

KIC 005481781

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})
005481781-01	OBS	No	1.966829	131.995908	29.4	7.365	8.3	5.4	1.91	9105	1.19	14208.85
005481781-02	OBS	No	162.981392	196.593464	956.5	10.604	8.4	8.8	1.91	9105	10.71	39.33

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005481781-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
005481781-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—INCONSISTENT_TRANS

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 005481781-01

No Significant Match Found

KIC: 5481781 Candidate: 1 of 2 Period: 1.967 d

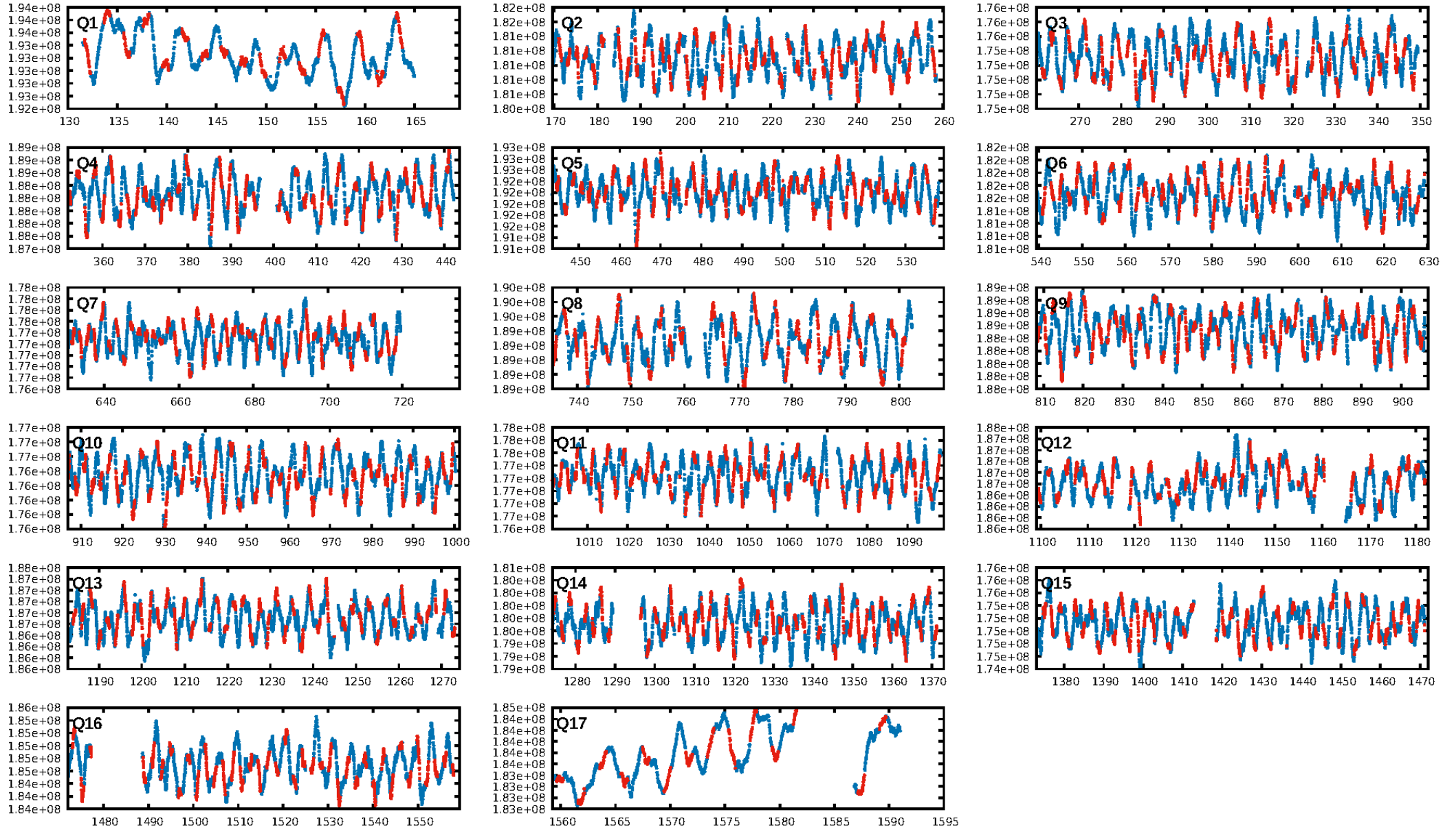


DV Diagnostic Results:

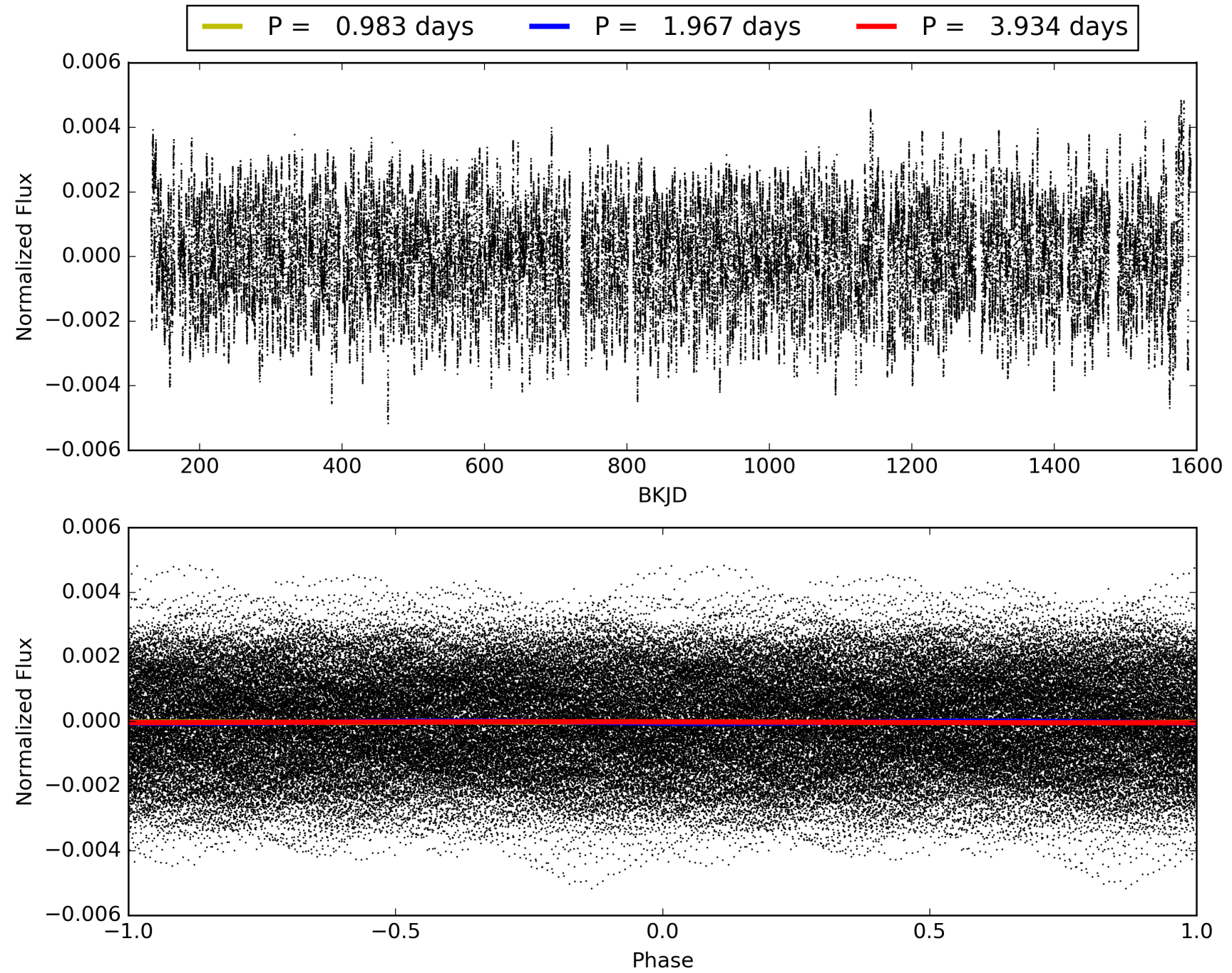
ShortPeriod-sig: N/A
LongPeriod-sig: 100.0% [299.31σ]
ModelChiSquare2-sig: N/A
ModelChiSquareGof-sig: N/A
Bootstrap-pfa: 1.11e-13
RollingBand-fgt: 1.00 [652/653]
GhostDiagnostic-chr: 0.8943

Centroid-sig: 1.0%
Centroid-so: 1.270 arcsec [1.74σ]
OotOffset-rm: 0.392 arcsec [0.38σ]
KicOffset-rm: 0.388 arcsec [0.40σ]
OotOffset-st: 4/4/3/4 [15]
KicOffset-st: 4/4/3/4 [15]
DiffImageQuality-fgm: 0.47 [7/15]
DiffImageOverlap-fno: 1.00 [17/17]

TCE 005481781-01, PDC Light Curves

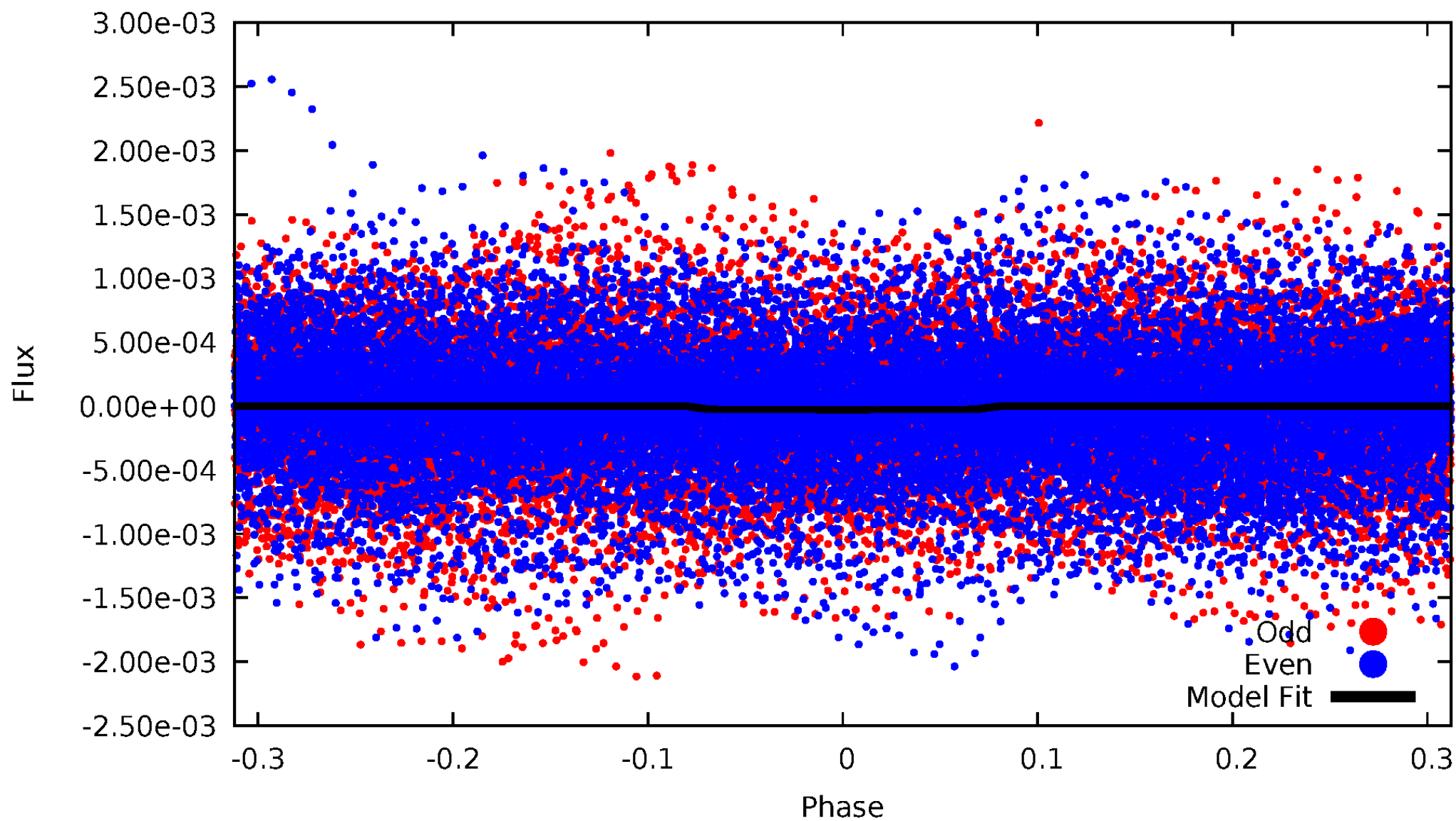


TCE 005481781-01



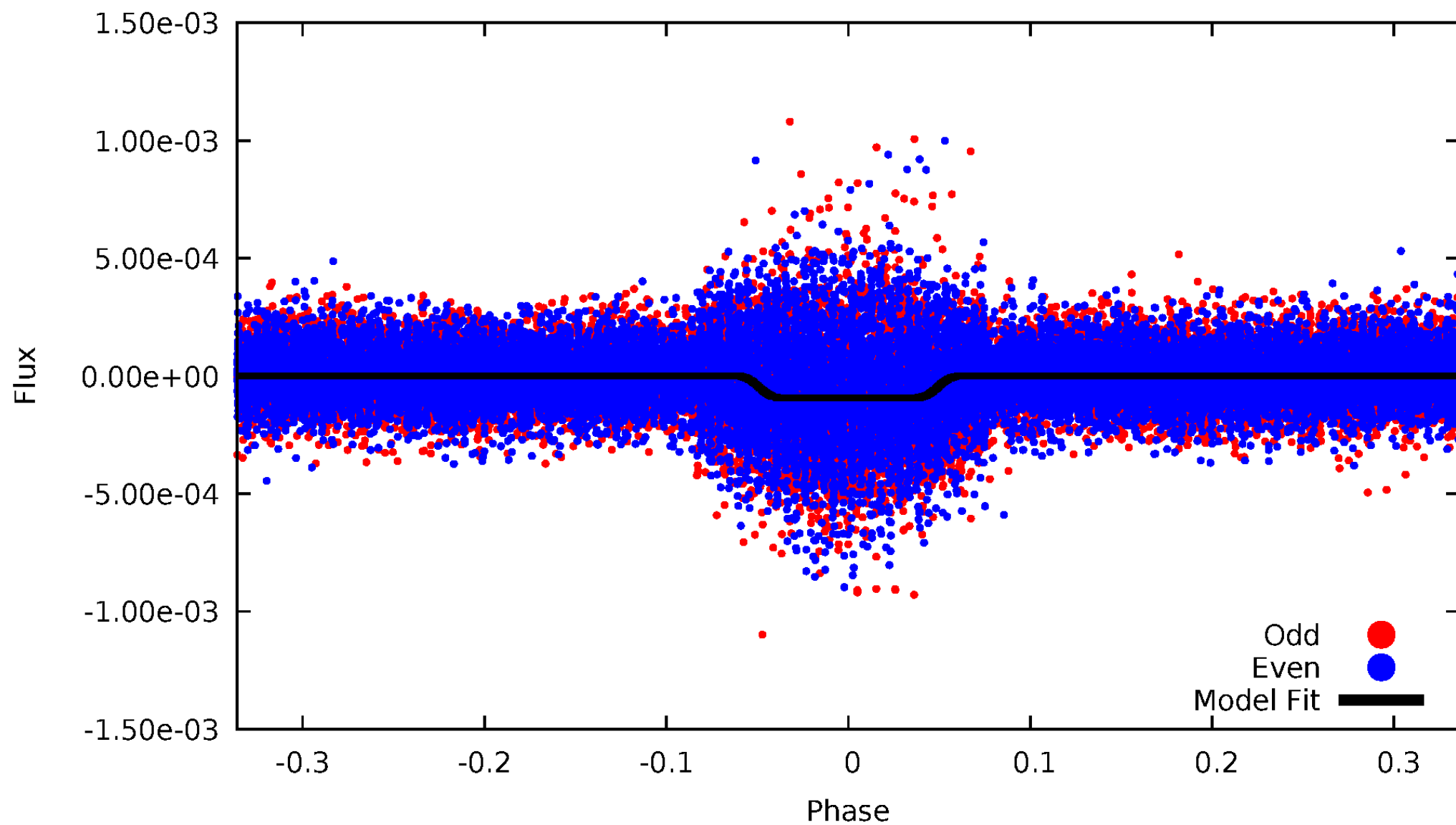
DV Odd/Even

TCE 005481781-01

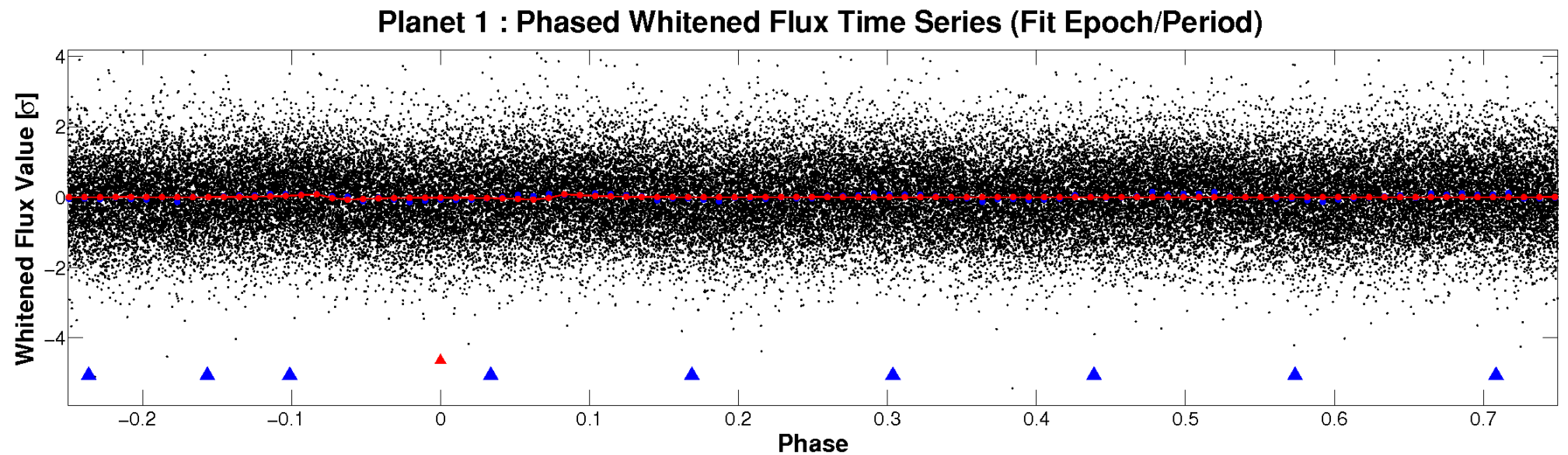
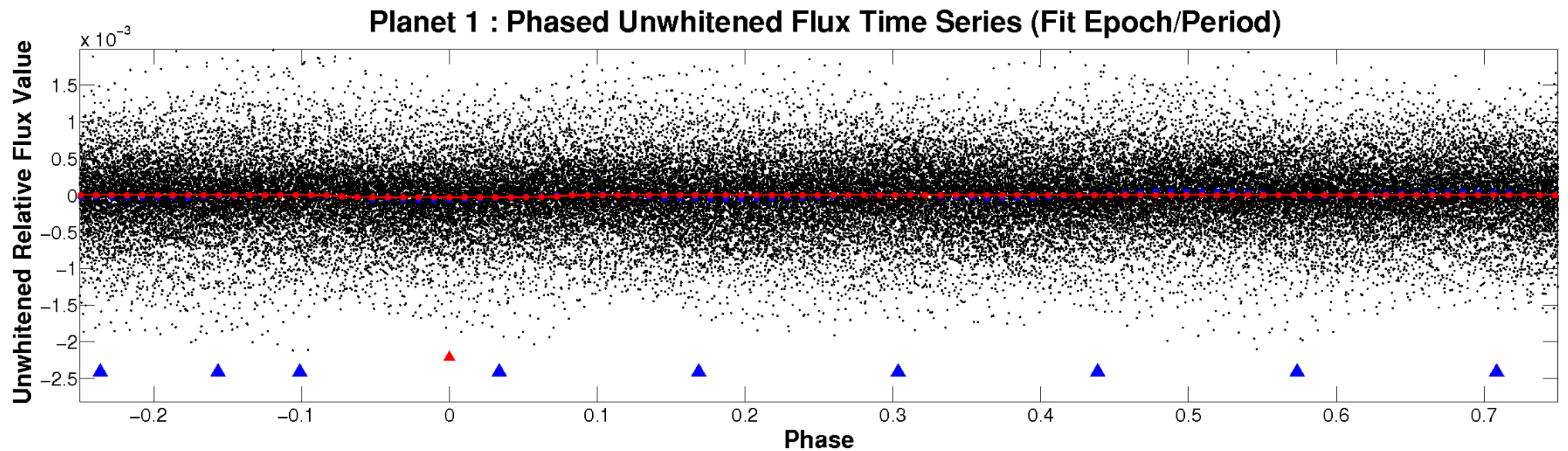


ALT Odd/Even

TCE 005481781-01

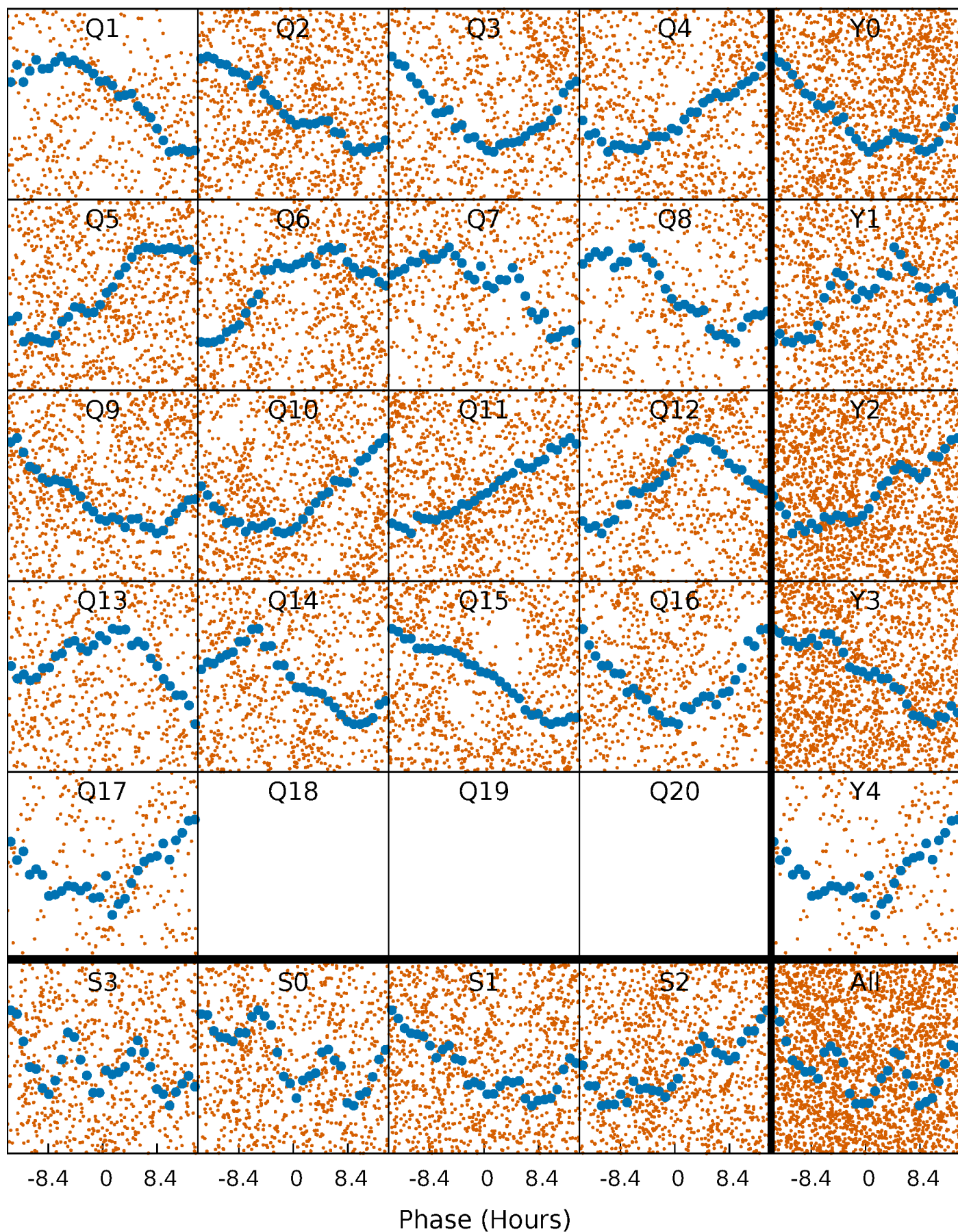


Non-Whitened Vs. Whitened Light Curve



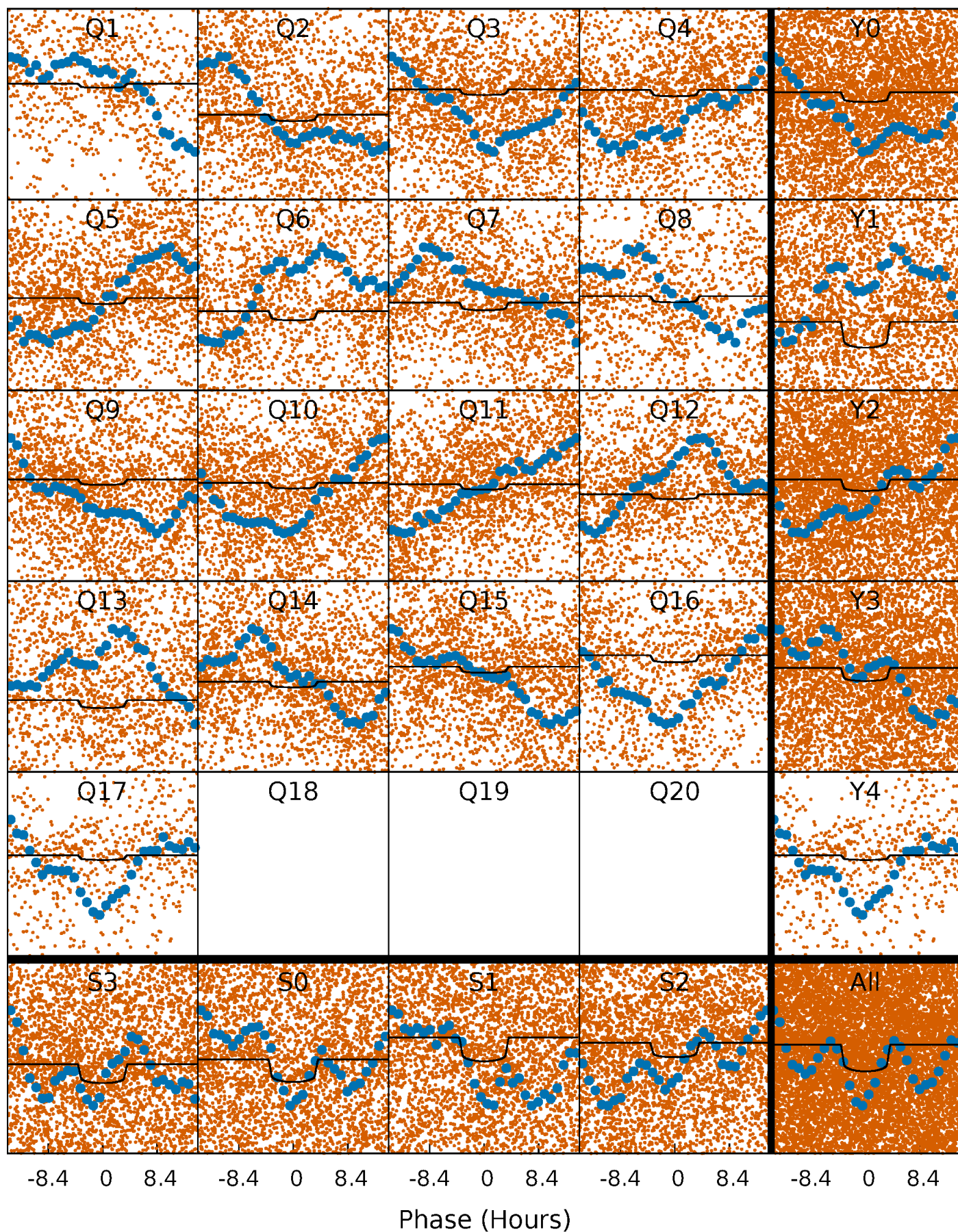
PDC Quarter-Phased Transit Curves

TCE 005481781-01 P= 1.966829 Days $T_0=131.995908$ (BKJD)



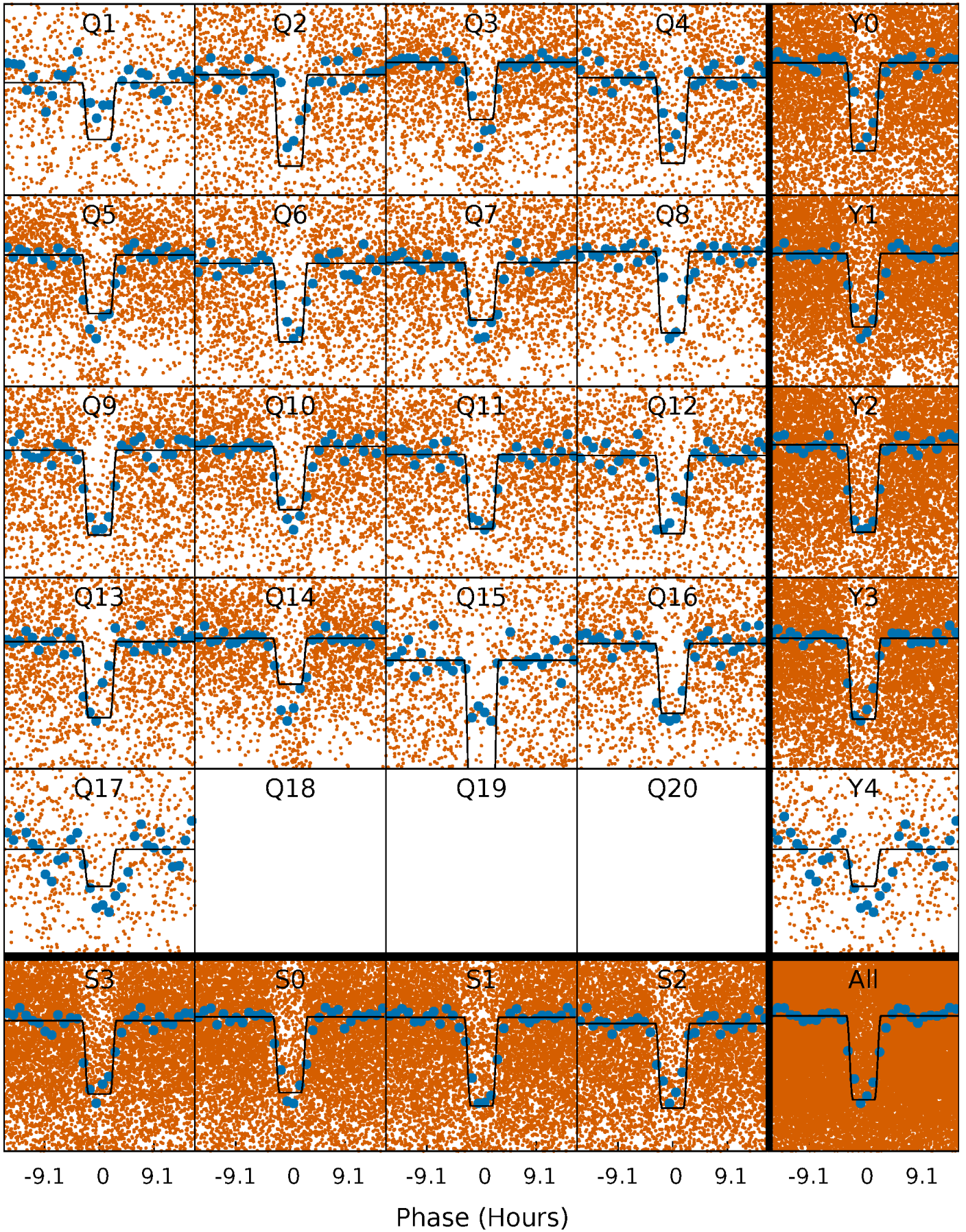
DV Quarter-Phased Transit Curves

TCE 005481781-01 P= 1.966829 Days $T_0=131.995908$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

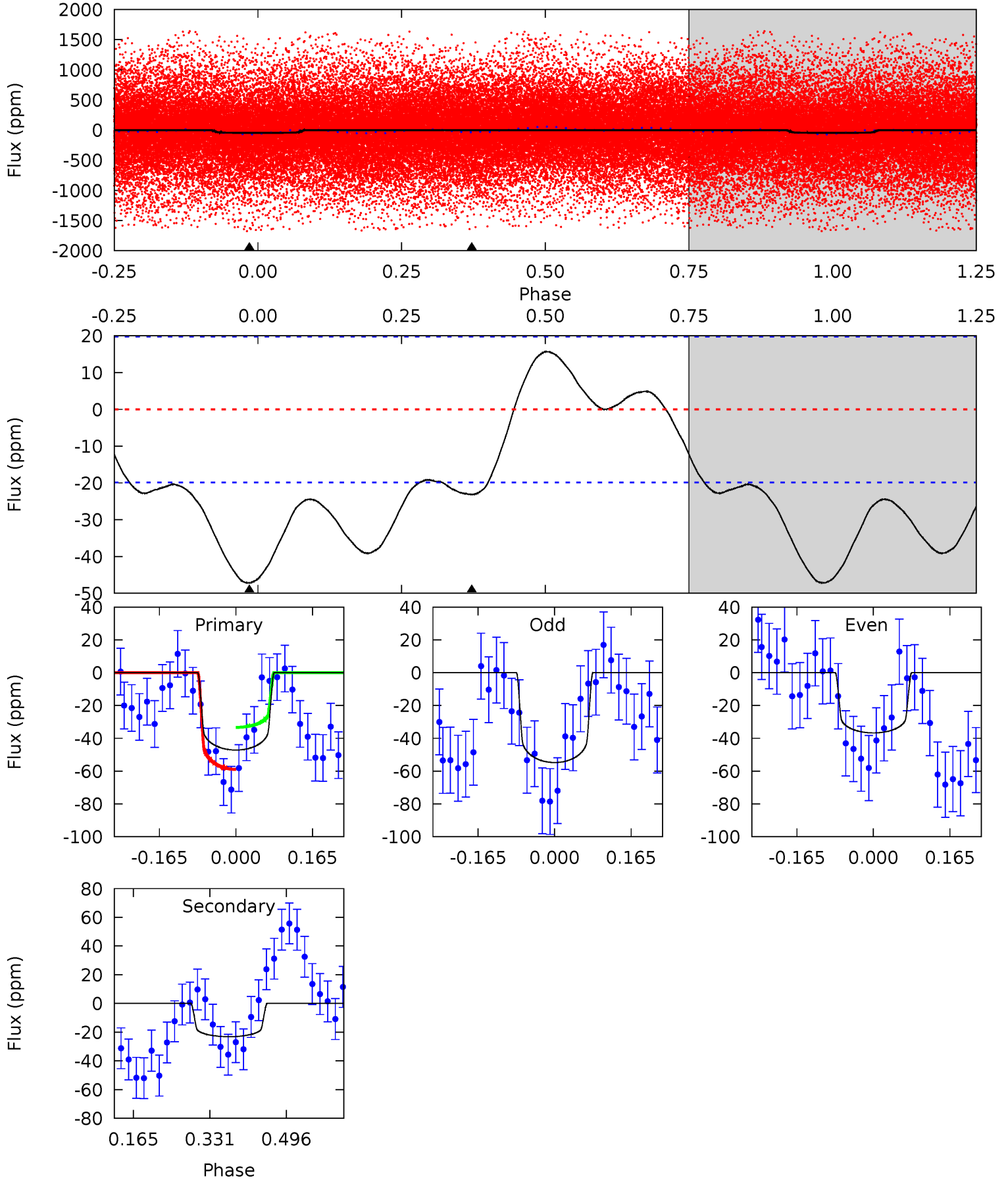
TCE 005481781-01 P= 1.966784 Days $T_0=131.989539$ (BKJD)



DV Model-Shift Uniqueness Test

005481781-01, P = 1.966829 Days, E = 130.029079 Days

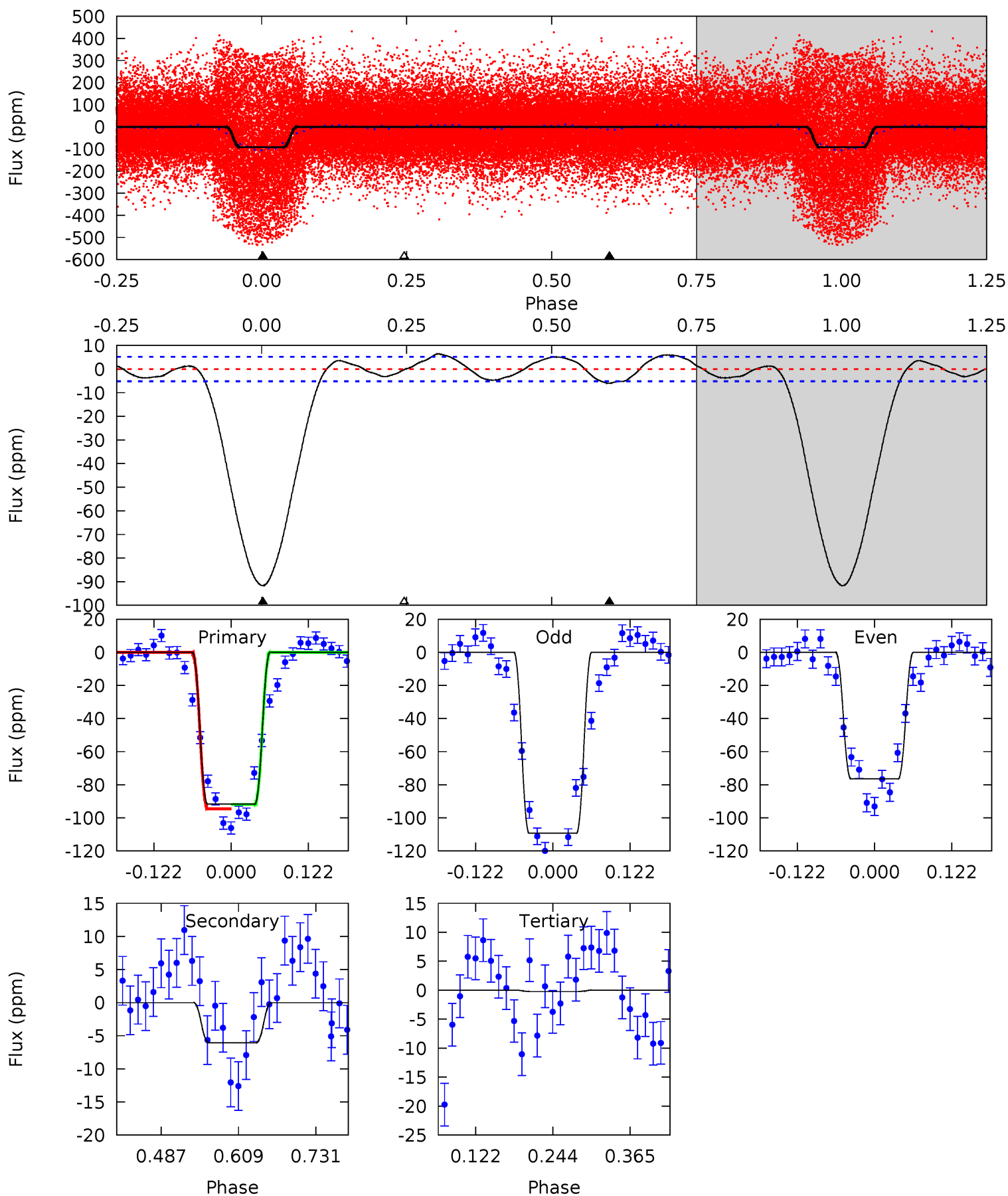
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
10.6	5.20	0	0	4.46	1.39	3.54	10.6	10.6	5.20	5.20	2.05	1.12	0.25	2.86



Alt Model-Shift Uniqueness Test

005481781-01, P = 1.966784 Days, E = 130.022755 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
79.7	5.26	0.20	0	4.52	1.55	2.64	79.5	79.7	5.06	5.26	14.2	0.89	0.07	1.11



Stellar Parameters For KIC 005481781

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	R (R_{\odot})	M (M_{\odot})	p_{\star} ($\text{g}\cdot\text{cm}^{-3}$)
	9105^{+286}_{-381}	$4.211^{+0.062}_{-0.248}$	$0.210^{+0.050}_{-0.600}$	$1.907^{+0.876}_{-0.274}$	$2.153^{+0.384}_{-0.427}$	$0.438^{+0.124}_{-0.280}$
	+3%/-4%	+1%/-6%	+24%/-286%	+46%/-14%	+18%/-20%	+28%/-64%
Source	KIC0	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 005481781-01 / KOI

Detrend	Depth (ppm)	R_p (R_{\oplus})	T_{max} (K)	T_{obs} (K)	A_{obs}
DV	-23 ± 4	$1.24^{+0.36}_{-0.26}$	3989^{+387}_{-231}	8016^{+1310}_{-874}	12^{+7}_{-5}
Alt.	-6 ± 1	$2.09^{+0.45}_{-0.31}$	3982^{+342}_{-224}	4232^{+341}_{-317}	$1.135^{+0.472}_{-0.381}$

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

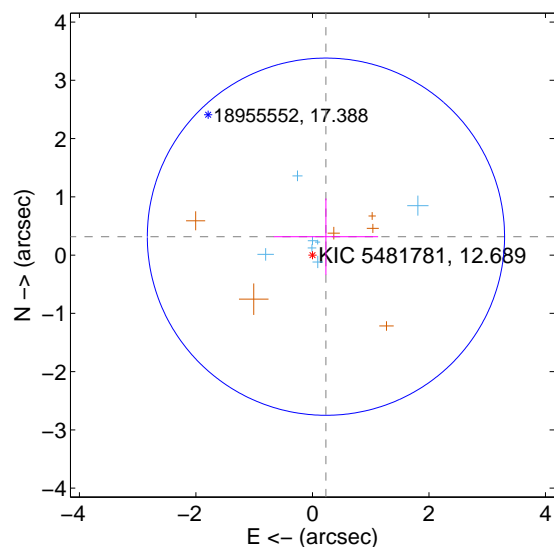
Supplemental centroid analysis for 005481781-01. Kepler magnitude: 12.69. Transit SNR 5.42

There are 7 quarters with good PRF difference image offsets

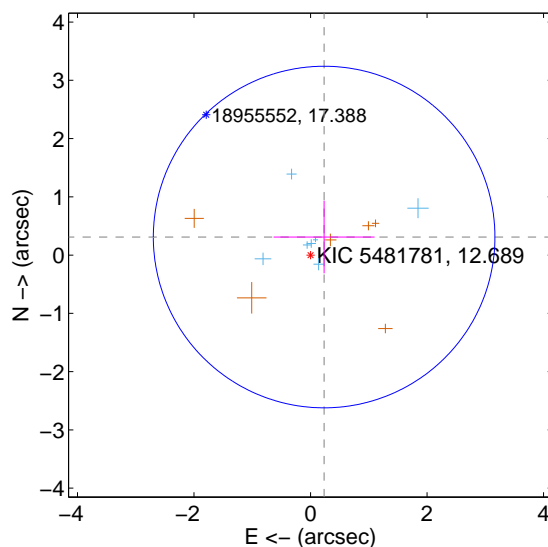
The direct PRF centroid is offset from the target star catalog position by about 0.05 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.392 ± 1.022	0.38	-0.232 ± 0.895	0.316 ± 0.655
PRF-fit source offset from KIC position	0.388 ± 0.977	0.40	-0.233 ± 0.867	0.310 ± 0.623
photometric centroid source offset	1.27 ± 0.73	1.74	-0.39 ± 0.90	-1.21 ± 0.71

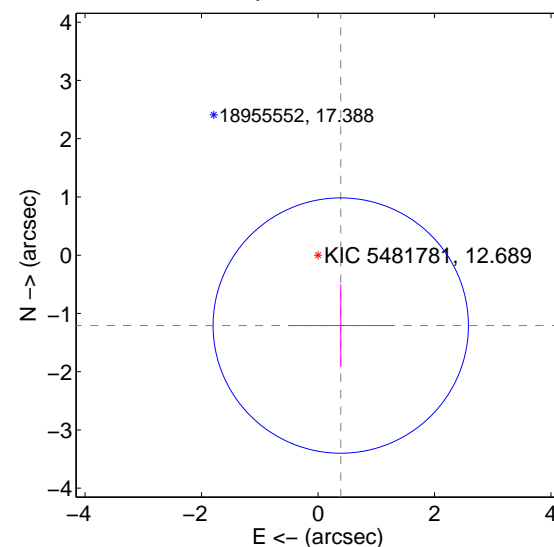
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

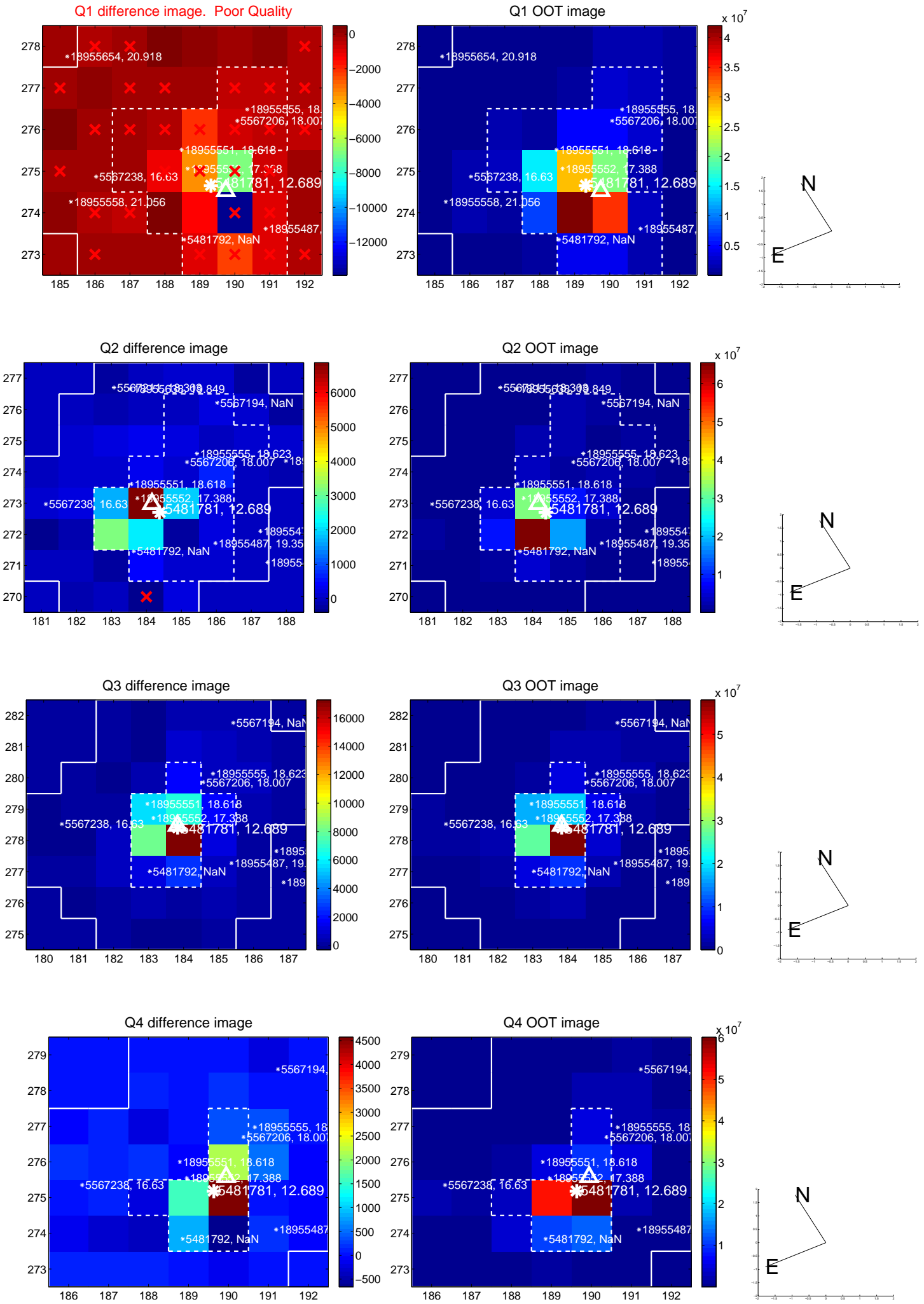


offset from photometric centroids

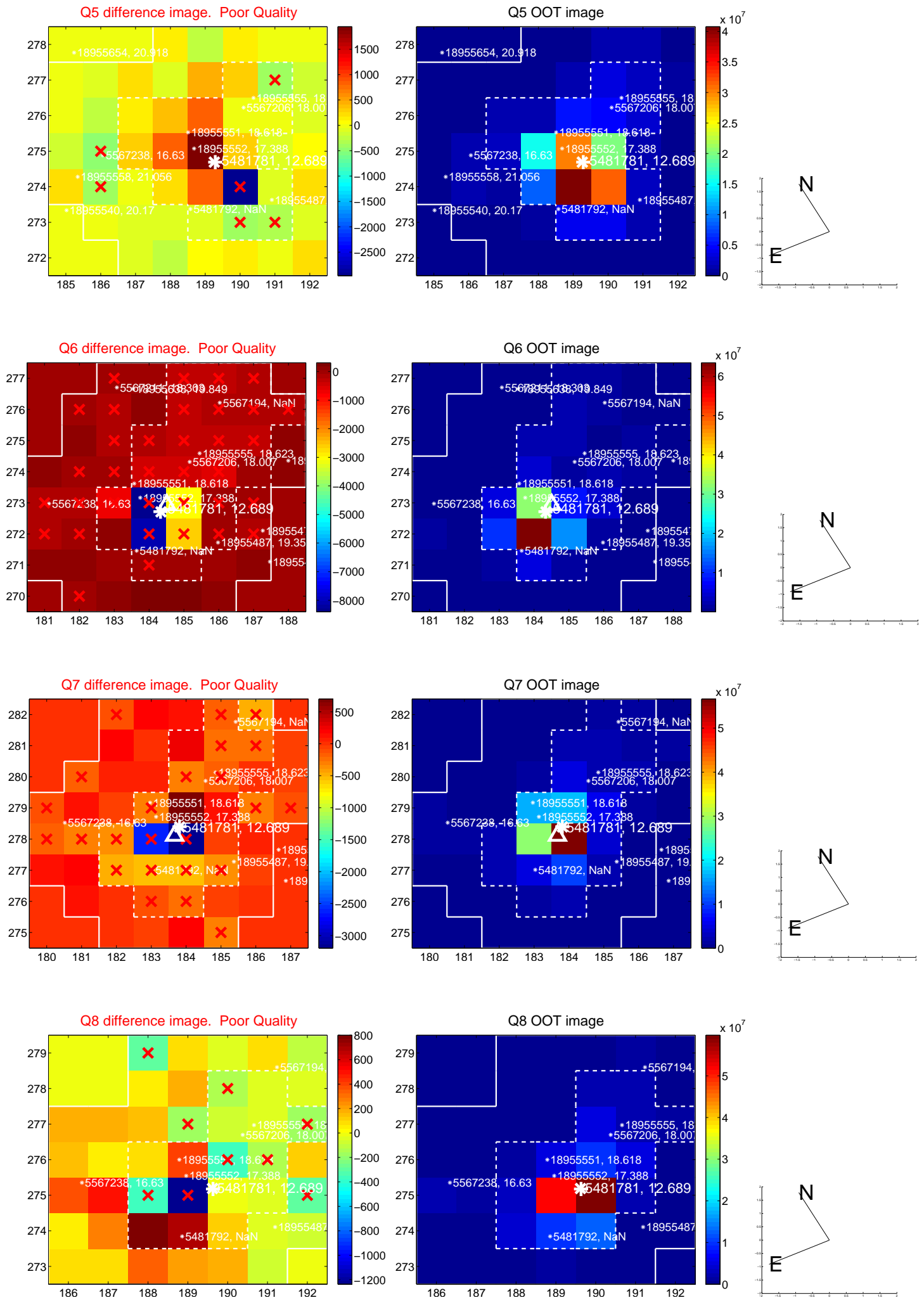


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets; Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

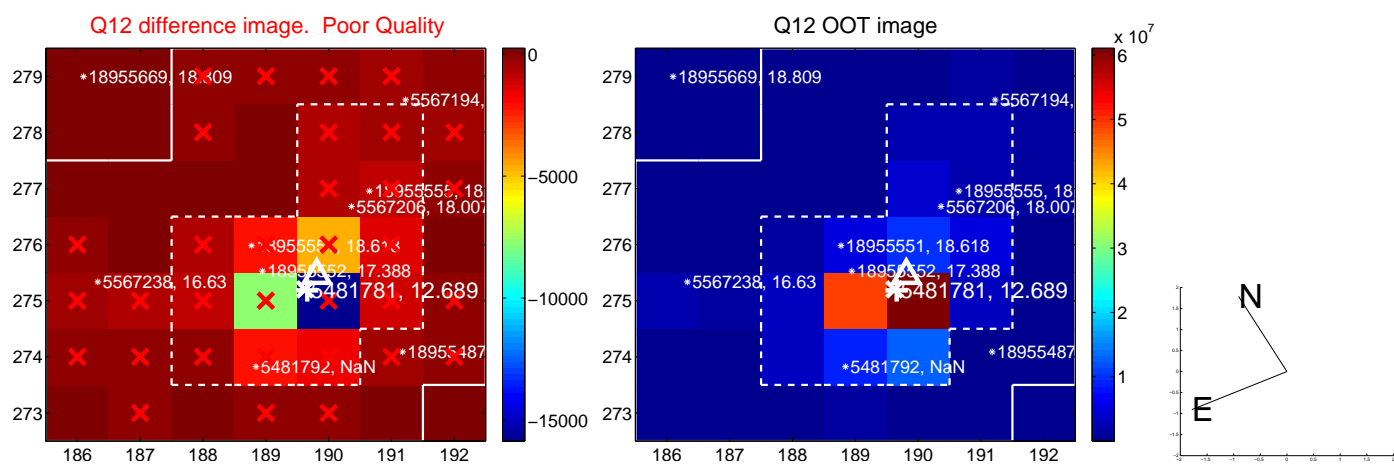
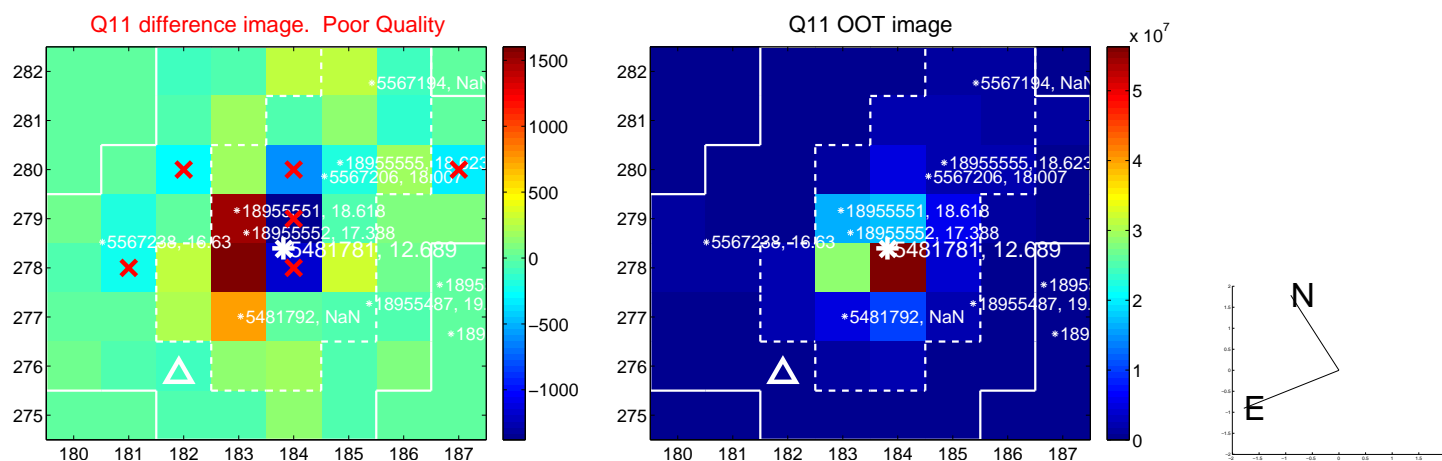
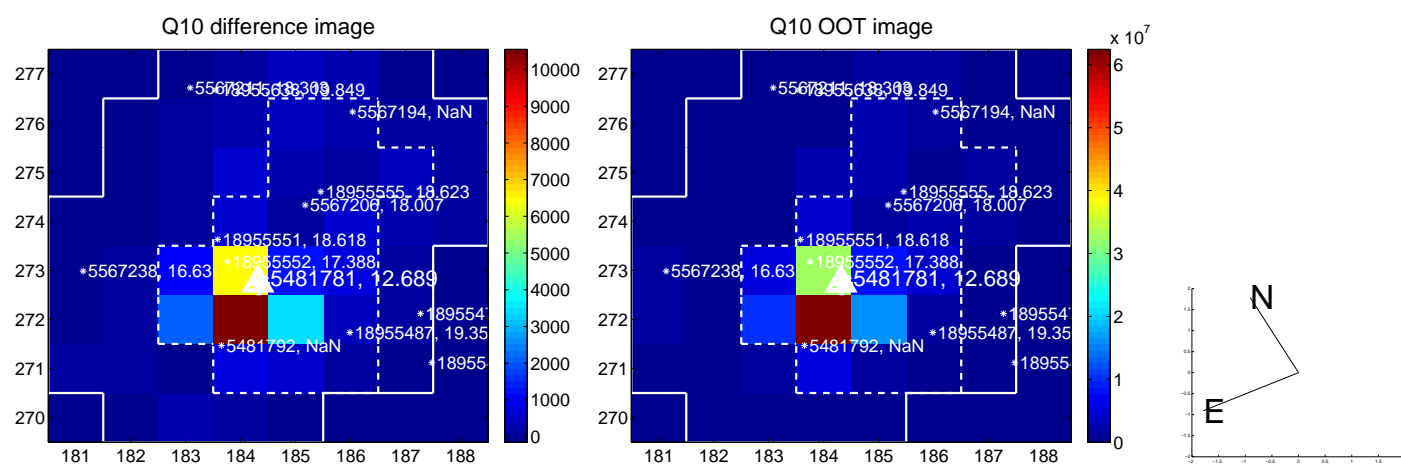
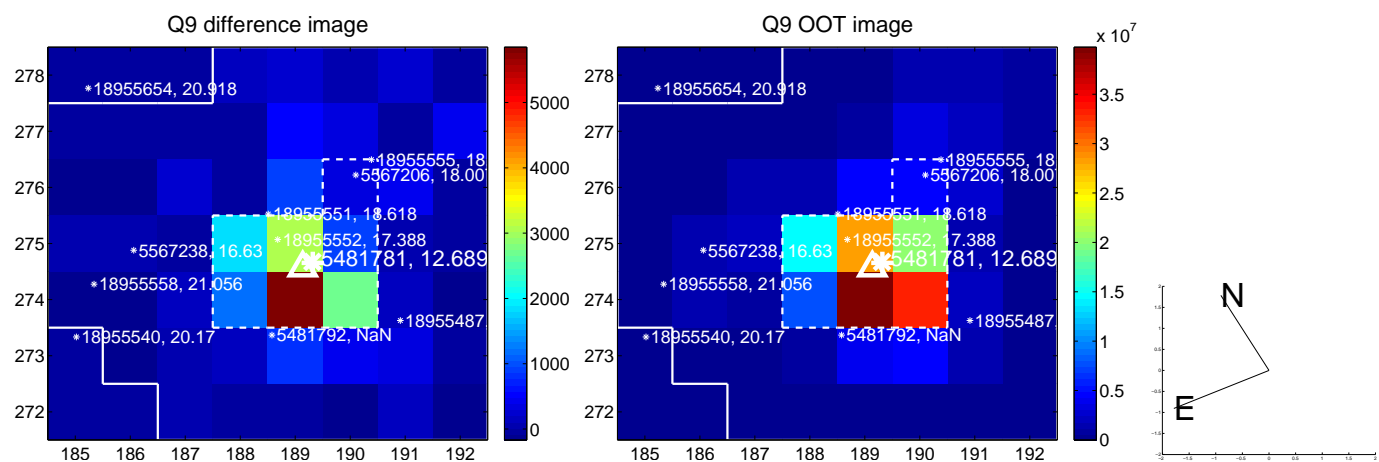
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



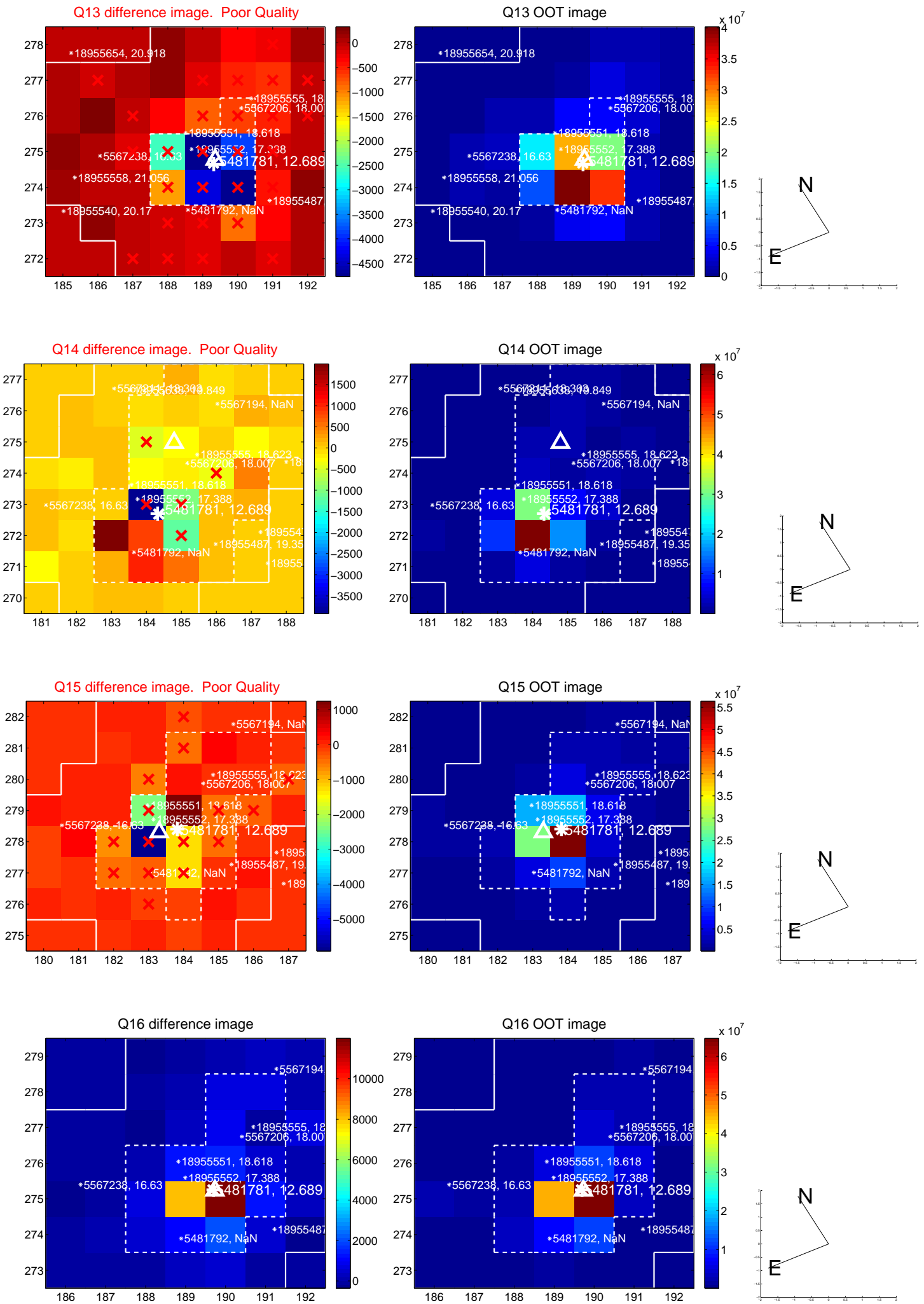
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



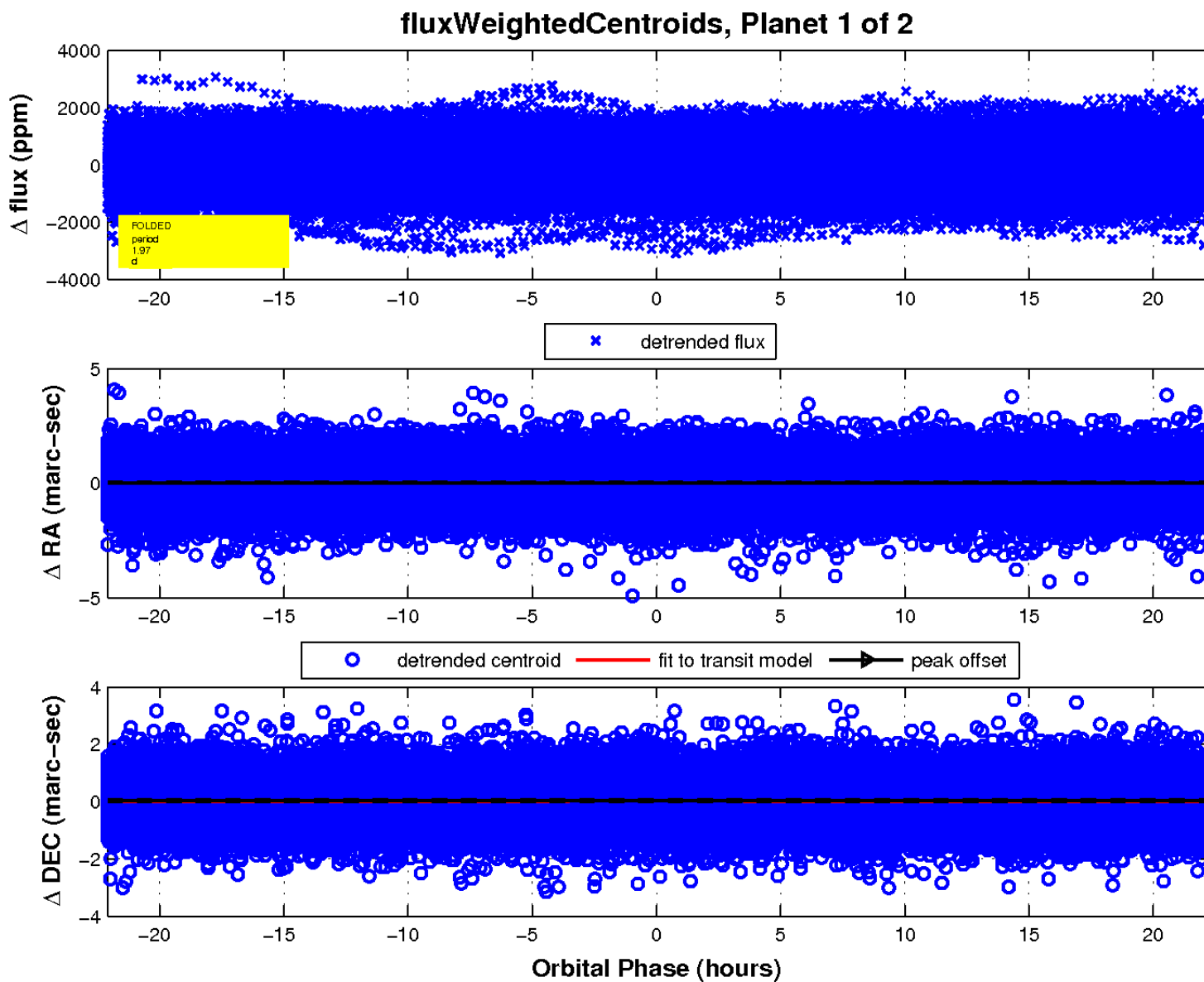
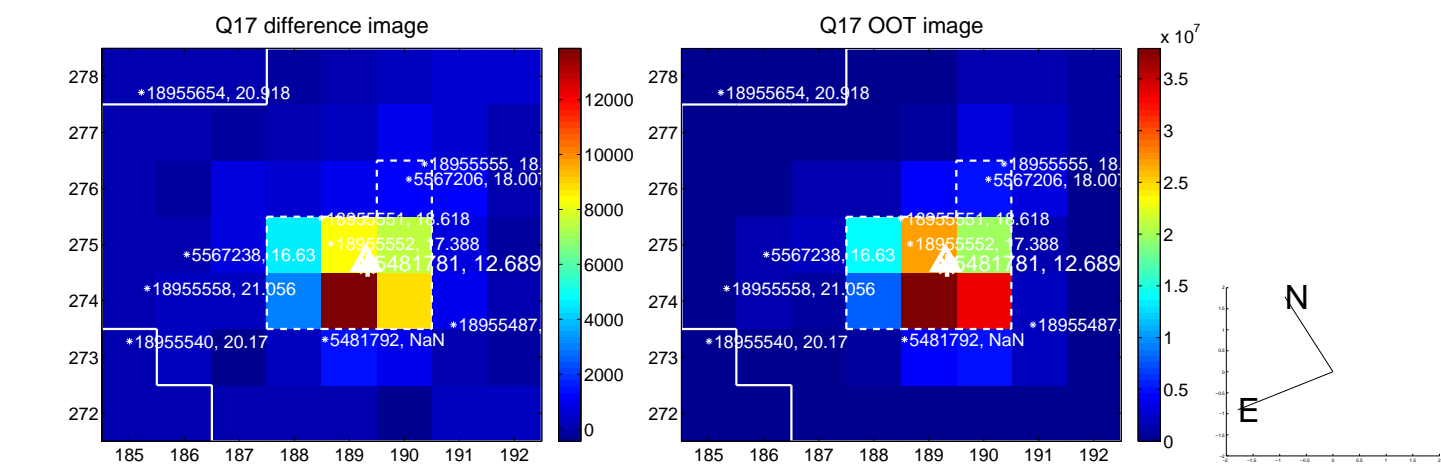
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

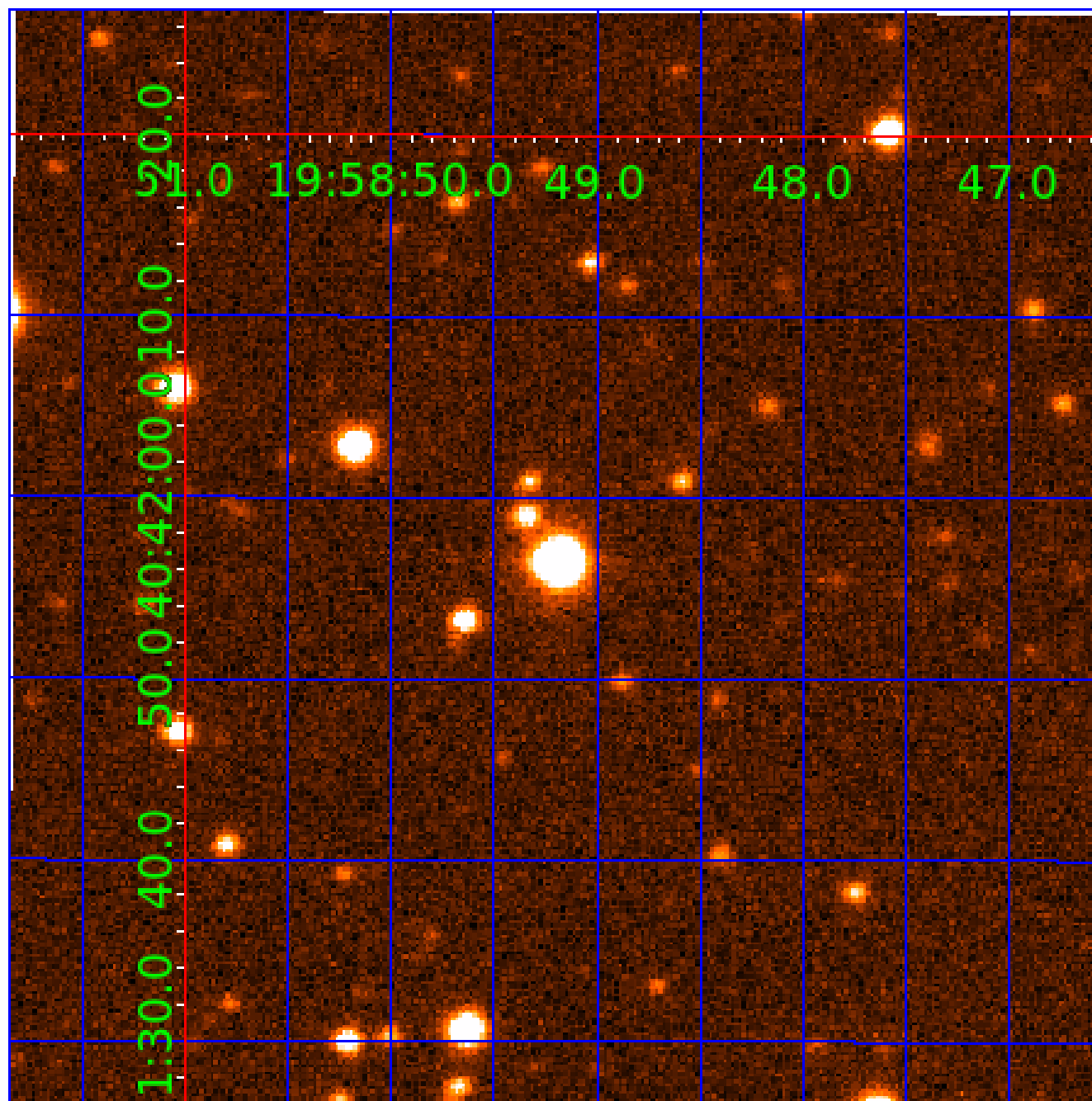


white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



UKIRT Image

Declination



KIC 005481781

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})
005481781-01	OBS	No	1.966829	131.995908	29.4	7.365	8.3	5.4	1.91	9105	1.19	14208.85
005481781-02	OBS	No	162.981392	196.593464	956.5	10.604	8.4	8.8	1.91	9105	10.71	39.33

Robovetter Results

TCE	Run Type	Disp	Score	N	S	C	E	Comments
005481781-01	OBS	FP	0.00	1	0	0	0	LPP_DV—MOD_NONUNIQ_DV
005481781-02	OBS	FP	0.00	1	0	0	0	INDIV_TRANS_RUBBLE—TRANS_GAPPED—INCONSISTENT_TRANS

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

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

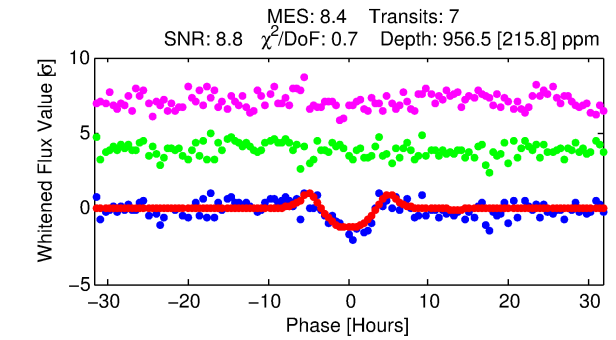
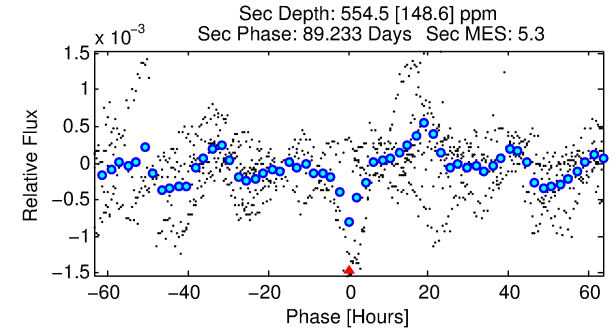
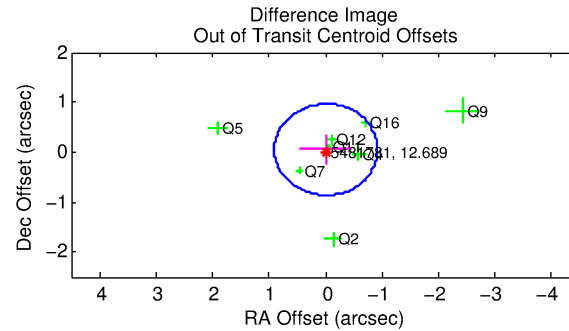
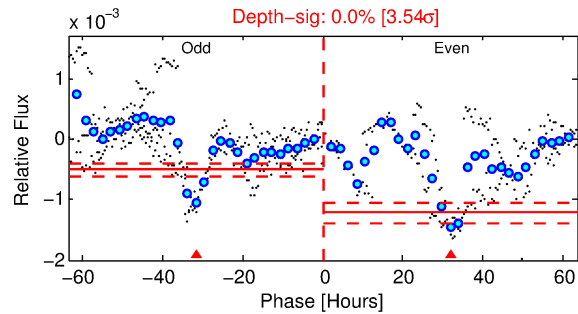
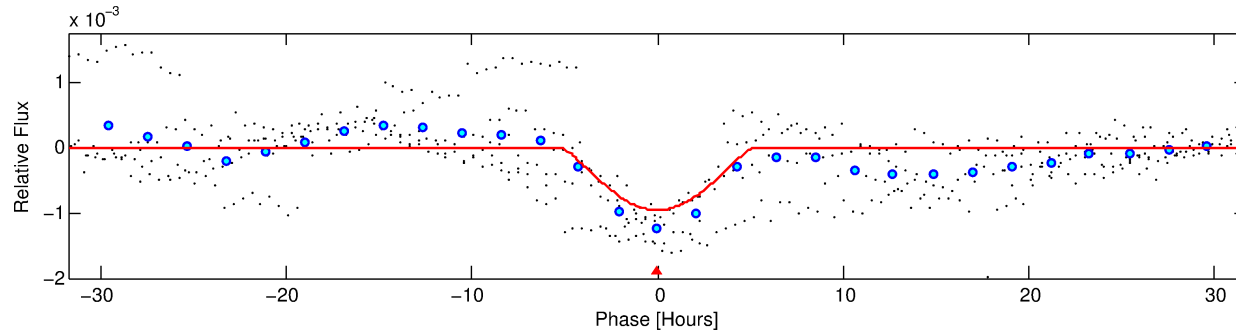
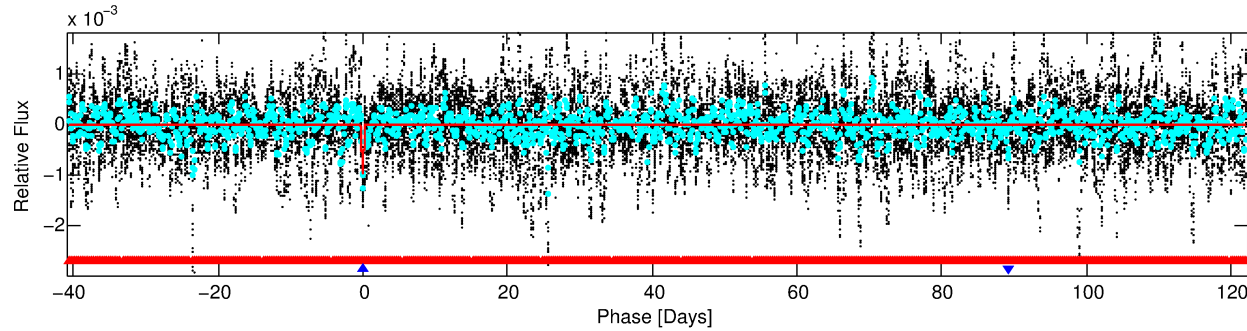
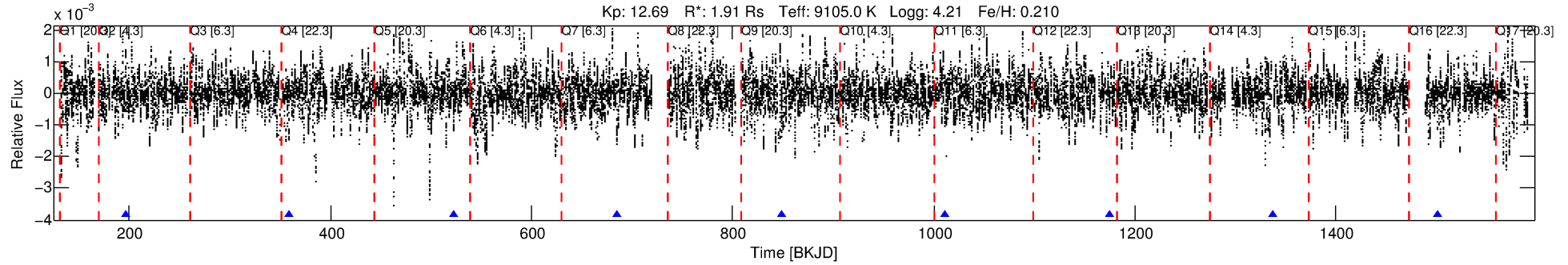
See http://exoplanetarchive.ipac.caltech.edu/docs/API_kepcandidate_columns.html#proj_disp_col for comment definitions.

Ephemeris Match Information For 005481781-02

No Significant Match Found

DV One-Page Summary

KIC: 5481781 Candidate: 2 of 2 Period: 162.981 d



DV Fit Results:

Period = 162.98139 [0.00369] d
Epoch = 196.5935 [0.0135] BKJD
Rp/R* = 0.0515 [0.0516]
a/R* = 38.18 [9.40]
b = 1.00 [0.07]
Seff = 39.33 [20.31]
Teq = 639 [82] K
Rp = 10.71 [11.82] Re
a = 0.7546 [0.2721] AU
Ag = 1513.47 [3150.12] [0.48σ]
Teffp = 6158 [3125] K [1.77σ]

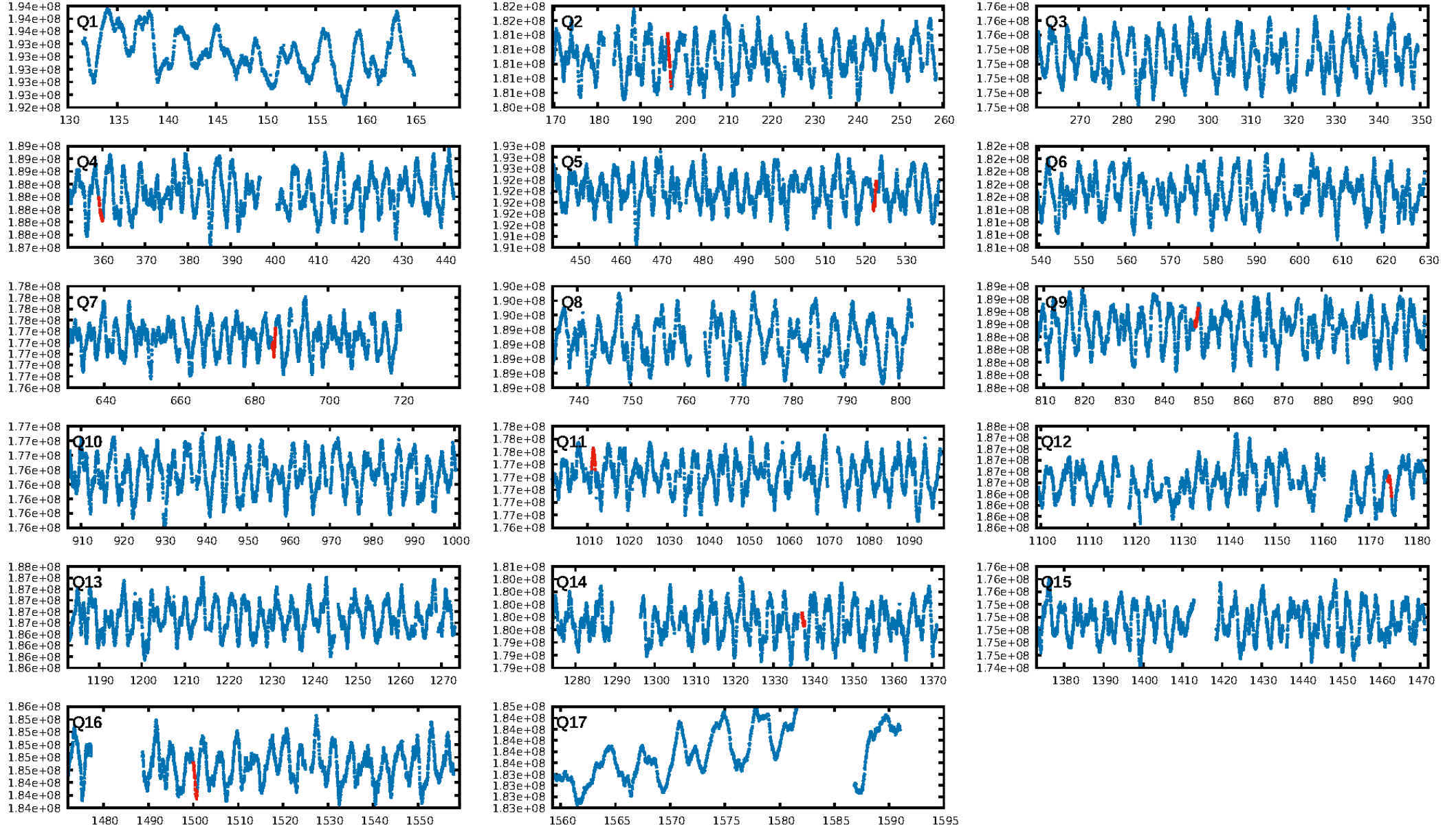
DV Diagnostic Results:

ShortPeriod-sig: 100.0% [299.31σ]
LongPeriod-sig: N/A
ModelChiSquare2-sig: 95.9%
ModelChiSquareGof-sig: 100.0%
Bootstrap-pfa: 1.05e-09
RollingBand-fgt: 1.00 [7/7]
GhostDiagnostic-chr: 0.259
Centroid-sig: 0.1%
Centroid-so: 0.578 arcsec [2.12σ]
OotOffset-rm: 0.051 arcsec [0.17σ]
KicOffset-rm: 0.214 arcsec [0.85σ]
OotOffset-st: 1/2/3/2 [8]
KicOffset-st: 1/2/3/2 [8]
DiffImageQuality-fgm: 0.50 [4/8]
DiffImageOverlap-fno: 0.00 [0/8]

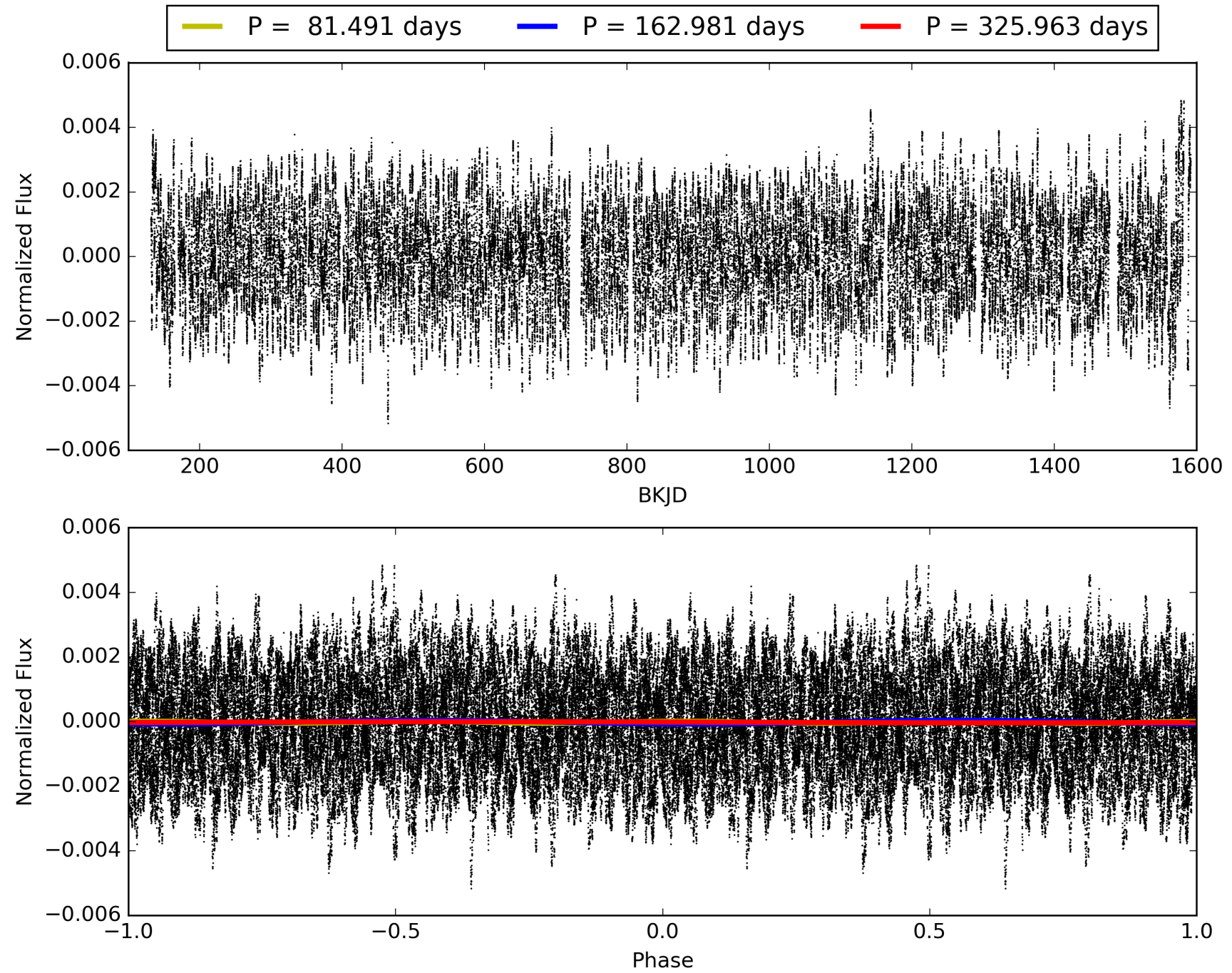
Software Revision: svn+ssh://murzim/repo/soc/tags/release/9.3.42@60958 -- Date Generated: 29-Jan-2016 14:46:10 Z

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

TCE 005481781-02, PDC Light Curves

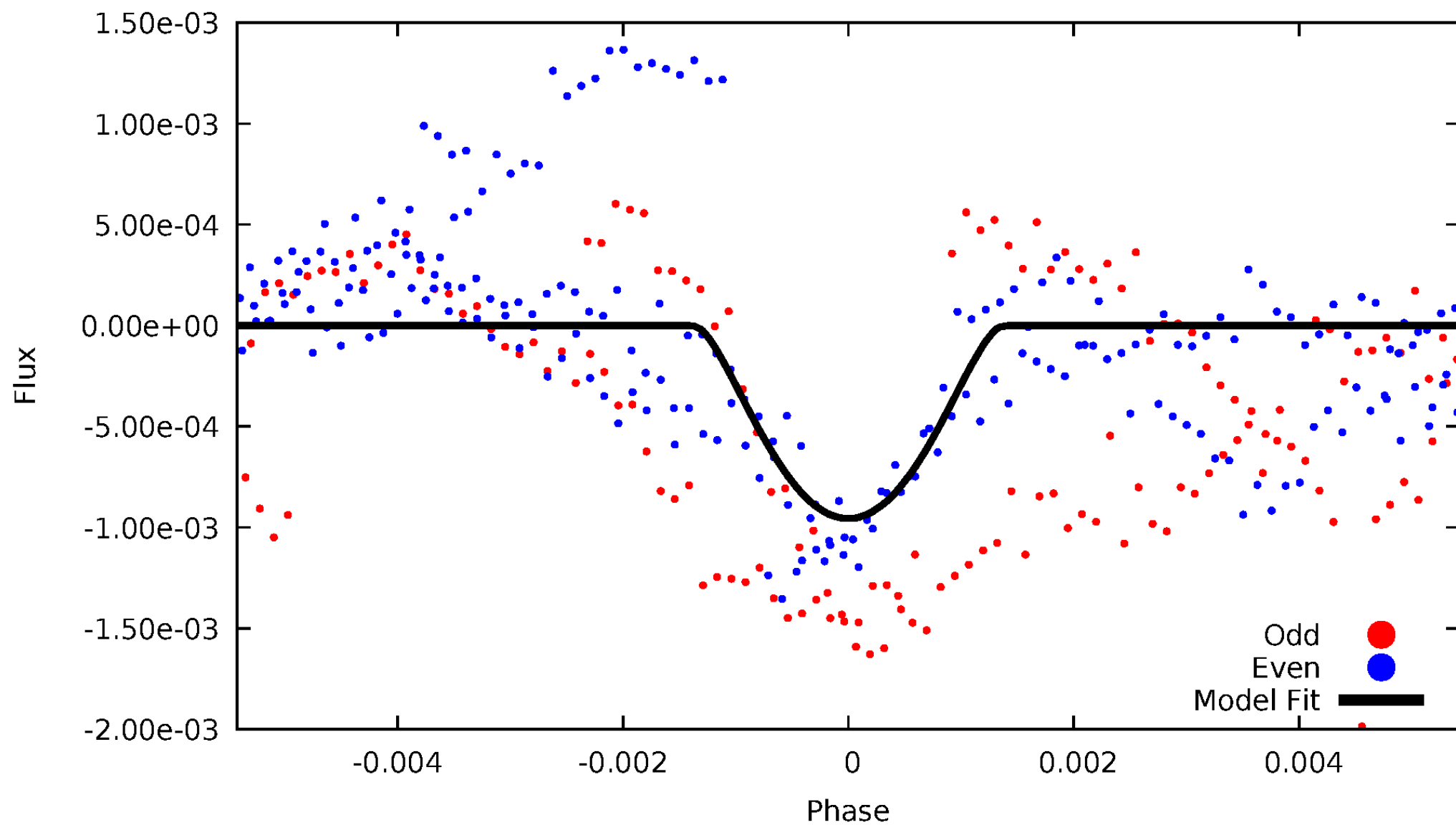


TCE 005481781-02



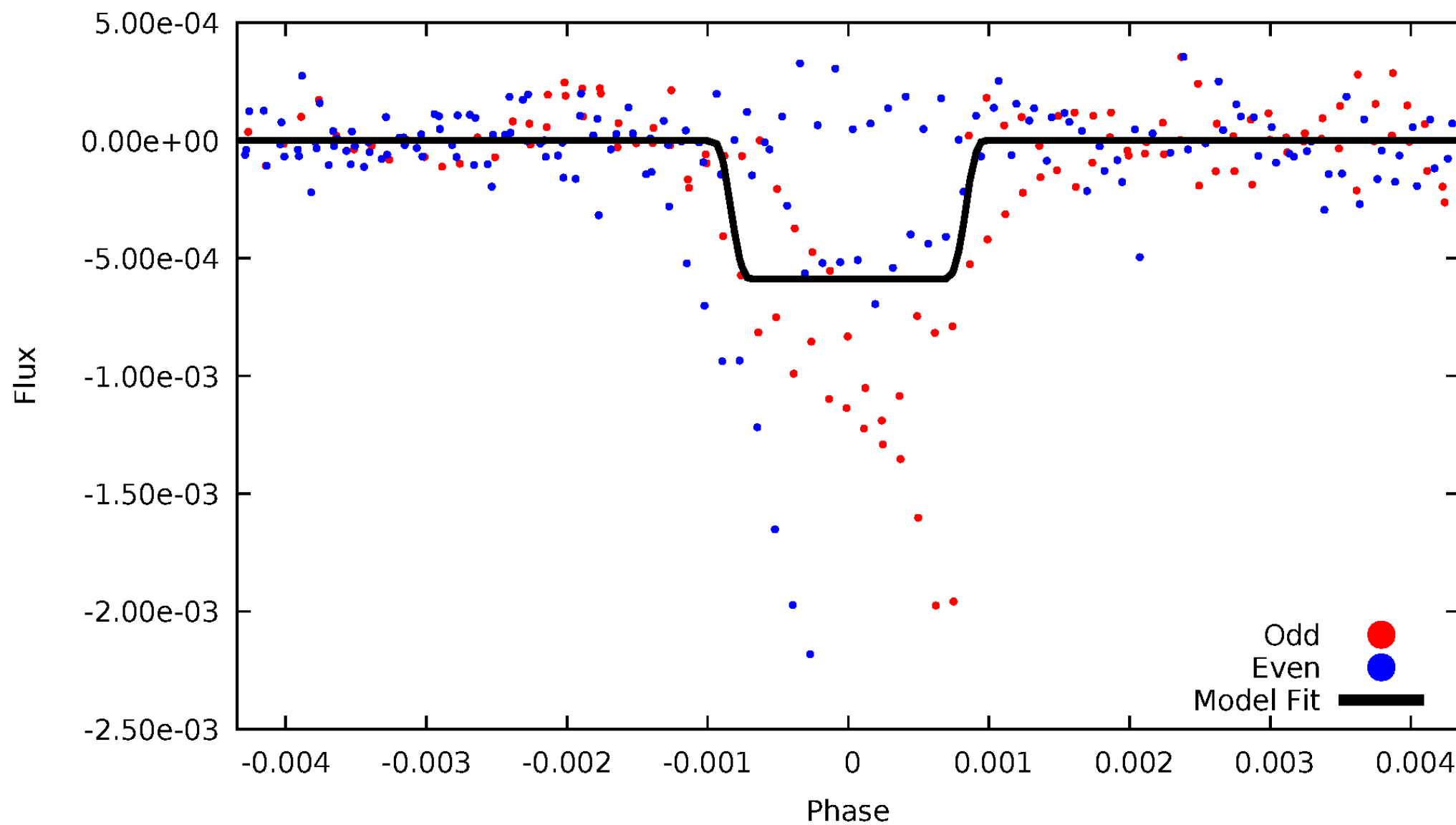
DV Odd/Even

TCE 005481781-02



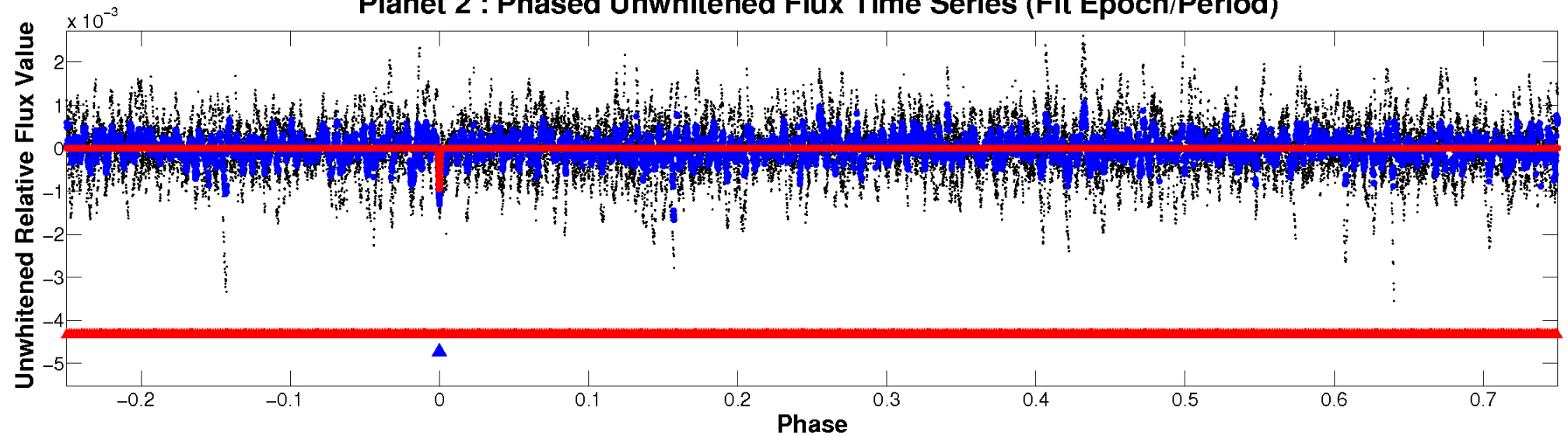
ALT Odd/Even

TCE 005481781-02

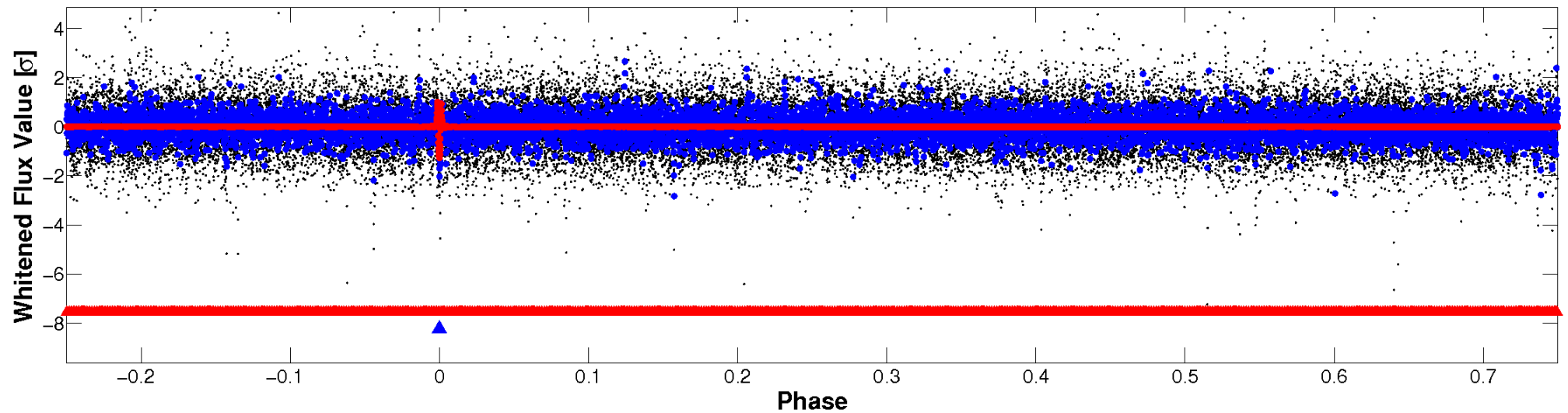


Non-Whitened Vs. Whitened Light Curve

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

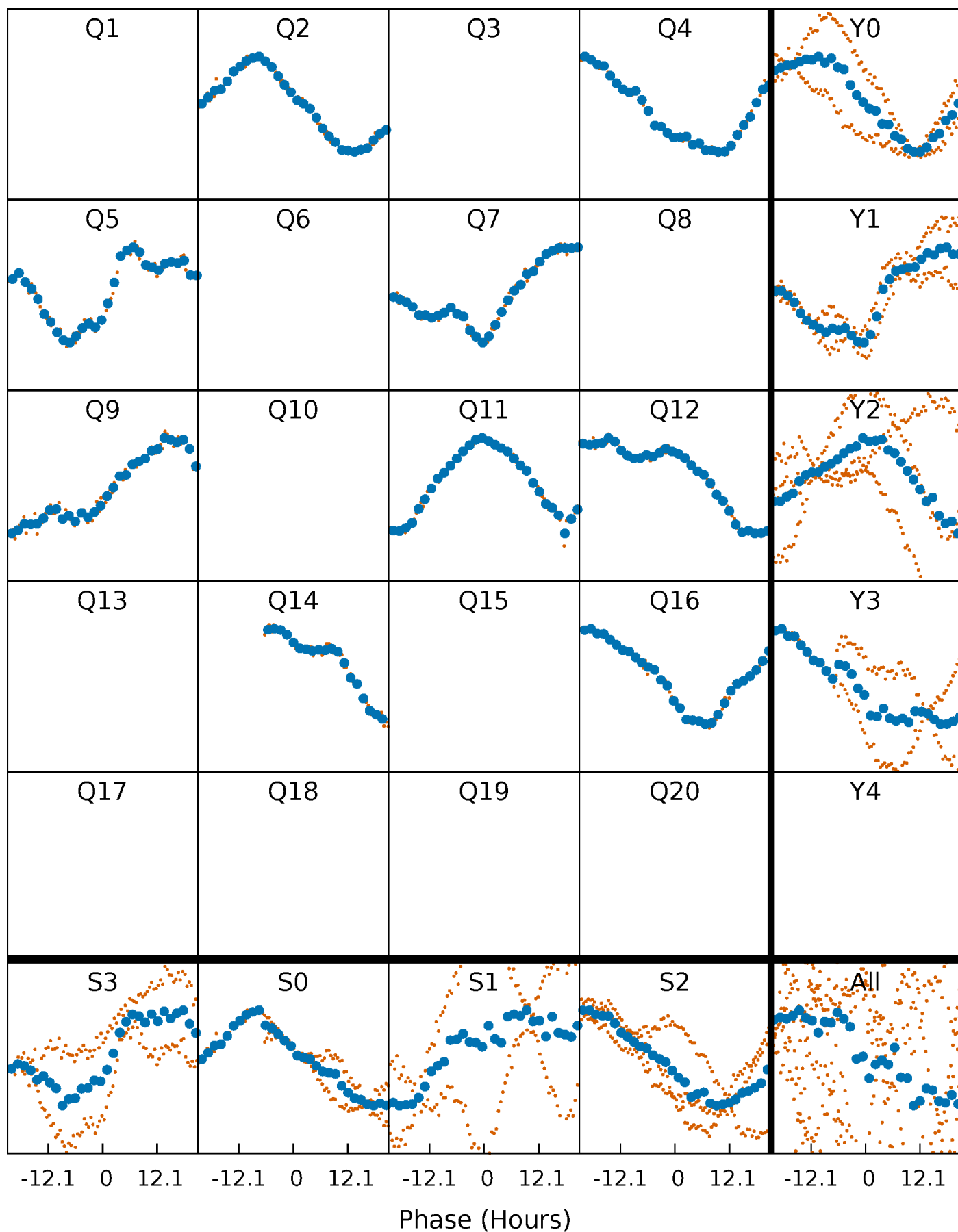


Planet 2 : Phased Whitened Flux Time Series (Fit Epoch/Period)



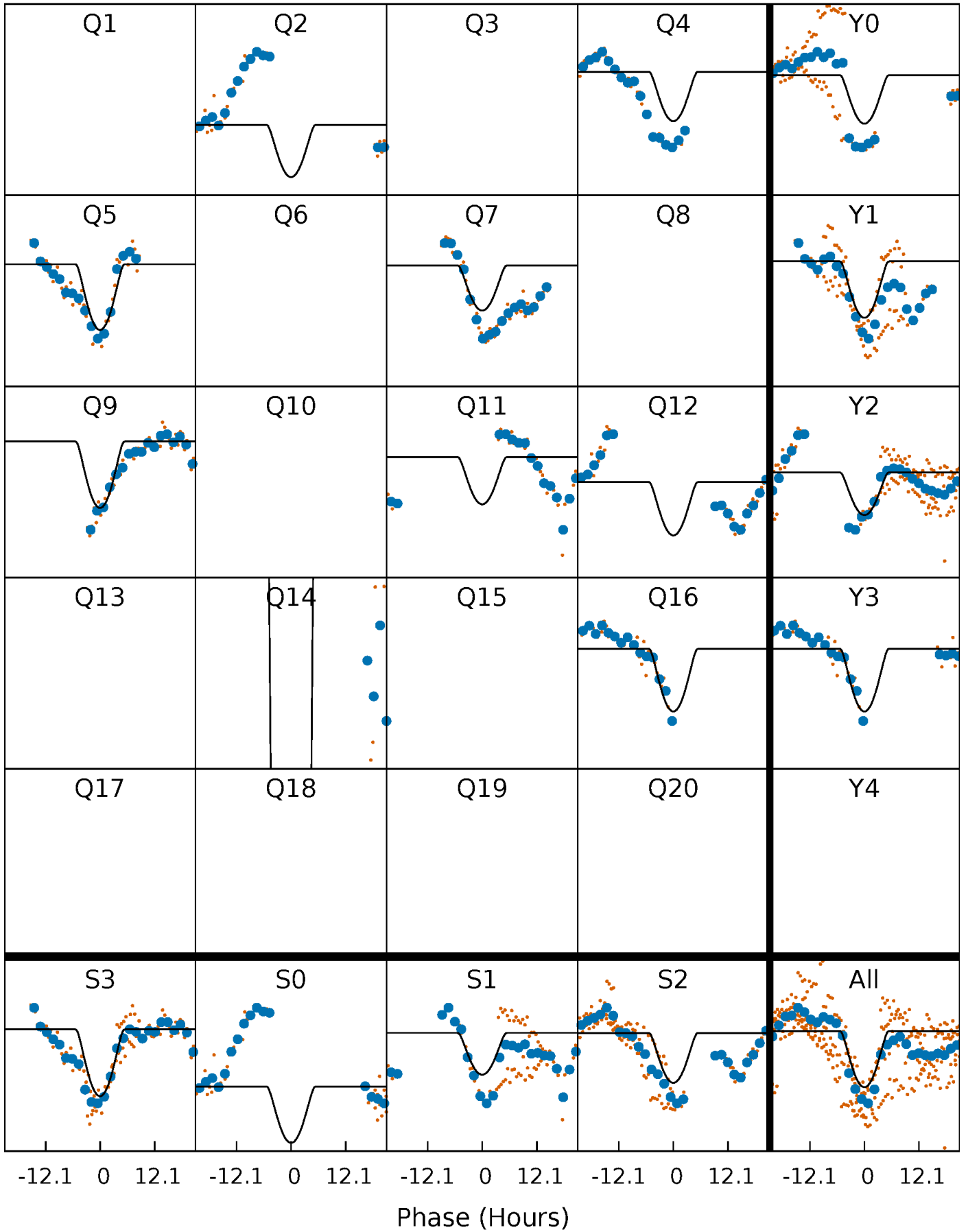
PDC Quarter-Phased Transit Curves

TCE 005481781-02 P=162.981392 Days $T_0=196.593464$ (BKJD)



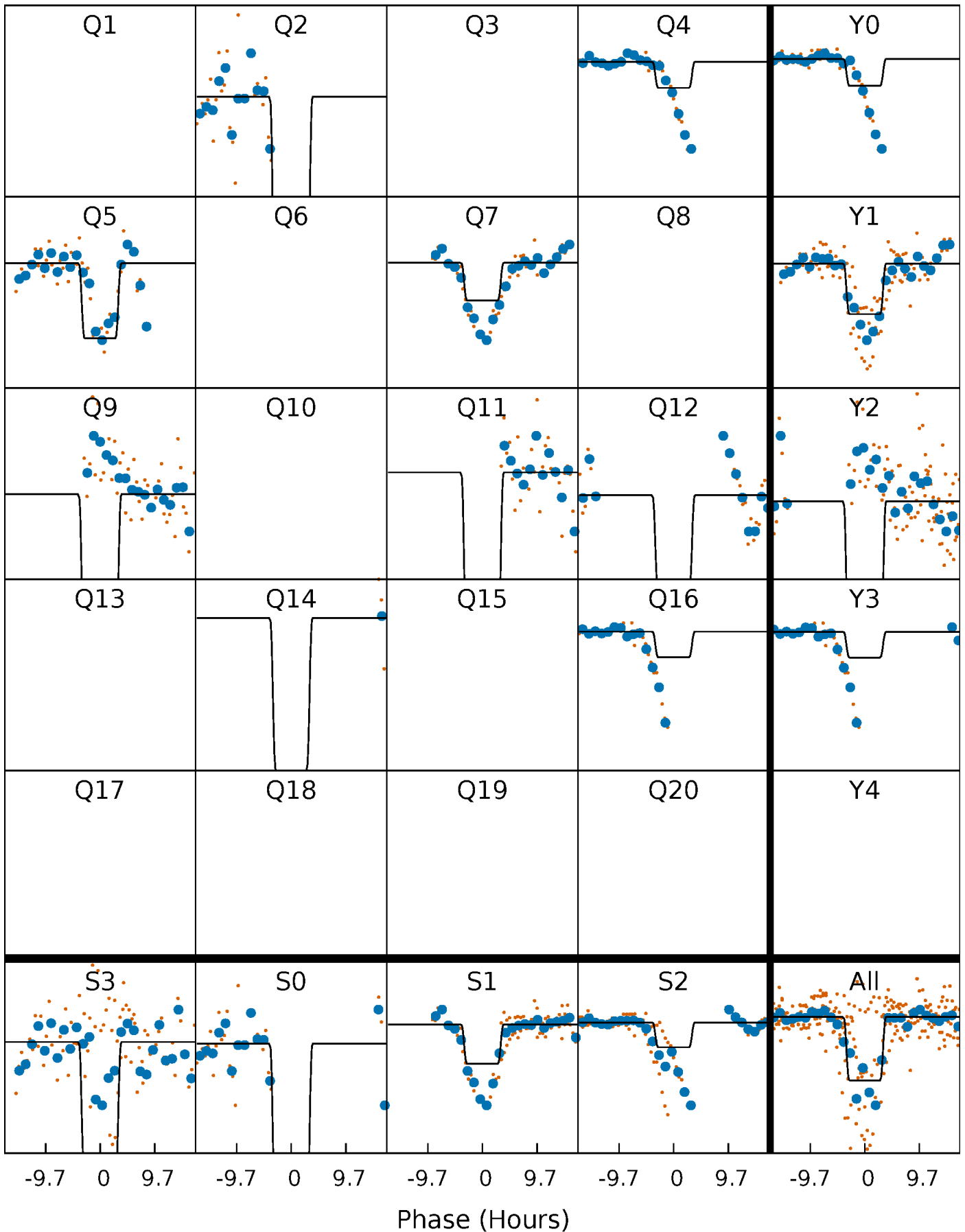
DV Quarter-Phased Transit Curves

TCE 005481781-02 P=162.981392 Days $T_0=196.593464$ (BKJD)



Alt. Detrend Quarter-Phased Transit Curves

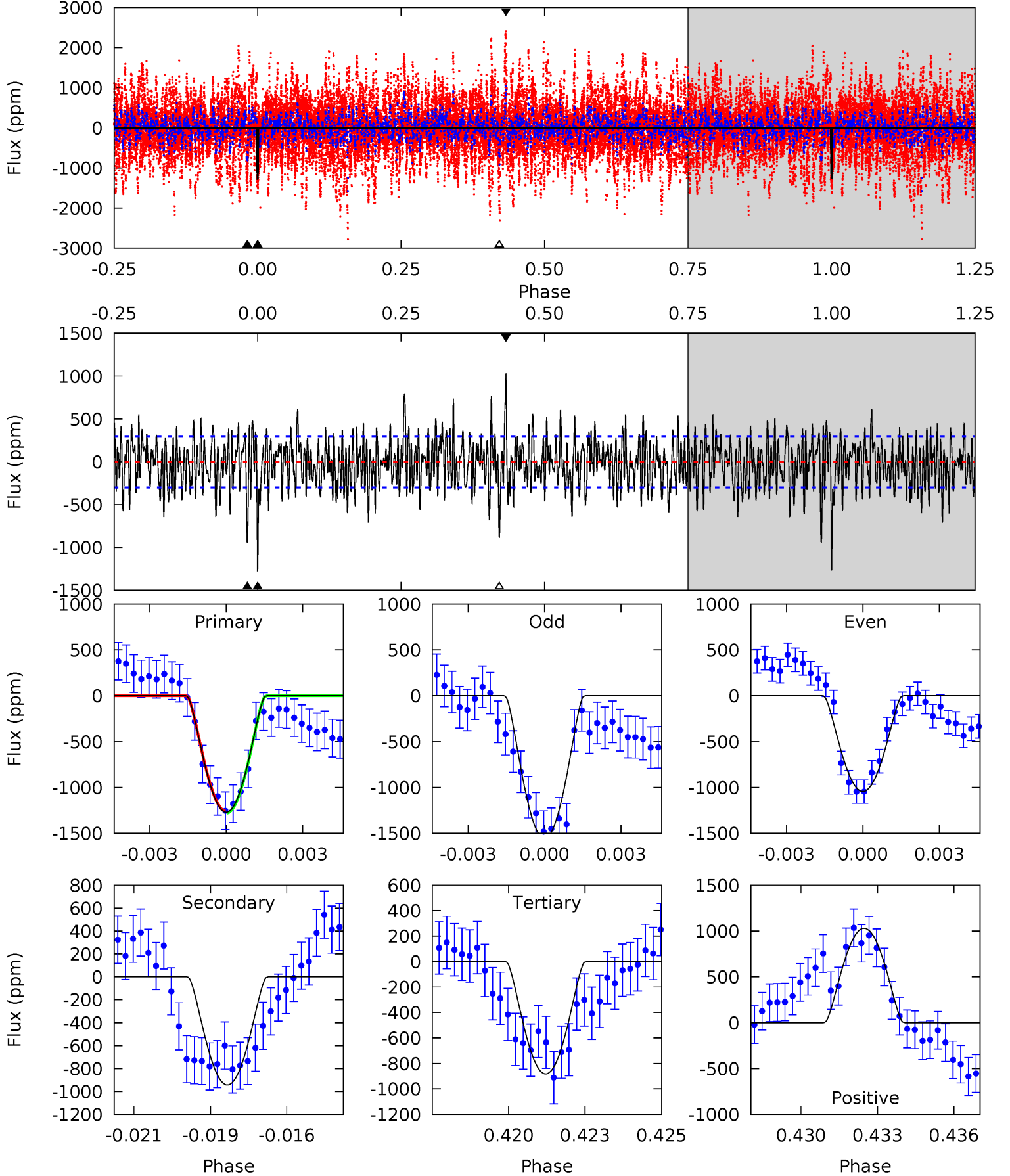
TCE 005481781-02 P=162.990312 Days $T_0=196.559187$ (BKJD)



DV Model-Shift Uniqueness Test

005481781-02, $P = 162.981392$ Days, $E = 33.612072$ Days

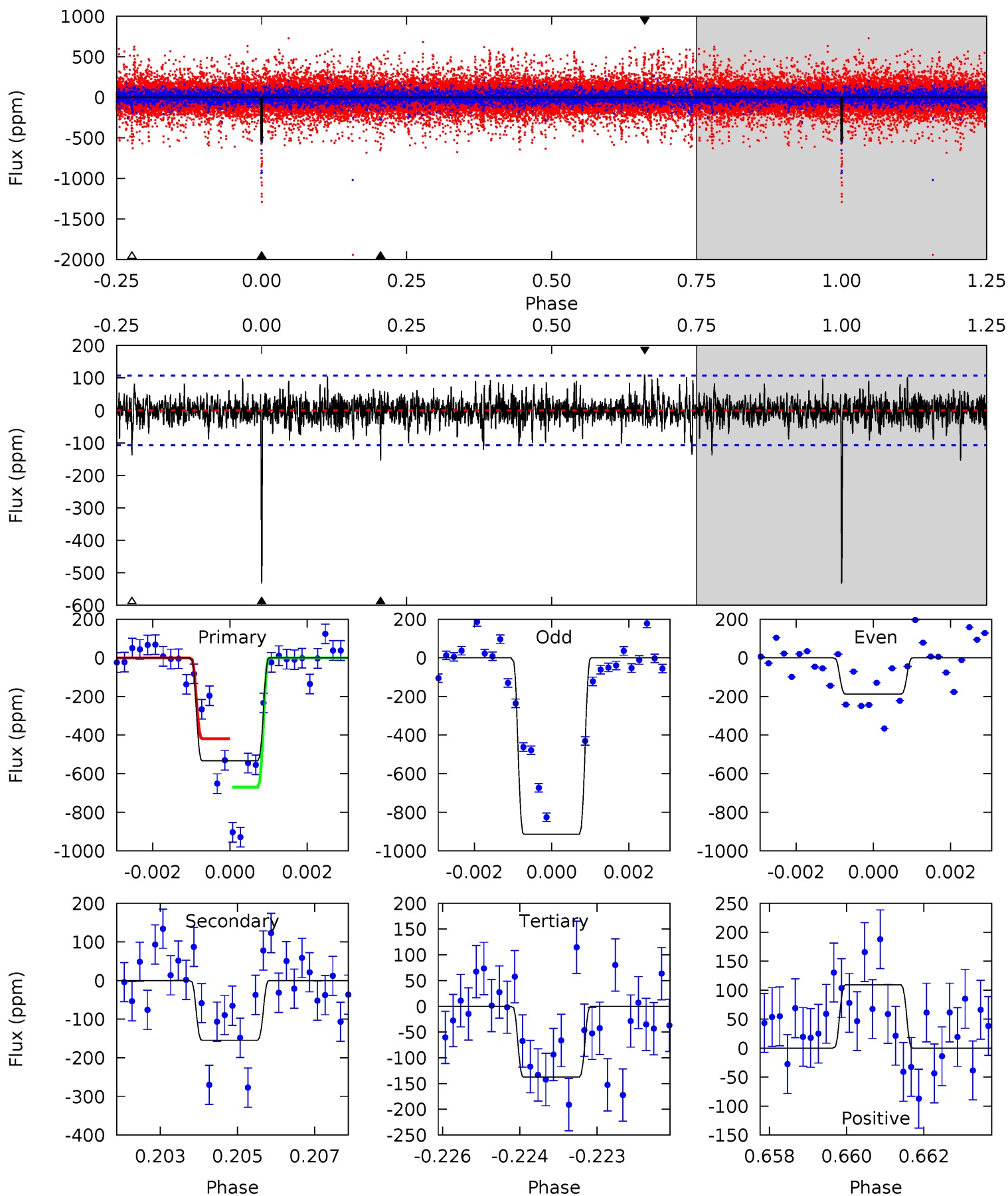
Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
22.3	16.6	15.5	18.1	5.27	3.00	4.40	6.81	4.22	1.08	-1.52	4.51	-0.45	0.45	0.19



Alt Model-Shift Uniqueness Test

005481781-02, P = 162.990312 Days, E = 33.568875 Days

Pri	Sec	Ter	Pos	FA ₁	FA ₂	F _{Red}	Pri-Ter	Pri-Pos	Sec-Ter	Sec-Pos	Odd-Evn	DMM	Shape	TAT
26.5	7.67	6.83	5.43	5.33	3.10	1.45	19.6	21.0	0.84	2.24	16.7	0.84	0.17	6.19



Stellar Parameters For KIC 005481781

	$T_{\text{eff}}(K)$	$\log(g)$	[Fe/H]	$R (R_{\odot})$	$M(M_{\odot})$	$p_{\star} (\text{g}\cdot\text{cm}^{-3})$
	9105^{+286}_{-381}	$4.211^{+0.062}_{-0.248}$	$0.210^{+0.050}_{-0.600}$	$1.907^{+0.876}_{-0.274}$	$2.153^{+0.384}_{-0.427}$	$0.438^{+0.124}_{-0.280}$
	+3%/-4%	+1%/-6%	+24%/-286%	+46%/-14%	+18%/-20%	+28%/-64%
Source	KIC0	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 005481781-02 / KOI

Detrend	Depth (ppm)	$R_p (R_{\oplus})$	$T_{max} (K)$	$T_{obs} (K)$	A_{obs}
DV	-943 ± 57	$13.13^{+10.98}_{-8.40}$	915^{+86}_{-55}	6180^{+5239}_{-1467}	1688^{+10425}_{-1183}
Alt.	-154 ± 20	$10.49^{+9.37}_{-7.10}$	914^{+88}_{-55}	4596^{+3041}_{-943}	432^{+3403}_{-316}

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

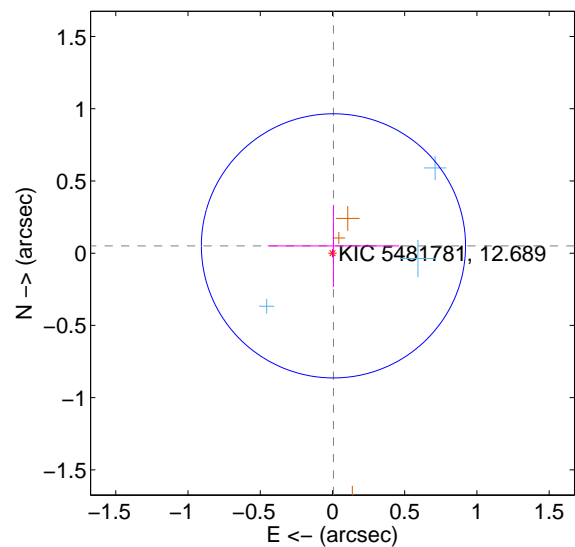
Supplemental centroid analysis for 005481781-02. Kepler magnitude: 12.69. Transit SNR 8.81

There are 4 quarters with good PRF difference image offsets

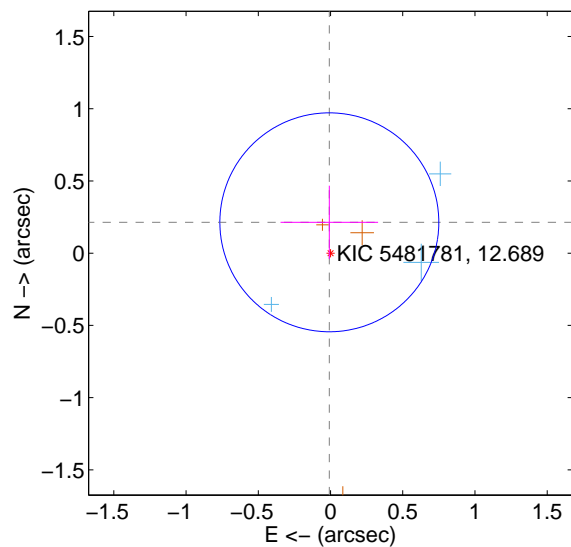
The direct PRF centroid is offset from the target star catalog position by about 0.06 arcsec

	Distance in arcsec	Distance / σ	Δ RA	Δ Dec
PRF-fit source offset from OOT	0.051 ± 0.305	0.17	-0.007 ± 0.454	0.051 ± 0.284
PRF-fit source offset from KIC position	0.214 ± 0.253	0.85	0.008 ± 0.338	0.214 ± 0.254
photometric centroid source offset	0.58 ± 0.27	2.12	0.41 ± 0.31	0.41 ± 0.24

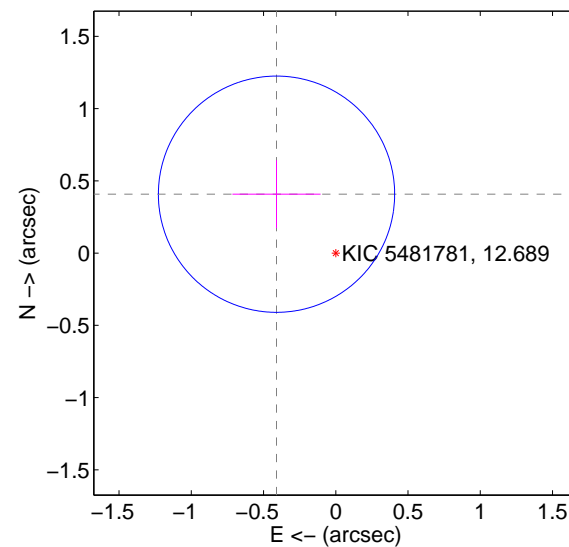
offset from difference PRF-fit to OOT PRF-fit



offset from difference PRF-fit to KIC position

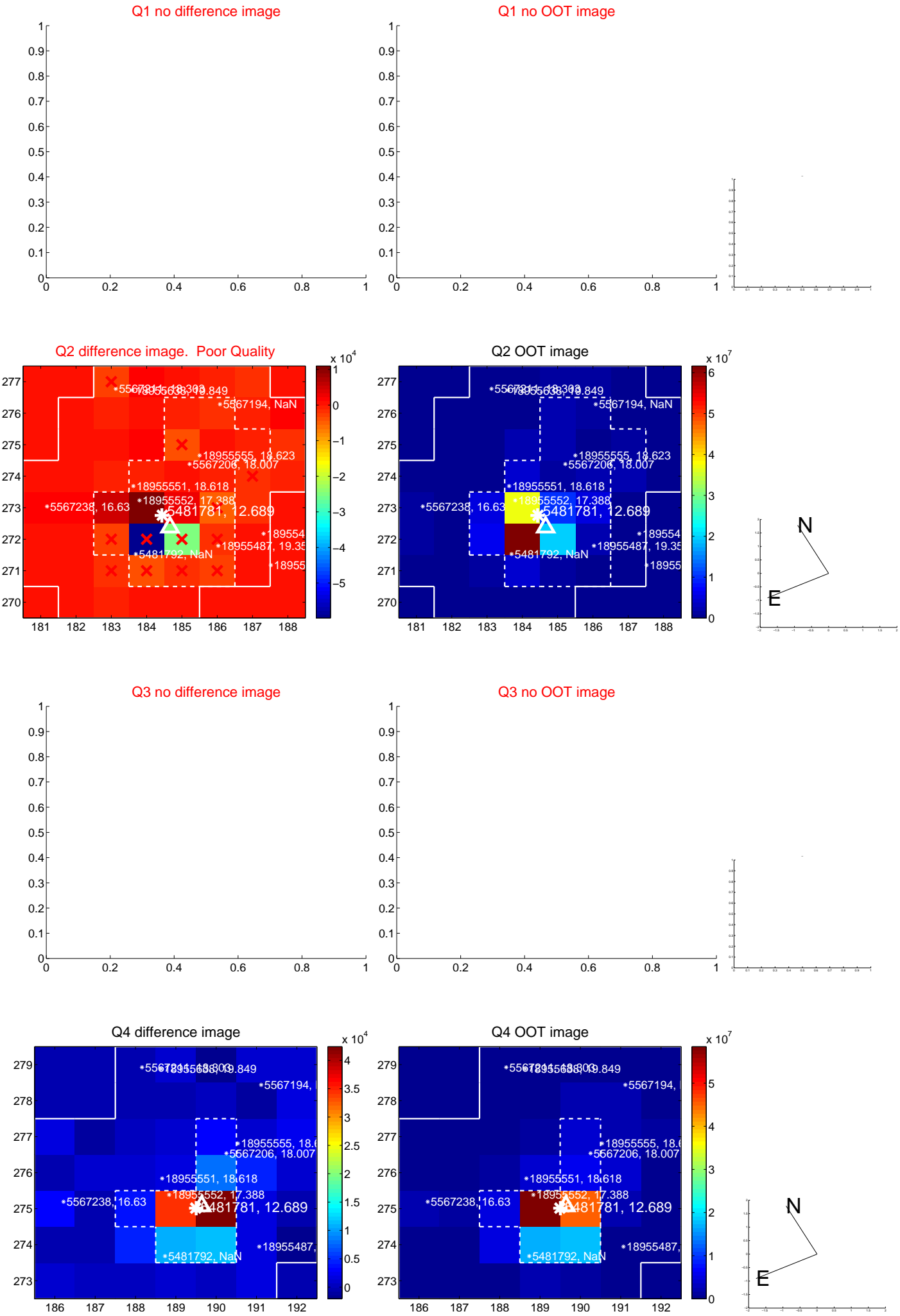


offset from photometric centroids

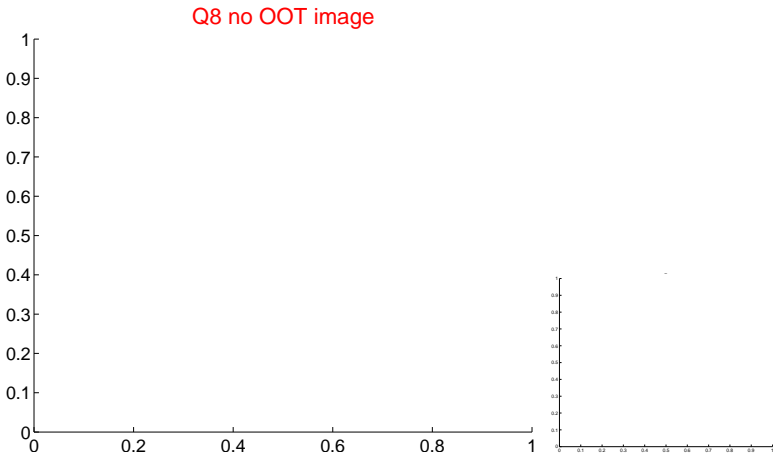
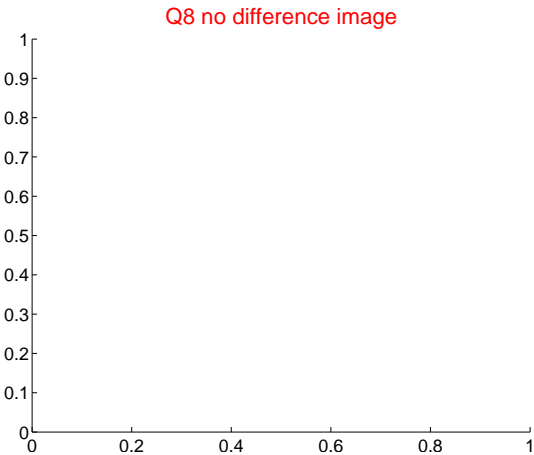
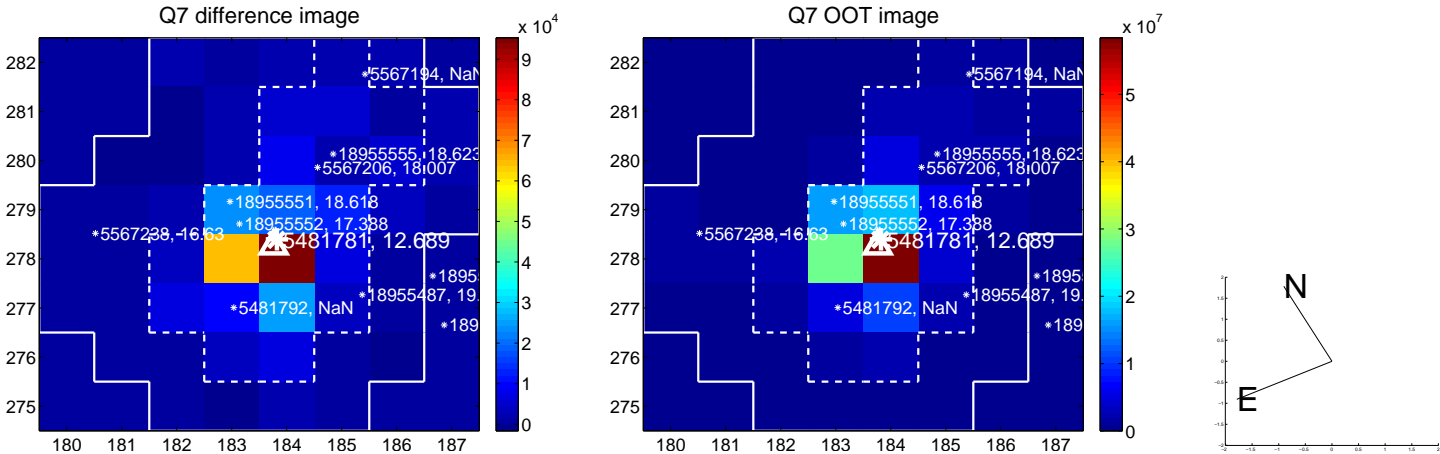
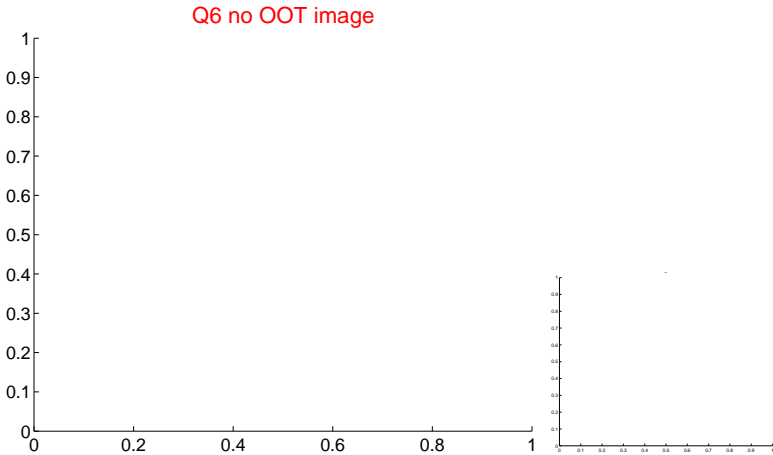
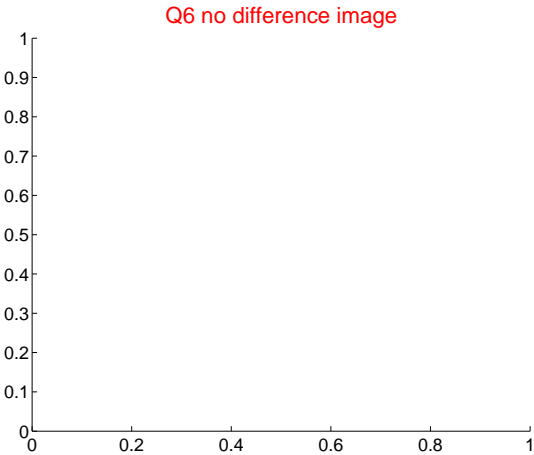
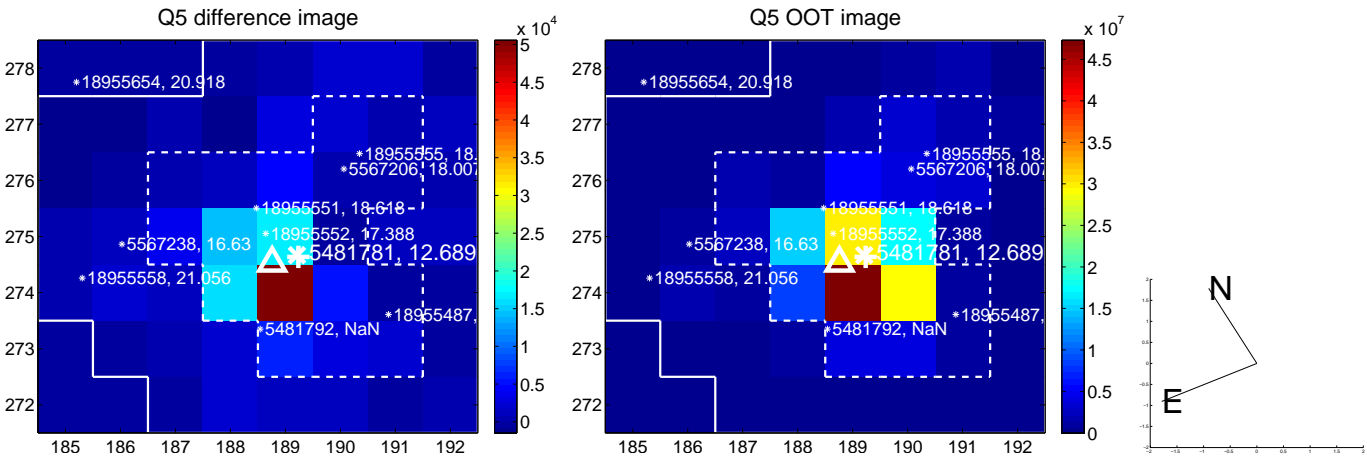


Centroid source offsets from the target star reconstructed from PRF and photometric centroids. **Sky blue crosses: good quarterly centroid offsets**; **Vermillion crosses: bad quarterly centroid offsets**; magenta cross: average over quarters. Length of the crosses: one- σ uncertainty. Blue circle: three-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

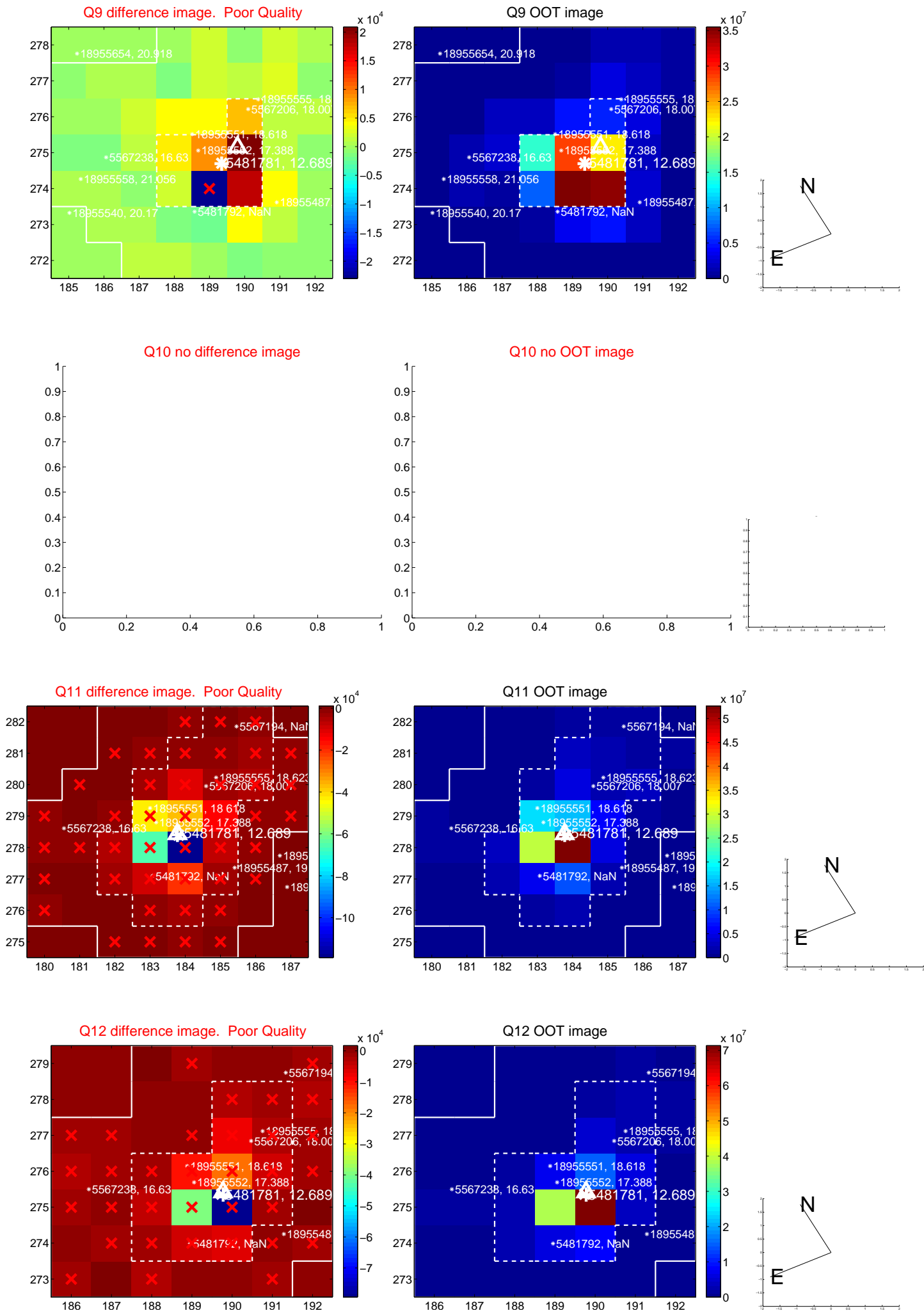
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



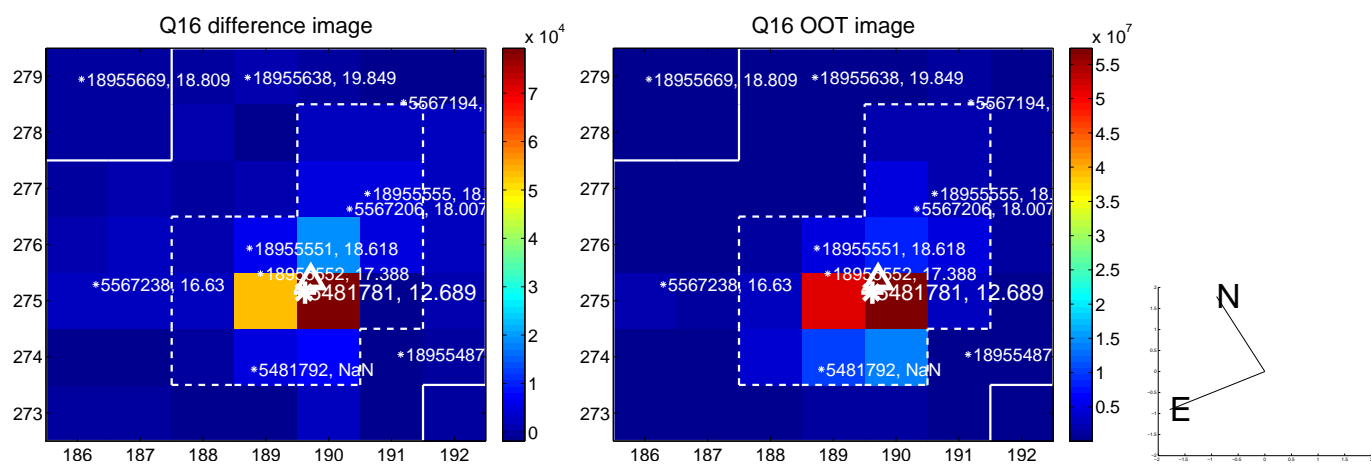
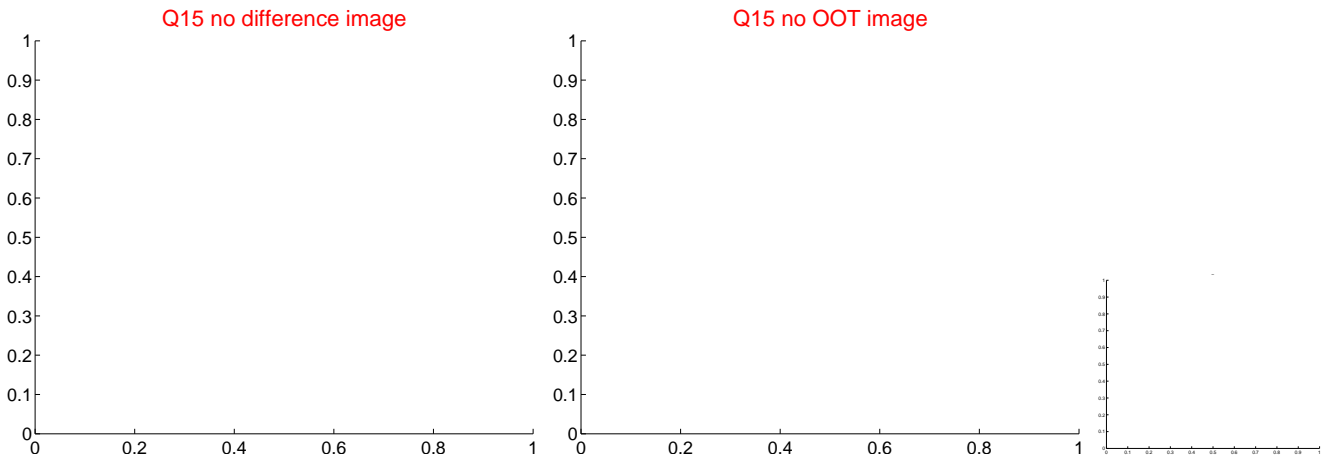
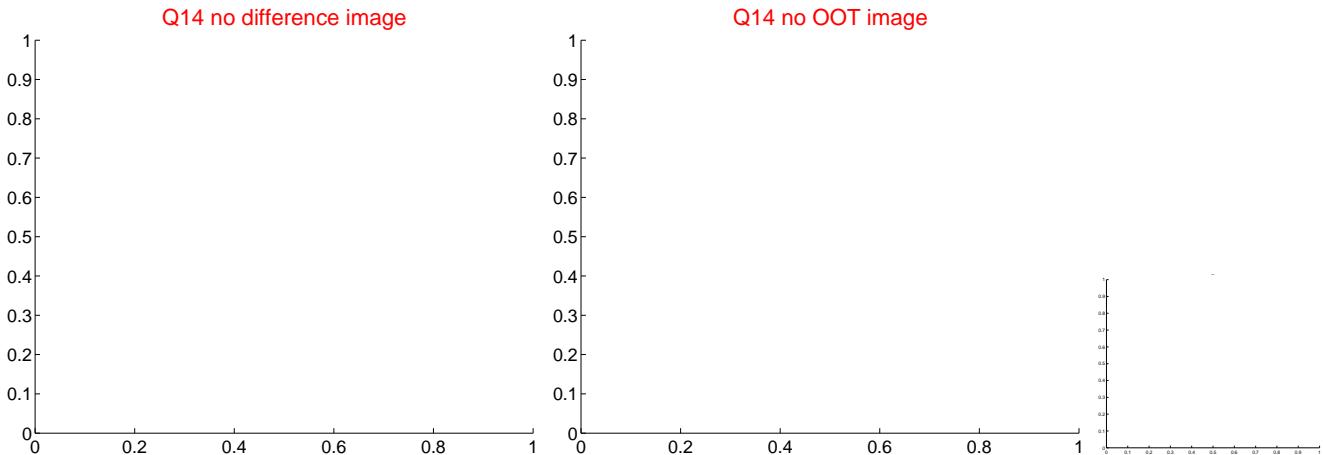
white \times : KIC target position; $+$: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



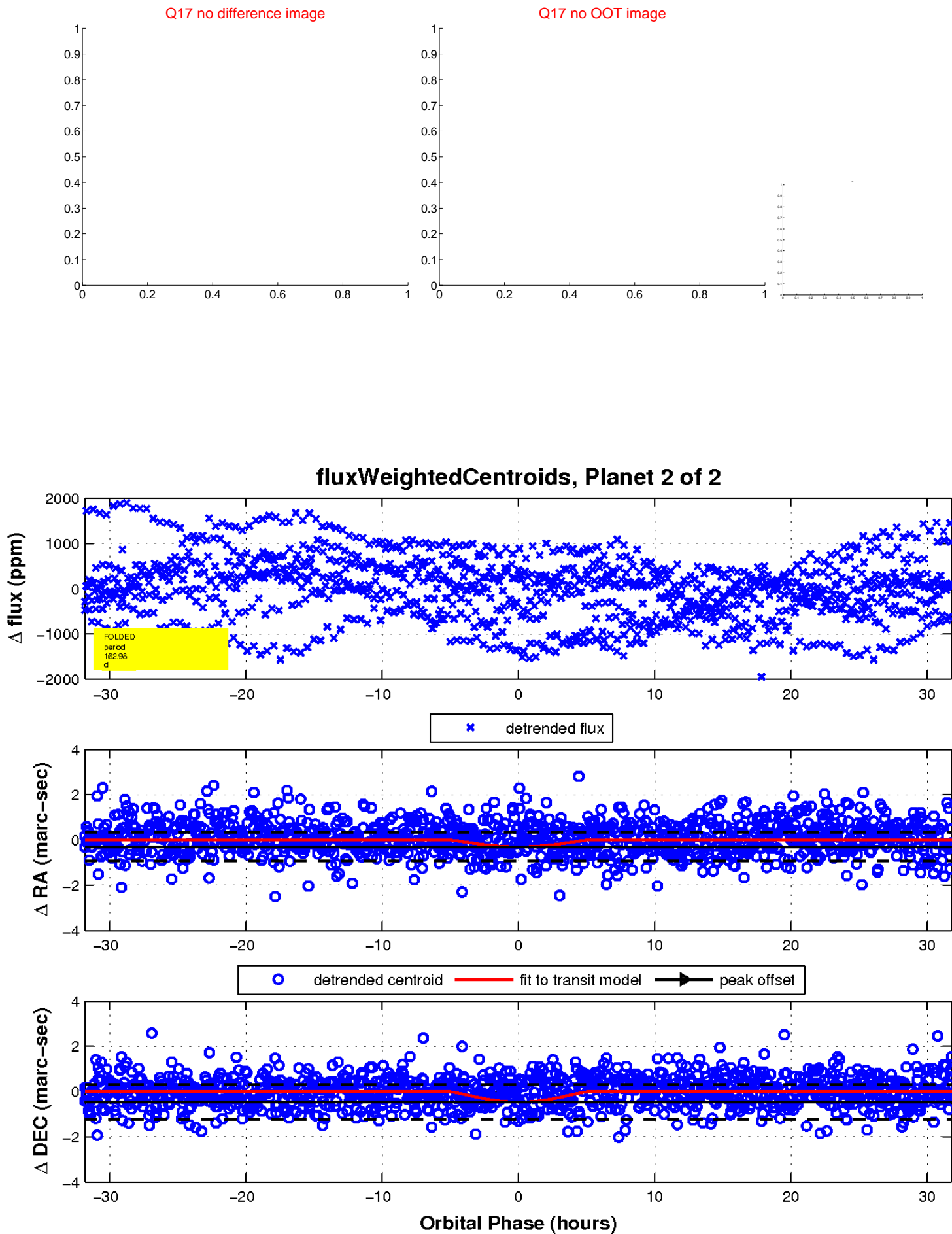
white \times : KIC target position; +: OOT centroid; \triangle : difference centroid. red \times : large negative pixel value.



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

