

KIC 012504988

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})
012504988-01	OBS	0181.01	5.093940	134.623733	25096.4	3.963	1803.6	1636.3	1.03	6197	17.37	395.83
012504988-02	OBS	No	5.093932	132.078571	769.7	3.853	57.5	61.8	1.03	6197	3.40	395.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012504988-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
012504988-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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.

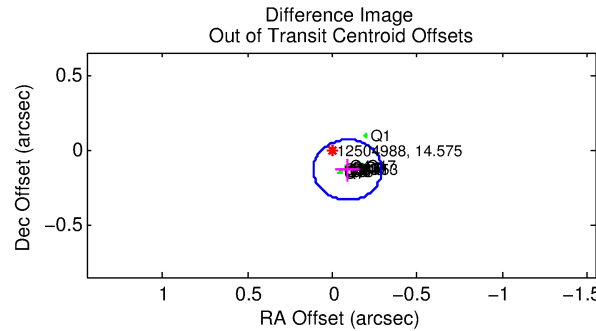
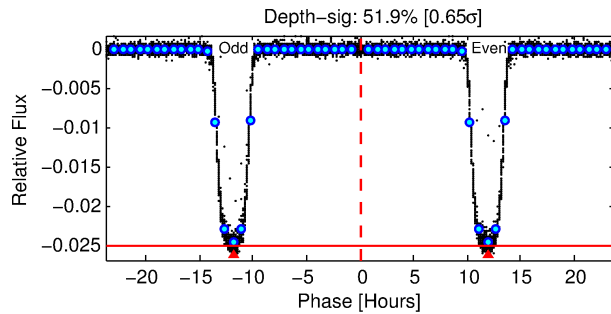
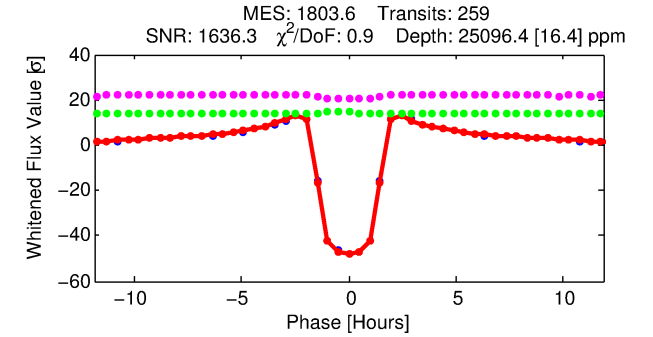
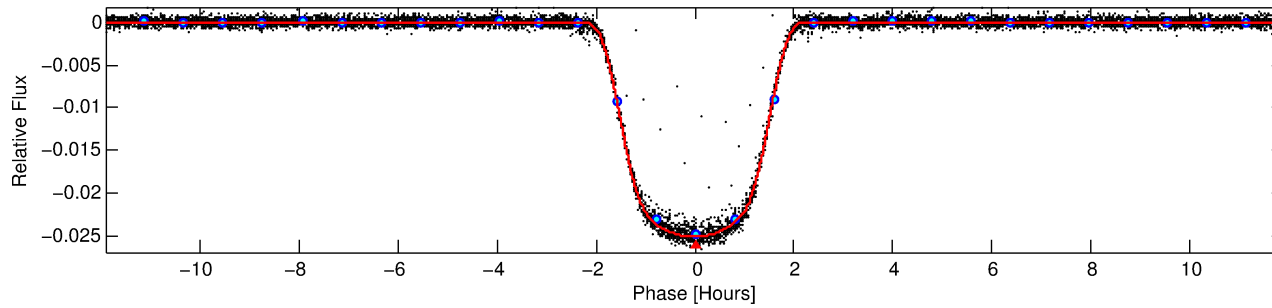
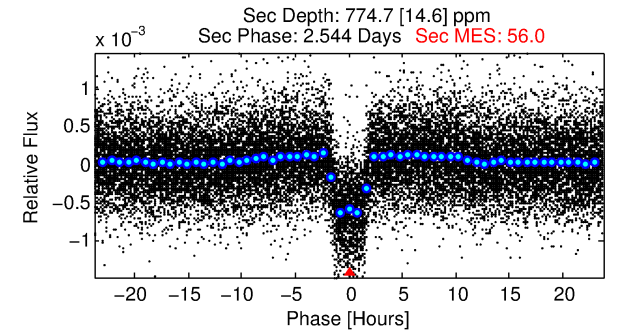
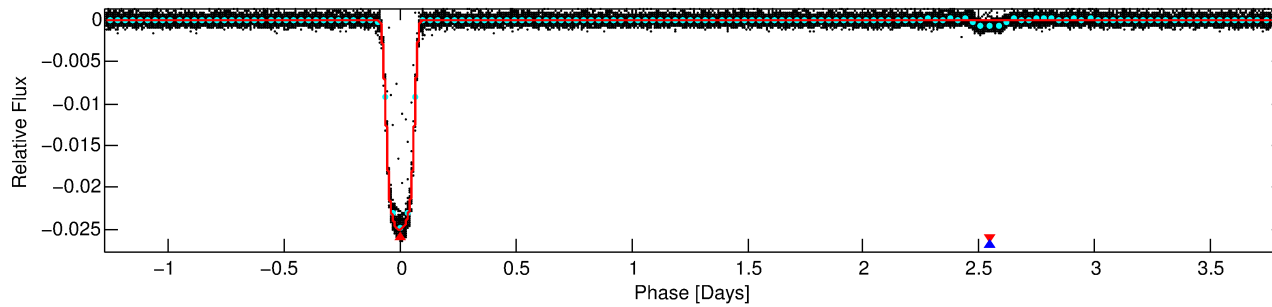
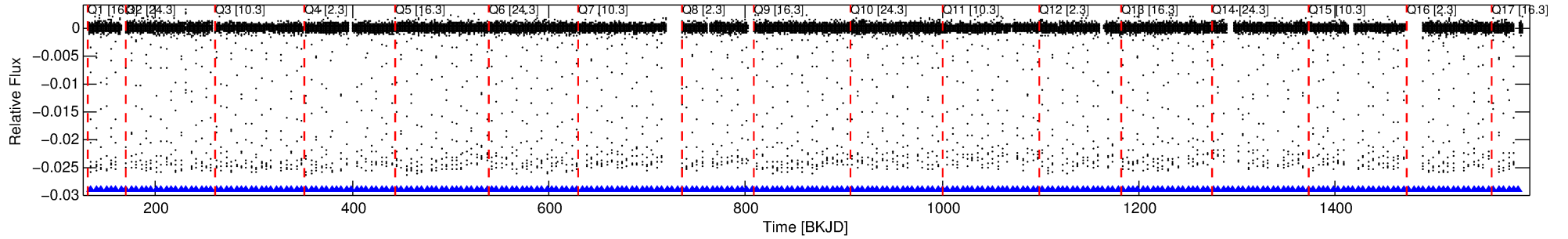
Ephemeris Match Information For 012504988-01

No Significant Match Found

DV One-Page Summary

KIC: 12504988 Candidate: 1 of 2 Period: 5.094 d
KOI: K00181.01 Corr: 0.996

Kp: 14.57 R*: 1.03 Rs Teff: 6197.0 K Logg: 4.45 Fe/H: -0.080



DV Fit Results:

Period = 5.09394 [0.00000] d
Epoch = 134.6237 [0.0000] BKJD
Rp/R* = 0.1538 [0.0001]
a/R* = 9.42 [0.02]
b = 0.65 [0.00]
Seff = 395.83 [172.22]
Teq = 1137 [124] K
Rp = 17.37 [5.86] Re
a = 0.0598 [0.0169] AU
Ag = 5.05 [2.08] [1.95σ]
Teffp = 2636 [95] K [9.60σ]

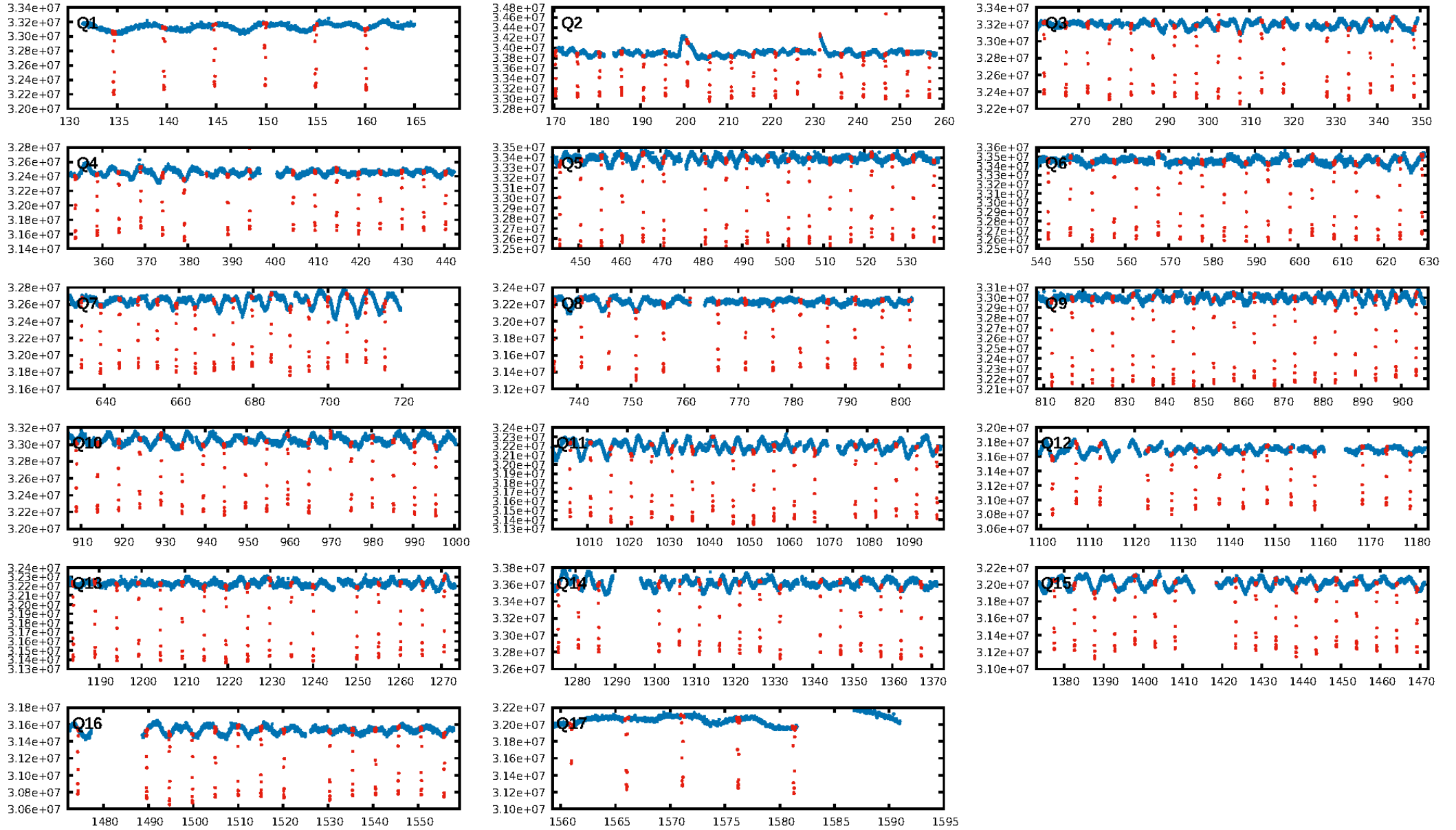
DV Diagnostic Results:

ShortPeriod-sig: 0.0% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [248/248]
GhostDiagnostic-chr: 5.887
Centroid-sig: N/A
Centroid-so: 0.566 arcsec [108.28σ]
OotOffset-rm: 0.161 arcsec [2.39σ]
KicOffset-rm: 0.161 arcsec [2.39σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
DiffImageOverlap-fno: 1.00 [17/17]

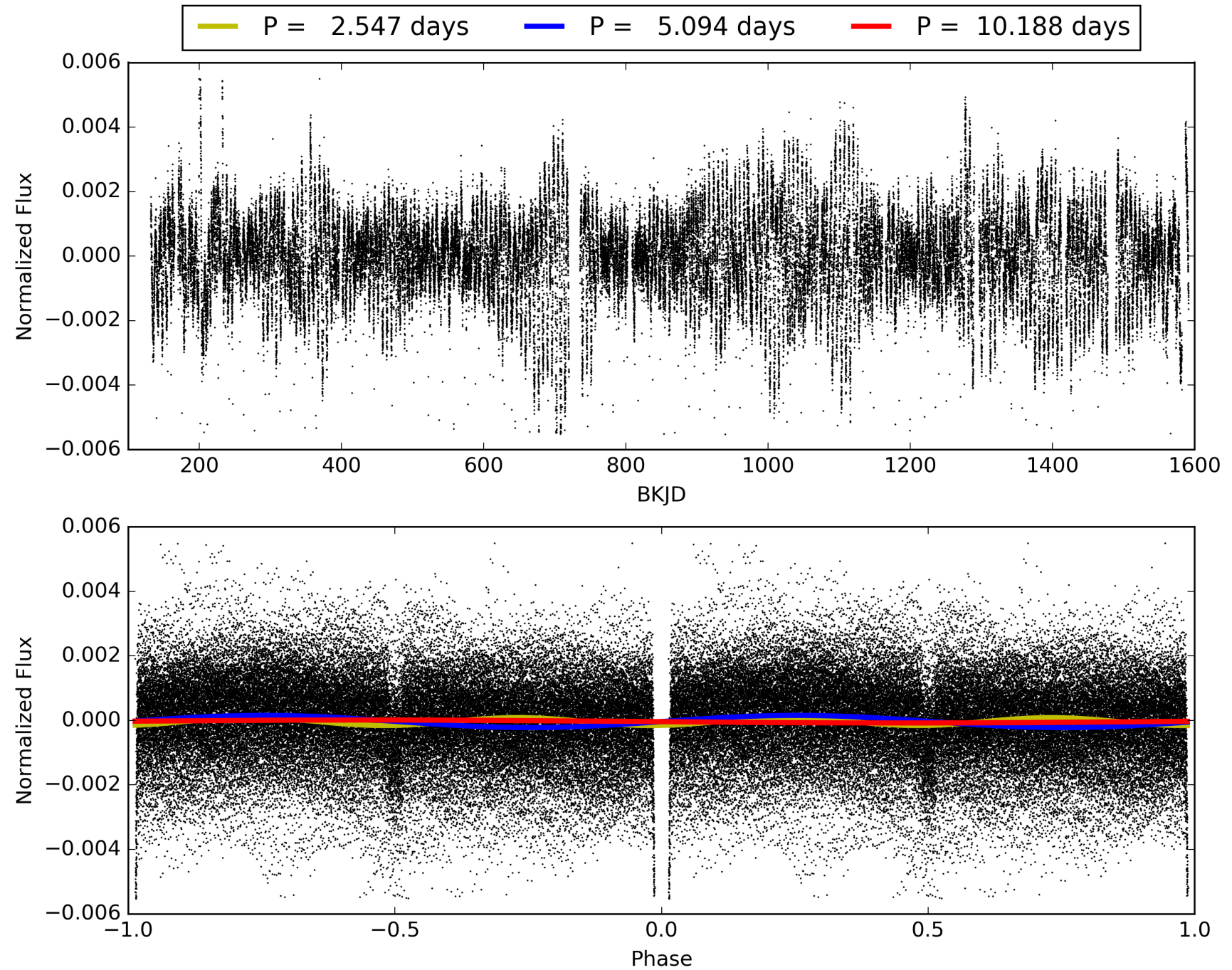
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 07:52:28 Z

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

TCE 012504988-01, PDC Light Curves

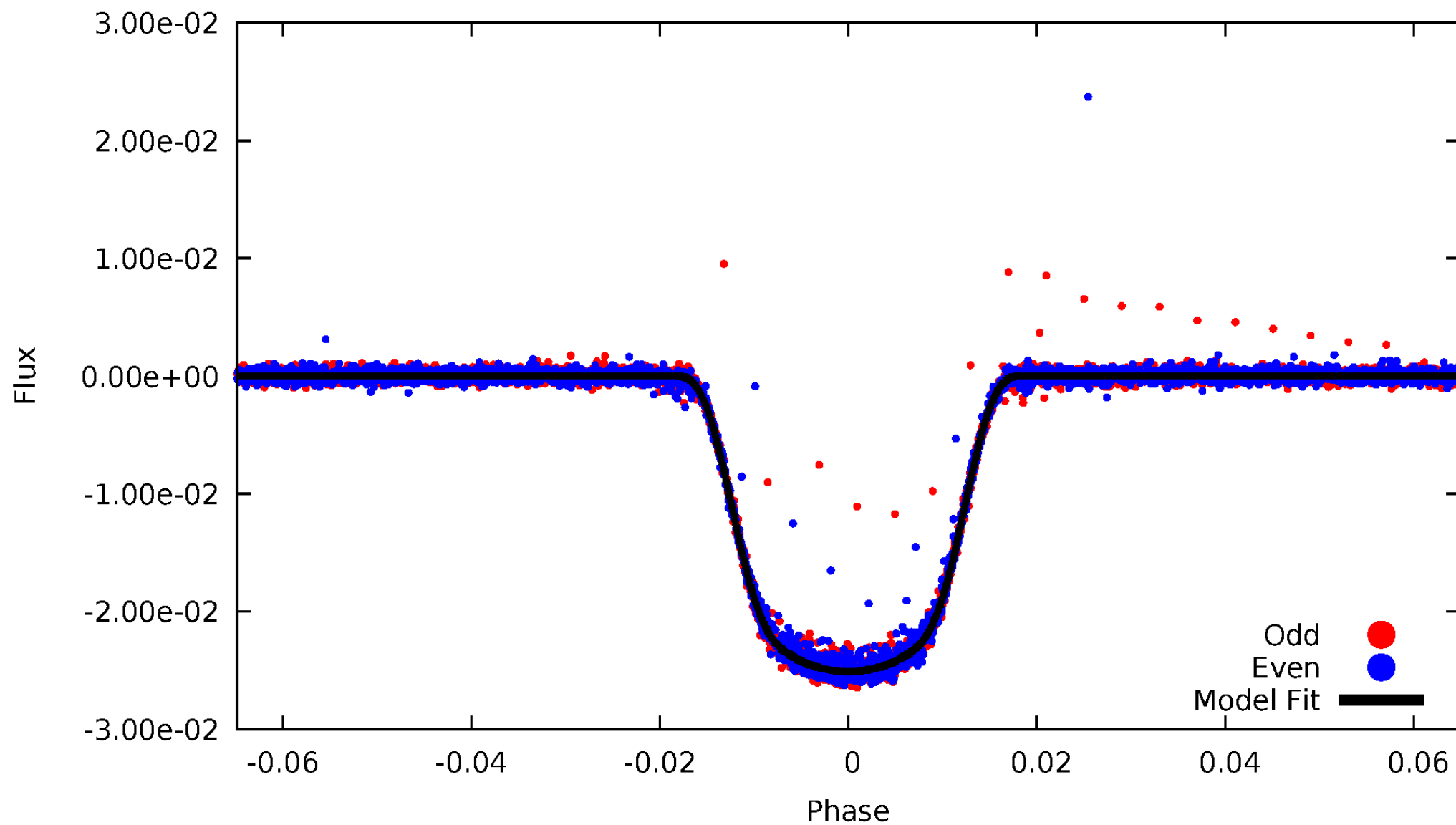


TCE 012504988-01



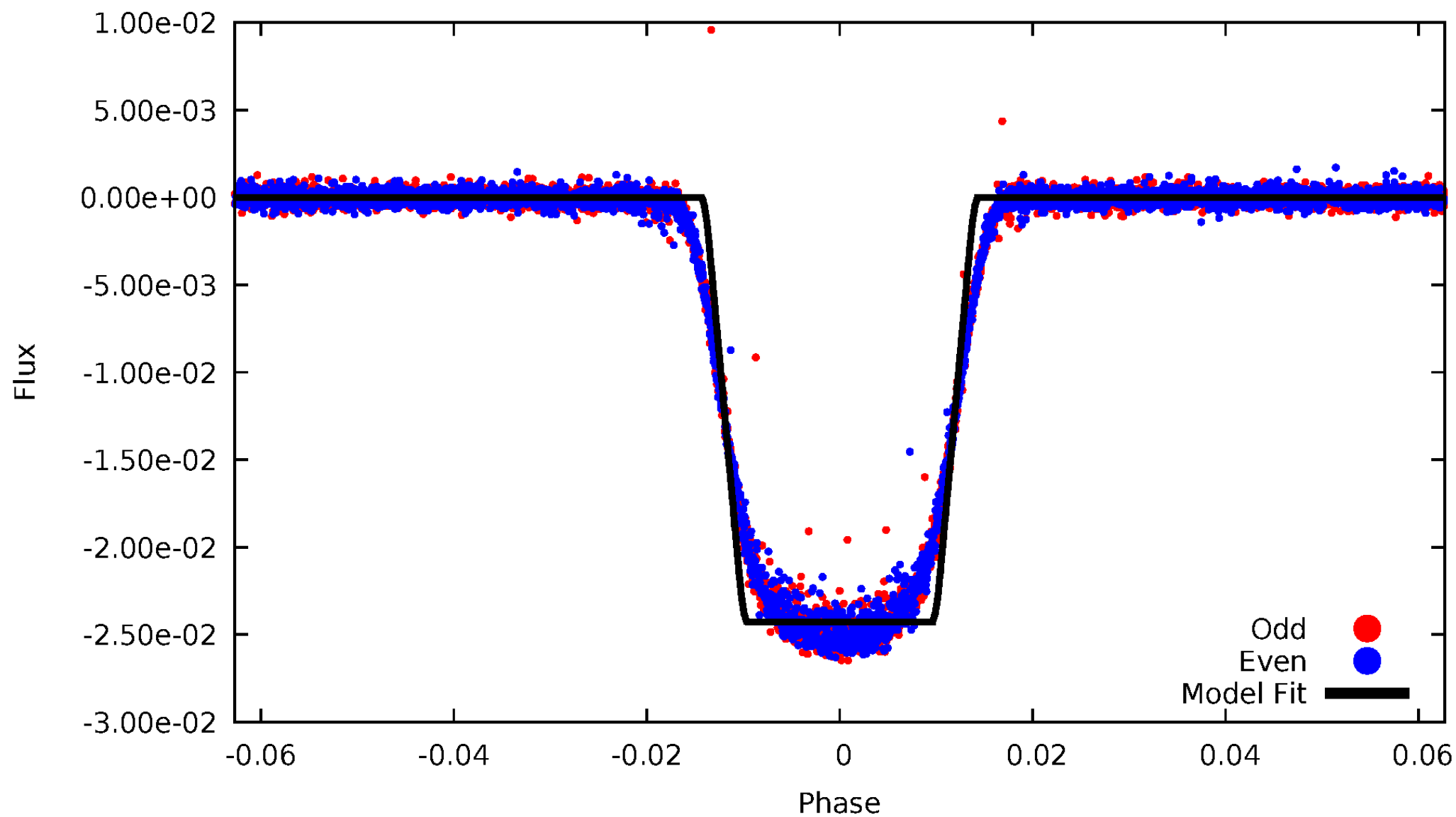
DV Odd/Even

TCE 012504988-01



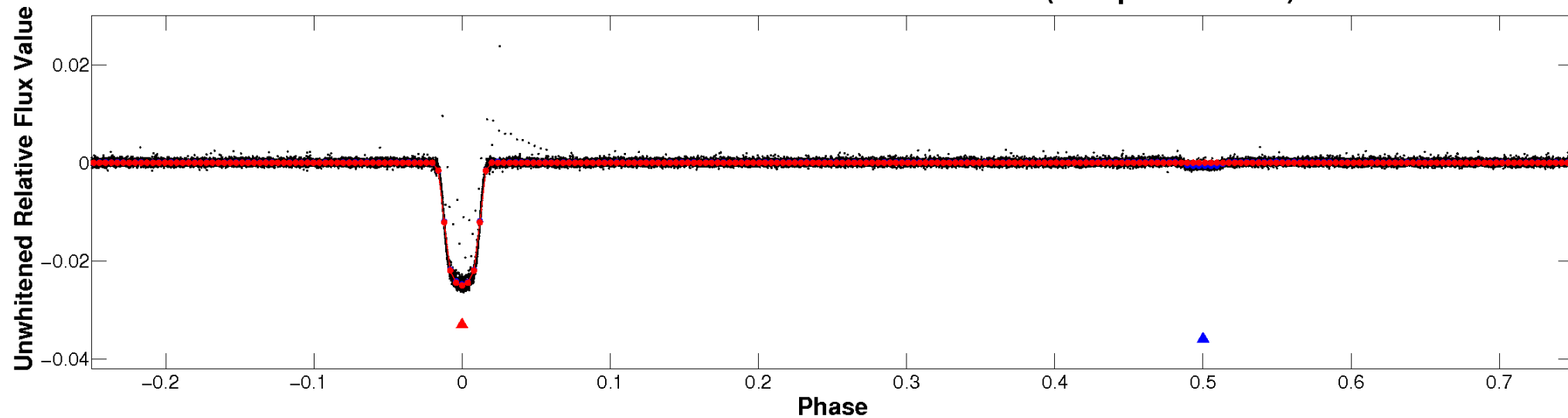
ALT Odd/Even

TCE 012504988-01

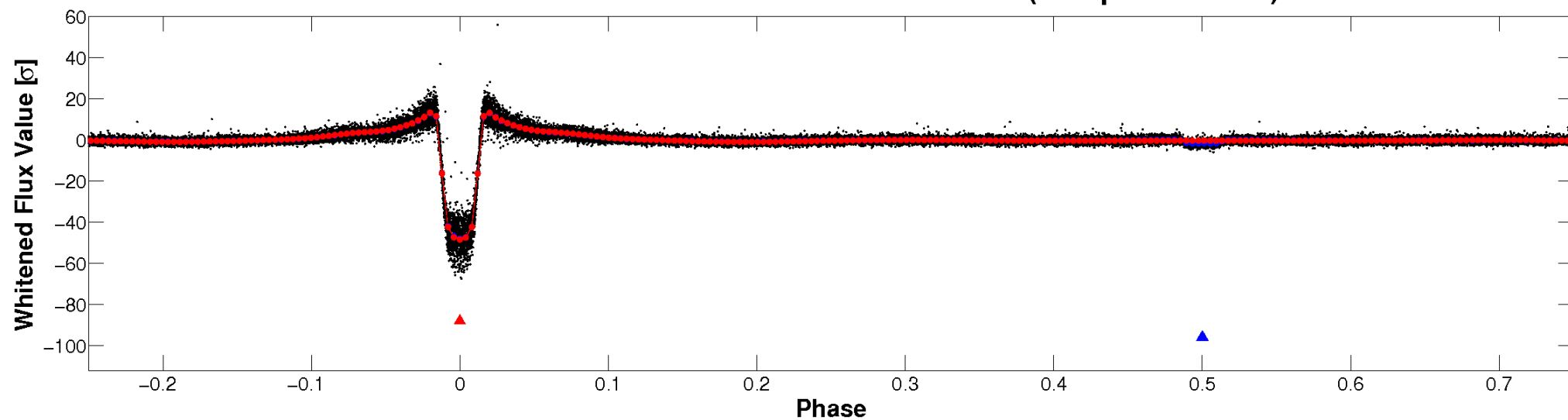


Non-Whitened Vs. Whitened Light Curve

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

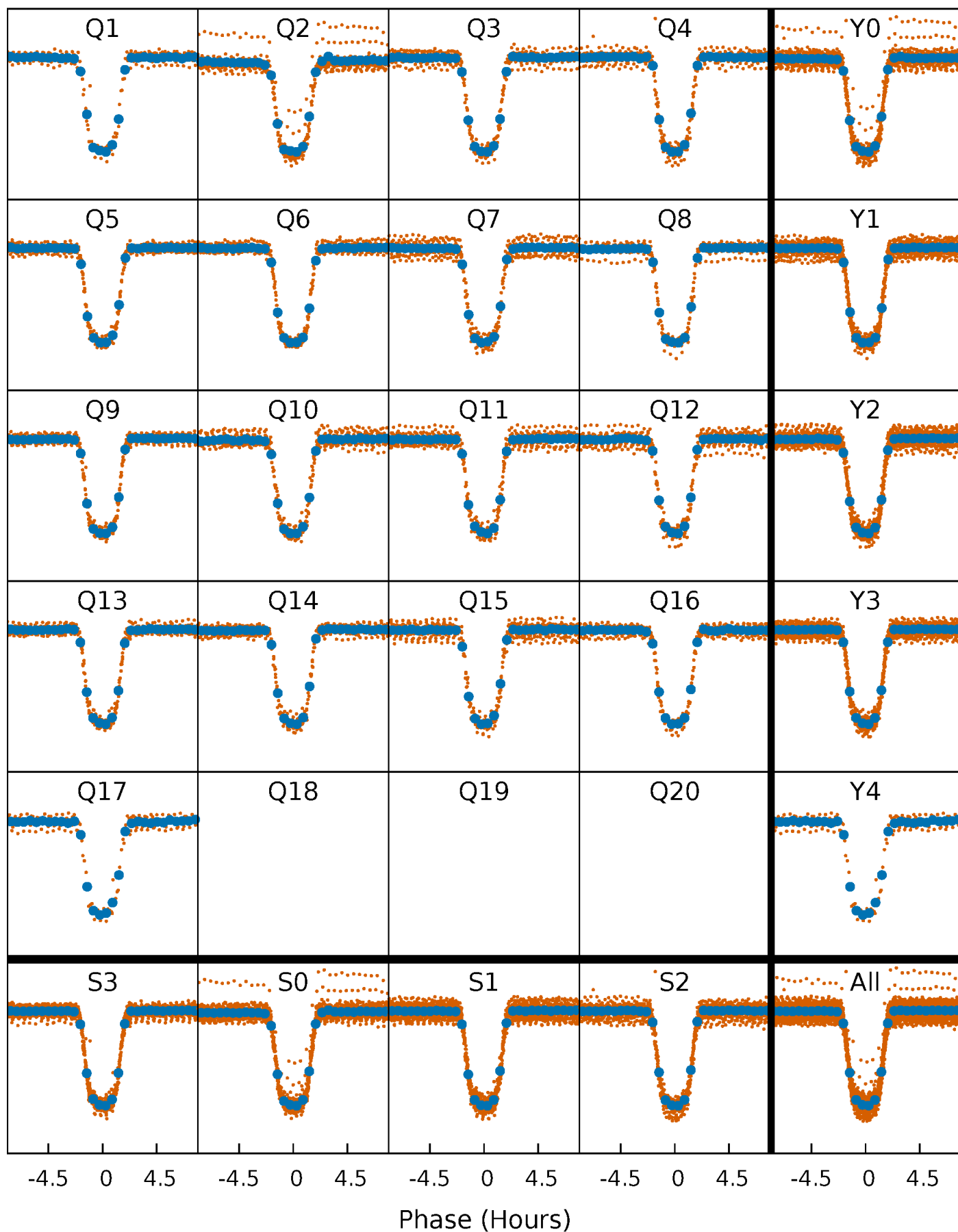


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



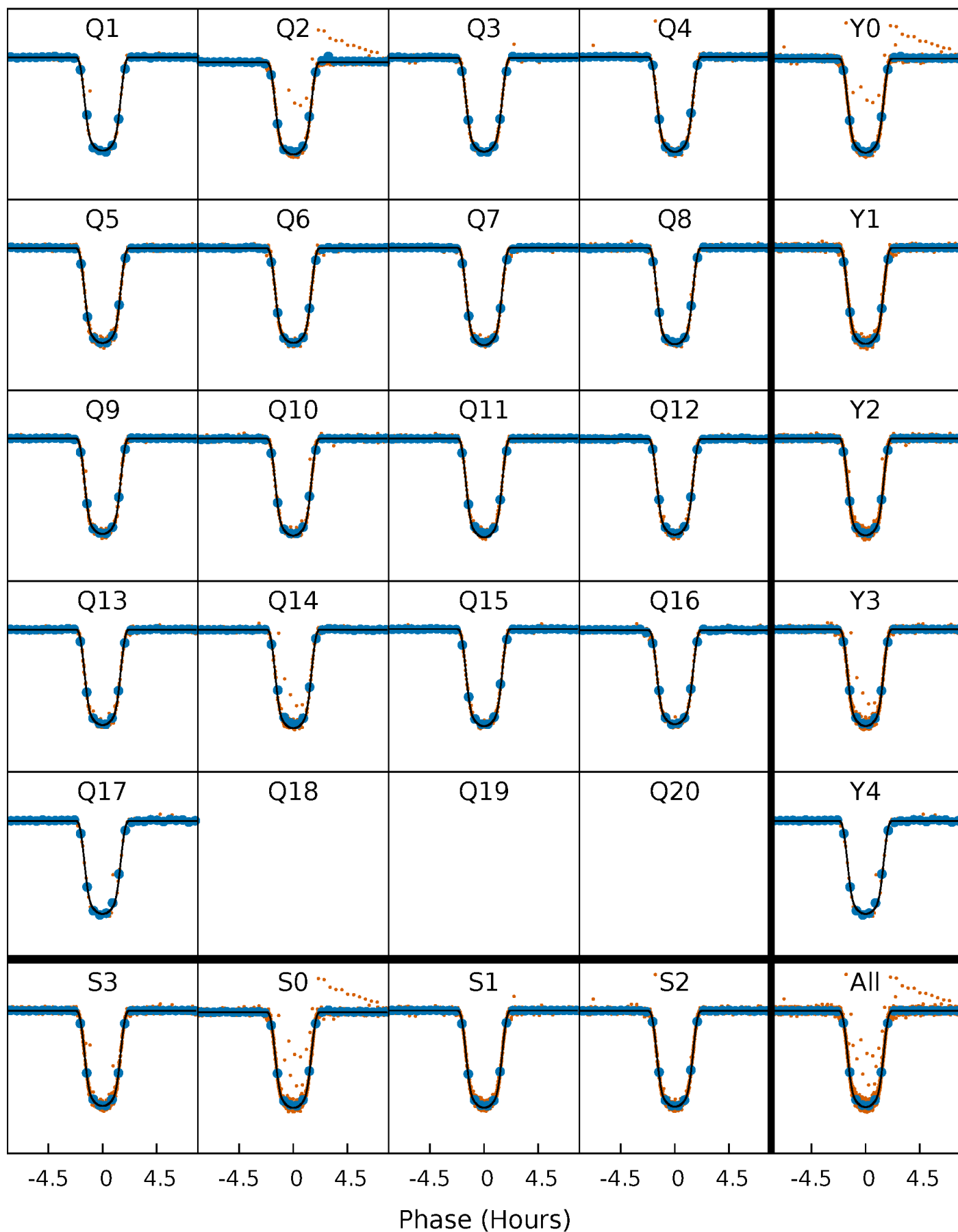
PDC Quarter-Phased Transit Curves

TCE 012504988-01 P= 5.093940 Days $T_0=134.623733$ (BKJD)



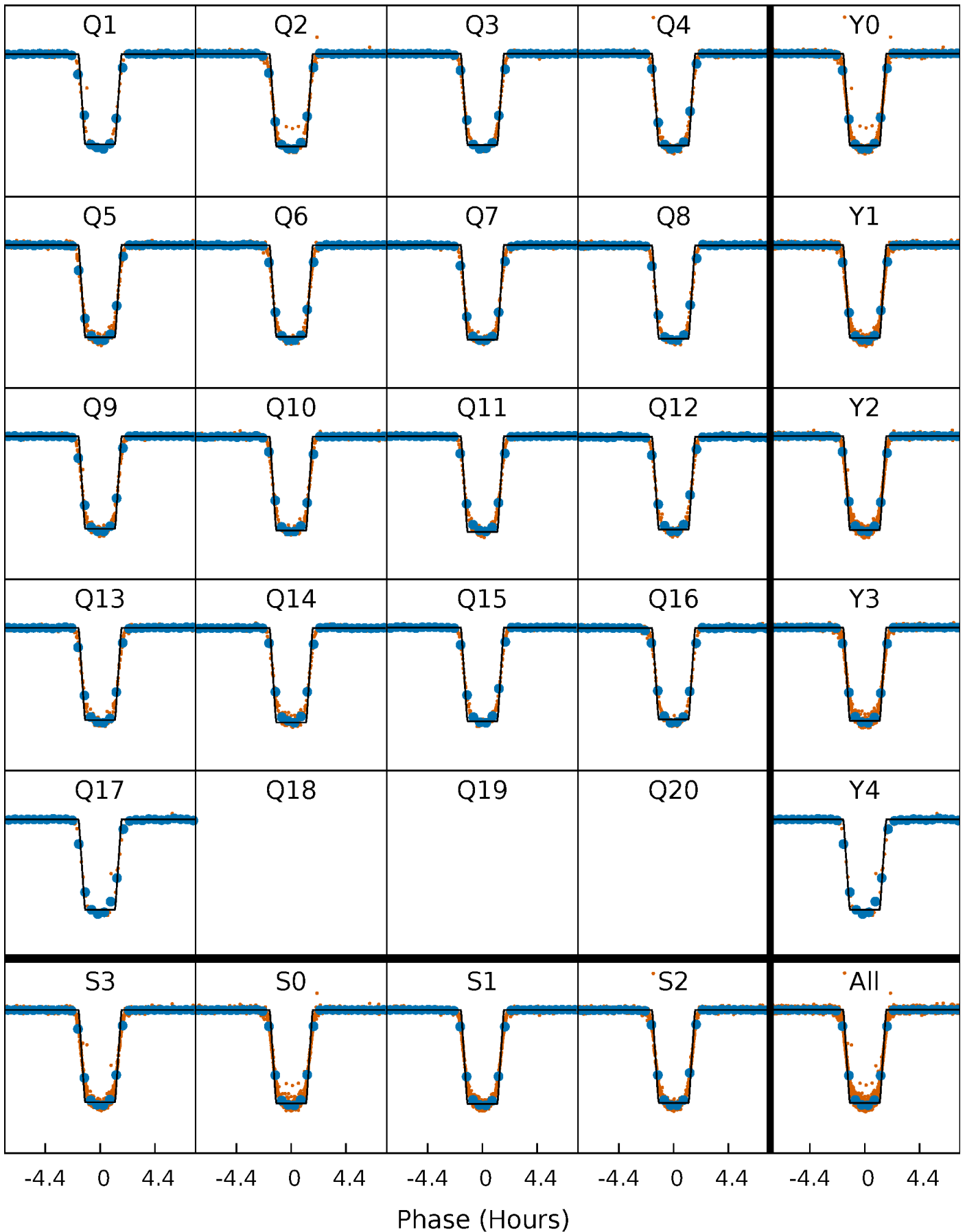
DV Quarter-Phased Transit Curves

TCE 012504988-01 P= 5.093940 Days $T_0=134.623733$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

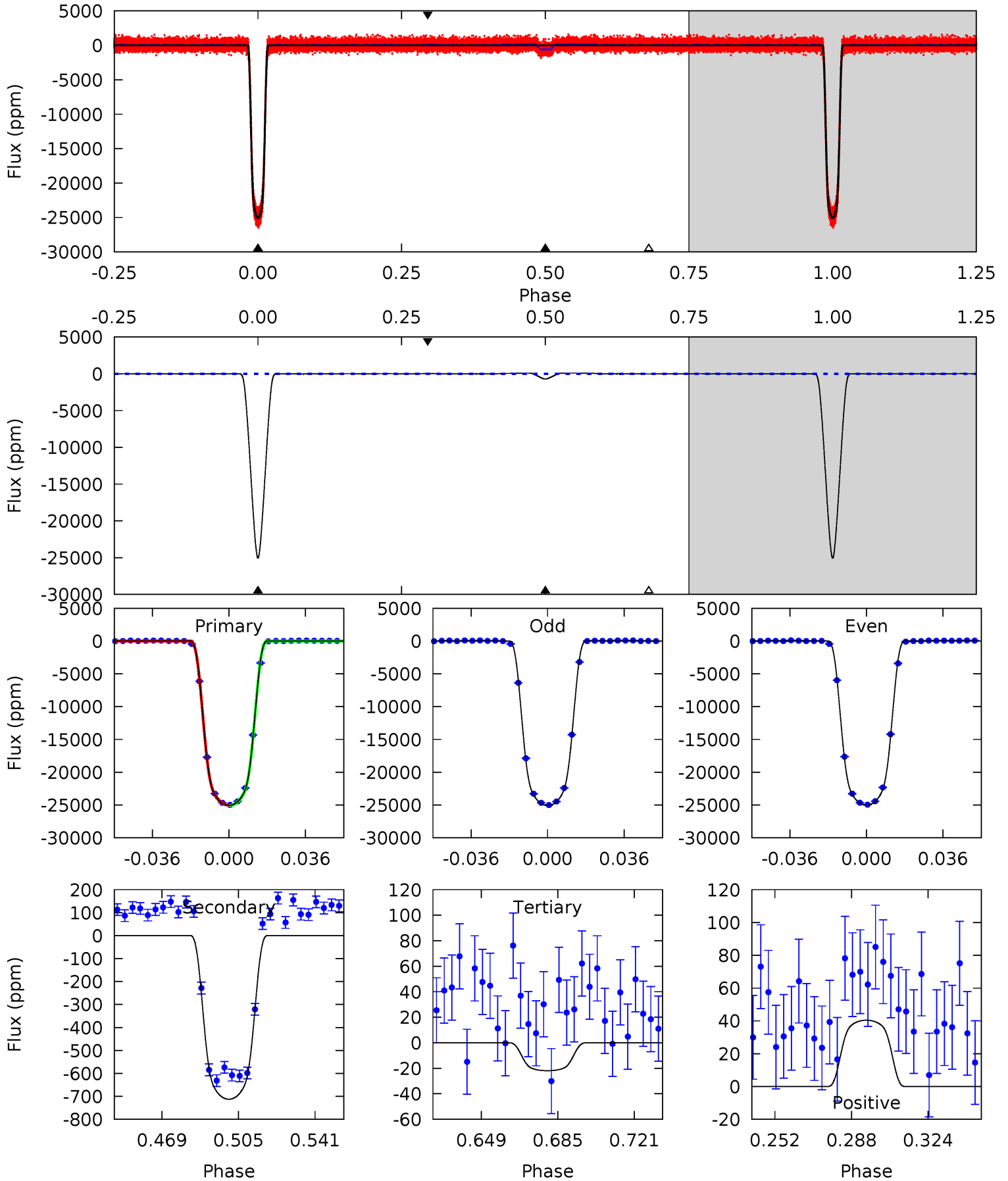
TCE 012504988-01 P= 5.093935 Days $T_0=134.624476$ (BKJD)



DV Model-Shift Uniqueness Test

012504988-01, P = 5.093940 Days, E = 129.529793 Days

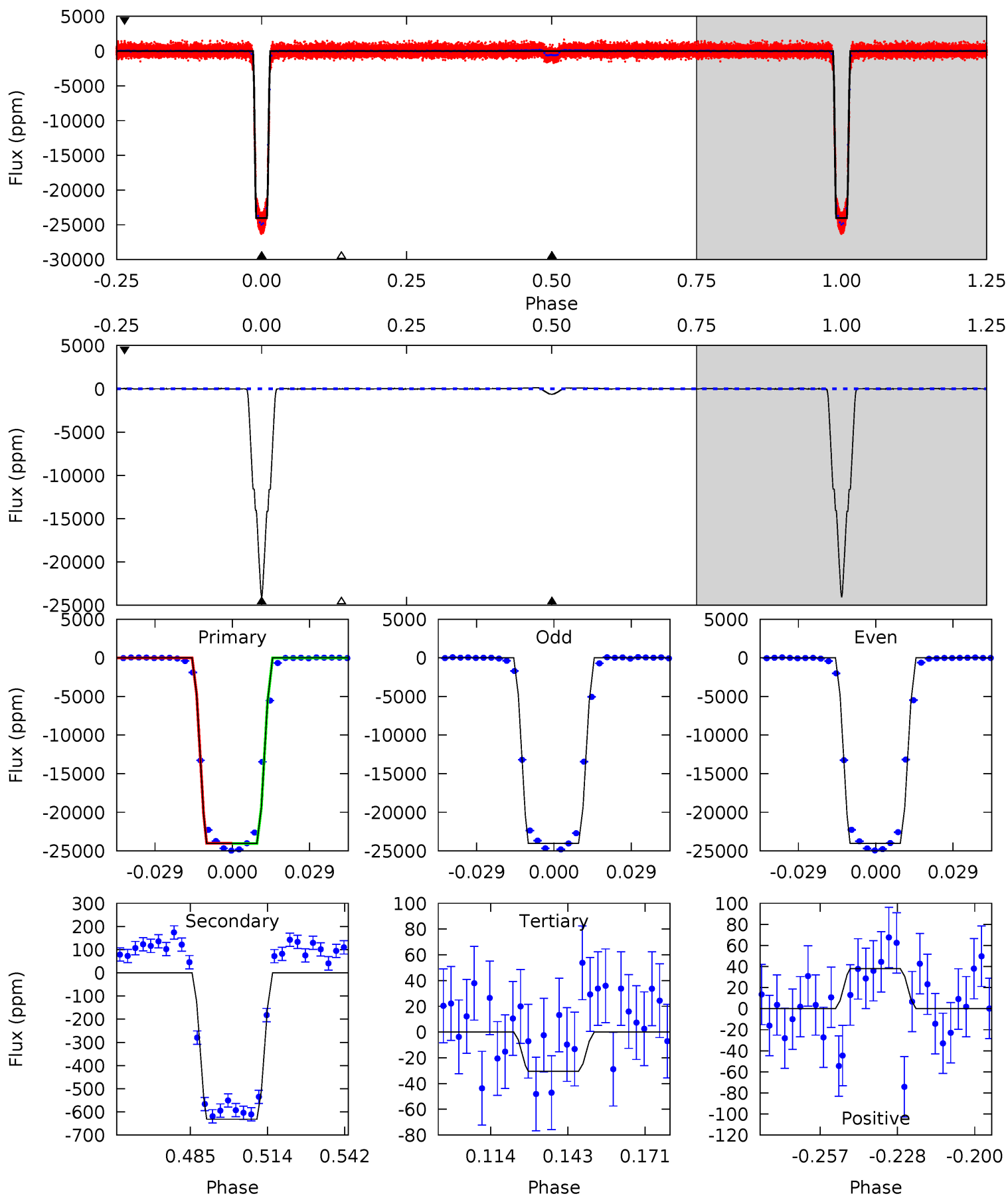
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
3250	92.4	2.84	5.24	4.77	2.10	3.63	3247	3245	89.6	87.2	2.87	0.99	0.00	5.00



Alt Model-Shift Uniqueness Test

012504988-01, P = 5.093935 Days, E = 129.530541 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
2454	64.5	3.11	3.87	4.82	2.19	2.63	2450	2450	61.4	60.6	0.05	1.00	0.01	2.76



Stellar Parameters For KIC 012504988

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6197^{+166}_{-222}	$4.449^{+0.056}_{-0.224}$	$-0.080^{+0.250}_{-0.350}$	$1.035^{+0.349}_{-0.116}$	$1.096^{+0.153}_{-0.137}$	$1.394^{+0.431}_{-0.779}$
	+3%/-4%	+1%/-5%	+312%/-438%	+34%/-11%	+14%/-12%	+31%/-56%
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 012504988-01 / KOI 0181.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-713 ± 8	$18.03^{+2.63}_{-1.58}$	1624^{+115}_{-85}	3147^{+49}_{-69}	$4.303^{+0.659}_{-1.073}$
Alt.	-632 ± 10	$18.20^{+3.26}_{-1.52}$	1624^{+131}_{-83}	3073^{+53}_{-61}	$3.728^{+0.591}_{-1.006}$

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 $A_{obs} \gg 1.0$

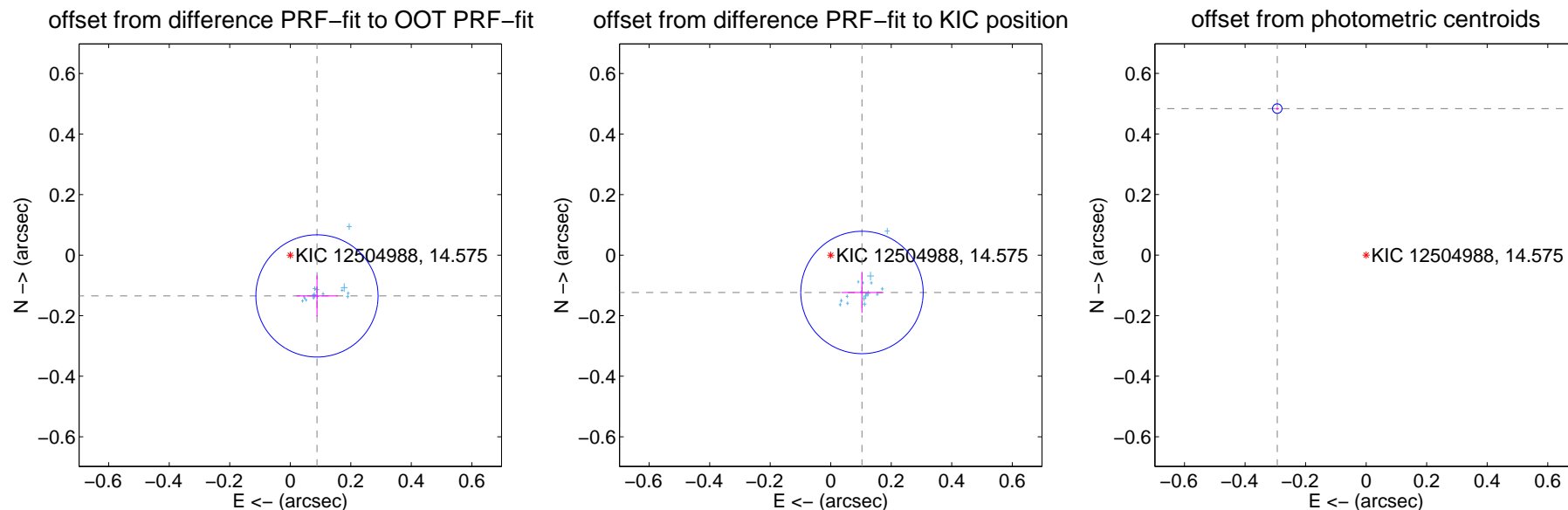
DV Centroid Data

Supplemental centroid analysis for 012504988-01. Kepler magnitude: 14.57. Transit SNR 1636.28

There are 17 quarters with good PRF difference image offsets

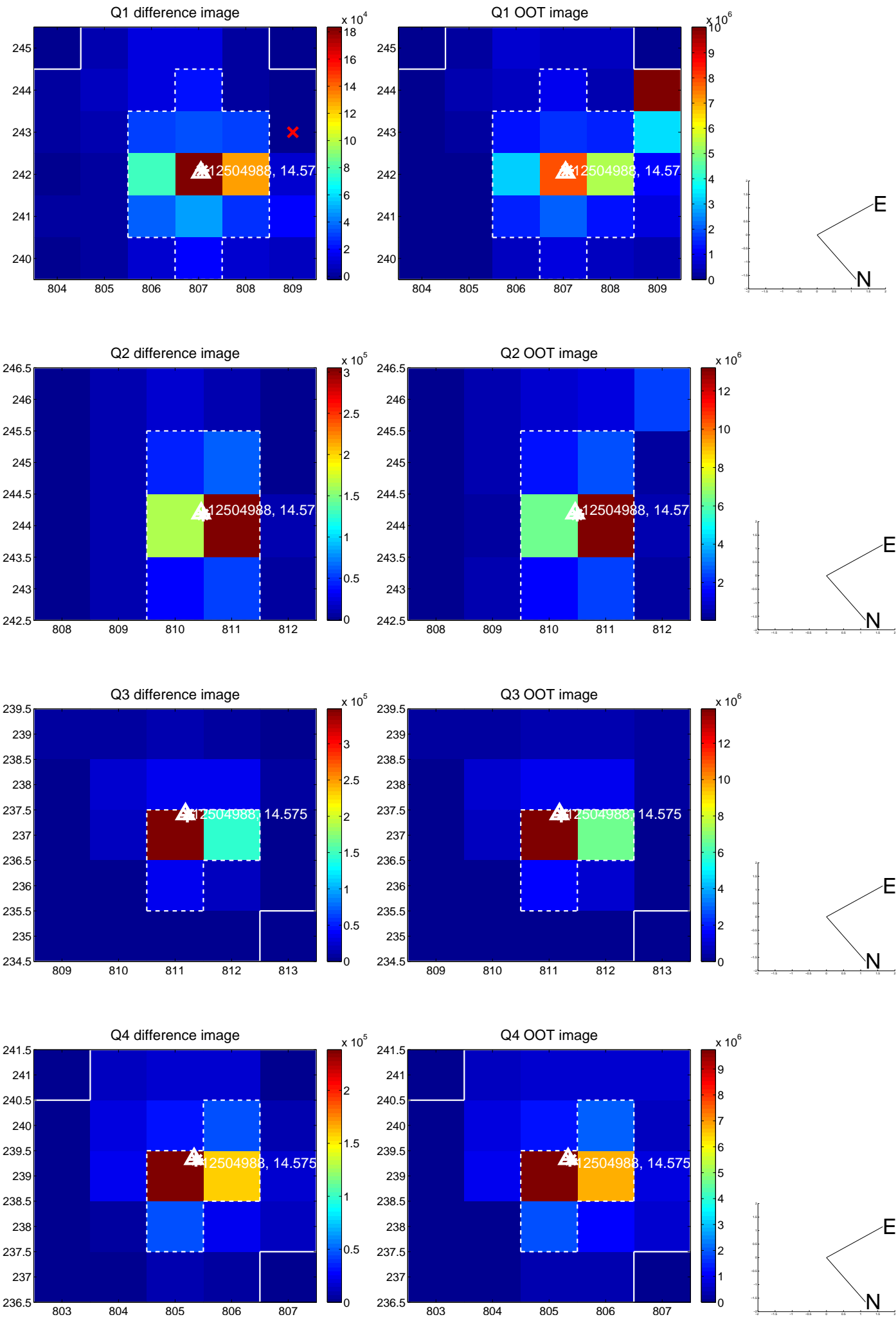
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.161 ± 0.067	2.39	-0.088 ± 0.068	-0.135 ± 0.068
PRF-fit source offset from KIC position	0.161 ± 0.067	2.39	-0.103 ± 0.068	-0.123 ± 0.067
photometric centroid source offset	0.57 ± 0.01	108.28	0.29 ± 0.01	0.48 ± 0.01

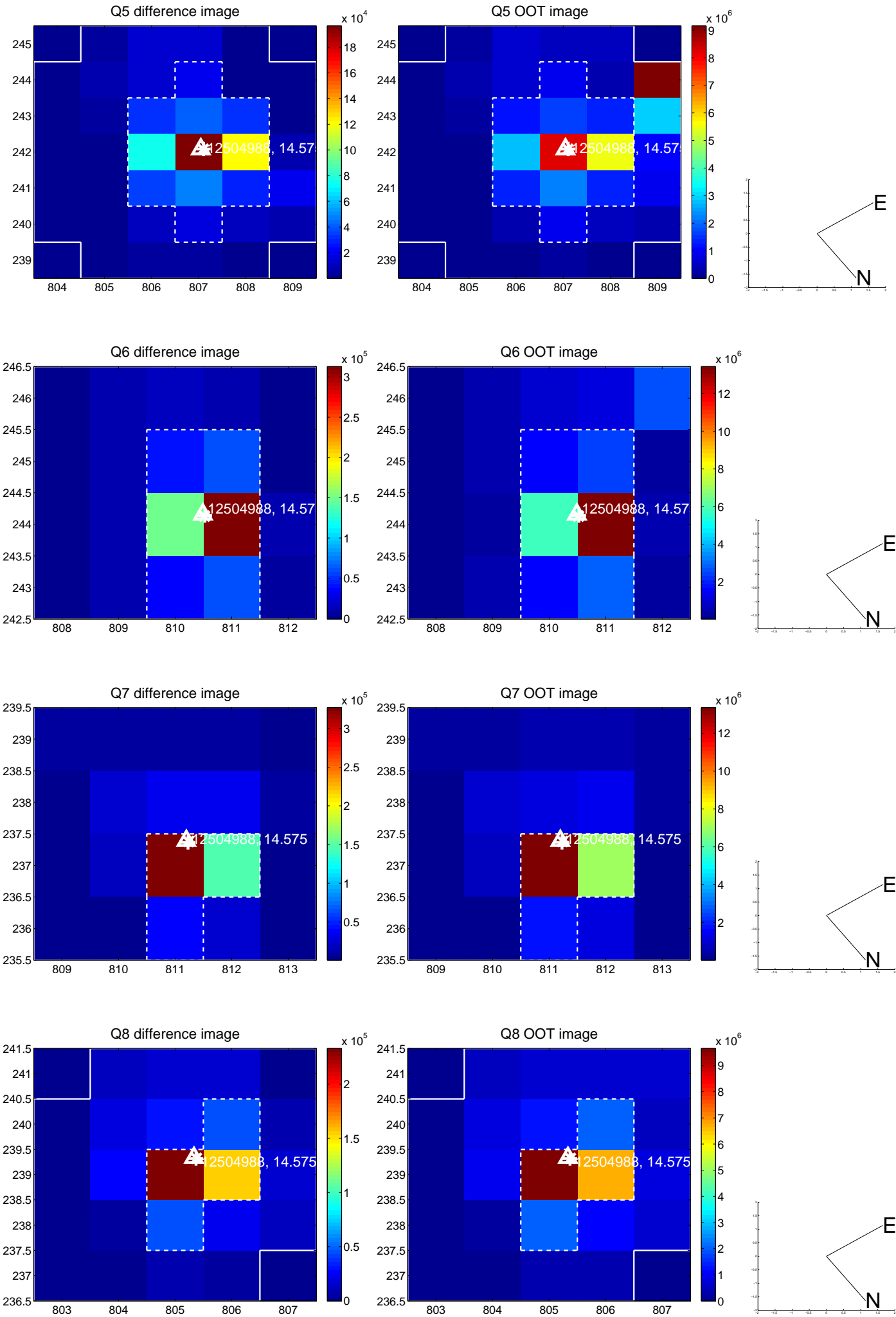


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

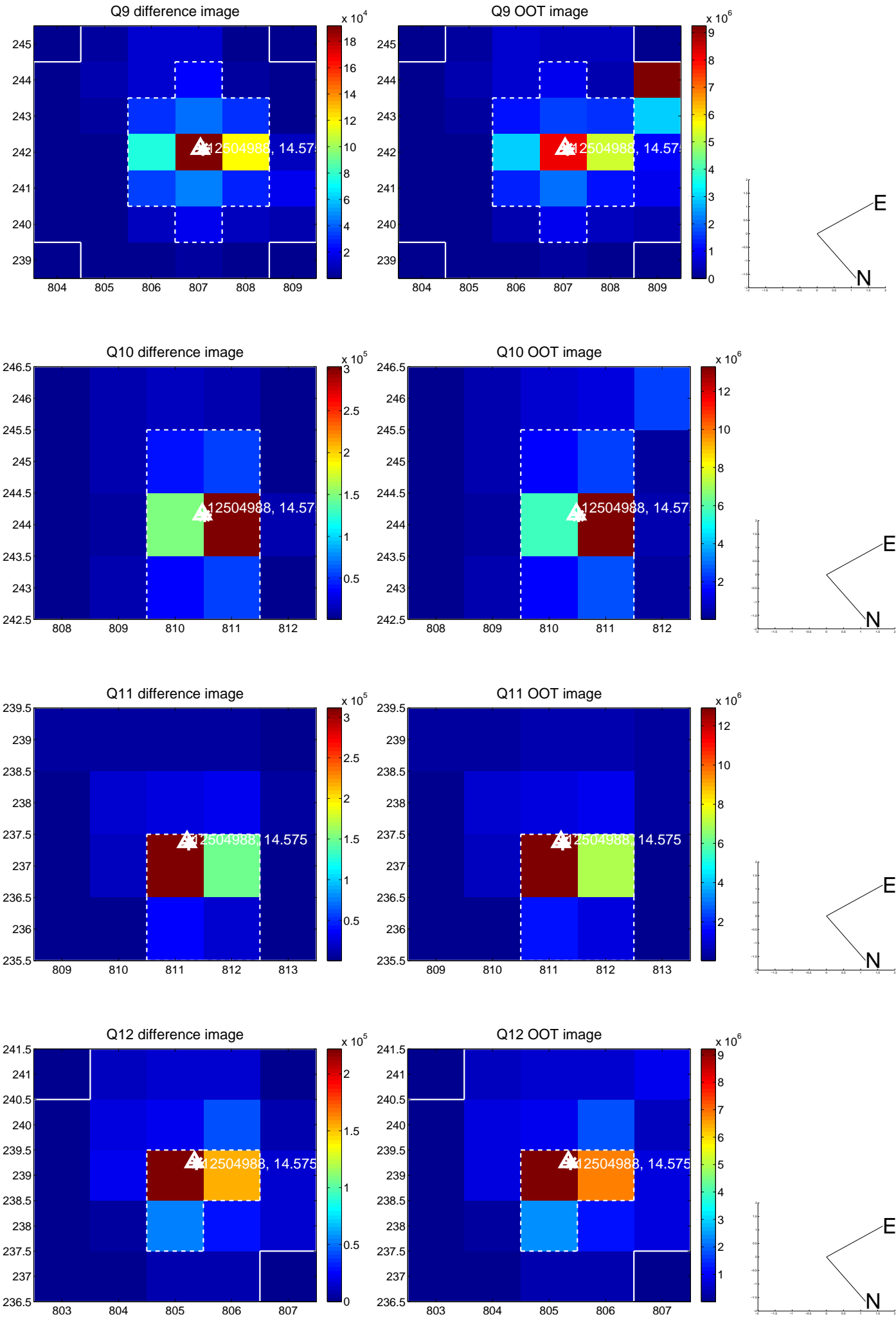
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



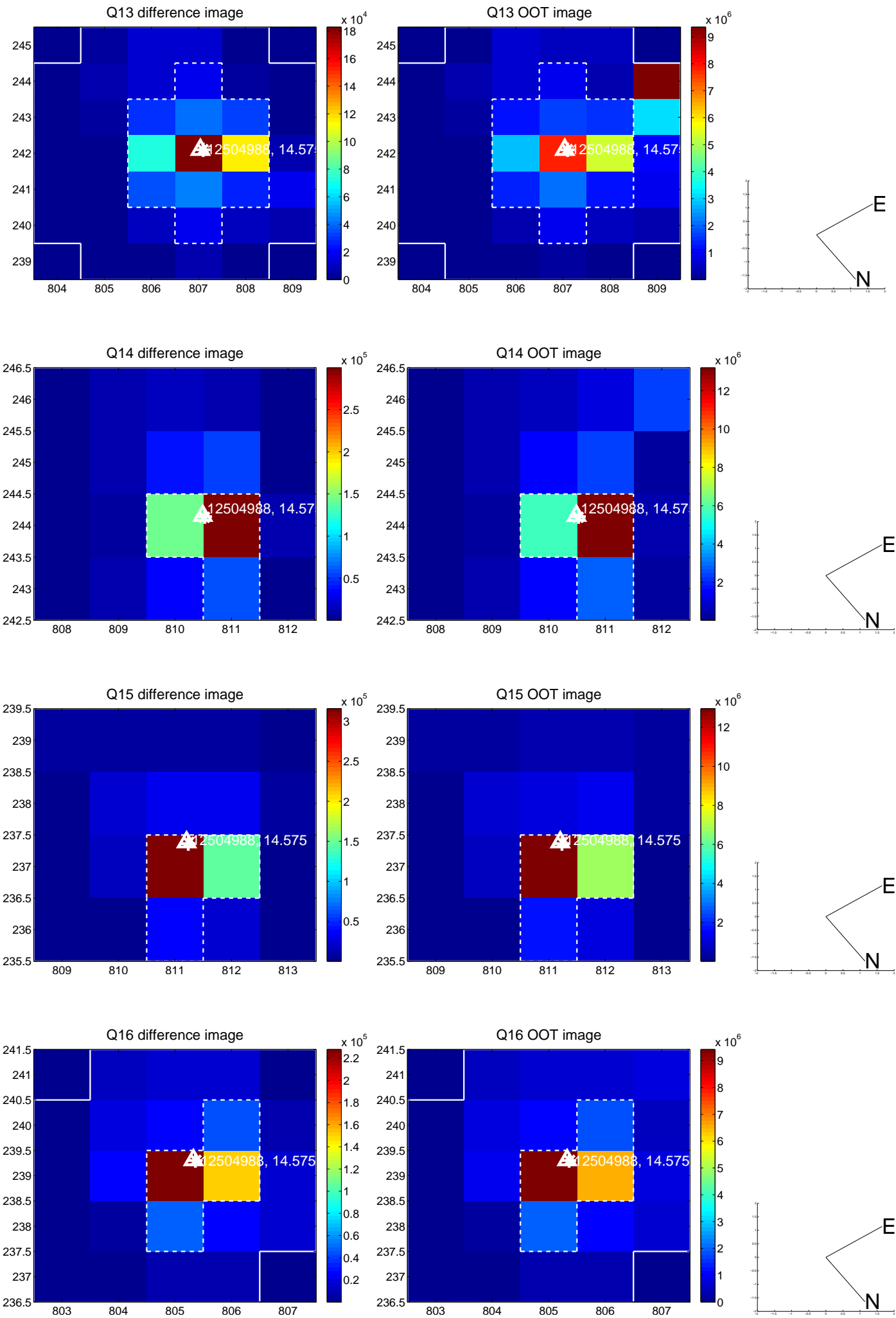
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



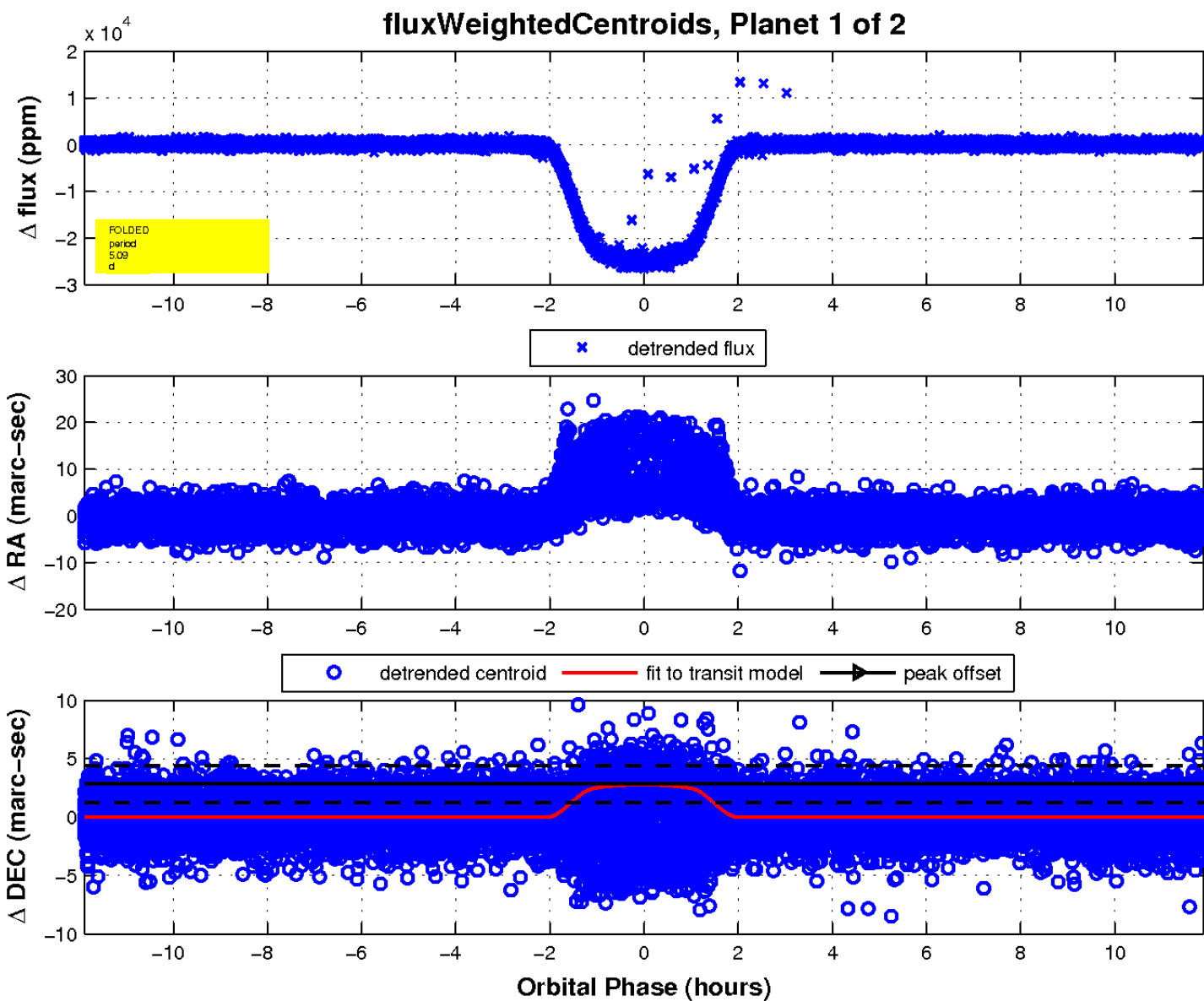
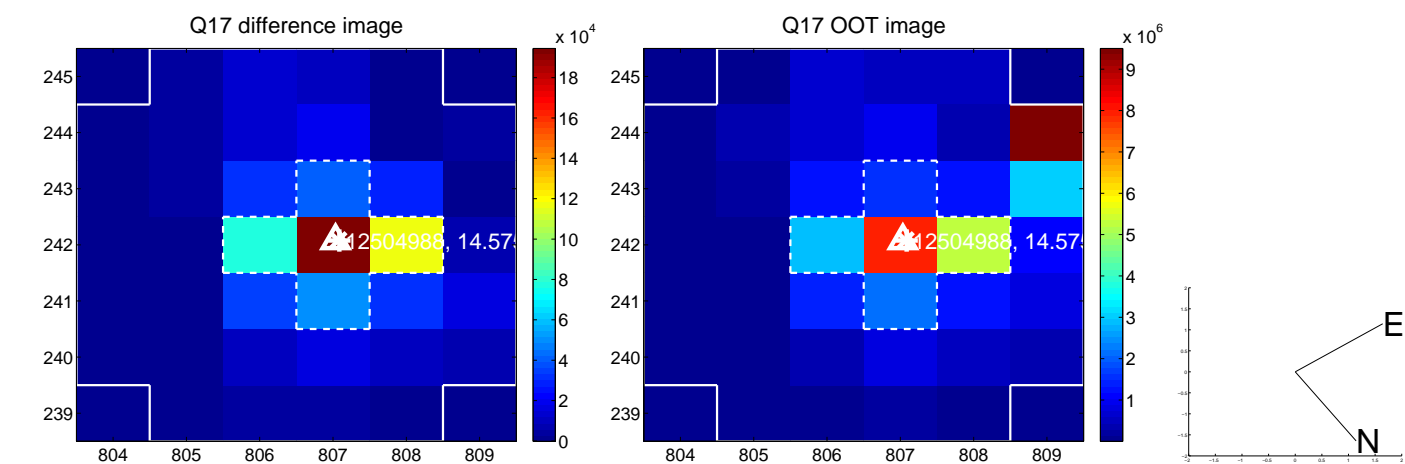
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

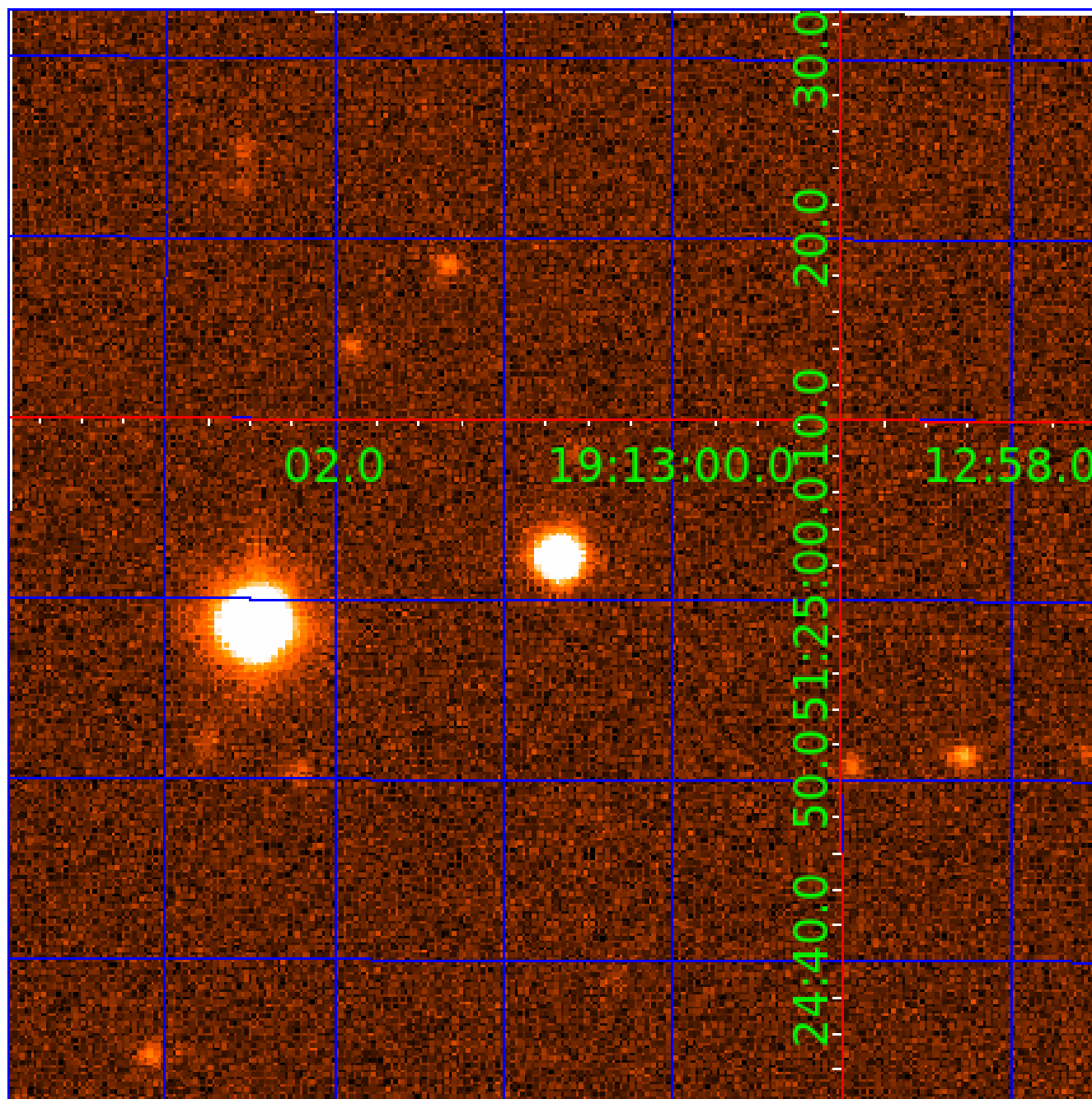


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 012504988

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})
012504988-01	OBS	0181.01	5.093940	134.623733	25096.4	3.963	1803.6	1636.3	1.03	6197	17.37	395.83
012504988-02	OBS	No	5.093932	132.078571	769.7	3.853	57.5	61.8	1.03	6197	3.40	395.83

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
012504988-01	OBS	FP	0.00	0	1	0	0	MOD_SEC_DV—MOD_SEC_ALT—HAS_SEC_TCE
012504988-02	OBS	FP	0.00	1	1	0	0	IS_SEC_TCE

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 012504988-02

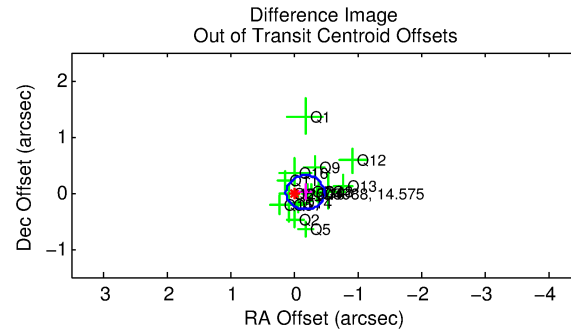
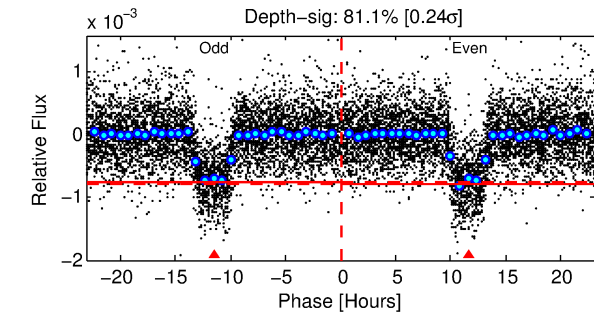
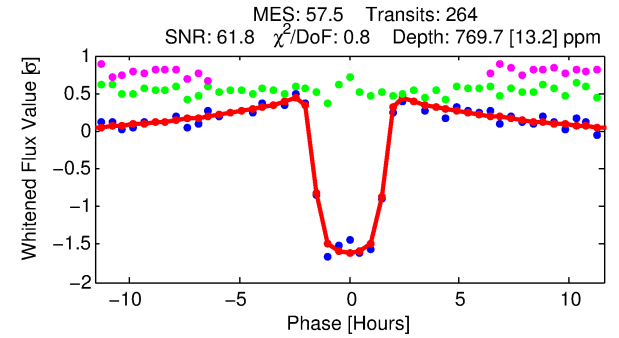
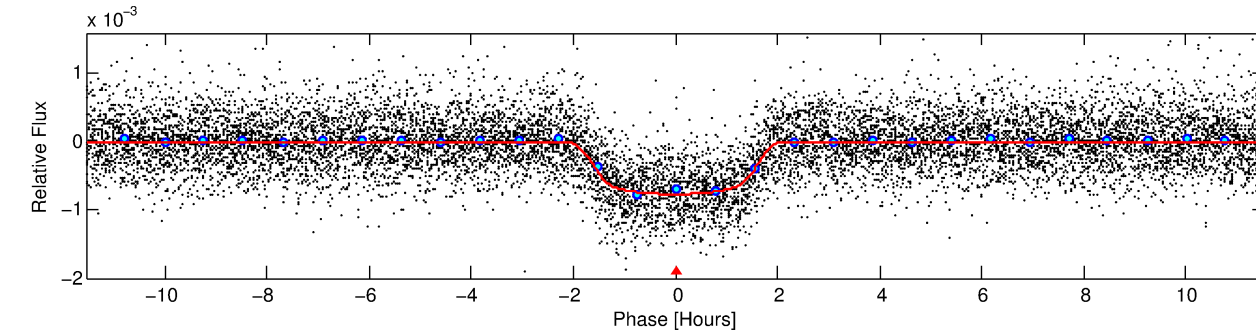
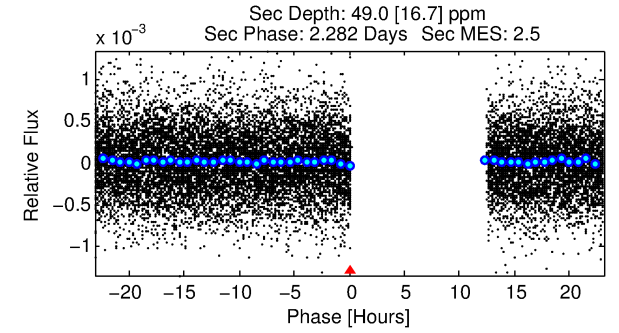
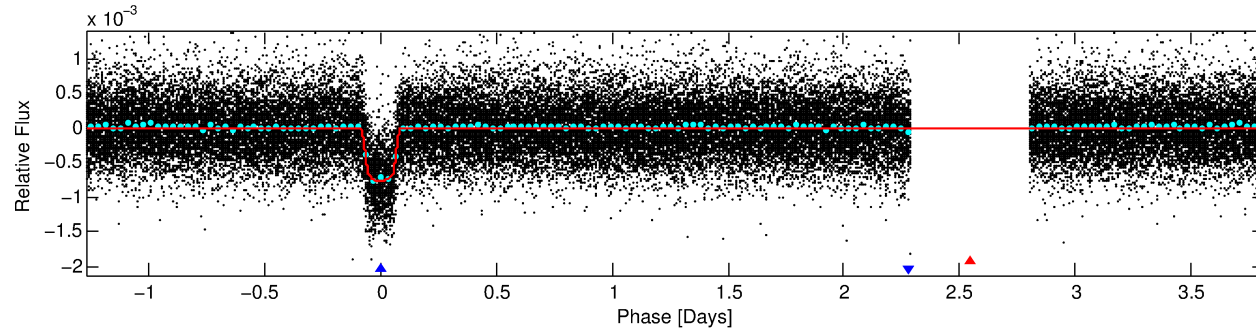
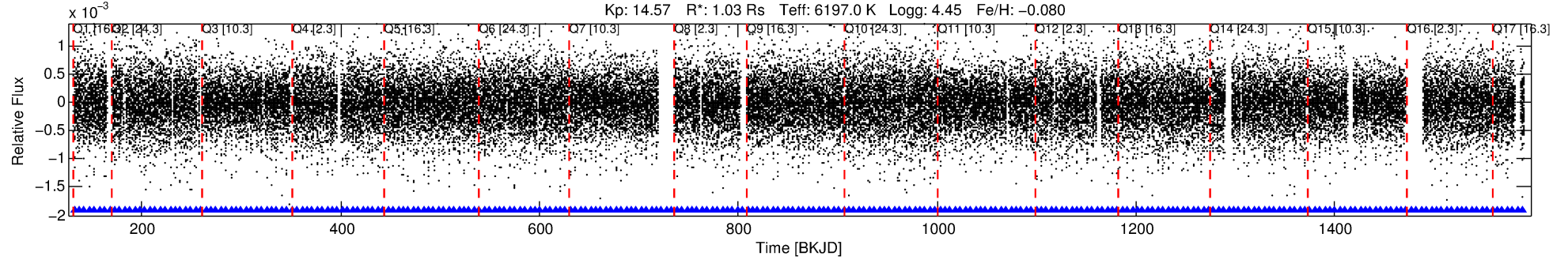
No Significant Match Found

DV One-Page Summary

KIC: 12504988 Candidate: 2 of 2 Period: 5.094 d

KOI: K00181 Corr: No Ephemeris Match

Kp: 14.57 R*: 1.03 Rs Teff: 6197.0 K Logg: 4.45 Fe/H: -0.080



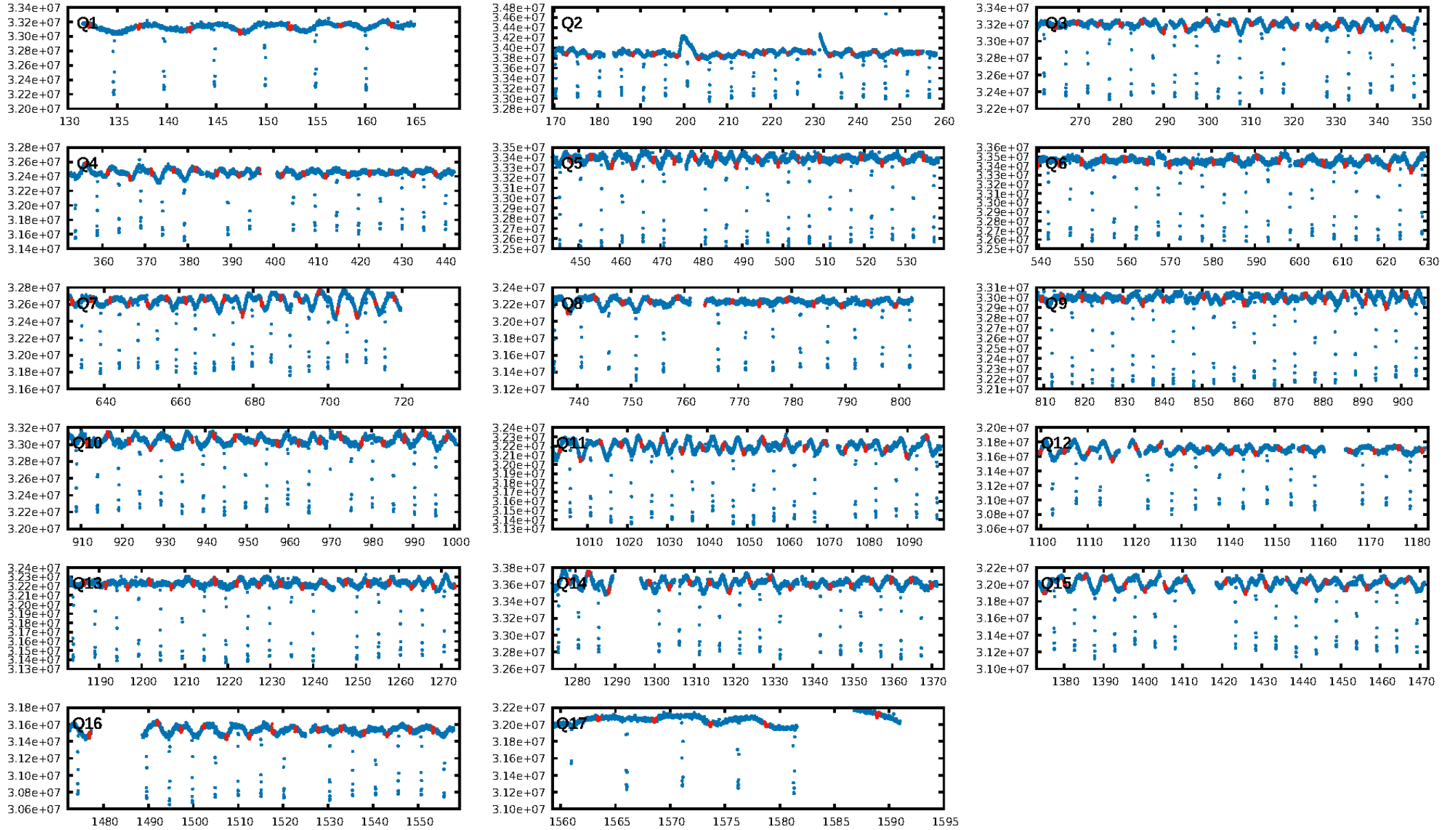
DV Fit Results:

Period = 5.09393 [0.00001] d
Epoch = 132.0786 [0.0009] BKJD
Rp/R* = 0.0301 [0.0007]
a/R* = 5.03 [0.51]
b = 0.91 [0.02]
Seff = 395.83 [172.22]
Teq = 1137 [124] K
Rp = 3.40 [1.15] Re
a = 0.0598 [0.0169] AU
Ag = 8.34 [4.47] [1.64σ]
Teffp = 2988 [278] K [6.07σ]

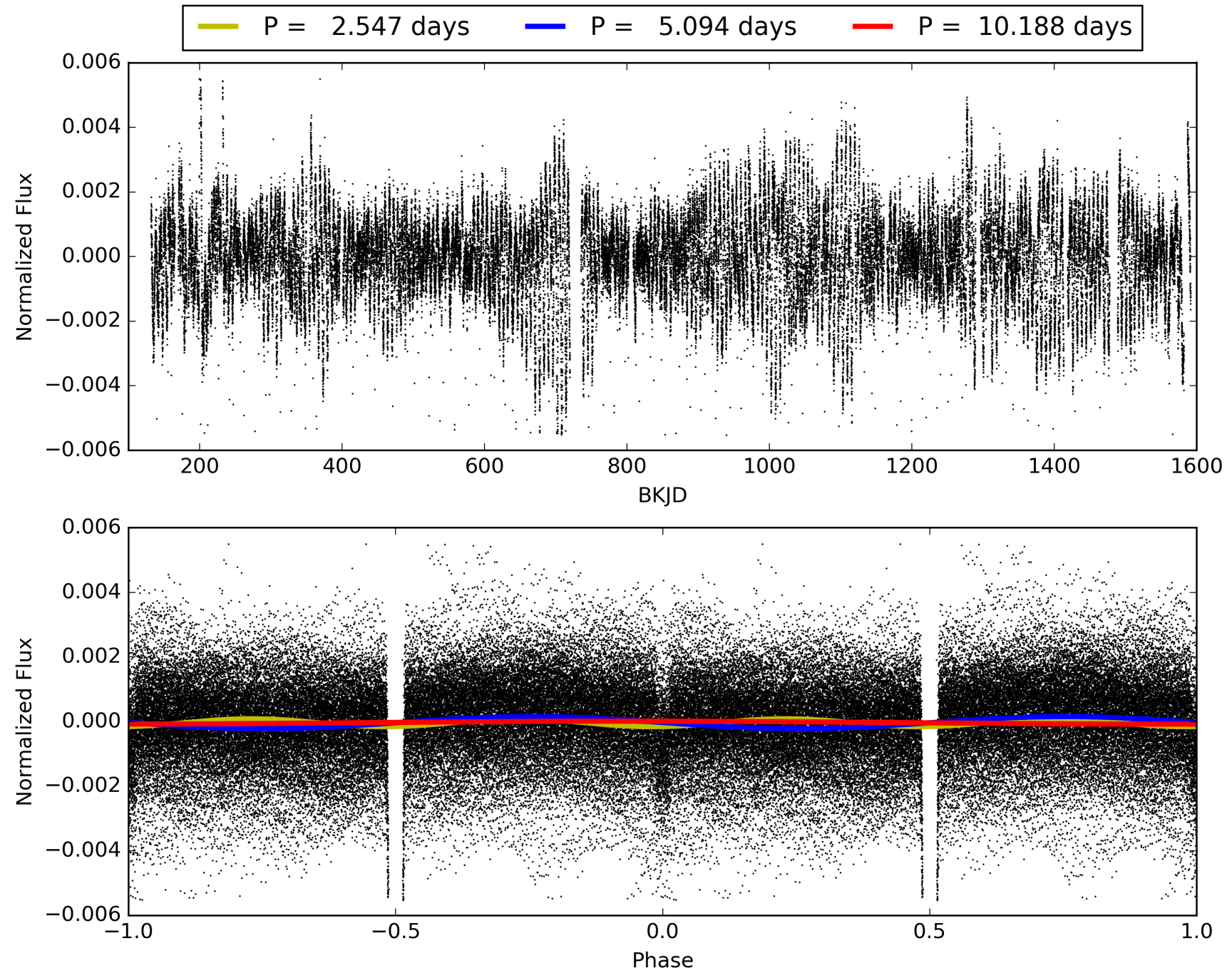
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.0% [0.00σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 0.00e+00
RollingBand-fgt: 1.00 [252/252]
GhostDiagnostic-chr: 5.542
Centroid-sig: N/A
Centroid-so: 0.401 arcsec [2.51σ]
OotOffset-rm: 0.178 arcsec [1.78σ]
KicOffset-rm: 0.179 arcsec [1.71σ]
OotOffset-st: 4/4/4/5 [17]
KicOffset-st: 4/4/4/5 [17]
DiffImageQuality-fgm: 1.00 [17/17]
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TCE 012504988-02, PDC Light Curves

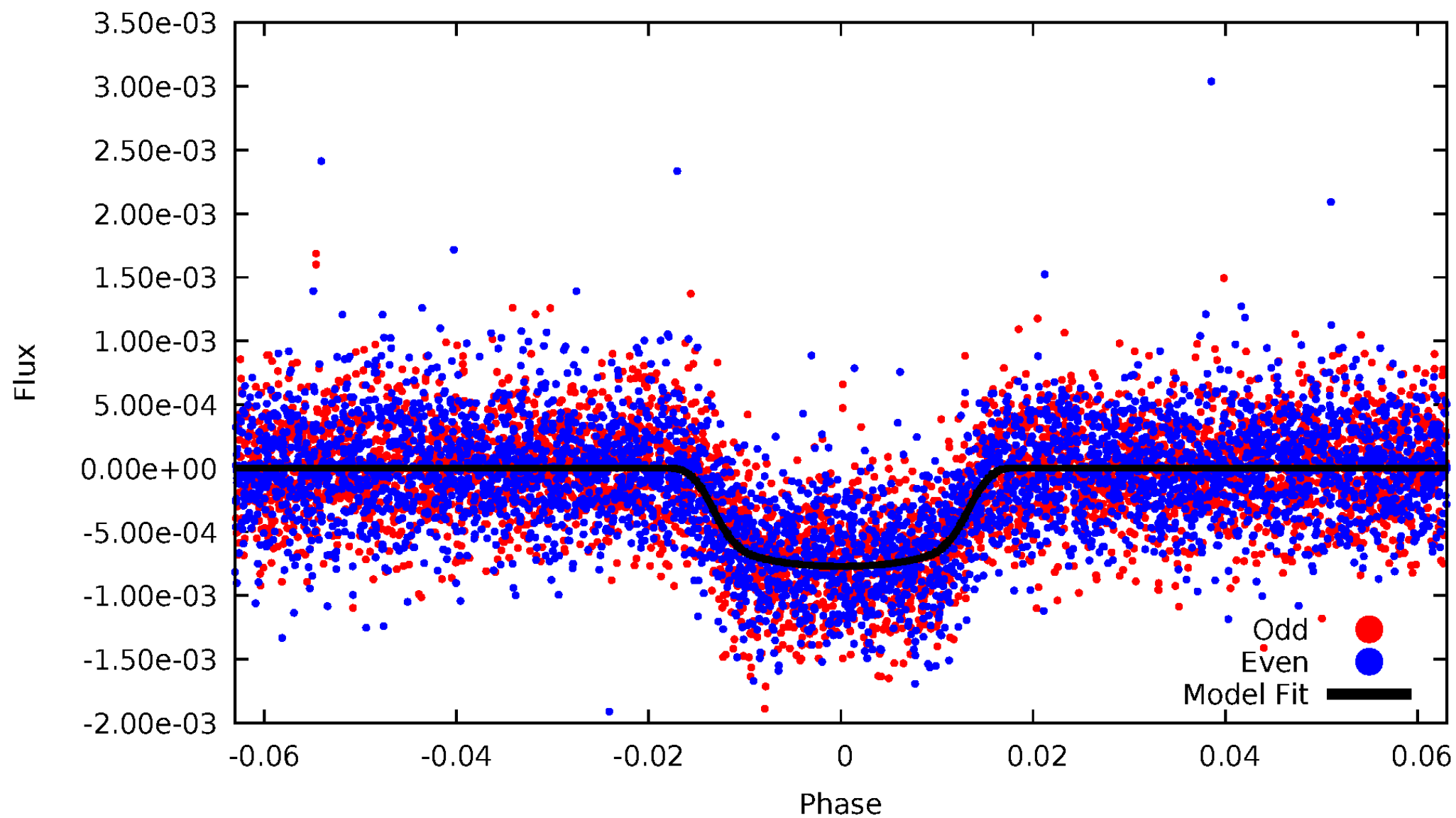


TCE 012504988-02



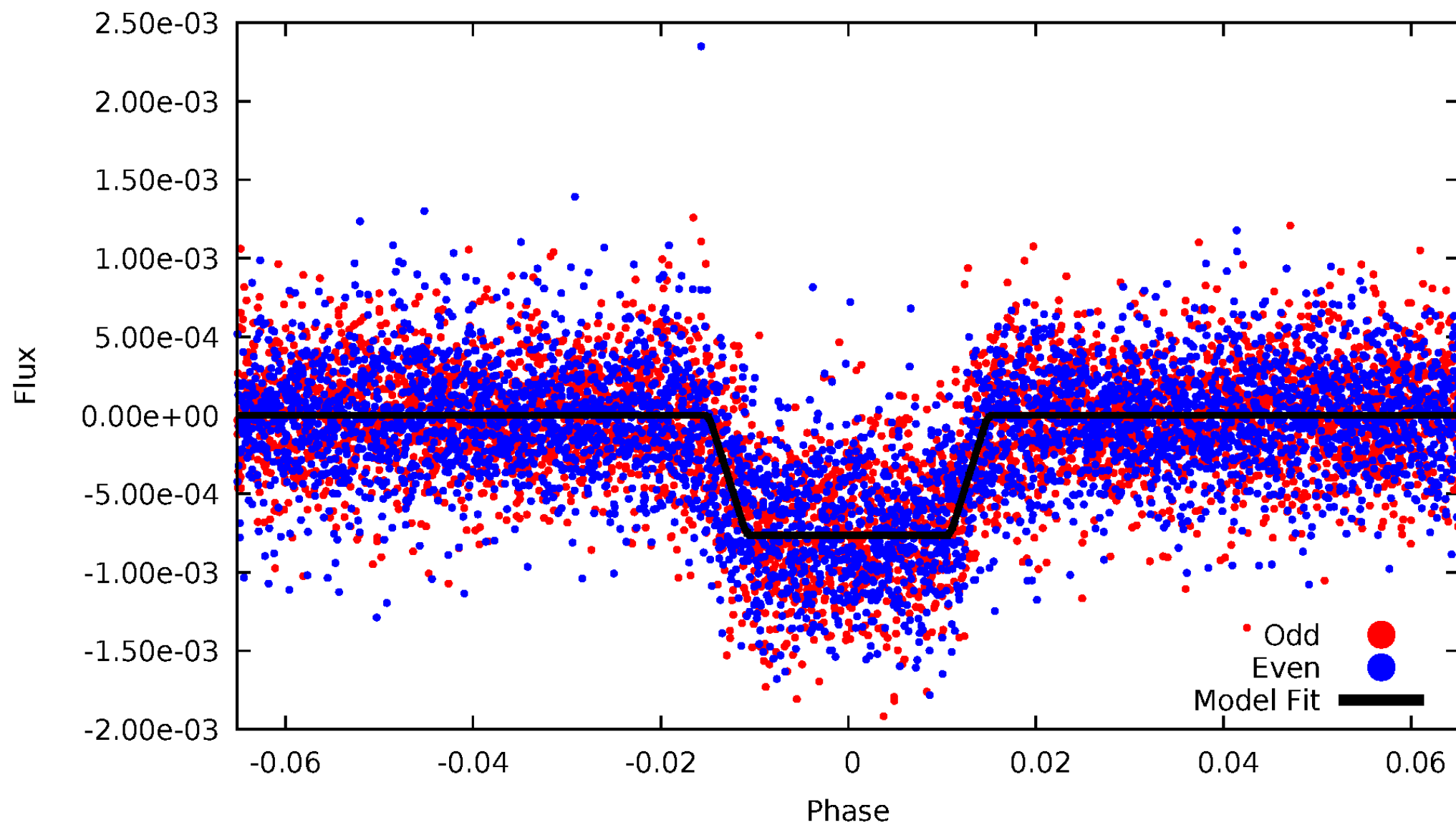
DV Odd/Even

TCE 012504988-02



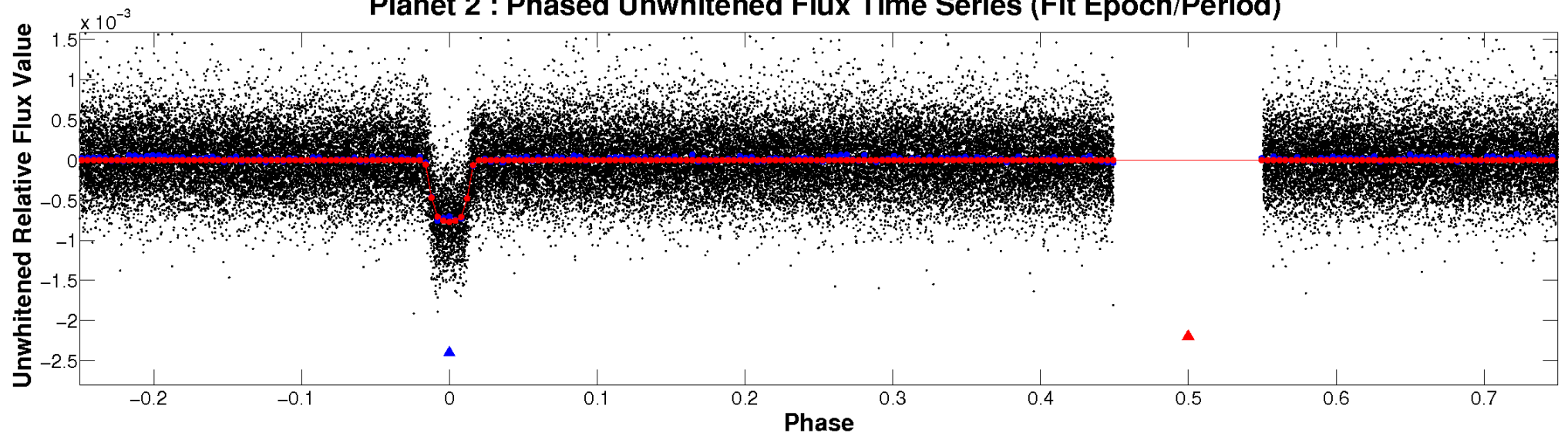
ALT Odd/Even

TCE 012504988-02

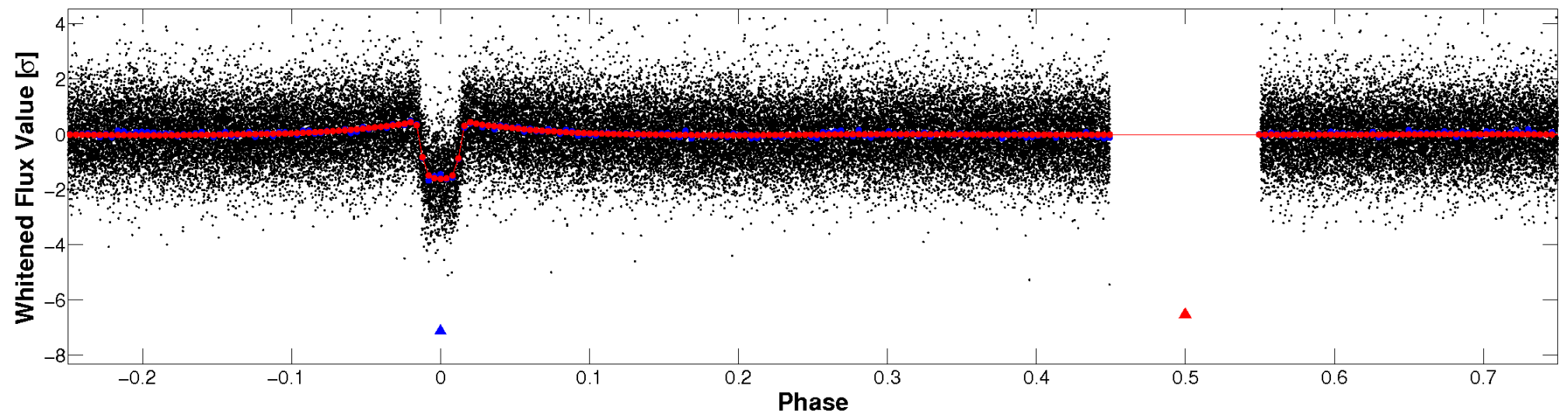


Non-Whitened Vs. Whitened Light Curve

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

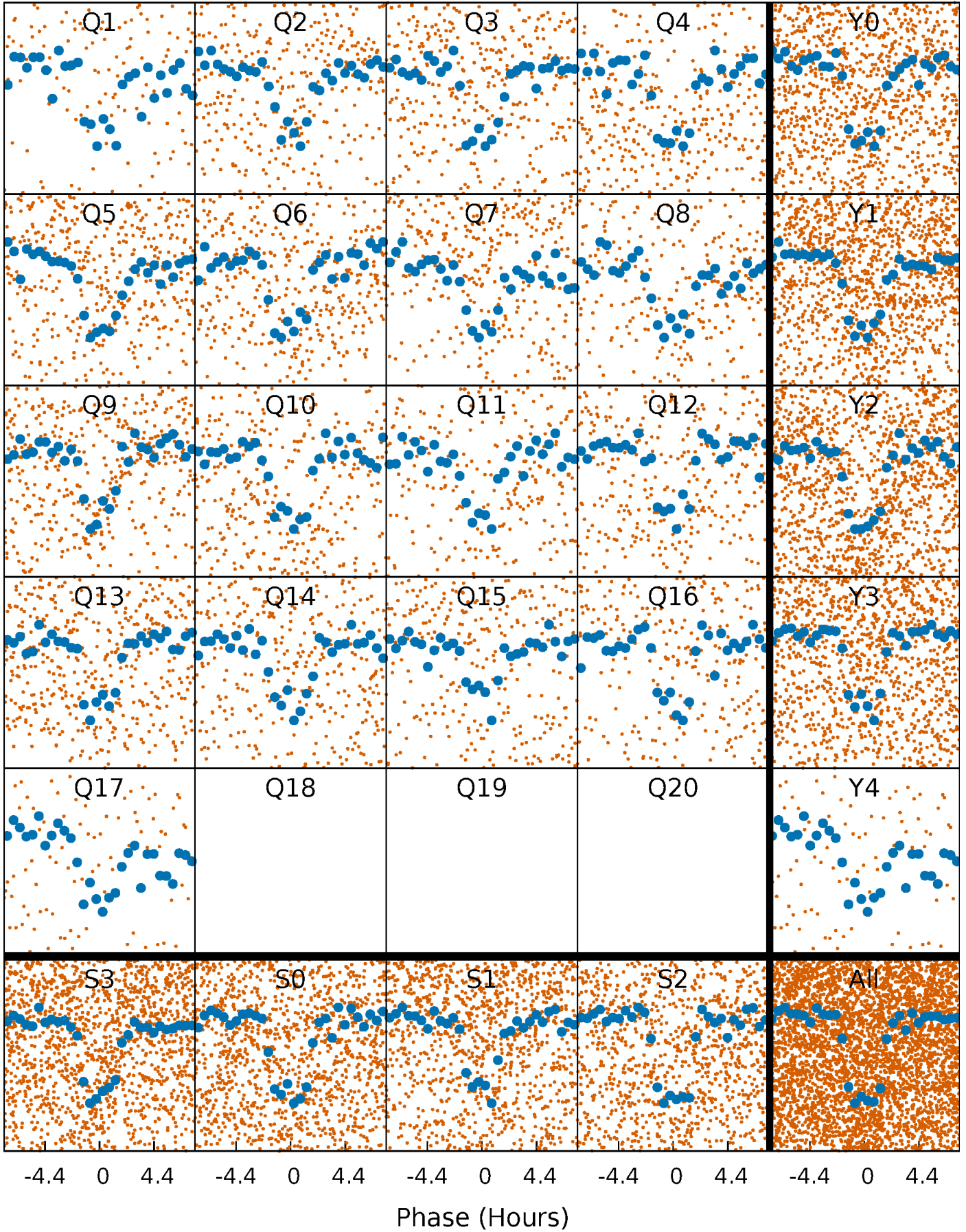


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



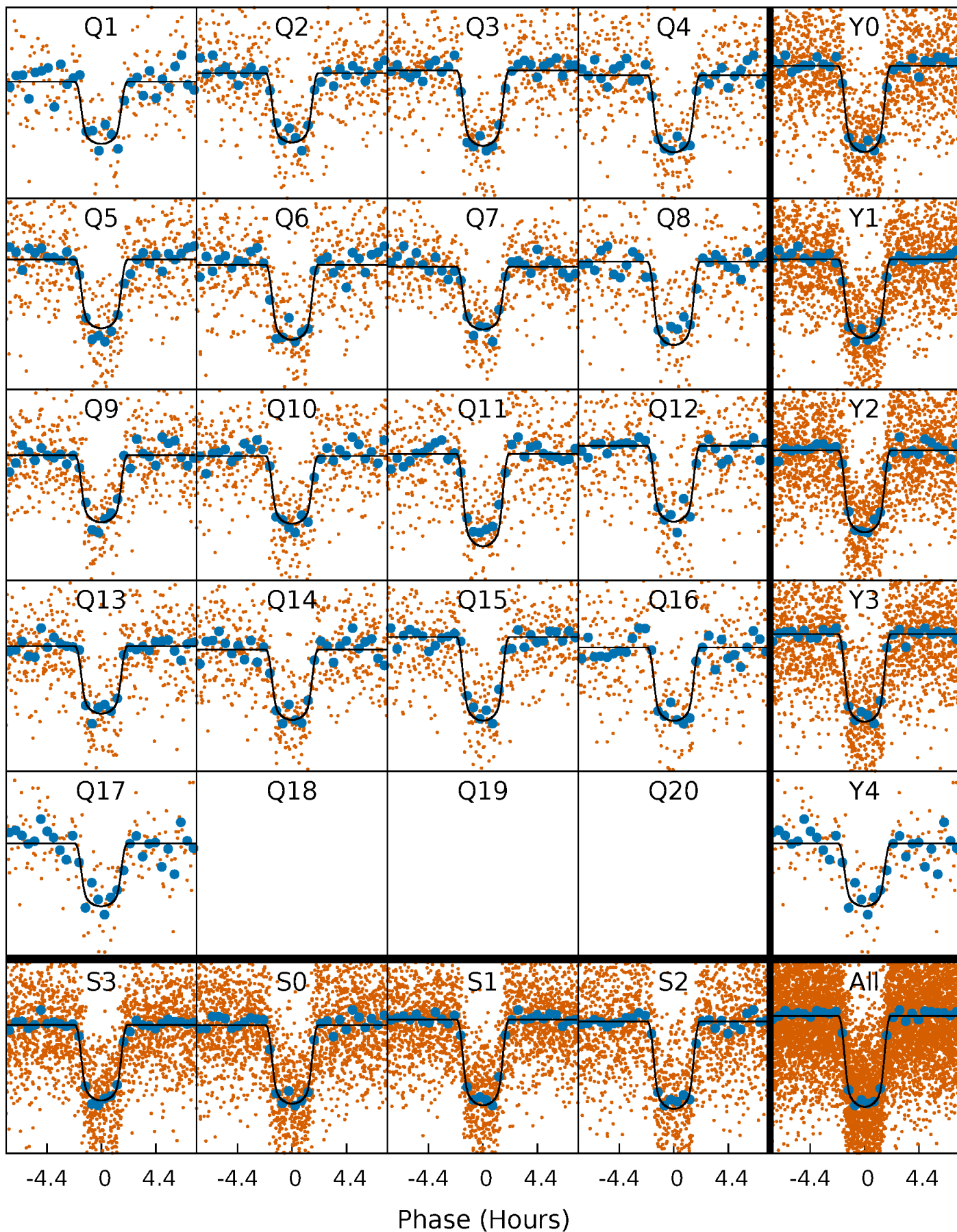
PDC Quarter-Phased Transit Curves

TCE 012504988-02 P= 5.093932 Days $T_0=132.078571$ (BKJD)



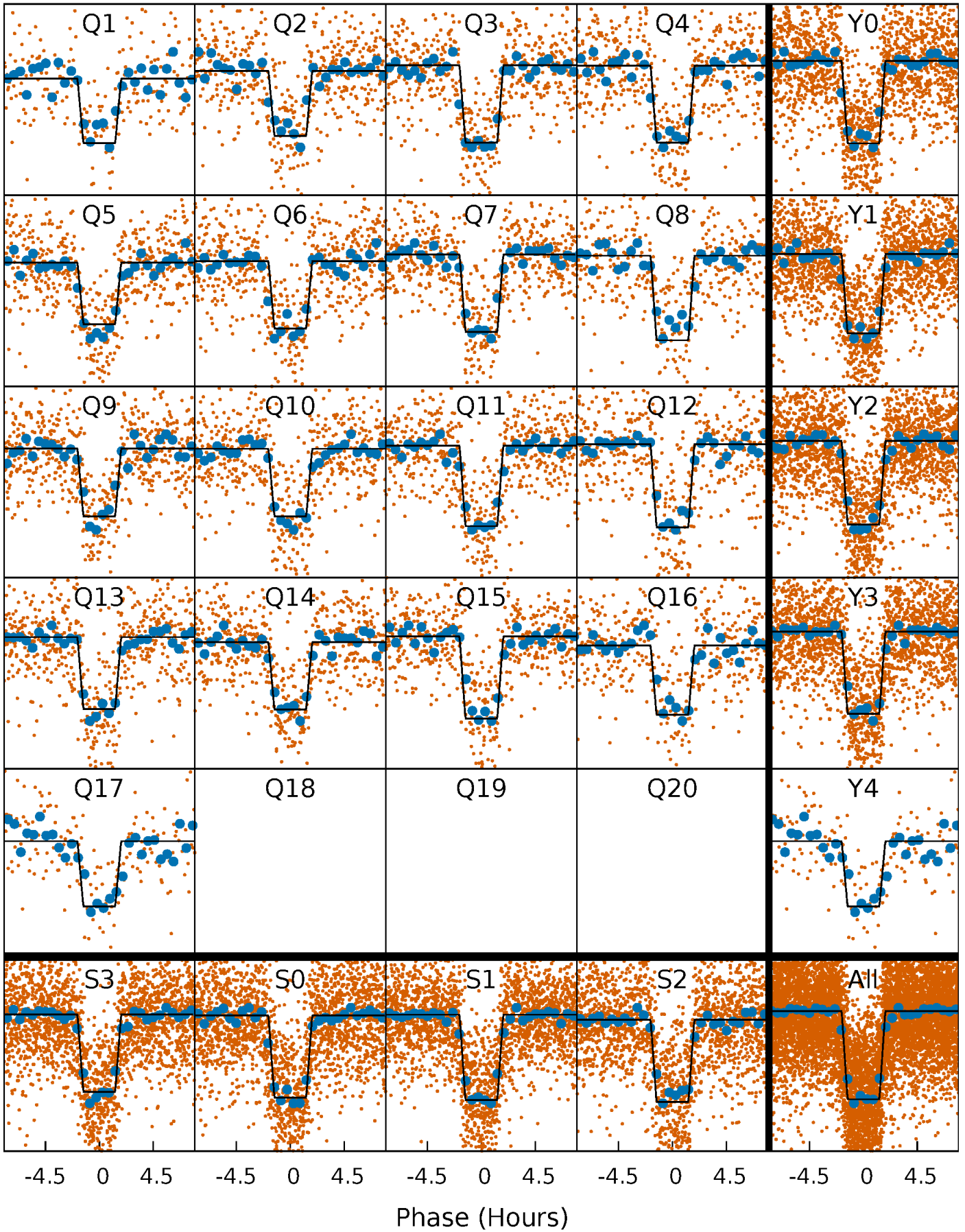
DV Quarter-Phased Transit Curves

TCE 012504988-02 P= 5.093932 Days $T_0=132.078571$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

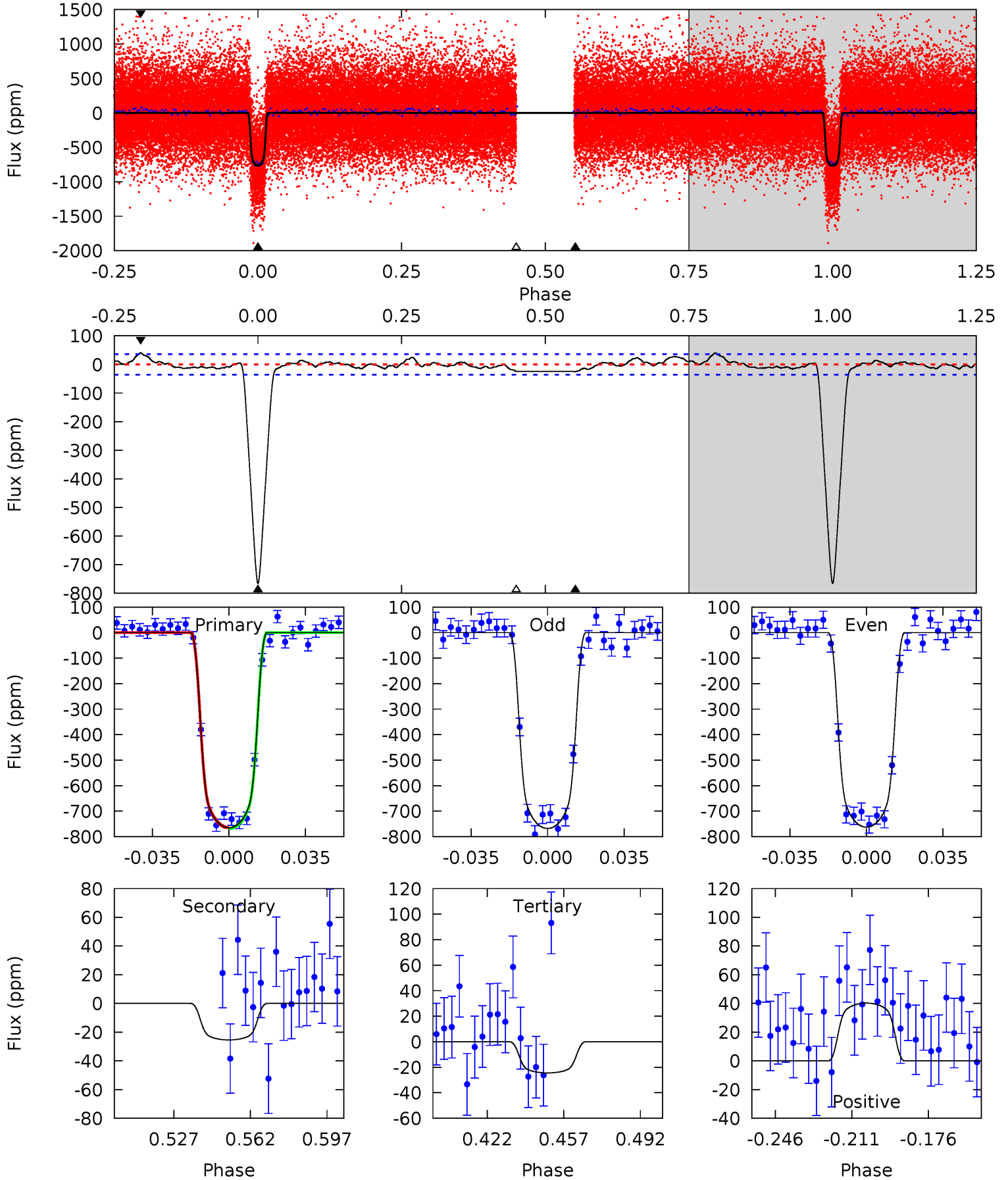
TCE 012504988-02 P= 5.093876 Days $T_0=132.087035$ (BKJD)



DV Model-Shift Uniqueness Test

012504988-02, P = 5.093932 Days, E = 126.984639 Days

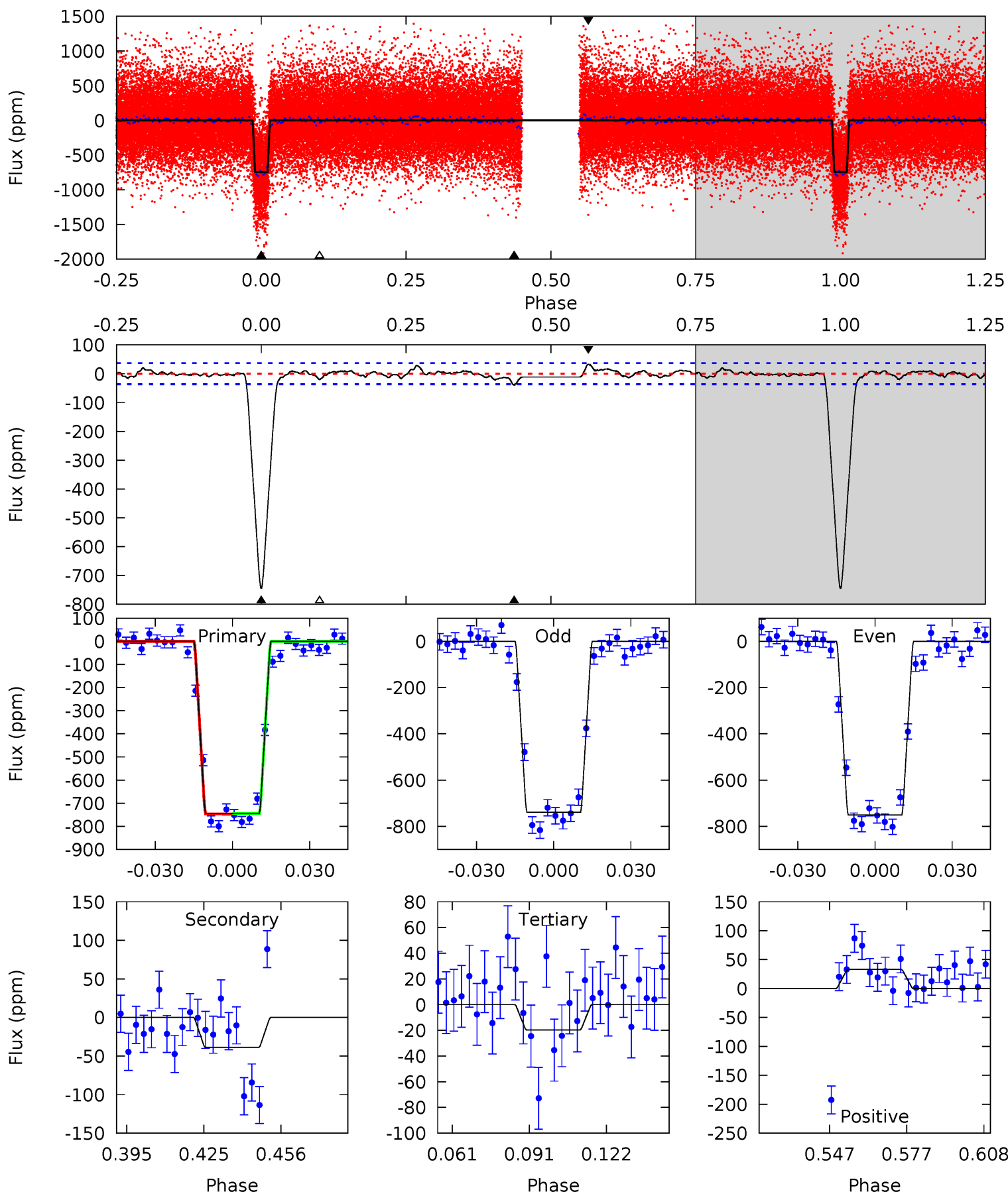
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
102.1	3.39	3.26	5.37	4.78	2.11	1.55	98.8	96.7	0.13	-1.98	0.34	1.01	0.05	0.23



Alt Model-Shift Uniqueness Test

012504988-02, P = 5.093876 Days, E = 126.993159 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
97.8	5.10	2.59	4.32	4.81	2.17	1.19	95.2	93.5	2.51	0.78	0.78	1.00	0.04	0.10



Stellar Parameters For KIC 012504988

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	6197^{+166}_{-222}	$4.449^{+0.056}_{-0.224}$	$-0.080^{+0.250}_{-0.350}$	$1.035^{+0.349}_{-0.116}$	$1.096^{+0.153}_{-0.137}$	$1.394^{+0.431}_{-0.779}$
	+3%/-4%	+1%/-5%	+312%/-438%	+34%/-11%	+14%/-12%	+31%/-56%
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 012504988-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-25 ± 7	$3.52^{+0.61}_{-0.34}$	1617^{+134}_{-78}	3098^{+155}_{-157}	$3.827^{+1.431}_{-1.372}$
Alt.	-39 ± 8	$3.22^{+0.59}_{-0.30}$	1621^{+126}_{-83}	3412^{+120}_{-129}	$6.969^{+2.112}_{-2.116}$

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 $A_{obs} \gg 1.0$

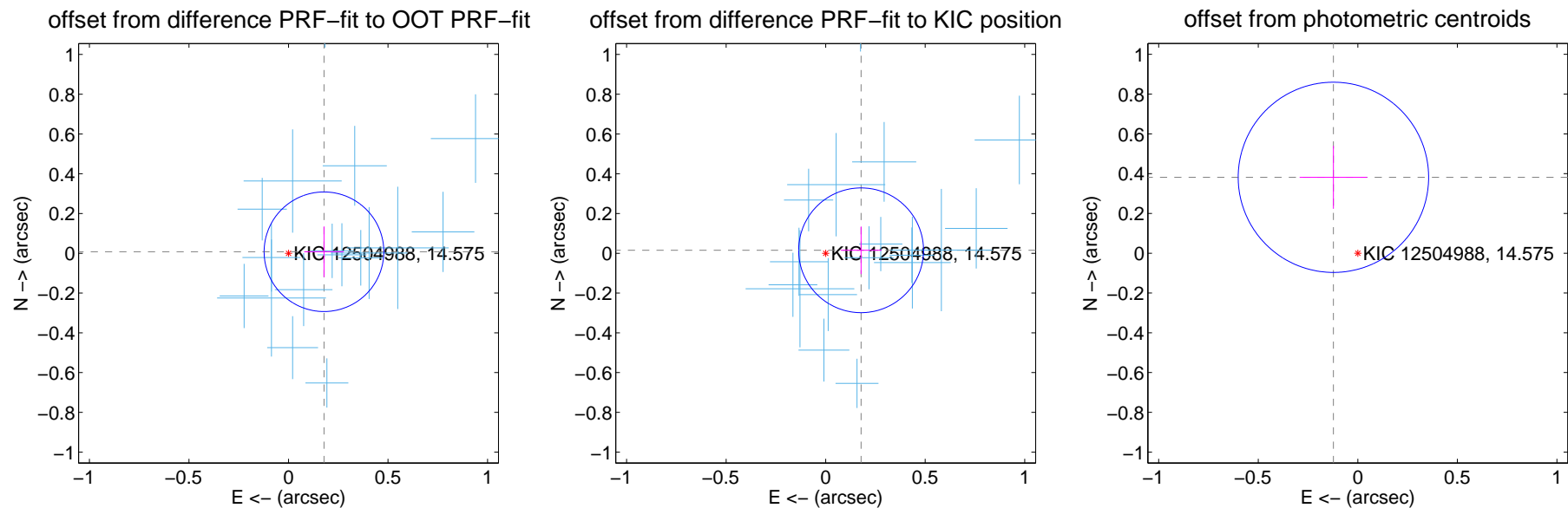
DV Centroid Data

Supplemental centroid analysis for 012504988-02. Kepler magnitude: 14.57. Transit SNR 61.78

There are 17 quarters with good PRF difference image offsets

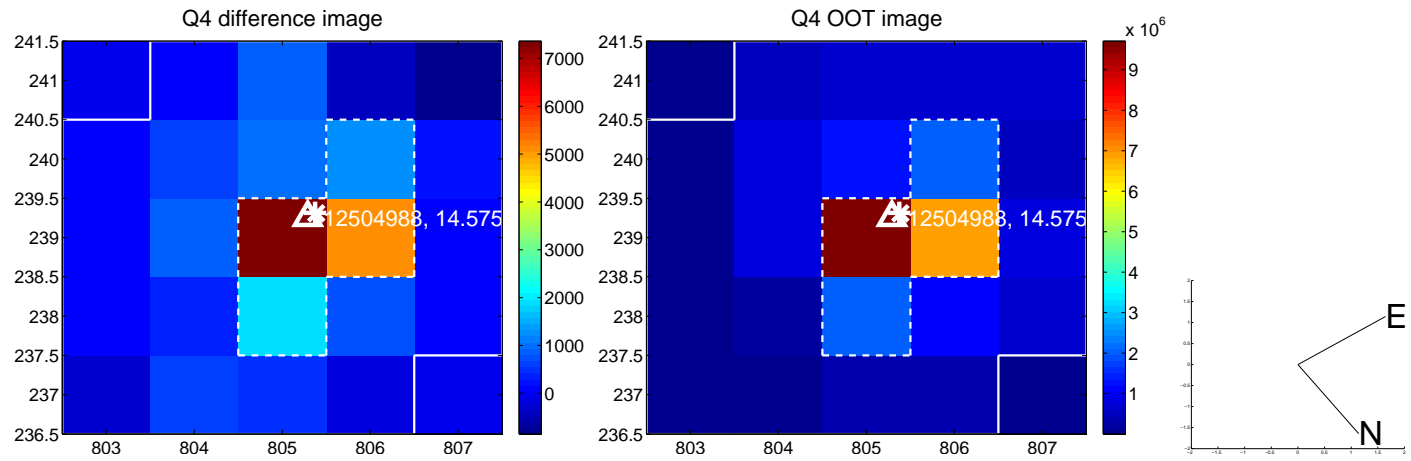
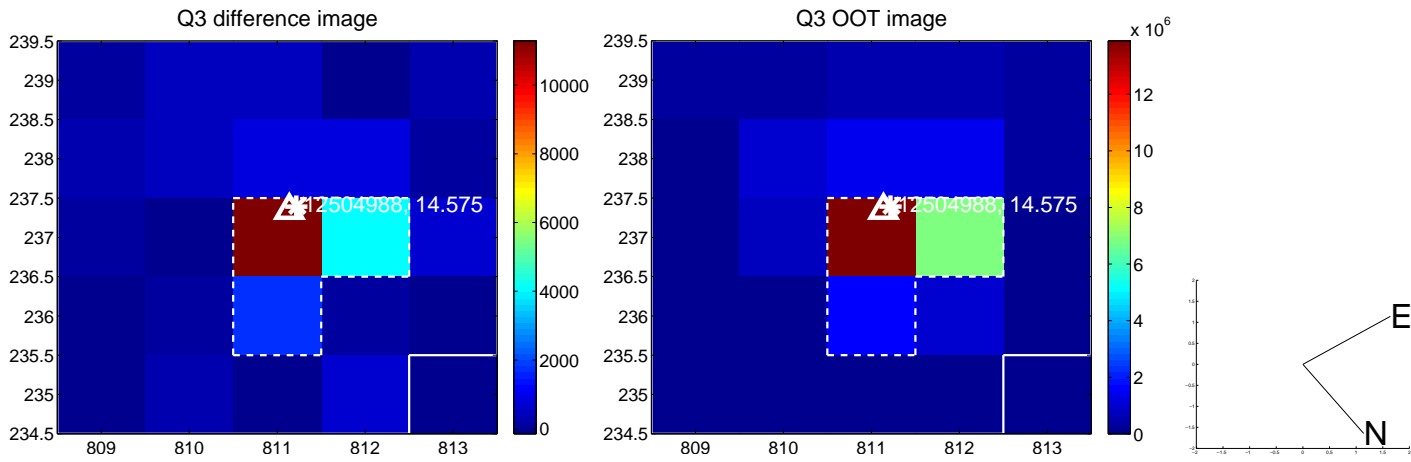
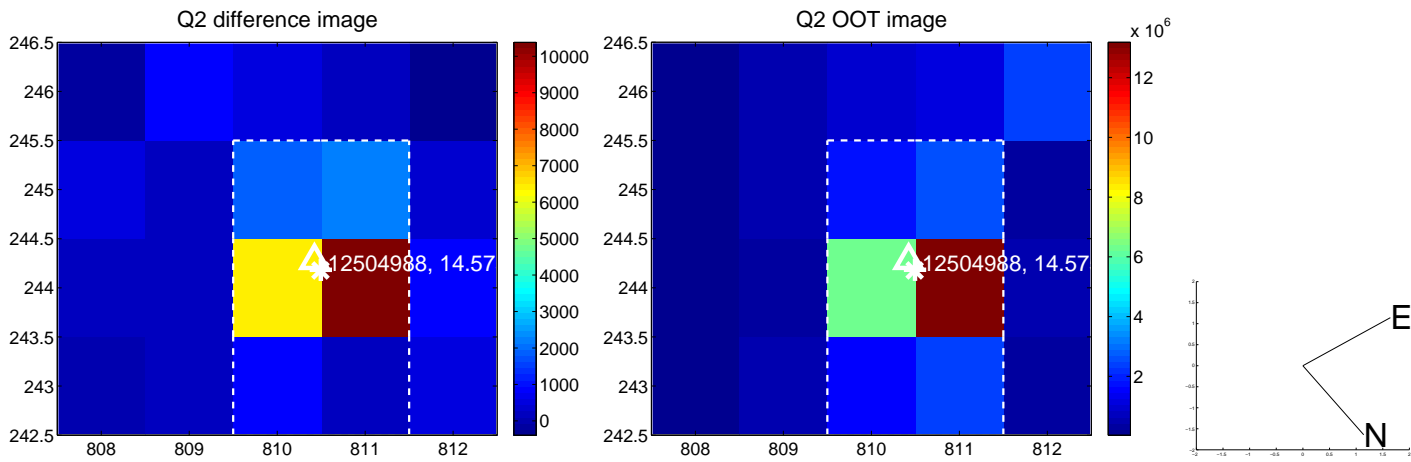
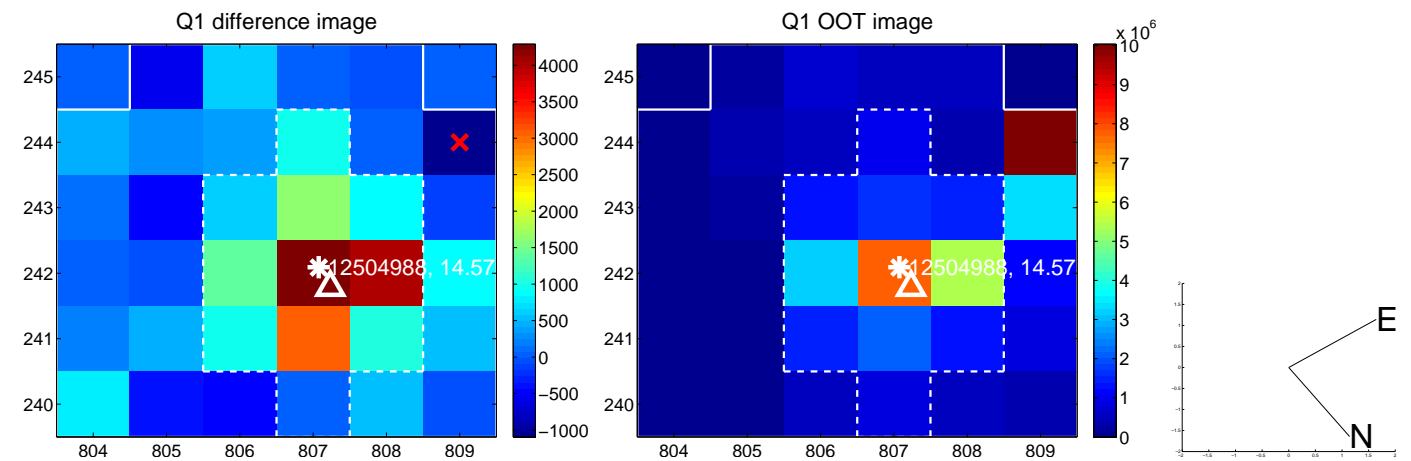
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.178 ± 0.100	1.78	-0.178 ± 0.100	0.008 ± 0.127
PRF-fit source offset from KIC position	0.179 ± 0.105	1.71	-0.178 ± 0.102	0.015 ± 0.119
photometric centroid source offset	0.40 ± 0.16	2.51	0.12 ± 0.17	0.38 ± 0.16

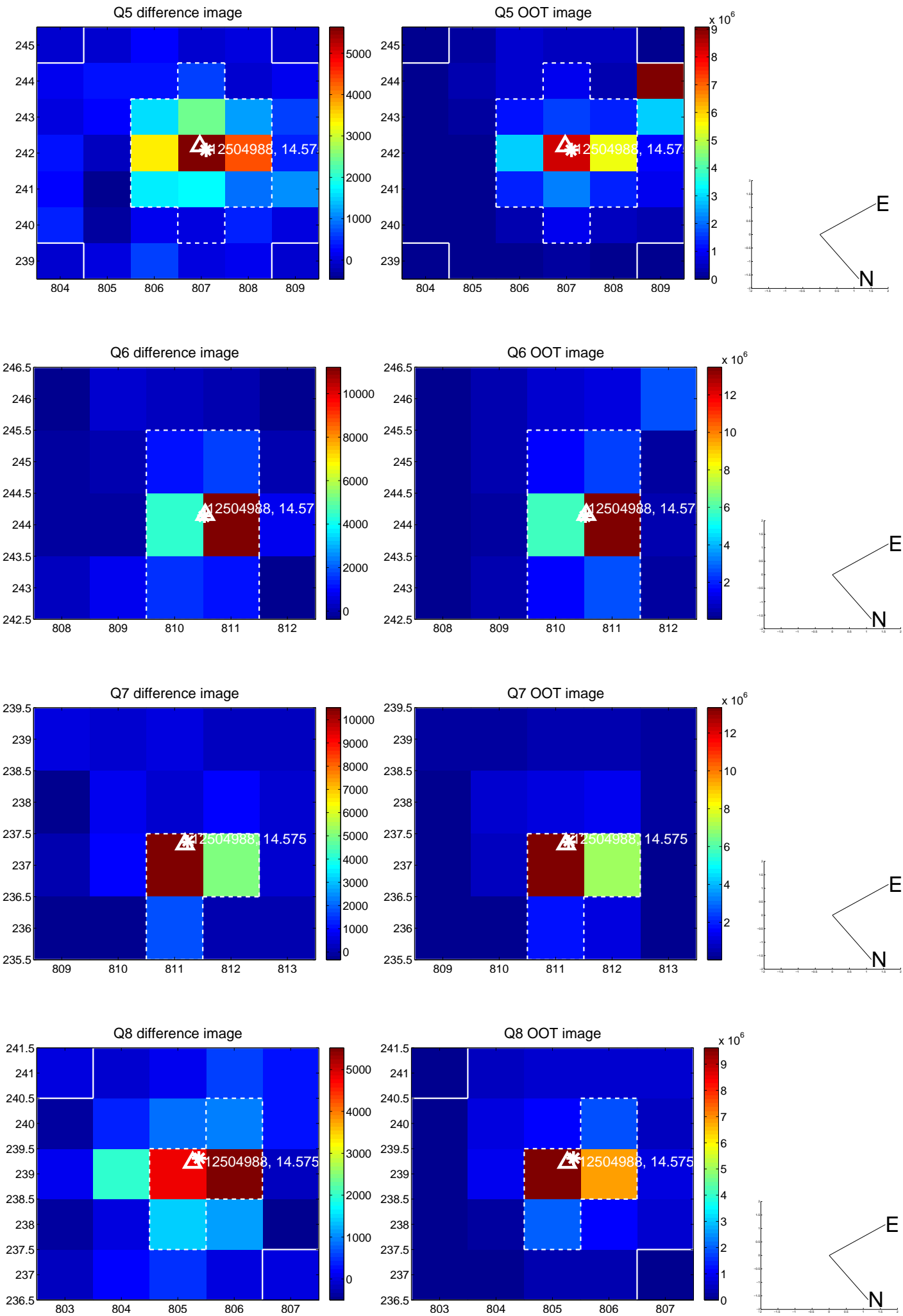


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses:** good quarterly centroid offsets; **Vermillion crosses:** bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

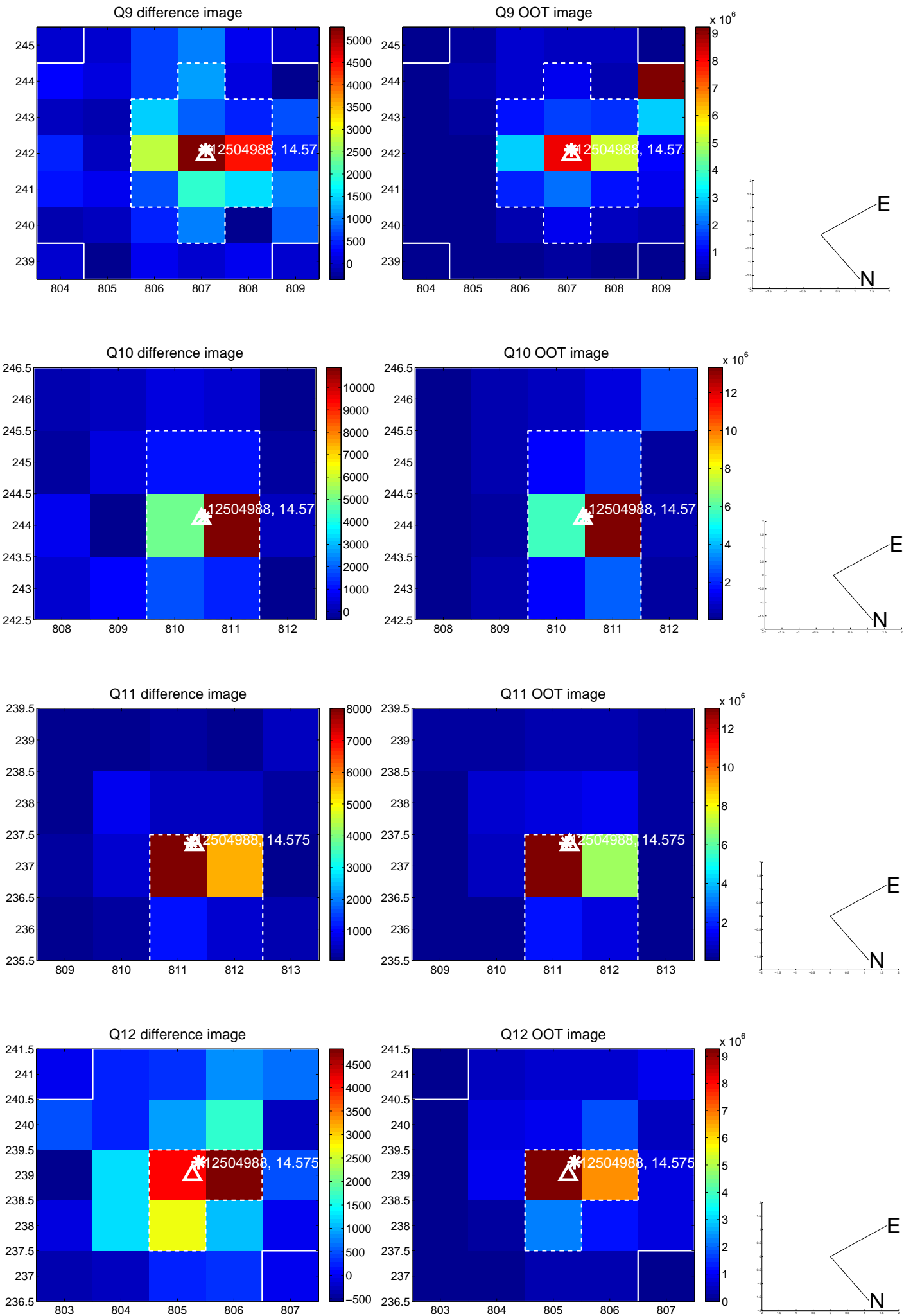
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



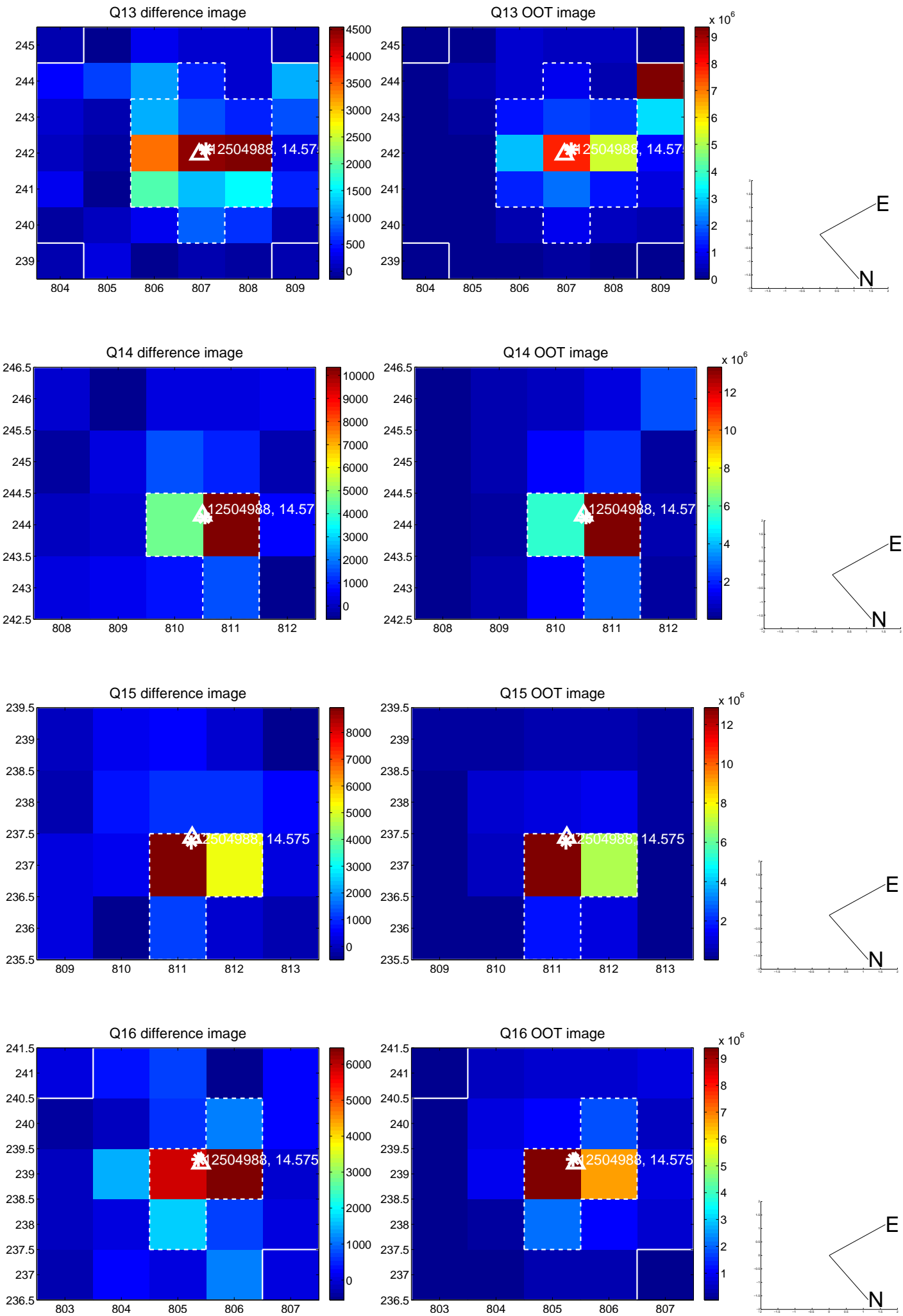
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



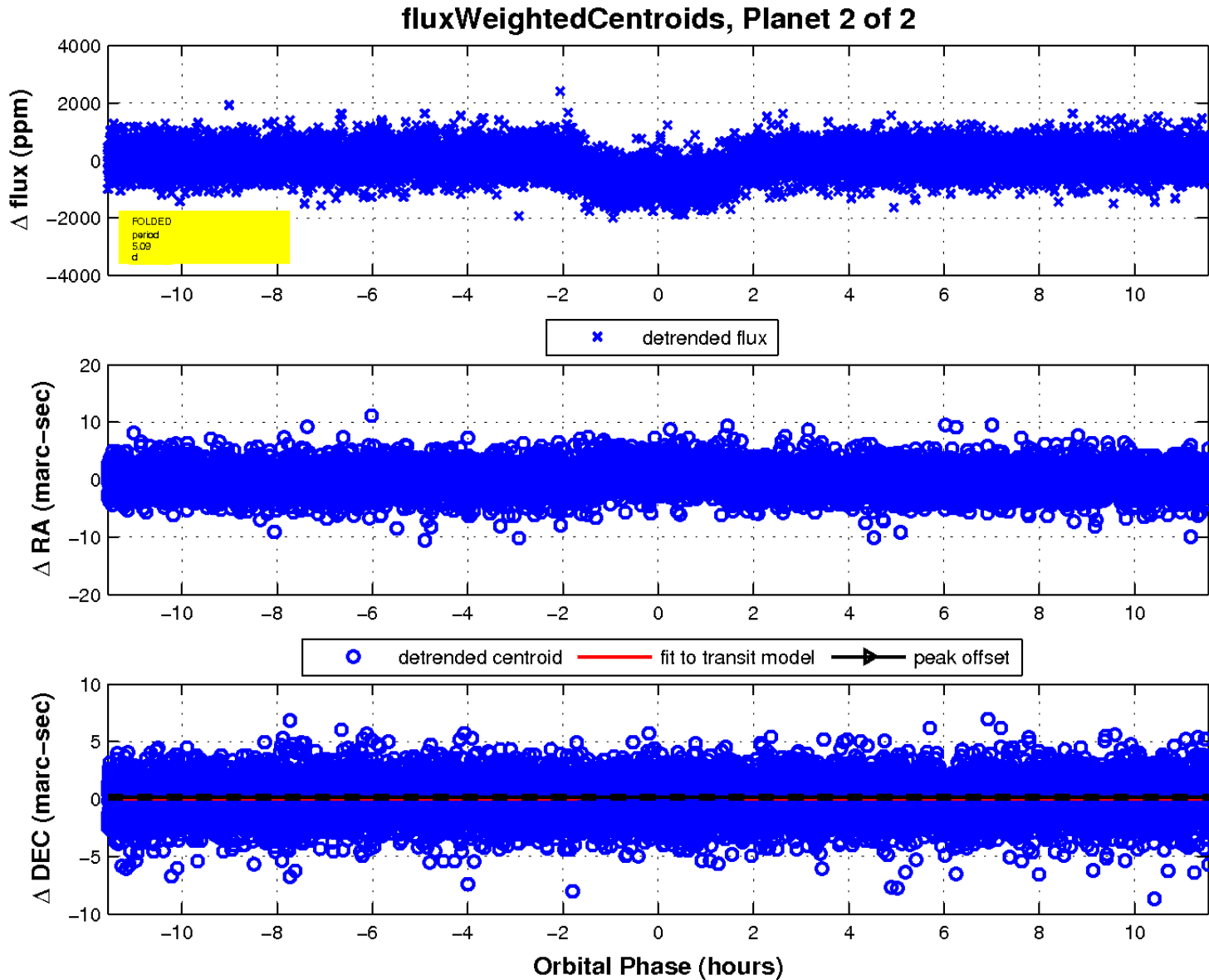
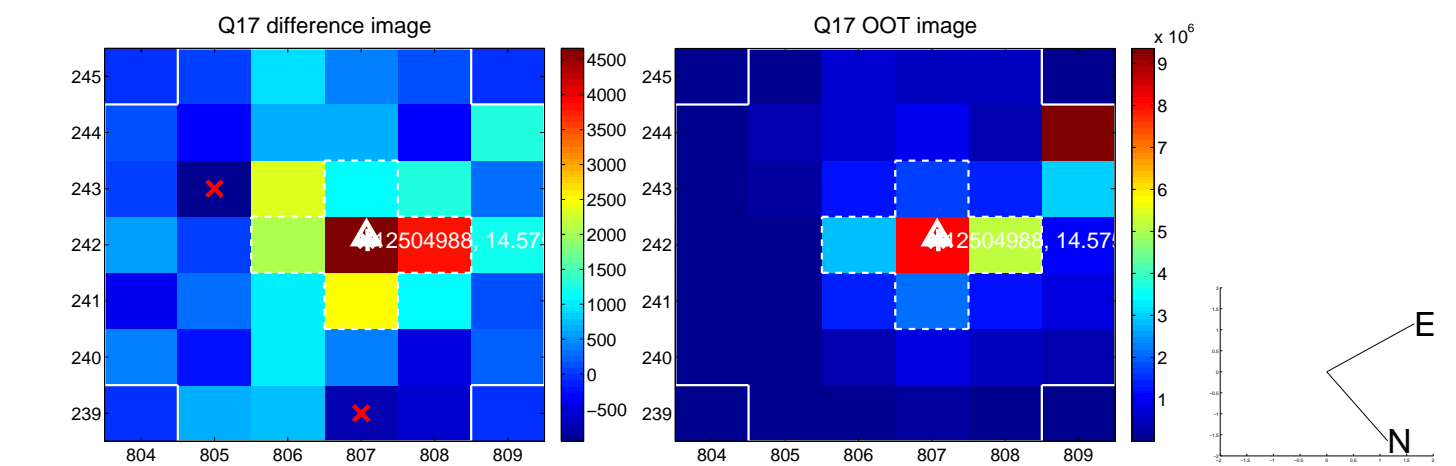
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

