

KIC 004947556

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})
004947556-01	OBS	3936.01	141.609595	190.271995	1265.5	7.938	25.9	25.9	0.84	5083	3.25	1.69
004947556-02	OBS	3936.02	13.026809	139.147205	334.1	0.722	11.7	18.0	0.84	5083	1.69	40.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004947556-01	OBS	FP	0.00	0	0	1	0	HALO_GHOST
004947556-02	OBS	PC	0.91	0	0	0	0	NO_COMMENT

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

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

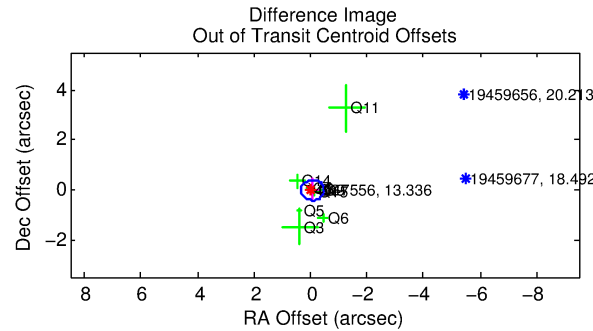
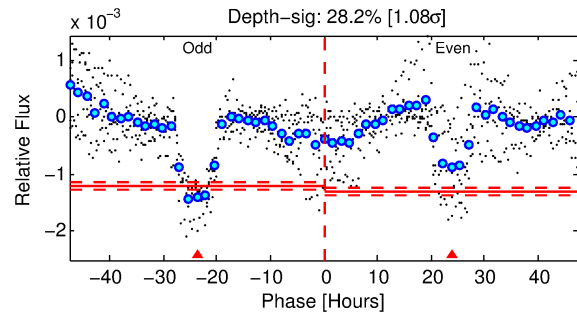
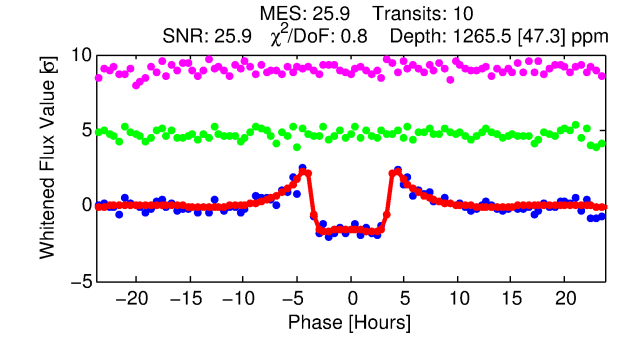
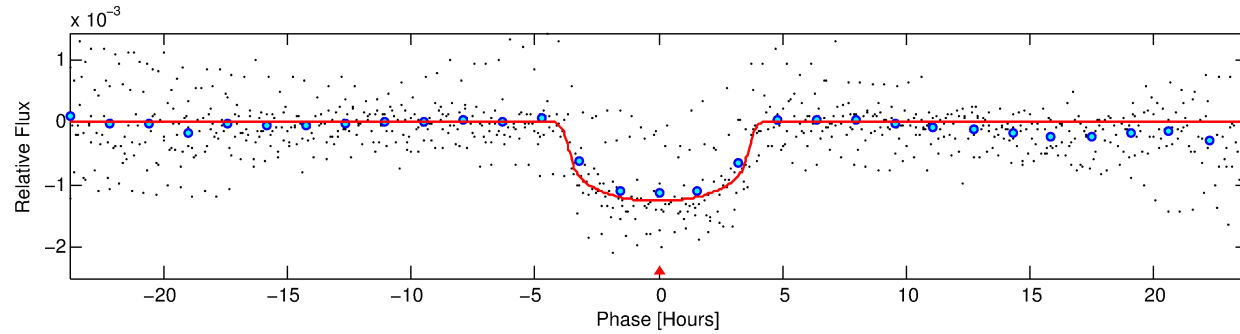
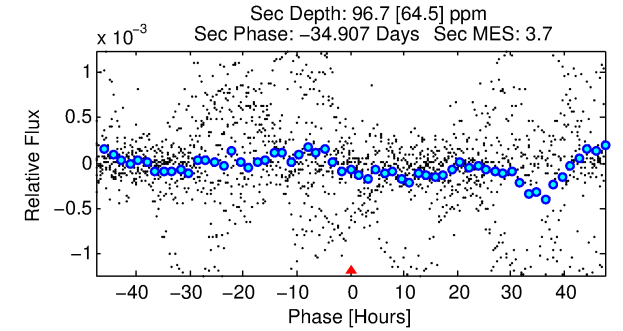
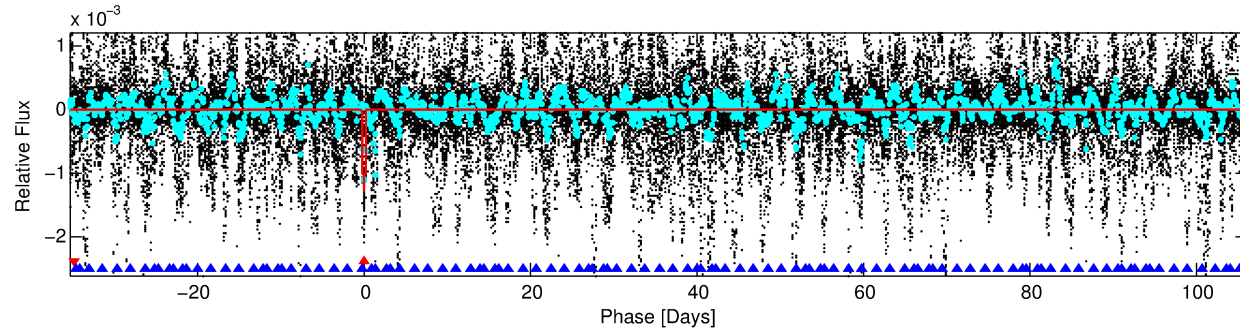
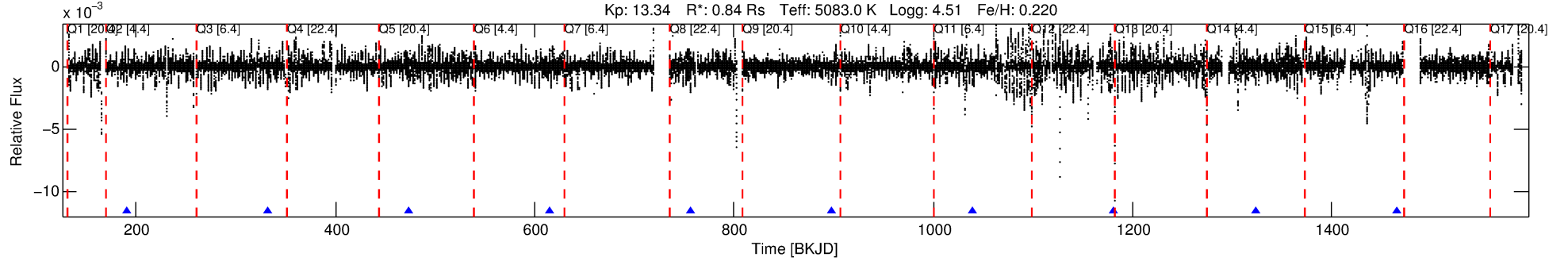
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004947556-01

No Significant Match Found

DV One-Page Summary

KIC: 4947556 Candidate: 1 of 2 Period: 141.610 d
KOI: K03936.01 Corr: 0.972



DV Fit Results:

Period = 141.60960 [0.00044] d
Epoch = 190.2720 [0.0024] BKJD
Rp/R* = 0.0352 [0.0022]
a/R* = 99.76 [19.57]
b = 0.73 [0.13]
Seff = 1.69 [0.29]
Teq = 291 [13] K
Rp = 3.25 [0.38] Re
a = 0.5027 [0.0426] AU
Ag = 1276.19 [880.94] [1.45σ]
Teffp = 2685 [463] K [5.17σ]

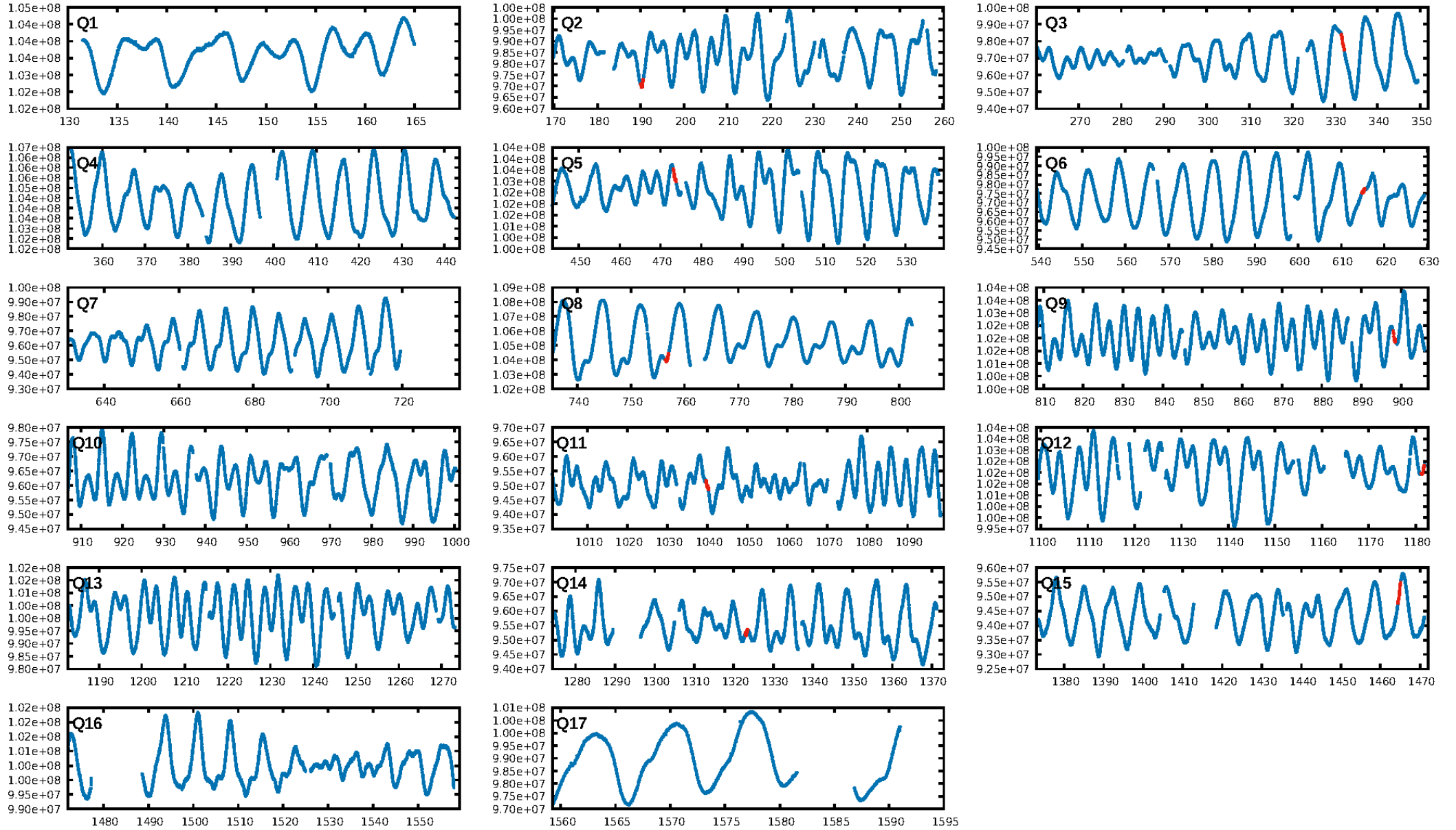
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [387.15σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 91.7%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 3.69e-45
RollingBand-fgt: 1.00 [10/10]
GhostDiagnostic-chr: 0.02604
Centroid-sig: 0.3%
Centroid-so: 0.764 arcsec [3.85σ]
OotOffset-rm: 0.066 arcsec [0.48σ]
KicOffset-rm: 0.118 arcsec [0.28σ]
OotOffset-st: 3/3/1/2 [9]
KicOffset-st: 3/3/1/2 [9]
DiffImageQuality-fgm: 0.78 [7/9]
DiffImageOverlap-fno: 1.00 [9/9]

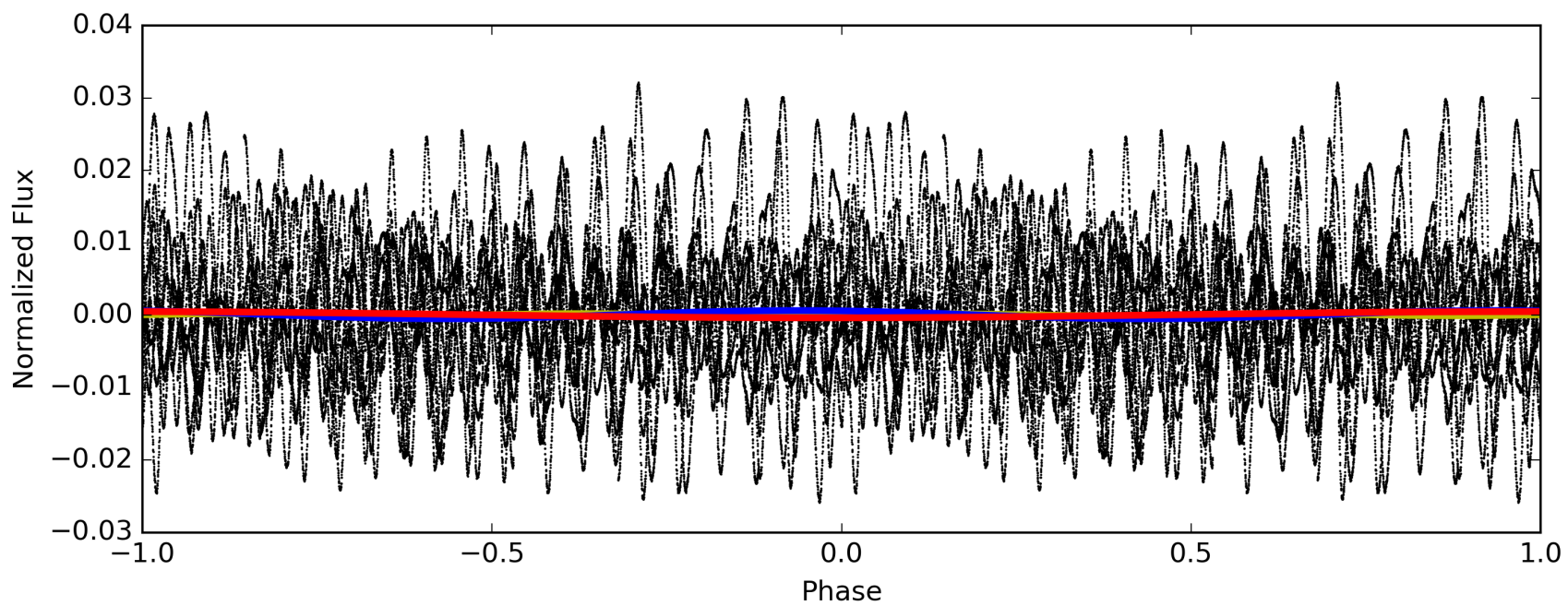
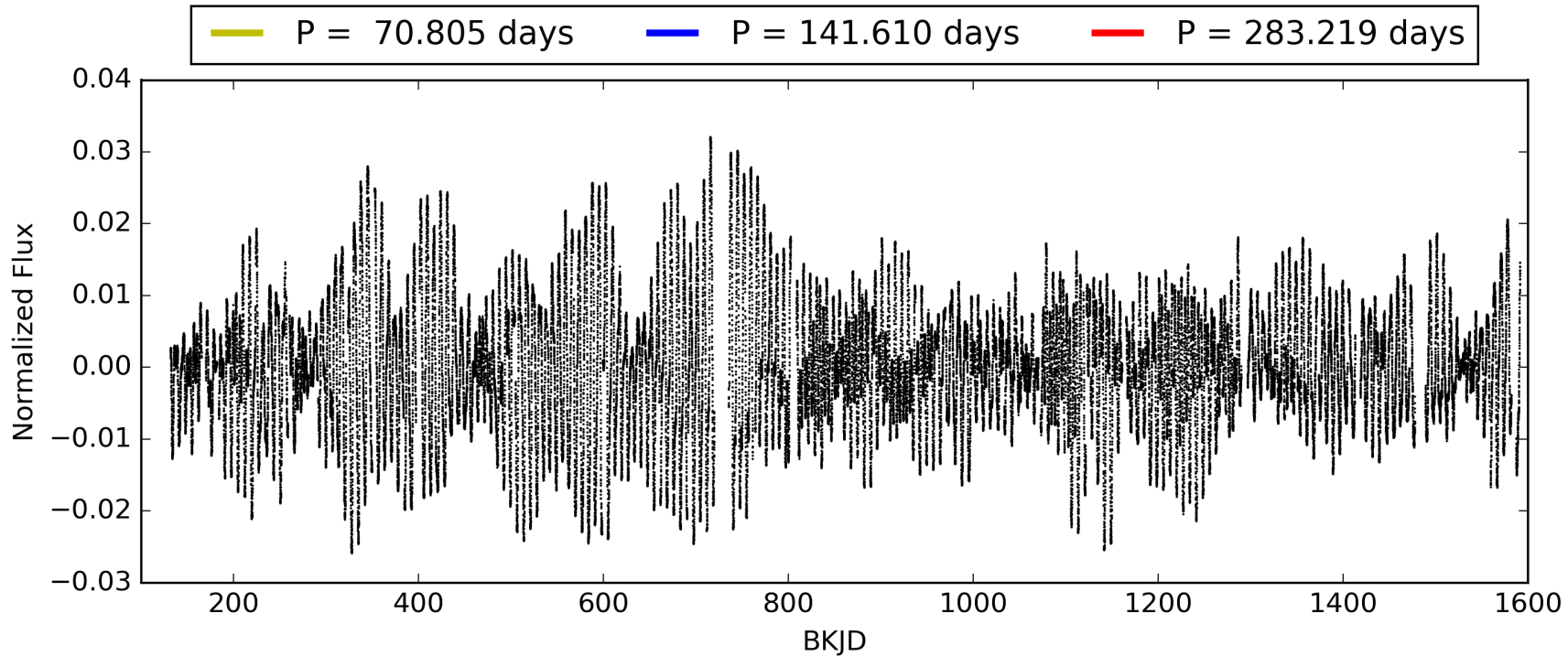
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:56:11 Z

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

TCE 004947556-01, PDC Light Curves

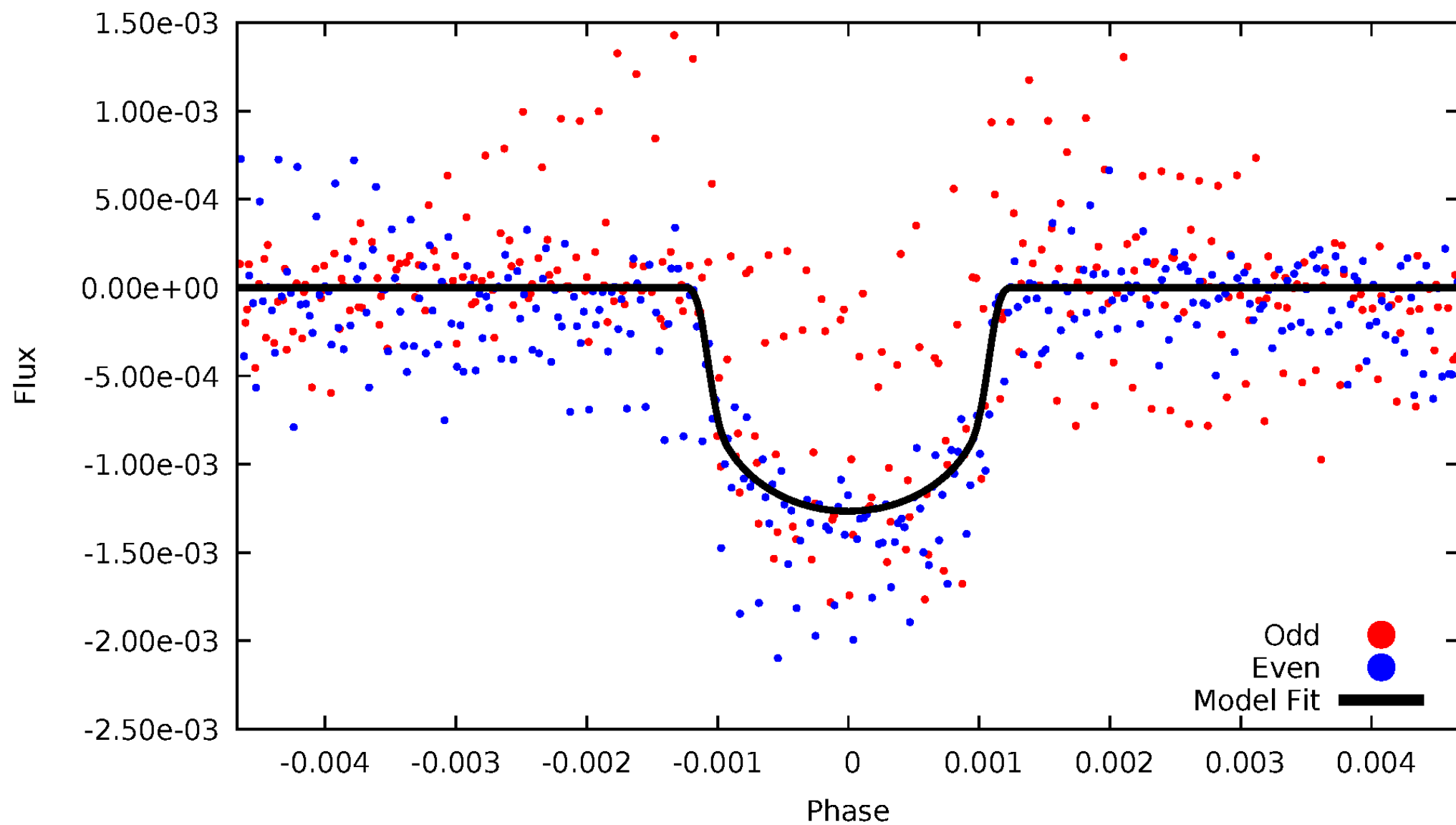


TCE 004947556-01



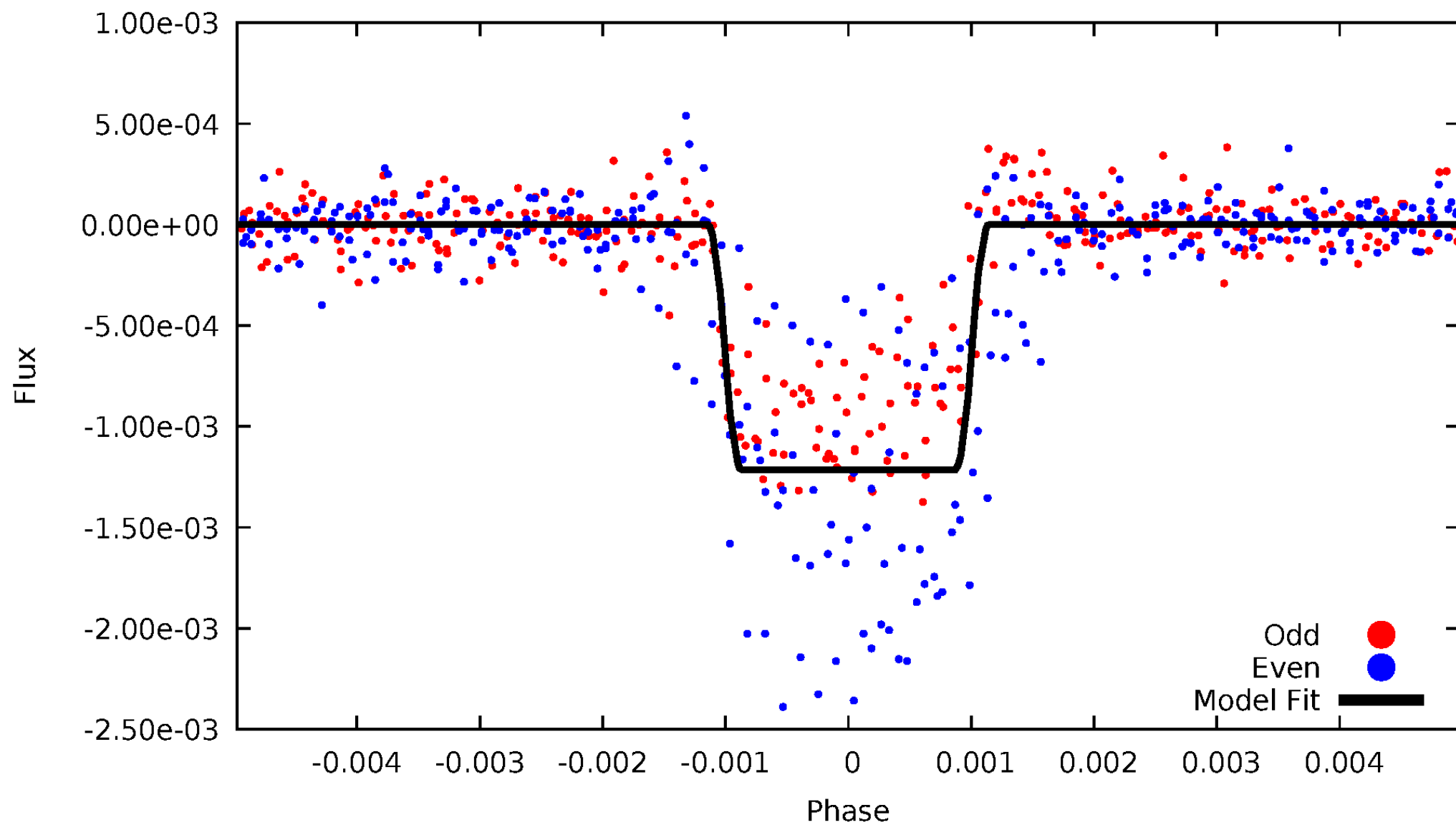
DV Odd/Even

TCE 004947556-01



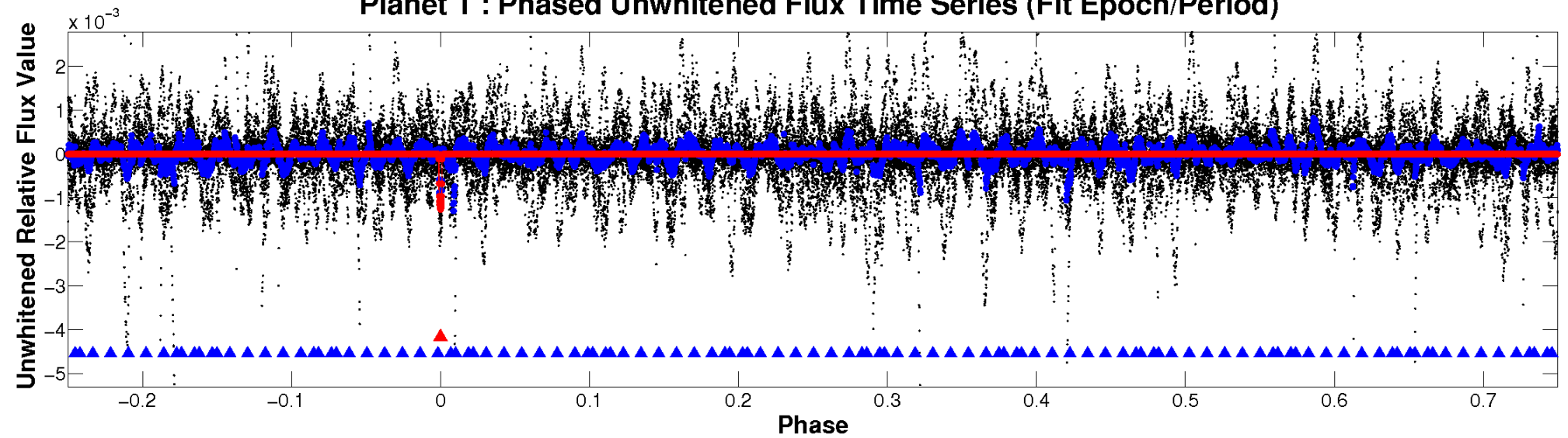
ALT Odd/Even

TCE 004947556-01

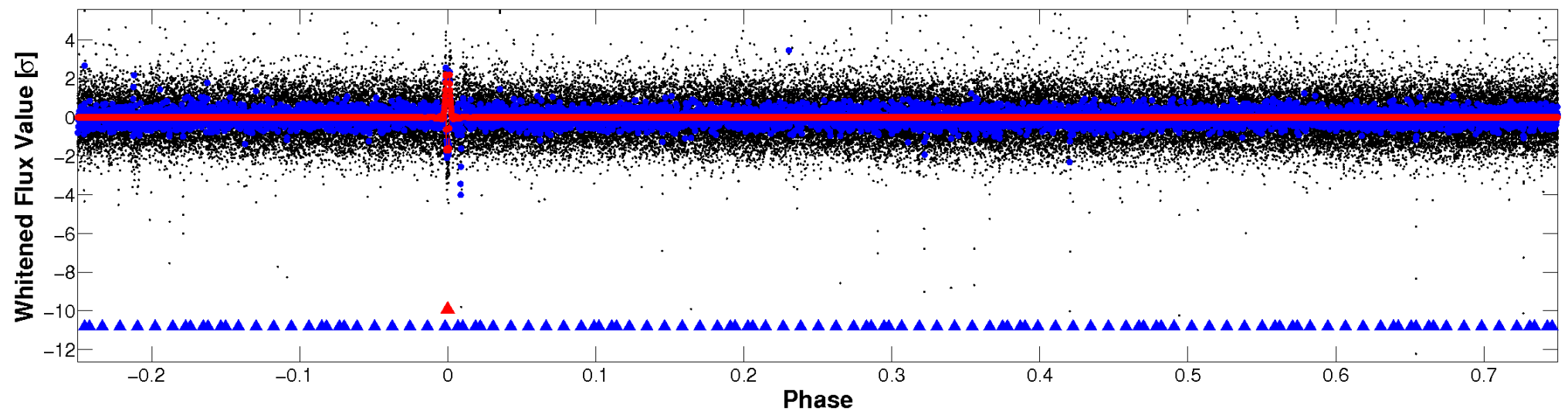


Non-Whitened Vs. Whitened Light Curve

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

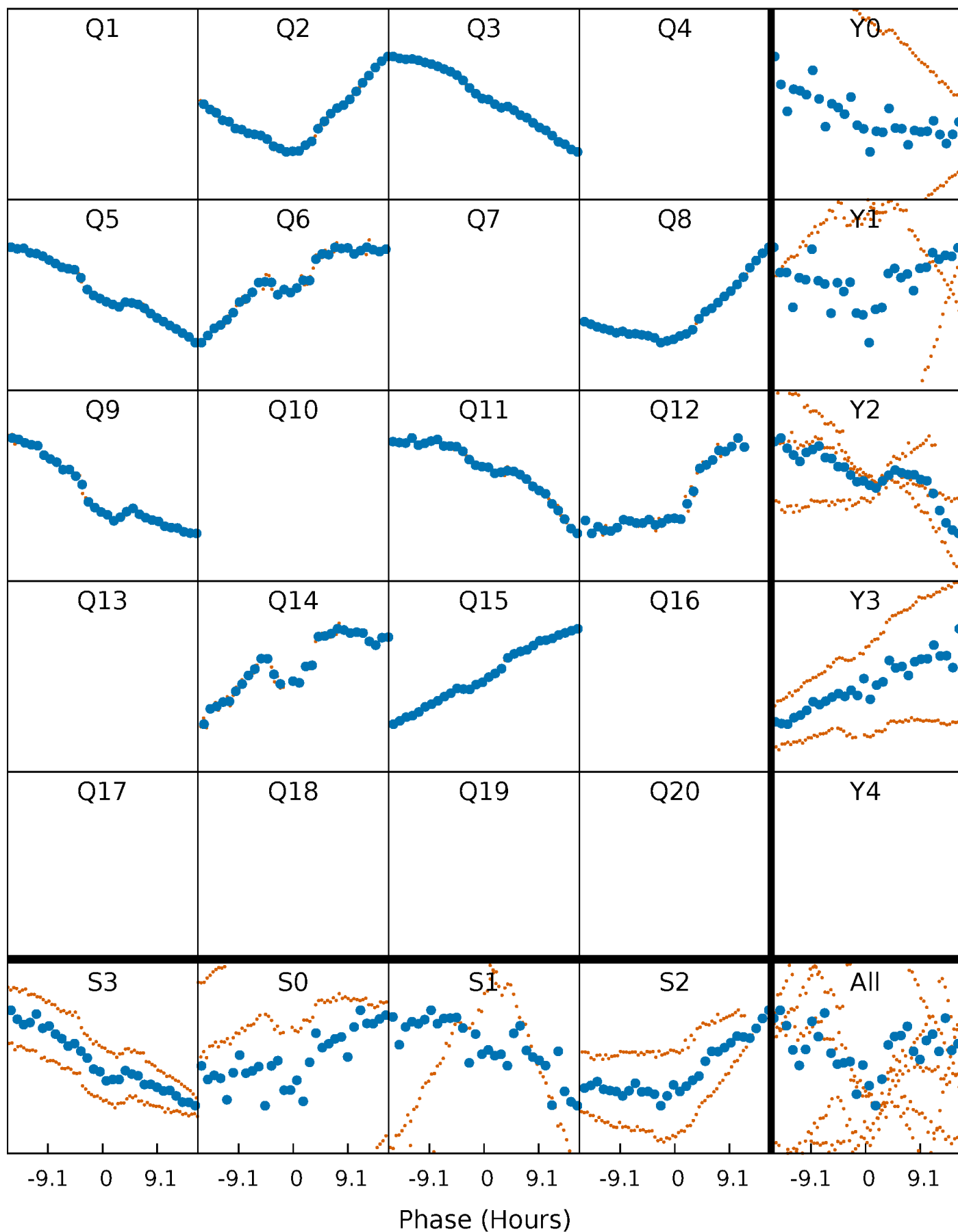


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



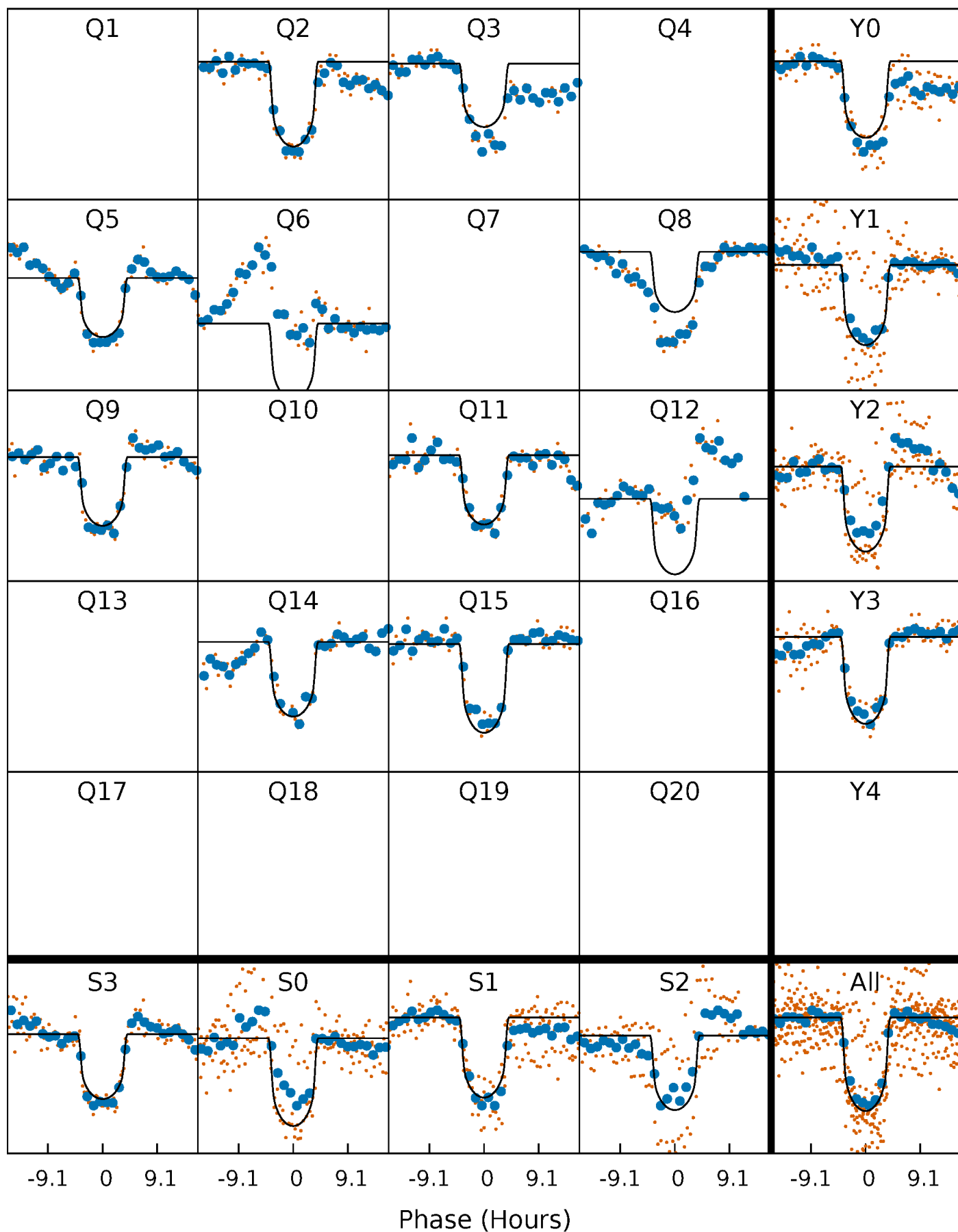
PDC Quarter-Phased Transit Curves

TCE 004947556-01 P=141.609595 Days $T_0=190.271995$ (BKJD)



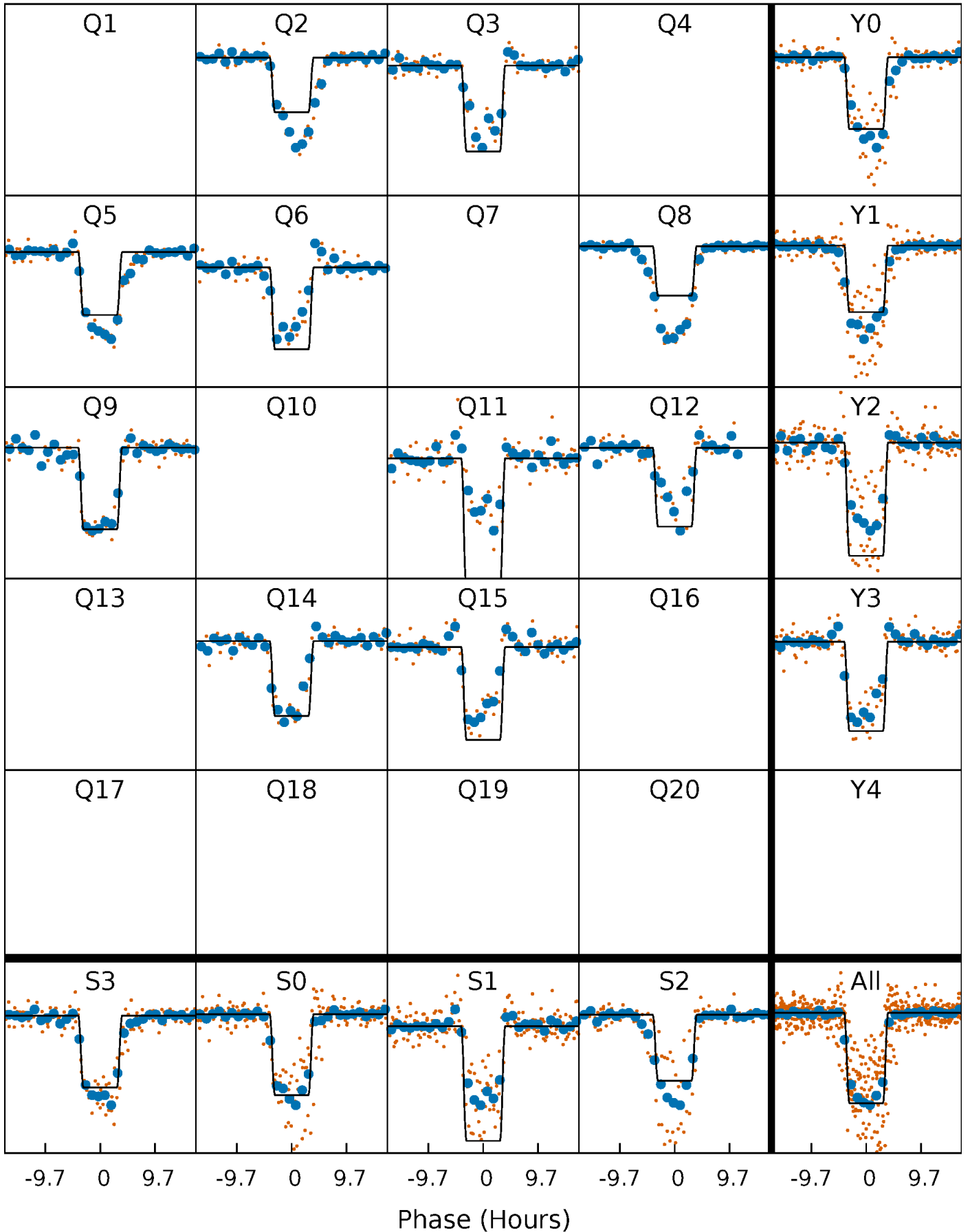
DV Quarter-Phased Transit Curves

TCE 004947556-01 P=141.609595 Days $T_0=190.271995$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

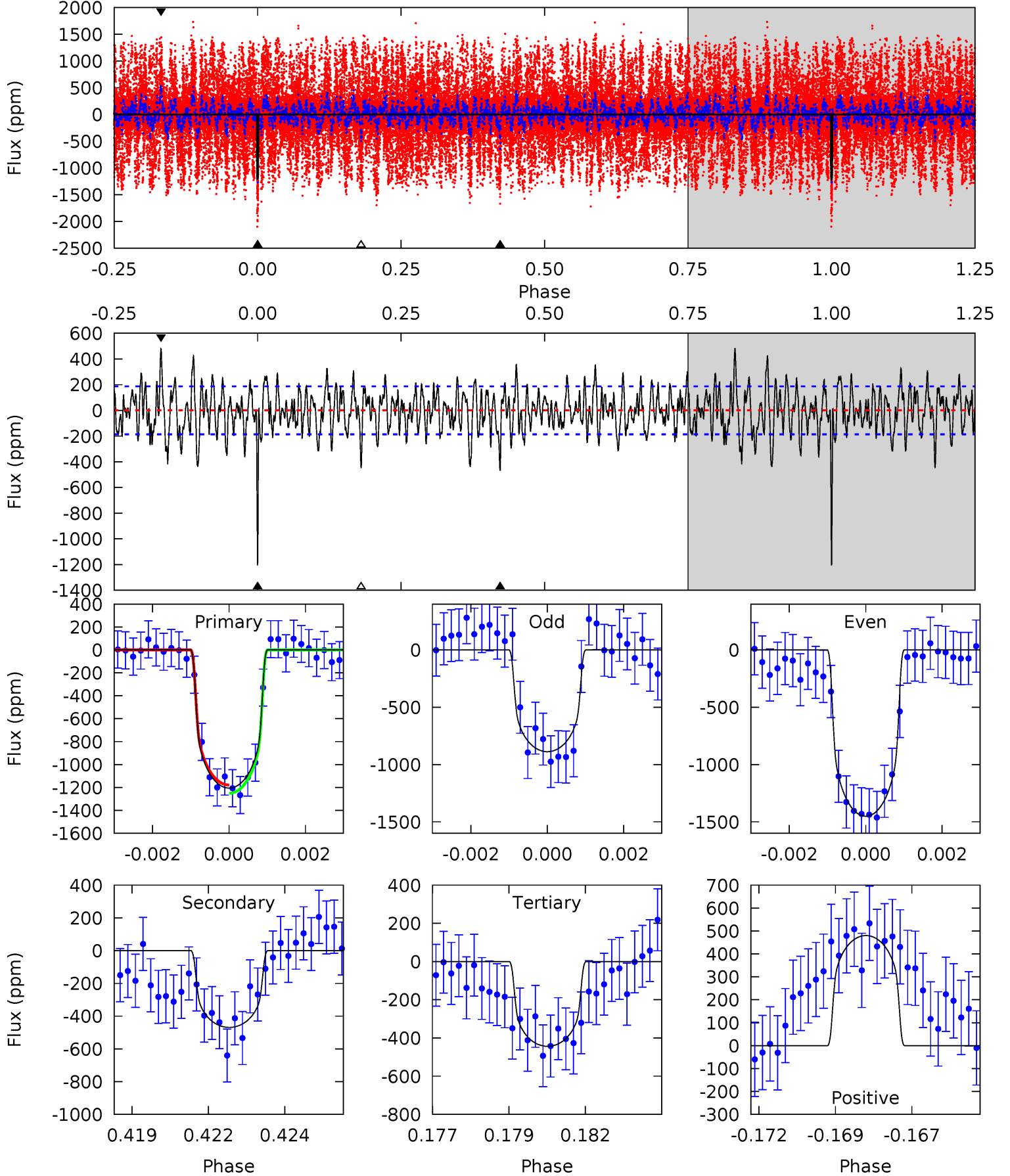
TCE 004947556-01 P=141.611369 Days $T_0=190.264058$ (BKJD)



DV Model-Shift Uniqueness Test

004947556-01, P = 141.609595 Days, E = 48.662400 Days

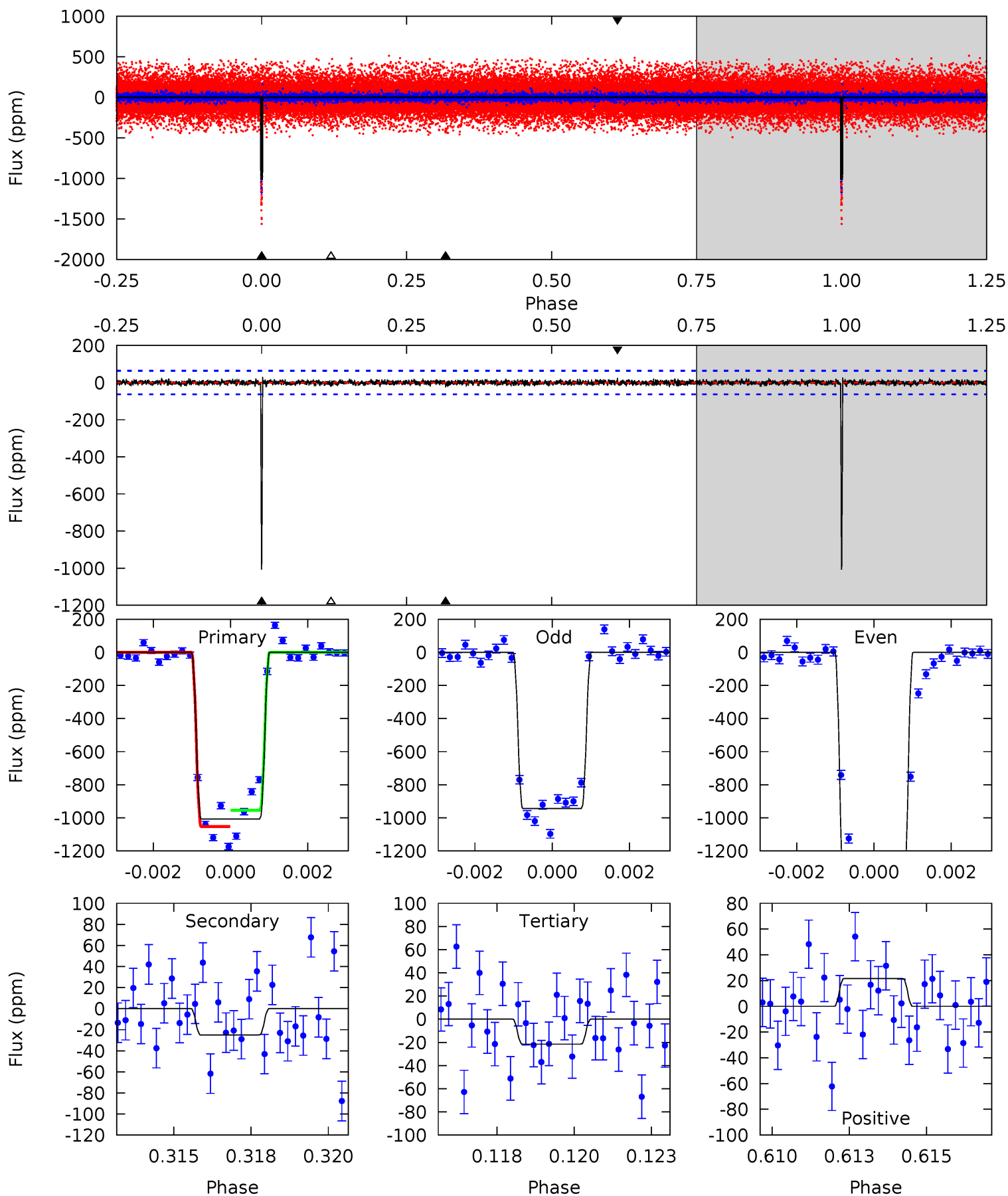
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
34.2	13.3	12.6	13.6	5.29	3.03	4.02	21.6	20.6	0.71	-0.32	7.92	0.88	0.28	1.04



Alt Model-Shift Uniqueness Test

004947556-01, P = 141.611369 Days, E = 48.652689 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
84.1	2.08	1.80	1.80	5.30	3.05	0.52	82.3	82.3	0.29	0.28	23.3	1.17	0.03	4.10



Stellar Parameters For KIC 004947556

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	$M(M_{\odot})$	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	5083^{+152}_{-152}	$4.512^{+0.063}_{-0.070}$	$0.220^{+0.200}_{-0.300}$	$0.844^{+0.083}_{-0.074}$	$0.844^{+0.058}_{-0.065}$	$1.977^{+0.567}_{-0.440}$
	+3%/-3%	+1%/-2%	+91%/-136%	+10%/-9%	+7%/-8%	+29%/-22%
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 004947556-01 / KOI 3936.01

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-469 ± 35	$3.25^{+0.26}_{-0.26}$	406^{+17}_{-16}	4186^{+157}_{-146}	6150^{+1187}_{-955}
Alt.	-25 ± 12	$3.22^{+0.27}_{-0.26}$	407^{+15}_{-16}	2680^{+167}_{-216}	333^{+173}_{-173}

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 $A_{obs} \gg 1.0$

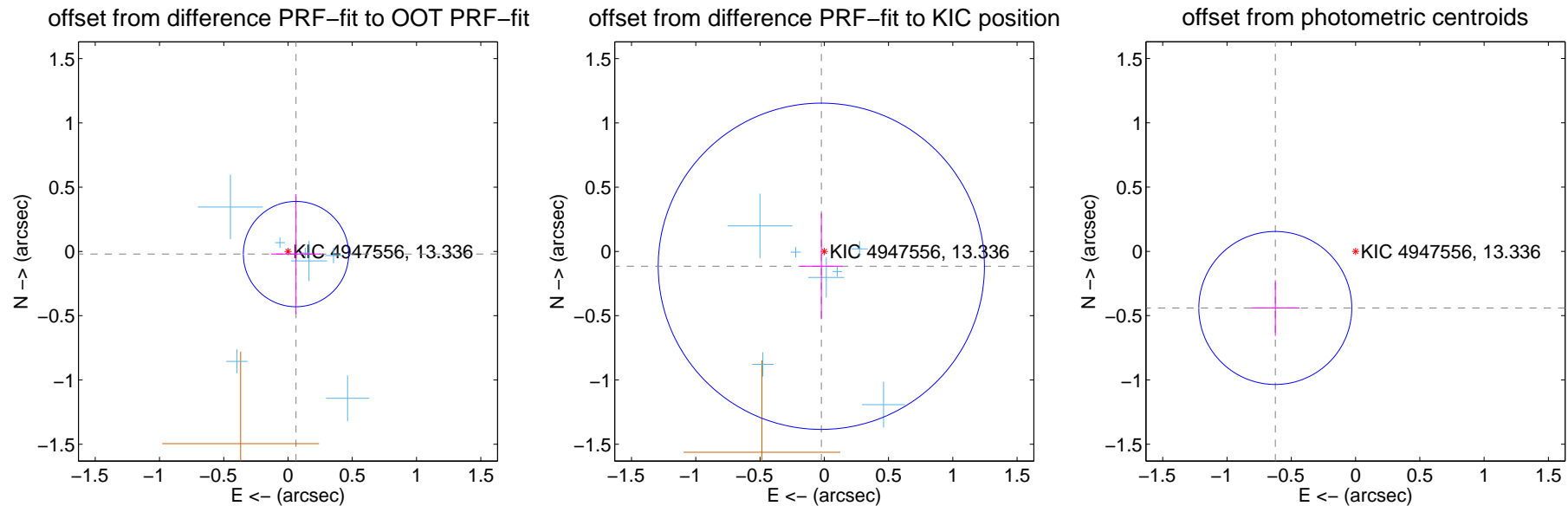
DV Centroid Data

Supplemental centroid analysis for 004947556-01. Kepler magnitude: 13.34. Transit SNR 25.94

There are 7 quarters with good PRF difference image offsets

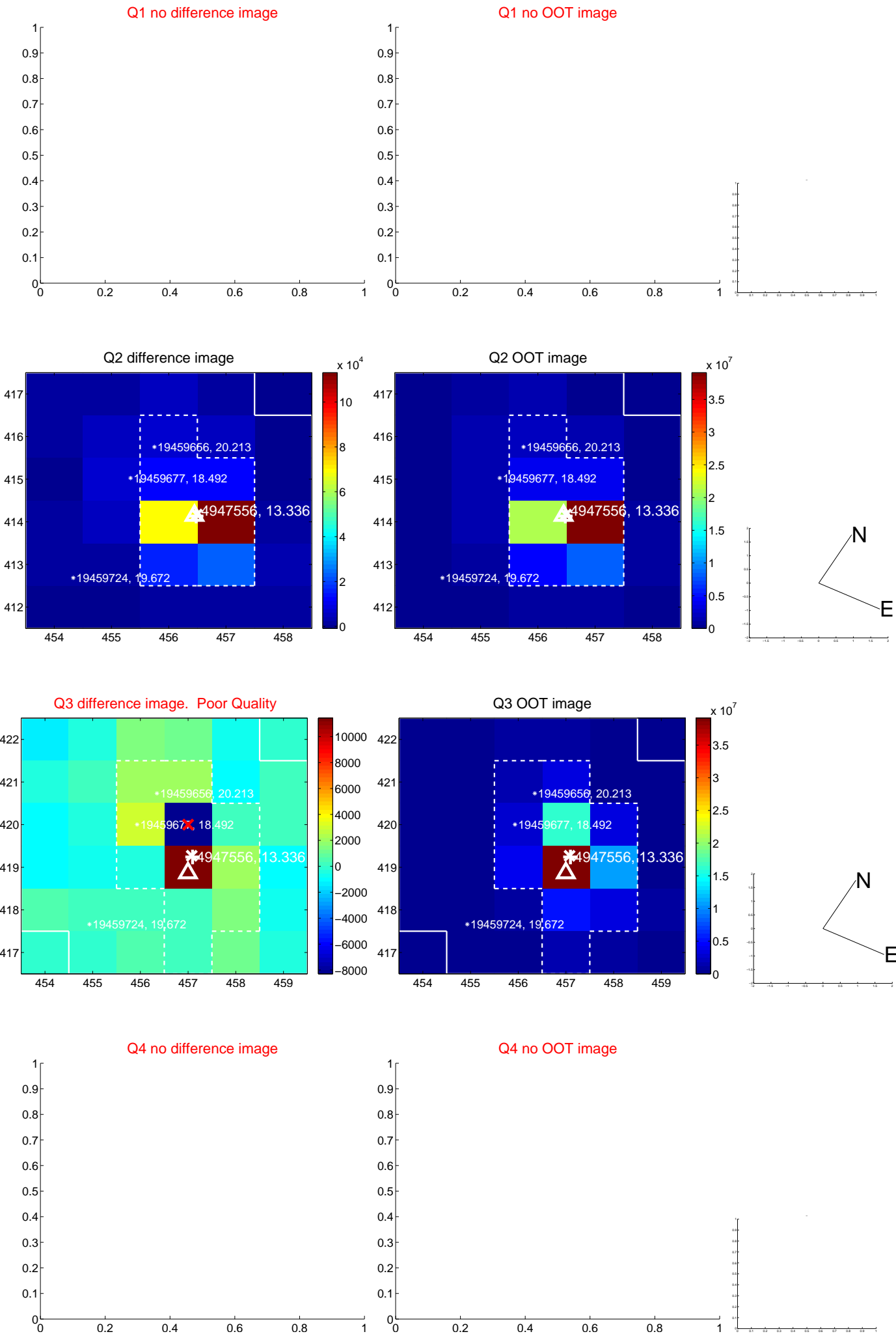
The direct PRF centroid is offset from the target star catalog position by about 0.20 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.066 ± 0.137	0.48	-0.062 ± 0.193	-0.021 ± 0.467
PRF-fit source offset from KIC position	0.118 ± 0.423	0.28	0.023 ± 0.164	-0.116 ± 0.412
photometric centroid source offset	0.76 ± 0.20	3.85	0.62 ± 0.19	-0.44 ± 0.22

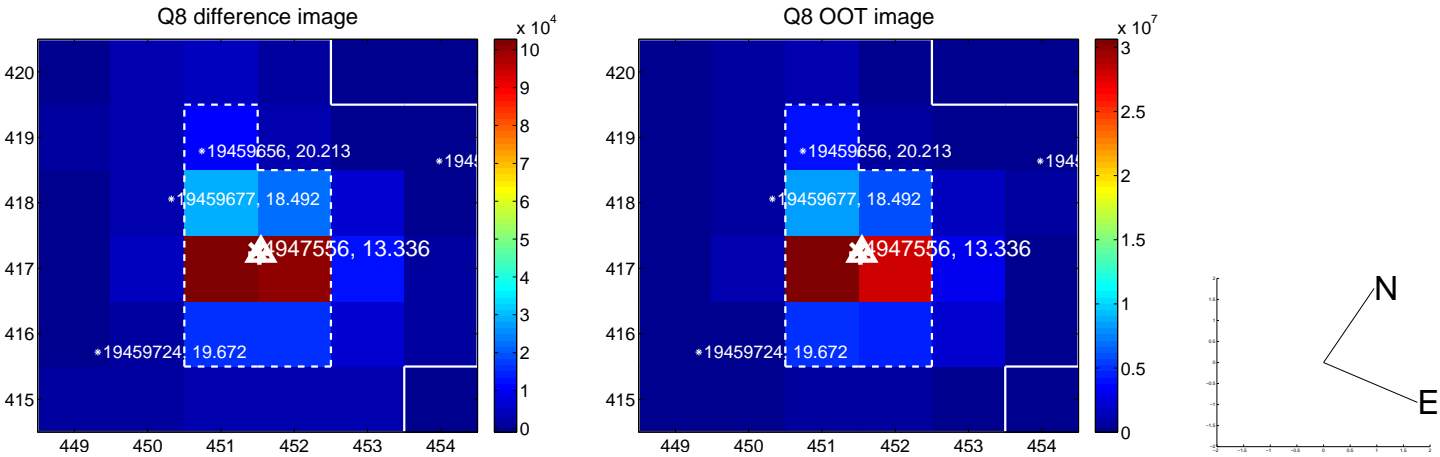
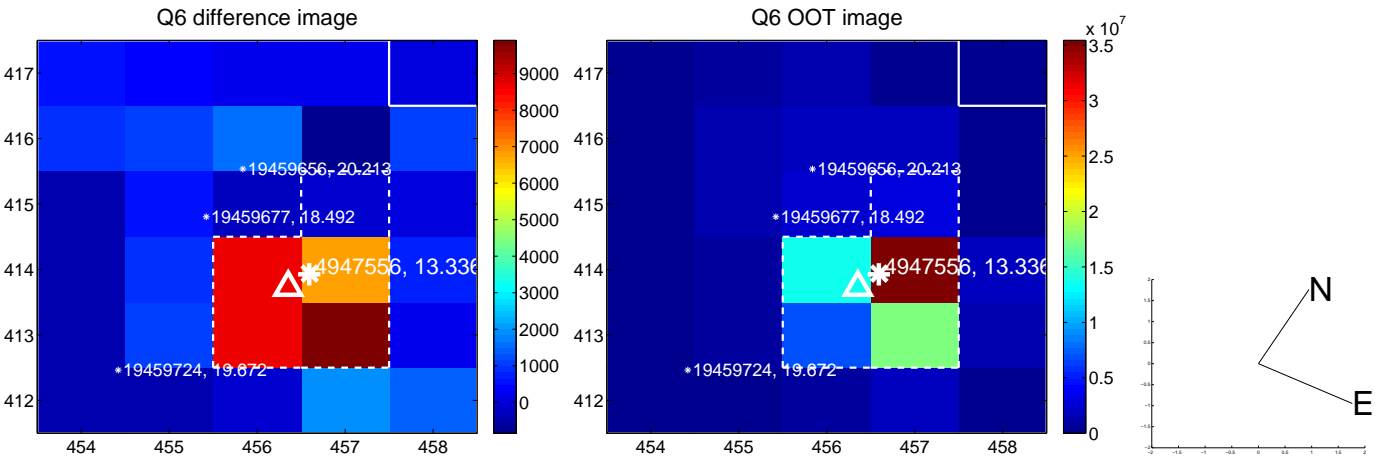
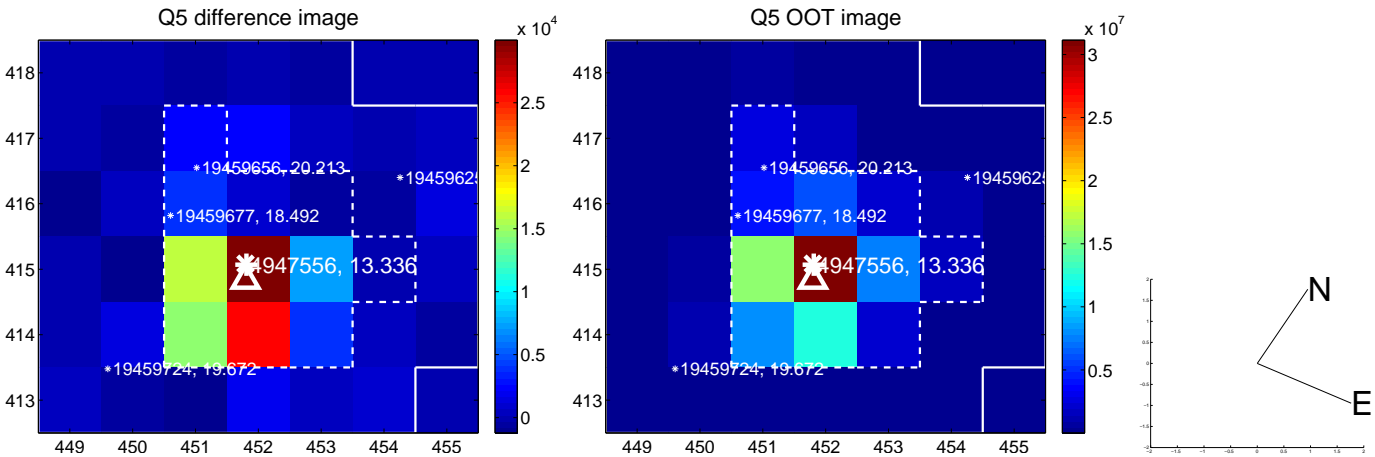


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

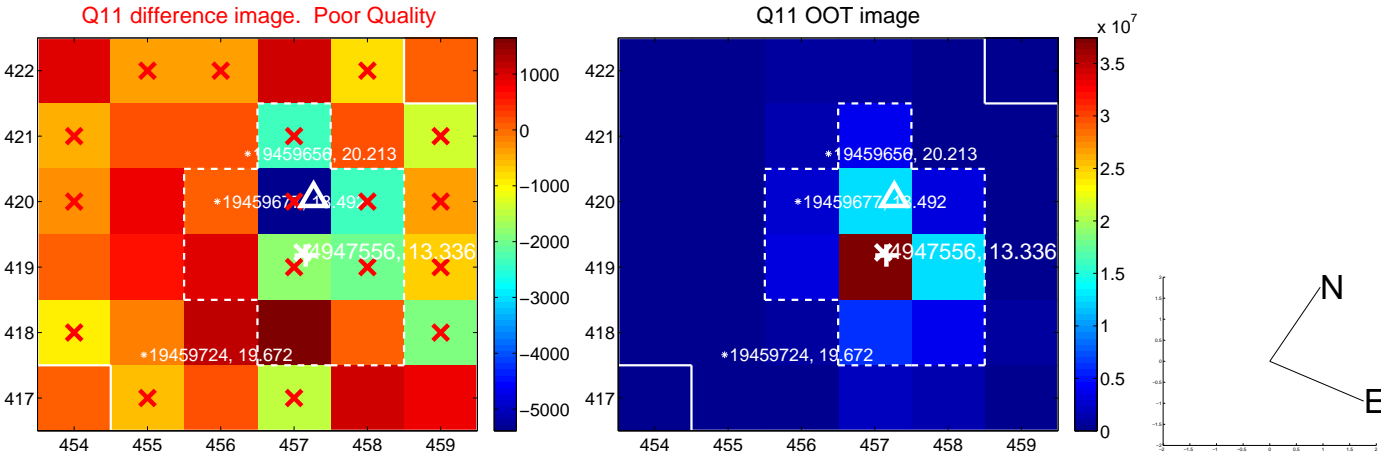
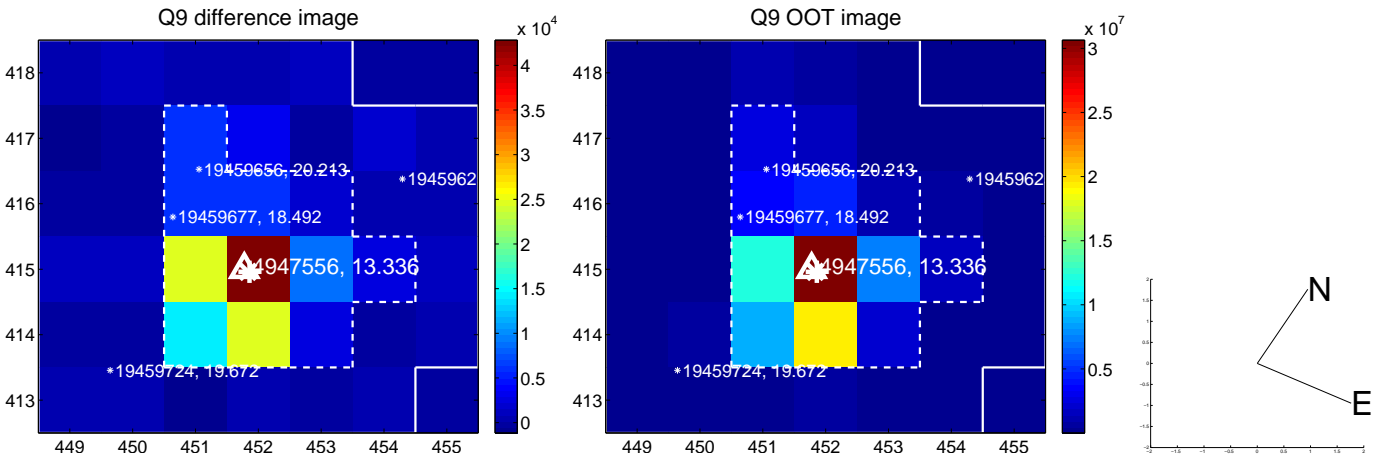
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



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



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

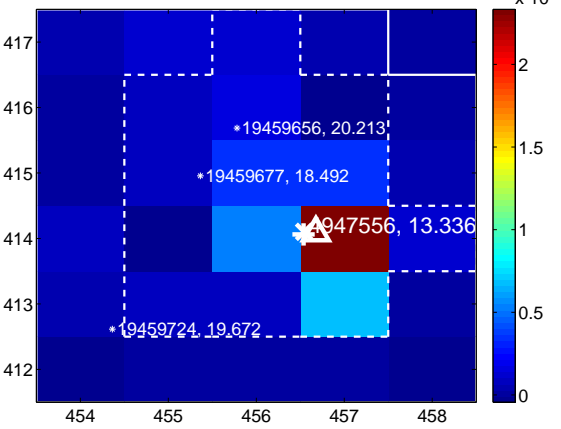
Q13 no difference image



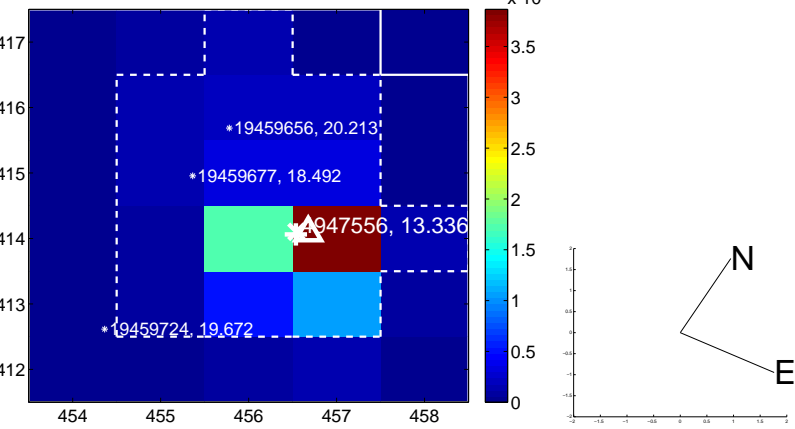
Q13 no OOT image



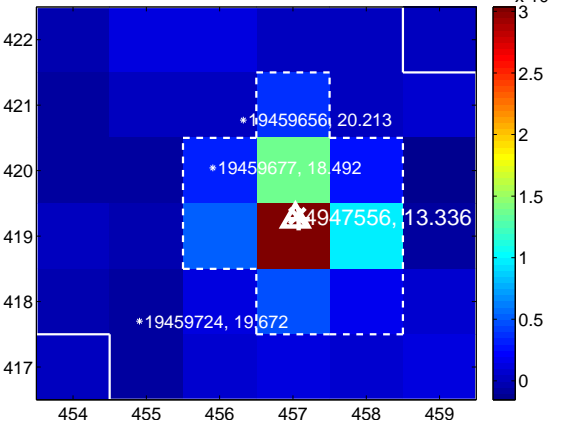
Q14 difference image



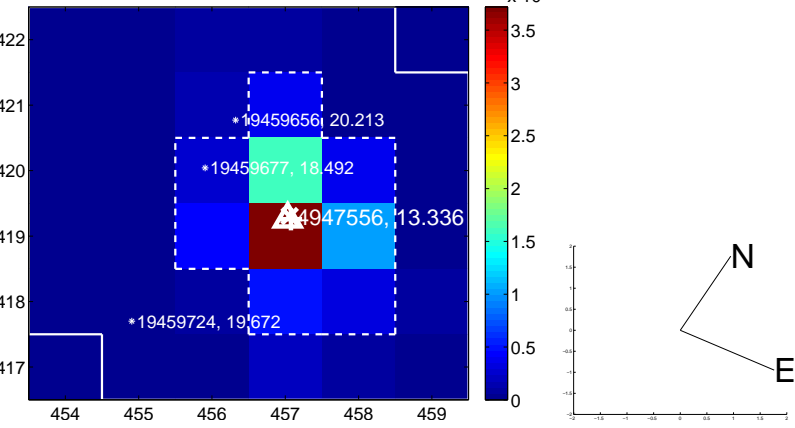
Q14 OOT image



Q15 difference image



Q15 OOT image



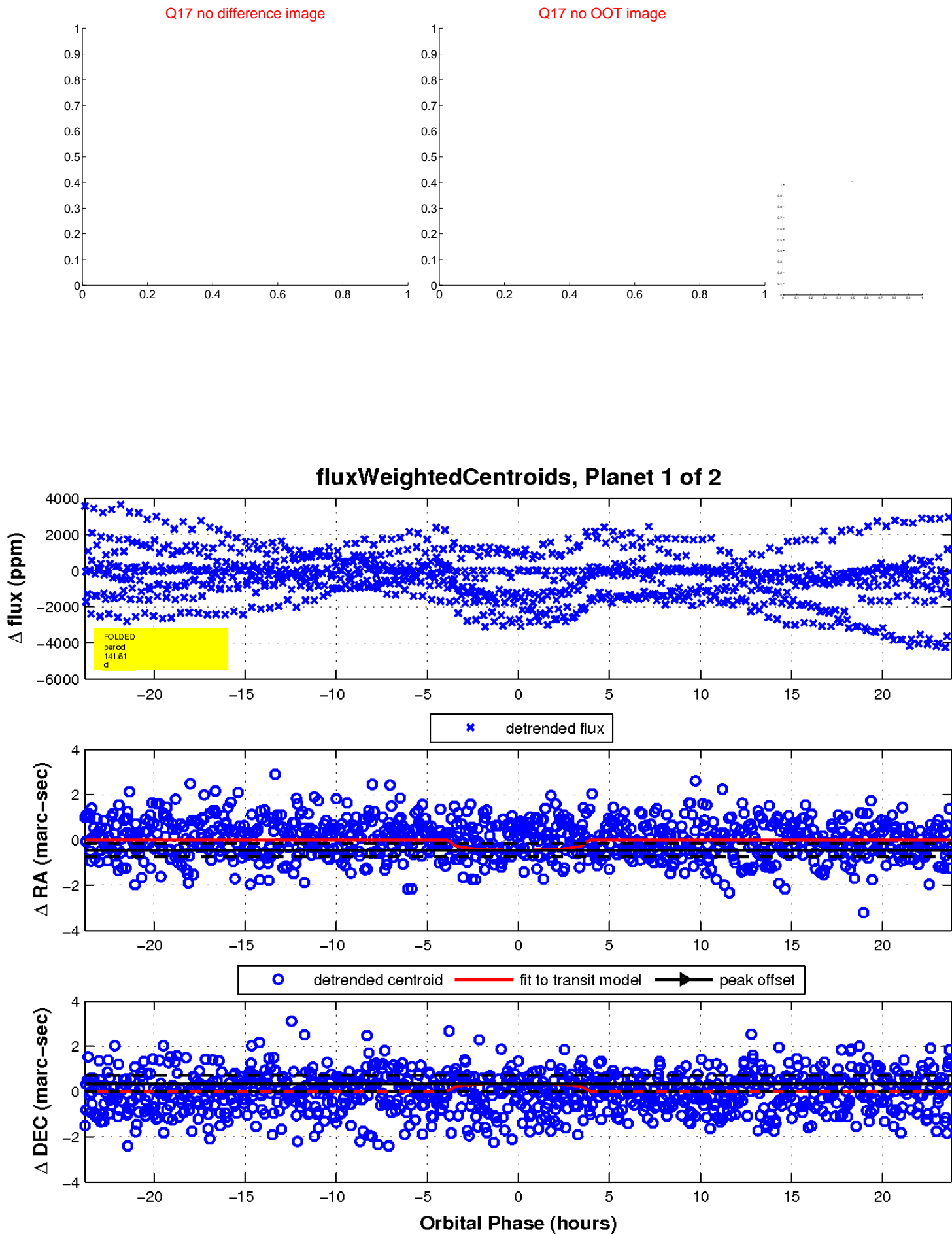
Q16 no difference image



Q16 no OOT image

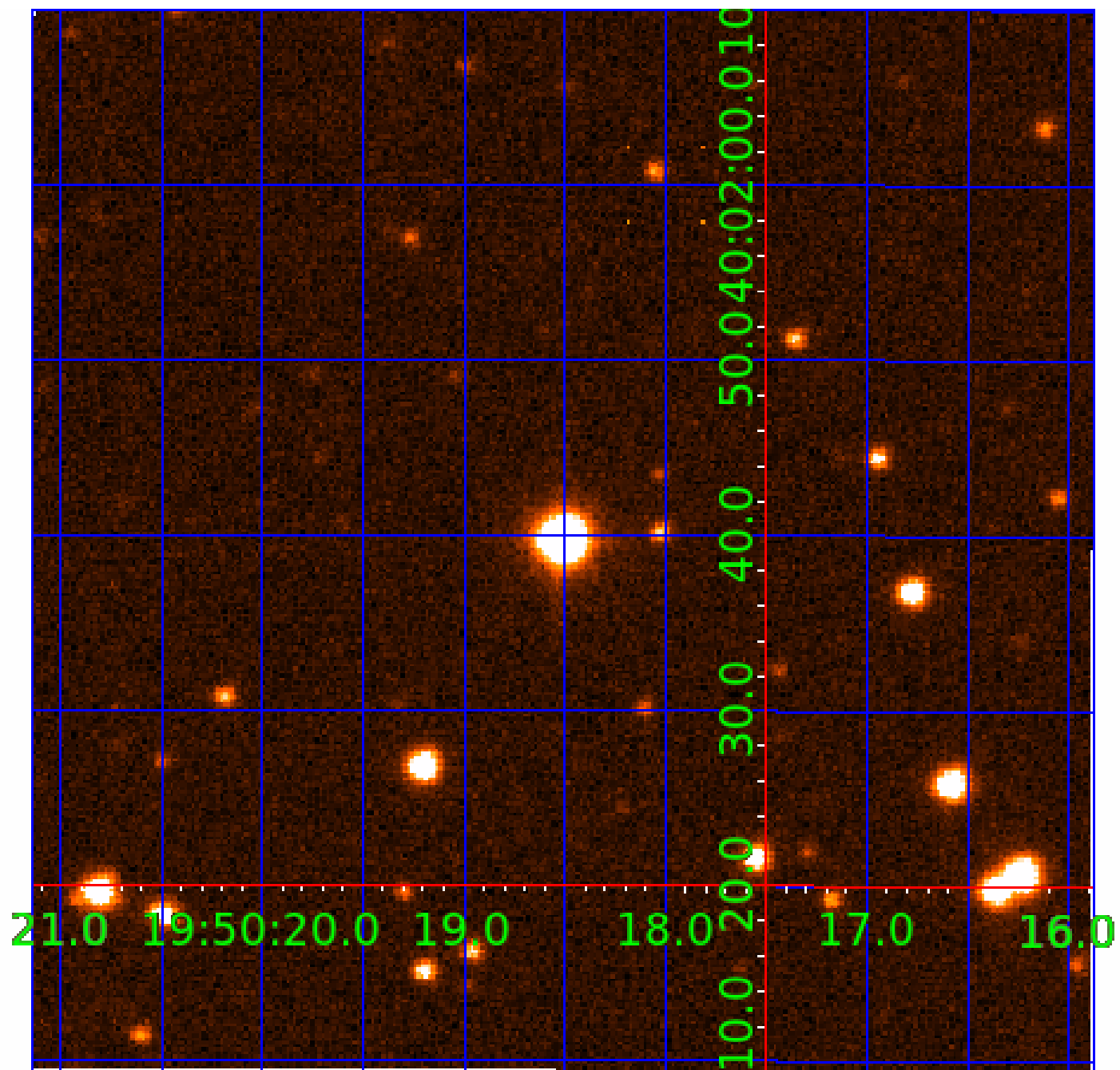


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 004947556

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})
004947556-01	OBS	3936.01	141.609595	190.271995	1265.5	7.938	25.9	25.9	0.84	5083	3.25	1.69
004947556-02	OBS	3936.02	13.026809	139.147205	334.1	0.722	11.7	18.0	0.84	5083	1.69	40.60

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
004947556-01	OBS	FP	0.00	0	0	1	0	HALO_GHOST
004947556-02	OBS	PC	0.91	0	0	0	0	NO_COMMENT

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

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

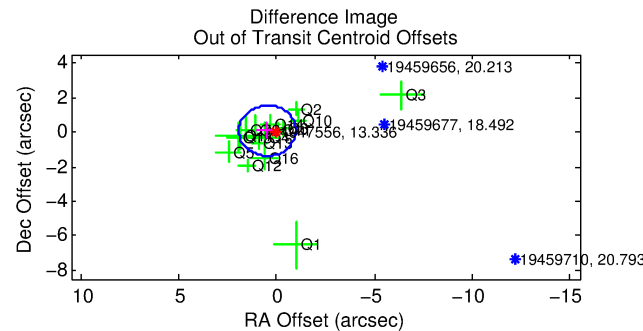
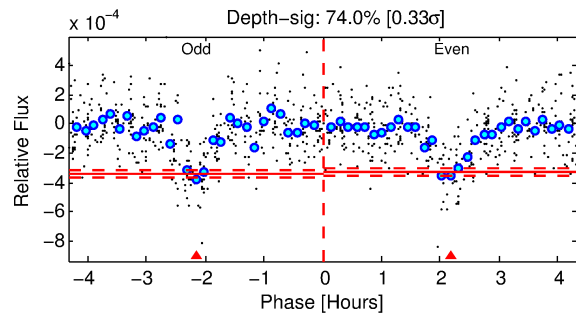
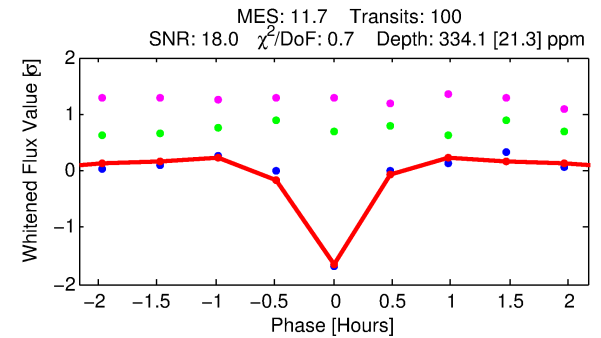
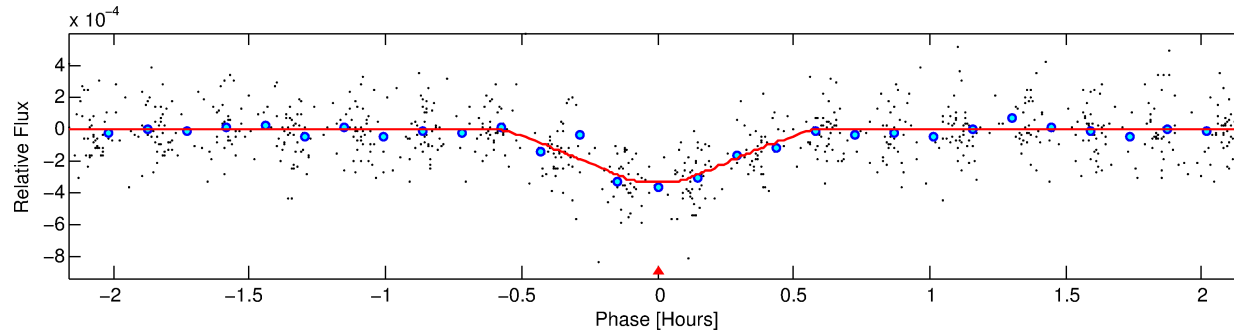
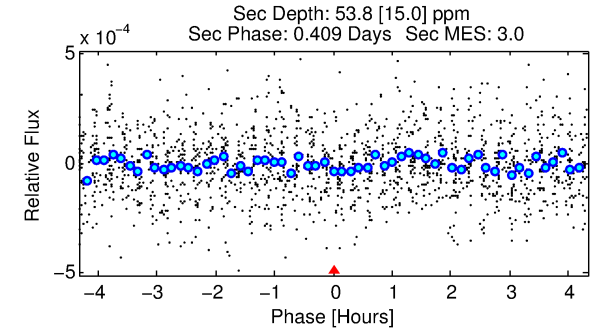
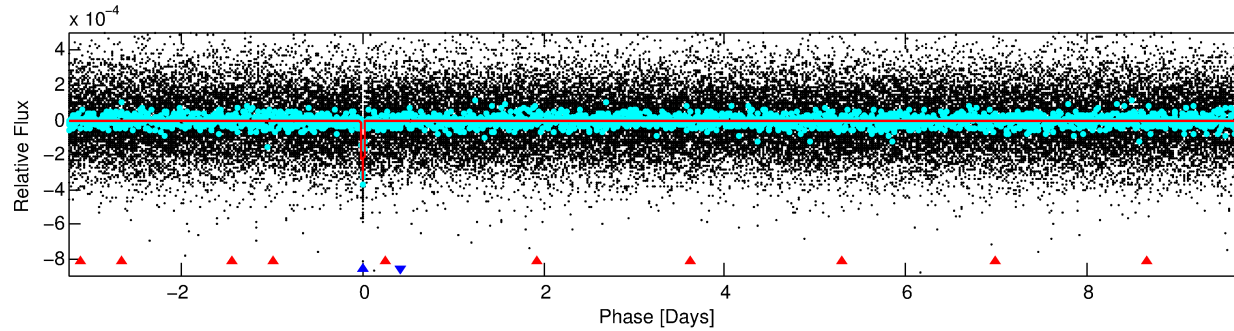
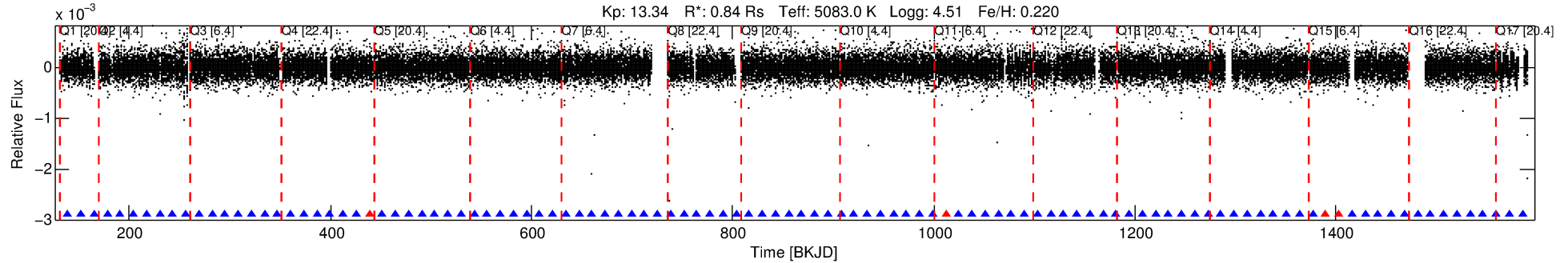
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 004947556-02

No Significant Match Found

DV One-Page Summary

KIC: 4947556 Candidate: 2 of 2 Period: 13.027 d
KOI: K03936.02 Corr: 0.970



DV Fit Results:

Period = 13.02681 [0.00002] d
Epoch = 139.1472 [0.0013] BKJD
Rp/R* = 0.0183 [0.0078]
a/R* = 101.92 [153.88]
b = 0.70 [1.11]
Seff = 40.60 [7.05]
Teq = 644 [28] K
Rp = 1.69 [0.74] Re
a = 0.1024 [0.0087] AU
Ag = 108.93 [98.36] [1.10σ]
Teffp = 3215 [725] K [3.54σ]

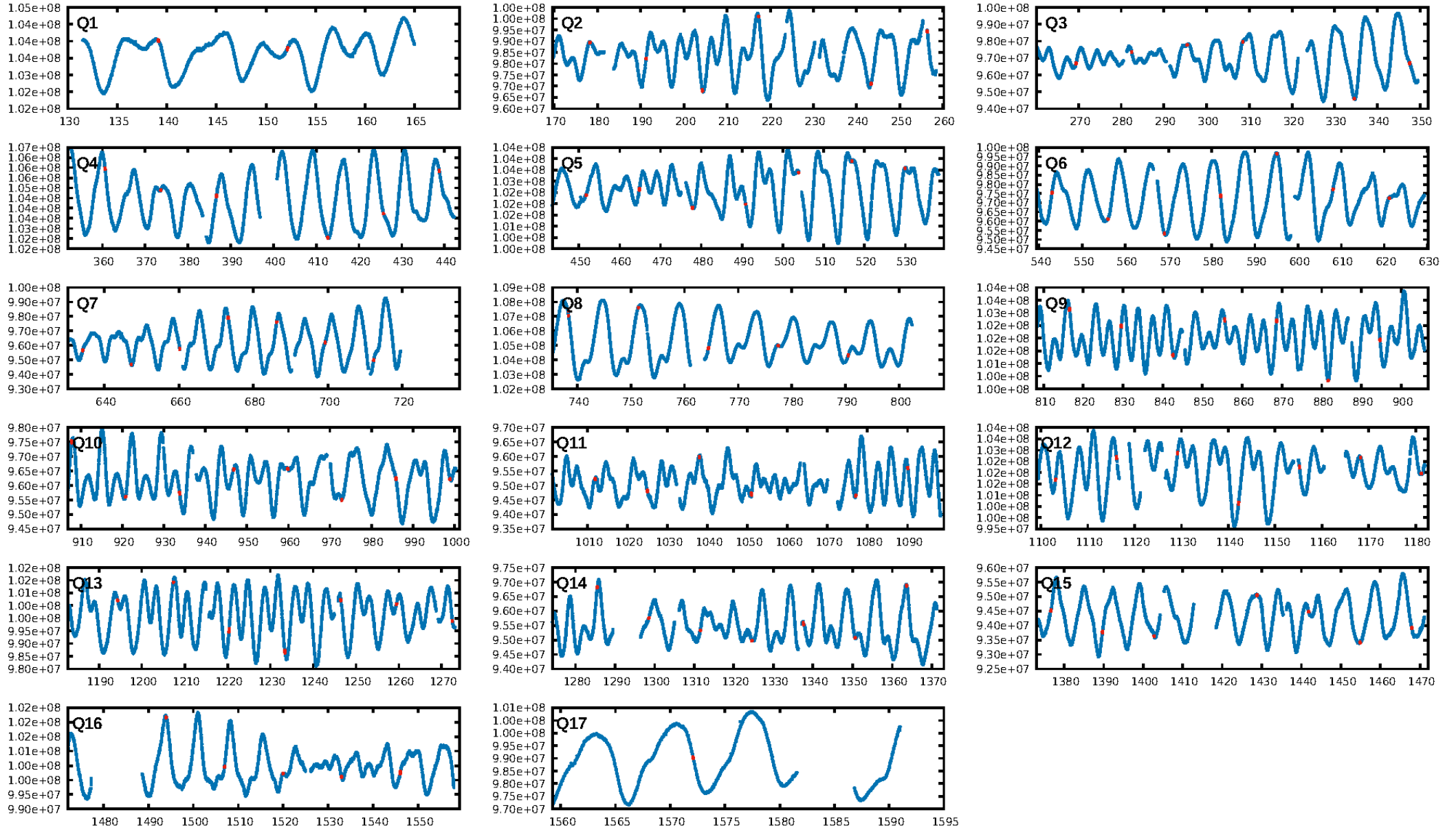
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [387.15σ]
ModelChiSquare2-sig: 100.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 9.07e-26
RollingBand-fgt: 0.96 [93/97]
GhostDiagnostic-chr: 14.14
Centroid-sig: 13.3%
Centroid-so: 1.182 arcsec [1.91σ]
OotOffset-rm: 0.479 arcsec [0.99σ]
KicOffset-rm: 0.626 arcsec [1.28σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 0.88 [15/17]
DiffImageOverlap-fno: 1.00 [17/17]

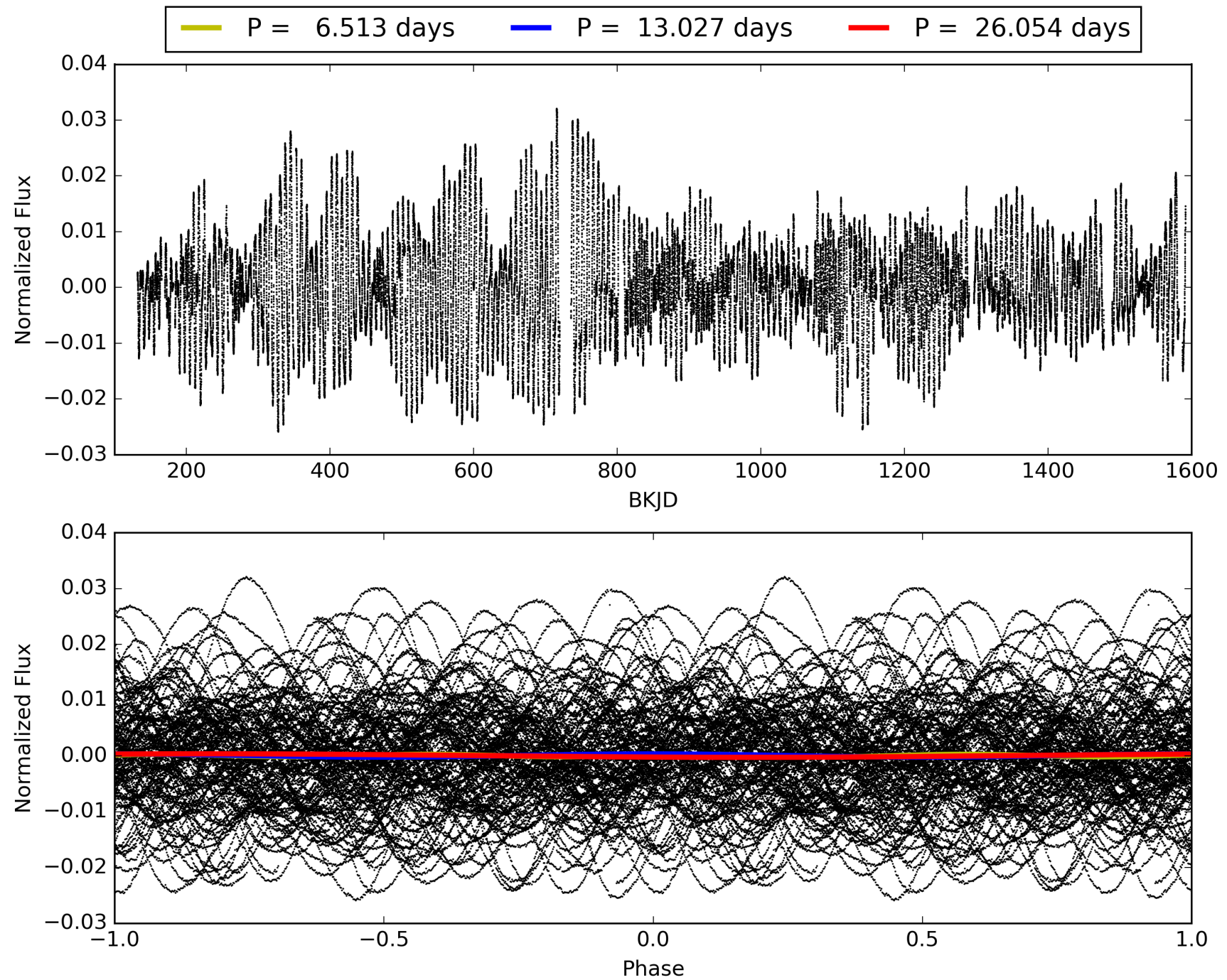
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 11:56:19 Z

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

TCE 004947556-02, PDC Light Curves

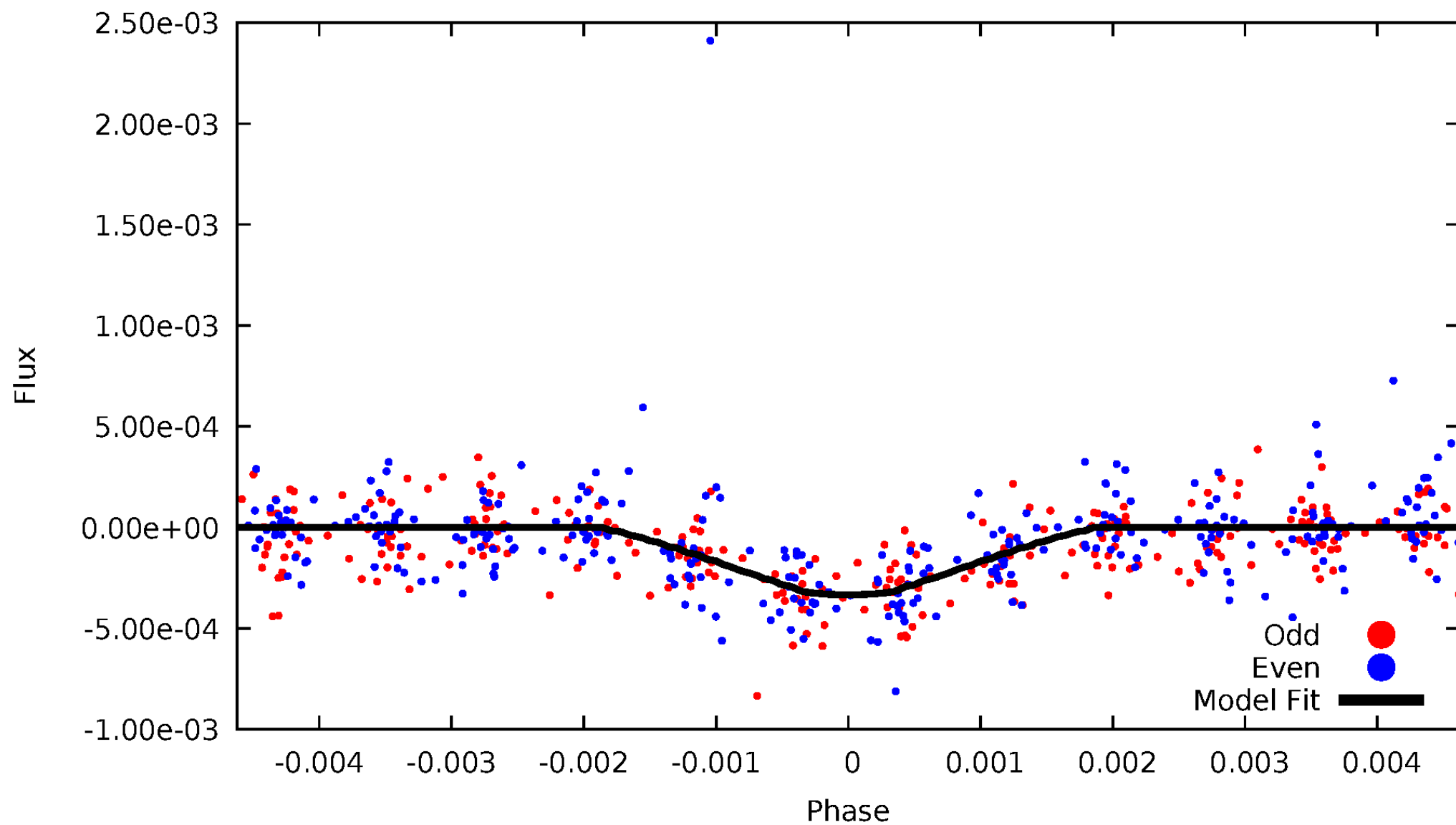


TCE 004947556-02



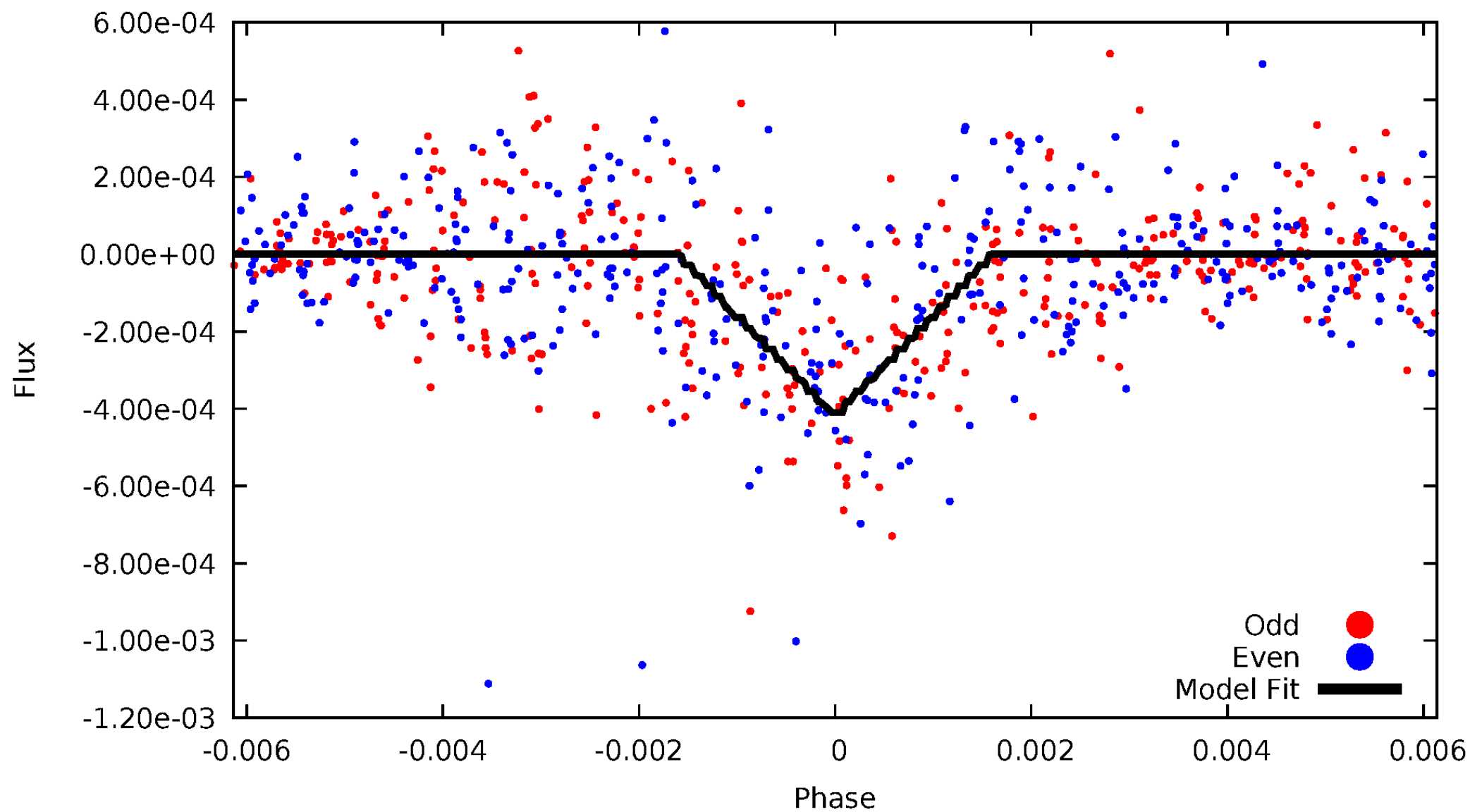
DV Odd/Even

TCE 004947556-02



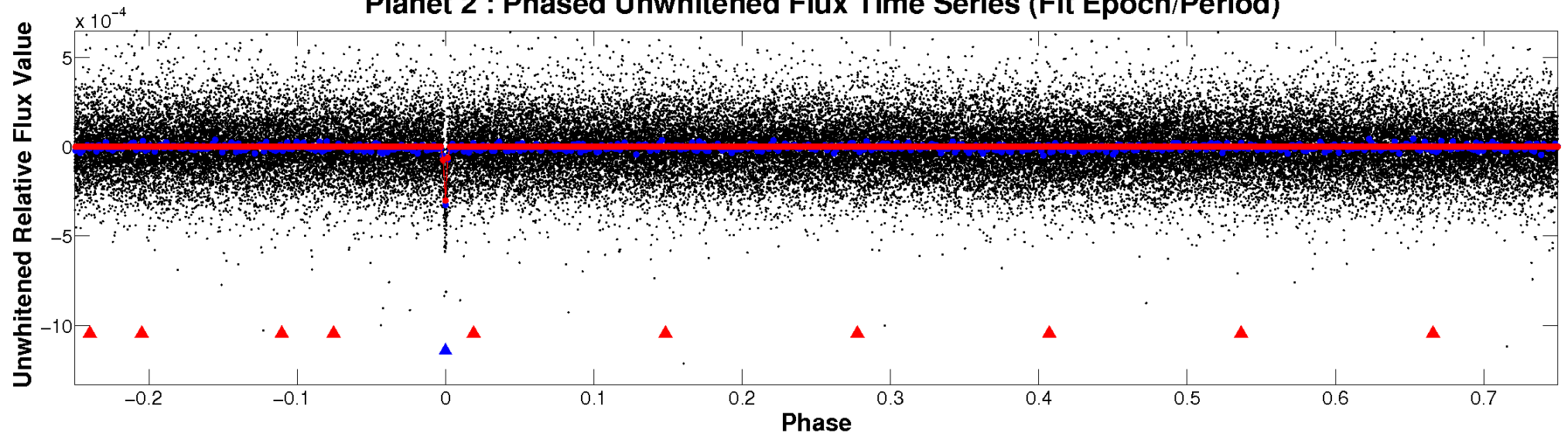
ALT Odd/Even

TCE 004947556-02

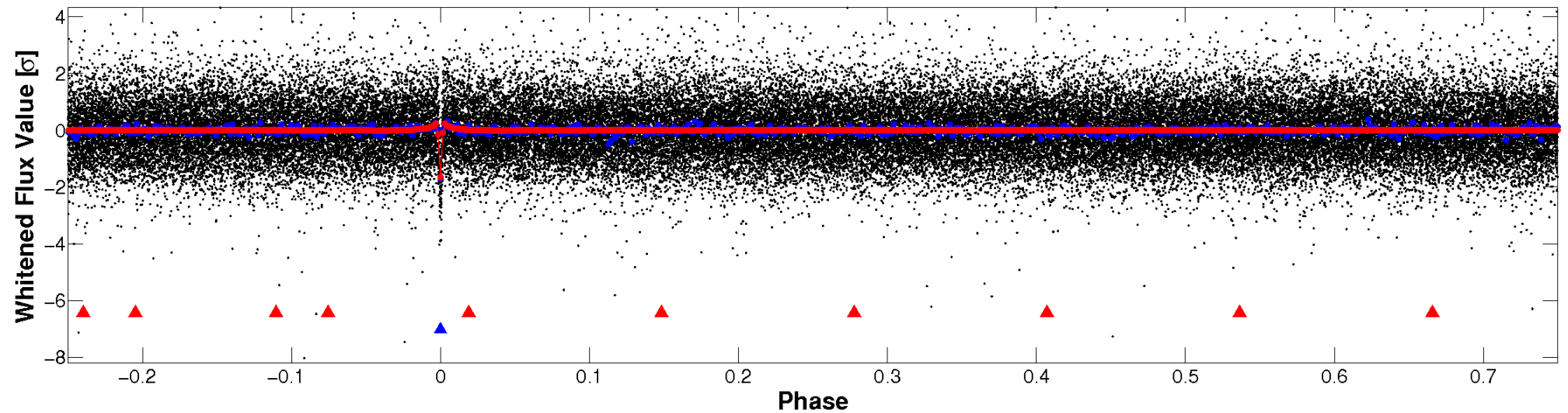


Non-Whitened Vs. Whitened Light Curve

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

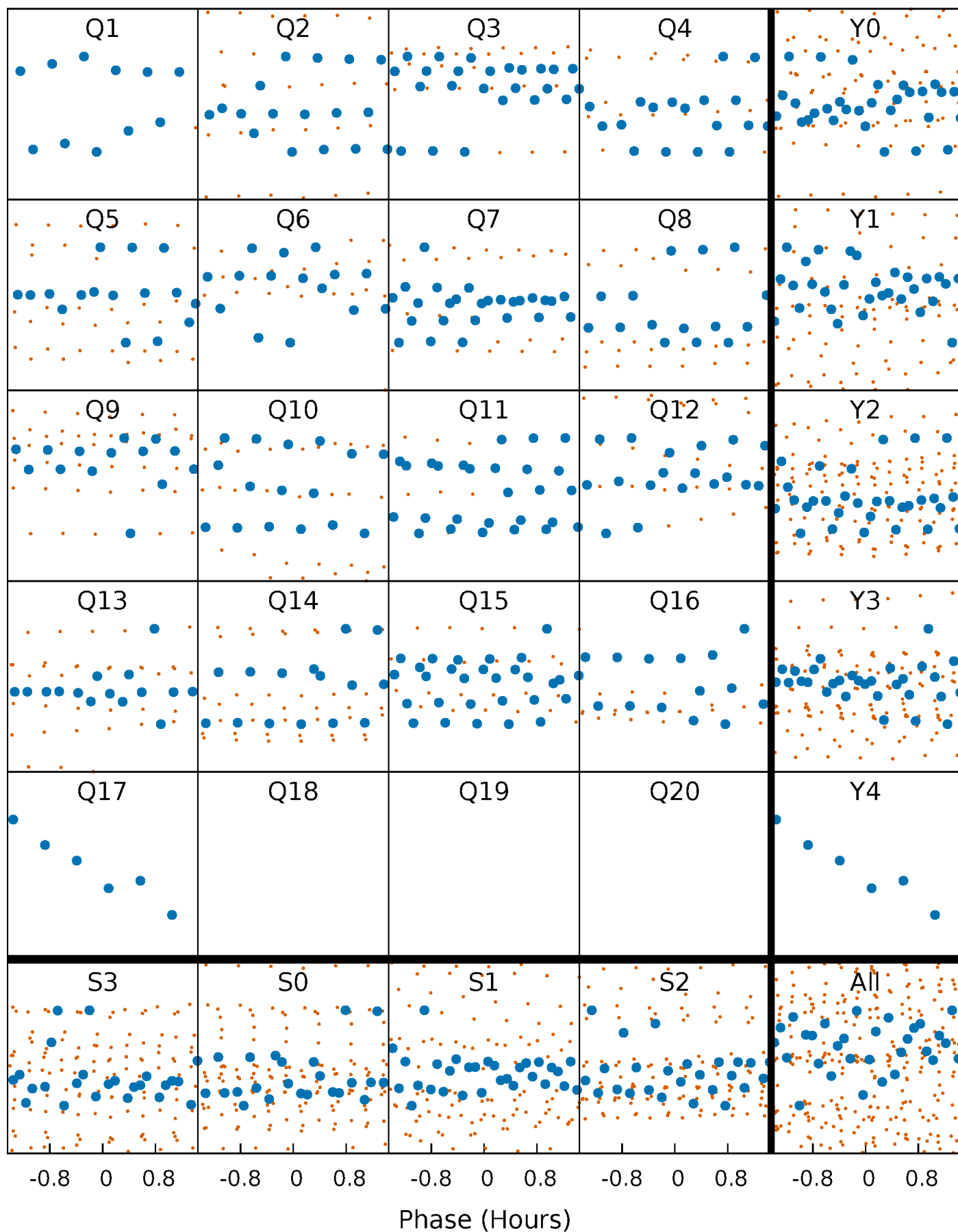


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



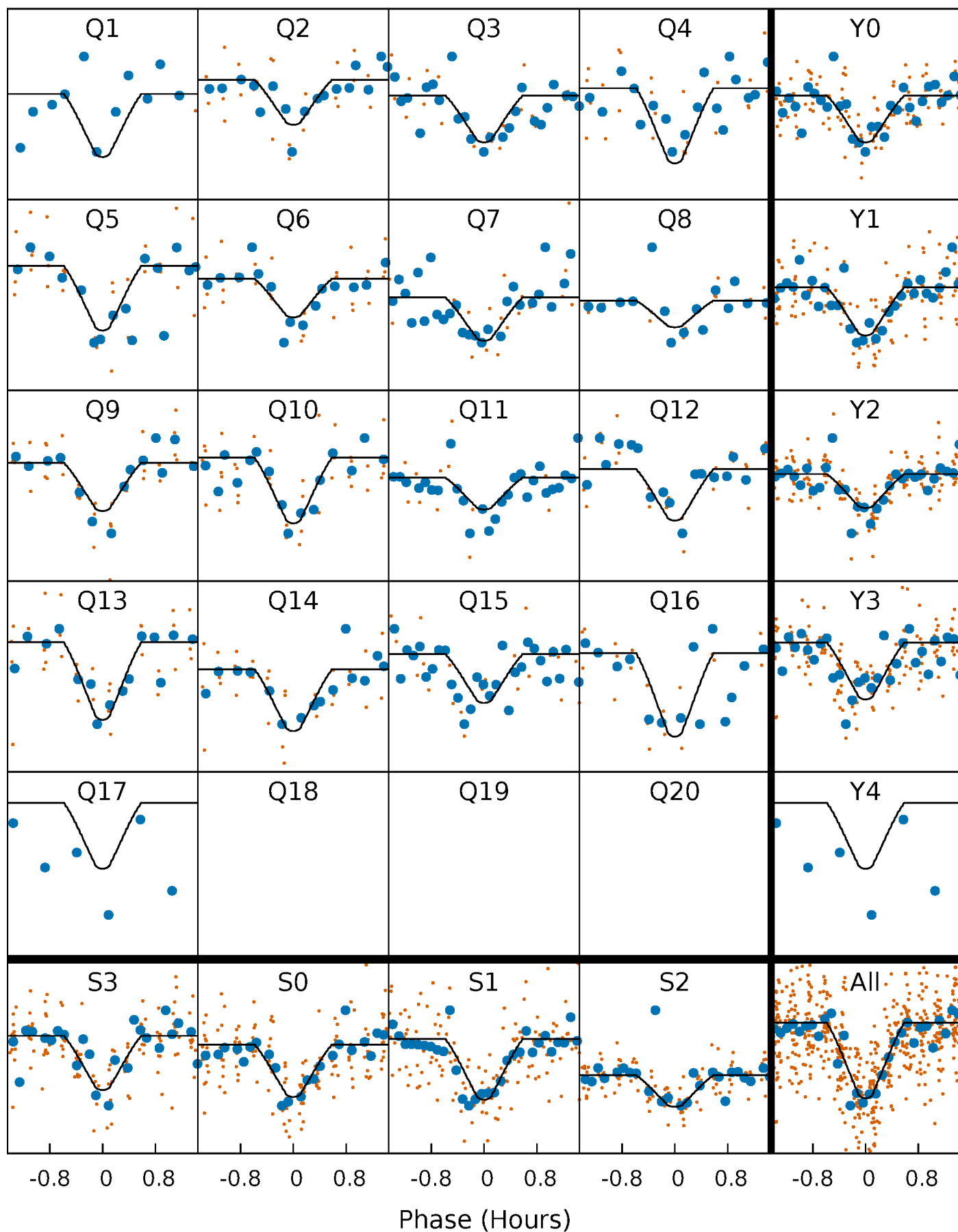
PDC Quarter-Phased Transit Curves

TCE 004947556-02 P= 13.026809 Days $T_0=139.147205$ (BKJD)



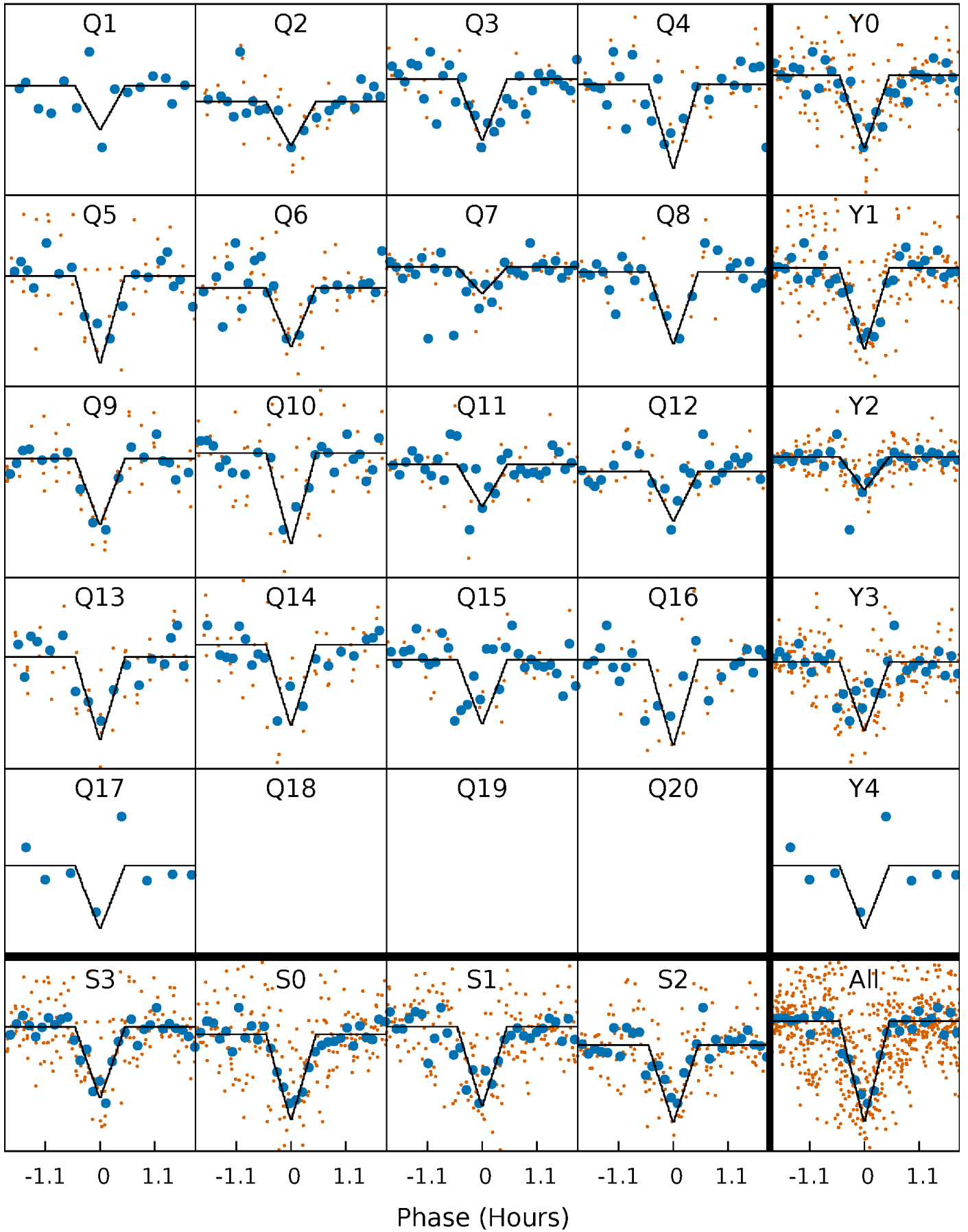
DV Quarter-Phased Transit Curves

TCE 004947556-02 P= 13.026809 Days $T_0=139.147205$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

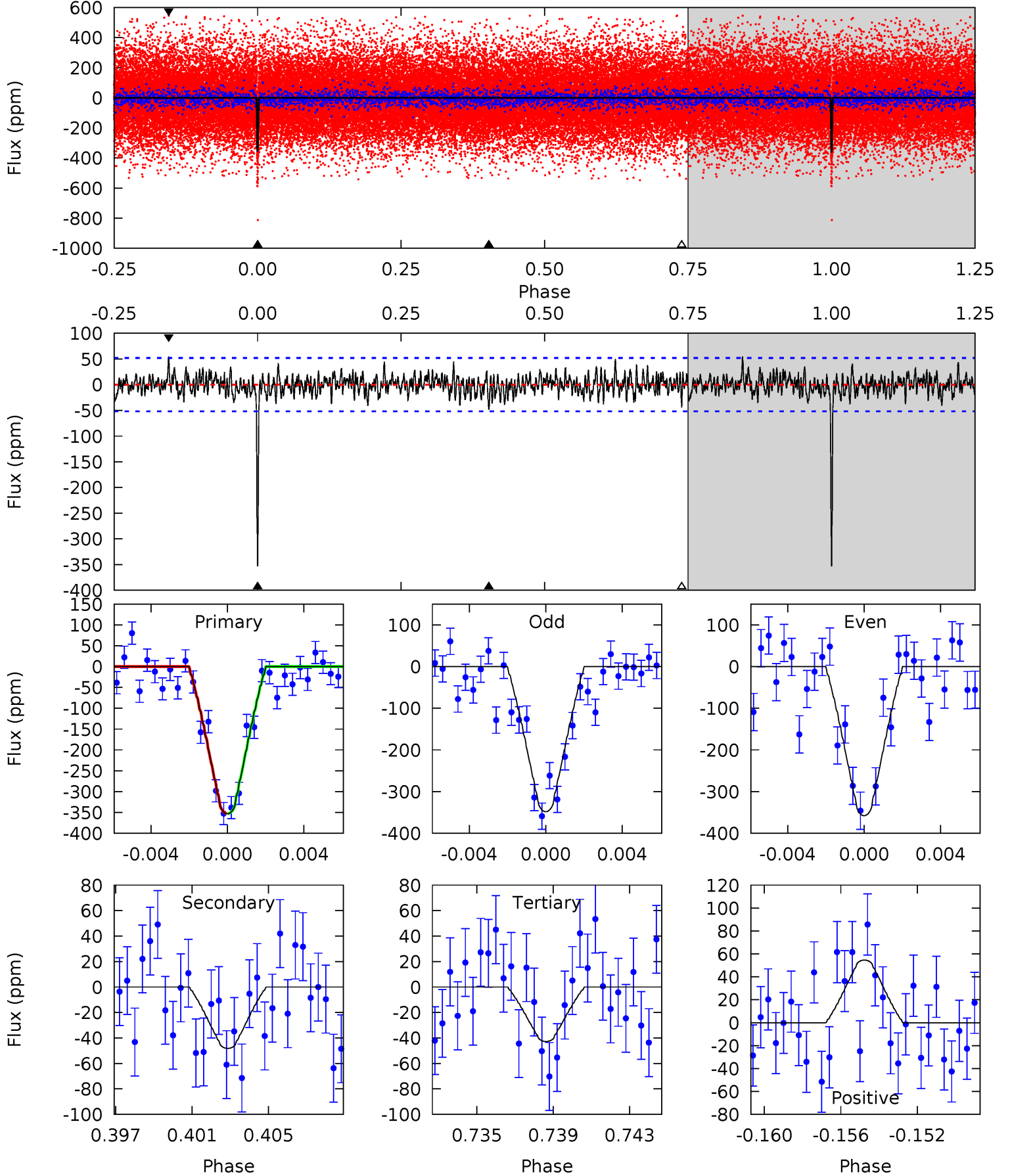
TCE 004947556-02 P= 13.026902 Days $T_0=139.143065$ (BKJD)



DV Model-Shift Uniqueness Test

004947556-02, $P = 13.026809$ Days, $E = 126.120396$ Days

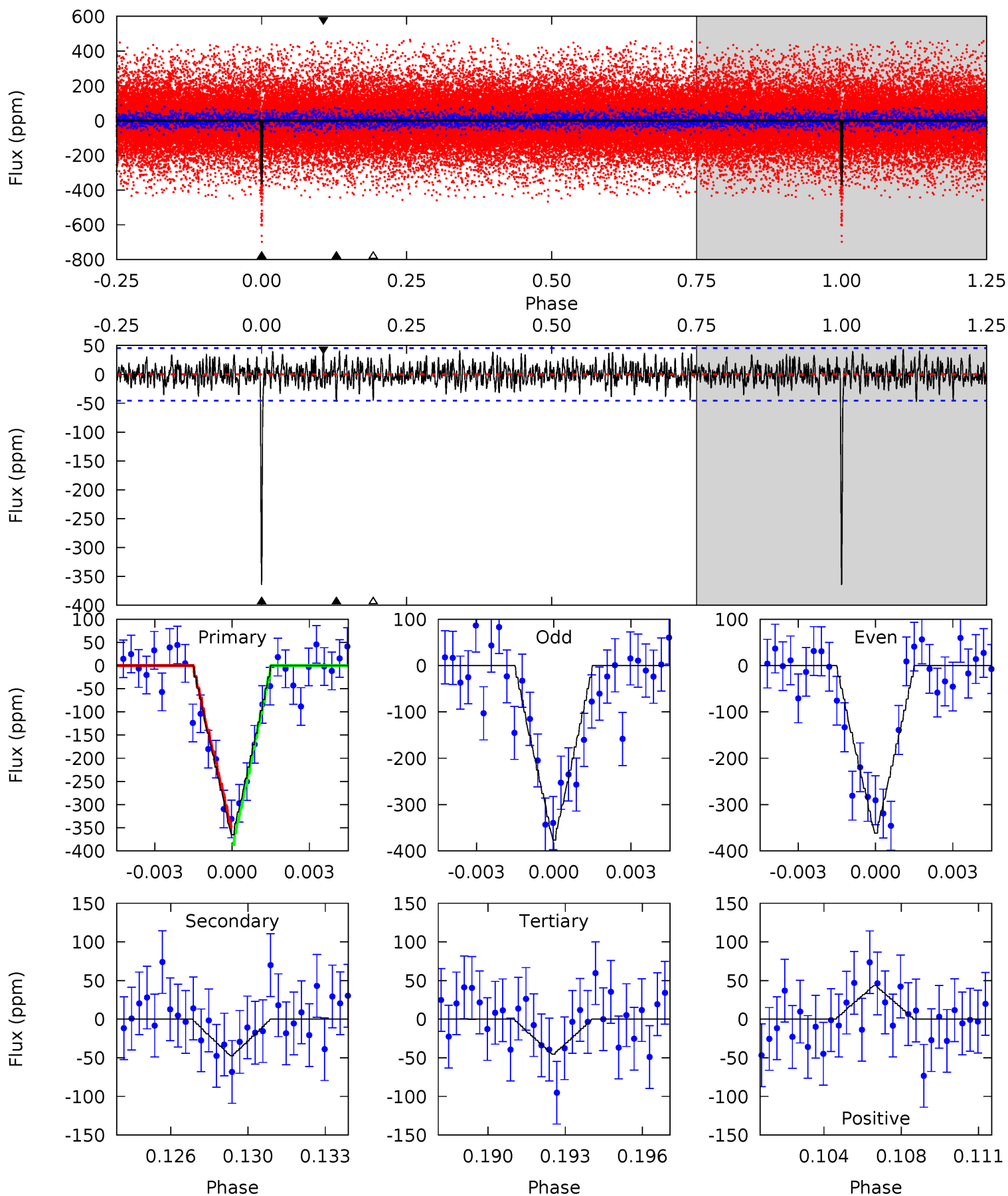
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
35.5	4.85	4.30	5.50	5.21	2.90	1.46	31.2	30.0	0.54	-0.65	0.48	0.96	0.13	0.01



Alt Model-Shift Uniqueness Test

004947556-02, P = 13.026902 Days, E = 126.116163 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
42.0	5.45	5.21	5.00	5.24	2.95	1.57	36.7	37.0	0.25	0.45	0.86	0.94	0.11	2.18



Stellar Parameters For KIC 004947556

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	5083^{+152}_{-152}	$4.512^{+0.063}_{-0.070}$	$0.220^{+0.200}_{-0.300}$	$0.844^{+0.083}_{-0.074}$	$0.844^{+0.058}_{-0.065}$	$1.977^{+0.567}_{-0.440}$
	+3%/-3%	+1%/-2%	+91%/-136%	+10%/-9%	+7%/-8%	+29%/-22%
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 004947556-02 / KOI 3936.02

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-48 ± 10	$1.74^{+0.73}_{-0.72}$	901^{+32}_{-33}	3519^{+668}_{-383}	92^{+169}_{-48}
Alt.	-47 ± 9	$1.86^{+0.75}_{-0.72}$	902^{+36}_{-34}	3428^{+663}_{-338}	79^{+128}_{-39}

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 $A_{obs} \gg 1.0$

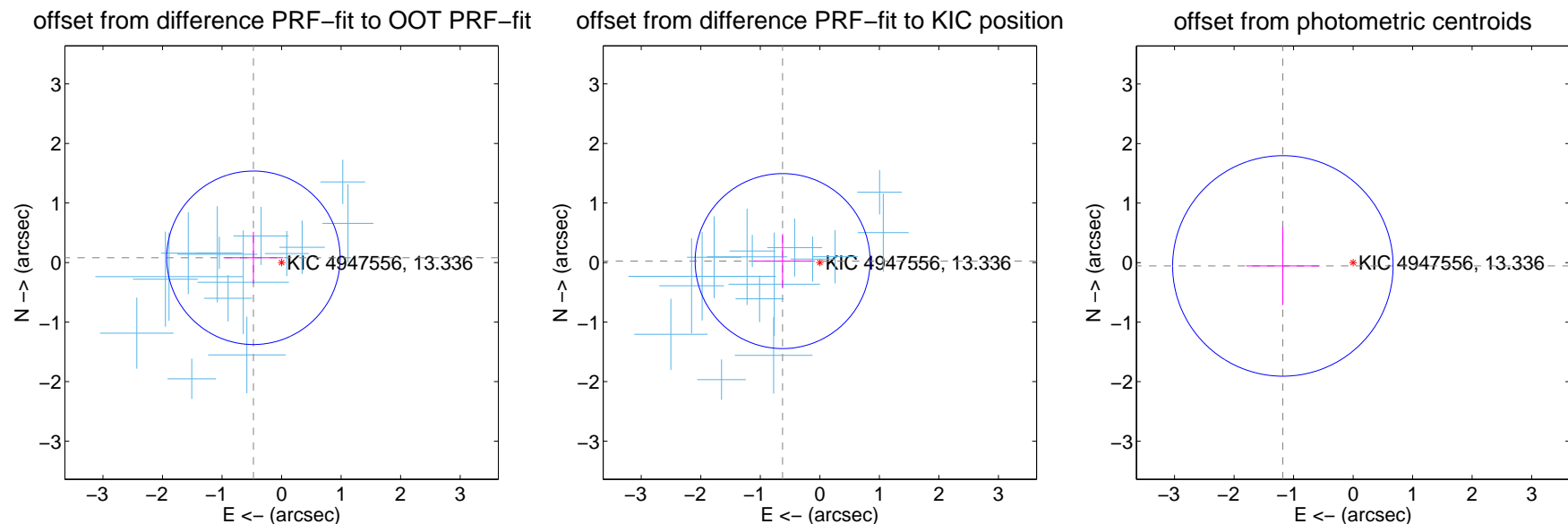
DV Centroid Data

Supplemental centroid analysis for 004947556-02. Kepler magnitude: 13.34. Transit SNR 18.05

There are 15 quarters with good PRF difference image offsets

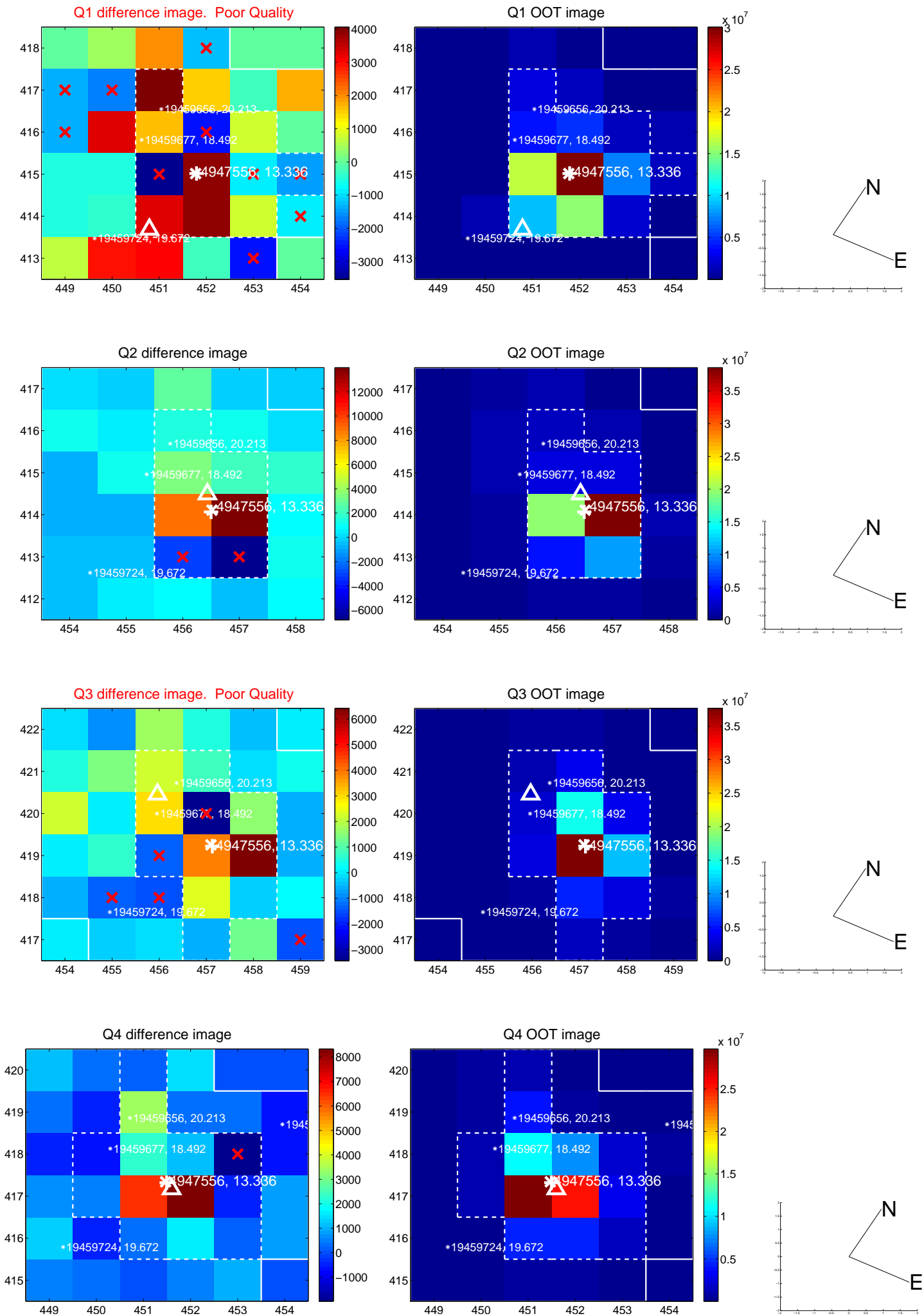
The direct PRF centroid is offset from the target star catalog position by about 0.09 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.479 ± 0.486	0.99	0.473 ± 0.501	0.080 ± 0.436
PRF-fit source offset from KIC position	0.626 ± 0.490	1.28	0.626 ± 0.494	0.024 ± 0.456
photometric centroid source offset	1.18 ± 0.62	1.91	1.18 ± 0.62	-0.06 ± 0.66

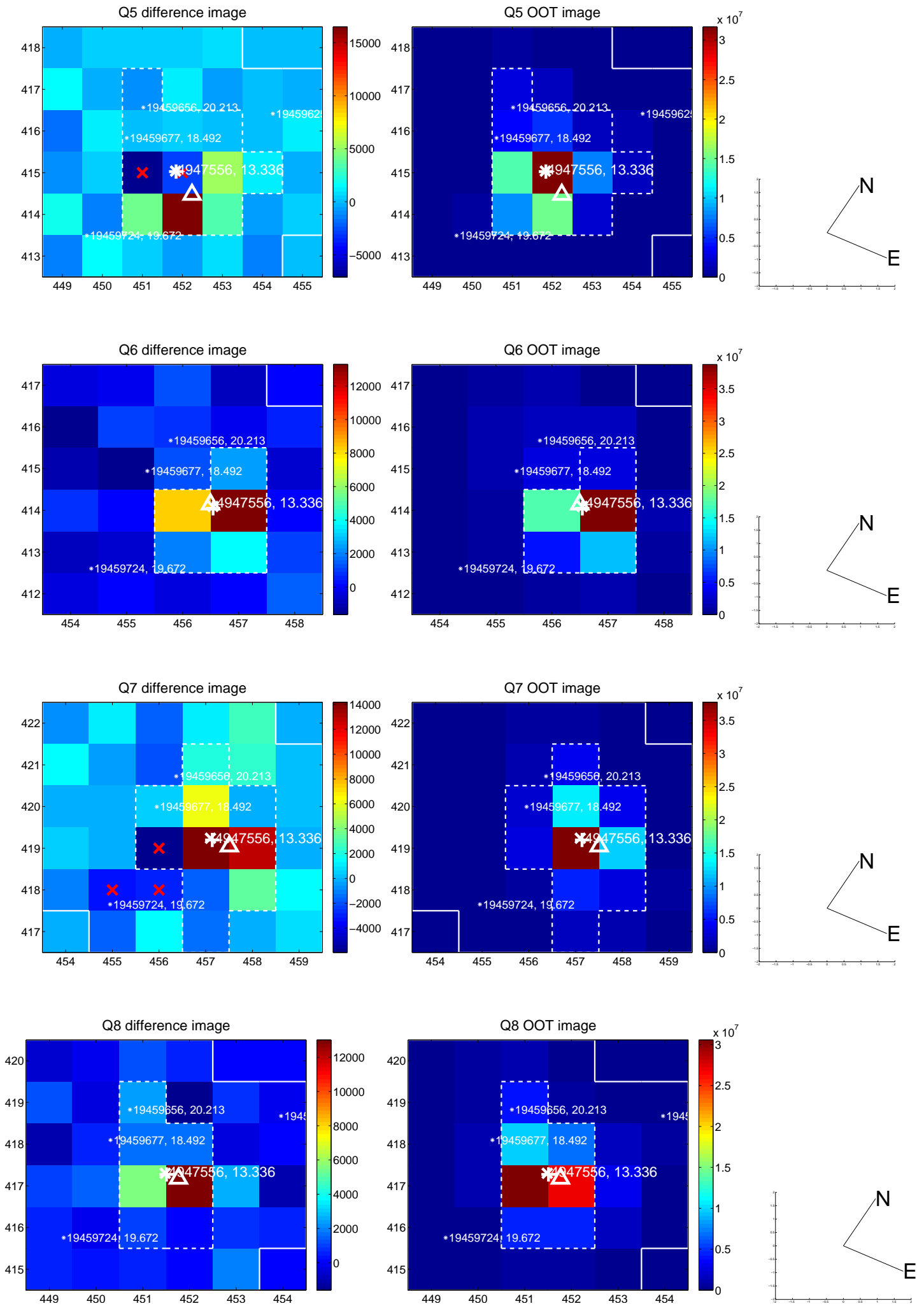


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

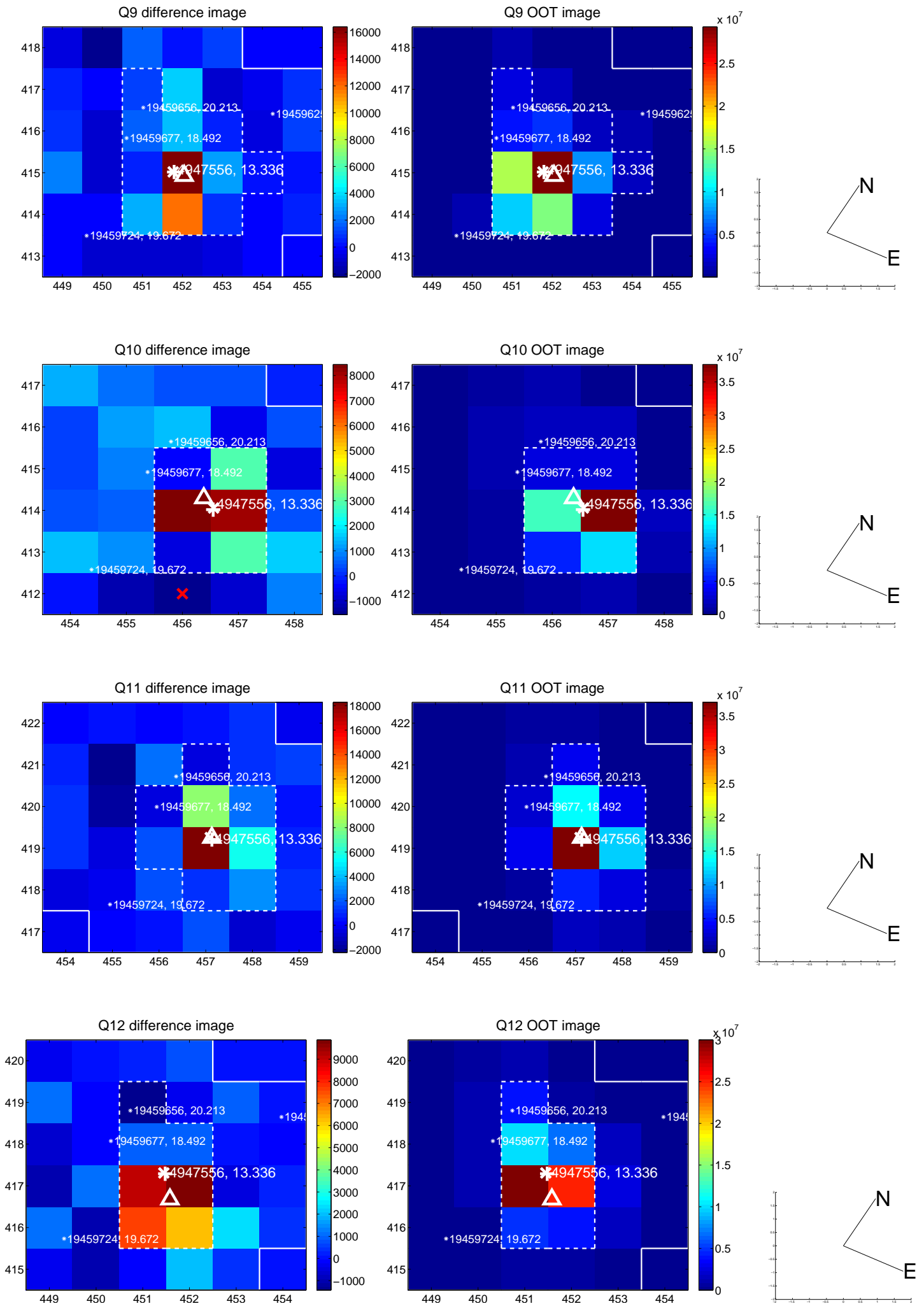
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



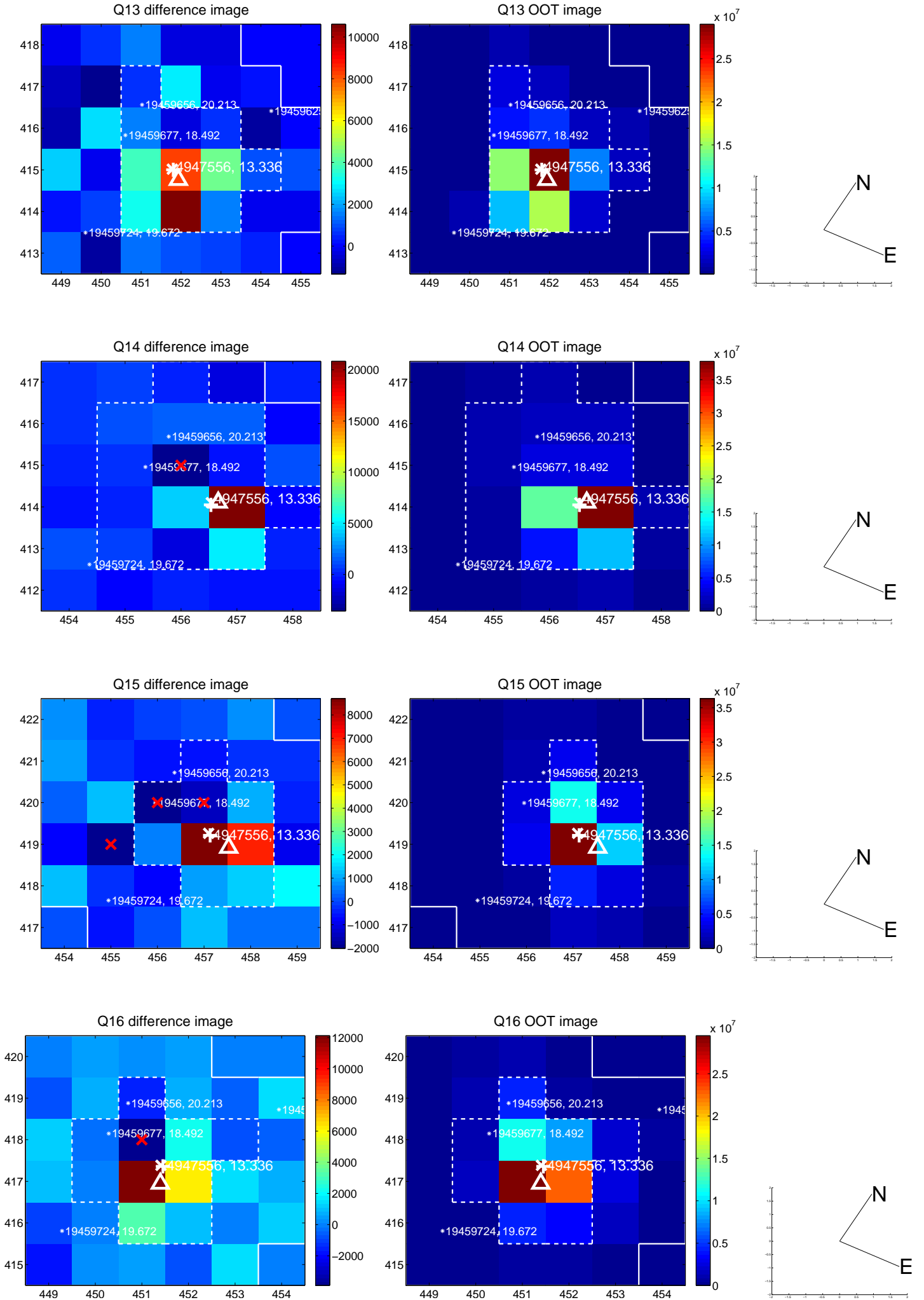
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



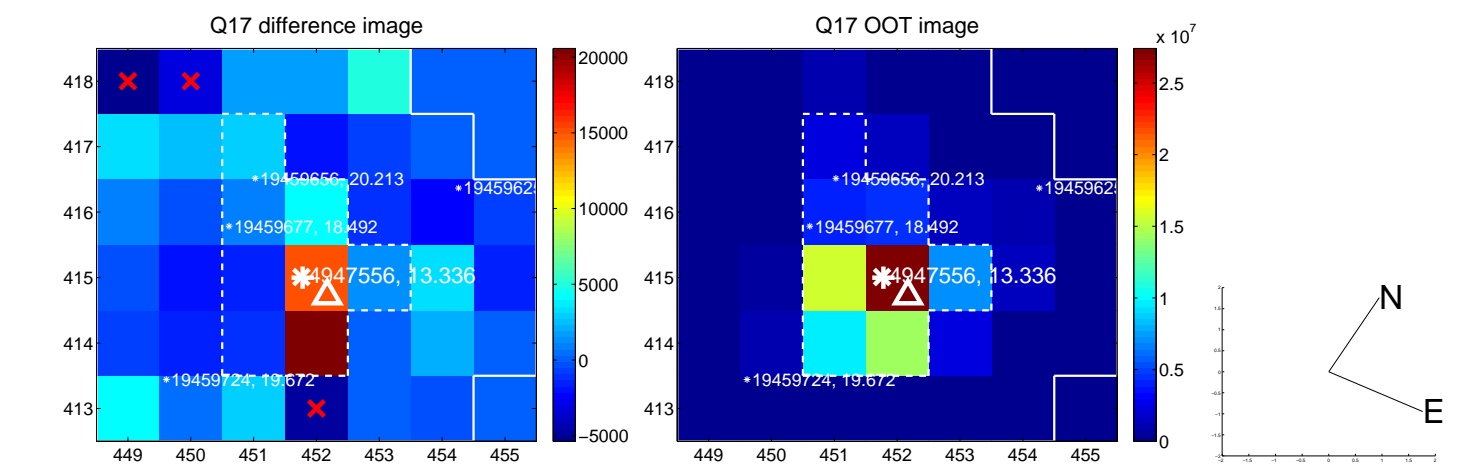
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



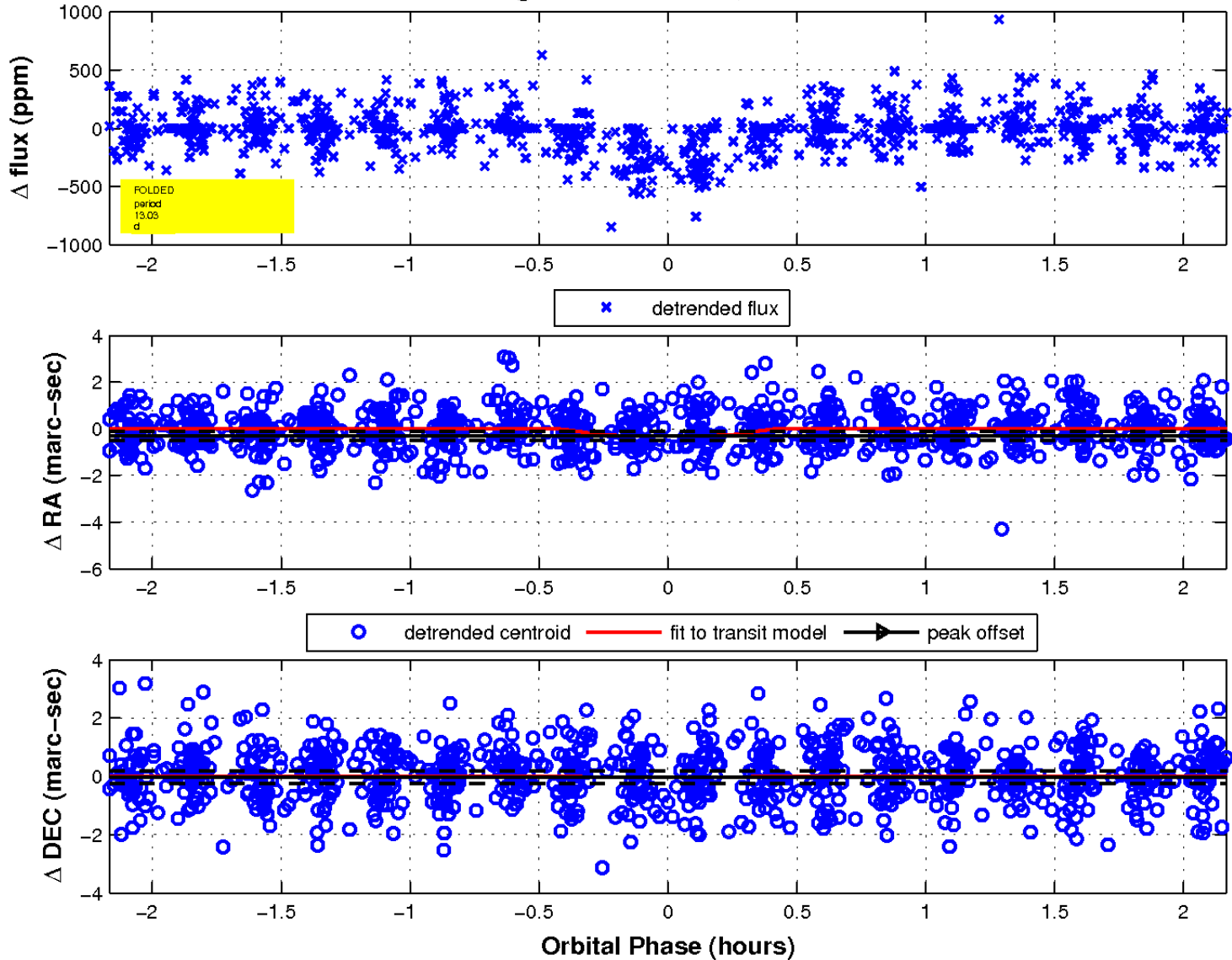
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



fluxWeightedCentroids, Planet 2 of 2



UKIRT Image

Declination

