

KIC 003548449

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})
003548449-01	OBS	No	1.029398	132.068396	8.0	4.039	7.9	4.7	1.30	6784	0.43	7524.32
003548449-02	OBS	No	178.427267	256.001325	232.1	12.851	7.5	8.1	1.30	6784	2.32	7.79
003548449-03	OBS	No	89.337053	165.511012	211.4	2.585	7.6	7.0	1.30	6784	2.22	19.58
003548449-04	OBS	No	119.051687	133.057761	177.7	2.730	7.4	8.0	1.30	6784	1.84	13.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003548449-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
003548449-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
003548449-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_SATURATED
003548449-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_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.

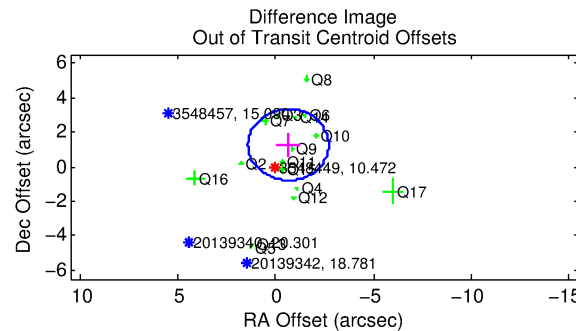
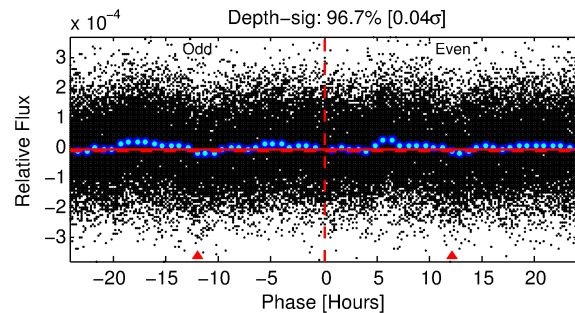
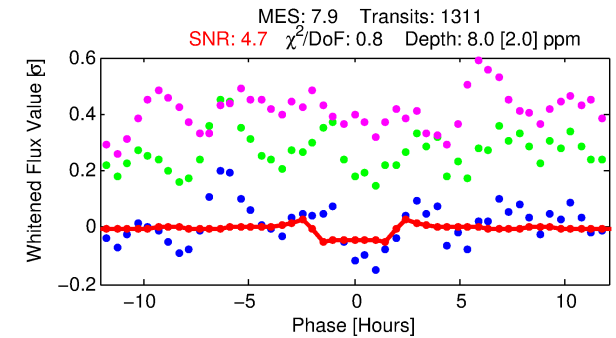
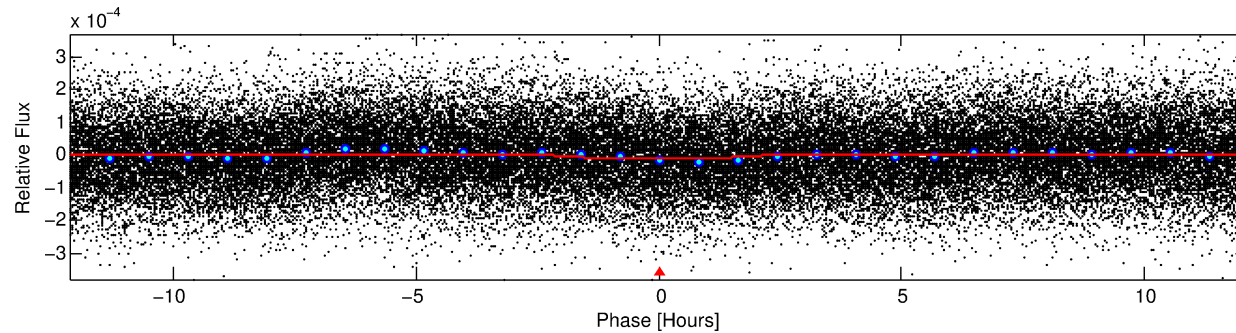
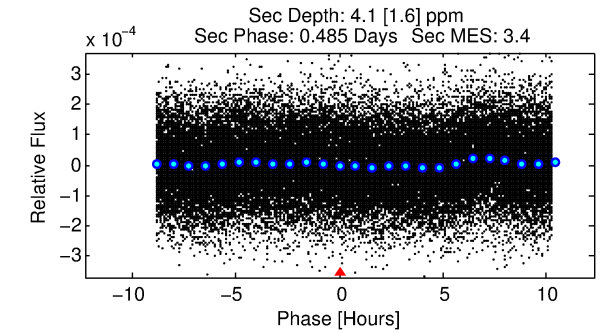
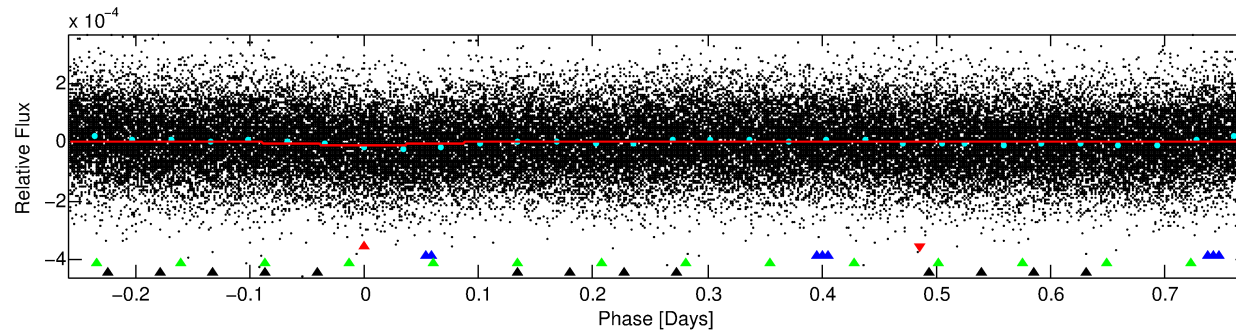
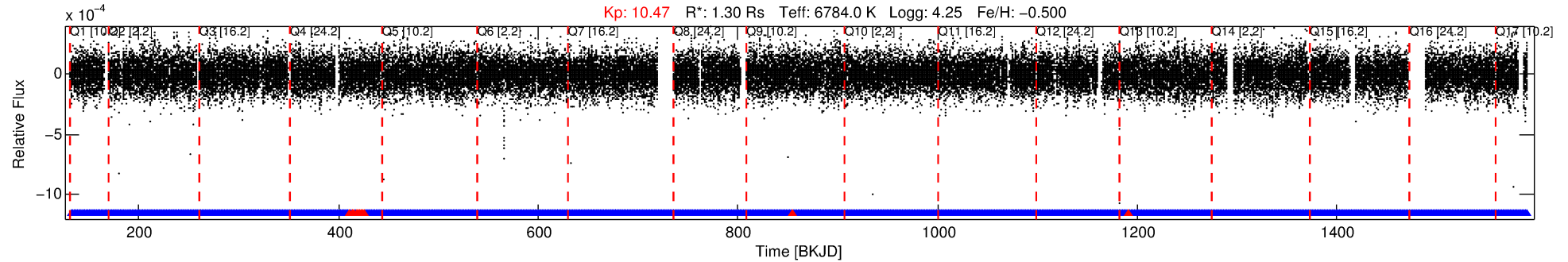
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003548449-01

No Significant Match Found

DV One-Page Summary

KIC: 3548449 Candidate: 1 of 4 Period: 1.029 d



DV Fit Results:

Period = 1.02940 [0.00002] d
Epoch = 132.0684 [0.0048] BKJD
 $R_p/R^* = 0.0030$ [0.0008]
 $a/R^* = 1.27$ [0.71]
 $b = 0.90$ [0.31]
 $S_{\text{eff}} = 7524.32$ [2817.83]
 $T_{\text{eq}} = 2375$ [222] K
 $R_p = 0.43$ [0.16] R_e
 $a = 0.0207$ [0.0048] AU
 $A_g = 5.25$ [3.87] [1.10σ]
 $T_{\text{eff}} = 5559$ [939] K [3.30σ]

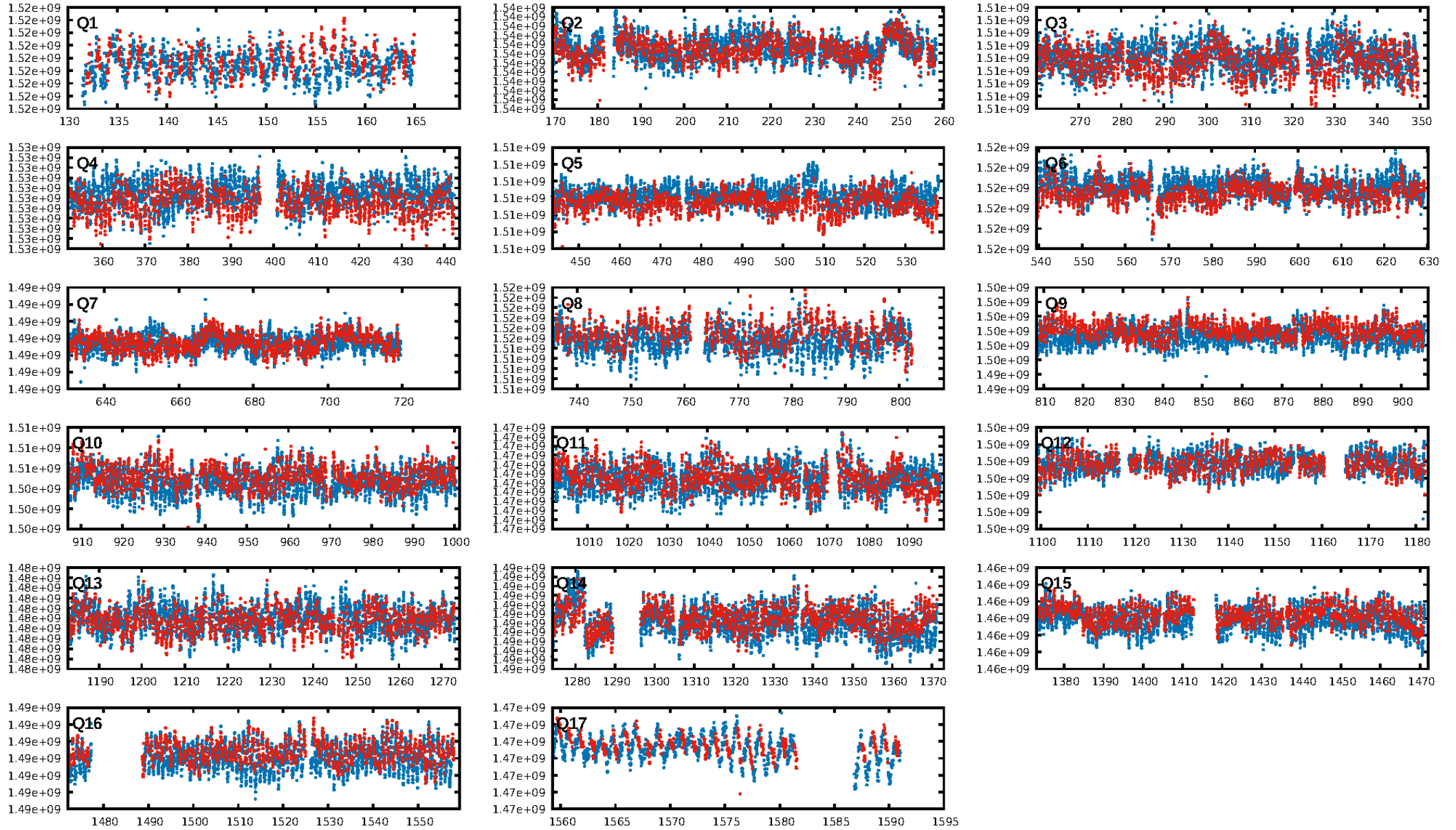
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [441.99σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 4.84e-10
RollingBand-fgt: 0.99 [1239/1252]
GhostDiagnostic-chr: 0.6677
Centroid-sig: 9.2%
Centroid-so: 1.603 arcsec [1.19σ]
OotOffset-rm: 1.419 arcsec [2.06σ]
OotOffset-st: 4/4/4/4 [16]
KicOffset-rm: 1.384 arcsec [2.10σ]
KicOffset-st: 4/4/4/4 [16]
DiffImageQuality-fgm: 0.38 [6/16]
DiffImageOverlap-fno: 1.00 [17/17]

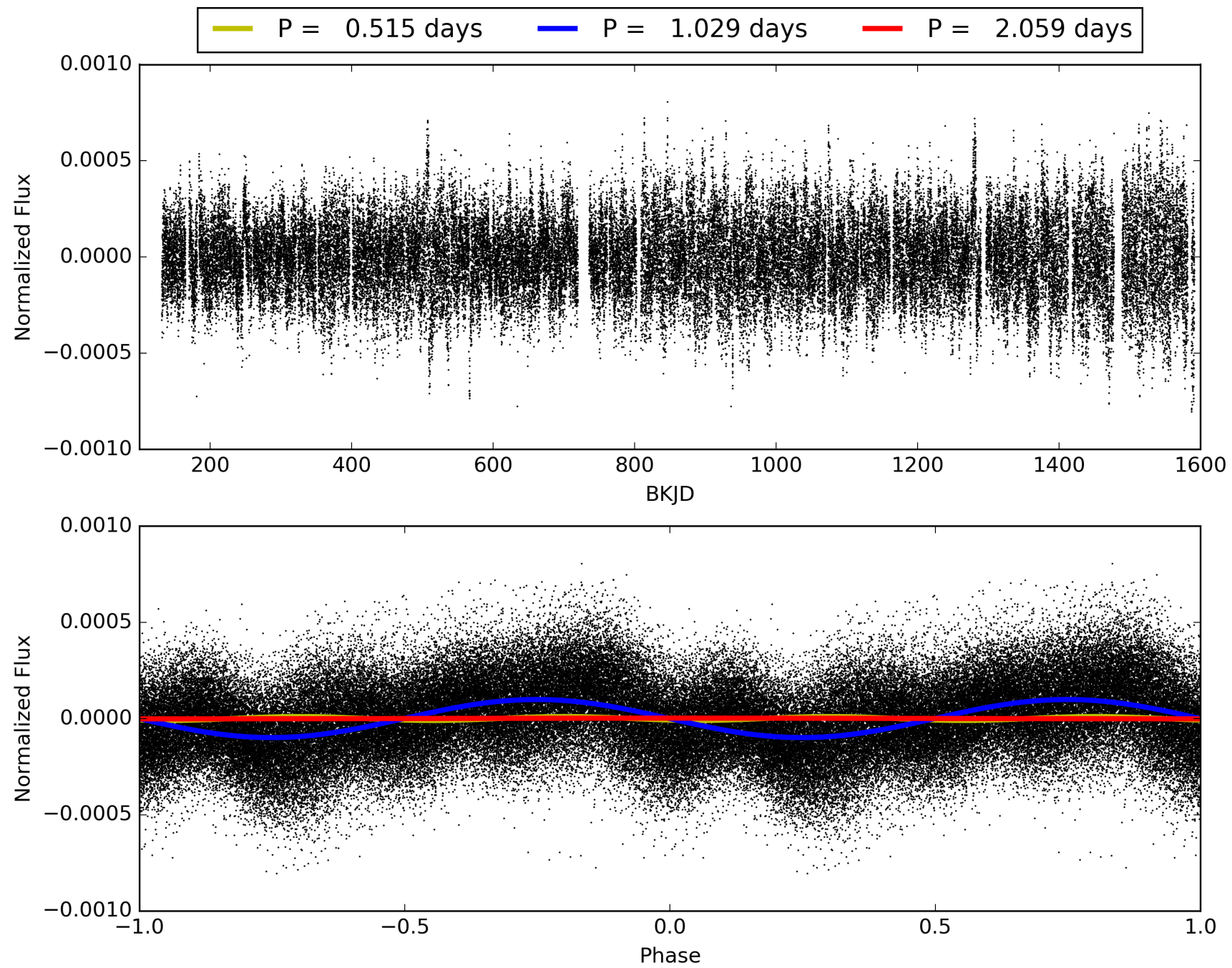
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:28:28 Z

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

TCE 003548449-01, PDC Light Curves

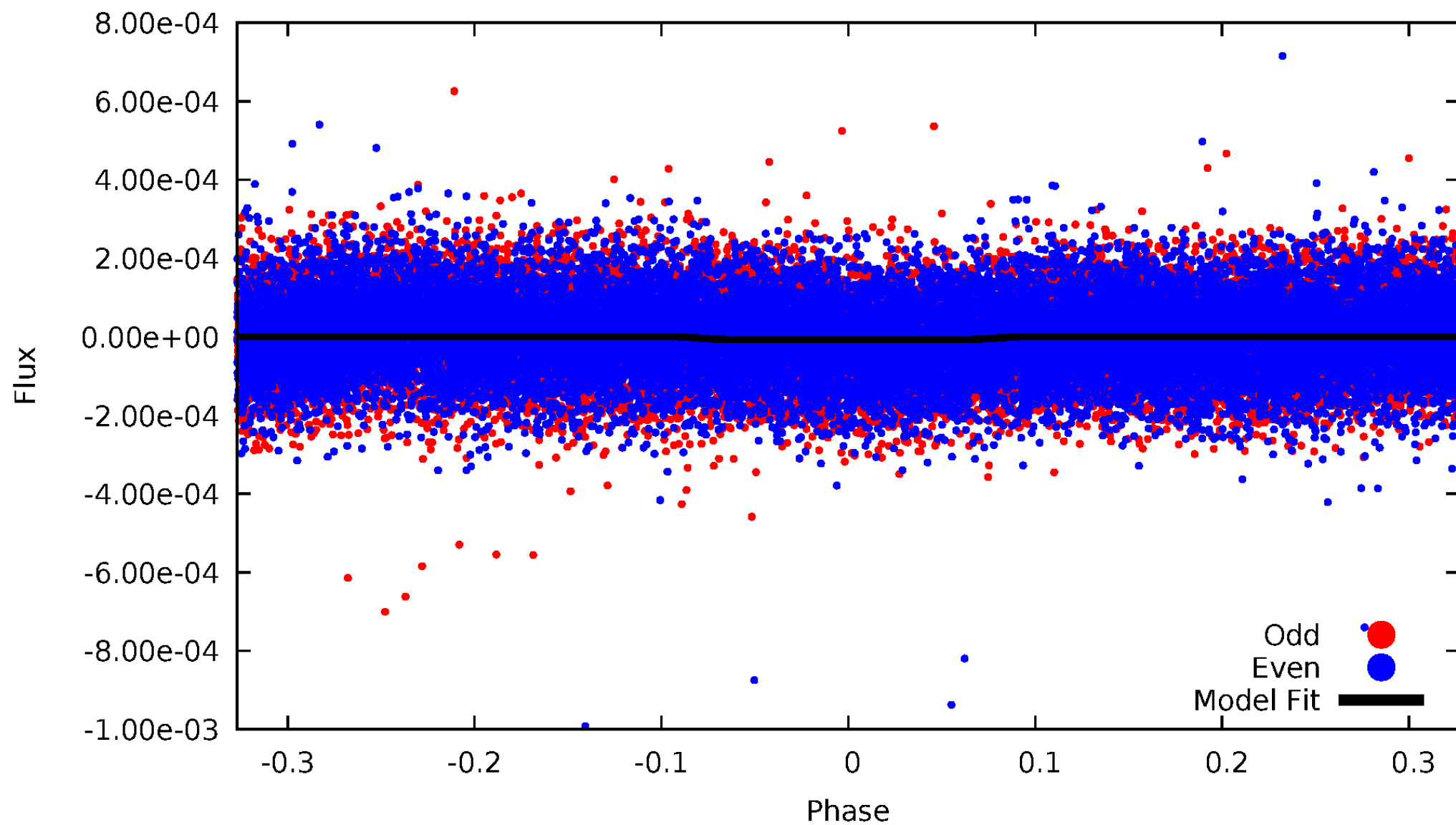


TCE 003548449-01



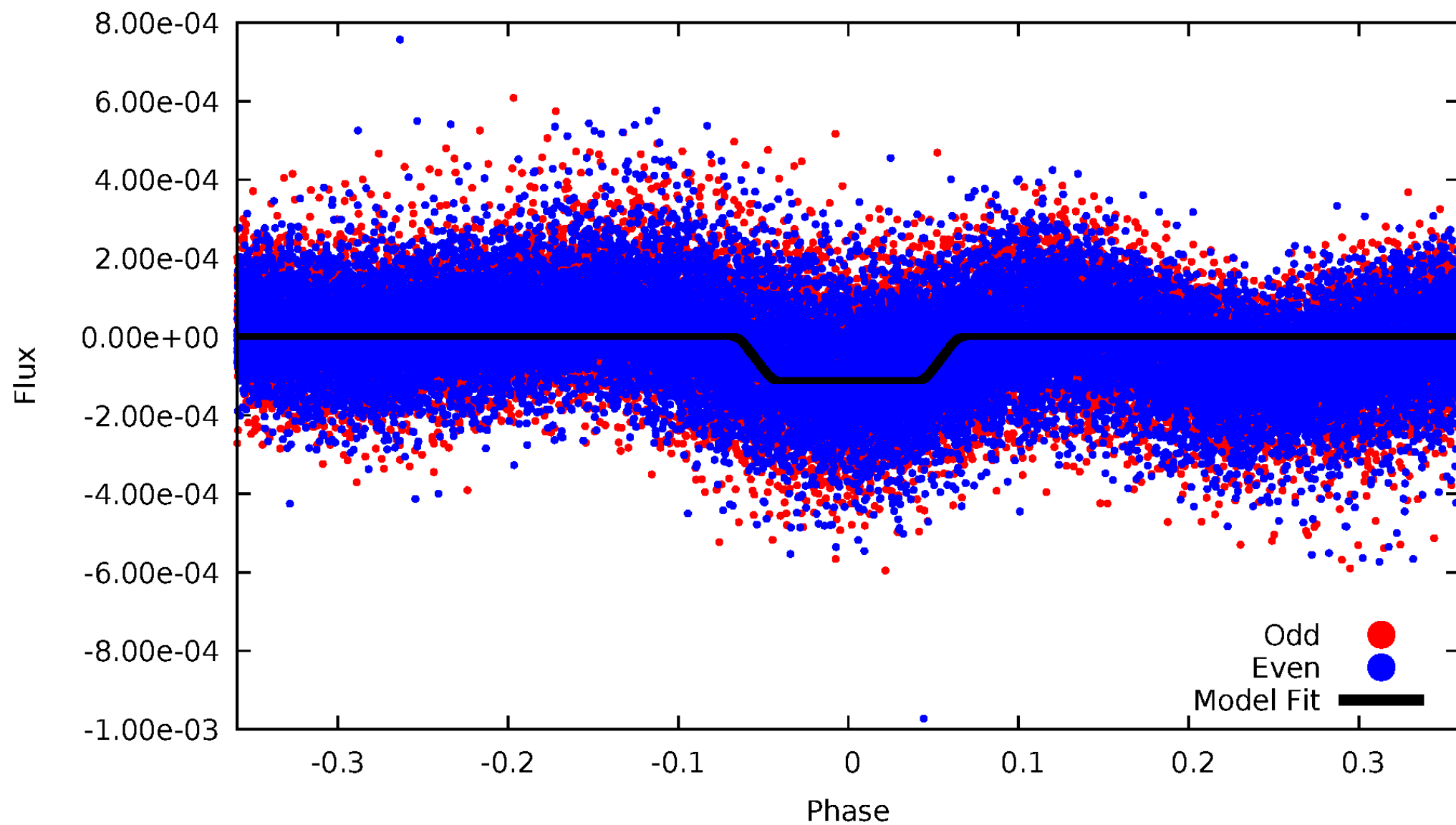
DV Odd/Even

TCE 003548449-01



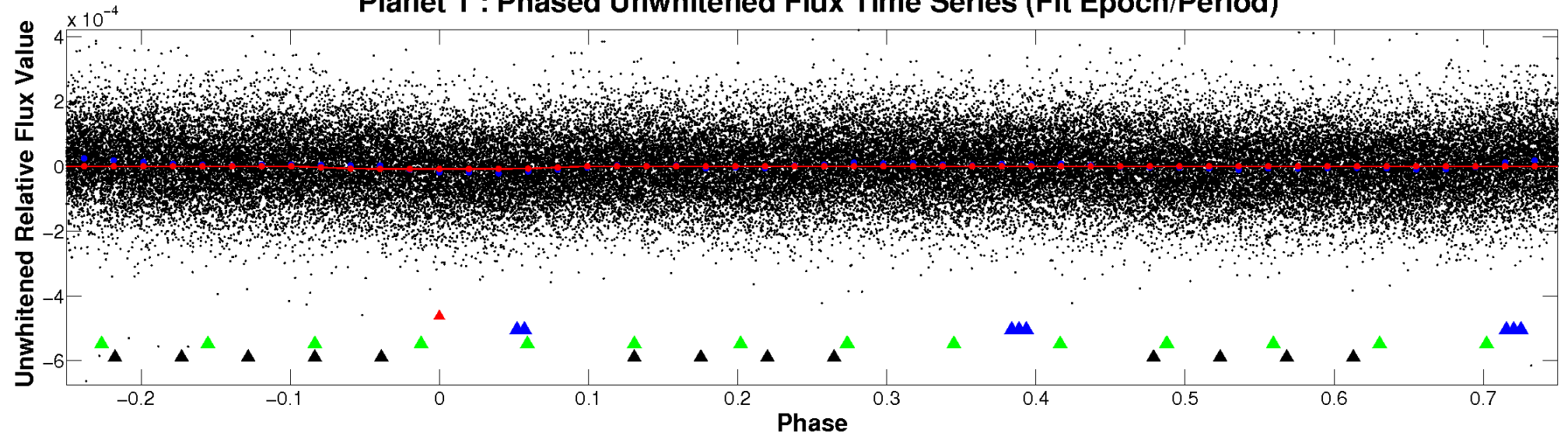
ALT Odd/Even

TCE 003548449-01

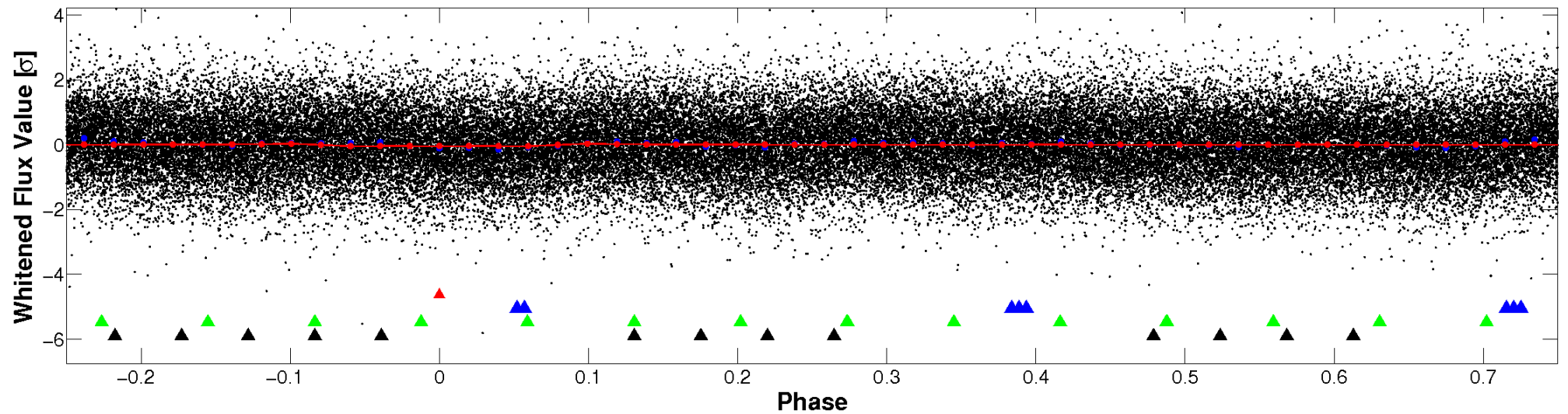


Non-Whitened Vs. Whitened Light Curve

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

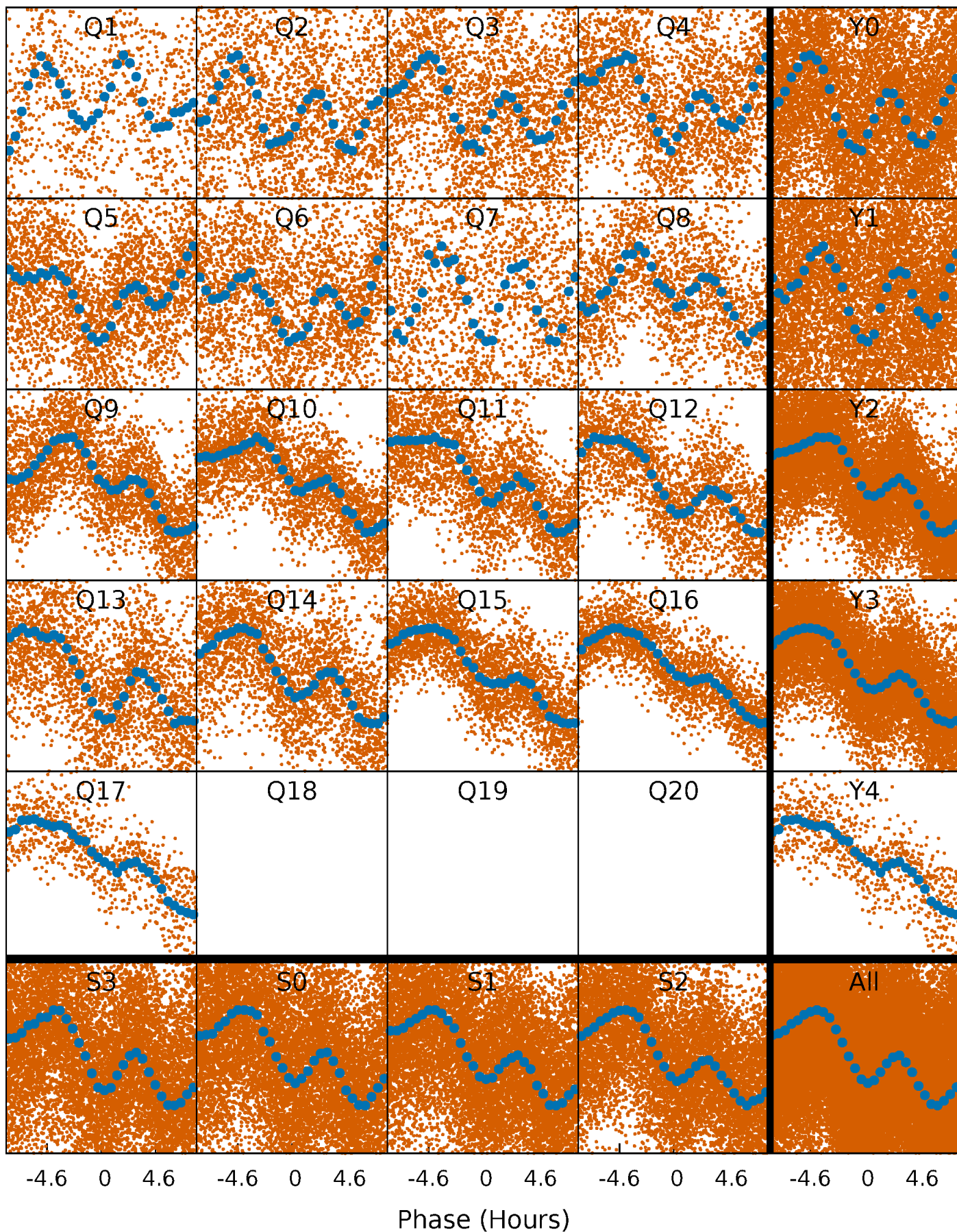


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



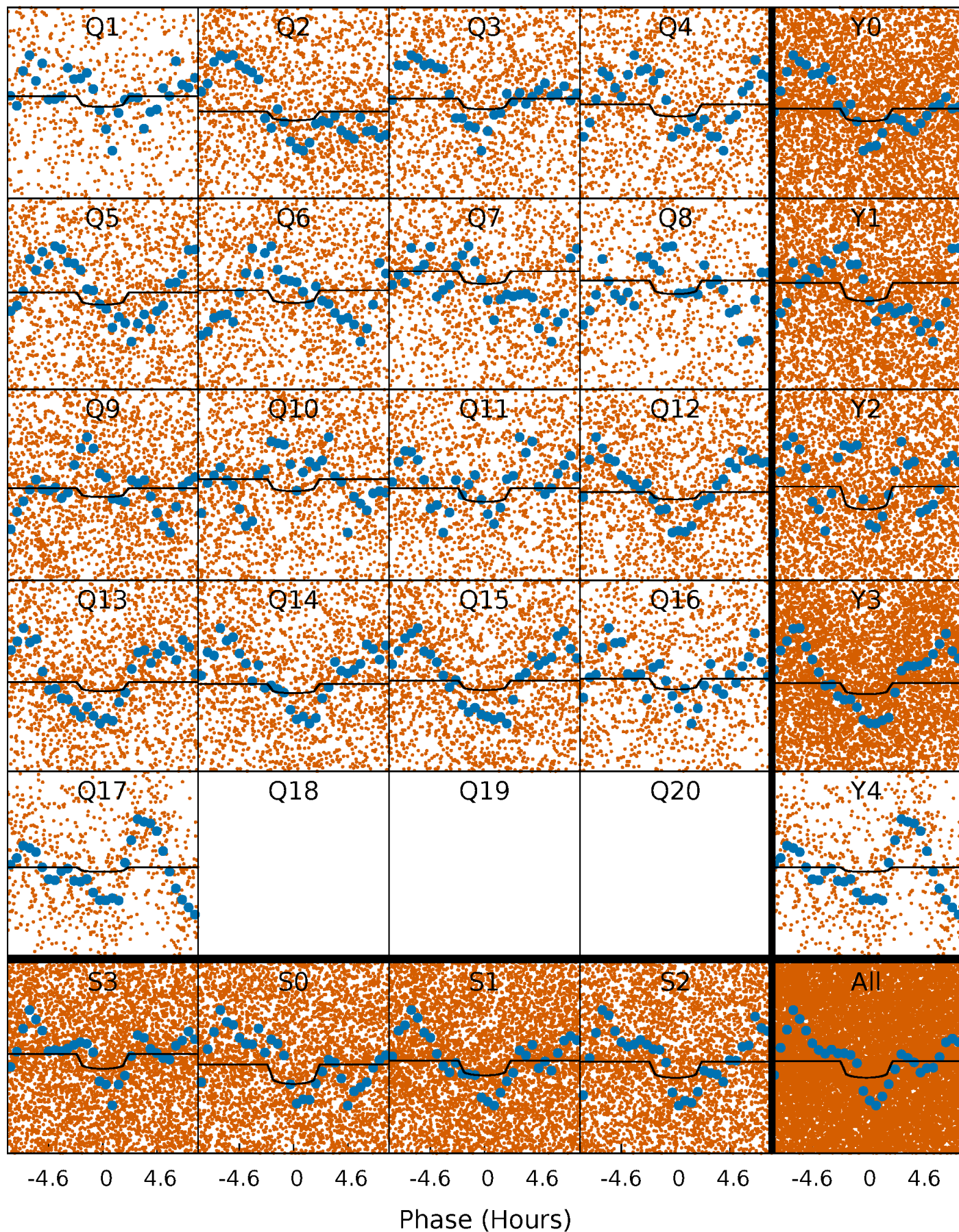
PDC Quarter-Phased Transit Curves

TCE 003548449-01 P= 1.029398 Days $T_0=132.068396$ (BKJD)



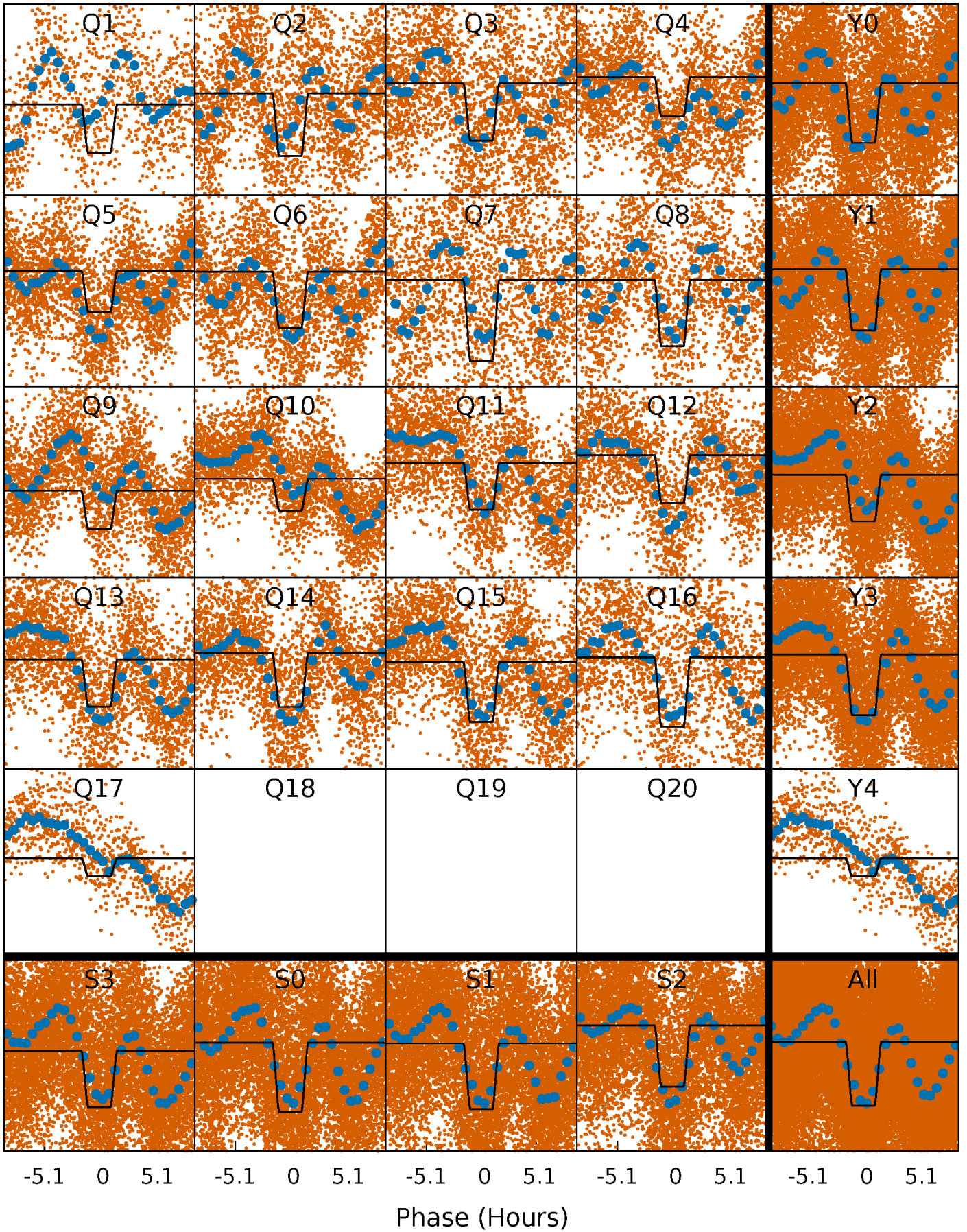
DV Quarter-Phased Transit Curves

TCE 003548449-01 P= 1.029398 Days $T_0=132.068396$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

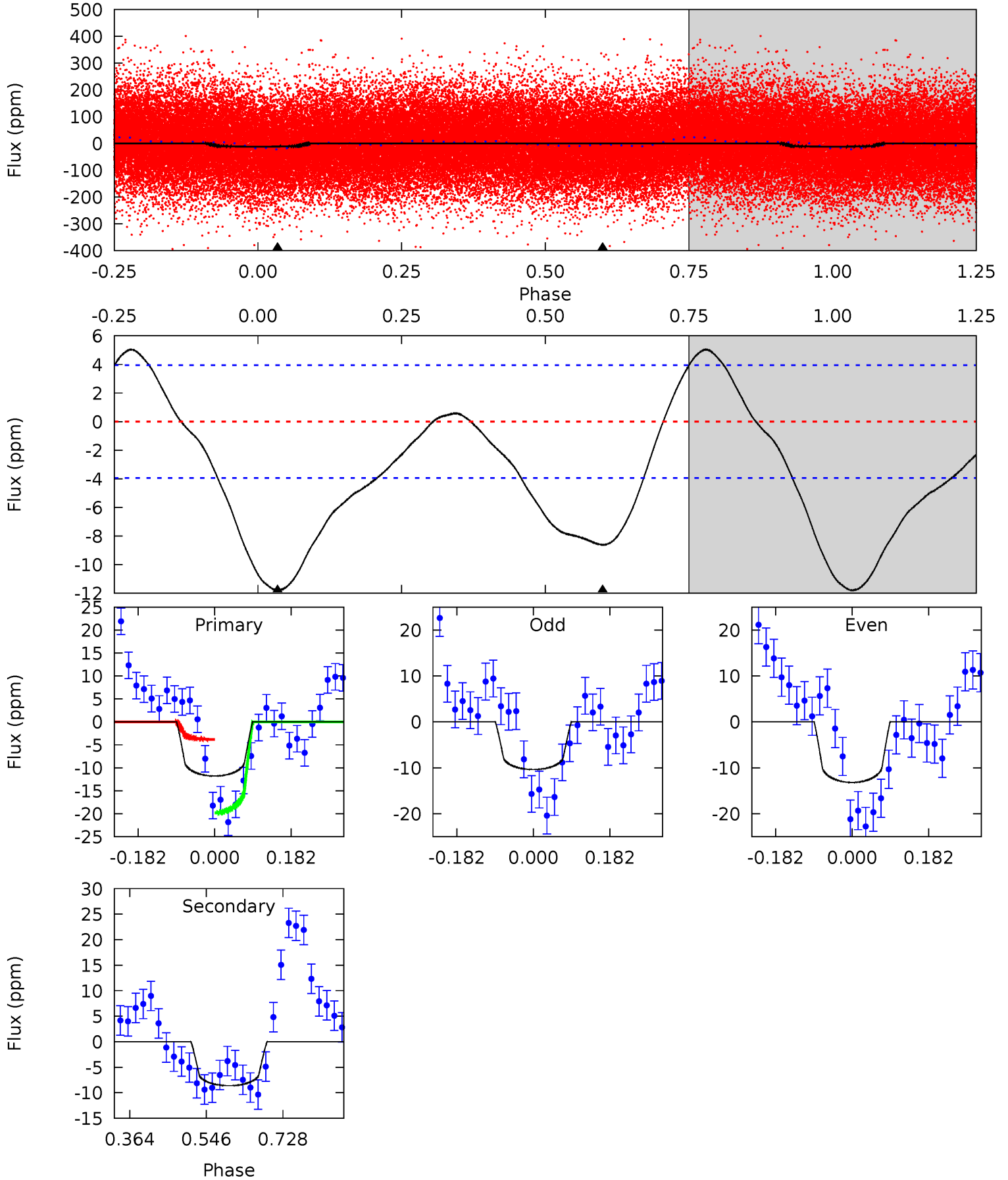
TCE 003548449-01 P= 1.029415 Days $T_0=132.055017$ (BKJD)



DV Model-Shift Uniqueness Test

003548449-01, P = 1.029398 Days, E = 131.038998 Days

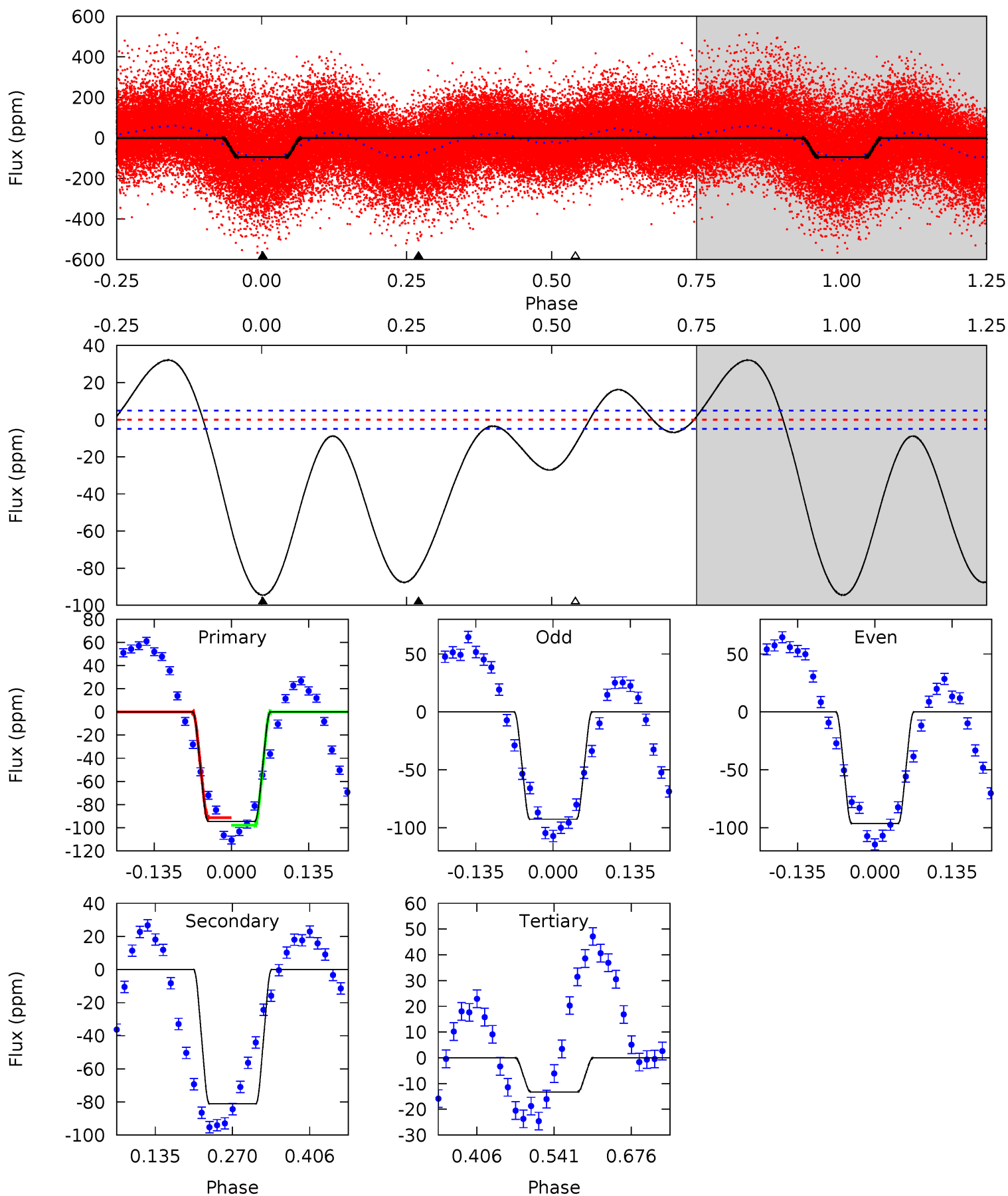
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
13.3	9.69	0	0	4.44	1.33	2.52	13.3	13.3	9.69	9.69	1.58	0.98	0.30	8.97



Alt Model-Shift Uniqueness Test

003548449-01, P = 1.029415 Days, E = 131.025602 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
85.9	73.7	12.1	0	4.50	1.49	15.6	73.9	85.9	61.6	73.7	1.66	0.97	0.25	2.59



Stellar Parameters For KIC 003548449

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$\rho_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6784^{+212}_{-282}	$4.255^{+0.149}_{-0.182}$	$-0.500^{+0.250}_{-0.300}$	$1.302^{+0.363}_{-0.242}$	$1.112^{+0.181}_{-0.131}$	$0.710^{+0.512}_{-0.346}$
	+3%/-4%	+4%/-4%	+50%/-60%	+28%/-19%	+16%/-12%	+72%/-49%
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 003548449-01 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-9 ± 1	$0.44^{+0.12}_{-0.12}$	3332^{+257}_{-215}	6623^{+1368}_{-813}	11^{+11}_{-4}
Alt.	-81 ± 1	$1.52^{+0.25}_{-0.21}$	3323^{+248}_{-214}	6187^{+329}_{-354}	$8.267^{+2.628}_{-1.971}$

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

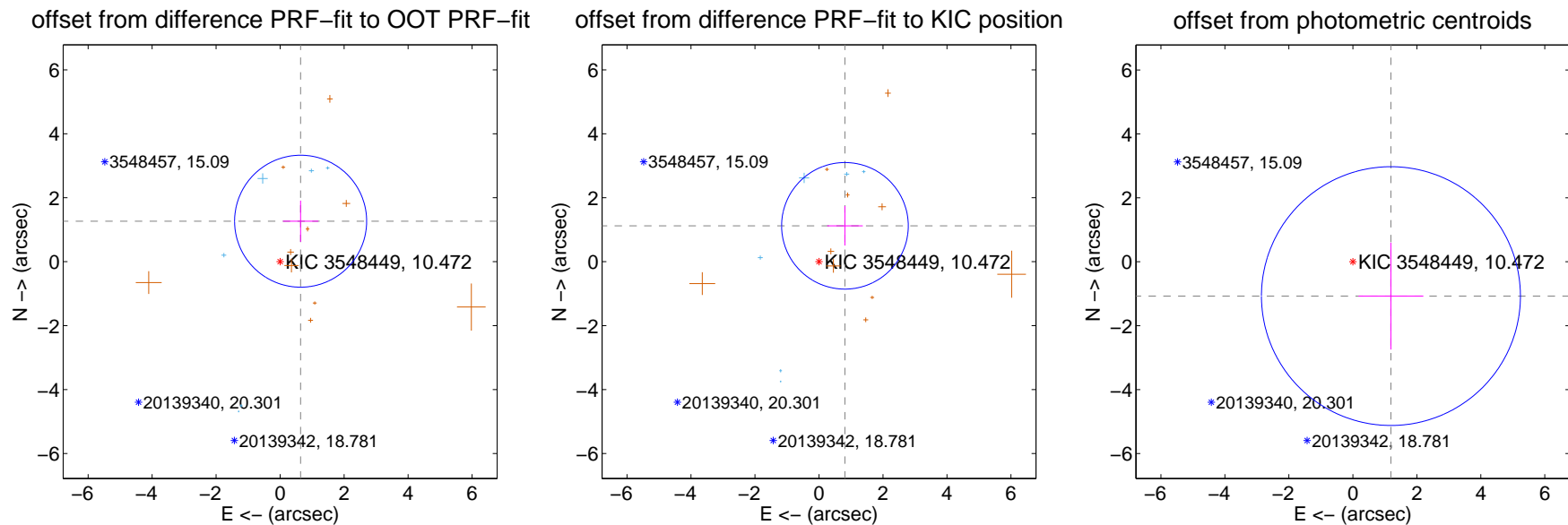
DV Centroid Data

Supplemental centroid analysis for 003548449-01. **Kepler magnitude: 10.47.** Transit SNR 4.75

There are 6 quarters with good PRF difference image offsets

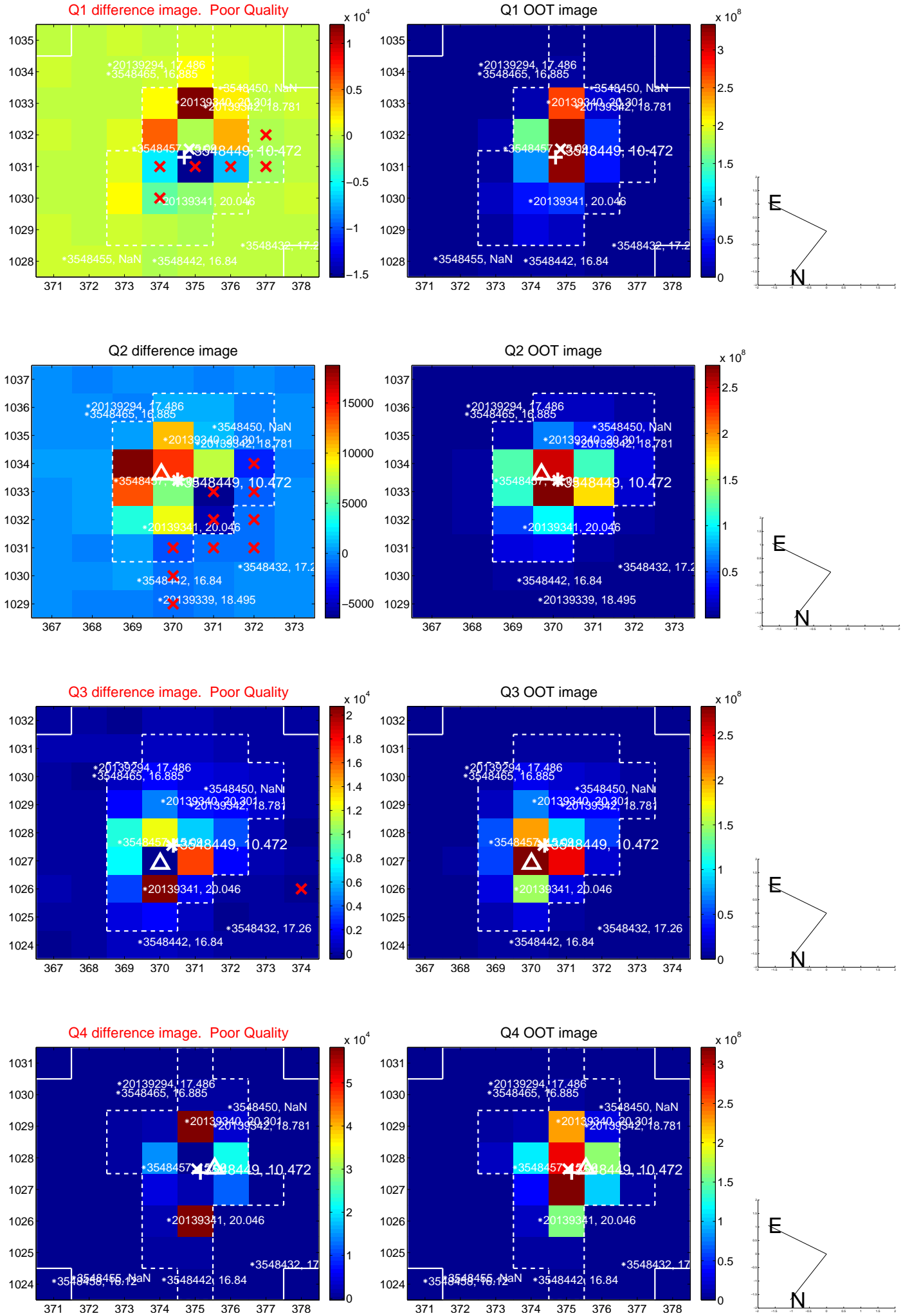
The direct PRF centroid is offset from the target star catalog position by about 1.03 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.419 ± 0.688	2.06	-0.641 ± 0.554	1.266 ± 0.646
PRF-fit source offset from KIC position	1.384 ± 0.660	2.10	-0.811 ± 0.557	1.122 ± 0.618
photometric centroid source offset	1.60 ± 1.35	1.19	-1.19 ± 1.01	-1.07 ± 1.67

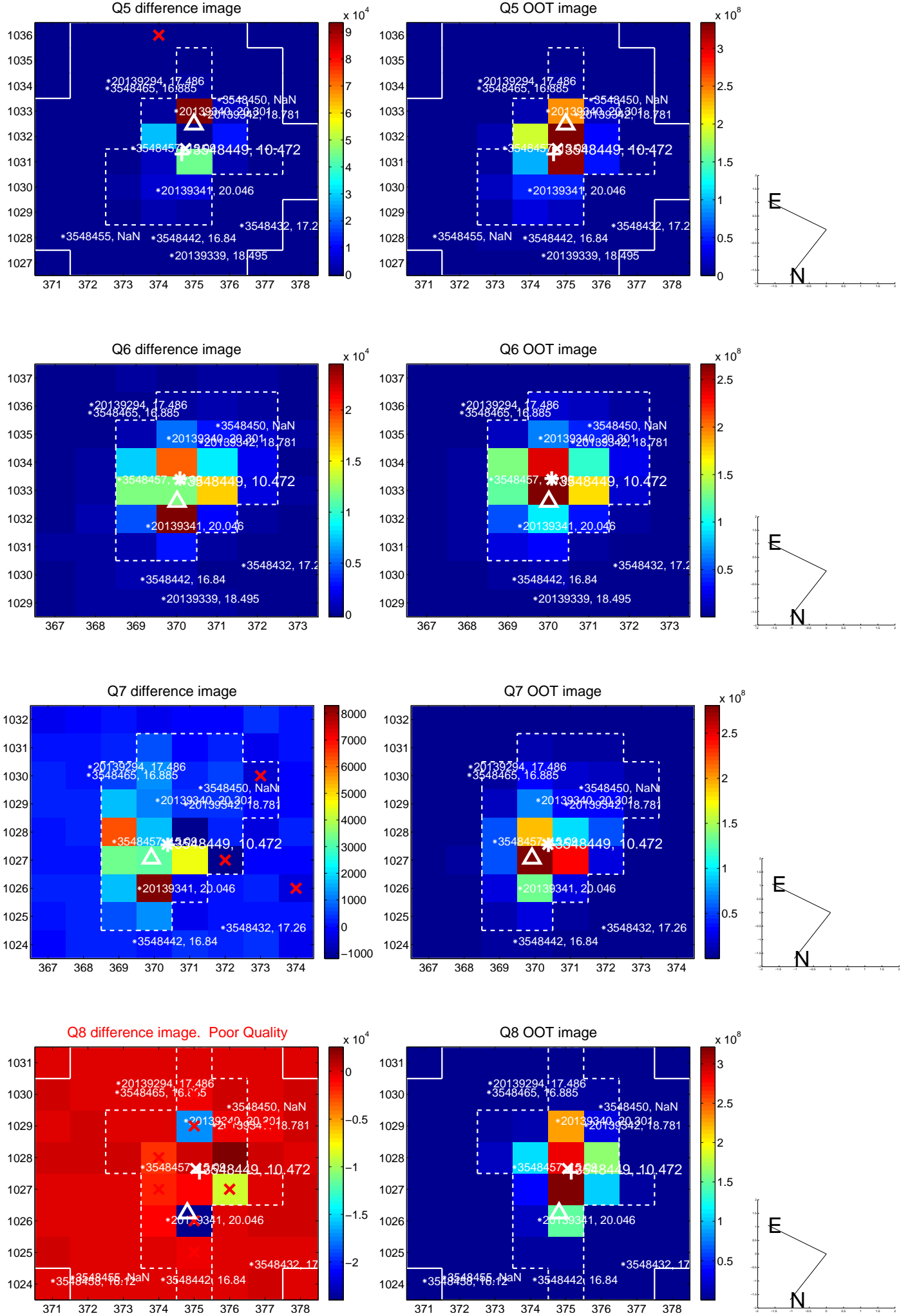


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

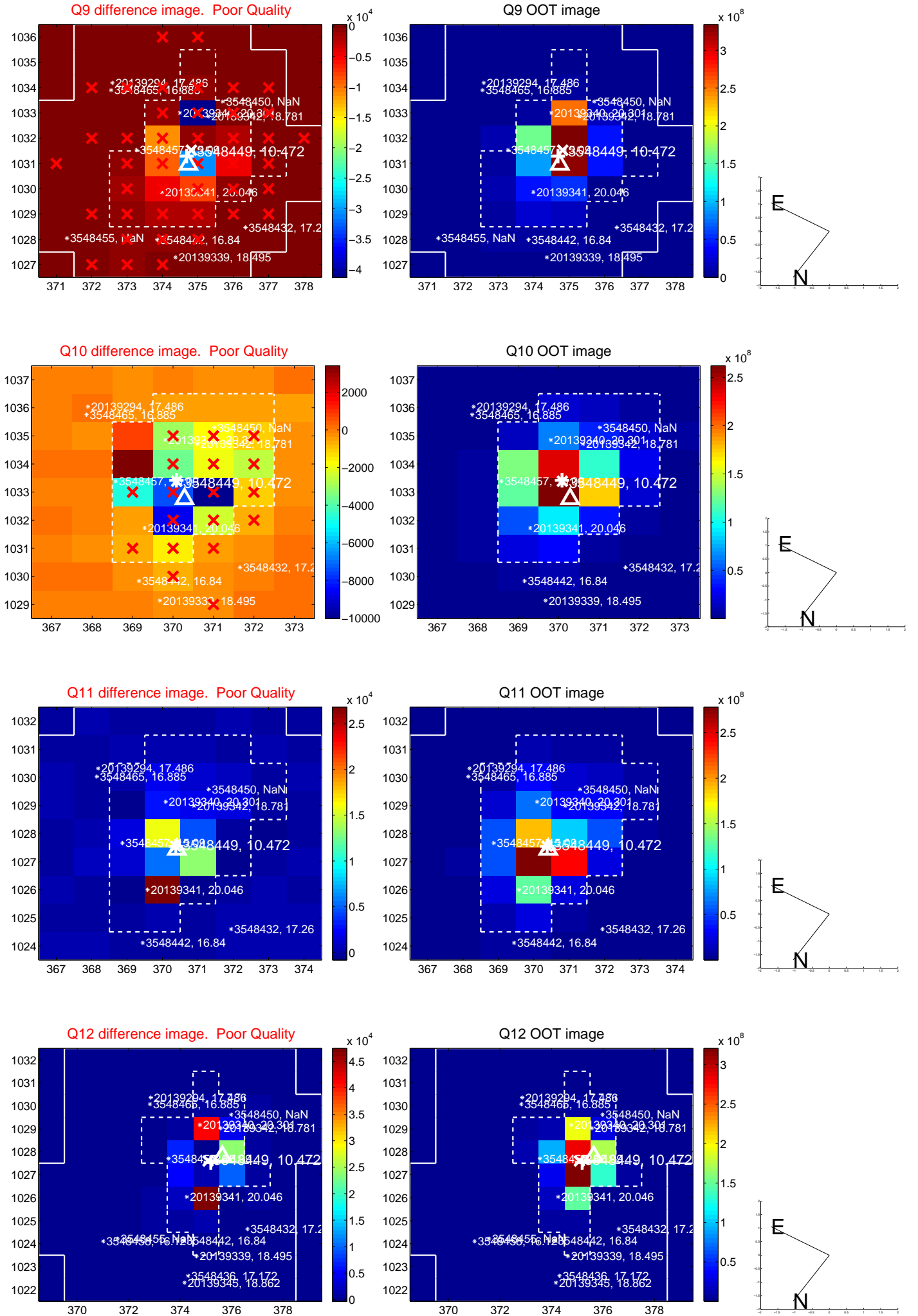
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



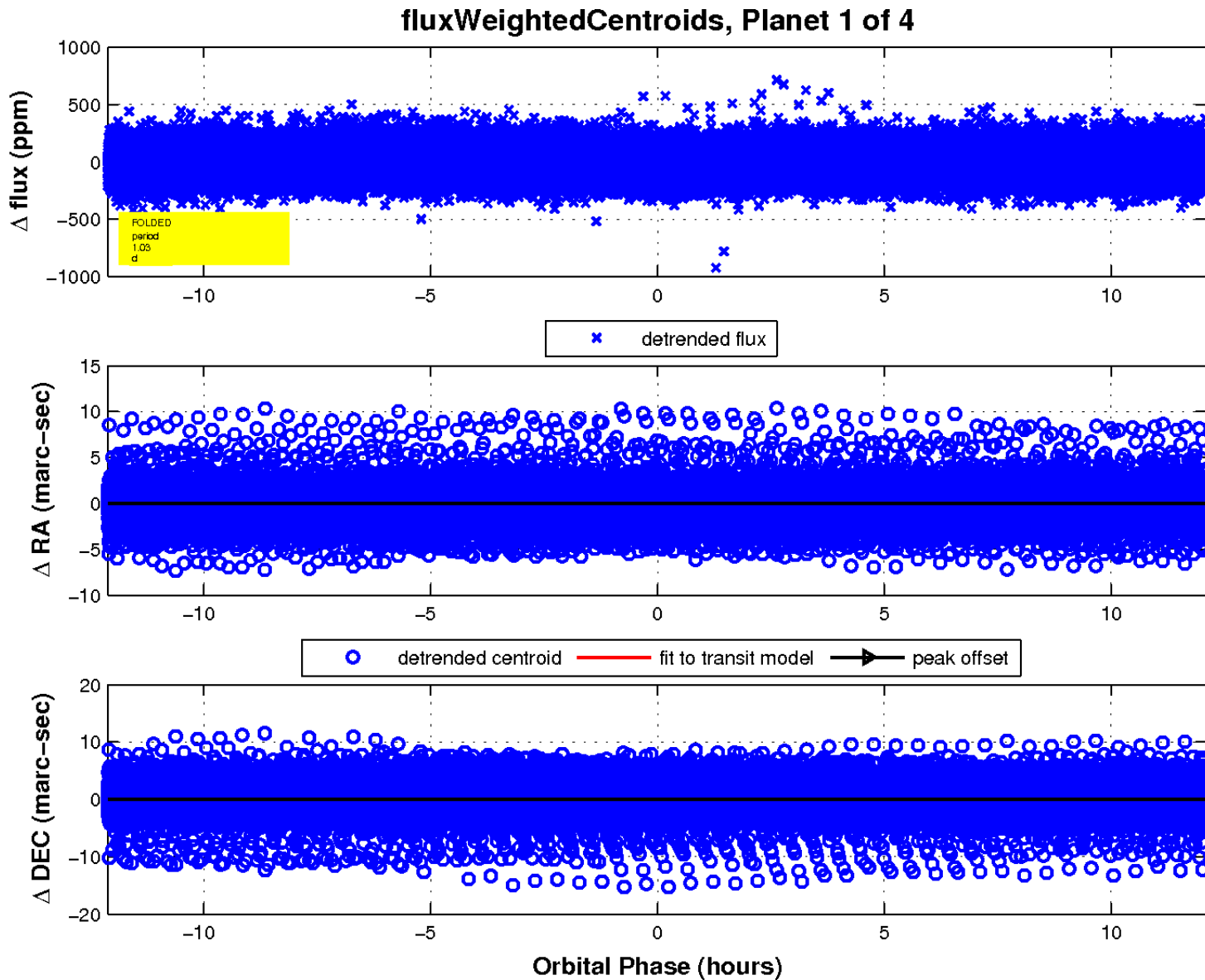
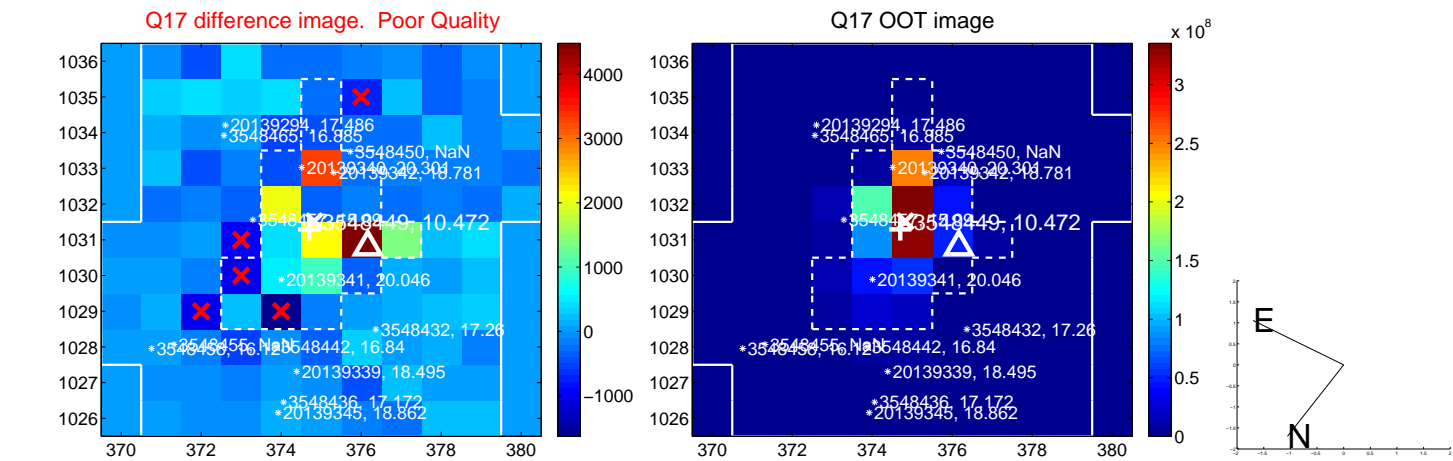
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

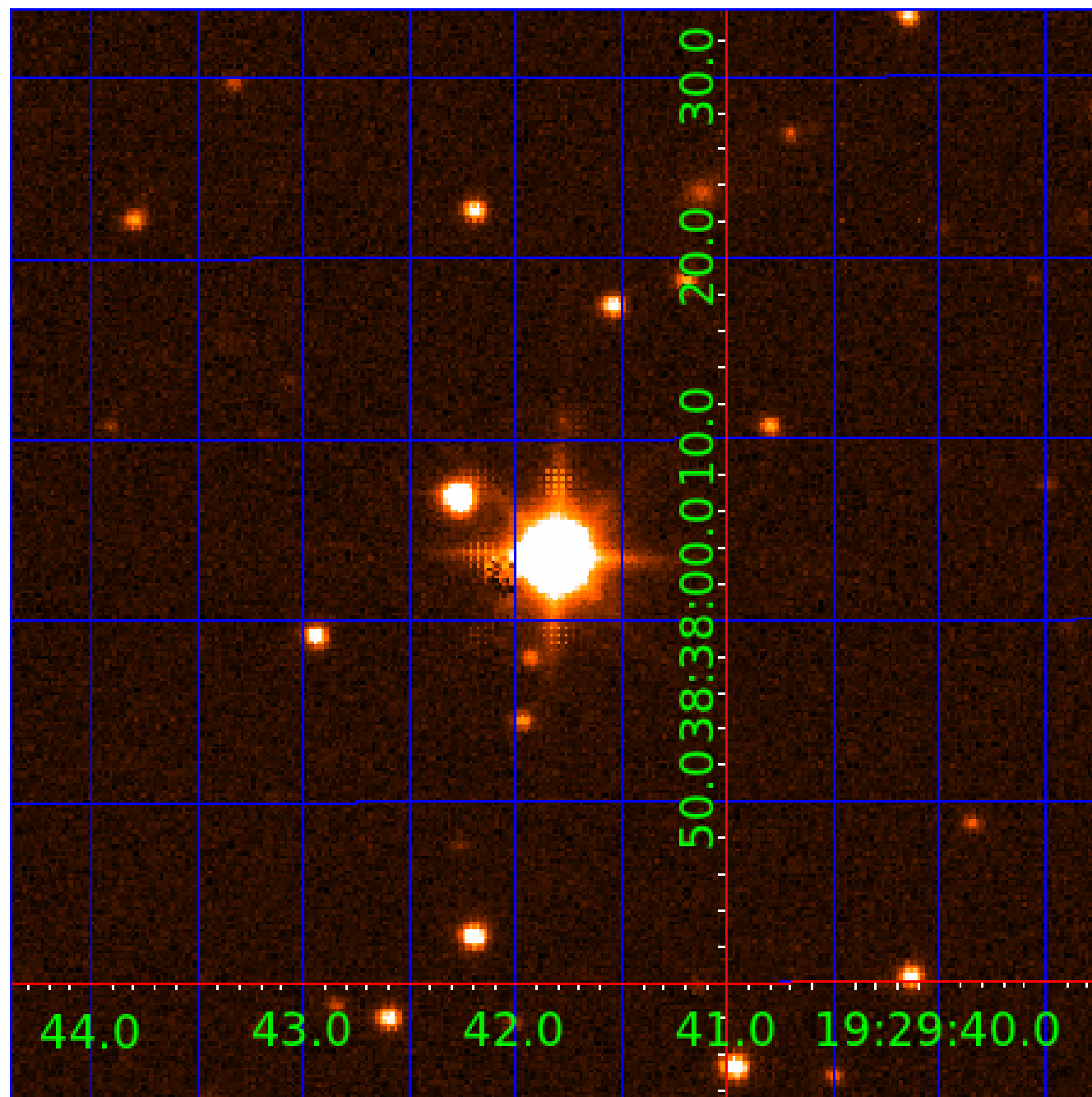


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003548449

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})
003548449-01	OBS	No	1.029398	132.068396	8.0	4.039	7.9	4.7	1.30	6784	0.43	7524.32
003548449-02	OBS	No	178.427267	256.001325	232.1	12.851	7.5	8.1	1.30	6784	2.32	7.79
003548449-03	OBS	No	89.337053	165.511012	211.4	2.585	7.6	7.0	1.30	6784	2.22	19.58
003548449-04	OBS	No	119.051687	133.057761	177.7	2.730	7.4	8.0	1.30	6784	1.84	13.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003548449-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
003548449-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
003548449-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_SATURATED
003548449-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_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.

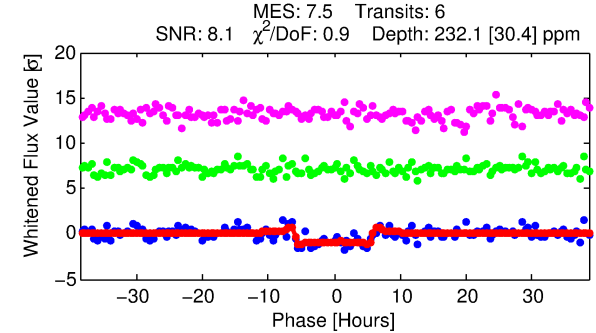
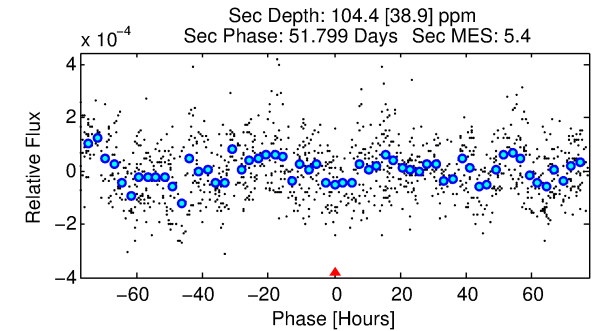
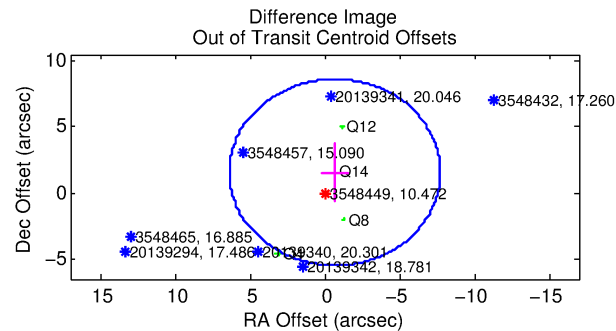
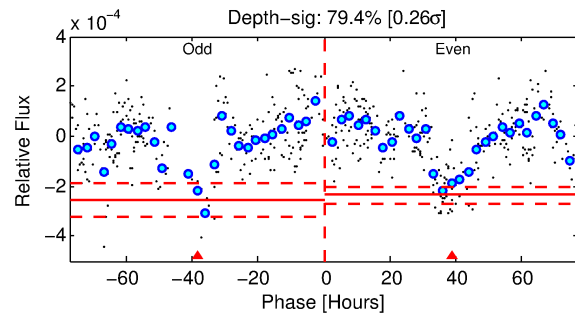
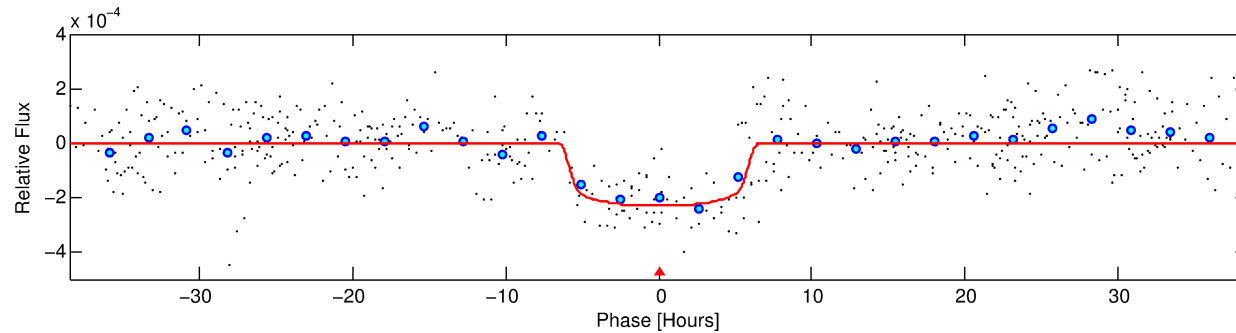
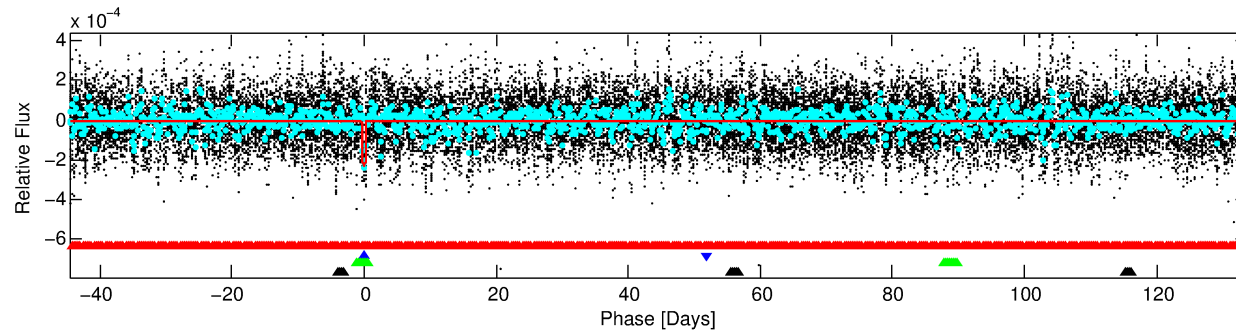
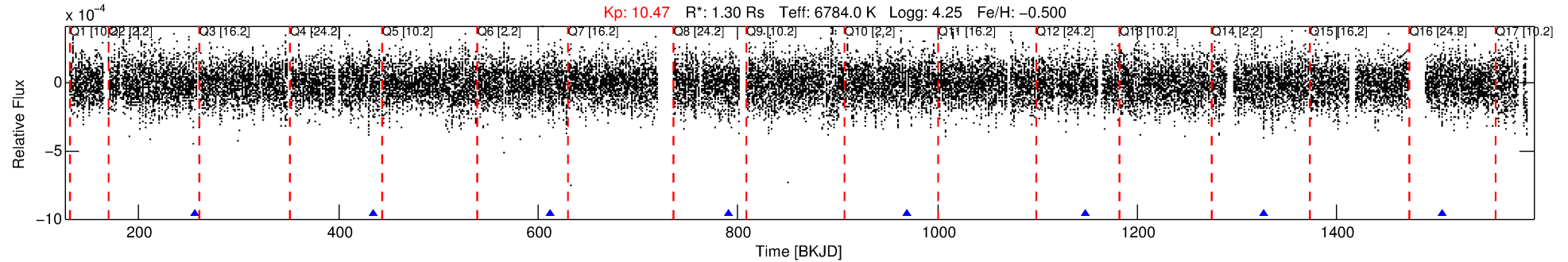
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003548449-02

No Significant Match Found

DV One-Page Summary

KIC: 3548449 Candidate: 2 of 4 Period: 178.427 d



DV Fit Results:

Period = 178.42727 [0.00293] d
Epoch = 256.0013 [0.0134] BKJD
Rp/R* = 0.0163 [0.0013]
a/R* = 48.56 [12.18]
b = 0.91 [0.05]
Seff = 7.79 [2.92]
Teq = 426 [40] K
Rp = 2.32 [0.67] Re
a = 0.6428 [0.1495] AU
Ag = 4403.74 [2324.80] [1.89 σ]
Teffp = 5365 [590] K [8.35 σ]

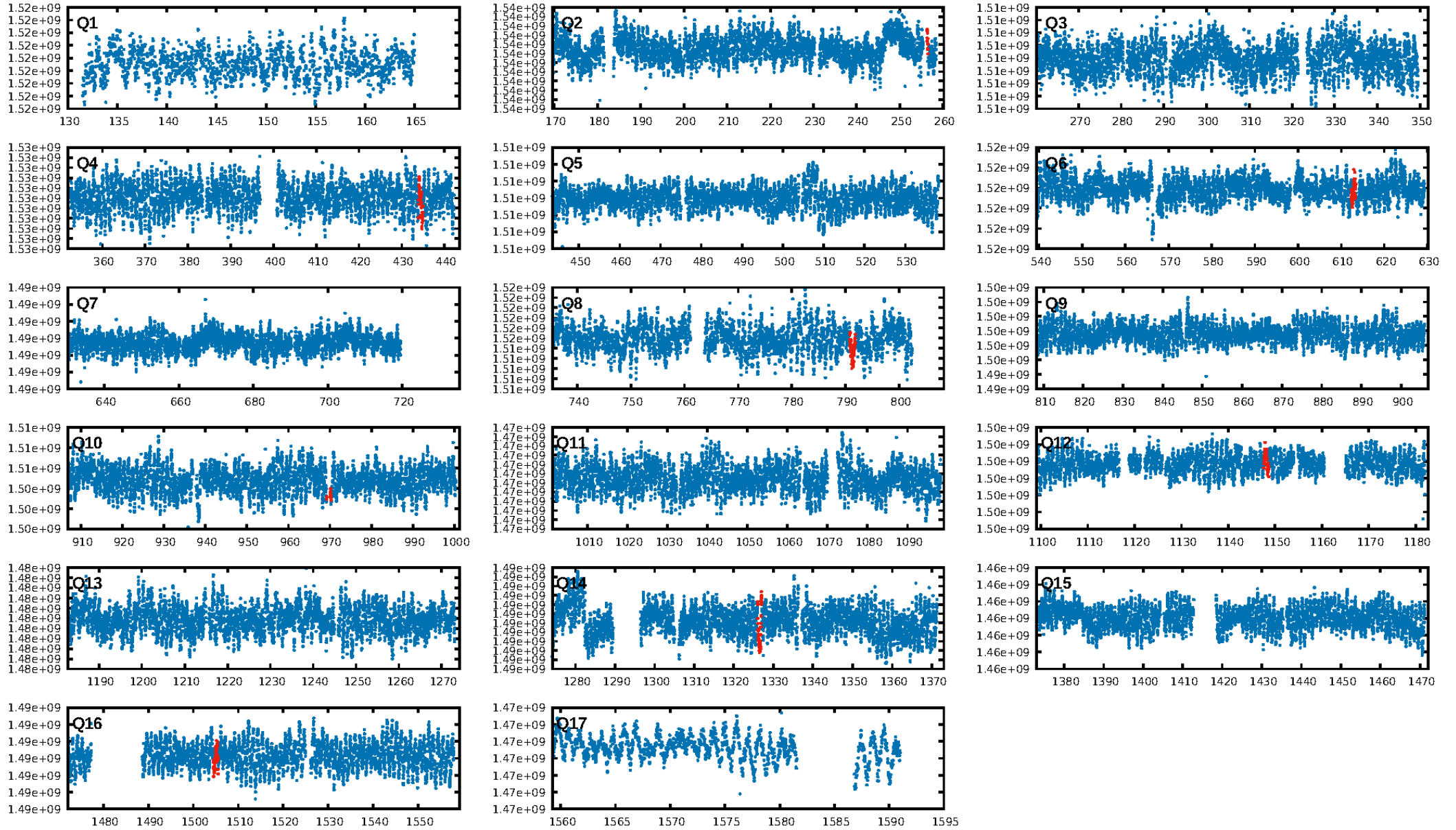
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [108.47 σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 97.6%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.40e-09
RollingBand-fgt: 1.00 [6/6]
GhostDiagnostic-chr: 3.625
Centroid-sig: 32.5%
Centroid-so: 0.797 arcsec [0.82 σ]
OotOffset-rm: 1.709 arcsec [0.73 σ]
KicOffset-rm: 1.631 arcsec [1.18 σ]
OotOffset-st: 1/0/3/0 [4]
KicOffset-st: 1/0/3/0 [4]
DiffImageQuality-fgm: 0.25 [1/4]
DiffImageOverlap-fno: 0.00 [0/5]

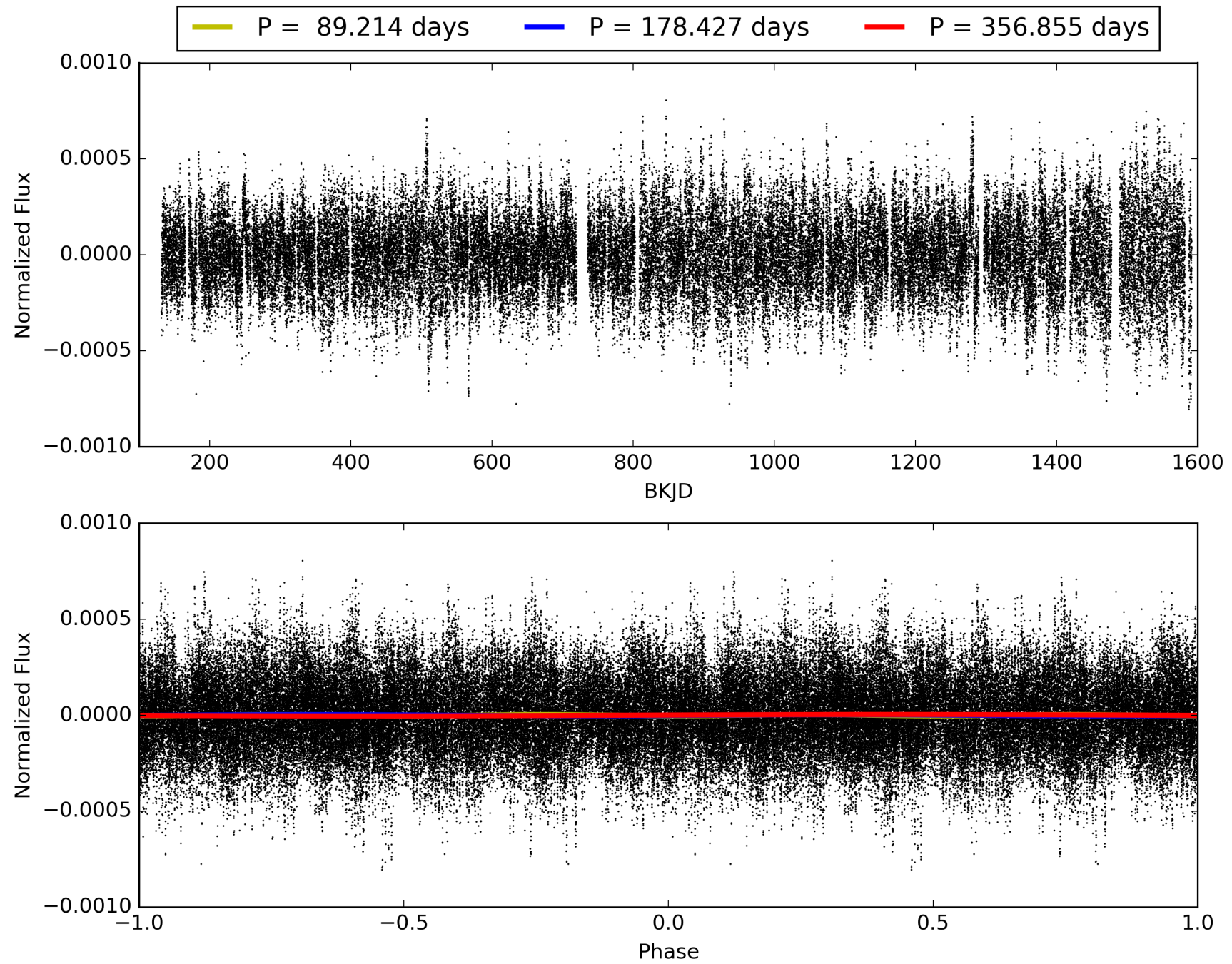
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:28:38 Z

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

TCE 003548449-02, PDC Light Curves

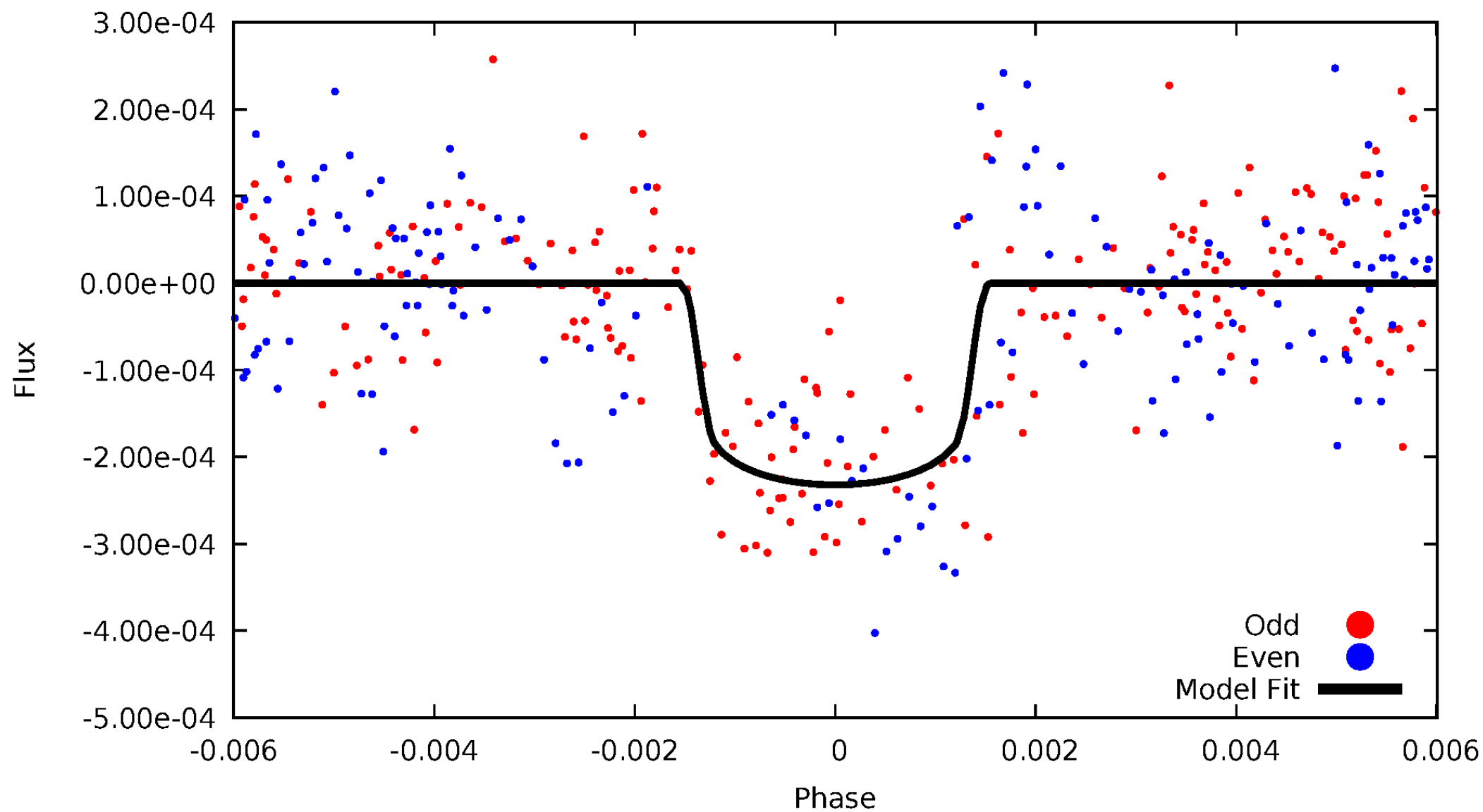


TCE 003548449-02



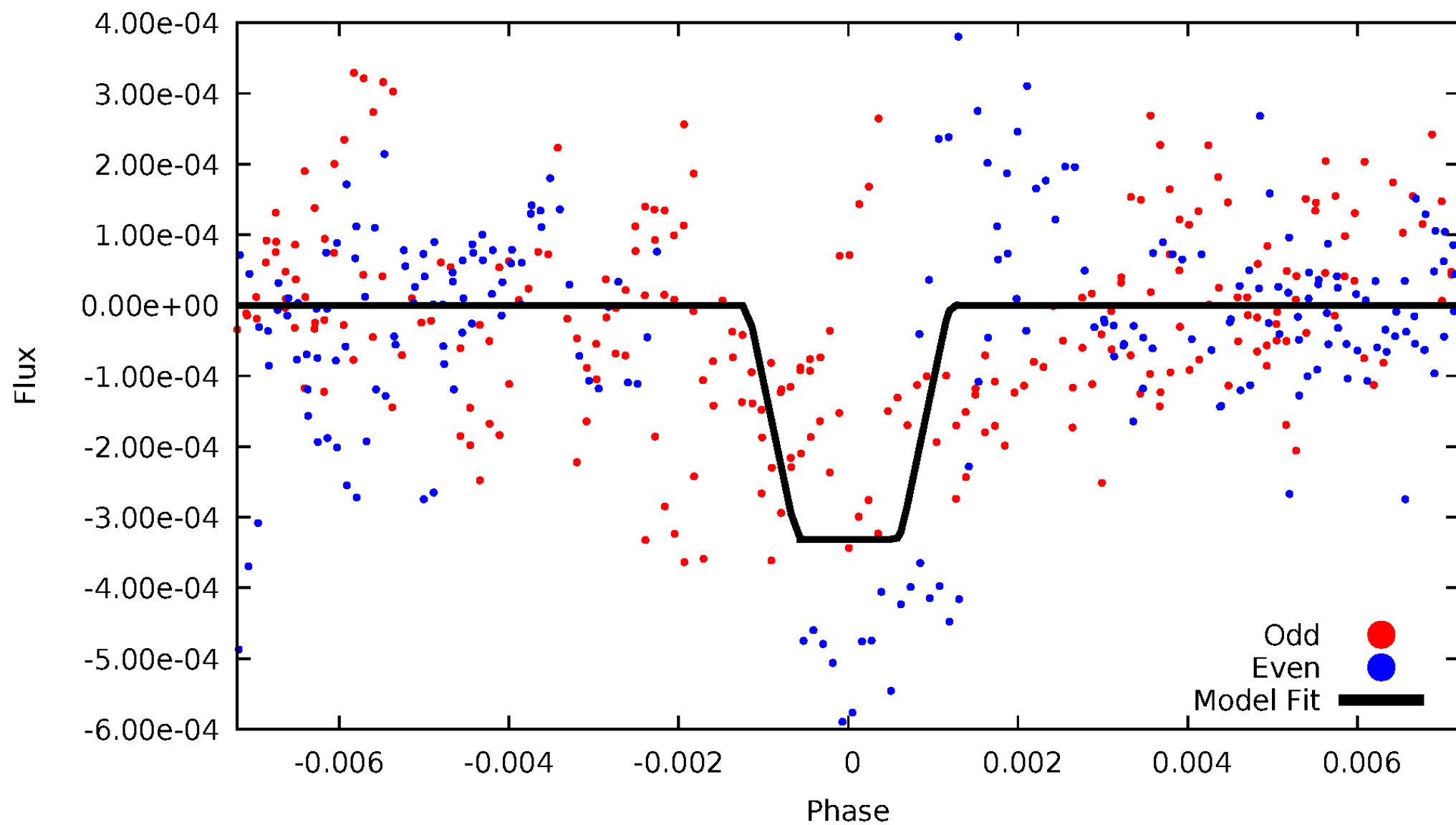
DV Odd/Even

TCE 003548449-02



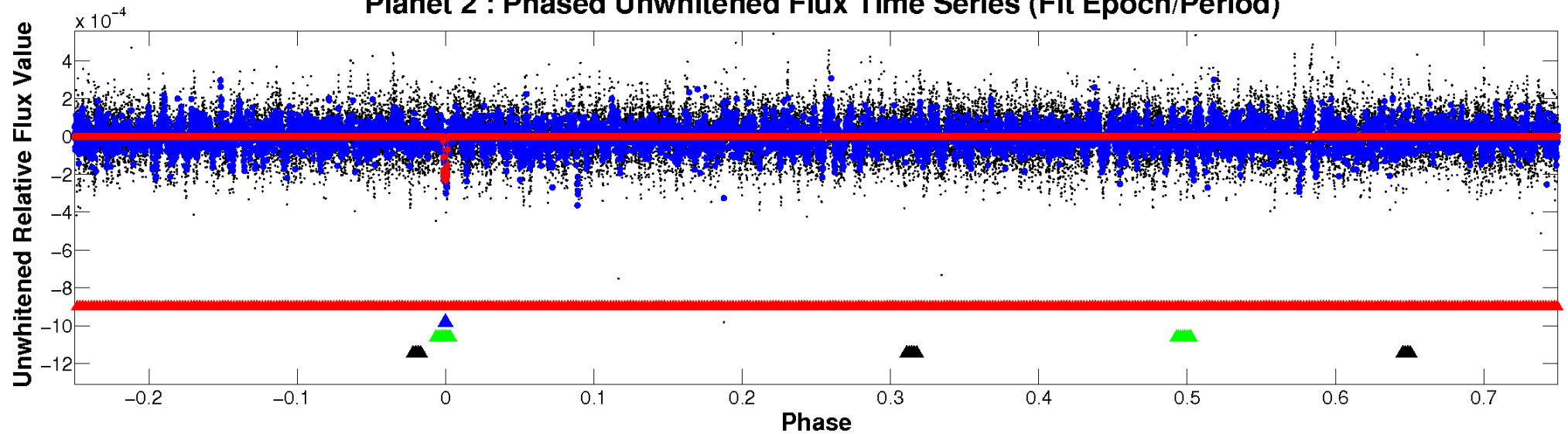
ALT Odd/Even

TCE 003548449-02

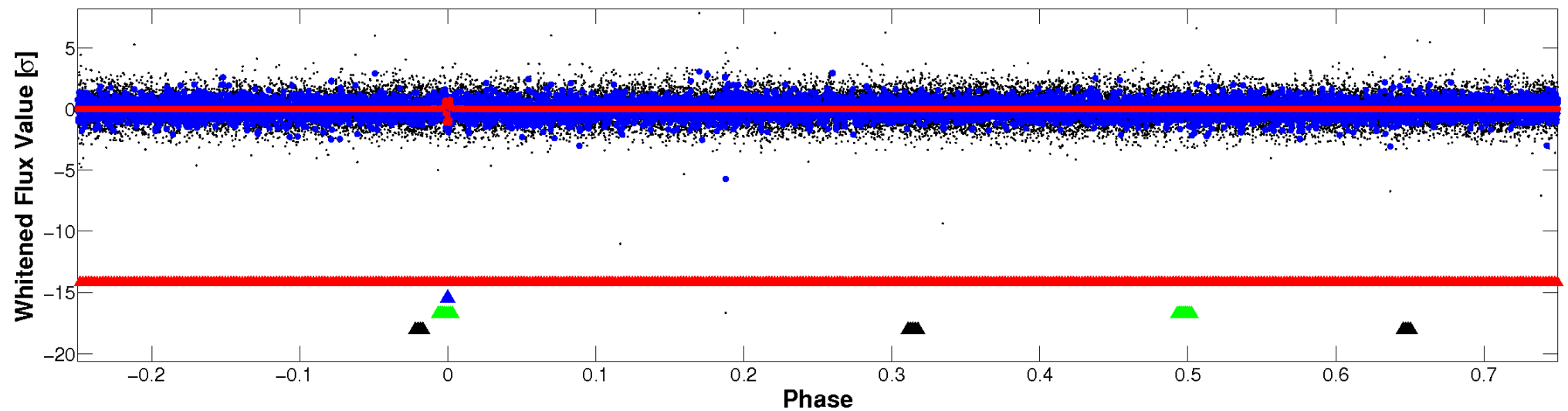


Non-Whitened Vs. Whitened Light Curve

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

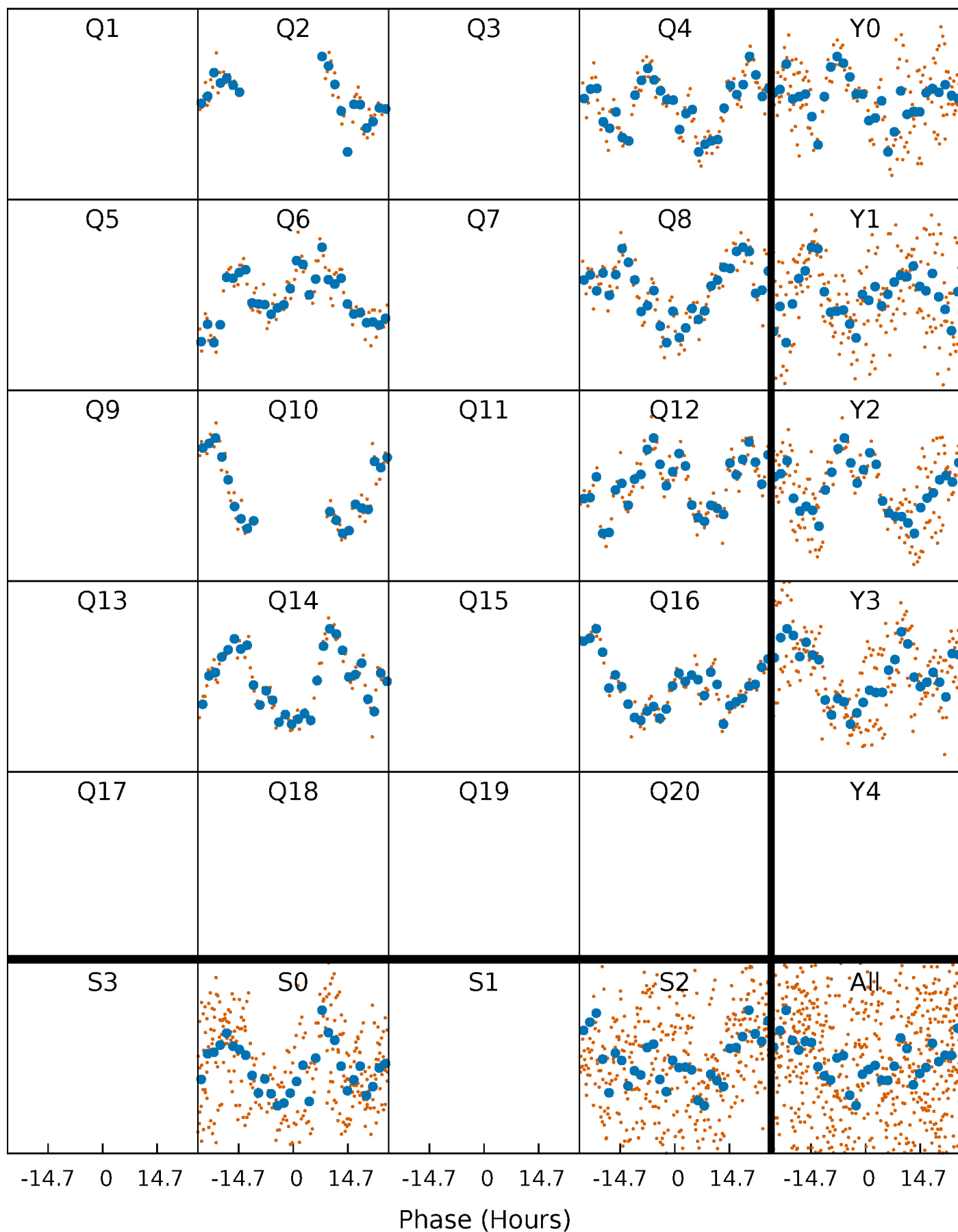


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



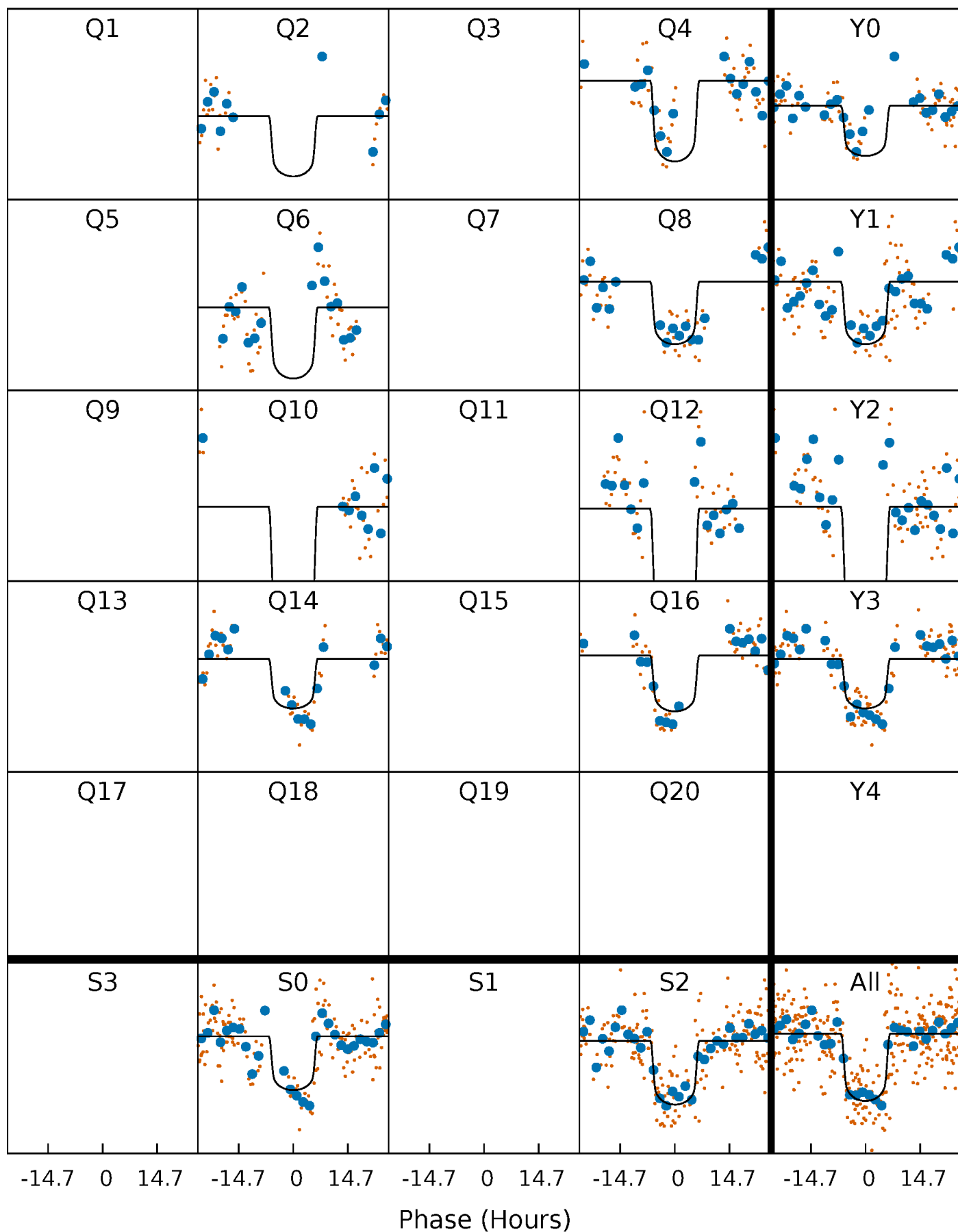
PDC Quarter-Phased Transit Curves

TCE 003548449-02 P=178.427267 Days $T_0=256.001325$ (BKJD)



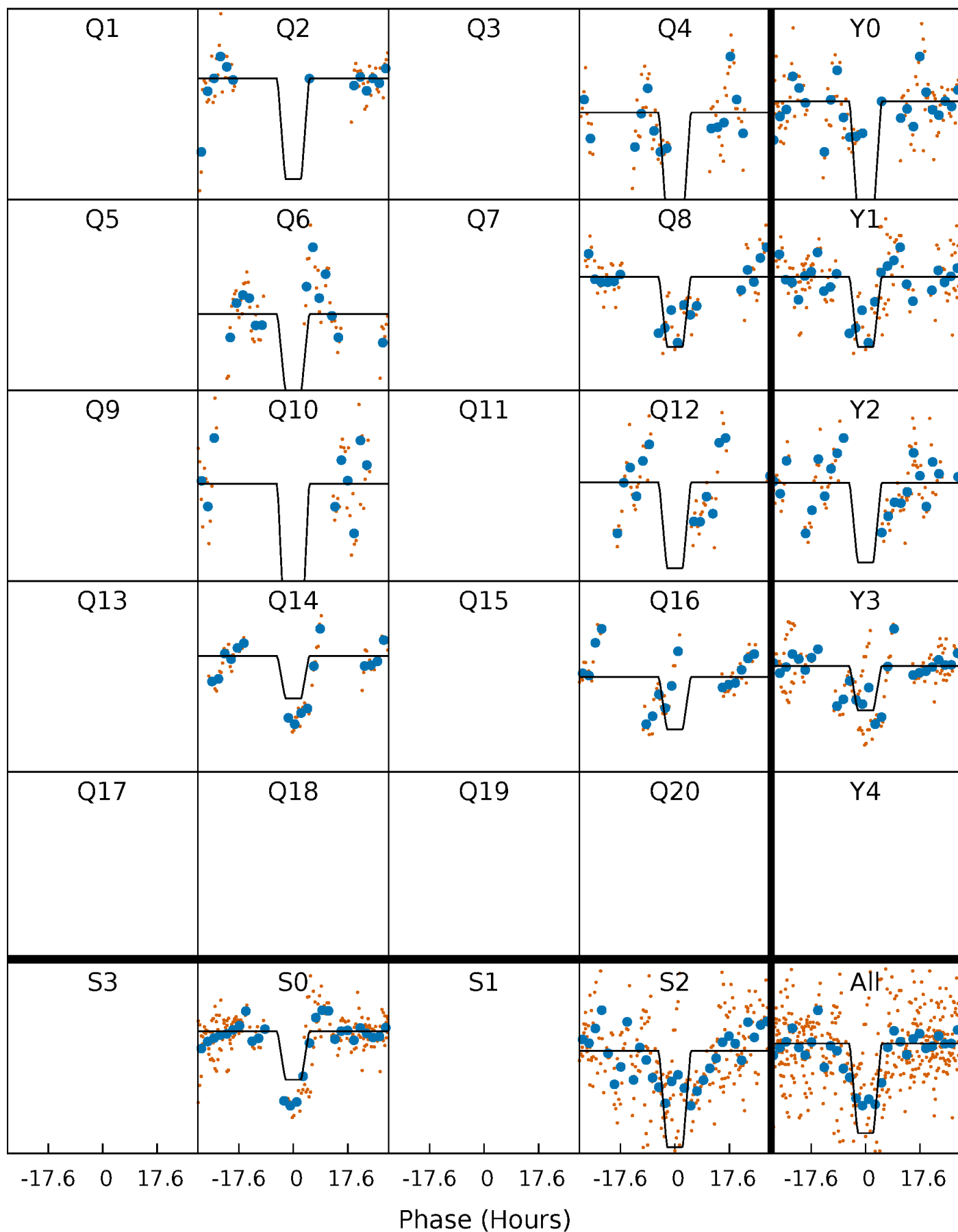
DV Quarter-Phased Transit Curves

TCE 003548449-02 P=178.427267 Days $T_0=256.001325$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

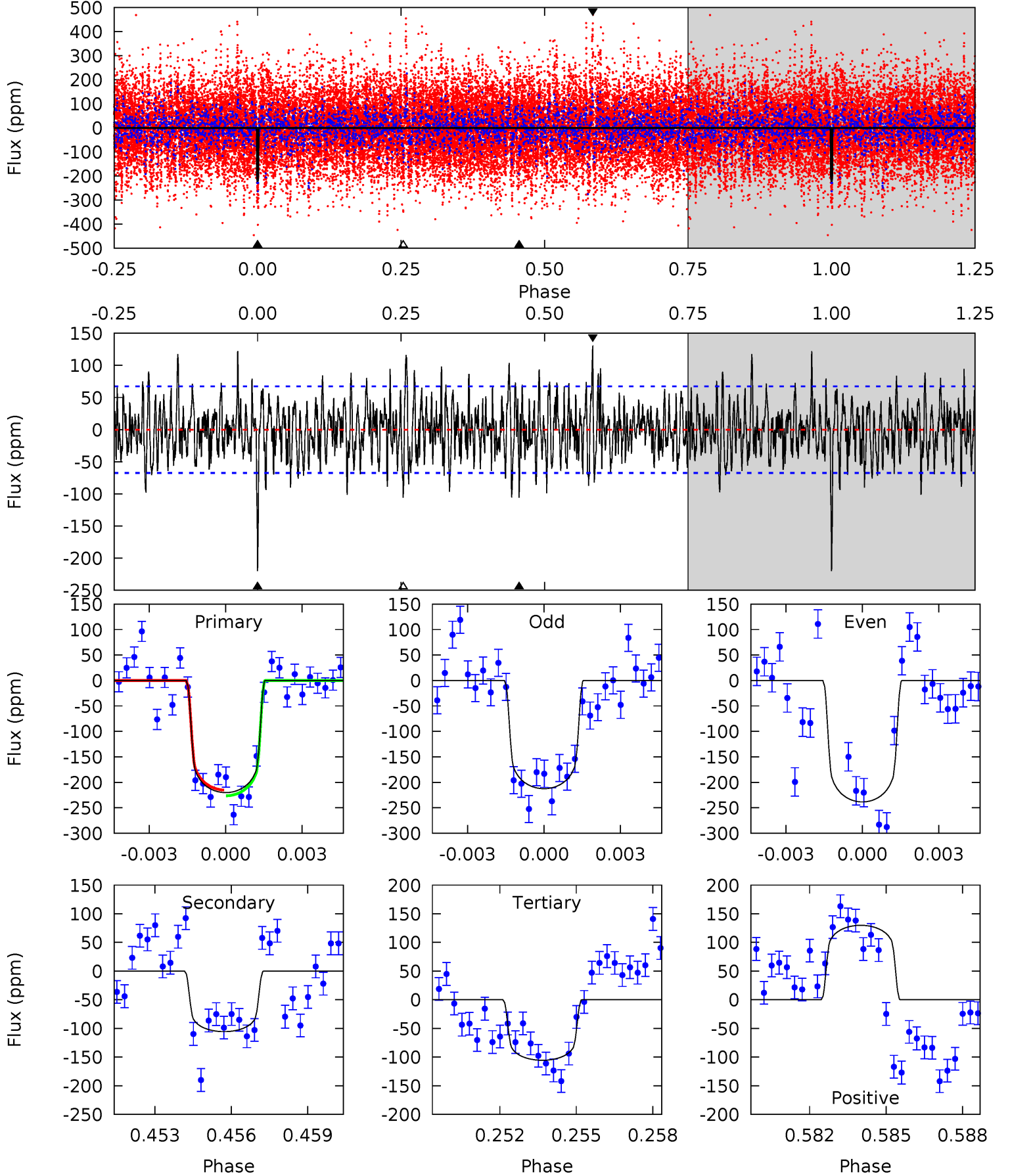
TCE 003548449-02 P=178.405412 Days $T_0=256.112739$ (BKJD)



DV Model-Shift Uniqueness Test

003548449-02, P = 178.427267 Days, E = 77.574058 Days

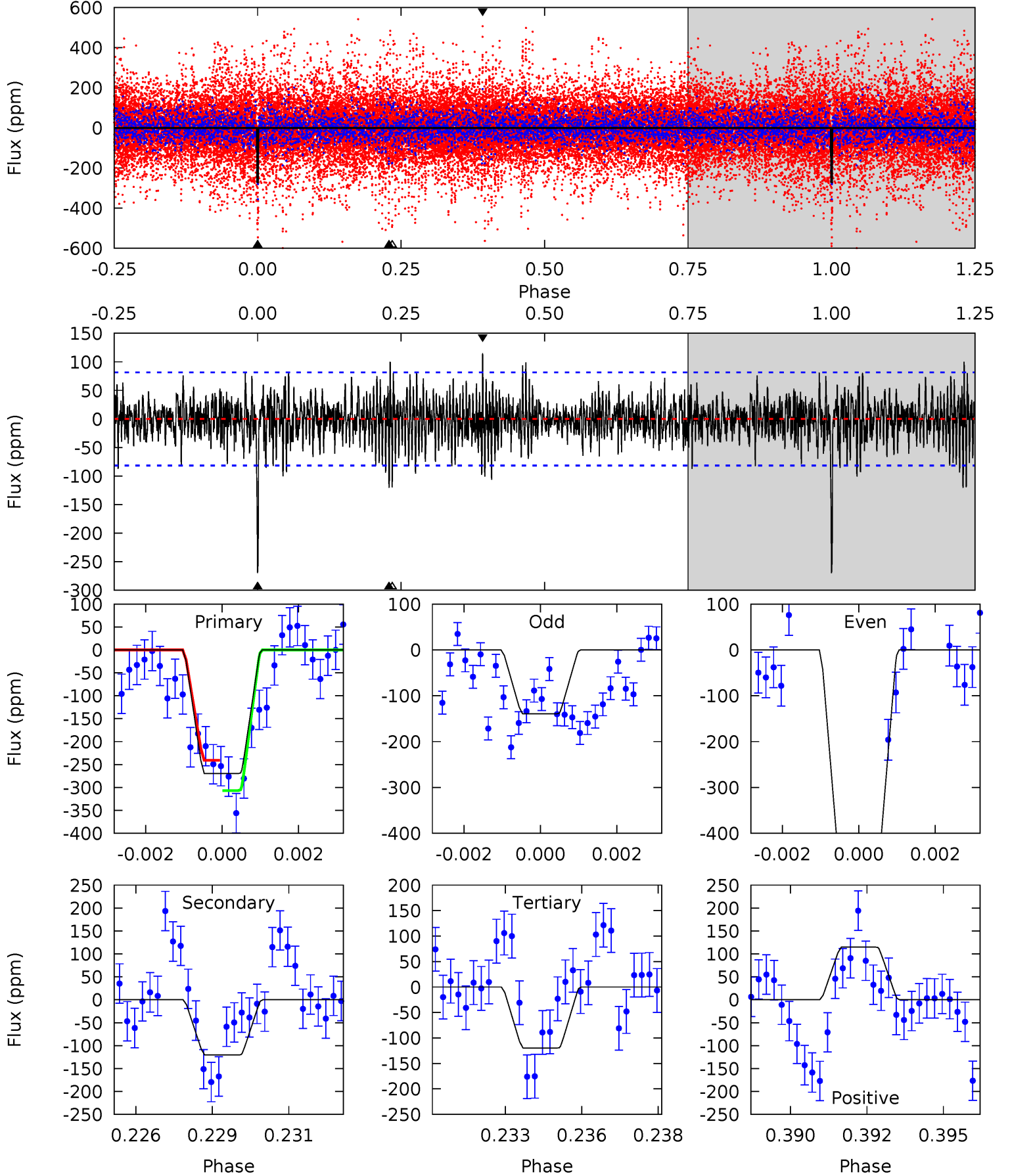
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.2	8.24	8.24	10.1	5.25	2.97	2.80	8.94	7.04	0.00	-1.89	0.94	0.61	0.37	0.44



Alt Model-Shift Uniqueness Test

003548449-02, $P = 178.405412$ Days, $E = 77.707327$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
17.5	7.82	7.78	7.46	5.29	3.03	1.88	9.75	10.1	0.04	0.36	11.0	1.27	0.30	2.14



Stellar Parameters For KIC 003548449

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6784^{+212}_{-282}	$4.255^{+0.149}_{-0.182}$	$-0.500^{+0.250}_{-0.300}$	$1.302^{+0.363}_{-0.242}$	$1.112^{+0.181}_{-0.131}$	$0.710^{+0.512}_{-0.346}$
	+3%/-4%	+4%/-4%	+50%/-60%	+28%/-19%	+16%/-12%	+72%/-49%
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 003548449-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-106 ± 13	$2.36^{+0.40}_{-0.34}$	594^{+48}_{-35}	5376^{+301}_{-290}	4343^{+1580}_{-1245}
Alt.	-120 ± 15	$2.60^{+0.45}_{-0.32}$	595^{+44}_{-43}	5271^{+287}_{-275}	4037^{+1331}_{-1119}

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

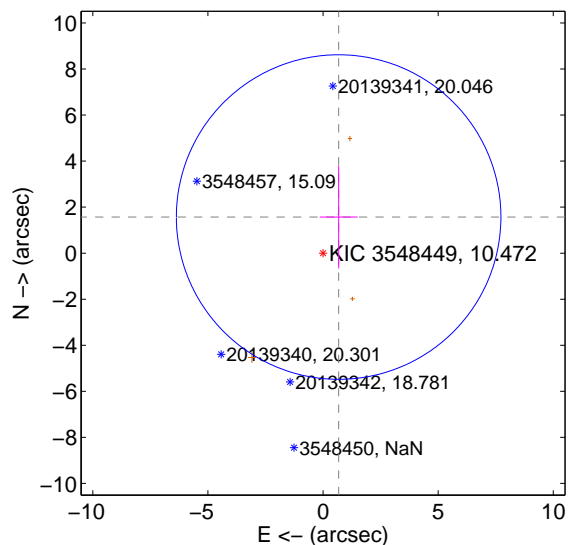
Supplemental centroid analysis for 003548449-02. **Kepler magnitude: 10.47.** Transit SNR 8.07

There are 1 quarters with good PRF difference image offsets

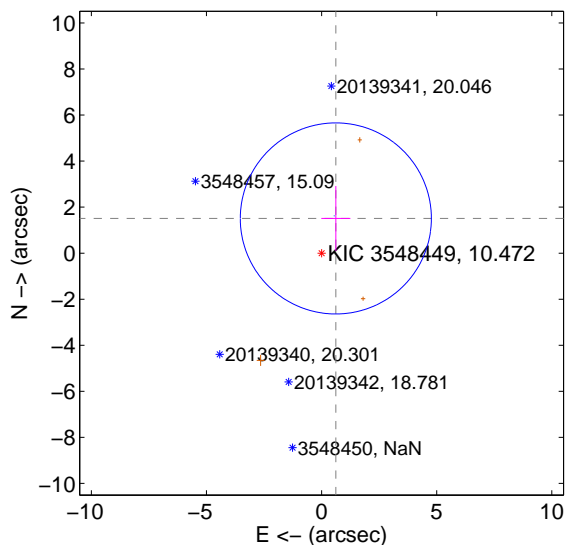
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	1.709 ± 2.349	0.73	-0.677 ± 0.826	1.569 ± 2.234
PRF-fit source offset from KIC position	1.631 ± 1.383	1.18	-0.619 ± 0.633	1.509 ± 1.408
photometric centroid source offset	0.80 ± 0.97	0.82	-0.46 ± 0.81	-0.65 ± 1.04

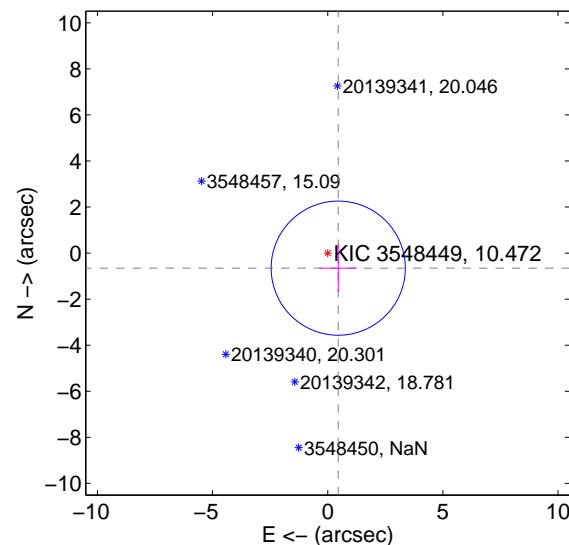
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

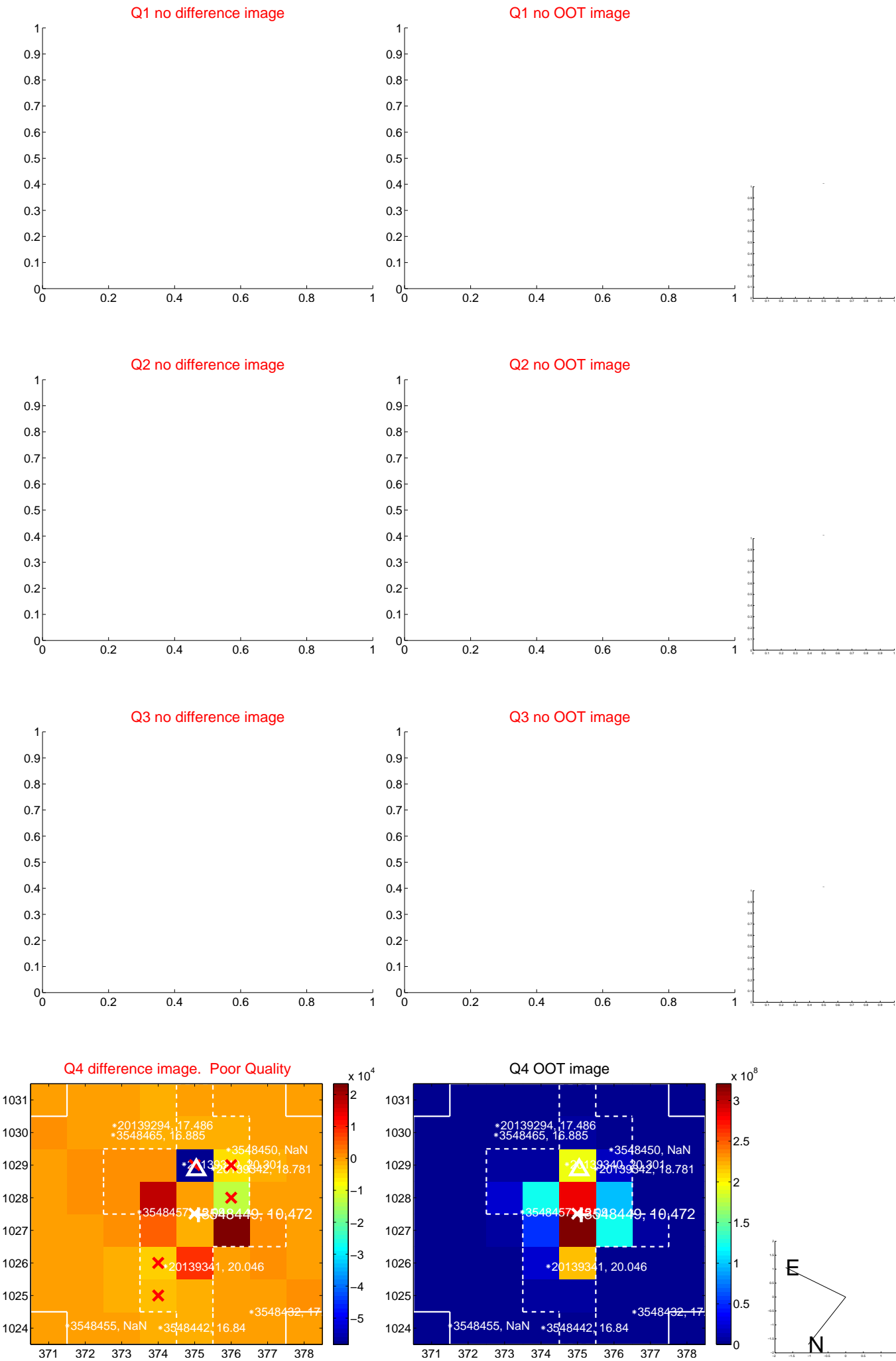


offset from photometric centroids

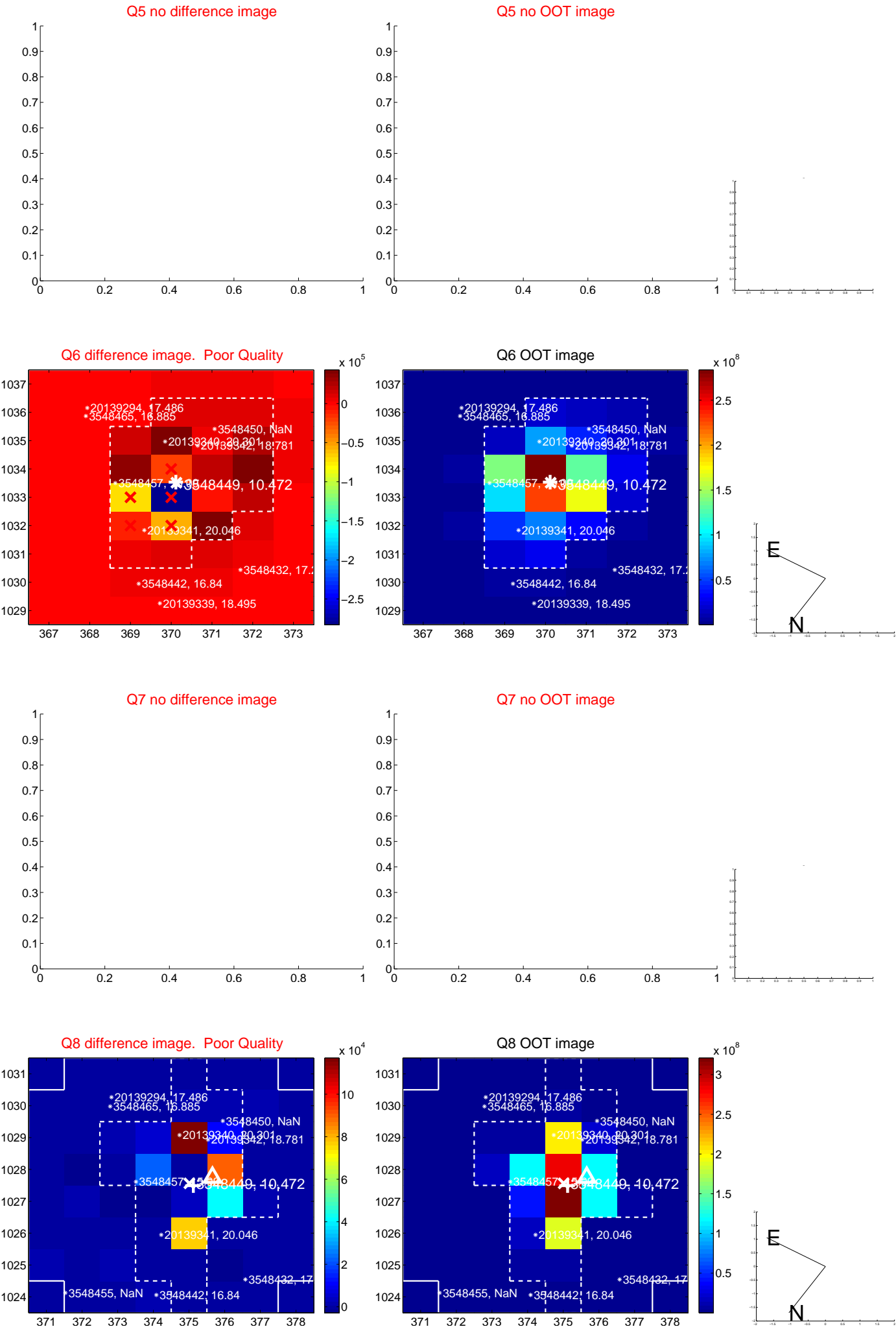


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

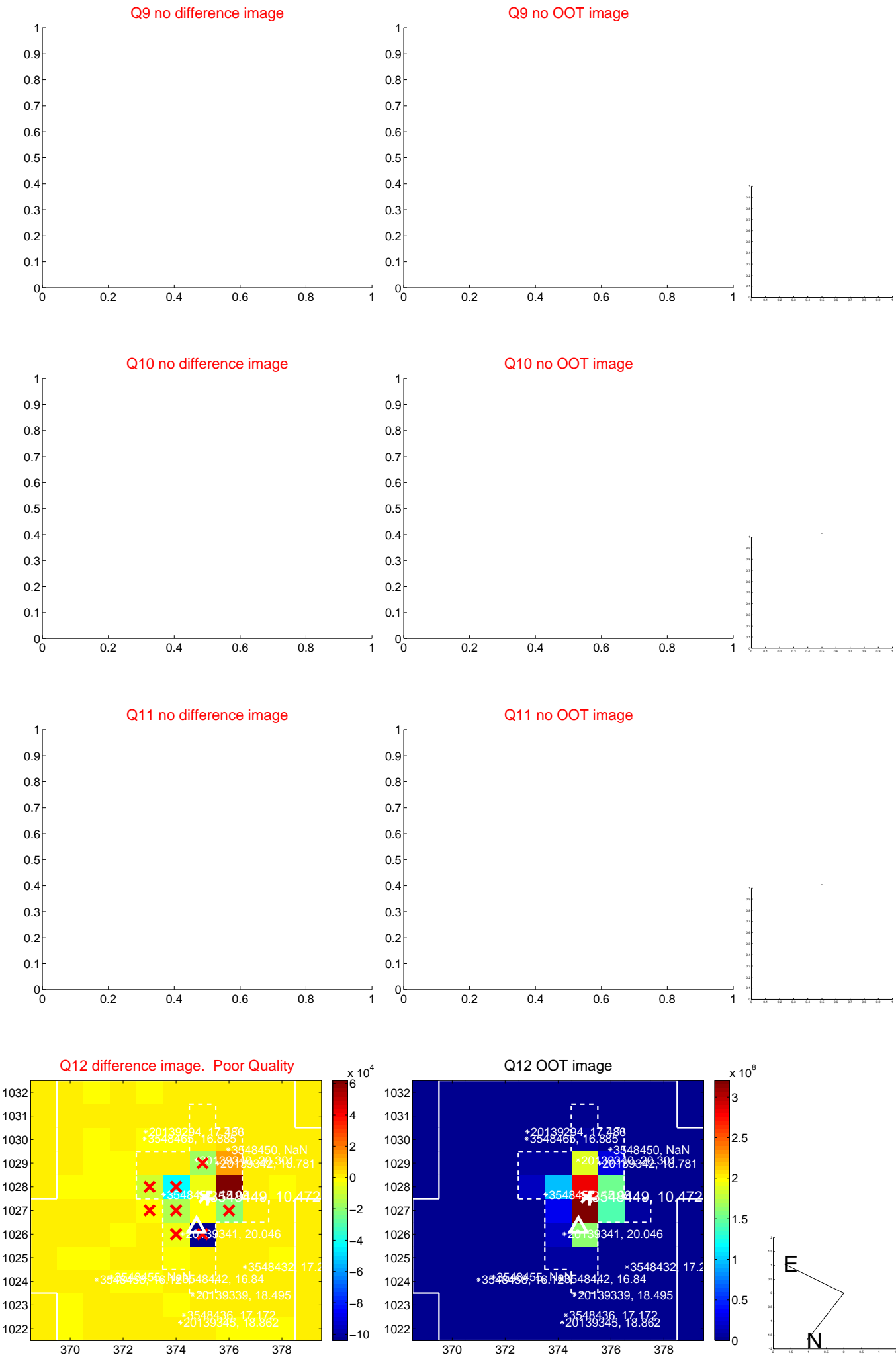
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



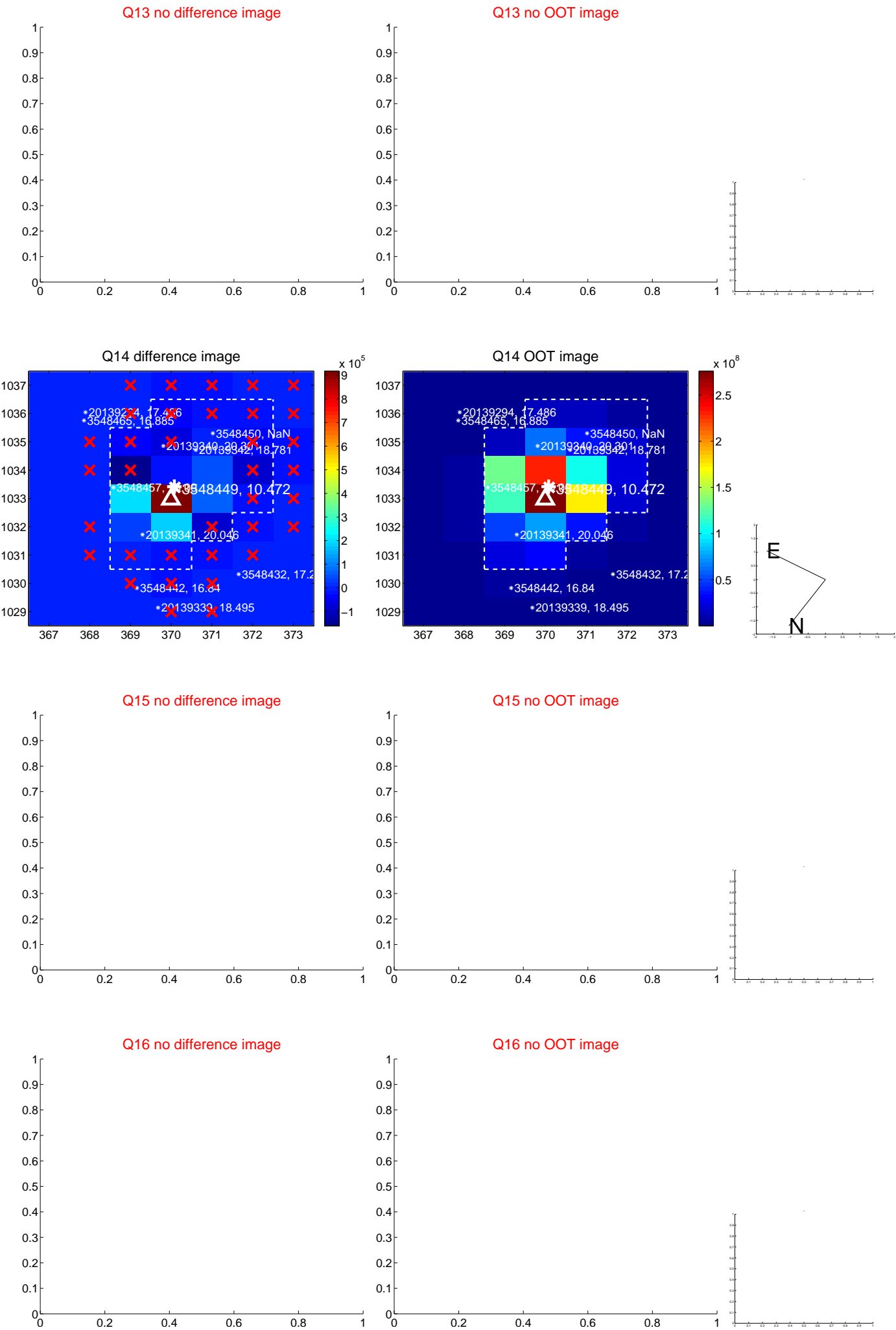
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



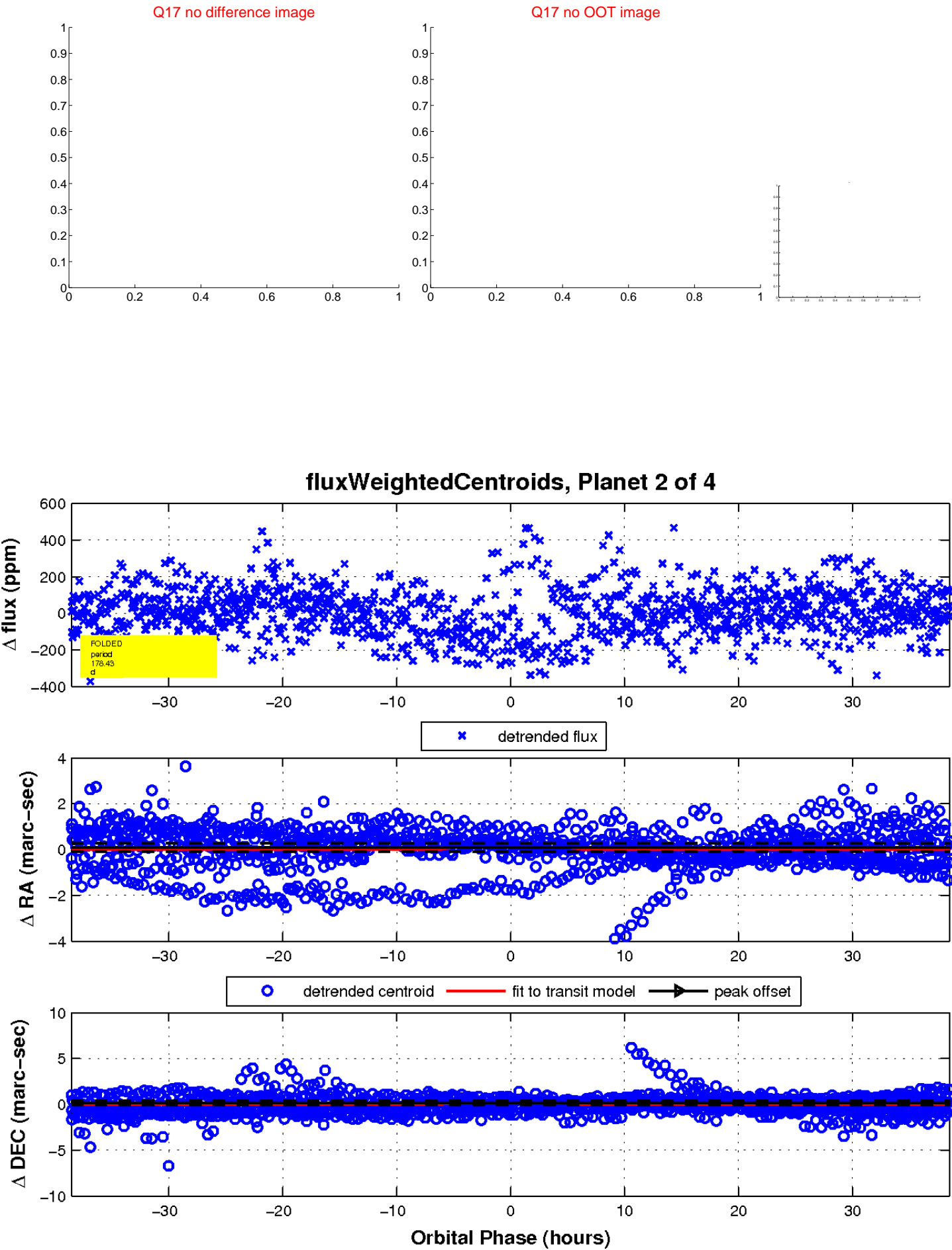
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

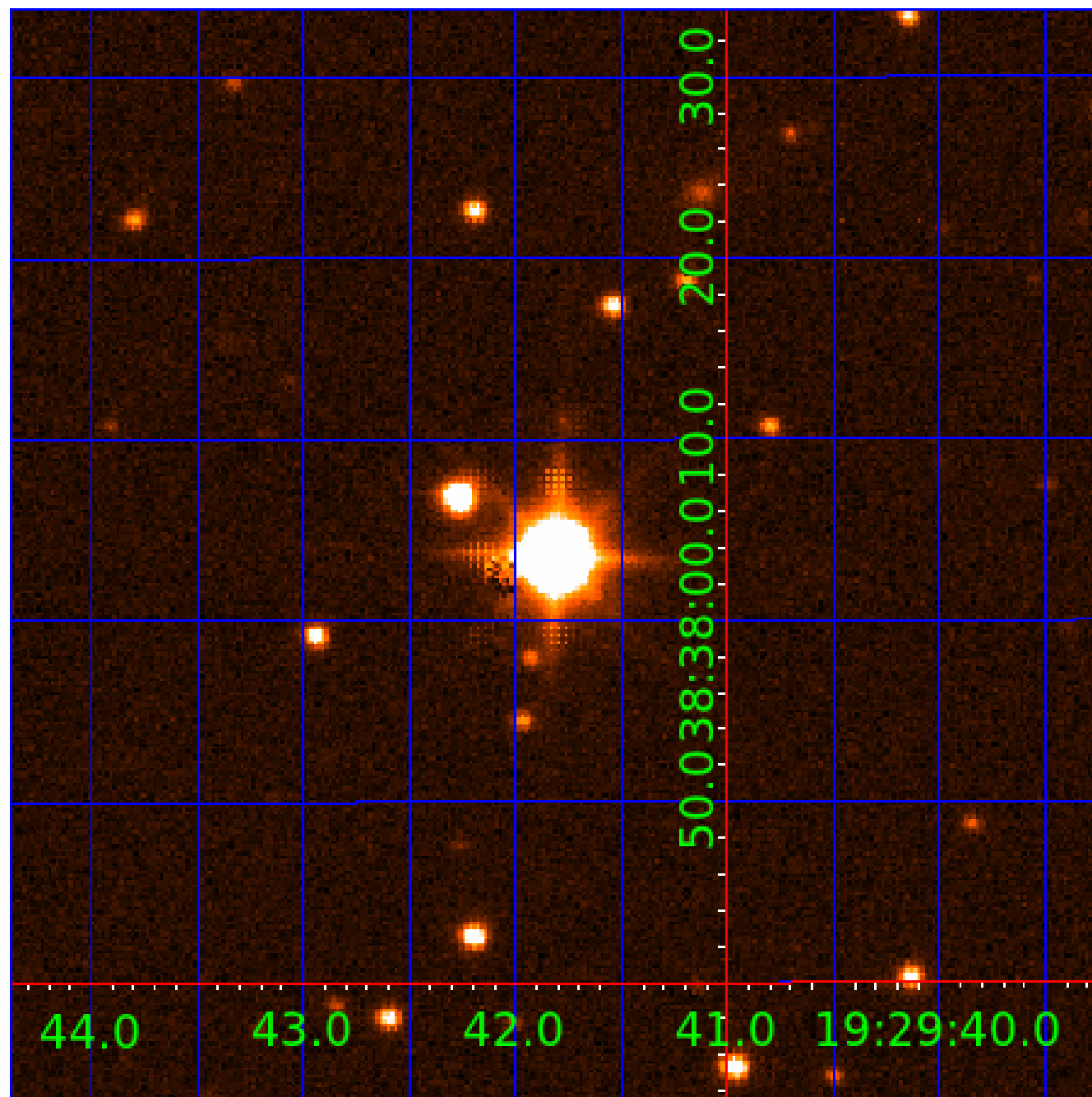


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003548449

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})
003548449-01	OBS	No	1.029398	132.068396	8.0	4.039	7.9	4.7	1.30	6784	0.43	7524.32
003548449-02	OBS	No	178.427267	256.001325	232.1	12.851	7.5	8.1	1.30	6784	2.32	7.79
003548449-03	OBS	No	89.337053	165.511012	211.4	2.585	7.6	7.0	1.30	6784	2.22	19.58
003548449-04	OBS	No	119.051687	133.057761	177.7	2.730	7.4	8.0	1.30	6784	1.84	13.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003548449-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
003548449-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
003548449-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_SATURATED
003548449-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_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.

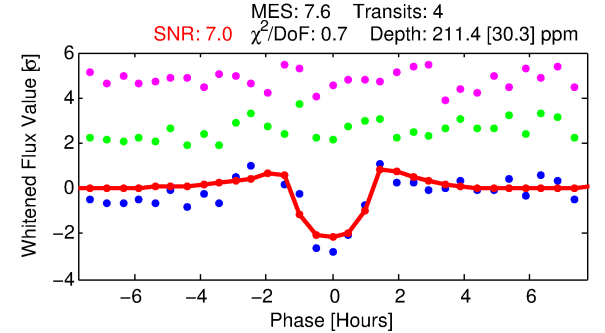
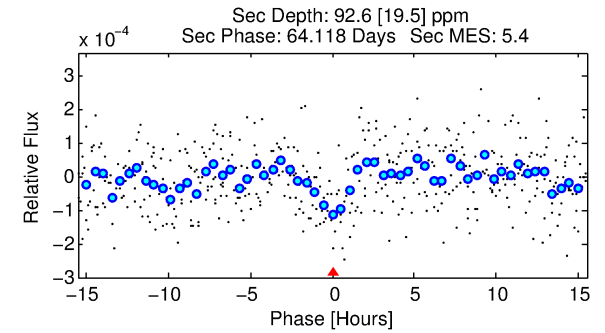
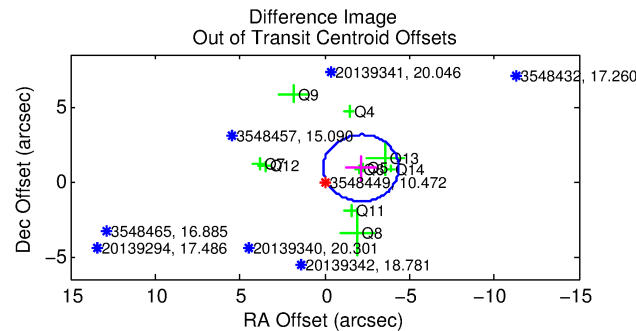
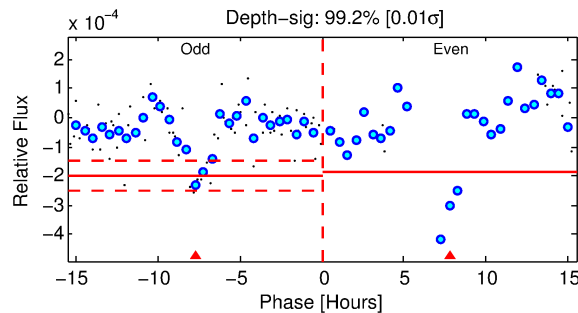
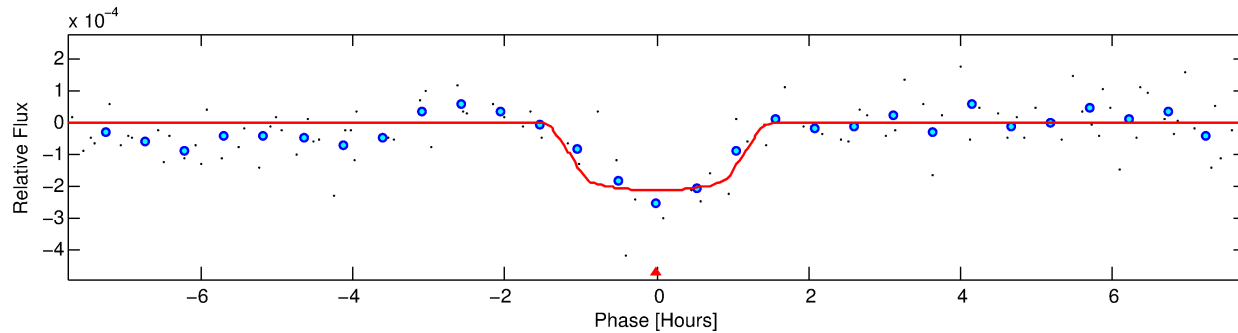
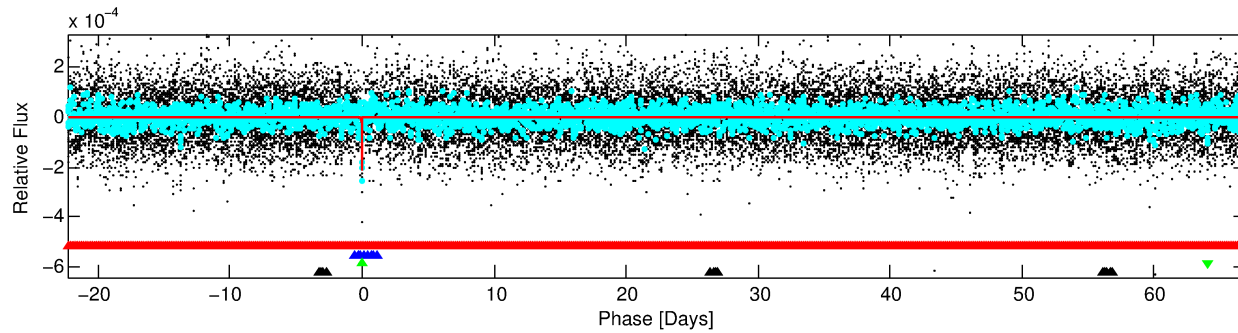
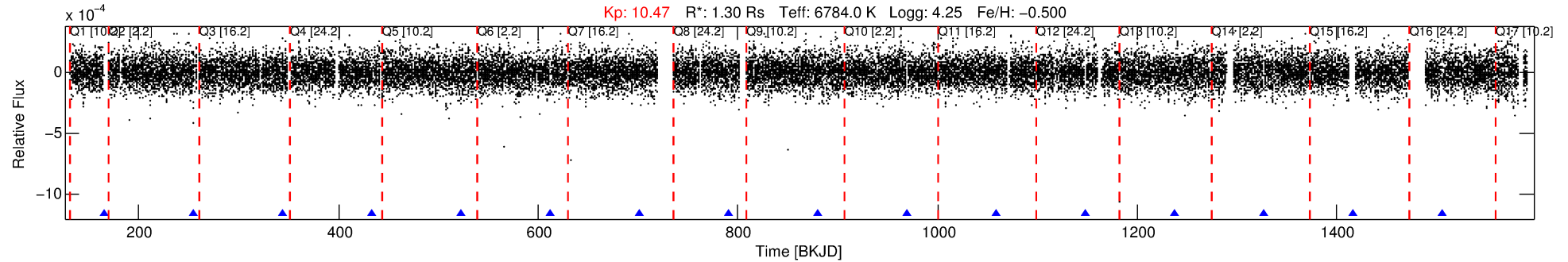
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003548449-03

No Significant Match Found

DV One-Page Summary

KIC: 3548449 Candidate: 3 of 4 Period: 89.337 d



DV Fit Results:

Period = 89.33705 [0.00099] d
Epoch = 165.5110 [0.0075] BKJD
Rp/R* = 0.0156 [0.0087]
a/R* = 120.80 [400.55]
b = 0.91 [0.66]
Seff = 19.58 [7.33]
Teq = 536 [50] K
Rp = 2.22 [1.39] Re
a = 0.4053 [0.0942] AU
Ag = 1703.09 [2022.44] [0.84 σ]
Teffp = 5328 [1533] K [3.12 σ]

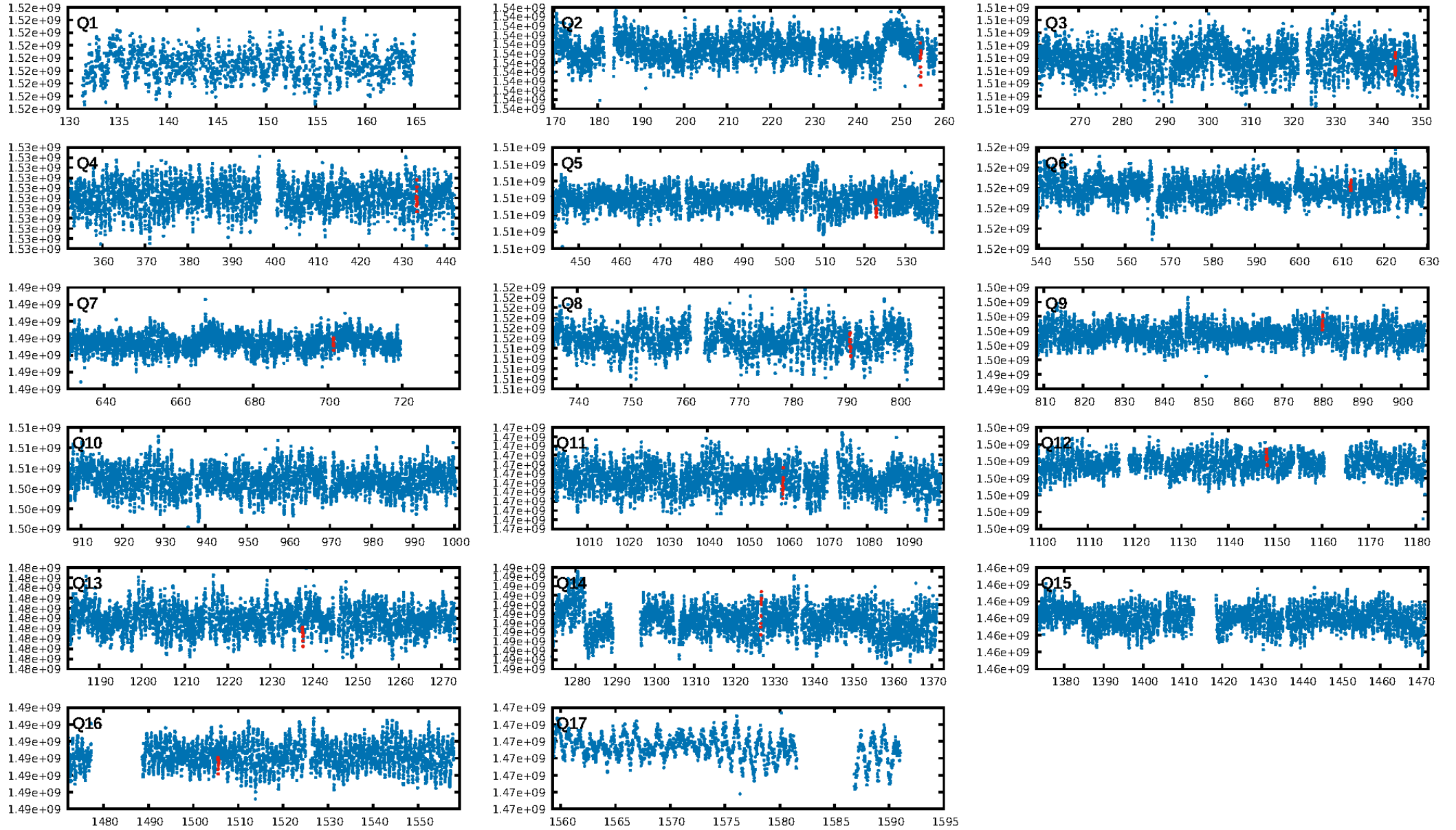
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [441.99 σ]
LongPeriod-sig: 100.0% [189.70 σ]
ModelChiSquare2-sig: 62.1%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.67e-10
RollingBand-fgt: 1.00 [4/4]
GhostDiagnostic-chr: 1.178
Centroid-sig: 69.9%
Centroid-so: 0.286 arcsec [0.47 σ]
OotOffset-rm: 2.324 arcsec [3.13 σ]
KicOffset-rm: 2.456 arcsec [3.19 σ]
OotOffset-st: 2/2/3/3 [10]
KicOffset-st: 2/2/3/3 [10]
DiffImageQuality-fgm: 0.10 [1/10]
DiffImageOverlap-fno: 0.17 [2/12]

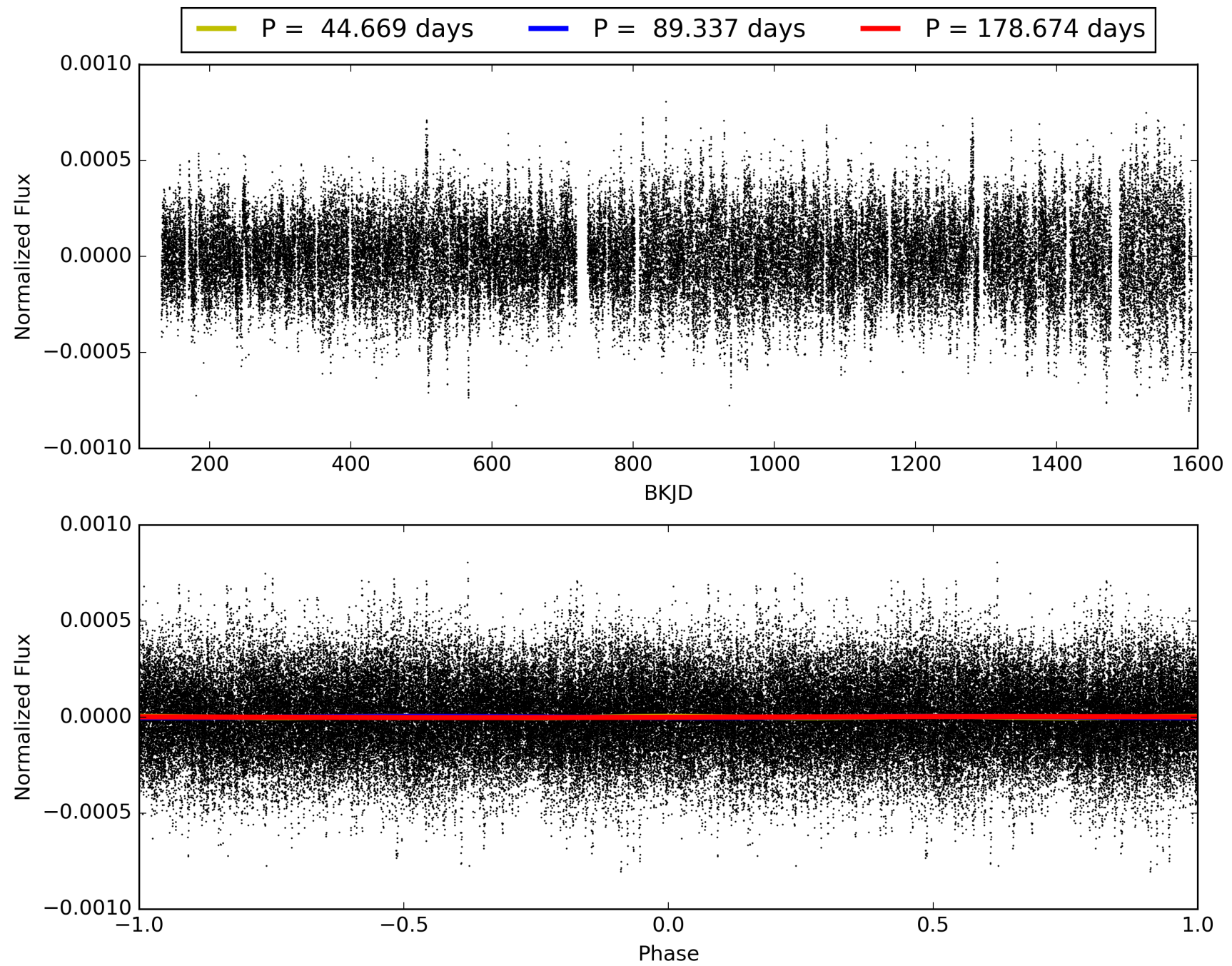
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:28:45 Z

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

TCE 003548449-03, PDC Light Curves

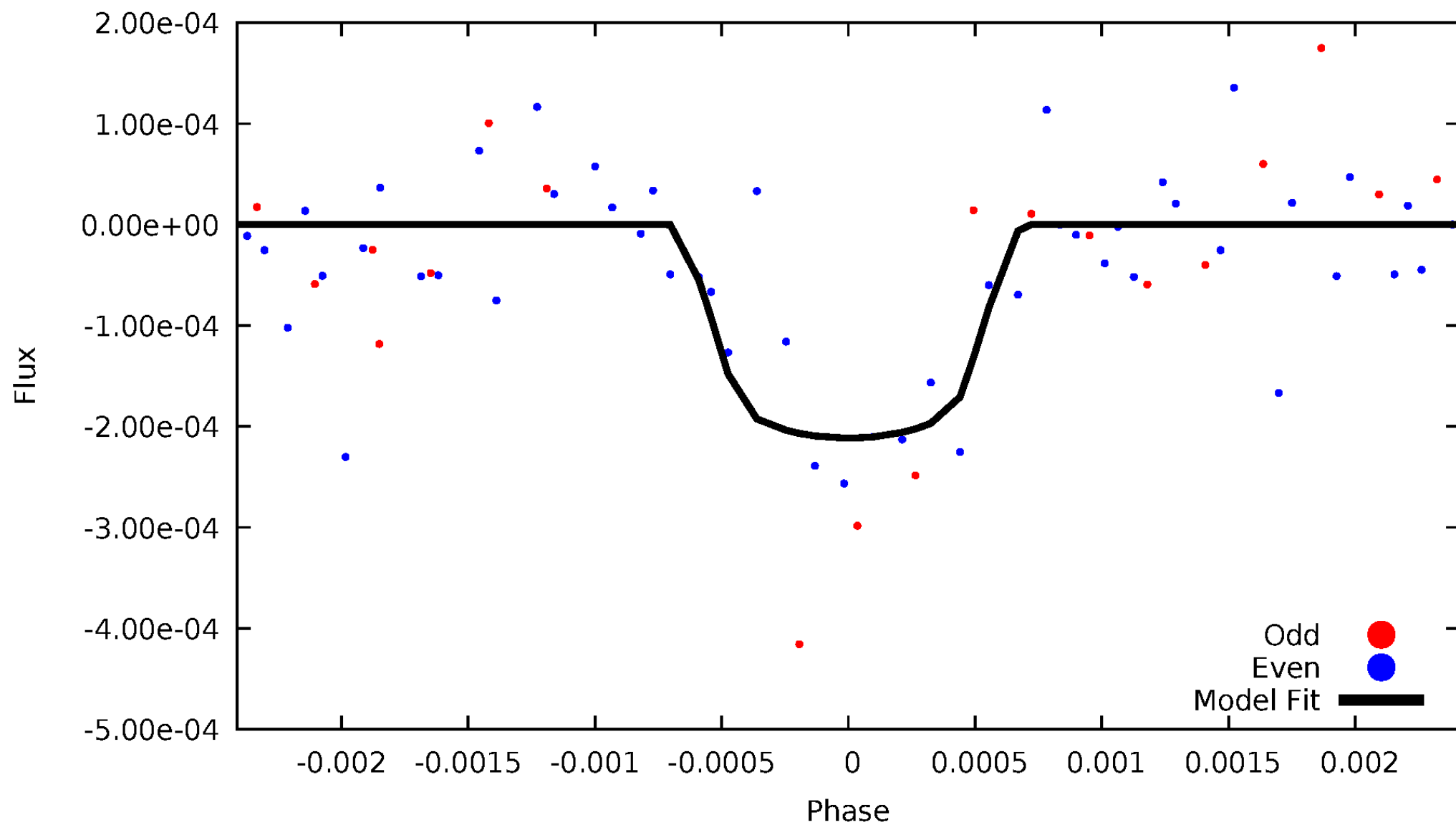


TCE 003548449-03



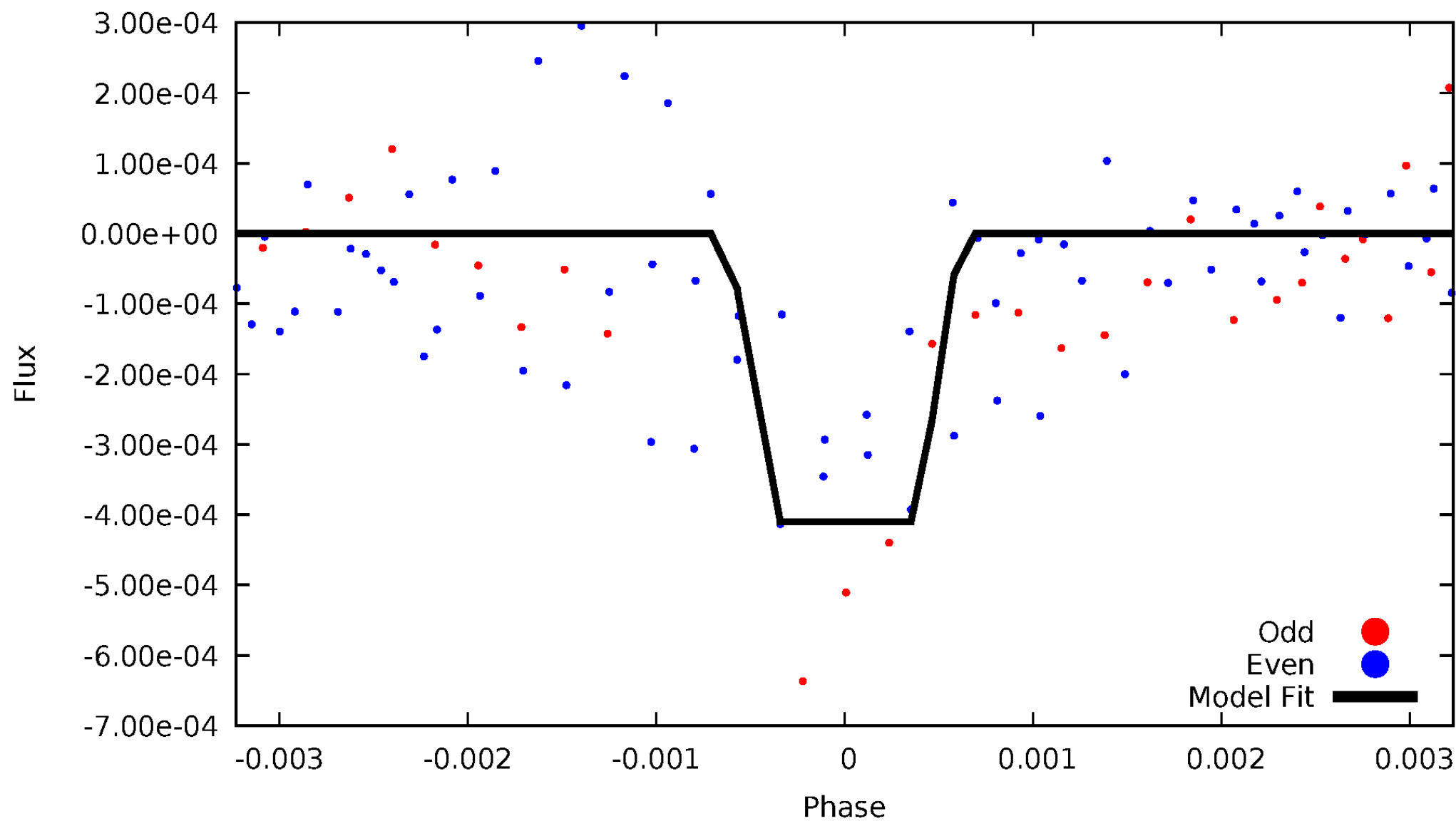
DV Odd/Even

TCE 003548449-03



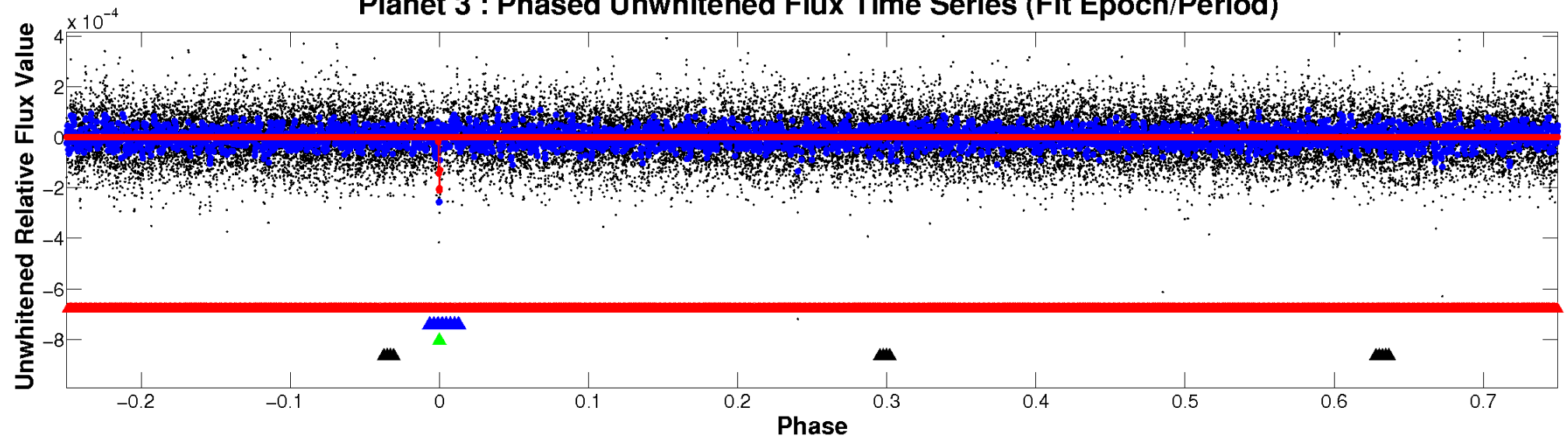
ALT Odd/Even

TCE 003548449-03

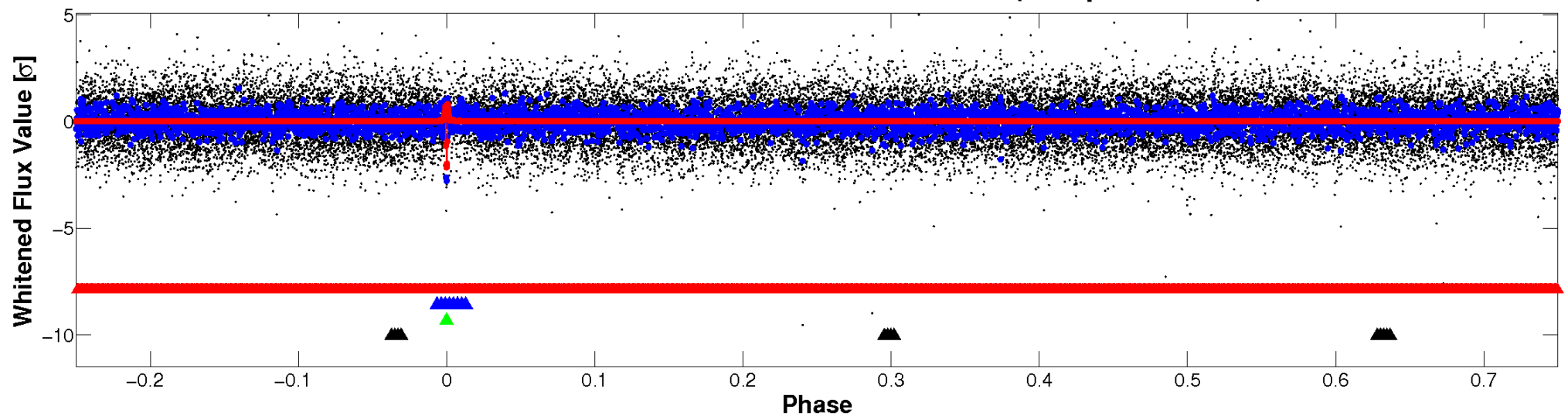


Non-Whitened Vs. Whitened Light Curve

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

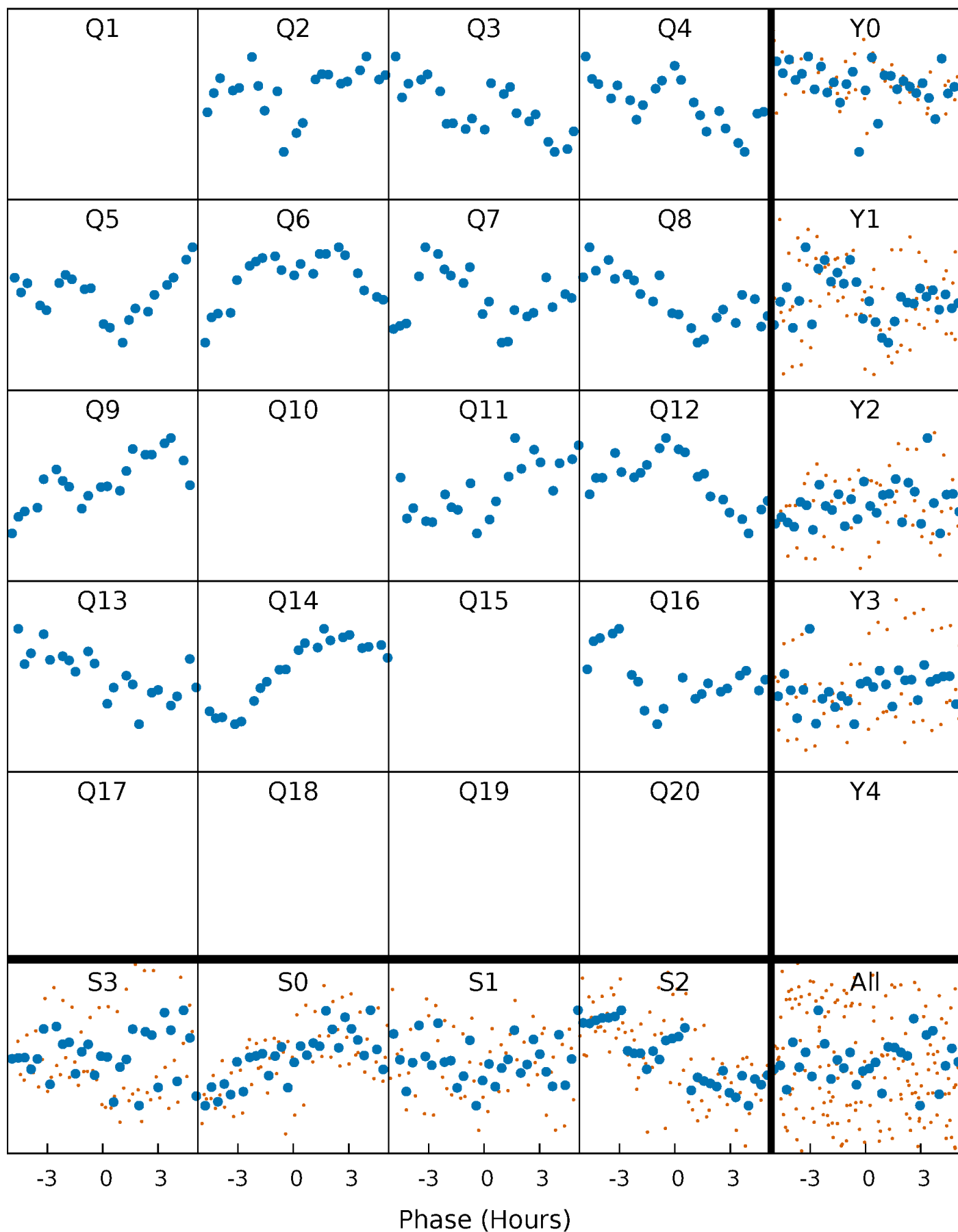


Planet 3 : Phased Whitened Flux Time Series (Fit Epoch/Period)



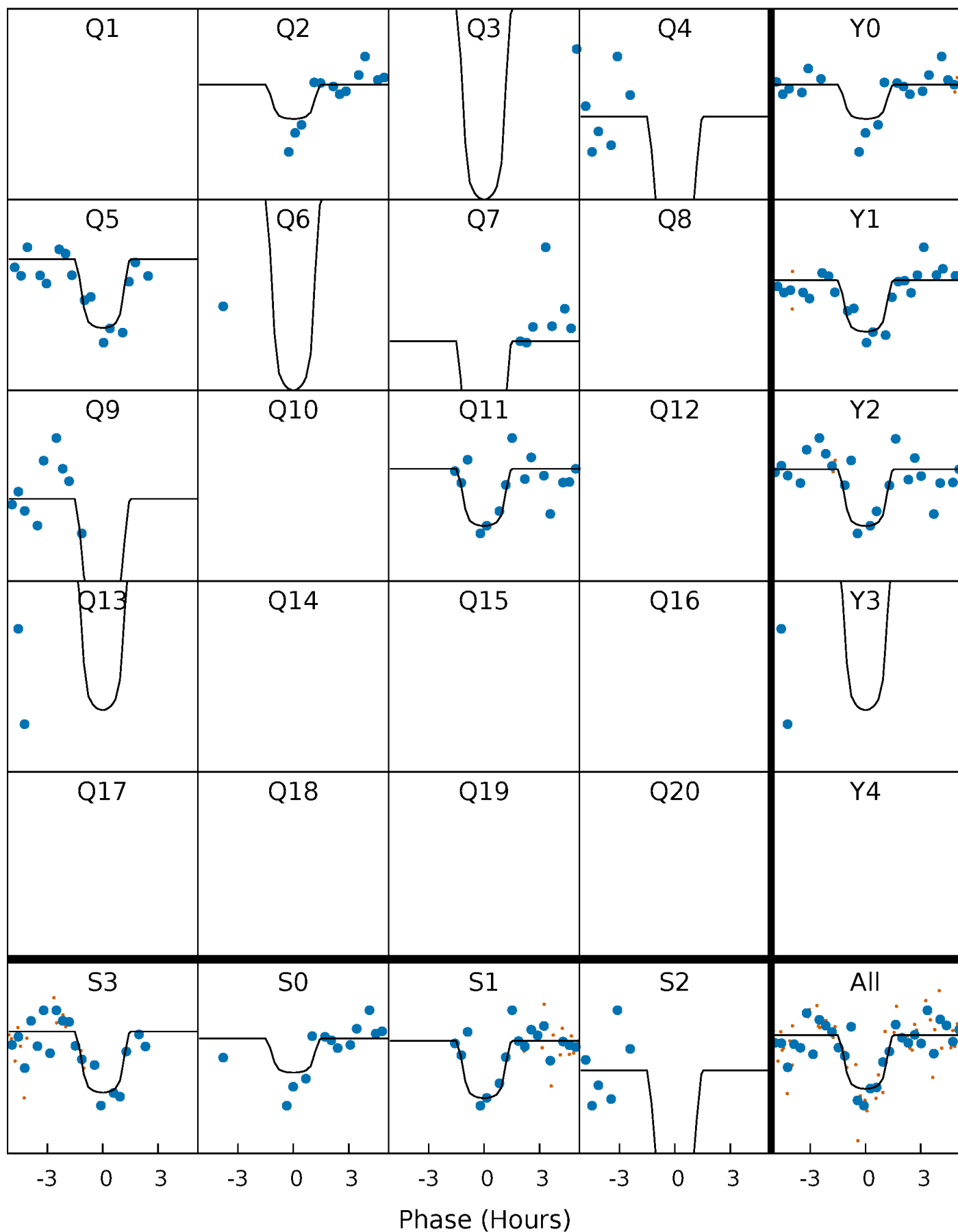
PDC Quarter-Phased Transit Curves

TCE 003548449-03 P= 89.337053 Days $T_0=165.511012$ (BKJD)



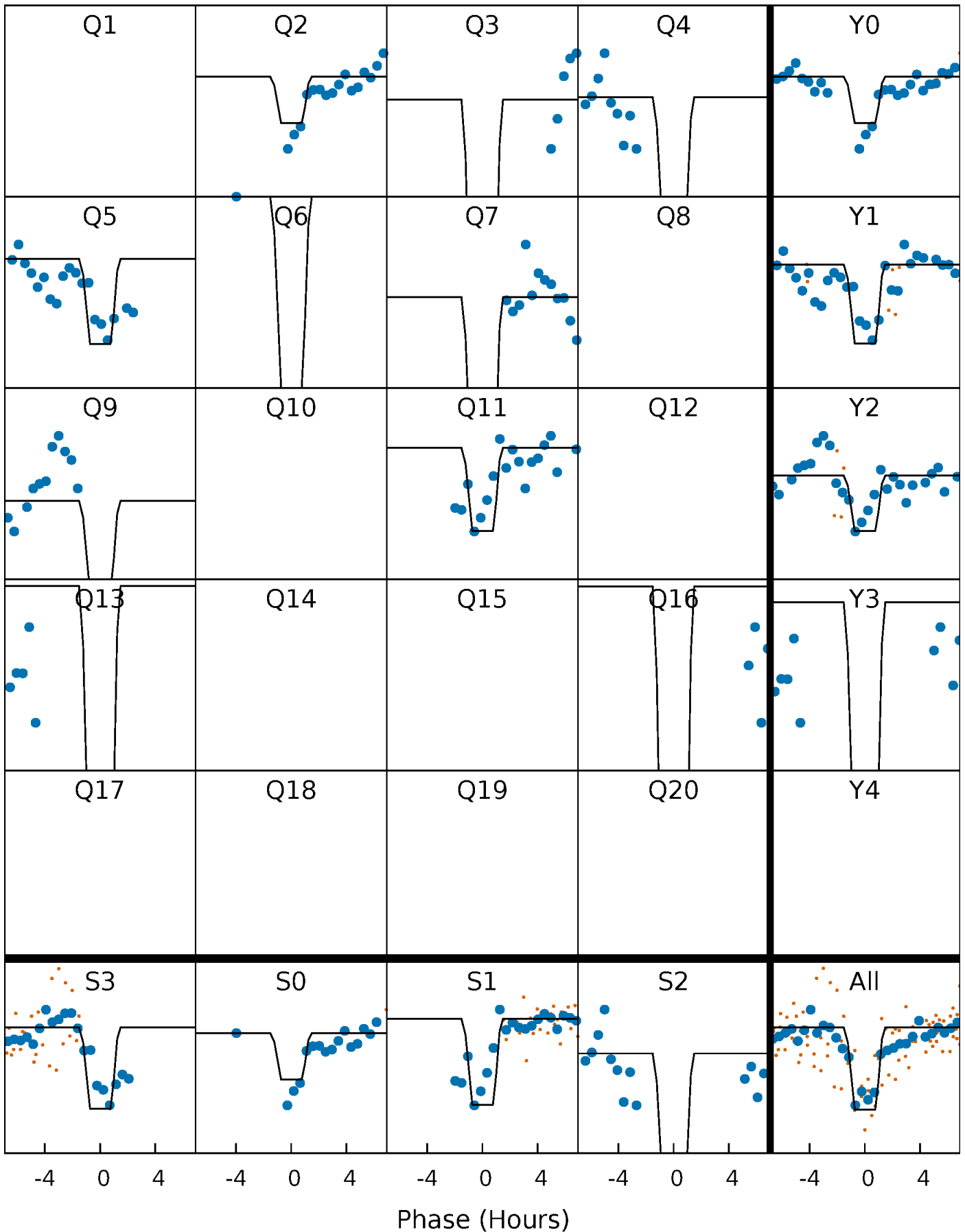
DV Quarter-Phased Transit Curves

TCE 003548449-03 P= 89.337053 Days $T_0=165.511012$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

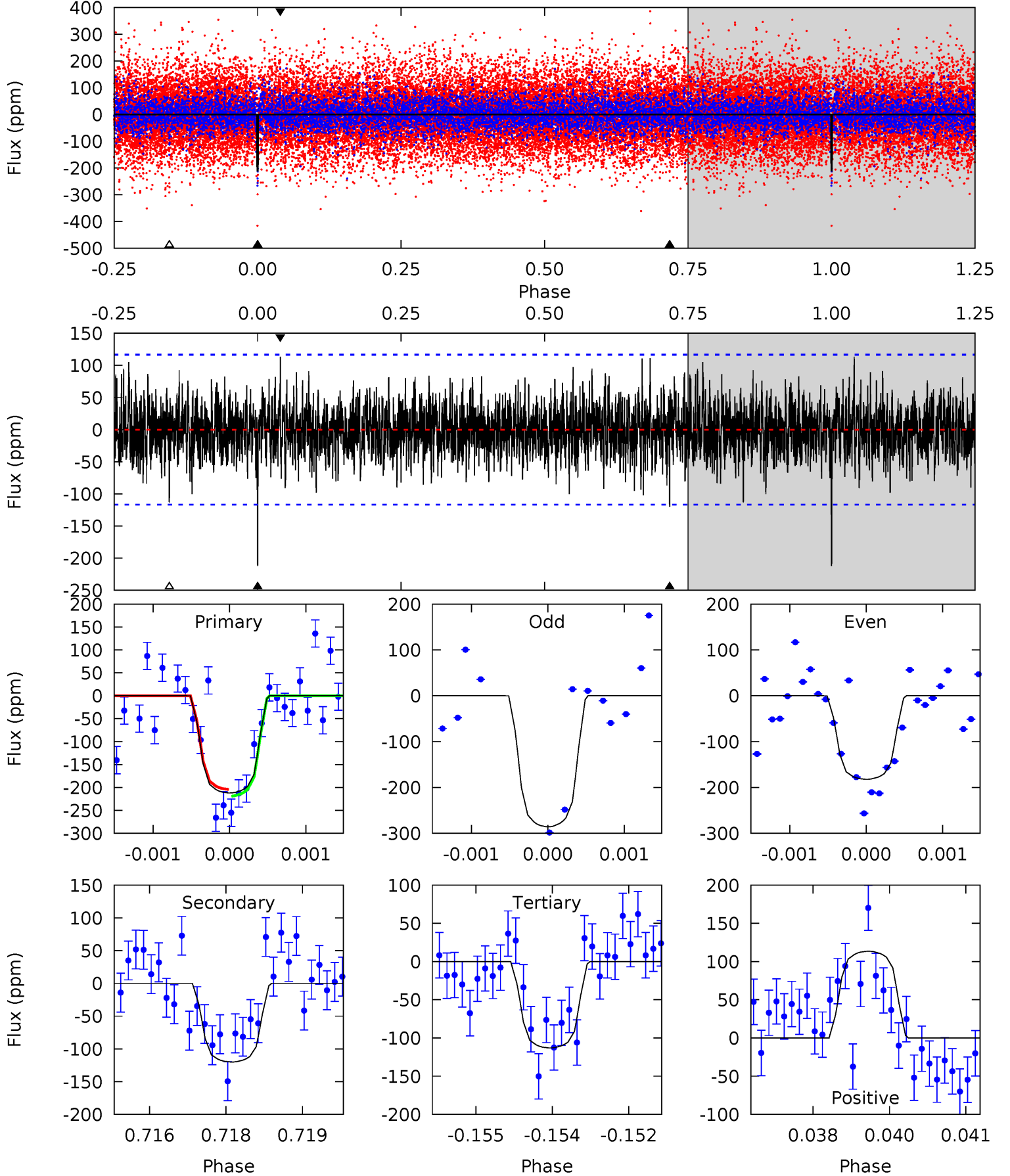
TCE 003548449-03 $P = 89.338846$ Days $T_0 = 165.511739$ (BKJD)



DV Model-Shift Uniqueness Test

003548449-03, P = 89.337053 Days, E = 76.173959 Days

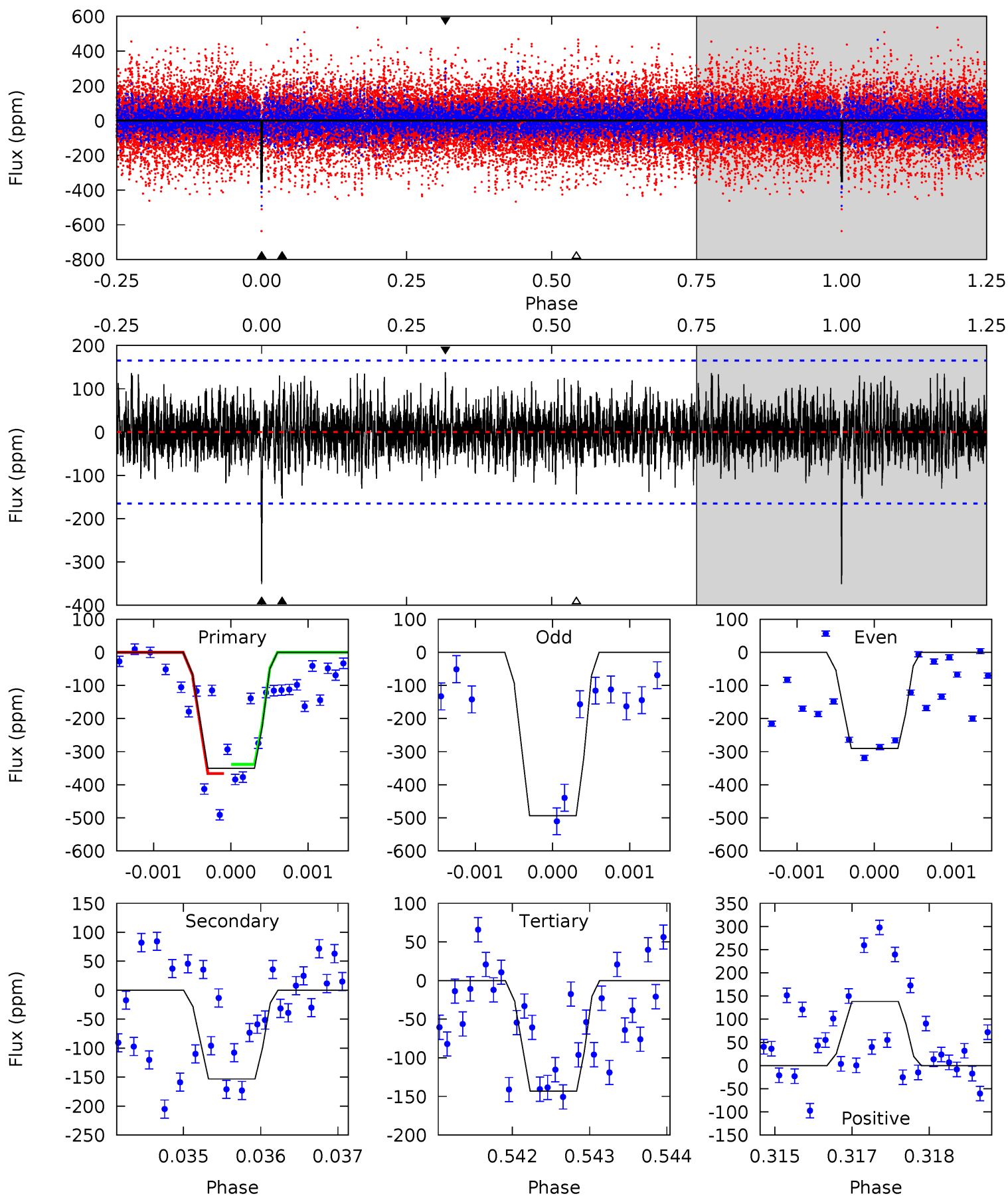
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
9.81	5.55	5.23	5.25	5.39	3.20	1.41	4.58	4.56	0.32	0.30	2.09	1.03	0.35	0.34



Alt Model-Shift Uniqueness Test

003548449-03, P = 89.338846 Days, E = 76.172893 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	5.03	4.70	4.54	5.43	3.25	1.24	6.82	6.98	0.33	0.49	3.08	1.23	0.28	0.46



Stellar Parameters For KIC 003548449

	$T_{\text{eff}} (K)$	$\log(g)$	$[\text{Fe}/\text{H}]$	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6784^{+212}_{-282}	$4.255^{+0.149}_{-0.182}$	$-0.500^{+0.250}_{-0.300}$	$1.302^{+0.363}_{-0.242}$	$1.112^{+0.181}_{-0.131}$	$0.710^{+0.512}_{-0.346}$
	+3%/-4%	+4%/-4%	+50%/-60%	+28%/-19%	+16%/-12%	+72%/-49%
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 003548449-03 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{\text{max}} (K)$	$T_{\text{obs}} (K)$	A_{obs}
DV	-120 ± 22	$2.26^{+1.44}_{-1.18}$	748^{+61}_{-50}	5613^{+2940}_{-1022}	2041^{+7602}_{-1268}
Alt.	-153 ± 30	$2.85^{+1.43}_{-1.18}$	751^{+52}_{-47}	5334^{+1564}_{-767}	1719^{+3139}_{-956}

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

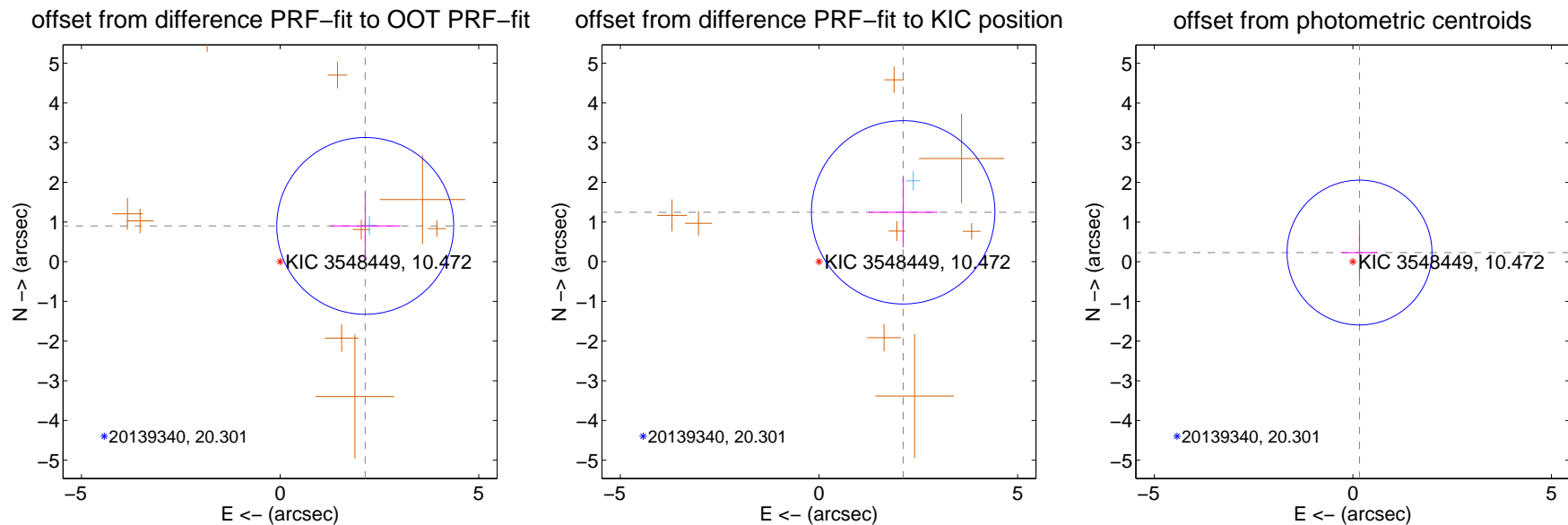
DV Centroid Data

Supplemental centroid analysis for 003548449-03. **Kepler magnitude: 10.47.** Transit SNR 7.03

There are 1 quarters with good PRF difference image offsets

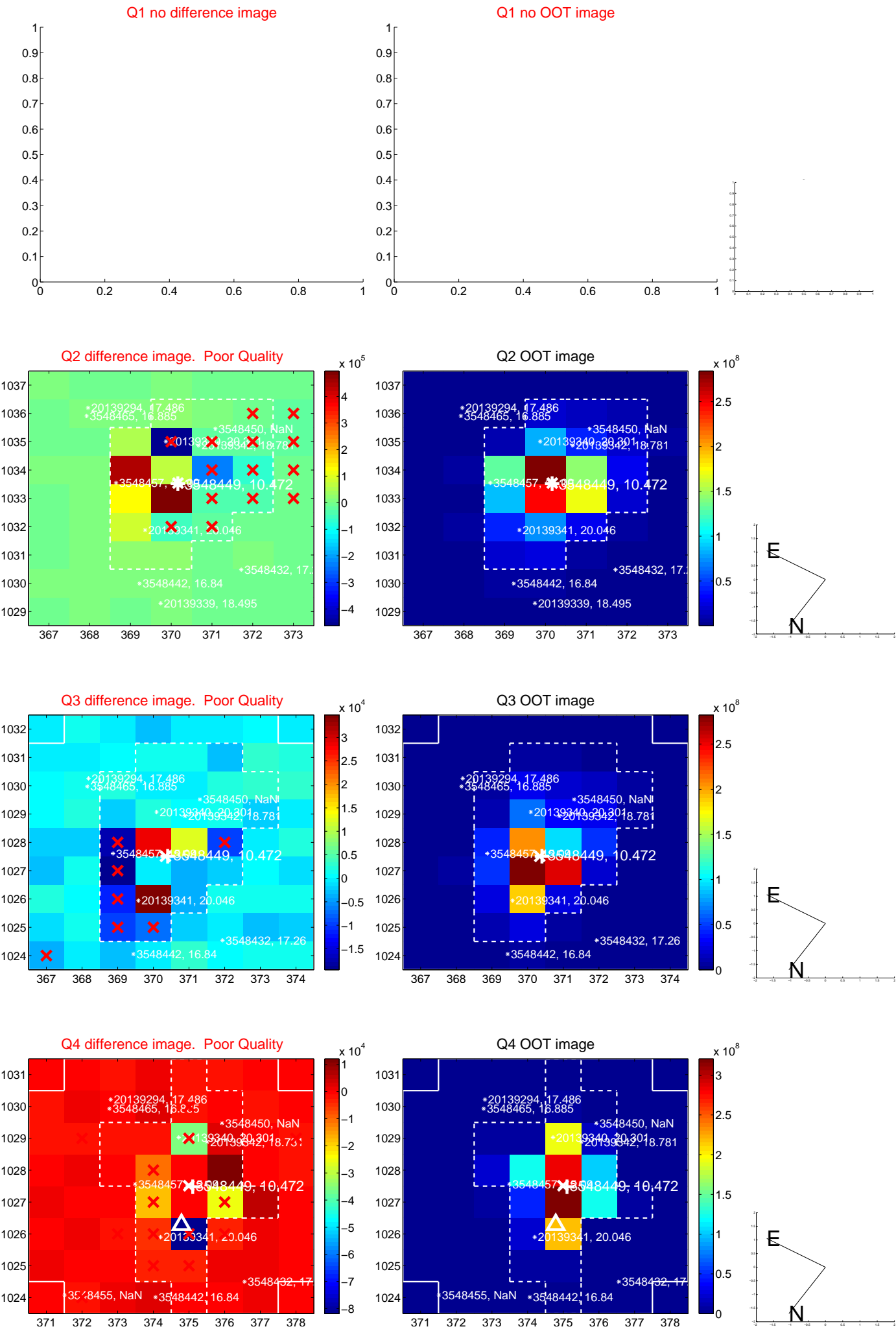
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	2.324 ± 0.742	3.13	-2.142 ± 0.877	0.901 ± 0.845
PRF-fit source offset from KIC position	2.456 ± 0.770	3.19	-2.118 ± 0.866	1.243 ± 0.879
photometric centroid source offset	0.29 ± 0.61	0.47	-0.17 ± 0.45	0.23 ± 0.68

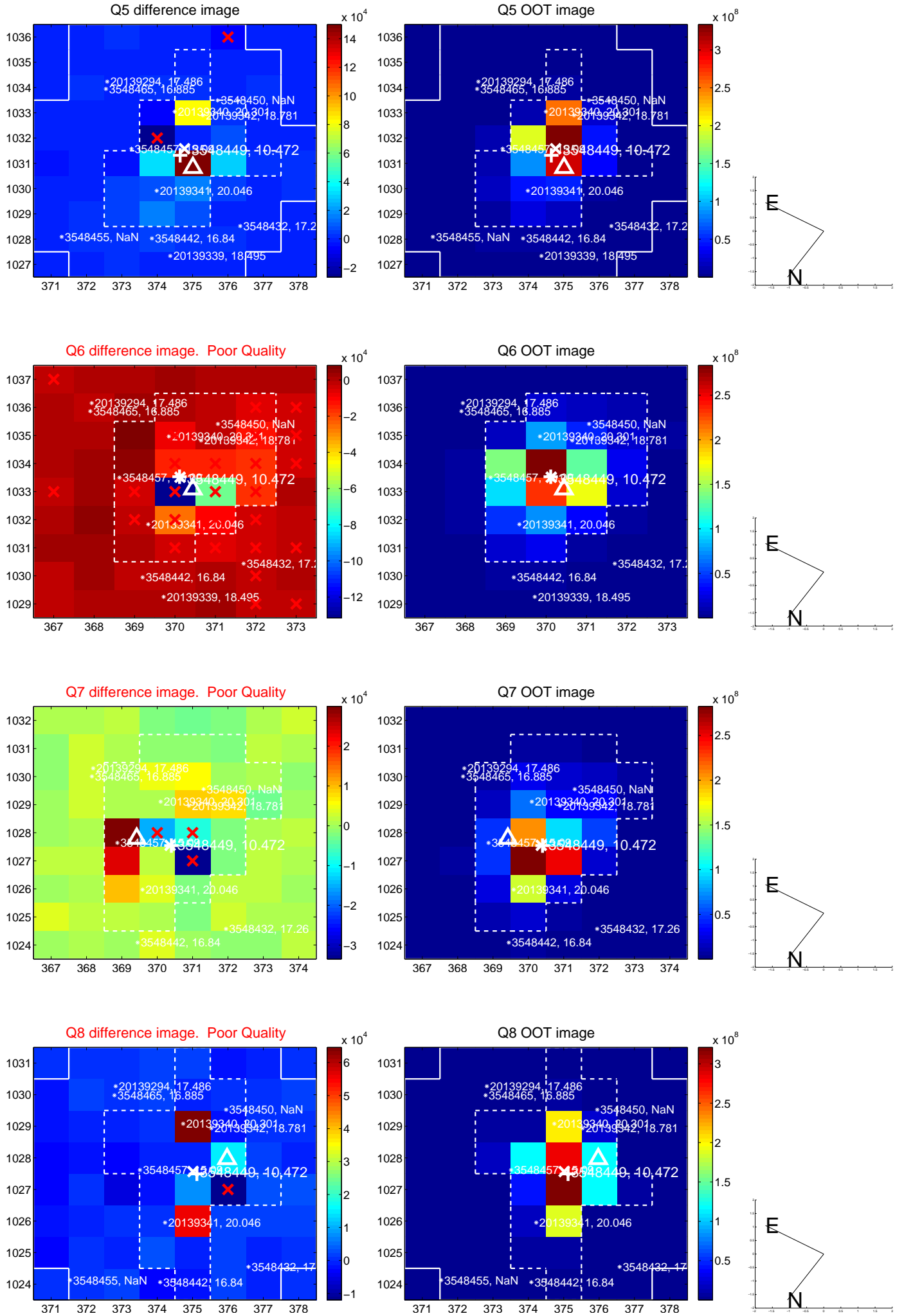


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

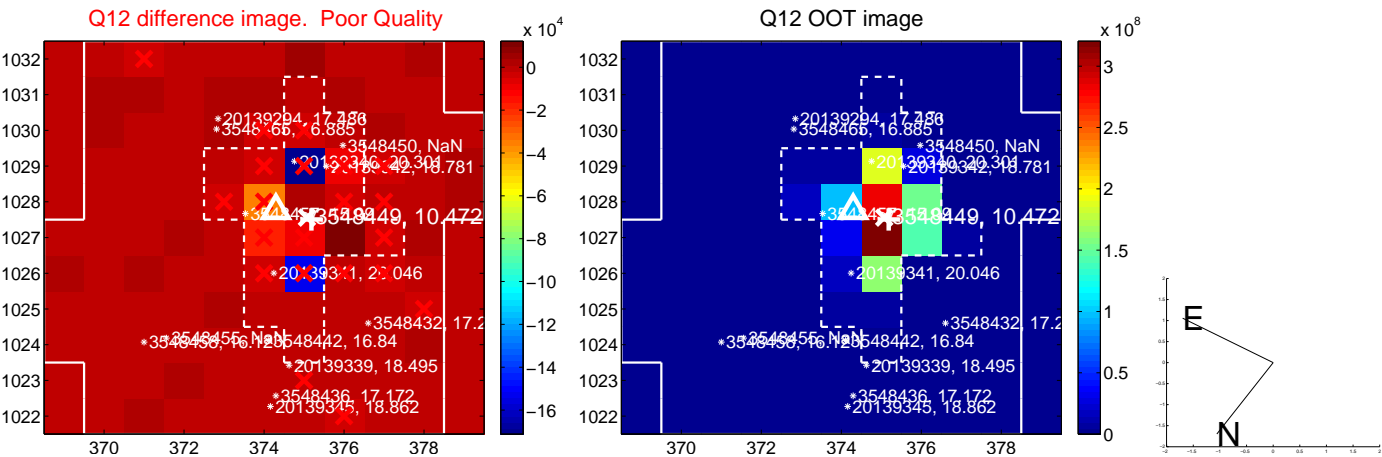
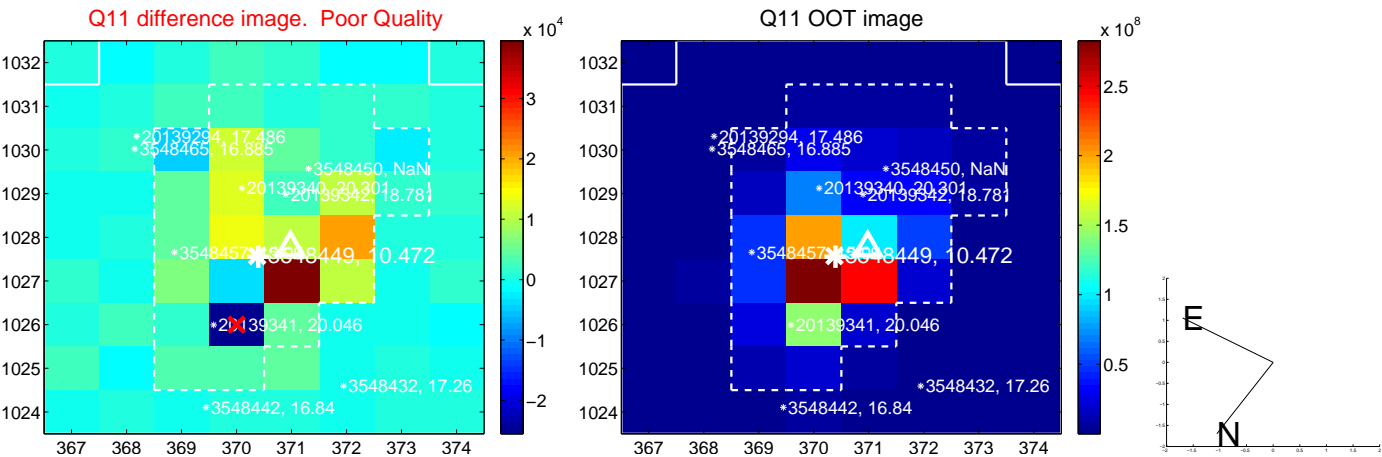
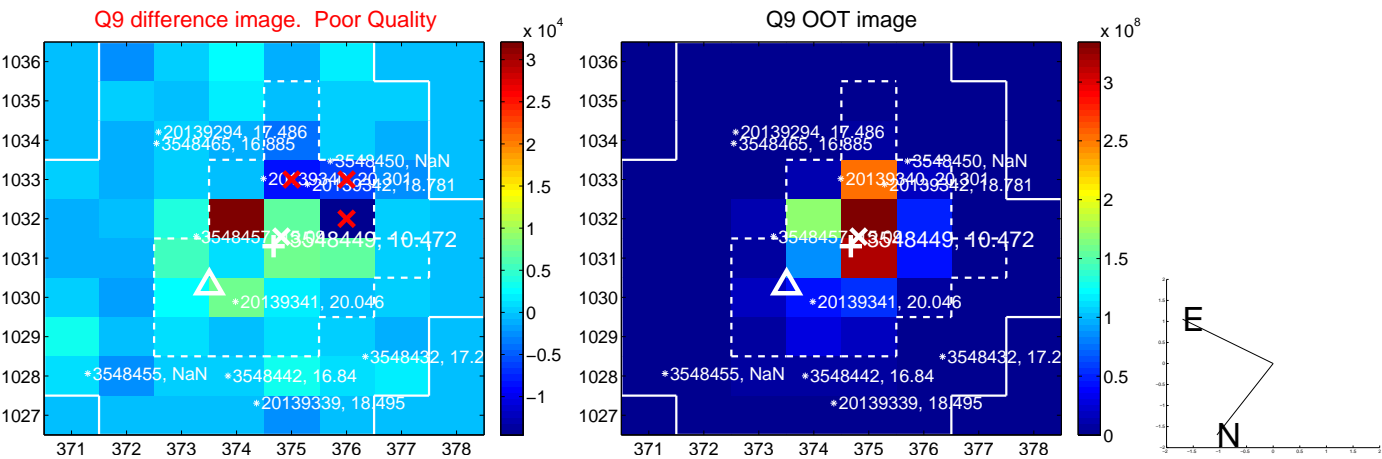
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



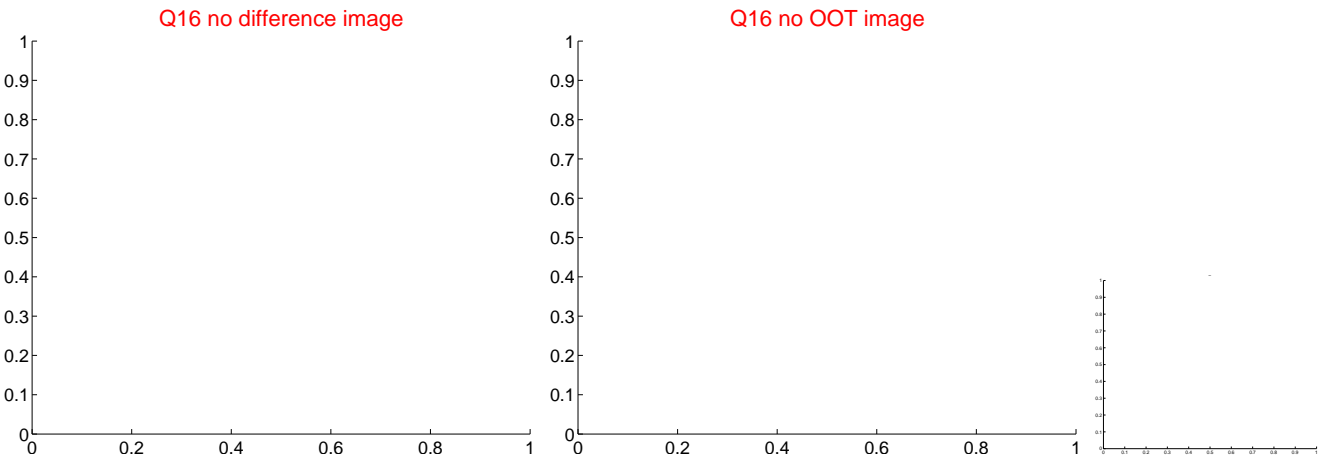
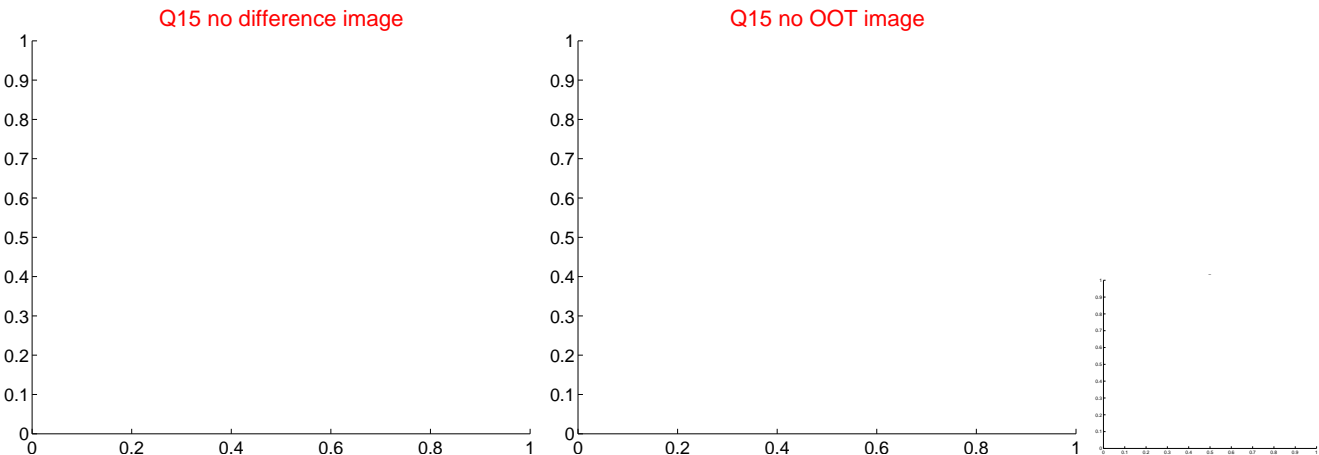
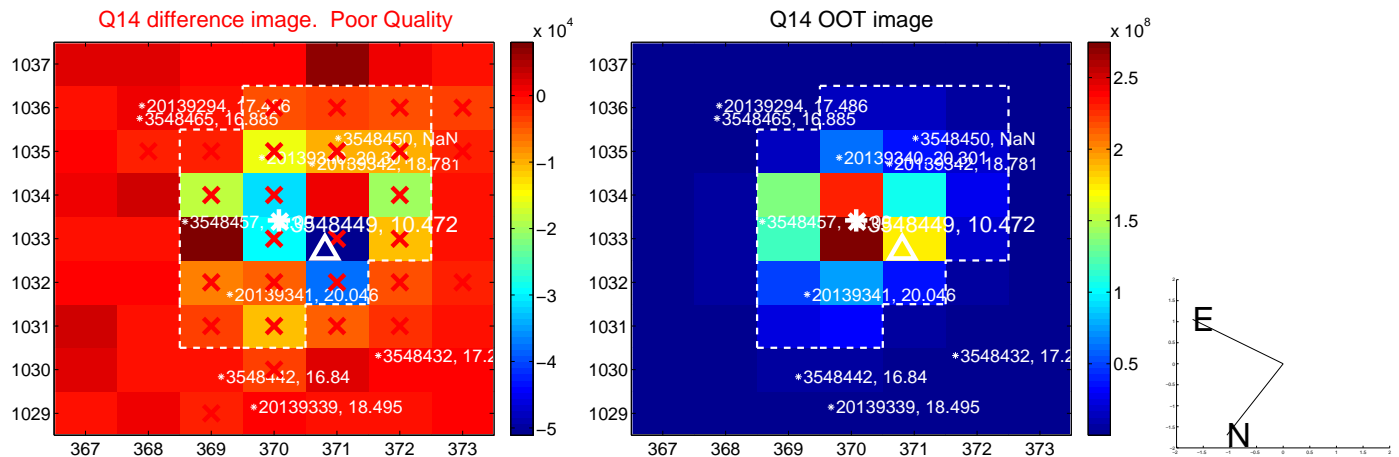
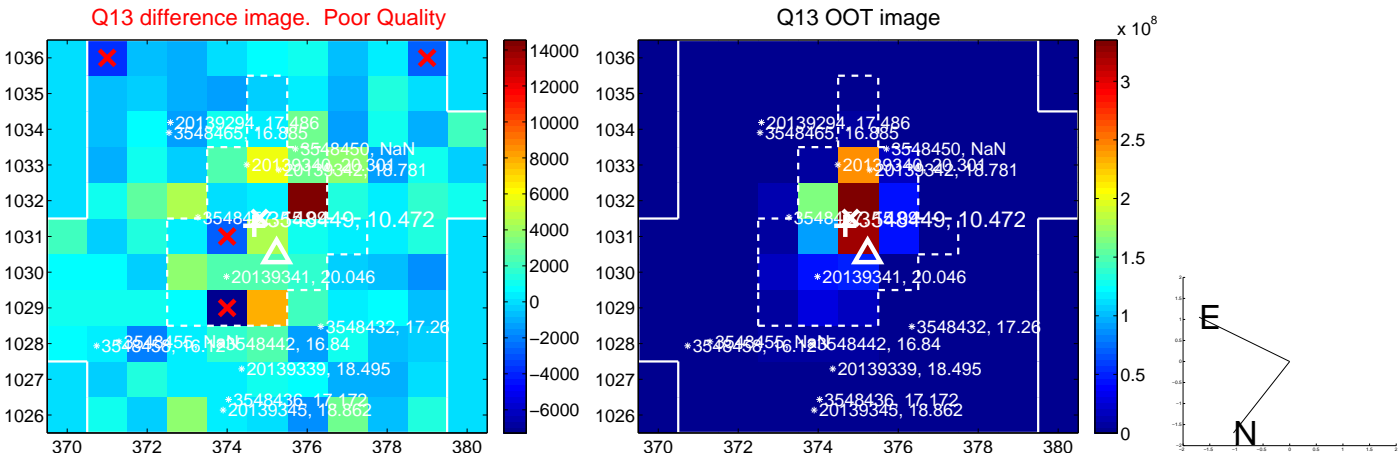
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



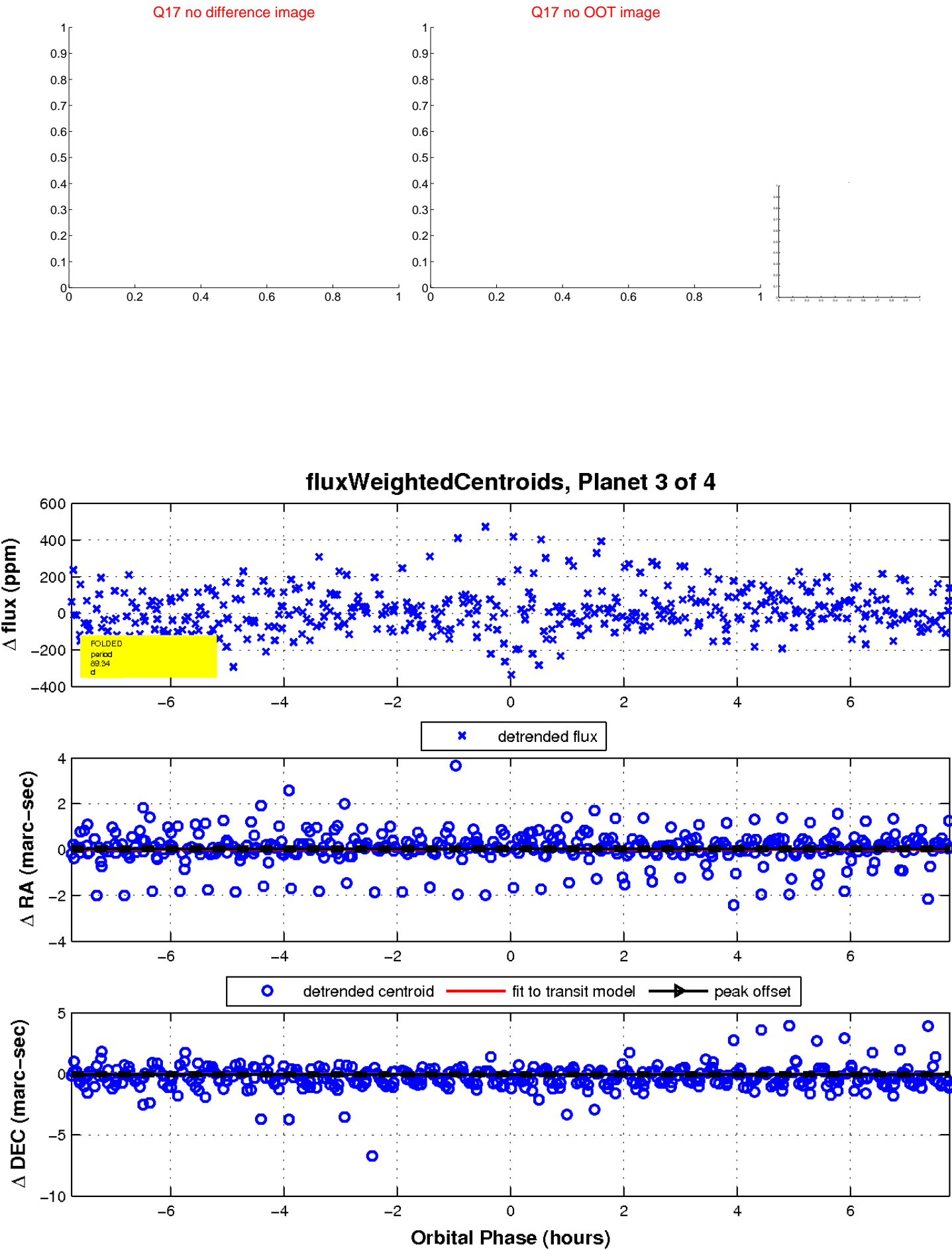
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

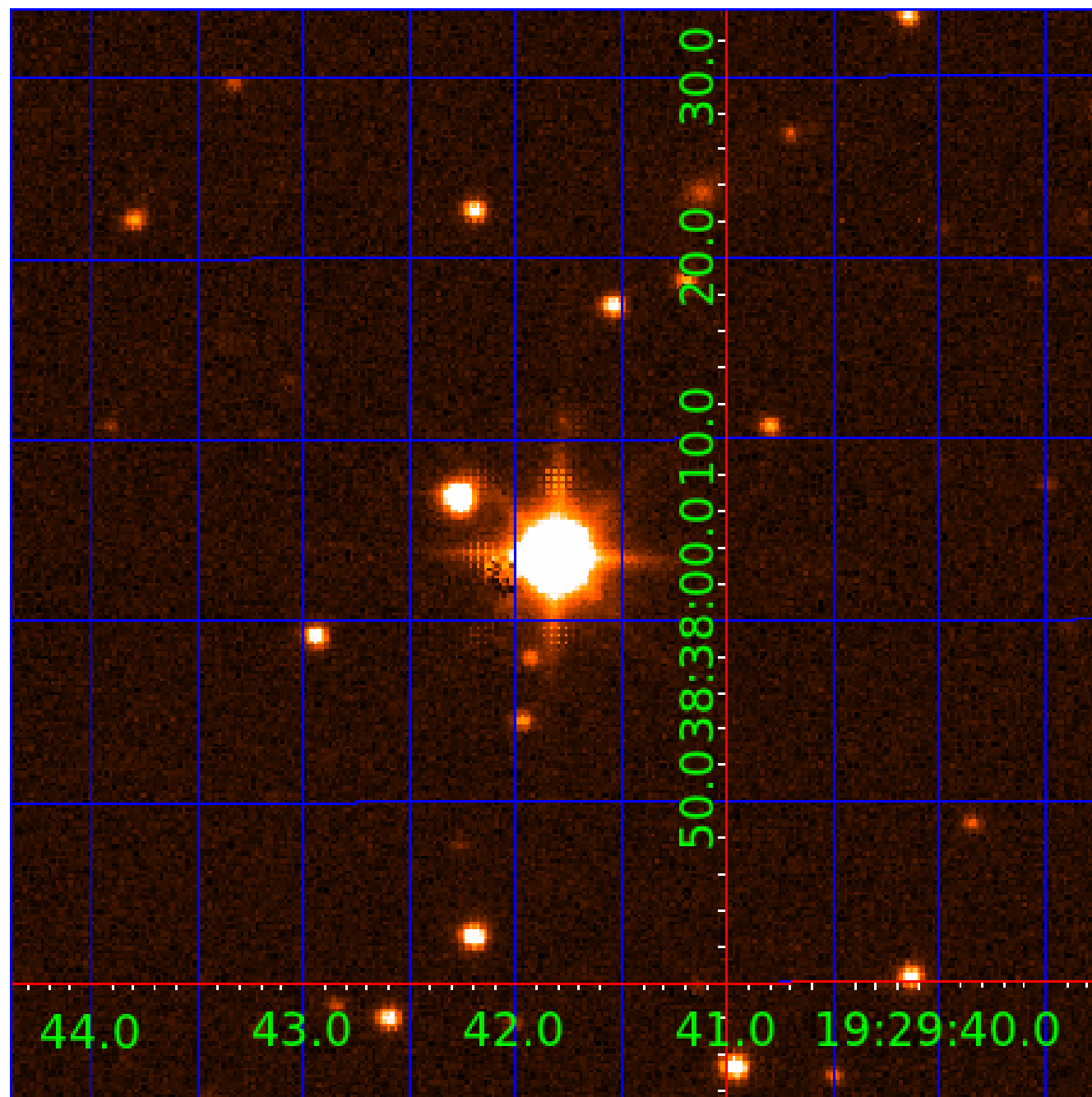


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 003548449

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})
003548449-01	OBS	No	1.029398	132.068396	8.0	4.039	7.9	4.7	1.30	6784	0.43	7524.32
003548449-02	OBS	No	178.427267	256.001325	232.1	12.851	7.5	8.1	1.30	6784	2.32	7.79
003548449-03	OBS	No	89.337053	165.511012	211.4	2.585	7.6	7.0	1.30	6784	2.22	19.58
003548449-04	OBS	No	119.051687	133.057761	177.7	2.730	7.4	8.0	1.30	6784	1.84	13.35

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
003548449-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_ALT—CENT_SATURATED
003548449-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE_MARSHALL—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—CENT_SATURATED
003548449-03	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—MOD_NONUNIQ_ALT—CENT_SATURATED
003548449-04	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—ALL_TRANS_CHASES—MOD_NONUNIQ_ALT—MOD_POS_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.

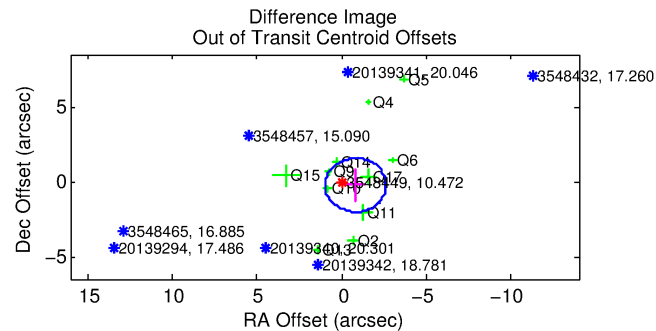
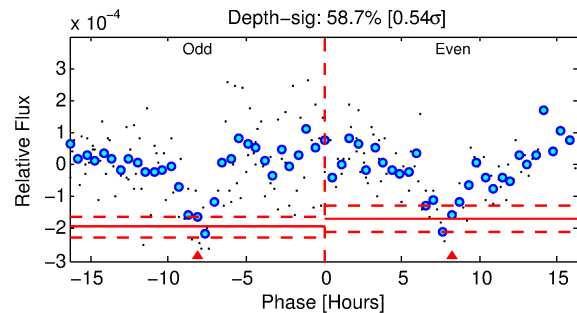
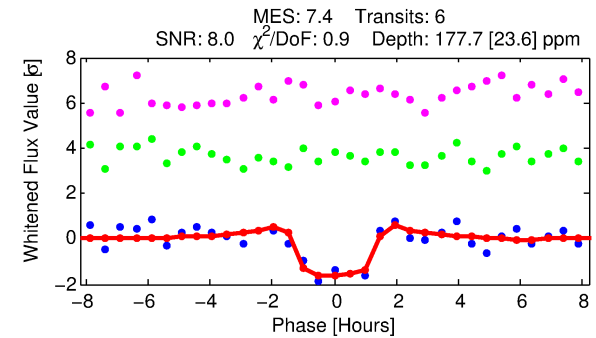
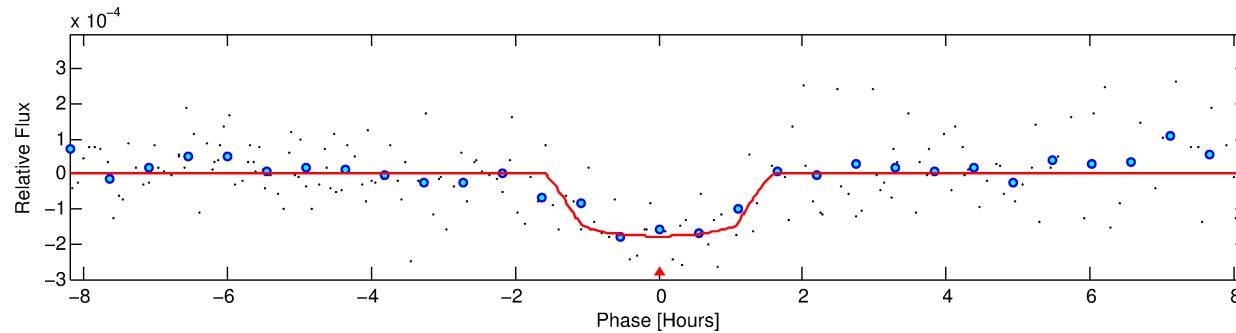
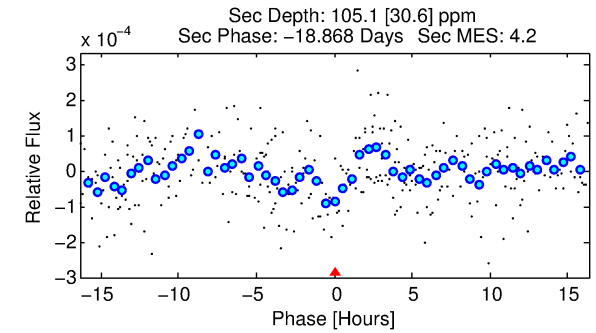
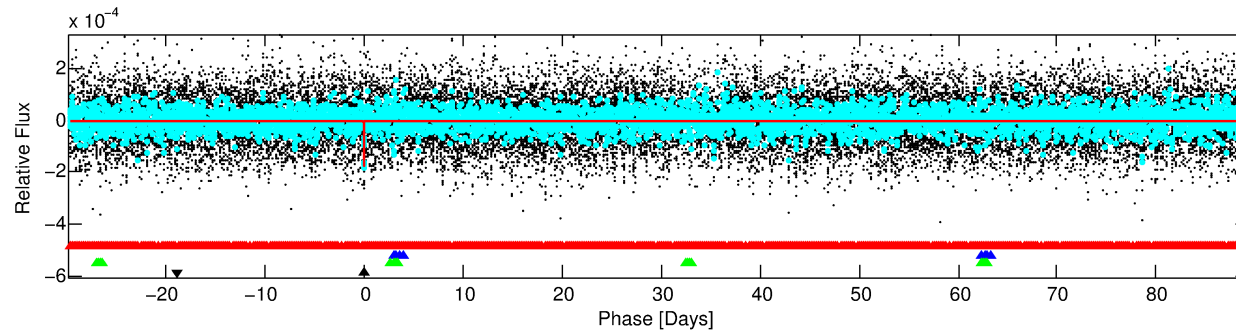
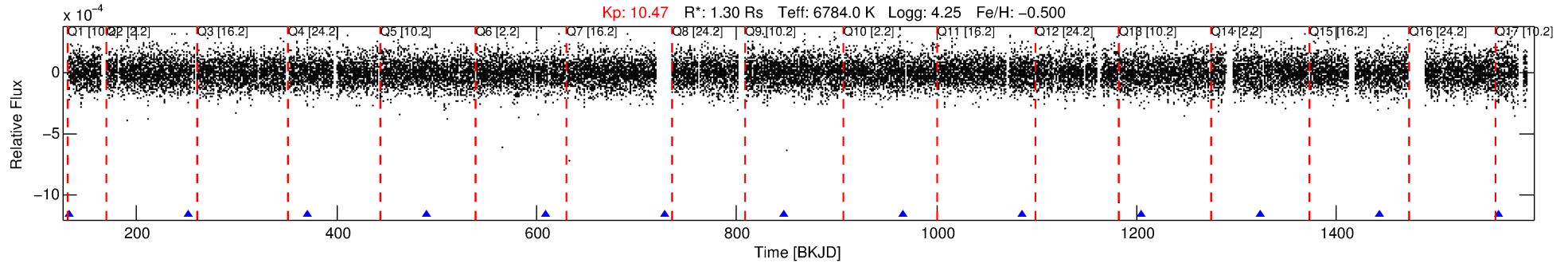
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 003548449-04

No Significant Match Found

DV One-Page Summary

KIC: 3548449 Candidate: 4 of 4 Period: 119.052 d



DV Fit Results:

Period = 119.05169 [0.00096] d
Epoch = 133.0578 [0.0064] BKJD
 $R_p/R^* = 0.0130$ [0.0105]
 $a/R^* = 256.90$ [1173.70]
 $b = 0.66$ [3.98]
 $\text{Seff} = 13.35$ [5.00]
 $T_{\text{eq}} = 487$ [46] K
 $R_p = 1.84$ [1.58] R_e
 $a = 0.4908$ [0.1141] AU
 $A_g = 4102.41$ [6881.26] [0.60σ]
 $T_{\text{eff}} = 6032$ [2491] K [2.23σ]

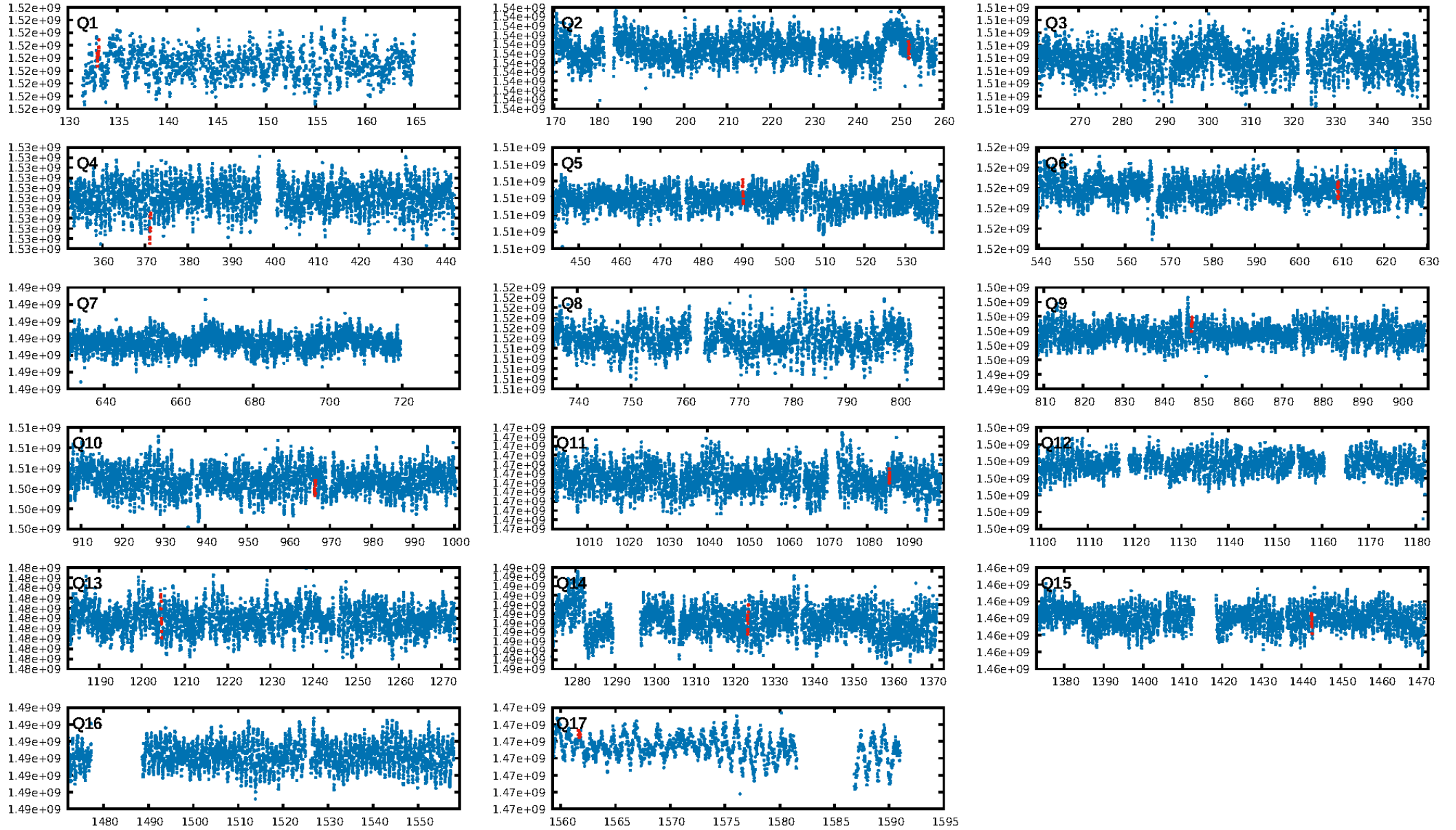
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [189.70σ]
LongPeriod-sig: 100.0% [108.47σ]
ModelChiSquare2-sig: 50.5%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.08e-09
RollingBand-fgt: 1.00 [5/5]
GhostDiagnostic-chr: 1.005
Centroid-sig: 7.5%
Centroid-so: 0.932 arcsec [1.18σ]
OotOffset-rm: 0.853 arcsec [1.43σ]
OotOffset-st: 4/2/1/4 [11]
KicOffset-rm: 1.028 arcsec [1.72σ]
KicOffset-st: 4/2/1/4 [11]
DiffImageQuality-fgm: 0.45 [5/11]
DiffImageOverlap-fno: 0.33 [4/12]

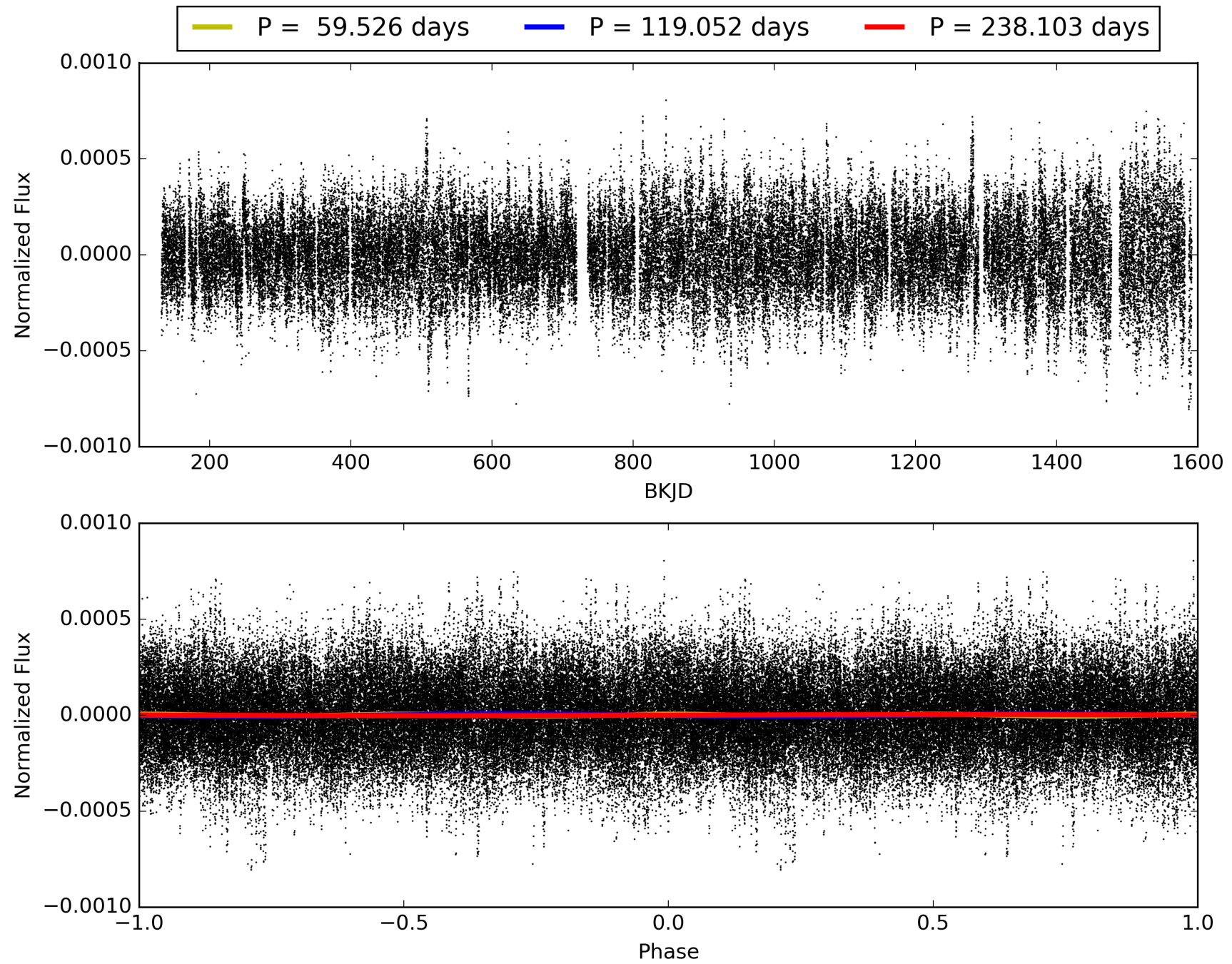
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 31-Jan-2016 13:28:51 Z

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

TCE 003548449-04, PDC Light Curves

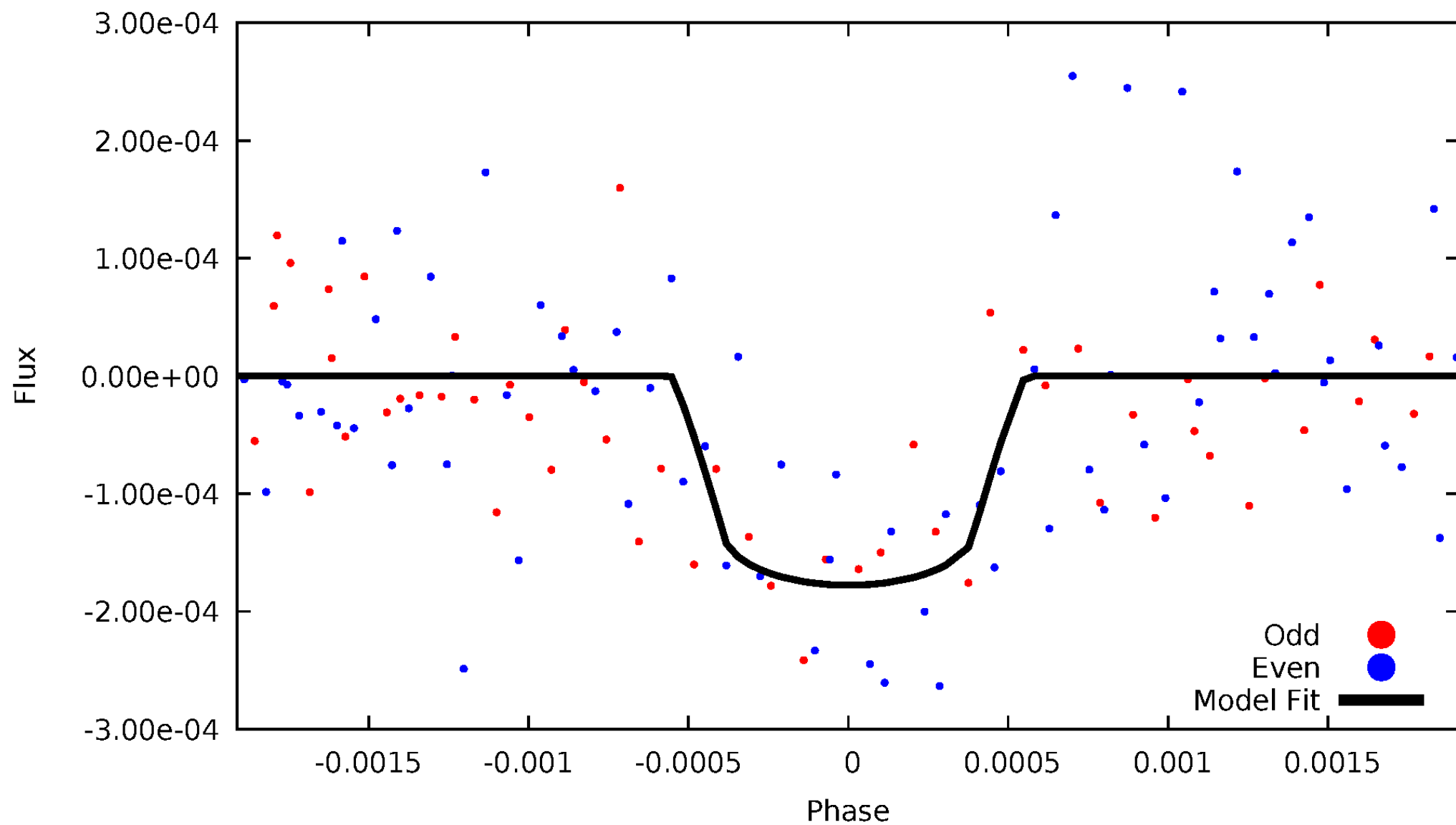


TCE 003548449-04



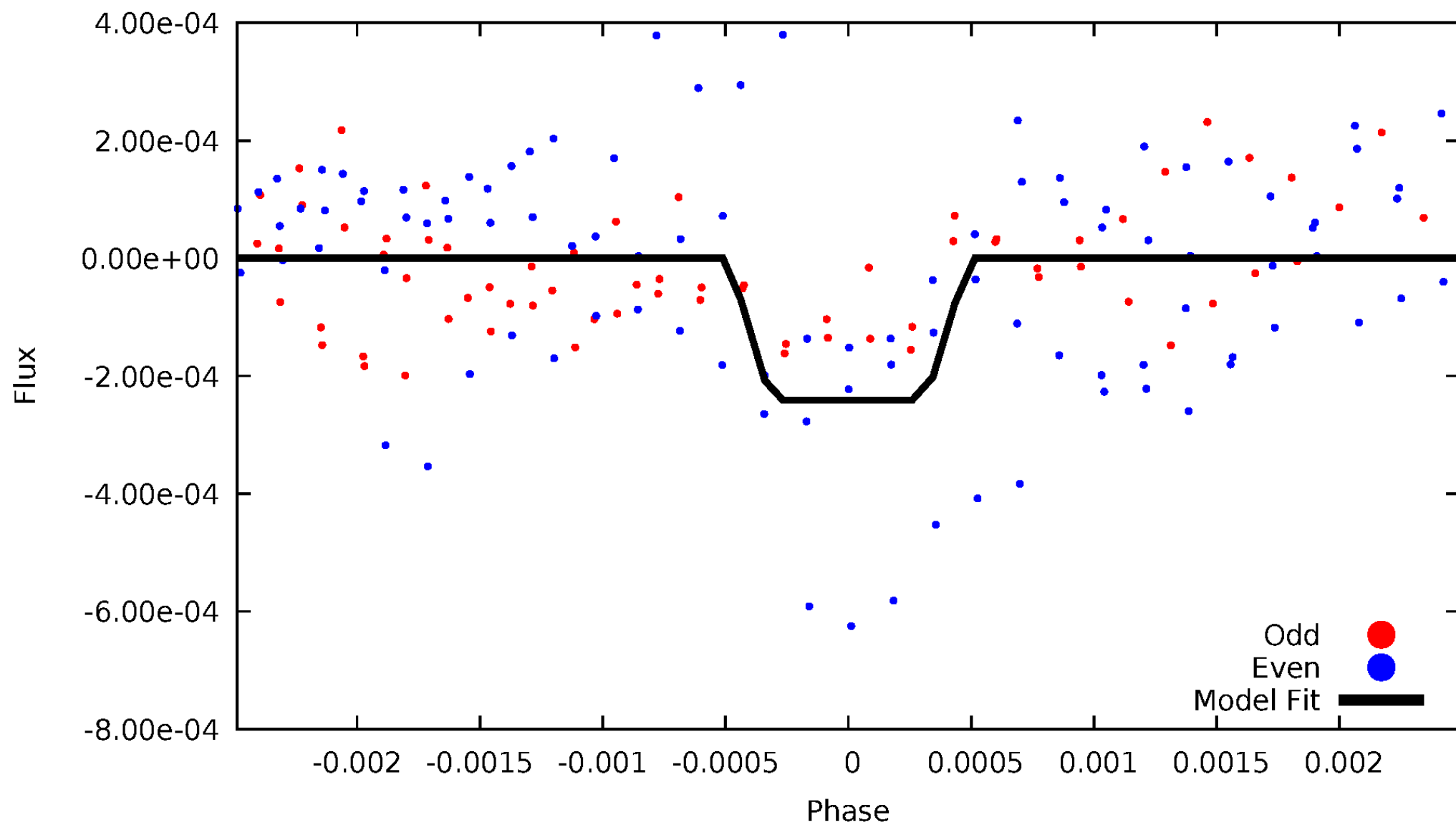
DV Odd/Even

TCE 003548449-04



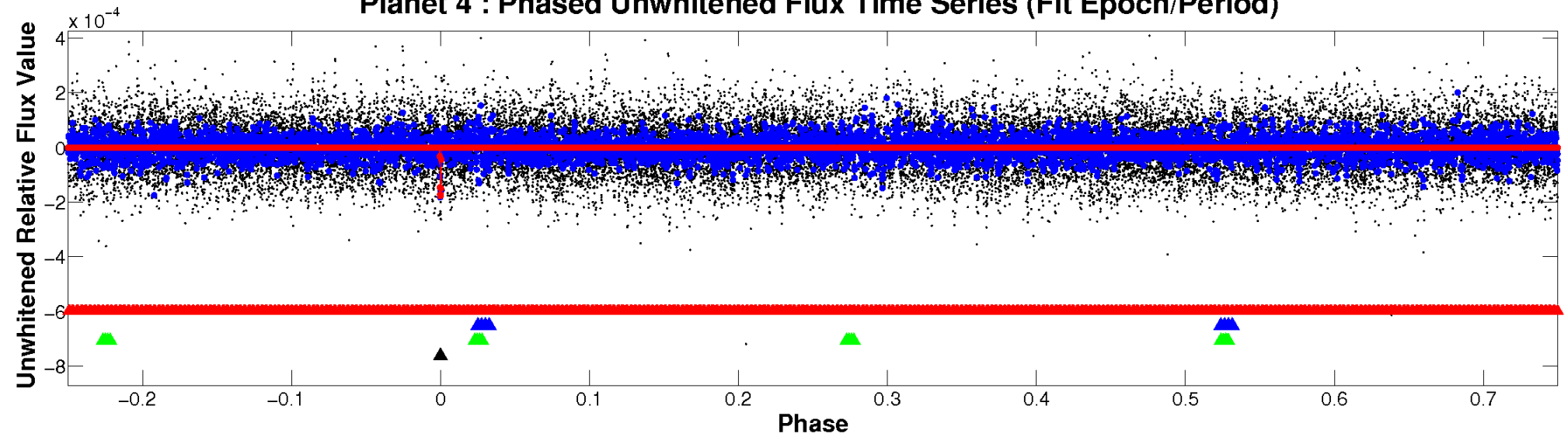
ALT Odd/Even

TCE 003548449-04

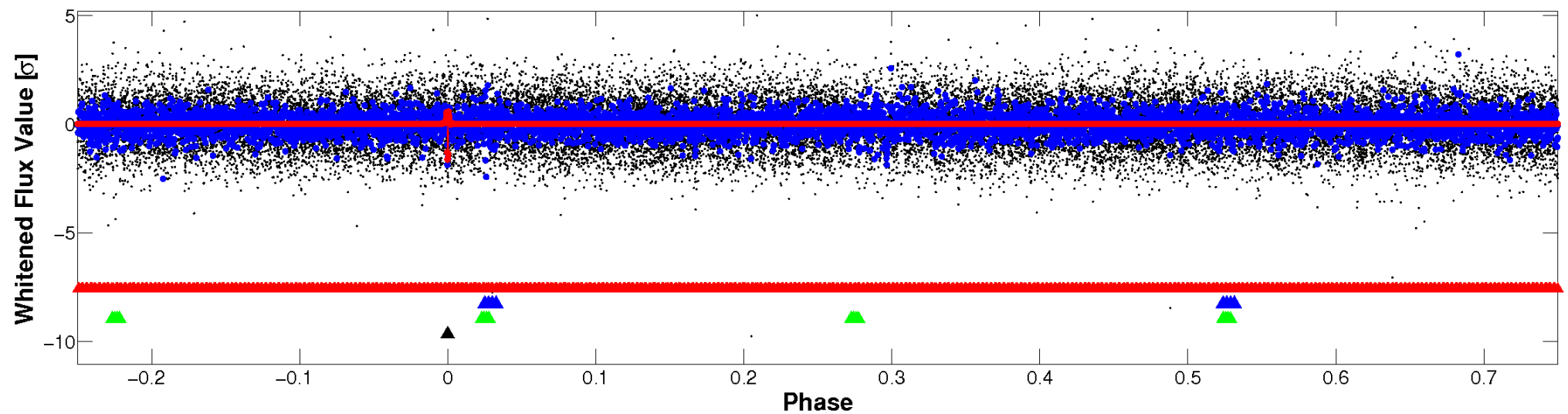


Non-Whitened Vs. Whitened Light Curve

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

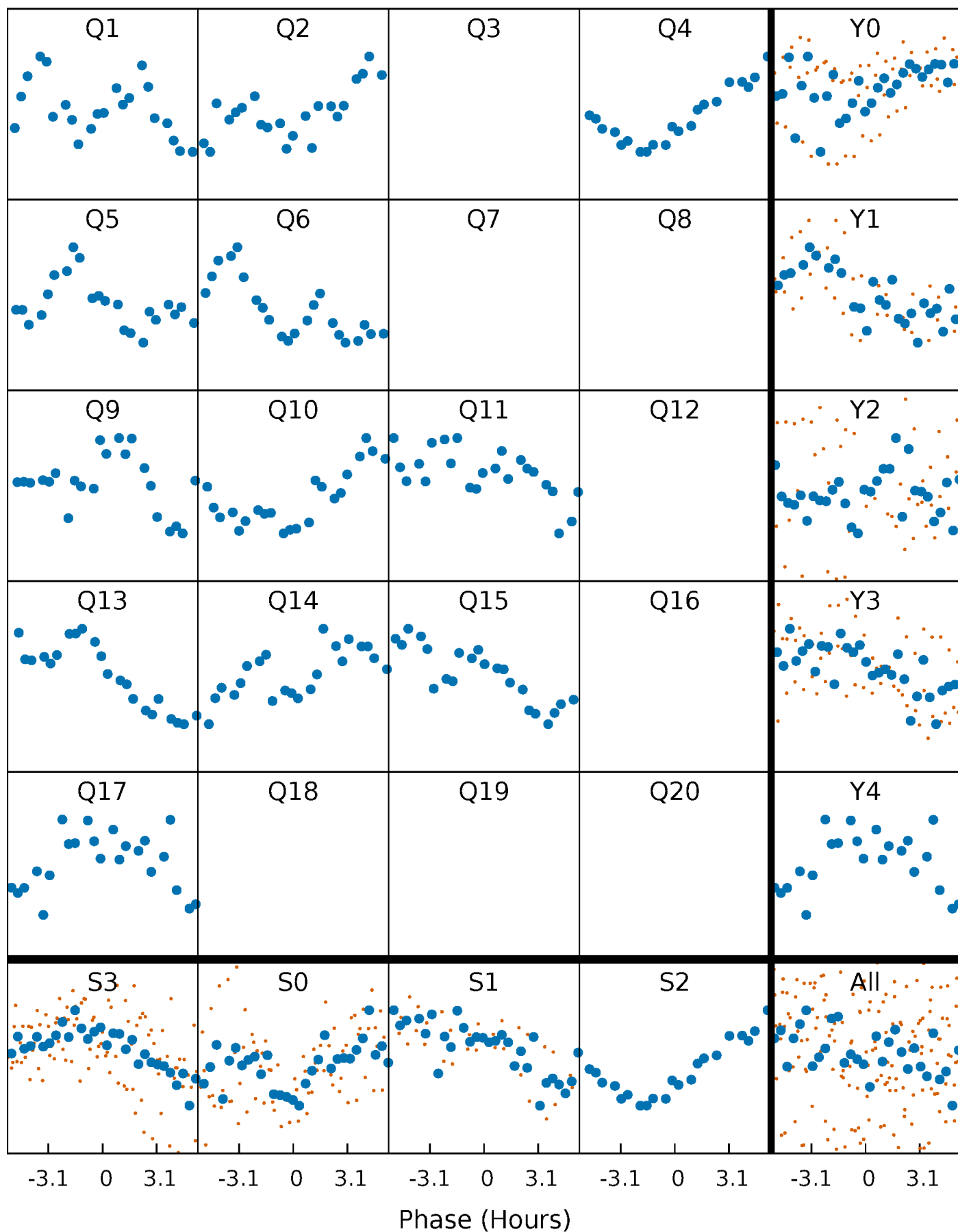


Planet 4 : Phased Whitened Flux Time Series (Fit Epoch/Period)



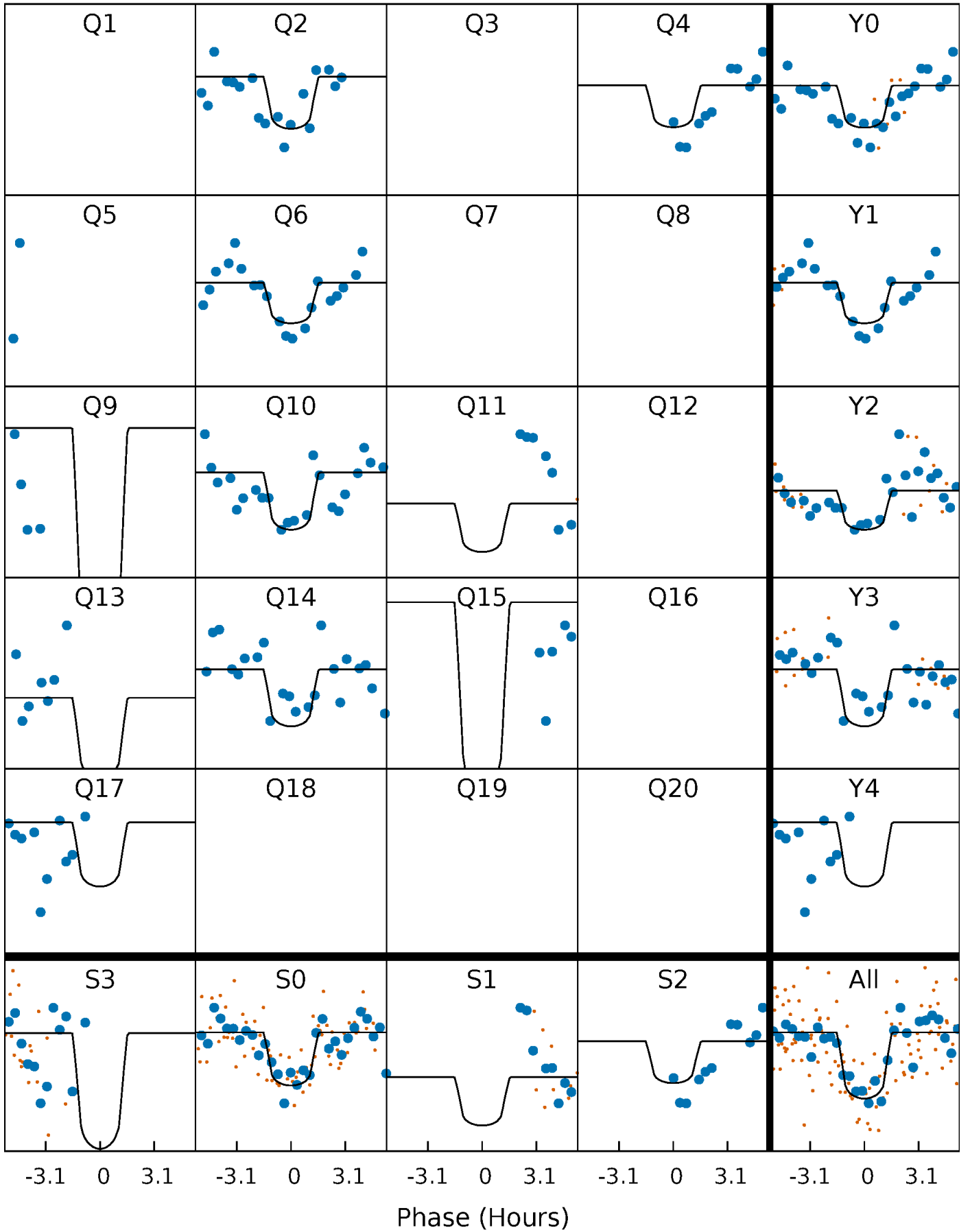
PDC Quarter-Phased Transit Curves

TCE 003548449-04 P=119.051687 Days $T_0=133.057761$ (BKJD)



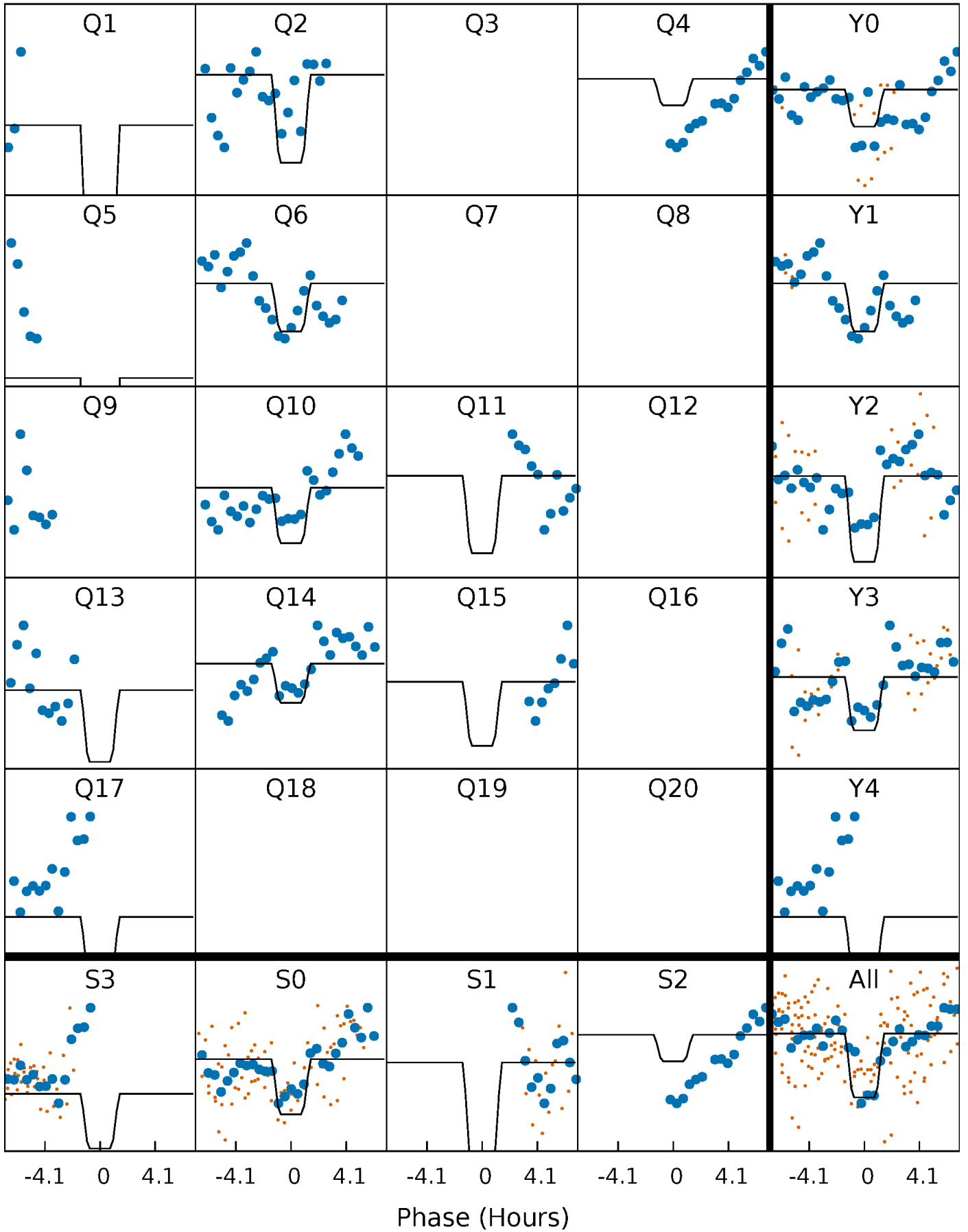
DV Quarter-Phased Transit Curves

TCE 003548449-04 P=119.051687 Days $T_0=133.057761$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

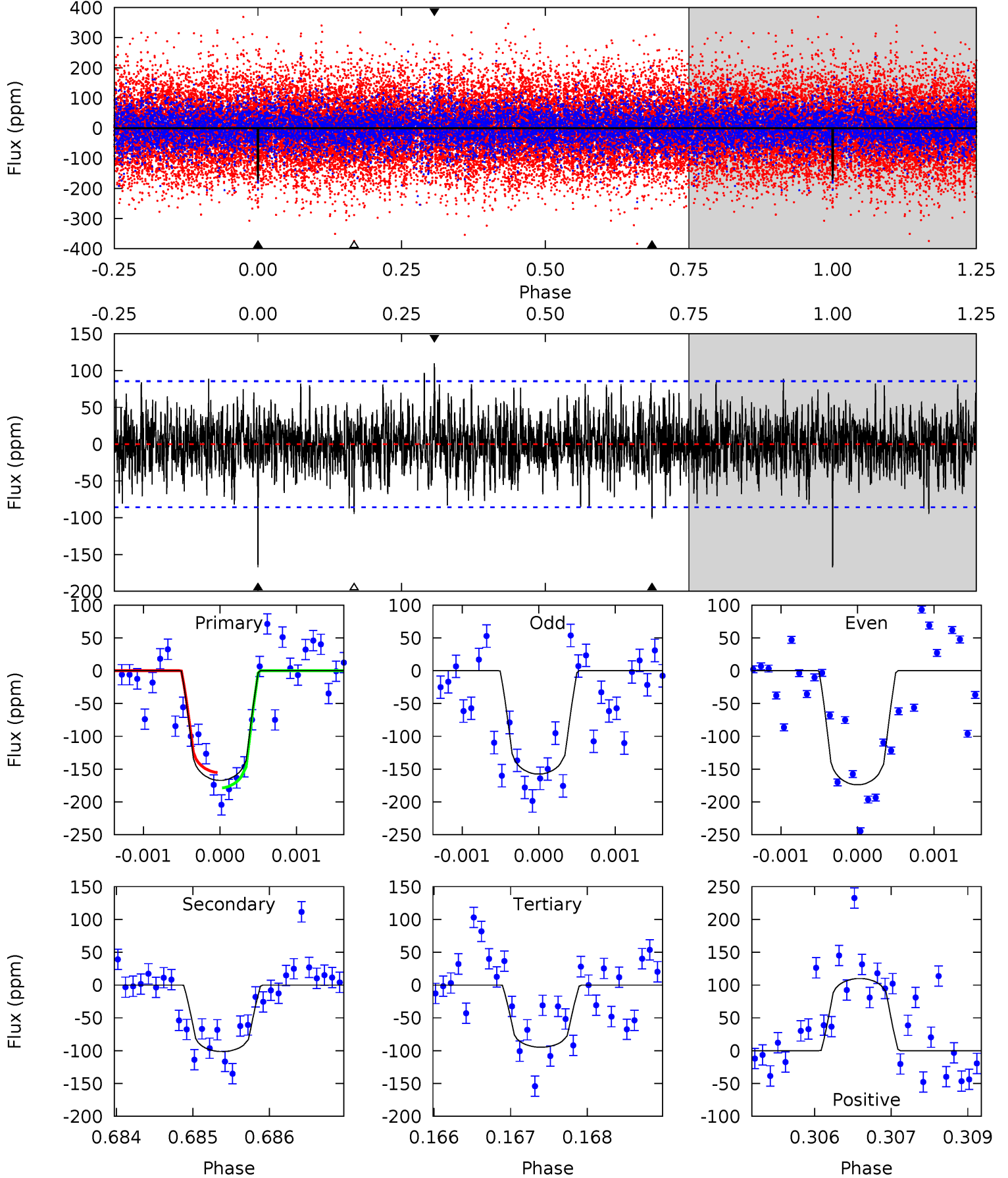
TCE 003548449-04 P=119.049551 Days $T_0=133.074168$ (BKJD)



DV Model-Shift Uniqueness Test

003548449-04, P = 119.051687 Days, E = 14.006074 Days

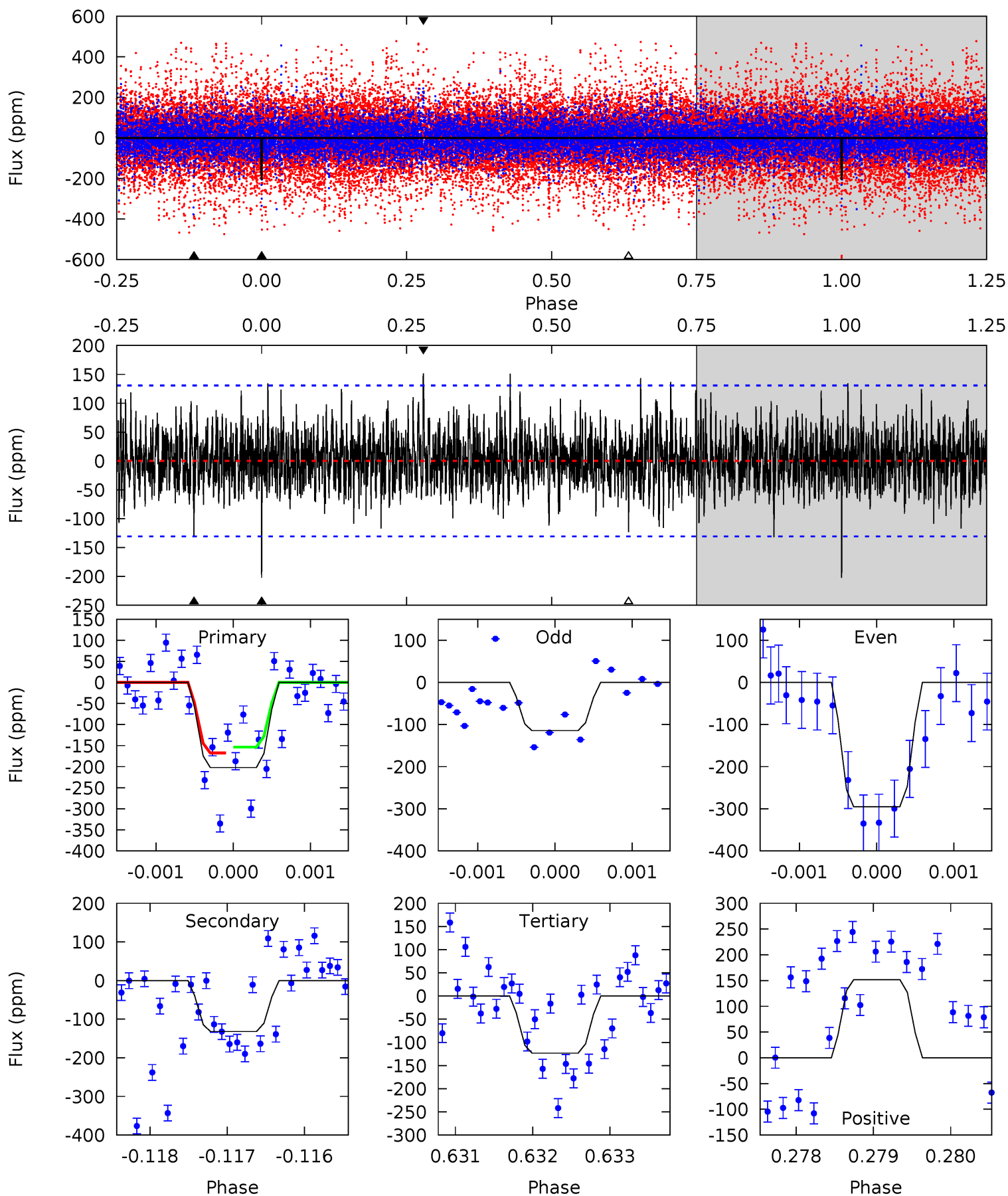
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	6.42	6.00	6.97	5.43	3.26	1.75	4.59	3.63	0.42	-0.55	0.51	0.94	0.40	0.74



Alt Model-Shift Uniqueness Test

003548449-04, $P = 119.049551$ Days, $E = 14.024617$ Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
8.47	5.53	5.17	6.36	5.48	3.33	1.57	3.31	2.11	0.37	-0.83	3.86	0.87	0.43	0.28



Stellar Parameters For KIC 003548449

	$T_{\text{eff}} (K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M (M_{\odot})$	$p_{\star} (g \cdot \text{cm}^{-3})$
	6784^{+212}_{-282}	$4.255^{+0.149}_{-0.182}$	$-0.500^{+0.250}_{-0.300}$	$1.302^{+0.363}_{-0.242}$	$1.112^{+0.181}_{-0.131}$	$0.710^{+0.512}_{-0.346}$
	+3%/-4%	+4%/-4%	+50%/-60%	+28%/-19%	+16%/-12%	+72%/-49%
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 003548449-04 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-101 ± 16	$2.11^{+1.41}_{-1.22}$	680^{+51}_{-45}	5582^{+3559}_{-1119}	3009^{+15119}_{-1931}
Alt.	-132 ± 24	$2.36^{+1.61}_{-1.43}$	680^{+49}_{-40}	5647^{+3837}_{-1092}	3154^{+16918}_{-2075}

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 $A_{obs} \gg 1.0$

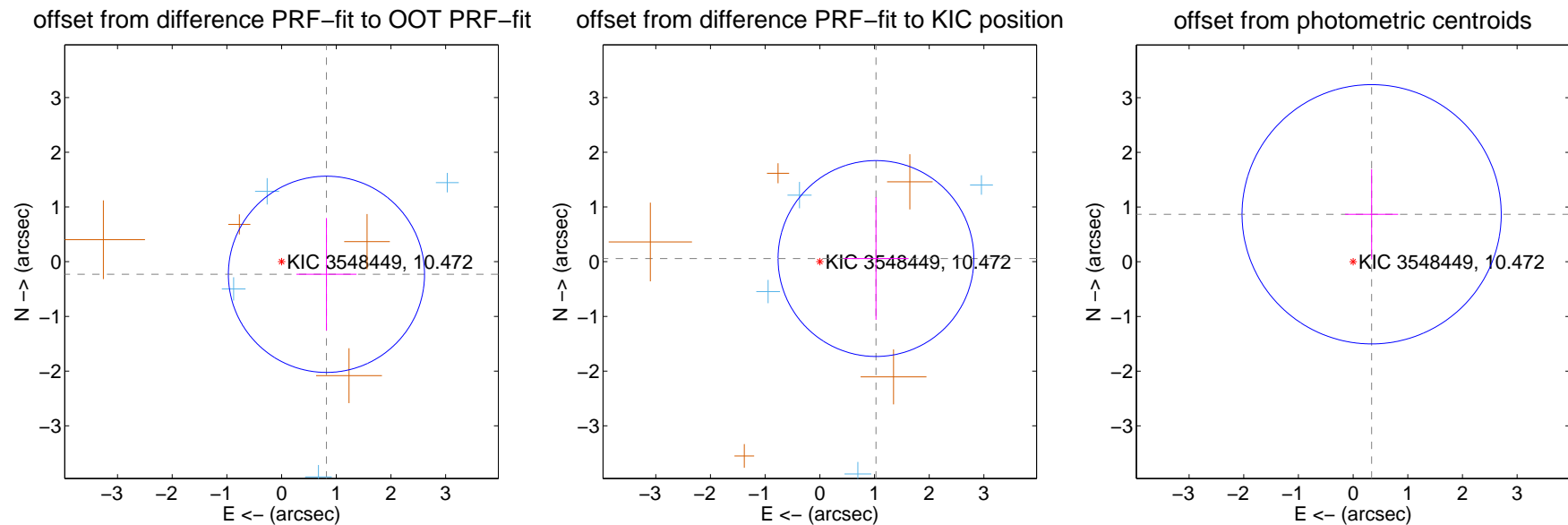
DV Centroid Data

Supplemental centroid analysis for 003548449-04. **Kepler magnitude: 10.47.** Transit SNR 8.00

There are 5 quarters with good PRF difference image offsets

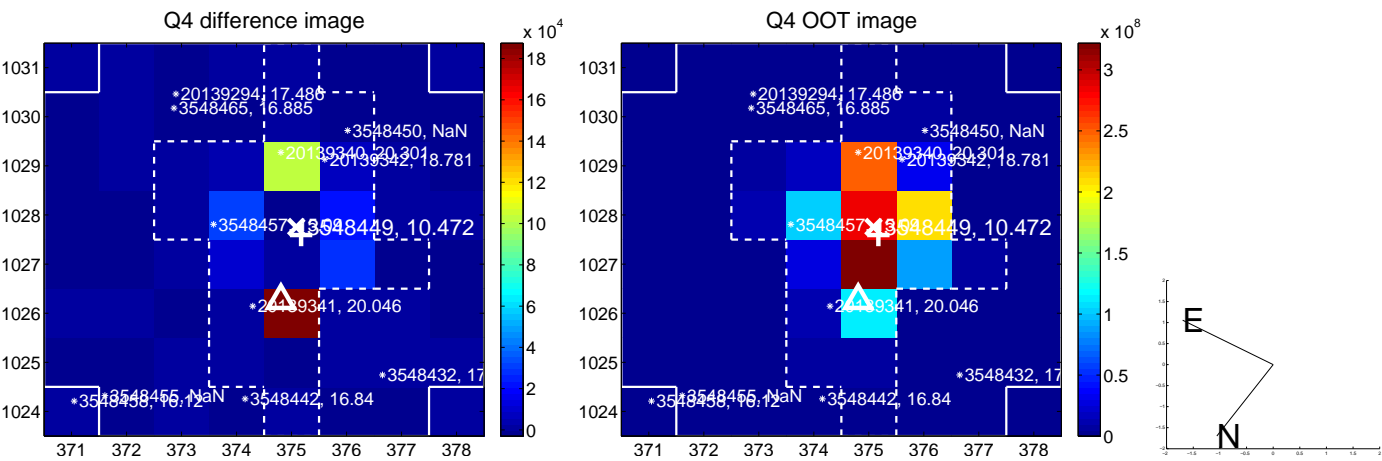
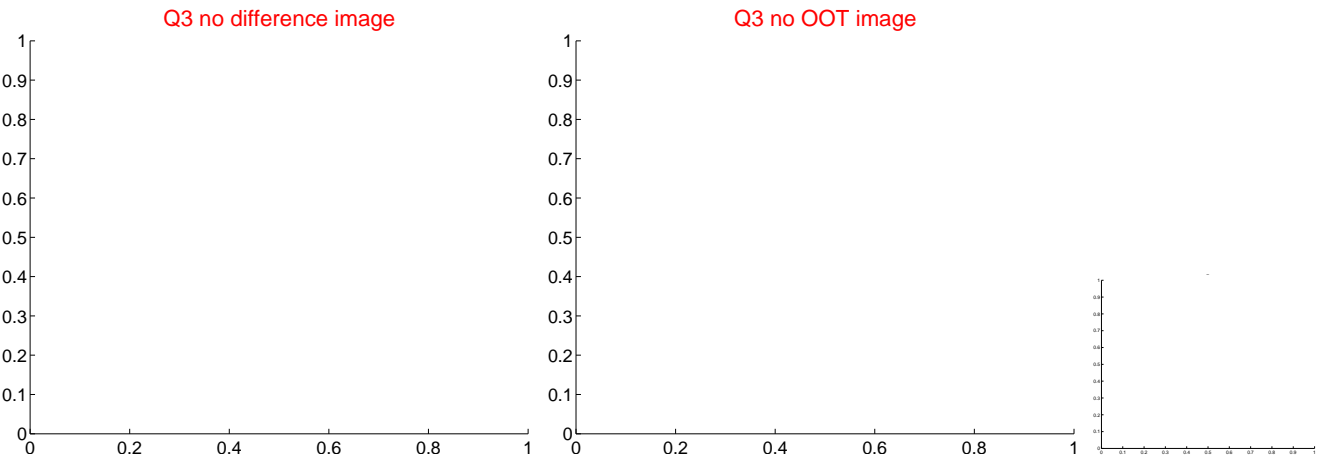
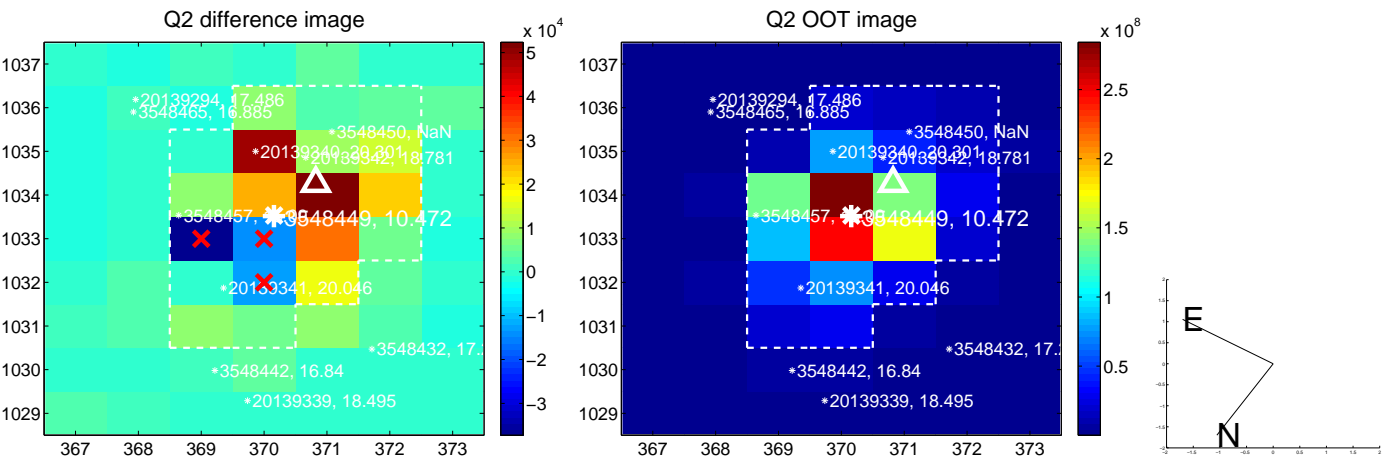
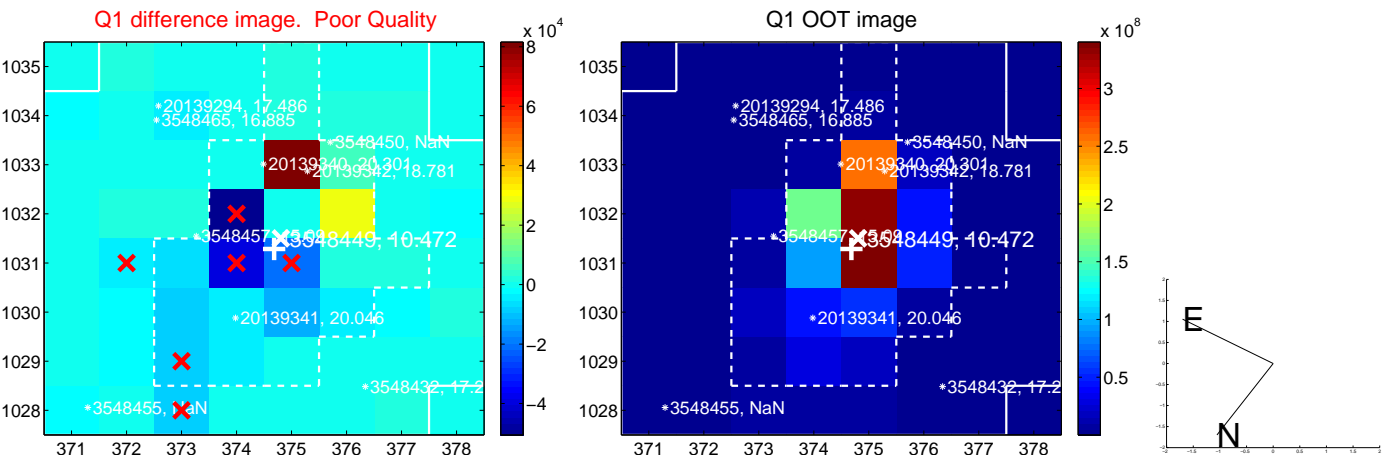
The direct PRF centroid is offset from the target star catalog position by about 1.10 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.853 ± 0.598	1.43	-0.821 ± 0.550	-0.231 ± 1.028
PRF-fit source offset from KIC position	1.028 ± 0.597	1.72	-1.027 ± 0.594	0.058 ± 1.120
photometric centroid source offset	0.93 ± 0.79	1.18	-0.34 ± 0.49	0.87 ± 0.83

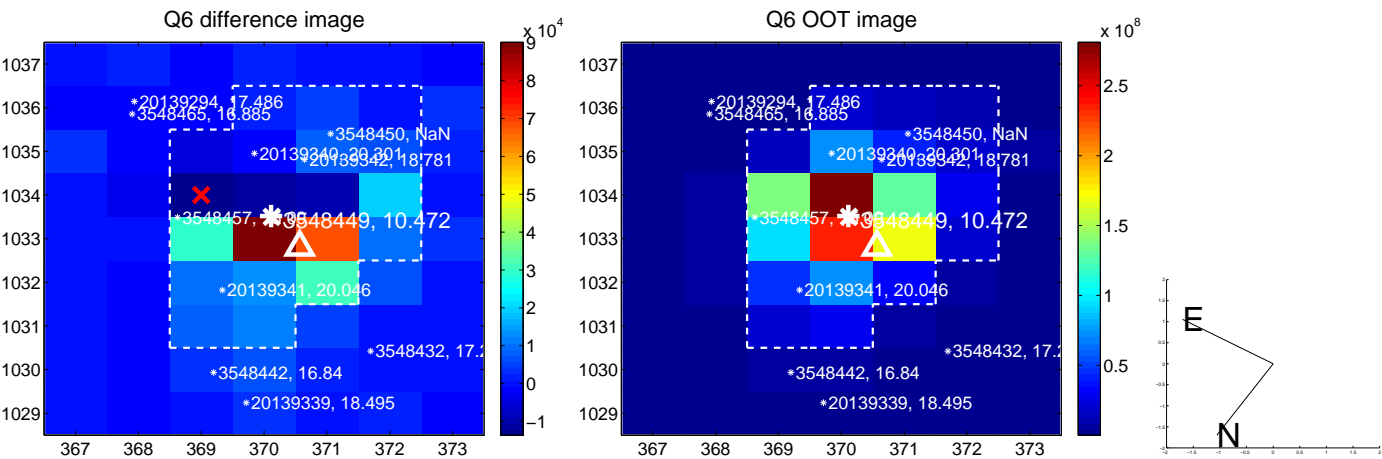
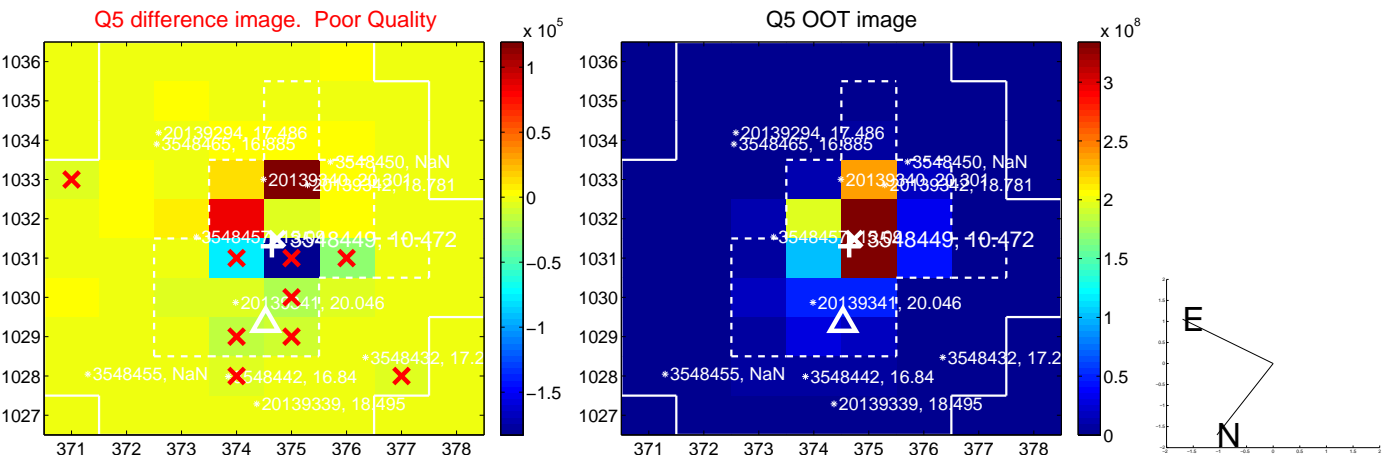


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets;** magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

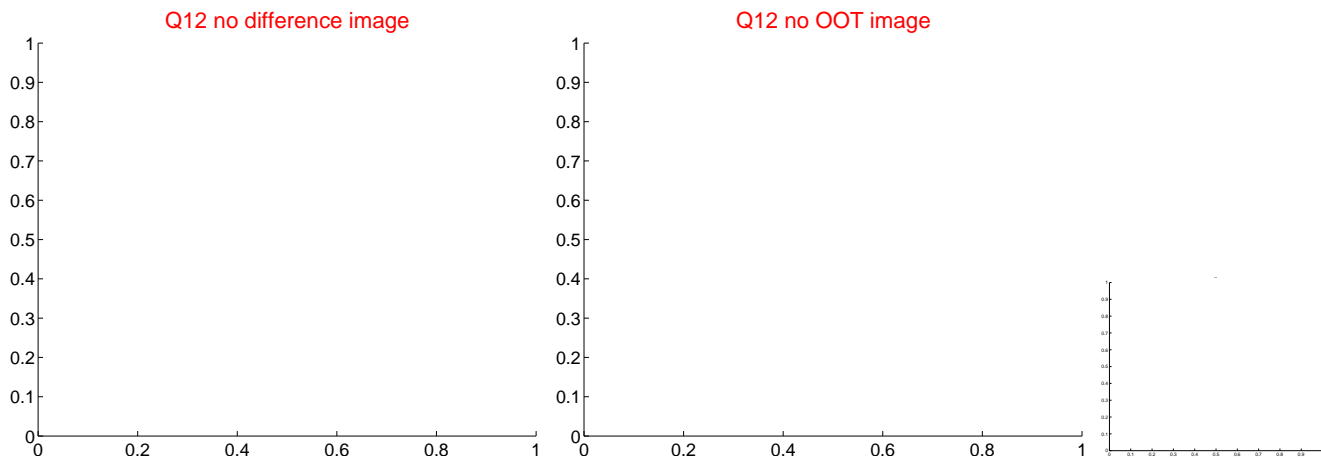
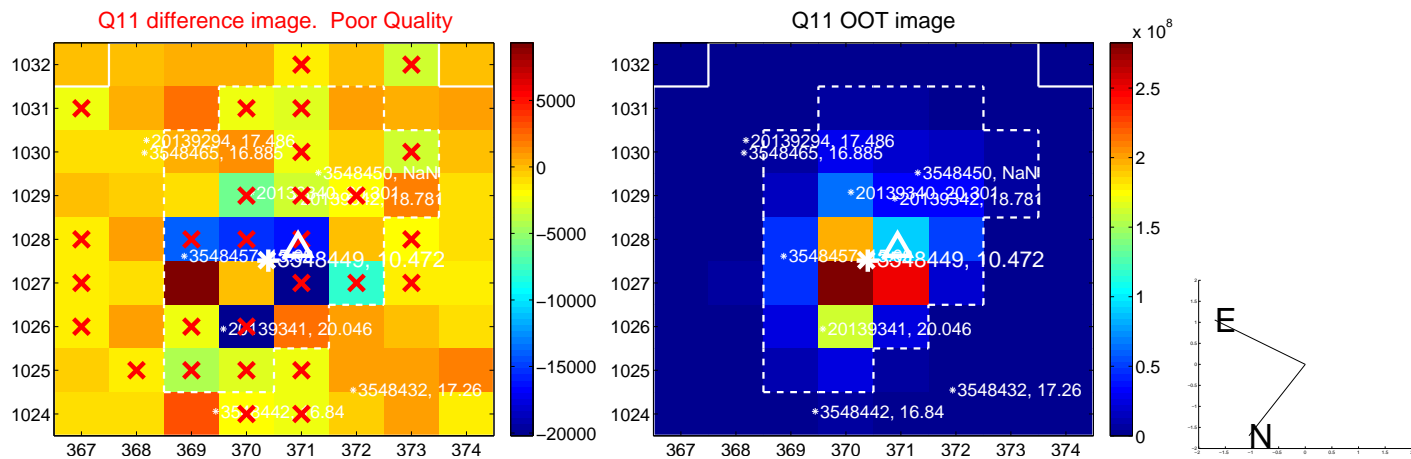
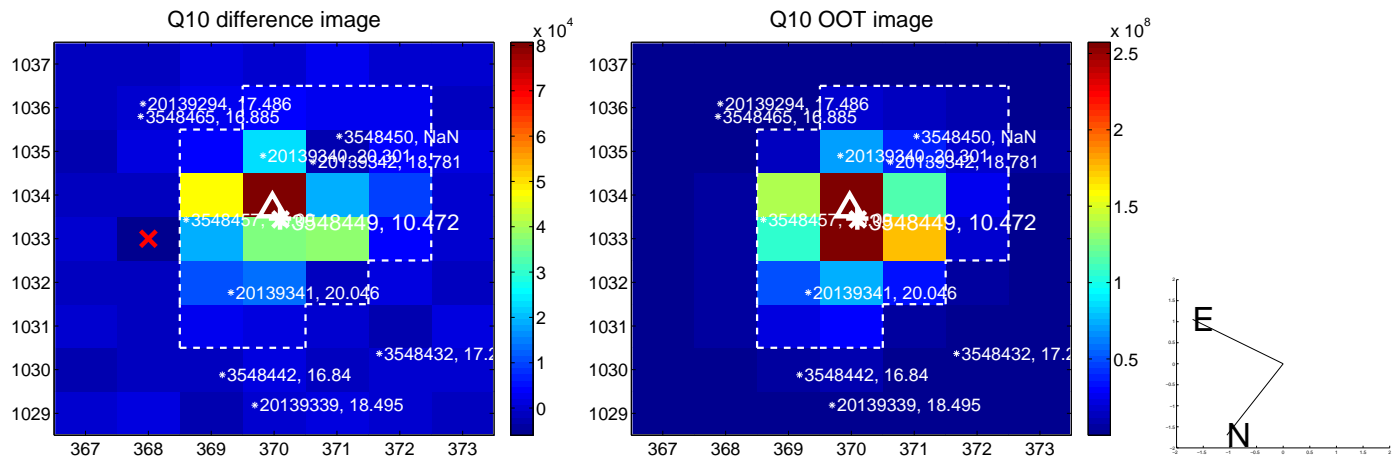
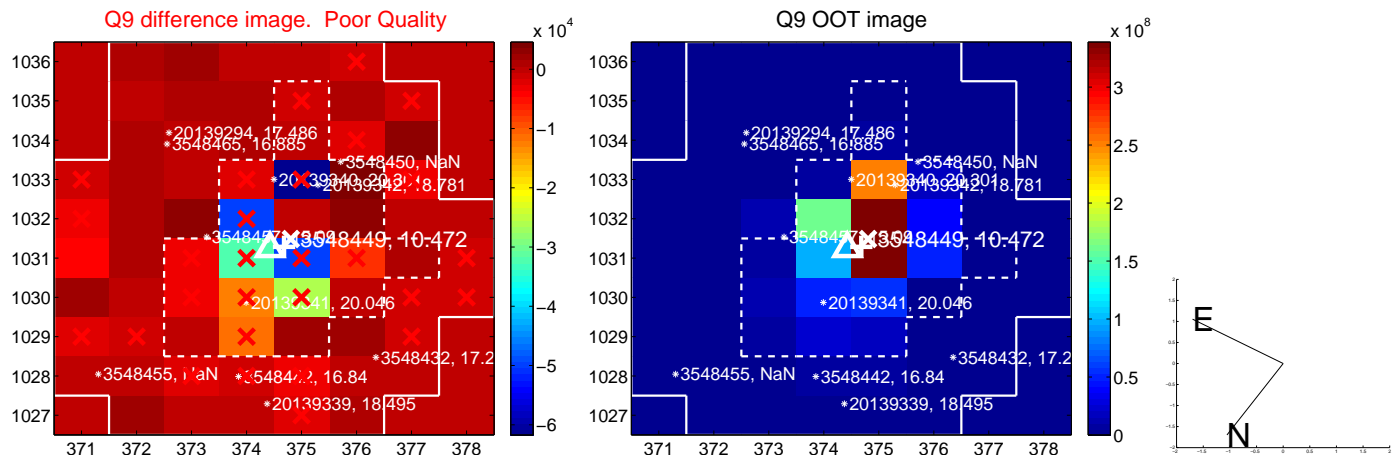
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



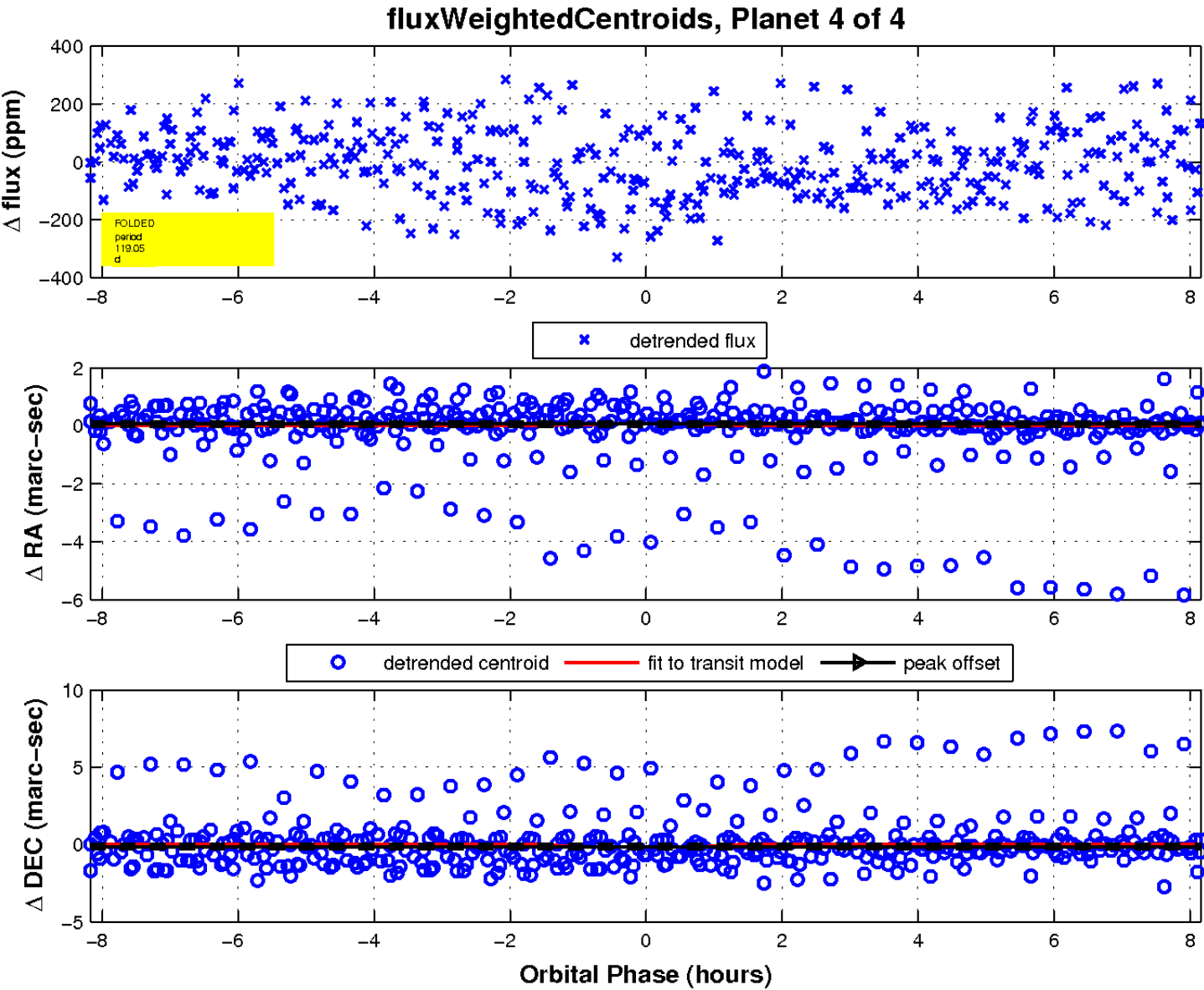
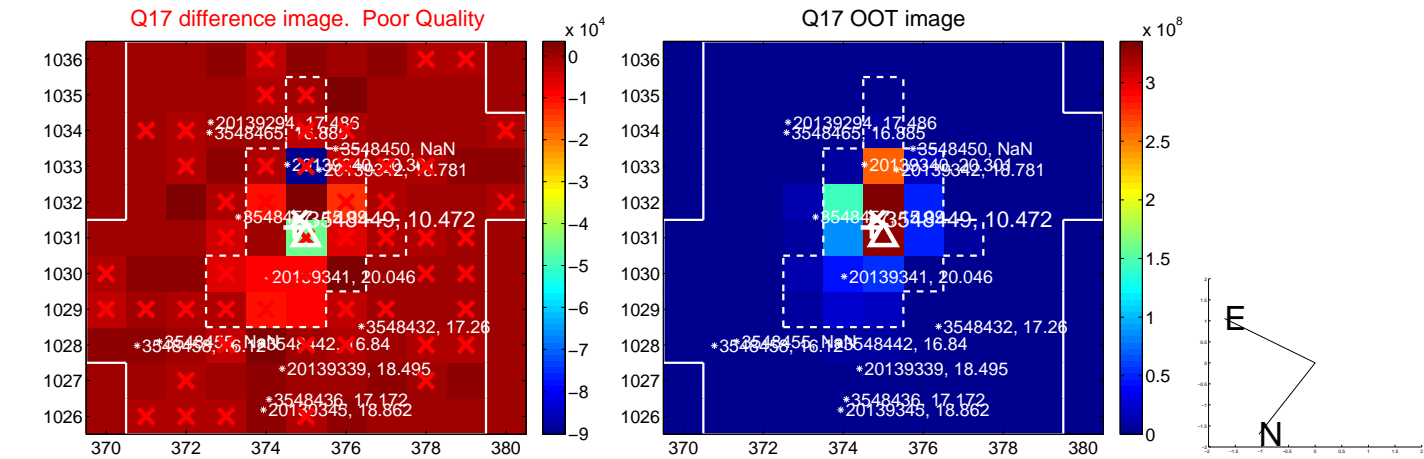
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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.



UKIRT Image

Declination

