

KIC 006421137

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})
006421137-01	OBS	No	2.456085	131.565483	60.8	7.500	9.5	-1.0	1.64	6486	1.29	2958.28
006421137-02	OBS	No	358.723980	417.363432	280.0	6.890	7.4	6.9	1.64	6486	3.15	3.85
006421137-03	OBS	No	225.705916	155.109014	308.3	5.433	7.4	7.3	1.64	6486	3.26	7.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006421137-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL —LPP_DV —CENT_SATURATED
006421137-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES —MOD_NONUNIQ_ALT —CENT_SATURATED
006421137-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE —TRANS_GAPPED —MOD_NONUNIQ_ALT —CENT_SATURATED

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 006421137-01

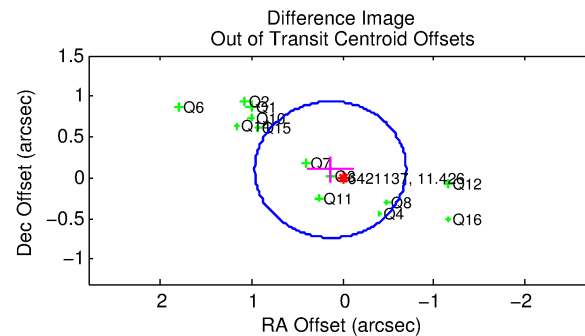
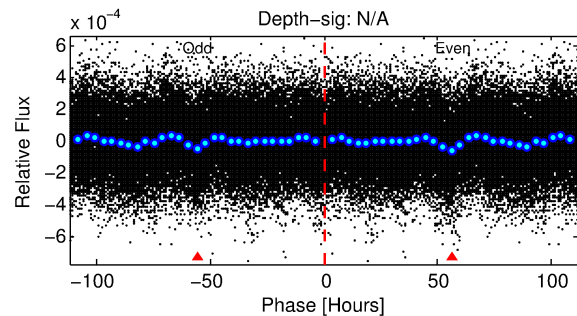
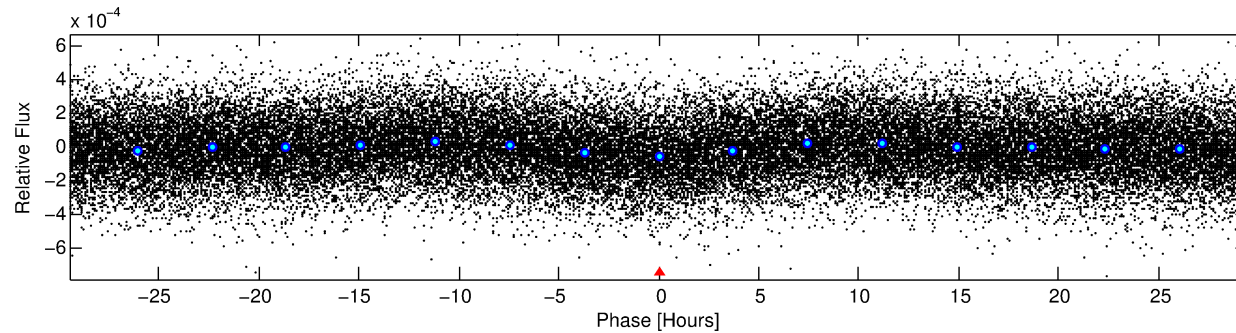
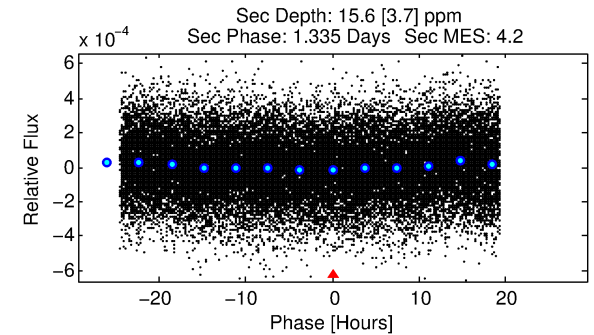
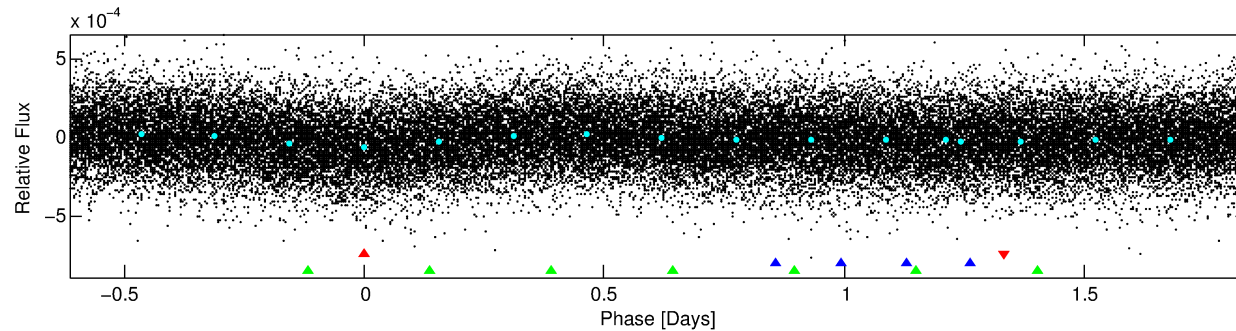
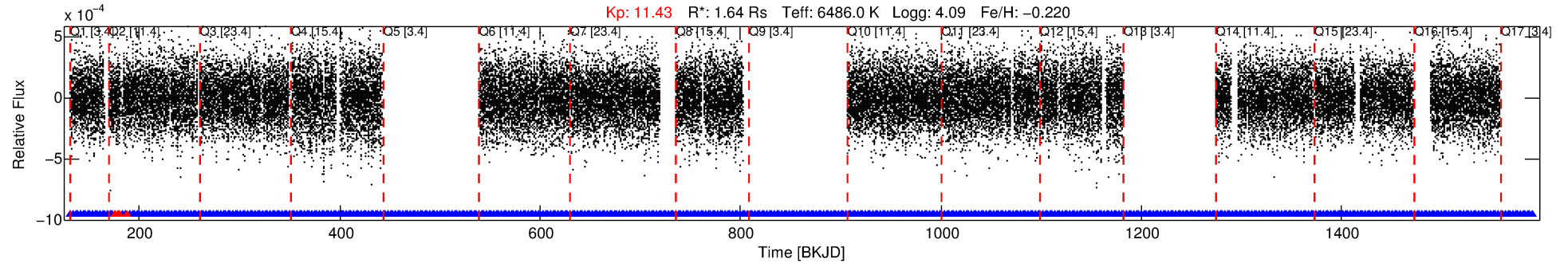
No Significant Match Found

DV One-Page Summary

KIC: 6421137 Candidate: 1 of 3 Period: 2.456 d

KOI: K04739 Corr: No Ephemeris Match

Kp: 11.43 R*: 1.64 Rs Teff: 6486.0 K Logg: 4.09 Fe/H: -0.220



TPS TCE Results:

Period = 2.45609 d
Epoch = 131.5655 BKJD

DV fit results are unavailable

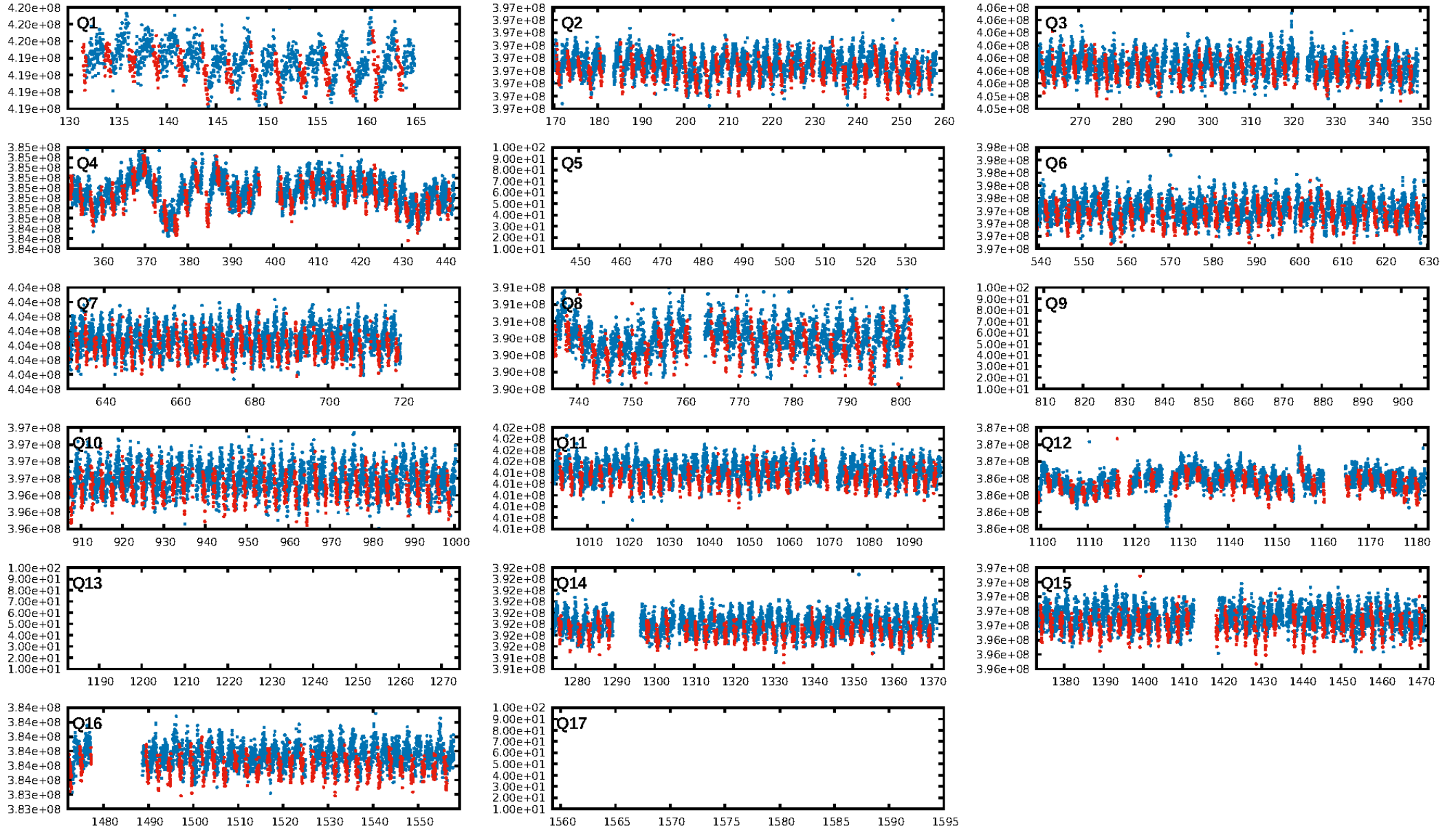
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [578.55σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 2.52e-14
RollingBand-fgt: 0.99 [415/419]
GhostDiagnostic-chr: 1.235
Centroid-sig: 47.3%
Centroid-so: 0.133 arcsec [1.13σ]
OotOffset-rm: 0.168 arcsec [0.61σ]
KicOffset-rm: 0.239 arcsec [0.89σ]
OotOffset-st: 4/4/4/1 [13]
KicOffset-st: 4/4/4/1 [13]
DiffImageQuality-fgm: 1.00 [13/13]
DiffImageOverlap-fno: 1.00 [13/13]

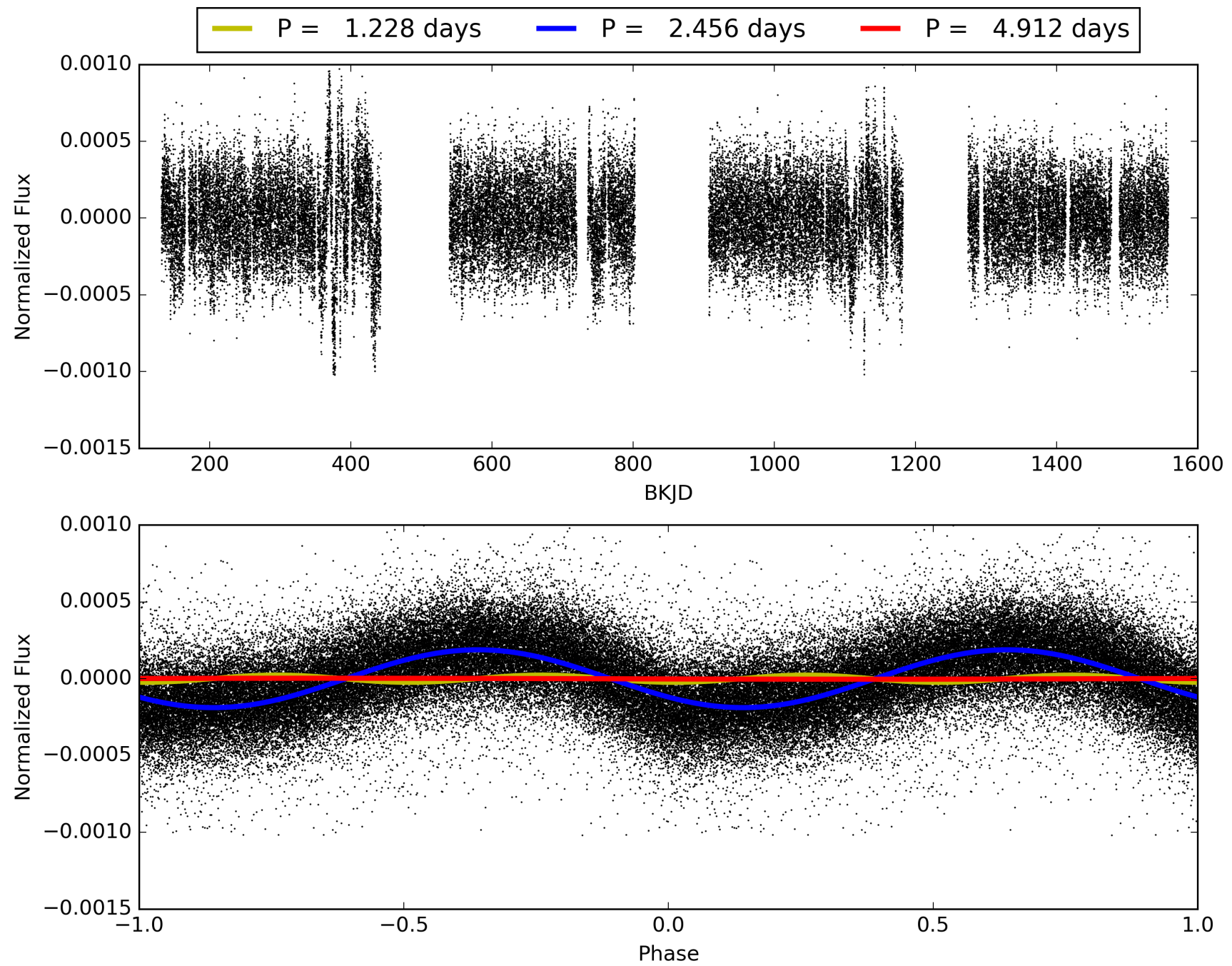
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:18:35 Z

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

TCE 006421137-01, PDC Light Curves

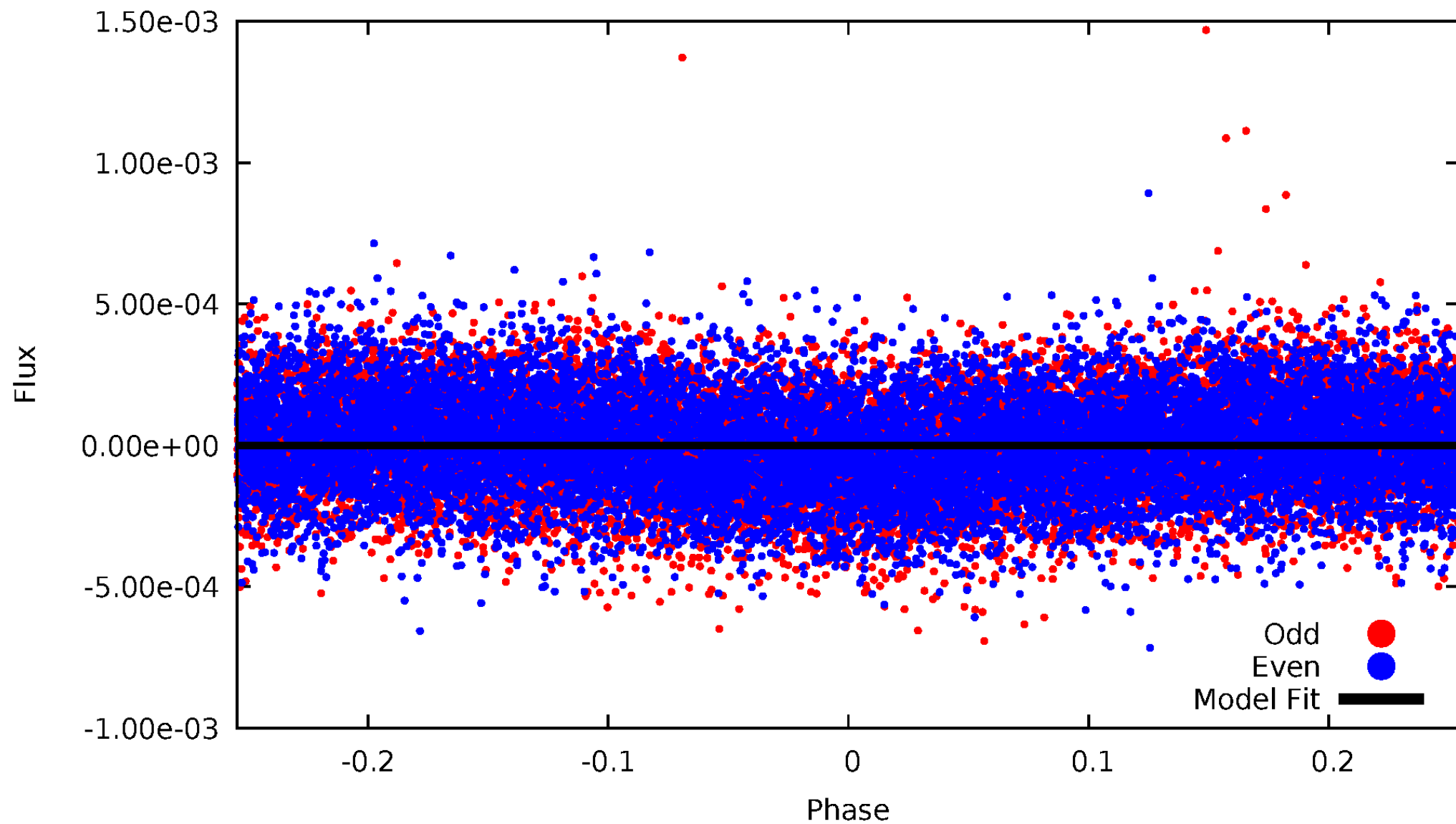


TCE 006421137-01



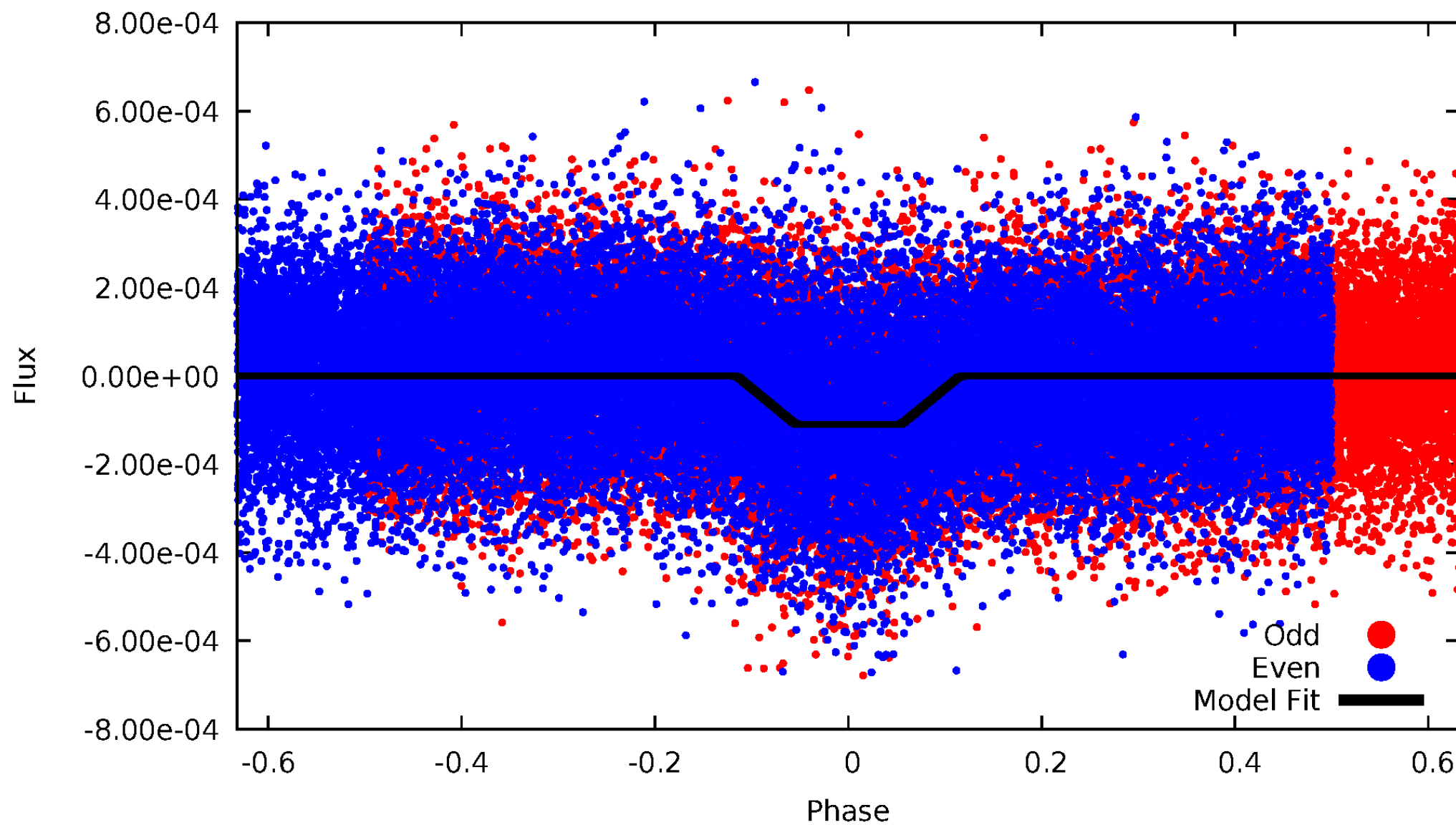
DV Odd/Even

TCE 006421137-01

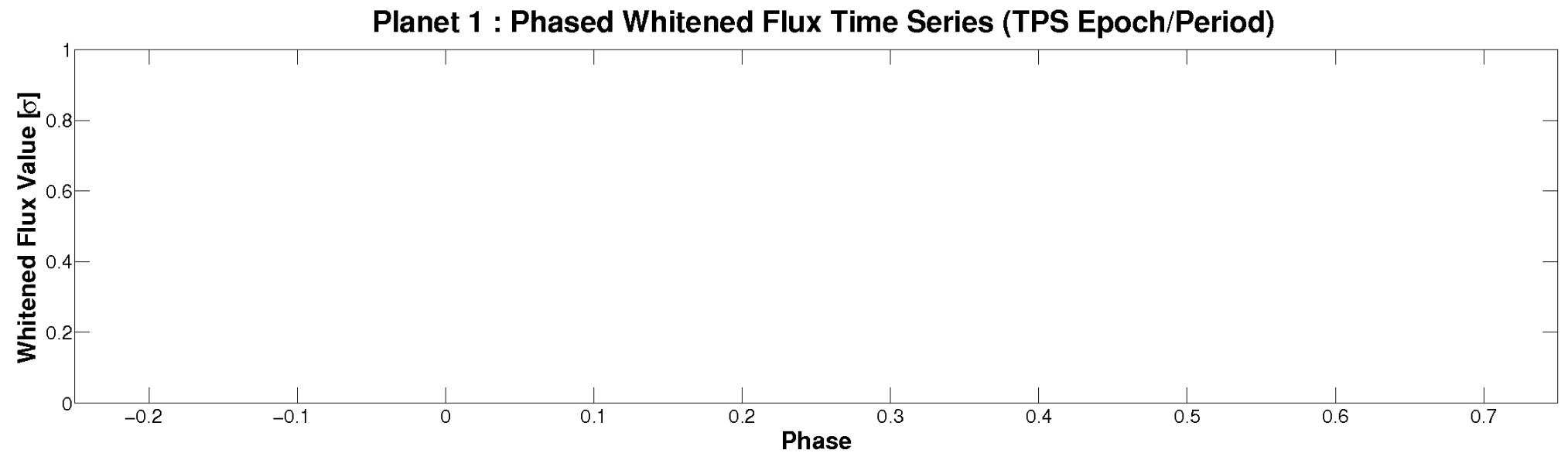
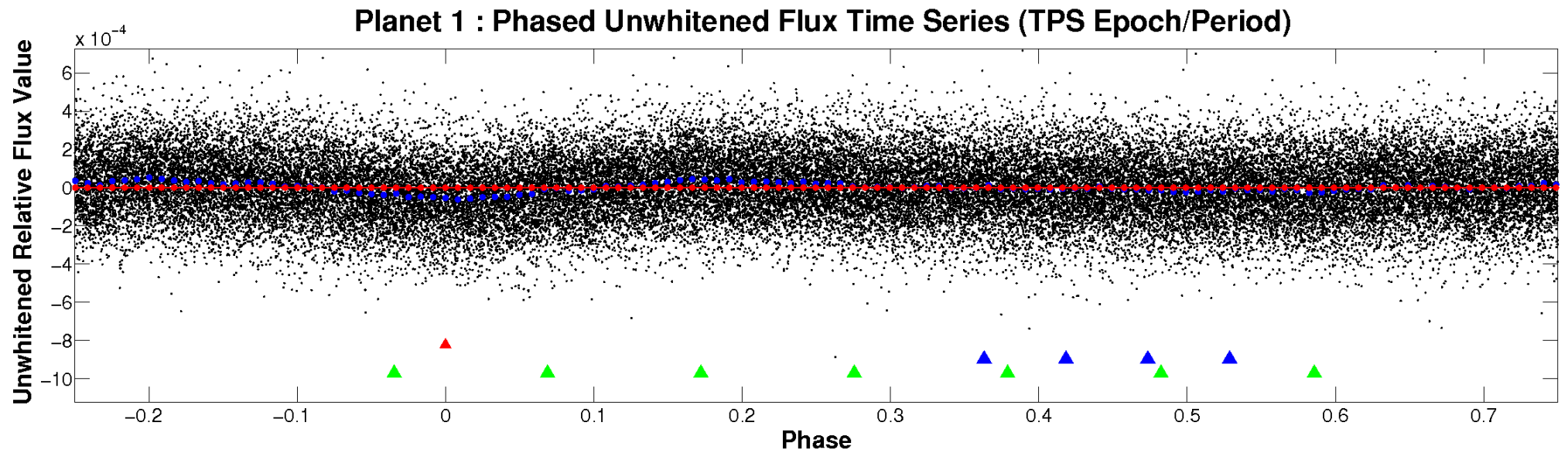


ALT Odd/Even

TCE 006421137-01

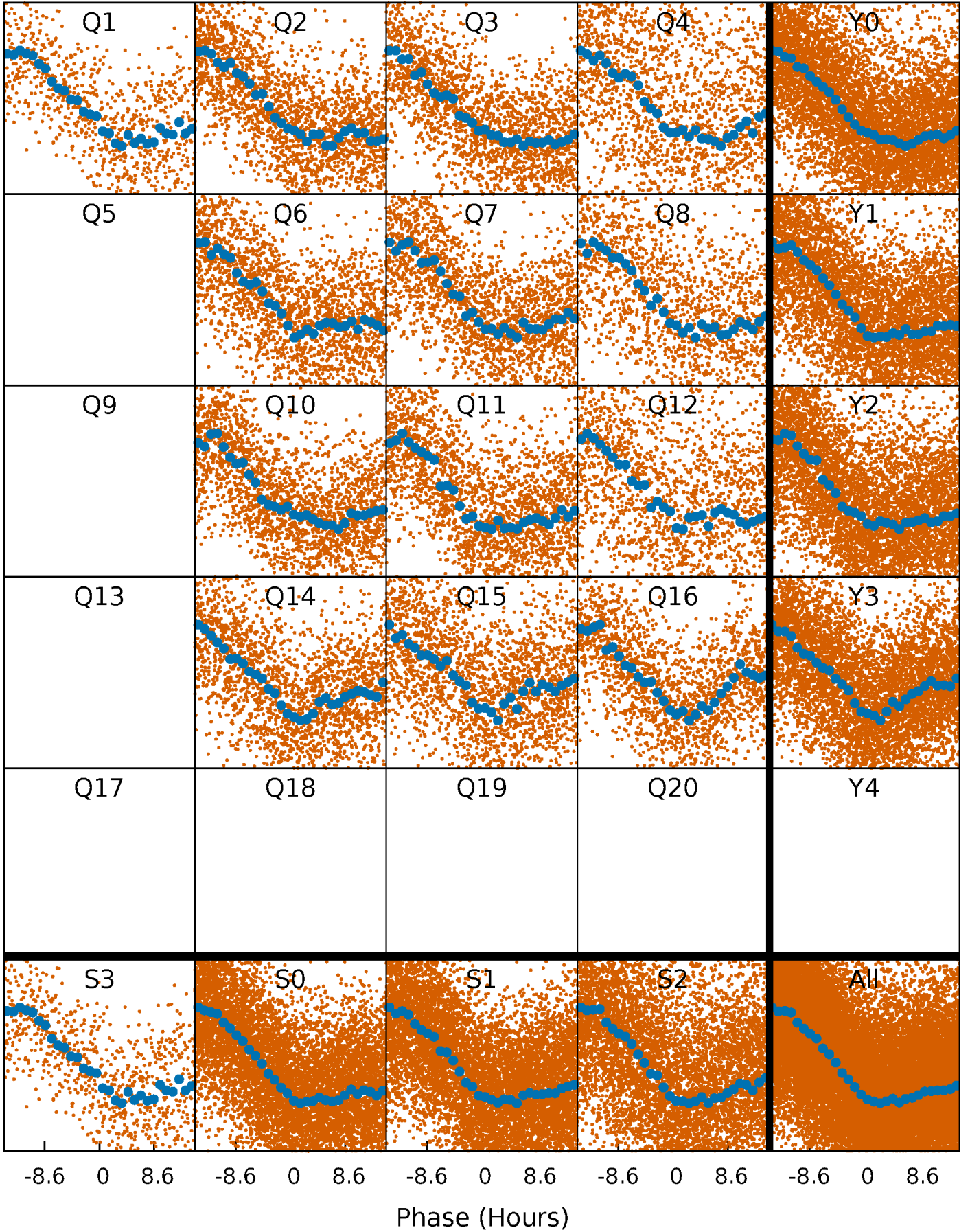


Non-Whitened Vs. Whitened Light Curve



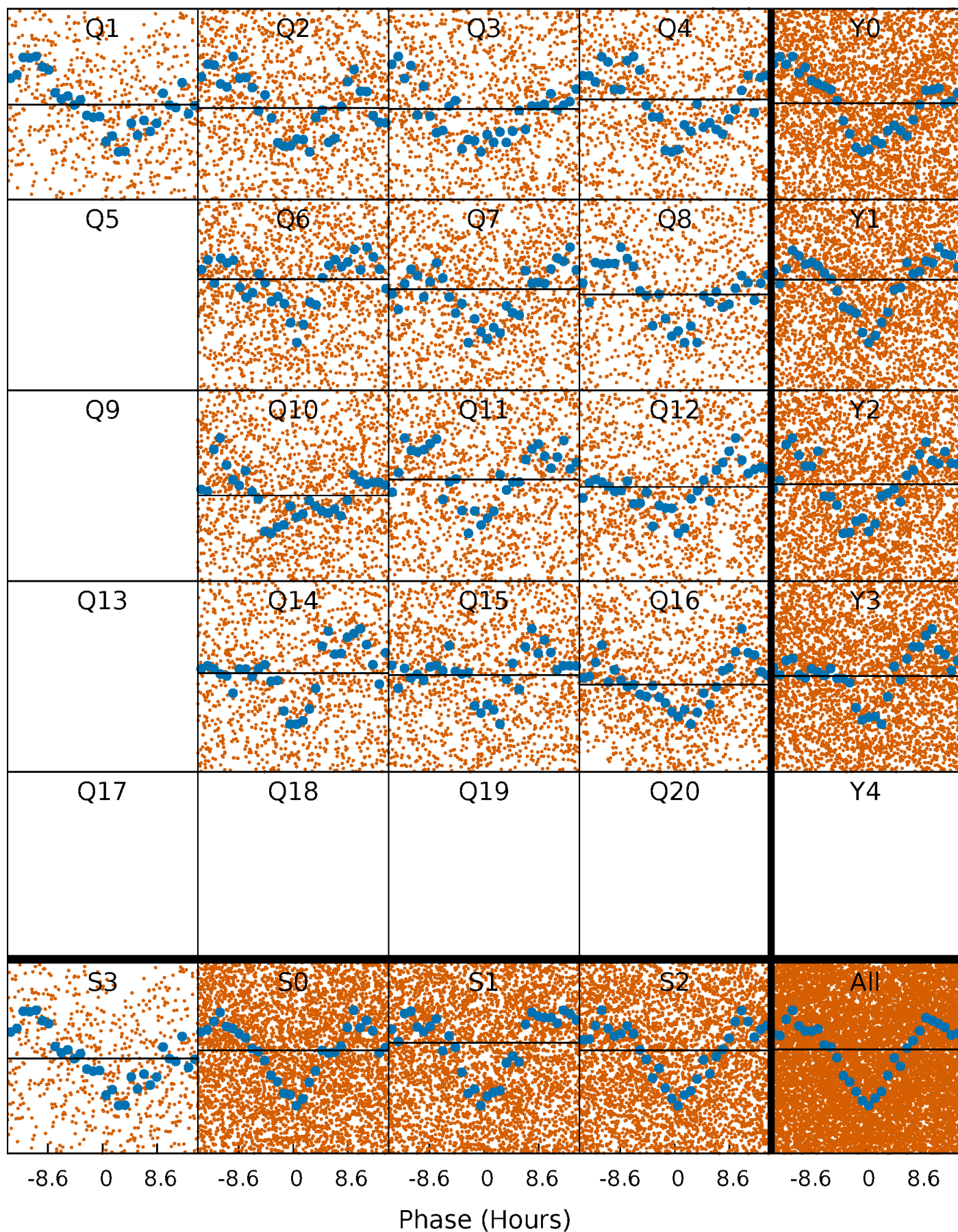
PDC Quarter-Phased Transit Curves

TCE 006421137-01 P= 2.456085 Days $T_0=131.565483$ (BKJD)



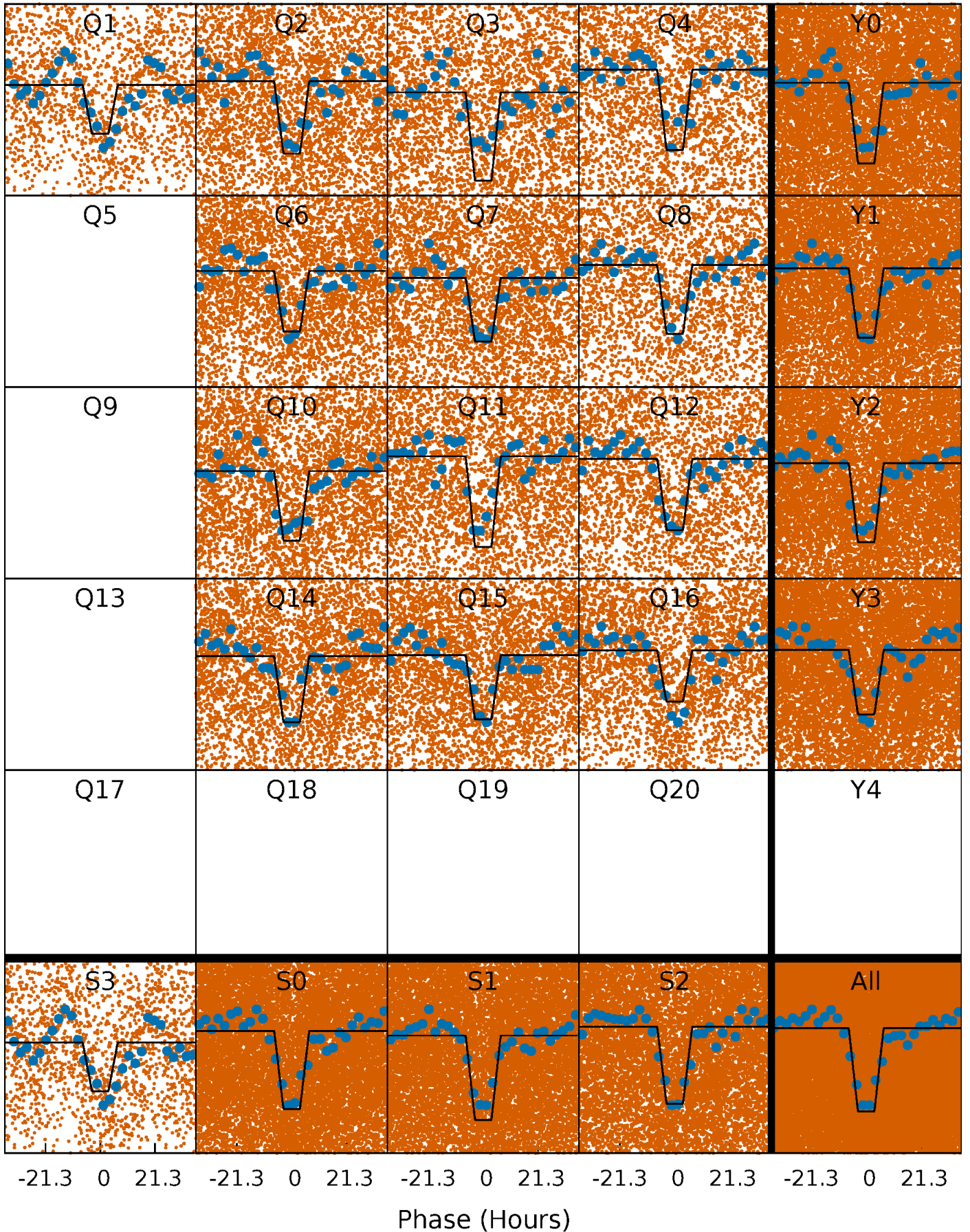
DV Quarter-Phased Transit Curves

TCE 006421137-01 P= 2.456085 Days $T_0=131.565483$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

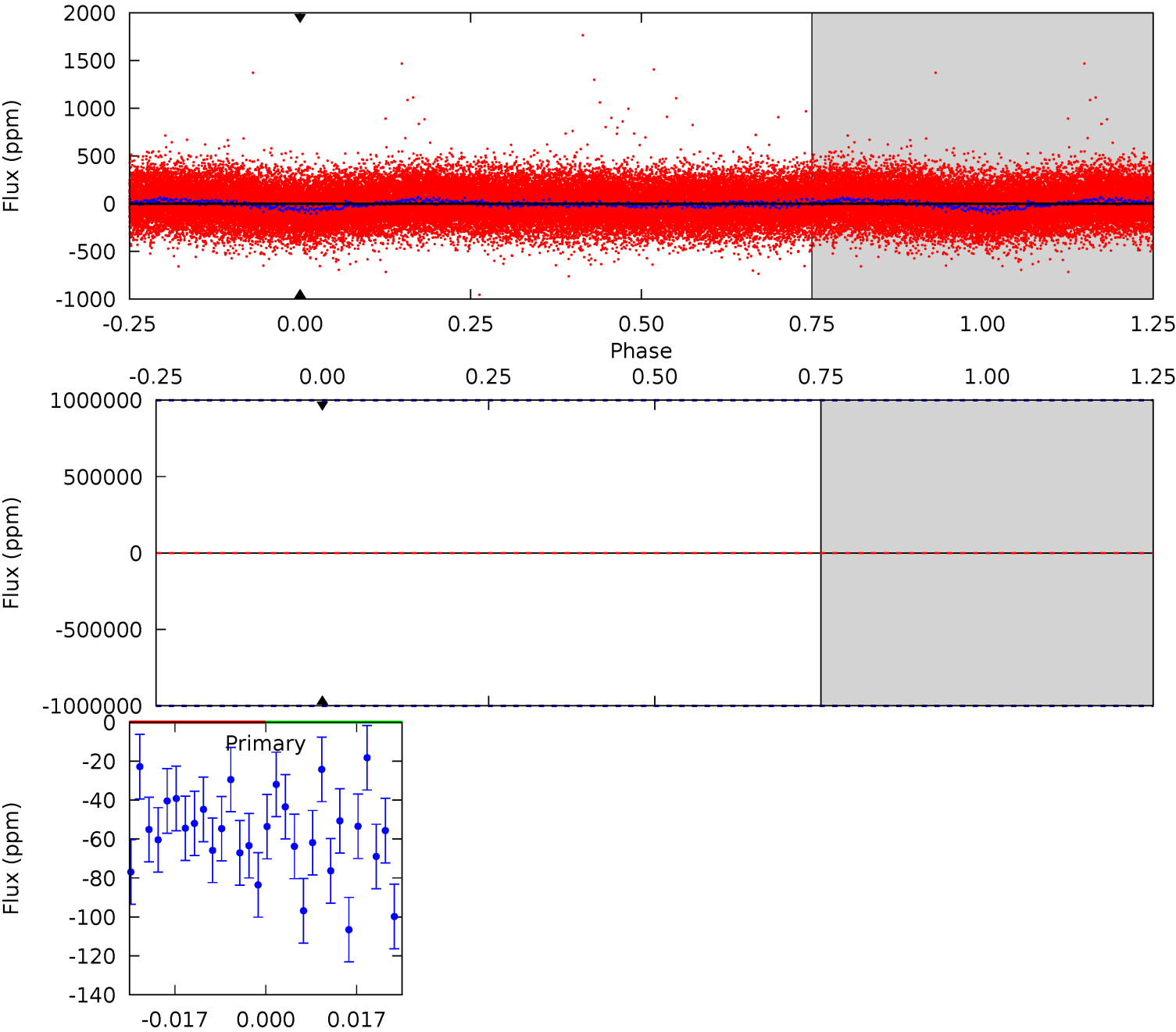
TCE 006421137-01 P= 2.456085 Days $T_0=131.599230$ (BKJD)



DV Model-Shift Uniqueness Test

006421137-01, P = 2.456085 Days, E = 129.109398 Days

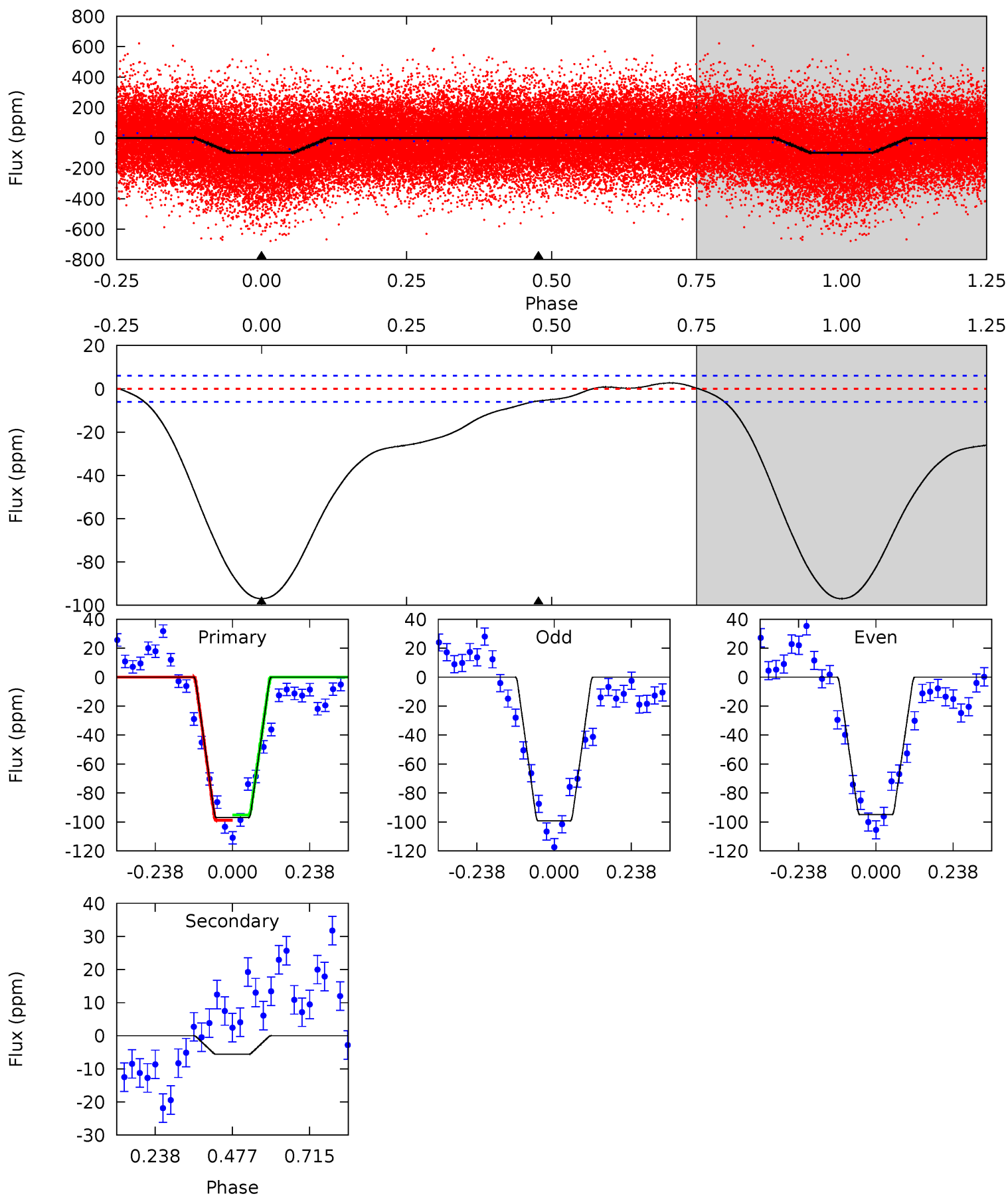
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
0	0	0	0	1.00	1.00	1.00	0	0	0	0	0	0	0	0



Alt Model-Shift Uniqueness Test

006421137-01, P = 2.456085 Days, E = 129.143145 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
70.7	4.10	0	0	4.38	1.18	9.07	70.7	70.7	4.10	4.10	1.56	1.06	0.03	1.28



Stellar Parameters For KIC 006421137

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6486^{+181}_{-227}	$4.091^{+0.252}_{-0.168}$	$-0.220^{+0.250}_{-0.300}$	$1.640^{+0.444}_{-0.494}$	$1.213^{+0.188}_{-0.206}$	$0.387^{+0.660}_{-0.174}$
	+3%/-3%	+6%/-4%	+114%/-136%	+27%/-30%	+15%/-17%	+171%/-45%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 006421137-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	0 ± 1000000	$12.46^{+13.93}_{-9.08}$	2606^{+202}_{-218}	-5426^{+32752}_{-32628}	$-10.233^{+901.024}_{-1283.833}$
Alt.	-6 ± 1	$11.66^{+13.78}_{-8.18}$	2609^{+190}_{-219}	-2758^{+5120}_{-157}	$0.033^{+0.332}_{-0.027}$

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

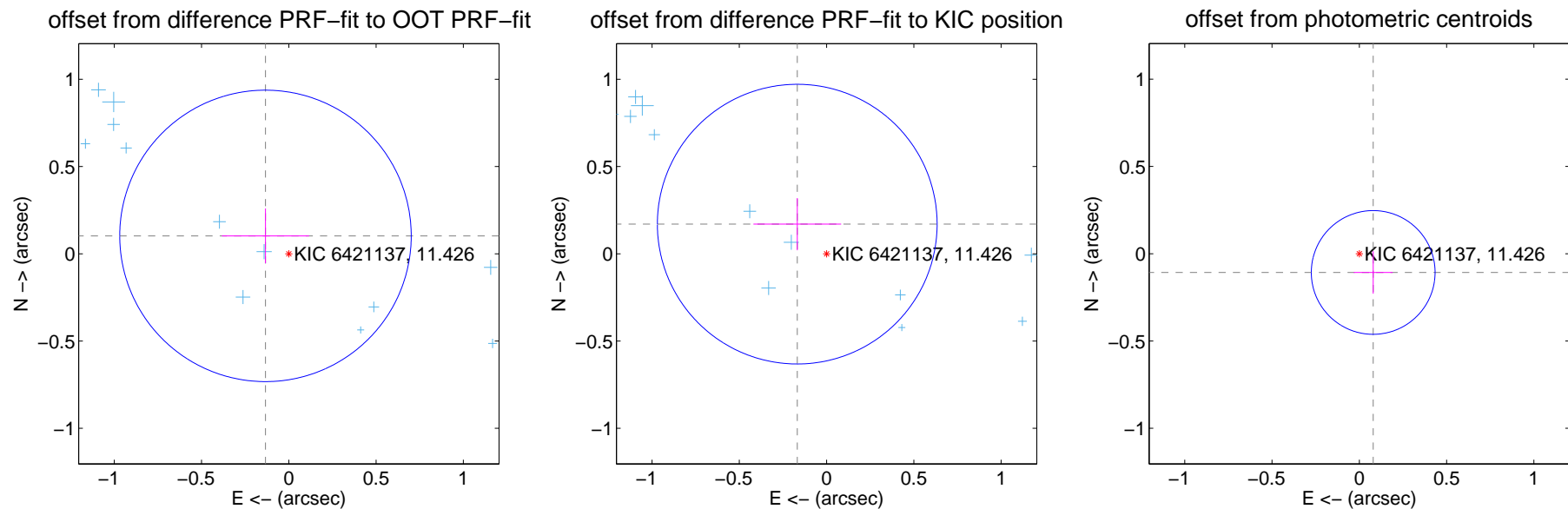
DV Centroid Data

Supplemental centroid analysis for 006421137-01. **Kepler magnitude: 11.43.** Transit SNR -1.00

There are 13 quarters with good PRF difference image offsets

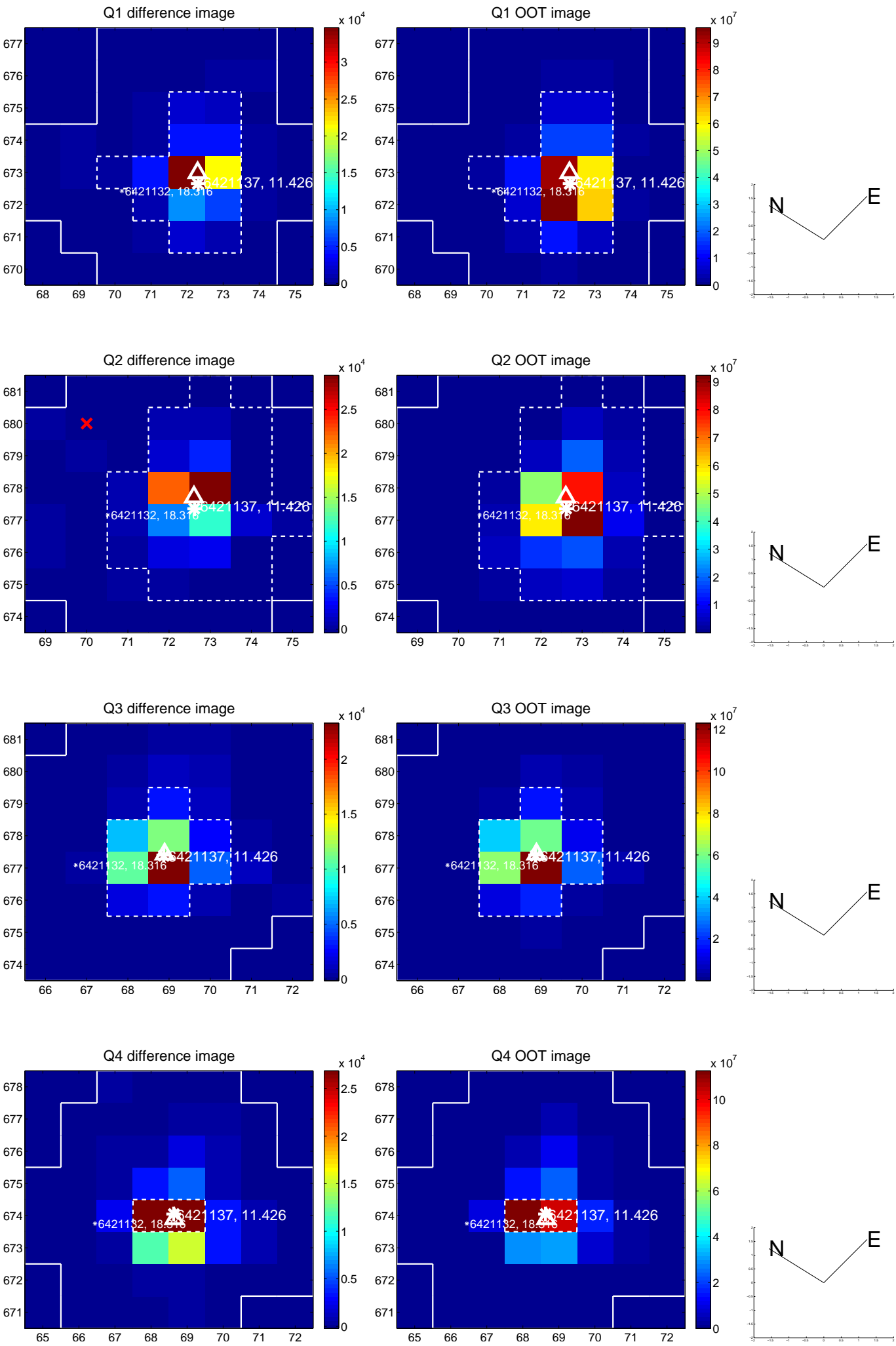
The direct PRF centroid is offset from the target star catalog position by about 0.13 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.168 ± 0.278	0.61	0.134 ± 0.249	0.103 ± 0.157
PRF-fit source offset from KIC position	0.239 ± 0.267	0.89	0.168 ± 0.251	0.170 ± 0.149
photometric centroid source offset	0.13 ± 0.12	1.13	-0.08 ± 0.11	-0.11 ± 0.12

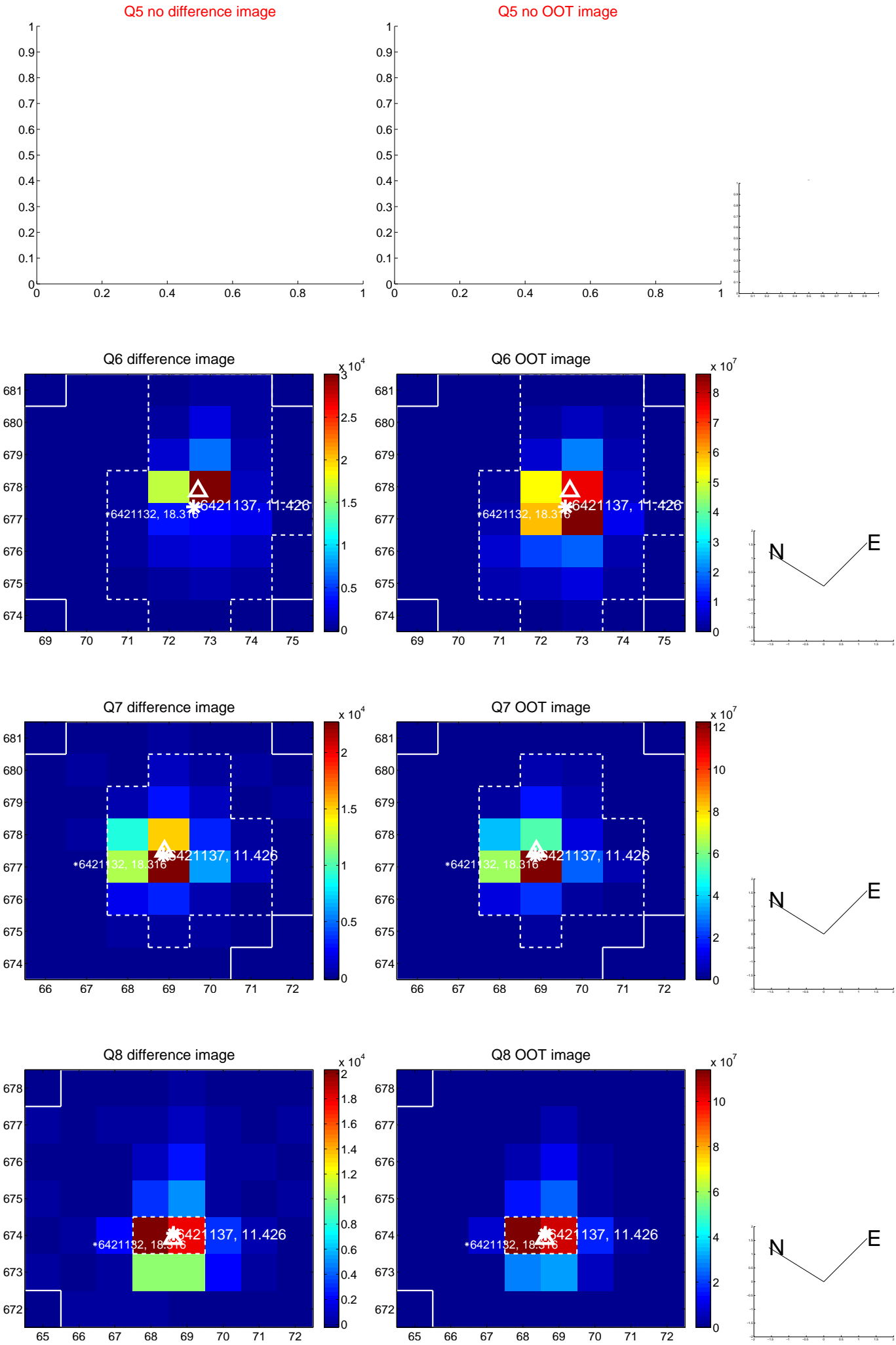


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

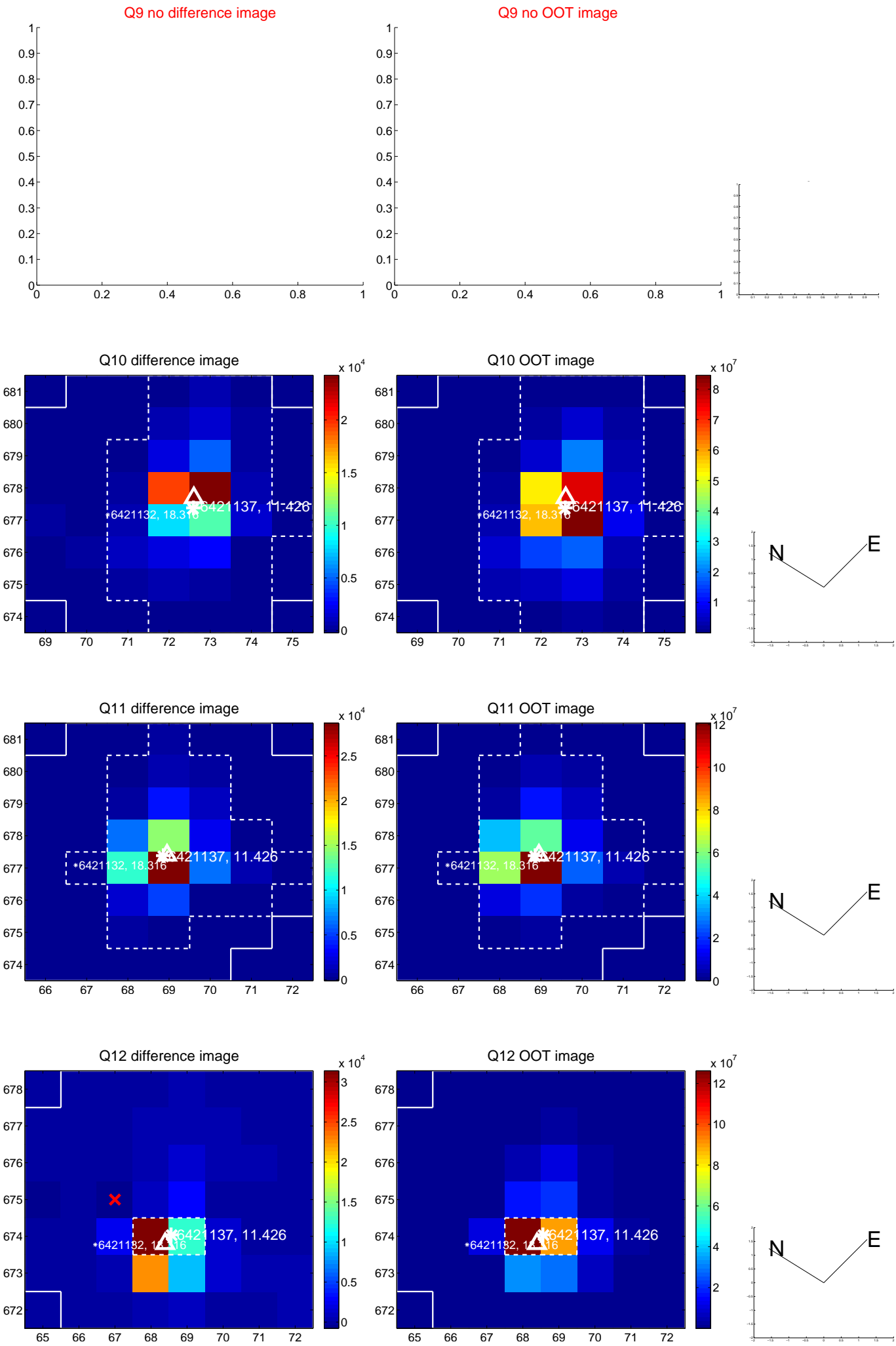
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



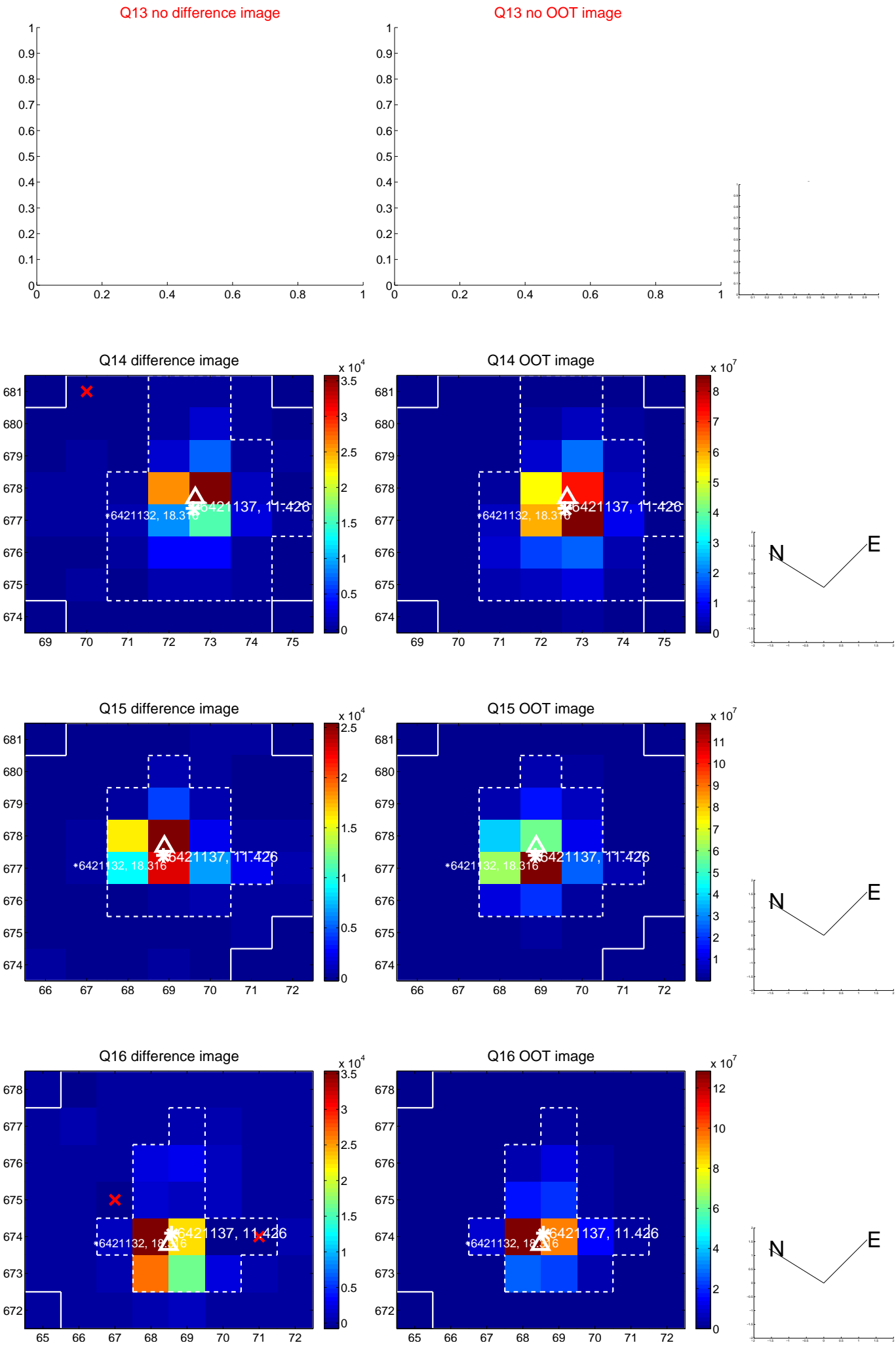
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



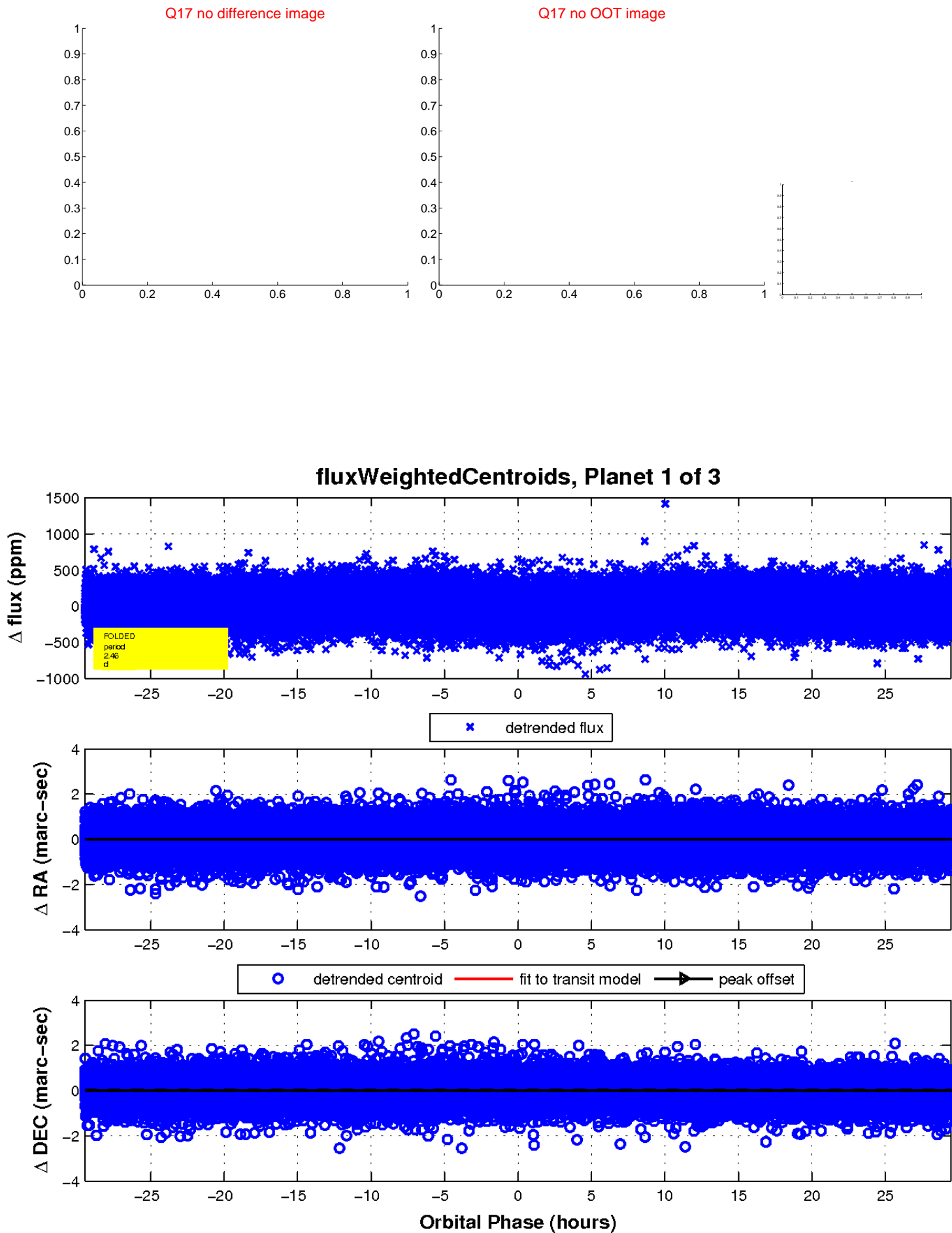
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

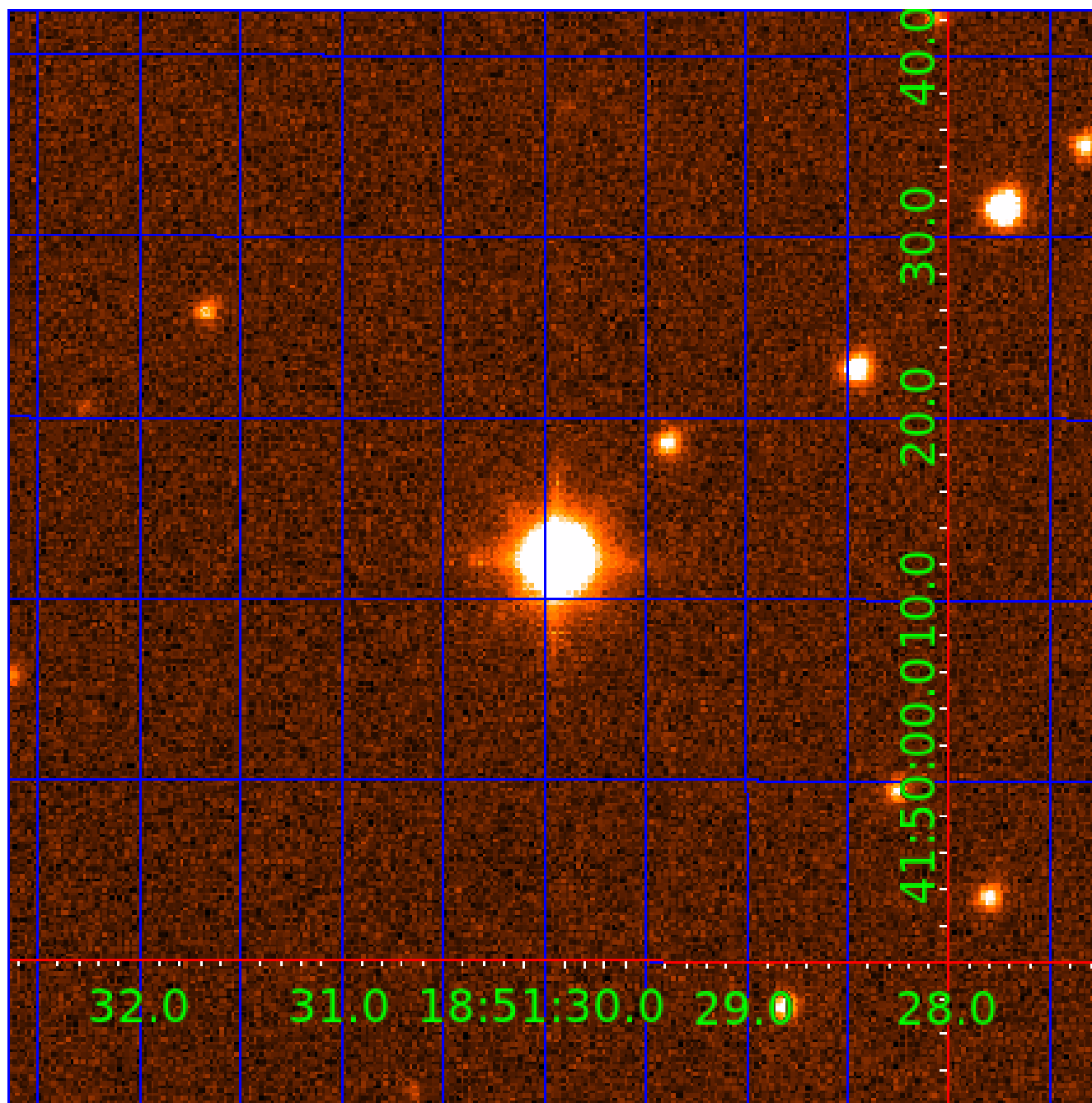


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006421137

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})
006421137-01	OBS	No	2.456085	131.565483	60.8	7.500	9.5	-1.0	1.64	6486	1.29	2958.28
006421137-02	OBS	No	358.723980	417.363432	280.0	6.890	7.4	6.9	1.64	6486	3.15	3.85
006421137-03	OBS	No	225.705916	155.109014	308.3	5.433	7.4	7.3	1.64	6486	3.26	7.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006421137-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
006421137-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
006421137-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_SATURATED

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.

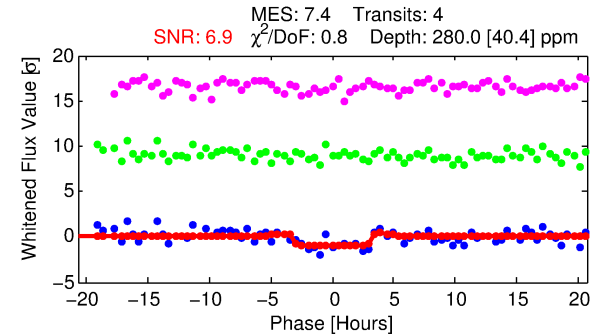
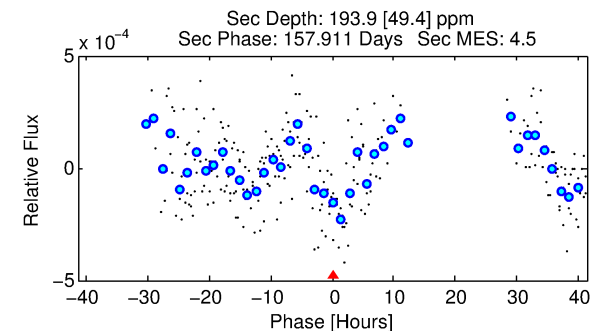
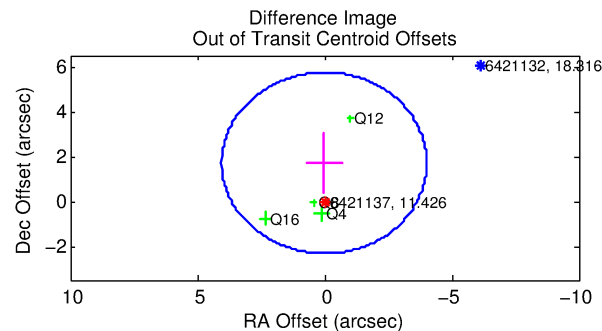
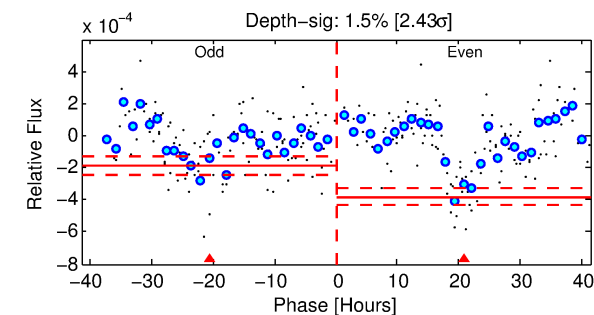
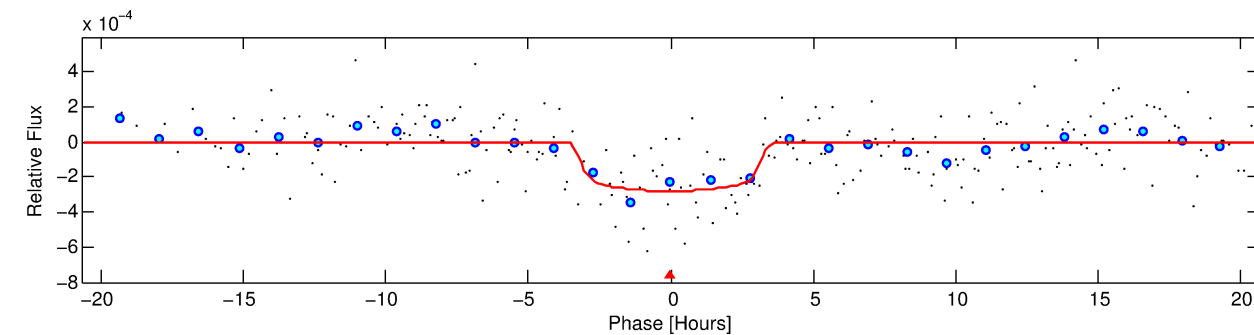
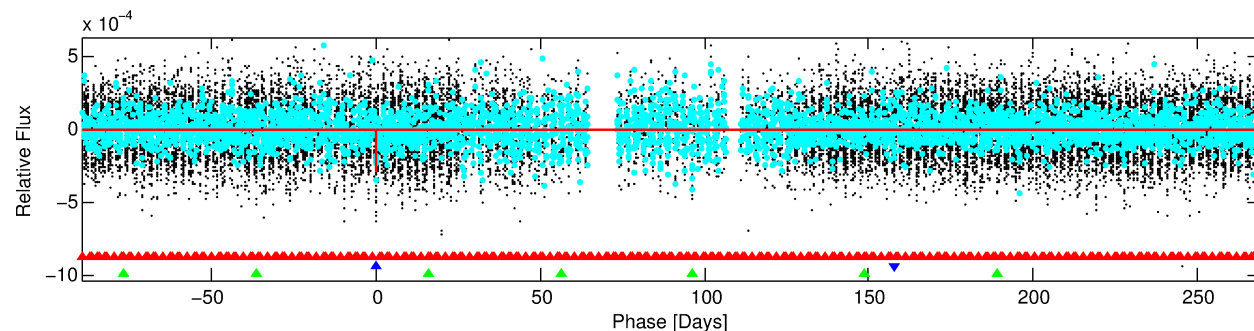
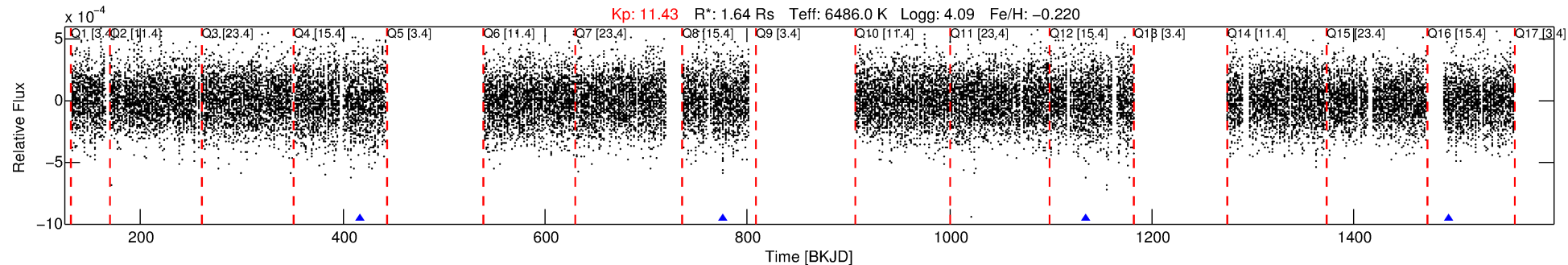
Ephemeris Match Information For 006421137-02

No Significant Match Found

DV One-Page Summary

KIC: 6421137 Candidate: 2 of 3 Period: 358.724 d
KOI: K04739 Corr: No Ephemeris Match

Kp: 11.43 R*: 1.64 Rs Teff: 6486.0 K Logg: 4.09 Fe/H: -0.220



DV Fit Results:

Period = 358.72398 [0.00501] d
Epoch = 417.3634 [0.0098] BKJD
Rp/R* = 0.0176 [0.0035]
a/R* = 205.82 [201.83]
b = 0.88 [0.26]
Seff = 3.85 [1.76]
Teq = 357 [41] K
Rp = 3.15 [1.13] Re
a = 1.0530 [0.2936] AU
Ag = 11918.77 [7626.00] [1.56σ]
Teffp = 5769 [705] K [7.66σ]

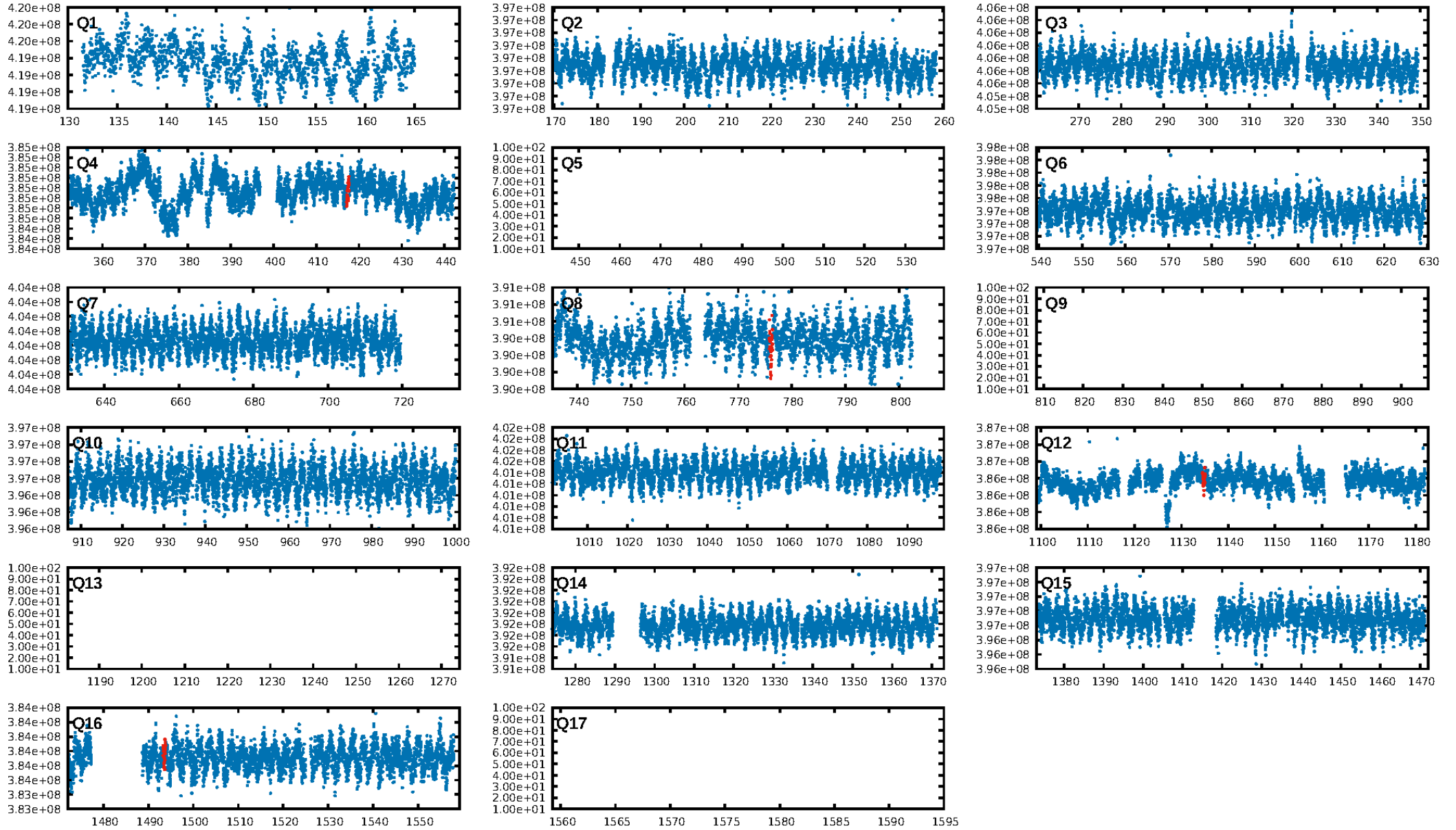
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [363.85σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 14.2%
ModelChiSquareGof-sig: 99.1%
Bootstrap-pfa: 9.12e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 2.183
Centroid-sig: 44.8%
Centroid-so: 0.349 arcsec [0.80σ]
OotOffset-rm: 1.707 arcsec [1.27σ]
OotOffset-st: 0/0/4/0 [4]
KicOffset-rm: 1.801 arcsec [1.34σ]
KicOffset-st: 0/0/4/0 [4]
DiffImageQuality-fgm: 1.00 [4/4]
DiffImageOverlap-fno: 0.75 [3/4]

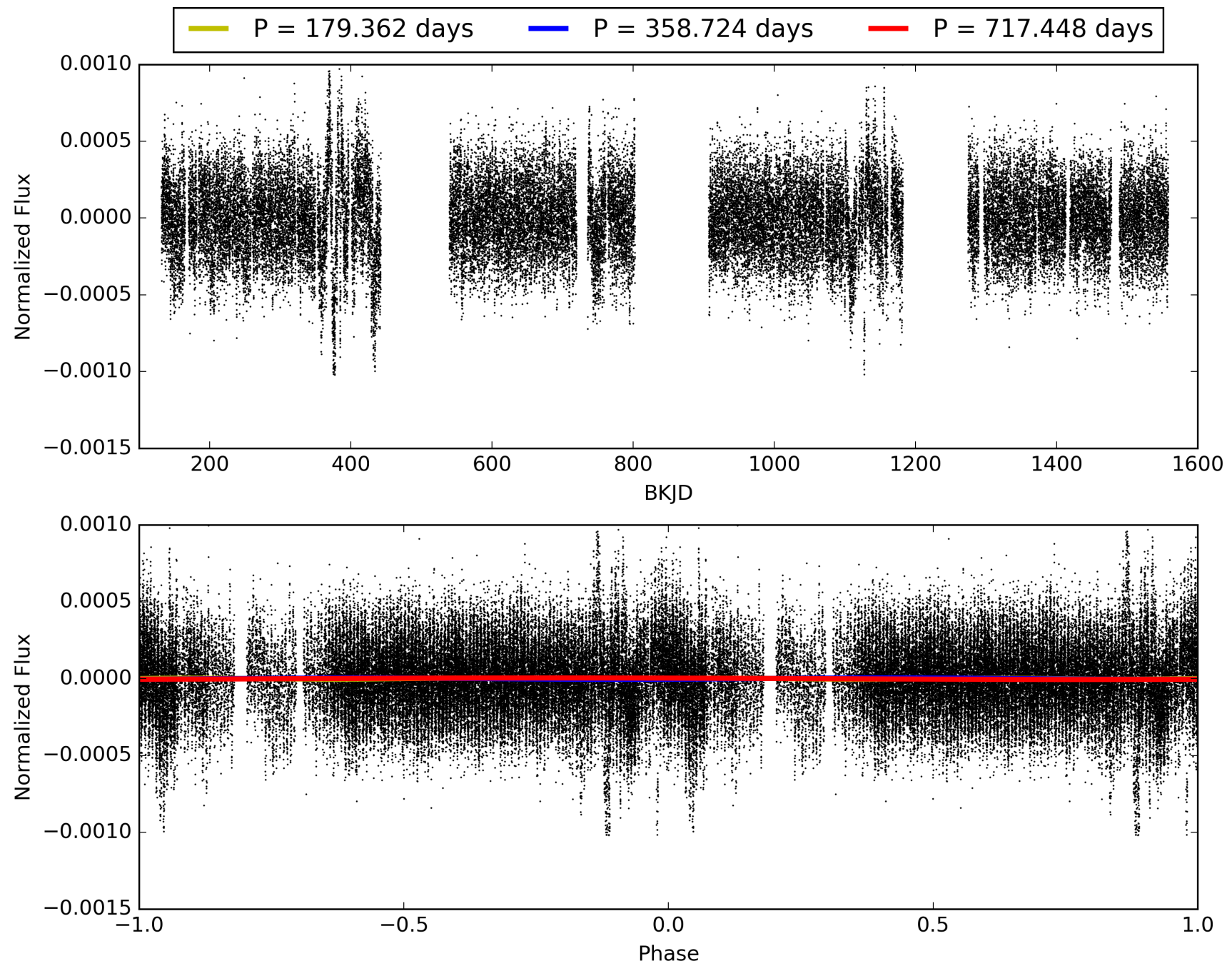
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:18:47 Z

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

TCE 006421137-02, PDC Light Curves

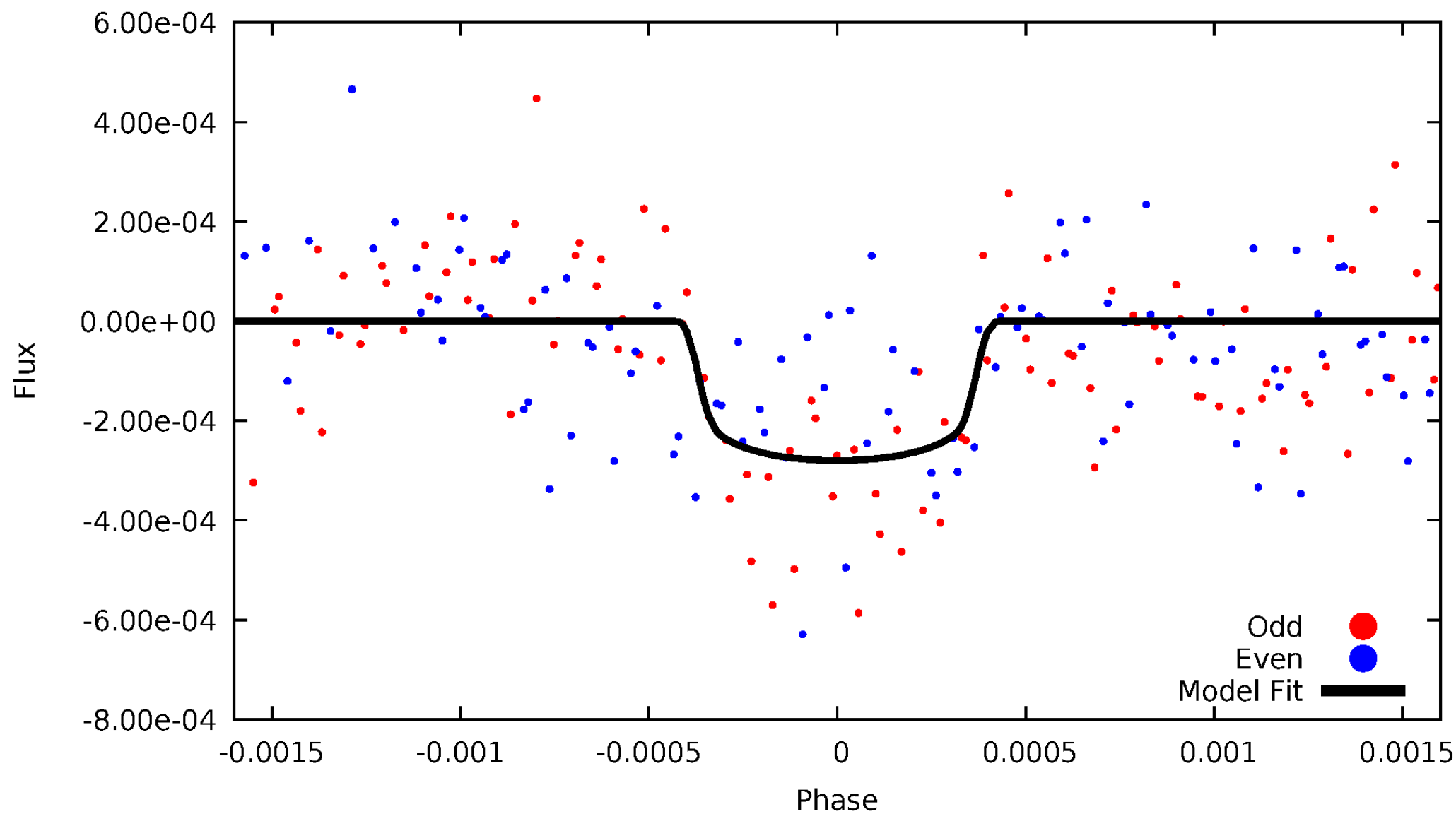


TCE 006421137-02



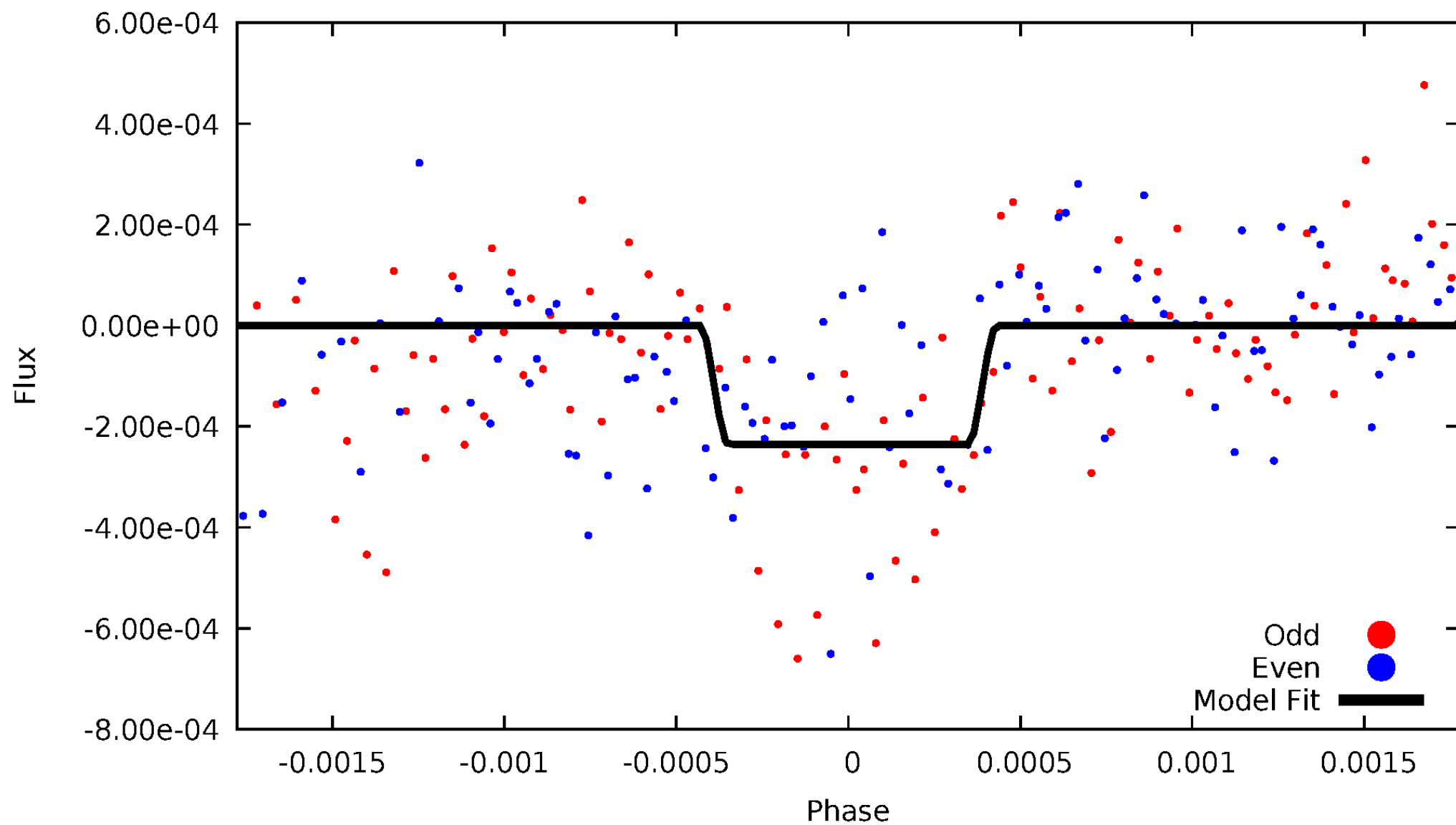
DV Odd/Even

TCE 006421137-02



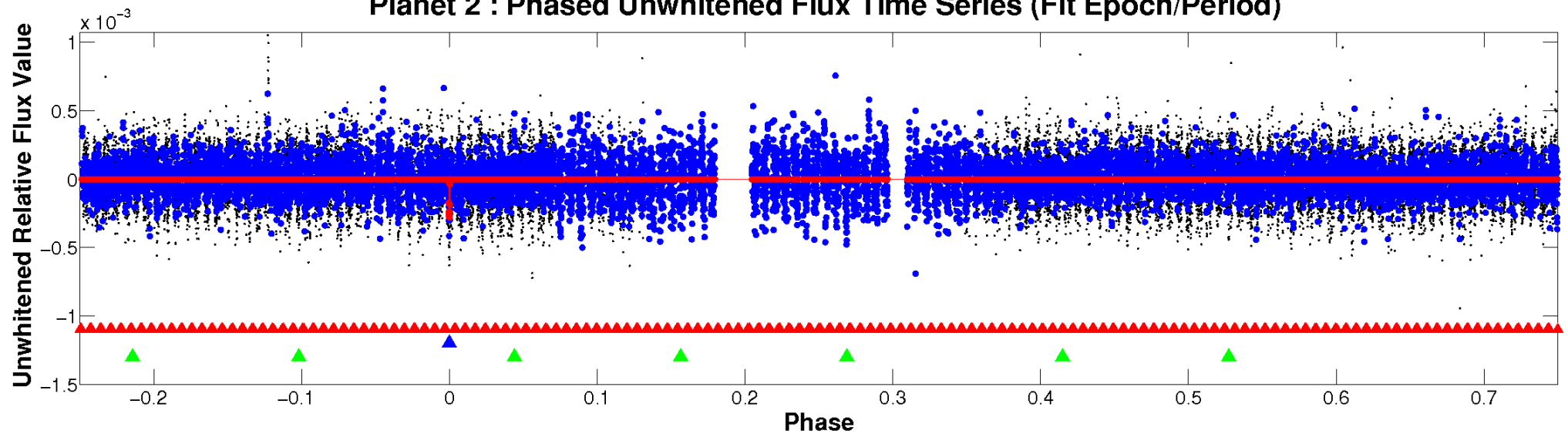
ALT Odd/Even

TCE 006421137-02

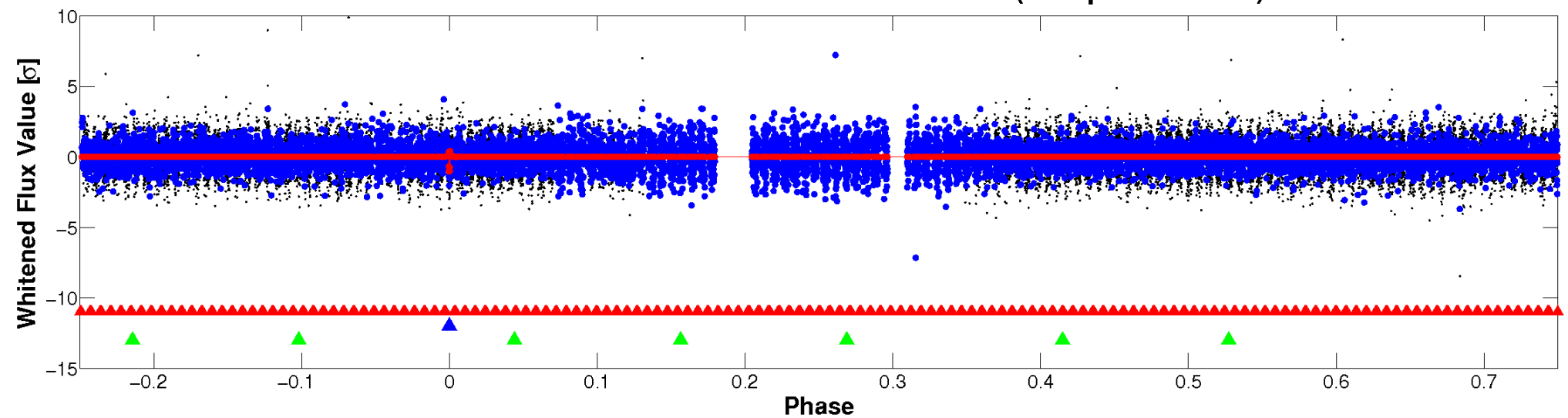


Non-Whitened Vs. Whitened Light Curve

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

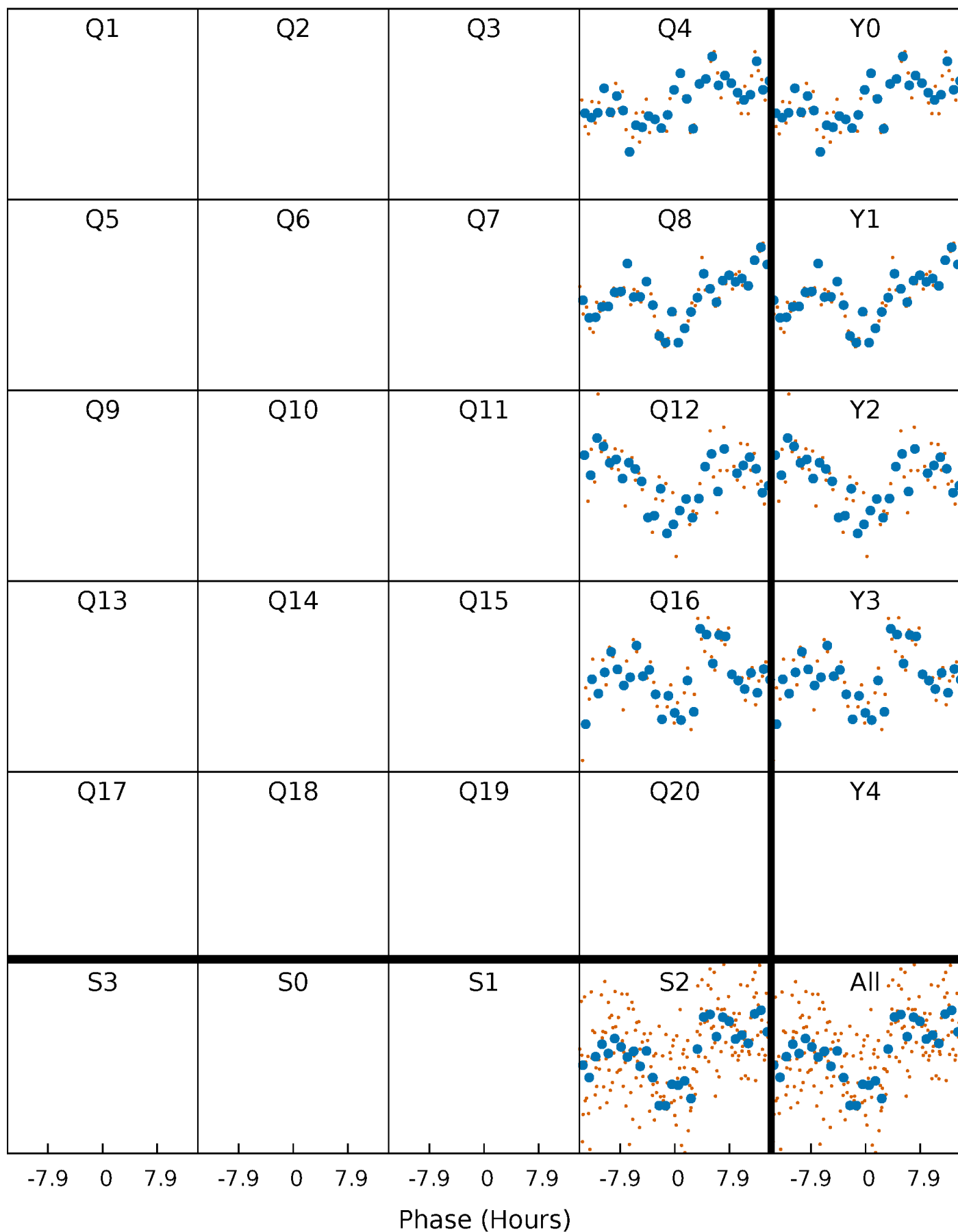


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



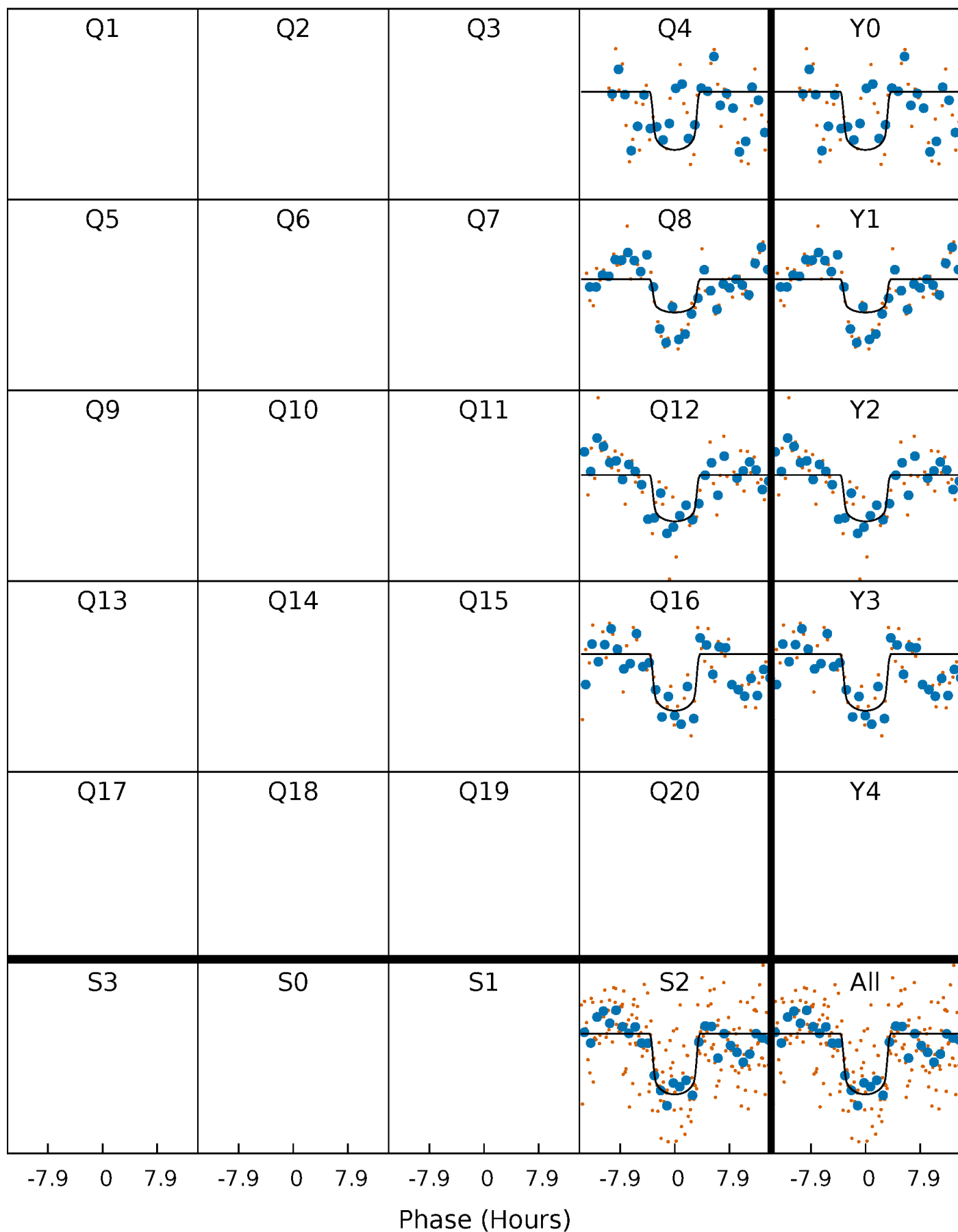
PDC Quarter-Phased Transit Curves

TCE 006421137-02 $P=358.723980$ Days $T_0=417.363432$ (BKJD)



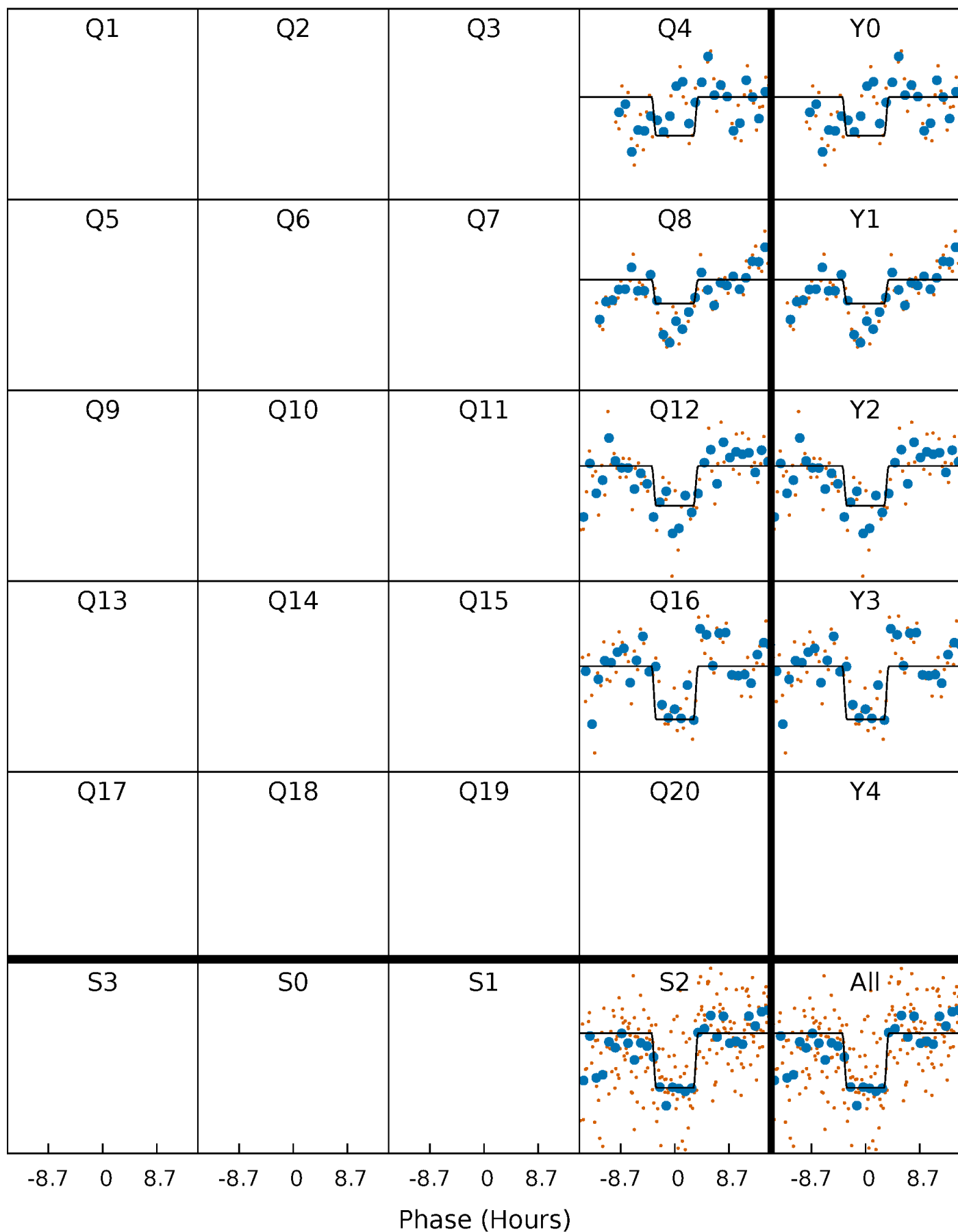
DV Quarter-Phased Transit Curves

TCE 006421137-02 $P=358.723980$ Days $T_0=417.363432$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

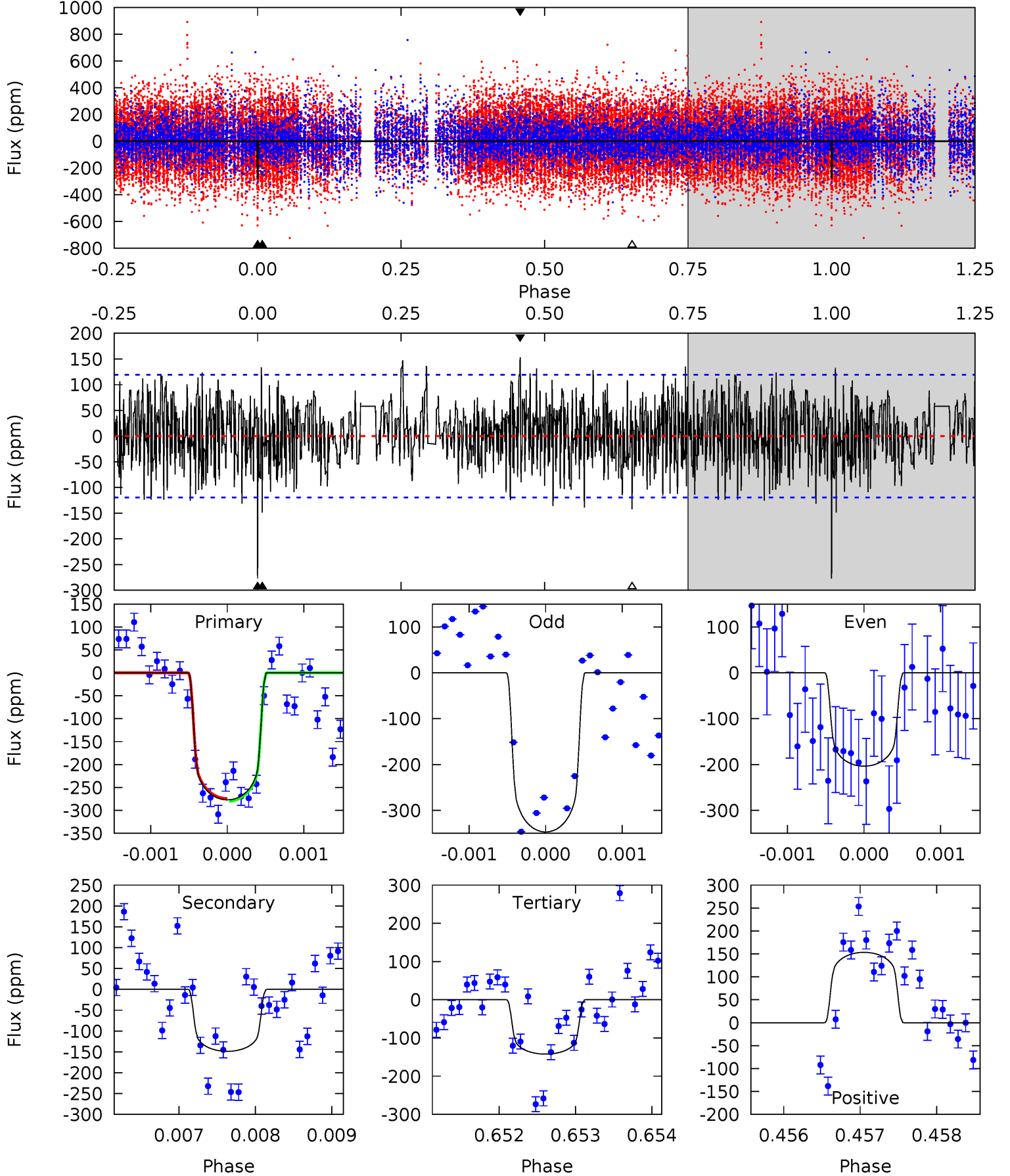
TCE 006421137-02 P=358.717957 Days $T_0=417.360960$ (BKJD)



DV Model-Shift Uniqueness Test

006421137-02, $P = 358.723980$ Days, $E = 58.639452$ Days

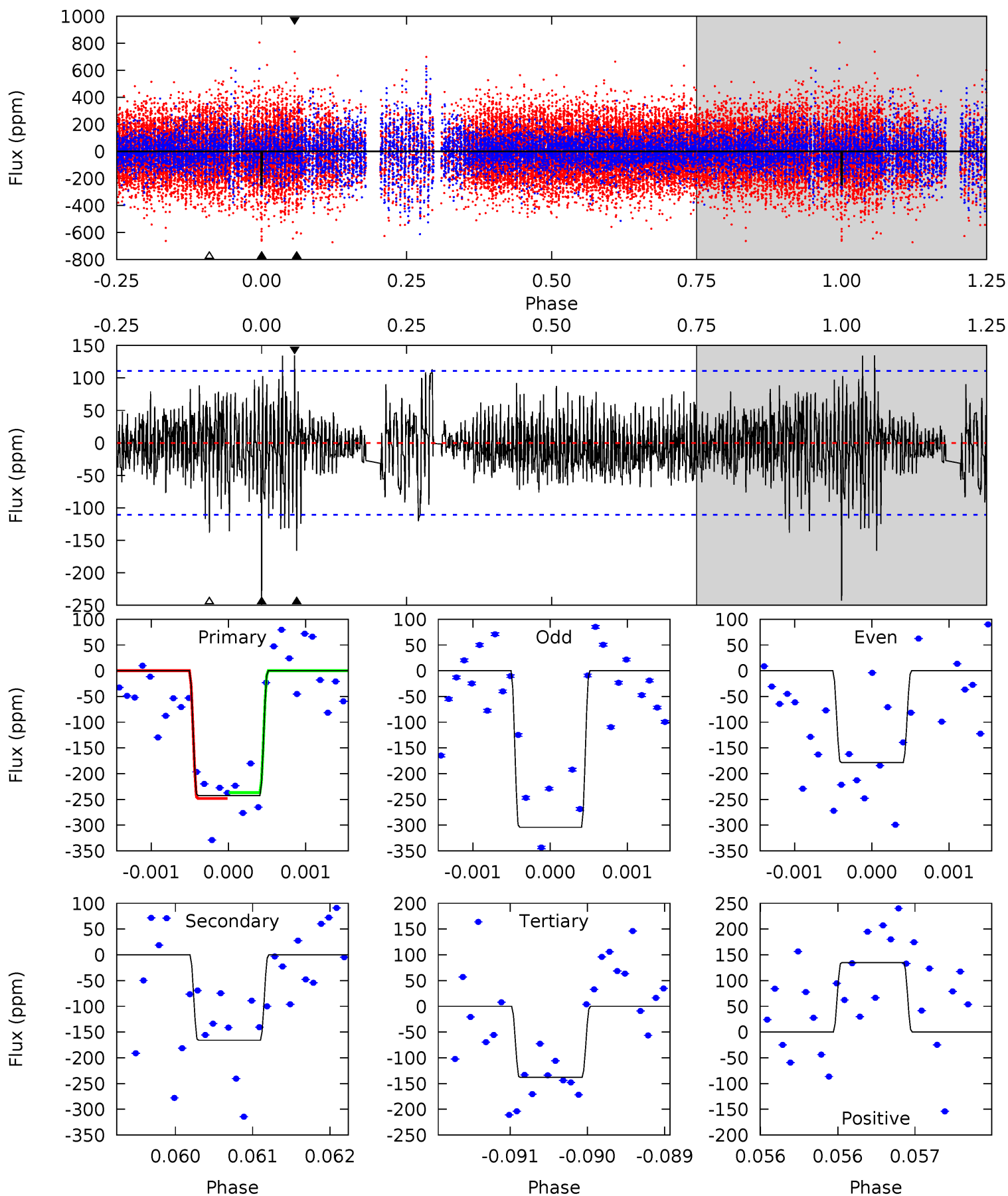
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.7	6.83	6.53	7.04	5.48	3.34	2.11	6.19	5.68	0.30	-0.21	3.31	0.99	0.36	0.14



Alt Model-Shift Uniqueness Test

006421137-02, P = 358.717957 Days, E = 58.643003 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
12.0	8.20	6.82	6.67	5.48	3.33	1.66	5.17	5.33	1.38	1.53	3.14	1.07	0.36	0.28



Stellar Parameters For KIC 006421137

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6486^{+181}_{-227}	$4.091^{+0.252}_{-0.168}$	$-0.220^{+0.250}_{-0.300}$	$1.640^{+0.444}_{-0.494}$	$1.213^{+0.188}_{-0.206}$	$0.387^{+0.660}_{-0.174}$
	+3%/-3%	+6%/-4%	+114%/-136%	+27%/-30%	+15%/-17%	+171%/-45%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 006421137-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-149 ± 22	$3.09^{+0.85}_{-0.78}$	494^{+39}_{-40}	5408^{+681}_{-485}	9528^{+7496}_{-3709}
Alt.	-166 ± 20	$2.70^{+0.82}_{-0.70}$	496^{+36}_{-40}	5871^{+928}_{-519}	13853^{+11458}_{-5621}

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

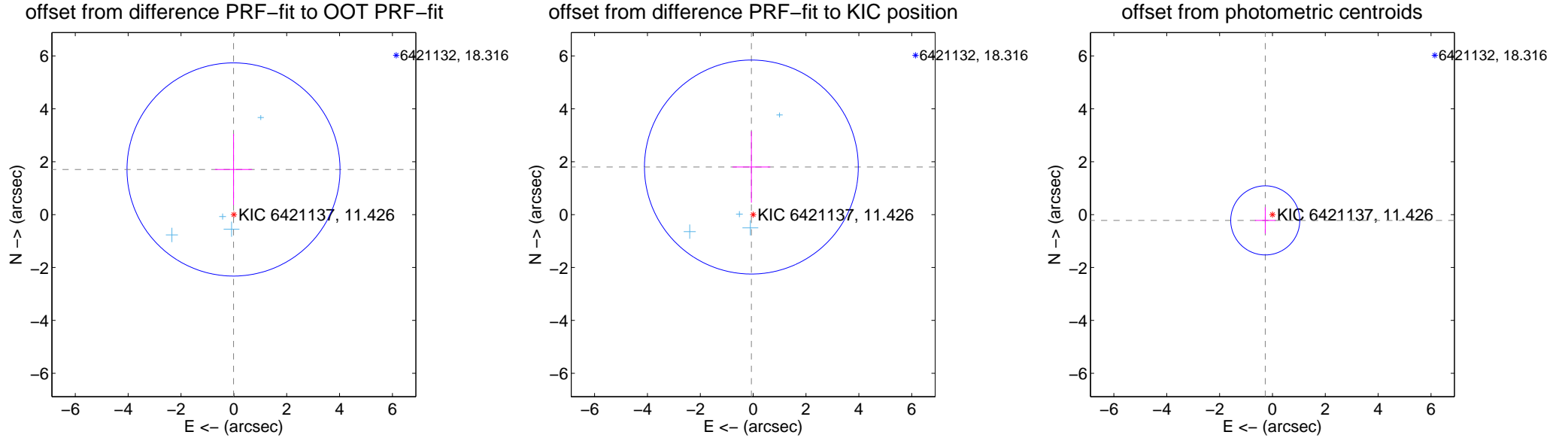
DV Centroid Data

Supplemental centroid analysis for 006421137-02. **Kepler magnitude: 11.43.** Transit SNR 6.89

There are 4 quarters with good PRF difference image offsets

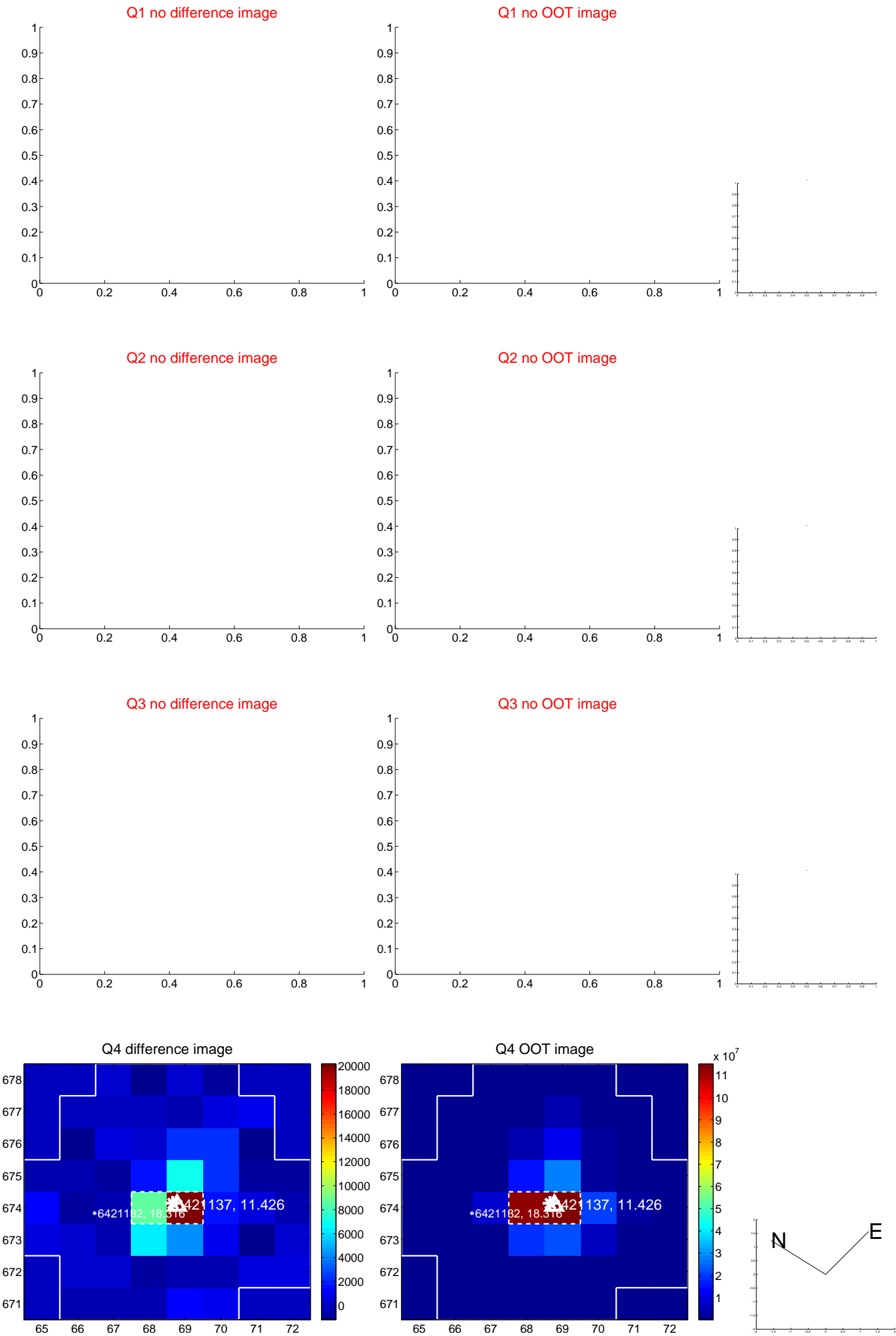
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.707 ± 1.344	1.27	0.013 ± 0.700	1.707 ± 1.344
PRF-fit source offset from KIC position	1.801 ± 1.349	1.34	0.067 ± 0.714	1.799 ± 1.349
photometric centroid source offset	0.35 ± 0.44	0.80	0.27 ± 0.39	-0.22 ± 0.50

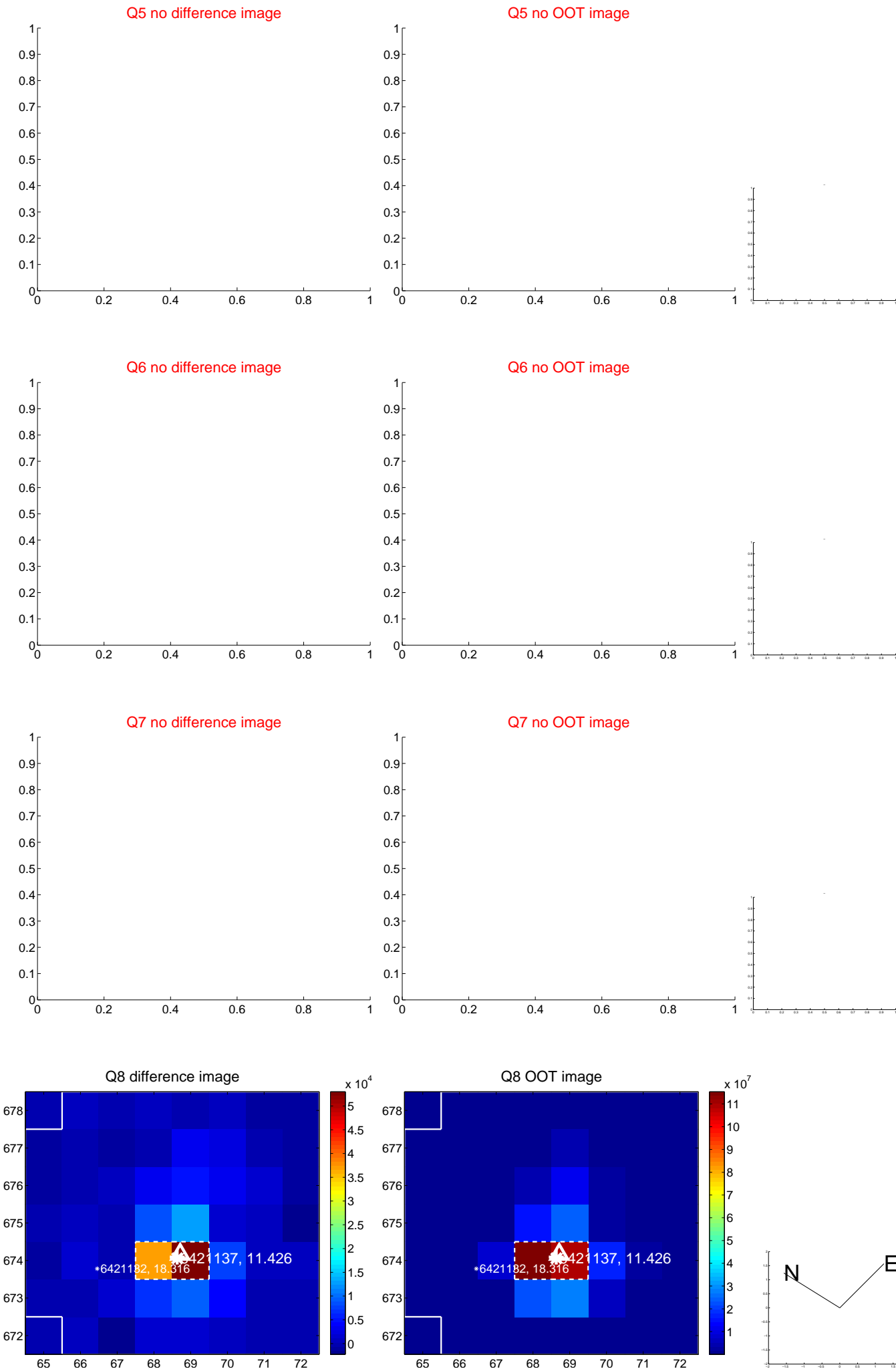


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

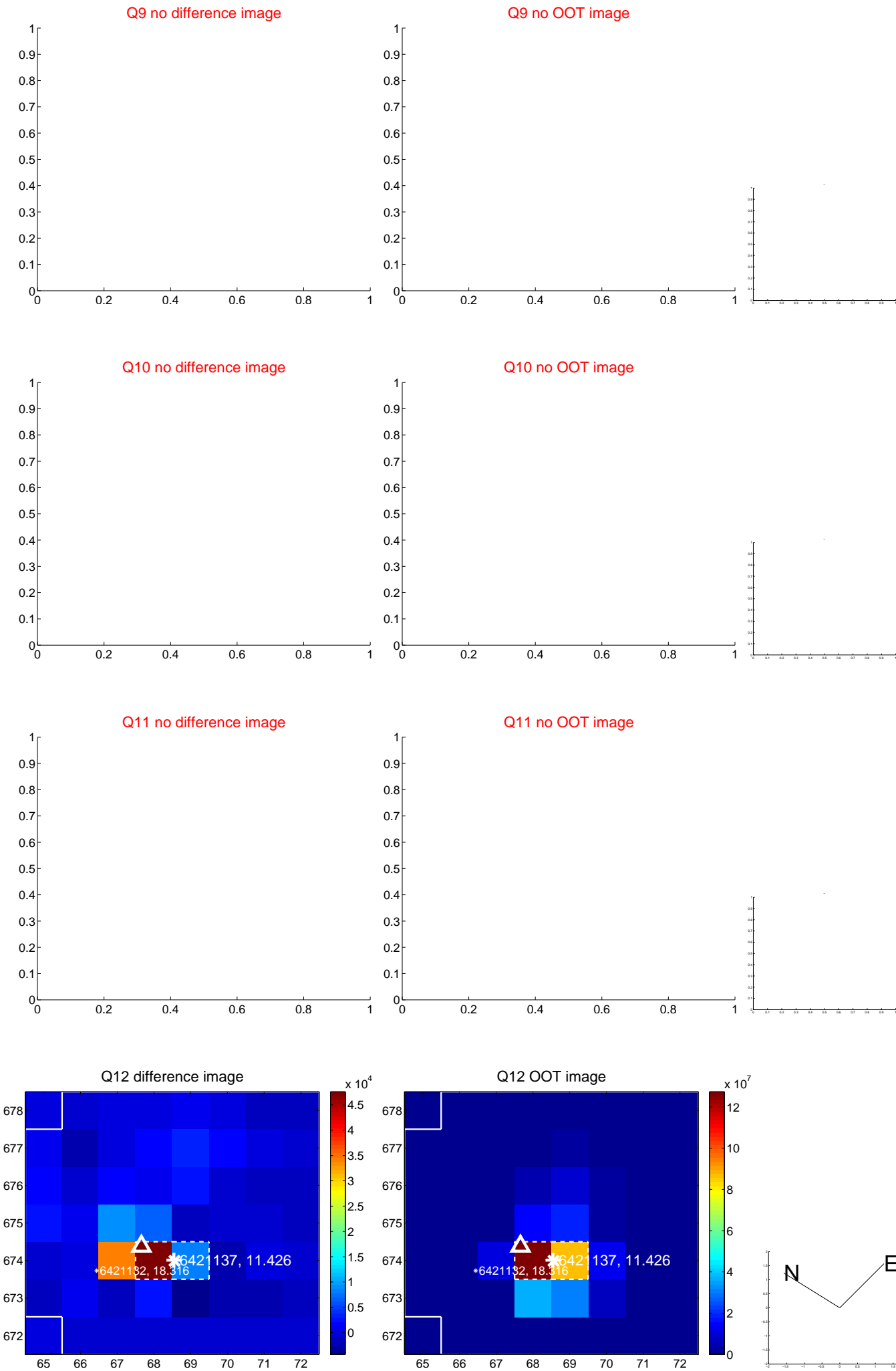
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



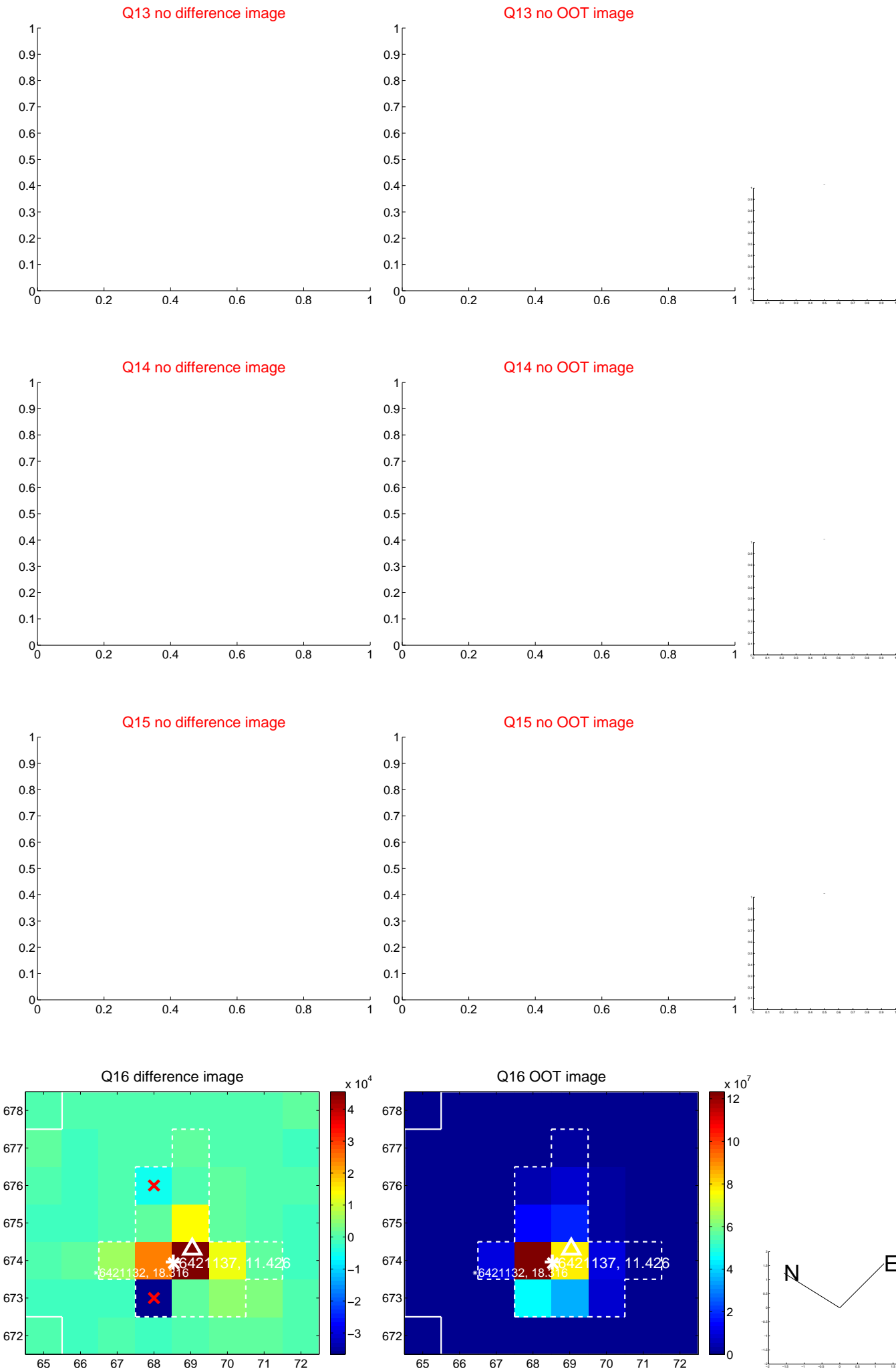
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



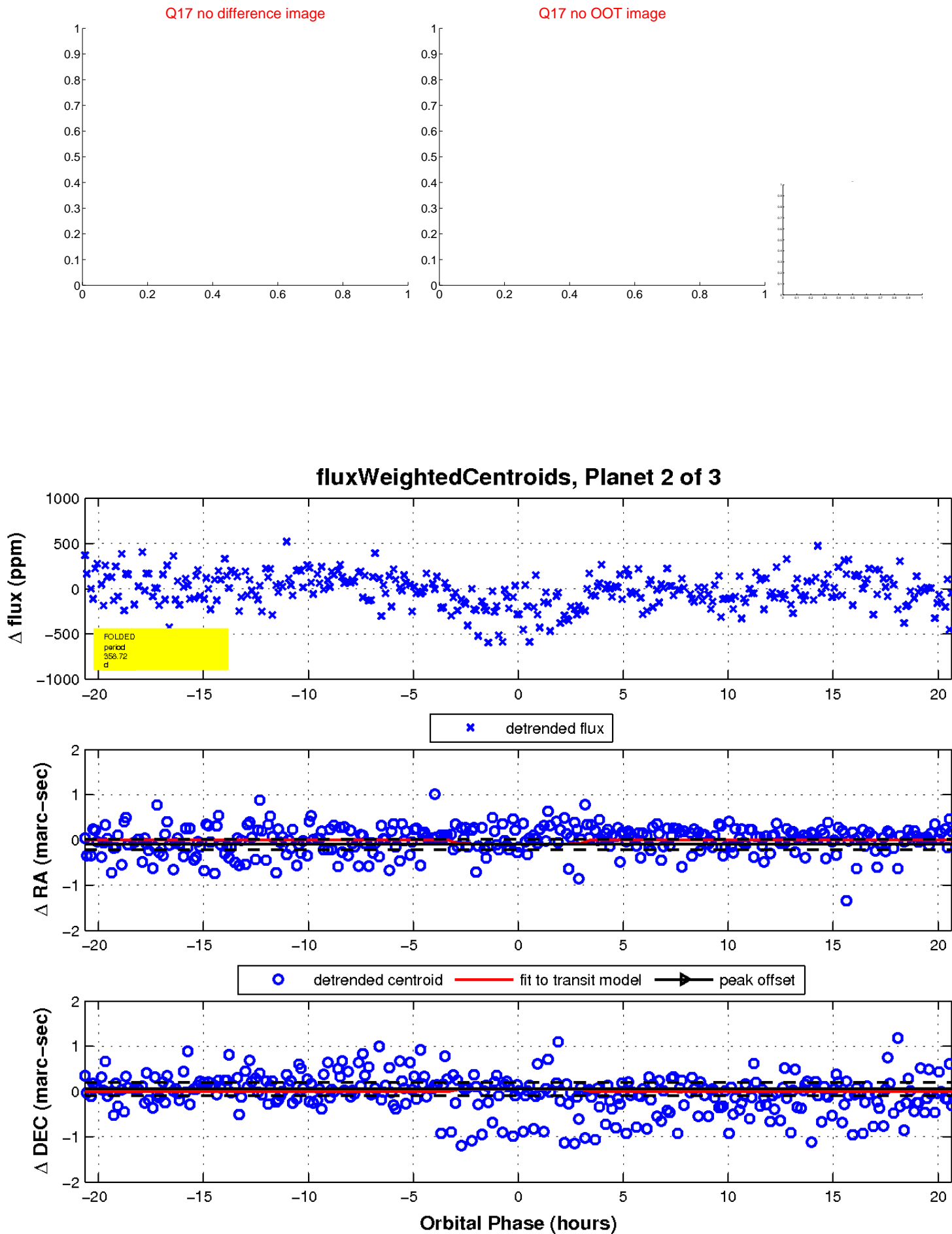
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

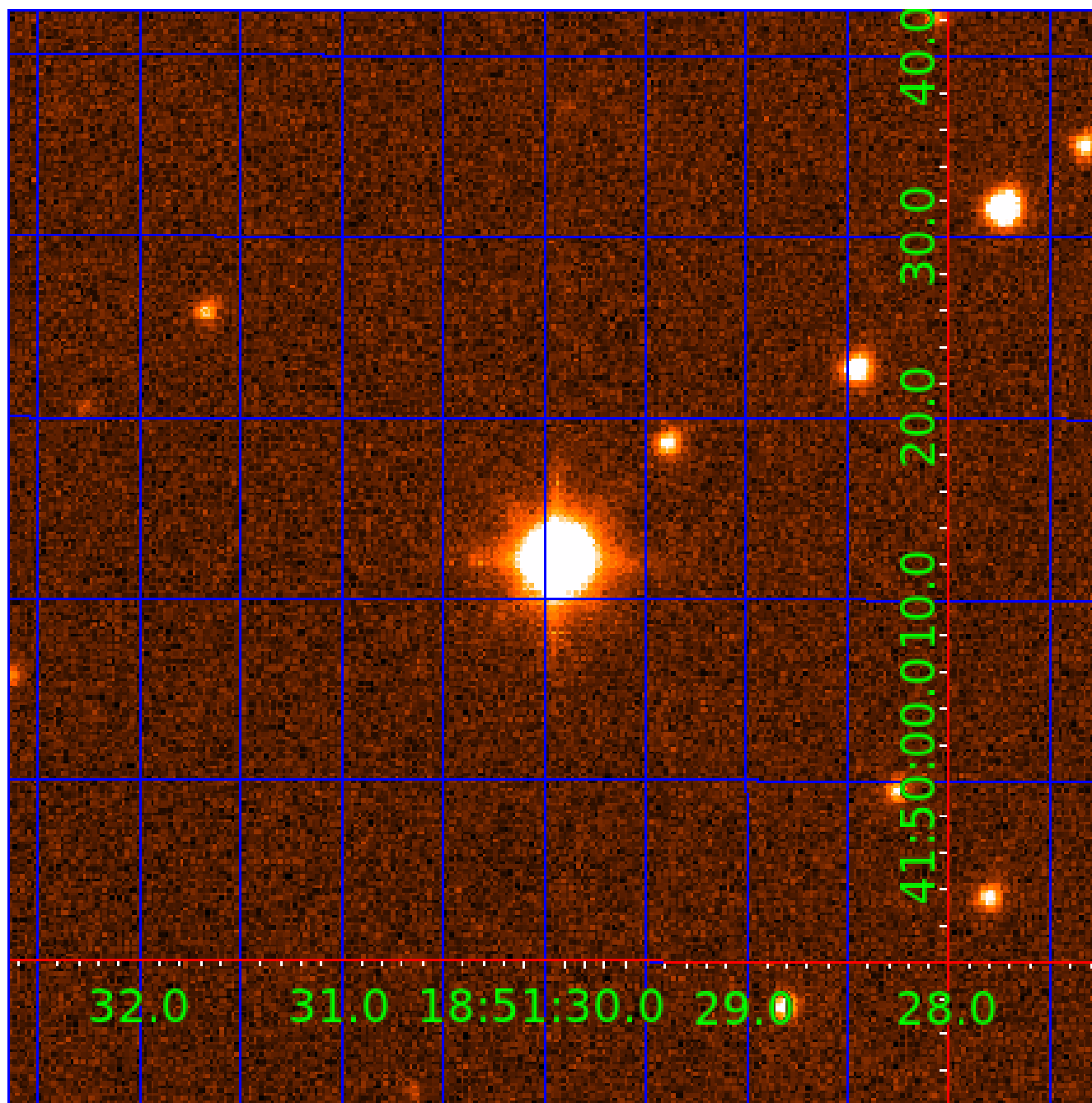


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 006421137

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})
006421137-01	OBS	No	2.456085	131.565483	60.8	7.500	9.5	-1.0	1.64	6486	1.29	2958.28
006421137-02	OBS	No	358.723980	417.363432	280.0	6.890	7.4	6.9	1.64	6486	3.15	3.85
006421137-03	OBS	No	225.705916	155.109014	308.3	5.433	7.4	7.3	1.64	6486	3.26	7.13

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
006421137-01	OBS	FP	0.00	1	0	0	0	SWEET_NTL—LPP_DV—CENT_SATURATED
006421137-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
006421137-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_SATURATED

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 006421137-03

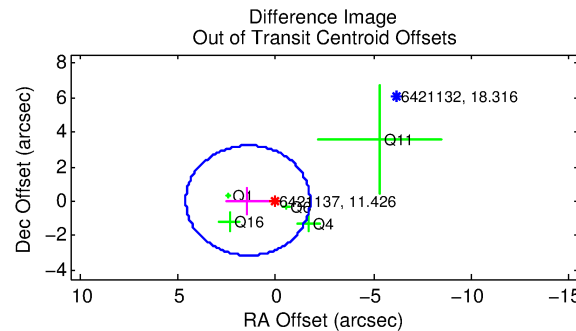
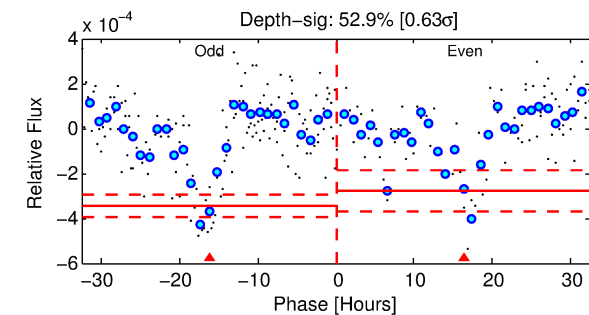
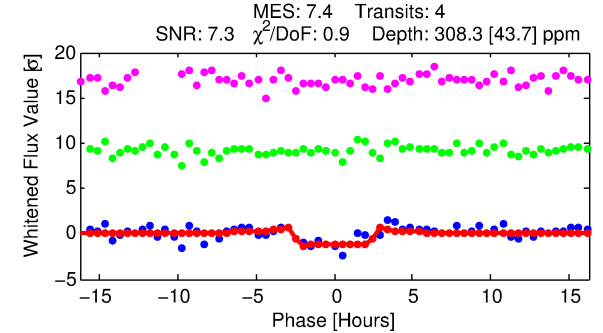
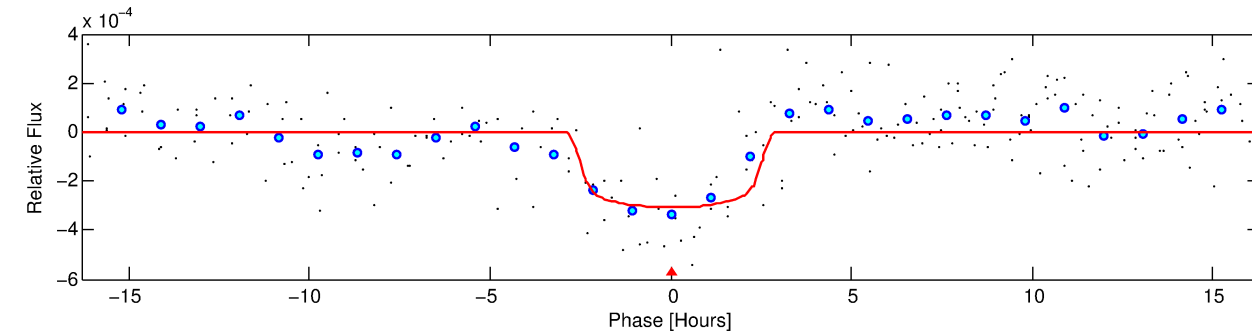
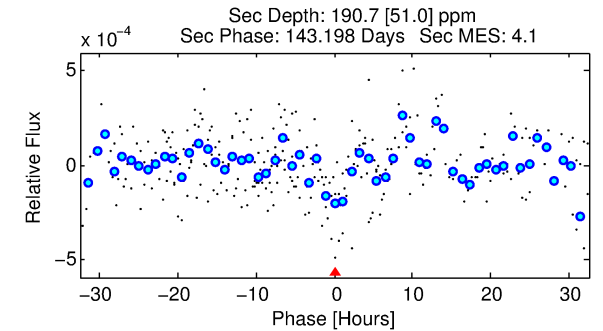
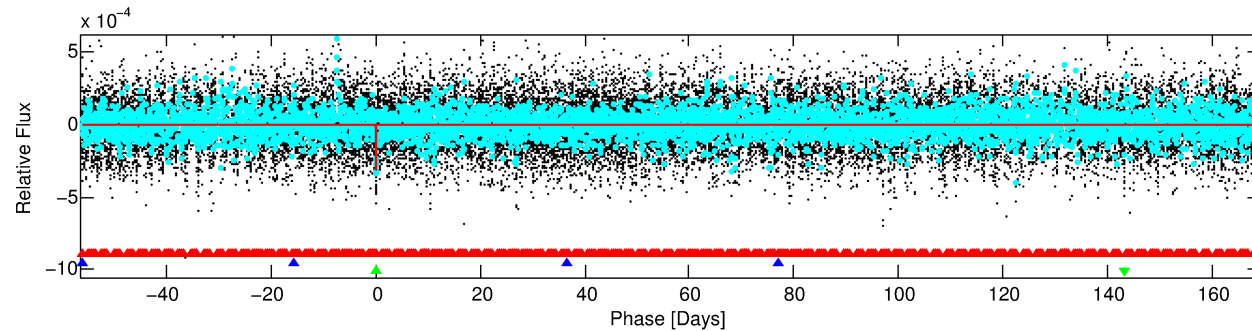
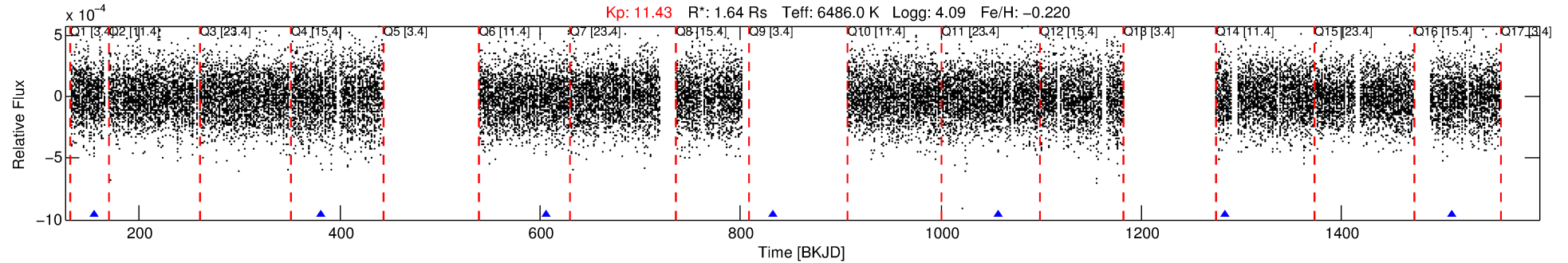
No Significant Match Found

DV One-Page Summary

KIC: 6421137 Candidate: 3 of 3 Period: 225.706 d

KOI: K04739 Corr: No Ephemeris Match

Kp: 11.43 R*: 1.64 Rs Teff: 6486.0 K Logg: 4.09 Fe/H: -0.220



DV Fit Results:

Period = 225.70592 [0.00357] d
Epoch = 155.1090 [0.0070] BKJD
Rp/R* = 0.0182 [0.0051]
a/R* = 177.61 [261.83]
b = 0.85 [0.48]
Seff = 7.13 [3.27]
Teff = 417 [48] K
Rp = 3.26 [1.34] Re
a = 0.7732 [0.2156] AU
Ag = 5915.08 [4473.90] [1.32σ]
Teffp = 5650 [895] K [5.84σ]

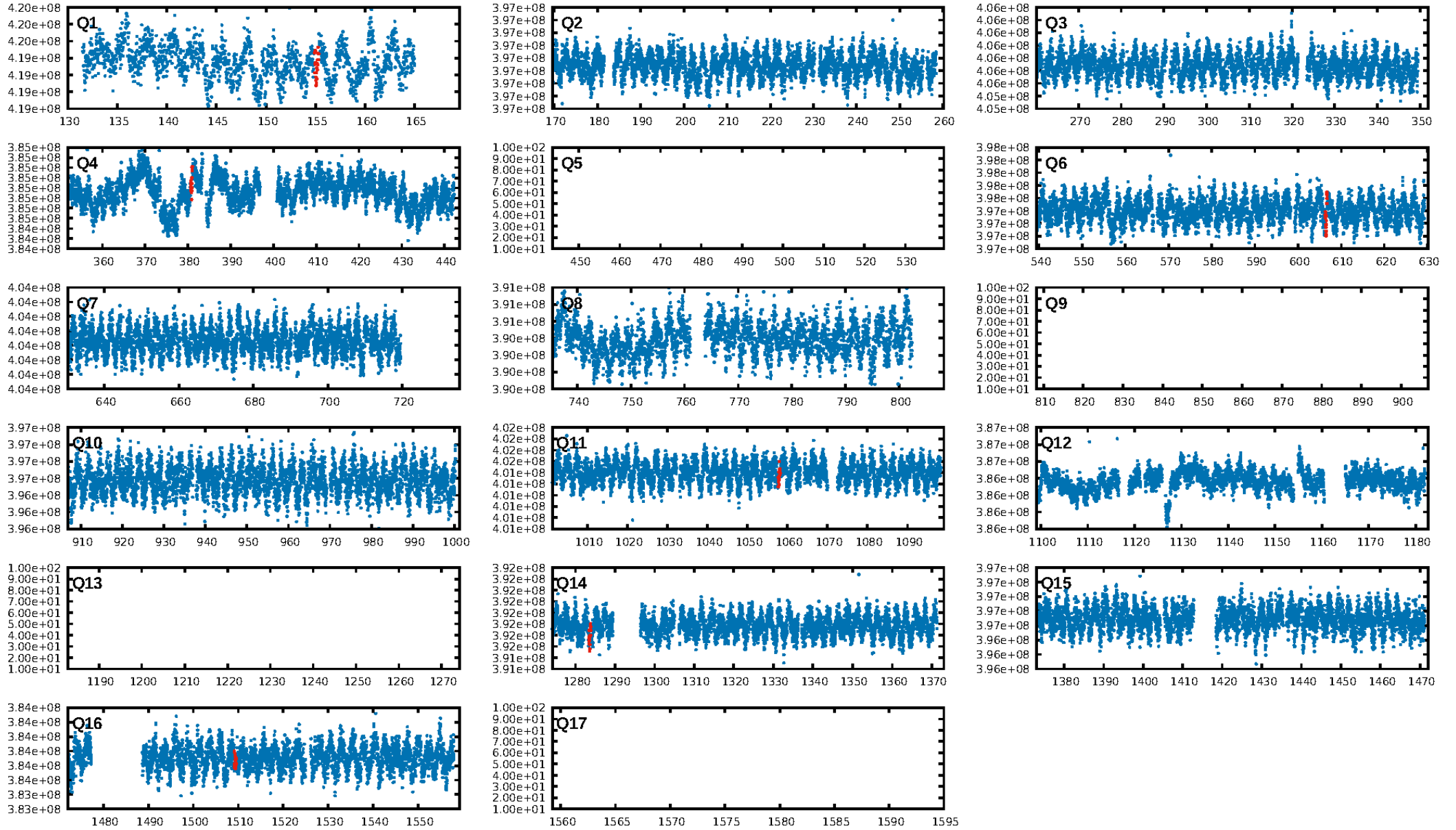
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [578.55σ]
LongPeriod-sig: 100.0% [363.85σ]
ModelChiSquare2-sig: 24.2%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.33e-09
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: -5.368
Centroid-sig: 15.1%
Centroid-so: 0.594 arcsec [1.32σ]
OotOffset-rm: 1.421 arcsec [1.34σ]
OotOffset-st: 1/1/2/1 [5]
KicOffset-rm: 1.434 arcsec [1.54σ]
KicOffset-st: 1/1/2/1 [5]
DiffImageQuality-fgm: 0.80 [4/5]
DiffImageOverlap-fno: 0.60 [3/5]

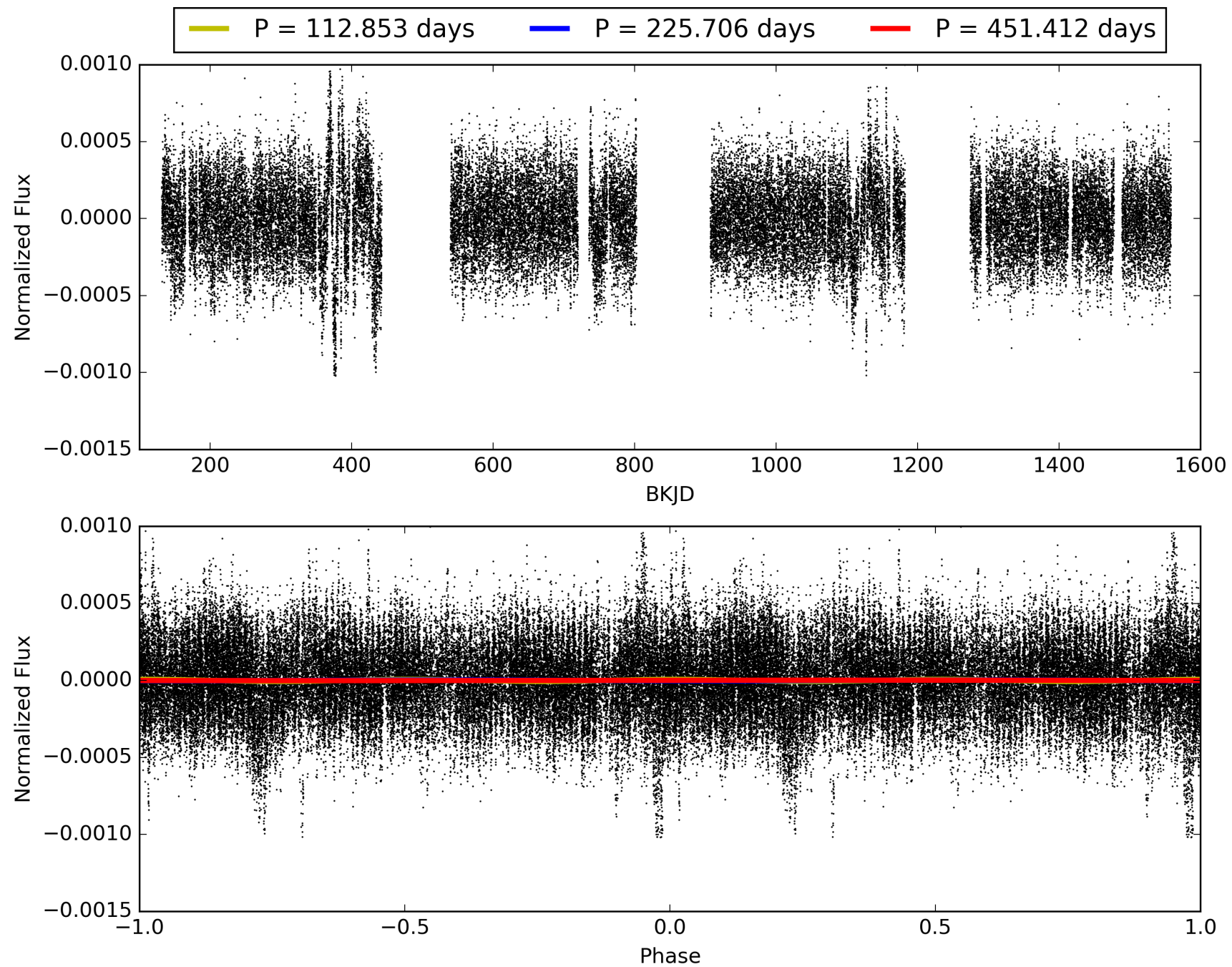
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 01-Feb-2016 08:18:53 Z

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

TCE 006421137-03, PDC Light Curves

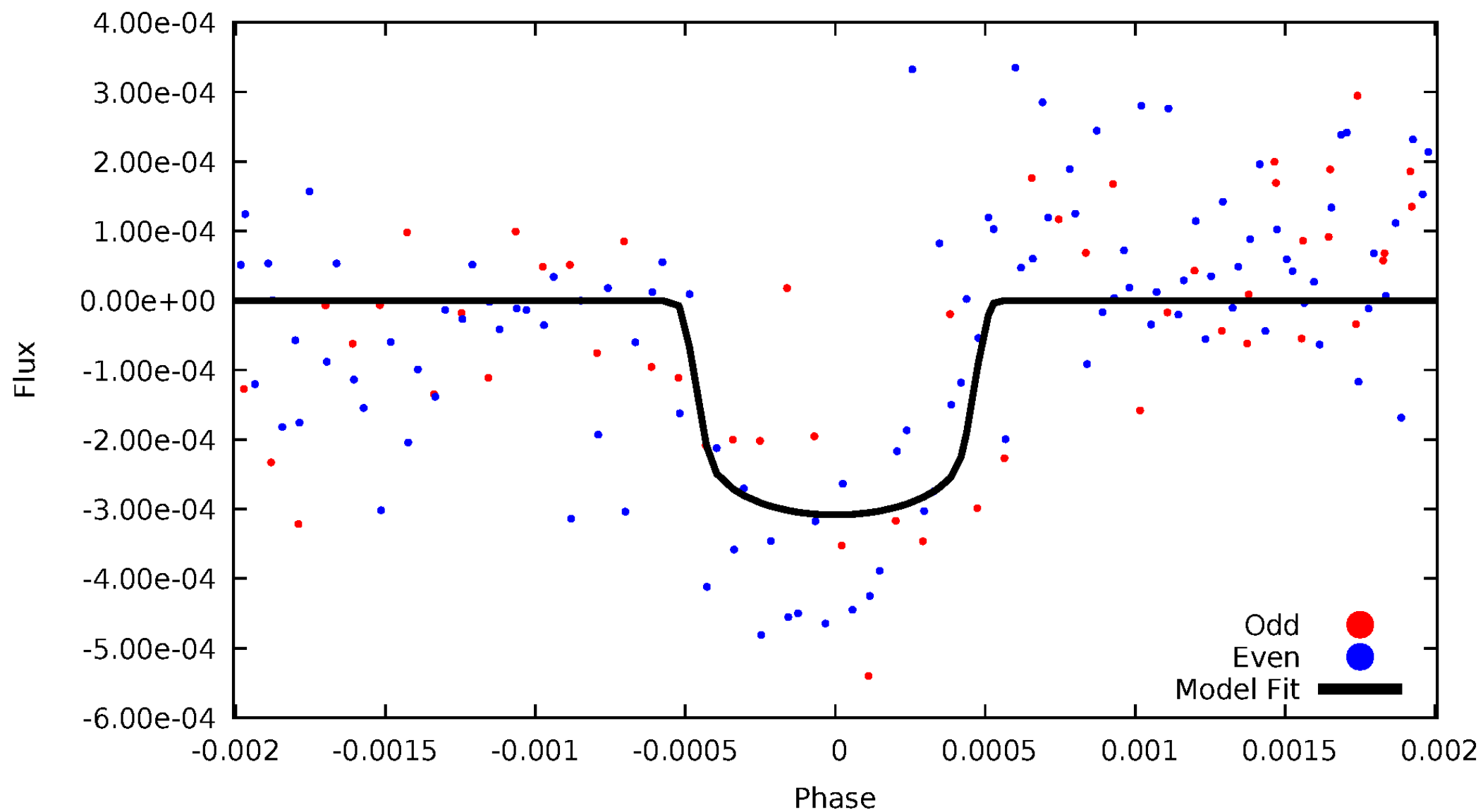


TCE 006421137-03



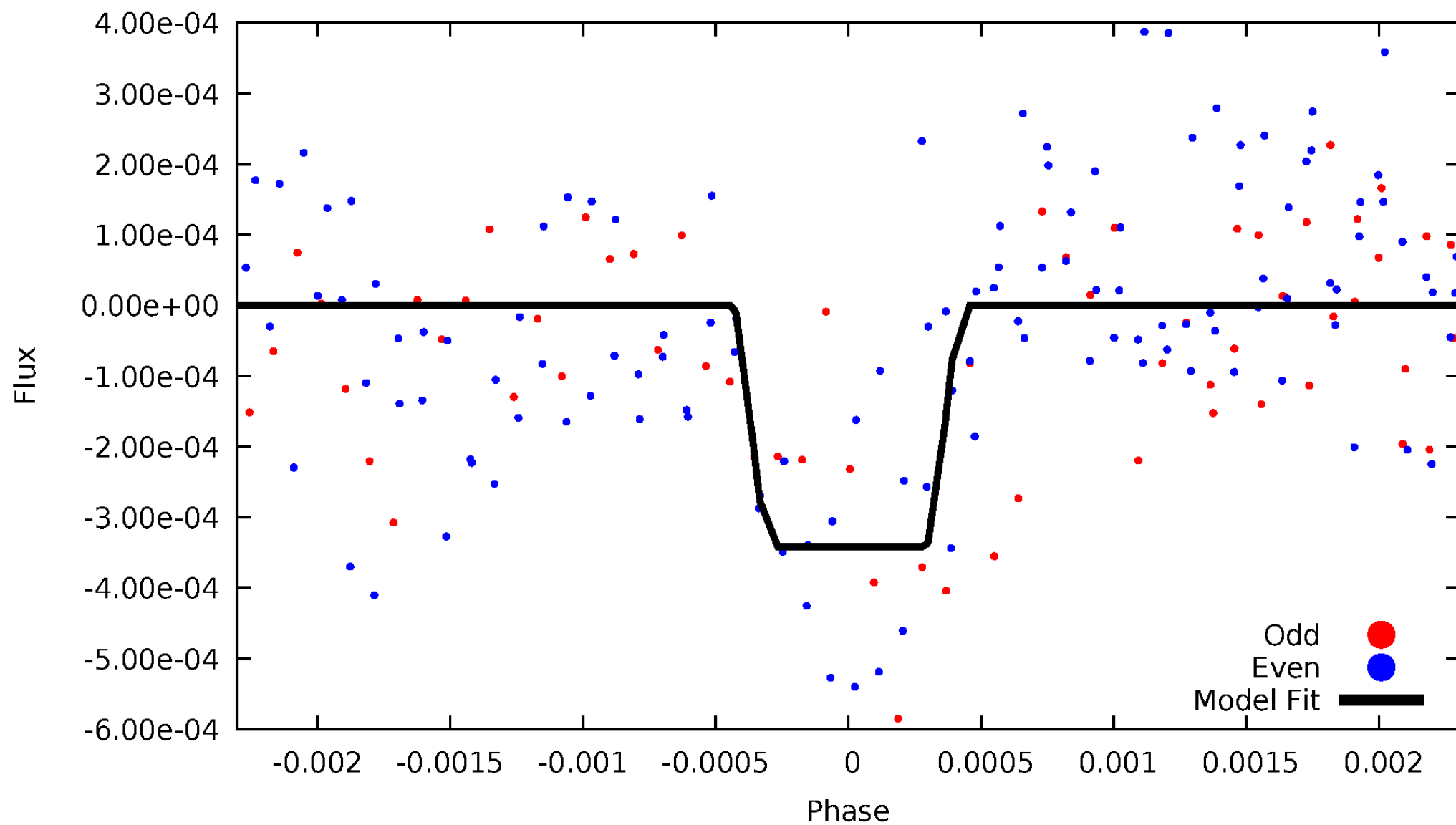
DV Odd/Even

TCE 006421137-03

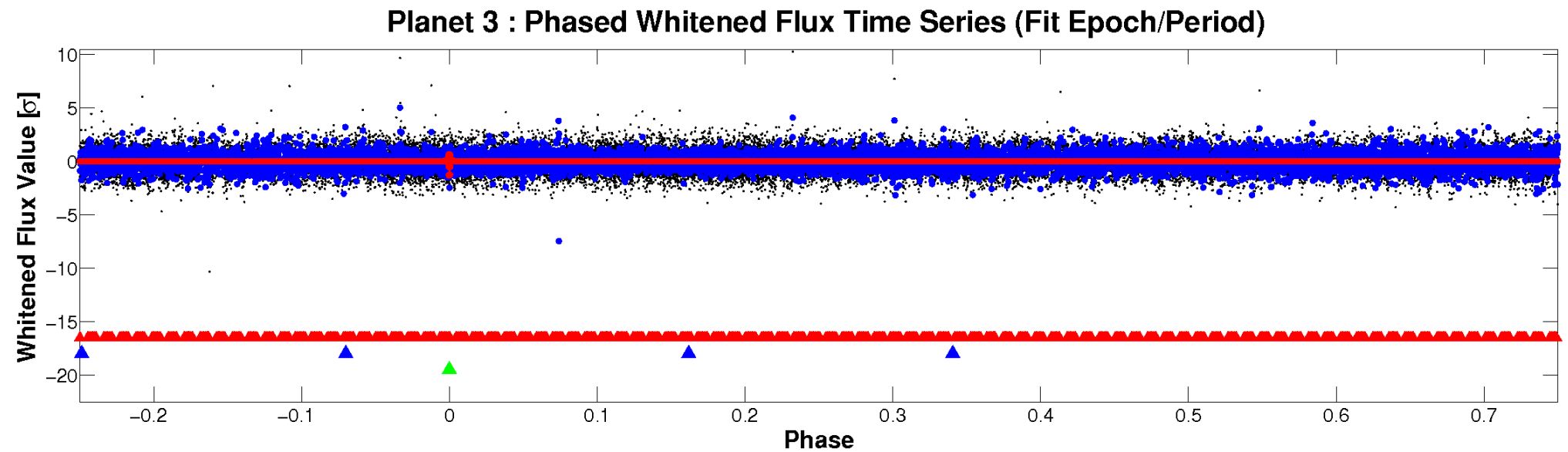
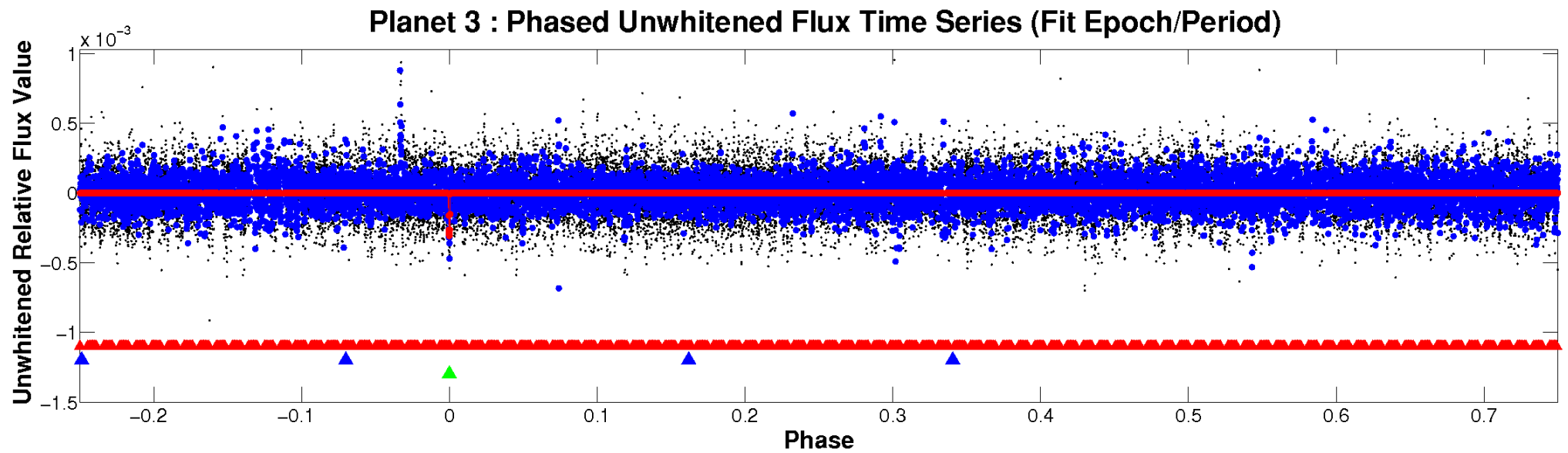


ALT Odd/Even

TCE 006421137-03

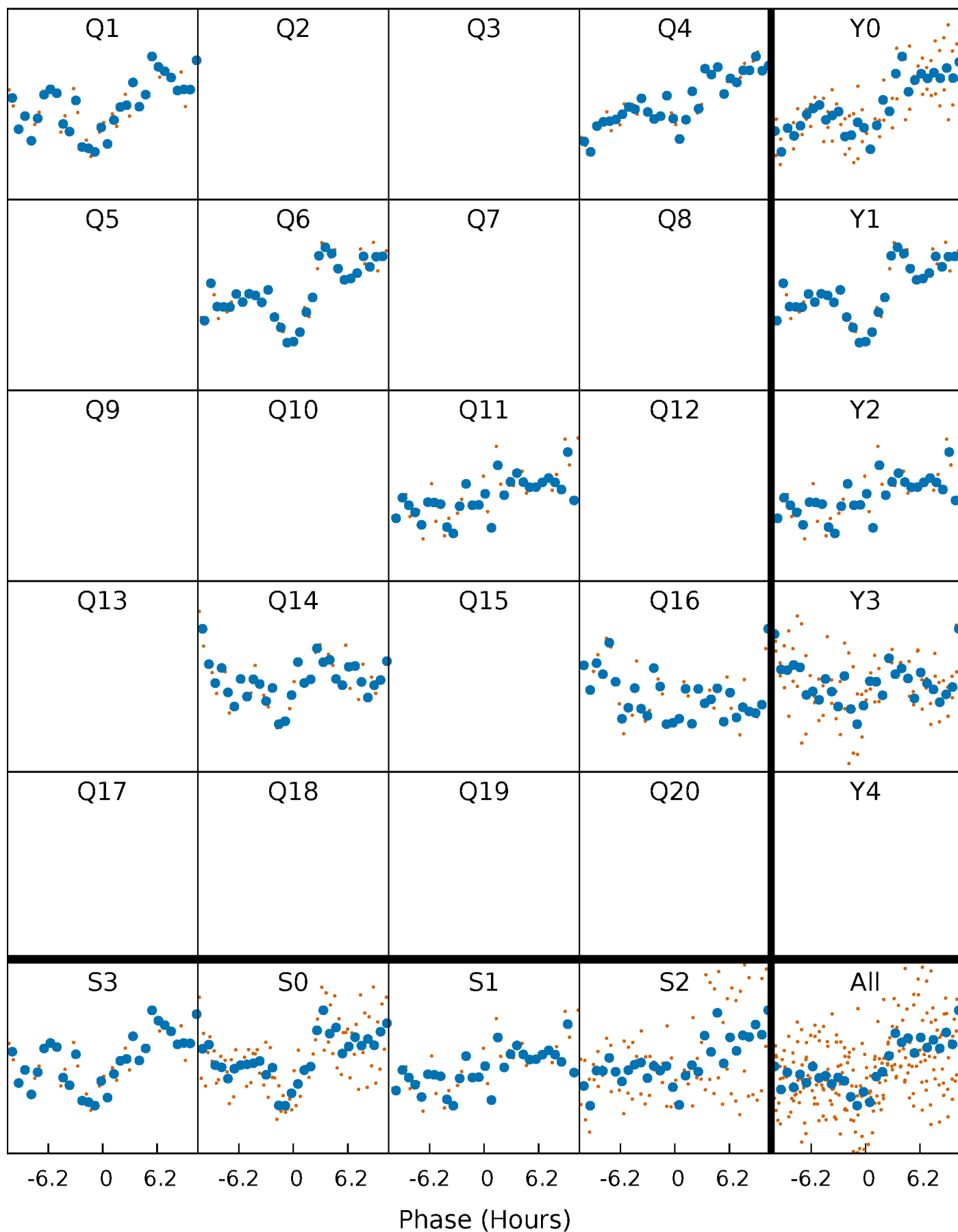


Non-Whitened Vs. Whitened Light Curve



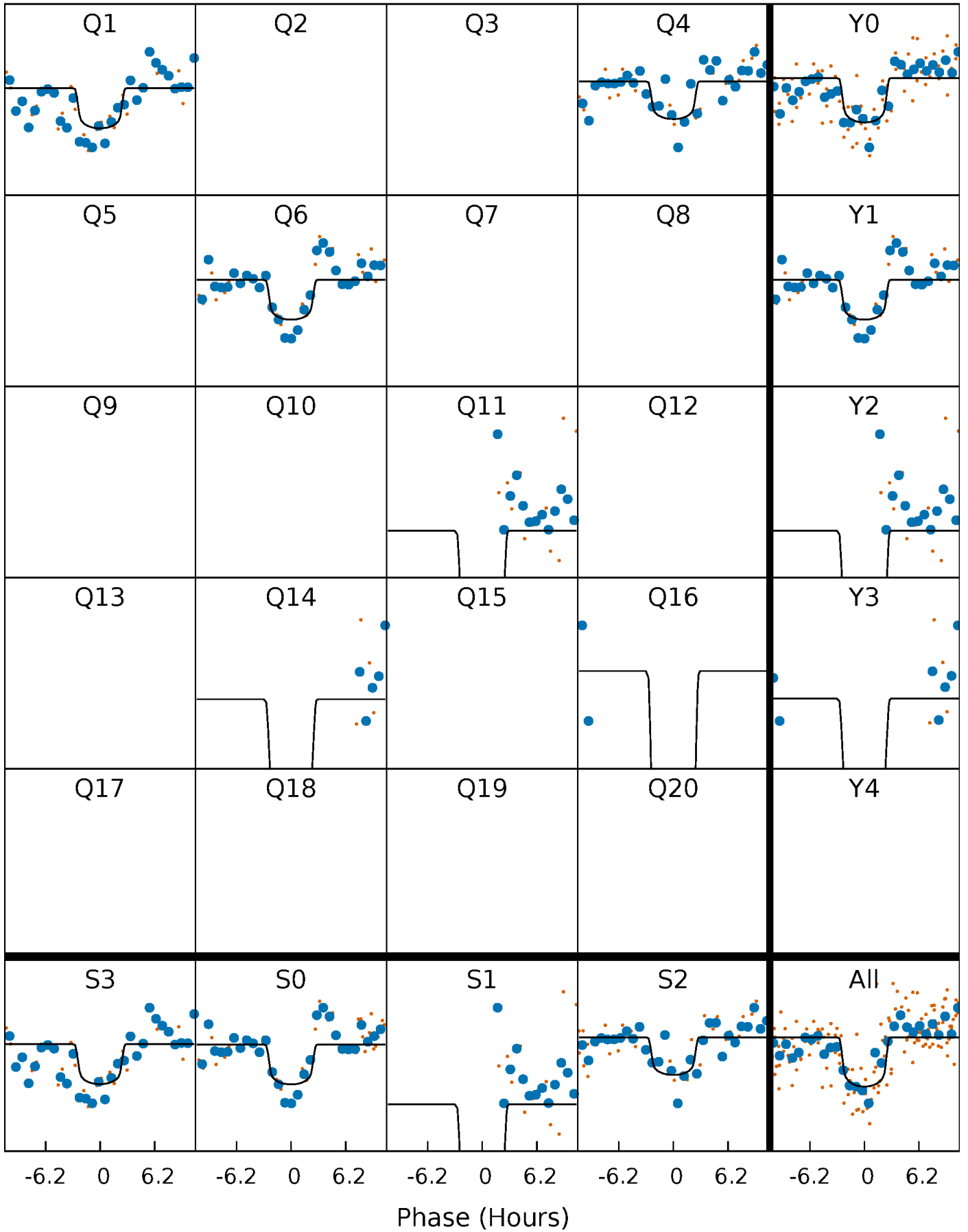
PDC Quarter-Phased Transit Curves

TCE 006421137-03 P=225.705916 Days $T_0=155.109014$ (BKJD)



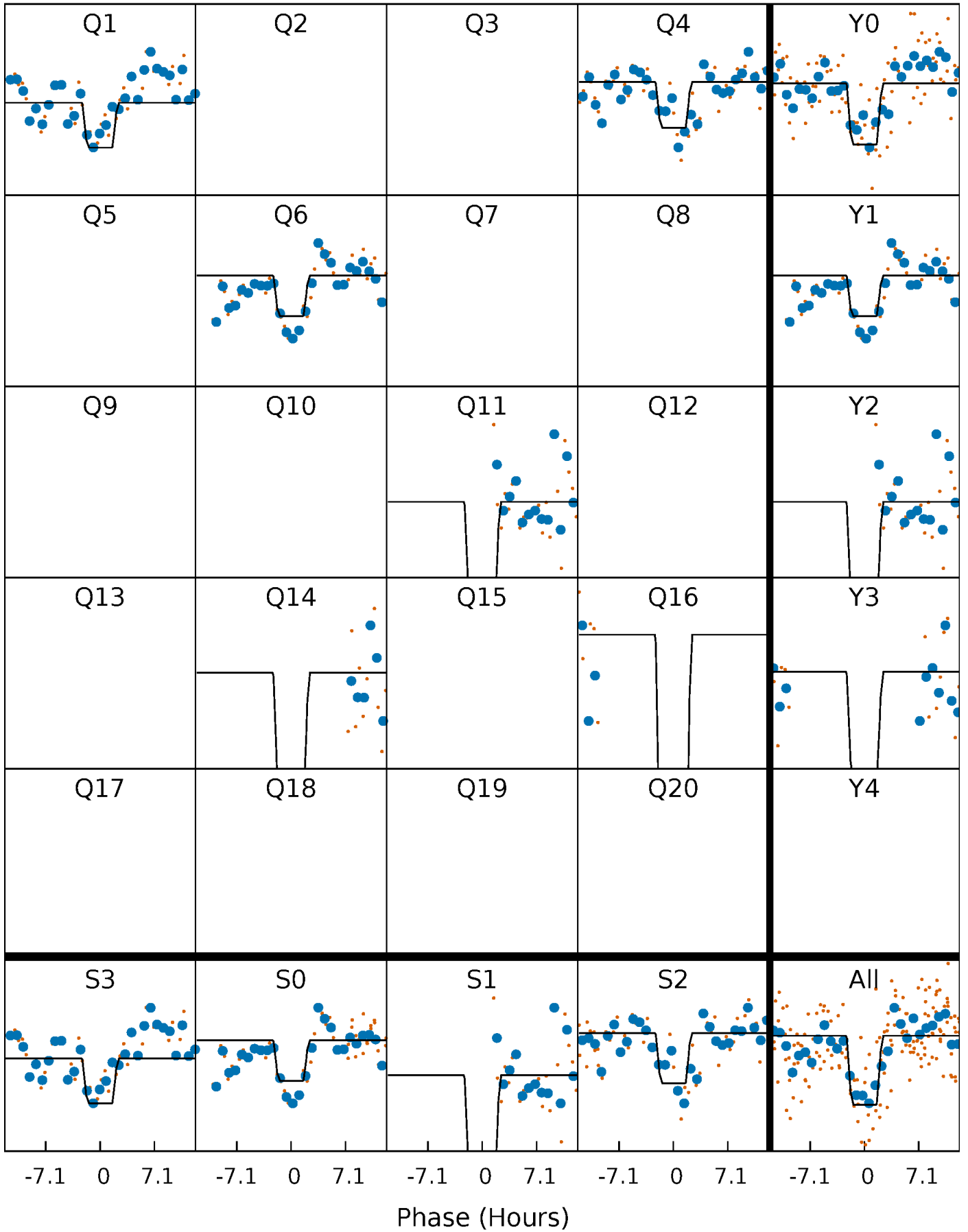
DV Quarter-Phased Transit Curves

TCE 006421137-03 P=225.705916 Days $T_0=155.109014$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

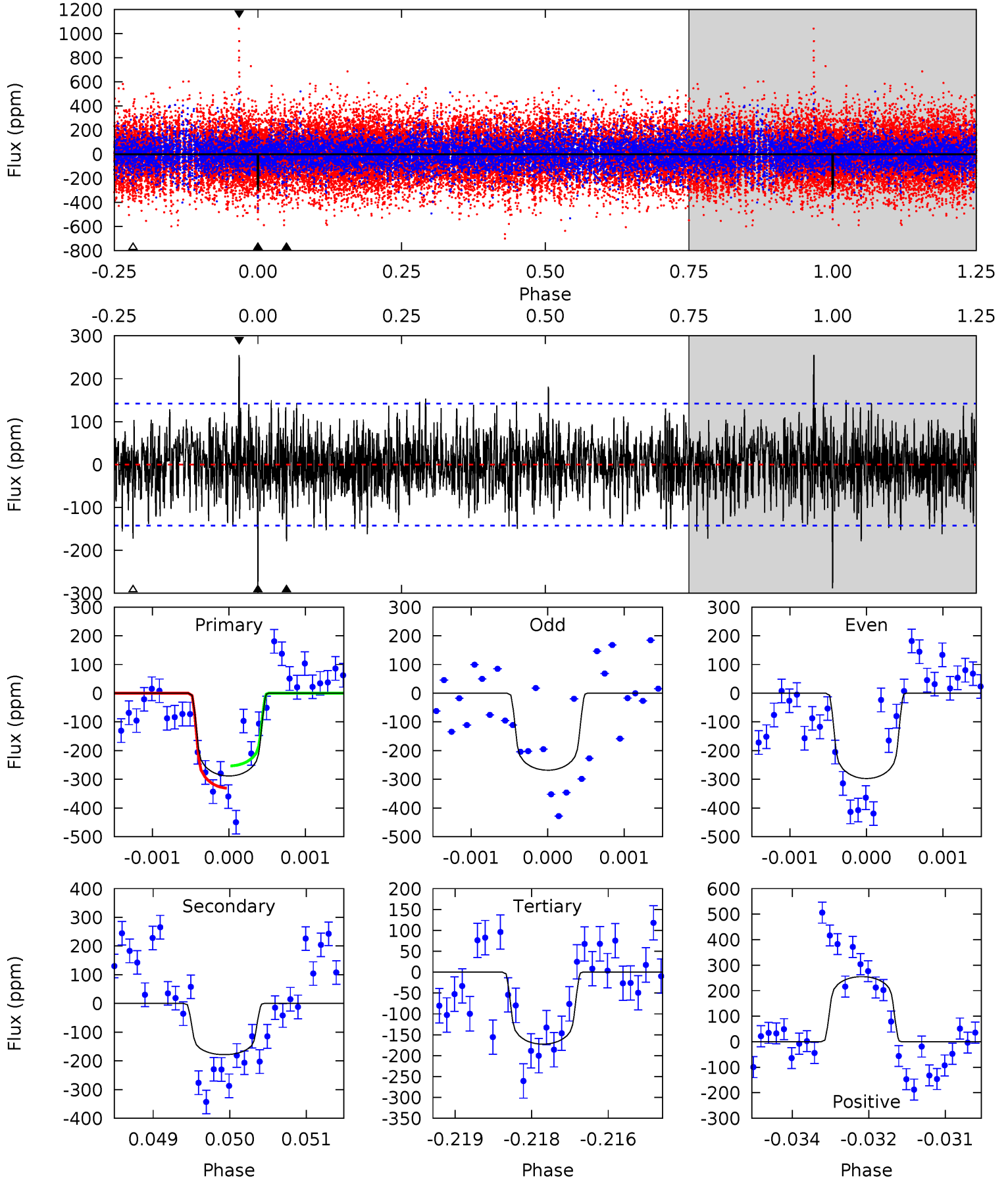
TCE 006421137-03 P=225.710147 Days $T_0=155.087526$ (BKJD)



DV Model-Shift Uniqueness Test

006421137-03, P = 225.705916 Days, E = 155.109014 Days

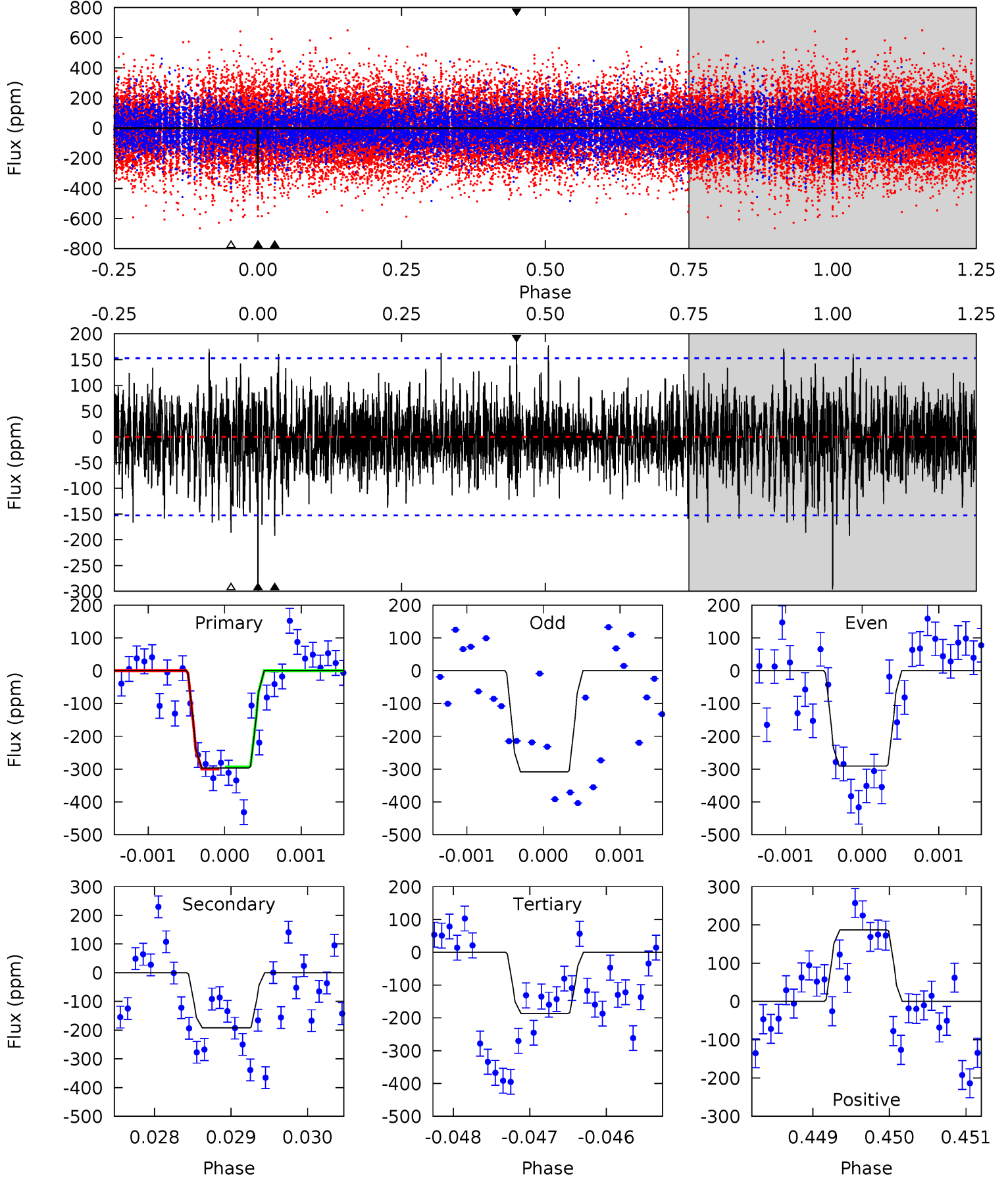
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
11.0	6.82	6.60	9.75	5.44	3.27	1.93	4.44	1.28	0.23	-2.93	0.49	0.64	0.47	1.47



Alt Model-Shift Uniqueness Test

006421137-03, P = 225.710147 Days, E = 155.087526 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	6.89	6.69	6.71	5.47	3.32	1.70	3.94	3.93	0.20	0.19	0.29	0.74	0.39	0.10



Stellar Parameters For KIC 006421137

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6486^{+181}_{-227}	$4.091^{+0.252}_{-0.168}$	$-0.220^{+0.250}_{-0.300}$	$1.640^{+0.444}_{-0.494}$	$1.213^{+0.188}_{-0.206}$	$0.387^{+0.660}_{-0.174}$
	+3%/-3%	+6%/-4%	+114%/-136%	+27%/-30%	+15%/-17%	+171%/-45%
Source	PHO54	PHO54	PHO54	DSEP		

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

Secondary Eclipse Parameters for KIC 006421137-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-178 ± 26	$3.24^{+1.07}_{-1.02}$	578^{+45}_{-49}	5492^{+1072}_{-582}	5477^{+6524}_{-2478}
Alt.	-192 ± 28	$3.16^{+1.17}_{-0.86}$	576^{+44}_{-47}	5608^{+1006}_{-627}	6315^{+6084}_{-2990}

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

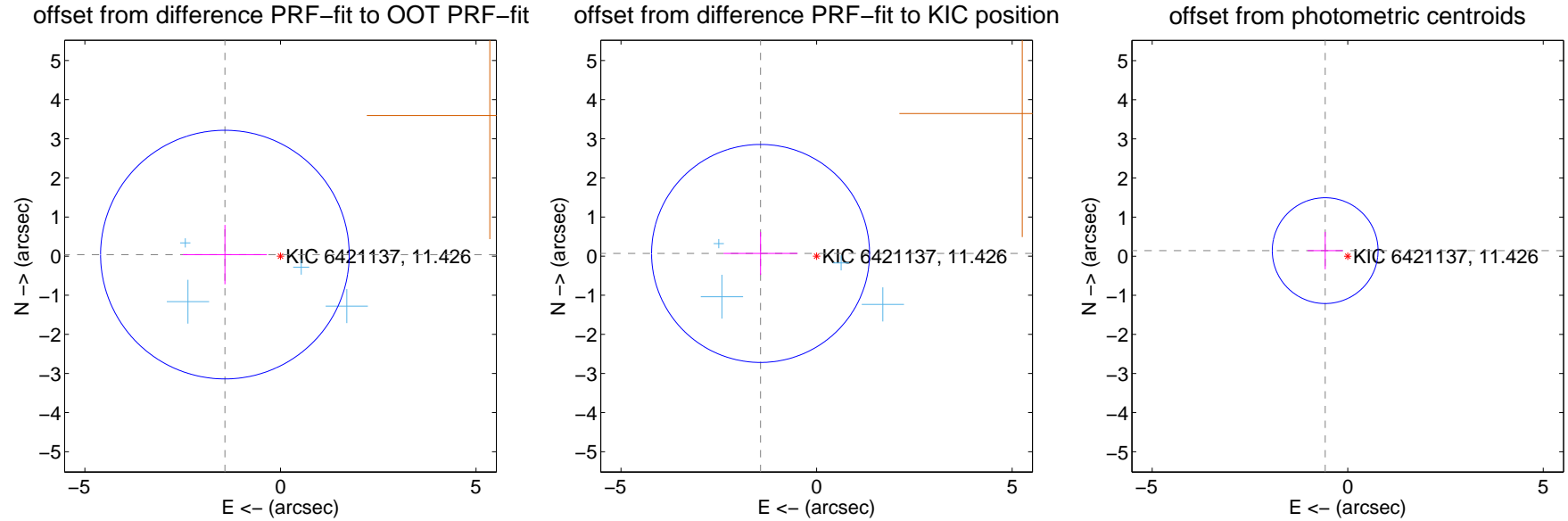
DV Centroid Data

Supplemental centroid analysis for 006421137-03. **Kepler magnitude: 11.43.** Transit SNR 7.27

There are 4 quarters with good PRF difference image offsets

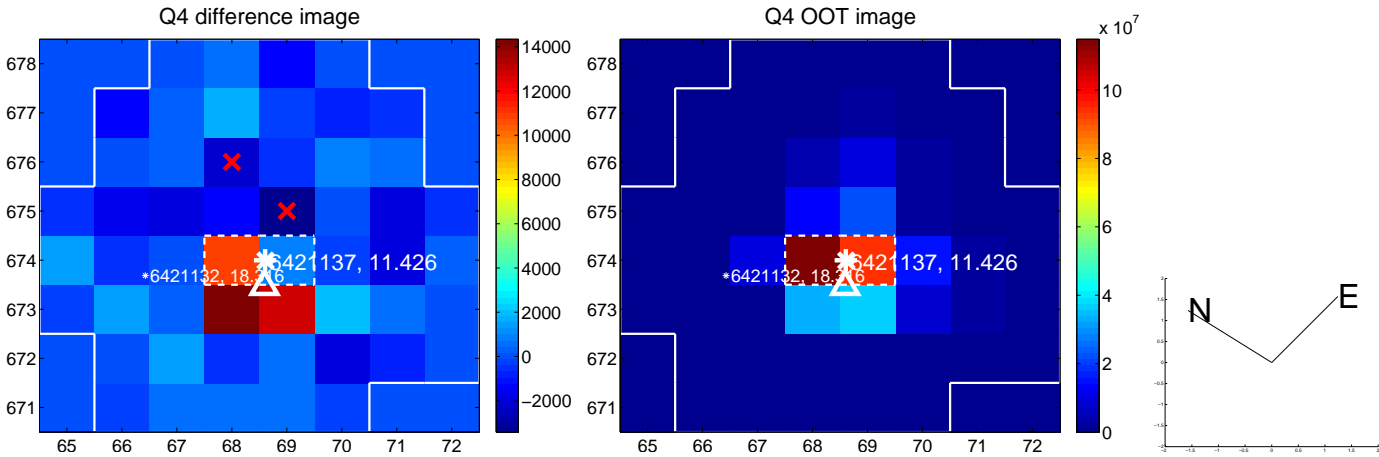
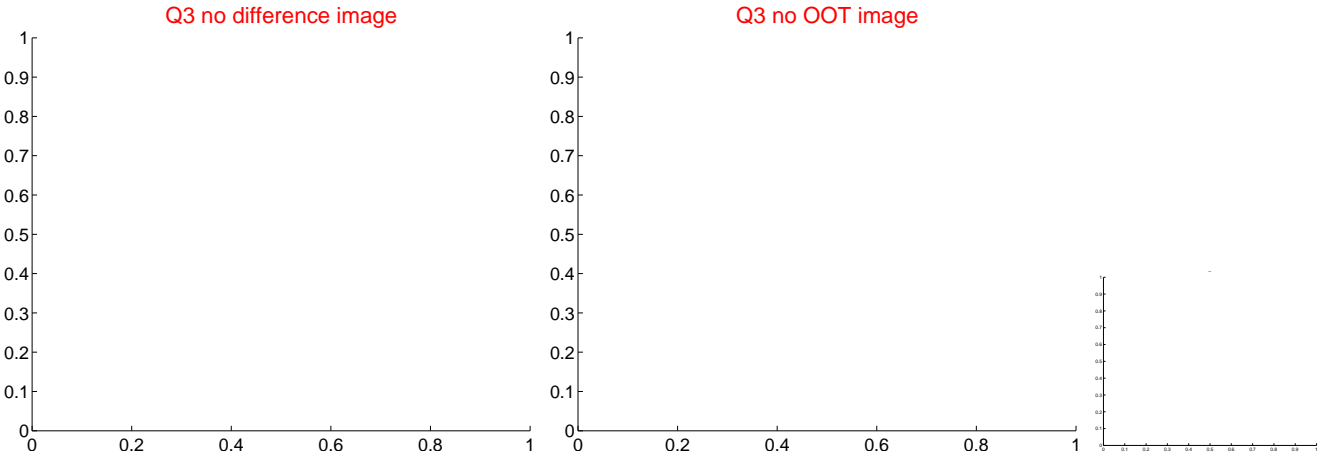
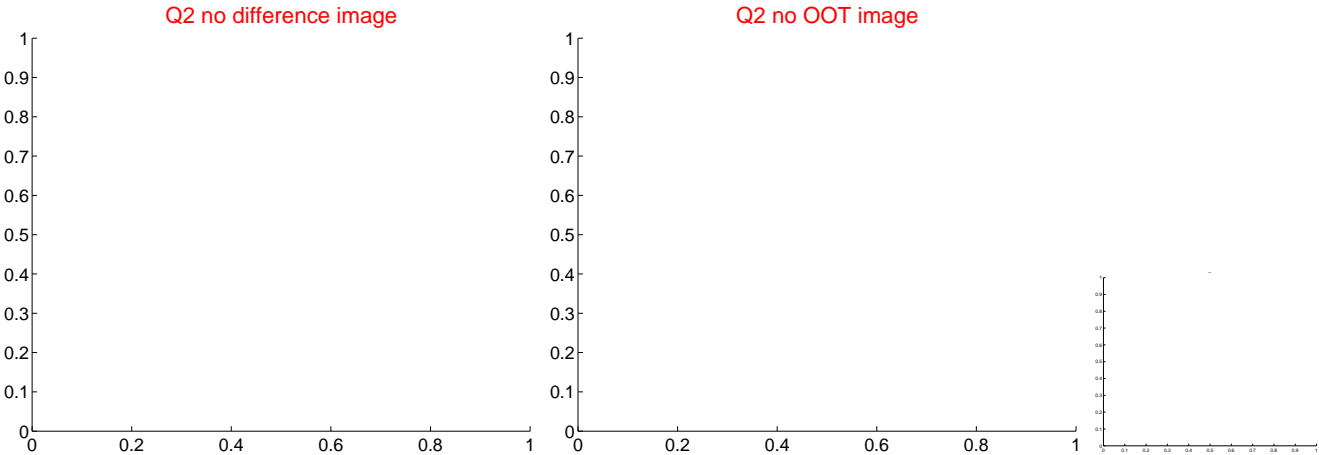
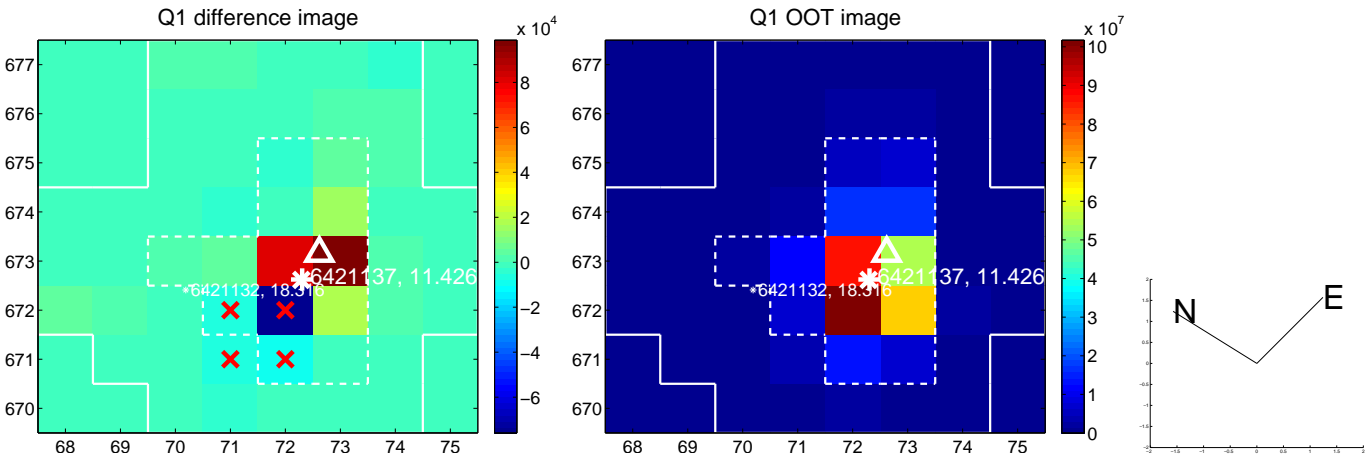
The direct PRF centroid is offset from the target star catalog position by about 0.14 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.421 ± 1.059	1.34	1.421 ± 1.075	0.039 ± 0.760
PRF-fit source offset from KIC position	1.434 ± 0.929	1.54	1.432 ± 0.947	0.069 ± 0.547
photometric centroid source offset	0.59 ± 0.45	1.32	0.58 ± 0.45	0.14 ± 0.48

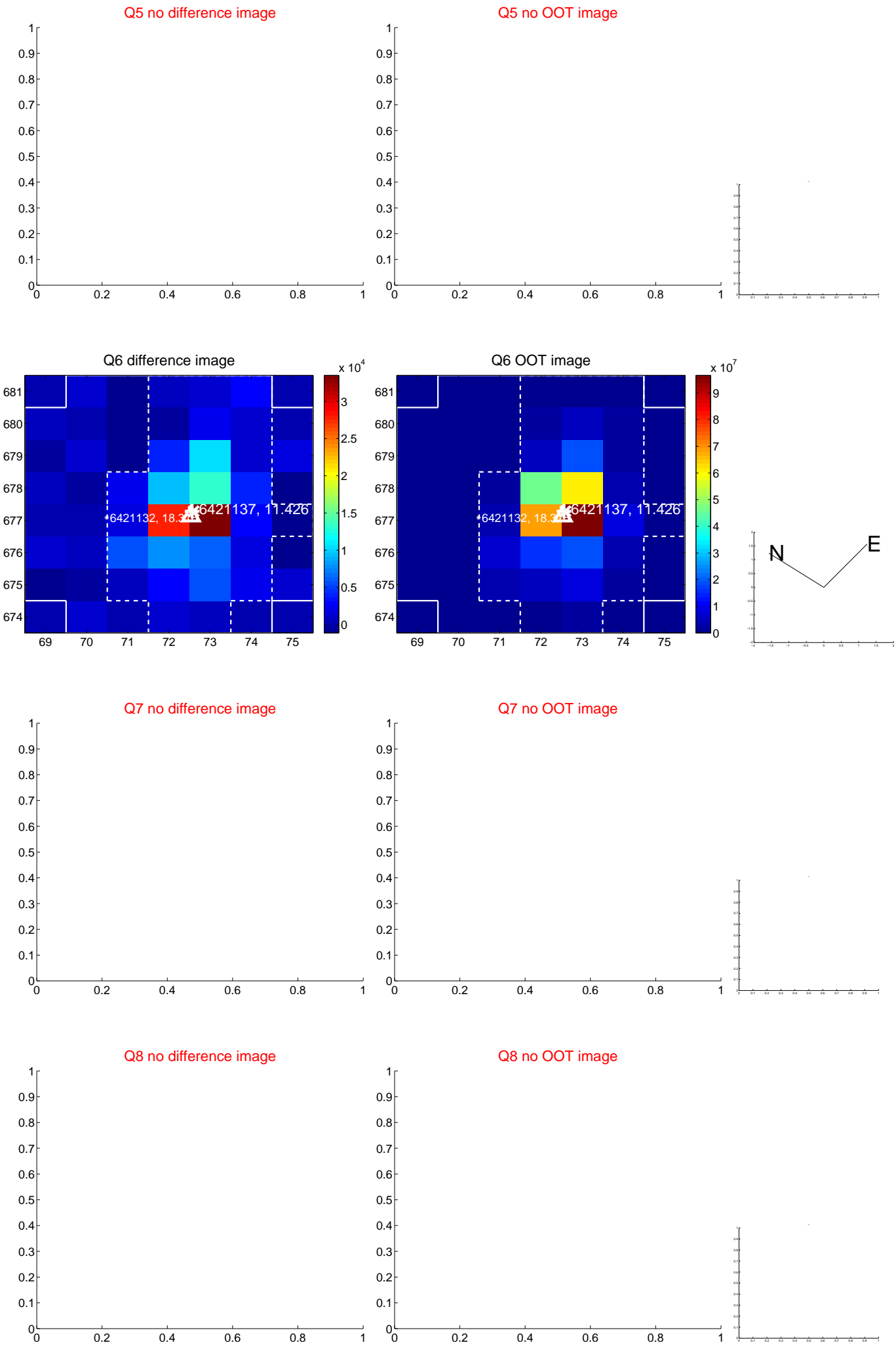


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

Q9 no difference image



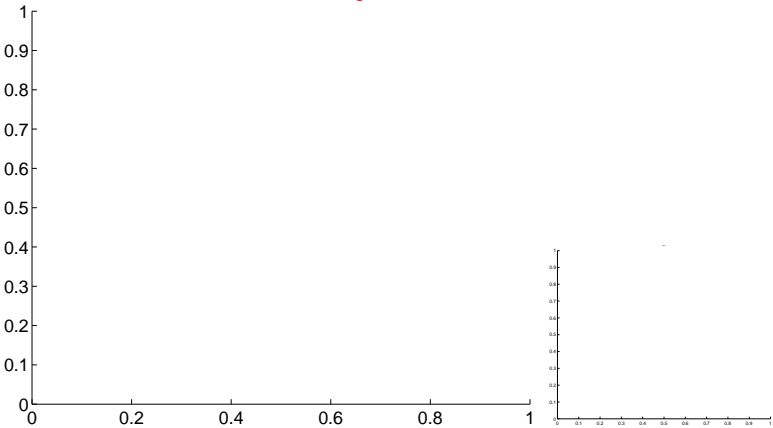
Q9 no OOT image



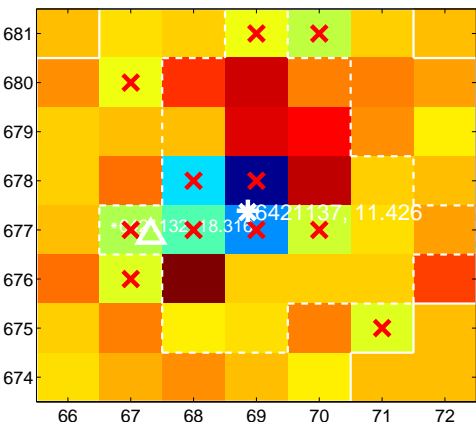
Q10 no difference image



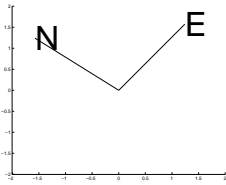
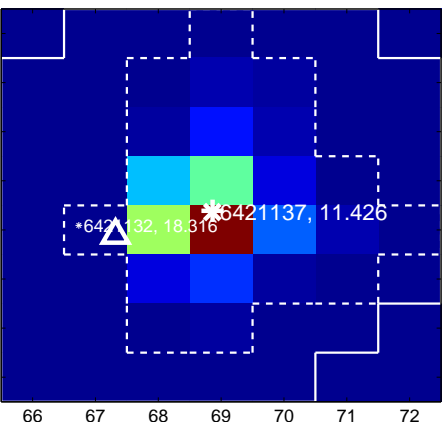
Q10 no OOT image



Q11 difference image. Poor Quality



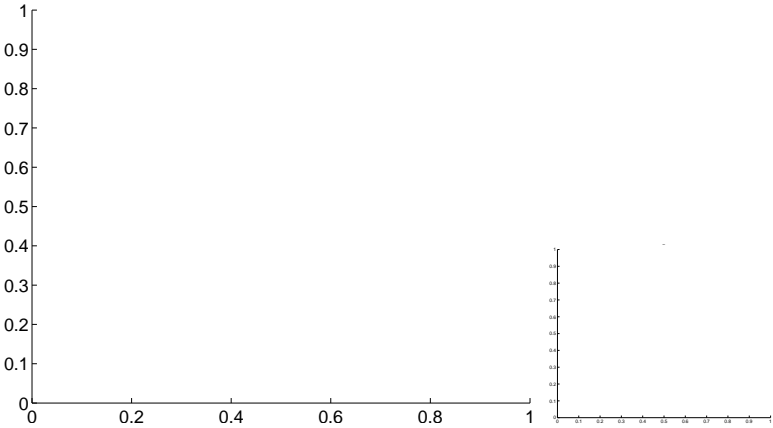
Q11 OOT image



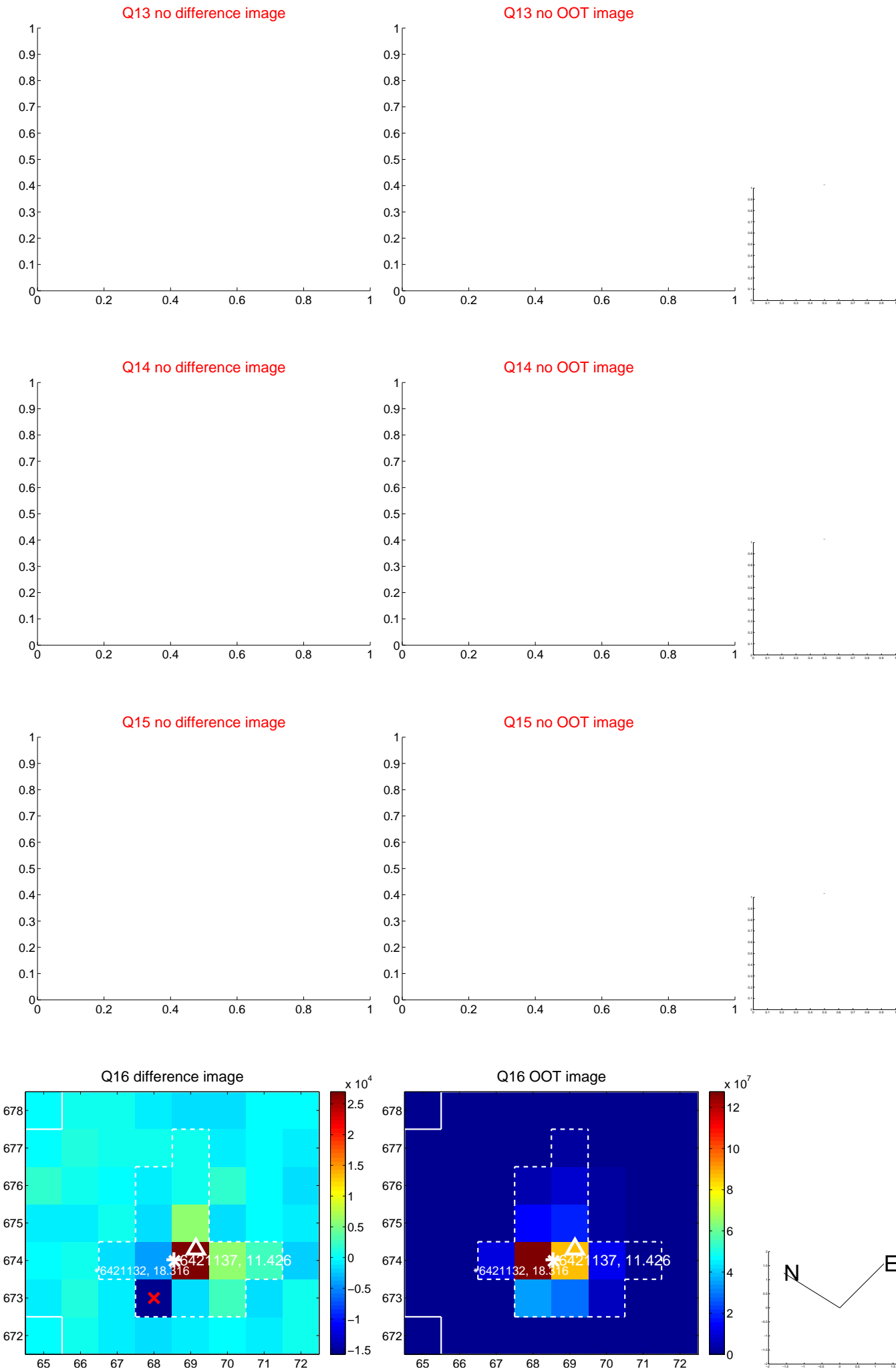
Q12 no difference image



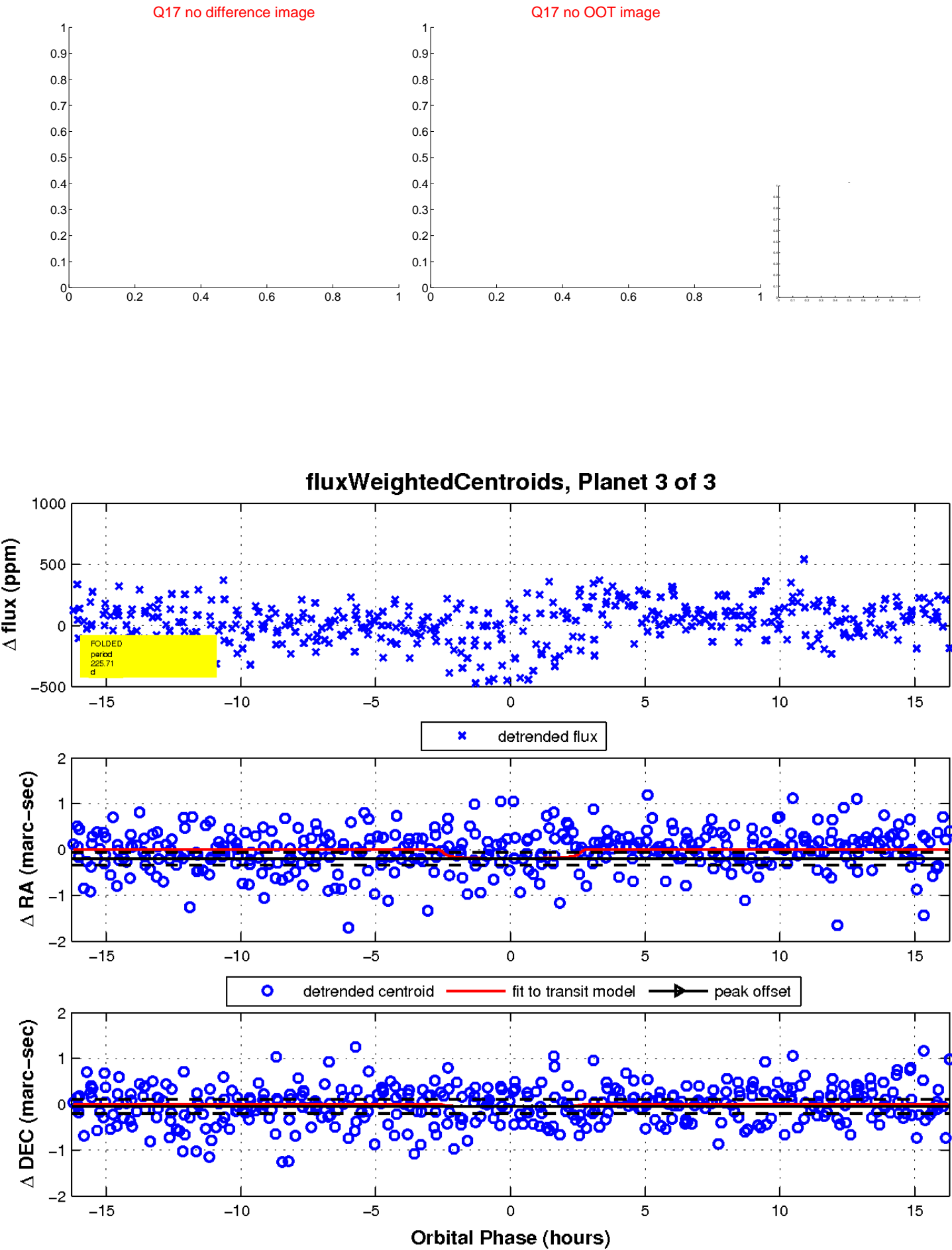
Q12 no OOT image



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



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



UKIRT Image

Declination

