

KIC 011407811

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})
011407811-01	OBS	No	0.676789	131.939975	39.9	3.148	9.4	8.8	0.89	5418	0.68	2989.37
011407811-03	OBS	No	77.108758	165.989221	870.8	10.500	14.5	-1.0	0.89	5418	2.57	5.41
011407811-04	OBS	No	574.788958	196.942565	14486.3	92.601	13.6	9.5	0.89	5418	19.29	0.37
011407811-06	OBS	No	70.605236	172.699679	565.7	3.904	9.4	6.5	0.89	5418	2.36	6.09
011407811-09	OBS	No	123.901899	238.180470	402.4	5.110	9.4	3.9	0.89	5418	1.99	2.88
011407811-10	OBS	No	167.727451	224.512960	348.4	8.853	9.4	2.7	0.89	5418	1.77	1.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011407811-01	OBS	FP	0.00	1	0	0	0	LPP_DV
011407811-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
011407811-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011407811-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011407811-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
011407811-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT

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

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

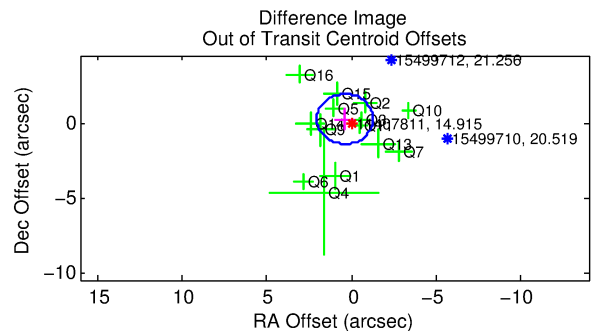
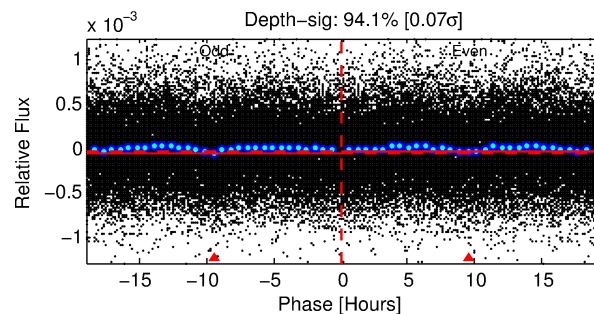
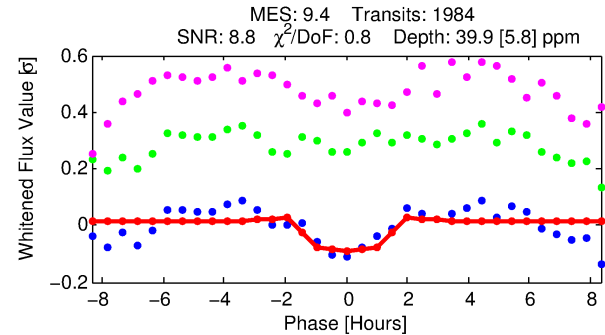
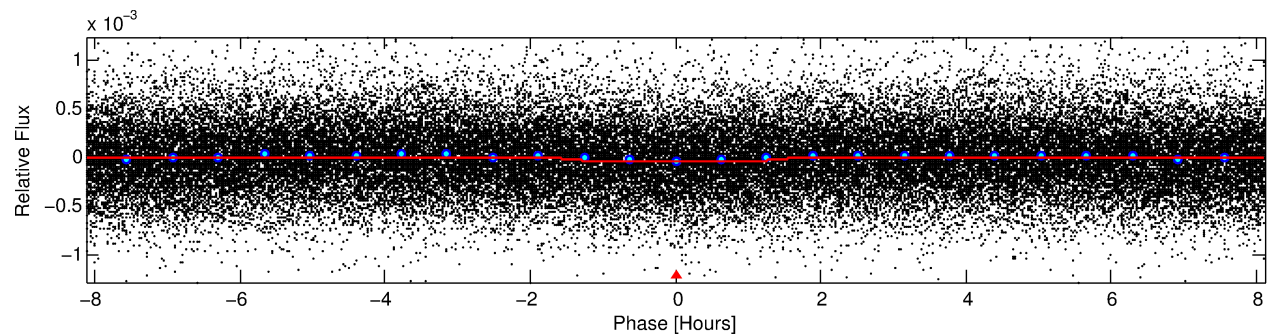
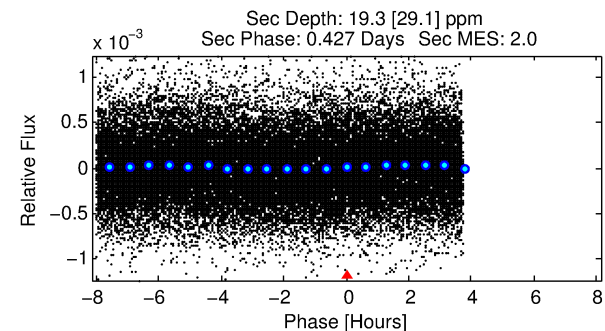
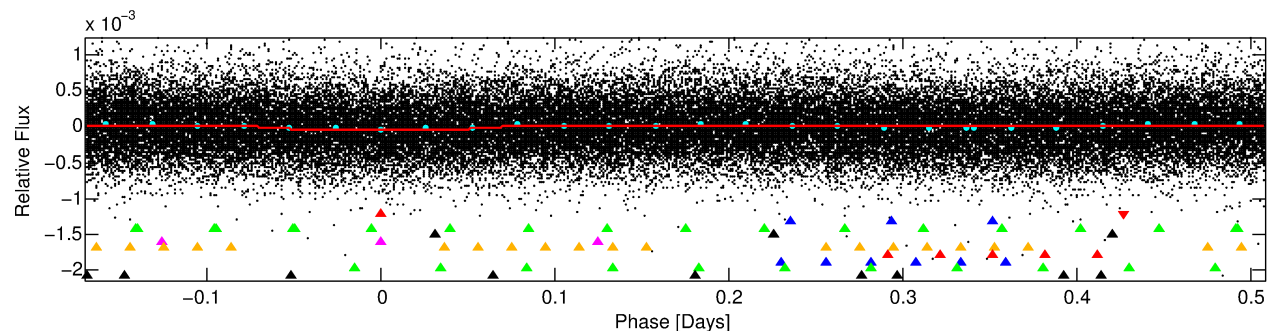
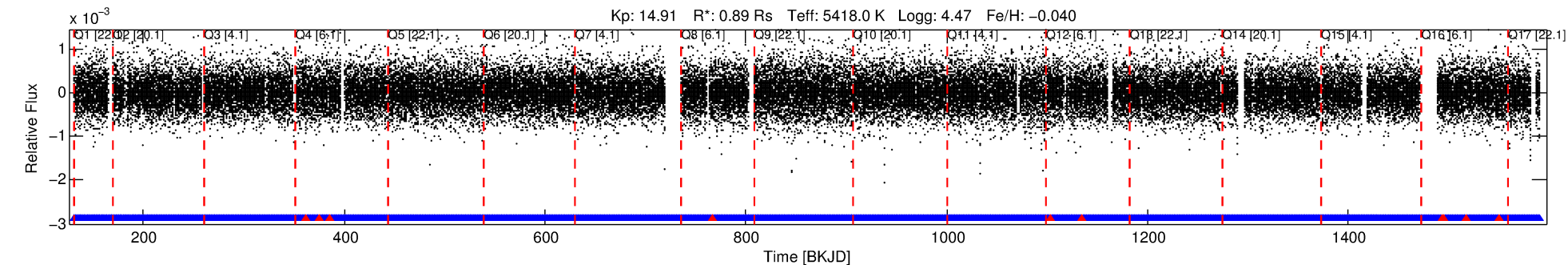
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011407811-01

No Significant Match Found

DV One-Page Summary

KIC: 11407811 Candidate: 1 of 10 Period: 0.677 d



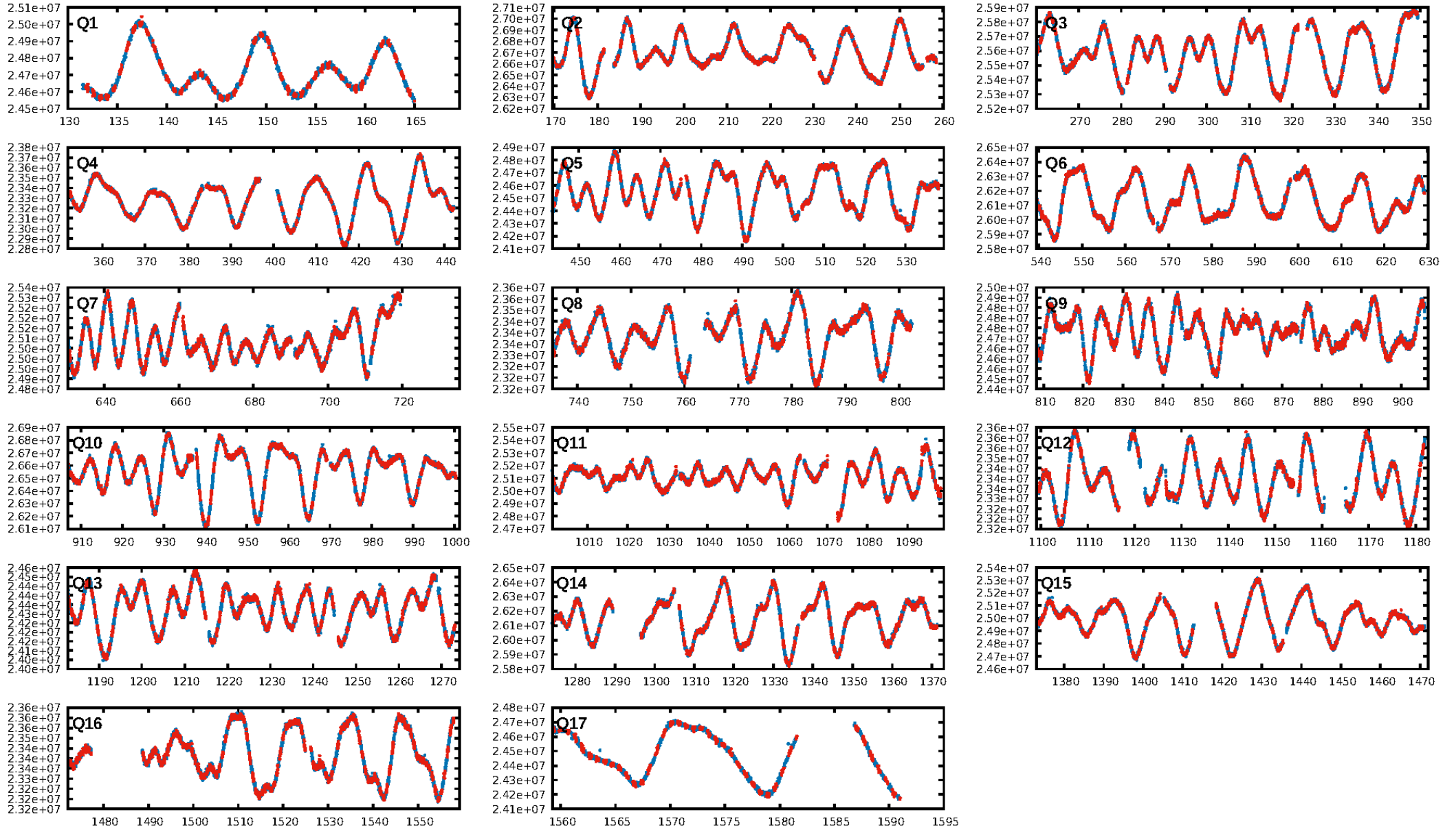
DV Fit Results:

Period = 0.67679 [0.00001] d
Epoch = 131.9400 [0.0036] BKJD
Rp/R* = 0.0070 [0.0048]
a/R* = 1.20 [1.11]
b = 0.90 [0.66]
Seff = 2989.37 [855.27]
Teff = 1885 [135] K
Rp = 0.67 [0.48] Re
a = 0.0143 [0.0025] AU
Ag = 4.77 [9.79] [0.39 σ]
Teffp = 4308 [2196] K [1.10 σ]

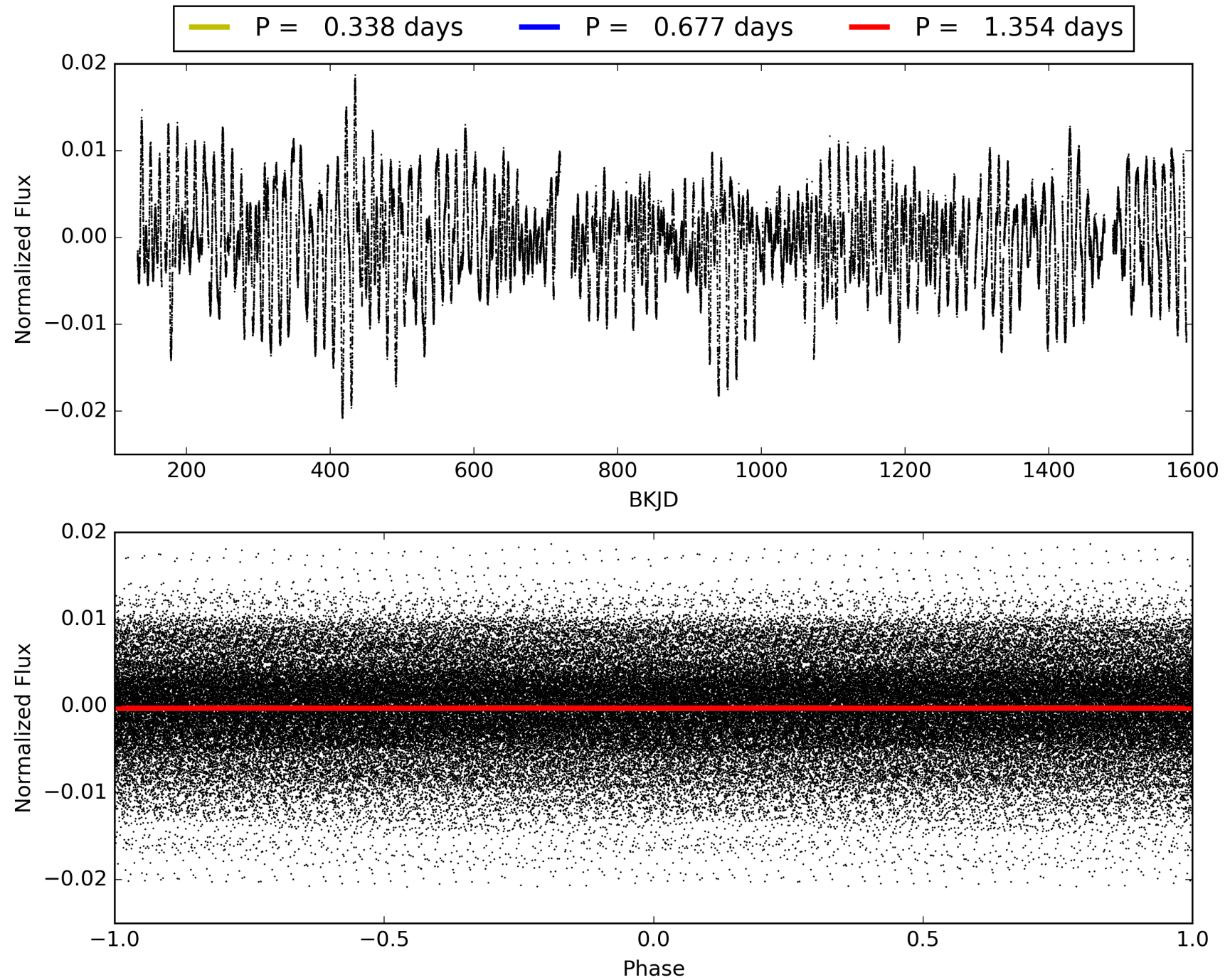
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [334.64 σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 0.99 [1885/1895]
GhostDiagnostic-chr: 13.82
Centroid-sig: 39.5%
Centroid-so: 1.119 arcsec [0.89 σ]
OotOffset-rm: 0.465 arcsec [0.84 σ]
KicOffset-rm: 0.433 arcsec [0.82 σ]
OotOffset-st: 4/4/2/4 [14]
KicOffset-st: 4/4/2/4 [14]
DiffImageQuality-fgm: 0.50 [7/14]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 011407811-01, PDC Light Curves

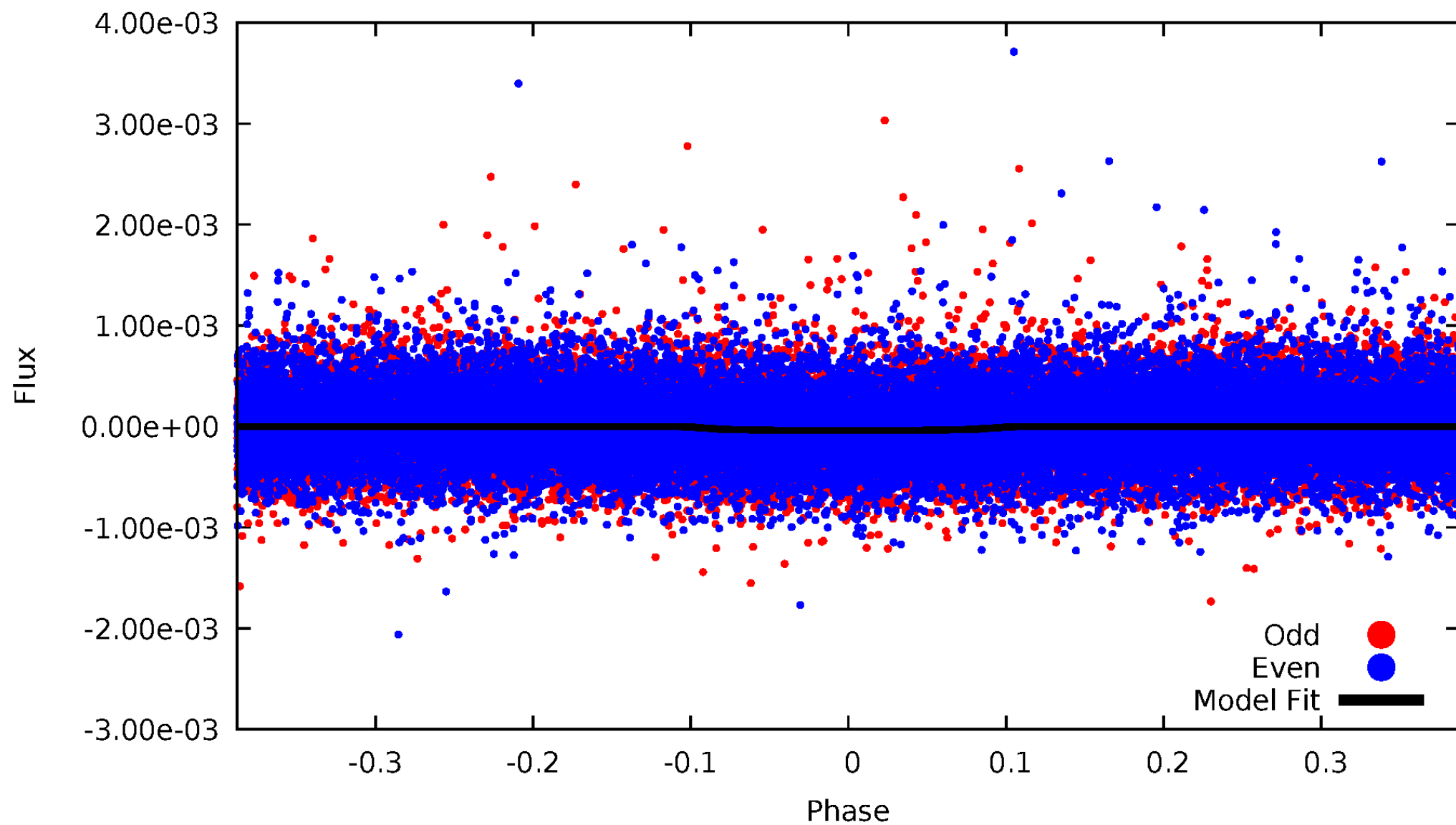


TCE 011407811-01



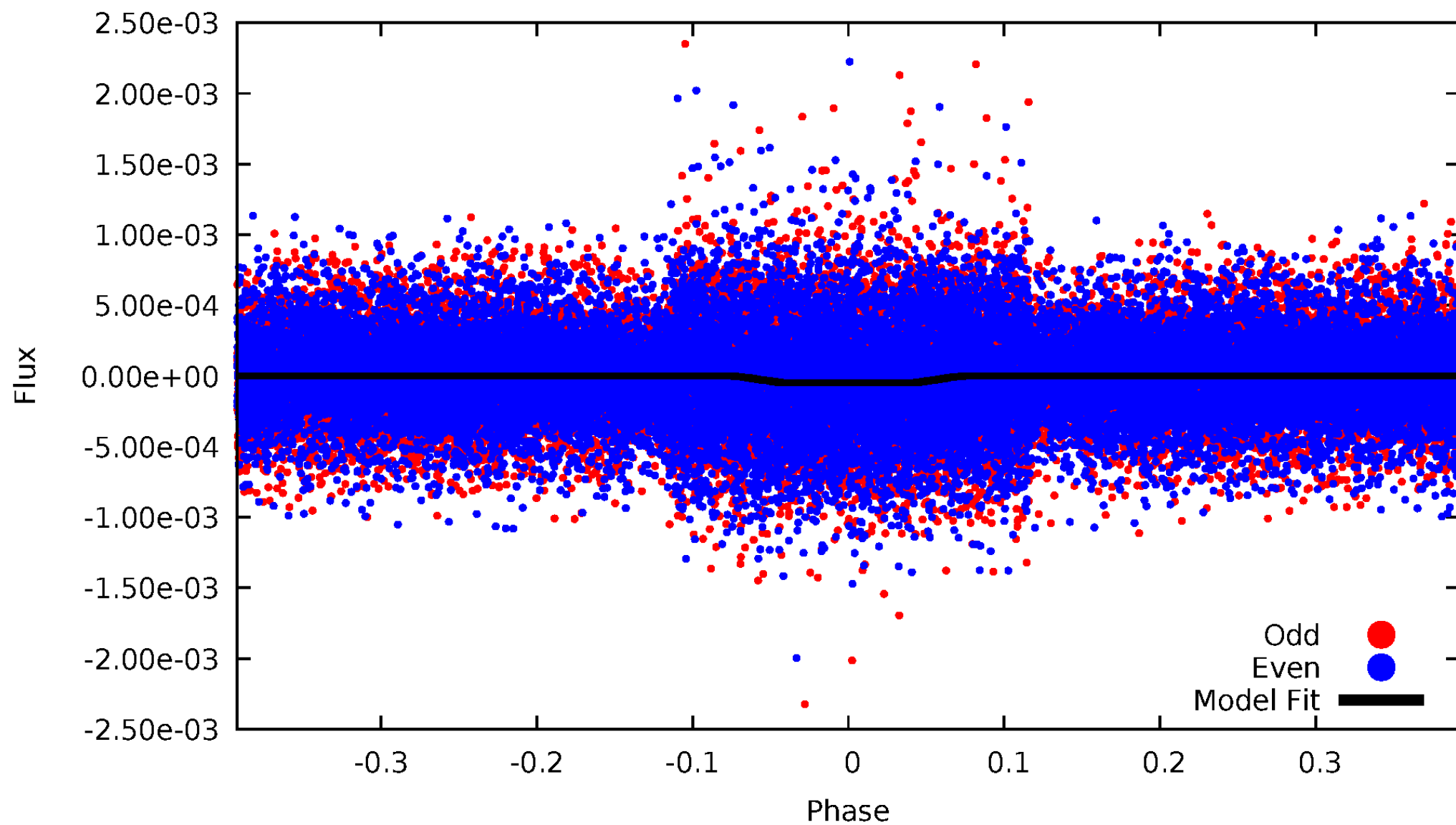
DV Odd/Even

TCE 011407811-01



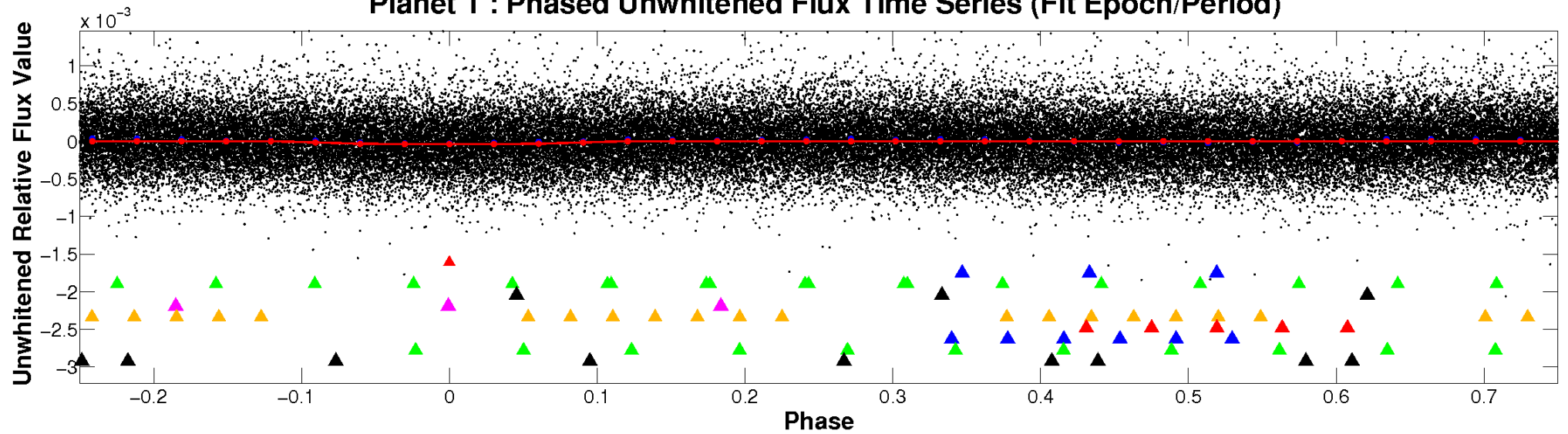
ALT Odd/Even

TCE 011407811-01

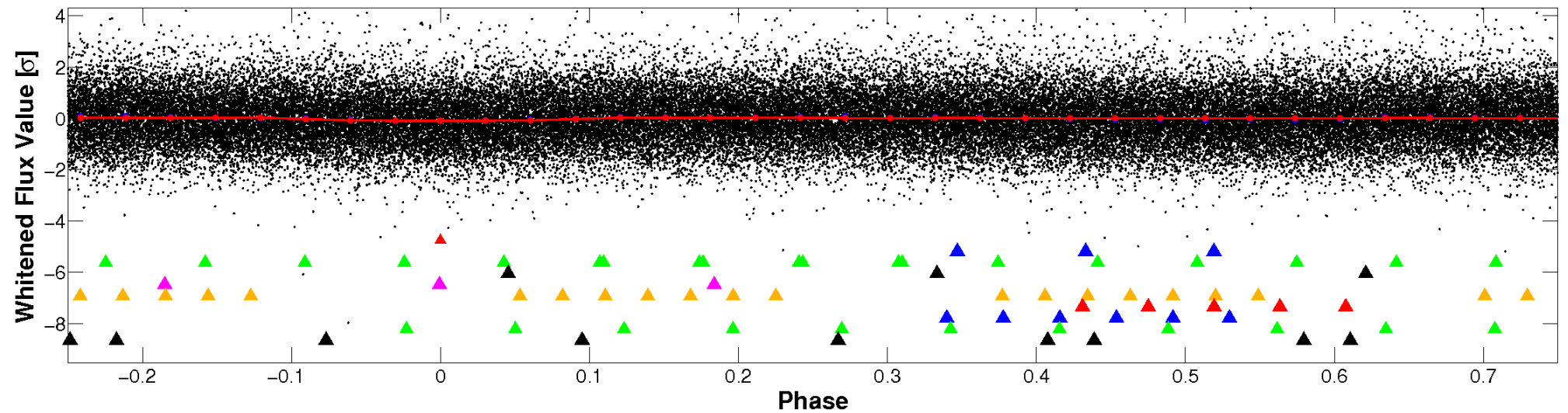


Non-Whitened Vs. Whitened Light Curve

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

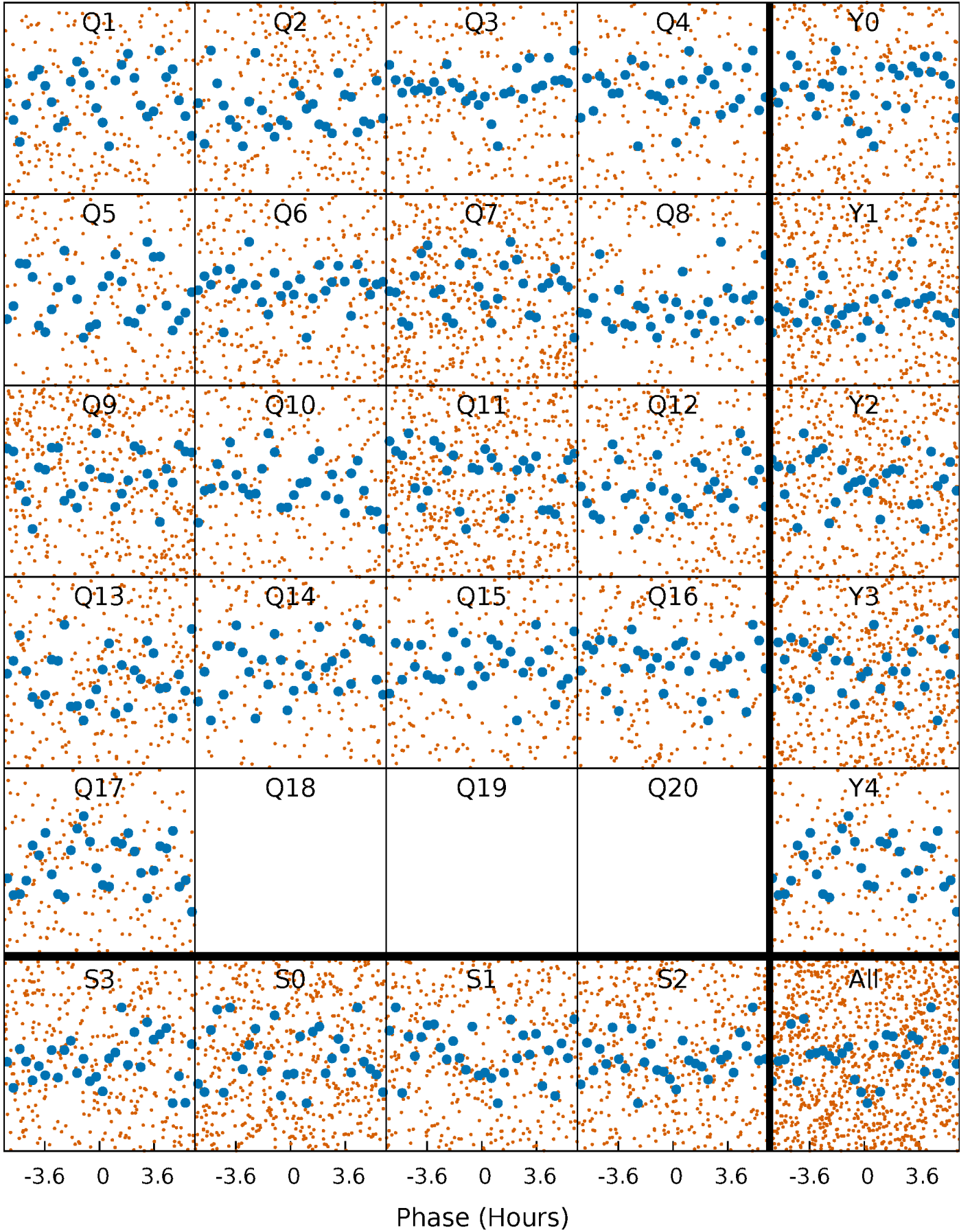


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



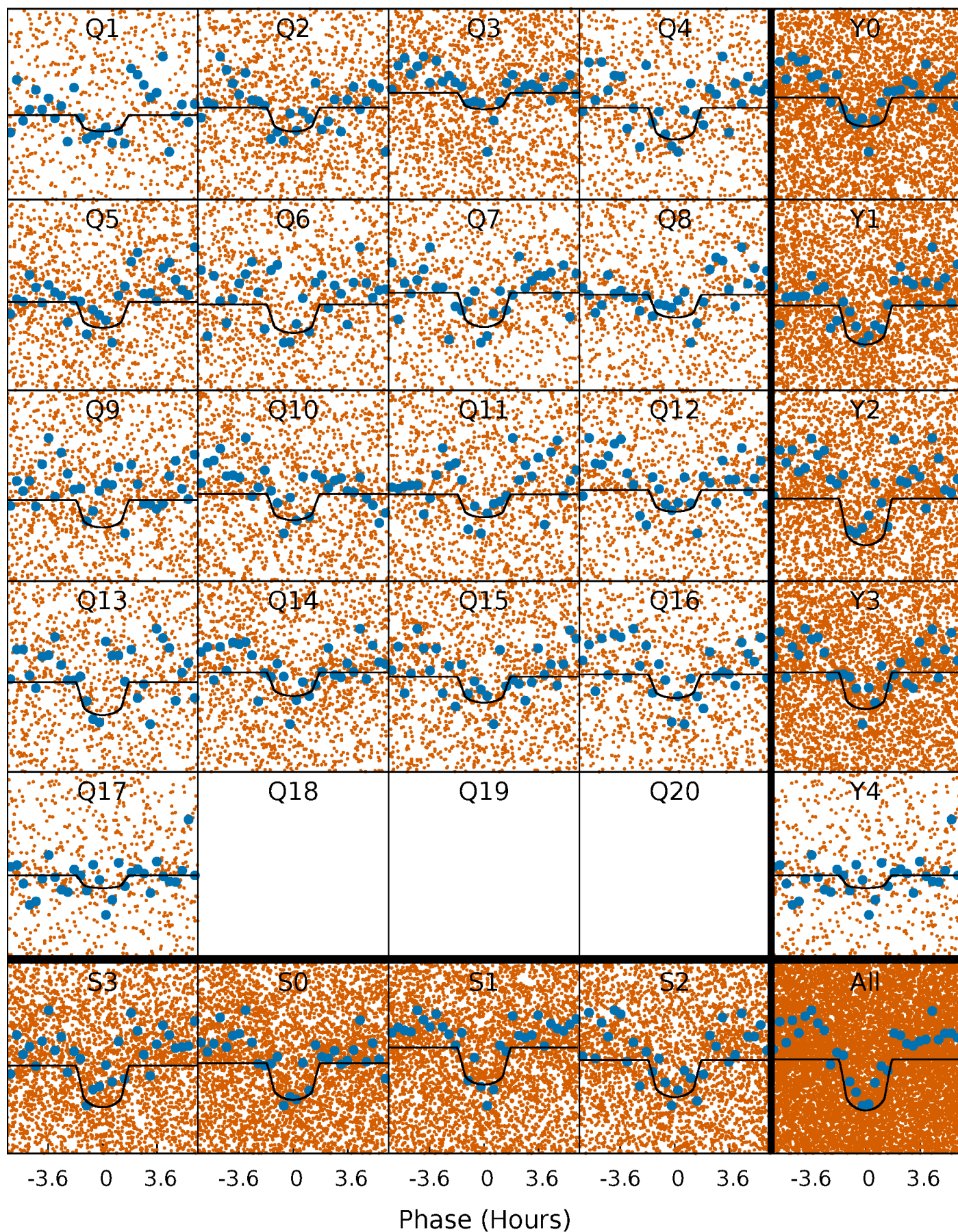
PDC Quarter-Phased Transit Curves

TCE 011407811-01 P= 0.676789 Days $T_0=131.939975$ (BKJD)



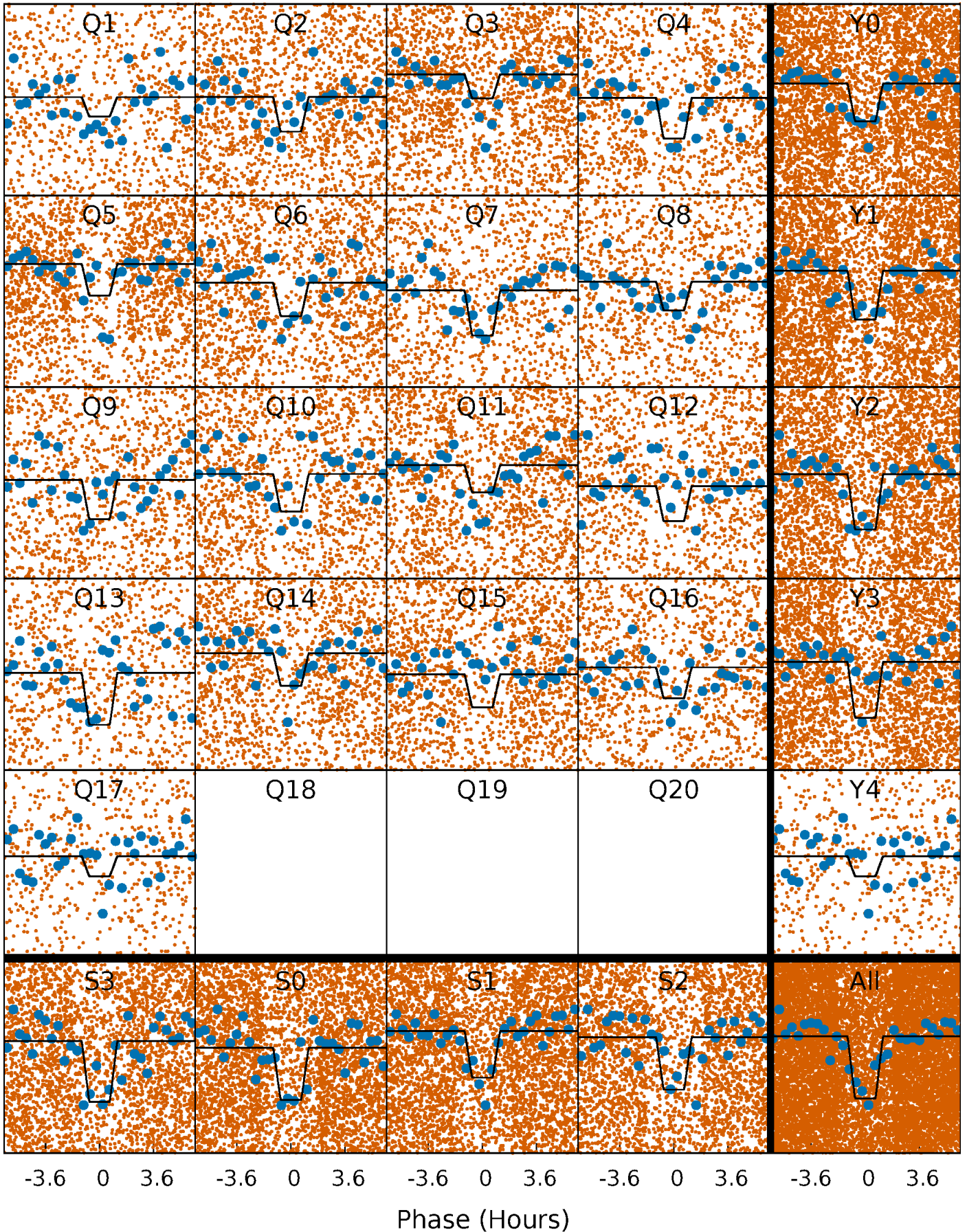
DV Quarter-Phased Transit Curves

TCE 011407811-01 P= 0.676789 Days $T_0=131.939975$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

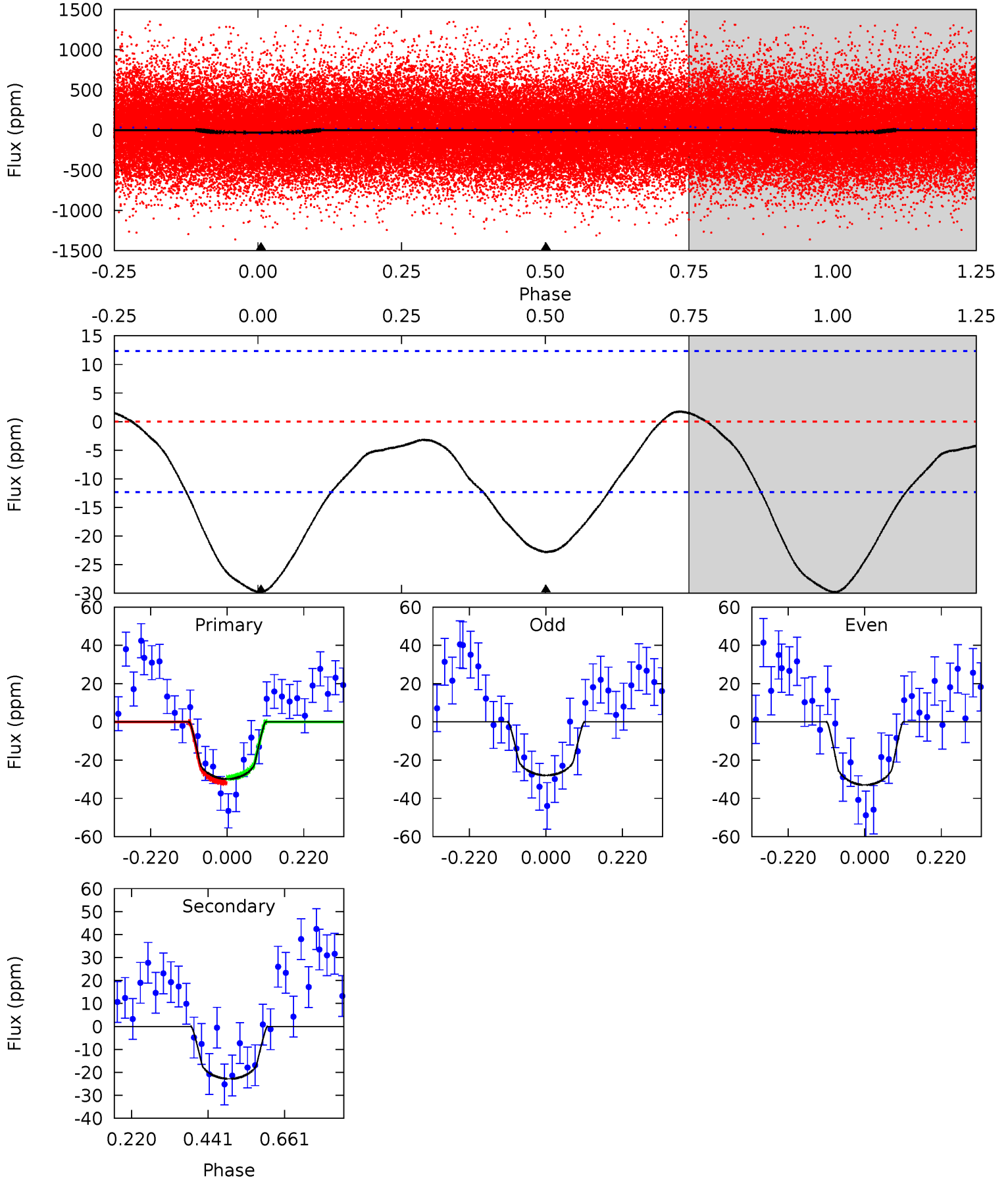
TCE 011407811-01 P= 0.676791 Days $T_0=131.940062$ (BKJD)



DV Model-Shift Uniqueness Test

011407811-01, P = 0.676789 Days, E = 131.263186 Days

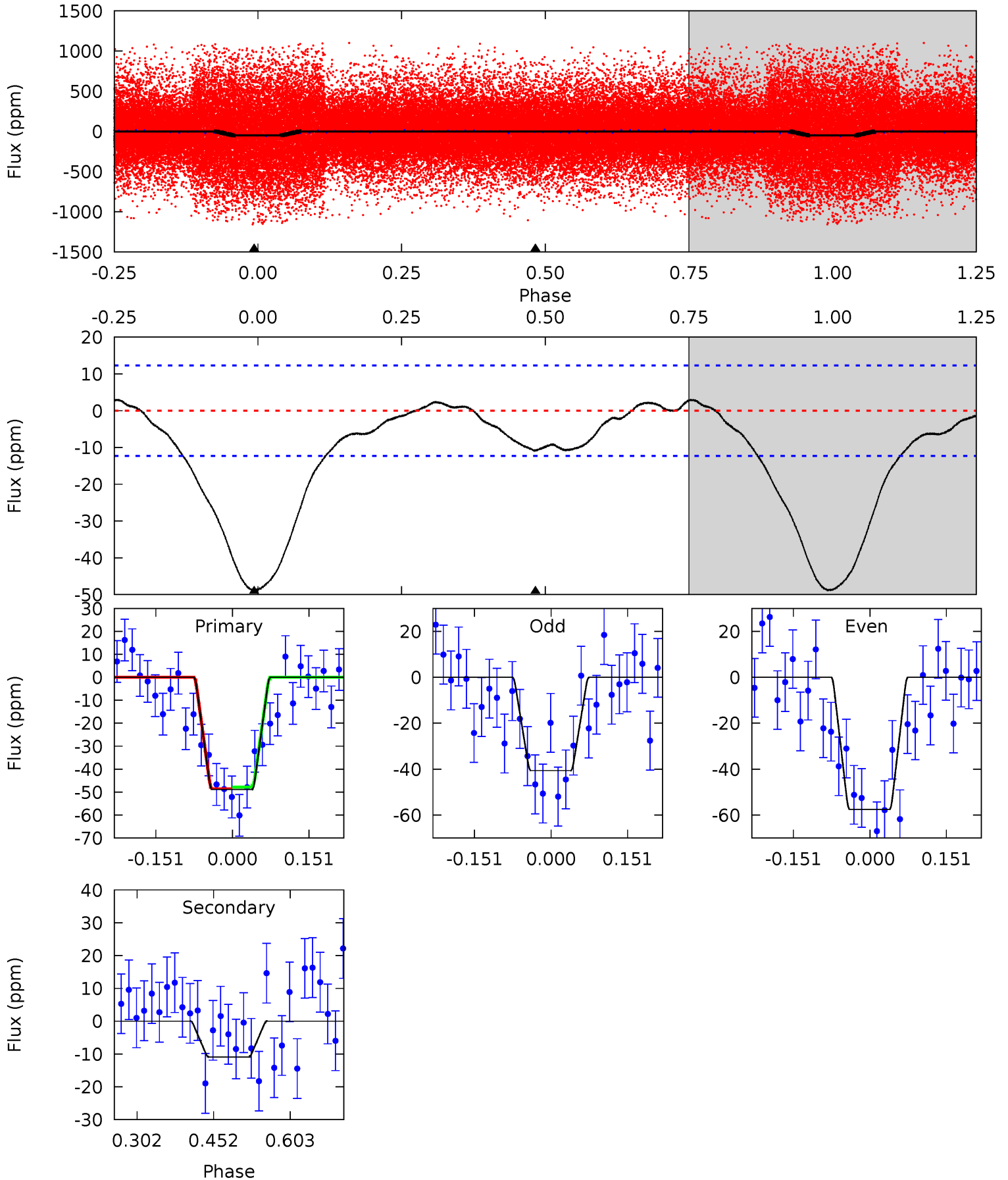
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	8.13	0	0	4.40	1.23	0.95	10.6	10.6	8.13	8.13	0.90	0.90	0.06	0.46



Alt Model-Shift Uniqueness Test

011407811-01, P = 0.676791 Days, E = 131.263271 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.8	3.97	0	0	4.48	1.44	1.12	17.8	17.8	3.97	3.97	3.08	0.84	0.06	0.13



Stellar Parameters For KIC 011407811

	$T_{\text{eff}}(K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5418^{+160}_{-160}	$4.469^{+0.096}_{-0.144}$	$-0.040^{+0.300}_{-0.300}$	$0.889^{+0.184}_{-0.107}$	$0.849^{+0.099}_{-0.072}$	$1.702^{+0.685}_{-0.675}$
	+3%/-3%	+2%/-3%	+750%/-750%	+21%/-12%	+12%/-8%	+40%/-40%
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 011407811-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-23 ± 3	$0.73^{+0.43}_{-0.42}$	2652^{+154}_{-134}	4459^{+2122}_{-761}	$4.771^{+22.528}_{-2.867}$
Alt.	-11 ± 3	$0.69^{+0.50}_{-0.41}$	2662^{+145}_{-143}	3952^{+1755}_{-790}	$2.460^{+12.319}_{-1.613}$

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 $A_{obs} \gg 1.0$

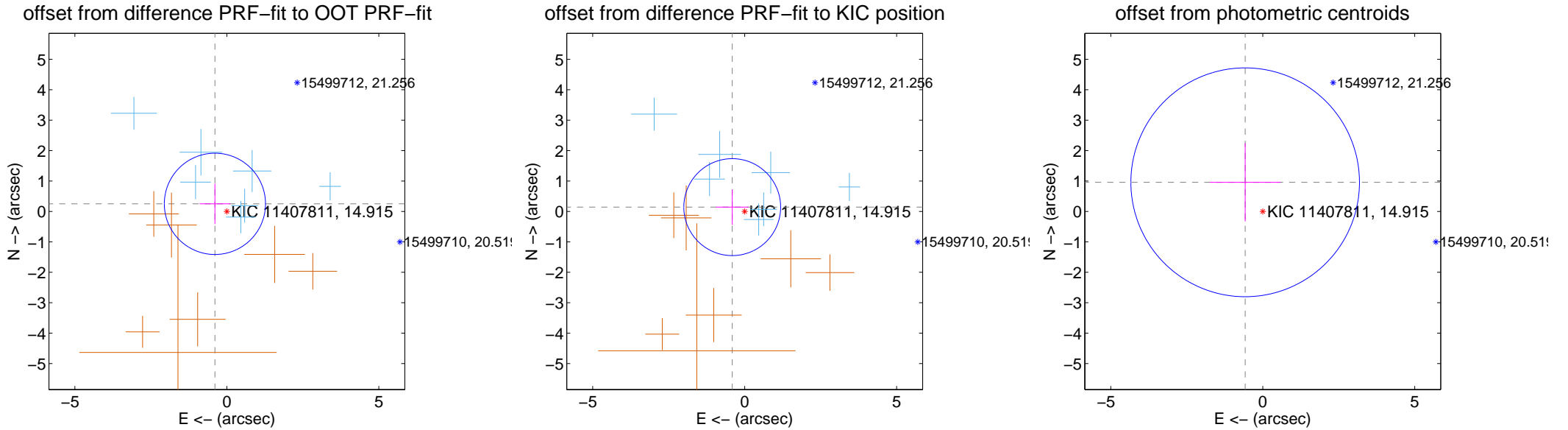
DV Centroid Data

Supplemental centroid analysis for 011407811-01. Kepler magnitude: 14.91. Transit SNR 8.84

There are 7 quarters with good PRF difference image offsets

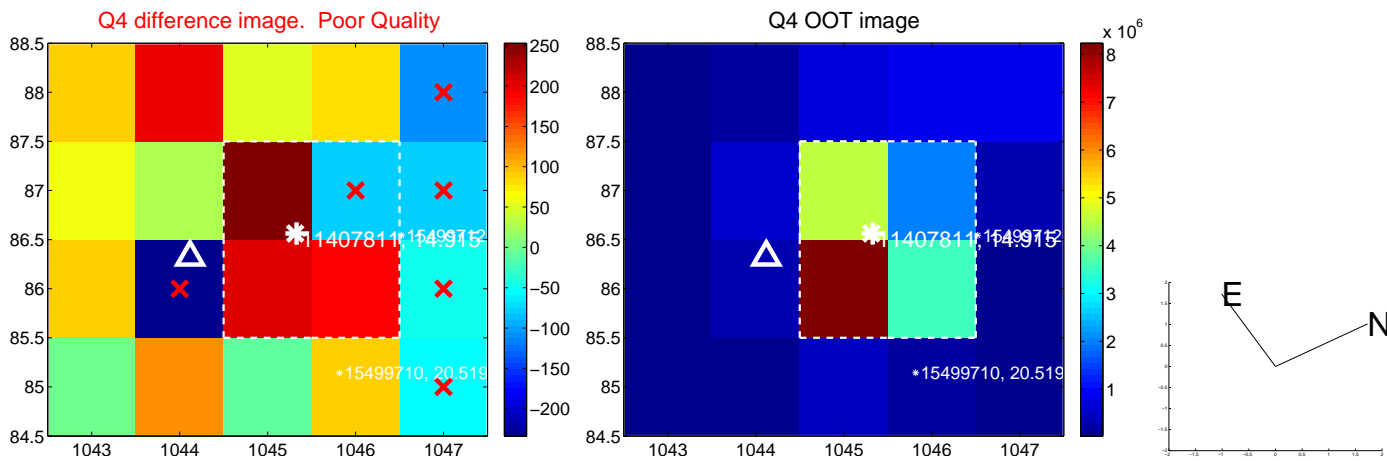
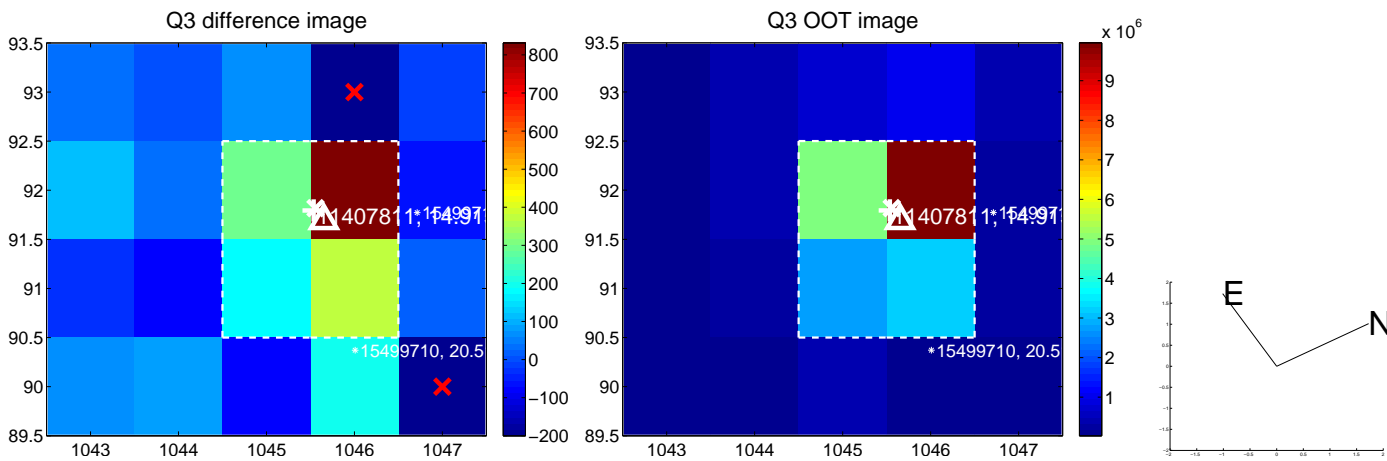
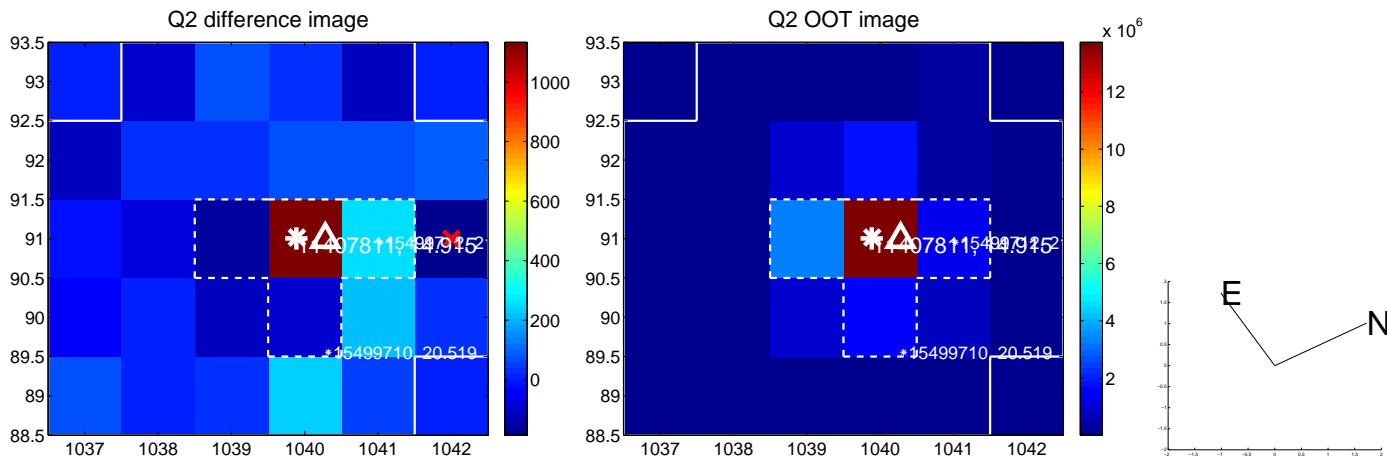
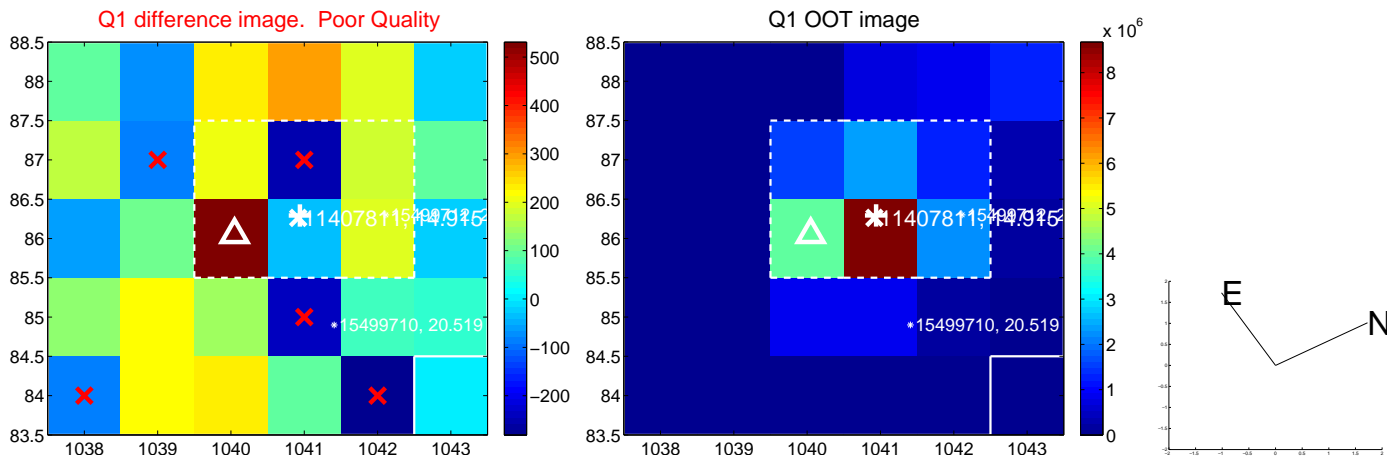
The direct PRF centroid is offset from the target star catalog position by about 0.08 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.465 ± 0.555	0.84	0.393 ± 0.505	0.250 ± 0.664
PRF-fit source offset from KIC position	0.433 ± 0.531	0.82	0.409 ± 0.534	0.142 ± 0.581
photometric centroid source offset	1.12 ± 1.25	0.89	0.58 ± 1.16	0.96 ± 1.29

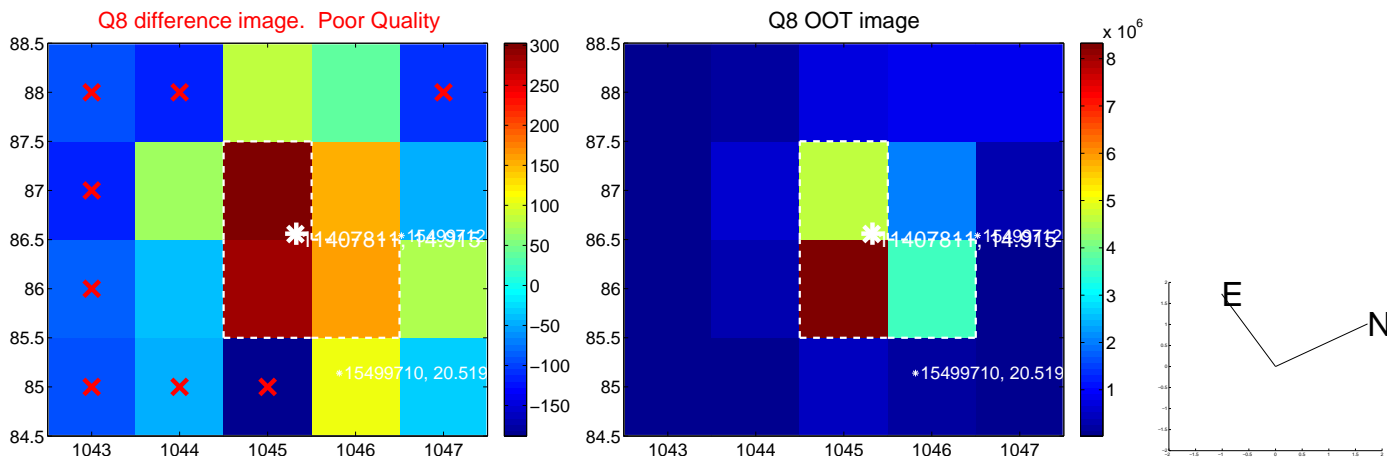
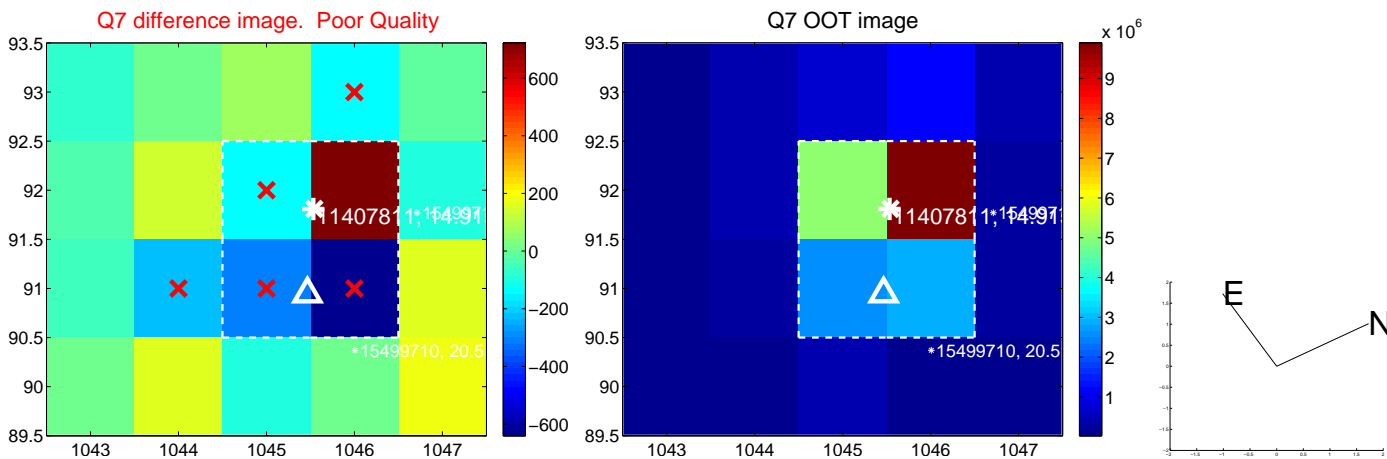
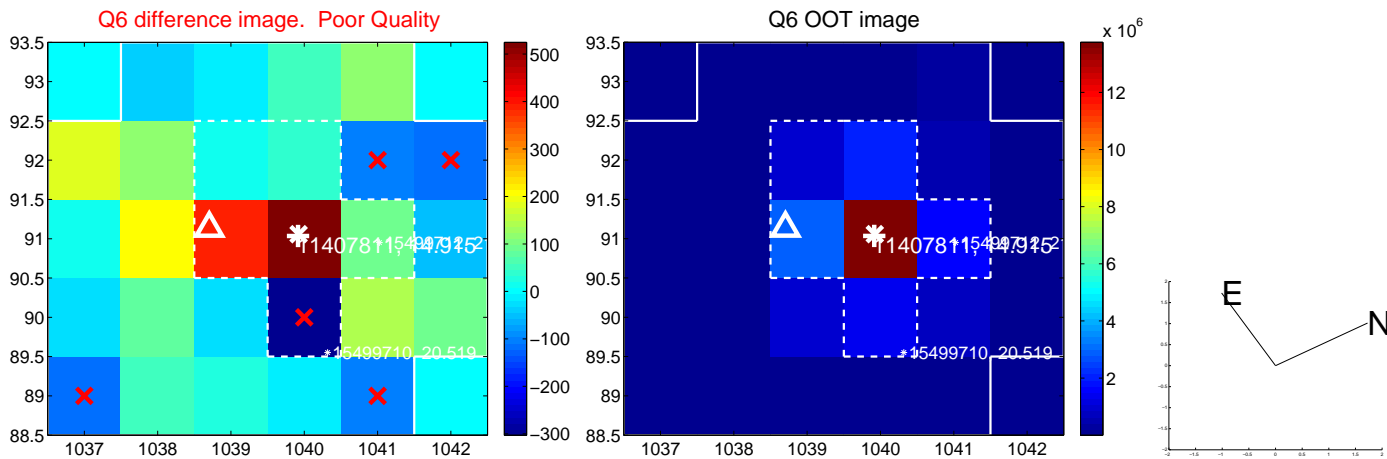
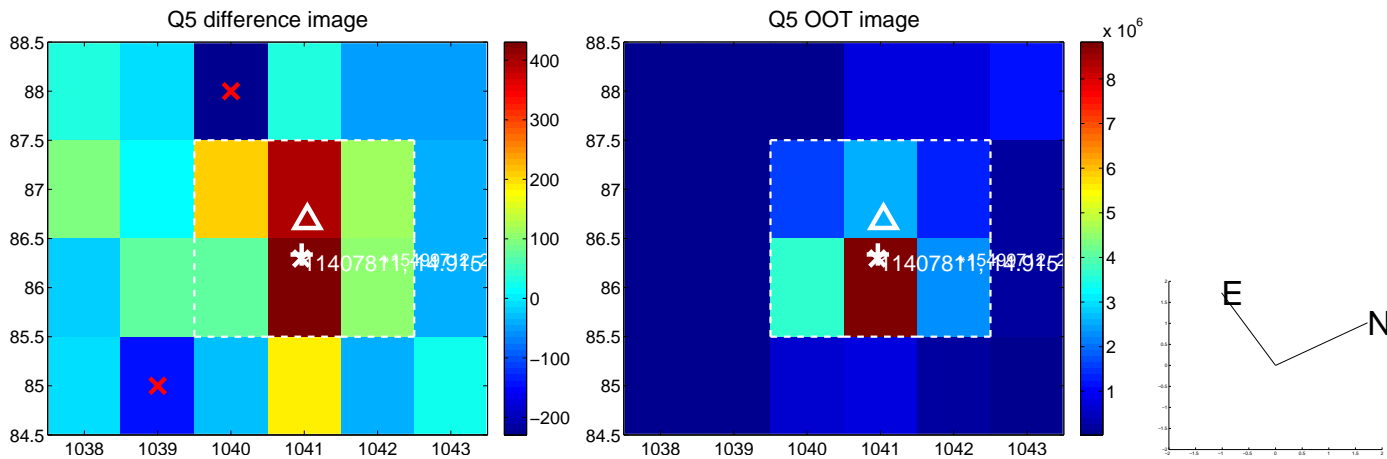


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

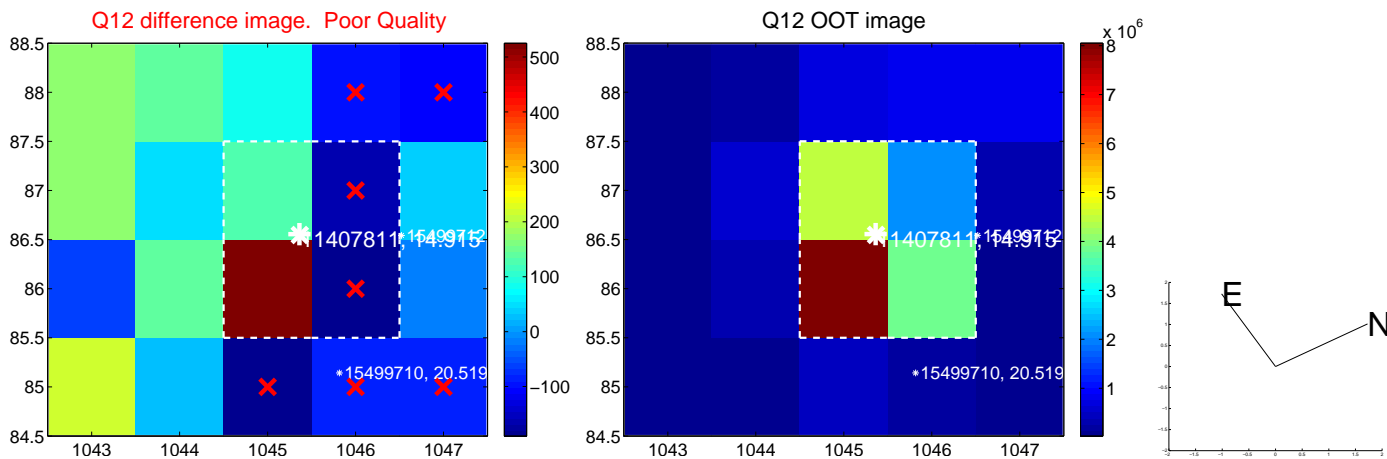
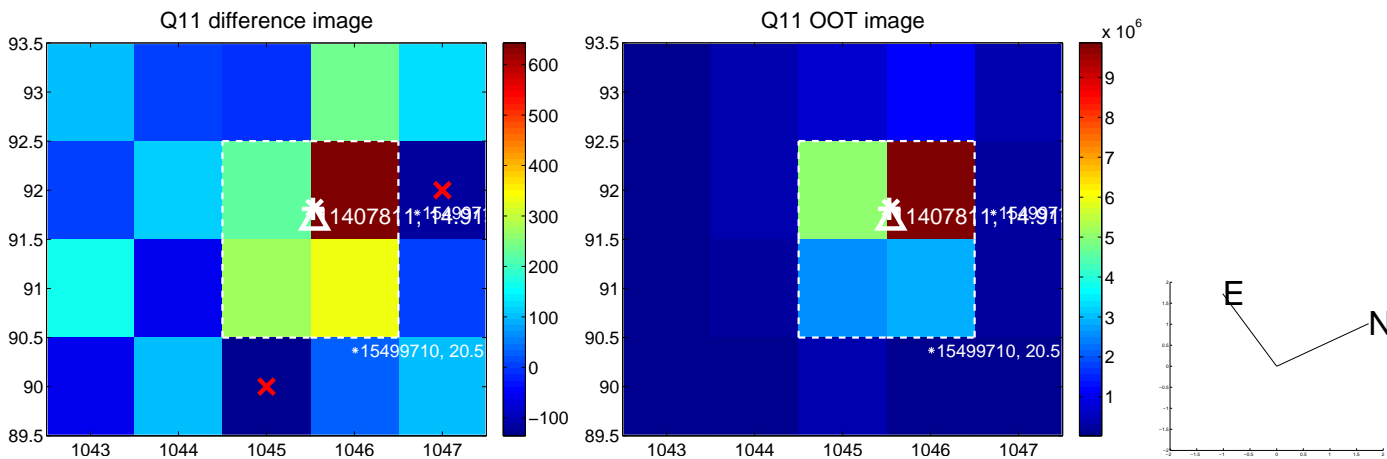
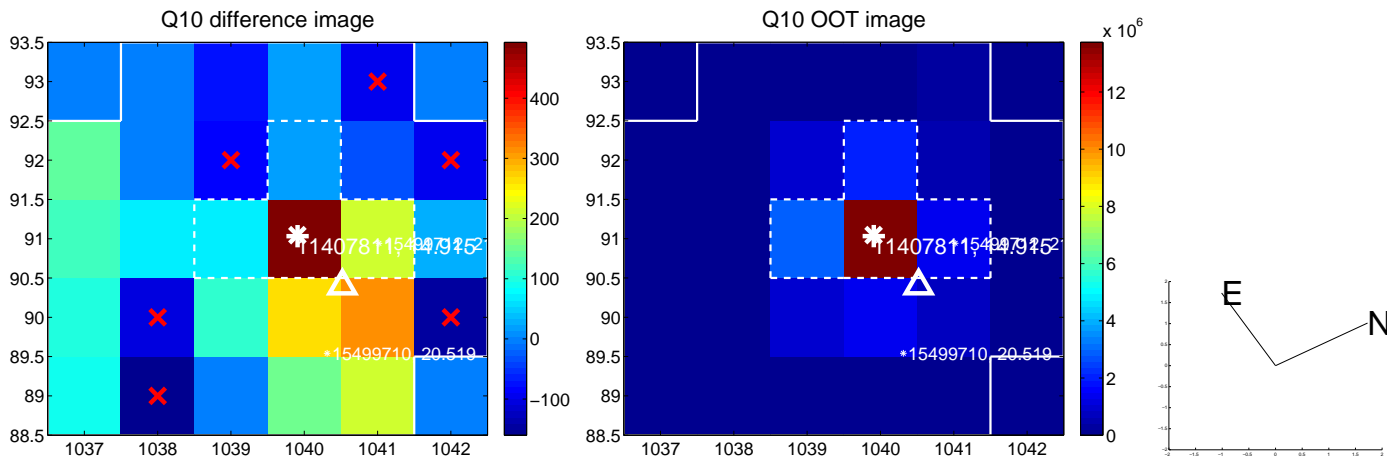
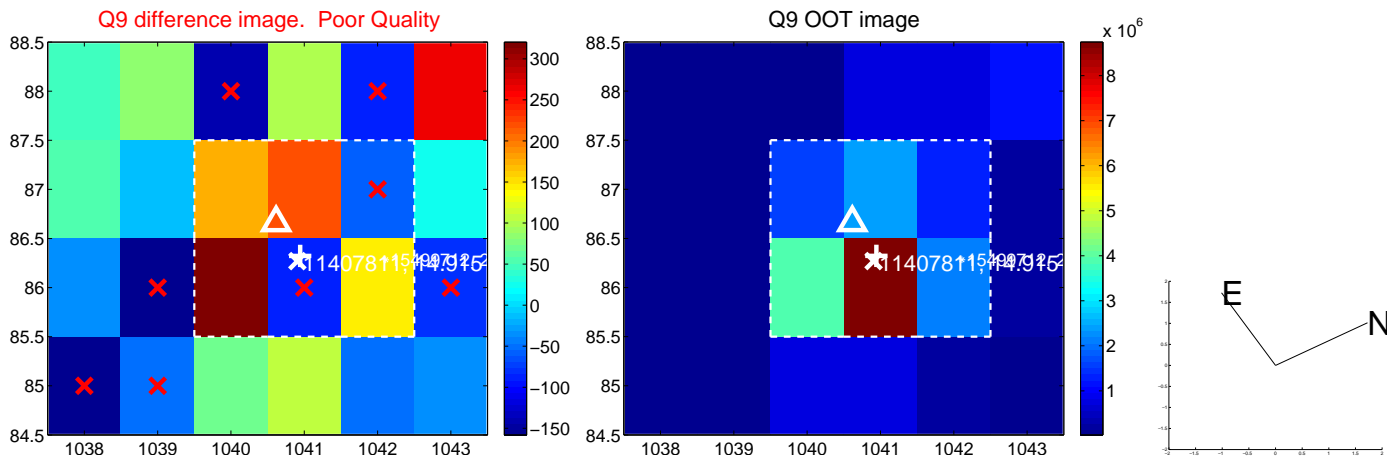
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



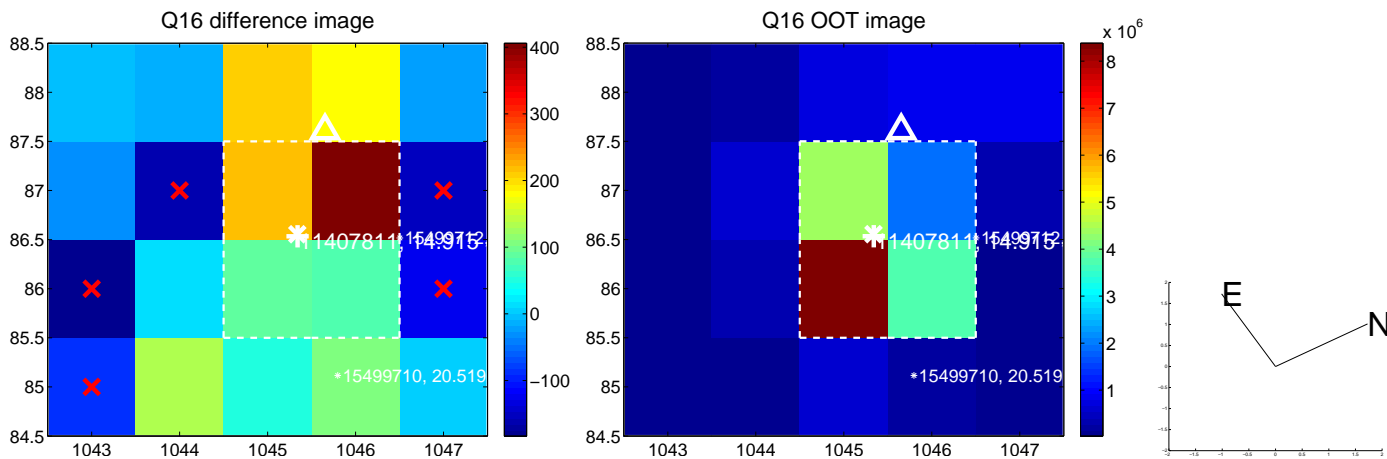
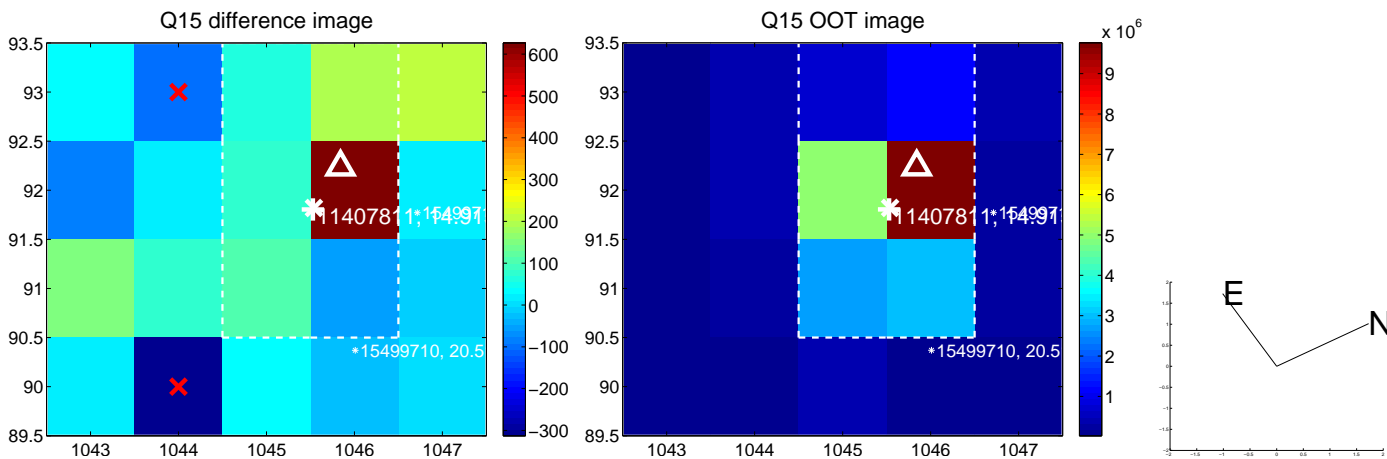
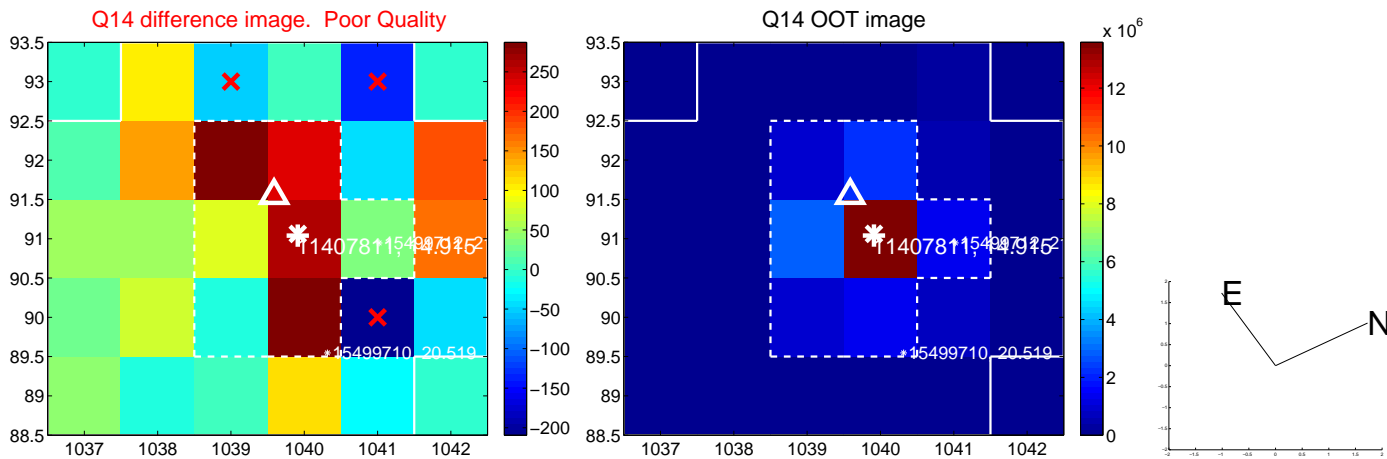
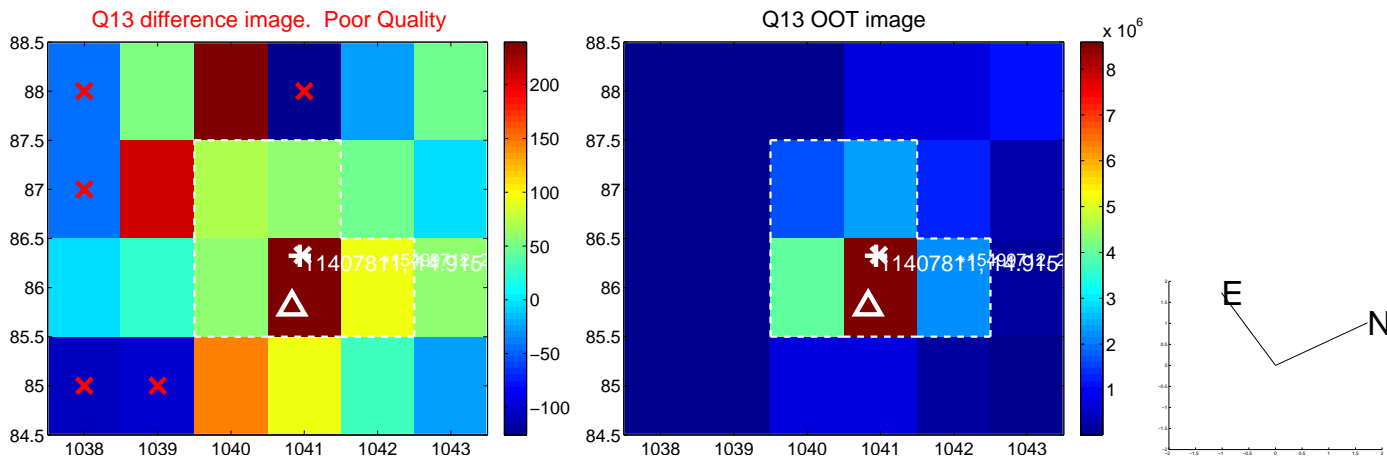
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



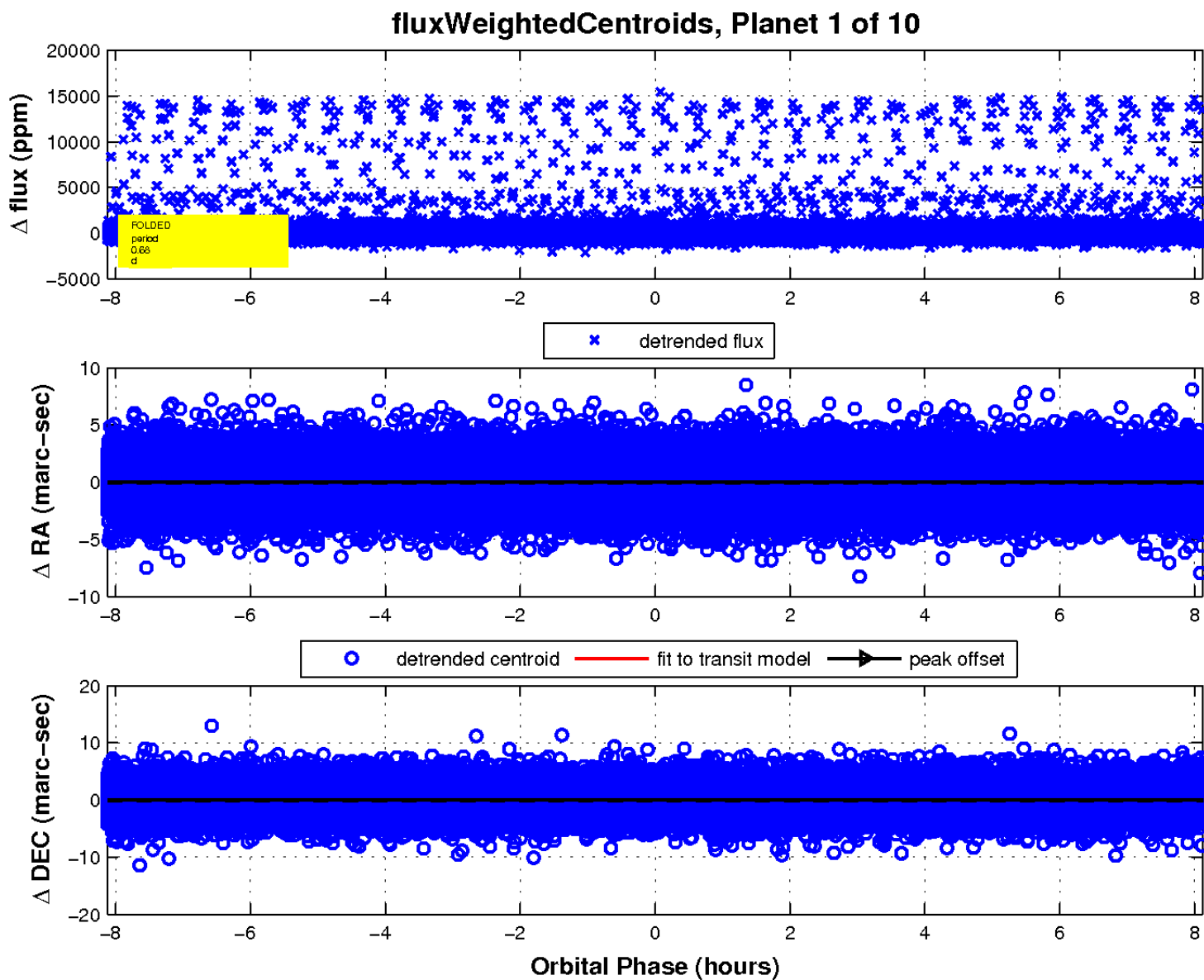
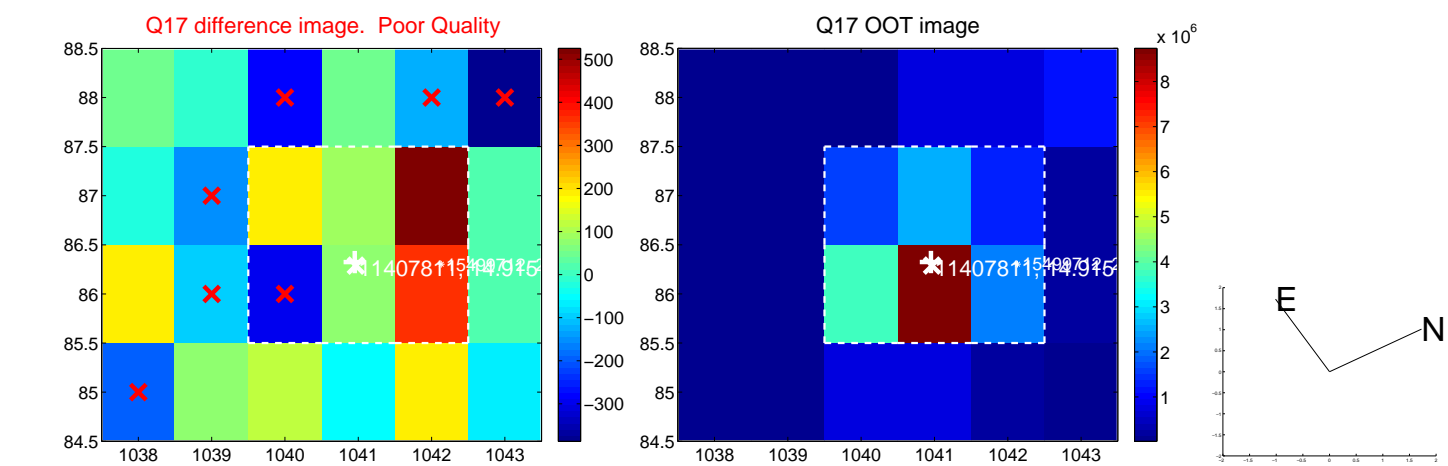
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

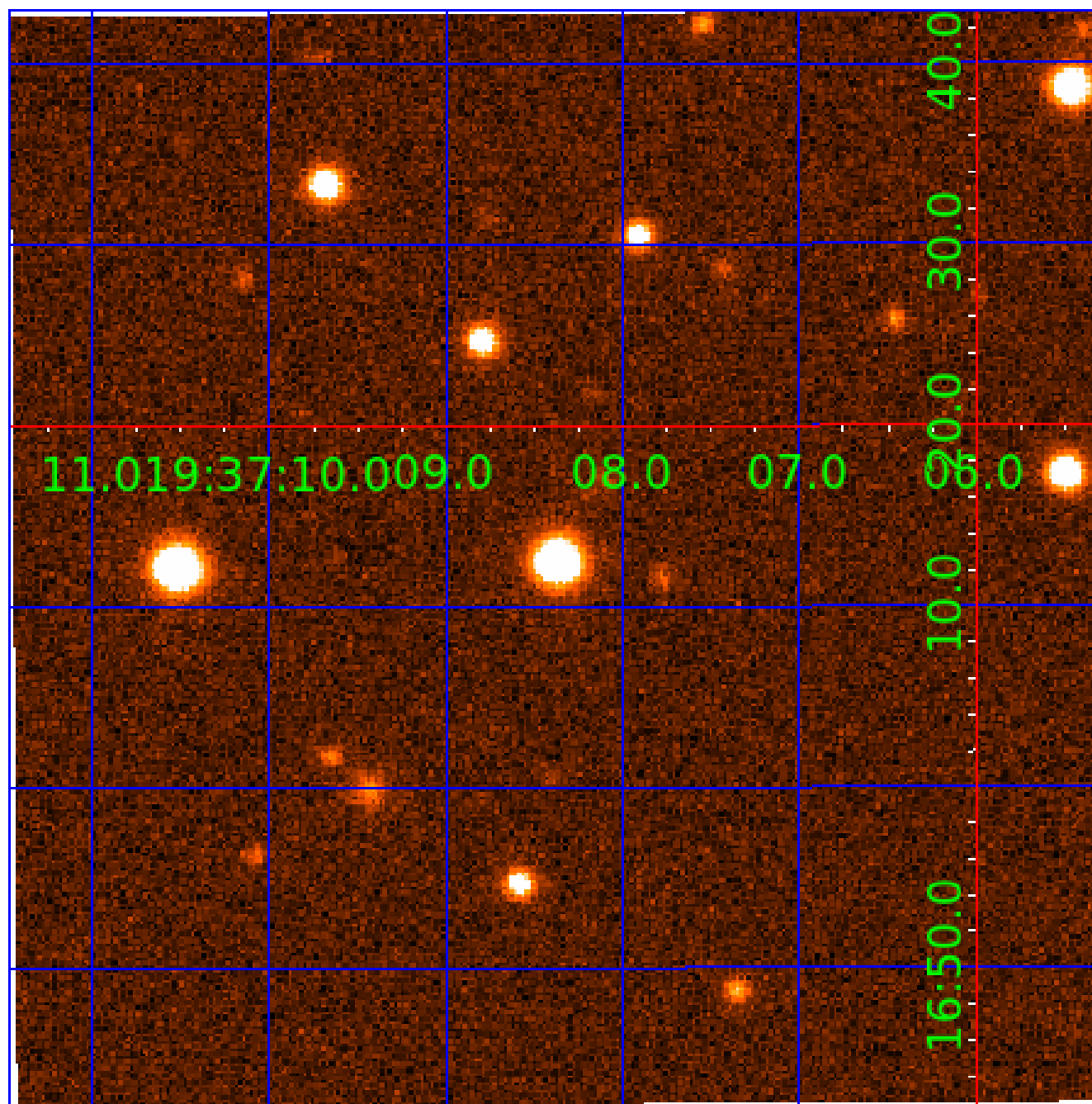


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011407811

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})
011407811-01	OBS	No	0.676789	131.939975	39.9	3.148	9.4	8.8	0.89	5418	0.68	2989.37
011407811-03	OBS	No	77.108758	165.989221	870.8	10.500	14.5	-1.0	0.89	5418	2.57	5.41
011407811-04	OBS	No	574.788958	196.942565	14486.3	92.601	13.6	9.5	0.89	5418	19.29	0.37
011407811-06	OBS	No	70.605236	172.699679	565.7	3.904	9.4	6.5	0.89	5418	2.36	6.09
011407811-09	OBS	No	123.901899	238.180470	402.4	5.110	9.4	3.9	0.89	5418	1.99	2.88
011407811-10	OBS	No	167.727451	224.512960	348.4	8.853	9.4	2.7	0.89	5418	1.77	1.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011407811-01	OBS	FP	0.00	1	0	0	0	LPP_DV
011407811-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
011407811-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011407811-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011407811-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
011407811-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT

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

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

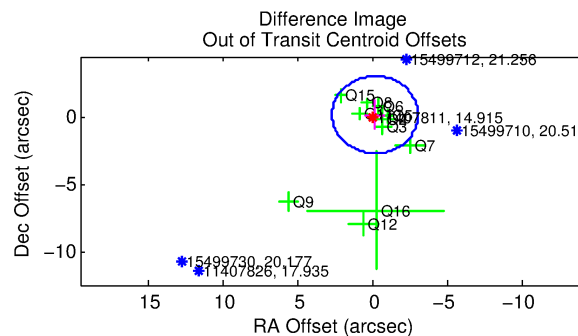
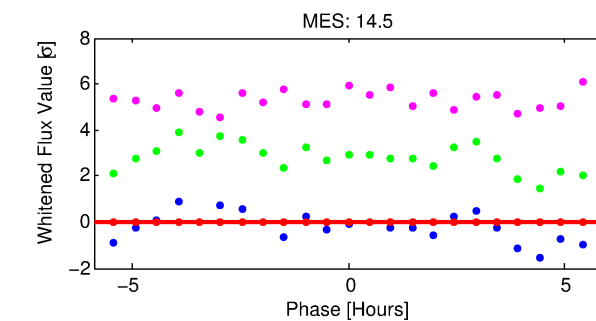
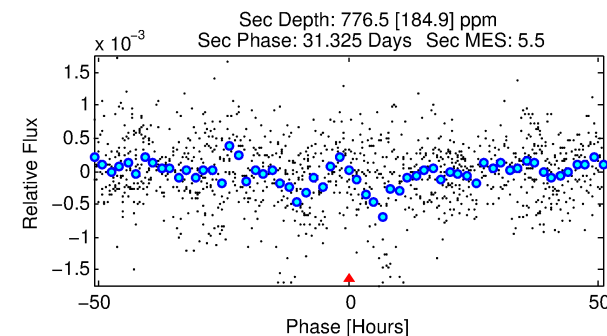
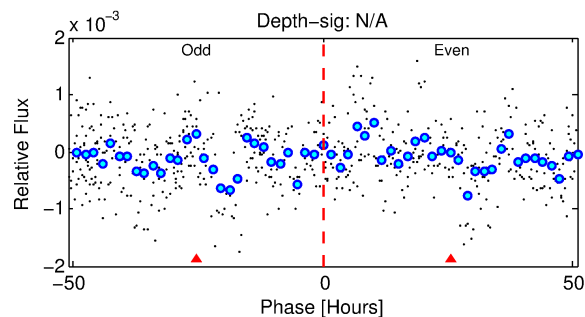
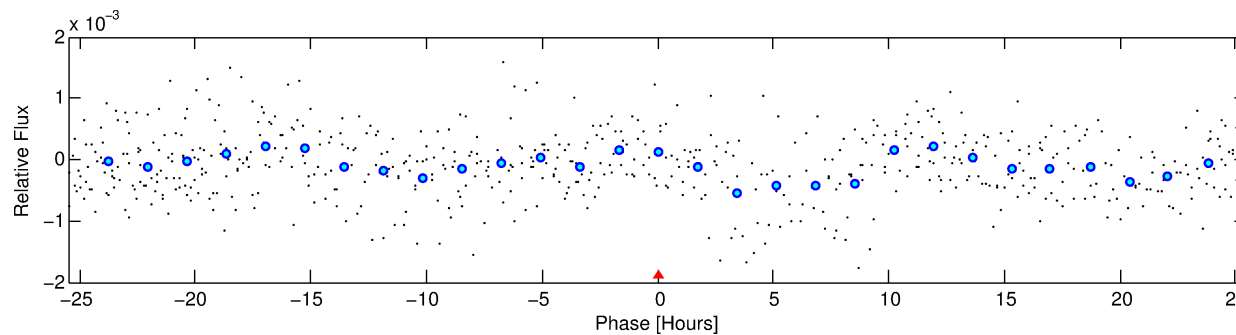
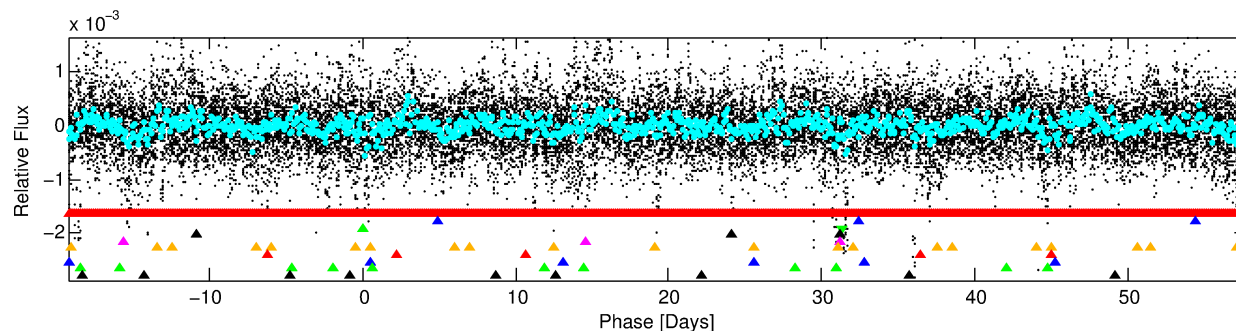
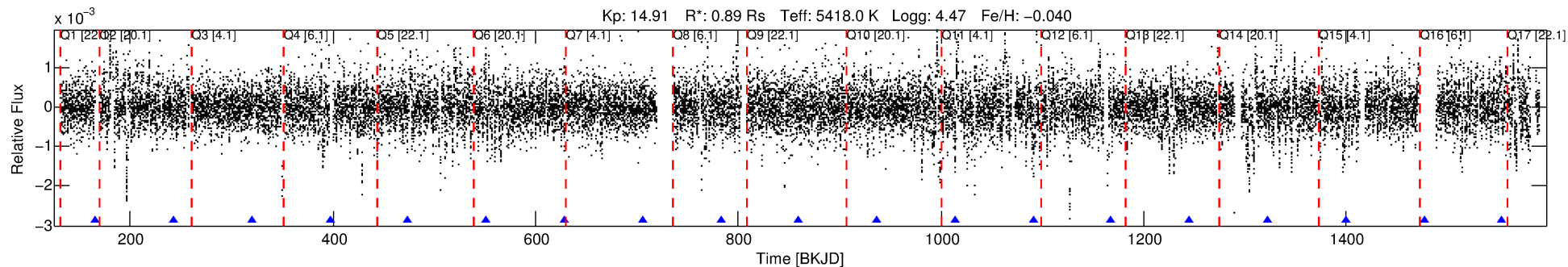
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011407811-03

No Significant Match Found

DV One-Page Summary

KIC: 11407811 Candidate: 3 of 10 Period: 77.109 d



TPS TCE Results:

Period = 77.10876 d
Epoch = 165.9892 BKJD

DV fit results are unavailable

DV Diagnostic Results:

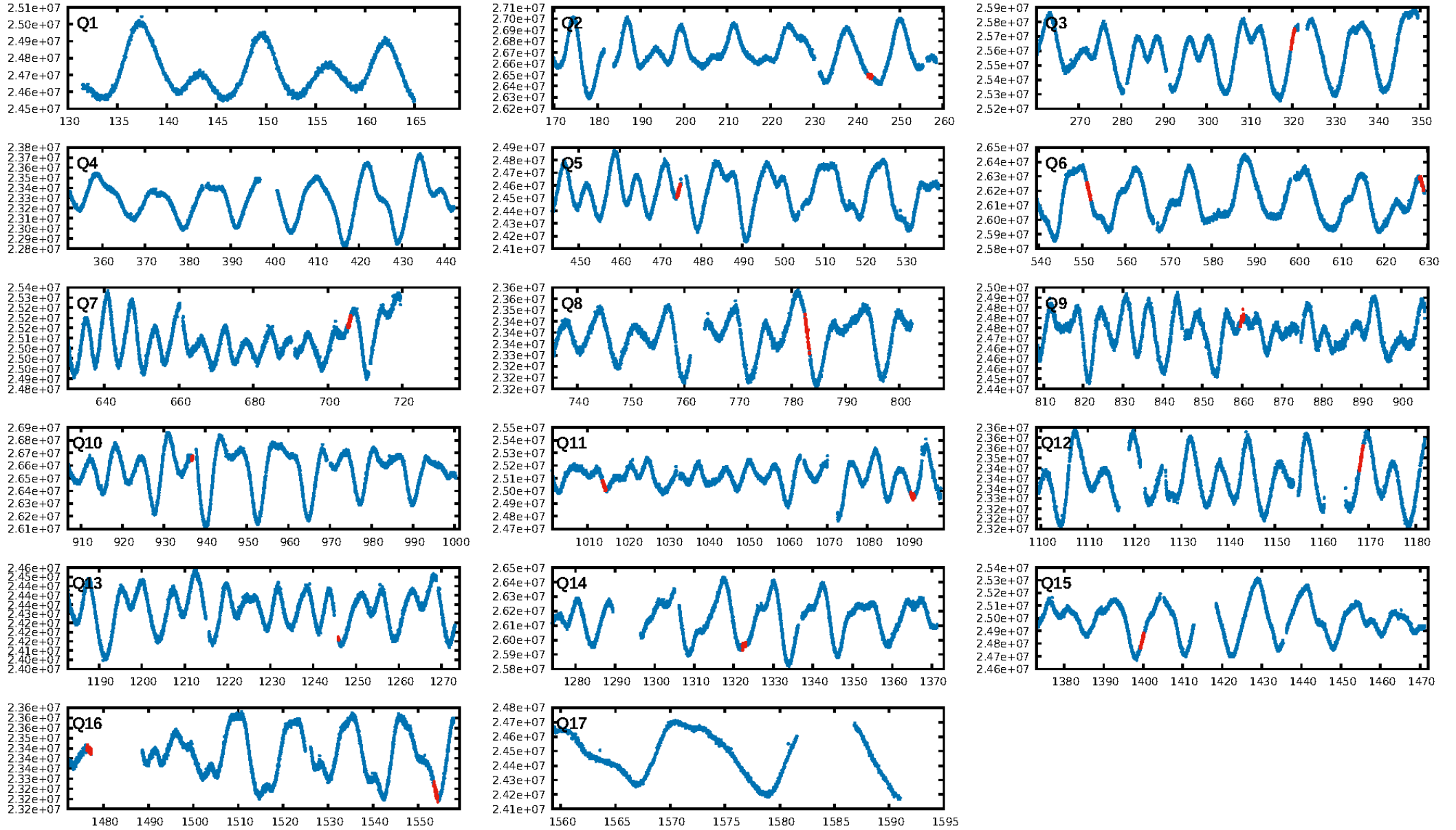
ShortPeriod-sig: 100.0% [13.93σ]
LongPeriod-sig: 100.0% [96.17σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [15/15]
GhostDiagnostic-chr: -3.388

Centroid-sig: 0.0%
Centroid-so: 12.389 arcsec [2.88σ]
OotOffset-rm: 0.263 arcsec [0.27σ]
KicOffset-rm: 0.122 arcsec [0.14σ]
OotOffset-st: 2/4/3/2 [11]
KicOffset-st: 2/4/3/2 [11]
DiffImageQuality-fgm: 0.36 [4/11]
DiffImageOverlap-fno: 0.00 [0/12]

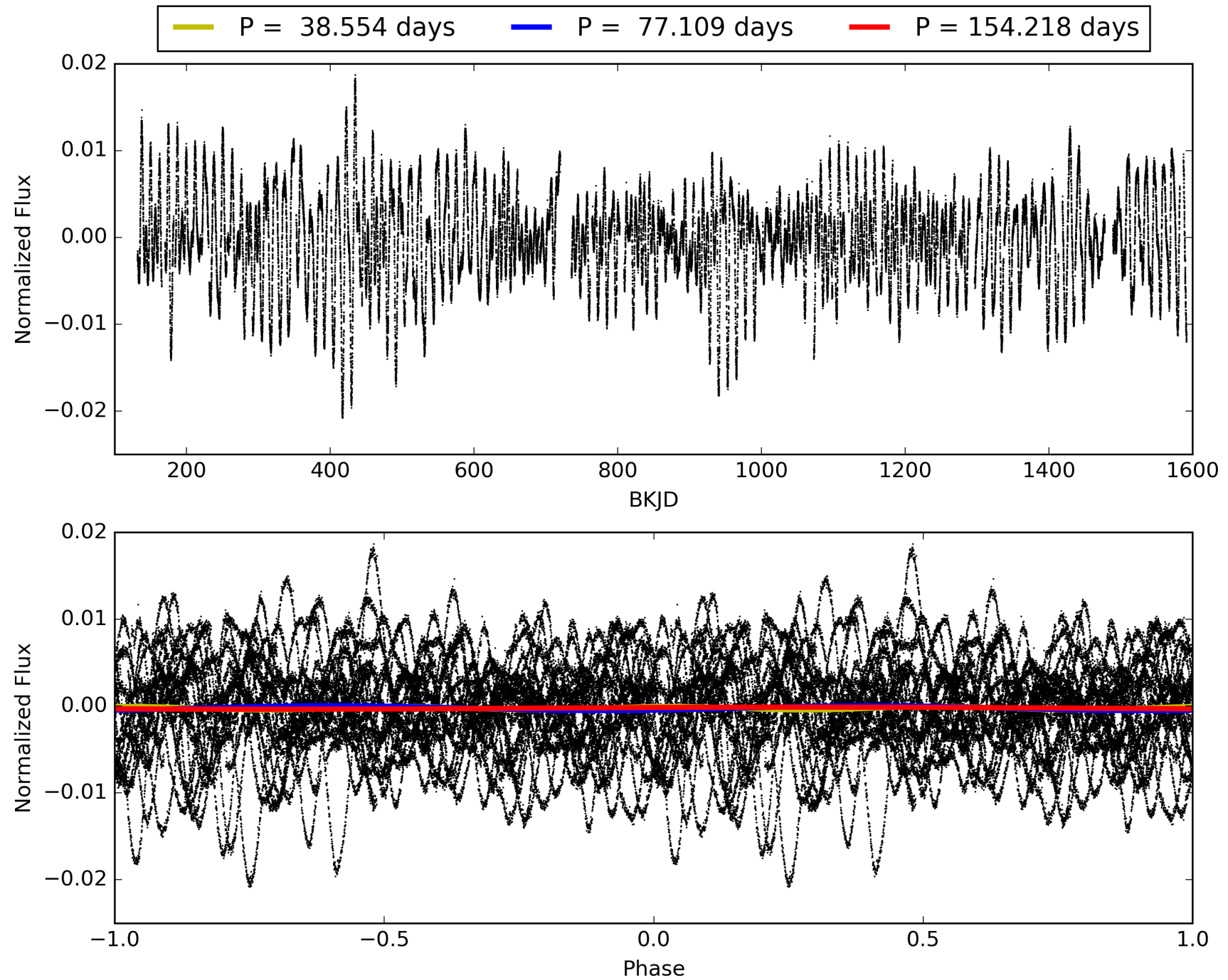
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:41:35 Z

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

TCE 011407811-03, PDC Light Curves

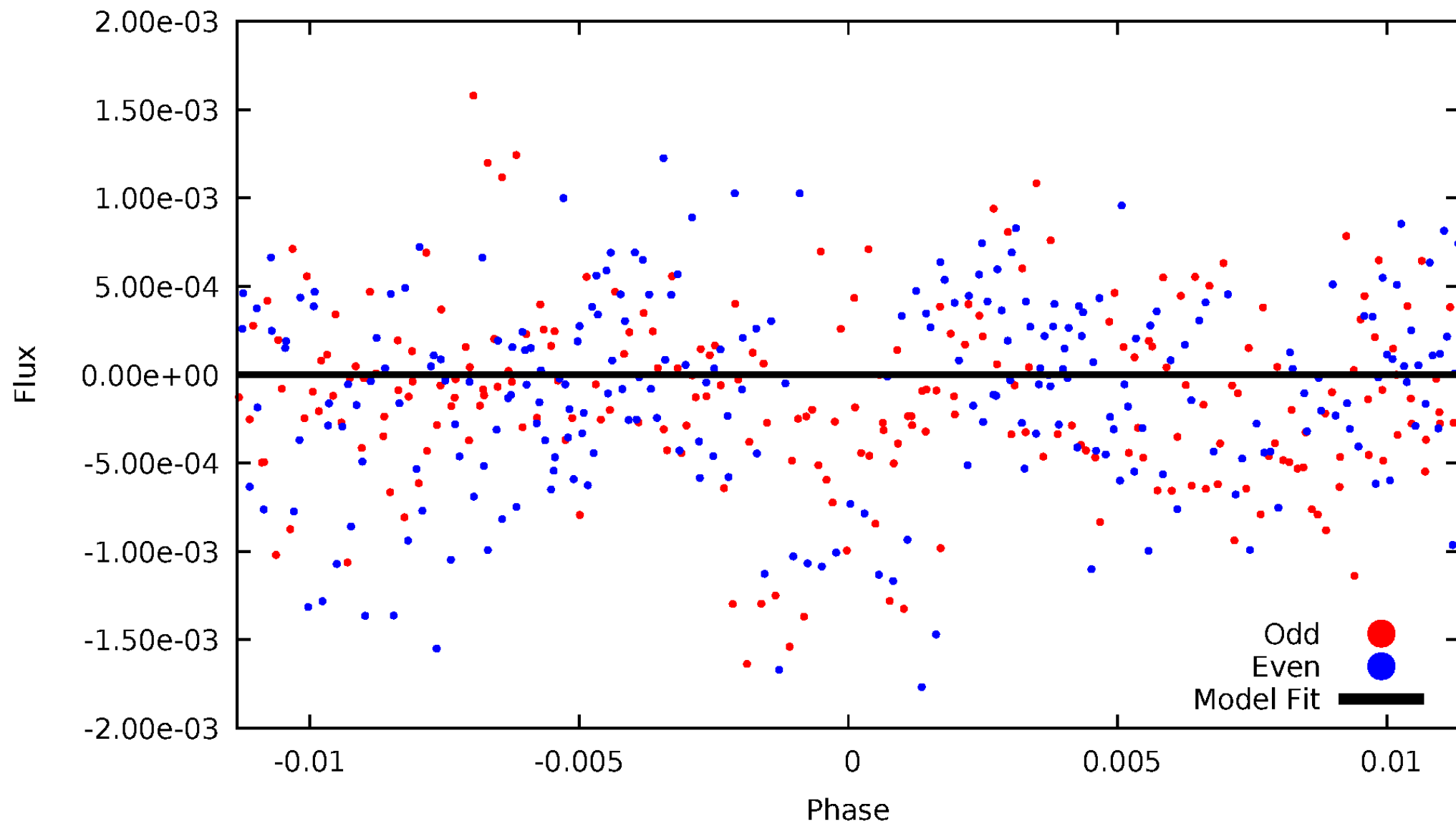


TCE 011407811-03



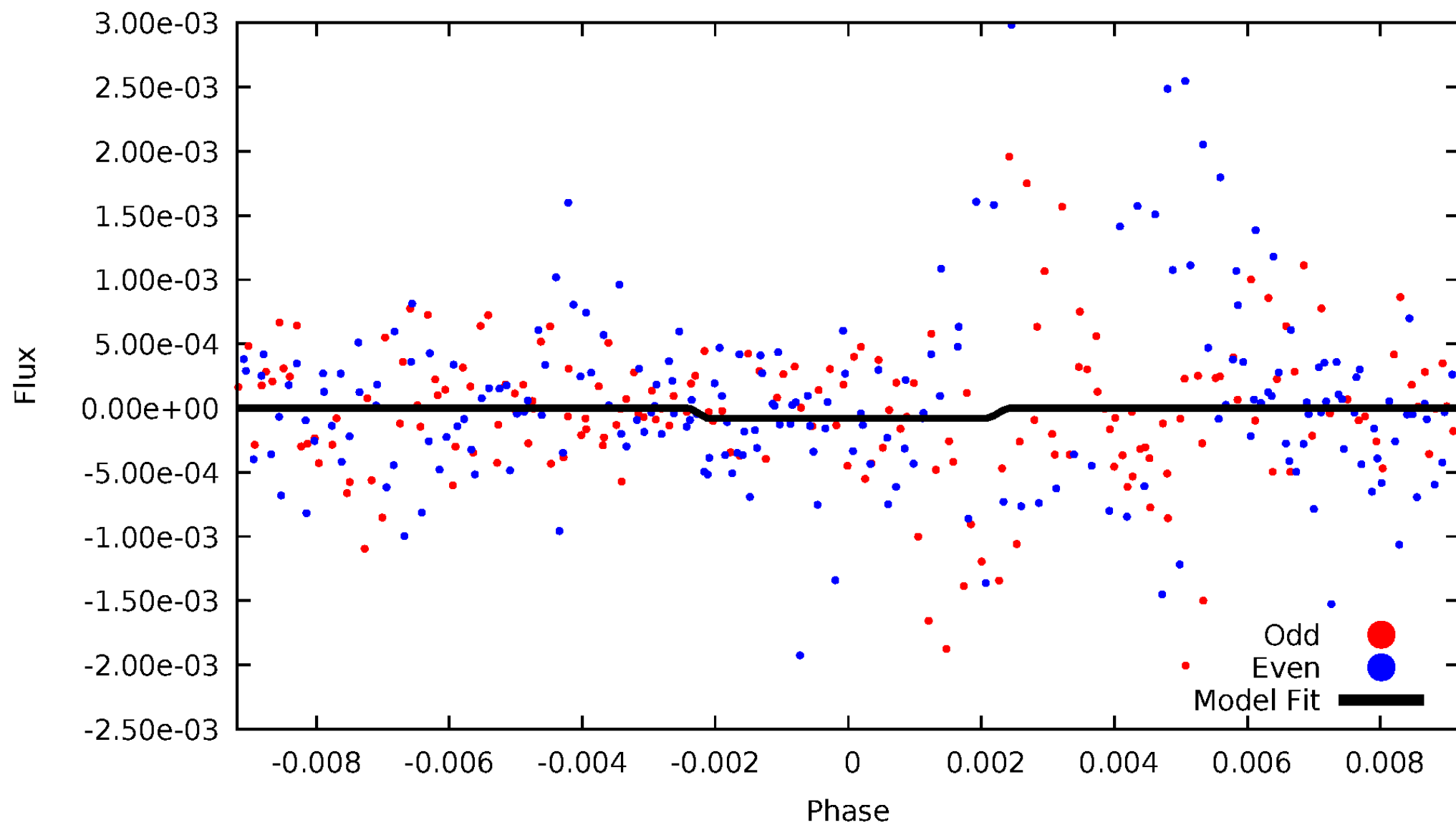
DV Odd/Even

TCE 011407811-03



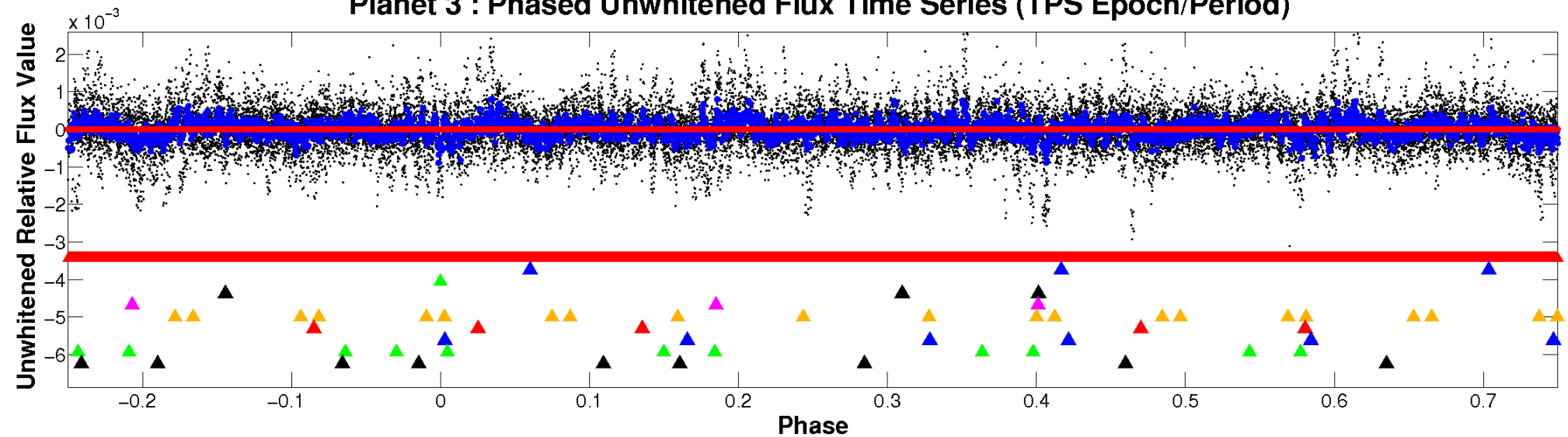
ALT Odd/Even

TCE 011407811-03

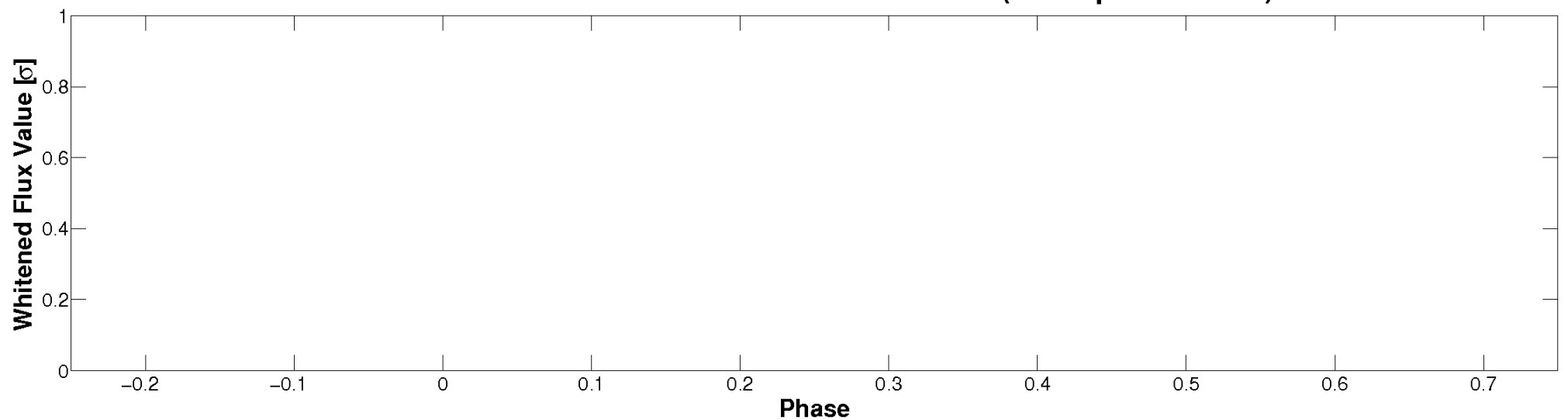


Non-Whitened Vs. Whitened Light Curve

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

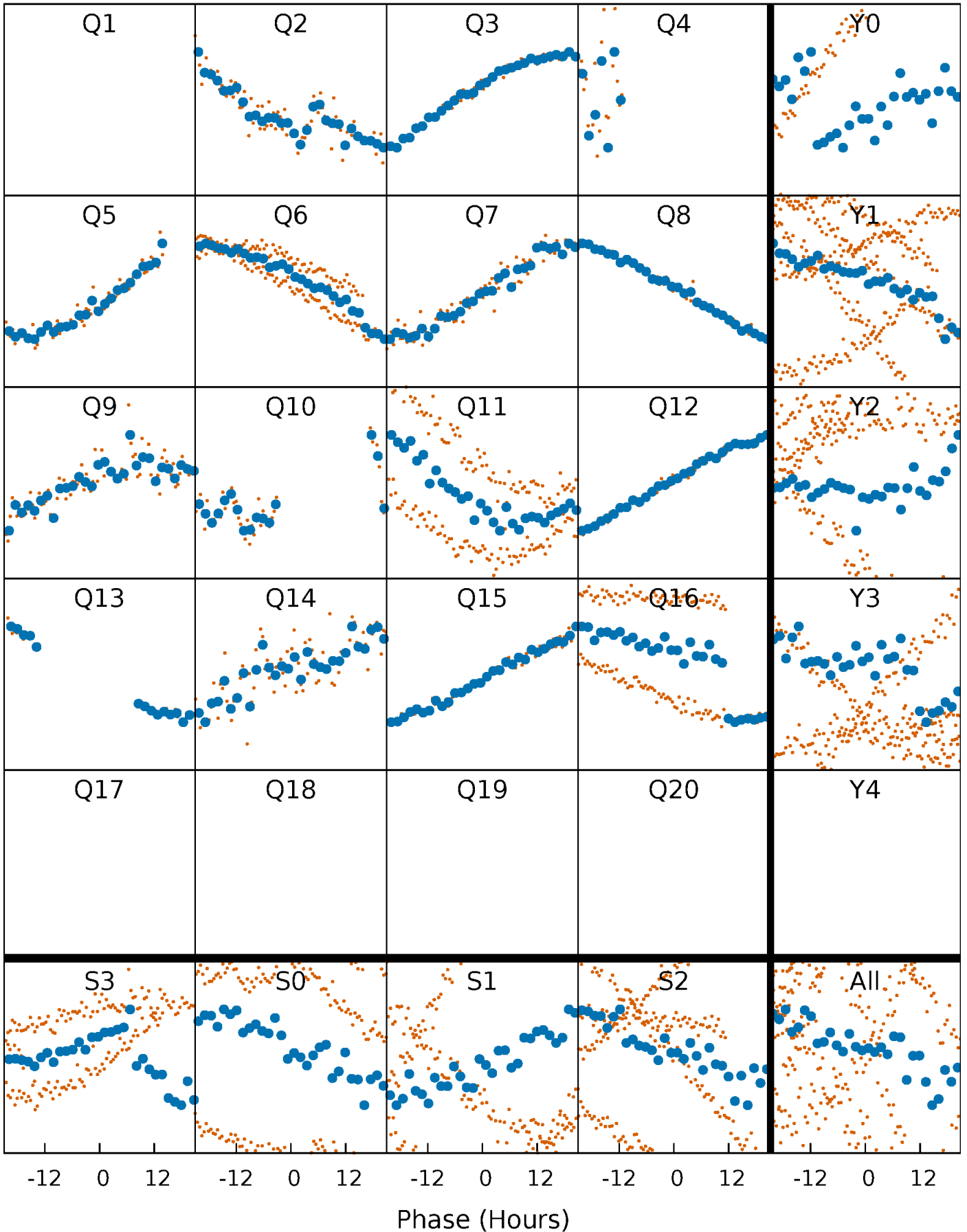


Planet 3 : Phased Whitened Flux Time Series (TPS Epoch/Period)



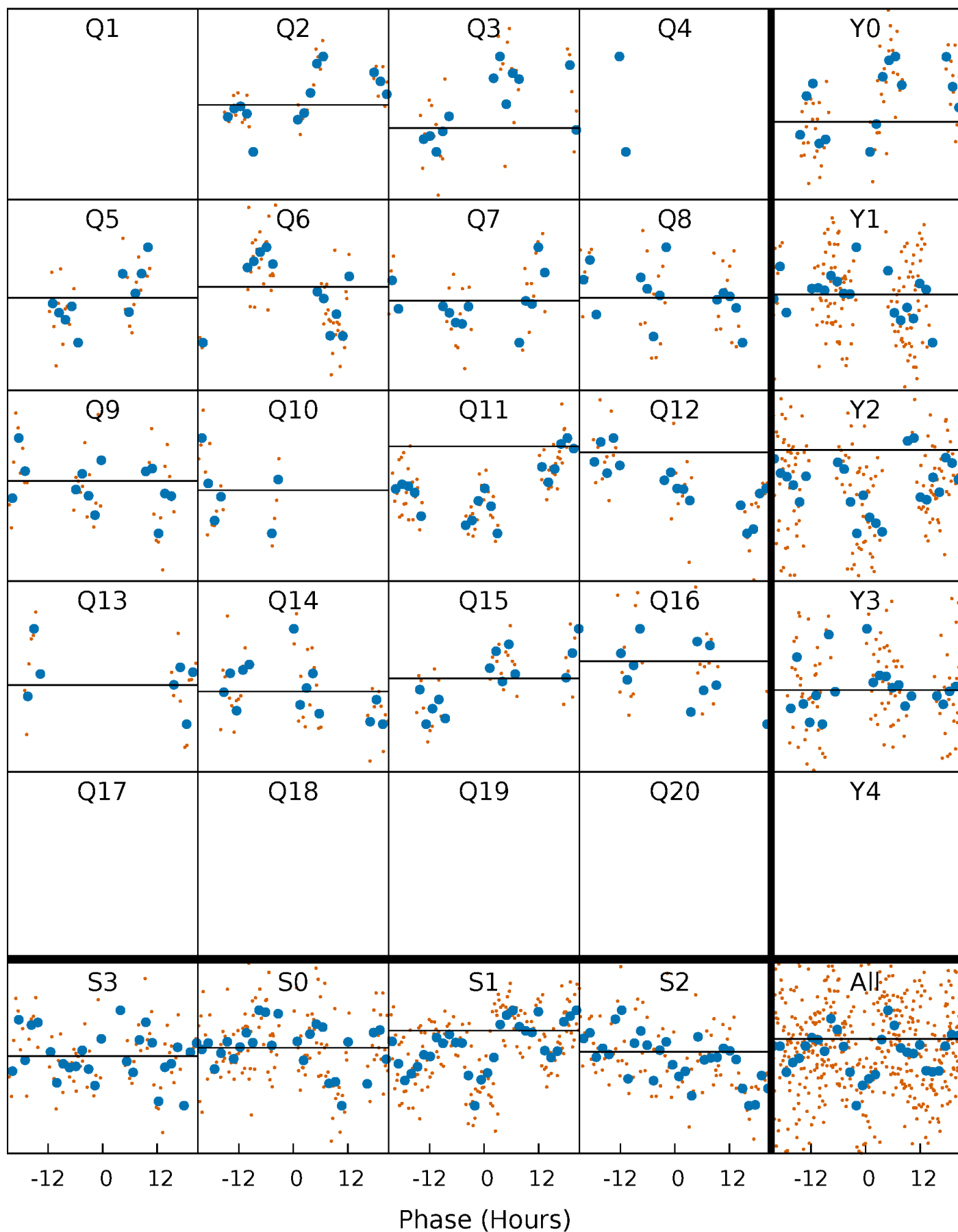
PDC Quarter-Phased Transit Curves

TCE 011407811-03 P= 77.108758 Days $T_0=165.989221$ (BKJD)



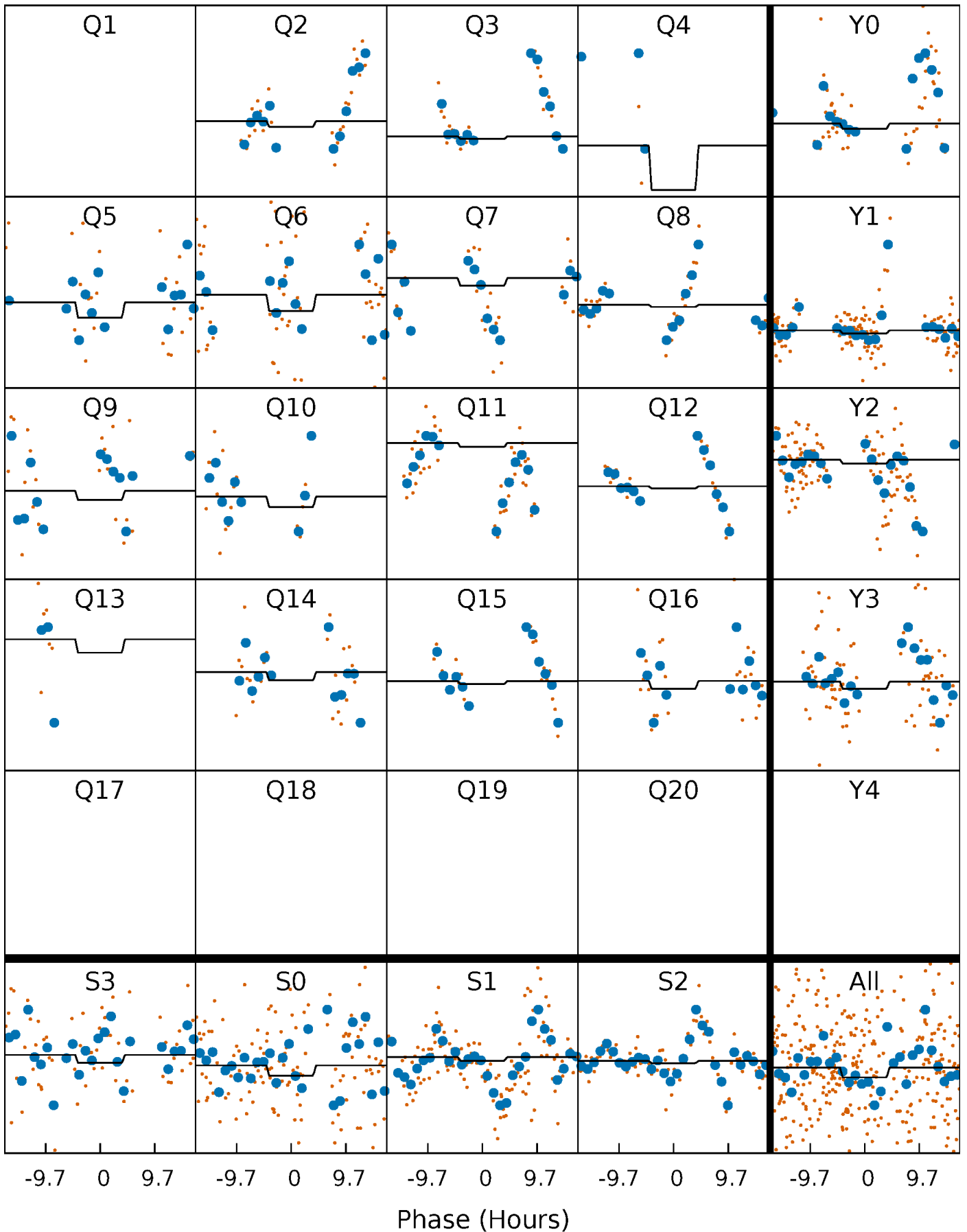
DV Quarter-Phased Transit Curves

TCE 011407811-03 P= 77.108758 Days $T_0=165.989221$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

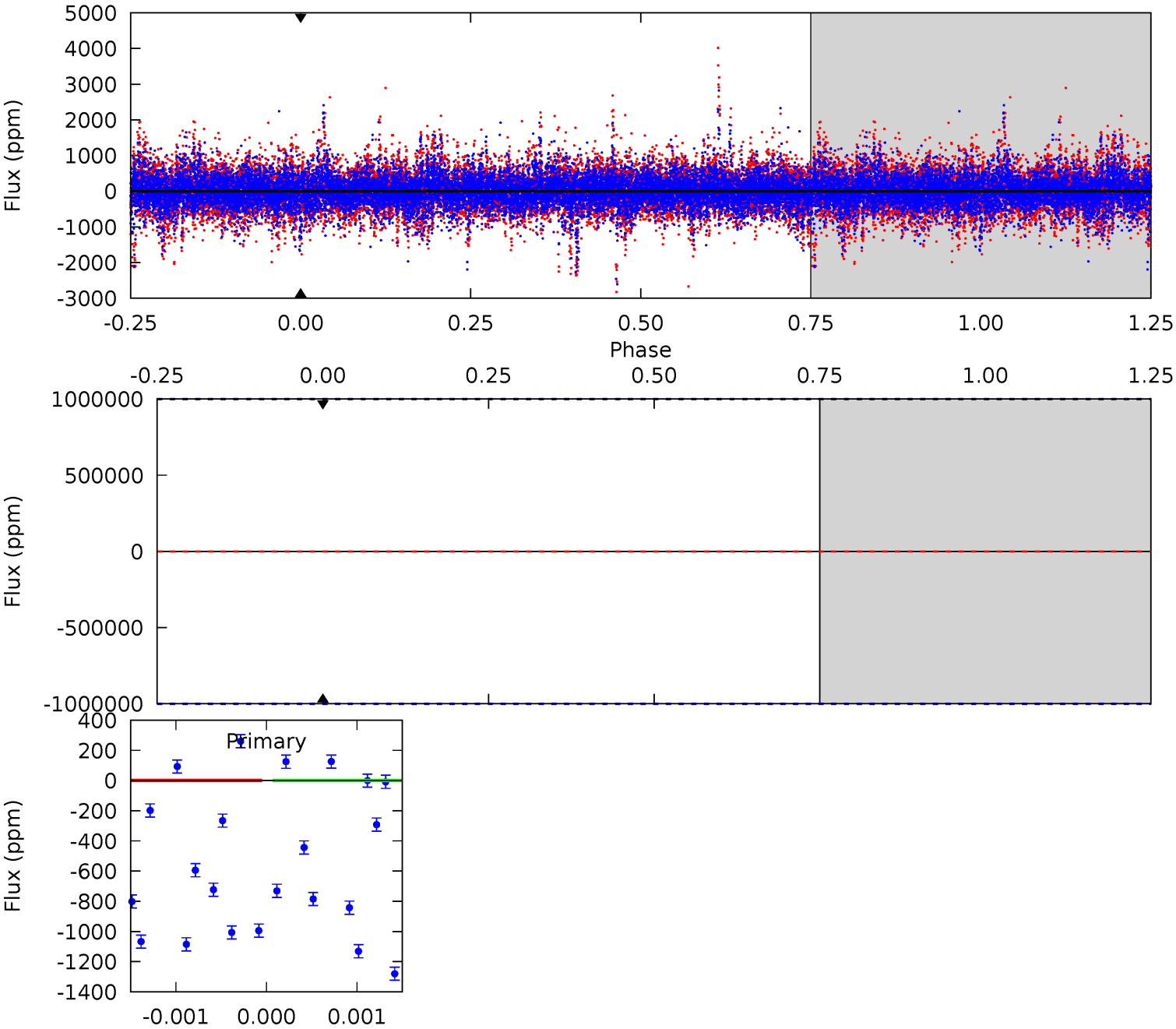
TCE 011407811-03 P= 77.108758 Days $T_0=165.730484$ (BKJD)



DV Model-Shift Uniqueness Test

011407811-03, P = 77.108758 Days, E = 88.880463 Days

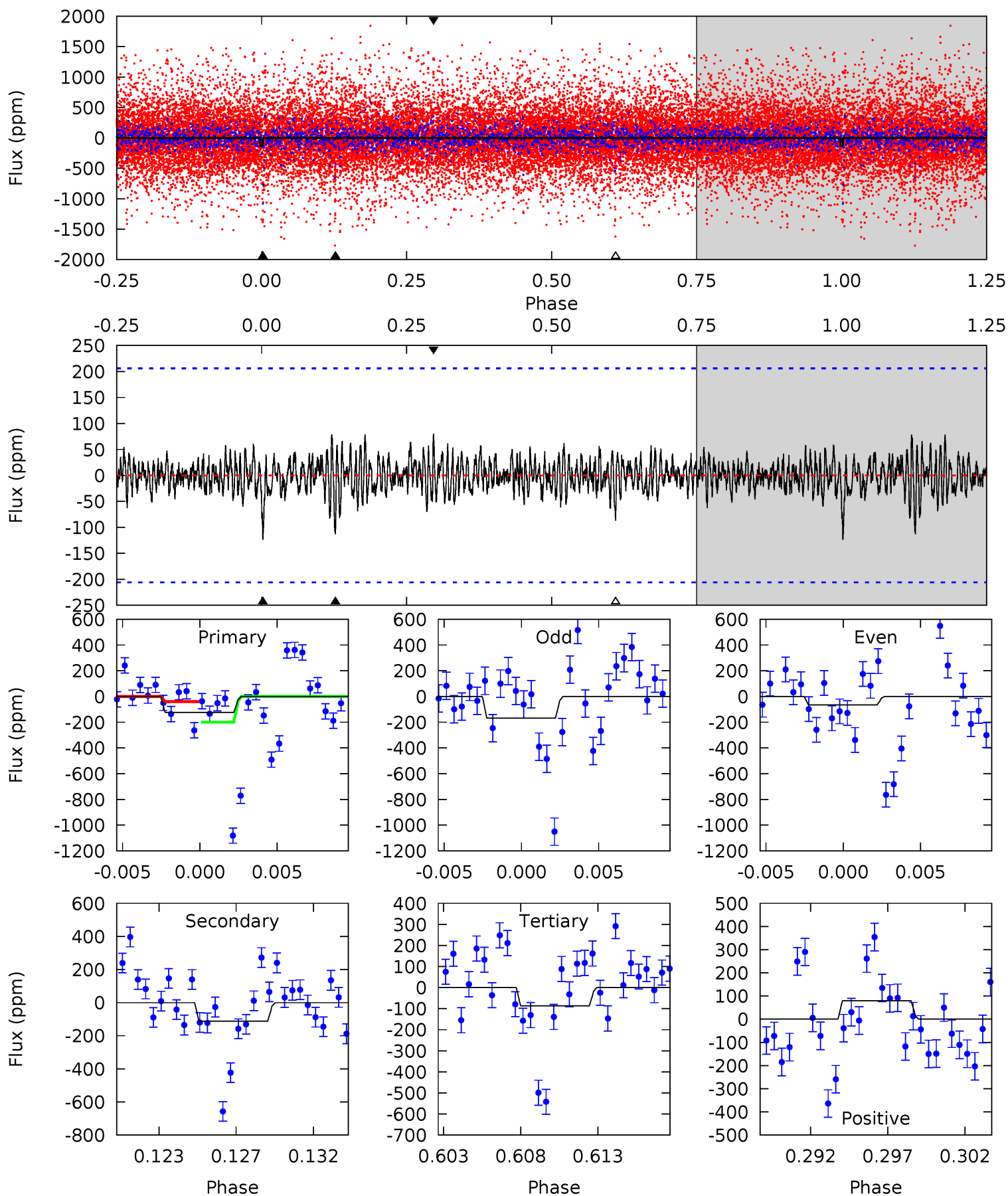
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

011407811-03, P = 77.108758 Days, E = 88.621726 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3.11	2.83	2.19	2.00	5.17	2.83	0.64	0.93	1.11	0.65	0.83	1.27	5.40	0.39	1.99



Stellar Parameters For KIC 011407811

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5418^{+160}_{-160}	$4.469^{+0.096}_{-0.144}$	$-0.040^{+0.300}_{-0.300}$	$0.889^{+0.184}_{-0.107}$	$0.849^{+0.099}_{-0.072}$	$1.702^{+0.685}_{-0.675}$
	+3%/-3%	+2%/-3%	+750%/-750%	+21%/-12%	+12%/-8%	+40%/-40%
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 011407811-03 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	0 ± 1000000	$8.06^{+8.27}_{-5.48}$	547^{+31}_{-26}	4274^{+14887}_{-19129}	$1991^{+219802}_{-138377}$
Alt.	-113 ± 40	$7.13^{+8.27}_{-4.71}$	547^{+33}_{-28}	2801^{+1116}_{-499}	134^{+1027}_{-107}

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 $A_{obs} \gg 1.0$

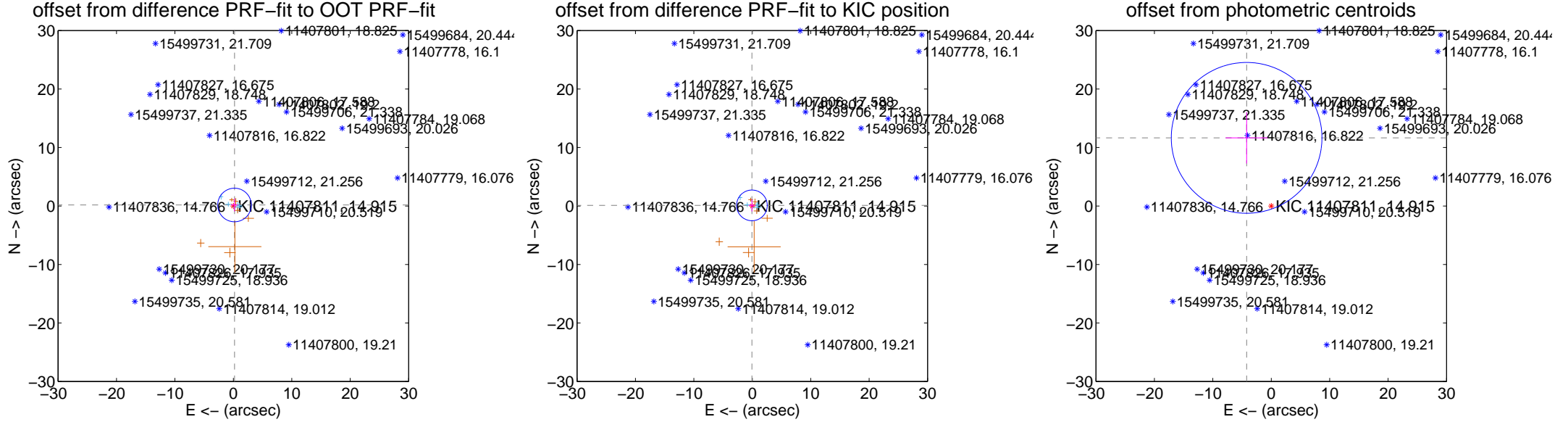
DV Centroid Data

Supplemental centroid analysis for 011407811-03. Kepler magnitude: 14.91. Transit SNR -1.00

There are 4 quarters with good PRF difference image offsets

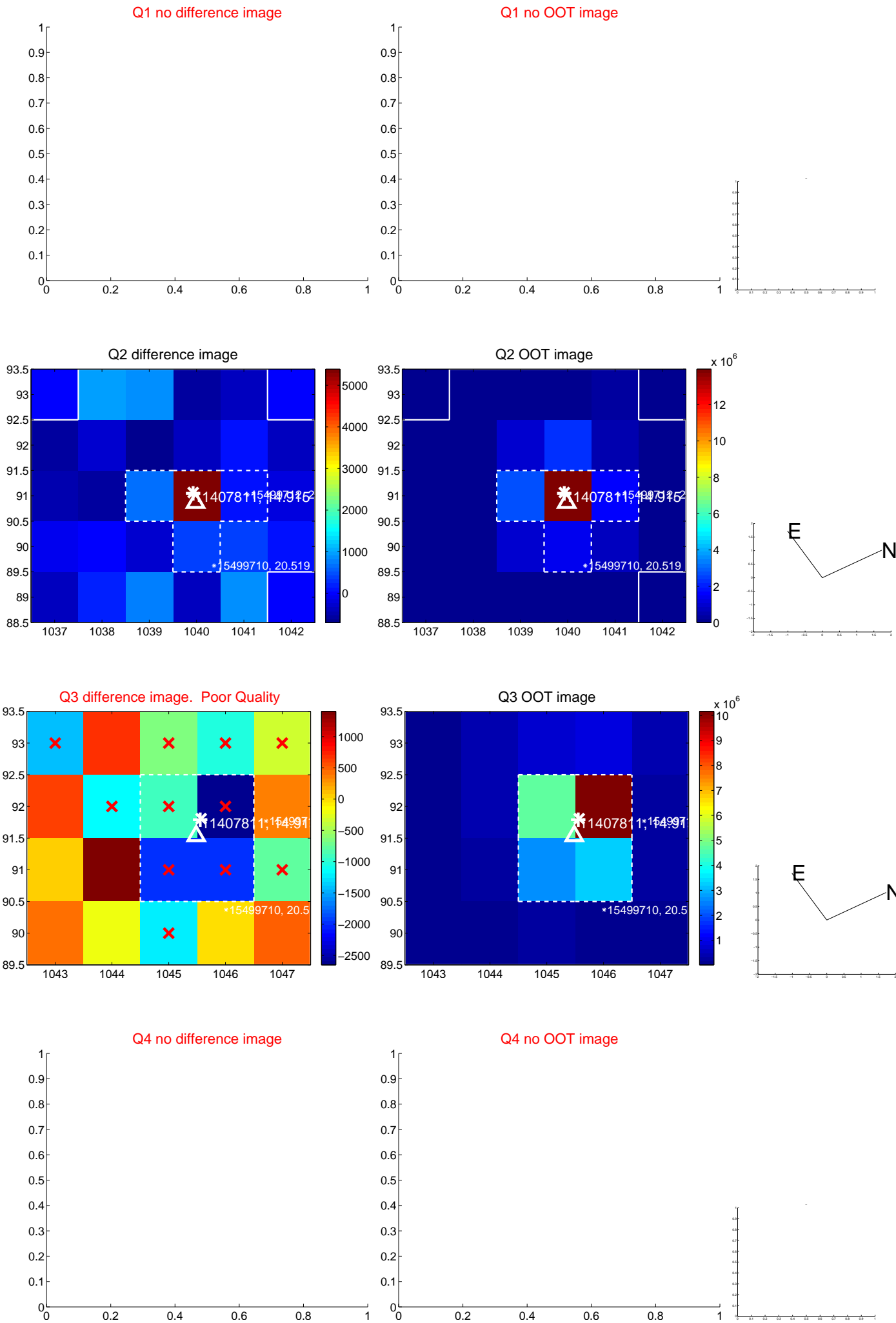
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.263 ± 0.957	0.27	-0.199 ± 0.594	0.172 ± 1.106
PRF-fit source offset from KIC position	0.122 ± 0.875	0.14	0.062 ± 0.559	0.106 ± 1.030
photometric centroid source offset	12.39 ± 4.30	2.88	4.22 ± 3.60	11.65 ± 4.38

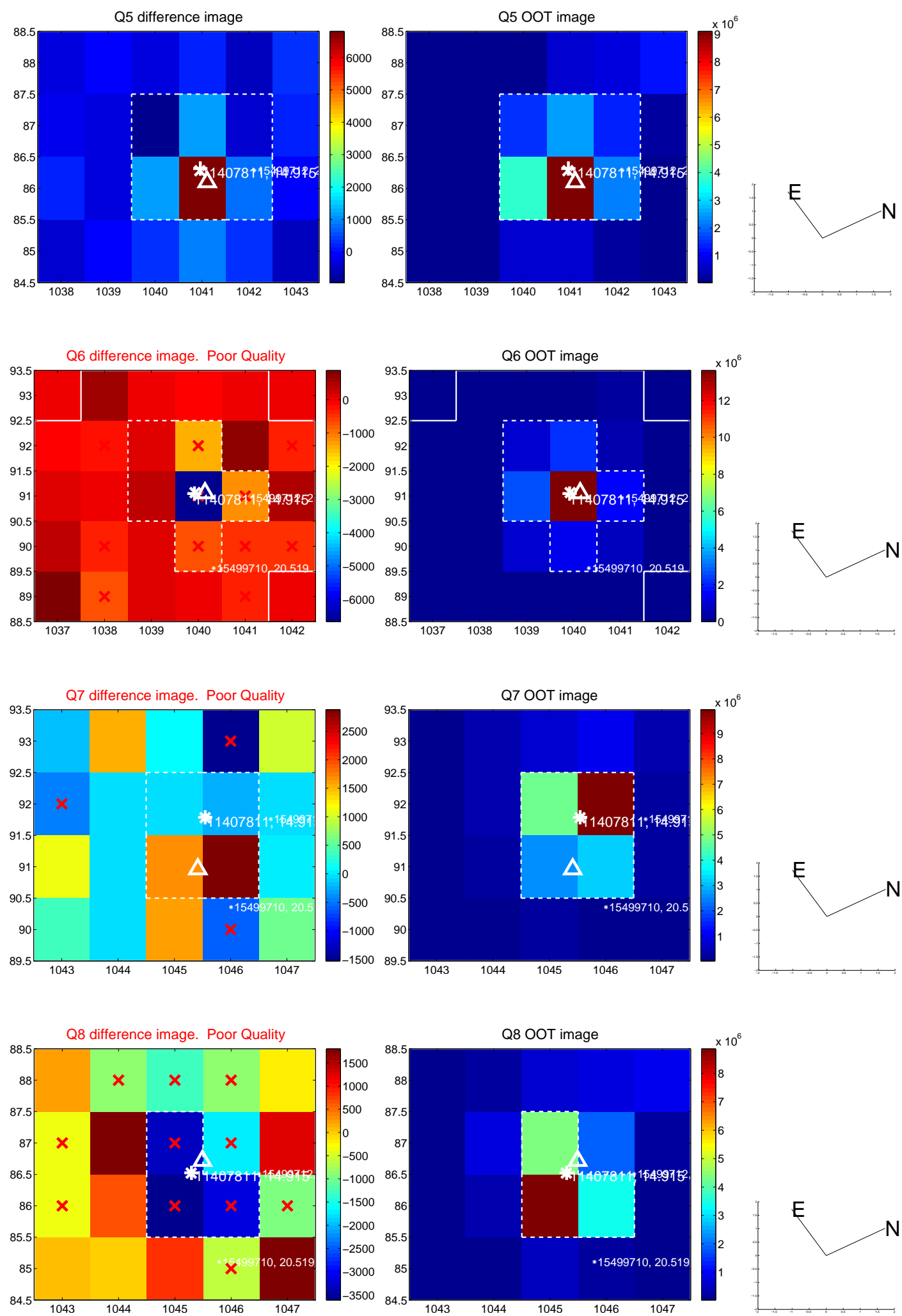


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

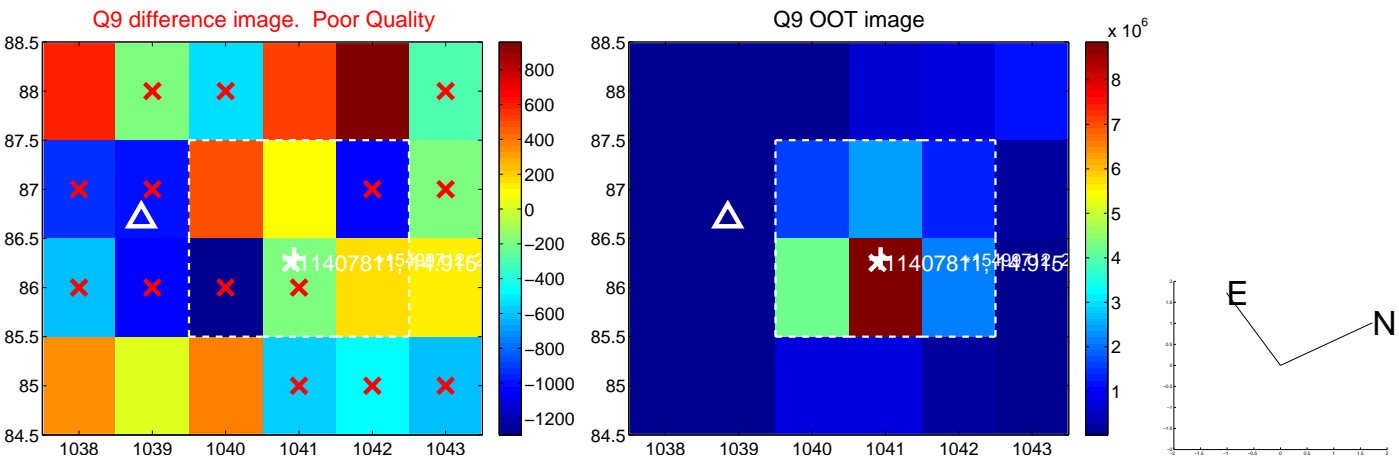
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



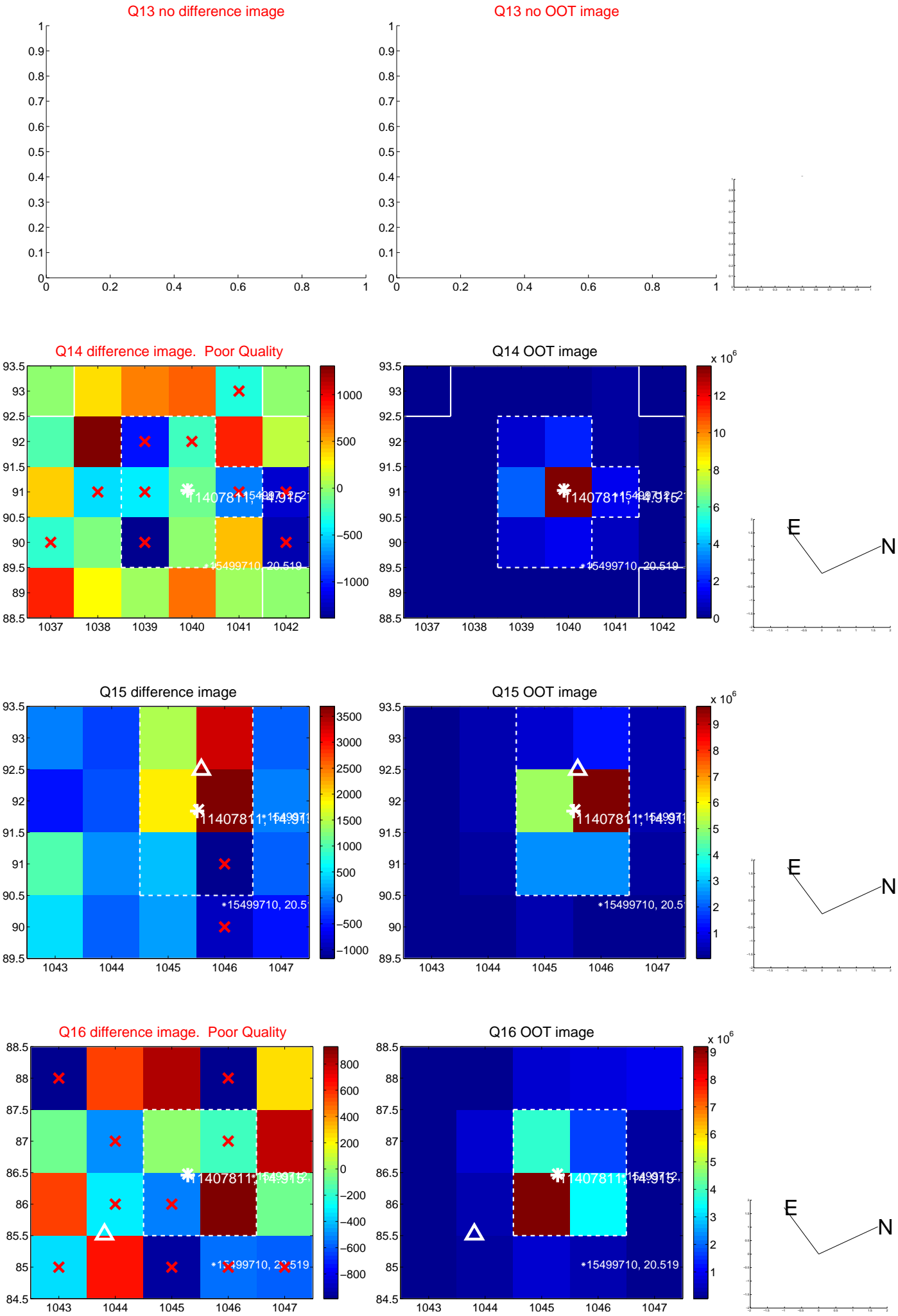
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



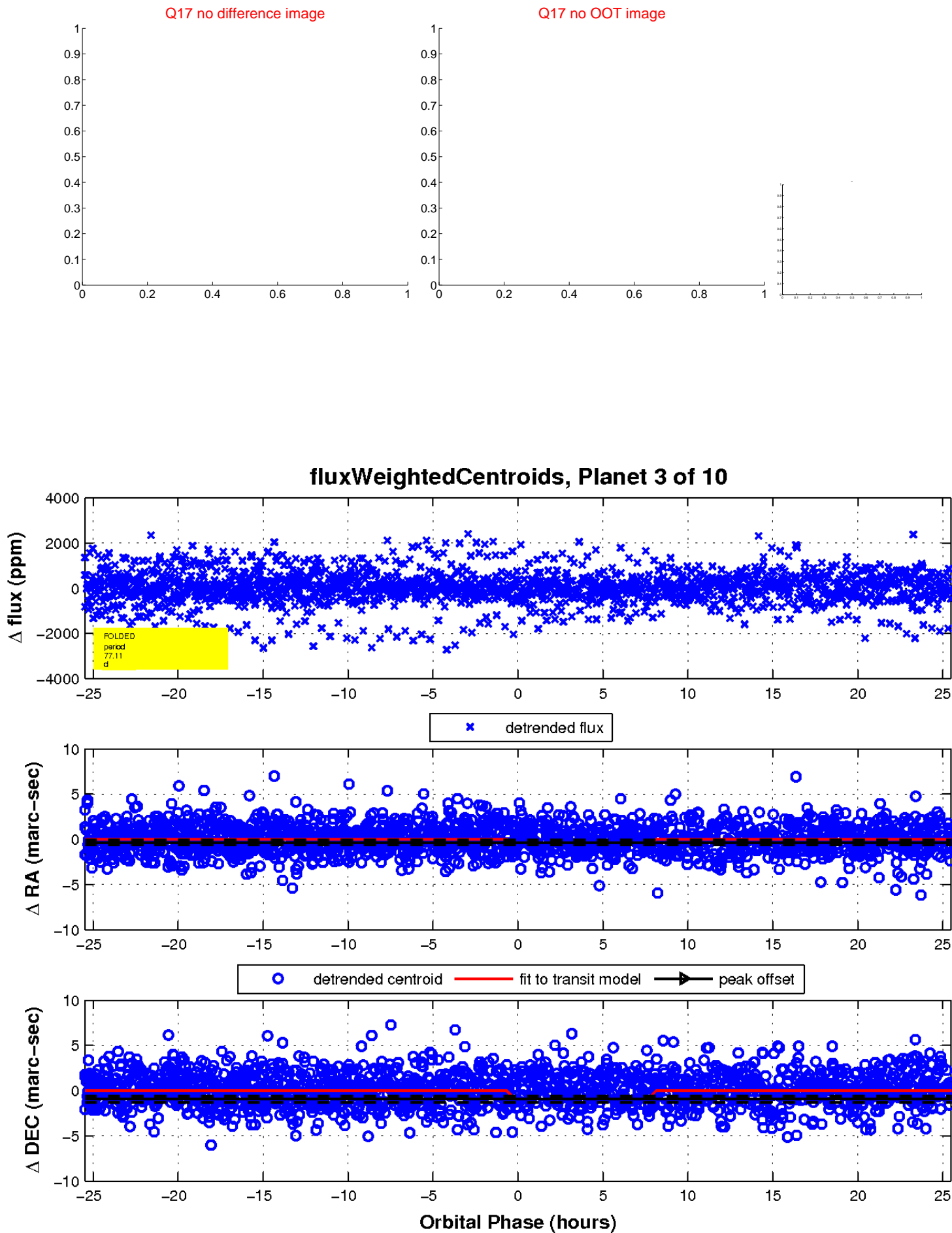
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

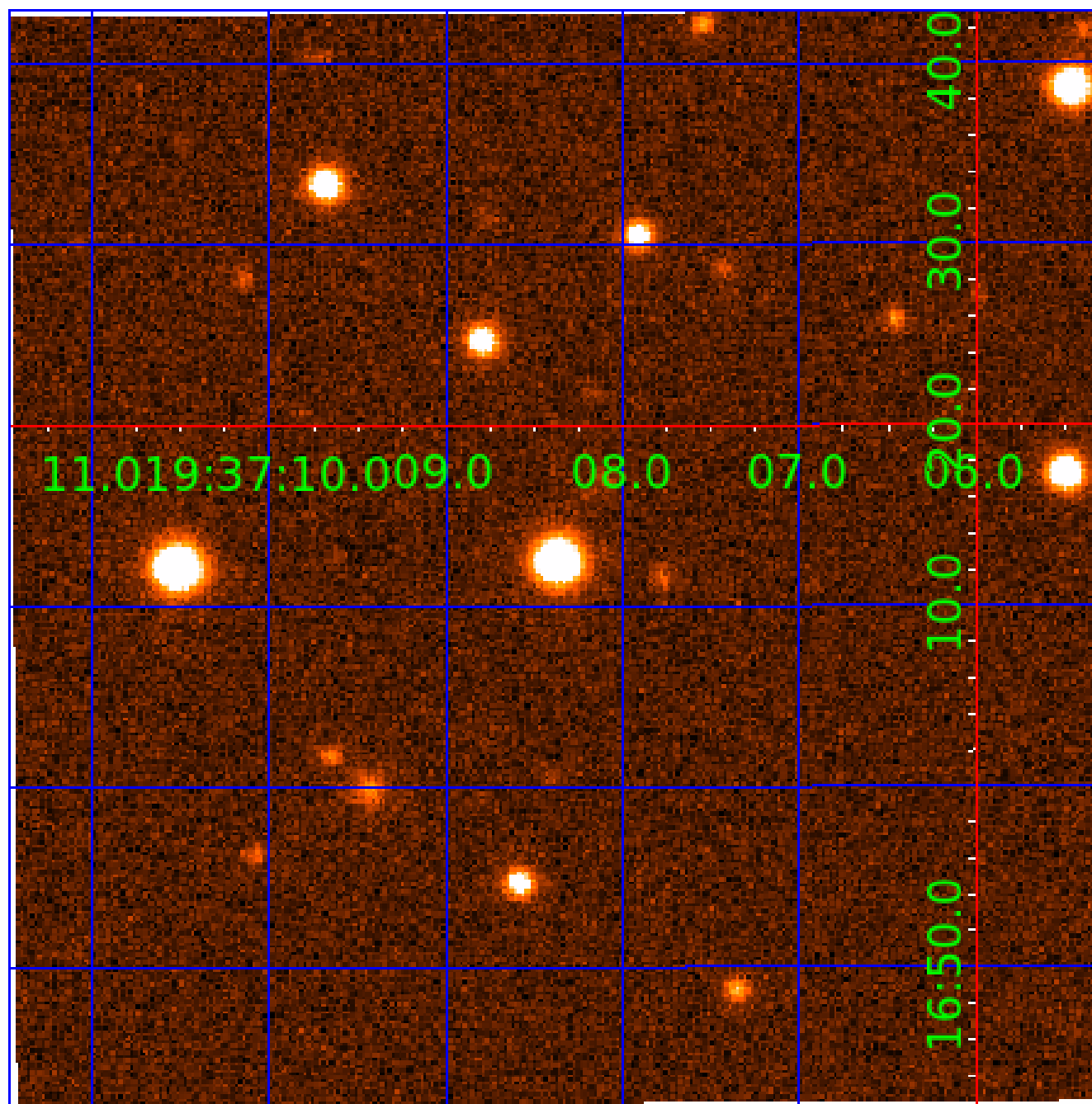


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011407811

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})
011407811-01	OBS	No	0.676789	131.939975	39.9	3.148	9.4	8.8	0.89	5418	0.68	2989.37
011407811-03	OBS	No	77.108758	165.989221	870.8	10.500	14.5	-1.0	0.89	5418	2.57	5.41
011407811-04	OBS	No	574.788958	196.942565	14486.3	92.601	13.6	9.5	0.89	5418	19.29	0.37
011407811-06	OBS	No	70.605236	172.699679	565.7	3.904	9.4	6.5	0.89	5418	2.36	6.09
011407811-09	OBS	No	123.901899	238.180470	402.4	5.110	9.4	3.9	0.89	5418	1.99	2.88
011407811-10	OBS	No	167.727451	224.512960	348.4	8.853	9.4	2.7	0.89	5418	1.77	1.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011407811-01	OBS	FP	0.00	1	0	0	0	LPP_DV
011407811-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
011407811-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011407811-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011407811-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
011407811-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT

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

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

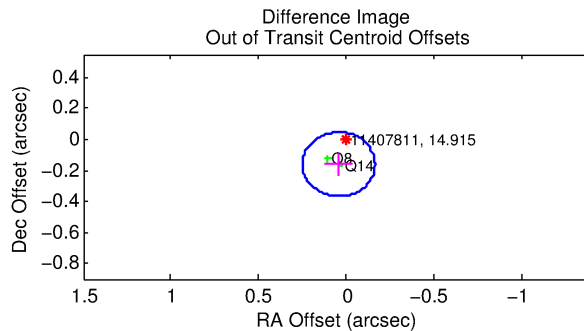
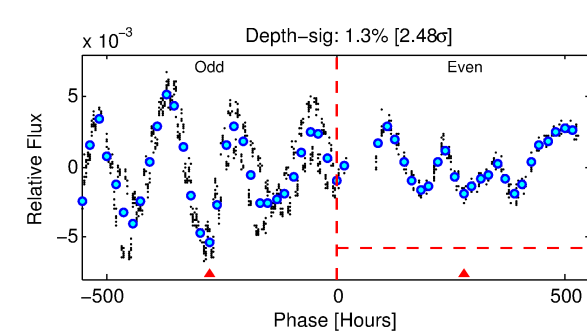
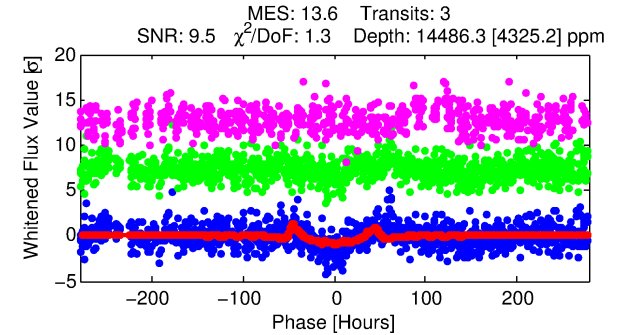
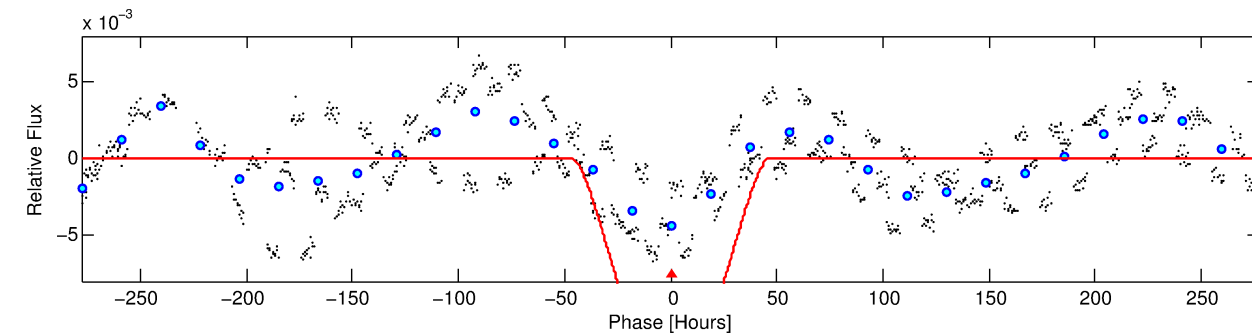
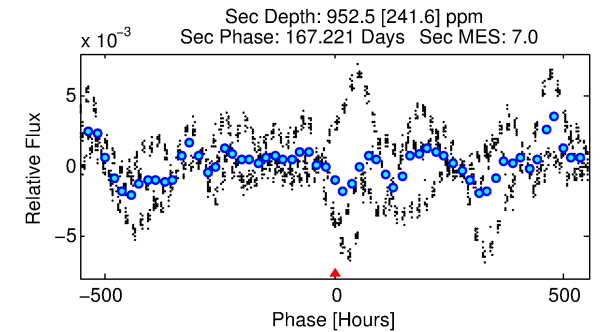
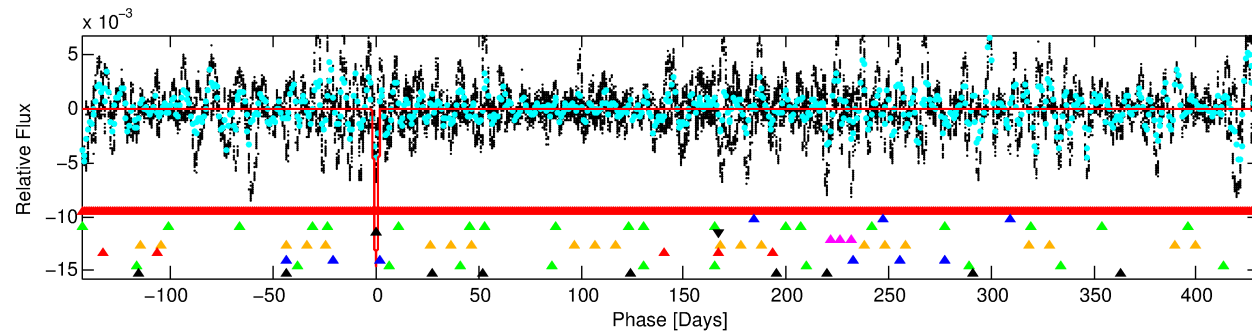
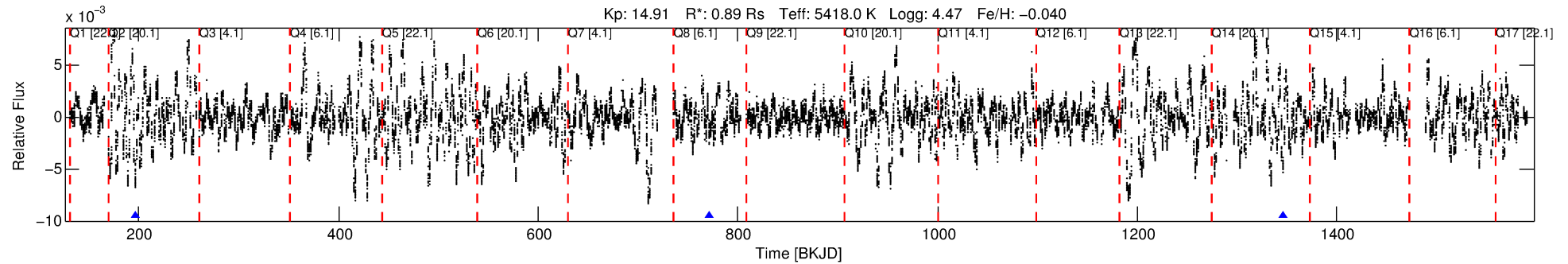
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011407811-04

No Significant Match Found

DV One-Page Summary

KIC: 11407811 Candidate: 4 of 10 Period: 574.789 d



DV Fit Results:

Period = 574.78896 [0.06113] d
Epoch = 196.9426 [0.0895] BKJD
Rp/R* = 0.1989 [0.1761]
a/R* = 31.38 [2.71]
b = 1.00 [0.21]
Seff = 0.37 [0.11]
Teq = 199 [14] K
Rp = 19.29 [17.55] Re
a = 1.2813 [0.2265] AU
Ag = 2311.36 [4179.48] [0.55σ]
Teffp = 2134 [957] K [2.02σ]

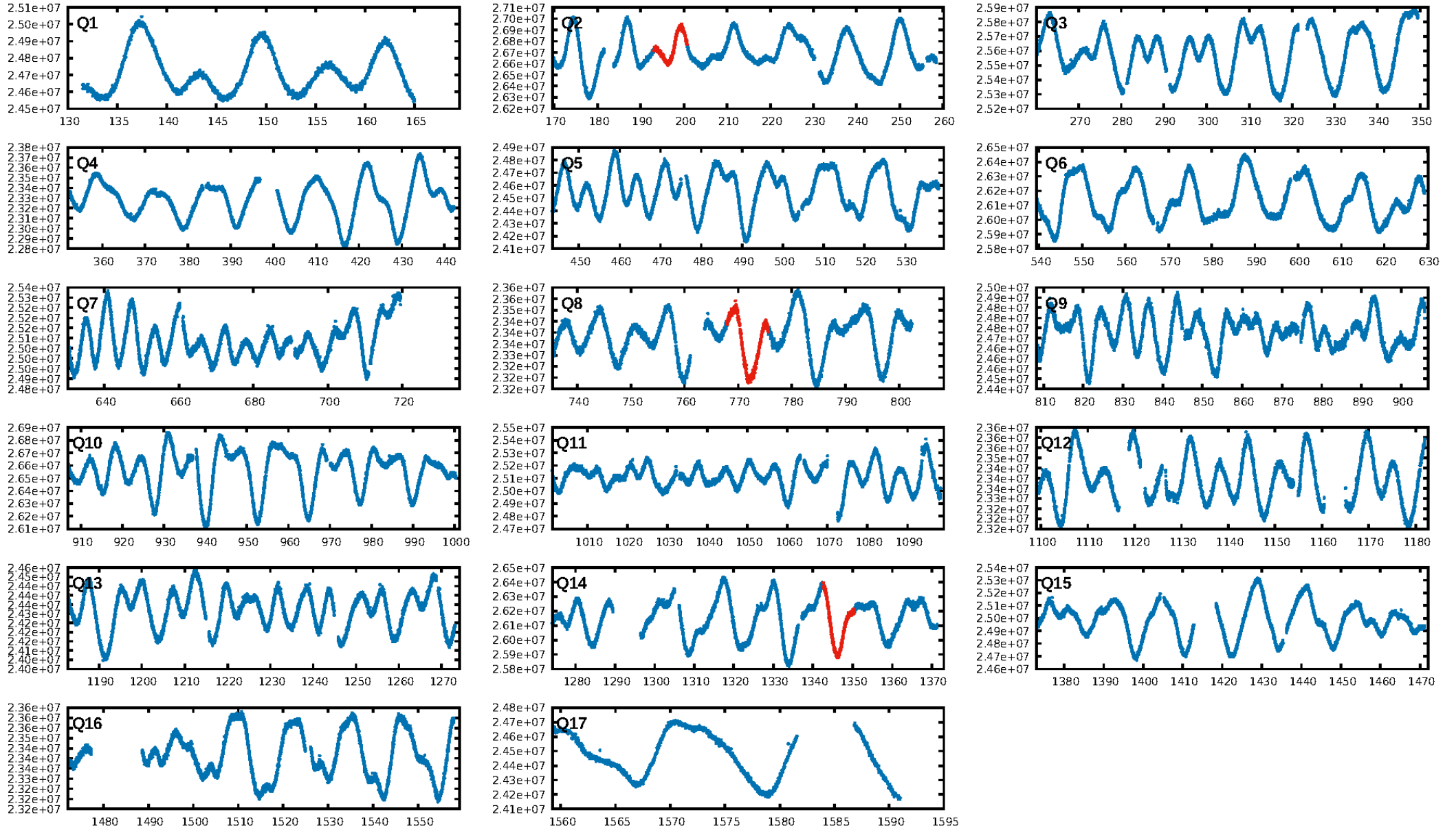
DV Diagnostic Results:

ShortPeriod-sig: 76.3% [1.18σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 0.9047
Centroid-sig: 19.9%
Centroid-so: 0.194 arcsec [5.88σ]
OotOffset-rm: 0.166 arcsec [2.40σ]
KicOffset-rm: 0.187 arcsec [1.95σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 1.00 [2/2]
DiffImageOverlap-fno: 0.00 [0/2]

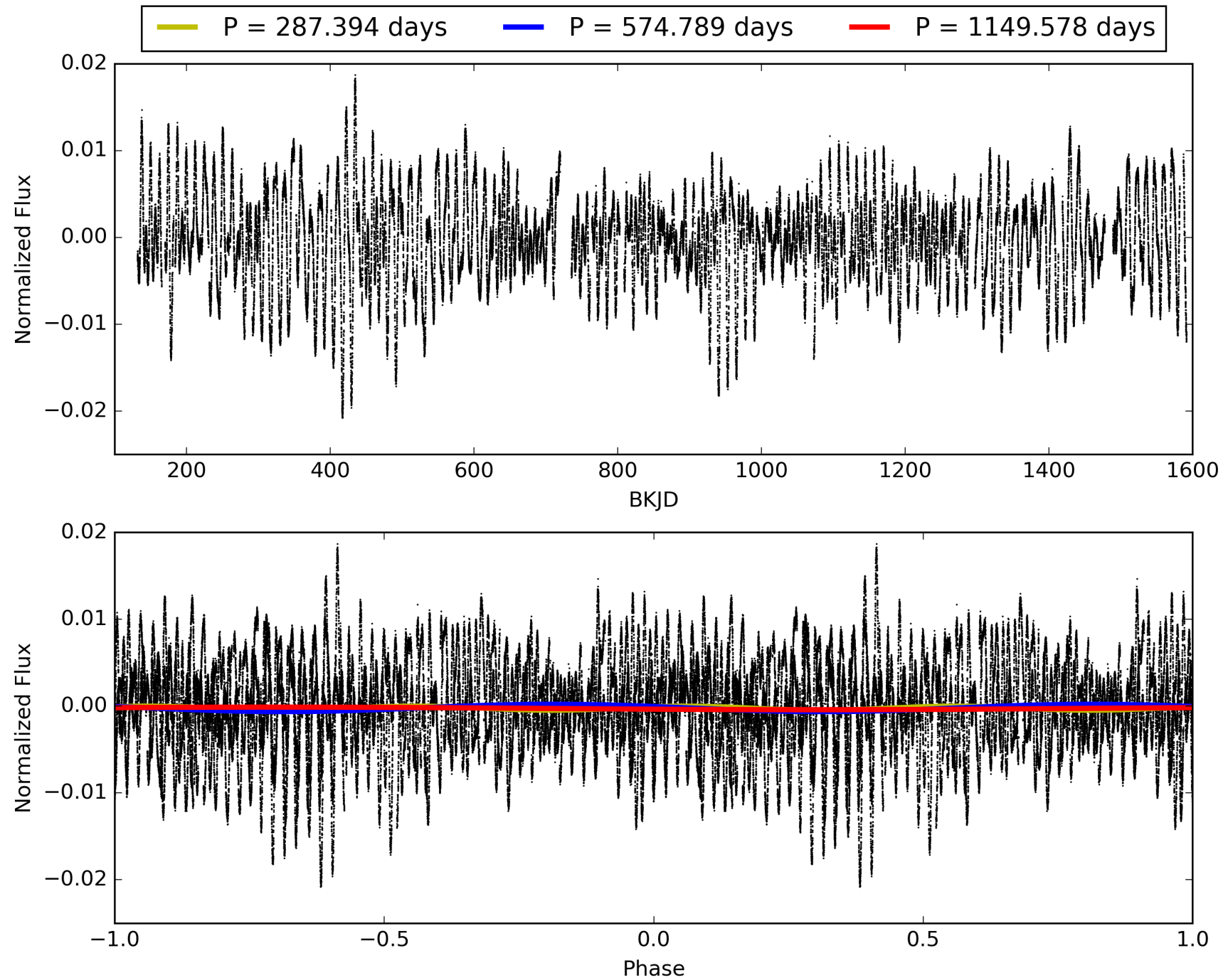
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:41:43 Z

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

TCE 011407811-04, PDC Light Curves

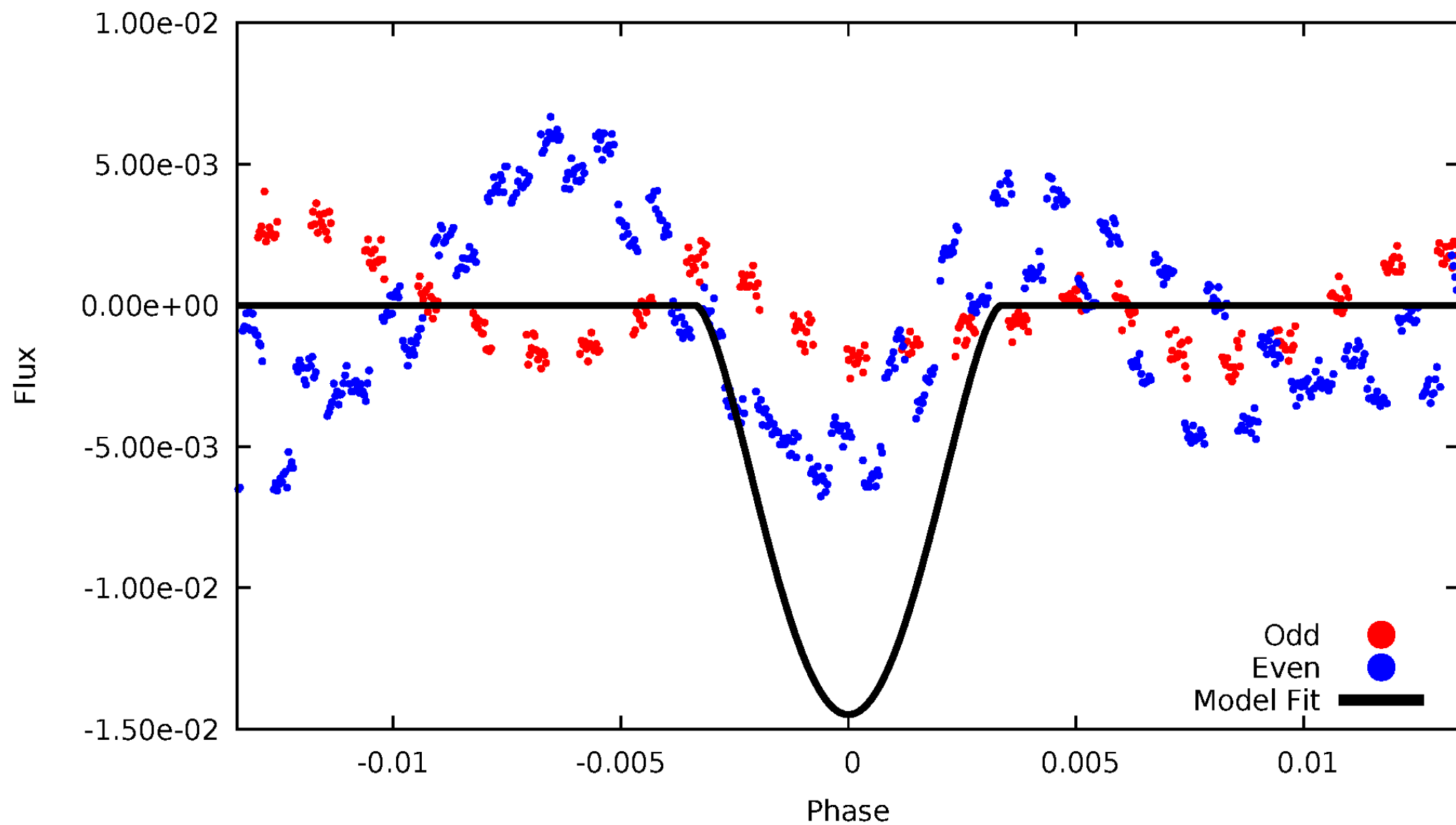


TCE 011407811-04



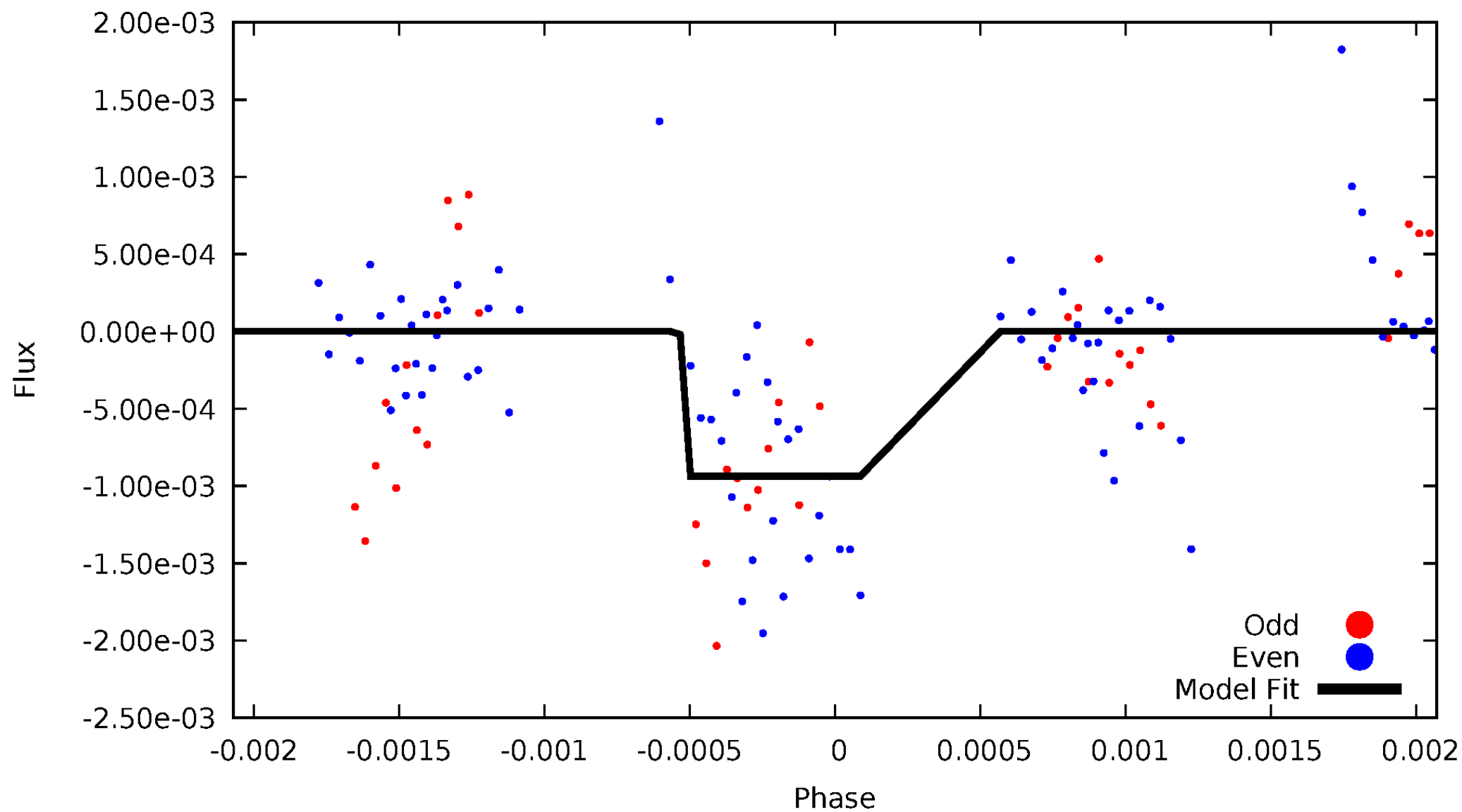
DV Odd/Even

TCE 011407811-04



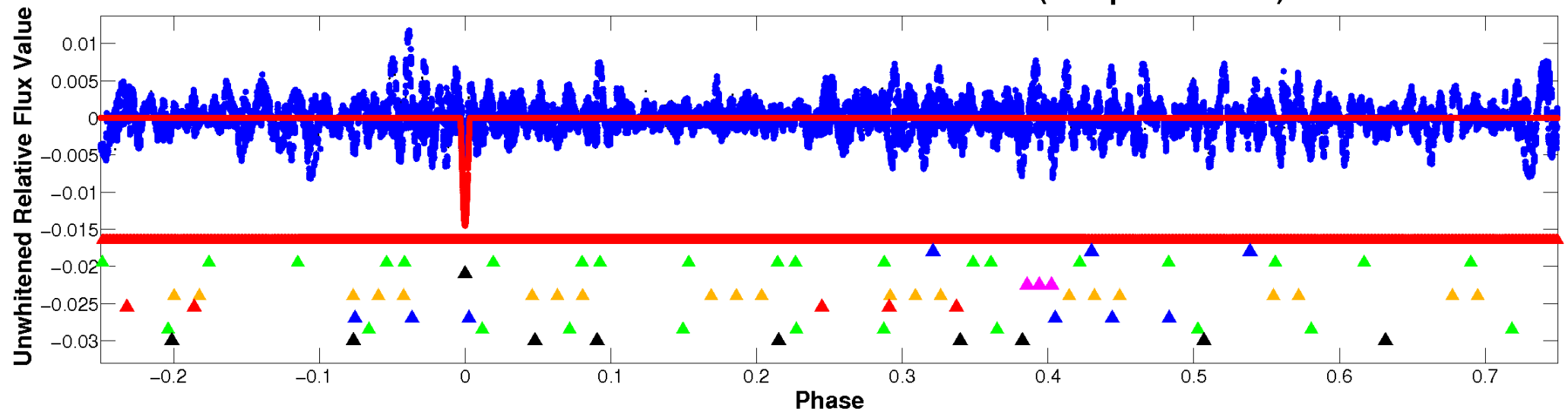
ALT Odd/Even

TCE 011407811-04

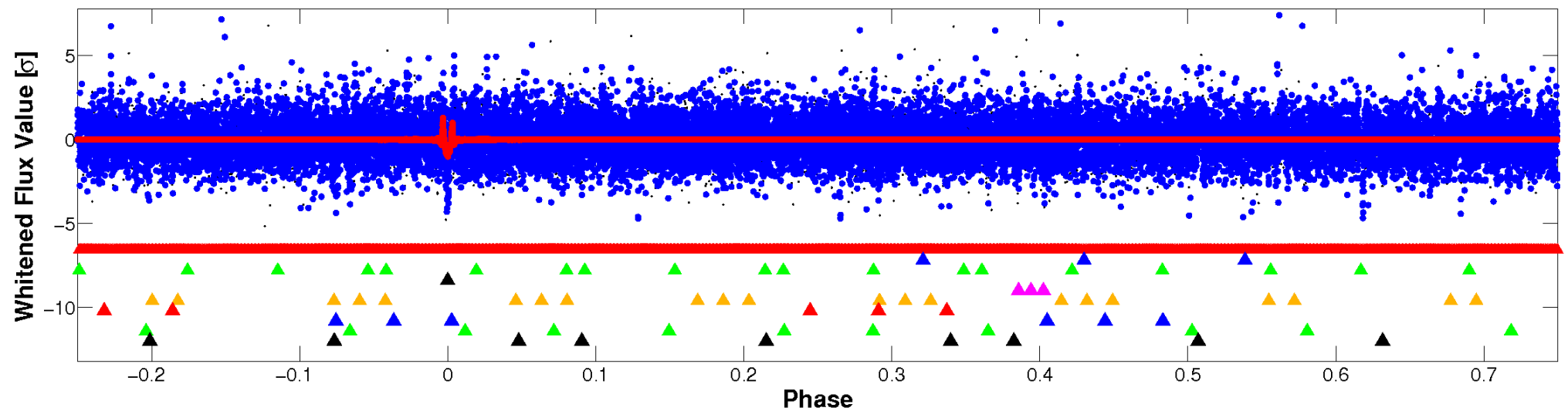


Non-Whitened Vs. Whitened Light Curve

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

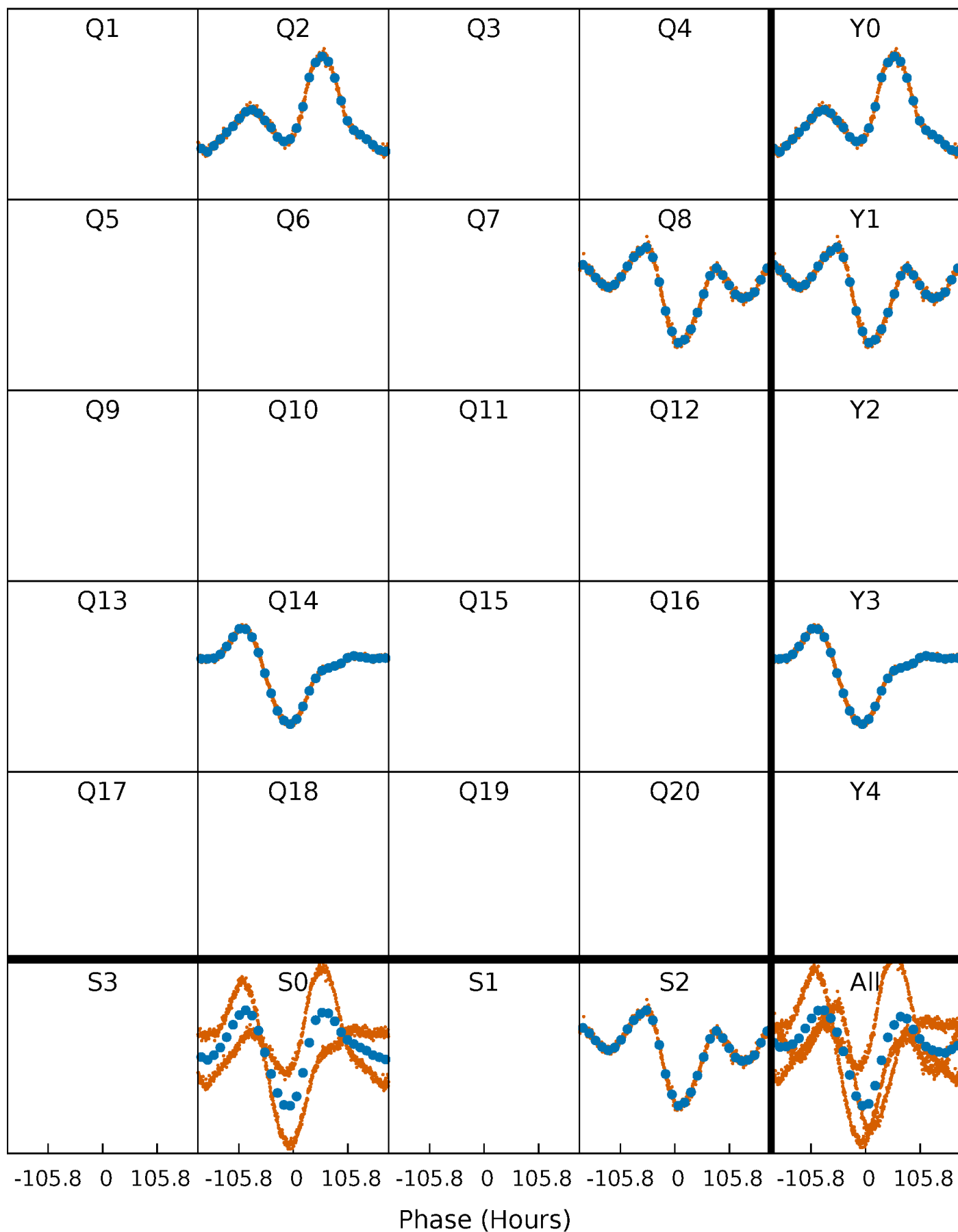


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



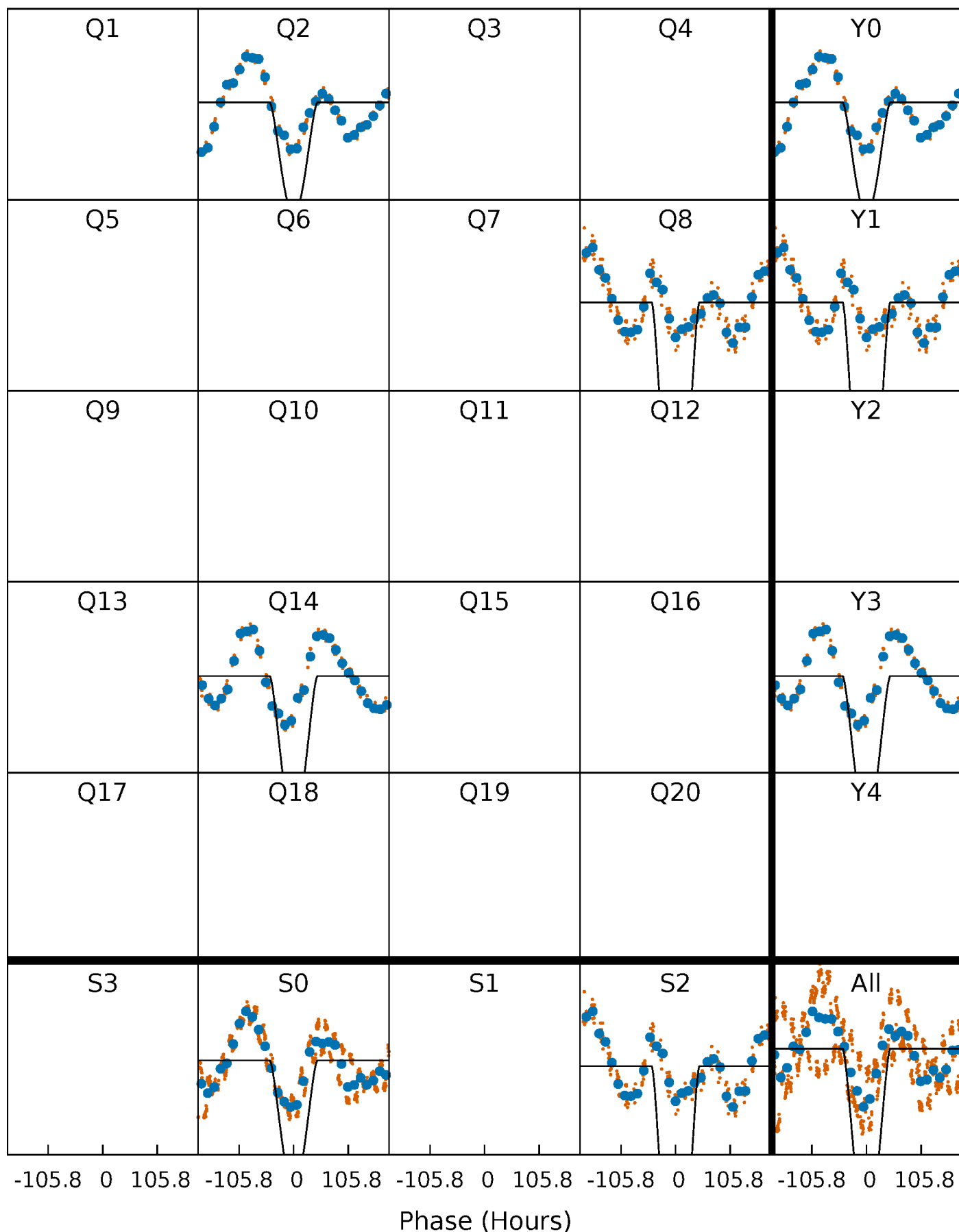
PDC Quarter-Phased Transit Curves

TCE 011407811-04 P=574.788958 Days $T_0=196.942565$ (BKJD)



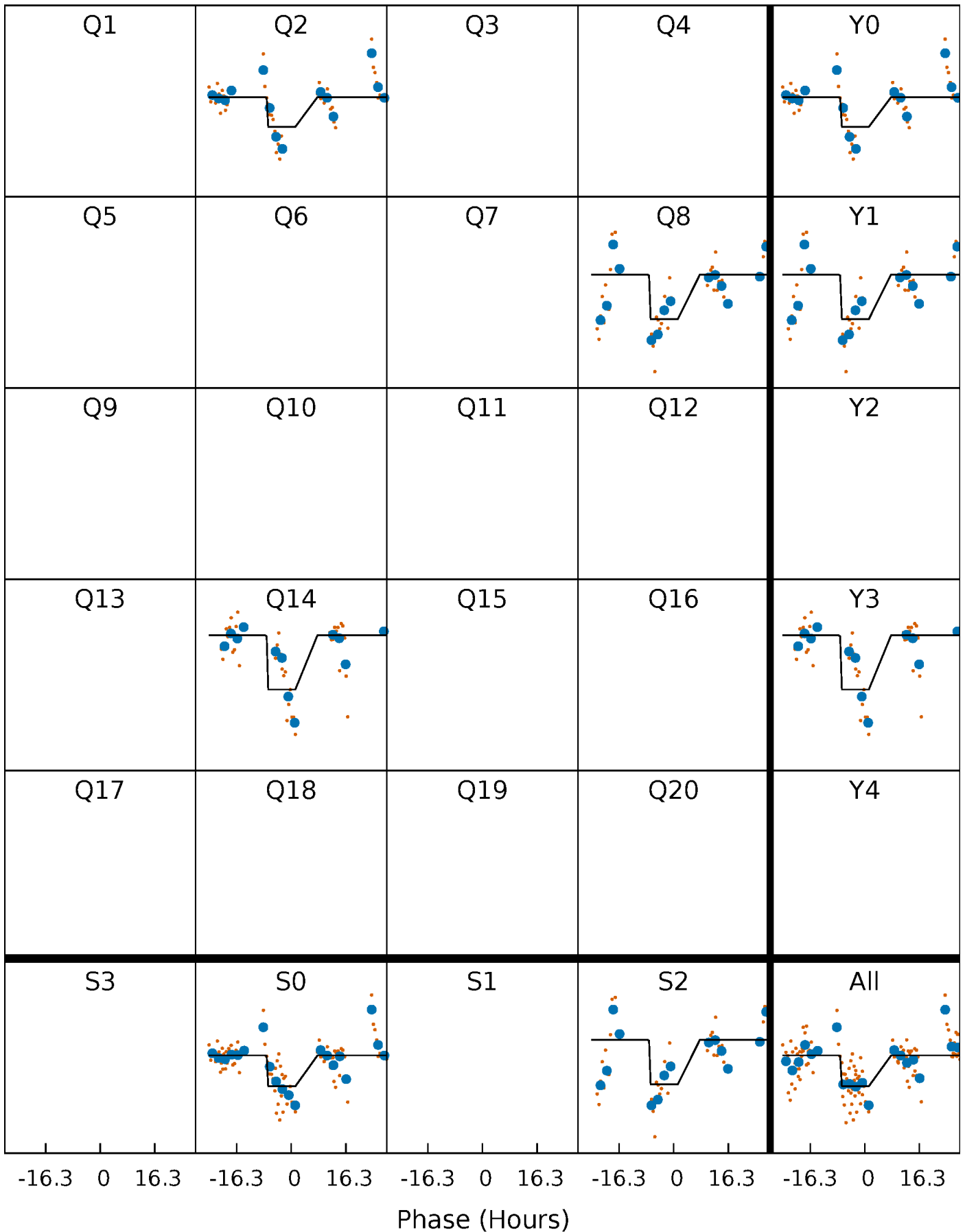
DV Quarter-Phased Transit Curves

TCE 011407811-04 P=574.788958 Days $T_0=196.942565$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

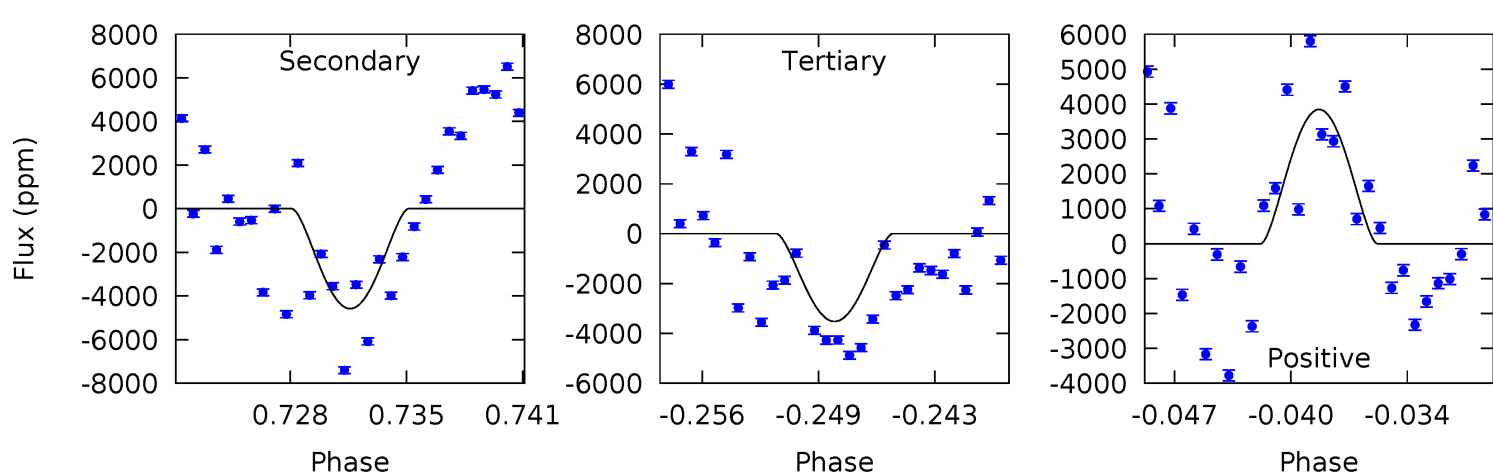
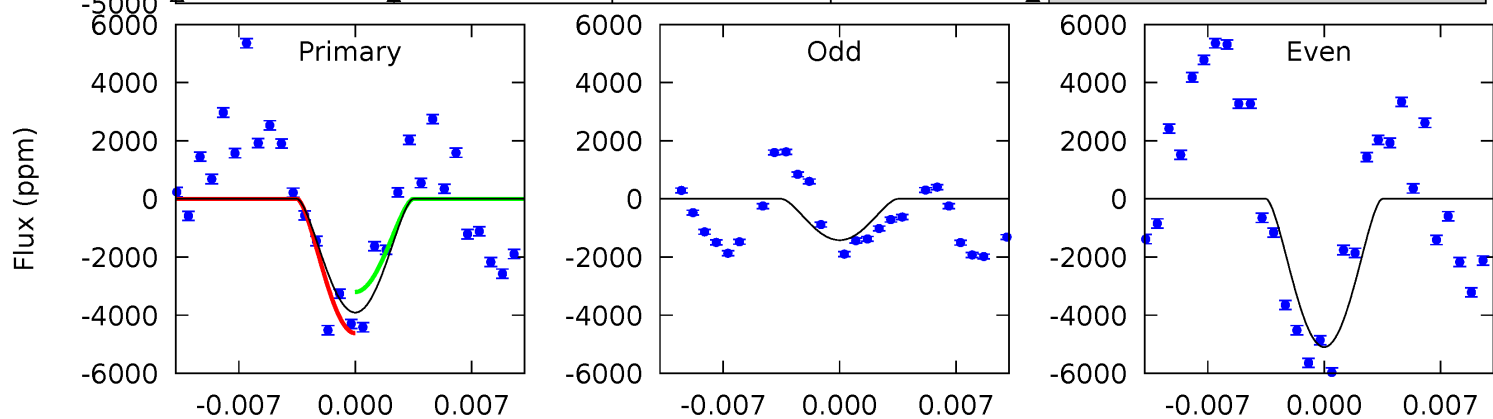
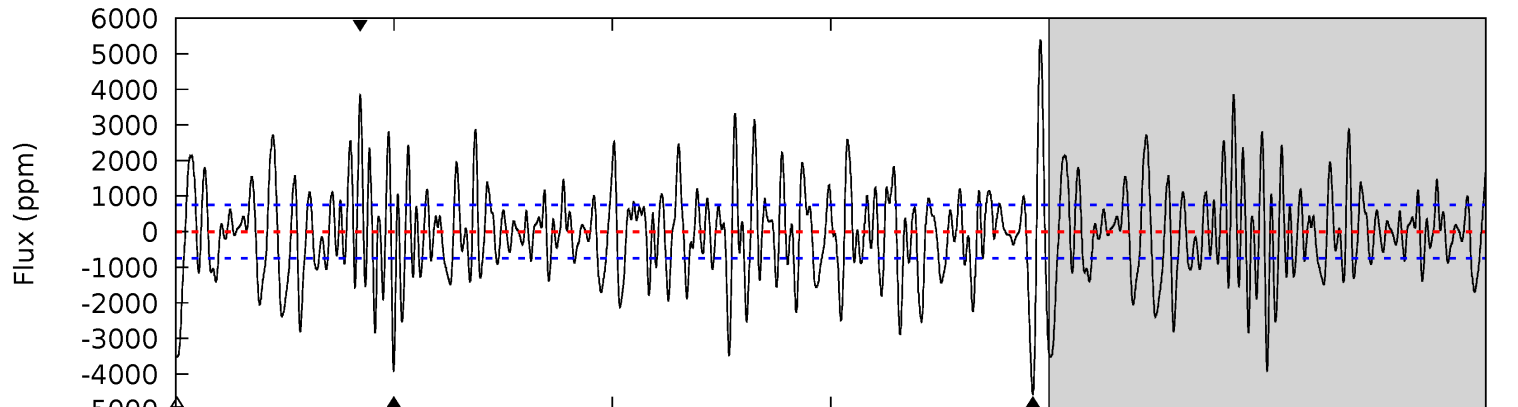
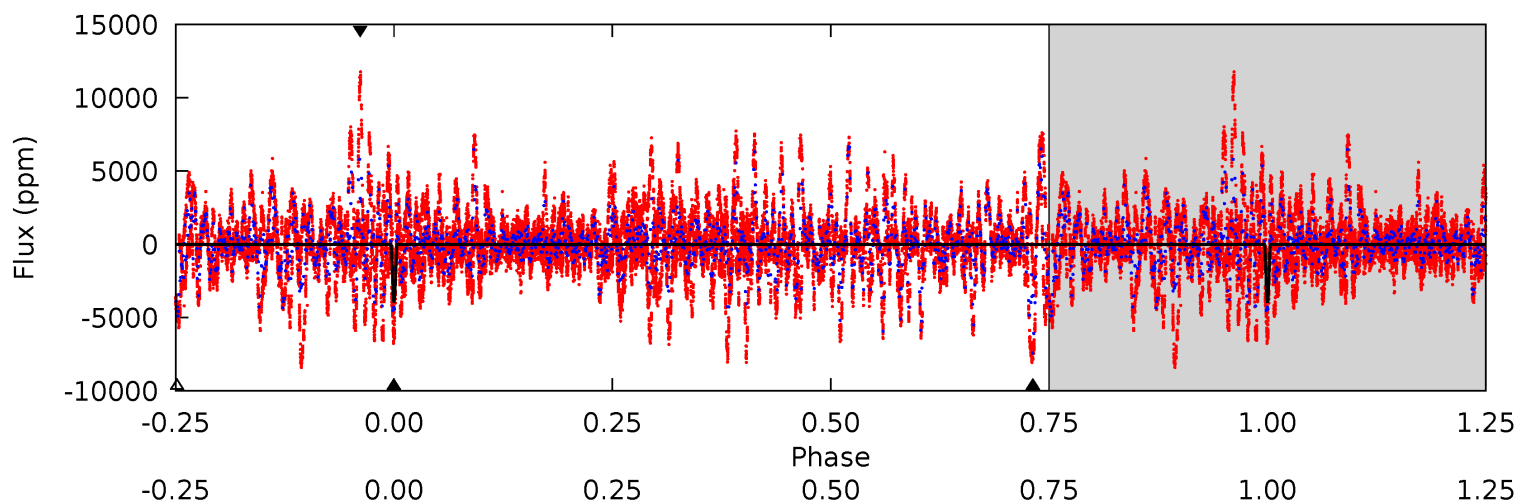
TCE 011407811-04 P=574.516784 Days $T_0=197.472902$ (BKJD)



DV Model-Shift Uniqueness Test

011407811-04, P = 574.788958 Days, E = 196.942565 Days

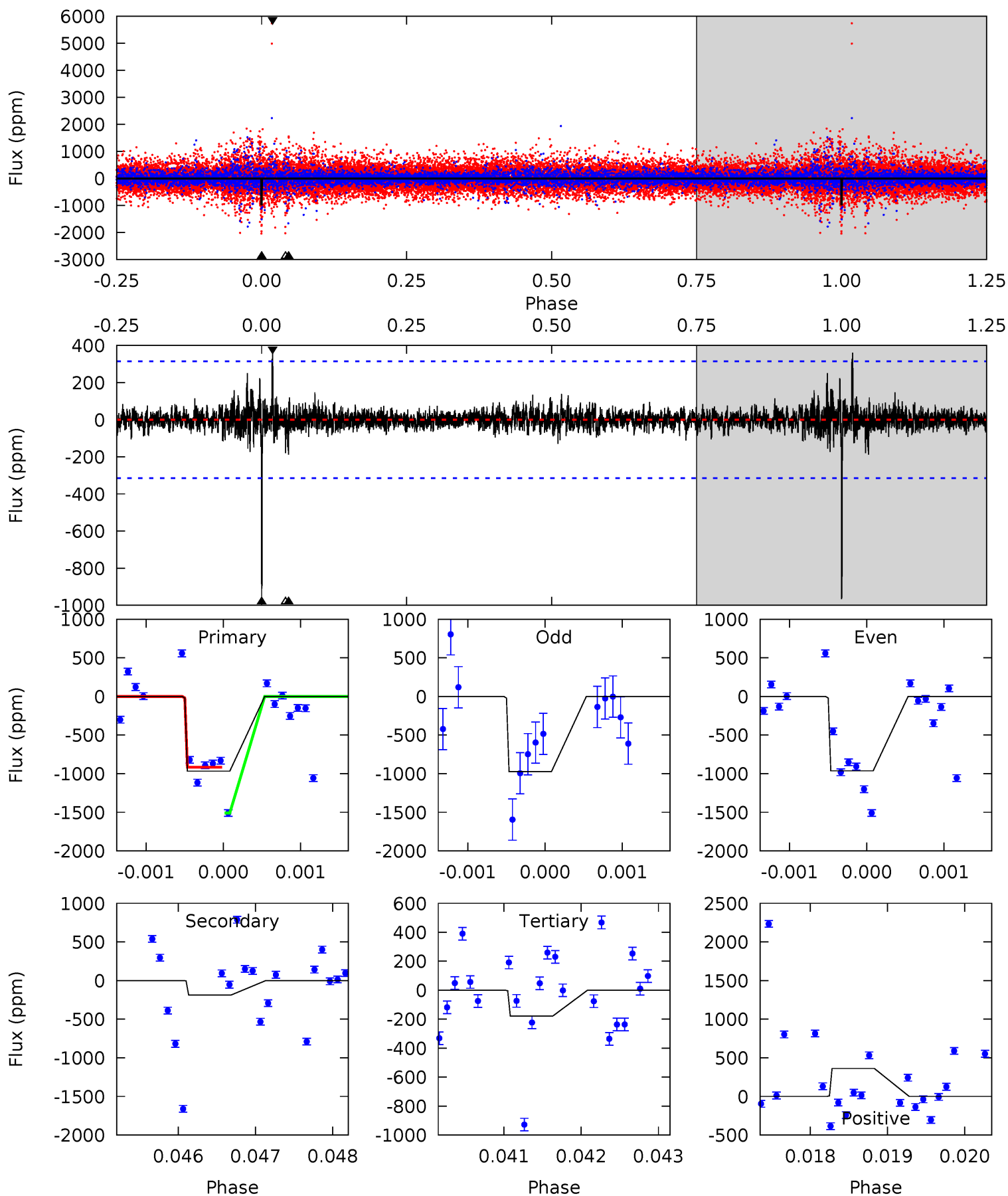
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.5	31.1	23.9	26.1	5.10	2.71	8.13	2.62	0.44	7.18	5.00	12.3	0.97	0.54	4.81



Alt Model-Shift Uniqueness Test

011407811-04, P = 574.516784 Days, E = 197.472902 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
16.7	3.24	3.10	6.24	5.44	3.27	0.62	13.6	10.5	0.15	-2.99	0.09	1.01	0.27	2.96



Stellar Parameters For KIC 011407811

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5418^{+160}_{-160}	$4.469^{+0.096}_{-0.144}$	$-0.040^{+0.300}_{-0.300}$	$0.889^{+0.184}_{-0.107}$	$0.849^{+0.099}_{-0.072}$	$1.702^{+0.685}_{-0.675}$
	+3%/-3%	+2%/-3%	+750%/-750%	+21%/-12%	+12%/-8%	+40%/-40%
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 011407811-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-4581 ± 147	$22.13^{+15.57}_{-12.72}$	280^{+15}_{-14}	3423^{+1200}_{-476}	8371^{+37892}_{-5469}
Alt.	-188 ± 58	$13.22^{+15.32}_{-8.43}$	280^{+17}_{-14}	2526^{+892}_{-385}	886^{+6797}_{-686}

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 $A_{obs} \gg 1.0$

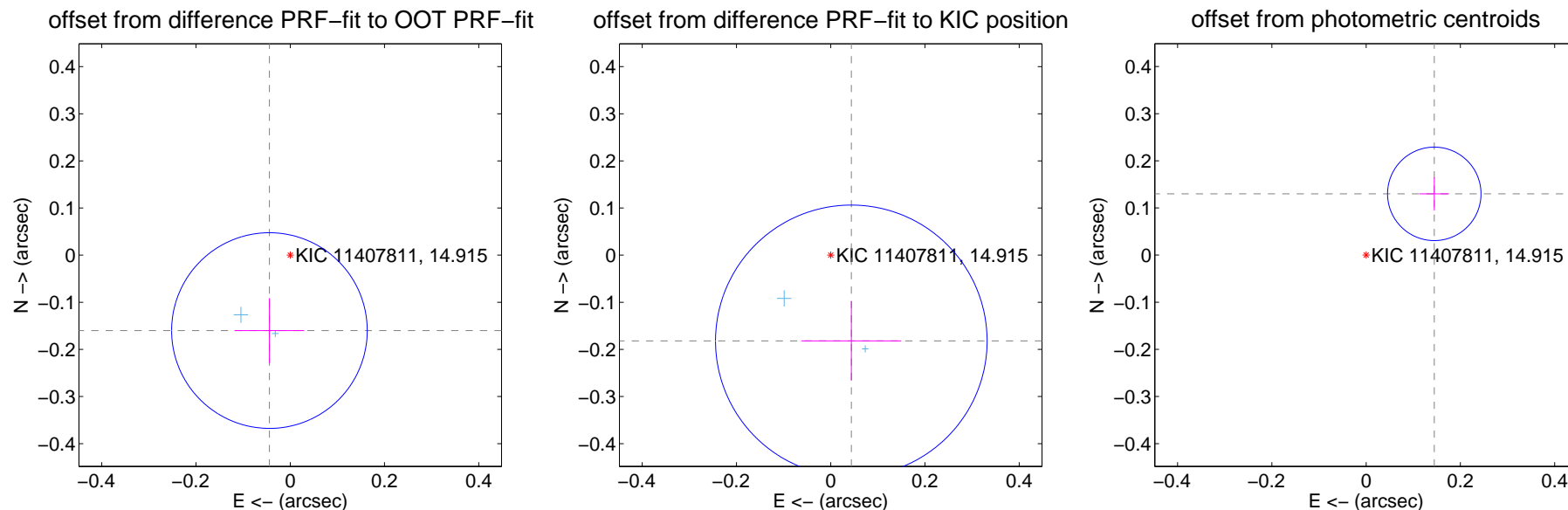
DV Centroid Data

Supplemental centroid analysis for 011407811-04. Kepler magnitude: 14.91. Transit SNR 9.50

There are 2 quarters with good PRF difference image offsets

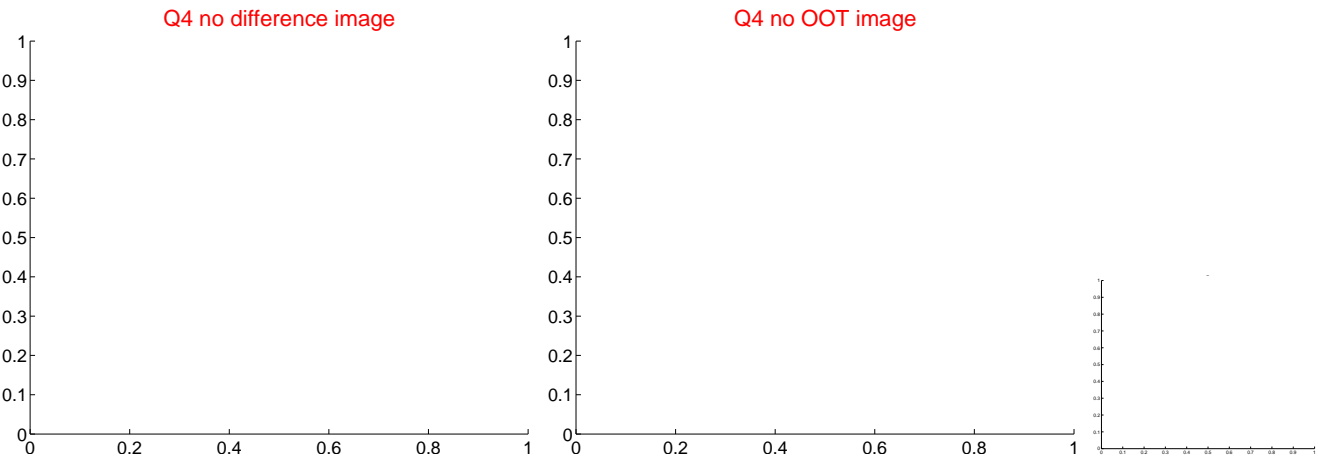
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.166 ± 0.069	2.40	0.044 ± 0.074	-0.160 ± 0.069
PRF-fit source offset from KIC position	0.187 ± 0.096	1.95	-0.044 ± 0.106	-0.182 ± 0.084
photometric centroid source offset	0.19 ± 0.03	5.88	-0.14 ± 0.03	0.13 ± 0.04

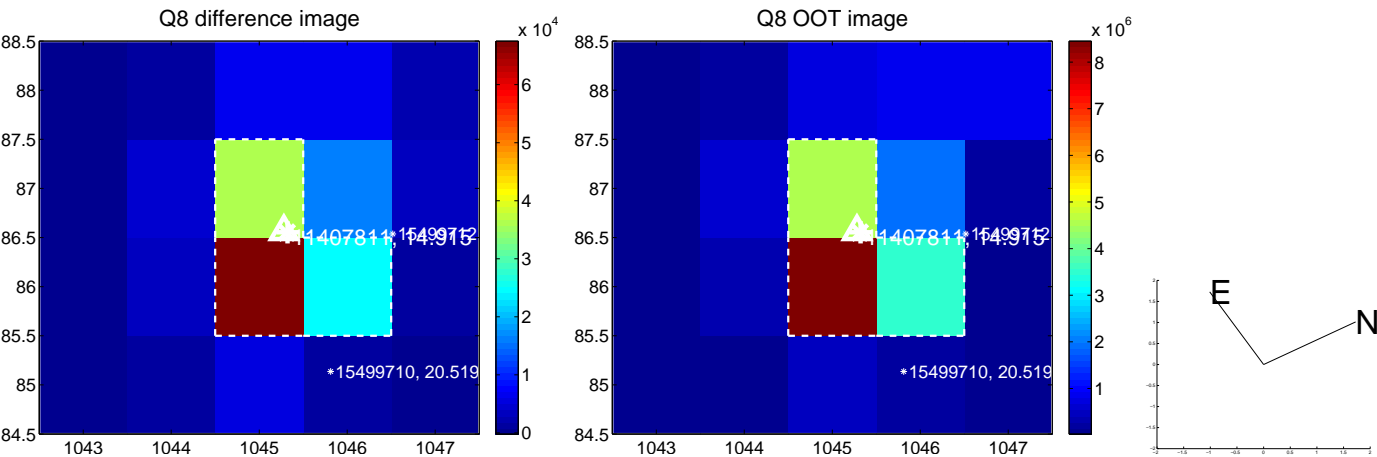


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

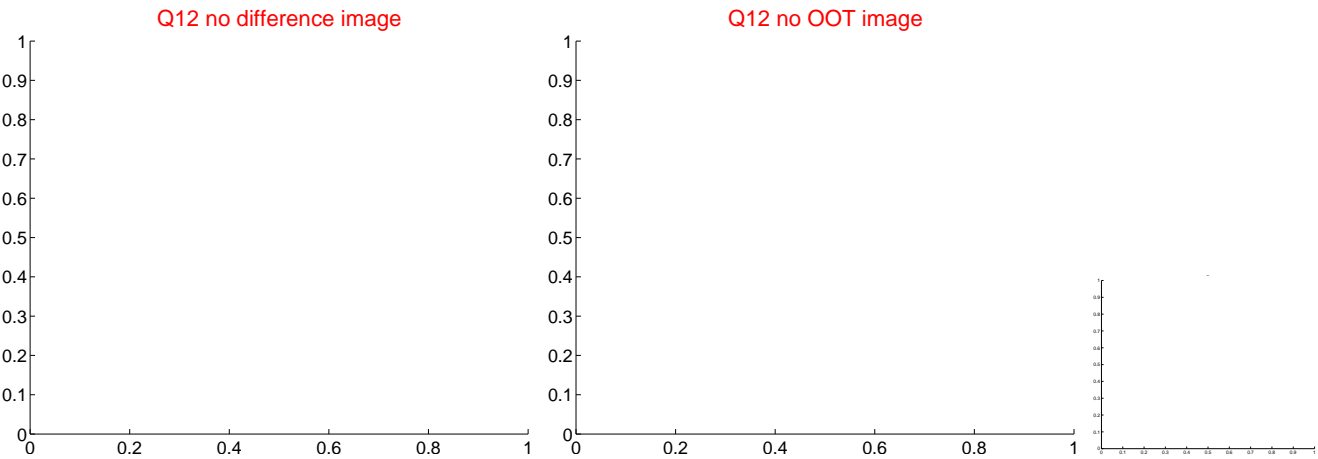
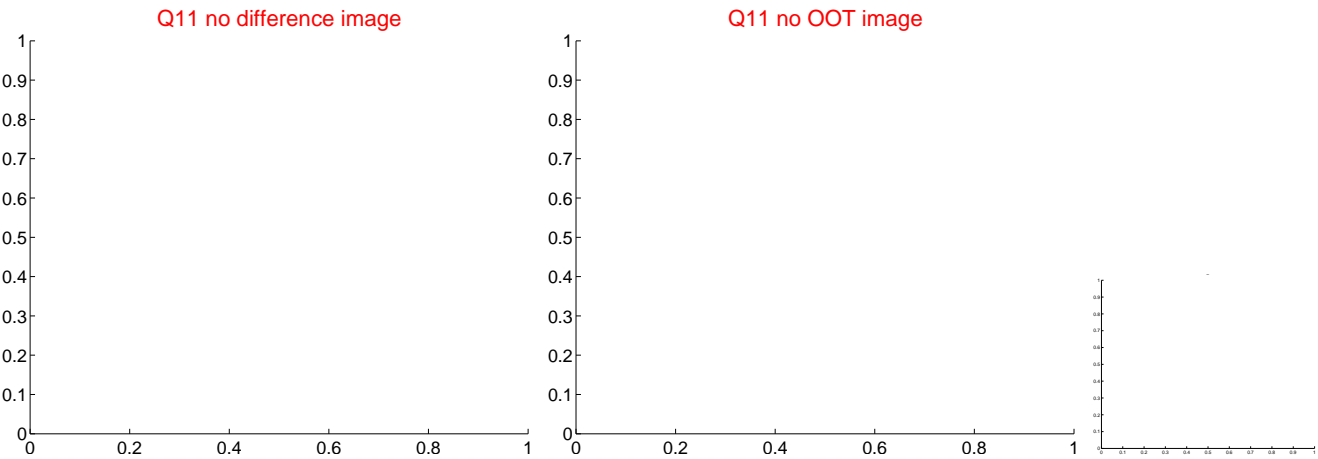
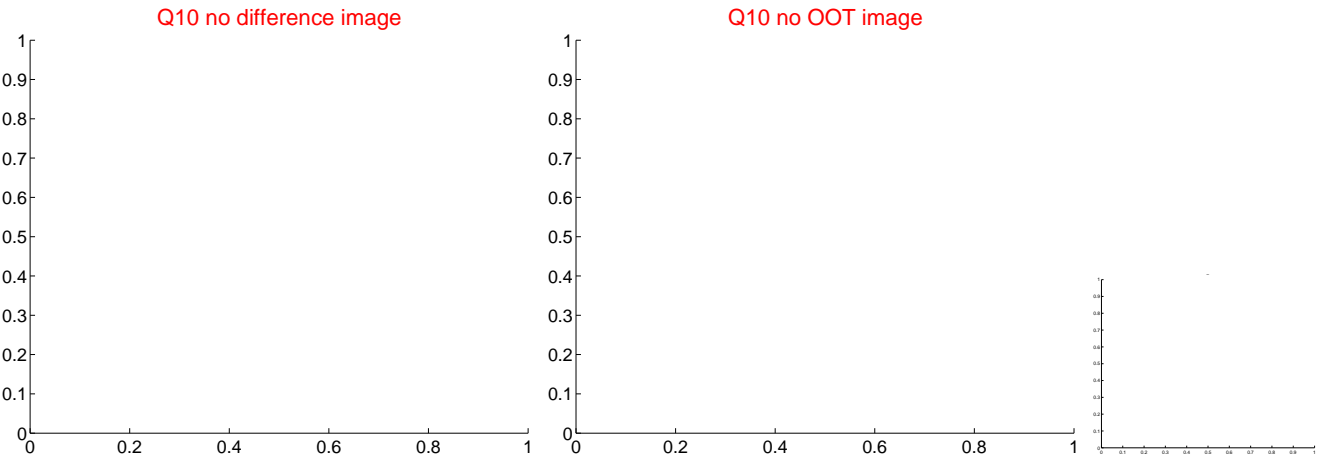
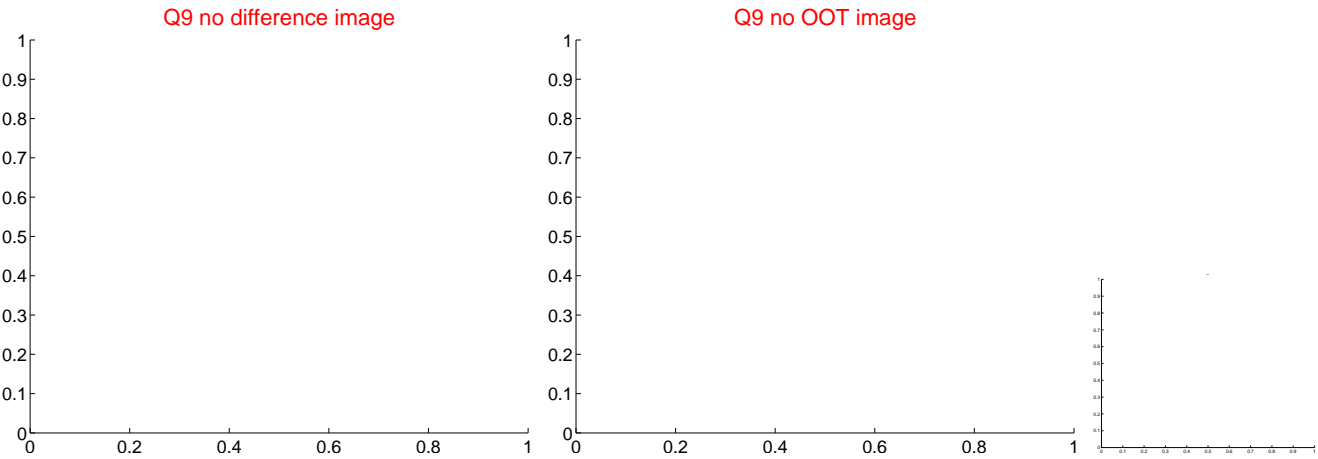
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

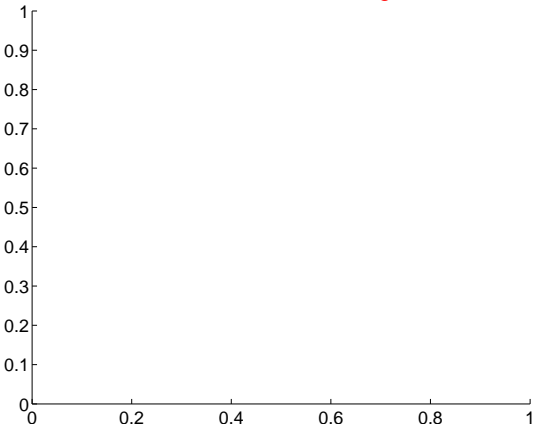


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

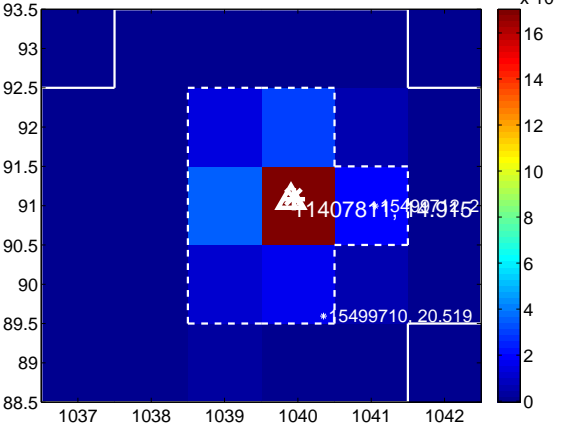
Q13 no difference image



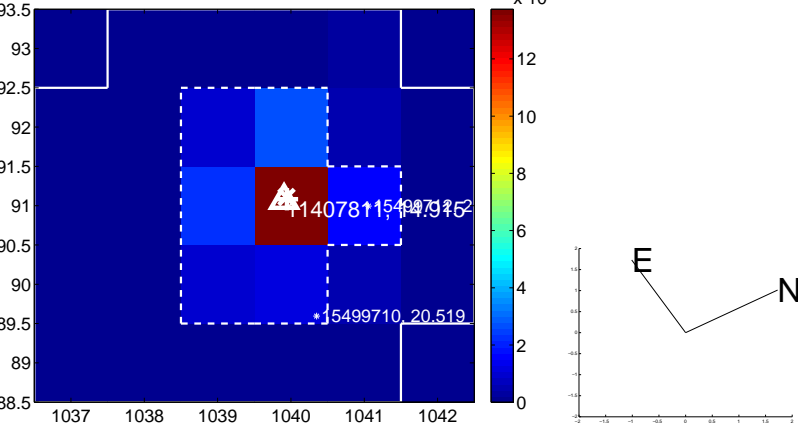
Q13 no OOT image



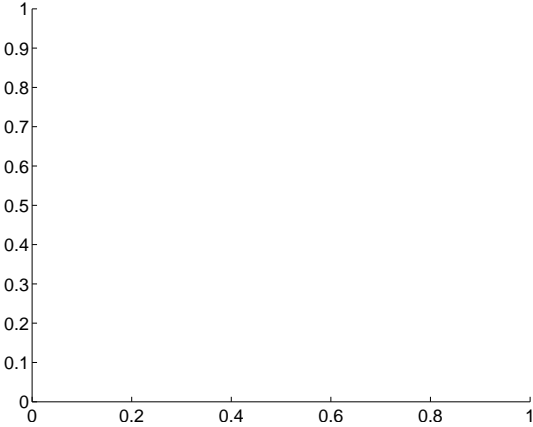
Q14 difference image



Q14 OOT image



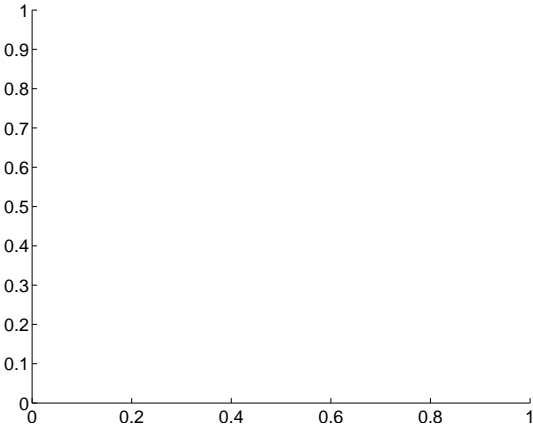
Q15 no difference image



Q15 no OOT image



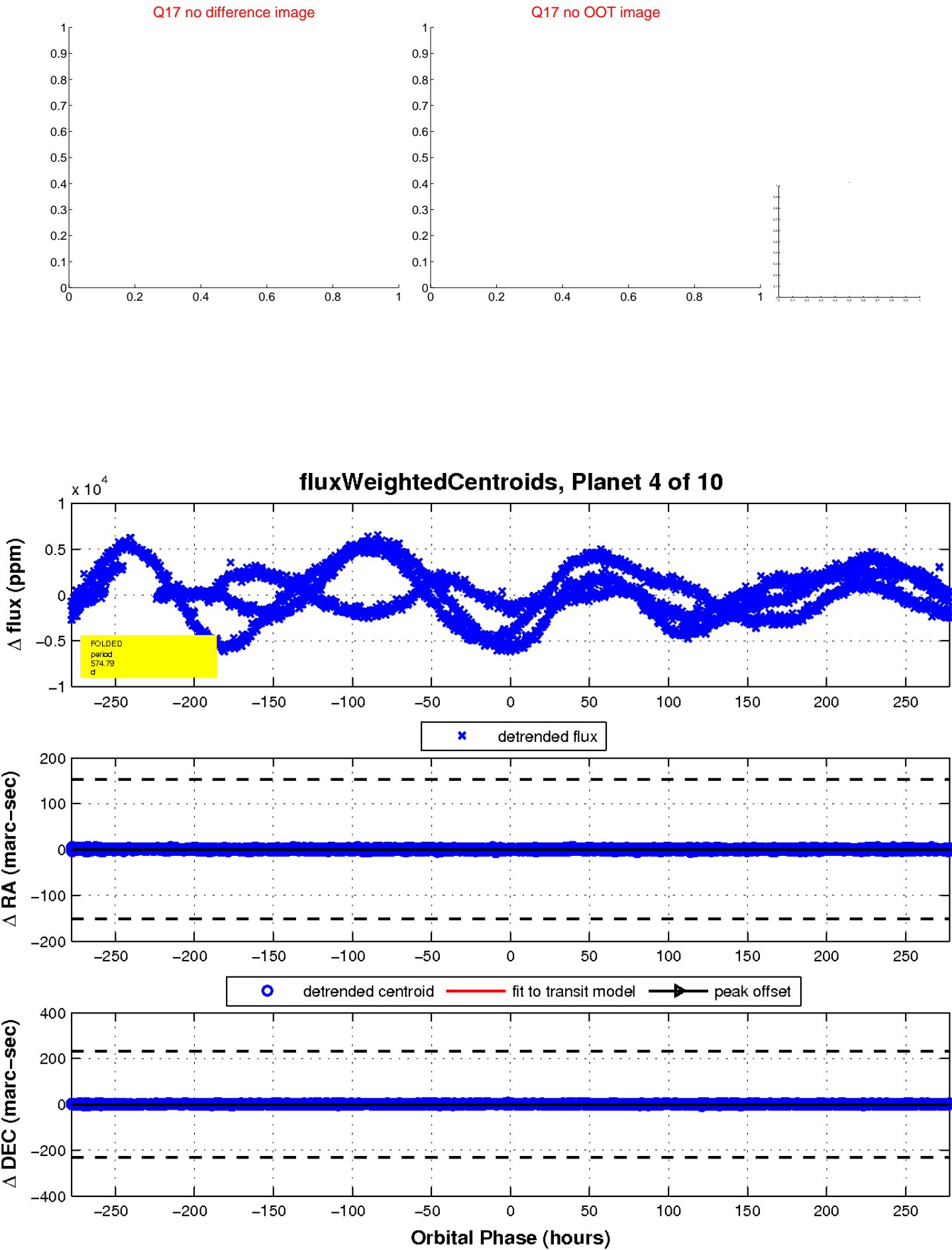
Q16 no difference image



Q16 no OOT image

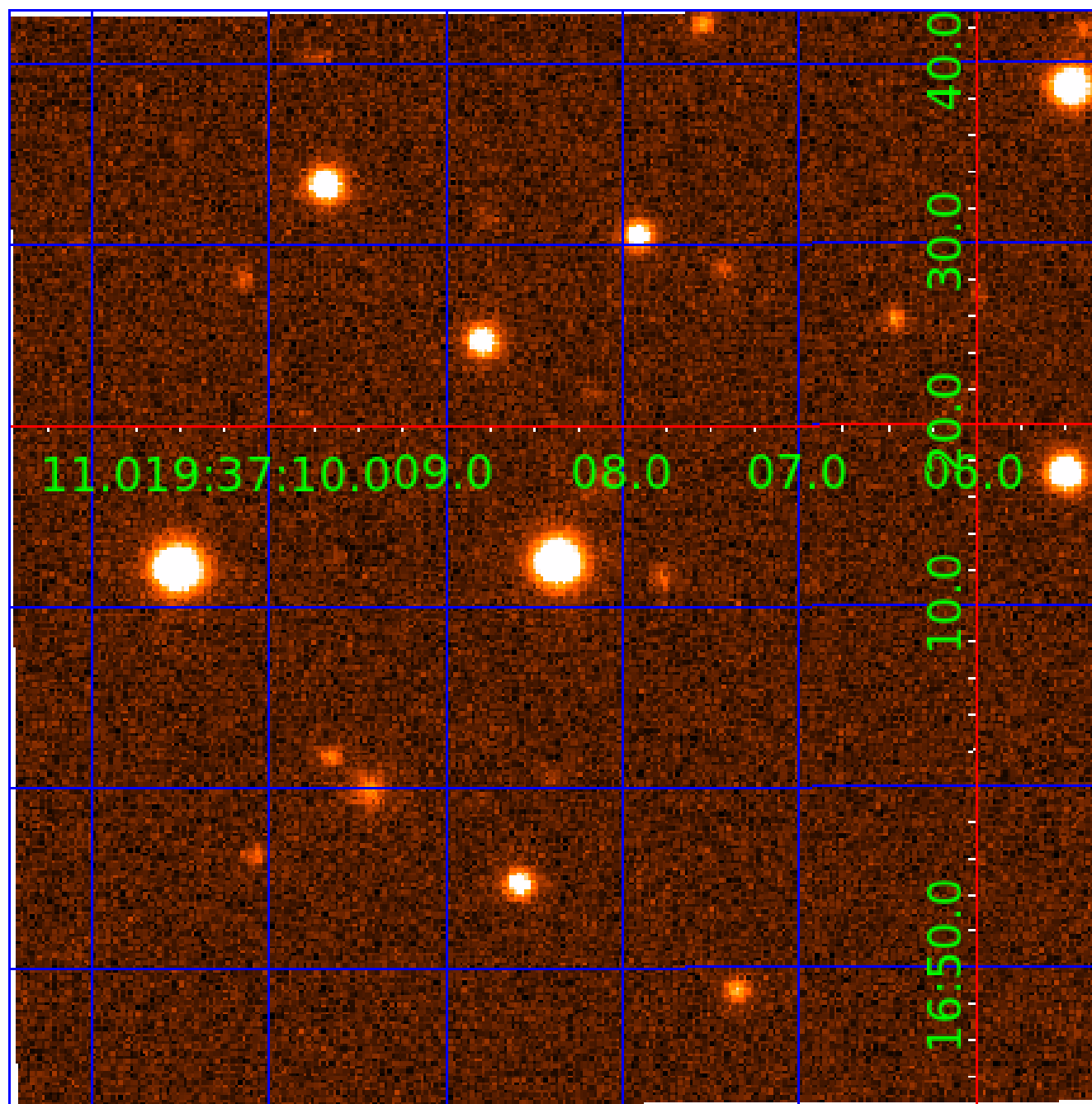


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011407811

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})
011407811-01	OBS	No	0.676789	131.939975	39.9	3.148	9.4	8.8	0.89	5418	0.68	2989.37
011407811-03	OBS	No	77.108758	165.989221	870.8	10.500	14.5	-1.0	0.89	5418	2.57	5.41
011407811-04	OBS	No	574.788958	196.942565	14486.3	92.601	13.6	9.5	0.89	5418	19.29	0.37
011407811-06	OBS	No	70.605236	172.699679	565.7	3.904	9.4	6.5	0.89	5418	2.36	6.09
011407811-09	OBS	No	123.901899	238.180470	402.4	5.110	9.4	3.9	0.89	5418	1.99	2.88
011407811-10	OBS	No	167.727451	224.512960	348.4	8.853	9.4	2.7	0.89	5418	1.77	1.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011407811-01	OBS	FP	0.00	1	0	0	0	LPP_DV
011407811-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
011407811-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011407811-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011407811-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
011407811-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT

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

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

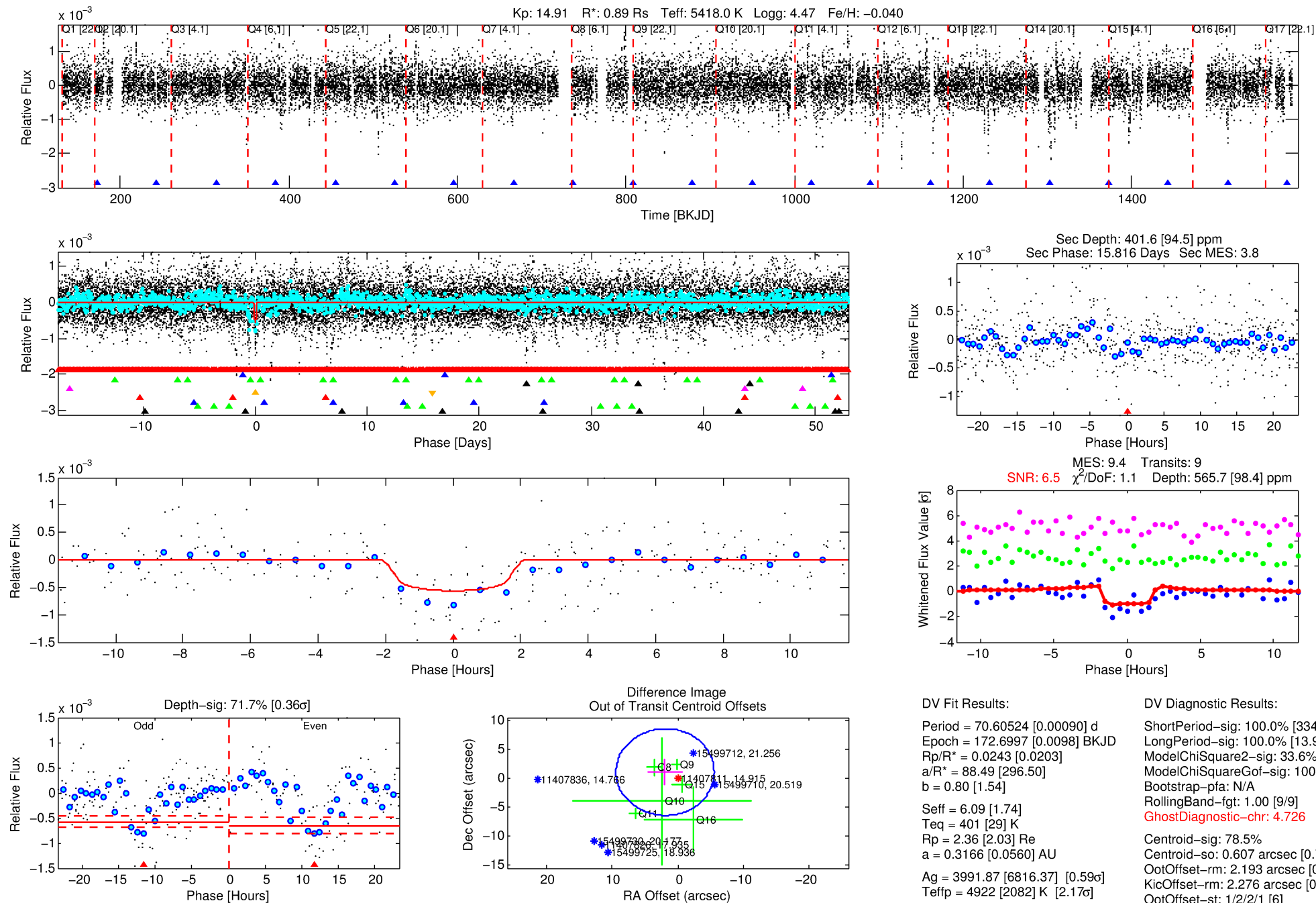
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011407811-06

No Significant Match Found

DV One-Page Summary

KIC: 11407811 Candidate: 6 of 10 Period: 70.605 d



DV Fit Results:

Period = 70.60524 [0.00090] d
Epoch = 172.6997 [0.0098] BKJD
Rp/R* = 0.0243 [0.0203]
a/R* = 88.49 [296.50]
b = 0.80 [1.54]
Seff = 6.09 [1.74]
Teq = 401 [29] K
Rp = 2.36 [2.03] Re
a = 0.3166 [0.0560] AU
Ag = 3991.87 [6816.37] [0.59 σ]
Teff = 4922 [2082] K [2.17 σ]

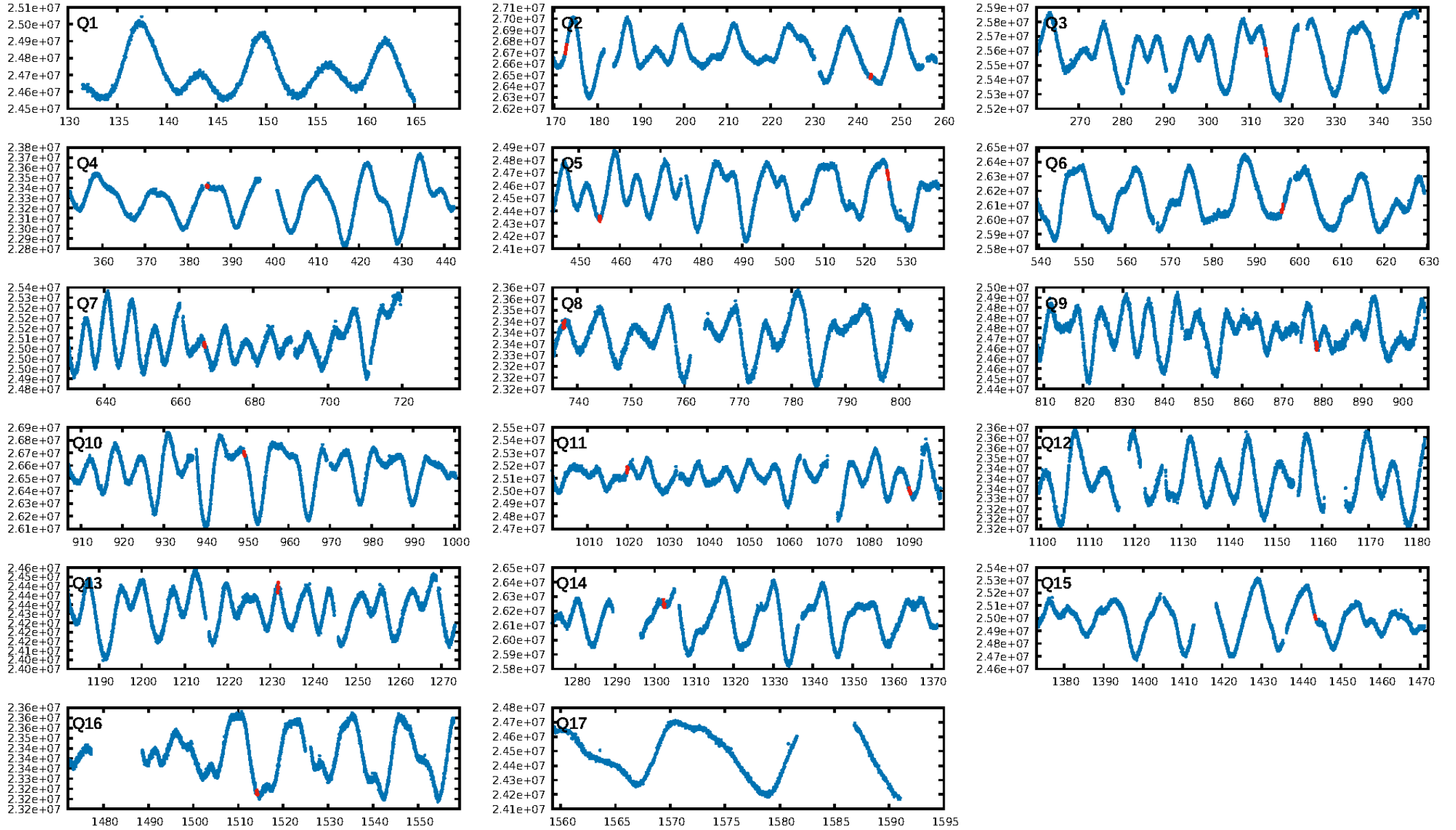
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [334.64 σ]
LongPeriod-sig: 100.0% [13.93 σ]
ModelChiSquare2-sig: 33.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [9/9]
GhostDiagnostic-chr: 4.726
Centroid-sig: 78.5%
Centroid-so: 0.607 arcsec [0.73 σ]
OotOffset-rm: 2.193 arcsec [0.88 σ]
KicOffset-rm: 2.276 arcsec [0.92 σ]
OotOffset-st: 1/2/2/1 [6]
KicOffset-st: 1/2/2/1 [6]
DiffImageQuality-fgm: 0.17 [1/6]
DiffImageOverlap-fno: 0.00 [0/12]

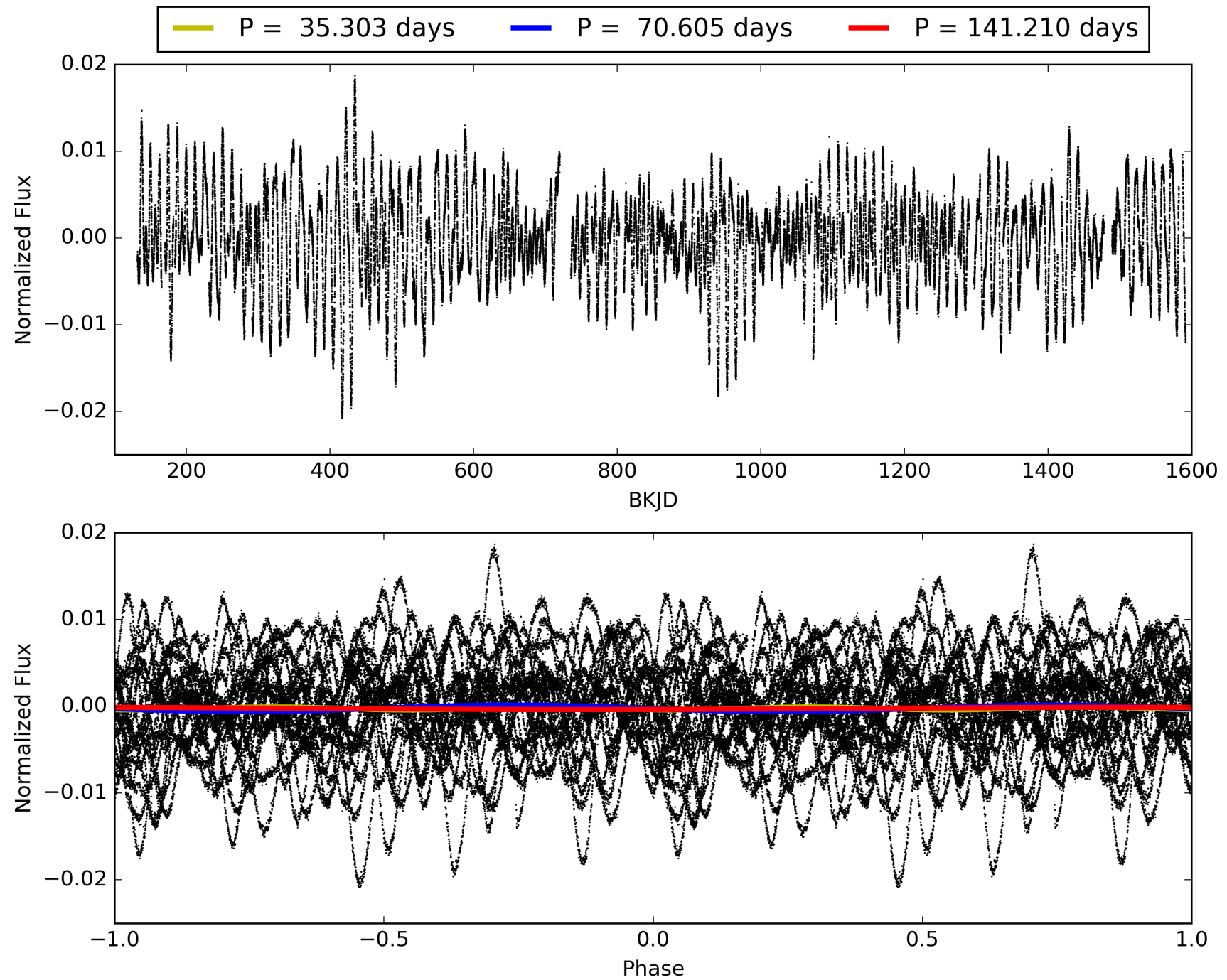
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:41:53 Z

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

TCE 011407811-06, PDC Light Curves

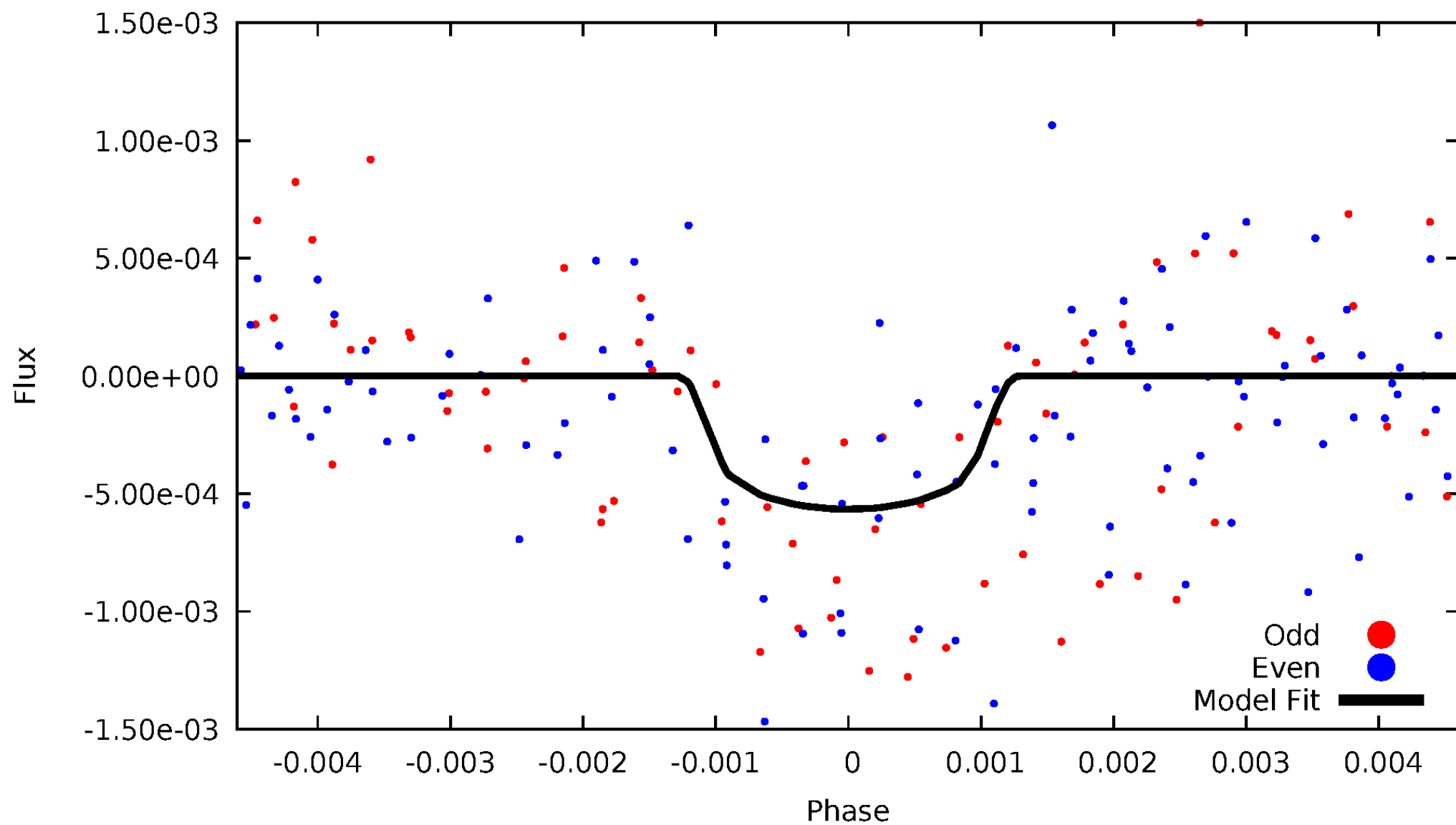


TCE 011407811-06



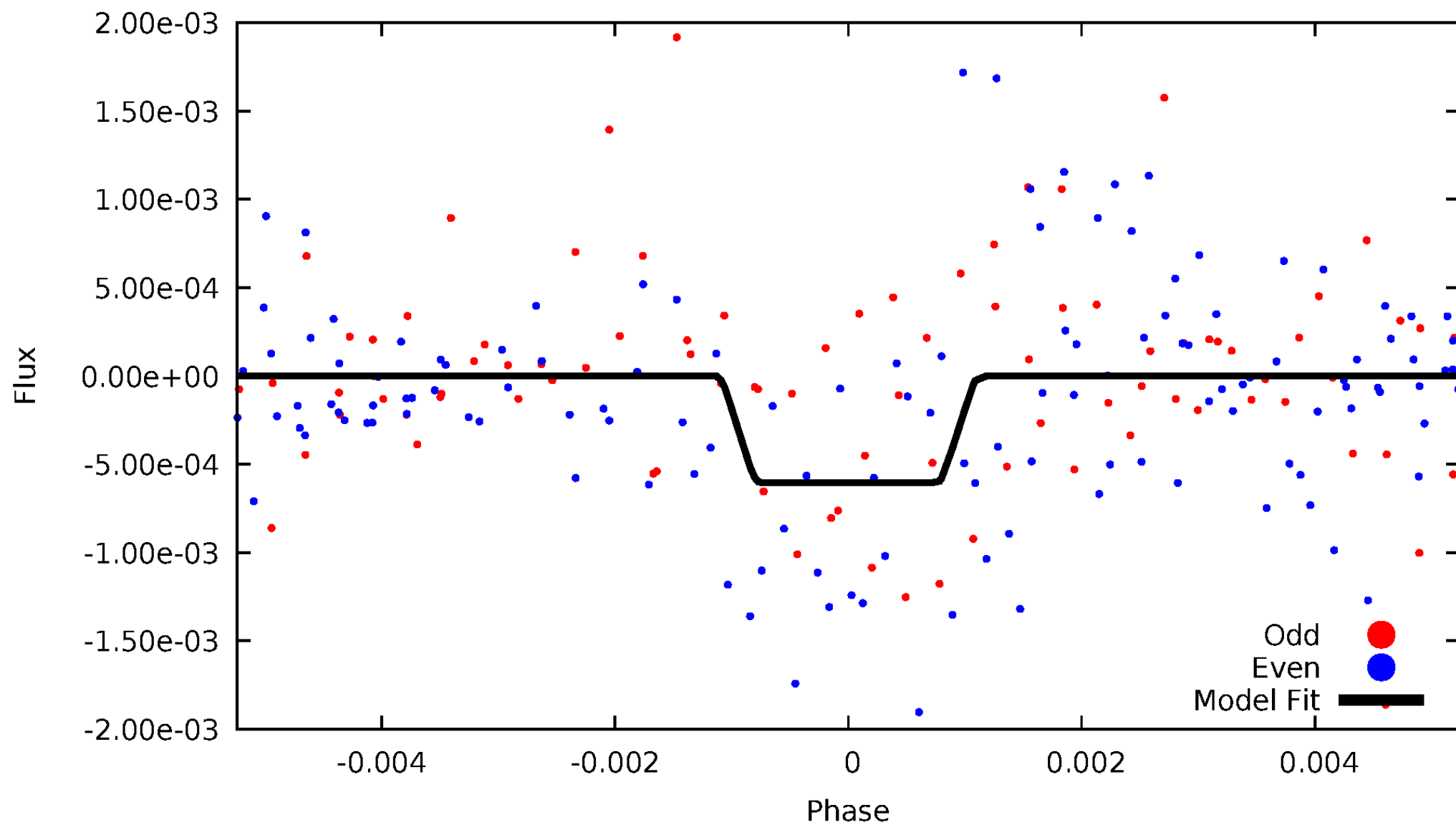
DV Odd/Even

TCE 011407811-06



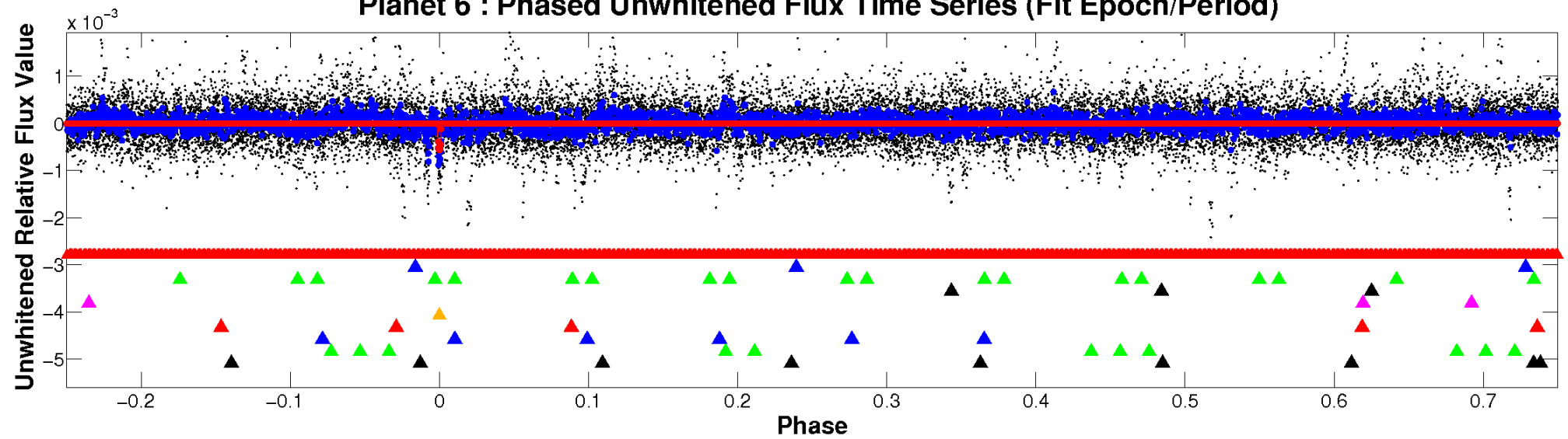
ALT Odd/Even

TCE 011407811-06

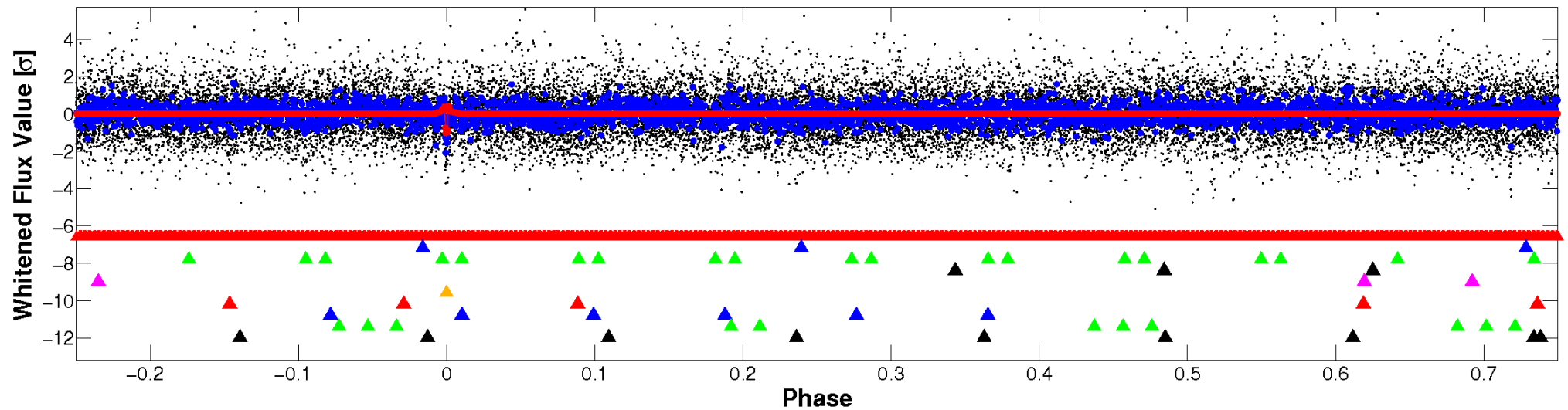


Non-Whitened Vs. Whitened Light Curve

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

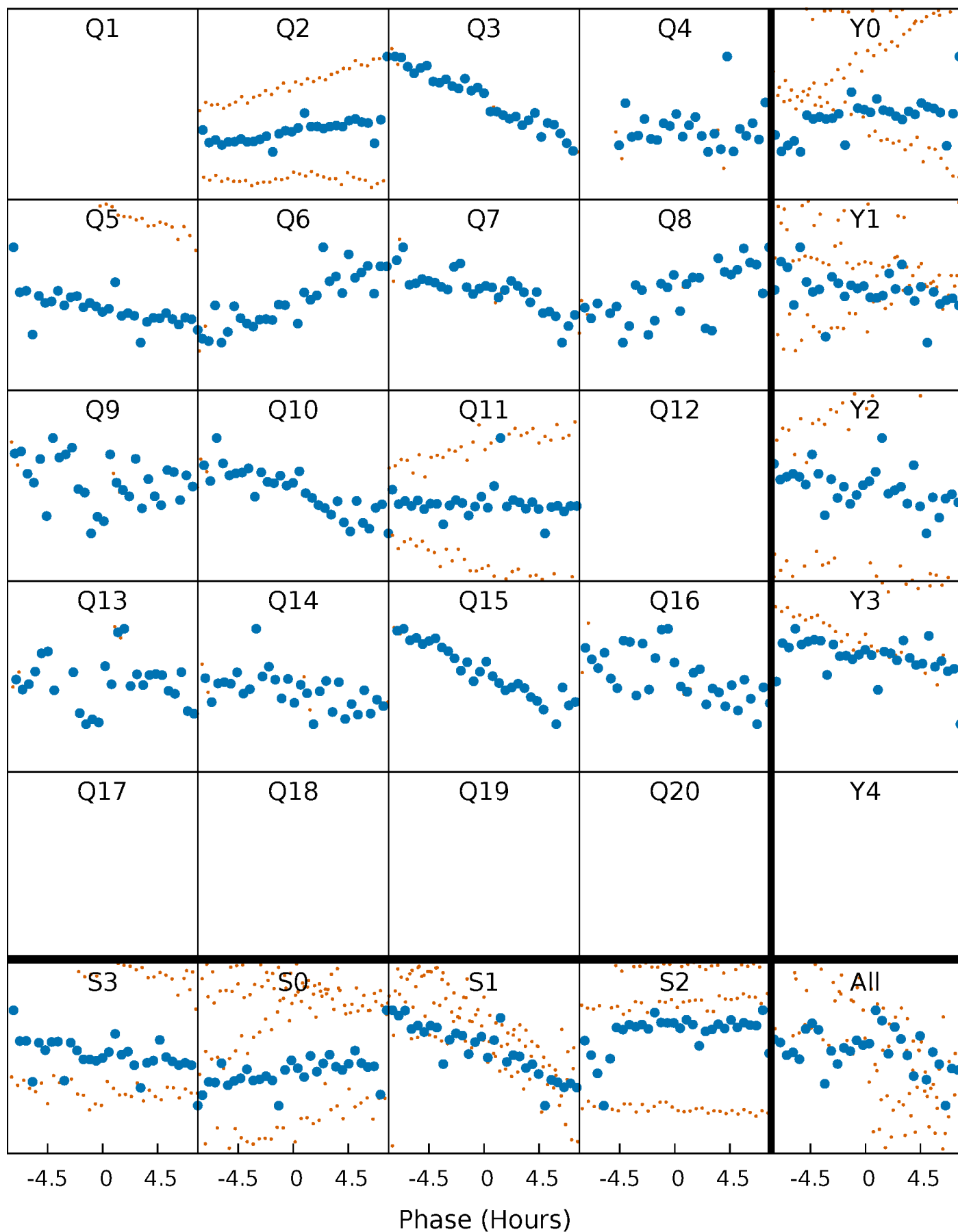


Planet 6 : Phased Whitened Flux Time Series (Fit Epoch/Period)



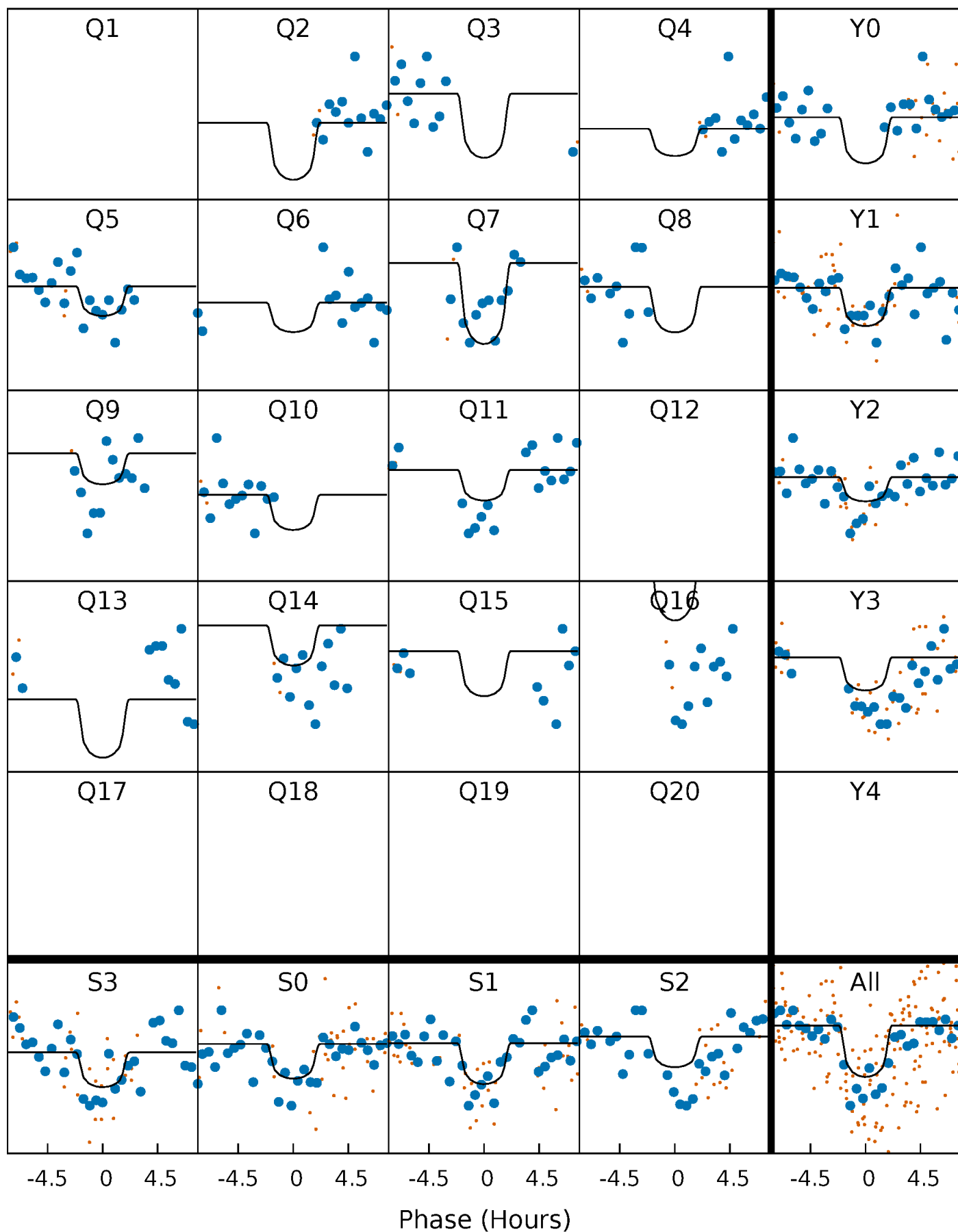
PDC Quarter-Phased Transit Curves

TCE 011407811-06 P= 70.605236 Days $T_0=172.699679$ (BKJD)



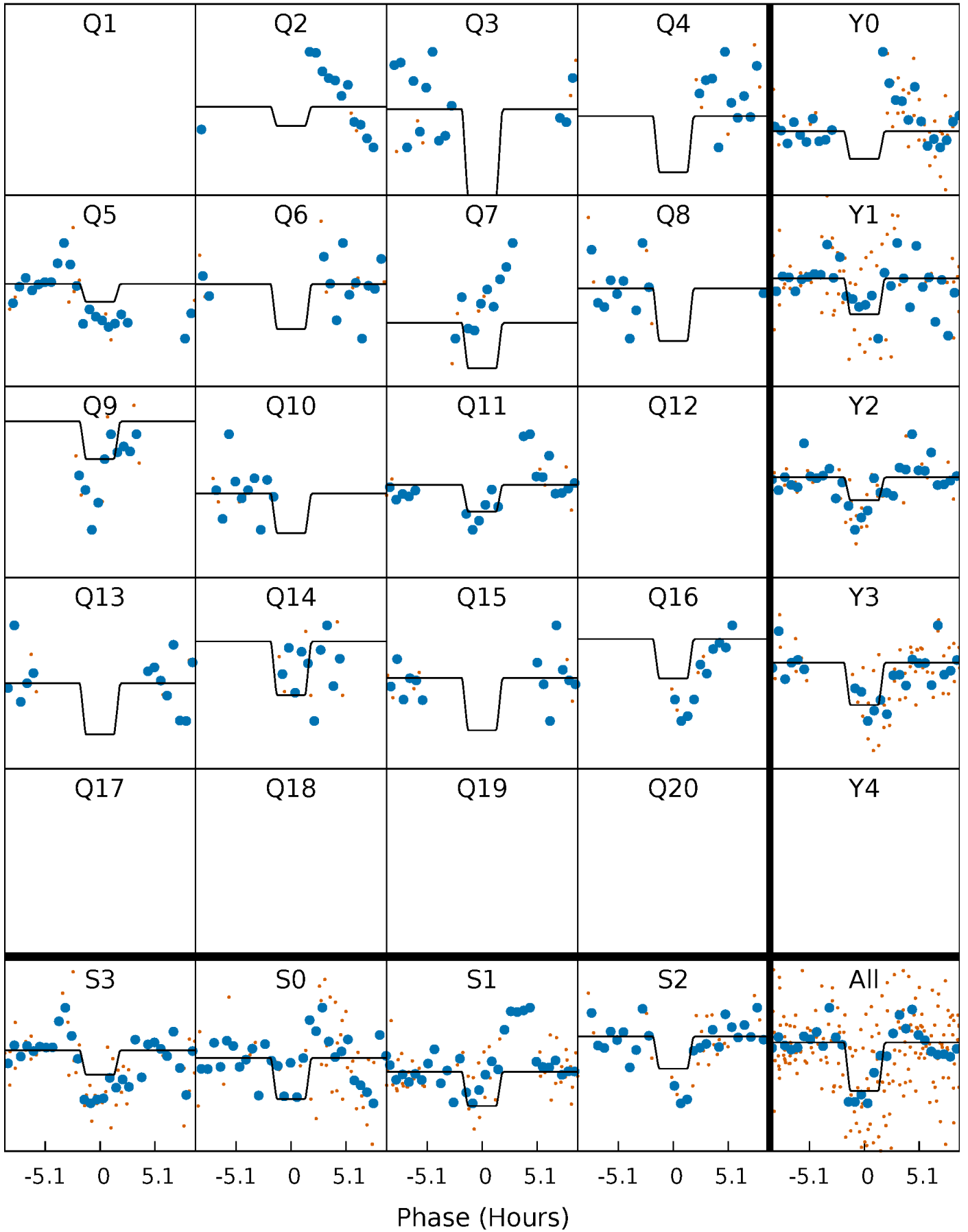
DV Quarter-Phased Transit Curves

TCE 011407811-06 P= 70.605236 Days $T_0=172.699679$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

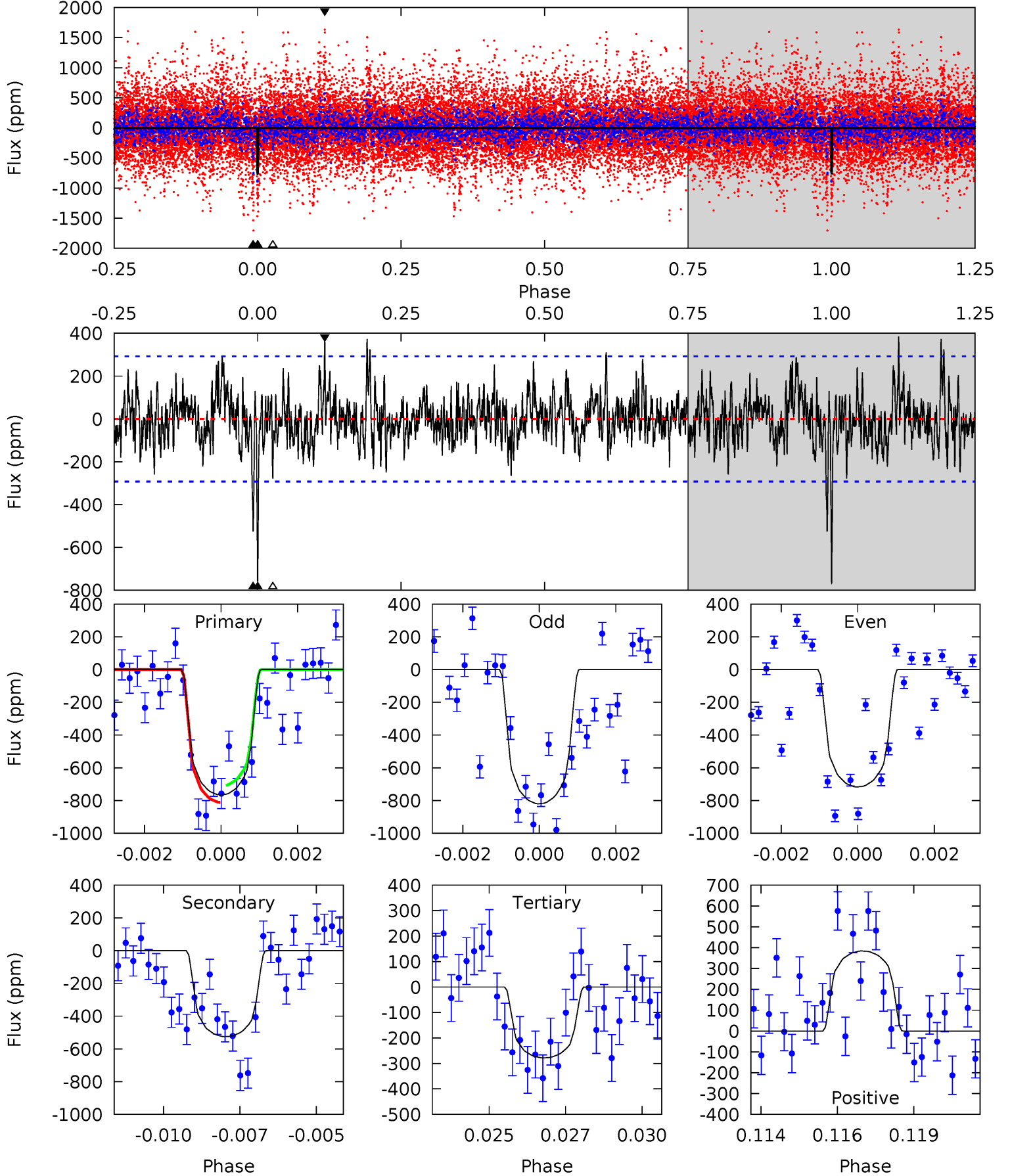
TCE 011407811-06 P= 70.604022 Days $T_0=172.699293$ (BKJD)



DV Model-Shift Uniqueness Test

011407811-06, $P = 70.605236$ Days, $E = 102.094443$ Days

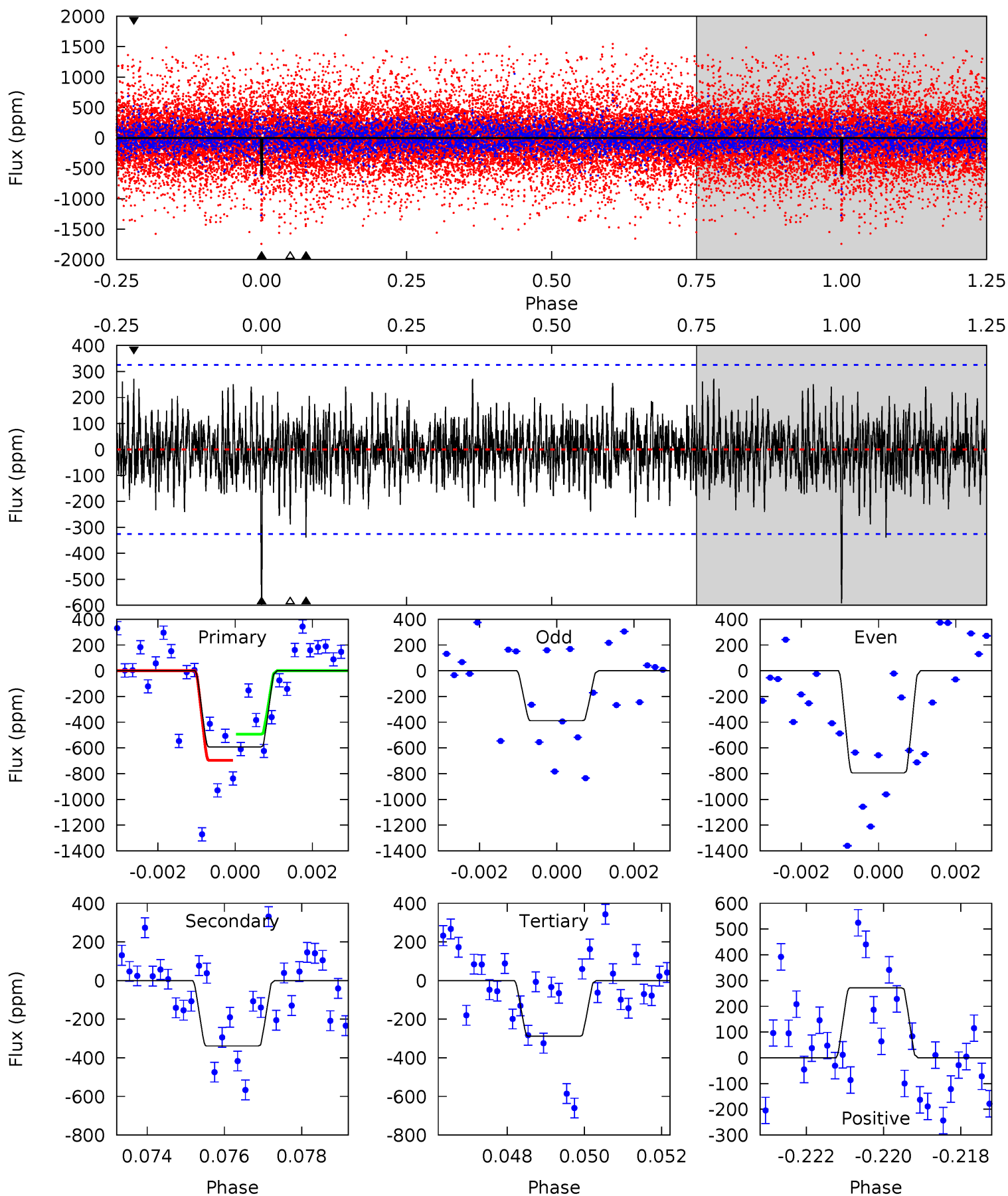
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	9.50	5.03	6.94	5.29	3.03	1.64	8.81	6.90	4.47	2.55	0.94	0.95	0.33	0.94



Alt Model-Shift Uniqueness Test

011407811-06, P = 70.604022 Days, E = 102.095271 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.66	5.52	4.71	4.43	5.31	3.06	1.31	4.96	5.23	0.82	1.10	3.29	0.99	0.31	1.66



Stellar Parameters For KIC 011407811

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5418^{+160}_{-160}	$4.469^{+0.096}_{-0.144}$	$-0.040^{+0.300}_{-0.300}$	$0.889^{+0.184}_{-0.107}$	$0.849^{+0.099}_{-0.072}$	$1.702^{+0.685}_{-0.675}$
	+3%/-3%	+2%/-3%	+750%/-750%	+21%/-12%	+12%/-8%	+40%/-40%
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 011407811-06 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-525 ± 55	$2.66^{+2.00}_{-1.58}$	563^{+34}_{-27}	5046^{+2845}_{-1009}	3977^{+20489}_{-2625}
Alt.	-339 ± 61	$2.69^{+1.83}_{-1.63}$	565^{+30}_{-29}	4593^{+2508}_{-819}	2625^{+12925}_{-1756}

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 $A_{obs} \gg 1.0$

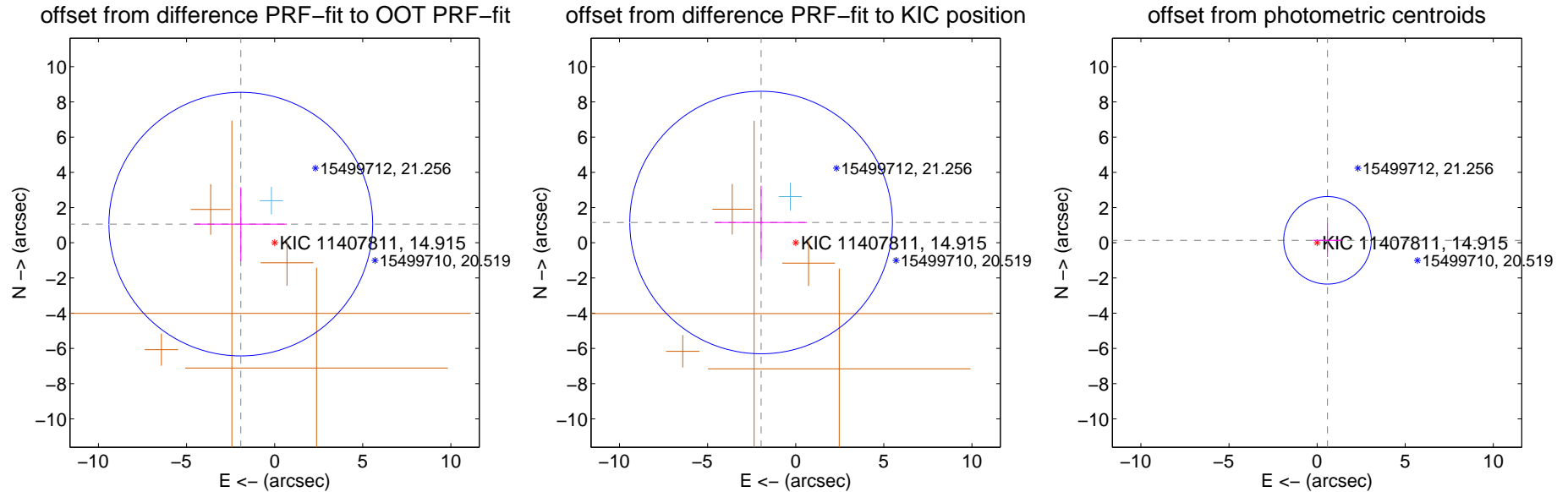
DV Centroid Data

Supplemental centroid analysis for 011407811-06. Kepler magnitude: 14.91. Transit SNR 6.55

There are 1 quarters with good PRF difference image offsets

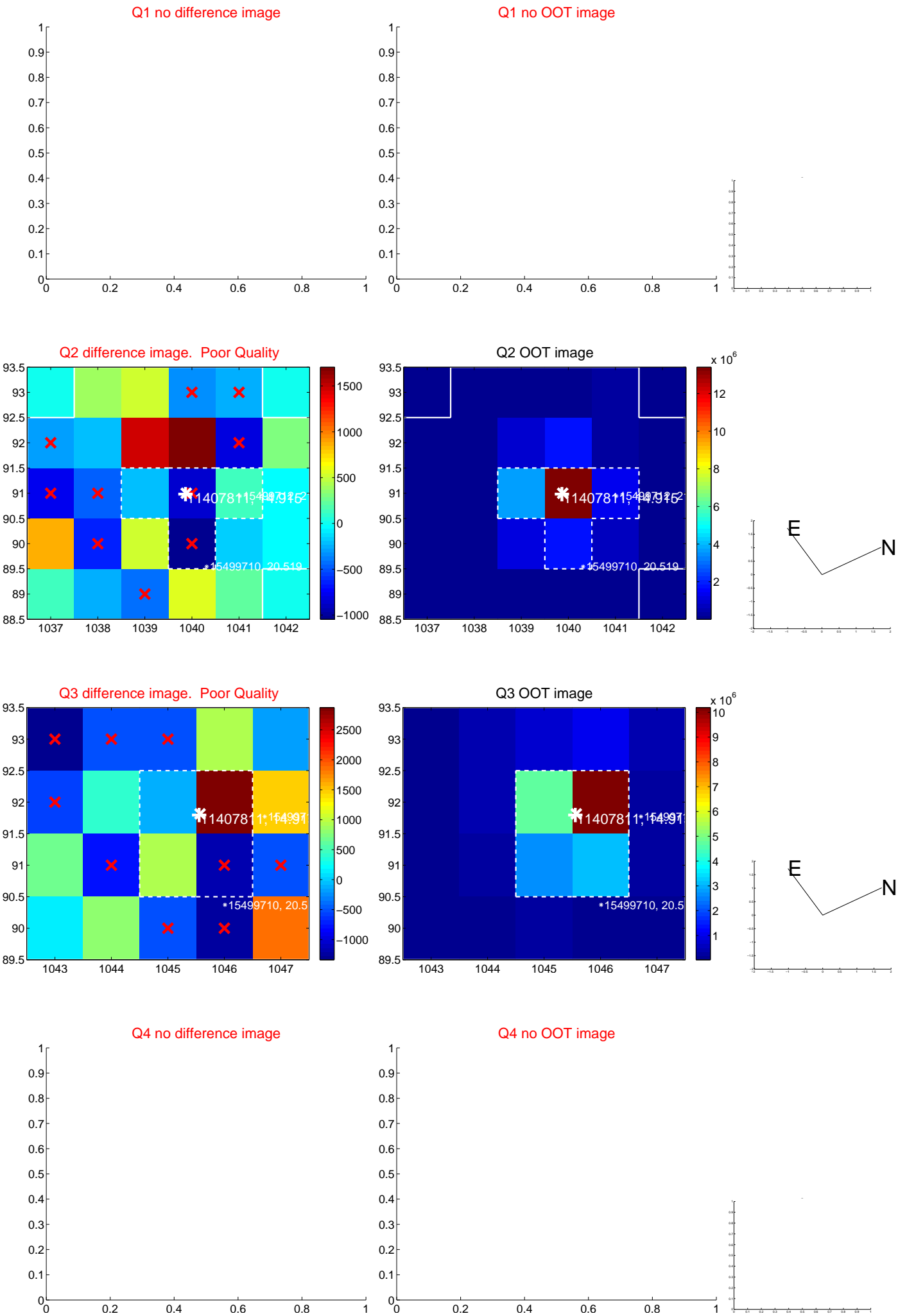
The direct PRF centroid is offset from the target star catalog position by about 0.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.193 ± 2.494	0.88	1.921 ± 2.604	1.059 ± 2.092
PRF-fit source offset from KIC position	2.276 ± 2.484	0.92	1.965 ± 2.604	1.149 ± 2.092
photometric centroid source offset	0.61 ± 0.83	0.73	-0.59 ± 0.82	0.14 ± 0.94

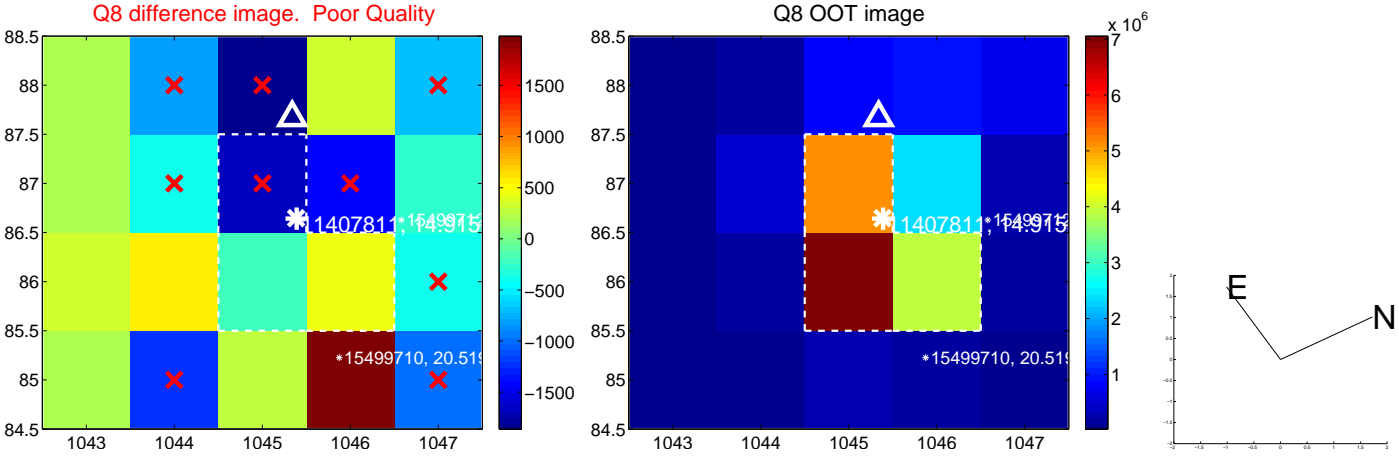
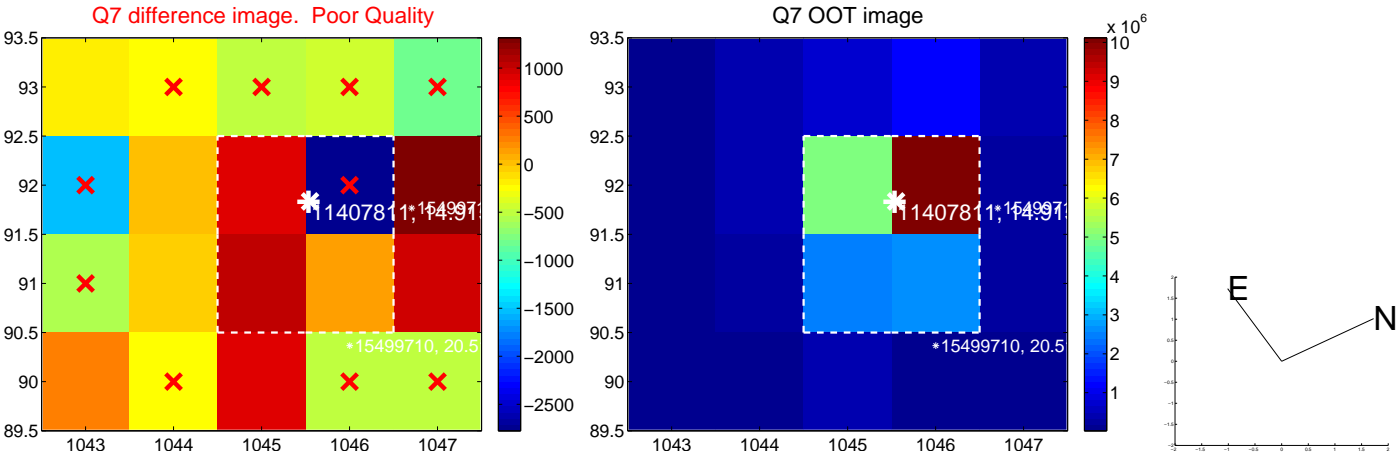
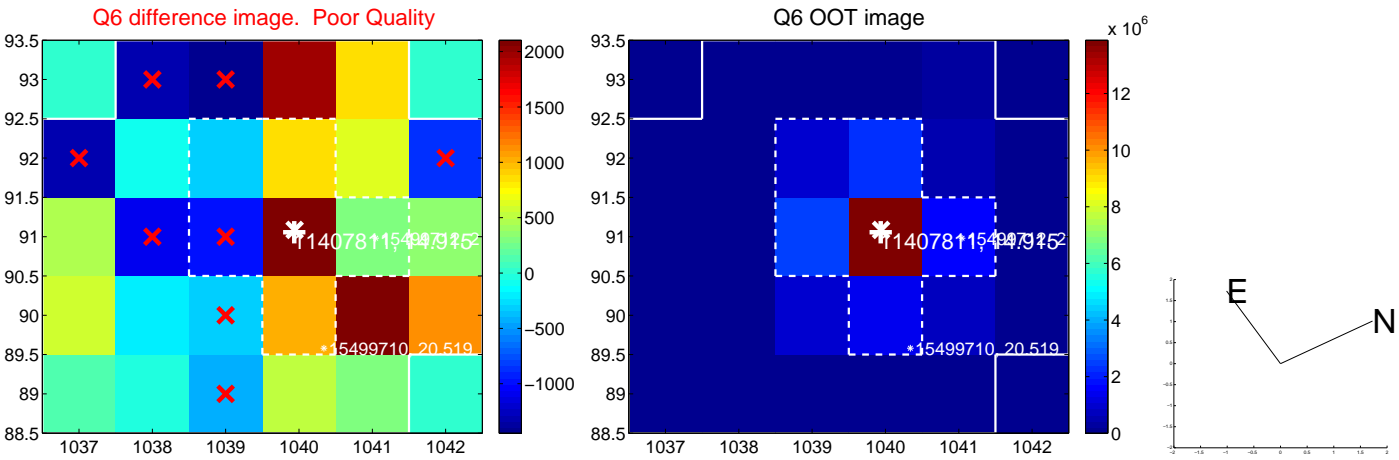
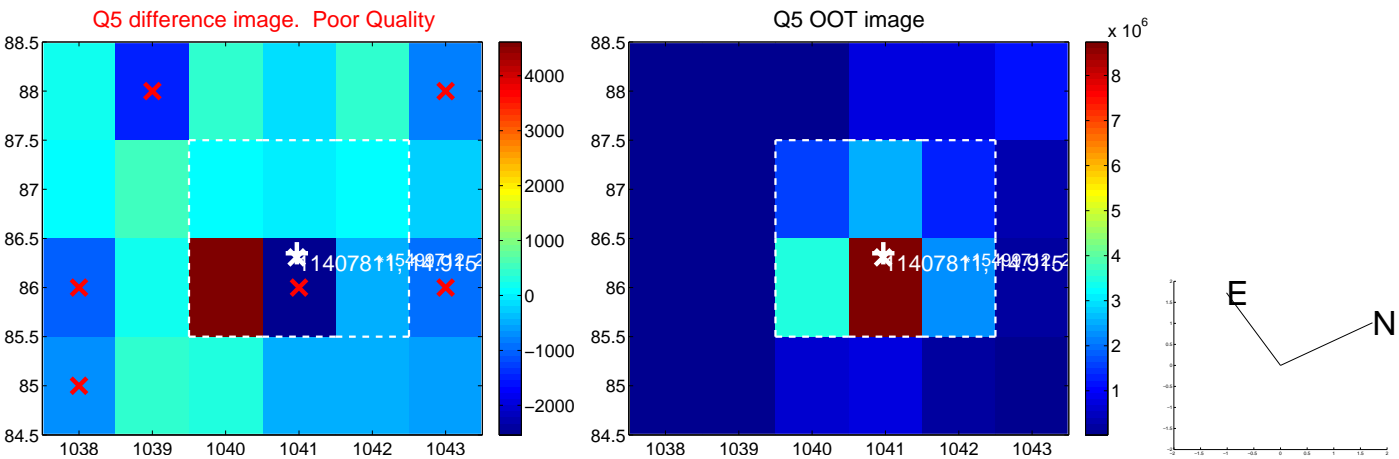


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

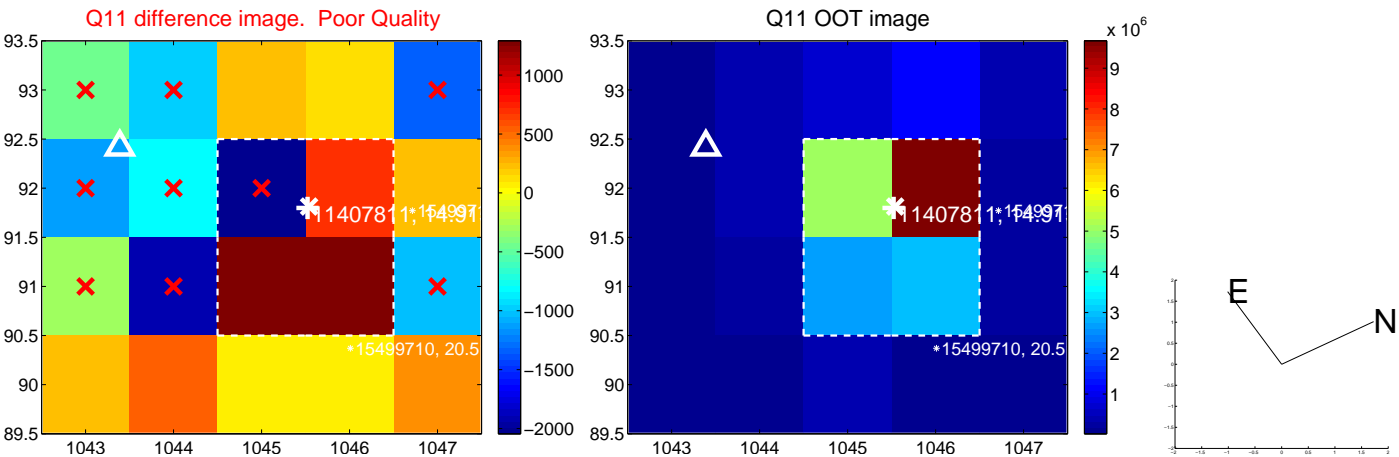
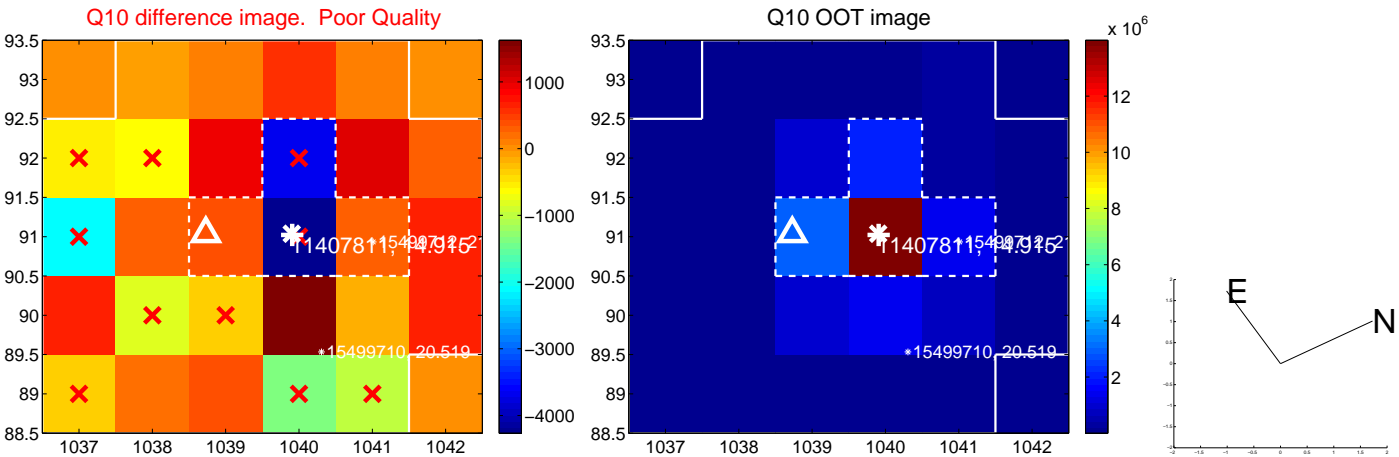
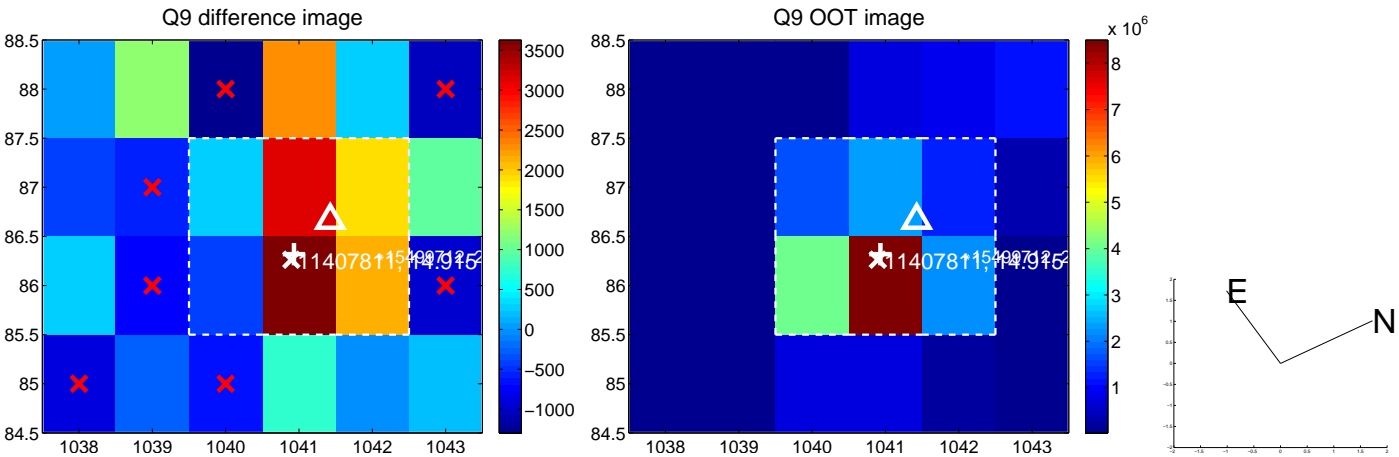
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ✕: large negative pixel value.



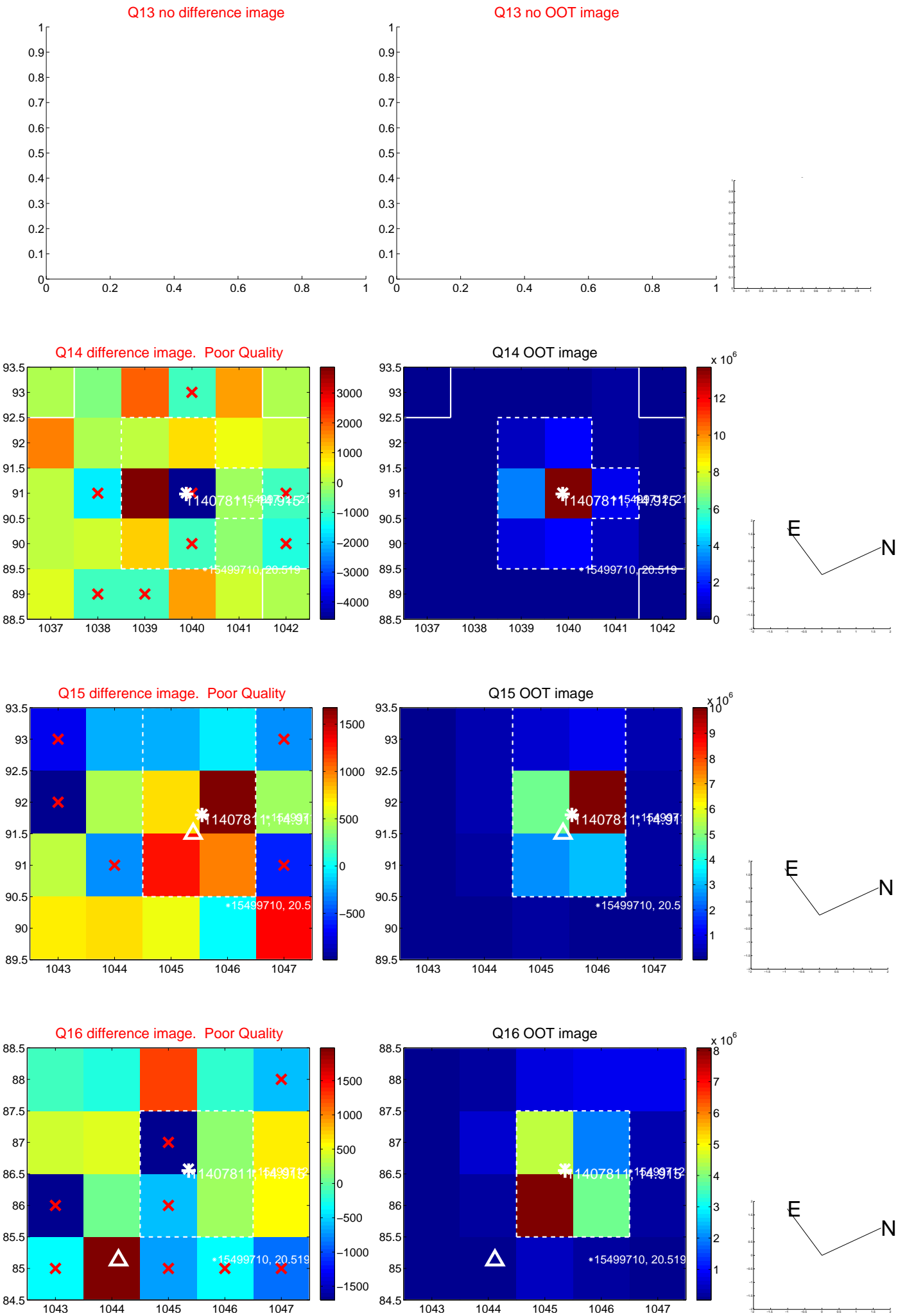
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



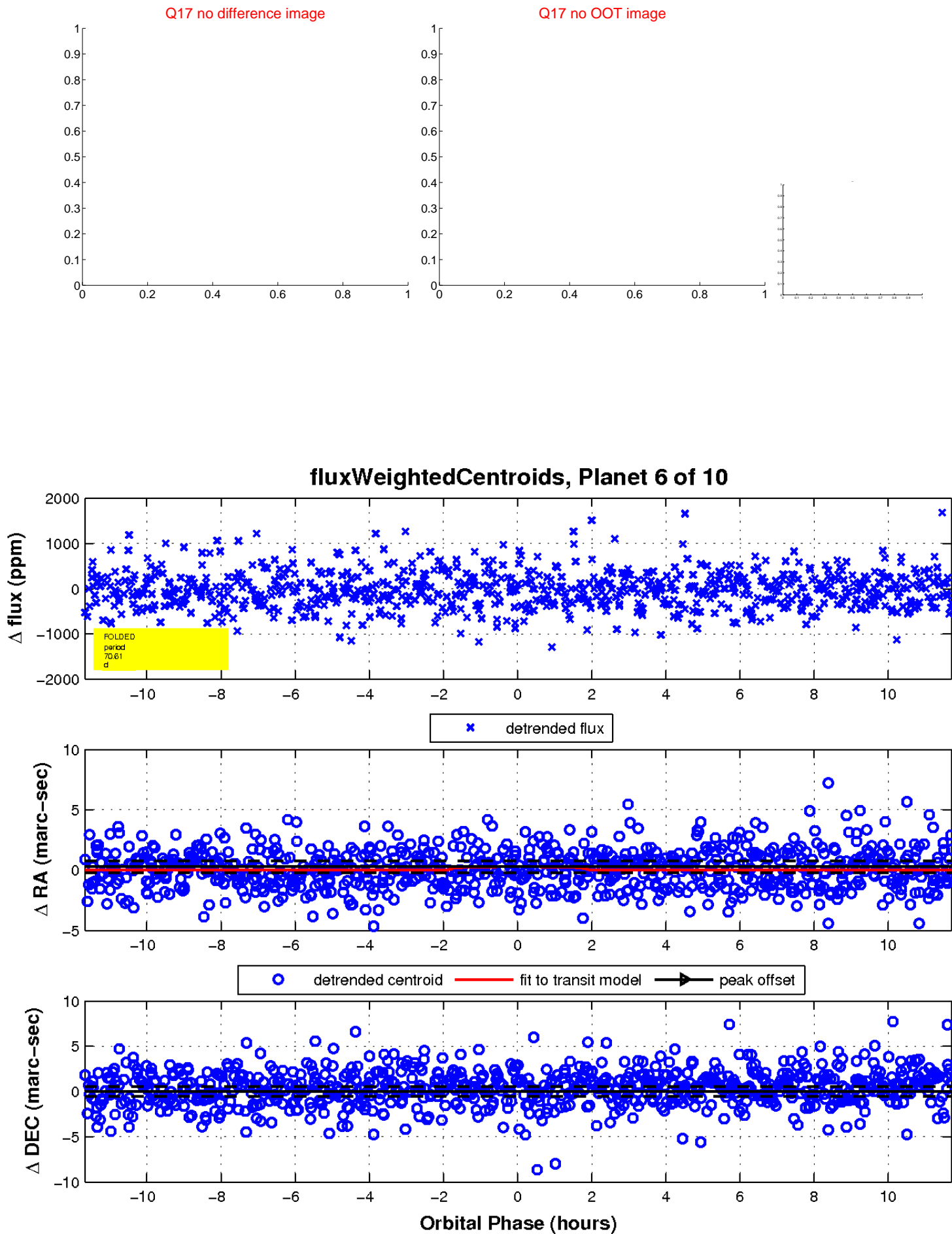
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

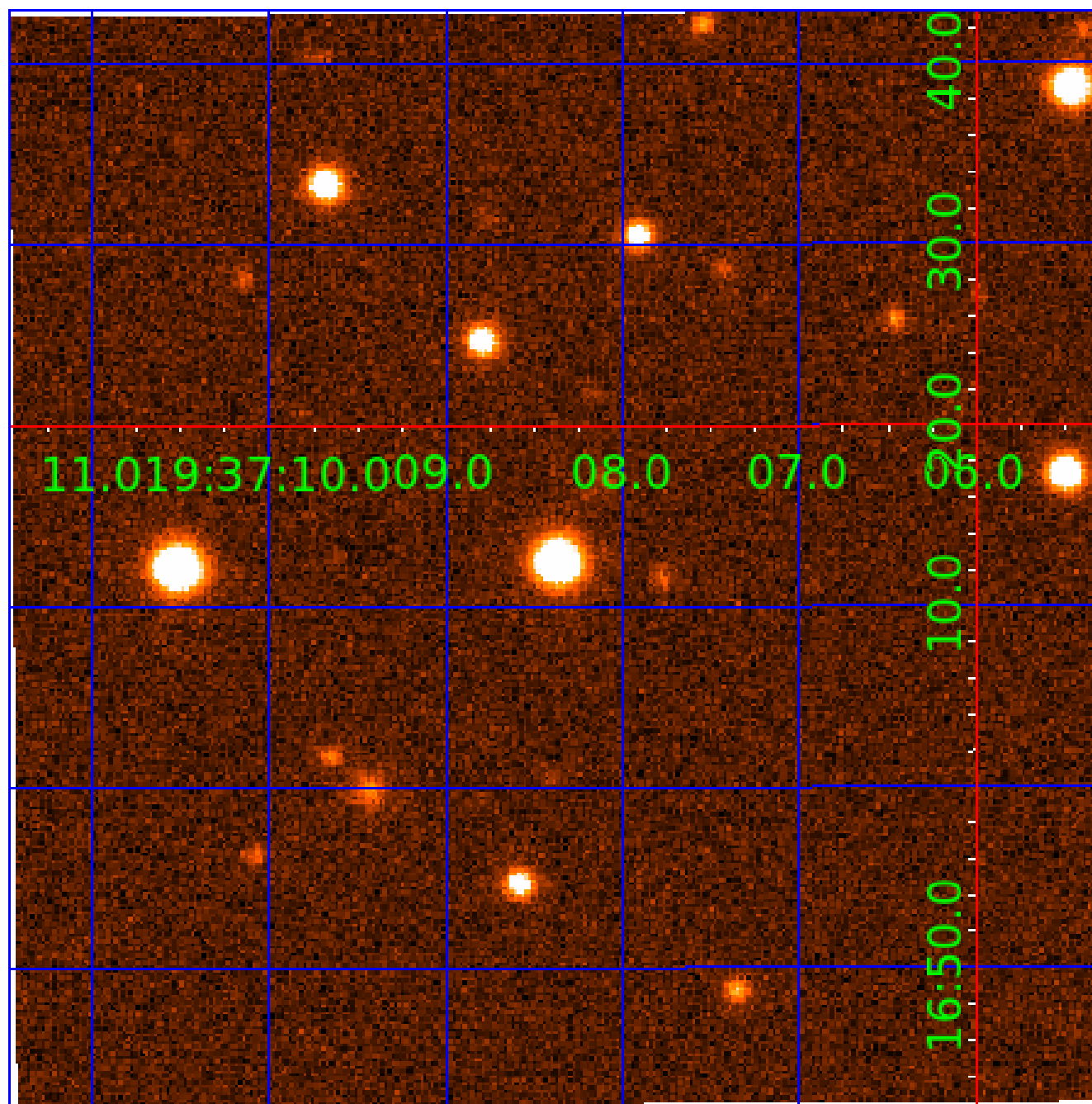


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011407811

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})
011407811-01	OBS	No	0.676789	131.939975	39.9	3.148	9.4	8.8	0.89	5418	0.68	2989.37
011407811-03	OBS	No	77.108758	165.989221	870.8	10.500	14.5	-1.0	0.89	5418	2.57	5.41
011407811-04	OBS	No	574.788958	196.942565	14486.3	92.601	13.6	9.5	0.89	5418	19.29	0.37
011407811-06	OBS	No	70.605236	172.699679	565.7	3.904	9.4	6.5	0.89	5418	2.36	6.09
011407811-09	OBS	No	123.901899	238.180470	402.4	5.110	9.4	3.9	0.89	5418	1.99	2.88
011407811-10	OBS	No	167.727451	224.512960	348.4	8.853	9.4	2.7	0.89	5418	1.77	1.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011407811-01	OBS	FP	0.00	1	0	0	0	LPP_DV
011407811-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
011407811-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011407811-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011407811-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
011407811-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT

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

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

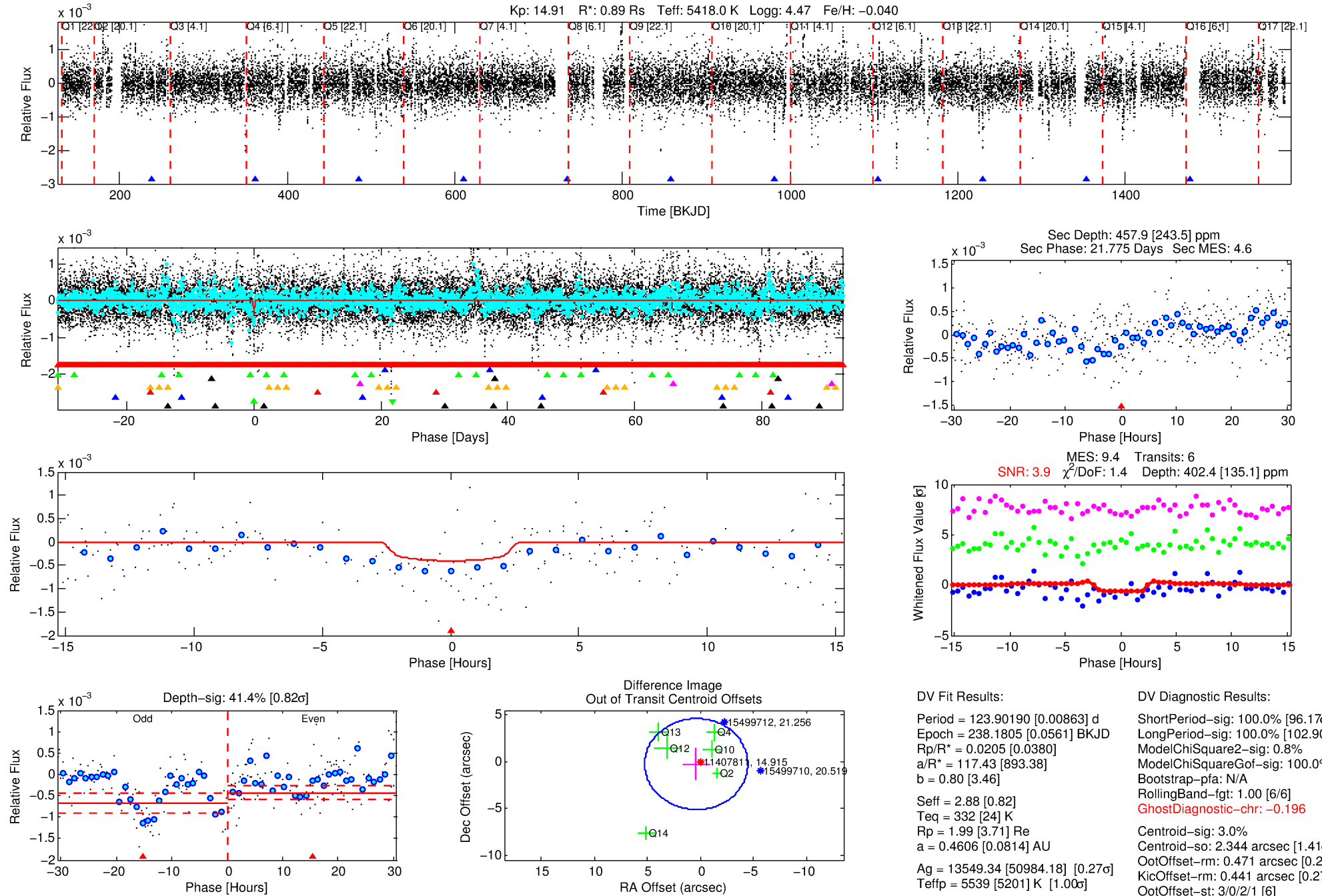
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011407811-09

No Significant Match Found

DV One-Page Summary

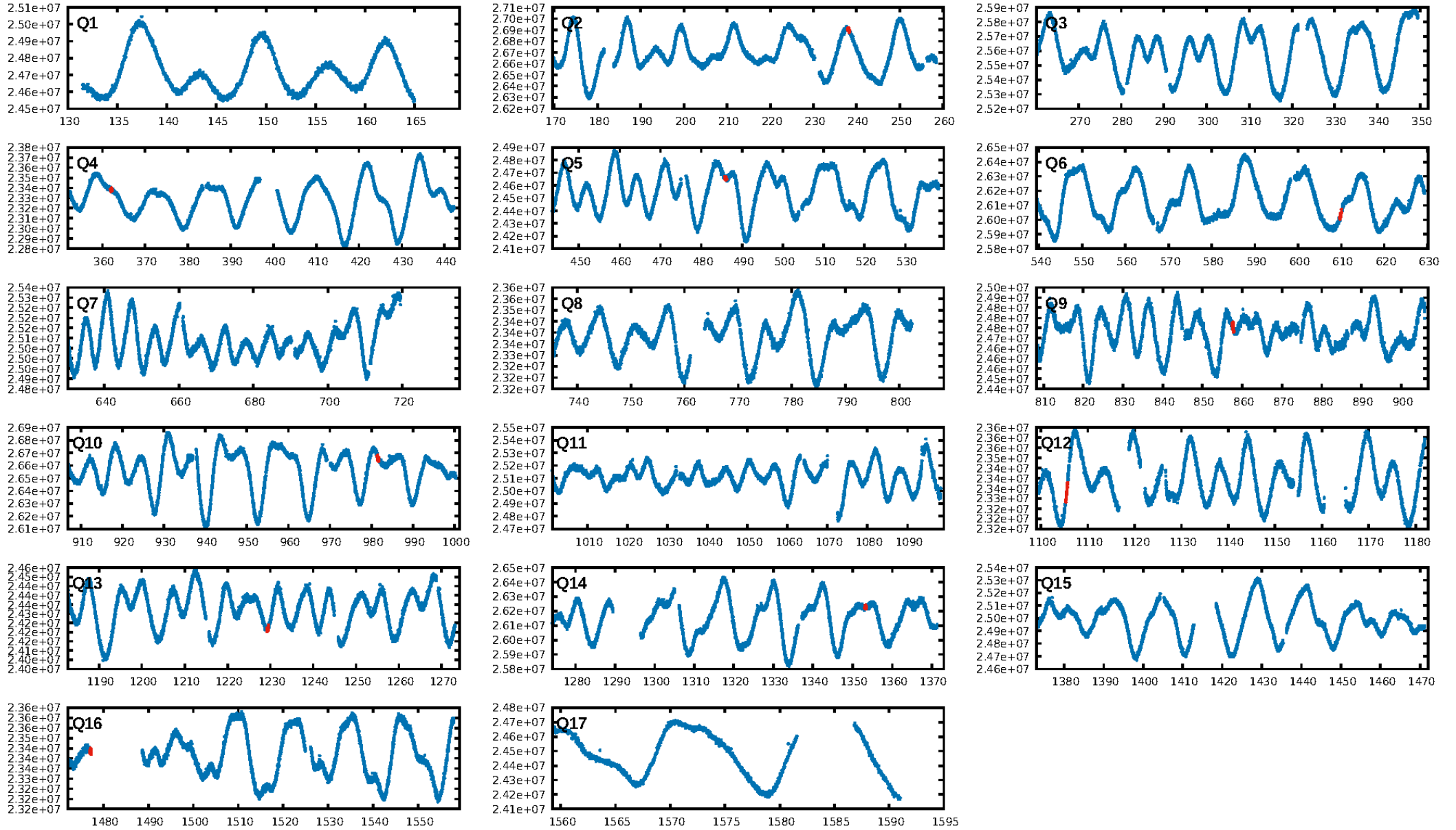
KIC: 11407811 Candidate: 9 of 10 Period: 123.902 d



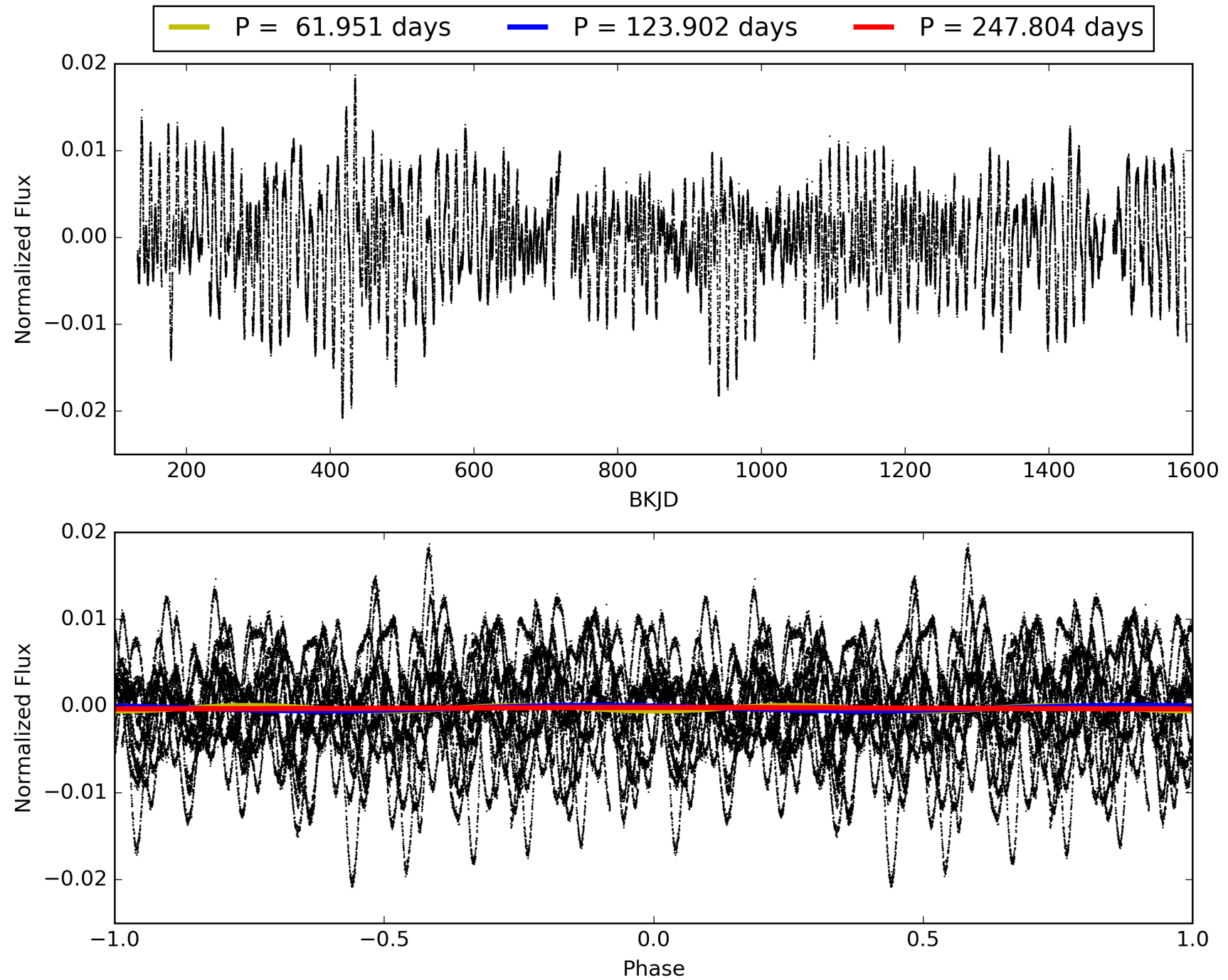
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:42:18 Z

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

TCE 011407811-09, PDC Light Curves

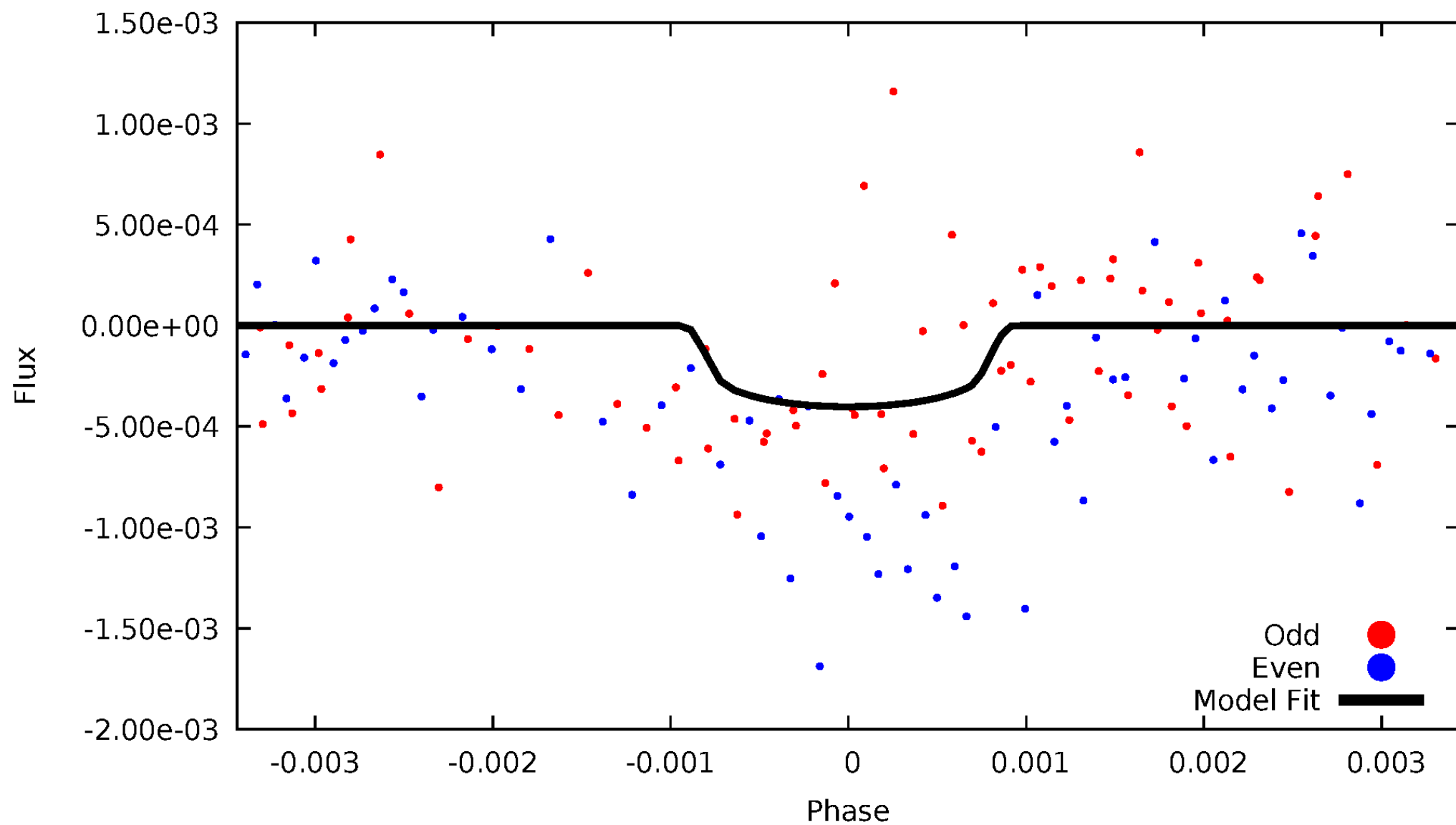


TCE 011407811-09



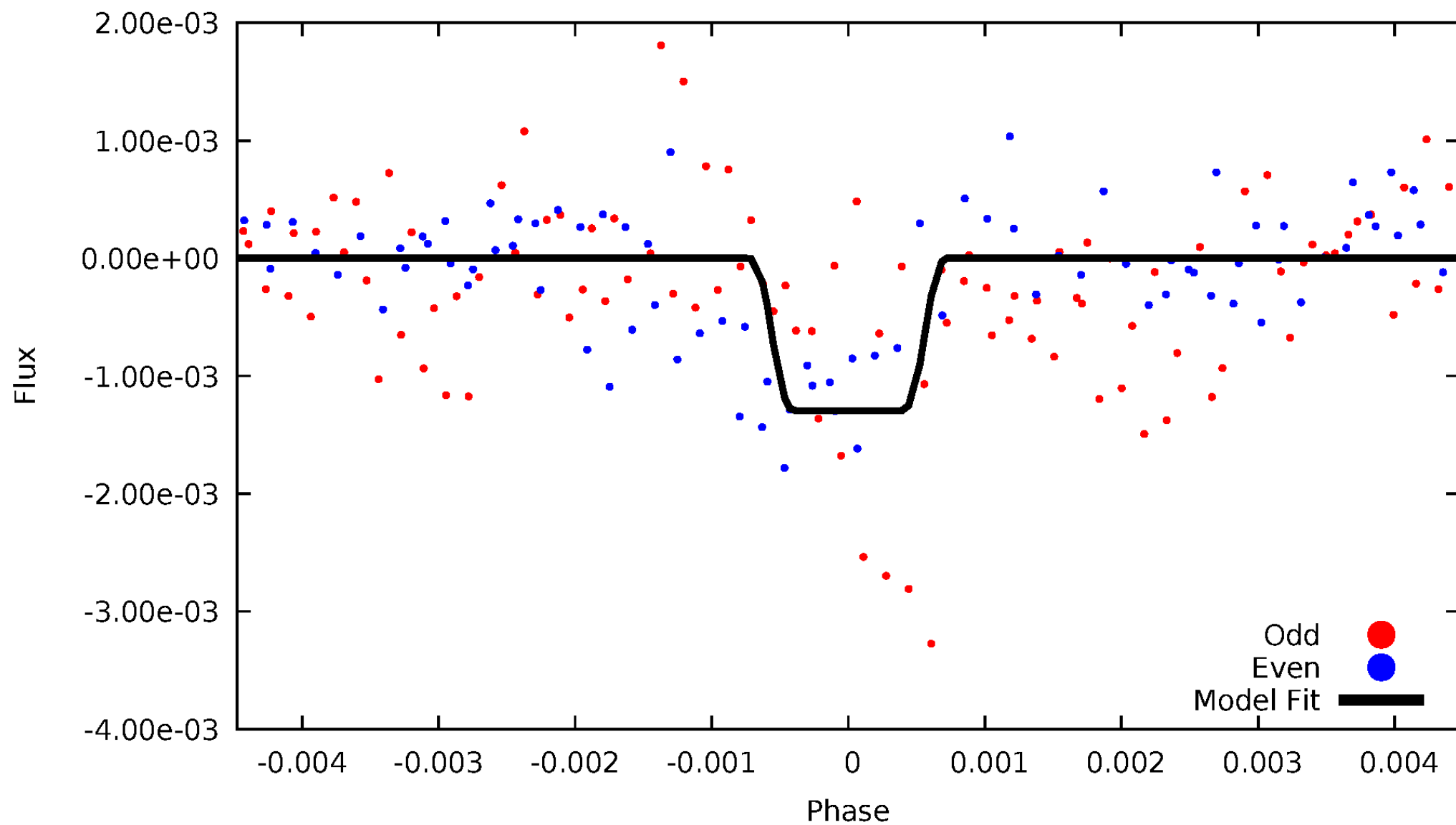
DV Odd/Even

TCE 011407811-09



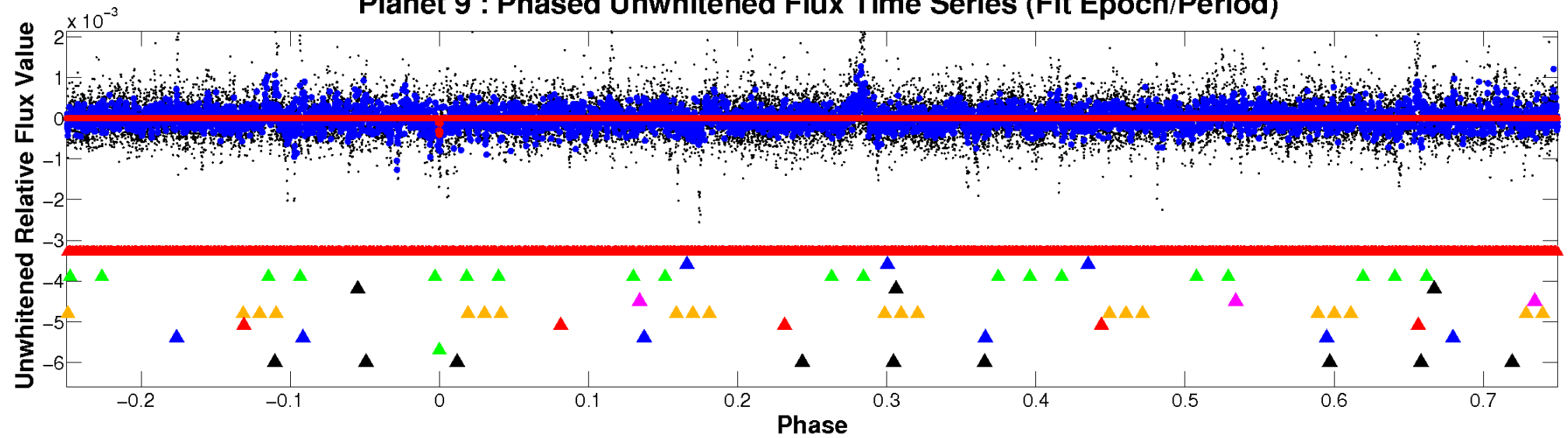
ALT Odd/Even

TCE 011407811-09

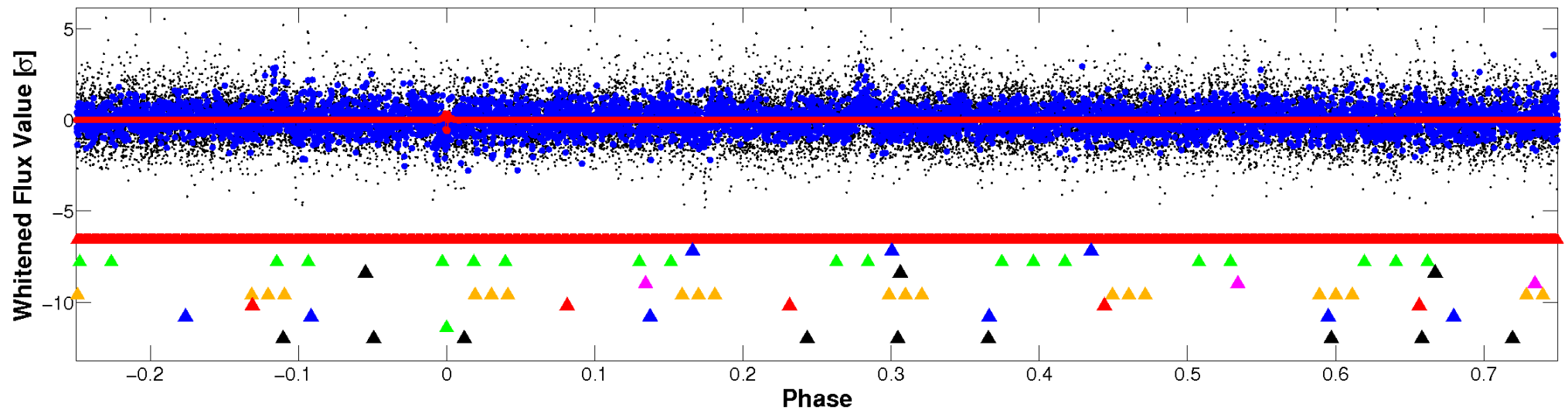


Non-Whitened Vs. Whitened Light Curve

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

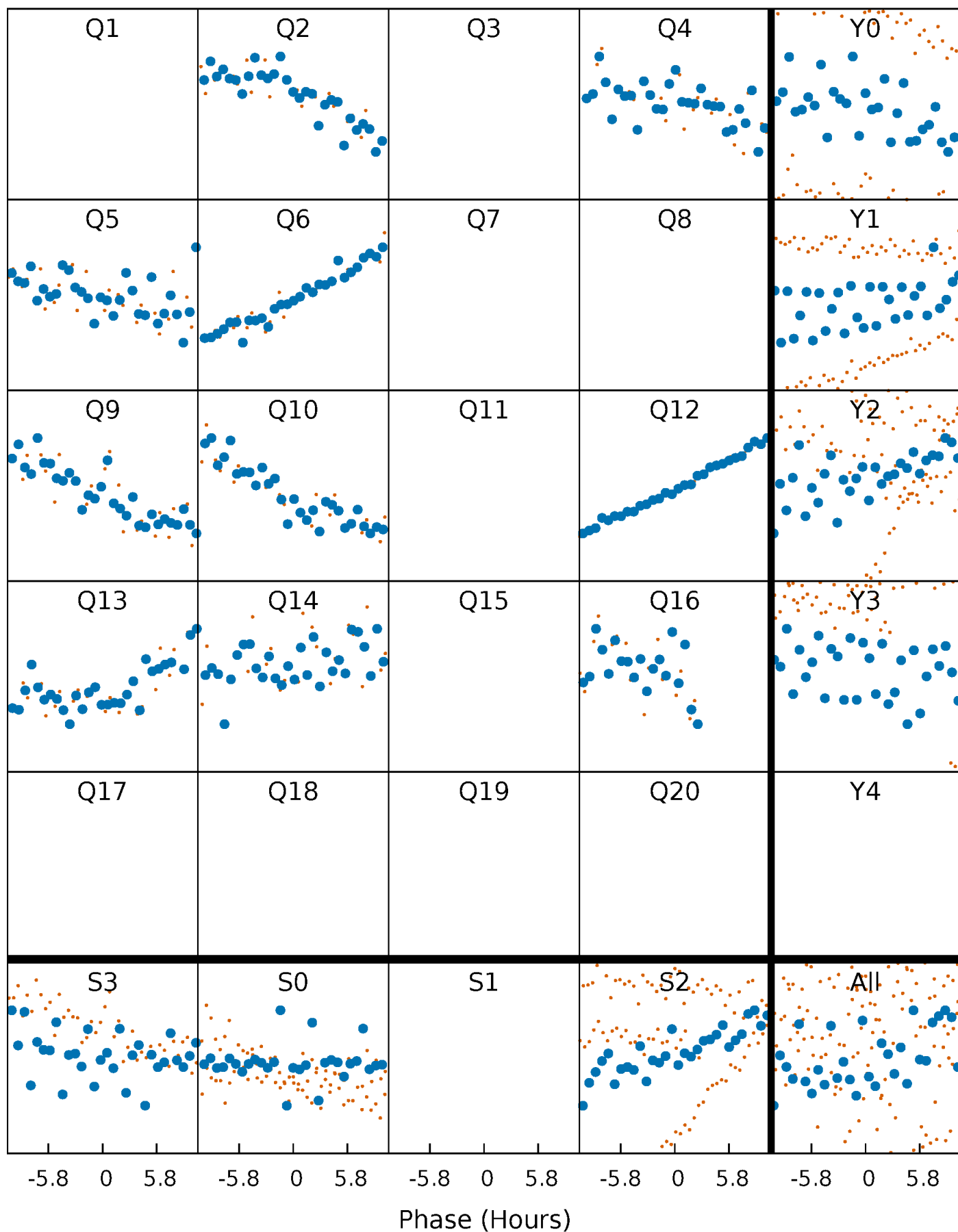


Planet 9 : Phased Whitened Flux Time Series (Fit Epoch/Period)



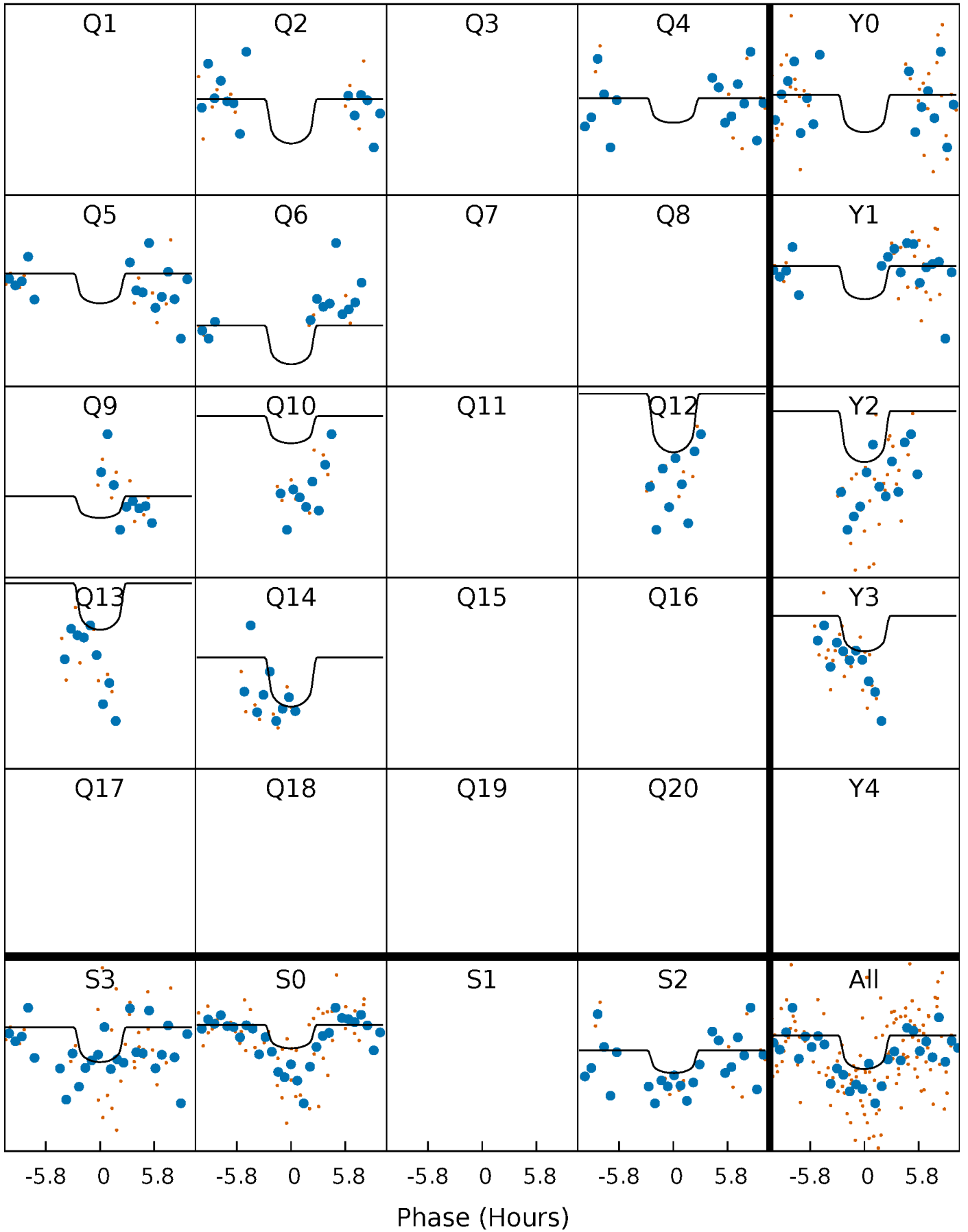
PDC Quarter-Phased Transit Curves

TCE 011407811-09 P=123.901899 Days $T_0=238.180470$ (BKJD)



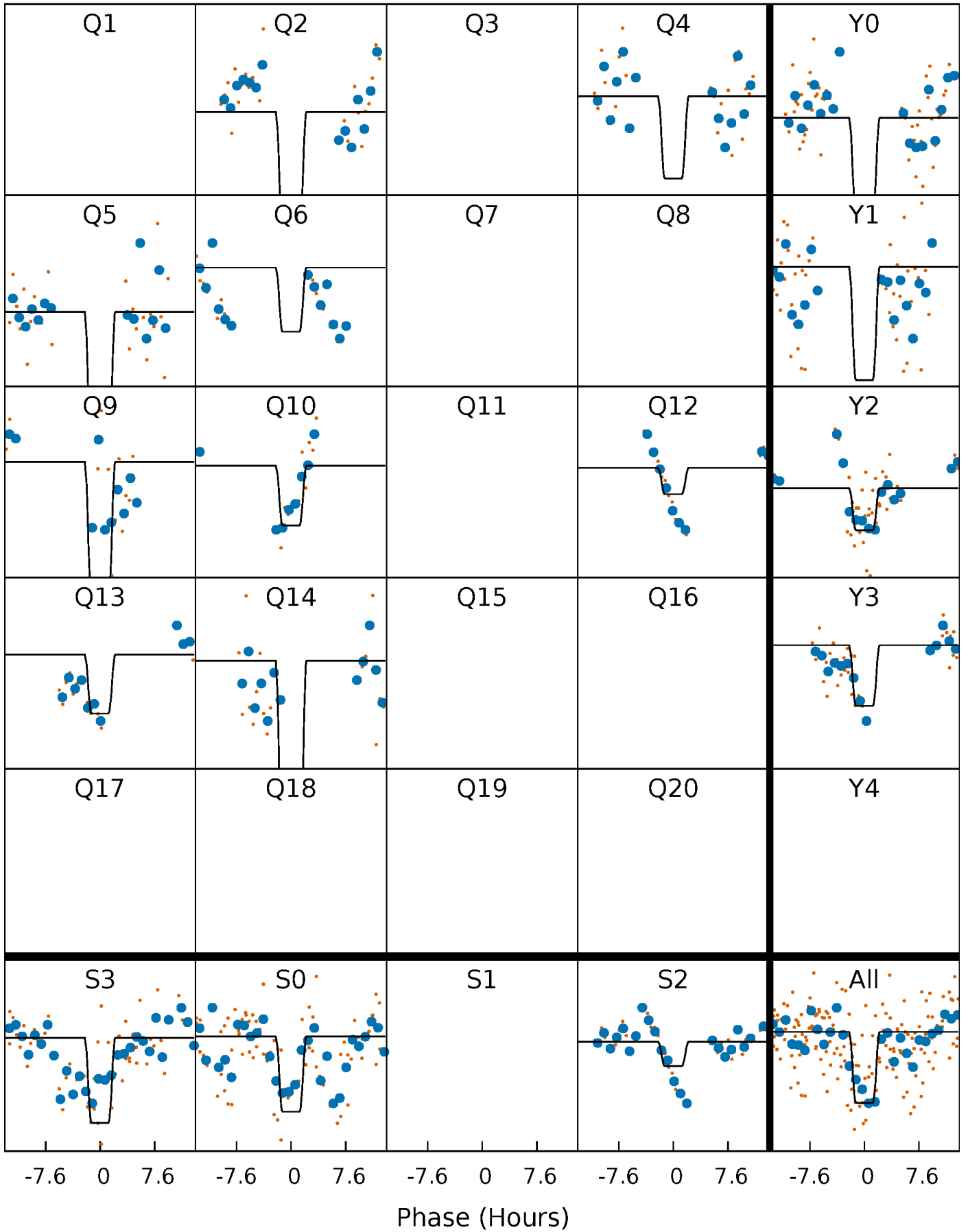
DV Quarter-Phased Transit Curves

TCE 011407811-09 P=123.901899 Days $T_0=238.180470$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

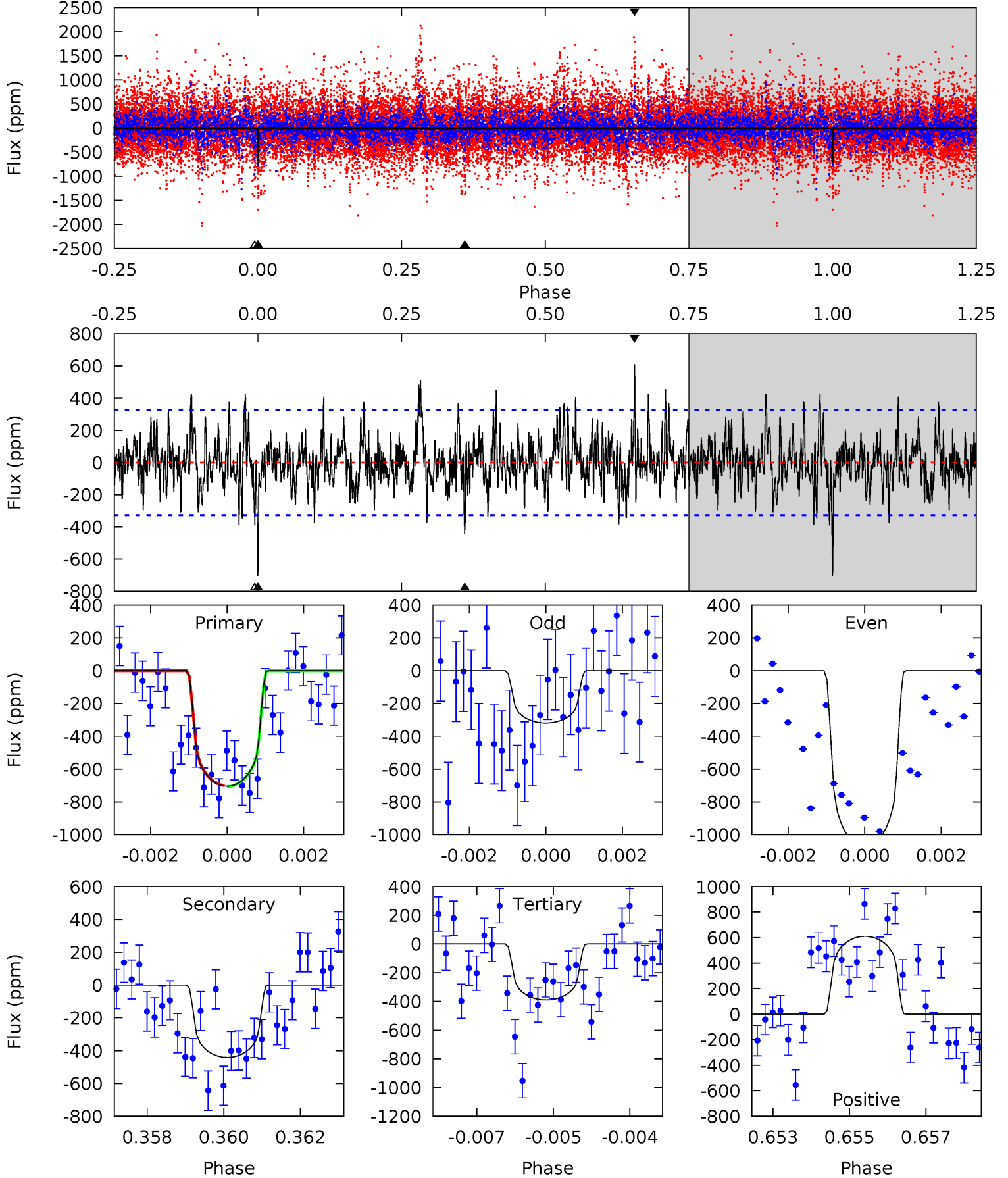
TCE 011407811-09 P=123.915919 Days $T_0=238.134197$ (BKJD)



DV Model-Shift Uniqueness Test

011407811-09, P = 123.901899 Days, E = 114.278571 Days

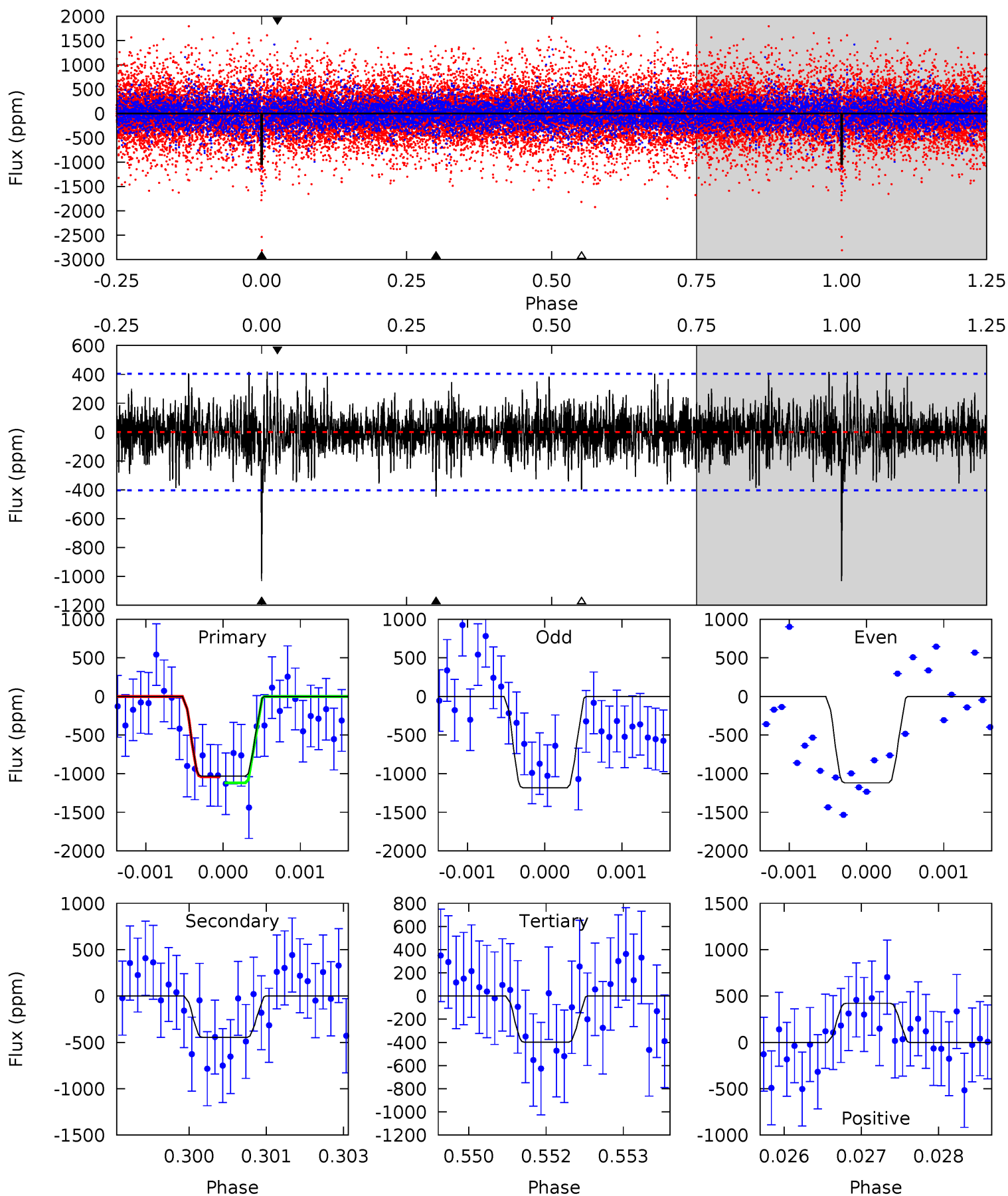
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.5	7.21	6.36	9.97	5.35	3.12	2.12	5.14	1.53	0.84	-2.77	6.04	0.82	0.46	0.05



Alt Model-Shift Uniqueness Test

011407811-09, P = 123.915919 Days, E = 114.218278 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.8	5.97	5.33	5.63	5.40	3.20	1.50	8.47	8.17	0.64	0.34	0.41	1.03	0.29	0.48



Stellar Parameters For KIC 011407811

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	5418^{+160}_{-160}	$4.469^{+0.096}_{-0.144}$	$-0.040^{+0.300}_{-0.300}$	$0.889^{+0.184}_{-0.107}$	$0.849^{+0.099}_{-0.072}$	$1.702^{+0.685}_{-0.675}$
	+3%/-3%	+2%/-3%	+750%/-750%	+21%/-12%	+12%/-8%	+40%/-40%
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 011407811-09 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-441 ± 61	$3.50^{+3.05}_{-2.36}$	467^{+27}_{-23}	4361^{+2831}_{-846}	4162^{+33553}_{-2965}
Alt.	-446 ± 75	$4.48^{+3.44}_{-2.78}$	465^{+27}_{-21}	4017^{+2009}_{-700}	2601^{+16972}_{-1759}

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

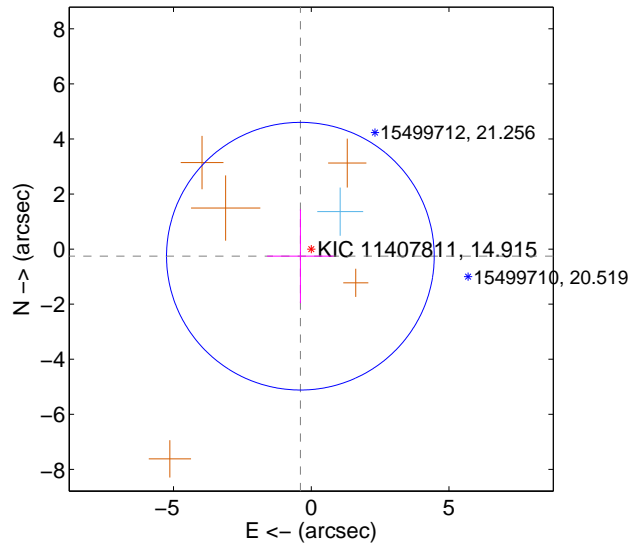
Supplemental centroid analysis for 011407811-09. Kepler magnitude: 14.91. Transit SNR 3.85

There are 1 quarters with good PRF difference image offsets

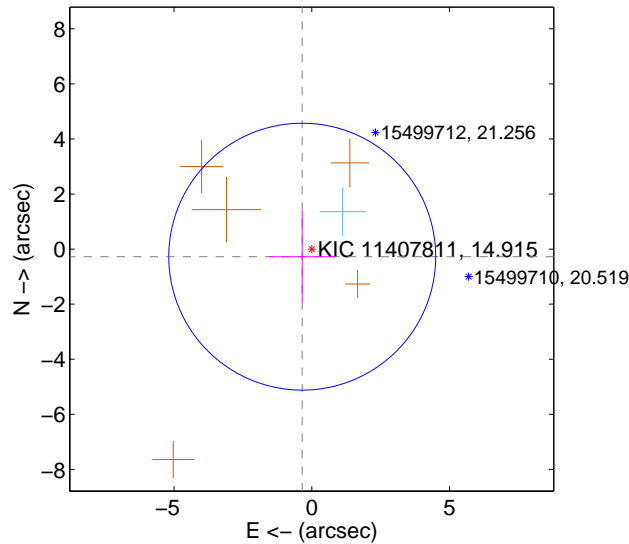
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.471 ± 1.620	0.29	0.394 ± 1.209	-0.258 ± 1.703
PRF-fit source offset from KIC position	0.441 ± 1.615	0.27	0.345 ± 1.218	-0.275 ± 1.664
photometric centroid source offset	2.34 ± 1.66	1.41	0.83 ± 1.44	-2.19 ± 1.69

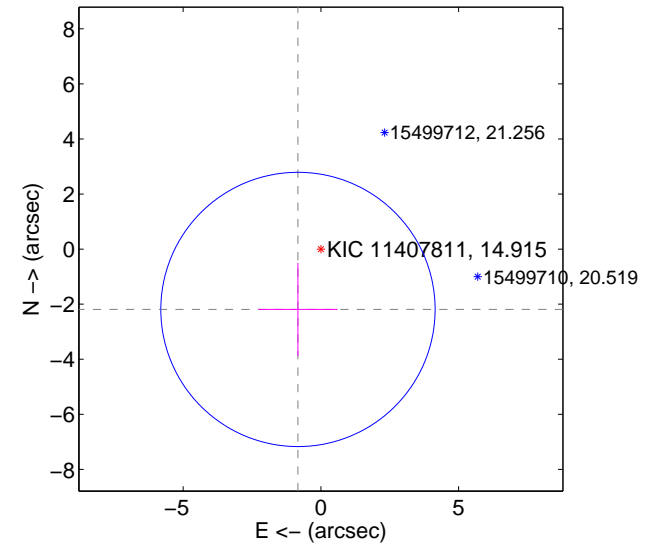
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

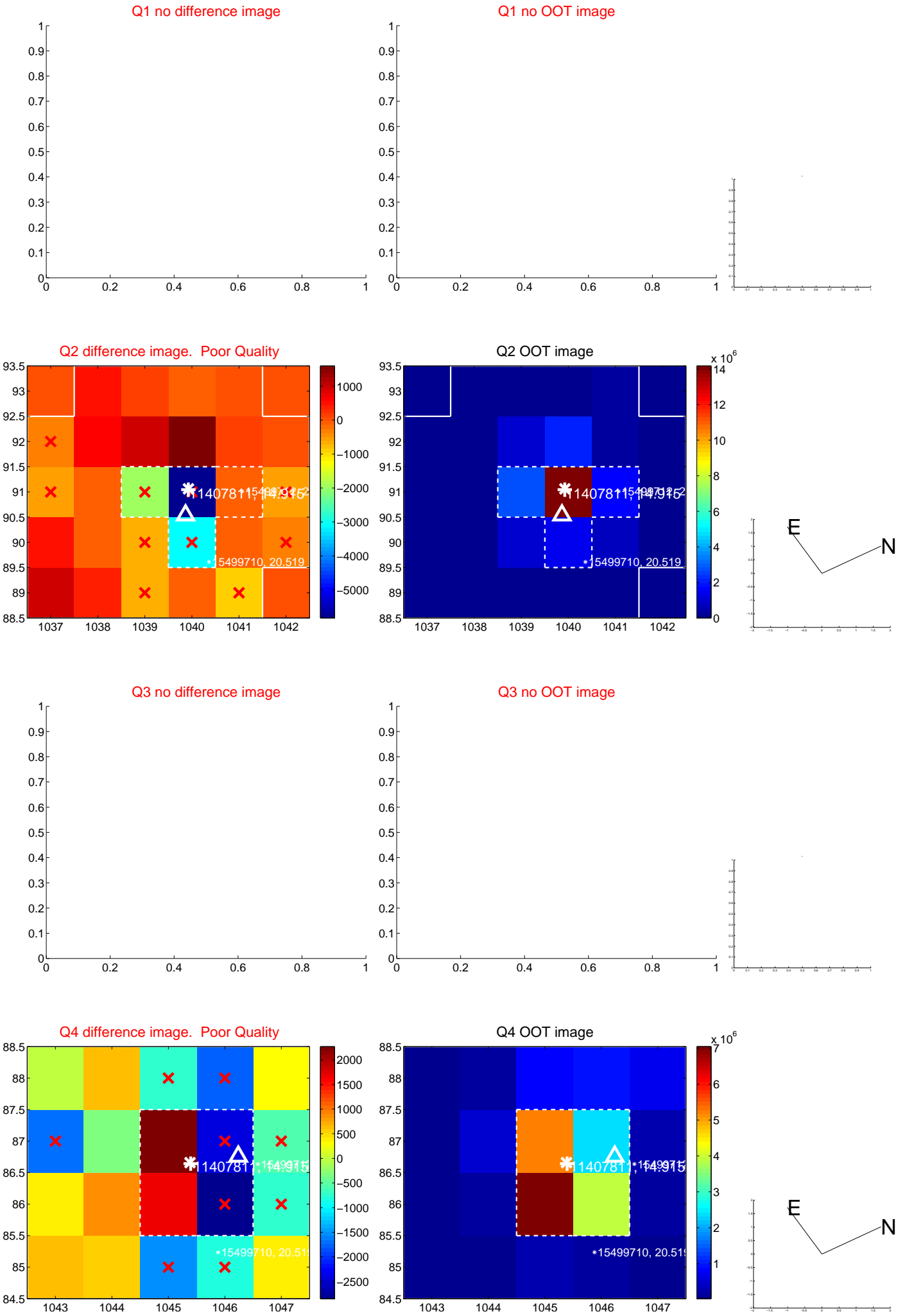


offset from photometric centroids

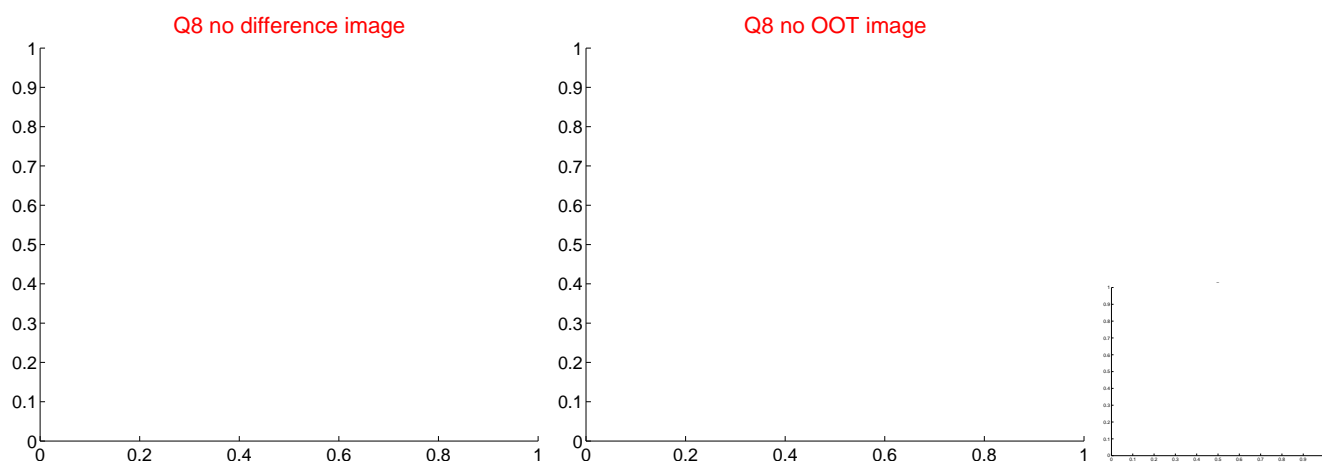
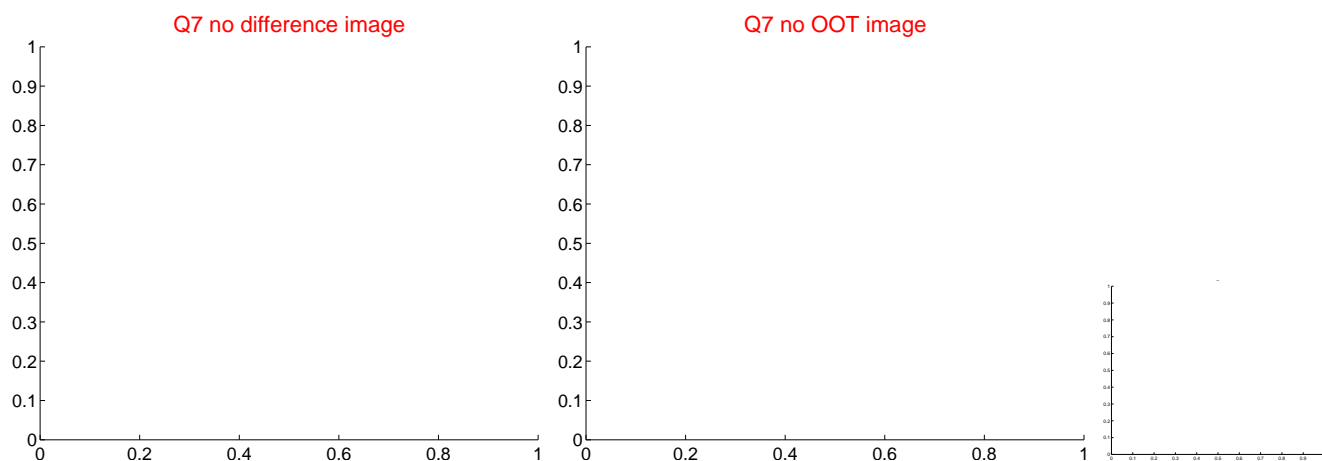
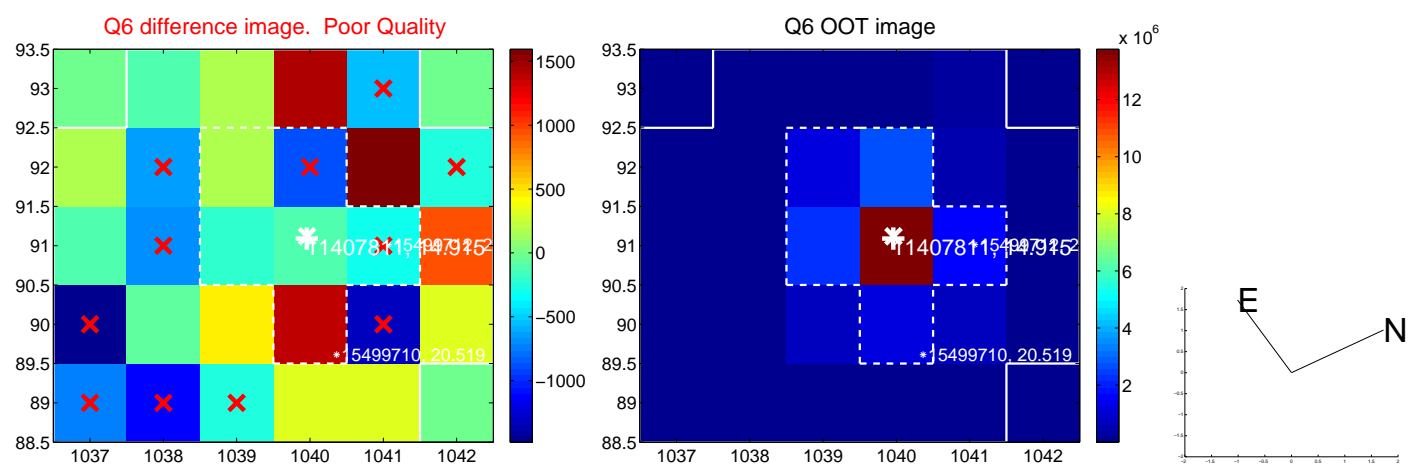
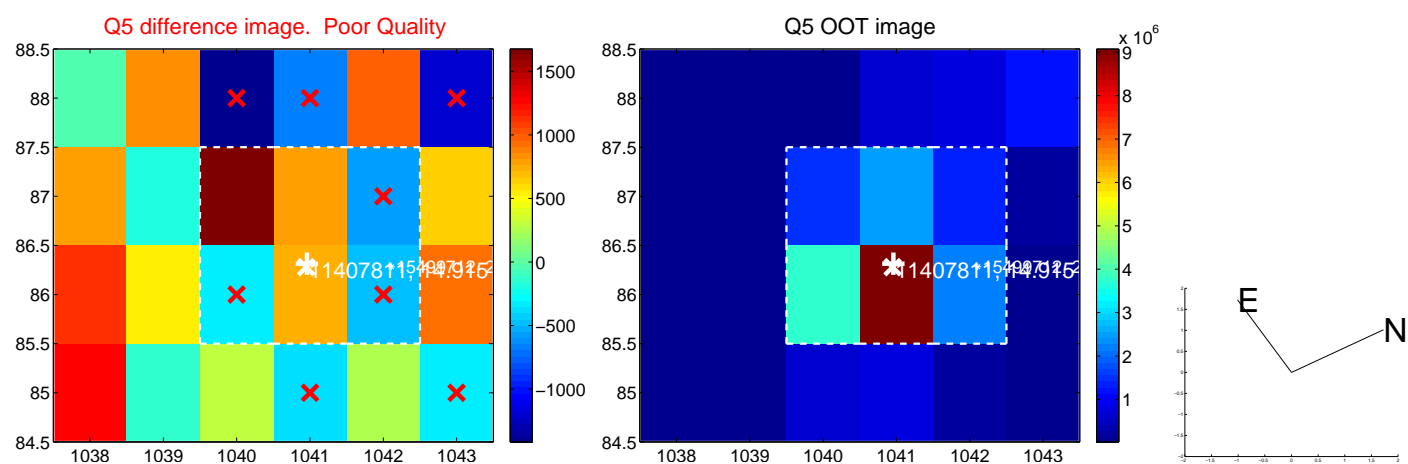


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

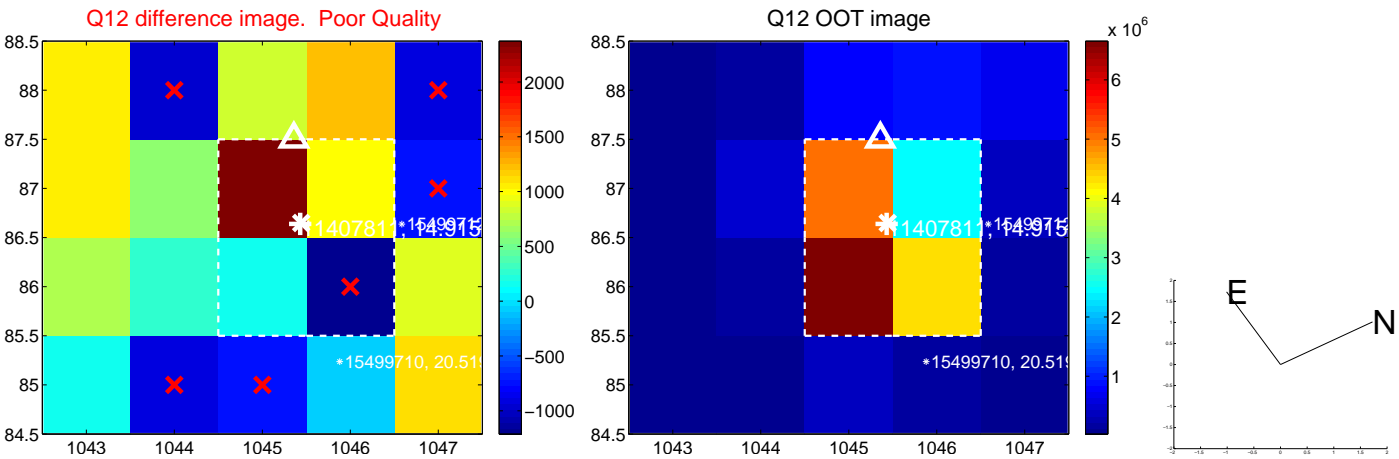
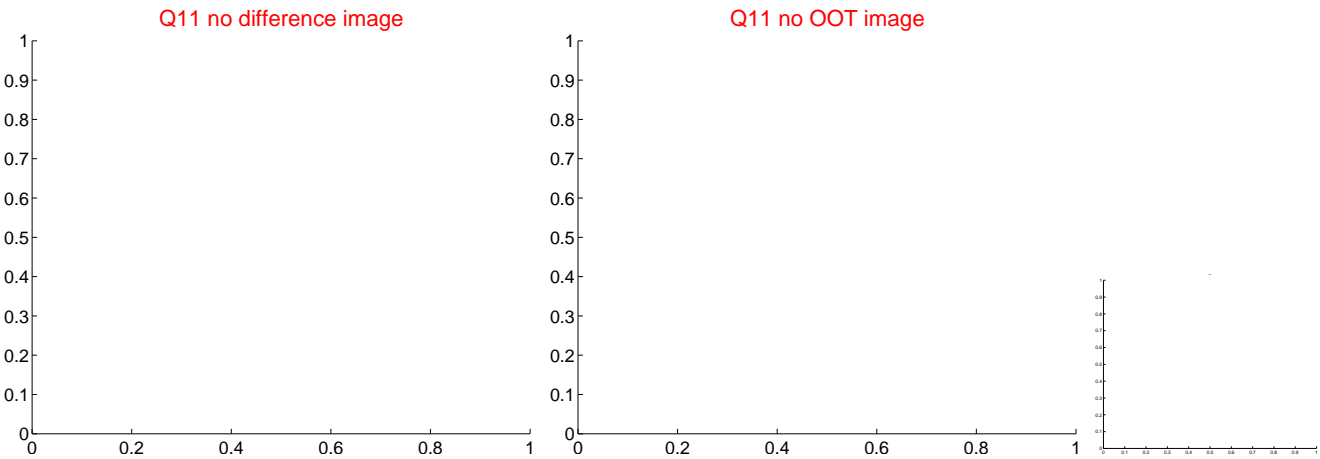
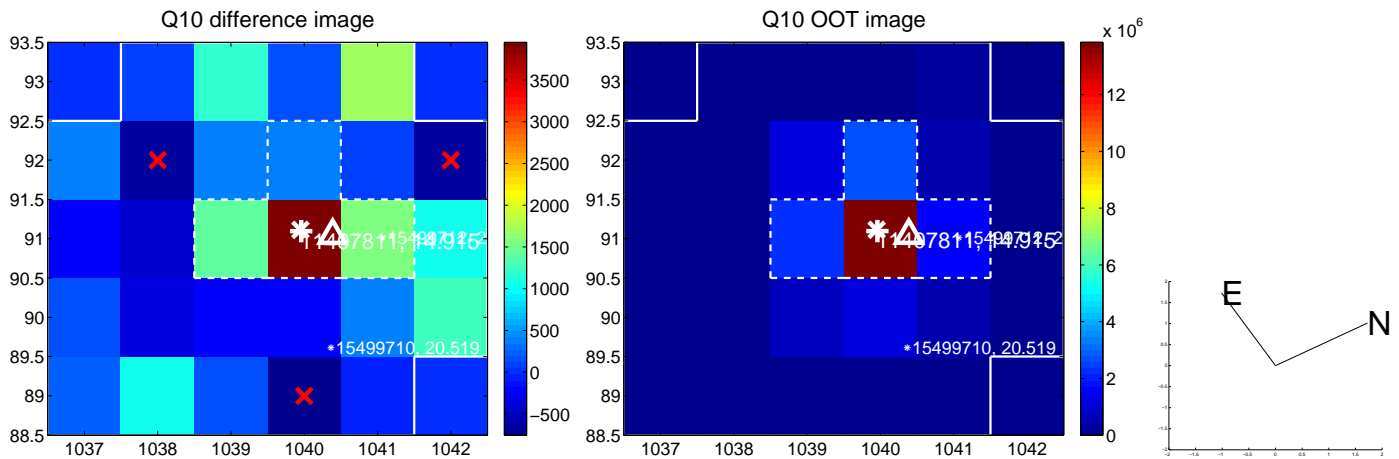
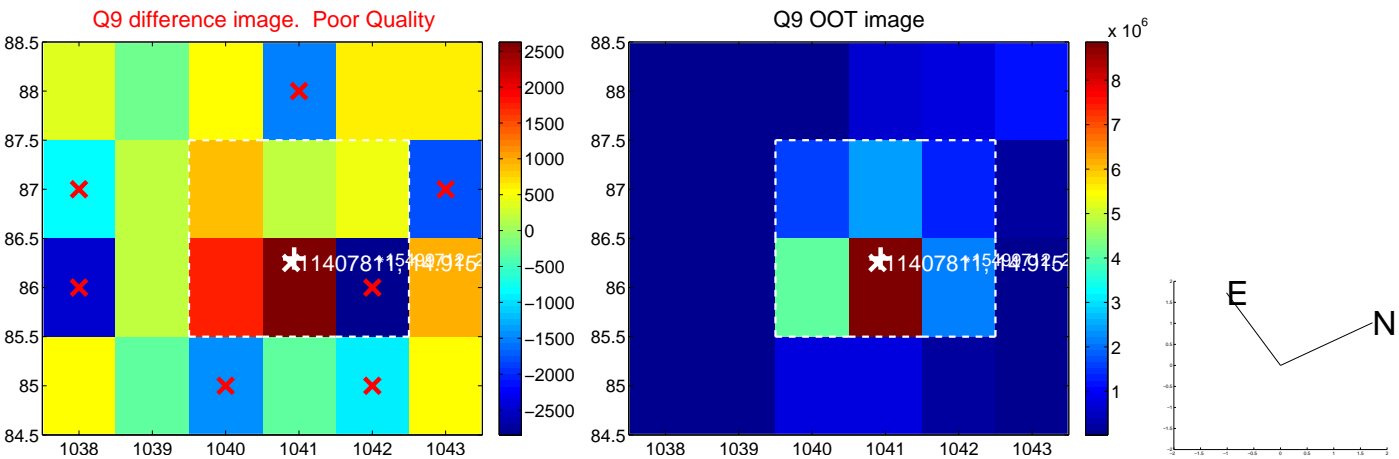
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



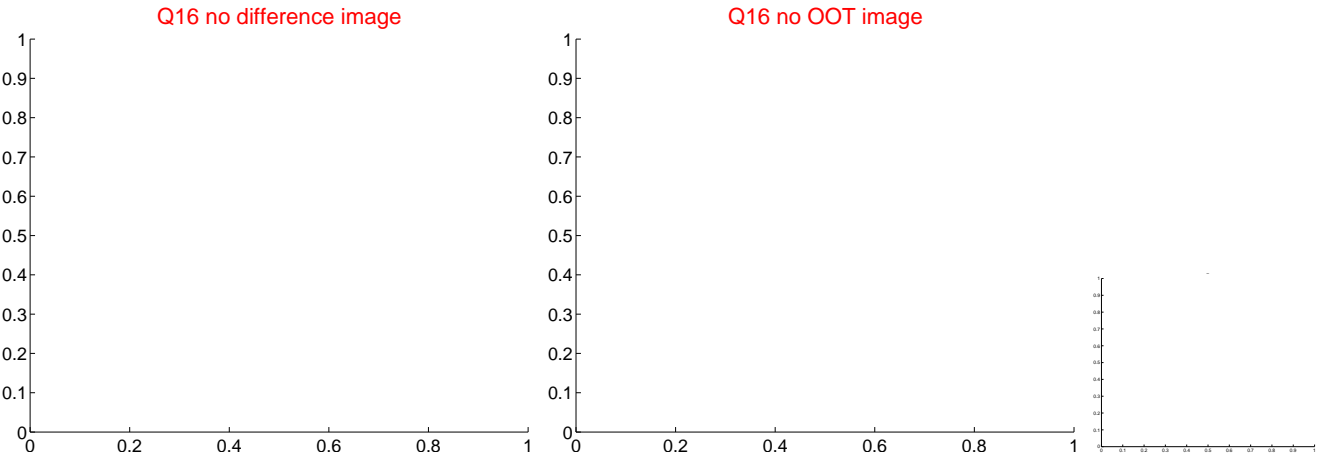
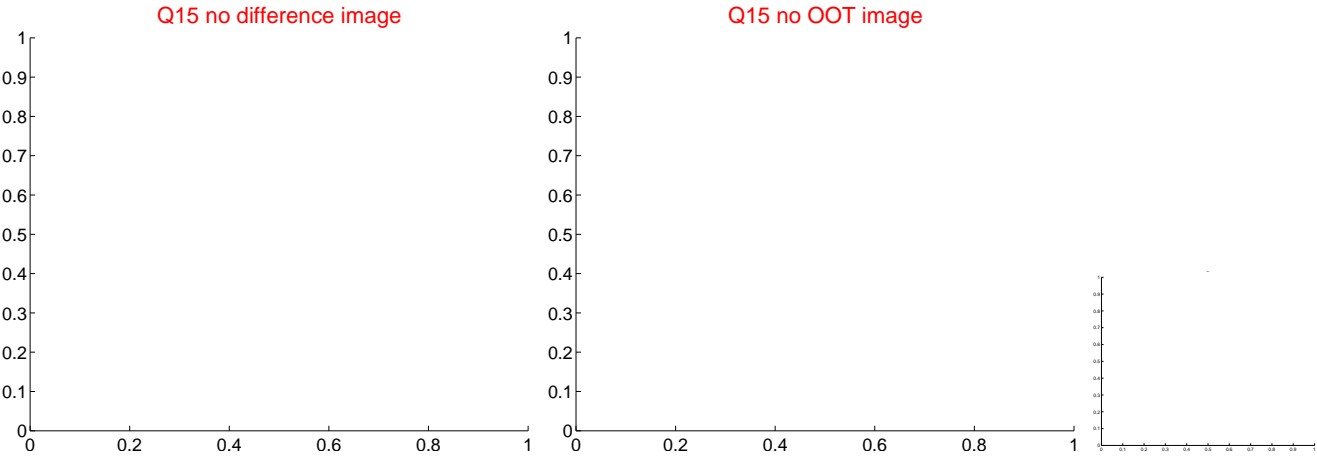
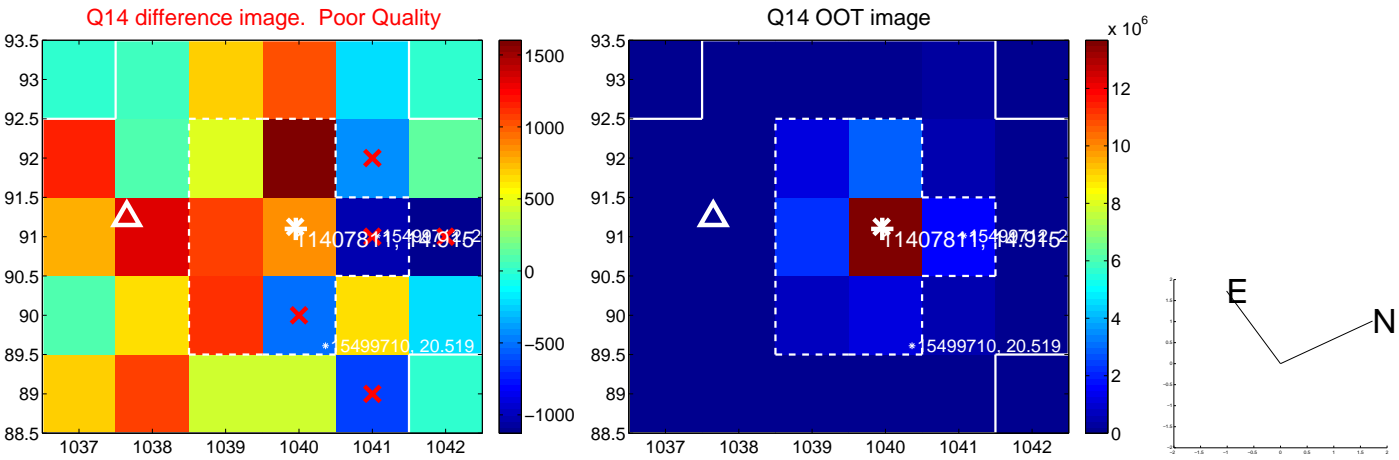
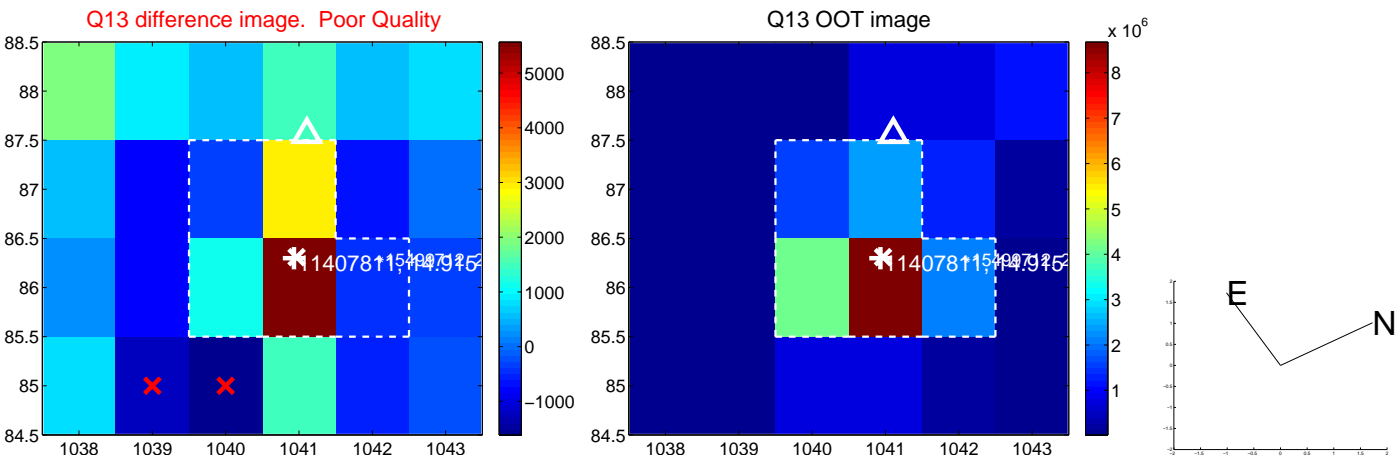
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



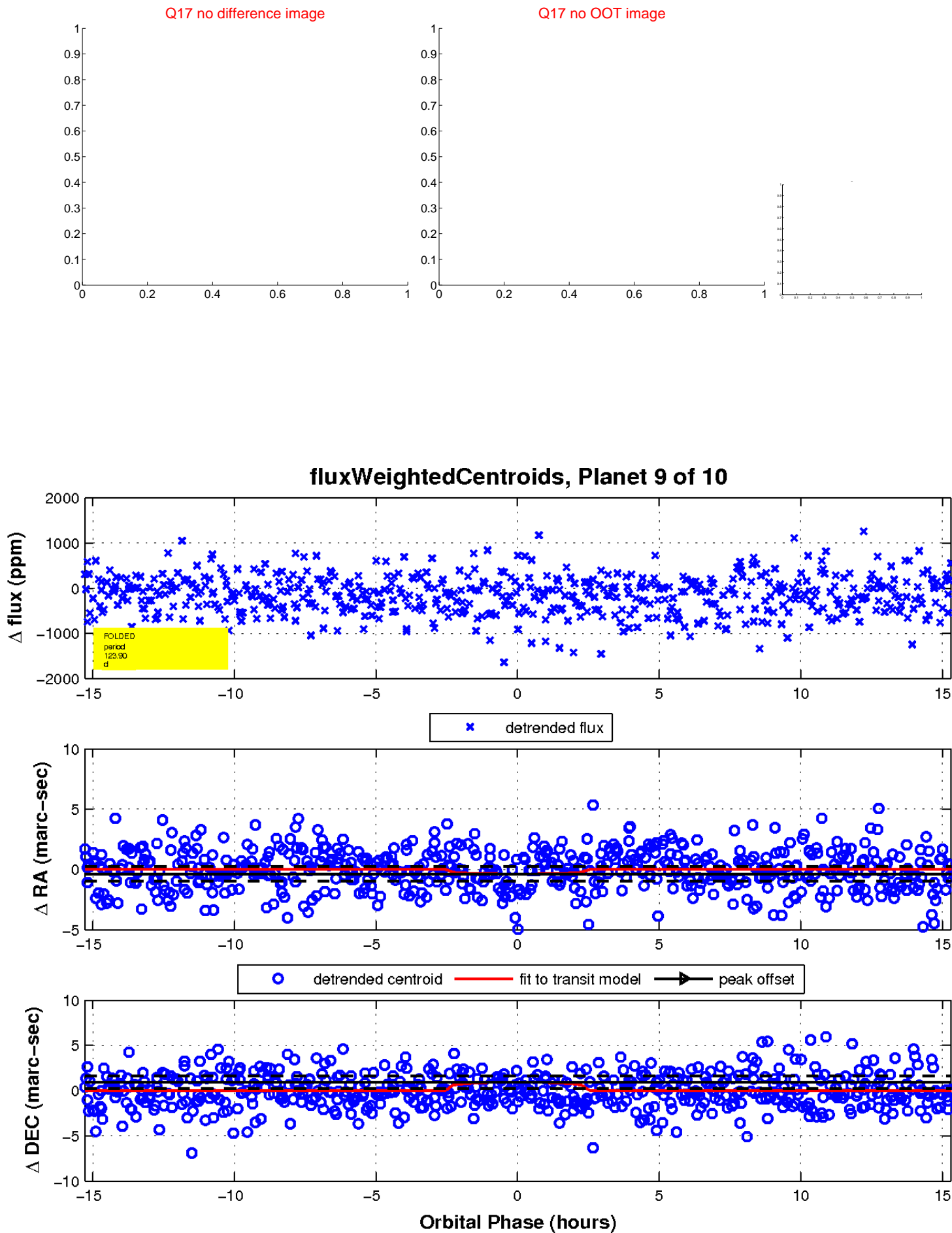
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

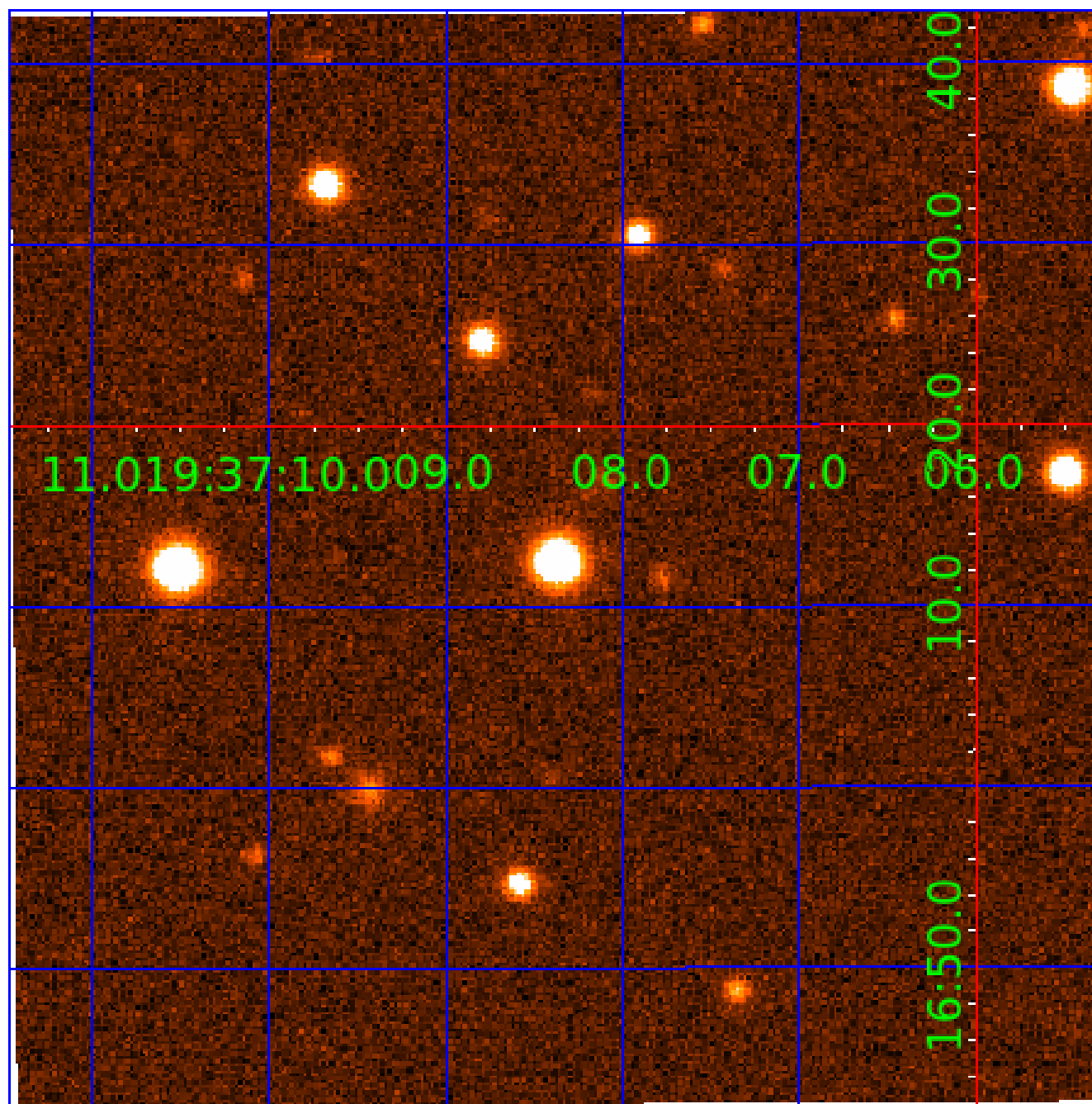


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 011407811

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})
011407811-01	OBS	No	0.676789	131.939975	39.9	3.148	9.4	8.8	0.89	5418	0.68	2989.37
011407811-03	OBS	No	77.108758	165.989221	870.8	10.500	14.5	-1.0	0.89	5418	2.57	5.41
011407811-04	OBS	No	574.788958	196.942565	14486.3	92.601	13.6	9.5	0.89	5418	19.29	0.37
011407811-06	OBS	No	70.605236	172.699679	565.7	3.904	9.4	6.5	0.89	5418	2.36	6.09
011407811-09	OBS	No	123.901899	238.180470	402.4	5.110	9.4	3.9	0.89	5418	1.99	2.88
011407811-10	OBS	No	167.727451	224.512960	348.4	8.853	9.4	2.7	0.89	5418	1.77	1.92

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
011407811-01	OBS	FP	0.00	1	0	0	0	LPP_DV
011407811-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_TER_ALT—MOD_POS_ALT—CENT_NOFITS
011407811-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_CHASES—LPP_DV—ALL_TRANS_CHASES—MOD_NONUNIQ_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS
011407811-06	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_FEW_DIFFS
011407811-09	OBS	FP	0.00	1	0	1	0	INDIV_TRANS_RUBBLE_SKYE—TRANS_GAPPED—LPP_DV—ALL_TRANS_CHASES—CENT_FEW_DIFFS—HALO_GHOST
011407811-10	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL_TRACKER—TRANS_GAPPED—LPP_DV—LPP_ALT—ALL_TRANS_CHASES—MOD_TER_ALT—MOD_POS_ALT

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

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

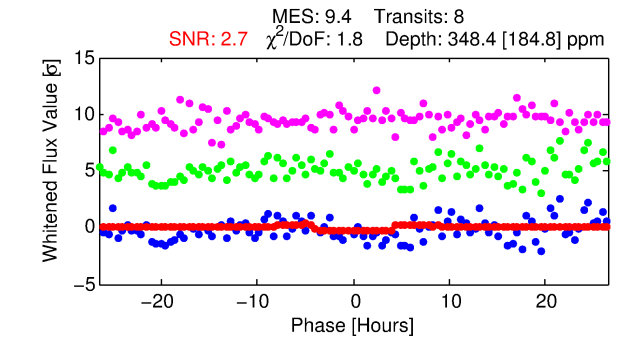
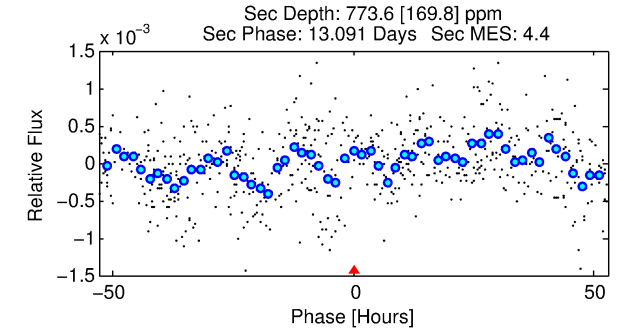
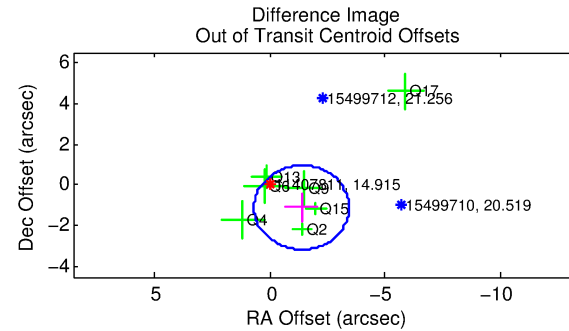
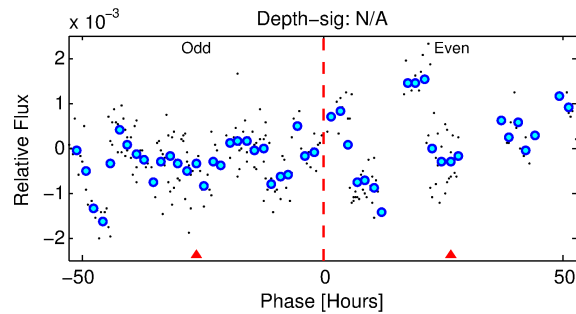
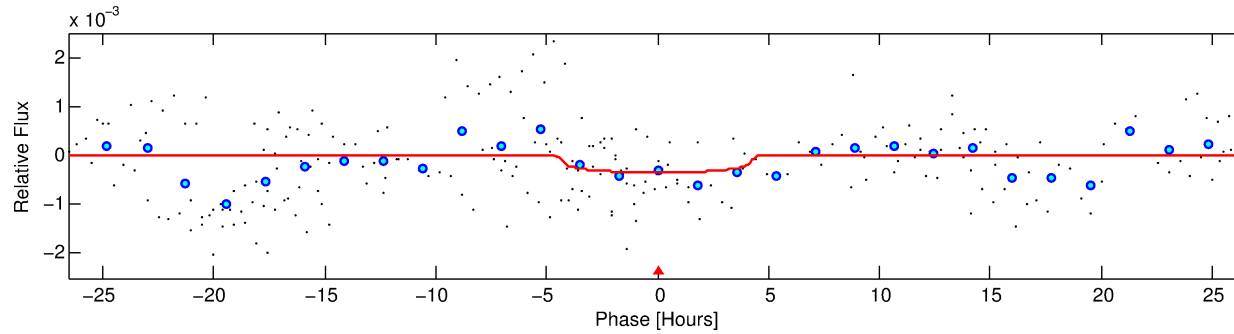
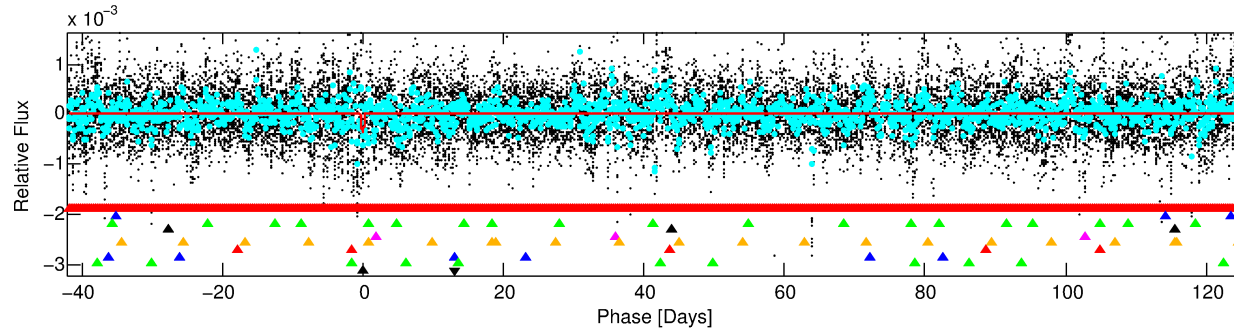
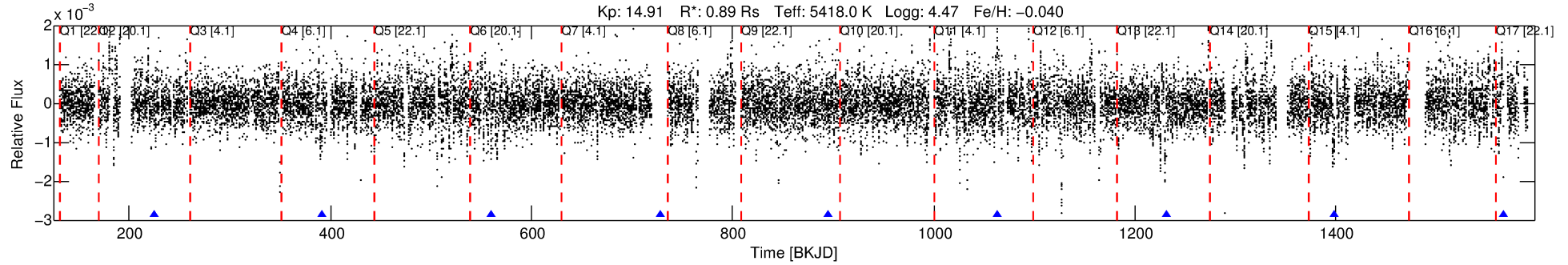
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 011407811-10

No Significant Match Found

DV One-Page Summary

KIC: 11407811 Candidate: 10 of 10 Period: 167.727 d



DV Fit Results:

Period = 167.72745 [0.00880] d
Epoch = 224.5130 [0.0425] BKJD
Rp/R* = 0.0182 [0.0375]
a/R* = 107.74 [878.69]
b = 0.69 [6.17]
Seff = 1.92 [0.55]
Teq = 300 [21] K
Rp = 1.77 [3.66] Re
a = 0.5637 [0.0997] AU
Ag = 43328.70 [179286.06] [0.24σ]
Teffp = 6696 [6916] K [0.92σ]

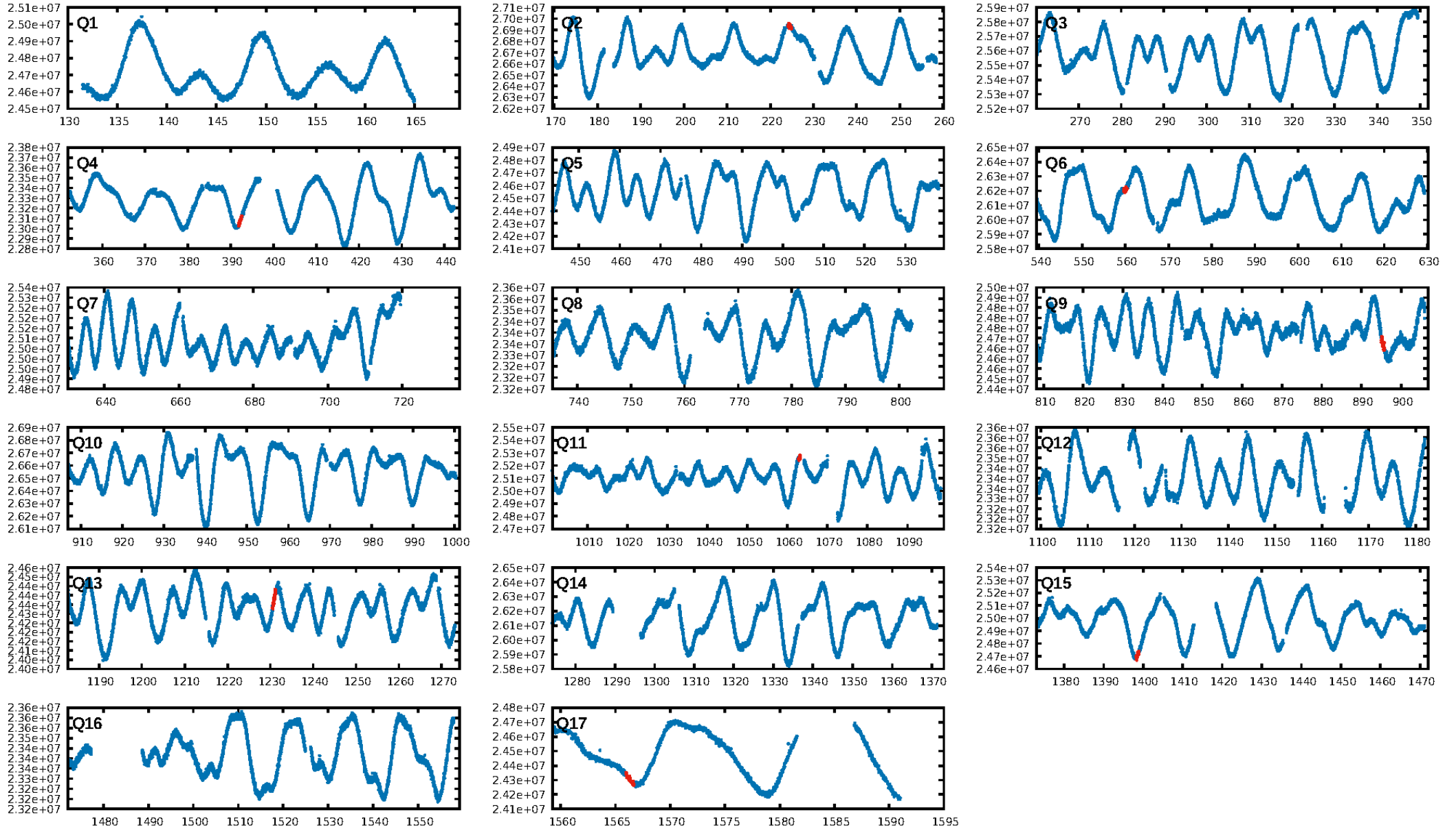
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [102.90σ]
LongPeriod-sig: 100.0% [286.24σ]
ModelChiSquare2-sig: 0.4%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: N/A
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: -1.735
Centroid-sig: 17.1%
Centroid-so: 2.066 arcsec [1.50σ]
OotOffset-rm: 1.761 arcsec [2.57σ]
KicOffset-rm: 1.819 arcsec [2.73σ]
OotOffset-st: 2/1/1/3 [7]
KicOffset-st: 2/1/1/3 [7]
DiffImageQuality-fgm: 0.57 [4/7]
DiffImageOverlap-fno: 0.00 [0/7]

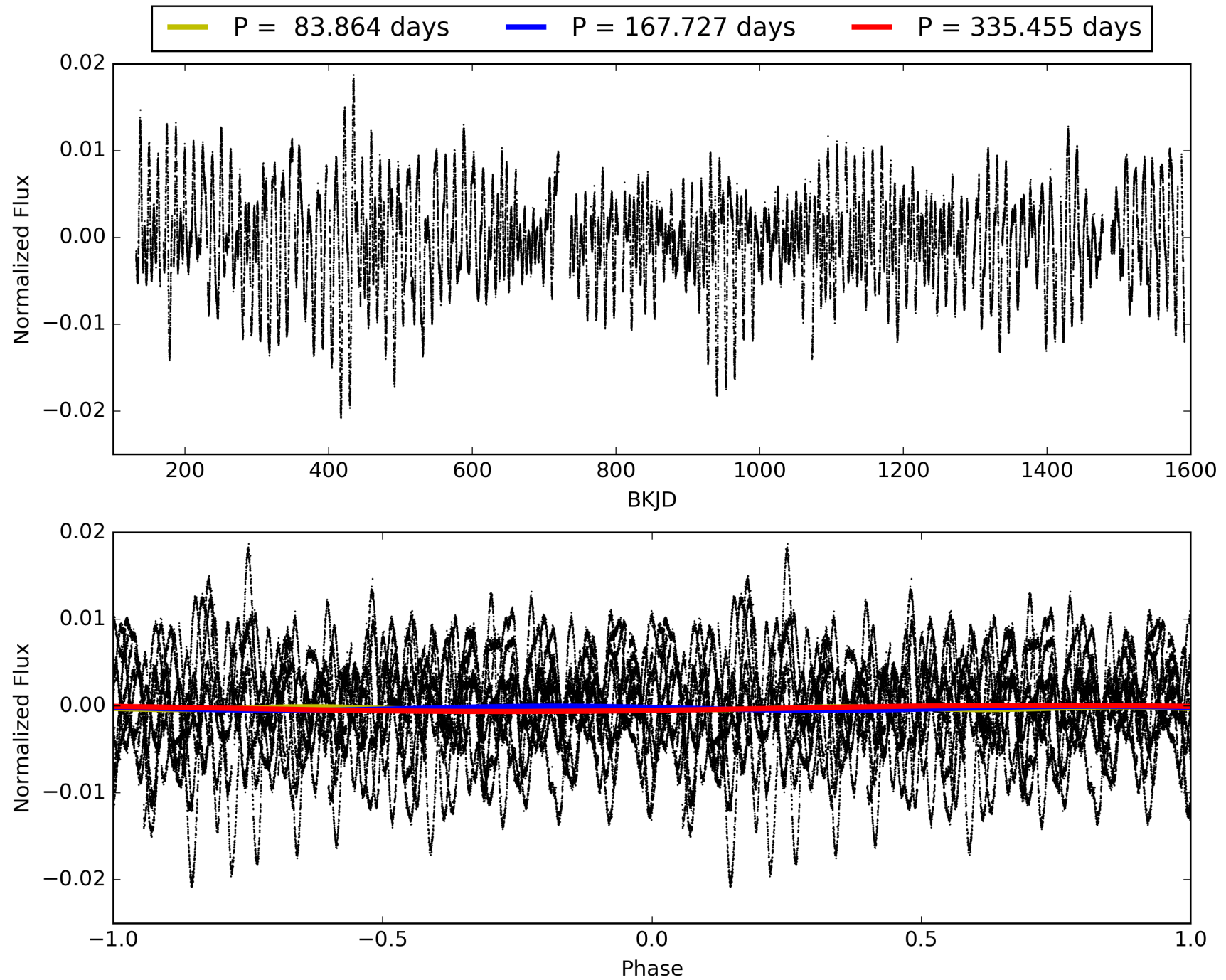
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 04:42:23 Z

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

TCE 011407811-10, PDC Light Curves

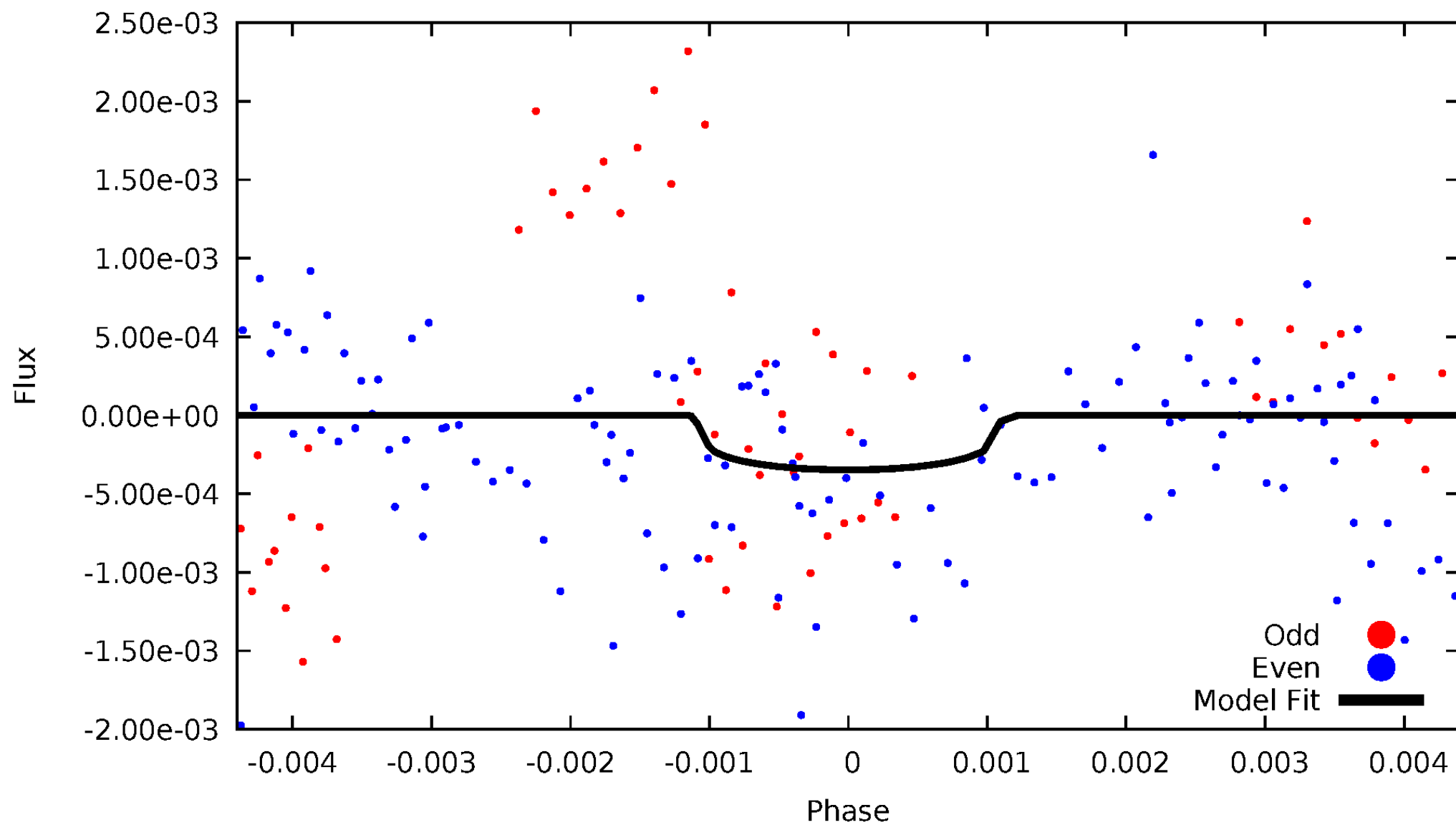


TCE 011407811-10



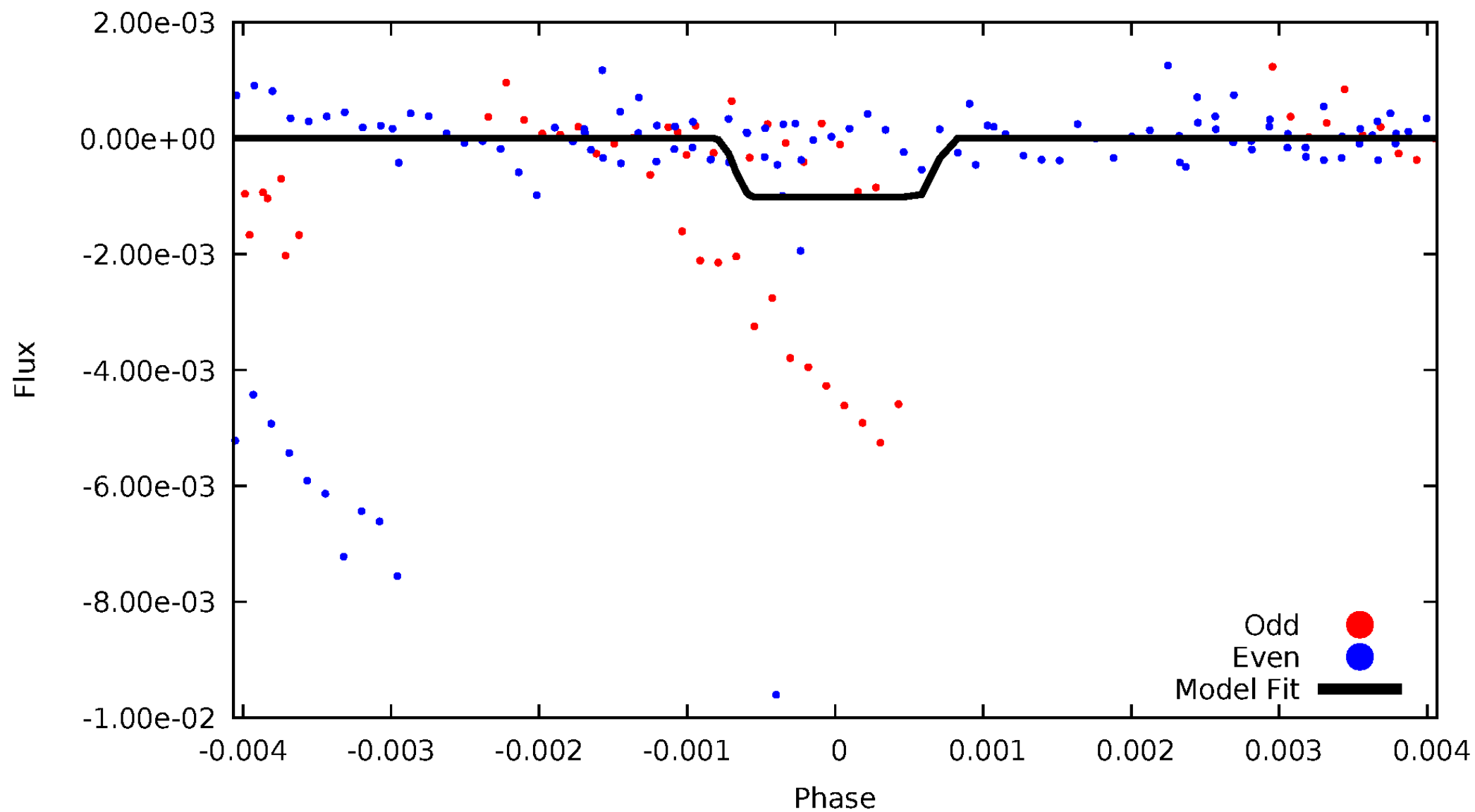
DV Odd/Even

TCE 011407811-10



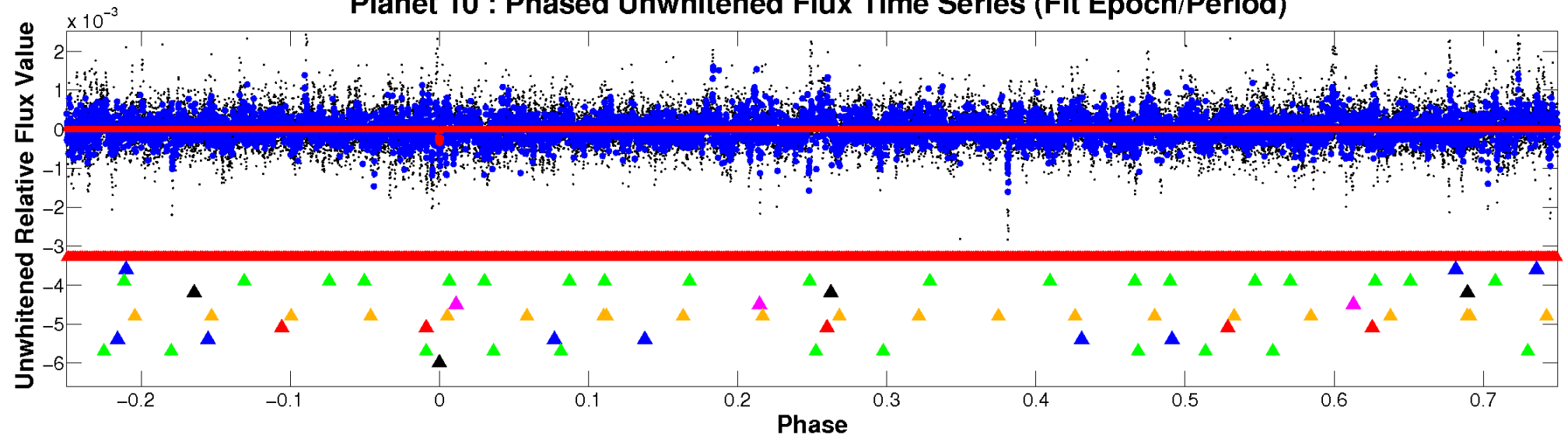
ALT Odd/Even

TCE 011407811-10

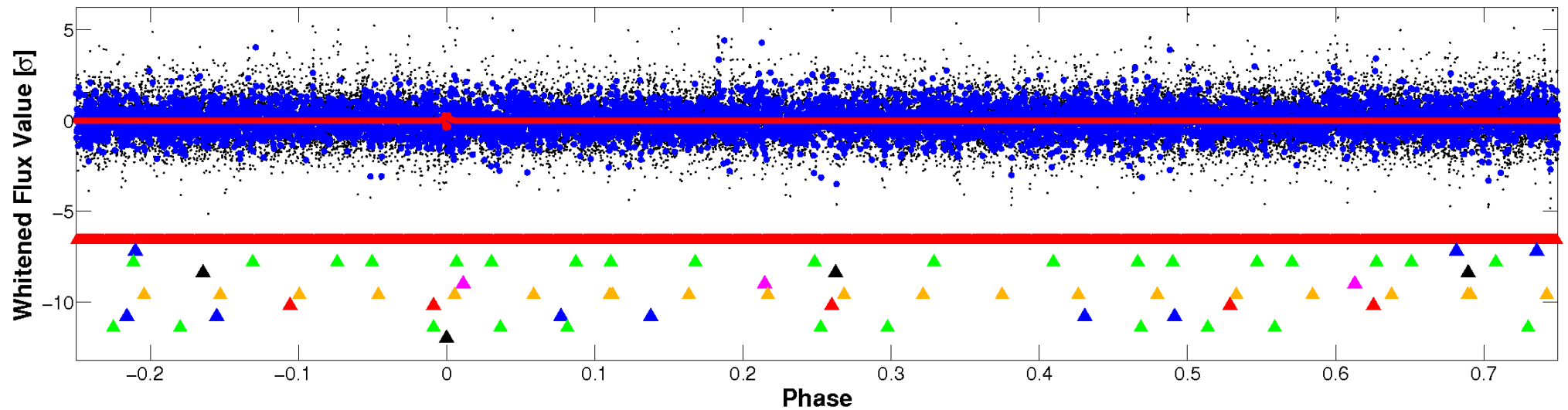


Non-Whitened Vs. Whitened Light Curve

Planet 10 : Phased Unwhitened Flux Time Series (Fit Epoch/Period)

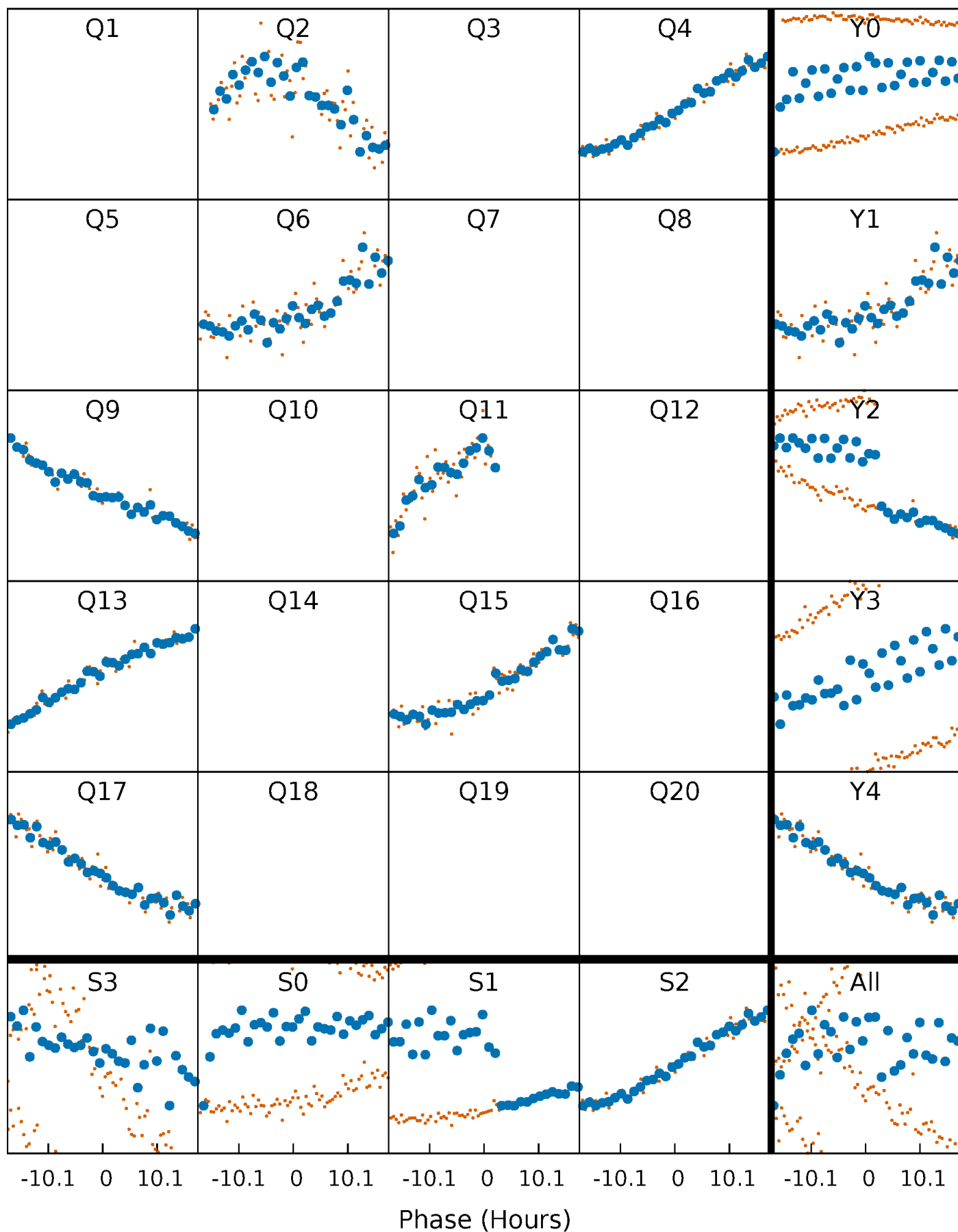


Planet 10 : Phased Whitened Flux Time Series (Fit Epoch/Period)



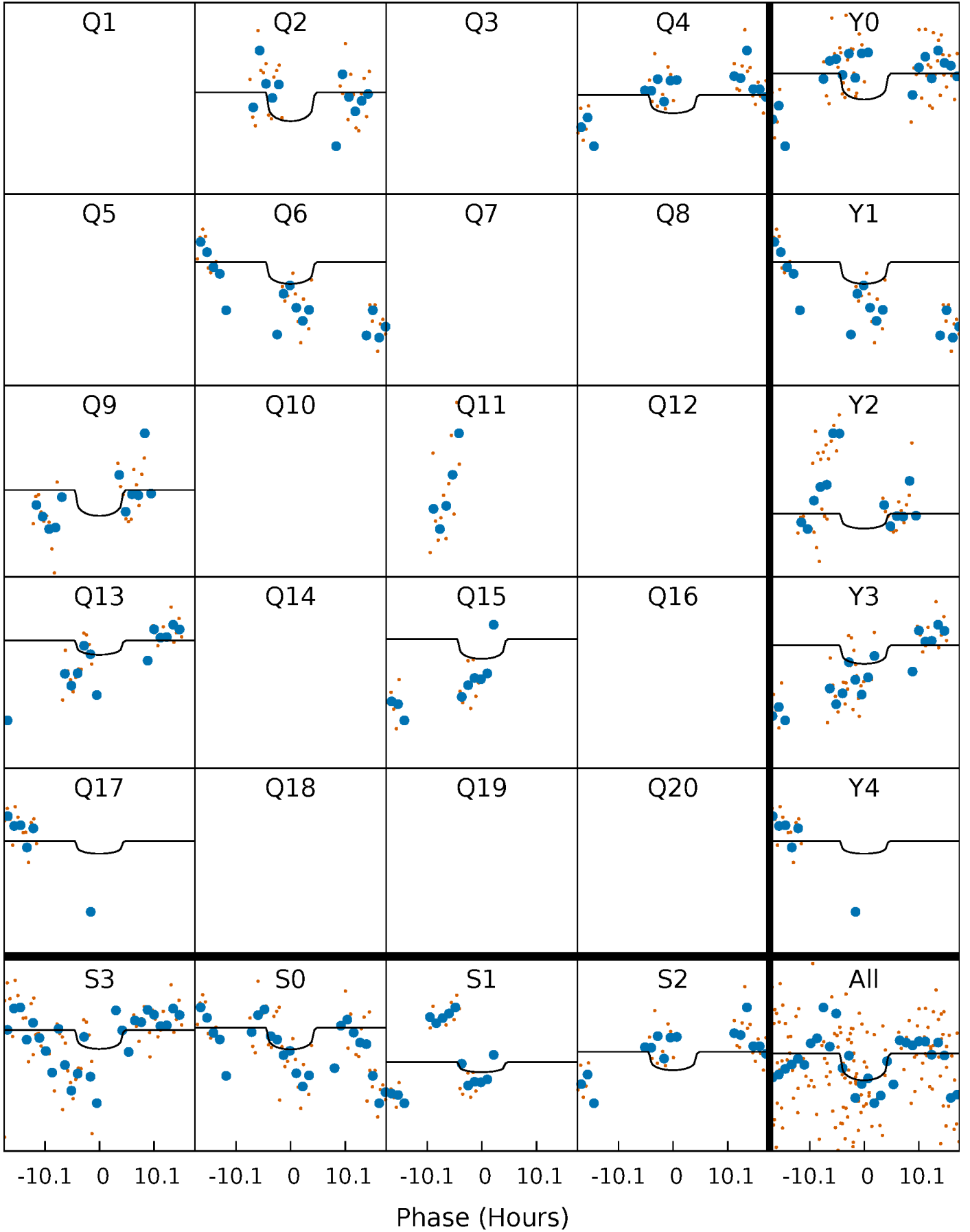
PDC Quarter-Phased Transit Curves

TCE 011407811-10 P=167.727451 Days $T_0=224.512960$ (BKJD)



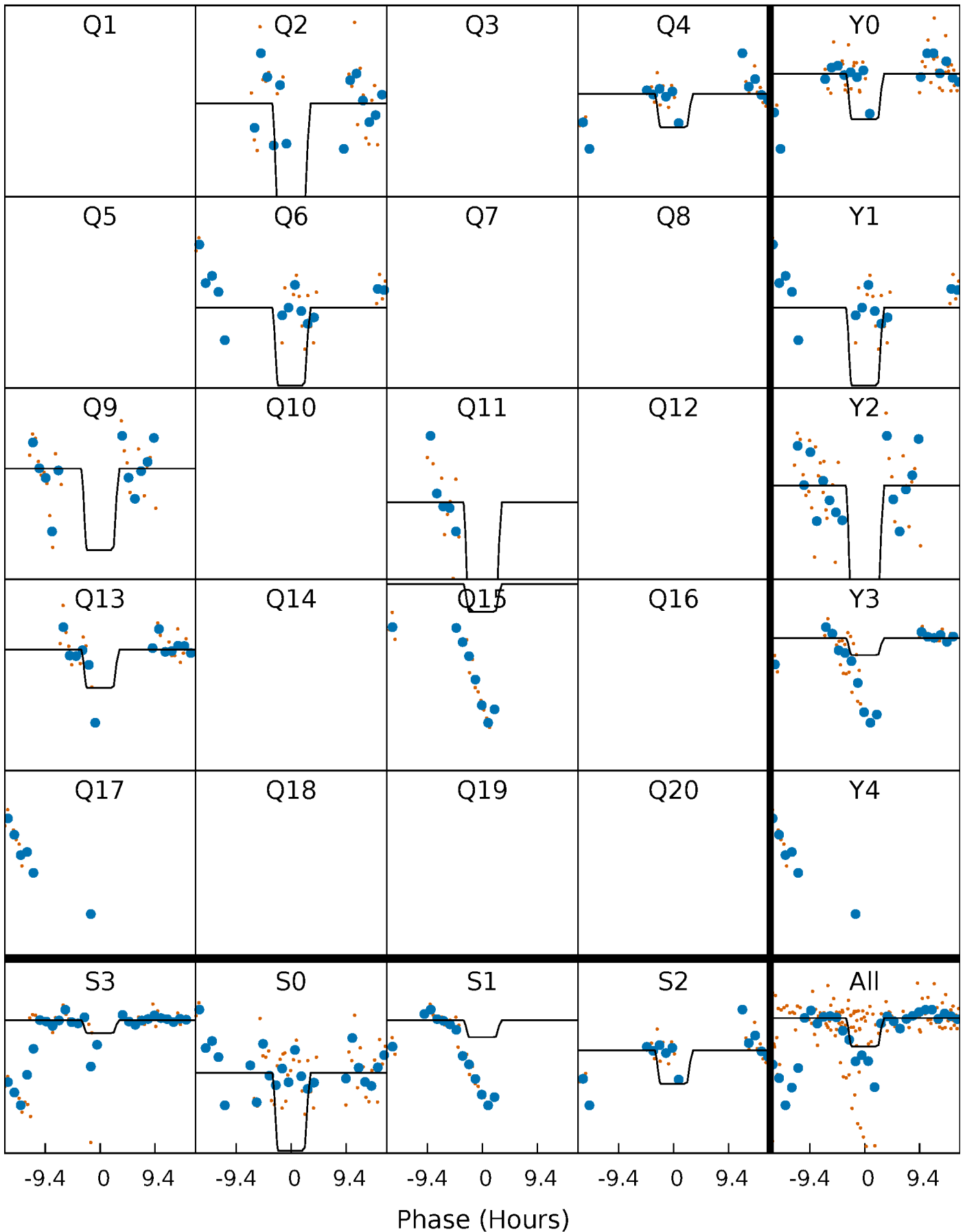
DV Quarter-Phased Transit Curves

TCE 011407811-10 P=167.727451 Days $T_0=224.512960$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

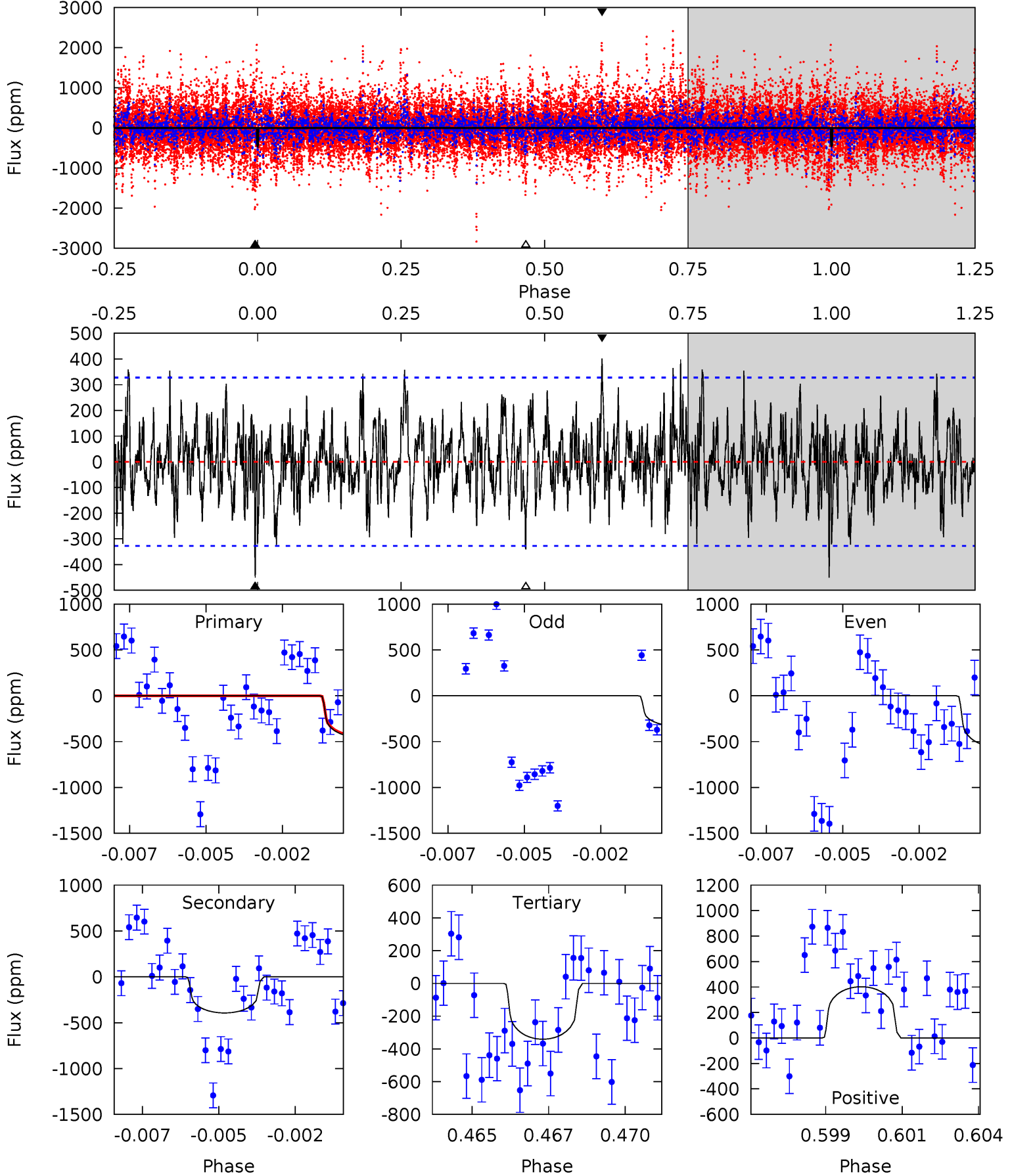
TCE 011407811-10 P=167.732283 Days $T_0=224.484413$ (BKJD)



DV Model-Shift Uniqueness Test

011407811-10, $P = 167.727451$ Days, $E = 56.785509$ Days

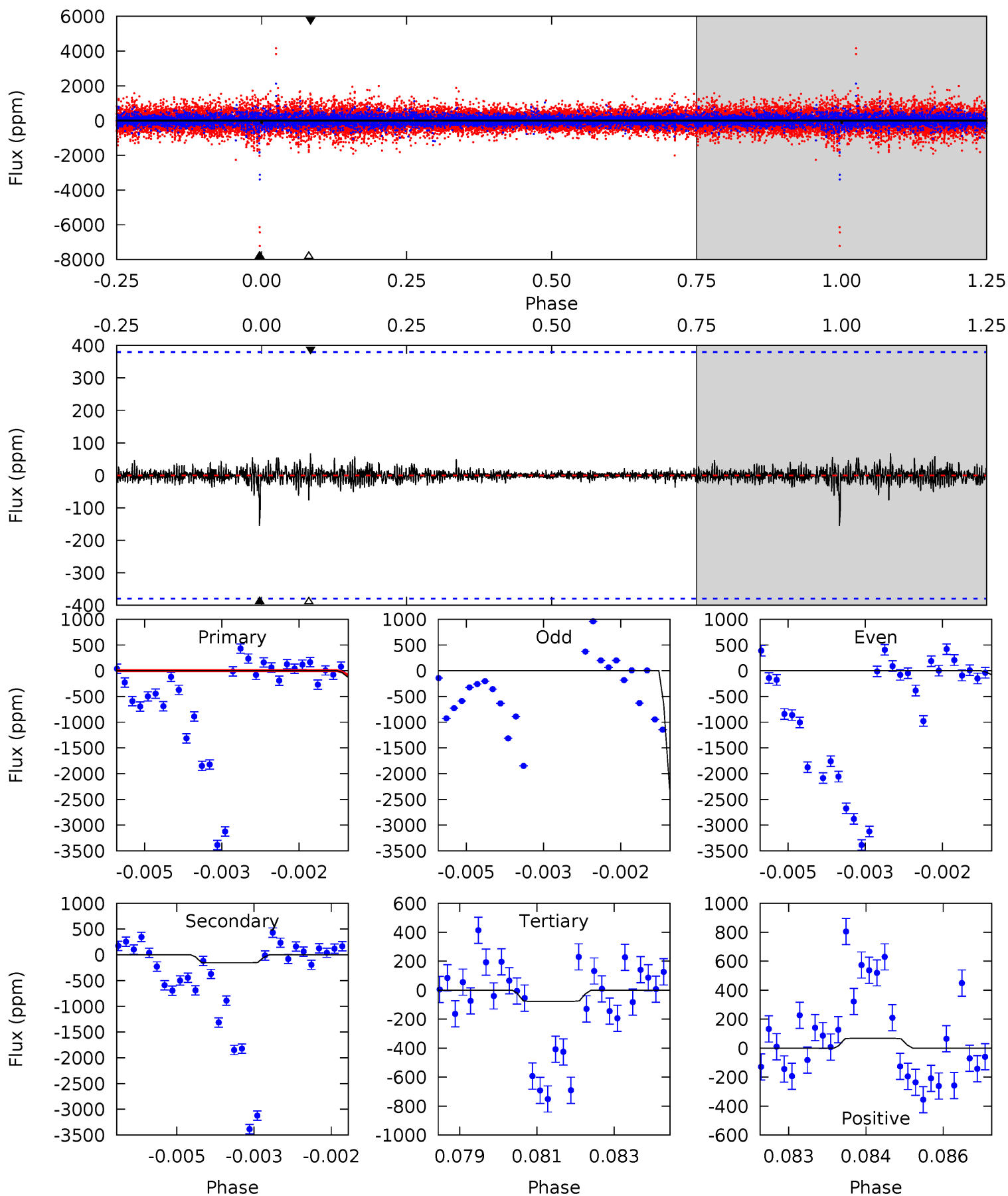
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
7.28	6.37	5.51	6.50	5.30	3.04	1.83	1.77	0.78	0.86	-0.13	1.78	103.7	0.47	0.29



Alt Model-Shift Uniqueness Test

011407811-10, $P = 167.732283$ Days, $E = 56.752130$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
1.91	2.20	1.09	0.96	5.37	3.15	0.18	0.83	0.96	1.11	1.24	18.0	4.30	0.30	0.93



Stellar Parameters For KIC 011407811

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5418^{+160}_{-160}	$4.469^{+0.096}_{-0.144}$	$-0.040^{+0.300}_{-0.300}$	$0.889^{+0.184}_{-0.107}$	$0.849^{+0.099}_{-0.072}$	$1.702^{+0.685}_{-0.675}$
	+3%/-3%	+2%/-3%	+750%/-750%	+21%/-12%	+12%/-8%	+40%/-40%
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 011407811-10 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-394 ± 62	$3.19^{+3.03}_{-2.11}$	420^{+26}_{-20}	4374^{+2828}_{-887}	6491^{+51567}_{-4760}
Alt.	-156 ± 71	$4.15^{+3.23}_{-2.81}$	422^{+24}_{-21}	3406^{+1756}_{-591}	1447^{+12922}_{-1052}

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 $A_{obs} \gg 1.0$

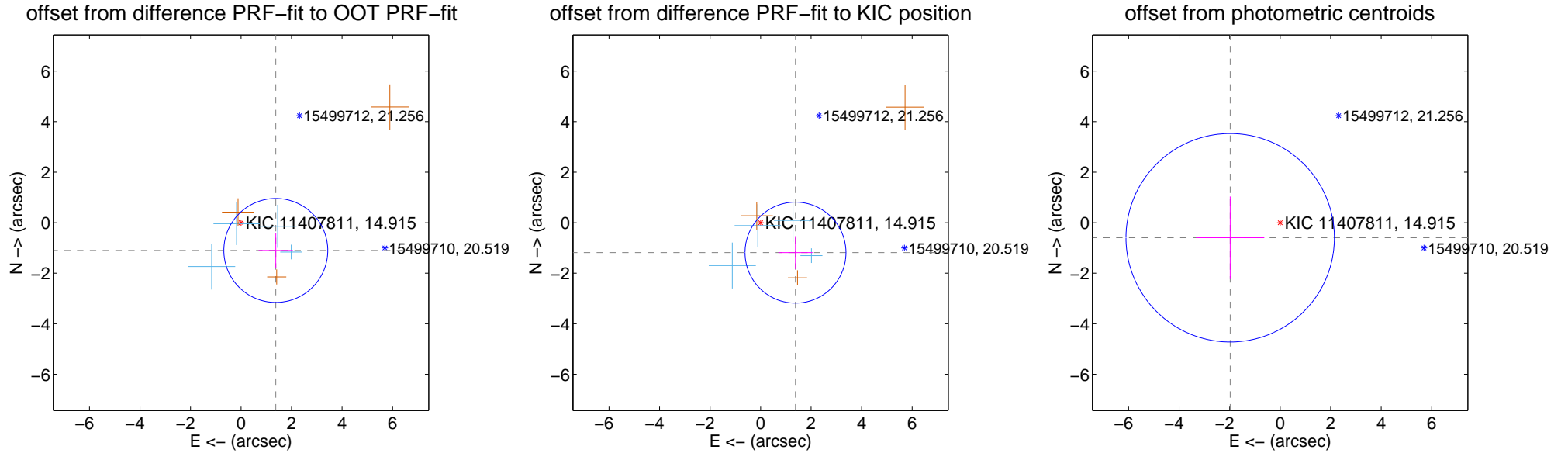
DV Centroid Data

Supplemental centroid analysis for 011407811-10. Kepler magnitude: 14.91. Transit SNR 2.74

There are 4 quarters with good PRF difference image offsets

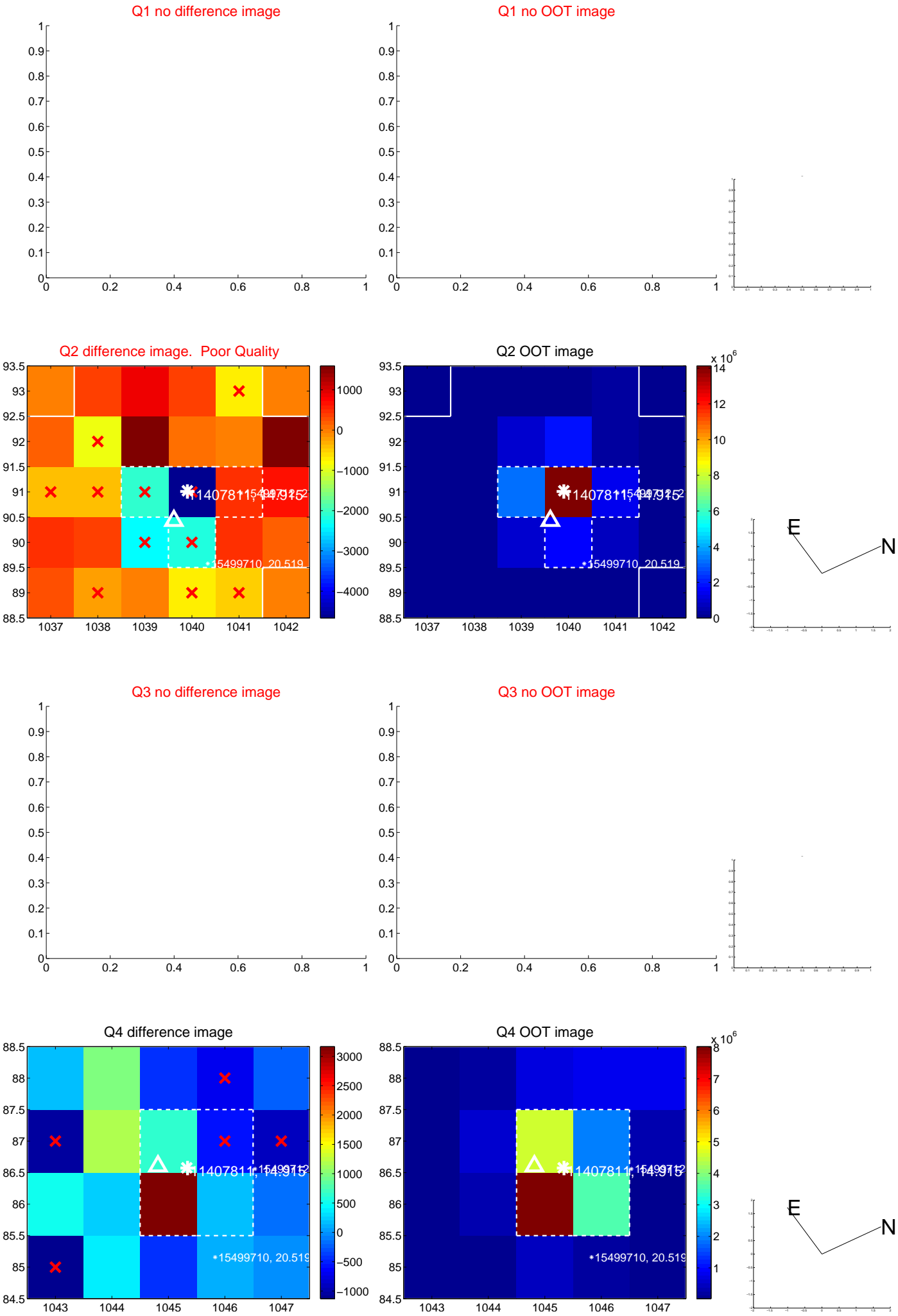
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.761 ± 0.686	2.57	-1.376 ± 0.680	-1.099 ± 0.695
PRF-fit source offset from KIC position	1.819 ± 0.666	2.73	-1.381 ± 0.678	-1.184 ± 0.650
photometric centroid source offset	2.07 ± 1.37	1.50	1.98 ± 1.35	-0.60 ± 1.63

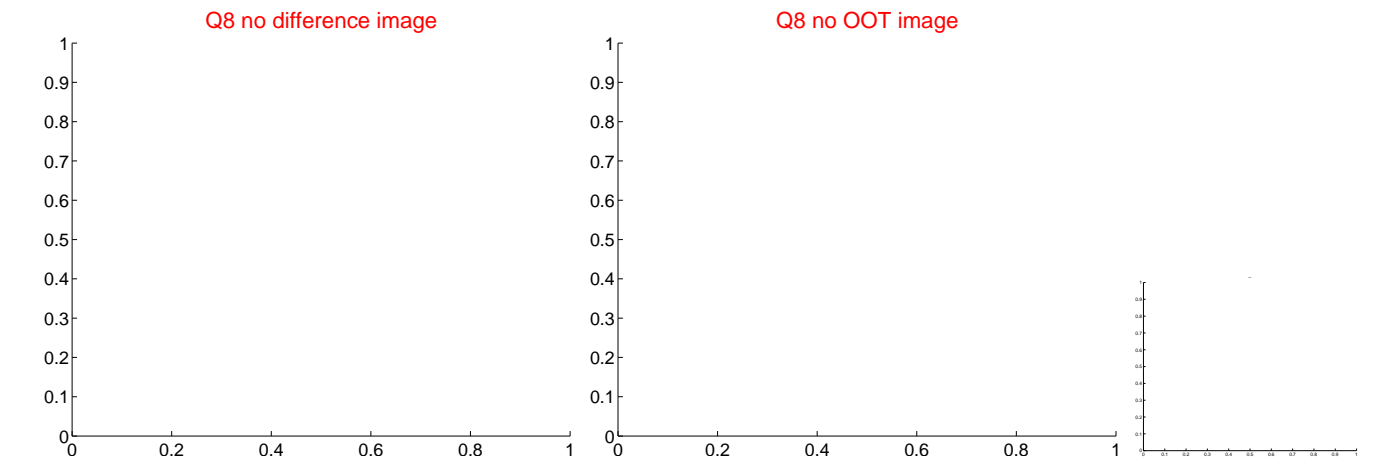
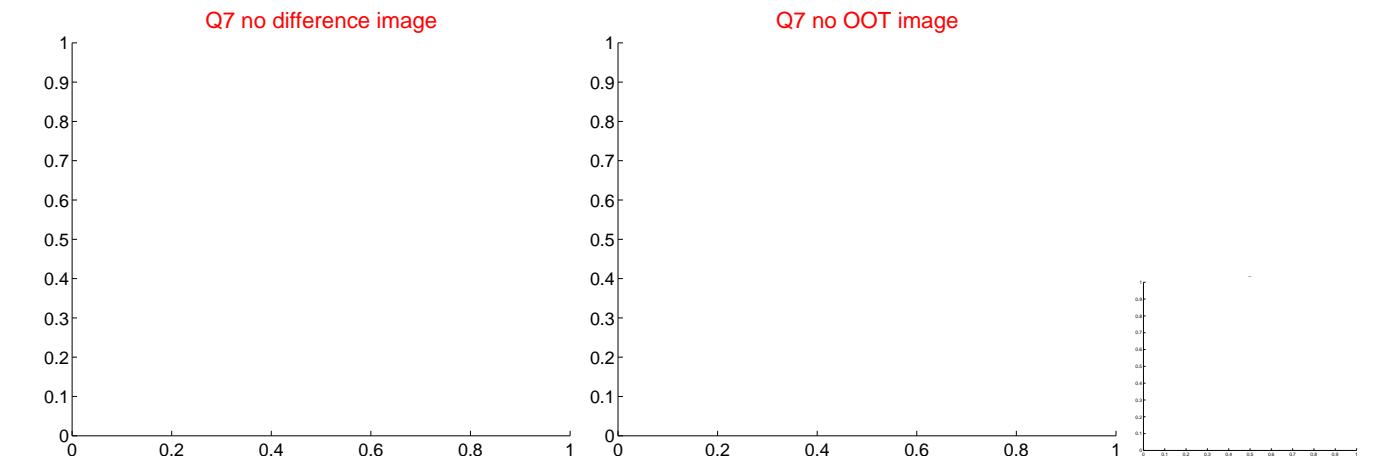
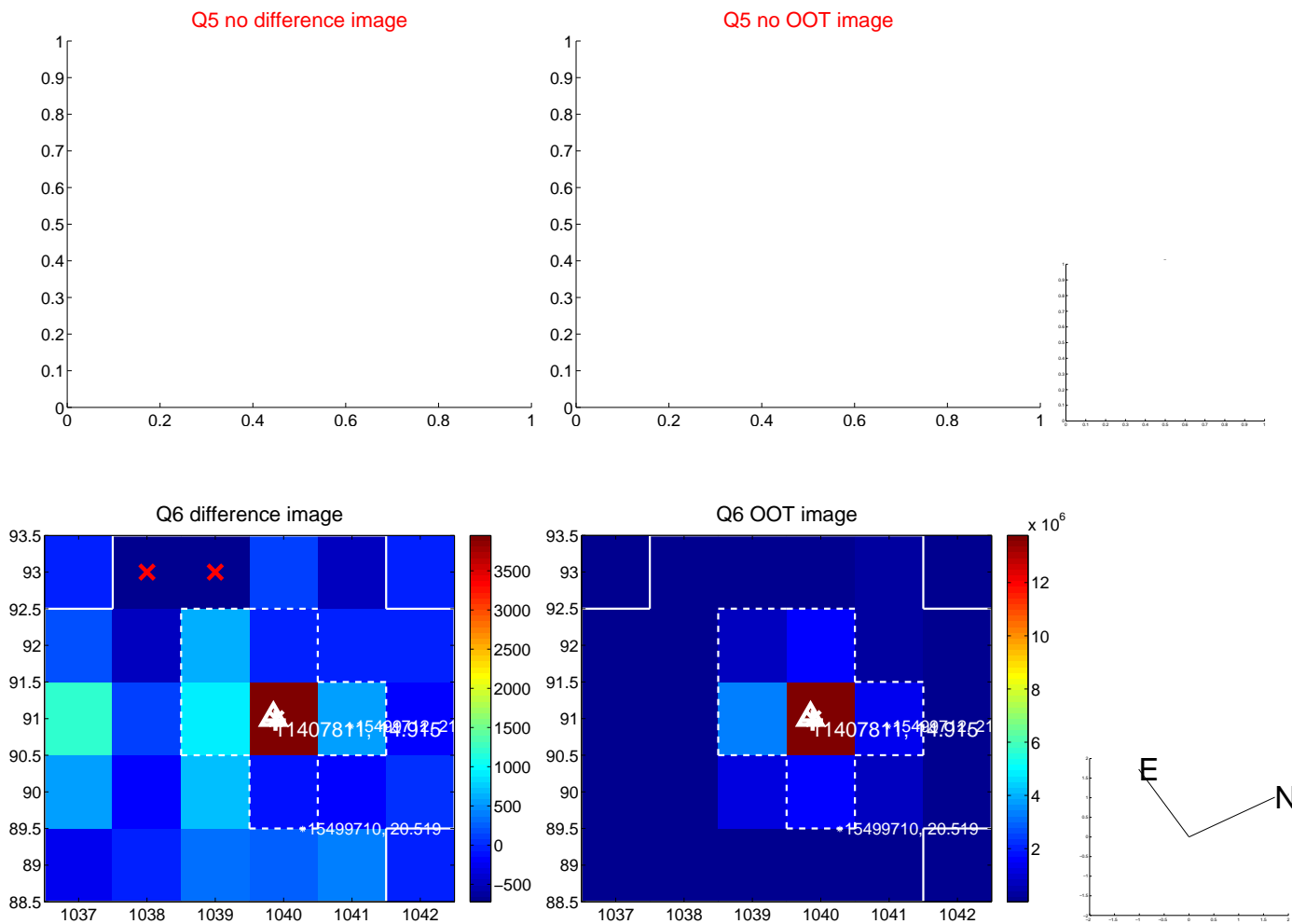


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

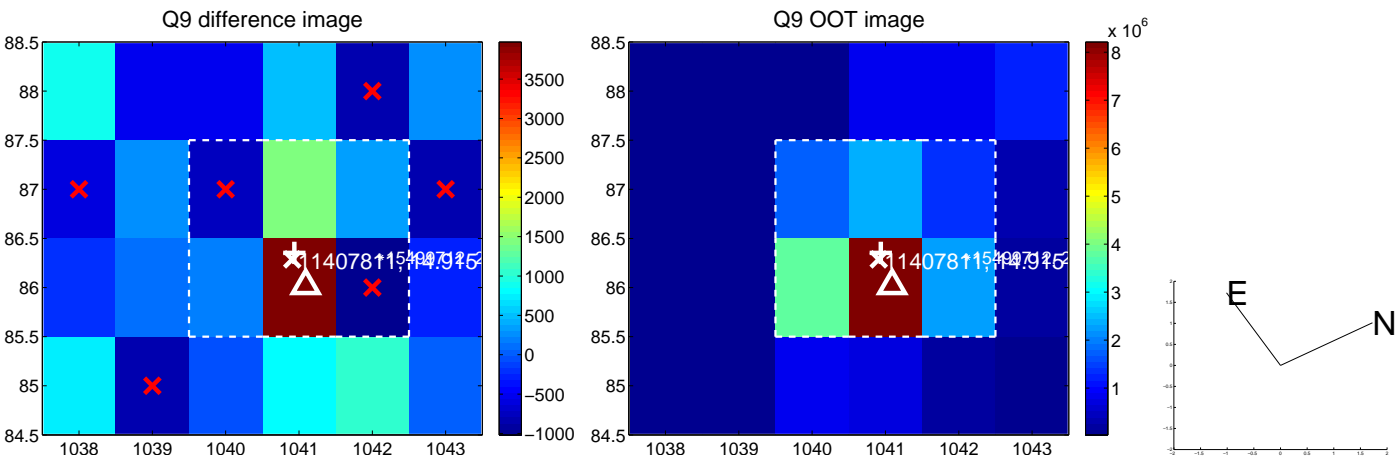
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



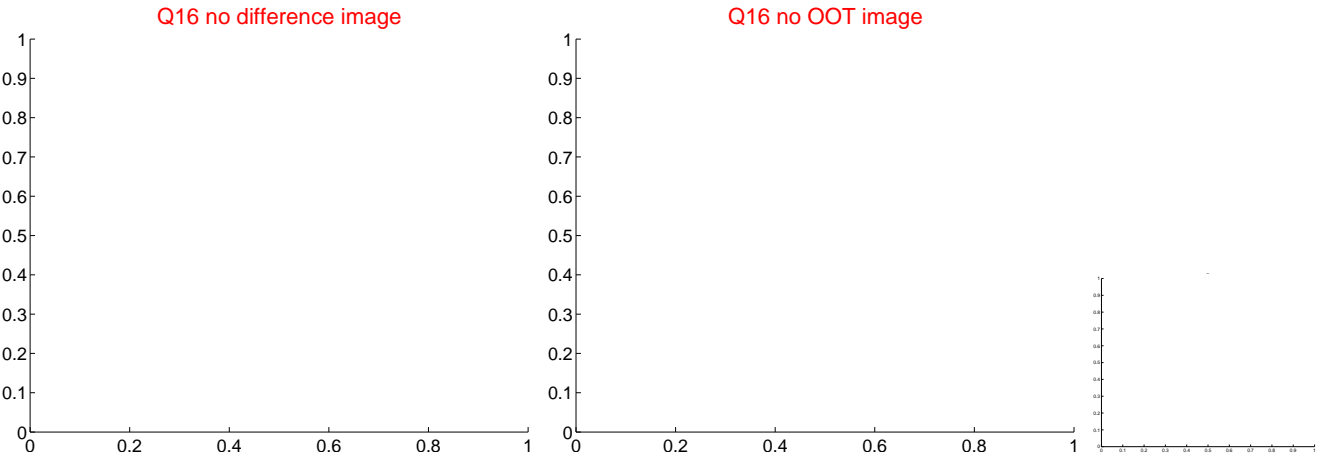
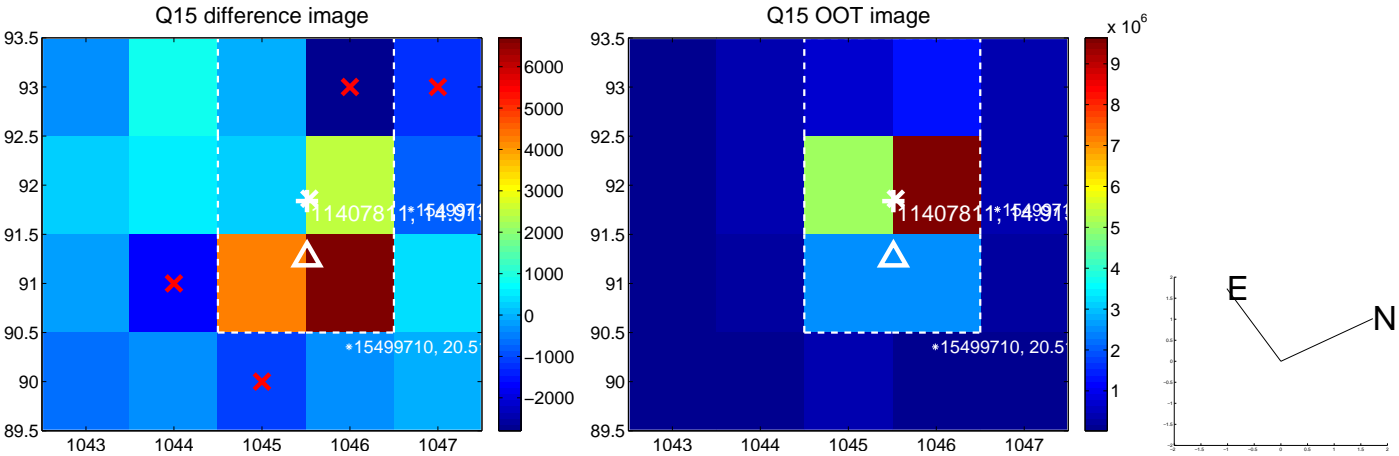
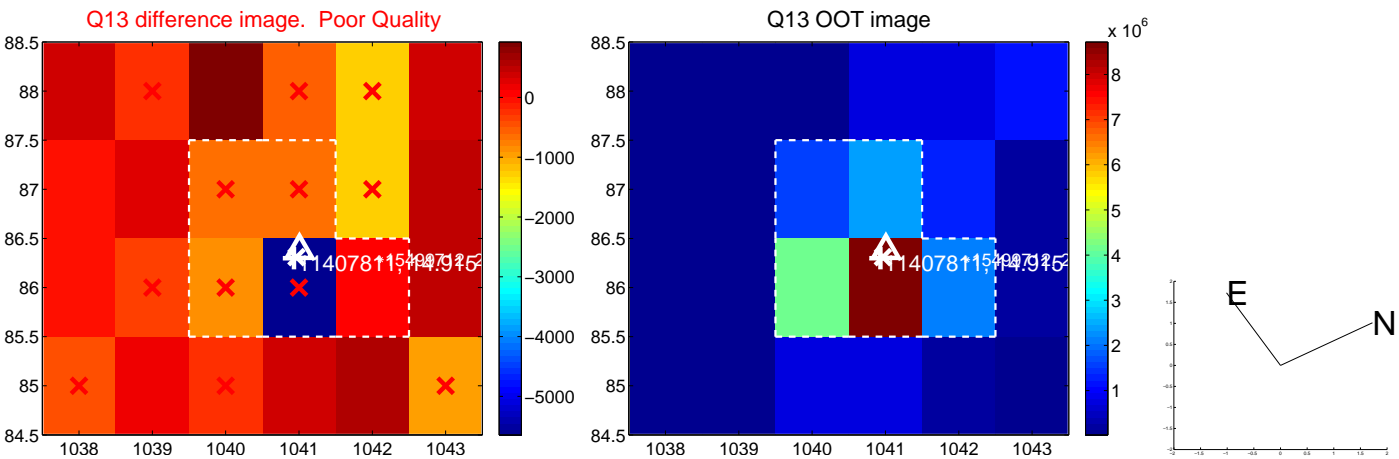
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



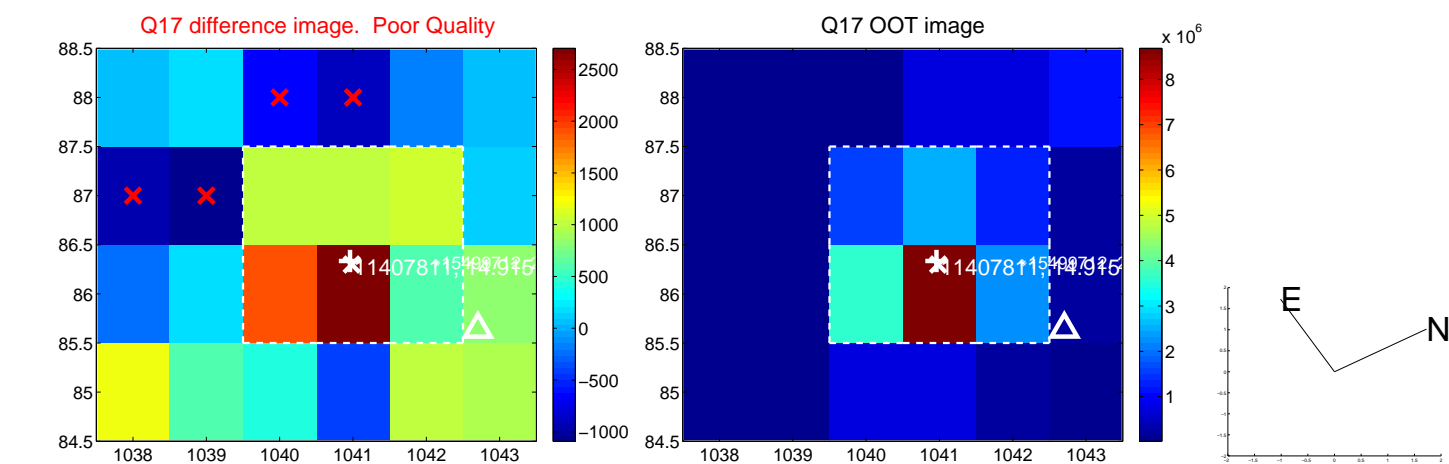
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



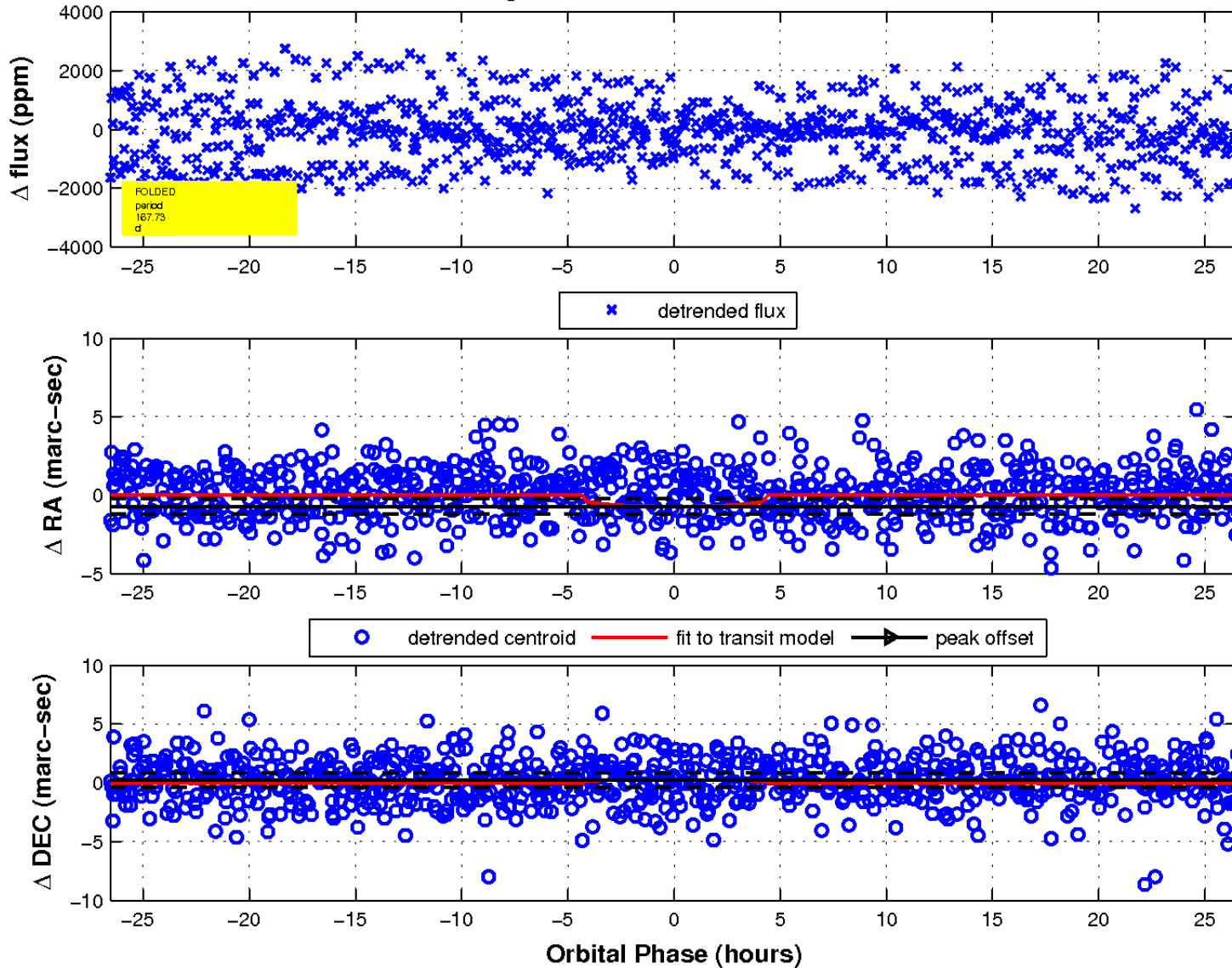
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 10 of 10



UKIRT Image

Declination

