

KIC 010931507

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})
010931507-01	OBS	No	3.780915	132.287046	108.6	18.863	11.4	11.5	1.55	6768	1.63	1671.45
010931507-02	OBS	No	312.499383	301.335318	500.5	11.335	10.7	6.9	1.55	6768	3.67	4.64
010931507-03	OBS	No	239.474085	133.334850	566.4	15.610	10.6	7.6	1.55	6768	3.83	6.62
010931507-04	OBS	No	178.239748	250.769948	646.2	21.108	9.9	9.4	1.55	6768	5.03	9.81
010931507-05	OBS	No	317.619309	197.784589	610.8	9.162	7.3	7.9	1.55	6768	7.31	4.54
010931507-06	OBS	No	252.275521	271.282709	471.9	8.359	7.4	7.0	1.55	6768	3.96	6.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010931507-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
010931507-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010931507-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010931507-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010931507-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
010931507-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

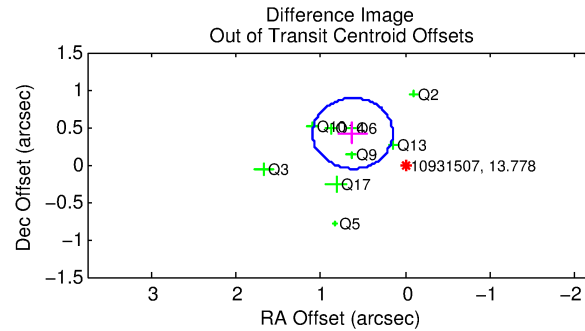
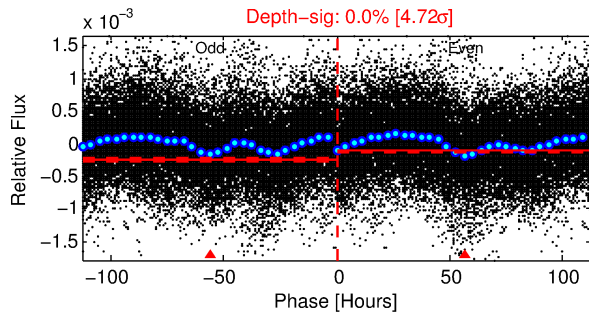
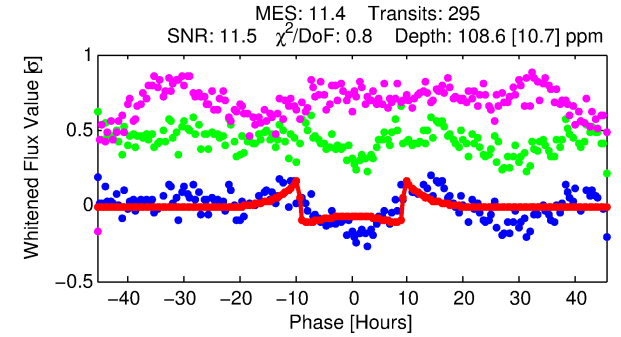
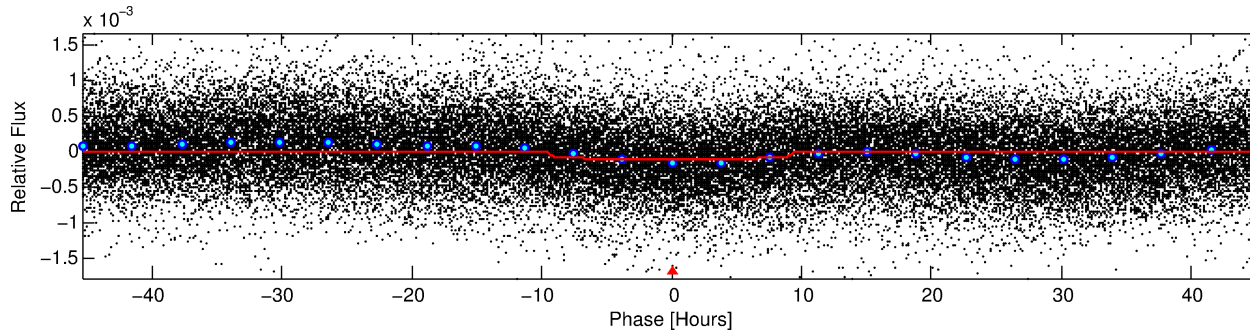
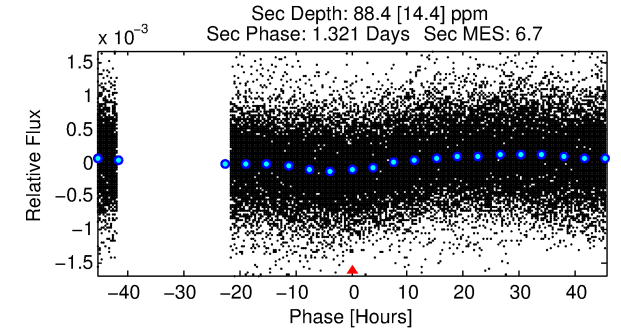
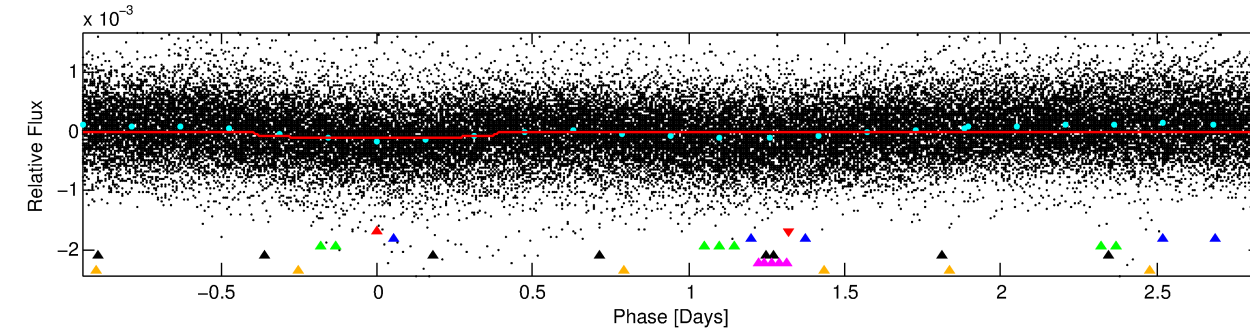
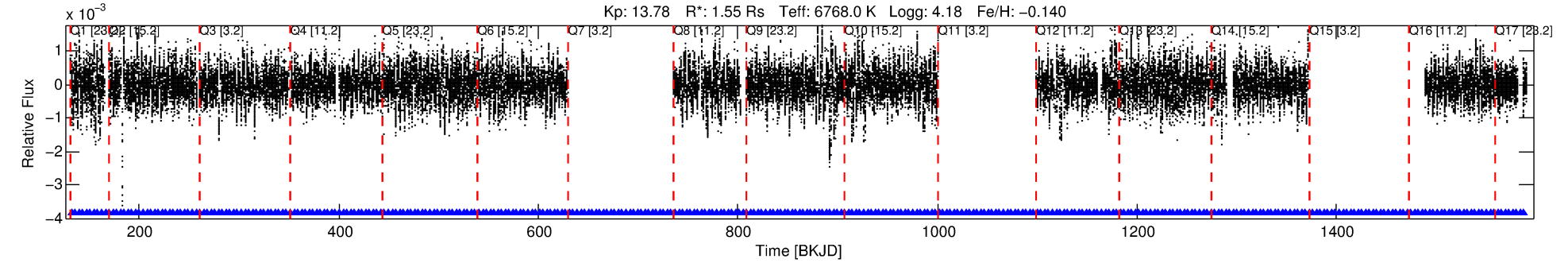
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010931507-01

No Significant Match Found

DV One-Page Summary

KIC: 10931507 Candidate: 1 of 6 Period: 3.781 d



DV Fit Results:

Period = 3.78092 [0.00003] d
Epoch = 132.2870 [0.0045] BKJD
Rp/R* = 0.0096 [0.0036]
a/R* = 1.66 [2.21]
b = 0.07 [30.35]
Seff = 1671.45 [630.07]
Teq = 1630 [154] K
Rp = 1.63 [0.78] Re
a = 0.0521 [0.0129] AU
Ag = 49.55 [41.32] [1.18σ]
Teffp = 6688 [1295] K [3.88σ]

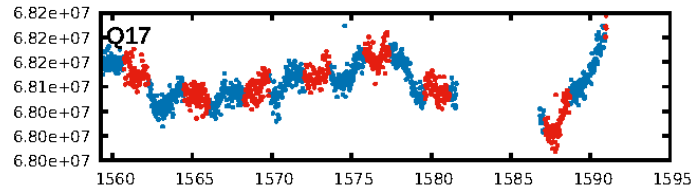
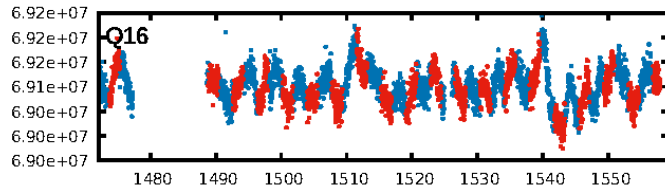
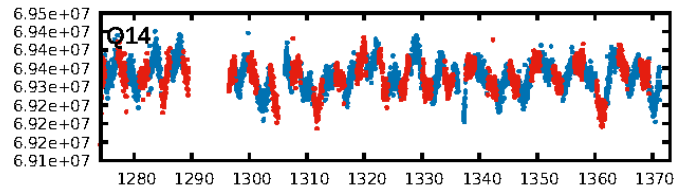
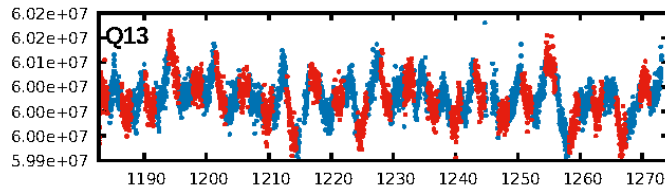
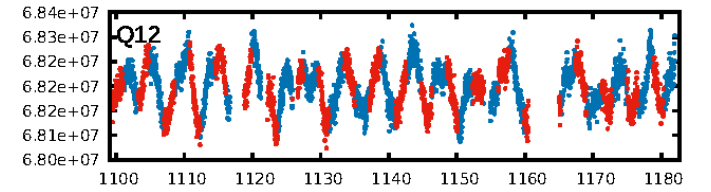
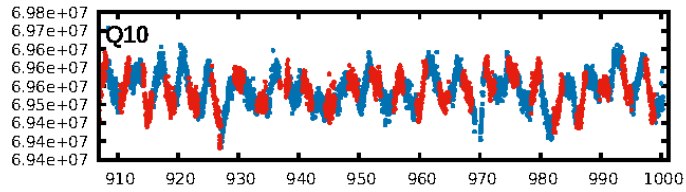
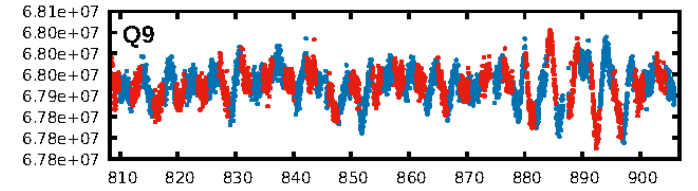
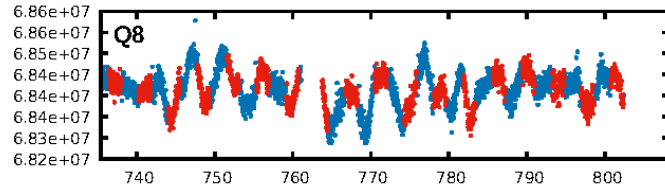
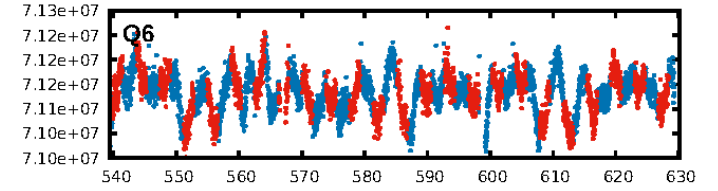
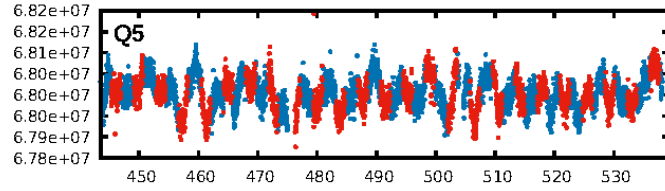
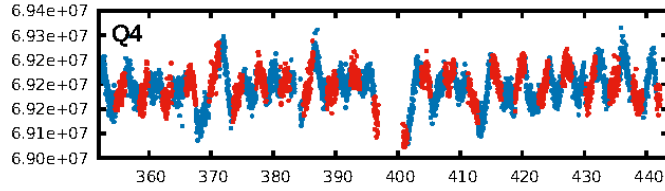
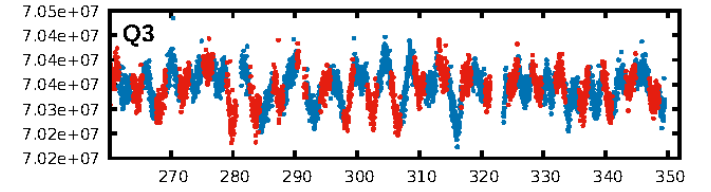
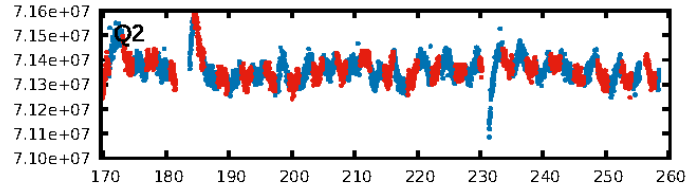
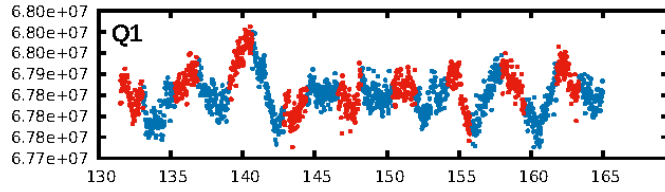
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [147.91σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 5.62e-17
RollingBand-fgt: 1.00 [279/279]
GhostDiagnostic-chr: -0.4123
Centroid-sig: 0.0%
Centroid-so: 3.645 arcsec [14.06σ]
OotOffset-rm: 0.747 arcsec [4.75σ]
KicOffset-rm: 4.896 arcsec [44.21σ]
OotOffset-st: 4/1/0/4 [9]
KicOffset-st: 4/1/0/4 [9]
DiffImageQuality-fgm: 1.00 [9/9]
DiffImageOverlap-fno: 1.00 [14/14]

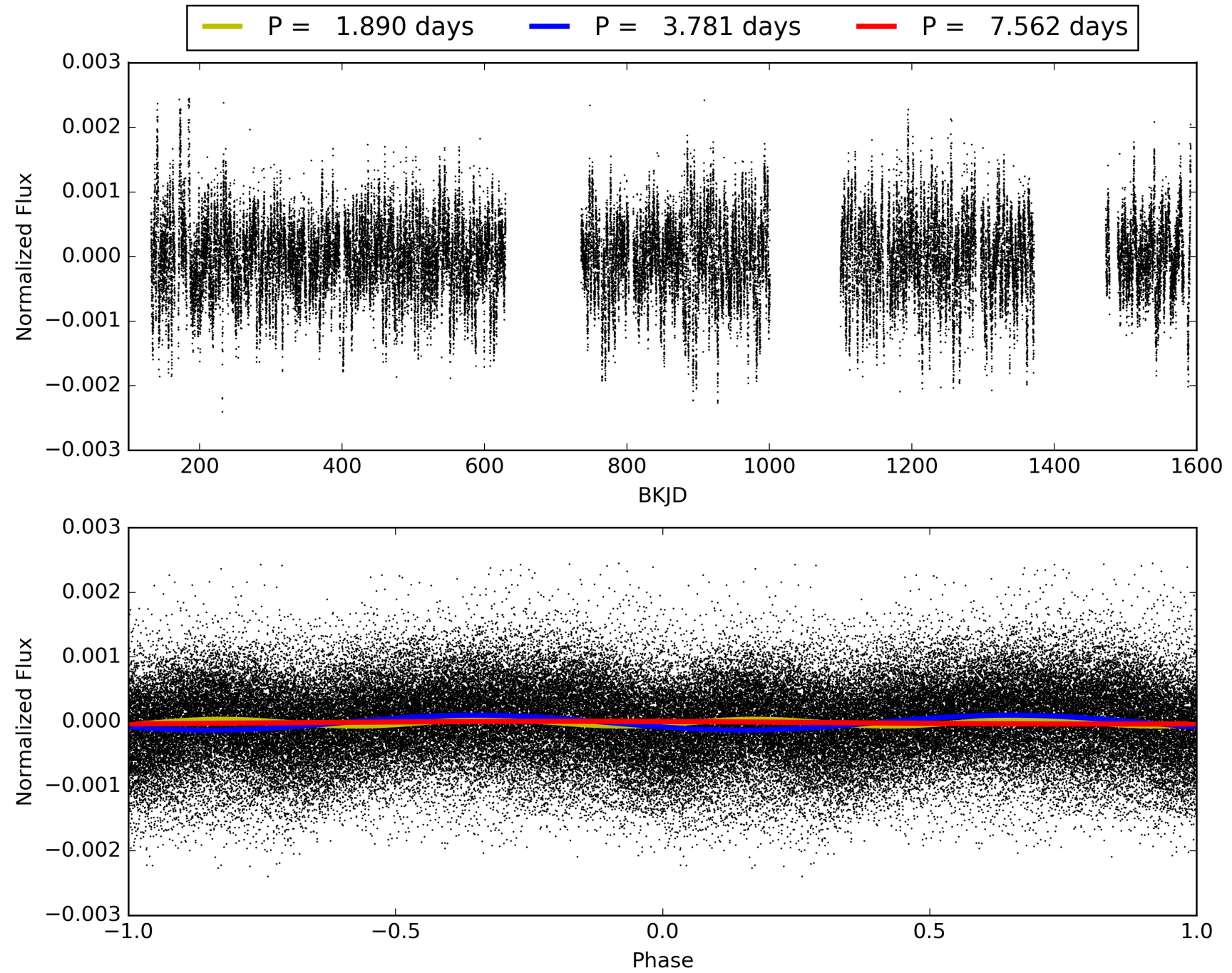
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 010931507-01, PDC Light Curves

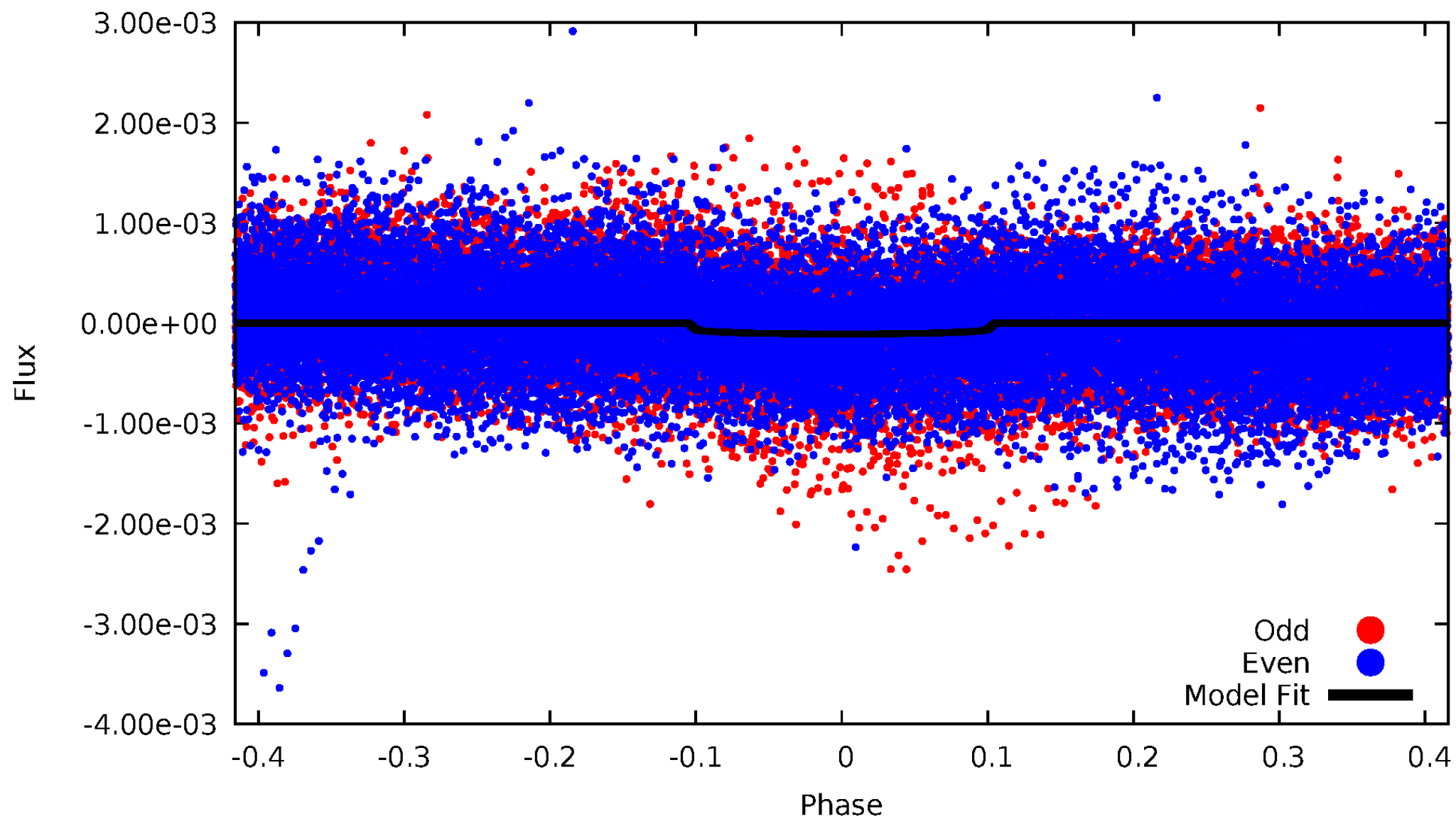


TCE 010931507-01



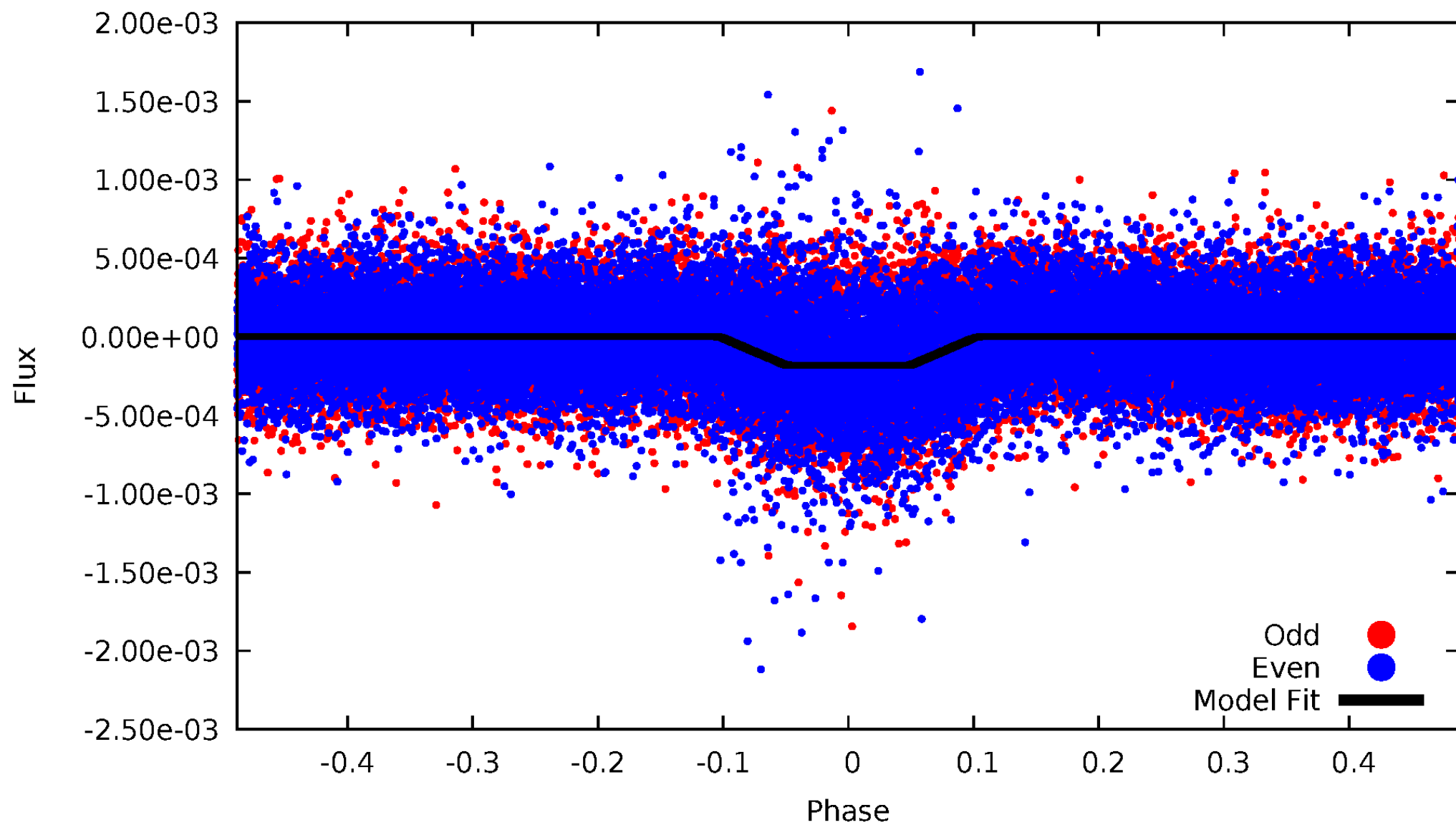
DV Odd/Even

TCE 010931507-01

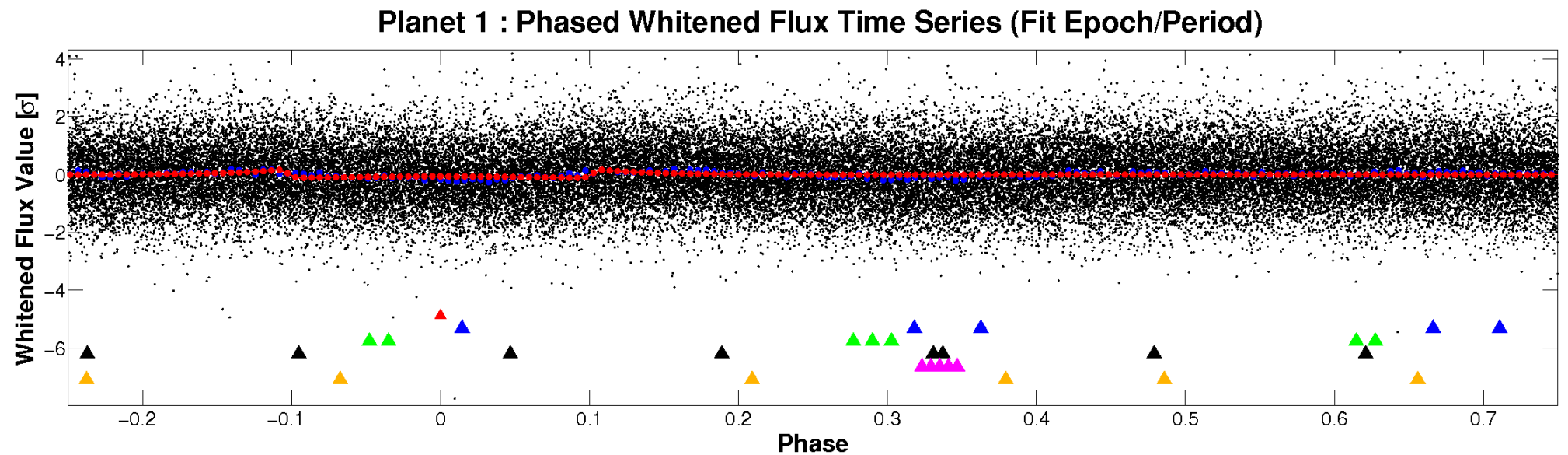
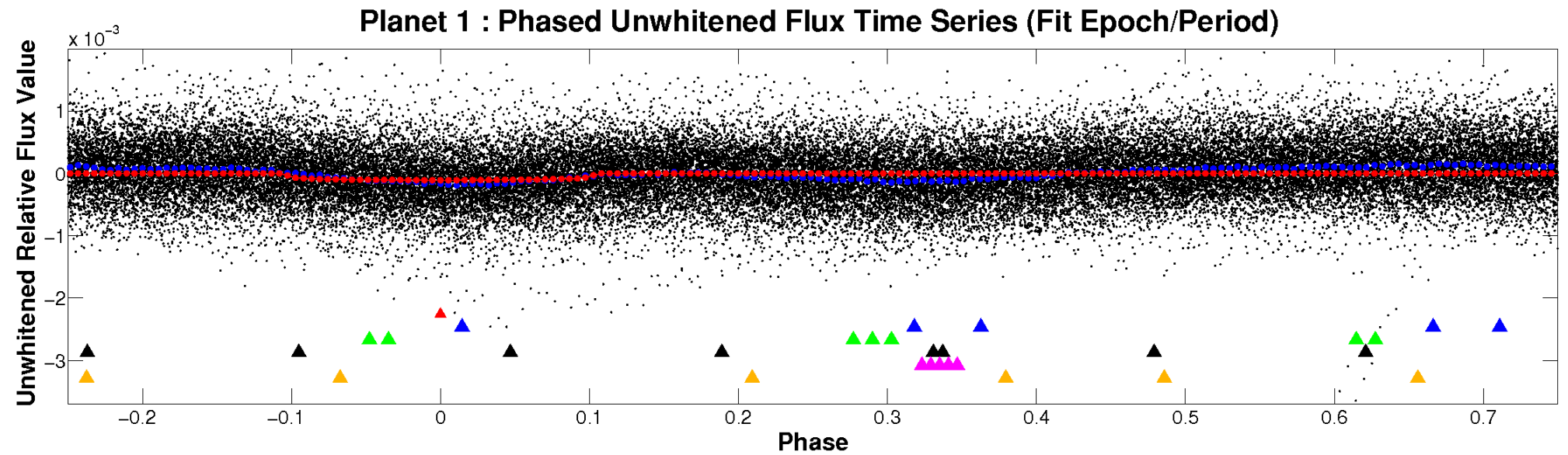


ALT Odd/Even

TCE 010931507-01

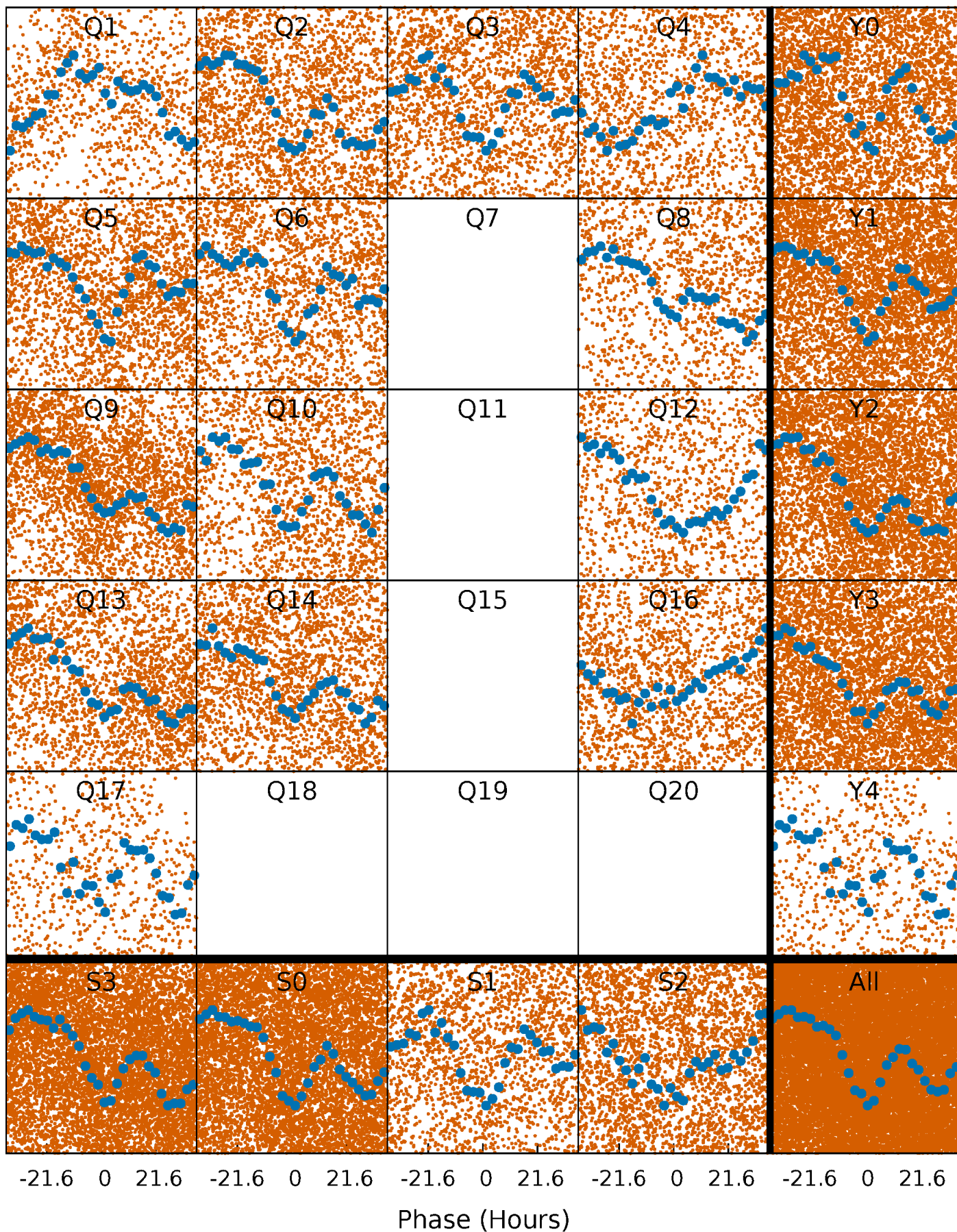


Non-Whitened Vs. Whitened Light Curve



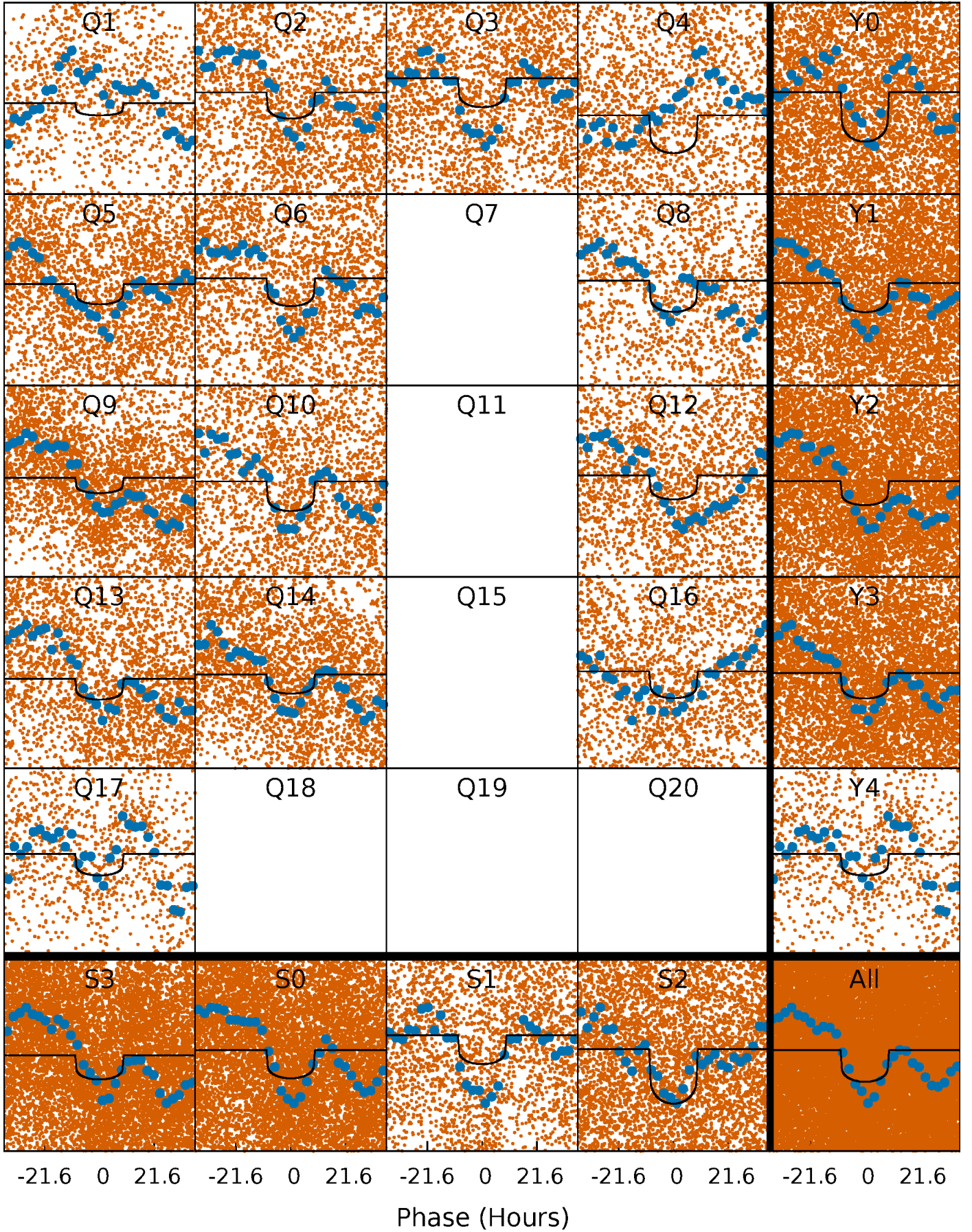
PDC Quarter-Phased Transit Curves

TCE 010931507-01 P= 3.780915 Days $T_0=132.287046$ (BKJD)



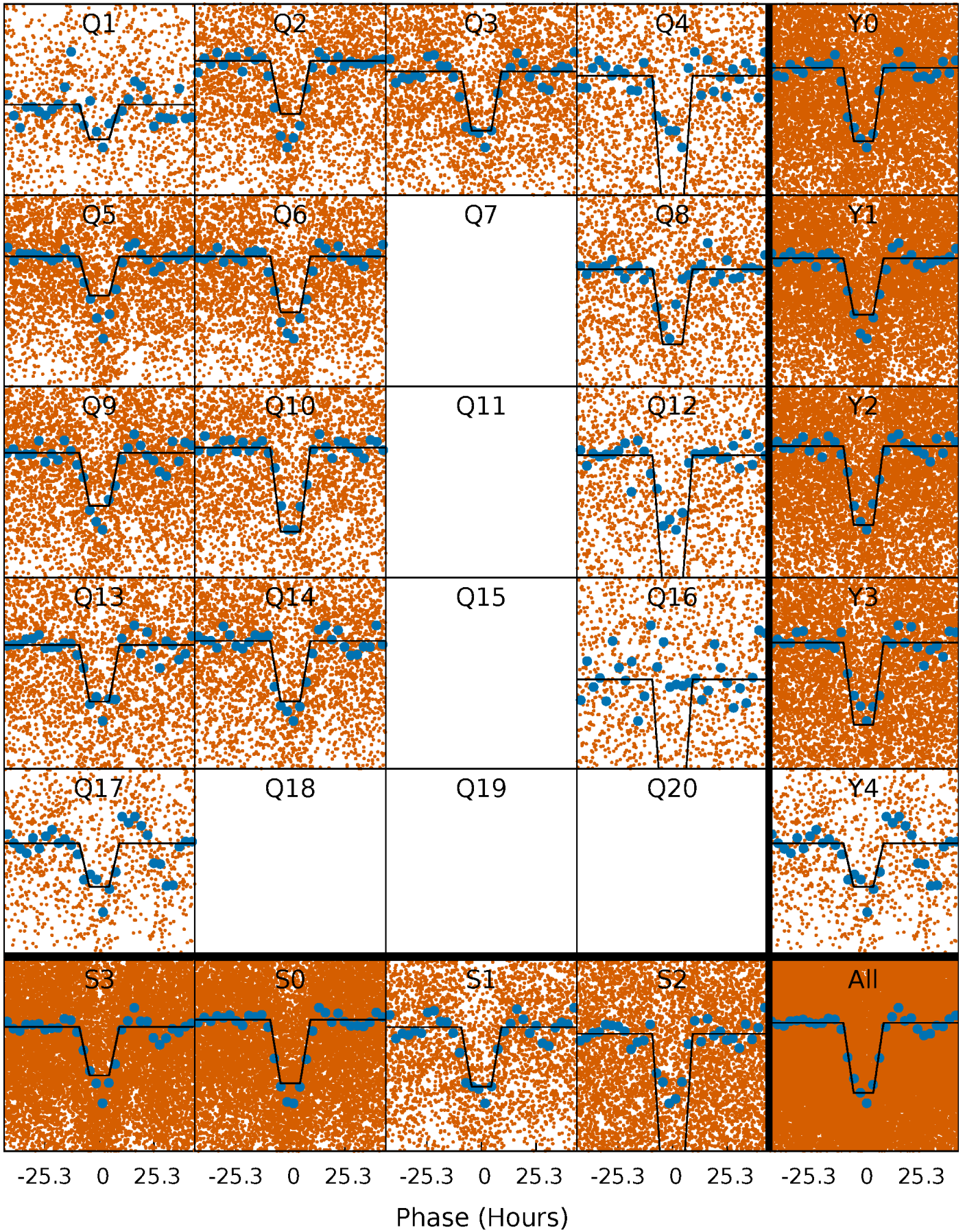
DV Quarter-Phased Transit Curves

TCE 010931507-01 P= 3.780915 Days $T_0=132.287046$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

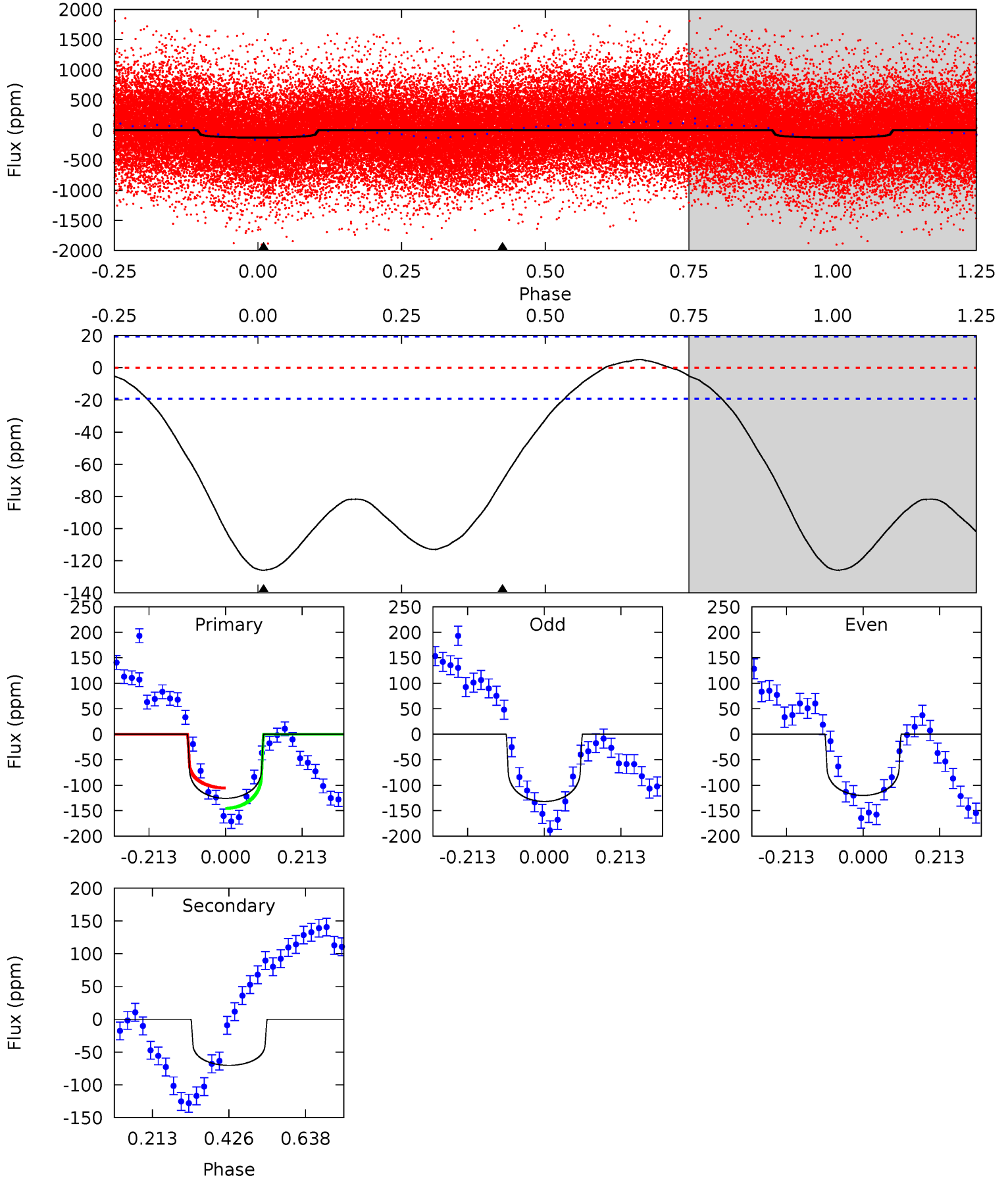
TCE 010931507-01 P= 3.780583 Days $T_0=132.344942$ (BKJD)



DV Model-Shift Uniqueness Test

010931507-01, P = 3.780915 Days, E = 128.506131 Days

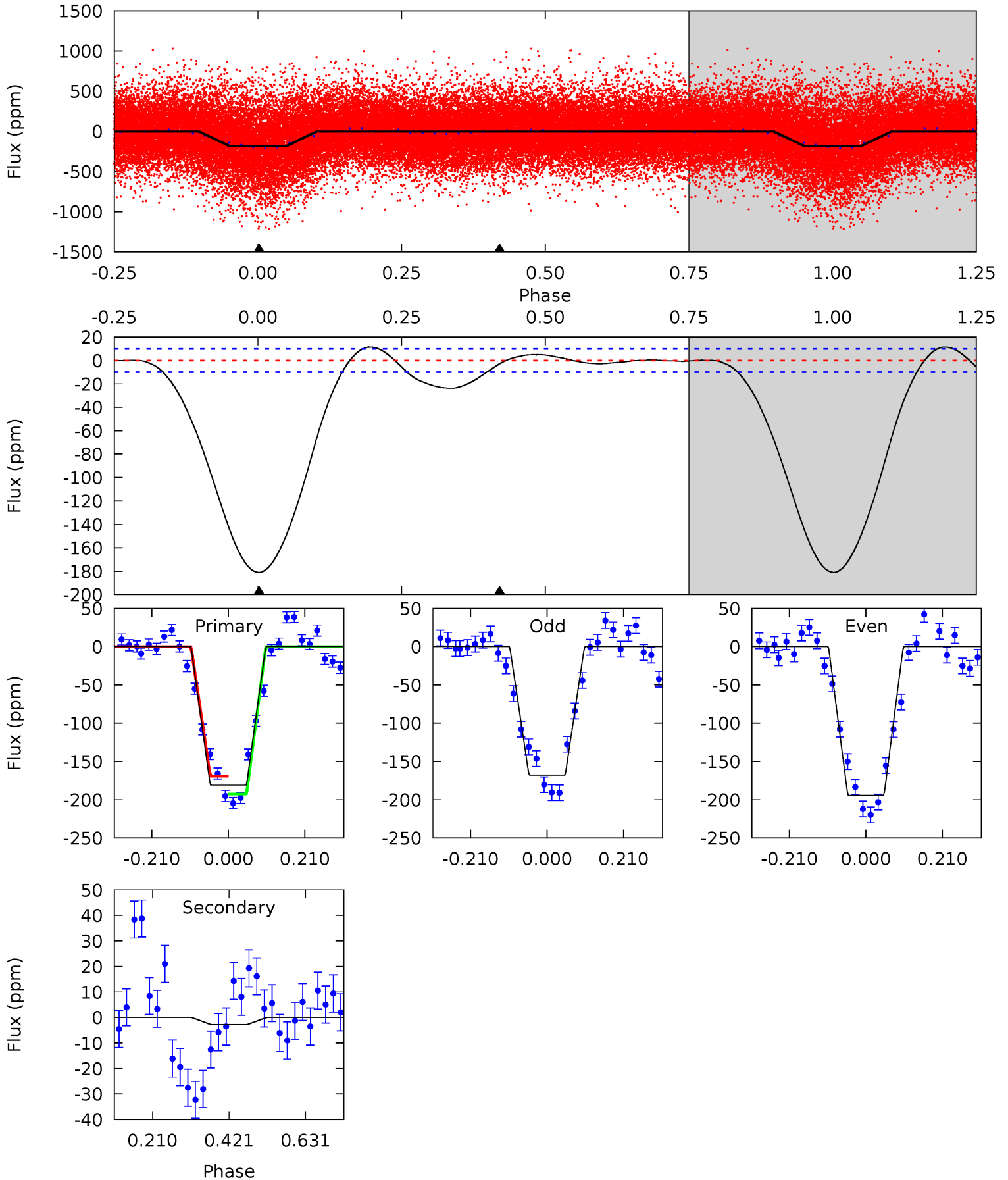
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
28.8	16.1	0	0	4.40	1.25	1.38	28.8	28.8	16.1	16.1	1.39	1.00	0.04	4.63



Alt Model-Shift Uniqueness Test

010931507-01, P = 3.780583 Days, E = 128.564359 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
80.0	1.23	0	0	4.41	1.25	0.21	80.0	80.0	1.23	1.23	5.68	1.09	0.06	5.19



Stellar Parameters For KIC 010931507

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6768^{+189}_{-259}	$4.176^{+0.148}_{-0.181}$	$-0.140^{+0.250}_{-0.300}$	$1.555^{+0.475}_{-0.317}$	$1.333^{+0.196}_{-0.239}$	$0.499^{+0.440}_{-0.247}$
	+3%/-4%	+4%/-4%	+179%/-214%	+31%/-20%	+15%/-18%	+88%/-49%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010931507-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-70 ± 4	$1.65^{+0.66}_{-0.62}$	2283^{+160}_{-153}	6282^{+1801}_{-987}	39^{+63}_{-19}
Alt.	-3 ± 2	$2.28^{+0.70}_{-0.63}$	2279^{+169}_{-152}	2783^{+539}_{-5273}	$0.733^{+1.037}_{-0.596}$

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 $A_{obs} \gg 1.0$

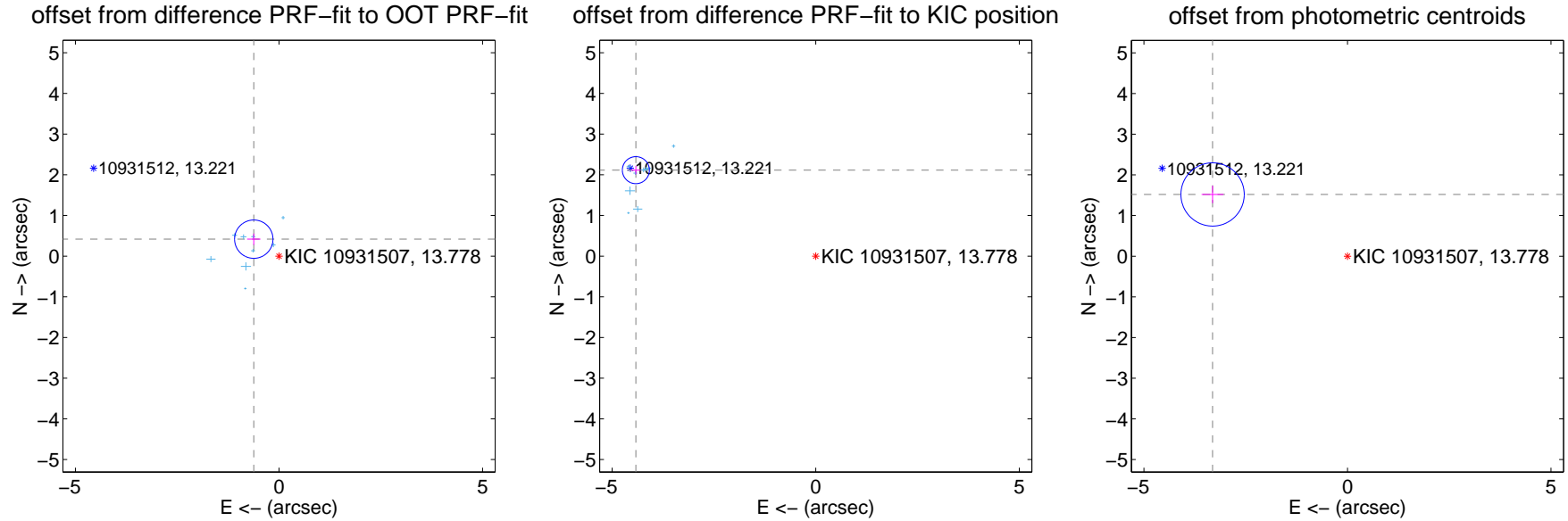
DV Centroid Data

Supplemental centroid analysis for 010931507-01. Kepler magnitude: 13.78. Transit SNR 11.54

There are 9 quarters with good PRF difference image offsets

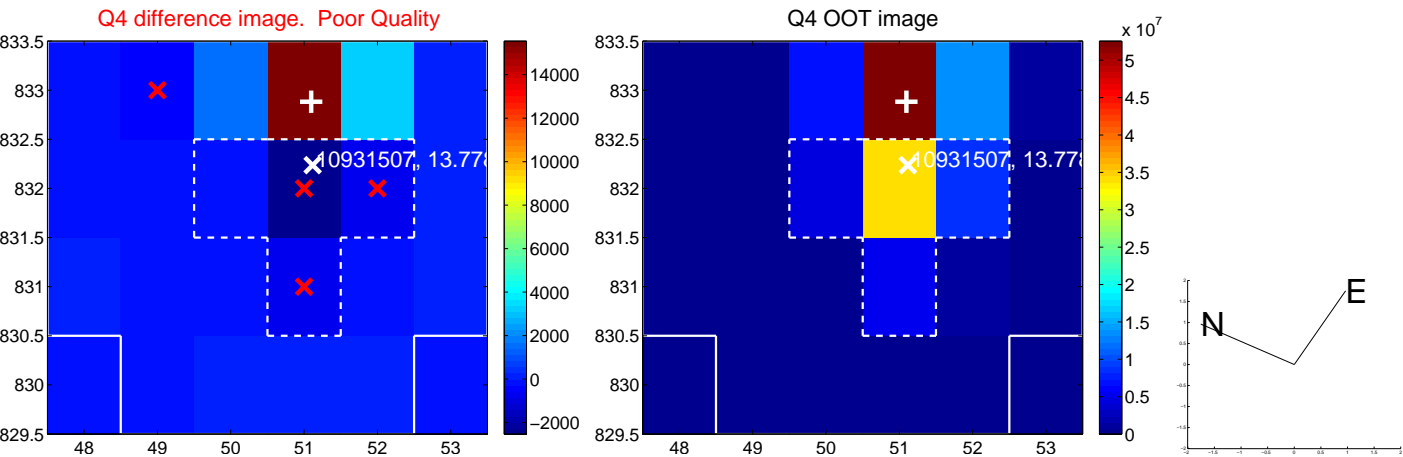
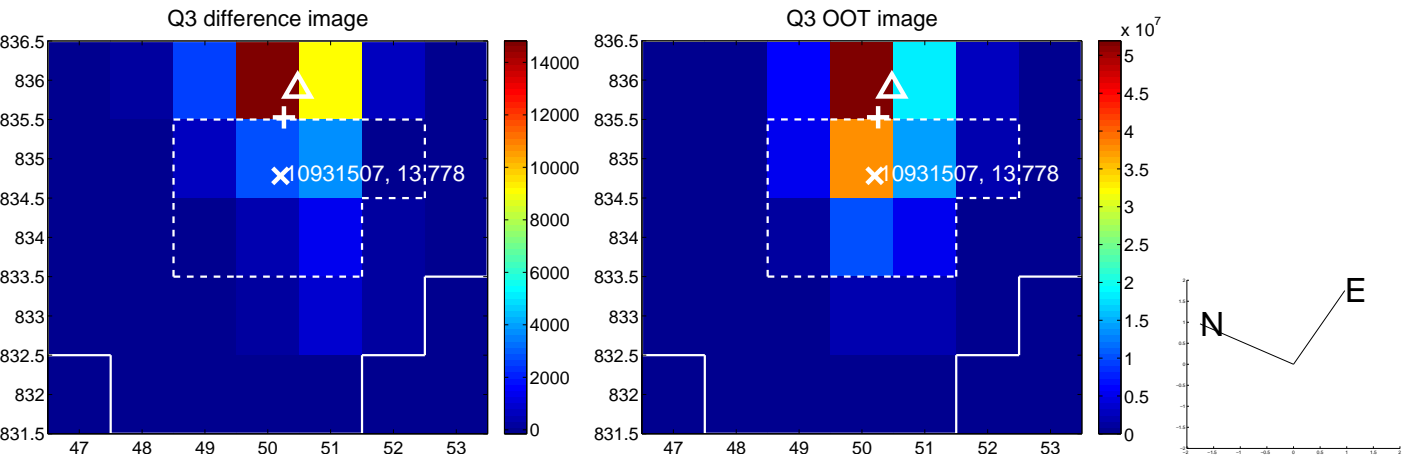
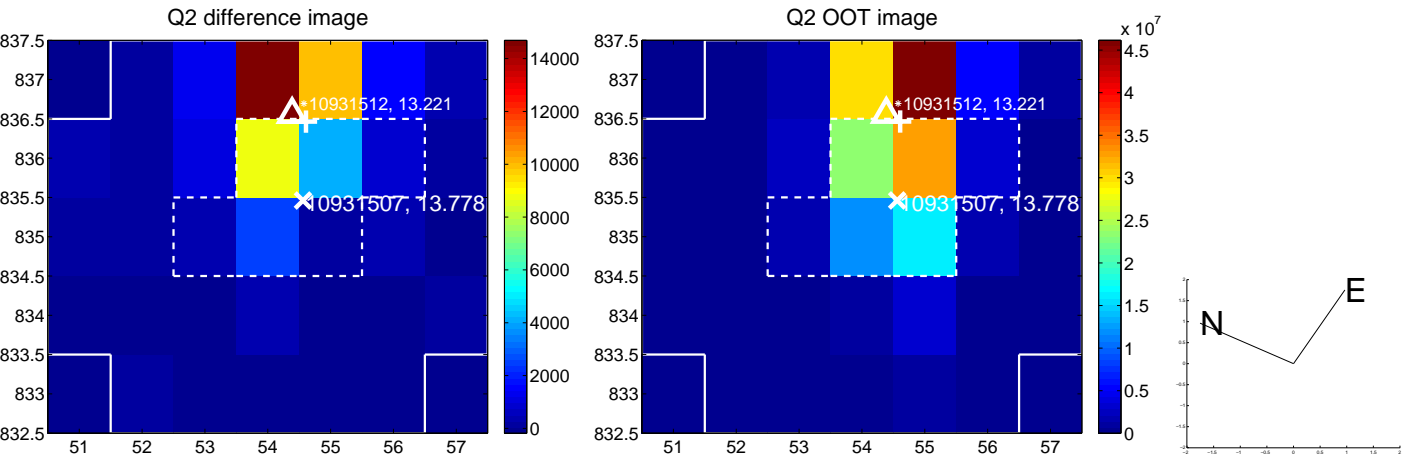
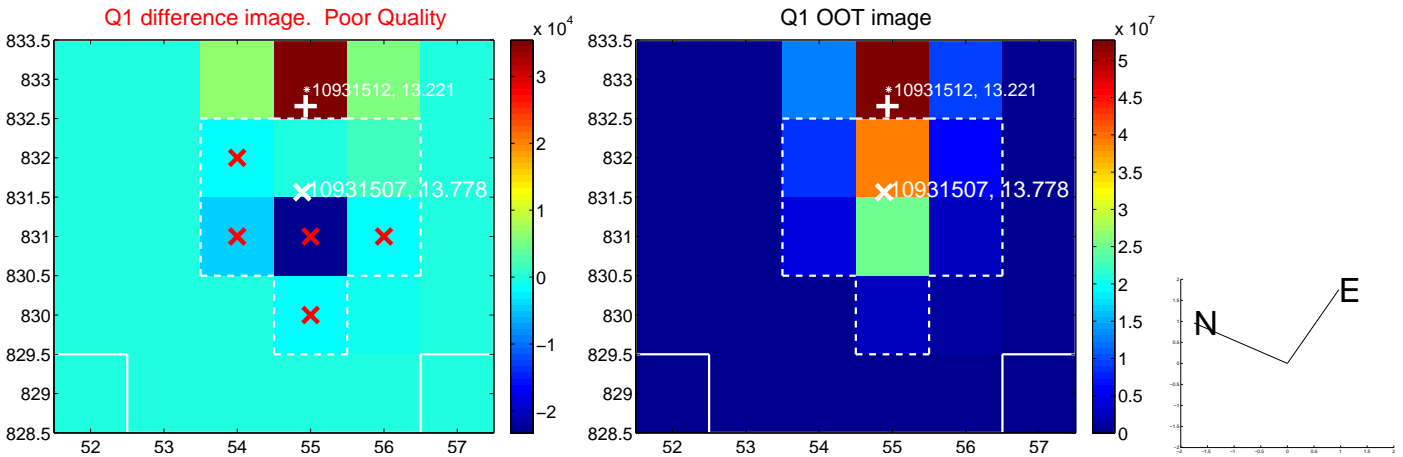
The OOT PRF centroid is offset from the target star catalog position by about 4.19 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.747 ± 0.157	4.75	0.619 ± 0.164	0.417 ± 0.140
PRF-fit source offset from KIC position	4.896 ± 0.111	44.21	4.416 ± 0.112	2.114 ± 0.104
photometric centroid source offset	3.64 ± 0.26	14.06	3.31 ± 0.27	1.52 ± 0.21

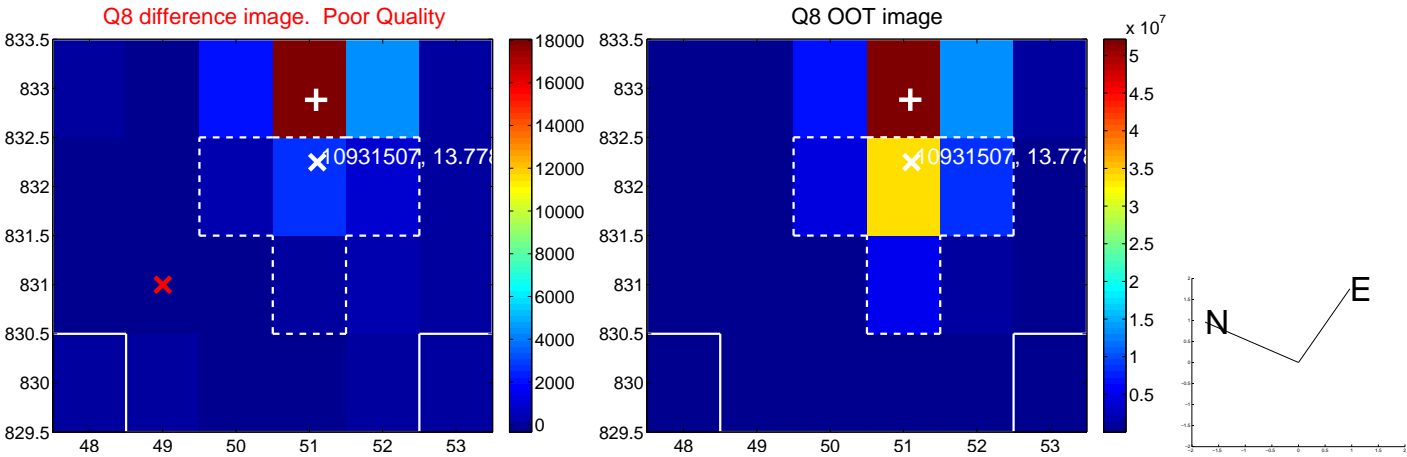
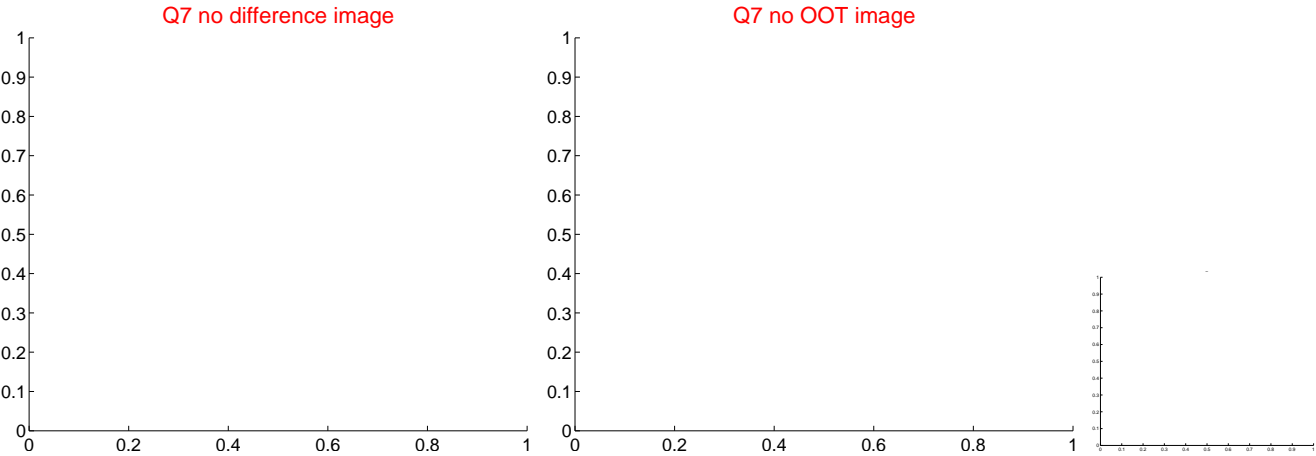
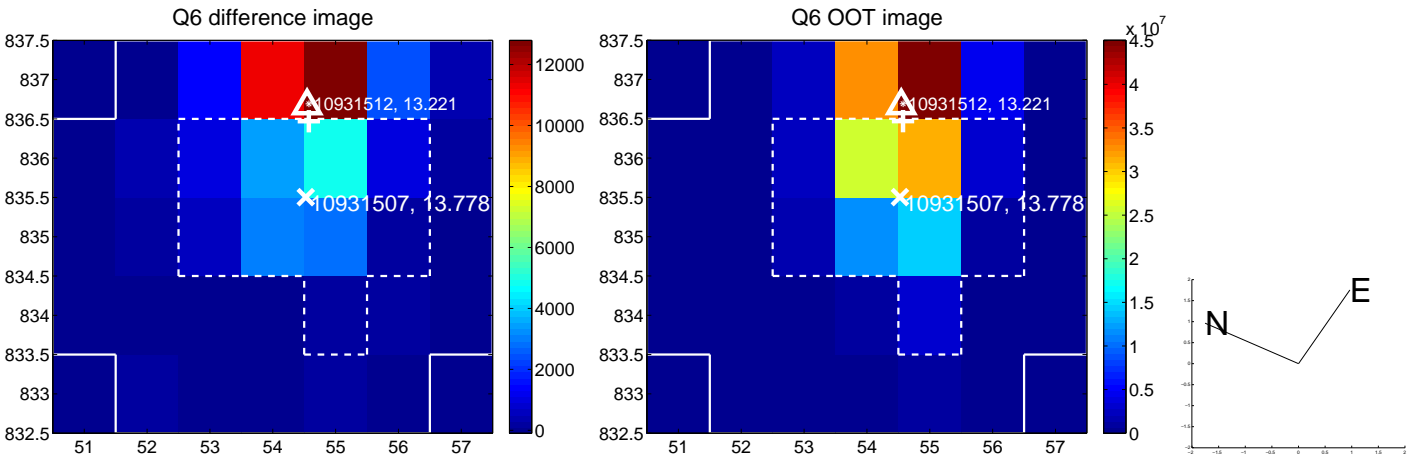
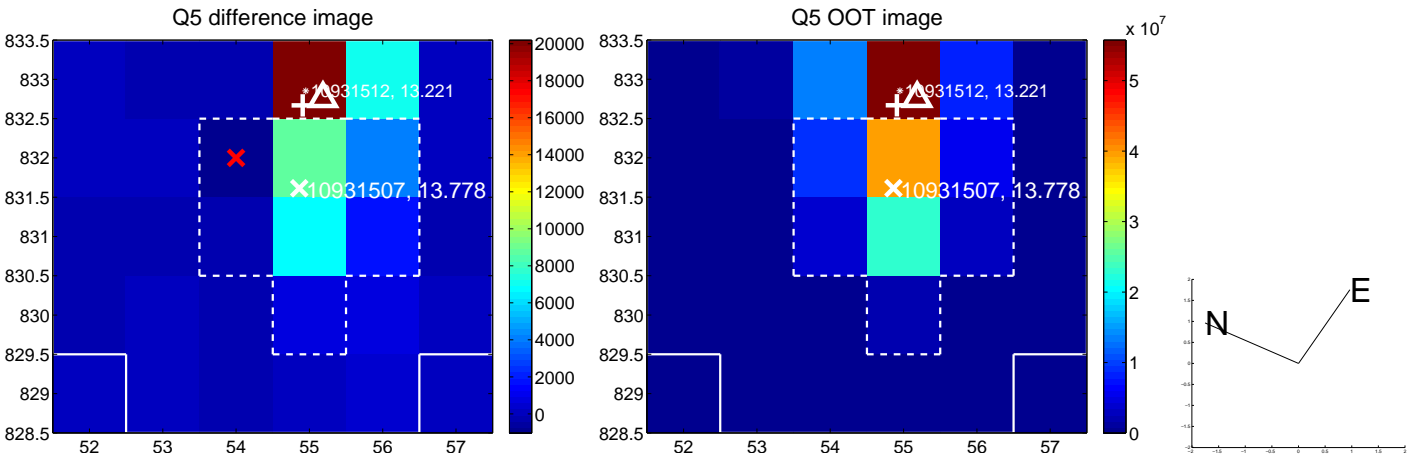


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

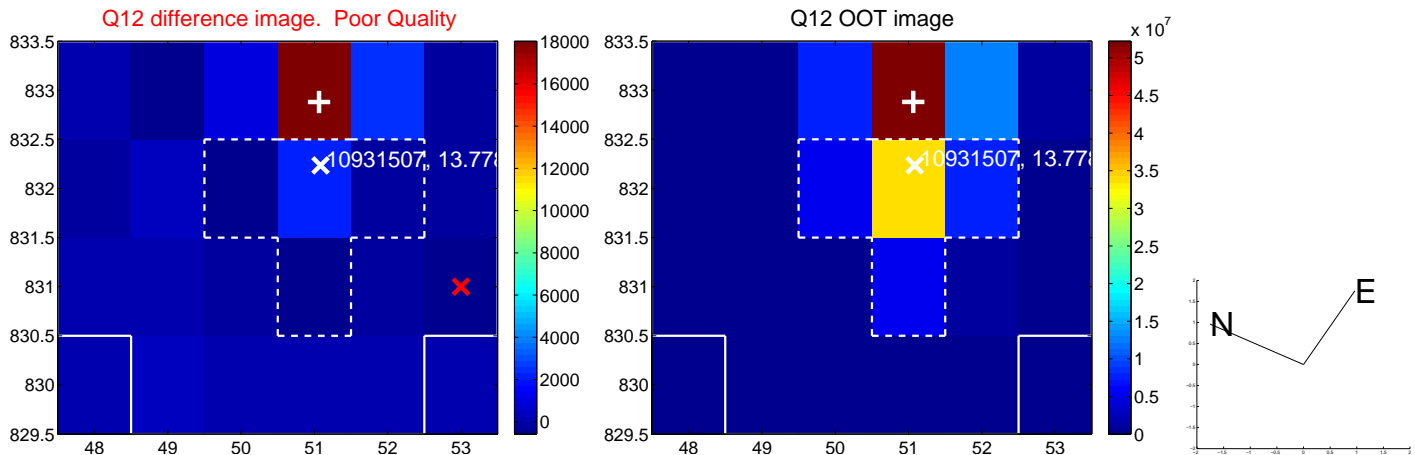
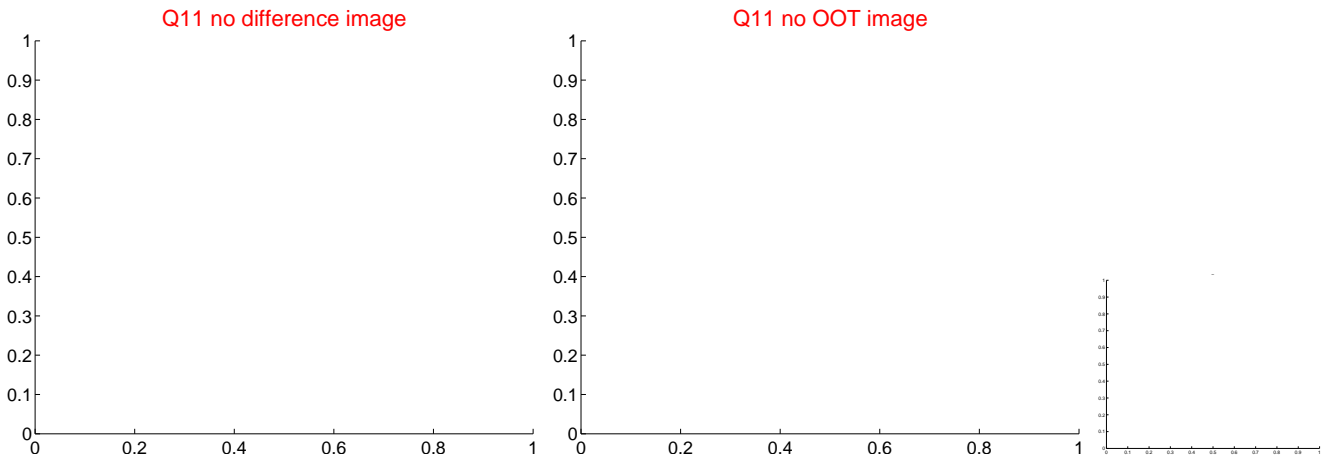
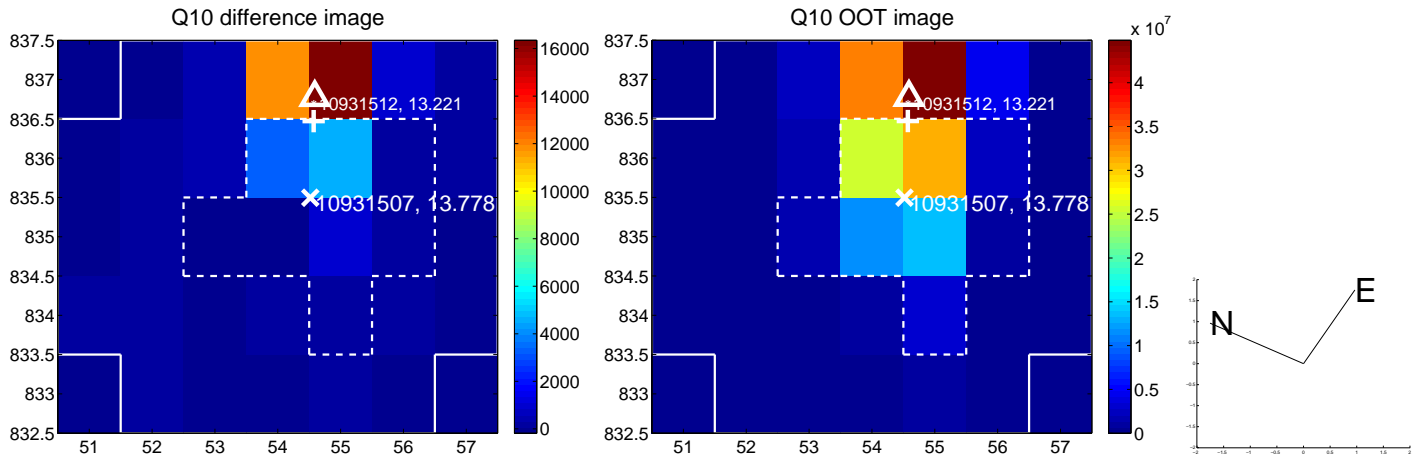
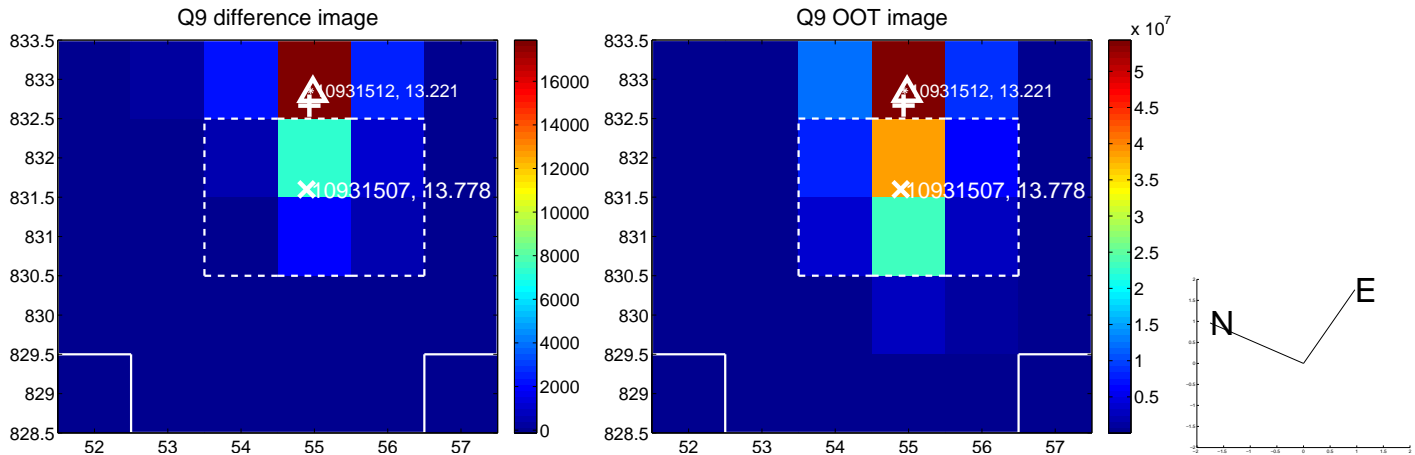
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



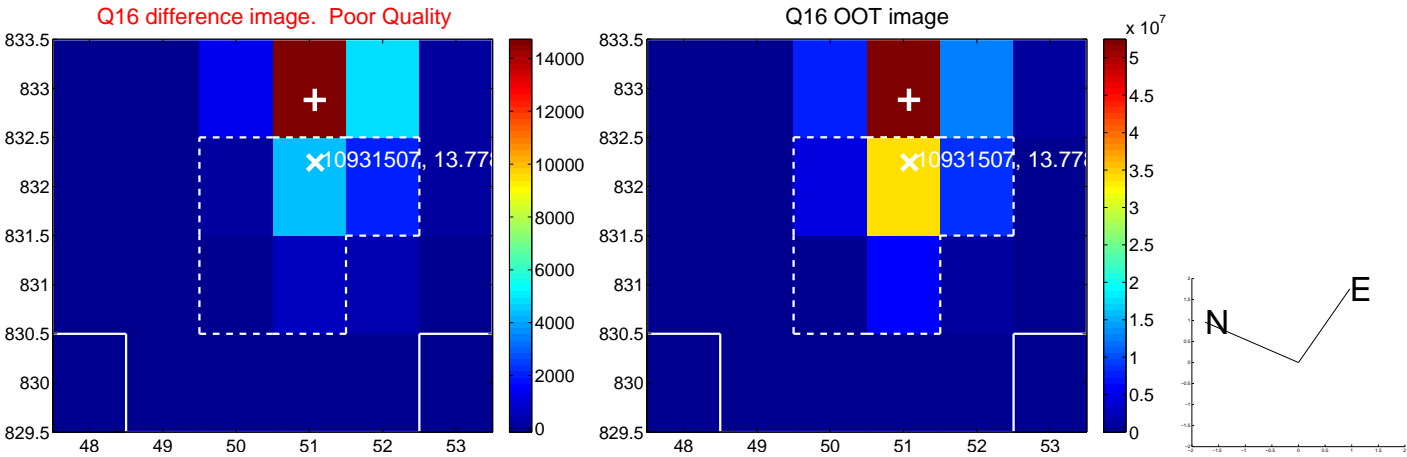
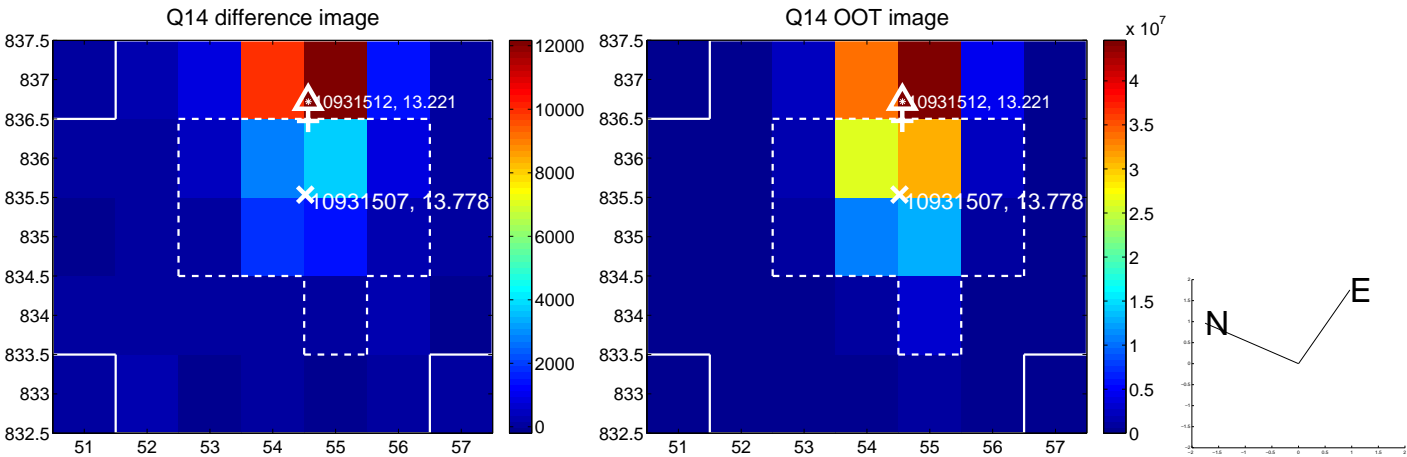
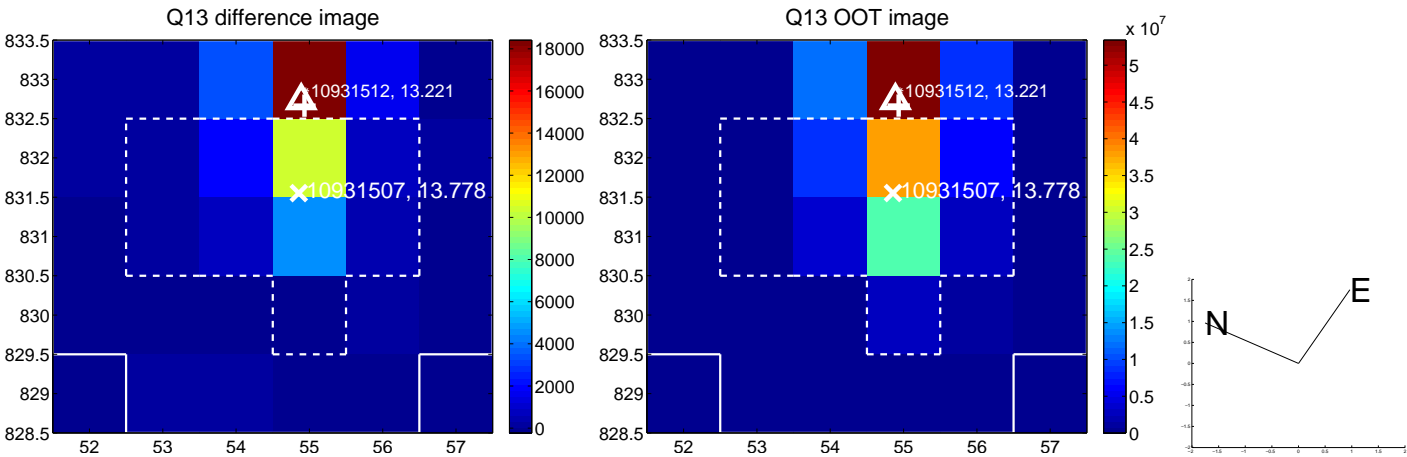
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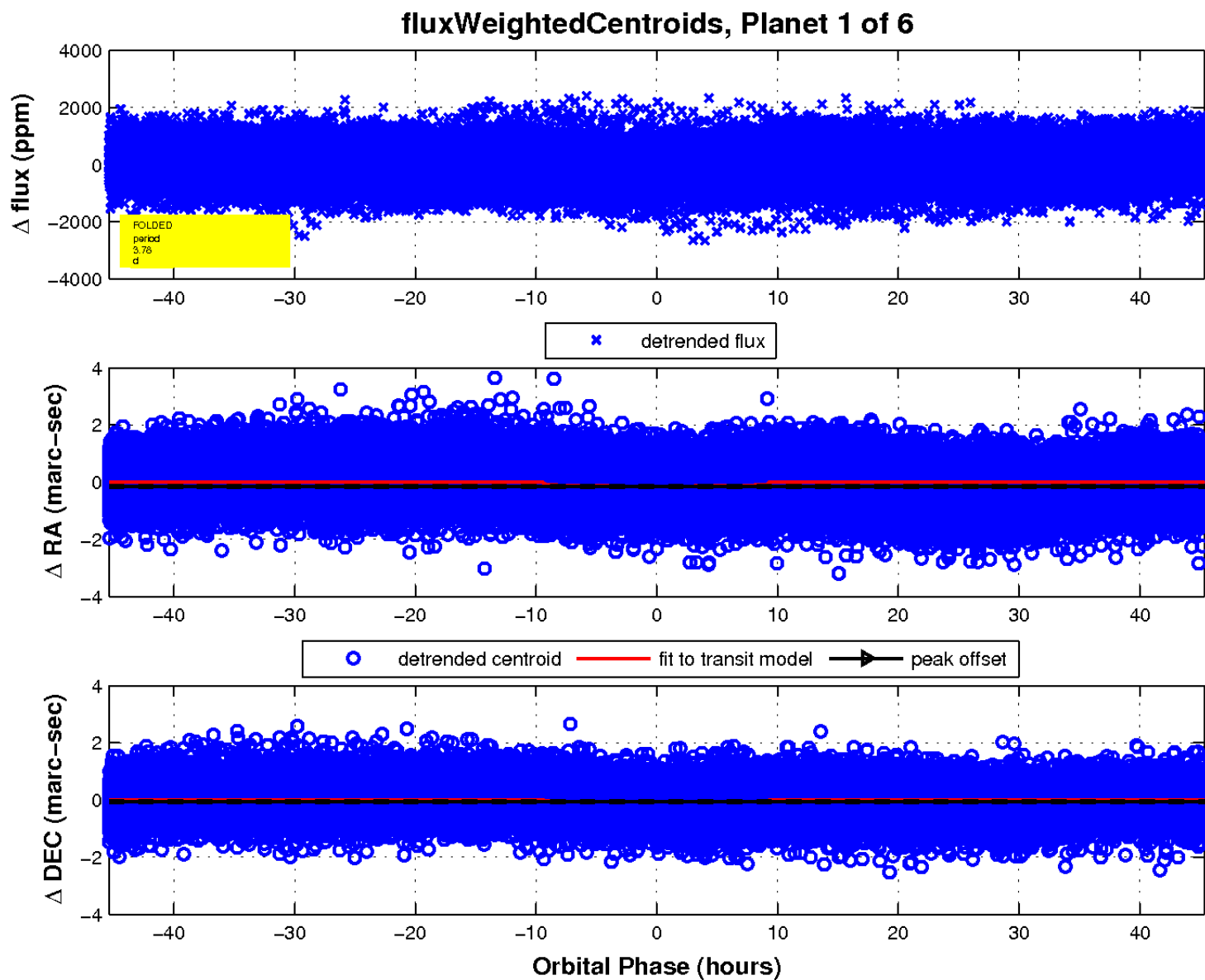
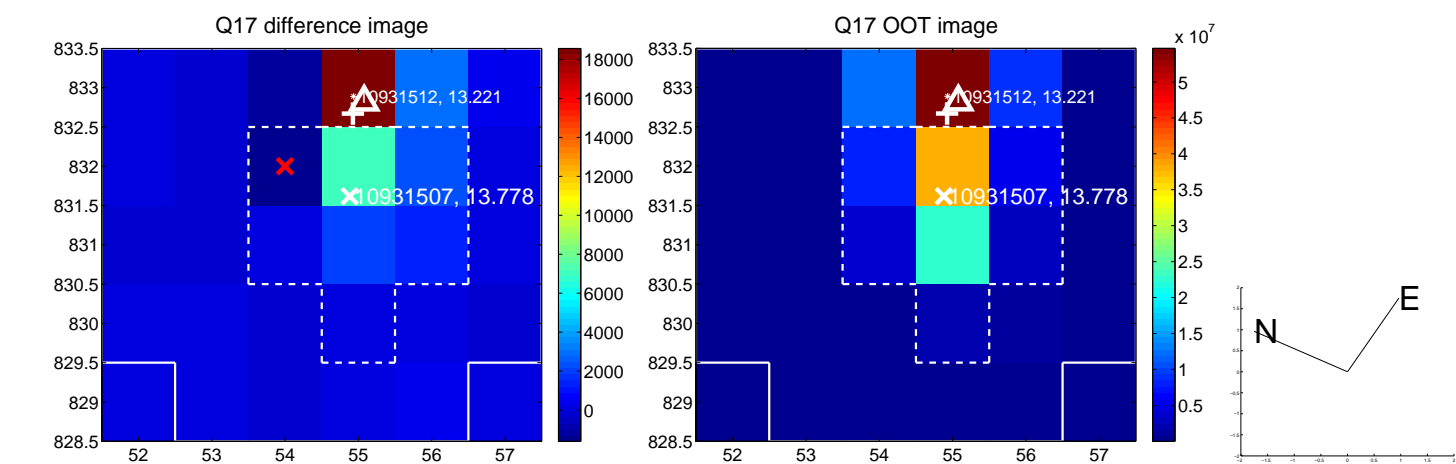
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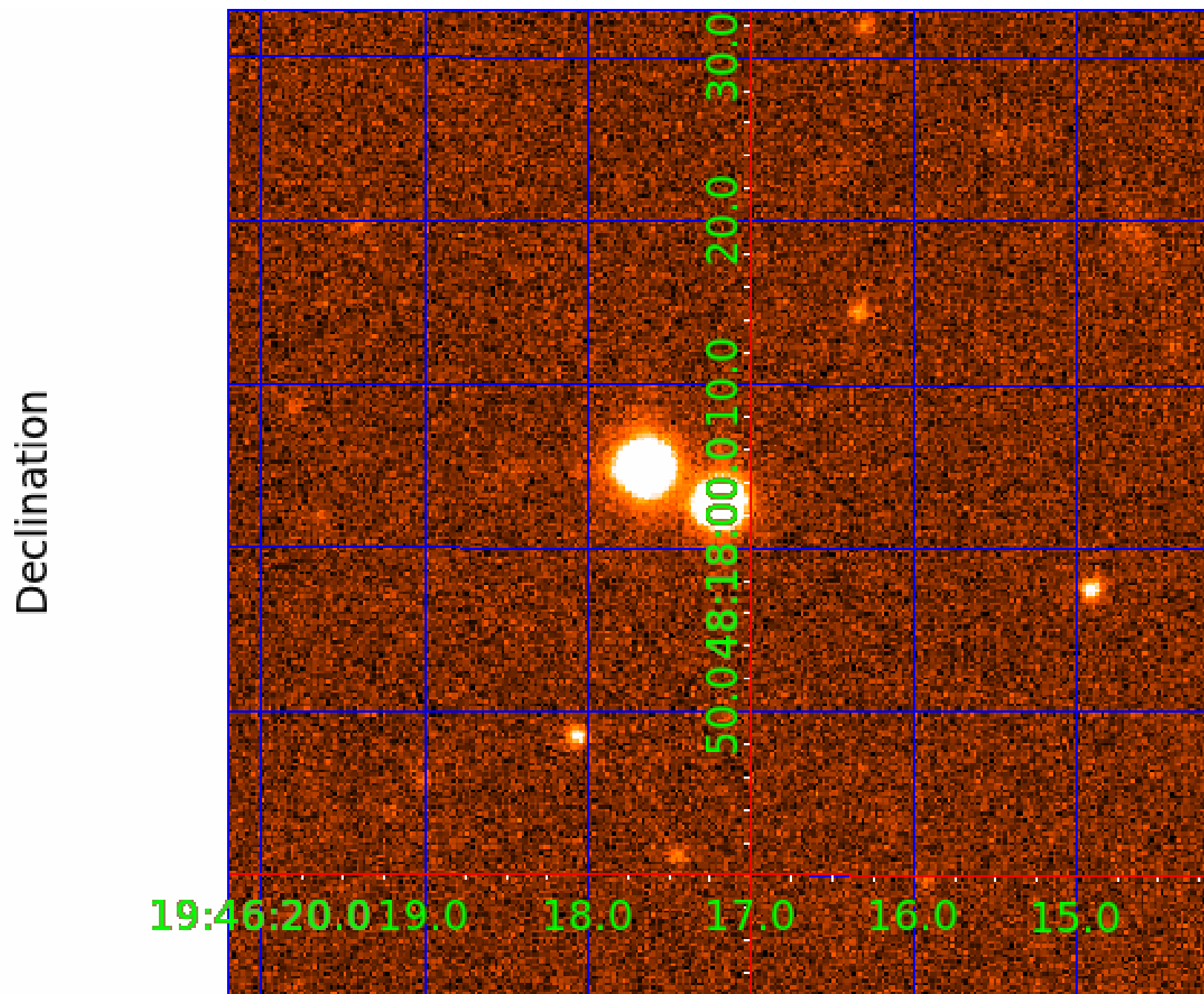
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UKIRT Image



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

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

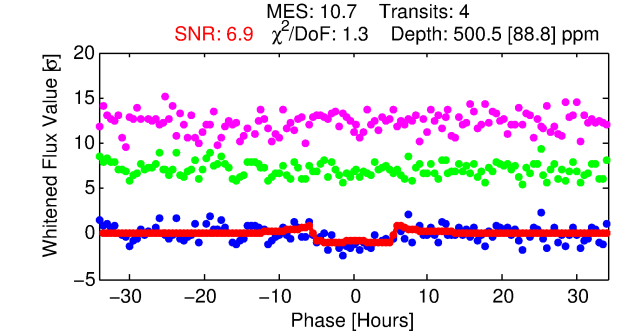
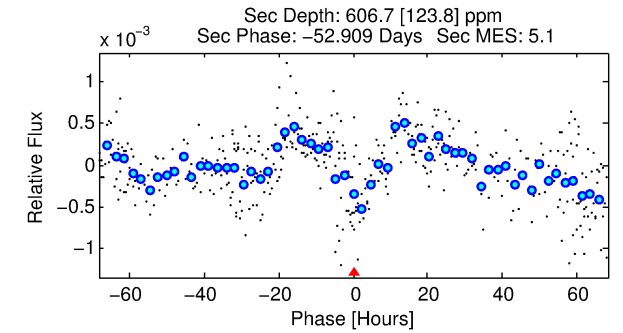
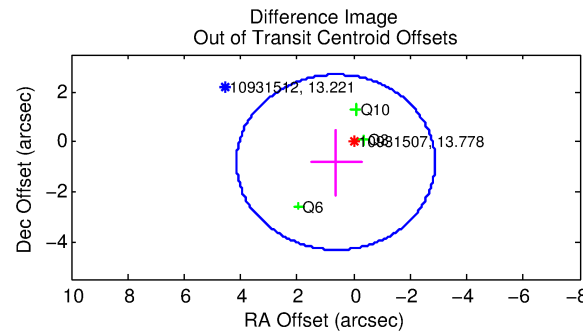
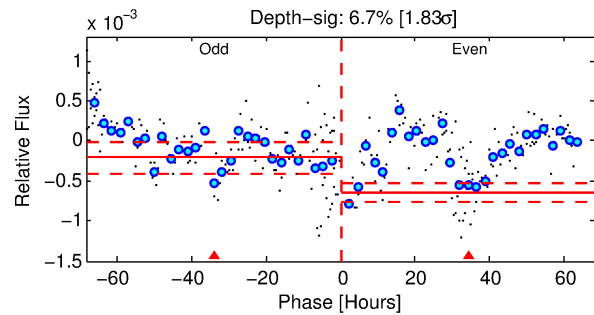
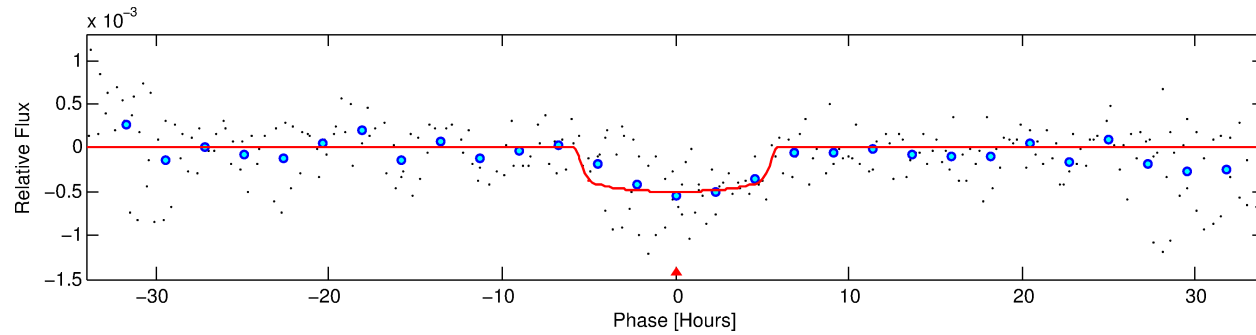
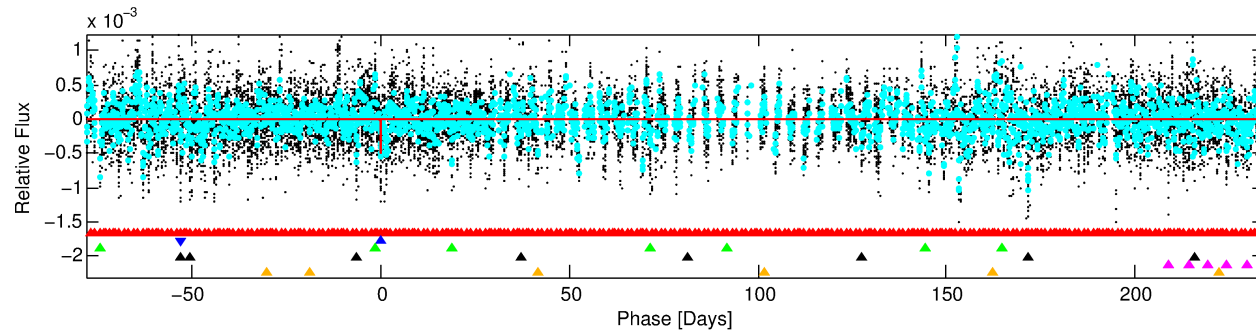
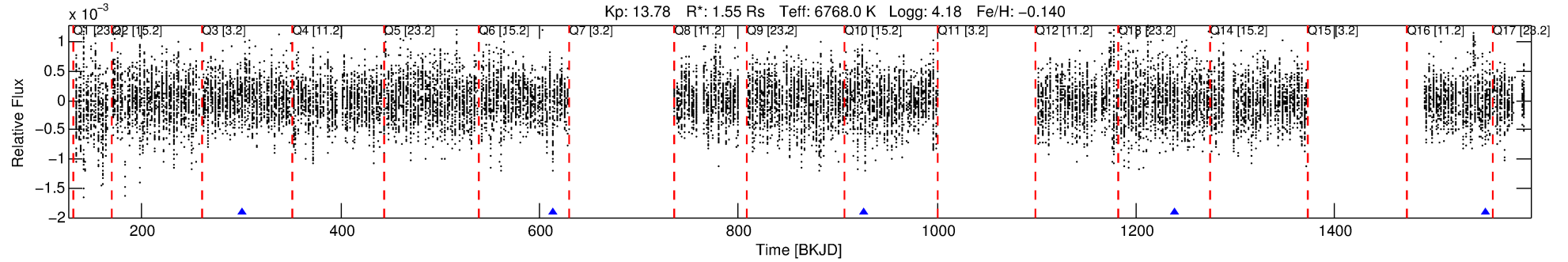
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010931507-02

No Significant Match Found

DV One-Page Summary

KIC: 10931507 Candidate: 2 of 6 Period: 312.499 d



DV Fit Results:

Period = 312.49938 [0.00520] d
Epoch = 301.3353 [0.0127] BKJD
Rp/R* = 0.0216 [0.0093]
a/R* = 170.35 [396.82]
b = 0.62 [2.28]
Seff = 4.64 [1.75]
Teq = 374 [35] K
Rp = 3.67 [1.93] Re
a = 0.9895 [0.2439] AU
Ag = 24316.72 [23029.57] [1.06 σ]
Teffp = 7227 [1618] K [4.23 σ]

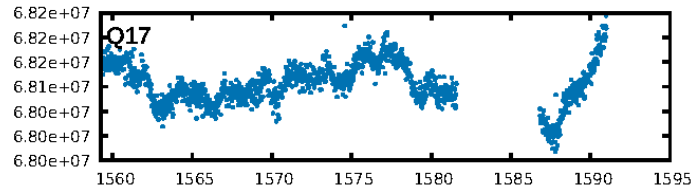
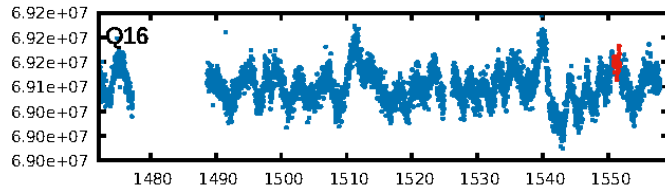
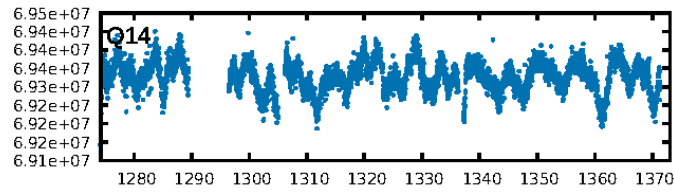
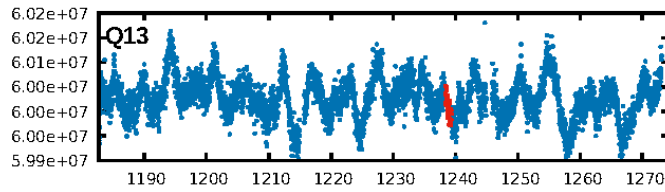
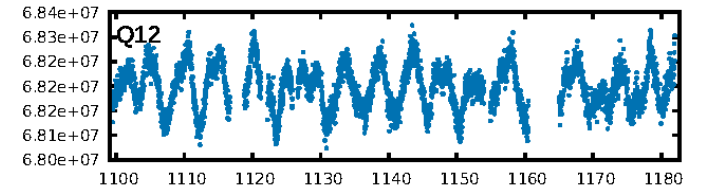
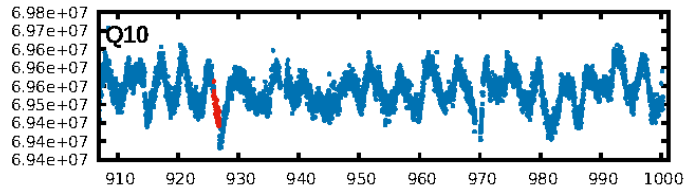
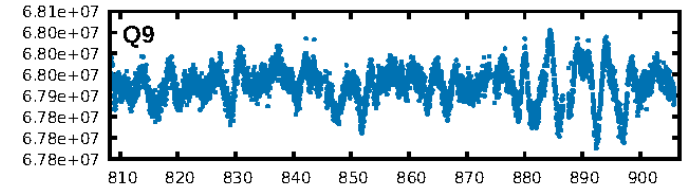
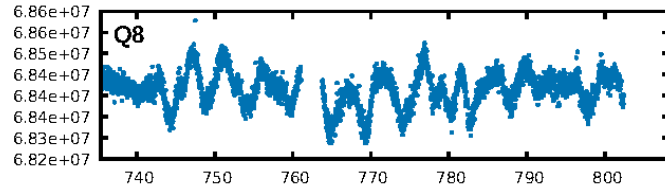
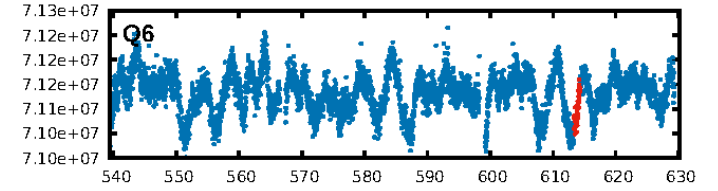
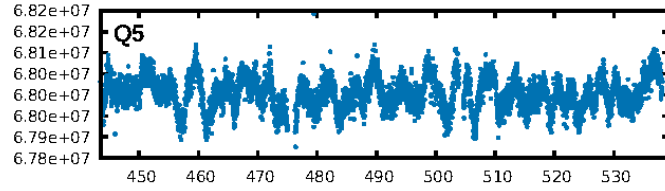
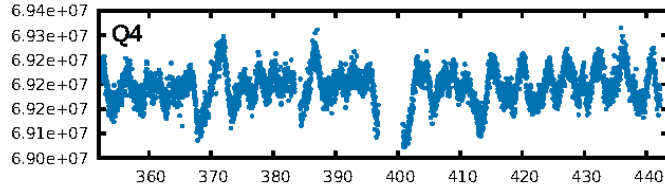
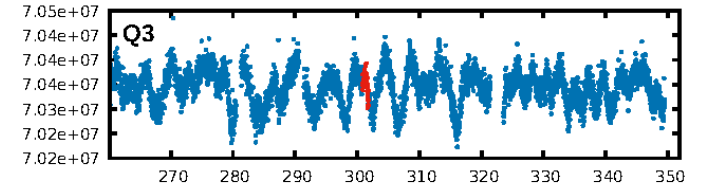
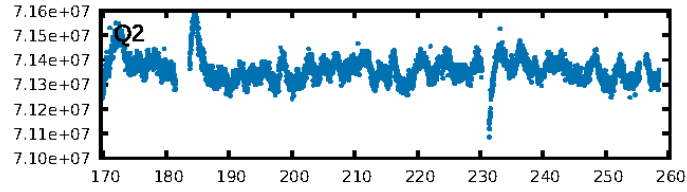
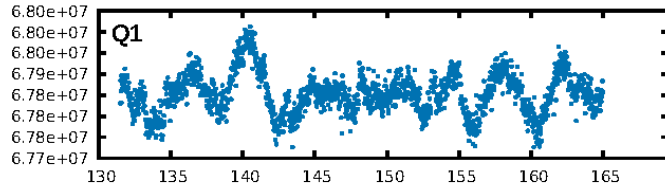
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [102.63 σ]
LongPeriod-sig: 100.0% [8.43 σ]
ModelChiSquare2-sig: 0.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 6.00e-13
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.3034
Centroid-sig: 18.1%
Centroid-so: 2.339 arcsec [3.96 σ]
OotOffset-rm: 1.037 arcsec [0.89 σ]
KicOffset-rm: 3.881 arcsec [4.29 σ]
OotOffset-st: 2/1/0/0 [3]
KicOffset-st: 2/1/0/0 [3]
DiffImageQuality-fgm: 0.33 [1/3]
DiffImageOverlap-fno: 0.40 [2/5]

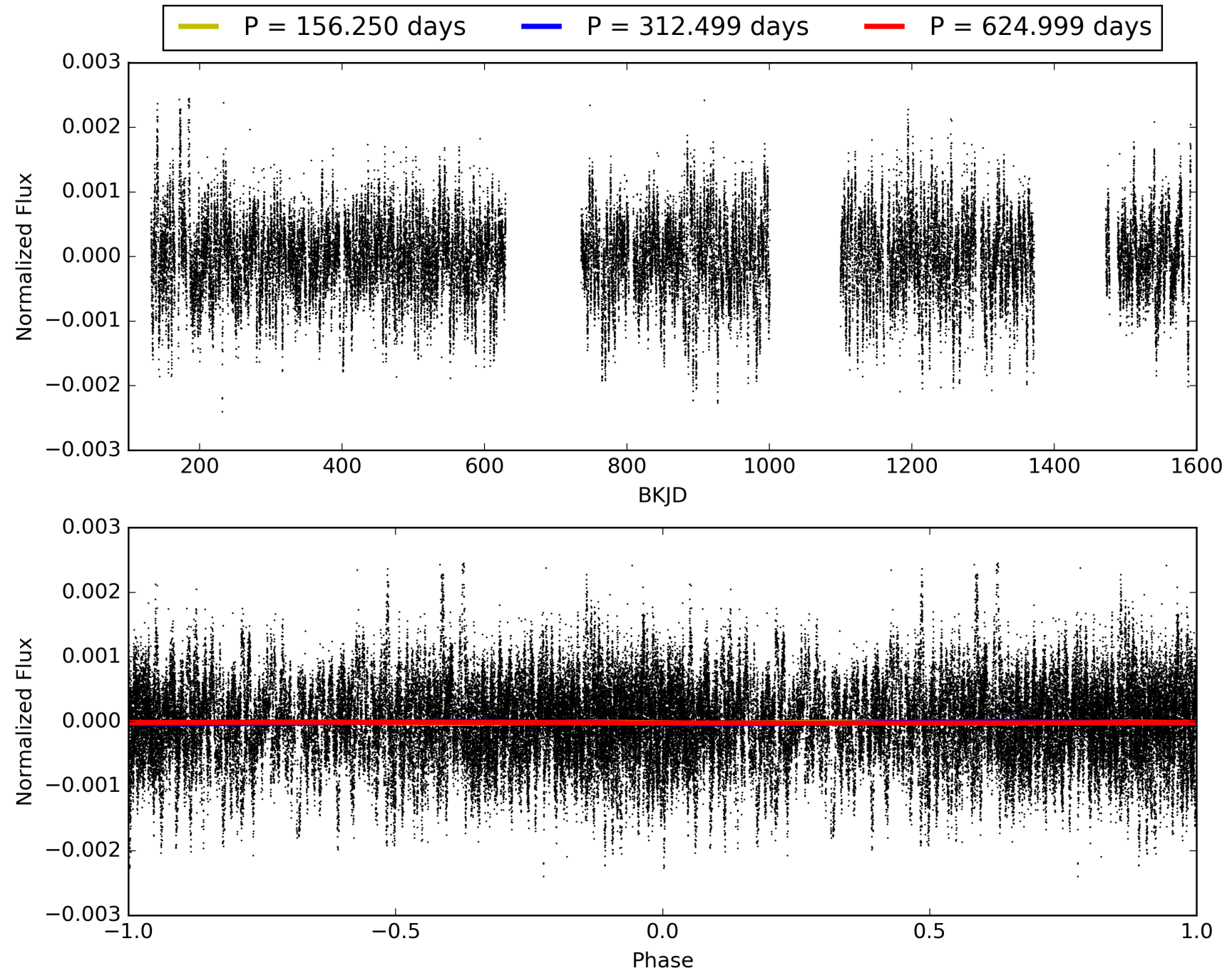
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:58:59 Z

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

TCE 010931507-02, PDC Light Curves

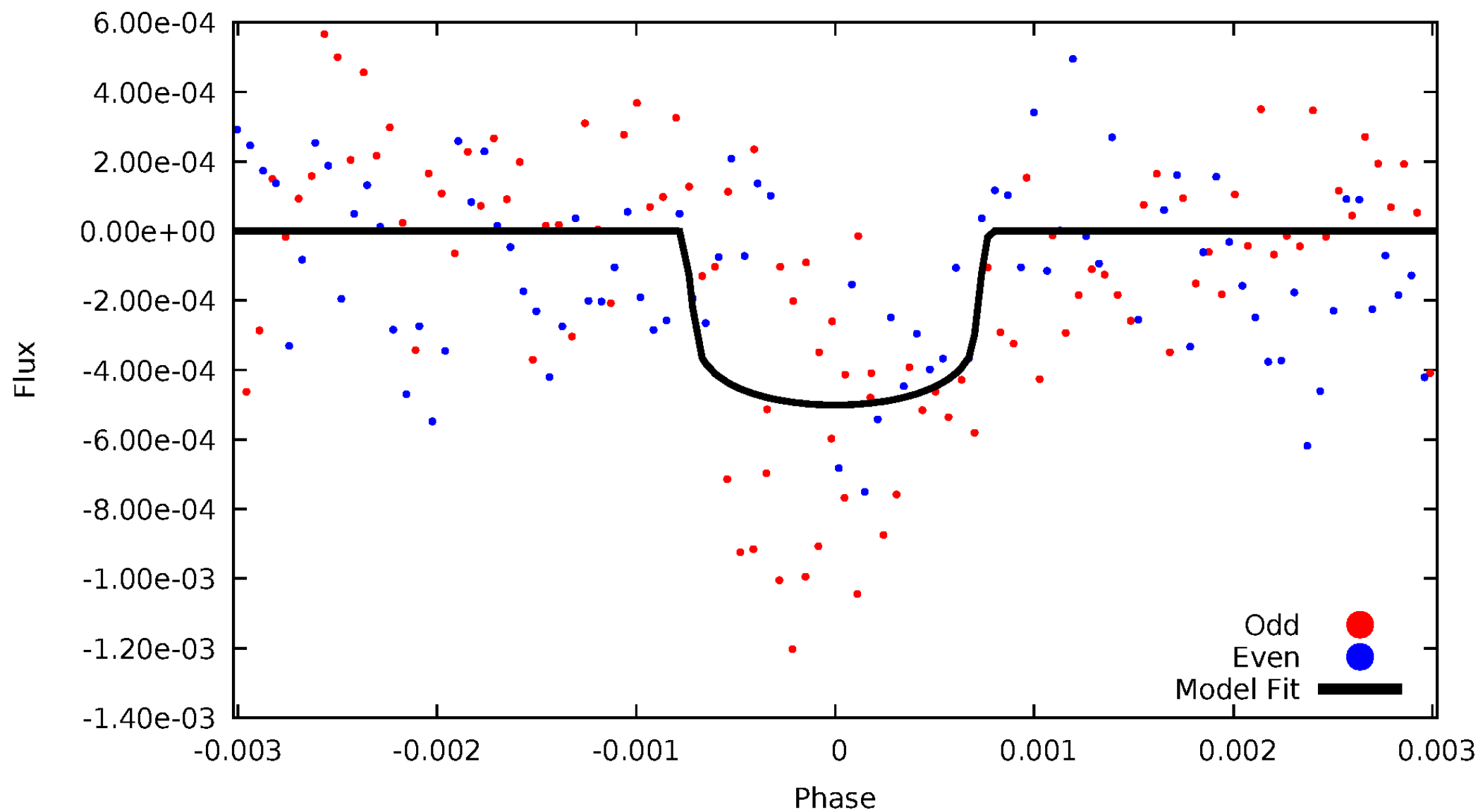


TCE 010931507-02



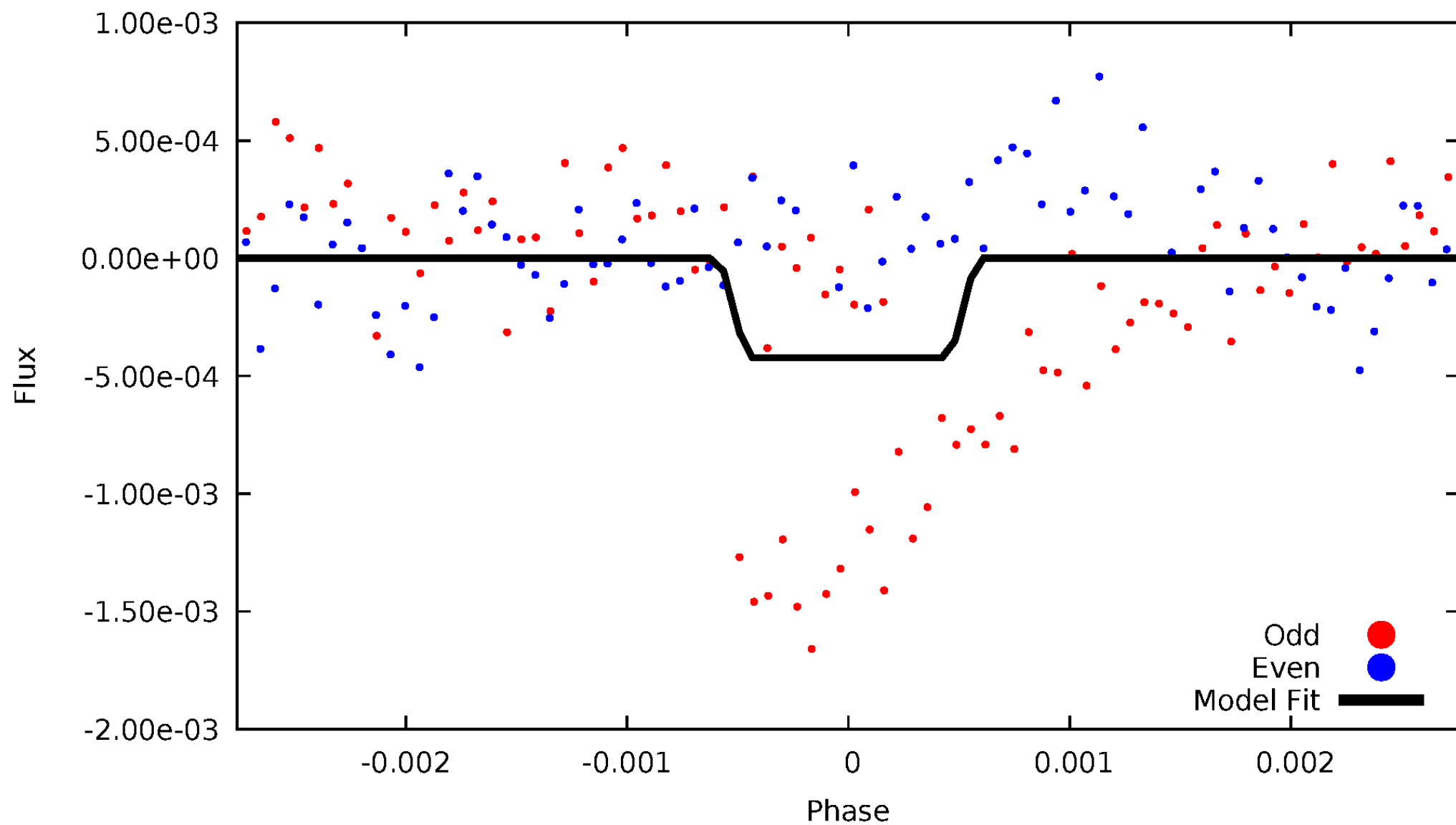
DV Odd/Even

TCE 010931507-02



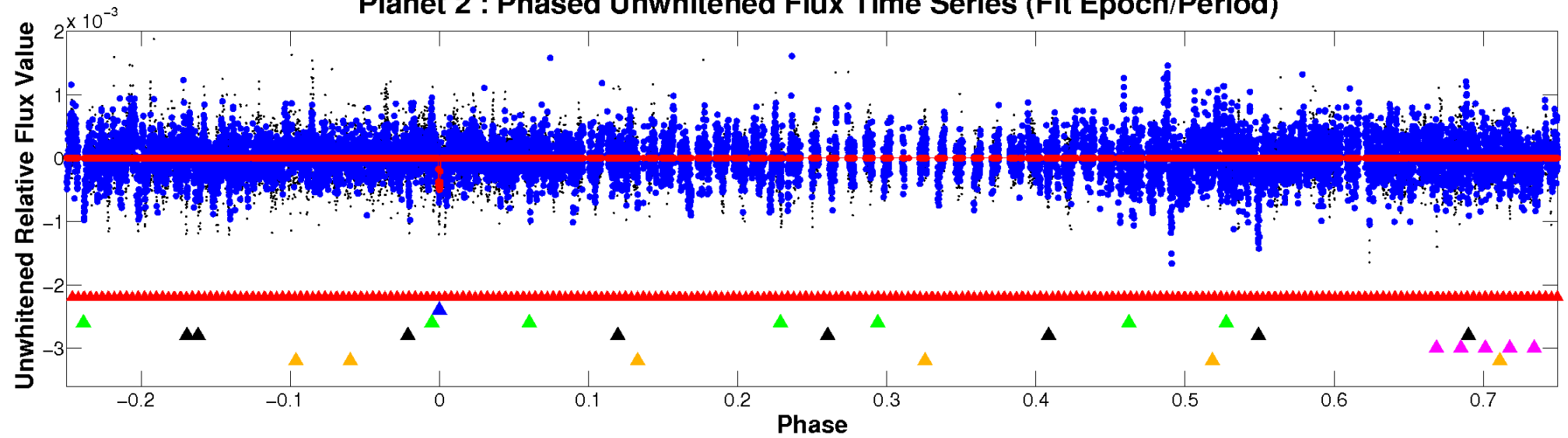
ALT Odd/Even

TCE 010931507-02

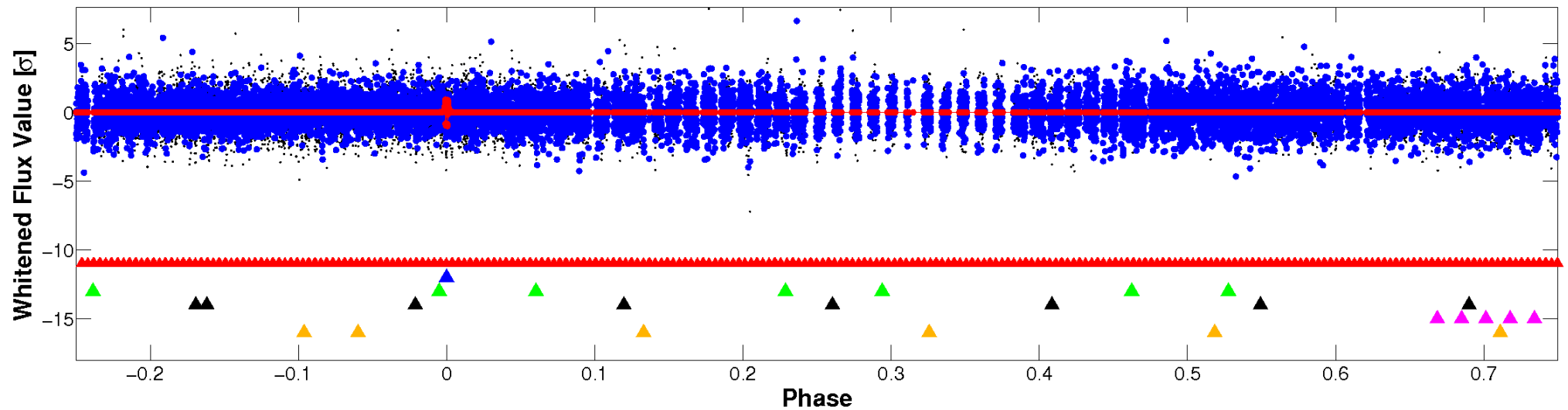


Non-Whitened Vs. Whitened Light Curve

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

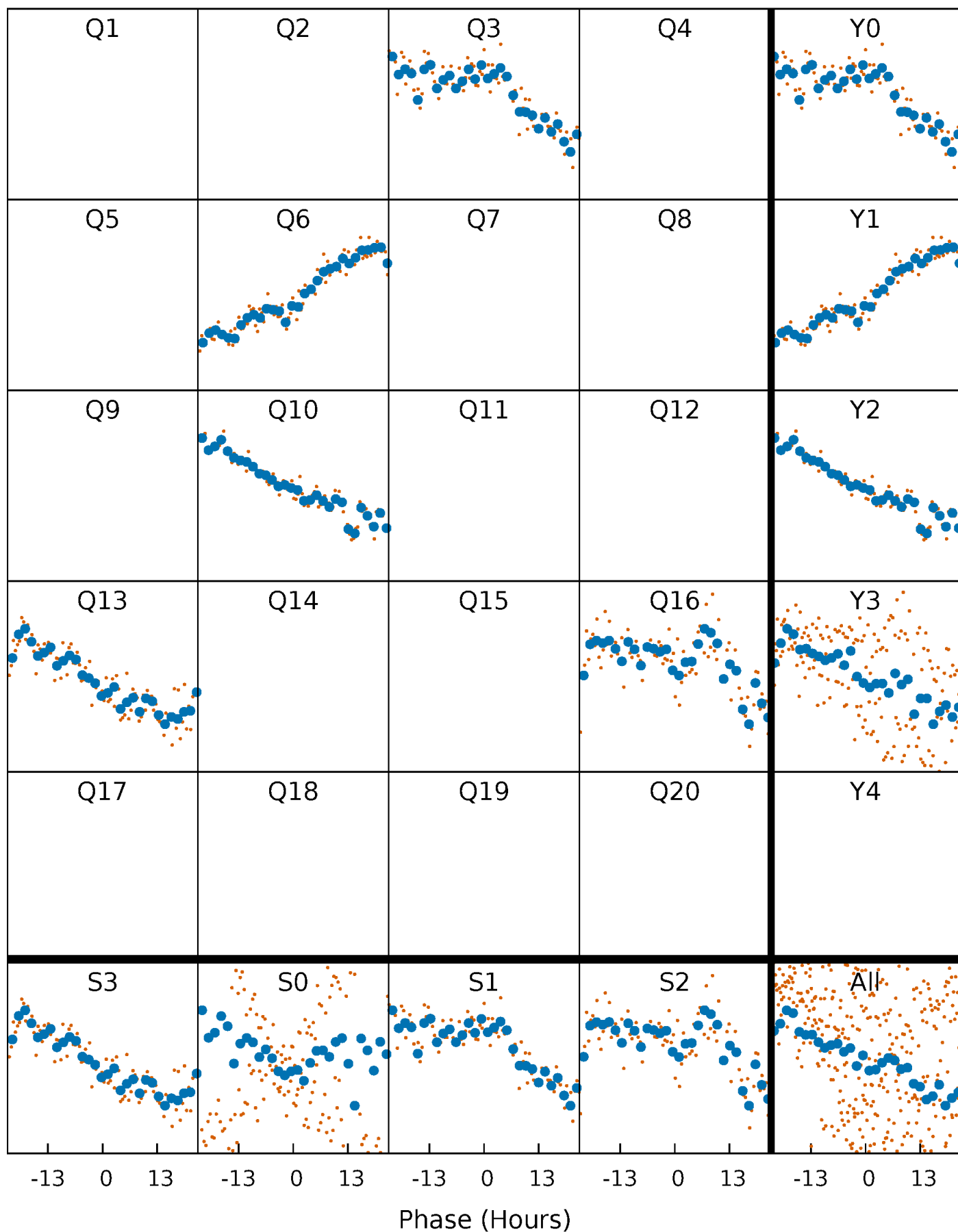


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



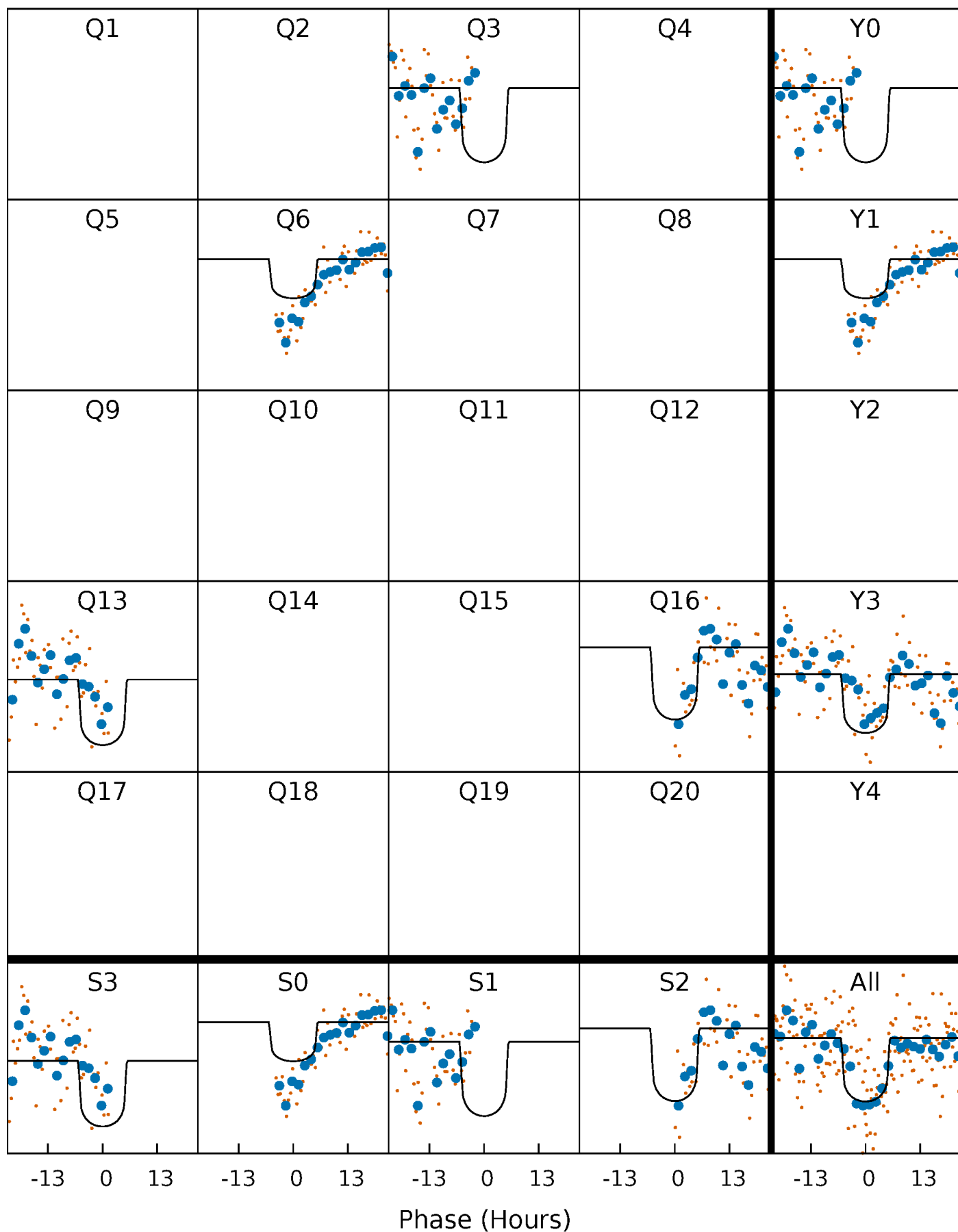
PDC Quarter-Phased Transit Curves

TCE 010931507-02 $P=312.499383$ Days $T_0=301.335318$ (BKJD)



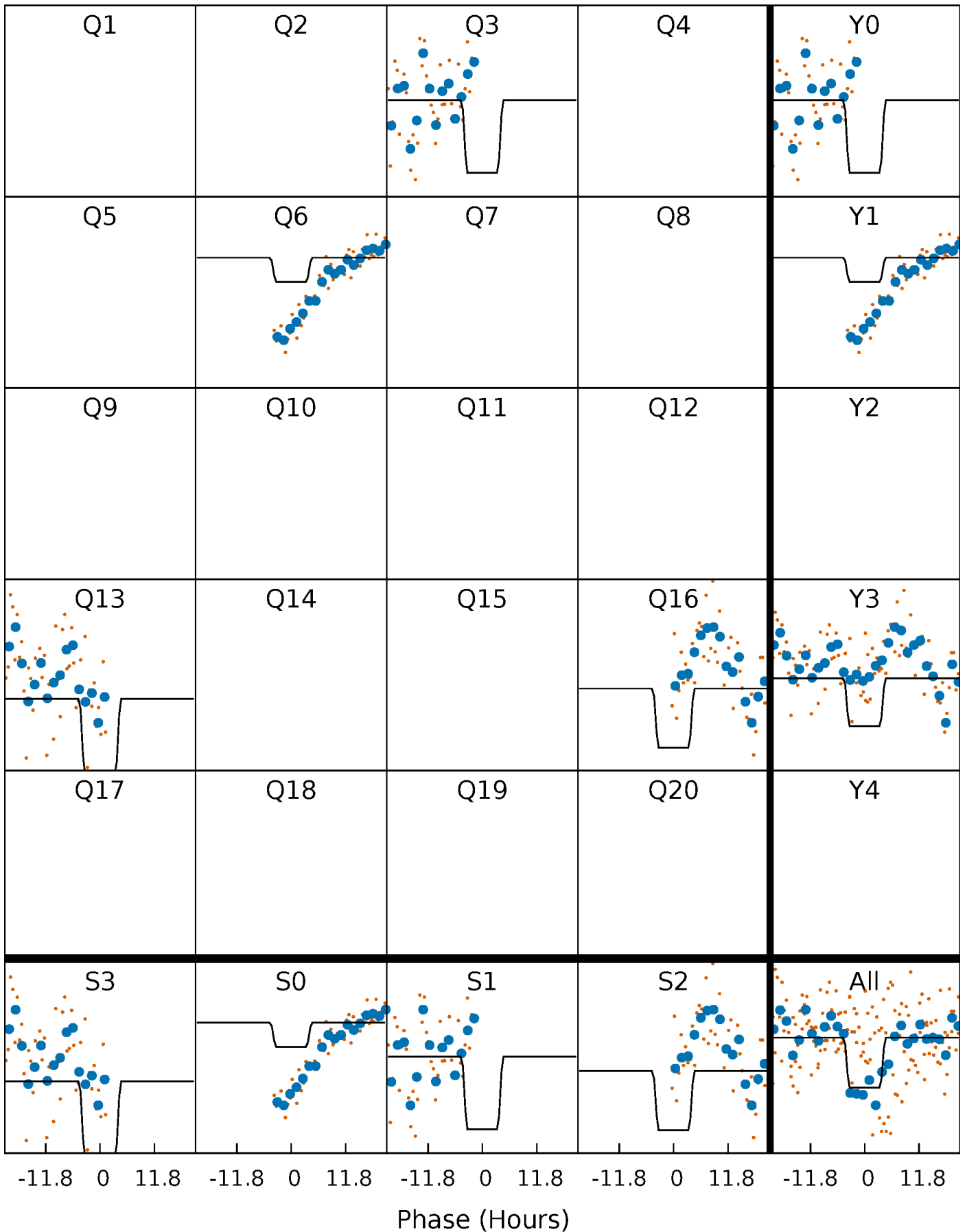
DV Quarter-Phased Transit Curves

TCE 010931507-02 $P=312.499383$ Days $T_0=301.335318$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

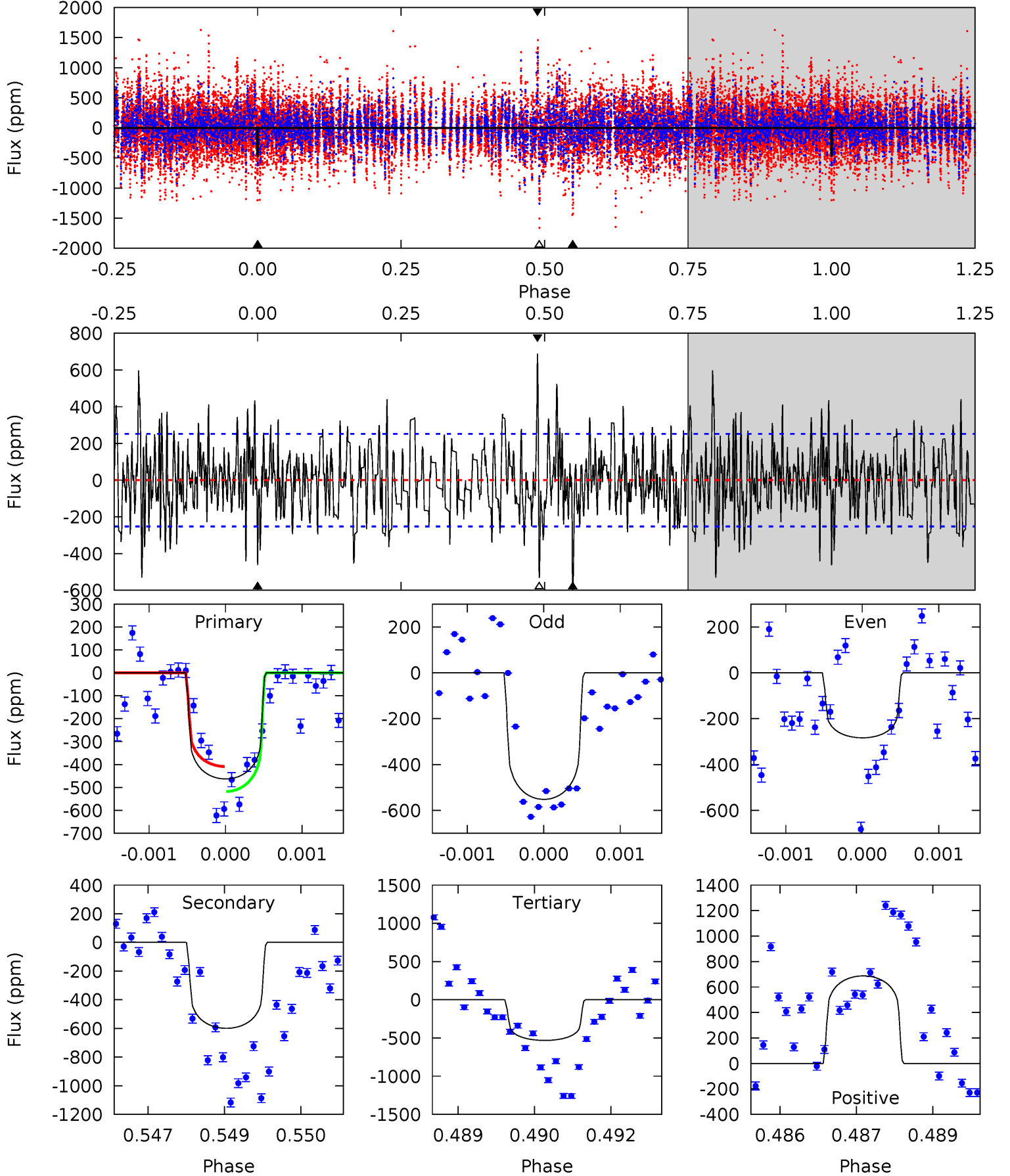
TCE 010931507-02 $P=312.510867$ Days $T_0=301.308163$ (BKJD)



DV Model-Shift Uniqueness Test

010931507-02, P = 312.499383 Days, E = 301.335318 Days

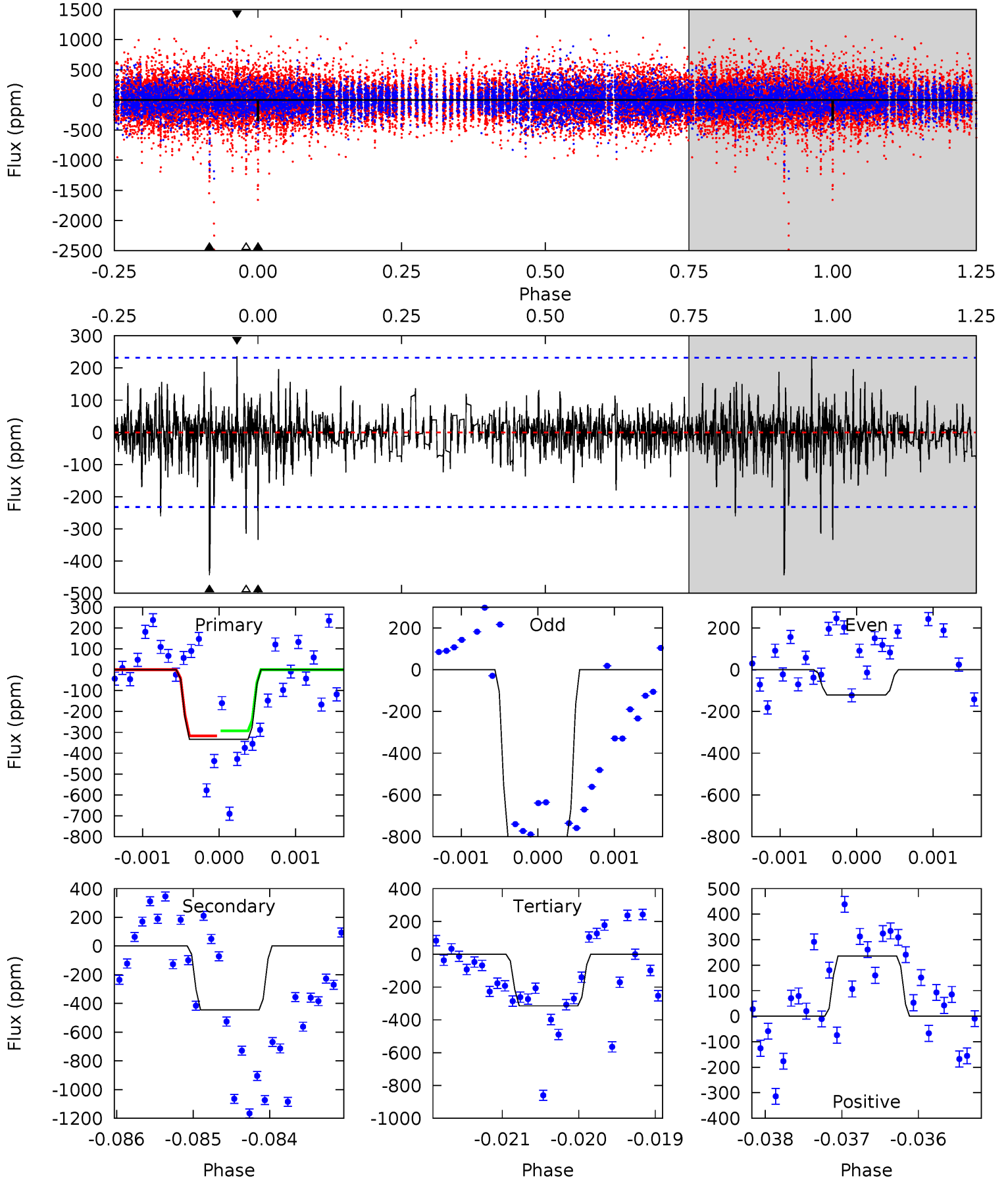
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.89	12.8	11.4	14.7	5.38	3.17	3.32	-1.48	-4.80	1.43	-1.88	2.78	1.15	0.53	1.18



Alt Model-Shift Uniqueness Test

010931507-02, P = 312.510867 Days, E = 301.308163 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.80	10.4	7.36	5.52	5.43	3.26	1.22	0.44	2.28	3.03	4.87	8.32	-8.95	0.35	0.28



Stellar Parameters For KIC 010931507

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6768^{+189}_{-259}	$4.176^{+0.148}_{-0.181}$	$-0.140^{+0.250}_{-0.300}$	$1.555^{+0.475}_{-0.317}$	$1.333^{+0.196}_{-0.239}$	$0.499^{+0.440}_{-0.247}$
	+3%/-4%	+4%/-4%	+179%/-214%	+31%/-20%	+15%/-18%	+88%/-49%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010931507-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-599 ± 47	$3.77^{+1.71}_{-1.68}$	524^{+41}_{-34}	7187^{+2854}_{-1239}	23541^{+46126}_{-12916}
Alt.	-444 ± 43	$3.54^{+1.63}_{-1.49}$	525^{+38}_{-35}	6838^{+2902}_{-1212}	19392^{+35928}_{-10356}

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

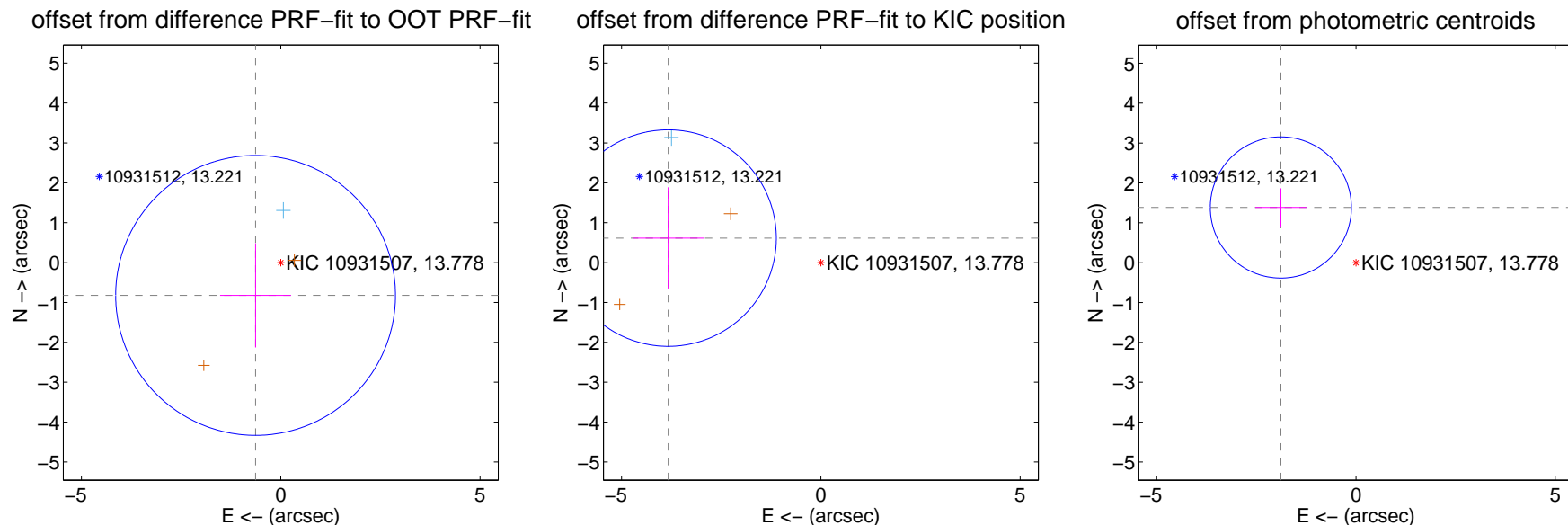
DV Centroid Data

Supplemental centroid analysis for 010931507-02. Kepler magnitude: 13.78. Transit SNR 6.94

There are 1 quarters with good PRF difference image offsets

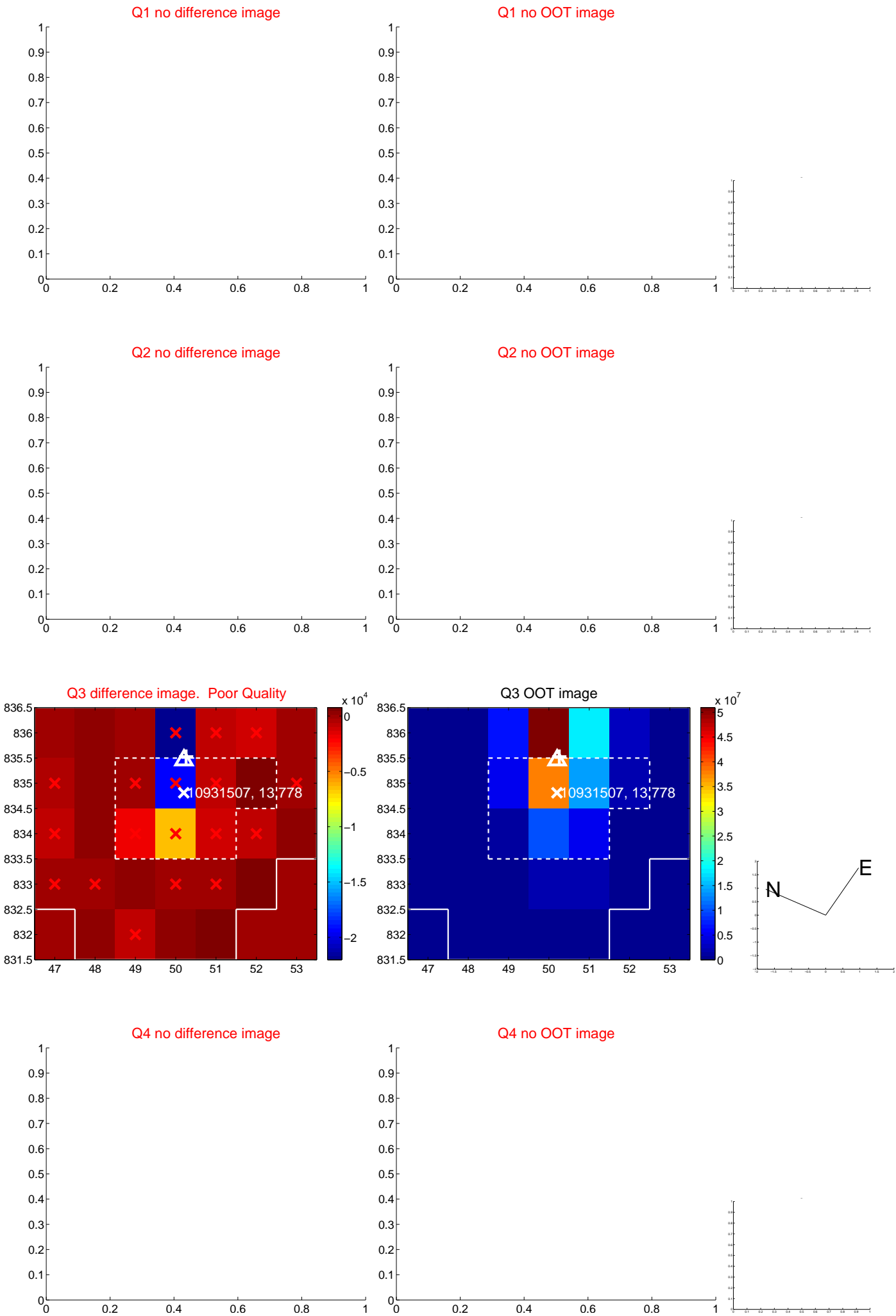
The OOT PRF centroid is offset from the target star catalog position by about 4.23 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.037 ± 1.170	0.89	0.632 ± 0.890	-0.822 ± 1.307
PRF-fit source offset from KIC position	3.881 ± 0.905	4.29	3.832 ± 0.893	0.615 ± 1.273
photometric centroid source offset	2.34 ± 0.59	3.96	1.88 ± 0.64	1.38 ± 0.48

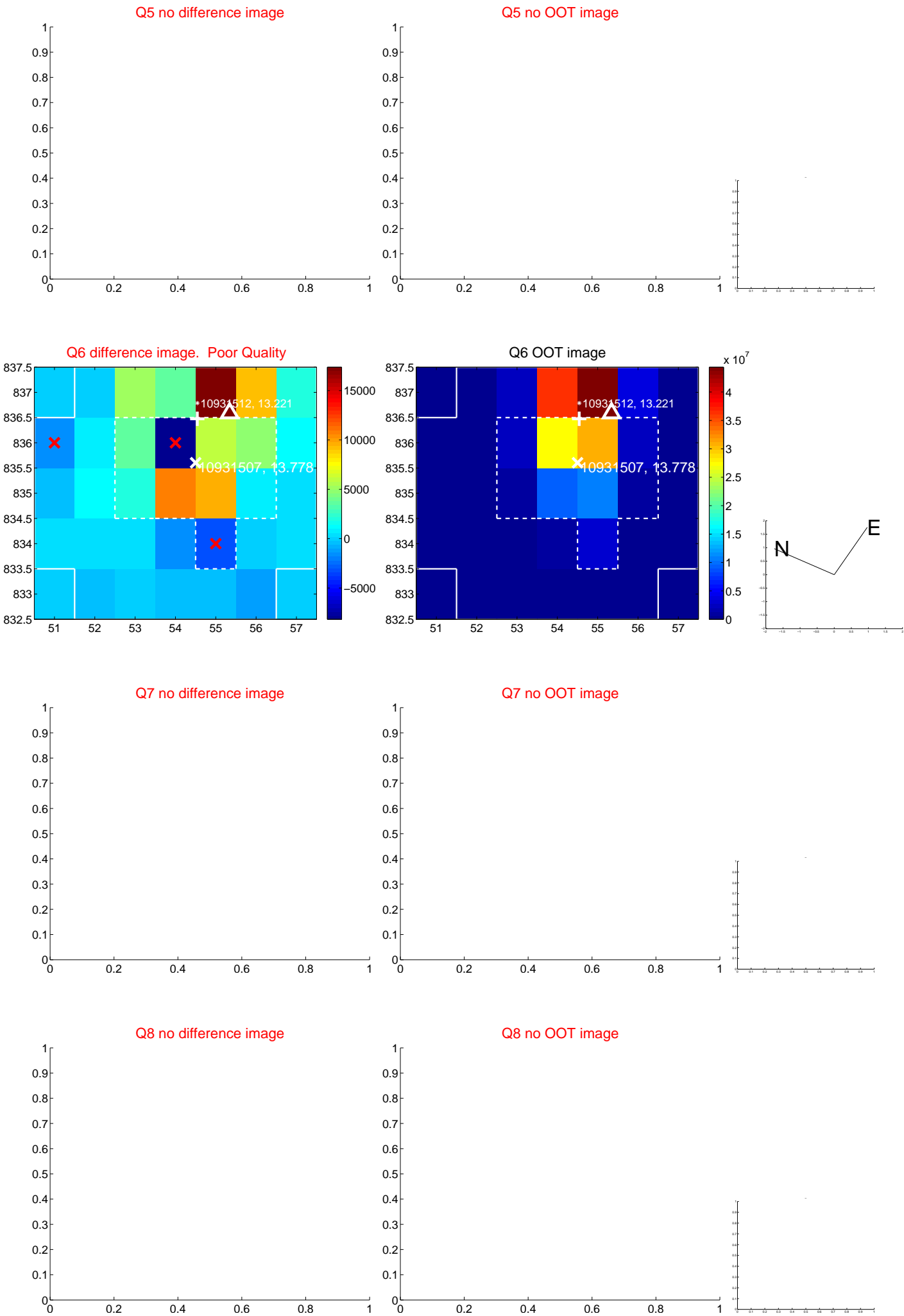


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

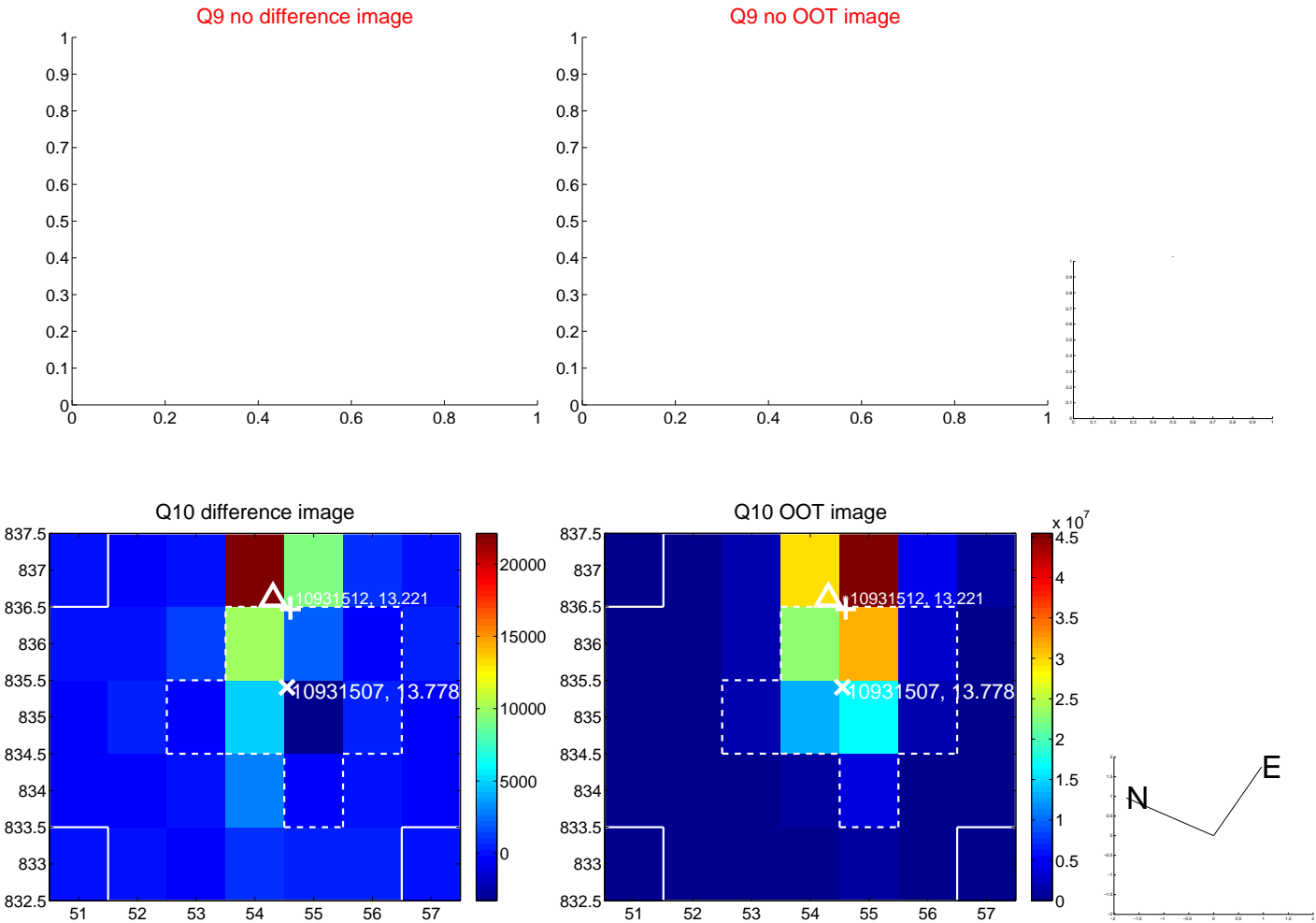
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



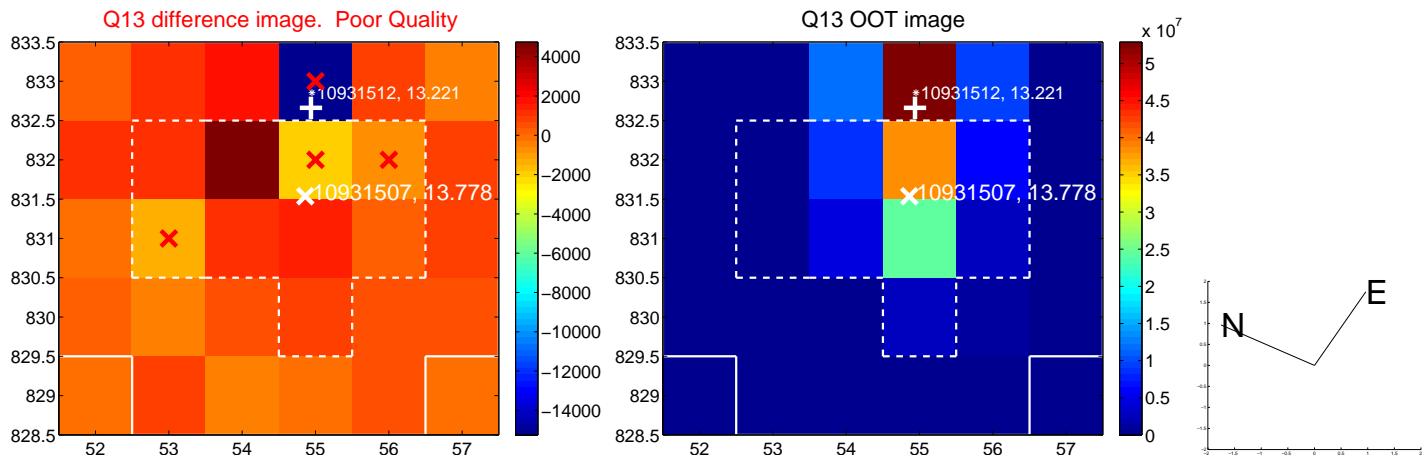
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



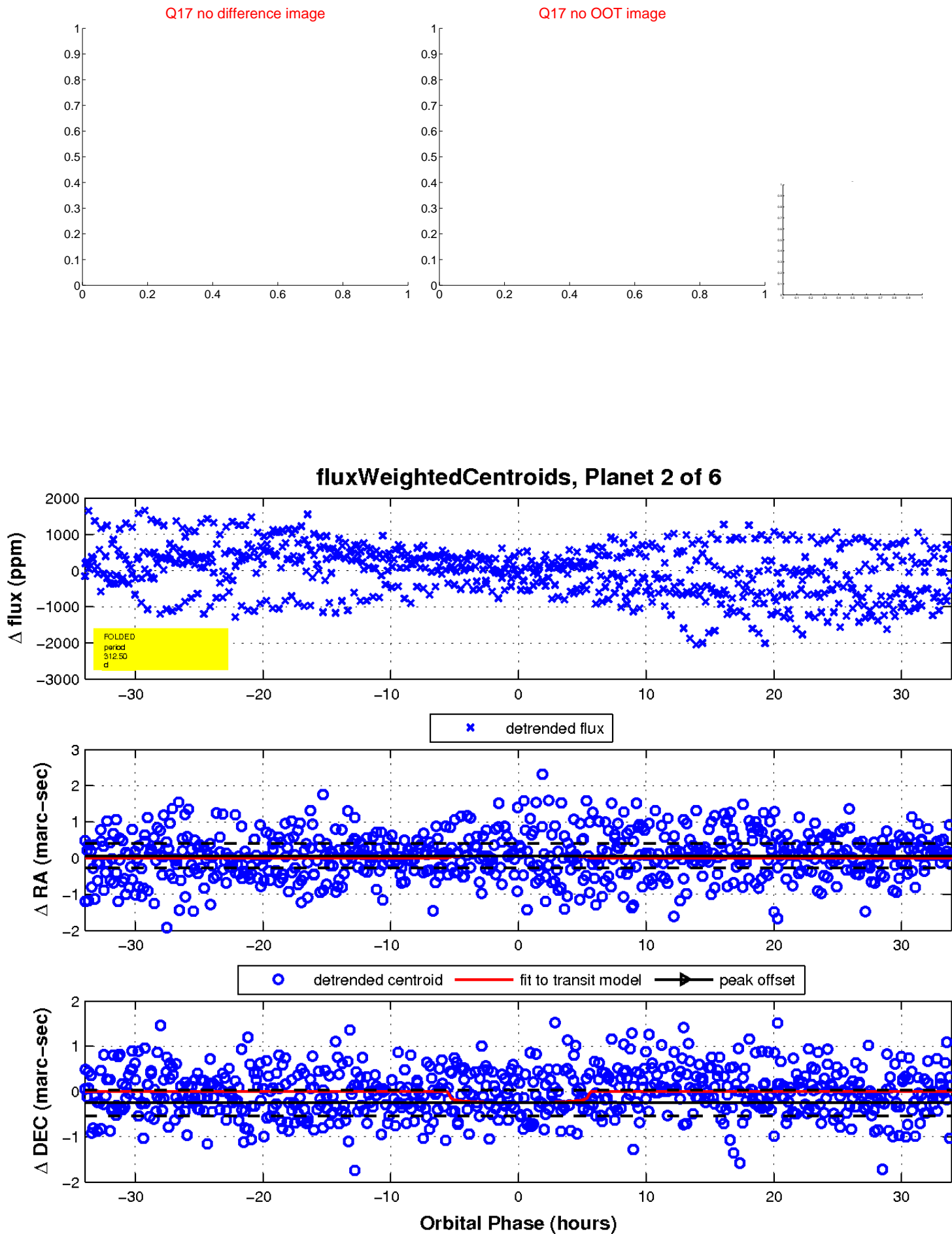
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

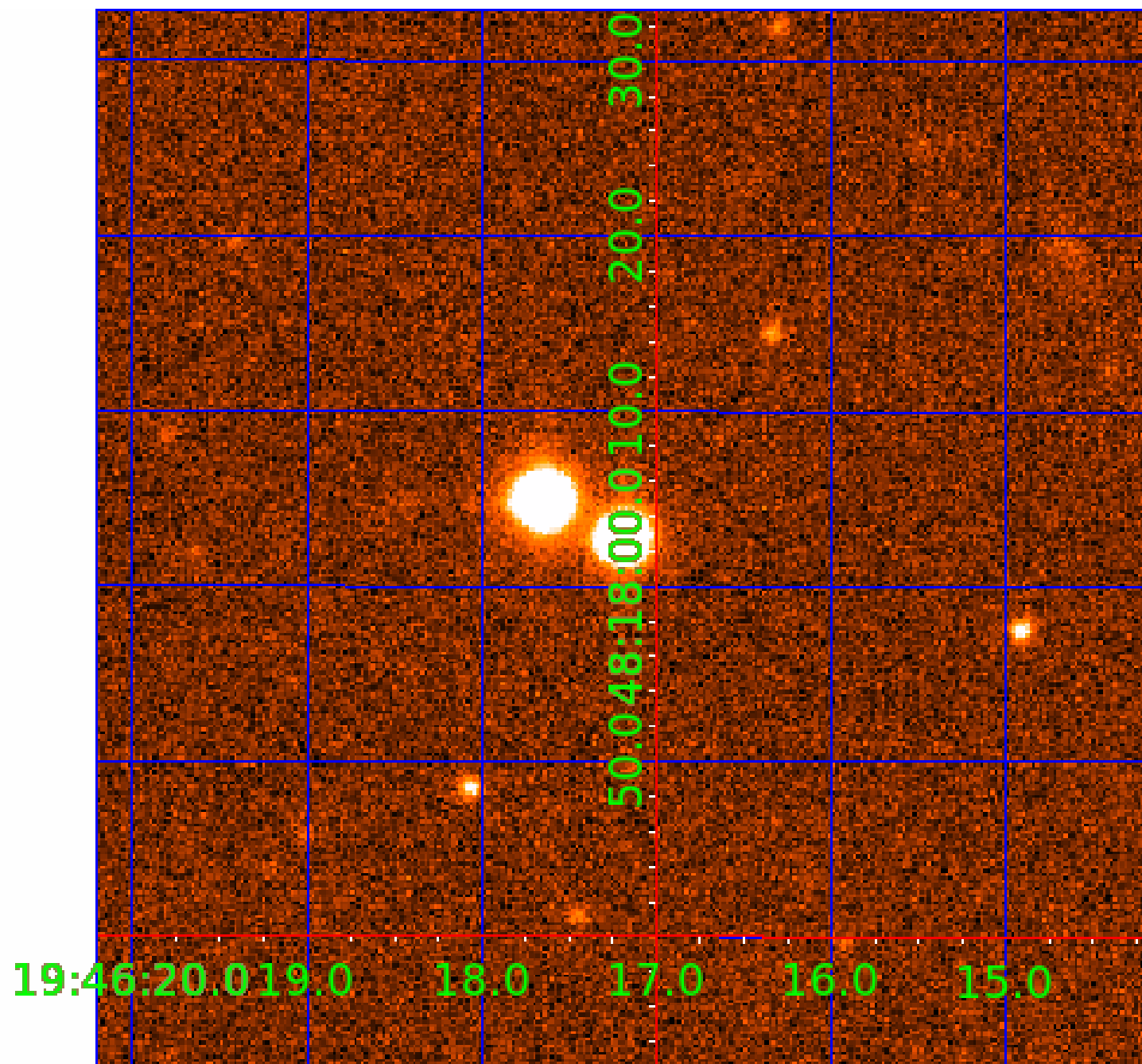


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010931507

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})
010931507-01	OBS	No	3.780915	132.287046	108.6	18.863	11.4	11.5	1.55	6768	1.63	1671.45
010931507-02	OBS	No	312.499383	301.335318	500.5	11.335	10.7	6.9	1.55	6768	3.67	4.64
010931507-03	OBS	No	239.474085	133.334850	566.4	15.610	10.6	7.6	1.55	6768	3.83	6.62
010931507-04	OBS	No	178.239748	250.769948	646.2	21.108	9.9	9.4	1.55	6768	5.03	9.81
010931507-05	OBS	No	317.619309	197.784589	610.8	9.162	7.3	7.9	1.55	6768	7.31	4.54
010931507-06	OBS	No	252.275521	271.282709	471.9	8.359	7.4	7.0	1.55	6768	3.96	6.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010931507-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
010931507-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010931507-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010931507-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010931507-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
010931507-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

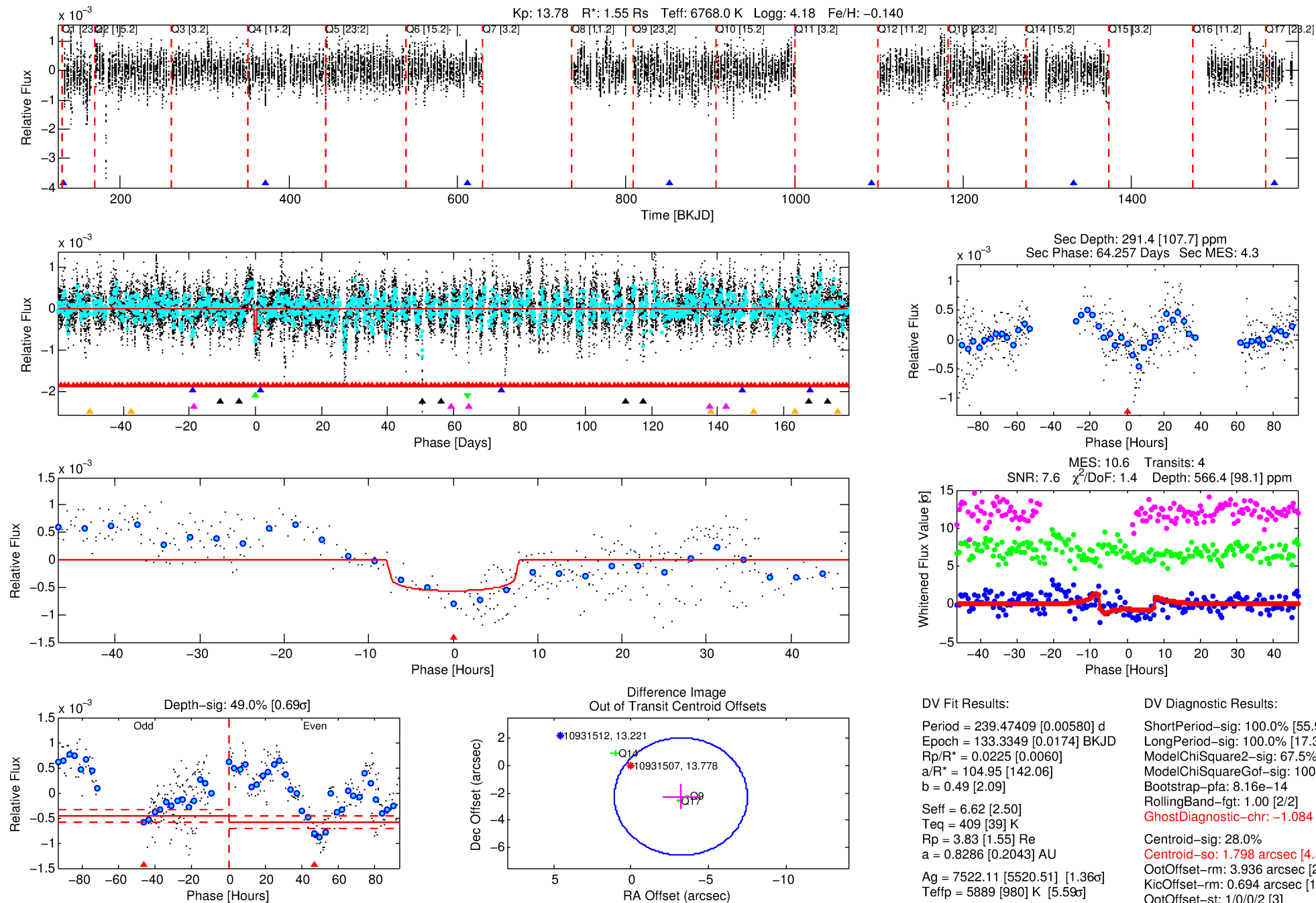
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010931507-03

No Significant Match Found

DV One-Page Summary

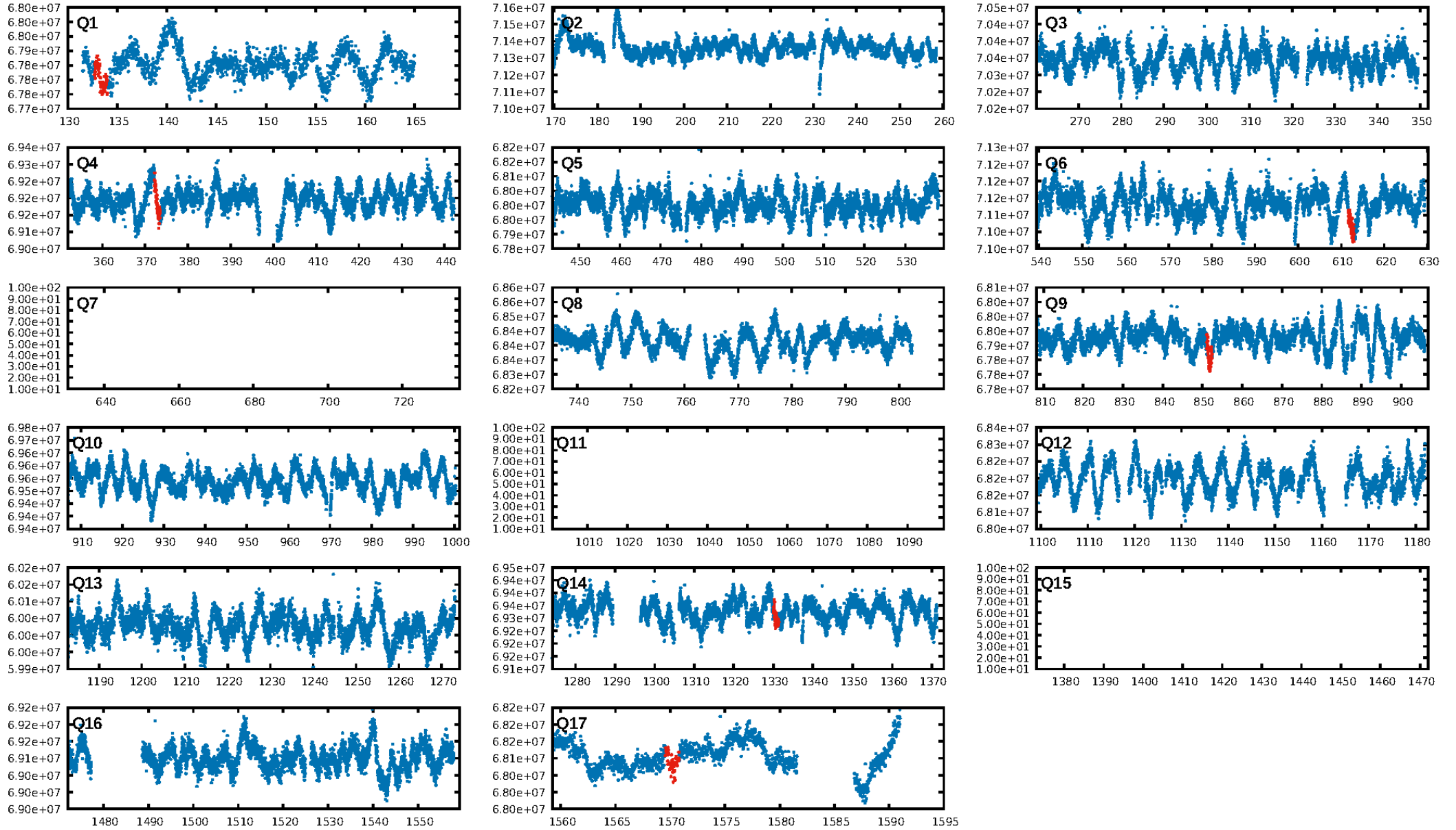
KIC: 10931507 Candidate: 3 of 6 Period: 239.474 d



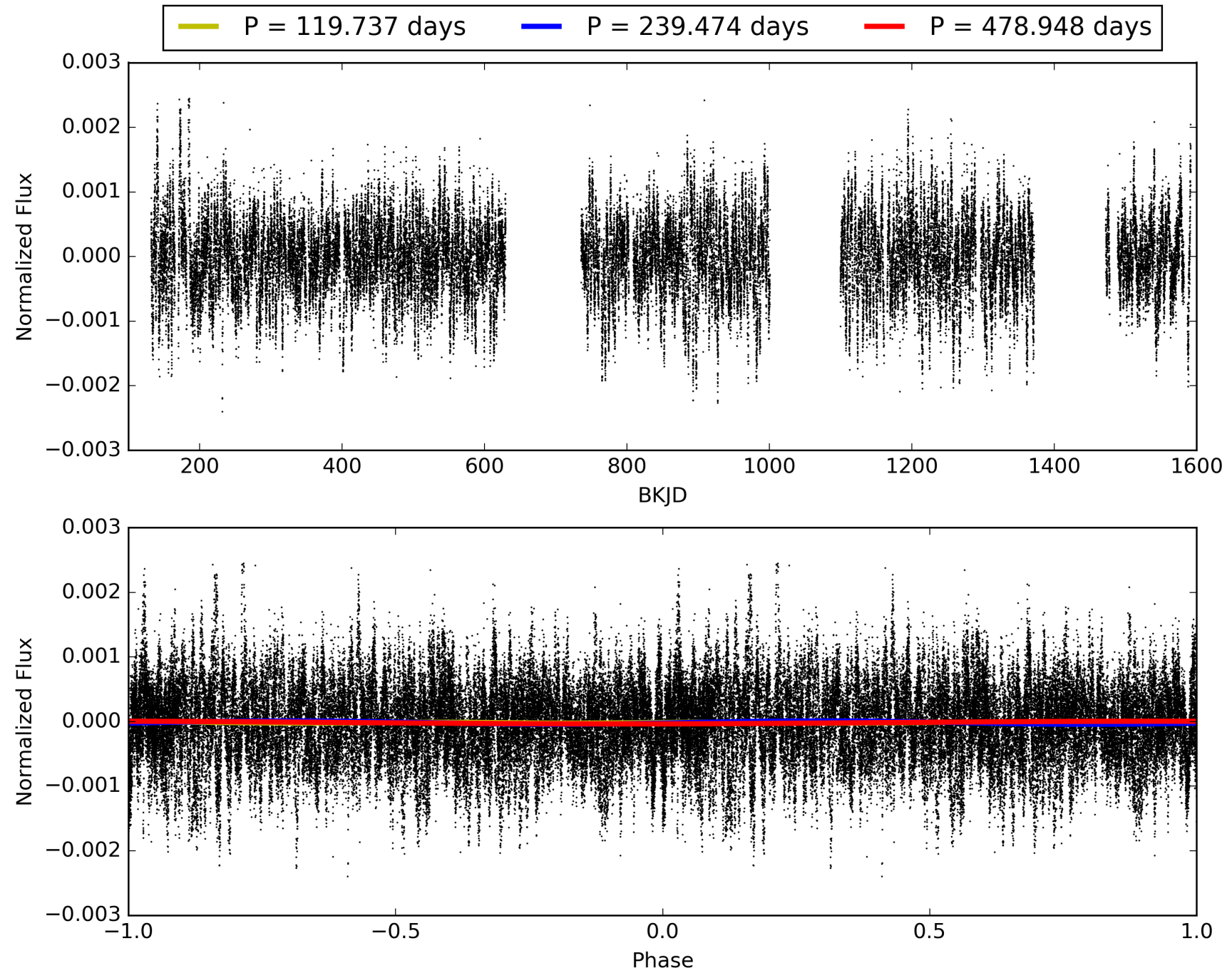
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:59:04 Z

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

TCE 010931507-03, PDC Light Curves

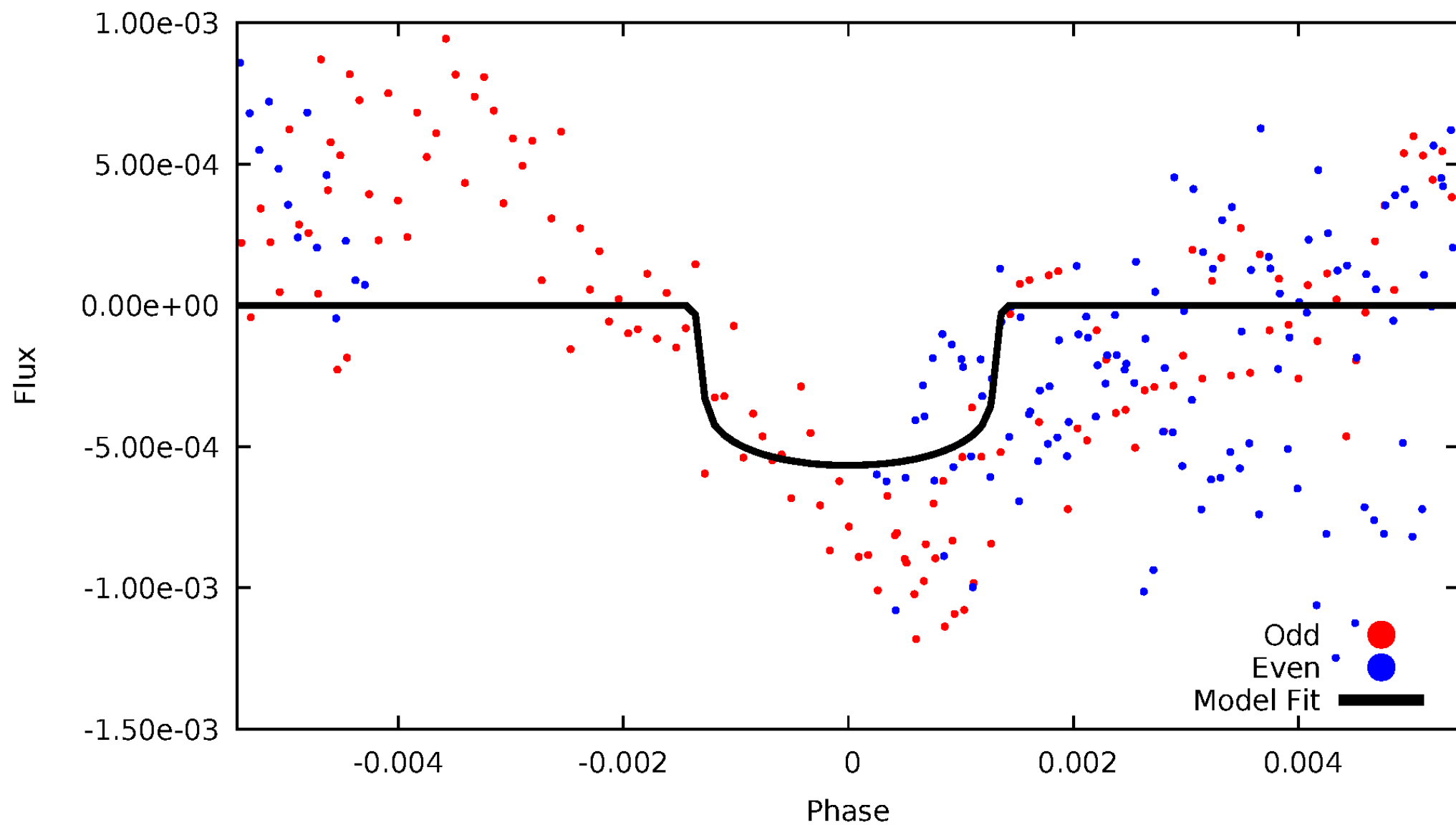


TCE 010931507-03



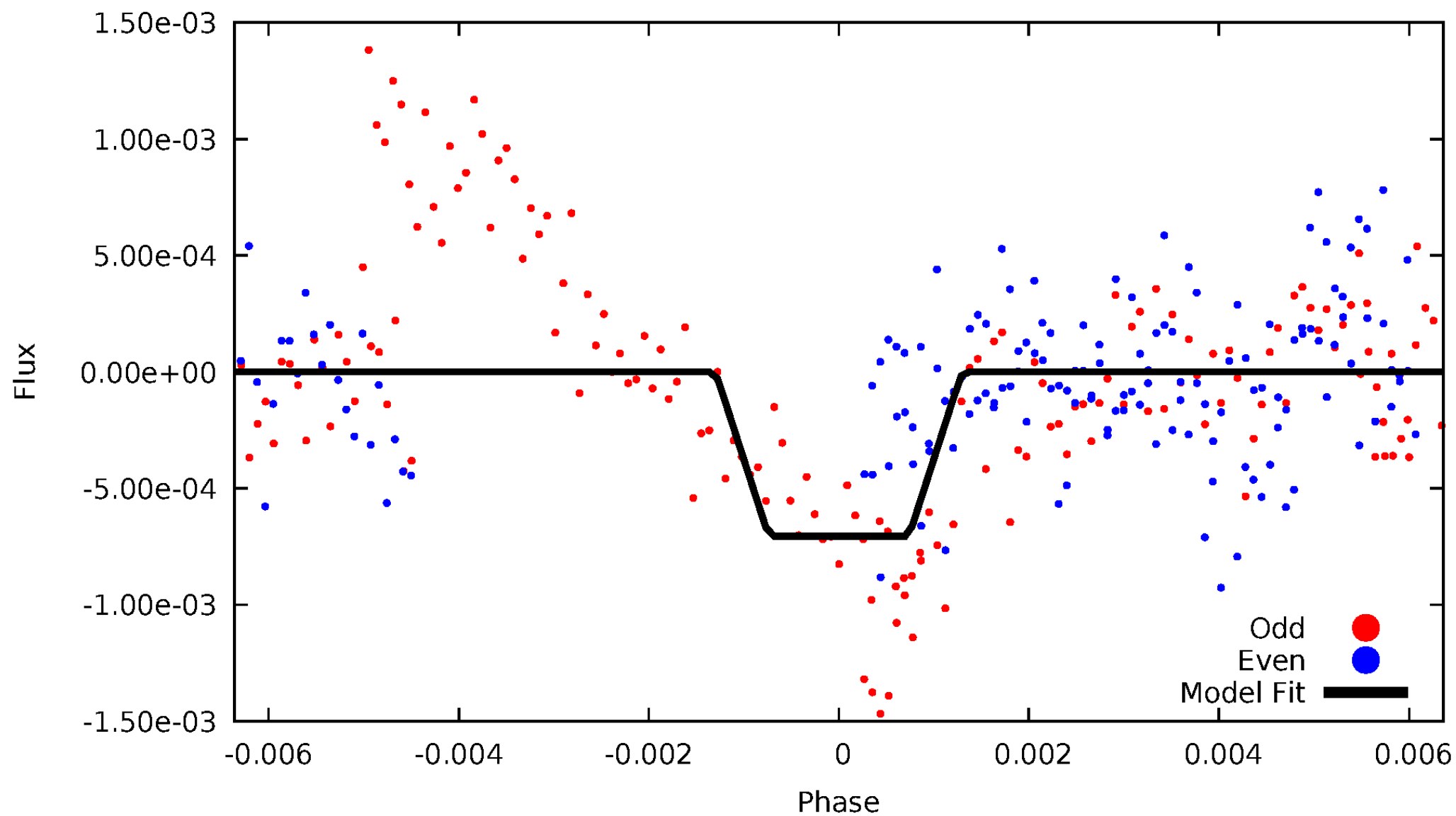
DV Odd/Even

TCE 010931507-03



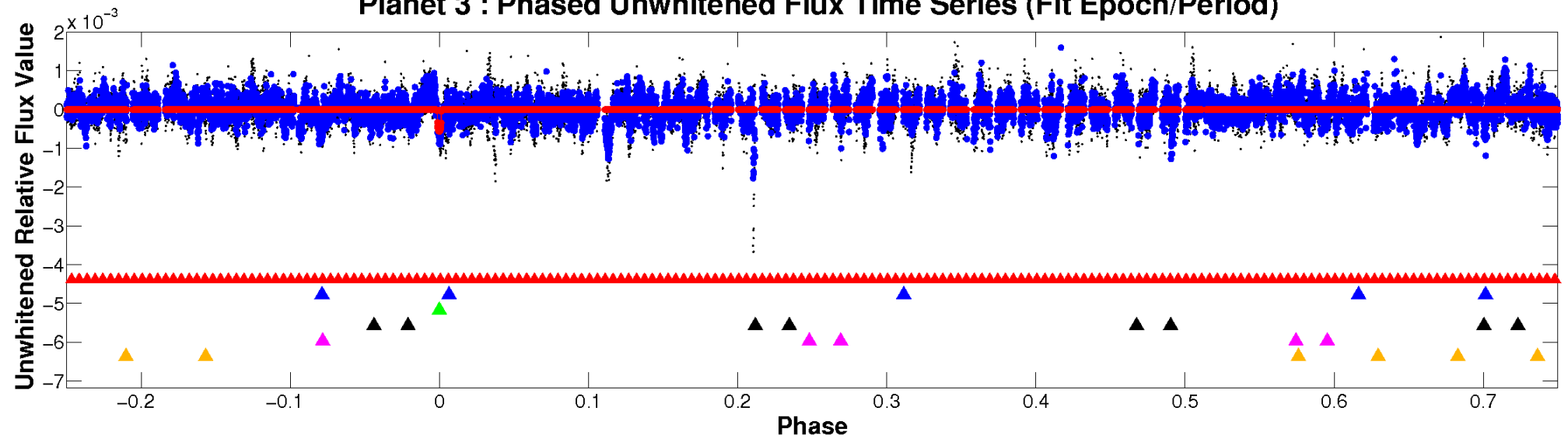
ALT Odd/Even

TCE 010931507-03

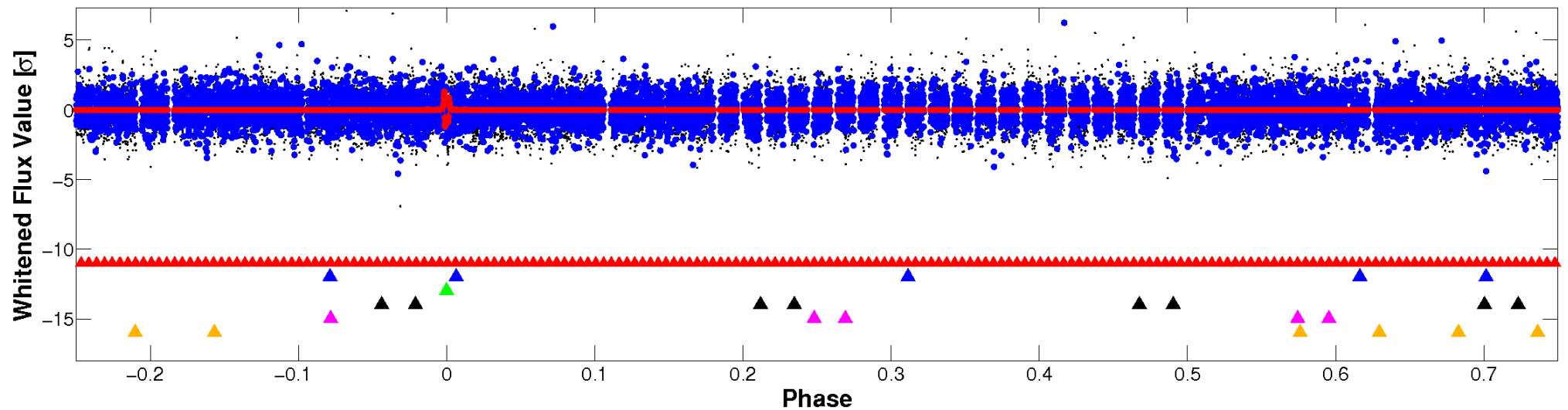


Non-Whitened Vs. Whitened Light Curve

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

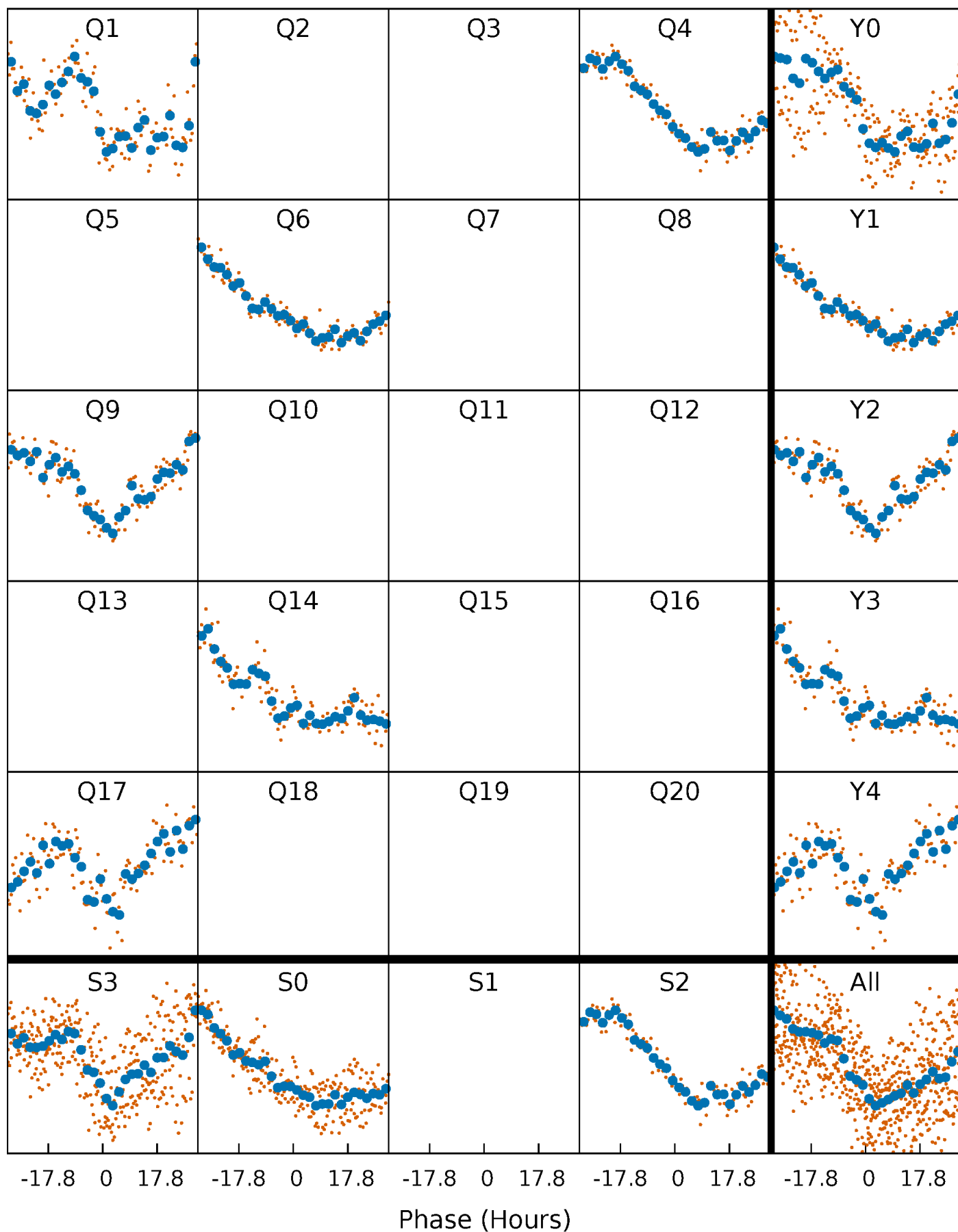


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



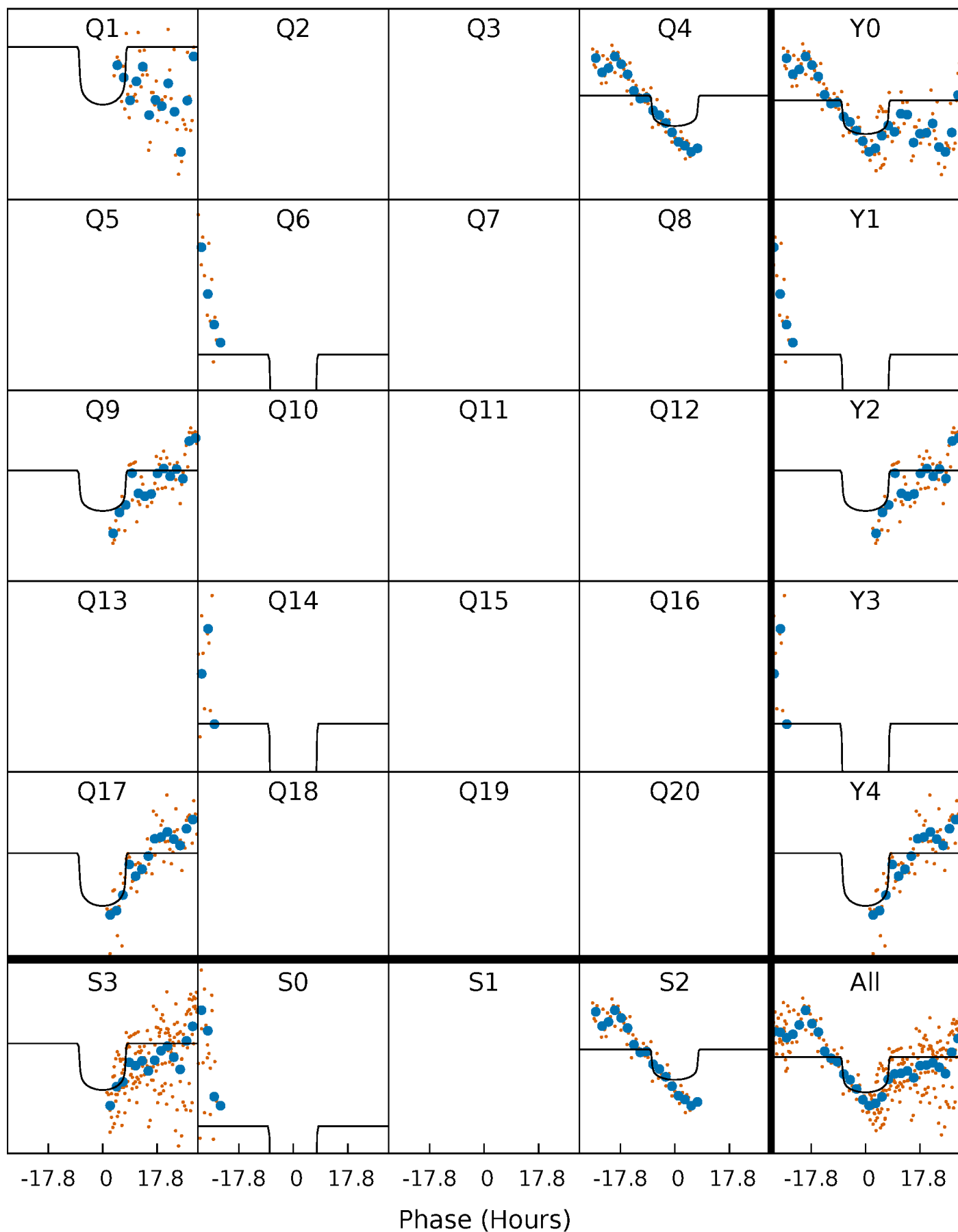
PDC Quarter-Phased Transit Curves

TCE 010931507-03 $P=239.474085$ Days $T_0=133.334850$ (BKJD)



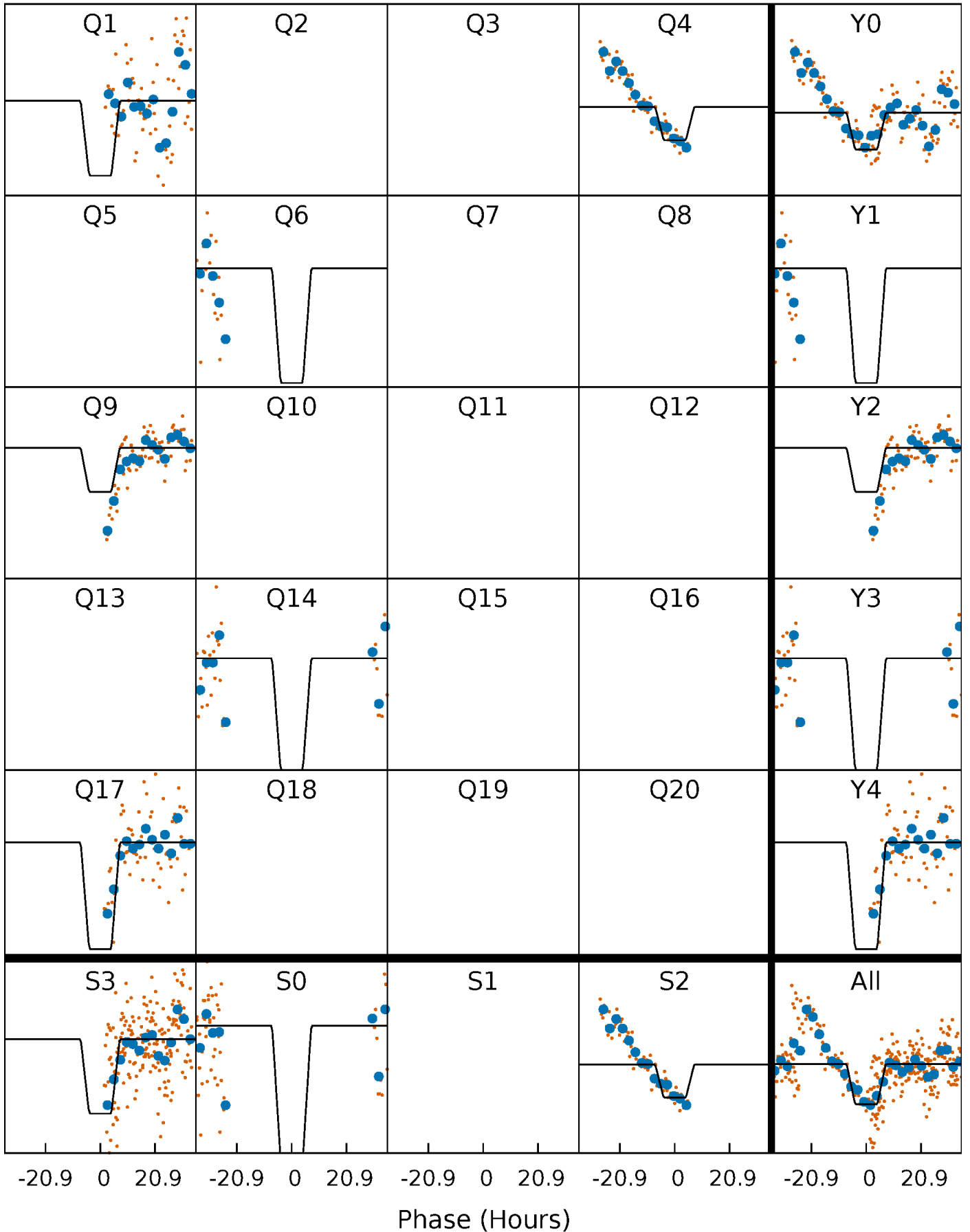
DV Quarter-Phased Transit Curves

TCE 010931507-03 $P=239.474085$ Days $T_0=133.334850$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

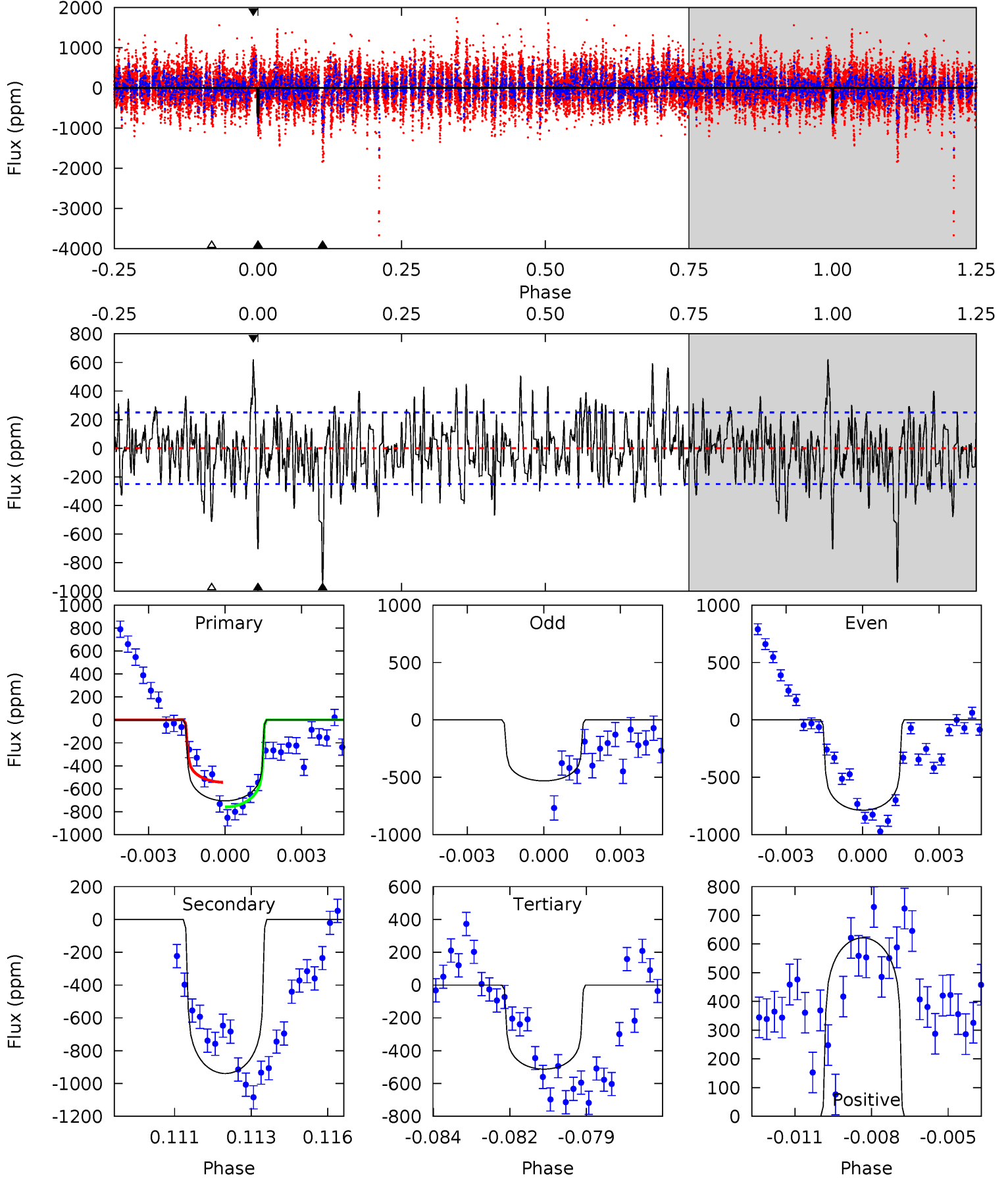
TCE 010931507-03 $P=239.460890$ Days $T_0=133.409936$ (BKJD)



DV Model-Shift Uniqueness Test

010931507-03, $P = 239.474085$ Days, $E = 133.334850$ Days

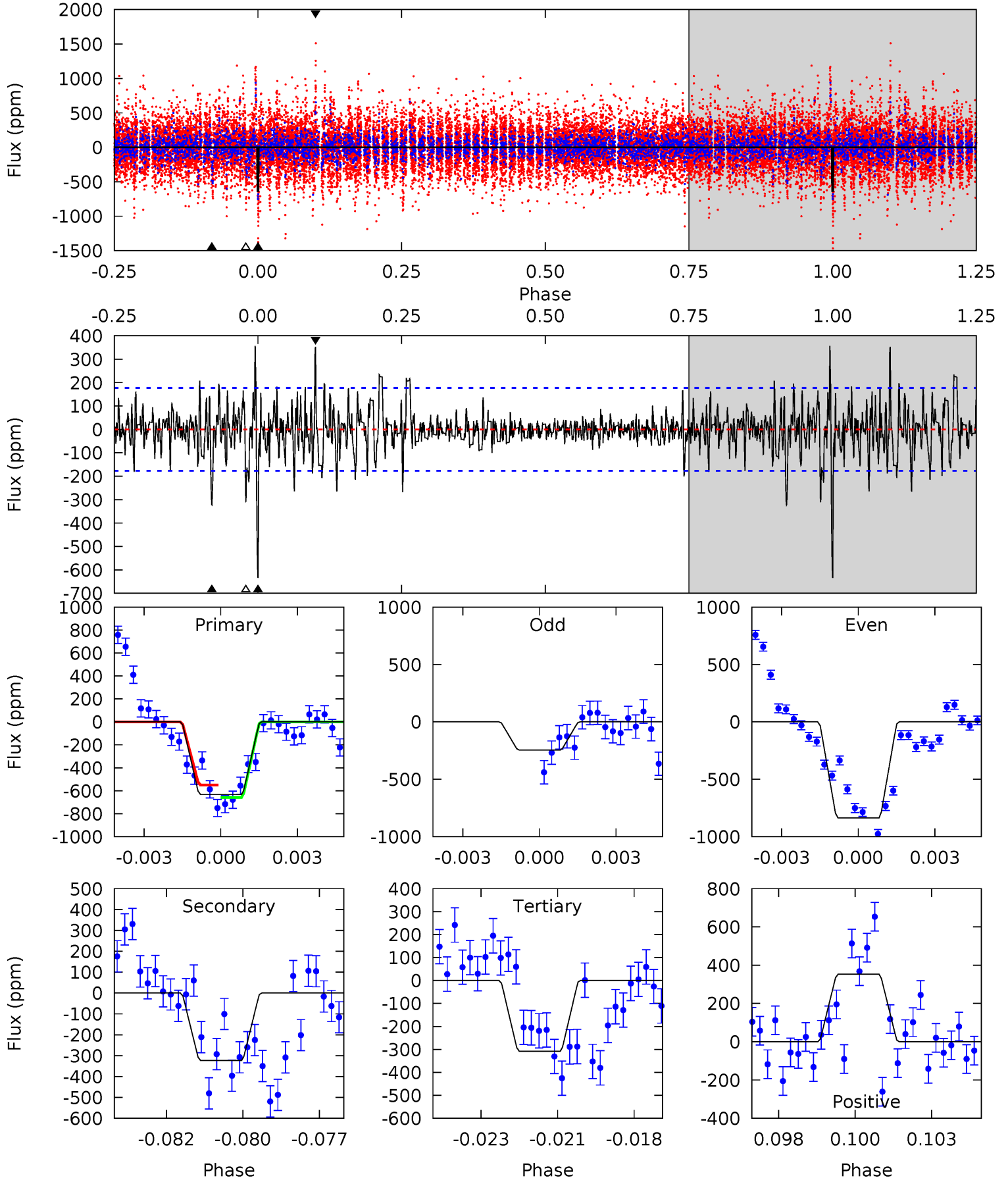
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.9	19.8	10.8	13.1	5.28	3.01	3.70	4.05	1.76	8.99	6.70	2.58	0.90	0.40	1.95



Alt Model-Shift Uniqueness Test

010931507-03, P = 239.460890 Days, E = 133.409936 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
18.8	9.63	9.17	10.5	5.28	3.02	2.03	9.67	8.34	0.45	-0.87	8.60	1.05	0.36	1.32



Stellar Parameters For KIC 010931507

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6768^{+189}_{-259}	$4.176^{+0.148}_{-0.181}$	$-0.140^{+0.250}_{-0.300}$	$1.555^{+0.475}_{-0.317}$	$1.333^{+0.196}_{-0.239}$	$0.499^{+0.440}_{-0.247}$
	+3%/-4%	+4%/-4%	+179%/-214%	+31%/-20%	+15%/-18%	+88%/-49%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010931507-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-939 ± 47	$3.77^{+1.21}_{-1.08}$	572^{+43}_{-36}	8096^{+1995}_{-1116}	24751^{+21399}_{-10321}
Alt.	-323 ± 34	$4.48^{+1.34}_{-1.12}$	573^{+45}_{-39}	5574^{+748}_{-525}	5941^{+4756}_{-2357}

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

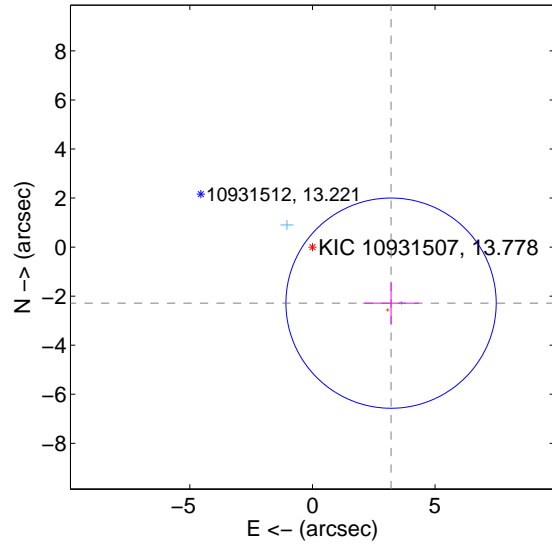
Supplemental centroid analysis for 010931507-03. Kepler magnitude: 13.78. Transit SNR 7.56

There are 2 quarters with good PRF difference image offsets

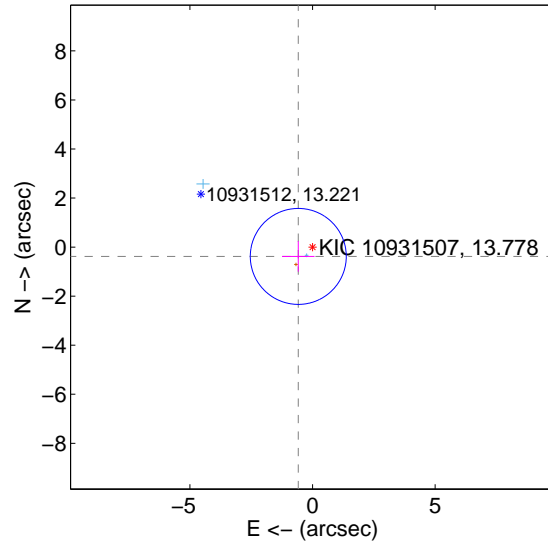
The OOT PRF centroid is offset from the target star catalog position by about 4.18 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.936 ± 1.429	2.76	-3.205 ± 1.134	-2.285 ± 0.875
PRF-fit source offset from KIC position	0.694 ± 0.652	1.06	0.581 ± 0.664	-0.380 ± 0.624
photometric centroid source offset	1.80 ± 0.40	4.55	1.65 ± 0.41	0.71 ± 0.27

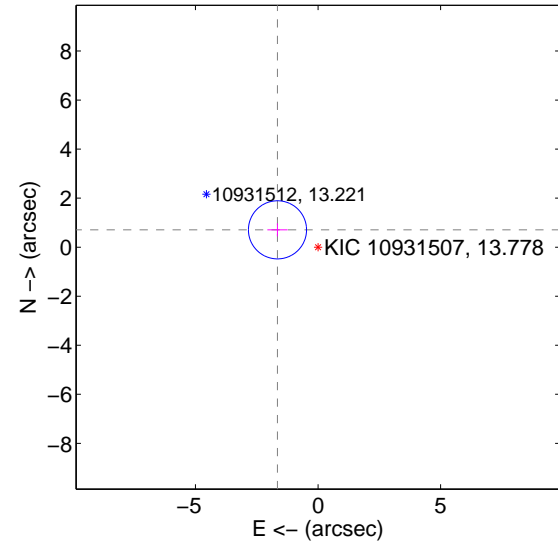
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

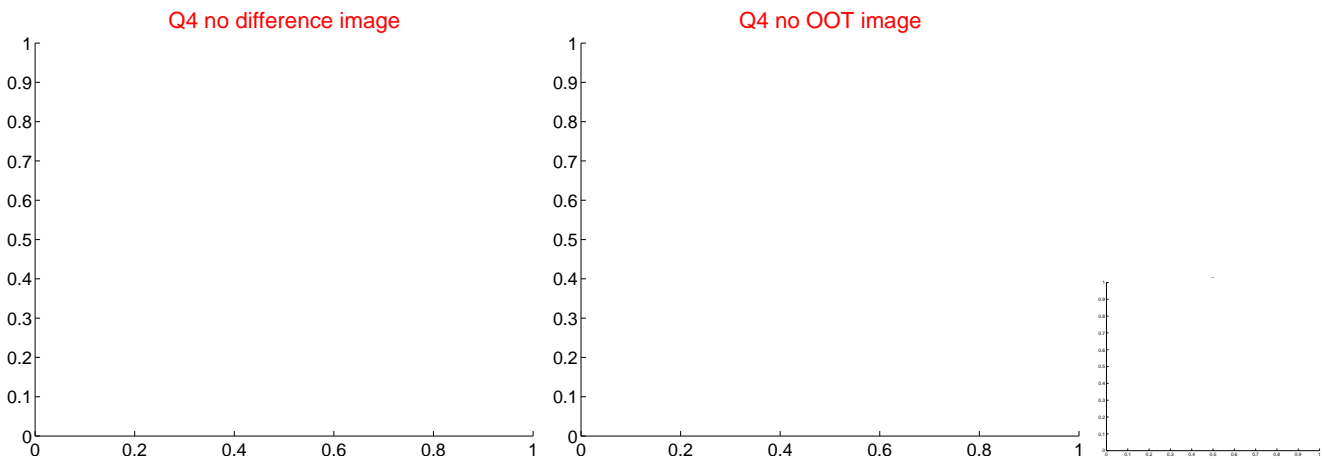
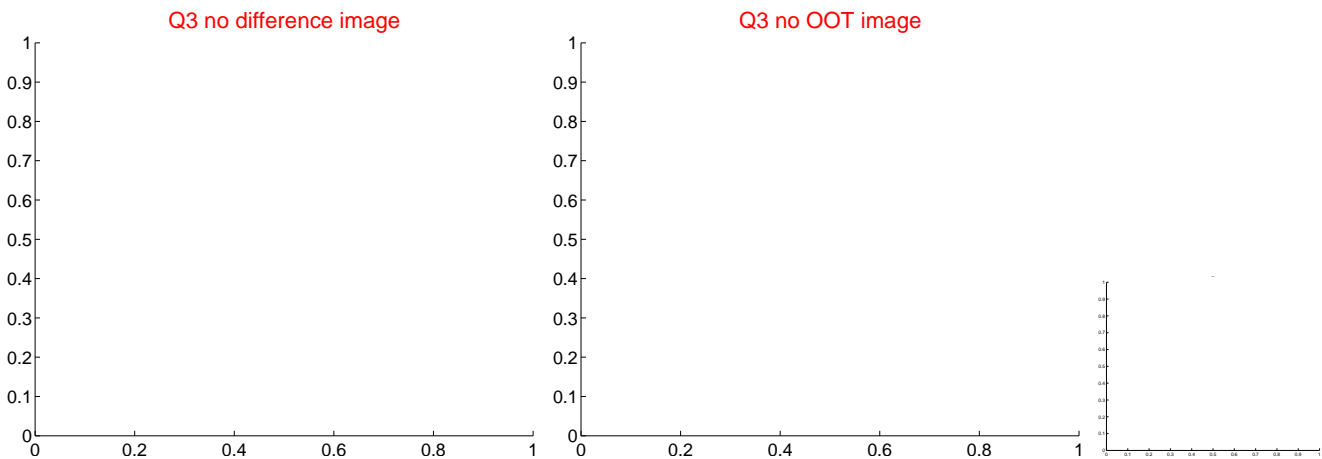
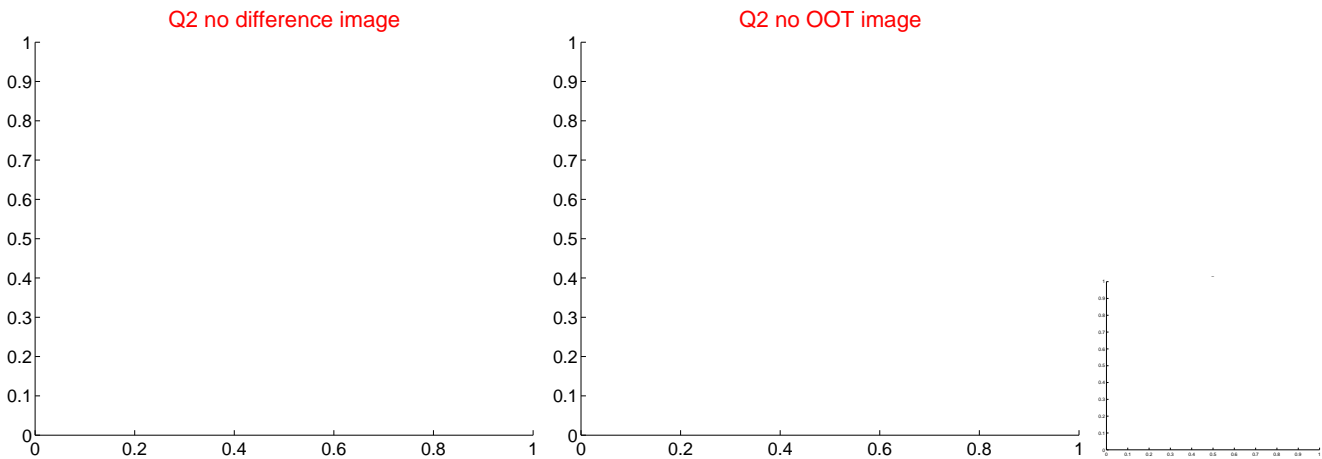
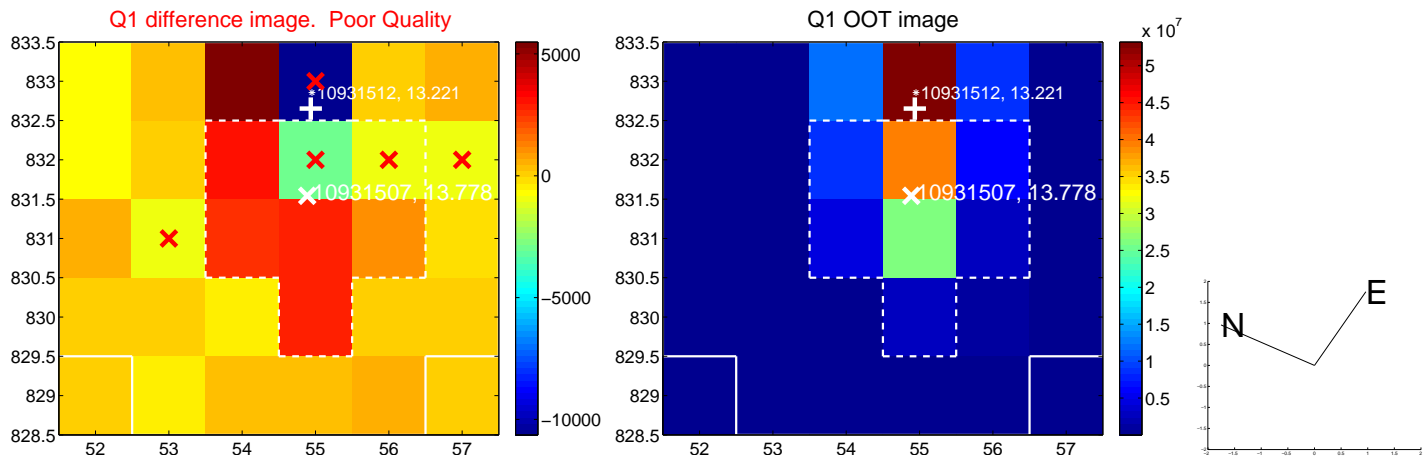


offset from photometric centroids

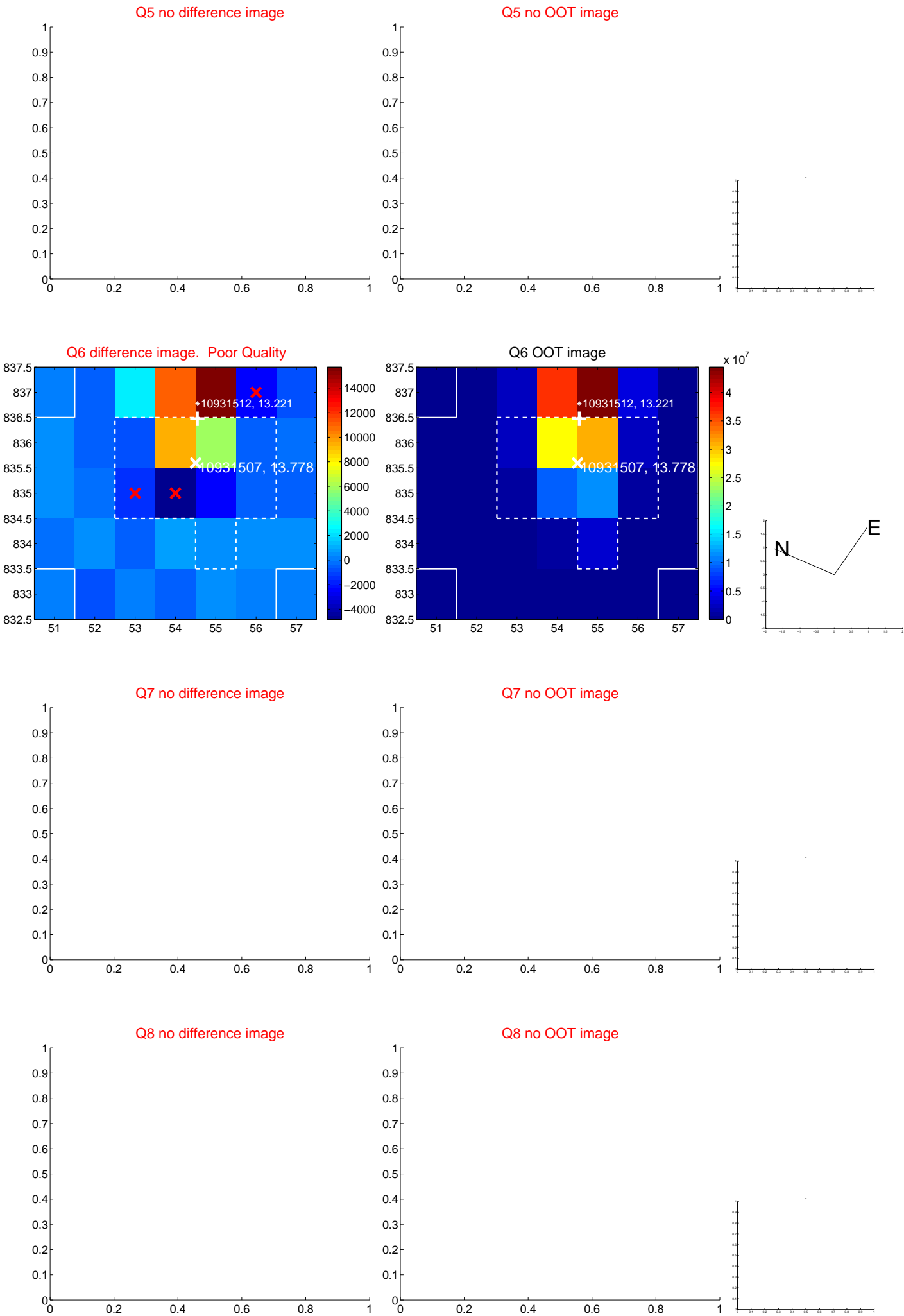


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

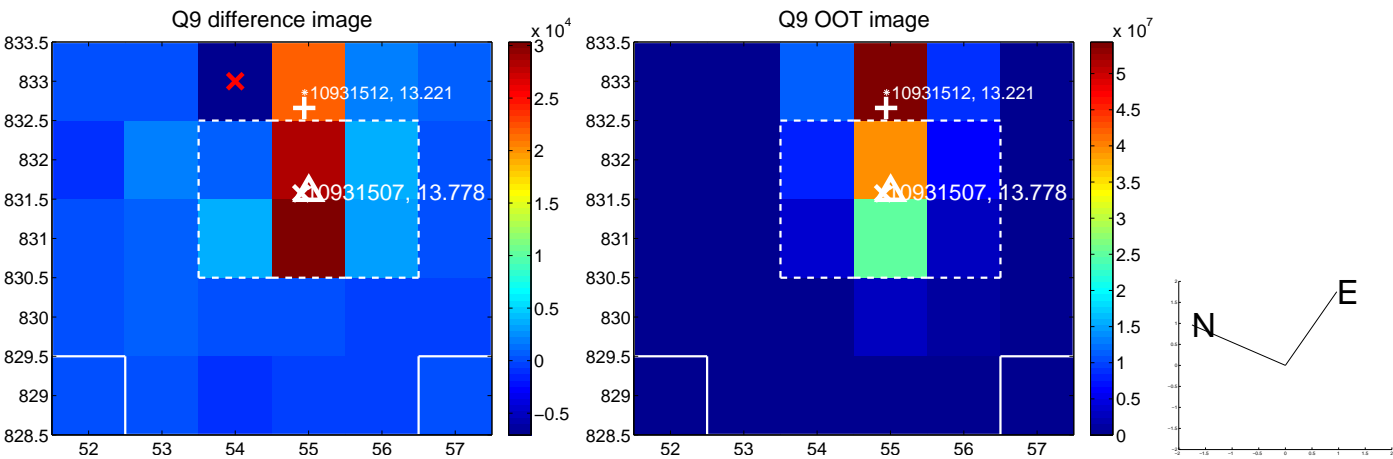
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



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

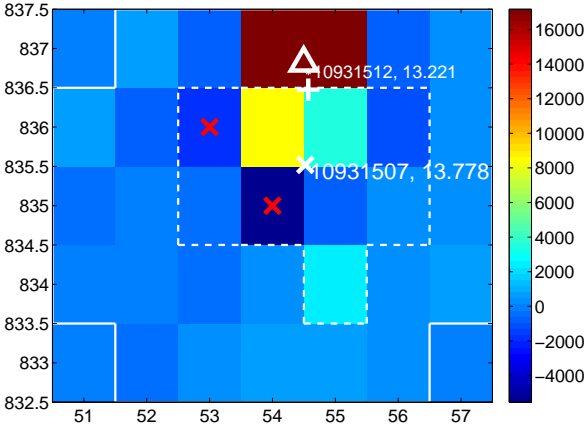
Q13 no difference image



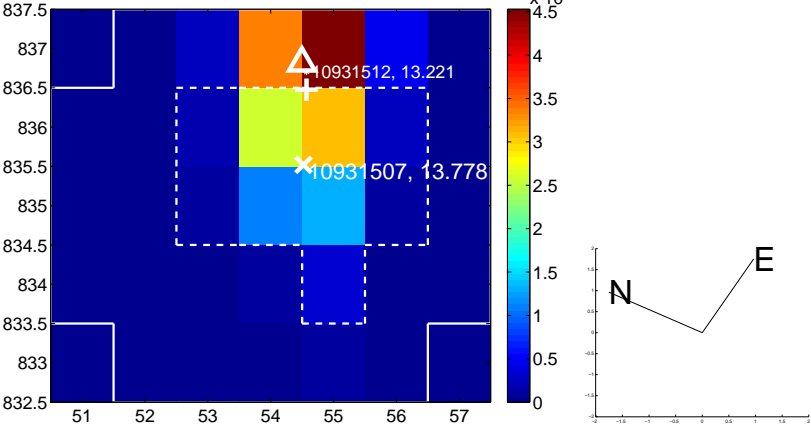
Q13 no OOT image



Q14 difference image



Q14 OOT image



Q15 no difference image



Q15 no OOT image



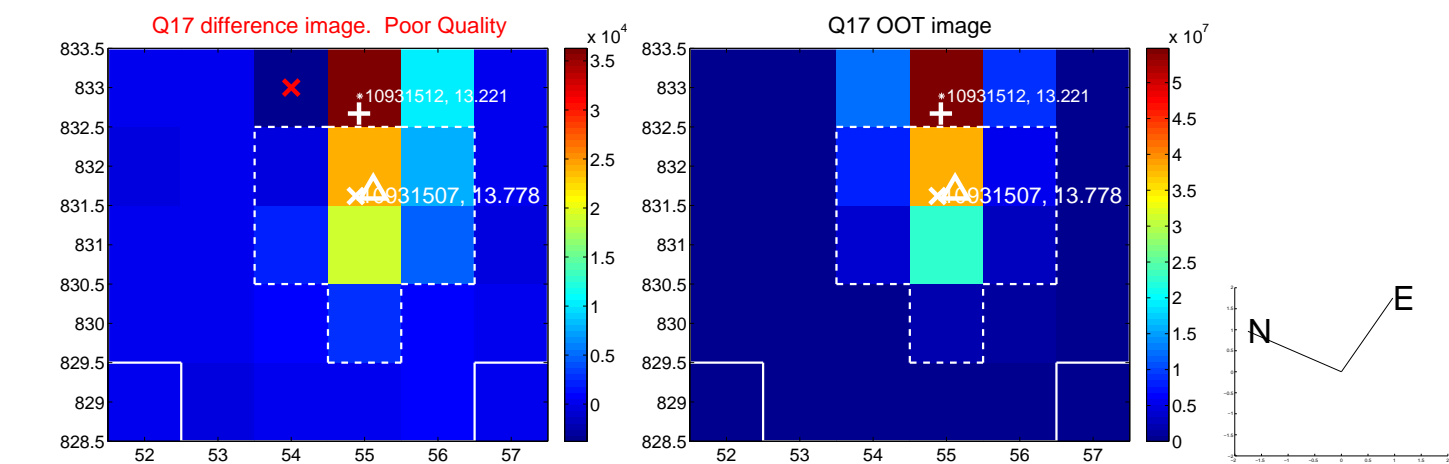
Q16 no difference image



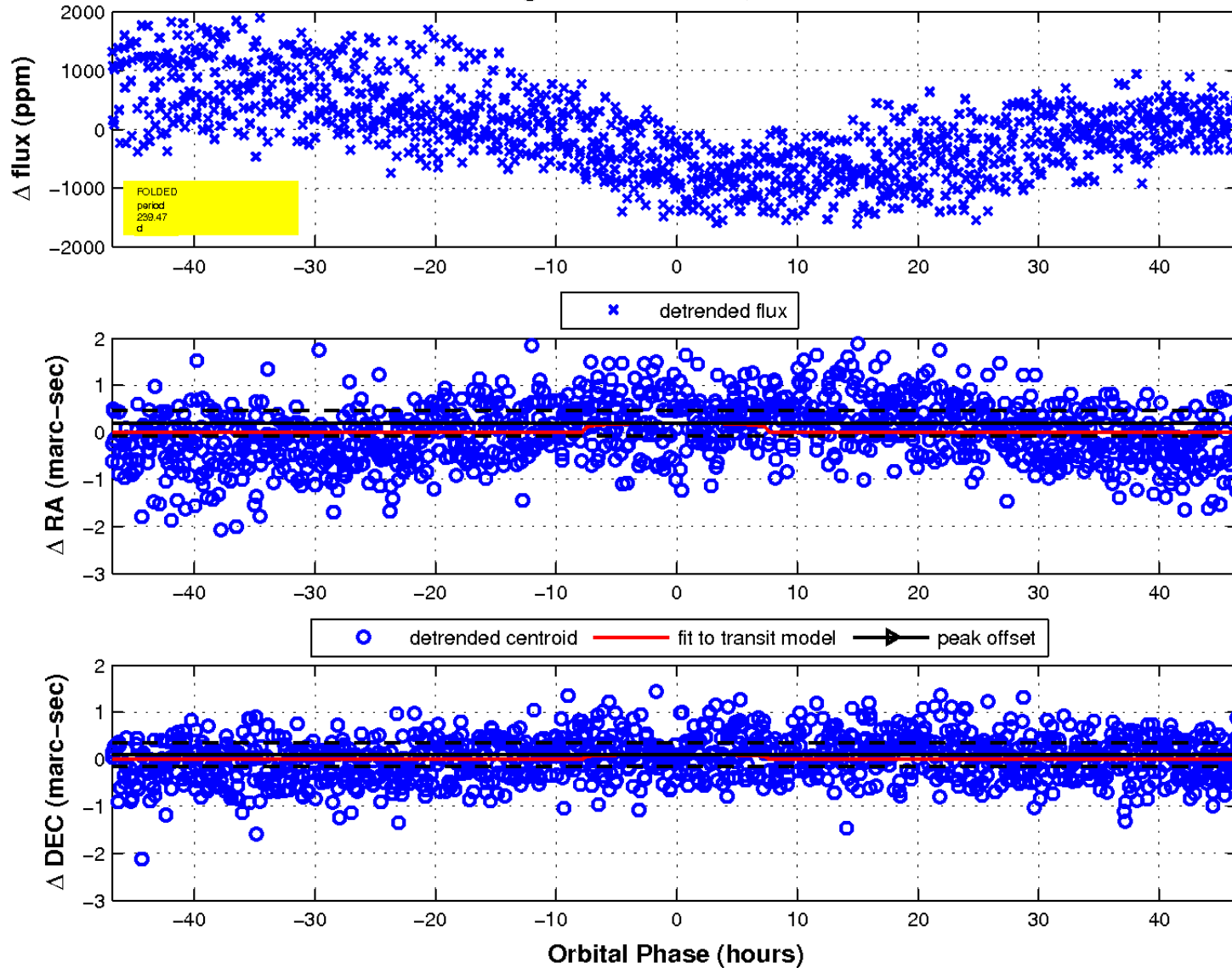
Q16 no OOT image



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

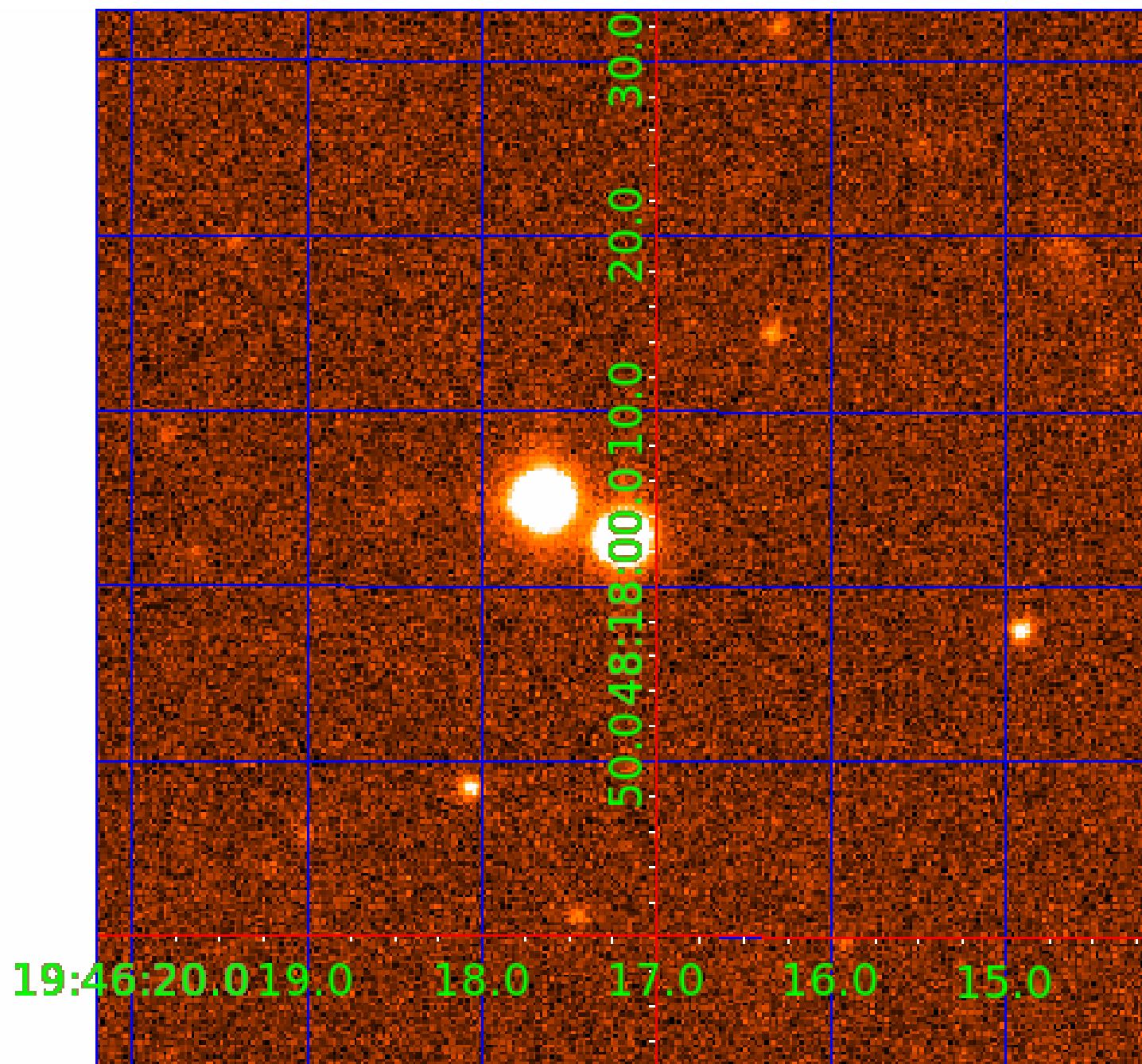


fluxWeightedCentroids, Planet 3 of 6



UKIRT Image

Declination



KIC 010931507

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})
010931507-01	OBS	No	3.780915	132.287046	108.6	18.863	11.4	11.5	1.55	6768	1.63	1671.45
010931507-02	OBS	No	312.499383	301.335318	500.5	11.335	10.7	6.9	1.55	6768	3.67	4.64
010931507-03	OBS	No	239.474085	133.334850	566.4	15.610	10.6	7.6	1.55	6768	3.83	6.62
010931507-04	OBS	No	178.239748	250.769948	646.2	21.108	9.9	9.4	1.55	6768	5.03	9.81
010931507-05	OBS	No	317.619309	197.784589	610.8	9.162	7.3	7.9	1.55	6768	7.31	4.54
010931507-06	OBS	No	252.275521	271.282709	471.9	8.359	7.4	7.0	1.55	6768	3.96	6.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010931507-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
010931507-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010931507-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010931507-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010931507-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
010931507-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

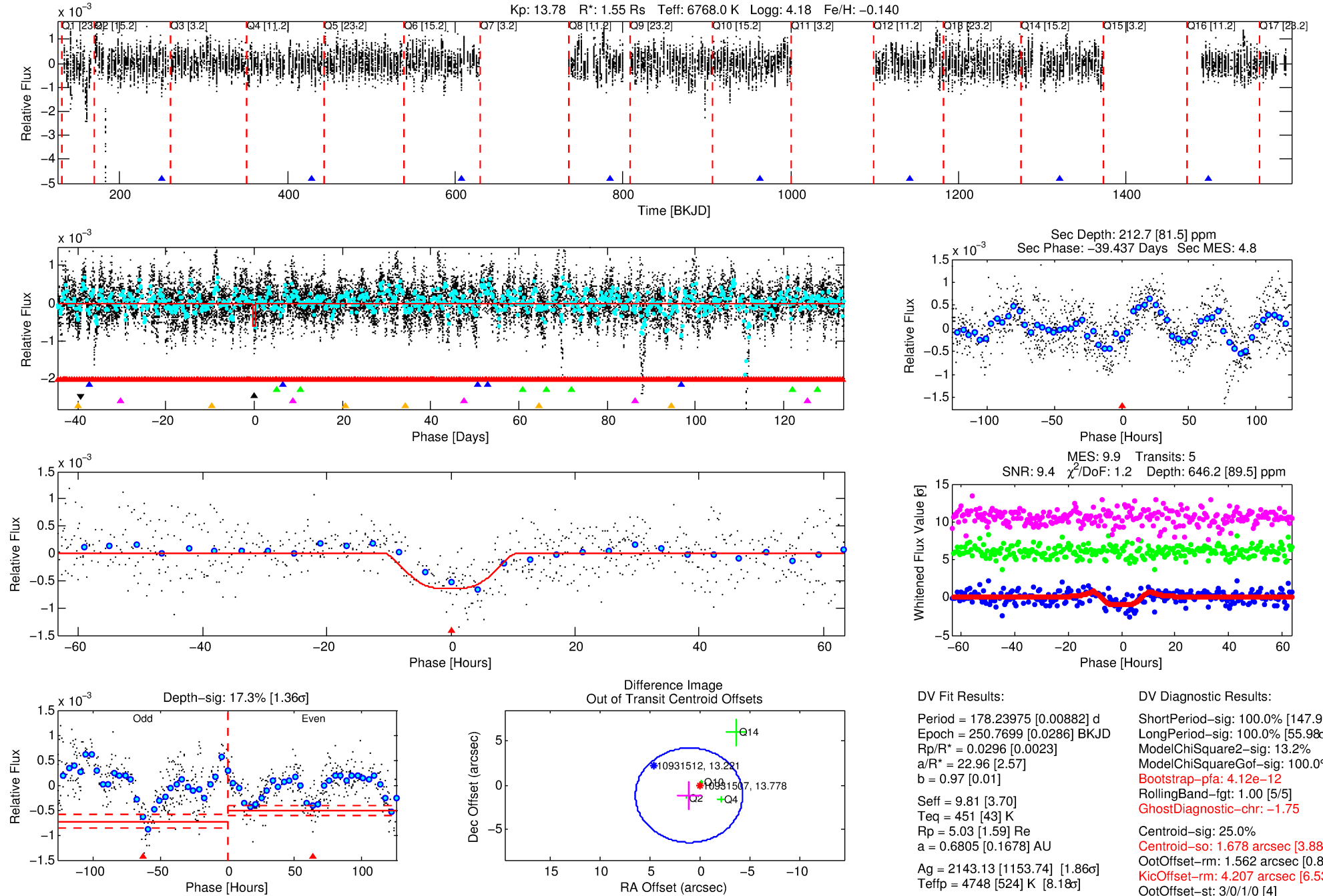
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010931507-04

No Significant Match Found

DV One-Page Summary

KIC: 10931507 Candidate: 4 of 6 Period: 178.240 d



DV Fit Results:

Period = 178.23975 [0.00882] d
Epoch = 250.7699 [0.0286] BKJD
Rp/R* = 0.0296 [0.0023]
a/R* = 22.96 [2.57]
b = 0.97 [0.01]
Seff = 9.81 [3.70]
Teff = 451 [43] K
Rp = 5.03 [1.59] Re
a = 0.6805 [0.1678] AU
Ag = 2143.13 [1153.74] [1.86 σ]
Teffp = 4748 [524] K [8.18 σ]

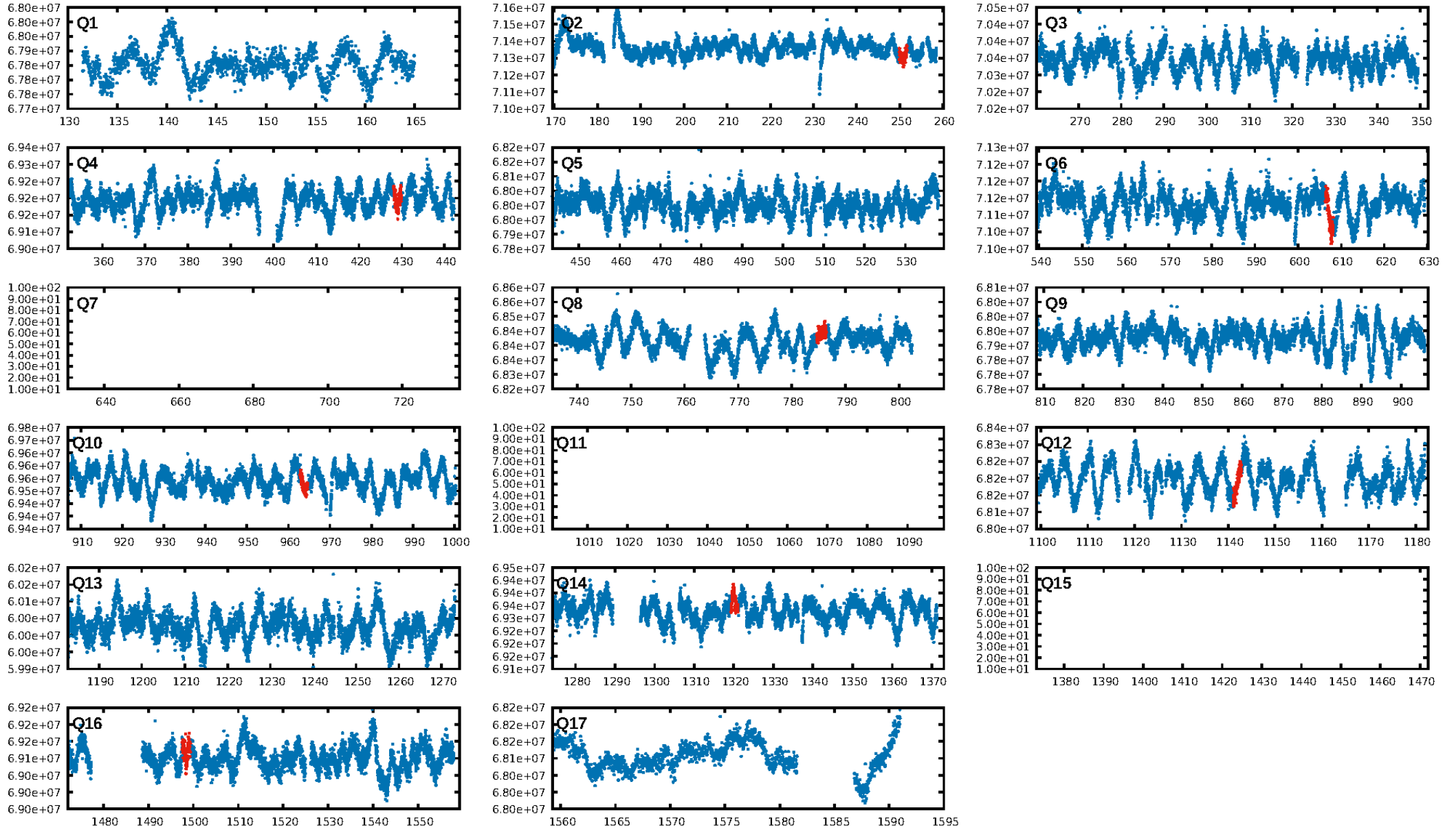
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [147.91 σ]
LongPeriod-sig: 100.0% [55.98 σ]
ModelChiSquare2-sig: 13.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.12e-12
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: -1.75
Centroid-sig: 25.0%
Centroid-so: 1.678 arcsec [3.88 σ]
OotOffset-rm: 1.562 arcsec [0.87 σ]
KicOffset-rm: 4.207 arcsec [6.53 σ]
OotOffset-st: 3/0/1/0 [4]
KicOffset-st: 3/0/1/0 [4]
DiffImageQuality-fgm: 0.75 [3/4]
DiffImageOverlap-fno: 0.00 [0/7]

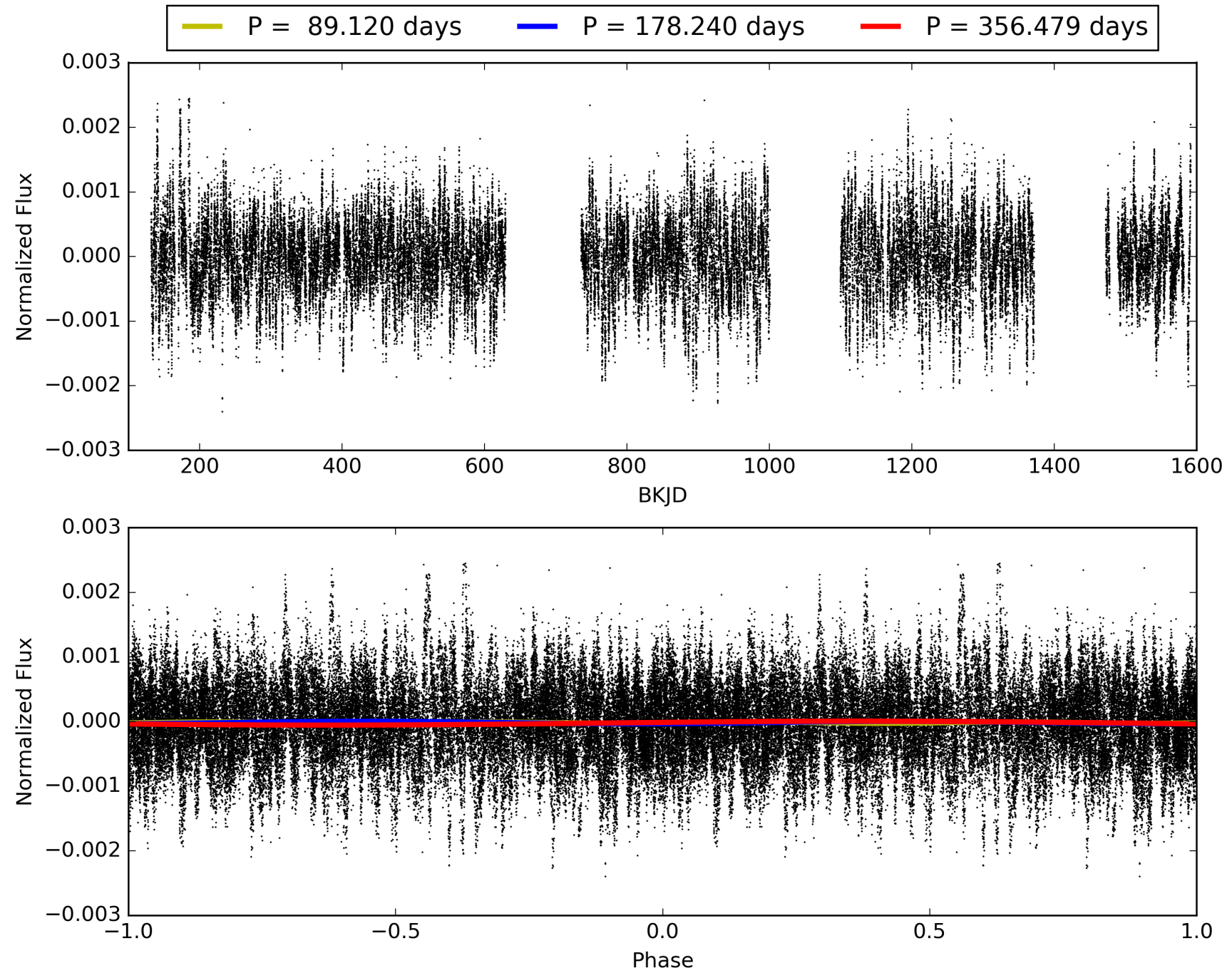
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:59:08 Z

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

TCE 010931507-04, PDC Light Curves

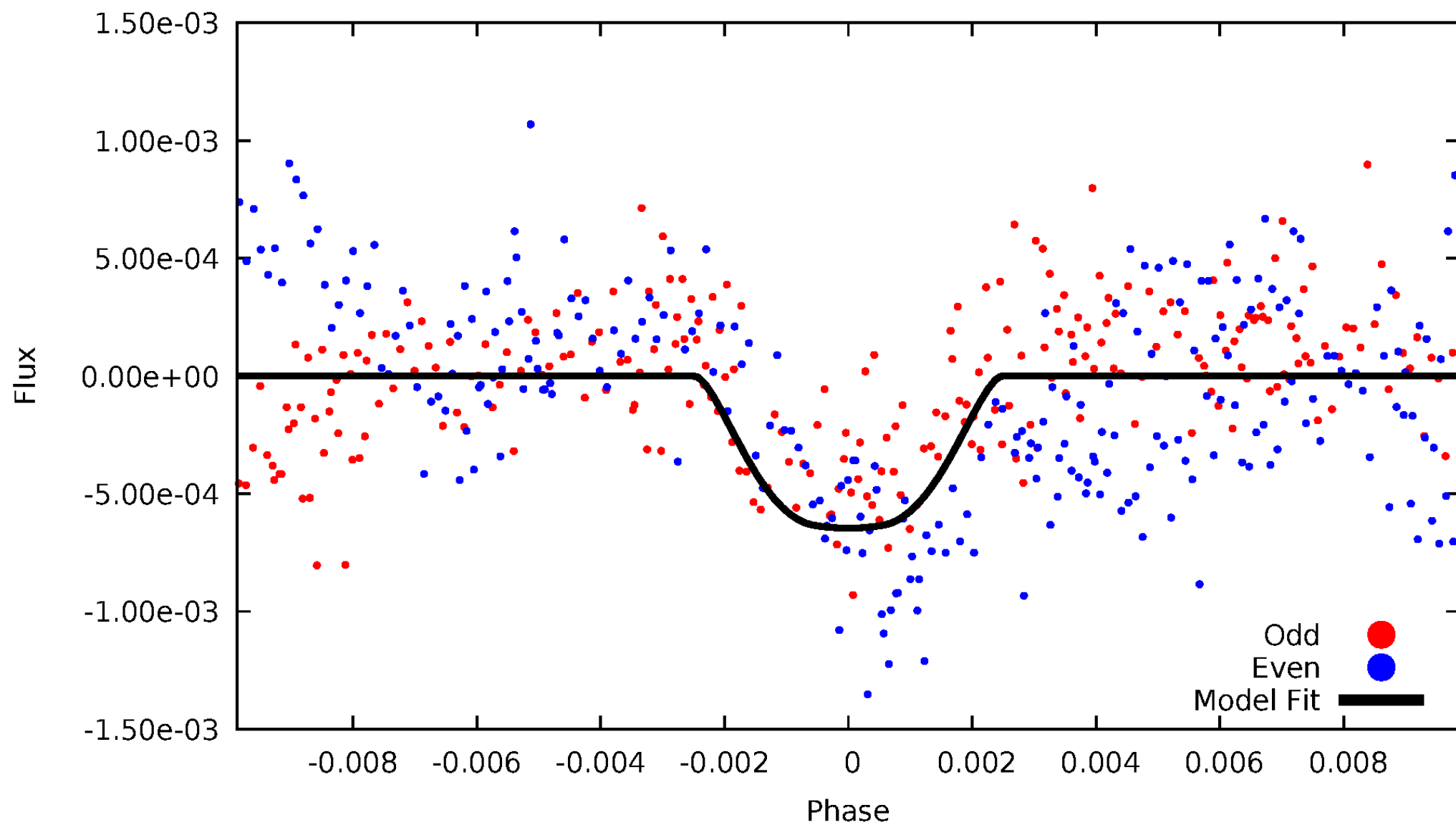


TCE 010931507-04



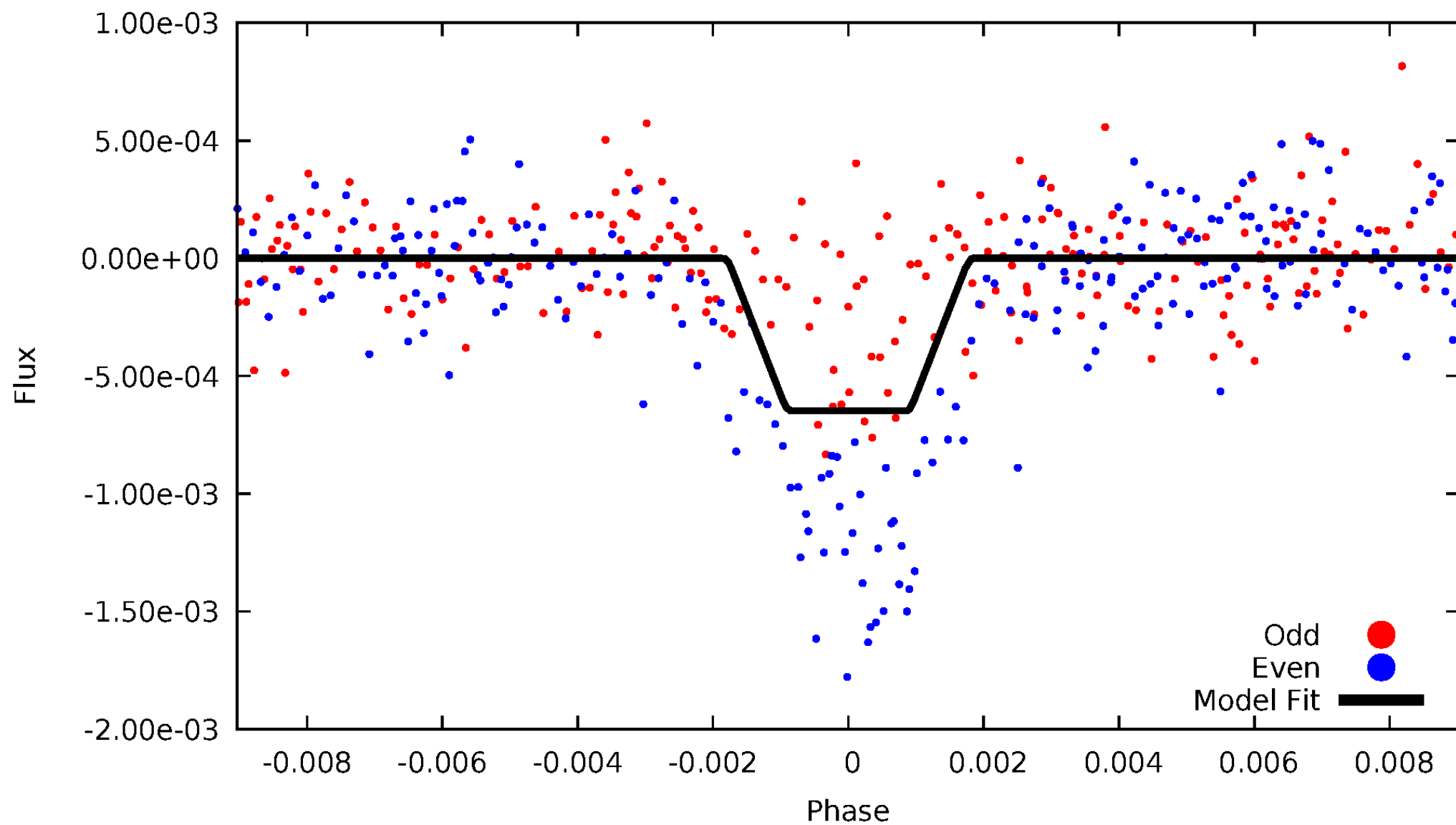
DV Odd/Even

TCE 010931507-04



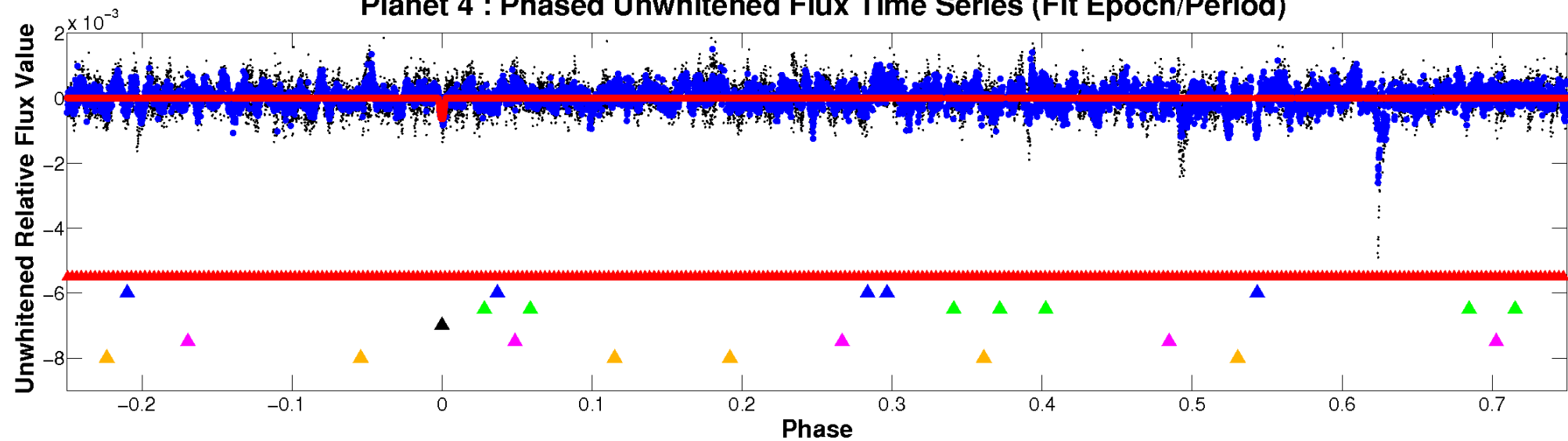
ALT Odd/Even

TCE 010931507-04

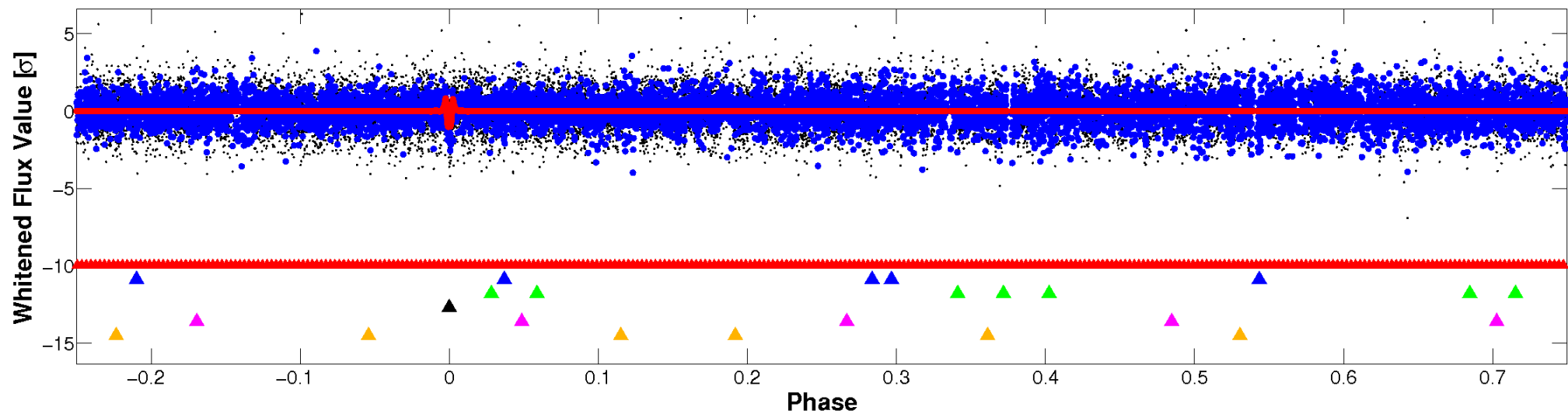


Non-Whitened Vs. Whitened Light Curve

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

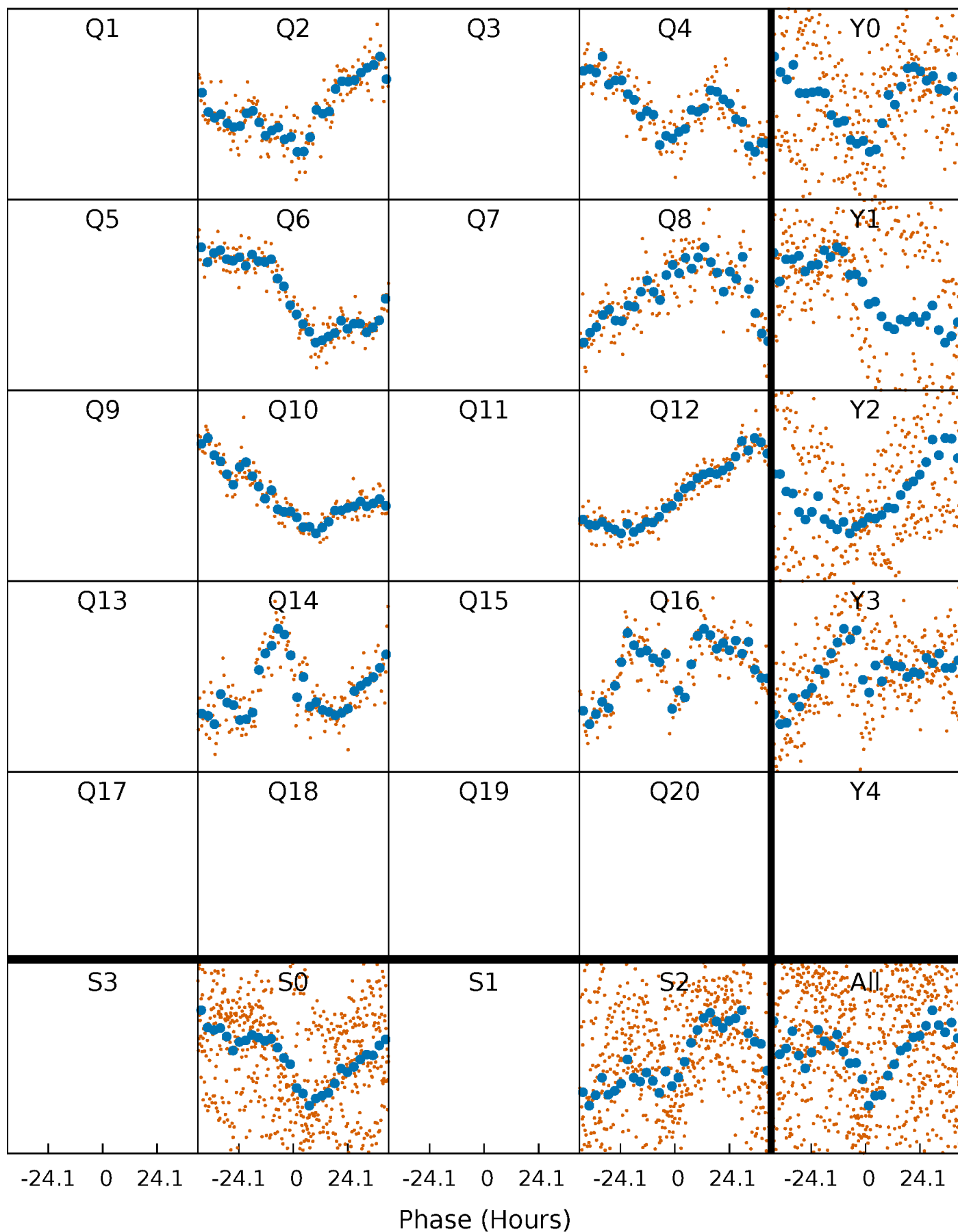


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



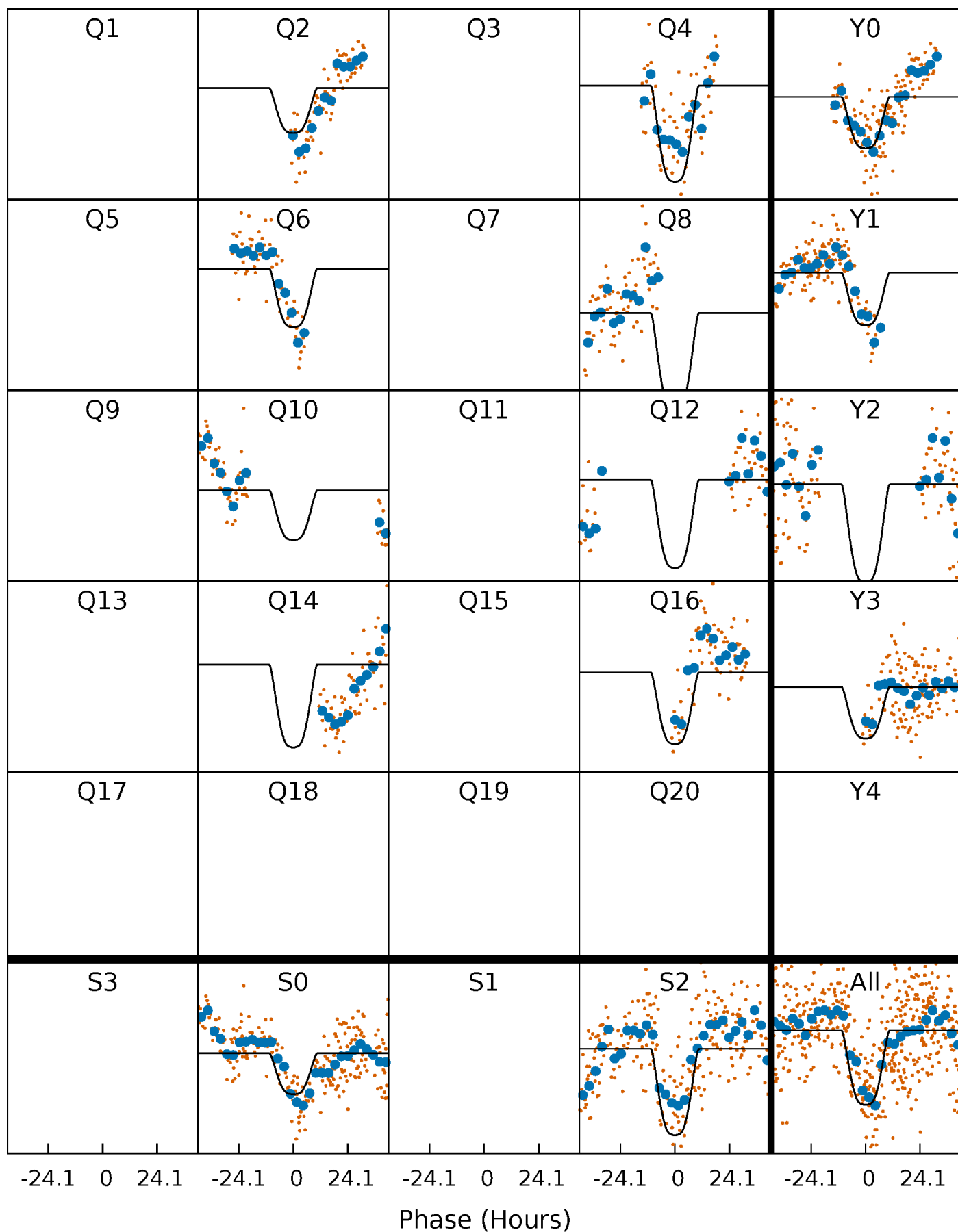
PDC Quarter-Phased Transit Curves

TCE 010931507-04 P=178.239748 Days $T_0=250.769948$ (BKJD)



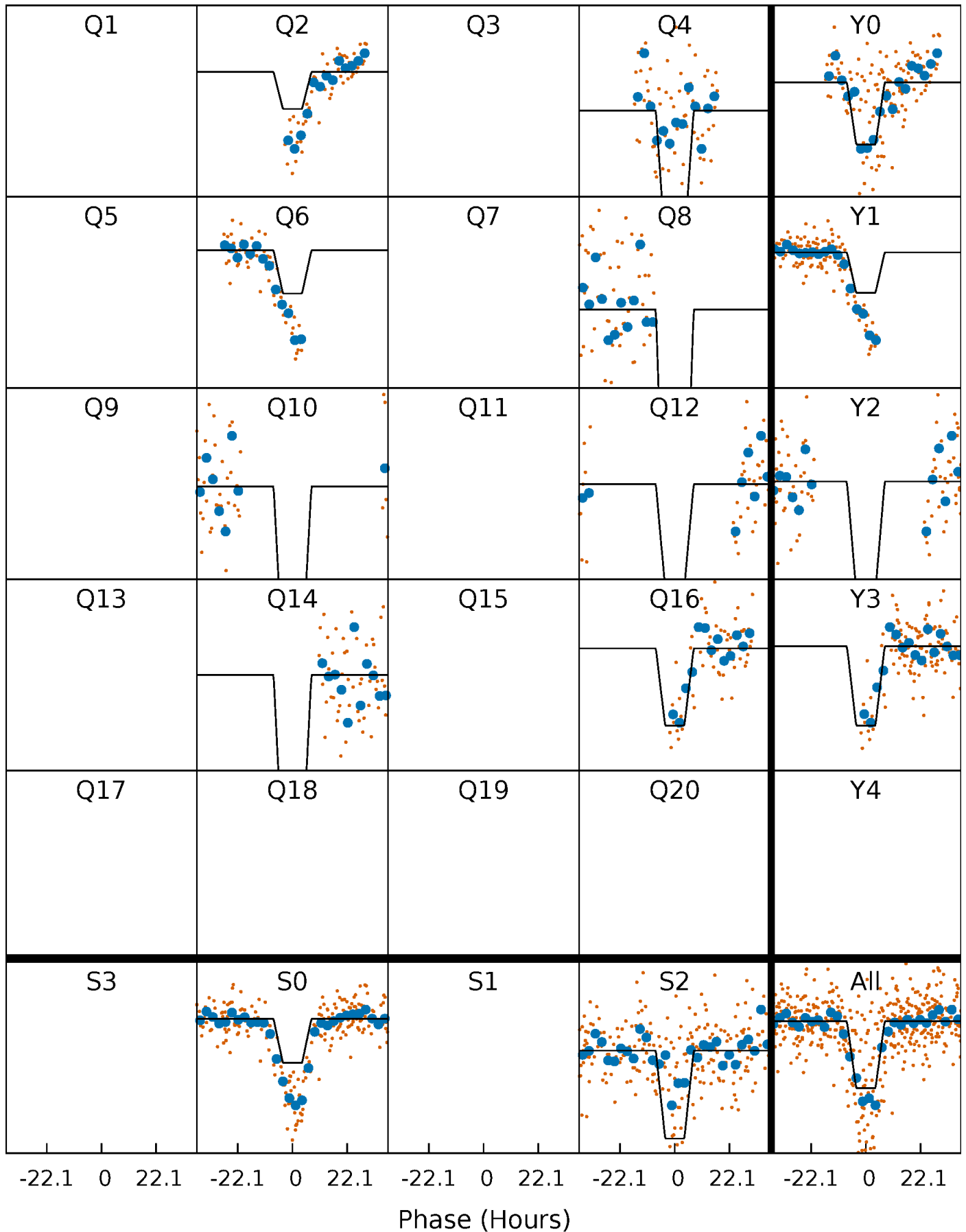
DV Quarter-Phased Transit Curves

TCE 010931507-04 P=178.239748 Days $T_0=250.769948$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

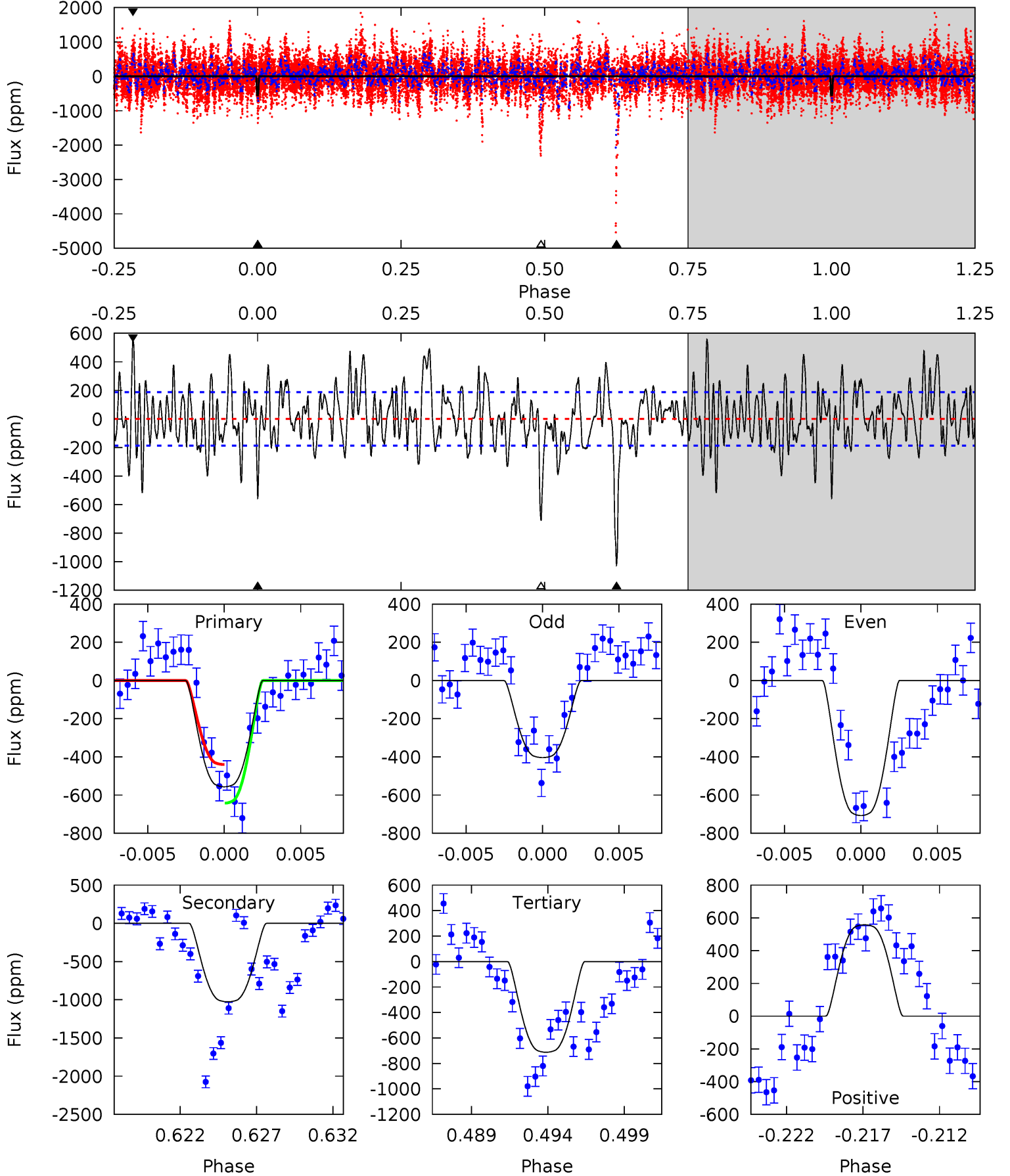
TCE 010931507-04 $P=178.235133$ Days $T_0=250.828722$ (BKJD)



DV Model-Shift Uniqueness Test

010931507-04, $P = 178.239748$ Days, $E = 72.530200$ Days

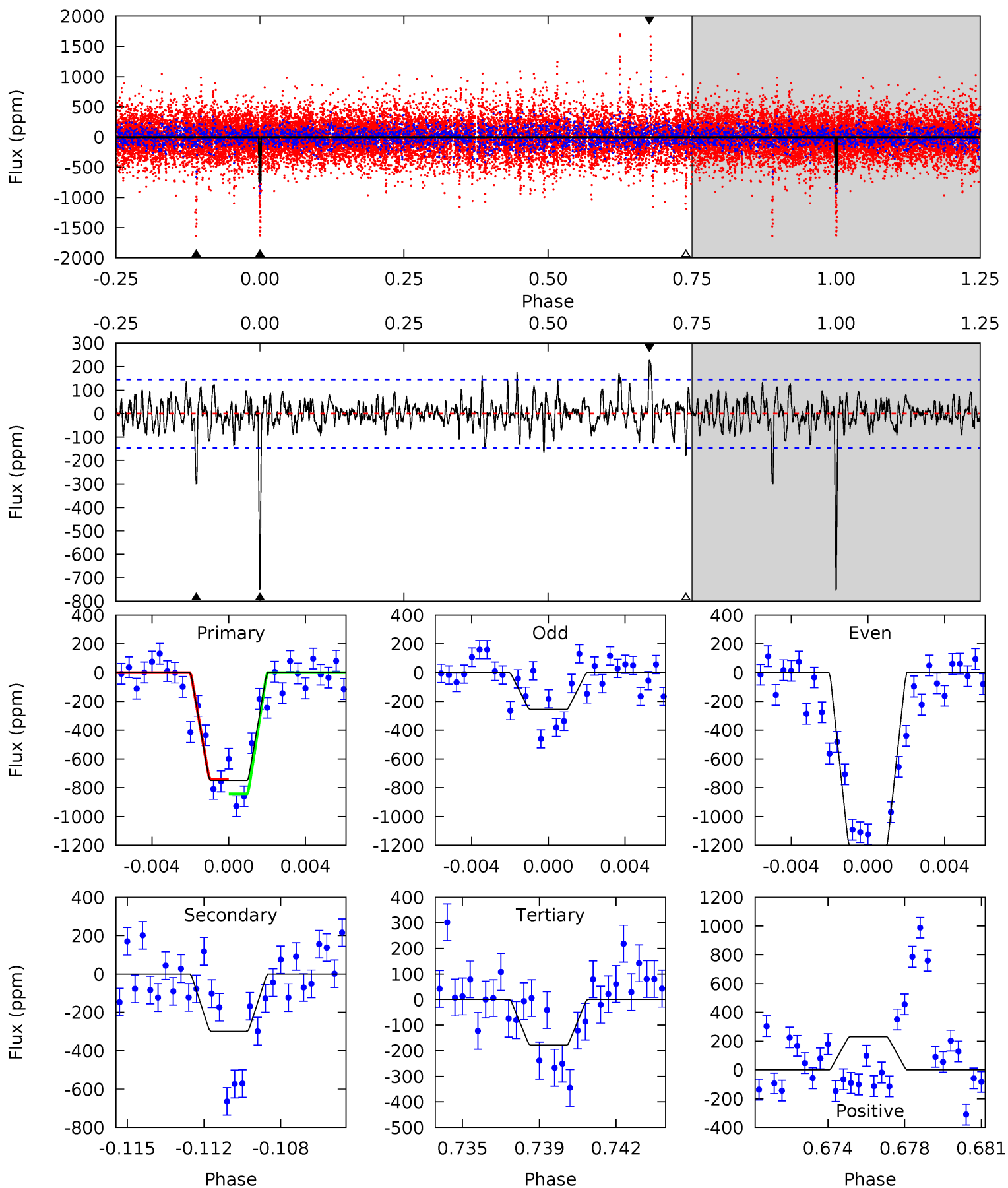
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
15.3	28.3	19.6	15.4	5.16	2.81	4.86	-4.28	-0.03	8.66	12.9	4.25	0.76	0.35	2.82



Alt Model-Shift Uniqueness Test

010931507-04, P = 178.235133 Days, E = 72.593589 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.0	10.7	6.39	8.29	5.22	2.91	1.81	20.6	18.7	4.31	2.42	17.2	0.88	0.24	1.75



Stellar Parameters For KIC 010931507

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6768^{+189}_{-259}	$4.176^{+0.148}_{-0.181}$	$-0.140^{+0.250}_{-0.300}$	$1.555^{+0.475}_{-0.317}$	$1.333^{+0.196}_{-0.239}$	$0.499^{+0.440}_{-0.247}$
	+3%/-4%	+4%/-4%	+179%/-214%	+31%/-20%	+15%/-18%	+88%/-49%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010931507-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-1027 ± 36	$5.03^{+0.99}_{-0.76}$	632^{+47}_{-45}	7043^{+409}_{-361}	10251^{+3451}_{-2748}
Alt.	-298 ± 28	$4.35^{+0.83}_{-0.66}$	631^{+46}_{-41}	5548^{+361}_{-321}	3946^{+1529}_{-1117}

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

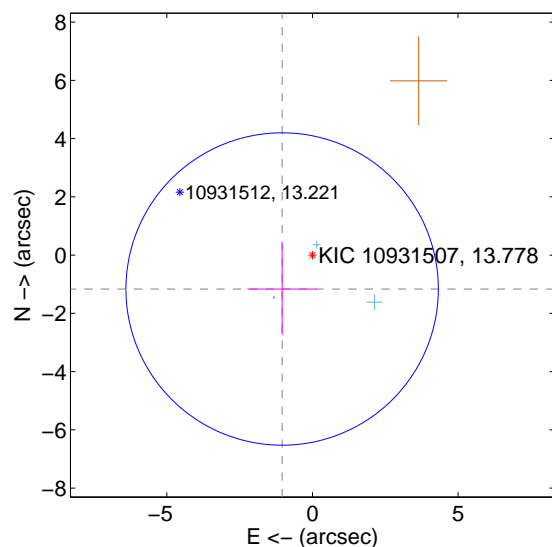
Supplemental centroid analysis for 010931507-04. Kepler magnitude: 13.78. Transit SNR 9.37

There are 3 quarters with good PRF difference image offsets

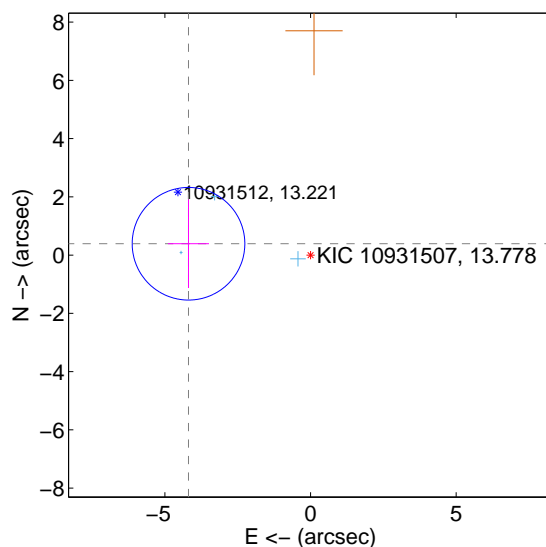
The OOT PRF centroid is offset from the target star catalog position by about 3.92 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.562 ± 1.787	0.87	1.041 ± 1.191	-1.165 ± 1.575
PRF-fit source offset from KIC position	4.207 ± 0.644	6.53	4.189 ± 0.704	0.390 ± 1.521
photometric centroid source offset	1.68 ± 0.43	3.88	1.50 ± 0.46	0.76 ± 0.31

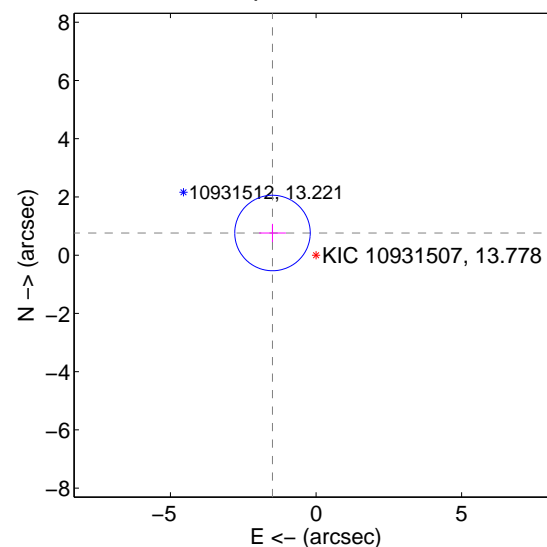
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position



offset from photometric centroids



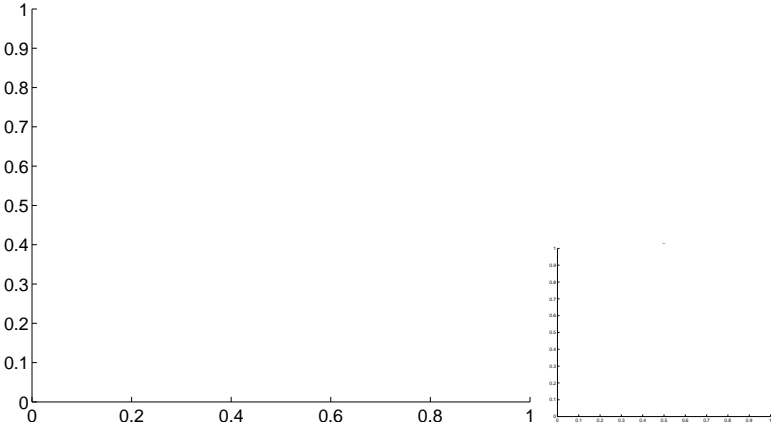
Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

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

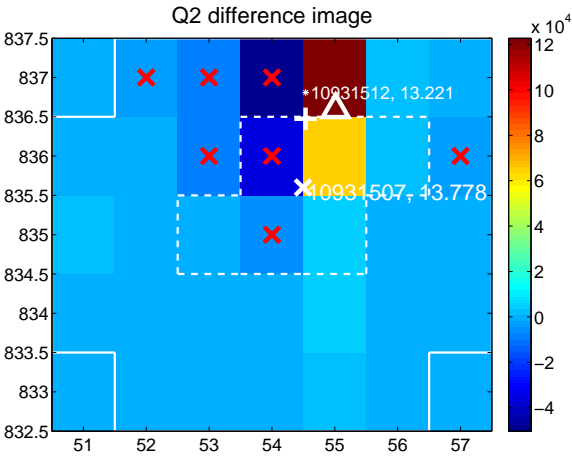
Q1 no difference image



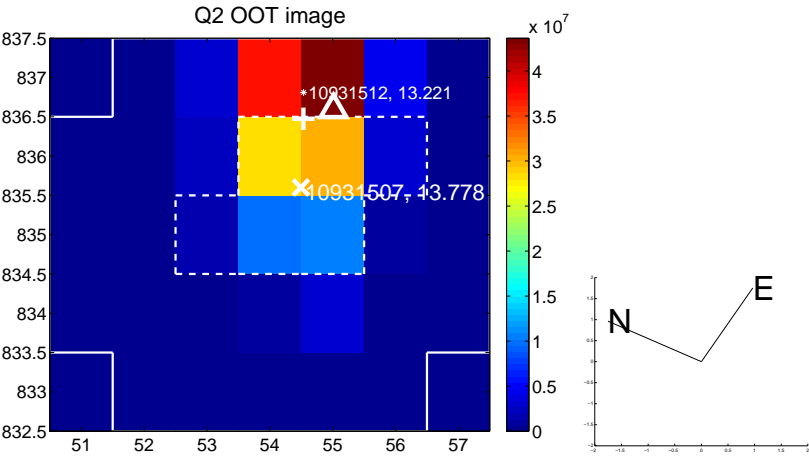
Q1 no OOT image



Q2 difference image



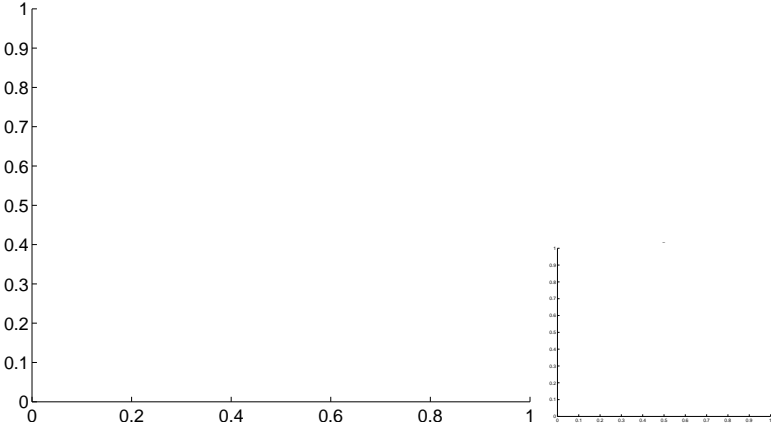
Q2 OOT image



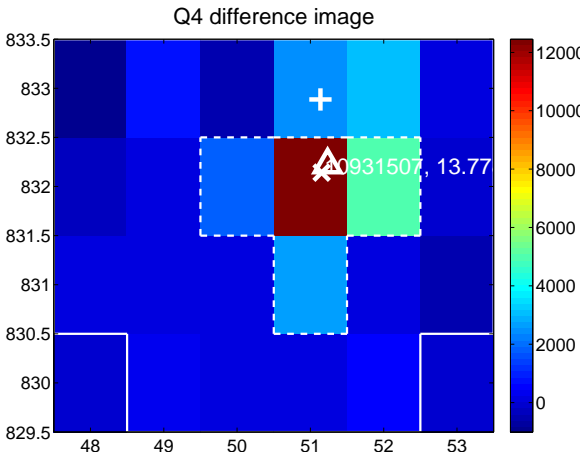
Q3 no difference image



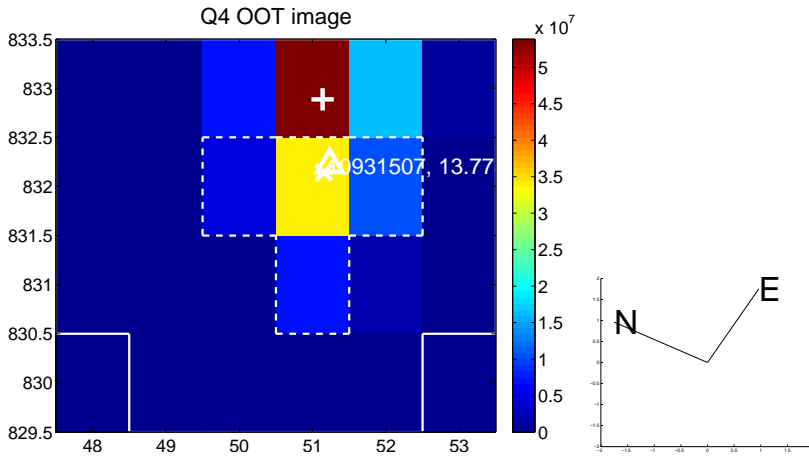
Q3 no OOT image



Q4 difference image



Q4 OOT image



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

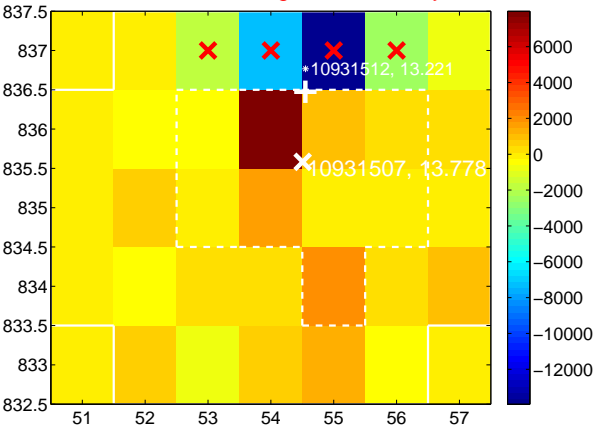
Q5 no difference image



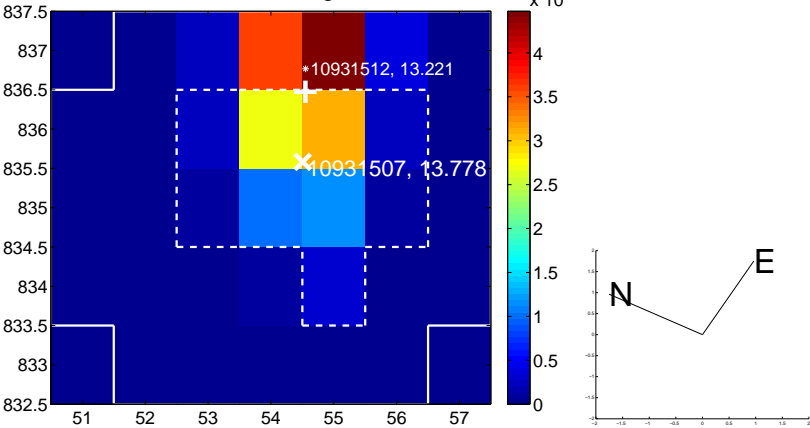
Q5 no OOT image



Q6 difference image. Poor Quality



Q6 OOT image



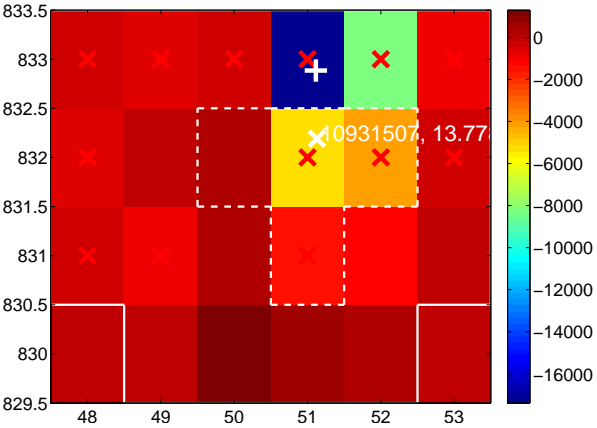
Q7 no difference image



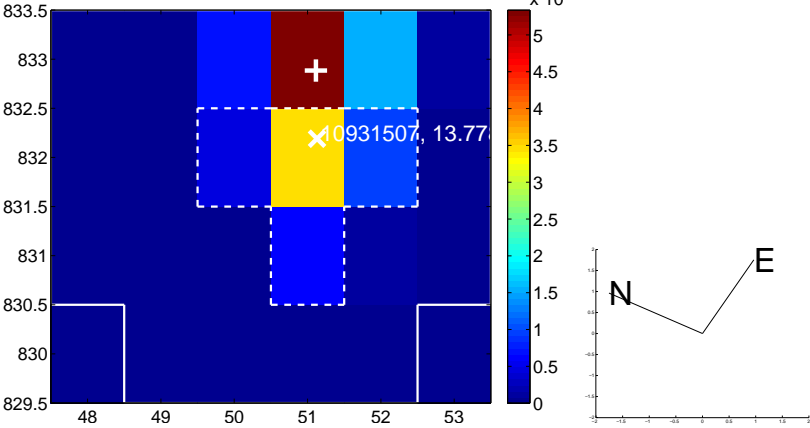
Q7 no OOT image



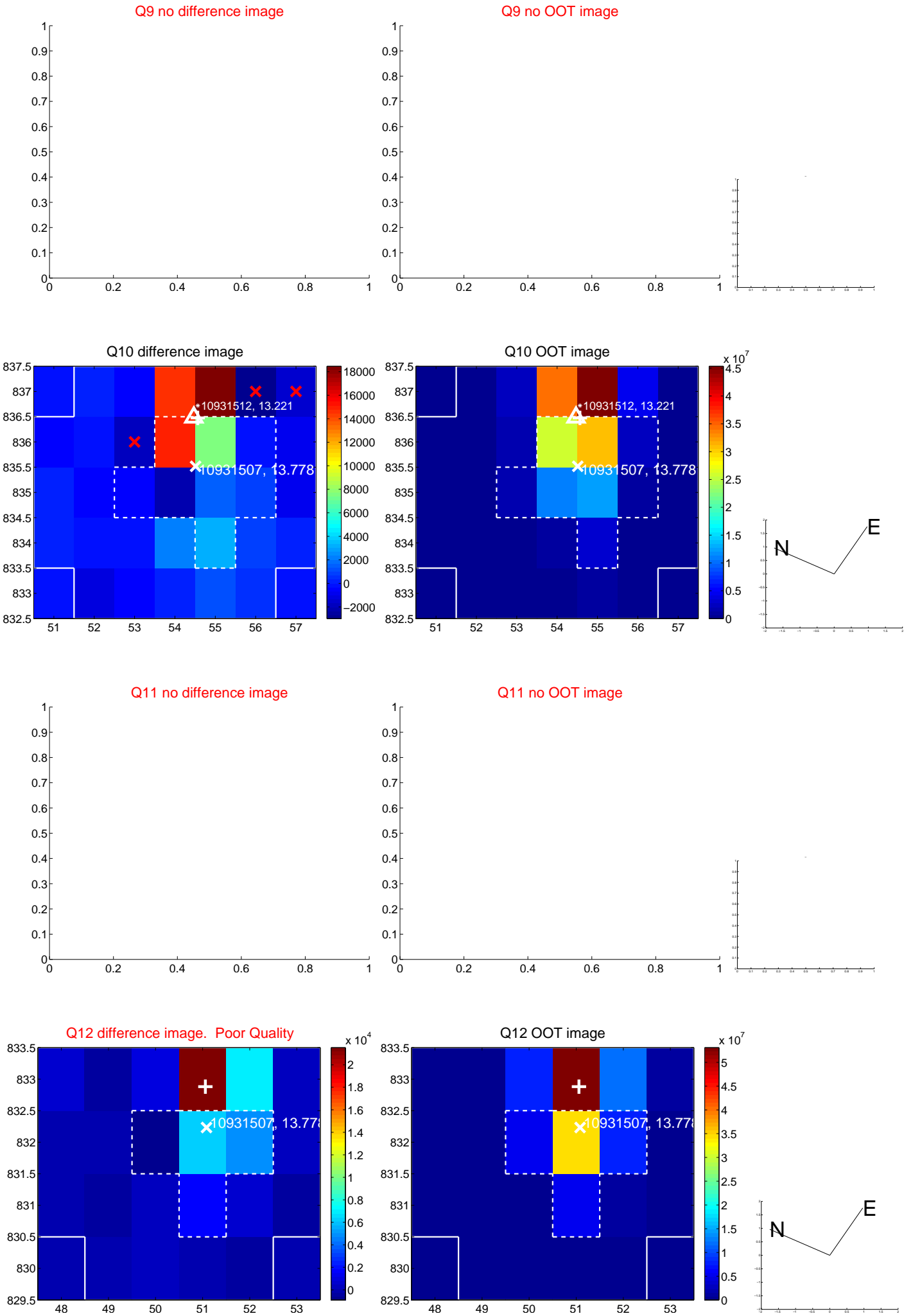
Q8 difference image. Poor Quality



Q8 OOT image

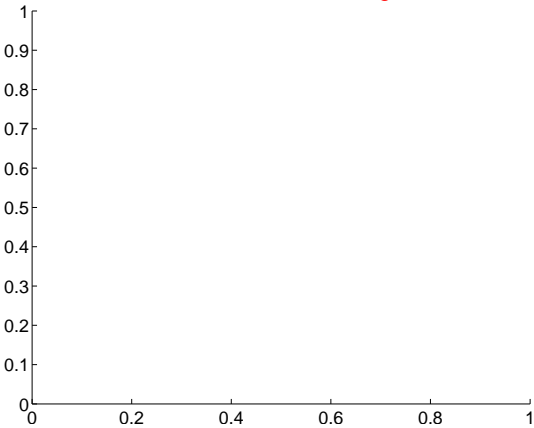


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

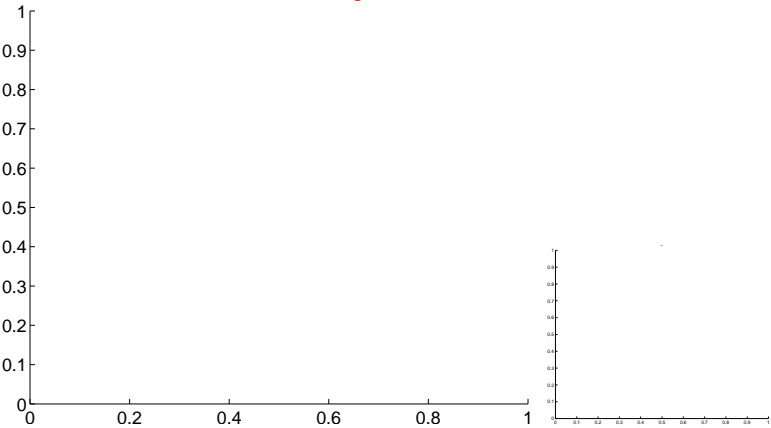


white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.

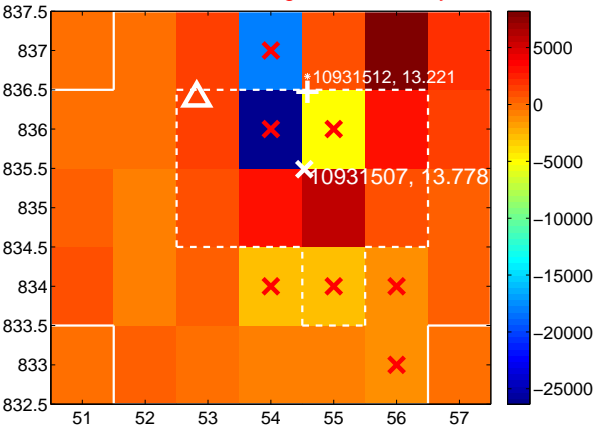
Q13 no difference image



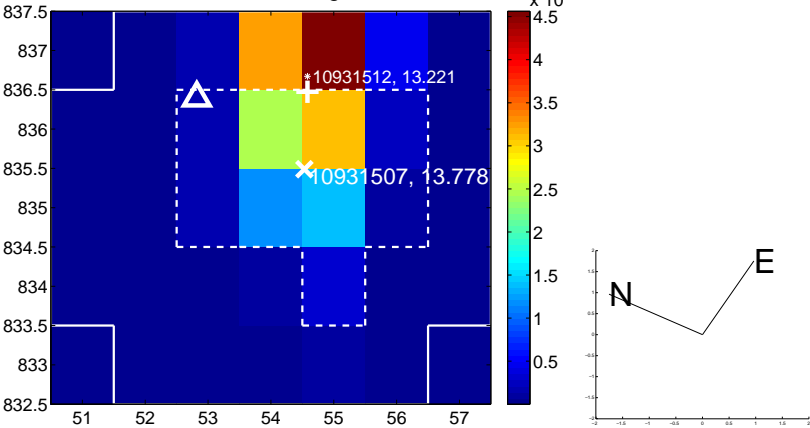
Q13 no OOT image



Q14 difference image. Poor Quality



Q14 OOT image



Q15 no difference image



Q15 no OOT image



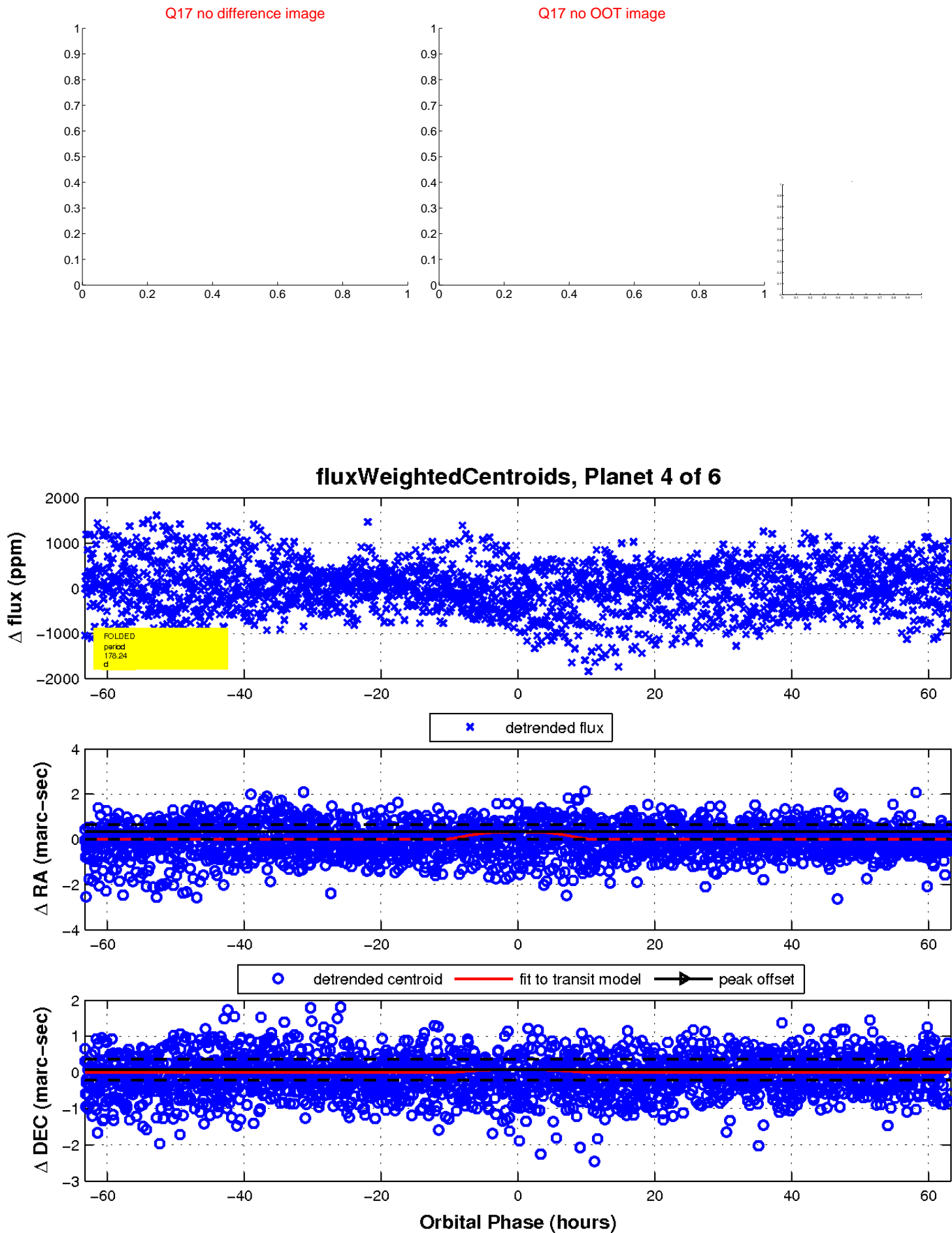
Q16 no difference image



Q16 no OOT image

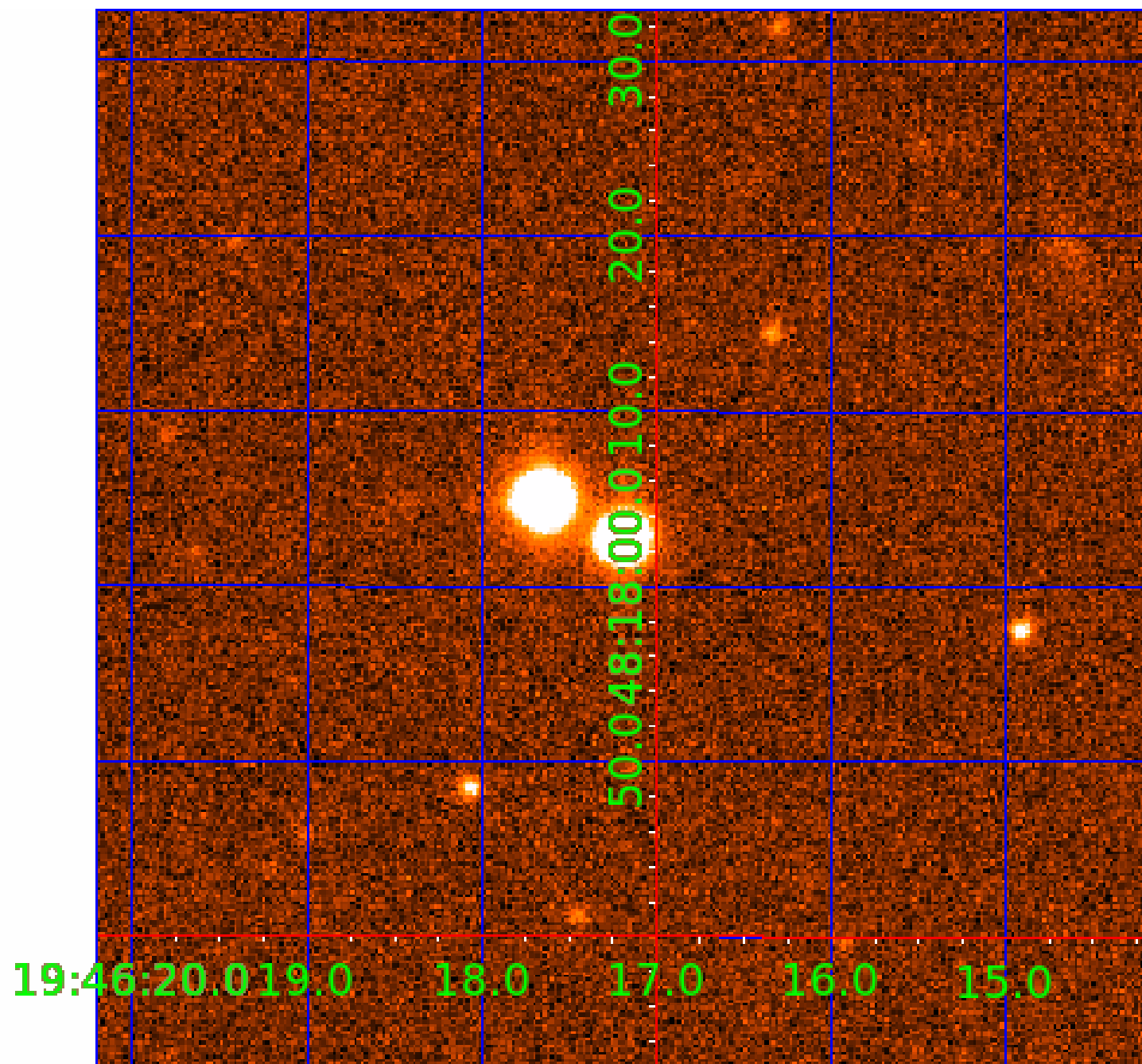


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 010931507

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})
010931507-01	OBS	No	3.780915	132.287046	108.6	18.863	11.4	11.5	1.55	6768	1.63	1671.45
010931507-02	OBS	No	312.499383	301.335318	500.5	11.335	10.7	6.9	1.55	6768	3.67	4.64
010931507-03	OBS	No	239.474085	133.334850	566.4	15.610	10.6	7.6	1.55	6768	3.83	6.62
010931507-04	OBS	No	178.239748	250.769948	646.2	21.108	9.9	9.4	1.55	6768	5.03	9.81
010931507-05	OBS	No	317.619309	197.784589	610.8	9.162	7.3	7.9	1.55	6768	7.31	4.54
010931507-06	OBS	No	252.275521	271.282709	471.9	8.359	7.4	7.0	1.55	6768	3.96	6.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010931507-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
010931507-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010931507-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010931507-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010931507-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
010931507-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

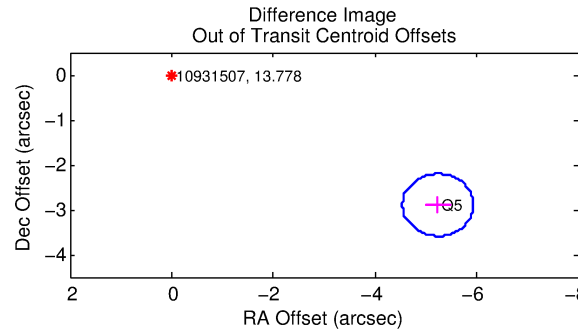
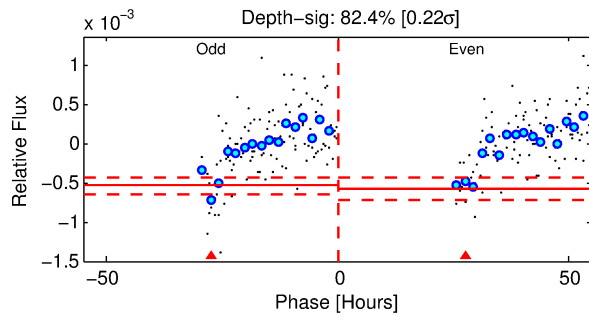
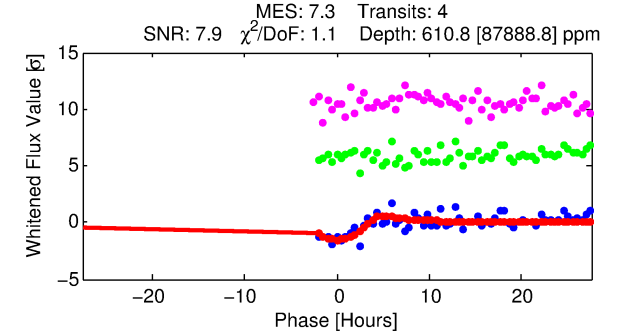
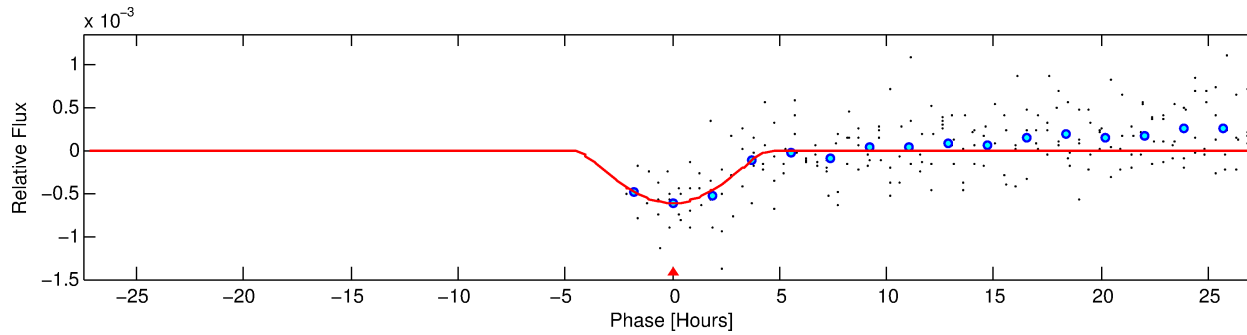
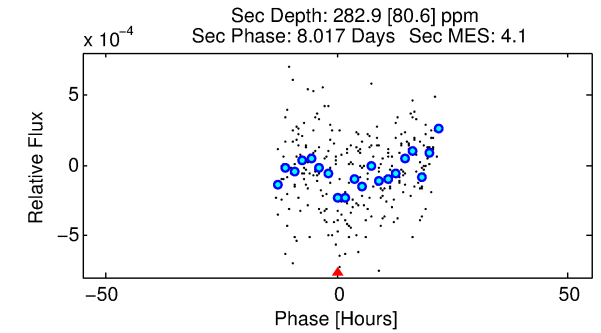
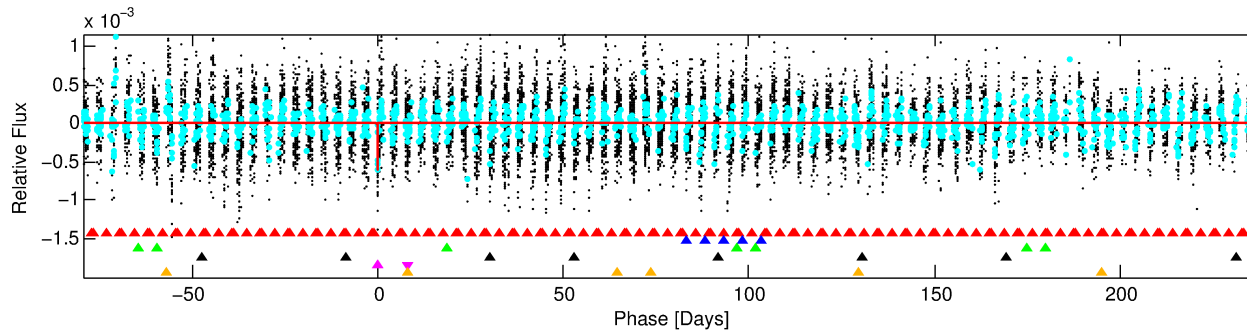
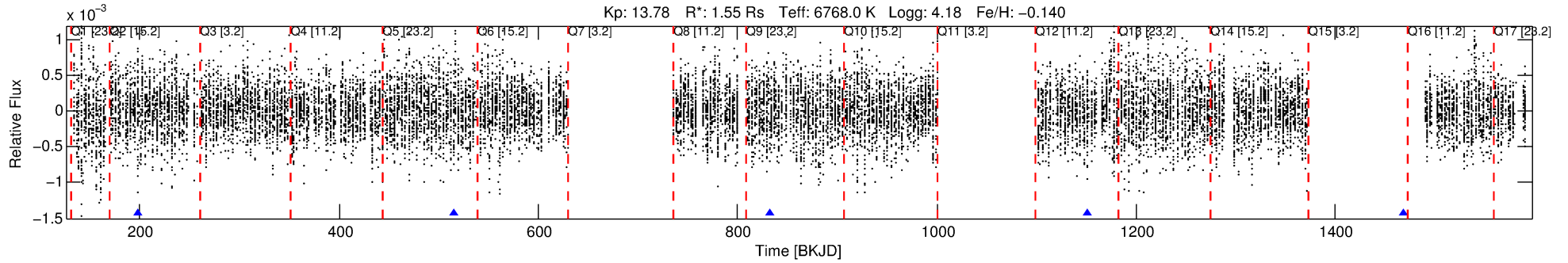
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010931507-05

No Significant Match Found

DV One-Page Summary

KIC: 10931507 Candidate: 5 of 6 Period: 317.619 d



DV Fit Results:

Period = 317.61931 [0.01305] d
Epoch = 197.7846 [0.0346] BKJD
Rp/R* = 0.0431 [0.1682]
a/R* = 78.58 [80.05]
b = 1.00 [4.01]
Seff = 4.54 [1.71]
Teq = 372 [35] K
Rp = 7.31 [28.63] Re
a = 1.0003 [0.2466] AU
Ag = 2913.06 [22782.77] [0.13σ]
Teffp = 4229 [8261] K [0.47σ]

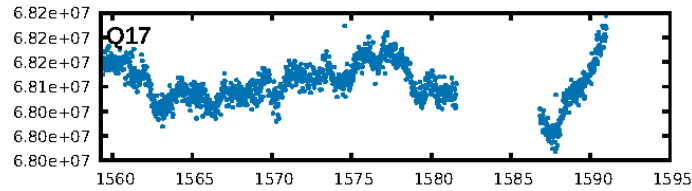
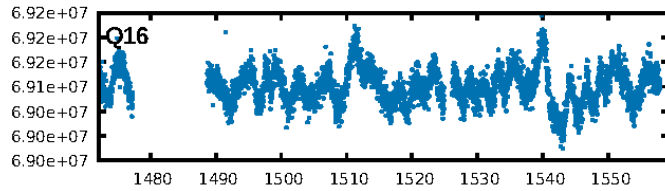
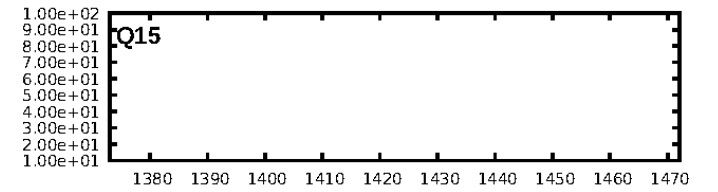
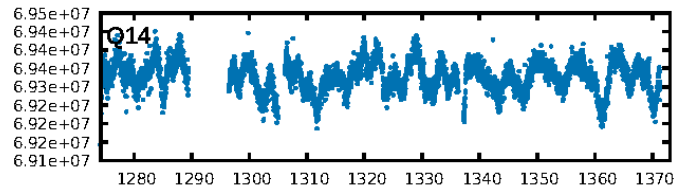
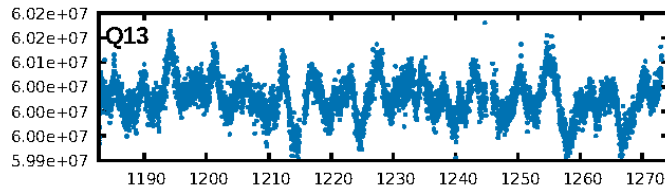
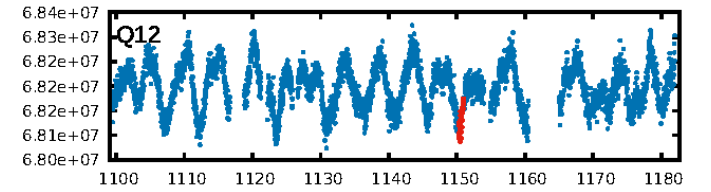
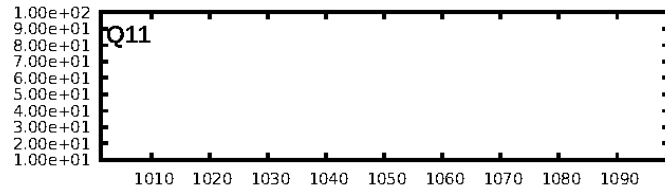
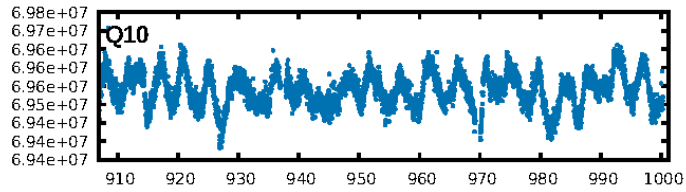
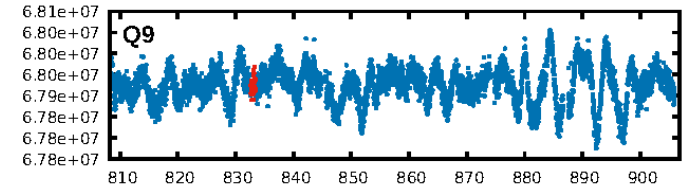
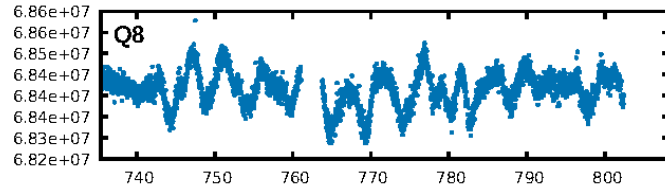
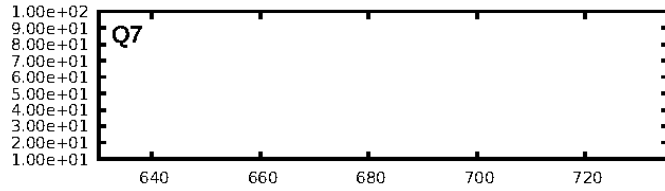
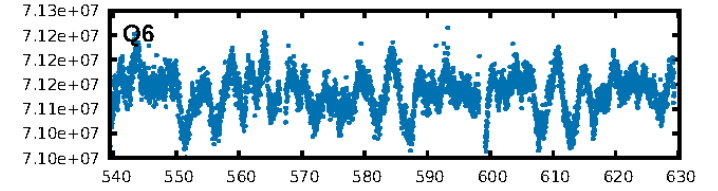
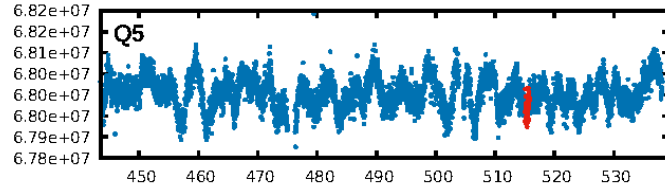
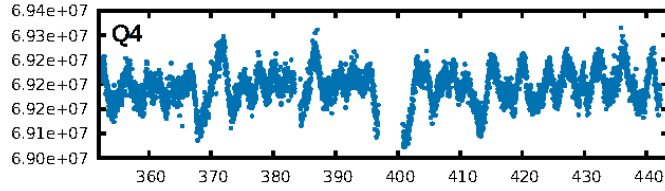
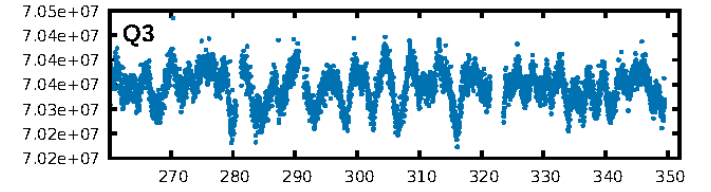
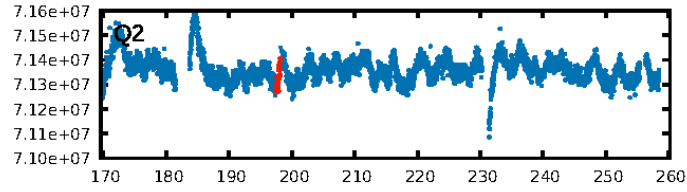
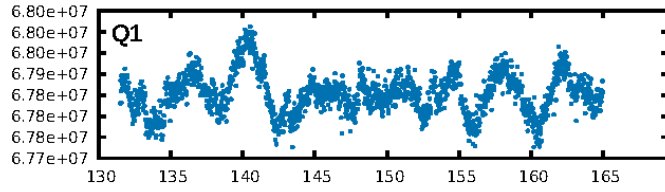
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [8.43σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 17.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.29e-08
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 0.6478
Centroid-sig: 6.0%
Centroid-so: 1.907 arcsec [3.34σ]
OotOffset-rm: 5.980 arcsec [25.88σ]
KicOffset-rm: 1.794 arcsec [7.95σ]
OotOffset-st: 0/0/0/1 [1]
KicOffset-st: 0/0/0/1 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [4/4]

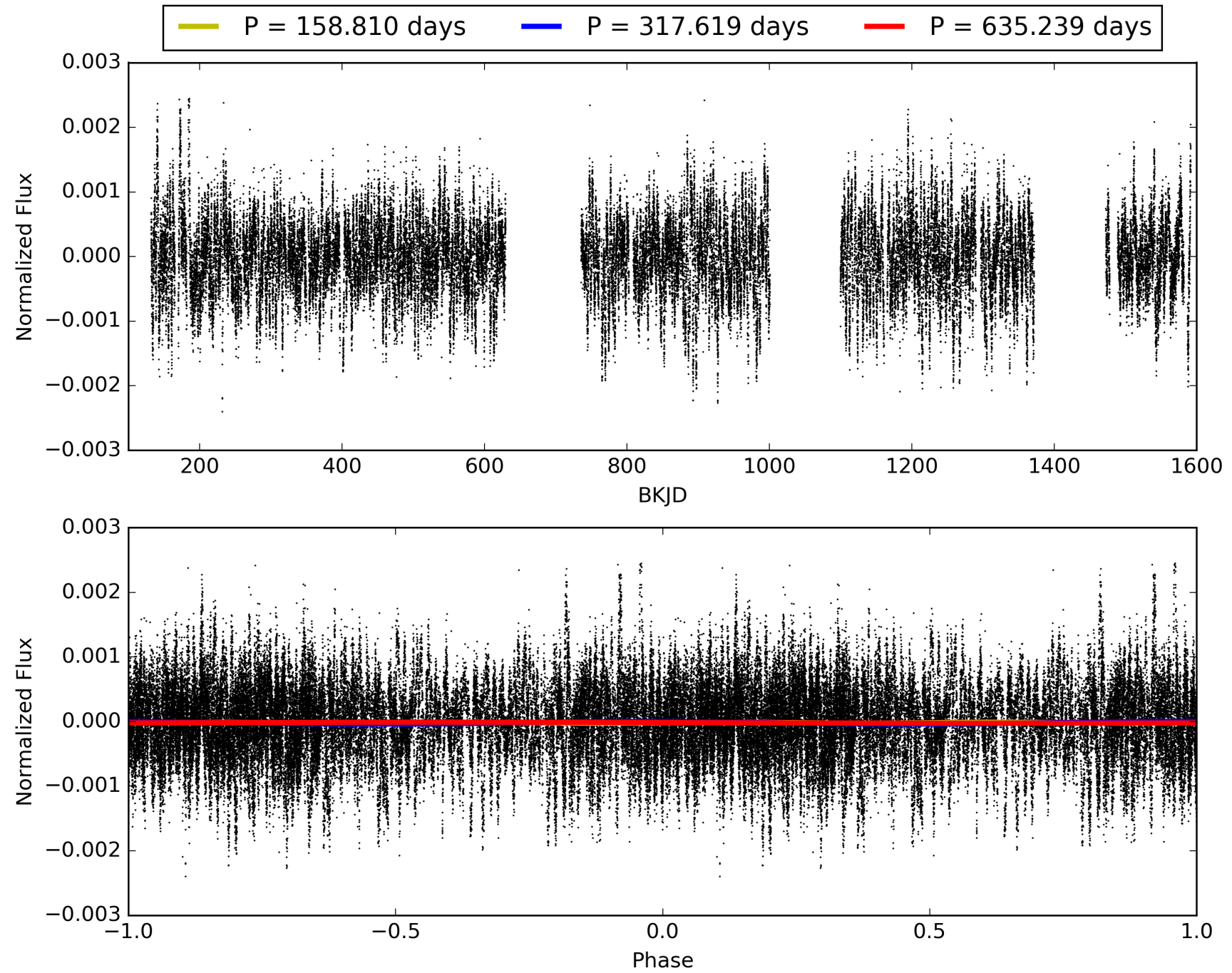
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 21:59:13 Z

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

TCE 010931507-05, PDC Light Curves

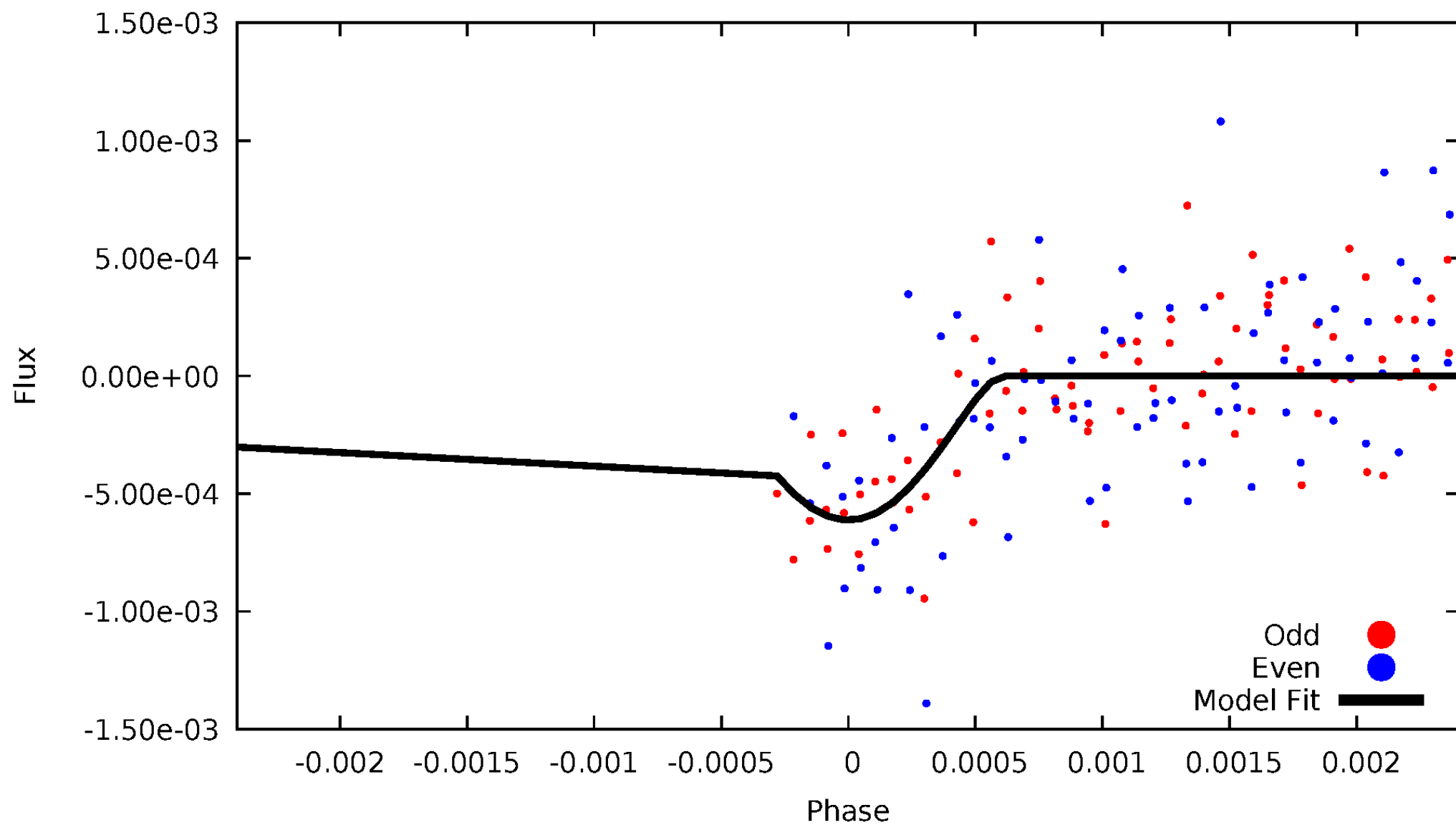


TCE 010931507-05



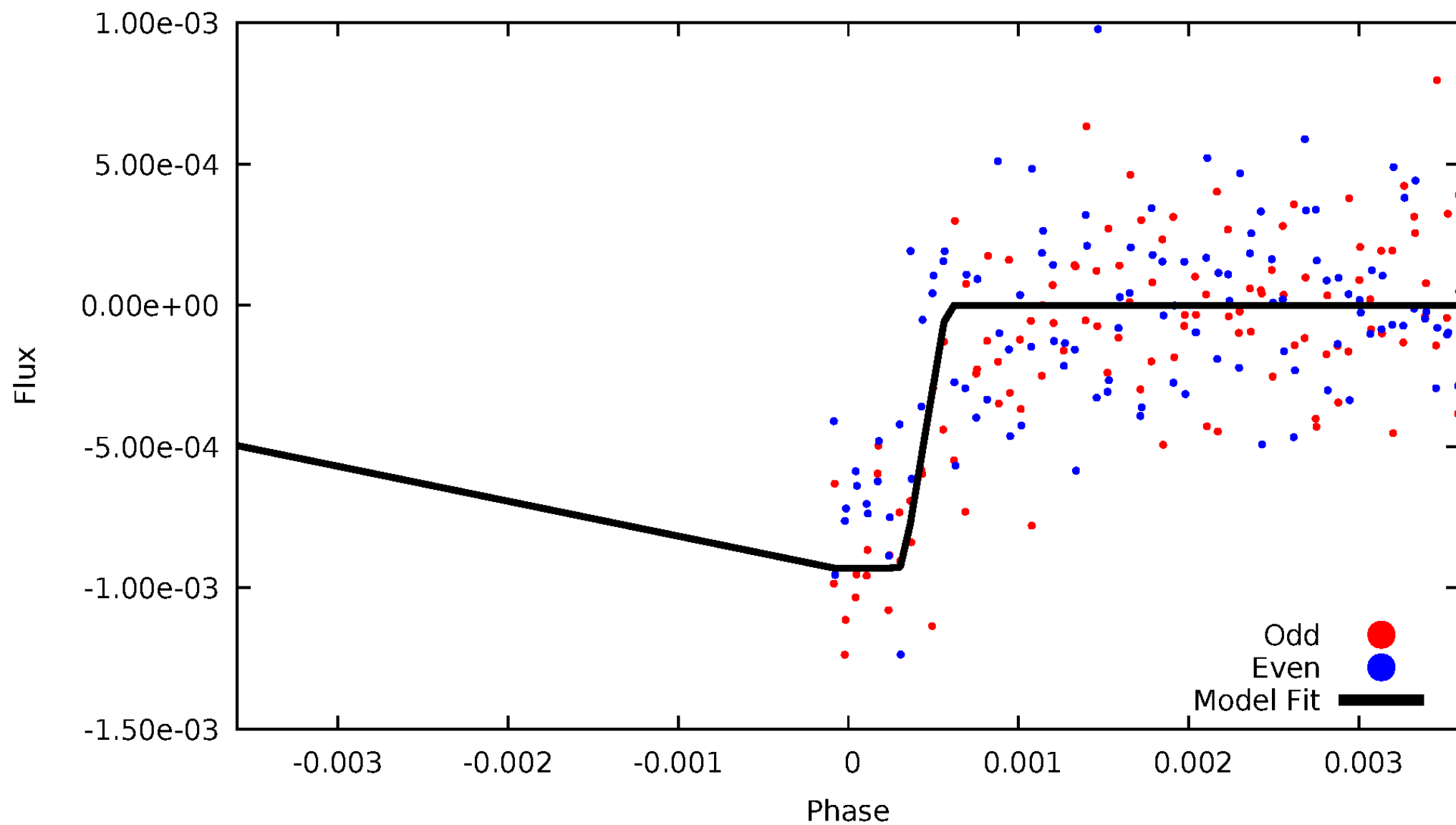
DV Odd/Even

TCE 010931507-05



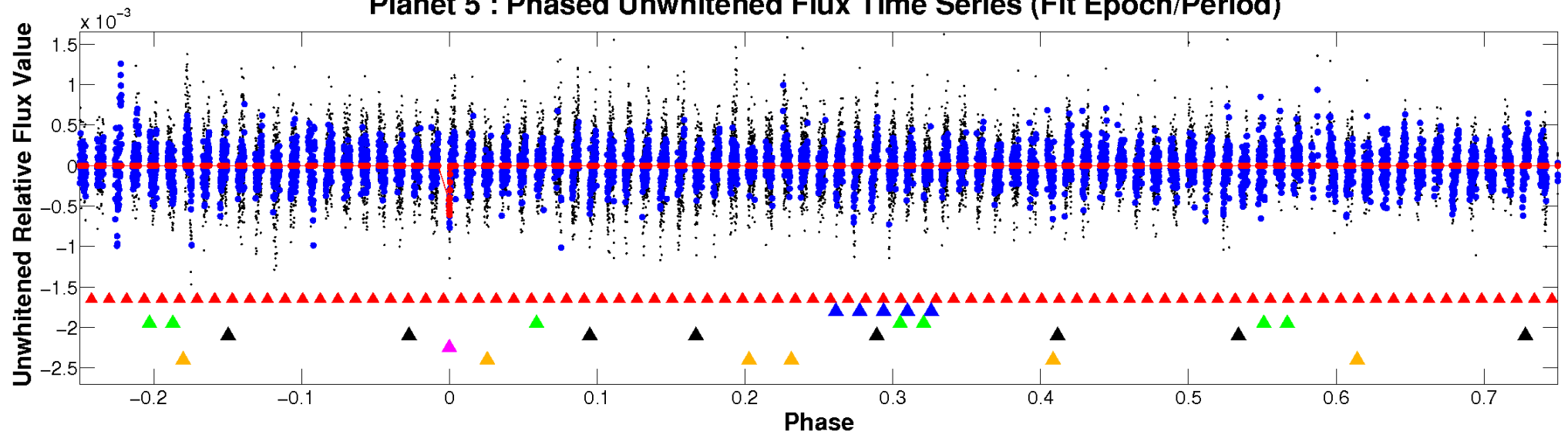
ALT Odd/Even

TCE 010931507-05

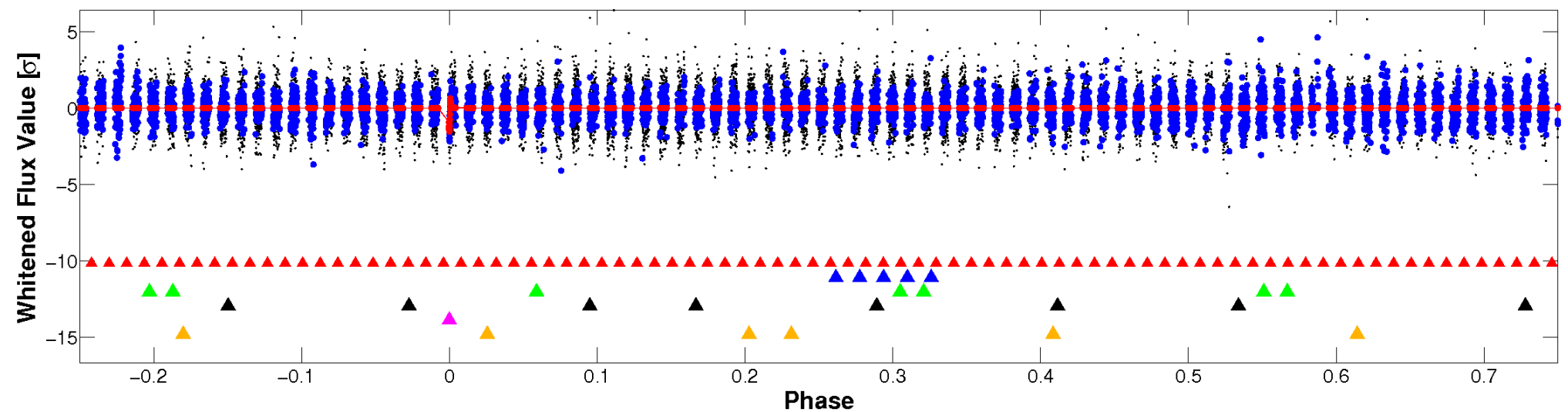


Non-Whitened Vs. Whitened Light Curve

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

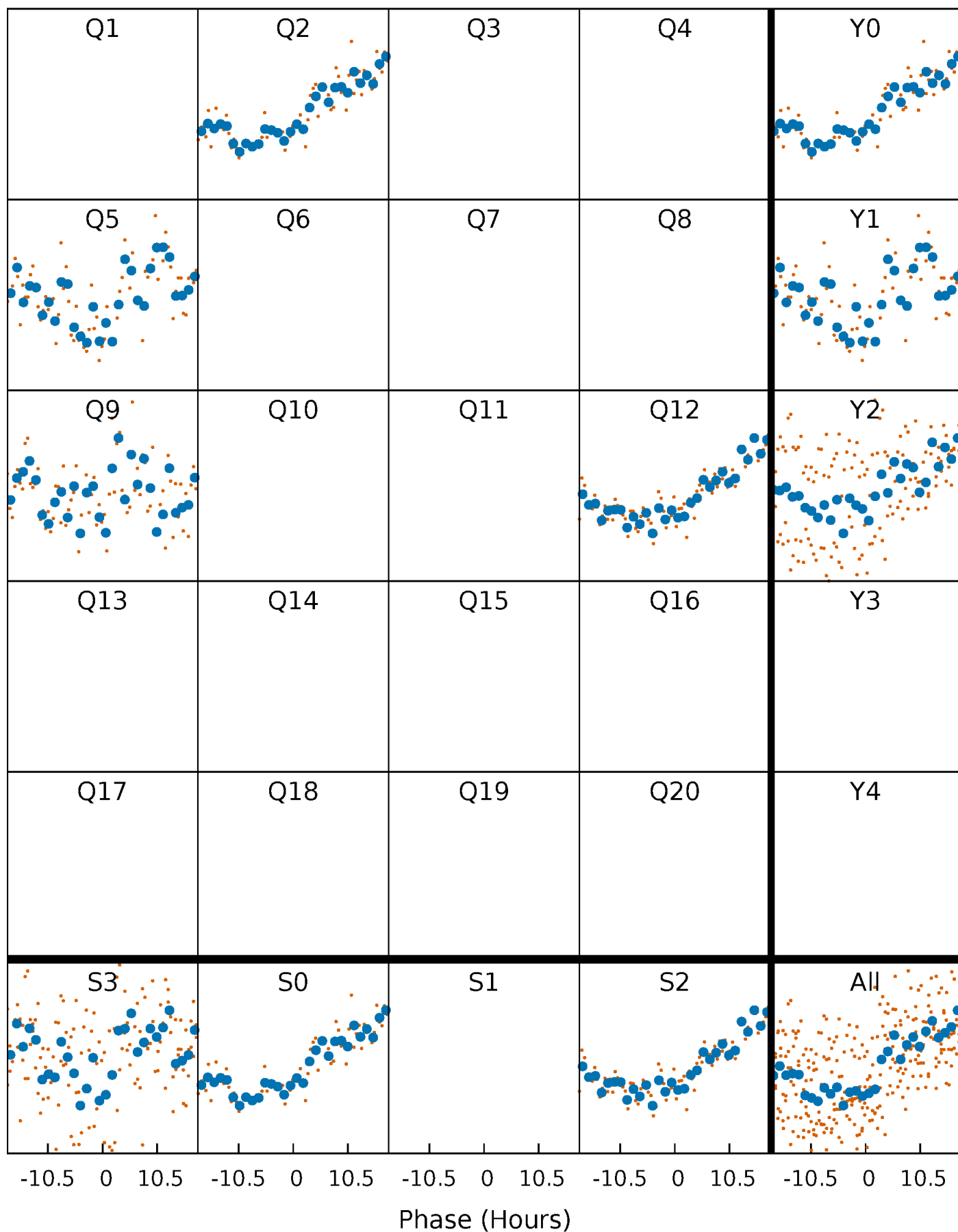


Planet 5 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 010931507-05 $P=317.619309$ Days $T_0=197.784589$ (BKJD)



DV Quarter-Phased Transit Curves

TCE 010931507-05 $P=317.619309$ Days $T_0=197.784589$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

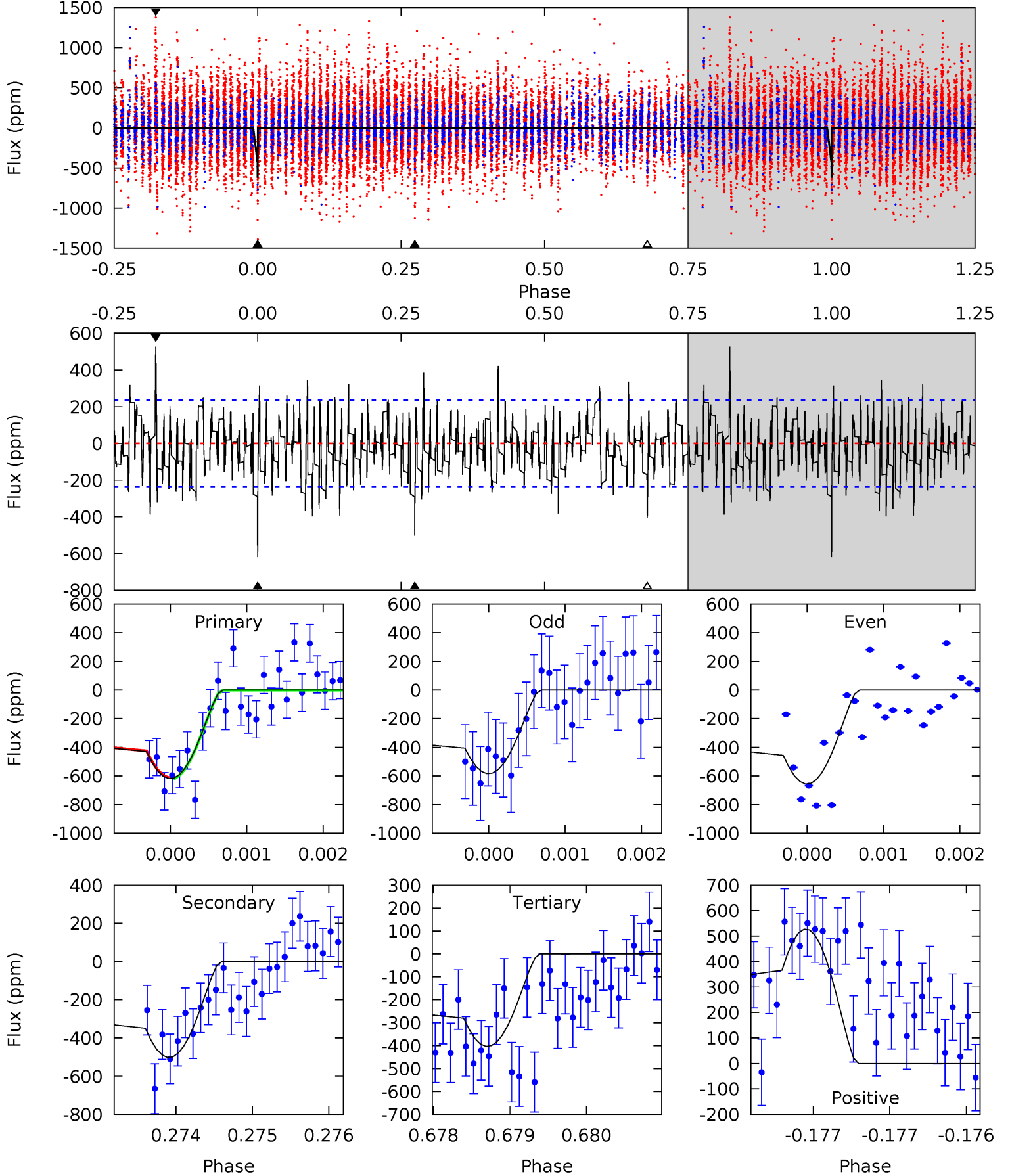
TCE 010931507-05 $P=317.598823$ Days $T_0=197.784265$ (BKJD)



DV Model-Shift Uniqueness Test

010931507-05, P = 317.619309 Days, E = 197.784589 Days

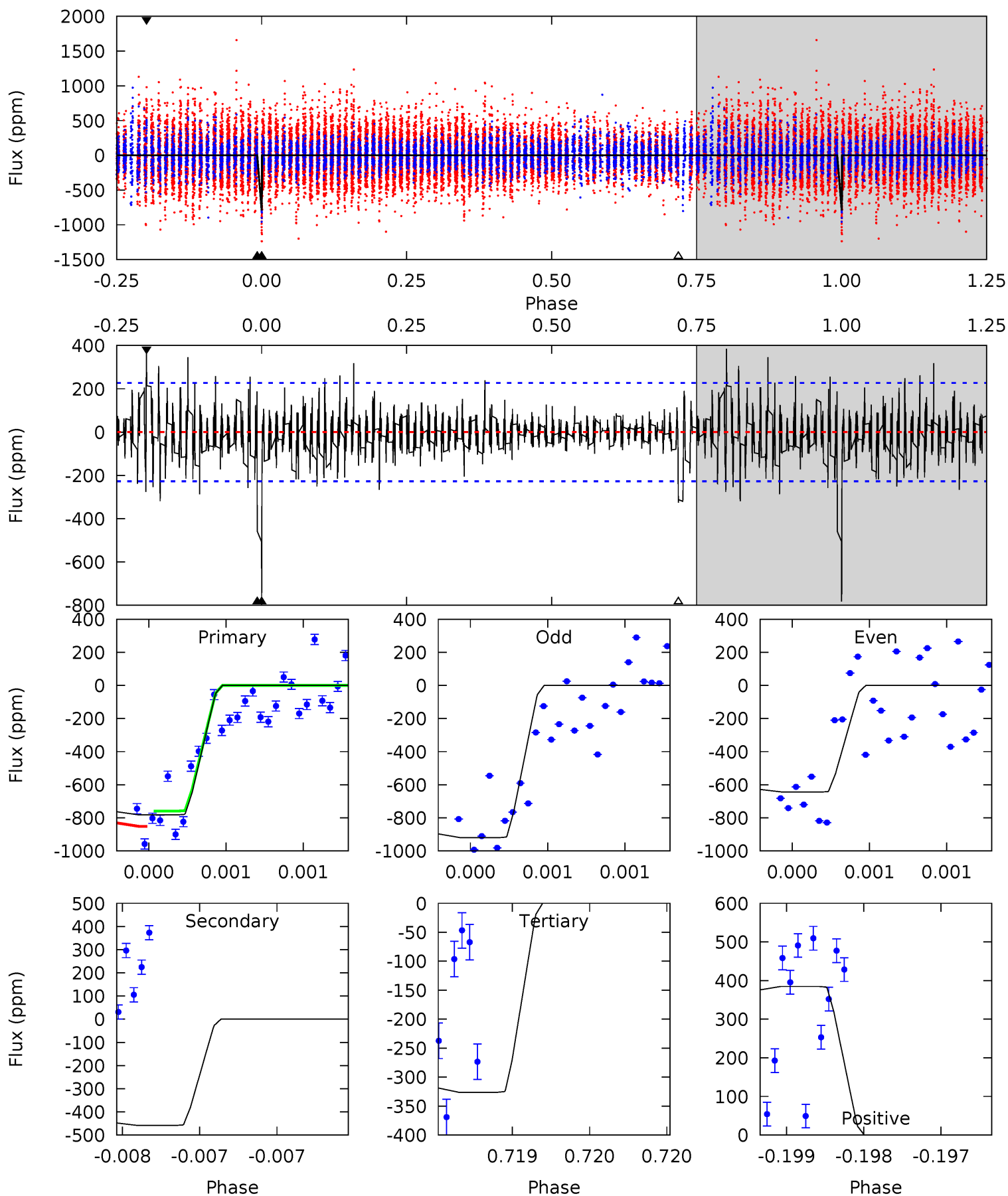
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
14.3	11.6	9.32	12.2	5.47	3.32	2.98	4.97	2.10	2.28	-0.59	0.83	1.10	0.46	0.07



Alt Model-Shift Uniqueness Test

010931507-05, P = 317.598823 Days, E = 197.784265 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
19.0	11.2	7.94	9.36	5.53	3.41	1.79	11.1	9.68	3.21	1.79	3.35	0.97	0.33	0.82



Stellar Parameters For KIC 010931507

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6768^{+189}_{-259}	$4.176^{+0.148}_{-0.181}$	$-0.140^{+0.250}_{-0.300}$	$1.555^{+0.475}_{-0.317}$	$1.333^{+0.196}_{-0.239}$	$0.499^{+0.440}_{-0.247}$
	+3%/-4%	+4%/-4%	+179%/-214%	+31%/-20%	+15%/-18%	+88%/-49%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010931507-05 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-502 ± 43	$22.91^{+21.64}_{-16.63}$	519^{+39}_{-33}	3343^{+1870}_{-603}	545^{+6224}_{-411}
Alt.	-458 ± 41	$22.24^{+22.65}_{-15.27}$	520^{+39}_{-33}	3301^{+1588}_{-587}	504^{+4671}_{-382}

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

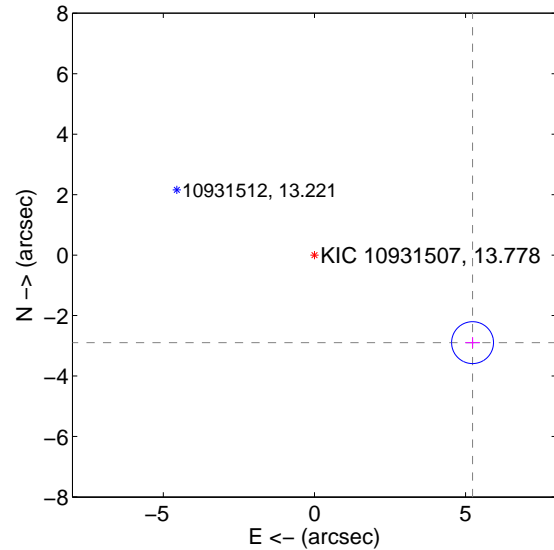
Supplemental centroid analysis for 010931507-05. Kepler magnitude: 13.78. Transit SNR 7.88

There are 1 quarters with good PRF difference image offsets

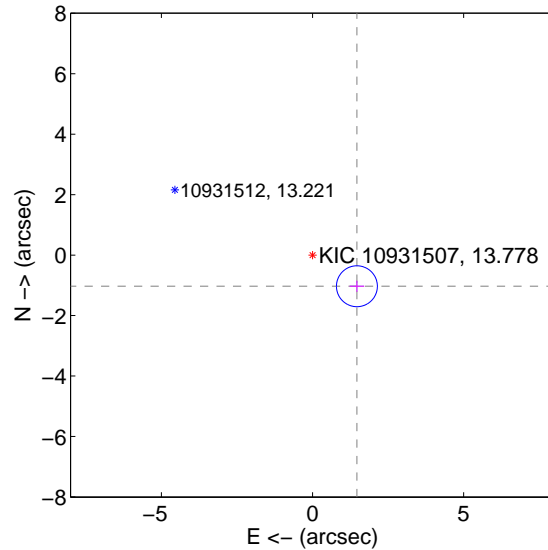
The OOT PRF centroid is offset from the target star catalog position by about 4.20 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	5.980 ± 0.231	25.88	-5.231 ± 0.244	-2.896 ± 0.183
PRF-fit source offset from KIC position	1.794 ± 0.226	7.95	-1.469 ± 0.244	-1.031 ± 0.183
photometric centroid source offset	1.91 ± 0.57	3.34	1.32 ± 0.65	1.37 ± 0.49

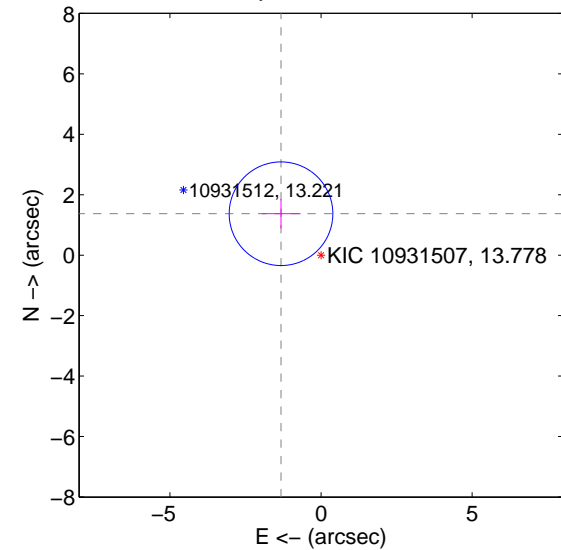
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

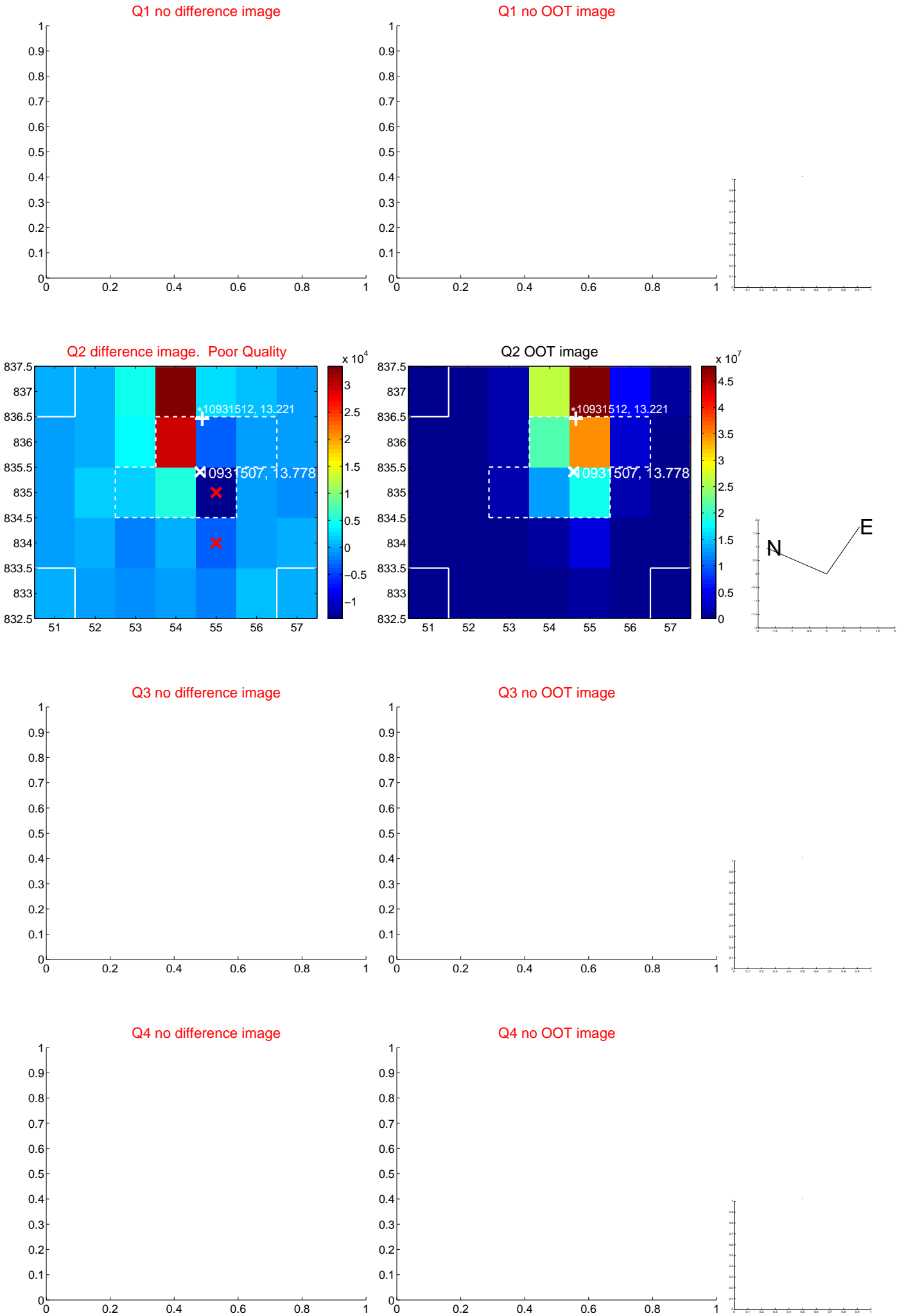


offset from photometric centroids

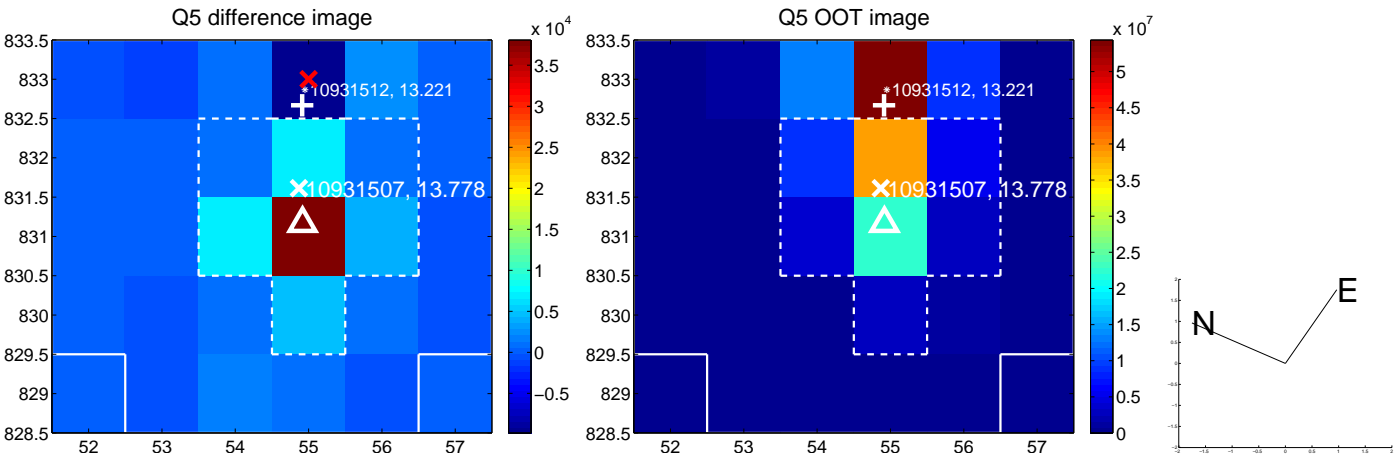


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

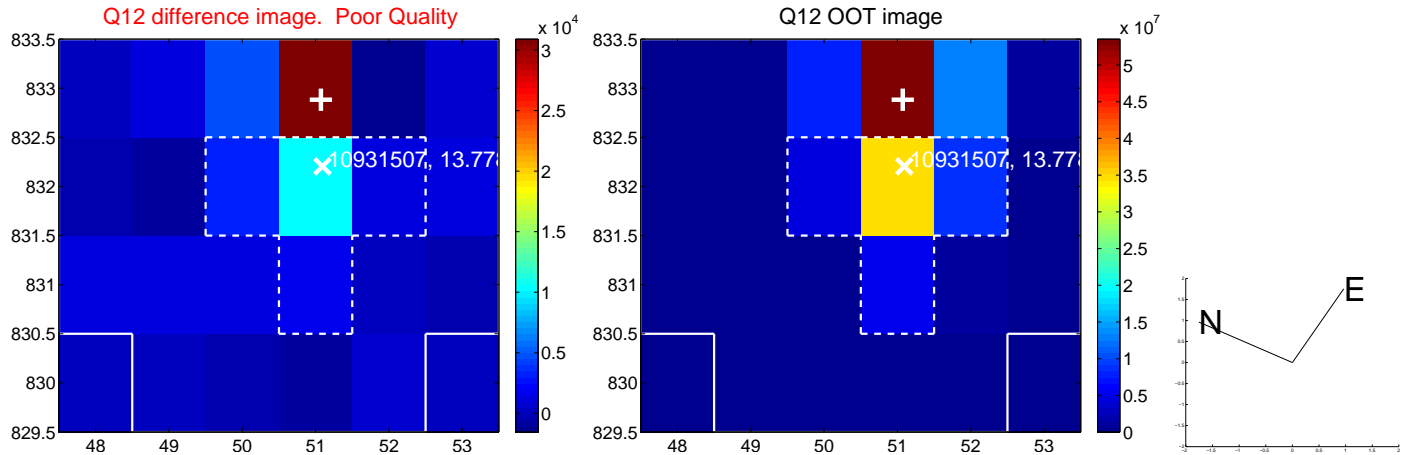
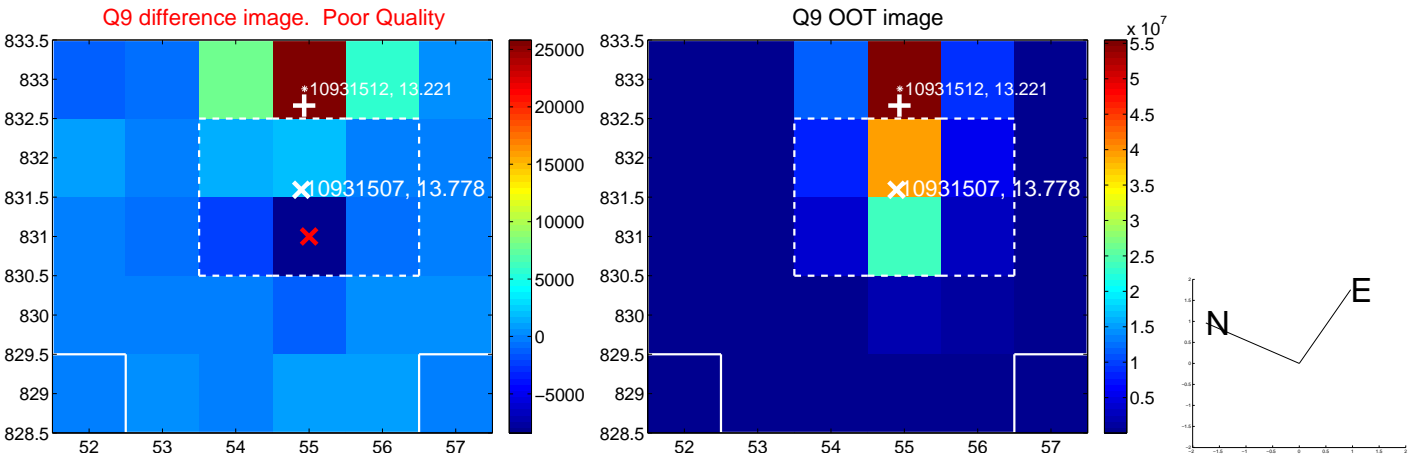
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



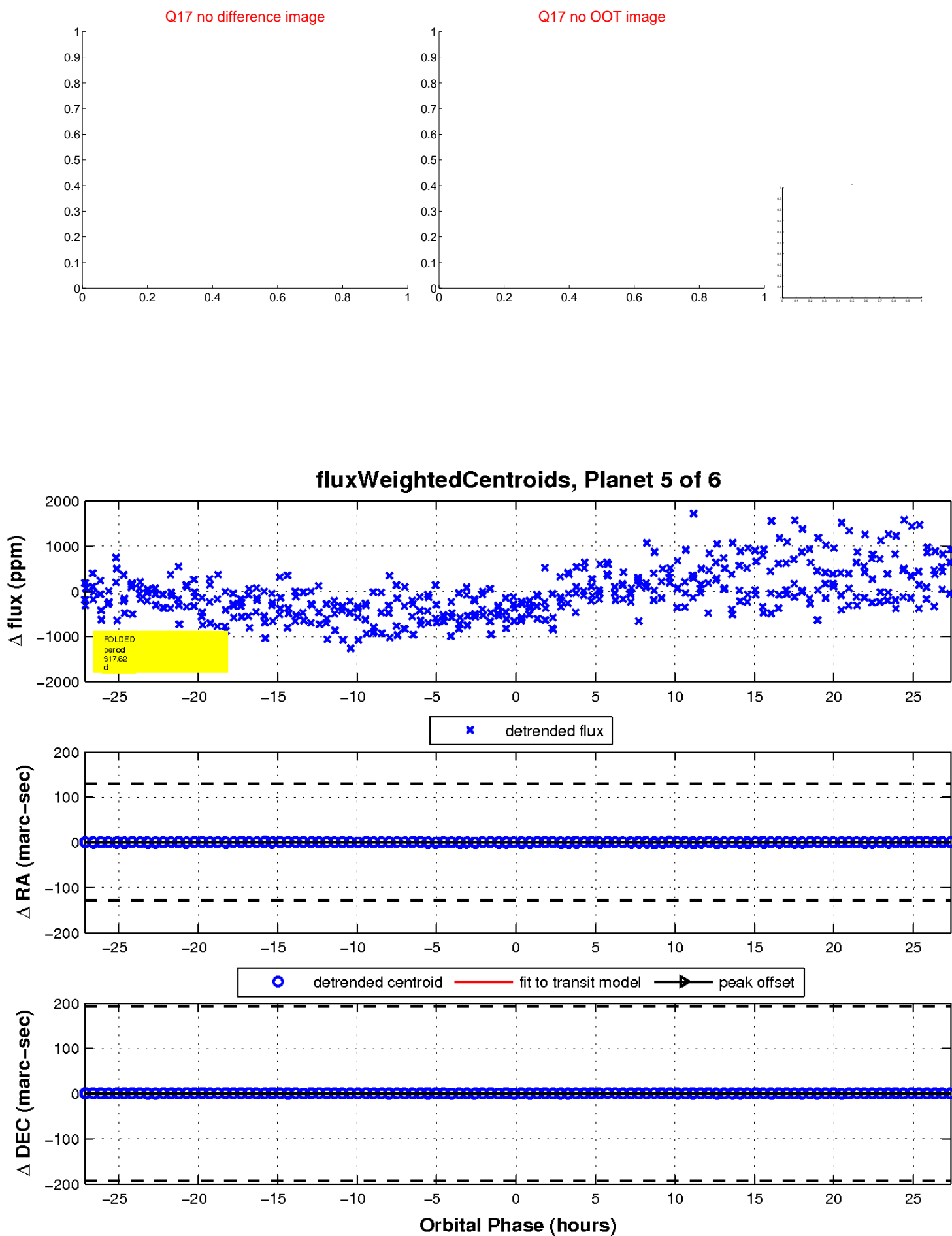
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



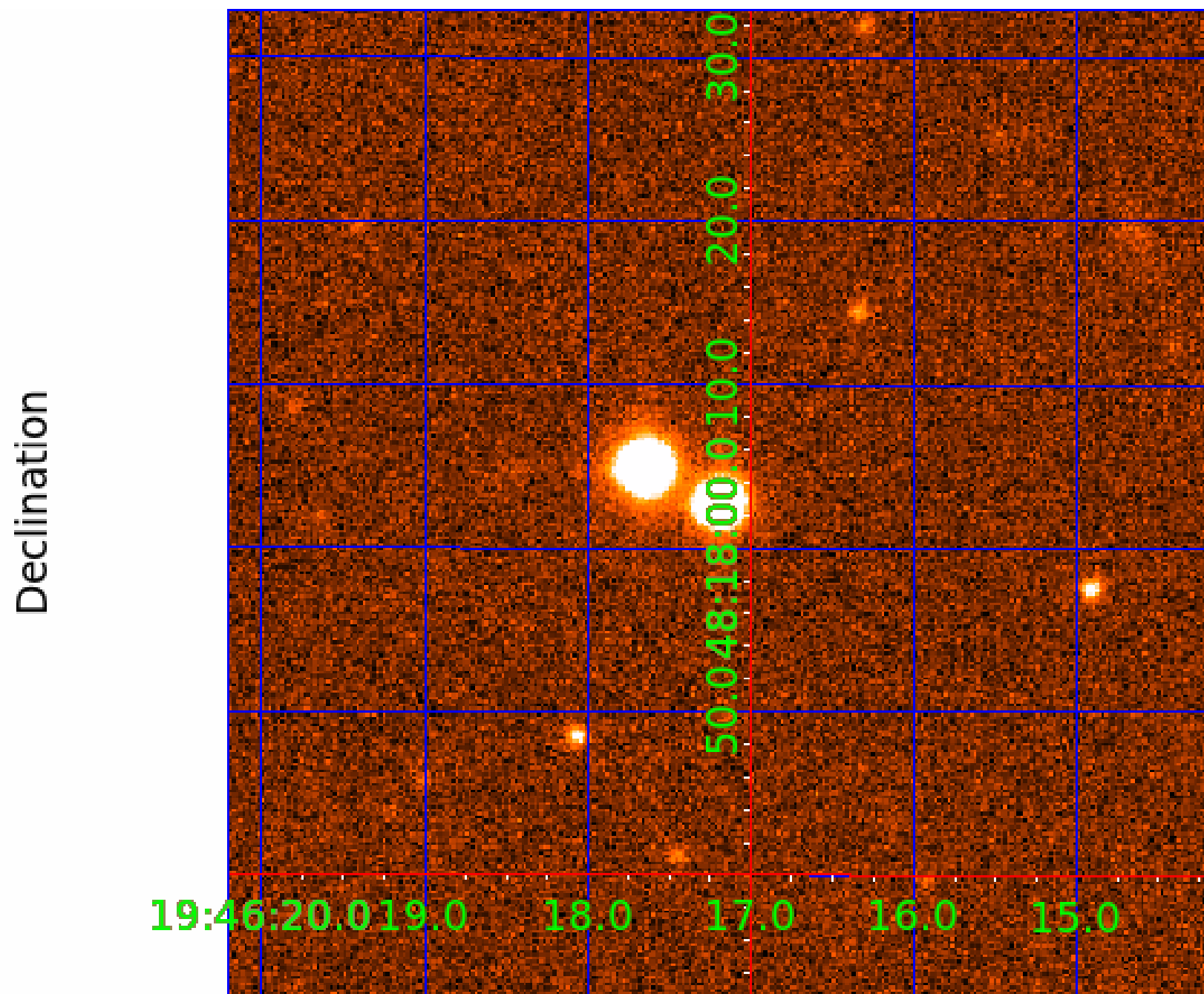
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 010931507

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})
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010931507-02	OBS	No	312.499383	301.335318	500.5	11.335	10.7	6.9	1.55	6768	3.67	4.64
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010931507-05	OBS	No	317.619309	197.784589	610.8	9.162	7.3	7.9	1.55	6768	7.31	4.54
010931507-06	OBS	No	252.275521	271.282709	471.9	8.359	7.4	7.0	1.55	6768	3.96	6.18

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
010931507-01	OBS	FP	0.00	1	0	0	0	LPP_DV—CENT_KIC_POS
010931507-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_ALT—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010931507-03	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_MARSHALL_ZUMA—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_RESOLVED_OFFSET
010931507-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_SKYE—TRANS_GAPPED—LPP_DV—MOD_NONUNIQ_DV—MOD_TER_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
010931507-05	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES_MARSHALL—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_NONUNIQ_ALT—CENT_FEW_MEAS
010931507-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—MOD_TER_DV—MOD_POS_DV—MOD_NONUNIQ_ALT—MOD_TER_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.

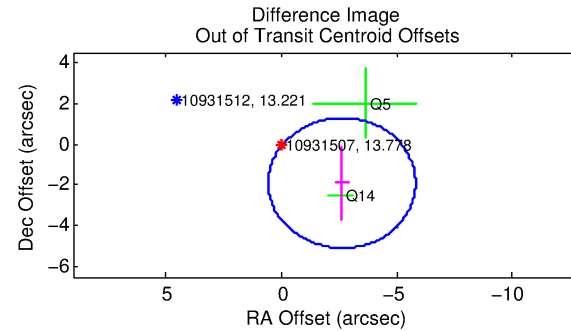
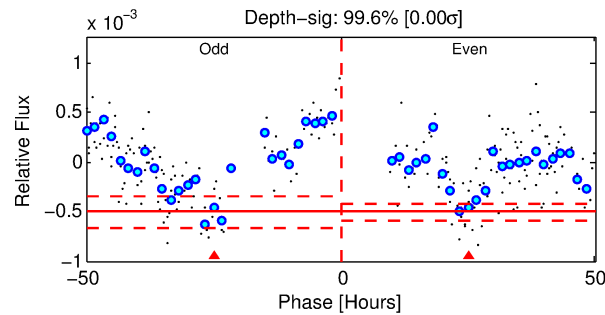
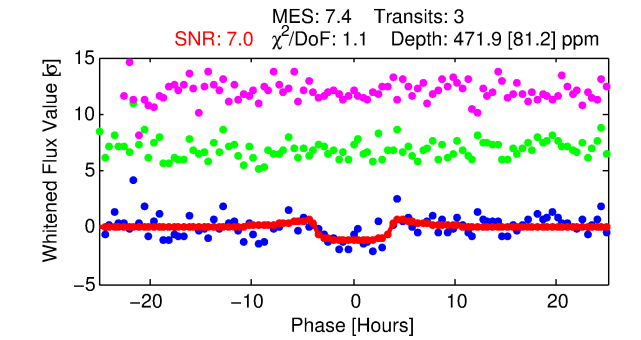
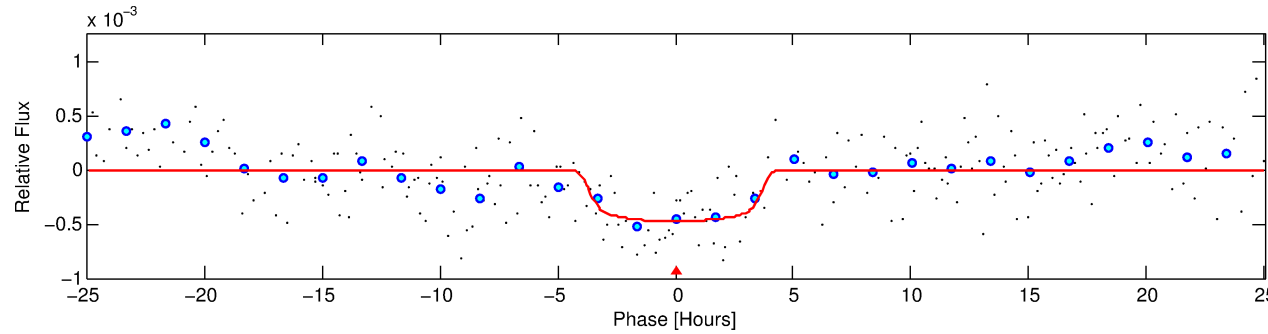
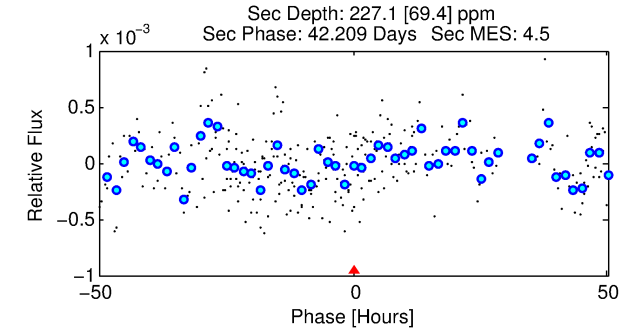
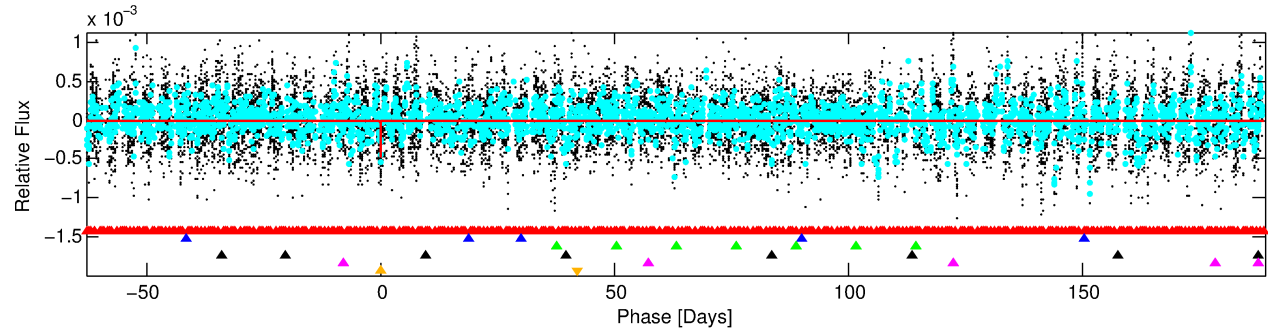
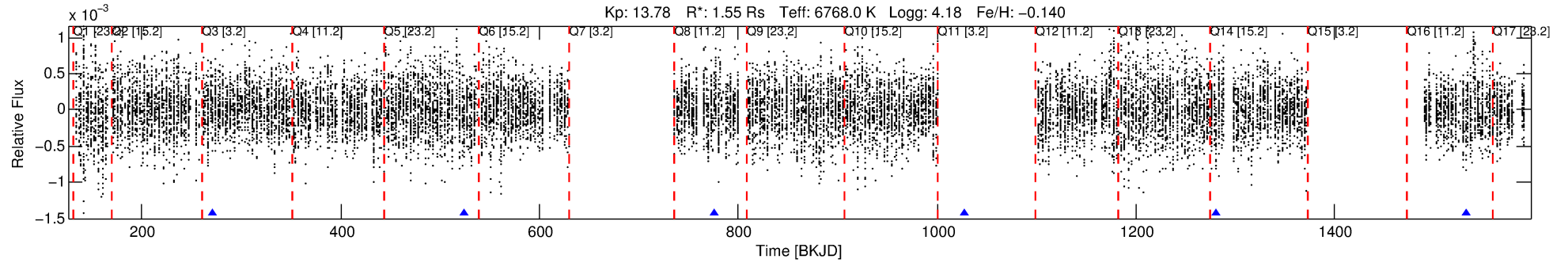
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 010931507-06

No Significant Match Found

DV One-Page Summary

KIC: 10931507 Candidate: 6 of 6 Period: 252.276 d



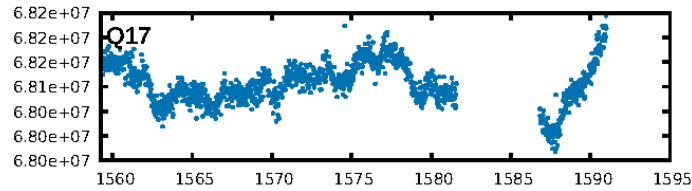
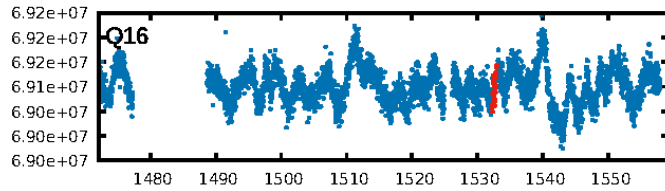
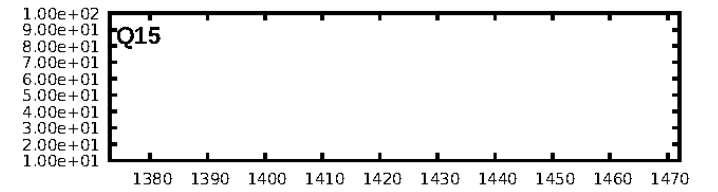
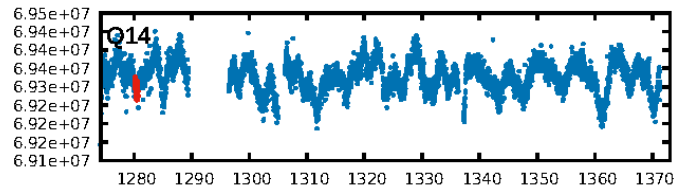
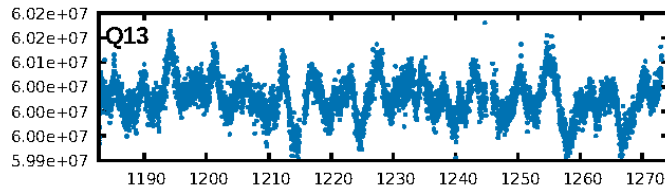
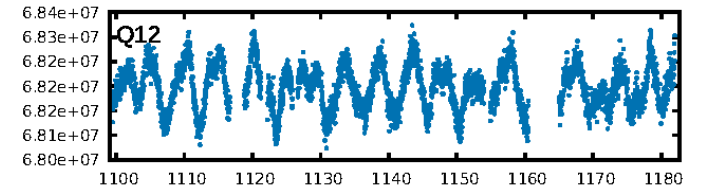
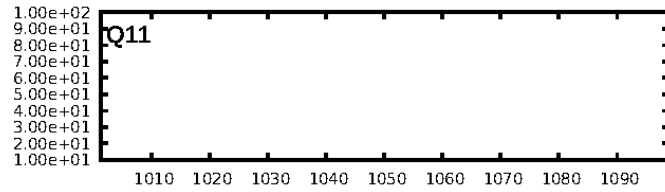
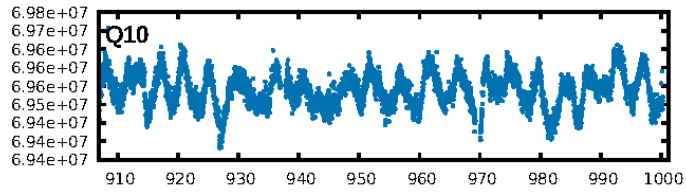
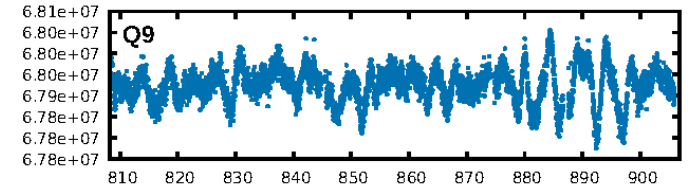
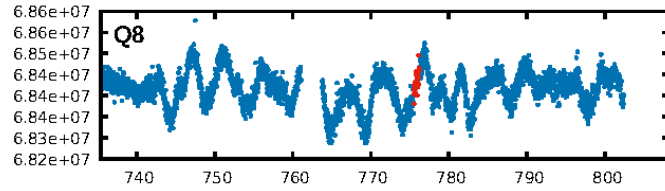
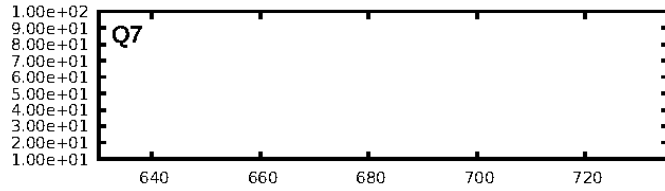
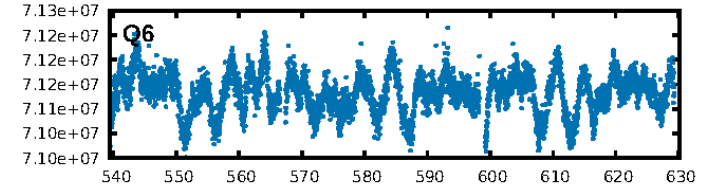
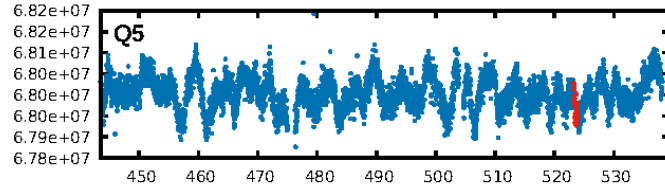
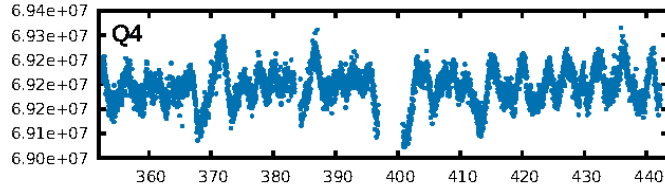
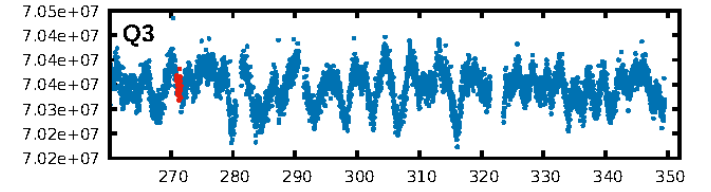
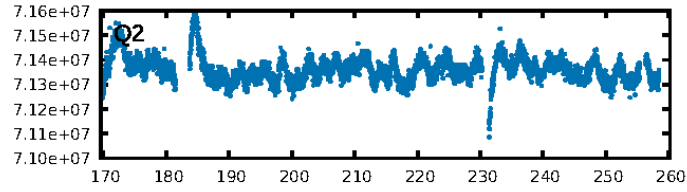
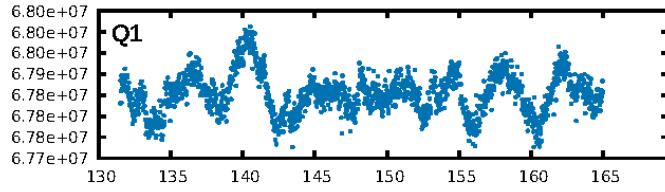
DV Fit Results:

Period = 252.27552 [0.00549] d
Epoch = 271.2827 [0.0218] BKJD
Rp/R* = 0.0234 [0.0031]
a/R* = 108.31 [59.06]
b = 0.91 [0.11]
Seff = 6.18 [2.33]
Teq = 402 [38] K
Rp = 3.96 [1.32] Re
a = 0.8579 [0.2115] AU
Ag = 5851.72 [3118.40] [1.88 σ]
Teffp = 5436 [590] K [8.51 σ]

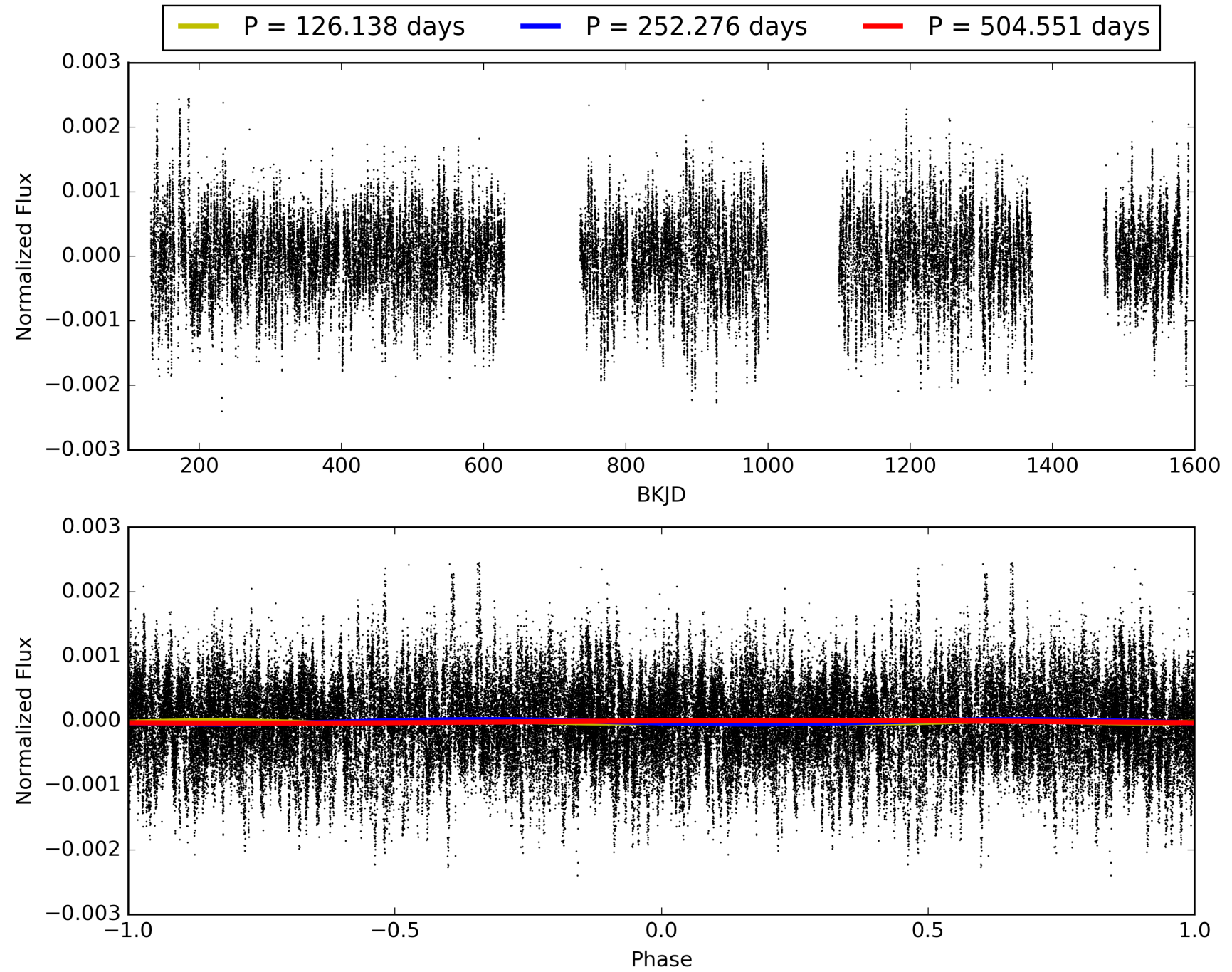
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [17.35 σ]
LongPeriod-sig: 100.0% [102.63 σ]
ModelChiSquare2-sig: 85.4%
ModelChiSquareGof-sig: 88.2%
Bootstrap-pfa: 1.63e-07
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.2585
Centroid-sig: 13.1%
Centroid-so: 2.150 arcsec [3.33 σ]
OotOffset-rm: 3.242 arcsec [3.05 σ]
KicOffset-rm: 1.283 arcsec [1.13 σ]
OotOffset-st: 1/0/0/1 [2]
KicOffset-st: 1/0/0/1 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 0.75 [3/4]

TCE 010931507-06, PDC Light Curves

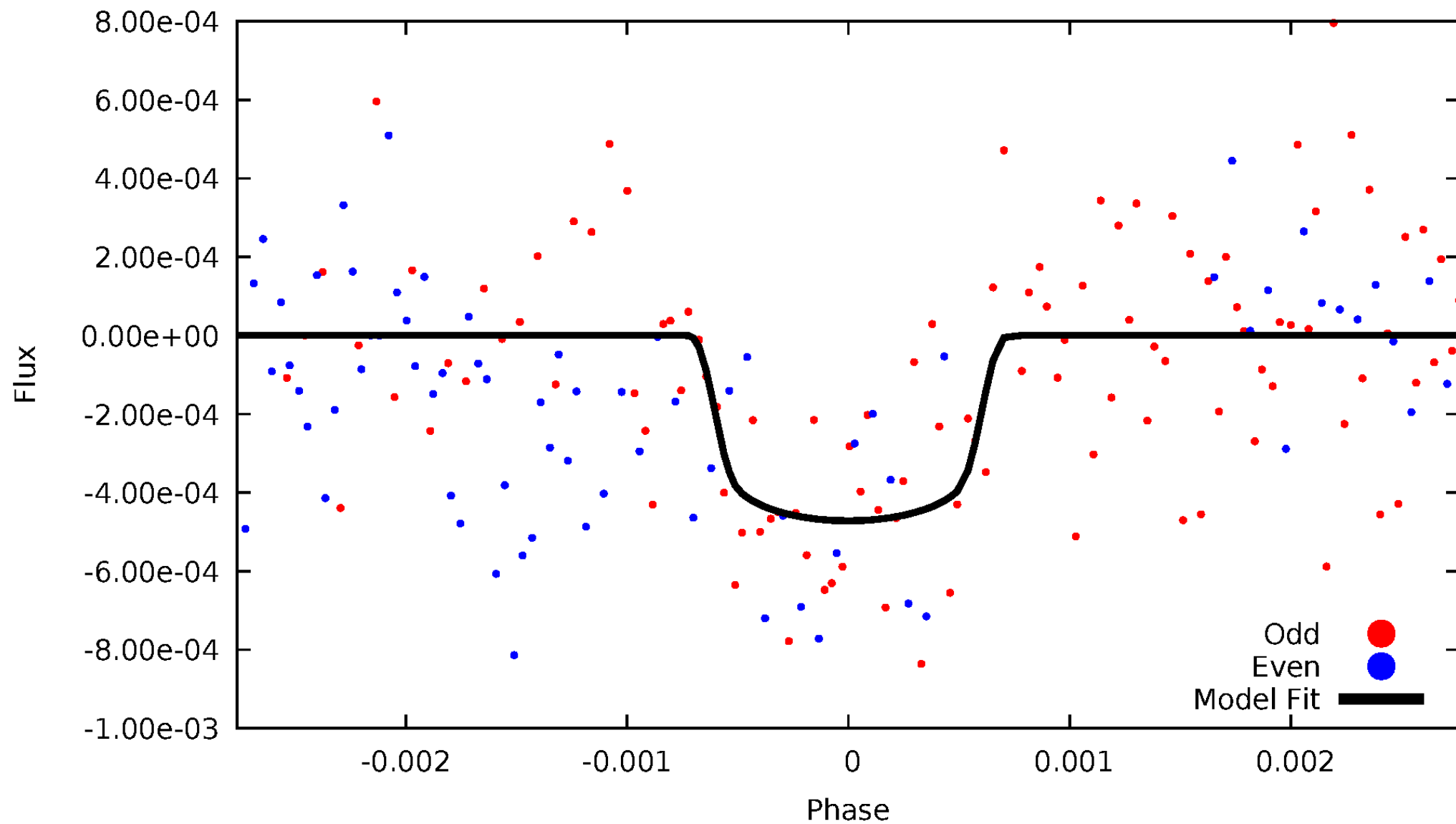


TCE 010931507-06



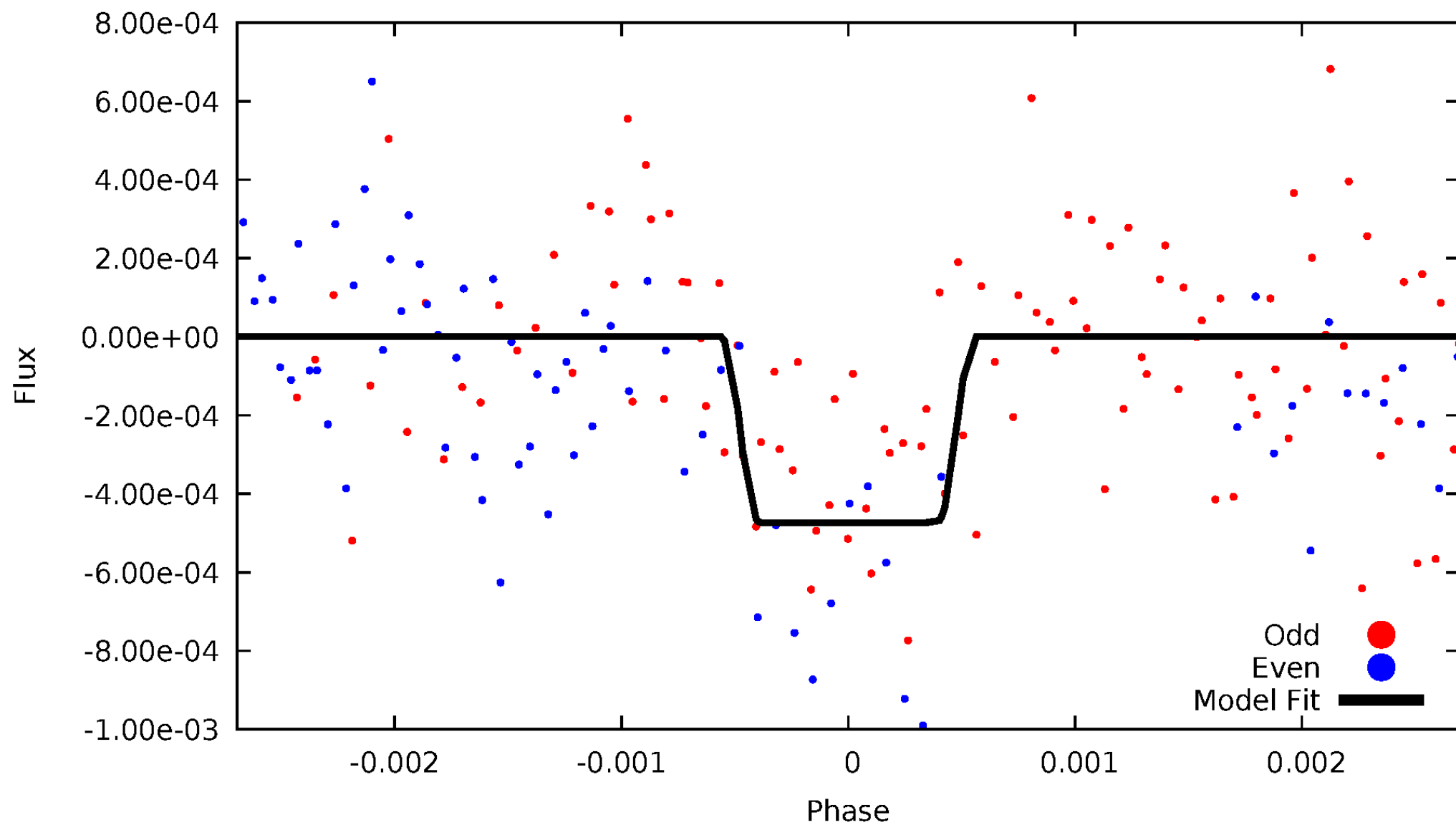
DV Odd/Even

TCE 010931507-06



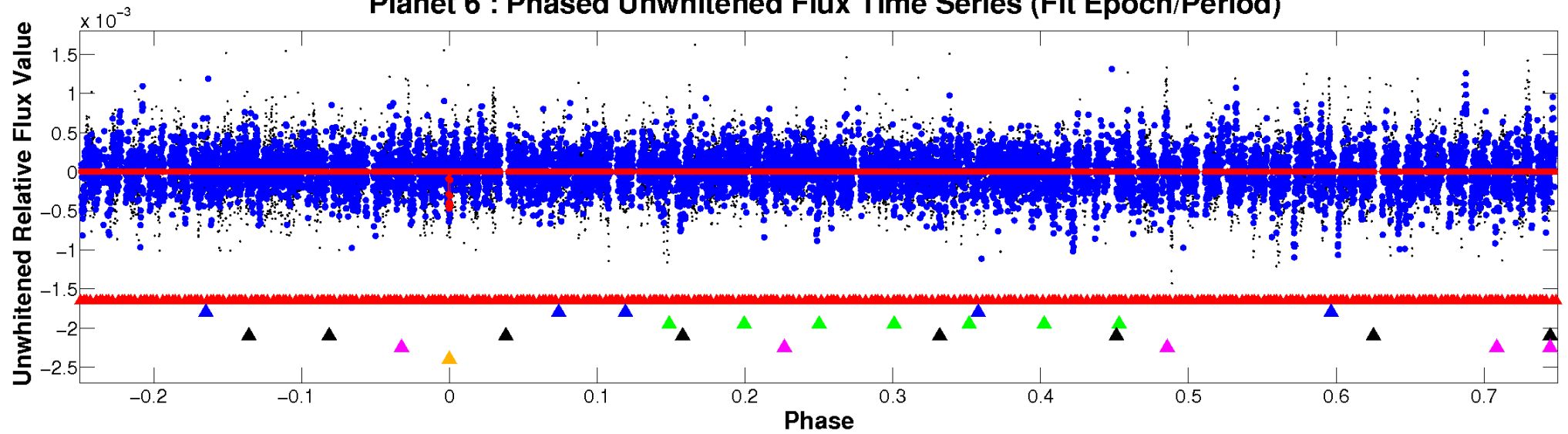
ALT Odd/Even

TCE 010931507-06

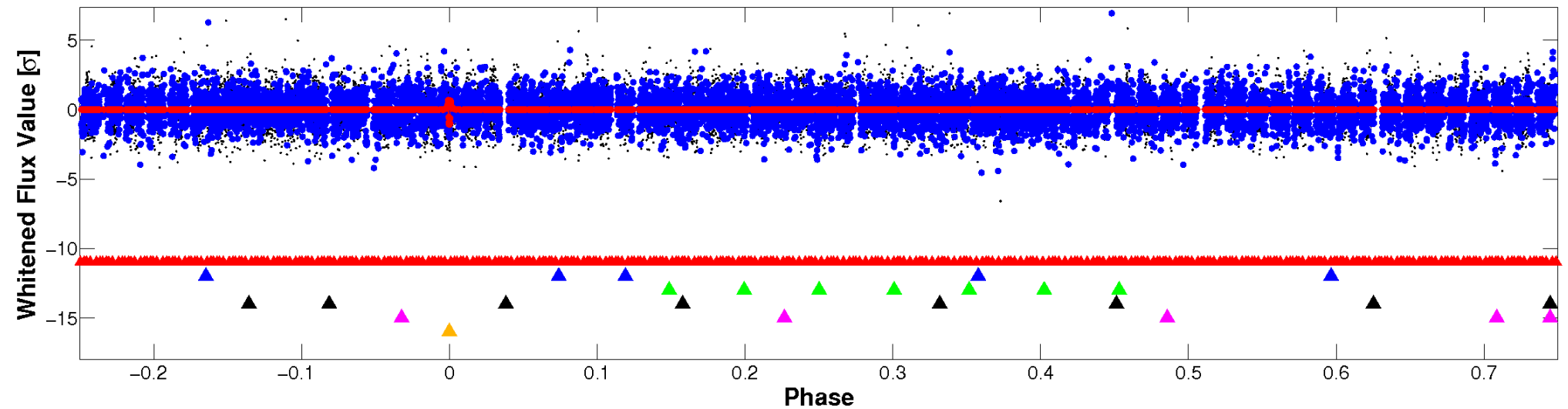


Non-Whitened Vs. Whitened Light Curve

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

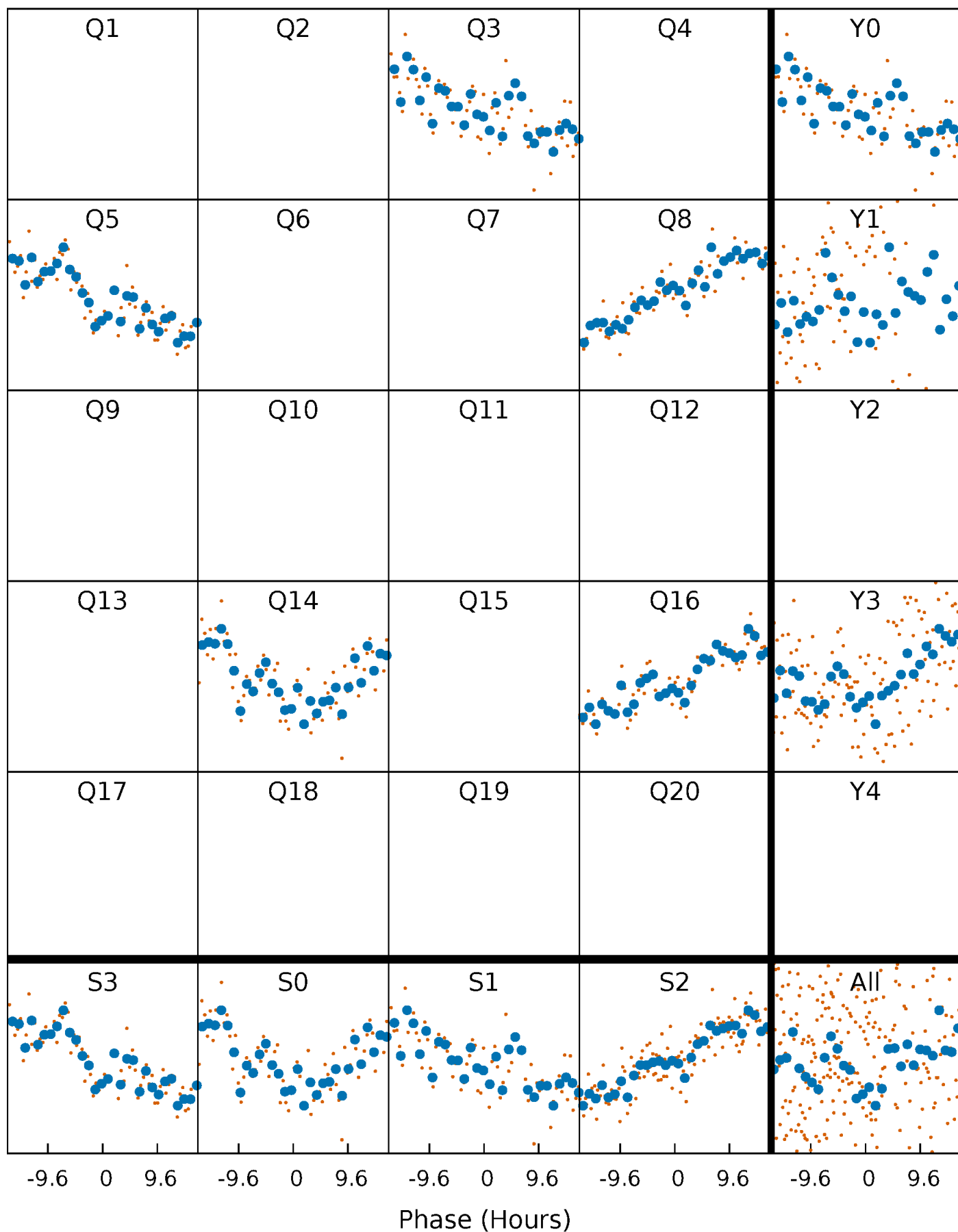


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



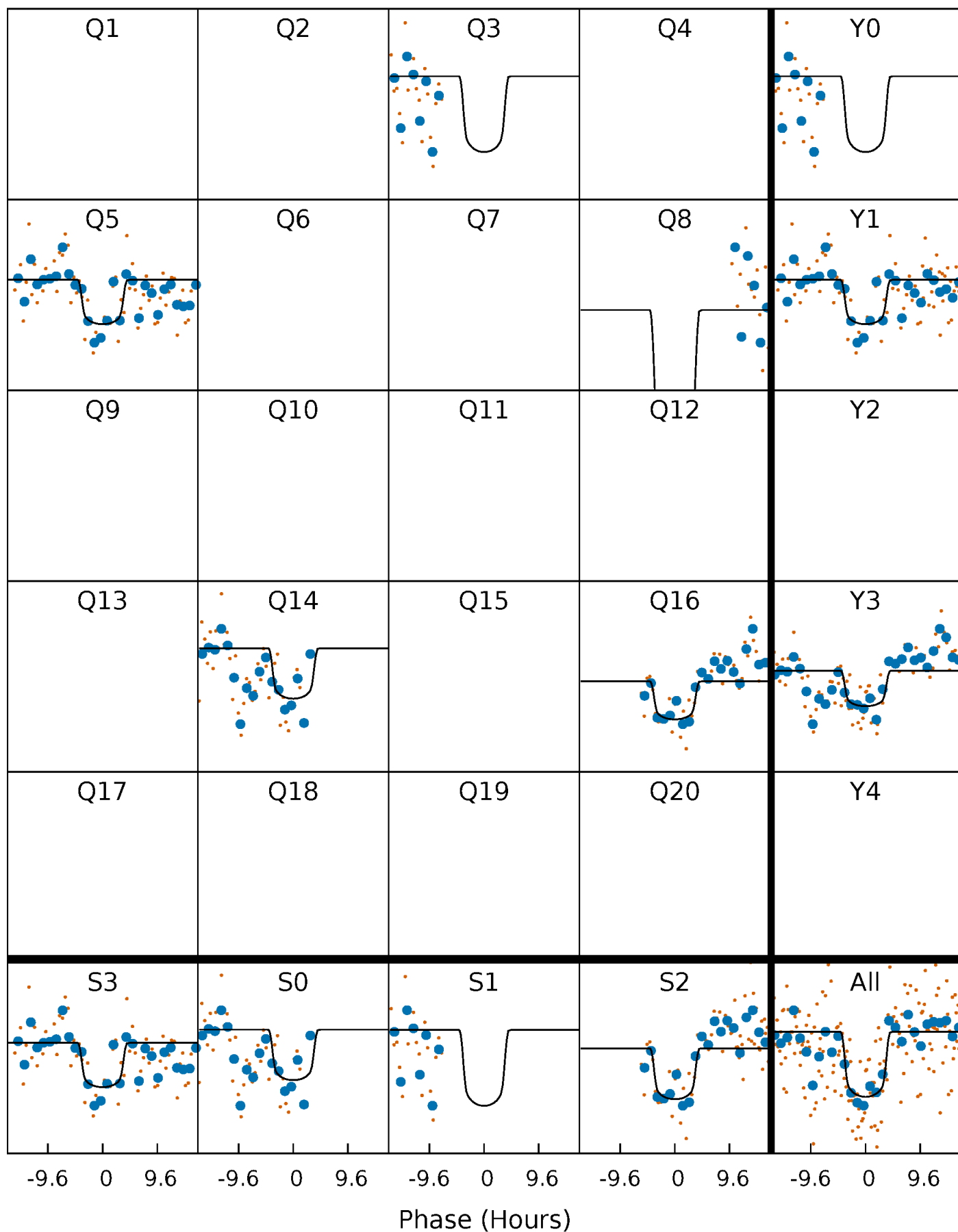
PDC Quarter-Phased Transit Curves

TCE 010931507-06 $P=252.275521$ Days $T_0=271.282710$ (BKJD)



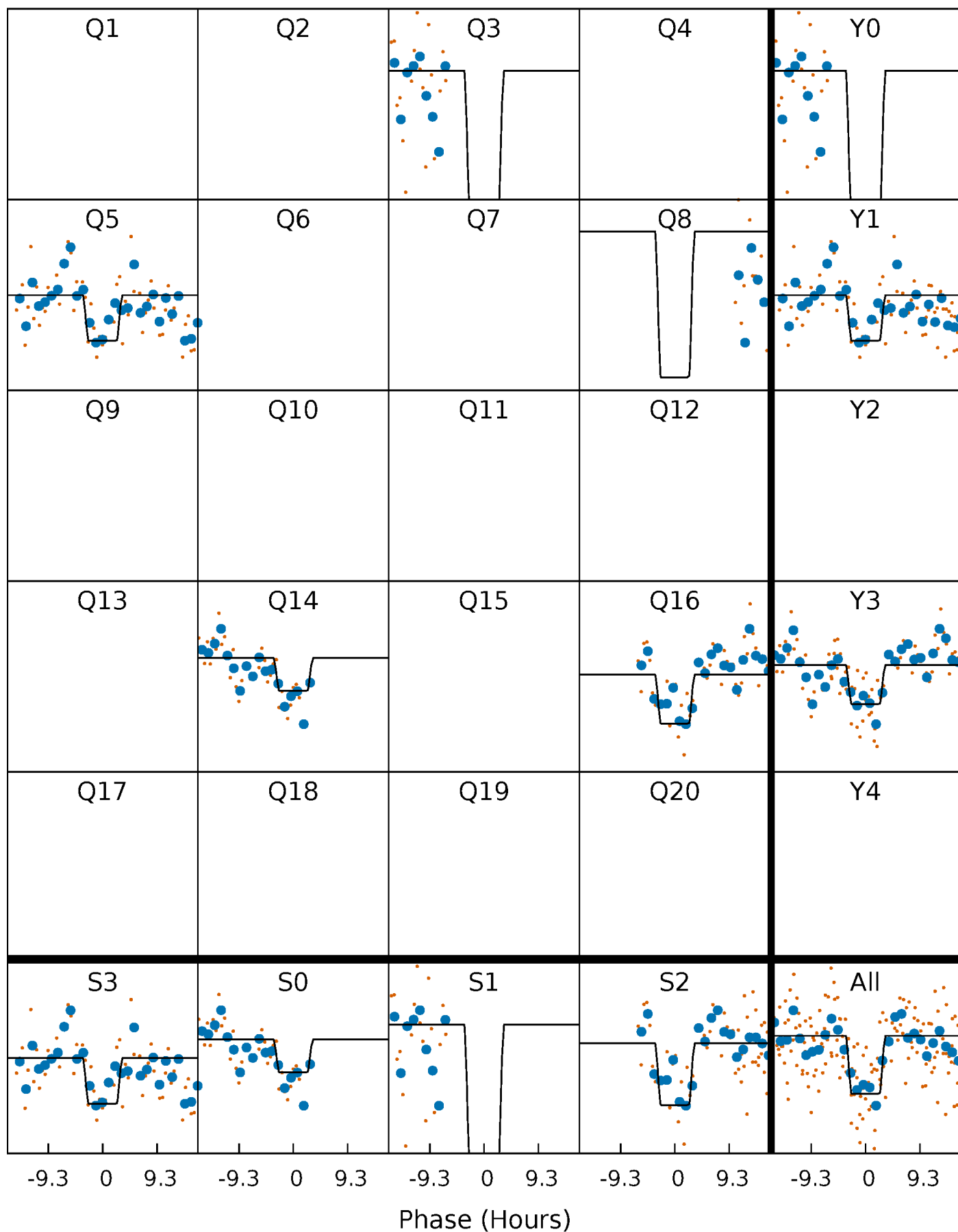
DV Quarter-Phased Transit Curves

TCE 010931507-06 $P=252.275521$ Days $T_0=271.282710$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

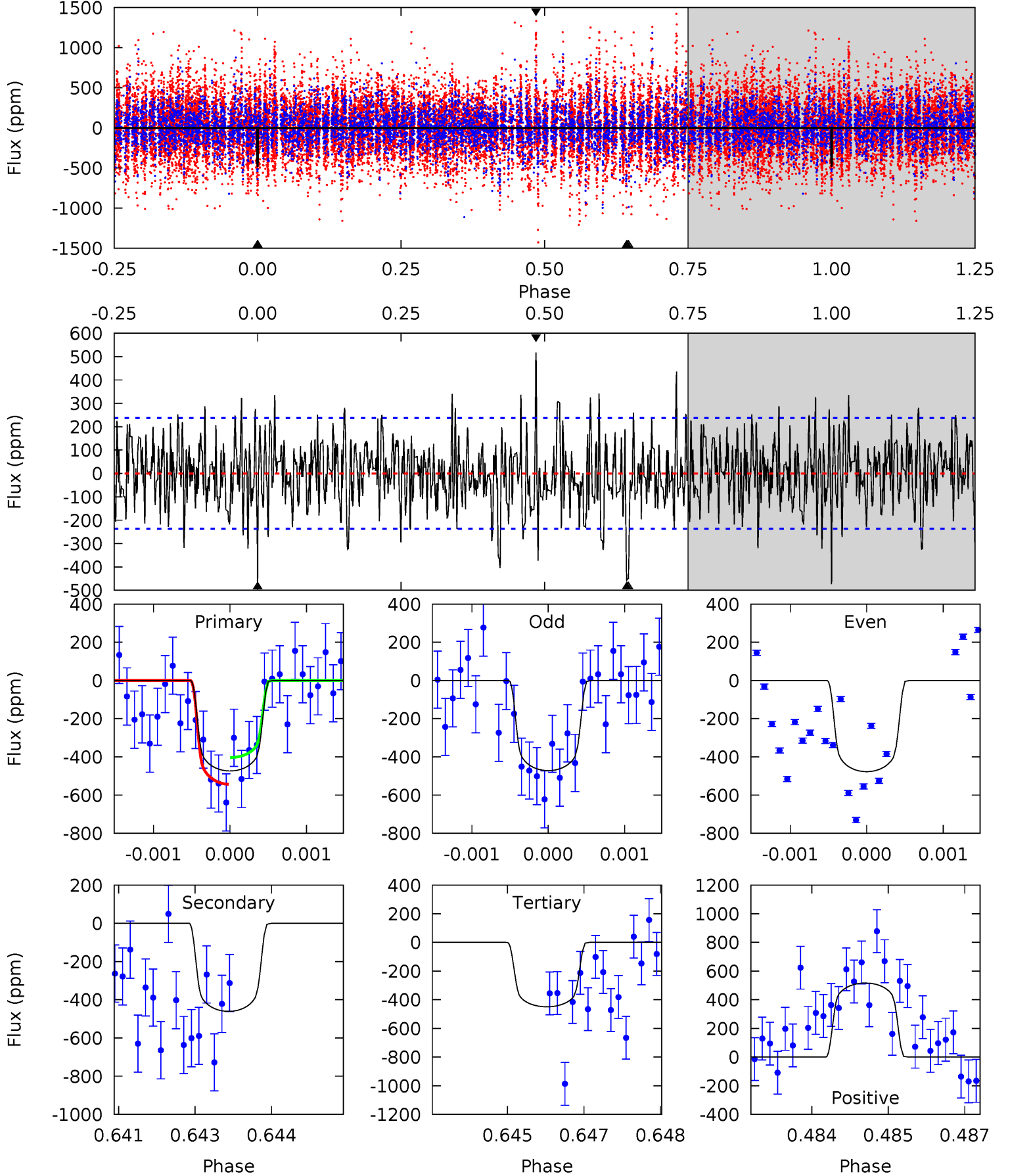
TCE 010931507-06 P=252.286354 Days $T_0=271.245337$ (BKJD)



DV Model-Shift Uniqueness Test

010931507-06, $P = 252.275521$ Days, $E = 19.007189$ Days

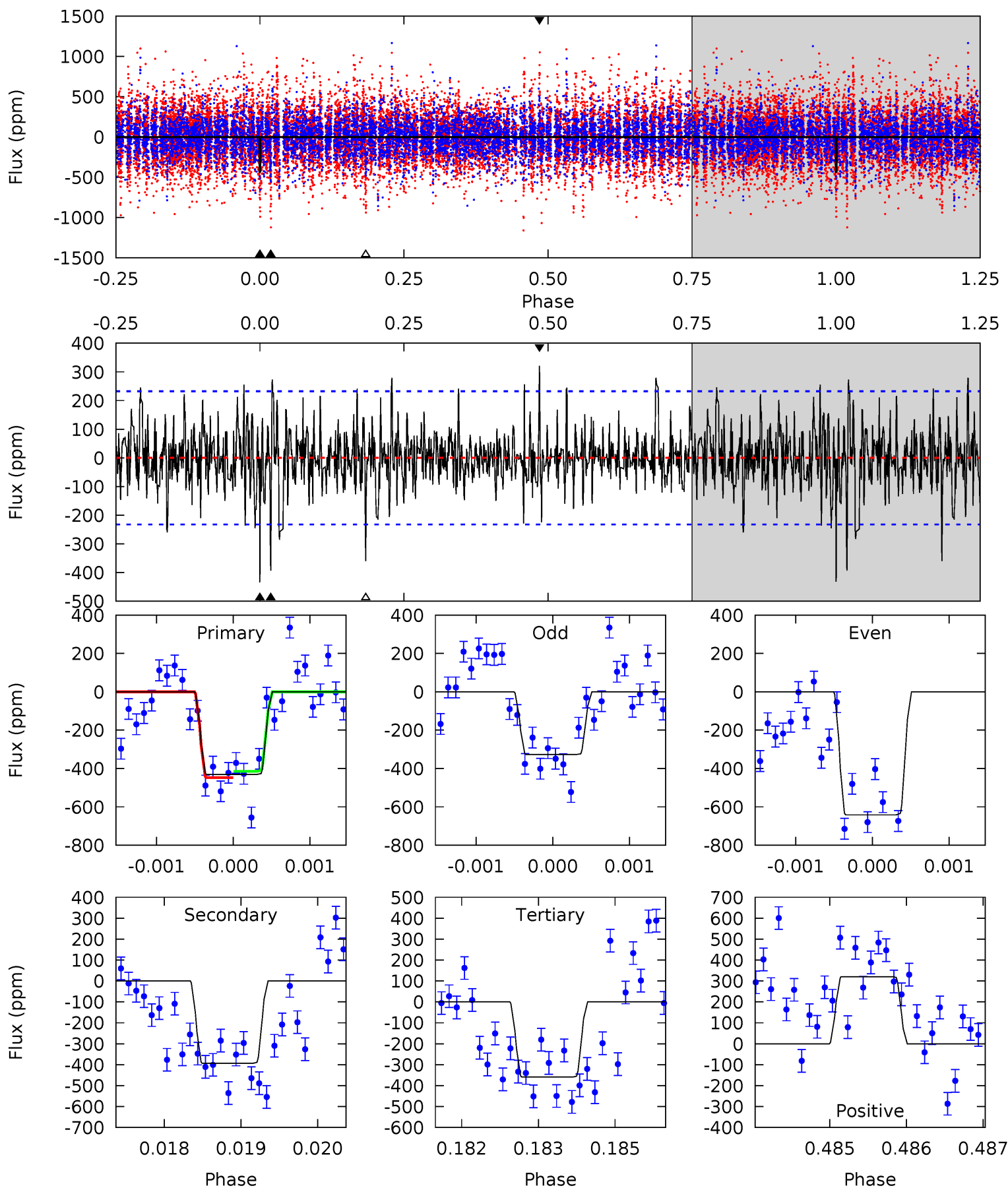
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.8	10.5	10.2	11.7	5.39	3.19	2.62	0.56	-0.98	0.26	-1.27	0.06	1.00	0.52	1.59



Alt Model-Shift Uniqueness Test

010931507-06, P = 252.286354 Days, E = 18.958983 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.1	9.20	8.40	7.50	5.43	3.26	1.76	1.68	2.58	0.80	1.70	3.42	1.27	0.43	0.39



Stellar Parameters For KIC 010931507

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6768^{+189}_{-259}	$4.176^{+0.148}_{-0.181}$	$-0.140^{+0.250}_{-0.300}$	$1.555^{+0.475}_{-0.317}$	$1.333^{+0.196}_{-0.239}$	$0.499^{+0.440}_{-0.247}$
	+3%/-4%	+4%/-4%	+179%/-214%	+31%/-20%	+15%/-18%	+88%/-49%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 010931507-06 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-461 ± 44	$3.97^{+0.85}_{-0.71}$	563^{+40}_{-36}	6454^{+627}_{-471}	11815^{+5391}_{-3782}
Alt.	-393 ± 43	$3.65^{+0.82}_{-0.66}$	560^{+43}_{-37}	6425^{+652}_{-489}	11875^{+6055}_{-4132}

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 $A_{obs} \gg 1.0$

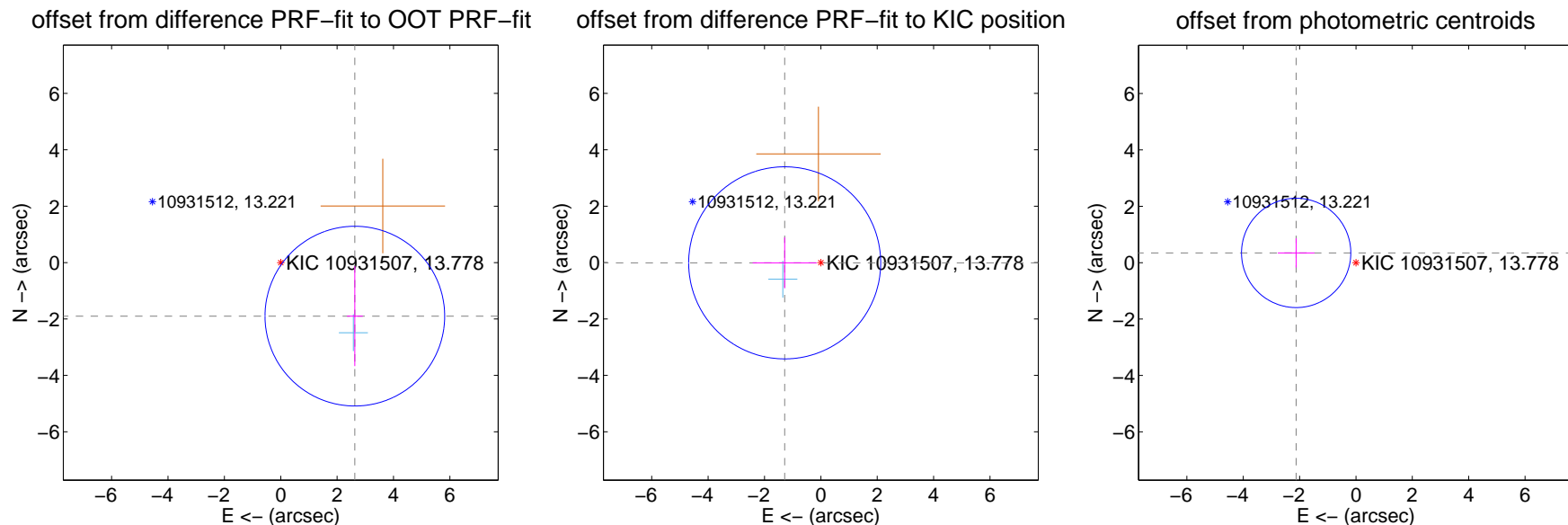
DV Centroid Data

Supplemental centroid analysis for 010931507-06. Kepler magnitude: 13.78. Transit SNR 6.98

There are 1 quarters with good PRF difference image offsets

The OOT PRF centroid is offset from the target star catalog position by about 4.36 arcsec so the offset from difference PRF-fit to OOT-fit may be invalid.

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	3.242 ± 1.062	3.05	-2.628 ± 0.278	-1.898 ± 1.772
PRF-fit source offset from KIC position	1.283 ± 1.135	1.13	1.283 ± 1.135	-0.009 ± 0.902
photometric centroid source offset	2.15 ± 0.65	3.33	2.12 ± 0.65	0.35 ± 0.52

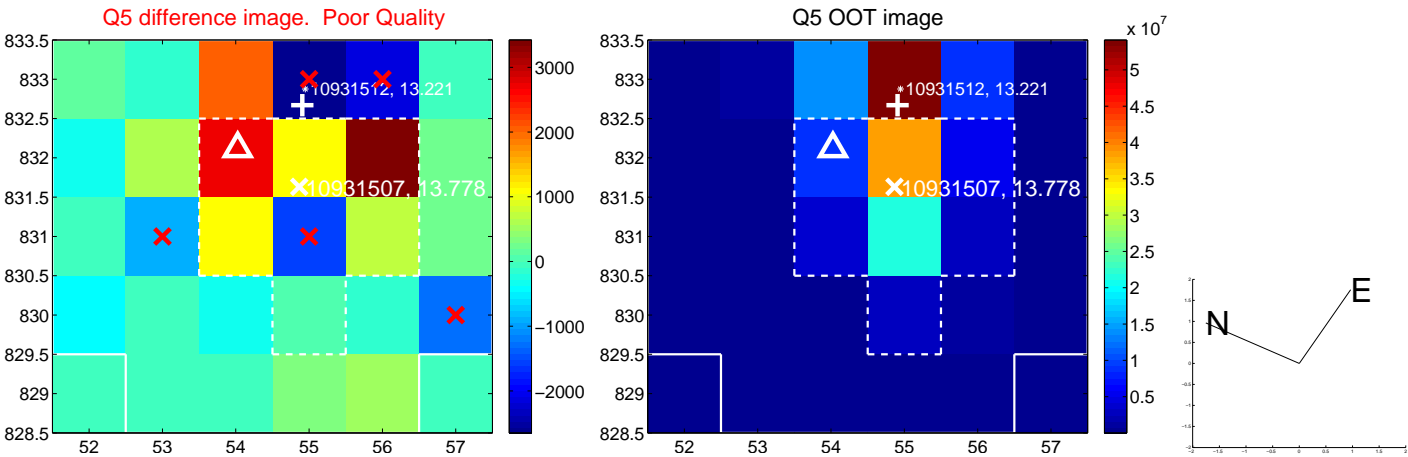


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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



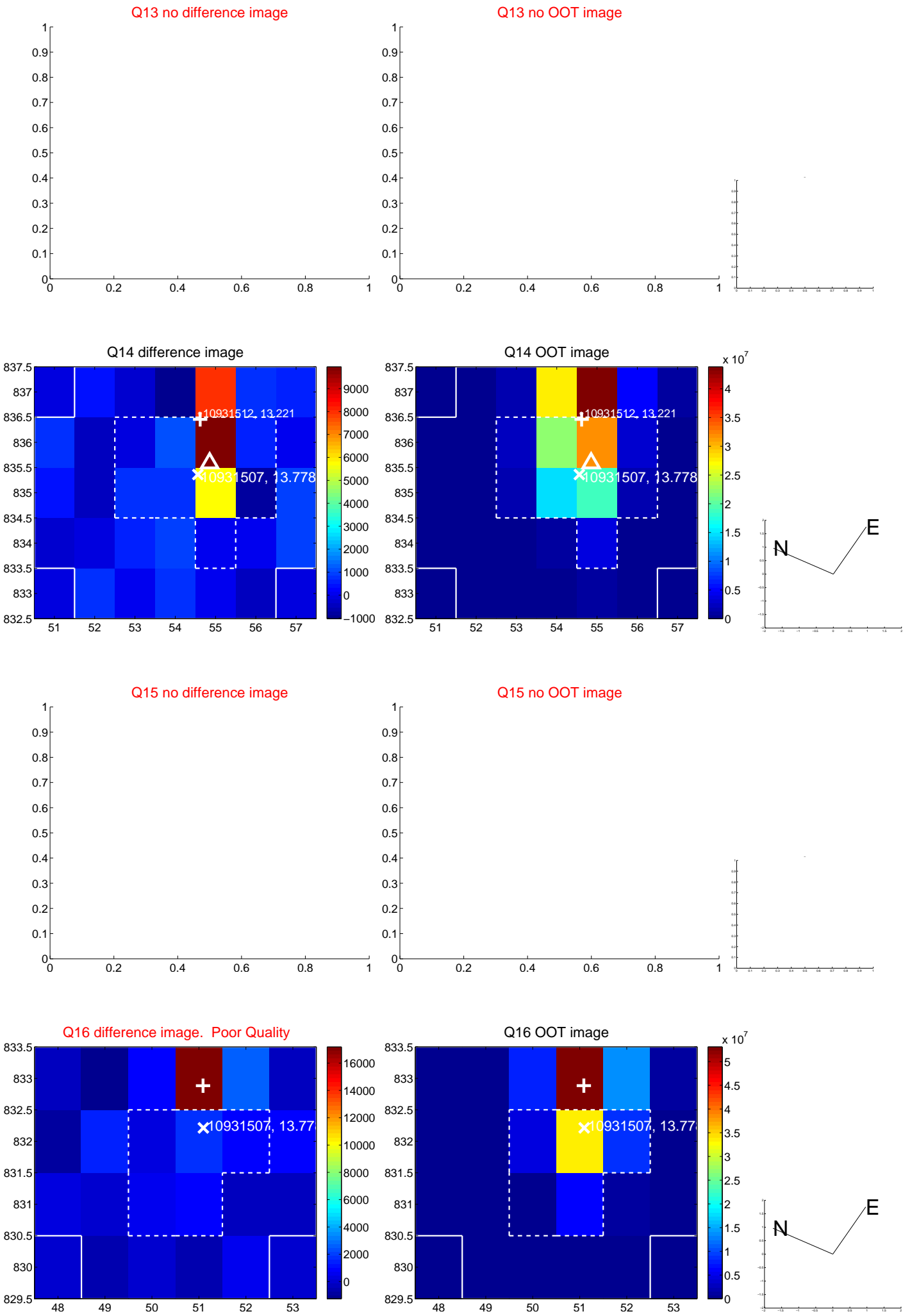
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



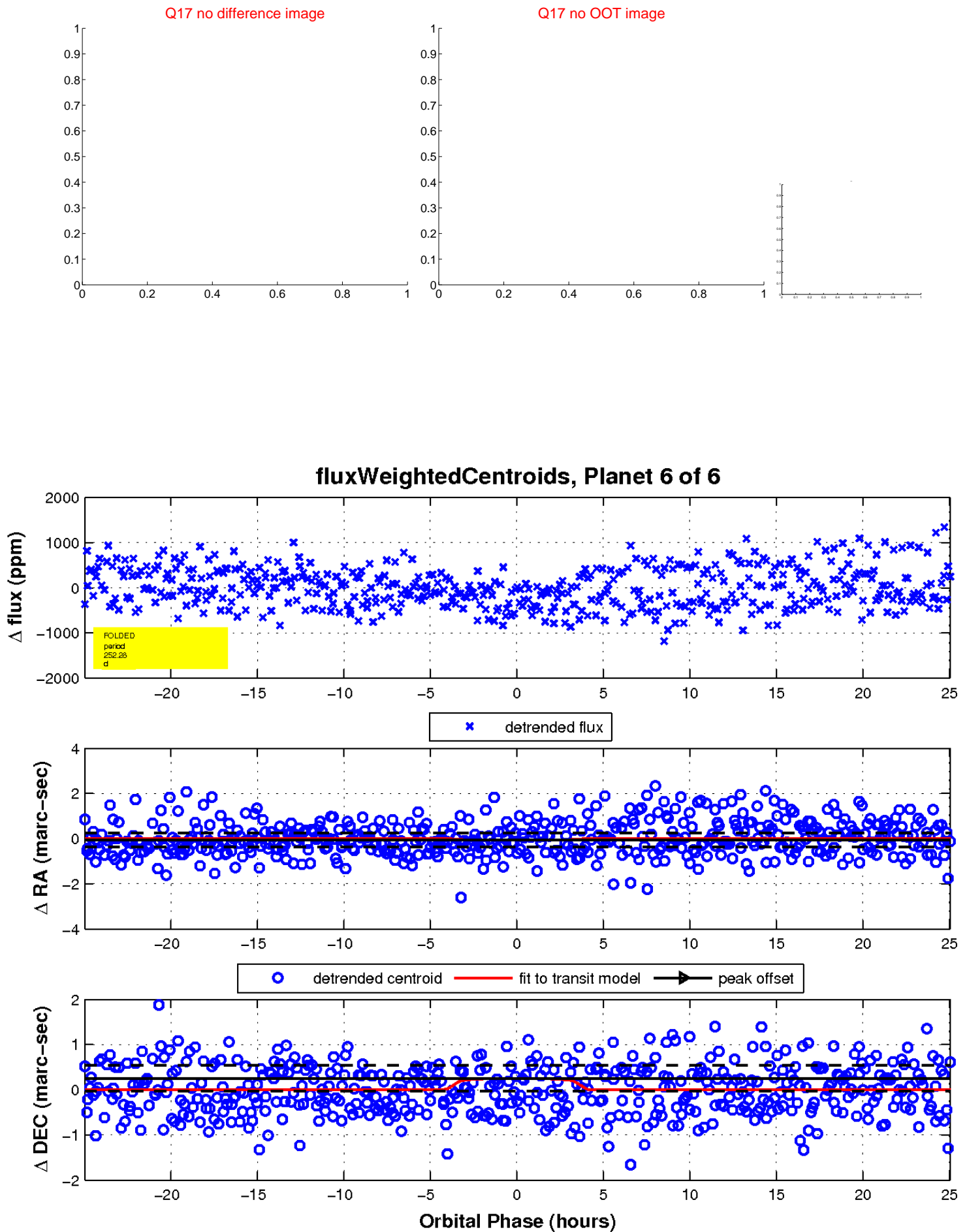
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

