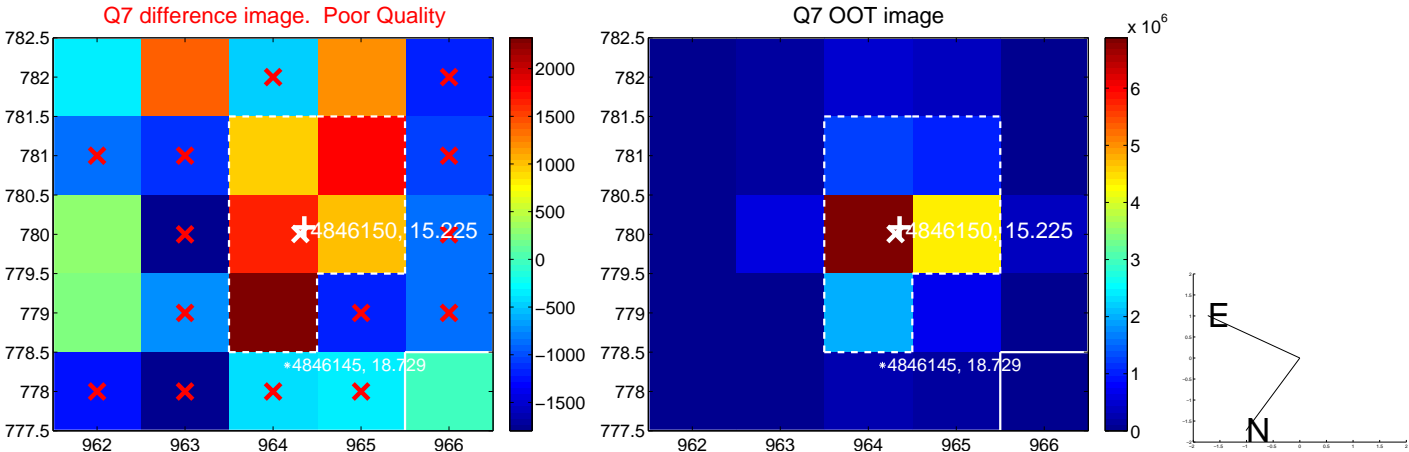
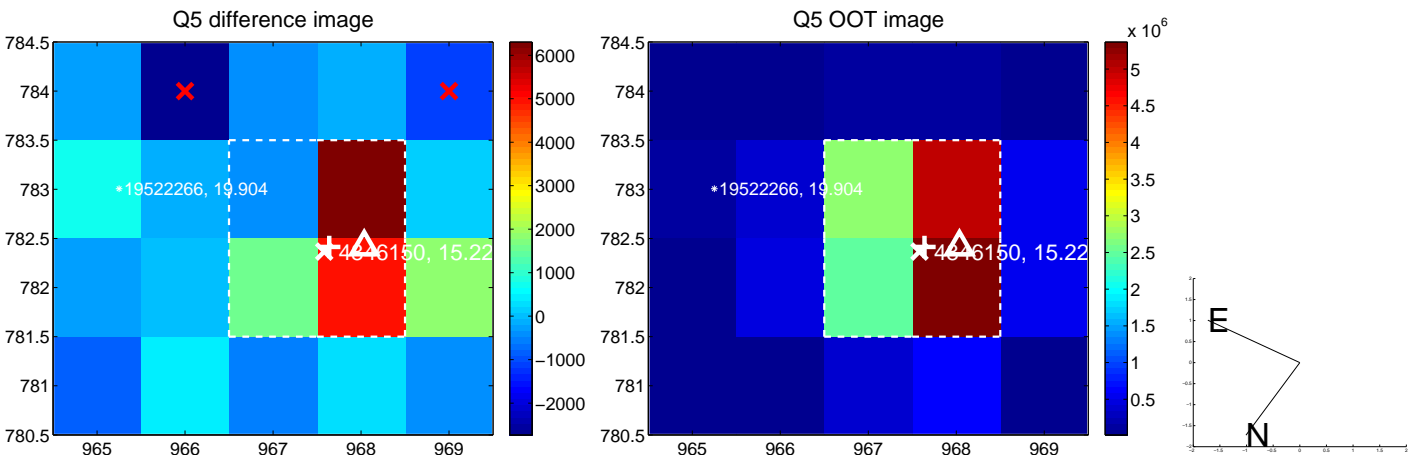


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

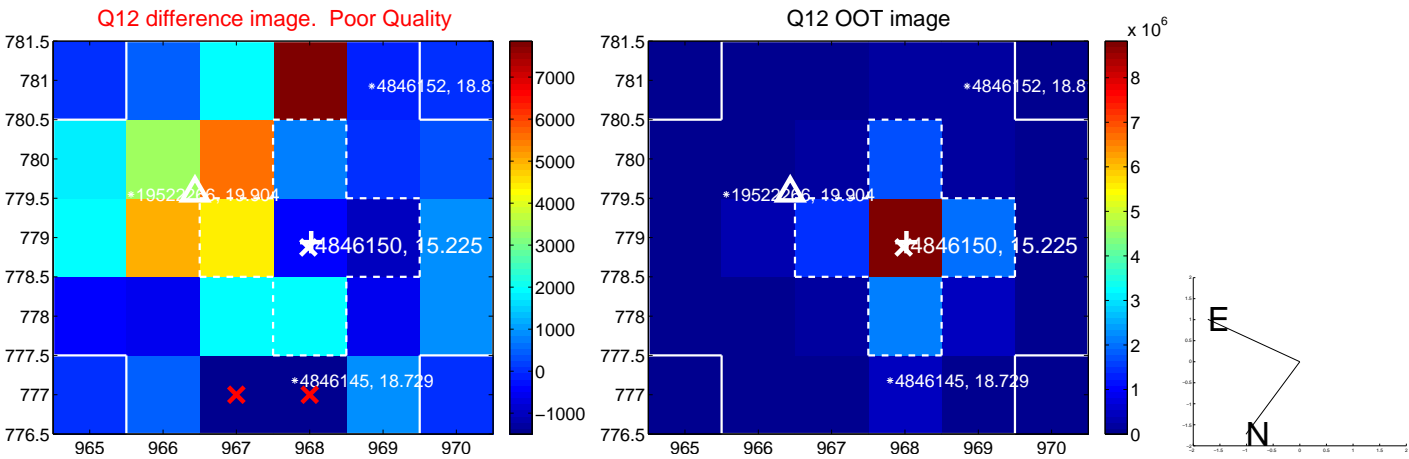
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



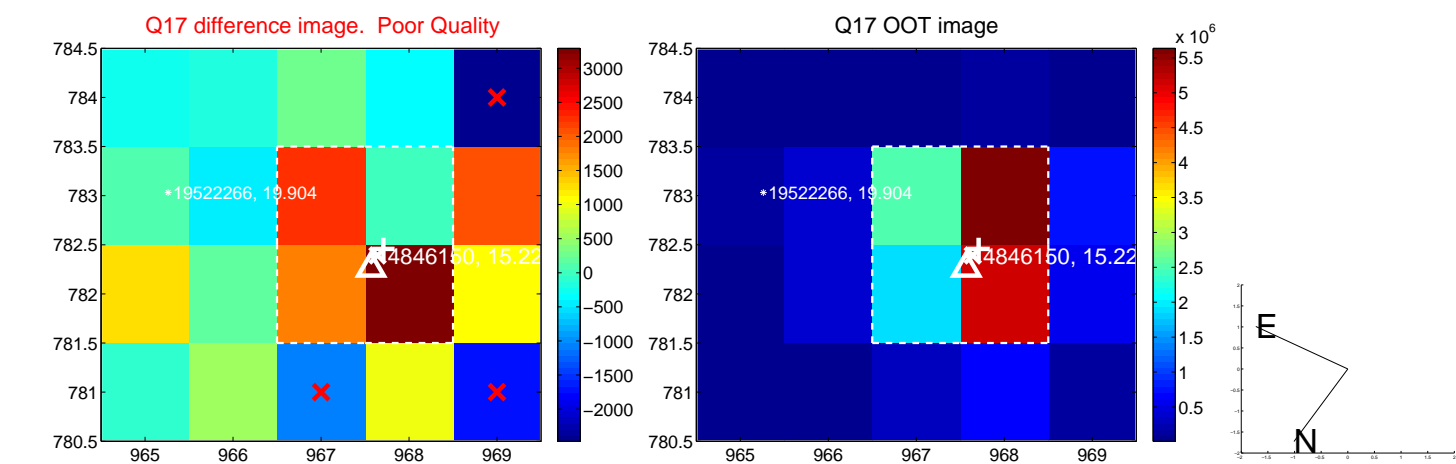
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



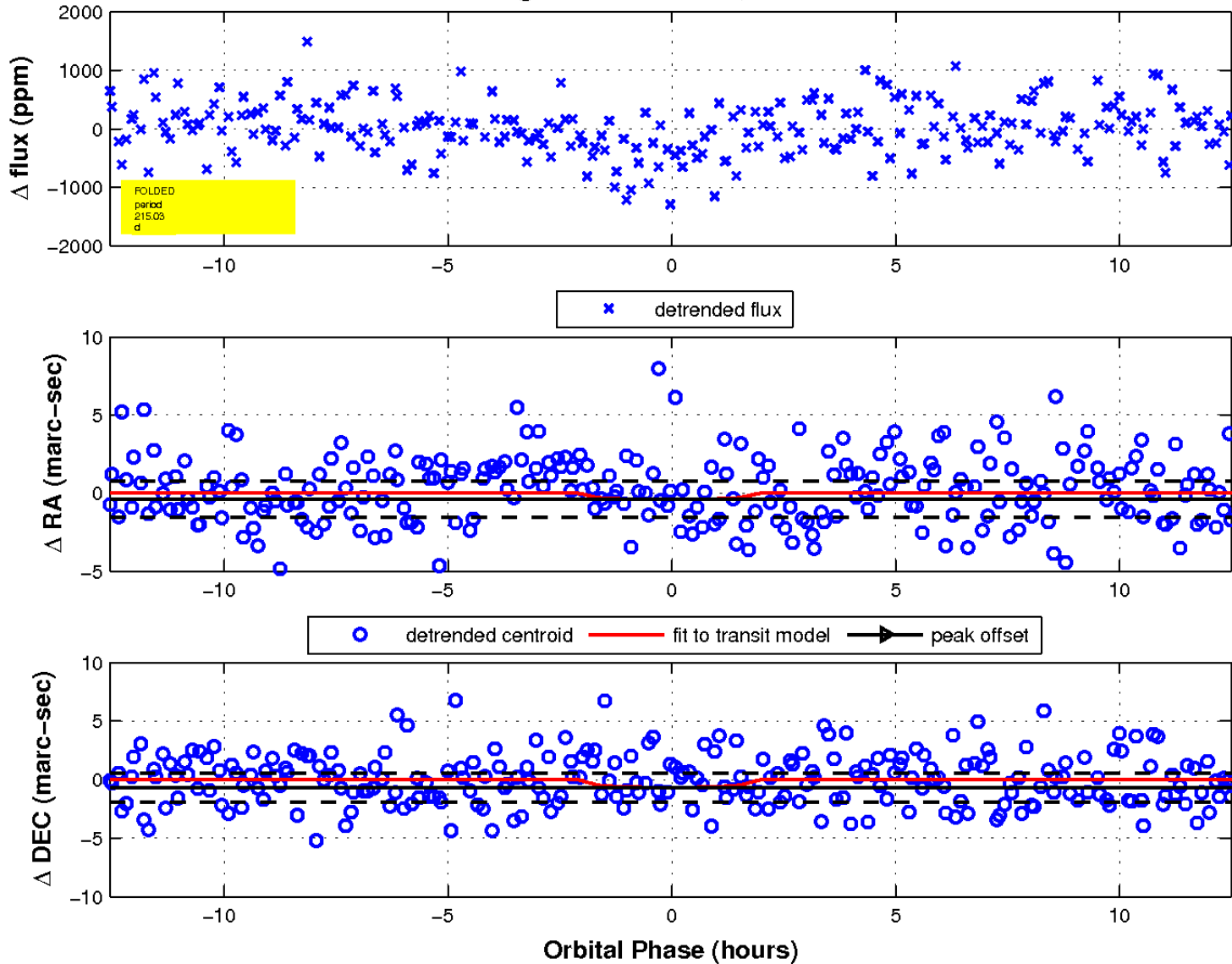
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 5 of 5



UKIRT Image

Declination

