

KIC 008781480

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})
008781480-01	OBS	3929.01	60.530097	159.341461	730.4	3.033	31.9	22.3	60.69	3942	234.59	6154.61
008781480-02	OBS	No	60.530611	161.666748	673.7	8.175	23.3	22.6	60.69	3942	345.90	6154.55

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008781480-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
008781480-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

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.

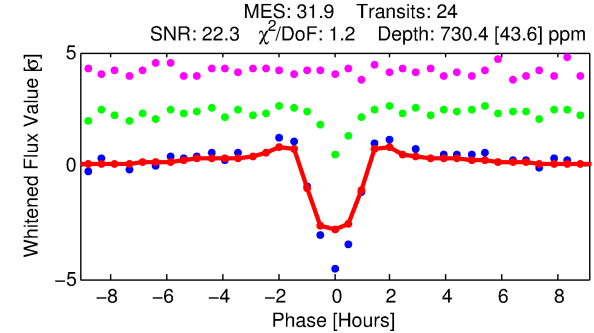
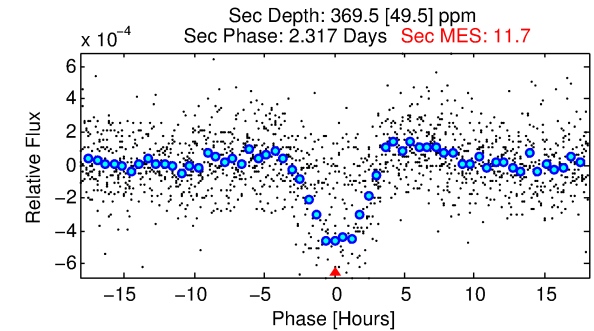
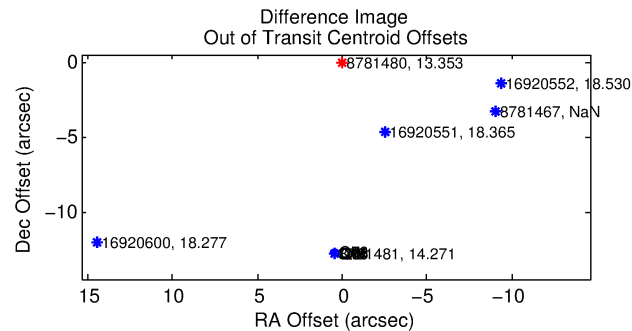
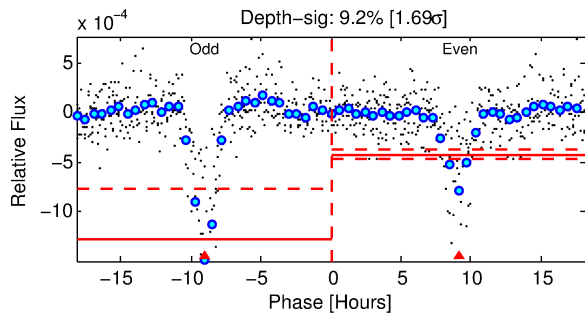
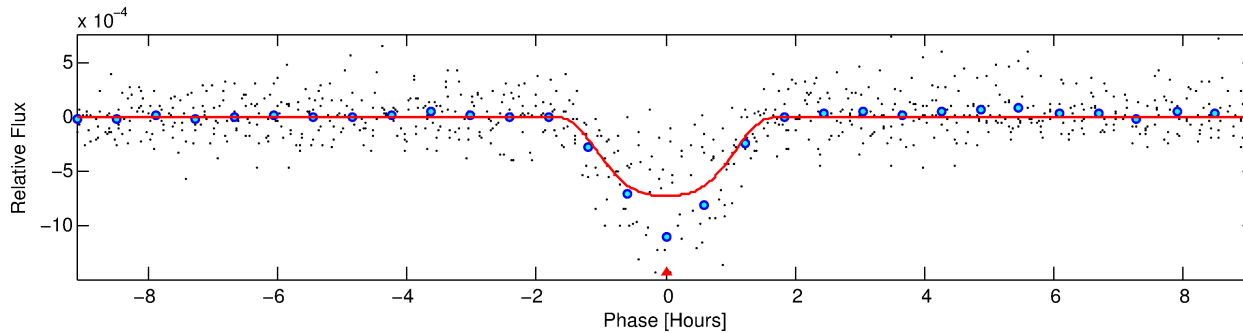
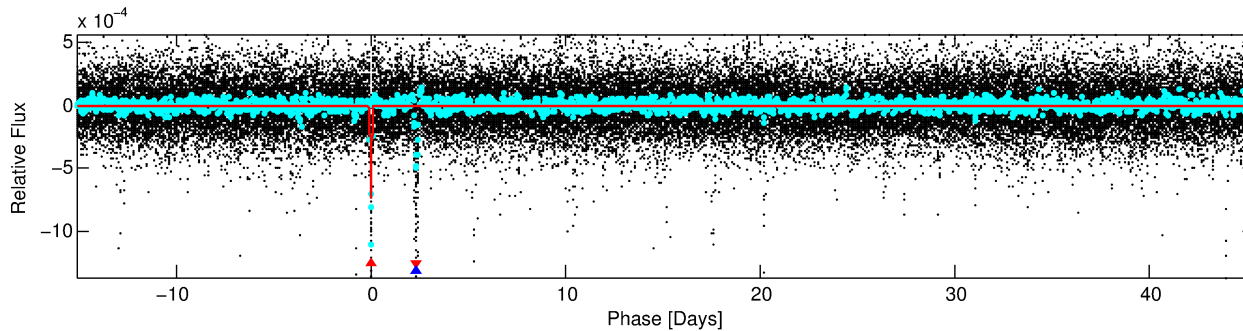
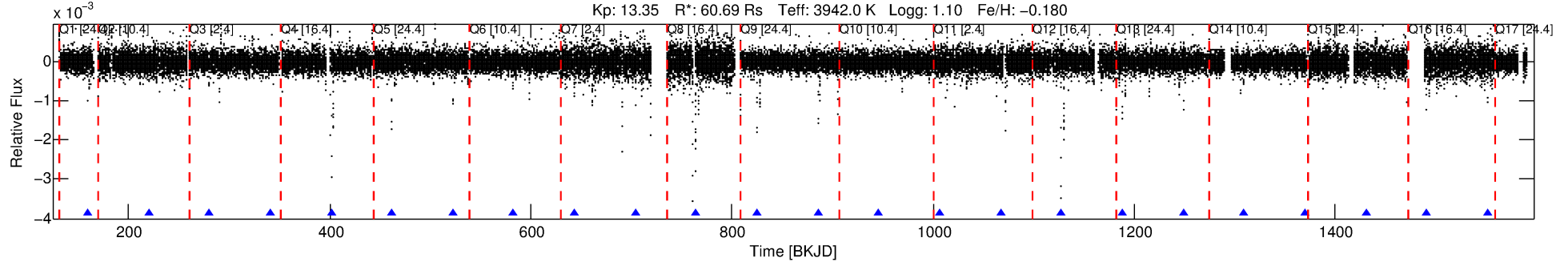
Ephemeris Match Information For 008781480-01

No Significant Match Found

DV One-Page Summary

KIC: 8781480 Candidate: 1 of 2 Period: 60.530 d
KOI: K03929 Corr: No Ephemeris Match

Kp: 13.35 R*: 60.69 Rs Teff: 3942.0 K Logg: 1.10 Fe/H: -0.180



DV Fit Results:

Period = 60.53010 [0.00020] d
Epoch = 159.3415 [0.0024] BKJD
Rp/R* = 0.0354 [0.0018]
a/R* = 59.57 [5.14]
b = 0.96 [0.01]
Seff = 6154.61 [1096.19]
Teq = 2259 [101] K
Rp = 234.59 [48.18] Re
a = 0.3598 [0.0484] AU
Ag = 0.48 [0.10] [-4.98σ]
Teff = 2904 [146] K [3.64σ]

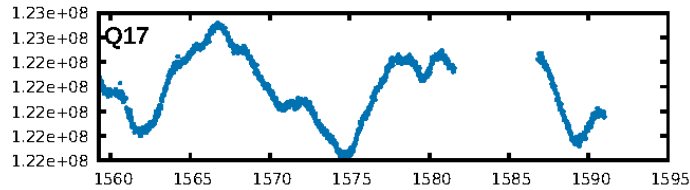
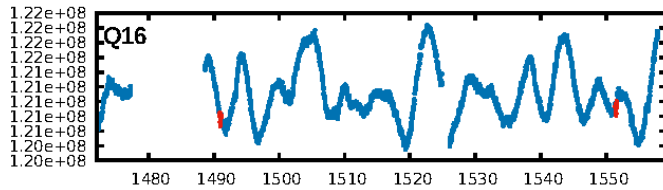
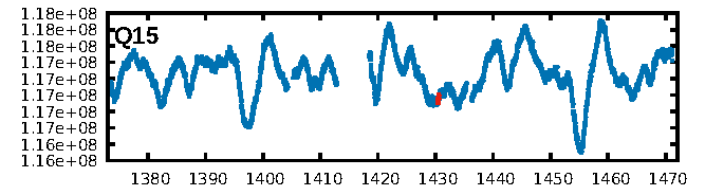
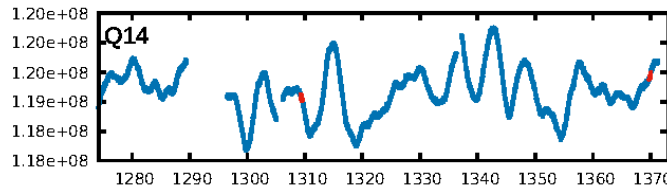
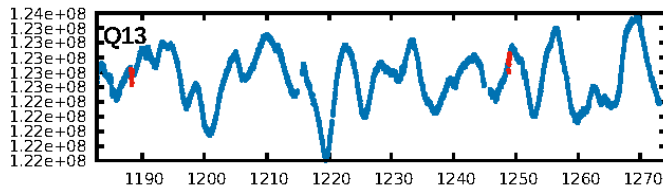
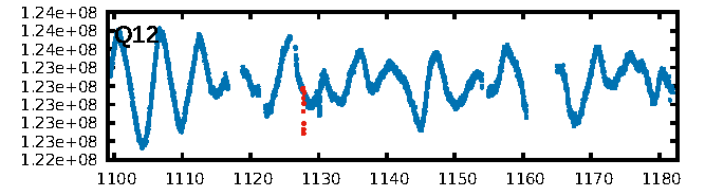
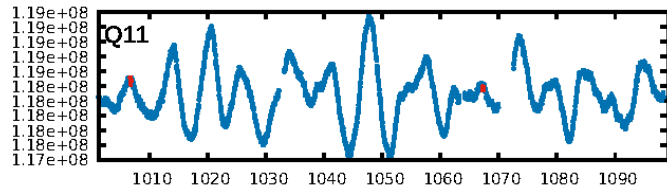
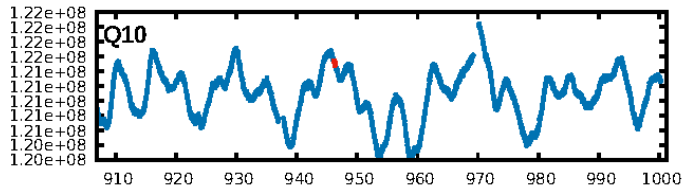
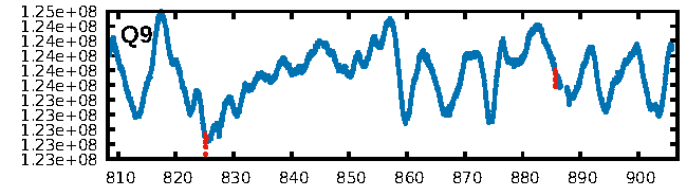
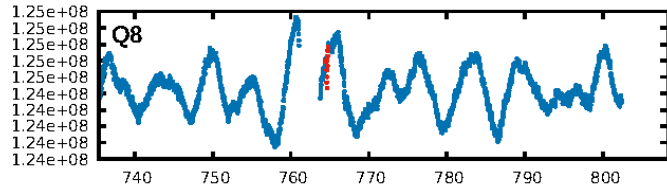
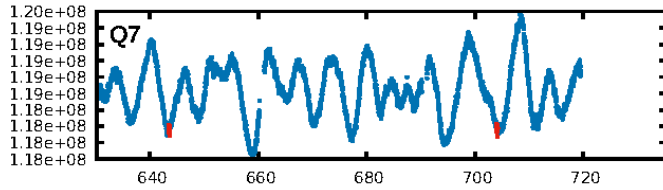
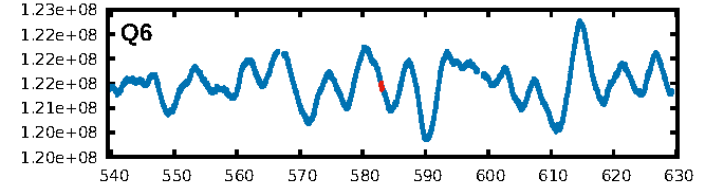
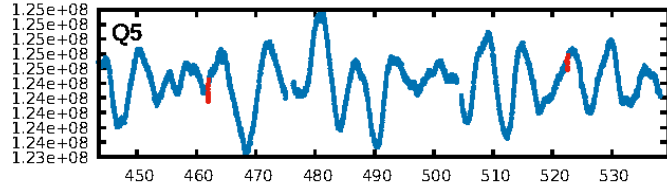
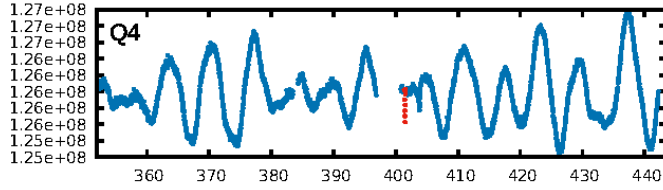
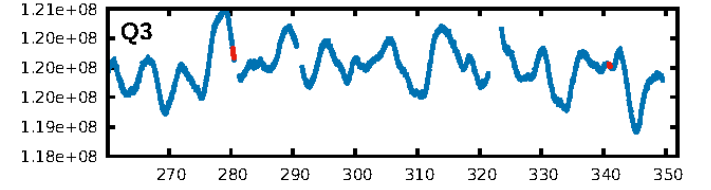
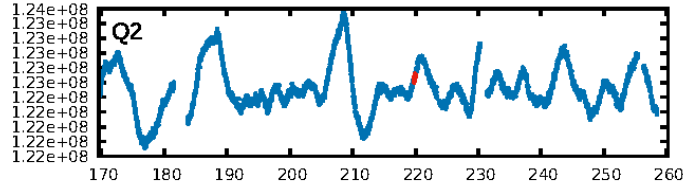
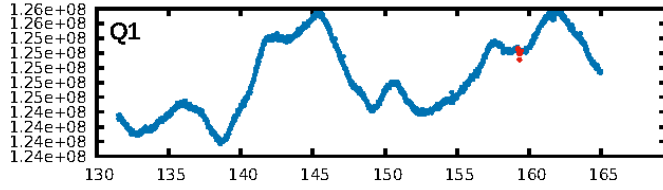
DV Diagnostic Results:

ShortPeriod-sig: N/A
LongPeriod-sig: 0.1% [0.00σ]
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 57.5%
Bootstrap-pfa: 3.36e-158
RollingBand-fgt: 1.00 [23/23]
GhostDiagnostic-chr: -0.4463
Centroid-sig: N/A
Centroid-so: 71.487 arcsec [174.10σ]
OotOffset-rm: 12.759 arcsec [186.80σ]
KicOffset-rm: 12.858 arcsec [188.97σ]
OotOffset-st: 3/4/1/4 [12]
KicOffset-st: 3/4/1/4 [12]
DiffImageQuality-fgm: 1.00 [12/12]
DiffImageOverlap-fno: 1.00 [13/13]

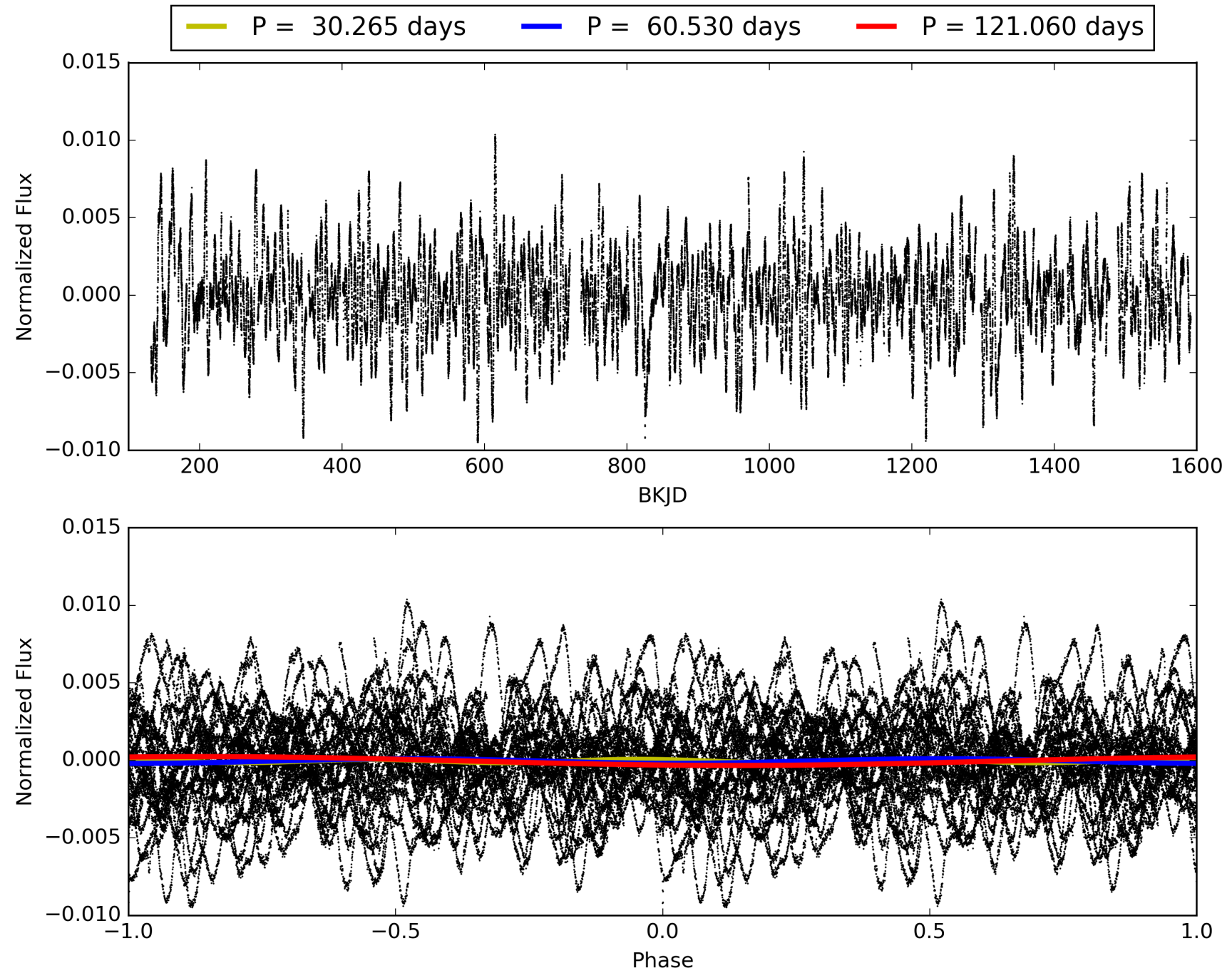
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This Data Validation Report Summary was produced in the Kepler Science Operations Center Pipeline at NASA Ames Research Center

TCE 008781480-01, PDC Light Curves

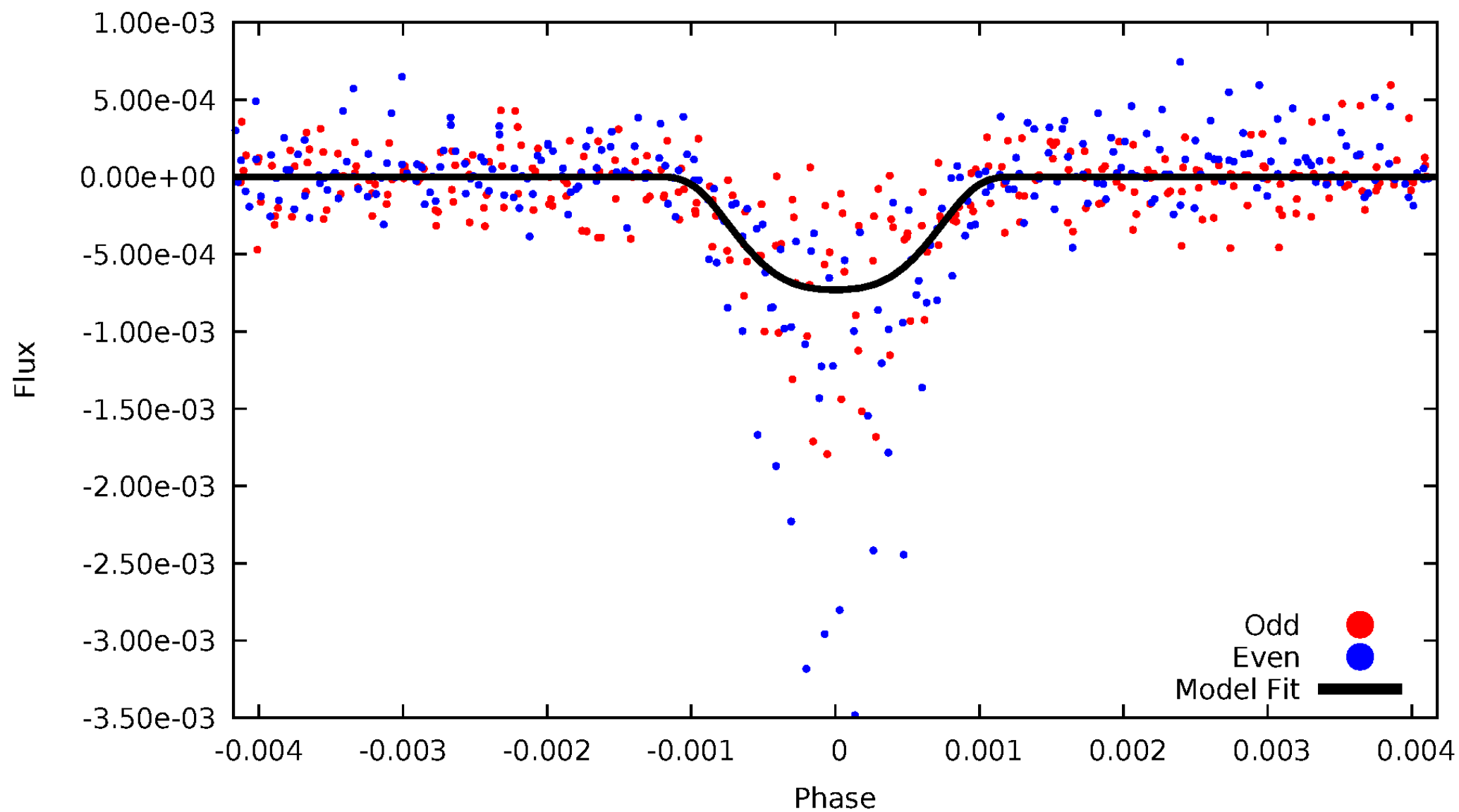


TCE 008781480-01



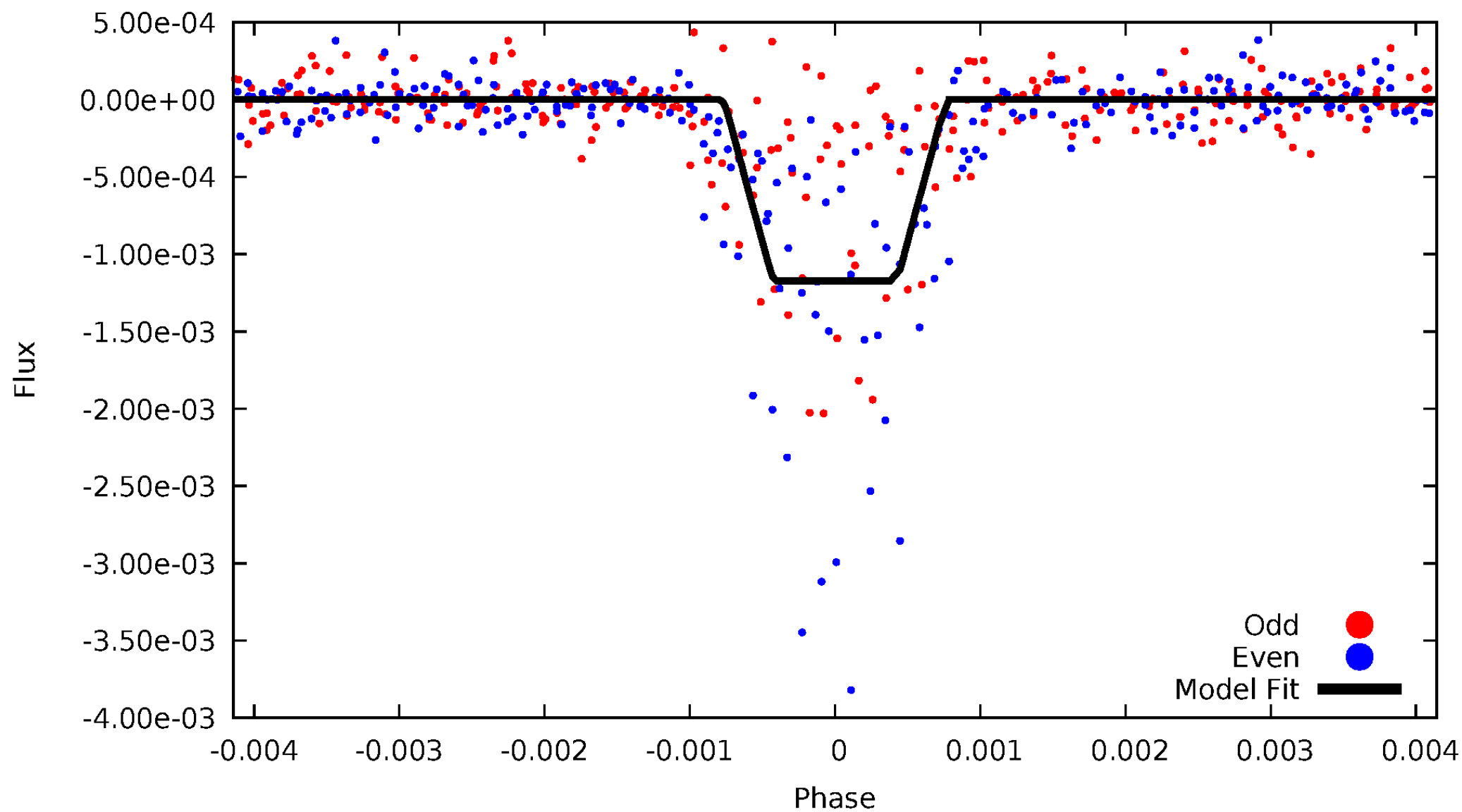
DV Odd/Even

TCE 008781480-01



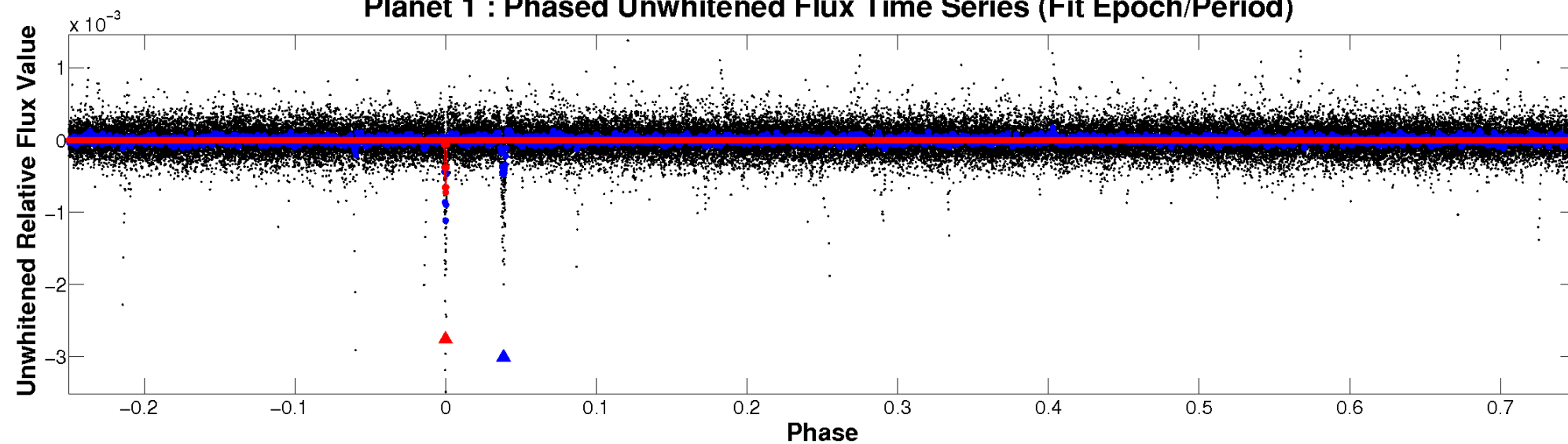
ALT Odd/Even

TCE 008781480-01

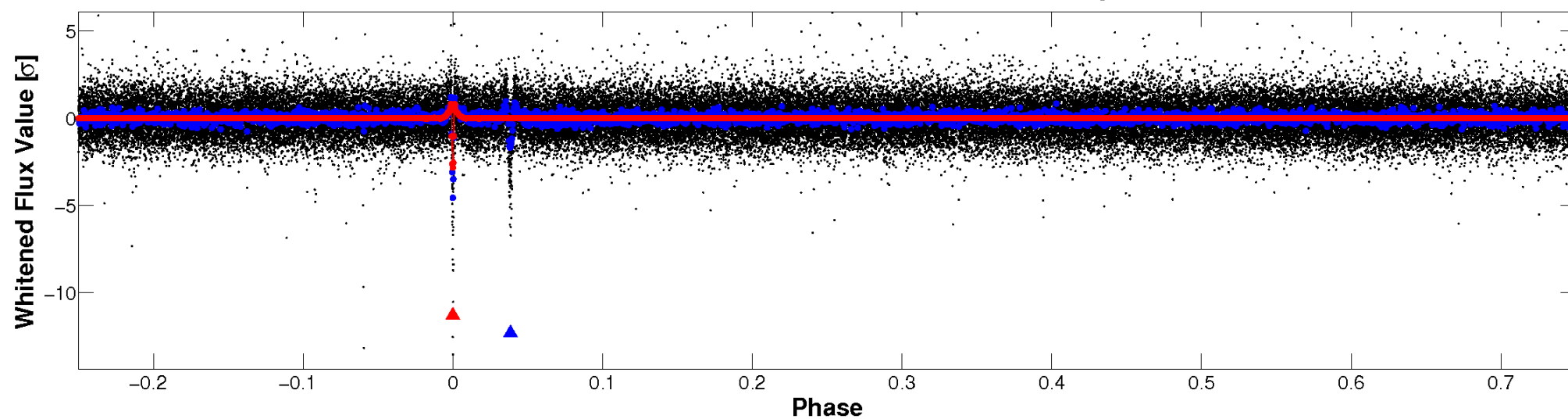


Non-Whitened Vs. Whitened Light Curve

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

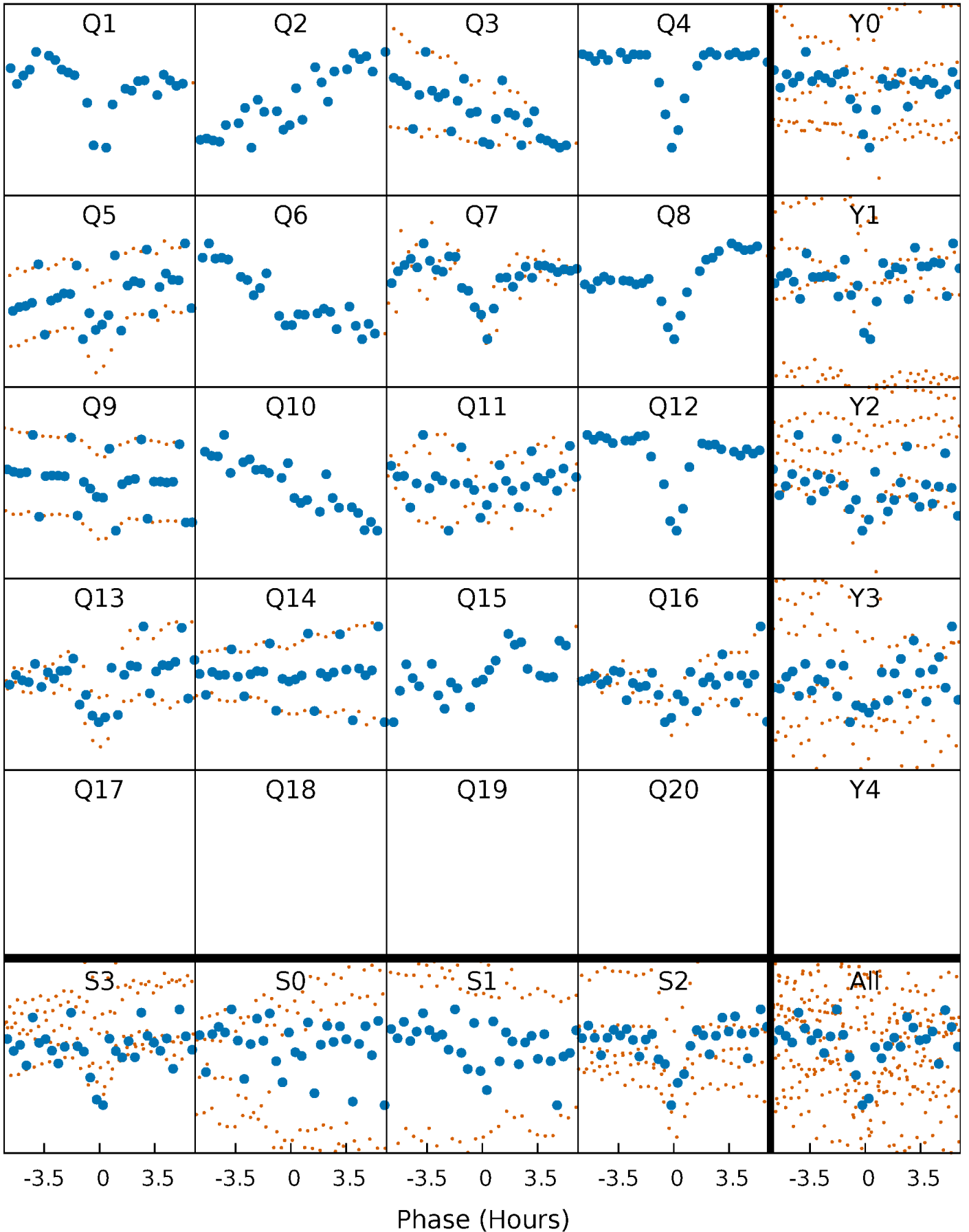


Planet 1 : Phased Whitened Flux Time Series (Fit Epoch/Period)



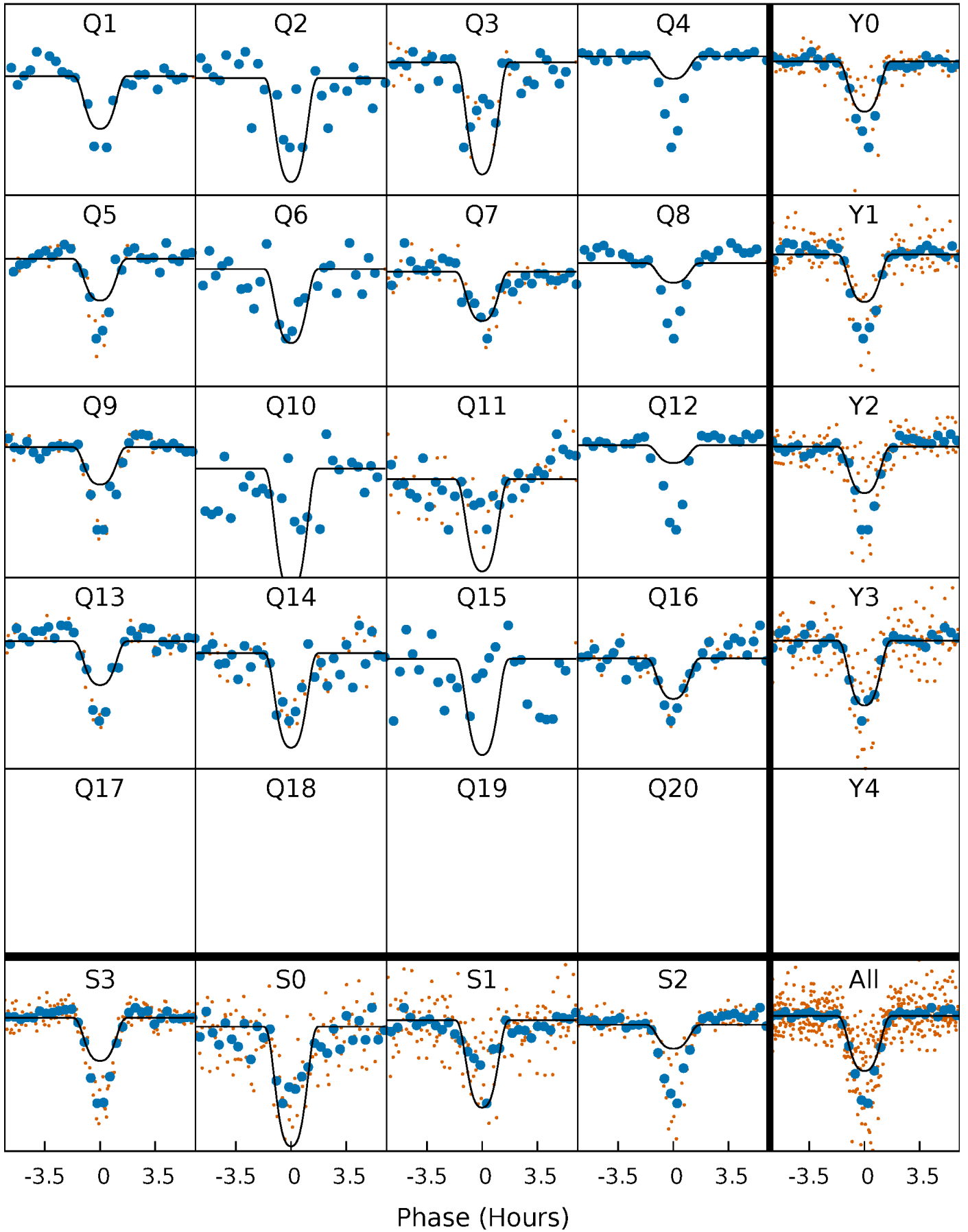
PDC Quarter-Phased Transit Curves

TCE 008781480-01 P= 60.530097 Days $T_0=159.341461$ (BKJD)



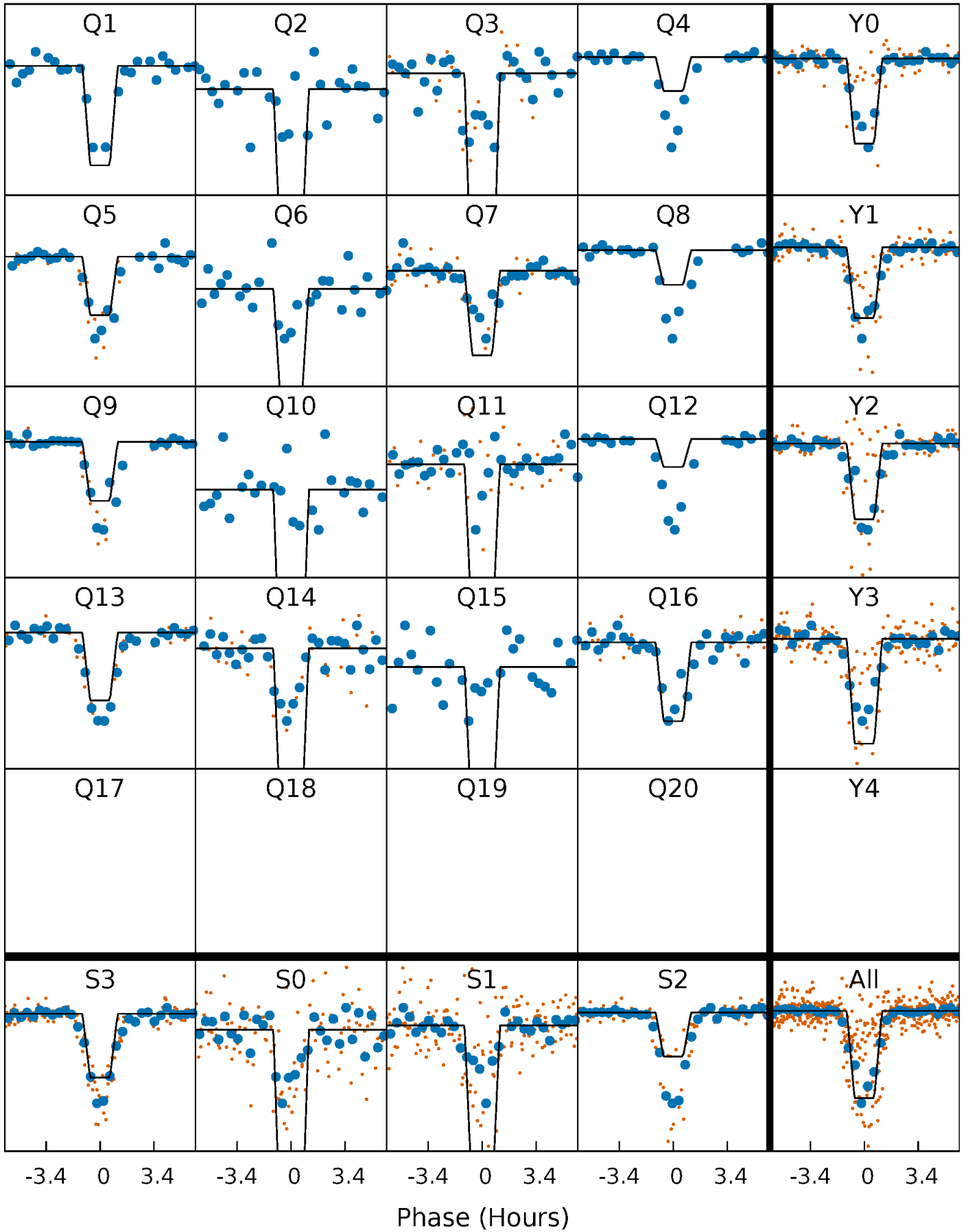
DV Quarter-Phased Transit Curves

TCE 008781480-01 P= 60.530097 Days $T_0=159.341461$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

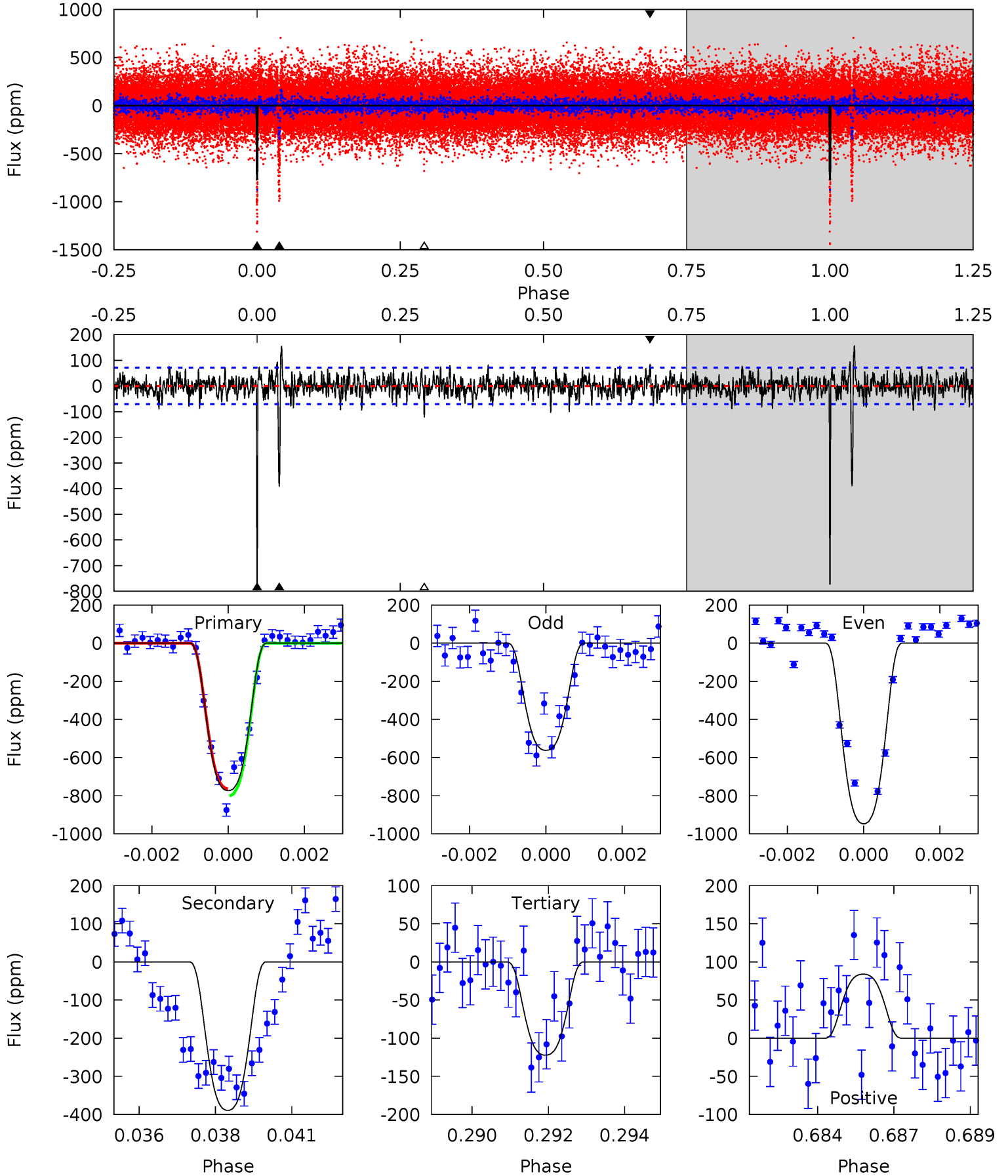
TCE 008781480-01 P= 60.530130 Days $T_0=159.342482$ (BKJD)



DV Model-Shift Uniqueness Test

008781480-01, P = 60.530097 Days, E = 98.811364 Days

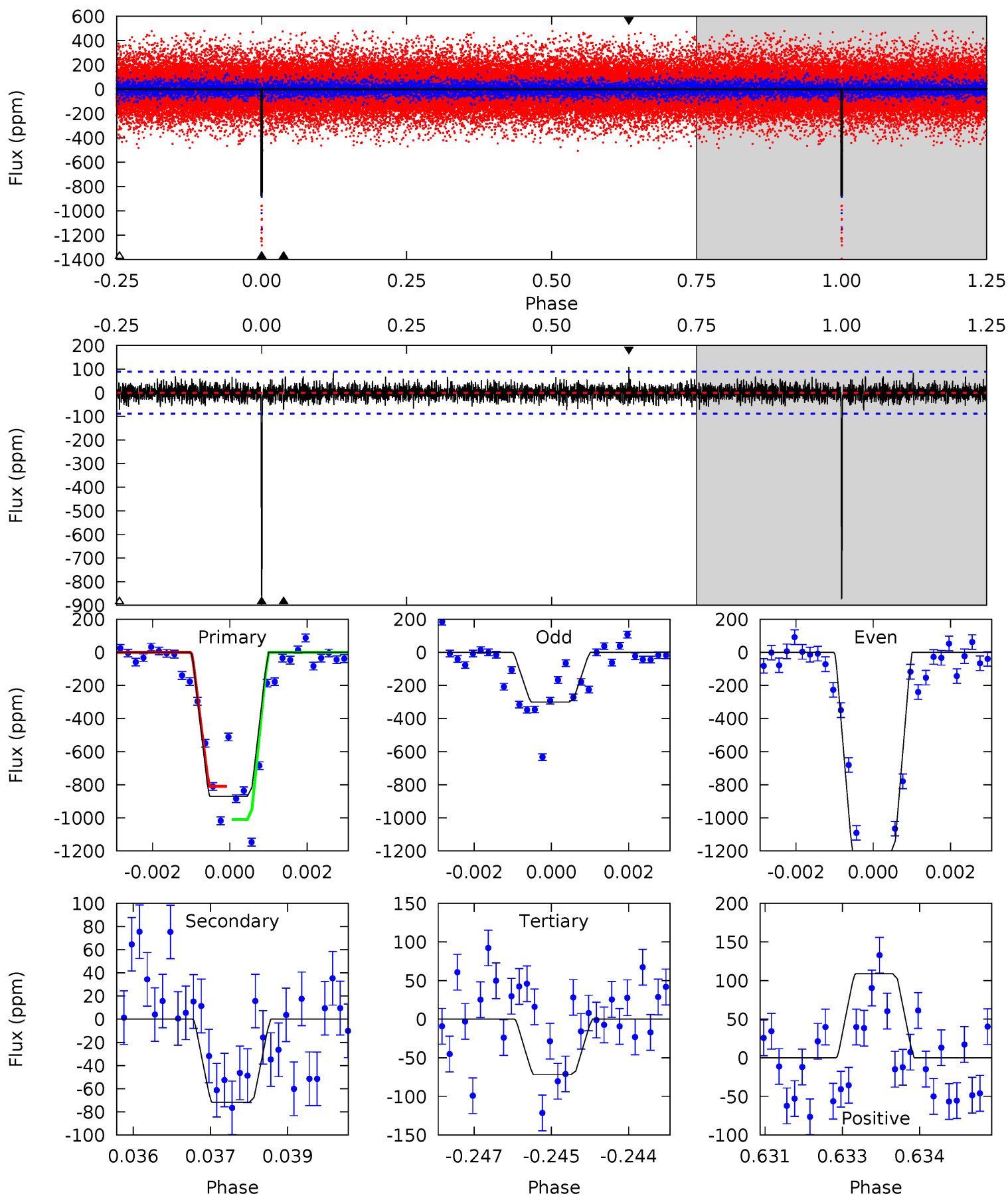
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
57.6	29.0	9.09	6.25	5.29	3.04	2.19	48.5	51.3	19.9	22.7	14.3	1.21	0.17	1.38



Alt Model-Shift Uniqueness Test

008781480-01, P = 60.530130 Days, E = 98.812352 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
52.5	4.33	4.32	6.56	5.37	3.16	1.22	48.2	45.9	0.01	-2.23	28.5	1.23	0.11	0



Stellar Parameters For KIC 008781480

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3942^{+88}_{-108}	$1.101^{+0.030}_{-0.030}$	$-0.180^{+0.200}_{-0.250}$	$60.688^{+3.019}_{-12.074}$	$1.696^{+0.108}_{-0.613}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+3%/-3%	+111%/-139%	+5%/-20%	+6%/-36%	+27%/-9%
Source	PHO54	AST54	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 008781480-01 / KOI 3929.01

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-389 ± 13	$237.65^{+14.89}_{-17.42}$	3161^{+84}_{-103}	2857^{+110}_{-129}	$0.499^{+0.071}_{-0.054}$
Alt.	-72 ± 17	$228.90^{+15.31}_{-18.41}$	3152^{+87}_{-101}	-2853^{+91}_{-82}	$0.099^{+0.029}_{-0.024}$

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 $A_{obs} \gg 1.0$

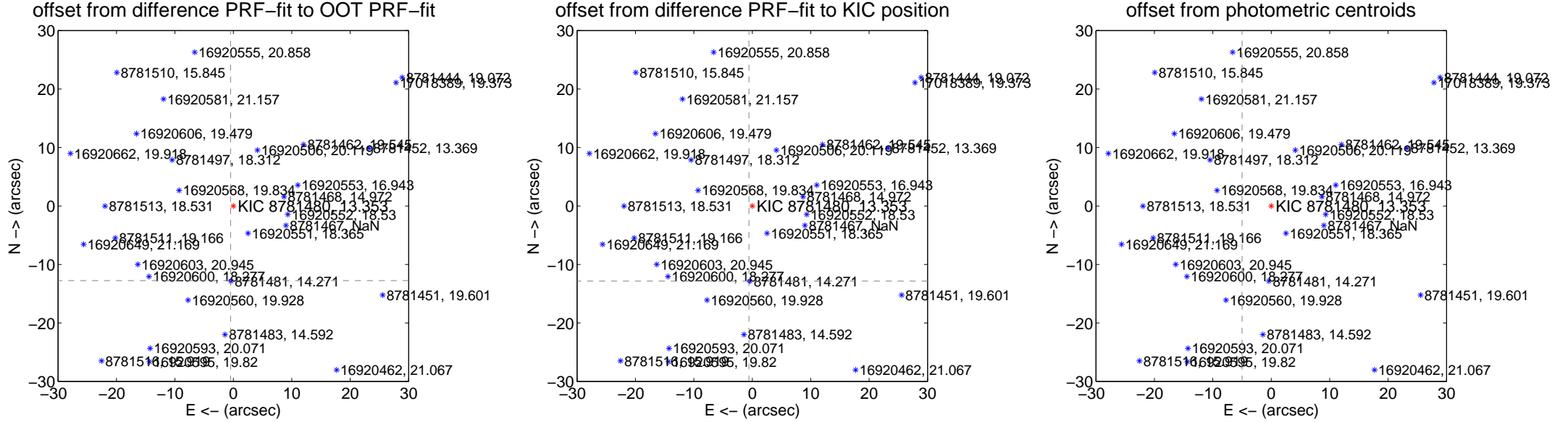
DV Centroid Data

Supplemental centroid analysis for 008781480-01. Kepler magnitude: 13.35. Transit SNR 22.32

There are 12 quarters with good PRF difference image offsets

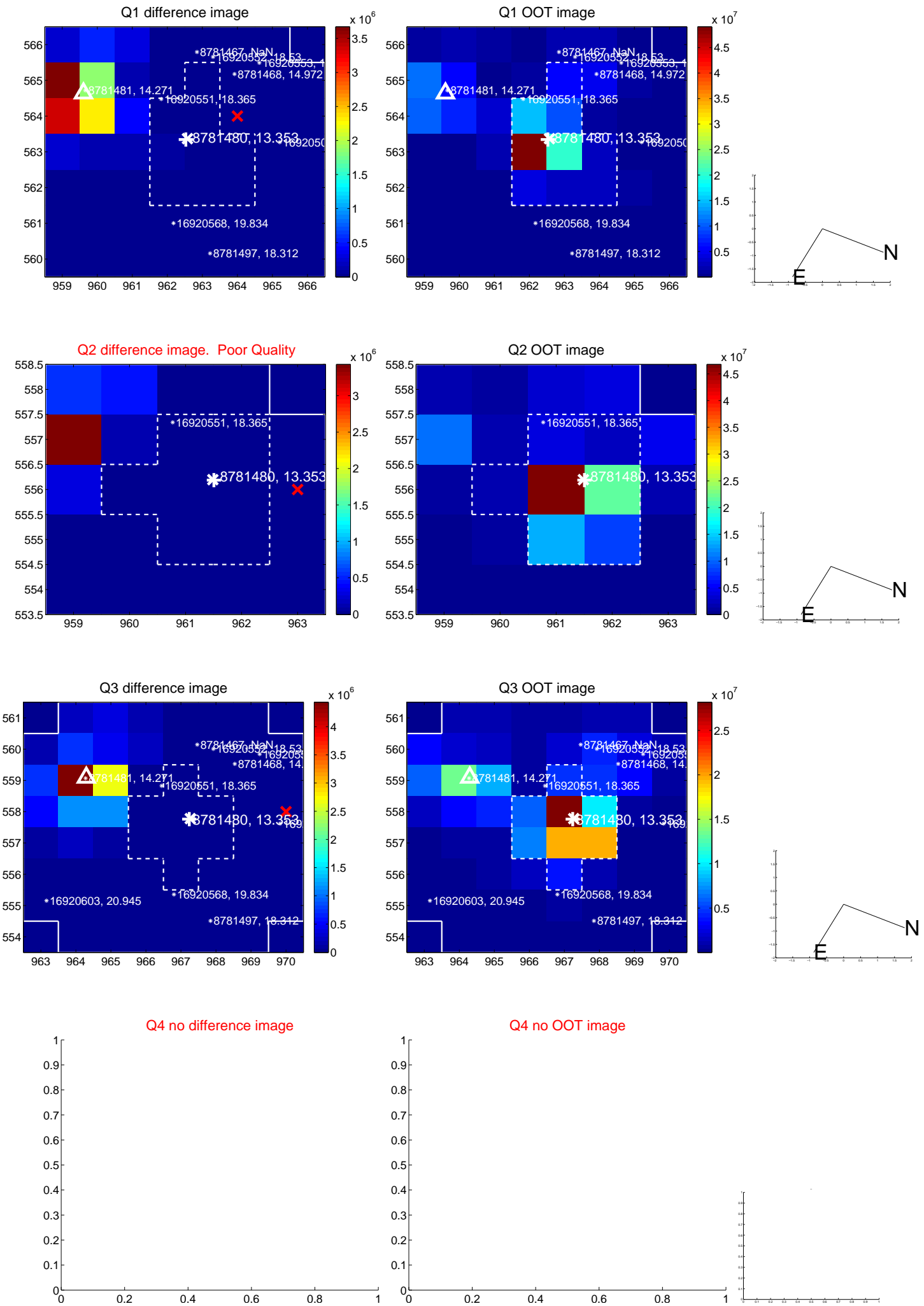
The direct PRF centroid is offset from the target star catalog position by about 0.11 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	12.759 \pm 0.068	186.80	0.477 \pm 0.067	-12.750 \pm 0.068
PRF-fit source offset from KIC position	12.858 \pm 0.068	188.97	0.580 \pm 0.068	-12.845 \pm 0.068
photometric centroid source offset	71.49 \pm 0.41	174.10	4.99 \pm 0.35	-71.31 \pm 0.41

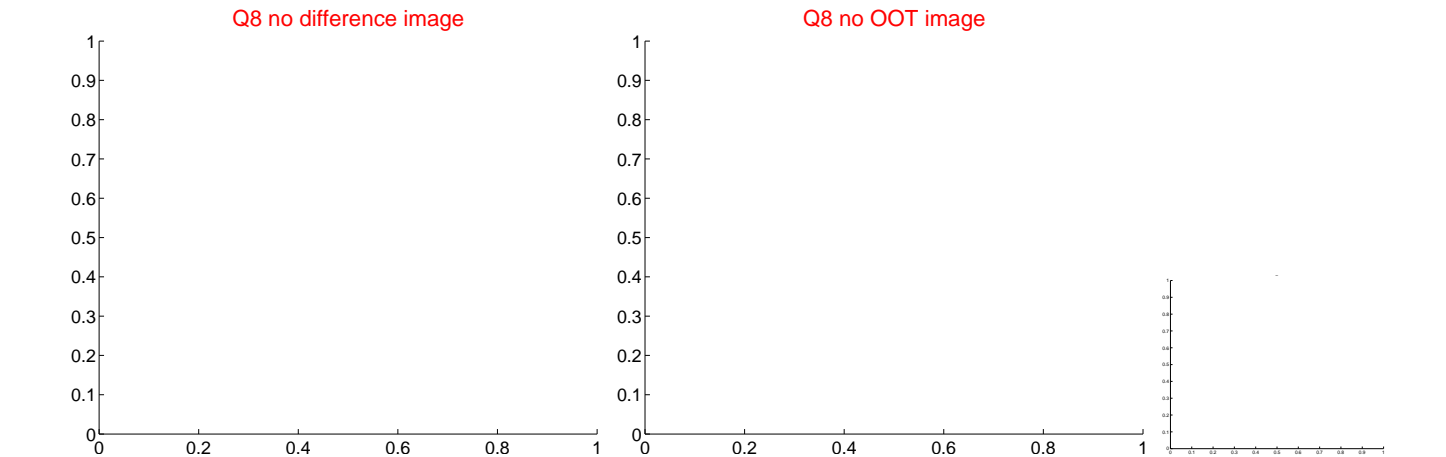
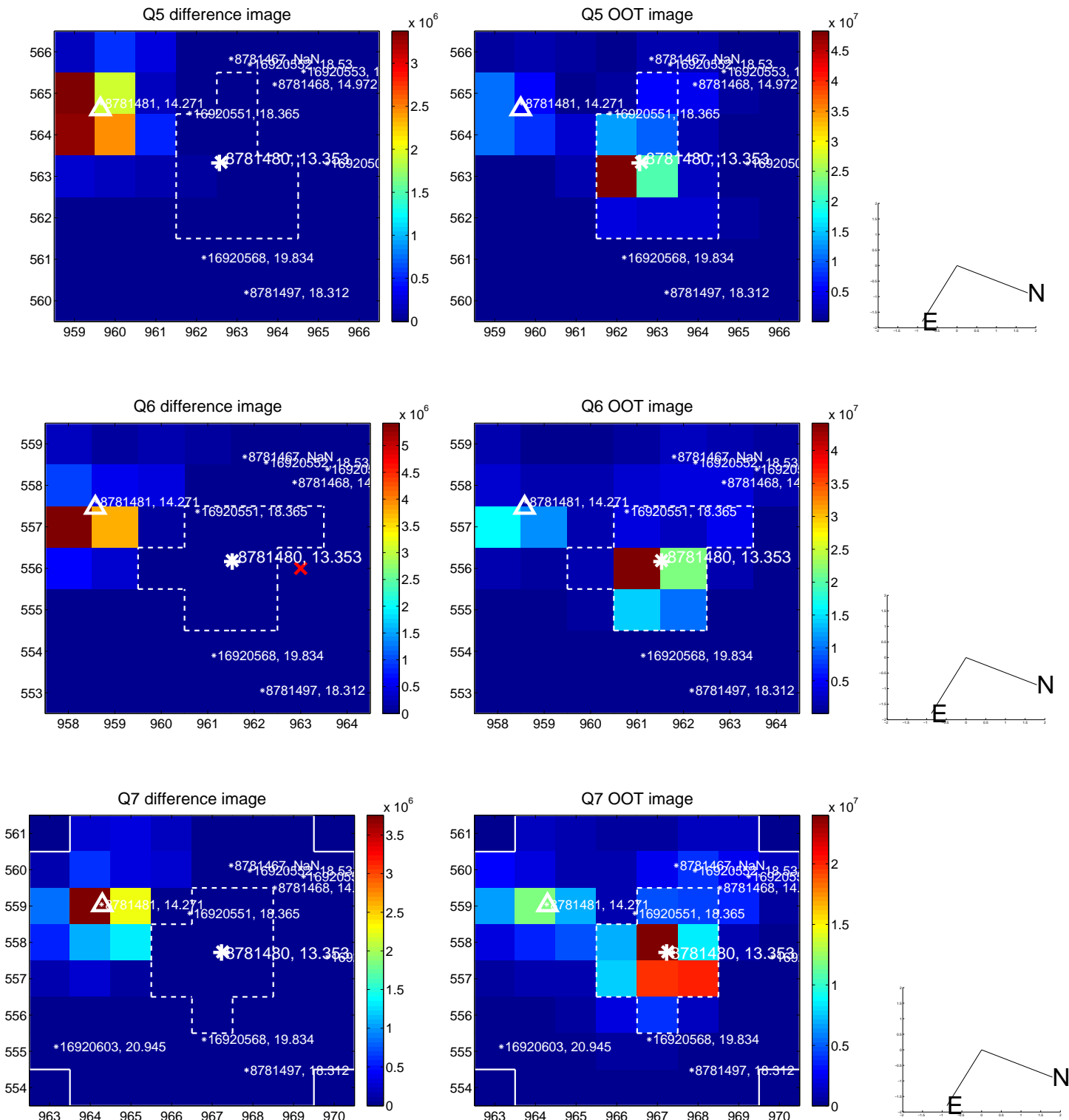


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

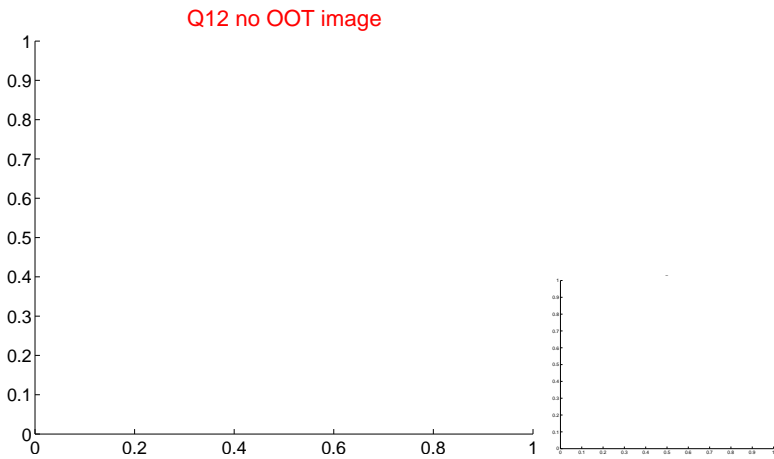
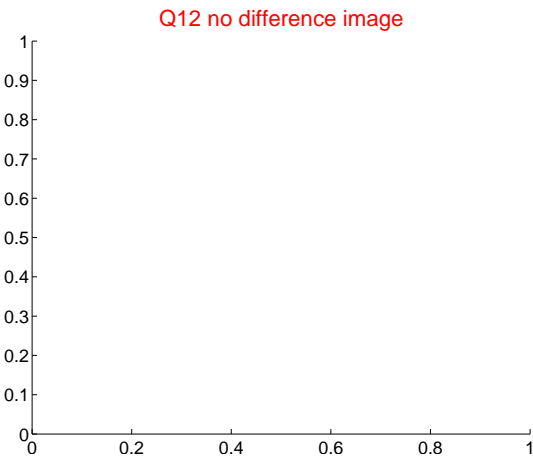
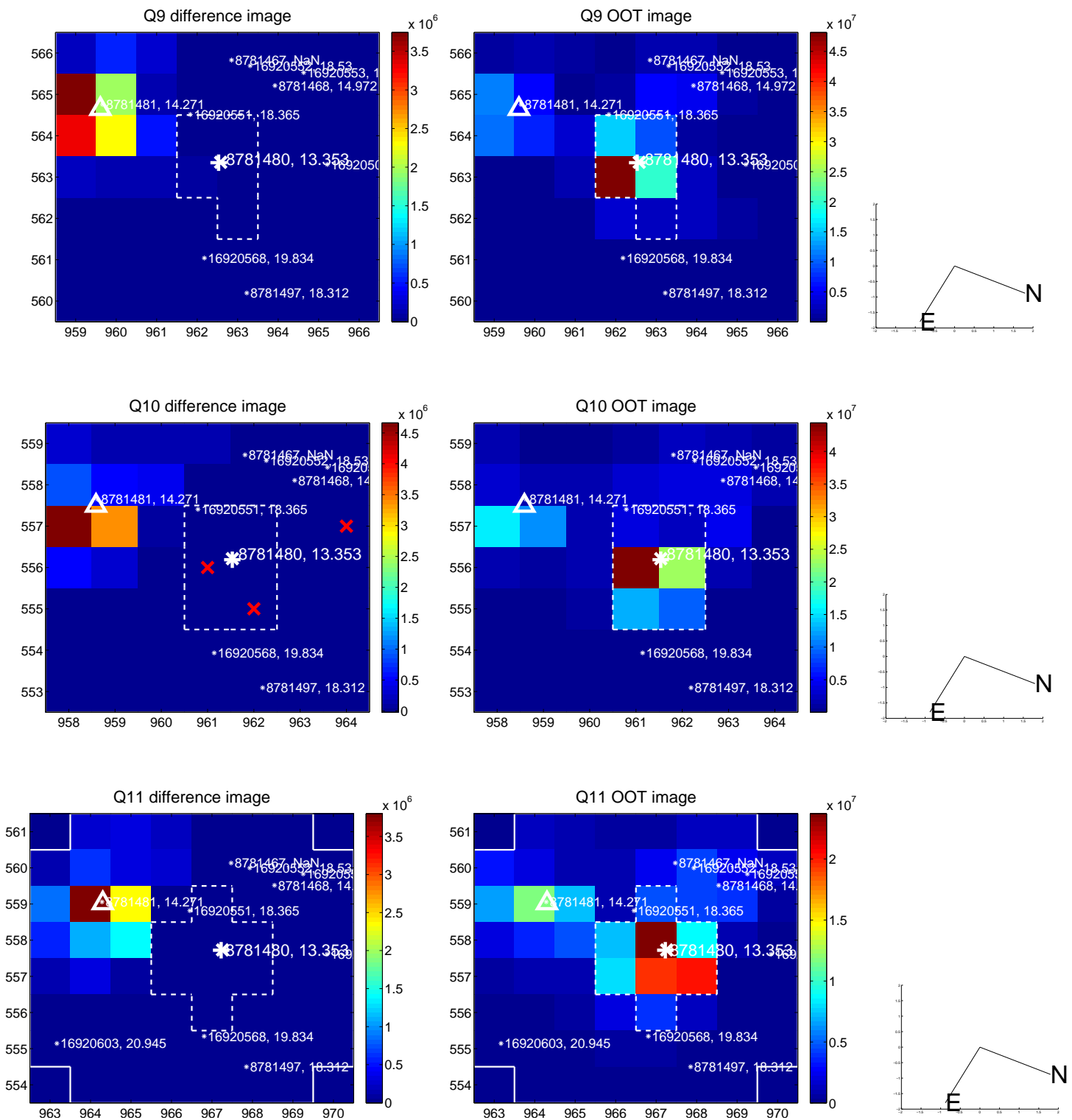
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



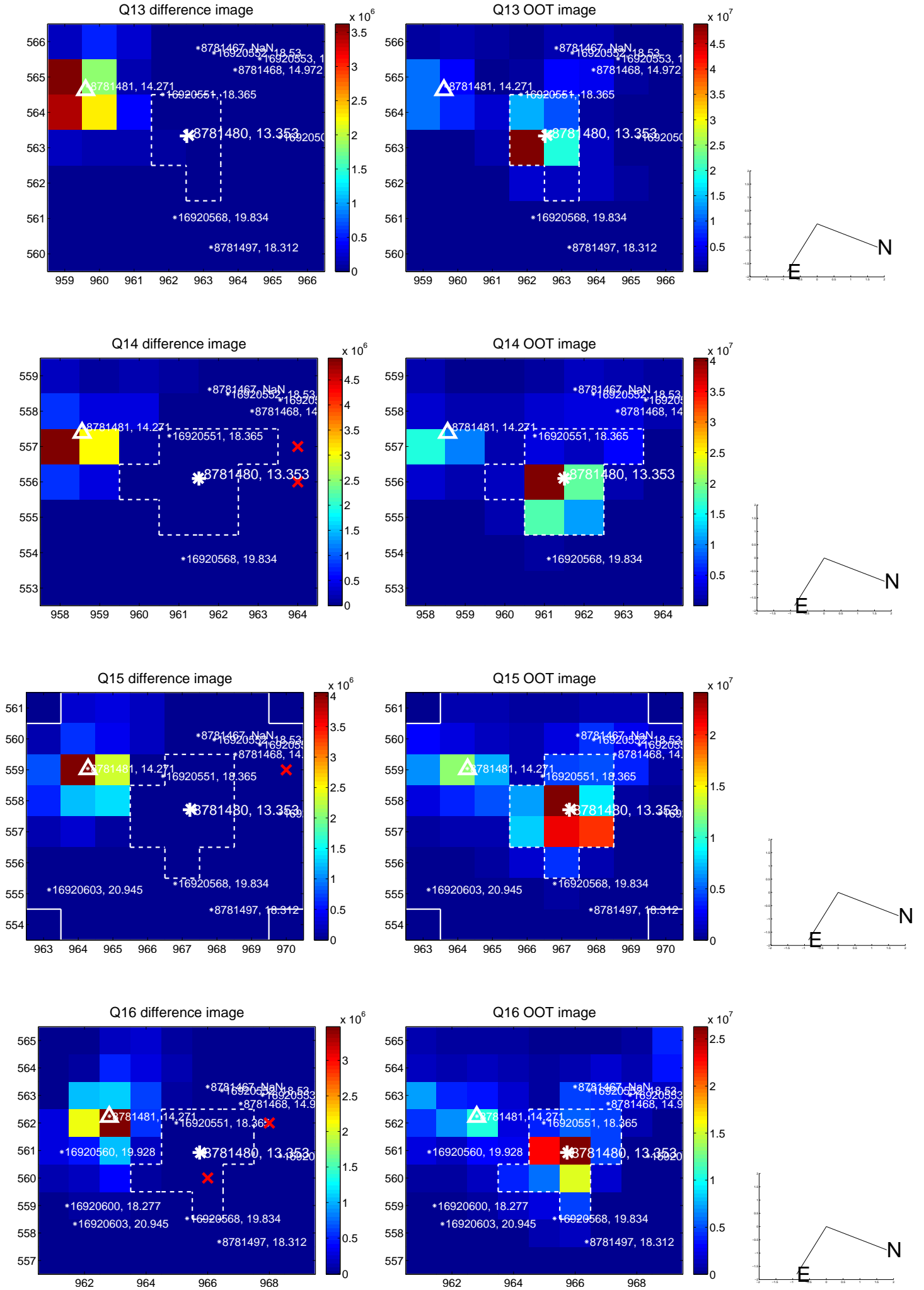
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



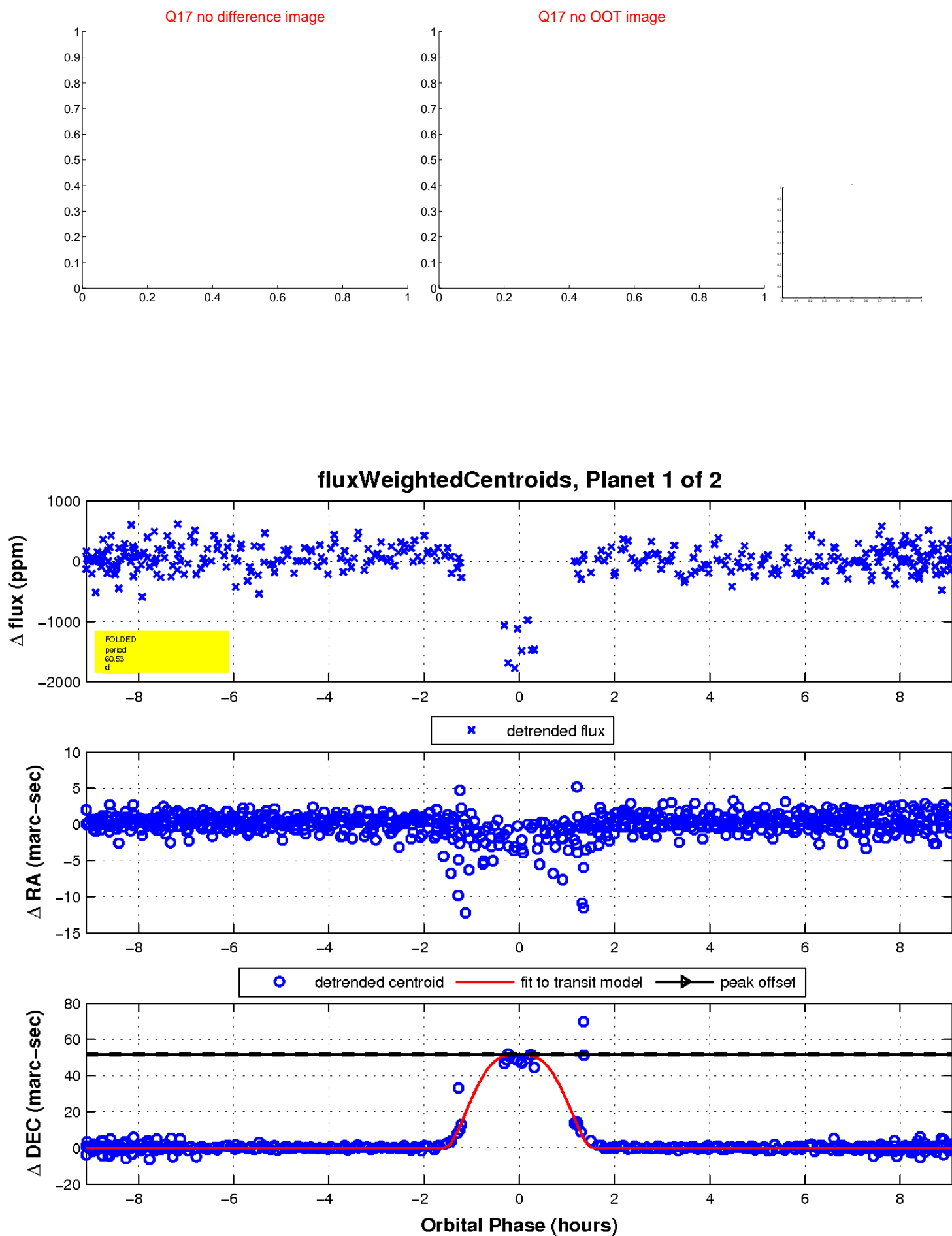
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



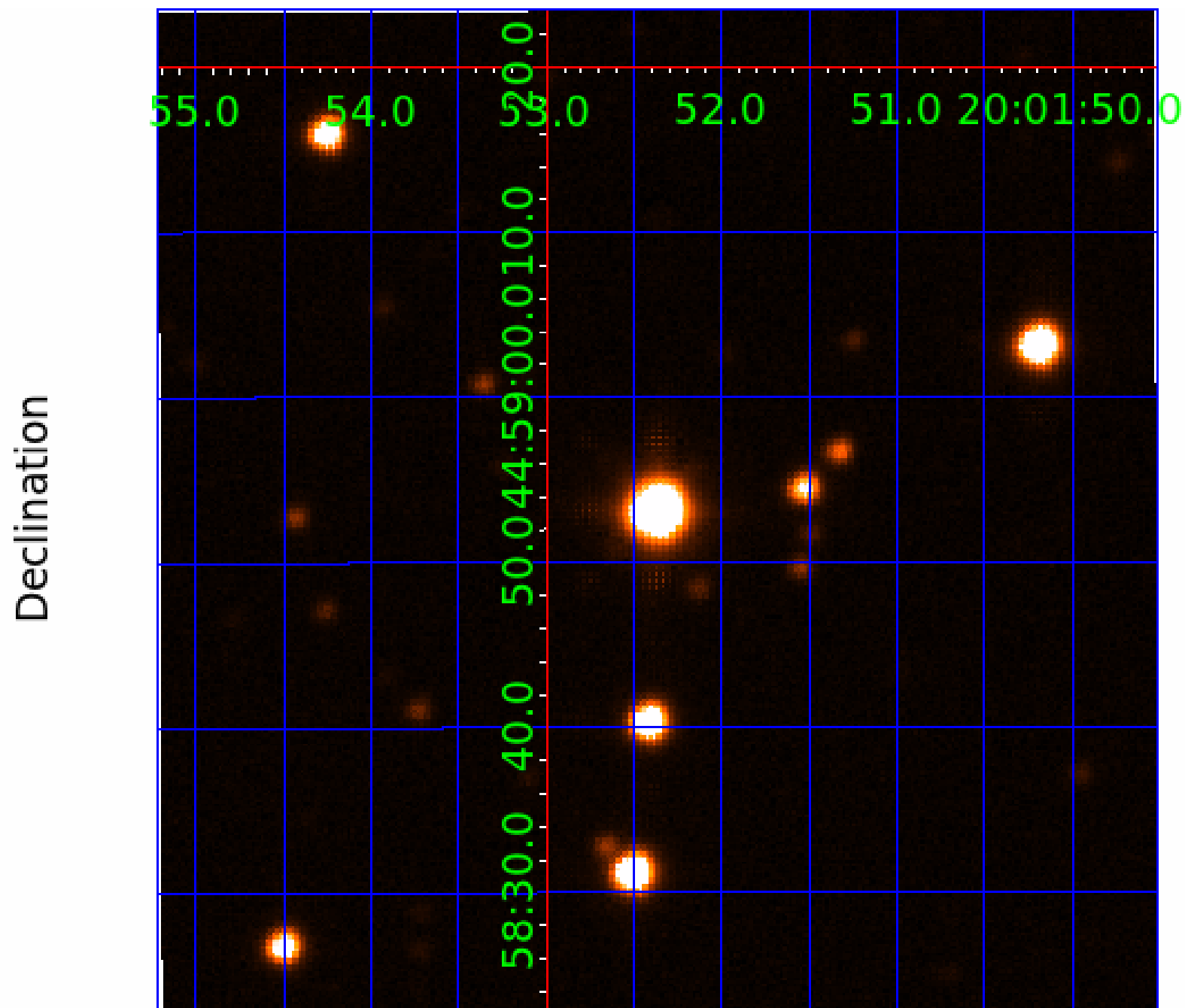
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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



UKIRT Image



KIC 008781480

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})
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008781480-02	OBS	No	60.530611	161.666748	673.7	8.175	23.3	22.6	60.69	3942	345.90	6154.55

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
008781480-01	OBS	FP	0.00	0	1	1	0	MOD_SEC_DV—MOD_ODDEVEN_DV—MOD_ODDEVEN_ALT—HAS_SEC_TCE—CENT_RESOLVED_OFFSET
008781480-02	OBS	FP	0.00	1	1	1	0	IS_SEC_TCE—CENT_RESOLVED_OFFSET

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.

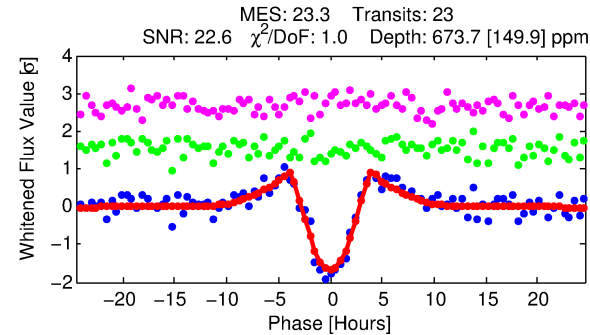
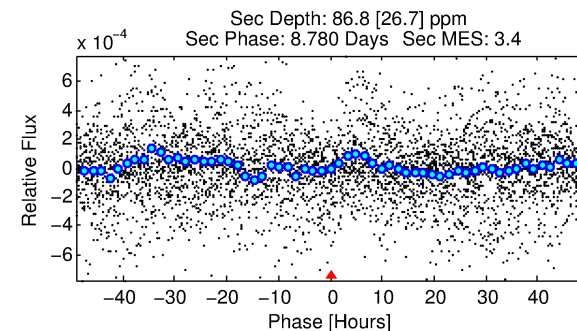
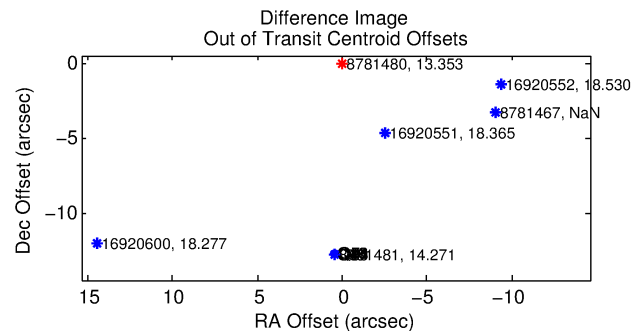
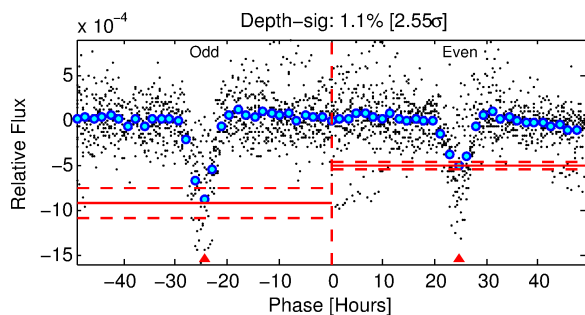
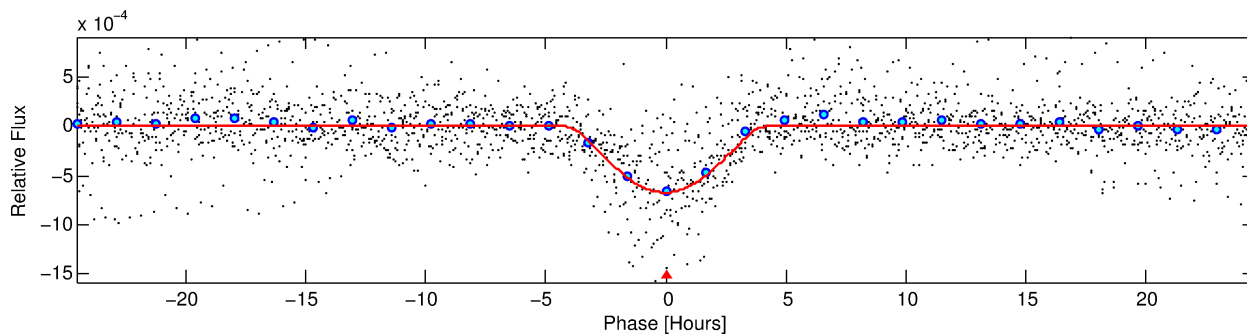
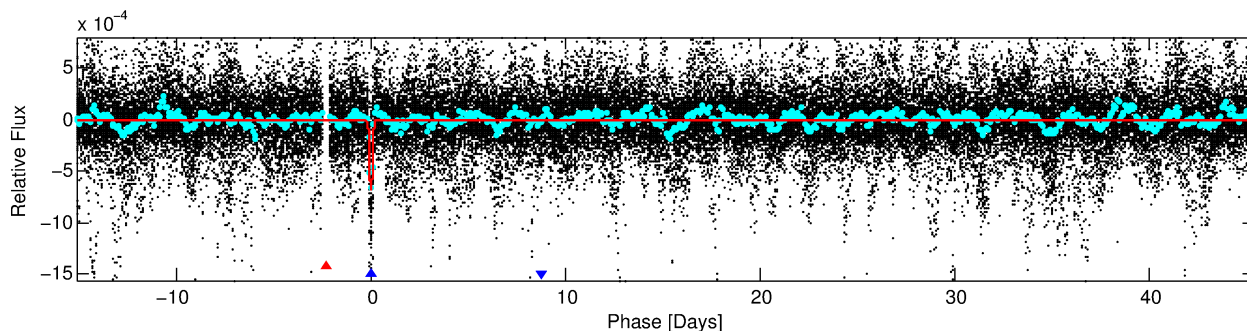
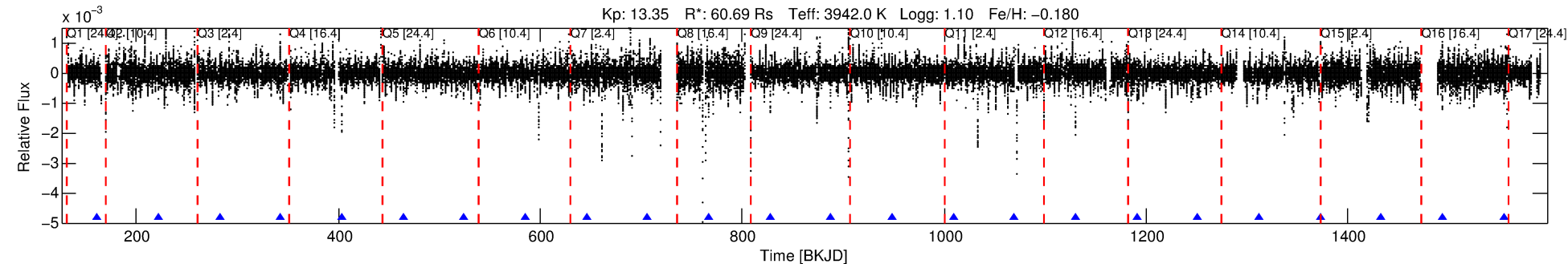
Ephemeris Match Information For 008781480-02

No Significant Match Found

DV One-Page Summary

KIC: 8781480 Candidate: 2 of 2 Period: 60.531 d
KOI: K03929 Corr: No Ephemeris Match

Kp: 13.35 R*: 60.69 Rs Teff: 3942.0 K Logg: 1.10 Fe/H: -0.180



DV Fit Results:

Period = 60.53061 [0.00046] d
Epoch = 161.6667 [0.0055] BKJD
Rp/R* = 0.0522 [0.0527]
a/R* = 18.56 [4.21]
b = 1.00 [0.08]
Seff = 6154.55 [1096.17]
Teq = 2259 [101] K
Rp = 345.90 [356.01] Re
a = 0.3598 [0.0484] AU
Ag = 0.05 [0.11] [-8.97σ]
Teff = 1665 [851] K [-0.69σ]

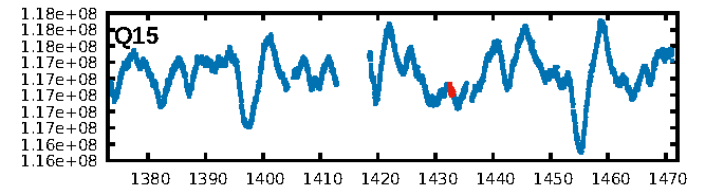
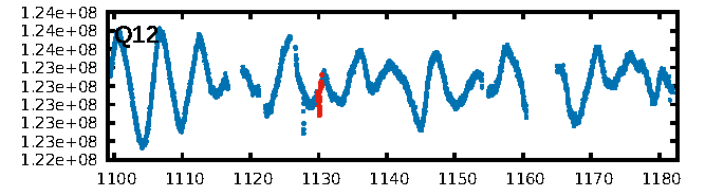
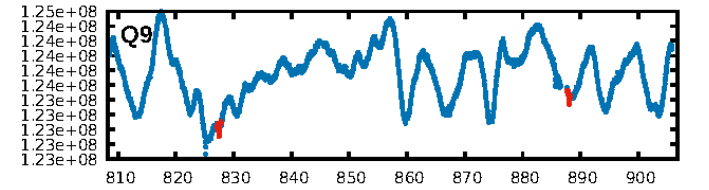
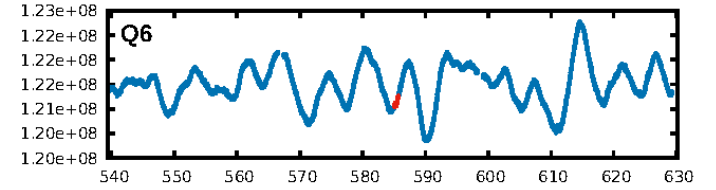
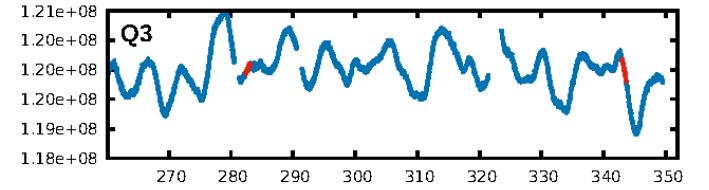
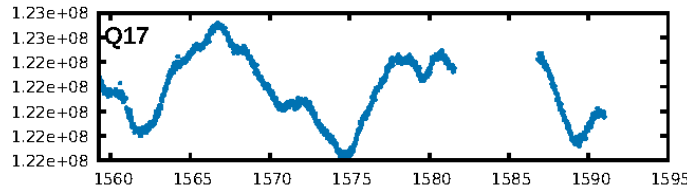
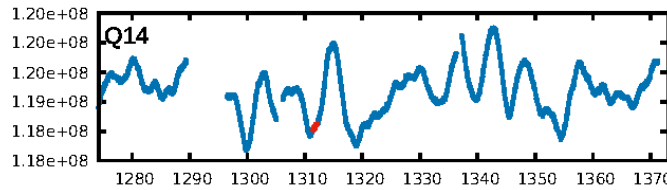
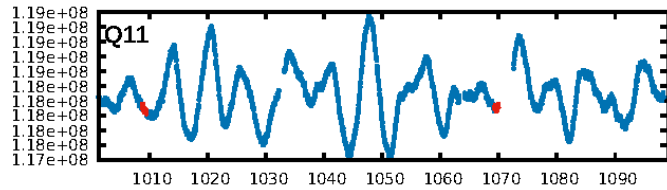
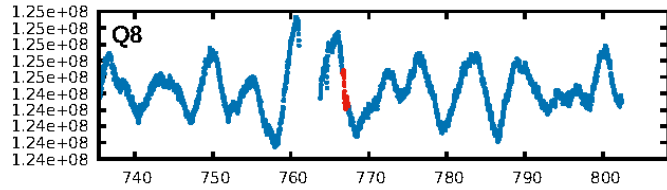
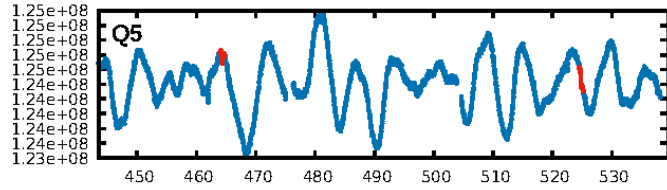
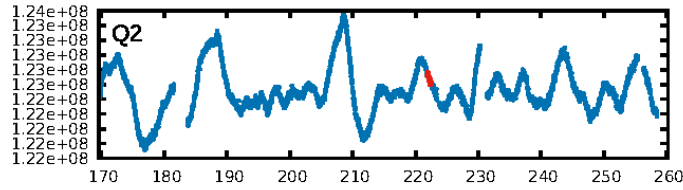
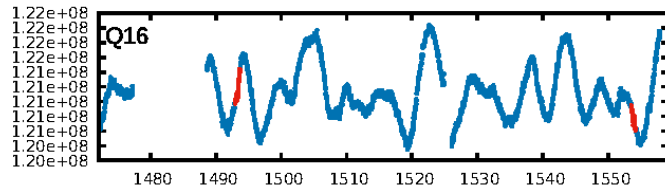
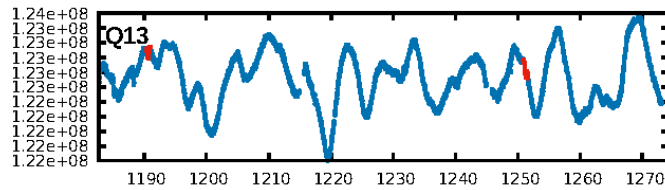
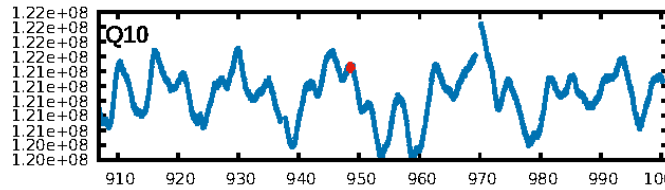
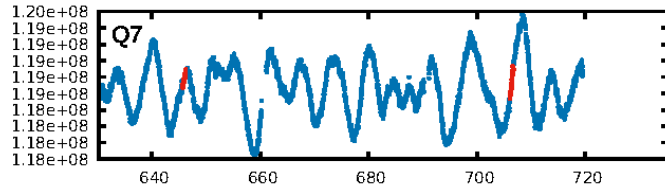
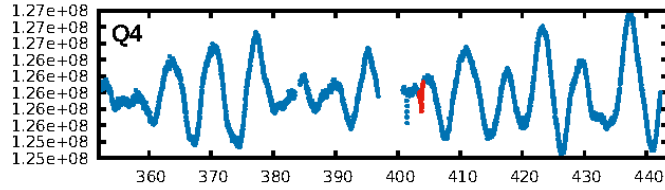
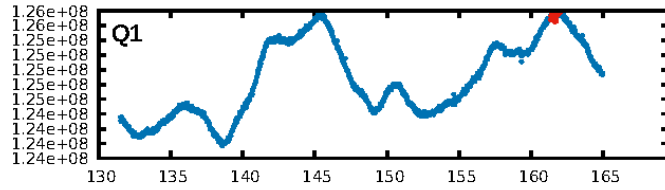
DV Diagnostic Results:

ShortPeriod-sig: 0.1% [0.00σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 0.0%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 7.73e-72
RollingBand-fgt: 1.00 [22/22]
GhostDiagnostic-chr: -0.4567
Centroid-sig: N/A
Centroid-so: 48.206 arcsec [124.64σ]
OotOffset-rm: 12.758 arcsec [187.35σ]
KicOffset-rm: 12.840 arcsec [189.13σ]
OotOffset-st: 3/4/3/4 [14]
KicOffset-st: 3/4/3/4 [14]
DiffImageQuality-fgm: 1.00 [14/14]
DiffImageOverlap-fno: 1.00 [15/15]

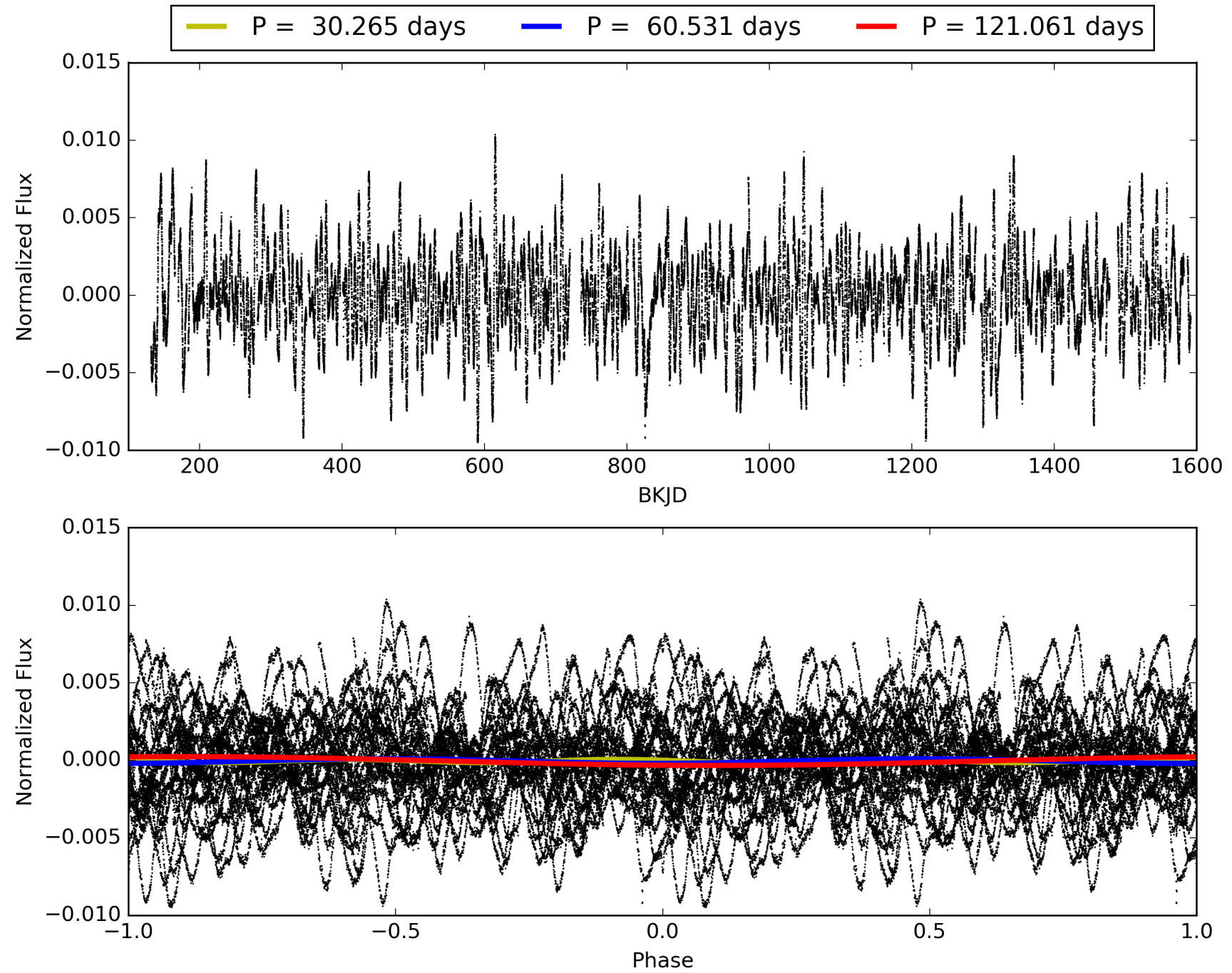
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 30-Jan-2016 02:46:15 Z

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

TCE 008781480-02, PDC Light Curves

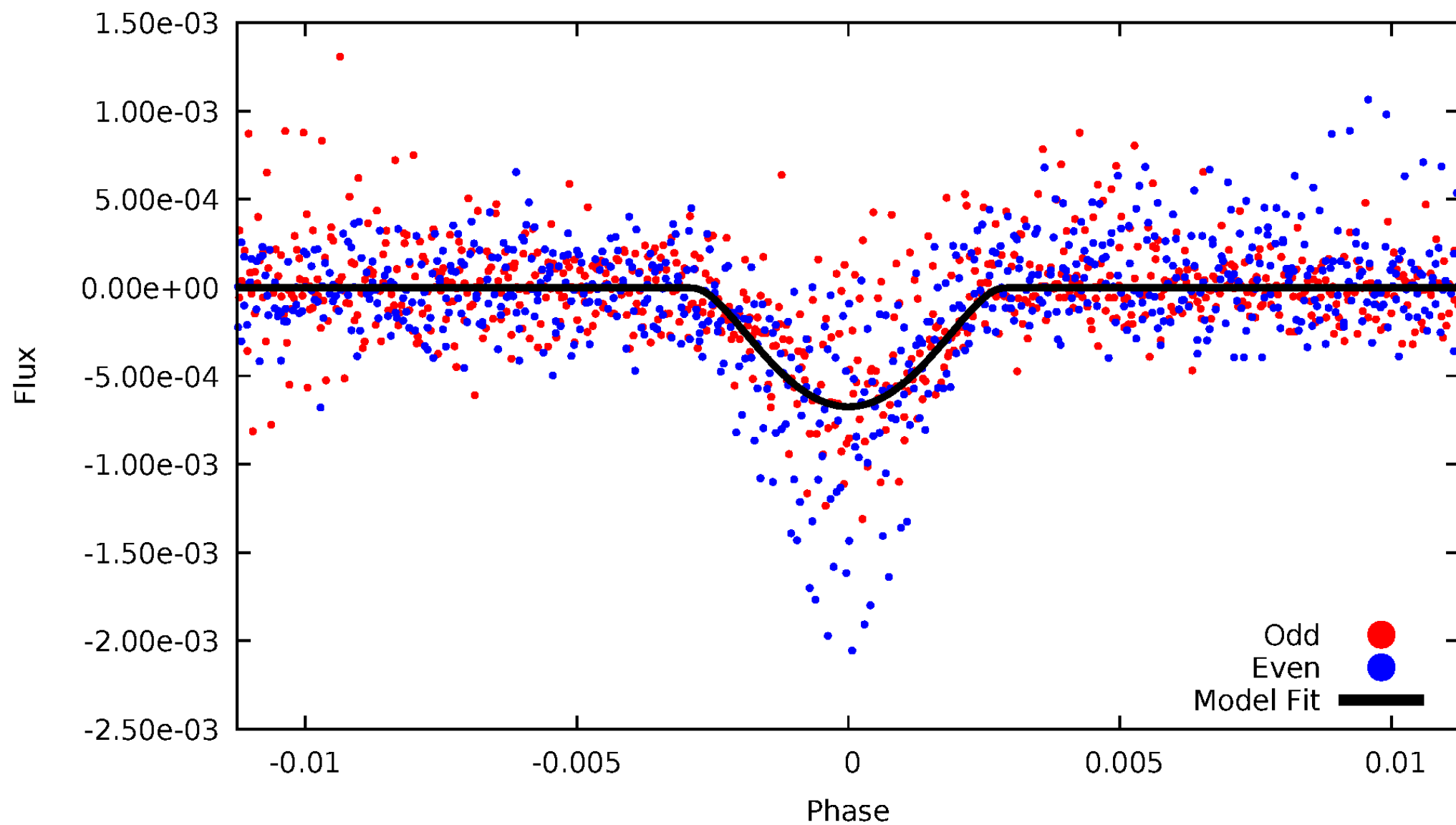


TCE 008781480-02



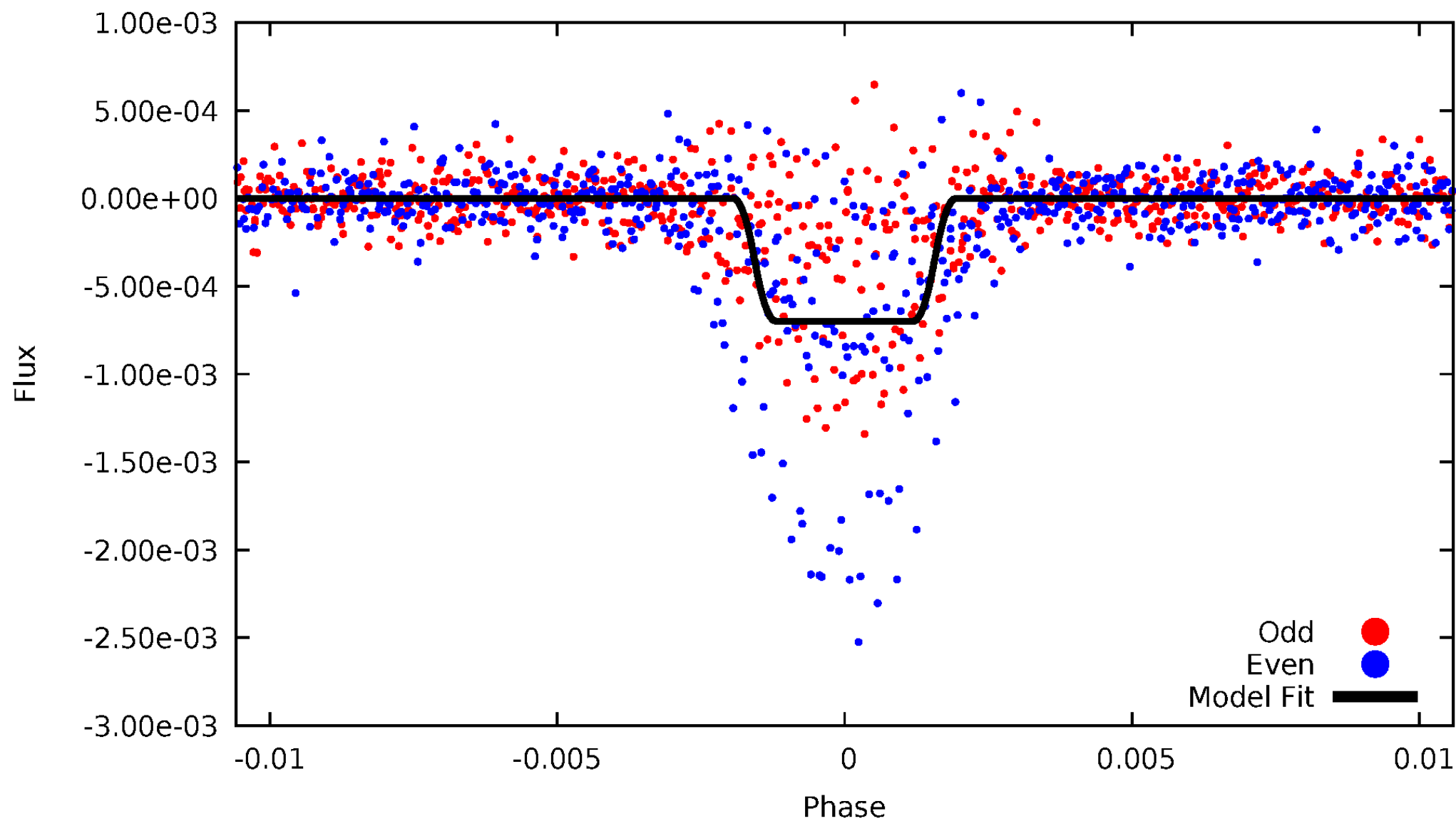
DV Odd/Even

TCE 008781480-02



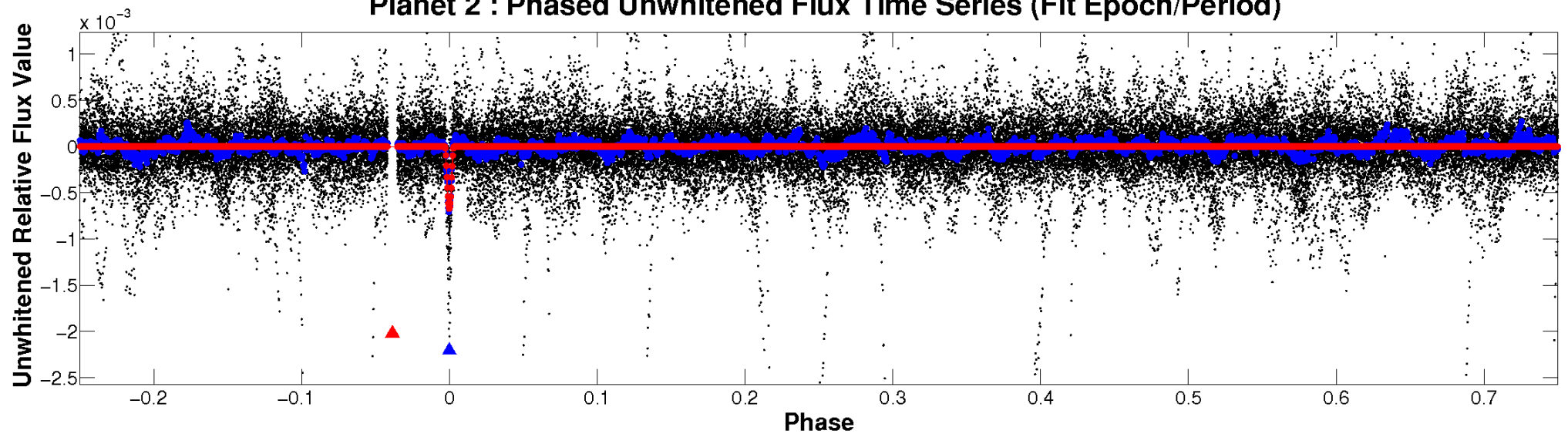
ALT Odd/Even

TCE 008781480-02

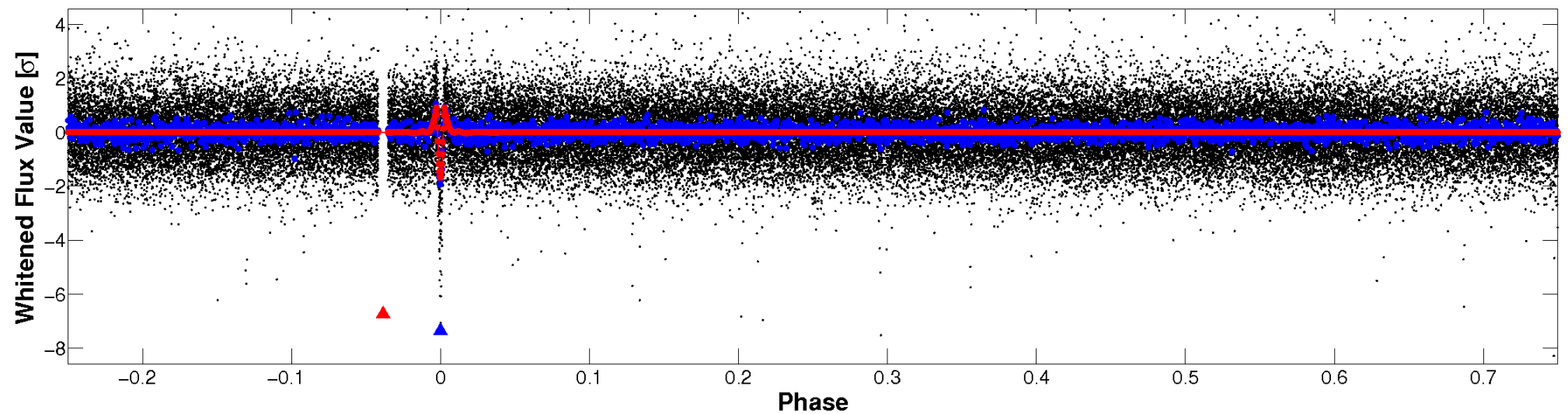


Non-Whitened Vs. Whitened Light Curve

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

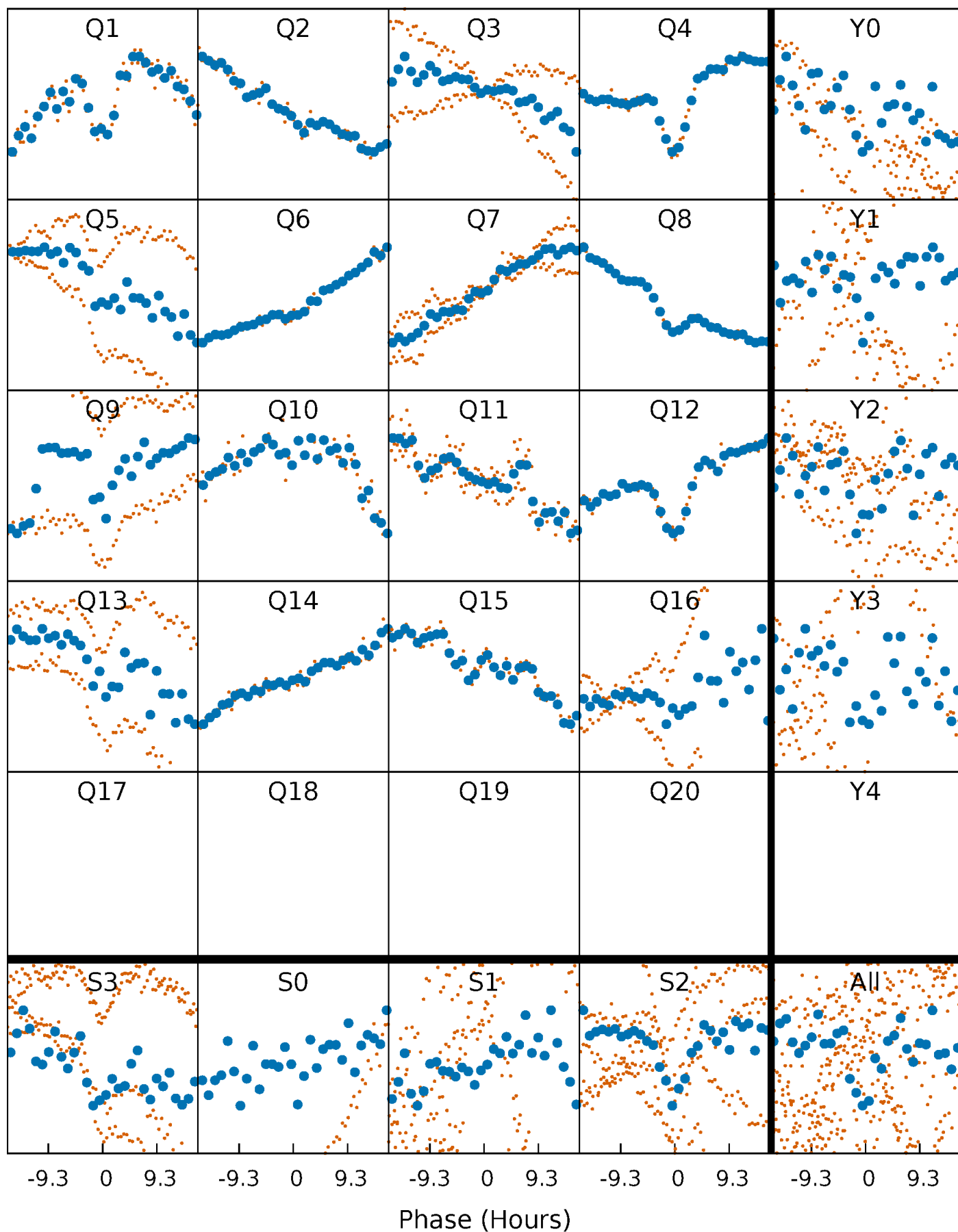


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



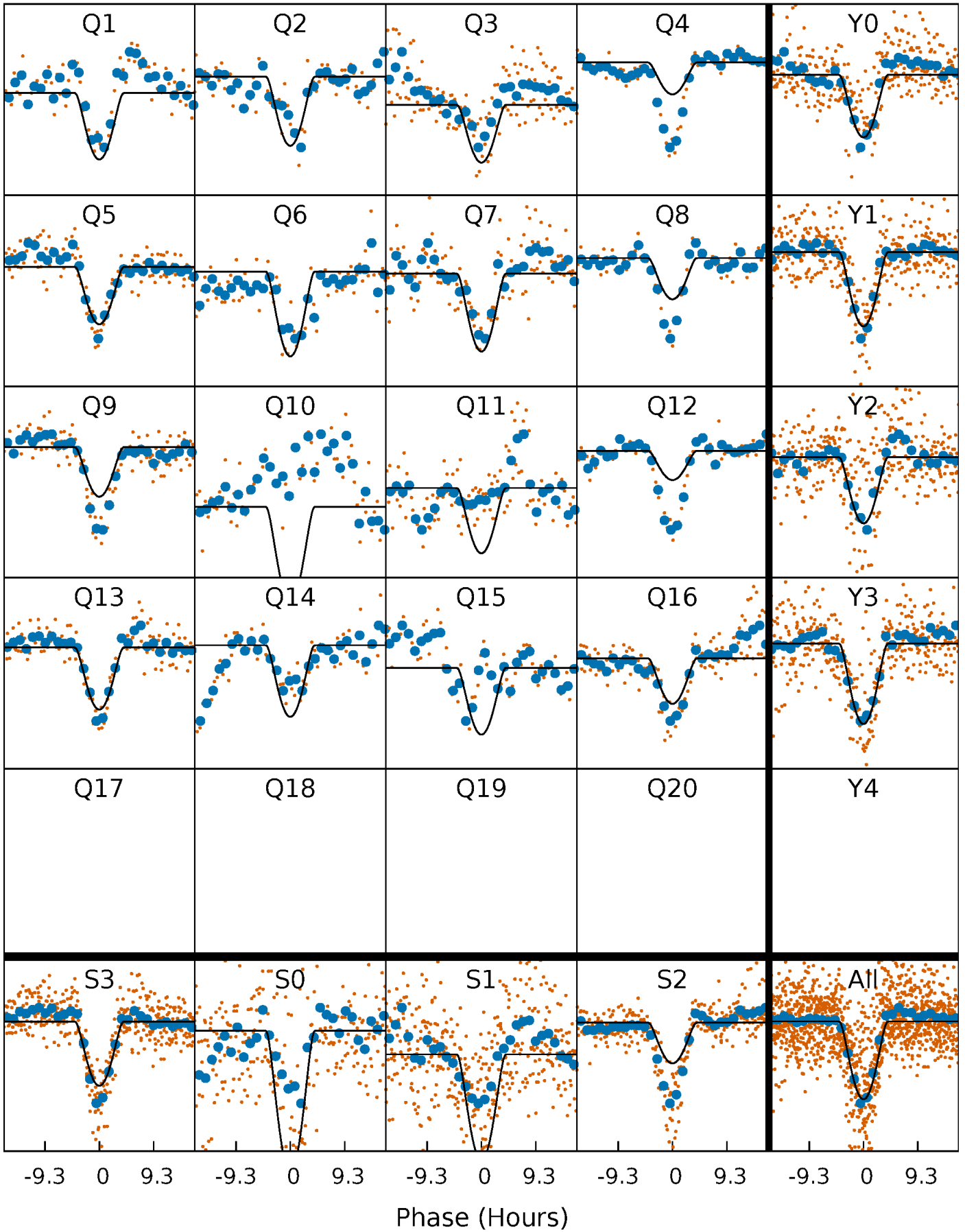
PDC Quarter-Phased Transit Curves

TCE 008781480-02 P= 60.530611 Days $T_0=161.666748$ (BKJD)



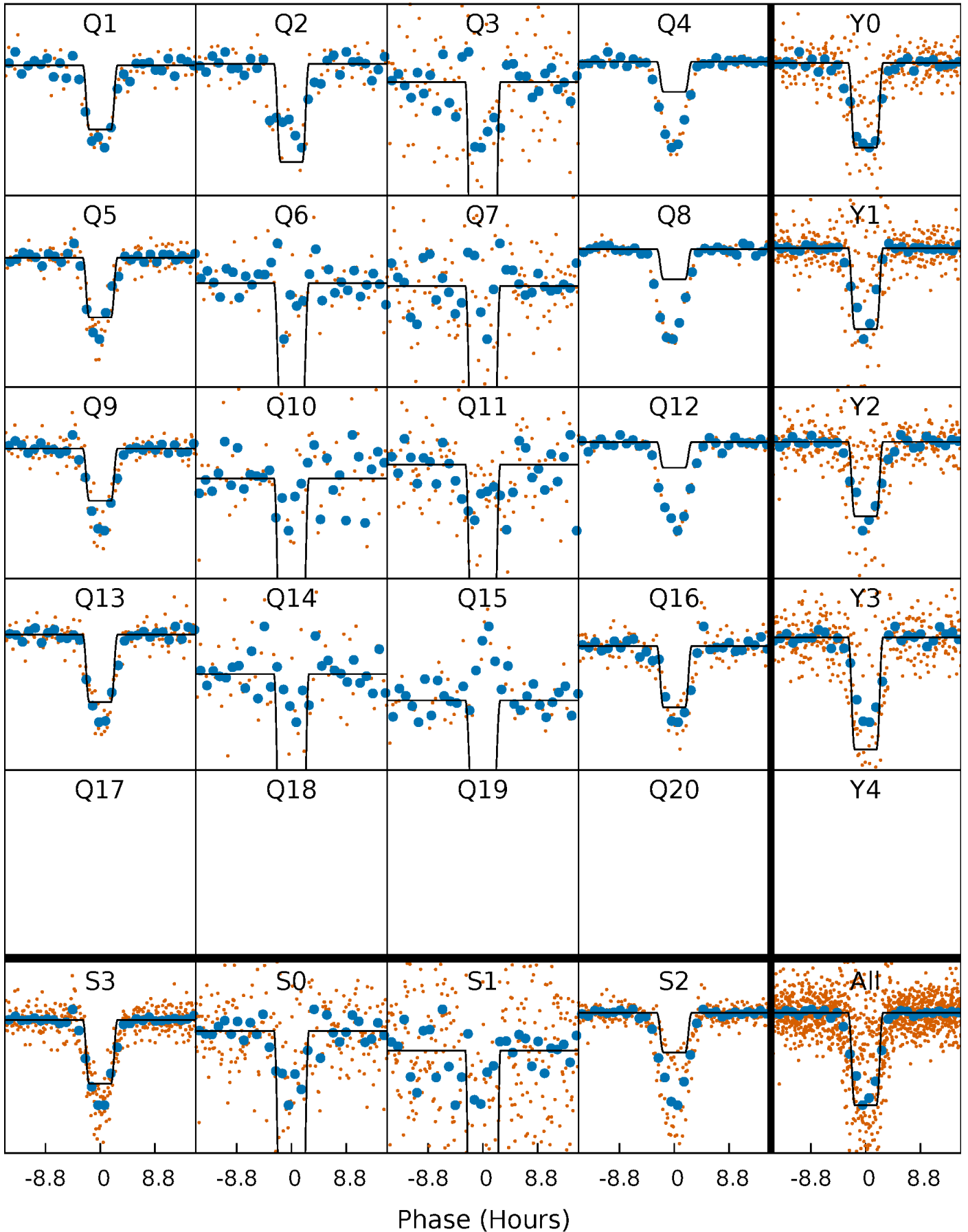
DV Quarter-Phased Transit Curves

TCE 008781480-02 P= 60.530611 Days $T_0=161.666748$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

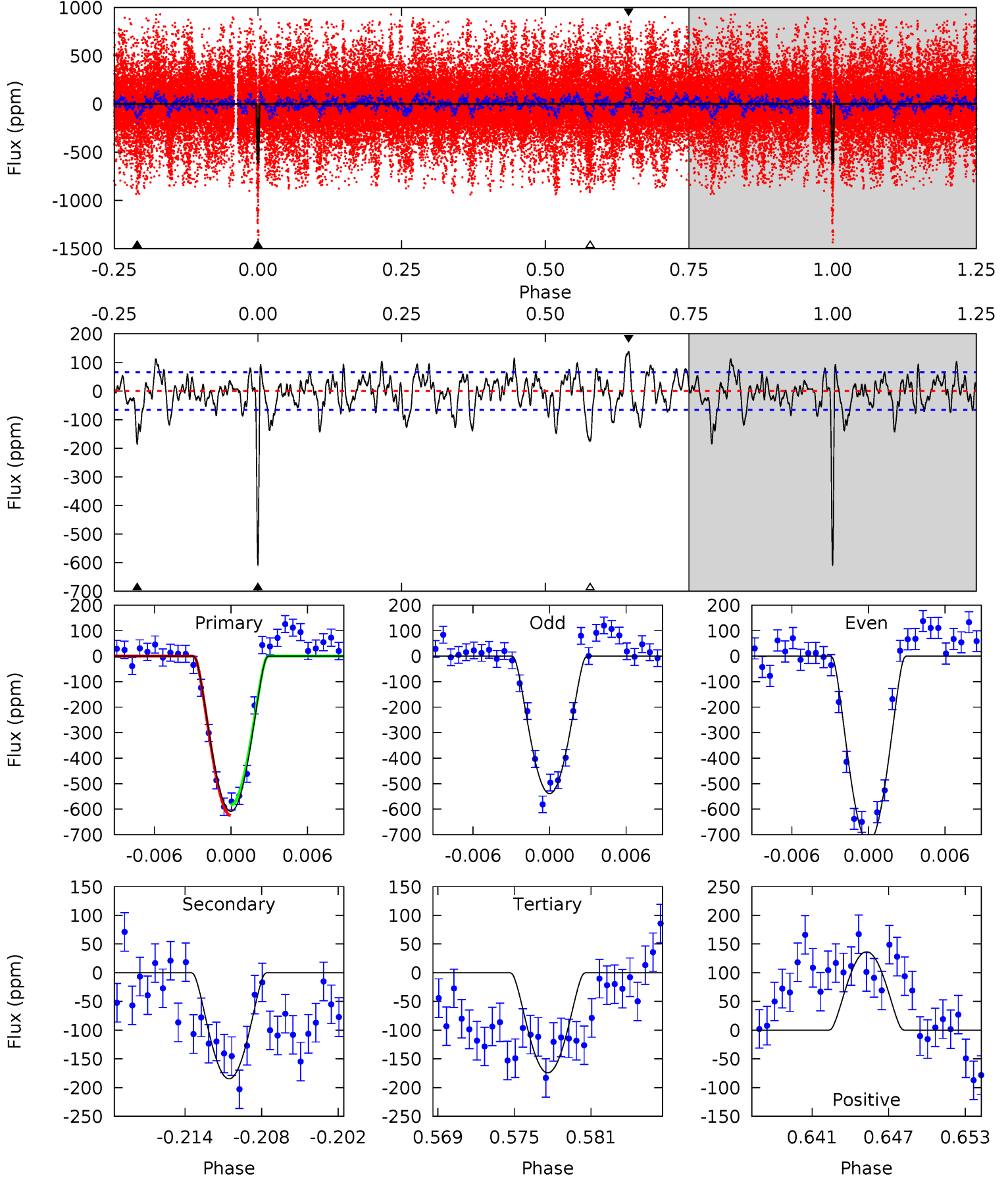
TCE 008781480-02 P= 60.529640 Days $T_0=161.671897$ (BKJD)



DV Model-Shift Uniqueness Test

008781480-02, P = 60.530611 Days, E = 101.136137 Days

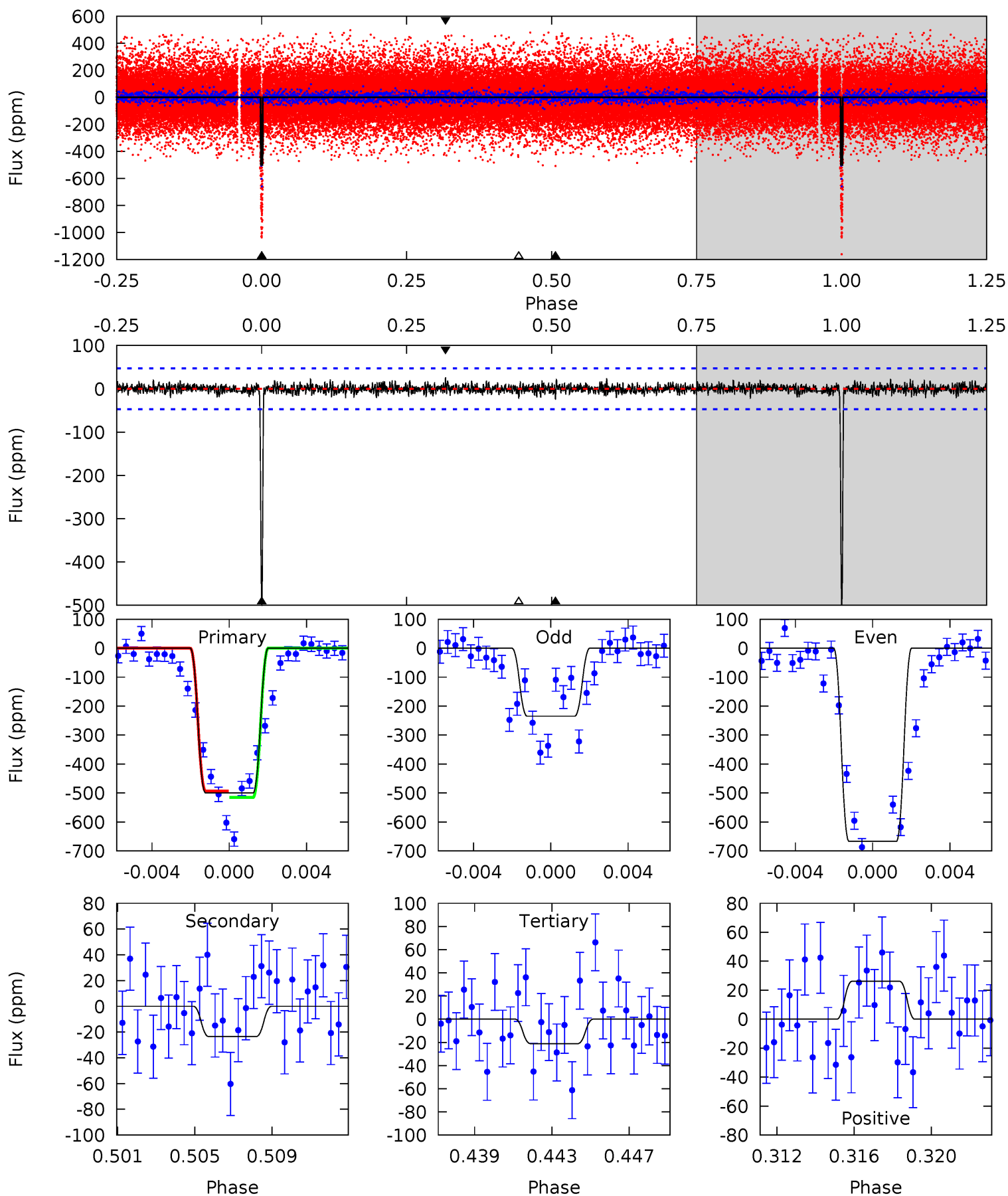
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
47.5	14.4	13.6	10.6	5.13	2.75	4.14	33.9	36.8	0.82	3.77	7.47	1.06	0.18	1.61



Alt Model-Shift Uniqueness Test

008781480-02, P = 60.529640 Days, E = 101.142257 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
55.0	2.59	2.32	2.88	5.21	2.89	0.72	52.7	52.1	0.27	-0.29	22.8	1.03	0.05	1.20



Stellar Parameters For KIC 008781480

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	3942^{+88}_{-108}	$1.101^{+0.030}_{-0.030}$	$-0.180^{+0.200}_{-0.250}$	$60.688^{+3.019}_{-12.074}$	$1.696^{+0.108}_{-0.613}$	$0.000^{+0.000}_{-0.000}$
	+2%/-3%	+3%/-3%	+111%/-139%	+5%/-20%	+6%/-36%	+27%/-9%
Source	PHO54	AST54	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 008781480-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-185±13	$413.33^{+310.39}_{-272.58}$	3159^{+85}_{-105}	-2874^{+5978}_{-131}	$0.077^{+0.577}_{-0.052}$
Alt.	-23±9	$320.71^{+295.43}_{-211.22}$	3156^{+83}_{-106}	-2975^{+223}_{-78}	$0.015^{+0.124}_{-0.012}$

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 $A_{obs} \gg 1.0$

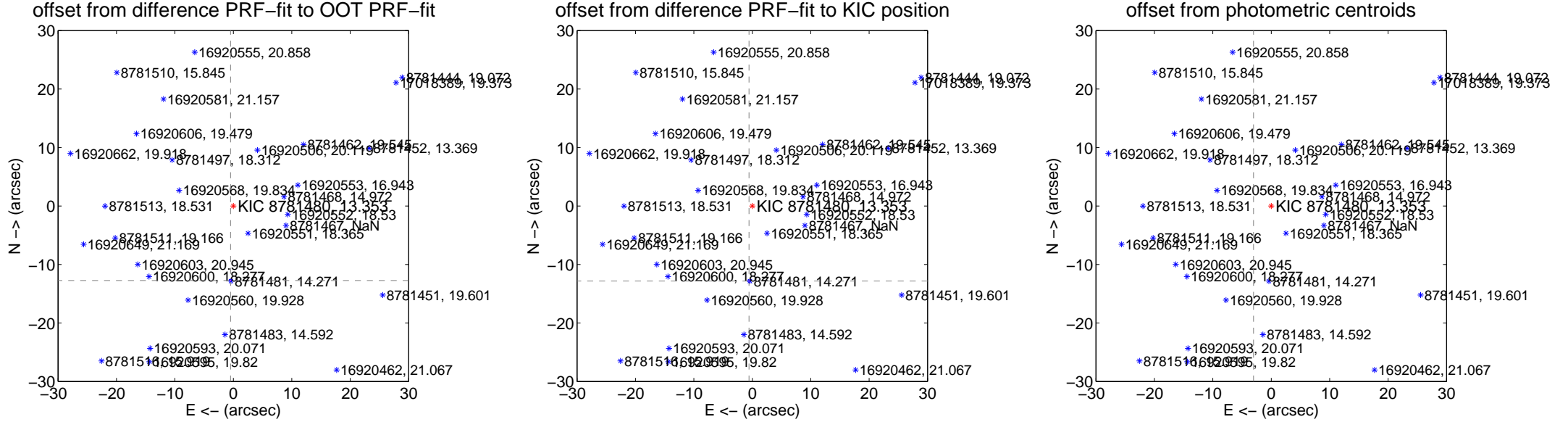
DV Centroid Data

Supplemental centroid analysis for 008781480-02. Kepler magnitude: 13.35. Transit SNR 22.63

There are 14 quarters with good PRF difference image offsets

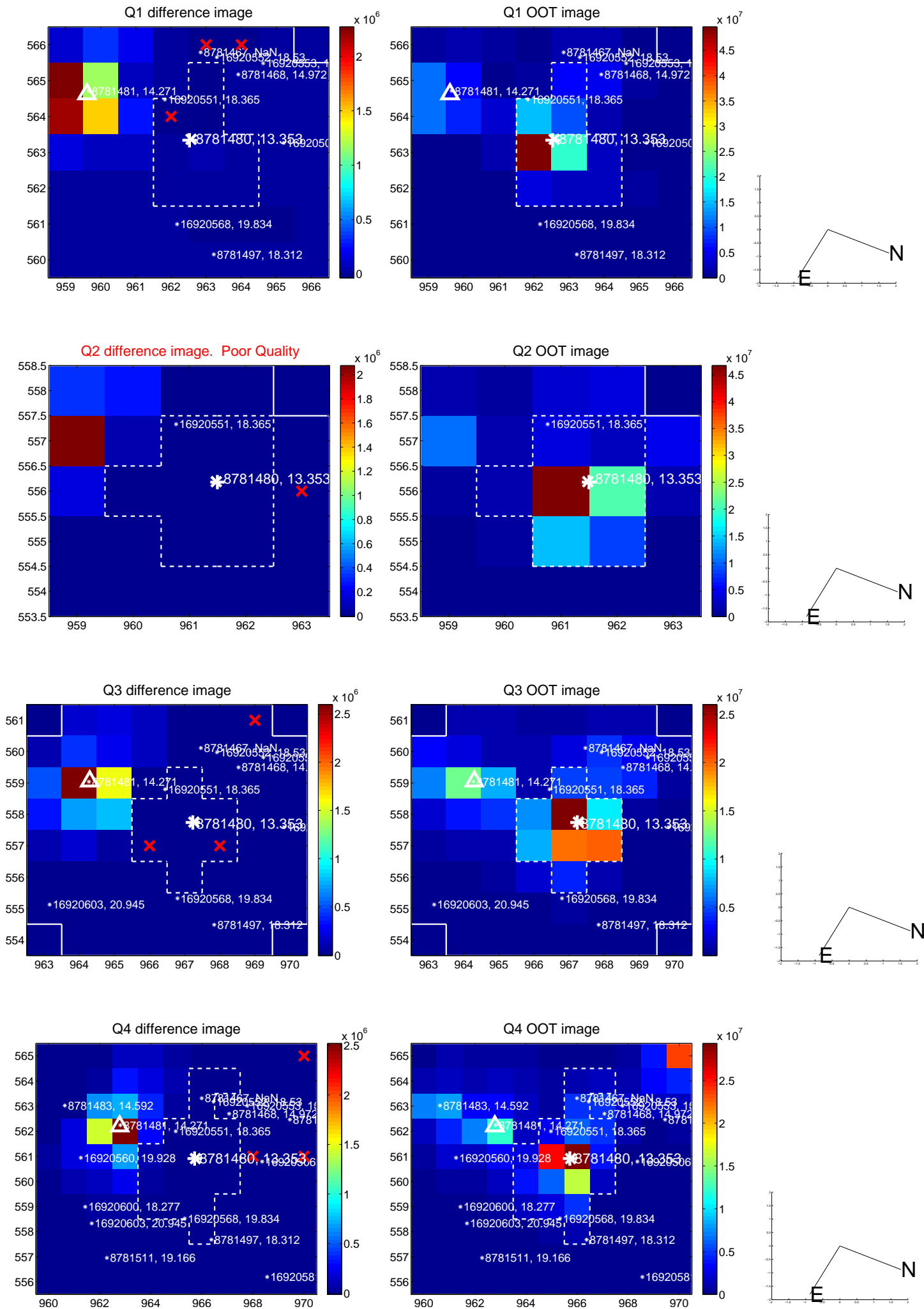
The direct PRF centroid is offset from the target star catalog position by about 0.12 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	12.758 \pm 0.068	187.35	0.481 \pm 0.067	-12.749 \pm 0.068
PRF-fit source offset from KIC position	12.840 \pm 0.068	189.13	0.562 \pm 0.067	-12.827 \pm 0.068
photometric centroid source offset	48.21 \pm 0.39	124.64	3.03 \pm 0.31	-48.11 \pm 0.39

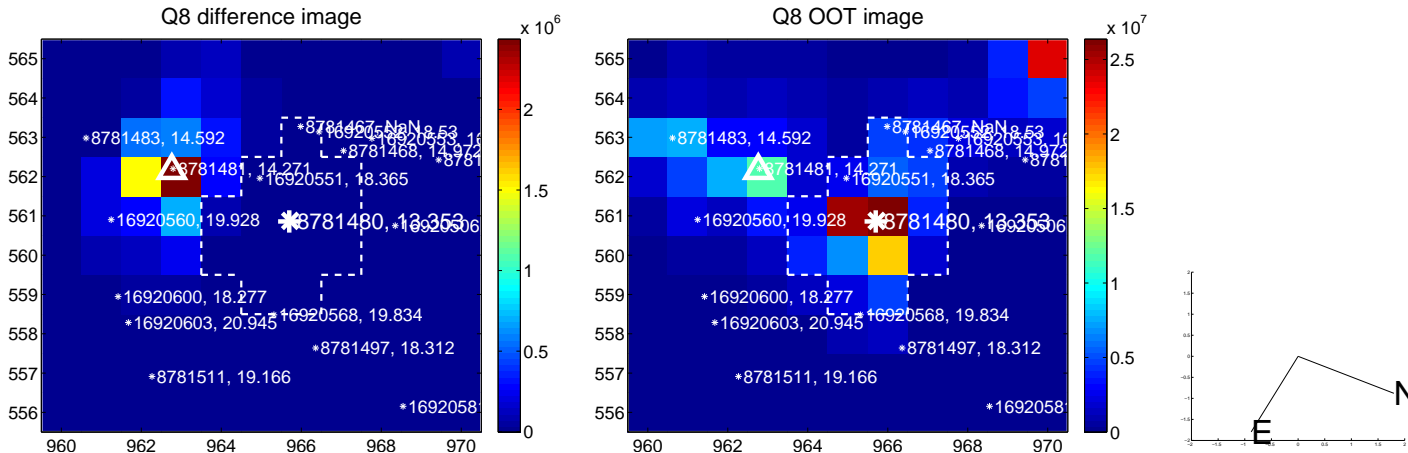
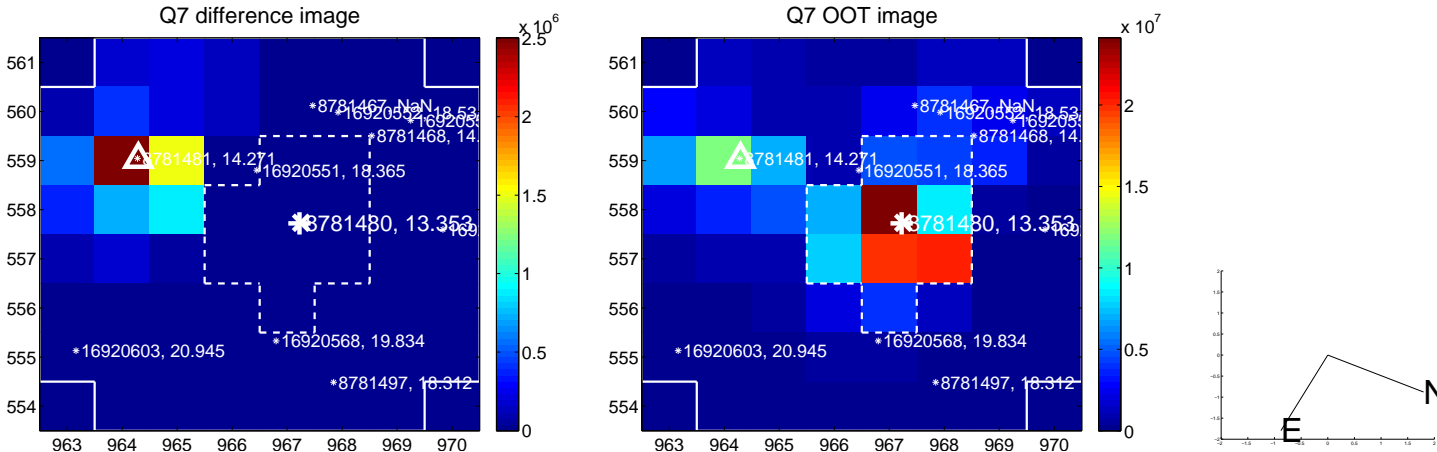
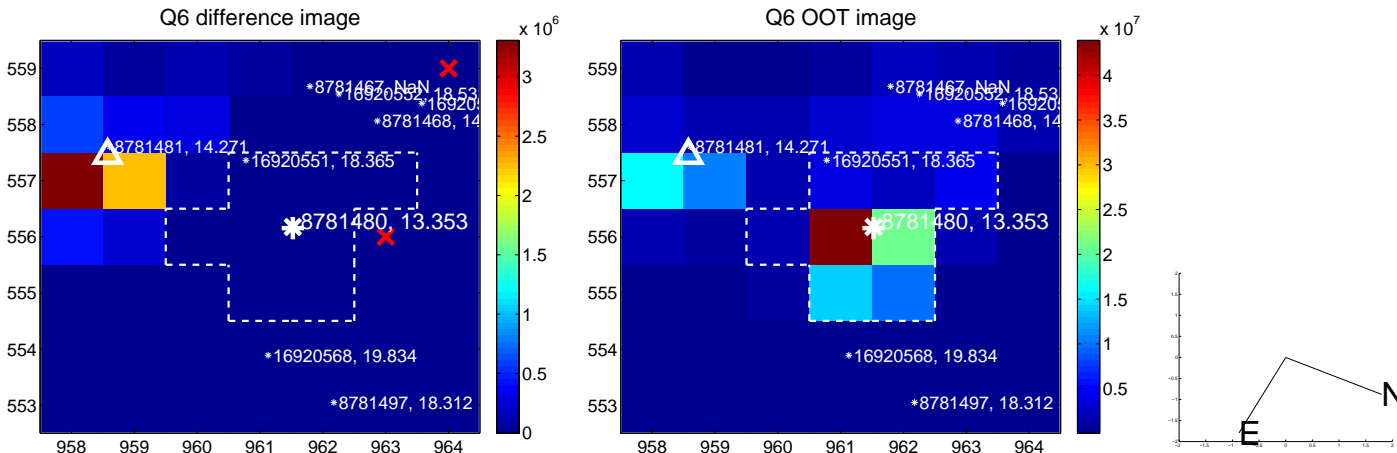
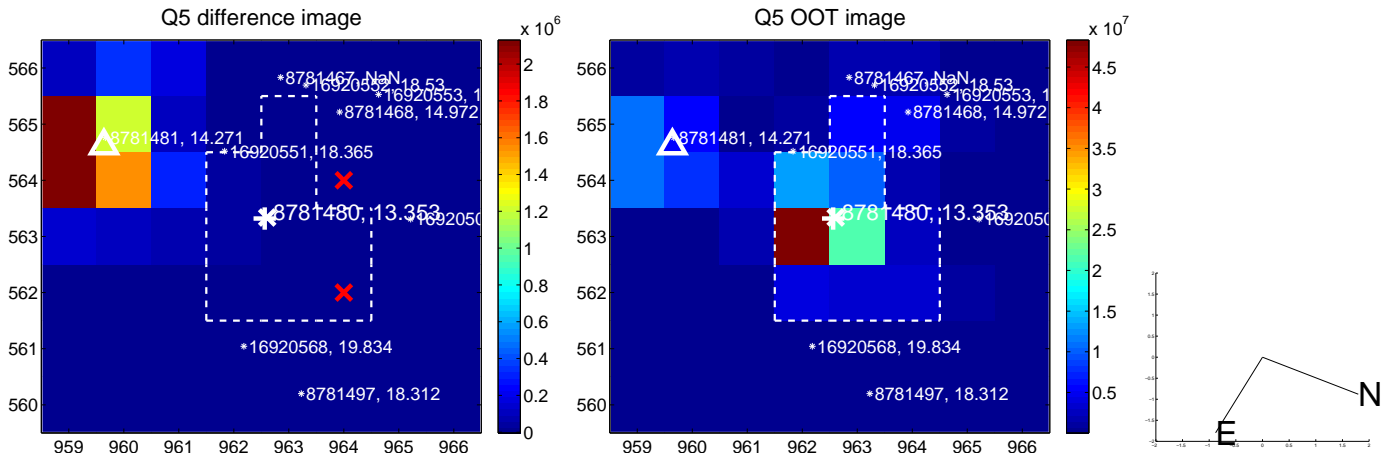


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three- σ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

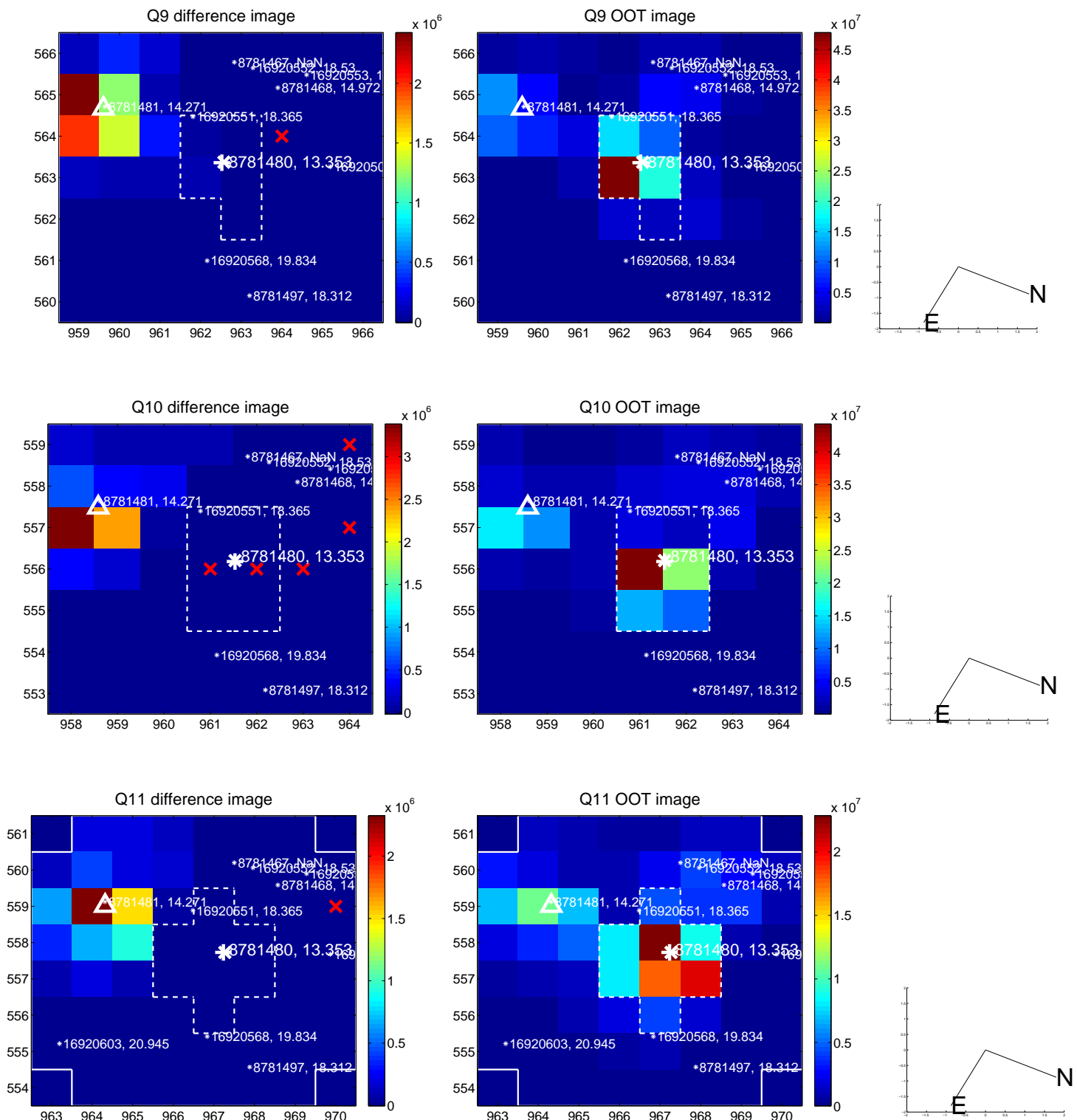
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



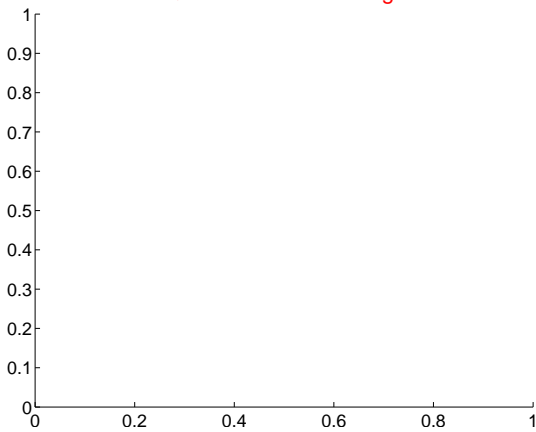
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



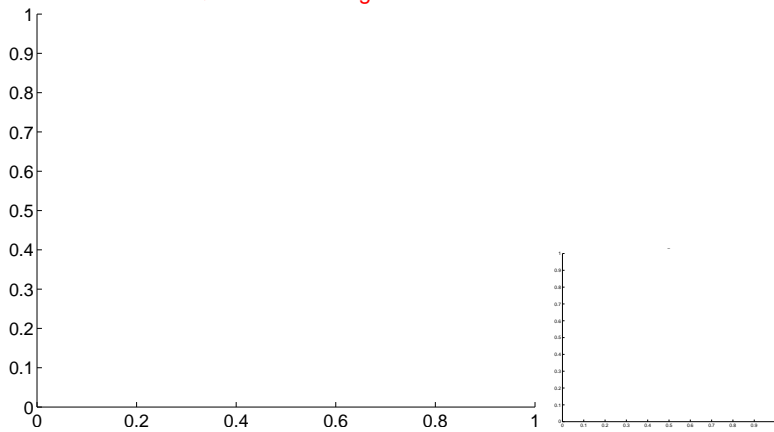
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



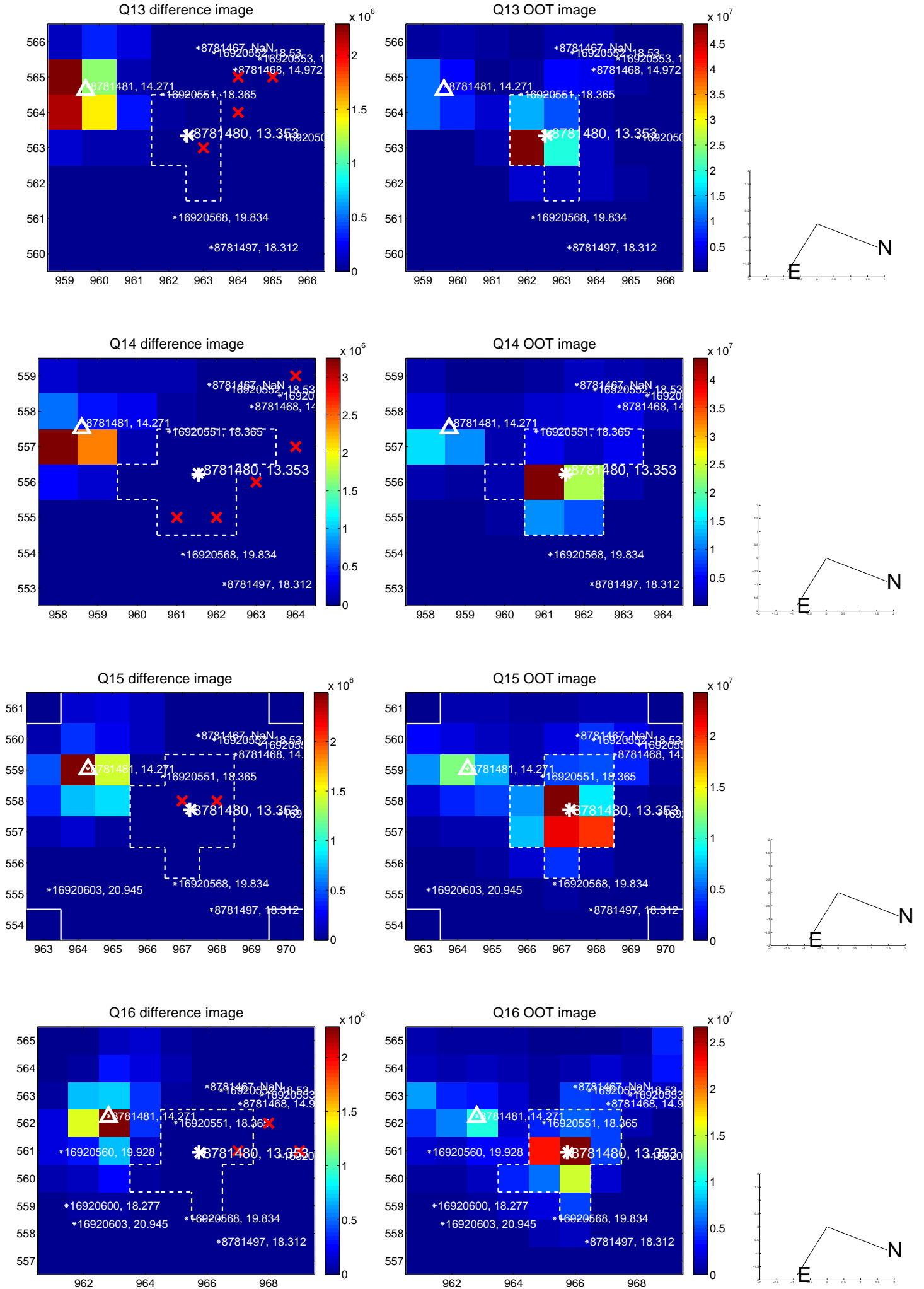
Q12 no difference image



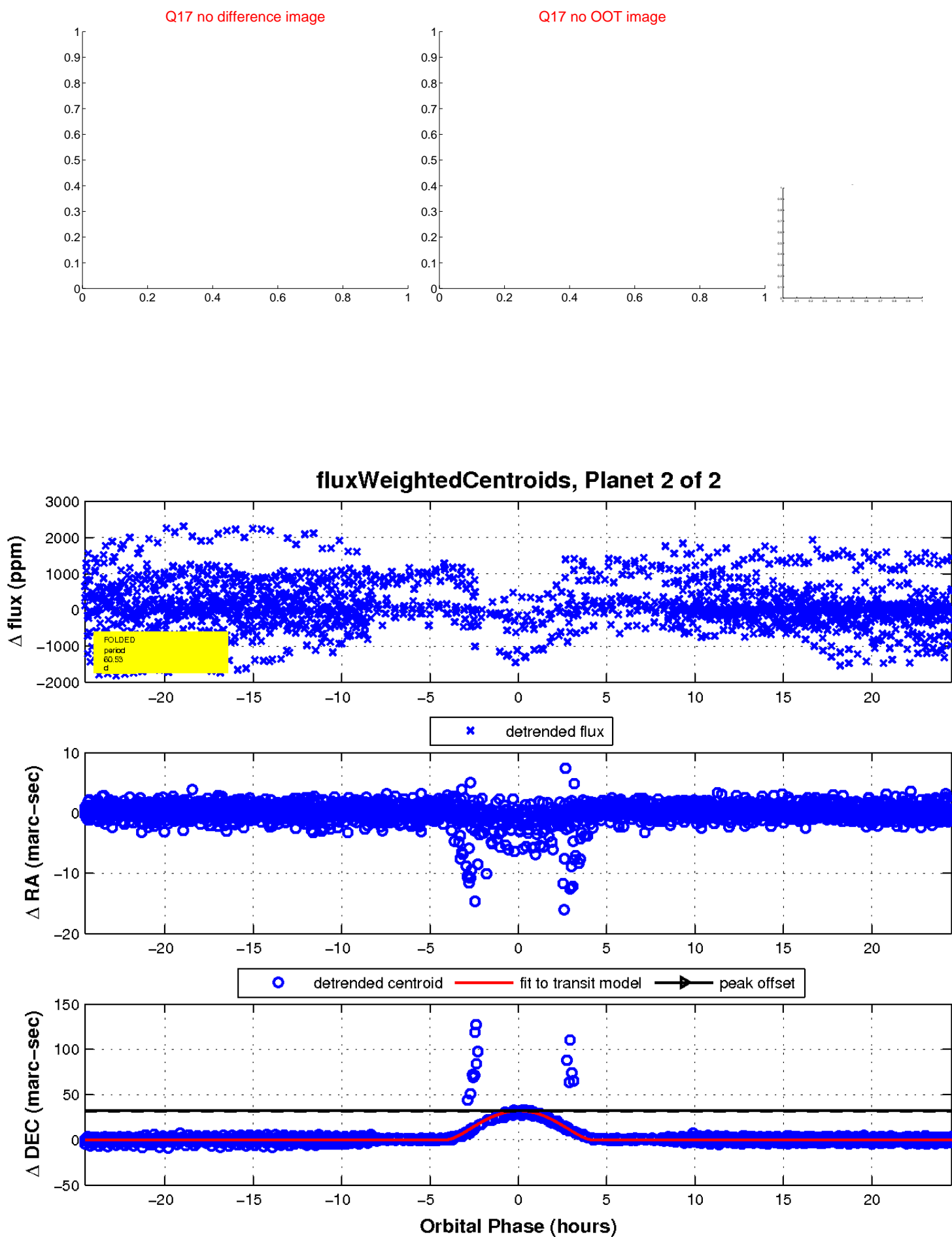
Q12 no OOT image



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



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



UKIRT Image

Declination

