

KIC 005441030

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})
005441030-01	OBS	No	515.297005	347.164687	996.0	22.279	7.9	7.8	0.81	5944	3.19	0.51
005441030-02	OBS	No	480.359304	188.415364	437.7	18.498	7.4	7.5	0.81	5944	1.77	0.56

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005441030-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—CENT_FEW_DIFFS
005441030-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

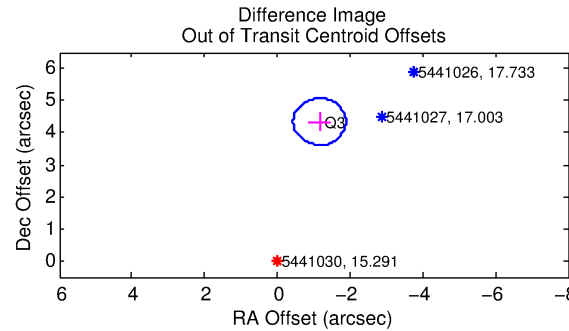
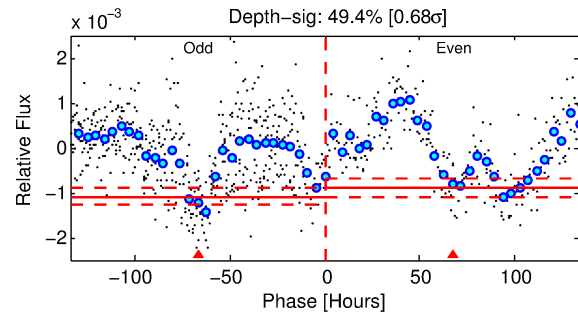
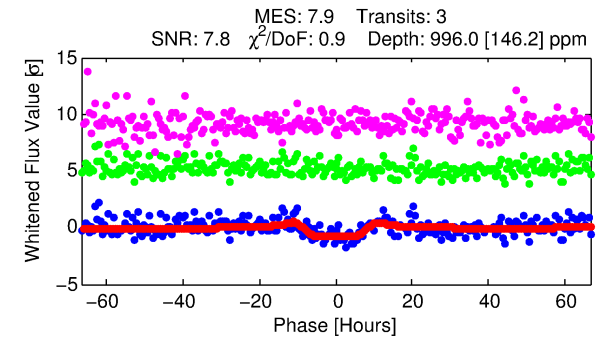
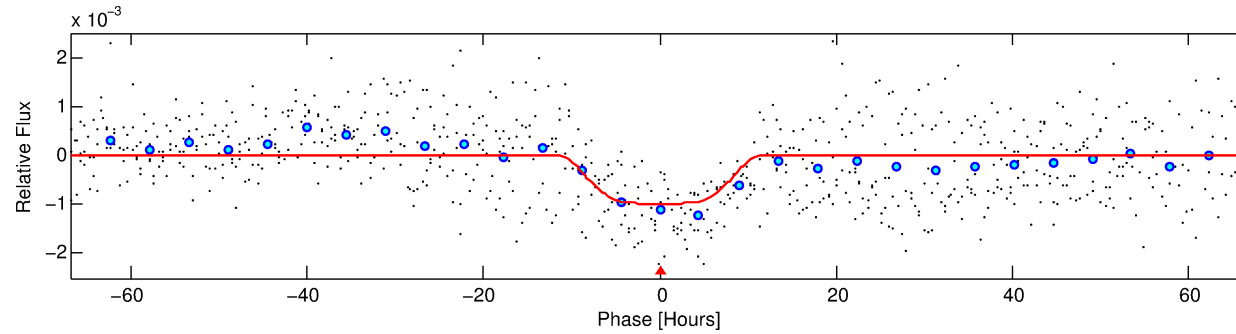
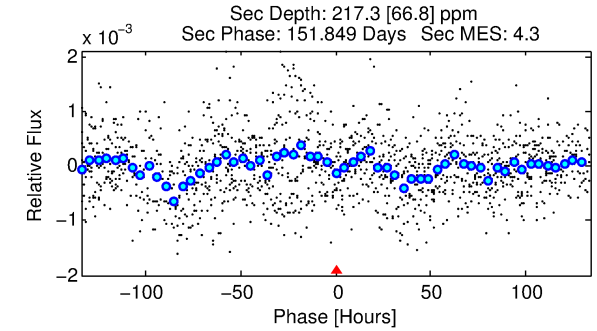
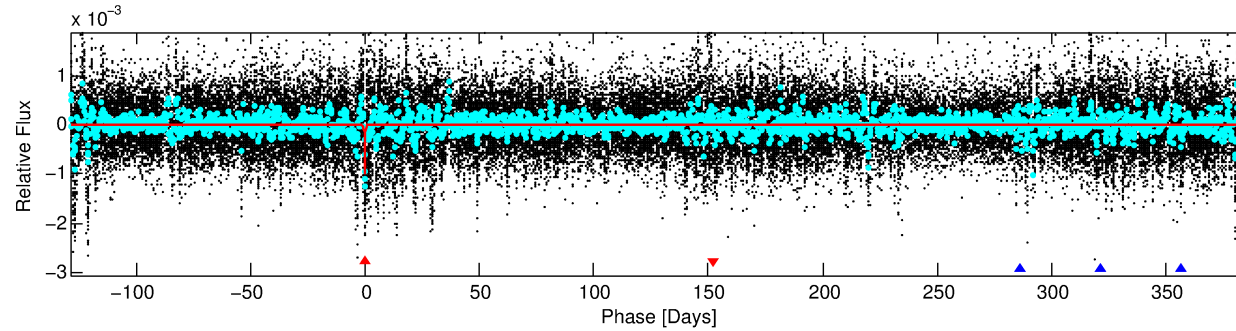
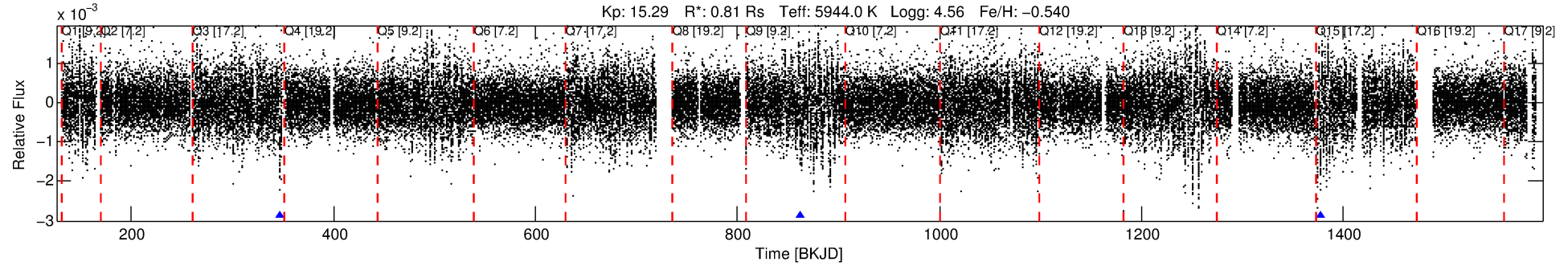
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005441030-01

No Significant Match Found

DV One-Page Summary

KIC: 5441030 Candidate: 1 of 2 Period: 515.297 d



DV Fit Results:

Period = 515.29700 [0.02777] d
Epoch = 347.1647 [0.0345] BKJD
Rp/R* = 0.0360 [0.0032]
a/R* = 74.34 [12.60]
b = 0.95 [0.02]
Seff = 0.51 [0.18]
Teq = 216 [19] K
Rp = 3.19 [0.90] Re
a = 1.2017 [0.2738] AU
Ag = 16919.81 [8250.80] [2.05σ]
Teff = 3803 [356] K [10.06σ]

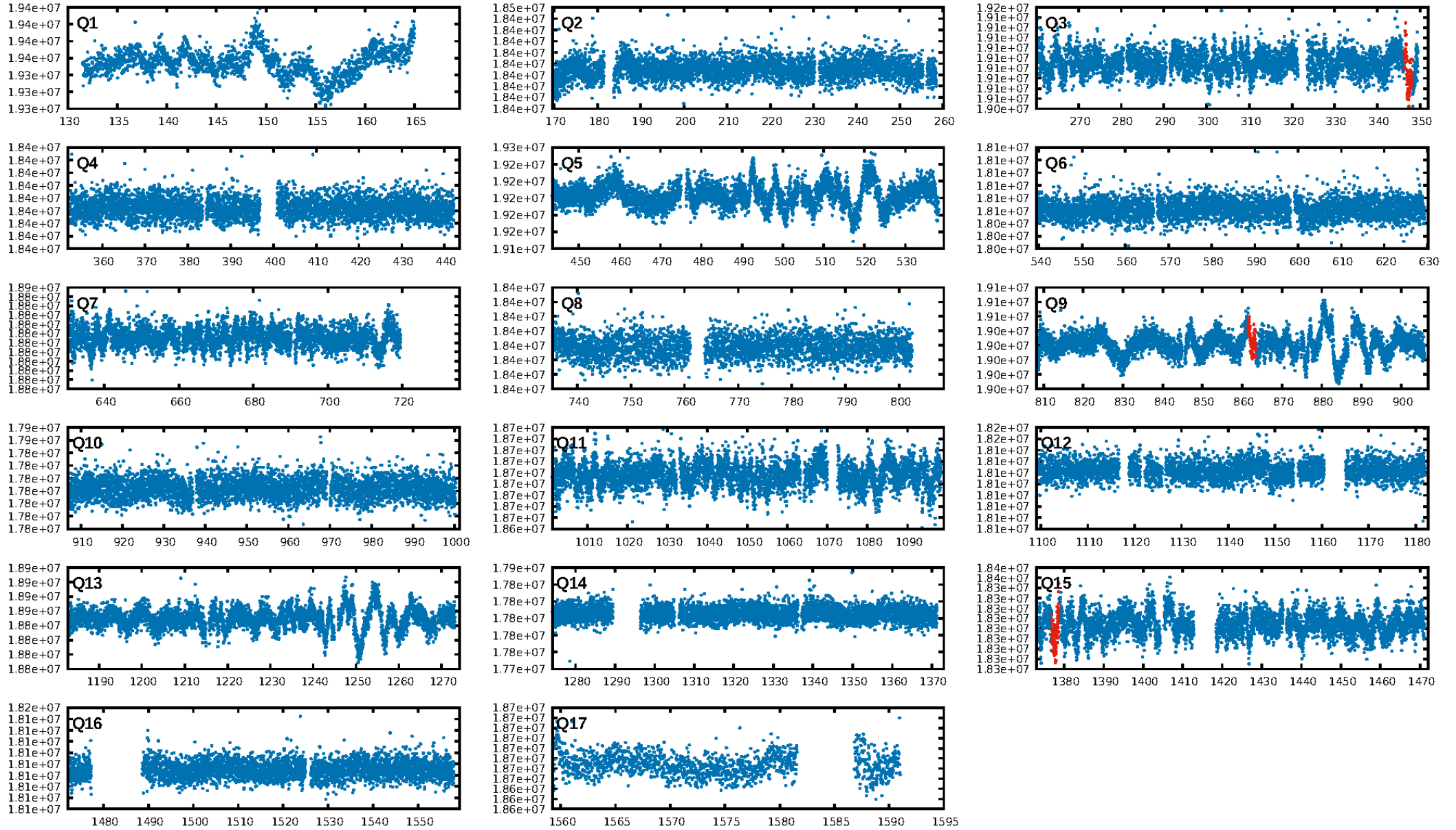
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [28.96σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 43.4%
ModelChiSquareGoF-sig: 100.0%
Bootstrap-pfa: 1.19e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 1.201
Centroid-sig: 18.7%
Centroid-so: 2.568 arcsec [1.06σ]
OotOffset-rm: 4.489 arcsec [18.55σ]
KicOffset-rm: 4.327 arcsec [17.87σ]
OotOffset-st: 0/1/0/0 [1]
KicOffset-st: 0/1/0/0 [1]
DiffImageQuality-fgm: 1.00 [1/1]
DiffImageOverlap-fno: 1.00 [3/3]

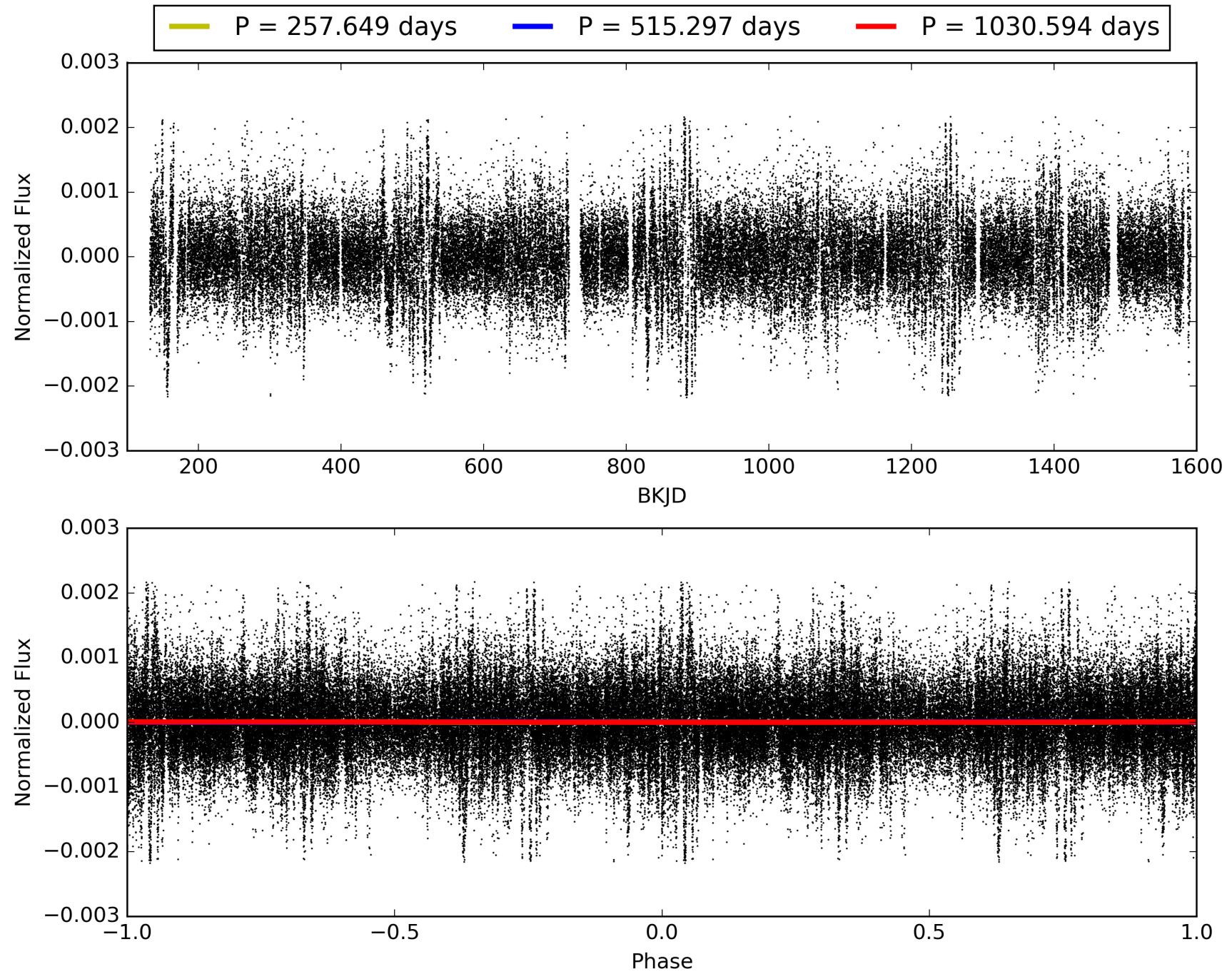
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:06:32 Z

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

TCE 005441030-01, PDC Light Curves

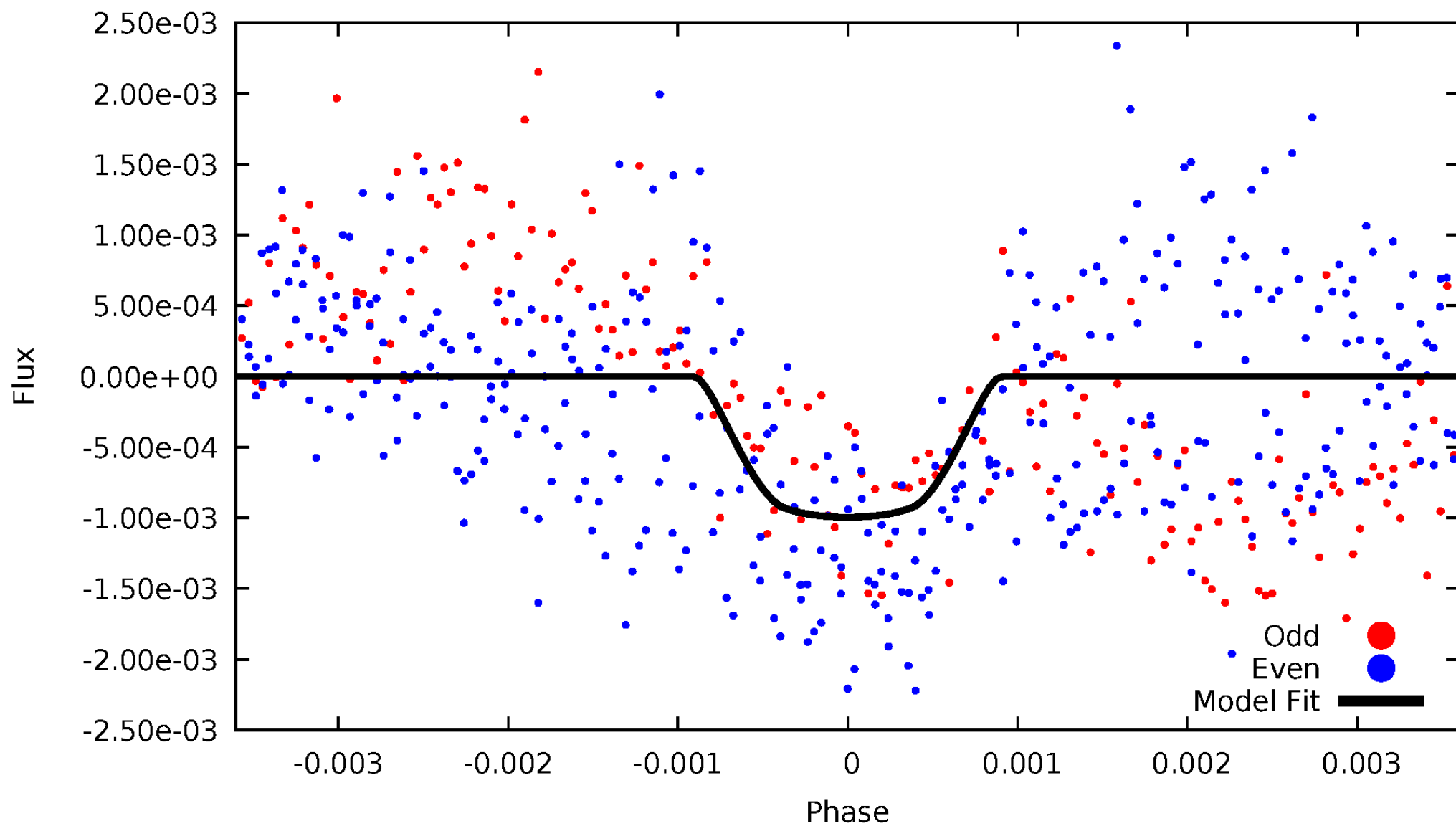


TCE 005441030-01



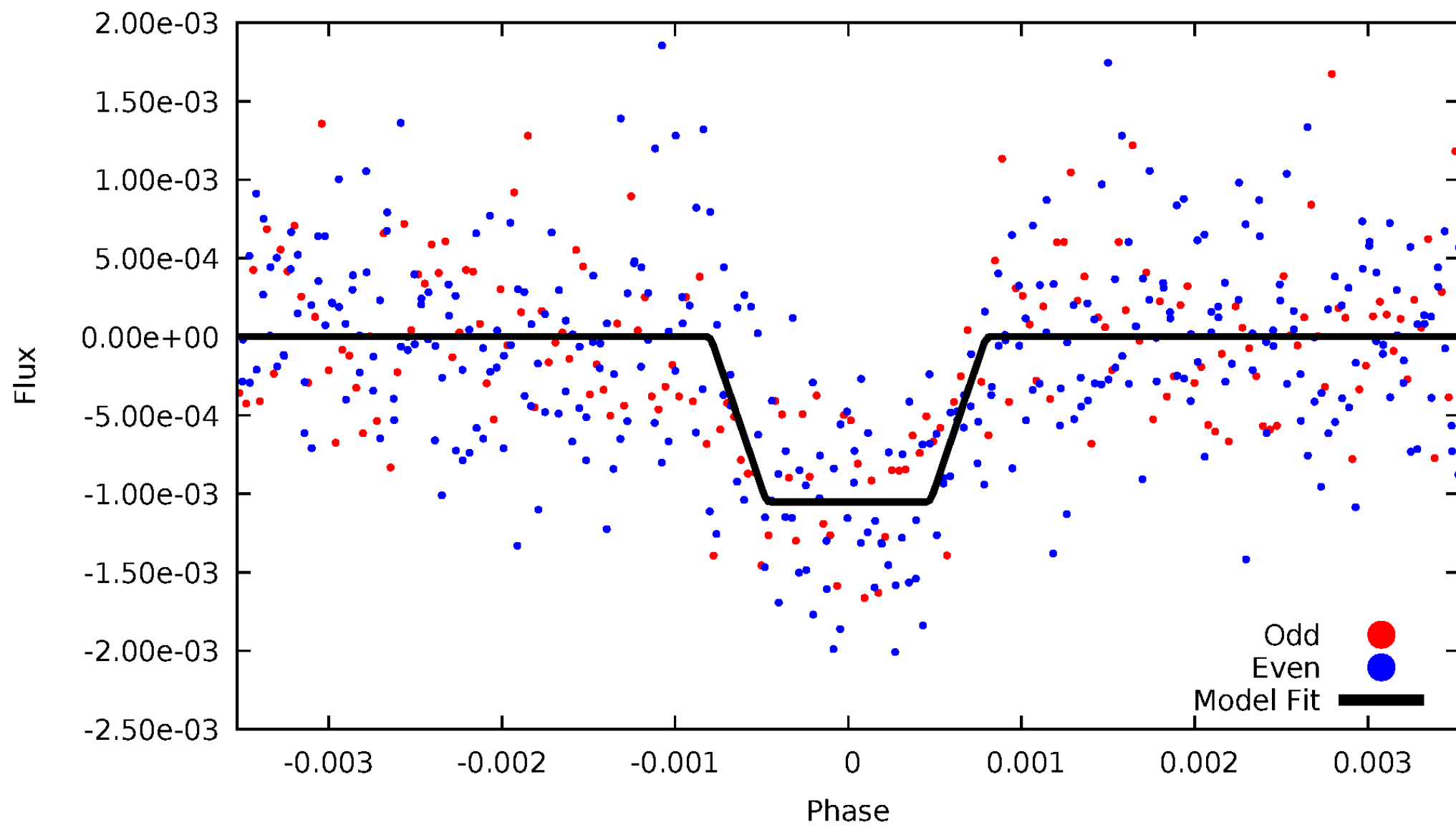
DV Odd/Even

TCE 005441030-01



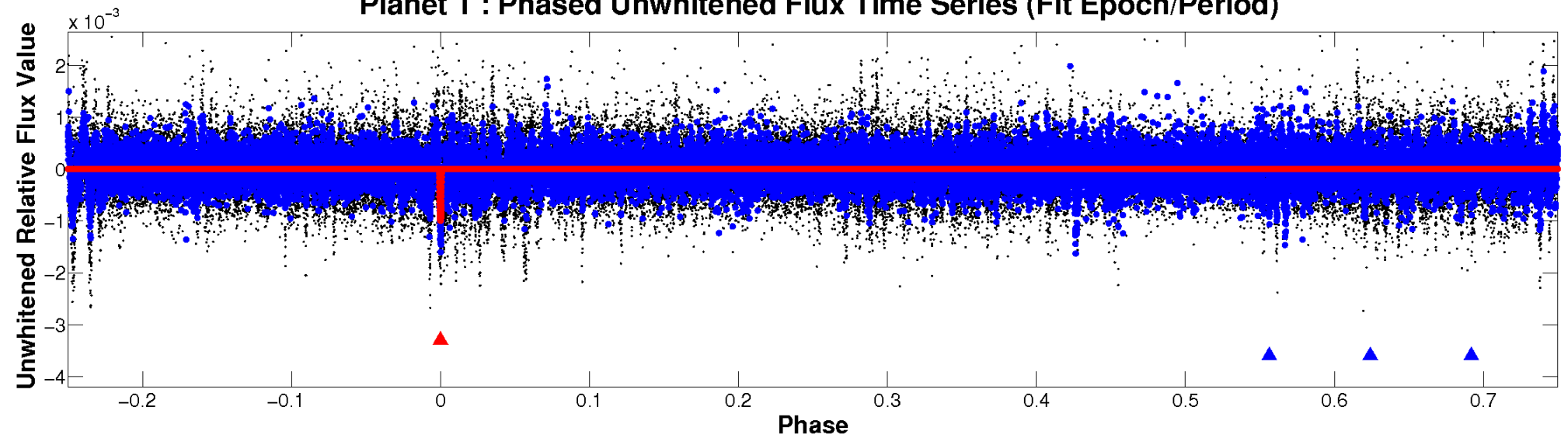
ALT Odd/Even

TCE 005441030-01

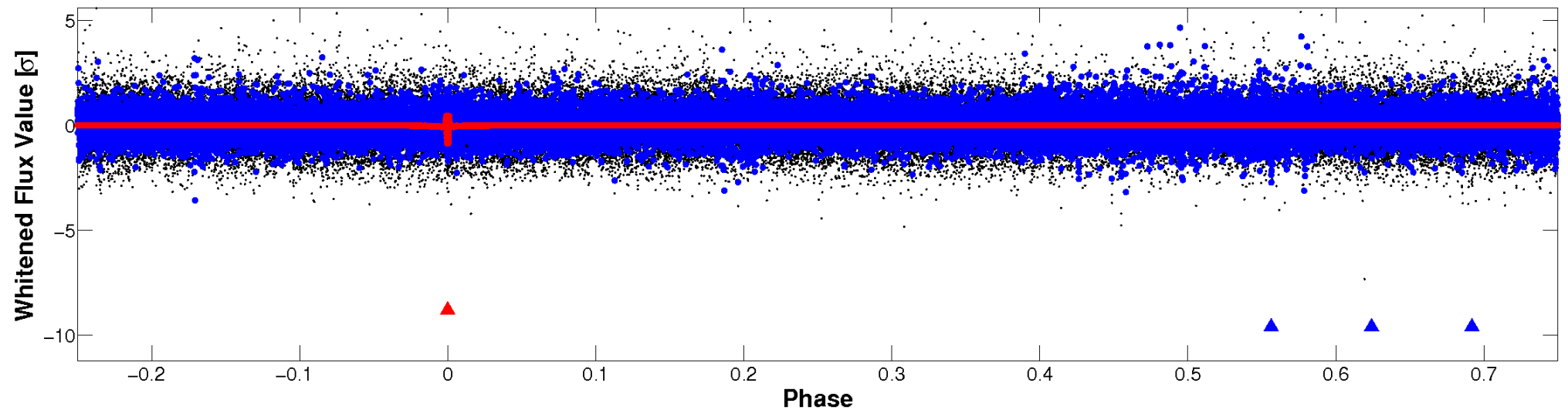


Non-Whitened Vs. Whitened Light Curve

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

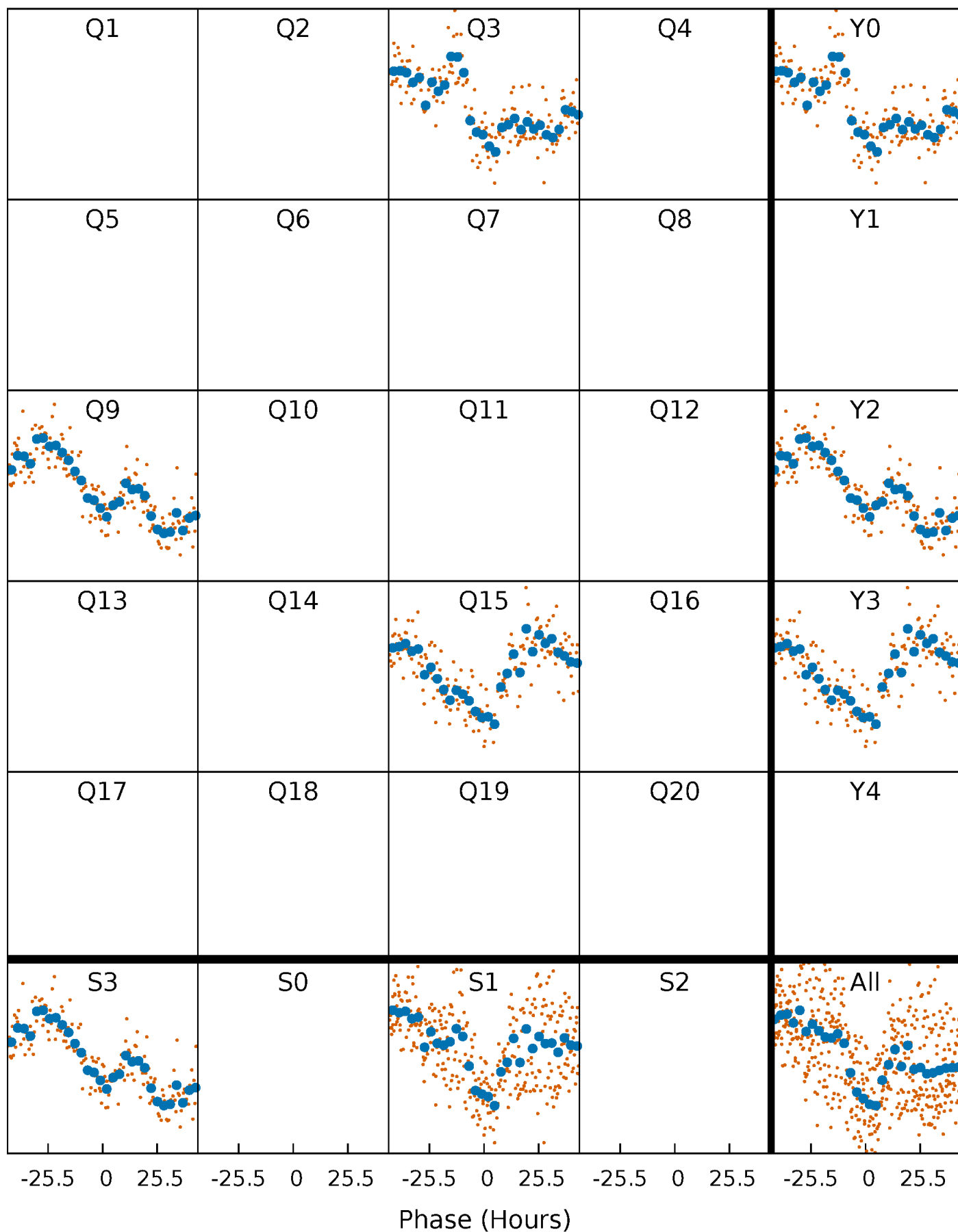


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



PDC Quarter-Phased Transit Curves

TCE 005441030-01 P=515.297005 Days $T_0=347.164687$ (BKJD)



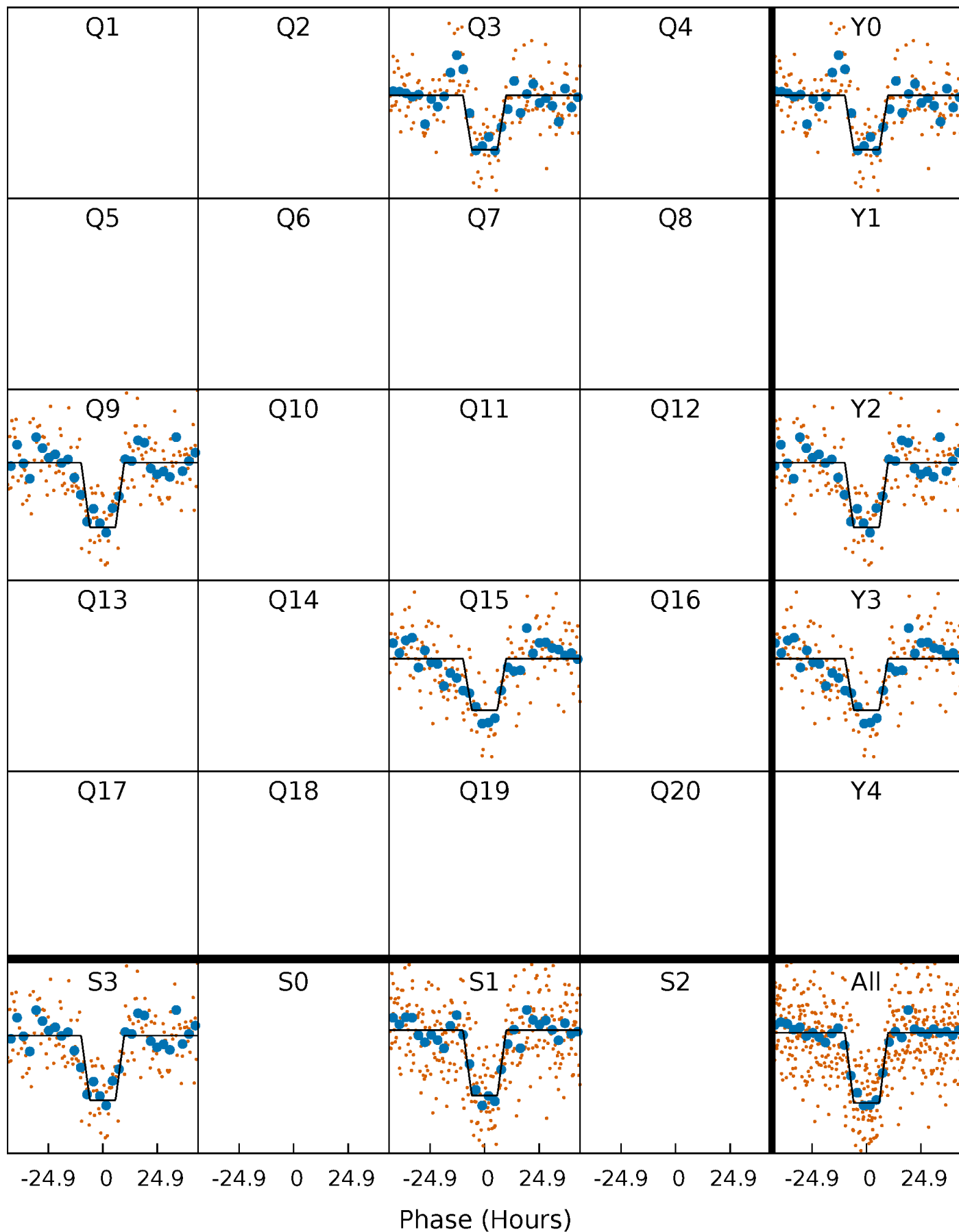
DV Quarter-Phased Transit Curves

TCE 005441030-01 P=515.297005 Days $T_0=347.164687$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

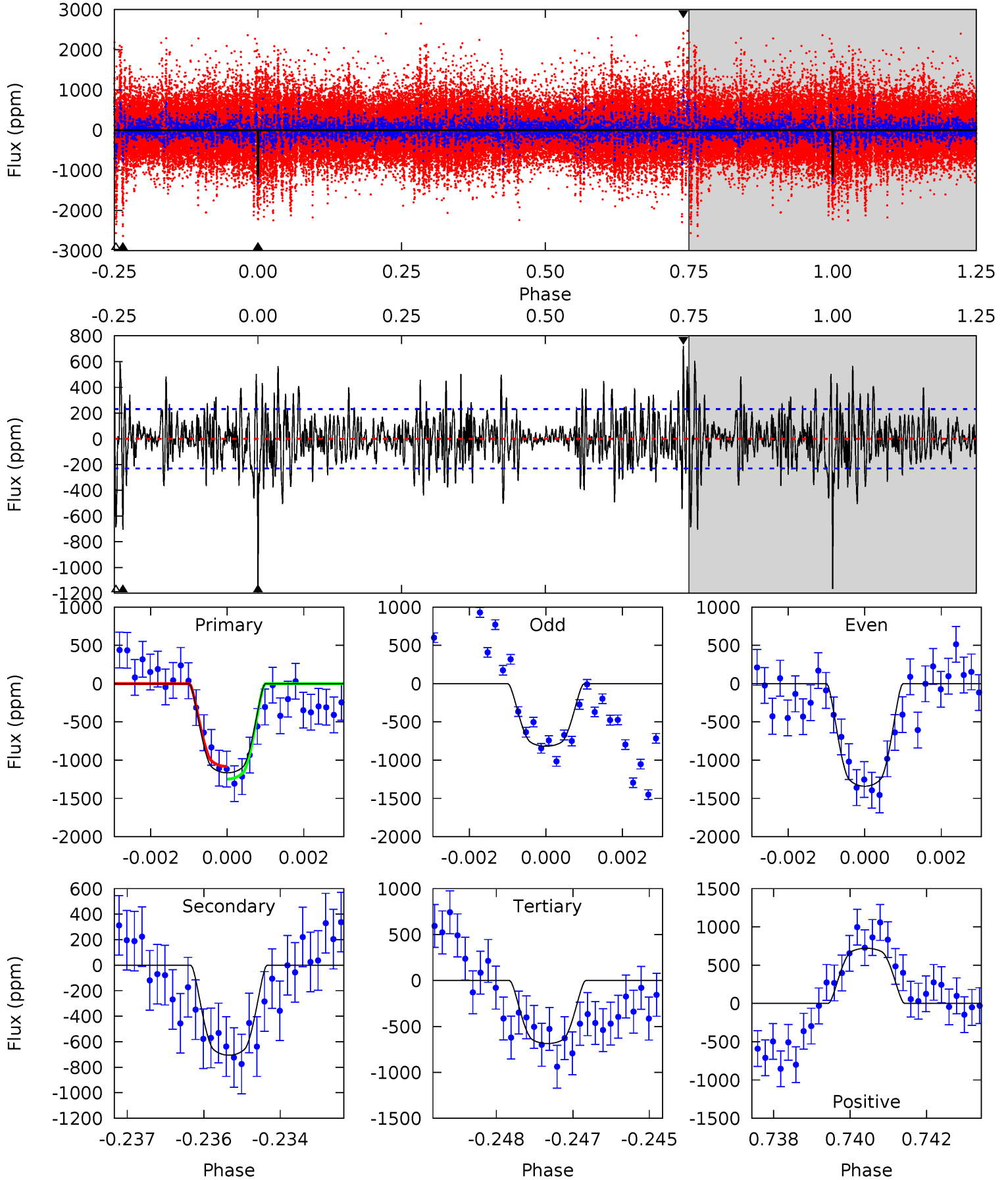
TCE 005441030-01 P=515.327572 Days $T_0=347.148139$ (BKJD)



DV Model-Shift Uniqueness Test

005441030-01, P = 515.297005 Days, E = 347.164687 Days

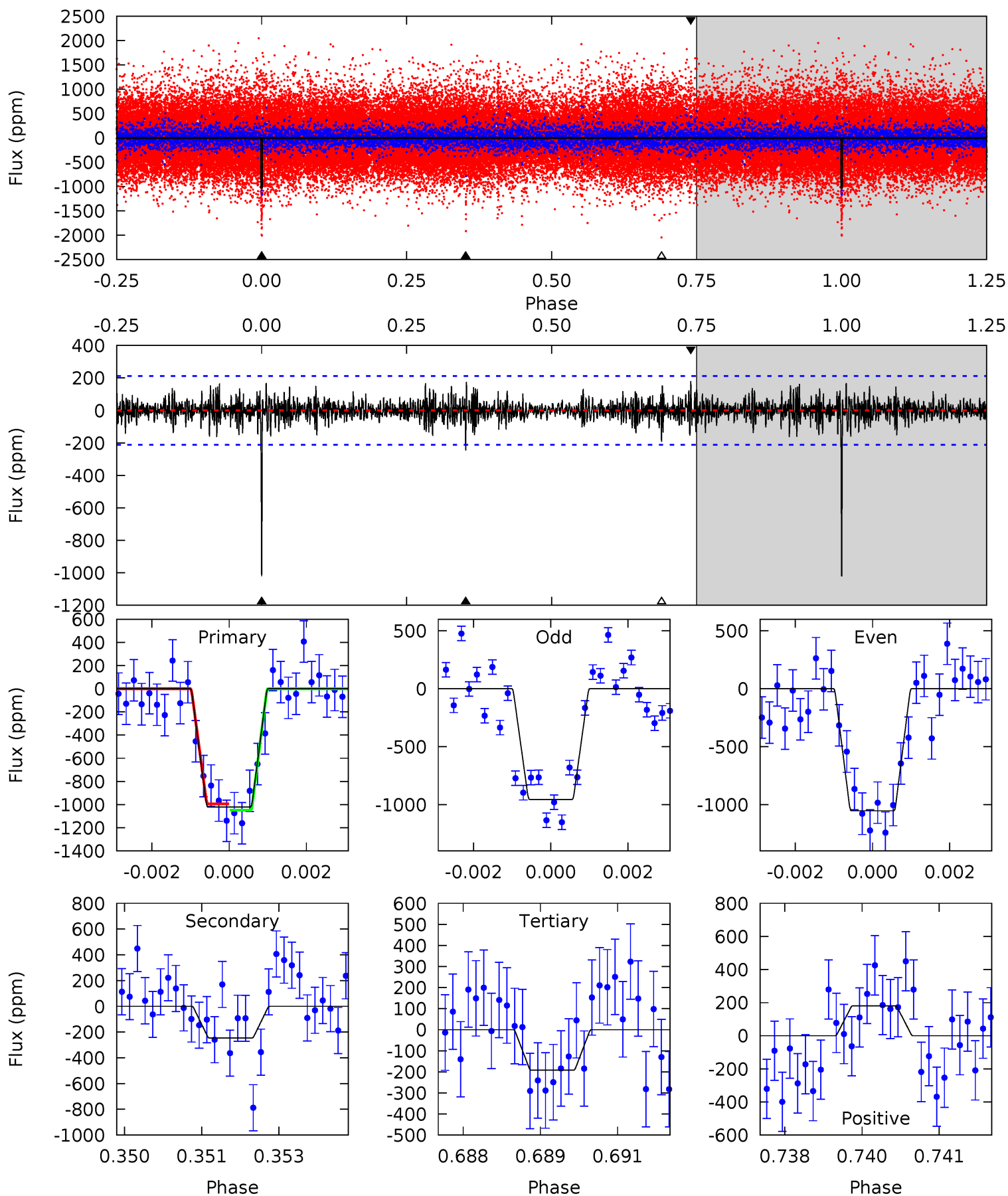
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
27.0	16.3	15.9	16.7	5.34	3.12	3.67	11.1	10.3	0.44	-0.35	5.75	0.95	0.38	1.90



Alt Model-Shift Uniqueness Test

005441030-01, P = 515.327572 Days, E = 347.148139 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
25.9	6.22	4.85	4.56	5.36	3.15	1.16	21.0	21.3	1.37	1.66	1.17	1.07	0.15	0.69



Stellar Parameters For KIC 005441030

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5944^{+159}_{-177}	$4.558^{+0.046}_{-0.184}$	$-0.540^{+0.300}_{-0.300}$	$0.813^{+0.218}_{-0.073}$	$0.871^{+0.088}_{-0.088}$	$2.286^{+0.533}_{-1.122}$
	+3%/-3%	+1%/-4%	+56%/-56%	+27%/-9%	+10%/-10%	+23%/-49%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005441030-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-705 ± 43	$3.32^{+0.52}_{-0.40}$	306^{+20}_{-13}	5148^{+277}_{-217}	50042^{+14887}_{-12455}
Alt.	-246 ± 39	$3.00^{+0.51}_{-0.40}$	307^{+22}_{-13}	4366^{+230}_{-212}	21685^{+7747}_{-6239}

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

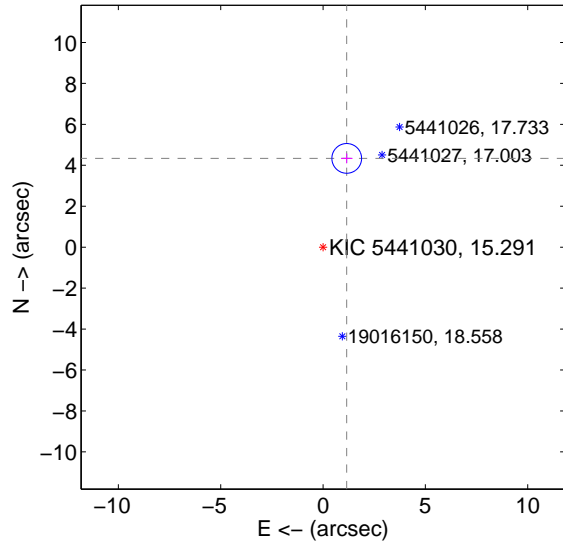
Supplemental centroid analysis for 005441030-01. Kepler magnitude: 15.29. Transit SNR 7.81

There are 1 quarters with good PRF difference image offsets

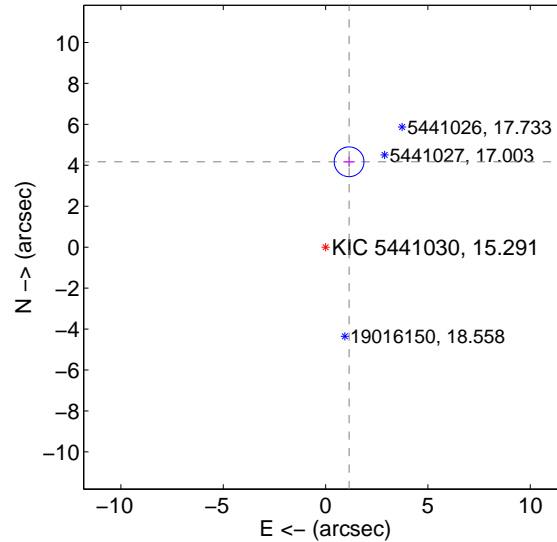
The direct PRF centroid is offset from the target star catalog position by about 0.17 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	4.489 \pm 0.242	18.55	-1.157 \pm 0.276	4.338 \pm 0.239
PRF-fit source offset from KIC position	4.327 \pm 0.242	17.87	-1.148 \pm 0.276	4.172 \pm 0.239
photometric centroid source offset	2.57 \pm 2.43	1.06	-1.52 \pm 2.26	-2.07 \pm 2.51

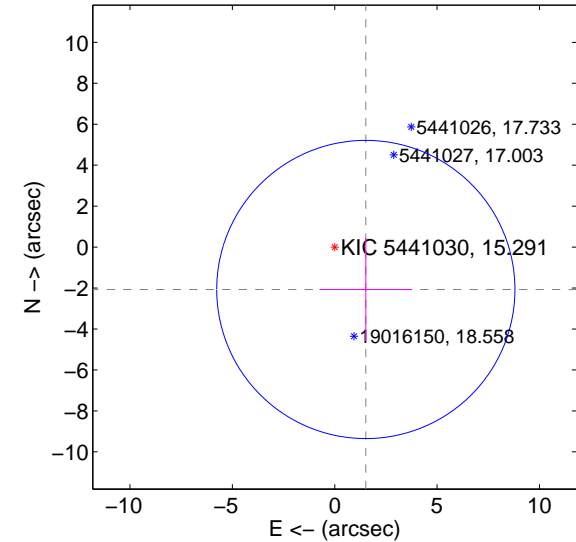
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

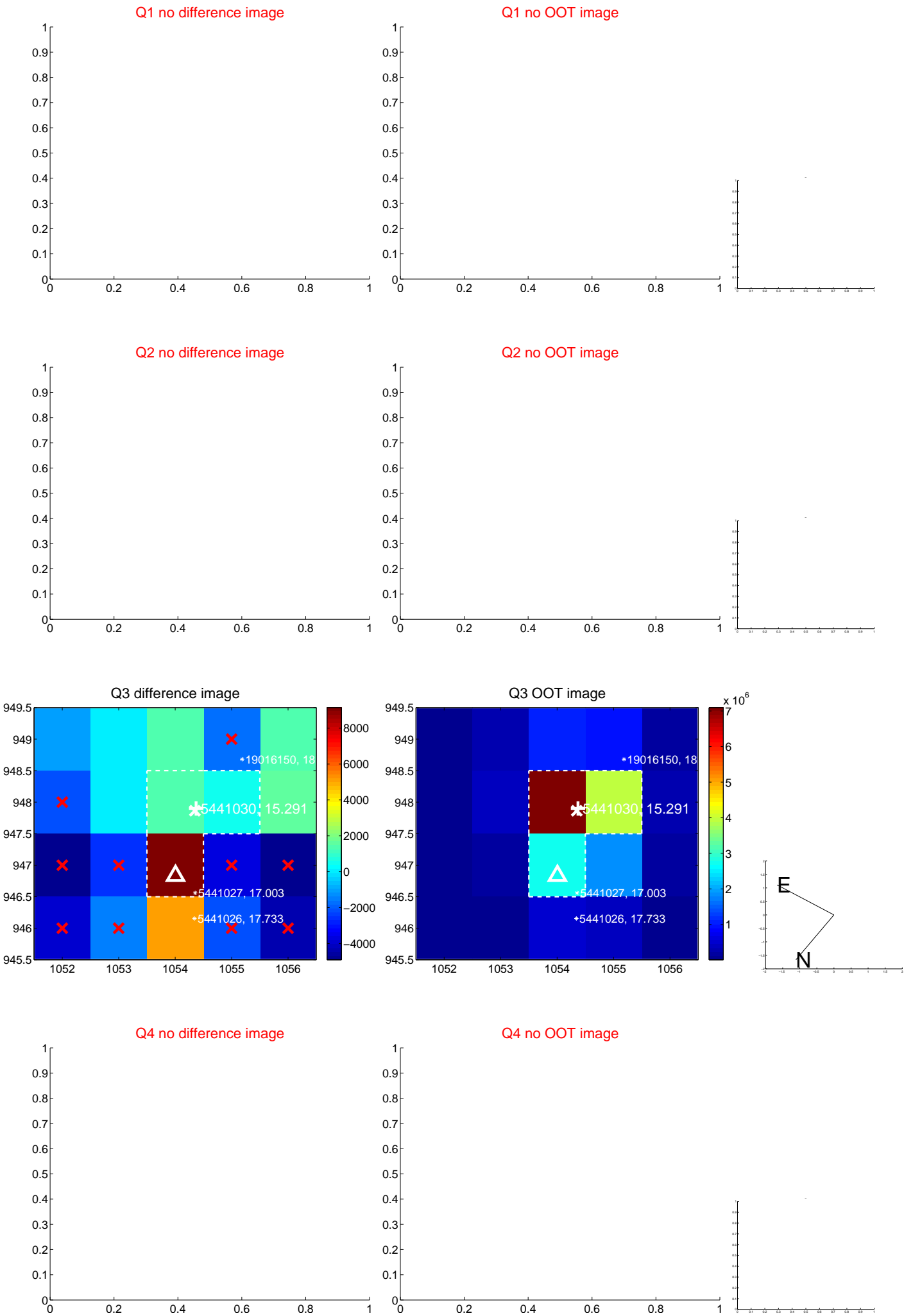


offset from photometric centroids



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.

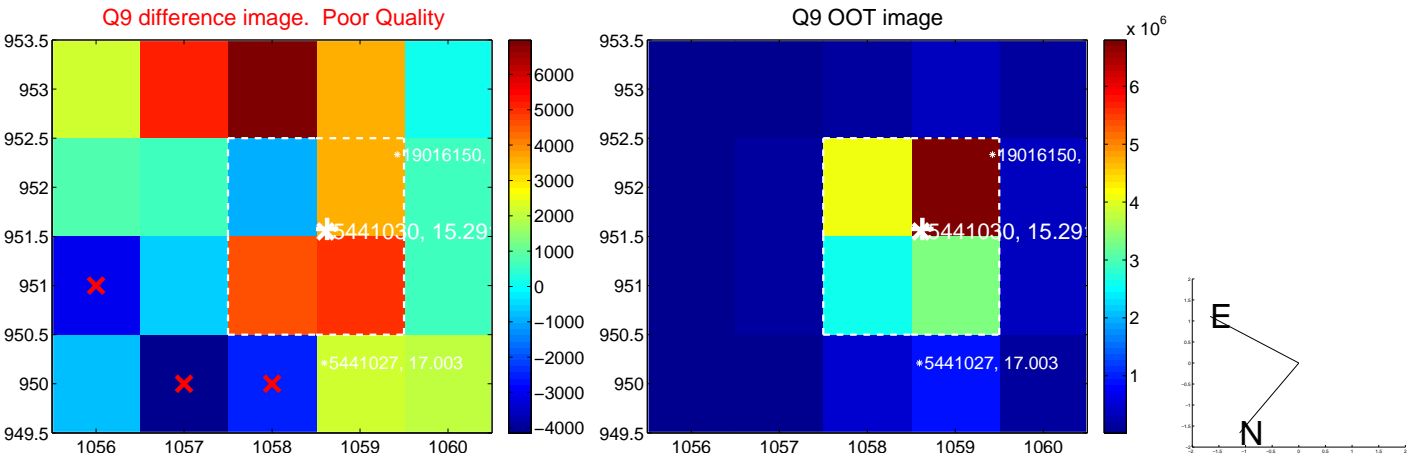
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



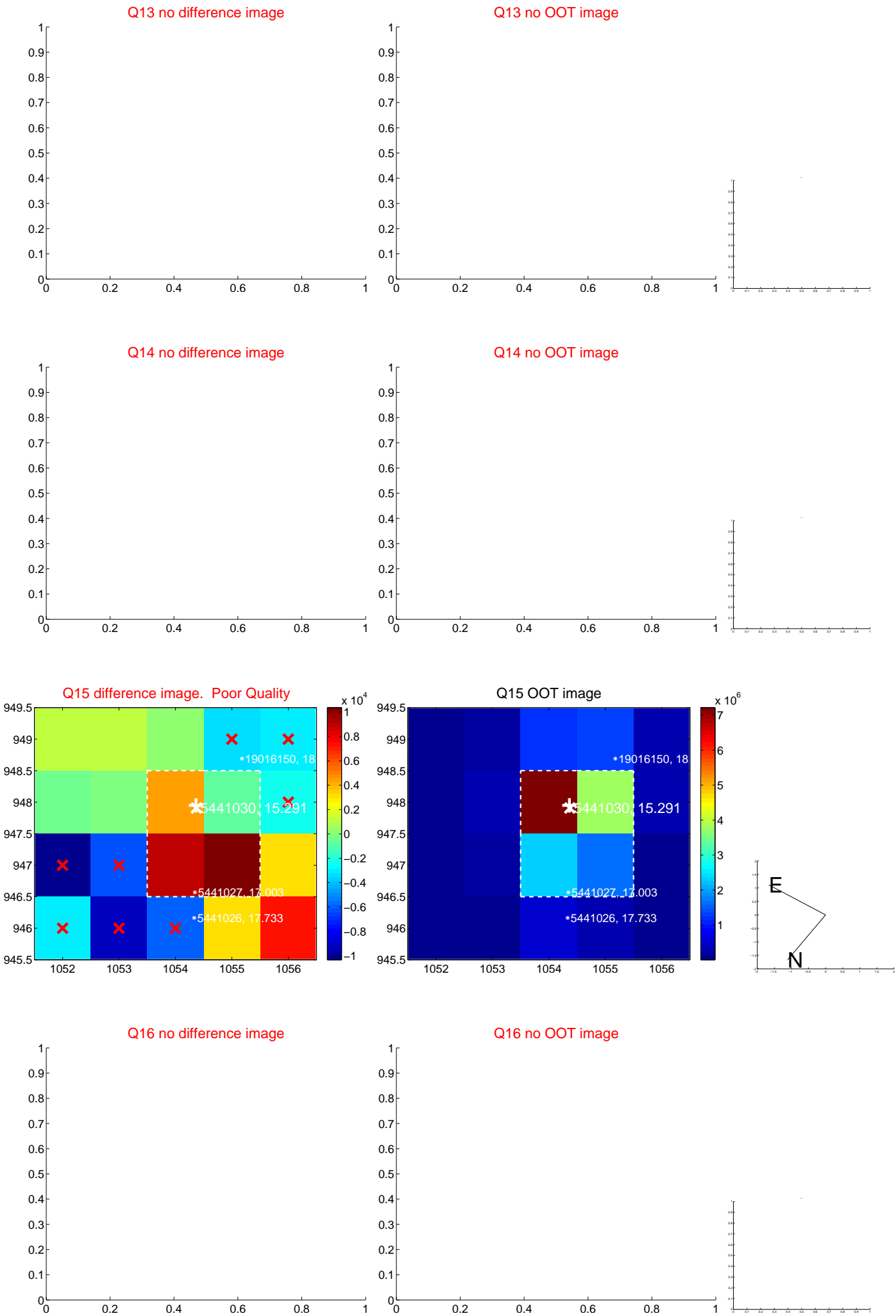
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



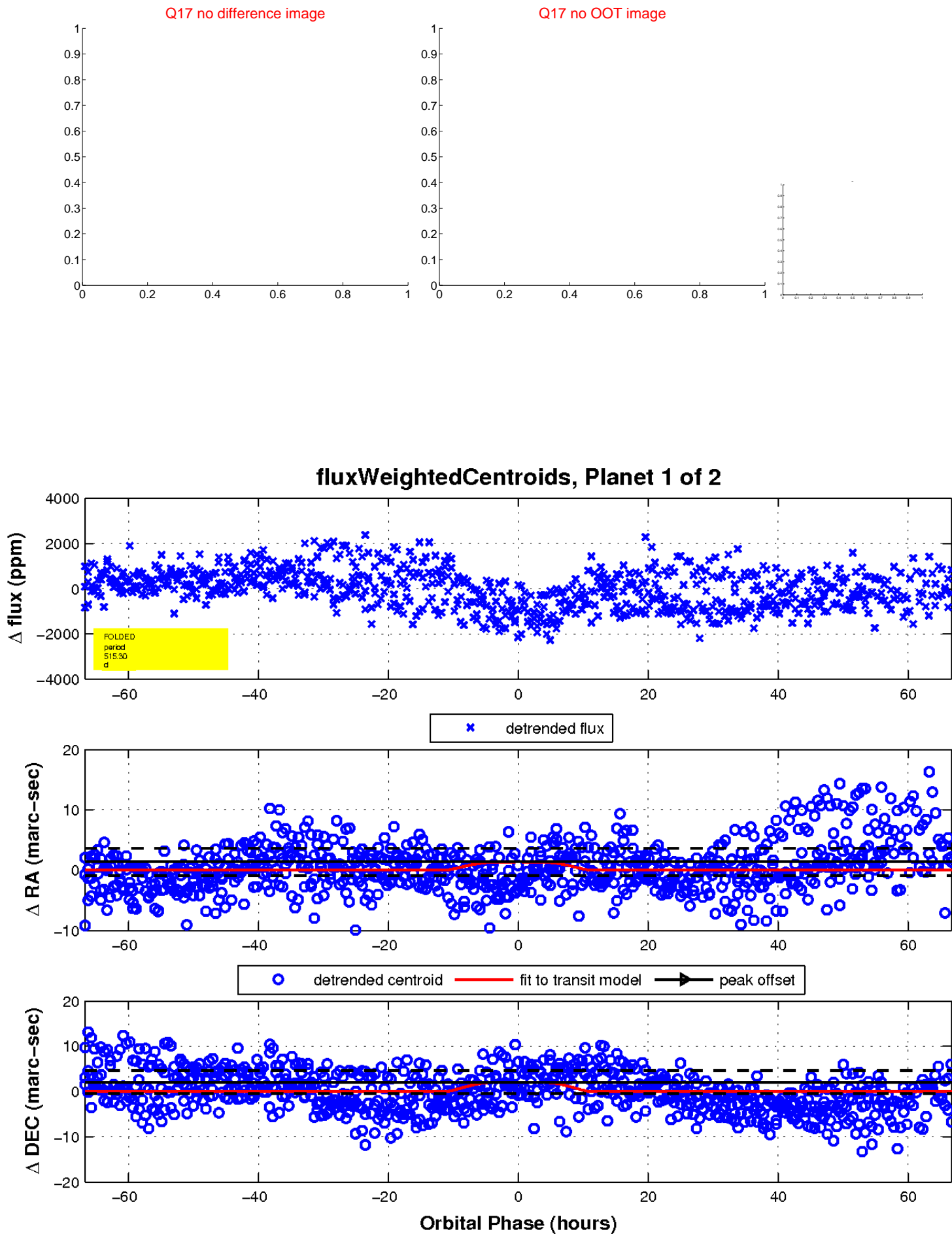
white ×: KIC target position; +: OOT centroid; △: difference centroid. red ×: large negative pixel value.



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

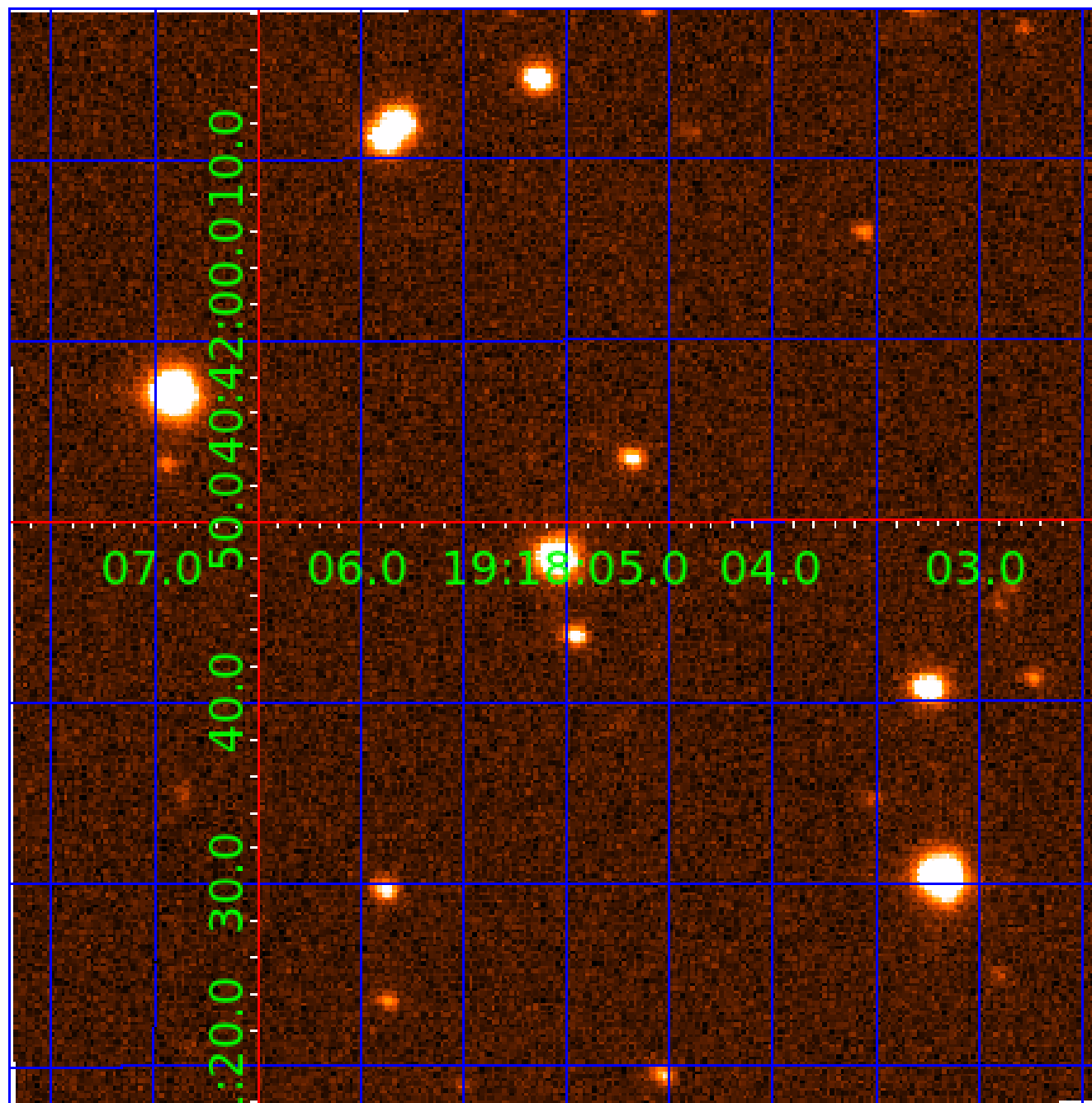


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005441030

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})
005441030-01	OBS	No	515.297005	347.164687	996.0	22.279	7.9	7.8	0.81	5944	3.19	0.51
005441030-02	OBS	No	480.359304	188.415364	437.7	18.498	7.4	7.5	0.81	5944	1.77	0.56

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005441030-01	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL_SKYE—CENT_FEW_DIFFS
005441030-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_MARSHALL—LPP_DV—ALL_TRANS_CHASES—MOD_TER_DV—MOD_POS_DV—INCONSISTENT_TRANS—CENT_FEW_DIFFS

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

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

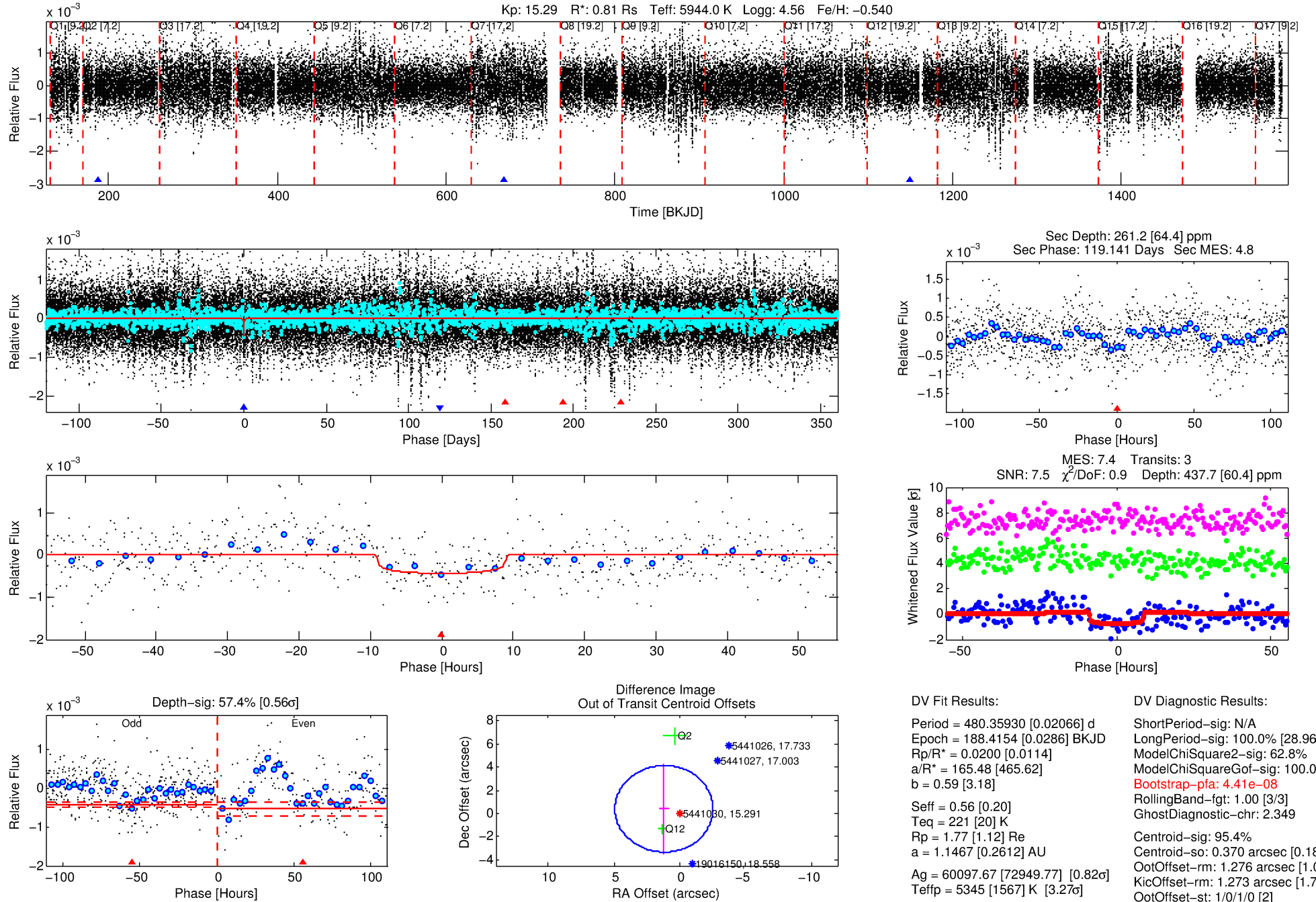
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005441030-02

No Significant Match Found

DV One-Page Summary

KIC: 5441030 Candidate: 2 of 2 Period: 480.359 d



DV Fit Results:

Period = 480.35930 [0.02066] d
Epoch = 188.4154 [0.0286] BKJD
Rp/R* = 0.0200 [0.0114]
a/R* = 165.48 [465.62]
b = 0.59 [3.18]
Seff = 0.56 [0.20]
Teq = 221 [20] K
Rp = 1.77 [1.12] Re
a = 1.1467 [0.2612] AU
Ag = 60097.67 [72949.77] [0.82σ]
Teffp = 5345 [1567] K [3.27σ]

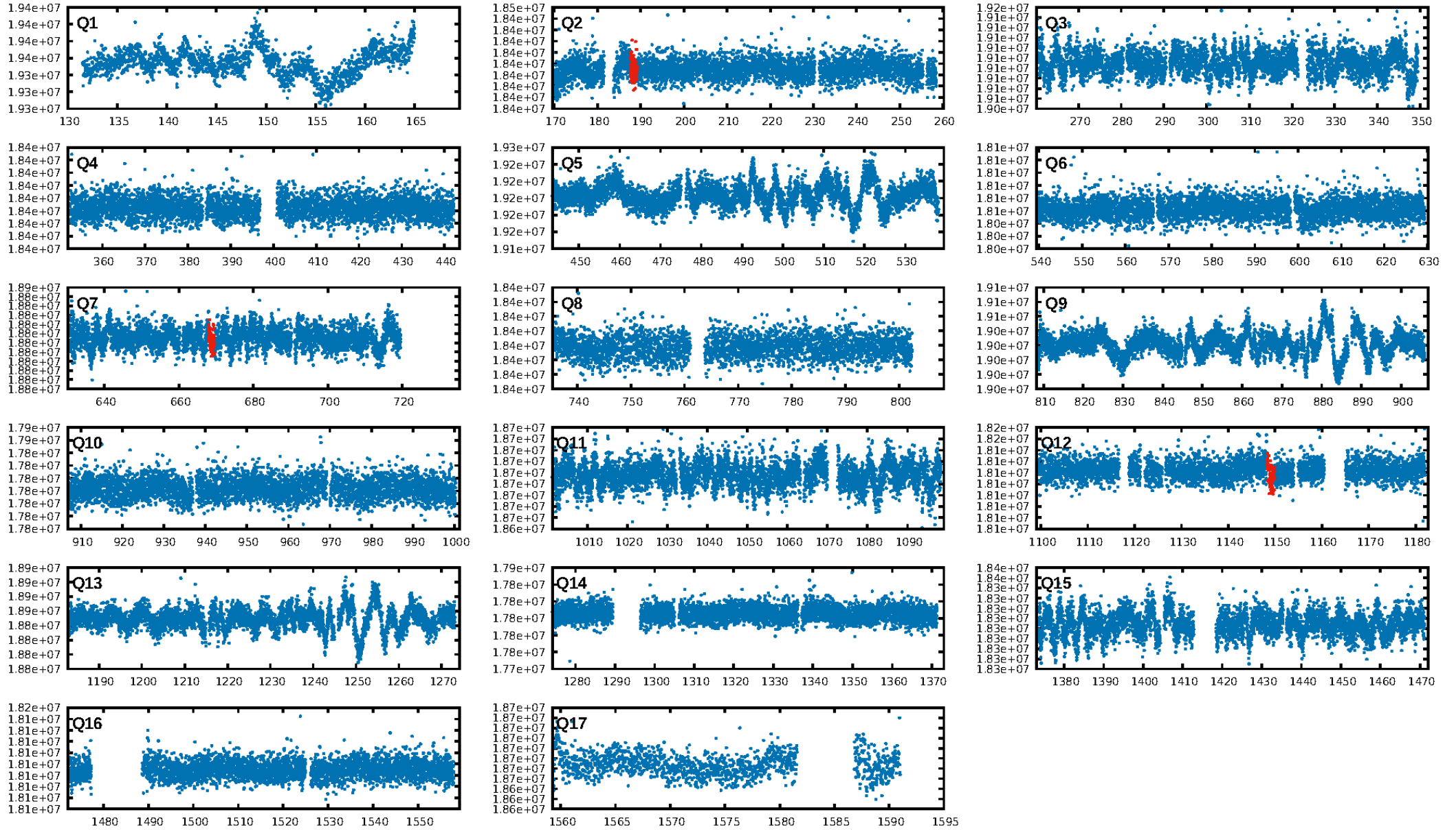
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [28.96σ]
ModelChiSquare2-sig: 62.8%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 4.41e-08
RollingBand-fgt: 1.00 [3/3]
GhostDiagnostic-chr: 2.349
Centroid-sig: 95.4%
Centroid-so: 0.370 arcsec [0.18σ]
OotOffset-rm: 1.276 arcsec [1.03σ]
OotOffset-st: 1/0/1/0 [2]
KicOffset-rm: 1.273 arcsec [1.70σ]
KicOffset-st: 1/0/1/0 [2]
DiffImageQuality-fgm: 0.50 [1/2]
DiffImageOverlap-fno: 1.00 [3/3]

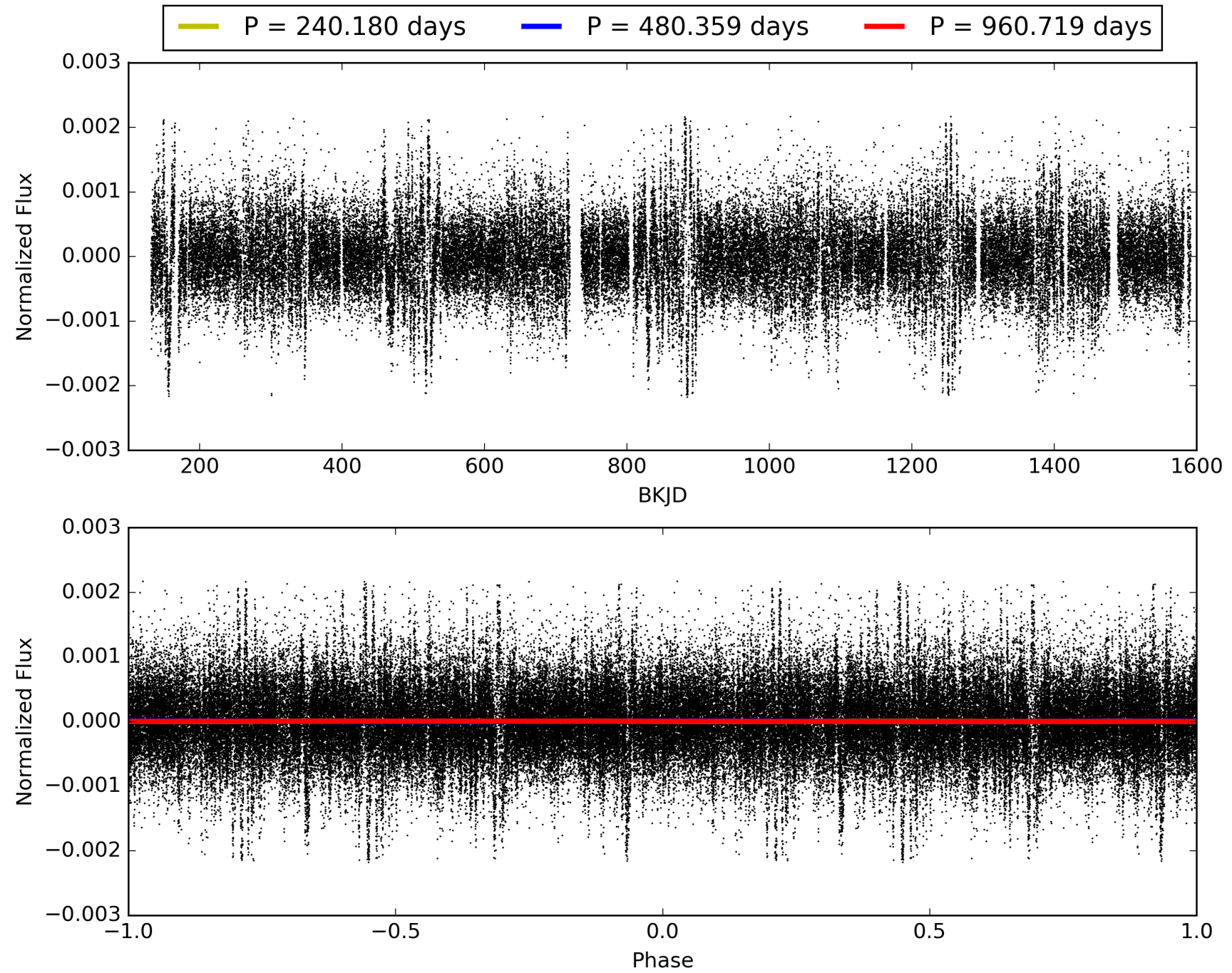
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 20:06:56 Z

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

TCE 005441030-02, PDC Light Curves

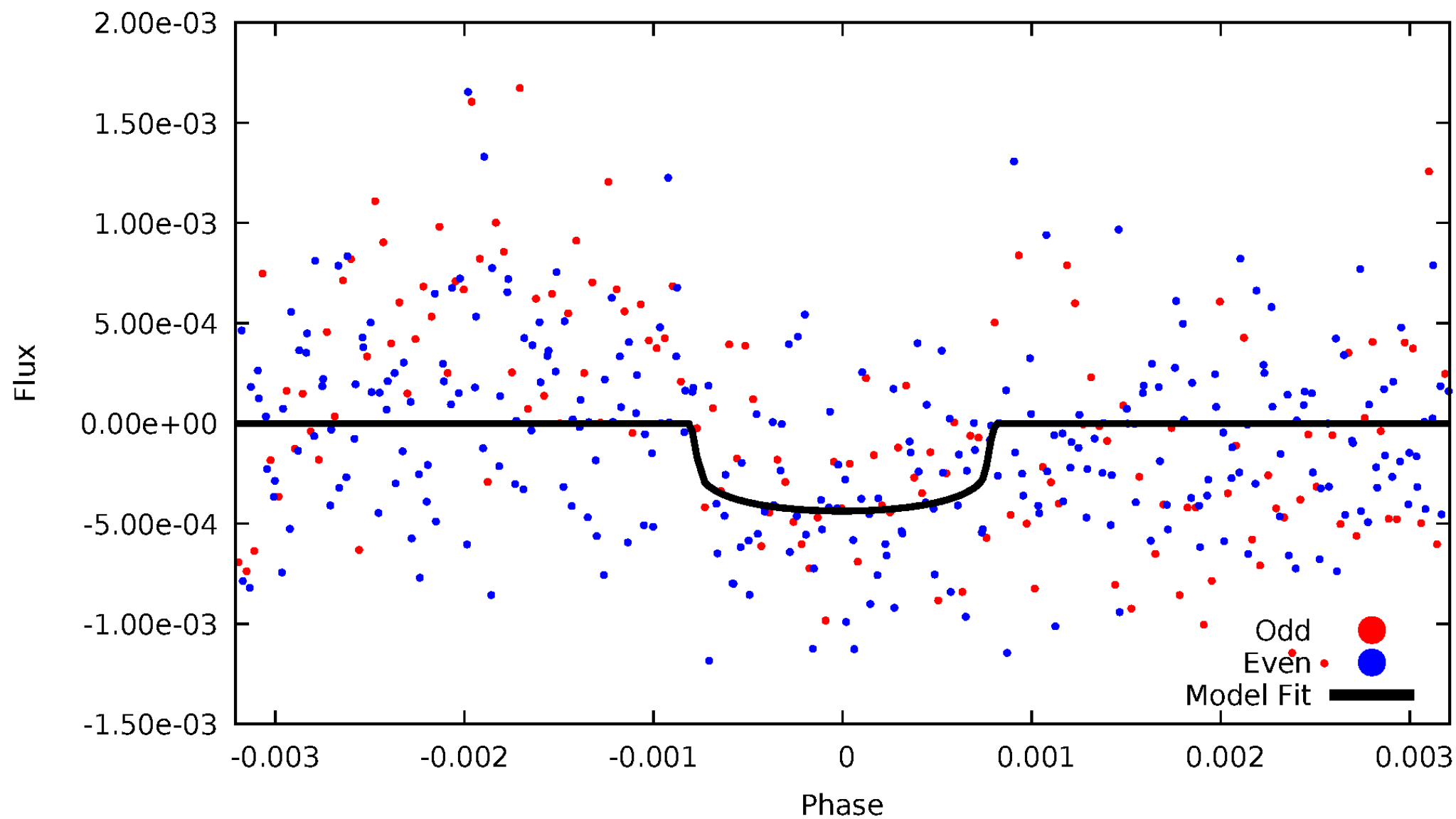


TCE 005441030-02



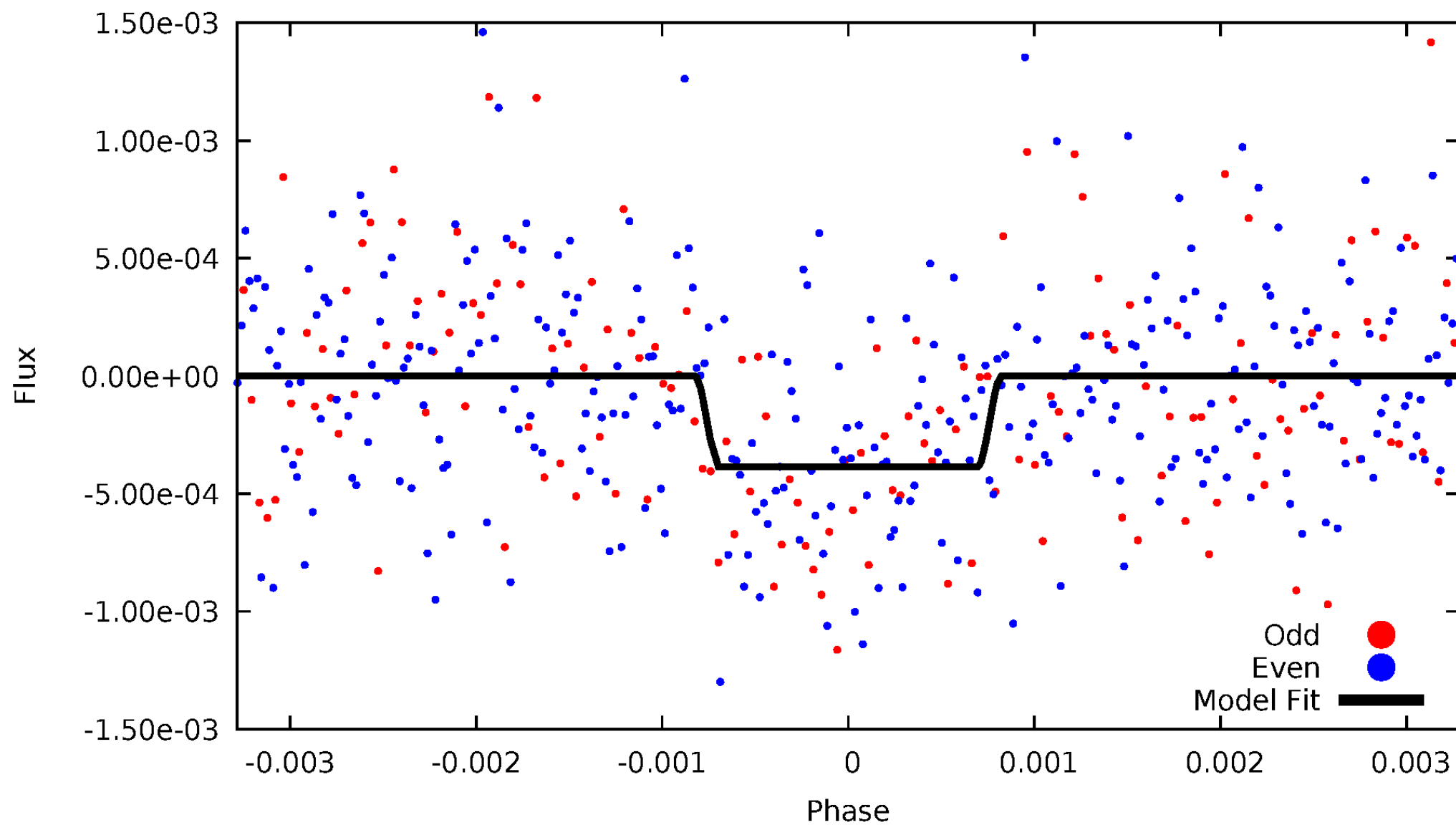
DV Odd/Even

TCE 005441030-02



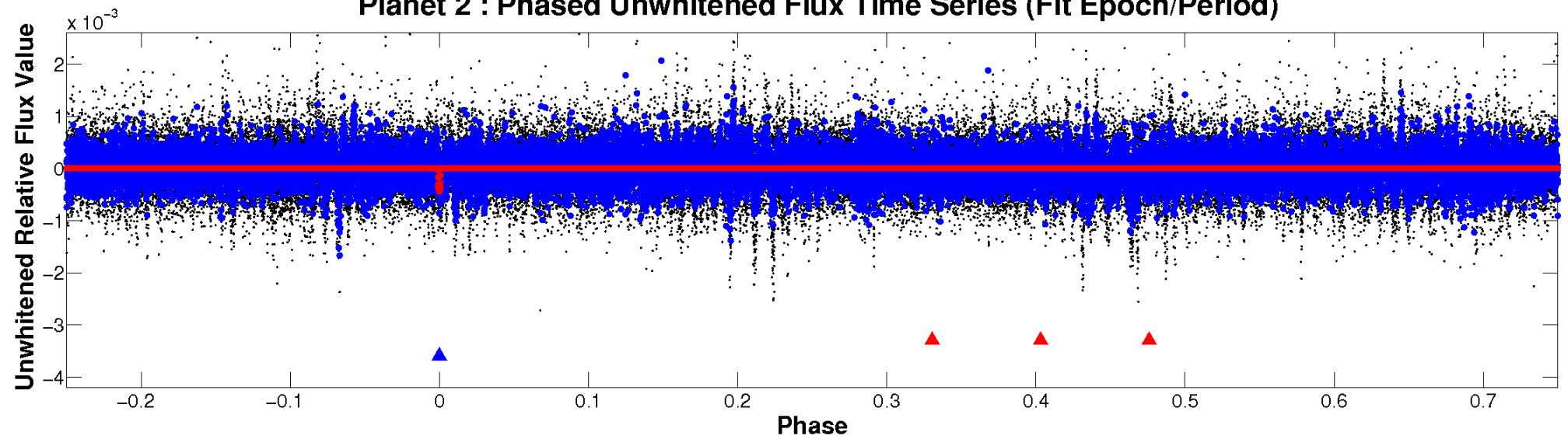
ALT Odd/Even

TCE 005441030-02

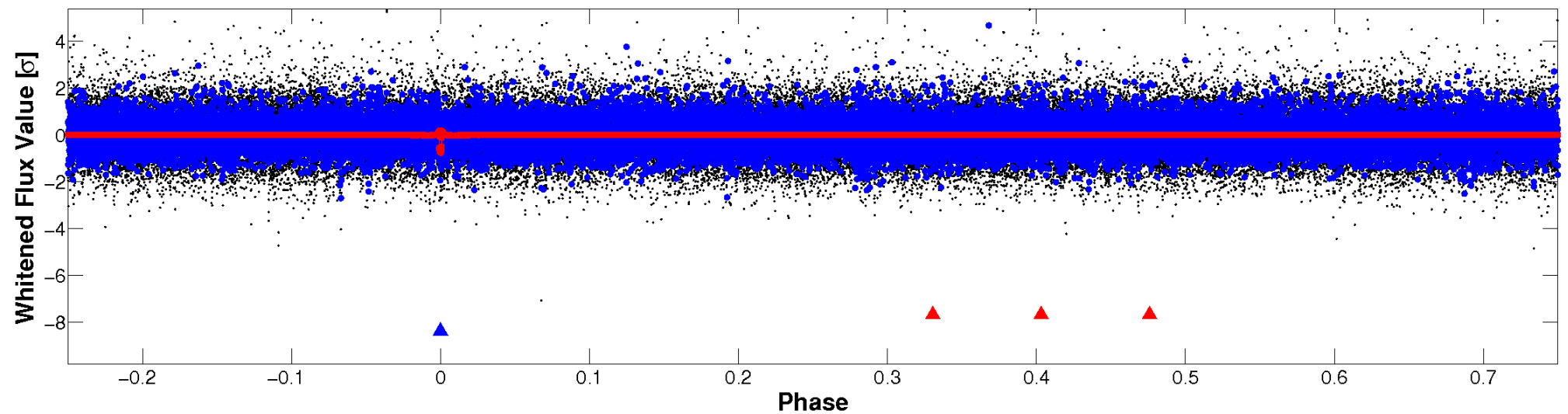


Non-Whitened Vs. Whitened Light Curve

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 005441030-02 $P=480.359304$ Days $T_0=188.415364$ (BKJD)



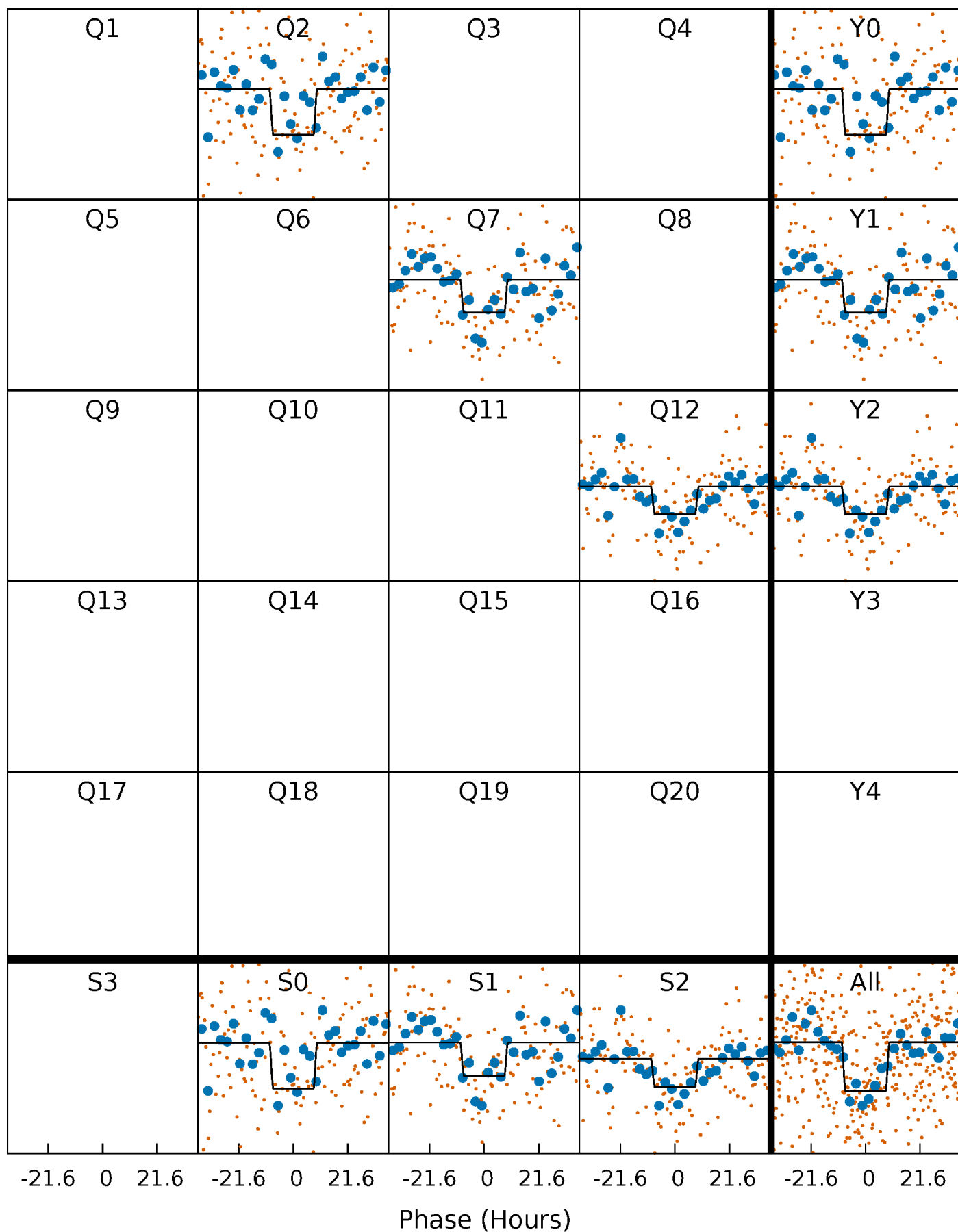
DV Quarter-Phased Transit Curves

TCE 005441030-02 P=480.359304 Days $T_0=188.415364$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

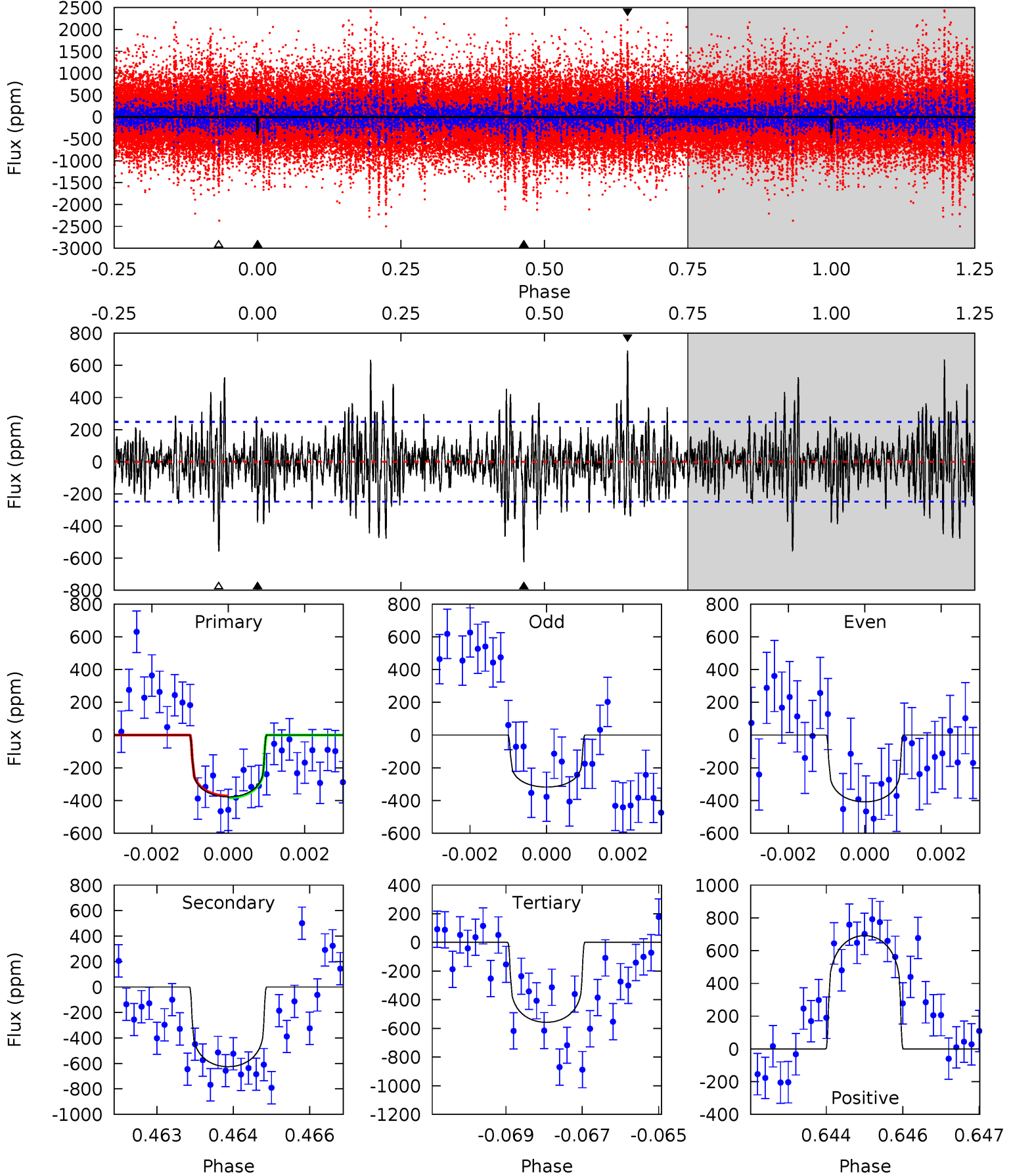
TCE 005441030-02 P=480.365751 Days $T_0=188.394805$ (BKJD)



DV Model-Shift Uniqueness Test

005441030-02, P = 480.359304 Days, E = 188.415364 Days

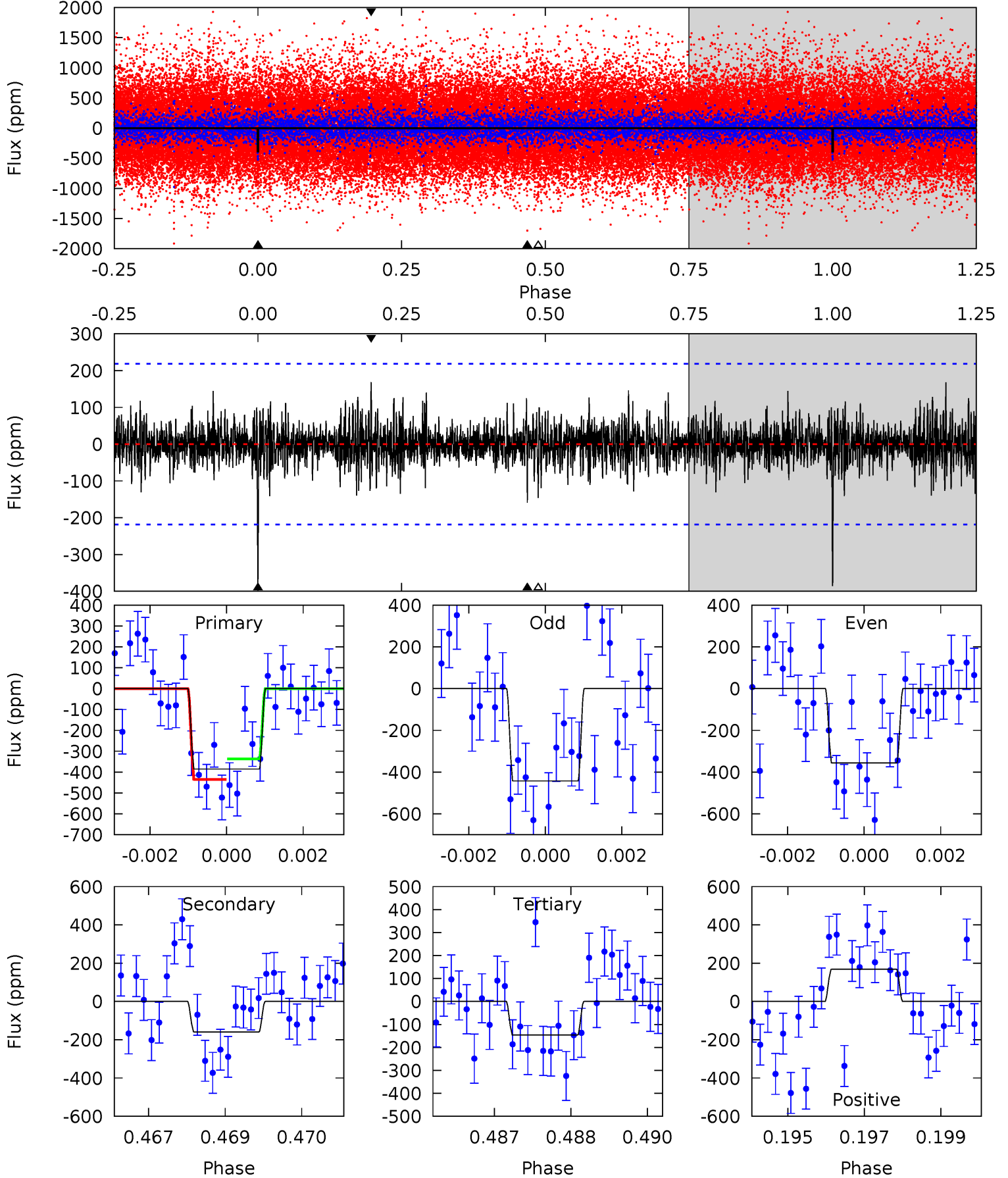
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.15	13.5	12.0	14.9	5.36	3.15	2.90	-3.88	-6.78	1.46	-1.43	0.93	1.15	0.53	0.12



Alt Model-Shift Uniqueness Test

005441030-02, P = 480.365751 Days, E = 188.394805 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.46	3.90	3.58	4.13	5.36	3.15	0.94	5.87	5.33	0.31	-0.23	1.01	0.87	0.30	1.21



Stellar Parameters For KIC 005441030

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5944^{+159}_{-177}	$4.558^{+0.046}_{-0.184}$	$-0.540^{+0.300}_{-0.300}$	$0.813^{+0.218}_{-0.073}$	$0.871^{+0.088}_{-0.088}$	$2.286^{+0.533}_{-1.122}$
	+3%/-3%	+1%/-4%	+56%/-56%	+27%/-9%	+10%/-10%	+23%/-49%
Source	PHO1	KIC0	KIC0	DSEP		

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

Secondary Eclipse Parameters for KIC 005441030-02 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-625 ± 46	$1.90^{+1.13}_{-0.98}$	314^{+21}_{-13}	6599^{+3502}_{-1287}	$125392^{+390679}_{-76087}$
Alt.	-159 ± 41	$1.90^{+1.03}_{-0.91}$	315^{+18}_{-15}	4732^{+1680}_{-708}	31044^{+80973}_{-18478}

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

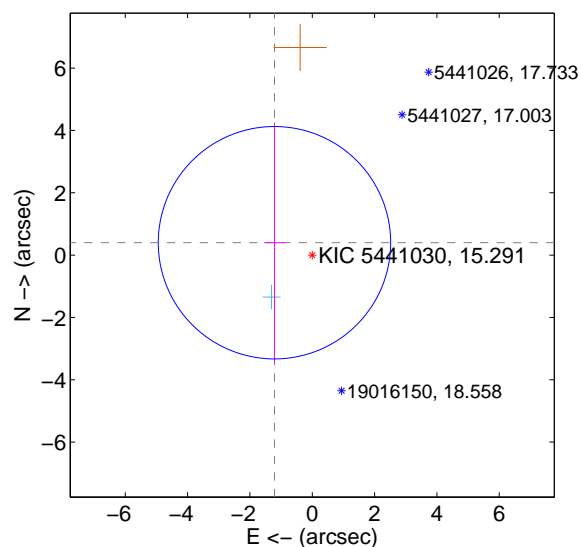
Supplemental centroid analysis for 005441030-02. Kepler magnitude: 15.29. Transit SNR 7.49

There are 1 quarters with good PRF difference image offsets

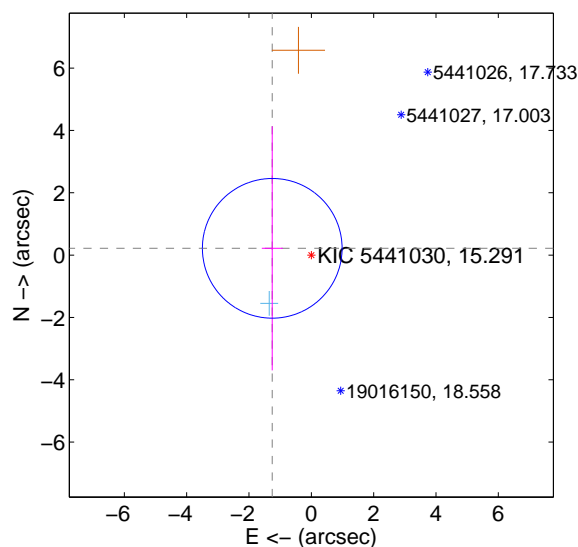
The direct PRF centroid is offset from the target star catalog position by about 0.21 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.276 ± 1.243	1.03	1.212 ± 0.331	0.397 ± 3.862
PRF-fit source offset from KIC position	1.273 ± 0.747	1.70	1.254 ± 0.337	0.218 ± 3.917
photometric centroid source offset	0.37 ± 2.03	0.18	-0.13 ± 2.03	0.35 ± 2.03

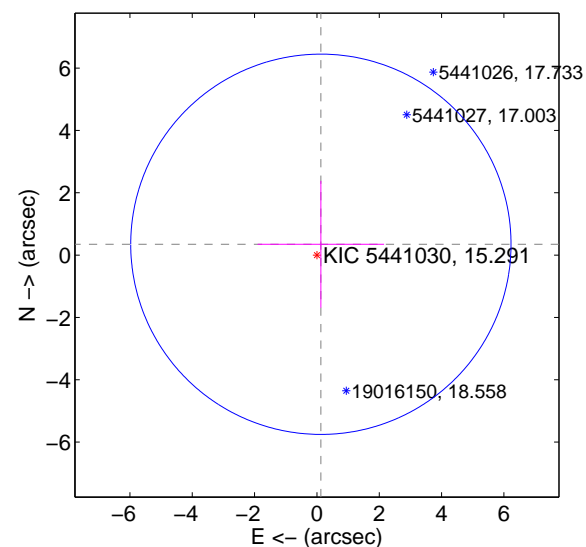
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

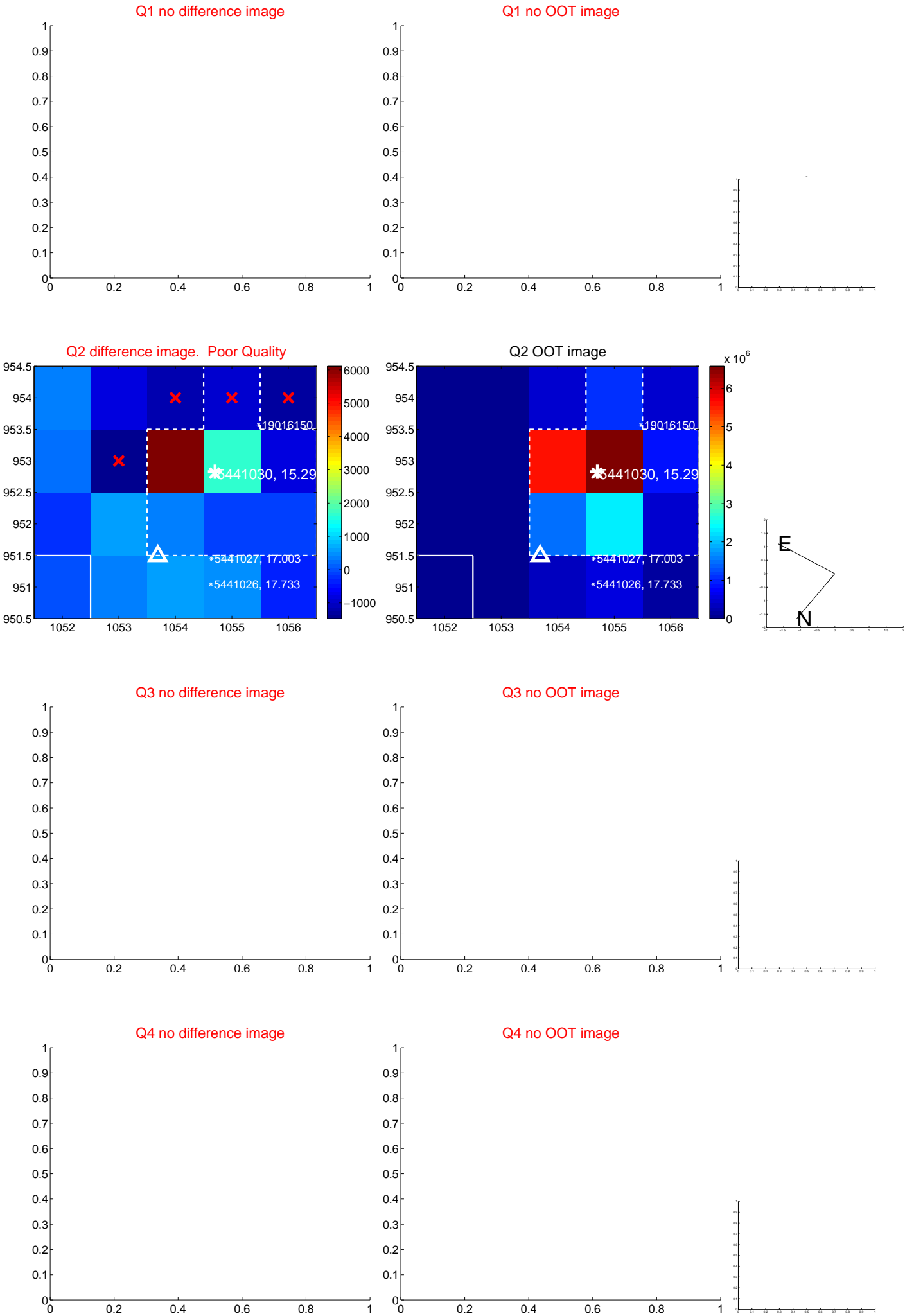


offset from photometric centroids

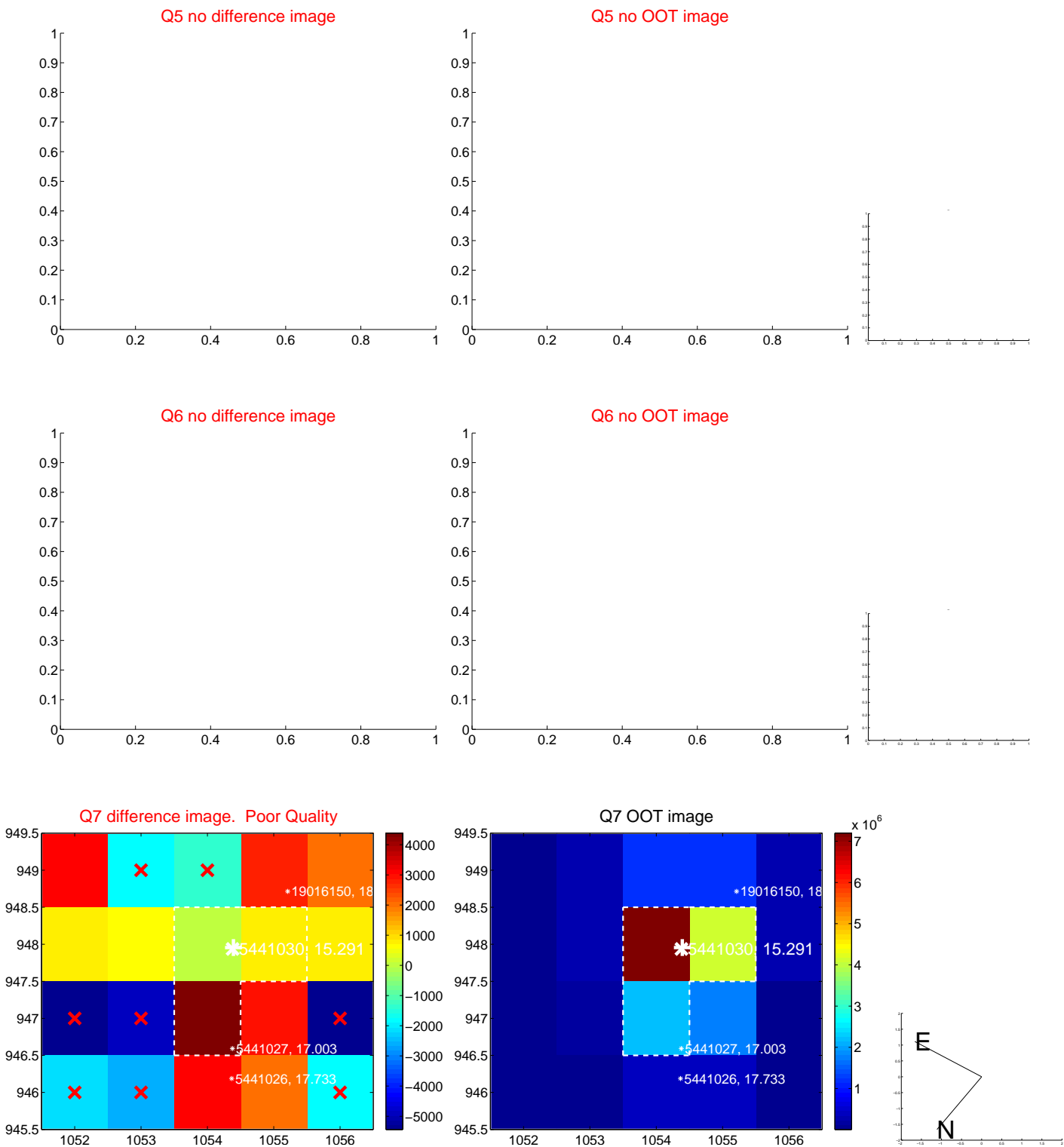


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

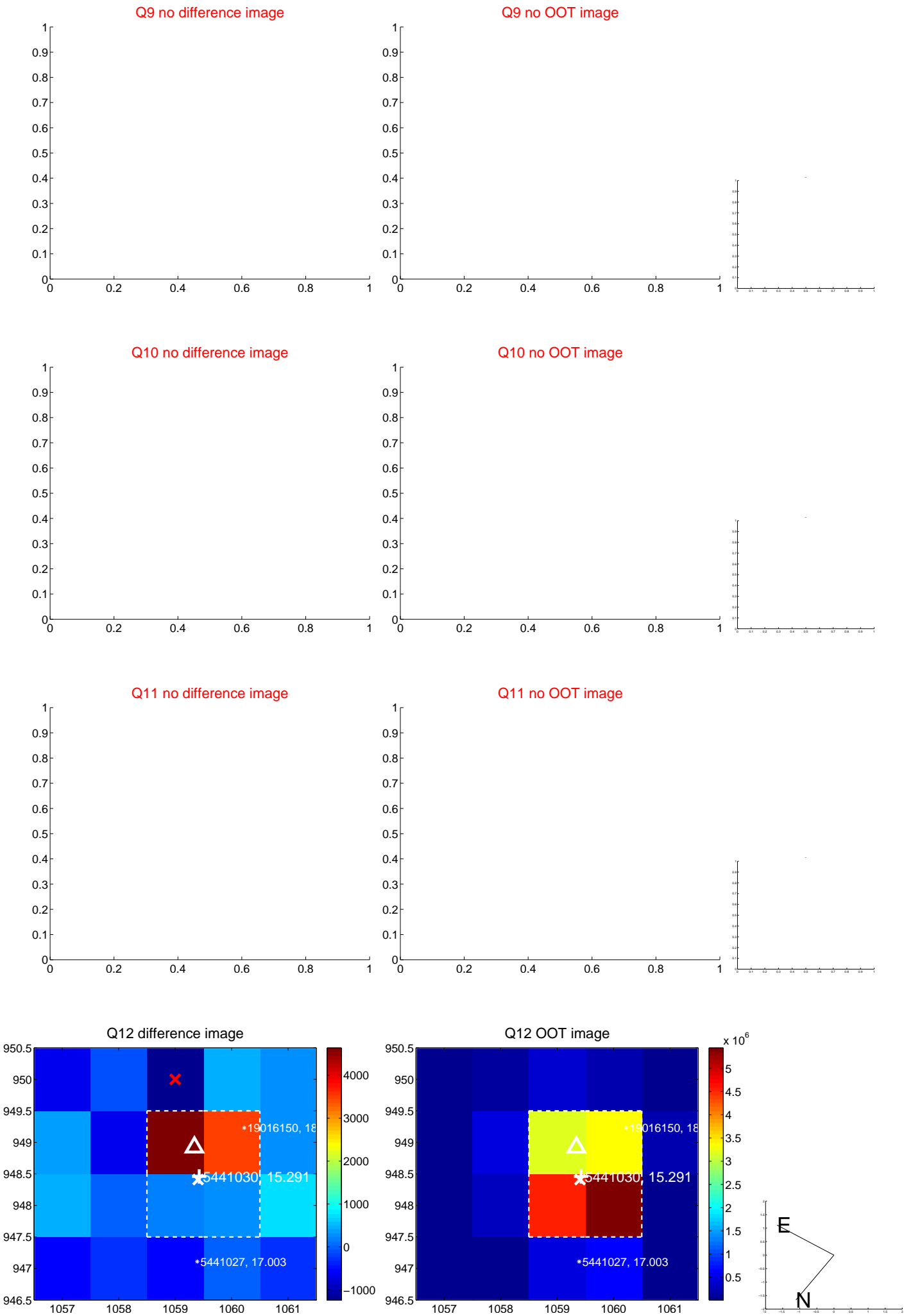
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



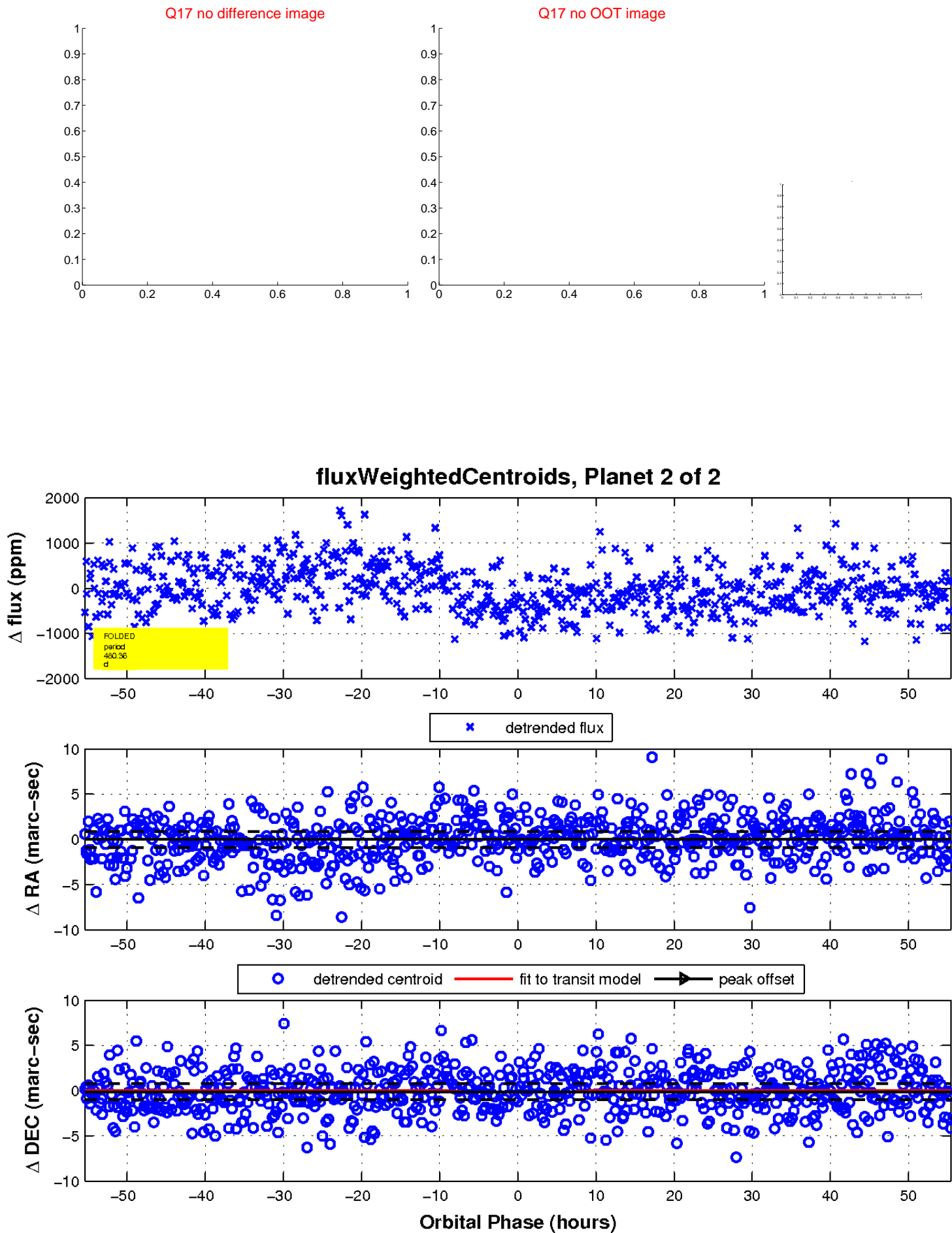
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

